Honeywell

SERVICE BULLETIN

Engines, Systems & Services – Phoenix, Arizona

REVISION TRANSMITTAL SHEET

This sheet transmits Revision 1 to Service Bulletin No. RE220-49-7558.

This is a PARTIAL revision with a COMPLETE REPRINT. The pages changed are shown below, with the Reason for Revision. The pages which are not changed keep the same revision dates. Please remove and discard all pages of the other issues and replace with the pages of this revision.

Reason for Revision

NOTE: The equipment that was changed in the other issues of this service bulletin needs rework. Remove previously installed harness adapter and splice, and replace with new materials per revised Section 2, Material Requirements, and Section 3, Accomplishment Instructions, paragraph D.

Changed company name in headers and body of the text.

Section 1

Page 1. Changed to show this revision.

Section 2

Page 3. Updated Material List.
Page 4. Updated Modification Kit part number.

Section 3

Page 5. Changed tape in step D.(6).
Page 7. Changed Harness Adapter part number.
Page 8. Removed "(red)" from paragraph D.(12)(e).
Page 9. Changed Figure 3 and updated insulation part number.
Page 12. Changed tape in step D.(17).

List of Effective Pages:

Page No.	Date	Page No.	Date
1	Mar 21/02	8	Mar 21/02
2	Mar 21/02	9	Mar 21/02
3	Mar 21/02	10	Mar 21/02
4	Mar 21/02	11	Mar 21/02
5	Mar 21/02	12	Mar 21/02
6	Mar 21/02	13	Mar 21/02
7	Mar 21/02		

Previous Revisions:

None.

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SERVICE BULLETIN

Engines, Systems & Services – Phoenix, Arizona

AIRBORNE AUXILIARY POWER – GAS TURBINE ENGINE – Remove/Replace EGT Sensor, Part No. WE3876282-1 with Part No. WE3876352-1 and Replace/ Rework Wiring Harness, Part No. WB3888400-1 with/to part No. WE3888471-1.

1. Planning Information

A. Effectivity

This service bulletin applies to this pneumatic and shaft power gas turbine engine assembly:

Part No.	Engine Model No.	Before Serial No.	Application
WE3800714-1	RE220[GX]	*P-178	Global Express

*First Unit Production Point

B. Concurrent Requirements

None.

C. Reason

(1) Problem: EGT probes have been removed from the aircraft as the result of intermittent signals and also mechanical failure. The mechanical failures have occurred primarily due to the probe natural frequency being coincident with the engine 1/rev frequency. The turbine bearing support EGT bosses have also exhibited cracks on two occasions at the base fillet weld contributing to EGT probe failures and intermittent EGT signals.

(2) Background: The EGT probe shank has been redesigned to move the probe natural frequency away from the engine 1/rev frequency. In addition the single EGT Probe, Part No. WE3876282-1 has been replaced with two independent probes eliminating turbine bearing support (TBS) EGT boss stresses which can exist as a result of the tolerance stack and thermal interactions between the TBS and the existing EGT probe.

(3) Action: Replace EGT Sensor, Part No. WE3876282-1 with Part No. WE3876352-1. Also replace/rework Wiring Harness, Part No. WB3888400-1 with/to Part No. WE3888471-1.

(4) Technical Validation: This design was validated with bench/engine test(s) at Honeywell.

D. Description

This service bulletin contains instructions for incorporating improved EGT Sensor, Part No. WE3876352-1 and Wiring Harness, Part No. WE3888471-1. This service bulletin also contains instructions to rework Wiring Harness, Part No. WB3888400-1 to Part No. WE3888471-1.

E. Compliance

RECOMMENDED

Honeywell recommends that this service bulletin be accomplished at first return for any cause, at a Honeywell authorized overhaul/repair facility. This service bulletin can also be field incorporated.

F. Approval

TSO authorization was received for the modification identified in this service bulletin.

G. Labor Hours

An estimated one labor hour is necessary to do this service bulletin. Labor reimbursement by Honeywell does not apply.

H. Weight and Balance

No change.

I. Electrical Load Data

No change.

J. Software Accomplishment Summary

Does not apply.

K. References

(1) Publications.

The publications applicable to the service bulletin are shown below:

Part/ Model No.	Component Maintenance Manual	Illustrated Parts Catalog	Aircraft Maintenance Manual
WE3800714-1	49-24-35	49-24-25	49-24-27

(2) Service Bulletin References.

