P U B L I C A T I O N T R A N S M I T T A L

International Aero Engines

400 MAIN STREET, MAIL STOP 121-10
EAST HARTFORD, CT 06108, USA.
TELEPHONE:- 860 565 5515
FAX:- 860 565 0600

P.O. BOX 31, DERBY
TELEGRAMS - 'ROYCAR' DERBY
TELEX - 37645
TELEPHONE:- 44 (0) 1332 242424
FAX:- 44 (0) 1332 249936

DATE: Dec.17/08

V2500-A5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits the Revision 1 of Service Bulletin V2500-ENG-80-0021

Document History

Service Bulletin Revision Status

Initial Issue Apr. 8/08

Service Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 17 of the Service Bulletin	To extend the time of installation in the Accomplishment Instructions.

V2500-ENG-80-0021

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Customer Data Services, Rolls-Royce plc, Derby, England

International Aero Engines

SERVICE BULLETIN

STARTER/TAI DUCT SYSTEM - REPLACEMENT OF BEARING LINK ASSEMBLIES (FOR CONTROLLED SERVICE USE)

1. Planning Information

A. Effectivity

(1) Airplane

(a) Airbus A319.

(2) Model

(a) A319-132 Aircraft Tail/Serial Numbers as follows:

Aircraft Tail No.	Aircraft Serial No.	Aircraft Tail No.	Aircraft Serial No.
N501NK	2424	N518NK	2718
N502NK	2433	N519NK	2723
N503NK	2470	N520NK	2784
N504NK	2473	N521NK	2797
N505NK	2485	N522NK	2893
N506NK	2490	N523NK	2898
N507NK	2560	N524NK	2929
N508NK	2567	N525NK	2942
N509NK	2603	N526NK	2963
N510NK	2622	N527NK	2978
N511NK	2659	N528NK	2983
N512NK	2673	N529NK	3007
N514NK	2679	N530NK	3017
N515NK	2698	N531NK	3026
N516NK	2704	N532NK	3165
N517NK	2711		

(3) This Service Bulletin will be carried out on one Engine only from any of the Aircraft listed above as directed by the local IAE representative.

B. Concurrent Requirements

None.

C. Reason

(1) Problem

There have been reports from operator`s of excessive wear to the link rod bearings associated with the Starter duct and the Thermal Anti-Icing (TAI) systems.

(2) Evidence

Operators have observed the problem in service.

(3) Substantiation

The accomplishment instructions in this Service Bulletin introduce pre-load into the Air Starter and TAI duct support linkages, and hence remove the opportunity for the bearings to vibrate and promote wear. Pre-loading in the linkages will not have a detrimental effect on flight safety with respect to the Air Starter and TAI system for the duration of the test.

(4) Objectives

This Service Bulletin is issued to replace specified bearing links for a Controlled Service Use (CSU) test on specific Aircraft.

(5) Effect of bulletin on:

(a) Operation

Not affected.

(b) Maintenance

Affected.

(c) Overhaul

Not affected.

(d) Repair Scheme

Not affected.

(e) Interchangeability

Not affected.

(f) Fits and Clearance

Not affected.

(6) Supplemental Information

Not affected.

D. Description

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

NOTE: Bombardier personnel must witness the re-rigging of the Air Starter and the TAI bearing link assemblies. Bearing link assemblies loosened while under controlled service use will make it necessary to re-rig in accordance with Bombardier instructions.

(a) The four bearing link assemblies on the LH or RH Air Starter system are removed according to the existing Maintenance Manual instructions. The ducting is allowed to settle in a state that is free of any tension.

(b) The number one and two bearing link assemblies on the LH or RH Air Starter system are then replaced with turnbuckle link assemblies. The bearing link assemblies are installed under torque controlled conditions to induce positive axial pre-load in accordance with the accomplishment instructions in this Service Bulletin.

(c) The existing number three and four bearing link assemblies are inspected for wear and if serviceable, are re-installed. The bearing link assemblies are then rigged in accordance with the accomplishment instructions in this Service Bulletin to introduce positive axial load.

(d) The three bearing link assemblies on the LH or RH TAI system are removed in accordance with the existing Maintenance Manual instructions. The ducting is allowed to settle in a state that is free of any tension.

(e) The number one and two bearing link assemblies on the LH or RH TAI system are replaced with turnbuckle link assemblies. The bearing link assemblies are installed under torque-controlled conditions to induce positive axial pre-load in accordance with the accomplishment instructions in this Service Bulletin.

