

Scandinavian Airlines System

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
CHAPTER 79 TAB			79-00-00		CONT.	79-21-00		CONT.
OIL (PW4000)			622	AUG 22/05	N01	8	AUG 10/95	N01
EFFECTIVE PAGES SEE LAST PAGE OF LIST FOR NUMBER OF PAGES			79-00-00		N01	79-21-00		N01
79-CONTENTS			701	AUG 22/99	N01	101	AUG 10/91	N01
1	DEC 22/08	NSAS	702	BLANK		102	AUG 10/91	N01
2	APR 22/00	NSAS	79-00-00		N01	103	AUG 10/94	N02
3	DEC 10/98	NSAS	901	DEC 10/98	N01	104	AUG 10/91	N01
4	APR 22/06	NSAS	902	DEC 10/98	N01	105	AUG 10/94	N01
5	DEC 10/98	NSAS	903	DEC 10/98	N01	106	BLANK	
6	BLANK		904	DEC 10/98	N01	79-21-01		
79-00-00			905	DEC 10/98	N01	401	DEC 22/00	N01
1	DEC 22/00	N01	906	BLANK		402	DEC 22/00	N01
2	BLANK		79-11-00			403	DEC 22/00	N01
79-00-00			1	AUG 10/92	N01	404	FEB 10/90	N01
201	DEC 22/00	N01	2	MAY 10/94	N01	405	AUG 10/97	N01
202	FEB 10/91	N01	79-11-00			406	AUG 10/97	N01
203	AUG 10/91	N02	101	MAY 10/94	N01	407	AUG 10/97	N01
204	MAY 10/94	N01	102	MAY 10/94	N01	408	AUG 10/97	N01
205	AUG 10/96	N01	79-11-00			409	APR 10/98	N01
206	DEC 22/00	N01	301	APR 22/99	N01	410	APR 10/98	N01
207	DEC 22/00	N01	302	BLANK		411	AUG 10/97	N01
208	DEC 22/03	N01	79-11-00			412	DEC 22/00	N01
209	DEC 22/01	N01	301	APR 22/99	N01	413	APR 22/08	N01
210	DEC 22/00	N01	302	BLANK		414	AUG 10/97	N01
211	DEC 22/00	N01	79-11-01			415	DEC 22/00	N01
212	BLANK		401	DEC 22/00	N01	416	DEC 22/00	N01
79-00-00			402	MAY 10/93	N04	417	DEC 22/00	N01
601	AUG 22/05	N01	403	FEB 10/94	N01	418	DEC 22/00	N01
602	NOV 10/96	N01	404	APR 22/01	N01	419	APR 22/08	N01
603	NOV 10/96	N01	405	DEC 22/03	N01	420	DEC 22/00	N01
604	AUG 22/01	N01	406	DEC 22/00	N01	421	DEC 22/00	N01
605	DEC 22/00	N01	407	DEC 22/00	N01	422	DEC 22/00	N01
606	DEC 22/00	N01	408	DEC 22/07	N01	423	DEC 22/00	N01
607	AUG 22/05	N01	409	AUG 22/01	N01	424	DEC 22/00	N01
608	AUG 22/05	N01	410	AUG 22/01	N01	79-21-03		
609	AUG 22/05	N01	411	AUG 22/01	N01	401	DEC 22/00	N01
610	AUG 22/05	N01	412	DEC 22/03	N01	402	DEC 22/00	N01
611	DEC 22/00	N01	413	DEC 22/00	N01	403	FEB 10/91	N01
612	AUG 22/05	N01	414	BLANK		404	MAY 10/97	N01
613	AUG 22/05	N01	79-11-03			405	DEC 22/07	N01
614	DEC 22/00	N01	201	DEC 22/01	N01	406	DEC 22/00	N01
615	AUG 22/05	N01	202	AUG 10/94	N01	407	DEC 22/00	N01
616	AUG 22/05	N01	203	MAY 10/94	N01	408	BLANK	
617	AUG 22/05	N01	204	DEC 22/01	N01	79-21-04		
618	AUG 22/05	N01	205	DEC 22/00	N01	401	DEC 22/00	N01
619	AUG 22/05	N01	206	DEC 22/00	N01	402	DEC 22/07	N02
620	AUG 22/05	N01	79-21-00			403	DEC 22/07	N02
621	AUG 22/05	N01	1	DEC 22/01	N01	404	DEC 22/07	N02
			2	DEC 22/01	N01	405	DEC 22/07	N02
			3	AUG 10/95	N01	406	DEC 22/07	N02
			4	NOV 10/87	N01	407	DEC 22/07	N02
			5	APR 22/00	N01	408	DEC 22/07	N02
			6	APR 22/00	N01	409	DEC 22/07	N02
			7	MAY 10/91	N01	410	DEC 22/07	N02
						411	DEC 22/07	N03

R = REVISED, A = ADDED OR D = DELETED
F = FOLDOUT PAGE
33
AUG 22/09

D633T133

CHAPTER 79
EFFECTIVE PAGES
N PAGE 1
CONTINUED

Scandinavian Airlines System

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
79-21-04		CONT.	79-21-09			79-21-10		CONT.
412	APR 22/08	N03	401	DEC 22/00	N01	605	AUG 22/08	N01
413	DEC 22/07	N03	402	APR 22/01	N01	606	AUG 22/08	N01
414	APR 22/08	N03	403	MAY 10/93	N01	607	AUG 22/08	N01
415	APR 22/08	N03	404	APR 22/01	N01	608	AUG 22/08	N01
416	DEC 22/07	N03	405	APR 22/01	N01	609	AUG 22/08	N01
417	DEC 22/07	N02	406	APR 22/01	N01	610	AUG 22/08	N01
418	BLANK		407	MAY 10/93	N02	611	AUG 22/08	N01
			408	MAY 10/93	N03	612	AUG 22/08	N01
79-21-05			409	MAY 10/93	N03			
401	DEC 22/00	N01	410	DEC 22/99	N01	79-21-10		
402	DEC 22/00	N01	411	APR 22/08	N03	701	AUG 22/02	N01
403	NOV 10/96	N01	412	DEC 22/00	N01	702	DEC 22/00	N01
404	NOV 10/96	N01	413	DEC 22/00	N03			
405	NOV 10/96	N01	414	APR 22/08	N03	79-21-11		
406	NOV 10/96	N01	415	APR 22/08	N03	401	DEC 22/00	N01
407	APR 22/02	N01	416	APR 22/08	N06	402	DEC 22/00	N01
408	APR 22/02	N01	417	DEC 22/00	N03	403	MAY 10/93	N01
409	APR 22/02	N01	418	DEC 22/01	N03	404	DEC 22/00	N01
410	APR 22/06	N01	419	APR 22/08	N02	405	DEC 22/00	N01
411	APR 22/02	N01	420	DEC 22/01	N02	406	FEB 10/94	N01
412	APR 22/02	N01						
413	APR 22/02	N01	79-21-10			79-21-16		
414	APR 22/02	N01	401	APR 22/07	N01	401	DEC 22/00	N01
415	APR 22/02	N01	402	APR 22/07	N01	402	DEC 22/07	N01
416	APR 22/02	N01	403	APR 22/07	N01	403	AUG 10/93	N01
417	APR 22/02	N01	404	APR 22/07	N01	404	AUG 10/93	N01
418	BLANK		405	APR 22/07	N01	405	DEC 22/00	N01
			406	APR 22/07	N01	406	AUG 10/93	N01
79-21-05			407	APR 22/07	N01	407	AUG 10/93	N01
601	DEC 22/00	N01	408	APR 22/07	N01	408	DEC 22/00	N01
602	DEC 22/00	N01	409	APR 22/07	N01	409	DEC 22/00	N01
603	DEC 22/00	N01	410	APR 22/07	N01	410	DEC 22/00	N01
604	DEC 22/00	N01	411	APR 22/07	N01	411	DEC 22/00	N01
605	DEC 22/00	N01	412	APR 22/07	N01	412	DEC 22/00	N01
606	BLANK		413	APR 22/07	N01	413	DEC 22/07	N01
			414	APR 22/07	N01	414	AUG 10/93	N01
79-21-06			415	APR 22/07	N01	415	DEC 22/07	N01
401	DEC 22/00	N01	416	APR 22/07	N01	416	DEC 22/07	N01
402	FEB 10/91	N01	417	APR 22/07	N01	417	DEC 22/00	N01
403	DEC 22/00	N01	418	APR 22/07	N01	418	DEC 22/00	N01
404	DEC 22/00	N01	419	APR 22/07	N01	419	DEC 22/00	N01
405	DEC 22/00	N01	420	APR 22/07	N01	420	DEC 22/00	N01
406	BLANK		421	APR 22/07	N01	421	DEC 22/00	N01
			422	APR 22/07	N01	422	DEC 22/00	N01
79-21-07			423	APR 22/07	N01	423	DEC 22/00	N01
401	DEC 22/00	N01	424	APR 22/07	N01	424	DEC 22/00	N01
402	AUG 10/96	N01	425	APR 22/07	N01	425	DEC 22/00	N01
403	DEC 22/00	N01	426	APR 22/07	N01	426	BLANK	
404	APR 22/08	N01	427	APR 22/07	N01			
405	APR 22/08	N01	428	APR 22/07	N01	79-21-16		
406	DEC 22/00	N01	429	APR 22/07	N01	601	DEC 22/00	N01
407	DEC 22/00	N01	430	APR 22/07	N01	602	DEC 22/00	N01
408	BLANK					603	DEC 22/00	N01
			79-21-10			604	DEC 22/00	N01
			601	AUG 22/05	N01	605	DEC 22/00	N01
			602	AUG 22/05	N01	606	BLANK	
			603	AUG 22/05	N01			
			604	AUG 22/08	N01			

R = REVISED, A = ADDED OR D = DELETED
F = FOLDOUT PAGE
33
AUG 22/09

D633T133

CHAPTER 79
EFFECTIVE PAGES
N PAGE 2
CONTINUED

Scandinavian Airlines System

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
79-21-16			79-32-00			79-34-00		
701	DEC 22/00	N01	1	AUG 10/92	N01	101	FEB 10/95	N01
702	DEC 22/00	N01	2	MAY 10/94	N02	102	FEB 10/95	N02
703	DEC 22/00	N01	3	MAY 10/88	N01			
704	BLANK		4	BLANK		79-34-00		
						501	APR 22/02	N01
79-21-17			79-32-00			502	FEB 10/96	N01
401	DEC 22/00	N01	101	MAY 10/94	N01	503	APR 22/02	N01
402	DEC 22/00	N01	102	MAY 10/94	N01	504	BLANK	
403	AUG 10/97	N01						
404	AUG 10/97	N01	79-32-00			79-34-01		
405	AUG 10/97	N01	501	DEC 22/00	N01	401	APR 22/02	N01
406	AUG 22/99	N01	502	MAY 10/94	N02	402	MAY 10/91	N02
407	DEC 22/00	N01	503	DEC 22/00	N01	403	DEC 22/00	N02
408	APR 22/08	N01	504	APR 22/02	N01	404	DEC 22/00	N02
409	DEC 22/00	N01				405	DEC 22/00	N02
410	APR 22/08	N01	79-32-01			406	DEC 22/00	N01
411	AUG 10/97	N01	401	DEC 22/00	N01			
412	DEC 22/00	N01	402	MAY 10/94	N02	79-35-00		
413	DEC 22/00	N01	403	MAY 10/94	N02	1	AUG 10/92	N01
414	BLANK		404	DEC 22/00	N01	2	NOV 10/94	N01
			405	DEC 22/00	N01	3	NOV 10/94	N01
79-31-00			406	DEC 22/00	N01	4	NOV 10/94	N01
1	AUG 10/95	N01	407	DEC 22/00	N01			
2	AUG 10/94	N01	408	BLANK		79-35-00		
3	NOV 10/87	N01				101	NOV 10/94	N01
4	BLANK		79-33-00			102	NOV 10/94	N01
			1	DEC 22/00	N01	103	NOV 10/94	N01
79-31-00			2	MAY 10/94	N01	104	BLANK	
101	AUG 10/94	N01	3	MAY 10/88	N01			
102	AUG 10/94	N01	4	BLANK		79-35-00		
						501	DEC 22/99	N01
79-31-00			79-33-00			502	APR 22/02	N01
501	DEC 22/00	N01	101	MAY 10/94	N01	503	DEC 22/99	N01
502	DEC 22/00	N01	102	MAY 10/94	N01	504	DEC 22/99	N01
503	DEC 22/03	N01	103	MAY 10/94	N01	505	APR 22/09	N01
504	DEC 22/00	N01	104	BLANK		506	APR 22/09	N01
505	DEC 22/00	N01				507	APR 22/08	N01
506	BLANK		79-33-00			508	APR 22/08	N01
			501	DEC 22/00	N01	509	APR 22/08	N01
79-31-01			502	MAY 10/94	N01	510	BLANK	
401	DEC 22/00	N01	503	DEC 22/00	N01			
402	DEC 22/00	N01	504	DEC 22/00	N01	79-35-01		
403	NOV 10/94	N01	505	DEC 22/00	N01	401	DEC 22/00	N01
404	APR 22/06	N01	506	BLANK		402	NOV 10/94	N01
405	DEC 22/00	N01				403	NOV 10/94	N01
406	DEC 22/00	N01	79-33-01			404	DEC 22/00	N01
			401	DEC 22/00	N01	405	DEC 22/00	N01
79-31-02			402	MAY 10/94	N01	406	DEC 22/00	N01
401	DEC 22/00	N01	403	DEC 22/00	N01	407	DEC 22/00	N01
402	AUG 10/94	N01	404	DEC 22/00	N01	408	NOV 10/97	N01
403	DEC 22/00	N01	405	DEC 22/00	N01			
404	DEC 22/00	N01	406	BLANK				
405	DEC 22/00	N01						
406	BLANK		79-34-00					
			1	DEC 22/00	N01			
			2	MAY 10/91	N02			
			3	AUG 10/90	N02			
			4	AUG 10/92	N01			

R = REVISED, A = ADDED OR D = DELETED
F = FOLDOUT PAGE
33
AUG 22/09

D633T133

CHAPTER 79
EFFECTIVE PAGES
N PAGE 3
LAST PAGE

CHAPTER 79 - OIL

TABLE OF CONTENTS

<u>Subject</u>	Chapter Section <u>Subject</u>	<u>Page</u>	<u>Effectivity</u>
<u>OIL</u>	79-00-00		
Description and Operation		1	ALL
General		1	
Maintenance Practices		201	ALL
Inspection/Check		601	ALL
Cleaning/Painting		701	ALL
DDG Maintenance Procedures		901	ALL
General		901	
DDG 79-31-1 Preparation - Oil		901	
Quantity Indications			
Inoperative			
DDG 79-34-1 Preparation - Engine		903	
Bearing No. 3 Scavenge Oil Temp			
DDG 79-35-1 Preparation - Oil		904	
Filter Bypass Warning System			
 <u>STORAGE</u>	79-10-00		
ENGINE OIL STORAGE	79-11-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
Engine Oil Tank		1	
Engine Oil Tank Fill and		1	
Drain Features			
Component Location		101	ALL
Component Index			
Component Location			
Servicing		301	ALL
CAP - OIL TANK	79-11-03		
Maintenance Practices		201	ALL
TANK - ENGINE OIL	79-11-01		
Removal/Installation		401	ALL
 <u>DISTRIBUTION</u>	79-20-00		

CHAPTER 79 - OIL

TABLE OF CONTENTS

<u>Subject</u>	<u>Chapter Section Subject</u>	<u>Page</u>	<u>Effectivity</u>
OIL DISTRIBUTION SYSTEM	79-21-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
Air/Oil Heat Exchanger		1	
Air/Oil Heat Exchanger Valve		5	
Deoiler		6	
Fuel/Oil Cooler		5	
Fuel/Oil Cooler Bypass Valve		5	
Fuel/Oil Cooler Bypass Valve Solenoid		6	
Last Chance Oil Strainers		6	
Lubrication and Scavenge Oil Pump		6	
Magnetic Chip Detectors		6	
Main Oil Filter		1	
Main Oil Filter		1	
Main Oil Filter Bypass Valve		1	
Oil System Pressure (Regulator) Relief Valve		1	
Operation		8	
Functional Description		8	
Component Location		101	ALL
Component Index			
Component Location			
ASSEMBLY - MAIN BEARING STRAINER HOUSING	79-21-17		
Removal/Installation		401	ALL
DETECTOR - MAGNETIC CHIP	79-21-10		
Removal/Installation		401	ALL
Inspection/Check		601	ALL
Cleaning/Painting		701	ALL
EXCHANGER AND VALVE - AIR/OIL HEAT	79-21-09		
Removal/Installation		401	ALL
FILTER - MAIN OIL	79-21-05		
Removal/Installation		401	ALL
Inspection/Check		601	ALL
PUMP - LUBRICATION AND SCAVENGE OIL	79-21-04		
Removal/Installation		401	ALL

CHAPTER 79 - OIL

TABLE OF CONTENTS

<u>Subject</u>	<u>Chapter Section Subject</u>	<u>Page</u>	<u>Effectivity</u>
SOLENOID - FUEL/OIL COOLER BYPASS VALVE	79-21-03		
Removal/Installation		401	ALL
STRAINER - LAST CHANCE OIL	79-21-16		
Removal/Installation		401	ALL
Inspection/Check		601	ALL
Cleaning/Painting		701	ALL
VALVE - FUEL/OIL COOLER AND FUEL/OIL BYPASS	79-21-01		
Removal/Installation		401	ALL
VALVE - MAIN OIL FILTER PRESSURE RELIEF	79-21-06		
Removal/Installation		401	ALL
VALVE - NO. 3 BEARING BREATHER AND RESTRICTOR	79-21-11		
Removal/Installation		401	ALL
VALVE - OIL SYSTEM PRESSURE (REGULATOR) RELIEF	79-21-07		
Removal/Installation		401	ALL
<u>INDICATING</u>	79-30-00		
OIL QUANTITY INDICATING SYSTEM	79-31-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
Oil Quantity Indication		1	
Oil Quantity Transmitter		1	
Oil Tank Sight Gage		1	
Operation		1	
Functional Description		1	
Component Location		101	ALL
Component Index			
Component Location			
Adjustment/Test		501	ALL
GAGE - ENGINE OIL TANK SIGHT	79-31-02		
Removal/Installation		401	ALL
TRANSMITTER - OIL QUANTITY	79-31-01		
Removal/Installation		401	ALL

CHAPTER 79 - OIL

TABLE OF CONTENTS

<u>Subject</u>	Chapter Section <u>Subject</u>	<u>Page</u>	<u>Effectivity</u>
OIL PRESSURE INDICATING SYSTEM	79-32-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
Oil Pressure Indication		1	
Oil Pressure Transmitter		1	
Operation		1	
Functional Description		1	
Component Location		101	ALL
Component Index			
Component Location			
Adjustment/Test		501	ALL
TRANSMITTER - OIL PRESSURE	79-32-01		
Removal/Installation		401	ALL
LOW OIL PRESSURE WARNING SYSTEM	79-33-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
Low Oil Pressure Indication		1	
Low Oil Pressure Warning		1	
Switch			
Operation		1	
Functional Description		1	
Component Location		101	ALL
Component Index			
Component Location			
Adjustment/Test		501	ALL
SWITCH - LOW OIL PRESSURE	79-33-01		
WARNING			
Removal/Installation		401	ALL
OIL TEMPERATURE INDICATING SYSTEM	79-34-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
EEC Oil Temperature		1	
Thermocouple Probe			
No. 3 Bearing Oil		1	
Temperature Sensor			
Oil Temperature Indication		1	
Operation		4	
Functional Description		4	

CHAPTER 79 - OIL

TABLE OF CONTENTS

<u>Subject</u>	Chapter Section <u>Subject</u>	<u>Page</u>	<u>Effectivity</u>
Component Location		101	ALL
Component Index			
Component Location			
Adjustment/Test		501	ALL
SENSOR - NO. 3 BEARING OIL	79-34-01		
TEMPERATURE			
Removal/Installation		401	ALL
OIL FILTER BYPASS WARNING SYSTEM	79-35-00		
Description and Operation		1	ALL
General		1	
Component Details		1	
EICAS Indication		1	
Oil Filter Differential		1	
Pressure Switch			
Operation		1	
Functional Description		1	
Component Location		101	ALL
Component Index			
Component Location			
Adjustment/Test		501	ALL
SWITCH - OIL FILTER DIFFERENTIAL	79-35-01		
PRESSURE			
Removal/Installation		401	ALL

OIL - DESCRIPTION AND OPERATION

1. General

- A. The engine oil system supplies oil to lubricate, clean and decrease the temperature of the engine main bearings, gearbox gear trains and accessory drives. One more function of the engine oil system is to send the oil back to the oil tank through a scavenge system.
- B. Each engine has an independent oil system which includes an oil storage system, distribution system, and indicating systems.
- C. The oil storage system, (AMM 79-11-00) includes an oil tank with safety qualities, oil fill and drain qualities, and oil quantity indicators.
- D. The oil distribution system (AMM 79-21-00) includes pressure, scavenge, and breather sub-systems. These sub-systems are the lubrication and scavenge oil pump, oil filter bypass and pressure relief valves, air/oil heat exchanger and valve, fuel/oil cooler and bypass valve, last chance oil strainers, and magnetic chip detectors.
- E. Engine oil indicating systems monitor the items that follow:
 - (1) Oil quantity (AMM 79-31-00)
 - (2) Oil pressure (AMM 79-32-00)
 - (3) Low oil pressure warning (AMM 79-33-00)
 - (4) Oil temperature (AMM 79-34-00)
 - (5) Oil filter bypass (AMM 79-35-00)

EFFECTIVITY

ALL

79-00-00

N01

Page 1
Dec 22/00

OIL - MAINTENANCE PRACTICES (HOT OIL FLUSH)

1. General

- A. This procedure has the data to flush the hot oil through the engine oil system. This procedure is not the usual procedure. This procedure is only necessary when there is a large quantity of contamination.

TASK 79-00-00-172-001-N00

2. Flush the Hot Oil Through the Engine Oil System

A. Equipment

- (1) The items that follow are Pratt & Whitney equipment, Pratt & Whitney, East Hartford, CT 06108
(a) Hot oil cart - CTE9060
(b) Adapter - PWA 85525
(c) Adapter - PWA 85526

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
(2) D00247 Antigalling Compound - PWA 586

C. References

- (1) AMM 12-13-01/301, Engine
(2) AMM 71-00-00/201, Power Plant
(3) AMM 71-11-04/201, Fan Cowl Panels
(4) AMM 71-11-06/201, Core Cowl Panels
(5) AMM 78-31-00/201, Thrust Reverser Systems
(6) AMM 79-11-03/201, Engine Oil Tank Cap

D. Access

- (1) Location Zones
410 Left Engine
420 Right Engine

(2) Access Panels
415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

E. Prepare the Hot Oil Cart to Flush the Hot Oil

S 842-002-N00

- (1) Drain all remaining water or contamination from the reservoir, the lines, and the hydraulic system.

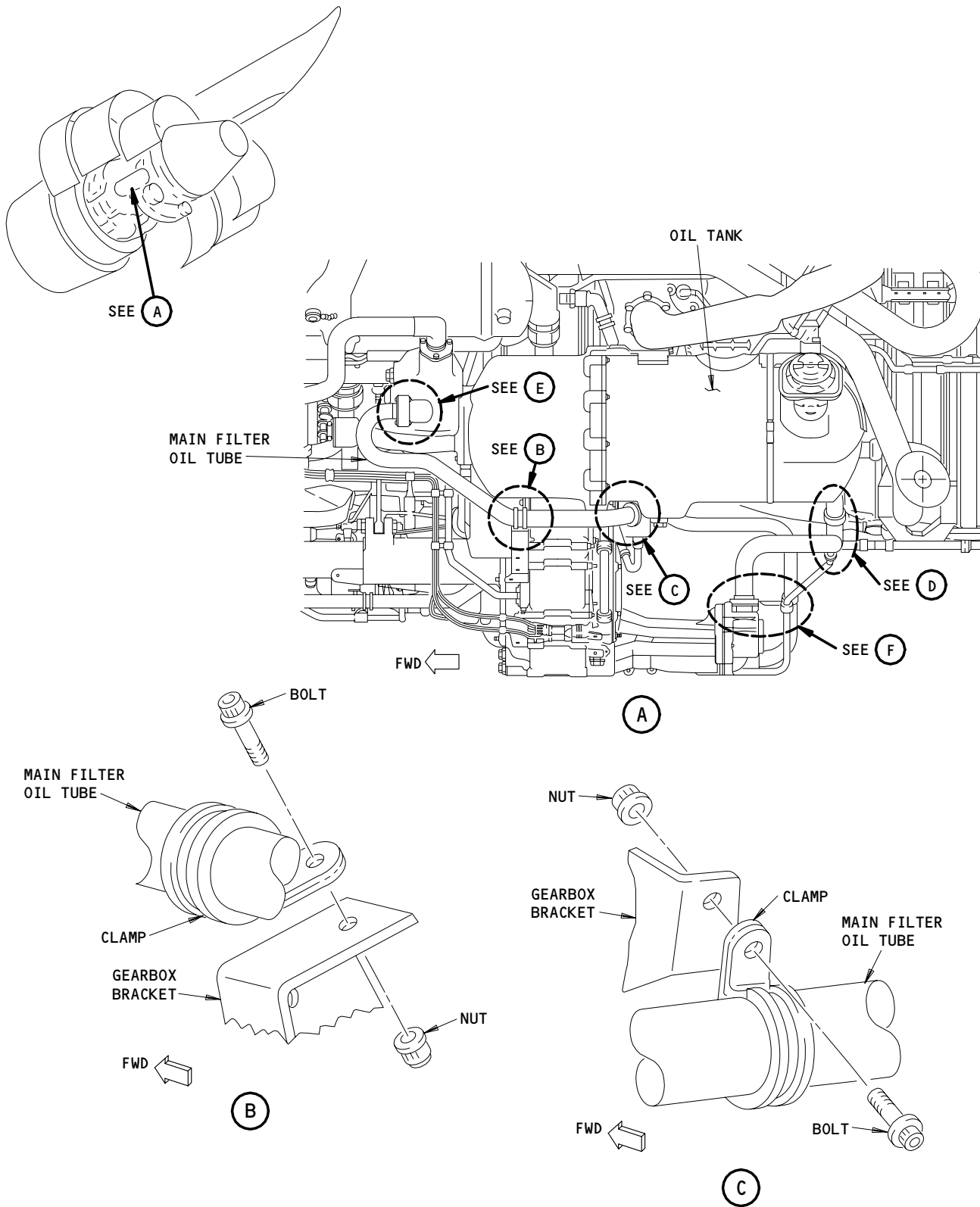
EFFECTIVITY

ALL

79-00-00

N01

Page 201
Dec 22/00



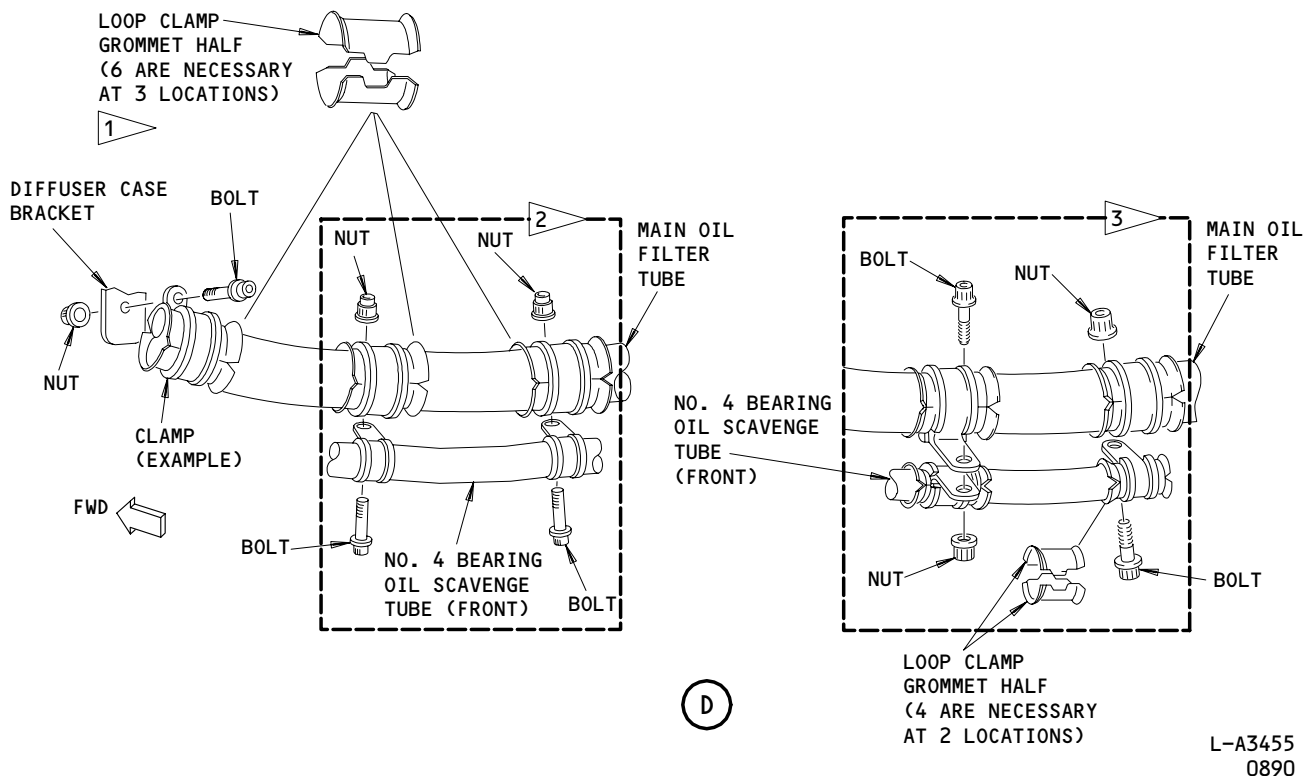
Main Oil Filter Tube Installation
Figure 201 (Sheet 1)

EFFECTIVITY	
	ALL

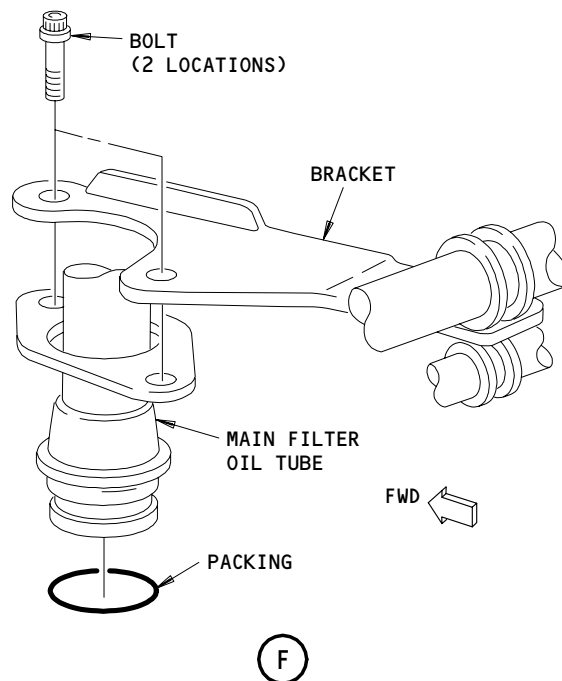
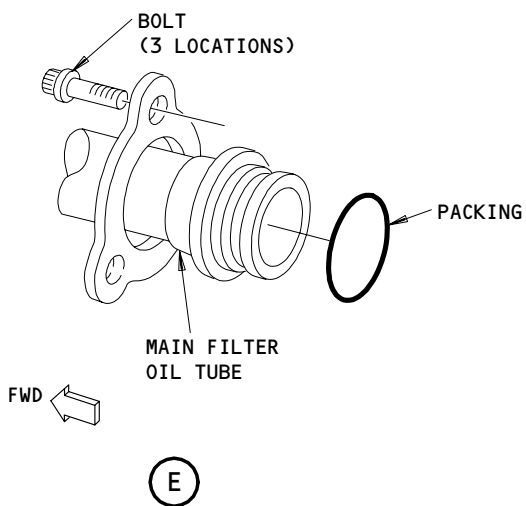
79-00-00

N01

Page 202
Feb 10/91



L-A3455
0890



L-A3455
0589

- 1 ENGINES WITH PW SB 79-36
- 2 ENGINES WITHOUT PW SB 79-46
- 3 ENGINES WITH PW SB 79-46

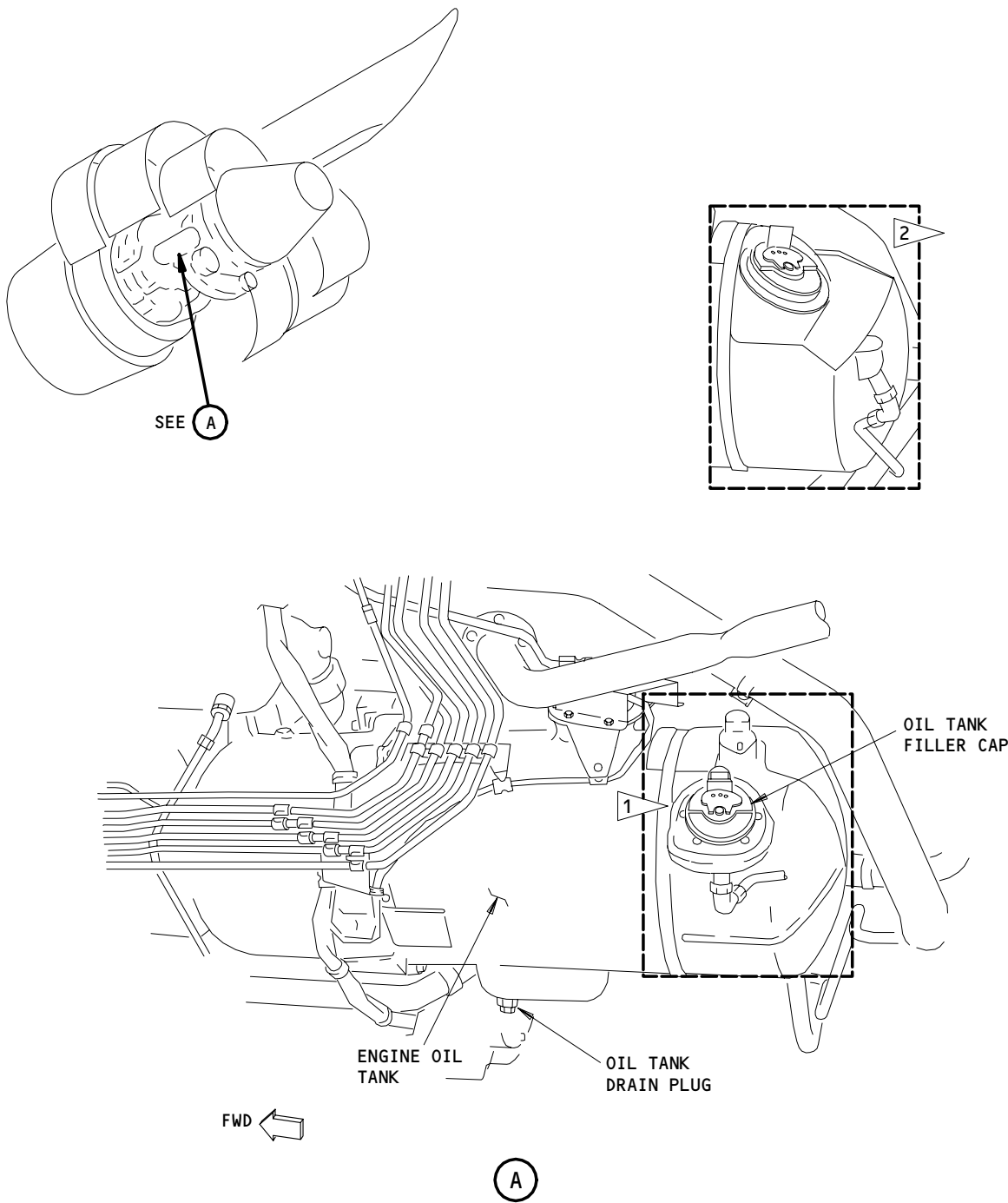
Main Oil Filter Tube Installation
Figure 201 (Sheet 2)

EFFECTIVITY	
	ALL

79-00-00

N02

Page 203
Aug 10/91



- 1 ENGINES WITHOUT PW SB 79-65
- 2 ENGINES WITH PW SB 79-65

Oil Tank Servicing
Figure 202

EFFECTIVITY	
	ALL

79-00-00

N01

Page 204
May 10/94

299441

S 842-003-N00
(2) Close the outlet valve from the reservoir.

S 842-004-N00
(3) Remove the cap from the connection to fill the reservoir.

NOTE: You can fill the reservoir through the inlet line if it is easier.

S 842-005-N00
(4) Connect the oil supply line to the connection.

S 842-006-N00
(5) Open the vent valve and the inlet valve.

S 842-007-N00
(6) Fill the reservoir with approximately fifty gallons (189 liters) of the jet engine oil, or until the oil flows out from the vent.

NOTE: You must use the engine oil of the same type and manufacturer to fill the hot oil cart.

S 842-008-N00
(7) Close the inlet valve.

S 842-009-N00
(8) Put a cap on the connection.

S 842-010-N00
(9) Set the temperature controller in the control cabinet at 300°F (149°C).

S 842-011-N00

WARNING: DO NOT CONNECT OR DISCONNECT THE ELECTRICAL LEADS TO THE CART OR OPEN THE CONTROL CABINET UNLESS THE POWER SUPPLY IS OFF. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(10) Connect the electrical leads from the cart to the power supply.

NOTE: When you increase the temperature of the oil in the reservoir, initially set the temperature controller at 225°F (107.2°C). Let the temperature become stable for approximately one hour, or until the water becomes gas and goes through the vent, before you increase the temperature to 300°F (149°C).

EFFECTIVITY

ALL

79-00-00

N01

Page 205
Aug 10/96

S 842-012-N00

- (11) Energize the electrical circuits of the cart in this sequence:
- (a) Power supply
 - (b) Circulating pump
 - (c) Heating elements.

S 842-013-N00

CAUTION: DO NOT PERMIT A TEMPERATURE OF THE OIL MORE THAN 310 F (154 C). THE TEMPERATURE INDICATOR AND TEMPERATURE CONTROLLER HAVE A RED LINE AT 310°F (154°C) TO PREVENT ACCIDENTAL TEMPERATURES WHICH ARE TOO HIGH. IF YOU GET A TEMPERATURE MORE THAN 310 F (154 C), YOU WILL GET COKE ON THE HEATING ELEMENTS.

- (12) Let the temperature become stable at the temperature which was set until you are prepared to fill the engine.

NOTE: Examine the flow of oil from the vent when you get to the temperature which was set. If it is necessary, add the oil to fill the reservoir to the top.

F. Prepare to Flush the Hot Oil from the Engine

S 012-014-N00

- (1) Open the fan cowl panels (AMM 71-11-04/201).

S 042-015-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 012-016-N00

- (3) Open the core cowl panels (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 206
Dec 22/00

S 012-017-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).
- G. Flush the Hot Oil through the Engine Oil System (Fig. 201 and 202)

S 032-018-N00

- (1) Remove the tube assembly of the main oil filter with the steps that follow:
 - (a) Remove the bolts which attach the forward end of the tube to the main oil filter.
 - (b) Remove the bolts which attach the rear end of the tube to the top of the oil pump.
 - (c) Remove the bolts, nuts, and clamps which attach the tube to the gearbox brackets.
 - (d) Remove the bolt, nut, and clamp which attach the tube to the diffuser case bracket and to the oil scavenge tube for the No. 4 bearing.
 - (e) Remove the tube from the engine.
 - 1) Discard the packings.
 - (f) Install the protection caps.

S 492-019-N00

- (2) Install the PWA 85525 adapter to the pad on the housing of the main oil filter with the bolts.

NOTE: Make sure the packing is installed on the adapter before the installation.

S 492-020-N00

- (3) Install the PWA 85526 Adapter to the pad on the top, rear of the oil pump with the bolts.

NOTE: Make sure the packing is installed on the adapter before the installation.

EFFECTIVITY

ALL

79-00-00

N01

Page 207
Dec 22/00

- S 612-021-N00
- (4) Drain and fill the engine oil tank with the steps that follow:
- (a) Remove the cap from the engine oil tank (AMM 79-11-03/201).
 - (b) Put the containers below the drain plug of the engine oil tank.
 - (c) Remove the drain plug from the bottom of the oil tank to drain the engine oil.
 - 1) Discard the packing.
 - (d) Let the oil drain from the engine oil tank.
 - (e) Lubricate the new packing for the drain plug with oil.
 - (f) Install the new packing on the drain plug.
 - (g) Install the drain plug in the oil tank.
 - (h) Tighten the drain plug to 200-225 pound-inches (22.6-25.4 newton-meters).
 - (i) Do the servicing procedure for the engine oil tank (AMM 12-13-01/301).
- S 842-022-N00
- (5) Stop the heat cycle on the cart.
- S 092-023-N00
- (6) Disconnect the electrical leads from the cart.
- S 092-024-N00
- (7) Remove the cart from the area.
- (a) Install all caps, plugs and covers on the lines and the hydraulic system of the cart.
- S 492-025-N00
- (8) Connect the outlet hose from the cart to the adapter on the housing of the main oil filter.
- S 492-026-N00
- (9) Connect the inlet hose from the cart to the adapter on the top rear of the oil pump.
- S 842-027-N00
- (10) Close the vent valve on the reservoir.
- S 842-028-N00
- (11) Open the inlet valve and the outlet valve to the reservoir.

EFFECTIVITY

ALL

79-00-00

N01

Page 208
Dec 22/03

S 862-029-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

CAUTION: MAKE SURE THE RESERVOIR IS FULL, THE INLET VALVES AND THE OUTLET VALVES ARE OPEN, AND THE VENT VALVE IS CLOSED. IF YOU DO NOT OBEY THESE INSTRUCTIONS, YOU CAN CAUSE DAMAGE TO THE BEARINGS WHEN YOU MOTOR THE ENGINE.

(12) Use the Power Plant Dry-Motor procedure to motor the engine for a minimum of three minutes (AMM 71-00-00/201).

S 212-030-N00

(13) Monitor the pressure in the reservoir as it increases and becomes stable during the time you motor the engine.

S 862-031-N00

(14) Use the Power Plant Dry-Motor procedure to do the engine shutdown (AMM 71-00-00/201).

S 092-032-N00

CAUTION: DO NOT GET THE HOT OIL ON YOU WHEN YOU TOUCH THE FITTINGS AND THE LINES. THE HOT OIL FROM THE SYSTEM CAN CAUSE INJURY TO YOU.

(15) Disconnect the inlet lines and the outlet lines from the housing of the main oil filter and from the top rear of the oil pump housing.

S 092-033-N00

(16) Remove the adapters from the housing of the main oil filter and the top rear of the oil pump housing.

EFFECTIVITY

ALL

79-00-00

N01

Page 209
Dec 22/01

S 432-034-N00

- (17) Install the tube assembly for the main oil filter with the steps that follow:
- (a) Remove the protection caps.
 - (b) Lubricate the new packings for the ends of the tube for the main oil filter with oil.
 - (c) Install the new packings to the grooves on the two ends of the tube.
 - (d) Install the tube to the port on the housing of the main oil filter and the port on the top rear of the oil pump.
 - (e) Lubricate the threads of the bolts, which attach the tube to the housing, with oil.
 - (f) Attach the flange of the tube on the forward end to the housing with the bolts.
 - 1) Tighten the bolts with your hand.
 - (g) Lubricate the threads of the bolts, which attach the rear end of the tube, with antigalling compound.
 - (h) Attach the rear end of the tube and the bracket to the oil pump with the bolts.
 - 1) Tighten the bolts with your hand.
 - (i) Lubricate the threads of the bolts, which attach the gearbox brackets, with oil.
 - (j) Install the clamps, bolts and nuts to attach the tube to the gearbox brackets.
 - 1) Tighten the nuts with your hand.
 - (k) Lubricate the threads of the bolts, which attach the tube to the diffuser case bracket and the oil scavenge tube for the No. 4 bearing, with oil.
 - (l) Install the clamps, bolts and nuts which attach the tube to the diffuser case bracket and to the oil scavenge tube.

NOTE: Make sure the grommet halves of the loop clamps are only installed below the clamp locations as shown in Fig. 201.

- (m) Tighten all clamp bolts to 36-40 pound-inches (4.1-4.5 newton-meters).
- (n) Tighten the bolts which attach the tube to the housing for the main oil filter to 85-95 pound-inches (9.6-10.7 newton-meters).

EFFECTIVITY

ALL

79-00-00

N01

Page 210
Dec 22/00

- (o) Tighten the bolts which attach the tube to the main oil pump to 62-72 pound-inches (7.0-8.1 newton-meters).
- H. Put the Airplane Back to Its Usual Condition

S 412-035-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

S 412-036-N00

- (2) Close the core cowl panels (AMM 71-11-06/201).

S 412-037-N00

- (3) Close the fan cowl panels (AMM 71-11-04/201).

S 442-038-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 211
Dec 22/00

OIL - INSPECTION/CHECK

1. General

- A. This procedure has three tasks. The first task does an inspection of the oil system tubing for damage. The second task does an inspection of the oil system components. The last task does a leak detection inspection of the oil system.
- B. You can get access to the oil system tubes when you open the thrust reversers.
- C. When the engine turns for an extended time at speeds less than idle (i.e. extended start/shutdown, windmilling), it is possible for the oil to go through the No. 2 bearing carbon seal assembly. After an engine shutdown, this oil can drain and will show on the retention bolts of the variable stator vane at the bottom of the engine. This small quantity of oil leakage is permitted and no corrective action is necessary.

TASK 79-00-00-216-001-N00

2. Do the Inspection of the Oil System Tubing

- A. References
 - (1) AMM 71-11-04/201, Fan Cowl Panels
 - (2) AMM 71-11-06/201, Core Cowl Panels
 - (3) AMM 78-31-00/201, Thrust Reverser System
 - (4) AMM 79-11-00/001, Engine Oil System
- B. Access
 - (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
 - (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 416AR Fan Reverser (Right)
 - 425AL Fan Reverser (Left)
 - 426AR Fan Reverser (Right)
- C. Prepare to Examine the Oil System Tubes

S 046-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 601
Aug 22/05

S 016-002-N00

- (2) Open the left fan cowl panels (AMM 71-11-04/201).

S 016-004-N00

- (3) Open the left core cowl panels (AMM 71-11-06/201).

S 016-005-N00

WARNING: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).

D. Examine the Oil System Tubing

S 216-007-N00

- (1) Examine the tubes of the oil system for condition and if they are attached correctly.
 - (a) Visually examine the external oil system tubes for damage. See Table 601.

NOTE: It is not necessary to remove the tube to do the inspection to make sure the tube condition is satisfactory. Oil system tube dents are permitted for continued service if, visually, the tube OD is seen to not be decreased by more than 20 percent at any one location.
The Inspection Reference Table that follows is to help you identify specified areas and conditions whenever maintenance time permits inspection. Tube inspection should not be done only on the basis of this table. Table 601 does not imply that items or conditions listed are all-inclusive. Experience and judgement will continue to be an important part of any inspection program.

EFFECTIVITY

ALL

79-00-00

N01

Page 602
Nov 10/96

Table 601 - Inspection Reference Table Continue In Service Limits For The Oil System Tubes		
ITEM	INSPECT FOR	CONTINUE IN SERVICE LIMITS
Oil System Tubes	Cracks	None Permitted
	Corrosion and Stains	Permitted if it can be removed by light polishing with crocus cloth
	Loose Tube Nuts	None Permitted
	Loose or Broken Lockwire	None Permitted
	Nicks, Scratches, Chafing and Pitting	0.003 inch (0.076mm) maximum depth permitted in all locations
	Dents (without sharp edges or corners)	Permitted if the tubing OD is not decreased by more than 20 percent at each location. No dents permitted within 0.25 inch (6.25 mm) or less from the tube ferrule.
	Dents (with sharp edges or corners)	None Permitted

- (b) Visually examine the external oil system tubes for 0.125 inch (3.175 mm) minimum clearance to adjacent tubes or structure.
 - 1) Minimum clearance between any two adjacent tubes or between one single tube and any other adjacent engine part shall be 0.125 inch (3.175 mm) unless otherwise specified. Exceptions to this clearance requirement are permitted at specified locations where adjacent tubes are clipped together or where other local constraints will prevent tube contact at clearances below 0.125 inch (3.175 mm) minimum.
 - 2) Minimum clearance refers only to clearance relative to tube and not to fittings or other attached hardware.
- (c) Examine the tubes to make sure they are correctly attached at all support locations.
 - 1) Replace all worn clamps.

EFFECTIVITY

ALL

79-00-00

N01

Page 603
Nov 10/96

- 2) Tighten all loose clamp bolts and brackets at all support points along the tube length.
- 3) Tighten all loose tube fittings.
- (d) Examine the oil system tube connections, tube or manifold to component connections, and tube to case boss connections for leaks and loose connections.
 - 1) No leaks or loose connections permitted.
 - 2) Make all corrections as necessary.
- E. Put the airplane back to its initial condition

S 416-020-N00

WARNING: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

S 416-021-N00

- (2) Close the core cowl panels (AMM 71-11-06/201).

S 416-022-N00

- (3) Close the fan cowl panels (AMM 71-11-04/201).

S 446-023-N00

- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

TASK 79-00-00-216-024-N00

3. Do the Inspection of the Oil System Components

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

EFFECTIVITY

ALL

79-00-00

N01

Page 604
Aug 22/01

- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 416AR Fan Reverser (Right)
 - 425AL Fan Reverser (Left)
 - 426AR Fan Reverser (Right)

C. Prepare to Examine the Oil System Components

S 016-025-N00

- (1) Open the fan cowl panels (AMM 71-11-04/201).

S 046-026-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 016-027-N00

- (3) Open the core cowl panels (AMM 71-11-06/201).

S 016-028-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).

D. Examine the Oil System Components

S 216-006-N00

- (1) Examine the engine oil tank for condition and if it is attached correctly.

EFFECTIVITY

ALL

79-00-00

N01

Page 605
Dec 22/00

- S 216-008-N00
- (2) Examine the oil system interfaces of the main gearbox for condition.
- S 216-009-N00
- (3) Examine the fuel/oil cooler for condition and if it is attached correctly.
- S 216-010-N00
- (4) Examine the oil quantity transmitter and the wiring for condition and if it is attached correctly.
- S 216-011-N00
- (5) Examine the oil pressure transmitter and wiring for condition and if it is attached correctly.
- S 216-012-N00
- (6) Examine the warning switch for the low oil pressure and wiring for condition and if it is attached correctly.
- S 216-013-N00
- (7) Examine the oil temperature bulb and wiring for condition and if it is attached correctly.
- S 216-014-N00
- (8) Examine the differential pressure switch of the oil filter, hoses and wiring for condition and if they are attached correctly.
- E. Put the airplane back to its initial condition

S 416-015-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 606
Dec 22/00

S 416-016-N00
(2) Close the core cowl panels (AMM 71-11-06/201).

S 416-017-N00
(3) Close the fan cowl panels (AMM 71-11-04/201).

S 446-018-N00
(4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

TASK 79-00-00-206-072-N00

4. Do the Leak Detection Inspection of the Oil System

A. General

(1) Use this procedure to find leaks in the oil system with a blue dye that is applied to the engine oil before the test. Use of blue is optional for detection of leaks. After this test, the oil with the dye must be drained from the engine. This will enable a distinction between a nuisance leak (from engine assembly oil weeping from seams) and a true leak from the engine's lube system.

B. Consumable Materials

(1) Solution, Blue Dye.

C. References

- (1) AMM 12-13-01/301, Engine Servicing (Oil Replenishing)
- (2) AMM 70-11-12/201, Degreasing of the Engine Externals
- (3) AMM 71-00-00/201, Power Plant
- (4) FIM 71-08-00/101, Power Plant (Engine Check)
- (5) AMM 71-11-04/201, Fan Cowl Panels
- (6) AMM 71-11-06/201, Core Cowl Panels
- (7) AMM 78-31-00/201, Thrust Reverser Systems
- (8) AMM 79-21-05/401, Main Oil Filter
- (9) AMM 79-21-10/401, Magnetic Chip Detectors

D. Access

(1) Location Zones

410 Left Engine
420 Right Engine

(2) Access Panels

415AL Fan Reverser (Left)
416AR Fan Reverser (Right)
425AL Fan Reverser (Left)
426AR Fan Reverser (Right)

EFFECTIVITY

ALL

79-00-00

N01

Page 607
Aug 22/05

E. Prepare to Do the Inspection of the Oil System

NOTE: For preparation of blue dye solution refer to AMM 70-00-00/601, Inspection/Check.

S 046-032-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSON AND DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 016-029-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 016-031-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 016-030-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

F. Examine the Oil System for Leaks

S 686-090-N00

- (1) Drain the oil system completely by the existing procedures. (AMM 79-11-00/001)

S 286-039-N00

- (2) Add the Blue Dye Solution in the oil system at the engine oil tank to refill the system by the existing procedures. (AMM 79-11-00/001)

(a) Do not add more than 0.50 fluid ounces (14.8 ml) of dye for each 10 gallons (37.85 liter) of engine oil.

S 166-034-N00

- (3) Do the cleaning procedure to remove the remaining engine oil on the external part of the engine (AMM 70-11-12/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 608
Aug 22/05

S 416-033-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Close the left thrust reverser (AMM 78-31-00/201).

S 416-035-N00

(5) Close the left core cowl panel (AMM 71-11-06/201).

S 416-036-N00

(6) Close the left fan cowl panel (AMM 71-11-04/201).

S 446-073-N00

(7) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 866-037-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

(8) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).

S 866-038-N00

(9) Set the thrust lever to the idle position.
(a) Operate the engine at idle for five minutes.
(b) Make sure the engine parameters are within the operating limits (AMM 71-00-00/201).

S 846-087-N00

(10) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).

S 046-057-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 609
Aug 22/05

S 016-058-N00

(12) Open the fan cowl panels (AMM 71-11-04/201).

S 016-059-N00

(13) Open the core cowl panels (AMM 71-11-06/201).

S 016-060-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(14) Open the thrust reversers (AMM 78-31-00/201).

S 216-062-N00

(15) Examine the engine for the location of leaks. Refer to Engine check 13, FIM 71-08-00/101.

NOTE: Amber color leaks are the result of assembly fluids. Blue leaks are the result of engine oil.

- (a) Examine the seal drains for signs of the blue dye.
- (b) If there are signs of the dye, do the necessary steps to correct the leak. After all the leaks are repaired, clean the dye, refer to AMM (70-11-13/201)
- (c) If you find oil leaks, do what is necessary to correct the leak and put the airplane back to its usual condition.
- (d) Do a check of the oil system again to check for leaks.

S 206-088-N00

(16) If you do not find oil leaks, do the 1.3 EPR power or the TAKE-OFF power procedure.

G. Optional test procedure at 1.3 EPR power.

NOTE: This test is not necessary if you find leaks by the idle procedure.

EFFECTIVITY

ALL

79-00-00

N01

Page 610
Aug 22/05

S 416-063-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Close the thrust reversers (AMM 78-31-00/201).

S 416-064-N00

(2) Close the core cowl panels (AMM 71-11-06/201).

S 416-065-N00

(3) Close the fan cowl panels (AMM 71-11-04/201).

S 446-066-N00

(4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 866-067-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

(5) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).

(a) Operate the engine at idle for five minutes.

(b) Make sure the engine parameters are within the operating limits (AMM 71-00-00/201).

(c) Set the thrust lever at 1.3 EPR.

1) Stay at 1.3 EPR power for one minute.

NOTE: It is possibly necessary to operate the engine at 1.3 EPR for more time to make sure the area around the leak is wet. But, keep the operation time to a minimum to prevent too much leakage.

EFFECTIVITY

ALL

79-00-00

N01

Page 611
Dec 22/00

S 866-042-N00

- (6) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).

S 046-044-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (7) Do the deactivation procedure for the thrust reversers for ground maintenance (AMM 78-31-00/201).

S 016-043-N00

- (8) Open the fan cowl panels (AMM 71-11-04/201).

S 016-045-N00

- (9) Open the core cowl panels (AMM 71-11-06/201).

S 016-046-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (10) Open the thrust reversers (AMM 78-31-00/201).

S 216-047-N00

- (11) Examine the engine for the location of leaks. Refer to Engine check 13, FIM 71-08-00/101.

NOTE: Amber color leaks are the result of assembly fluids. Blue leaks are the result of engine oil.

- (a) Examine the seal drains for signs of the blue dye.

EFFECTIVITY

ALL

79-00-00

N01

Page 612
Aug 22/05

- (b) If you find oil leaks, do what is necessary to correct the leak and put the airplane back to its usual condition.
 - (c) Do a check of the oil system again to check for leaks.
- H. Optional test procedure at take off power.

NOTE: This test is not necessary if you find leaks by the idle or 1.3 EPR procedure.

S 416-076-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

S 416-077-N00

- (2) Close the core cowl panels (AMM 71-11-06/201).

S 416-078-N00

- (3) Close the fan cowl panels (AMM 71-11-04/201).

S 446-079-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 866-080-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (5) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).
 - (a) Operate the engine at idle for five minutes.
 - (b) Make sure the engine parameters are within the operating limits (AMM 71-00-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 613
Aug 22/05

- (c) Set the thrust lever at TAKE_OFF power.
 - 1) Stay at take off for one minute.

NOTE: It is possibly necessary to operate the engine at take off for more time to make sure the area around the leak is wet. But, keep the operation time to a minimum to prevent too much leakage.

- (d) Set the thrust lever at 1.3 EPR.
 - 1) Stay at 1.3 EPR for 2 to 3 minutes.

NOTE: It is possibly necessary to operate the engine at 1.3 EPR for more time to make sure the area around the leak is wet. But, keep the operation time to a minimum to prevent too much leakage.

S 866-081-N00

- (6) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).

S 046-082-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (7) Do the deactivation procedure for the thrust reversers for ground maintenance (AMM 78-31-00/201).

S 016-083-N00

- (8) Open the fan cowl panels (AMM 71-11-04/201).

S 016-084-N00

- (9) Open the core cowl panels (AMM 71-11-06/201).

S 016-085-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (10) Open the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 614
Dec 22/00

S 216-086-N00

- (11) Examine the engine for the location of leaks. Refer to Engine check 13, FIM 71-08-00/101.

NOTE: Amber color leaks are the result of assembly fluids. Blue leaks are the result of engine oil.

- (a) Examine the seal drains for signs of the blue dye.
(b) If there are signs of the dye, do the necessary steps to correct the leak. After all the leaks are repaired, clean the dye, refer to AMM (70-11-13/201)

I. Do the Steps that Follow to Replace the Engine Oil

S 686-053-N00

- (1) Remove the magnetic chip detectors to drain the engine oil with the dye in it from the oil system (AMM 79-21-10/401).

S 036-050-N00

- (2) Remove the main oil filter (AMM 79-21-05/401).

S 426-075-N00

- (3) Install a new main oil filter (AMM 79-21-05/401).

S 436-051-N00

- (4) Install the magnetic chip detectors (AMM 79-21-10/401).

S 616-052-N00

- (5) Fill the oil system with clean engine oil (AMM 12-13-01/301).

J. Put the airplane back to its usual condition.

S 416-056-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reversers (AMM 78-31-00/201).

S 416-055-N00

- (2) Close the left core cowl panels (AMM 71-11-06/201).

S 416-074-N00

- (3) Close the left fan cowl panels (AMM 71-11-04/201).

S 446-054-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 615
Aug 22/05

S 796-055-N00

(5) Do the Test No. 3 - Ground Test - Idle Power (AMM 71-00-00/501).

TASK 79-00-00-806-068-N00

5. Oil System Fits and Clearances

A. General

- (1) The reference numbers on the figures show the location of parts in which fits and clearances are specified.
- (2) Unless specified differently, all fits are of the diameter.
- (3) The numbers in all columns are in inches, and (millimeters).
- (4) The letter "T" which follows the limits shows a tight fit.
- (5) The Description column gives the names for the part(s) specified.

B. Inspection Frequency Requirements (IFR).

S 996-069-N00

- (1) The IFR column gives the Inspection Frequency Requirements. The Letter Codes A, B, or C show how and when it is recommended to examine the identified item, as applicable to regular repairs. These codes are specified as follows:

EFFECTIVITY

ALL

79-00-00

N01

Page 616
Aug 22/05

IFR Code	Definition
A	The clearance or fit is calculated from the dimensions of the part at each assembly of the parts. These dimensions written at the time of each part inspection are equally as correct as the dimensions written at the time of the part assembly.
B	<p>You must make an analysis of the clearance or fit at each assembly of the parts. Use the trial assembly or the equivalent procedure to make an estimate of the clearance or fit. The dimension of the parts and the quantity of the clearance or fit you calculated is necessary only if:</p> <p style="padding-left: 40px;">The procedure you used to make an estimate shows that the clearance or fit is not in the specified limits, or</p> <p style="padding-left: 40px;">One or two mating parts included is replaced or repaired in an area or in a procedure which changes the clearance or fit.</p>
C	The fit is not made to change in the normal engine operation. The dimensions of the parts and the quantity you calculated of the fit is necessary if one of the mating parts included is replaced or repaired in the area or a procedure which would change the fit.

- S 996-070-N00
- (2) New Part Reference Dimensions
- (a) The dimensions are given to refer to only.
 - (b) The dimensions are the Minimum and Maximum initial dimensions in inches (and millimeters) for each part listed in the Description.

- S 996-071-N00
- (3) Limits
- (a) The limits are applicable to all mixtures of new or used parts.
 - (b) The limits give the permitted (minimum - maximum) range of fit or clearance in inches (and millimeters). You can use these limits for all mixtures of new or used parts.

EFFECTIVITY

ALL

79-00-00

N01

Page 617
Aug 22/05

(c) The limits are found when you compare mathematics of the minimum and maximum values specified in the New Part Reference Dimensions column. See Example 1.

NOTE: In Example 1, the limits are found when you compare the dimensions of the bearing and support as follows:

$$0.517 (-) 0.512 = 0.005$$

$$(13.131) - (13.005) = (0.126)$$

$$0.527 (-) 0.508 = 0.019$$

$$(13.385) - (12.903) = (0.482)$$

(d) The asterick (*) adjacent to the value is for expanded limits which have more tolerance than the condition of a new part. See Example 2.

NOTE: In Example 2, the limits have more tolerance as shown by the asterick (*).

EXAMPLE 1						
REF NO	I F R	DESCRIPTION	NEW PART REFERENCE			
			DIMENSIONS		LIMITS	
			MIN	MAX	MIN	MAX
1812		Bearing	0.508 (12.903)	0.512 (13.005)		
		Support	0.517 (13.131)	0.527 (13.385)	0.005 (0.126)	0.019 (0.482)

EXAMPLE 2						
REF NO	I F R	DESCRIPTION	NEW PART REFERENCE			
			DIMENSIONS		LIMITS	
			MIN	MAX	MIN	MAX
1812		Bearing	0.508 (12.903)	0.512 (13.005)		
		Support	0.517 (13.131)	0.527 (13.385)	0.005 (0.126)	0.020* (0.508)*

EFFECTIVITY _____
ALL

79-00-00

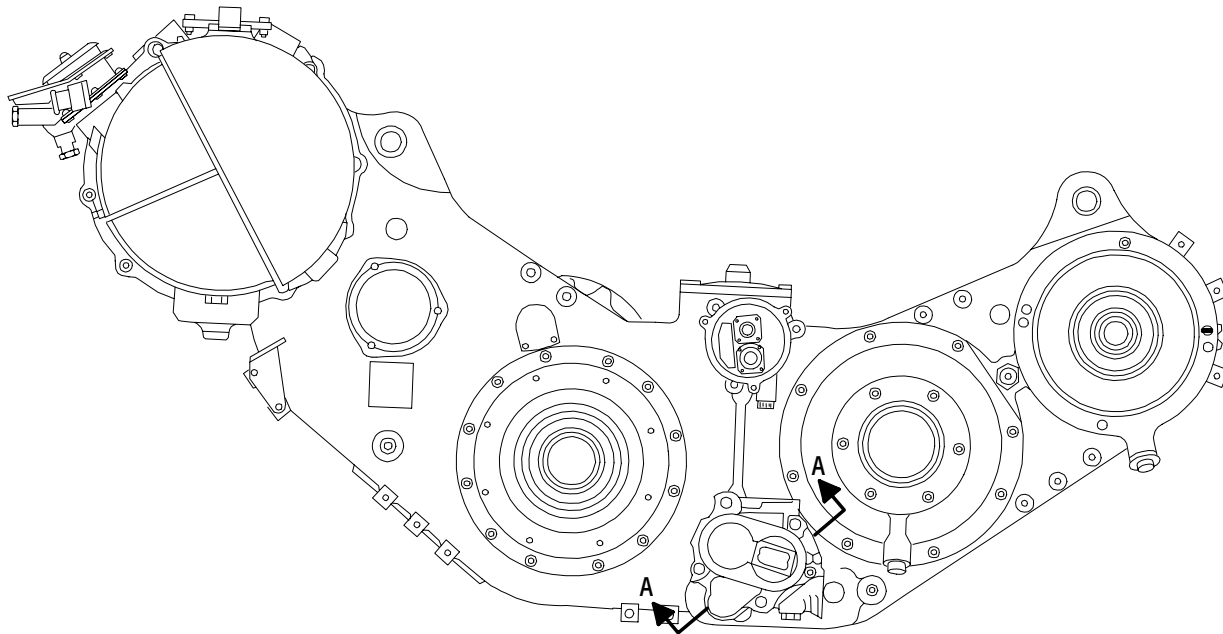
- 1) Limits for applicable engines scheduled for a partial refurbishment.
- 2) You can give one more set of limits which are contained by the lines. See Example 3. These limits have more tolerance and are given for engines scheduled for a partial refurbishment.

NOTE: In Example 3, the limits (with more tolerance) which are contained in the lines are chosen for engines scheduled for a partial refurbishment.

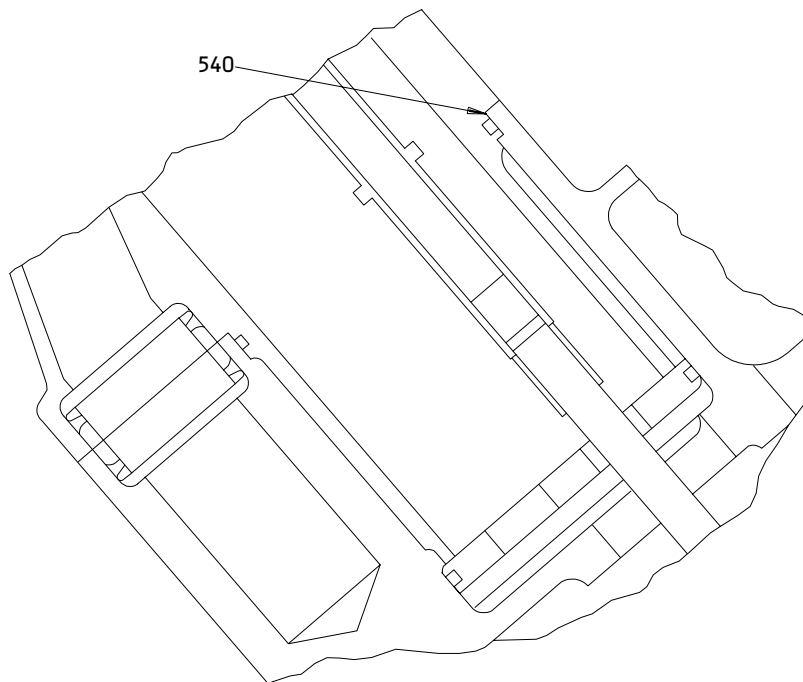
EXAMPLE 3						
REF NO	I F R	DESCRIPTION	NEW PART REFERENCE			
			DIMENSIONS		LIMITS	
			MIN	MAX	MIN	MAX
1812		Bearing	0.508 (12.903)	0.512 (13.005)		
		Support	0.517 (13.131)	0.527 (13.385)	0.005 (0.126)	0.019 (0.482)
					0.005 (0.13)	0.022 (0.56)

EFFECTIVITY _____
ALL

79-00-00



**MAIN GEARBOX
 REAR VIEW**



A-A

L-A3314
 (1291)

**Lubrication and Scavenge Oil Pump Fits and Clearances
 Figure 601**

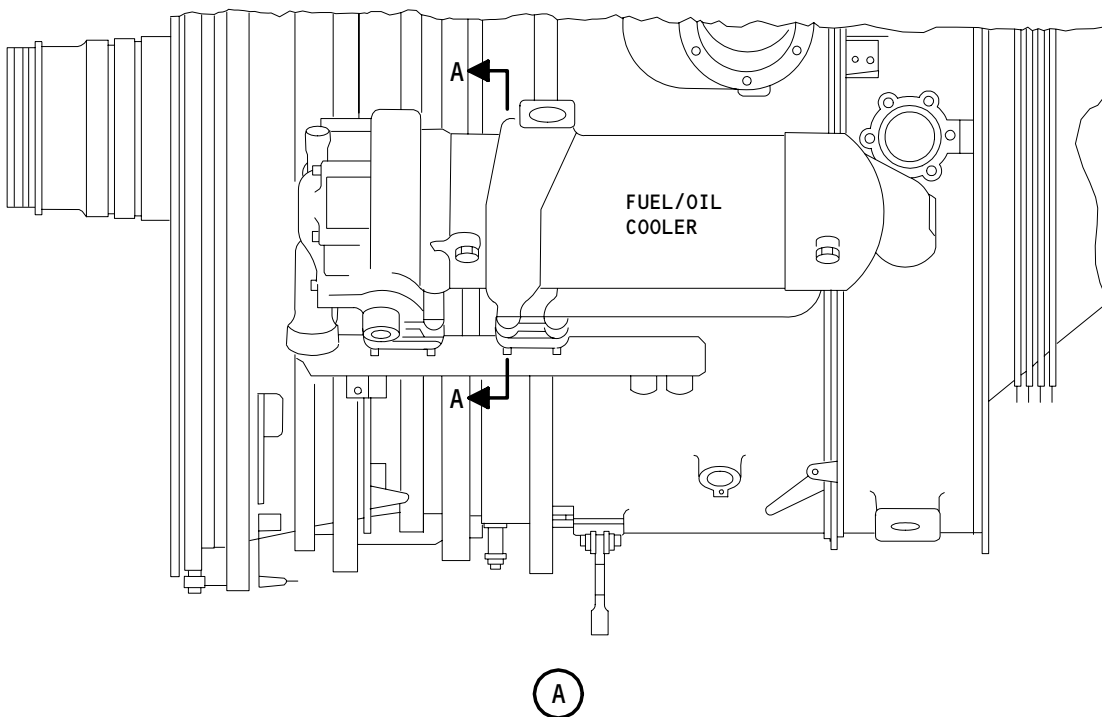
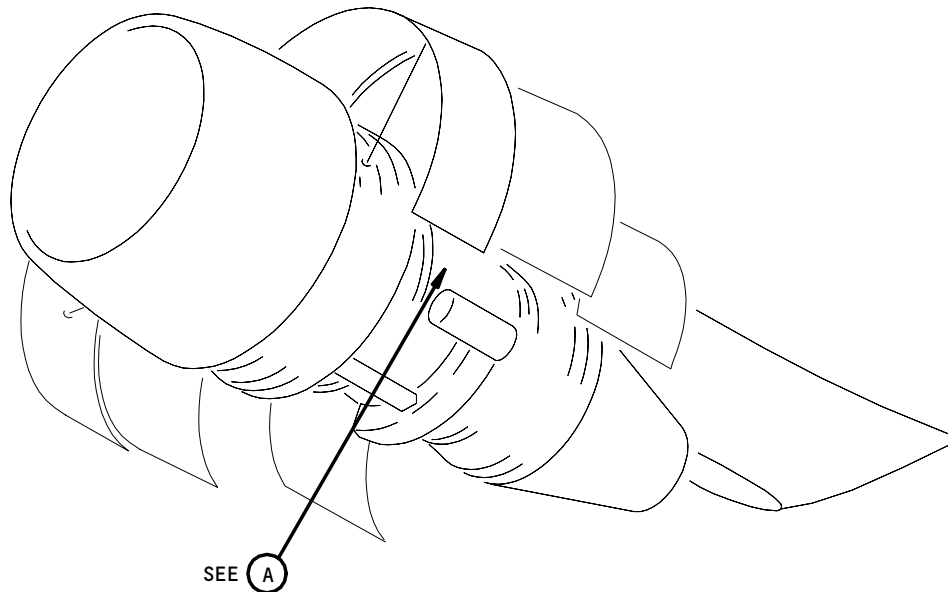
EFFECTIVITY	ALL
-------------	-----

79-00-00

N01

Page 620
 Aug 22/05

582629



L-A3312

Fuel/Oil Cooler Fits and Clearances
Figure 602 (Sheet 1)

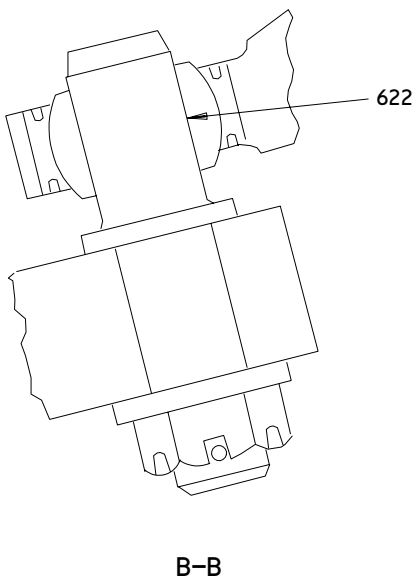
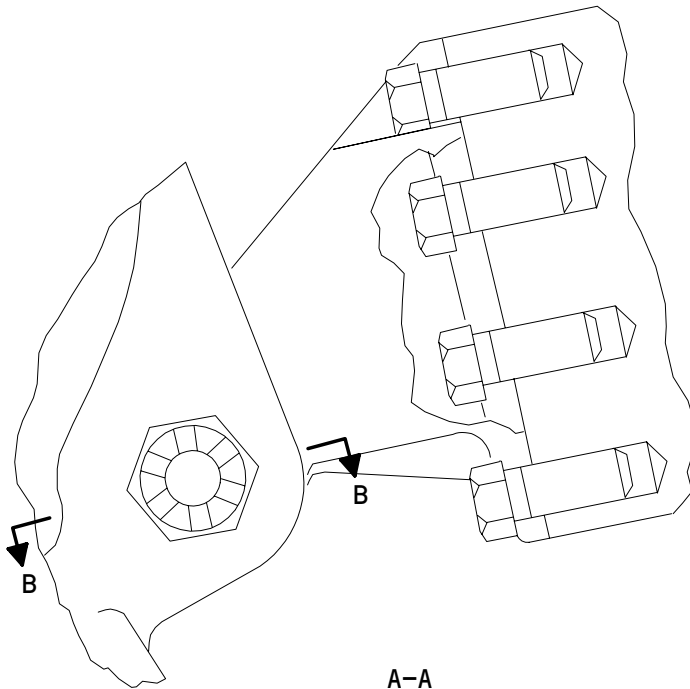
EFFECTIVITY	
	ALL

79-00-00

N01

Page 621
Aug 22/05

582635



L-A3313

Fuel/Oil Cooler Fits and Clearances
 Figure 602 (Sheet 2)

EFFECTIVITY	
	ALL

79-00-00

N01

Page 622
 Aug 22/05

582640

OIL - CLEANING/PAINTING

1. General

A. This procedure gives direction on how to clean the engine after chemical contact with oil.

TASK 79-00-00-107-001-N00

2. Clean the Engine Component

A. References

(1) AMM 70-11-10/201, Engine Contamination

B. Procedure

S 117-002-N00

(1) If necessary, clean the engine to remove oil by SPOP 425 (AMM 70-11-10/201).

EFFECTIVITY

ALL

79-00-00

N01

Page 701
Aug 22/99

OIL - DDG MAINTENANCE PROCEDURES

1. General

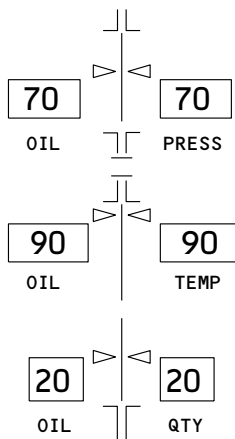
- A. This procedure includes these DDG maintenance procedures:
- (1) DDG 79-31-1 Preparation - Oil Quantity Indications Inoperative
 - (2) DDG 79-34-1 Preparation - Engine Bearing No. 3 Scavenge Oil Temp Inoperative
 - (3) DDG 79-35-1 Preparation - Oil Filter Bypass Warning System Inoperative

TASK 79-00-00-049-005-N00

2. DDG 79-31-1 Preparation - Oil Quantity Indications Inoperative

A. References

- (1) AMM 12-13-01/301, Engine (Oil Servicing)
- (2) AMM 72-00-00/201, Engine
- (3) AMM 79-21-05/401, Main Oil Filter



OIL QUANTITY
INDICATIONS

Oil Quantity Indications
Figure 901

EFFECTIVITY	ALL
-------------	-----

79-00-00

N01

Page 901
Dec 10/98

H62217

B. Access

(1) Location Zones

- 211 Flight Compartment
- 212 Flight Compartment
- 411 Engine, Left
- 421 Engine, Right

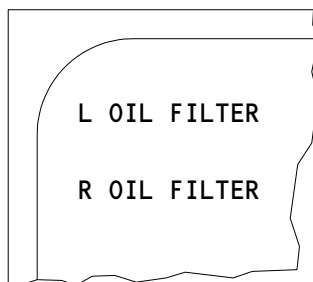
C. Procedure

S 619-002-N00

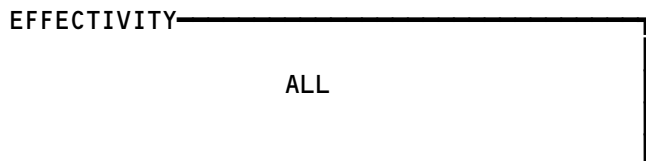
- (1) Fill the applicable engine oil tank (AMM 12-13-01/301).

NOTE: The airplane operator must make a decision on what is 'above normal' oil use. But on an average, the engine will use not more than one U.S. quart for each hour of flight.

- (a) Examine the outer side of the engine to make sure there is no leakage.



Oil Filter Bypass Warning System
Figure 902



79-00-00

N01

Page 902
Dec 10/98

H62222

- S 869-003-N00
- (2) Put a placard 'L (and/or R) OIL FILT BYPASS WARN INOP' near the EICAS display.
- S 719-004-N00
- (3) Do the steps that follow to make a decision if the alerting (bypass warning) system operates correctly.
- (a) If the EICAS message "L(R) ENG OIL FILTER" stays on more than one minute after engine shutdown, the bypass warning system operates incorrectly.
 - (b) If the EICAS message, 'L(R) ENG OIL FILTER', goes off in less than one minute after engine shutdown, do this test:
 - 1) Do the Oil Filter Bypass Warning System Test to make sure the differential pressure switch operates correctly (AMM 79-35-00/501).
 - (c) Before each takeoff, examine the main oil filter for contamination.
 - 1) If there is contamination, do the inspection procedure for the engine oil system (AMM 72-00-00/201).
 - 2) Clean the oil filter if it is necessary.
 - a) Install the oil filter on the engine (AMM 79-21-05/401).

TASK 79-00-00-049-007-N00

3. DDG 79-34-1 Preparation - Engine Bearing No. 3 Scavenge Oil Temp

A. Access

(1) Location Zones

211	Flight Compartment
212	Flight Compartment
411	Left Engine
421	Right Engine

B. Procedure

S 869-009-N00

- (1) Do these steps for the EICAS message TEMP1:
- (a) If the Status level EICAS message 'ENG - SCAV TEMP1' is shown, the differential oil temperature for the No. 3 bearing is 'Hot'.

EFFECTIVITY

ALL

79-00-00

N01

Page 903
Dec 10/98

- (b) You must do the necessary repairs in three days or less.
- (c) Put a placard 'ENGINE - BEARING NO. 3 SCAVENGE OIL TEMPERATURE HOT' on the flight log for the airplane.

S 869-010-N00

- (2) Do these steps for the EICAS message TEMP2:
 - (a) If the Status level EICAS message 'ENG - SCAV TEMP2' is shown, the differential oil temperature for the No. 3 bearing is 'Warm'.
 - (b) You must do the necessary repairs in ten days or less.
 - (c) Put a placard 'ENGINE - BEARING NO. 3 SCAVENGE OIL TEMPERATURE WARM' on the flight log for the airplane.

TASK 79-00-00-049-011-N00

4. DDG 79-35-1 Preparation - Oil Filter Bypass Warning System

A. References

- (1) AMM 72-00-00/601, Engine
- (2) AMM 79-21-05/401, Main Oil Filter
- (3) AMM 79-35-00/501, Oil Filter Bypass Warning System

B. Access

- (1) Location Zones
 - 211 Flight Compartment
 - 212 Flight Compartment
 - 411 Left Engine
 - 421 Right Engine

C. Procedure

S 719-012-N00

- (1) Do these steps to make sure the malfunction is caused by the alerting (bypass warning) system.
 - (a) If the EICAS message, L(R) ENG OIL FILTER, stays on more than one minute after the engine is shutdown, the bypass warning system does not operate correctly.
 - (b) If the EICAS message, L(R) ENG OIL FILTER, goes off in less than one minute after the engine is shutdown, do a test of the Oil Filter Bypass Warning System (AMM 79-35-00/501).

NOTE: This test finds if the differential pressure switch operates correctly.

EFFECTIVITY

ALL

79-00-00

N01

Page 904
Dec 10/98

- (c) Before each takeoff, examine the main oil filter for contamination.
 - 1) If you find contamination, examine the engine oil system (AMM 72-00-00/601).
- (d) Clean the main oil filter if it is necessary.
 - 1) Install the main oil filter on the engine (AMM 79-21-05/401).

EFFECTIVITY

ALL

79-00-00

N01

Page 905
Dec 10/98

ENGINE OIL STORAGE - DESCRIPTION AND OPERATION

1. General

A. Each engine has a different oil storage system. This system includes an oil reservoir with oil fill and drain qualities. The oil tank and main gearbox make the oil reservoir.

2. Component Details (Fig. 1)

A. Engine Oil Tank

- (1) The oil tank is a cylindrical stainless steel weldment, attached with bolts to the rear, left side of the main gearbox. A heatshield is attached to the oil tank.
- (2) The oil tank has a maximum capacity of 36.0 quarts (34.065 liters).

B. Engine Oil Tank Fill and Drain Features

- (1) The filler cap can be locked for a safety function.
- (2) An integral filler neck valve prevents a quick decrease in the quantity of oil if the filler cap is not correctly installed.
- (3) When oil falls out from the filler neck, the oil is collected by the scupper drain and drained through the scupper drain line.
- (4) A magnetic chip detector (MCD) probe and valve assembly is on the bottom of the oil tank. The removal of the MCD probe and valve assembly will permit you to drain the oil tank.

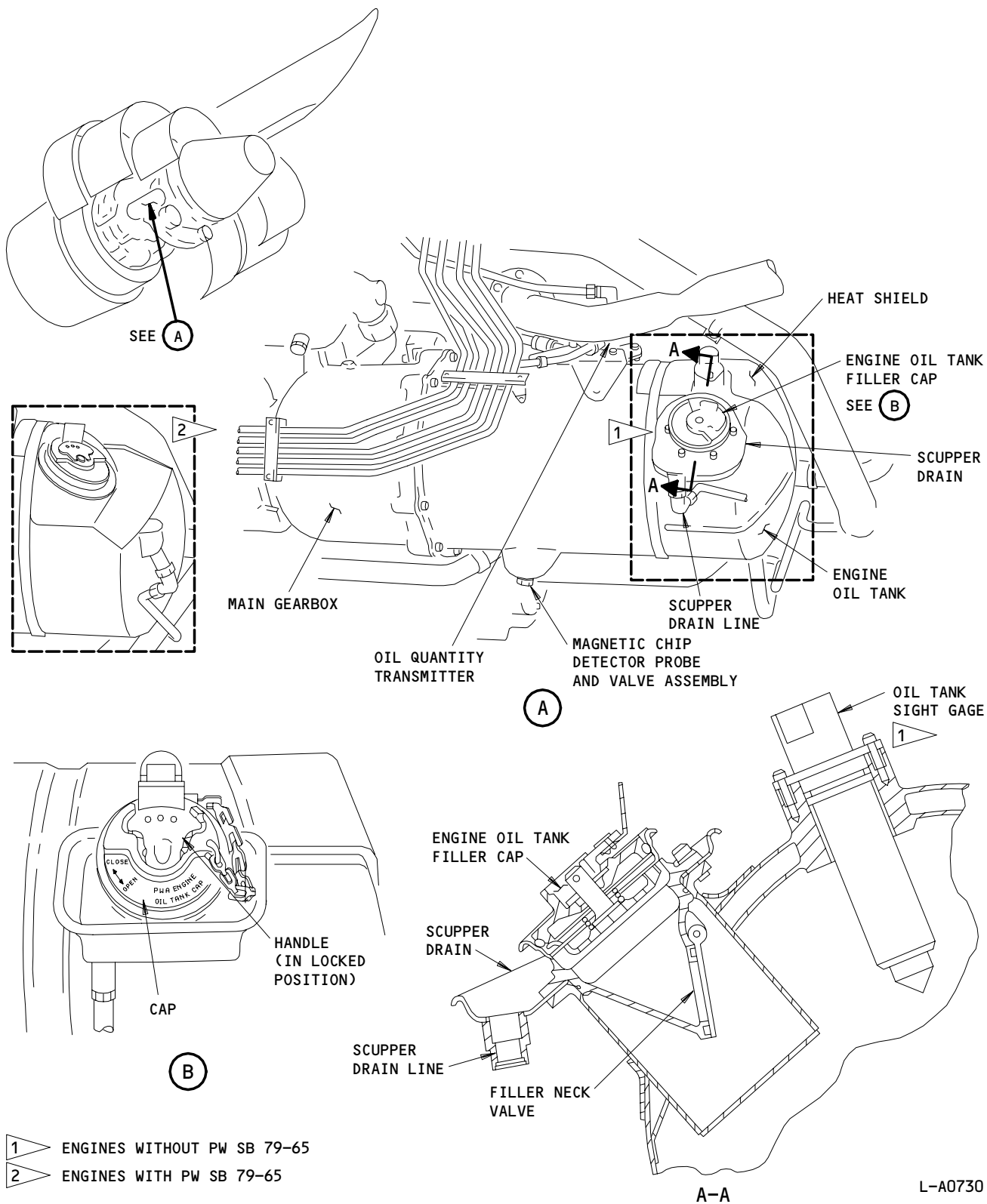
EFFECTIVITY

ALL

79-11-00

N01

Page 1
Aug 10/92



- 1 ENGINES WITHOUT PW SB 79-65
- 2 ENGINES WITH PW SB 79-65

Engine Oil Storage
Figure 1

EFFECTIVITY	
	ALL

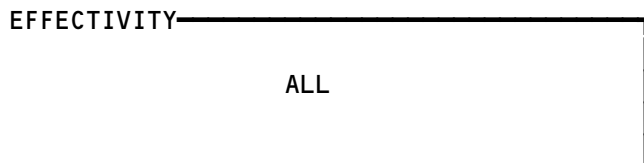
79-11-00

266015

ENGINE OIL STORAGE

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CAP - ENGINE OIL TANK FILLER	--	2	417BL, 427BL CORE COWL	79-11-03
TANK - ENGINE OIL	--	2	415AL, 425AL THRUST REVERSER	79-11-01

Engine Oil Storage - Component Index
 Figure 101



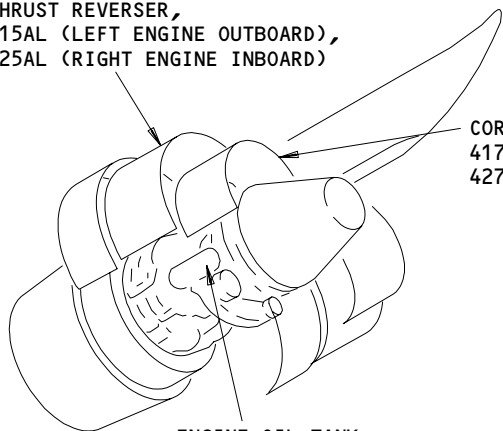
79-11-00

N01

Page 101
 May 10/94

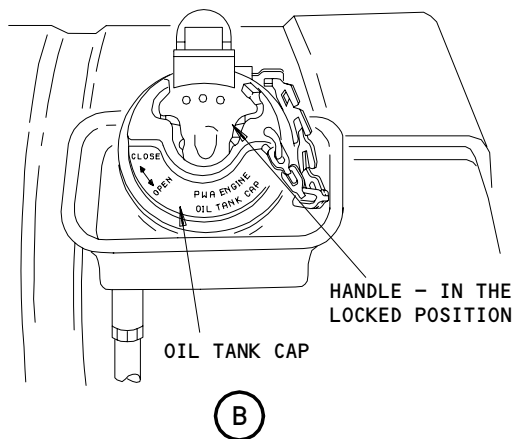
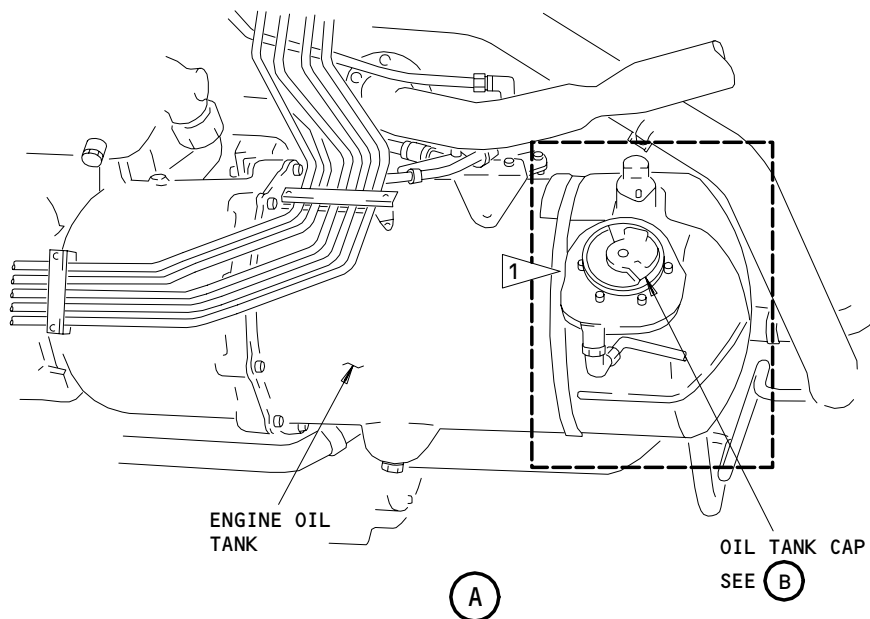
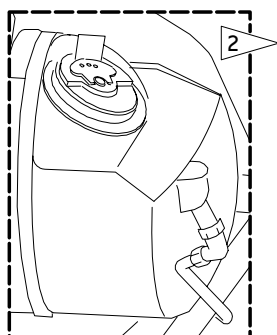
E15073

THRUST REVERSER,
415AL (LEFT ENGINE OUTBOARD),
425AL (RIGHT ENGINE INBOARD)



CORE COWL,
417AL (LEFT ENGINE OUTBOARD),
427AL (RIGHT ENGINE INBOARD)

ENGINE OIL TANK
SEE (A)



- 1 ENGINES WITHOUT PW SB 79-65
- 2 ENGINES WITH PW SB 79-65

Engine Oil Storage - Component Location
Figure 102

EFFECTIVITY

ALL

79-11-00

N01

Page 102
May 10/94

265801

ENGINE OIL STORAGE - SERVICING

TASK 79-11-00-603-034-N00

1. Engine Oil Storage

A. General

- (1) This procedure was moved to AMM 12-22-01/301. Refer to AMM 12-22-01/301 to change (drain, flush and fill) the oil in the engine oil system.

EFFECTIVITY

ALL

79-11-00

N01

Page 301
Apr 22/99

ENGINE OIL TANK - REMOVAL/INSTALLATION

TASK 79-11-01-004-001-N00

1. Remove the Engine Oil Tank

A. Equipment

- (1) Container - 10 U.S. gallons (38 liter) capacity for oil
- (2) Puller - PWA 88231 Jackscrew, Pratt & Whitney

B. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 36-11-01/401, Pneumatic Duct
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 75-24-02/401, Turbine Vane and Blade Cooling Air Ducts
- (6) AMM 78-31-00/201, Thrust Reverser System
- (7) AMM 79-11-03/201, Oil Tank Cap
- (8) AMM 79-21-10/401, Magnetic Chip Detectors
- (9) AMM 79-31-01/401, Oil Quantity Transmitter
- (10) AMM 79-31-02/401, Oil Tank Sight Gage

C. Access

- (1) Location Zones
 - 411 Left Engine
 - 421 Right Engine
- (2) Access Panels
 - 417AL Core Cowl (Left)
 - 427AL Core Cowl (Left)

D. Prepare for Removal of the Engine Oil Tank

S 864-002-N00

- (1) Remove electrical power (AMM 24-22-00/201).