None.

L. Other Publications Affected

Same as the publications shown in Paragraph 1.K.(1).

M. Interchangeability or Intermixability of Parts

This service bulletin does have an effect on interchangeability at the detail component level.

2. Material Information

A. Kit Material - Price and Availability

Honeywell Engines, Systems & Services, P.O. Box 29003, Phoenix, AZ 85038-9003 will furnish the parts necessary for this service bulletin, upon receipt of customer's no-charge purchase order. Quantities supplied will be limited to the customer's inventory of units on the issue date of this service bulletin.

B. Industry Support Information

Units returned to an authorized Honeywell Engines, Systems & Services repair facility for repair and/or overhaul will have this service bulletin done at no charge.

Authorized Honeywell Engines, Systems & Services repair facilities are:

1. Honeywell Engines, Systems & Services, Phoenix Repair Operations, 1944 E. Sky Harbor Circle, Phoenix, AZ 85034.

C. Material Necessary for Each Engine/Component/Spare

NOTE: Parts necessary to do this service bulletin are available in limited quantities, and later available at standard catalog lead times.

The parts and/or kits necessary to do this service bulletin are as follows:

NOTE: The illustrated parts catalogs and spare parts bulletins dated later than the original issue date of this service bulletin can introduce different parts. Refer to these documents before you order parts.

New PN	Qty	Nomenclature/ Key Word	Old PN	Instructions- Disposition
WE3876352-1	2	EGT Sensor	WE3876282-1	B, N, L, S
WE3888471-1	1	Wiring Harness	WB3888400-1	N, L, C or S
*370-511-9006	2	Grommet		Q
*3616475-1	2	Clamp		Q
*370-511-9007	2	Grommet		Q
3617933-4	1	Kit, Adapter		
*WE3888501-1	1	Harness Adapter		Q
*672-503-9002	7**	Splice		Q
*M23053/13-002	1	Insulation		Q
*S8999-1-240	1	Braid		Q
PCS5752 Type II	AR	HumiSeal		T
*MS3368-1-9A	1	Identification Tag		Q
#423	AR	Tape (ASTM-D-2686)		T
*M23053/13-001-0	1	Insulation		Q

*Part of the Adapter Kit.
**Only six splices are used in the installation, an extra is provided for a spare.

Options

Operators should order two EGT Sensors, Part No. WE3876352-1 and one of the following:

A. Order Modification Kit, Part No. 3617933-4, if modification of the wiring harness will be done by the operator.

B. Order Wiring Harness, Part No. WE3888471-1, Grommet, Part No. 370-5111-9006 (Qty 2), Clamp, Part No. 3616475-1 (Qty 2) and Grommet, Part No. 370-511-9007 (Qty 2), if the wire harness is to be replaced and not reworked.

Disposition Code B. Replaced part.

Disposition Code C. Rework the part as shown in this service bulletin.

Disposition Code L. The old and new parts are not interchangeable.

Disposition Code N. The old part will not be available.

Disposition Code Q. Added part.

Disposition Code S. Send the part to Honeywell Engines, Systems & Services, Shipping and Receiving, 1944 E. Sky Harbor Circle, Phoenix, Arizona 85034, for rework.

Disposition Code T. Additional part recommended for rework not included in kit.

D. Tooling - Price and Availability

None.

3. Accomplishment Instructions

NOTE: Manuals shown in Section 1 contain the disassembly, cleaning, check, assembly, and test instructions and must be used to complete this service bulletin.

A. (On wing modification.) Gain access to the APU. Refer to the Aircraft Maintenance Manual, ATA No. 49-24-27.

(1) Remove EGT Sensor, Part No. WE3876282-1.

(2) Install EGT Sensor, Part No. WE3876352-1 in place of Part No. WE3876282-1.

(3) Modify Wire Harness, Part No. WB3888400-1 to Part No. WE3888471-1. (Refer to paragraph D.)

B. (Off wing modification) Disassemble the APU as necessary to gain access to the EGT Sensor, Part No. WE3876282-1. Refer to the manual shown in Section 1, Paragraph K.(1).

(1) Remove EGT Sensor, Part No. WE3876282-1.

C. Assemble the APU. Refer to the manual shown in Section 1, Paragraph K.(1) except as follows:

(1) Install EGT Sensor, Part No. WE3876352-1 in place of Part No. WE3876282-1.

