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V2500-A1/A5/D5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

Printed in Great Britain

This document transmits the Initial Issue of Service Bulletin EV2500-80-0019

Bulletin Initial Issue

Remove	Incorporate Pages 1 to 17 of the Service Bulletin	Reason for change Initial issue
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CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Publication Services, Rolls-Royce plc, Derby, England
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LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin are as follows:

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STARTING - PNEUMATIC STARTER - INTRODUCTION OF A PNEUMATIC STARTER WITH REVISED
DYNAMIC 'O' RING SEALS

1. Planning Information

A. Effectivity

(1) Airbus A319

(a) V2522-A5, V2524-A5, V2527M-A5 Engines prior to Serial No.V11725

(2) Airbus A320

(a) V2500-A1 Engines prior to Serial No.V0362

(b) V2527-A5, V2527E-A5 Engines prior to Serial No.V11725

(3) Airbus A321

(a) V2530-A5, V2533-A5 Engines prior to Serial No.V11725

(4) Boeing - Longbeach Division MD-90

(a) V2525-D5, V2528-D5 Engines prior to Serial No.V20286

B. Concurrent Requirements

None.

C. Reason

(1) Problem

Oil loss from the Pneumatic Starter can occur which may result in premature deterioration of the turbine bearing.

The problem is attributed to oil leakage past the 'o' ring seals in the output shaft and turbine rotor shaft seals which can result in insufficient lubrication of the bearing.

(2) Evidence

The problem has been experienced on units in service.

(3) Substantiation

The changes introduced by this Service Bulletin (modification) have been the subject of successful engineering assessment tests, together with vendor endurance rig test, laboratory review and representative service experience.

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(4) Objective

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

(5) Effect of Bulletin on:

(a) Operation

Not affected.

(b) Maintenance

Not affected.

(c) Overhaul

Not affected.

(d) Repair Schemes

Not affected.

(e) Interchangeability

Not affected.

(f) Fits and Clearances

Not affected.

D. Description

- (1) This Service Bulletin covers the fitment to engines of a pneumatic starter, supplied by Sumitomo Precision Products Co., incorporating design changes to prevent external oil leakage and turbine bearing failure.

The changes introduced are:

- (a) A revised Pneumatic Starter is introduced similar to the existing unit except for the material of the 'o' ring seals in the output shaft and turbine rotor shaft seals has changed from Fluorohydrocarbon elastomer Type A (FKM-A) to Fluorohydrocarbon elastomer Type GLT (FKM-GLT).
- (2) Existing Pneumatic Starters may be reworked. Refer to Sumitomo Service Bulletin 80-2519. (See 1.N. References).
- (3) Units incorporating this Service Bulletin will be identified by endorsement of the modification plate with L15.



(4) This Service Bulletin is in three parts as follows:

Part 1

New production.

Part 2

Application to pneumatic starters to pre-Service Bulletin ENG-80-0015.

Part 3

Application to pneumatic starters to pre-Service Bulletin ENG-80-0008.

E. Compliance

Category Code 6.

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

F. Approval

The part number changes and/or part modifications described in Sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-Approved for the engine models listed.

G. Manpower

In service

Not applicable.

At overhaul

Not affected.

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

H. Material Price and Availability

For prices and availability of future spares refer to Sumitomo Service Bulletin 80-2519.

I. Tooling Price and Availability

Refer to Sumitomo Service Bulletin 80-2519.



J. Industry Support Information

None.

K. Weight and Balance

(1) Weight Change

None.

(2) Moment Arm

None.

(3) Datum

Engine Front Mount Centreline (Power Plant Station PPS 100).

L. Electrical Load Data

The aircraft electrical load is not affected by this Service Bulletin.

M. Software Accomplishment Summary

Not applicable.

N. References

(1) Vendor Service Bulletin:

Sumitomo 80-2519

STARTING - PNEUMATIC STARTER - SEAL MATERIAL CHANGE

(2) IAE V2500 Service Bulletins:

ENG-80-0008

STARTING - PNEUMATIC STARTER - INTRODUCTION OF A SYNCHRONOUS ENGAGEMENT CLUTCH.

ENG-80-0015

STARTING - PNEUMATIC STARTER - INTRODUCTION OF A REVISED PNEUMATIC STARTER WITH A MODIFIED SYNCHRONOUS ENGAGEMENT CLUTCH ASSEMBLY.

(3) A1/A5/D5 Engine Manual (EM), Chapter/Section 72-00-60, Removal/Installation.

(4) A1/A5 Aircraft Maintenance Manual (AMM), Chapter/Section 80-13-41, Removal/Installation.



(5) D5 Aircraft Maintenance Manual (AMM), Chapter/Section 80-11-01, Removal/Installation.

(6) Engineering Change Nos. - 03VI004 and 03VI004A.

(7) ATA Locator - 80-13-41.

0. Other Publications Affected

(1) Illustrated Parts Catalogue (IPC), Chapter/Section 80-13-41 will be revised.

P. Interchangeability of Parts

Not affected.



2. Material Information

A. The kit required consists of the following parts:

None.

