



ENGINE – DIFFUSER AND COMBUSTION GROUP AND STAGE 1 TURBINE NOZZLE ASSEMBLY – PROVIDE
NEW INNER AND OUTER COMBUSTION CHAMBER ASSEMBLIES WITH GENERATION II LINER SEGMENTS –
CATEGORY CODE 7 – MOD.ENG-72-0116

1. Planning Information

A. Effectivity

- (1) Aircraft: Airbus A320
- (2) Engine: V2500-A1 Engines before Serial No.V0247

B. Reason

(1) Condition

Cracks and burns can occur in the combustion chamber liner segments and the bulkhead segments, which can reduce usual combustor life.

(2) Background

Some inner and outer combustion chamber liner segments and outer combustion chamber bulkhead segments have shown burns and cracks earlier than expected. This occurred because the distribution of the cooling air is not effective in the current design liner segments, and the outer combustion chamber bulkhead segments have no thermal barrier coating. The new liner segments, which have revised cooling pin configurations, and bulkhead segments with thermal barrier coating, are more resistant to burns and cracks.

(3) Objective

To provide a more durable combustor.

(4) Substantiation

Satisfactory engine testing including:

500 cycles and 200 hours of operation on one test engine. 1500 cycles and 750 hours of operation on a second test engine. A temperature survey test on one engine. Successful operating envelope testing at altitude conditions.

(5) Effect of Bulletin on Workshop procedures:

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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) Revised cooling pin configurations for the liner segments.

(b) Bulkhead segments with thermal barrier coating.

D. Approval

The Part Number Changes and/or part modifications described in Section 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 Code 7.

Accomplish when supply of superseded parts has been depleted.

F. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
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(1) In Service	Not applicable
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(2) At overhaul	Not affected
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(Note: The parts affected by this Service Bulletin are accessible at Overhaul).

G. Material - Price and Availability

(1) Modification kit not required.

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

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H. Tooling - Price and Availability

None.

I. Weight and Balance

- | | | | | | |
|-----|---------------|----|----|----|--|
| (1) | Weight change | .. | .. | .. | None |
| (2) | Moment arm | .. | .. | .. | No effect |
| (3) | Datum | .. | .. | .. | Engine front mount centerline
(Powerplant station P.P.S. 100) |

J. Electrical Load Data

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

K. References

- (1) Internal Reference No.

89VA190B

- (2) Other References

IAE V2500 Service Bulletin Number

V2500-ENG-72-0006 (Engine - Diffuser and Combustion Group and Stage 1 Turbine Nozzle Assembly - Thermal Barrier Coating for Combustion Liners).

V2500-ENG-72-0060 (Engine - Diffuser and Combustion Group and Stage 1 Turbine Nozzle Assembly - Introduce Thermal Barrier Coating on Inner and Outer Combustion Chamber Liners).

V2500 Engine Manual.

V2500 Standard Practices Manual.

L. Other Publications Affected

- (1) The V2500 Engine Illustrated Parts Catalog, Chapter/Section 72-42-61, Figure 1 and 72-44-30, Figure 1, to add the new parts.
- (2) The V2500 Engine Manual, Chapter/Section 72-42-61 and 72-44-30, Cleaning, to add the new parts.
- (3) The V2500 Engine Manual, Chapter/Section 72-42-61 and 72-44-30, Inspection, to add the new parts.

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- (4) The V2500 Engine Manual, Chapter/Section 72-42-61, VRS3092 and VRS3096 and 72-44-30, VRS3173 Repair, to add the new parts.

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2. Accomplishment Instruction

A. Rework Instructions

There are no rework instructions necessary for this Service Bulletin.

B. Disassembly Instructions

- (1) Remove the Outer Chamber Liner Segments by the approved procedure given in Reference (2), Chapter/Section 72-42-60, Disassembly.

NOTE: Outer Combustion Chamber Liners modified by the instructions given in Service Bulletin V2500-ENG-72-0060 will have coated segments at the applicable locations.

- (a) Inspect the removed 2A1613 Liner Segments by the approved procedure in Chapter/Section 72-42-61, Inspection.

- (b) Keep the specified liner segments, which are in the inspection limits, and install them when you assemble the outer combustion chamber assembly.

- (2) Remove the Combustion Chamber Liner (bulkhead) Segments by the approved procedure given in Reference (2), Chapter/Section 72-42-61, Repair VRS3096.

NOTE: Although the procedure specified is only to replace damaged Combustion Chamber Liner (bulkhead) Segments, all segments must be removed to incorporate this Service Bulletin.

- (3) Remove the Inner Combustion Chamber Liner Segments by the approved procedure in Reference (2), Chapter/Section 72-44-30, Disassembly.

