ENGINE - POWER PLANT - EEC FAN HARNESS - REWORK TO DELETE THRUST REVERSER INTERLOCK CIRCUIT - CATEGORY CODE 4 - MOD.ENG-71-0175

1. Planning Information

A. Effectivity

(1) Aircraft: McDonnell Douglas MD-90

(2) Engine: (a) V2525-D5 Engines prior to Serial No. V20050
(b) B2528-D5 Engines prior to Serial No. V20050

B. Concurrent Requirements

This Service Bulletin is to be incorporated concurrently with Service Bulletin V2500-ENG-73-0079.

C. Reason

(1) Condition

McDonnell Douglas has instructed the deletion of the thrust reverser interlock function from the EEC. EEC software SCN-11B, introduced by SBE V2500-ENG-73-0079 no longer uses or monitors the thrust reverser interlock circuit. To guard against Potential Incomplete circuits, which will be undetectable by the SCN-11BEEC, the thrust reverser interlock circuit connections must be removed from the EEC.

(2) Background

Several instances have occurred where error messages have been received by the EEC from the thrust reverser interlock circuit. The deletion of the EEC interlock function has made the EEC harness wiring redundant.

(3) Objective

To delete the redundant wiring from Loom A and Loom B of the EEC harness.

(4) Substantiation

The new EEC software introduced by Service Bulletin V2500-ENG-73-0079 makes the EEC harness wiring redundant.

(5) Effect 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.

D. Description

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

(1) Rework of the EEC harness, Channel A - Loom A and Channel B - Loom B by cutting back the harnesses at both the EEC and pylon interface connectors, fitting heatshrink caps and tying the ends into the harnesses.

(2) The vacant socket and pin positions on Loom A and Loom B connectors are fitted with sealing plugs.

(3) The new parts must be fitted to the reworked harnesses in sets.

E. 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.

F. Compliance

Category Code 4

Accomplish at the first visit of an engine or module to a maintenance base capable of compliance with the accomplishment instructions regardless of the planned maintenance action or the reason for engine removal.

G. Manpower

Estimated manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In Service	
(a) To gain access	9 minutes
(b) To rework E looms A and B	17 minutes

(c) To return engine to flyable status — 25 minutes

Total — 51 minutes

(2) At Overhaul — Not Applicable

H. Material - Price and Availability

(1) Modification Kit not required

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

I. Tooling - Price and Availability

Tool No.	Qty	Description	Function	Avail
1J12018	1	Wrench	Remove/Install connector	(1)

(1) Tool currently available for maintenance

J. Weight and Balance

(1) Weight Change .. .. .. None

(2) Moment Arm .. .. .. No effect

(3) Datum .. .. Engine front mount centerline (Power Plant Station (PPS) 100)

K. Electrical Load Data

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

L. References

(1) Internal Reference No.