B. Parts to be reworked:

None.

C. New production parts:

None.

D. Vendor units affected by this bulletin:

The type of equipment affected by this Service Bulletin is listed below for information only:

Part 1

A1 and A5 Models

80-13-41

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01200	790425A6	1	.Starter, pneumatic (VK0680)	-	790425A6	(A)(S1) (1D)
01200	790425A5	1	.Starter, pneumatic (VK0680) (Customer Option)	-	790425A5	(A)(S1) (1D)

D5 Models

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01200	790425A5	1	.Starter, pneumatic (VK0680)	-	790425A5	(A)(S1) (1D)
01200	790425A6	1	.Starter, pneumatic (VK0680) (Customer Option)	-	790425A6	(A)(S1) (1D)



Part 2

A1 and A5 Models

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01200	790425A4	1	.Starter, pneumatic (VK0680)	—	790425A4	(A)(S1) (1D)
01200	790425A3	1	.Starter, pneumatic (VK0680) (Customer Option)	—	790425A3	(A)(S1) (1D)

D5 Models

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01200	790425A3	1	.Starter, pneumatic (VK0680)	—	790425A3	(A)(S1) (1D)
01200	790425A4	1	.Starter, pneumatic (VK0680) (Customer Option)	—	790425A4	(A)(S1) (1D)

Part 3

A1 and A5 Models (Except V2533-A5)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01200	790425-2	1	.Starter, pneumatic (VK0680)	—	790425-2	(A)(S1) (1D)

E. Instruction disposition codes:

(A) New standard of unit will be made available from March 2004.

(S1) Old and new units are freely and fully interchangeable.

(1D) Old standard of unit may be reworked.



3. Accomplishment Instructions

A. Rework Instructions

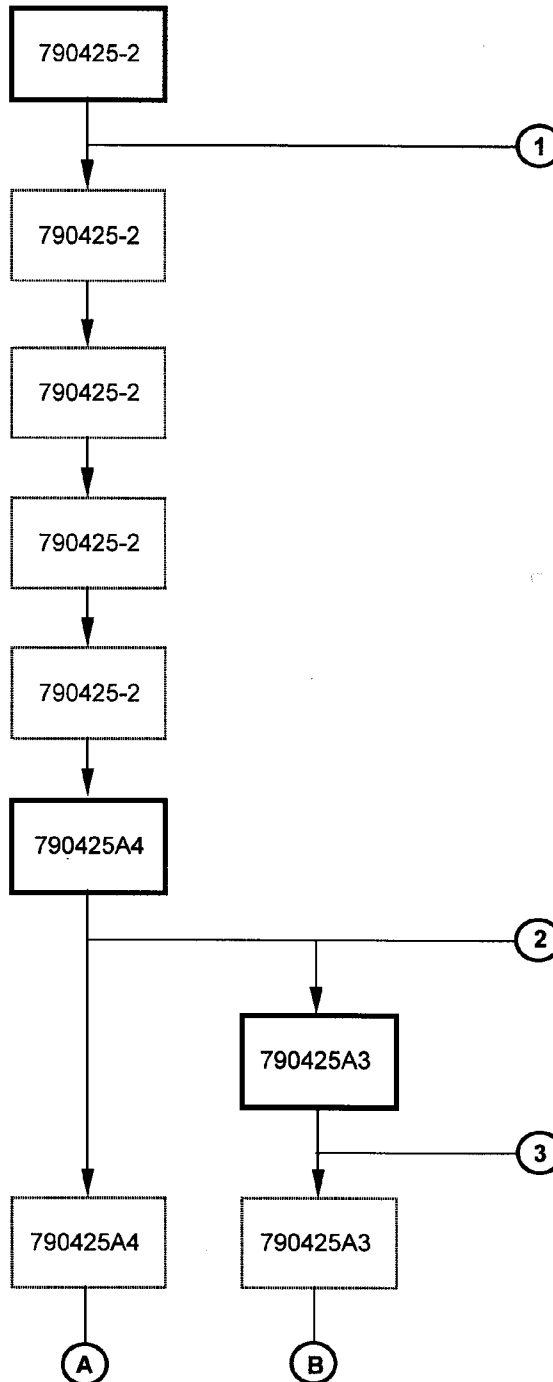
Refer to Sumitomo Service Bulletin 80-2519.

B. Assembly Instructions

The revised pneumatic starter introduced by this Service Bulletin is interchangeable with existing. Remove and install in accordance with current overhaul procedures and maintenance practices (Engine Manual, 72-00-60, Removal and Installation and Aircraft Maintenance Manual, 80-13-41, Removal/Installation (A1/A5), 80-11-01, Removal/Installation (D5)).

C. Recording Instructions

A record of accomplishment is necessary. Refer to Sumitomo Service Bulletin 80-2519.