NOTE: Inner Combustion Chamber Liners modified by the instructions given in Service Bulletin V2500-ENG-72-0060 will have coated segments at the applicable locations.

- (a) Inspect the removed 2A1616 Liner Segments by the approved procedure in Chapter/Section 72-44-30, Inspection.

- (b) Keep the specified liner segments, which are in the inspection limits, and install them when you assemble the inner combustion chamber assembly.

C. Assembly Instructions

- (1) Install the 2A2096 Combustion Chamber Liner (bulkhead) Segments (20 off) by the approved procedure given in Chapter/Section 72-42-61, Repair VRS3096 and Figure 1.



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NOTE: Although the procedure specified is only to replace damaged Combustion Chamber Liner (bulkhead) Segments, all segments must be removed to incorporate this Service Bulletin.

- (2) Install the Outer Combustion Chamber Liner Segments by the approved procedure given in Reference (2), Chapter/Section 72-42-60, Assembly, and Figure 2.
 - (a) The liner segments necessary to incorporate this Service Bulletin in the Outer Combustion Chamber Liner Assembly are: 2A1613 (10 off), 2A2083 (9 off), 2A2084 (1 off), 2A2085 (8 off), 2A2086 (1 off), 2A2087 (1 off), 2A2088 (10 off) and 2A2089 (10 off).
- (3) Install the Inner Combustion Chamber Liner Segments by the approved procedure given in Reference (2), Chapter/Section 72-44-30, Assembly, and Figure 3.
 - (a) The liner segments necessary to incorporate this Service Bulletin in the Inner Combustion Chamber Liner Assembly are: 2A1616 (10 off), 2A2091 (10 off), 2A2092 (10 off), 2A2093 (10 off) and 2A2094 (10 off).

D. Identification Instructions

- (1) Identify the modified outer combustion chamber assemblies as follows:

Old Part Number	New Part Number
2A1383	2A1620
2A1385	2A2032
2A1399	2A2032
2A1666	2A1620
2A1618	2A2032
2A2013	2A1620

- (2) Identify the modified inner combustion chamber assemblies as follows:

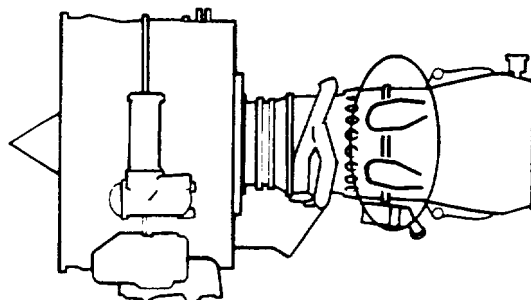
Old Part Number	New Part Number
2A1374	2A2034
2A1398	2A2034
2A1617	2A2034

- (3) Make a mark adjacent to the old part number to show the new part number. Use the approved procedure in Reference (3), Chapter/Section 70-09-00, Marking of parts. Use the vibration peen method.

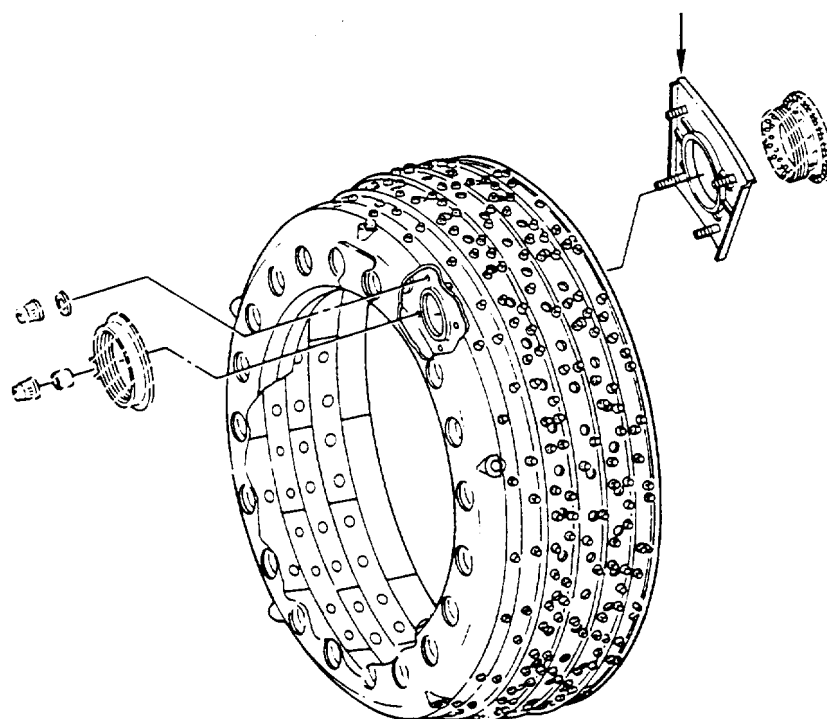
E. Recording Instructions

- (1) A record of accomplishment is necessary.