95VR017

(2) Other references

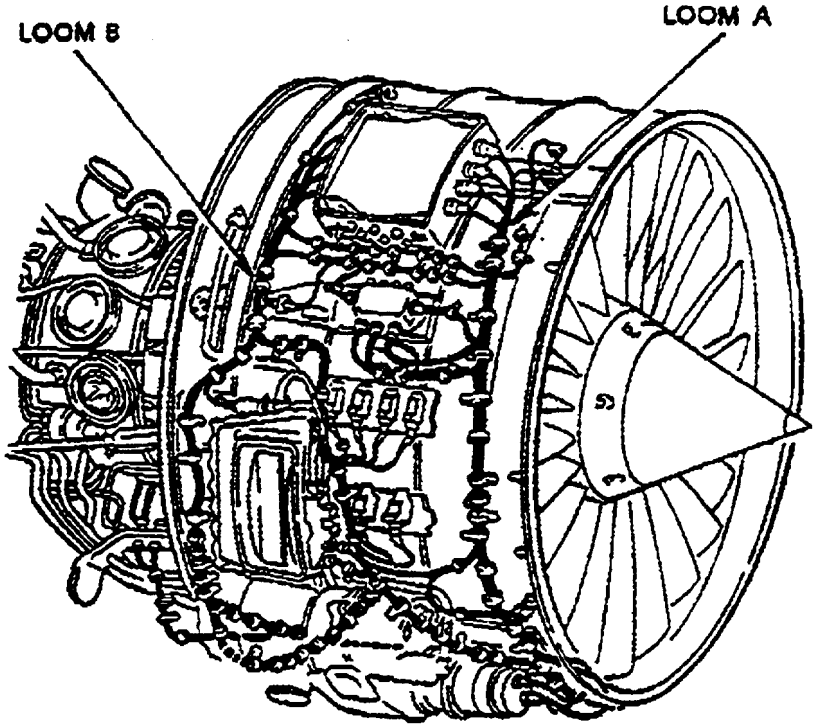
MD90 Aircraft Maintenance Manual

Standard Practices Manual (SPP-V2500-1IA)

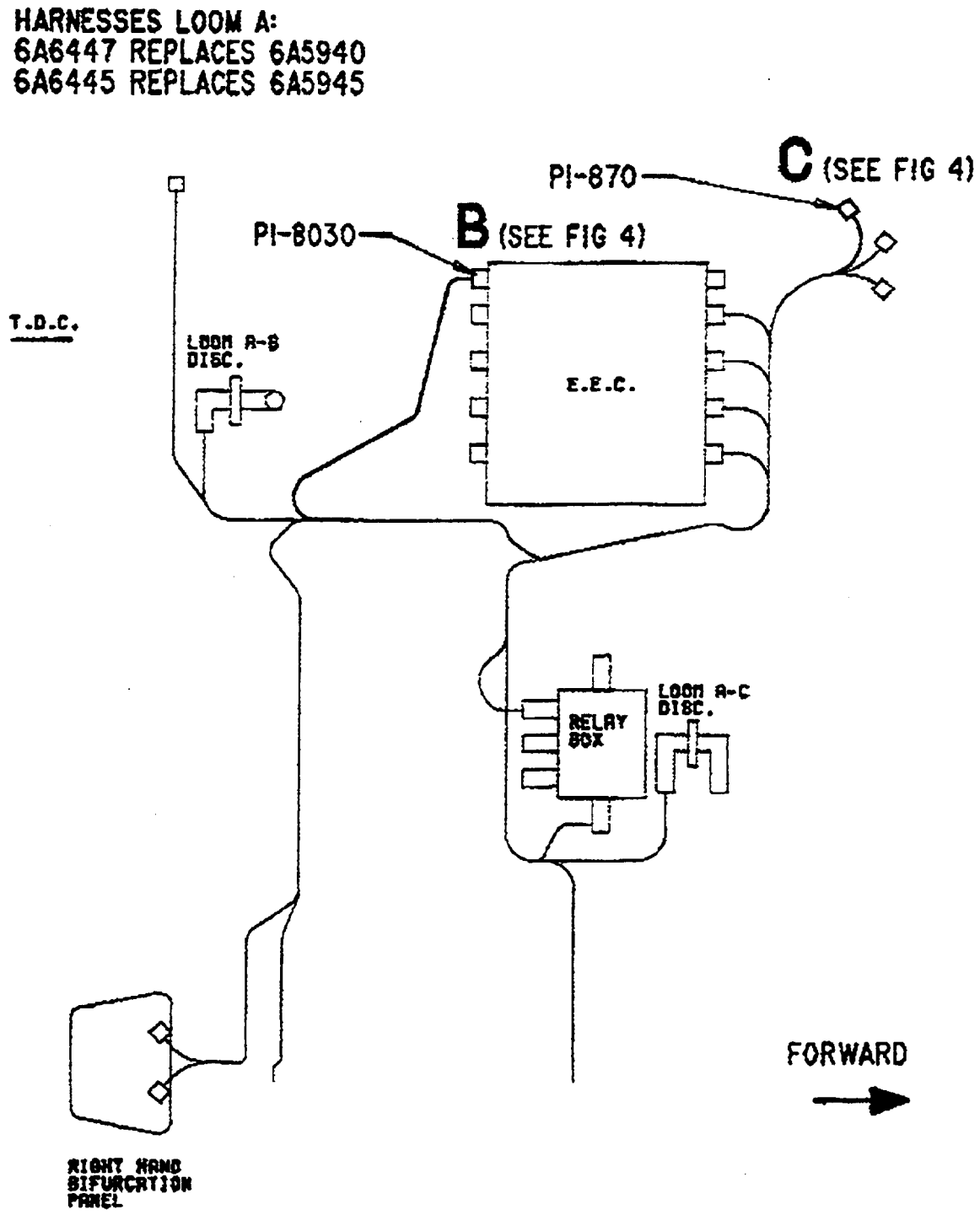
M. Other Publications Affected

(1) V2500 Engine Illustrated Parts Catalog (S-V2500-3IA) Chapter Section 71-51-51, 71-51-54.

