International Aero Engines

SERVICE BULLETIN

STARTING – PNEUMATIC STARTER – INTRODUCTION OF GLASS BEAD PEENED CLUTCH PAWL SPRINGS AND IMPROVED OIL DISTRIBUTION – CATEGORY CODE 6 – MOD.ENG-80-0002

1. Planning Information

A. Effectivity

(1) Airbus A320

(2) Engine: V2500-A1 Engines prior to Serial No.V0072.

B. Reason

(1) Condition

Premature deterioration (fracture) of the clutch pawl springs in the pneumatic starter can occur. This is atrributed to the ingress of small particles of material causing frettage between the outer pawl springs and the pawl lift off adjustment shims.

(2) Background

This condition was observed during development testing.

(3) Objective

Incorporation of this Service Bulletin is designed to improve unit reliability.

(4) Substantiation

The changes recommended in this Service Bulletin have been shown by detailed engineering analysis, by the manufacturer, to improve pawl spring fatigue life.

Improved oil distribution has been confirmed by development testing.

(5) Effect of Service Bulletin on Workshop Procedures:

None

(6) Supplemental Information

See Sumitomo Service Bulletin 80-2501 for detailed rework procedure.

C. Description

The modification contained in the Sumitomo Service Bulletin 80-2501 improves the wear characteristics of the pawl springs and improves starter lubrication.

D. Approval

The part number changes shown in Paragraph 3 of this Service Bulletin have been sanctioned under a product development/control system that has been approved by the D.G.A.C. (Direction Generale de l'Aviation Civile - France).

E. Compliance

Category Code 6.

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

F. References

(1) Internal Reference No.

EC88VR102

(2) Other references

A320 Aircraft Maintenance Manual.

Sumitomo Service Bulletin 80-2501.

G. Other Publications Affected

(1) 80-13-41 Vendor Component Manual.

2. Accomplishment Instructions

A. Incorporate the intent of Sumitomo Service Bulletin 80-2501.

B. Recording Instructions

(1) A record of accomplishment is necessary.

3. Material Information

New Part No. (ATA No.)	Qty	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
790425-2 (80-13-41)	1	-	Starter, Pneumatic	790425-2 (01-010)	(1)(2)

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits Associated With This Bulletin:

None

B. Parts Affected By This Bulletin:

C. Instruction/Disposition Code Statements:

(1) Old part may be reworked to the new configuration.
(2) Parts in service reworked by the referenced bulletin may be identified by the notation "L6" on the identification plate.

SUMITOMO PRECISION PRODUCTS CO., LTD.

SERVICE BULLETIN

A320/V2500

CIRCULATE PROMPTLY

STARTING - PNEUMATIC STARTER -
IMPROVED SHIMS ARE ADDED TO STARTER CLUTCH

1. Planning Information

A. Effectivity

Airbus A320
V2500 Engines
A1100N2A Serial Numbers N0001 through N0067

Pneumatic Starter PN 790425-2 Not Incorporating SPP Stock List Number	Serial Number of First Production Incorporation
L6	A0106

B. Reason

This product improvement bulletin increases the fatigue strength, and improves the wear characteristics, of the clutch springs. Lubrication of the internal parts of the starter is improved thru the addition of thicker flat washers to the clutch spring and shim pack. The thicker washers improve lubrication by causing additional oil turbulence.

C. Description

The clutch springs are glassbead peened and additional shims are added to the outer most clutch spring shim pack. The screws, washers, and locking plates which retain the clutch spring packs in position are replaced.

D. Compliance

Recommended. Accomplish at next suitable maintenance activity which affords access to affected parts.

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E. Approval

This Service Bulletin 80-2501 (RR SB80-0002) was technically agreed by Rolls-Royce on July 27, 1989 and by IAE on January 26, 1990.

F. Manpower

No additional man-hours are required to accomplish the modification at component maintenance.

G. Material - Cost and Availability

The new parts required to accomplish this modification are listed in Section 3, Material Information, and are available at the price and lead times indicated. Orders for new or spare parts should be addressed to:

Hamilton Standard Product Services Incorporated
United Technologies Corporation
Attention: Supervisor, Spares Services
V2500 Distribution Products
Mail Stop: 1-2-B13
P.O. Box 2403
Windsor Locks, CT 06096-1010

H. Tooling

None

I. Weight and Balance

None

J. Electrical Load Data

None

K. Reference

Component Maintenance Manual 80-13-41.