**V2500-A1 Pneumatic Starter Family Tree *****Service Bulletin Number****Unit Mod Plate Endorsement****Baseline****None****V2500-ENG-80-0002**

Introduction of a revised Pneumatic Starter with improved clutch and oil distribution

L6**V2500-ENG-80-0003**

Introduction of a revised Pneumatic Starter with oil sight glass & increased oil quantity

L8**V2500-ENG-80-0005**

Introduction of a revised Pneumatic Starter with improved turbine torque loading, oil flow & carbon seal sealing

L10**V2500-ENG-80-0007**

Introduction of a revised Pneumatic Starter with revised transmission housing

L11**V2500-ENG-80-0008**

Introduction of a revised Pneumatic Starter with synchronous engagement clutch

NONE**V2500-ENG-70-0395**

Introduction of a revised Pneumatic Starter with oil pressure fill facility (Customer Option)

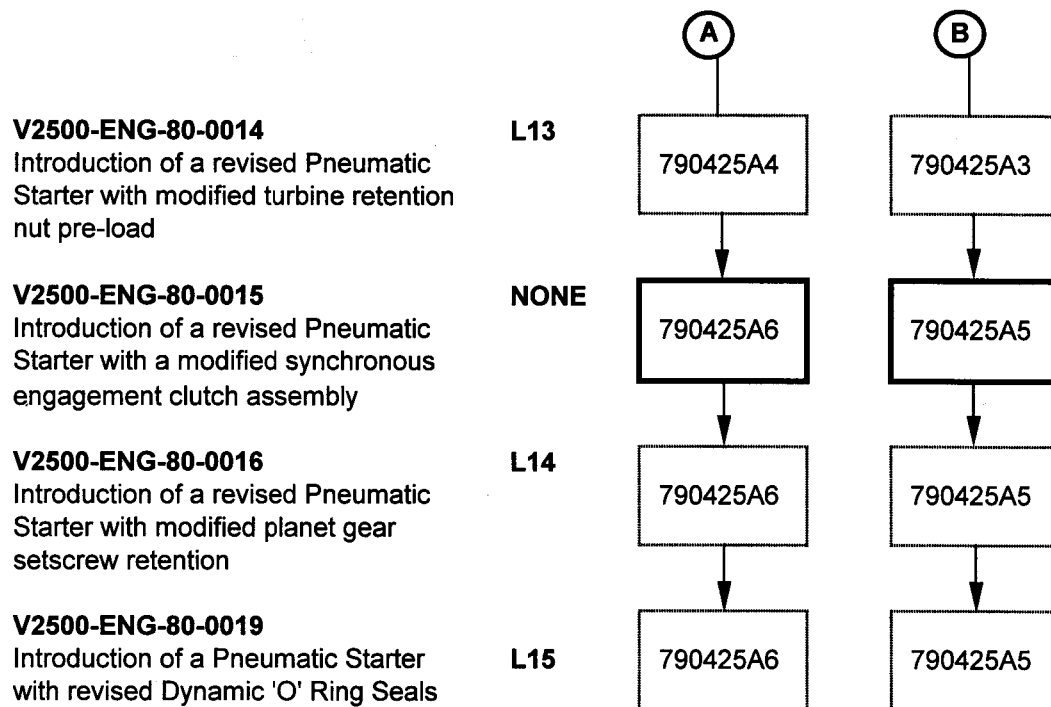
NONE**V2500-ENG-80-0013**

Introduction of a revised Pneumatic Starter with revised carbon seal retention

L12

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V2500-A1 Pneumatic Starter - Family Tree
Figure 1 (Sheet 1 of 3)

**V2500-A1 Pneumatic Starter Family Tree * (cont.)**

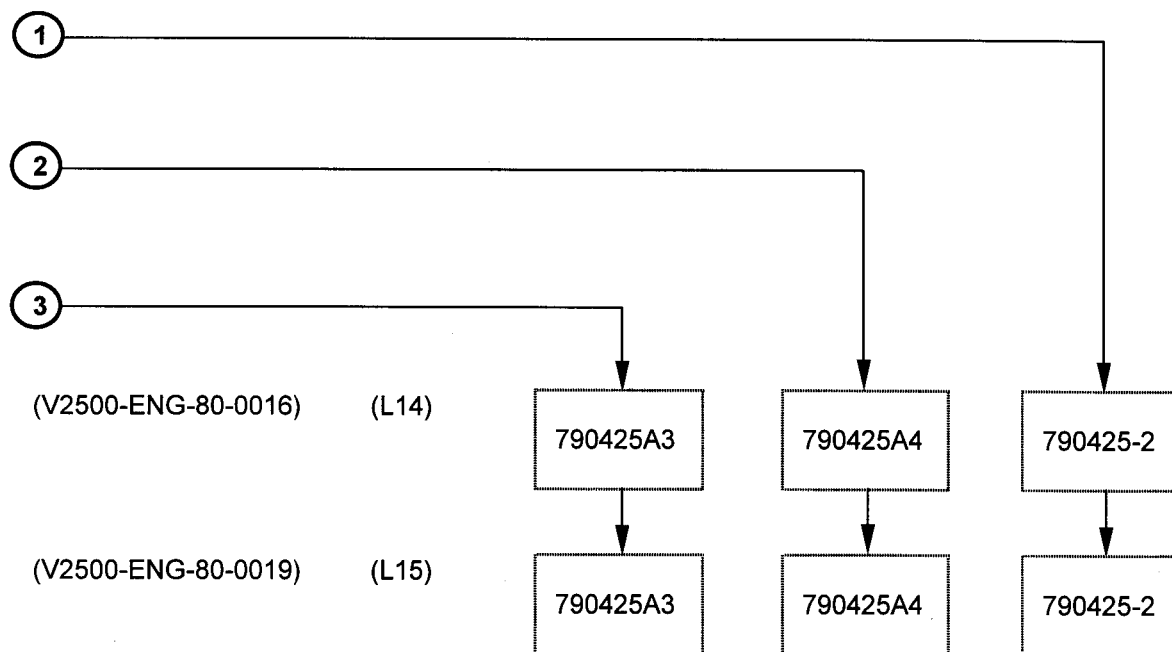
* This family tree is not intended to represent the combination of modifications

