International Aero Engines

SERVICE BULLETIN

ENGINE - DIFFUSER AND COMBUSTOR GROUP - PROVIDE NEW DIFFUSER GROUP ADAPTERS AND TUBE ASSEMBLIES - CATEGORY CODE 8 - MOD.ENG-72-0239



1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A320, A321

McDonnell Douglas MD-90

(2) Engine: V2527-A5 Engines before Serial No V10198
V2530-A5 Engines before Serial No V10198
V2525-D5 Engines before Serial No. V20068
V2528-D5 Engines before Serial No V20068

For V2527-A5 and V2530-A5

NOTE: This Service Bulletin must be incorporated before or at the same time as Service Bulletin V2500-ENG-72-0240 and at the same time as or after Service Bulletin V2500-NAC-75-0062 specified in Reference (1).

For V2525-D5 and V2528-D5

NOTE: This Service Bulletin must be incorporated before or at the same time as Service Bulletin V2500-ENG-72-0240 specified in Reference (1).

B. Reason

(1) Condition:

Higher thrust versions of the V2500 engine result in a higher temperature operating environment for the number four bearing compartment.

(2) Background:

Increased thrust versions of the V2500 engine result in higher number four bearing compartment operating temperatures. The higher operating temperatures can cause premature compartment oil degradation and, as a result, premature bearing distress.

(3) Objective:

Provide new number four bearing compartment cooling air tubes that will increase the cooling air flow to the number four bearing compartment, reducing the operating temperatures to acceptable levels. These new tubes will become the new standard for all V2500 models.

(4) Substantiation

Satisfactorily completed by structural analytical review. The intent of this configuration was demonstrated in a test engine.

(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) Install new No. 4 Bearing Outer Tube Assemblies and Tube to Boss Adapters.

D. Approval

The Part Number Changes and/or part modifications described in Section 2 and 3 or 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 8

Accomplish based upon experience with the prior configuration.

F. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

| Venue | Estimated Manhours |
|---|---|
| (1) In service | Not Applicable |
| (2) At overhaul | 1 hour 15 minutes |

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

| | | |
|---|---|---|
| (a) | To make modifiction to the No. 4 Bearing Tube assy. (3 off) and reidentify. | 41 minutes |
| (b) | To make modifiction to the replacement tube detail (1 off) and reidentify. | 27 minutes |
| (c) | To make modification to the adapters (2 off) and and reidentify. | 34 minutes |
| | TOTAL: | 1 hour 15 minutes |

G. Material - Price and Availability

(1) Modification kit is not required. Parts are supplied as single line items.

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

H. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

I. Weight and Balance

| | | |
|---|---|---|
| (1) | Weight change | None |
| (2) | Moment arm | No effect |
| (3) | Datum | Engine Front mount Centerline (Power Plant station (PPS) 100) |

J. Electrical Load Data

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

K. References

(1) Internal Reference No.

95VA021E

(2) Other References

IAE V2500 Service Bulletins:

V2500-ENG-72-0148 - Engine - No. 4 Bearing Compartment - Replace Existing Tube Adapters With Tube Adapters Having A Decreased Inner Diameter

V2500-ENG-72-0240 - Engine - High Pressure Turbine Rotor and Stator Assembly - Provide A New Stage 2 HPT Air Seal And New Stage 1 High Pressure Turbine (HPT) Hub Metering Plugs

V2500-NAC-75-0062 - ACAC Exhaust Duct Redesign - 58% Increase In Exhaust Area

V2500 Standard Practices Manual (SPP-V2500-1I-A), 70-09-00, Marking of Parts.

V2500-A5 Engine Illustrated Parts Catalog (S-V2500-2IA), Chapter/Section 72-42-20, 72-45-10 and 72-45-14

V2500-D5 Engine Illustrated Parts Catalog (S-V2500-3IA), Chapter/Section 72-42-20, 72-45-10 and 72-45-14

(5) V2500 Engine Manual (E-V2500-1I-A), 72-42-00, Assembly.

(6) V2500 Engine Manual (E-V2500-3I-A), 72-42-00, Assembly.

L. Other Publications Affected

(1) The V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-42-20, Cleaning to add the new part number.

(2) The V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-20, Cleaning to add the new part number.

(3) The V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-42-20, Inspection to add the new part number.

(4) The V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-20, Inspection to add the new part number.

(5) The V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-42-20, Repair to add the new part number.

(6) The V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-20, Repair to add the new part number.

