POWER PLANT - ENGINE - EEC HARNESS FAN - LOOMS A AND B WITH SHORTENED FIRE DETECTION LIMBS AND REVISED CLIPPING - CATEGORY CODE 6 - MOD.ENG-71-0154

1. Planning Information

A. Effectivity

(1) Aircraft: (a) McDonnell Douglas MD-90

(2) Engine: (a) V2500-D5 Engines, Serial Nos. V2500 and V2008 only.

B. Concurrent Requirements

This Service Bulletin is to be incorporated concurrently with Service Bulletin V2500-ENG-71-0150.

C. Reason

(1) Condition

See "Background"

(2) Background

During installation of the EEC Fan Harness, it was highlighted that the length of harness looms A and B fire detection limbs, A20 and B19 were too long and may cause chafing. It was also noted that the revision to four clipping points would improve the harness run and ease installation.

(3) Objective

To introduce a revised harness with improved reliability and ease of installation.

(4) Substantiation

The parts instructed by this Bulletin were installed on a mock up engine with acceptable results.

(5) Effect of Bulletin on Workshop Procedures:

Removal/Installation	Affected (see Supplemental Information)
Disassembly/Assembly	Not affected
Cleaning	Not affected
Inspection/Check	Not affected
Repair	Not affected
Testing	Not affected

(6) Supplemental information

(a) The Removal/Installation will be revised to add the new configuration of this Service Bulletin.

D. Description

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

(a) A new harness loom A assembly to replace the existing assembly.

The new harness assembly is identical to the existing harness except for limb A20 being 8.250in. (209,55 mm) shorter with an additional 0.750 in. (19,05 mm) removed from the main wire.

The existing harness assembly can be reworked in accordance with the acccomplishment instructions and re-identified to the modified standard.

(b) A new harness loom B assembly to replace the existing assembly.

The new harness assembly is identical to the existing harness except for limb B19 main wire being 5.000 in. (1276 mm) shorter.

The existing harness assembly can be reworked in accordance with the accomplishment instructions and re-identified to the modified standard.

(c) Revised clipping points CP2346, CP2348 and CP2557 with harnesses loom A and B transposed.

Revised clipping point CP2502 with the clamp re-orientated by 180 degrees.

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 6

Accomplish when the sub-assembly (i.e modules, accessories, components, build groups) is disassembled sufficiently to afford access to the affected parts and to all affected spare parts.

G. Manpower

Estimated manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In Service	Not applicable
(2) At Overhaul	Not affected

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

Special tools are not required.

J. Weight and Balance

(1) Weight change	T.B.A.
(2) Moment arm	T.B.A.
(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.

EC94VR034

(2) Other references

Overhaul Processes and Consumable Index (PCI-V2500-1IA)

M. Other Publication Affected

(1) V2500 Illustrated Parts Catalog (S-V2500-3IA) Chapter/Section 71-51-51 and 71-15-54.

(2) V2500 Engine Manual (E-V2500-3IA), 72-00-32, Removal-02 and Installation-04.

(3) V2500 Engine Manual (E-V2500-3IA), 72-00-60, Removal-01, -02 and Installation-03, -04.

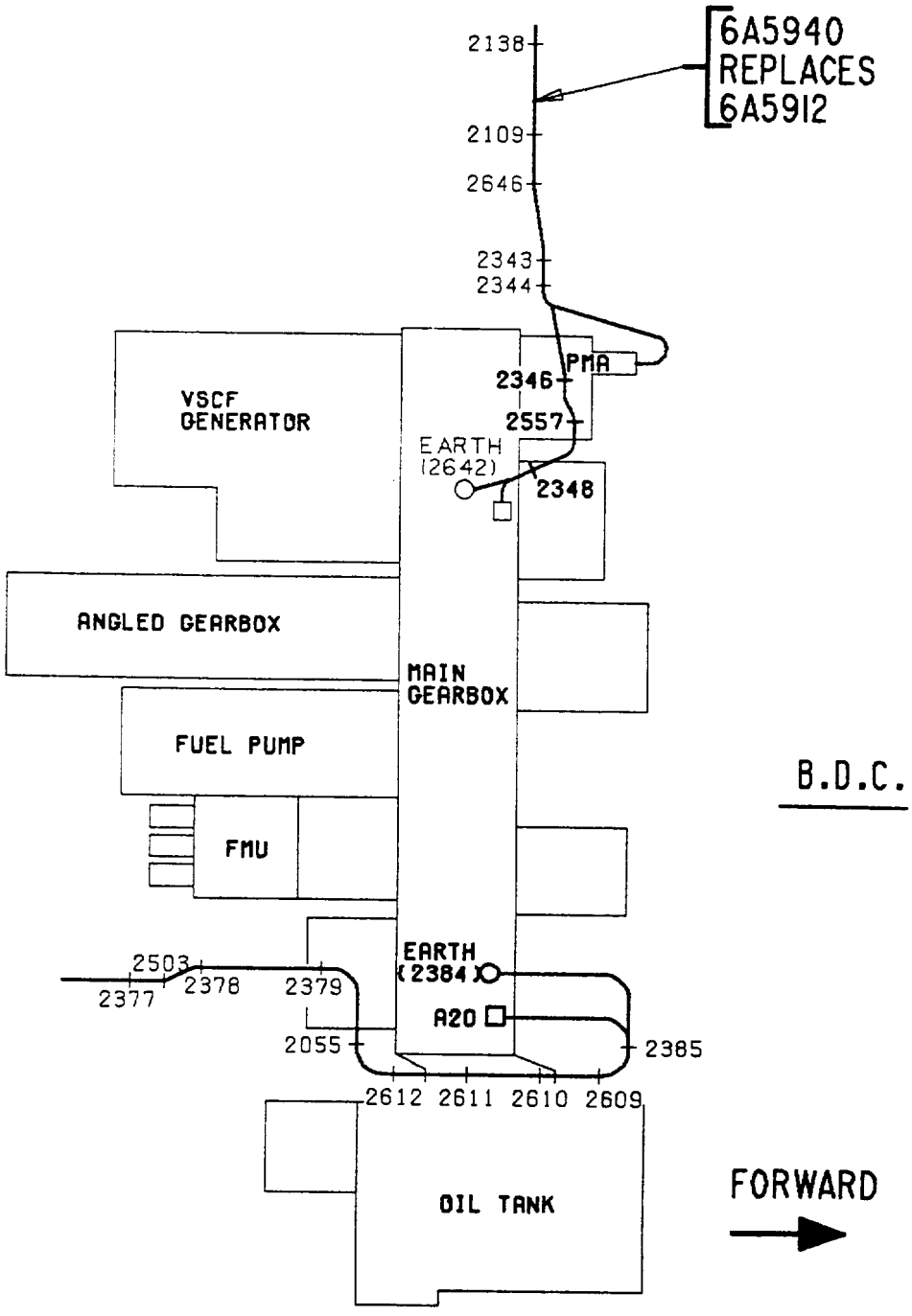
(4) V2500 Component Maintenance Manual (CMM-ECH-V2500-3IA) 71-51-51, Cleaning-01, Inspection-01, 02 and Testing-01.

