DOCKET NO. SA-516

EXHIBIT NO. 11I

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

SERVICE BULLETIN 747-28A-2092

(PAGES I-1 THRU I-22)

BOEING COMMERCIAL AIRPLANE COMPANY P.O. BOX 3707 SEATTLE, WASHINGTON 98124

ALERT

PLEASE NOTIFY BOEING
OF YOUR PLANNED ACTION
AND INSPECTION RESULTS

SERVICE BULLETIN

ATA 2820
SYSTEM: 747

NO: 747-28A2092
DATE: February 12, 1979
REVISION 1: April 27, 1979

SUBJECT: MAIN FUEL TANK PUMP WIRING INSPECTION, REWORK, AND MODIFICATION

NOTE: THIS SERVICE BULLETIN IS BEING SENT TO ALL AFFECTED OPERATORS WHO NORMALLY RECEIVE SERVICE BULLETINS FROM BOEING. OPERATORS WHO HAVE LEASED AIRPLANES SHOULD FORWARD THIS INFORMATION TO THE LESSEE. OPERATORS WHO HAVE SOLD AIRPLANES SHOULD FORWARD THIS INFORMATION TO THE NEW OWNER, UNLESS 30 DAYS HAS ELAPSED SINCE BOEING HAS RECEIVED NOTIFICATION OF THE SALE.

I. Planning Information

A. Effectivity

1. Airplanes Affected

An equivalent change will be incorporated in production in accordance with PKR 79382 on applicable airplanes other than those listed below.

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP 1			
AF (AIR FRANCE) RA251-RA254	747-128	19749 THRU 19752	F-BPVA THRU F-BPVD

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP I (CONTINUED)			
AZ (ALITALIA)			
RA551	747-143	19729	I-DEMA
BA (BRITISH AIRWAYS)			
RA301-RA303	747-136	19761 THRU 19763	G-AWNA THRU G-AWNC
BN (BRANIFF)			
RA201	747-130	19746	N610BN
BO (BOEING)			
RA001	747-121	20235	N7470
FT (FLYING TIGER LINES INC.)			
RA901	747-123	20100	N800FT
IM (IMPERIAL IRANIAN AIR FORCE)			
RA101	747-131	19667	5-8101
RA102	747-131	19668	5-8106
RA103	747-131	19669	5-8108
IN (AER LINGUS)			
RA203	747-130	19748	EI-BED
JL (JAPAN AIR)			
RA521-RA523	747-146	19725 THRU 19727	JA8101 THRU JA8103
NW (NORTHWEST)			
RA351-RA353	747-151	19778 THRU 19780	N601US THRU N603US
PA (PAN AMERICAN)			
RA002&RA003	747-121	19639 AND 19638	N747PA AND N732PA
RA004	747-121	19637	N731PA
RA005-RA007	747-121	19640 THRU 19642	N733PA THRU N735PA
RA009-RA016	747-121	19644 THRU 19651	N737PA THRU N744PA
RA017-RA020	747-121	19652 THRU 19655	N748PA THRU N751PA
RA022-RA024	747-121	19657 THRU 19659	N753PA THRU N755PA
RA025	747-121	19660	N770PA
TW (TRANS WORLD)			
RA104-RA109	747-131	19670 THRU 19675	N93104 THRU N93109

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP I (CONTINUED)			
UA (UNITED)			
RA401	747-122	19753	N4703U
WY (WORLD AIRWAYS)			
RB041	747-124	19733	N809FT
GROUP II			
AA (AMERICAN)			
RA903-RA907	747-123	20102 THRU 20106	N9663 THRU N9667
RA909&RA910	747-123	20108 AND 20109	N9669 AND N9670
RA912-RA914	747-123	20324 THRU 20326	N9672 THRU N9674
RA915	747-123	20390	N9675
AC (AIR CANADA)			
RA741-RA743	747-133	20013 THRU 20015	CF-TOA THRU CF-TOC
RA744&RA745	747-133	20767 AND 20881	CF-TOD AND C-FTOE
RA750	747-133	21627	C-GAGB
RA749	747-233B	20977	C-GAGA
AF (AIR FRANCE)			
RA255	747-128	20355	F-BPVE
RA256-RA258	747-128	20376 THRU 20378	F-BPVF THRU F-BPVH
RA259	747-128	20541	N28903
RA261	747-128	20543	N28899
RA262-RA264	747-128	20798 THRU 20800	F-BPVL THRU N28366
RA265	747-128	20954	F-BPVP
RA266	747-128	21141	N40116
RD651	747-228B	21326	F-BPVS
RD652	747-228B	21429	F-BPVT
RD653	747-228B	21537	N1252E
RR301	747-228F	20887	N18815
RR302	747-228F	21255	F-BPVR
RR303	747-228F	21576	F-BPVV