S 014-003-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-004-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (3) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

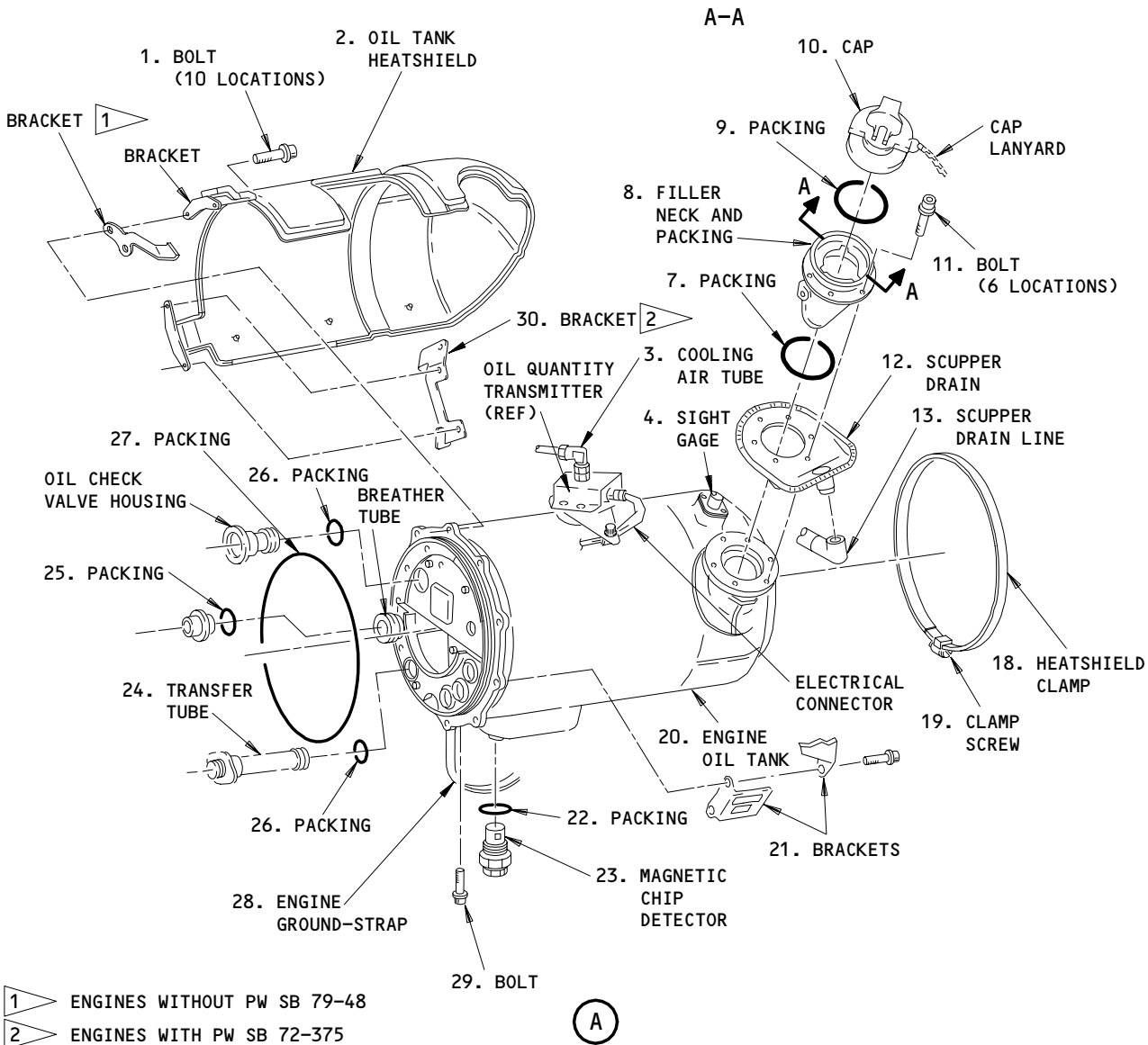
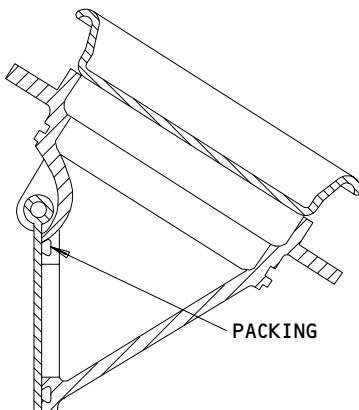
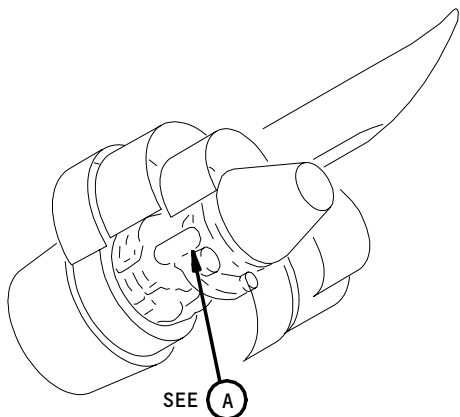
EFFECTIVITY

ALL

79-11-01

N01

Page 401
Dec 22/00



- 1 ENGINES WITHOUT PW SB 79-48
- 2 ENGINES WITH PW SB 72-375

Engine Oil Tank Installation
Figure 401 (Sheet 1)

EFFECTIVITY

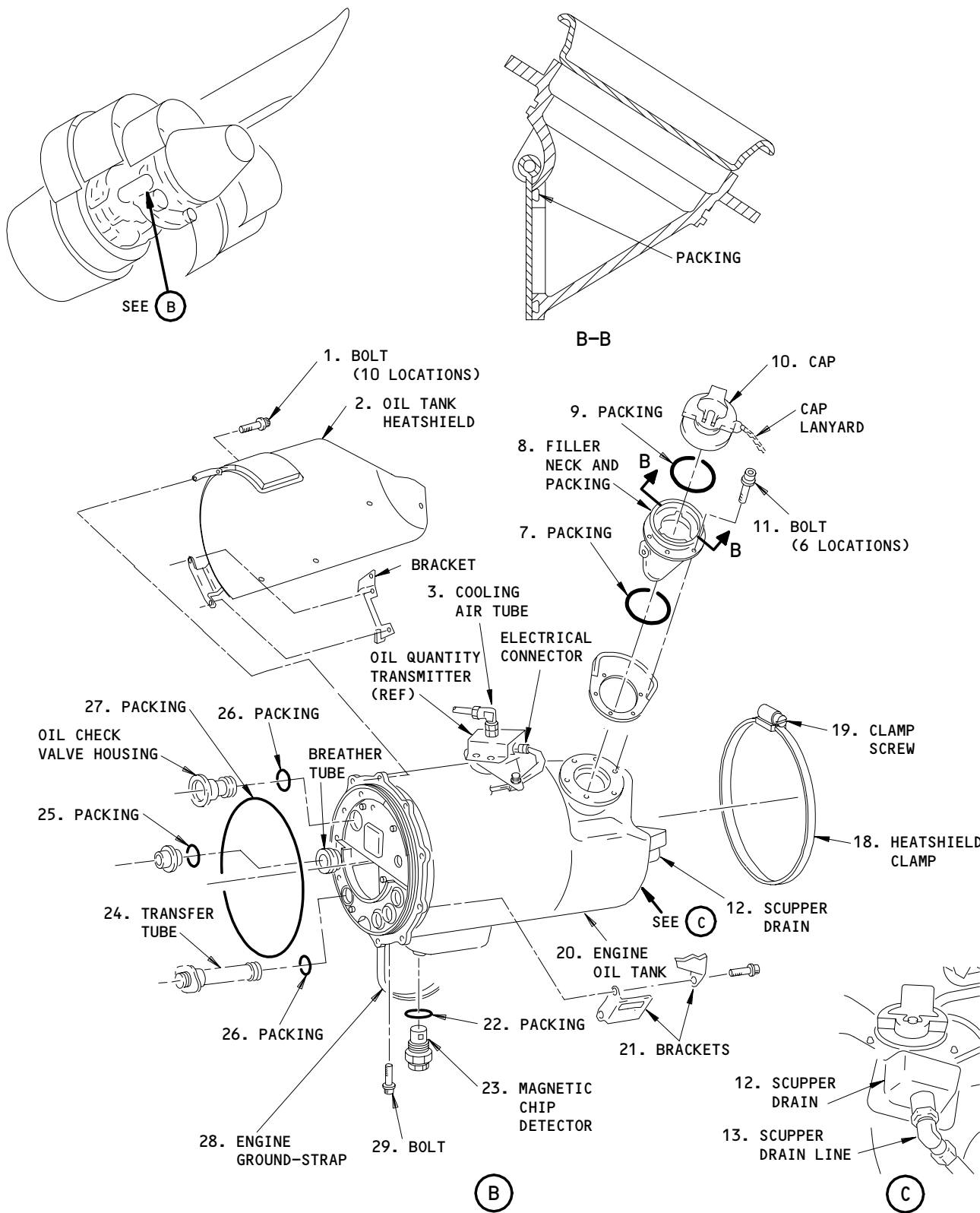
ALL

79-11-01

N04

Page 402
May 10/93

993610



Engine Oil Tank Installation
Figure 401 (Sheet 2)

EFFECTIVITY
ENGINES WITH OIL TANKS THAT HAVE THE
CUTAWAY END, AND NO SIGHT GAGE

79-11-01

N01

Page 403
Feb 10/94

S 014-005-N00

- (4) Open the left core cowl panel (AMM 71-11-06/201).

S 014-006-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (5) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the Oil Tank (Fig. 401)

S 034-007-N00

- (1) To get better access to the oil tank, remove the 15th-stage pneumatic duct of high pressure from the No. 4 port (AMM 36-11-01/401).

S 034-008-N00

- (2) Disconnect the electrical connector from the oil quantity transmitter.

S 034-009-N00

- (3) Remove the cooling air tube (3) from the heatshield of the oil quantity transmitter.

S 034-010-N00

- (4) Remove the (lower left) cooling air duct of the turbine vane (AMM 75-24-02/401).

S 614-011-N00

- (5) Position the container under the drain plug of the oil tank.

S 034-012-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

CAUTION: IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE A STAIN ON YOUR CLOTHES AND PAINT WILL BECOME SOFT.

- (6) Remove the oil tank cap (10) from the filler neck (AMM 79-11-03/201).

EFFECTIVITY

ALL

79-11-01

N01

Page 404
Apr 22/01

S 844-067-N00

- (7) Remove the magnetic chip detector assembly to drain the oil from the oil tank (AMM 79-21-10/401).
(a) Discard the packing (22).

S 034-014-N00

- (8) Disconnect the line (13) of the scupper drain from the scupper drain (12).

S 034-015-N00

- (9) Remove the bolts (1) which attach the flange of the oil tank to the main gearbox.

NOTE: You must know the location of the offset bolt hole when you install the oil tank.

- (a) ENGINES POST-PW-SB 72-375;
Remove the bracket (30) from the oil tank.

S 034-016-N00

- (10) Remove the bolt (29) which attaches the engine ground strap (28) to the oil tank.
(a) Remove the ground strap (28) from the oil tank.

NOTE: The engine ground strap must stay with the engine.

S 024-017-N00

- (11) Remove the ID plate bracket (21) from the gearbox.

NOTE: The ID plate bracket must stay with the gearbox.

S 034-062-N00

- (12) Remove the bolts (1) that attach the heat shield (2) and brackets.

EFFECTIVITY

ALL

79-11-01

N01

Page 405
Dec 22/03

S 034-063-N00

- (13) Remove the remaining bolts that attach the oil tank to the gearbox.

S 024-066-N00

CAUTION: MAKE SURE ALL THE OIL TANK TO GEARBOX ATTACHMENT BOLTS ARE REMOVED BEFORE INSTALLING PWA 88231 PULLER. IF YOU DO NOT OBEY THIS INSTRUCTION, DAMAGE TO THE GEARBOX HOUSING CAN OCCUR.

- (14) Use a PWA 88231 Jackscrew Puller to carefully remove the oil tank from the gearbox as follows:
- (a) Put the upper clamp ring half and the lower clamp ring half around the oil tank between the bolt flange and the circumferential weld.
 - (b) Attach the two clamp ring halves to the oil tank with the two detail socket head cap screws.
 - (c) Tighten the two cap screws to pull the upper and lower clamp ring halves together.
 - (d) Install the four detail jackscrews into the internal thread holes of the puller.
 - (e) Tighten the four jackscrews slowly and equally to disengage the oil tank from the gearbox.
 - (f) Remove the oil tank and puller from the engine.
 - (g) Remove the puller from the oil tank.
 - 1) Loosen and remove the two detail socket head cap screws.
 - 2) Remove the upper and lower clamp ring halves from the oil tank.

S 034-018-N00

- (15) Remove the packings (25, 26, 27) from the flange of the oil tank (20) and from the flange of the transfer tubes (24).
- (a) Discard the packings (25, 26, 27).

S 034-019-N00

- (16) Remove the oil quantity transmitter (AMM 79-31-01/401).

EFFECTIVITY

ALL

79-11-01

N01

Page 406
Dec 22/00

S 034-020-N00

- (17) ENGINES PRE-PW-SB 79-65;
If a new oil tank is necessary, remove the sight gage from the oil tank (AMM 79-31-02/401).

NOTE: Oil tanks with the cutaway end do not have a sight gage.

S 034-021-N00

- (18) If a new oil tank is necessary, continue with the steps that follow:
- (a) ENGINES PRE-PW-SB 79-48;
Do the steps that follow:
 - 1) Remove the clamp (18) which attaches the heatshield (2) and bracket to the oil tank.
 - a) Remove the heatshield.
 - b) Remove the bracket.
 - (b) ENGINES POST-PW-SB 79-48;
Do the steps that follow:
 - 1) Remove the clamp (18) which attaches the heatshield (2) to the oil tank.
 - 2) Remove the heatshield (2).
 - (c) Remove the bolts (6) which attach the filler neck (8) and scupper drain (12) to the oil tank.
 - (d) Remove the filler neck (8) and the scupper drain (12).
 - 1) Discard the packing (7).
 - (e) Make sure there is no damage or deterioration to the packing under the valve of filler neck (8).
 - (f) If there is damage to the packing, do the steps that follow:
 - 1) Discard the packing.
 - 2) Lubricate the new packing with oil.
 - 3) Install the new packing under the valve of the filler neck.

S 024-058-N00

- (19) ENGINES POST-PW-SB 79-25, POST-PW-SB 79-47, OR POST-PW-SB 79-65;
If it is necessary to use the oil tank cap and the related parts from this engine oil tank on a different engine oil tank, do the steps that follow:

EFFECTIVITY

ALL

79-11-01

N01

Page 407
Dec 22/00

- (a) Remove the oil tank cap (10).
 - 1) Lift the handle on the oil tank cap (10).
 - 2) Turn the oil tank cap counterclockwise.
 - 3) Remove the oil tank cap (10).
 - 4) Remove the bolt which attaches the cap lanyard.
 - 5) Discard the packing.
- (b) Remove the filler neck valve.
 - 1) Remove the remaining bolts on the filler neck (8).
 - 2) Remove the filler neck (8).
 - a) Discard the packing.
 - 3) Examine the packing below the filler neck (8).
 - a) If the packing has damage, discard it.
- (c) Remove the scupper drain (12).

S 034-022-N00

(20) Install protective caps.

TASK 79-11-01-404-023-N00

2. Install the Engine Oil Tank

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) G02332 Ferrule, Safety Cable (P05-292)
- (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (4) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	9	Packing	79-11-03	05	10
	17	Packing	79-11-01	10	85
	20	Tank - Engine Oil			280
	22	Packing			10
	25	Packing			160
	26	Packing			150
	27	Packing			165

EFFECTIVITY

ALL

79-11-01

N01

Page 408
Dec 22/07

D. References

- (1) AMM 12-13-01/301, Engine
- (2) AMM 24-22-00/201, Electrical Power - Control
- (3) AMM 36-11-01/401, Pneumatic Duct
- (4) AMM 71-00-00/501, Power Plant
- (5) AMM 71-11-04/201, Fan Cowl Panels
- (6) AMM 71-11-06/201, Core Cowl Panels
- (7) AMM 75-24-02/401, Turbine Vane and Blade Cooling Air Ducts
- (8) AMM 78-31-00/201, Thrust Reverser System
- (9) AMM 79-11-03/201, Oil Tank Cap
- (10) AMM 79-21-10/401, Magnetic Chip Detectors
- (11) AMM 79-31-01/401, Oil Quantity Transmitter
- (12) AMM 79-31-02/401, Oil Tank Sight Gage

E. Access

- (1) Location Zones
 - 411 Left Engine
 - 421 Right Engine

- (2) Access Panels
 - 417AL Core Cowl (Left)
 - 427AL Core Cowl (Left)

F. Procedure (Fig. 401)

- S 434-024-N00
- (1) Remove protective caps.

- S 434-026-N00
- (2) Make sure the packing is under the valve of filler neck (8).

- S 434-027-N00
- (3) If there is no packing, do the steps that follow:
 - (a) Lubricate the new packing with oil.
 - (b) Install the new packing under the valve of the filler neck.

- S 644-028-N00
- (4) Lubricate the new packing (7) with oil.

EFFECTIVITY

ALL

79-11-01

N01

Page 409
Aug 22/01

S 434-029-N00

- (5) Install the new packing (7) to the filler neck (8).

S 434-030-N00

- (6) Install the filler neck (8) and scupper drain (12) to the oil tank with the bolts (11).
(a) Tighten the bolts (11) to 32-36 pound-inches (3.616-4.067 newton-meters).

S 434-057-N00

CAUTION: MAKE SURE YOU USE THE OIL TANK WITH THE CORRECT PART NUMBER. THE PART NUMBER HAS AN EFFECT ON THE INTERCHANGEABLE OIL TANKS. IF YOU DO NOT USE THE CORRECT OIL TANK, AN OVERSERVICING CONDITION CAN CAUSE A HIGH OIL TEMPERATURE (REFER TO PW SB 79-43).

- (7) If a new oil tank is installed, do the steps that follow:
(a) ENGINES POST-PW-SB 79-47 OR POST-PW-SB 79-65;
Install the oil tank cap and the related parts with the steps that follow:
1) Align the scupper drain (12) on the engine oil tank (20).
2) Install the filler neck (8).
a) Make sure there is a packing below the valve of the filler neck (8).
b) If there is not a packing, do the steps that follow:
1. Lubricate a new packing.
2. Install the packing below the valve.
3) Lubricate the threads of the bolts (11) with engine oil.
4) Lubricate the packing with engine oil.
5) Install one of the bolts (11) in the hole on the filler neck (8) to attach the cap lanyard.
6) Install the filler neck (8) and the scupper drain (12) to the engine oil tank (20) with the bolts (11).
a) Tighten the bolts (11) to 32-36 pound-inches (3.616-4.067 newton-meters).

EFFECTIVITY

ALL

79-11-01

N01

Page 410
Aug 22/01

- b) Install the lockwire on the bolts (11).
- 7) Install the oil tank cap (10).
- 8) Lubricate the packing (9) with engine oil.
- 9) Install the packing (9) on the oil tank cap (10).
- 10) Install the oil tank cap (10) in the filler neck (8).
- 11) Turn the handle on the oil tank cap (10) clockwise to the CLOSE position.

S 434-032-N00

- (8) If a new oil tank is installed, install the oil tank cap with the packing to the filler neck (AMM 79-11-03/201).

S 434-033-N00

- (9) ENGINES PRE-PW-SB 79-65;
If a new oil tank is installed, install the sight gage (4) in the oil tank (AMM 79-31-02/401).

NOTE: Oil tanks with the cutaway end do not have a sight gage.

S 434-035-N00

- (10) If a new oil tank is installed, install the heatshield with the steps that follow:
 - (a) ENGINES PRE-PW-SB 79-48;
Install the heatshield (2) and bracket to the oil tank with the seam on the heatshield adjacent to the seam on the oil tank.
 - (b) ENGINES POST-PW-SB 79-48 OR POST-PW-SB 79-65;
Install the heatshield (2) to the oil tank with the seam on the heatshield adjacent to the seam on the oil tank.
 - (c) Attach the heatshield (2) with the clamp (18).
 - (d) Tighten the clamp screw (19) to 15-18 pound-inches (1.695-2.034 newton-meters).

S 644-036-N00

- (11) Lubricate the new packing (27) with oil.

S 434-037-N00

- (12) Install the new packing (27) on the front flange of the oil tank (20).

S 644-038-N00

- (13) Lubricate the new packings (25, 26) with oil.

EFFECTIVITY

ALL

79-11-01

N01

Page 411
Aug 22/01

S 434-039-N00
(14) Install the new packings (25, 26) on the transfer tubes (24) in the main gearbox.

S 644-040-N00
(15) Lubricate the threads of the bolts (1) with oil.

S 424-041-N00
(16) Install the oil tank (20), heatshield (2) and the ID plate bracket (21) to the left rear face of the main gearbox with the bolts (1).

NOTE: Align the offset bolt hole when you install the oil tank.

- (a) ENGINES POST-PW-SB 72-375;
Install the bracket (30) to the oil tank.
- (b) Tighten the bolts (1) with your hand.

CAUTION: MAKE SURE THE TUBES IN THE OIL TANK CORRECTLY ENGAGE THE TUBES FROM THE MAIN GEARBOX. IF THE TUBES ARE INCORRECTLY ENGAGED, DAMAGE TO THE ENGINE CAN OCCUR.

- (c) Make sure the oil tank (20) is correctly installed with the steps that follow:
 - 1) Look in the hole at the top of the oil tank where the oil quantity transmitter attaches.
 - 2) With a mirror, do a check to make sure the tubes in the oil tank are engaged with the tubes from the main gearbox.
 - 3) Make sure the breather tube is correctly engaged with its mating tube.
- (d) Tighten the bolts (1) to 180-200 pound-inches (20.337-22.597 newton-meters).

S 434-042-N00
(17) Attach the engine ground strap (28) with the bolt (29).

S 844-068-N00
(18) Install the magnetic chip detector assembly (AMM 79-21-10/401).

S 434-044-N00
(19) Connect the line (13) of the scupper drain to the scupper drain (12).

S 434-056-N00
(20) Install the oil quantity transmitter (AMM 79-31-01/401).

S 434-045-N00
(21) Connect the electrical connector to the oil quantity transmitter.

EFFECTIVITY

ALL

79-11-01

N01

Page 412
Dec 22/03

- S 434-046-N00
- (22) Connect the cooling air tube (3) to the heatshield of the oil quantity transmitter.

- S 434-047-N00
- (23) Install the (lower left) cooling air duct of the turbine vane (AMM 75-24-02/401).

- S 434-048-N00
- (24) Install the 15th-stage pneumatic duct to the No. 4 port (AMM 36-11-01/401).

- S 614-049-N00
- (25) Fill the engine oil system (AMM 12-13-01/301).
- G. Put the airplane back to its initial condition

- S 864-050-N00
- (1) Supply electrical power (AMM 24-22-00/201).

S 414-051-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (2) Close the left thrust reverser (AMM 78-31-00/201).

S 414-052-N00

- (3) Close the left core cowl panel (AMM 71-11-06/201).

S 444-053-N00

- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

S 414-054-N00

- (5) Close the left fan cowl panel (AMM 71-11-04/201).

S 714-055-N00

- (6) Do the test of the Oil Tank that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-11-01

N01

Page 413
Dec 22/00

OIL TANK CAP - MAINTENANCE PRACTICES

1. General

A. This procedure contains instructions to open and close the oil tank cap.

TASK 79-11-03-022-001-N00

2. Open the Oil Tank Cap

A. References

(1) AMM 78-31-00/201, Thrust Reverser System

B. Access

(1) Location Zones

410 Left Engine
420 Right Engine

(2) Access Panels

415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

C. Prepare to Open the Oil Tank Cap

S 042-002-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 012-003-N00

(2) Open the access door to fill the oil tank.

D. Open the Oil Tank Cap (Fig. 201)

S 032-004-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

CAUTION: THE SPECIFIED OIL USED IN THIS OIL SYSTEM CAN CAUSE DAMAGE TO THE PAINT AND SOME TYPES OF RUBBER. YOU MUST NOT PERMIT THE OIL TO TOUCH THOSE PARTS OF THE ENGINE WHICH DO NOT USUALLY TOUCH THE OIL. YOU MUST IMMEDIATELY CLEAN THE OIL WHICH FALLS OUT OF THE CONTAINER DURING SERVICING.

(1) Lift the handle on the oil tank cap.

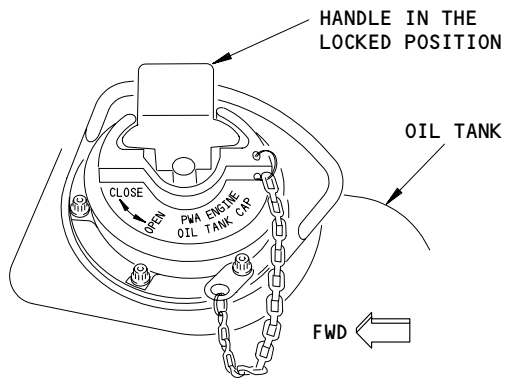
EFFECTIVITY

ALL

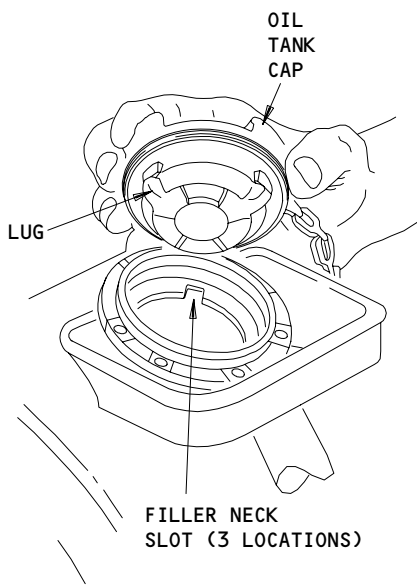
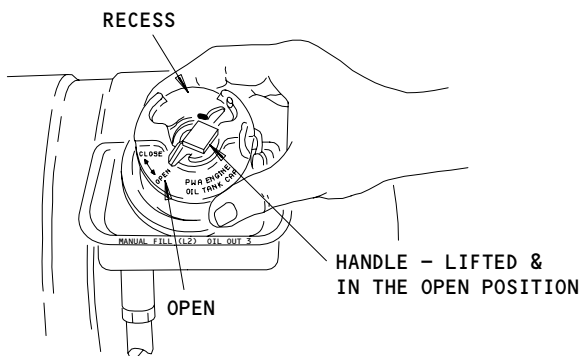
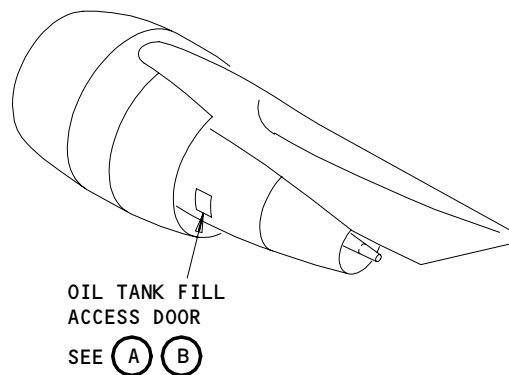
79-11-03

N01

Page 201
Dec 22/01

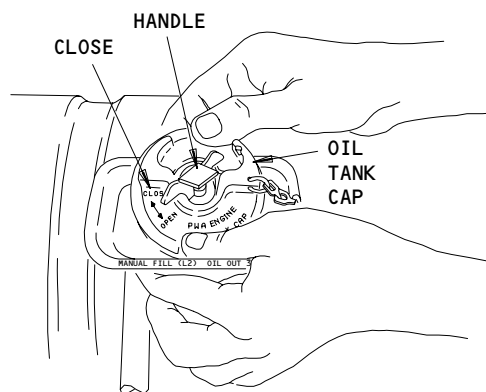


ENGINES WITH PWSB 79-65



SEQUENCE TO OPEN THE OIL TANK CAP

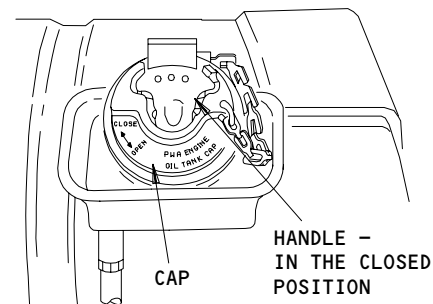
(A)



ENGINES WITHOUT PWSB 79-65

SEQUENCE TO CLOSE THE OIL TANK CAP

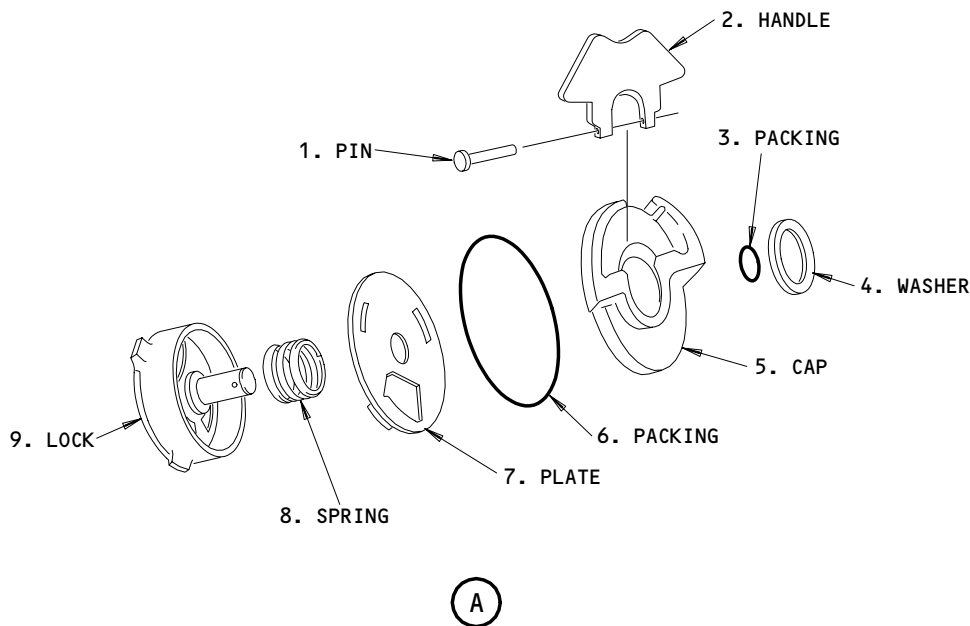
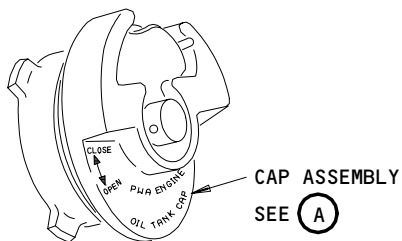
(B)



Oil Tank Cap
Figure 201

EFFECTIVITY	
	ALL

79-11-03



Disassembled Cap Assembly
Figure 202

EFFECTIVITY	
	ALL

79-11-03

N01

Page 203
May 10/94

- S 822-005-N00
(2) Turn the handle 45 degrees counterclockwise to the OPEN position.

- S 422-006-N00
(3) Remove the oil tank cap from the filler neck.
(a) Install protective cap.
(b) Examine the packing for cuts, nicks, or tears.
(c) Remove and Discard the packing (6) if you find it damaged.

- S 212-016-N00
(4) Examine the cap assembly for leaks around the handle.
(a) If you see that there were leaks around the handle, do the "Cap Assembly Repair" task.

TASK 79-11-03-302-017-N00

3. Cap Assembly Repair (Fig. 202)

A. General

- (1) This task replaces the packing on the lock of the cap assembly.
(2) You must disassemble the cap assembly to replace the packing.

B. Consumable Materials

- (1) D00390 Oil - Engine

C. References

- (1) AMM 78-31-00/201, Thrust Reverser System
(2) IPC 79-11-03 Fig. 1

D. Access

(1) Location Zones

- 410 Left Engine
420 Right Engine

(2) Access Panel

- 415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

E. Procedure

- S 962-018-N00
(1) Replace the packing.
(a) Disassemble the cap assembly.
1) Push the cap (5) and lock (9) together.
2) While they are pushed together, remove the pin (1) with a drift.
3) Remove the handle (2) from the lock.
4) Slowly release the pressure on the cap (5) and lock (9).

NOTE: The washer (4), cap, spring (8), plate (7), and lock will move apart.

- 5) Discard the packing (3).

EFFECTIVITY

ALL

79-11-03

N01

Page 204
Dec 22/01

- (b) Assemble the cap assembly.
 - 1) Apply engine oil to a new packing (3).
 - 2) Install the packing (3) in the packing groove in the lock (9).
 - 3) Install the spring (8), plate (7), cap (5), and washer (4) on the shaft of the lock (9).
 - 4) Put the handle (2) in its position on the shaft of the lock (9) and the cap (5).
 - 5) Push together the lock (9) and the cap (5), then put the pin (1) through the handle (2).

TASK 79-11-03-422-007-N00

4. Close the Oil Tank Cap

A. References

- (1) AMM 78-31-00/201, Thrust Reverser System

B. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

C. Procedure (Fig. 201)

S 422-019-N00

- (1) If the packing is not installed, install a new packing as follows:
 - (a) Apply engine oil to the new packing.
 - (b) Install the new packing in the packing groove on the cap assembly.

S 422-008-N00

- (2) With the handle in the OPEN position, put the oil tank cap in the filler neck.

S 822-009-N00

- (3) Align the lugs on the oil tank cap with the slots in the filler neck.

S 432-010-N00

- (4) Apply pressure with your hand to the top of the oil tank cap.

S 822-015-N00

- (5) Turn the handle 45 degrees clockwise to the CLOSE position.

S 432-011-N00

- (6) Push the handle into the recess to lock the oil tank cap.

EFFECTIVITY

ALL

79-11-03

N01

Page 205
Dec 22/00

- S 422-012-N00
- (7) Make sure the oil tank cap is installed and locked correctly in the filler neck.
 - (a) Apply pressure to the outer rim of the oil tank cap at opposite sides.
 - (b) You must not feel movement of the oil tank cap.
- D. Put the airplane back to its initial condition

- S 412-013-N00
- (1) Close the access door to the oil tank.

- S 442-014-N00
- (2) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-11-03

N01

Page 206
Dec 22/00

ENGINE OIL DISTRIBUTION SYSTEM – DESCRIPTION AND OPERATION

1. General (Fig. 1)
 - A. The engine oil distribution system supplies engine oil to lubricate, clean and decrease the temperature of the engine main bearings, seals, angle and main gearboxes, and accessory drives. One more function is to send the oil back to the oil tank through a scavenge system.
2. Component Details
 - A. ENGINES PRE-PW-SB 72-525;
Main Oil Filter (Fig. 2)
 - (1) The housing for the main oil filter is attached to the front, left side of the main gearbox.
 - (2) The main oil filter is a unit which cleans the solid contamination from the oil.
 - (3) The filter is a 15 micron nominal disposable unit.
 - B. ENGINES POST-PW-SB 72-525;
Main Oil Filter (Fig. 2)
 - (1) The dual element oil filter is a filter within a filter design.
 - (2) The dual element design features a 150 micron secondary element within the 65 micron primary element.
 - C. Main Oil Filter Bypass Valve (Fig. 2)
 - (1) ENGINES PRE-PW-SB 72-525;
The bypass valve for the main oil filter is installed on the top forward side of the housing for the main oil filter.
 - (2) ENGINES POST-PW-SB 72-525;
The primary filter bypass valve is installed on the bottom centerbody of the filter assembly.
 - (3) If there is a clogged main oil filter, the bypass valve opens and gives free oil flow around the main oil filter. The bypass valve opens when the differential pressure is more than 70 psid, and closes when the pressure is less than 70 psid.
 - D. Oil System Pressure (Regulator) Relief Valve (Fig. 2)
 - (1) The pressure (regulator) relief valve for the oil system is installed on the forward side of the housing for the main oil filter.
 - (2) This pressure relief valve prevents too much oil system pressure. When the pressure is more than 520 psig, the pressure relief valve opens, and causes some oil to go directly back to the oil tank, which decreases the oil pressure. When the pressure goes less than 520 psig, the pressure relief valve closes.
 - E. Air/Oil Heat Exchanger (Fig. 2)
 - (1) The air/oil heat exchanger is installed on the left side of the engine at the 8:30 o'clock position on the rear bulkhead of the intermediate case.
 - (2) This air/oil heat exchanger decreases the temperature of the engine oil with a tube and fin quality in a single housing with fan air inlet and internal tubes for a continuous oil flow.
 - (3) The oil inlet and return ports are installed on the top, aft side of the air/oil heat exchanger.

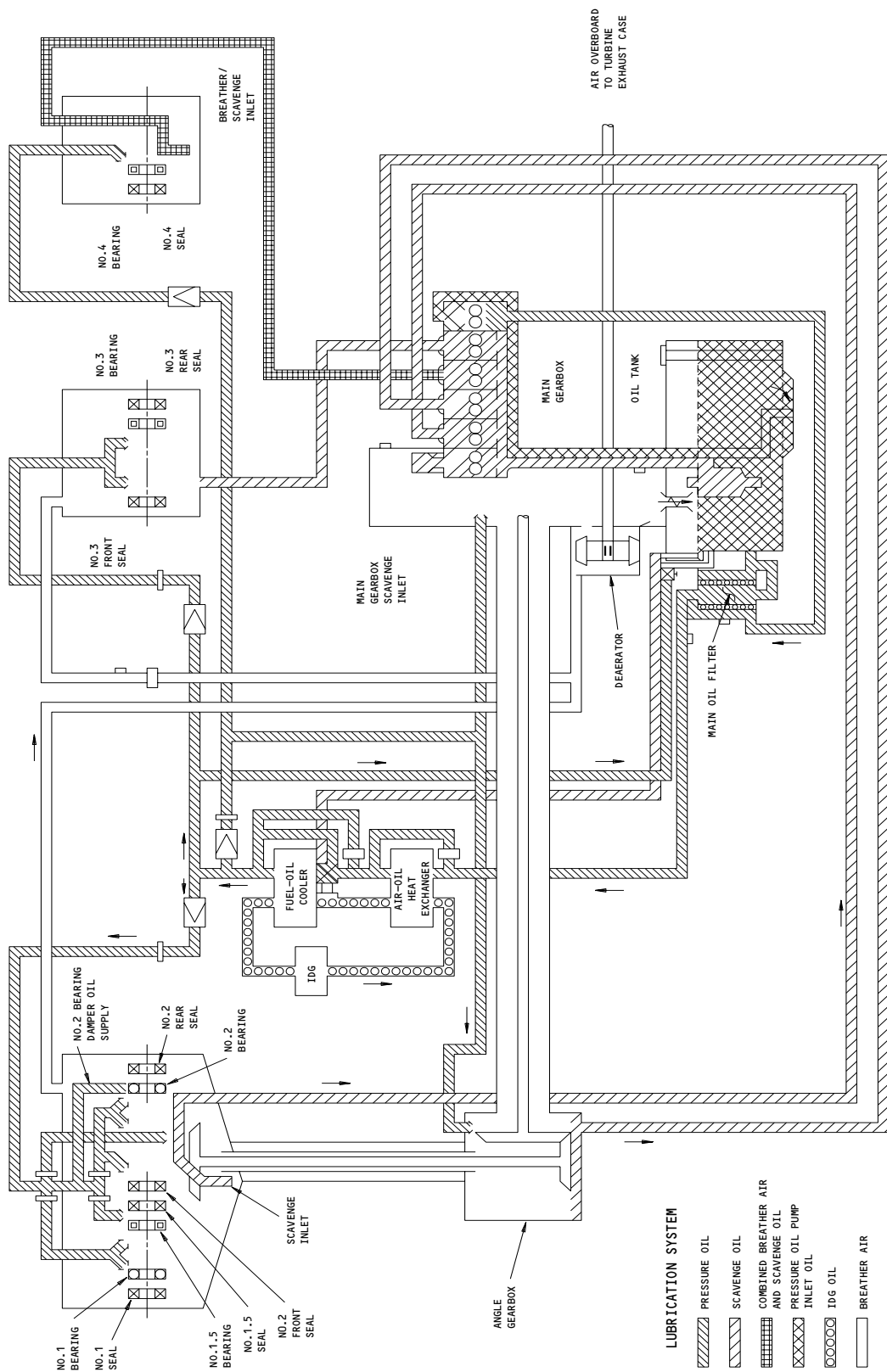
EFFECTIVITY

ALL

79-21-00

N01

Page 1
Dec 22/01



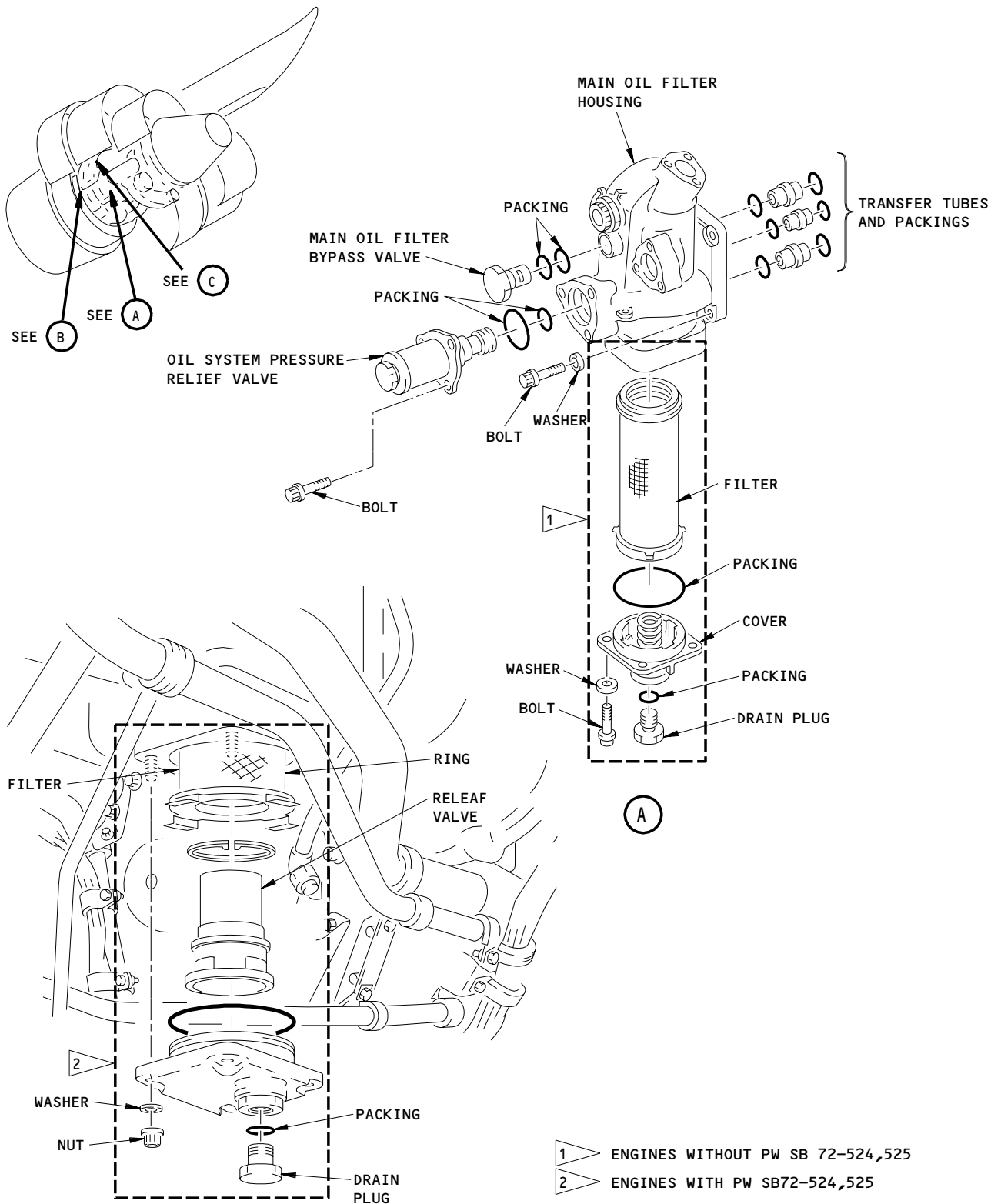
Engine Oil System Schematic
Figure 1

- LUBRICATION SYSTEM**
- PRESSURE OIL
 - SCAVENGE OIL
 - COMBINED BREATHER AIR AND SCAVENGE OIL
 - PRESSURE OIL PUMP INLET OIL
 - IDG OIL
 - BREATHER AIR

EFFECTIVITY

ALL

79-21-00



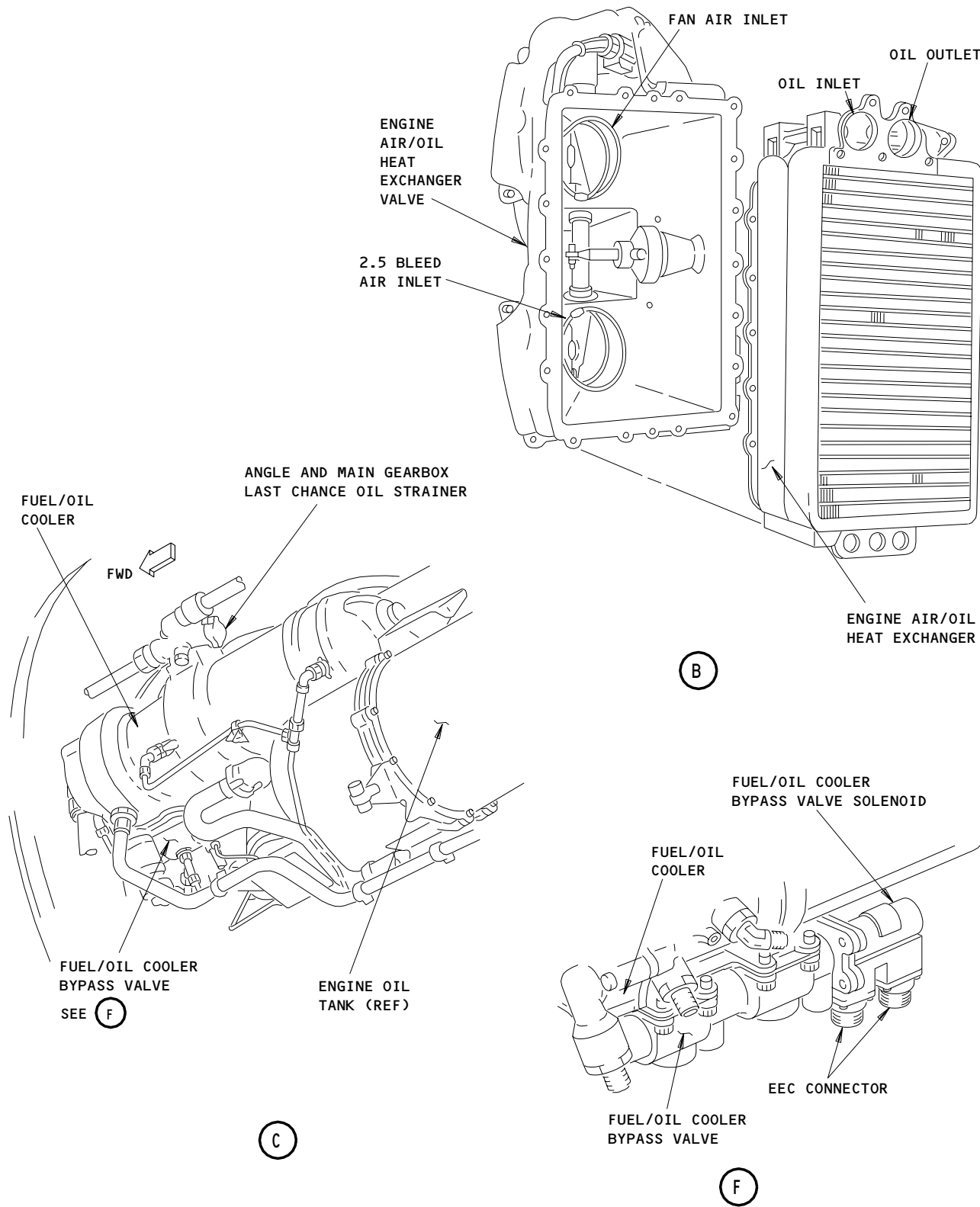
Engine Oil Distribution System
Figure 2 (Sheet 1)

EFFECTIVITY	
	ALL

79-21-00

N01

Page 3
Aug 10/95



Engine Oil Distribution System
Figure 2 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-00

N01

Page 4
Nov 10/87

F. Air/Oil Heat Exchanger Valve (Fig. 2)

- (1) The valve for the air/oil heat exchanger is installed on the rear bulkhead of the intermediate case at the 8:30 o'clock position on the forward side of the air/oil heat exchanger.
- (2) The valve controls the cooling airflow, which is fan air or 2.5 bleed air, to the air/oil heat exchanger.
- (3) The valve includes pneumatic dual-butterfly valves, a fuel pressure-driven actuator, dual-coil torque motor, and a dual-rotary variable transformer (RVT).
 - (a) The torque motor controls pressure which is applied on each side of the actuator piston. This changes the actuator position.
 - (b) The movement of the actuator causes the butterfly valves to turn.
 - (c) The RVT measures the position of the butterfly valve and supplies a valve position signal to the engine electronic control (EEC).
- (4) The valve for the air/oil heat exchanger is spring-loaded to the open position (fail-safe) if there is an EEC signal or fuel pressure failure.

G. Fuel/Oil Cooler (Fig. 2)

- (1) The fuel/oil cooler is installed on the HPC rear case at the 9 o'clock position.
- (2) The fuel/oil cooler decreases the temperature of the engine and IDG oil, and increases the temperature of the fuel to prevent ice in the fuel system.
- (3) The fuel/oil cooler is a shell and tube type heat exchanger which uses a single housing with two different, internal oil passage cores.
 - (a) One is for the flow of the engine oil and the other for the IDG oil.
 - (b) You can replace each internal oil passage core.
- (4) The fuel flows through internal passages for continuous flow. But, a pressure relief valve in the fuel/oil cooler permits the boost stage flow of the fuel pump to go around the IDG core if ice in the IDG core occurs.
- (5) Engine oil flow is controlled by the bypass valve of the fuel/oil cooler. The IDG oil flow is continuous and must go through the fuel/oil cooler.
- (6) The overboard drain ports are available for the engine oil core and the IDG oil core.

H. Fuel/Oil Cooler Bypass Valve (Fig. 2)

- (1) The bypass valve for the fuel/oil cooler is attached to the bottom of the fuel/oil cooler.
- (2) Held in the nonbypass (fail-safe) position by engine oil pressure, the bypass valve will open with cold oil or a clogged cooler core. If the pressure differential between the inlet and outlet of the fuel/oil cooler is more than 50 psi, the force on the relief valve poppet will cause the relief valve spring to close. This lets the relief valve poppet open, and the oil to go around the fuel/oil cooler.

EFFECTIVITY

ALL

79-21-00

N01

Page 5
Apr 22/00

- (3) Also, a solenoid can operate the bypass valve to the closed position.
- I. Fuel/Oil Cooler Bypass Valve Solenoid (Fig. 2)
 - (1) The bypass valve solenoid is installed on the aft side of the bypass valve, below the fuel/oil cooler.
 - (2) The bypass valve solenoid is a dual-coil solenoid operated by the EEC as a function of fuel temperature. Each channel of the EEC controls one coil of the bypass valve solenoid.
- J. Last Chance Oil Strainers
 - (1) Last chance oil strainers are installed in the positions that follow:
 - (a) One in the oil pressure line for the No. 1, 1.5, and 2 bearings at the 9 o'clock position on the HPC front case.
 - (b) One in the oil pressure line for the No. 3 bearing at the 9:30 o'clock position on the diffuser case.
 - (c) One in the oil pressure line for the No. 4 bearing at the 11:30 o'clock position on the turbine exhaust case.
 - (d) One in the oil outlet housing of the fuel/oil cooler for the main and angle gearboxes.
 - (2) These metal strainers prevent particles which can cause blockage of the oil nozzles or go into the bearing compartments.
- K. Magnetic Chip Detectors (Fig. 3)
 - (1) The magnetic chip detectors collect metal particles from the engine oil. These magnetic chip detectors are installed in the positions that follow:
 - (a) Four on the housing for the lubrication and scavenge oil pump. One at the angle gearbox scavenge inlet and at each scavenge inlet for the bearing compartment.
 - (b) One on the bottom, forward side of the main gearbox.
 - (2) The magnetic chip detectors include a bayonet-type magnetic probe and a self-closing check valve housing which you can remove and not let the engine oil fall.
- L. Lubrication and Scavenge Oil Pump (Fig. 3)
 - (1) The lubrication and scavenge oil pump supplies oil with pressure to the engine bearings, seals, and the angle and main gearboxes. Also, it puts scavenge oil back into the oil tank.
 - (2) The lubrication and scavenge oil pump is attached on the rear, right side of the main gearbox, and is operated by the main gearbox.
 - (3) The lubrication and scavenge oil pump is a positive displacement, six stage, gear pump. One stage is for the lubrication oil and five stages for the scavenge oil.
- M. Deoiler
 - (1) Installed on the left front face of the main gearbox, the deoiler removes the engine oil mist from the breather air.
 - (2) The deoiler uses an impeller to remove most of the engine oil from the breather air. The engine oil then drains to the main gearbox sump through an internal tube. The air is bled overboard.

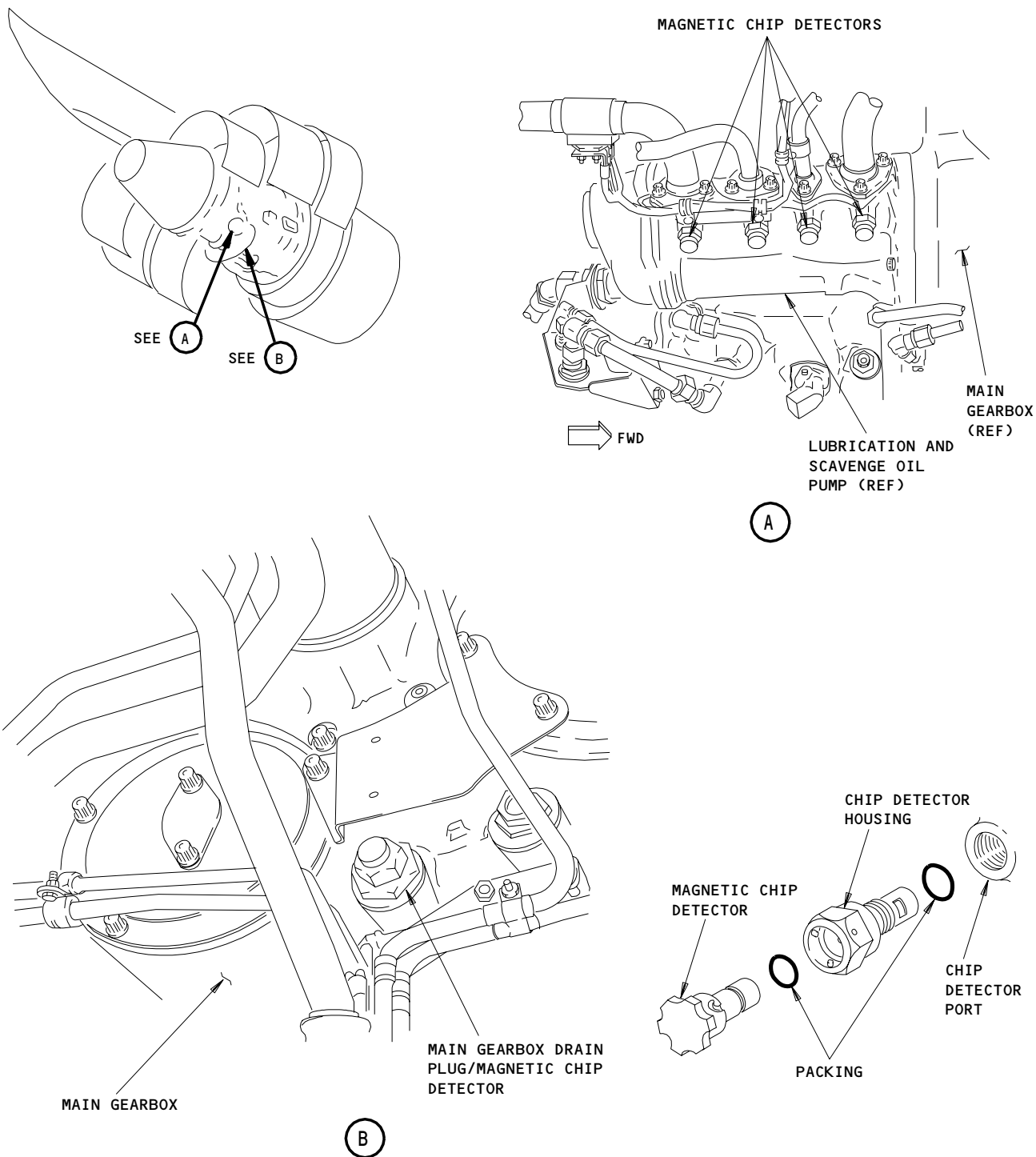
EFFECTIVITY

ALL

79-21-00

N01

Page 6
Apr 22/00



Engine Oil Distribution System
Figure 3

EFFECTIVITY

ALL

79-21-00

N01

Page 7
May 10/91

272896

3. Operation

A. Functional Description (Fig. 1)

- (1) The engine oil flows from the oil tank to the pressure stage inlet for the lubrication and scavenge oil pump where the pump supplies the pressurized oil to the main oil filter. If there is a clogged main oil filter, the differential pressure will increase, and cause the bypass valve to open. This makes sure the engine oil flows around the main oil filter.
- (2) From the main oil filter, the engine oil goes to the pressure relief valve and to the air/oil heat exchanger and fuel/oil cooler. The air/oil heat exchanger and fuel/oil cooler have a bypass valve to make sure engine oil can flow when the differential pressure becomes too high.
- (3) The last chance oil strainers clean the engine oil before the engine oil goes into the bearings, seals, and gearboxes.
- (4) The engine oil in the bearing compartments and gearboxes is put back into the oil tank through each scavenge oil stage in the lubrication and scavenge oil pump.
- (5) After it goes through the scavenge oil stages, all scavenge oil goes through a deaerator before it goes back to the oil tank.
- (6) The breather air is bled from the bearing compartments to the deoiler through the gearboxes. From the deoiler, the breather air is bled overboard through the nacelle cowling.

EFFECTIVITY

ALL

79-21-00

N01

Page 8
Aug 10/95

ENGINE OIL DISTRIBUTION SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
CONTROL - (REF 73-21-00, FIG. 101) ELECTRONIC ENGINE, M7198				
COOLER - FUEL/OIL	2	2	415AL,425AL, THRUST REVERSER	79-21-01
DETECTOR - ANGLE GEARBOX MAGNETIC CHIP	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-10
DETECTOR - MAIN GEARBOX MAGNETIC CHIP	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-10
DETECTOR - NO. 1,1.5,2 BEARING MAGNETIC CHIP	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-10
DETECTOR - NO. 3 BEARING MAGNETIC CHIP	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-10
DETECTOR - NO. 4 BEARING MAGNETIC CHIP	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-10
DETECTOR - OIL TANK MAGNETIC CHIP	4	2	415AL,425AL, THRUST REVERSER	79-21-10
FILTER - MAIN OIL	1	2	415AL,425AL, THRUST REVERSER	79-21-05
HEAT EXCHANGER - AIR/OIL	2	2	415AL,425AL, THRUST REVERSER	79-21-09
PUMP - LUBRICATION AND SCAVENGE OIL	4	2	415AL,416AR,425AL,426AR, THRUST REVERSER	79-21-04
STRAINER - ANGLE AND MAIN GEARBOX LAST CHANCE OIL	3	2	415AL,425AL, THRUST REVERSER	79-21-16
STRAINER - NO. 1,1.5,2 BEARING LAST CHANCE OIL	3	2	415AL,425AL, THRUST REVERSER	79-21-16
STRAINER - NO. 3 BEARING LAST CHANCE OIL	3	2	415AL,425AL, THRUST REVERSER	79-21-16
STRAINER - NO. 4 BEARING LAST CHANCE OIL	3	2	417AL,427AL, CORE COWL PANELS	79-21-16
SOLENOID - FUEL/OIL COOLER BYPASS VALVE	2	2	415AL,425AL, THRUST REVERSER	79-21-03
VALVE - AIR/OIL HEAT EXCHANGER	2	2	415AL,425AL, THRUST REVERSER	79-21-09
VALVE - FUEL/OIL COOLER BYPASS	2	2	415AL,425AL, THRUST REVERSER	79-21-01
VALVE - MAIN OIL FILTER BYPASS	1	2	415AL,425AL, THRUST REVERSER	79-21-06
VALVE - OIL SYSTEM PRESS RELIEF	1	2	415AL,425AL, THRUST REVERSER	79-21-07

 Engine Oil Distribution System - Component Index
 Figure 101

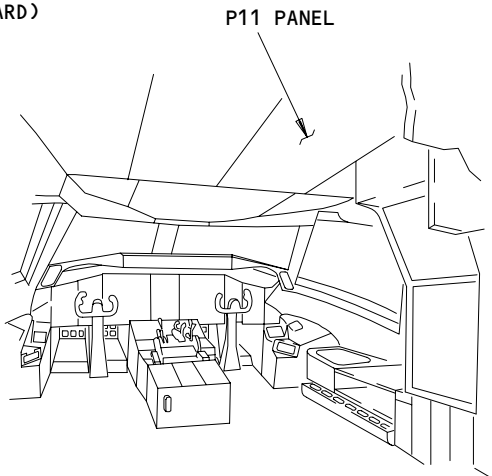
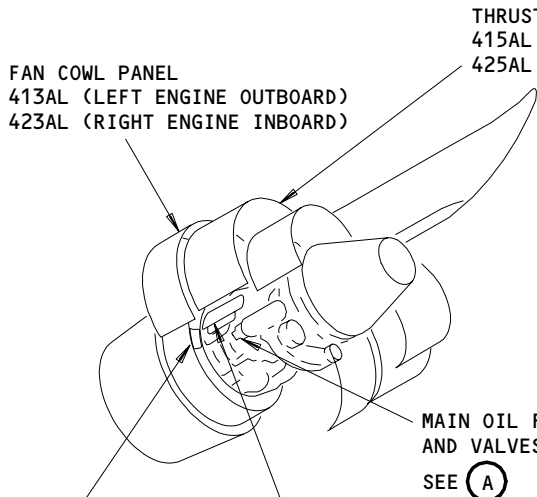
EFFECTIVITY

ALL

79-21-00

N01

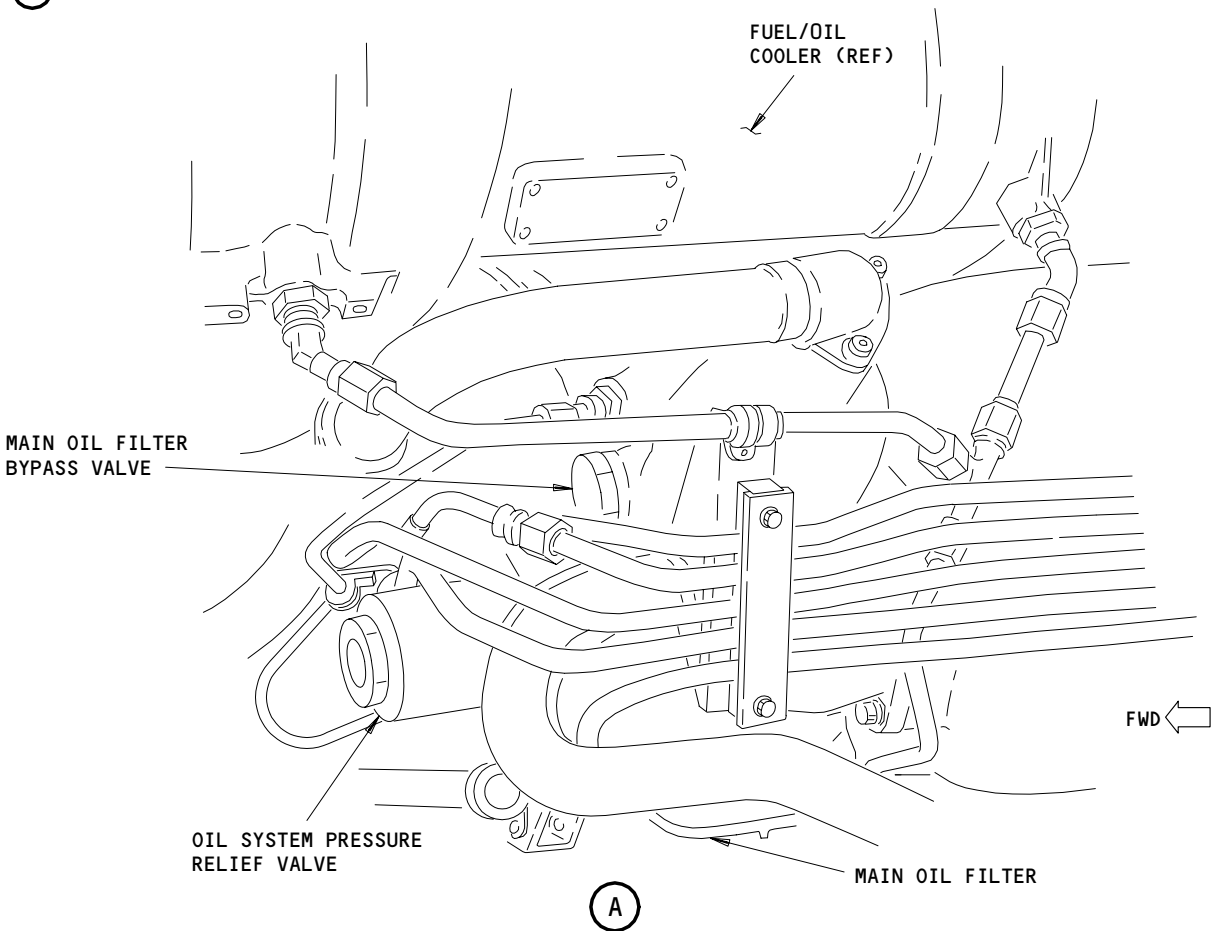
 Page 101
 Aug 10/91



AIR/OIL HEAT EXCHANGER AND VALVE
SEE (B) SHT 2

FUEL/OIL COOLER
SEE (C) SHT 2

FLIGHT COMPARTMENT

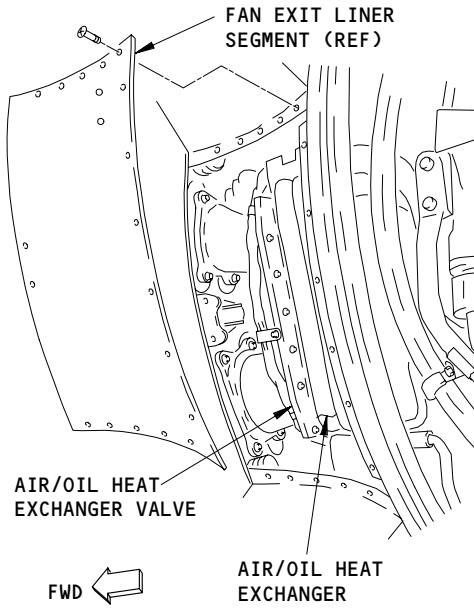


Engine Oil Distribution System - Component Location
Figure 102 (Sheet 1)

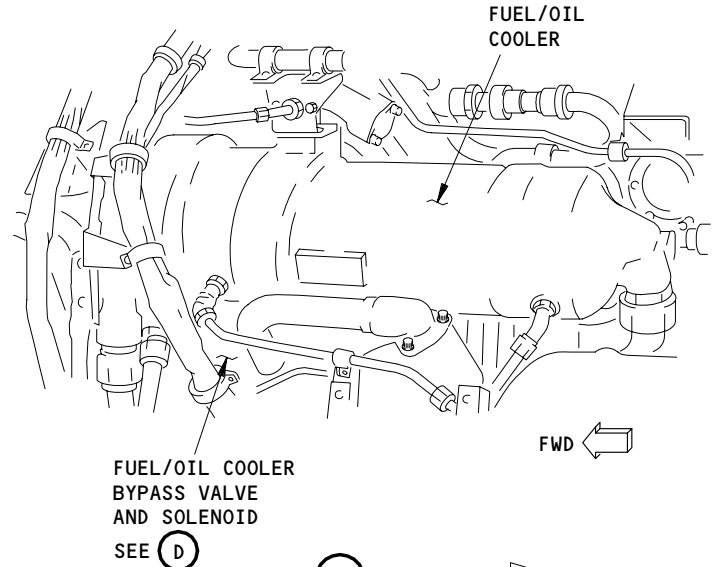
EFFECTIVITY	
ALL	

79-21-00

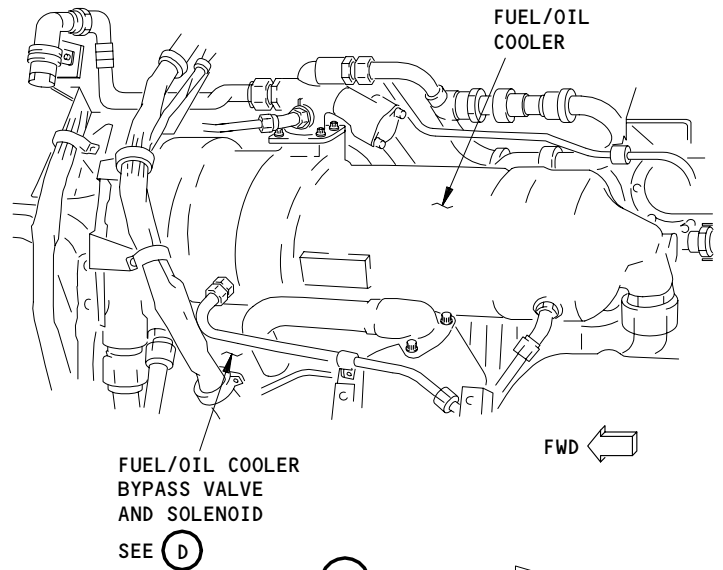
273070



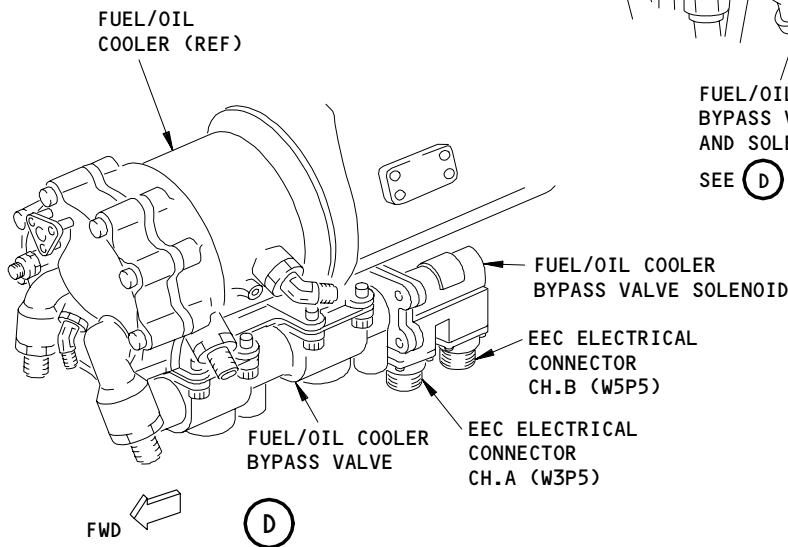
(B) FROM SHT 1



(C) FROM SHT 1 1



(C) FROM SHT 1 2



(D)

1 ENGINES WITHOUT PHASE 3
2 ENGINES WITH PHASE 3

Engine Oil Distribution System - Component Location
Figure 102 (Sheet 2)

EFFECTIVITY

ALL

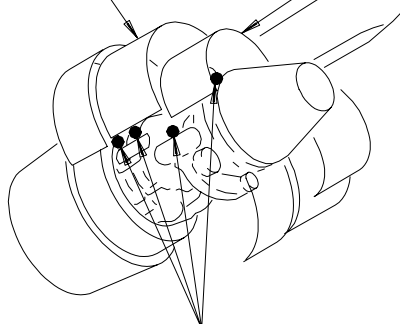
79-21-00

N02

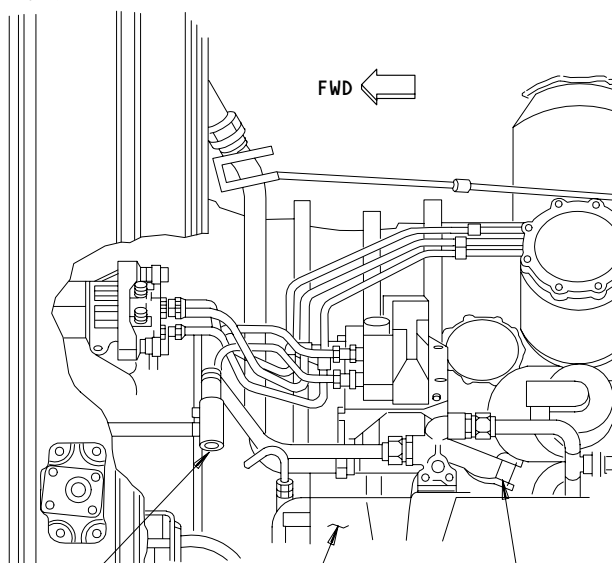
Page 103
Aug 10/94

THRUST REVERSER
415AL (LEFT ENGINE OUTBOARD)
425AL (RIGHT ENGINE INBOARD)

CORE COWL PANEL
417AL (LEFT ENGINE OUTBOARD)
427AL (RIGHT ENGINE INBOARD)



LAST CHANCE
OIL STRAINERS
SEE (E) (F) (G)

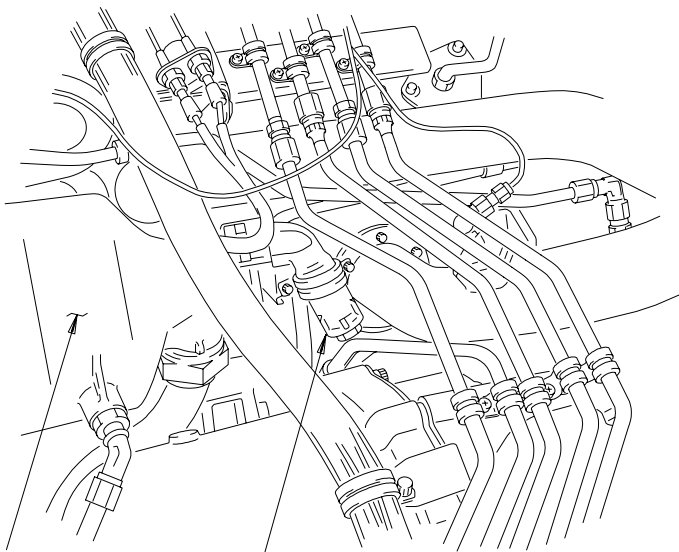


NO. 1, 1.5, AND 2
BEARINGS LAST CHANCE
OIL STRAINER

FUEL/OIL
COOLER (REF)

ANGLE AND MAIN
GEARBOX LAST
CHANCE OIL
STRAINER

(E)

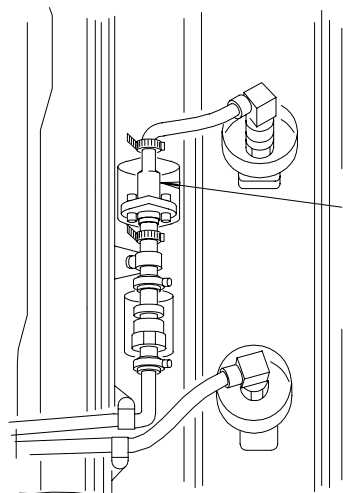


FUEL/OIL
COOLER (REF)

NO. 3 BEARING LAST
CHANCE OIL STRAINER

FWD ←

(F)



NO. 4
BEARING
LAST CHANCE
OIL STRAINER

FWD ←

(G)

Engine Oil Distribution System - Component Location
Figure 102 (Sheet 3)

EFFECTIVITY

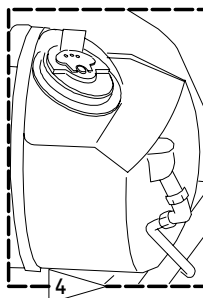
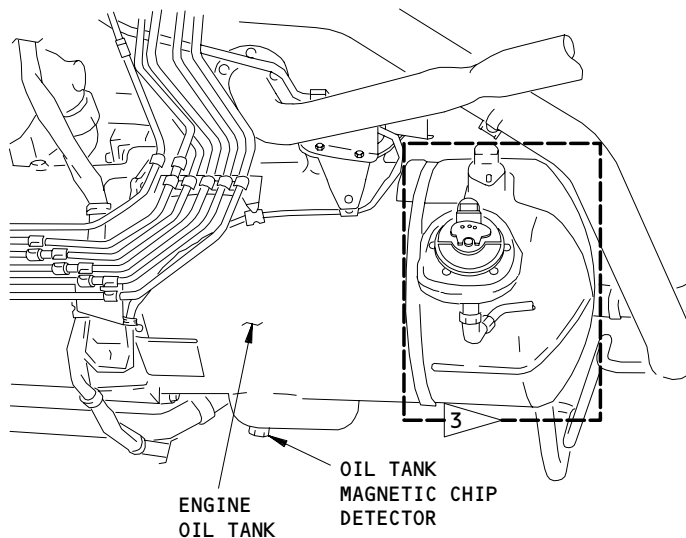
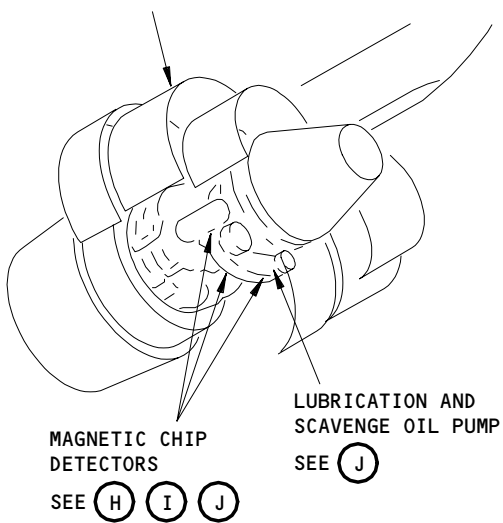
ALL

79-21-00

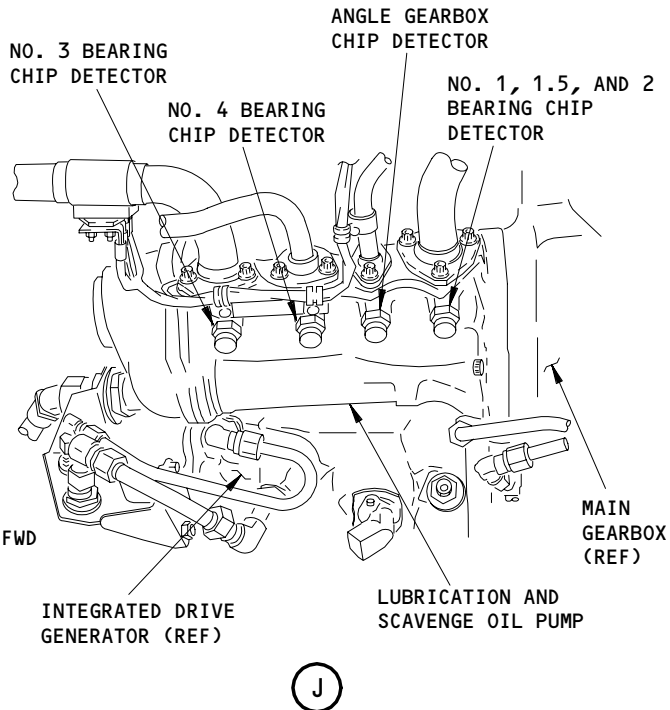
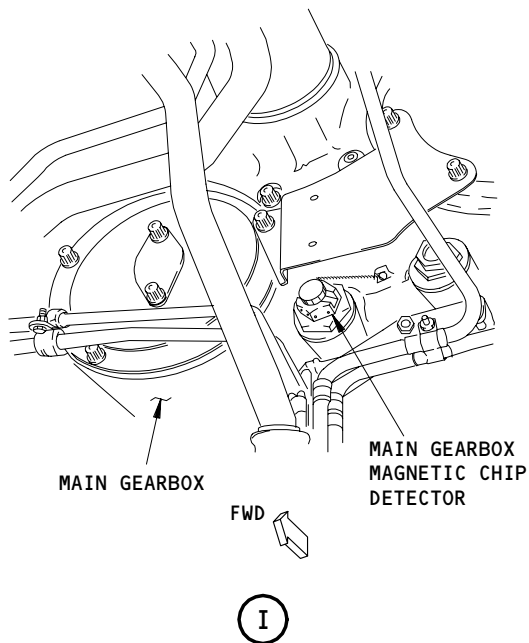
N01

Page 104
Aug 10/91

THRUST REVERSER,
415AL (LEFT ENGINE OUTBOARD),
416AR (LEFT ENGINE INBOARD),
425AL (RIGHT ENGINE INBOARD),
426AR (RIGHT ENGINE OUTBOARD)



(H)



- 3 ENGINES WITHOUT PW SB 79-65
- 4 ENGINES WITH PW SB 79-65

Engine Oil Distribution System - Component Location
Figure 102 (Sheet 4)

EFFECTIVITY

ALL

79-21-00

N01

Page 105
Aug 10/94

FUEL/OIL COOLER AND FUEL/OIL COOLER BYPASS VALVE -
REMOVAL/INSTALLATION

1. General

- A. This procedure gives the removal and installation of the fuel/oil cooler and bypass valve of the fuel/oil cooler from the engine as one unit. Also, this procedure includes the separation of the bypass valve from the fuel/oil cooler after they are removed from the engine.
- B. The fuel/oil cooler is cleaned at a maintenance facility when the engine is removed for overhaul.

TASK 79-21-01-004-001-N00

2. Remove the Fuel/Oil Cooler and Fuel/Oil Cooler Bypass Valve (Fig. 401)

A. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 36-11-01/401, Pneumatic Duct
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System
- (6) AMM 79-21-03/401, Fuel/Oil Cooler Bypass Valve Solenoid

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare for Removal of the Fuel/Oil Cooler and the Bypass Valve of the Fuel/Oil Cooler

S 864-002-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 864-003-N00

- (2) For the left engine, make sure this circuit breaker on the main power distribution panel P6 is closed:
 - (a) 6E1, FUEL VALVES L SPAR

S 864-004-N00

- (3) For the left engine, make sure this circuit breaker on the overhead circuit breaker panel P11 is closed:
 - (a) 11D25, ENGINE FUEL CONT VLV & EEC CHAN B RST L

S 864-005-N00

- (4) For the right engine, make sure this circuit breaker on the main power distribution panel P6 is closed:
 - (a) 6E2, FUEL VALVES R SPAR

EFFECTIVITY

ALL

79-21-01

N01

Page 401
Dec 22/00

- S 864-006-N00
- (5) For the right engine, make sure this circuit breaker on the overhead circuit breaker panel P11 is closed:
- (a) 11D26, ENGINE FUEL CONT VLV & EEC CHAN B RST R
- S 864-007-N00
- (6) Make sure the applicable FUEL CONTROL switch is in cutoff position.
- S 864-008-N00
- (7) Make sure the applicable ENG VALVE and SPAR VALVE panel lights on the control stand are extinguished.
- S 864-009-N00
- (8) For the left engine, open this circuit breaker on the main power distribution panel P6 and attach DO-NOT-CLOSE tag:
- (a) 6E1, FUEL VALVES L SPAR
- S 864-010-N00
- (9) For the left engine, open this circuit breaker on the overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tag:
- (a) 11D25, ENGINE FUEL CONT VLV & EEC CHAN B RST L
- S 864-011-N00
- (10) For the right engine, open this circuit breaker on the main power distribution panel P6 and attach DO-NOT-CLOSE tag:
- (a) 6E2, FUEL VALVES R SPAR
- S 864-012-N00
- (11) For the right engine, open this circuit breaker on the overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tag:
- (a) 11D26, ENGINE FUEL CONT VLV & EEC CHAN B RST R
- S 864-013-N00
- (12) Remove electrical power (AMM 24-22-00/201).
- S 014-014-N00
- (13) Open the left fan cowl panel (AMM 71-11-04/201).
- S 044-015-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (14) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

- S 014-016-N00
- (15) Open the left core cowl panel (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-21-01

N01

Page 402
Dec 22/00

S 014-017-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

(16) Open the left thrust reverser (AMM 78-31-00/201).

D. Remove the Fuel/Oil Cooler and the Bypass Valve of the Fuel/Oil Cooler

S 034-018-N00

(1) Remove the 8th-stage intermediate pressure (IP) duct (AMM 36-11-01/401).

S 034-019-N00

(2) Remove the brackets from the forward end of the fuel/oil cooler as follows (Fig. 401):

- (a) Remove the clamps (1) which attach the wire harnesses.
- (b) Remove the bolts (7) which attach the support (6) to the bracket (5).
- (c) Remove the clamp (11) which attaches the support (10) to the bracket (4).
- (d) Remove the bolts (9) which attach the brackets (4, 5) to the fuel/oil cooler.
 - 1) Remove the brackets (4, 5).

S 034-020-N00

(3) Disconnect the EEC electrical connectors from the bypass valve solenoid of the fuel/oil cooler.

S 034-021-N00

(4) Install protective caps on the EEC electrical connections.

S 024-062-N00

(5) Remove main bearing strainer housing (AMM 79-21-17/401).

S 034-025-N00

(6) Remove the oil return tube (1), oil inlet tube (2) and IDG oil inlet tube (3) from the bypass valve (Fig. 402):

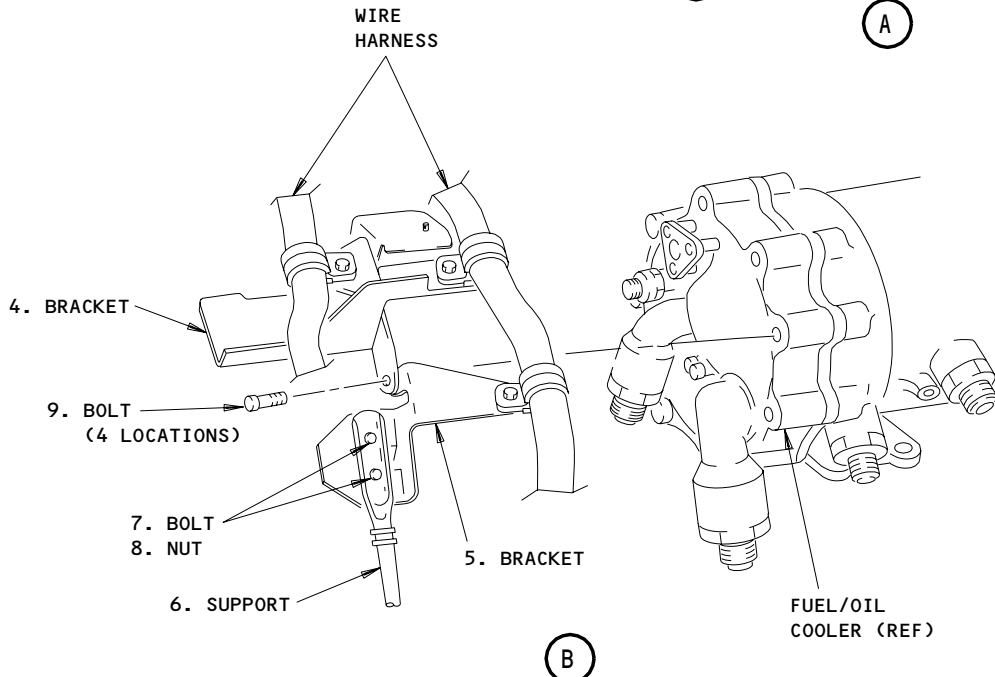
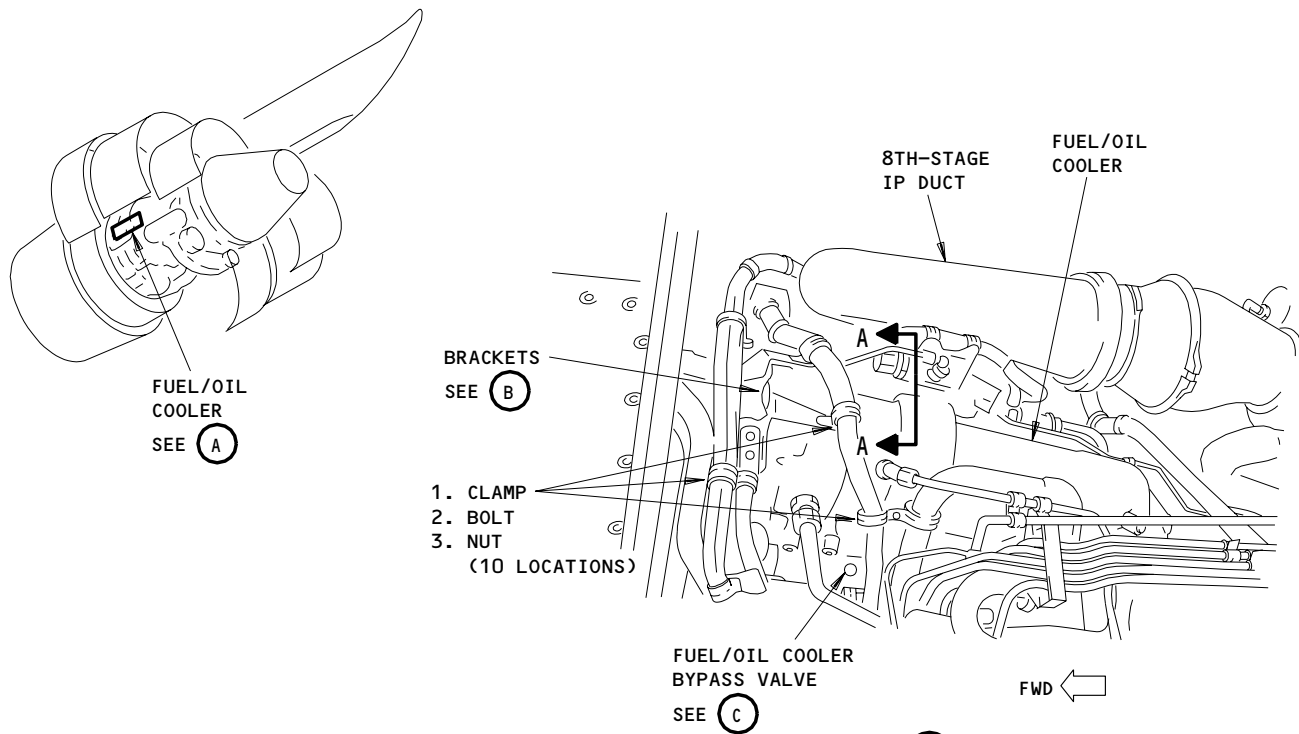
EFFECTIVITY

ALL

79-21-01

N01

Page 403
Dec 22/00



Bracket and EEC Connector Installation
Figure 401 (Sheet 1)

EFFECTIVITY	
ALL	

79-21-01

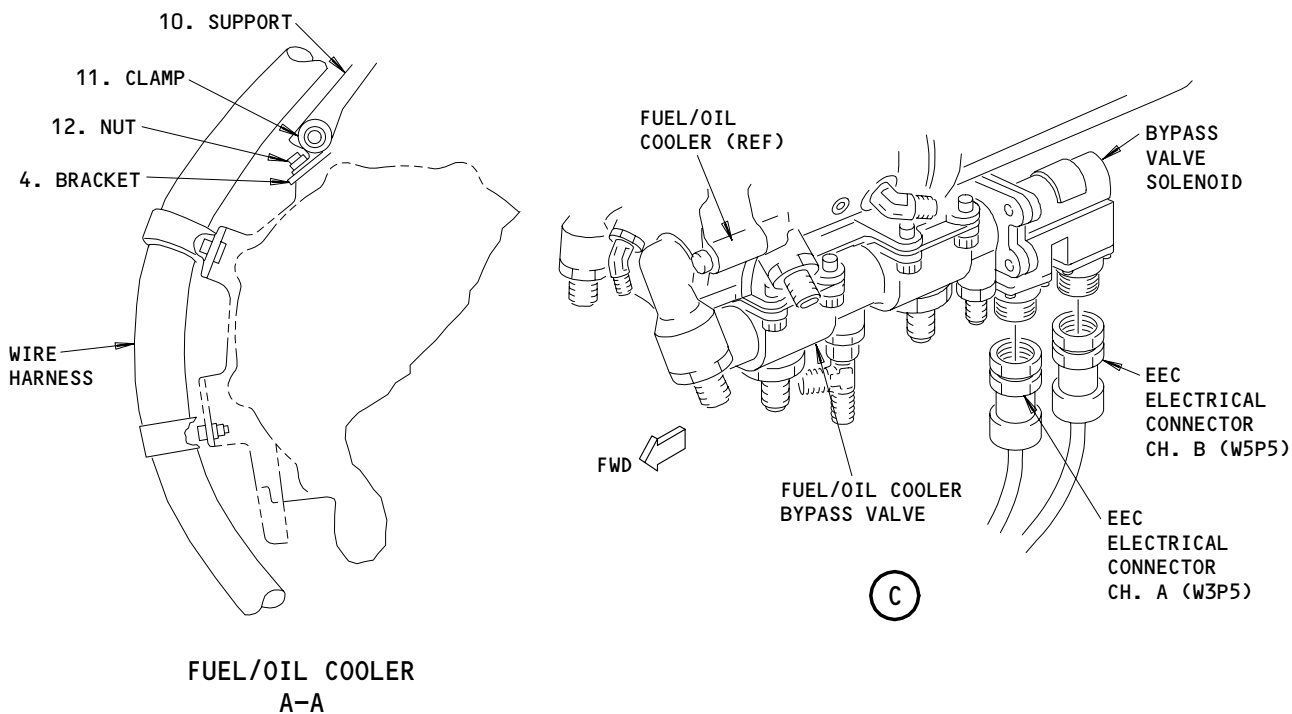
- (a) Disconnect the oil return tube (1) from the bypass valve.
- (b) Disconnect the oil inlet tube (2) from the bypass valve.
- (c) Disconnect the IDG oil inlet tube (3) from the bypass valve.
- (d) Discard the packings and retainers from the oil return tube, oil inlet tube and IDG oil inlet tube.
- (e) Install protective caps on the tube fittings.

S 034-026-N00

- (7) Remove the fuel outlet tube, fuel inlet tubes and inlet return tube for fuel (Fig. 403):
 - (a) Disconnect the fuel outlet tube (4) from the fuel/oil cooler.
 - (b) Disconnect the fuel inlet tube (9) from the fuel/oil cooler.
 - (c) Disconnect the fuel inlet tube (12) from the fuel/oil cooler.
 - (d) Disconnect inlet return tube (1) for fuel from the fuel/oil cooler.
 - (e) Discard the packings and retainers from the fuel outlet tube, fuel inlet tubes and the inlet return tube for fuel.
 - (f) Install protective caps on the tube fittings.

S 034-027-N00

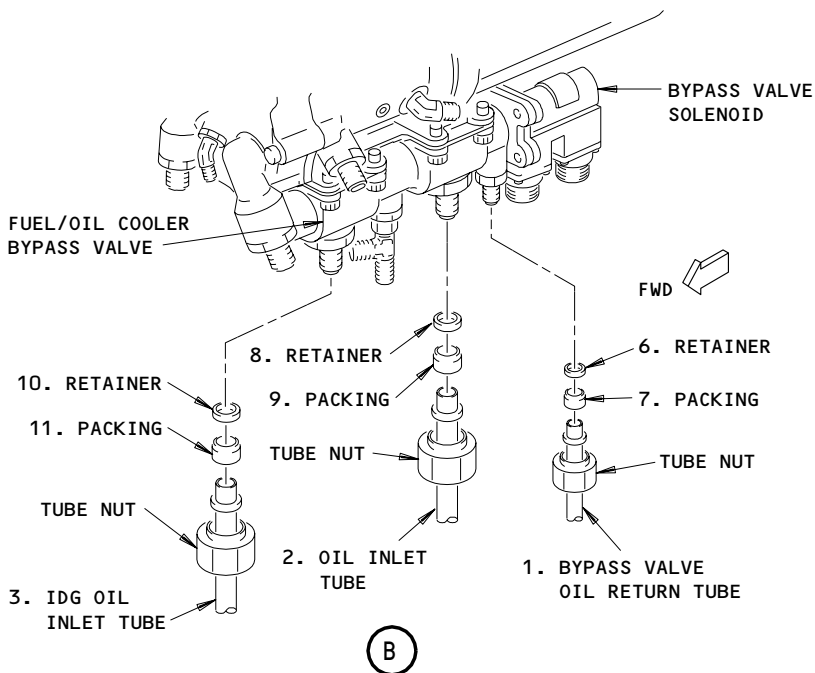
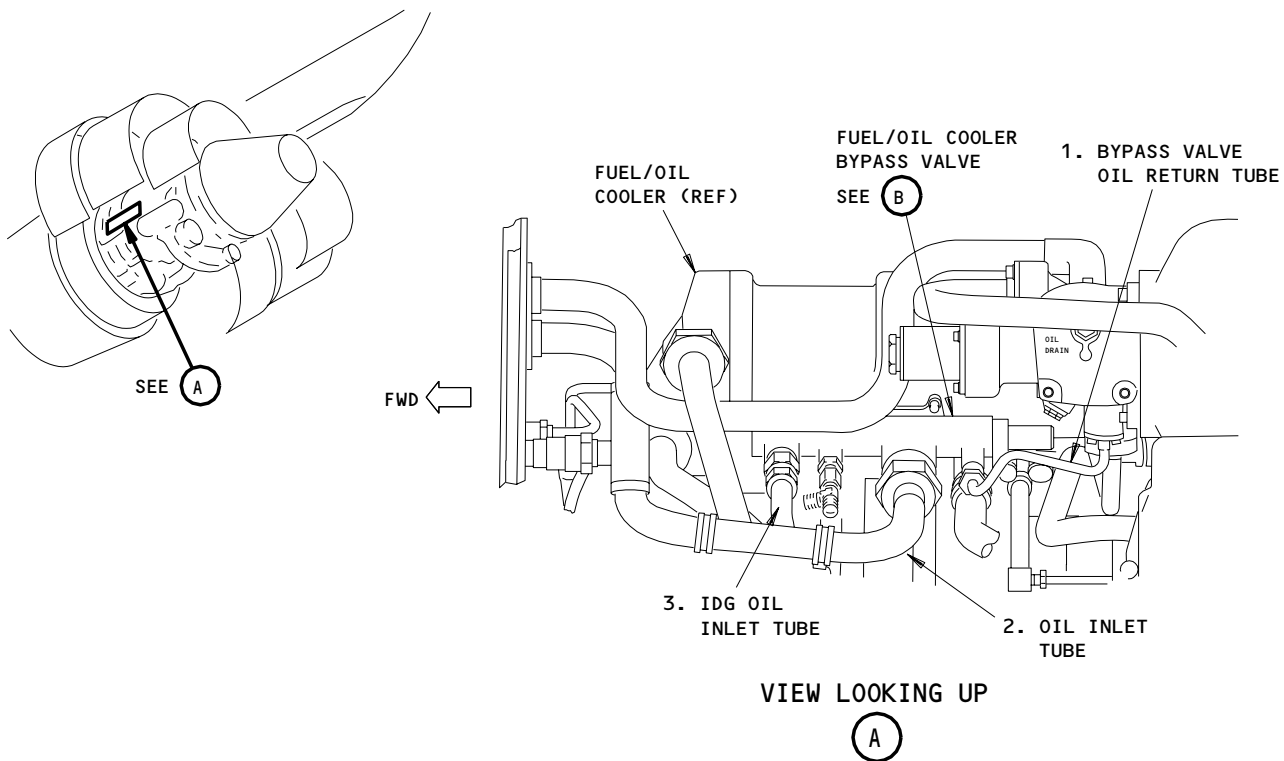
- (8) Remove the IDG oil outlet tube (Fig. 404):
 - (a) Remove the clamp (4) which attaches the IDG oil outlet tube (7) to the bracket.
 - (b) Disconnect the IDG oil outlet tube (7) from the fuel/oil cooler.