(5) V2500 Engine Maintenance Manual (CMM-ECH-V2500-3IA), 71-51-54, Cleaning-01, Inspection-01, 02 and Testing-01.

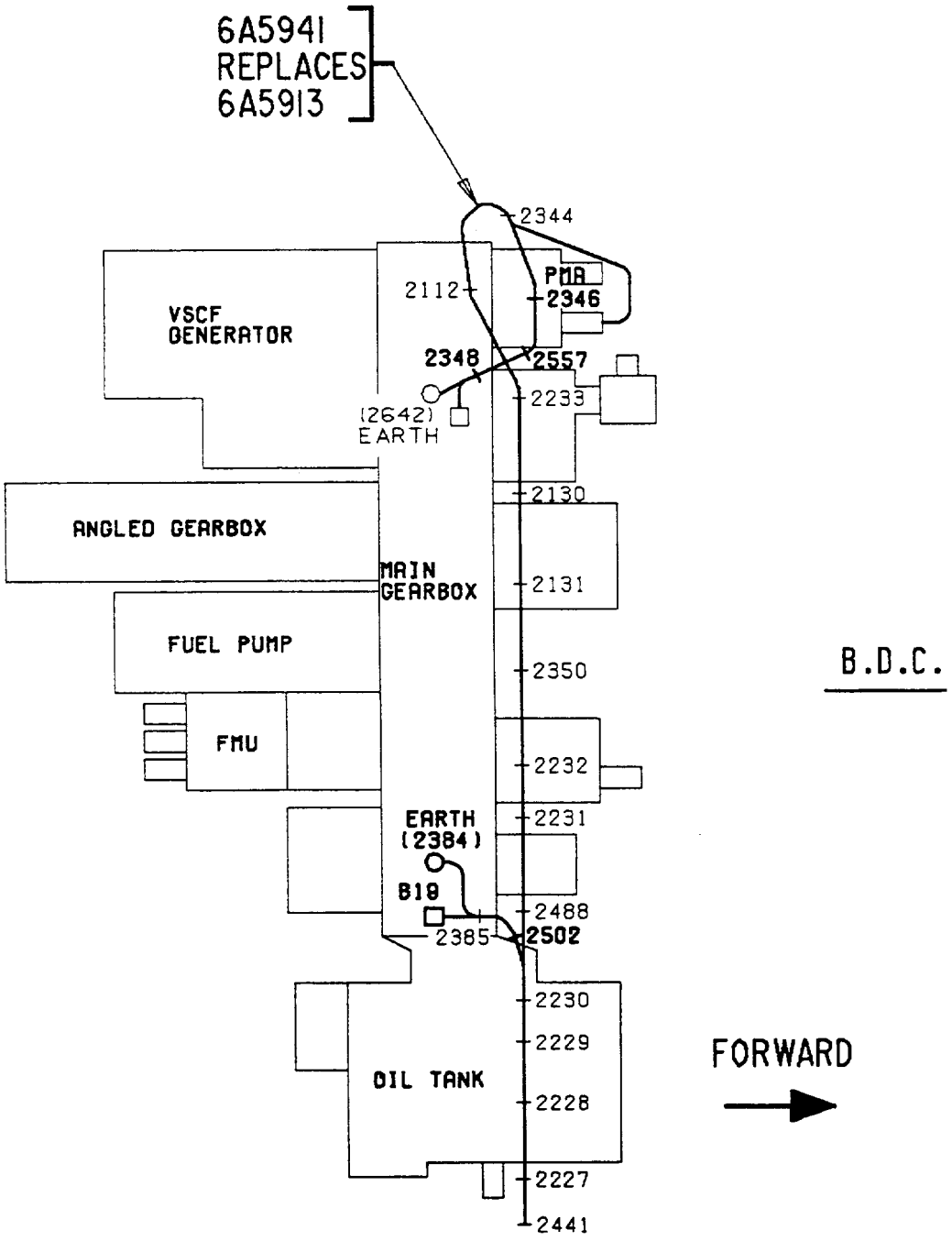
(6) V2500 Engine Maintenance Manual (M-V2500-3IA), 72-60-00, Removal/Installation.

(7) V2500 Engine Maintenance Manual (M-V2500-3IA), 71-51-51, Removal/Installation.

(8) V2500 Engine Maintenance Manual (M-V2500-3IA), 71-51-54, Removal/Installation.

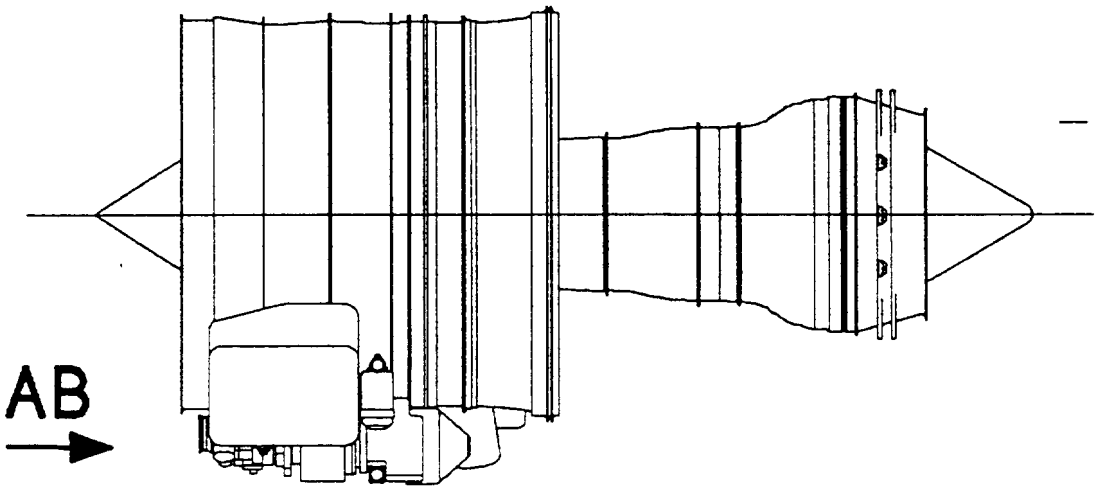


Part schematic view of harness loom 'A' showing clipping points affected - Before and after alteration
Fig.1

