



**COMPONENT MAINTENANCE
MANUAL
WITH
ILLUSTRATED PARTS LIST
ENGINE START BRAKE ASSEMBLY**

**PART NUMBER
254A1290-1, -2, -4, -5, -6**

BOEING PROPRIETARY, CONFIDENTIAL, AND/OR TRADE SECRET

Copyright © 1995 The Boeing Company
Unpublished Work - All Rights Reserved

Boeing claims copyright in each page of this document only to the extent that the page contains copyrightable subject matter. Boeing also claims copyright in this document as a compilation and/or collective work.

This document includes proprietary information owned by The Boeing Company and/or one or more third parties. Treatment of the document and the information it contains is governed by contract with Boeing. For more information, contact The Boeing Company, P.O. Box 3707, Seattle, Washington 98124.

Boeing, the Boeing signature, the Boeing symbol, 707, 717, 727, 737, 747, 757, 767, 777, 787, Dreamliner, BBJ, DC-8, DC-9, DC-10, KC-10, KDC-10, MD-10, MD-11, MD-80, MD-88, MD-90, P-8A, Poseidon and the Boeing livery are all trademarks owned by The Boeing Company; and no trademark license is granted in connection with this document unless provided in writing by Boeing.

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

76-11-09

Page 1
Jul 01/2009



COMPONENT MAINTENANCE MANUAL

Revision No. 15
Jul 01/2009

To: All holders of ENGINE START BRAKE ASSEMBLY 76-11-09.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

IF YOU RECEIVE PRINTED REVISIONS, PLEASE VERIFY THAT YOU HAVE RECEIVED AND FILED THE PREVIOUS REVISION. BOEING MUST BE NOTIFIED WITHIN 30 DAYS IF YOU HAVE NOT RECEIVED THE PREVIOUS REVISION. REQUESTS FOR REVISIONS OTHER THAN THE PREVIOUS REVISION WILL REQUIRE A COMPLETE MANUAL REPRINT SUBJECT TO REPRINT CHARGES SHOWN IN THE DATA AND SERVICES CATALOG.

76-11-09
TRANSMITTAL LETTER
Page 1
Jul 01/2009



COMPONENT MAINTENANCE MANUAL

Location of Change

Description of Change

NO HIGHLIGHTS

76-11-09

HIGHLIGHTS

Page 1

Jul 01/2009



COMPONENT MAINTENANCE MANUAL

Subject/Page	Date	Subject/Page	Date	Subject/Page	Date
TITLE PAGE		76-11-09 TESTING AND FAULT ISOLATION (cont)		76-11-09 FITS AND CLEARANCES (cont)	
O 1	Jul 01/2009	108	BLANK	803	Mar 01/2006
2	BLANK	76-11-09 DISASSEMBLY		804	BLANK
76-11-09 TRANSMITTAL LETTER		301	Mar 01/2006	76-11-09 SPECIAL TOOLS, FIXTURES, AND EQUIPMENT	
O 1	Jul 01/2009	302	Mar 01/2006	901	Mar 01/2006
2	BLANK	76-11-09 CLEANING		902	BLANK
76-11-09 HIGHLIGHTS		401	Mar 01/2006	76-11-09 ILLUSTRATED PARTS LIST	
O 1	Jul 01/2009	402	BLANK	1001	Nov 01/2008
2	BLANK	76-11-09 CHECK		1002	Jul 01/2006
76-11-09 EFFECTIVE PAGES		501	Mar 01/2006	1003	Jul 01/2006
1	Jul 01/2009	502	Mar 01/2006	1004	Mar 01/2006
2	BLANK	76-11-09 REPAIR - GENERAL		1005	Mar 01/2006
76-11-09 CONTENTS		601	Mar 01/2006	1006	Mar 01/2006
1	Mar 01/2006	602	Mar 01/2006	1007	Mar 01/2006
2	BLANK	76-11-09 REPAIR 1-1		1008	Mar 01/2006
76-11-09 TR AND SB RECORD		601	Mar 01/2006	1009	Mar 01/2006
1	Mar 01/2006	602	BLANK	1010	Mar 01/2006
2	BLANK	76-11-09 REPAIR 2-1		1011	Mar 01/2006
76-11-09 REVISION RECORD		601	Jul 01/2008	1012	Mar 01/2006
1	Mar 01/2006	602	Mar 01/2006	1013	Mar 01/2006
2	Mar 01/2006	603	Mar 01/2006	1014	Mar 01/2006
76-11-09 RECORD OF TEMPORARY REVISIONS		604	BLANK	1015	Mar 01/2006
1	Mar 01/2006	76-11-09 REPAIR 2-2		1016	Mar 01/2006
2	Mar 01/2006	601	Mar 01/2006	1017	Mar 01/2006
76-11-09 INTRODUCTION		602	BLANK	1018	Mar 01/2006
1	Mar 01/2009	76-11-09 ASSEMBLY		1019	Mar 01/2006
2	BLANK	701	Jul 01/2008	1020	Mar 01/2006
76-11-09 DESCRIPTION AND OPERATION		702	Jul 01/2008	1021	Mar 01/2006
1	Mar 01/2006	703	Mar 01/2006	1022	Mar 01/2006
2	Mar 01/2006	704	Mar 01/2006		
76-11-09 TESTING AND FAULT ISOLATION		705	Nov 01/2007		
101	Mar 01/2006	706	Mar 01/2006		
102	Mar 01/2006	707	Mar 01/2006		
103	Mar 01/2006	708	Nov 01/2007		
104	Mar 01/2006	709	Mar 01/2006		
105	Mar 01/2006	710	Mar 01/2006		
106	Mar 01/2006	76-11-09 FITS AND CLEARANCES			
107	Mar 01/2006	801	Jul 01/2006		
		802	Mar 01/2006		

A = Added, R = Revised, D = Deleted, O = Overflow

76-11-09

EFFECTIVE PAGES

Page 1

Jul 01/2009

**COMPONENT MAINTENANCE MANUAL****TABLE OF CONTENTS**

<u>Paragraph Title</u>	<u>Page</u>
ENGINE START BRAKE ASSEMBLY - DESCRIPTION AND OPERATION	1
TESTING AND FAULT ISOLATION	101
DISASSEMBLY	301
CLEANING	401
CHECK	501
REPAIR	601
ASSEMBLY	701
FITS AND CLEARANCES	801
SPECIAL TOOLS, FIXTURES, AND EQUIPMENT	(Not Applicable)
ILLUSTRATED PARTS LIST	1001

76-11-09

CONTENTS

Page 1

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

76-11-09

TR AND SB RECORD

Page 1

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials



COMPONENT MAINTENANCE MANUAL

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

76-11-09

REVISION RECORD

Page 2

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

All temporary revisions to this manual will be accompanied by a cover sheet bearing the temporary revision number. Enter the temporary revision number in numerical order, together with the temporary revision date, the date the temporary revision is inserted and the initials of the person filing.

When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed		Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials	Date	Initials	Number	Date	Date	Initials

76-11-09

RECORD OF TEMPORARY REVISION

Page 1

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

INTRODUCTION

1. General

- A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.
- B. This manual is divided into different parts:
 - (1) Title Page
 - (2) Transmittal Letter
 - (3) Highlights
 - (4) List of Effective Pages
 - (5) Table of Contents
 - (6) Temporary Revision & Service Bulletin Record
 - (7) Record of Revisions
 - (8) Record of Temporary Revisions
 - (9) Introduction
 - (10) Procedures & IPL Sections
- C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.
- D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.
- E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.
- F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.
- G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

76-11-09

INTRODUCTION

Page 1

Mar 01/2009



COMPONENT MAINTENANCE MANUAL

ENGINE START BRAKE ASSEMBLY - DESCRIPTION AND OPERATION

1. Description

- A. The engine start brake assemblies (DESCRIPTION AND OPERATION, Figure 1) contain the fuel control switches for the airplane's engines.
- B. Spring-loaded friction discs apply pressure to a mechanical pad in the engine start brake assembly.
- C. The friction discs apply resistance and give feedback to the engine start lever assembly while the captain or first officer moves the lever assembly during normal operation.

2. Operation

- A. When the engine start lever is moved to the cut-off positions, then the switches inside the engine start brake assembly electrically operates the fuel supply cut-off to the engine.
- B. When the engine start lever is moved to the idle position, then the fuel supply to the engine is on.

3. Leading Particulars (Approximate)

- A. Length – 6.0 inches
- B. Width – 6.0 inches
- C. Height – 2.0 inches
- D. Weight – 1.7 pounds

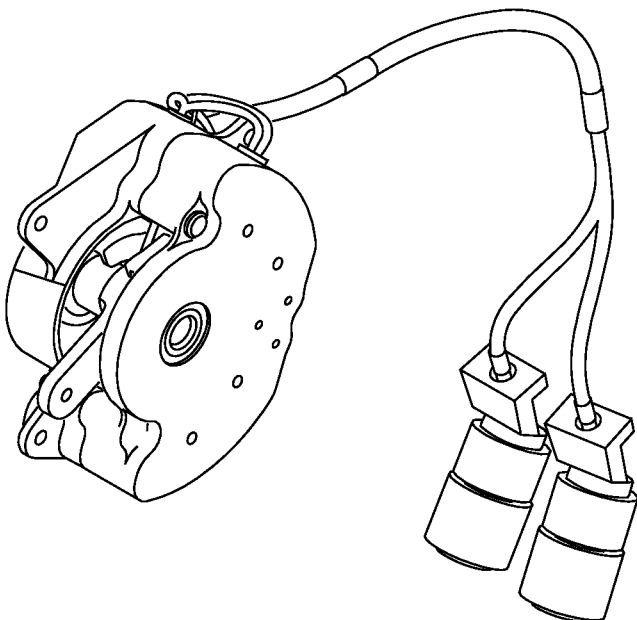
76-11-09

DESCRIPTION AND OPERATION

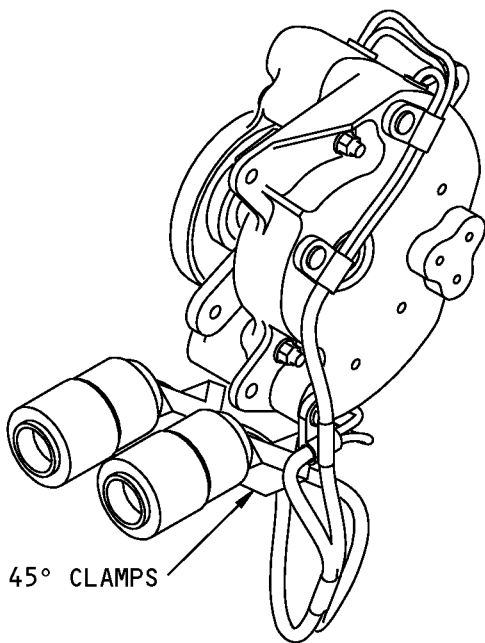
Page 1

Mar 01/2006

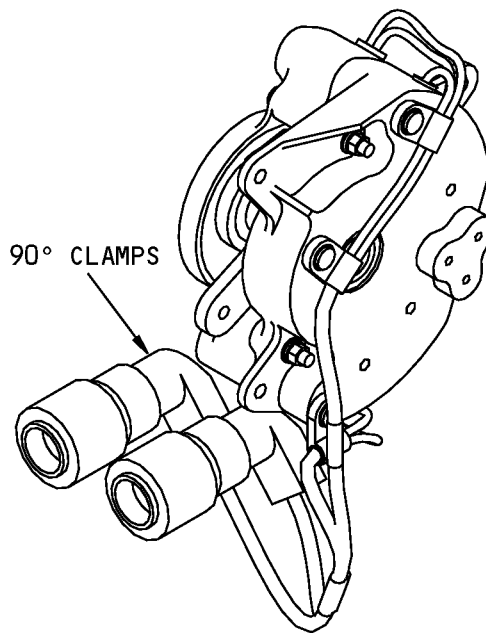
COMPONENT MAINTENANCE MANUAL



254A1290-1,-5



254A1290-2



254A1290-4,-6

Engine Start Brake Assemblies
Figure 1

76-11-09

DESCRIPTION AND OPERATION

Page 2

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

TESTING AND FAULT ISOLATION

1. General

- A. This procedure has the data necessary to do a test of the engine start brake assemblies after an overhaul or for fault isolation.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2 for the item numbers.

2. Testing and Fault Isolation

- A. Procedure
 - (1) The applicable schematic diagrams of the wire bundles are shown in TESTING AND FAULT ISOLATION, Figure 101, TESTING AND FAULT ISOLATION, Figure 102 or TESTING AND FAULT ISOLATION, Figure 103 to help in fault isolation of the engine start brake assembly.
 - (2) Procedure
 - (a) Test the switches (55, 145) or (55A, 145A) as applicable and the wire bundles of the engine start brake assemblies (1).
 - (b) Refer to the ASSEMBLY section of this manual for the correct wiring layouts and connector data.

76-11-09

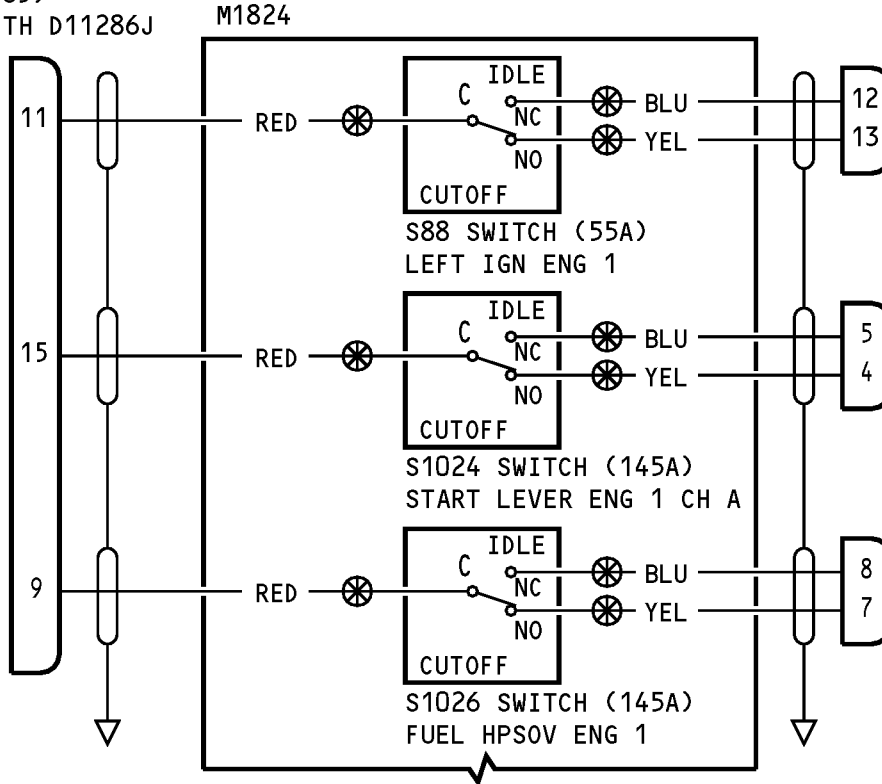
TESTING AND FAULT ISOLATION

Page 101

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11286P
 CONNECTOR (175)
 CLAMP (165)
 MATES WITH D11286J



254A1290-1,-5 Wire Bundle Schematic
 Figure 101 (Sheet 1 of 2)