Bracket and EEC Connector Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-01



Bypass Valve Oil Tube Installation
Figure 402

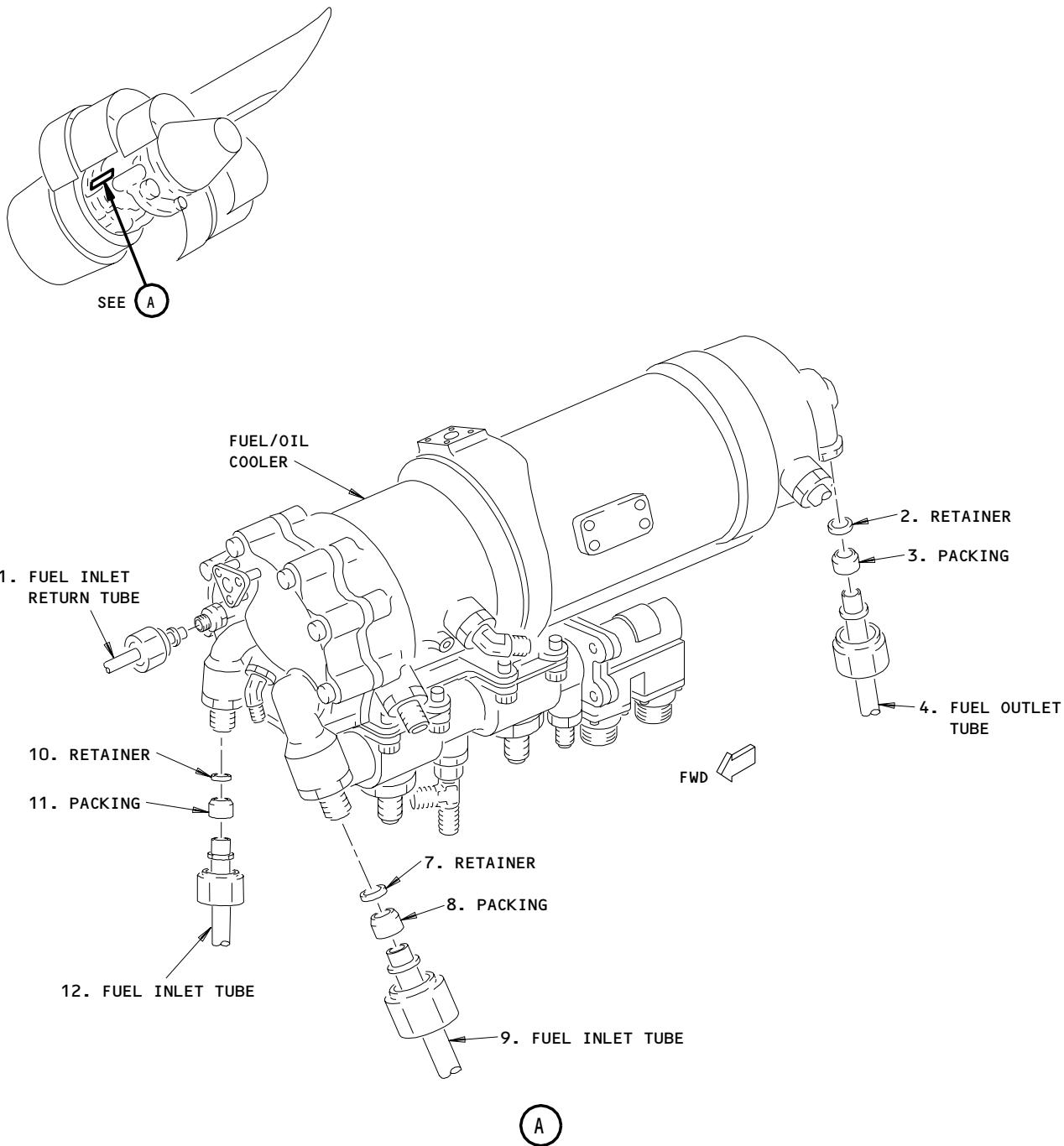
EFFECTIVITY

ALL

79-21-01

N01

Page 406
Aug 10/97



Fuel Tube Installation
Figure 403

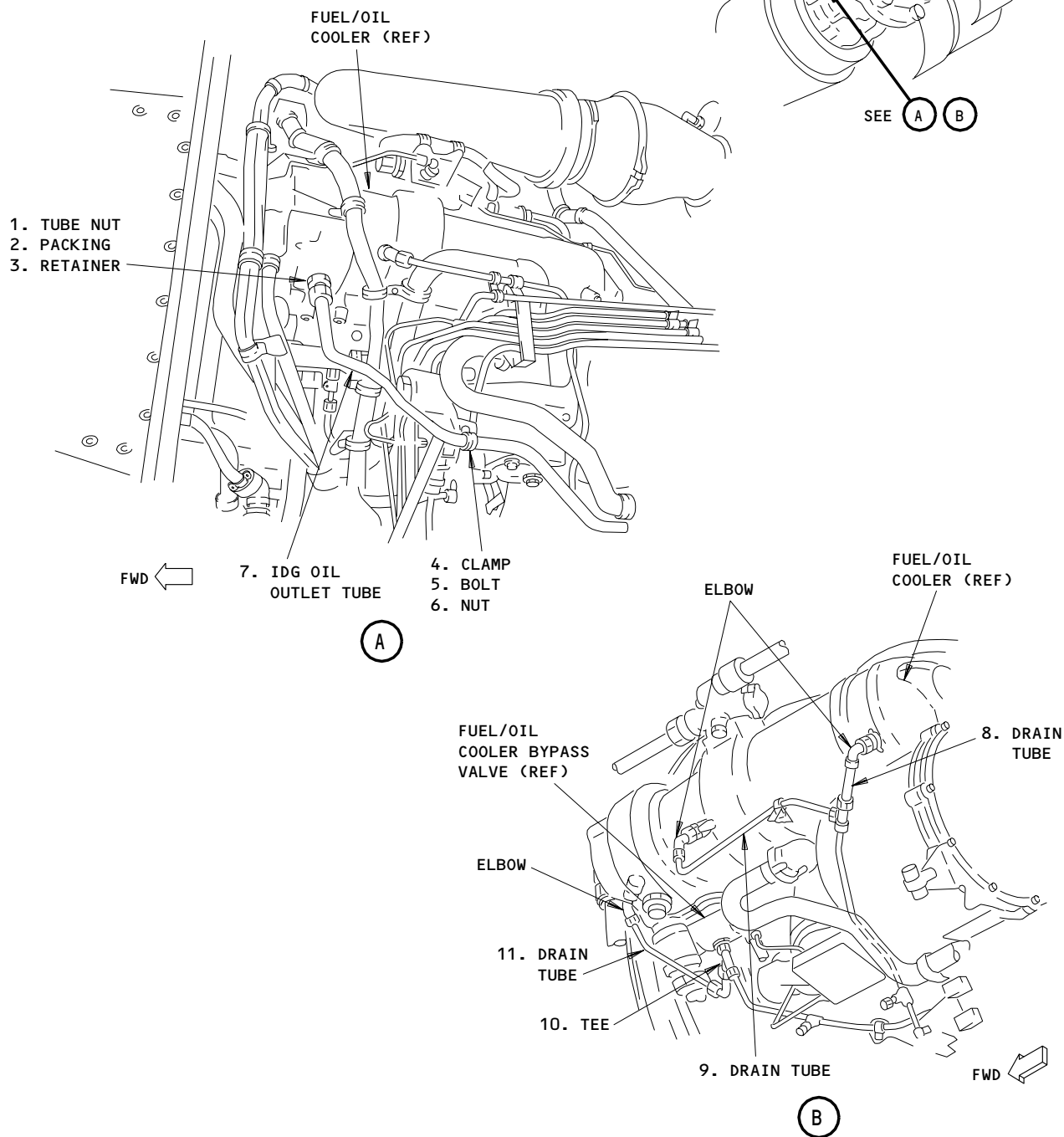
EFFECTIVITY

ALL

79-21-01

N01

Page 407
Aug 10/97



IDG Oil and Drain Tube Installation
Figure 404

EFFECTIVITY	
	ALL

79-21-01

N01

Page 408
Aug 10/97

- (c) Discard the packing and retainer from the IDG oil outlet tube.
- (d) Install protective caps on the tube fittings.

S 034-028-N00

- (9) Remove the drain tubes (Fig. 404):
 - (a) Disconnect the drain tubes (8, 11) from the elbows.
 - (b) Disconnect the drain tube (9) from the elbow or adapter, as applicable.
 - (c) Install protective caps on the tube fittings.

S 024-029-N00

- (10) Remove the fuel/oil cooler and bypass valve from the engine (Fig. 405):

NOTE: Move the fuel and oil tubes to allow the tube fittings and adapters to clear during the removal of the fuel/oil cooler.

- (a) Remove the bolts (45) which attach the cooler aft flange to the engine bracket.
- (b) Move the bracket (44) rearward.
- (c) Remove the bolts (2) which attach the forward mount hinge (3) to the engine bracket.
- (d) Remove the fuel/oil cooler and bypass valve from the engine.

NOTE: Lift the fuel/oil cooler off the tube connections and move outward and upward. Remove the fuel/oil cooler forward end first.

S 034-030-N00

- (11) If necessary, move the fuel/oil cooler and bypass valve apart (Fig. 405):
 - (a) Remove the bolts (14) and washers (15) which attach the bypass valve (30) to the fuel/oil cooler (1).

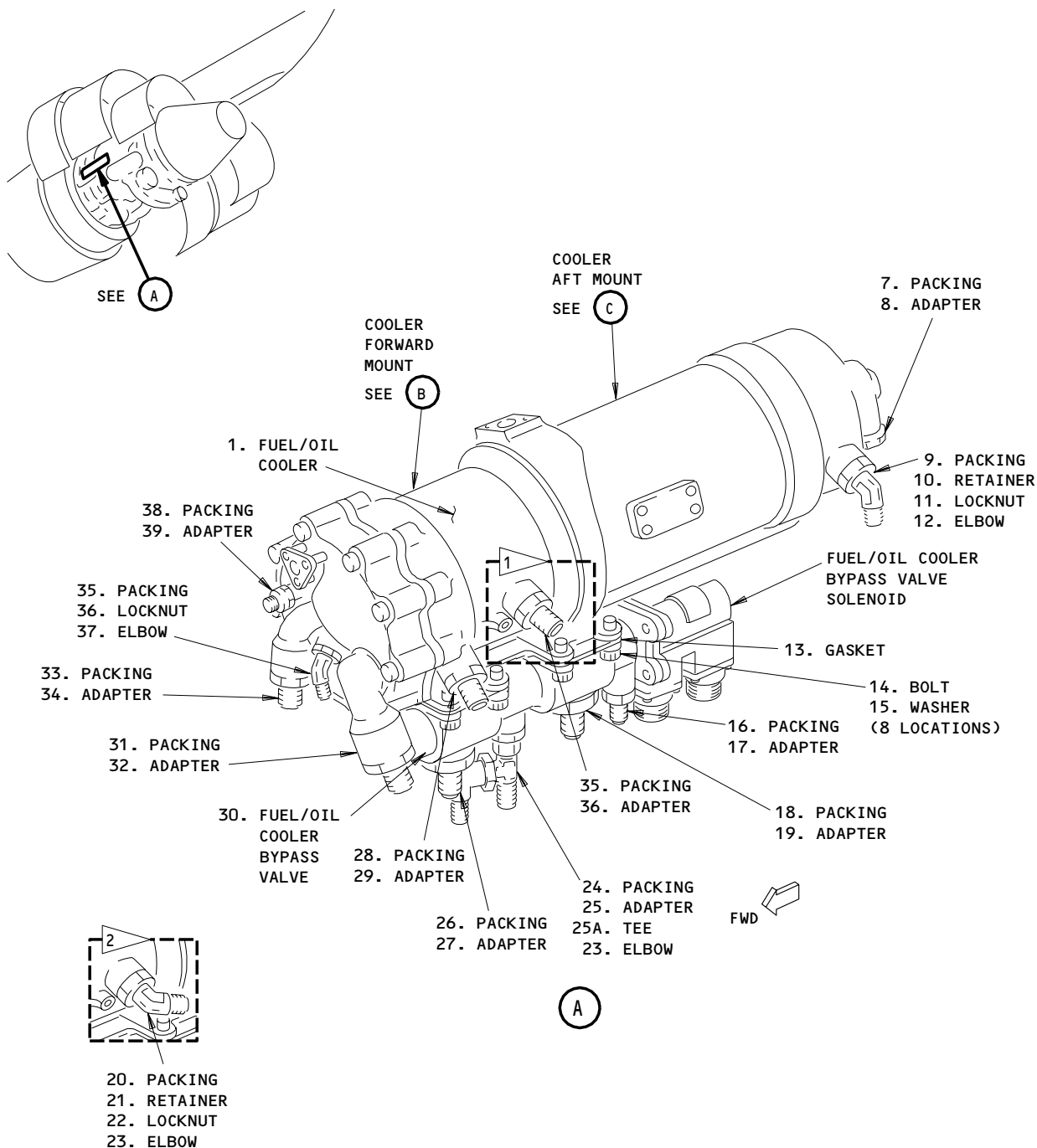
EFFECTIVITY

ALL

79-21-01

N01

Page 409
Apr 10/98



- 1 ▽ PREFERRED CONFIGURATION
- 2 ▽ OPTIONAL CONFIGURATION

Fuel/Oil Cooler and Bypass Valve Installation
Figure 405 (Sheet 1)

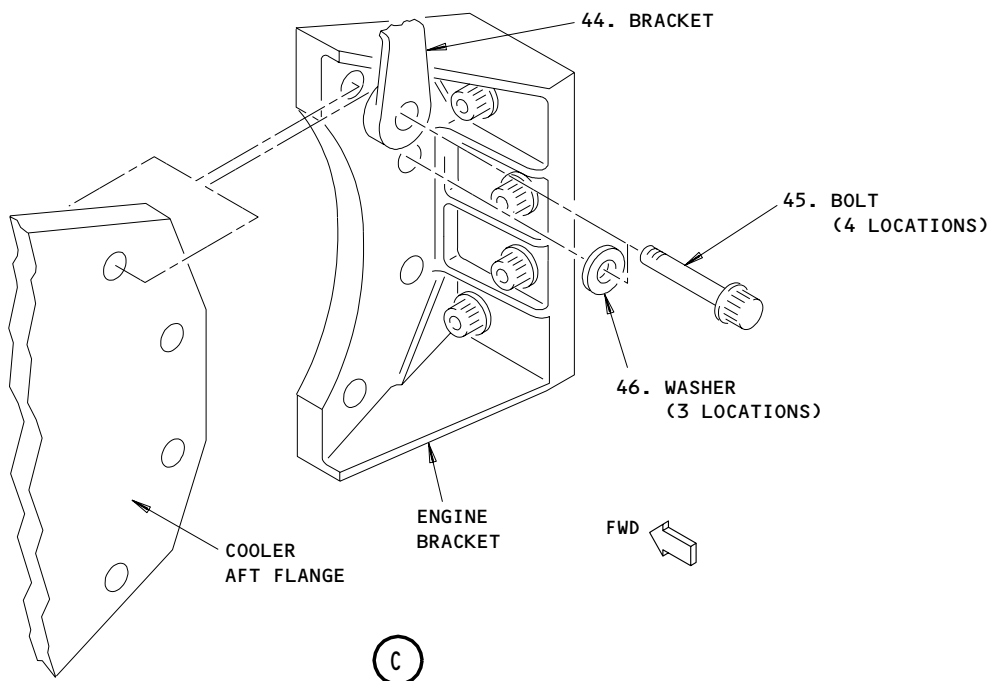
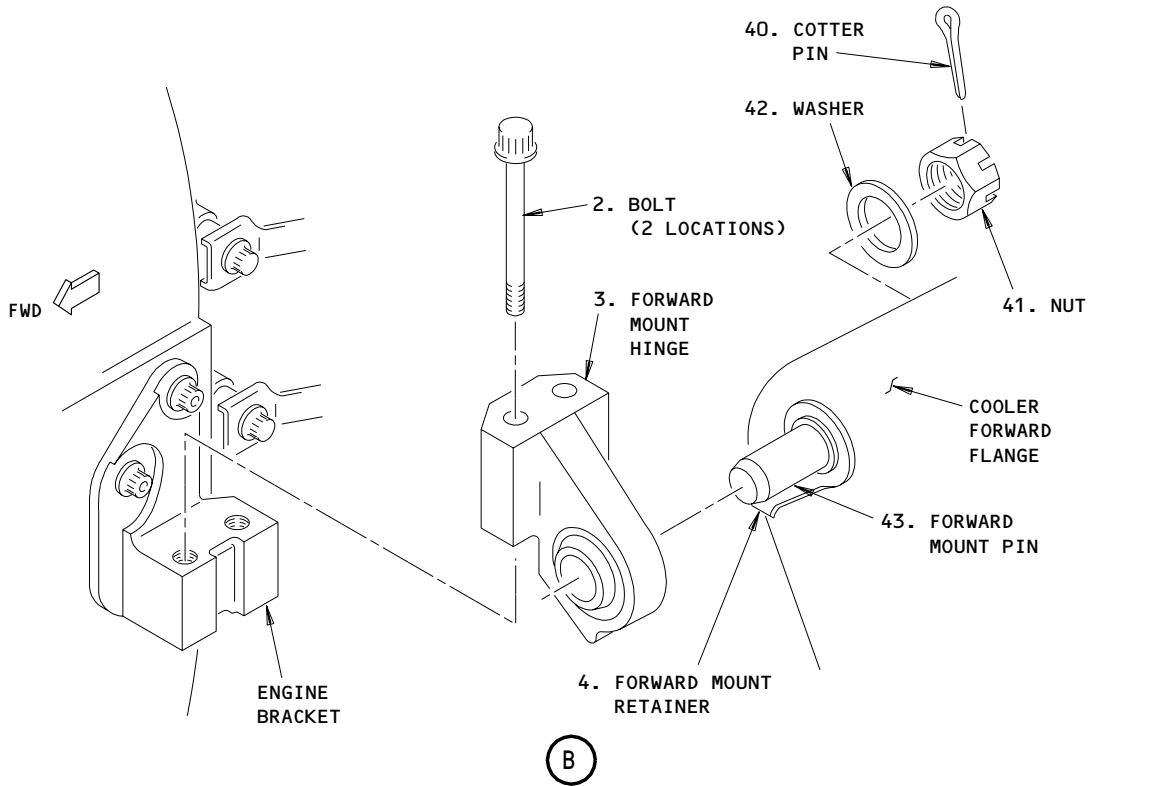
EFFECTIVITY	
	ALL

79-21-01

N01

Page 410
Apr 10/98

299439



Fuel/Oil Cooler and Bypass Valve Installation
Figure 405 (Sheet 2)

EFFECTIVITY	
ALL	

79-21-01

N01

Page 411
Aug 10/97

- (b) Remove the cooler bypass valve (30) from the fuel/oil cooler (1).
- (c) Discard the gasket (13).
- (d) Install protective caps.

S 034-031-N00

- (12) If it is necessary to replace the fuel/oil cooler, do the steps that follow (Fig. 405):
 - (a) Remove the forward mount hinge (3) from the forward mount pin (43).
 - (b) Remove the cotter pin (40), nut (41) and washer (42) to remove the forward mount pin (43) and the forward mount retainer (4).
 - (c) Remove the fuel outlet adapter (8).
 - (d) Remove the drain tube elbows (12, 37, and 23 if applicable) and adapters (36).
 - (e) Remove the IDG oil outlet adapter (29).
 - (f) Remove the fuel inlet adapters (32, 34).
 - (g) Remove the adapter (39) for the inlet return tube.
 - (h) Discard the packings and retainers on the adapters.
 - (i) Install protective caps.

S 034-032-N00

- (13) If it is necessary to replace the bypass valve, do the steps that follow (Fig. 405):
 - (a) Remove the bypass valve solenoid of the fuel/oil cooler (Ref 79-21-03).
 - (b) Remove the oil return adapter (17).
 - (c) Remove the oil inlet adapter (19).
 - (d) Remove the drain tube adapter (25), tee (25A), and elbow (23).
 - (e) Remove the IDG oil inlet adapter (27).
 - (f) Discard the packings from adapters.
 - (g) Install protective caps.

TASK 79-21-01-404-033-N00

3. Install the Fuel/Oil Cooler and Fuel/Oil Cooler Bypass Valve

NOTE: Unless specified differently, lubricate all packings, bolts, and adapter threads with engine oil. In addition, lubricate the tube nut threads with antigalling lubricant (PWA 550), before you install the parts.

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

EFFECTIVITY

ALL

79-21-01

N01

Page 412
Dec 22/00

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) A00456 Lubricant, Antigalling - PWA 550
- (3) D50124 Paste, Anti-seize - PWA 36246
- (4) D00453 Compound, Antigalling - PWA 36035
- (5) D00504 Petrolatum - PMC-9609
- (6) G02332 Ferrule, Safety Cable (P05-292)
- (7) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (8) G02335 Cable, Safety (P05-291)

EFFECTIVITY

ALL

79-21-01

N01

Page 413
Apr 22/08

C. Parts

EFFECTIVITY _____
ALL

79-21-01

N01 Page 414
Aug 10/97

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
402	6	Retainer	79-21-51	05	100
	7	Packing			95
	8	Retainer	79-21-01	20	50
	9	Packing			45
	10	Retainer	24-11-51	15	35
	11	Packing			30
403	2	Retainer	73-11-06	20	30
	3	Packing			40
	7	Retainer			30
	8	Packing			35
	10	Retainer			30
	11	Packing			35
404	2	Packing			TBF
	3	Retainer			TBF
405	1	Cooler - Fuel/Oil	79-21-01	15	105
	7	Packing			20
	9	Packing	71-71-01	15	785
	10	Retainer			840
	13	Gasket	79-21-02	05	125
	16	Packing			50
	18	Packing			45
	20	Packing	71-71-01	15	785
	21	Retainer			840
	24	Packing			TBF
	26	Packing	79-21-02	05	40
	28	Packing			TBF
	30	Valve - Fuel/Oil Cooler Bypass			120
					120
	31	Packing	79-21-01	15	20
	33	Packing			20
	35	Packing	71-71-01	15	785

EFFECTIVITY

ALL

79-21-01

N01

Page 415
Dec 22/00

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
	38	Packing	79-21-01	15	40
	40	Pin - Cotter			45

D. References

- (1) AMM 12-13-01/301, Engine - Servicing (Oil Replenishing)
- (2) AMM 12-13-03/301, Integrated Drive Generator
- (3) AMM 36-11-01/401, Pneumatic Duct
- (4) AMM 70-24-05/201, Electrical Harnesses
- (5) AMM 71-00-00/501, Power Plant - General
- (6) AMM 71-11-04/201, Fan Cowl Panels
- (7) AMM 71-11-06/201, Core Cowl Panels
- (8) AMM 78-31-00/201, Thrust Reverser System
- (9) AMM 79-21-03/401, Fuel/Oil Cooler Bypass Valve Solenoid

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

F. Procedure

- S 434-034-N00
- (1) If necessary, attach the bypass valve for the fuel/oil cooler to the fuel/oil cooler (Fig. 405):
 - (a) Remove protective caps.

EFFECTIVITY

ALL

79-21-01

N01

Page 416
Dec 22/00

- (b) Install the new gasket (13) and the bypass valve (30) to the bottom of the fuel/oil cooler (1).
 - 1) Put the end of the fuel/oil cooler with the bypass valve solenoid aft.
- (c) Install the bolts (14) and washers (15) which attach the bypass valve to the fuel/oil cooler.
- (d) Tighten the bolts (14) to 85-95 pound-inches (9.6-10.7 newton-meters).

S 434-035-N00

- (2) If the fuel/oil cooler was replaced, install the fuel/oil cooler with the steps that follow (Fig. 405):
 - (a) Remove protective caps.
 - (b) Attach the forward mount pin (43) and the forward mount retainer (4) to the cooler forward flange with the washer (42) and nut (41).
 - (c) Tighten the nut (41) to 550-750 pound-inches (62.1-84.7 newton-meters).
 - (d) Install the new packing (38) to the adapter (39) of the inlet return tube.
 - (e) Install the adapter (39) to the port for the inlet return fuel.

NOTE: Install the adapter with the long threaded end out from the fuel/oil cooler.

- 1) Tighten the adapter (39) to 110-120 pound-inches (12.4-13.6 newton-meters).
- (f) Install the new packing (35) and adapter (36) to the front housing of the fuel/oil cooler.
 - 1) Torque the adapter to 40-50 pound-inches (4.5-5.6 newton-meters).
- (g) Install the oil drain elbow (37), do not lubricate the threads, to the adapter (36).
 - 1) While you hold the adapter (36), torque the elbow (37) to 200-225 pound-inches (22.6-25.4 newton-meters).

EFFECTIVITY

ALL

79-21-01

N01

Page 417
Dec 22/00

- (h) Lubricate the new packing (31, 33) with petrolatum.
- (i) Install the new packing (31, 33) to the fuel inlet adapters (32, 34).
- (j) Install the fuel inlet adapters (32, 34) to the fuel/oil cooler (1).
 - 1) Tighten the fuel inlet adapters (32, 34) to 650-750 pound-inches (73.4-84.7 newton-meters).
- (k) Install the new packing (28) to the IDG oil outlet adapter (29).
- (l) Install the IDG oil outlet adapter (29) to the fuel/oil cooler (1).
 - 1) Tighten the IDG oil outlet adapter (29) to 855-945 pound-inches (96.6-106.8 newton-meters).
- (m) Install the new packing (9) and retainer (10) to the rear oil drain elbow (12).
- (n) Install the rear oil drain elbow (12) to the fuel/oil cooler (1) with the locknut (11).
 - 1) Tighten the locknut (11) with your hand.
- (o) Install fuel/oil cooler drain connector for drain tube (9) (Fig. 404).
 - 1) ENGINES WITH PREFERRED CONFIGURATION;
Do the steps that follow (Fig. 405):
 - a) Install the new packing (35) to the adapter (36).
 - b) Install the adapter (36) to the fuel/oil cooler (1).
 - c) Tighten the adapter (36).
 - 2) ENGINES WITH OPTIONAL CONFIGURATION;
Do the steps that follow:
 - a) Install the new packing (20) and retainer (21) to the oil drain elbow (23).
 - b) Install the oil drain elbow (23) to the fuel/oil cooler (1) with the locknut (22).
 - c) Tighten the locknut (22) with your hand.
- (p) Lubricate the new packing (7) with petrolatum.
- (q) Install the new packing (7) to the fuel outlet adapter (8).
- (r) Install the fuel outlet adapter (8) to the fuel/oil cooler (1).
 - 1) Tighten the fuel outlet adapter (8) to 650-750 pound-inches (73.4-84.7 newton-meters).

S 434-036-N00

- (3) If the bypass valve was replaced, install the bypass valve with the steps that follow (Fig. 405):
 - (a) Remove protective caps.
 - (b) Install the bypass valve solenoid (AMM 79-21-03/401).
 - (c) Install the new packing (16) to the oil return adapter (17).
 - (d) Install the oil return adapter (17) to the bypass valve (30).
 - 1) Tighten the oil return adapter (17) to 110-120 pound-inches (12.4-13.6 newton-meters).

EFFECTIVITY

ALL

79-21-01

N01

Page 418
Dec 22/00

- (e) Install the new packing (18) to the oil inlet adapter (19).
- (f) Install the oil inlet adapter (19) to the bypass valve (30).
 - 1) Tighten the oil inlet adapter (19) to 650-750 pound-inches (73.4-84.7 newton-meters).
- (g) Install the new packing (24) to the drain tube adapter (25).
- (h) Install the drain tube adapter (25), do not lubricate the threads, to the bypass valve (30).
 - 1) Tighten the drain tube adapter (25) to 40-50 pound-inches (4.5-5.6 newton-meters).
- (i) Install the tee (25A), do not lubricate the threads, to the adapter (25).
 - 1) While you hold the adapter (25), tighten the tee (25A) to 200-225 pound-inches (22.6-25.4 newton-meters).
- (j) Install the elbow (23), do not lubricate the threads, to the tee (25A).
 - 1) While you hold the tee (25A), tighten the elbow (23) to 200-225 pound-inches (22.6-25.4 newton-meters).
- (k) Install the new packing (26) to the IDG oil inlet adapter (27).
- (l) Install the IDG oil inlet adapter (27) to the bypass valve (30).
 - 1) Tighten the IDG oil inlet adapter (27) to 375-425 pound-inches (42.4-48.0 newton-meters).
- (m) Safety all adapters with a lockwire or safety cable and safety cable ferrule.

S 424-037-N00

- (4) Install the fuel/oil cooler and bypass valve to the engine (Fig. 405):
 - (a) Make sure the forward mount hinge (3) is connected to the forward mount pin (43).
 - (b) Install the fuel/oil cooler (1) to the engine.
 - (c) Lubricate the threads of the bolts (2) with anti-seize paste (PWA 36246).
 - (d) Connect the forward mount hinge (3) to the engine bracket with the bolts (2).
 - 1) Tighten the bolts (2) to 125-140 pound-inches (14.1-15.8 newton-meters).
 - (e) Attach the aft cooler mount and bracket (44) to the engine bracket with the bolts (45) and washers (46).
 - 1) Tighten the bolts (45) to 125-140 pound-inches (14.1-15.8 newton-meters).

S 434-038-N00

- (5) Install the fuel tubes (Fig. 403):
 - (a) Remove protective caps.

EFFECTIVITY

ALL

79-21-01

N01

Page 419
Apr 22/08

- (b) Lubricate the threads of the tube nut on the inlet return tube (1) for fuel with oil.
 - (c) Connect the inlet return tube (1) to the adapter (39) for the inlet return tube on the fuel/oil cooler (1).
 - 1) Tighten the tube nut to 200-225 pound-inches (22.6-25.4 newton-meters).
 - (d) Install the new packings (8, 11) and retainers (7, 10) to the fuel inlet tubes (9, 12).
 - (e) Connect the fuel inlet tube (9) to the fuel inlet adapter (32) on the fuel oil cooler (1).
 - (f) Connect the fuel inlet tube (12) to the fuel inlet adapter (34) on the fuel/oil cooler (1).
 - (g) Tighten the tube nuts to 150-160 pound-inches (16.9-18.0 newton-meters).
 - (h) Loosen the tube nuts.
 - (i) Tighten the tube nuts, again, to 150-160 pound-inches (16.9-18.1 newton-meters).
 - (j) Install the new packing (3) and retainer (2) to the fuel outlet tube (4).
 - (k) Connect the fuel outlet tube (4) to the fuel outlet adapter (8).
 - 1) Tighten the tube nut to 150-160 pound-inches (16.9-18.1 newton-meters).
 - 2) Loosen the tube nut.
 - 3) Tighten the tube nut, again, to 150-160 pound-inches (16.9-18.1 newton-meters).
- S 434-039-N00
- (6) Install the oil tubes on the bypass valve (Fig. 402):
 - (a) Remove protective caps.
 - (b) Install the new packing (7) and retainer (6) to the oil return tube (1) for the bypass valve.
 - (c) Connect the oil return tube (1) to the oil return adapter (17) with the tube nut.
 - 1) Tighten the tube nut to 65-70 pound-inches (7.3-7.9 newton-meters).

EFFECTIVITY

ALL

79-21-01

N01

Page 420
Dec 22/00

- 2) Loosen the tube nut.
 - 3) Tighten the tube nut, again, to 65-70 pound-inches (7.3-7.9 newton-meters).
 - (d) Install the new packing (9) and retainer (8) to the oil inlet tube (2).
 - (e) Connect the oil inlet tube (2) to the oil inlet adapter (19) with the tube nut.
 - 1) Tighten the tube nut to 200-220 pound-inches (22.6-24.9 newton-meters).
 - 2) Loosen the tube nut.
 - 3) Tighten the tube nut, again, to 200-220 pound-inches (22.6-24.9 newton-meters).
 - (f) Install the new packing (11) and retainer (10) to the IDG oil inlet tube (3).
 - (g) Connect the IDG oil inlet tube (3) to the IDG oil inlet adapter (27) with the tube nut.
 - 1) Tighten the tube nut to 140-160 pound-inches (15.8-18.1 newton-meters).
 - 2) Loosen the tube nut.
 - 3) Tighten the tube nut, again, to 140-160 pound-inches (15.8-18.1 newton-meters).
- S 434-040-N00
- (7) Install the drain tubes (Fig. 404):
 - (a) Remove protective caps.
 - (b) Connect the drain tube (8) to the elbow with locknut.
 - (c) Tighten the drain tube (8) connection.
 - (d) Tighten the locknut (11) on the elbow (12) to 70-80 pound-inches (7.9-9.0 newton-meters) (Fig. 405).
 - (e) Connect the drain tube (9) (Fig. 404).
 - 1) ENGINES WITH PREFERRED CONFIGURATION;
Do the steps that follow:
 - a) Install the tube nut to the adapter (36) (Fig. 405).
 - b) While you hold the adapter (36), tighten the tube nut.
 - 2) ENGINES WITH OPTIONAL CONFIGURATION;
Do the steps that follow:
 - a) Connect the drain tube to the elbow (23) with locknut (22).

EFFECTIVITY

ALL

79-21-01

N01

Page 421
Dec 22/00

- b) Tighten the drain tube connection.
- c) Tighten the locknut (22) on the elbow (23) to 70-80 pound-inches (7.9-9.0 newton-meters).
- (f) Connect drain tube (11) to elbows (Fig. 404).
 - 1) Tighten the tube nuts to elbows (23, 37) to 200-225 pound-inches (22.6-24.9 newton-meters) (Fig. 405).
 - 2) Loosen the tube nuts.
 - 3) Tighten the tube nuts to elbows (23, 37), again, to 200-225 pound-inches (22.6-24.9 newton-meters).

S 434-041-N00

- (8) Install the IDG oil outlet tube (Fig. 404):
 - (a) Remove protective caps.
 - (b) Install the new packing (2) and retainer (3) to the IDG oil outlet tube (7).
 - (c) Connect the IDG oil outlet tube (7) to the IDG oil outlet adapter (27) with the tube nut.
 - 1) Tighten the tube nut to 855-945 pound-inches (96.6-106.8 newton-meters).
 - 2) Loosen the tube nut.
 - 3) Tighten the tube nut to 855-945 pound-inches (96.6-106.8 newton-meters).
 - (d) Attach the IDG oil outlet tube (7) to the bracket with the bolt (5), nut (6) and clamp (4).
 - 1) Tighten the bolt (5) to 36-40 pound-inches (4.1-4.5 newton-meters).

S 434-063-N00

- (9) Install lockwire or safety cable and safety cable ferrule on all tubes torqued to bottom of fuel/oil cooler and fuel/oil cooler bypass valve adapters.

NOTE: Forward inboard fuel/oil cooler inlet fuel tube to be lockwired to forward outboard wire hole in bypass valve gasket.

S 434-042-N00

- (10) Install the main bearing strainer housing assembly (AMM 79-21-17/401).

S 434-045-N00

- (11) Attach the wire harness at the forward end of fuel/oil cooler as follows (Fig. 401):
 - (a) Install the brackets (4, 5) to the fuel/oil cooler and attach with the bolts (9).
 - 1) Tighten the bolts (9) to 85-95 pound-inches (9.603-10.733 newton-meters).
 - (b) Attach the bracket (4) to the support (10) with the clamp (11) and nut (12).
 - 1) Tighten the nut (12).

EFFECTIVITY

ALL

79-21-01

N01

Page 422
Dec 22/00

- (c) Attach the support (6) to the bracket (5) with the bolts (7) and nuts (8).
 - 1) Tighten the bolts (7).
- (d) Attach the wire harnesses to the brackets (4, 5) and supports (6, 10) with the bolts (2), nuts (3) and clamps (1).
 - 1) Tighten the bolts (2).

S 434-046-N00

- (12) Remove the protective caps from the EEC electrical connectors.

S 434-060-N00

CAUTION: USE THE CORRECT ASSEMBLY PROCEDURE, AND TOOLS, FOR THE HARNESS CONNECTOR INSTALLATION (AMM 70-24-05/201). IF YOU USE THE INCORRECT ASSEMBLY PROCEDURE, OR TOOLS, A DAMAGED OR LOOSE CONNECTOR CAN OCCUR. A LOOSE CONNECTOR PERMITS VIBRATION, WHICH CAUSES THE CONTACTS TO WEAR AND DECREASES THE LIGHTNING PROTECTION.

- (13) Connect the EEC electrical connectors to the bypass valve solenoid on the fuel/oil cooler (AMM 70-24-05/201).

S 434-048-N00

- (14) Install the 8th-stage IP duct (AMM 36-11-01/401).

G. Put the airplane back to its initial condition

S 614-049-N00

- (1) Fill the engine oil system (AMM 12-13-01/301).

S 614-050-N00

- (2) Fill the IDG oil system (AMM 12-13-03/301).

S 414-051-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (3) Close the left thrust reverser (AMM 78-31-00/201).

S 414-052-N00

- (4) Close the left core cowl panel (AMM 71-11-06/201).

S 444-053-N00

- (5) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-01

N01

Page 423
Dec 22/00

- S 414-054-N00
- (6) Close the left fan cowl panel (AMM 71-11-04/201).
- S 864-055-N00
- (7) For the left engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel P6:
(a) 6E1, FUEL VALVES L SPAR
- S 864-056-N00
- (8) For the left engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel P11:
(a) 11D25, ENGINE FUEL CONT VLV & EEC CHAN B RST L
- S 864-057-N00
- (9) For the right engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel P6:
(a) 6E2, FUEL VALVES R SPAR
- S 864-058-N00
- (10) For the right engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel P11:
(a) 11D26, ENGINE FUEL CONT VLV & EEC CHAN B RST R
- S 714-059-N00
- (11) Do the test of the Fuel/Oil Cooler Bypass Valve that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-01

N01

Page 424
Dec 22/00

FUEL/OIL COOLER BYPASS VALVE SOLENOID – REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks. The first task removes the bypass valve solenoid for the fuel/oil cooler. The second task installs the bypass valve solenoid.

TASK 79-21-03-004-001-N00

2. Remove the Fuel/Oil Cooler Bypass Valve Solenoid

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

- (2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

C. Prepare to Remove the Bypass Valve Solenoid for the Fuel/Oil Cooler

S 864-002-N00

- (1) For the left engine, open these circuit breakers on the overhead circuit breaker panel, P11, and attach the DO-NOT-CLOSE tags:
 - (a) 11L3, L ENG PERF SOL CHAN A
 - (b) 11L4, L ENG PERF SOL CHAN B

S 864-003-N00

- (2) For the right engine, open these circuit breakers on the overhead circuit breaker panel, P11, and attach the DO-NOT-CLOSE tags:
 - (a) 11L30, R ENG PERF SOL CHAN A
 - (b) 11L31, R ENG PERF SOL CHAN B

S 014-004-N00

- (3) Open the left fan cowl panel (AMM 71-11-04/201).

EFFECTIVITY

ALL

79-21-03

N01

Page 401
Dec 22/00

S 044-005-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (4) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-006-N00

- (5) Open the left core cowl panel (AMM 71-11-06/201).

S 014-007-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Open the left thrust reverser (AMM 78-31-00/201).
- D. Remove the Bypass Valve Solenoid for the Fuel/Oil Cooler (Fig. 401)

S 034-008-N00

- (1) Disconnect the EEC electrical connectors from the bypass valve solenoid (1).

S 034-009-N00

- (2) Remove the oil return tube (2) from the engine with the steps that follow:
 - (a) Disconnect the tube nut from the bypass valve.
 - (b) Remove the bolts (7) which attach the oil return tube to the housing for the main oil filter.
 - (c) Remove the oil return tube from the engine.
 - (d) Discard the packings.

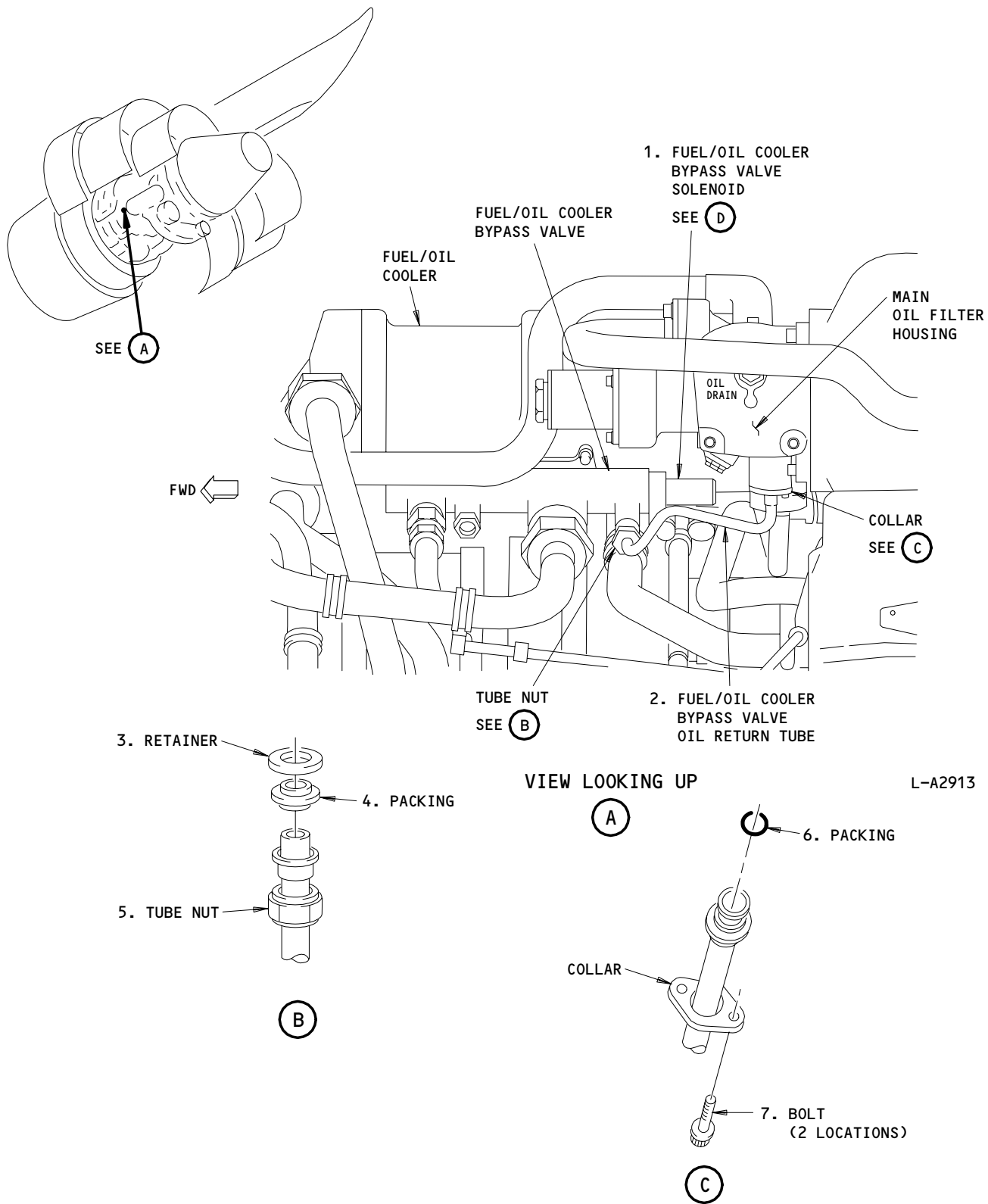
EFFECTIVITY

ALL

79-21-03

N01

Page 402
Dec 22/00



Fuel/Oil Cooler Bypass Valve Solenoid Installation
Figure 401 (Sheet 1)

EFFECTIVITY	
	ALL

79-21-03

N01

Page 403
Feb 10/91

288090

S 024-010-N00
(3) Remove the bolts (9) which attach the bypass valve solenoid (1) to the bypass valve.

S 024-011-N00
(4) Remove the bypass valve solenoid from the bypass valve.

NOTE: Remove the bypass valve solenoid from the engine down between the engine and the housing for the main oil filter.

(a) Discard the packings.

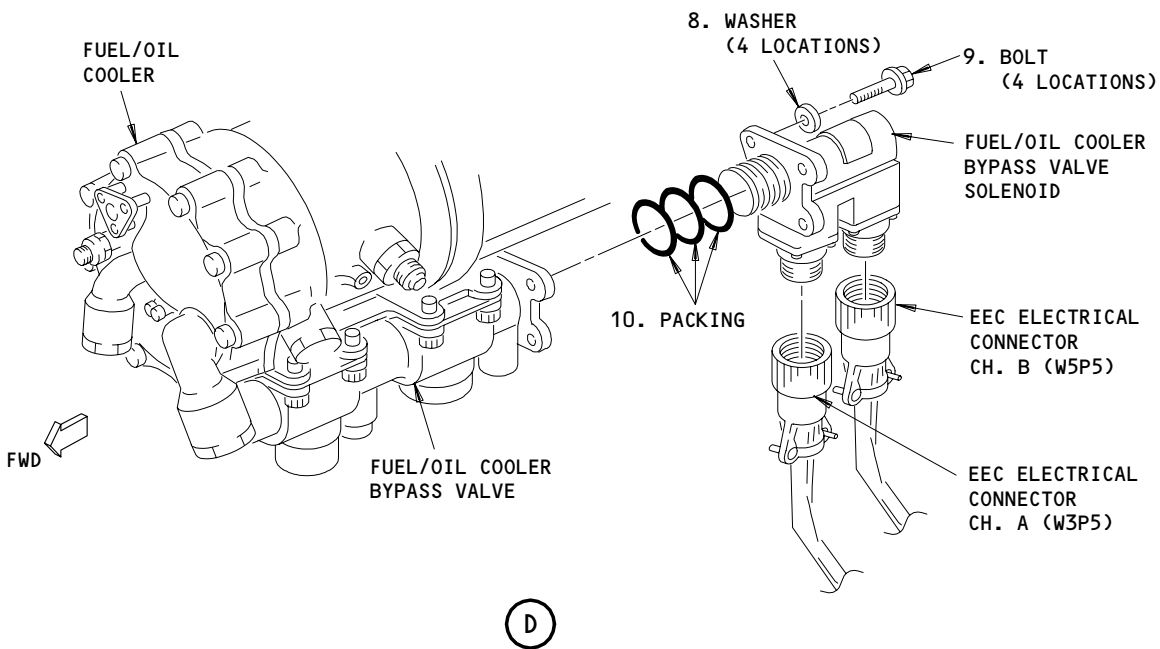
S 034-012-N00
(5) Install the protection covers.

TASK 79-21-03-404-013-N00

3. Install the Fuel/Oil Cooler Bypass Valve Solenoid

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982



Fuel/Oil Cooler Bypass Valve Solenoid Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-03

288083

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) D00247 Antigalling Compound - PWA 586
- (3) D00627 Petrolatum White (P06-002)
- (4) G02332 Ferrule, Safety Cable (P05-292)
- (5) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (6) G02335 Cable, Safety (P05-291)
- (7) G01505 Lockwire - AS3412-02

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Solenoid - Fuel Oil Cooler Bypass Valve	79-21-02	05	150
	4	Packing (O-ring)	79-21-51	05	95
	6	Packing (O-ring)			90
	10	Packing (O-ring)	79-21-02	05	145

D. References

- (1) AMM 70-24-05/201, Electrical Harnesses
- (2) AMM 71-00-00/501, Power Plant
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

F. Install the Bypass Valve Solenoid for the Fuel/Oil Cooler (Fig. 401)

- S 434-014-N00
- (1) Remove the protection covers.
- S 644-015-N00
- (2) Lubricate the new packings (10) for the bypass valve solenoid (1) with Petrolatum White.

EFFECTIVITY

ALL

79-21-03

N01

Page 405
Dec 22/07

- S 434-016-N00
- (3) Install the new packings (10) to the bypass valve solenoid (1).
- S 424-017-N00
- (4) Install the bypass valve solenoid (1) to the aft end of the bypass valve.
- (a) Make sure the electrical connectors point down away from the fuel/oil cooler.
- S 644-018-N00
- (5) Lubricate the threads of the bolts (9), which attach the bypass valve solenoid, with oil.
- S 424-019-N00
- (6) Install the bypass valve solenoid with bolts (9) and washers (8).
- (a) Tighten the bolts (9) to 60-80 pound-inches (6.8-9.0 newton-meters).
- (b) Install the lockwire or safety cable and safety cable ferrule to the bolts (9).
- S 434-020-N00
- (7) Install the oil return tube (2) with the steps that follow:
- (a) Install the new packing (6) at the collar end of the oil return tube.
- (b) Install the new packing (4) and retainer (3) to the tube nut.
- (c) Lubricate the tube nut (5) with the antigalling compound.
- (d) Connect the collar end of the oil return tube to the housing with the bolts (7).
- (e) Connect the tube nut (5) to the adapter on the bypass valve.
- (f) Tighten bolts (7) to 36-40 pound-inches (4.1-4.5 newton-meters).
- (g) Tighten the tube nut (5) to 65-70 pound-inches (7.3-7.9 newton-meters).
- (h) Loosen the tube nut (5).
- (i) Tighten the tube nut (5) again to 65-70 pound-inches (7.3-7.9 newton-meters).
- 1) Install the lockwire or safety cable and safety cable ferrule to the tube nut (5).

EFFECTIVITY

ALL

79-21-03

N01

Page 406
Dec 22/00

S 434-029-N00

CAUTION: USE THE CORRECT ASSEMBLY PROCEDURE, AND TOOLS, FOR THE HARNESS CONNECTOR INSTALLATION (AMM 70-24-05/201). IF YOU USE THE INCORRECT ASSEMBLY PROCEDURE, OR TOOLS, A DAMAGED OR LOOSE CONNECTOR CAN OCCUR. A LOOSE CONNECTOR PERMITS VIBRATION, WHICH CAUSES THE CONTACTS TO WEAR AND DECREASES THE LIGHTNING PROTECTION.

- (8) Connect the EEC electrical connectors to the bypass valve solenoid (1) (AMM 70-24-05/201).
- G. Put the Airplane Back to Its Usual Condition

S 414-022-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-023-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-024-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-025-N00

- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

S 444-026-N00

- (5) For the left engine, remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
 - (a) 11L3, L ENG PERF SOL CHAN A
 - (b) 11L4, L ENG PERF SOL CHAN B

S 864-027-N00

- (6) For the right engine, remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
 - (a) 11L30, R ENG PERF SOL CHAN A
 - (b) 11L31, R ENG PERF SOL CHAN B

S 714-028-N00

- (7) Do the test of the fuel/oil cooler bypass valve solenoid that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-03

N01

Page 407
Dec 22/00

LUBRICATION AND SCAVENGE OIL PUMP – REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. One task is to remove the lubrication and scavenge oil pump. The other task is to install the lubrication and scavenge oil pump.

TASK 79-21-04-004-001-N00

2. Remove the Lubrication and Scavenge Oil Pump

A. Equipment

(1) Container – 10 U.S. gallon (38 liters) capacity, commercially available

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-11-00/301, Engine Oil Storage

C. Access

(1) Location Zones

410 Left Engine
420 Right Engine

(2) Access Panels

415AL Fan Reverser (Left)
416AR Fan Reverser (Right)
425AL Fan Reverser (Left)
426AR Fan Reverser (Righth)

D. Prepare to Remove the Lubrication and Scavenge Oil Pump

S 014-002-N00

(1) Open the fan cowl panels (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

(2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-04

N01

Page 401
Dec 22/00

S 014-004-N00

- (3) Open the core cowl panels (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).

E. Remove the Pump for the Lubrication and Scavenge Oil (Fig. 401)

S 684-006-N00

- (1) Drain the engine oil from the engine oil system (AMM 79-11-00/301).
(a) Remove the magnetic chip detector assemblies from the main gearbox and the oil tank (AMM 79-21-10/401).

S 034-041-N00

- (2) ENGINES PRE-PW-SB 73-84;
Disconnect the electrical connector (5) from the oil temperature sensor for the No. 3 bearing.

S 034-040-N00

- (3) ENGINES POST-PW-SB 73-84;
Remove the nuts which attach the thermocouple probe to the scavenge oil tube (7) for the No. 3 bearing.

S 034-050-N00

- (4) ENGINES PRE-PW-SB 79-75;
Do the steps that follow:
(a) Loosen (do not remove) the clamp bolt on the tube bracket (14) of the main oil filter to permit the tube to move.
(b) Remove the bolts (13) which attach the flange of the tube (15) and bracket (14) of the main oil filter to the top rear port on the pump.
1) Disengage the flange from the pump.
2) Remove the packing (16).

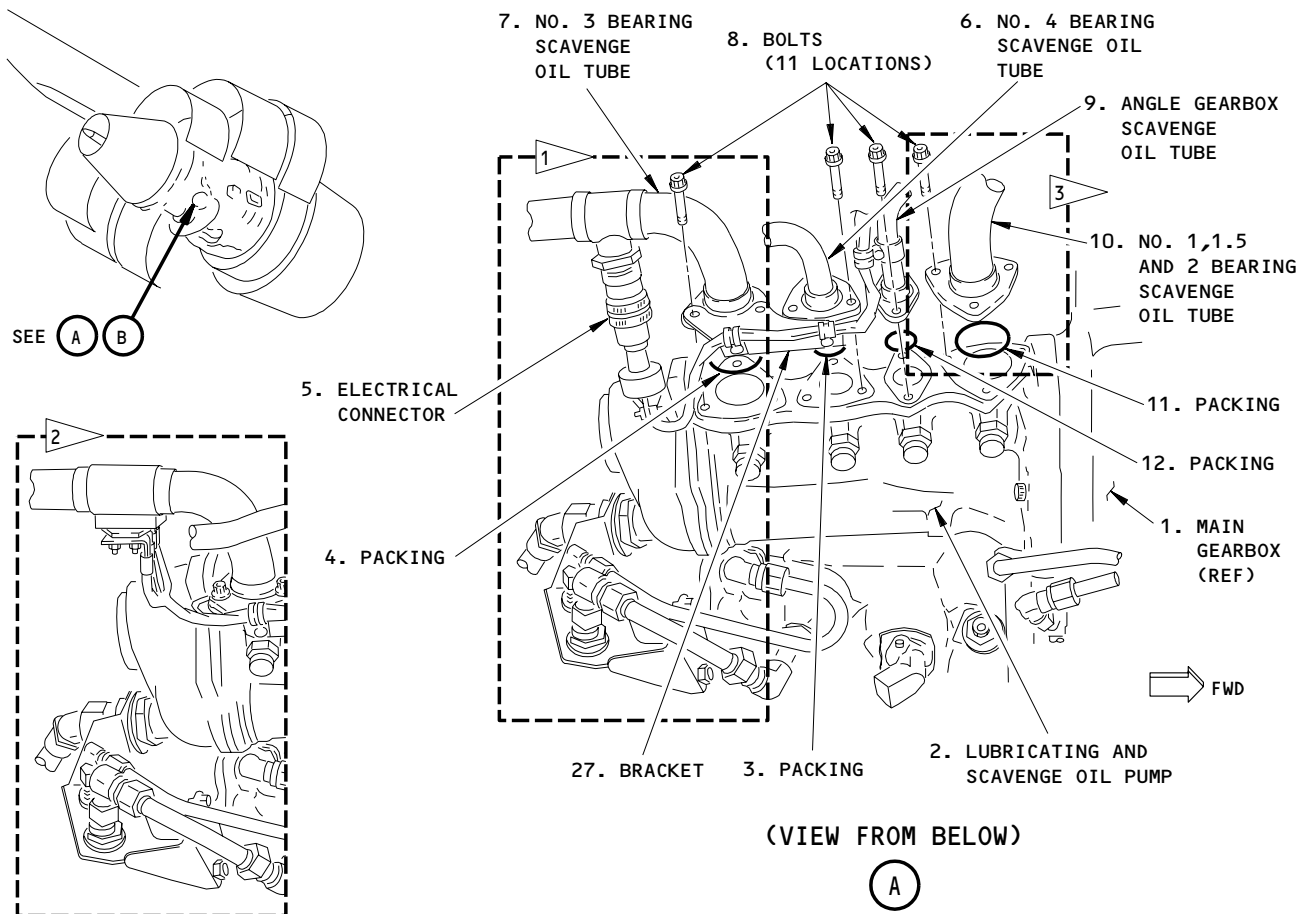
EFFECTIVITY

ALL

79-21-04

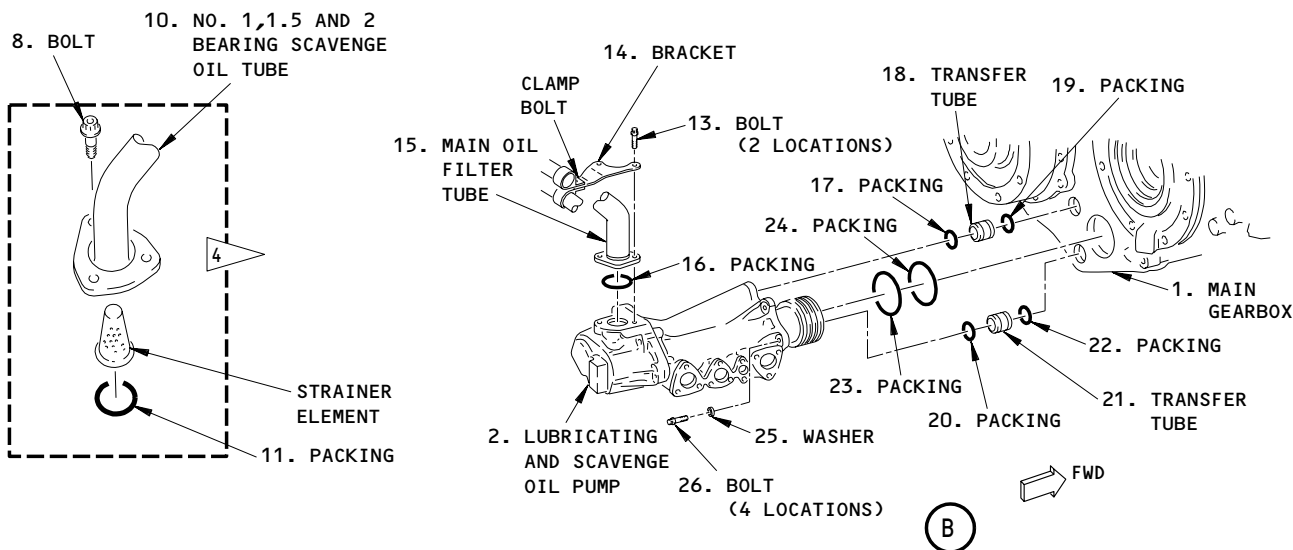
N02

Page 402
Dec 22/07



(VIEW FROM BELOW)

(A)



(B)

- 1 ENGINES WITHOUT PW SB 73-84
- 2 ENGINES WITH PW SB 73-84

- 3 ENGINES WITHOUT PW SB 79-58
- 4 ENGINES WITH PW SB 79-58

Lubrication and Scavenge Oil Pump
Figure 401

EFFECTIVITY

ALL

79-21-04

N02

Page 403
Dec 22/07

265822

S 034-051-N00

- (5) ENGINES POST-PW-SB 79-75 (FIG. 402);

Do the steps that follow:

- (a) Remove bolts (32) which attach the tube (31) to top of the dampener (35) or adapter (45).
- (b) Remove bolt (44) which attaches the tube (31) to diffuser case bracket (43) at approximately the 7 o'clock position.
- (c) Remove bolts (37), nuts (38) and clamp (41) which attaches the tube (31) to the bracket (42) on rear face of gearbox.
- (d) Remove bolts (37), nuts (38) and clamp (40) which attach the tube (31) to the bracket (39) at forward face of gearbox.
- (e) If applicable, remove bolts (34) that attach the dampener (35) or adapter (45) to the top of the main oil pump.
- (f) If applicable, remove bolts (37) and nuts (38) which attach the dampener (35) or adapter (45) to the loop clamp bracket (36/46).
- (g) If applicable, remove the dampener (35) or adapter (45) from the main oil pump.
- (h) Discard packings (33) from the tube and the dampener (35) or adapter (45), as applicable.

S 034-010-N00

- (6) Remove the bolts (8) which attach the flanges of the scavenge tubes, from the aft end of the pump to the forward end, that follow:

- (a) No. 3 bearing scavenge tube (7) and bracket (27).
- (b) No. 4 bearing scavenge tube (6).
- (c) Angle gearbox scavenge tube (9).
- (d) No. 1, 1.5, and 2 bearing oil scavenge tube (10).

1) ENGINES POST-PW-SB 79-58;

Remove the strainer element from the No. 1, 1.5, and 2 bearing oil scavenge tube.

S 034-011-N00

- (7) Disengage the tubes (6, 7, 9, 10) from the pump.

- (a) Discard the packings (3, 4, 11, 12).

S 024-047-N00

- (8) Remove the lubrication and scavenge oil pump from the main gearbox as follows:

- (a) Remove the four bolts and washers that attach the oil pump to the main gearbox.

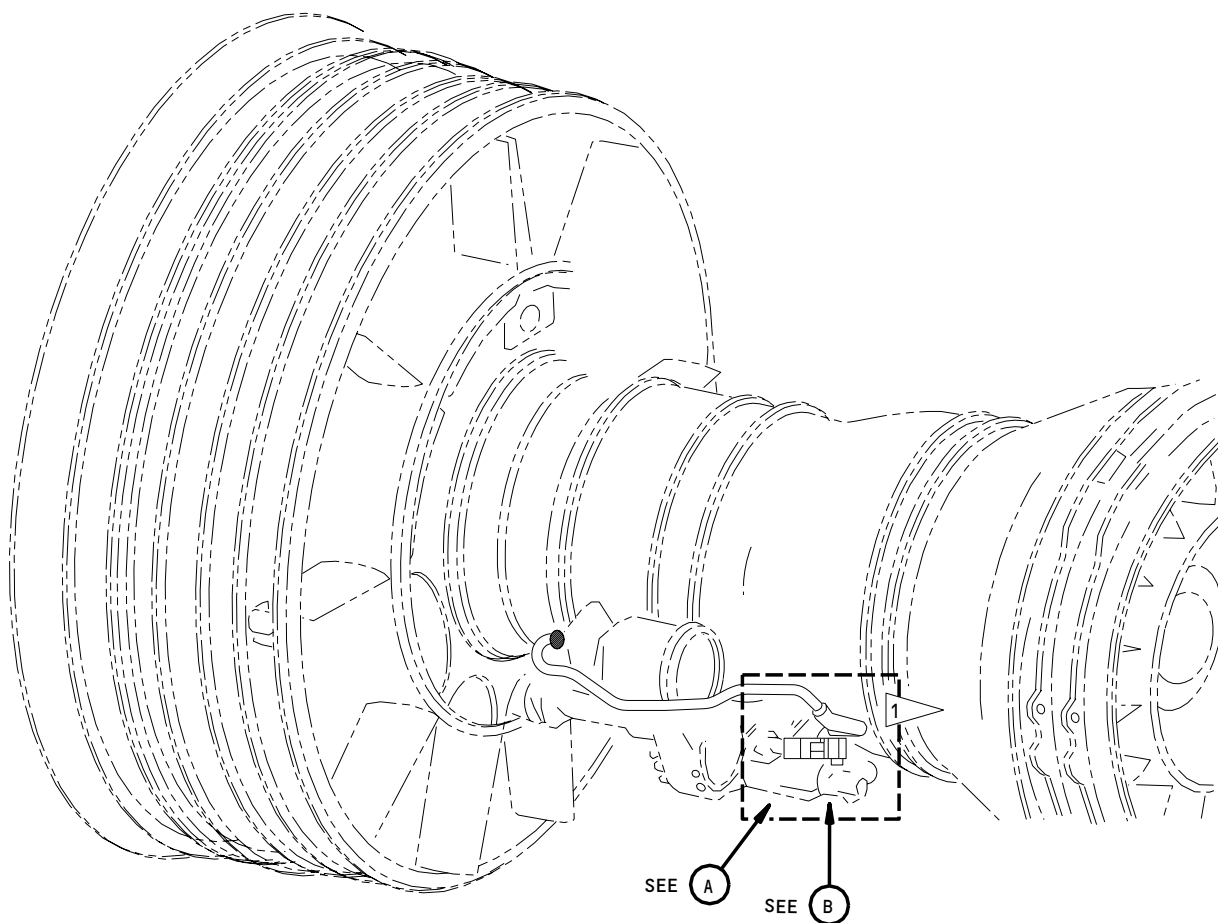
EFFECTIVITY

ALL

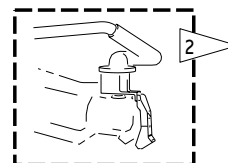
79-21-04

N02

Page 404
Dec 22/07



ENGINE LEFT SIDE VIEW



1 ▽ ENGINES POST-PW-SB 79-75

2 ▽ ENGINES POST-PW-SB 79-86

L-B2502 (0000)

Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 1)

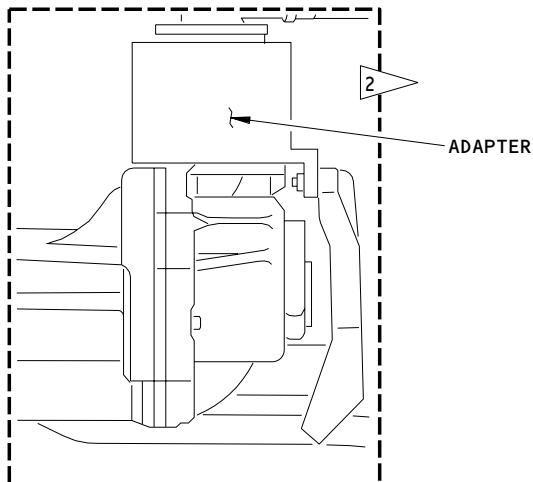
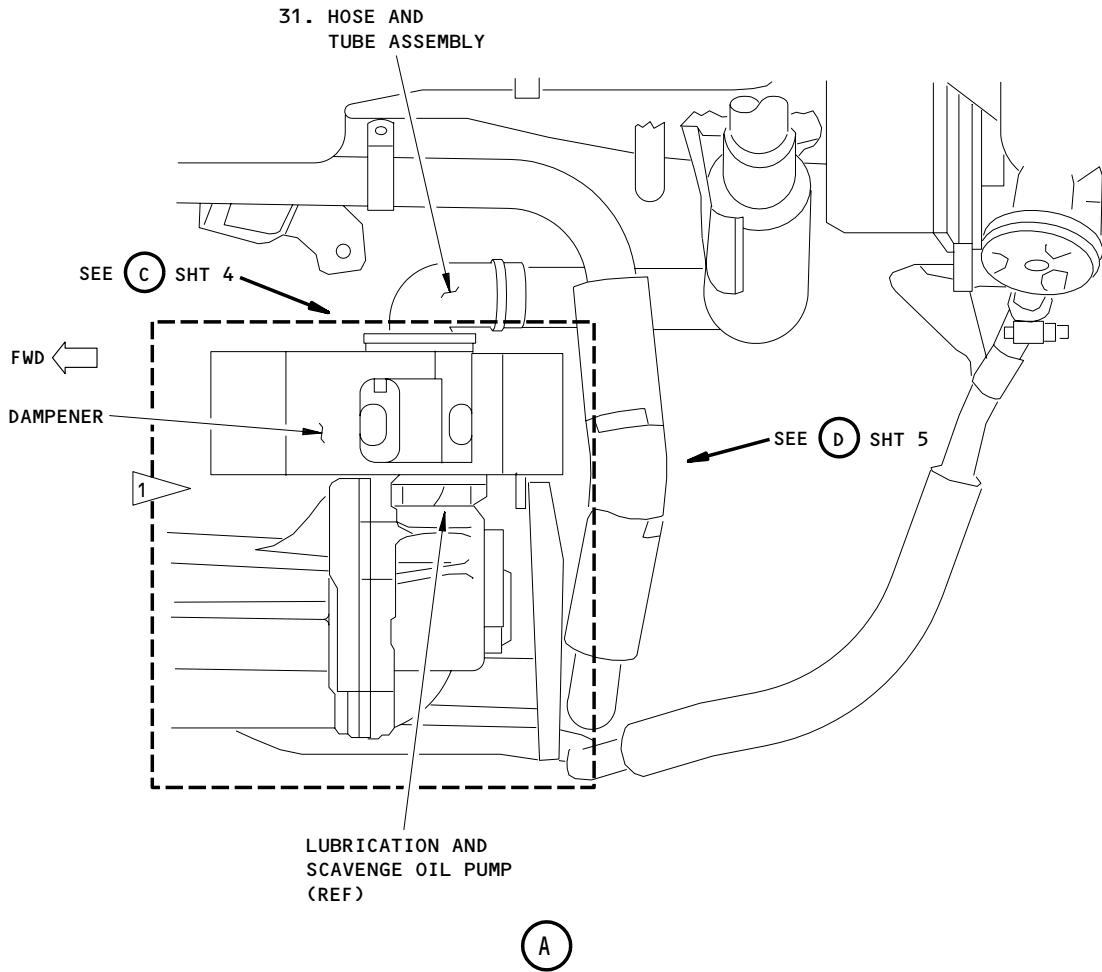
EFFECTIVITY	
	ALL

79-21-04

N02

Page 405
Dec 22/07

645055

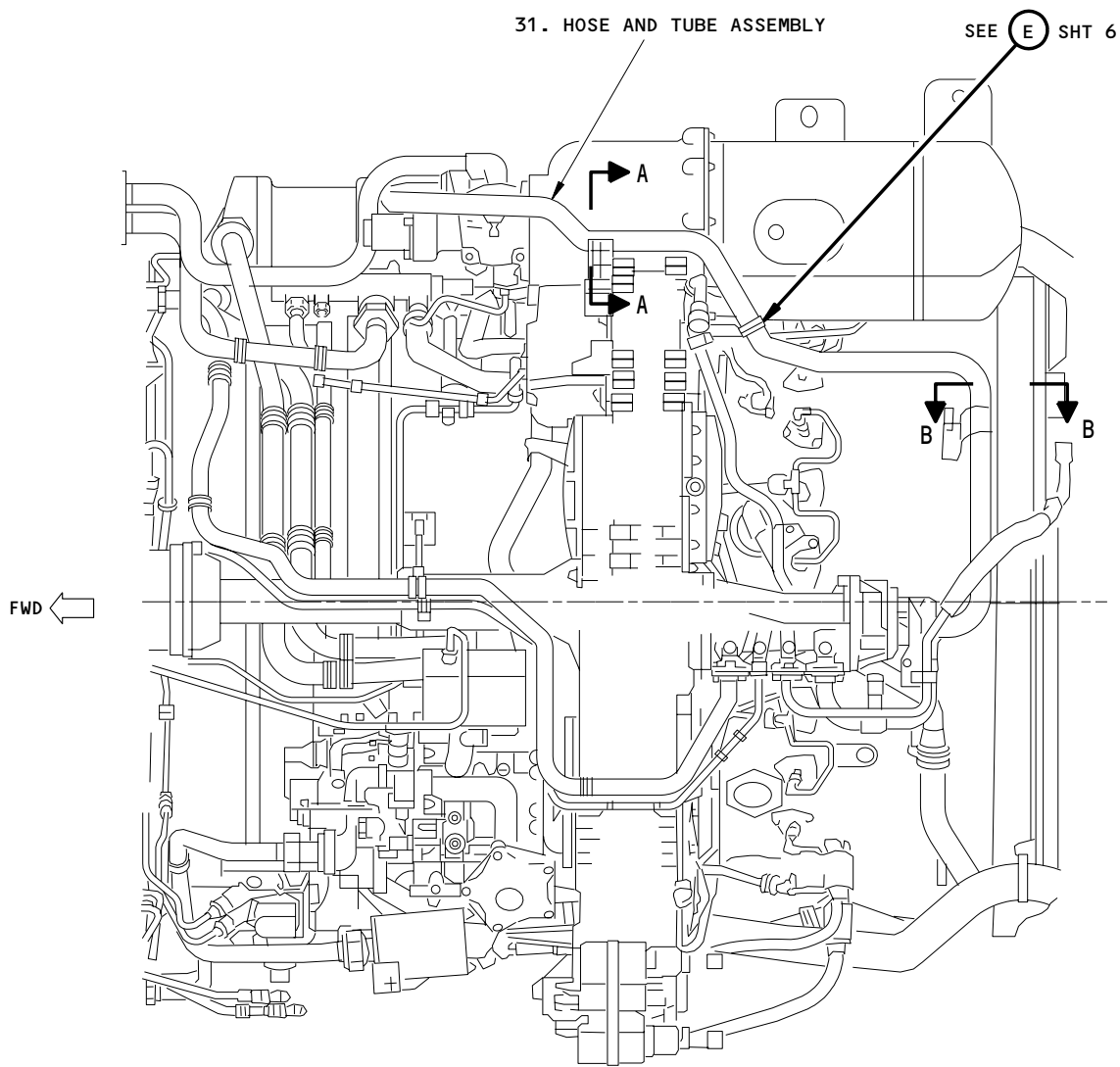


L-B2503 (0000)
L-B6568 (0698)

Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-04



ENGINE
(BOTTOM VIEW)

(B)

L-B2504 (0000)

Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 3)

EFFECTIVITY

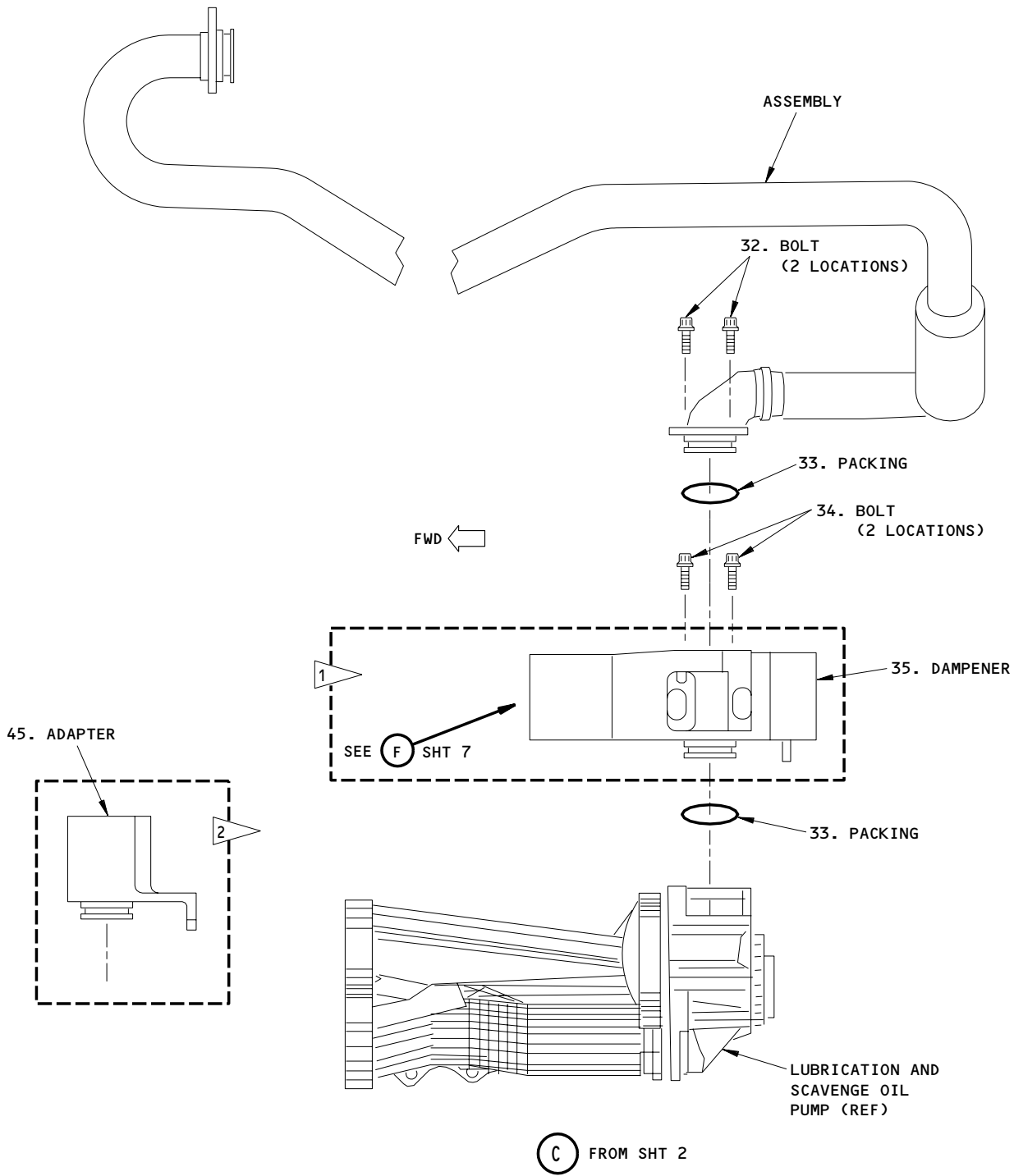
ALL

79-21-04

N02

Page 407
Dec 22/07

645281



L-B2505 (000)
B500999

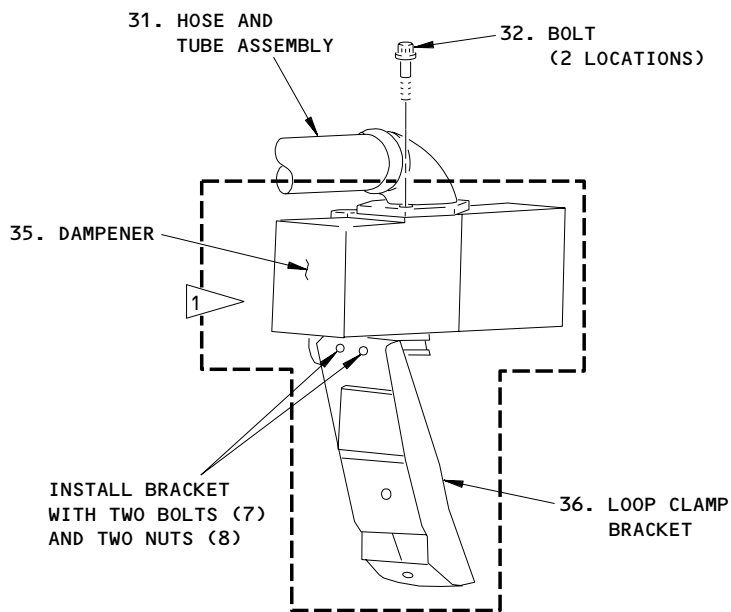
Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 4)

EFFECTIVITY	
	ALL

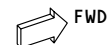
79-21-04

N02

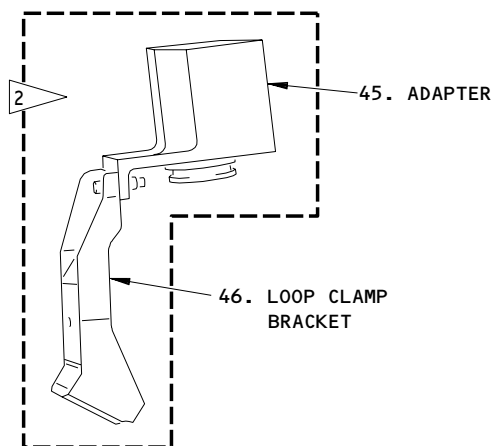
Page 408
Dec 22/07



(OIL PUMP REMOVED)



(D) FROM SHT 2



L-B2506(1297)
B500999

Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 5)

EFFECTIVITY

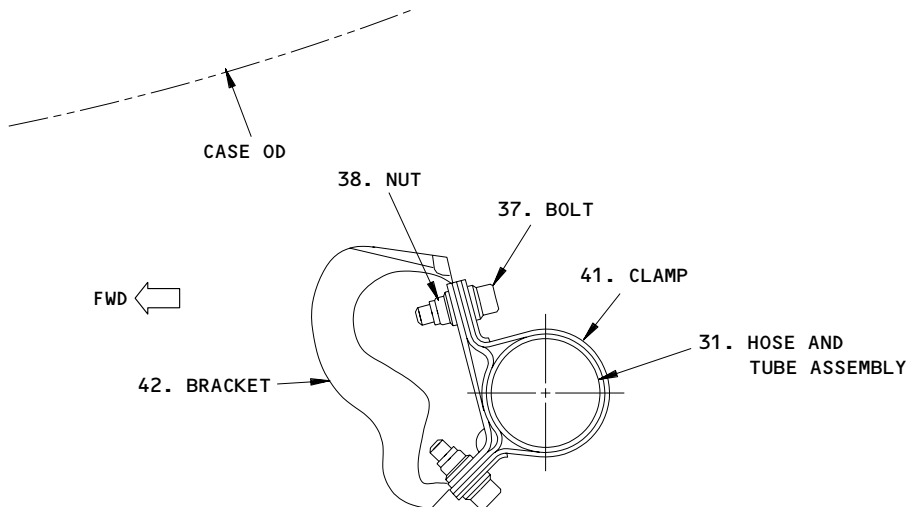
ALL

79-21-04

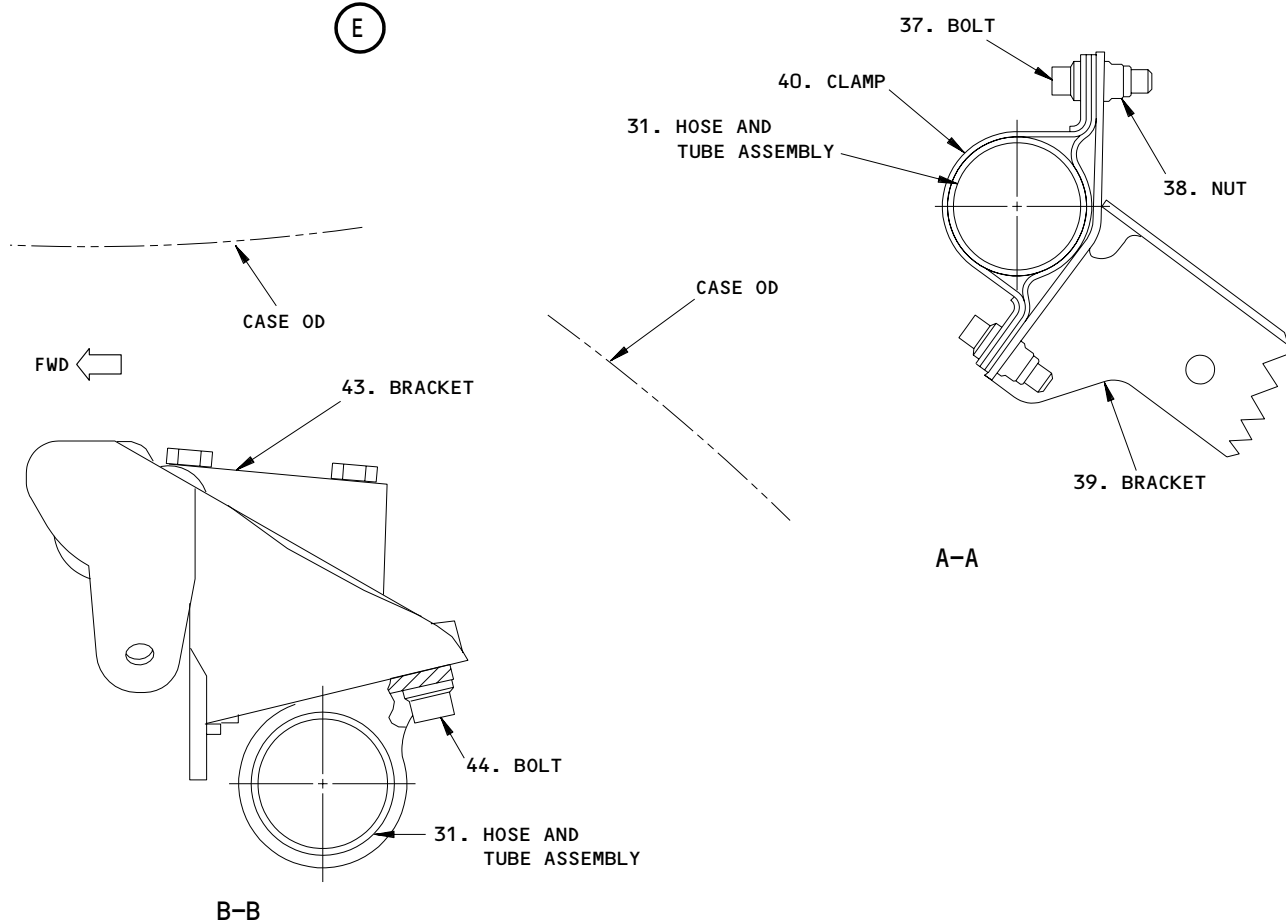
N02

Page 409
Dec 22/07

645310



(E)



FROM SHT 3

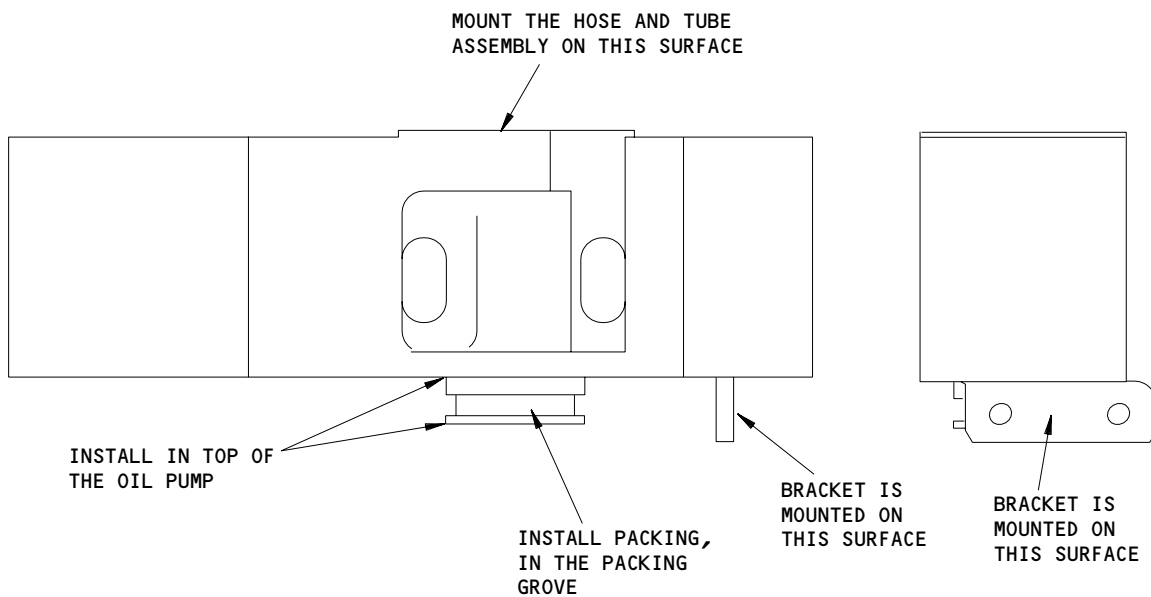
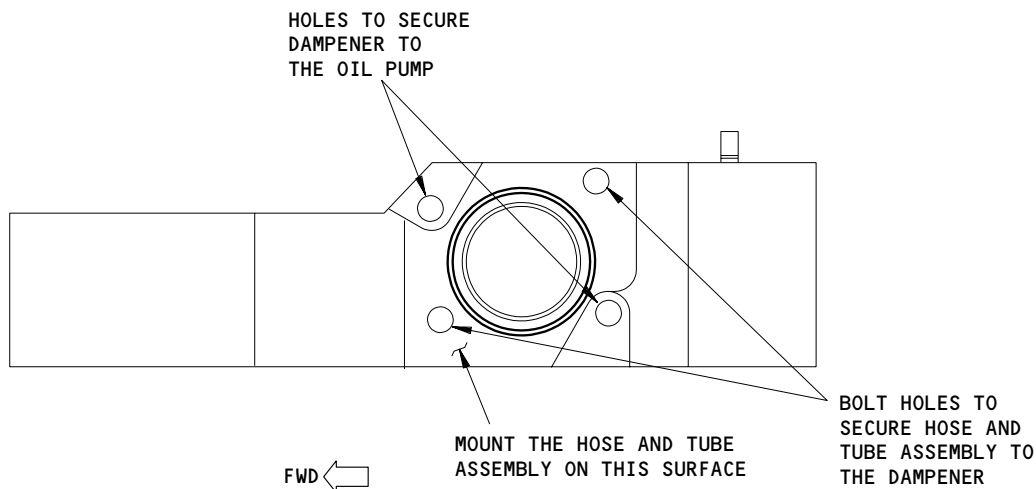
Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 6)

EFFECTIVITY	
	ALL

79-21-04

N02

Page 410
Dec 22/07



(F) FROM SHT 4

L-B2507 (0000)

Lubrication and Scavenge Oil Pump
Figure 402 (Sheet 7)

EFFECTIVITY	ALL

79-21-04

N03

Page 411
Dec 22/07

- (b) Two of the four oil pump flange bolt holes (where you just removed the bolts) have threads. Find the two threaded holes and install two PWA 86630 or PWA 88774 jackscrew pullers.

NOTE: If you can not find the two threaded bolt holes on the oil pump flange, you can not use the two PWA 86630 or PWA 88774 jackscrew pullers to remove the oil pump. To remove oil pumps without threaded bolt holes, carefully pull on the pump to remove it from the gearbox.

To get the two threaded bolt holes in the oil pump flange, see Sundstrand Service Bulletin 5008437-79-4.##

- (c) Turn the two PWA 86630 or PWA 88774 jackscrew pullers with your hand until they touch the gearbox.
- (d) Turn the two PWA 86630 or PWA 88774 jackscrew pullers equally with a wrench until the oil pump is disengaged from the gearbox.
- (e) Carefully remove the oil pump from the main gearbox.

S 034-048-N00

- (9) Remove the two PWA 86630 or PWA 88774 jackscrew pullers from the threaded holes of the oil pump.

S 034-049-N00

- (10) Remove the two large packings (23, 24) from the front of the oil pump.

S 034-014-N00

- (11) Remove the transfer tubes (18 and 21).
 - (a) Discard the packings (17, 19, 20, 22).

S 034-015-N00

- (12) Install the protection caps.

TASK 79-21-04-404-016-N00

3. Install the Lubrication and Scavenge Oil Pump

A. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) D50124 Anti-seize paste - PWA 36246

B. Parts

EFFECTIVITY

ALL

79-21-04

N03

Page 412
Apr 22/08

AMM		NOMENCLATURE	AIPC			
FIG	ITEM		SUBJECT	FIG	ITEM	
401	2	Pump-Lubricating and Scavenge Oil	79-21-04	05	120	
	3	Packing - Preformed	79-22-00	15	50	
	4	Packing - Preformed		10	30	
	11	Packing - Preformed		05	25	
	12	Packing - Preformed		01	30	
	16	Packing	79-21-05	05	30	
	17	Packing	79-21-04	05	25	
	19	Packing			25	
	20	Packing			35	
	22	Packing			35	
	23	Packing			55	
	24	Packing			55	
	402	33	Packing	79-21-05	05	32

C. References

- (1) AMM 12-13-01/301, Engine - Oil Servicing
- (2) AMM 70-24-05/201, Electrical Harnesses
- (3) AMM 71-00-00/501, Power Plant
- (4) AMM 71-11-04/201, Fan Cowl Panels
- (5) AMM 71-11-06/201, Core Cowl Panels
- (6) AMM 78-31-00/201, Thrust Reverser System

D. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 416AR Fan Reverser (Right)
 - 425AL Fan Reverser (Left)
 - 426AR Fan Reverser (Righth)

E. Procedure (Fig. 401)

- S 434-017-N00
- (1) Remove the protection caps.
- S 434-018-N00
- (2) After you lubricate the preformed packings with engine oil, install the packings that follow in the grooves on the correct tubes:
 - (a) ENGINES PRE-PW-SB 79-75;
 - Packing (16) to the tube (15) of the main oil filter (Fig. 401).

EFFECTIVITY

ALL

79-21-04

N03

Page 413
Dec 22/07

- (b) ENGINES POST-PW-SB 79-75;
Packing (33) to the tube (31) and dampener (35) or adapter (45). (Fig. 402).
- (c) Packing (4) to the scavenge tube (7) for the No. 3 bearing
- (d) Packing (3) to the scavenge tube (6) for the No. 4 bearing
- (e) Packing (12) to the scavenge tube (9) for the angle gearbox
- (f) Packing (11) to the scavenge tube (10) for the main bearings
- (g) Packings (17, 19) to the transfer tube (18)
- (h) Packings (20, 22) to the transfer tube (21)

S 434-019-N00

- (3) Install the transfer tubes (18, 21) to the correct ports on the pump (2).

S 644-020-N00

- (4) Lubricate the packing (23, 24) with engine oil.

S 434-021-N00

- (5) Install the packings (23, 24) on the pump (2).

S 424-022-N00

- (6) Install the pump (2) to the aft face of the main gearbox while you align the transfer tubes with the ports on the main gearbox.

S 644-023-N00

- (7) Lubricate the threads of the bolts (26) with anti-seize paste.

S 434-024-N00

- (8) Install the bolts (26) and the washers (25) to attach the pump (2) to the main gearbox.
 - (a) Tighten the bolts (26) to 125-140 pound-inches (14.1-15.8 newton-meters).
 - (b) Install the new packing (16) in the tube (15) of the main oil filter.
 - (c) Lubricate the threads of the bolts (13) with anti-seize paste.
 - (d) Install the tube (15) and the bracket (14) to the top aft port of the pump with the bolts (13).
 - 1) Tighten the bolts (13) to 62-72 pound-inches (7.0-8.1 newton-meters).
 - 2) Tighten the clamp bolt on the bracket (14) to 36-40 pound-inches (4.1-4.5 newton-meters).

S 434-054-N00

- (9) ENGINES POST-PW-SB 79-75 (FIG. 402);
Attach the dampener (35) or adapter (45) and tube (31) with the steps that follow:
 - (a) Install the dampener (35) or adapter (45) to the top of the lubrication and scavenge oil pump and attach with bolts (34), threads lubricated with engine oil, hand tight only.

EFFECTIVITY

ALL

79-21-04

N03

Page 414
Apr 22/08

- (b) Attach the tube (31) to the dampener (35) or adapter (45) with bolts (32), threads lubricated with engine oil, hand tight only.
- (c) Install the loop clamp bracket (36/46) to the dampener (35) or adapter (45).
 - 1) Attach loop clamp bracket (36/46) to dampener (35) or adapter (45) with bolts (37) and nuts (38).
 - 2) Tighten the bolts (37) which attach the loop clamp bracket (36/46) to the dampener (35) or adapter (45) to 32-36 pound-inches (3.6-4.1 newton-meters).
- (d) Install bolts (37), threads lubricated with engine oil, nuts (38) and clamp (40) which attaches the tube (31) to bracket (39) at forward face of gearbox, hand tight only.
- (e) Install bolts (37), threads lubricated with engine oil, nuts (38) and clamp (41) which attaches the tube (31) to bracket (42) at rear face of gearbox, hand tight only.
- (f) Install bolts (44), threads lubricated with engine oil, on the tube (31) which attaches to the diffuser case bracket (43).
- (g) Tighten the bolts (37) which attach the clamps (40,41) to gearbox brackets (39,42) to 32-36 pound-inches (3.6-4.1 newton-meters).
- (h) Tighten the bolts (34) which attach the dampener (35) or adapter (45) to the top of the main oil pump to 62-72 pound-inches (7.0-8.1 newton-meters).
- (i) Tighten the bolts (32) which attach the tube (31) to the dampener (35) or adapter (45) to 62-72 pound-inches (7.0-8.1 newton-meter).
- (j) Tighten the bolts (44) which attach the tube (31) to the diffuser case bracket (43) to 65-75 pound-inches (7.3-8.5 newton-meters).

S 434-043-N00

- (10) ENGINES POST-PW-SB 79-58;
Install the strainer element into the No. 1, 1.5, and 2 bearing oil scavenge tube assembly.

S 434-028-N00

- (11) With the new packing installed, attach the tubes that follow, from the aft end to the forward end, to the pump:
 - (a) No. 3 bearing scavenge tube (7)
 - (b) No. 4 bearing scavenge tube (6)
 - (c) Angle gearbox scavenge tube (9)
 - (d) No. 1, 1.5, and 2 bearing oil scavenge tube (10)

S 644-029-N00

- (12) Lubricate the threads of the bolts (8) with anti-seize paste.

S 434-030-N00

- (13) Attach the tubes and the bracket (27) to the pump with the bolts (8).