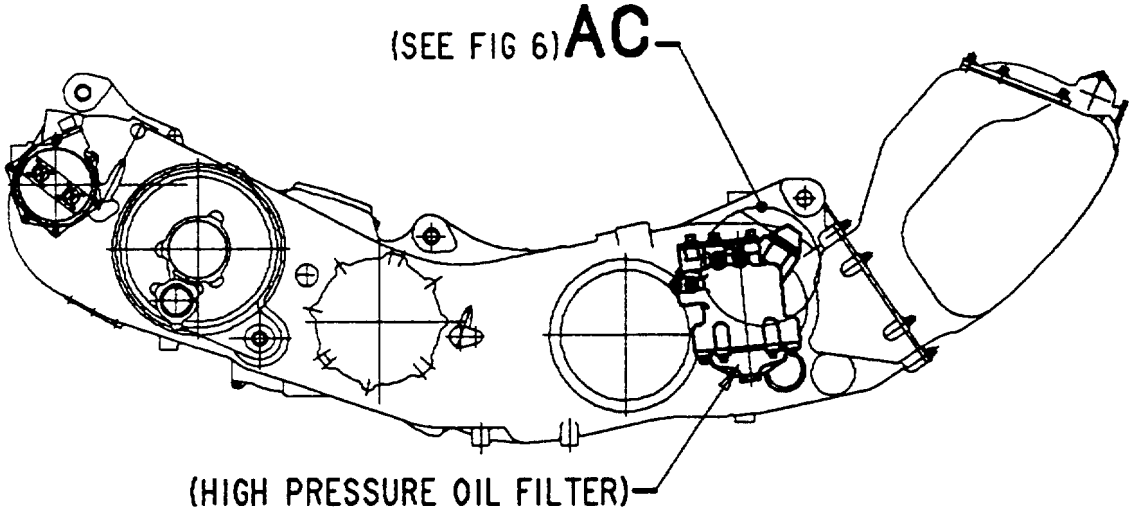


ded0000410

Part schematic view of harness loom 'B' showing clipping points affected - Before and after alteration
Fig.2



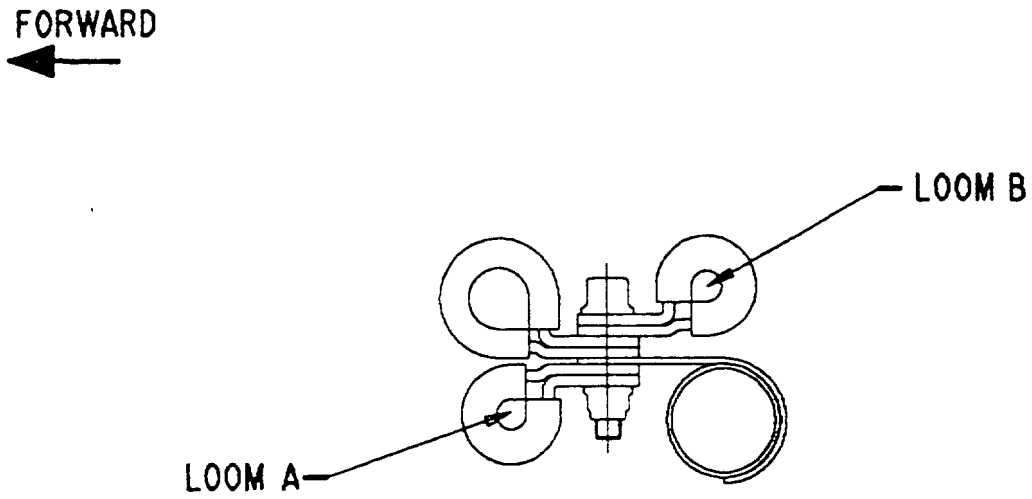
DIAGRAMMATIC VIEW OF ENGINE



VIEW ON ARROW AB
DIAGRAMMATIC VIEW ON GEARBOX

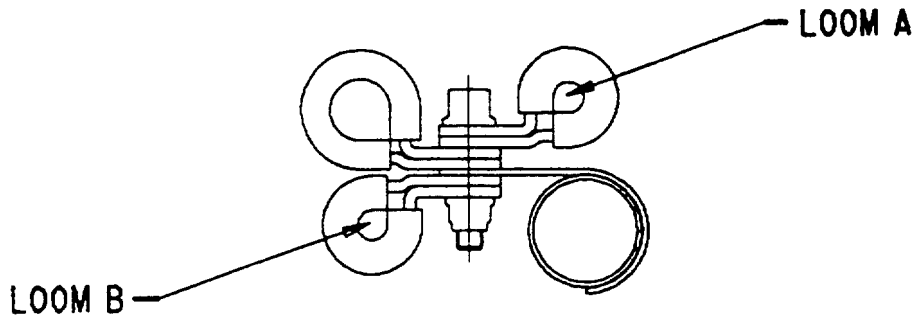
ded0000411

View on arrow AB diagrammatic view on gearbox
Fig.3



CP2346 (SEE FIGS 1 AND 2 FOR POSITION)