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REMOVE THE PN 2A0129
CC LINER SEGMENTS (Bulkhead)
AND INSTALL THE 2A2096 CC LINER
SEGMENTS (Bulkhead)
(20 off)



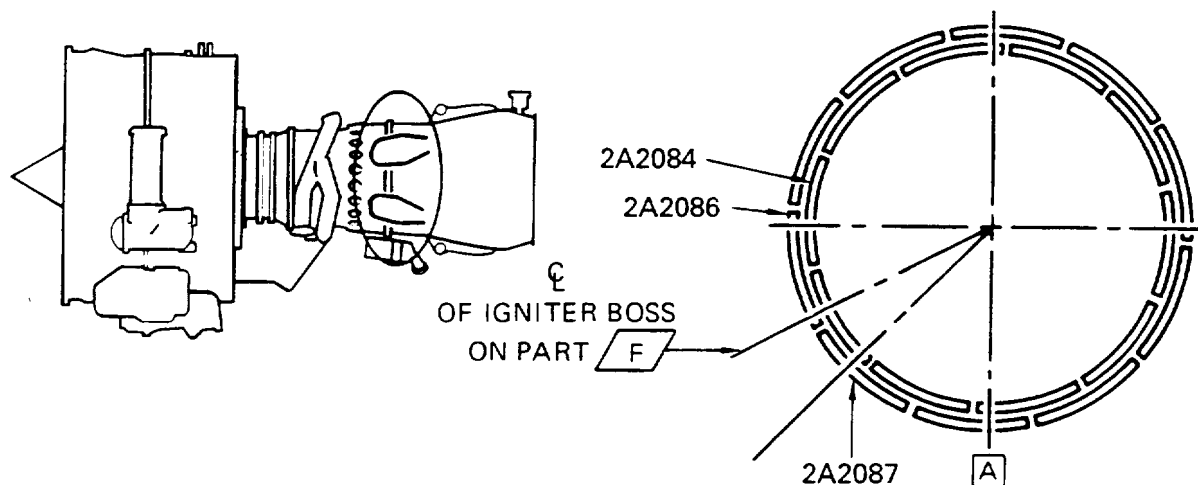
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Location of the combustion chamber liner segments (bulkhead)
Fig.1

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REMOVE THE PN 2A1077 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2086 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1080 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2084 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1078 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2087 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1073 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A1613 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1079 CC LINER SEGMENTS (9 off) AND INSTALL THE PN 2A2083 CC LINER SEGMENTS (9 off)

REMOVE THE PN 2A1323 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A2089 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1324 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A2088 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1076 CC LINER SEGMENTS (8 off) AND INSTALL THE PN 2A2085 CC LINER SEGMENTS (8 off)

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Location of the outer combustion chamber liner segments (for engines which do not incorporate V2500-ENG-72-0006 and V2500-ENG-72-0060)

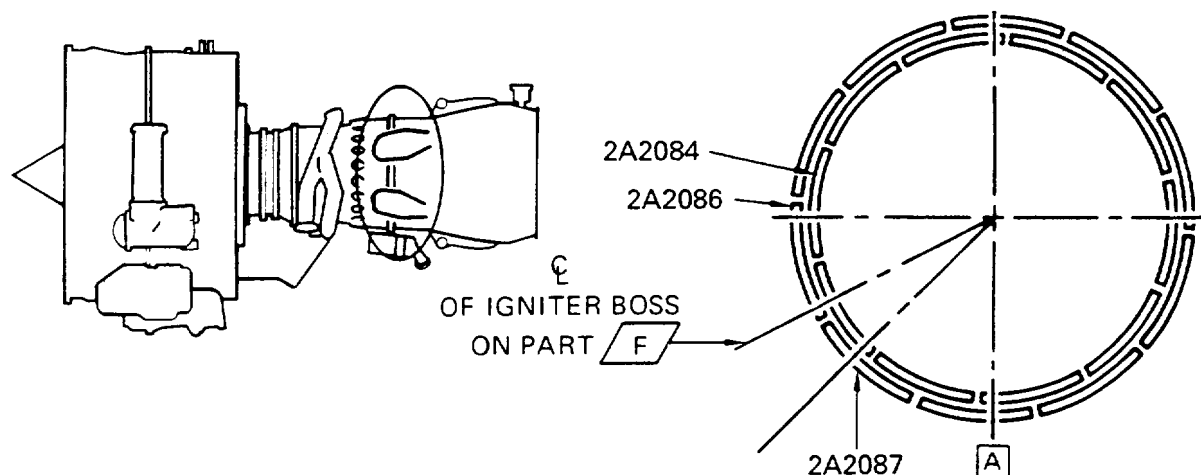
Fig.2 (Sheet 1 of 3)