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CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
AI (AIR INDIA)			
RA722	747-237B	19960	VT-EBE
RA723&RA724	747-237B	20459 AND 20558	VT-EBN AND VT-EBO
RA725	747-237B	21182	VT-EDU
RA726	747-237B	21446	VT-EFJ
RA727	747-237B	21473	VT-EFO
AR (ARGENTINAS)			
RD121	747-287B	21189	LV-LZD
RD122	747-287B	21725	LV-MLO
AV (AVIANCA)			
RB042	747-124	19734	HK2000
AT (ROYAL AIR MOROC)			
RD671	747-2B6B	21615	CN-RME
AZ (ALITALIA)			
RA552	747-143	19730	I-DEME
RA559&RA560	747-243B	19731 AND 19732	I-DEMO AND I-DEMU
RA561	747-243B	20520	I-DEMB
BA (BRITISH AIRWAYS)			
RA304-RA306	747-136	19764 THRU 19766	G-AWND THRU G-AWNF
RA307-RA311	747-136	20269 THRU 20273	G-AWNG THRU G-AWNK
RA312&RA313	747-136	20284 AND 20708	G-AWNL AND G-AWNM
RA314&RA315	747-136	20809 AND 20810	G-AWNN AND G-AWNO
RA316&RA317	747-136	20952 AND 20953	G-AWNP AND G-BBPU
RA318	747-136	21213	G-BDPV
RD131&RD132	747-236B	21238 AND 21239	G-BDXA AND G-BDXB
RD133	747-236B	21240	G-BDXC
RD134	747-236B	21241	G-BDXD
RD135&RD136	747-236B	21350 AND 21351	G-BDXE AND G-BDXF
RD137	747-236B	21536	G-BDXG

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CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
BN (BRANIFF)			
RA761	747-127	20207	N601BN
CI (CHINA AIRLINES)			
RA633	747-132	19898	B-1860
RD551	747-209B	21454	B-1864
RG171	747SP-09	21300	B-1862
CP (CANADIAN PACIFIC)			
RD101&RD102	747-217B	20801 AND 20802	CF-CRA AND CF-CRB
RD103&RD104	747-217B	20927 AND 20929	C-FCRD AND C-FCRE
CV (CARGOLUX)			
RR421	747-2R7F	21650	LX-DCV
FT (FLYING TIGER LINES INC.)			
RA902	747-123	20101	N801FT
RA911	747-123	20323	N802FT
RA632	747-132	19897	N803FT
RA634	747-132	20246	N804FT
RA635	747-132	20247	N805FT
GN (AIR GABON)			
RD661	747-2Q2B	21468	F-ODJG
IA (IRAQI AIRWAYS)			
RJ301&RJ302	747-270C	21180 AND 21181	YI-AGN AND YI-AGO
IB (IBERIA)			
RA581&RA582	747-156	19957 AND 19958	EC-BRO AND EC-BRP
RA585	747-256B	20137	EC-BRQ
IM (IMPERIAL IRANIAN AIR FORCE)			
RA112	747-131	19678	5-8102
RA161	747-131	20080	5-8103
RA162	747-131	20081	5-8105
RA163	747-131	20082	5-8107
RR001&RR002	747-2J9F	21486 AND 21487	5-8113 AND 5-8114
RR003	747-2J9F	21507	5-8115
RR004	747-2J9F	21514	5-8116

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
IN (AER LINGUS)			
RA501&RA502	747-148	19744 AND 19745	EI-ASI AND EI-ASJ
IR (IRAN NATIONAL AIRLINES)			
RD681	747-286B	21217	EP-IAG
RD682	747-286B	21218	EP-IAH
RG101&RG102	747SP-86	20998 AND 20999	EP-IAA AND EP-IAB
RG103	747SP-86	21093	EP-IAC
JL (JAPAN AIR)			
RA524&RA525	747-146	20332 AND 20528	JA8107 AND JA8112
RA526&RA527	747-146	20531 AND 20532	JA8115 AND JA8116
RA528	747-146	21029	JA8128
RA532-RA534	747-246B	19823 THRU 19825	JA8104 THRU JA8106
RA535	747-246B	20333	JA8108
RA537&RA538	747-246B	20504 AND 20505	JA8110 AND JA8111
RA539&RA540	747-246B	20529 AND 20530	JA8113 AND JA8114
RA541&RA542	747-246B	20924 AND 21030	JA8122 AND JA8125
RA543	747-246B	21031	JA8127
RB601-RB604	747SR-46	20781 THRU 20784	JA8117 THRU JA8120
RB605	747SR-46	20923	JA8121
RB606&RB607	747SR-46	21032 AND 21033	JA8124 AND JA8126
RR261	747-246F	21034	JA8123
KE (KOREAN AIR LINES)			
RD071&RD072	747-2B5B	20770 AND 20771	HL-7410AND HL-7411
RA216	747-230B	20372	HL7440
RR201	747-230F	20373	HL7441
KL (ROYAL DUTCH)			
RA671-RA673	747-206B	19922 THRU 19924	PH-BUA THRU PH-BUC
RA674&RA675	747-206B	20398 AND 20399	PH-BUD AND PH-BUE
RA677	747-206B	20427	PH-BUG
RD601&RD602	747-206B	21110 AND 21111	PH-BUH AND PH-BUI
RD603	747-206B	21547	PH-BUK
RD604	747-206B	21548	PH-BUL