(2) Install Wire Harness, Part No. WE3888471-1 in place of Part No. WB3888400-1. Wire Harness, Part No. WB3888400-1 can be reworked to Part No. WE3888471-1. (Refer to paragraph D.)

D. Rework Wire Harness, Part No. WB3888400-1 to Part No. WE3888471-1 as follows:

(1) Remove harness (5, Figure 1) and grommets (10) from clamp (15), two places.

(2) Identify the EGT wiring connected to Pins A and B of connector plug formerly attached to the dual EGT sensor. Cut those wires 12 in. (304,8 mm) away from dual EGT sensor connector plug. Temporarily mark wiring on APU portion of harness as EGT1.

(3) Cut the remaining EGT wiring 9 in. (228.6 mm) away from dual EGT Probe connector plug. Temporarily mark this wiring as EGT 2.

NOTE: Take care to leave remaining wiring intact and neatly routed.

(4) Discard removed wiring and connector plug.

(5) Loosely install terminals of harness adapter (20, Figure 2) to EGT sensor studs. Terminals for EGT1 should be connected to the sensor located at the six o'clock position, and terminals for EGT2 should be connected to the sensor located at the eight o'clock position.

(6) Add two grommets (15) to the turbine bearing scavenge line in the locations shown in Figure 2. Ensure that the split in the grommet is facing aft. Apply tape (pressure sensitive polytetrafloroethylene tape per ASTM-D-2686, Permacel No. 423 Teflon Tape, manufactured by Permacel Industrial Tape Products, New Brunswick, NJ, or equivalent) around the grommet (15). Attach clamp (10) to each grommet (15).

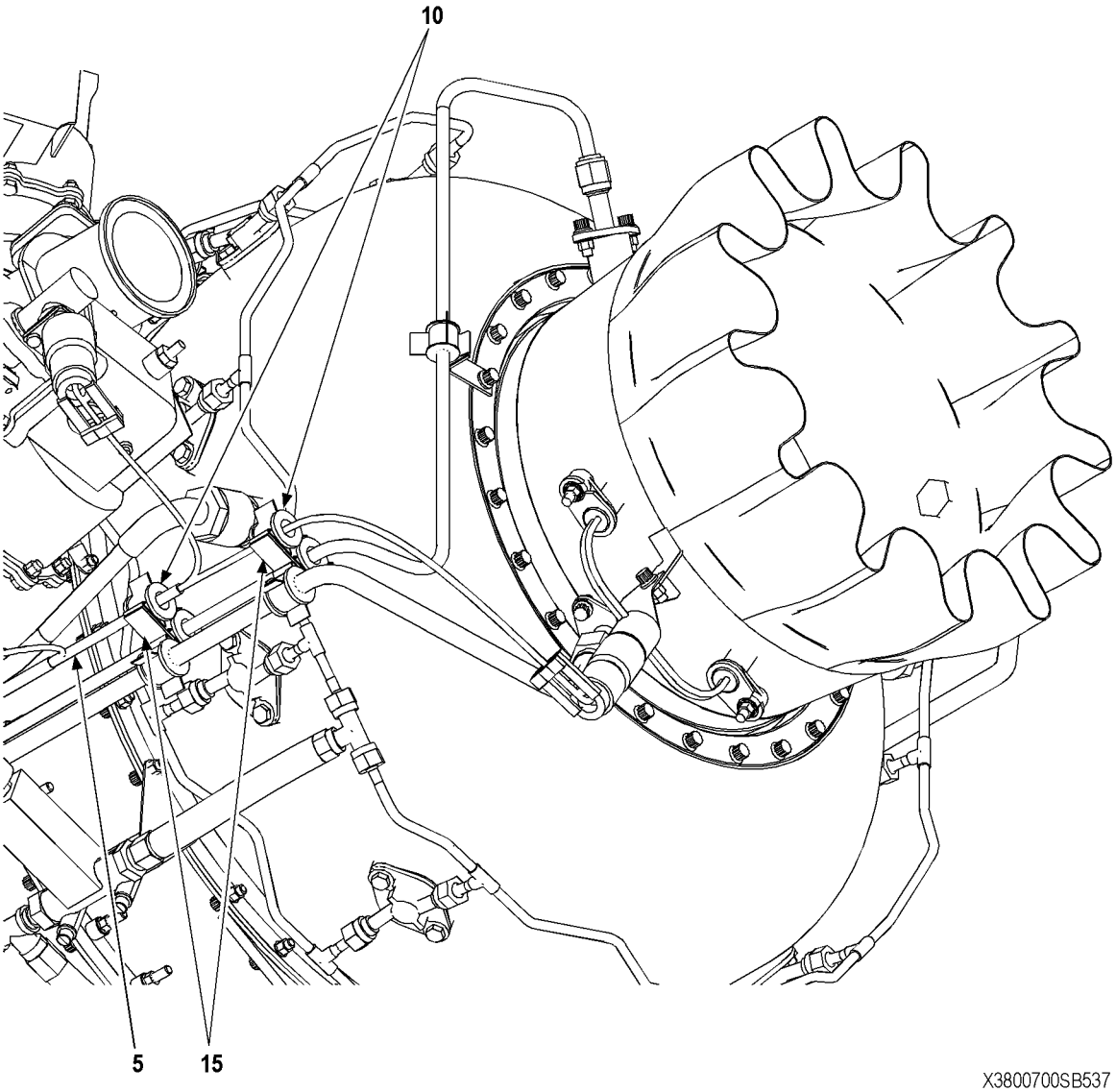
NOTE: Make sure that all grommets are positioned within the clamps so that the grommet split is within the clamp radius.