76-11-09

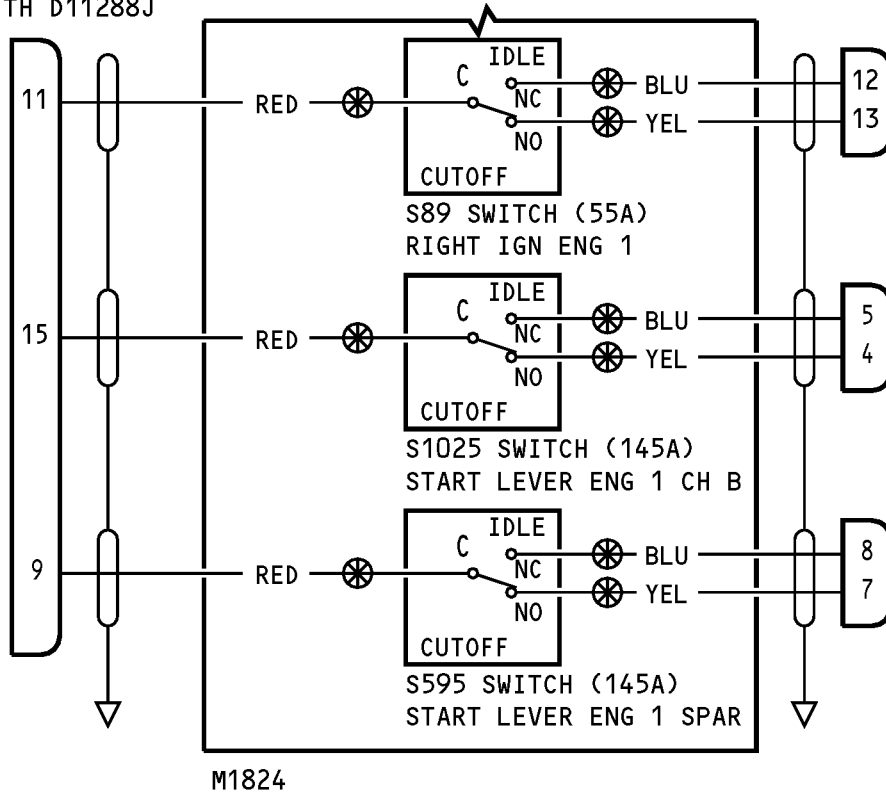
TESTING AND FAULT ISOLATION

Page 102

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11288P
 CONNECTOR (175)
 CLAMP (165)
 MATES WITH D11288J



ITEM NUMBERS REFER TO IPL FIG. 1
 AND 2

254A1290-1,-5 Wire Bundle Schematic
 Figure 101 (Sheet 2 of 2)

76-11-09

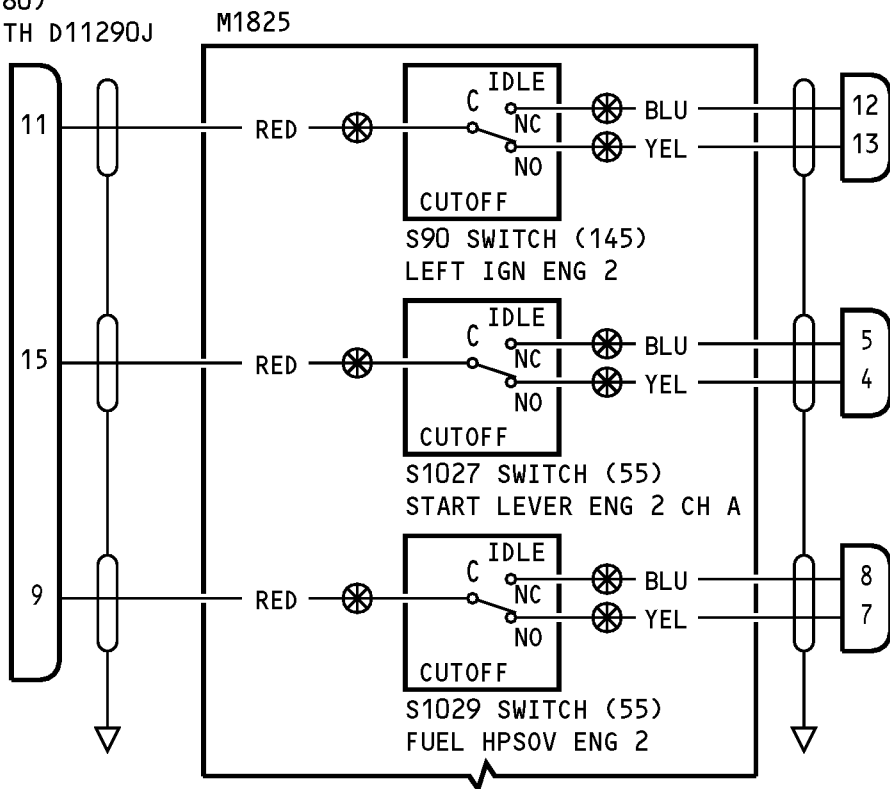
TESTING AND FAULT ISOLATION

Page 103

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11290P
 CONNECTOR (185)
 CLAMP (180)
 MATES WITH D11290J



254A1290-2 Wire Bundle Schematic
 Figure 102 (Sheet 1 of 2)

76-11-09

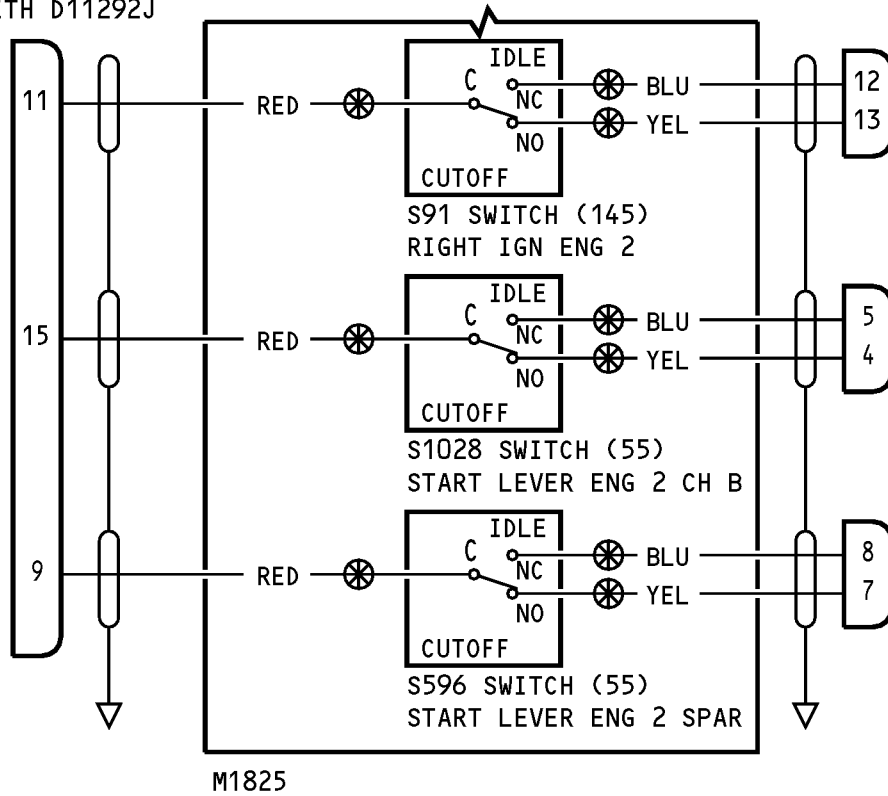
TESTING AND FAULT ISOLATION

Page 104

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11292P
 CONNECTOR (190)
 CLAMP (180)
 MATES WITH D11292J



ITEM NUMBERS REFER TO IPL FIG. 1
 AND 2

254A1290-2 Wire Bundle Schematic
 Figure 102 (Sheet 2 of 2)

76-11-09

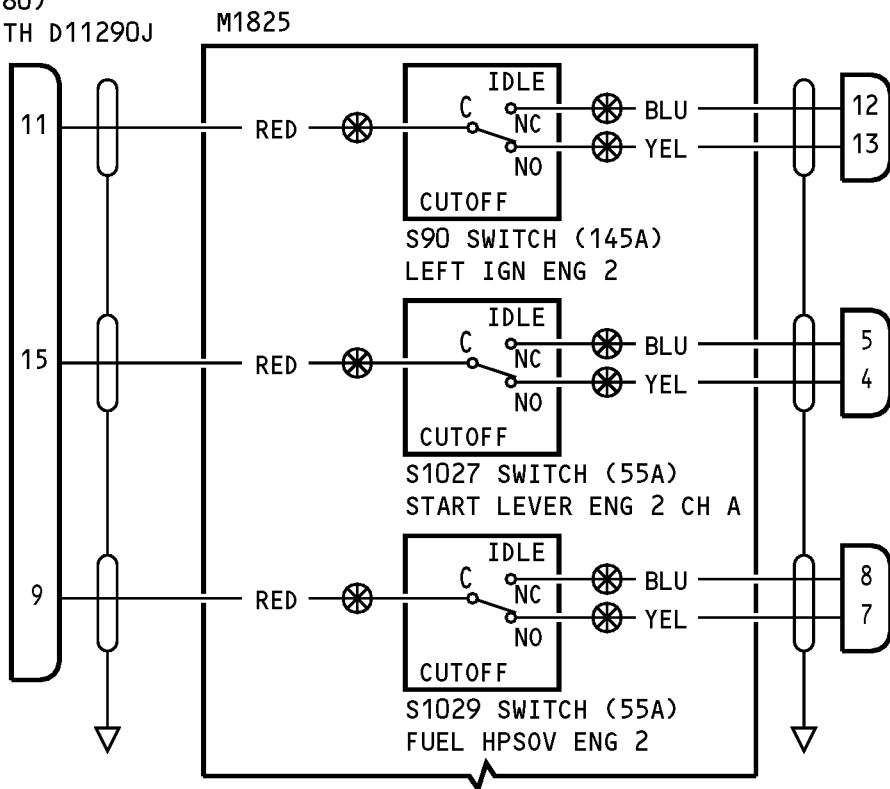
TESTING AND FAULT ISOLATION

Page 105

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11290P
 CONNECTOR (185)
 CLAMP (180)
 MATES WITH D11290J



254A1290-4,-6 Wire Bundle Schematic
 Figure 103 (Sheet 1 of 2)

76-11-09

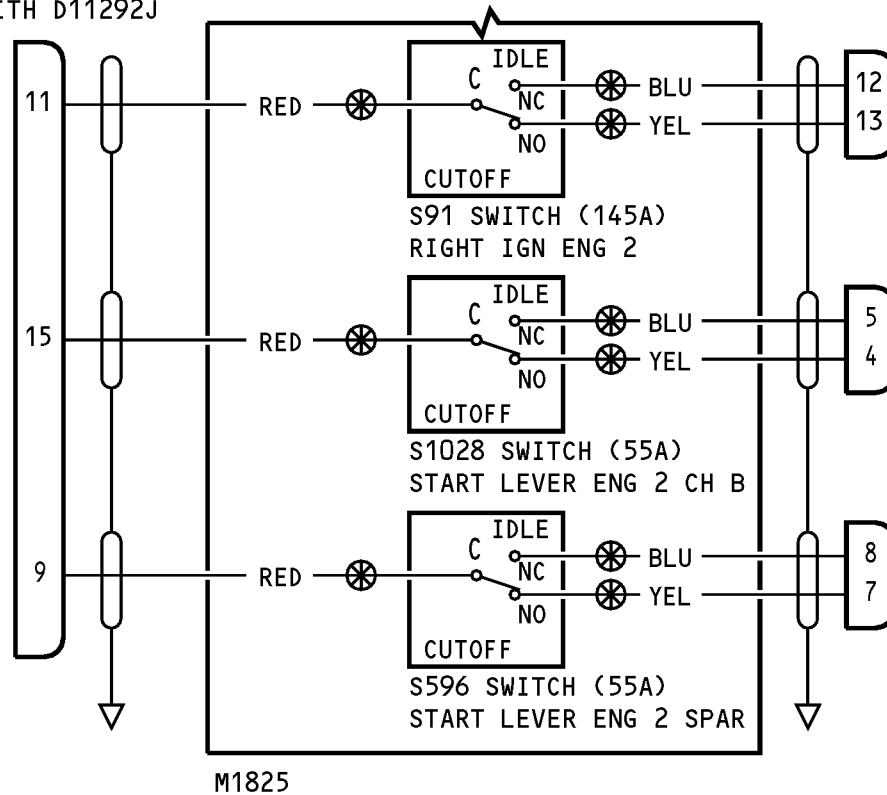
TESTING AND FAULT ISOLATION

Page 106

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

D11292P
 CONNECTOR (190)
 CLAMP (180)
 MATES WITH D11292J



ITEM NUMBERS REFER TO IPL FIG. 1 AND 2

254A1290-4,-6 Wire Bundle Schematic
 Figure 103 (Sheet 2 of 2)

76-11-09

TESTING AND FAULT ISOLATION

Page 107

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

DISASSEMBLY

1. General

- A. This procedure has the data necessary to disassemble the engine start brake assemblies (1).
- B. Disassemble this component sufficiently to isolate the defects, do the necessary repairs, and put the component back to a serviceable condition.
- C. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- D. Refer to IPL Figure 1 or IPL Figure 2 for the item numbers.

2. Disassembly

A. References

Reference	Title
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT

B. Disassembly Procedures

- (1) Procedure for the disassembly of the engine start brake assembly 254A1290-1, -5 (IPL Figure 1, 1, 1D).
 - (a) Use standard industry procedures to disassemble the engine start brake assembly, 254A1290-1, -5 (IPL Figure 1, 1, 1D).
 - (b) Also, do the steps that follow to disassemble the 254A1290-1, -5 engine start brake:
 - 1) Remove the bolts (5) and the screw (10) with washers (15) and nuts (20) from the engine start brake assembly (1A).
 - 2) Disconnect the housing assemblies (25, 115).
 - 3) Remove the rotor assembly (75).
 - a) Remove the friction discs (60, 150) and the springs (65, 155) from the housings (40, 130).
 - b) Remove the screws (45, 135) and washers (50, 140) that attach the switches (55, 145) to the housings (40, 130).
 - c) Disconnect and remove the switches (55, 145) from the wires.
 - d) Remove the connectors (170, 175) with the wires from the housings (40, 130).
 - e) Remove the connectors (170, 175) from the clamps (165), then remove the clamps from the wires.
 - f) Remove the grommets (70, 160) from the housings (40, 130).
 - 4) Remove the bearings (110) (SOPM 20-50-03) from the housings (40, 130).
 - (c) After removal of the bearings (110), then refer to CLEANING for the specified cleaning procedures.
- (2) Procedure for the disassembly of the engine start brake assembly 254A1290-2 (IPL Figure 1, 1B) (IPL Figure 2, 1), 254A1290-4, -6 (IPL Figure 1, 1C, 1E) (IPL Figure 2, 1A, 1B).
 - (a) Use standard industry procedures to disassemble the engine start brake assembly 254A1290-2 (IPL Figure 1; 1B) (IPL Figure 2; 1), 254A1290-4, -6 (IPL Figure 1; 1C, 1E) (IPL Figure 2; 1A, 1B).

76-11-09

DISASSEMBLY

Page 301

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

- (b) Also, do the steps that follow to disassemble the 254A1290-2, -4, -6 engine start brake:
 - 1) Remove the bolts (5) and the screw (10) with washers (15) and nuts (20) from the engine start brake assembly (1).
 - 2) Disconnect the housing assemblies (25, 115).
 - 3) Remove the rotor assembly (75).
 - a) Remove the friction discs (60, 150) and the springs (65, 155) from the housings (40, 130).
 - b) Remove the screws (45, 135) and washers (50, 140) that attach the switches (55, 145) to the housings (40, 130).
 - c) Disconnect and remove the switches (55, 145) or (55A, 145A) as applicable from the wires.
 - d) Remove the connectors (185, 190) with the wires from the housings (40, 130).
 - e) Remove the connectors (185, 190) from the clamps (180 or 180A) as applicable, and then remove the clamps from the wires.
 - f) Remove the grommets (70, 175) from the housings (40, 130).
 - 4) Remove the bearings (110) (SOPM 20-50-03) from the housings (40, 130).
- (c) After removal of the bearings (110), then refer to CLEANING for the specified cleaning procedures.

76-11-09

DISASSEMBLY

Page 302

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

CLEANING

1. General

- A. This procedure has the data necessary to clean the engine start brake assemblies.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2 for the correct item numbers.