EFFECTIVITY

ALL

79-21-04

N03

Page 415
Apr 22/08

S 434-044-N00

CAUTION: USE THE CORRECT ASSEMBLY PROCEDURE, AND TOOLS, FOR THE HARNESS CONNECTOR INSTALLATION (AMM 70-24-05/201). IF YOU USE THE INCORRECT ASSEMBLY PROCEDURE, OR TOOLS, A DAMAGED OR LOOSE CONNECTOR CAN OCCUR. A LOOSE CONNECTOR PERMITS VIBRATION, WHICH CAUSES THE CONTACTS TO WEAR AND DECREASES THE LIGHTNING PROTECTION.

- (14) ENGINES PRE-PW-SB 73-84;
Connect the electrical connector (5) to the oil temperature sensor for the No. 3 bearing (AMM 70-24-05/201).

S 434-032-N00

- (15) ENGINES POST-PW-SB 73-84;
Do the steps that follow to install the thermocouple probe (5) to the temperature sensor:
(a) Tighten the alumel connection (larger nut) to 18-22 pound-inches (2.0-2.5 newton-meters).
(b) Tighten the chromel connection (smaller nut) to 15-18 pound-inches (1.7-2.0 newton-meters).

S 844-058-N00

- (16) Install the magnetic chip detector assemblies in the main gearbox and the oil tank AMM 79-21-10/401).
F. Put the airplane back to its initial condition

S 614-034-N00

- (1) Do the servicing procedure of the engine oil system (AMM 12-13-01/301).

S 414-035-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (2) Close the thrust reversers (AMM 78-31-00/201).

S 414-036-N00

- (3) Close the core cowl panels (AMM 71-11-06/201).

S 414-037-N00

- (4) Close the fan cowl panels (AMM 71-11-04/201).

S 444-038-N00

- (5) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-04

N03

Page 416
Dec 22/07

S 714-039-N00

- (6) Do the test of the lubrication and scavenge oil pump that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-04

N02

Page 417
Dec 22/07

MAIN OIL FILTER - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. One task is to remove the main oil filter. The other task is to install the main oil filter.

TASK 79-21-05-024-001-N00

2. Remove the Main Oil Filter

A. Equipment

- (1) Container - for engine oil - 5 U.S. gallons (19 liters) capacity

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
(2) AMM 71-11-06/201, Core Cowl Panels
(3) AMM 78-31-00/201, Thrust Reverser System

C. Access

- (1) Location Zones
410 Left Engine
420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

D. Prepare to Remove the Main Oil Filter

S 014-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-05

N01

Page 401
Dec 22/00

E. Remove the Main Oil Filter

S 034-006-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

- (1) Remove the lockwire which attaches the drain plug to the bottom of the insert.

S 684-007-N00

- (2) Put the container below the drain plug.

S 024-058-N00

WARNING: DO NOT GET THE ENGINE OIL ON YOUR CLOTHES OR ON THE AIRPLANE. DO NOT KEEP THE ENGINE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE ENGINE OIL OFF, THE ENGINE OIL CAN CAUSE INJURY.

CAUTION: IF YOU DO NOT CLEAN THE ENGINE OIL OFF, THE ENGINE OIL CAN CAUSE A STAIN ON YOUR CLOTHES AND THE PAINT WILL BECOME SOFT.

- (3) ENGINES PRE-PW-SB 72-524;

Do the steps that follow (Fig. 401, View A):

- (a) Hold the insert (8) in position with a wrench on the flats to remove the drain plug (10).
- (b) Remove the drain plug (10) with the wrench.
 - 1) Discard the packing (9) on the drain plug (10).
- (c) Permit the housing of the main oil filter to drain.

WARNING: A TENSION FROM A SPRING IS ON THE FILTER COVER. HOLD THE FILTER COVER WITH YOUR HAND TO MAKE SURE THE FILTER COVER DOES NOT EJECT WHEN YOU REMOVE THE BOLTS.

- (d) While you hold the filter cover in position with your hand, remove the bolts (11) and washers (12) which attach the filter cover (13).

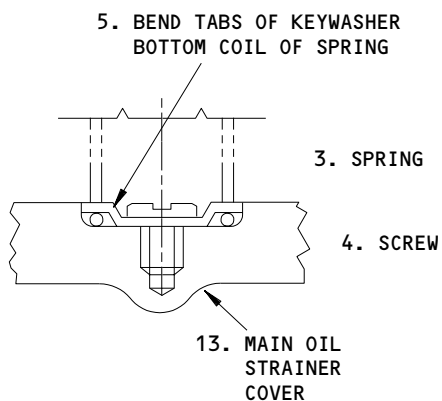
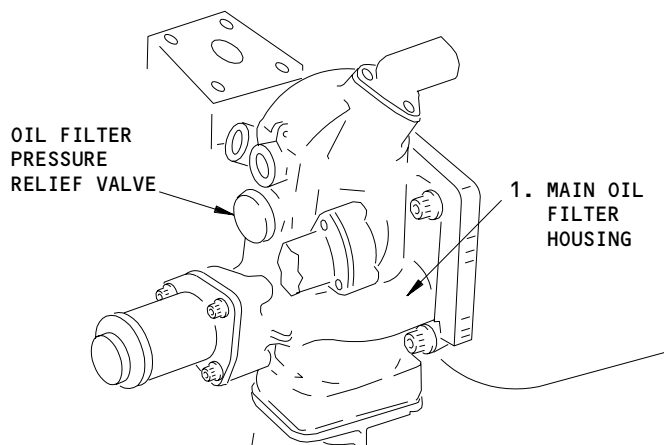
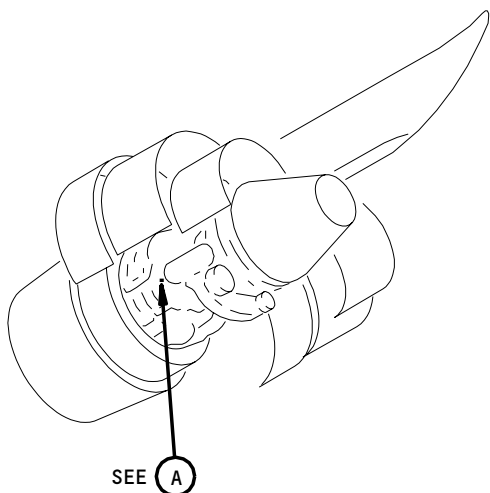
EFFECTIVITY

ALL

79-21-05

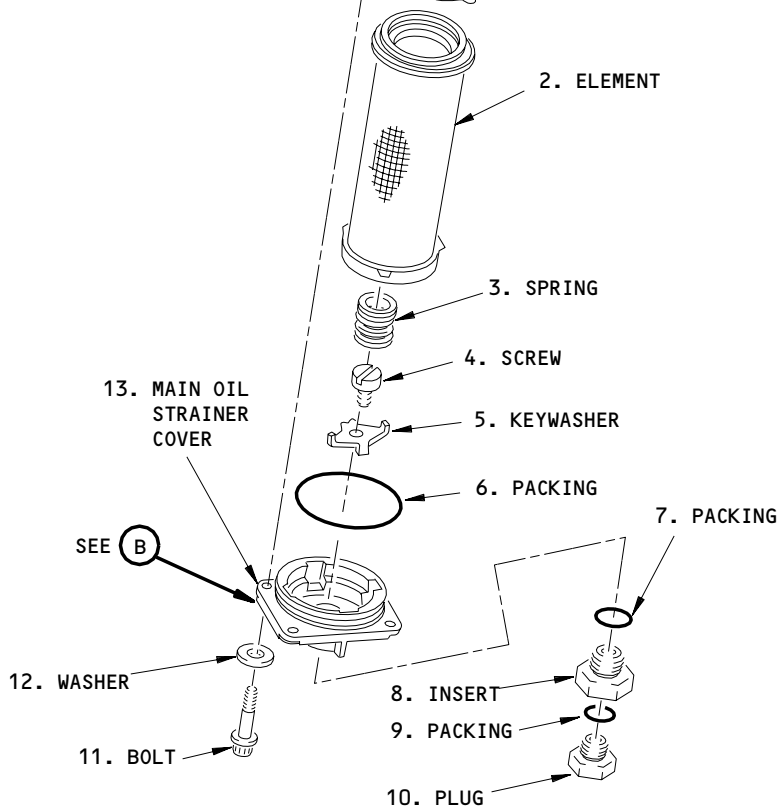
N01

Page 402
Dec 22/00



VIEW OF SPRING, SCREW,
KEYWASHER AND COVER
INSTALLED

(B)



ENGINES WITHOUT PW SB 72-524

(A)

L-B3667 (0000)

Main Oil Filter Installation
Figure 401 (Sheet 1)

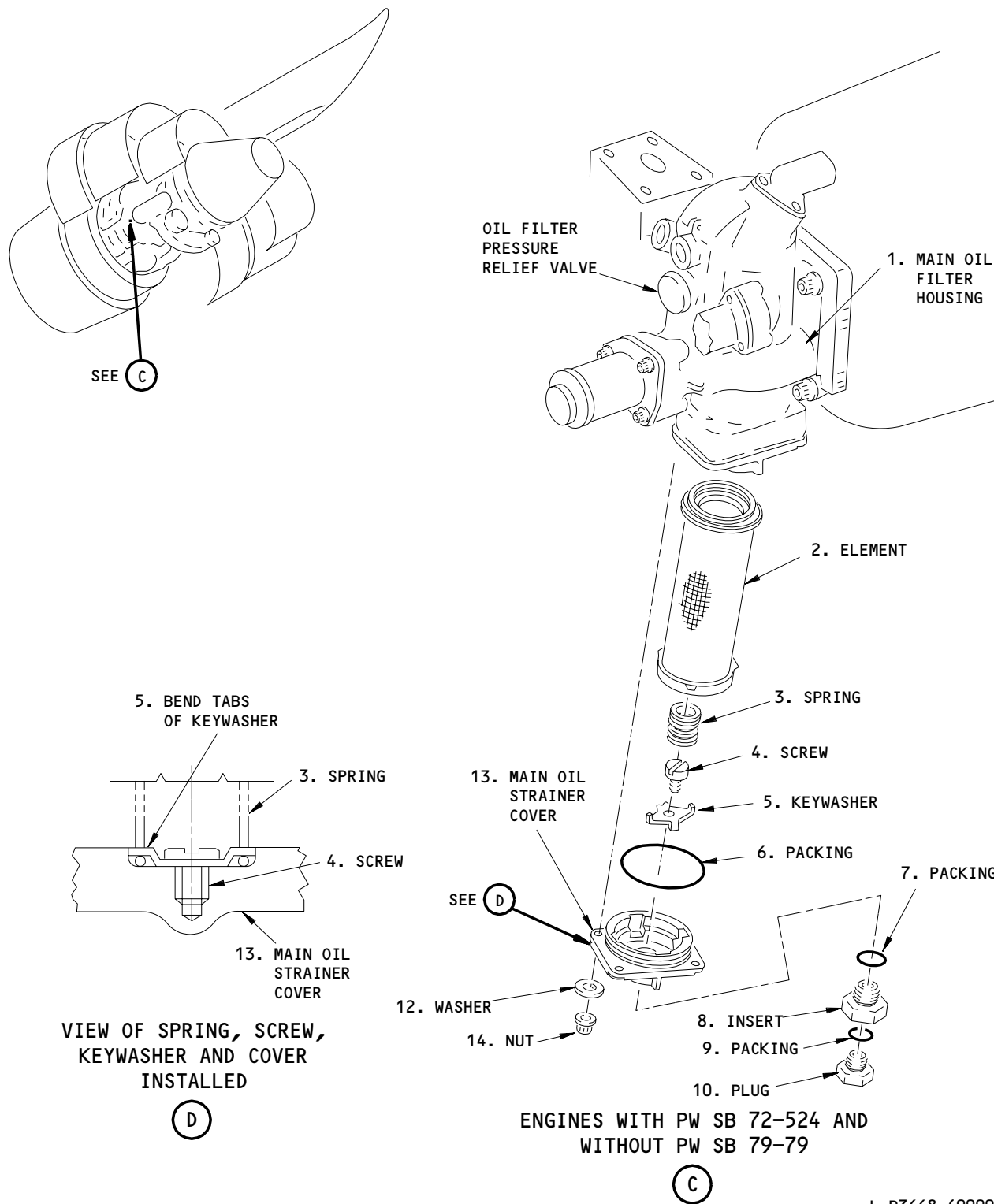
EFFECTIVITY

ALL

79-21-05

N01

Page 403
Nov 10/96



L-B3668 (0000)

Main Oil Filter Installation
Figure 401 (Sheet 2)

EFFECTIVITY

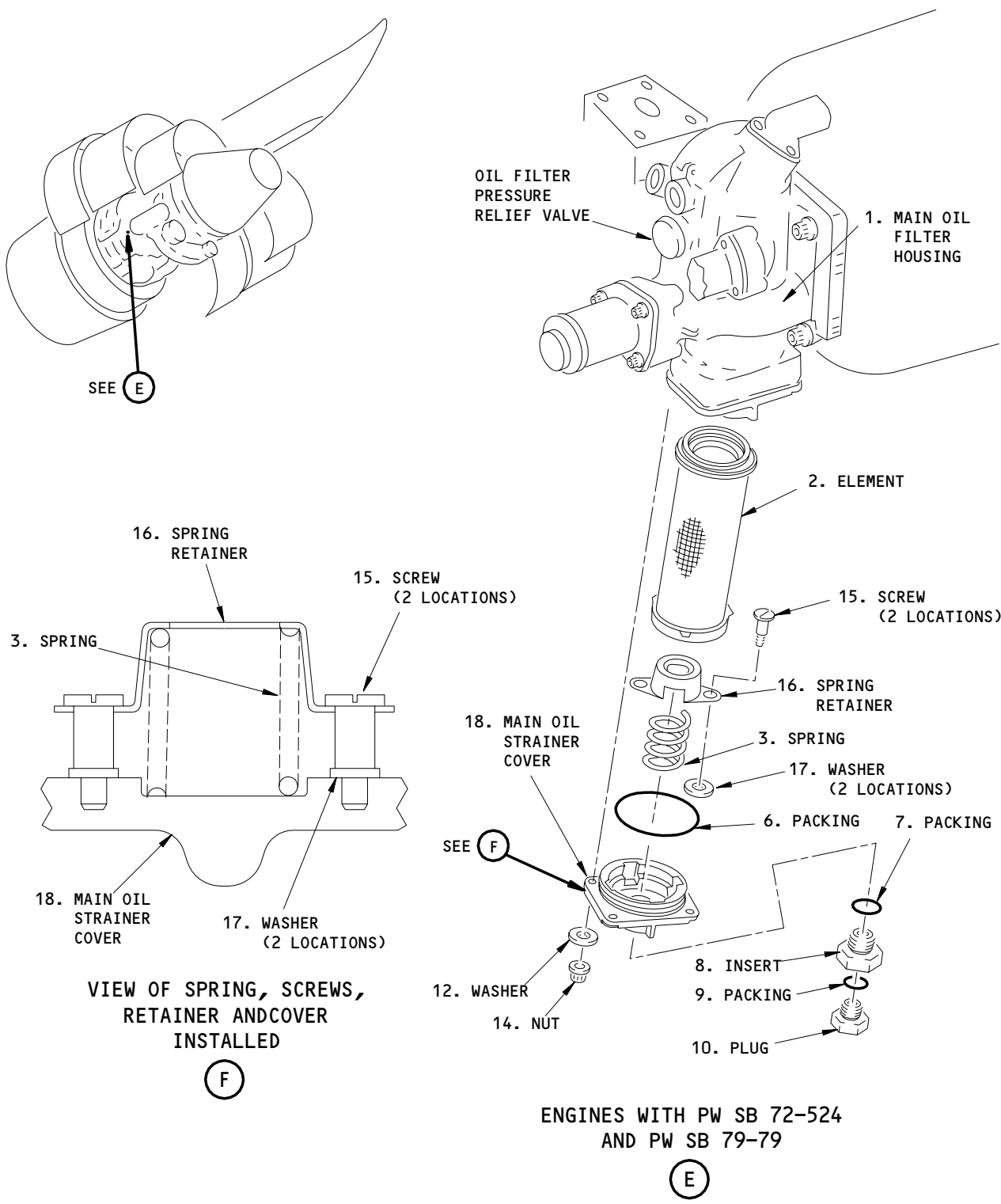
ALL

79-21-05

N01

Page 404
Nov 10/96

G15945



ENGINES WITH PW SB 72-524
AND PW SB 79-79

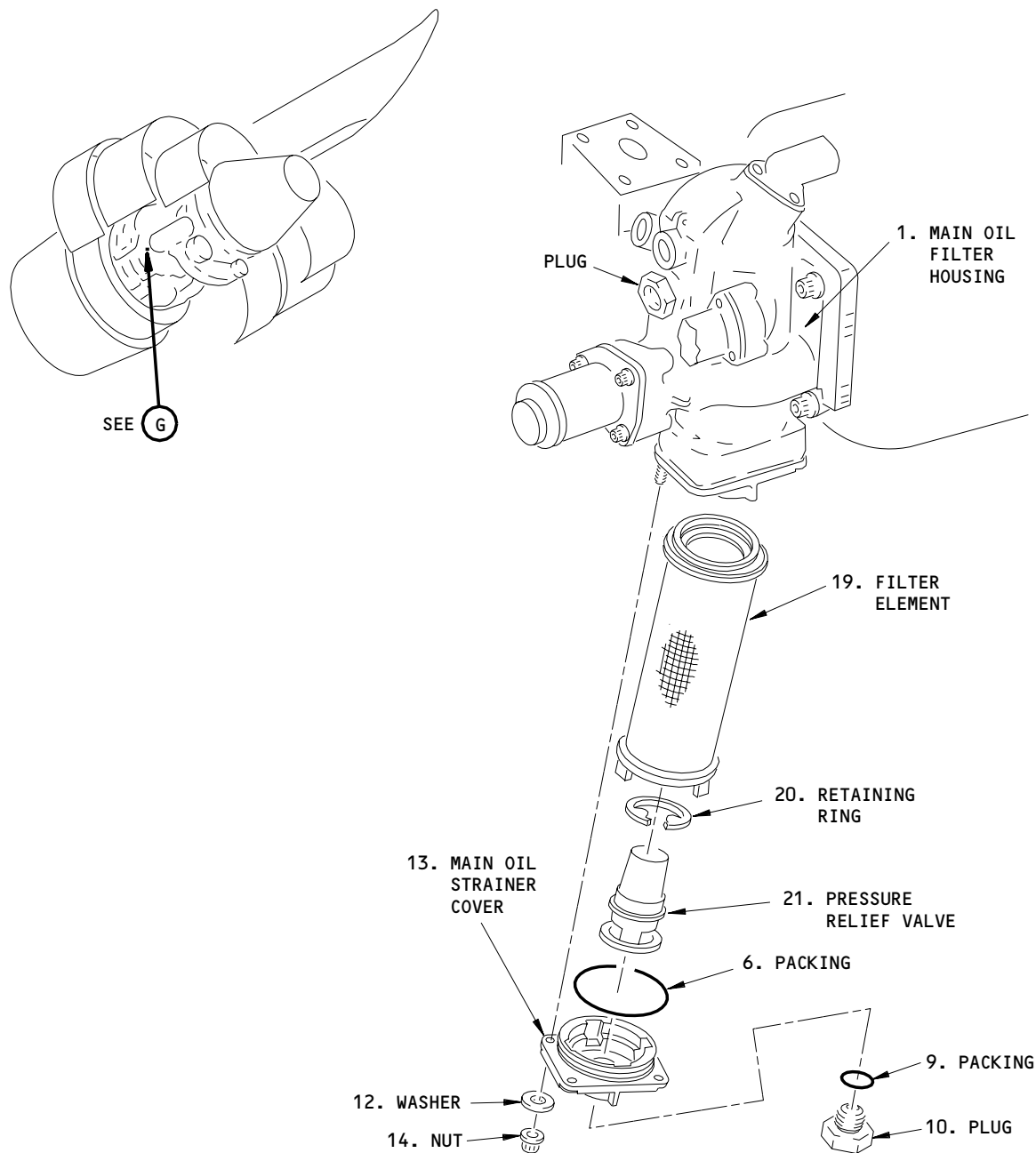
L-B3669 (0000)

Main Oil Filter Installation
Figure 401 (Sheet 3)

EFFECTIVITY	
	ALL

79-21-05

G15955



ENGINES WITH PW SB 72-525

(G)

L-B3670 (0000)

Main Oil Filter Installation
Figure 401 (Sheet 4)

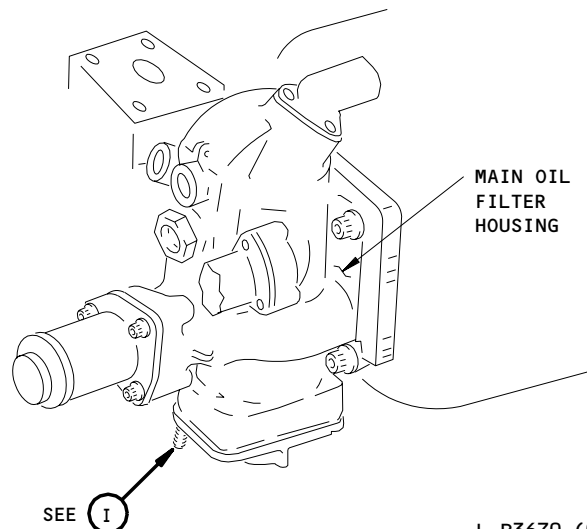
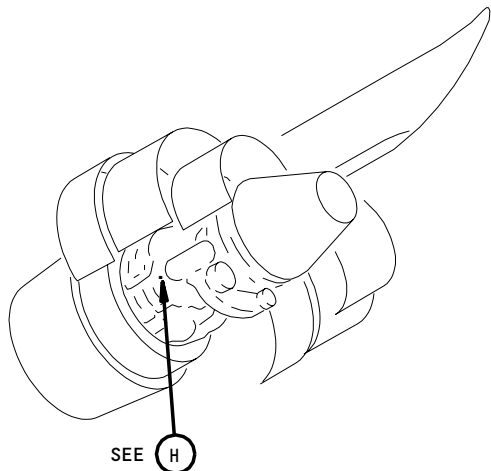
EFFECTIVITY	
	ALL

79-21-05

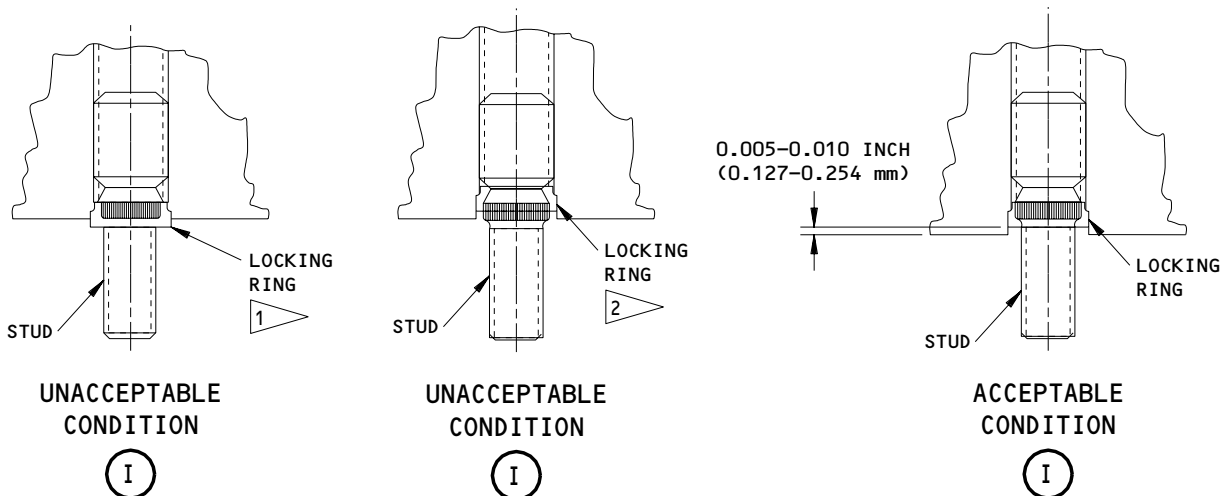
N01

Page 406
Nov 10/96

G15982



L-B3670 (0000)



- 1 IF THE LOCK RING IS ABOVE THE HOUSING SURFACE, REMOVE AND REPLACE THE MAIN OIL FILTER HOUSING
- 2 IF THE STUD SERRATED EDGES ARE ABOVE THE LOCK RING, REMOVE AND REPLACE THE MAIN OIL FILTER HOUSING

L-B7798 (0100)

Main Oil Filter Installation
Figure 401 (Sheet 5)

EFFECTIVITY	ALL
-------------	-----

79-21-05

N01

Page 407
Apr 22/02

#59667

- (e) Remove the filter cover (13).
 - 1) Discard the packing (6).
- (f) Remove the main oil filter (2) from the filter housing (1).
 - 1) Discard the main oil filter (2).
- (g) Remove spring (3) from cover (13).
 - 1) Remove the screw (4) which attaches the key washer (5) to the cover.
 - 2) Discard the key washer (5).

S 024-045-N00

- (4) ENGINES POST-PW-SB 72-524 AND PRE-PW-SB 79-79;
Do the steps that follow (Fig. 401, View C):
 - (a) Hold the insert (8) in position with a wrench on the flats to remove the drain plug (10).
 - (b) Remove the drain plug (10) with the wrench.
 - 1) Discard the packing (9) on the drain plug (10).
 - (c) Permit the housing of the main oil filter to drain.

WARNING: A TENSION FROM A SPRING IS ON THE FILTER COVER. HOLD THE FILTER COVER WITH YOUR HAND TO MAKE SURE THE FILTER COVER DOES NOT EJECT WHEN YOU REMOVE THE BOLTS.

- (d) While you hold the filter cover in position with your hand, remove the lockwire, nuts (14), and washers (12) which attach the filter cover (13).
 - 1) If self-locking nuts were used, discard them.
- (e) Remove the filter cover (13).
 - 1) Discard the packing (6).
- (f) Remove the main oil filter (2) from the filter housing (1).
 - 1) Discard the main oil filter (2).
- (g) Remove spring (3) from cover (13).
 - 1) Remove the screw (4) which attaches the key washer (5) to the cover (13).
 - 2) Discard the key washer (5).
 - 3) Do a check of the studs installed in the main oil filter housing (Fig. 401, View I).
 - a) If the studs are not acceptable, remove and replace the main oil filter housing (AMM 72-61-11/401).

S 024-049-N00

- (5) ENGINES POST-PW-SB 72-524 AND POST-PW-SB 79-79;
Do the steps that follow (Fig. 401, View E):
 - (a) Hold the insert (8) in position with a wrench on the flats to remove the drain plug (10).
 - (b) Remove the drain plug (10) with the wrench.
 - 1) Discard the packing (9) on the drain plug (10).
 - (c) Permit the housing of the main oil filter to drain.

EFFECTIVITY

ALL

79-21-05

N01

Page 408
Apr 22/02

WARNING: A TENSION FROM A SPRING IS ON THE FILTER COVER. HOLD THE FILTER COVER WITH YOUR HAND TO MAKE SURE THE FILTER COVER DOES NOT EJECT WHEN YOU REMOVE THE BOLTS.

- (d) While you hold the filter cover in position with your hand, remove the lockwire, nuts (14), and washers (12) which attach filter cover (18).
 - 1) If self-locking nuts were used, discard them.
- (e) Remove the filter cover (18).
 - 1) Discard the packing (6).
- (f) Remove the main oil filter (2) from the filter housing (1).
 - 1) Discard the main oil filter (2).
- (g) Remove spring (3) from cover (18).
 - 1) Remove the screws (15) and washers (17) which attach the spring retainer (16) to the cover (18).

S 024-034-N00

- (6) ENGINES POST-PW-SB 72-525;

Do the steps that follow (Fig. 401, View G):

- (a) Remove the drain plug (10) with the wrench.
 - 1) Discard the packing (9) on the drain plug (10).
 - 2) Permit the housing of the main oil filter to drain.

WARNING: A TENSION FROM A SPRING IS ON THE FILTER COVER. HOLD THE FILTER COVER WITH YOUR HAND TO MAKE SURE THE FILTER COVER DOES NOT EJECT WHEN YOU REMOVE THE BOLTS.

- (b) While you hold the filter cover in position with your hand, remove the four self-locking nuts (14) and washers (12) on the main oil filter cover assembly (13).

NOTE: You can use plain nuts with wire holes as an alternate method.

- (c) Remove the filter cover (13).
 - 1) Discard the packing (6).
 - 2) Discard the four self-locking nuts (14).

NOTE: Keep the nuts with the wire holes if they were used.

- (d) Remove the main oil filter (19) from the filter housing (1).
- (e) Remove the retaining ring (20) from the pressure relief valve (21).
- (f) Remove the pressure relief valve (21) from the cover (13).

EFFECTIVITY

ALL

79-21-05

N01

Page 409
Apr 22/02

- (g) Do a check of the studs installed in the main oil filter housing (Fig. 401, View I).
 - 1) If the studs are not acceptable, remove and replace the main oil filter housing (AMM 72-61-11/401).

S 034-013-N00

- (7) Install protective caps into the housing of the main oil filter.

TASK 79-21-05-424-014-N00

3. Install the Main Oil Filter

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) G02332 Ferrule, Safety Cable (P05-292)
- (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (4) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	2	Filter Element	79-21-06	01	60 62

D. References

- (1) AMM 12-13-01/301, Engine - Oil Servicing
- (2) AMM 71-00-00/501, Power Plant - General
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

F. Procedure (Fig. 401)

S 434-015-N00

- (1) Remove protective cap from the housing of the main oil filter.

EFFECTIVITY

ALL

79-21-05

N01

Page 410
Apr 22/06

S 144-016-N00

- (2) Clean the housing of any unwanted material.

S 424-017-N00

CAUTION: THE MAIN OIL FILTERS HAVE A REMOVABLE PLUG WHICH YOU MUST INSTALL BEFORE YOU INSTALL THE MAIN OIL FILTER INTO THE HOUSING. IF YOU DO NOT INSTALL THE REMOVABLE PLUG, THE ENGINE OIL WILL NOT GO THROUGH THE MAIN OIL FILTER.

- (3) ENGINES PRE-PW-SB 72-524;

Do the steps that follow (Fig. 401, View A):

- (a) Align bolt hole and position key washer (5) in center of cover with tab of key washer in mating hole in cover (13).
- (b) Attach the key washer (5) with the screw (4), lubricated with engine oil.
- (c) Tighten the screw (4) to 36-40 pound-inches (4.1-4.5 newton-meters).
- (d) Install the spring (3) on the key washer (5).
1) Bend tabs of key washer out between coils of spring.
- (e) Install new packing (6), lubricated with engine oil, into groove in OD of main oil strainer cover (13).
- (f) Install filter element (2) into opening in bottom of cover (13).
- (g) Align bolt holes and install cover (13) with filter element (2) into main oil filter housing (1).

NOTE: The removable plug in the outboard end cap of the filter must be installed before you install the filter element into the cover.

CAUTION: MAKE SURE YOU INSTALL THIS PART CORRECTLY. IF YOU DO NOT INSTALL THE PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU INSTALL THE COVER CORRECTLY. DO NOT USE THE COVER RETAINING BOLTS TO PULL COVER INTO THE HOUSING. YOU CAN CAUSE DAMAGE TO THE PACKING.

- (h) With the cover (13) in position on the housing (1), carefully push the cover on the housing until the flange of the cover touches the housing.

EFFECTIVITY

ALL

79-21-05

N01

Page 411
Apr 22/02

CAUTION: MAKE SURE YOU ATTACH THE COVER CORRECTLY. IF YOU DO NOT ATTACH THE COVER CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU TIGHTEN THE BOLTS CORRECTLY. MAKE SURE TO TIGHTEN THE COVER RETAINING BOLTS TO THE TORQUE SPECIFIED. IF YOU DO NOT TIGHTEN THE BOLTS AS SPECIFIED, AN INFLIGHT SHUTDOWN CAN OCCUR.

- (i) Attach the cover (13) to the housing (1) with four washers (12) and bolts (11).
- (j) Tighten the bolts (11) to 125-140 pound-inches (14.1-15.8 newton-meters).

S 424-050-N00

CAUTION: THE MAIN OIL FILTERS HAVE A REMOVABLE PLUG WHICH YOU MUST INSTALL BEFORE YOU INSTALL THE MAIN OIL FILTER INTO THE HOUSING. IF YOU DO NOT INSTALL THE REMOVABLE PLUG, THE ENGINE OIL WILL NOT GO THROUGH THE MAIN OIL FILTER.

- (4) ENGINES POST-PW-SB 72-524 AND PRE-PW-SB 79-79;
Do the steps that follow (Fig. 401, View C):
 - (a) Align bolt hole and position key washer (5) in center of cover (13) with tab of key washer in mating hole in cover.
 - (b) Attach key washer (5) with screw (4), lubricated with engine oil.
 - (c) Tighten the screw (4) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - (d) Install spring (3) on key washer (5).
 - 1) Bend tabs of key washer out between coils of spring.
 - (e) Install new packing (6), lubricated with engine oil, into groove in OD of main oil strainer cover (13).
 - (f) Install filter element (2) into opening in bottom of cover (13).
 - (g) Align bolt holes and install cover (13) with filter element (2) into main oil filter housing (1).

NOTE: The removable plug in the outboard end cap of the filter must be installed before you install the filter element into the cover.

EFFECTIVITY

ALL

79-21-05

N01

Page 412
Apr 22/02

CAUTION: MAKE SURE YOU INSTALL THIS PART CORRECTLY. IF YOU DO NOT INSTALL THE PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU INSTALL THE COVER CORRECTLY. DO NOT USE THE COVER RETAINING NUTS TO PULL COVER INTO THE HOUSING. YOU CAN CAUSE DAMAGE TO THE PACKING.

(h) With the cover (13) in position over the studs in the housing, carefully push the cover on the housing until the flange of the cover touches the housing (1).

CAUTION: MAKE SURE YOU ATTACH THE COVER CORRECTLY. IF YOU DO NOT ATTACH THE COVER CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU TIGHTEN THE NUTS CORRECTLY. MAKE SURE TO TIGHTEN THE COVER RETAINING NUTS TO THE TORQUE SPECIFIED. IF YOU DO NOT TIGHTEN THE NUTS AS SPECIFIED, AN INFLIGHT SHUTDOWN CAN OCCUR.

CAUTION: DO NOT INSTALL THE REMOVED LOCK NUTS; USE NEW NUTS. THE LOCK PROPERTY OF THE NUT DECREASES WITH USE. IF THE NUT BACKS OUT BECAUSE OF THE DECREASED IN LOCK PROPERTY, OIL LOSS AND AN IN-FLIGHT-SHUTDOWN CAN OCCUR.

- (i) Attach the cover (13) to the housing (1).
- 1) If self-locking nuts (14) are used:
 - a) Lubricate housing studs with engine oil.
 - b) Attach cover (13) to housing (1) with four washers (12) and nuts (14).
 - c) Tighten the nuts (14) to 150-170 pound-inches (16.9-19.2 newton-meters).
 - 2) If hex nuts (14) with lockwire provisions are used:
 - a) Lubricate housing studs with engine oil.
 - b) Attach cover (13) to housing (1) with four washers (12) and nuts (14).
 - c) Tighten the nuts (14) to 125-150 pound-inches (14.1-16.9 newton-meters).
 - d) Attach the lockwire or safety cable and safety cable ferrule to the nuts (14).

S 424-051-N00

CAUTION: THE MAIN OIL FILTERS HAVE A REMOVABLE PLUG WHICH YOU MUST REMOVE BEFORE YOU INSTALL THE MAIN OIL FILTER INTO THE HOUSING. IF YOU DO NOT REMOVE THE REMOVABLE PLUG, THE FILTER WILL NOT WORK CORRECTLY.

(5) ENGINES POST-PW-SB 72-524 AND POST-PW-SB 79-79;

EFFECTIVITY

ALL

79-21-05

N01

Page 413
Apr 22/02

Do the steps that follow (Fig. 401, View E):

- (a) Install the spring (3) in the spring retainer (16).
- (b) Install two screws (15) through the spring retainer screw holes.
- (c) Install two washers (17) on the ends of the screws (15).
- (d) Lubricate the threads of the two screws (15) with engine oil.
- (e) With the spring (3) in place in the spring retainer (16), thread the two screws (15) into the main oil strainer cover (18).
- (f) Tighten the two screws (15) to 36–40 pound–inches (4.1–4.5 newton–meters).
- (g) Install new packing (6), lubricated with engine oil, into groove in OD of main oil strainer cover (18).
- (h) Install filter element (2) into opening in bottom of cover (18).
- (i) Align bolt holes and install cover (18) with filter element (2) into main oil filter housing (1).

NOTE: The removable plug in the outboard end cap of the filter must be removed before you install the filter element into the cover.

CAUTION: MAKE SURE YOU INSTALL THIS PART CORRECTLY. IF YOU DO NOT INSTALL THE PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU INSTALL THE COVER CORRECTLY. DO NOT USE THE COVER RETAINING NUTS TO PULL COVER INTO THE HOUSING. YOU CAN CAUSE DAMAGE TO THE PACKING.

- (j) With the cover (18) in position over the studs in the housing, carefully push the cover on the housing until the flange of the cover touches the housing (1).

CAUTION: MAKE SURE YOU ATTACH THE COVER CORRECTLY. IF YOU DO NOT ATTACH THE COVER CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU TIGHTEN THE NUTS CORRECTLY. MAKE SURE TO TIGHTEN THE COVER RETAINING NUTS TO THE TORQUE SPECIFIED. IF YOU DO NOT TIGHTEN THE NUTS AS SPECIFIED, AN INFLIGHT SHUTDOWN CAN OCCUR.

CAUTION: DO NOT INSTALL THE REMOVED LOCK NUTS; USE NEW NUTS. THE LOCK PROPERTY OF THE NUT DECREASES WITH USE. IF THE NUT BACKS OUT BECAUSE OF THE DECREASED IN LOCK PROPERTY, OIL LOSS AND AN IN-FLIGHT-SHUTDOWN CAN OCCUR.

- (k) Attach the cover (18) to the housing (1).
 - 1) If self-locking nuts (14) are used:
 - a) Lubricate housing studs with engine oil.

EFFECTIVITY

ALL

79-21-05

N01

Page 414
Apr 22/02

- b) Attach cover (18) to housing (1) with four washers(12) and nuts (14).
 - c) Tighten the nuts (14) to 150-170 pound-inches (16.9-19.2 newton-meters).
 - 2) If hex nuts (14) with lockwire provisions are used:
 - a) Lubricate housing studs with engine oil.
 - b) Attach cover (18) to housing (1) with four washers (12) and nuts (14).
 - c) Tighten the nuts (14) to 125-150 pound-inches (14.1-16.9 newton-meters).
 - d) Attach the lockwire or safety cable and safety cable ferrule to the nuts (14).
- S 424-052-N00
- (6) Install new packing (7), lubricated with engine oil, on insert (8).
- S 424-053-N00
- (7) Install insert (8), lubricated with engine oil, in opening in bottom of cover (13, 18).
 - (a) Tighten the insert (8) to 200-225 pound-inches (22.6-25.4 newton-meters).
- S 424-054-N00
- (8) Install new packing (9), lubricated with engine oil, on plug (10).
- S 424-055-N00
- (9) Install plug (10), lubricated with engine oil, into insert (8).
 - (a) Tighten the plug (10) to 110-120 pound-inches (12.4-13.6 newton-meters).
 - (b) Attach lockwire or safety cable and safety cable ferrule to plug (10).
- S 024-038-N00
- (10) ENGINES POST-PW-SB 72-525;
Do the steps that follow (Fig. 401, View G):
 - (a) Install pressure relief valve (21) in center of cover (13).
 - (b) Attach retaining ring (20) to pressure relief valve (21).
 - (c) Install new packing (6), lubricated with engine oil, in groove in OD of main oil strainer cover (13).
 - (d) Remove the protective closure from the end of the filter element (19).
 - (e) Install the filter element (19) over the pressure relief valve (21) in cover (13).

EFFECTIVITY

ALL

79-21-05

N01

Page 415
Apr 22/02

- 1) Align bolt holes and dowel pin in cover (13) with studs and dowel pin hole in main oil filter housing (1), then install cover with filter element (19) into main oil filter housing.

NOTE: The removable plug in the outboard end cap of the filter must be removed before you install the filter element into the cover.

CAUTION: MAKE SURE YOU INSTALL THIS PART CORRECTLY. IF YOU DO NOT INSTALL THE PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU INSTALL THE COVER CORRECTLY. DO NOT USE THE COVER RETAINING NUTS TO PULL COVER INTO THE HOUSING. YOU CAN CAUSE DAMAGE TO THE PACKING.

- (f) With the cover (13) in position over the studs and dowel pin hole in the housing (1), carefully push the cover on the housing until the flange of the cover touches the housing.

CAUTION: MAKE SURE YOU ATTACH THE COVER CORRECTLY. IF YOU DO NOT ATTACH THE COVER CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: MAKE SURE YOU TIGHTEN THE NUTS CORRECTLY. MAKE SURE TO TIGHTEN THE COVER RETAINING NUTS TO THE TORQUE SPECIFIED. IF YOU DO NOT TIGHTEN THE NUTS AS SPECIFIED, AN INFLIGHT SHUTDOWN CAN OCCUR.

CAUTION: DO NOT INSTALL THE REMOVED LOCK NUTS; USE NEW NUTS. THE LOCK PROPERTY OF THE NUT DECREASES WITH USE. IF THE NUT BACKS OUT BECAUSE OF THE DECREASED IN LOCK PROPERTY, OIL LOSS AND AN IN-FLIGHT-SHUTDOWN CAN OCCUR.

- (g) Attach the cover (13) with four washers (12) and nuts (14).
- (h) Tighten the nuts (14) to 150-170 pound-inches (16.9-19.2 newton-meters).
- (i) Install packing (9), lubricated with engine oil, on plug (10).
- (j) Install plug (10), lubricated with engine oil, into threaded hole in bottom of cover (13).
- (k) Tighten the plug (10) to 110-120 pound-inches (12.4-13.6 newton-meters).
- (l) Attach lockwire or safety cable and safety cable ferrule to plug (10).

S 614-027-N00

- (11) Do the servicing procedure for the engine (AMM 12-13-01/301).
- G. Put the airplane back to its initial condition

EFFECTIVITY

ALL

79-21-05

N01

Page 416
Apr 22/02

S 414-028-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

(1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-029-N00

(2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-030-N00

(3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-031-N00

(4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

S 714-032-N00

(5) Do a test of the Main Oil Filter that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-05

N01

Page 417
Apr 22/02

MAIN OIL FILTER - INSPECTION/CHECK

1. General

- A. This procedure contains the instructions and limits when you examine the contamination caught by the main oil filter. If you find some contamination, this is possibly an indication of a failure of the bearings. The correct analysis of the metal particles is important. You must find the bearing or gear problems before they cause damage or failure of the engine.

TASK 79-21-05-216-001-N00

2. Do An Inspection of the Main Oil Filter

A. Equipment

- (1) Microscope 30x to 50x - commercially available

B. References

- (1) AMM 12-13-01/301, Engine - Oil Servicing
(2) AMM 12-22-01/301, Engine (Oil Change)
(3) AMM 71-00-00/201, Power Plant
(4) AMM 71-00-00/501, Power Plant
(5) AMM 71-00-02/401, Power Plant
(6) AMM 71-11-04/201, Fan Cowl Panels
(7) AMM 71-11-06/201, Core Cowl Panels
(8) AMM 72-00-00/601, Engine
(9) AMM 78-31-00/201, Thrust Reverser System
(10) AMM 79-21-05/401, Main Oil Filter
(11) AMM 79-21-10/601, Magnetic Chip Detector
(12) AMM 79-21-16/601, Last Chance Oil Filter

C. Access

(1) Location Zones

- 410 Left Engine
420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

D. Prepare to Examine the Main Oil Filter

S 016-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

EFFECTIVITY

ALL

79-21-05

N01

Page 601
Dec 22/00

S 046-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 016-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 016-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Do The Inspection of the Main Oil Filter

S 026-006-N00

- (1) Remove the main oil filter (AMM 79-21-05/401).

S 216-007-N00

- (2) Examine the main oil filter for contamination with the steps that follow:
 - (a) Examine the main oil filter for contamination.

NOTE: If some contamination is found, you must find the source.

- (b) Remove the contamination on the main oil filter.
 - 1) Keep the contamination which is found.

EFFECTIVITY

ALL

79-21-05

N01

Page 602
Dec 22/00

- (c) Go through the contamination with a clean magnet to look for some magnetic metal particles.

NOTE: The magnetic metal particles are important because the material of the bearings and gears is magnetic.

- (d) Examine the samples of the magnetic metal particles and the other contamination with a microscope.
- (e) Look for the metal particles.

NOTE: Spalling causes shiny rounded particles. The two faces will look different and one surface will be more rough. The outer surface is highly polished and can have straight lines which are the same distance apart. The bottom will show a rough, wavy or granular texture. When there is damage to the bearing surface, the material below the surface starts to break apart. The material below the surface will look rougher, darker, and splintered. The surface material is usually harder and more easily damaged than the other material particles.

- 1) Look for the remaining contamination from the repair which was done before.

NOTE: The remaining contamination from the repair before could possibly be pieces of the gaskets or preformed packing, sealing compound, pieces of the metal seal rings etc.

- (f) If you do not find the source of the metal particles and you think it is the bearings, do the spectrographic analysis (AMM 72-00-00/601, Oil System Contamination, for gear and bearing material analysis.)

S 966-008-N00

- (3) If metal particles from the bearings are found in the main oil filter, replace the engine (AMM 71-00-02/401).

EFFECTIVITY

ALL

79-21-05

N01

Page 603
Dec 22/00

S 216-009-N00

- (4) If other contamination is found do the steps that follow:
- (a) Examine the magnetic chip detectors (AMM 79-21-10/601).
 - (b) Examine the last chance oil filters (AMM 79-21-16/601).
 - (c) Install a clean main oil filter (AMM 79-21-05/401).
 - (d) Do the servicing procedure which drains, flushes, and fills the engine oil system (AMM 12-22-01/301).

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (e) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201) and operate at idle until the oil temperature is 50° C.
- (f) Increase the speed of the engine five times from idle to 80% of the takeoff power and return to idle.
- (g) Operate the engine at 80% of takeoff power for 20 minutes.
- (h) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).
- (i) Examine the main oil filter with the specified steps above.
- (j) Examine the magnetic chip detectors again (AMM 79-21-10/601).
- (k) If the contamination is found after a second engine operation, you must identify and correct the source of the contamination before the engine is put back in operation.

S 426-010-N00

- (5) Install a new element for the main oil filter (AMM 79-21-05/401).

S 616-011-N00

- (6) Do the servicing procedure for the engine oil system (AMM 12-13-01/301).

F. Put the airplane back to its initial condition

S 416-012-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-05

N01

Page 604
Dec 22/00

- S 416-013-N00
(2) Close the left core cowl panel (AMM 71-11-06/201).
- S 416-014-N00
(3) Close the left fan cowl panel (AMM 71-11-04/201).
- S 446-015-N00
(4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).
- S 716-016-N00
(5) Do a test of the main oil filter that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-05

N01

Page 605
Dec 22/00

MAIN OIL FILTER PRESSURE RELIEF VALVE – REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks. The first task removes the pressure relief valve for the main oil filter. The second task installs the pressure relief valve.

NOTE: For engines POST-PW-SB 72-525 (Dual Element Oil Filter), see AMM 79-21-05/401 for removal and installation of the pressure relief valve.

TASK 79-21-06-004-001-N00

2. Remove the Main Oil Filter Pressure Relief Valve

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare to Remove the Pressure Relief Valve for the Main Oil Filter

S 014-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

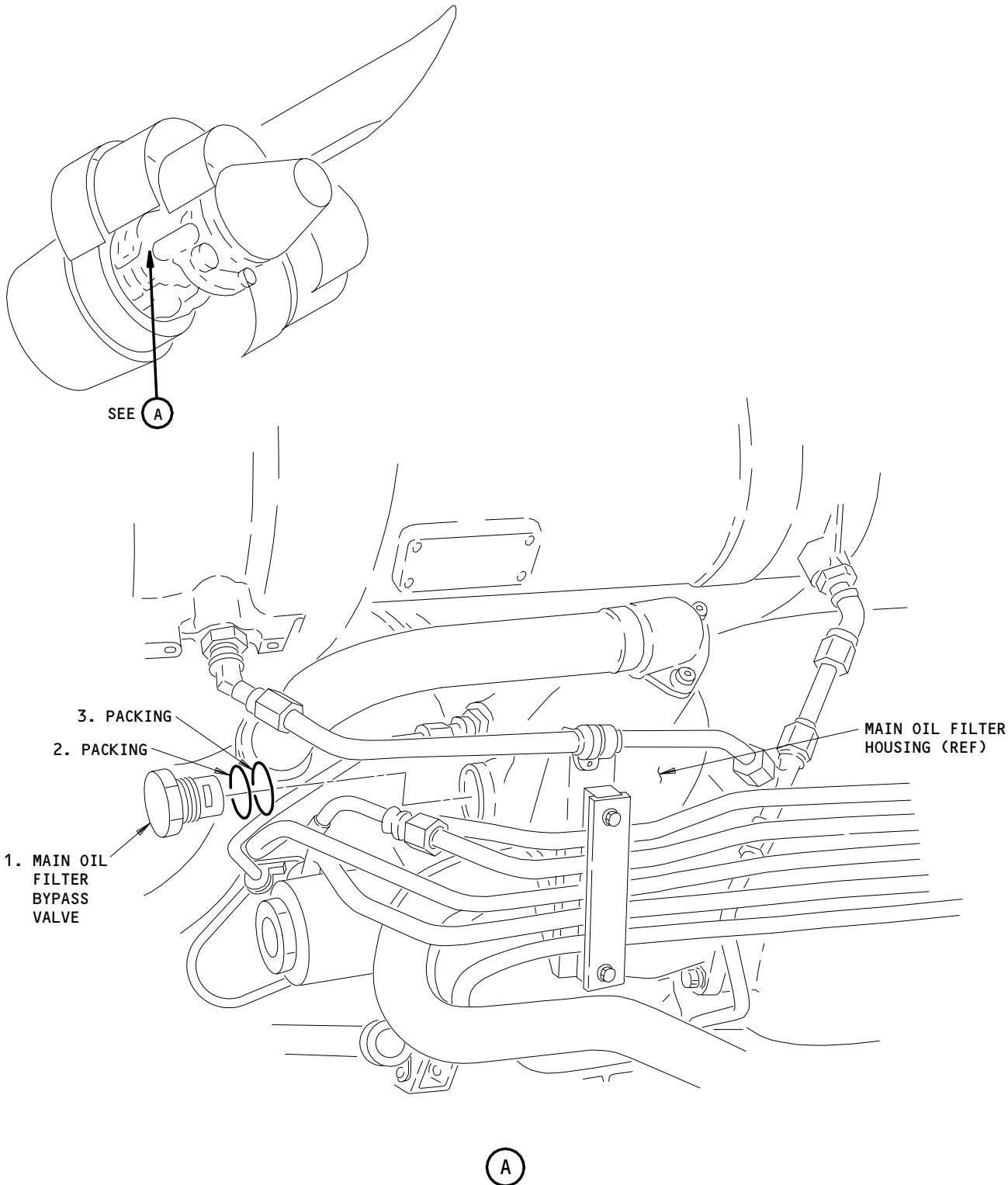
EFFECTIVITY

ALL

79-21-06

N01

Page 401
Dec 22/00



Oil Filter Bypass Valve Installation
Figure 401

EFFECTIVITY	
	ALL

79-21-06

N01

Page 402
Feb 10/91

271015

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).
- D. Remove the Pressure Relief Valve for the Main Oil Filter (Fig. 401)

S 024-006-N00

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (1) Turn the pressure relief valve (1) counterclockwise to remove it from the housing of the main oil filter.

NOTE: Be prepared to catch the oil in a container with a minimum capacity of 5 U.S. gallons (19 liters).

- (a) Discard the packings (2, 3).

TASK 79-21-06-404-007-N00

3. Install the Main Oil Filter Pressure Relief Valve

A. Equipment

- (1) Container - for the oil - 5 U.S. gallon (19 liter) capacity
- (2) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521

EFFECTIVITY

ALL

79-21-06

N01

Page 403
Dec 22/00

- (2) G02332 Ferrule, Safety Cable (P05-292)
- (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (4) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Valve - Pressure Relief	79-21-06	01	110
	2	Packing			115
	3	Packing			120

D. References

- (1) AMM 12-13-01/301, Engine
- (2) AMM 71-00-00/501, Power Plant
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

F. Install the Pressure Relief Valve for the Main Oil Filter (Fig. 401)

- S 644-016-N00
 - (1) Lubricate the packings (2, 3) with engine oil.
- S 434-017-N00
 - (2) Install the packings (2, 3) into the pressure relief valve (1).
- S 644-008-N00
 - (3) Lubricate the threads of the pressure relief valve (1) with engine oil.
- S 424-009-N00
 - (4) Install the pressure relief valve into the housing of the main oil filter.
 - (a) Tighten the pressure relief valve to 525-625 pound-inches (59.3-70.6 newton-meters).
 - (b) Install the lockwire or safety cable and safety cable ferrule to the pressure relief valve (1).

EFFECTIVITY

ALL

79-21-06

S 614-010-N00

- (5) Do the servicing procedure for the engine oil system (AMM 12-13-01/301).

G. Put the Airplane Back to Its Usual Condition

S 414-011-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-012-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-013-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-014-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 714-015-N00

- (5) Do the test of the Main Oil Filter Pressure Relief Valve that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-06

N01

Page 405
Dec 22/00

OIL SYSTEM PRESSURE (REGULATOR) RELIEF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks. The first task removes the pressure relief valve for the oil system. The second task installs the pressure relief valve.

TASK 79-21-07-004-001-N00

2. Remove the Oil System Pressure (Regulator) Relief Valve

A. Equipment

(1) Container - for the oil - 5 U.S. gallon (19 liter) capacity.

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

C. Access

(1) Location Zones
410 Left Engine
420 Right Engine

(2) Access Panels

415AL Fan Reverser (Left)
425AL Fan Reverser (Left)

D. Prepare to Remove the Pressure Relief Valve for the Oil System

S 014-002-N00

(1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

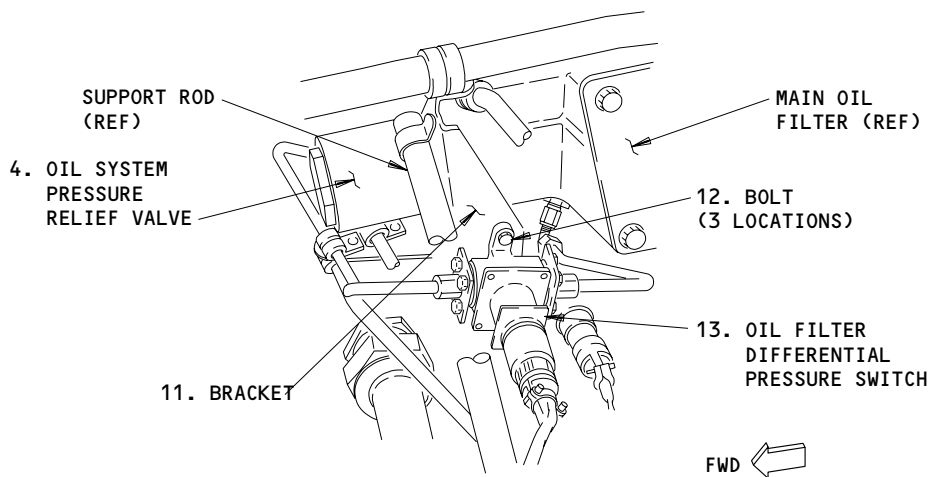
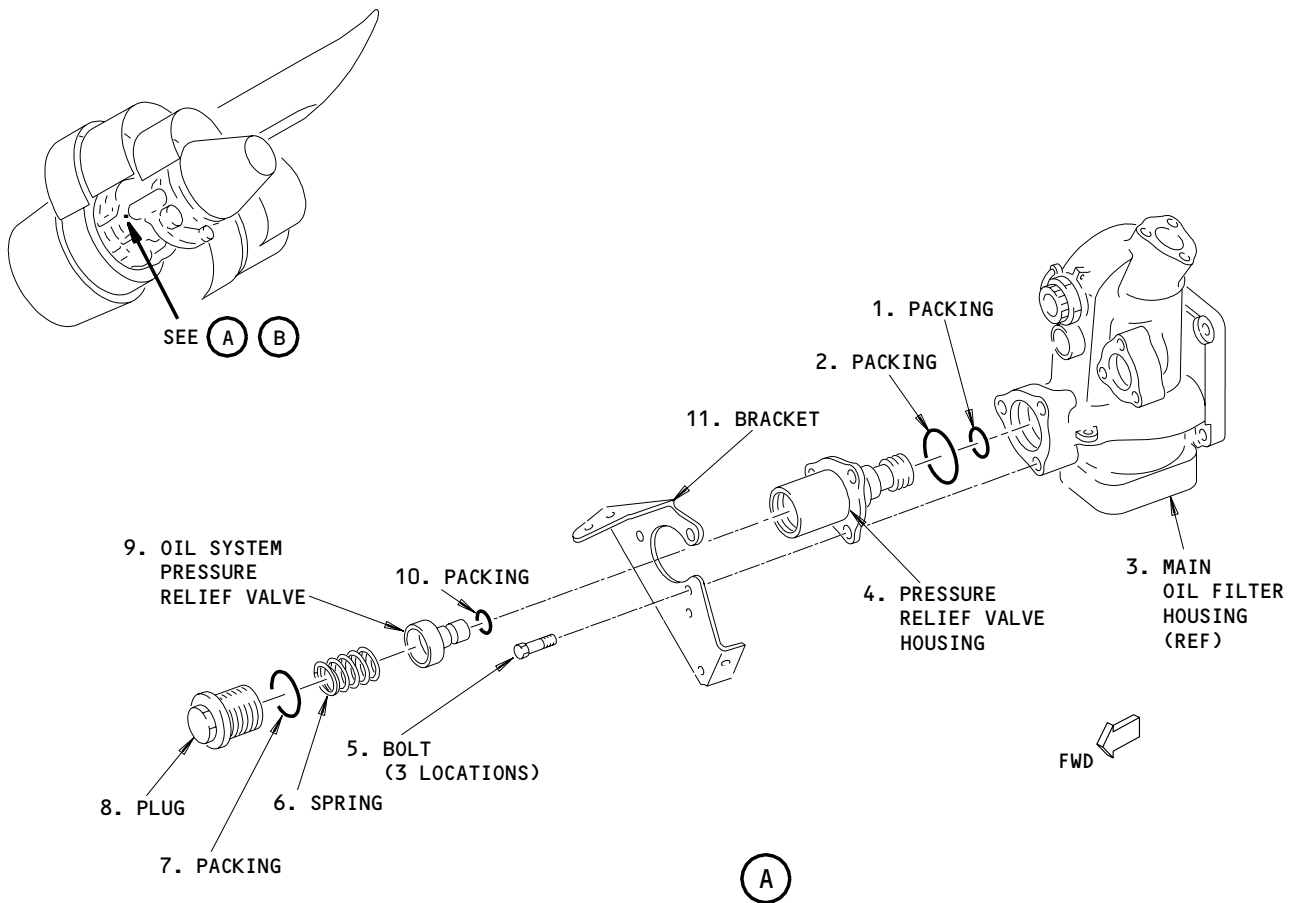
EFFECTIVITY

ALL

79-21-07

N01

Page 401
Dec 22/00



VIEW FROM THE BOTTOM

Oil System Pressure Relief Valve Installation
Figure 401

EFFECTIVITY

ALL

79-21-07

N01

Page 402
Aug 10/96

271637

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).
E. Remove the Pressure Relief Valve for the Oil System (Fig. 401)

S 034-025-N00

WARNING: BE VERY CAREFUL WHEN YOU REMOVE THE PLUG IN THE PRESSURE RELIEF VALVE. THE PLUG HAS A SPRING IN IT AND INJURY CAN OCCUR DURING THE REMOVAL.

- (1) Remove the plug (8) from the pressure relief valve (9).

NOTE: Catch the oil in a container with a minimum capacity of 5 U.S. gallons (19 liters).

- (a) Discard the packing (10) from the plug (8).

S 024-026-N00

- (2) Remove the spring (6) and the pressure relief valve (9) from the housing (4) of the pressure relief valve.
(a) Discard the packing (10) from the pressure relief valve (9).

S 284-038-N00

- (3) Examine the housing of the pressure relief valve for one of the conditions that follow:
(a) You see damage in the housing
(b) You see leakage from the mating flange of the housing
(c) You must replace the internal packings (1,2) .

EFFECTIVITY

ALL

79-21-07

N01

Page 403
Dec 22/00

S 024-027-N00

- (4) If one of the conditions occur, remove the housing (4) for the pressure relief valve from the housing (3) of the main oil filter with the steps that follow:
 - (a) Remove the bolts, nuts, and clamps that are attached to the bracket (11):
 - (b) Remove the bolts (12) which attach the differential pressure switch (13) for the oil filter to the bracket (11).

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (c) Remove the bolts (5) which attach the bracket (11) and the housing (4) to the housing (3) for the main oil filter.
- (d) Remove the housing (4) and the bracket (11) from the housing (3) for the main oil filter.
 - 1) Discard the packings (1, 2).

S 034-028-N00

- (5) Install the protection covers.

TASK 79-21-07-404-010-N00

3. Install the Oil System Pressure (Regulator) Relief Valve

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) D50124 Anti-seize paste - PWA 36246
- (3) G02332 Ferrule, Safety Cable (P05-292)
- (4) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02

EFFECTIVITY

ALL

79-21-07

N01

Page 404
Apr 22/08

- (5) G02335 Cable, Safety (P05-291)
C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Packing	79-21-06	01	105
	2	Packing			100
	7	Packing	79-21-06	01	75
	9	Valve - Pressure Relief			85
	10	Packing			90

D. References

- (1) AMM 12-13-01/301, Engine
- (2) AMM 71-00-00/501, Power Plant
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

F. Install the Pressure Relief Valve for the Oil System (Fig. 401)

S 424-037-N00

- (1) If it is necessary, install the housing of the pressure relief valve with the steps that follow:
 - (a) Remove the protection covers.
 - (b) Lubricate the packings (1, 2) with engine oil.
 - (c) Install the packings (1, 2) on the housing (4).
 - (d) Install the housing (4) into the port on the housing (3) of the main oil filter.
 - 1) Make sure to align the holes for the bolts.
 - (e) Install the bracket (11) to the housing (4).
 - (f) Lubricate the threads of the bolts (5) with anti-seize paste.

EFFECTIVITY

ALL

79-21-07

N01

Page 405
Apr 22/08

- (g) Install the bolts (5) to attach the bracket (11) and the housing (4) to the housing (3).
 - 1) Tighten the bolts (5) to 125-140 pound-inches (14.1-15.8 newton-meters).
- (h) Attach the differential pressure switch (13) for the oil filter to the bracket (11) with the bolts (12).
 - 1) Tighten the bolts (12) to 25-35 pound-inches (2.8-4.0 newton-meters).
- (i) Attach the applicable tubes to the bracket (11).

S 644-029-N00

- (2) Lubricate the new packing (10) for the pressure relief valve (9) with engine oil.

S 434-030-N00

- (3) Install the packing (10) to the pressure relief valve (9).

S 424-031-N00

- (4) Install the pressure relief valve (9) into the housing (4) with the packing end first.

S 644-032-N00

- (5) Lubricate the new packing (7) for the plug (8) of the pressure relief valve with engine oil.

S 434-033-N00

- (6) Install the packing (7) to the plug (8).

S 434-034-N00

- (7) Install the spring (6) to the plug (8).

S 644-035-N00

- (8) Lubricate the threads of the plug (8) with engine oil.

S 434-036-N00

- (9) Install the spring (6) and the plug (8) to the housing (4).
 - (a) Tighten the plug to 650-750 pound-inches (73.4-84.7 newton-meters).
 - (b) Install the lockwire or safety cable and safety cable ferrule to the plug.

S 614-019-N00

- (10) Do the servicing procedure for the oil system (AMM 12-13-01/301).
- G. Put the Airplane Back to Its Usual Condition

EFFECTIVITY

ALL

79-21-07

N01

Page 406
Dec 22/00

S 414-020-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-021-N00

(2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-022-N00

(3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-023-N00

(4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 714-024-N00

(5) Do the test of the Oil System Pressure (Regulator) Relief Valve that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-07

N01

Page 407
Dec 22/00

AIR/OIL HEAT EXCHANGER AND VALVE - REMOVAL/INSTALLATION

1. General

- A. This procedure includes the removal and installation of the air/oil heat exchanger and the valve as one unit. Also, this procedure includes the separation of the air/oil heat exchanger from the valve after they are removed.

TASK 79-21-09-004-001-N00

2. Remove the Air/Oil Heat Exchanger and the Valve

A. Equipment

- (1) Container - 5 U.S. gallon (19 liter) capacity for the engine oil
- (2) Torque Adapter - PWA 85853, Pratt & Whitney, East Hartford, Conn.

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 72-34-03/401, Fan Exit Liner Segment
- (4) AMM 78-31-00/201, Thrust Reverser System

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

- (2) Access Panels

- 413AL Fan Cowl Panel (Left)
- 415AL Fan Reverser (Left)
- 423AL Fan Cowl Panel (Left)
- 425AL Fan Reverser (Left)

D. Prepare to Remove the Air/Oil Heat Exchanger and the Valve

S 864-002-N00

- (1) For the left engine, open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
 - (a) 11L3, L ENG PERF SOL CHAN A

EFFECTIVITY

ALL

79-21-09

N01

Page 401
Dec 22/00

(b) 11L4, L ENG PERF SOL CHAN B

S 864-003-N00

(2) For the right engine, open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:

(a) 11L30, R ENG PERF SOL CHAN A

(b) 11L31, R ENG PERF SOL CHAN B

S 014-004-N00

(3) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-005-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

(4) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-006-N00

(5) Open the left core cowl panel (AMM 71-11-06/201).

S 014-007-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

(6) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the Air/Oil Heat Exchanger and the Valve (Fig. 401 and 402)

S 034-008-N00

(1) Remove the fan exit liner segment at the position No. 6 (AMM 72-34-03/401).

S 024-009-N00

(2) Remove the air/oil heat exchanger and the valve from the engine with the steps that follow (Fig. 401):

(a) Disconnect the EEC electrical connector from the cable connector (33) for the valve.

1) Install caps on the connectors.

(b) Remove the bolts (36) which attach the cable connector collar (34) to the bracket.

(c) Remove the cable connector (33).

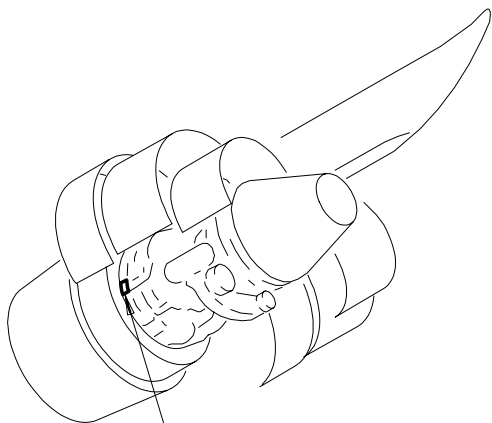
EFFECTIVITY

ALL

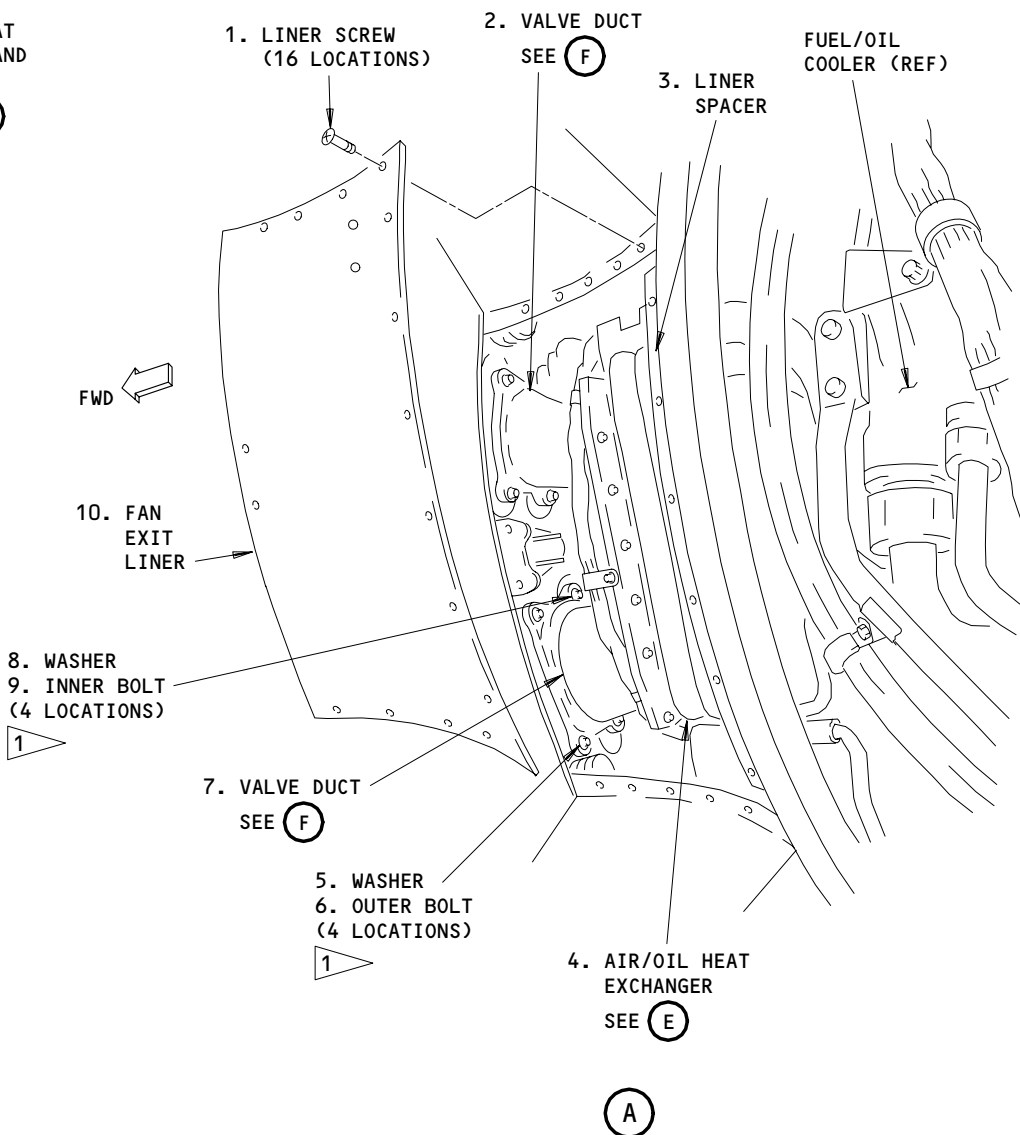
79-21-09

N01

Page 402
Apr 22/01



AIR/OIL HEAT EXCHANGER AND VALVE
SEE (A) (B)



1 ENGINES WITHOUT PW SB 79-60

Air/Oil Heat Exchanger and Valve Installation
Figure 401 (Sheet 1)

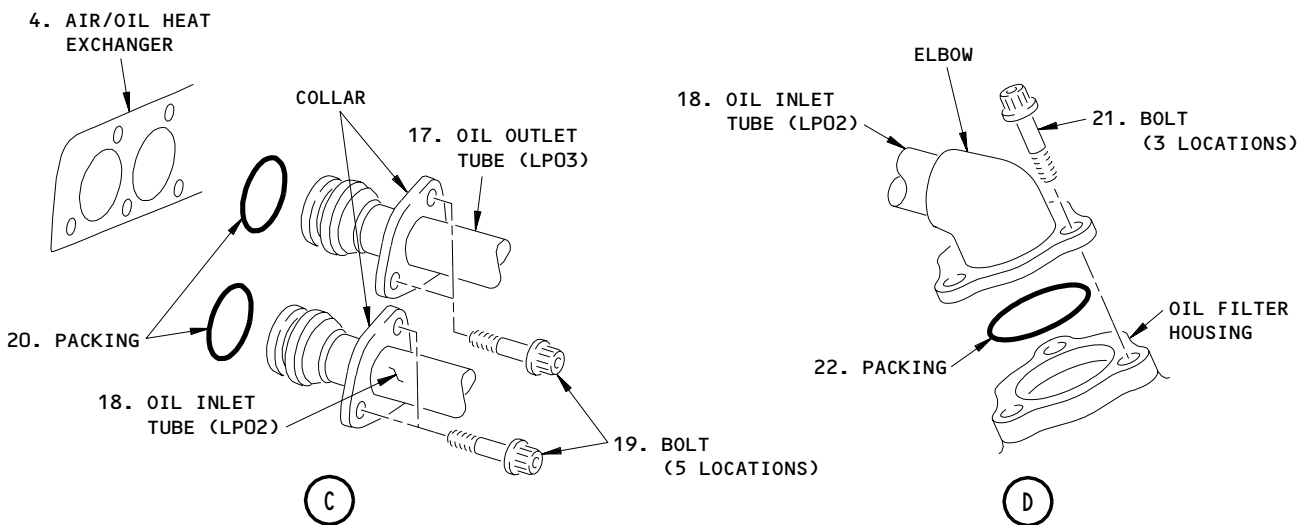
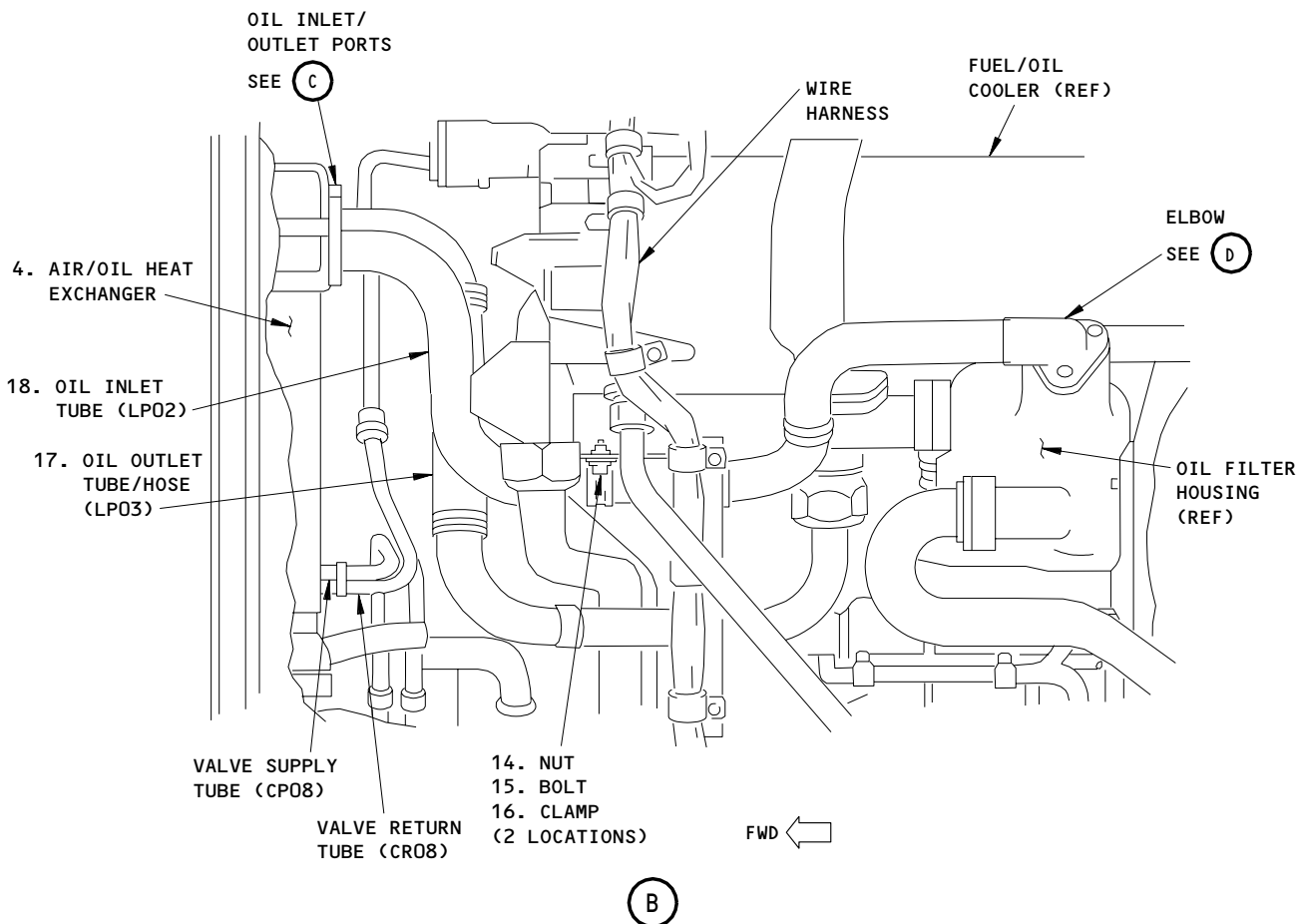
EFFECTIVITY	
	ALL

79-21-09

N01

Page 403
May 10/93

288112



Air/Oil Heat Exchanger and Valve Installation
Figure 401 (Sheet 2)

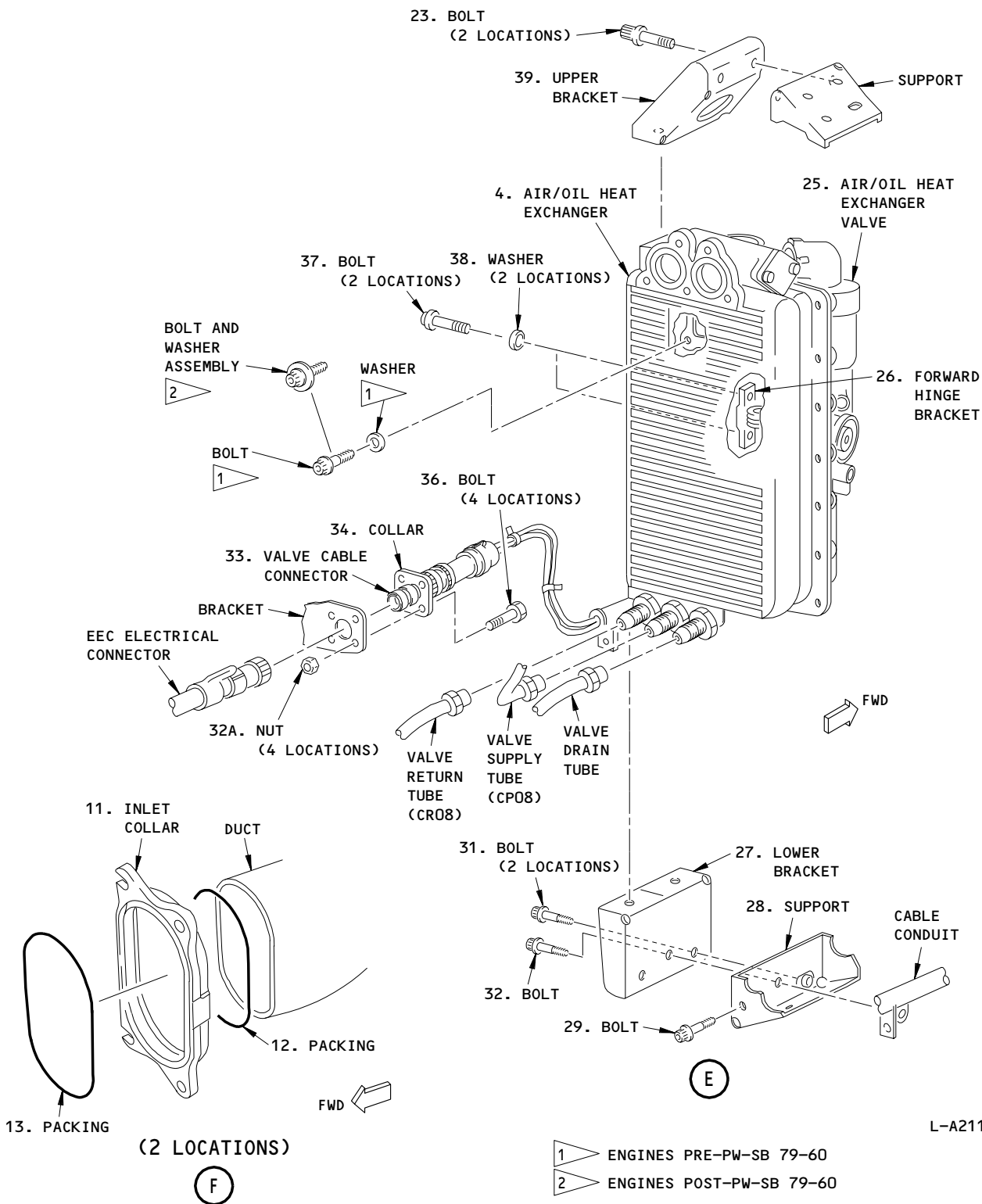
EFFECTIVITY	
ALL	

79-21-09

N01

Page 404
Apr 22/01

288117



L-A2110

Air/Oil Heat Exchanger and Valve Installation
Figure 401 (Sheet 3)

EFFECTIVITY	ALL
-------------	-----

79-21-09

N01

Page 405
Apr 22/01

WARNING: DO NOT KEEP THE ENGINE OIL ON YOUR SKIN FOR A LONG TIME.
IF YOU DO NOT CLEAN THE ENGINE OIL OFF, THE ENGINE OIL CAN
CAUSE INJURY TO YOU.

IF YOU DO NOT CLEAN THE ENGINE OIL OFF, YOU CAN CAUSE A
STAIN ON YOUR CLOTHES AND PAINT WILL BECOME SOFT.

- (d) Disconnect the valve drain, supply (CP08) and return (CR08) tubes from the air/oil heat exchanger.
- (e) Remove the bolts (29, 32) which attach the cable conduit to the support (28) on the intermediate case.
- (f) Disconnect the oil tubes (17, 18) for the air/oil heat exchanger with the steps that follow:
 - 1) Remove the bolts (15) which attaches the tube clamps (16) on the oil inlet tube (LP02) (18) to the bracket.
 - 2) Remove the bolts (21) which attaches the oil inlet elbow to the housing of the main oil filter.
 - 3) Remove the bolts (19) which attach the oil tube collars to the air/oil heat exchanger.
- (g) Move the oil inlet tube (LP02) (18) aft to disconnect it from the air/oil heat exchanger (4).
 - 1) Discard the packings.
 - 2) Install a cap on the oil inlet tube (18).
 - 3) Disconnect the oil outlet tube (LP03) (17) from the air/oil heat exchanger (4).
 - a) Discard the packing.
 - b) Install a cap on the oil outlet tube (LP03) (17).
- (h) ENGINES PRE-PW-SB 79-60;
Remove the four outboard bolts (6) and washers (5), and loosen the four inboard bolts (9) as follows:
 - 1) Remove the four outboard bolts (6) and washers (5) that attach the valve inlet collars to the rear of the intermediate case.
 - 2) Use the PWA 85853 torque adapter to loosen the four inboard bolts (9) and washers (8).

NOTE: These bolts and washers attach the valve inlet collars (11) to the rear of the intermediate case. Do not remove the inboard bolts and washers from the intermediate case.

NOTE: The four bolt holes in the valve inlet collars are slotted. This is to make it easier to remove the heat exchanger and the valve.

- (i) ENGINES POST-PW-SB 79-60;
Remove the four outboard bolt and washer assemblies (6). Also loosen the four inboard bolt and washer assemblies (9) from the valve inlet collars as follows:

EFFECTIVITY

ALL

79-21-09

N01

Page 406
Apr 22/01

- 1) Remove the four outboard bolt and washer assemblies (6) that attach the valve inlet collars to the rear of the intermediate case.
- 2) Use the PWA 85853 torque adapter to loosen the four inboard bolt and washer assemblies (9).

NOTE: These bolt and washer assemblies attach the valve inlet collars to the rear of the intermediate case. Do not remove the inboard bolt and washer assemblies from the intermediate case.

NOTE: The washers are part of the washer and bolt assembly.

- (j) Remove the bolts (37) and the washers (38) which attach the hinge bracket (26), on the forward side of the valve, to the intermediate case.
- (k) Remove the bolts (23) which attach the top bracket (39), on the air/oil heat exchanger, to the support on the intermediate case.

WARNING: DO NOT HOLD THE VALVE BY THE INLET COLLARS, WHICH ARE NOT PARTS OF THE VALVE DUCTS. IF YOU HOLD THE INLET COLLARS, THIS CAN CAUSE IN INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (l) Remove the air/oil heat exchanger and the valve from the engine with the steps that follow:
 - 1) Pull out the air/oil heat exchanger (4) to let the lower bracket to fall between the intermediate case and the flange for the fan exit liner.
 - 2) Turn out the top end of the air/oil heat exchanger (4) until the top bracket is clear of the flange.
 - 3) Lift the air/oil heat exchanger (4) up and out from the intermediate case.
- (m) Remove the inlet collars (11) from the valve ducts (2, 7).
 - 1) Discard the packings (12, 13).

S 024-010-N00

- (3) If it is necessary, remove the air/oil heat exchanger from the valve with the steps that follow (Fig. 402):
 - (a) Remove the nuts (17) and, if installed, washers and plates or bolts, from the drain, supply, and return tubes (14, 15, 16) to the heat exchanger bulkhead.
 - (b) Remove the bolts (4) from the mating flange of the air/oil heat exchanger and the valve.
 - (c) Move the air/oil heat exchanger apart from the valve.

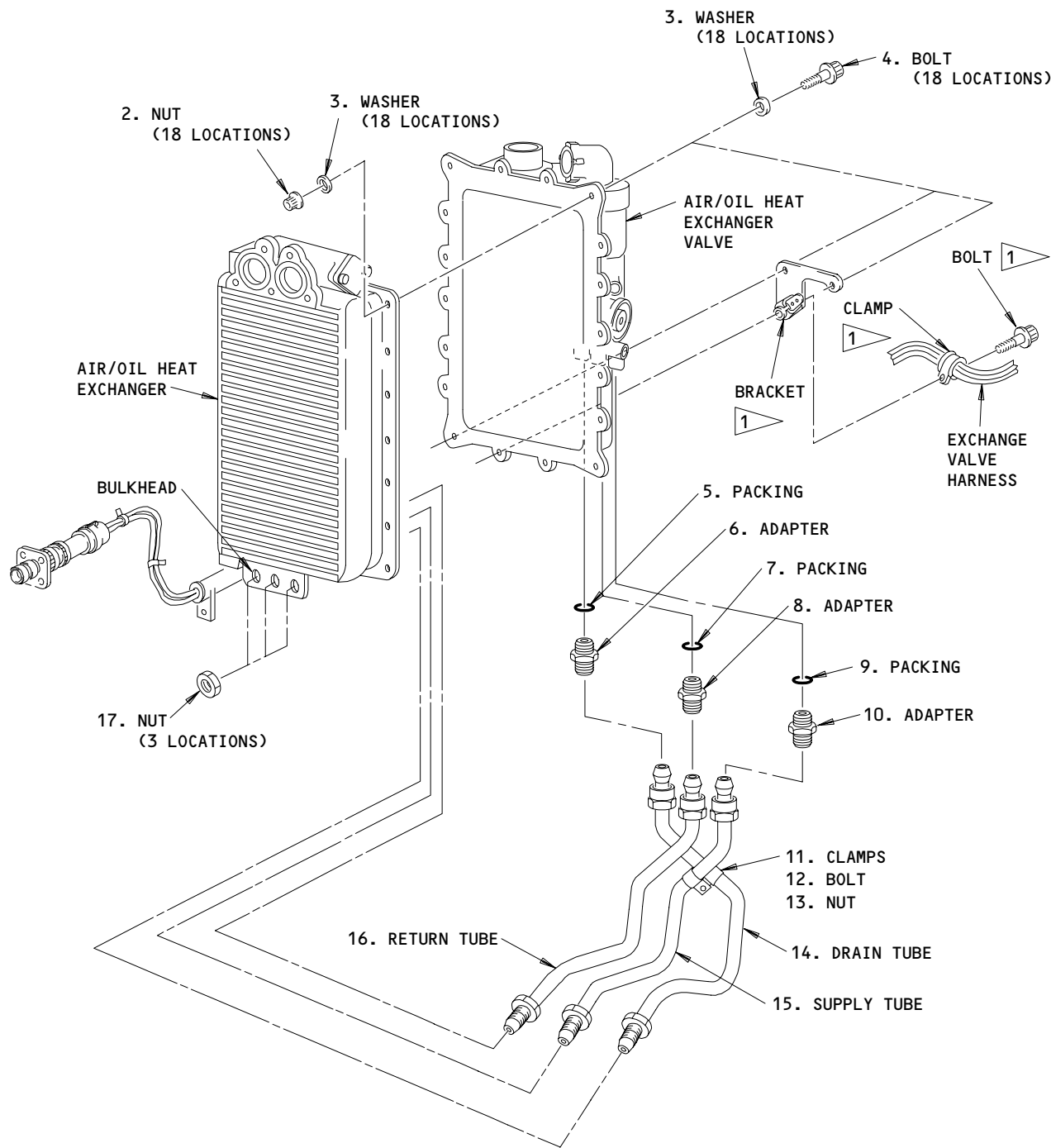
EFFECTIVITY

ALL

79-21-09

N02

Page 407
May 10/93



1 ▽ ENGINES WITH PW SB 79-44

ENGINES WITHOUT PW SB 79-50

L-A2946
0587

Air/Oil Heat Exchanger and Valve Separation
Figure 402 (sheet 1)

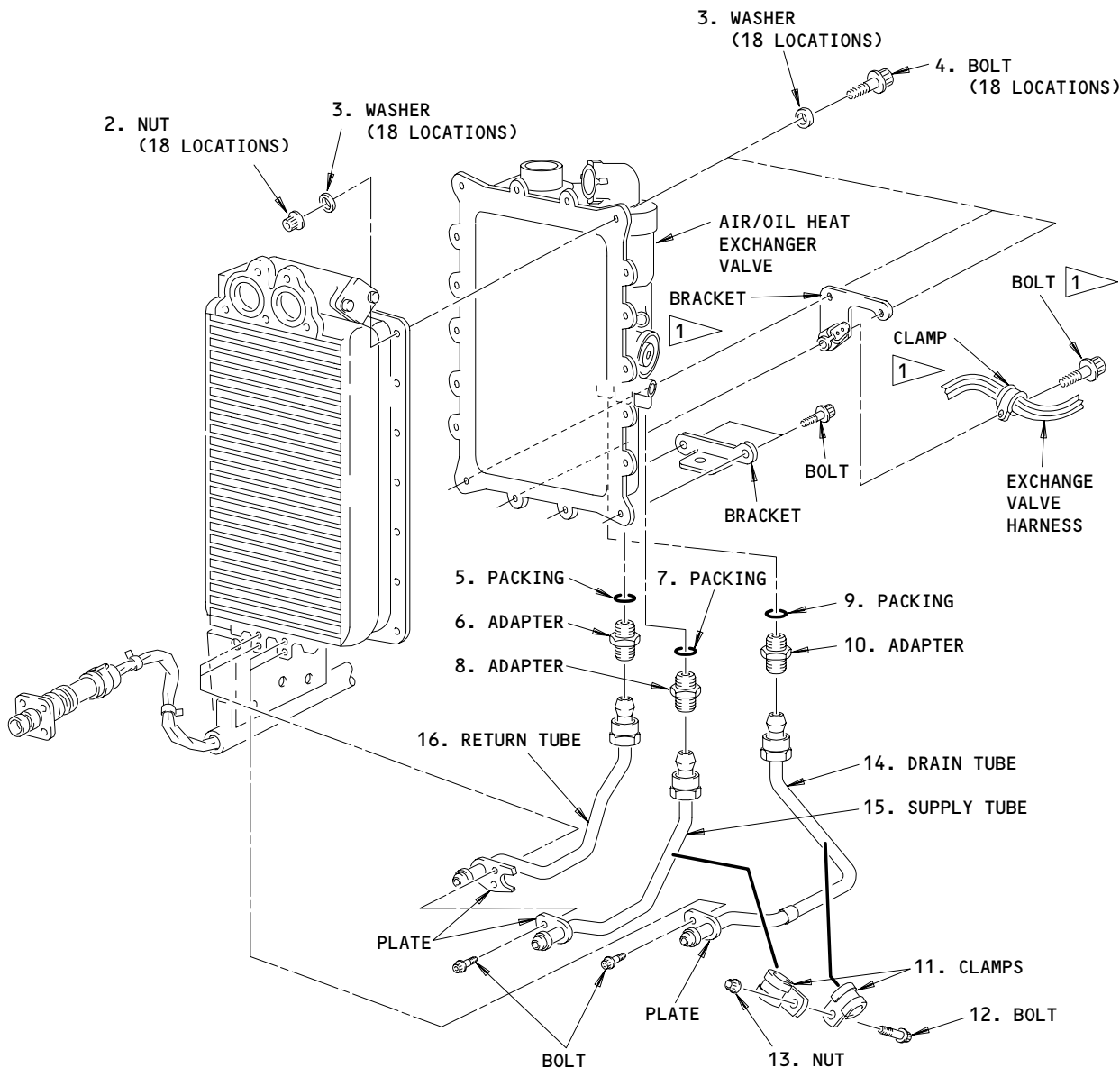
EFFECTIVITY	
ALL	

79-21-09

N03

Page 408
May 10/93

299988



1 ENGINES WITH PW SB 79-44

ENGINES WITH PW SB 79-50

Air/Oil Heat Exchanger and Valve Separation
Figure 402 (Sheet 2)

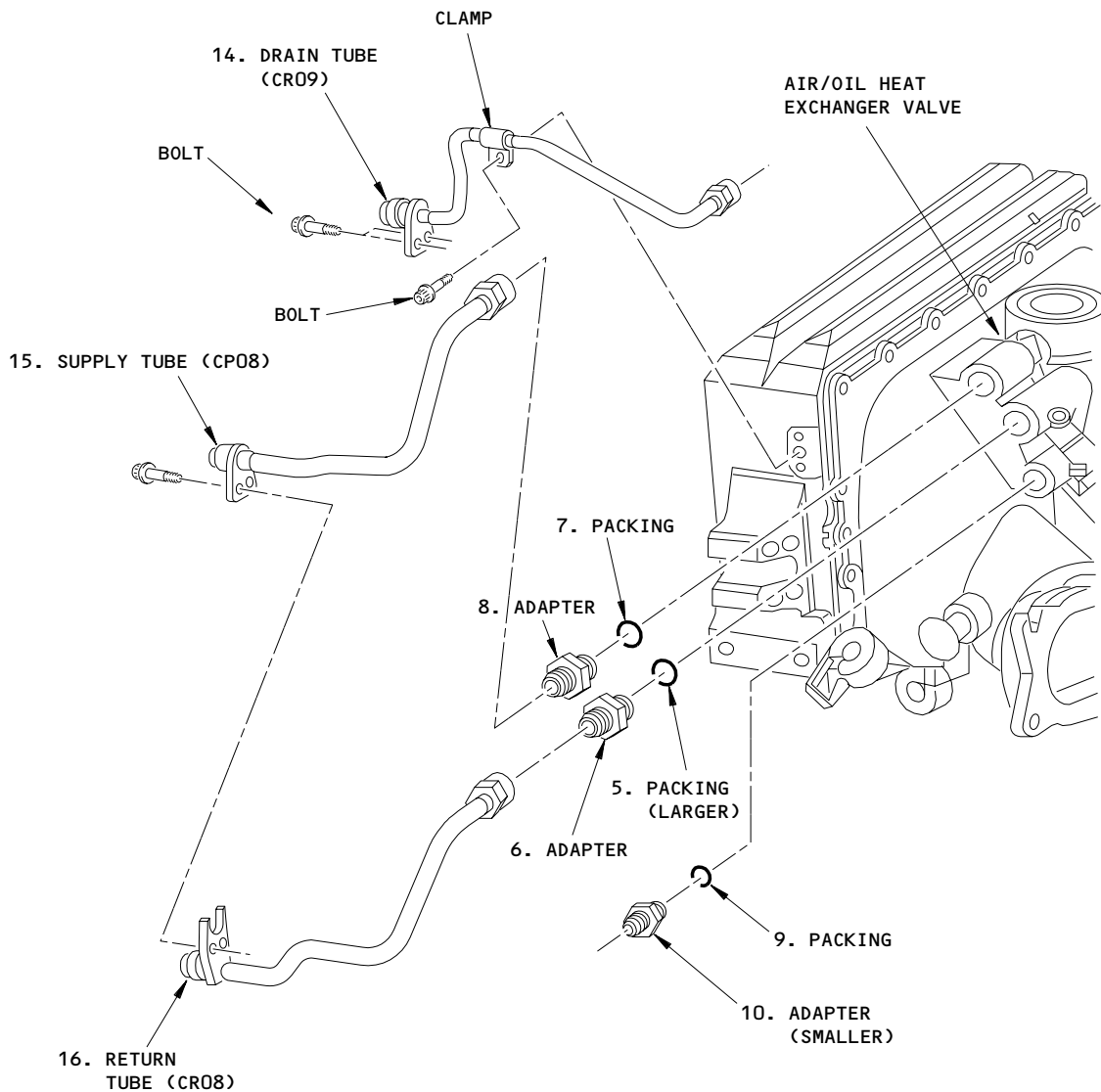
EFFECTIVITY

ALL

79-21-09

N03

Page 409
May 10/93



ENGINES POST-PW-SB 79-50

L-A6821 (0899)

Air/Oil Heat Exchanger and Valve Separation
Figure 402 (Sheet 3)

EFFECTIVITY	
	ALL

79-21-09

N01

Page 410
Dec 22/99

- (d) ENGINES POST-PW-SB 79-44 AND POST-PW-SB 79-49;
Remove the bracket(s) from the bottom of the air/oil heat exchanger (4).