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REMOVE THE PN 2A1394 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2086 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1080 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2084 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1073 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A1613 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1079 CC LINER SEGMENTS (9 off) AND INSTALL THE PN 2A2083 CC LINER SEGMENTS (9 off)

REMOVE THE PN 2A1391 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A2089 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1395 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2087 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1392 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A2088 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1393 CC LINER SEGMENTS (8 off) AND INSTALL THE PN 2A2085 CC LINER SEGMENTS (8 off)

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Location of the outer combustion chamber liner segments (for engines which incorporate V2500-ENG-72-0006, but do not incorporate V2500-ENG-72-0060)

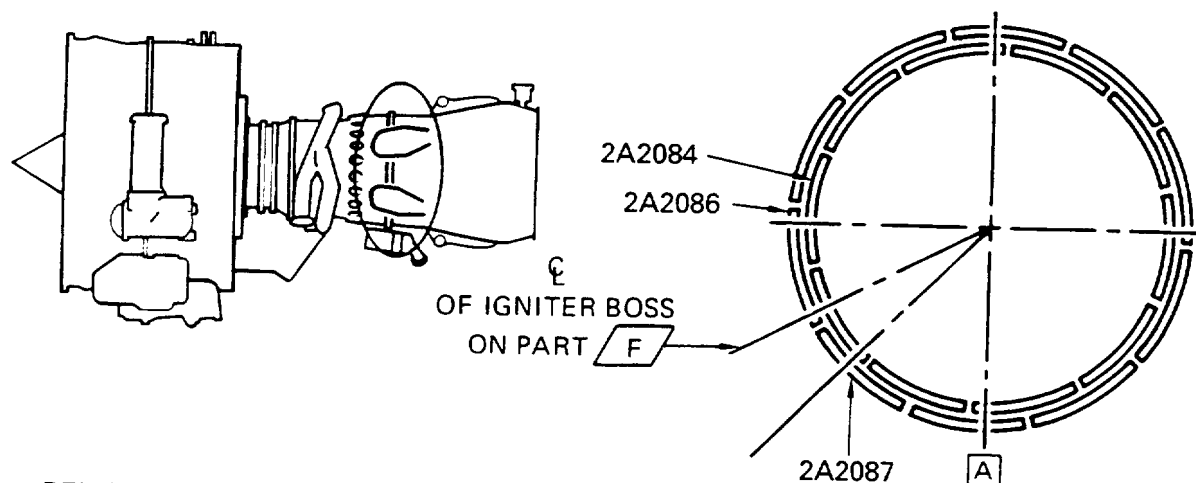
Fig.2 (Sheet 2 of 3)

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REMOVE THE PN 2A1394 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2086 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1612 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2084 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1395 CC LINER SEGMENT (1 off) AND INSTALL THE PN 2A2087 CC LINER SEGMENT (1 off)

REMOVE THE PN 2A1611 CC LINER SEGMENTS (9 off) AND INSTALL THE PN 2A2083 CC LINER SEGMENTS (9 off)

REMOVE THE PN 2A1391 CC LINER SEGMENTS (10 off) AND INSTALL THE PN 2A2089 CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1392 CC LINER SEGMENTS (10 ff) AND INSTALL THE PN 2A2088 CC LINER SEGMENTS (10 off)

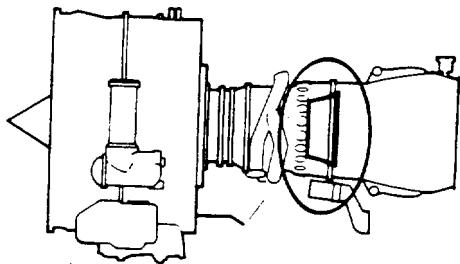
REMOVE THE PN 2A1393 CC LINER SEGMENTS (8 off) AND INSTALL THE PN 2A2085 CC LINER SEGMENTS (8 off)