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP 11 (CONTINUED)			
KU (KUWAIT AIRWAYS CORP.)			
RD201	747-269B	21541	9K-ADA
RD202	747-269B	21542	9K-ADB
LH (LUFTHANSA)			
RA217	747-230B	20527	D-ABYG
RA245	747-230B	20493	D-ABYF
RD181	747-230B	21589	D-ABYN
RD183	747-230B	21591	D-ABYQ
RD641	747-230B	21220	D-ABYJ
RD642	747-230B	21221	D-ABYK
RD643	747-230B	21380	D-ABYL
RD644	747-230B	21588	D-ABYM
RD645	747-230B	21643	D-ABYR
RR202	747-230F	21592	D-ABYO
LY (EL AL ISRAEL)			
RA781&RA782	747-258B	20135 AND 20274	4X-AXA AND 4X-AXB
RA783	747-258B	20704	4X-AXC
RB043	747-124	19735	4X-AXZ
RJ151	747-258C	21190	4X-AXD
RJ152	747-258C	21594	4X-AXF
MD (AIR MADAGASCAR)			
RD561	747-282B	21614	5R-MFT
ME (MIDDLE EAST AIRLINES)			
RD621-RD623	747-264B	21097 THRU 21099	OD-AGH THRU OD-AGJ
NH (ALL NIPON AIRWAYS CO. LTD.)			
RB681&RB682	747SR-81	21604 AND 21605	JA8133 AND JA8134
NY (N.A.S.A.)			
RA905	747-123	20107	N905NA

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
NW (NORTHWEST)			
RA601&RA602	747-151	19918 AND 19919	N620US AND N621US
RA354-RA360	747-151	19781 THRU 19787	N604US THRU N610US
RA369-RA373	747-251B	20356 THRU 20360	N611US THRU N615US
RR341-RR343	747-251F	21120 THRU 21122	N616US THRU N618US
RR344	747-251F	21321	N619US
OA (OLYMPIC AIRWAYS)			
RD021&RD022	747-284B	20742 AND 20825	SX-OAA AND SX-OAB
PA (PAN AMERICAN)			
RA026	747-121	19661	N771PA
RA027-RA034	747-121	20347 THRU 20354	N652PA THRU N659PA
RA916	747-123	20391	N901PA
RA631	747-132	19896	N902PA
RG001-RG005	747SP-21	21022 THRU 21026	N530PA THRU N534PA
RG006	747SP-21	21547	N537PA
RG007	747SP-21	21548	N538PA
RG091	747SP-21	21441	N536PA
QF (QANTAS)			
RB001-RB004	747-238B	20009 THRU 20012	VH-EBA THRU VH-EBD
RB005&RB006	747-238B	20534 AND 20535	VH-EBE AND VH-EBF
RB007&RB008	747-238B	20641 AND 20842	VH-EBG AND VH-EBH
RB009	747-238B	20921	VH-EBI
RB010	747-238B	21054	VH-EBJ
RB011	747-238B	21140	VH-EBK
RB012	747-238B	21237	VH-EBL
RB513	747-238B	21352	VH-EBM
RB514	747-238B	21353	VH-EBN
RB515	747-238B	21657	VH-EBO
RB516&RB521	747-238B	21658 AND 21354	VH-EBP AND VH-ECA
RB (SYRIAN ARAB AIRLINES)			
RG141&RG142	747SP-94	21174 AND 21175	YK-AHA AND YK-AHB

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
RJ (ROYAL JORDANIAN)			
RD691	747-2D3B	21251	JY-AFA
RD692	747-2D3B	21252	JY-AFB
SA (SOUTH AFRICAN)			
RB071-RB073	747-244B	20237 THRU 20239	ZS-SAL THRU ZS-SAN
RB074&RB075	747-244B	20556 AND 20557	ZS-SAO AND ZS-SAP
RG121-RG123	747SP-44	21132 THRU 21134	ZS-SPA THRU ZS-SPC
RG124	747SP-44	21253	ZS-SPD
RG125	747SP-44	21254	ZS-SPE
RG126	747SP-44	21263	ZS-SPF
SB (SEABOARD WORLD)			
RR221&RR222	747-245F	20826 AND 20827	N701SW AND N702SW
SK (SCANDINAVIAN)			
RA701&RA702	747-283B	20120 AND 20121	SE-DDL AND OY-KHA
RD591	747-283B	21381	LN-RNA
SN (SABENA)			
RB101&RB102	747-129	20401 AND 20402	OO-SGA AND OO-SGB
SQ (SINGAPORE AIRLINES LTD)			
RD041&RD042	747-212B	20712 AND 20713	9V-SIA AND 9V-SIB
RD043&RD044	747-212B	20888 AND 21048	9V-SQC AND 9V-SQD
RD045	747-212B	21162	9V-SQE
RD046	747-212B	21316	9V-SQF
RD047	747-212B	21439	9V-SQG
SR (SWISSAIR)			
RA651&RA652	747-257B	20116 AND 20117	HB-IGA AND HB-IGB
TP (T.A.PORTUGUESES)			
RD001&RD002	747-282B	20501 AND 20502	CS-TJA AND CS-TJB
RD003&RD004	747-282B	20928 AND 21035	AP-AYV AND AP-AYW