BEFORE ALTERATION

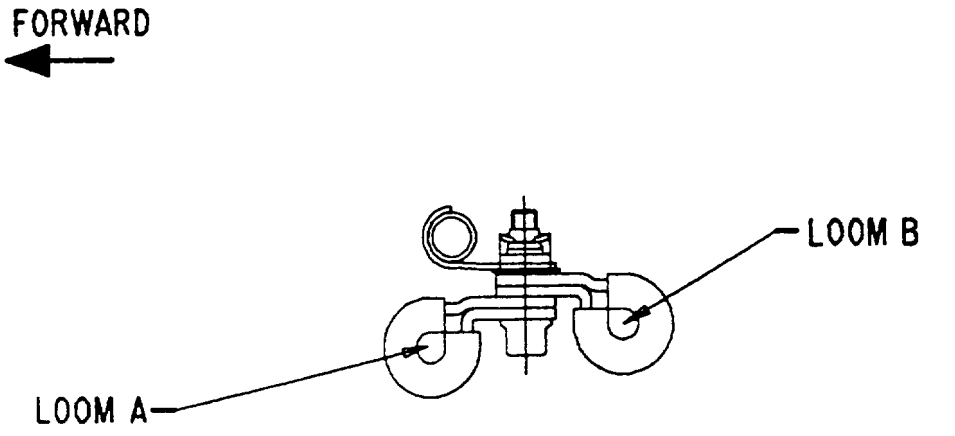


CP2346 (SEE FIGS 1 AND 2 FOR POSITION)

AFTER ALTERATION

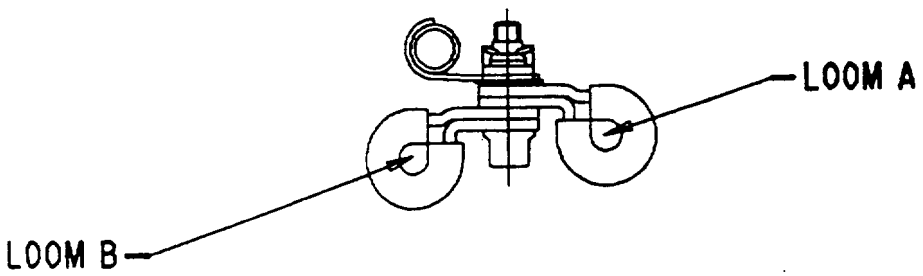
ded00000412

Clipping point 2346 (see Figures 1 and 2 for position) - Before and after alteration
Fig.4



CP2348 (SEE FIGS 1 AND 2 FOR POSITION)

BEFORE ALTERATION



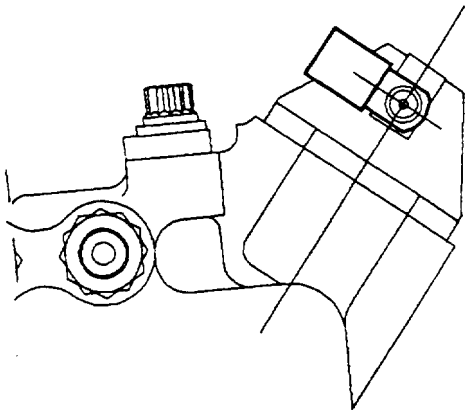
CP2348 (SEE FIGS 1 AND 2 FOR POSITION)

AFTER ALTERATION

ded0000413

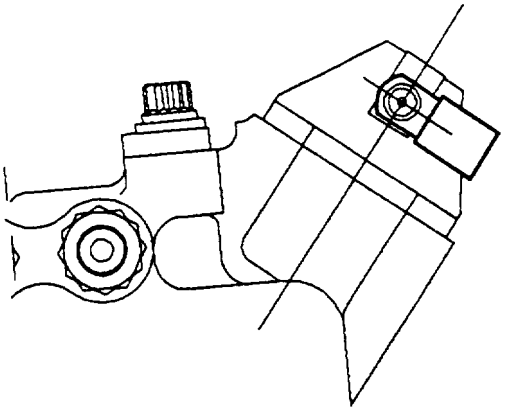
Clipping point 2348 (see Figures 1 and 2 for position) - Before and after alteration
Fig.5

NOTE: SEE ALSO FIG 2 FOR POSITION OF CP2502.



ENLARGED VIEW AT **AC** (SEE FIG 3)
SHOWING POSITION OF CP2502

BEFORE ALTERATION.

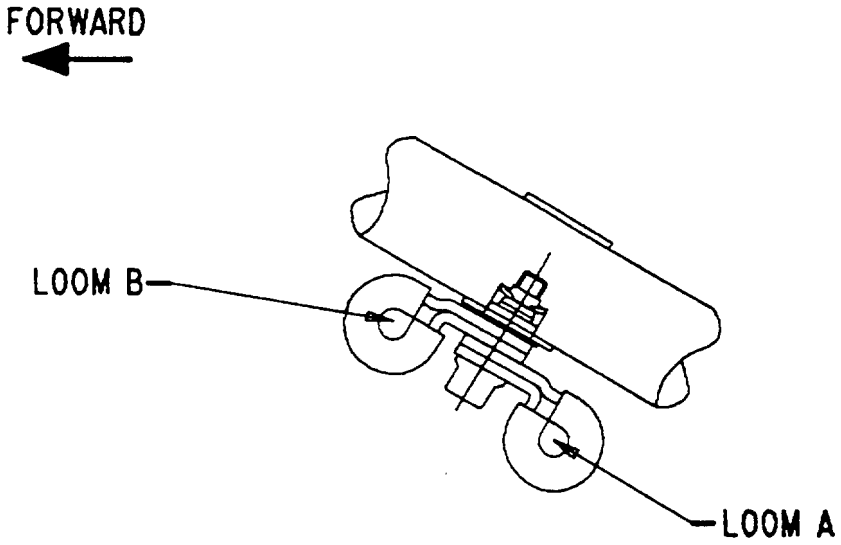


ENLARGED VIEW AT **AC** (SEE FIG 3)
SHOWING POSITION OF CP2502

AFTER ALTERATION.

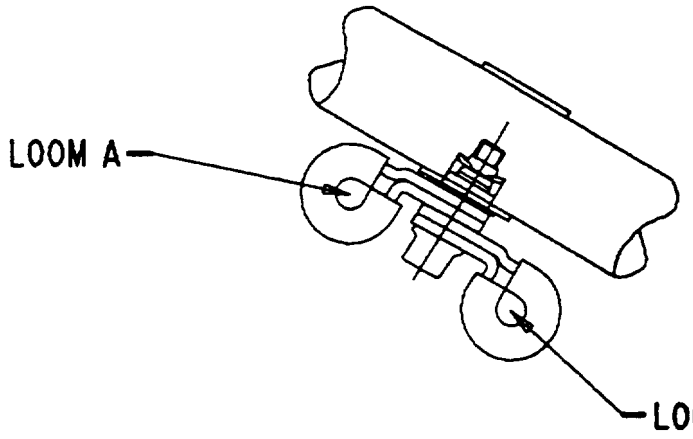
ded0000414

Enlarged view at AC (see Figure 3) showing position of clipping point 2502 - Before and after alteration
FIG.6



CP2557 (SEE FIGS 1 AND 2 FOR POSITION)

BEFORE ALTERATION



CP2557 (SEE FIGS 1 AND 2 FOR POSITION)

AFTER ALTERATION

ded0000415

Clipping point 2557 (see Figures 1 and 2 for position) - Before and after alteration
Fig.7

2. Accomplishment Instructions

A. Rework Instructions

(1) Rework 6A5912 Harness Assembly, Loom 'A'. (Refer to 71-51-51, Fig./Item 01-005).