B5404

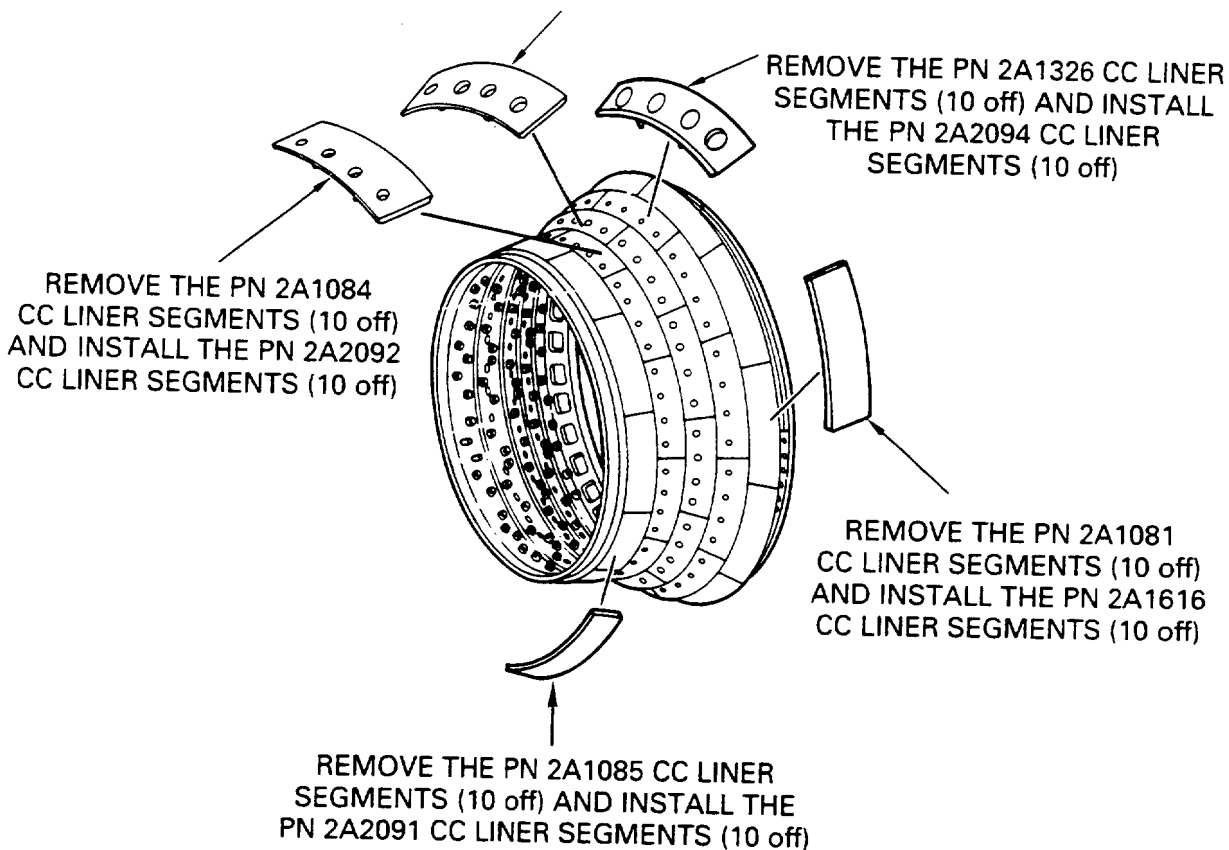
Location of the outer combustion chamber liner segments (for engines which incorporate V2500-ENG-72-0060)

Fig.2 (Sheet 3 of 3)

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REMOVE THE PN 2A1325
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A2093
CC LINER SEGMENTS (10 off)

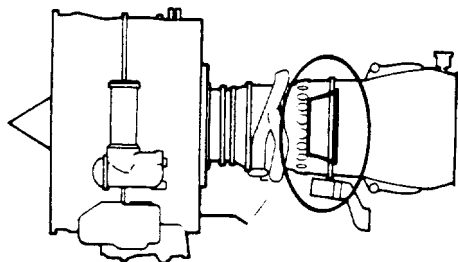


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Location of the inner combustion chamber liner segments (for engines which do not incorporate V2500-ENG-72-0006 and V2500-ENG-72-0060)

Fig.3 (Sheet 1 of 3)

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REMOVE THE PN 2A1397
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A2093
CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1326 CC LINER
SEGMENTS (10 off) AND INSTALL
THE PN 2A2094 CC LINER
SEGMENTS (10 off)

REMOVE THE PN 2A1396
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A2092
CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1081
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A1616
CC LINER SEGMENTS (10 off)

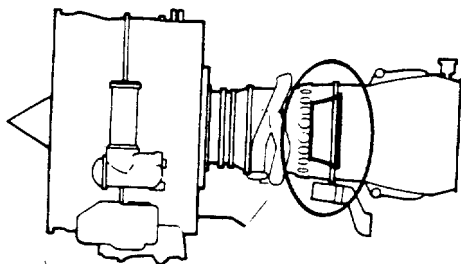
REMOVE THE PN 2A1085 CC LINER
SEGMENTS (10 off) AND INSTALL THE
PN 2A2091 CC LINER SEGMENTS (10 off)