V2500-A1 Pneumatic Starter - Family Tree
Figure 1 (Sheet 2 of 3)



V2500-A1 Pneumatic Starter Family Tree * (cont.)

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V2500-A1 Pneumatic Starter - Family Tree
Figure 1 (Sheet 3 of 3)

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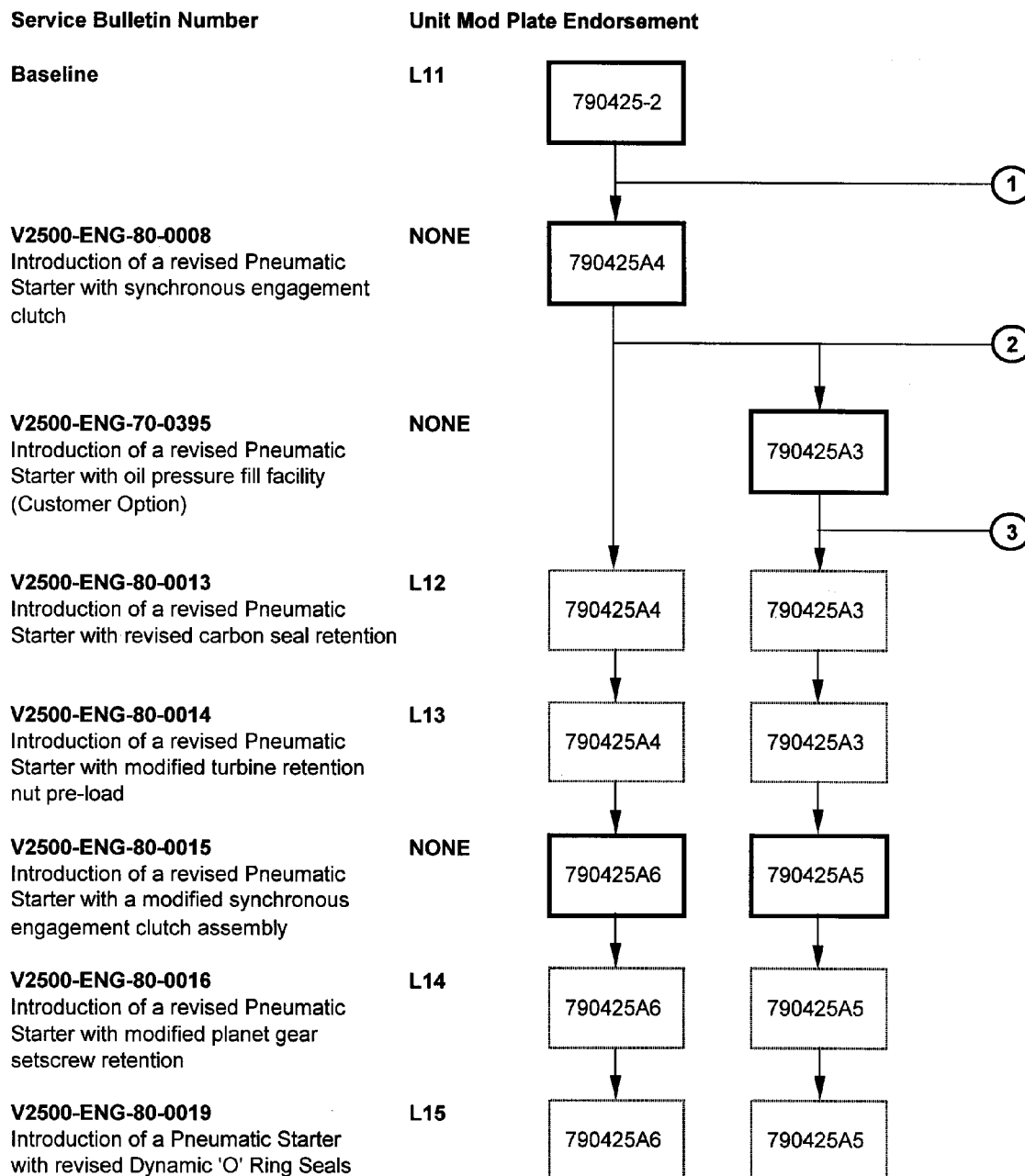
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V2500-A5 (EXCEPT V2533-A5)
Pneumatic Starter Family Tree