Procedure	Supplementary Informaton
(a) Cut back existing cable to length shown	Refer to Figure 8. Use standard workshop equipment.
(b) Fit identification sleeve and shrink sleeve tubing to cable	Refer to Figure 9. Use U.323942 or HS064WE sleeving identified 6A071, 1 off and TFERSIZE-4 tubing cut to 0.78 in. (20,00 mm) length.
(c) Strip back outer jacket of the cable to expose the earth screen and separate screen from cable to form a pigtail.	Refer to Figures 8 and 9. Use standard workshop equiment. Pull screen staight to make a close weave.
(d) Fit shrink sleeve tubing to earth pigtail.	Refer to Figure 9. Use TFERSIZE1-4 tubing cut to length required to insulate pigtail completely. Shrink insulation sleeve into position. Use Thermogun.
(e) Again, cut conductor wire to final length.	Refer to Figure 8. Use standard workshop equipment.
(f) Tie cable at junction 'AE'.	Refer to Figures 9 and 12. Use 3100631 lacing tape as required.

(i) Step 1. Thread the lacing tape End 'B' between the comduction wire and pigtail. Wind End 'B' around the conduction wire by a turn and again between the wire and earth pigtail. Pull tight to make a figure-of-eight whip.

(ii) Step 2. Repeat the procedures in Step 1. six times and pull End 'B' tighty each time.

(iii) Step 3. Take End 'B' across the six whippings to the stand point of the lacing and wind tightly around the six whippings between the wire and pigtail by three turns. Attach End 'A' to End 'B' to make a reef knot. Cut-off unnecessary lacing tape at End 'A' and 'B' to minimum length of 0.31 in. (8,00 mm).

(g) Slide shrink sleeve tubing into position to cover outer jacket cut-off point	Refer to Figure 9. Shrink insulation into position. Use Thermogun.
(h) Fit identification sleeve and shrink sleeve tubing to conductor wire.	Refer to Figure 9. Use U323942 or HSO64WE sleeving identified A20, 1 off and TFERSIZE1-4 tubing cut to 0.78 in. (20,00 mm) length.
(i) Install the terminal lugs on the conductor wire and earth pigtail.	Refer to Figure 9. Remove 0.39 in. (10,00 mm) of the insulation sleeve and install 321898 terminal lug No.10, off on the wire and pigtail ends. Make sure the terminal lug barrel is fully around the insulation of each wire. Push back the identification and shrink sleeve tubing before crimping the terminal lug to wire and pigtail. Use crimp tool.
(j) Slide shrink sleeve tubing into position to cover the terminal lug	Refer to Figure 9. Shrink insulation sleeves into position. Use Thermogun.
(k) Cancel the old part number and identify with the new part number.	Old Part Number 6A5912 — New Part Number 6A5940 Apply two turns of CoMat 02-148 adhesive tape and mark new loom part number using a black ball point pen.

(2) Rework 6A5913 Harness Assembly, Loom 'B'. (Refer to 71-51-54, Fig/Item (01-005).

(a) Cut back existing cable to length shown.	Refer to Figure 10. Use standard workshop equipment.
(b) Fit identification sleeve and shrink sleeve tubing to cable.	Refer to Figure 10. Use U32342 or HSO64WE sleeving identified B19, 1 off and TFERSIZE1-4 tubing, cut to 0.78 in. (20,00 mm) length.

(c) Install the terminal lug on the conductor wire.	Refer to Figure 11. Remove 0.39 in. (10,00 mm) of the insulation and install 321897 terminal lug, No.8, 1 off on the wire. Make sure the terminal lug barrel is fully around the insulation of the wire. Push back the identification and shrink sleeve tubing before crimping the terminal lug wire.Use the crimp tool.	
(d) Slide shrink sleeve tubing into position to cover the terminal lug barrel.	Refer to Figure 11. Shrink insulation sleeve into position. Use Thermogun.	
(e) Cancel the old part number and identify with the new part number.	Old Part Number 6A5913 Apply two turns of CoMat 02-148 adhesive tape and mark new loom part number using a black ball point pen.	New Part Number 6A5941

B. Assembly instructions

(1) Disassemble clipping points 2385, 2609, 2610, 2611 and 2612 sufficiently to remove the 6A5912 loom 'A' harness limb A20 and 6A5913 loom 'B' harness limb B19. Refer to Figures 1 and 2.

(2) Disassemble clipping points 2346, 2348, 2502 and 2557. Refer to Figures 1,2,3,4,5,6 and 7.

(3) Disassemble clipping points 2384 sufficiently to remove the earth tags for the A20 AND B19 harness limbs.

(4) Disconnect the 6A5912 loom 'A' harness limb A20 and 6A5913 loom 'B' harness limb B19 from the fancase fireseal.

WARNING: WHEN YOU USE COMAT 01-002 INHIBITED AND STABILIZED TRICHLOROETHANE YOU MUST USE THE NECESSARY PROTECTIVE CLOTHING. DO NOT GET THE SOLVENT ON YOUR SKIN OR IN YOUR EYES. YOU MUST NOT SMOKE WHEN YOU USE THE SOLVENT AS THE VAPOUR CHANGES AND BECOMES TOXIC.

(5) Clean all mating faces with CoMat 01-002 inhibited and stabilized trichloroethane and install the new 6A5940 loom 'A' harness limb A20 and 6A59412 loom 'B' harness limb B19 onto the fancase firerail using the existing material from step (4). Tighten the nuts and bolts (2 off) to secure.

WARNING: WHEN YOU USE COMAT 01-002 INHIBITED AND STABILIZED TRICHLOROETHANE YOU MUST USE THE NECESSARY PROTECTIVE CLOTHING. DO NOT GET THE SOLVENT ON YOUR SKIN OR IN YOUR EYES. YOU MUST NOT SMOKE WHEN YOU USE THE SOLVENT AS THE VAPOUR CHANGES AND BECOMES TOXIC.