B5406

Location of the inner combustion chamber liner segments (for engines which incorporate V2500-ENG-72-0006, but do not incorporate V2500-ENG-72-0060)

Fig.3 (Sheet 2 of 3)

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REMOVE THE PN 2A1397
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A2093
CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1615 CC LINER
SEGMENTS (10 off) AND INSTALL
THE PN 2A2094 CC LINER
SEGMENTS (10 off)

REMOVE THE PN 2A1396
CC LINER SEGMENTS (10 off)
AND INSTALL THE PN 2A2092
CC LINER SEGMENTS (10 off)

REMOVE THE PN 2A1614 CC LINER
SEGMENTS (10 off) AND INSTALL THE
PN 2A2091 CC LINER SEGMENTS (10 off)

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Location of the inner combustion chamber liner segments (for engines which incorporate
V2500-ENG-72-0060)

Fig.3 (Sheet 3 of 3)

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3. Material Information

Applicability: For each V2500 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.)	Instructions Disposition
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Applicability: For each V2500-A1 Engine which does not incorporate V2500-ENG-72-0006 and V2500-ENG-72-0060.

2A1620 (72-42-61)	1	-	Outer Combustion Chamber Assembly	2A1383 (01-501)	(S1)(1D) (B)
or					
2A2032 (72-42-61)	1	-	Outer Combustion Chamber Assembly	2A1385 (01-501)	(S1)(1D) (B)
2A1613 (72-42-61)	10	271.00	.Liner Segment - CC	2A1073 (01-600)	(S1)(A)(B)
2A2083 (72-42-61)	9	-	.Liner Segment - CC, 1 OD	2A1079 (01-630)	(S1)(A)(B)
2A2084 (72-42-61)	1	-	.Liner Segment - CC, 1 OD, IGN	2A1080 (01-640)	(S1)(A)(B)
2A2085 (72-42-61)	8	-	.Liner Segment - CC	2A1076 (01-650)	(S1)(A)(B)
2A2086 (72-42-61)	1	-	.Liner Segment - CC	2A1077 (01-660)	(S1)(A)(B)
2A2087 (72-42-61)	1	-	.Liner Segment - CC	2A1078 (01-670)	(S1)(A)(B)
2A2088 (72-42-61)	10	-	.Liner Segment - CC	2A1324 (01-620)	(S1)(A)(B)
2A2089 (72-42-61)	10	-	.Liner Segment - CC	2A1323 (01-610)	(S1)(A)(B)
2A2096 (72-42-61)	20	-	.Liner Segment - CC (Bulkhead)	2A0129 (01-680)	(S1)(A)(B)
2A2034 (72-44-30)	1	-	Inner Combustion Chamber Assembly	2A1374 (01-401)	(S1)(1D) (B)
2A1616 (72-44-30)	10	271.00	.Liner Segment - CC, 1 ID	2A1081 (01-560)	(S1)(A)(B)
2A2091 (72-44-30)	10	-	.Liner Segment - CC	2A1085 (01-540)	(S1)(A)(B)
2A2092 (72-44-30)	10	-	.Liner Segment - CC	2A1084 (01-620)	(S1)(A)(B)
2A2093 (72-44-30)	10	-	.Liner Segment - CC	2A1325 (01-600)	(S1)(A)(B)

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2A2094 (72-44-30)	10	-	.Liner Segment - CC	2A1326 (01-580)	(S1)(A)(B)
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Applicability: For each V2500-A1 Engine which incorporates V2500-ENG-72-0006, but does not incorporate V2500-ENG-72-0060.