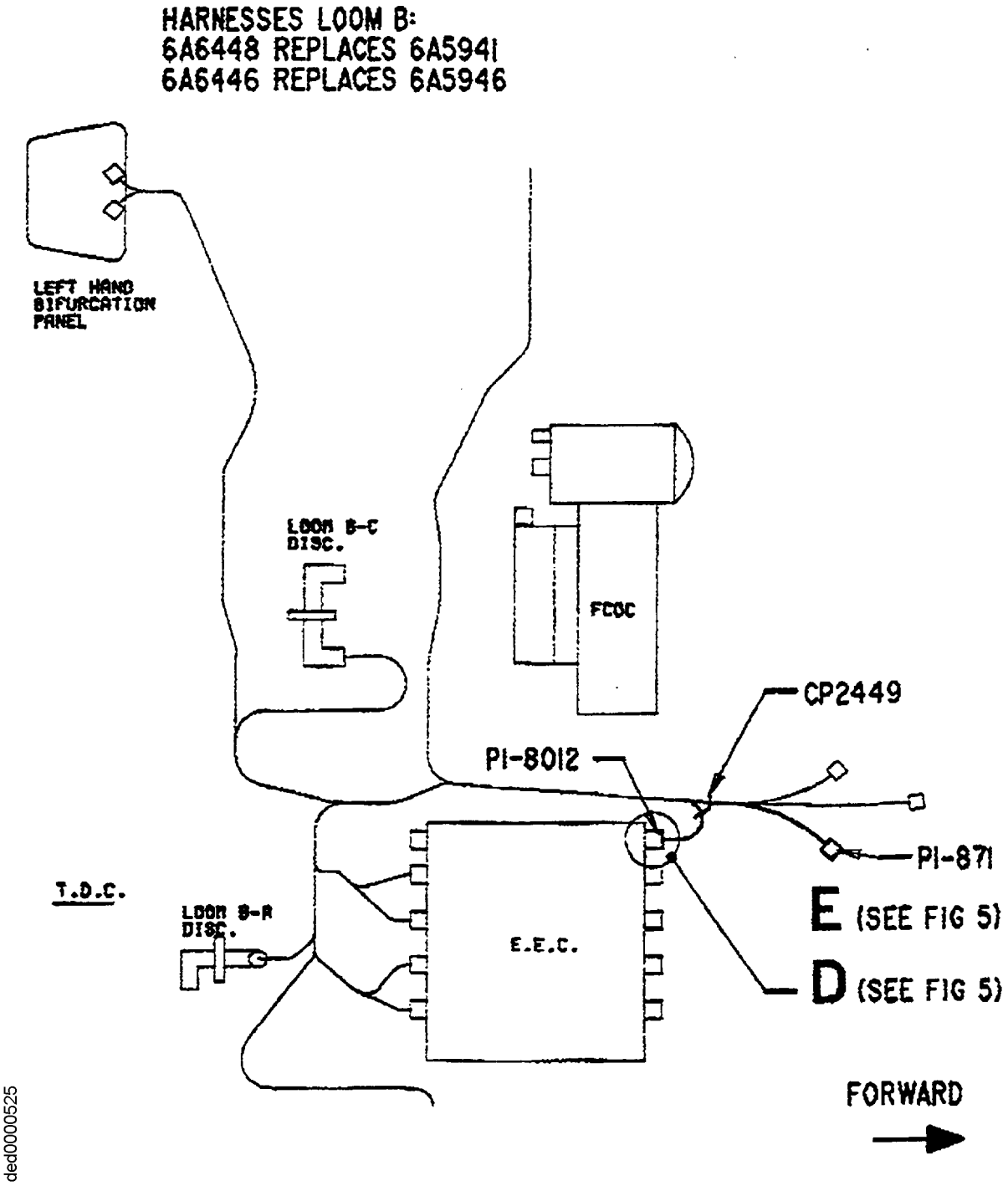
Printed in Great Britain



Location of fan case harnesses
Fig.1



Part schematic view of harness loom A showing harness limbs affected - Before and after alteration
Fig.2