(7) Attach two grommets (5) to harness adapter (20) and route to existing APU wiring. Position grommets and wiring into clamps (10). Adjust the wiring and clamps so that there is sufficient length to reduce stress yet not risk chaffing during vibration.

(8) On adapter harness, identify the wiring from the EGT1 probe and trim the length to allow splicing to the APU harness in the configuration (Staggered Splices) shown in Figure 5. Three splices per wire pair. Re-trim APU harness as needed to accommodate the staggered splices.

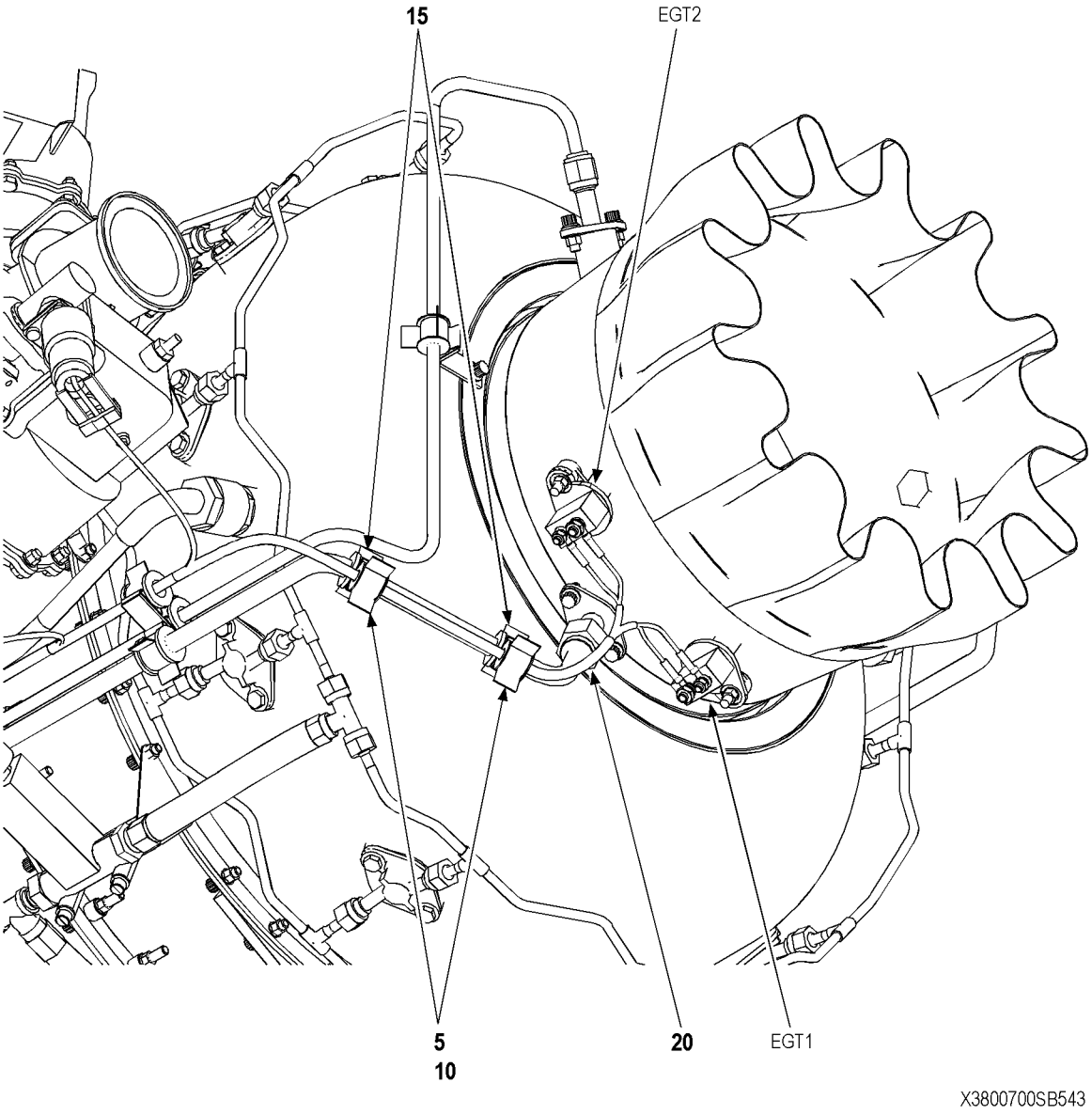
(9) On adapter harness, identify the wiring from the EGT2 probe and trim the length to allow splicing to the APU harness in the configuration (staggered splices) shown in Figure 5. Three splices per wire pair. Re-trim APU harness as needed to accommodate the staggered splices.