2. Cleaning

A. References

Reference	Title
SOPM 20-30-01	CLEANING AND RELUBRICATING BEARINGS
SOPM 20-30-03	GENERAL CLEANING PROCEDURES

B. Procedure

- (1) Clean the bearings (110) as specified in SOPM 20-30-01.
- (2) Use standard industry procedures and refer to SOPM 20-30-03 to clean all of the other parts.

76-11-09

CLEANING

Page 401

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

CHECK

1. General

- A. This procedure has the data necessary to find defects in the material of the specified parts.
- B. Refer to FITS AND CLEARANCES for the design dimension and wear limits.
- C. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- D. Refer to IPL Figure 1 or IPL Figure 2 for the correct item numbers.

2. Check

A. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION

B. Procedure

- (1) Use standard industry procedures to do a visual check of all the parts for defects.

NOTE: Always do a penetrant or magnetic particle inspection if you suspect possible damage on the parts listed below.

- (2) Do a magnetic particle inspection (SOPM 20-20-01) of the parts that follow:

- (a) IPL Figure 1 and IPL Figure 2:

- 1) Cams (90, 100)
- 2) Rotor (95)
- 3) Hub (105)

- (3) Do a penetrant inspection (SOPM 20-20-02) of the parts that follow:

- (a) IPL Figure 1 and IPL Figure 2:

- 1) Bushings (35, 125)
- 2) Housings (40, 130)

- (4) Do a check of the spring (IPL Figure 1, 65; IPL Figure 2, 65) as shown in CHECK, Figure 501.

- (a) Make sure that the spring measures 1.196-1.496 inches in the free position.
- (b) Make sure the spring exerts 3.87-4.73 pounds of force when you compress it to 0.547 inch in length.
- (c) Make sure the spring exerts 2.79-3.41 pounds of force when you compress it to 0.741 inch in length.

76-11-09

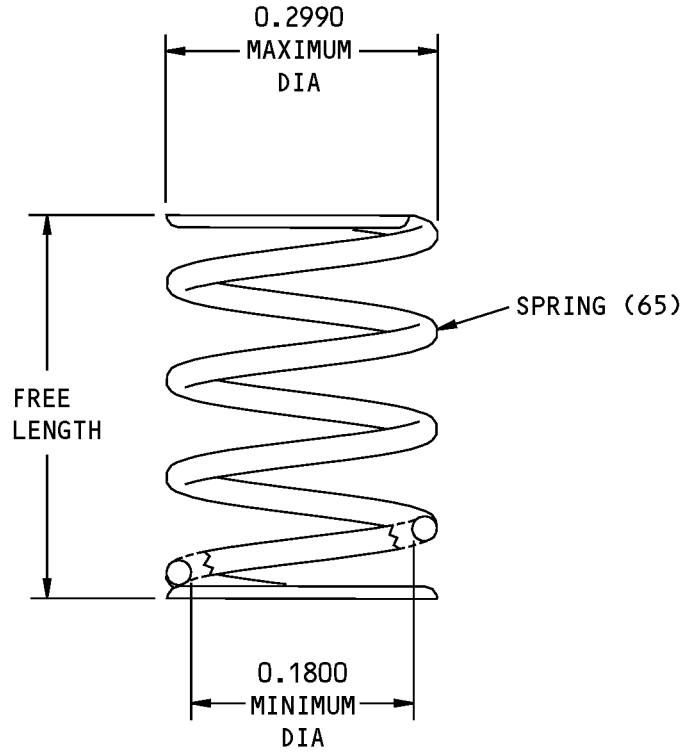
CHECK

Page 501

Mar 01/2006



COMPONENT MAINTENANCE MANUAL



ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

Spring Check
Figure 501

76-11-09

CHECK
Page 502
Mar 01/2006



COMPONENT MAINTENANCE MANUAL

REPAIR

1. General

- A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

Table 601:

PART NUMBER	NAME	REPAIR
—	REFINISH OF OTHER PARTS	1-1
254A1291	HOUSING ASSEMBLY	2-1, 2-2

2. Dimensioning Symbols

- A. Standard True Position Dimensioning Symbols used in the applicable repair procedures are shown in REPAIR-GENERAL, Figure 601.

76-11-09

REPAIR - GENERAL

Page 601

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

—	STRAIGHTNESS	∅	DIAMETER
▭	FLATNESS	S ∅	SPHERICAL DIAMETER
⊥	PERPENDICULARITY (OR SQUARENESS)	R	RADIUS
//	PARALLELISM	SR	SPHERICAL RADIUS
○	ROUNDNESS	()	REFERENCE
⊘	CYLINDRICITY	BASIC	A THEORETICALLY EXACT DIMENSION USED
⌒	PROFILE OF A LINE	(BSC)	TO DESCRIBE SIZE, SHAPE OR LOCATION OF
⌒	PROFILE OF A SURFACE	OR	A FEATURE. FROM THIS FEATURE PERMISS-
◎	CONCENTRICITY	DIM	SIBLE VARIATIONS ARE ESTABLISHED BY
≡	SYMMETRY		TOLERANCES ON OTHER DIMENSIONS OR
∠	ANGULARITY	-A-	NOTES.
↗	RUNOUT	(M)	DATUM
↗	TOTAL RUNOUT	(L)	MAXIMUM MATERIAL CONDITION (MMC)
⊔	COUNTERBORE OR SPOTFACE	(S)	LEAST MATERIAL CONDITION (LMC)
∇	COUNTERSINK	(RFS)	REGARDLESS OF FEATURE SIZE (RFS)
⊕	THEORETICAL EXACT POSITION	(P)	PROJECTED TOLERANCE ZONE
	OF A FEATURE (TRUE POSITION)	FIM	FULL INDICATOR MOVEMENT

EXAMPLES

— 0.002	STRAIGHT WITHIN 0.002	◎ ∅ 0.0005 C	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
⊥ 0.002 B	PERPENDICULAR TO DATUM B WITHIN 0.002	≡ 0.010 A	SYMMETRICAL WITH DATUM A WITHIN 0.010
// 0.002 A	PARALLEL TO DATUM A WITHIN 0.002	∠ 0.005 A	ANGULAR TOLERANCE 0.005 WITH DATUM A
○ 0.002	ROUND WITHIN 0.002	⊕ ∅ 0.002 (S) B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊘ 0.010	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER	⊥ ∅ 0.010 (M) A	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION
⌒ 0.006 A	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A	0.510 (P)	
⌒ 0.020 A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE	2.000	THEORETICALLY EXACT DIMENSION IS 2.000
		OR	
		2.000	
		BSC	

True Position Dimensioning Symbols
Figure 601

76-11-09

REPAIR - GENERAL

Page 602

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

- A. This procedure has the data necessary to refinish the parts which are not given in the specified repairs.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 and IPL Figure 2 for the item numbers.

2. Repair Procedures

A. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Refinish of Other Parts

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01.

- (1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 are for repair of the initial finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Bushing (35, 125)	Aluminum-Nickel-Bronze	Cadmium plate (F-15.06) all over, except omit plating on the inner diameter.
Spring (65, 155)	Music wire as specified in AMS 5112	Cadmium plate (F-15.06) all over.
Rotor (95)	15-5PH CRES	Passivate (F-17.25 which replaces F-17.09) all over.
Cam (90, 100)	15-5PH CRES	Passivate (F-17.25 which replaces F-17.09) all over.
Hub (105)	15-5PH CRES	Passivate (F-17.25 which replaces F-17.09) all over.

76-11-09

REPAIR 1-1

Page 601

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

HOUSING ASSEMBLY - REPAIR 2-1

254A1291-1, -2, -5, -6, -9, -10, -13, -14

1. General

- A. This procedure has the data necessary to repair the housing assemblies (25, 115).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2 for the correct item numbers.

2. Repair procedures

- A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

- B. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

- C. Insert Replacement

NOTE: For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

- (1) Remove the inserts (30, 120) from the housings (40, 130).
- (2) Clean the insert (30, 120) holes.
- (3) Install new inserts (30, 120) into the housings (40, 130) with primer, C00259 (F-20.20).
 - (a) Seat the inserts with a thread gage while the primer, C00259 is wet.
 - (b) Make sure that the top edge of the inserts are 0.75-1.50 threads below the top surface of the housings.

- D. Bushing Replacement

NOTE: For miscellaneous materials, refer to SOPM 20-60-04.

- (1) Remove the bushings (35, 125) from the housings (40, 130).
- (2) Clean the bushing (35, 125) holes.

76-11-09

REPAIR 2-1

Page 601

Jul 01/2008



COMPONENT MAINTENANCE MANUAL

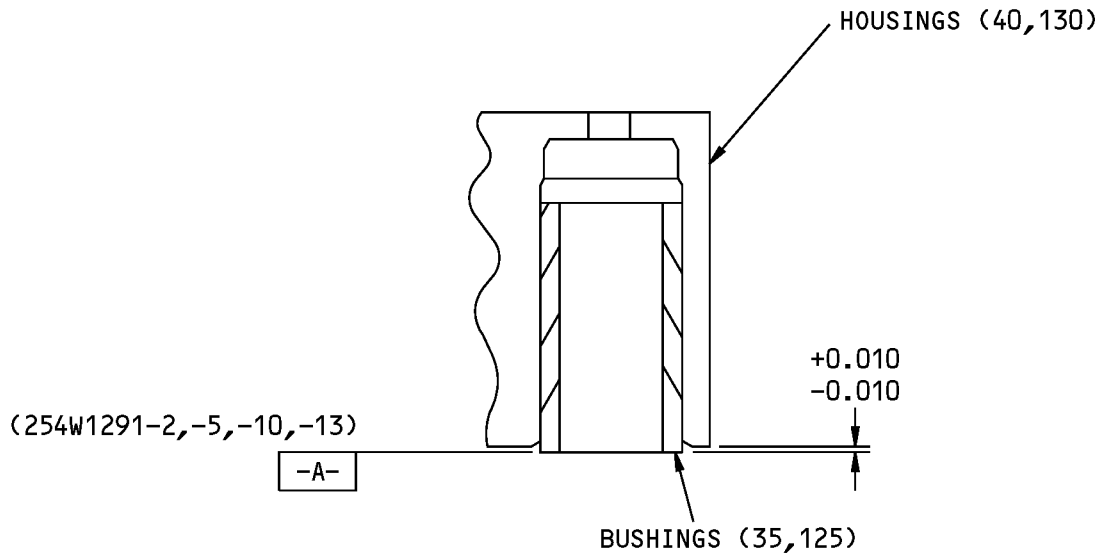
- (3) Install new bushings (35, 125) into the housings (40, 130) with sealant, A00247 as specified by SOPM 20-50-03.
 - (a) Make sure that the bushings are even with the surface of the housing within 0.010 inch as shown in REPAIR 2-1, Figure 601.
 - (b) If there is sealant in the bottoms of the holes after you install the bushings, then remove it.

76-11-09

REPAIR 2-1
Page 602

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1291-1,-2,-5,-6,-9,-10,-13,-14 Housing Assembly Repair
Figure 601

76-11-09

REPAIR 2-1

Page 603

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

HOUSING - REPAIR 2-2

254A1291-3, -4, -7, -8, -11, -12, -15, -16

1. General

- A. This procedure has the data necessary to refinish the housings (40, 130).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2 for the correct item numbers.
- E. General repair details:
 - (1) Material: Aluminum Alloy

2. Repair Procedures

- A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

- B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

- C. Housing Refinish

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

- (1) Anodize (F-17.31) the housings (40, 130) all over, then apply primer, C00259 (F-20.03) all over the housings.

NOTE: Do not apply primer to any of the holes or the threads.

76-11-09

REPAIR 2-2

Page 601

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

ASSEMBLY

1. General

- A. This procedure tells how to assemble the engine start brake assemblies (1).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2 for the correct item numbers.

2. Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

B. References

Reference	Title
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-02	FINISHING MATERIALS
SWPM 20-10-15	ASSEMBLY OF SHIELD GROUND WIRES

C. Procedure for the assembly of the engine start brake assembly

NOTE: For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02. For the repair of electrical connectors, refer to SWPM 20-10-15.

- (1) Use standard industry procedures to assemble the engine start brake assembly 254A1290-1, -5 (IPL Figure 1, 1, 1D).
- (2) Also, do the steps that follow to assemble the 254A1290-1, -5 engine start brake assemblies:
 - (a) See TESTING AND FAULT ISOLATION in this manual for schematic diagrams of the engine start brake assemblies.
 - (b) Press fit the bearings (110) into the housings (40, 130) as specified in SOPM 20-50-03.
 - (c) Install the grommets (70, 160) into the housings (40, 130).

NOTE: Use grease, D00633 or grease, D00013.

NOTE: If the grommets are split, then turn it so that the split is away from the wires.

76-11-09

ASSEMBLY

Page 701

Jul 01/2008



COMPONENT MAINTENANCE MANUAL

- (d) Install the clamps (165) onto the wires, then install the connectors (170, 175) to the clamps (165).
 - 1) Join the shields together by the ferrule-to-ferrule method and ground the shielding to the backshell as specified by SWPM 20-10-15.
 - 2) Assemble each backshell to the connector master keyway at the 2 o'clock position.
 - (e) Install the wires into the housings (40, 130).
 - (f) Attach the switches (55, 145) to the wires.
 - (g) Install the switches (55, 145).

NOTE: Use screws (45, 135) and washers (50, 140).
 - (h) Lockstitch the wires at four locations as shown in ASSEMBLY, Figure 701 and every six inches along each wire run.
 - (i) Install the springs (65, 155) and friction discs (60, 150) into the housings (40, 130).
 - (j) Clean the surfaces of the rotor (95) as specified in SOPM 20-30-03, then install the rotor assembly (75) into one of the housing assemblies (25, 115).
 - (k) Assemble together the two housing assemblies (25, 115).
 - (l) Install the bolts (5), screws (10), washers (15), and nuts (20) to complete the engine start brake assembly (1).
 - (m) After the assembly of the engine start brake is completed, then do the steps that follow:
 - 1) Make sure that the rotor assembly (75) has a torque value of 7.4 to 21.3 inch-pounds.
 - 2) As an alternative, the rotor assembly must have an equivalent perpendicular force of 4.6 to 13.3 pounds on a 1.6-inch input arm.
 - (n) Refer to the TESTING AND FAULT ISOLATION to do the specified functional testing procedures on the fully assembled engine start brake assembly.
- (3) The engine start brake assembly unit must pass all of the testing and fault isolation test procedures before the unit can be installed on the airplane.