CUSTOMER & CUSTOMER NO.	MODEL & SERIES	MFG. SERIAL NO.	REGISTRY NO.
GROUP II (CONTINUED)			
TW (TRANS WORLD)			
RA110	747-131	19676	N53110
RA113&RA114	747-131	20320 AND 20321	N93115 AND N53116
RA115	747-131	20322	N53117
RA164	747-131	20083	N93119
UA (UNITED)			
RA402	747-122	19754	N4704U
RA403-RA405	747-122	19755 THRU 19757	N4710U THRU N4712U
RA406&RA407	747-122	19875 AND 19876	N4713U AND N4714U
RA408-RA412	747-122	19877 THRU 19881	N4716U THRU N4720U
RA413&RA414	747-122	19882 AND 19883	N4723U AND N4727U
RA415&RA416	747-122	19925 AND 19926	N4728U AND N4729U
RA417&RA418	747-122	19927 AND 19928	N4732U AND N4735U
US (U.S. AIR FORCE)			
RB013&RB014	747-E4A	20682 AND 20683	31676 AND 31677
RB015	747-E4A	20684	40787
RB016	747-E4B	20949	50125
UT (UNION DE TRANSPORTS AERIENS)			
RR331	747-283F	21515	F-GPAN
WD (WARDAIR)			
RA762	747-1D1	20208	C-FDJC
RB044	747-1D1	20305	C-FFUN
RD171	747-211B	21516	C-GXRA
WY (WORLD AIRWAYS)			
RJ131-RJ133	747-273C	20651 THRU 20653	N747WA THRU N749WA

2. Spares Affected

None

B. Reason

This inspection, repair, and modification will preclude electrical arcing into main fuel tanks No. 2 and 3 that may result from damaged wires which provide power to the No. 1 and 4 main fuel tank boost pumps.

Two main fuel boost pumps for each of the Nos. 1 and 4 main fuel tanks are located in a dry bay area (dog house) near the outboard end of the Nos. 2 and 3 main fuel tanks. Electrical wiring to the pumps is installed in aluminum conduit routed through the Nos. 2 and 3 tanks between the wing rear spar and the dog house.

Recently, one operator, investigating the cause of a fuel leak in an auxiliary fuel tank, found a small hole burned through the conduit that houses the electrical wires to the auxiliary fuel tank pump. Reportedly, a wire had abraded against the inner conduit wall, exposing the conductor, and arcing from the conductor to the conduit produced the hole through which fuel escaped. Alert Service Bulletin 747-28A2091 was released to four affected overseas operators and recommended an inspection, repair, and modification of auxiliary fuel tank pump wiring.

The conduit and wiring installations for the Nos. 1 and 4 fuel tank boost pumps are similar but not identical to the auxiliary fuel tank installations. An inspection of the main fuel tank boost pump wiring was initiated on selected airplane groups in order to evaluate the possible extent that wire chafing may exist in the fleet. Partial results of the survey to date indicate the existence of chafing and/or abrasion in varying degrees of the main boost pump wire insulation. Damaged wires were reported on airplanes that had accumulated approximately 40,500, 23,000, 22,000, 20,000, and 15,000 flight-hours. No wires were reported that had worn through the insulation to the conductor.

In summary, of 25 wire bundles inspected, 16 were reported to have some degree of damage. The reported chafing and abrasion is attributed to vibration of the wires against the conduit wall. Initial findings from the survey indicate that the degree of wire insulation damage is related to airplane flight-hours.

C. Description

The Nos. 1 and 4 main fuel tank forward and aft fuel boost pump wire bundles between each pump and the wing rear spar should be inspected for chafing and abrasion or other damage; repaired or replaced as necessary; and, modified by providing additional protection against damage.

Inspection of each wire bundle requires removal of electrical connectors at the pump and pulling the wires out of the conduit at the wing rear spar. The wires should then be cleaned and closely inspected for damage. Damaged wires should be replaced or repaired as necessary. If electrical arcing or burning is evident, the conduit should be inspected, and replaced if necessary.