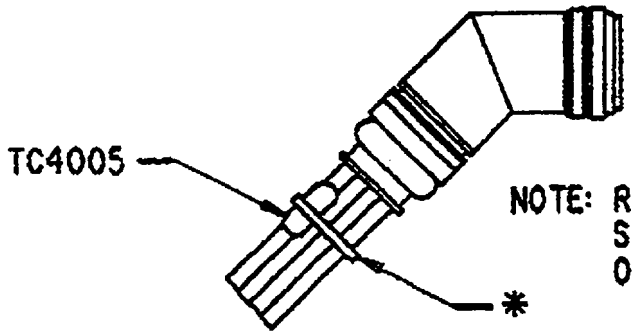


Part schematic view of harness loom B showing harness looms affected - Before and after alteration
Fig.3

*LACING TIES T085 (SEE FIGS 6 AND 7)

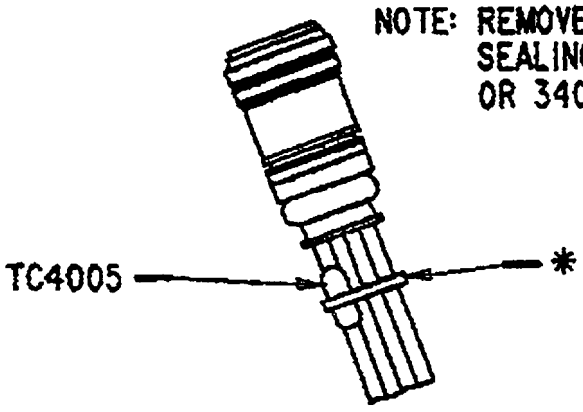
NOTE : HARNESS LIMBS TO BE CUT 1.000 (25.4) MIN FROM CONNECTOR BACKSHELLS AND EXPOSED ENDS TO HAVE HEATSHRINK CAPS TC4005 FITTED

ALL DIMENSIONS ARE IN INCHES (MILLIMETRES)



NOTE: REMOVE SOCKETS R & h AND FIT SEALING PLUGS T3-4020-59L OR 3400-043-0020

ENLARGED VIEW AT **B** (SEE FIG 2) SHOWING REWORK OF HARNESS LOOM A AT EEC INTERFACE P1-8030



NOTE: REMOVE PINS 2 & 10 AND FIT SEALING PLUGS BT-4016-60P OR 3400-152-016

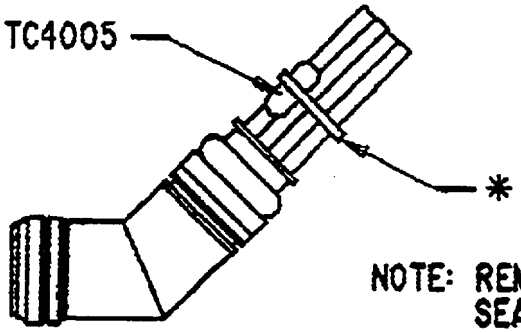
ded0000431

Enlarged view at C (see fig.2) - Showing rework of harness Loom A at pylon interface P1-870
Fig.4

*LACING TIES T085 (SEE FIGS 6 AND 7)

NOTE : HARNESS LIMBS TO BE CUT 1.000 (25.4) MIN FROM CONNECTOR BACKSHELLS AND EXPOSED ENDS TO HAVE HEATSHRINK CAPS TC4005 FITTED