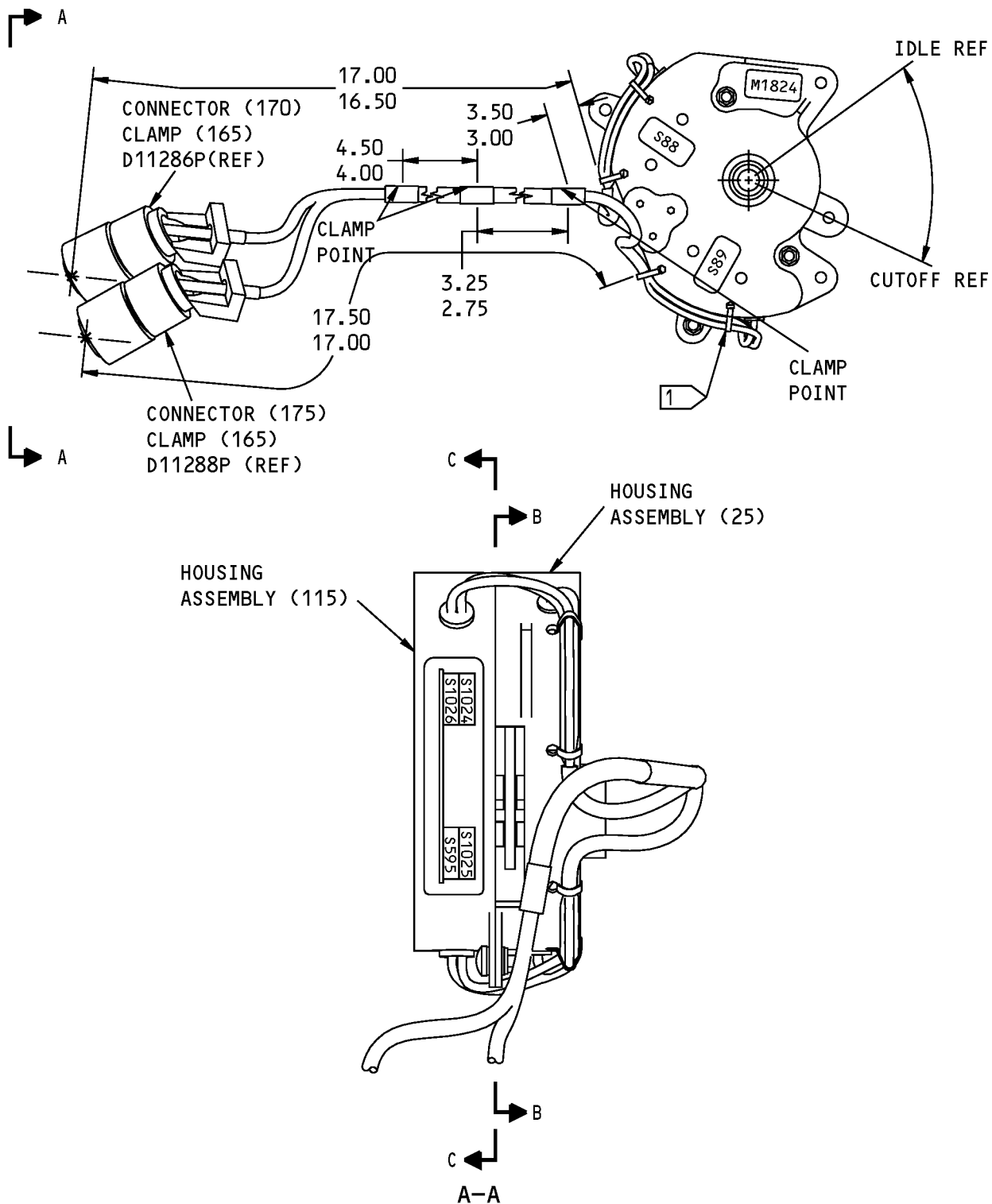
76-11-09

ASSEMBLY

Page 702

Jul 01/2008

COMPONENT MAINTENANCE MANUAL



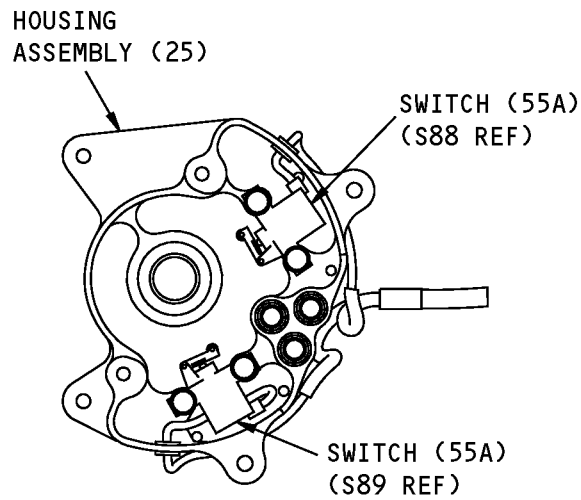
254A1290-1,-5 Wire Bundle Schematic and Layout
Figure 701 (Sheet 1 of 2)

76-11-09

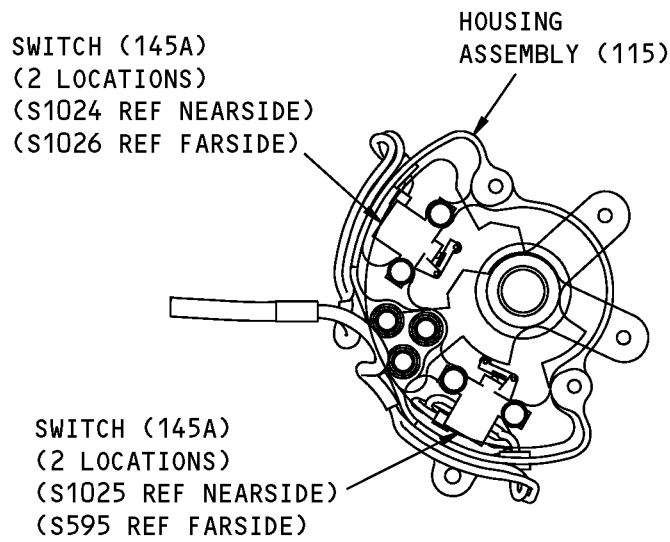
ASSEMBLY
Page 703
Mar 01/2006



COMPONENT MAINTENANCE MANUAL



B-B



C-C

 LOCKSTITCH

254A1290-1,-5 Wire Bundle Schematic and Layout
Figure 701 (Sheet 2 of 2)

76-11-09

ASSEMBLY

Page 704

Mar 01/2006



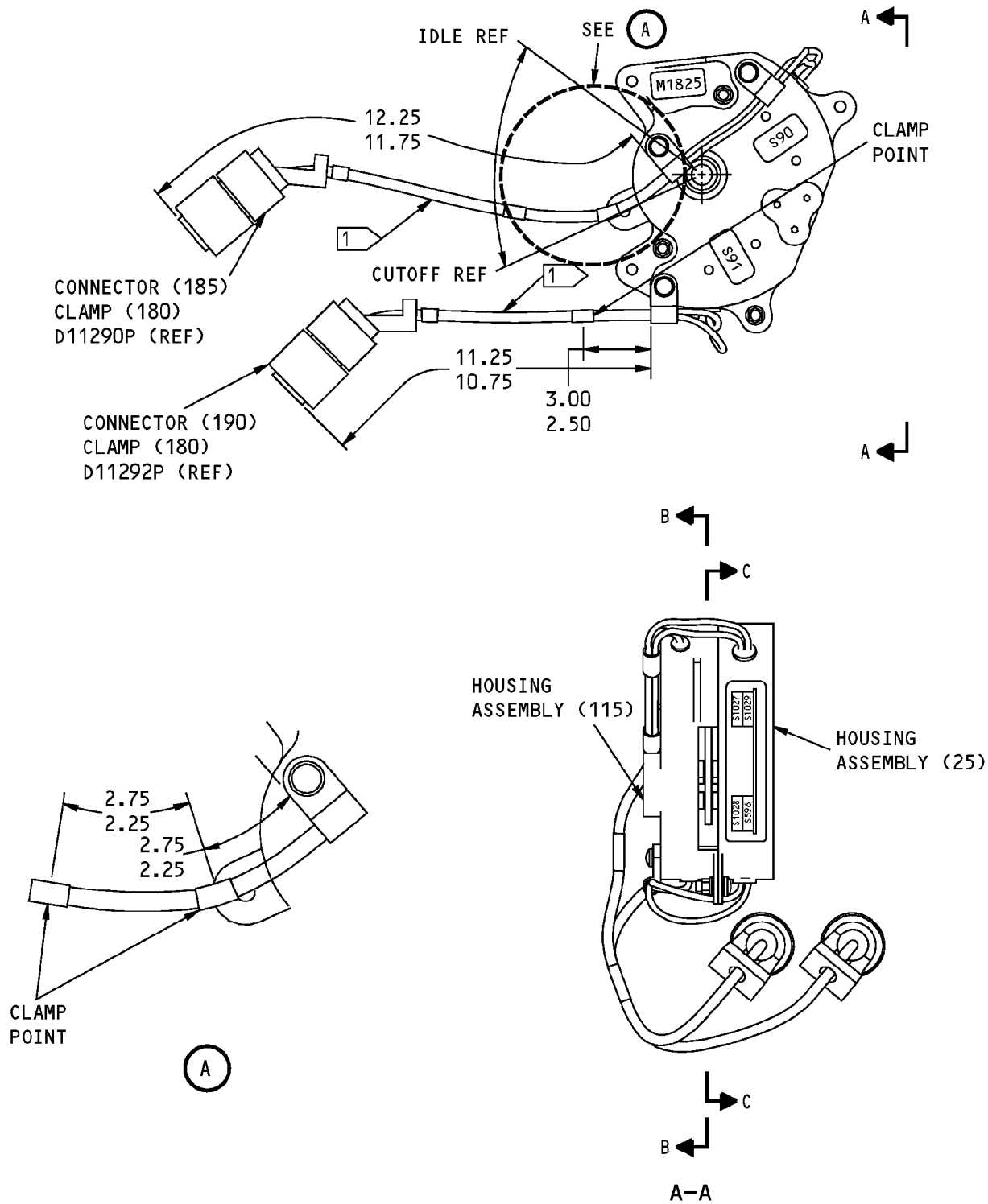
COMPONENT MAINTENANCE MANUAL

- D. Procedure for the assembly of the engine start brake assembly 254A1290-2
- (1) Use standard industry procedures to assemble the engine start brake assembly 254A1290-2 (IPL Figure 1, 1B) (IPL Figure 2, 1).
 - (2) Also, do the steps that follow to assemble the 254A1290-2 engine start brake assembly:
 - (a) See TESTING AND FAULT ISOLATION in this manual for schematic diagrams of the engine start brake assemblies.
 - (b) Press fit the bearings (110) into the housings (40, 130) as specified by SOPM 20-50-03.
NOTE: Use grease, D00633 or grease, D00013.
 - (c) Install the grommets (70, 175) into the housings (40, 130).
NOTE: If the grommets are split, then turn it so that the split is away from the wires.
 - (d) Install the clamps (180) onto the wires, then install the connectors (185, 190) to the clamps (180).
 - 1) Join the shields together by the ferrule-to-ferrule method and ground the shielding to the backshell as specified by SWPM 20-10-15.
 - 2) Assemble each backshell to the connector master keyway at the 2 o'clock position.
 - (e) Install the wires into the housings (40, 130).
 - (f) Attach the switches (55, 145) to the wires.
 - (g) Install the switches (55, 145) using screws (45, 135) and washers (50, 140).
 - (h) Lockstitch the wires at four locations as shown in ASSEMBLY, Figure 702 and every six inches along each wire run.
 - (i) Install the springs (65, 155) and friction discs (60, 150) into the housings (40, 130).
 - (j) Clean the surfaces of the rotor (95) as specified in SOPM 20-30-03, then install the rotor assembly (75) into one of the housing assemblies (25, 115).
 - (k) Assemble together the two housing assemblies (25, 115).
 - (l) Install the bolts (5), screws (10), washers (15), and nuts (20) to complete the engine start brake assembly (1).
 - (m) After the assembly of the engine start brake is completed, then do the steps that follow:
 - 1) Make sure that the rotor assembly (75) has a torque value of 7.4 to 21.3 inch-pounds.
 - 2) As an alternative, the rotor assembly must have an equivalent perpendicular force of 4.6 to 13.3 pounds on a 1.6-inch input arm.
 - (n) Refer to the TESTING AND FAULT ISOLATION to do the specified functional testing procedures on the fully assembled engine start brake assembly.
 - (3) The engine start brake assembly unit must pass all of the testing and fault isolation test procedures before the unit can be installed on the airplane.

76-11-09

ASSEMBLY
Page 705
Nov 01/2007

COMPONENT MAINTENANCE MANUAL



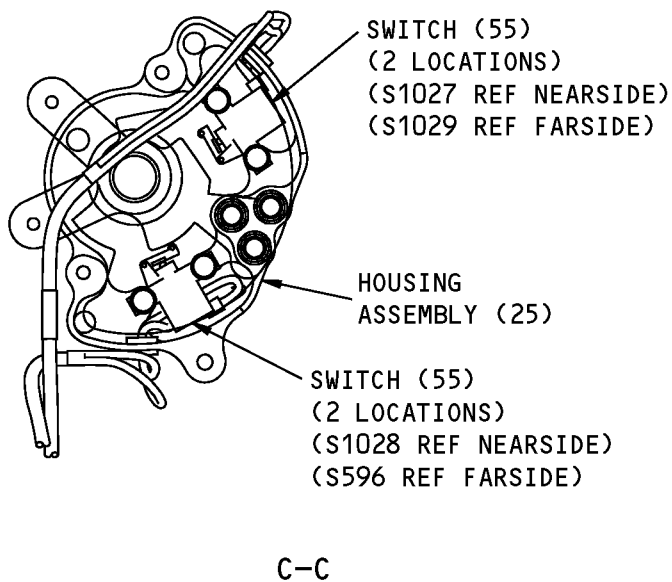
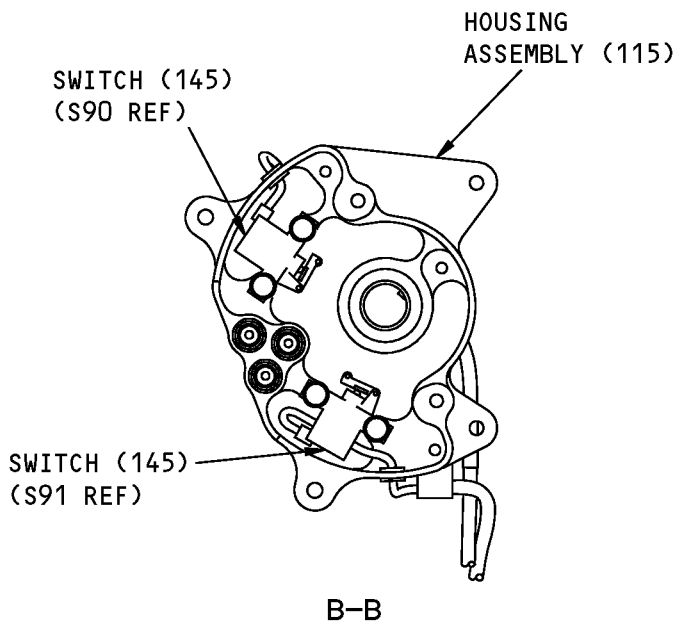
254A1290-2 Wire Bundle Schematic and Layout
Figure 702 (Sheet 1 of 2)

76-11-09

ASSEMBLY
Page 706
Mar 01/2006



COMPONENT MAINTENANCE MANUAL



1 LOCKSTITCH

254A1290-2 Wire Bundle Schematic and Layout
Figure 702 (Sheet 2 of 2)

76-11-09

ASSEMBLY
Page 707
Mar 01/2006



COMPONENT MAINTENANCE MANUAL

- E. Procedure for the assembly of the engine start brake assembly 254A1290-4,
- (1) Use standard industry procedures to assemble the engine start brake assembly 254A1290-4, -6 (IPL Figure 1, 1C, 1E) (IPL Figure 2, 1A, 1B).
 - (2) Also, do the steps that follow to assemble the 254A1290-4, -6 engine start brake assembly:
 - (a) See TESTING AND FAULT ISOLATION in this manual for schematic diagrams of the engine start brake assemblies.
 - (b) Press fit the bearings (110) into the housings (40, 130).

NOTE: Use grease, D00633 or grease, D00015 as specified by SOPM 20-50-03.
 - (c) Install the grommets (70, 175) into the housings (40, 130).

NOTE: If the grommets are split, then turn it so that the split is away from the wires.
 - (d) Install the clamps (180) onto the wires, then install the connectors (185, 190) to the clamps (180).
 - 1) Join the shields together by the ferrule-to-ferrule method and ground the shielding to the backshell as specified by SWPM 20-10-15.
 - 2) Assemble each backshell to the connector master keyway at the 2 o'clock position.
 - (e) Install the wires into the housings (40, 130).
 - (f) Attach the switches (55A, 145A) to the wires.
 - (g) Install the switches (55A, 145A).