Terminating action consists of tying the wire bundles at six inch intervals and installing two concentric teflon sleeves over the wires. The wire bundle is then reinstalled in the conduit, the electrical connectors are reinstalled, and the boost pump should be operationally checked.

Affected airplanes are divided into two groups. Group I airplanes (line position 001 through 054) were delivered with boost pump wires that exhibit better wear characteristics than the wires on later (Group II) airplanes.

It is recommended that the inspection, repair, and terminating action be accomplished at the next, planned maintenance period on Group I airplanes with less than 30,000 flight-hours and on Group II airplanes with less than 6000 flight-hours.

It is recommended that the inspection, repair, and terminating action be accomplished on Group I airplanes with 30,000 or more flight-hours, and on Group II airplanes with 6000 or more flight-hours, at the earliest opportunity when manpower and facilities are available within the next 750 flight-hours or two months calendar time, whichever is earlier.

Revision 1 changes the type of knot used to tie the wire bundles prior to sleeving. It also deletes an airplane, previously modified at Boeing, from the effectivity.

Airworthiness Directive 79-06-02 has been issued on this subject.

NOTE: PLEASE NOTIFY BOEING OF YOUR PLANNED ACTION AND INSPECTION RESULTS.

D. Approval

The inspection and rework described herein has been approved by the FAA Designated Engineering Representative at the Boeing Commercial Airplane Company and coordinated with FAA Northwest Region Engineering and Manufacturing Branch ANW-210.

E. Manpower

Approximately 20 man-hours and a crew of 4 men are required to accomplish this modification per airplane.

F. Material - Price and Availability

The kits identified in Paragraph II.A. may be obtained from Boeing within the terms and conditions defined below. After expiration of the quotation, price and delivery data will be provided upon request.

The delivery quotation below indicates the date when initial kits will be available. When source capacity is limited and tooling or material availability is the pacing factor, customer purchase orders will receive an allocation, from the available quantities, based on receipt date of purchase order by the Spares Department and based on operator's planned modification schedules. It is therefore requested that customer purchase orders include planned dates of incorporation.

Kit Number	Description	Delivery	Unit Price
61B74794-629	Kit, Standard Airplanes	Available	No Charge
61B74794-630	Kit, SP Airplanes	Available	No Charge

Date February 12, 1979

The prices quoted are subject to the terms and conditions of Boeing's standard purchase order acknowledgement. Quotations are subject to acceptance within 120 days from date hereon.

Any items which are offered at "No Charge" are subject to charge after expiration of the 120-day period.

Prices quoted in United States Dollars. Terms: Net 30 days.

Address purchase orders and correspondence pertaining to this quotation to Director of Spares, and refer to this service bulletin number.

G. Tooling - Price and Availability

None

H. Weight and Balance

No Change

I. References

1. Existing Data:

   a. Engineering Change Memo PRR 79382

   b. 747 Wiring Diagram Manual Chapter 20 and Subjects 28-22-31 and 28-22-32

   c. 747 Maintenance Manual Subject 28-22-00

   d. Boeing Service Letter 747-SL-28-19, dated February 5, 1979

2. New or revised data supplied in support of this bulletin:

   None

J. Publications Affected

None

II. Material Information

A. Parts Required Per Airplane

The following kit assemblies may be obtained from Boeing as noted in Paragraph I.F.:

61B74794 - KIT, FUEL BOOST PUMP SLEEVE ADDITION

-630-629 Quantity		Part Number	Nomenclature
.	-	61B74794-629	Kit, Standard Airplane
-	.	61B74794-630	Kit, SP Airplane
.	1	61B74794-62901	Sleeve, Teflon (74 Inches, Size 4)
.	1	61B74794-62902	Sleeve, Teflon (74 Inches, Size 0)
.	1	61B74794-62903	Sleeve, Teflon (68 Inches, Size 4)
.	1	61B74794-62904	Sleeve, Teflon (68 Inches, Size 0)
.	1	61B74794-62905	Sleeve, Teflon (71 Inches, Size 4)
.	1	61B74794-62906	Sleeve, Teflon (71 Inches, Size 0)
.	1	61B74794-62907	Sleeve, Teflon (72 Inches, Size 4)
.	1	61B74794-62908	Sleeve, Teflon (72 Inches, Size 0)
1	.	61B74794-63001	Sleeve, Teflon (78 Inches, Size 4)
1	.	61B74794-63002	Sleeve, Teflon (78 Inches, Size 0)
1	.	61B74794-63003	Sleeve, Teflon (73 Inches, Size 4)
1	.	61B74794-63004	Sleeve, Teflon (73 Inches, Size 0)
1	.	61B74794-63005	Sleeve, Teflon (74 Inches, Size 4)
1	.	61B74794-63006	Sleeve, Teflon (74 Inches, Size 0)
1	.	61B74794-63007	Sleeve, Teflon (88 Inches, Size 4)
1	.	61B74794-63008	Sleeve, Teflon (88 Inches, Size 0)

B. Parts Required to Modify Spares

None

C. Special Tools and Equipment Required

None

D. Existing Parts Accountability

None

III. Accomplishment Instructions

NOTE: The following paragraphs outline the general accomplishment instructions and detailed test requirements. The suggested sequence of operations and detailed accomplishment instructions are indicated by circle notes on the figures.