* This family tree is not intended to represent the combination of modifications fitted to units in service

V2500-A5 (Except V2533-A5) Pneumatic Starter - Family Tree
Figure 2 (Sheet 1 of 2)

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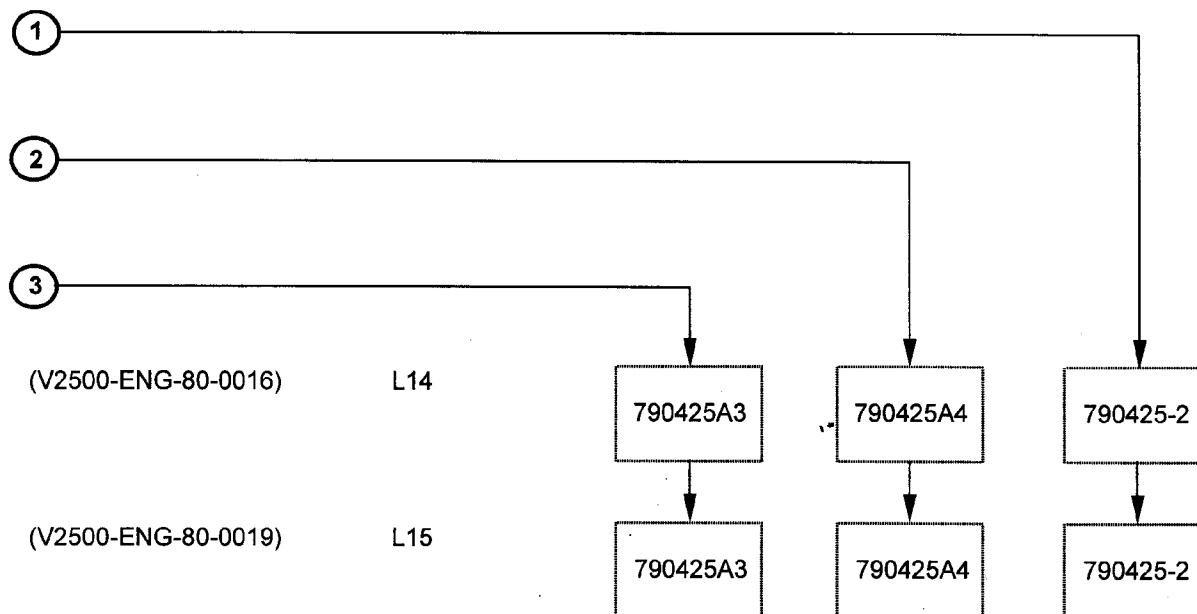
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V2500-A5 (EXCEPT V2533-A5)
Pneumatic Starter Family Tree (cont.)

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V2500-A5 (Except V2533-A5) Pneumatic Starter - Family Tree
Figure 2 (Sheet 2 of 2)

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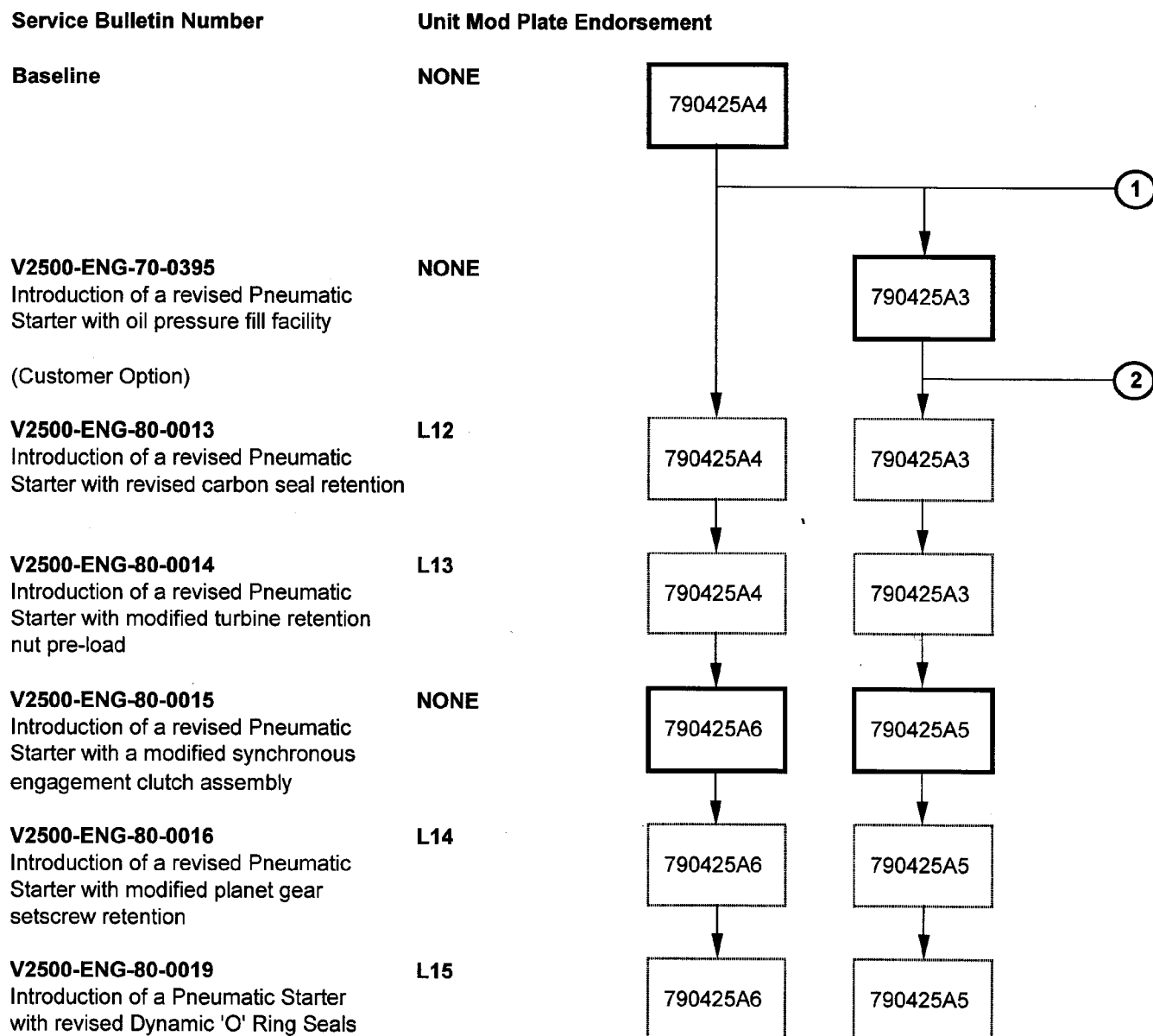
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V2533-A5 Pneumatic Starter Family Tree*