NOTE: Use screws (45, 135) and washers (50, 140).
 - (h) Lockstitch the wires at four locations as shown in ASSEMBLY, Figure 702 and every 6 inches along each wire run.
 - (i) Install the springs (65, 155) and friction discs (60, 150) into the housings (40, 130).
 - (j) Clean the surfaces of the rotor (95) as specified in SOPM 20-30-03, then install the rotor assembly (75) into one of the housing assemblies (25, 115).
 - (k) Assemble together the two housing assemblies (25, 115).
 - (l) Install the bolts (5), screws (10), washers (15), and nuts (20) to complete the engine start brake assembly (1).
 - (m) After the engine start brake assembly is completed, then do the steps that follow:
 - 1) Make sure that the rotor assembly (75) has a torque value of 7.4 to 21.3 inch-pounds.
 - 2) As an alternative, the rotor assembly must have an equivalent perpendicular force of 4.6 to 13.3 pounds on a 1.6-inch input arm.

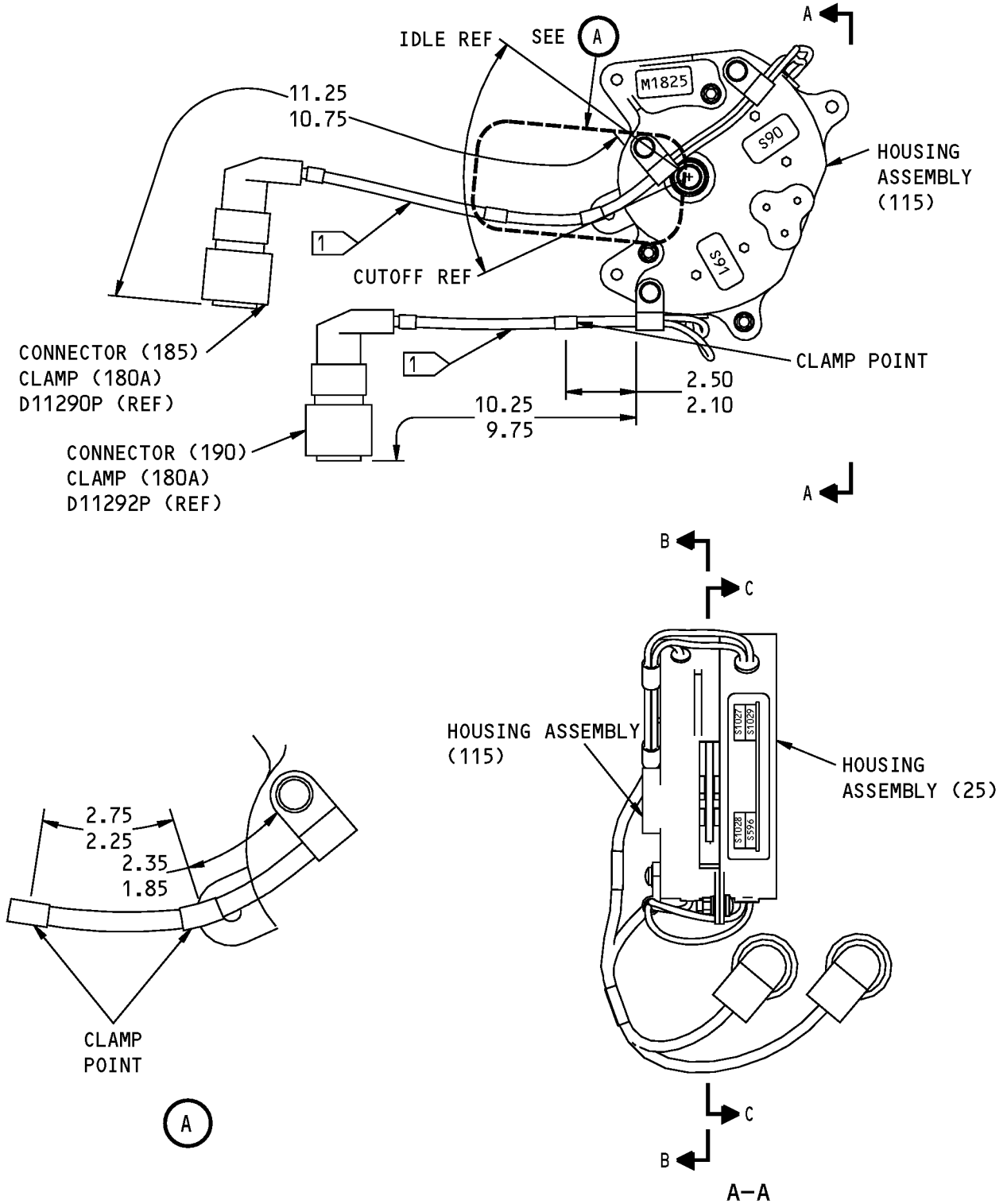
76-11-09

ASSEMBLY

Page 708

Nov 01/2007

COMPONENT MAINTENANCE MANUAL



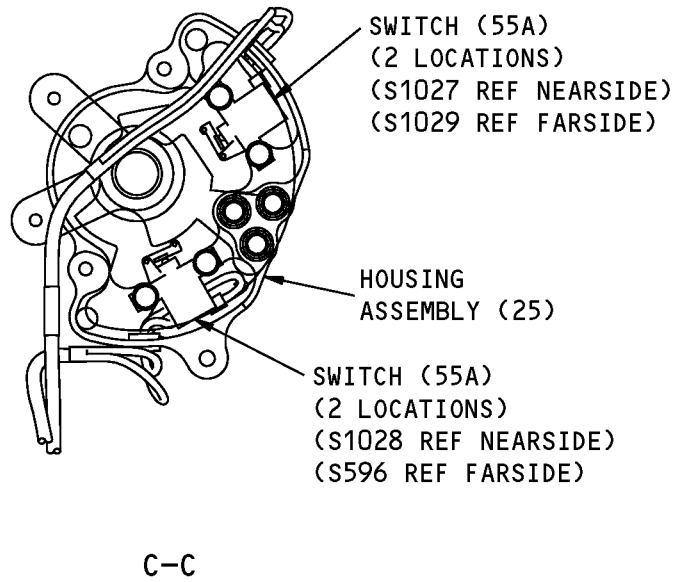
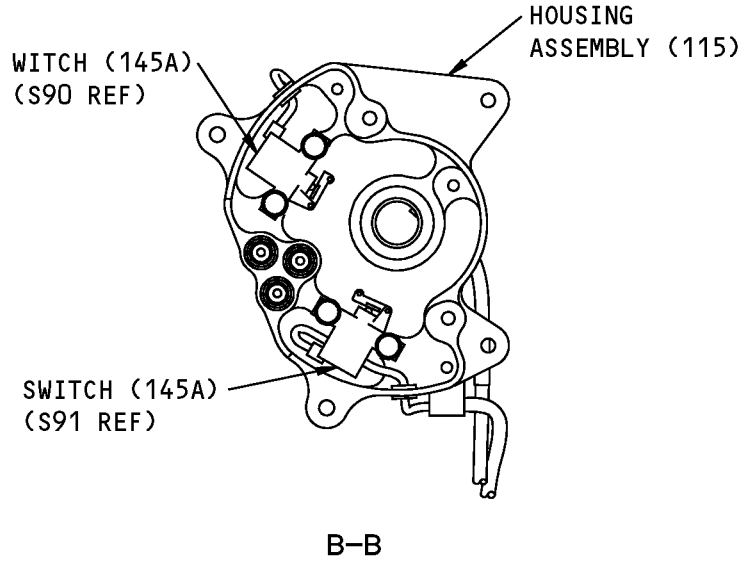
254A1290-4,-6 Wire Bundle Schematic and Layout
Figure 703 (Sheet 1 of 2)

76-11-09

ASSEMBLY
Page 709
Mar 01/2006



COMPONENT MAINTENANCE MANUAL



1 LOCKSTITCH

254A1290-4,-6 Wire Bundle Schematic and Layout
Figure 703 (Sheet 2 of 2)

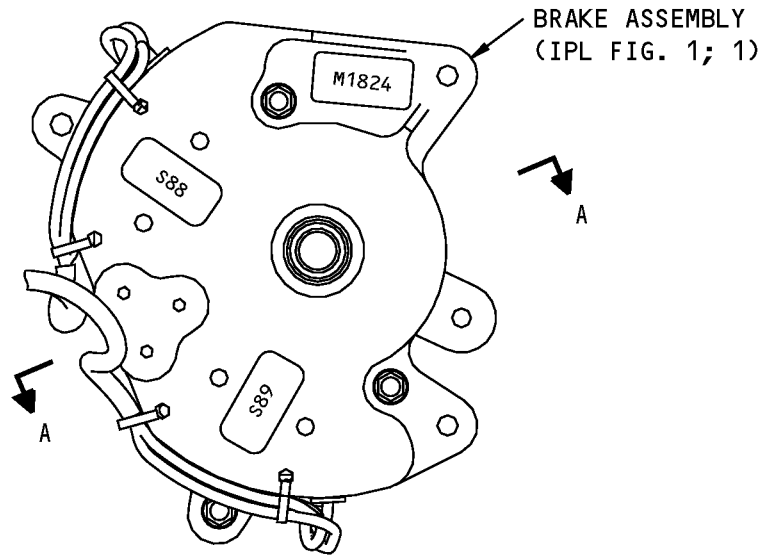
76-11-09

ASSEMBLY
Page 710
Mar 01/2006

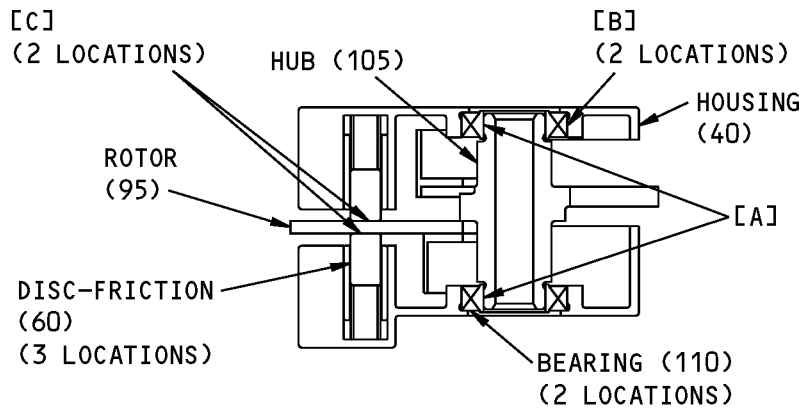


COMPONENT MAINTENANCE MANUAL

FITS AND CLEARANCES



ENGINE START BRAKE ASSEMBLY 254A1290-1,-5



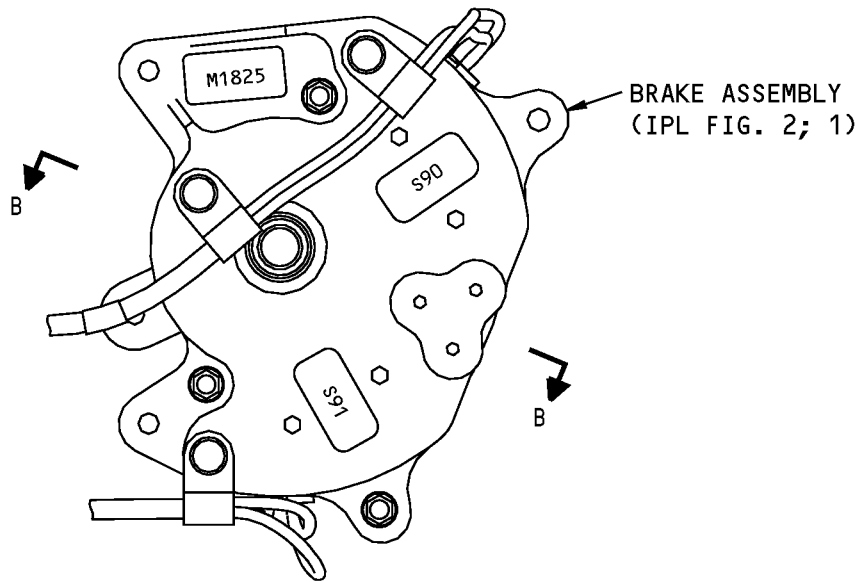
VIEW ROTATED CLOCKWISE 20°

A-A

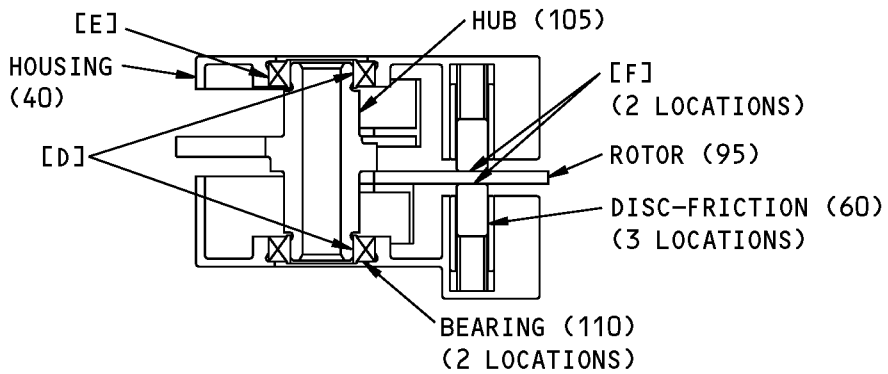
Fits and Clearances
Figure 801 (Sheet 1 of 3)



COMPONENT MAINTENANCE MANUAL



ENGINE START BRAKE ASSEMBLY 254A1290-2,-4,-6





VIEW ROTATED CLOCKWISE 20°
B-B


ITEM NUMBERS REFER TO IPL FIG. 1 AND 2

Fits and Clearances
Figure 801 (Sheet 2 of 3)

COMPONENT MAINTENANCE MANUAL

REF LETTER	REF IPL		DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
	FIG. NO.	MATING ITEM NO.	DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
			MIN	MAX	MIN	MAX	MIN	MAX	
[A]	1	ID 110	0.6245	0.6250	0.0015	0.0030	0.6210	0.6255	0.0045
		OD 105	0.6220	0.6230					
[B]	1	ID 40	1.0635	1.0645	0.0010	0.0025	1.0615	1.0655	0.0050
		OD 110	1.0620	1.0625					
[C]	1	60	0.51	0.6250					
		95	0.1200	0.6230					
[D]	2	ID 110	0.6245	0.6250	0.0015	0.0030	0.6210	0.6255	0.0045
		OD 105	0.6220	0.6230					
[E]	2	ID 40	1.0635	1.0645	0.0010	0.0025	1.0615	1.0655	0.0050
		OD 110	1.0620	1.0625					
[F]	2	60	0.51	0.53					
		95	0.1200	0.1300					

* ALL DIMENSIONS ARE IN INCHES

 IF THE MINIMUM LENGTH OF THE DISC-FRICTION (60) IS LESS THAN 0.40 INCH, THEN YOU MUST REPLACE THE DISC. ON THE ROTOR, SCRATCHING, SCORING, GOUGING IS PERMITTED UP TO A MAXIMUM DIMENSION OF 0.010 INCH IN DEPTH (BOTH SIDES). IF THE DEPTH OF DAMAGE IS GREATER THAN 0.010 INCH, THEN YOU MUST REPLACE THE ROTOR

Fits and Clearances
Figure 801 (Sheet 3 of 3)

76-11-09
FITS AND CLEARANCES
Page 803
Mar 01/2006



COMPONENT MAINTENANCE MANUAL

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

(NOT APPLICABLE)

76-11-09

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

Page 901

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

ILLUSTRATED PARTS LIST

1. Introduction

- A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.
- B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1	2	3	4	5	6	7
.	Assembly					
.	Attaching parts for assembly					
.	.	Detail parts for assembly				
.	.	Subassembly				
.	.	Attaching parts for subassembly				
.	.	.	Detail parts for subassembly			
.	.	.	Sub-subassembly			
.	.	.	Attaching parts for subassembly			
.	.	.	.	Details parts for sub-subassembly		
						Detail Installation Parts (Included only if installation parts may be sent to the shop as part of assembly)

- C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.
- D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.
- E. Color-coded parts are identified with a single digit alpha following the dash number or with "SP" suffix. If the "SP" suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.
- F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a "~" at the end of the line and will be continued on the next line. The "~" denotes that the part number continues on the next line.
- G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.
- (1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.
- (2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.
- H. Interchangeable Parts