(f) The existing number three bearing link assembly is inspected for wear and if serviceable, are re-installed. The bearing link assembly is then rigged in accordance with the accomplishment instructions in this Service Bulletin to introduce positive axial load.

(g) Subsequent inspection checks of both the Air starter and TAI bearing link assemblies should be carried out at regular intervals and the data recorded.

E. Compliance

Category 8

Accomplish based upon experience with the prior configuration.

F. Approval

The technical content of this Service Bulletin has been approved under the authority of EASA Design Organisation Approval No EASA.21J.031.

G. Manpower

Estimate of man-hours to incorporate the intent of this Service Bulletin on each engine:

	VENUE	Estimated Man-Hours
(1)	In Service	
(a)	To gain access	0.25 M/Hr
(b)	To remove the bolts, bushes and link arms	2.25 M/Hr
(c)	To install the bolts, bushes and link arms	2.25 M/Hr
(d)	To return to A/C service	0.25 M/Hr
	Total	5.00 M/Hr per engine

NOTE: Man-hour estimate is provided for planning purposes only. No labor reimbursement is provided under the terms of this Service Bulletin offering.

H. Material Price and Availability

The Operator with one of units listed in Paragraph 1.A. should submit a no charge purchase order for the parts required. The purchase order must specify this Service Bulletin number and the ATA location of the Bearing Links.

Direct request to:

Goodrich Aerostructures

850 Lagoon Drive

Chula Vista, CA 91910-2098 USA

Attn: Regional Account Manager - MZ107A

(Reference Service Bulletin No. V2500-ENG-80-0021)

I. Tooling - Cost and Availability

None

J. Industry Support Information

Not applicable.

K. Weight and Balance

(1) Weight change

None.

(2) Momentum change

None.

(3) Datum

Nacelle Front Mount Centreline (Powerplant Station PPS 100.00).

L. Electrical Load Data

Not affected.

M. Software Accomplishment Summary

Not applicable.

N. References

(1) A319/A320/A321/V2500-A5 Aircraft Maintenance Manual (E-V2500-1IA), Chapter/Section 71-13-00.

(2) V2500-A5 Aircraft Maintenance Manual (M-V2500-1IA), Chapter/Section 30-21-49.

(3) V2500-A5 Aircraft Maintenance Manual (M-V2500-1IA), Chapter/Section 80-13-49.

(4) V2500 Overhaul Processes and Consumable Index (PCI-V2500-2IA).

(5) IAE V2500 Standard Practices/Processes Manual (SPP-V2500-1IA), Chapter/Section 70-09-00.

(6) Bombardier Aerospace-Shorts Modification Number, D1208.

(7) Bombardier Aerospace- EC Number, 07VN307.

(8) Bombardier Aerospace-Shorts Test Report MPE/RS/1323.

O. Other Publications

Not applicable.

2. Material Information

A. Kits associated with this Bulletin

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
	V2580021-551 Consisting of:	1	MOD KIT (Starter Ducts)	-		(A)
	P3A1830	2	Bearing	-		
	P3A1830L	2	Bearing	-		
	745-5125-501	1	Rod	-		
	745-5125-503	1	Rod	-		
	A105GT	2	Nut	-		
	A105GTL	2	Nut	-		
	MS9276-11	4	Washer, Tab	-		
	V2580021-553 Consisting of:	1	MOD KIT (TAI Ducts)	-		(A)
	P3A1830	2	Bearing	-		
	P3A1830L	2	Bearing	-		
	745-5125-505	1	Rod	-		
	745-5125-507	1	Rod	-		
	A105GT	2	Nut	-		
	A105GTL	2	Nut	-		
	MS9276-11	4	Washer, Tab	-		

B. Parts affected by this Service Bulletin

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
80-13-49						
01-125A	-	2	.Bearing, Link, Female	-	P3A1830	(B)
01-130	-	1	.Rod	-	740-5123-503	(B)
01-180	-	2	.Bearing, Link, Female	-	P3A1830	(B)
01-190	-	1	.Rod		740-5123-505	(B)
30-21-49						
01-170B	-	2	.Bearing, Link, Female		P3A1830	(B)
01-180A	-	1	.Rod		740-5123-503	(B)
02-170B	-	3	.Bearing, Link, Female		P3A1830	(B)
02-180B	-	1	.Bearing, Link, Female		P3A1830	(B)
02-185	-	1	.Rod		745-5123-501	(B)

C. Instructions/Dispositions Code Statements

(A) Kit is currently available.