(6) Clean all mating faces with CoMat 01-002 inhibited and stabilized trichloroethane and install the new 6A5940 loom 'A' harness and 6A5941 loom 'B' harness earth tags at clipping point 2384 using the existing material from step (3). Torque the bolt to 36 to 45 lbfin (4 to 5 Nm).

(7) Assemble clippings points 2346, 2348 and 2557 with the loom 'A' and loom 'B' harnesses, moved into the opposite clips using the existing material from step (2). Torque the bolts to 36 to 45 lbfin (4 to 5Nm), Refer to Figures 1,2,4,5 and 7.

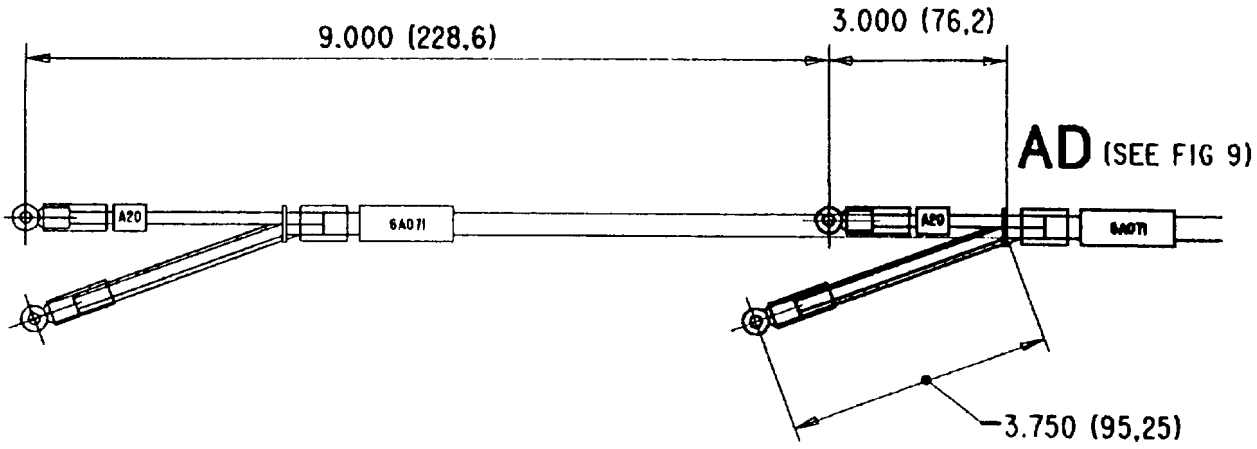
(8) Assemble clipping point 2502 onto the 6A5941 harness using the existing material from step (2) with the clip turned to 180 degrees. Torque the bolt to 36 to 45 lbfin (4 to 5 Nm). Refer to Figures 2, 3 and 6.

(9) Assemble clipping points 2385, 2609, 2610, 2611 and 2612 onto the 6A5940 harness, using the existing material from step (1). Torque the bolts to 36 to 45 Lbfin (4 to 5 Nm). Refer to Figures 1 and 2.

C. Recording Instructions

(1) A record of accomplishment is necessary.

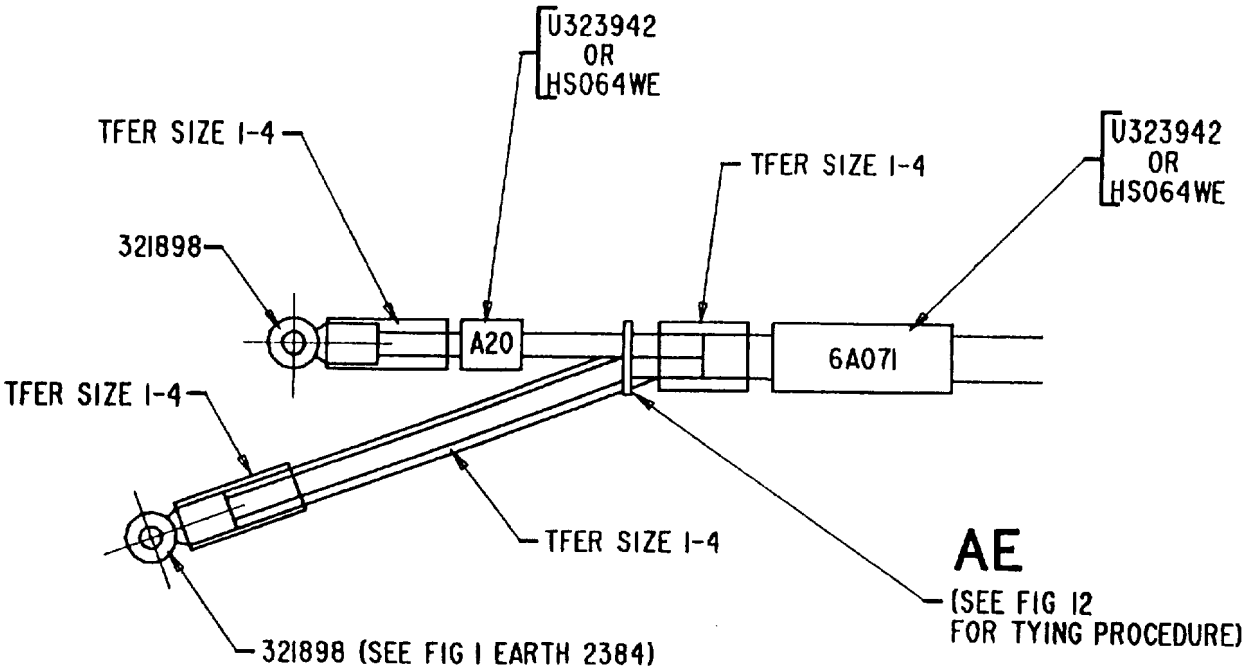
——— EXISTING WIRE TO BE REMOVED.
——— NEW PROFILE.