76-11-09

ILLUSTRATED PARTS LIST

Page 1001

Nov 01/2008



COMPONENT MAINTENANCE MANUAL

Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

VENDOR CODES

Code	Name
06324	GLENAIR INC 1211 AIR WAY GLENDALE, CALIFORNIA 91201-2497
06725	AIR INDUSTRIES CORPORATION 12570 KNOTT STREET GARDEN GROVE, CALIFORNIA 92641-3932 FORMERLY AIR INDUSTRIES OF CALIF IN GARDENA, CALIF.
06950	SCREWCORP VSI AEROSPACE PRODUCTS DIV FAIRCHILD IND DIV 13001 EAST TEMPLE AVENUE PO BOX 730 CITY OF INDUSTRY, CALIFORNIA 91746-1417 FORMERLY VB0096 AND VSI CORP SCREWCORP DIV FORMERLY IN CULVER CITY, CALIFORNIA SCREW CORP SEE V.S.I. CORP SCREWCORP DIVISION
07418	JOSLYN SUNBANK CO LLC 1740 COMMERCE WAY PASO ROBLES, CALIFORNIA 93446-3620 FORMERLY SUNBANK ELECTRONICS
OPTK6	SPS TECHNOLOGIES INC AEROSPACE PRODUCTS DIV 5195 W 4700 SALT LAKE CITY, UTAH 94118 SEE V56878 SPS TECHNOLOGIES INC
14283	AMPHENOL CORP AMPHENOL AEROSPACE MATRIX SCIENCE CONNECTORS 7077 CONSOLIDATED WAY STE H SAN DIEGO, CALIFORNIA 92121

76-11-09

ILLUSTRATED PARTS LIST

Page 1002

Jul 01/2006



COMPONENT MAINTENANCE MANUAL

Code	Name
21649	OTTO CONTROLS DIV OF OTTO ENGRG INC 2 EAST MAIN STREET CARPENTERSVILLE, ILLINOIS 60110
31461	ELECTRO ADAPTER INC 20640 NORDHOFF STREET CHATSWORTH, CALIFORNIS 91311-2560
56878	SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV 301 HIGHLAND AVE JENKINTOWN, PENNSYLVANIA 19046 FORMERLY STANDARD PRESSED STEEL FORMERLY IN SALT LAKE, UTAH
73197	HI-SHEAR TECHNOLOGY CORP 2600 SKYPARK DRIVE TORRANCE, CALIFORNIA 90509
97928	Replaced: [V97928] SEE V17446 HUCK INTL by Code: Name and Address below 17446: HUCK INTL INC AEROSPACE FASTENER DIV 900 WATSON CENTER ROAD CARSON, CALIFORNIA 90745-4201 FORMERLY V32134 REXNORD INC; FORMERLY V97928 HUCK INTL
9N513	VOI SHAN/CHATSWORTH DIV OF VSI CORP SUB OF FAIRCHILD IND CHATSWORTH, CALIFORNIA 91311-5013 COMPANY NO LONGER WISHES TO BE CONSIDERED FOR FED CONTRCTG

76-11-09

ILLUSTRATED PARTS LIST

Page 1003

Jul 01/2006



COMPONENT MAINTENANCE MANUAL

REFERENCE DESIGNATOR INDEX

REFERENCE DESIGNATOR	PART NUMBER	FIG-ITEM
D11286P	BACC63CB14-15PN	1-170
D11288P	BACC63CB14-15P6	1-175
D11290P	BACC63CB14-15P7	2-185
D11292P	BACC63CB14-15P8	2-190
S1024-S1026	P6-330012	1-145
S1024-S1026	P6-330020	1-145A
S1024-S1026	P6-330020	1-145B
S1027-S1029	P6-330012	2-55
S1027-S1029	P6-330020	2-55A
S1027-S1029	P6-330020	2-55B
S595	P6-330012	1-145
S595	P6-330020	1-145A
S595	P6-330020	1-145B
S596	P6-330012	2-55
S596	P6-330020	2-55A
S596	P6-330020	2-55B
S88	P6-330012	1-55
S88	P6-330020	1-55A
S88	P6-330020	1-55B
S89	P6-330012	1-55
S89	P6-330020	1-55A
S89	P6-330020	1-55B
S90	P6-330012	2-145
S90	P6-330020	2-145A
S90	P6-330020	2-145B
S91	P6-330012	2-145
S91	P6-330020	2-145A
S91	P6-330020	2-145B

76-11-09

ILLUSTRATED PARTS LIST

Page 1004

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
253U5728-1		1	60	3
		1	150	3
		2	60	3
		2	150	3
254A1290-1		1	1A	RF
254A1290-2		1	1B	RF
		2	1	RF
254A1290-4		1	1C	RF
		2	1A	RF
254A1290-5		1	1D	RF
254A1290-6		1	1E	RF
		2	1B	RF
254A1291-1		1	25	1
254A1291-10		1	115A	1
254A1291-11		1	40A	1
254A1291-12		1	130A	1
254A1291-13		2	25B	1
254A1291-14		2	115B	1
254A1291-15		2	40A	1
254A1291-16		2	130A	1
254A1291-2		1	115	1
254A1291-3		1	40	1
254A1291-4		1	130	1
254A1291-5		2	25	1
		2	25A	1
254A1291-6		2	115	1
		2	115A	1
254A1291-7		2	40	1
254A1291-8		2	130	1
254A1291-9		1	25A	1
254A1292-1		1	75	1
254A1292-2		2	75	1
254A1293-1		1	95	1
		2	95	1

76-11-09

ILLUSTRATED PARTS LIST

Page 1005

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
254A1294-1		1	90	1
254A1294-2		2	90	1
254A1297-1		1	105	1
254A1297-2		2	105	1
254A1298-1		1	65	3
		1	155	3
		2	65	3
		2	155	3
254A1299-1		1	100	1
254A1299-2		2	100	1
254W6014-3		1	35	3
		1	125	3
		2	35	3
		2	125	3
6000-124-1014		2	180A	2
620AB028NF14L		1	165	2
		2	180B	2
900-555L14-34		2	180A	2
BAC27DEL1193		1	185	1
BAC27DEL1194		1	190	1
BAC27DEL1195		2	200	1
BAC27DEL1196		2	205	1
BAC27DEL1197		1	180	1
BAC27DEL1198		2	195	1
BAC27DEL1199		1	195	1
BAC27DEL1200		2	210	1
BACB10FU10RG		1	110	2
		2	110	2
BACB30VT5HK9		1	80	2
		2	80	2
BACB30VT6K22		1	5	2
		2	5	2
BACC10DK4		2	170	3
BACC10HG14A		2	180A	2
BACC10KF14		1	165	2

76-11-09

ILLUSTRATED PARTS LIST

Page 1006

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		2	180B	2
BACC30BS5S		1	85	2
		2	85	2
BACC63CB14-15P6		1	175	1
BACC63CB14-15P7		2	185	1
BACC63CB14-15P8		2	190	1
BACC63CB14-15PN		1	170	1
G899414		2	180A	2
G8994M14		2	180A	2
HST1094DU5		1	85	2
		2	85	2
HST10AG6-22		1	5	2
		1	5	2
		1	5	2
		1	5	2
		2	5	2
		2	5	2
		2	5	2
		2	5	2
MS21042L3		1	20A	3
		2	20	3
MS21209C0810P		1	30	4
		1	120	4
		2	30	4
		2	120	4
MS35489-142		1	70	2
		2	175	2
MS35489-144		1	160A	2
		2	70	2
NAS1149DN816J		1	50	4
		1	140	4
		2	50	4
		2	140	4
		2	165	3
NAS620A10L		1	15	6

76-11-09

ILLUSTRATED PARTS LIST

Page 1007

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		2	15	6
NAS623-2-2		2	160	3
NAS623-2-4		1	45	4
		2	135	4
NAS623-2-9		1	135	4
		2	45	4
NAS623-3-3		1	10	1
		2	10A	1
P6-330012		1	55	2
		1	145	4
		2	55	4
		2	145	2
P6-330020		1	55A	2
		1	55B	2
		1	145A	4
		1	145B	4
		2	55A	4
		2	55B	4
		2	145A	2
		2	145B	2
S2252-14-8		2	180A	2
S3821-14-65		1	165	2
		2	180B	2
VL310AG5-9		1	80	2
		1	80	2
		1	80	2
		2	80	2
		2	80	2
		2	80	2

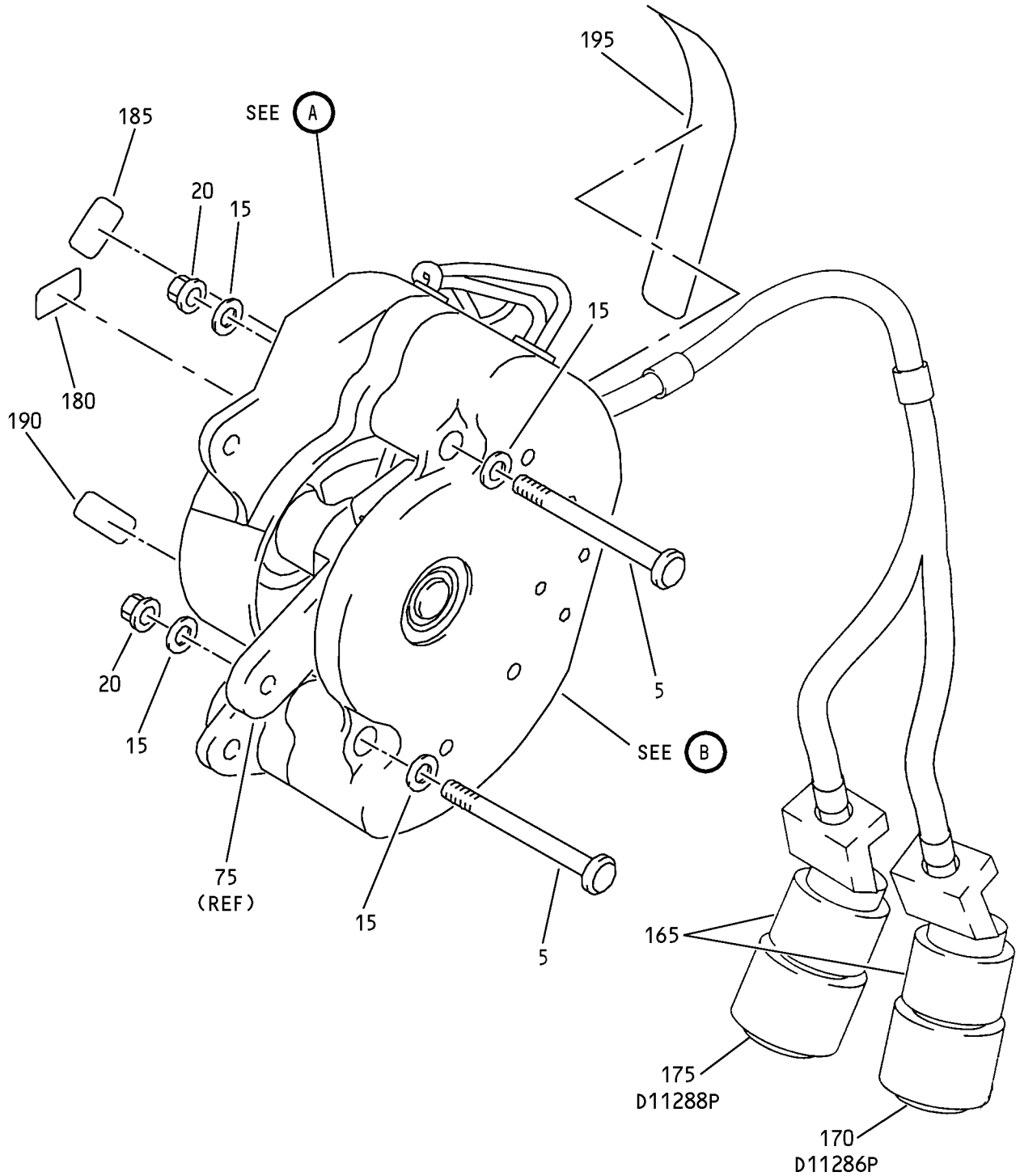
76-11-09

ILLUSTRATED PARTS LIST

Page 1008

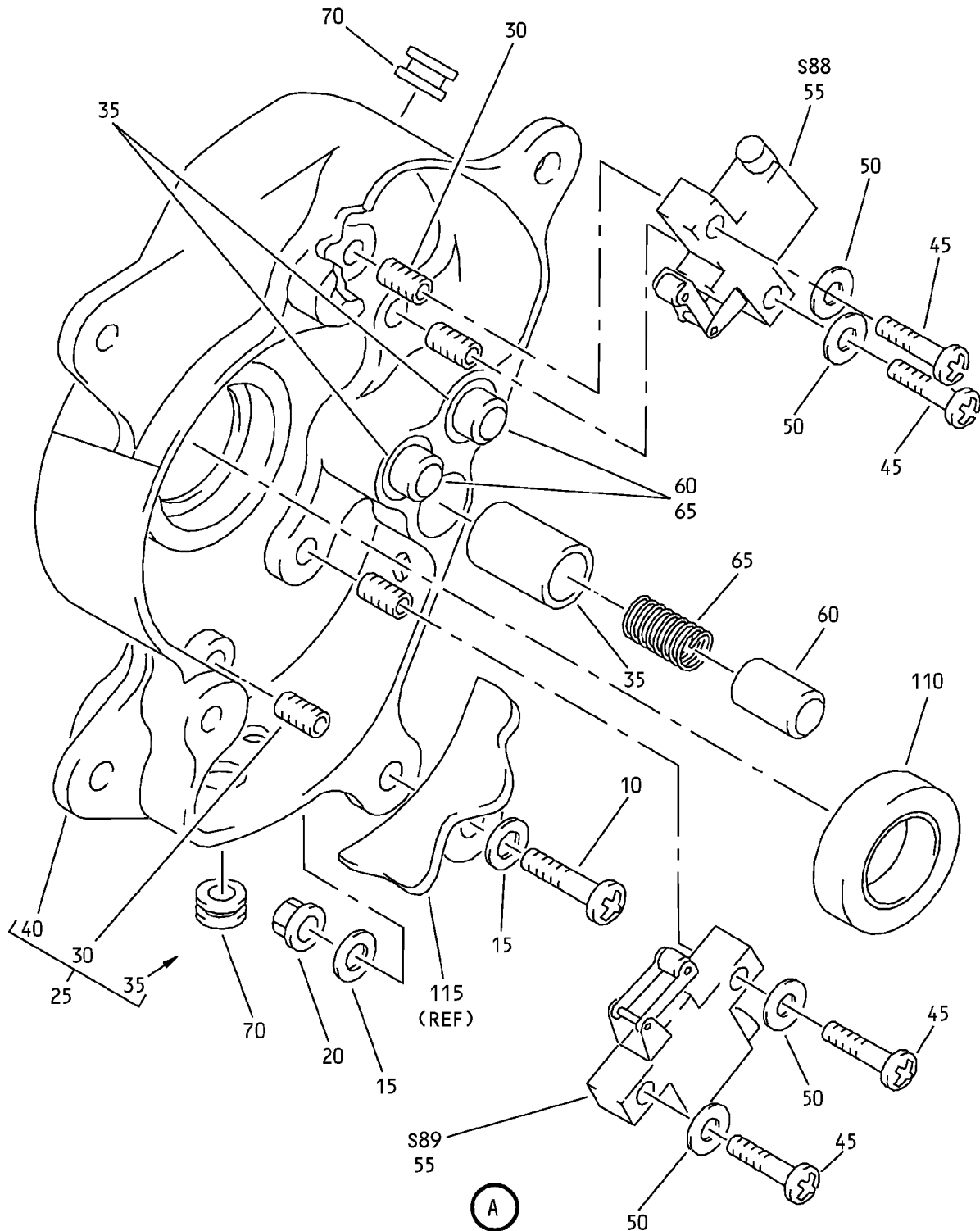
Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-1 Engine Start Brake Assembly
IPL Figure 1 (Sheet 1 of 4)