(B) Old parts, if serviceable can be used for this Service Bulletin or on other applications.

D. Materials required to incorporate this Service Bulletin

CoMat 02-099	Lint free cloth
CoMat 01-076	Solvent
or	
CoMat 01-438	
CoMat 10-039	Engine Oil
or	
CoMat 10-040	

NOTE: To identify consumable materials, refer to the Overhaul Processes and Consumable Index (PCI-V2500-1IA).

3. Accomplishment Instructions

A. Rework Instructions

NOTE: These instructions are written on the basis that the aircraft has been made safe for maintenance.

NOTE: Bombardier personnel must witness the re-rigging of the Air Starter and the TAI bearing link assemblies. Bearing link assemblies loosened while under controlled service use will make it necessary to re-rig in accordance with Bombardier instructions.

NOTE: Check and record the rigged lengths of all the bearing link assemblies before removal. Check and record the rigged lengths of all the bearing link assemblies after installation.

WARNING: BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUT DOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR.

Part A - Replacement of the bearing link assemblies on the Air Starter - LH or RH Engine

(Refer to Figure 1)

(1) Open the Fan Cowls as instructed in the V2500-A5 Aircraft Maintenance Manual, Task 71-13-00-010-010.

WARNING: SOLVENT IS FLAMMABLE AND THE VAPOR IS HARMFUL. USE IN A WELL VENTILATED AREA. AVOID PROLONGED BREATHING OF VAPORS OR PROLONGED OR REPEATED CONTACT WITH SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT. PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS. PRIOR TO USE OF THIS PRODUCT, READ THE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(2) Clean the Link Arm assemblies and attaching bolts with a lint free cloth (CoMat 02-099) made moist with Solvent (CoMat 01-076) or (CoMat 01-438). Wipe the area dry with a lint-free cloth before the solvent evaporates.

(3) Remove the Starter Duct bearing links, nuts, bolts and washers that attach the duct at all four positions. This will permit the ducting to settle in a state that is free of any tension. Refer to the Aircraft Maintenance Manual, TASK 80-13-49-000-010.

(4) Install and Rig the Starter Duct bearing links with the nuts, bolts and washers removed in the previous step. Refer to the Aircraft Maintenance Manual, TASK 80-13-49-400-010 and TASK 80-13-49-820-010 except as follows:

NOTE: Make sure that the threads on all bearing link assemblies are free to adjust with no interference that may result in incorrect indications of preload/ torque values.

(a) Adjust the central connecting rod nut at position one to make the overall length of the bearing link an approximate nominal length of 4.65 in. (118,00 mm).

(b) Adjust the central connecting rod nut at position two to make the overall length of the bearing link an approximate nominal length of 5.55 in. (141,00 mm).

(c) Make further adjustments to the bearing link at position one to set the link to a length that just permits you to put in the bolts at the end of the bearing link. Tighten the bearing link bolts in accordance with the Aircraft Maintenance Manual, TASK 80-13-49-400-010.

(d) Make further adjustments to the bearing link at position two to set the link to a length that just permits you to put in the bolts at the end of the bearing link. Tighten the bearing link bolts in accordance with the Aircraft Maintenance Manual, TASK 80-13-49-400-010.

(e) Torque the central adjustment nut on the connecting rod at position one to 25 lbf in. (2.8 Nm). Apply the torque so that it will reduce the length of the bearing link. Refer to the Aircraft Maintenance Manual, TASK 70-23-11-911-013.

(f) Torque the central adjustment nut on the connecting rod at position two to 25 lbf in. (2.8 Nm). Apply the torque so that it will reduce the length of the bearing link. Refer to the Aircraft Maintenance Manual, TASK 70-23-11-911-013.

(g) Tighten the bearing link nuts either side of the central adjustment nut at position one and bend the washer tabs to secure in position. Refer to the Aircraft Maintenance Manual, TASK 70-40-11-911-014.

(h) Tighten the bearing link nuts either side of the central adjustment nut at position two and bend the washer tabs to secure in position. Refer to the Aircraft Maintenance Manual, TASK 70-40-11-911-014.