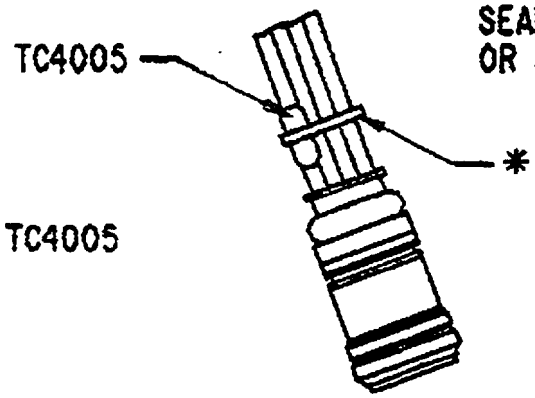
ALL DIMENSIONS ARE IN INCHES (MILLIMETRES)



NOTE: REMOVE SOCKETS R & h AND FIT SEALING PLUGS T3-4020-59L OR 3400-043-0020

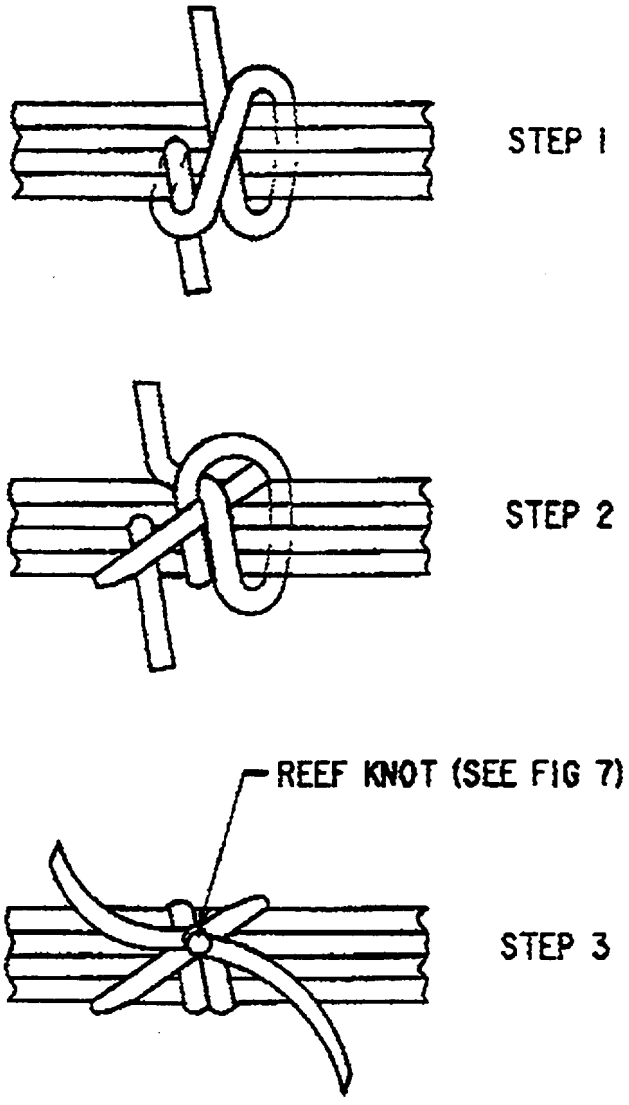
ENLARGED VIEW AT D (SEE FIG 3)
SHOWING REWORK OF HARNESS LOOM B
AT EEC INTERFACE P1-8012