ALL DIMENSIONS ARE IN INCHES (MILLIMETRES)

ded0000416

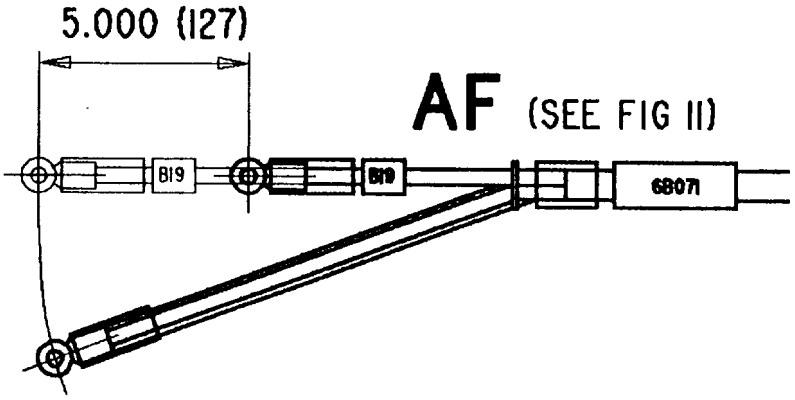
Part view on harness loom 'A' showing required rework
Fig.8



ded0000417

Enlarged view at AD (see Figure 8) showing parts required for loom 'A'
Fig.9

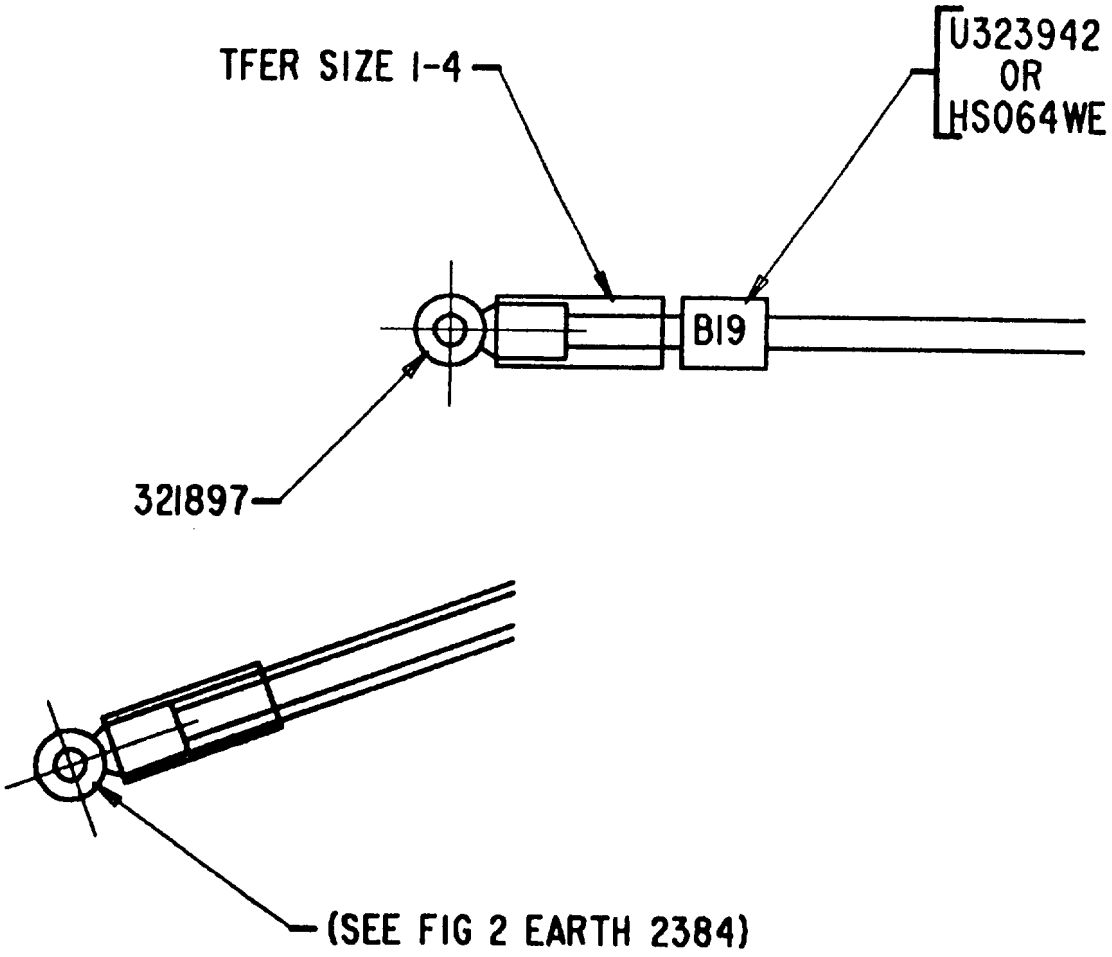
——— EXISTING WIRE TO BE REMOVED.
——— NEW PROFILE.



ALL DIMENSIONS ARE IN INCHES (MILLIMETRES)