S 024-011-N00

- (4) If you are to replace the valve, do the steps that follow (Fig. 402):
 - (a) Remove the bolt (12) which attaches the clamps (11).
 - (b) Remove the drain tube (14), supply tube (15) and return tube (16) from the valve adapters.
 - (c) Remove the adapters (6, 8, 10) from the ports of the valve.
 - 1) Discard the packings.

S 034-012-N00

- (5) Install the protection caps.

TASK 79-21-09-404-013-N00

3. Install the Air/Oil Heat Exchanger and the Valve

NOTE: Unless it is specified differently, lubricate all the packings, bolts and tube nuts with engine oil before you install them.

A. Equipment

- (1) Torque Adapter - PWA 85853, Pratt & Whitney, East Hartford, Conn.
- (2) Positioner - PWA 87505, Pratt & Whitney, East Hartford, Conn.
- (3) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) D50124 Anti-seize paste - PWA 36246
- (3) D00504 Petrolatum - PMC-9609
- (4) D00420 Beeswax
- (5) G02332 Ferrule, Safety Cable (P05-292)
- (6) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (7) G02335 Cable, Safety (P05-291)

EFFECTIVITY

ALL

79-21-09

N03

Page 411
Apr 22/08

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Heat Exchanger - Air/Oil	79-21-09	05	40
	12	Packing	79-21-09	01	245
	13	Packing			255
	20	Packing	79-21-01	20	40
	22	Packing			40
	25	Valve - Air/Oil Heat Exchanger	79-21-09	01	100
402	5	Packing	79-21-09	01	85
	7	Packing			95
	9	Packing			85

D. References

- (1) AMM 12-13-01/301, Engine
- (2) AMM 70-24-05/201, Electrical Harnesses
- (3) AMM 70-50-00/201, Standard Torque Values
- (4) AMM 71-00-00/501, Power Plant
- (5) AMM 71-11-04/201, Fan Cowl Panels
- (6) AMM 71-11-06/201, Core Cowl Panels
- (7) AMM 72-34-03/401, Fan Exit Liner Segment
- (8) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 413AL Fan Cowl Panel (Left)
 - 415AL Fan Reverser (Left)
 - 423AL Fan Cowl Panel (Left)
 - 425AL Fan Reverser (Left)

EFFECTIVITY

ALL

79-21-09

N01

Page 412
Dec 22/00

F. Procedure

S 434-014-N00

- (1) Remove the protection caps.

S 424-015-N00

- (2) If it is applicable, attach the air/oil heat exchanger to the valve with the steps that follow (Fig. 402):
- (a) Put the air/oil heat exchanger to the valve.
 - (b) ENGINES PRE-PW-SB 79-44;
Do the steps that follow:
 - 1) Lubricate the threads of the bolts (4) with engine oil.
 - 2) Install the bolts (4), washers (3) and nuts (2) to attach the air/oil heat exchanger and the valve.
 - a) Tighten the bolts (4) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - (c) ENGINES POST-PW-SB 79-44 AND POST-PW-SB 79-49;
Do the steps that follow:
 - 1) Lubricate the threads of the bolts (4) with engine oil.
 - 2) Install all bolts (4), washers (3) and nuts (2) but not the two bolts which hold the bracket to the air/oil heat exchanger.
 - 3) Install the bracket between the air/oil heat exchanger and the valve with the two bolts.
 - 4) Lubricate the threads of the bolt, which attaches the clamp of the exchange valve harness to the bracket, with engine oil.
 - 5) Attach the clamp to the bracket with the bolt.
 - a) Tighten the bolt to 36-40 pound-inches (4.1-4.5 newton-meters).
 - 6) Tighten the bolts (4) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - (d) ENGINES POST-PW-SB 79-49;
Do the steps that follow:
 - 1) Lubricate the threads of the bolts (4) with engine oil.

EFFECTIVITY

ALL

79-21-09

N03

Page 413
Dec 22/00

- 2) Install all bolts (4), washers (3) and nuts (2), but do not install the washers (3) at the four bolts (4) which hold the brackets to the air/oil heat exchanger.
- 3) Lubricate the threads of the bolt, which attaches the clamp of the valve harness to the bracket, with engine oil.
- 4) Attach the clamp to the bracket with the bolt.
 - a) Tighten the bolt to 36-40 pound-inches (4.1-4.5 newton-meters).
- 5) Tighten the bolts (4) to 36-40 pound-inches (4.1-4.5 newton-meters).

S 424-016-N00

- (3) If you replaced the valve, do the steps that follow (Fig. 402):
 - (a) Lubricate the new packings (5, 7, 9) with petrolatum.
 - (b) Install the new packings (5, 7, 9) to the adapters (6, 8, 10).
 - (c) Install the adapters (6, 8, 10) to the valve ports.
 - 1) Tighten the adapter (6) to 65-75 pound-inches (7.3-8.5 newton-meters).
 - 2) Tighten the adapter (8) to 110-120 pound-inches (12.4-13.6 newton-meters).
 - 3) Tighten the adapter (10) to 110-120 pound-inches (12.4-13.6 newton-meters).
 - (d) Install the drain tube (14) with the steps that follow:
 - 1) ENGINES PRE-PW-SB 79-49;
Do the steps that follow:
 - a) Lubricate the threads of the smaller adapter (6) with the anti-seize paste.
 - b) Attach the drain tube (14) to the adapter (6) and to the hole in the tube flange on the air/oil heat exchanger (4).
 - c) Lubricate the threads of the jamnut, which attaches the drain tube (14) to the air/oil heat exchanger (4), with engine oil.
 - d) Attach the coupling on the drain tube (14) to the air/oil heat exchanger (4) with the jamnut.

EFFECTIVITY

ALL

79-21-09

N03

Page 414
Apr 22/08

- e) Tighten the jamnut to 70-80 pound-inches (7.9-9.0 newton-meters).
- 2) ENGINES POST-PW-SB 79-49 AND PRE-PW-SB 79-50;
Do the steps that follow:
 - a) Lubricate the threads of the smaller adapter (6) with the anti-seize paste.
 - b) Attach the drain tube (14) to the adapter (6) and to the hole in the tube flange on the air/oil heat exchanger (4).
 - 1. Install the plate between the flats on the drain tube (14) and the flange.
 - c) Lubricate the threads on the coupling end of the drain tube (14) with engine oil.
 - d) Attach the coupling end of the drain tube (14) with a washer and a jamnut.
 - e) Tighten the jamnut to 70-80 pound-inches (7.9-9.0 newton-meters).
- 3) ENGINE POST-PW-SB 79-49 AND POST-PW-SB 79-50;
Do the steps that follow:
 - a) Lubricate the threads of the smaller adapter (6) with the anti-seize paste.
 - b) Attach the tube nut for the drain tube (14) to the adapter (6).
 - c) Lubricate the threads of the bolts, which attach the drain tube (14) to the air/oil heat exchanger (4), with engine oil.
 - d) Attach the drain tube (14) to the air/oil heat exchanger (4) with the bolts.
 - e) Tighten the bolts to 32-36 pound-inches (3.6-4.1 newton-meters).
- 4) Tighten the tube nut for the drain tube (14) to 90-100 pound-inches (10.2-11.3 newton-meters).
- 5) Install the lockwire or safety cable and safety cable ferrule on the tube nut and, if installed, the bolts or the jamnut.
- (e) Install the supply tube (15) and the return tube (16) with the steps that follow:
 - 1) ENGINES PRE-PW-SB 79-49;
Do the steps that follow:
 - a) Lubricate the threads on the remaining adapters (8, 10) with the anti-seize paste.
 - b) Attach the return tube (16) and the supply tube (15) to the adapters (8, 10), with the couplings on the tubes through the tube flange on the air/oil heat exchanger (4).
 - c) Lubricate the threads of the couplings with engine oil.
 - d) Attach the couplings with the jamnuts.
 - e) Tighten the jamnuts to 70-80 pound-inches (7.9-9.0 newton-meters).

EFFECTIVITY

ALL

79-21-09

N03

Page 415
Apr 22/08

- 2) ENGINES POST-PW-SB 79-49 AND PRE-PW-SB 79-50;
Do the steps that follow:
 - a) Lubricate the threads on the remaining adapters (8, 10) with the anti-seize paste.
 - b) Attach the return tube (16) and the supply tube (15) to the remaining adapters (8, 10).
 1. Put the couplings on the tubes through the plate and the flange on the air/oil heat exchanger (4).
 - c) Lubricate the threads on the couplings with engine oil.
 - d) Attach the couplings to the tubes with the washers and the jamnuts.
 - e) Tighten the jamnuts to 70-80 pound-inches (7.9-9.0 newton-meters).
- 3) ENGINES POST-PW-SB 79-49 AND POST-PW-SB 79-50;
Do the steps that follow:
 - a) Lubricate the threads on the remaining adapters (8, 10) with the anti-seize paste.
 - b) Attach the return tube (16) and the supply tube (15) to the adapters (8, 10).
 - c) Lubricate the threads of the bolts, which attach the tubes to the air/oil heat exchanger, with engine oil.
 - d) Attach the return tube (16) and the supply tube (15) to the air/oil heat exchanger (4) with the bolts.
 - e) Tighten the bolts to 32-36 pound-inches (3.6-4.1 newton-meters).
- 4) Tighten the tube nuts for the return tube (16) and the supply tube (15) to 200-225 pound-inches (22.6-25.4 newton-meters).
- 5) Install the lockwire or safety cable and safety cable ferrule to the tube nuts and, if installed, the bolts or jamnuts.
- (f) Lubricate the threads of the bolts, which attach the drain tube (14) and the supply tube (15) together, with engine oil.
- (g) Install the clamps (11), bolt(s) (12), and nut (13) to attach the drain tube (14) and the supply tube (15) together.
 - 1) Tighten the bolt(s) (12) to 36-40 pound-inches (4.1-4.5 newton-meters).

S 434-027-N00

- (4) If a new air/oil heat exchanger is installed, do the steps that follow:
 - (a) Install the upper mount bracket and the lower mount bracket on the air/oil heat exchanger.
 - (b) Lubricate the threads of the bolts, which attach the brackets, with engine oil.
 - (c) Attach the brackets with the bolts.
 - 1) Tighten the bolts to 85-95 pound-inches (9.6-10.7 newton-meters).

EFFECTIVITY

ALL

79-21-09

N06

Page 416
Apr 22/08

S 424-017-N00

- (5) Install the air/oil heat exchanger and the valve to the engine with the steps that follow (Fig. 401):
- (a) Lubricate the new packings (12, 13) with the petrolatum.
 - (b) Install the new packings (12, 13) to the inlet collars (11).
 - (c) Install the inlet collars (11) to the valve ducts (2, 7).
 - (d) ENGINES PRE-PW-SB 79-60;
Make sure the four inboard bolts (9) and washers (8), are installed loosely to the rear of the intermediate case as follows:
 - 1) Make sure the four bolts (9) threads are lubricated with engine oil.
- NOTE: Make sure the bolts with washers are installed loosely in the bolt holes.
- NOTE: Make sure the washers are sealed (attached) to the bolt heads with beeswax.
- 2) Set the height of the bolts (9) with the PWA 87505 positioner.
 - (e) ENGINES POST-PW-SB 79-60;
Make sure the four inboard bolt and washer assemblies are loosely installed in the rear of the intermediate case.
 - 1) Set the height of the bolt and washer assemblies with a PWA 87505 positioner.
- WARNING: DO NOT HOLD THE VALVE BY THE INLET COLLARS, WHICH ARE NOT PARTS OF THE VALVE DUCTS. IF YOU HOLD THE INLET COLLARS, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.
- (f) Put the air/oil heat exchanger (4) until the lower bracket (27) is between the intermediate case and the flange of the fan exit liner segment.
 - (g) Turn in the top end of the air/oil heat exchanger (4) until the top bracket (39) is clear of the flange.
 - (h) Lift the air/oil heat exchanger (4) to put it on the intermediate case.
 - 1) Align the mount holes of the lower and higher brackets (27, 39) with the supports.
 - 2) Make sure the inner holes, which have slots, on the inlet collars (11) are on the bolts (9) bolt and washer assemblies which were installed before.
 - (i) Install the bolts (37) and washer (38) to attach the forward hinge bracket to the intermediate case.
 - 1) Do not tighten the bolts.
 - (j) Attach the lower and higher brackets (27, 39) to the supports on the intermediate case with the bolts (31, 23).
 - 1) Tighten the bolts (31, 23) with your hand.

EFFECTIVITY

ALL

79-21-09

N03

Page 417
Dec 22/00

- (k) ENGINES PRE-PW-SB 79-60;
Attach the valve inlet collars to the rear of the intermediate case as follows:
- 1) Install the outboard bolts (6) with washers (5), in the outboard holes. Lubricate the threads with engine oil.
 - a) Tighten the four inboard bolts by hand. These are the bolts that were installed before the four outboard bolts.

- (l) ENGINES POST-PW-SB 79-60;
Attach the valve inlet collars to the rear of the intermediate case as follows:
- 1) Install the four bolt and washer assemblies (6) in the outboard bolt holes. Lubricate the threads with engine oil.
 - 2) Tighten the four inboard bolt and washer assemblies (9) by hand.

NOTE: These are the bolt and washer assemblies that were installed before the four outboard bolt and washer assemblies.

- (m) Install the bolts (29, 32) which attach the cable conduit to the support (28).

CAUTION: WHEN YOU USE A TORQUE ADAPTER, THE TORQUE ON THE BOLTS ARE LARGER THAN SHOWN BY THE TORQUE WRENCH. IT IS NECESSARY TO ADJUST THE TORQUE VALUES OR DAMAGE TO THE BOLT CAN OCCUR. REFER TO THE STANDARD PRACTICES (AMM 70-50-00/201).

- (n) Tighten the bolts or bolt and washer assemblies (9) to 85-95 pound-inches (9.6-10.7 newton-meters).

NOTE: Use the torque adapter to apply a torque to the four inner bolts or bolt and washer assemblies (9).

- (o) Tighten the bolts or bolt and washer assemblies (6, 23, 31, 37) to 85-95 pound-inches (9.6-10.7 newton-meters).
- (p) Tighten the bolts (29, 32) to 36-40 pound-inches (4.1-4.5 newton-meters).
- (q) Connect the oil tubes (17, 18) with the steps that follow:
- 1) Remove the protection caps.
 - 2) Install the new packings (20) on the oil outlet tube (LP03) (17) and the oil inlet tube (LP02) (18).
 - 3) Install the new packing (22) on the oil inlet tube (LP02) (18).
 - 4) Put the oil inlet tube (LP02) (18) to the air/oil heat exchanger and the oil filter housing.
 - 5) Put the oil outlet tube (LP03) (17) to the air/oil heat exchanger (4).

EFFECTIVITY

ALL

79-21-09

N03

Page 418
Dec 22/01

- 6) Attach the collars to the air/oil heat exchanger (4) with the bolts (19).
- 7) Attach the elbow of the oil outlet tube (LP03) (17) to the oil filter housing with the bolts (21).
- 8) Tighten the bolts (19, 21) to 85-95 pound-inches (9.6-10.7 newton-meters).
- 9) Lubricate the threads of the bolts (15) with engine oil.
- 10) Attach the tube clamps (16) on the oil inlet tube (LP02) (18) to the bracket with the bolts (15) and nuts (14).
 - a) Tighten the bolts (15) to 36-40 pound-inches (4.1-4.5 newton-meters).
- (r) Lubricate the tube nut of the valve supply tube (CP08) with the anti-seize paste.
- (s) Connect the valve supply tube (CP08) to the air/oil heat exchanger.
 - 1) Tighten the tube nut to 200-225 pound-inches (22.6-25.4 newton-meters).
 - 2) Install the lockwire or safety cable and safety cable ferrule on the tube nut.
- (t) Lubricate the tube nut of the valve return tube (CR08) with anti-seize paste.
- (u) Connect the valve return tube (CR08) to the air/oil heat exchanger (4).
 - 1) Tighten the tube nut to 200-225 pound-inches (22.6-25.4 newton-meters).
 - 2) Install the lockwire or safety cable and safety cable ferrule on the tube nut.
- (v) Connect the valve drain tube to the air/oil heat exchanger (4).
 - 1) Tighten the tube nut to 200-225 pound-inches (22.6-25.4 newton-meters).
 - 2) Install the lockwire or safety cable and safety cable ferrule on the tube nut.
- (w) Install the valve cable connector (33) to the bracket on the HPC case.
- (x) Attach the collar (34) with the bolts (36) and nuts (32A).
 - 1) Tighten the bolts (36) to 4.0-4.5 pound-inches (0.4-0.5 newton-meters).

CAUTION: USE THE CORRECT ASSEMBLY PROCEDURE, AND TOOLS, FOR THE HARNESS CONNECTOR INSTALLATION (AMM 70-24-05/201). IF YOU USE THE INCORRECT ASSEMBLY PROCEDURE, OR TOOLS, A DAMAGED OR LOOSE CONNECTOR CAN OCCUR. A LOOSE CONNECTOR PERMITS VIBRATION, WHICH CAUSES THE CONTACTS TO WEAR AND DECREASES THE LIGHTNING PROTECTION.

- (y) Connect the EEC electrical connector to the valve cable connector (33) (AMM 70-24-05/201).

EFFECTIVITY

ALL

79-21-09

N02

Page 419
Apr 22/08

- S 434-018-N00
- (6) Install the fan exit liner segment to the No. 6 position (AMM 72-34-03/401).
- G. Put the Airplane Back to Its Usual Condition.

- S 614-019-N00
- (1) Do the servicing procedure for the engine oil system (AMM 12-13-01/301).

S 414-020-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (2) Close the left thrust reverser (AMM 78-31-00/201).

S 414-021-N00

- (3) Close the left core cowl panel (AMM 71-11-06/201).

S 414-022-N00

- (4) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-023-N00

- (5) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 864-024-N00

- (6) For the left engine, remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
- (a) 11L3, L ENG PERF SOL CHAN A
 - (b) 11L4, L ENG PERF SOL CHAN B

S 864-025-N00

- (7) For the right engine, remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
- (a) 11L30, R ENG PERF SOL CHAN A
 - (b) 11L31, R ENG PERF SOL CHAN B

S 714-026-N00

- (8) Do the test of the air/oil heat exchanger that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-09

N02

Page 420
Dec 22/01

MAGNETIC CHIP DETECTORS – REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. One task is to remove the magnetic chip detector. The other is to install the magnetic chip detector. The magnetic chip detector is referred to in this section as the MCD.
- B. The MCD includes a housing with an integral check valve, and magnetic probe.
- C. There are six MCD's installed as follows:
 - (1) The drain port in the main gearbox.
 - (2) The drain port in the oil tank (master MCD).
 - (3) The housing of the lubrication and scavenge oil pump (4 locations).
 - (a) The scavenge oil inlet of the No. 3 bearing.
 - (b) The scavenge oil inlet of the No. 4 bearing.
 - (c) The scavenge oil inlet for the angle gearbox.
 - (d) The scavenge oil inlet of the No. 1, 1.5, and 2 bearing.
 - (4) You can get access to the MCD's through the applicable thrust reverser.
- D. To remove the full magnetic chip detector assembly, first remove the probe, then the valve. To drain the oil tank, it is necessary to remove the full magnetic chip detector assembly.

TASK 79-21-10-024-001-N00

2. Remove the Magnetic Chip Detector (MCD)

- A. Equipment
 - (1) Fluid Drain Collector or Container (capacity 10 US gallon (38.0 liter)).
- B. References
 - (1) AMM 71-11-04/201, Fan Cowl Panels
 - (2) AMM 71-11-06/201, Core Cowl Panels
 - (3) AMM 78-31-00/201, Thrust Reverser System
- C. Access
 - (1) Location Zones
 - 410 L Power Plant
 - 420 R Power Plant
- D. Prepare to Remove the Magnetic Chip Detectors

S 014-002-N00

- (1) Open the fan cowl panels (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-10

N01

Page 401
Apr 22/07

S 014-004-N00

- (3) Open the core cowl panels (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).

E. Remove the Magnetic Chip Detectors (Fig. 401)

S 024-028-N00

CAUTION: INSTALL THE PROTECTIVE COVERS OVER ALL OPENINGS AS SOON AS POSSIBLE TO PREVENT ENGINE DAMAGE.

CAUTION: YOU MUST PUSH IN THE MCD PROBE BEFORE YOU TURN IT. THE MCD PROBE IS LOCKED INTO THE MCD HOUSING BY A CONFIGURATION WITH SLOTS. REPLACE THE MCD ASSEMBLY IF YOU CANNOT REMOVE THE MCD PROBE WITH YOUR HAND. DO NOT USE THE TOOLS TO REMOVE THE MCD PROBE OR YOU CAN CAUSE DAMAGE TO THE MCD.

CAUTION: DO NOT TRY TO REMOVE THE MAGNETIC CHIP DETECTOR AS AN ASSEMBLY. THE MAGNETIC CHIP DETECTOR PROBE MUST BE REMOVED FROM THE VALVE TO PREVENT DAMAGE TO THE PART.

- (1) Remove the magnetic chip detector from the engine main oil tank (Figure 401).
(a) FOR P/N 50R499;
Remove the magnetic chip detector from the engine main oil tank as follows:
1) Remove the lockwire or safety cable from the valve (4).
2) Put a fluid drain collector or container under the engine oil tank.

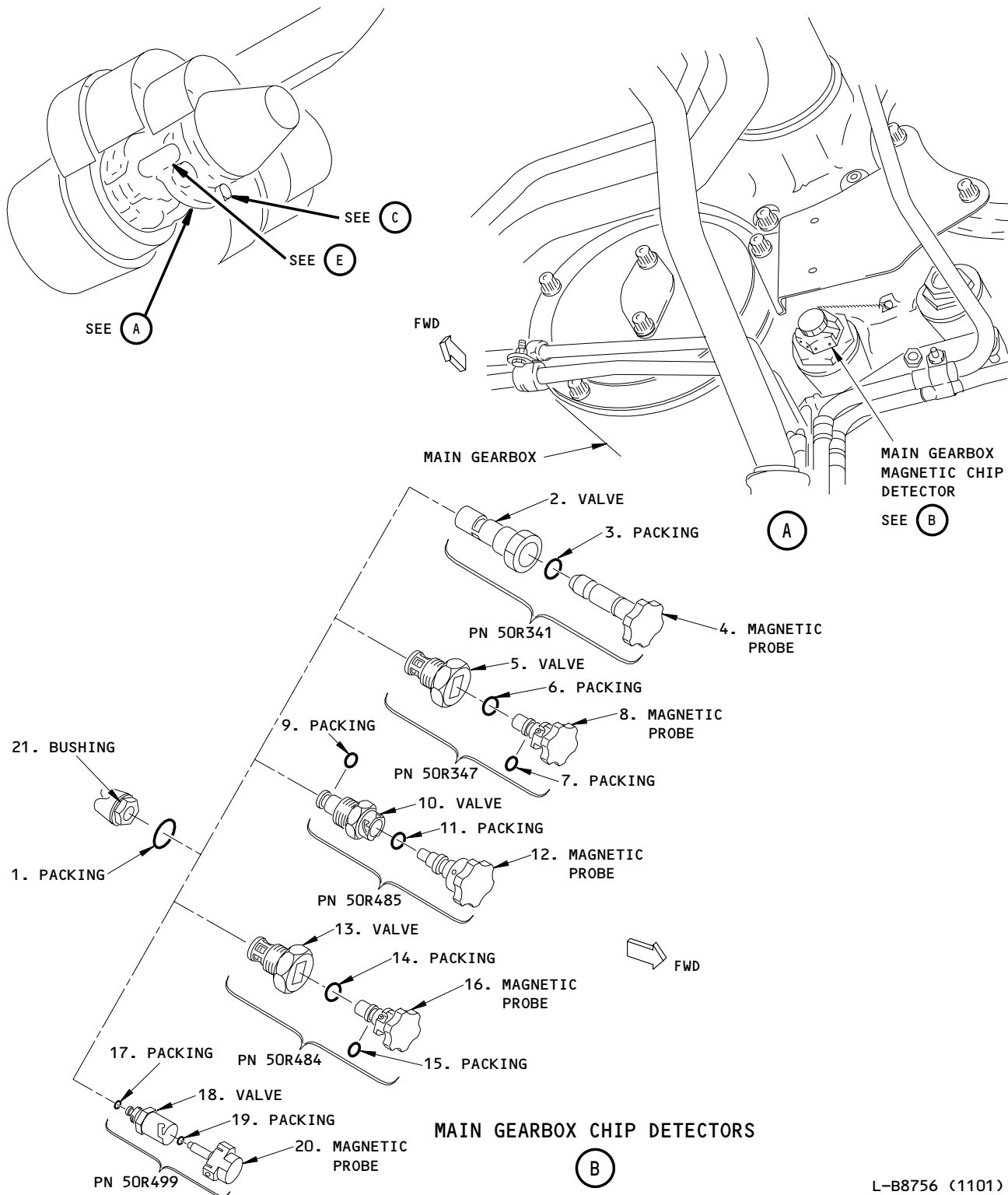
EFFECTIVITY

ALL

79-21-10

N01

Page 402
Apr 22/07



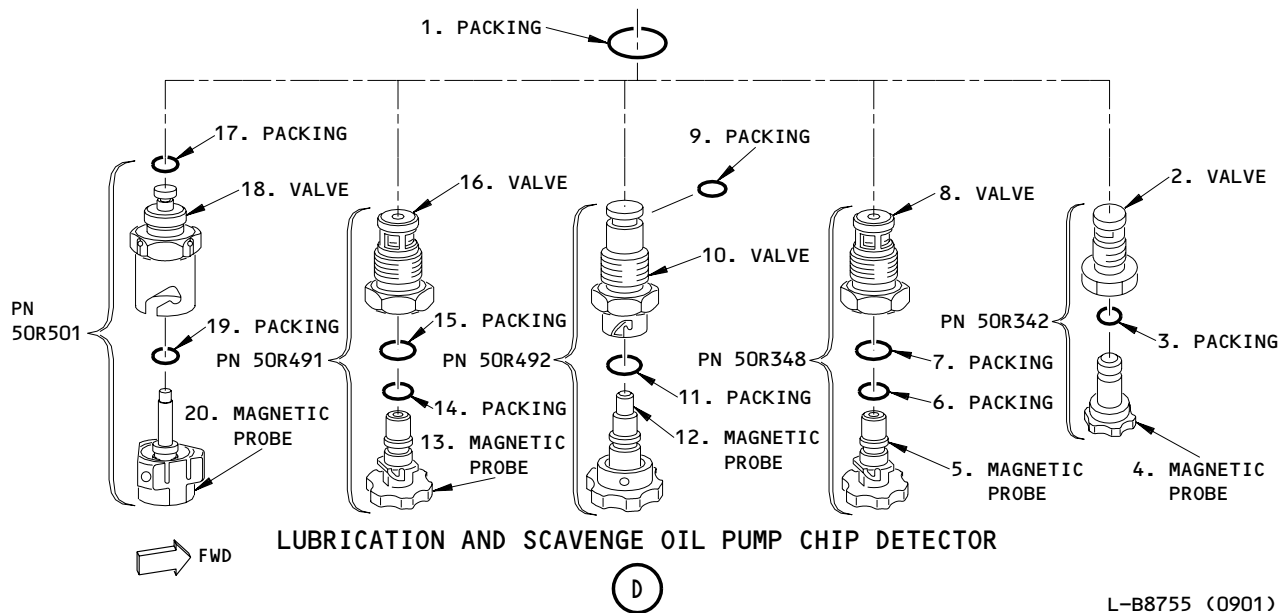
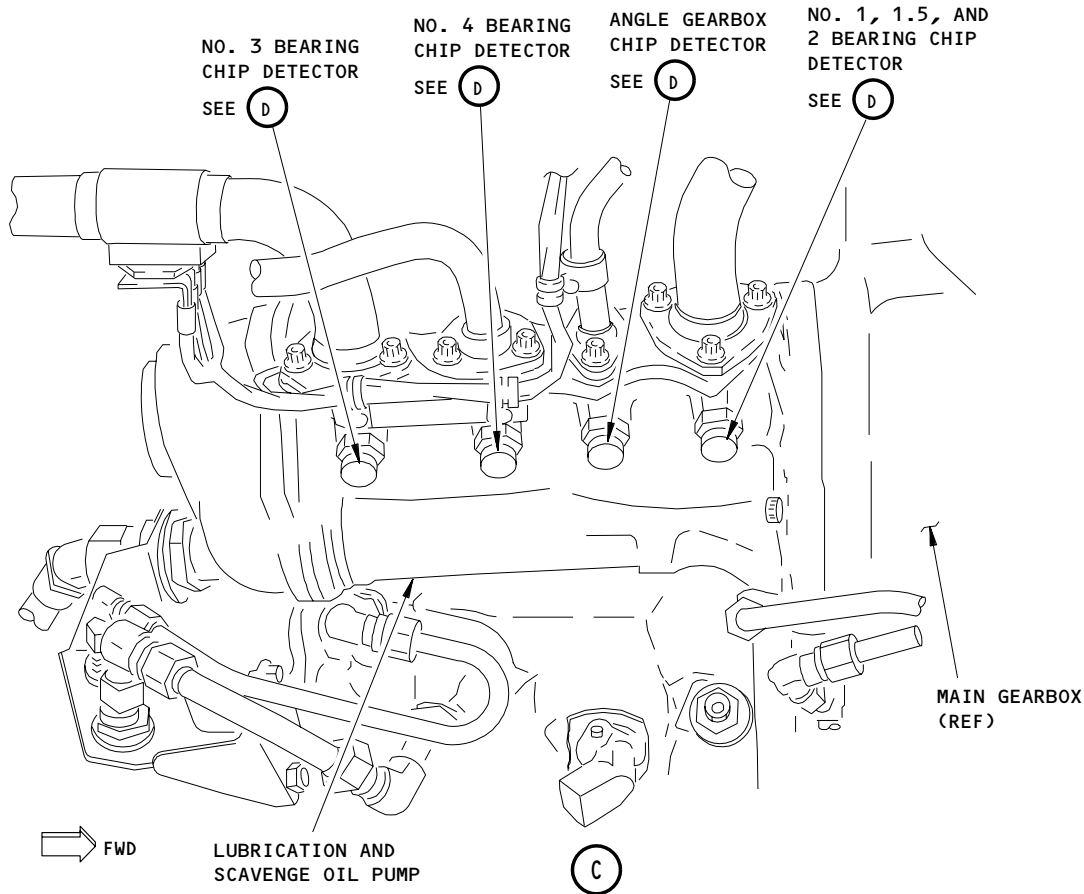
Magnetic Chip Detector Installation
Figure 401 (Sheet 1)

EFFECTIVITY	
	ALL

79-21-10

N01

Page 403
Apr 22/07



L-B8755 (0901)

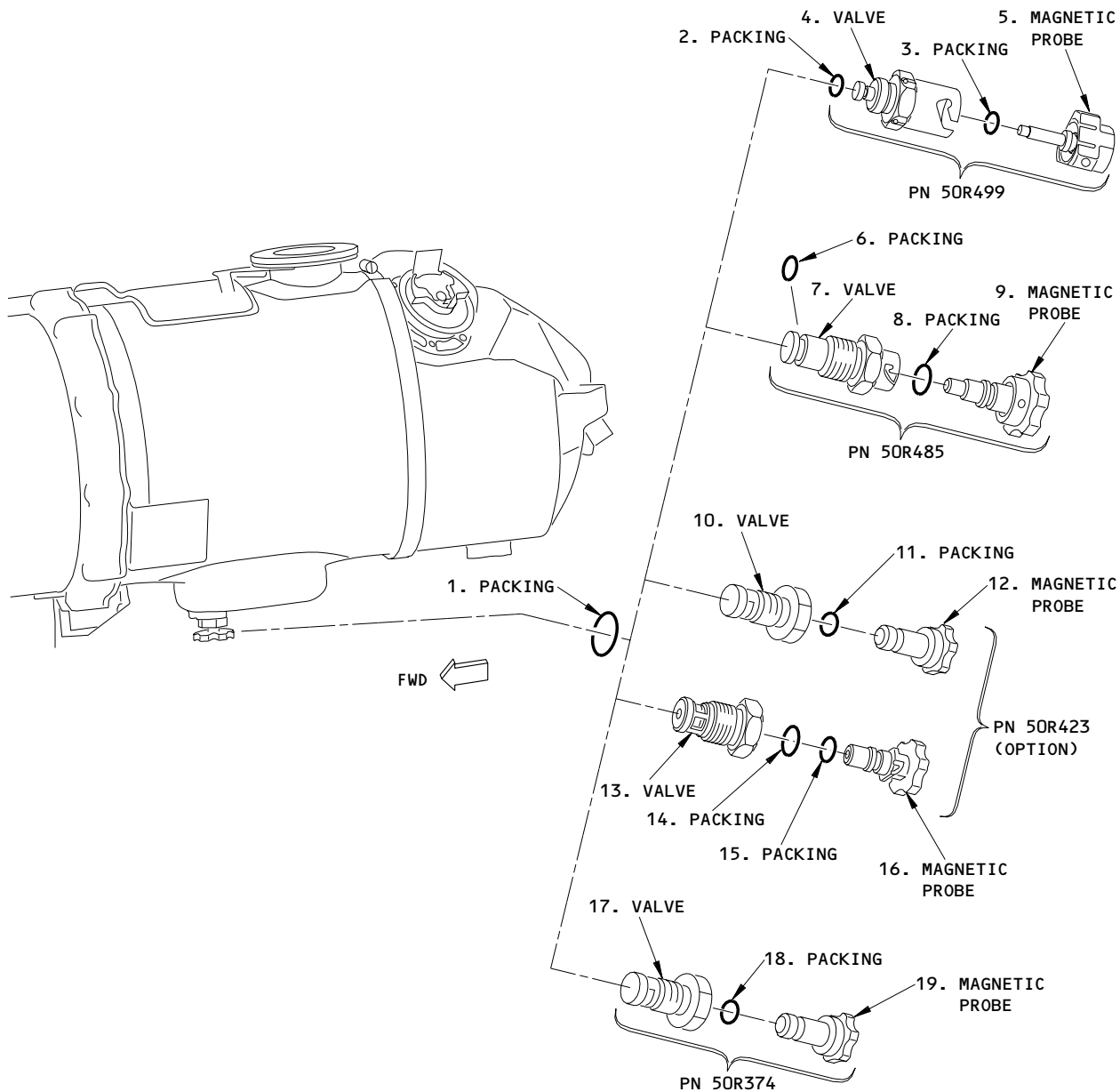
Magnetic Chip Detector Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-10

N01

Page 404
Apr 22/07



MAIN OIL TANK CHIP DETECTOR

(E)

L-B8754 (0901)

Magnetic Chip Detector Installation
Figure 401 (Sheet 3)

EFFECTIVITY	
	ALL

79-21-10

N01

Page 405
Apr 22/07

C14386

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 3) Push the magnetic probe (5) in and turn it counterclockwise to disengage it from the valve (4).
- 4) Remove the magnetic probe (5) from the valve (4).
- 5) Remove the packing (3) from the magnetic probe (5).
 - a) Discard the packing (3).
- 6) Remove the valve (4) from the engine main oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 7) Let the oil drain into the fluid drain collector or container.
 - 8) Install the magnetic probe (5) into the valve (4).
 - 9) Remove the packing (2) from the small OD end of the valve (4).
 - a) Discard the packing (2).
 - 10) Remove the packing (1) from the washer face of the valve (4).
 - a) Discard the packing (1).
 - 11) Remove the magnetic probe (5) from the valve (4) again.
- (b) FOR P/N 50R485;
Remove the magnetic chip detector from the engine main oil tank as follows:
- 1) Remove the lockwire or safety cable from the valve (7).
 - 2) Put a fluid drain collector or container under the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 3) Push the magnetic probe (9) in and turn it counterclockwise to disengage it from the valve (7).
- 4) Remove the magnetic probe (9) from the valve (7).
- 5) Remove the packing (8) from the magnetic probe (9).
 - a) Discard the packing (8).
- 6) Remove the valve (7) from the engine oil tank.

EFFECTIVITY

ALL

79-21-10

N01

Page 406
Apr 22/07

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
 - 8) Install the magnetic probe (9) into the valve (7).
 - 9) Remove the packing (6) from the small OD end of the valve (7).
 - a) Discard the packing (6).
 - 10) Remove the packing (1) from the washer face of the valve (7).
 - a) Discard the packing (1).
 - 11) Remove the magnetic probe (9) from the valve (7) again.
- (c) FOR P/N 50R423 (OPTION 1);
Remove the magnetic chip detector from the engine main oil tank as follows:
- 1) Remove the lockwire or safety cable from the valve (10).
 - 2) Put a fluid drain collector or container under the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (12) in and turn it counterclockwise to disengage it from the valve (10).
- 4) Remove the magnetic probe (12) from the valve (10).
- 5) Remove the packing (11) from the magnetic probe (12).
 - a) Discard the packing (11).
- 6) Remove the valve (10) from the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
 - 8) Remove the packing (1) from the washer face of the valve (10).
 - a) Discard the packing (1).
- (d) FOR P/N 50R423 (OPTION 2);
Remove the magnetic chip detector from the engine main oil tank as follows:
- 1) Remove the lockwire or safety cable from the valve (13).
 - 2) Put a fluid drain collector or container under the engine oil tank.

EFFECTIVITY

ALL

79-21-10

N01

Page 407
Apr 22/07

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (16) in and turn it counterclockwise to disengage it from the valve (13).
- 4) Remove the magnetic (16) from the valve (13).
- 5) Remove the packing (15) from the magnetic probe (16).
 - a) Discard the packing (15).
- 6) Remove the valve (13) from the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) If it is necessary, remove the packing (14) from the washer face of the valve (13).
 - a) Discard the packing (14).
- 9) Remove the packing (1) from the washer face of the valve (13).
 - a) Discard the packing (1).

(e) FOR P/N 50R374;

Remove the magnetic probe (19) from the engine main oil tank as follows:

- 1) Remove the lockwire or safety cable from the valve (17).
- 2) Put a fluid drain collector or container under the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (19) in and turn it counterclockwise to disengage it from the valve (17).
- 4) Remove the magnetic probe (19) from the valve (17).
- 5) Remove the packing (18) from the magnetic probe (19).
 - a) Discard the packing (18).
- 6) Remove the valve (17) from the engine oil tank.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Remove the packing (1) from the washer face of the valve (17).
 - a) Discard the packing (1).

EFFECTIVITY

ALL

79-21-10

N01

Page 408
Apr 22/07

S 024-029-N00

CAUTION: INSTALL THE PROTECTIVE COVERS OVER ALL OPENINGS AS SOON AS POSSIBLE TO PREVENT ENGINE DAMAGE.

CAUTION: YOU MUST PUSH IN THE MCD PROBE BEFORE YOU TURN IT. THE MCD PROBE IS LOCKED INTO THE MCD HOUSING BY A CONFIGURATION WITH SLOTS. REPLACE THE MCD ASSEMBLY IF YOU CANNOT REMOVE THE MCD PROBE WITH YOUR HAND. DO NOT USE THE TOOLS TO REMOVE THE MCD PROBE OR YOU CAN CAUSE DAMAGE TO THE MCD.

CAUTION: DO NOT TRY TO REMOVE THE MAGNETIC DETECTOR AS AN ASSEMBLY. THE MAGNETIC CHIP DETECTOR PROBE MUST BE REMOVED FROM THE VALVE TO PREVENT DAMAGE TO THE PART.

(2) Remove the magnetic chip detectors from the lubrication and scavenge oil pump (Figure 401).

(a) FOR P/N 50R342;

Remove the magnetic chip detector from the lubrication and scavenge oil pump as follows:

- 1) Remove the lockwire or safety cable from the valve (2).
- 2) Put a fluid drain collector or container under the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (4) in and turn it counterclockwise to disengage from the valve (2).
- 4) Remove the magnetic probe (4) from the valve (2).
- 5) Remove the packing (3) from the magnetic probe (4).
 - a) Discard the packing (3).
- 6) Remove the valve (2) from the lubrication and scavenge oil pump.

EFFECTIVITY

ALL

79-21-10

N01

Page 409
Apr 22/07

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 7) Let the oil drain into the fluid drain collector or container.
 - 8) Remove the packing (1) from the washer face of the valve (2).
 - a) Discard the packing (1).
 - 9) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.
- (b) FOR P/N 50R348;
Remove the magnetic chip detector from the lubrication and scavenge oil pump as follows:
- 1) Remove the lockwire or safety cable from the valve (8).
 - 2) Put a fluid drain collector or container under the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 3) Push the magnetic probe (5) in and turn it counterclockwise to disengage it from the valve (8).
- 4) Remove the magnetic probe (5) from the valve (8).
- 5) Remove the packing (6) from the magnetic probe (5).
 - a) Discard the packing (6).
- 6) Remove the valve (8) from the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND
EYES.

- 7) Let the oil drain into the fluid drain collector or container.

EFFECTIVITY

ALL

79-21-10

N01

Page 410
Apr 22/07

- 8) Remove the packing (7) from the ID of the valve (8).
 - a) Discard the packing (7).
 - 9) Remove the packing (1) from the washer face of the valve (8).
 - a) Discard the packing (1).
 - 10) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.
- (c) FOR P/N 50R492;
Remove the magnetic chip detector from the lubrication and scavenge oil pump as follows:
- 1) Remove the lockwire or safety cable from the valve (10).
 - 2) Put a fluid drain collector or container under the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (12) in and turn it counterclockwise to disengage it from the valve (9).
- 4) Remove the magnetic probe (12) from the valve (9).
- 5) Remove the packing (11) from the magnetic probe (12).
 - a) Discard the packing (11).
- 6) Remove the valve (10) from the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Install the magnetic probe (12) into the valve (10).
- 9) Remove the packing (9) from the small OD end of the valve (10).
 - a) Discard the packing (9).

EFFECTIVITY

ALL

79-21-10

N01

Page 411
Apr 22/07

- 10) Remove the packing (1) from the washer face of the valve (10).
 - a) Discard the packing (1).
 - 11) Remove the magnetic probe (12) from the valve (10) again.
 - 12) Do this procedure again for the remaining three locations of the lubrication and scavenge oil pump.
- (d) FOR P/N 50R491;
Remove the magnetic chip detector from the lubrication and scavenge oil pump as follows:
- 1) Remove the lockwire or safety cable from the valve (16).
 - 2) Put a fluid drain collector or container under the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (13) in and turn it counterclockwise to disengage it from the valve (16).
- 4) Remove the magnetic probe (13) from the valve (16).
- 5) Remove the packing (14) from the magnetic probe (13).
 - a) Discard the packing (14).
- 6) Remove the valve (16) from the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Remove the packing (15) from the ID of the valve (16).
 - a) Discard the packing (15).
- 9) Remove the packing (1) from the washer face of the valve (16).
 - a) Discard the packing (1).
- 10) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.

EFFECTIVITY

ALL

79-21-10

N01

Page 412
Apr 22/07

- (e) FOR P/N 50R501;
Remove the magnetic chip detector from the lubrication and scavenge oil pump as follows:
- 1) Remove the lockwire or safety cable from the valve (18).
 - 2) Put a fluid drain collector or container under the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (20) in and turn it counterclockwise to disengage it from the valve (18).
- 4) Remove the magnetic probe (20) from the valve (18).
- 5) Remove the packing (19) from the magnetic probe (20).
 - a) Discard the packing (19).
- 6) Remove the valve (18) from the lubrication and scavenge oil pump.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Install the magnetic probe (20) into the valve (18).
- 9) Remove the packing (17) from the small OD end of the valve (18).
 - a) Discard the packing (17).
- 10) Remove the packing (1) from the washer face of the valve (18).
 - a) Discard the packing (1).
- 11) Remove the magnetic probe (20) from the valve (18) again.
- 12) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.

EFFECTIVITY

ALL

79-21-10

N01

Page 413
Apr 22/07

S 024-036-N00

CAUTION: INSTALL THE PROTECTIVE COVERS OVER ALL OPENINGS AS SOON AS POSSIBLE TO PREVENT ENGINE DAMAGE.

CAUTION: YOU MUST PUSH IN THE MCD PROBE BEFORE YOU TURN IT. THE MCD PROBE IS LOCKED INTO THE MCD HOUSING BY A CONFIGURATION WITH SLOTS. REPLACE THE MCD ASSEMBLY IF YOU CANNOT REMOVE THE MCD PROBE WITH YOUR HAND. DO NOT USE THE TOOLS TO REMOVE THE MCD PROBE OR YOU CAN CAUSE DAMAGE TO THE MCD.

CAUTION: DO NOT TRY TO REMOVE THE MAGNETIC DETECTOR AS AN ASSEMBLY. THE MAGNETIC CHIP DETECTOR PROBE MUST BE REMOVED FROM THE VALVE TO PREVENT DAMAGE TO THE PART.

(3) Remove the magnetic chip detectors from the center front side of the main gearbox assembly (Figure 401).

(a) FOR P/N 50R341;

Remove the magnetic chip detector from the main gearbox assembly as follows:

- 1) Remove the lockwire or cable safety from the valve (2).
- 2) Put a fluid drain collector or container under the main gearbox assembly.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (4) in and turn it counterclockwise to disengage it from the valve (2).
- 4) Remove the magnetic probe (4) from the valve (2).
- 5) Remove the packing (3) from the magnetic probe (4).
 - a) Discard the packing (3).
- 6) Remove the valve (2) from the main gearbox assembly.

EFFECTIVITY

ALL

79-21-10

N01

Page 414
Apr 22/07

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
 - 8) Remove the packing (1) from the washer face of the valve (2).
 - a) Discard the packing (1).
- (b) FOR P/N 50R347;
Remove the magnetic chip detector from the main gearbox assembly as follows:
- 1) Remove the lockwire or safety cable from the valve (5).
 - 2) Put a fluid drain collector or container under the main gearbox assembly.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (8) in and turn it counterclockwise to disengage it from the valve (5).
- 4) Remove the magnetic probe (8) from the valve (5).
- 5) Remove the packing (7) from the magnetic probe (8).
 - a) Discard the packing (7).
- 6) Remove the valve (5) from the main gearbox assembly.
 - a) Hold the bushing (21) with a wrench so that it does not turn.
 - b) Remove the valve (5) from the bushing (21).

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE.
HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.

EFFECTIVITY

ALL

79-21-10

N01

Page 415
Apr 22/07

- 8) Remove the packing (6) from the ID of the valve (5).
 - a) Discard the packing (6).
- 9) Remove the packing (1) from the washer face of the valve (5).
 - a) Discard the packing (1).

(c) FOR P/N 50R485;

Remove the magnetic chip detector from the main gearbox assembly as follows:

- 1) Remove the lockwire or safety cable from the valve (10).
- 2) Put a fluid drain collector or container under the main gearbox assembly.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (12) in and turn it counterclockwise to disengage it from the valve (10).
- 4) Remove the magnetic probe (12) from the valve(10).
- 5) Remove the packing (11) from the magnetic probe (12).
 - a) Discard the packing (11).
- 6) Remove the valve (10) from the main gearbox assembly.
 - a) Hold the bushing (21) with a wrench so that it does not turn.
 - b) Remove the valve (10) from the bushing (21).

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Install the magnetic probe (12) into the valve (10).
- 9) Remove the packing (9) from the small OD end of the valve (10).
 - a) Discard the packing (9).

EFFECTIVITY

ALL

79-21-10

N01

Page 416
Apr 22/07

- 10) Remove the packing (1) from the washer face of the valve (10).
 - a) Discard the packing (1).
- 11) Remove the magnetic probe (12) from the valve (10) again.
- (d) FOR P/N 50R484;
Remove the magnetic chip detector from the main gearbox assembly as follows:
 - 1) Remove the lockwire or safety cable from the valve (13).
 - 2) Put a fluid drain collector or container under the main gearbox assembly.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (16) in and turn it counterclockwise to disengage it from the valve (13).
- 4) Remove the magnetic probe (16) from the valve (13).
- 5) Remove the packing (15) from the magnetic probe (16).
 - a) Discard the packing (15).
- 6) Remove the valve (13) from the main gearbox assembly.
 - a) Hold the bushing (21) with a wrench so that it does not turn.
 - b) Remove the valve (13) from the bushing (21).

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Remove the packing (14) from the ID of the valve (13).
 - a) Discard the packing (14).
- 9) Remove the packing (1) from the washer face of the valve (13).
 - a) Discard the packing (1).

EFFECTIVITY

ALL

79-21-10

N01

Page 417
Apr 22/07

- (e) FOR P/N 50R499;
Remove the magnetic chip detector from the main gearbox assembly as follows:
- 1) Remove the lockwire or safety cable from the valve (18).
 - 2) Put a fluid drain collector or container under the main gearbox assembly.

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 3) Push the magnetic probe (20) in and turn it counterclockwise to disengage it from the valve (18).
- 4) Remove the magnetic probe (20) from the valve (18).
- 5) Remove the packing (19) from the magnetic probe (20).
 - a) Discard the packing (19).
- 6) Remove the valve (18) from the main gearbox assembly.
 - a) Hold the bushing (21) with a wrench so that it does not turn.
 - b) Remove the valve (18) from the bushing (21).

WARNING: BE CAREFUL WHEN YOU DRAIN THE OIL FROM A HOT ENGINE. HOT OIL IS DANGEROUS. IT CAN BURN YOUR BODY AND EYES.

- 7) Let the oil drain into the fluid drain collector or container.
- 8) Install the magnetic probe (20) into the valve (18).
- 9) Remove the packing (17) from the small ID end of the valve (18).
 - a) Discard the packing (17).
- 10) Remove the packing (1) from the washer face of the valve (18).
 - a) Discard the packing (1).
- 11) Remove the magnetic probe (20) from the valve (18) again.

TASK 79-21-10-424-008-N00

3. Install the Magnetic Chip Detectors (MCD)

A. General

- (1) This procedure provide instructions to install a full magnetic chip detector, first install the valve and then install the magnetic probe.

B. Equipment

- (1) Container - for oil - 10 U.S. gallon (38 liter) capacity

EFFECTIVITY

ALL

79-21-10

N01

Page 418
Apr 22/07

- (2) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982
- C. Consumable Materials
 - (1) D00137 Engine Oil - PWA 521
 - (2) G02332 Ferrule, Safety Cable (P05-292)
 - (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
 - (4) G02335 Cable, Safety (P05-291)
- D. References
 - (1) AMM 12-13-01/301, Engine - Oil Servicing
 - (2) AMM 71-00-00/501, Power Plant
 - (3) AMM 71-11-04/201, Fan Cowl Panels
 - (4) AMM 71-11-06/201, Core Cowl Panels
 - (5) AMM 78-31-00/201, Thrust Reverser System
- E. Access
 - (1) Location Zones
 - 410 L Power Plant
 - 420 R Power Plant
- F. Procedure

S 424-031-N00

CAUTION: INSTALL THE CORRECT MAGNETIC PROBE IN THE HOUSING. SOME PROBES ARE INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: BEFORE YOU INSTALL EACH PART, REMOVE THE PROTECTIVE COVERS FROM THE OPENINGS AS NECESSARY TO PREVENT ENGINE DAMAGE.

CAUTION: DO NOT TRY TO INSTALL THE MAGNETIC CHIP DETECTOR AS AN ASSEMBLY. YOU MUST REMOVE THE MAGNETIC PROBE FROM THE VALVE TO PREVENT DAMAGE TO THE PARTS.

- (1) Install the magnetic chip detectors from the engine main oil tank (Figure 401).

CAUTION: MAKE SURE YOU INSTALL THE MCD HOUSING WITH A PACKING ON IT. IF THE MCD HOUSING DOES NOT HAVE A PACKING, AN OIL LEAKAGE CAN OCCUR AND CAUSE DAMAGE TO THE ENGINE.

- (a) FOR P/N 50R499;
Install the magnetic chip detector to the engine main oil tank as follows:
 - 1) If it is necessary, install the magnetic probe (5) into the valve (4) to get access to the packing grooves.
 - 2) Apply engine oil (P03-001) to the new packing (2).
 - 3) Install the new packing (2) to the small OD end of the valve (5).

EFFECTIVITY

ALL

79-21-10

N01

Page 419
Apr 22/07

- 4) Apply engine oil (P03-001) to the new packing (1).
- 5) Install the new packing (1) to the washer face of the valve (4).
- 6) Remove the magnetic probe (5) from the valve (4).
- 7) Install the valve (4) into the engine main oil tank.
- 8) Tighten the valve (4) to 200 - 255 Pound-inches (22.597 - 25.422 Newton-meters).
- 9) Install the lockwire or safety cable and ferrule to the valve (4).
- 10) Apply engine oil (P03-001) to the new packing (3).
- 11) Install the new packing (3) to the groove on the magnetic probe (5).
- 12) Install the magnetic probe (5) into the valve (4).
- 13) Push the magnetic probe (5) in and turn it clockwise until it locks.
- 14) Pull on the magnetic probe (5) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you aligned the red mark on the magnetic probe with the red mark on the valve.

(b) FOR P/N 50R485;

Install the magnetic chip detectors to the engine main oil tank as follows:

- 1) If it is necessary, install the magnetic probe (9) into the valve (7) to get access to the packing grooves.
- 2) Apply engine oil (P03-001) to the new packing (6).
- 3) Install the new packing (6) to the small OD end of the valve (7).
- 4) Apply engine oil (P03-001) to the new packing (1).
- 5) Install the new packing (1) to the washer face of the valve (7).
- 6) Remove the magnetic probe (9) from the valve (7).
- 7) Install the valve (7) into the engine main oil tank.
- 8) Tighten the valve (7) to 220 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
- 9) Install the lockwire or safety cable and ferrule to the valve (7).
- 10) Apply engine oil (P03-001) to the new packing (8).
- 11) Install the new packing (8) to the groove on the magnetic probe (9).
- 12) Install the magnetic probe (9) into the valve (7).
- 13) Push the magnetic probe (9) in and turn it clockwise until it locks.
- 14) Pull on the magnetic probe (9) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

EFFECTIVITY

ALL

79-21-10

N01

Page 420
Apr 22/07

- (c) FOR P/N 50R423 (OPTION 1);
Install the magnetic chip detector to the engine main oil tank as follows:
- 1) Apply engine oil (P03-001) to the new packing (1).
 - 2) Install the new packing (1) to the washer face of the valve (10).
 - 3) Install the valve (10) into the engine main oil tank.
 - 4) Tighten the valve (10) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
 - 5) Install the lockwire or safety cable and ferrule to the valve (10).
 - 6) Apply engine oil (P03-001) to the new packing (11).
 - 7) Install the new packing (11) to the groove on the magnetic probe (12).
 - 8) Install the magnetic probe (12) into the valve (10).
 - 9) Push the magnetic probe (12) in and turn it clockwise until it locks.
 - 10) Pull on the magnetic probe (12) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

- (d) FOR P/N 50R423 (OPTION 2);
Install the magnetic chip detector to the engine main oil tank as follows:
- 1) Apply engine oil (P03-011) to the new packing (1).
 - 2) Install the new packing (1) to the washer face of the valve (13).
 - 3) Apply engine oil (P03-011) to the new packing (14).
 - 4) Install the new packing (14) to the ID of the valve (13).
 - 5) Install the valve (13) into the engine main oil tank.
 - 6) Tighten the valve (13) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
 - 7) Install the lockwire or safety cable and ferrule to the valve (13).
 - 8) Apply engine oil (P03-001) to the new packing (15).
 - 9) Install the new packing (15) to the groove on the magnetic probe (16).

EFFECTIVITY

ALL

79-21-10

N01

Page 421
Apr 22/07

- 10) Install the magnetic probe (16) into the valve (13).
- 11) Push the magnetic probe (16) in and turn it clockwise until it locks.
- 12) Pull on the magnetic probe (16) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

- (e) FOR P/N 50R374;
Install the magnetic chip detector to the engine main oil tank as follows:
- 1) Apply engine oil (P03-001) to the new packing (1).
 - 2) Install the new packing (1) to the washer face of the valve (17).
 - 3) Install the valve (17) into the engine main oil tank.
 - 4) Tighten the valve (17) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
 - 5) Install the lockwire or safety cable and ferrule to the valve (17).
 - 6) Apply engine oil (P03-011) to the new packing (18).
 - 7) Install the new packing (18) to the groove on the magnetic probe (19).
 - 8) Install the magnetic probe (19) into the valve (17).
 - 9) Push the magnetic probe (19) in and turn it clockwise until it locks.
 - 10) Pull the magnetic probe (17) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

S 424-032-N00

CAUTION: INSTALL THE CORRECT MAGNETIC PROBE IN THE HOUSING. SOME PROBES ARE INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: BEFORE YOU INSTALL EACH PART, REMOVE THE PROTECTIVE COVERS FROM THE OPENINGS AS NECESSARY TO PREVENT ENGINE DAMAGE.

CAUTION: DO NOT TRY TO INSTALL THE MAGNETIC CHIP DETECTOR AS AN ASSEMBLY. YOU MUST REMOVE THE MAGNETIC PROBE FROM THE VALVE TO PREVENT DAMAGE TO THE PARTS.

- (2) Install the four magnetic chip detectors to the lubrication and scavenge oil pump (Figure 401).

EFFECTIVITY

ALL

79-21-10

CAUTION: MAKE SURE YOU INSTALL THE MCD HOUSING WITH A PACKING ON IT. IF THE MCD HOUSING DOES NOT HAVE A PACKING, AN OIL LEAKAGE CAN OCCUR AND CAUSE DAMAGE TO THE ENGINE.

(a) FOR P/N 50R342;

Install the magnetic chip detector to the lubrication and scavenge oil pump as follows:

- 1) Apply engine oil (P03-001) to the new packing (1).
- 2) Install the new packing (1) to the washer face of the valve (2).
- 3) Install the valve (2) into the lubrication and scavenge oil pump.
- 4) Tighten the valve (2) to 90 - 100 Pound-inches (10.169 - 11.298 Newton-meters).
- 5) Install the lockwire or safety cable and ferrule to the valve (2).
- 6) Apply engine oil (P03-001) to the new packing (3).
- 7) Install the new packing (3) to the groove on the magnetic probe (4).
- 8) Install the magnetic probe (4) into the valve (2).
- 9) Push the magnetic probe (4) in and turn it clockwise until it locks.
- 10) Pull on the amgnetic probe (4) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

- 11) Do this procedure again for the remaining three locations on the mubrication and scavenge oil pump.

(b) FOR P/N 50R348;

Install the magnetic chip detector to the lubrication and scavenge oil pump as follows:

- 1) Apply engine oil (P03-001) to the new packing (1).
- 2) Install the new packing (1) to the washer face of the valve (8).
- 3) Apply engine oil (P03-001) to the new packing (7).
- 4) Install the new packing (7) to the ID of the valve (8).
- 5) Install the valve (8) into the lubrication and scavenge oil pump.
- 6) Tighten the valve (8) to 90 - 100 Pound-inches (10.169 - 11.298 Newton-meters).
- 7) Install the lockwire or safety cable and ferrule to the valve (8).
- 8) Apply engine oil (P03-001) to the new packing (6).
- 9) Install the new packing (6) to the groove on the magnetic probe (5).
- 10) Install the magnetic probe (6) into the valve (8).
- 11) Push the magnetic probe (5) in and turn it clockwise until it locks.

EFFECTIVITY

ALL

79-21-10

N01

Page 423
Apr 22/07

12) Pull the magnetic probe (5) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

13) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.

(c) FOR P/N 50R492;

Install the magnetic chip detector to the lubrication and scavenge oil pump as follows:

- 1) If it is necessary, install the magnetic probe (12) into the valve (10) to get access to the packing grooves.
- 2) Apply engine oil (P03-001) to the new packing (9).
- 3) Install the new packing (9) to the small OD end of the valve (10).
- 4) Apply engine oil (P03-001) to the new packing (1).
- 5) Install the new packing (1) to the washer face of the valve (10).
- 6) Remove the magnetic probe (12) from the valve (10).
- 7) Install the valve (10) into the lubrication and scavenge oil pump.
- 8) Tighten the valve (10) to 90 - 100 Pound-inches (10.169 - 11.298 Newton-meters).
- 9) Install the lockwire or safety cable and ferrule to the valve (10).
- 10) Apply engine oil (P03-001) to the new packing (11).
- 11) Install the new packing (11) to the groove on the magnetic probe (12).
- 12) Install the magnetic probe (12) into the valve (10).
- 13) Push the magnetic probe (12) in and turn it clockwise until it locks.
- 14) Pull on the magnetic probe (12) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

15) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.

(d) FOR P/N 50R491;

Install the magnetic chip detector to the lubrication and scavenge oil pump as follows:

- 1) Apply engine oil (P03-001) to the new packing (1).
- 2) Install the new packing (1) to the washer face of the valve (16).
- 3) Apply engine oil (P03-001) to the new packing (15).
- 4) Install the new packing (15) to the ID of the valve (16).
- 5) Install the valve (16) into the lubrication and scavenge oil pump.

EFFECTIVITY

ALL

79-21-10

N01

Page 424
Apr 22/07

- 6) Tighten the valve (16) to 90 - 100 Pound-inches (10.169 - 11.298 Newton-meters).
- 7) Install the lockwire or safety cable and ferrule to the valve (16).
- 8) Apply engine oil (P03-001) to the new packing (14).
- 9) Install the new packing (14) to the groove on the magnetic probe (13).
- 10) Install the magnetic probe (13) into the valve (16).
- 11) Push the magnetic probe (13) in and turn it clockwise until it locks.
- 12) Pull on the magnetic probe (13) to make sure it is locked.

NOTE: The magnetic probe installed is correctly when you align the red mark on the magnetic probe with the red mark on the valve.

- 13) Do this procedure again for the three remaining locations on the lubrication and scavenge oil pump.
- (e) FOR P/N 50R501;
Install the magnetic chip probe to the lubrication and scavenge oil pump as follows:
- 1) If it is necessary, install the magnetic probe (20) into the valve (18) to get access to the packing groove.
 - 2) Apply engine oil (P03-001) to the new packing (17).
 - 3) Install the new packing (17) to the small OD end of the valve (18).
 - 4) Apply engine oil (P03-001) to the new packing (1).
 - 5) Install the new packing (1) to the washer face of the valve (18).
 - 6) Remove the magnetic probe (20) from the valve (18).
 - 7) Install the valve (18) into the lubrication and scavenge oil pump.
 - 8) Tighten the valve (18) to 90 - 100 Pound-inches (10.169 - 11.298 Newton-meters).
 - 9) Install the lockwire or safety cable and ferrule to the valve (18).
 - 10) Apply engine oil (P03-011) to the new packing (19).
 - 11) Install the new packing (19) to the groove on the magnetic probe (20).
 - 12) Install the magnetic probe (20) into the valve (18).
 - 13) Push the magnetic probe (20) in and turn it clockwise until it locks.
 - 14) Pull on the magnetic probe (20) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

EFFECTIVITY

ALL

79-21-10

N01

Page 425
Apr 22/07

15) Do this procedure again for the remaining three locations on the lubrication and scavenge oil pump.

S 424-037-N00

CAUTION: INSTALL THE CORRECT MAGNETIC PROBE IN THE HOUSING. SOME PROBES ARE INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT PART CORRECTLY, AN INFLIGHT ENGINE SHUTDOWN CAN OCCUR.

CAUTION: BEFORE YOU INSTALL EACH PART, REMOVE THE PROTECTIVE COVERS FROM THE OPENINGS AS NECESSARY TO PREVENT ENGINE DAMAGE.

CAUTION: DO NOT TRY TO INSTALL THE MAGNETIC CHIP DETECTOR AS AN ASSEMBLY. YOU MUST REMOVE THE MAGNETIC PROBE FROM THE VALVE TO PREVENT DAMAGE TO THE PARTS.

(3) Install the magnetic chip detectors to the center front of the main gearbox assembly (Figure 401).

CAUTION: MAKE SURE YOU INSTALL THE MCD HOUSING WITH A PACKING ON IT. IF THE MCD HOUSING DOES NOT HAVE A PACKING, AN OIL LEAKAGE CAN OCCUR AND CAUSE DAMAGE TO THE ENGINE.

- (a) FOR P/N 50R341;
Install the magnetic chip detector to the center front side of the main gearbox assembly as follows:
- 1) Apply engine oil (P03-001) to the new packing (1).
 - 2) Install the new packing (1) to the washer face of the valve (2).
 - 3) Install the valve (2) into the center front side of the main gearbox assembly.
 - 4) Tighten the valve to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
 - 5) Install the lockwire or safety cable and ferrule to the valve (2).
 - 6) Apply engine oil (P03-001) to the new packing (3).
 - 7) Install the new packing (3) to the groove on the magnetic probe (4).
 - 8) Install the magnetic probe (4) into the valve (2).
 - 9) Push the magnetic probe (4) in and turn it clockwise until it locks.
 - 10) Pull on the magnetic probe (4) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve

- (b) FOR P/N 50R347;
Install the magnetic chip detector to the center front side of the main gearbox assembly as follows:
- 1) Apply engine oil (P03-001) to the new packing (1).

EFFECTIVITY

ALL

79-21-10

N01

Page 426
Apr 22/07

- 2) Install the new packing (1) to the washer face of the valve (5).
- 3) Apply engine oil (P03-001) to the new packing (6).
- 4) Install the new packing (6) to the ID of the valve (5).
- 5) Install the valve (5) to the center front side of the main gearbox assembly.
- 6) Tighten the valve (5) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
- 7) Install the lockwire or safety cable and ferrule to the valve (5).
- 8) Apply engine oil (P03-001) to the new packing (7).
- 9) Install the new packing (7) to the groove on the magnetic probe (8).
- 10) Install the magnetic probe (8) into the valve (5).
- 11) Push the magnetic probe (8) in and turn it clockwise until it locks.
- 12) Pull on the magnetic probe (8) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

(c) FOR P/N 50R485;

Install the magnetic chip detector to the center front side of the main gearbox assembly as follows:

- 1) If it is necessary, install the magnetic probe (12) into the valve (10) to get access to the packing grooves.
- 2) Apply engine oil (P03-001) to the new packing (9).
- 3) Install the new packing (9) to the small OD end of the valve (10).
- 4) Apply engine oil (P03-001) to the new packing (1).
- 5) Install the new packing (1) to the washer face of the valve (10).
- 6) Remove the magnetic probe (12) from the valve (10).
- 7) Install the valve (10) into the center front side of the main gearbox assembly.
- 8) Tighten the valve (10) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
- 9) Install the lockwire or safety cable and ferrule to the valve (10).
- 10) Apply engine oil (P03-001) to the new packing (11).
- 11) Install the new packing (11) to the groove on the magnetic probe (12).
- 12) Install the magnetic probe (12) into the valve (10).
- 13) Push the magnetic probe (12) in and turn it clockwise until it locks.
- 14) Pull on the magnetic probe (12) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

EFFECTIVITY

ALL

79-21-10

N01

Page 427
Apr 22/07

- (d) FOR P/N 50R484;
Install the magnetic chip detector to the center front side of the main gearbox assembly as follows:
- 1) Apply engine oil (P03-001) to the new packing (1).
 - 2) Install the new packing (1) to the washer face of the valve (13).
 - 3) Apply engine oil (P03-001) to the new packing (14).
 - 4) Install the new packing (14) to the ID of the valve (13).
 - 5) Install the valve (13) into the center front of the main gearbox assembly.
 - 6) Tighten the valve (13) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
 - 7) Install the lockwire or safety cable and ferrule to the valve (13).
 - 8) Apply engine oil (P03-001) to the new packing (15).
 - 9) Install the new packing (15) to the groove on the magnetic probe (16).
 - 10) Install the magnetic probe (16) into the valve (13).
 - 11) Push the magnetic probe (16) in and turn it clockwise until it locks.
 - 12) Pull on the magnetic probe (16) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

- (e) FOR P/N 50R499;
Install the magnetic chip detector to the center front side of the main gearbox assembly.
- 1) If it is necessary, install the magnetic probe (20) into the valve (18) to get access to the packing grooves.
 - 2) Apply engine oil (P03-001) to the new packing (17).
 - 3) Install the new packing (17) to the small OD end of the valve (18).
 - 4) Apply engine oil (P03-001) to the new packing (1).

EFFECTIVITY

ALL

79-21-10

N01

Page 428
Apr 22/07

- 5) Install the new packing (1) to the washer face of the valve (18).
- 6) Remove the magnetic probe (20) from the valve (18).
- 7) Install the valve (18) into the center front side of the main gearbox assembly.
- 8) Tighten the valve (18) to 200 - 225 Pound-inches (22.597 - 25.422 Newton-meters).
- 9) Install the lockwire or safety cable and ferrule to the valve (18).
- 10) Apply engine oil (P03-001) to the new packing (19).
- 11) Install the new packing (19) to the groove on the magnetic probe (18).
- 12) Install the magnetic probe (20) into the valve (18).
- 13) Push the magnetic probe (20) in and turn it clockwise until it locks.
- 14) Pull on the magnetic probe (20) to make sure it is locked.

NOTE: The magnetic probe is correctly installed when you align the red mark on the magnetic probe with the red mark on the valve.

S 614-034-N00

- (4) Do the engine oil system servicing (AMM 12-13-01/301).

G. Put the airplane back to its initial condition

S 414-012-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

S 414-013-N00

- (2) Close the core cowl panels (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-21-10

N01

Page 429
Apr 22/07

- S 414-014-N00
- (3) Close the fan cowl panels (AMM 71-11-04/201).

- S 444-015-N00
- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

- S 794-035-N00
- (5) Do the test for the magnetic chip detectors housing that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-10

N01

Page 430
Apr 22/07

MAGNETIC CHIP DETECTOR – INSPECTION/CHECK

1. General

- A. This procedure contains instructions and standards to examine the metal particles on the magnetic chip detectors. Bearing failure could be the cause of the metal particles. The correct analysis of the metal particles found is important to find the bearing or gear problems before they cause engine damage or failure.

TASK 79-21-10-206-001-N00

2. Do the Inspection of the Magnetic Chip Detectors

A. General

- (1) This procedure gives the instructions to examine and interpret the contamination found on the magnetic chip detectors (MCD).
- (2) There are four main types of contamination: build debris or residual debris (contamination from the assembly of the engine) fines, flakes, and chips.
- (3) It is necessary to keep a record of all the debris contamination that is found on the probes and in the oil filter.
- (4) You must examine the debris contamination with suitable magnification. It is recommended that you use a magnifying glass that has 20X magnification.
- (5) The PWA 107014 Photo Aid can be used as an aid to show actual photos of conditions which can be found during inspection.
- (6) If the engine or gearbox can not continue in service, you must send the debris contamination and/or analysis of the debris contamination with the engine or gearbox to the repair facility.

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-10/401, Magnetic Chip Detectors
- (5) AMM 79-21-05/401, Main Oil Filter

C. Equipment

- (1) PWA 107014, Photograph, Inspection (Photo Aid)

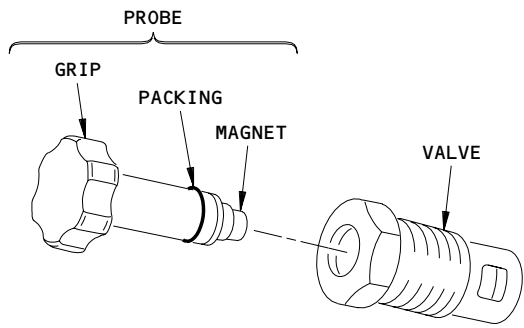
EFFECTIVITY

ALL

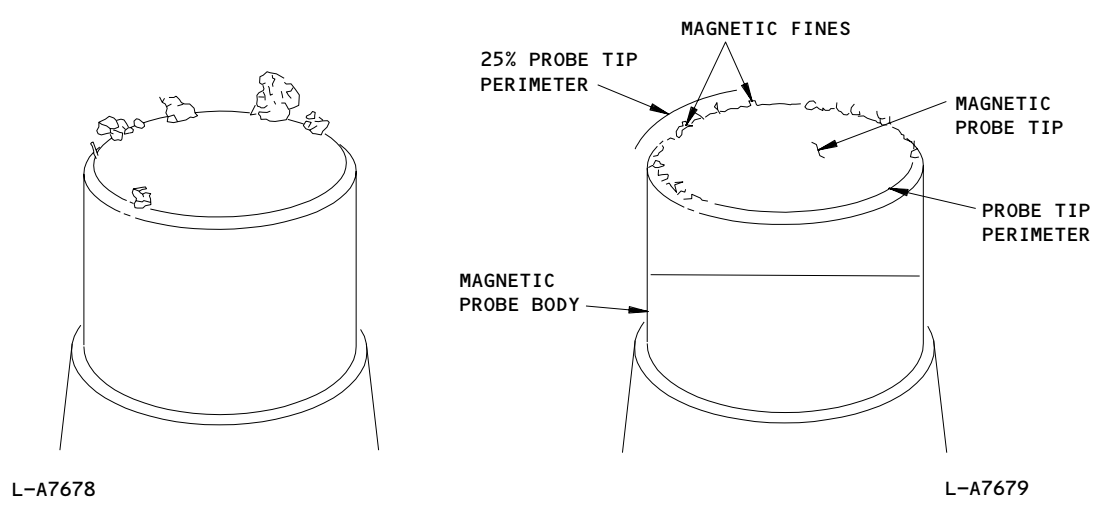
79-21-10

N01

Page 601
Aug 22/05



MAGNETIC CHIP DETECTOR ASSEMBLY

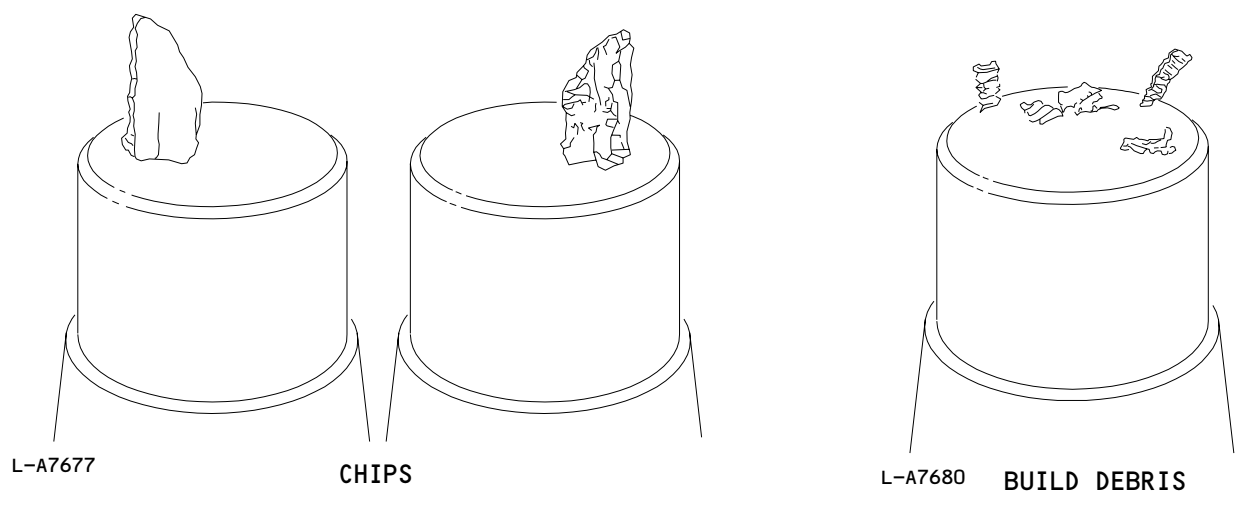


L-A7678

L-A7679

FLAKES

MAGNETIC FINES



L-A7677

L-A7680

CHIPS

BUILD DEBRIS

**Magnetic Chip Detector Assembly
Figure 601**

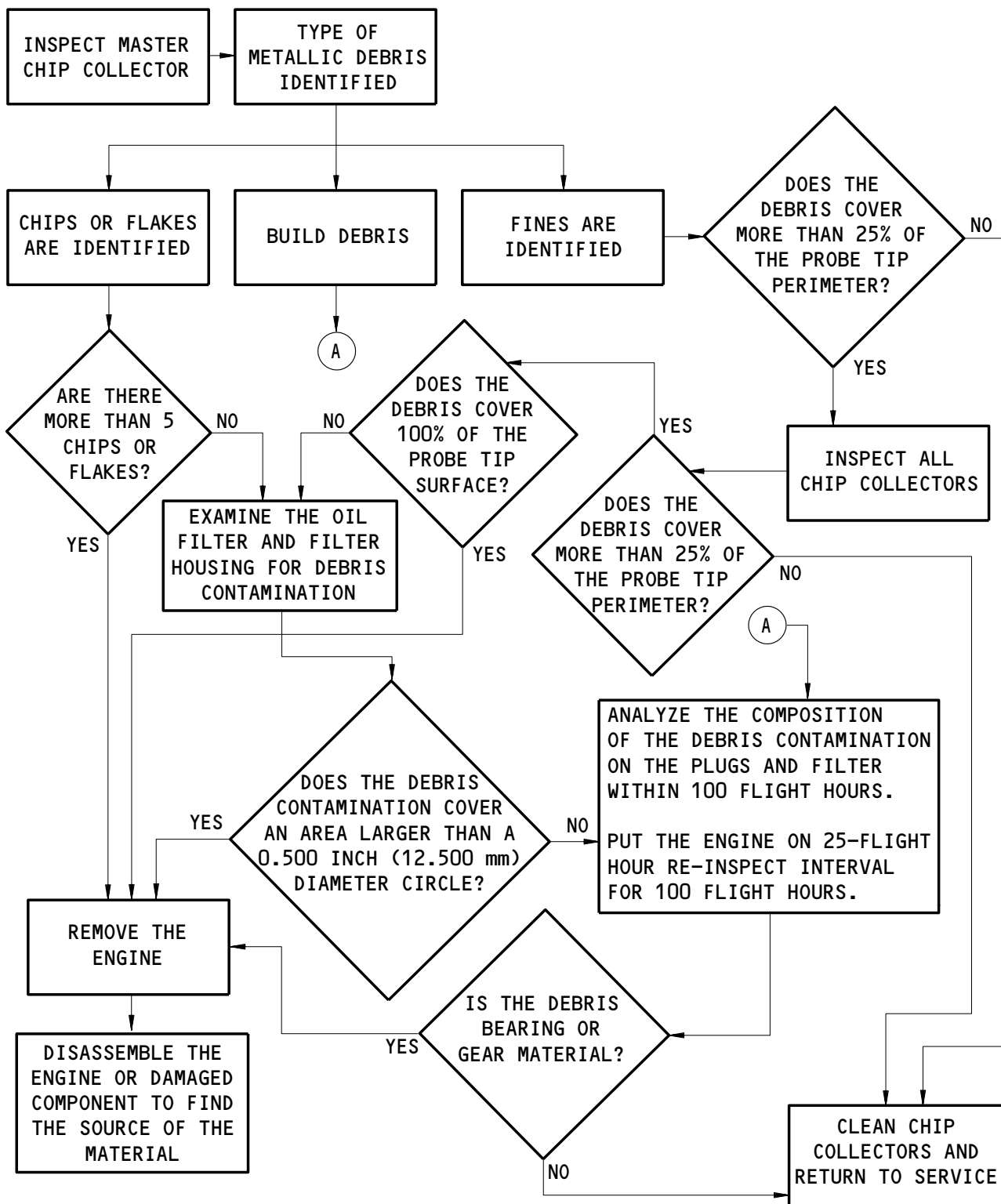
EFFECTIVITY	ALL
-------------	-----

79-21-10

N01

Page 602
Aug 22/05

314796



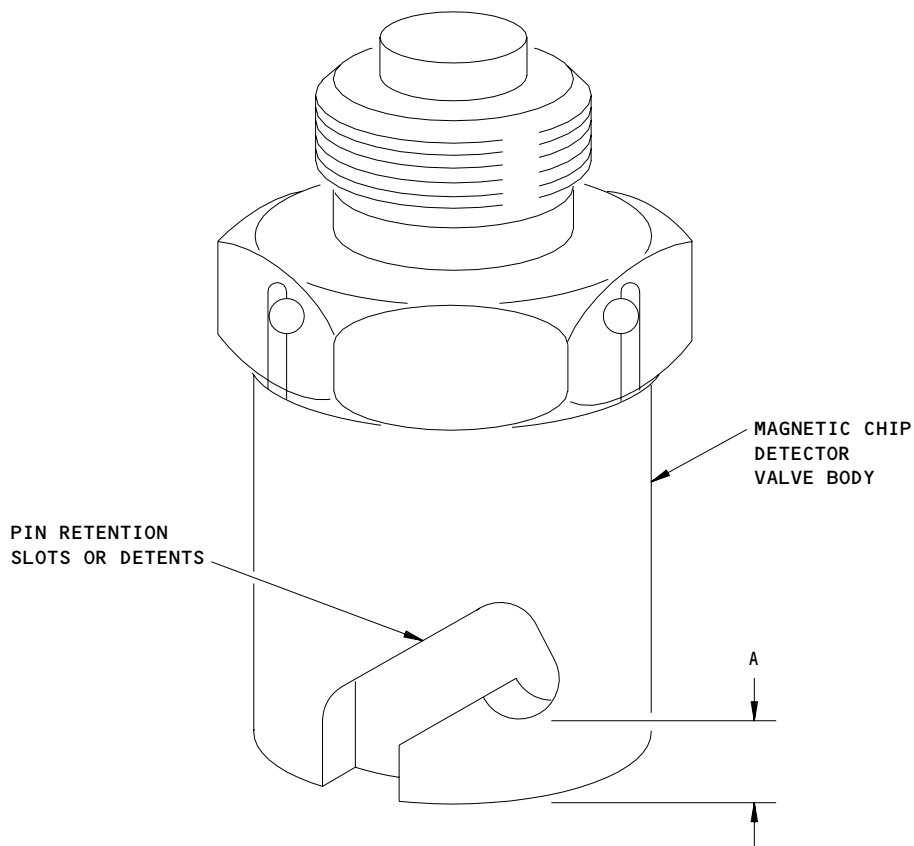
Evaluation Chart for Magnetic Fines, Chips and Flakes
Figure 602

EFFECTIVITY —————
ALL

79-21-10

N01

Page 603
Aug 22/05



L-D3990 (0308)

Magnetic Chip Detector Valve Body Inspection
Figure 603

EFFECTIVITY	
	ALL

79-21-10

N01

Page 604
Aug 22/08

1576957

- D. Consumable Materials
 - (1) B00130 Isopropyl Alcohol
 - (2) B00787 Solvent, Petroleum (PMC 9001)

- E. Access
 - (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
 - (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 416AR Fan Reverser (Right)
 - 425AL Fan Reverser (Left)
 - 426AR Fan Reverser (Right)

F. Prepare to Do the Inspection

S 016-021-N00

- (1) Open the fan cowl panels (AMM 71-11-04/201).

S 046-022-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 016-023-N00

- (3) Open the core cowl panels (AMM 71-11-06/201).

S 016-024-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the thrust reversers (AMM 78-31-00/201).

G. Do the Inspection of the Magnetic Chip Detectors

S 026-051-N00

CAUTION: DO NOT PERMIT THE MAGNETS ON THE PROBES TO TOUCH EACH OTHER OR THEY CAN BECOME DEMAGNETIZED.

- (1) Remove the magnetic chip detector (MCD) probe from the valve (AMM 79-21-10/401).
 - (a) Make a record of the position of each probe.
 - (b) If oil leaks from the valve, replace the valve packing.

EFFECTIVITY

ALL

79-21-10

N01

Page 605
Aug 22/08

- (c) If the valve still leaks with the new valve packing, replace the valve (AMM 79-21-10/401).

S 216-053-N00

- (2) Inspect the Magnetic Chip Detector Valve Body.
 - (a) Inspect the three retention grooves on the valve bodies with Part Numbers 50R499 or 50R501.
 - 1) Examine the bottom of the three retention grooves in the valve body wall for wear (Fig. 603).
 - 2) If wear is found, measure the thickness of metal at the bottom of the three retention grooves. See Dimension A on Figure 603. Minimum serviceable thickness is 0.130 inch (3.302 mm).

NOTE: You can measure the thickness of the metal at the bottom of the three detents with a caliper that can measure up to 0.150 in (3.810 mm).

- 3) If the valve body has less than the minimum thickness of material at the bottom of the retention grooves, you must replace the magnetic chip detector valve and probe as specified below.
 - a) If dimension A is less than 0.100 inch (2.540 mm) the magnetic chip detector valve body and probe are not serviceable. You must replace the magnetic chip detector.
 - b) If dimension A is more than 0.100 inch (2.540 mm) but less than 0.130 inch (3.302 mm), and if a new magnetic chip detector is not available, replace the magnetic chip detector at the next A-check.
 - c) Do this procedure if you replace the magnetic chip detector valve and probe: (AMM 79-21-10/401).

S 116-054-N00

- (3) If the probe is covered by a drop of oil, apply a few drops of isopropyl alcohol to the probe tip.
 - (a) The alcohol will help break the surface tension of the oil and allow the oil to flow down the body of the probe.
 - (b) After a few minutes, metallic particles are expected to be observed on the probe tip.

NOTE: This condition is shown in the photo aid of tool PWA 107014 (Condition C). It is usually the result of fine metallic particles holding the oil near the collector and the reason for adding a few drops of isopropyl alcohol to the probe tip.

EFFECTIVITY

ALL

79-21-10

N01

Page 606
Aug 22/08

S 216-055-N00

- (4) In the steps that follow, if there is a question of what type of debris contamination you see, obey the action for the stricter interpretation.

S 216-037-N00

- (5) Find the type of contamination that is found on the MCD probe (Fig. 601):

Build (residual) debris

NOTE: The PWA 107014 Photo Aid (see condition A) can be used to see actual photos of different conditions.

- (a) Description: Shown as curly strands steel wool, shavings, or burrs.
The build debris normally collects during the early stages (first 1000 hours) of engine operation after the assembly of the engine. This is the remaining material which stays in or goes into the engine during the assembly. The build debris usually comes from the machine operation when the components are made or assembled.
- (b) Source: This is residual material that is accidentally left in or enters the engine at assembly. Build debris typically comes from machining operations when the components are made or assembled.
- (c) Action: The engine can continue in service. Obey the usual magnetic probe inspection interval.
1) After 1000 hours of post build operation, do an analysis of chips or flakes (these are not specified as build debris).

Magnetic fines

NOTE: The PWA 107014 Photo Aid (see conditions B and E) can be used to see actual photos of different conditions.

- (d) Description: Shown as very small particles less than 0.010 inch (0.254 mm) in length and with different widths. They can show as a black or gray sludge or fuzz on the magnetic probe. When the oil on the probe is removed, they show as dull hairlike slivers.
Fines are typical of low-time engines and small quantities are serviceable.
- (e) Source: When the engine components wear, they can usually cause a small quantity of fines. You can keep the engine in operation with this condition. Fines can also be caused by bearing skid and the spinning of parts such as spacers, seal plates, and shaft plugs. Bearing skid and spinning make fines at a higher rate than usual wear. You can not keep the engine in operation in this condition. Service experience shows that only the bearing for the deoiler idler gear in the main gearbox has bearing skid that will make fines.

EFFECTIVITY

ALL

79-21-10

N01

Page 607
Aug 22/08

- (f) Action: If fines are collected on the probe tip, do the steps that follow:
- 1) If the fines collected on the probe tip make up less than 25 percent of the probe tip's perimeter (see PWA 10714 Photo Aid Condition B) the engine can continue in service. Obey the usual magnetic chip detector inspection interval.
 - 2) If the fines collected on the probe tip make up more than 25 percent of the probe tip's perimeter (see PWA 10714 Photo Aid Condition E) examine the individual compartment chip collectors for debris.
 - 3) If there is debris on more than 25 percent of any of the individual probe tip's perimeter (see PWA Photo Aid, Condition E) and less than 100 percent surface coverage, do the steps that follow:
 - a) Remove the main oil filter (AMM 79-21-05/401).
 - b) Keep the oil which you drain from the housing of the main oil filter.
 - c) Flush the main oil filter with the petroleum solvent.
 - d) Put the petroleum solvent through a filter paper or a clean cloth.
 - e) Keep the debris contamination for the identification.
 - f) Install a new main oil filter (AMM 79-21-05/401).
 - g) Examine the main oil filter and the oil in the housing for metallic contamination.
 - h) If there is metallic debris contamination which is not build debris in the main oil filter and the filter housing oil, and the quantity is sufficient to make a circle which has a minimum diameter of 0.50 inch (12.700 mm), do the steps that follow:
 1. Remove the engine from operation.
 2. Disassemble the engine and find the source of the debris contamination.
 - i) If there is metallic debris contamination which is not build debris, and the quantity is not sufficient to make a circle which has a minimum diameter of 0.50 inch (12.700 mm), do the steps that follow:
 1. Continue the engine in service, and examine the MCD probe each 25 hours of operation for the subsequent 200 hours.
 2. Collect the contamination from the MCD probe, and do an analysis of the material within 200 hours of operation.
 3. If there is contamination from the bearings or gear material, remove the engine from operation. disassemble the engine, and find the source of the material.

EFFECTIVITY

ALL

79-21-10

N01

Page 608
Aug 22/08

4. If the debris contamination is the same or increases in consecutive magnetic probe inspections during the 200 flight hour inspection interval, remove the engine from service. Disassemble the engine to find the source of the debris contamination.
 5. If you do not find bearing or gear material, and if the quantity of the contamination decreases in each consecutive inspection of the probes during the 200 hours, put the engine back into operation.
- 4) If any individual MCD probe has 100 percent coverage of fines, the engine must be removed from service.

Chips or flakes

NOTE: The PWA 107014 Photo Aid (see conditions D and F) can be used to see actual photos of different conditions.

- (g) Description of chips: Chips are very thick pieces of metal where one surface is usually smooth and the other surface is rough or irregular.
- (h) Source of chips: The chips from ball and roller bearings are usually smooth and shiny on one side. This side can show the initial manufacture process. The opposite side is not as shiny and looks like a fracture has occurred. The chips from gear-teeth have one shiny side with machine marks and one side that is smooth and not shiny.
- (i) Description of Flakes: Flakes have an irregular shape, but are usually flat and shiny on the two sides. You must do an analysis of the flakes to know their source.
- (j) Source of flakes: The flakes come from ball bearings, roller bearings, and gear-teeth. The flakes from the ball bearings and the roller bearings are usually between 0.002-0.010 inch (0.051-0.254 mm) in thickness. They usually have an irregular, plate-like shape and have radial cracks. When you clean the flake, it is more shiny than other types of debris contamination. The flakes from the gear-teeth are shiny, long, thin, and can have an irregular shape. They are usually thicker and not as shiny as the flakes from the ball or roller bearing.
- (k) If there are five or more flakes or chips on a MCD probe, the engine is not serviceable. Disassemble the engine and find the source of the debris contamination.
 - 1) Do a spectrographic analysis of the debris contamination. Disassemble the engine and find the source of the debris contamination.
- (l) Combination of chips/flakes and fines: If a combination of both chips/flakes and fines are found on a probe, follow the chip/flakes path shown in the Evaluation Chart, Fig. 602.
- (m) If there are less than five chips or flakes on a probe, do the steps that follow:
 - 1) Remove the main oil filter (AMM 79-21-05/401).

EFFECTIVITY

ALL

79-21-10

N01

Page 609
Aug 22/08

- 2) Keep the oil which you drain from the housing of the main oil filter.
- 3) Flush the main oil filter with the petroleum solvent.
- 4) Put the petroleum solvent through a filter paper or a clean cloth.
 - a) Keep the debris contamination for the identification.
- 5) Install a new main oil filter (AMM 79-21-05/401).
- 6) Examine the (used) main oil filter and the oil in the housing for metallic contamination.
 - a) If there is metallic debris contamination which is not build debris in the main oil filter and the filter housing oil, and the quantity is sufficient to make a circle which has a minimum diameter of 0.50 inch (12.700 mm), do the steps that follow:
 1. Remove the engine from operation.
 2. Disassemble the engine and find the source of the debris contamination.
 - b) If there is metallic debris contamination which is not build debris, and the quantity is not sufficient to make a circle which has a minimum diameter of 0.50 inch (12.700 mm), do the steps that follow:
 1. Continue the engine in service, and examine the MCD probe each 25 hours of operation for the subsequent 200 hours.
 2. Collect the contamination from the MCD probe, and do an analysis of the material within 200 hours of operation.
 3. If there is contamination from the bearings or gear material, remove the engine from operation. Disassemble the engine, and find the source of the material.
 4. If the debris contamination is the same or increases in consecutive magnetic probe inspections during the 200 flight hour inspection interval, remove the engine from service. Disassemble the engine to find the source of the debris contamination.
 5. If you do not find bearing or gear material, and if the quantity of the contamination decreases in each consecutive inspection of the probes during the 200 hours, put the engine back into operation.

S 246-041-N00

- (6) Do a check of the magnetic strength of the MCD Probe with one of the steps that follow:

EFFECTIVITY

ALL

79-21-10

N01

Page 610
Aug 22/08

CAUTION: DO NOT LET THE MAGNETS ON THE MCD PROBE TOUCH EACH OTHER.
IF THE MAGNETS TOUCH EACH OTHER, THEY CAN BECOME
DEMAGNETIZED AND MUST BE REPLACED.

- (a) Preferred method -
Have the magnetic probe pick up a 1.00 inch (25.400 mm)
diameter carbon steel ball bearing (if the ball is not
available, do the optional method below).
- (b) Optional method -
Hang the MCD probe from a horizontal steel surface so that the
magnet has to fully support the weight of the probe.

NOTE: This is not the preferred strength test but can be used
at locations that do not have a 1.00 inch (25.400 mm)
diameter carbon steel bearing to perform the preferred
method.

S 966-042-N00

- (7) If the MCD probe does not operate correctly, replace the MCD probe
(AMM 79-21-10/401).

S 116-056-N00

- (8) Clean the MCD probe with the solvent.
 - (a) Make the MCD probe dry with a clean cloth.
 - (b) Make sure you remove all the debris contamination.

S 966-066-N00

- (9) Replace the packing on the probes.

NOTE: The shape of the grip and the quantity of packings can be
different from what is shown in the figure.

S 426-065-N00

- (10) Install the MCD probe into the applicable valve (AMM 79-21-10/401).
- H. Put the Airplane Back to Its Usual Condition

S 416-061-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE
THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY
TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the thrust reversers (AMM 78-31-00/201).

S 416-062-N00

- (2) Close the core cowl panels (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-21-10

N01

Page 611
Aug 22/08

- S 416-063-N00
(3) Close the fan cowl panels (AMM 71-11-04/201).
- S 446-064-N00
(4) Do the activation procedure for the thrust reversers
(AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-10

N01

Page 612
Aug 22/08

MAGNETIC CHIP DETECTOR – CLEANING/PAINTING

1. General

- A. This procedure has the instructions to clean the probe of the magnetic chip detectors. All magnetic chip detectors are cleaned with the same procedure. You must examine the magnetic chip detectors for metal particles before they are cleaned.

TASK 79-21-10-117-001-N00

2. Clean the Magnetic Chip Detectors

A. Consumable Materials

- (1) B00081 Solvent, Trichloroethylene – PMC 9015

B. References

- (1) AMM 79-21-10/401, Magnetic Chip Detectors
- (2) AMM 79-21-10/601, Magnetic Chip Detectors

C. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 416AR Fan Reverser (Right)
- 425AL Fan Reverser (Left)
- 426AR Fan Reverser (Right)

D. Clean the Magnetic Chip Detectors

S 027-002-N00

- (1) Remove the probe of the magnetic chip detector from the housing of the magnetic chip detectors (AMM 79-21-10/401).

S 217-003-N00

- (2) Examine the magnetic chip detector and the probe for metal particles (AMM 79-21-10/601).