A. Open the following circuit breakers:

Nomenclature	Location (Panel)
NO. 1 AFT & NO. 4 FWD BOOST PUMP CONTROL	P12
NO. 1 MAIN AFT BOOST PUMP	P14
NO. 4 MAIN FWD BOOST PUMP	P14
NO. 1 FWD & NO. 4 AFT BOOST PUMP CONTROL	P12
NO. 4 MAIN AFT BOOST PUMP	P15
NO. 1 MAIN FWD BOOST PUMP	P15
F/E IND LTS 4	P12
F/E IND LTS 5	P12

B. Remove access panel from applicable boost pump dog house (two per wing).

C. Inspect and rework wire bundle per Figures 1 and 2.

D. Confirm proper phase sequence, using 115/200v ac, 3-phase, ABC phase sequence meter, nominal 400 cps as follows:

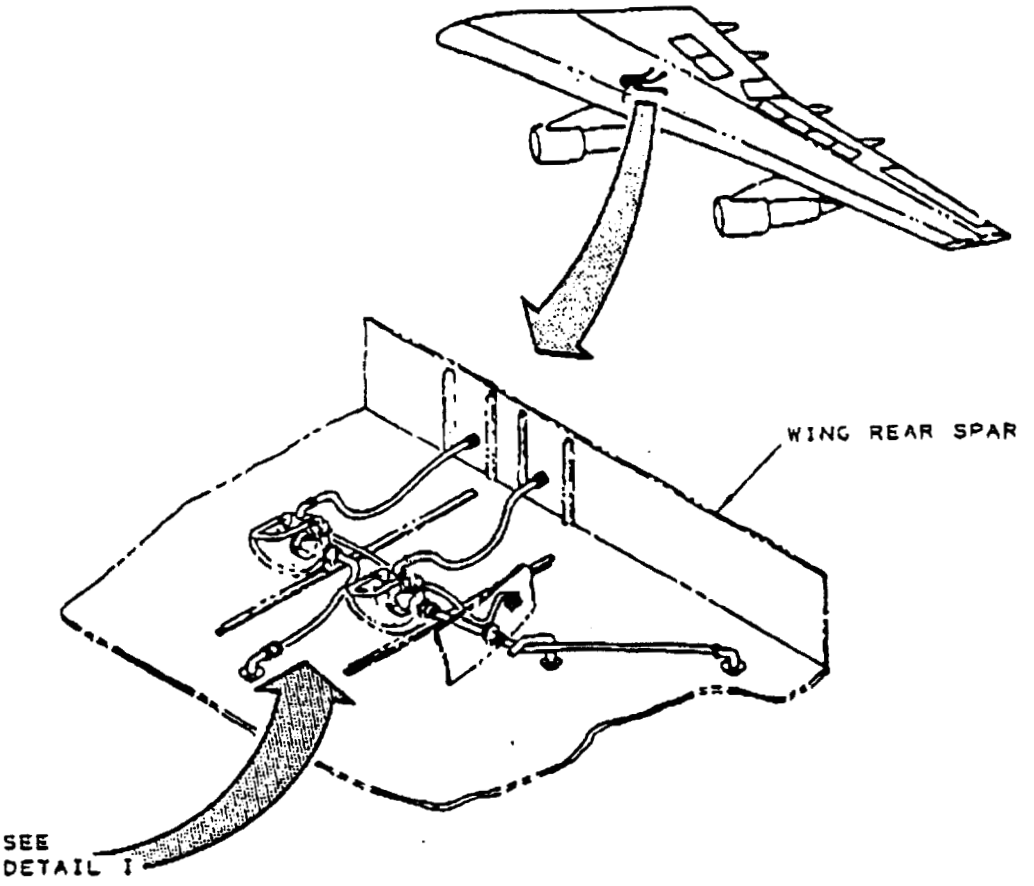
1. At each pump, before attaching the plug to the receptacle, insert phase sequencing meter.

2. Ensure that the phase sequence on the plug is A, B, C for pins No. 1, 2, and 3.

3. Check for continuity to ground on pin No. 4.

NOTE: For phase check, close only the applicable pump circuit breaker and ac bus circuit breaker prior to actuating each switch on the P4 panel.

E. Restore access panel and close circuit breakers; perform operational check of pump (Ref: 747 Maintenance Manual Subject 28-22-00).