L. Other Publications Affected

Component Maintenance Manual 80-13-41.

2. Accomplishment Instructions

A. Modify pneumatic starter PN 790425-2 as follows:

(1) Modify clutch shaft and spring PN 753365-17 to PN 753365-20 as follows:

(a) Replace three each clutch springs PN's 728832-15, -16 and -17 with PN's 728832-18, -19 and -20 respectively.

(b) Increase the number of shims PN 737128-3 located in the outermost shim stackup (Item 150, IPL Figure 4 CMM 80-13-41) from 5 in 3 places for a total quantity of 15, to 11 in 3 places for a total quantity of 33 shims.

(c) Replace six flat washers PN 732041-21 with PN 732041-25.

(d) Replace three locking plates PN 753363-3 with PN 753363-4.

(e) Replace six screws PN NAS1802-4-9 with PN NAS1802-4-12.

(f) Assemble clutch shaft and spring in accordance with CMM instructions using replacement parts and additional shims.

(g) Reidentify modified clutch shaft and spring by X'ing out "-17" and marking "-20" adjacent to existing part number marking, using vibration peen shallow impression method of marking.

(2) Assemble and test pneumatic starter in accordance with existing CMM instructions with the following exception:

(a) If the clutch pawl lift-off and re-engagement speed requirements cannot be met during the clutch and over-run test, the quantity of shims PN 737128-3 may be reduced from 11 to 5 minimum to meet requirements. Quantity of shims used must be the same for all three pawls.

B. Reidentification

Incorporation of this bulletin is identified by Sumitomo Precision Products Co. LTD. (SPP) stock list number. Reidentify modified units by including "L6" on units identification plate. The Sumitomo Precision Products Co., LTD. (SPP) part number is not affected by this bulletin.

3. Material Information

The basis for the following data is per pneumatic starter. Any prices shown herein are the net prices F.O.B. Hamilton Standard Product Services Incorporated, United Technologies Corporation, P.O. Box 2403, Windsor Locks, CT 06096-1010 in effect as of date of bulletin and are based on the condition that Hamilton Standard Products Services Incorporate's Standard Terms and Conditions of Sale pertaining to commercial contracts in effect when the order is accepted will apply. These prices are firm subject to ninety days notice of change, except that corrections, additions, or deletions shall be effective immediately and in the event prices for these parts are included in a related general parts price list, prices shown in such parts price list shall be deemed to have superseded the prices shown herein on the effective date of such price list. Quantities ordered must be in accordance with the specified Minimum Sales Quantity (MSQ) or multiples thereof. Lead times listed herein apply to all orders placed for modification parts, are based on the number of days from acceptance of order, and are subject to change without notice. Lead times for parts ordered as replenishment for inventory will be established in accordance with Hamilton Standard Product Services current product support policy. The maintenance/overhaul factors (M/OH) shown are estimated replacement percentages for the individual parts based on 100 maintenance actions (usage between overhauls) and 100 overhauls, respectively. These estimated factors are furnished for your convenience and they shall not constitute either representations or guarantees.

NOTE: The tabulation below includes code numbers in the "Instructions/Disposition" column identified as "I/D Code". These code numbers designate the following dispositions.

1. Added Part
2. Scrap Part
3. Rework and Reidentify Part
4. Use for Other Applications

A. New Parts Required

New PN	Qty	Unit Price	Lead Time	M/OH	MSQ	Nomenclature	Old PN	I/D Code
728832-18	3	Not Available at Time of Publication				Clutch Spring	728832-15*	2
728832-19	3					Clutch Spring	728832-16*	2
728832-20	3					Clutch Spring	728832-17*	2
737128-3	42					Shim	737128-3	1**
732041-25	6					Flat Washer	732041-21*	2
753363-4	3					Locking Plate	753363-3*	2
NAS1802-4-12	6					Screw	NAS1802-4-9*	2

B. Parts to be Reworked and Reidentified

New PN	Qty	Unit Price	Lead Time	M/OH	MSQ	Nomenclature	Old PN	I/D Code
753365-20	1	Not Available at Time of Publication				Shaft Spring Clutch Assembly	753365-17*	3

*Spares of this part will not be maintained by Hamilton Standard Product Services.
**Was a quantity of 24.

Hamilton Standard Product Services Internal Reference Number 187934
Hamilton Standard Product Services Internal Identification Number 6338N