(i) Visually inspect the bearing link assemblies at positions three and four for wear. If serviceable, undo the lock nuts to permit the adjustment of the bearing links.

(j) Adjust the length of the bearing link at position three to the nominal length of 3.04 in. (77.4 mm) as shown.

NOTE: The male/female bearing link at position three may require full adjustment to make the total length of the link as short as possible.

(k) Adjust the length of the bearing link at position four to the nominal length of 4.59 in. (116.5 mm) as shown.

(l) Make further adjustment to the bearing link at position three to set the link to a length that just permits you to put in the bolts at the end of the bearing link.

(m) Make further adjustment to the bearing link at position four to set the link to a length that just permits you to put in the bolts at the end of the bearing link.

(n) If required, shorten the length of the bearing link at position three by the application of a half turn (180 degrees) in a clockwise direction. This will cause a positive axial preload when the link is re-installed.

NOTE: Make sure you make a reference mark on the bearing link before you make the following adjustments.

(o) Shortened the length of the bearing link at position four by the application of a full turn (360 degrees) in a clockwise direction. This will cause a positive axial preload when the link is re-installed.

(p) Install the bearing links at positions three and four. Tighten the lock nuts at each end of the bearing links and bend the washer tabs to secure in position.

Part B - Replacement of the bearing link assemblies on the TAI Ducts - LH or RH Engine

(Refer to Figure 2)

WARNING: SOLVENT IS FLAMMABLE AND THE VAPOR IS HARMFUL. USE IN A WELL VENTILATED AREA. AVOID PROLONGED BREATHING OF VAPORS OR PROLONGED OR REPEATED CONTACT WITH SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT. PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS. PRIOR TO USE OF THIS PRODUCT, READ THE MATERIAL DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(1) Clean the Link Arm assemblies and attaching bolts with a lint free cloth (CoMat 02-099) made moist with Solvent (CoMat 01-076) or (CoMat 01-438). Wipe the area dry with a lint-free cloth before the solvent evaporates.

(2) Remove the Thermal Anti-Icing (TAI) bearing links, nuts, bolts and washers that attach the duct at all three positions to permit the ducting to settle in a state that is free of tension. Refer to the Aircraft Maintenance Manual, TASKS 30-21-49-000-012 and 30-21-49-000-013.

NOTE: Make sure the insulation is not damaged when you remove the Thermal Anti-Icing (TAI) hardware.

(3) Install and Rig the TAI duct bearing links with the nuts, bolts and washers removed in the previous step. Refer to the Aircraft Maintenance Manual, TASKS 30-21-49-400-012, 30-21-49-400-013 and 30-21-49-820-001.

NOTE: Make sure that the threads on all bearing link assemblies are free to adjust with no interference that may result in incorrect indications of preload or torque values

(a) Adjust the central connecting rod nut at position one to make the overall length of the bearing link an approximate nominal length of 5.37 in. (136.5 mm).

(b) Adjust the central connecting rod nut at position two to make the overall length of the bearing link an approximate nominal length of 5.84 in. (148.34 mm).

(c) Make further adjustments to the bearing link at position one to set the link to a length that just permits you to put in the bolts at the end of the bearing link. Tighten the bearing link bolts in accordance with the Aircraft Maintenance Manual, TASK 80-13-49-400-010.

(d) Make further adjustments to the bearing link at position two to set the link to a length that just permits you to put in the bolts at the end of the bearing link. Tighten the bearing link bolts in accordance with the Aircraft Maintenance Manual, TASK 80-13-49-400-010.

NOTE: Make sure that there is a minimum clearance of 0.23 in. (6.0 mm) between the gimble insulation and the fan case after you torque the connecting rods.

(e) Torque the central adjustment nut on the connecting rod at position two to 25 lbf in. (2.8 Nm). Apply the torque so that it will reduce the length of the bearing link. Refer to the Aircraft Maintenance Manual, TASK 70-23-11-911-013.

(f) Torque the central adjustment nut on the connecting rod at position one to 25 lbf in. (2.8 Nm). Apply the torque so that it will reduce the length of the bearing link.

(g) Tighten the bearing link nuts either side of the central adjustment nut at position one and bend the washer tabs to secure in position. Refer to the Aircraft Maintenance Manual.

(h) Tighten the bearing link nuts either side of the central adjustment nut at position two and bend the washer tabs to secure in position. Refer to the Aircraft Maintenance Manual, TASK 70-40-11-911-014.