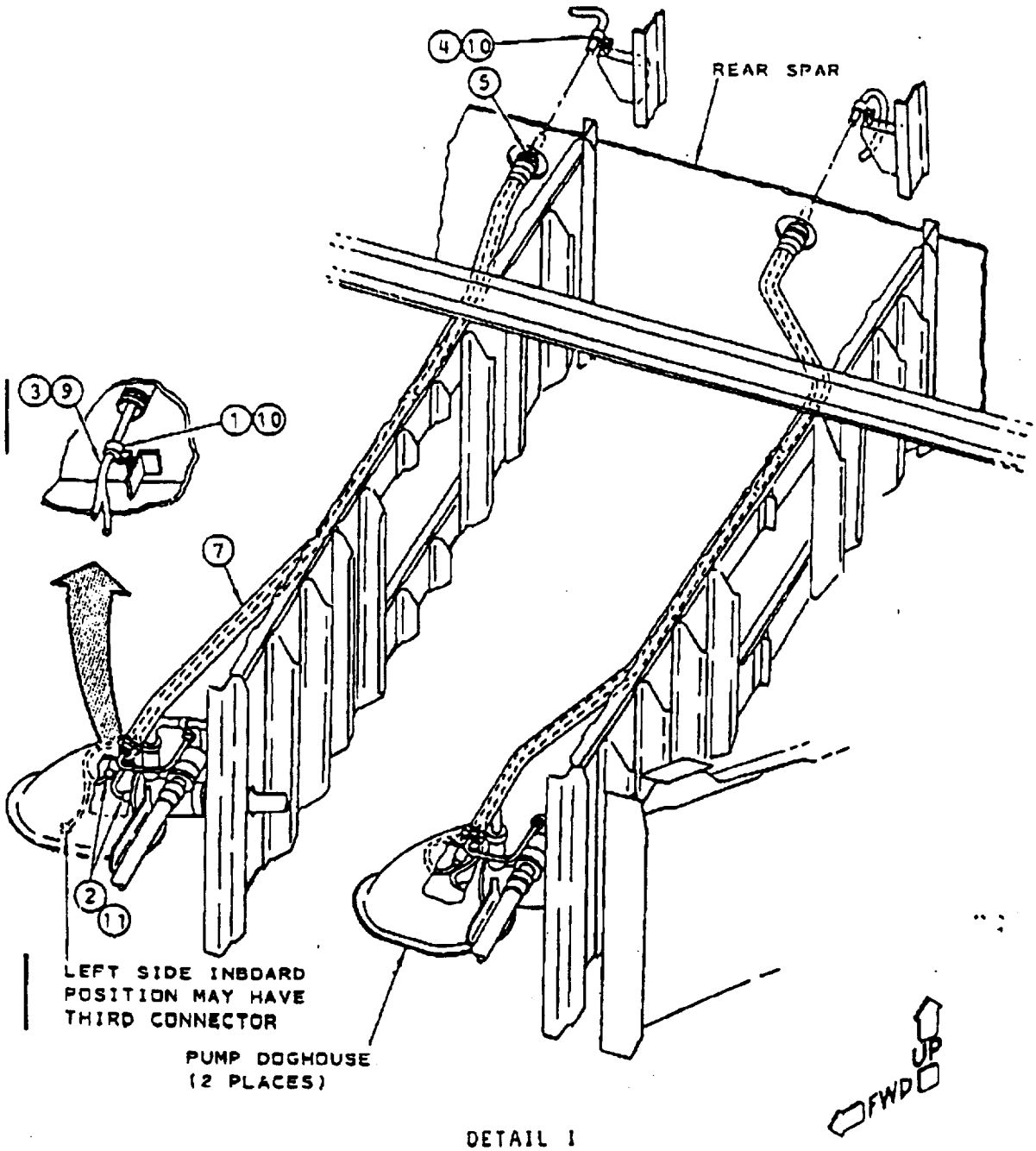


(1) Unclamp wire bundle W1210, W1214, (and W602 at left side inboard position), W1216 or W1212 inside pump doghouse (located approximately at WS708, WS680, WS680 and WS708, respectively).

(2) Disconnect pump connector DM22, DM28, DM27 or DM32 and pressure switch connector DS62, DS63 (and DS106), DS72 or DS71, respectively. Remove connectors from bundle.

(3) Attach pull cord to pump end of bundle (in order to reinstall in conduit after inspection and sleeving).

FIGURE 1. WIRE BUNDLE INSPECTION AND REWORK



DETAIL I

LEFT WING INSTALLATION SHOWN
RIGHT WING OPPOSITE

FIGURE 1. WIRE BUNDLE INSPECTION AND REWORK

(4) Remove bundle from clamp on rear side of rear spar (inboards located at approximately WS692 and outboards at WS711).

NOTES: 1. Outboard positions may require removal of second, lower clamp to allow easier handling of bundle.