S 117-004-N00

- (3) Put the probe in the solvent.

EFFECTIVITY

ALL

79-21-10

N01

Page 701
Aug 22/02

- S 117-005-N00
- (4) Turn the probe in the solvent to clean off the metal particles.
- S 217-006-N00
- (5) Make the probe dry with a clean cloth.
- S 217-007-N00
- (6) Examine the probe for remaining particles.
- S 427-008-N00
- (7) Install the probe in housing of the magnetic chip detector (AMM 79-21-10/401).

EFFECTIVITY

ALL

79-21-10

N01

Page 702
Dec 22/00

NO. 3 BEARING BREATHER AND RESTRICTOR VALVE – REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) A removal of the breather restrictor valve for the No. 3 bearing compartment.
 - (2) An installation of the breather restrictor valve for the No. 3 bearing compartment.
- B. There is one breather restrictor valve (referred to as the valve) attached to the front of the deoiler housing at the left front side of the main gearbox.

TASK 79-21-11-024-009-N00

2. Removal of the No. 3 Bearing Compartment Breather Restrictor Valve

A. Equipment

- (1) Access Platform
- (2) Container - 5-gallon capacity, used for oil.

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 413AL Fan Cowl Panel (Left)
 - 415AL Fan Reverser (Left)
 - 423AL Fan Cowl Panel (Left)
 - 425AL Fan Reverser (Left)

D. Prepare to Remove the NO. 3 Bearing Breather Restrictor Valve.

S 044-016-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-11

N01

Page 401
Dec 22/00

S 014-017-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 014-023-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-015-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

S 494-005-N00

- (5) Put the access platform in its position.

E. Removal of the No. 3 Bearing Compartment Breather Restrictor Valve (Fig. 401).

S 424-014-N00

- (1) Remove the valve (3) with the steps that follow:

NOTE: You will find the valve (3) attached to the left front side of the main gearbox. It is at the approximate 8 o'clock position.

- (a) Remove the lockwire from the tube nut on the air supply tube (6) that is attached to the No. 3 breather and restrictor valve.
- (b) Disconnect the tube nut (6) from the restrictor valve (3).
- (c) Remove the three bolts (1) which attach the No. 3 Bearing breather tube (2) to the restrictor valve (3).
- (d) Remove the face seal (7).
- (e) Remove the three bolts (4) that attach the valve (3) to the deoiler.
- (f) Remove the restrictor valve (3) from the gear box.

S 494-009-N00

CAUTION: INSTALL PROTECTION COVERS ON ALL OPENINGS AS SOON AS POSSIBLE. IF YOU DO NOT INSTALL THE PROTECTION COVERS, DAMAGE TO THE ENGINE CAN OCCUR.

- (2) Make sure you install all necessary protection covers to the openings.

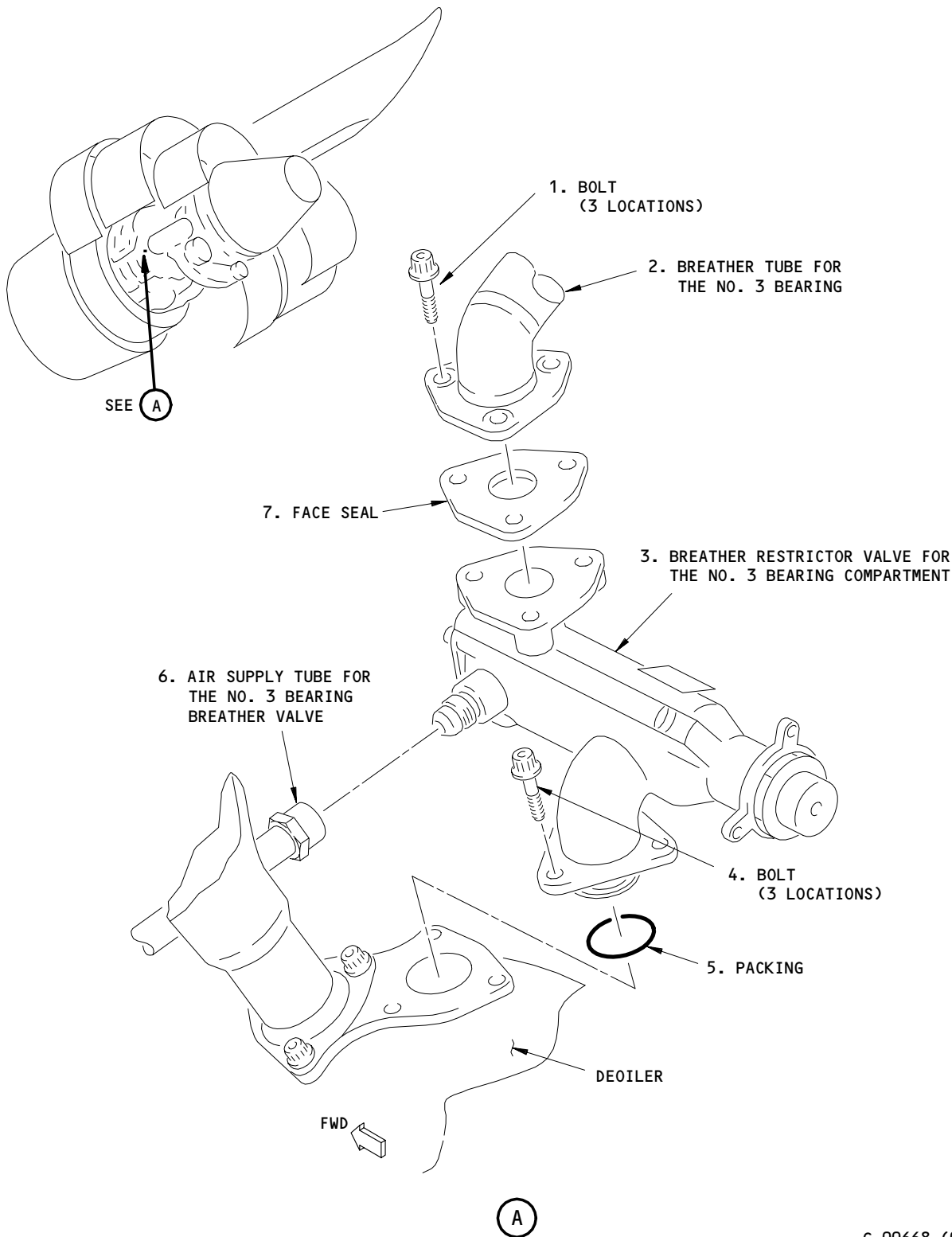
EFFECTIVITY

ALL

79-21-11

N01

Page 402
Dec 22/00



G-00668 (0000)

No. 3 Bearing Compartment Breather Restrictor Valve Installation
Figure 401

EFFECTIVITY	
	ALL

79-21-11

N01

Page 403
May 10/93

TASK 79-21-11-424-012-N00

3. No. 3 Bearing Compartment Breather Restrictor Valve Installation

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

- (2) Access Platform

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) D00405 Compound, Antigalling - PWA 550-3
- (3) G02332 Ferrule, Safety Cable (P05-292)
- (4) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (5) G02335 Cable, Safety (P05-291)

C. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

D. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

- (2) Access Panels

- 413AL Fan Cowl Panel (Left)
- 415AL Fan Reverser (Left)
- 423AL Fan Cowl Panel (Left)
- 425AL Fan Reverser (Left)

E. Installation of the No. 3 Bearing Compartment Breather Restrictor Valve (Fig. 401)

S 424-013-N00

- (1) Install the No. 3 bearing compartment breather restrictor valve (3) as follows:
 - (a) Remove the protective covers from the openings.
 - (b) Apply engine oil to the new packing (5) and to the bolts (1, 4).
 - (c) Install the new packing (5) to the groove on the elbow of the valve (3).

EFFECTIVITY

ALL

79-21-11

N01

Page 404
Dec 22/00

- (d) Install the restrictor valve (3) to the three-hole mount pad on the deoiler.

NOTE: The mount pad is on the front right side of the gear box.

- 1) Apply engine oil to the bolts (4).
- 2) Attach the valve (3) with bolts (4) and tighten with them your hands.
- (e) Install the face seal (7) between the upper three hole-pad on the restrictor valve and the No. 3 bearing breather tube (2).
 - 1) Attach the tube (2) to the valve (3) with the bolts (1).
 - a) Lubricate the bolt threads (1) with engine oil and tighten them with your hand.
- (f) Lubricate the tube nut (6) of the air supply tube (6) with antigalling compound.
 - 1) Connect the tube (6) to the restrictor valve (3) and tighten it with your hand.
- (g) Torque the three bolts (4) that attach the valve (3) to the deoiler to 85-95 pound-inches (9.6-10.7 newton-meters).
- (h) Torque the bolts (1) that attach the No. 3 bearing breather tube (2) to the restrictor valve (3) to 85-95 pound-inches (9.6- 10.7 newton-meters).
- (i) Torque the tube nut (6) to 200-225 pound-inches (22.6-25.4 newton-meters).
 - 1) Install lockwire or safety cable and safety cable ferrule to the tube nut (6).

F. Put the Airplane Back to Its Usual Condition

S 034-018-N00

- (1) Make sure the work area is clean.
 - (a) Remove all tools and other items.

S 094-019-N00

- (2) Remove the access platform.

S 414-020-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (3) Close the left thrust reverser (AMM 78-31-00/201).

S 414-025-N00

- (4) Close the left core cowl panel (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-21-11

N01

Page 405
Dec 22/00

S 414-024-N00
(5) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-021-N00
(6) Do the activation procedure for the thrust reverser
(AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-11

N01

Page 406
Feb 10/94

LAST CHANCE OIL STRAINERS - REMOVAL/INSTALLATION

1. General

- A. This procedure gives instruction to remove and install the last chance oil strainers.
- B. There are four last chance oil strainers installed in the oil pressure supply tubes that follow:
 - (1) The pressure manifold for the No. 1, 1.5, and 2 bearing to the rear of the intermediate case at approximately the 9 o'clock position
 - (2) The pressure manifold for the main and angle gearbox on the top of the fuel/oil cooler at approximately the 9 o'clock position
 - (3) The pressure manifold for the No. 3 bearing to the rear of the fuel/oil cooler at approximately the 9 o'clock position
 - (4) The pressure manifold for the No. 4 bearing on the turbine exhaust case between the flanges R and S at the 10:30 o'clock position
- C. The procedures necessary for the removal/installation of the No. 1, 1.5, and 2, or No. 3 (PRE-PW-SB 79-52) last chance oil strainer are the same and the instructions are given together. The procedures necessary for the removal/installation of the main and angle gearbox or last chance oil strainer for the No. 4 bearing are given in different instructions for each strainer.
- D. You can get access to the last chance oil strainers through the left thrust reverser.

TASK 79-21-16-024-001-N00

2. Remove the No. 1, 1.5, and 2 Bearing, or No. 3 Bearing (PRE-PW-SB 79-52) Last Chance Oil Strainers

A. Equipment

- (1) Container - 1 U.S. gallon (4 liter) capacity, used to catch the oil
- (2) PWA 85518 - Puller, Pratt & Whitney, Commercial Products Division 400 Main Street, East Hartford, CT 06108

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-16/601, Last Chance Oil Strainers

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 417AL Core Cowl (Left)
 - 425AL Fan Reverser (Left)
 - 427AL Core Cowl (Left)

EFFECTIVITY

ALL

79-21-16

N01

Page 401
Dec 22/00

D. Prepare to Remove the Last Chance Oil Strainers

S 044-003-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 014-002-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the Last Chance Oil Strainers (Fig. 401)

S 494-024-N00

- (1) Put the container below the strainer to collect the remaining oil.

S 024-006-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER THE ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (2) Remove the last chance oil strainer (2) with the steps that follow:

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE HOUSING OF THE LAST CHANCE OIL STRAINER WHEN YOU LOOSEN THE LAST CHANCE OIL STRAINER. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (a) While you hold the housing of the last chance oil strainer with a wrench, remove the last chance oil strainer (2) from the housing.
 - 1) Catch the oil in a container.
- (b) Discard the packing (1) from the last chance oil strainer (2).

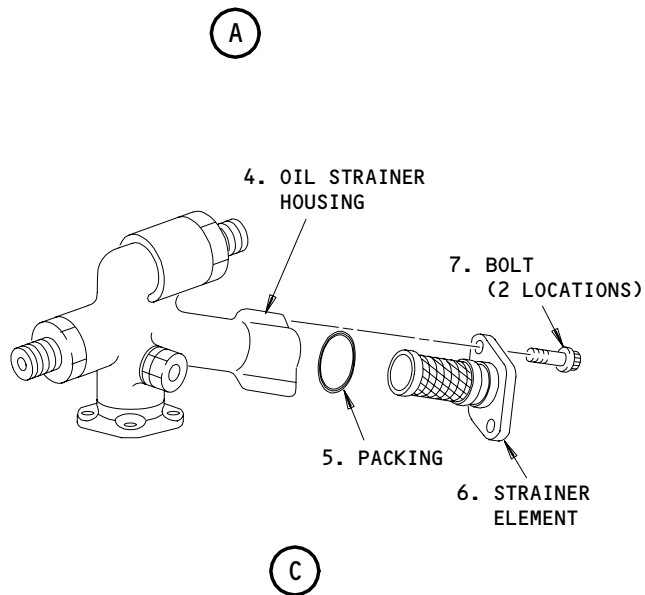
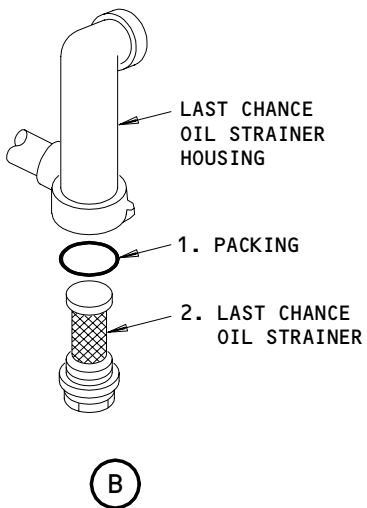
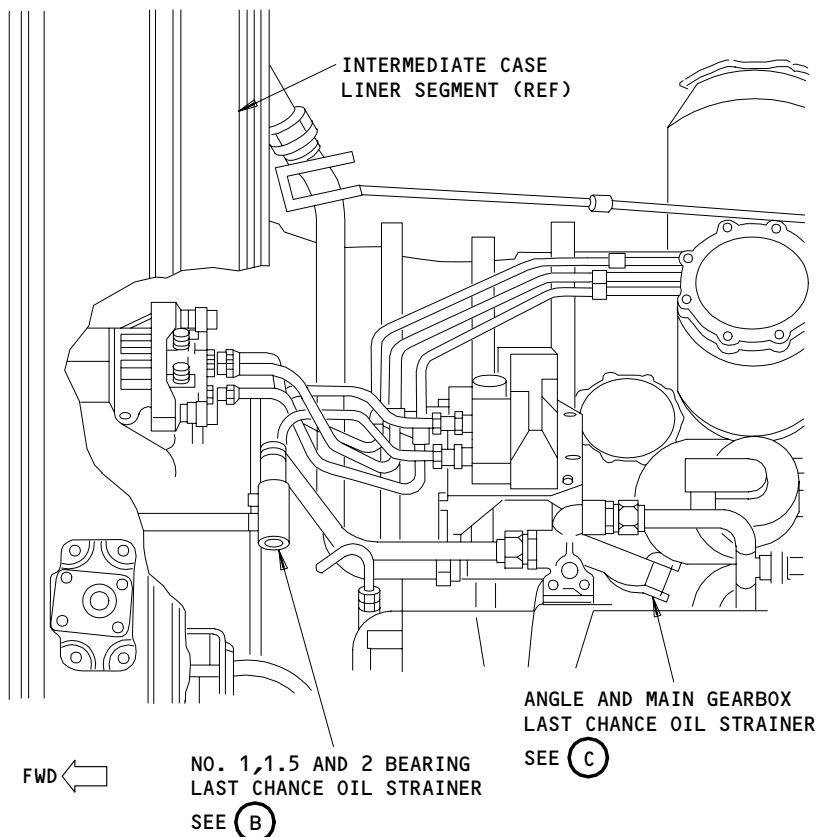
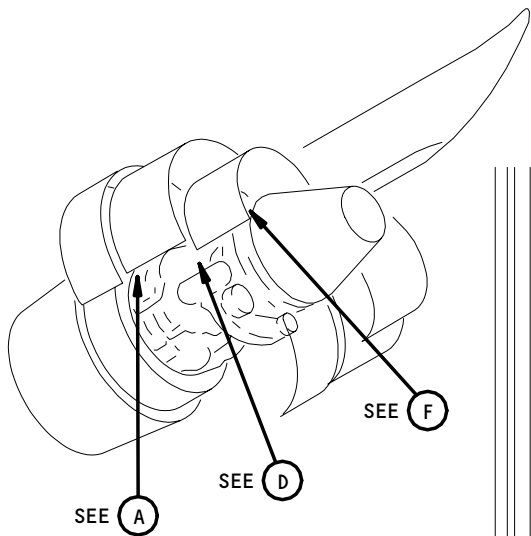
EFFECTIVITY

ALL

79-21-16

N01

Page 402
Dec 22/07



Last Chance Oil Strainer Installation
Figure 401 (Sheet 1)

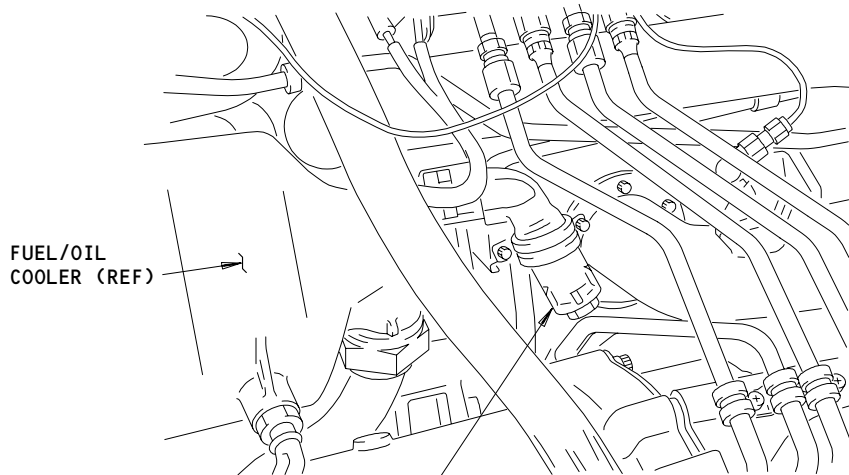
EFFECTIVITY	
	ALL

79-21-16

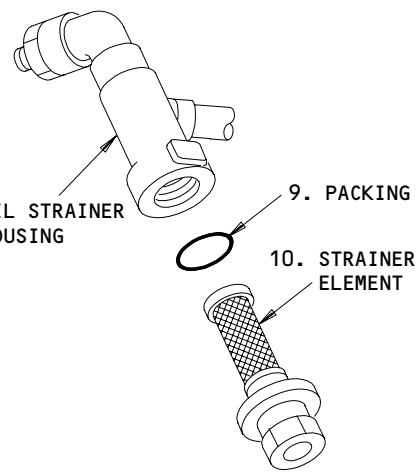
N01

Page 403
Aug 10/93

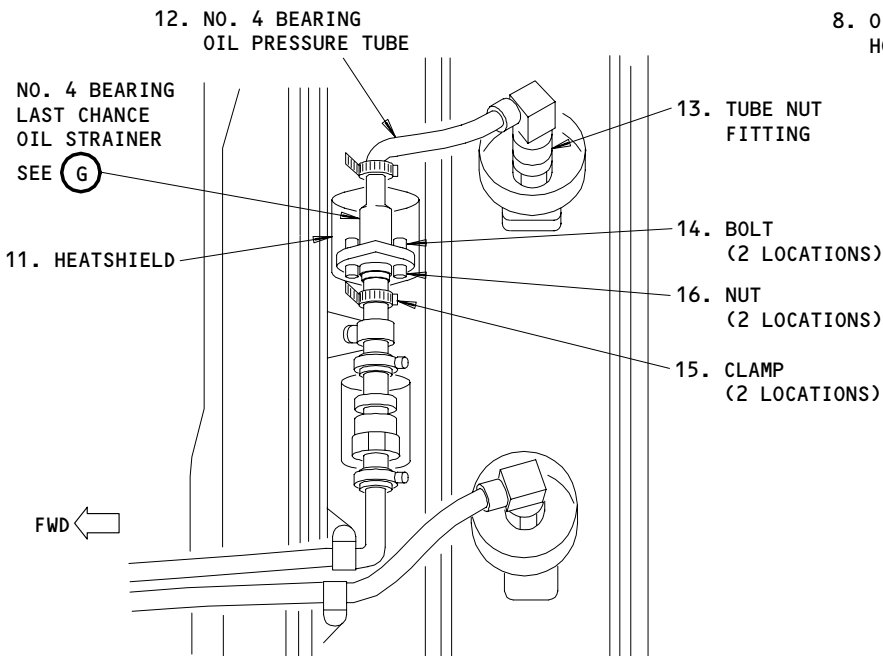
271026



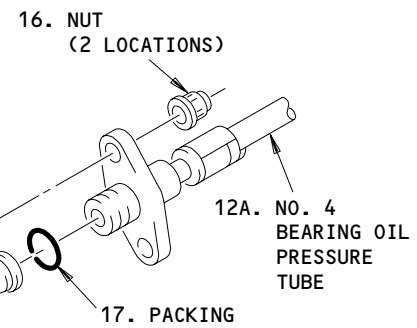
FWD ←
NO. 3 BEARING LAST CHANCE OIL STRAINER
SEE (E) (D)



(E) 1



(F)



1 ENGINES WITHOUT PW SB 79-52

(G)

Last Chance Oil Strainer Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
ALL	

79-21-16

271057

S 024-008-N00

- (3) Remove the last chance oil strainer (10) for the No. 3 bearing with the steps that follow:

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE HOUSING OF THE LAST CHANCE OIL STRAINER WHEN YOU LOOSEN THE LAST CHANCE OIL STRAINER. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (a) While you hold the housing (8) of the last chance oil strainer (10) with a wrench, remove the last chance oil strainer (10) from the housing.
1) Catch the oil in a container.
- (b) Discard the packing (9) from the last chance oil strainer (10).

TASK 79-21-16-024-031-N00

3. ENGINES POST-PW-SB 79-52;

Remove the No. 3 Bearing Oil Pressure Strainer (Fig. 402)

A. Equipment

- (1) Container - 1 U.S. gallon (4 liter) capacity, used to catch the oil
- (2) PWA 85518 - Puller, Pratt & Whitney, Commercial Products Division 400 Main Street, East Hartford, CT 06108

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-16/601, Last Chance Oil Strainers

C. Access

- (1) Location Zones
- | | |
|-----|--------------|
| 410 | Left Engine |
| 420 | Right Engine |
- (2) Access Panels
- | | |
|-------|---------------------|
| 415AL | Fan Reverser (Left) |
| 417AL | Core Cowl (Left) |
| 425AL | Fan Reverser (Left) |
| 427AL | Core Cowl (Left) |

D. Prepare to Remove the No. 3 Bearing Oil Strainer

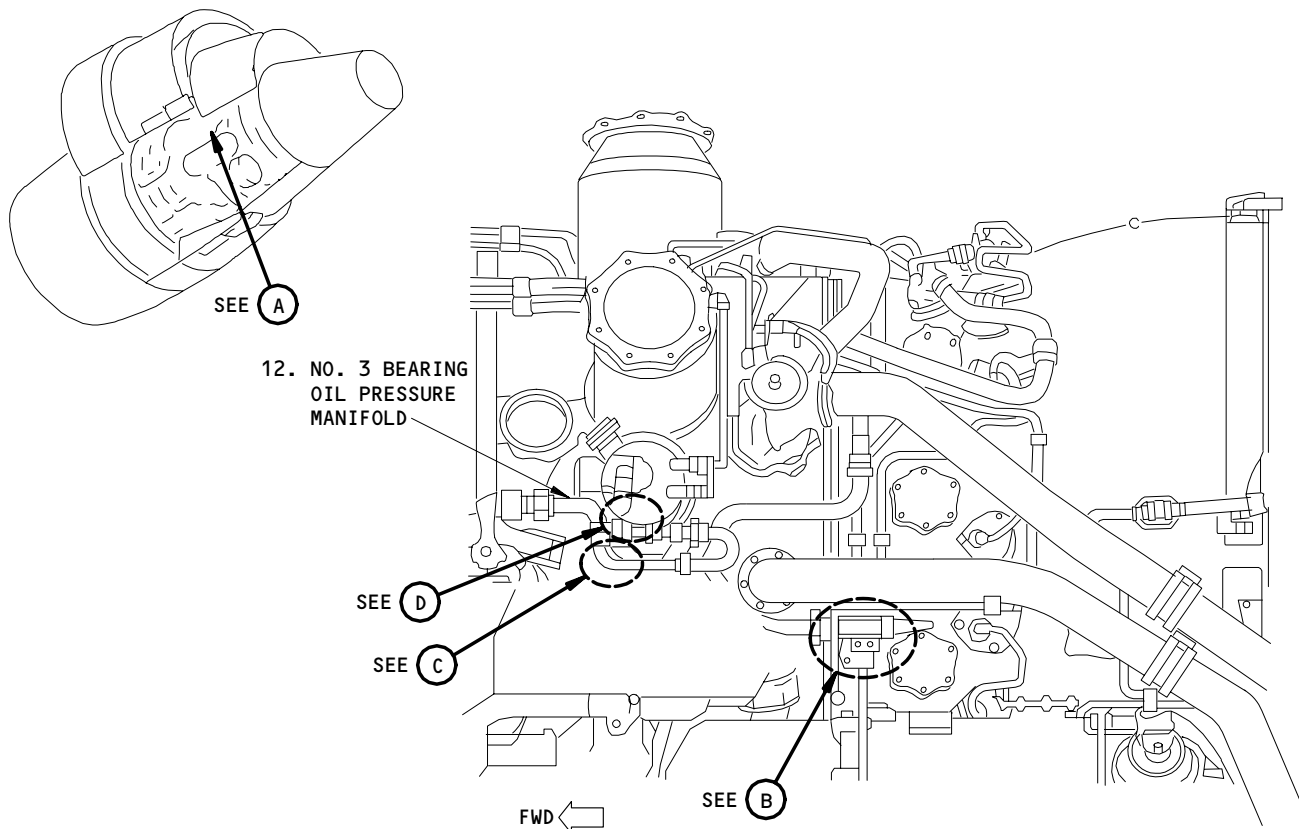
EFFECTIVITY

ALL

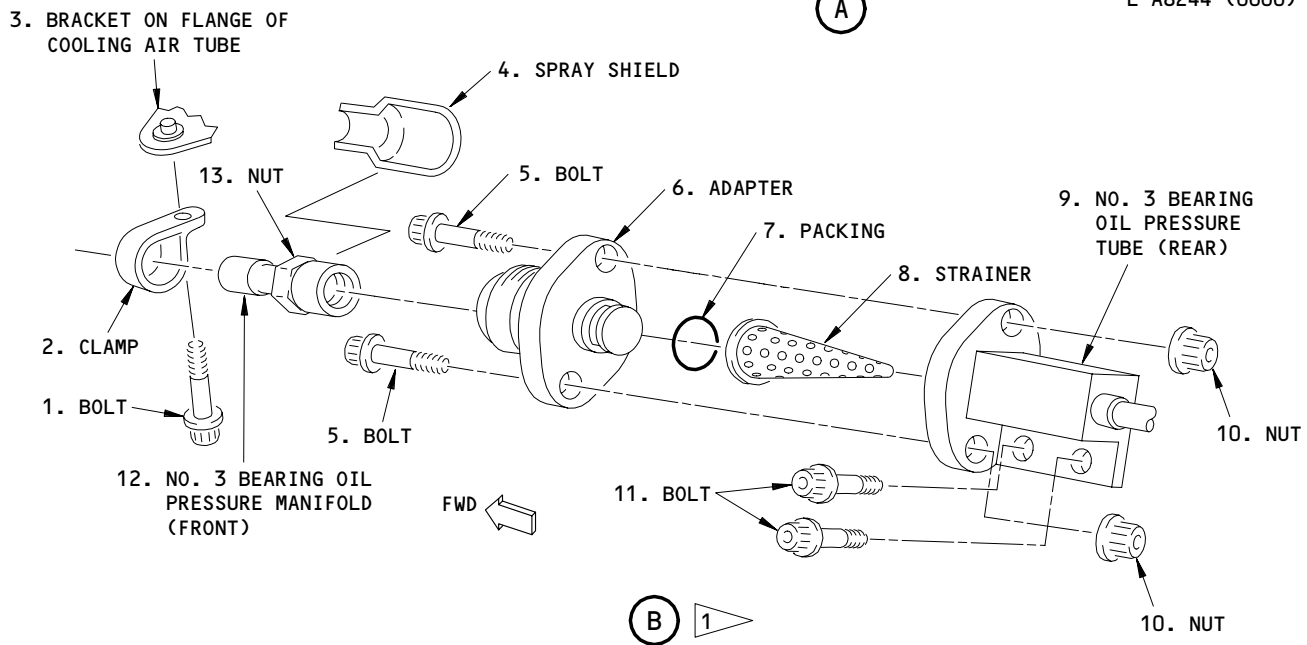
79-21-16

N01

Page 405
Dec 22/00



A L-A8244 (0000)



B 1 L-A8245 (0000)

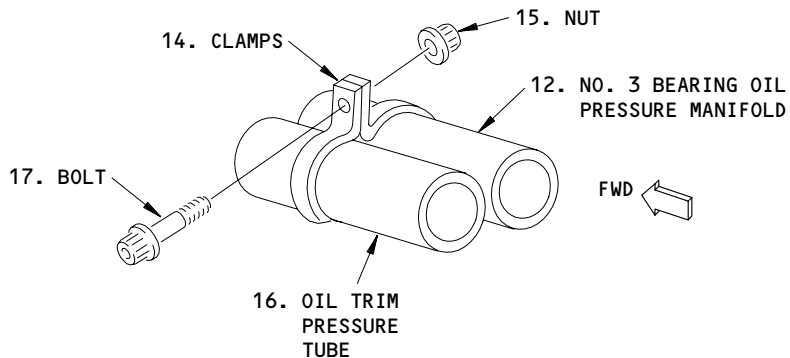
1 ENGINES WITH PW SB 79-52

No. 3 Bearing Oil Pressure Strainer
Figure 402 (Sheet 1)

EFFECTIVITY	
	ALL

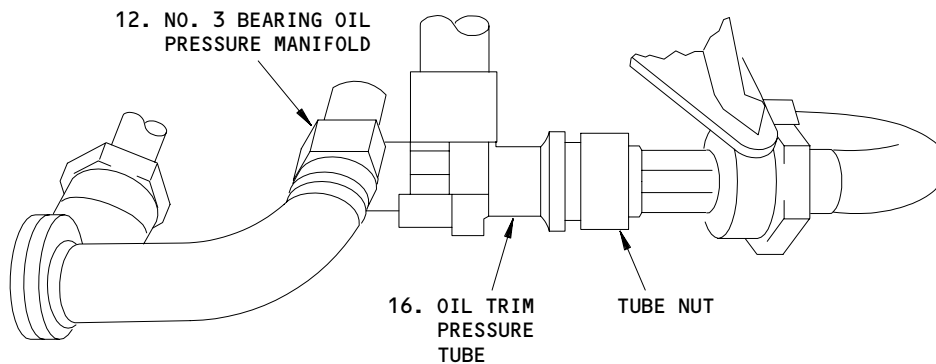
79-21-16

C49837



(C)

L-A8245 (0000)



(D)

L-A8246 (0000)

No. 3 Bearing Oil Pressure Strainer
Figure 402 (Sheet 2)

EFFECTIVITY	
	ALL

79-21-16

N01

Page 407
Aug 10/93

C49729

S 044-032-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 014-035-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 014-034-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-033-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the No. 3 Bearing Oil Pressure Strainer

S 034-036-N00

- (1) Do the steps that follow to remove the No. 3 Bearing oil pressure strainer.
 - (a) Remove the bolt (1) from the clamp (2) that attaches the No. 3 bearing oil pressure manifold (12) and spray shield (4) to a bracket (3).

NOTE: These parts are on the high compressor at approximately the 9 o'clock position.

- 1) Remove the bolt (1), clamp (2), and spray shield (4).
- (b) Remove the lockwire.
- (c) Disconnect the manifold nut (13) from the adapter (6) in the No. 3 bearing oil pressure tube.
 - 1) Put the container below the adapter (6) to collect the remaining oil.
- (d) Remove the bolts (11) that attach the ferrul end of the tube (9) to a bracket on Flange K.
- (e) Remove the lockwire from the bolts (5) that attach the adapter (6) to the strainer (8) into the ferrul end of the tube (9).
 - 1) Remove the bolts (5) and nuts (10) from the adapter (6).

EFFECTIVITY

ALL

79-21-16

N01

Page 408
Dec 22/00

- (f) Remove a nut (15) and bolt (17) that attach clamps (14) together on the oil pressure trim tube (16) and the No. 3 bearing oil pressure manifold (12).

NOTE: The clamps are located just above the fuel/oil cooler. The clamps can stay with the tube and manifold

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE PARTS THAT ARE CONNECTED WHEN YOU LOOSEN MANIFOLDS AND TUBES. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (g) Remove the lockwire from the tube nuts on the oil trim pressure tube (16).
 - 1) Disconnect the tube nuts.
- (h) Remove the lockwire from the tube nut on the No. 3 bearing oil pressure manifold (12).

NOTE: The manifold is attached to the bearing strainer element housing on top of the fuel/oil cooler.

- 1) Remove the retainer and packing and discard them.
- 2) Remove the oil trim pressure tube (16).
- (i) With the No. 3 bearing oil pressure manifold (12) sufficiently loose, remove the adapter (6) from the No. 3 bearing oil pressure tube (9).
 - 1) Remove the packing from the adapter.
- (j) Remove the strainer (8) from the ferrule end of the tube (9).
- (k) Install the protective covers.

S 204-057-N00

- (2) Do an inspection of the strainer (AMM 72-00-00/201).
 - (a) Clean the strainer if it is necessary.

TASK 79-21-16-034-037-N00

4. Remove the Main and Angle Gearbox Last Chance Oil Strainers (Fig. 401)

A. Equipment

- (1) Container - 1 U.S. gallon (4 liter) capacity, used to catch the oil
- (2) PWA 85518 - Puller, Pratt & Whitney, Commercial Products Division 400 Main Street, East Hartford, CT 06108

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-16/601, Last Chance Oil Strainers

EFFECTIVITY

ALL

79-21-16

N01

Page 409
Dec 22/00

C. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 417AL Core Cowl (Left)
- 425AL Fan Reverser (Left)
- 427AL Core Cowl (Left)

D. Prepare to Remove the Last Chance Oil Strainers

S 044-013-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 014-014-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 014-015-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-016-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the Last Chance Oil Strainers (Fig. 401)

S 494-017-N00

- (1) Put the container below the oil strainer housing (4) to collect the remaining oil.

EFFECTIVITY

ALL

79-21-16

N01

Page 410
Dec 22/00

S 024-038-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER THE ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (2) Remove the last chance oil strainer (6) for the angle gearbox and the main gearbox with the steps that follow:
 - (a) Remove the bolts (7) which attach the strainer element (6) to the oil strainer housing (4).
 - (b) Use the puller to remove the strainer element (6) from the oil strainer housing (4).
 - 1) Discard the packing (5) from the strainer element (6).

TASK 79-21-16-034-039-N00

5. Remove the No. 4 Bearing Last Chance Oil Strainer (Fig. 401)

A. Equipment

- (1) Container - 1 U.S. gallon (4 liter) capacity, used to catch the oil
- (2) PWA 85518 - Puller, Pratt & Whitney, Commercial Products Division 400 Main Street, East Hartford, CT 06108

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-16/601, Last Chance Oil Strainers

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

EFFECTIVITY

ALL

79-21-16

N01

Page 411
Dec 22/00

(2) Access Panels

- 415AL Fan Reverser (Left)
- 417AL Core Cowl (Left)
- 425AL Fan Reverser (Left)
- 427AL Core Cowl (Left)

D. Prepare to Remove the Last Chance Oil Strainers

S 044-018-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS and DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 014-019-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 014-020-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-021-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Remove the Last Chance Oil Strainers (Fig. 401)

S 494-022-N00

- (1) Put the container below the strainer (18) to collect the remaining oil.

S 024-040-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER THE ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (2) Remove the last chance oil strainer (18) for the No. 4 bearing with the steps that follow:

- (a) Loosen the clamps (15) which attach the heat shield (11).

EFFECTIVITY

ALL

79-21-16

N01

Page 412
Dec 22/00

- (b) Remove the heat shield (11) from the oil pressure tube (12) for the No. 4 bearing.
- (c) Remove the bolts (14) and nuts (16) which attach the flanges of the tubes together.
 - 1) Be prepared to collect the remaining oil.
- (d) Disconnect the oil pressure tube (12) at the tube nut fitting (13).
- (e) Remove the oil pressure tube (12) from the engine.
- (f) Remove the strainer element (18) from the housing at the larger end of the oil pressure tube (12).
- (g) Discard the packing (17) from the end of the oil pressure tube (12A).

S 034-010-N00

- (3) Install the protection covers into the strainer housings.

S 214-011-N00

- (4) Examine the strainer elements for contamination (AMM 79-21-16/601).

TASK 79-21-16-424-012-N00

6. Install the No. 1, 1.5, and 2 Bearing, or No. 3 Bearing (PRE-PW-SB 79-52) Last Chance Oil Strainers

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) G02332 Ferrule, Safety Cable (P05-292)
- (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (4) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Packing	79-21-51	05	116
	2	Strainer			141
	9	Packing			116
	10	Strainer			141

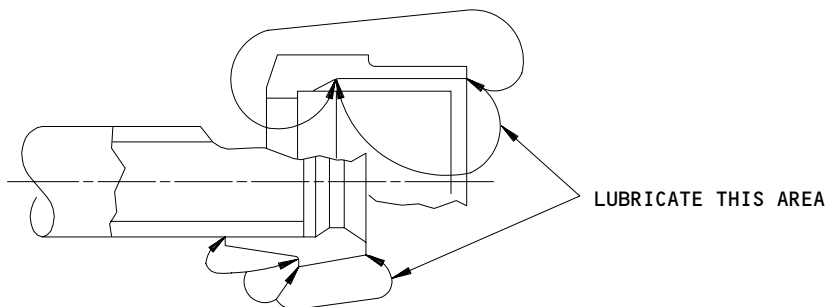
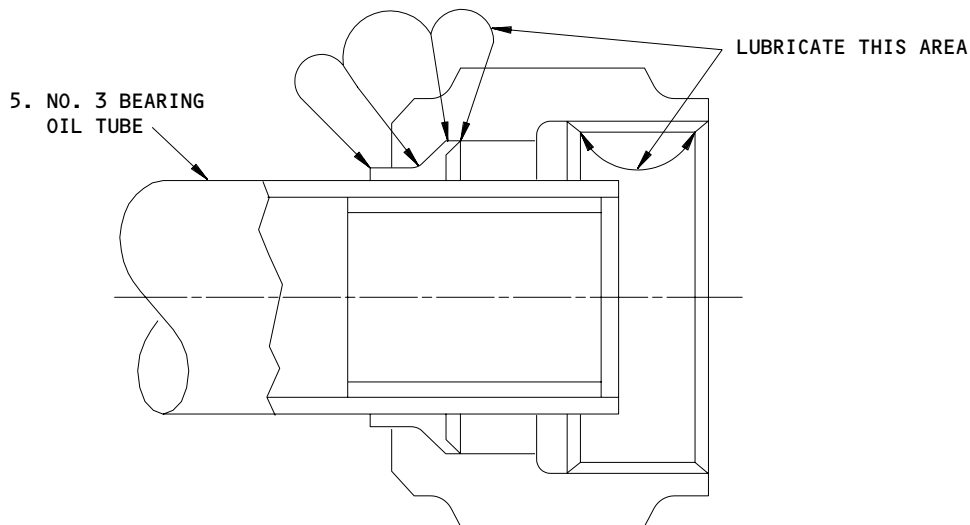
EFFECTIVITY

ALL

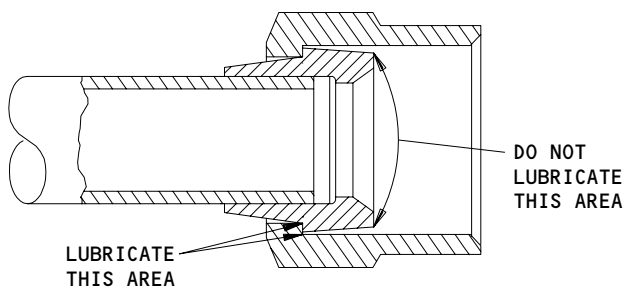
79-21-16

N01

Page 413
Dec 22/07



LUBRICATE WITH ANTIGALLANT COMPOUND (EXAMPLE)



LUBRICATED FERRULE EXAMPLE

Last Chance Oil Strainer Lubrication
Figure 403

EFFECTIVITY	ALL
-------------	-----

79-21-16

D. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-21-16/701, Last Chance Oil Strainers

E. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 417AL Core Cowl (Left)
 - 425AL Fan Reverser (Left)
 - 427AL Core Cowl (Left)

F. Install the Last Chance Oil Strainers (Fig. 401)

S 114-013-N00

- (1) Clean the strainer elements if it is necessary (AMM 79-21-16/701).

S 434-014-N00

- (2) Remove the protection covers from the strainer housings.

NOTE: Unless specified differently, lubricate all packings, bolts and strainer threads with engine oil before you install it.

S 424-015-N00

- (3) Install the last chance oil strainer (2) for the No. 1, 1.5 and 2 bearing with the steps that follow:
 - (a) Install the new packing (1) on the last chance oil strainer (2).

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE HOUSING OF THE LAST CHANCE OIL STRAINER WHEN YOU TIGHTEN THE LAST CHANCE OIL STRAINER. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (b) Lubricate the threads of the last chance oil strainer (2) with engine oil.

EFFECTIVITY

ALL

79-21-16

N01

Page 415
Dec 22/07

- (c) Install the last chance oil strainer (2) to the housing.
 - 1) Tighten the last chance oil strainer (2) with your hand.
 - 2) While you hold the housing with a wrench, tighten the last chance oil strainer (2) to 275-300 pound-inches (31.1-33.9 newton-meters).
 - 3) Install the lockwire or safety cable and safety cable ferrule to the last chance oil strainer (2).
- G. Put the Airplane Back to Its Usual Condition.

S 414-041-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-042-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-043-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-044-N00

- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

S 794-045-N00

- (5) Do the test of the last chance oil strainers that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

TASK 79-21-16-424-046-N00

7. ENGINES POST-PW-SB 79-52;

Install the No. 3 Bearing Oil Pressure Strainer (Fig. 402)

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

EFFECTIVITY

ALL

79-21-16

N01

Page 416
Dec 22/07

B. Consumable Materials

- (1) D00390 Oil Engine - PWA 521B
- (2) D00405 Antigallant Compound - PWA 550-3
- (3) G02332 Ferrule, Safety Cable (P05-292)
- (4) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (5) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
402	7	Packing Strainer Element	79-21-51	05	117
	8				142

D. References

- (1) AMM 71-00-00/501, Power Plant
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zone
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panel
 - 415AL Fan Reverser (Left)
 - 417AL Core Cowl (Left)
 - 425AL Fan Reverser (Left)
 - 427AL Core Cowl (Left)

F. Procedure

S 424-056-N00

- (1) Do the steps that follow to install the oil pressure strainer for the No. 3 bearing.
 - (a) Remove the protection covers.

EFFECTIVITY

ALL

79-21-16

N01

Page 417
Dec 22/00

- (b) Install the strainer (8) to the ferrul end of the No. 3 bearing oil pressure tube (9).
- (c) Lubricate the packing (7) with engine oil.
- (d) Install the packing (7) on the adapter (6).
- (e) Install the adapter (6) to the ferrule end of the No. 3 bearing oil pressure tube (9).
- (f) Attach the adapter (6) to the tube with bolts (5) and nuts (10).
 - 1) Lubricate the threads of the bolts with engine oil.
- (g) Torque the nuts (10) that attach the adapter (6) to the ferrule end of the tube (9) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - 1) Install lockwire or safety cable and safety cable ferrule on the bolts (5).
- (h) Install the oil pressure trim tube assembly (16) with the steps that follow:
 - 1) Lubricate the tube nuts with antigallant compound.
 - 2) Install the trim tube (16) to the oil metering nipple (restrictor).
 - a) Tighten the tube nut with your hand.
- (i) Connect the manifold nuts on the No. 3 bearing oil pressure manifold (12) as follows:
 - 1) Lubricate the manifold nut threads with antigallant compound (Fig. 403).
 - 2) Lubricate the manifold ferrules with antigallant compound (Fig. 403).
 - 3) Lubricate the packing with engine oil.
 - 4) Install the packing and retainer to the front of the manifold.
 - 5) Connect the front manifold nut (13) to the rear of the strainer housing on the fuel/oil cooler.
 - a) Tighten the manifold nut with your hand.
 - 6) Tighten the nut on the oil pressure trim tube (16) to the manifold tee (12) with your hand.
 - 7) Connect the rear manifold nut (13) to the adapter in the No. 3 bearing oil pressure tube (9).

NOTE: The rear manifold nut is at the 9 o'clock position.

- a) Tighten the manifold nut with your hand.

EFFECTIVITY

ALL

79-21-16

N01

Page 418
Dec 22/00

- (j) Attach the ferrule end of the No. 3 bearing oil pressure tube (9) to the bracket on Flange K with two bolts (11).
 - 1) Lubricate the bolt threads with engine oil.
- (k) Torque the bolts to 36-40 pound-inches (4.1-4.5 newton-meters).
- (l) Adjust the forward tube clamp (14) on the oil trim pressure tube (16) and the clamp on the No. 3 bearing oil pressure manifold (12).

NOTE: Adjust the clamps until the center of the forward clamp (on the oil trim pressure tube) is 2.500-3.000 inch (63.500-76.200 millimeters) from the center of the rear clamp.

- (m) Attach the clamps (14) together with a bolt (17) and nut (15).
 - 1) Lubricate the threads of the bolt (17) with engine oil.
 - 2) Torque the bolt (17) to 36-40 pound-inches (4.1-4.5 newton-meters).

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE PARTS THAT ARE CONNECTED WHEN YOU TIGHTEN MANIFOLDS AND TUBES. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (n) Torque the manifold nuts on the No. 3 bearing oil pressure manifold (12) as follows:
 - 1) Torque the front manifold nut that is attached to the strainer housing on the fuel/oil cooler to 140-160 pound-inches (15.8-18.1 newton-meters).
 - a) Loosen the same front manifold nut.
 - b) Torque the front manifold nut again to the same torque value, 140-160 pound-inches (15.8-18.1 newton-meters).
 - 2) Torque the rear manifold nut to the adapter in the No. 3 bearing oil pressure tube to 675-750 pound-inches (76.3-84.7 newton-meters).
 - 3) Install lockwire or safety cable and safety cable ferrule to the manifold nuts.

EFFECTIVITY

ALL

79-21-16

N01

Page 419
Dec 22/00

- (o) Torque the tube nuts on the oil trim pressure tube (16) as follows:
 - 1) Torque the front tube nut that is attached to the manifold tee to 675-750 pound-inches (76.3-84.7 newton-meters).
 - 2) Torque the tube nut that is attached to the oil tube metering nipple (restrictor) to 675-750 pound-inches (76.3-84.7 newton-meters).
 - 3) Install lockwire or safety cable and safety cable ferrule on the tube nuts.
- (p) At the rear of the No. 3 bearing oil pressure manifold (12), install a spray shield (4).

NOTE: The spray shield goes to the inboard side of the manifold.

- 1) Attach the spray shield (4) with a clamp (2) and a bolt (1) to a bracket (3).

NOTE: The bracket is attached to the flange of the cooling air tube on the high compressor.

- a) Lubricate the threads of the bolt with engine oil.
- b) Torque the bolt to 36-40 pound-inches (4.1-4.5 newton-meters).

G. Put the Airplane Back to Its Usual Condition.

S 414-047-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-048-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-049-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

EFFECTIVITY

ALL

79-21-16

N01

Page 420
Dec 22/00

- S 444-050-N00
- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

- S 794-051-N00
- (5) Do the test for the last chance oil strainer that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

TASK 79-21-16-424-025-N00

8. Install the Main and Angle Gearbox Last Chance Oil Strainer (Fig. 401)

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00390 Oil Engine - PWA 521B
(2) D00405 Antigallant Compound - PWA 550-3
(3) G02332 Ferrule, Safety Cable (P05-292)
(4) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
(5) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	5	Packing Strainer Element	79-21-02	05	80
	6				75

D. References

- (1) AMM 71-00-00/501, Power Plant
(2) AMM 71-11-04/201, Fan Cowl Panels
(3) AMM 71-11-06/201, Core Cowl Panels
(4) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zone
410 Left Engine
420 Right Engine

EFFECTIVITY

ALL

79-21-16

N01

Page 421
Dec 22/00

(2) Access Panel

- 415AL Fan Reverser (Left)
- 417AL Core Cowl (Left)
- 425AL Fan Reverser (Left)
- 427AL Core Cowl (Left)

F. Procedure

S 424-016-N00

- (1) Install the last chance oil strainer (6) for the angle gearbox and the main gearbox with the steps that follow:
 - (a) Remove the protection covers.
 - (b) Install the new packing (5) on the bottom of the strainer element (6).
 - (c) Lubricate the threads of the bolts (7) with engine oil.
 - (d) Install the strainer element (6) into the oil strainer housing (4) with the bolts (7).
 - (e) Tighten the bolts (7) to 85-95 pound-inches (9.6-10.7 newton-meters).
 - 1) Install lockwire or safety cable and safety cable ferrule to the bolts (7).

G. Put the Airplane Back to Its Usual Condition.

S 414-052-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-053-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-058-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-054-N00

- (4) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-16

N01

Page 422
Dec 22/00

S 794-055-N00

- (5) Do the test of the last chance oil strainer that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

TASK 79-21-16-424-026-N00

9. Install the No. 4 Bearing Last Chance Oil Strainer (Fig. 402)

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00390 Oil Engine - PWA 521B
(2) D00405 Antigallant Compound - PWA 550-3
(3) G02332 Ferrule, Safety Cable (P05-292)
(4) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
(5) G02335 Cable, Safety (P05-291)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	17	Packing Strainer Element	79-21-51	05	130
	18				145

D. References

- (1) AMM 71-00-00/501, Power Plant
(2) AMM 71-11-04/201, Fan Cowl Panels
(3) AMM 71-11-06/201, Core Cowl Panels
(4) AMM 78-31-00/201, Thrust Reverser System

E. Access

- (1) Location Zone
410 Left Engine
420 Right Engine

EFFECTIVITY

ALL

79-21-16

N01

Page 423
Dec 22/00

- (2) Access Panel
 - 415AL Fan Reverser (Left)
 - 417AL Core Cowl (Left)
 - 425AL Fan Reverser (Left)
 - 427AL Core Cowl (Left)

F. Install the Last Chance Oil Strainers (Fig. 401)

S 114-029-N00

- (1) Clean the strainer elements if it is necessary (AMM 79-21-16/701).

S 434-030-N00

- (2) Remove the protection covers from the strainer housings.

NOTE: Unless specified differently, lubricate all packings, bolts and strainer threads with engine oil before you install it.

S 424-018-N00

- (3) Install the last chance oil strainer (18) for the No. 4 bearing with the steps that follow:
 - (a) Install the new packing (17) to the end of the oil pressure tube (12A).
 - (b) Install the strainer element (18) in the housing at the larger end of the oil pressure tube (12) for the No. 4 bearing.
 - (c) Connect the oil pressure tube (12) to the tube nut fitting (13).
 - (d) Tighten the tube nut fitting (13) with your hand.
 - (e) Install the flanges of the oil pressure tubes (12, 12A) together with the bolts (14) and nuts (16).
 - (f) Tighten the bolts (14) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - (g) Tighten the tube nut fitting (13) to 270-300 pound-inches (30.5-33.9 newton-meters).
 - (h) Install lockwire or safety cable and safety cable ferrule on the tube nut fitting (13).
 - (i) Install the heat shield (11) to the oil pressure tube (12).
 - (j) Install the clamps (15) to attach the heat shield (11).
 - (k) Tighten the clamps (15) to 15-18 pound-inches (1.7-2.0 newton-meters).

G. Put the Airplane Back to Its Usual Condition

S 414-019-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-16

N01

Page 424
Dec 22/00

- S 414-020-N00
- (2) Close the left core cowl panel (AMM 71-11-06/201).

- S 414-021-N00
- (3) Close the left fan cowl panel (AMM 71-11-04/201).

- S 444-022-N00
- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

- S 714-023-N00
- (5) Do the test for the last chance oil strainers that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-16

N01

Page 425
Dec 22/00

LAST CHANCE OIL STRAINERS – INSPECTION/CHECK

1. General

A. This procedure gives the instructions and data to examine the contamination caught by the last chance oil strainers. The contamination found can show a failure of a bearing. The correct analysis of the metal particles is important to find bearing or gear problems before they cause damage or failure of the engine.

TASK 79-21-16-206-001-N00

2. Do an Inspection of the Last Chance Oil Strainers

A. Equipment

(1) Microscope 30x to 50x - commercially available

B. References

- (1) AMM 12-13-01/301, Engine
- (2) AMM 12-22-01/301, Engine (Oil Change)
- (3) AMM 71-00-00/201, Power Plant
- (4) AMM 71-00-00/501, Power Plant
- (5) AMM 71-00-02/401, Power Plant
- (6) AMM 71-11-04/201, Fan Cowl Panels
- (7) AMM 71-11-06/201, Core Cowl Panels
- (8) AMM 72-00-00/601, Engine
- (9) AMM 78-31-00/201, Thrust Reverser System
- (10) AMM 79-21-05/601, Main Oil Filter
- (11) AMM 79-21-10/601, Magnetic Chip Detector
- (12) AMM 79-21-16/401, Last Chance Oil Strainer
- (13) AMM 79-21-16/701, Last Chance Oil Strainer

C. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 417AL Core Cowl (Left)
- 425AL Fan Reverser (Left)
- 427AL Core Cowl (Left)

EFFECTIVITY

ALL

79-21-16

N01

Page 601
Dec 22/00

D. Prepare to Examine the Last Chance Oil Strainers

S 016-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 046-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 016-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 016-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Do the Inspection of the Last Chance Oil Strainers

S 026-006-N00

- (1) Remove the last chance oil strainers (AMM 79-21-16/401).

S 216-007-N00

- (2) Examine the last chance oil strainers for contamination with the steps that follow:
 - (a) Examine the last chance oil strainers for contamination.

NOTE: If there is contamination, you must find the source of the contamination.

EFFECTIVITY

ALL

79-21-16

N01

Page 602
Dec 22/00

- (b) Remove the contamination from the last chance oil strainer.
- (c) Keep the contamination.
- (d) Move a clean magnet above the contamination to examine for magnetic metal particles.

NOTE: The magnetic metal particles are the most important because the bearing and gear are made of magnetic material.

- (e) Examine the samples of magnetic metal particles and the other contamination with the microscope.
 - 1) Look for the metal particles.

NOTE: The particles of the bearing made by spalling shows as shiny rounded flakes. There is a difference in the how it looks and how rough the surface is between the two faces of these flakes. The outer surface is very polished and can have parallel marks while the bottom will have a rough quality. When there is damage to the top layer of the surface, the material below will start to break. The material will look more rough, less bright, and will have cracks.

- (f) Look for remaining particles from repairs which were done before.

NOTE: The remaining particles can be pieces of gaskets or preformed packing, sealing compound, or pieces of metal seal rings etc.

- (g) If you cannot find the source of a metal particle and you think it is from the bearings, do the spectrographic analysis. Refer to AMM 72-00-00/601, Oil System Contamination, for an analysis of the material of the bearing and gear.

EFFECTIVITY

ALL

79-21-16

N01

Page 603
Dec 22/00

- S 966-008-N00
- (3) If you find metal particles from the bearing in the last chance oil strainer, replace the engine (AMM 71-00-02/401).

- S 216-009-N00
- (4) If you find other contamination, do the steps that follow:
- (a) Examine the magnetic chip detectors (AMM 79-21-10/601).
 - (b) Examine the main oil filter (AMM 79-21-05/601).
 - (c) Clean the last chance oil strainer (AMM 79-21-16/701).
 - (d) Install the last chance oil strainer (AMM 79-21-16/401).
 - (e) Do the servicing procedure to drain, flush and fill the oil tank (AMM 12-22-01/301).

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (f) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).
 - 1) Operate the engine at idle until the oil becomes warm.
- (g) Increase the speed of the engine from idle to 1.35-1.40 EPR.
- (h) Decrease the speed of the engine back to idle.
 - 1) Do this step five times.
- (i) Operate the engine at 1.35-1.40 EPR for 10 minutes.
- (j) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).
- (k) Examine the last chance oil strainers.
- (l) Examine the main oil filter (AMM 79-21-05/601).
- (m) Examine the magnetic chip detectors (AMM 79-21-10/601).
- (n) If you find contamination after a second engine operation, you must identify the source of the contamination and correct it before you put the engine is back into operation.

- S 116-010-N00
- (5) Clean the last chance oil strainers (AMM 79-21-16/701).

- S 426-011-N00
- (6) Install the last chance oil strainers (AMM 79-21-16/401).

- S 616-012-N00
- (7) Do the servicing procedure for the engine oil system (AMM 12-13-01/301).

EFFECTIVITY

ALL

79-21-16

N01

Page 604
Dec 22/00

F. Put the Airplane Back to Its Usual Condition

S 416-013-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 416-014-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 416-015-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 446-016-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 716-017-N00

- (5) Do the test for the Last Chance Oil Strainers that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-16

N01

Page 605
Dec 22/00

LAST CHANCE OIL STRAINER – CLEANING/PAINTING

1. General

- A. This procedure has the instructions to clean the last chance oil strainers. You must examine the last chance oil strainers for metal particles before they are cleaned. All the last chance oil strainers are cleaned with the same procedure.

TASK 79-21-16-107-001-N00

2. Clean the Last Chance Oil Strainers

A. Consumable Materials

- (1) B00534 Solvent, Cleaning – PMC 9010

B. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
(2) AMM 71-11-06/201, Core Cowl Panels
(3) AMM 78-31-00/201, Thrust Reverser System
(4) AMM 79-21-16/401, Last Chance Oil Strainers
(5) AMM 79-21-16/601, Last Chance Oil Strainers

C. Access

(1) Location Zones

- 410 Left Engine
420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
417AL Core Cowl (Left)
425AL Fan Reverser (Left)
427AL Core Cowl (Left)

D. Prepare to Clean the Last Chance Oil Strainers

S 017-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 047-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-16

N01

Page 701
Dec 22/00

S 017-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 017-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

E. Clean the Last Chance Oil Strainers

S 027-006-N00

- (1) Remove the last chance oil strainers from the engine (AMM 79-21-16/401).

S 217-007-N00

- (2) Examine the last chance oil strainers for the metal particles and other contamination (AMM 79-21-16/601).

S 117-008-N00

- (3) Clean the last chance oil strainers with the solvent.

NOTE: You can use a gas or solvent degreaser to clean the strainer elements.

S 217-009-N00

- (4) Examine the last chance oil strainers for remaining contamination.

S 427-010-N00

- (5) Make the last chance oil strainers dry with dry, clean compressed air at a maximum pressure of 30 psi.

S 427-011-N00

- (6) Install the last chance oil strainers to the engine (AMM 79-21-16/401).

EFFECTIVITY

ALL

79-21-16

N01

Page 702
Dec 22/00

F. Put the Airplane Back to Its Usual Condition

S 417-012-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 417-013-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 417-014-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 447-015-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-16

N01

Page 703
Dec 22/00

MAIN BEARING STRAINER HOUSING ASSEMBLY – REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks. The first task removes the main bearing strainer housing assembly. The second task installs the main bearing strainer housing assembly.

TASK 79-21-17-004-001-N00

2. Remove the Main Bearing Strainer Housing Assembly (Fig. 401)

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare for Removal of the Main Bearing Strainer Housing Assembly

S 014-028-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-21-17

N01

Page 401
Dec 22/00

D. Remove the Main Bearing Strainer Housing Assembly.

NOTE: Be prepared to catch fuel and oil in a container with a minimum capacity of 5 U.S. gallons (19 liters).

S 034-017-N00

CAUTION: YOU MUST USE WRENCHING FLATS ON THE MATING PARTS WHEN YOU LOOSEN OR TIGHTEN ANY OR ALL TUBE NUTS. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (1) ENGINES POST-PW-SB 79-52;
Remove the bolt, nut and clamp that attach the oil trim pressure tube (3) to a bracket on the flange of the secondary flow control valve.

S 034-008-N00

- (2) Remove the bolt, nut and clamp that attach the oil trim pressure tube (3) to the bracket on the HPC cover.

S 034-009-N00

- (3) Remove the oil tube metering nipple (2).
(a) Remove the lockwire or safety cable and use the wrenching flats to disconnect the tube nuts from the oil tube metering nipple (2).
(b) Loosen the clamp bolts that attach the oil trim pressure tube (3).
(c) Loosen the three bolts that attach the oil trim pressure tube (3) to the main oil filter housing.
(d) Remove the metering nipple (2).

S 034-010-N00

- (4) Remove the No. 3 bearing oil tube:
(a) ENGINES PRE-PW-SB 79-52;
Do the steps that follow:
1) Remove the lockwire or safety cable and disconnect the No. 3 bearing oil pressure manifold (1) from the rear of the main bearing strainer housing (10).
2) Remove the hose clamp (13), spray shield (14), and lockwire or safety cable.
3) Disconnect the No. 3 bearing oil pressure manifold (1) from the front of the No. 3 bearing oil pressure tube (15).
4) Remove the attaching hardware and remove the No. 3 bearing oil pressure tube (15).
(b) ENGINES POST-PW-SB 79-52;

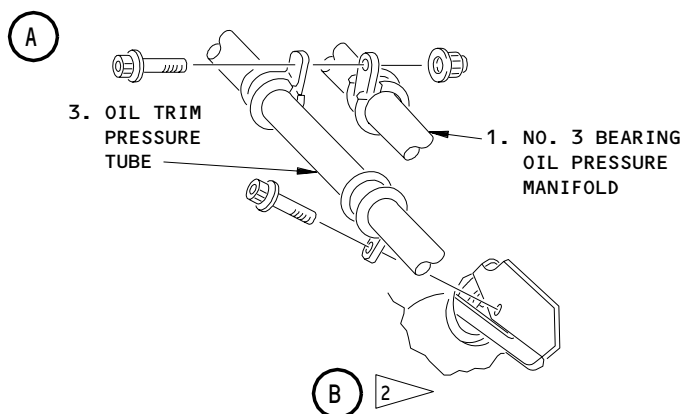
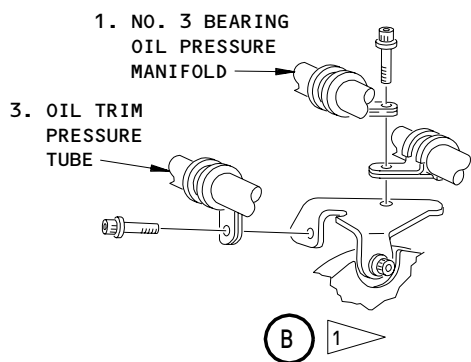
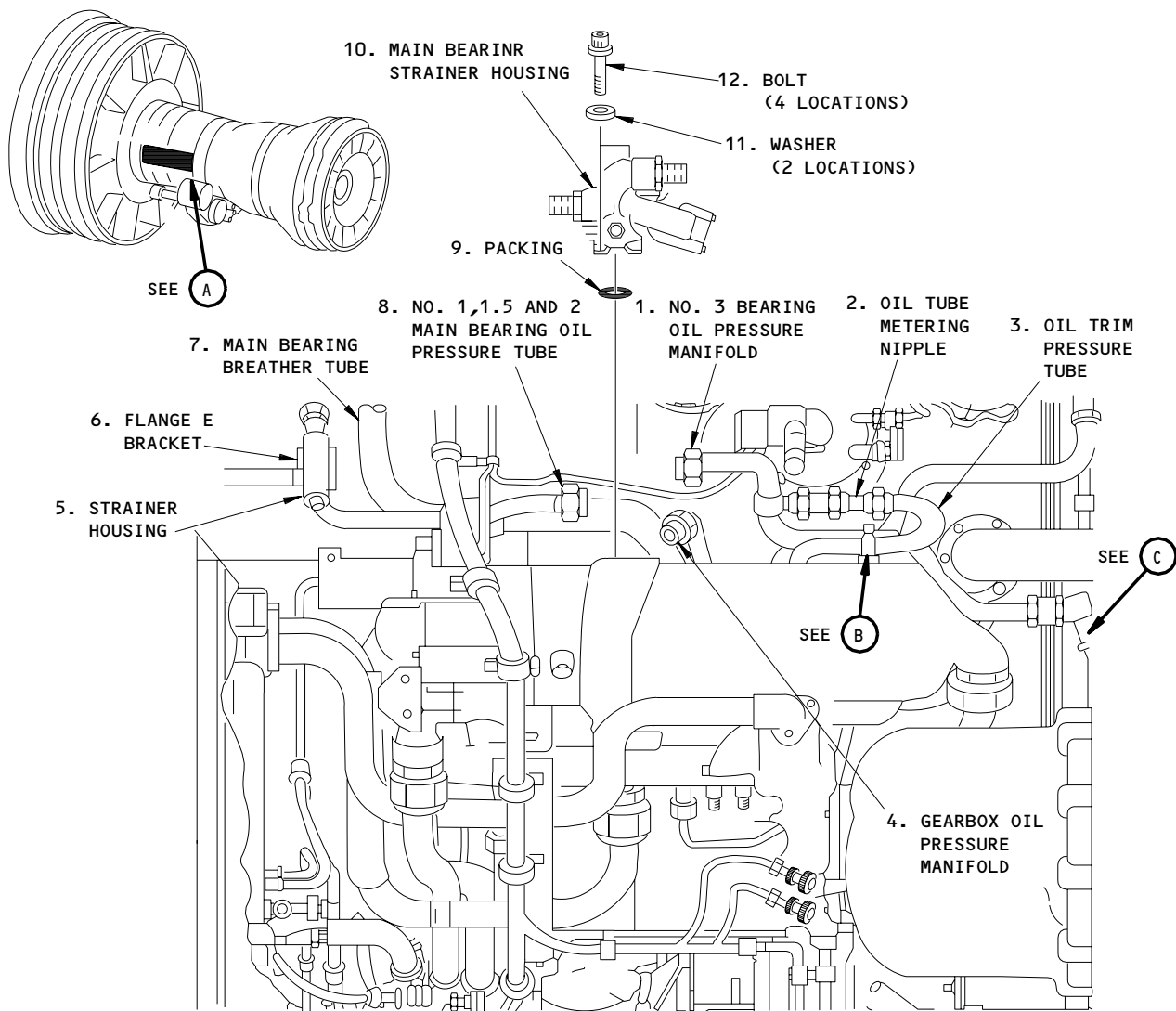
EFFECTIVITY

ALL

79-21-17

N01

Page 402
Dec 22/00



- 1 ENGINES WITHOUT PW SB 72-211
- 2 ENGINES WITH PW SB 72-211

L-B4661
0297

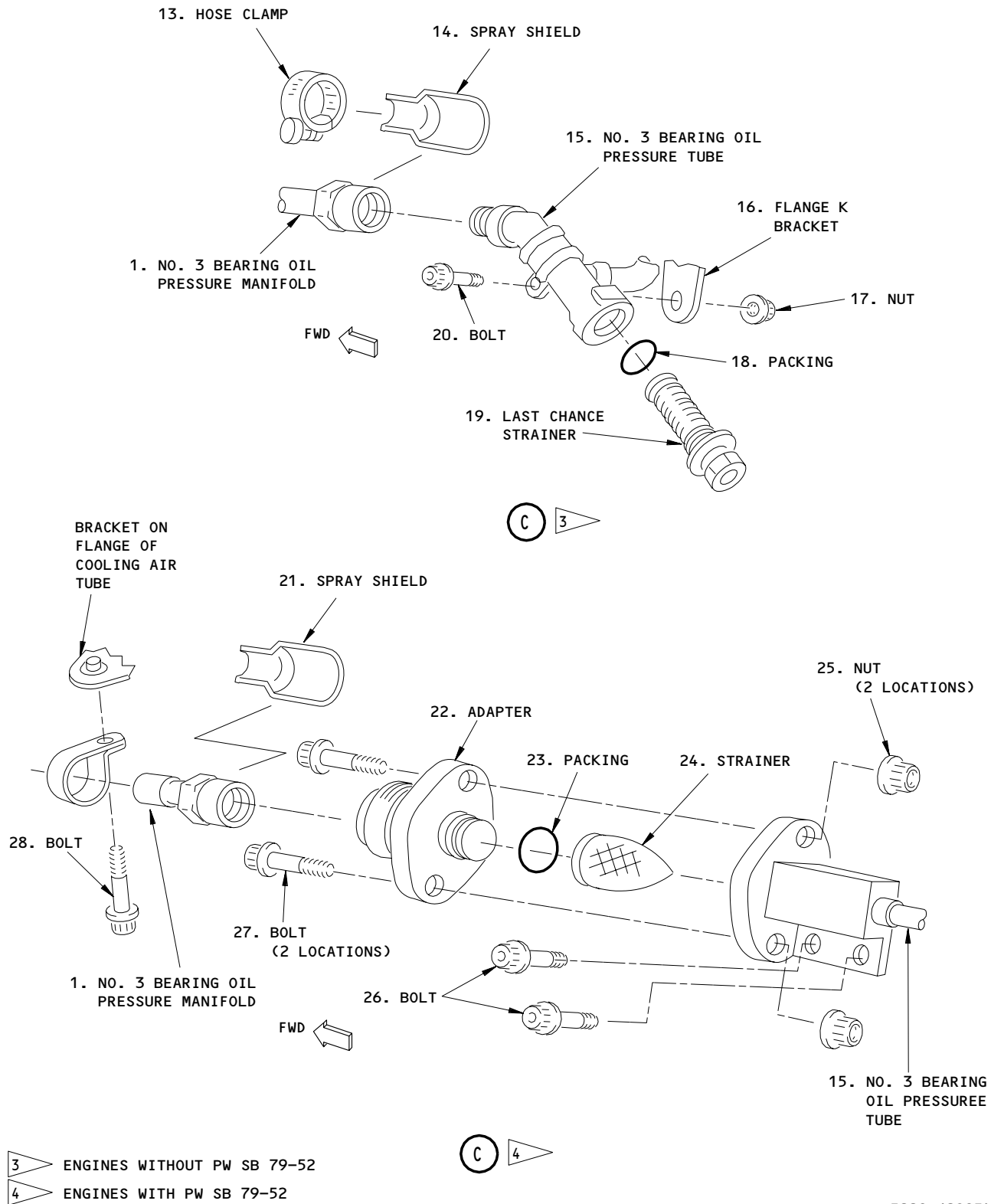
Fuel/Oil Cooler Mounted Main Bearing Strainer Housing
Figure 401 (Sheet 1)

EFFECTIVITY	ALL
-------------	-----

79-21-17

N01

Page 403
Aug 10/97



L-A5008 (0295)

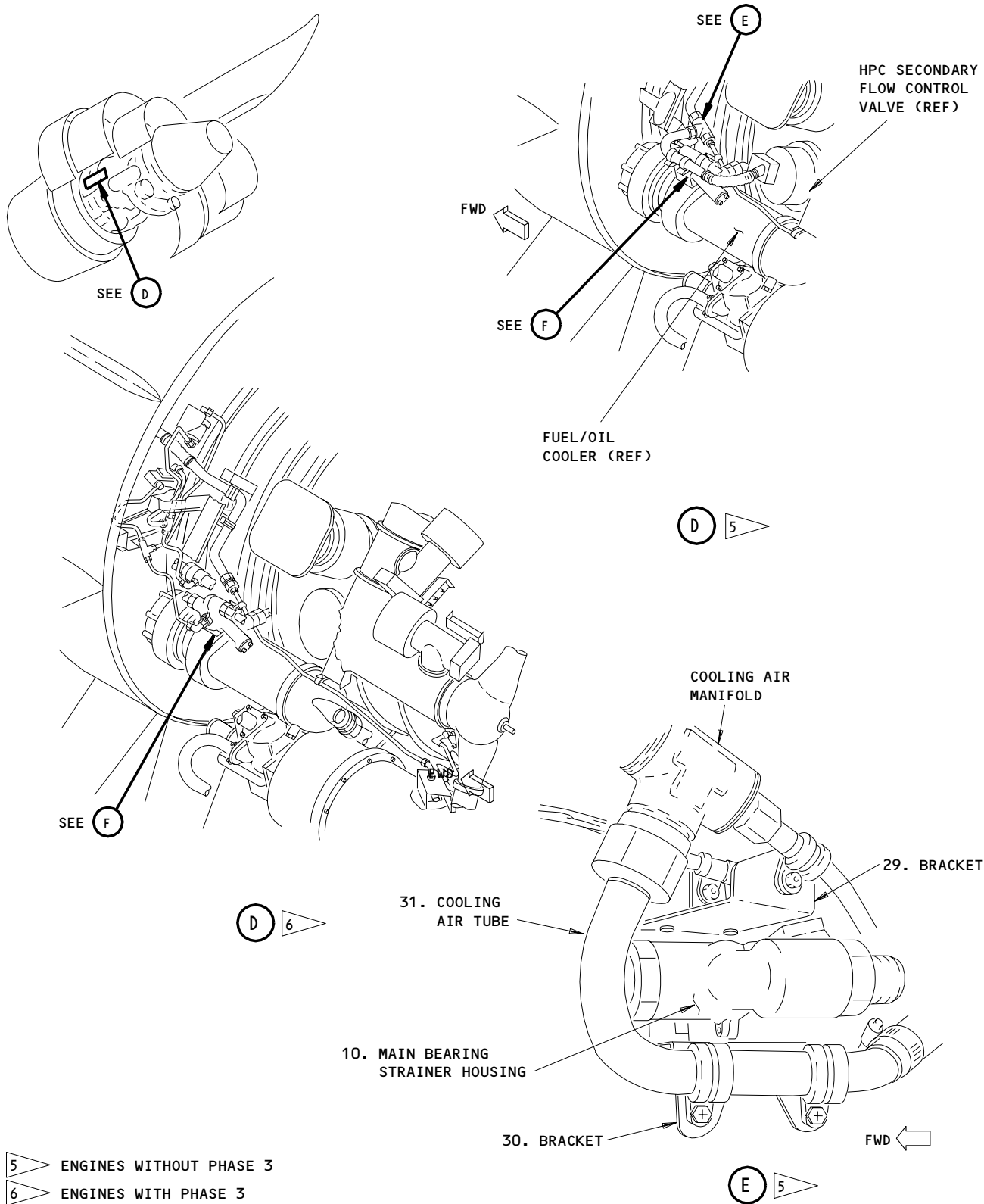
Fuel/Oil Cooler Mounted Main Bearing Strainer Housing
Figure 401 (Sheet 2)

EFFECTIVITY	
ALL	

79-21-17

N01

Page 404
Aug 10/97



- 5 ENGINES WITHOUT PHASE 3
- 6 ENGINES WITH PHASE 3

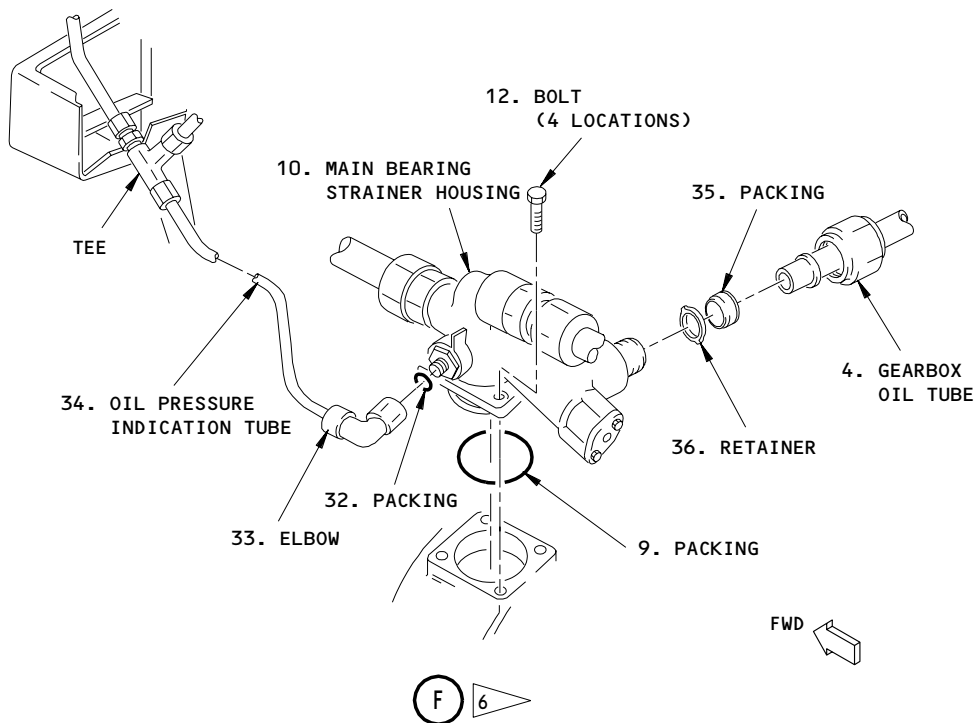
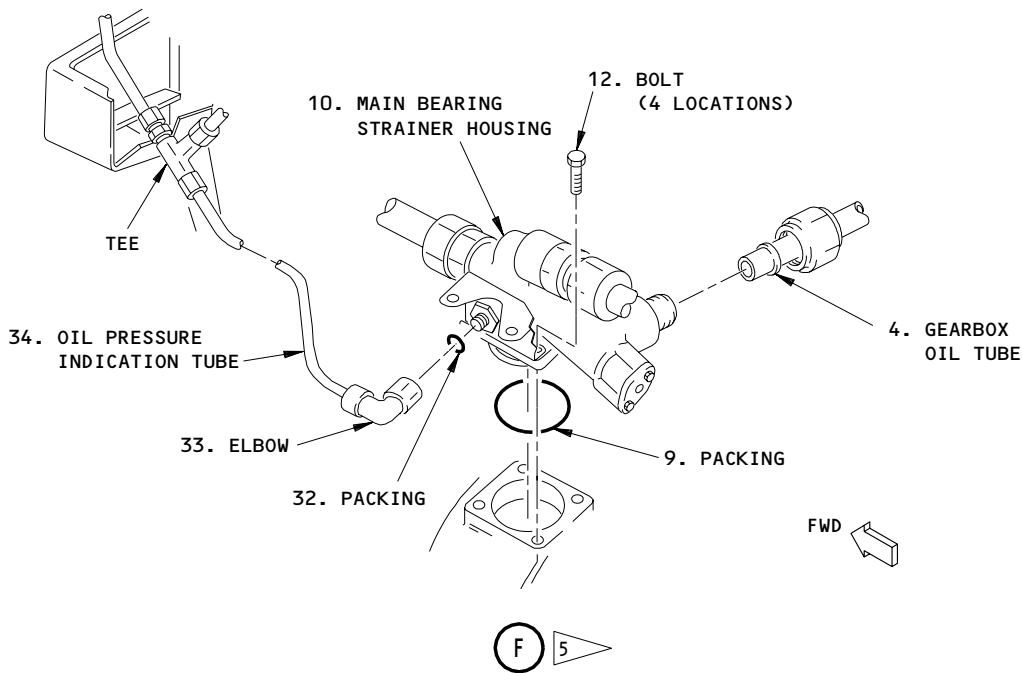
Main Bearing Strainer Housing Installation
Figure 401 (Sheet 3)

EFFECTIVITY	ALL
	ALL

79-21-17

N01

Page 405
Aug 10/97



Main Bearing Strainer Housing Installation
Figure 401 (Sheet 4)

EFFECTIVITY	
	ALL

79-21-17

N01

Page 406
Aug 22/99

Do the steps that follow:

- 1) Remove the lockwire or safety cable and disconnect the No. 3 bearing oil pressure manifold (1) from the rear of the main bearing strainer housing (10).
- 2) Remove the bolt (28), clamp and spray shield (21) from the rear of the No. 3 bearing oil pressure manifold (1).
- 3) Disconnect the No. 3 bearing oil pressure manifold (1) from the front of the No. 3 bearing pressure tube (15).
- 4) Remove the attaching hardware and remove the No. 3 bearing pressure tube (15) from the engine.

S 034-011-N00

- (5) Remove lockwire or safety cable and disconnect gearbox oil pressure manifold (4) from inboard side of main bearing strainer housing (10).

S 034-012-N00

- (6) Remove the No. 1, 1.5, and 2 main bearing oil pressure tube (8):
 - (a) Remove lockwire or safety cable and disconnect No. 1, 1.5, and 2 main bearing oil pressure tube (8) from front of main bearing strainer housing (10) and the strainer housing (5) attached to the Flange E bracket (6).
 - (b) Loosen the clamp bolt which attaches the No. 1, 1.5, and 2 main bearing oil pressure tube (8) to the Flange E bracket (6).
 - (c) Remove the No. 1, 1.5, and 2 main bearing oil pressure tube (8) from the engine.

S 034-013-N00

- (7) Remove the main bearing strainer housing (10):
 - (a) Disconnect the oil pressure indication tube (34) from the tee.
 - (b) Remove the oil pressure indication tube (34) and elbow (33) from the main bearing strainer housing (10).
 - (c) Disconnect the cooling air tube (31) from the cooling air manifold.
 - (d) Remove four bolts (12) and two washers (11) that attach the main bearing strainer housing (10) and brackets (29, 30) to top of the fuel/oil cooler.
 - (e) Reposition the bracket on the inboard side of the main bearing strainer housing with the W5 harness attached and remove the main bearing strainer housing (10).

S 034-014-N00

- (8) Remove the packings from the tubes and strainer housing flange and discard.

EFFECTIVITY

ALL

79-21-17

N01

Page 407
Dec 22/00

S 424-015-N00

- (9) Install protective covers.

TASK 79-21-17-404-016-N00

3. Install the Main Bearing Strainer Housing Assembly (Fig. 401)

A. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) A00456 Lubricant, Antigalling - PWA 550
- (3) D50124 Paste, Anti-seize - PWA 36246
- (4) D00453 Compound, Antigalling - PWA 36035
- (5) D00504 Petrolatum - PMC-9609
- (6) G02332 Ferrule, Safety Cable (P05-292)
- (7) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (8) G02335 Cable, Safety (P05-291)

B. References

- (1) AMM 12-13-01/301, Engine - Servicing (Oil Replenishing)
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System

C. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Location Zones

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

D. Procedure

S 434-018-N00

- (1) Install the main bearing strainer housing:
 - (a) Remove protective covers.
 - (b) Lubricate the threads of the two largest adapters (front and rear of strainer housing) with Antigalling Compound (PWA 550).
 - (c) Lubricate the threads of the smaller adapter (inboard side of the strainer housing) with Anti-seize paste (PWA 36246).
 - (d) Install the packing, lubricated with Engine Oil, and retainer to the No. 1, 1.5 and 2 main bearing oil pressure tube (8).
 - (e) Install the packing (9), lubricated with Engine Oil, to the groove in the flange of the main bearing strainer housing (10).
 - (f) Install the main bearing strainer housing (10) to the top of the fuel/oil cooler and engage the tubes to the adapters.

EFFECTIVITY

ALL

79-21-17

N01

Page 408
Apr 22/08

- (g) Attach the main bearing strainer housing (10) to the fuel/oil cooler with four bolts (12), threads lubricated with Engine Oil, and two washers (11) and bracket (30) attached to the W5 harness (omit washers at bracket).
- (h) Tighten bolts (12) to 85-95 pound-inches (9.6-10.7 newton-meters).

S 434-019-N00

- (2) Install the No. 1, 1.5, and 2 main bearing oil pressure tube (8).
 - (a) Lubricate the nut threads on the No. 1, 1.5 and 2 main bearing oil pressure tube (8) with Antigalling Compound (PWA 550).
 - (b) Install the No. 1, 1.5, and 2 main bearing oil pressure tube (8) to the main bearing strainer housing (packing and retainer at rearward end installed) handtight only.
 - (c) Tighten the clamp bolt that attaches the No. 1, 1.5, and 2 main bearing oil pressure tube (8) to the Flange E bracket (6) to 36-40 pound-inches (4.1-4.5 newton-meters).
 - (d) Tighten the forward tube nut to 675-750 pound-inches (76.3-84.7 newton-meters) and attach lockwire or safety cable and safety cable ferrule.
 - (e) Tighten the rear tube nut to 140-160 pound-inches (15.8-18.1 newton-meters), then loosen and retighten to the same value.
 - 1) Attach lockwire or safety cable and safety cable ferrule.

S 434-020-N00

- (3) Connect and tighten the gearbox oil pressure manifold (4) to 675-750 pound-inches (76.3-84.7 newton-meters). Attach lockwire or safety cable and safety cable ferrule.
 - (a) Attach lockwire or safety cable and safety cable ferrule.

S 434-021-N00

- (4) Install the No. 3 bearing oil pressure manifold (1):

CAUTION: YOU MUST DO THIS PROCEDURE AS FOLLOWS. IF YOU DO NOT DO THESE INSTRUCTIONS ACCURATELY, YOU CAN CAUSE DAMAGE TO THE TUBE.

CAUTION: YOU MUST USE THE WRENCHING FLATS ON THE MATING PARTS WHEN YOU TIGHTEN THE TUBE NUTS. IF YOU DO NOT DO THIS, YOU CAN TWIST THE TUBE AND CAUSE DAMAGE TO THE TUBE.

- (a) ENGINES PRE-PW-SB 79-52;
Loosen the clamp bolt (20) that attaches the No. 3 bearing oil tube (15) to the Flange K bracket (16).

EFFECTIVITY

ALL

79-21-17

N01

Page 409
Dec 22/00

- (b) ENGINES POST-PW-SB 79-52;
Loosen the clamp bolts that attach the ferrule end of the No. 3 bearing oil pressure tube (15) to the Flange K bracket.
- (c) Loosen the three bolts that attach the oil trim pressure tube (3) to the the main oil filter housing.
- (d) ENGINES PRE-PW-SB 79-52;
Do the steps that follow:
 - 1) Lubricate the back of the No. 3 bearing oil pressure manifold ferrules with Antigalling Compound (Fig. 402).
 - 2) Lubricate the forward tube nut threads with Antigalling Compound (PWA 550).
 - 3) Lubricate the rear tube nut threads with Anti-seize paste (PWA 36246).
 - 4) Lubricate the packing with Engine Oil.
 - 5) Install the packing and retainer to the tube.
- (e) ENGINES POST-PW-SB 79-52;
Do the steps that follow:
 - 1) Lubricate the back of the No. 3 bearing oil pressure manifold ferrules and the manifold nut threads with Antigallant Compound (PWA 550) (See Figure 402).
 - 2) Lubricate the packing with Engine Oil.
 - 3) Install the packing and retainer to the No. 3 bearing oil pressure manifold (1).
- (f) Install the No. 3 bearing oil pressure manifold (1) to the strainer housings (5, 10) and tighten by hand.
- (g) Lubricate the threads of the oil tube metering nipple (2) with Antigallant Compound (PWA 550).
- (h) Lubricate the back of the ferrules on the oil trim pressure tubes with Antigallant Compound (Fig. 402).
- (i) Install the oil tube metering nipple (2) to the two oil trim pressure tubes (3) and tighten by hand.
- (j) Lubricate the clamp bolts with Engine Oil and install the hardware which attaches the No. 3 bearing oil pressure manifold (1) and the oil trim pressure tube (3).
- (k) ENGINES POST-PW-SB 72-211;
Make sure the center of the forward clamp on the oil trim pressure tube is 2.500-3.000 inch (63.500-76.200 mm) from the center of the rear clamp.
- (l) Tighten the clamp bolts and tubes exactly as follows:
 - 1) Tighten the clamp bolt that attaches the No. 3 bearing oil pressure manifold clamp back to back with the oil trim pressure tube clamp to 36-40 pound-inches (4.1-4.5 newton-meters).
 - 2) Tighten the clamp bolts that attach the tubes to the oil cooler rear bracket to 36-40 pound-inches (4.1-4.5 newton-meters).

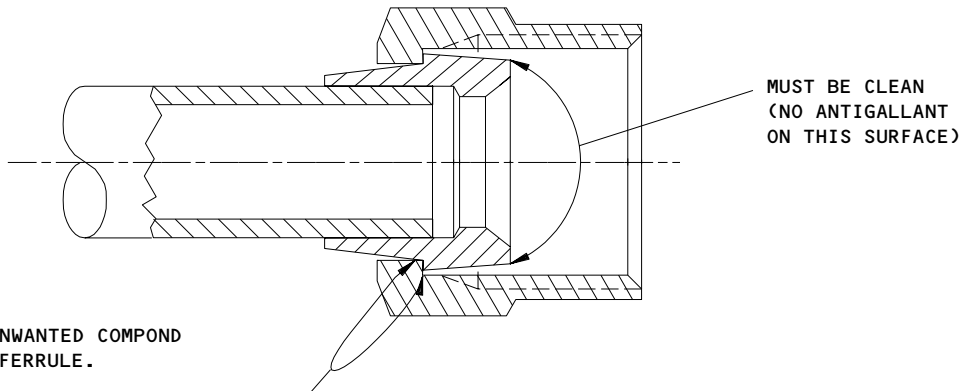
EFFECTIVITY

ALL

79-21-17

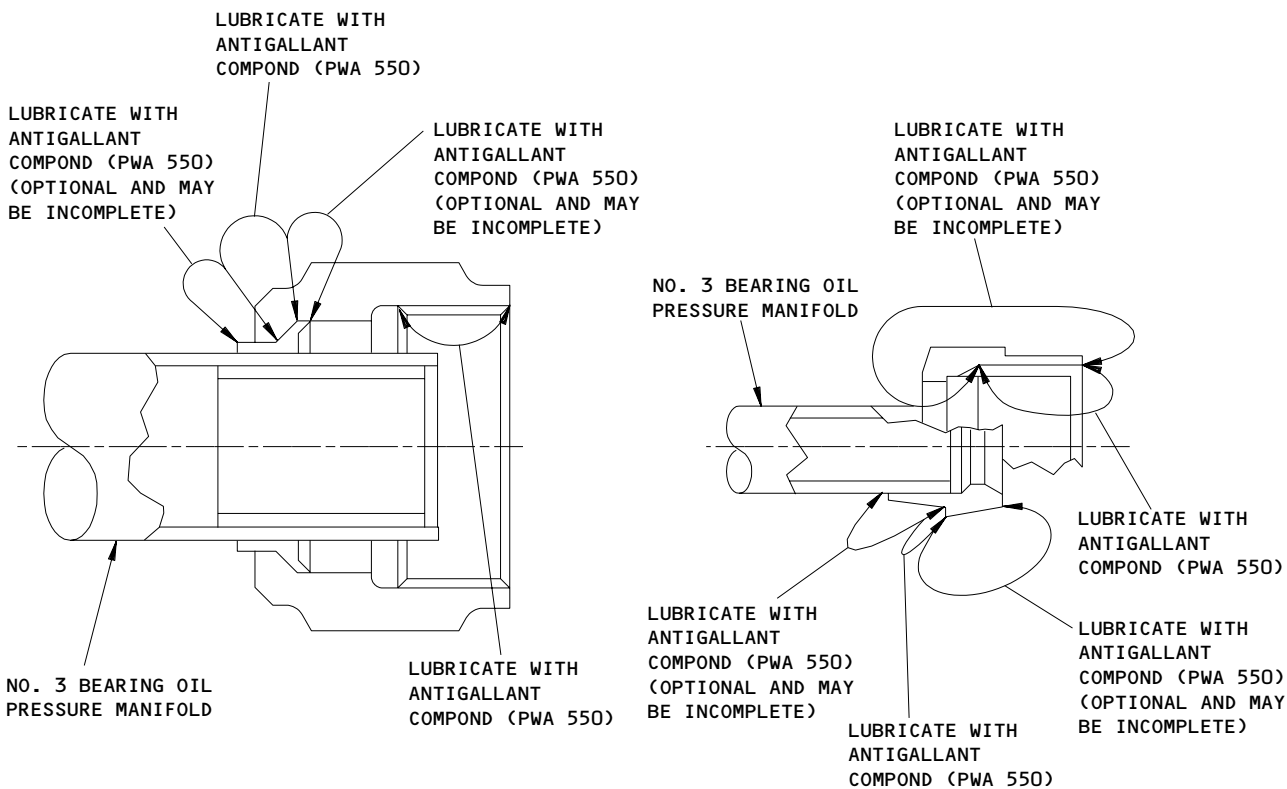
N01

Page 410
Apr 22/08



L-A7238

ENGINES WITHOUT PW SB 79-52



ENGINES WITH PW SB 79-52

L-A8055 (0000)

**Antigallant Compound Application
Figure 402**

EFFECTIVITY	ALL
-------------	-----

79-21-17

N01

Page 411
Aug 10/97

- 3) ENGINES PRE-PW-SB 79-52;
Tighten the clamp bolt (20) that attaches the No. 3 bearing oil strainer (19) to the Flange K bracket (16) to 36-40 pound-inches (4.1-4.5 newton-meters).
- 4) ENGINES POST-PW-SB 79-52;
Tighten the bolts that attach the ferrule end of the No. 3 bearing pressure tube to the bracket on Flange K to 36-40 pound-inches (4.1-4.5 newton-meters).
- 5) Tighten the three bolts that attach the oil trim pressure tube (3) to the main oil filter housing to 85-95 pound-inches (9.6-10.7 newton-meters).
- 6) Tighten the front tube nut of the No. 3 bearing oil pressure manifold (1) to the strainer housing to 140-160 pound-inches (15.8-18.1 newton-meters), then loosen and tighten again to the same value.
- 7) Tighten the tube nuts that attach the oil tube metering nipple (2) to 675-750 pound-inches (76.3-84.7 newton-meters).
- 8) ENGINES POST-PW-SB 79-52;
Do the steps that follow:
 - a) Install a clamp to the tube nut end of the oil trim pressure tube (3).
 - b) Attach the clamp to a bracket on the secondary flow control valve flange with a bolt, lubricated with Engine Oil, and a nut.
 - c) Tighten the nut to 36-40 pound-inches (4.1-4.5 newton-meters).
- 9) ENGINES PRE-PW-SB 79-52;
Tighten the No. 3 bearing oil pressure manifold nut to the No. 3 bearing oil strainer (19) at Flange K (16) to 675-750 pound-inches (76.3-84.7 newton-meters).
- (m) Attach the lockwire or safety cable and safety cable ferrule at all necessary locations.
- (n) ENGINES PRE-PW-SB 79-52;
Do the steps that follow:
 - 1) Install the spray shield (14) to the inboard side of the rear No. 3 bearing oil pressure manifold connection.
 - 2) Attach the spray shield (14) with the hose clamp (13).
 - 3) Tighten the hose clamp (14) to 15-18 pound-inches (1.7-2.0 newton-meters).
- (o) ENGINES POST-PW-SB 79-52;
Do the steps that follow:
 - 1) Install the spray shield (21) to the inboard side of the rear No. 3 bearing oil pressure manifold (1) that is attached to the No. 3 bearing pressure tube (15).

EFFECTIVITY

ALL

79-21-17

N01

Page 412
Dec 22/00

- 2) Attach the spray shield (21) with a clamp and a bolt (28), threads lubricated with Engine Oil, to a bracket attached to the flange of the cooling air tube on the high compressor.
- 3) Tighten the bolt (28) to 36-40 pound-inches (4.1-4.5 newton-meters).

S 614-022-N00

- (5) Fill the engine oil system (AMM 12-13-01/301).

S 414-023-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (6) Close the left thrust reverser (AMM 78-31-00/201).

S 414-024-N00

- (7) Close the left core cowl panel (AMM 71-11-06/201).

S 444-025-N00

- (8) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

S 414-026-N00

- (9) Close the left fan cowl panel (AMM 71-11-04/201).

S 714-027-N00

- (10) Do the test of the main bearing strainer housing assembly that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-21-17

N01

Page 413
Dec 22/00

OIL QUANTITY INDICATING SYSTEM - DESCRIPTION AND OPERATION

1. General

A. The oil quantity indication system includes an oil quantity transmitter and a sight gage on the oil tank. The oil quantity transmitter transmits a signal to the Engine Indication and Crew Alerting System (EICAS), which shows the quantity of engine oil in the oil tank. The EICAS computer shows this quantity on the bottom EICAS display in the flight compartment. The sight gage shows when the oil level in the oil tank is one or more quarts low.