NOTE: REMOVE PINS 2 & 10 AND FIT SEALING PLUGS BT-4016-60P OR 3400-152-016



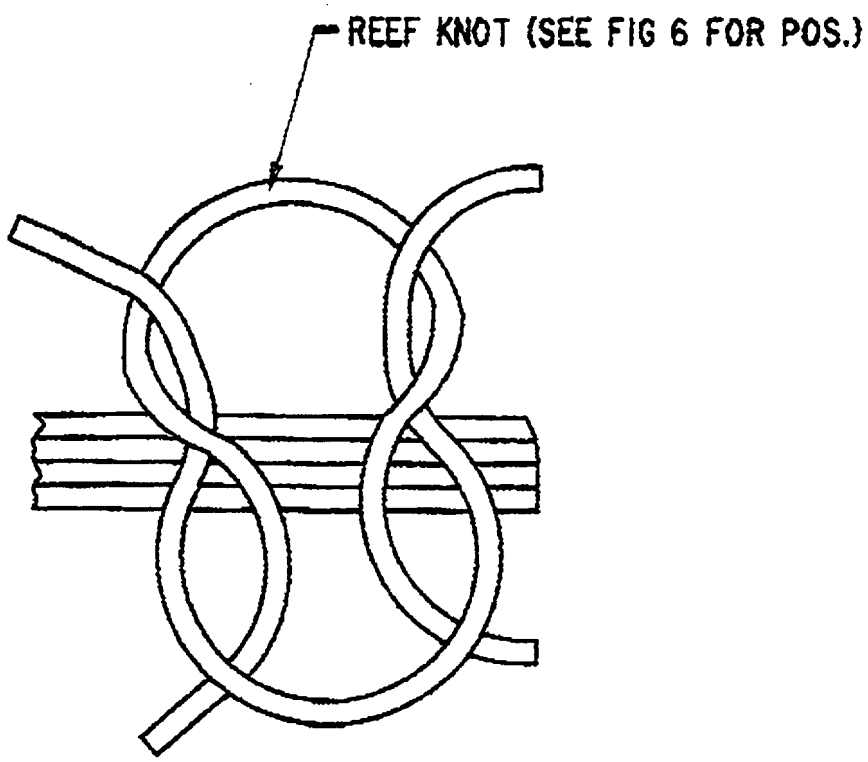
ded0000432

Enlarged view at E (see fig.3) Showing rework of harness Loom B at pylon interface P1-871
Fig.5



ded0000433

Rework of existing harnesses looms A and B - Showing procedure for fastening lacing tape
Fig.6



ded0000434

Rework of existing harnesses looms A and B - Showing procedure for fastening lacing tape
Fig.7

2. Accomplishment Instructions

A. Prerequisite Instructions

WARNING: YOU MUST DEACTIVATE THE ENGINE AND THRUST REVERSER BERORE YOU DO WORK ON OR AROUND THE THRUST REVERSER. IF YOU DO NOT, THE ENGINE OR THRUST REVERSER CAN OPERATE ACCIDENTALLY AND CAUSE AN INJURY AND/OR DAMAGE.

WARNING: YOU MUST OPEN, SAFETY AND TAG THE CIRCUIT BREAKERS BEFORE YOU DO WORK ON THE SYSTEM. IF THE CIRCUIT BREAKERS ARE NOT SAFETIED, THEY CAN BE CLOSED AND THE SYSTEM CAN OPERATE. THIS CAN CAUSE AN INJURY AND/OR DAMAGE.

WARNING: BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAUSE INJURY.

CAUTION: DO NOT BEND THE ELECTRICAL CABLE CONDUIT TOO MUCH WHEN YOU DISCONNECT/CONNECT THE ELECTRICAL CONNECTOR. THE CONDUIT CAN BE DAMAGED AND CAN CAUSE ELECTRICAL CIRCUIT DEFECTS.

(1) Tag throttle/thrust lever, and open and tag the EEC power circuit breakers.

(2) Open the fan cowl doors. See References (1) Chapter/Section 71-13-00, Page 201.

B. Removal Instructions

(1) Disconnect Channel A - Loom A connectors P1-8030 and P1-870. Refer to Figures 1 and 2

(a) Disconnect the connector P1-8030 at the EEC with the special wrench IAE 1J12018.

(b) Disconnect the connector P1-870 at the forward pylon panel.

(2) Disconnect channel B - Loom B connectors P1-8012 and P1-871. Refer to Figures 1 and 3

(a) Disconnect the connector P1-8012 at the EEC with the special wrench IAE 1J12018.

(b) Disassemble clipping point CP 2449 sufficiently to remove harness loom B, hold the parts for assembly after rework to harness.

(c) Disconnect the connector P1-871 at the forward pylon panel.

C. Rework Instructions

(1) Rework the following parts

V2500, D5 EEC Fan Harness, 6A5940 Loom A, at positions P1-8030 P1-870, (Refer to 71-51-51, Fig/Item 01-005).