2. Accomplishment Instructions

A. Rework Instructions

(1) Do a modification of the 2A1031-01 No. 4 Bearing Tube Assembly (3 off). See Reference (3) or (4), 72-42-20 Figure/Item No. 05-020).

| Procedure | Supplementary Information |
|---|---|
| (a) Set-up and machine to open the 0.204-0.214 in. (5,18 - 5,44 mm) diameter to 0.221 - 0.231 in. (5,61 - 5,87 mm) diameter. | Refer to Figures 1 and 2. |
| 1 Break sharp edges 0.003 - 0.005 inch (0,08-0,38 mm). | |
| (b) Mark the new part number adjacent to the existing part number. Use the vibration peen method. | Existing New Part Number<br>2A1031-01 2A3187-01<br>Refer to Reference (2), Control No./Task No. 70-09-00-400-501. |

(2) Do a modification of the 2A1031-02 Tube (1 off). See Reference (3) or (4), 72-42-20 Figure/Item No. 05-061).

NOTE: This procedure is required for any 2A1031-02 tube which will be used in a 2A3187-01 No. 4 Bearing Tube Assembly as a replacement detail.

| Procedure | Supplementary Information |
|---|---|
| (a) Set-up and machine to open the 0.204-0.214 in. (5,18 - 5,44 mm) diameter to 0.221 - 0.231 in. (5,61 - 5,87 mm) diameter. | Refer to Figure 2. |
| 1 Break sharp edges 0.003 - 0.015 inch (0,08-0,38 mm). | |

| | | |
|---|---|---|
| (b) | Mark the new part number adjacent to the existing part number. Use the vibration peen method. | Existing New Part Number<br>2A1031-02 2A3187-02<br>Refer to Reference (2), Control No./Task No. 70-09-00-400-501. |

(3) Do a modification of the 2A2766 Adapters (2 off). See Reference (3) or (4), 72-42-20 Figure/Item No. 06-240).

NOTE: The 2A2766 Adapter is the old part for the V2527-A5, V2530-A5 Engines, and the V2525-D5 and V2528-D5 engines that incorporate Reference (1) Service Bulletin V2500-ENG-72-0148. The 2A1912 Adapter is the old part for the V2525-D5 and V2528-D5 engines that do not incorporate Reference (1) Service Bulletin V2500-ENG-72-0148 (This part cannot be modified and identified as the new part number.

| | Procedure | Supplementary Information |
|---|---|---|
| (a) | Set-up and machine to open the 0.315-0.325 in. (8,00 - 8,26 mm) diameter to 0.399 - 0.409 in. (10,13 - 10,39 mm) diameter. | Refer to Figures 1 and 2. |
| 1 | Break sharp edges 0.003 - 0.015 inch (0,08-0,38 mm). | |
| (b) | Mark the new part number adjacent to the existing part number. Use the vibration peen method. | Existing New Part Number<br>2A2766 2A3188<br>Refer to Reference (2), Control No./Task No. 70-09-00-400-501. |

B. Install the 2A3187-01 No. 4 Bearing Outer Tube Assembly (3 off) by the procedure given in Reference (5), Chapter/Section 72-42-00, Assembly (for V2527-A5 and V2530-A5 engines) or Reference (6), Chapter/Section 72-42-00, Assembly (for V2525-D5 and V2528-A5 engines).