2A1620 (72-42-61)	1	-	Outer Combustion Chamber Assembly	2A2013 (01-501)	(S1)(1D) (B)
or					
2A2032 (72-42-61)	1	-	Outer Combustion Chamber Assembly	2A1399 (01-501)	(S2)(1D) (A)(B)
2A1613 (72-42-61)	10	-	.Liner Segment - CC	2A1073 (01-600)	(S2)(A)
2A2083 (72-42-61)	9	-	.Liner Segment - CC, 1 OD	2A1079 (01-630)	(S2)(A) (B)
2A2084 (72-42-61)	1	-	.Liner Segment - CC, 1 OD, IGN	2A1080 (01-640)	(S2)(A) (B)
2A2085 (72-42-61)	8	-	.Liner Segment - CC	2A1393 (01-650)	(S2)(A) (B)
2A2086 (72-42-61)	1	-	.Liner Segment - CC	2A1394 (01-660)	(S2)(A) (B)
2A2087 (72-42-61)	1	-	.Liner Segment - CC	2A1395 (01-670)	(S2)(A) (B)
2A2088 (72-42-61)	10	-	.Liner Segment - CC	2A1392 (01-620)	(S2)(A) (B)
2A2089 (72-42-61)	10	-	.Liner Segment - CC	2A1391 (01-610)	(S2)(A) (B)
2A2096 (72-42-61)	20	-	.Liner Segment - CC (Bulkhead)	2A0129 (01-680)	(S2)(A) (B)
2A2034 (72-44-30)	1	-	Inner Combustion Chamber Assembly	2A1398 (01-401)	(S2)(1D) (A)(B)
2A1616 (72-44-30)	10	271.00	.Liner Segment - CC, 1 ID	2A1081 (01-560)	(S2)(A) (B)
2A2091 (72-44-30)	10	-	.Liner Segment - CC	2A1085 (01-540)	(S2)(A) (B)
2A2092 (72-44-30)	10	-	.Liner Segment - CC	2A1396 (01-620)	(S2)(A) (B)
2A2093 (72-44-30)	10	-	.Liner Segment - CC	2A1397 (01-600)	(S2)(A) (B)
2A2094 (72-44-30)	10	-	.Liner Segment - CC	2A1326 (01-580)	(S2)(A) (B)

Applicability: For each V2500-A1 Engine which incorporates V2500-ENG-72-0060,

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2A1620 (72-42-61) or	1	-	Outer Combustion Chamber Assembly	2A1666 (01-501)	(S3)(1D) (B)
2A2032 (72-42-61)	1	-	Outer Combustion Chamber Assembly	2A1618 (01-501)	(S3)(1D) (A)(B)
2A2083 (72-42-61)	9	-	.Liner Segment - CC, 1 OD	2A1611 (01-630)	(S3)(A) (B)
2A2084 (72-42-61)	1	-	.Liner Segment - CC, 1 OD, IGN	2A1612 (01-640)	(S3)(A) (B)
2A2085 (72-42-61)	8	-	.Liner Segment - CC	2A1393 (01-650)	(S3)(A) (B)
2A2086 (72-42-61)	1	-	.Liner Segment - CC	2A1394 (01-660)	(S3)(A) (B)
2A2087 (72-42-61)	1	-	.Liner Segment - CC	2A1395 (01-670)	(S3)(A) (B)
2A2088 (72-42-61)	10	-	.Liner Segment - CC	2A1392 (01-620)	(S3)(A) (B)
2A2089 (72-42-61)	10	-	.Liner Segment - CC	2A1391 (01-610)	(S3)(A) (B)
2A2096 772-42-61)	20	-	.Liner Segment - CC (Bulkhead)	2A0129 (01-680)	(S3)(A) (B)
2A2034 (72-44-30)	1	-	Inner Combustion Chamber Assembly	2A1617 (01-401)	(S3)(1D) (A)(B)
2A2091 (72-44-30)	10	-	.Liner Segment - CC, 1 ID	2A1614 (01-540)	(S3)(A) (B)
2A2092 (72-44-30)	10	-	.Liner Segment - CC	2A1396 (01-620)	(S3)(A) (B)
2A2093 (72-44-30)	10	-	.Liner Segment - CC	2A1397 (01-600)	(S3)(A) (B)
2A2094 (72-44-30)	10	-	.Liner Segment - CC	2A1615 (01-580)	(S3)(A) (B)

C. Expendables Required To Incorporate This Bulletin

Part No.	ATA/IPC No.	Qty	Keyword
4W0001	72-42-61 (01-780)	230	Nut
4W0001	72-44-30 (01-680)	250	Nut

D. Instructions/Disposition Code Statements:

- (A) New part is currently available.
- (B) Old part will no longer continue to be available.
- (S1) New parts coded (S1) must replace old parts coded (S1) as a COMPLETE SET per engine except 2A2096 can be used to replace 2A0129, as necessary, but 2A0129 may not be used to replace 2A2096.
- (S2) New parts coded (S2) must replace old parts coded (S2) as a COMPLETE SET per engine except 2A2096 can be used to replace 2A0129, as necessary, but 2A0129 may not be used to replace 2A2096.
- (S3) New parts coded (S3) must replace old parts coded (S3) as a COMPLETE SET per engine except 2A2096 can be used to replace 2A0129, as

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necessary, but 2A0129 may not be used to replace 2A2096.

(1D) Rework the Old part number and identify as the New part number.

NOTE: The estimated 1992 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.