(i) Visually inspect the bearing link assemblies at positions three. If serviceable, undo the lock nuts to permit the adjustment of the bearing link.

(j) Adjust the length of the bearing link at position three to the nominal length of 4.20 in. (106.68 mm) as shown.

(k) If required, shorten the length of the bearing link at position three by the application of a half turn (180 degrees) in a clockwise direction. This will cause a positive axial preload when the link is re-installed.

(l) Install the bearing link at position three. Tighten the lock nuts at each end of the bearing link and bend the washer tab to secure in position.

(4) Close the Fan Cowl Doors as instructed in the V2500-A5 Aircraft Maintenance Manual, TASK 71-13-00-410-010.

Part C - Inspection Criteria

NOTE: Bombardier personnel must witness the removal of the bearing link assemblies on the Air Starter and the TAI ducting.

(1) Every three to five weeks or between every 200-300 flight hours.

Inspect the starter ducts on the modified engine for security in accordance with Aircraft Maintenance Manual TASK 80-13-49-110-051. Record the general visual condition of each bearing link end fitting. If the duct is loose, examine the bearing link assembly for wear and adjustment. If the bearing link assemblies are damaged or worn they must be replaced in accordance with the relevant part of this Service Bulletin. Record the relative condition of the modified engine duct bearing links.

Inspect the Anti-ice duct on the modified engine for security in accordance with AMM TASK 30-21-49-210-058. Record the general visual condition of each bearing link end fitting. If the duct is loose, examine the bearing link assembly for wear and adjustment. If the bearing link assemblies are damaged or worn they must be replaced in accordance with the relevant part of this Service Bulletin. Record the relative condition of the modified engine duct bearing links.

R (2) After no less than six (6) months and no more than twenty (20) months of normal operation remove the starter and TAI duct bearing link assemblies from the modified engine and return to the prior configuration.

Label all replaced bearing link hardware with the following details: - Date of removal, A/C Reg, Engine Position, Hours & Cycles since installed, Starter Duct or TAI Duct bearing link position per Figures 1 and 2. Return all replaced hardware to the address given in step (3).

(3) Report the results of this inspection to the Goodrich Project Engineer and fax the data record sheets to the following address:

Goodrich Aerostructures

850 Lagoon Drive Chula Vista, CA 91910-2098 USA

Tel: 619-498-7563

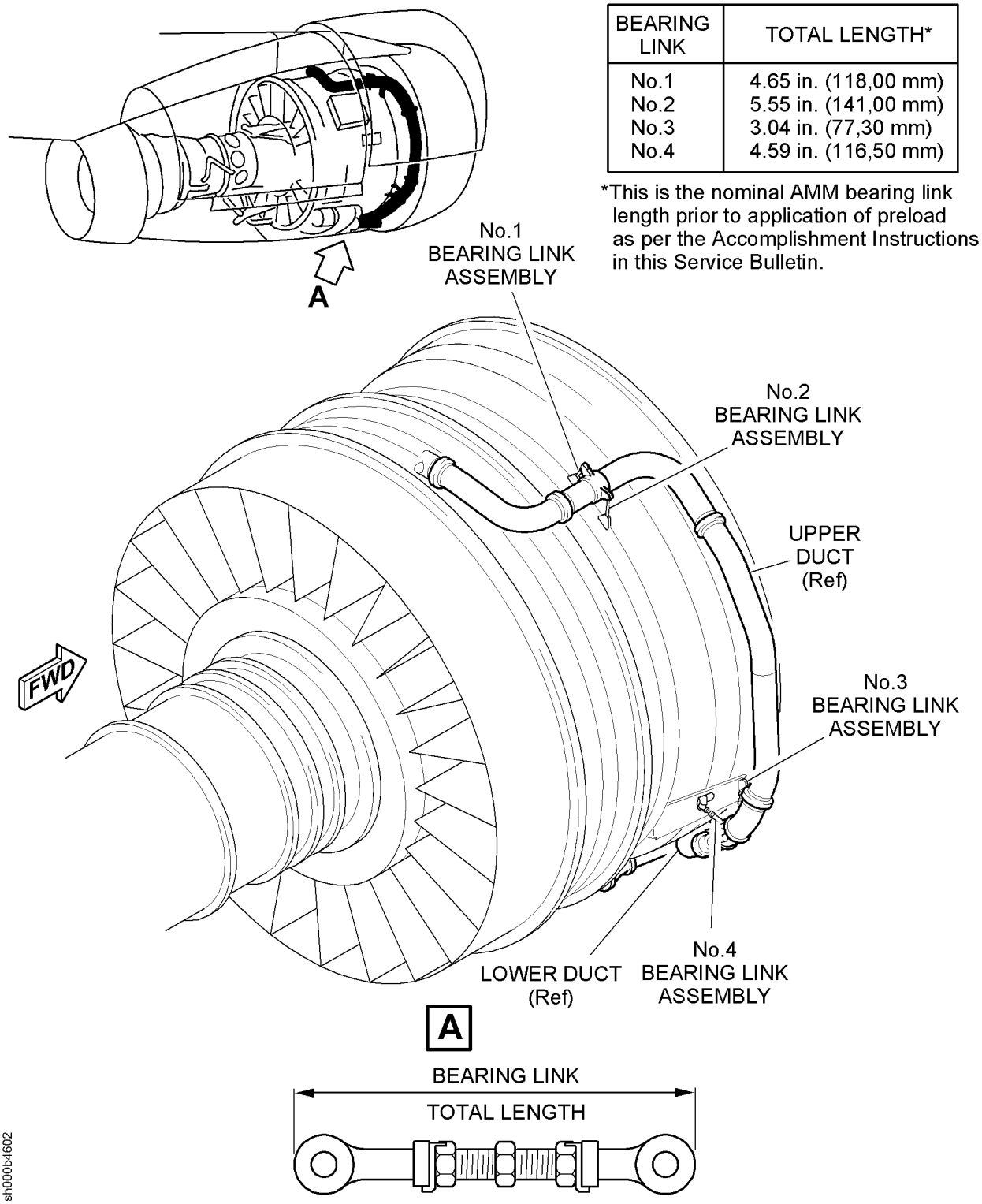
Fax: 619-691-6403

Part D - Record of Accomplishment

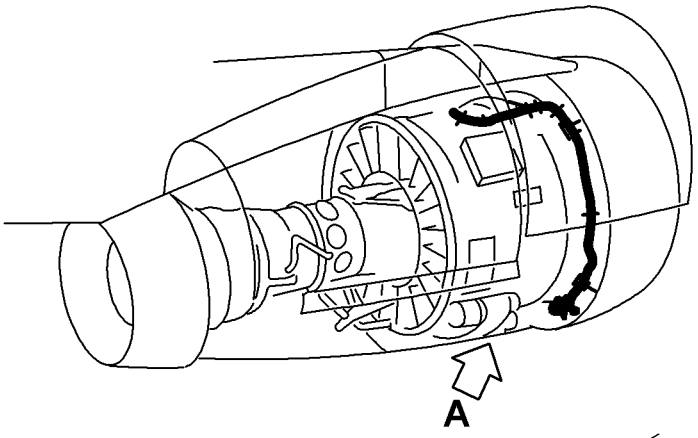
(1) A record of accomplishment is necessary. Write in the applicable records
R that Service Bulletin V2500-ENG-80-0021 Revision 1 has been done.

BEARING LINK	TOTAL LENGTH*
No.1	4.65 in. (118,00 mm)
No.2	5.55 in. (141,00 mm)
No.3	3.04 in. (77,30 mm)
No.4	4.59 in. (116,50 mm)

*This is the nominal AMM bearing link length prior to application of preload as per the Accomplishment Instructions in this Service Bulletin.