Consumable Materials

CoMat 02-148	Adhesive tape (electrical)
CoMat 06-131	Marking pen

Standard Equipment

Standard workshop equipment
Contact extraction/insertion tool (see Facilities Equipment Manual)
Hot air hand blower

	PROCEDURE	SUPPLEMENTARY INFORMATION
(a)	Identify and locate the EEC Fan harness, Loom A, along with the EEC interface connector P1-8030 and pylon interface connector P1-870	See Figure 2
(b)	Remove sockets R and h, pins 10 and 2, from the connectors P1-8030 and P1-870 respectively	Use the applicable contact extraction/insertion tool
(c)	Cut the EEC Fan harness, 2 wires, to remove the sockets/ pins from each wire	See Figure 4 Use standard workshop equipment
(d)	Protect the cut ends with heat shrink caps	See Figure 4 Use Raychem TC4005 Grey, 2 off, heat shrink caps, installed by the application of heat from a hot air hand blower

NOTE: 1. The finished sleeve must show no signs of splitting.

2. Make sure that the cables suffer no visible signs of heat.

(e)	Tie back the cut ends onto the existing EEC Fan harness	See Figures 6 and 7 Use T085 lacing (white), as necessary

(f)	Seal up the vacated sockets R and h in the connector P1-8030 and pin holes 10 and 2, in the connector	See Figure 4 Use sealing plug T3-4020-59L or 3400-043-0020, 2 off and sealing plug BT-4016-60P or 3400-152-016, 2 off and sealing plug BT-4016-60P or 3400-152-016, 2 off, as necessary
(g)	Cancel the existing part number on the re-worked EEC Fan harness Loom A and identify with the new number	See Figure 2 Refer to SPM TASK 70-09-00-400-501. SUBTASK 70-09-00-400-002 Existing Re-number 6A5940 6A6457 6A5945 6A6445 Use CoMat 02-148 adhesive tape (electrical) and CoMat 06-131 marking pen

(2) Rework the following parts

V2500, D5 EEC Fan Harness, 6A5941 or 6A5946, Loom B, at positions P1-8012 and P1-871, (Refer to 71-51-54, Fig/Item 01-005).

Consumable Materials

CoMat 01-148	Adhesive tape (electrical)
CoMat 06-131	Marking pen

Standard Equipment

Standard workshop equipment
Contact extraction/insertion tool (See Facilities Equipment Manual)
Hot air hand blower

	PROCEDURE	SUPPLEMENTARY INFORMATION
(a)	Identify and locate the EEC Fan harness, Loom B, along with the EEC interface connector P1-8012 and pylon interface connector P1-871	See Figure 3
(b)	Remove sockets R and h, from the connector P1-8012 and pins 10 and 2 from the connector P1-871	Use the applicable contact extraction/insertion tool
(C)	Cut the EEC Fan harness, 2 wires, to remove the sockets/ pins from each wire	See Figure 5 Use standard workshop equipment

(d)	Protect the cut ends with heat shrink caps	See Figure 5 Use Raychem TC4005 Grey, 2 off, heat shrink caps, installed by the application of heat from a hot air hand blower

NOTE: 1. The finished sleeve must show no signs of splitting.

2. Make sure that the cables suffer no visible signs of heat.

(e)	Tie back the cut ends onto the existing EEC Fan harness	See Figures 6 and 7 Use T085 lacing (white), as necessary
(f)	Seal up the vacated sockets R and h in the connector P1-8012 and pin holes 10 and 2 in the connector P1-871	See Figure 5 Use sealing plug T3-4020-59L or 3400-043-0020, 2 off and sealing plug BT-4016-060P or 3400-152-016, 2 off, as necessary
(g)	Cancel the existing part number on the re-worked EEC Fan harness, Loom B and identify with the new part number	See Figure 3 Refer to SPM TASK 70-09-00-400-501, SUBTASK 70-09-400-002 Existing Re-number 6A5941 6A6448 6A5946 6A6446 Use CoMat 02-148 adhesive tape (electrical) and CoMat 06-131 marking pen

D. Installation Instructions

(1) Connect Channel A - Loom A connectors P1-8030 and P1-870. Refer to Figures 1 and 2

(a) Connect the connector P1-8030 at the EEC with the special wrench IAE 1J12018.

(b) Connect the connector P1-870 at the forward pylon panel.

(2) Connect Channel B - Loom B connectors P1-8012 and P1-871. Refer to Figures 1 and 3

(a) Connect the connector P1-8012 at the EEC with the special wrench IAE 1J12018.