NOTE: Trimmed wire should allow all installed splices, six total to be staggered.



5. WIRE HARNESS (EXISTING)
10. GROMMET (PN 370-511-9006)
15. CLAMP (PN 3616475-1)

Wire Harness Installation
Figure 1



5.	GROMMET (PN 370-511-9006) (NEW)	15.	GROMMET (PN 370-511-9007) (NEW)
10.	CLAMP (PN 3616475-1) (NEW)	20.	HARNESS ADAPTER (PN WE3888501-1) (NEW)

Wire Harness Modification
Figure 2

(10) Remove harness adapter (20, Figure 2) wiring from clamps (10).

(11) Remove harness adapter terminals from EGT sensor studs.

(12) Install splices (5, Figure 3) as follows:

(a) Trim six, 0.75 in. (19,05 mm) pieces from insulation sleeve (10).

(b) Trim two, 6 in. (152,4 mm) pieces from insulation sleeve (15).

(c) Route each wiring pair, Alumel and Chromel, through insulation sleeve (15).

(d) Route each individual wire, Alumel and Chromel, and shield through insulation sleeve (10).

(e) Route the un-crimped splice (5) through one wire. Twist two wire sections (section includes harness adapter and harness) together, ensure wires are properly joined, i.e., Alumel to Alumel, etc. Slide the splice over the twisted wiring and crimp the splice (5). This will need to be accomplished for each wire, a total of four splices. (Refer to Figure 3.)

(f) Route the un-crimped splice (5) through the wire shielding. Twist the section of shielding together. Slide the splice (5) over the twisted shielding and crimp the splice (5). Total number of splices needed for the shielding is two. (Refer to Figure 3.)

(g) Position the insulation sleeve over each splice assembly and shrink the insulation sleeve (10) over the splices (5) using a heat gun. (Refer to Figure 3.)