2. Component Details (Fig. 1)

A. Oil Quantity Transmitter

- (1) The oil quantity transmitter is installed on the left side of the engine, installed in the top of the oil tank.
- (2) The oil quantity transmitter is a float-type, magnetic reed switch unit. It transmits a signal which shows the quantity of engine oil in the oil tank to the EICAS computer.

B. Oil Tank Sight Gage

- (1) The sight gage, Type I or II, for the oil tank is installed in the top, aft side of the oil tank.
- (2) The sight gage shows the approximate oil quantity with a prism.
- (3) The Type I sight gage shows the oil quantity as follows:
 - (a) Put a light in the prism.
 - (b) If the prism is dark, the oil quantity is satisfactory.
 - (c) If the prism is light, the oil quantity is more than one quart (0.946 liter) low.
- (4) The Type II sight gage shows the oil quantity as follows:
 - (a) If "OK" shows in the prism, the oil quantity is satisfactory.
 - (b) If "OK" does not show in the prism, the oil quantity is more than one quart (0.946 liter) low.

C. Oil Quantity Indication

- (1) The oil quantity indication is installed on the bottom EICAS display. The display indicates usable oil in oil tank. The oil quantity indication color above and in the low oil quantity band shows white.
- (2) The bottom EICAS display shows the quantity of engine oil to the nearest quart on a vertical scale with triangular analog pointers, and on a digital readout.

3. Operation

A. Functional Description (Fig. 2)

(1) Oil Quantity Indicating System

- (a) The oil quantity transmitter gets 3.0 to 6.2 volts from the dc reference power supply of the EICAS.
- (b) The oil quantity transmitter measures the engine oil in the oil tank by a float device, which operates the magnetic reed switches in a potentiometer and transmits a signal voltage to the EICAS computer.
- (c) The EICAS computer uses the ratio of the reference and the output signals from the oil quantity transmitter to calculate the oil quantity. This value is shown on the bottom EICAS display.

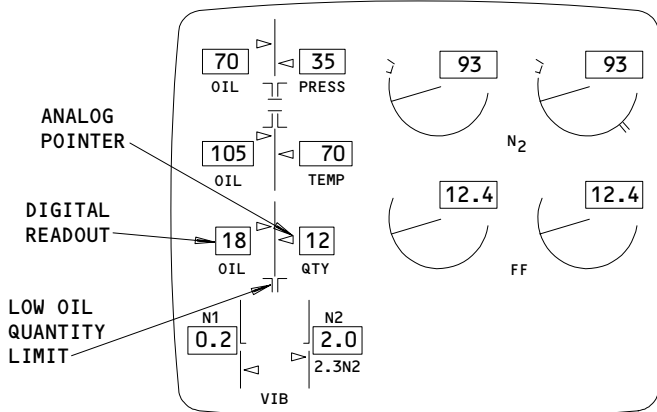
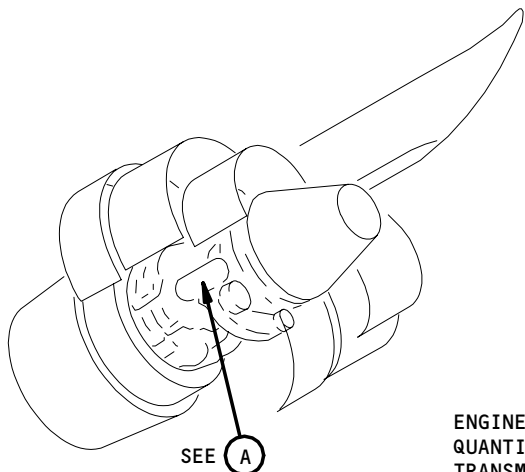
EFFECTIVITY

ALL

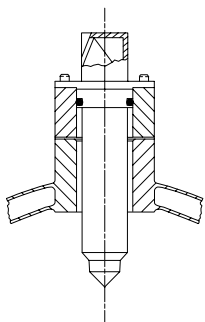
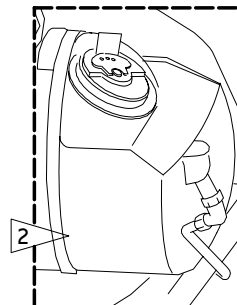
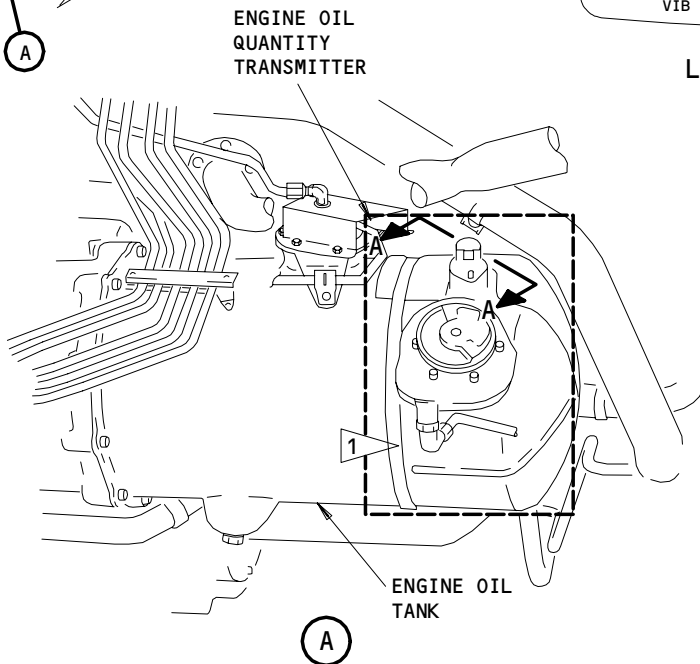
79-31-00

N01

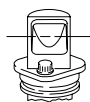
Page 1
Aug 10/95



LOWER EICAS DISPLAY



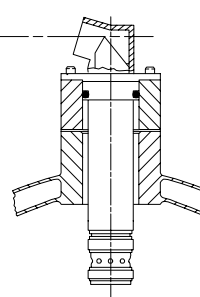
TYPE 1
INDICATOR
A-A



LOW OIL
LEVEL



ACCEPTABLE
OIL LEVEL



TYPE 2
INDICATOR
A-A

- 1 ENGINES WITHOUT PW SB 79-65
- 2 ENGINES WITH PW SB 79-65

L-A2779
0988

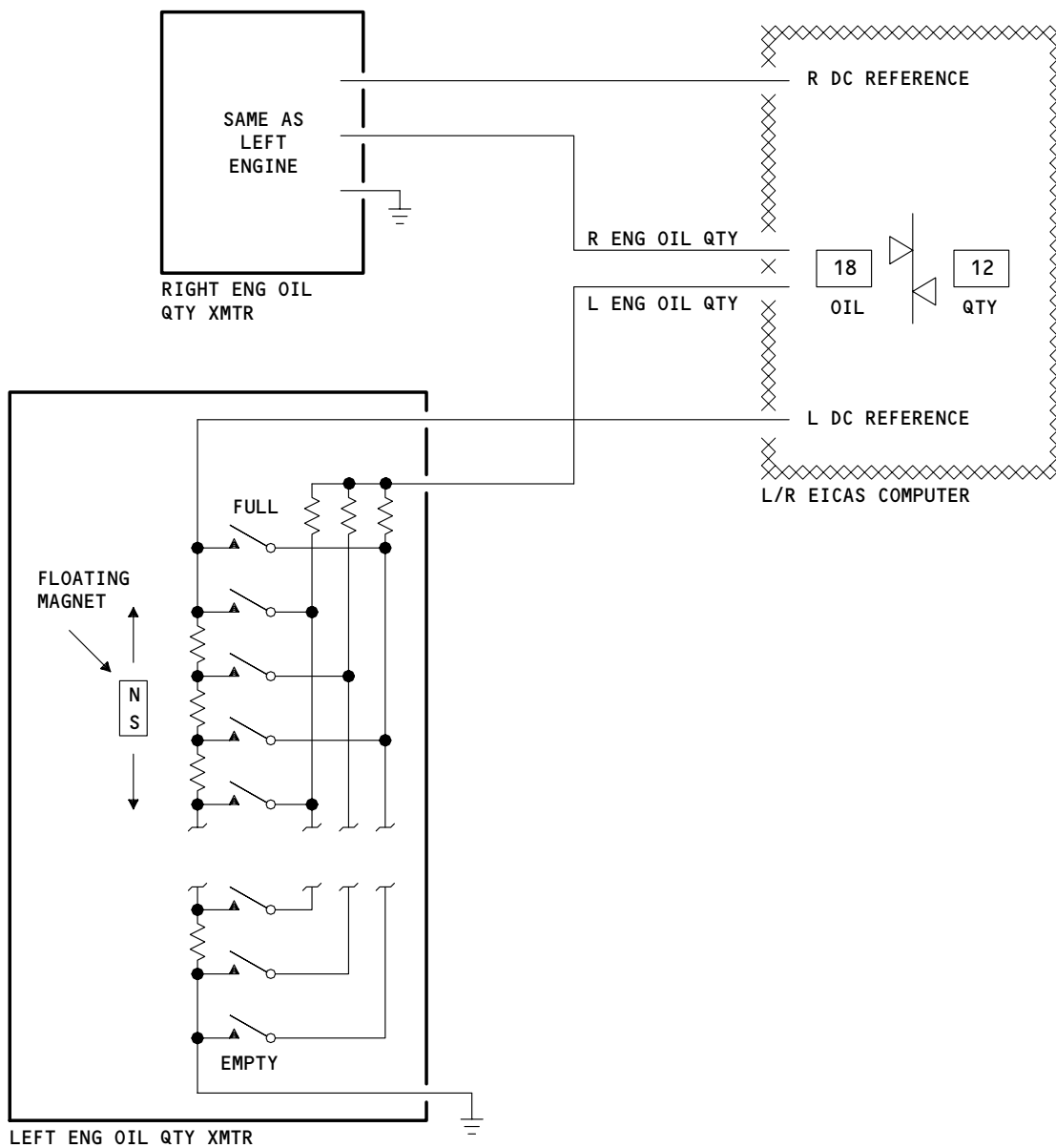
Oil Quantity Indicating System
Figure 1

EFFECTIVITY	ALL
-------------	-----

79-31-00

N01

Page 2
Aug 10/94



Engine Oil Quantity Indication Schematic
Figure 2

EFFECTIVITY ————
ALL

79-31-00

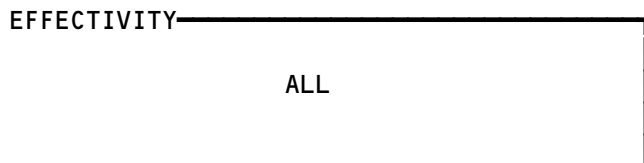
N01

Page 3
Nov 10/87

OIL QUANTITY INDICATING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
COMPUTER - (FIM 31-41-00/101) EICAS L, M10181 EICAS R, M10182				
GAGE - OIL TANK SIGHT	--	2	417AL,427AL, CORE COWL PANEL	79-31-02
TRANSMITTER - OIL QUANTITY, T675	--	2	415AL,425AL, THRUST REVERSER	79-31-01

Oil Quantity Indicating System - Component Index
Figure 101



79-31-00

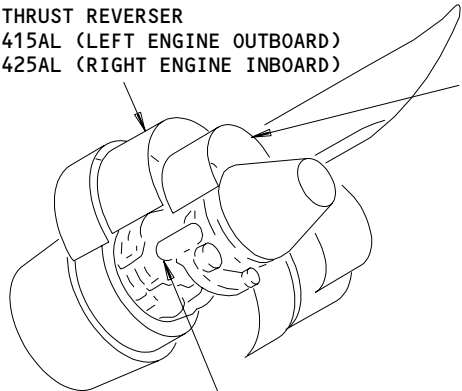
N01

Page 101
Aug 10/94

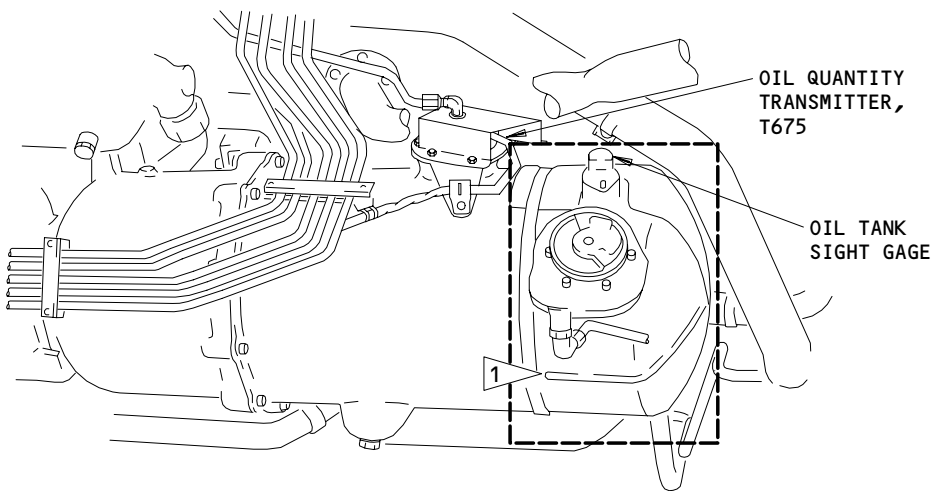
E38932

THRUST REVERSER
 415AL (LEFT ENGINE OUTBOARD)
 425AL (RIGHT ENGINE INBOARD)

CORE COWL PANEL
 417AL (LEFT ENGINE OUTBOARD)
 427AL (RIGHT ENGINE INBOARD)



ENGINE OIL TANK
 SEE (A)



FWD ←

ENGINE OIL TANK

(A)

- 1 ▽ ENGINES WITHOUT PW SB 79-65
- 2 ▽ ENGINES WITH PW SB 79-65

Oil Quantity Indicating System - Component Location
 Figure 102

EFFECTIVITY	ALL
-------------	-----

79-31-00

OIL QUANTITY INDICATING SYSTEM – ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks. The first task is an operational test of the oil quantity indicating system. The second task is a system test of the oil quantity indicating system.

TASK 79-31-00-715-001-N00

2. Operational Test – Oil Quantity Indicating System

A. References

- (1) AMM 12-13-01/301, Engine – Servicing
- (2) AMM 24-22-00/201, Electrical Power – Control
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

(1) Location Zones

- 211 Flight Compartment
- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

C. Do a Test of the Oil Quantity Indicating System

S 045-002-N00

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 215-003-N00

- (2) Make sure the engine oil tank is correctly filled (AMM 12-13-01/301).

S 865-004-N00

- (3) Supply electrical power (AMM 24-22-00/201).

S 865-005-N00

- (4) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

- (a) Six EICAS circuit breakers
- (b) 11U15, LANDING GEAR AIR/GND SYS 1
- (c) 11U23, LANDING GEAR POSITION AIR/GND SYS 2

EFFECTIVITY

ALL

79-31-00

N01

Page 501
Dec 22/00

- S 215-006-N00
- (5) Look at the oil quantity indication on the Engine Indication and Crew Alerting System (EICAS) bottom display in the flight compartment.
- S 215-025-N00
- (6) ENGINES PRE-PW-SB 79-65 (CUTAWAY OIL TANK);
The oil quantity indication must read as follows:
- (a) The oil quantity indication must read 25 ±3 quarts (24 ±3 liters) for the left engine with the engine not in operation.
 - (b) The oil quantity indication must read 22 ±3 quarts (21 ±3 liters) for the right engine with the engine not in operation.
- S 215-026-N00
- (7) ENGINES POST-PW-SB 79-65 (CUTAWAY OIL TANK);
The oil quantity indication must read 23 ±3 quarts (22 ±3 liters) for both left and right engine with the engines not in operation.
- S 445-007-N00
- (8) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

TASK 79-31-00-735-008-N00

3. System Test - Oil Quantity Indicating System

A. Equipment

- (1) Calibrated beaker - 1-quart size minimum (for the oil)

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521

C. References

- (1) AMM 12-13-01/301, Engine - Servicing
- (2) AMM 12-22-01/301, Engine (Oil Change)
- (3) AMM 24-22-00/201, Electrical Power - Control
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System
- (6) AMM 79-11-03/201, Engine Oil Tank Cap

D. Access

(1) Location Zones

- 211 Flight Compartment
- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 417AL Core Cowl (Left)
- 427AL Core Cowl (Left)

E. Prepare to Do the System Test

EFFECTIVITY

ALL

79-31-00

N01

Page 502
Dec 22/00

S 045-009-N00

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 015-010-N00

- (2) Open the left core cowl panel (AMM 71-11-06/201).

S 035-011-N00

WARNING: BEFORE YOU OPEN THE OIL TANK CAP, PERMIT A MINIMUM OF FIVE MINUTES AFTER THE ENGINE SHUTDOWN TO LET THE PRESSURE IN THE OIL TANK BLEED OFF. A FAST FLOW OF HOT OIL CAN OCCUR AND CAUSE INJURY TO YOU.

WARNING: DO NOT KEEP THE OIL ON YOU FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY TO YOU.

- (3) Open the oil tank cap (AMM 79-11-03/201).

S 685-012-N00

- (4) If the oil tank is not empty, drain the oil tank (AMM 12-22-01/301).
- F. Do a Test of the Oil Quantity Indicating System

S 865-013-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 865-014-N00

- (2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
 - (a) Six EICAS circuit breakers
 - (b) 11U15, LANDING GEAR AIR/GND SYS 1
 - (c) 11U23, LANDING GEAR POSITION AIR/GND SYS 2

S 725-015-N00

- (3) Do the left engine and right engine oil quantity system test.
 - (a) Set the EICAS computer select switch to L.

EFFECTIVITY

ALL

79-31-00

N01

Page 503
Dec 22/03

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

- (b) Add the oil to the oil tank until the oil quantity indication reads 1 on the lower EICAS display.

NOTE: You must use a calibrated beaker to accurately measure the quantity of oil you use.

- (c) Make sure that 7.8 to 9.8 quarts (7.4 to 9.3 liters) of oil have been added.
- (d) Add 9 more quarts (8.5 liters) of oil.
- (e) Make sure the oil quantity indication on the bottom display reads 10 ± 2 quarts (9.5 ± 1.9 liters) for the left or right engine.
- (f) Set the EICAS computer select switch to R.
- (g) Make sure the oil quantity indication on the bottom EICAS display reads 10 ± 2 quarts (9.5 ± 1.9 liters) for the left or right engine.
- (h) Add 9 more quarts (8.5 liters) of oil.
- (i) Make sure the oil quantity indication on the bottom EICAS display reads 19 ± 2 quarts (18 ± 1.9 liters) for the left or right engine.
- (j) Add sufficient oil to fill the tank to the lip of the scupper (fill the tank to overflow).

NOTE: The last quart must be poured very slowly. Pour until the oil starts to flow out of the tank and on to the scupper.

- (k) ENGINES PRE-PW-SB 79-65 (CUTAWAY OIL TANK);
Look at the EICAS.
 - 1) The oil quantity indication must read 25 ± 3 quarts (24 ± 3 liters) for the left engine.
 - 2) The oil quantity indication must read 22 ± 3 quarts (21 ± 3 liters) for the right engine.

EFFECTIVITY

ALL

79-31-00

N01

Page 504
Dec 22/00

- (L) ENGINES POST-PW-SB 79-65 (CUTAWAY OIL TANK);
Look at the EICAS:
 - 1) The oil quantity indication must read 23 ±3 quarts
(22 ±3 liters) for both left and right engine.

S 865-019-N00

- (4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

G. Put the Airplane Back to Its Usual Condition

S 615-020-N00

- (1) Do the servicing procedure for the engine oil tank
(AMM 12-13-01/301).

S 435-021-N00

- (2) Close the oil tank cap (AMM 79-11-03/201).

S 415-022-N00

- (3) Close the left core cowl panel (AMM 71-11-06/201).

S 445-023-N00

- (4) Do the activation procedure for the thrust reversers
(AMM 78-31-00/201).

EFFECTIVITY

ALL

79-31-00

N01

Page 505
Dec 22/00

OIL QUANTITY TRANSMITTER – REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. One task is to remove the oil quantity transmitter. The other task is to install the oil quantity transmitter.

TASK 79-31-01-024-001-N00

2. Remove the Oil Quantity Transmitter

A. References

- (1) AMM 24-22-00/201, Electrical Power – Control
- (2) AMM 36-11-01/401, Pneumatic Duct
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare to Remove the Oil Quantity Transmitter

S 864-002-N00

- (1) Remove electrical power (AMM 24-22-00/201).

S 014-003-N00

- (2) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-004-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (3) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-005-N00

- (4) Open the left core cowl panel (AMM 71-11-06/201).

S 014-006-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (5) Open the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-31-01

N01

Page 401
Dec 22/00

D. Remove the Oil Quantity Transmitter (Fig. 401)

S 034-007-N00

- (1) For easier access, remove the high pressure pneumatic duct of the 15th-stage from the No. 4 port (AMM 36-11-01/401).

S 034-008-N00

- (2) Disconnect the electrical connector (4).
(a) Install the protective cap to the electrical connector (4).

S 034-009-N00

- (3) Disconnect the cooling air tube (20) from the union (1) on the heatshield.

S 034-010-N00

- (4) Remove the bolts (9, 11), nuts (10, 12) and washers (13) which attach the heatshield (2) to the engine oil tank.

S 024-035-N00

- (5) Remove the heatshield (2) from the engine.

S 034-011-N00

- (6) Remove the bolts (14), nuts (15) and washers (16) to remove the brackets (3, 5) from the oil quantity transmitter (6).

S 034-012-N00

- (7) Remove the bolts (17), nuts (18) and washers (19) which attach the oil quantity transmitter to the engine oil tank.

S 034-013-N00

- (8) Remove the packing (7) from the oil quantity transmitter (6).
(a) Discard the packing (7).

S 034-014-N00

- (9) Install protective cap to the opening in the engine oil tank to prevent contamination of the engine oil tank.

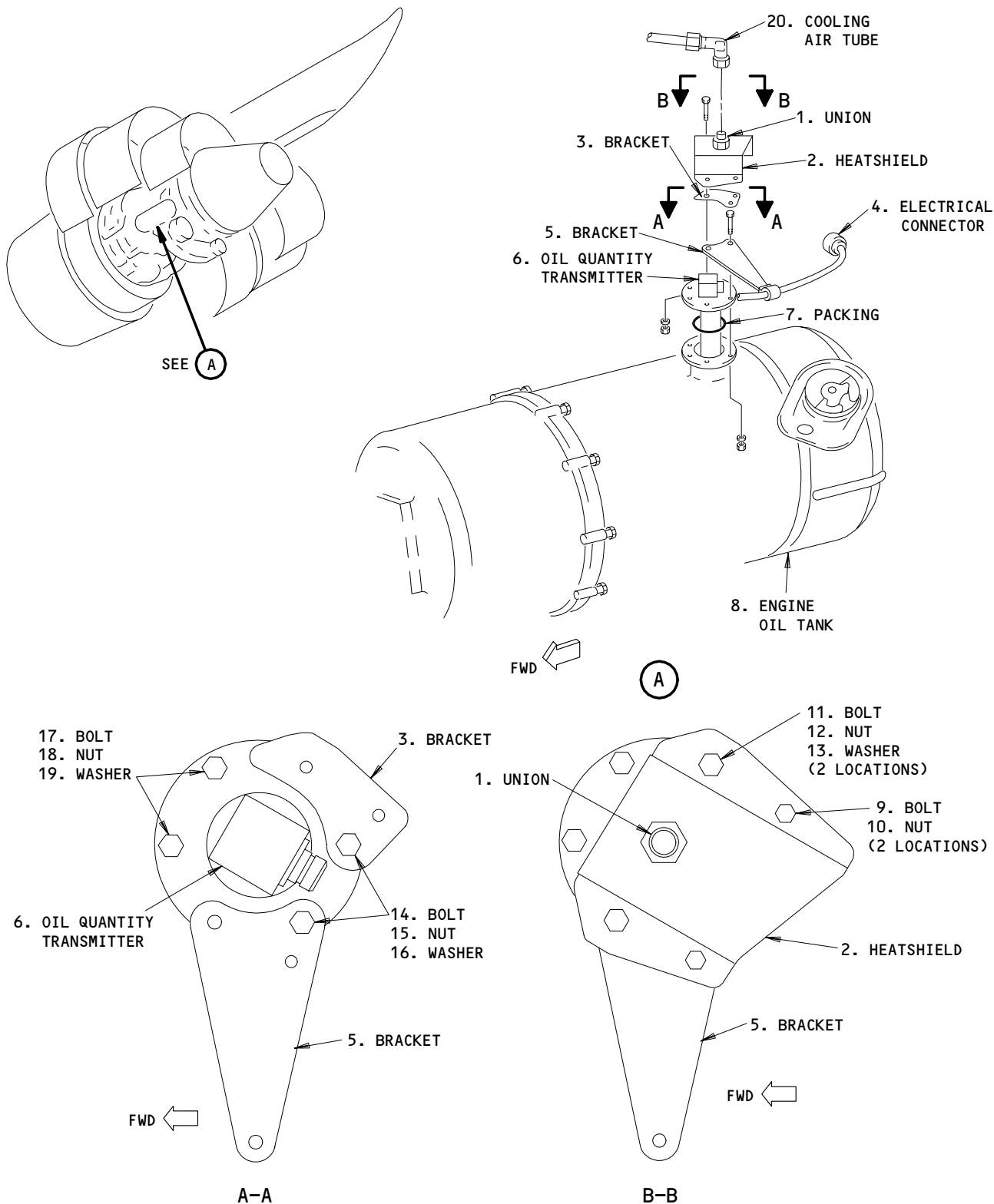
EFFECTIVITY

ALL

79-31-01

N01

Page 402
Dec 22/00



Oil Quantity Transmitter Installation
Figure 401

EFFECTIVITY

ALL

79-31-01

N01

Page 403
Nov 10/94

TASK 79-31-01-424-015-N00

3. Install the Oil Quantity Transmitter

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	6	Transmitter - Oil Quantity	79-31-01	03	50
	7	Packing	79-31-01	06	55
				03	55
				06	65

B. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 36-11-01/401, Pneumatic Duct
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System
- (6) AMM 79-31-00/501, Oil Quantity Indicating System

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

D. Procedure (Fig. 401)

S 434-016-N00

- (1) Remove protective cap from the opening on the engine oil tank.

S 644-017-N00

- (2) Lubricate the new packing (7) with engine oil.

EFFECTIVITY

ALL

79-31-01

N01

Page 404
Apr 22/06

- S 434-018-N00
(3) Install the packing (7) on the oil quantity transmitter (6).
- S 424-019-N00
(4) Install the oil quantity transmitter (6) into the engine oil tank.
- S 824-020-N00
(5) Align the electrical connection of the oil quantity transmitter (6) as shown in Fig. 401.
- S 434-021-N00
(6) Install the bolts (17), nuts (18) and washers (19) to attach the oil quantity transmitter (6) to the engine oil tank.
- S 434-022-N00
(7) Install the bolts (14), nuts (15) and washers (16) to attach the brackets (3, 5) and the oil quantity transmitter (6).
(a) Tighten the bolts (14, 17).
- S 434-023-N00
(8) Install the heatshield (2) to the brackets (3, 5) with the bolts (9, 11), nuts (10, 12) and washers (13).
(a) Tighten the bolts (9, 11).
- S 434-024-N00
(9) Connect the cooling air tube (20) to the union (1).
(a) Tighten the tube nut on the cooling air tube (20).
- S 434-025-N00
(10) Remove protective cap from the electrical connector (4).
- S 434-026-N00
(11) Connect the electrical connector (4) to the oil quantity transmitter (6).

EFFECTIVITY

ALL

79-31-01

N01

Page 405
Dec 22/00

S 434-027-N00

- (12) Install the high pressure pneumatic duct of the 15th-stage to the No. 4 port (AMM 36-11-01/401).

E. Put the airplane back to its initial condition

S 864-028-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 414-029-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (2) Close the left thrust reverser (AMM 78-31-00/201).

S 414-030-N00

- (3) Close the left core cowl panel (AMM 71-11-06/201).

S 414-031-N00

- (4) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-032-N00

- (5) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 714-033-N00

- (6) Do a test of the oil quantity indicating system to make sure it is serviceable (AMM 79-31-00/501).

EFFECTIVITY

ALL

79-31-01

N01

Page 406
Dec 22/00

ENGINE OIL TANK SIGHT GAGE - REMOVAL/INSTALLATION

1. General

NOTE: This procedure is not applicable to engines POST-PW-SB 79-65.

- A. This procedure contains two tasks. One task is to remove the sight gage for the engine oil tank. The other task is to install the sight gage for the engine oil tank.

TASK 79-31-02-024-001-N00

2. Remove the Engine Oil Tank Sight Gage

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare to Remove the Engine Oil Tank Sight Gage

S 014-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

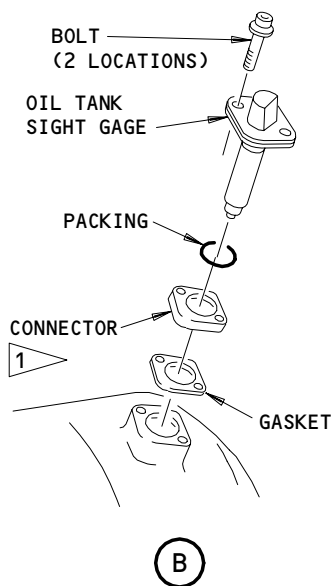
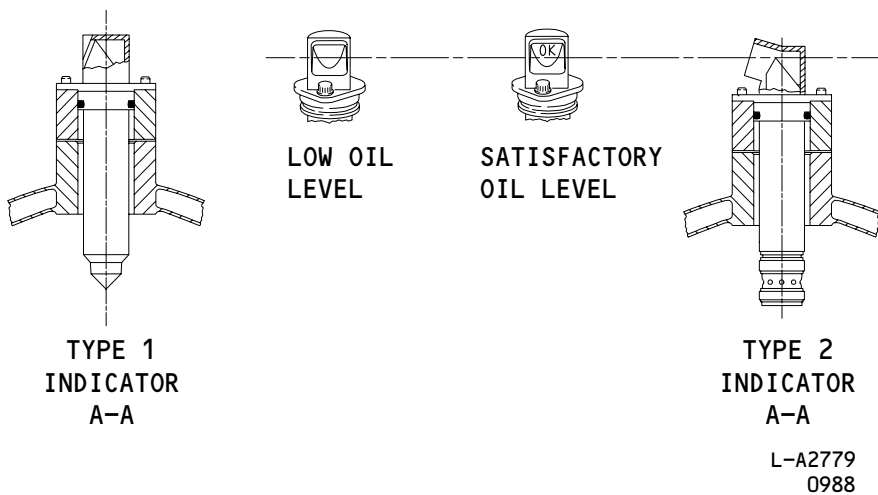
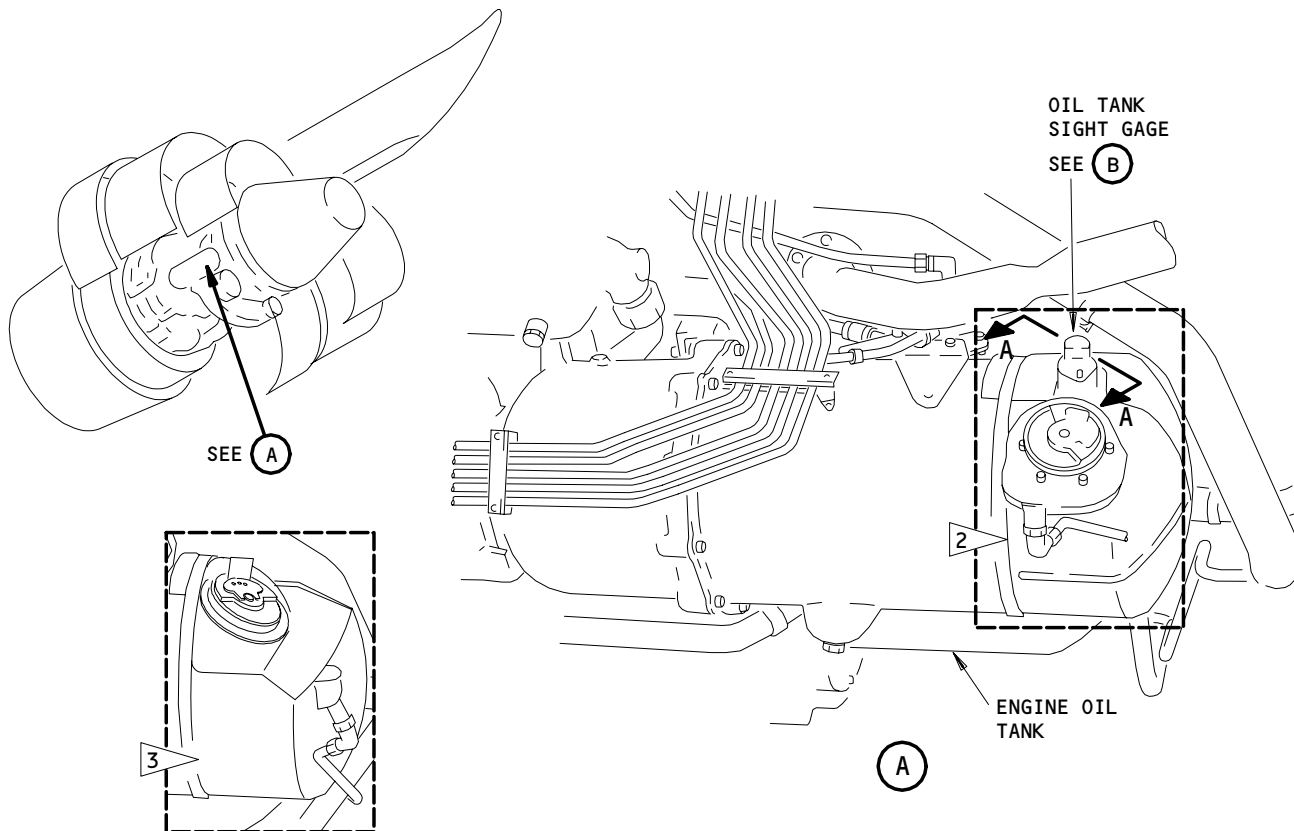
EFFECTIVITY

ALL

79-31-02

N01

Page 401
Dec 22/00



- 1 ENGINES WITHOUT PW SB 79-47
- 2 ENGINES WITHOUT PW SB 79-65
- 3 ENGINES WITH PW SB 79-65

Oil Tank Sight Gage Installation
Figure 401

EFFECTIVITY	
	ALL

79-31-02

N01

Page 402
Aug 10/94

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (4) Open the left thrust reverser (AMM 78-31-00/201).
- D. Remove the Engine Oil Tank Sight Gage (Fig. 401)

S 034-006-N00

- (1) Remove the bolts which attach the sight gage to the engine oil tank.

S 024-007-N00

- (2) Remove the sight gage from the engine oil tank.
 - (a) Discard the packing.

S 034-020-N00

- (3) ENGINES PRE-PW-SB 79-47;
Do the steps that follow:
 - (a) Remove the connector from the engine oil tank.
 - (b) Discard the gasket.

S 034-008-N00

- (4) Install protective cap on the opening of the engine oil tank.

TASK 79-31-02-424-009-N00

3. Install the Engine Oil Tank Sight Gage

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
- (2) G02332 Ferrule, Safety Cable (P05-292)
- (3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (4) G02335 Cable, Safety (P05-291)

C. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

D. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

EFFECTIVITY

ALL

79-31-02

N01

Page 403
Dec 22/00

- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

E. Procedure (Fig. 401)

S 434-010-N00

- (1) Remove protective cap from the opening on the engine oil tank.

S 644-011-N00

- (2) Lubricate the packing with engine oil.

S 434-012-N00

- (3) Install the packing on the sight gage of the engine oil tank.

S 424-013-N00

- (4) ENGINES PRE-PW-SB 79-47;

Do the steps that follow:

- (a) Install the gasket and the connector on the engine oil tank.
- (b) Lubricate the threads of the bolts, which attach the sight gage to the engine oil tank, with engine oil.
- (c) Attach the sight gage and the connector to the engine oil tank with the bolts.
- (d) Tighten the bolts to 32-36 pound-inches (3.6-4.0 newton-meters).
- (e) Install the lockwire or safety cable and safety cable ferrule on the bolts.

S 424-021-N00

- (5) ENGINES POST-PW-SB 79-47;

Do the steps that follow:

- (a) Lubricate the threads of the bolts, which attach the sight gage to the engine oil tank, with engine oil.
- (b) Attach the sight gage to the engine oil tank with the bolts.
- (c) Tighten the bolts to 32-36 pound-inches (3.6-4.0 newton-meters).
- (d) Install the lockwire or safety cable and safety cable ferrule on the bolts.

F. Put the airplane back to its initial condition

S 414-016-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-017-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-31-02

N01

Page 404
Dec 22/00

S 414-018-N00
(3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-019-N00
(4) Do the activation procedure for the thrust reversers
(AMM 78-31-00/201).

EFFECTIVITY

ALL

79-31-02

N01

Page 405
Dec 22/00

OIL PRESSURE INDICATING SYSTEM - DESCRIPTION AND OPERATION

1. General
 - A. The engine oil pressure indicating system uses the Engine Indication and Crew Alerting System (EICAS) display in the flight compartment to show the oil pressure at the fuel/oil cooler outlet for each engine.
 - B. The system includes an oil pressure transmitter and indication. The oil pressure transmitter measures the pressure after the fuel/oil cooler and before the engine oil goes to the engine bearings. The pressure signal is sent to the EICAS computers which show the oil pressure on the bottom EICAS display in the flight compartment.
2. Component Details (Fig. 1)
 - A. Oil Pressure Transmitter
 - (1) The oil pressure transmitter is installed on the left side of the engine to the rear of the fan case at the 11 o'clock position.
 - (2) The oil pressure transmitter is a variable reluctance type. It has a pressure sensor and an electrical transformer with a core that moves. A diaphragm in the pressure sensor is mechanically attached to the transformer core. The diaphragm feels the pressure changes.
 - B. Oil Pressure Indication
 - (1) The oil pressure indication is on the bottom EICAS display. The bottom EICAS display gives the oil pressure after the fuel/oil cooler and before the engine oil goes into the engine bearings.
3. Operation
 - A. Functional Description (Fig. 2)
 - (1) Oil Pressure Indicating System
 - (a) The system operates when 28 volts ac power is supplied to the oil pressure transmitter. The EICAS computer uses the signals from the oil pressure transmitter to calculate the oil pressure.
 - (b) The oil pressure transmitter finds the oil pressure from a diaphragm in the transmitter pressure sensor. The diaphragm position is the difference of the oil pressure and the breather air pressure from the main bearing compartment.
 - (c) Signals in direct relation with the oil pressure come from the oil pressure transmitter through the reluctance change between the windings of the transformer.
 - (d) The signals are sent to the EICAS computers which show the data on a vertical scale with triangular analog pointers and the digital readouts. The digital readouts change from white to red when the engine oil pressure decreases to 77 psi or less.

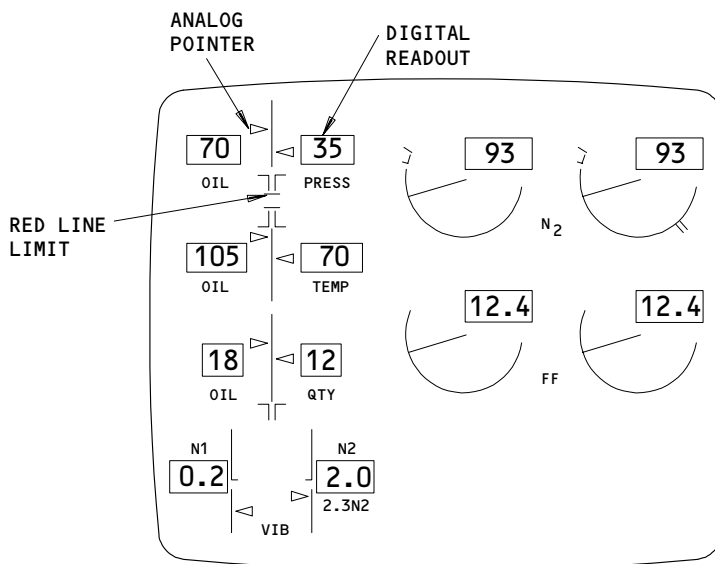
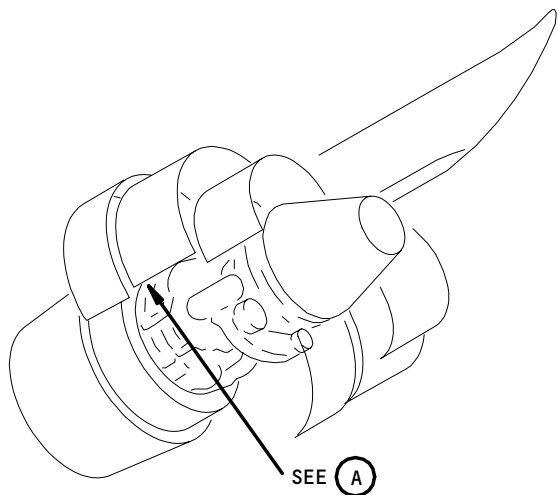
EFFECTIVITY

ALL

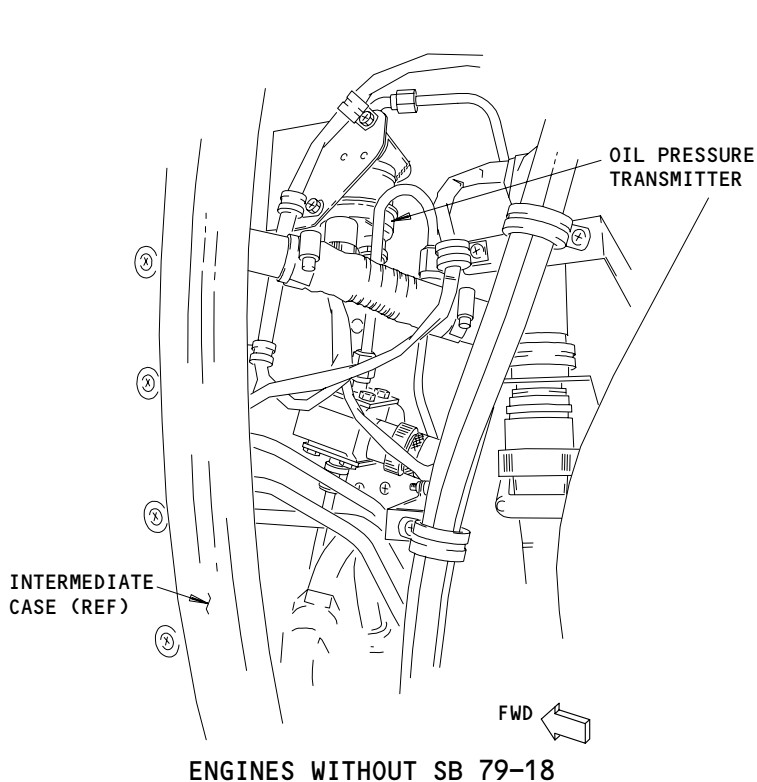
79-32-00

N01

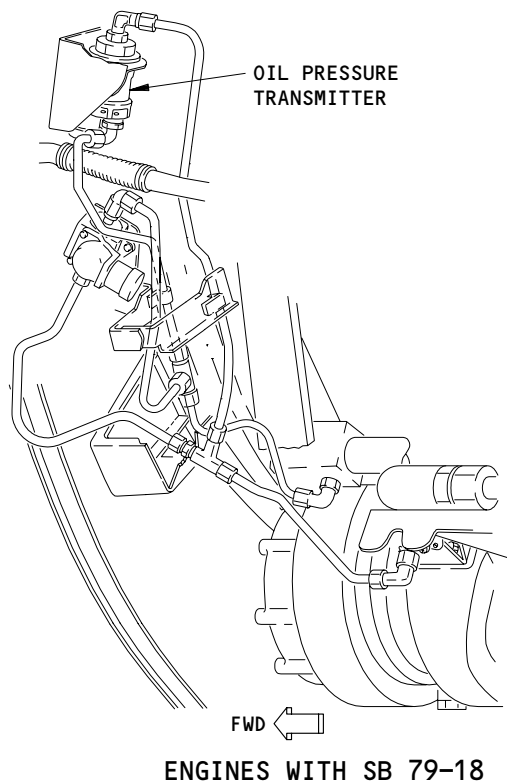
Page 1
Aug 10/92



LOWER EICAS DISPLAY



(A)



(A)

Oil Pressure Indicating System
Figure 1

EFFECTIVITY

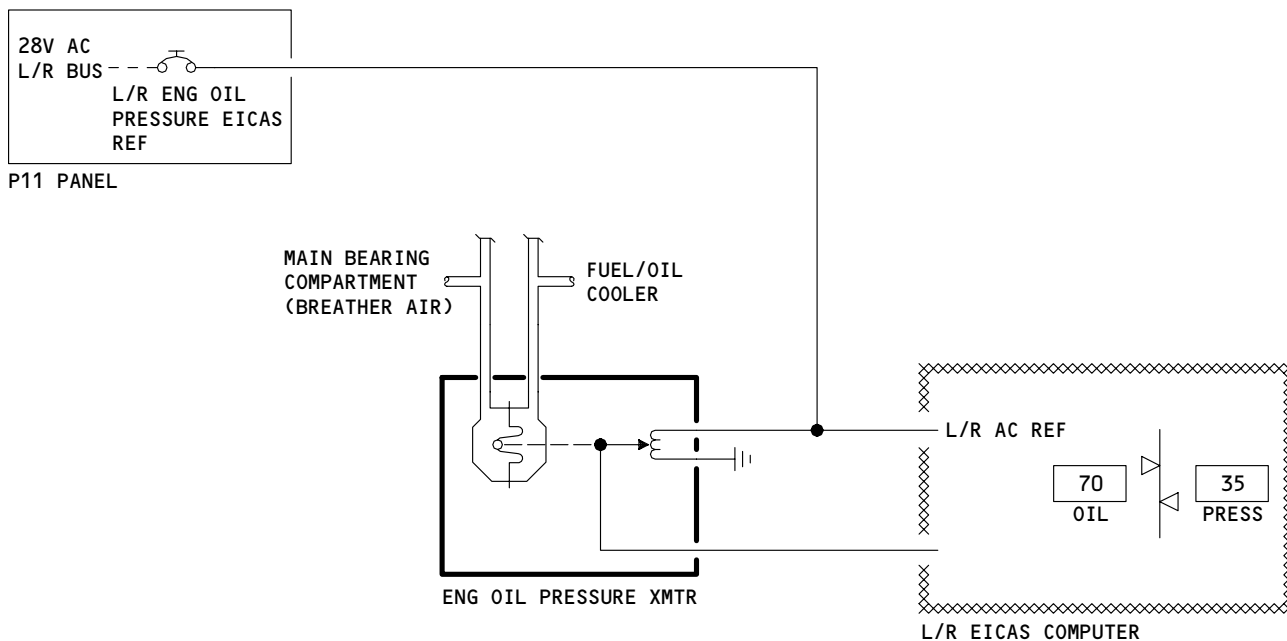
ALL

79-32-00

N02

Page 2
May 10/94

E17479



Engine Oil Pressure Indication Schematic
Figure 2

EFFECTIVITY	ALL
-------------	-----

79-32-00

N01

Page 3
May 10/88

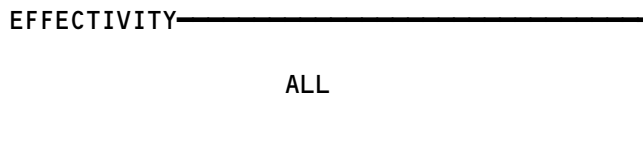
268713

OIL PRESSURE INDICATING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CIRCUIT BREAKER - L ENG OIL PRESS EICAS REF, C1498 R ENG OIL PRESS EICAS REF, C1499	--	1	FLT COMPT, P11 11L9	*
COMPUTER - (FIM 31-41-00/101) EICAS L, M10181 EICAS R, M10182	--	1	11L36	*
TRANSMITTER - OIL PRESSURE, T679	--	2	415AL,425AL, THRUST REVERSER, INTERMEDIATE CASE	79-32-01

* SEE THE WDM EQUIPMENT LIST

Oil Pressure Indicating System - Component Index
Figure 101



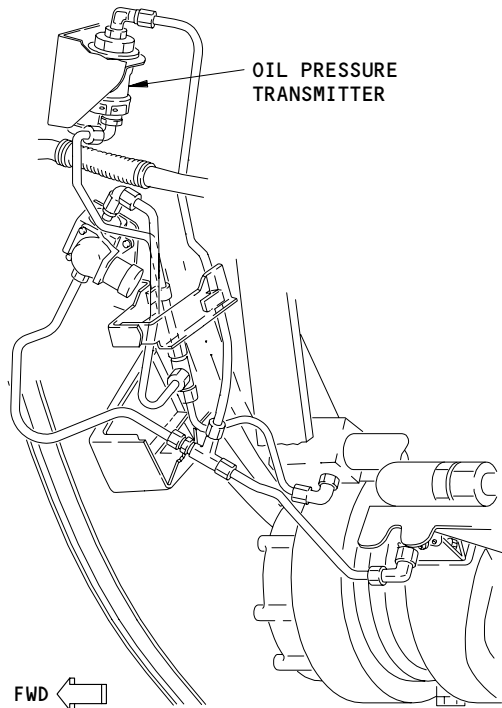
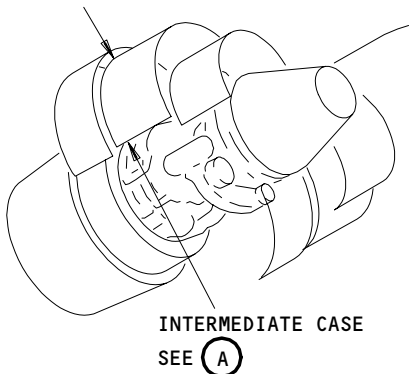
79-32-00

N01

Page 101
May 10/94

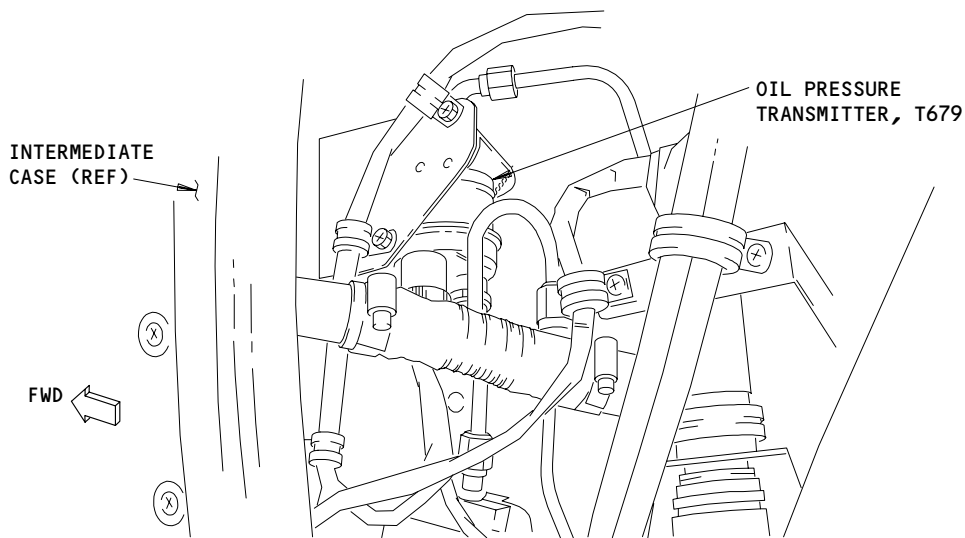
E15079

THRUST REVERSER,
 415AL (LEFT ENGINE OUTBOARD),
 425AL (RIGHT ENGINE INBOARD)



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Oil Pressure Indicating System - Component Location
 Figure 102

EFFECTIVITY	
	ALL

79-32-00

N01

Page 102
 May 10/94

OIL PRESSURE INDICATING SYSTEM – ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks. The first task is an operational test of the oil pressure indicating system. The second task is a system test of the oil pressure indicating system.

TASK 79-32-00-715-001-N00

2. Operational Test – Oil Pressure Indicating System

A. References

- (1) AMM 71-00-00/201, Power Plant

B. Do a Test of the Oil Pressure Indicating System

S 865-002-N00

- (1) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
- (a) Six EICAS circuit breakers
 - (b) 11U15, LANDING GEAR AIR/GND SYS 1
 - (c) 11U23, LANDING GEAR POSITION AIR/GND SYS 2
 - (d) 11L9, LEFT ENGINE OIL PRESS EICAS REF
 - (e) 11L36, RIGHT ENGINE OIL PRESS EICAS REF

S 865-003-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (2) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).

S 215-004-N00

- (3) With the two engines in operation at the same power, make sure the oil pressure indication on the bottom display of the Engine Indication and Crew Alerting System (EICAS) is approximately the same for the two engines.

S 865-005-N00

- (4) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).

TASK 79-32-00-735-006-N00

3. System Test – Oil Pressure Indicating System

A. References

- (1) AMM 24-22-00/201, Electrical Power – Control
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System

B. Equipment

- (1) Air pressure source – adjustable from 0 to 100 psi, accurate to ± 1 psi.

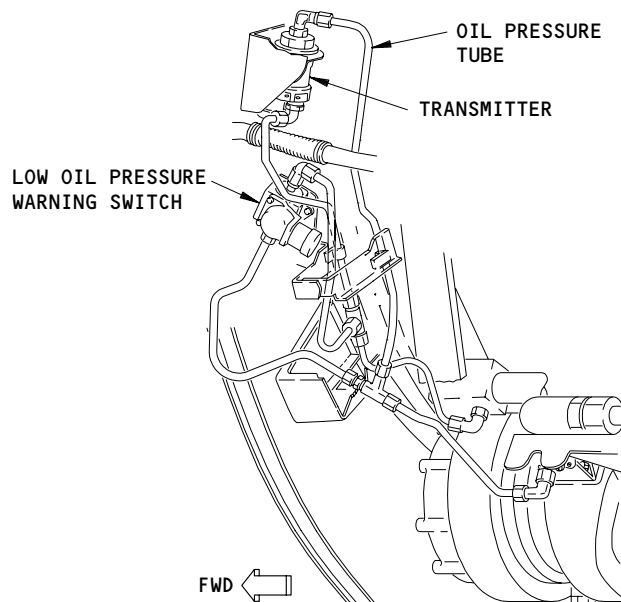
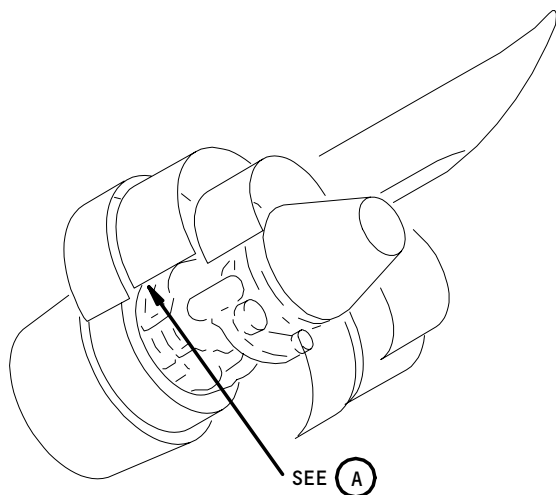
EFFECTIVITY

ALL

79-32-00

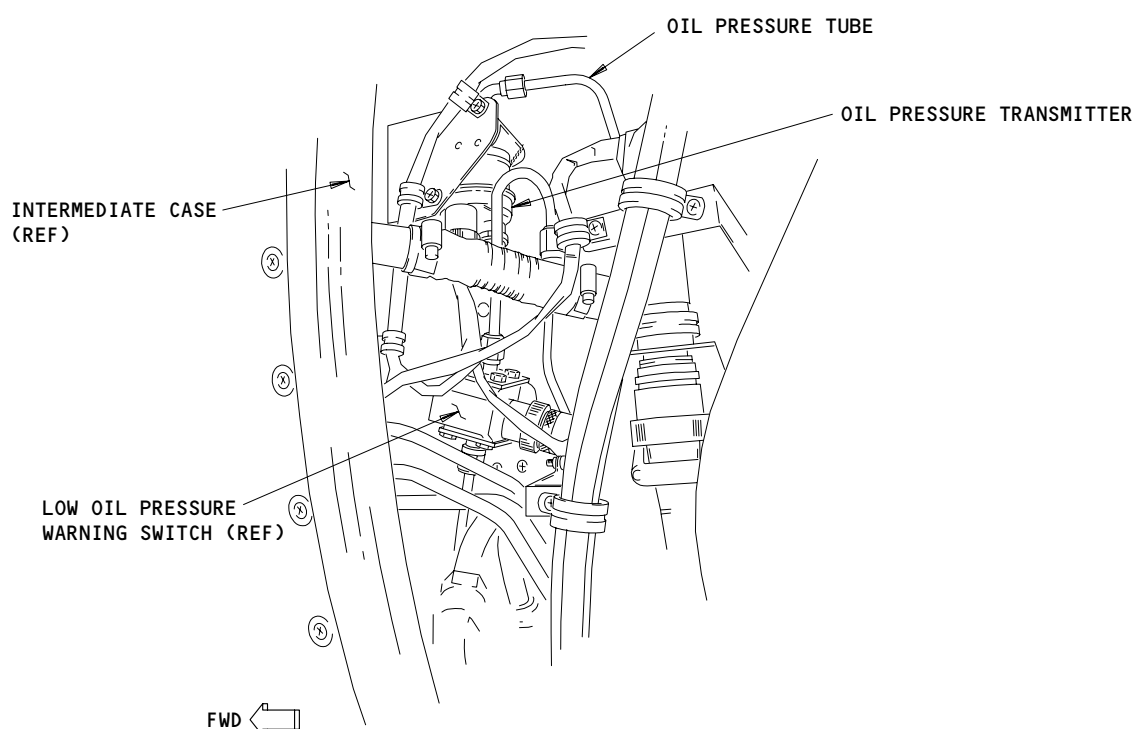
N01

Page 501
Dec 22/00



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Oil Pressure Indicating System Test
Figure 501

EFFECTIVITY	
	ALL

79-32-00

E17564

C. Do a Test of the Oil Pressure Indicating System (Fig. 501)

S 865-007-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 865-008-N00

- (2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
- (a) Six EICAS circuit breakers
 - (b) 11U15, LANDING GEAR AIR/GND SYS 1
 - (c) 11U23, LANDING GEAR POSITION AIR/GND SYS 2
 - (d) 11L9, LEFT ENGINE OIL PRESS EICAS REF
 - (e) 11L36, RIGHT ENGINE OIL PRESS EICAS REF

S 015-009-N00

- (3) Open the left fan cowl panel (AMM 71-11-04/201).

S 045-010-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (4) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 015-011-N00

- (5) Open the left core cowl panel (AMM 71-11-06/201).

S 015-012-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Open the left thrust reverser (AMM 78-31-00/201).

S 035-013-N00

- (7) Disconnect the oil pressure tube from the oil pressure transmitter.

S 495-014-N00

- (8) Connect the line from the air pressure source to the oil pressure transmitter.

S 865-015-N00

- (9) Apply a pressure of 100 ±1.0 psig to the oil pressure transmitter.
(a) Make sure the oil pressure indication on the bottom display of the EICAS reads 100 ±9 psi.

EFFECTIVITY

ALL

79-32-00

N01

Page 503
Dec 22/00

- S 865-016-N00
(10) Decrease the pressure to 60 ±1.0 psig.
(a) Make sure the oil pressure indication on the bottom display reads 60 ±9 psi.
- S 865-017-N00
(11) Decrease the pressure to 0.
- S 095-018-N00
(12) Remove the air pressure source.
- S 435-019-N00
(13) Connect the oil pressure tube to the oil pressure transmitter.
(a) Tighten the tube nut.
- S 865-020-N00
(14) Remove electrical power if it is not necessary (AMM 24-22-00/201).
- S 415-021-N00
- WARNING:** OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.
- (15) Close the left thrust reverser (AMM 78-31-00/201).
- S 415-022-N00
(16) Close the left core cowl panel (AMM 71-11-06/201).
- S 415-023-N00
(17) Close the left fan cowl panel (AMM 71-11-04/201).
- S 445-024-N00
(18) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-32-00

N01

Page 504
Apr 22/02

OIL PRESSURE TRANSMITTER – REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. The first task is to remove the oil pressure transmitter. The second task is to install the oil pressure transmitter.

TASK 79-32-01-004-002-N00

2. Remove the Oil Pressure Transmitter

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine

- (2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

C. Prepare to Remove the Oil Pressure Transmitter

S 864-003-N00

- (1) For the left engine, open these circuit breakers on the overhead panel, P11, and attach the DO-NOT-CLOSE tag:
 - (a) 11L9, LEFT ENGINE OIL PRESS EICAS REF

S 864-004-N00

- (2) For the right engine, open these circuit breakers on the overhead panel, P11, and attach the DO-NOT-CLOSE tag:
 - (a) 11L36, RIGHT ENGINE OIL PRESS EICAS REF

S 014-005-N00

- (3) Open the left fan cowl panel (AMM 71-11-04/201).

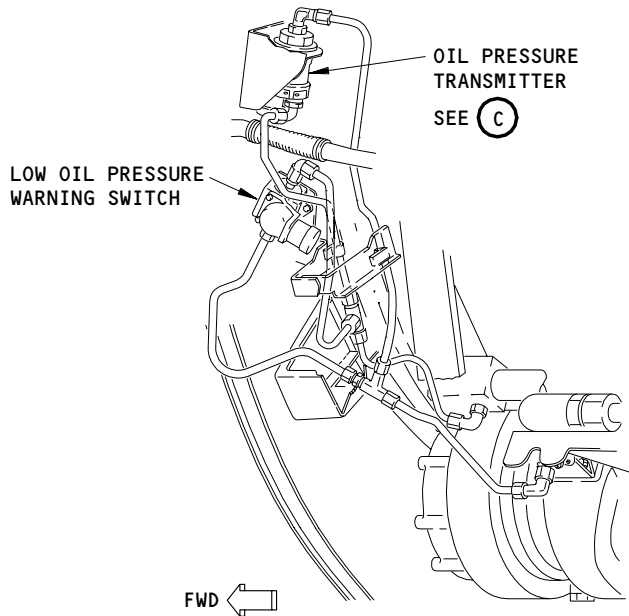
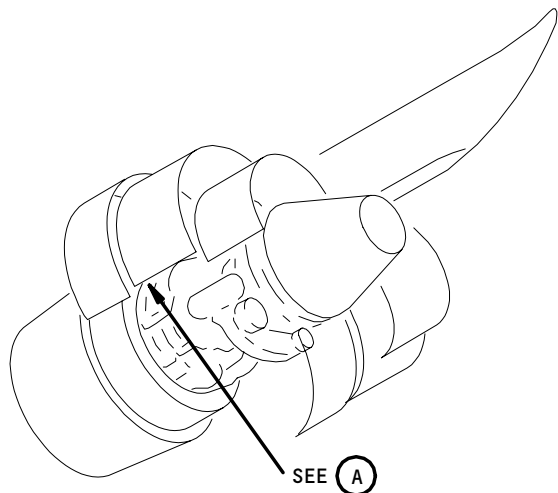
EFFECTIVITY

ALL

79-32-01

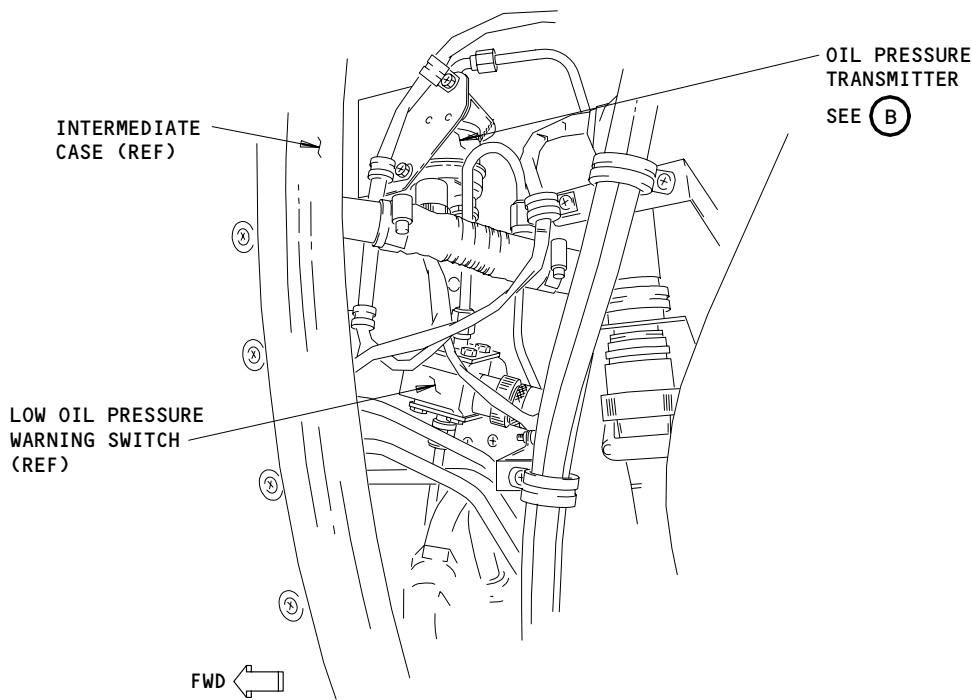
N01

Page 401
Dec 22/00



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Oil Pressure Transmitter Installation
Figure 401 (Sheet 1)

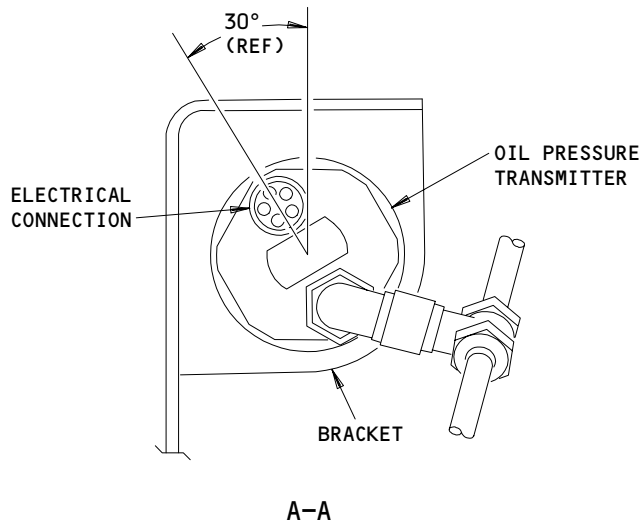
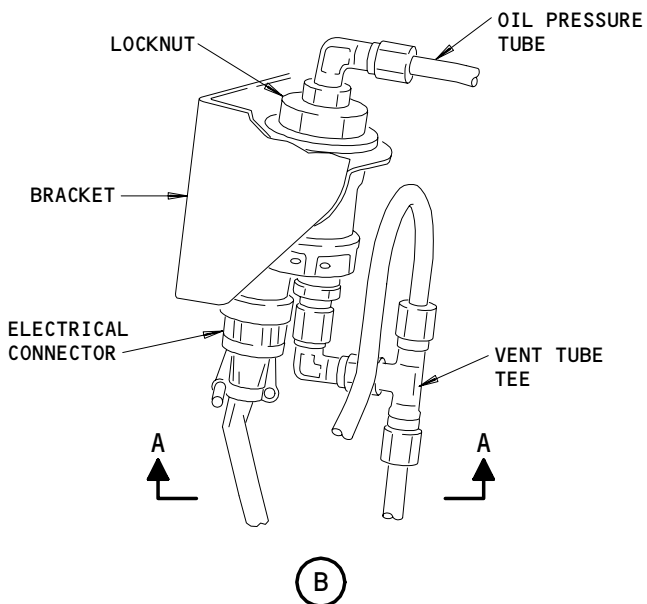
EFFECTIVITY	
	ALL

79-32-01

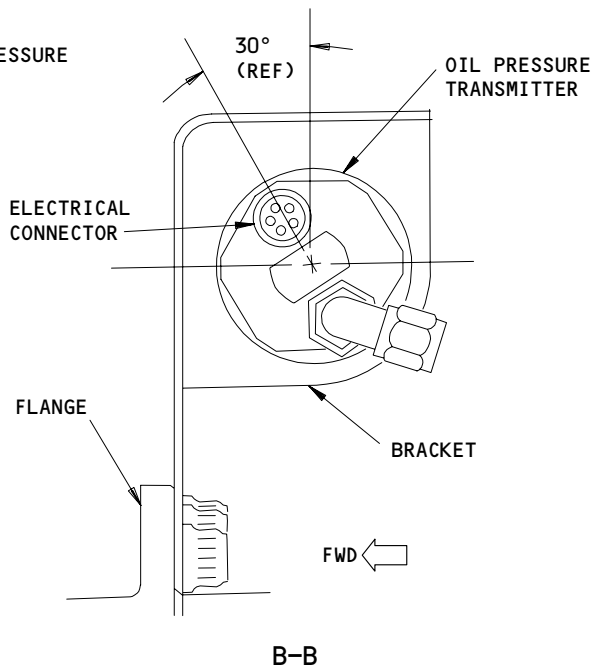
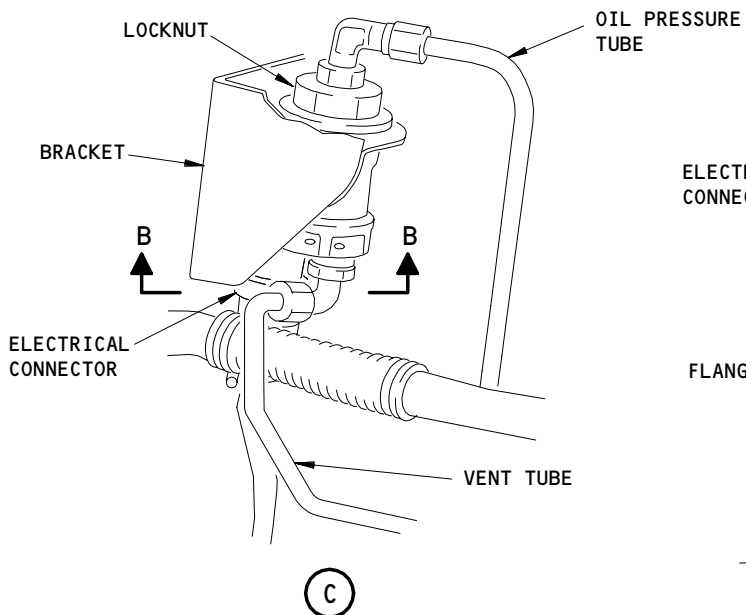
N02

Page 402
May 10/94

E17565



ENGINES WITHOUT SB 79-18



ENGINES WITH SB 79-18

Oil Pressure Transmitter Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
	ALL

79-32-01

N02

Page 403
May 10/94

E17569

S 044-006-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (4) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-008-N00

- (5) Open the left core cowl panel (AMM 71-11-06/201).

S 014-009-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Open the left thrust reverser (AMM 78-31-00/201).

D. Remove the Oil Pressure Transmitter

S 034-001-N00

- (1) Disconnect the electrical connector from the oil pressure transmitter.
 - (a) Install a cap on the electrical connector.

S 034-010-N00

- (2) Disconnect the vent tube tee from the oil pressure transmitter.
 - (a) Discard the packing.
 - (b) Install the cap on the vent tube.

S 034-011-N00

- (3) Remove the oil pressure tube from the oil pressure transmitter.
 - (a) Discard the packing.
 - (b) Install the cap on the oil pressure tube.

S 024-012-N00

- (4) Remove the locknut which attaches the oil pressure transmitter to the bracket.

S 024-013-N00

- (5) Remove the oil pressure transmitter from the engine.

TASK 79-32-01-404-014-N00

3. Install the Oil Pressure Transmitter

A. Consumable Materials

- (1) G01505 Lockwire - AS3214-02

EFFECTIVITY

ALL

79-32-01

N01

Page 404
Dec 22/00

B. References

- (1) AMM 20-10-21/601, Electrical Bonding
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System
- (5) AMM 79-32-00/501, Oil Pressure Indicating System

C. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

D. Install the Oil Pressure Transmitter (Fig. 401)

- S 424-015-N00
 - (1) Install the oil pressure transmitter through the bracket.
- S 424-016-N00
 - (2) Loosely install the nut which attaches the oil pressure transmitter to the bracket.
- S 424-017-N00
 - (3) Move the oil pressure transmitter until the electrical connector is at the 11:00 o'clock position.
 - (a) Tighten the nut.
 - (b) Install the lockwire on the nut.
- S 284-018-N00
 - (4) Make sure the bonding resistance between the oil pressure transmitter and the bracket is 0.010 ohms or less (AMM 20-10-21/601).
- S 434-019-N00
 - (5) Remove the cap from the oil pressure tube.
- S 434-020-N00
 - (6) Install the new packing on the oil pressure tube.
- S 434-021-N00
 - (7) Install the oil pressure tube to the oil pressure transmitter.
 - (a) Tighten the tube nut.

EFFECTIVITY

ALL

79-32-01

N01

Page 405
Dec 22/00

- S 434-022-N00
- (8) Install the new packing to the vent tube tee.
- S 434-023-N00
- (9) Connect the vent tube tee to the oil pressure transmitter.
(a) Tighten the tee nut.
- S 434-024-N00
- (10) Remove the cap from the electrical connector.
- S 434-025-N00
- (11) Connect the electrical connector to the oil pressure transmitter.
- E. Put the Airplane Back to Its Usual Condition

S 414-026-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 414-027-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 414-028-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-029-N00

- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 864-030-N00

- (5) For the left engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11L9, LEFT ENGINE OIL PRESS EICAS REF

EFFECTIVITY

ALL

79-32-01

N01

Page 406
Dec 22/00

- S 864-031-N00
- (6) For the right engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11L36, RIGHT ENGINE OIL PRESS EICAS REF

- S 714-032-N00
- (7) Do the operational test for the oil pressure transmitter (AMM 79-32-00/501).

EFFECTIVITY

ALL

79-32-01

N01

Page 407
Dec 22/00

LOW OIL PRESSURE WARNING SYSTEM – DESCRIPTION AND OPERATION

1. General

A. The low oil pressure warning system uses a pressure switch, with a warning light and caution message in the flight compartment. The system shows when the oil pressure downstream of the fuel/oil cooler is too low to sufficiently supply the engine bearings with engine oil.

2. Component Details (Fig. 1)

A. Low Oil Pressure Warning Switch

- (1) The low oil pressure warning switch is installed on the left side of the engine to the rear of the fan case at the 10 o'clock position. The low oil pressure warning switch is a hydraulically and mechanically operated, snap-action switch.
- (2) The low oil pressure warning switch feels the differential pressure between the oil pressure after the fuel/oil cooler and the breather air pressure from the main bearing compartment.

B. Low Oil Pressure Indication

- (1) The low oil pressure warning switch turns on or off an amber light on the pilots' main instrument panel, below the Standby Engine Indicator in the flight compartment. If the light is on, the oil pressure is low. If the light is off, the oil pressure is good.
- (2) The EICAS advisory (level C) message, L(R) ENG OIL PRESS, will show when the L(R) engine oil pressure decreases less than 70 (± 2) psi with the engine in operation.

3. Operation

A. Functional Description (Fig. 2)

(1) Low Oil Pressure Warning System

- (a) The low oil pressure warning system is supplied with 28 volt ac power from the master dim and test circuit (AMM 33-16-00).
- (b) The oil pressure after the fuel/oil cooler and the air pressure from the main bearing compartment are supplied to the low oil pressure warning switch. With power supplied to the system and the engine not in operation, the low oil pressure warning switch is supplied with electrical power and the light is on.
- (c) The light stays on when the engine is started and until the differential oil pressure is more than 80 psi. At this time, the low oil pressure warning switch opens and the light goes off. The light stays off while the differential oil pressure is more than the specified range.
- (d) When the differential pressure starts to decrease and is less than 70 (± 2) psi, the low oil pressure warning switch closes, the light goes on, and the EICAS advisory message shows. This shows an oil system failure and causes low oil pressure.

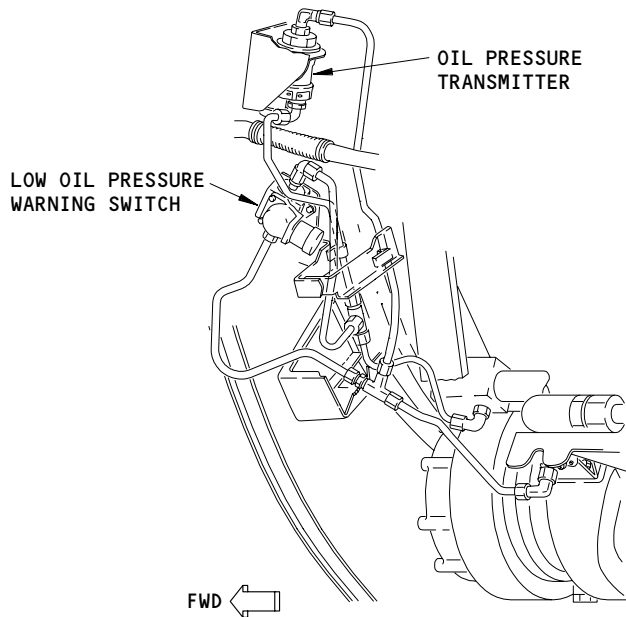
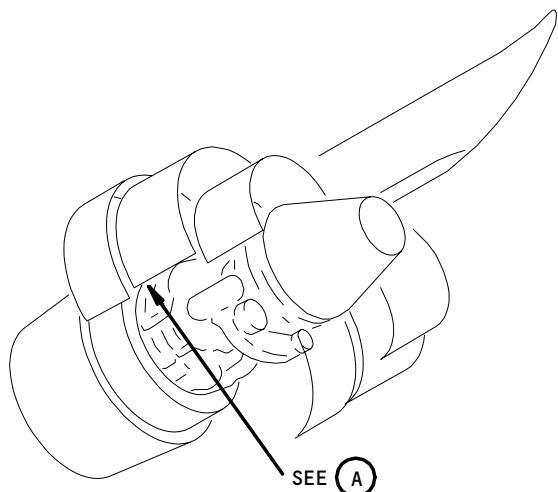
EFFECTIVITY

ALL

79-33-00

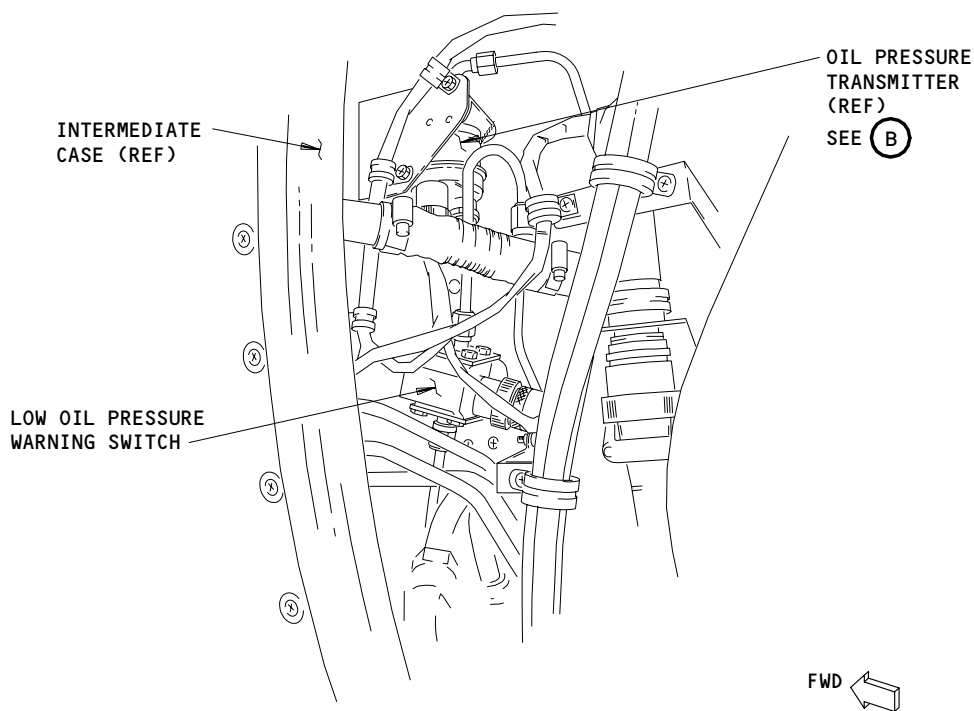
N01

Page 1
Dec 22/00



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Low Oil Pressure Warning System
Figure 1

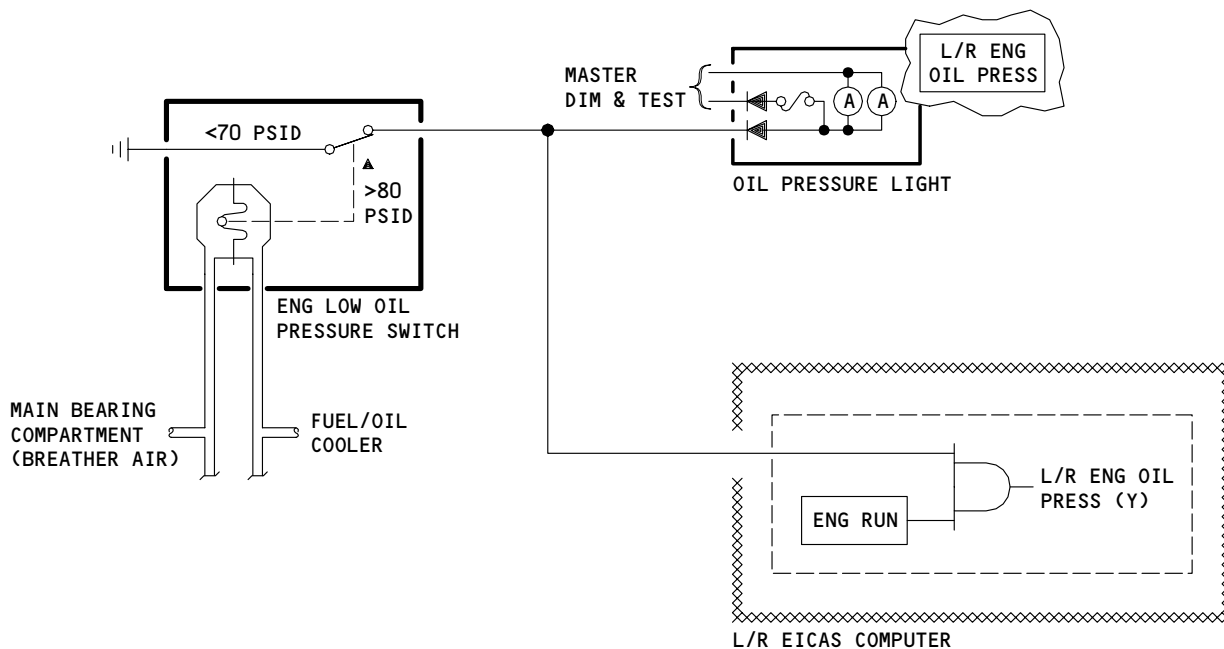
EFFECTIVITY	
	ALL

79-33-00

N01

Page 2
May 10/94

E17573



Low Oil Pressure Warning System Schematic
Figure 2

EFFECTIVITY ————
ALL

79-33-00

N01

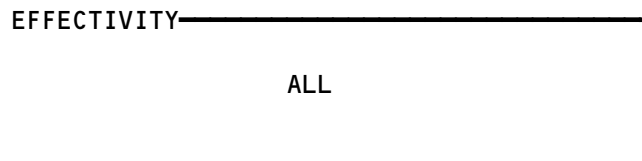
Page 3
May 10/88

LOW OIL PRESSURE WARNING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
COMPUTER - (FIM 31-41-00/101) EICAS L, M10181 EICAS R, M10182 LIGHT - LOW OIL PRESSURE, L474 LIGHT - LOW OIL PRESSURE, L475 SWITCH - LOW OIL PRESSURE, S1584	-- -- --	2	FLT COMPT, P1-3 FLT COMPT, P1-3 415AL,425AL, THRUST REVERSER, INTERMEDIATE CASE	* * 79-33-01

* SEE THE WDM EQUIPMENT LIST

Low Oil Pressure Warning System - Component Index
Figure 101



79-33-00

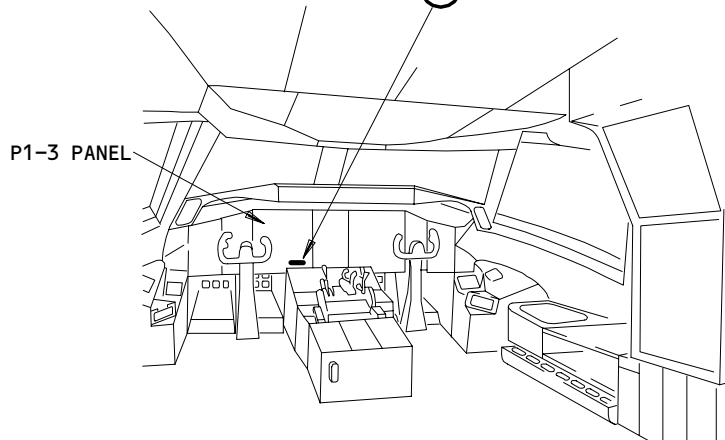
N01

Page 101
May 10/94

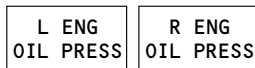
E15081

LEFT, RIGHT LOW OIL PRESSURE
 LIGHTS, L474,L475

SEE (B)



FLIGHT COMPARTMENT



LEFT, RIGHT LOW OIL
 PRESSURE LIGHTS, L474,L475

(B)

Low Oil Pressure Warning System - Component Location
 Figure 102 (Sheet 1)

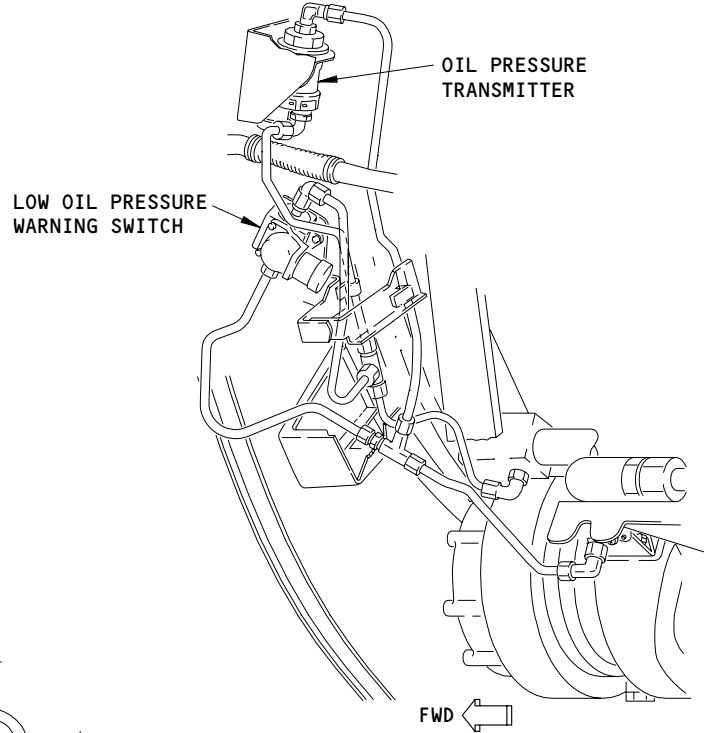
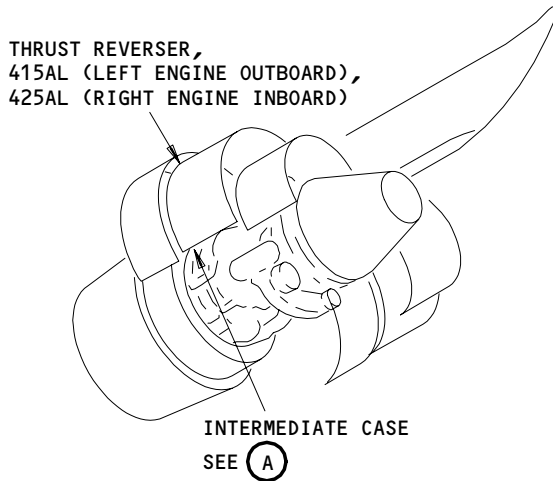
EFFECTIVITY	ALL
-------------	-----

79-33-00

N01

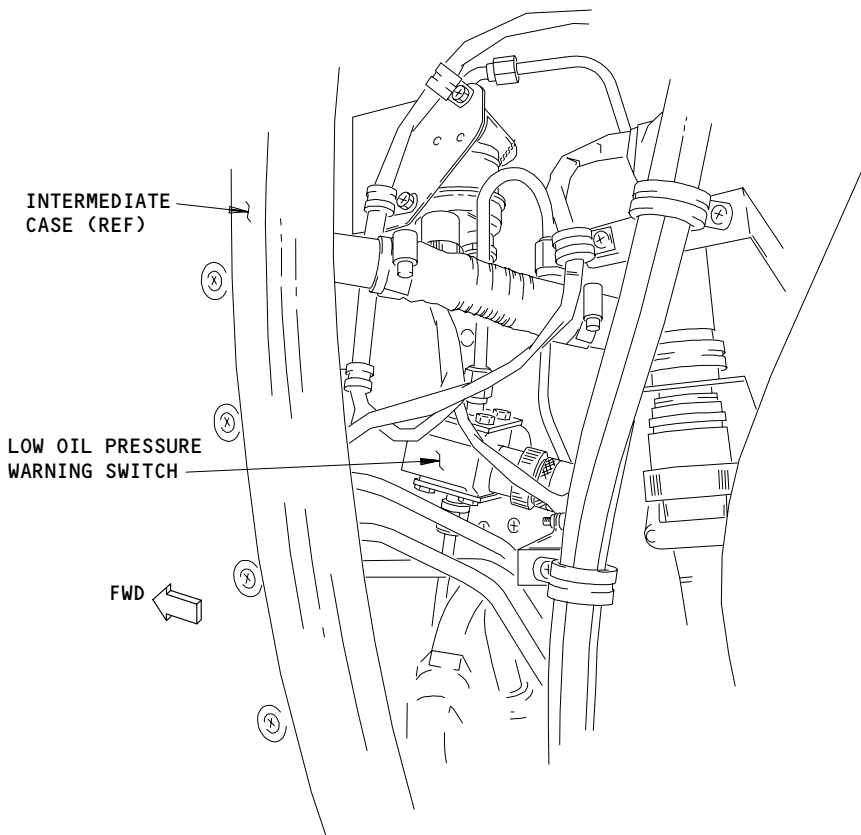
Page 102
 May 10/94

272655



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Low Oil Pressure Warning System - Component Location
 Figure 102 (Sheet 2)

EFFECTIVITY

ALL

79-33-00

N01

Page 103
 May 10/94

E17586

LOW OIL PRESSURE WARNING SYSTEM – ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks. The first task is an operational test of the warning system for low oil pressure. The second task is a system test of the warning system.

TASK 79-33-00-715-001-N00

2. Operational Test – Low Oil Pressure Warning System

A. References

- (1) AMM 71-00-00/201, Power Plant

B. Access

- (1) Location Zones
211 Flight Compartment

C. Do a Test of the Warning System for Low Oil Pressure

S 865-002-N00

- (1) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
 - (a) Six EICAS circuit breakers
 - (b) 11U15, LANDING GEAR AIR/GND SYS 1
 - (c) 11U23, LANDING GEAR POSITION AIR/GND SYS 2

S 865-003-N00

- (2) For the left engine, make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
 - (a) 11R1, LEFT IND LIGHTS 1

S 865-004-N00

- (3) For the right engine, make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
 - (a) 11R28, RIGHT IND LTS 1

S 215-005-N00

- (4) Before you start the engine, make sure the L(R) ENG OIL PRESS light is on.

NOTE: The light is found on the pilots' main instrument panel below the Standby Engine Indicator (SEI).

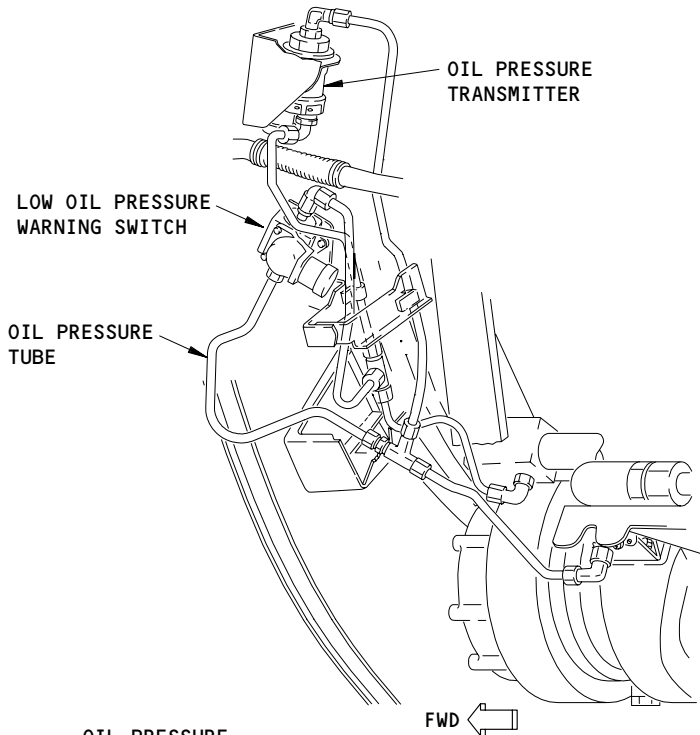
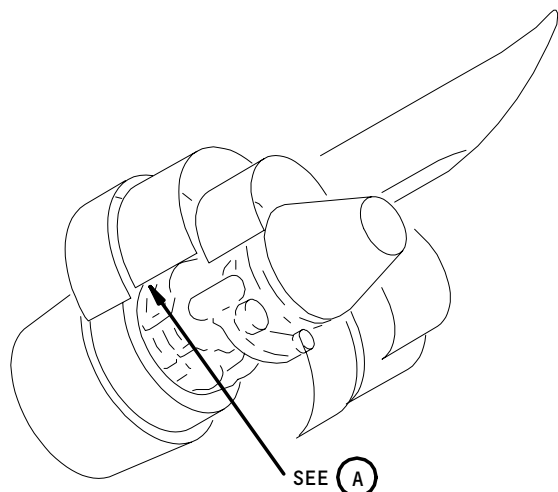
EFFECTIVITY

ALL

79-33-00

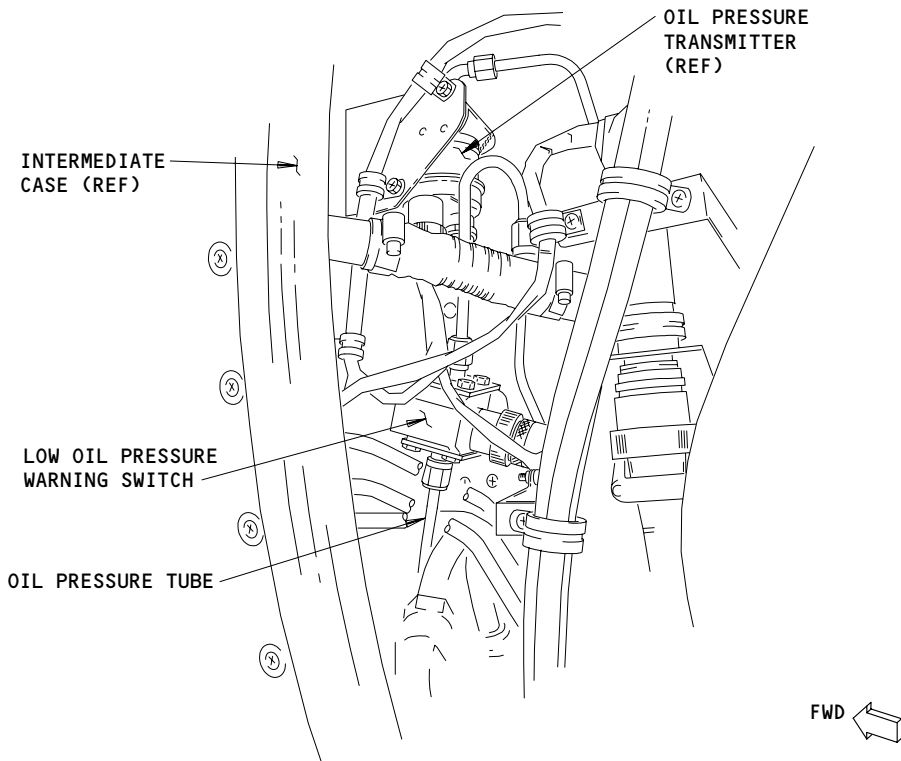
N01

Page 501
Dec 22/00



ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)

Low Oil Pressure Warning System Test
Figure 501

EFFECTIVITY	
	ALL

79-33-00

N01

Page 502
May 10/94

E17596

S 865-006-N00

WARNING: USE AMM 71-00-00/201 TO OPERATE THE POWER PLANT. IF YOU DO NOT USE THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (5) Use the Power Plant Operation (Normal) procedure to start the engine (AMM 71-00-00/201).
 - (a) During the engine start, the pressure at which the L(R) ENG OIL PRESS light must go off is at 80 psig or more.