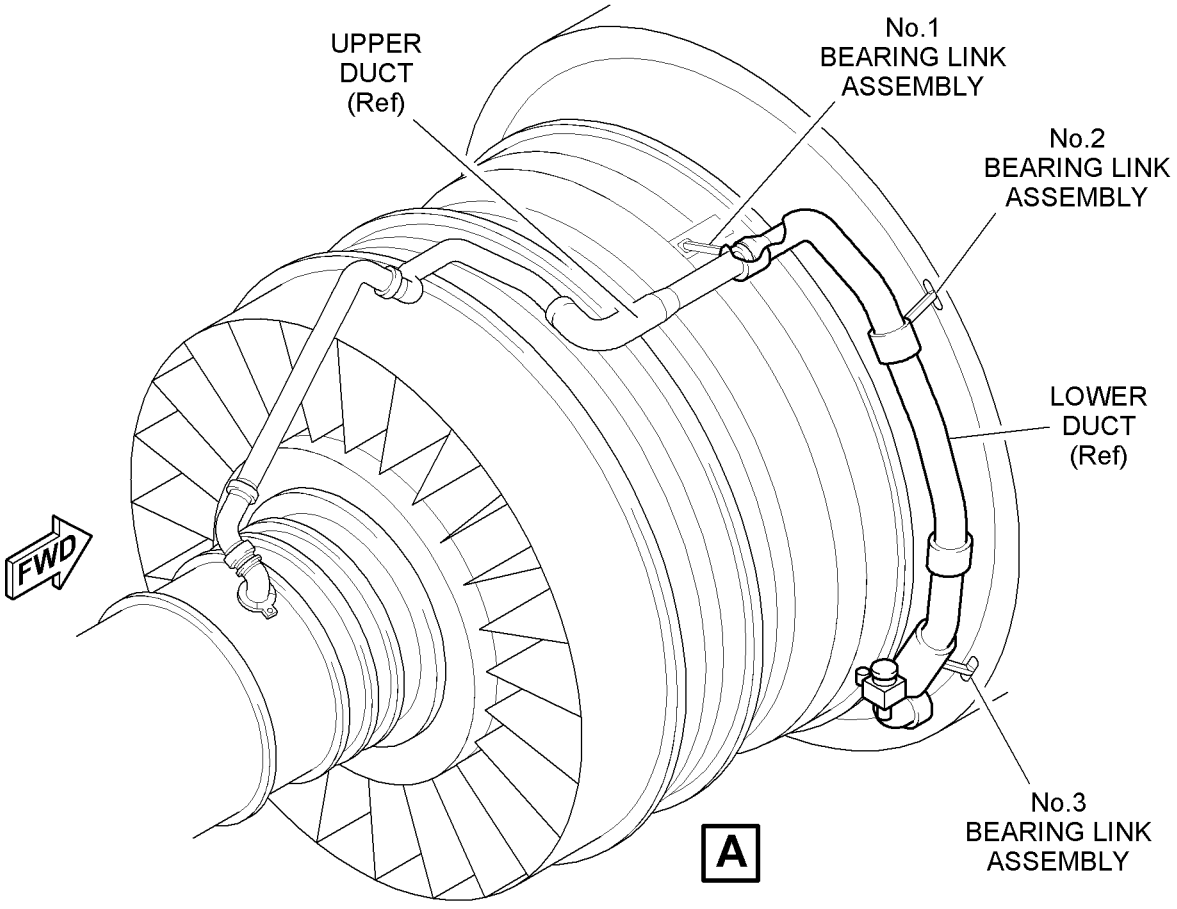
Replacement of Starter Duct Bearing Link Assemblies
Figure 1

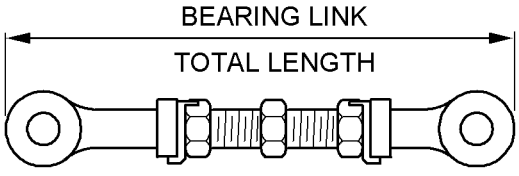


BEARING LINK	TOTAL LENGTH*
No.1	5.37 in. (136,50 mm)
No.2	5.84 in. (148,34 mm)
No.3	4.20 in. (106,68 mm)

*This is the nominal AMM bearing link length prior to application of preload as per the Accomplishment Instructions in this Service Bulletin.

REMOVE AND REPLACE EXISTING BEARING LINKS AND ATTACHING HARDWARE





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Replacement of TAI Bearing Link Assemblies
Figure 2

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SERVICE BULLETIN

APPENDIX TO

Service Bulletin V2500-ENG-80-0021

This Appendix gives a data record sheet for each Nacelle affected by this Service Bulletin. Complete and return as instructed.

Printed in Great Britain

INSPECTION RESULTS FOR SERVICE BULLETIN V2500-ENG-80-0021

OPERATOR: .....

ENG.S/N: ..... A/C No. .....

AS23024 Bolt

INSPECTION RESULTS: .....

740-5111-501 Bush

INSPECTION RESULTS: .....

.....

P3A1830/P3A1830L Link arm and bearings

INSPECTION RESULTS: .....

.....

DATE:

INSPECTOR:

Data Record Sheet