2. Right side outboard position requires extra effort and time due to proximity of cable pulley.

(5) Pull bundle out of conduit from rear side of rear spar. Tie off pull cord at doghouse end so it will not be inadvertently drawn through. Remove any wire ties that served as a manufacturing facility and were inadvertently left installed on the wire bundle.

(6) NOT SHOWN - Clean wires using approved solvents (Ref: 747 Wiring Diagram Manual Chapter 20). Inspect wires for burn damage or chafing. Repair or replace damaged or chafed wire as applicable (Ref: 747 Wiring Diagram Manual Chapter 20).

NOTE: If wire replacement is required, ensure that wires are spliced at a location such that the splices will be outside of the conduit.

(7) If electrical arcing or burning is evident the conduit should be inspected, and replaced if necessary.

(8) Tie wire bundle and encase in two concentric teflon sleeves; Size #4 inner; Size #0 outer per Figure 2.

(9) Reinstall tied double-sleeved wire bundle in conduit using pull cord. Detach pull cord.

NOTE: Sleeves should extend from under pump connector clamp thru clamp on rear face of rear spar. No cutting of sleeves should be necessary; under no condition should sleeves be trimmed while on bundle.

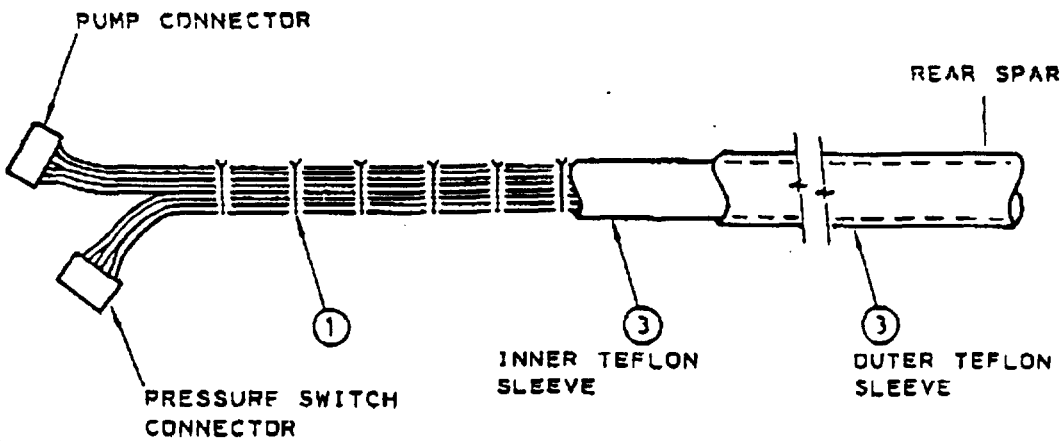
(10) Reinstall clamps, ensuring sleeving is under clamps.

NOTES: 1. Replacement of clamps with larger size may be required due to additional thickness of two sleeves.

2. Ensure, also, that wire bundles are not pulled taut inside the conduit.

(11) Reinstall connectors on wire bundle and make continuity check (Ref: 747 Wiring Diagram Manual Subjects 28-22-31 and 28-22-32.

FIGURE 1. WIRE BUNDLE INSPECTION AND REWORK



(1) Before installing sleeves on inspected/repaired wire bundle, tie bundle at 6.0 inch (maximum) intervals, using knots prescribed in 747 Wiring Diagram Manual Subject 20-10-11 (clove hitch and square knot or clove hitch and surgical knot), or the equivalent over the length to be encased in sleeve. See information below for correct sleeve part number and length for each bundle.

(2) (NOT SHOWN) - Remove pull card from end of bundle and attach second, separate pull cord.

(3) Install sleeve (size #4) over bundle using pull cord. Slide sleeve (size #3) over first sleeve.

(4) (NOT SHOWN) - Remove pull cord and reattach cord which runs through conduit.

NOTES:
1. Where 4 wire contacts (size #12) will not fit into sleeves, one wire may be bent and taped back (3 contacts will feed into sleeve and fourth will follow). Do not bend wire back sharply; maintain smooth bend.
2. "Mate - with" tag may be removed from third bundle at left inboard location to fit bundle into sleeves.

Position	Part Nos (Size 4 & Size 0) (747-100/-200)	Part Nos. (Size 4 & Size 0) (747 SP)
LS-Outboard	61B74794-62901 & -62902 (74")	61B74794-63001 & -63002 (78")
LS-Inboard	61B74794-62903 & -62904 (68")	61B74794-63003 & -63004 (73")
RS-Inboard	61B74794-62905 & -62906 (71")	61B74794-63005 & -63006 (74")
RS-Outboard	61B74794-62907 & -62908 (72")	61B74794-63007 & -63008 (88")

FIGURE 2. WIRING BUNDLE TYING AND SLEEVING