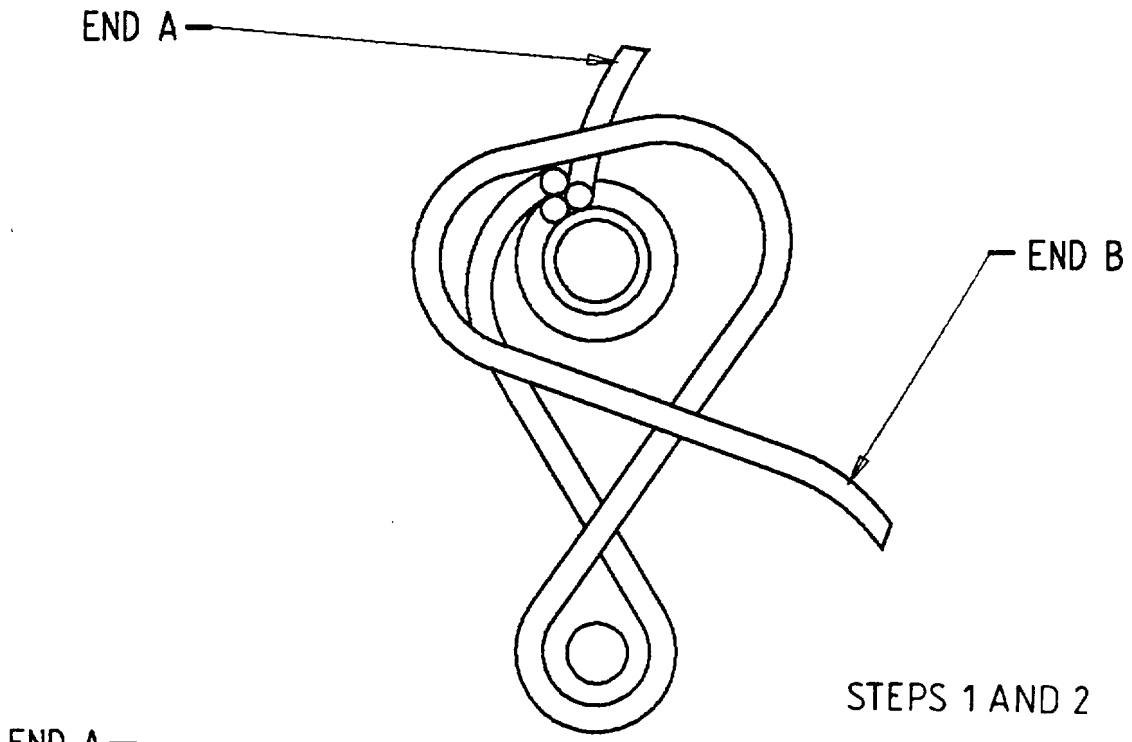
ded0000418

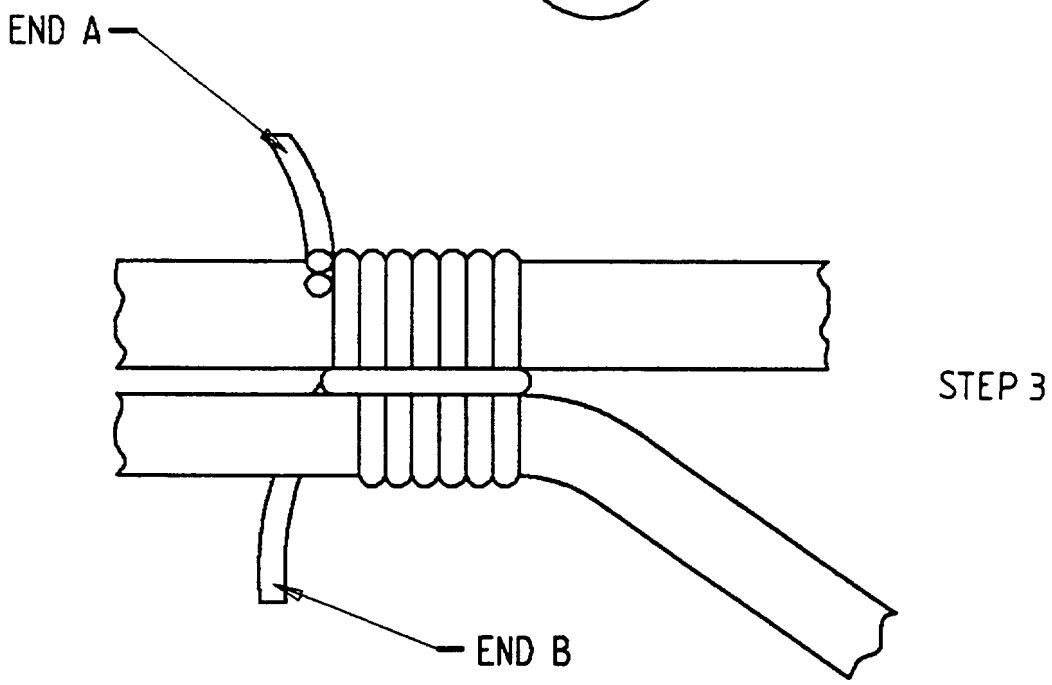
Part view on harness loom 'B' showing required rework
Fig.10



ded0000419

Enlarged view at AF (see Figure 10) showing parts required for loom 'B'
Fig.11





ded0000420

Rework of existing harness loom 'A' (see Figure 9) showing procedure for fastening lacing tape at harness junction
Fig.12

3. Material Information

Applicability: For each V2500 Engien 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
6A5940 (71-51-51)	1		Harness assembly Loom 'A'	6A4912 (01-005)	(A)(B)(1D) (S1)
321898 (71-51-51)	1		Terminal Lug No.10 (A20)	- (03-230)	(A)(C)
321898 (71-51-51)	1		Termiana Lug No.10 (Earth)	- (03-232)	(A)(C)
TFERSIZE1-4 (71-51-51)	A/R		Tubing, Translucent (A20 & 6A071)	- (03-311)	(A)(C)
TFERSIZE1-4 (71-51-51)	A/R		Tubing, Translucent (Earth)	-	(A)(C)
U323942 (71-51-51)			Sleeving (Identified A20)	- (03-429)	(A)(C)(E)
HS064WE (71-51-51)	1		Sleeving (Identified A20)	- (03-429)	(A)(C)(E)
U323942 (71-51-51)	1		Sleeving (Identified 6A071)	- (03-429)	(A)(C)(F)
HS064WE (71-51-51)	1		Sleeving (Identified 6A071)	- (03-429)	(A)(C)(F)
6A5941 (71-51-54)	1		Harness Assembly Loom 'B'	6A5913 (01-005)	(A)(B)(1D) (S1)
321897 (71-51-54)	1		Terminal Lug No.8 (B19)	- (03-230)	(A)(C)
TFERSIZE1-4 (71-51-54)	A/R		Tubing, Translucent (B19)	- (03-310)	(A)(C)

U323942 (71-51-54)	1	Sleeving (Identified B19)	- (03-396)	(A)(C)(G)
HS064WE (71-51-54)	1	Sleeving (Identified B19)	- (03-396)	(A)(C)(G)

C. Instructions/Disposition Code Statements

(A) New parts currently available for sale

(B) Old parts no longer available for sale

(C) Required for reworking harnesses

(1D) Old part cab be reworked and re-identified to the new part number

(S1) New part may be used in place of old part but not vice-versa

(E) Alternatives

(F) Alternatives

(G) Alternatives

D. Standard Equipment

Standard workshop equipment
Thermogun, Rayehem
Crimp tool

E. Expendable Parts

Part No.	ATA/IPC No.	Qty	Keyword
3100631	71-51-51, 03-070	A/R	Braid
3100631	71-51-54, 03-070	A/R	Braid

A/R = As Required

F. Consumable Material

CoMat 01-002 Inhibited and stabilized trichloroethane.
CoMat 02-148 Adhesive tape (electrical)

NOTE: The estaimated 1994 unit prices shown are provided for planning purposes only and do not constitute a firm quotations. Consult the IAE Price Catalog or contact the IAE,s Spare Parts Sales Department for information concerning firm prices.