* This family tree is not intended to represent the combination of modifications fitted to units in service

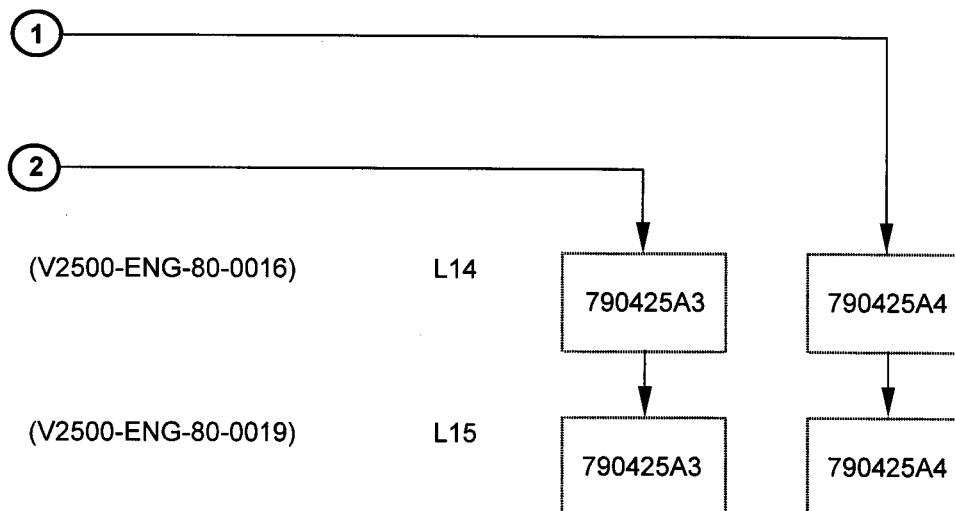
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V2533-A5 Pneumatic Starter - Family Tree
Figure 3 (Sheet 1 of 2)

V2533-A5 Pneumatic Starter Family Tree* (cont.)

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V2533-A5 Pneumatic Starter - Family Tree
Figure 3 (Sheet 2 of 2)