NOTE: You can monitor the pressure on the bottom display of the Engine Indication and Crew Alerting System (EICAS).

S 865-007-N00

- (6) Use the Power Plant Operation (Normal) procedure to do the engine shutdown (AMM 71-00-00/201).
 - (a) During the engine shutdown, the pressure at which the L(R) ENG OIL PRESS light comes on is between 68 and 72 psig.

TASK 79-33-00-735-008-N00

3. System Test - Low Oil Pressure Warning System

A. Equipment

- (1) Air pressure source - you can adjust the pressure from 0 to 100 psi, accurate to ± 1 psi

B. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System

C. Access

- (1) Location Zones
 - 211 Flight Compartment
 - 410 Left Engine
 - 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

D. Do a Test of the Warning System for Low Oil Pressure (Fig. 501)

S 865-009-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 865-010-N00

- (2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
 - (a) Six EICAS circuit breakers

EFFECTIVITY

ALL

79-33-00

N01

Page 503
Dec 22/00

S 865-011-N00

- (3) For the left engine, make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
(a) 11R1, LEFT IND LIGHTS 1

S 865-012-N00

- (4) For the right engine, make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
(a) 11R28, RIGHT IND LIGHTS 1

S 215-013-N00

- (5) Make sure the Left and Right ENG OIL PRESS lights are on.

S 015-014-N00

- (6) Open the left fan cowl panel (AMM 71-11-04/201).

S 045-015-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 015-016-N00

- (8) Open the left core cowl panel (AMM 71-11-06/201).

S 015-017-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (9) Open the left thrust reverser (AMM 78-31-00/201).

S 035-018-N00

- (10) Disconnect the oil pressure tube from the warning switch for low oil pressure.

S 495-019-N00

- (11) Connect the line from the air pressure source to the tube connection for the warning switch.

S 865-020-N00

- (12) Apply a pressure of 82 ±1 psig to the warning switch.
(a) Make sure the L(R) ENG OIL PRESS light on the pilots' main instrument panel is off.

EFFECTIVITY

ALL

79-33-00

N01

Page 504
Dec 22/00

S 865-021-N00

- (13) Increase the pressure to 100 ±1 psig maximum.
(a) Make sure the L(R) ENG OIL PRESS light stays off.

S 865-022-N00

- (14) Decrease the pressure to 66 ±1 psig.
(a) Make sure the L(R) ENG OIL PRESS light is on and stays on as the pressure is decreased to 0 psig.

S 095-023-N00

- (15) Remove the line for the air pressure source from the tube connection on the warning switch.

S 435-024-N00

- (16) Connect the oil pressure tube to the warning switch.
(a) Tighten the tube nut for the oil pressure tube.

S 865-025-N00

- (17) Remove electrical power if it is not necessary.

S 415-026-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (18) Close the left thrust reverser (AMM 78-31-00/201).

S 415-027-N00

- (19) Close the left core cowl panel (AMM 71-11-06/201).

S 415-028-N00

- (20) Close the left fan cowl panel (AMM 71-11-04/201).

S 445-029-N00

- (21) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-33-00

N01

Page 505
Dec 22/00

LOW OIL PRESSURE WARNING SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks. The first task removes the warning switch for low oil pressure. The second task installs the warning switch.

TASK 79-33-01-004-001-N00

2. Remove the Low Oil Pressure Warning Switch

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare to Remove the Warning Switch for Low Oil Pressure

S 864-002-N00

- (1) For the left engine, open this circuit breaker on the overhead circuit breaker panel, P11, and attach the DO-NOT-CLOSE tags:
 - (a) 11R1, LEFT IND LTS 1

S 864-003-N00

- (2) For the right engine, open this circuit breaker on the overhead circuit breaker panel, P11, and attach the DO-NOT-CLOSE tags:
 - (a) 11R28, RIGHT IND LTS 1

S 014-004-N00

- (3) Open the left fan cowl panel (AMM 71-11-04/201).

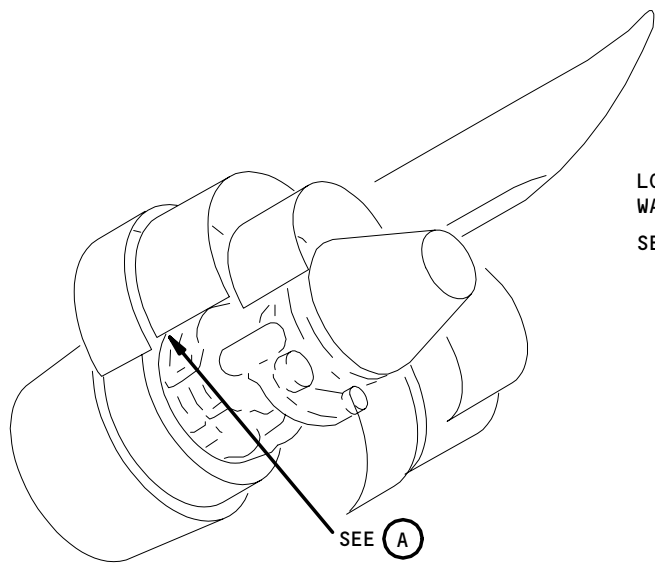
EFFECTIVITY

ALL

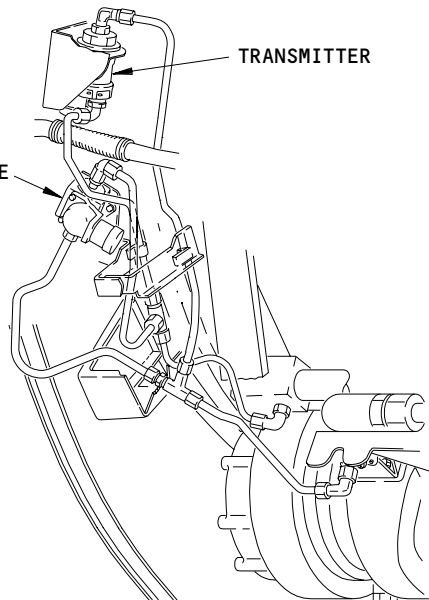
79-33-01

N01

Page 401
Dec 22/00



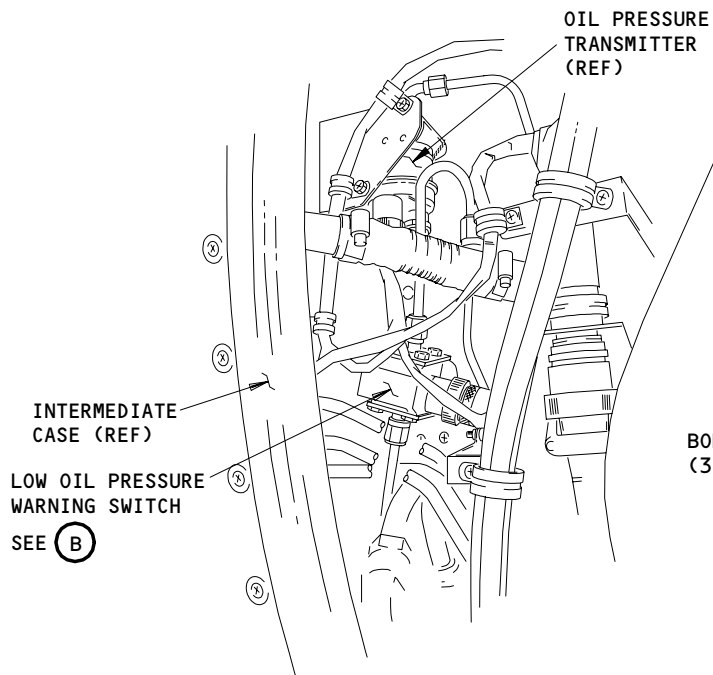
LOW OIL PRESSURE
WARNING SWITCH
SEE (B)



FWD ←

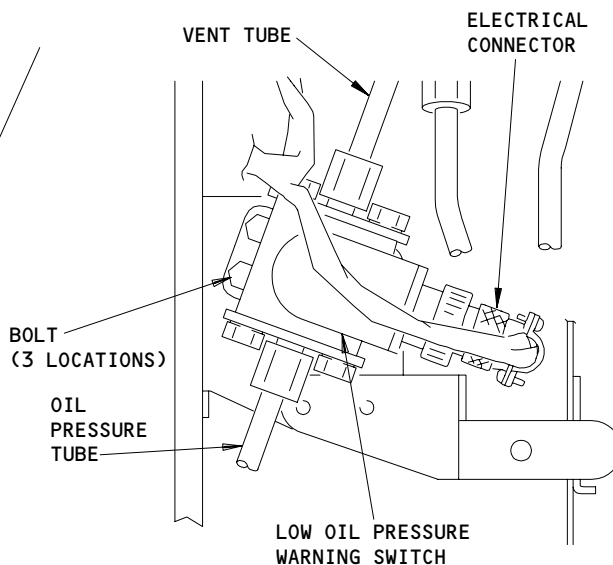
ENGINES WITH SB 79-18

(A)



ENGINES WITHOUT SB 79-18

(A)



(B)

Low Oil Pressure Warning Switch Installation
Figure 401

EFFECTIVITY

ALL

79-33-01

N01

Page 402
May 10/94

E17603

S 044-005-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (4) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-006-N00

- (5) Open the left core cowl panel (AMM 71-11-06/201).

S 014-007-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Open the left thrust reverser (AMM 78-31-00/201).
- D. Remove the Warning Switch for Low Oil Pressure (Fig. 401)

S 034-008-N00

- (1) Disconnect the electrical connector.
 - (a) Install the protection cap on the electrical connector.

S 034-009-N00

- (2) Disconnect the vent tube from the warning switch.
 - (a) Install the protection cap on the vent tube.

S 034-010-N00

- (3) Disconnect the oil pressure tube from the warning switch.
 - (a) Install the protection cap on the oil pressure tube.

S 024-011-N00

- (4) Remove the bolts which attach the warning switch to the bracket.

S 024-012-N00

- (5) Remove the warning switch from the engine.

TASK 79-33-01-404-013-N00

3. Install the Low Oil Pressure Warning Switch

A. References

- (1) AMM 71-11-04/201, Fan Cowl Panels
- (2) AMM 71-11-06/201, Core Cowl Panels
- (3) AMM 78-31-00/201, Thrust Reverser System
- (4) AMM 79-33-00/501, Low Oil Pressure Warning System

EFFECTIVITY

ALL

79-33-01

N01

Page 403
Dec 22/00

B. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 415AL Fan Reverser (Left)
- 425AL Fan Reverser (Left)

C. Install the Warning Switch for Low Oil Pressure (Fig. 401)

S 424-014-N00

- (1) Install the warning switch to the bracket with the bolts.
(a) Tighten the bolts.

S 434-015-N00

- (2) Remove the protection cap from the oil pressure tube.

S 434-016-N00

- (3) Install the new packing to the oil pressure tube.

S 434-017-N00

- (4) Connect the oil pressure tube to the warning switch.
(a) Tighten the tube nut to 133-147 pound-inches (15.027-16.608 newton-meters).

S 434-018-N00

- (5) Remove the protection cap from the oil vent tube.

S 434-019-N00

- (6) Install the new packing to the oil vent tube.

S 434-020-N00

- (7) Connect the vent tube to the warning switch.
(a) Tighten the tube nut to 133-147 pound-inches (15.027-16.608 newton-meters).

S 434-021-N00

- (8) Remove the protection cap from the electrical connector.

S 434-022-N00

- (9) Connect the electrical connector to the warning switch.

D. Put the Airplane Back to Its Usual Condition

S 414-023-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-33-01

N01

Page 404
Dec 22/00

- S 414-024-N00
- (2) Close the left core cowl panel (AMM 71-11-06/201).

- S 414-025-N00
- (3) Close the left fan cowl panel (AMM 71-11-04/201).

- S 444-026-N00
- (4) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

- S 864-027-N00
- (5) For the left engine, remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
 - (a) 11R1, LEFT IND LTS 1

- S 864-028-N00
- (6) For the right engine, remove the DO-NOT-CLOSE tags and close this circuit breaker on the P11 panel:
 - (a) 11R28, RIGHT IND LTS 1

- S 714-029-N00
- (7) Do the operational test for the warning switch (AMM 79-33-00/501).

EFFECTIVITY

ALL

79-33-01

N01

Page 405
Dec 22/00

OIL TEMPERATURE INDICATING SYSTEM – DESCRIPTION AND OPERATION

1. General

- A. The oil temperature indicating system measures the temperature of engine oil at the main gearbox and the scavenge oil tube for the No. 3 bearing. These temperatures are sent through the EEC to the Engine Indication and Crew Alerting System (EICAS) computers.
- B. The oil temperature at the main gearbox is shown on the bottom EICAS display in the flight compartment. The Differential Oil Temperature (DOT3) is the difference between the oil temperature of the No. 3 bearing and the oil temperature of the main gearbox. The maximum DOT3 is shown on the Electronic Propulsion Control System (EPCS) display on the EICAS at the end of each flight.

2. Component Details (Fig. 1)

- A. EEC Oil Temperature Thermocouple Probe
 - (1) The EEC oil temperature probe includes two thermocouples and is installed on the left side, front face of the main gearbox.
 - (2) The thermocouple probe finds the engine oil temperature at the main gearbox and sends a related signal through the EEC to the EICAS for oil indication.
 - (3) Also, the oil temperature signal is used at the EEC for fuel control (Refer to AMM 73-21-00/001, Fuel Control System – Description and Operation, for more data).
- B. No. 3 Bearing Oil Temperature Sensor
 - (1) The oil temperature sensor for the No. 3 bearing includes two thermocouples. The oil temperature sensor is installed on the oil scavenge tube for the No. 3 bearing near the lubrication and scavenge oil pump.
 - (2) The oil temperature sensor finds the scavenge oil temperature from the No. 3 bearing compartment and sends a related signal to the EEC.
- C. Oil Temperature Indication
 - (1) The oil temperature indication is on the bottom EICAS display.
 - (2) The bottom EICAS display shows the oil temperature in degrees celsius on a vertical scale with triangular analog pointers and digital readouts. The digital readouts change from white to yellow when the oil temperature increases to more than 163°C or decreases to less than 50°C. When the oil temperature is more than 177°C, the digital readouts change to red.
 - (3) The maximum DOT3 is shown on the EPCS display on the EICAS at the end of each flight. This digital readout changes to amber when DOT3 is more than 44°C. A red digital readout occurs when DOT3 is more than 55°C.

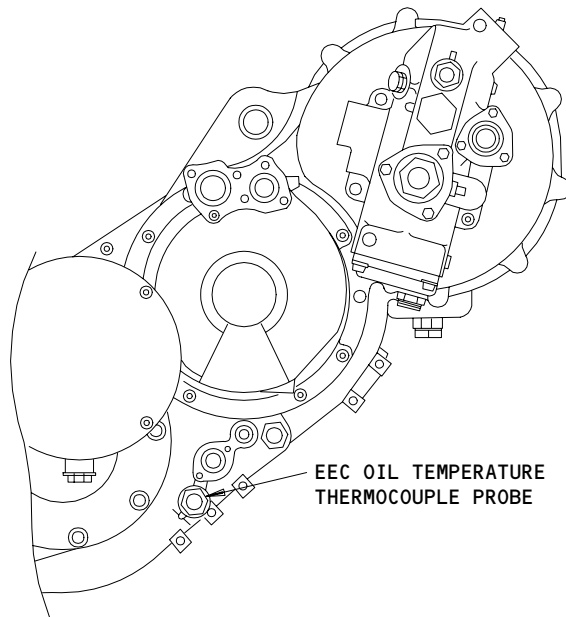
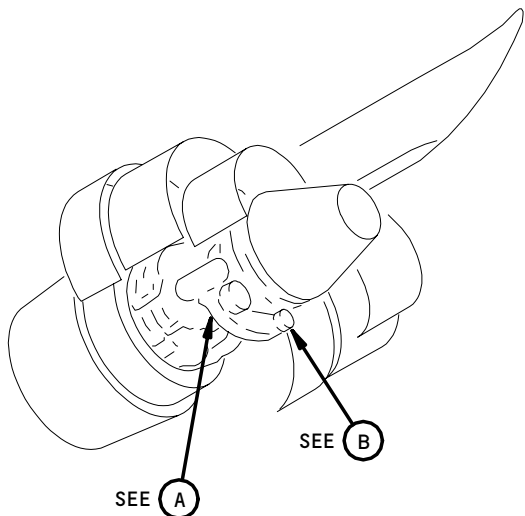
EFFECTIVITY

ALL

79-34-00

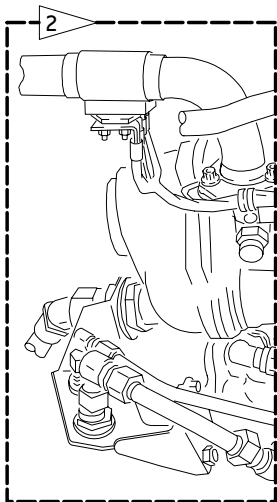
N01

Page 1
Dec 22/00

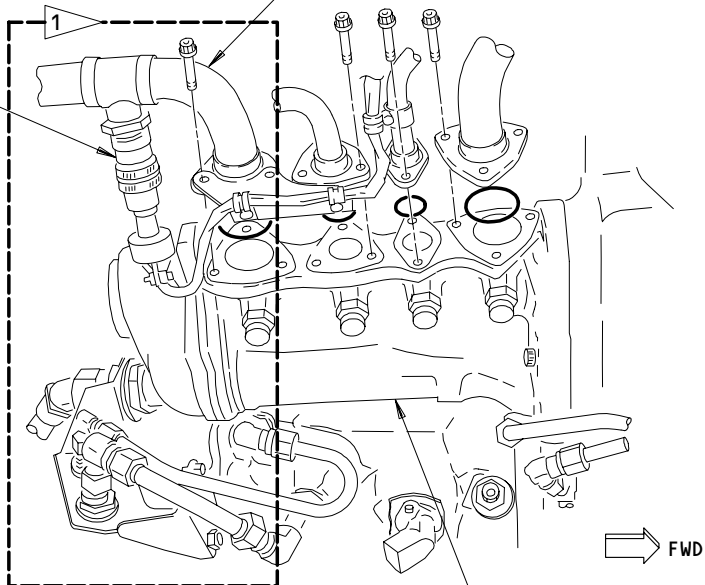


MAIN GEARBOX, LEFT SIDE,
FRONT FACE

(A)



NO. 3 BEARING OIL
TEMPERATURE SENSOR
SEE (C)



LUBRICATION AND
SCAVENGE OIL
PUMP (REF)

(B)

- 1 ENGINES WITHOUT PW SB 73-84
- 2 ENGINES WITH PW SB 73-84

Oil Temperature Indicating System
Figure 1 (Sheet 1)

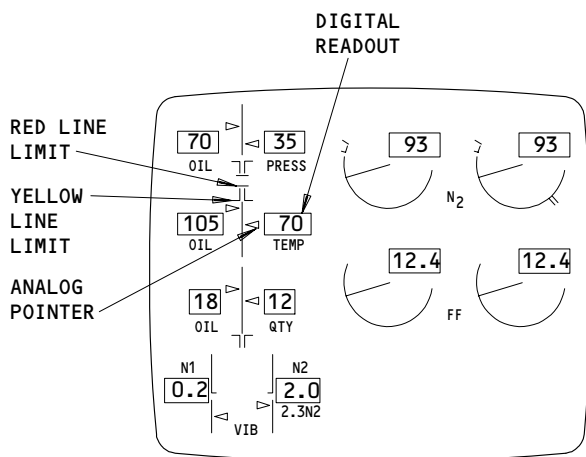
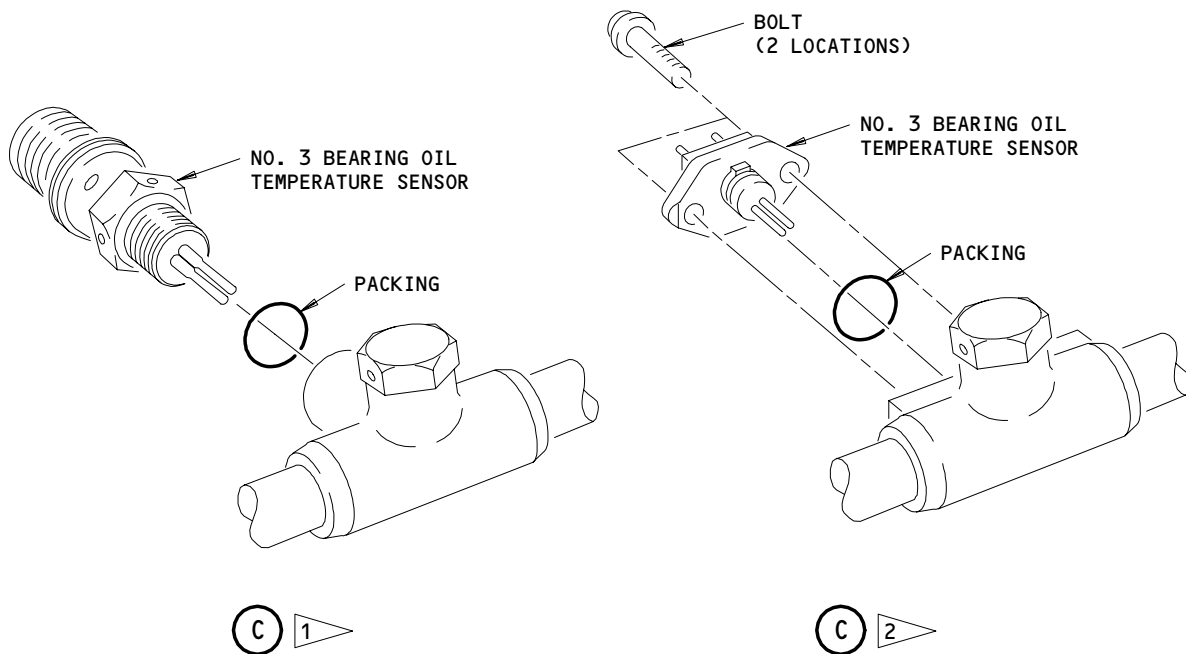
EFFECTIVITY

ALL

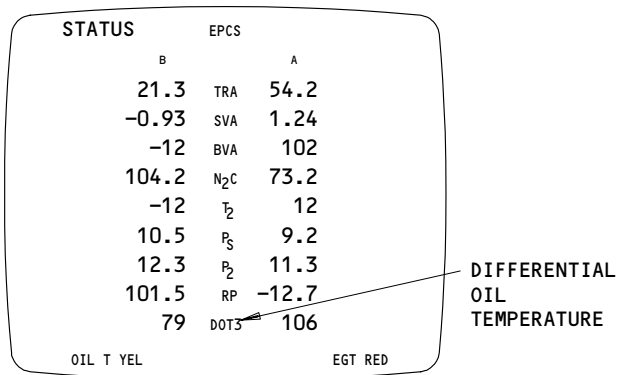
79-34-00

N02

Page 2
May 10/91



LOWER EICAS DISPLAY



EICAS EPCS DISPLAY

- 1 ENGINES WITHOUT PW SB 73-84
- 2 ENGINES WITH PW SB 73-84

Oil Temperature Indicating System
Figure 1 (Sheet 2)

EFFECTIVITY

ALL

79-34-00

N02

Page 3
Aug 10/90

3. Operation

A. Functional Description

(1) Oil Temperature Indicating System

- (a) The EEC oil temperature probe and the oil temperature sensor for the No. 3 bearing find the oil temperatures at their positions with the thermocouples. Related signals are sent from these thermocouples to the EEC.
- (b) The EICAS computers get the EEC oil temperature signal from the EEC and shows the temperature on the bottom EICAS display.
- (c) Also, the EICAS computers get the differential oil temperature signal from the EEC. The maximum DOT3 is then kept in memory. At the end of each flight, the maximum DOT3 is shown on the EPCS display on the EICAS.

EFFECTIVITY

ALL

79-34-00

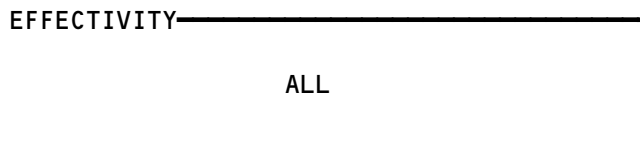
N01

Page 4
Aug 10/92

OIL TEMPERATURE INDICATING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
COMPUTER - (FIM 31-41-00/101) EICAS L, M10181 EICAS R, M10182 CONTROL - (FIM 73-21-00/101) ELECTRONIC ENGINE, M7198 SENSOR - NO. 3 BEARING OIL TEMP, T689 THERMOCOUPLE - (FIM 73-21-00/101) EEC OIL TEMPERATURE, T690	--	2	416AR,426AR, THRUST REVERSER, LUB AND SCAVENGE OIL PUMP	79-34-01

Oil Temperature Indicating System - Component Index
Figure 101

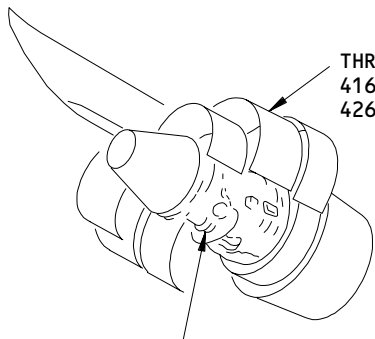


79-34-00

N01

Page 101
Feb 10/95

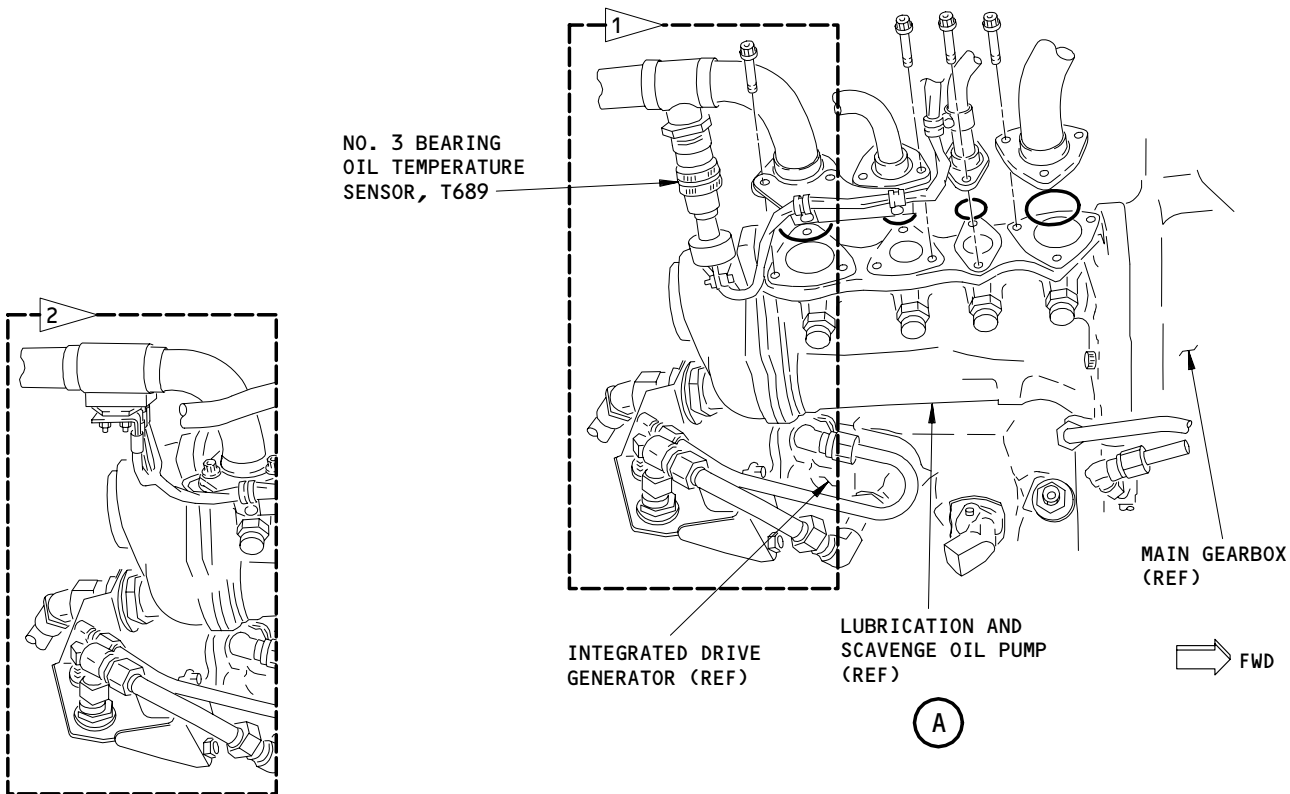
E66677



THRUST REVERSER,
416AR (LEFT ENGINE INBOARD),
426AR (RIGHT ENGINE OUTBOARD)

LUBRICATION AND
SCAVENGE OIL PUMP (REF)

SEE (A)



1 ENGINES WITHOUT PW SB 73-84

2 ENGINES WITH PW SB 73-84

Oil Temperature Indicating System - Component Location
Figure 102

EFFECTIVITY

ALL

79-34-00

N02

Page 102
Feb 10/95

280300

OIL TEMPERATURE INDICATING SYSTEM – ADJUSTMENT/TEST

1. General

- A. This procedure has one task, to do an operational test of the indicating system for the oil temperature, with two options.
- B. The operational test is done with the engines in operation and is used to make sure the indicating system operates correctly. The operational test is used to make sure the system operates correctly after the replacement of the thermocouple probes for the EEC oil temperature, the No. 3 bearing or both.

TASK 79-34-00-715-003-N00

2. Operational Test – Oil Temperature Indicating System (Fig. 501)

A. References

- (1) WDM 79-34-11
- (2) SSM 79-34-01
- (3) AMM 71-PIMU Message Index
- (4) AMM 71-00-00/201
- (5) AMM 24-22-00/201

B. Access

- (1) Location Zone
 - 211 Flight Compartment
 - 212 Flight Compartment

C. Operational test of the indicating system for the oil temperature, option one:

S 715-006-N00

- (1) Do the Test of the Indicating System for the Oil Temperature (after the replacement of the thermocouple probes for the EEC oil temperature or the No. 3 bearing or both).
 - (a) With the engines in operation at the same power, make sure the oil temperature indication on the lower EICAS display is approximately the same for each engine (EEC oil thermocouple probe).

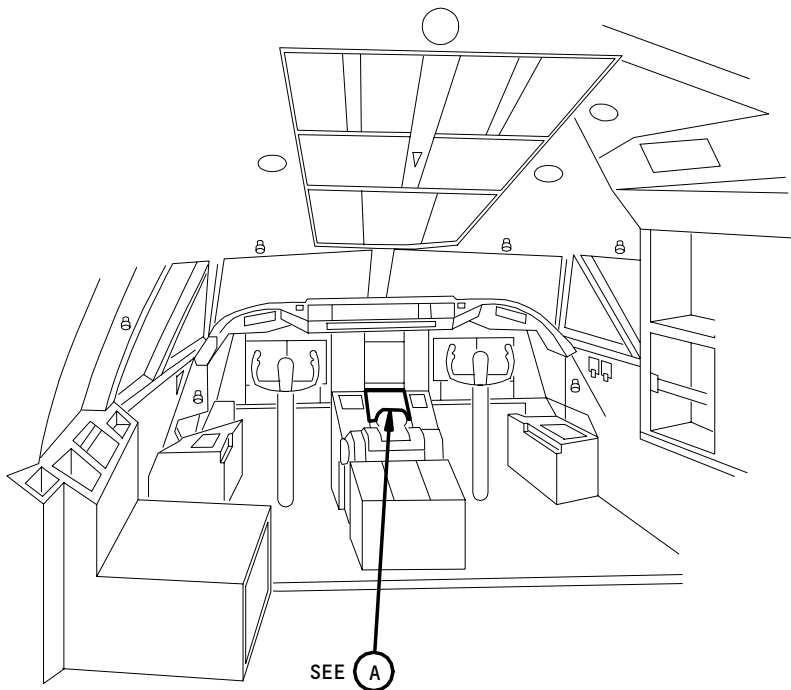
EFFECTIVITY

ALL

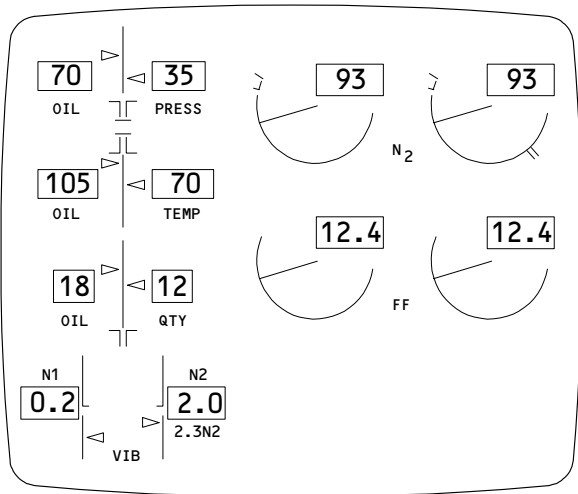
79-34-00

N01

Page 501
Apr 22/02



FLIGHT COMPARTMENT



LOWER EICAS DISPLAY

(A)

STATUS	EPCS	PAGE 1
B	TRA	A
54.3		54.3
12.4	SVA	12.4
102	BVA	102
72.3	N2C	72.3
12	T2	12
10.5	Ps	10.5
12.3	P2	12.3
101.5	RP	101.5
30	SCAV	30
16.3	Ps	16.3
60	AOC	60
70	TCC	70

ELECTRONIC PROPULSION CONTROL SYSTEM (EPCS) MAINTENANCE PAGE

(A)

Oil Temperature Indication
Figure 501

EFFECTIVITY

ALL

79-34-00

- (b) With the engines in operation at the same power, make sure the indication for the differential oil temperature (SCAV) on the EPCS maintenance page is approximately the same for each engine (No. 3 bearing thermocouple probe).
- D. Operational test of the indicating system for the oil temperature, option two:
- S 945-007-N00
- (1) Apply ground power to the EEC (AMM 24-22-00/201).
- S 745-008-N00
- (2) Perform the PIMU BITE procedure per AMM 71-PIMU Message index.
- S 215-004-N00
- (3) Verify that none of the following messages appear:
- (a) 352-21 - EEC CH-A/B.TOIL RING.FAIL
- (b) 353-21 - EEC CH-A/B.TOIL CR.-CK FAIL
- S 945-009-N00
- (4) Remove ground power from the EEC (AMM 24-22-00/201).
- S 945-010-N00
- (5) Start the applicable engine (AMM 71-00-00/201).
- (a) Operate the engine at idle for 5 minutes.
- S 215-011-N00
- (6) Examine the oil temperature indications for the applicable engines on the lower EICAS display.
- (a) Make sure that the oil temperature is in the limits.
- S 745-012-N00
- (7) Perform the PIMU BITE procedure per AMM 71-PIMU message index.
- S 215-013-N00
- (8) Verify that none of the following messages appear:
- (a) 352-21 - EEC CH-A/B.TOIL RING.FAIL
- (b) 353-21 - EEC CH-A/B.TOIL CR.-CK FAIL
- S 945-014-N00
- (9) Stop the engine (AMM 71-00-00/201).

EFFECTIVITY

ALL

79-34-00

N01

Page 503
Apr 22/02

NO. 3 BEARING OIL TEMPERATURE SENSOR – REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. One task is to remove the oil temperature sensor for the No. 3 bearing. The other task is to install the oil temperature sensor for the No. 3 bearing.

TASK 79-34-01-004-001-N00

2. Remove the No. 3 Bearing Oil Temperature Sensor

A. Equipment

- (1) Container – 5 U.S. gallon (18 liters) capacity for the engine oil

B. References

- (1) AMM 24-22-00/201, Electrical Power – Control
(2) AMM 71-11-04/201, Fan Cowl Panels
(3) AMM 71-11-06/201, Core Cowl Panels
(4) AMM 78-31-00/201, Thrust Reverser System

C. Access

- (1) Location Zones
410 Left Engine
420 Right Engine

(2) Access Panels

- 416AR Fan Reverser (Right)
426AR Fan Reverser (Right)

D. Prepare to Remove the No. 3 Bearing Oil Temperature Sensor

S 864-002-N00

- (1) Remove electrical power (AMM 24-22-00/201).

S 014-003-N00

- (2) Open the right fan cowl panel (AMM 71-11-04/201).

S 044-004-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (3) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-005-N00

- (4) Open the right core cowl panel (AMM 71-11-06/201).

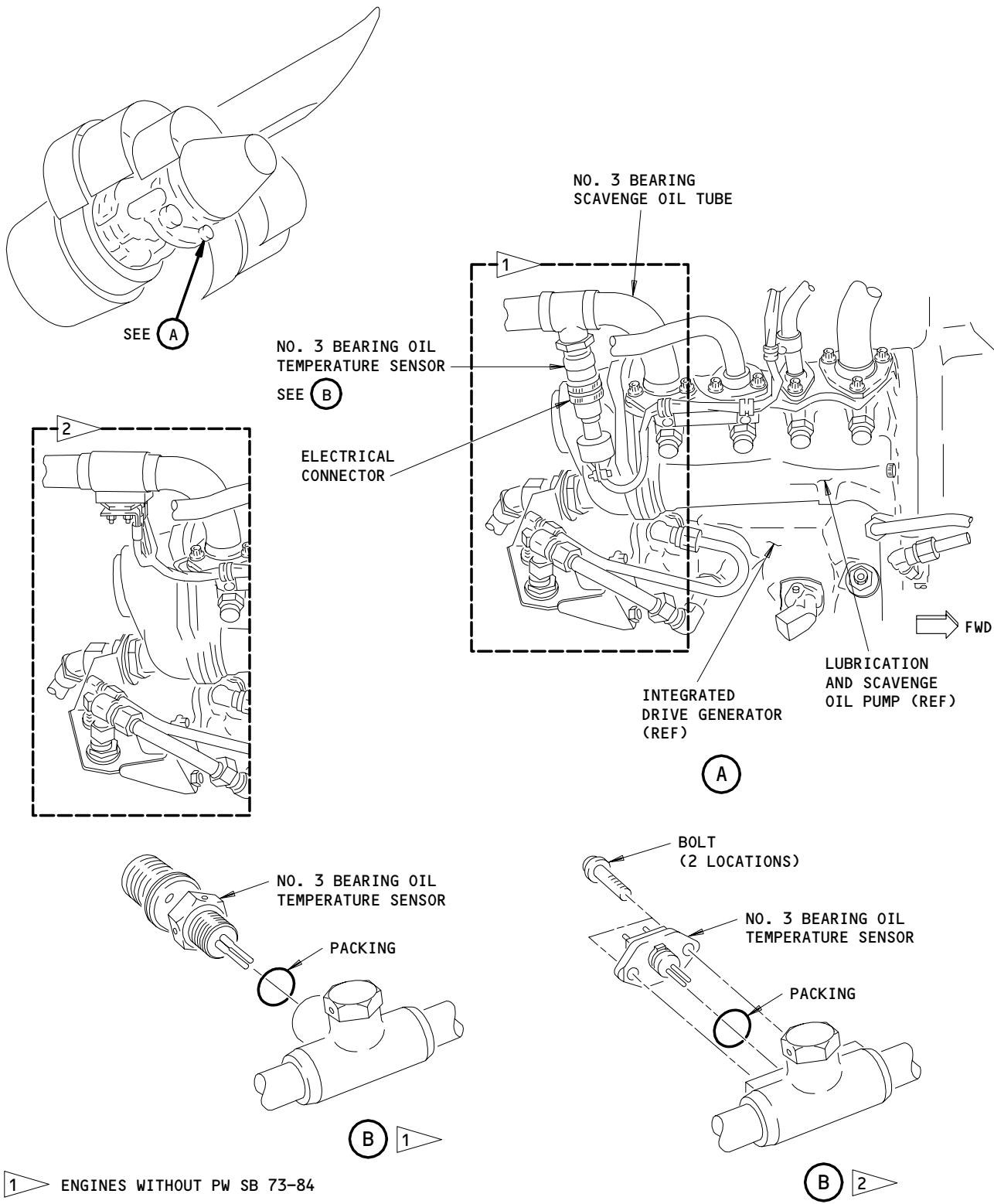
EFFECTIVITY

ALL

79-34-01

N01

Page 401
Apr 22/02



No. 3 Bearing Oil Temperature Sensor Installation
Figure 401

EFFECTIVITY

ALL

79-34-01

N02

Page 402
May 10/91

S 014-006-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (5) Open the right thrust reverser (AMM 78-31-00/201).
E. Remove the Oil Temperature Sensor for the No. 3 Bearing (Fig. 401)

S 034-007-N00

- (1) Disconnect the electrical connector from the oil temperature sensor.

S 684-008-N00

- (2) Put a container below the oil temperature sensor.

S 024-009-N00

- (3) Remove the oil temperature sensor from the tube boss for the No. 3 bearing scavenge oil.
(a) Discard the packing.

S 034-010-N00

- (4) Install the caps on the tube boss.

TASK 79-34-01-404-011-N00

3. Install the No. 3 Bearing Oil Temperature Sensor

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) D00137 Engine Oil - PWA 521
(2) G02332 Ferrule, Safety Cable (P05-292)
(3) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
(4) G02335 Cable, Safety (P05-291)

C. References

- (1) AMM 12-13-01/301, Engine - Oil Servicing
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 70-24-05/201, Electrical Harnesses
(4) AMM 71-00-00/501, Power Plant
(5) AMM 71-11-04/201, Fan Cowl Panels
(6) AMM 71-11-06/201, Core Cowl Panels
(7) AMM 78-31-00/201, Thrust Reverser System

EFFECTIVITY

ALL

79-34-01

N02

Page 403
Dec 22/00

D. Access

(1) Location Zones

- 410 Left Engine
- 420 Right Engine

(2) Access Panels

- 416AR Fan Reverser (Right)
- 426AR Fan Reverser (Right)

E. Procedure (Fig. 401)

S 434-012-N00

- (1) Remove the caps from the tube boss for the No. 3 bearing scavenge oil.

S 644-013-N00

- (2) Lubricate the new packing for the oil temperature sensor with engine oil.

S 434-014-N00

- (3) Install the packing on the oil temperature sensor.

S 424-015-N00

- (4) ENGINES PRE-PW-SB 73-84;

Do the steps that follow:

- (a) Lubricate the threads of the oil temperature sensor with engine oil.
- (b) Install the oil temperature sensor in the tube boss of the No. 3 bearing scavenge oil.
 - 1) Tighten the oil temperature sensor to 65-75 pound-inches (7.3-8.5 newton-meters).
 - 2) Install the lockwire or safety cable and safety cable ferrule on the oil temperature sensor.

S 424-016-N00

- (5) ENGINES POST-PW-SB 73-84;

Do the steps that follow:

- (a) Lubricate the threads of the bolts which attach the oil temperature sensor.
- (b) Install the oil temperature sensor to the tube boss with the bolts.
- (c) Tighten the bolts to 85-95 pound-inches (9.6-10.7 newton-meters).
- (d) Install the lockwire or safety cable and safety cable ferrule on the bolts.

EFFECTIVITY

ALL

79-34-01

N02

Page 404
Dec 22/00

S 434-033-N00

CAUTION: USE THE CORRECT ASSEMBLY PROCEDURE, AND TOOLS, FOR THE HARNESS CONNECTOR INSTALLATION (AMM 70-24-05/201). IF YOU USE THE INCORRECT ASSEMBLY PROCEDURE, OR TOOLS, A DAMAGED OR LOOSE CONNECTOR CAN OCCUR. A LOOSE CONNECTOR PERMITS VIBRATION, WHICH CAUSES THE CONTACTS TO WEAR AND DECREASES THE LIGHTNING PROTECTION.

- (6) ENGINES PRE-PW-SB 73-84;
Connect the electrical connector to the oil temperature sensor (AMM 70-24-05/201).

S 434-022-N00

- (7) ENGINES POST-PW-SB 73-84;
Do the steps that follow:
(a) Connect the probe to the oil temperature sensor with the nuts.
(b) Tighten the alumel connection (larger nut) to 18-22 pound-inches (2.0-2.5 newton-meters).
(c) Tighten the chromel connection (smaller nut) to 15-18 pound-inches (1.7-2.0 newton-meters).

F. Put the airplane back to its initial condition

S 614-026-N00

- (1) Do the servicing procedure for the engine oil tank (AMM 12-13-01/301).

S 864-027-N00

- (2) Supply electrical power if it is necessary (AMM 24-22-00/201).

S 414-028-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (3) Close the right thrust reverser (AMM 78-31-00/201).

S 414-029-N00

- (4) Close the right core cowl panel (AMM 71-11-06/201).

S 414-030-N00

- (5) Close the right fan cowl panel (AMM 71-11-04/201).

S 444-031-N00

- (6) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

EFFECTIVITY

ALL

79-34-01

N02

Page 405
Dec 22/00

S 714-032-N00

- (7) Do the test of the oil temperature sensor for the No. 3 bearing that is shown in the Power Plant Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-34-01

N01

Page 406
Dec 22/00

OIL FILTER BYPASS WARNING SYSTEM – DESCRIPTION AND OPERATION

1. General

A. The oil filter bypass warning system uses an advisory message on the Engine Indication and Crew Alerting System (EICAS) display in the flight compartment to show when there is a possible oil filter bypass. The system includes a differential pressure switch for the main oil filter and an advisory message on the top EICAS display.

2. Component Details (Fig. 1)

A. Oil Filter Differential Pressure Switch

- (1) The differential pressure switch for the main oil filter is installed on the left side of the engine, and forward of the main oil filter. The differential pressure switch is a hydraulically and electrically operated snap-action switch.
- (2) The differential pressure switch finds the differential oil pressure across the main oil filter.

B. EICAS Indication

- (1) The EICAS advisory (level C) message, L(R) OIL FILTER, will show when the differential pressure across the main oil filter for the L(R) engine is near the bypass value.

3. Operation

A. Functional Description (Fig. 2)

(1) Oil Filter Bypass Warning System

- (a) During an engine operation, the main oil filter collects dirt from the engine oil. If too much dirt collects on the main oil filter and the oil supply to the engine bearings is not sufficient, the differential oil pressure across the main oil filter increases.
- (b) When the differential oil pressure across the main oil filter gets to 50 ±2 psi, the differential pressure switch closes and the advisory message shows on the EICAS display. If the engine is operated during this condition, the differential pressure across the main oil filter will continue to increase until the pressure relief valve for the main oil strainer opens and lets the engine oil go around the main oil filter.
- (c) With the engine stopped, when the differential oil pressure across the main oil filter decreases to less than 40 psi, the differential pressure switch opens and the EICAS advisory message goes off.

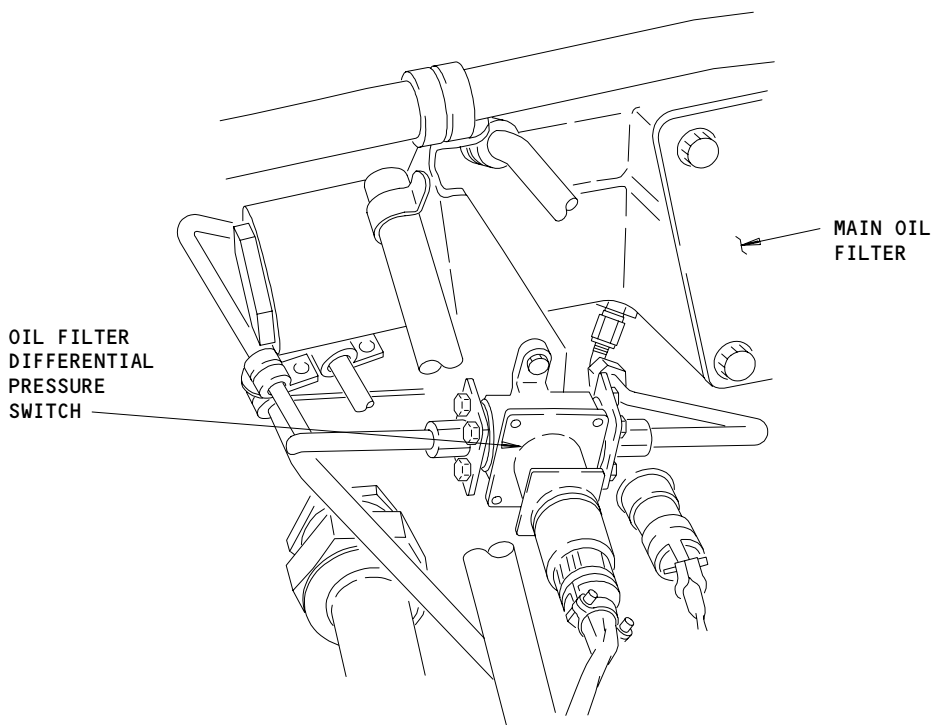
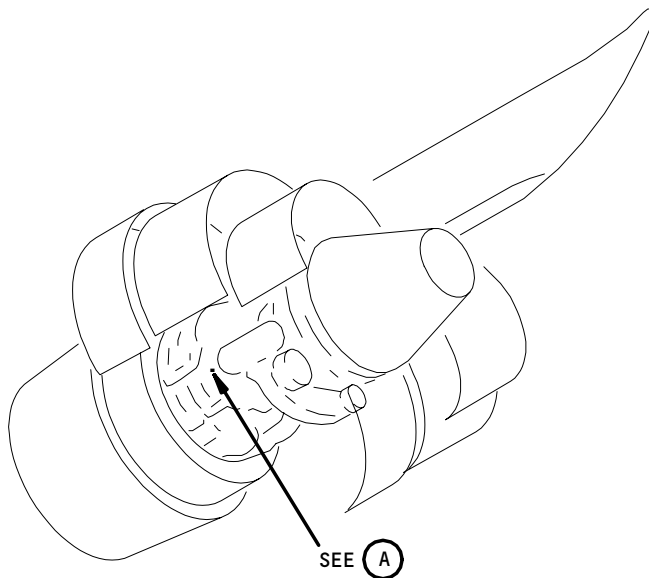
EFFECTIVITY

ALL

79-35-00

N01

Page 1
Aug 10/92



- 1 ENGINES WITHOUT PW SB 79-70
- 2 ENGINES WITH PW SB 79-70



FWD

Oil Filter Bypass Warning System
Figure 1 (Sheet 1)

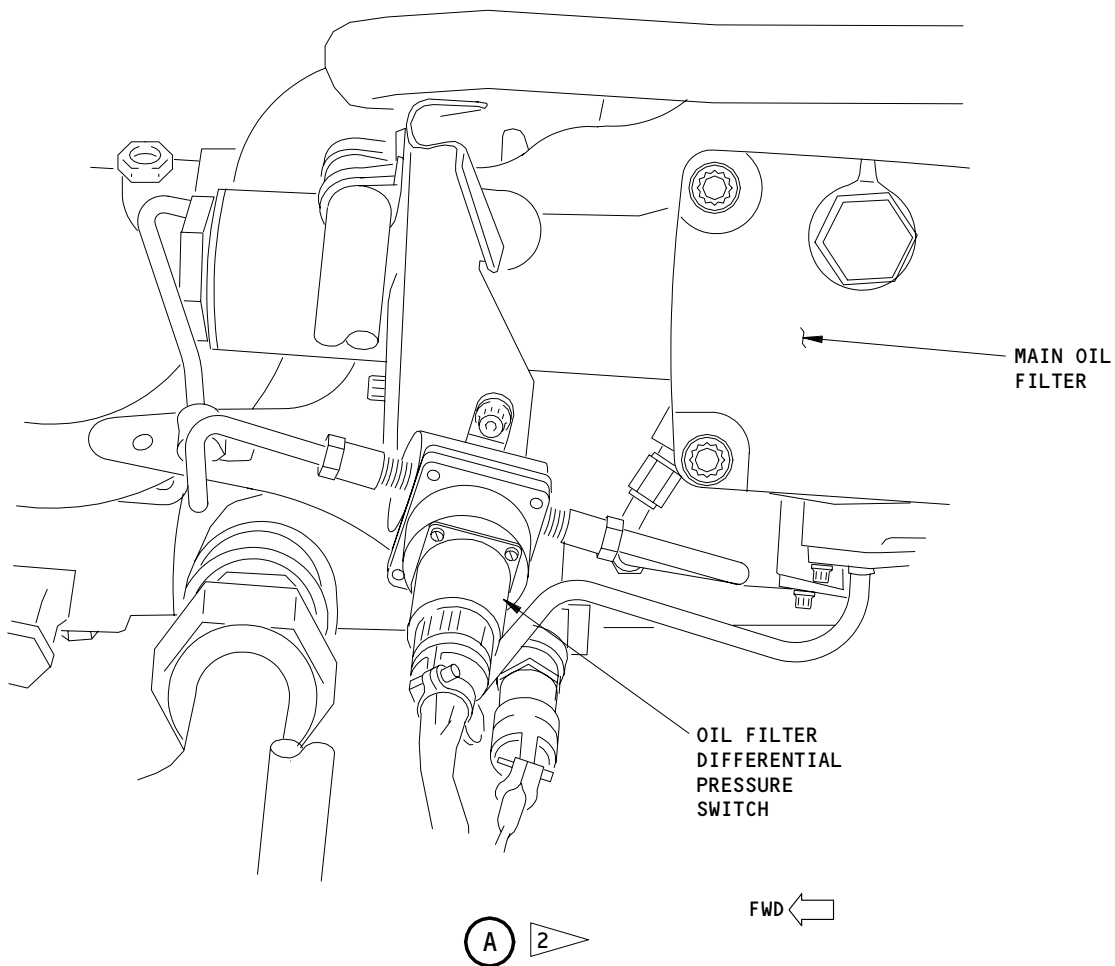
EFFECTIVITY	ALL
-------------	-----

79-35-00

N01

Page 2
Nov 10/94

271933



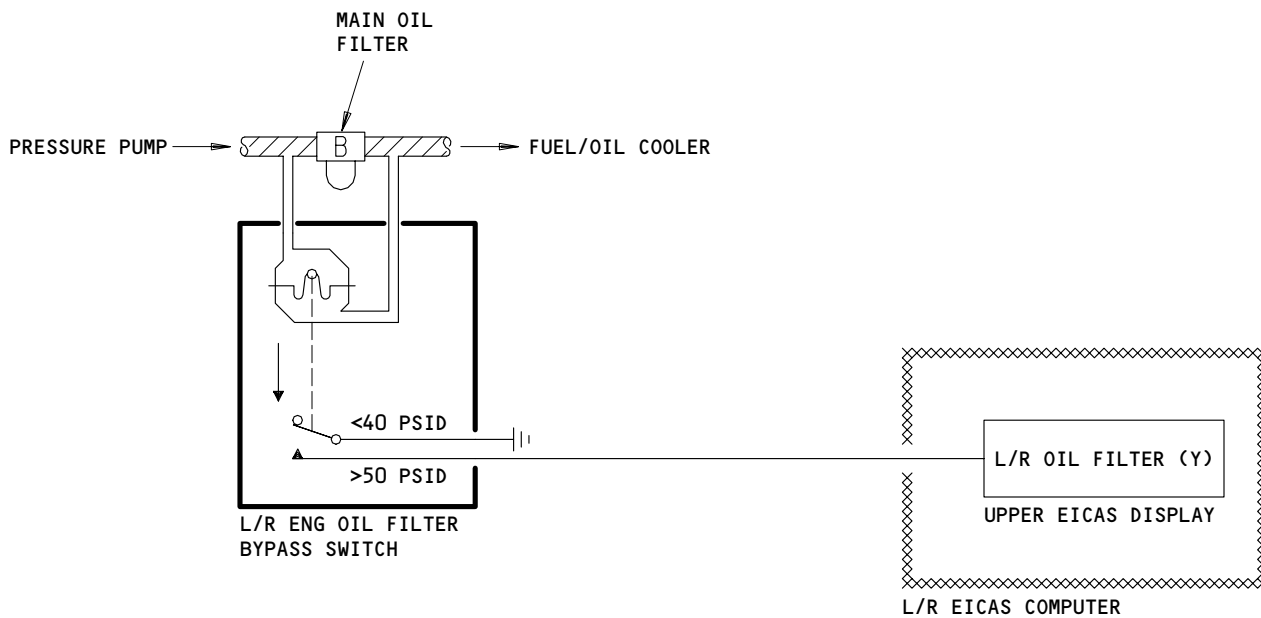
Oil Filter Bypass Warning System
Figure 1 (Sheet 2)

EFFECTIVITY	ALL
-------------	-----

79-35-00

N01

Page 3
Nov 10/94



Oil Filter Bypass Warning System Schematic
Figure 2

EFFECTIVITY
ALL

79-35-00

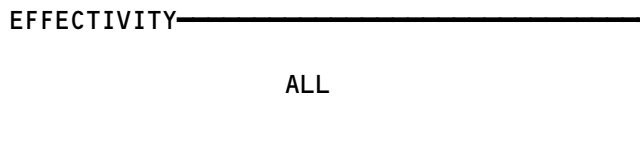
N01

Page 4
Nov 10/94

OIL FILTER BYPASS WARNING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
COMPUTER - (FIM 31-41-00/101) L EICAS, M10181 R EICAS, M10182 SWITCH - OIL FILTER DIFF PRESS, S1583	--	2	415AL,425AL, THRUST REVERSER	79-35-01

Oil Filter Bypass Warning System - Component Index
Figure 101



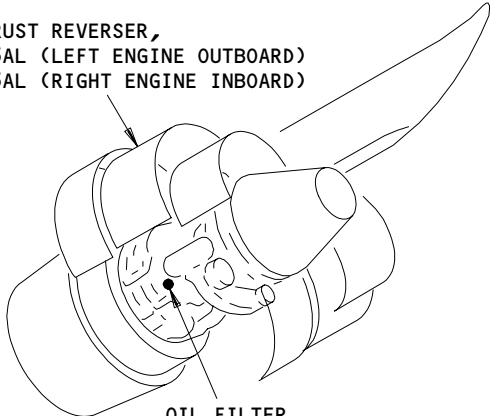
E56815

79-35-00

N01

Page 101
Nov 10/94

THRUST REVERSER,
415AL (LEFT ENGINE OUTBOARD)
425AL (RIGHT ENGINE INBOARD)

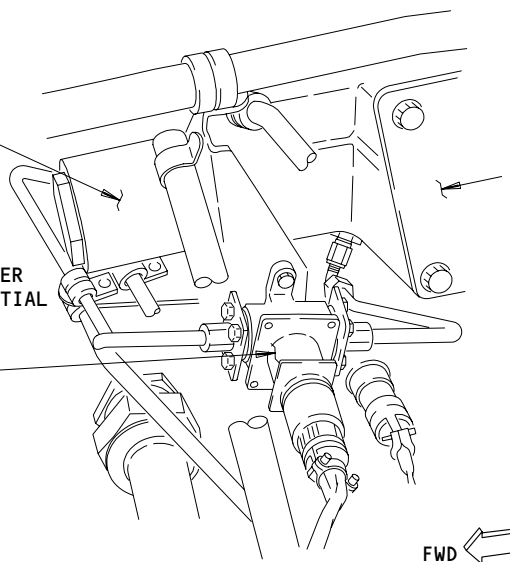


OIL FILTER
DIFFERENTIAL
PRESSURE
SWITCH, S1583
SEE (A)

OIL SYSTEM
PRESSURE
RELIEF VALVE
(REF)

OIL FILTER
DIFFERENTIAL
PRESSURE
SWITCH,
S1583

MAIN OIL
FILTER
(REF)

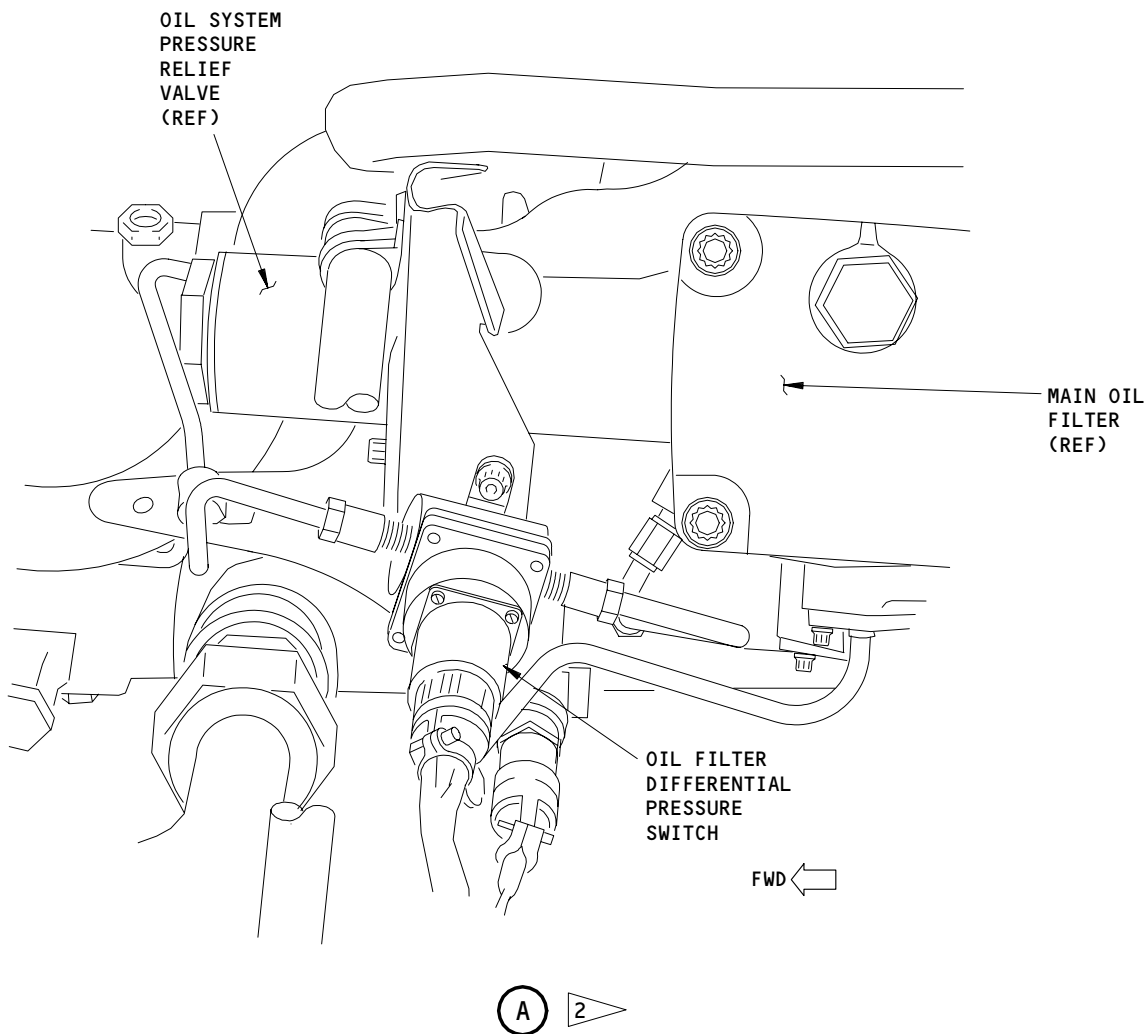


- 1 ENGINES WITHOUT PW SB 79-70
- 2 ENGINES WITH PW SB 79-70

Oil Filter Bypass Warning System - Component Location
Figure 102 (Sheet 1)

EFFECTIVITY	ALL
-------------	-----

79-35-00



Oil Filter Bypass Warning System - Component Location
Figure 102 (Sheet 2)

EFFECTIVITY	
	ALL

79-35-00

N01

Page 103
Nov 10/94

OIL FILTER BYPASS WARNING SYSTEM – ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks which do a test of the bypass warning system of the oil filter. The first task is the test that is recommended. The second task is an alternate test. You only have to do one of the two tasks.
- B. The first task is the recommended test. This test examines the system from the differential pressure switch to the EICAS. The test applies different air pressures on the differential pressure switch which will cause the EICAS message to go on or off.
- C. The second task is the alternate test. This test examines the system from the differential pressure switch to the connector at the strut.

TASK 79-35-00-735-025-N00

2. System Test – Oil Filter Bypass Warning System (Fig. 501)

A. Equipment

- (1) Air pressure source - adjustable from 0 to 100 psi, accurate to ± 1 psi

B. References

- (1) AMM 24-22-00/201, Electrical Power – Control
- (2) AMM 32-09-02/201, Air/Ground Relay System
- (3) AMM 71-00-00/501, Power Plant
- (4) AMM 71-11-04/201, Fan Cowl Panels
- (5) AMM 71-11-06/201, Core Cowl Panels
- (6) AMM 78-31-00/201, Thrust Reverser System

C. Access

(1) Location Zones

- 410 L Power Plant
- 420 R Power Plant

(2) Access Panels

- 413AL Fan Cowl Panel (Left)
- 423AL Fan Cowl Panel (Left)

EFFECTIVITY

ALL

79-35-00

N01

Page 501
Dec 22/99

D. Prepare to Do the Test

S 865-026-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 865-049-N00

- (2) Airplanes incorporating the optional L(R) OIL FILTER Advisory Level EICAS message inhibit, perform the following steps:
- (a) Push the ECS/MSG switch on the EICAS MAINT panel to make sure this Status level EICAS message, L(R) OIL FILTER, does not show on the bottom display.
 - (b) If the L(R) OIL FILTER Status level EICAS message does show on the bottom display, push and hold the ERASE button on the EICAS MAINT panel until the Status level EICAS message, L(R) OIL FILTER, does not show.

S 865-047-N00

- (3) Put the Air/Ground Relay System in the air mode (AMM 32-09-02/201).

S 015-027-N00

- (4) Open the left fan cowl panel (AMM 71-11-04/201).

S 045-028-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO YOU OR DAMAGE TO EQUIPMENT.

- (5) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 015-029-N00

- (6) Open the left core cowl panel (AMM 71-11-06/201).

S 015-030-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (7) Open the left thrust reverser (AMM 78-31-00/201).

E. Do the Test of the Bypass Warning System

S 035-031-N00

- (1) Disconnect the inlet pressure tube of the main oil filter from the differential pressure switch.

S 495-032-N00

- (2) Connect the line from the air pressure source to the differential pressure switch.

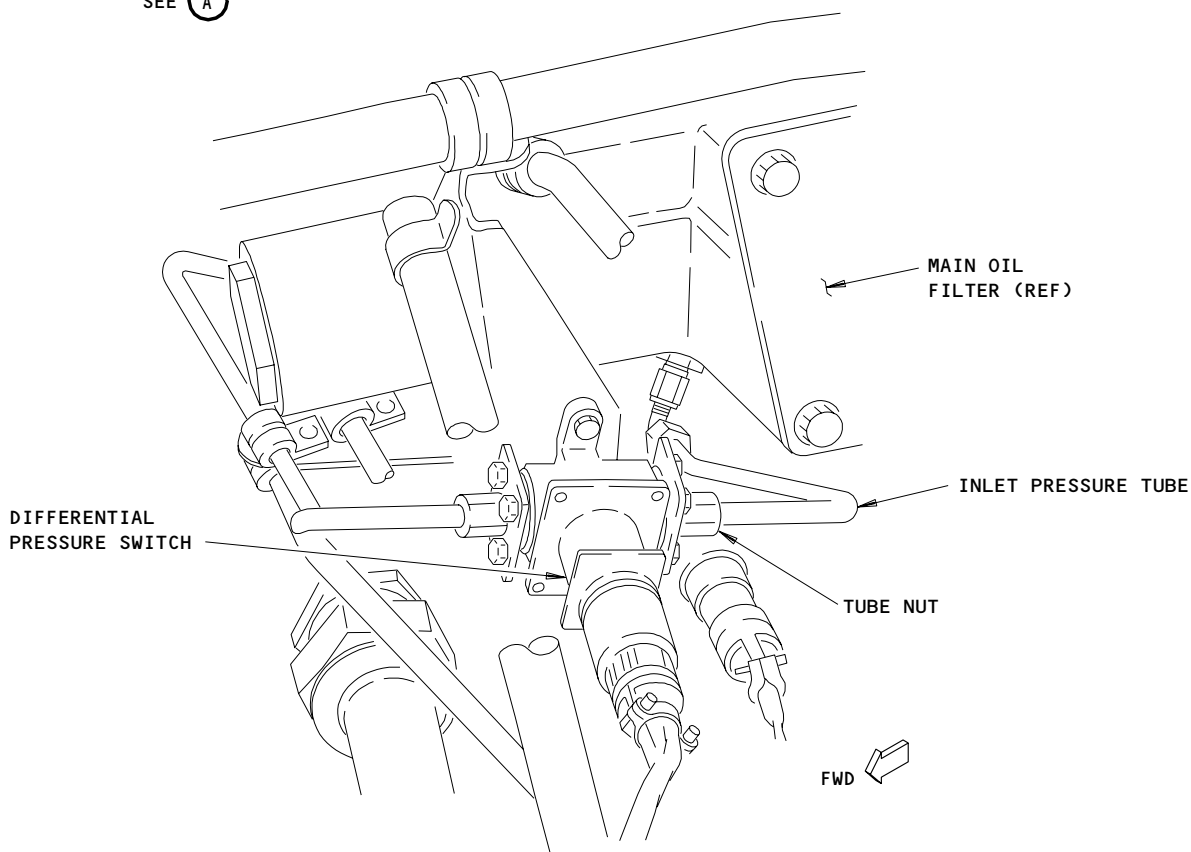
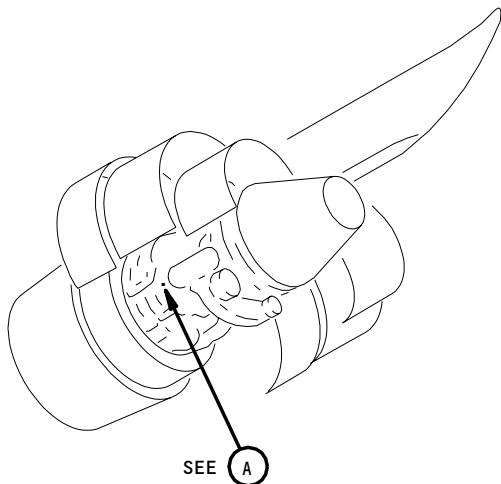
EFFECTIVITY

ALL

79-35-00

N01

Page 502
Apr 22/02



(VIEW IN THE UP DIRECTION)



- 1 ENGINES PRE-PW-SB 79-70
- 2 ENGINES POST-PW-SB 79-70

Oil Filter Bypass Warning System Test
Figure 501 (Sheet 1)

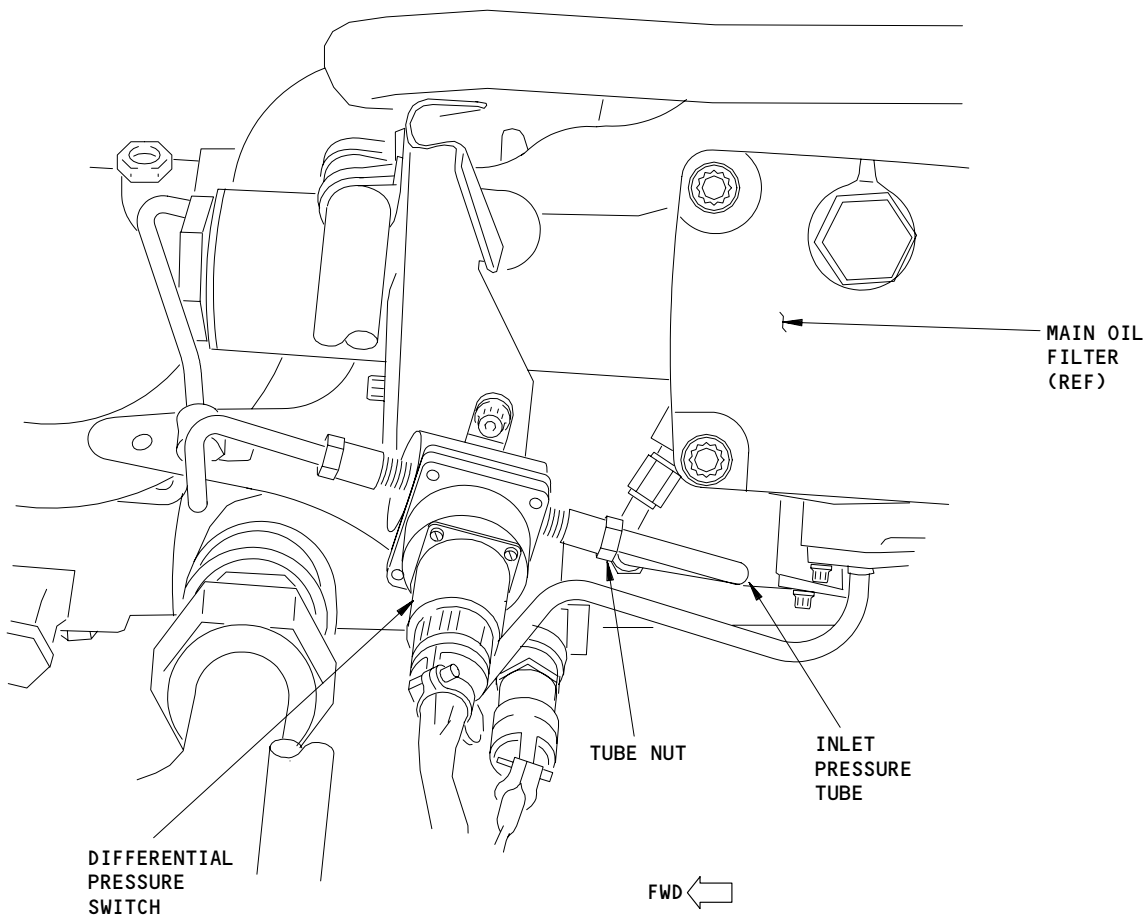
EFFECTIVITY	ALL
-------------	-----

79-35-00

N01

Page 503
Dec 22/99

288114



VIEW IN THE UP DIRECTION



Oil Filter Bypass Warning System Test
Figure 501 (Sheet 2)

EFFECTIVITY	
	ALL

79-35-00

N01

Page 504
Dec 22/99

E57587

S 865-033-N00

- (3) Apply a pressure of 54 ±1 psig to the differential pressure switch.
- (a) For airplanes with the L(R) OIL FILTER Advisory level EICAS message active:
 - 1) Make sure the Advisory level EICAS message, L(R) OIL FILTER, shows on the top display.
 - (b) For airplanes incorporating the optional L(R) OIL FILTER Advisory level EICAS message inhibit, perform the following steps:
 - 1) Make sure STATUS shows on the bottom EICAS display in the top, left corner.
 - 2) Push the STATUS button on the select panel of the EICAS display to make sure this Status level EICAS message, L(R) OIL FILTER, shows on the bottom display.

S 865-035-N00

- (4) Decrease the pressure to 38 ±1 psig.
- (a) For airplanes with the L(R) OIL FILTER Advisory level EICAS message active:
 - 1) Make sure the Advisory level EICAS message goes off and stays off while you decrease the pressure to zero psig.
 - (b) For airplanes incorporating the optional L(R) OIL FILTER Advisory level EICAS message inhibit, perform the following steps:
 - 1) Put the MAINT ENABLE BYPASS switch, S612, to the BYPASS position or put the Air/Ground Relay System in the ground mode (AMM 32-09-02/201).
 - 2) Push the AUTO-EVENT READ switch on the EICAS MAINT panel.
 - 3) Push and hold the ERASE button on the EICAS MAINT panel until the Status level EICAS message, L(R) OIL FILTER, does not appear.
 - 4) Put the MAINT ENABLE BYPASS switch, S612, to the NORMAL position or put the Air/Ground Relay System in the air mode (AMM 32-09-02/201).
 - 5) Wait 1 minute, and make sure the Status level EICAS message, L(R) OIL FILTER does not return.

S 865-036-N00

- (5) Decrease the pressure to zero.

S 095-037-N00

- (6) Remove the air pressure line from the differential pressure switch.

S 435-038-N00

- (7) Connect the inlet pressure tube to the differential pressure switch.
- (a) ENGINES PRE-PW-SB 79-70 OR PRE-PW-SB 79-77;
Tighten the tube nut to 135-145 pound-inches (15.253-16.383 newton-meters).

EFFECTIVITY

ALL

79-35-00

N01

Page 505
Apr 22/09

- (b) ENGINES POST-PW-SB 79-70 OR POST-PW-SB 79-77;
Tighten the tube nuts to 65-75 pound-inches
(7.344-8.474 newton-meters).
- (c) Attach lockwire or safety cable and safety cable ferrule to the
tube nuts.

S 795-046-N00

- (8) Do the test of the oil filter differential pressure switch that is
shown in the Power Plant Test Reference Table (AMM 71-00-00/501).
 - (a) Examine for leaks and repair the leaks as necessary.
- F. Put the Airplane Back to Its Usual Condition.

S 415-039-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU CLOSE THE THRUST
REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO
PERSONS OR DAMAGE TO EQUIPMENT COULD OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 415-040-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

S 415-041-N00

- (3) Close the left fan cowl panel (AMM 71-11-04/201).

S 445-024-N00

- (4) Do the activation procedure for the thrust reverser
(AMM 78-31-00/201).

S 865-048-N00

- (5) Put the Air/Ground Relay System in the ground mode
(AMM 32-09-02/201).

S 865-042-N00

- (6) Remove electrical power, if it is not necessary (AMM 24-22-00/201).

TASK 79-35-00-735-001-N00

3. System Test - Oil Filter Bypass Warning System (Alternate Procedure)

(Fig. 501)

A. Equipment

- (1) Air pressure source - adjustable from 0 to 100 psi,
accurate to ± 1 psi
- (2) Multimeter

B. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 71-00-00/501, Power Plant
- (3) AMM 71-11-04/201, Fan Cowl Panels
- (4) AMM 71-11-06/201, Core Cowl Panels
- (5) AMM 78-31-00/201, Thrust Reverser System

EFFECTIVITY

ALL

79-35-00

N01

Page 506
Apr 22/09

C. Access

(1) Location Zones

- 410 L Power Plant
- 420 R Power Plant

(2) Access Panels

- 413AL Fan Cowl Panel (Left)
- 423AL Fan Cowl Panel (Left)

D. Prepare to Do the Alternate Test of the Bypass Warning System

S 865-002-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 045-004-N00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 015-003-N00

- (3) Open the left fan cowl panel (AMM 71-11-04/201).

S 015-005-N00

- (4) Open the left core cowl panel (AMM 71-11-06/201).

S 015-006-N00

WARNING: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (5) Open the left thrust reverser (AMM 78-31-00/201).

E. Do the Alternate Test of the Bypass Warning System

S 035-018-N00

- (1) Remove the connector D4208P at the strut.

S 495-019-N00

- (2) Connect the multimeter across the pin 16 of the connector D4208P and the airplane ground.
(a) Make sure the multimeter shows an open circuit.

S 035-009-N00

- (3) Disconnect the inlet pressure tube of the main oil filter from the differential pressure switch.

EFFECTIVITY

ALL

79-35-00

N01

Page 507
Apr 22/08

- S 485-010-N00
- (4) Connect the line from the air pressure source to the differential pressure switch.
- S 865-011-N00
- (5) Apply a pressure of 54 ±1 psig to the differential pressure switch.
(a) Make sure the multimeter shows a continuity.
- S 865-013-N00
- (6) Decrease the pressure to 38 ±1 psig.
(a) Make sure the multimeter shows an open circuit.
- S 865-020-N00
- (7) Decrease the pressure to zero.
- S 095-021-N00
- (8) Remove the multimeter from the connector D4208P.
- S 435-022-N00
- (9) Install the connector D4208P to the mating connector D4208J for the left engine strut or D4258J for the right engine strut.
- S 085-014-N00
- (10) Remove the air pressure line from the differential pressure switch.
- S 435-011-N00
- (11) Connect the inlet pressure tube to the differential pressure switch.
(a) ENGINES PRE-PW-SB 79-70 OR PRE-PW-SB 79-77;
Tighten the tube nut to 135-145 pound-inches
(15.253-16.383 newton-meters).
(b) ENGINES POST-PW-SB 79-70 OR POST-PW-SB 79-77;
Tighten the tube nuts to 65-75 pound-inches
(7.344-8.474 newton-meters).
(c) Attach lockwire or safety cable and safety cable ferrule to the tube nuts.
- F. Put the Airplane Back to Its Usual Condition.

S 415-013-N00

WARNING: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Close the left thrust reverser (AMM 78-31-00/201).

S 415-023-N00

- (2) Close the left core cowl panel (AMM 71-11-06/201).

EFFECTIVITY

ALL

79-35-00

N01

Page 508
Apr 22/08

- S 415-015-N00
(3) Close the left fan cowl panel (AMM 71-11-04/201).
- S 795-043-N00
(4) Do the test of the oil filter differential pressure switch that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).
(a) Examine for leaks and repair the leaks as necessary.
- S 445-016-N00
(5) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).
- S 865-017-N00
(6) Remove electrical power, if it is not necessary (AMM 24-22-00/201).

EFFECTIVITY

ALL

79-35-00

N01

Page 509
Apr 22/08

OIL FILTER DIFFERENTIAL PRESSURE SWITCH – REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks. The first task removes the differential pressure switch for the main oil filter. The second task installs the differential pressure switch.

TASK 79-35-01-004-001-N00

2. Remove the Oil Filter Differential Pressure Switch

A. References

- (1) AMM 24-22-00/201, Electrical Power – Control
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System

B. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

C. Prepare to Remove the Differential Pressure Switch for the Oil Filter

S 014-002-N00

- (1) Open the left fan cowl panel (AMM 71-11-04/201).

S 044-003-N00

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 014-004-N00

- (3) Open the left core cowl panel (AMM 71-11-06/201).

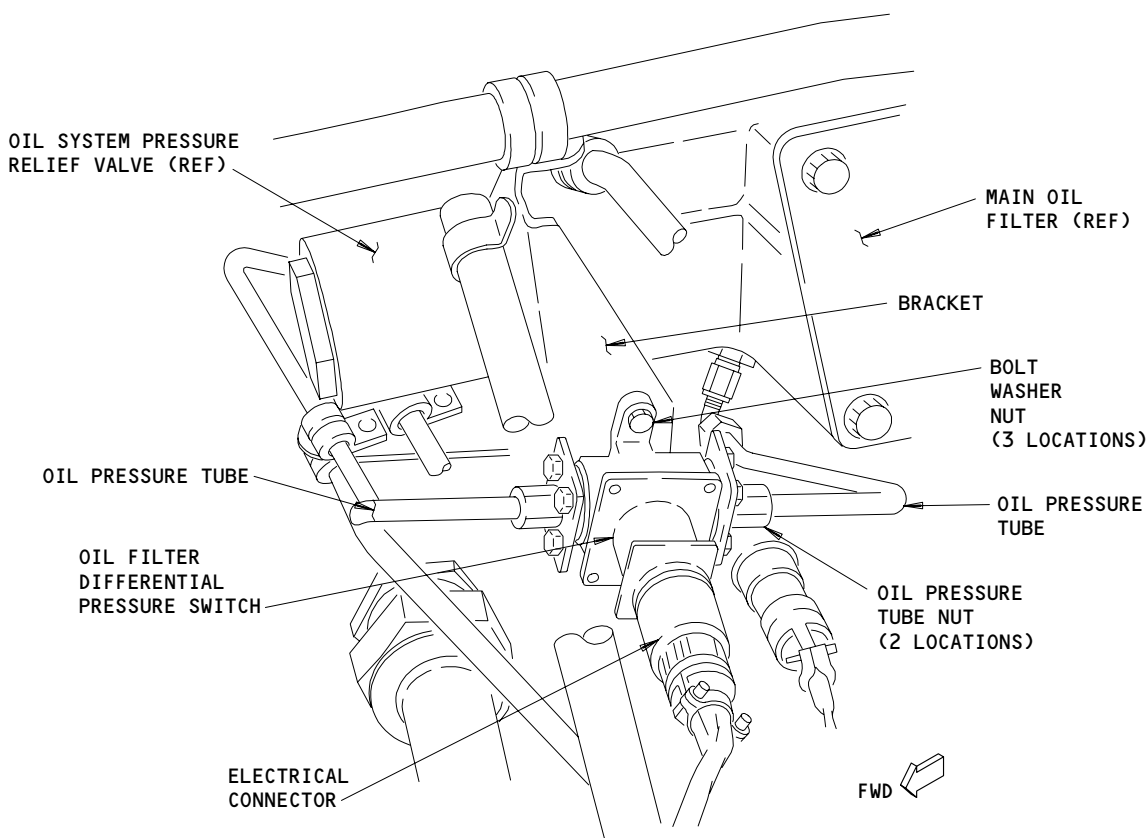
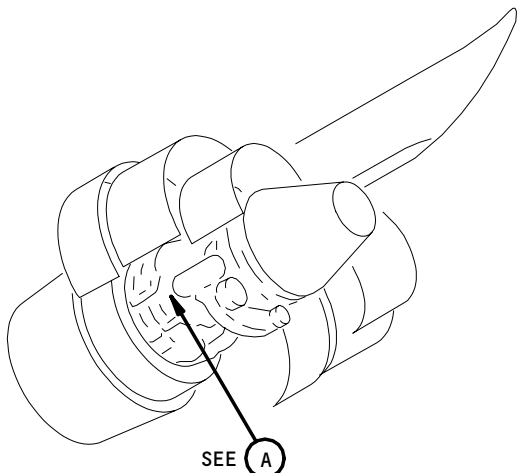
EFFECTIVITY

ALL

79-35-01

N01

Page 401
Dec 22/00



VIEW IN THE UP DIRECTION

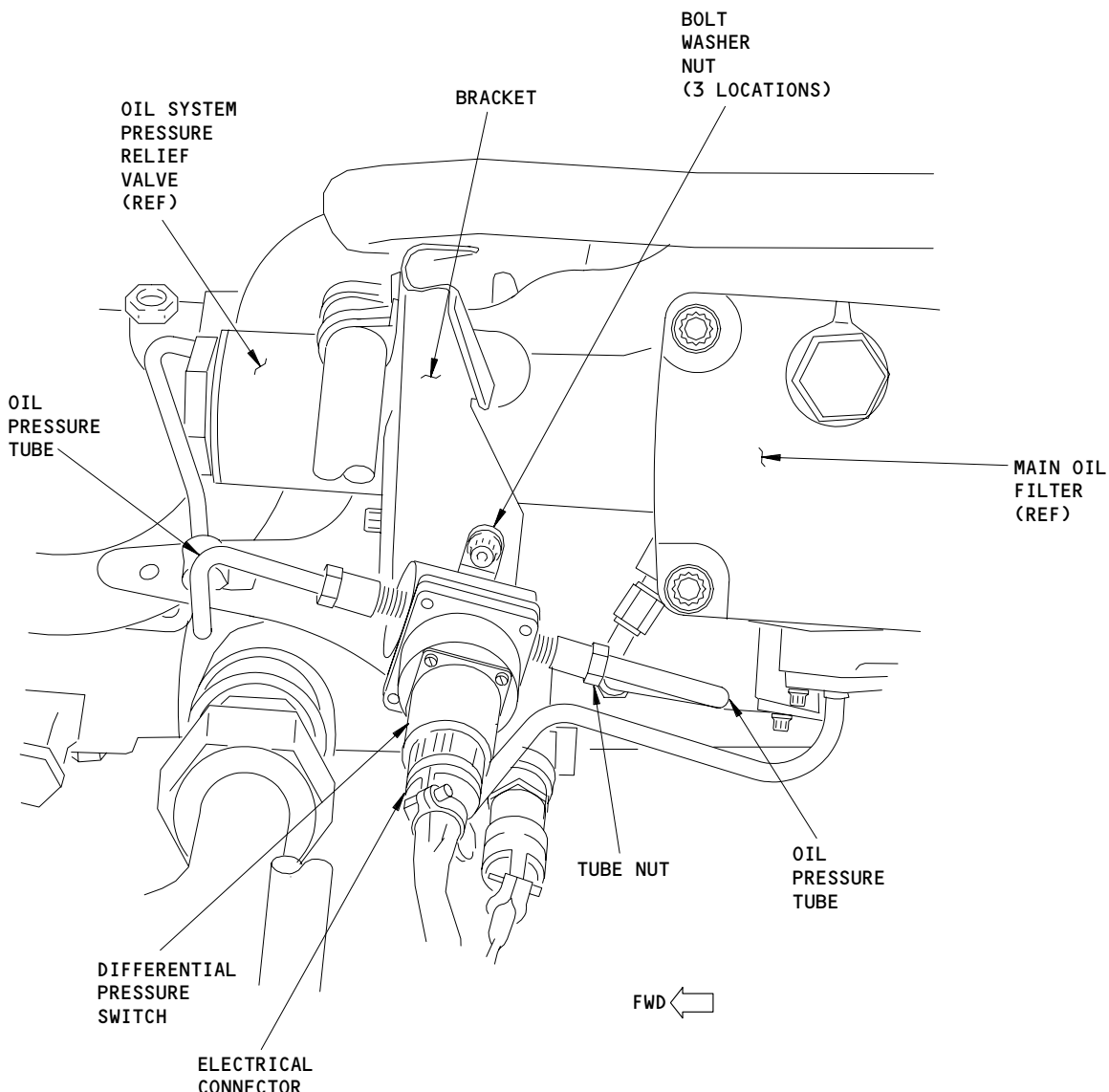


- 1 ENGINES WITHOUT PW SB 79-70
- 2 ENGINES WITH PW SB 79-70

Oil Filter Differential Pressure Switch Installation
Figure 401 (Sheet 1)

EFFECTIVITY	
	ALL

79-35-01



VIEW IN THE UP DIRECTION



Oil Filter Differential Pressure Switch Installation
Figure 401 (Sheet 2)

EFFECTIVITY	
	ALL

79-35-01

N01

Page 403
Nov 10/94

S 014-005-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Open the left thrust reverser (AMM 78-31-00/201).

S 864-006-N00

(5) Remove electrical power (AMM 24-22-00/201).

D. Remove the Differential Pressure Switch for the Oil Filter (Fig. 401)

S 034-007-N00

(1) Disconnect the electrical connector from the differential pressure switch.

(a) Install the protection cap on the electrical connector.

S 034-025-N00

(2) ENGINES PRE-PW-SB 79-77;

Do the steps that follow:

WARNING: DO NOT KEEP THE OIL ON YOUR SKIN FOR A LONG TIME. IF YOU DO NOT CLEAN THE OIL OFF, THE OIL CAN CAUSE INJURY.

(a) Disconnect the two oil pressure tubes from the differential pressure switch.

1) Install the protection caps on the two oil pressure tubes.

(b) Remove the bolts, washers and nuts which attach the differential pressure switch to the bracket.

(c) Remove the differential pressure switch from the engine.

S 034-026-N00

(3) ENGINES POST-PW-SB 79-77;

Do the steps that follow:

(a) Remove the bolt and clamp that attach the oil filter pressure tube to the mount bracket.

EFFECTIVITY

ALL

79-35-01

N01

Page 404
Dec 22/00

- (b) Disengage and remove the two oil filter pressure tubes (LP45, LP46) and elbow from the oil filter housing outlet and inlet ports.
- (c) Remove the three bolts that attach the differential pressure switch to the mount bracket.
- (d) Remove the differential pressure switch.
- (e) Install protective plugs in the oil filter housing outlet and inlet ports as necessary.

TASK 79-35-01-404-011-N00

3. Install the Oil Filter Differential Pressure Switch

A. Equipment

- (1) M303, M305, or M307 Bergen Mechanical Crimper
Bergen Cable Technologies Inc
170 Gregg St
P.O. Box 1300
Lodi, NJ 07644-9982

B. Consumable Materials

- (1) G02332 Ferrule, Safety Cable (P05-292)
- (2) G02334 Lockwire, (P05-289) 0.032 inch (0.813 mm) - AS3214-02
- (3) G02335 Cable, Safety (P05-291)

C. References

- (1) AMM 24-22-00/201, Electrical Power - Control
- (2) AMM 71-11-04/201, Fan Cowl Panels
- (3) AMM 71-11-06/201, Core Cowl Panels
- (4) AMM 78-31-00/201, Thrust Reverser System
- (5) AMM 79-35-00/501, Oil Filter Bypass Warning System

D. Access

- (1) Location Zones
 - 410 Left Engine
 - 420 Right Engine
- (2) Access Panels
 - 415AL Fan Reverser (Left)
 - 425AL Fan Reverser (Left)

E. Install the Differential Pressure Switch for the Oil Filter (Fig. 401)

S 424-027-N00

- (1) ENGINES PRE-PW-SB 79-77;
Do the steps that follow:
 - (a) Install the differential pressure switch on the bracket with the bolts, washers and nuts.
 - 1) ENGINES PRE-PW-SB 79-70;
Tighten the bolts to 32-38 pound-inches (3.6-4.3 newton-meters).
 - 2) ENGINES POST-PW-SB 79-70;
Tighten the bolts to 23-26 pound-inches (2.6-2.9 newton-meters).
 - (b) Remove the protection caps from the oil pressure tubes.

EFFECTIVITY

ALL

79-35-01

N01

Page 405
Dec 22/00

- (c) Connect the oil pressure tubes to the differential pressure switch.
- 1) ENGINES PRE-PW-SB 79-70;
Tighten the tube nuts to 135-145 pound-inches (15.3-16.4 newton-meters).
 - 2) ENGINES POST-PW-SB 79-70;
Tighten the tube nuts to 65-75 pound-inches (7.3-8.5 newton-meters).
 - 3) Attach lockwire or safety cable and safety cable ferrule to the tube nuts.

S 424-028-N00

- (2) ENGINES POST-PW-SB 79-77;
Do the steps that follow:
- (a) Install the differential pressure switch on the bracket with the bolts, washers and nuts.
 - 1) Lubricate the threads of the bolts, which attach the differential pressure switch, with engine oil.
 - 2) Tighten the bolts to 36-40 pounds-inches (4.1-4.5 newton-meters).
 - (b) Install the elbow, threads lubricated with Engine Oil, to the connector installed in the left pressure port of the main oil filter housing (as viewed from the front).
 - 1) Tighten the elbow to elbow to 65-75 pounds-inches (7.3-8.5 newton-meters).
 - (c) Install oil filter pressure tube (LP45):
 - 1) Install the oil filter pressure tube (LP45), threads lubricated with Engine Oil, to the forward connector on the pressure switch and to the front connector installed in the main oil filter housing.
 - 2) Attach the oil filter pressure tube (LP45) to the mount bracket with the clamp and bolt.

NOTE: The clamp is attached to the middle hole of the mount bracket to attach the oil filter pressure tube (LP45).
- 3) Tighten the clamp bolt to 36-40 pound-inches (4.1-4.5 newton-meters).

EFFECTIVITY

ALL

79-35-01

N01

Page 406
Dec 22/00

- (d) Install the oil filter pressure tube (LP46), threads lubricated with Engine Oil, to the rear connector on the pressure switch and to the elbow installed in the main oil filter housing.
- (e) Tighten the tube nuts of both oil filter pressure tubes (LP45, LP46) to 65-75 pound-inches (7.3-8.5 newton-meters).
- (f) Attach lockwire or safety cable and safety cable ferrule to the tube nuts.

S 434-015-N00

- (3) Remove the protection cap from the electrical connector.

S 434-016-N00

- (4) Connect the electrical connector to the differential pressure switch.

F. Put the Airplane Back to Its Usual Condition

S 864-017-N00

- (1) Supply electrical power (AMM 24-22-00/201).

S 414-018-N00

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00/201 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Close the left thrust reverser (AMM 78-31-00/201).

S 414-019-N00

- (3) Close the left core cowl panel (AMM 71-11-06/201).

S 414-020-N00

- (4) Close the left fan cowl panel (AMM 71-11-04/201).

S 444-021-N00

- (5) Do the activation procedure for the thrust reversers (AMM 78-31-00/201).

S 714-022-N00

- (6) Do the adjustment procedure for the warning system of the oil filter bypass (AMM 79-35-00/501).

EFFECTIVITY

ALL

79-35-01

N01

Page 407
Dec 22/00

S 794-023-N00

- (7) Do the test of the oil filter differential pressure switch that is shown in the Power Plant Test Reference Table (AMM 71-00-00/501).

EFFECTIVITY

ALL

79-35-01

N01

Page 408
Nov 10/97