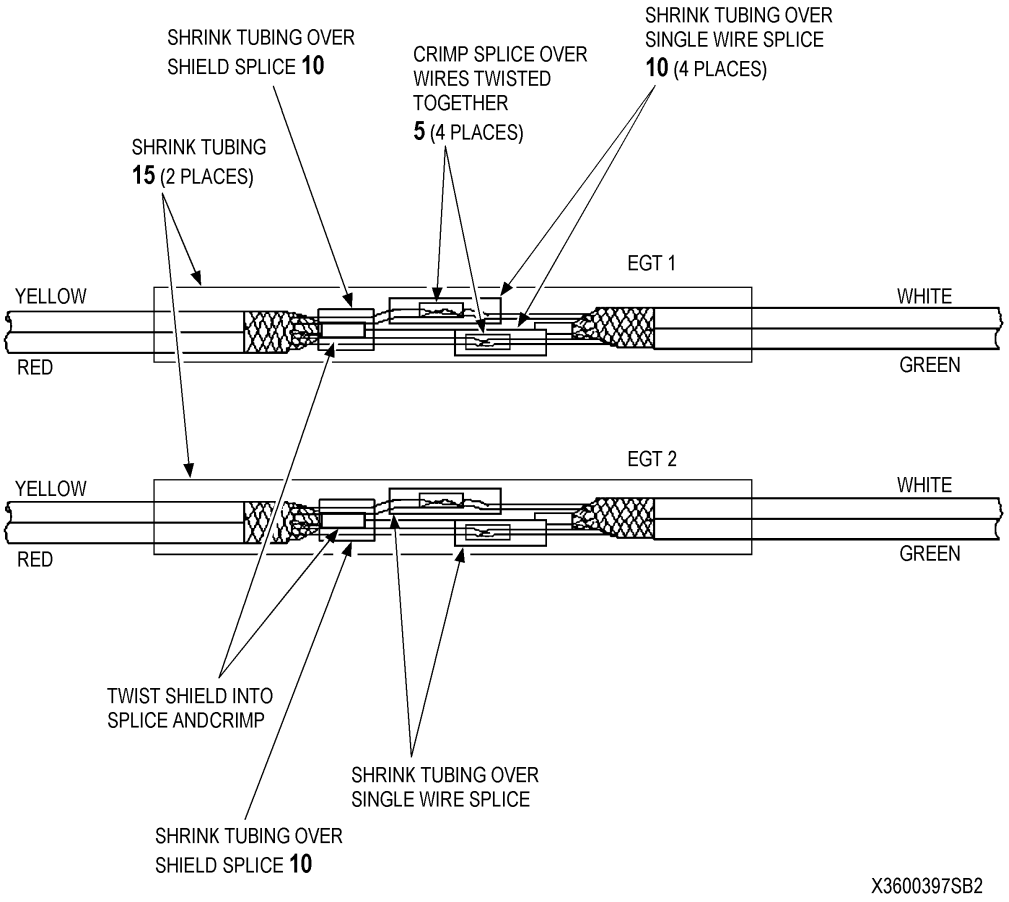
(h) Position the insulation sleeve over the spliced connections and shrink the insulation sleeve (15) over the wiring pair and spliced connections using a heat gun. (Refer to Figure 3.)

(13) Lace braid (5, Figure 4), 1 to 2 in. (25,4 to 50,8 mm) apart to limit the movement of the individual EGT wires.

(14) Trim the loose ends of the braid (5) so that the cut ends of the cord extend approximately 3/8 in. (9,525 mm) from the knot.

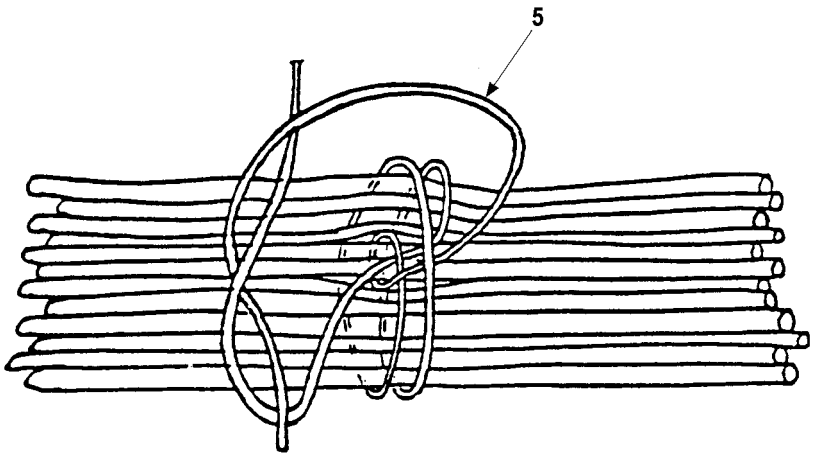
NOTE: Make sure all reworked areas have a braid tie (5) approximately 1 to 2 in. (25,4 to 50,8 mm) apart.

(15) Secure the knot and ends, apply sealing compound (PCS5752 Type II, product of HumiSeal, Woodside, NY 13777, or equivalent).