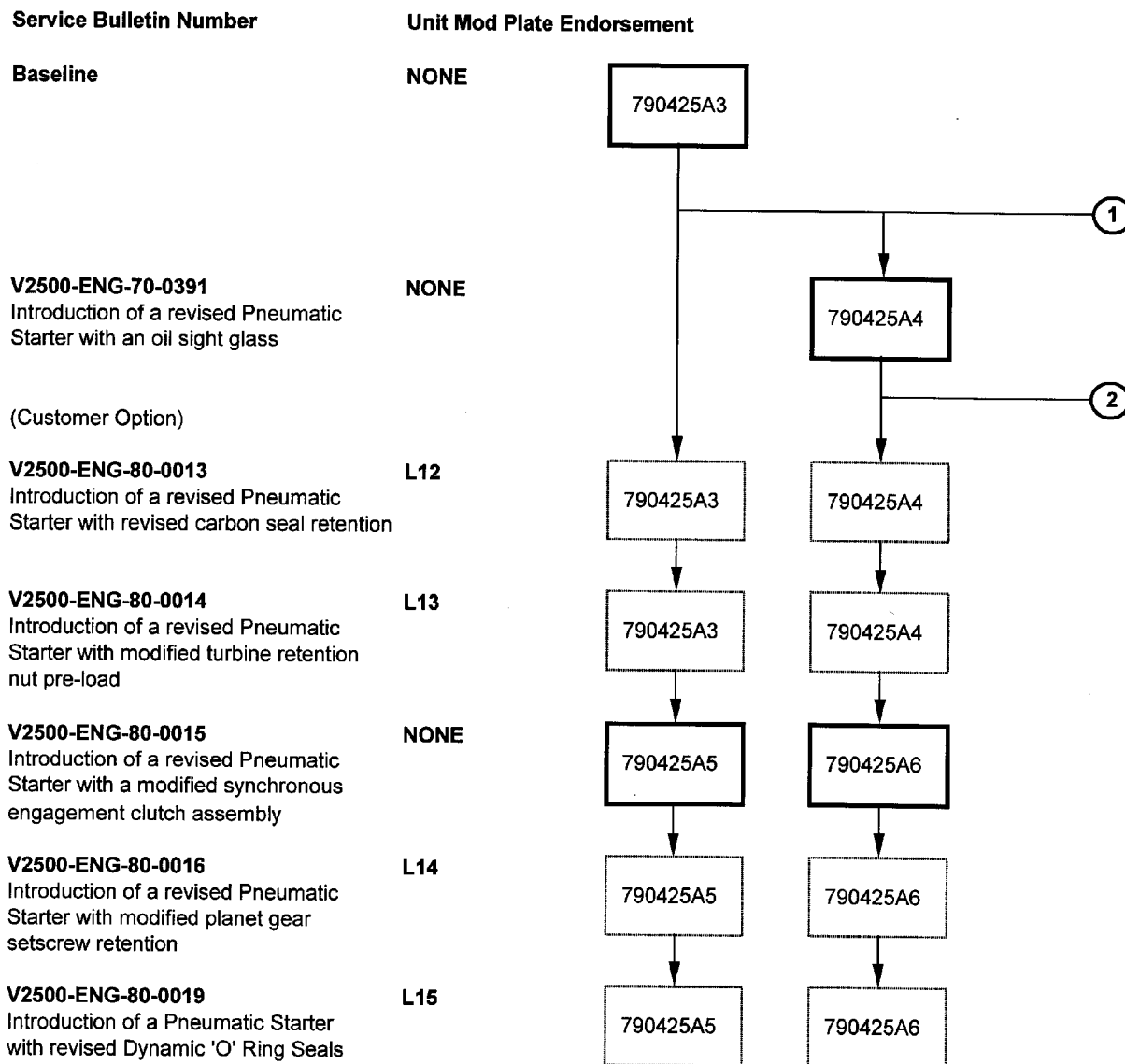
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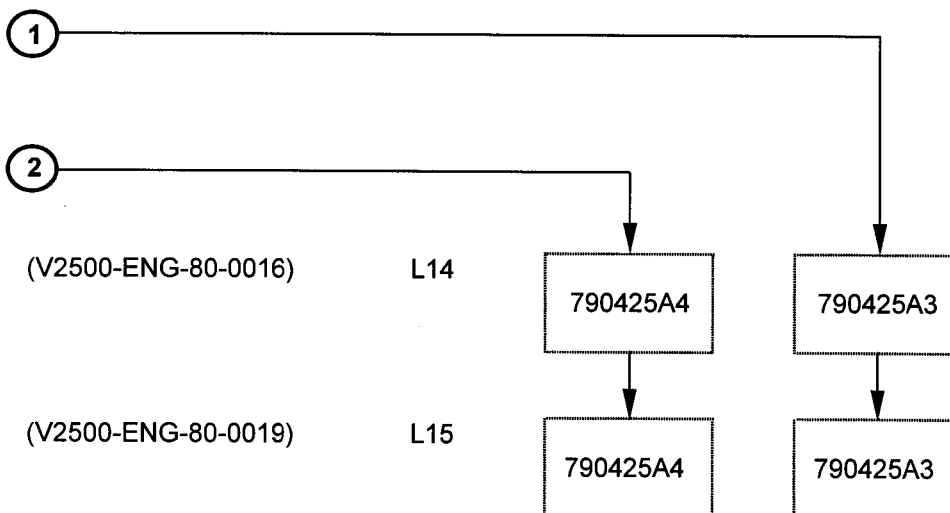
**V2500-D5 Pneumatic Starter Family Tree***

* This family tree is not intended to represent the combination of modifications fitted to units in service

V2500-D5 Pneumatic Starter - Family Tree
Figure 4 (Sheet 1 of 2)

V2500-D5 Pneumatic Starter Family Tree* (cont.)

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V2500-D5 Pneumatic Starter - Family Tree
Figure 4 (Sheet 2 of 2)

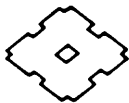
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SERVICE BULLETIN

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STARTING - PNEUMATIC STARTER - SEAL MATERIAL CHANGE

1. Planning Information

A. Effectivity

- (1) Refer to Table 1.