COMPONENT MAINTENANCE MANUAL



254A1290-1 Engine Start Brake Assembly
IPL Figure 1 (Sheet 2 of 4)

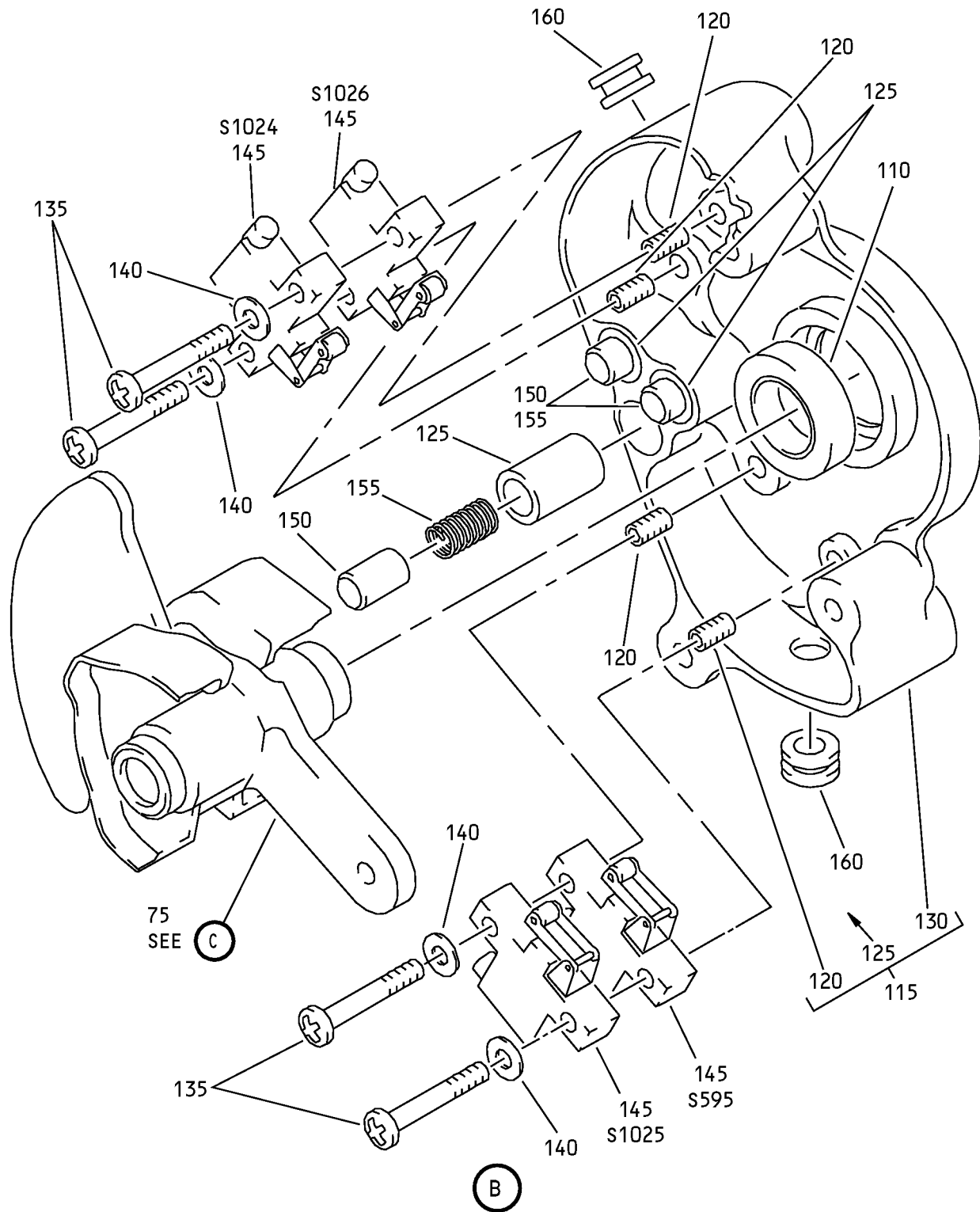
76-11-09

ILLUSTRATED PARTS LIST

Page 1010

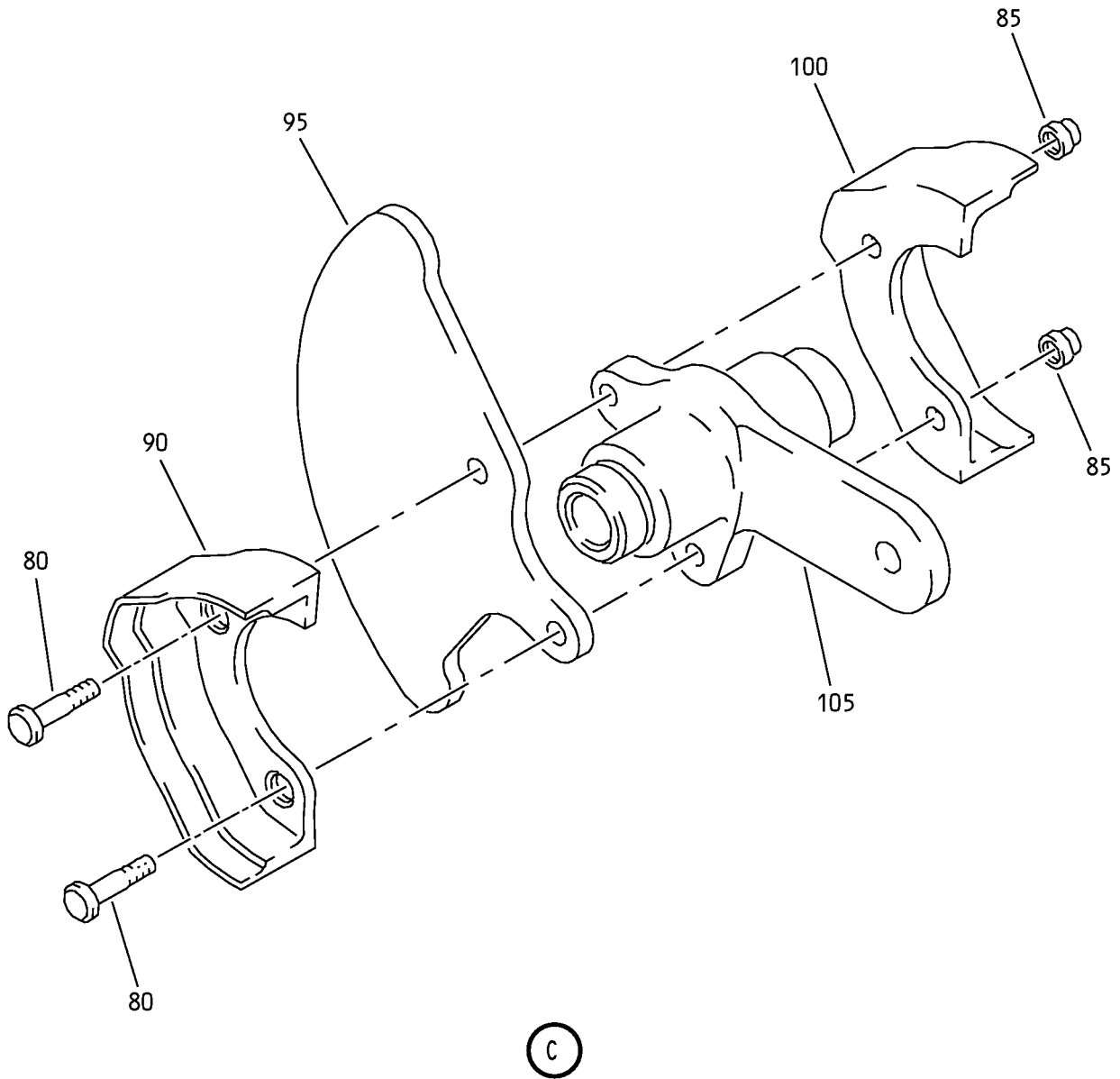
Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-1 Engine Start Brake Assembly
IPL Figure 1 (Sheet 3 of 4)

COMPONENT MAINTENANCE MANUAL



(C)

254A1290-1 Engine Start Brake Assembly
IPL Figure 1 (Sheet 4 of 4)

76-11-09
ILLUSTRATED PARTS LIST
Page 1012
Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
-1A	254A1290-1									A	RF
-1B	254A1290-2									B	RF
-1C	254A1290-4									C	RF
-1D	254A1290-5									D	RF
-1E	254A1290-6									E	RF
5	HST10AG6-22									A, D	2
10	NAS623-3-3									A, D	1
10A	NAS623-3-3										
15	NAS620A10L									A, D	6
20	MS212042L3										
20A	MS21042L3									A, D	3
25	254A1291-1									A, D	1
-25A	254A1291-9									A, D	1
30	MS21209C0810P									A, D	4
35	254W6014-3									A, D	3
40	254A1291-3									A, D	1
-40A	254A1291-11									A, D	1
45	NAS623-2-4									A, D	4
50	NAS1149DN816J									A, D	4
55	P6-330012									A	2

-Item not Illustrated

76-11-09

ILLUSTRATED PARTS LIST

Page 1013

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE	USAGE CODE	UNITS PER ASSY
1-					
-55A	P6-330020		. SWITCH (V21649) (S88, S89) (OPT ITEM 55)	A	2
-55B	P6-330020		. SWITCH (V21649) (S88, S89)	D	2
60	253U5728-1		. DISC-FRICTION	A, D	3
65	254A1298-1		. SPRING	A, D	3
70	MS35489-142		. GROMMET	A, D	2
75	254A1292-1		. ROTOR ASSY	A, D	1
80	VL310AG5-9		. . BOLT (V97928) (SPEC BACB30VT5HK9) (OPT VL310AG5-9 (V9N513)) (OPT VL310AG5-9 (V06950))	A, D	2
85	HST1094DU5		. . COLLAR (V73197) (SPEC BACC30BS5S)	A, D	2
90	254A1294-1		. . CAM	A, D	1
95	254A1293-1		. . ROTOR	A, D	1
100	254A1299-1		. . CAM	A, D	1
105	254A1297-1		. . HUB	A, D	1
110	BACB10FU10RG		. BEARING	A, D	2
115	254A1291-2		. HOUSING ASSY (OPT ITEM 115A)	A, D	1
-115A	254A1291-10		. HOUSING ASSY (OPT ITEM 115)	A, D	1
120	MS21209C0810P		. . INSERT	A, D	4
125	254W6014-3		. . BUSHING	A, D	3
130	254A1291-4		. . HOUSING (USED ON ITEM 115)	A, D	1
-130A	254A1291-12		. . HOUSING (USED ON ITEM 115A)	A, D	1
135	NAS623-2-9		. SCREW	A, D	4
140	NAS1149DN816J		. WASHER	A, D	4

-Item not Illustrated

76-11-09

ILLUSTRATED PARTS LIST

Page 1014

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE	USAGE CODE	UNITS PER ASSY
1- 145	P6-330012		. SWITCH (V21649) (S595, S1024-S1026) (OPT ITEM 145A)	A	4
-145A	P6-330020		. SWITCH (V21649) (S595, S1024-S1026) (OPT ITEM 145)	A	4
-145B	P6-330020		. SWITCH (V21649) (S595, S1024-S1026)	D	4
150	253U5728-1		. DISC-FRICTION	A, D	3
155	254A1298-1		. SPRING	A, D	3
160	MS25489-144		DELETED		
160A	MS35489-144		. GROMMET	A, D	2
165	S3821-14-65		. CLAMP (V07418) (SPEC BACC10KF14) (OPT 620AB028NF14L (V06324))	A, D	2
165A	BACC10KF14		DELETED		
170	BACC63CB14-15PN		. CONNECTOR (D11286P)	A, D	1
175	BACC63CB14-15P6		. CONNECTOR (D11288P)	A, D	1
180	BAC27DEL1197		. DECAL-VINYL, M1824	A, D	1
185	BAC27DEL1193		. DECAL-VINYL, S88	A, D	1
190	BAC27DEL1194		. DECAL-VINYL, S89	A, D	1
195	BAC27DEL1199		. DECAL-VINYL	A, D	1

-Item not Illustrated

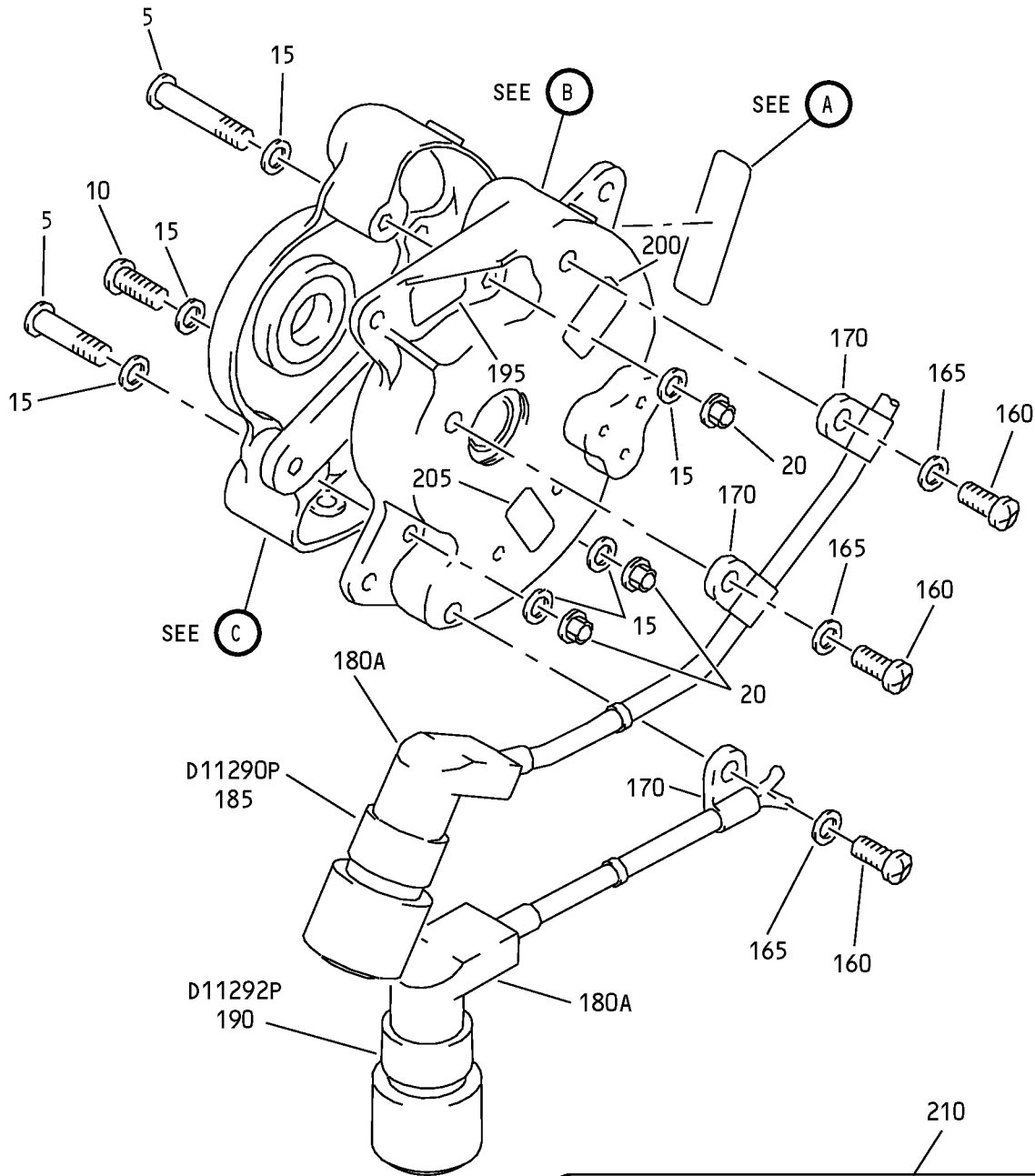
76-11-09

ILLUSTRATED PARTS LIST

Page 1015

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-4 SHOWN

S1028	S1027
S596	S1029

A

254A1290-2,-4 Engine Start Brake Assembly
IPL Figure 2 (Sheet 1 of 4)