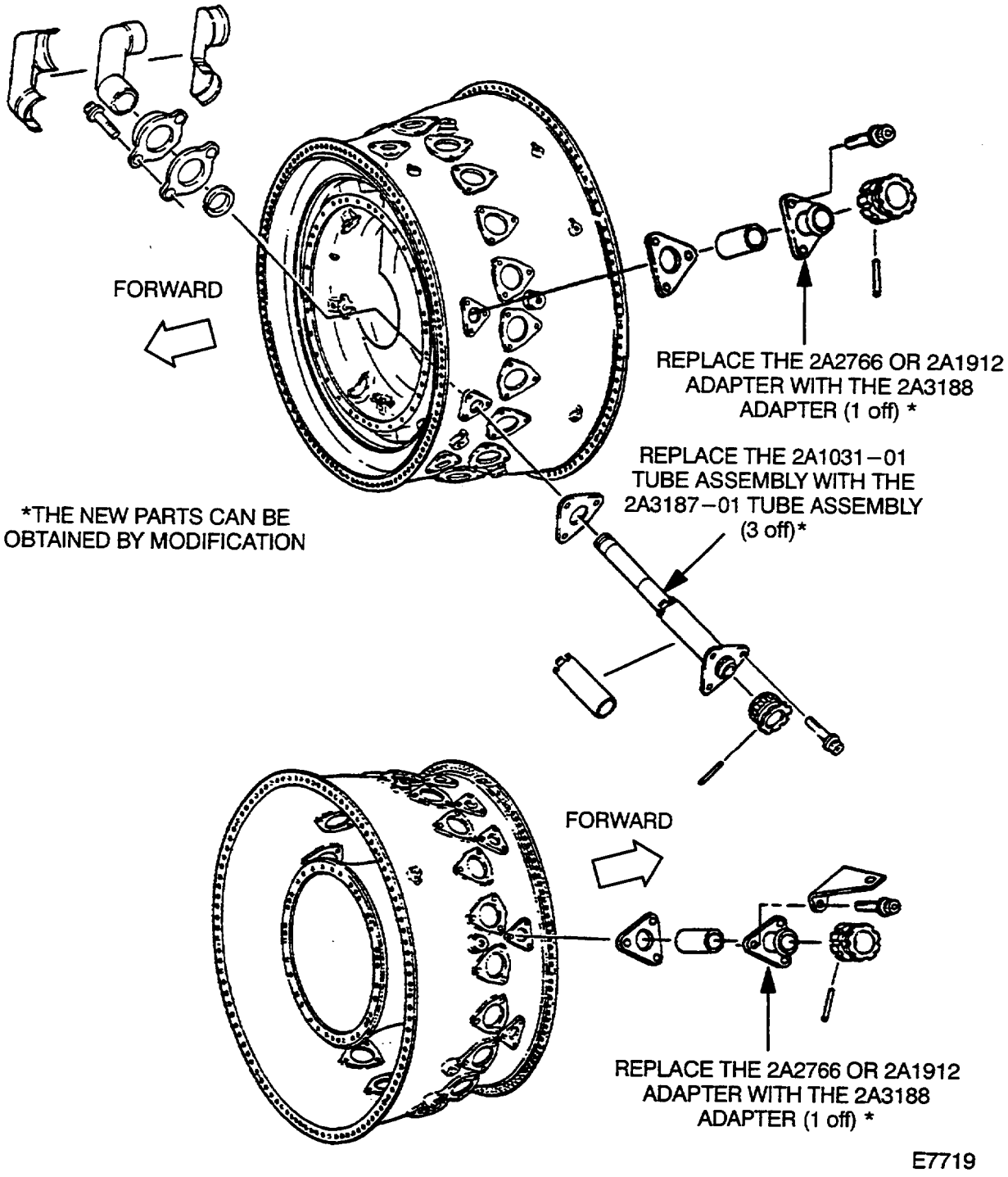
C. Install the 2A3188 Adapters (2 off) by the procedure given in Reference (5), Chapter/Section 72-42-00, Assembly (for V2527-A5 and V2530-A5 engines) or Reference (6), Chapter/Section 72-42-00, Assembly (for V2525-D5 and V2528-A5 engines).

D. Identify the new Diffuser and Combustor Groups by the procedure given in Reference (2), Control No./Task No. 70-09-00-400-501 and as follows:

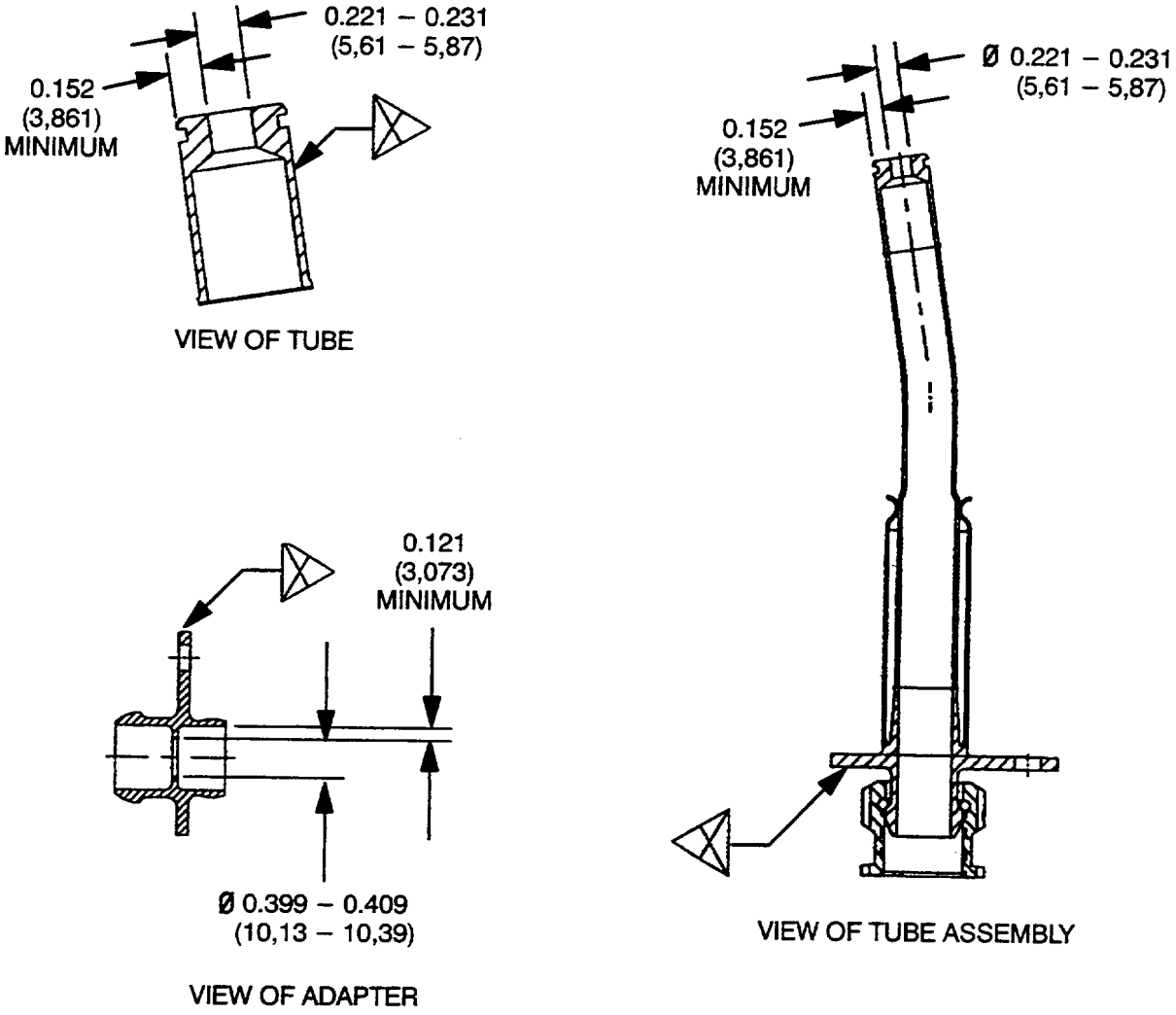
| Existing | New Part Number |
|---|---|
| 2A4000* | 2A9000 |
| 2A6800* | 2A9100 |
| 2A4000** | 2A9000-001 |
| 2A6800** | 2A9100-001 |

* For Engines incorporating V2500-ENG-72-0148

** For Engines that do not incorporate V2500-ENG-72-0148




Location of the Tube Assembly and Adapter
Fig.1




UNLESS DIFFERENTLY SPECIFIED BREAK SHARP EDGES 0.003 – 0.015 (0,08 – 0,38)

UNLESS DIFFERENTLY SPECIFIED ALL SURFACE TEXTURES ARE TO BE 125 (3.2 µm)

MARK IDENTIFICATION AT THIS LOCATION BY PROCEDURE SPECIFIED IN TEXT

E7720

Modification of the Tube Assembly, Tube and Adapter
Fig.2

3. Material Information

A. Kit assocaited 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 |
|---|---|---|---|---|---|
| Applicability: For each V2527-A5 and V2530-A5 Engine to incorporate this Service Bulletin that incorporates V2500-ENG-72-0148 | | | | | |
| 2A9000 (72-42-00) (74-21-41) | 1 | | Diffuser & Combustion Group | 2A4000 (01-001) (01-001) | (A)(S1)(1D) |
| 2A3187-01 (72-42-20) | 3 | | .No. 4 Bearing Outer Tube Assembly | 2A1031-01 (05-020) | (B)(S1)(1D) |
| 2A3188 (72-42-20) | 2 | | .Adapter, Tube to Boss | 2A2766 (06-240) | (B)(S1)(1D) |
| Applicability: For each V2525-D5 and V2528-D5 Engine to incorporate this Service Bulletin that incorporates V2500-ENG-72-0148 | | | | | |
| 2A9100 (72-42-00) (74-21-41) | 1 | | Diffuser & Combustion Group | 2A6800 (01-001) (01-001) | (A)(S1)(1D) |
| 2A3187-01 (72-42-20) | 3 | | .No. 4 Bearing Outer Tube Assembly | 2A1031-01 (05-020) | (B)(S1)(1D) |
| 2A3188 (72-42-20) | 2 | | .Adapter, Tube to Boss | 2A2766 (06-240) | (B)(S1)(1D) |
| Applicability: For each V2527-A5 and V2530-A5 Engine to incorporate this Service Bulletin that does not incorporate V2500-ENG-72-0148. | | | | | |