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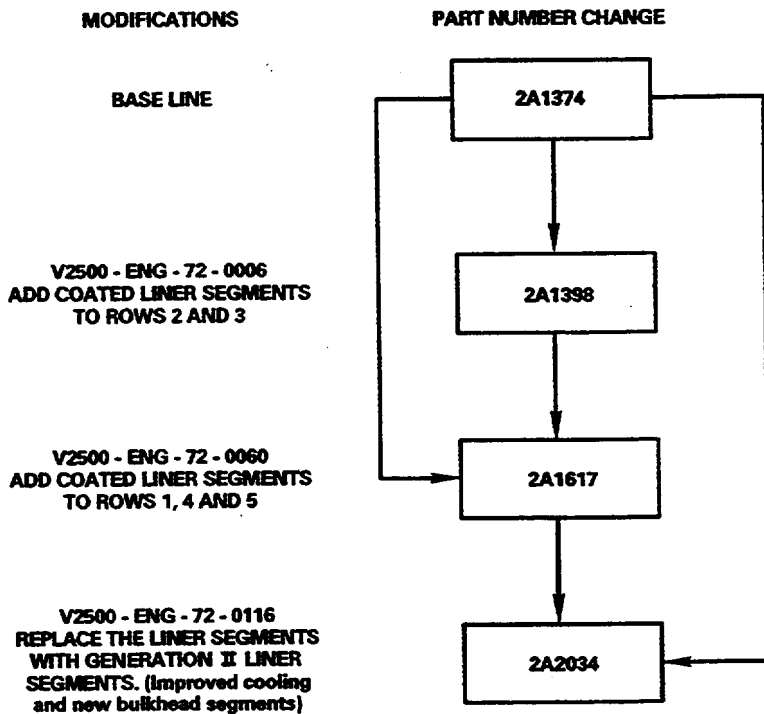
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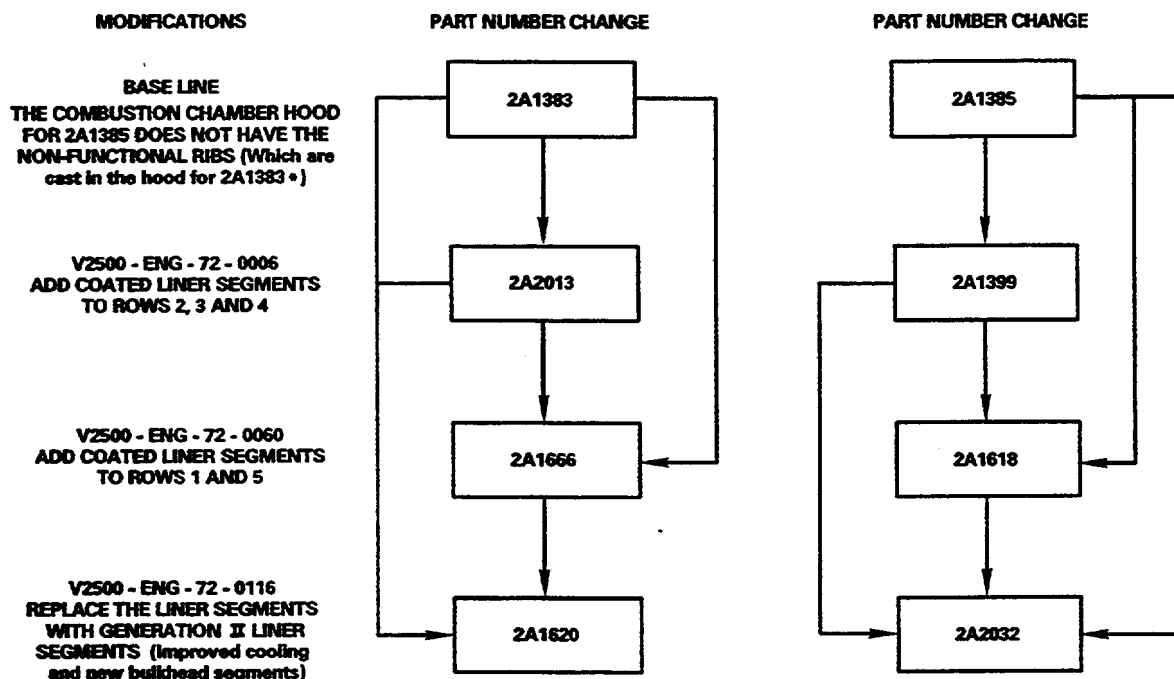
Family tree - Inner Combustion Chamber Assembly
Fig.4

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• NOTE : THERE IS NO PROCEDURE FOR MODIFICATION
AND IDENTIFICATION OF PN 2A1383 TO PN 2A1385

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Family tree - Outer Combustion Chamber Assembly
Fig.5

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