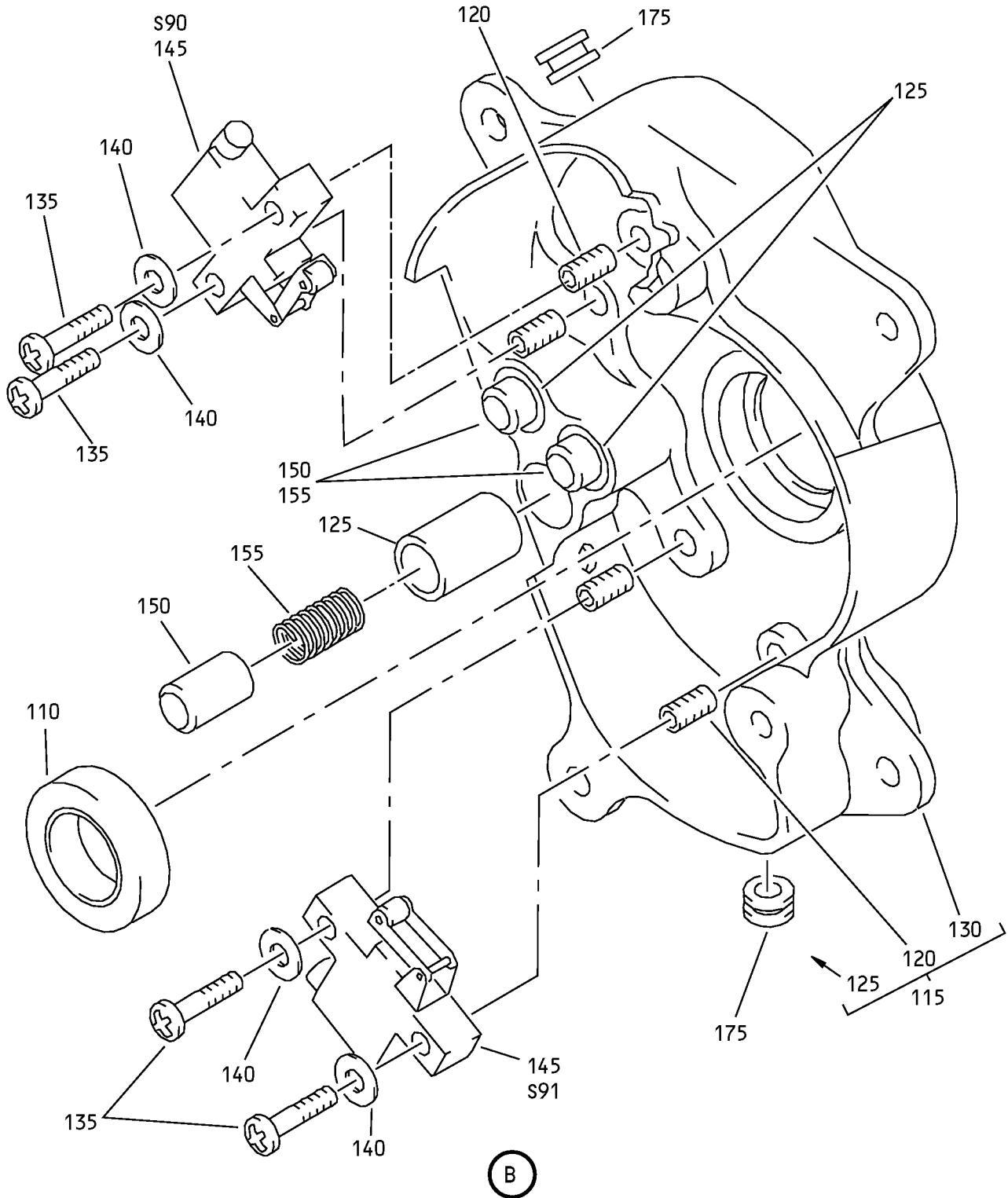
76-11-09

ILLUSTRATED PARTS LIST

Page 1016

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-2,-4 Engine Start Brake Assembly
IPL Figure 2 (Sheet 2 of 4)

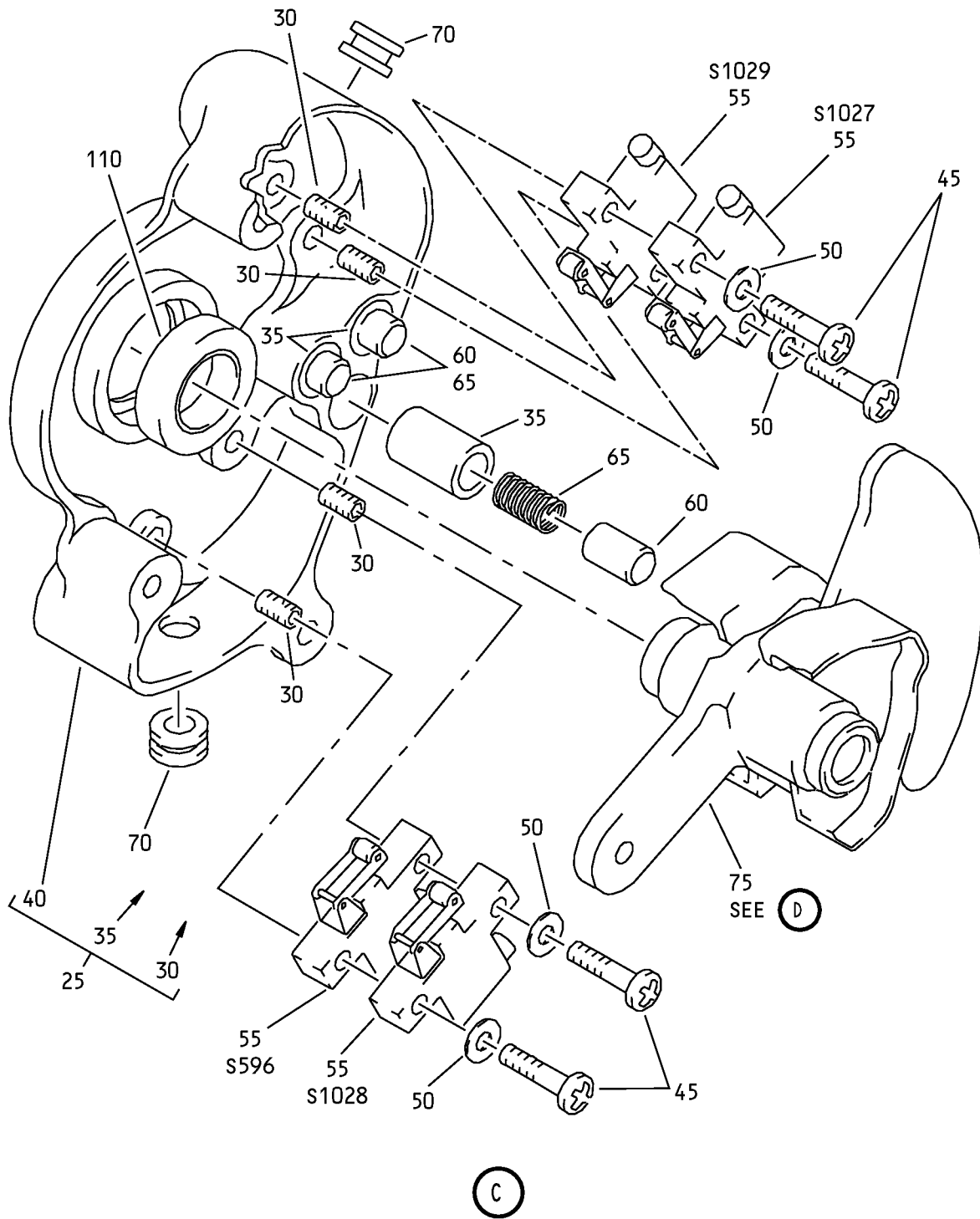
76-11-09

ILLUSTRATED PARTS LIST

Page 1017

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-2,-4 Engine Start Brake Assembly
IPL Figure 2 (Sheet 3 of 4)

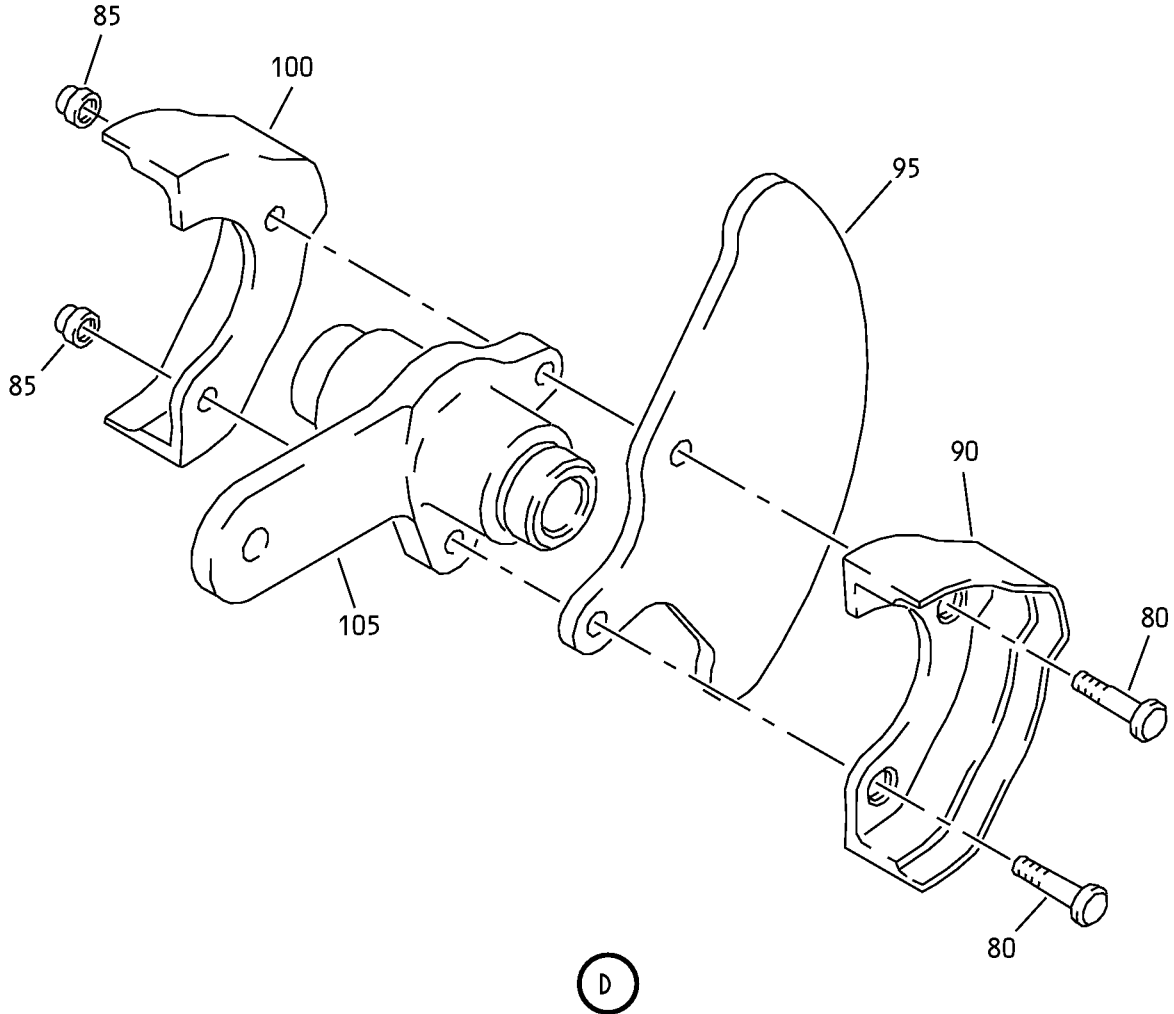
76-11-09

ILLUSTRATED PARTS LIST

Page 1018

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



254A1290-2,-4 Engine Start Brake Assembly
IPL Figure 2 (Sheet 4 of 4)

76-11-09

ILLUSTRATED PARTS LIST

Page 1019

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2-											
-1	254A1290-2									B	RF
-1A	254A1290-4									C	RF
-1B	254A1290-6									E	RF
5	HST10AG6-22									B, C, E	2
10	NAS623-3-4										
10A	NAS623-3-3									B, C, E	1
15	NAS620A10L									B, C, E	6
20	MS21042L3									B, C, E	3
25	254A1291-5									B	1
-25A	254A1291-5									C, E	1
-25B	254A1291-13									C, E	1
30	MS21209C0810P									B, C, E	4
35	254W6014-3									B, C, E	3
40	254A1291-7									B, C, E	1
-40A	254A1291-15									C, E	1
45	NAS623-2-9									B, C, E	4
50	NAS1149DN816J									B, C, E	4
55	P6-330012									B, C	4
-55A	P6-330020									B, C	4

-Item not Illustrated

76-11-09

ILLUSTRATED PARTS LIST

Page 1020

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2- -55B	P6-330020		.	SWITCH (V21649) (S596, S1027-S1029)						E	4
60	253U5728-1		.	DISC-FRICTION						B, C, E	3
65	254A1298-1		.	SPRING						B, C, E	3
70	MS35489-144		.	GROMMET						B, C, E	2
75	254A1292-2		.	ROTOR ASSY						B, C, E	1
80	VL310AG5-9		.	BOLT (V97928) (SPEC BACB30VT5HK9) (OPT VL310AG5-9 (V9N513)) (OPT VL310AG5-9 (V06950))						B, C, E	2
85	HST1094DU5		.	COLLAR (V73197) (SPEC BACC30BS5S)						B, C, E	2
90	254A1294-2		.	CAM						B, C, E	1
95	254A1293-1		.	ROTOR						B, C, E	1
100	254A1299-2		.	CAM						B, C, E	1
105	254A1297-2		.	HUB						B, C, E	1
110	BACB10FU10RG		.	BEARING						B, C, E	2
115	254A1291-6		.	HOUSING ASSY						B	1
-115A	254A1291-6		.	HOUSING ASSY (OPT ITEM 115B)						C, E	1
-115B	254A1291-14		.	HOUSING ASSY (OPT ITEM 115A)						C, E	1
120	MS21209C0810P		.	INSERT						B, C, E	4
125	254W6014-3		.	BUSHING						B, C, E	3
130	254A1291-8		.	HOUSING (USED ON ITEMS 115,115A)						B, C, E	1
-130A	254A1291-16		.	HOUSING (USED ON ITEM 115B)						C, E	1
135	NAS623-2-4		.	SCREW						B, C, E	4
140	NAS1149DN816J		.	WASHER						B, C, E	4

-Item not Illustrated

76-11-09

ILLUSTRATED PARTS LIST

Page 1021

Mar 01/2006



COMPONENT MAINTENANCE MANUAL

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY	
			1	2	3	4	5	6	7			
2- 145	P6-330012		.								B, C	2
-145A	P6-330020		.								B, C	2
-145B	P6-330020		.								E	2
150	253U5728-1		.								B, C, E	3
155	254A1298-1		.								B, C, E	3
160	NAS623-2-2		.								B, C, E	3
165	NAS1149DN816J		.								B, C, E	3
170	BACC10DK4		.								B, C, E	3
175	MS35489-142		.								B, C, E	2
180	S3819-14-65											
180A	G899414		.								C, E	2
-180B	S3821-14-65		.								B	2
185	BACC63CB14-15P7		.								B, C, E	1
190	BACC63CB14-15P8		.								B, C, E	1
195	BAC27DEL1198		.								B, C, E	1
200	BAC27DEL1195		.								B, C, E	1
205	BAC27DEL1196		.								B, C, E	1
210	BAC27DEL1200		.								B, C, E	1

-Item not Illustrated

76-11-09

ILLUSTRATED PARTS LIST

Page 1022

Mar 01/2006