Table 1. Effectivity

Part Number
All Pneumatic Starters Part Number (PN) 790425 That Do Not Incorporate Stock List Number L15

NOTE: This Service Bulletin is applicable to the Pneumatic Starters that are installed in Airbus A319, A320, A321 and Boeing/Douglas MD90 aircraft that use IAE/V2500 Engines.

B. Reason

- (1) Problem - The current material preformed packings in the magnetic seal and rotor seal assembly deteriorate over time when exposed to the new generation 3 high temperature stabilized oils per MIL-PRF-23699.
- (2) Cause - The new starter oils are more aggressive to the current preformed packing material.
- (3) Solution - Incorporate new magnetic seal and rotor seal assembly which contain the new material Viton GLT preformed packings in place of the old Viton preformed packings.
- (4) Substantiation - The new preformed packings are made of Viton GLT, which is more resilient to all types of oils. HS testing has shown the new material preformed packings to be superior to the old material preformed packings.

C. Description

- (1) The 790425 series Pneumatic Starters are disassembled to replace the magnetic seal and rotor seal assembly.
- (2) Reidentify the starter by adding L15 on the starter identification plate.

D. Compliance

- (1) Recommended - Do this SB when the starter is at a maintenance facility capable of performing the modification and the starter is disassembled for other reasons.



SERVICE BULLETIN

E. Approval

- (1) This Service Bulletin 80-2519 (IAE SB 80-0019) was technically agreed by IAE on April 7/04.

F. Manpower

- (1) No additional man-hours are necessary when you do this Service Bulletin procedure at component maintenance or overhaul.

G. Weight and Balance

- (1) None

H. Electrical Load Data

- (1) None

I. References

- (1) Component Maintenance Manual (CMM) 80-13-41
- (2) IAE SB 80-0019

J. Other Publications Affected

- (1) CMM 80-13-41

2. Material Information

A. Material - Price and Availability

- (1) Refer to Table 2.

B. Industry Support Information

- (1) None

C. Material Necessary for Each Component

- (1) Material to be Purchased
 - (a) The parts that are necessary to do this Service Bulletin are shown in Table 2.
 - (b) Any parts that usually are discarded when you disassemble the Pneumatic Starter are not shown in Table 2.
 - (c) In Table 2, "MSQ" is the Minimum Sales Quantity. The parts that have an entry in this area of Table 2 are supplied only in this quantity, or a multiple of this quantity.
 - (d) In Table 2, "Keyword" is the name of the part.
 - (e) In Table 2, the "Instruction Codes" tell you what to do with the parts. A short list under Table 2 tells you about the instruction codes that are used in Table 2.



**SUMITOMO PRECISION
PRODUCTS CO., LTD.**

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- (f) The prices that are shown are an estimate for one part in US dollars. When you buy the parts, the prices may be different. Send request for parts to:

Mail:

Sumitomo Precision Products Co.
Attention: Product Support Department
1-10, Fuso-cho, Amagasaki
Hyogo 660-0891 Japan

Telephone: +81-6-6489-5884
FAX: +81-6-6489-5889

Table 2. Material Information

New PN	Qty	MSQ	Estimated Unit Price	Keyword	PN Before this SB	Instruction Codes
797645-2	1	1	US \$ 583.00	Magnetic Seal	797645-1	A, B
797652-7	1	1	-	Rotor Balancing Assembly	797652-6	A
797646-3	1	1	US \$ 462.00	Rotor Seal Assembly	797646-2	A, B

- Instruction Code A. This Service Bulletin change removes the "PN before the SB" from the Pneumatic Starter.
- Instruction Code B. Discard the old part and use the new part number.

(2) Material Supplied by the Operator

(a) None

D. Material Necessary for Spare

(1) None

E. Re-identified Parts

(1) See Table 3

F. Tooling - Price and Availability

(1) None

SERVICE BULLETIN

3. Accomplishment Instructions

- A. Use the procedure in DISASSEMBLY of the CMM to disassemble the pneumatic starter to remove the magnetic seal.
- (1) Disassemble the pneumatic starter and discard the magnetic seal.
- (2) Continue with disassembly of the Rotor Balancing Assembly and discard the rotor seal assembly.
- B. Use the instructions in the CLEANING section of the CMM to clean the parts.
- C. Use the instructions in the CHECK section of the CMM to inspect the parts.
- D. Identify the Rotor Balance Assembly with an electrolytic etch process or vibrapeen method by marking an "X" over the existing number "-6" and add "-7". Refer to Table 3 for new part number.

Table 3. Rotor Balance Assembly Reidentification

Old Part Number	New Part Number
797652-6	797652-7

- E. Use the procedure in the ASSEMBLY section of the CMM to assemble the pneumatic starter.
- (1) Assemble the Rotor Balancing Assembly with the new rotor seal assembly.
- (2) Assemble the pneumatic starter with a new magnetic seal.
- F. Use the instructions in TESTING AND FAULT ISOLATION of the CMM to test the Pneumatic Starter.
- G. To show that this Service Bulletin was done, add the modification number "L15" to the Pneumatic Starter identification plate. The Sumitomo Precision Products part number is not changed by this Service Bulletin.