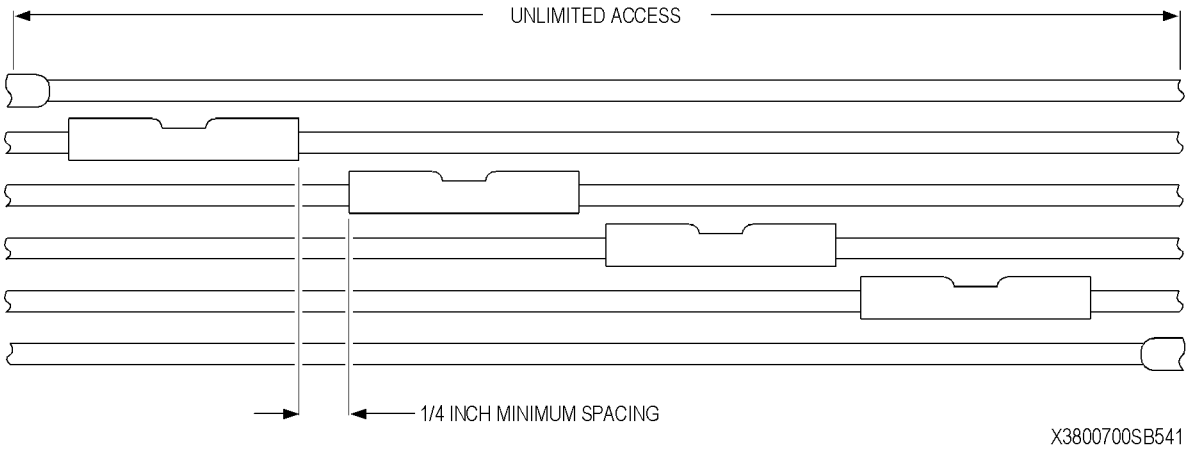
5. SPLICE (PN 672-503-9002) (NEW)
10. INSULATION (PN M23053/13-001-0)(NEW)
15. INSULATION (PN M23053/13-002)(NEW)

Wire Splices Installation
Figure 3



5. BRAID (PN S8999-1-240)

Wire Bundle Tying
Figure 4



Splice Arrangement
Figure 5

(16) Do a resistance check.

Probe Between Locations		Resistance (Ohms)
Plug P1, Pin 11	Alumel terminal, EGT1	<5.0
Plug P1, Pin 12	Chromel terminal, EGT1	<5.0
Alumel terminal, EGT1	Chromel terminal, EGT1	Infinity
Alumel terminal, EGT1	P1, Plug Case	Infinity
Chromel terminal, EGT1	P1, Plug Case	Infinity
Plug P1, Pin 36	Alumel terminal, EGT2	<5.0
Plug P1, Pin 37	Chromel terminal, EGT2	<5.0
Alumel terminal, EGT2	Chromel terminal, EGT2	Infinity
Alumel terminal, EGT2	P1, Plug case	Infinity
Chromel terminal, EGT2	P1, Plug Case	Infinity

NOTE: The alumel terminal is larger that the Chromel terminal.

(17) Install grommets (5, Figure 2) onto EGT wiring ensuring that the split is facing towards the APU. Apply tape (pressure sensitive polytetrafloroethylene tape per ASTM-D-2686, Permacel No. 423 Teflon Tape, manufactured by Permacel Industrial Tape Products, New Brunswick, NJ, or equivalent) to the grommets(5) and position the grommet (5) into the clamps (10). Make sure that the grommet is positioned within the clamp so that the grommet split is within the clamp radius.

(18) Attach the adapter terminal lugs to each of the EGT sensor studs as described in step (5). Place the terminals on the EGT posts first followed by the lock washer followed by the threaded nuts. The wires will only fit on the correct Alumel or Chromel terminal.

(19) Torque the terminal nuts, Alumel to 27 lb-in (3,051 Nm) and Chromel to 16 lb-in (1,808 Nm).

(20) Perform a final inspection of the wire bundle routing to assure there are no stress points or any wiring chaffing. Remove temporary EGT 1 and EGT2 markings from wiring.

(21) Remove the following identification and information located on the P1 connector; part number, vendor number, vendor name, and vendor part number.

(22) Re-identify the wiring harness by attaching ID Tag, Part No. MS3368-1-9A, included in the kit, around wire bundle extending from the fire wall.

(23) Remove and discard P18 identification strap

E. Refer to Global Express maintenance manuals and perform APU functional checkout.

F. Make a record of this service bulletin number and/or revision number in the engine log book or equivalent engine records. Put Change No. 10 on the APU identification plate adjacent to MOD RECORD.

4. Appendix

Does not apply.

This publication was prepared by
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Engines, Systems & Services
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Technical Publications

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