| | | | | |
|---|---|---|---|---|
| 2A9000-001 (72-42-00) (74-21-41) | 1 | Diffuser & Combustion Group | 2A4000 (01-001) (01-001) | (A)(S1)(1D) |
| 2A3188 (72-42-20) | 2 | Adapter, Tube to Boss | 2A1912 (06-240) | (B)(C)(S1)(2D) |
| 2A3187-01 (72-42-20) | 3 | .No. 4 Bearing Outer Tube Assembly | 2A1031-01 (05-020) | (B)(S1)(1D) |

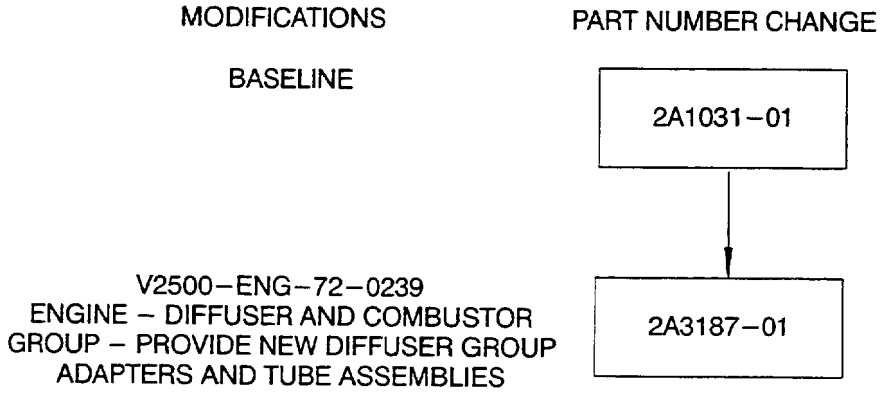
Applicability: For each V2525-D5 and V2528-D5 Engine to incorporate this Service Bulletin that does not incorporate V2500-ENG-72-0148.

| | | | | |
|---|---|---|---|---|
| 2A9100-001 (72-42-00) (74-21-41) | 1 | Diffuser & Combustion Group | 2A6800 (01-001) (01-001) | (A)(S1)(1D) |
| 2A3188 (72-42-20) | 2 | Adapter, Tube to Boss | 2A1912 (06-240) | (B)(C)(S1)(2D) |
| 2A3187-01 (72-42-20) | 3 | .No. 4 Bearing Outer Tube Assembly | 2A1031-01 (05-020) | (B)(S1)(1D) |

C. Instructions/Disposition Code Statements:

(S1)New parts coded (S1) must replace Old Parts coded (S1) in complete sets per engine.
(1D)You can obtain the new part by modification of the old part and identification to the new part number.
(2D)You can not obtain the new part by modification of the old part.
(A) Part is a major assembly that ia not sold. The assembly number is given to show part relationships.
(B) The new part is currently available.
(C) The old part will no longer be supplied.

NOTE: The estimated 1996 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.




E7691

Family Tree - No. 4 Bearing Outer Tube Assembly Ref. Catalog Sequence No 72-42-20.
Fig. 05 Item 020
Fig.3

| MODIFICATIONS | PART NUMBER CHANGE |
|---|---|
| BASELINE | 2A1912 |
| V2500–ENG–72–0148 ENGINE – NO. 4 BEARING COMPARTMENT – REPLACE EXISTING TUBE ADAPTERS WITH TUBE ADAPTERS HAVING A DECREASED INNER DIAMETER | 2A2766 |
| V2500–ENG–72–0239 ENGINE – DIFFUSER AND COMBUSTOR GROUP – PROVIDE NEW DIFFUSER GROUP ADAPTERS AND TUBE ASSEMBLIES | 2A3188 |

E7693

Family Tree – Tube To Boss Adapter Ref. Catalog Sequence No 72-42-20. Fig. 06 Item 240
Fig.4