(b) Connect the connector P1-870 at the forward pylon panel.

(c) Install the clipping point CP2449 to harness loom B using existing parts.

E. Post Requisite Instructions

(1) Close the fan cowl doors. See References (1) Chapter/Section 71-13-00, Page 201.

(2) Remove the tag from the throttle/thrust lever and remove the tags from the EEC power circuit breakers and close the circuit breakers.

F. Tests

(1) Do a test of the engine electrical system. See References (1) Chapter/Section 71-00-00, Page 201.

G. Recording Instructions

(1) A Record of accomplishment is necessary

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
6A6447 (71-51-51)	1	-	Harness assy Loom 'a'	6A5940 (01-005)	(1D)(S1)
6A6445 (71-51-51)	1	-	Harness assy Loom A	6A5945 (01-005)	(1D)(S1)
T085 (71-51-51)	A/R		Braid	3100631 (03-070)	(A)(B) (S1)
U322742 (71-51-51)	A/R		Tape, 500 Wide White	- (03-090)	(A)(B) (S1)
TC4005 (71-51-51)	2		Cap. Thermofit	- (03-440)	(A)(B) (S1)
ESC30P16BC (71-51-51)	17		Contact Pin	EXC30P16BC (04-108)	(C)
T3-4120-36LD	39		Socket	T3-4120-36LD	(E)
5100-101-0120 (71-51-51) (71-51-51)	Ref		Socket	- (04-293) (04-293)	(E)(K)
T3-4020-59L	2		Plug, Sealing	- (04-970)	(A)(B) (F)(S1)
3400-043-0020 (71-51-51)	Ref		Plug, Sealing	- (04-970)	(A)(B) (F)(S1)
BT4016-60P (71-51-51)	2		Plug	- (04-971)	(A)(B) (G)(S1)
3400-152-016 (71-51-51)	Ref		Plug	-	(A)(B)
6A6448 (71-51-54)	1	-	Harness assy Loom B	6A5941 (01-005)	(1D) (52)
6A6446 (71-51-54)	1		Harness assy Loom B	6A5946 (01-005)	(1D) (S2)
T085 (71-51-54)	A/R		Braid	3100631 (03-070)	(A)(B) (S2)
U332742 (71-51-54)	A/R		Tape - 500 wide White	- (03-090)	(A)(B) (S2)

TC4005 (71-51-54)	2	-	Cap, Thermofit	- (03-440)	(A)(B) (S2)
ESC30P16BC (71-51-54)	17	-	Contact, Pin	ESC30P16BC (04-193)	(C)
T3-4120 36LD (71-51-54)	39		Socket	T3-4120-36LD (04-118)	(E) (E)
5100-101-0120 (71-51-54)	Ref		Socket	- (04-118)	(E)(L)
T3-4020-59L (71-51-54)	2		Plug, Sealing	- (04-970)	(A)(B) (H)(S2)
3400-043 0020 (71-51-54)	Ref		Plug, Sealing	- (04-970)	(A)(B) (H)(S2)
BT 4016-60P (71-51-54)	2		Plug	- (04-971)	(A)(B) (J)(S2)
3400-152-016 (71-51-54)	Ref		Plug	- (04-971)	(A)(B) (J)(S2)

C. Instructions/Dispostion Code Statements:

(A) New parts are available
(B) Only required when reworking existing harness assy Looms 'A' and 'B'
(C) Quantity of part number decreased from 19 to 17
(1D) Old parts can be reworked and re-identified to the new part number
(E) Quantity of part numbers decreased from 41 to 39
(F) New parts coded (F) are alternatives
(G) New parts coded (G) are alternatives
(H) New parts coded (H) are alternatives
(J) New parts coded (J) are alternatives
(K) New Parts coded (K) are alternatives
(L) New parts coded (L) are alternatives
(S1) New parts codes (S1) must be fitted in sets per harness location
(S2) New parts coded (S2) must be fitted in sets per harness location

E. Consumable Materials

V02-148 Adhesive Tape (electrical)
V06-131 Marking Pen

NOTE: The estimated 1996 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE's Spare Parts Sales Department for information concerning firm prices.