AIR - HPT/LPT ACC VALVE ACTUATOR - INTRODUCTION OF A NEW ROD END TO HPT/LPT ACC VALVE ACTUATOR - PARKER HANNIFIN SB 5860017-75-91, 5910479-75-92 - CATEGORY CODE 6 - MOD.ENG-75-0046

See Vendor Bulletin 5860017-75-91
See Vendor Bulletin 5910479-75-92

1. Planning Information

A. Effectivity

(1) Aircraft:
(a) Airbus A320
(b) Airbus A321
(c) McDonnell Douglas MD-90

(2) Engine:
(a) V2500-A1 Engines prior to Serial Number V0360
(b) V2527-A5 Engines prior to Serial Number V10123
(c) V2530-A5 Engines prior to Serial Number V10123
(d) V2525-D5 Engines prior to Serial Number V20020
(b) V2528-D5 Engines prior to Serial Number V20020

B. Concurrent Requirements

None

C. Reason

(1) Condition

Some operators experienced excessively worn rod end of HPT/LPT ACC Valve Actuator.

(2) Background

A new rod end featuring a Teflon liner has been introduced to reduce wear of rod end bearing.

(3) Objective

To improve durability of rod end.

(4) Substantiation

The changes introduced by this Bulletin were analytically substantiated.

(5) Effect of Bulletin on the following shop functions:

Removal/Installation	Not Affected
Disassembly/Assembly	Not Affected
Cleaning	Not Affected
Inspection/Check	Not Affected
Repair	Not Affected
Testing	Not Affected

(6) Supplemental Information

None

D. Description

This service Bulletin introduces the following changes:

(1) BRES4-2580 Rod End is superseded by 5943051-101 Rod End. 5943051-101 Rod End has a Teflon liner to the bearing.

(2) Part numbers of HPT/LPT ACC Valve Actuator are changed by incorporation of 5943051-101 Rod End. For the details of part number change, refer to Section 3 Material Information of this Service Bulletin.

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 parts and to all affected spare parts.

F. Manpower

Estimated Manhours to incorporate the full intent of this Service Bulletin:

Venue	Estimated Manhours

For V2500-A1, V2527-A5 and V2530-A5 Engines:

(1) In service ..... Not Applicable

(2) At overhaul (The parts affected by this Service Bulletin accessible at overhaul.)

(a) To accomplish rework and re-identification of HPT/LPT ACC Valve actuator ..... 2 hours 30 minutes

(b) Increase in time required for assembly of new HPT/LPT ACC Valve Actuator ..... Not Affected

Total: 2 hours 30 minutes

For V2525-D5 and V2528-D5 Engines:

(1) In service ..... Not Applicable

(2) At overhaul (The parts affected by this Service Bulletin accessible at overhaul.)

(a) To accomplish rework and re-identification of HPT/LPT ACC Valve actuator ..... 2 hours 30 minutes

(b) Increase in time required for assembly of new HPT/LPT ACC Valve Actuator ..... Not Affected

Total: 2 hours 30 minutes

G. Material - Price and Availability

(1) Modification Kit not required.

(2) See Reference (5), Parker Hannifin SB No. 5860017-75-91, and Reference (6), Parker Hannifin SB No. 5910479-75-92, for price and availability of future spares.

H. Tooling - Price and Availability

Refer to Reference (5), Parker Hannifin SB No. 5860017-75-91, and Reference (6), Parker Hannifin SB No. 5910479-75-92, for Tooling.

I. Weight and Balance

(1)	Weight change	None
(2)	Moment arm	No effect
(3)	Datum	Engine front mount Centerline (Power Plant Section (PPS)100)

J. Electrical Load Data

This service Bulletin has no effect on the aircraft electrical load.

K. References

(1) Internal Reference No.

93VJ047

(2) Other References

IAE V2500 Engine Manual (E-V2500-1IA); 72-00-40 Removal and 72-00-40 Installation.

IAE V2500 Engine Manual (E-V2500-3IA); 72-00-40 Removal and 72-00-40 Installation.

IAE Overhaul Procedures and Consumable Index.

IAE Standard Practices/Processes Manual; 70-09-00 Marking of Parts.

Parker Hannifin Service Bulletin No. 5860017-75-91.

Parker Hannifin service Bulletin No. 5910479-75-92.

L. Other Publications Affected

(1) V2500-A1 Engine Illustrated Parts Catalog, 75-24-52, to add new parts.

(2) V2500-A5 Engine Illustrated Parts Catalog, 75-24-52, to add new parts.

(3) V2500-D5 Engine Illustrated Parts Catalog, 75-24-52, to add new parts.

2. Accomplishment Instruction

A. Rework Instructions

(1) Rework and reidentify 5860017-116, -118, -119, -124, and -129 HPT/LPT ACC Valve Actuator per Parker Hannifin Service Bulletin 5860017-75-91.

(2) Rework and reidentify 5910479-102 HPT/LPT ACC Valve Actuator per Parker Hannifin Service Bulletin 5910479-75-92.

B. Assembly Instructions

For V2500-A1 Engine:

(1) Install 5860017-130, -131, -132 or -134 HPT/LPT ACC Valve Actuator to the engine by approved procedure in Reference (1), 72-00-40 Installation-09, Config-1.

For V2527-A5 and V2530-A5 Engines:

(2) Install 5860017-134 HPT/LPT ACC Valve Actuator to the engine by approved procedure in Reference (1), 72-00-40 Installation-09, Config-2.

For V2525-D5 and V2528-D5 Engines:

(3) Install 5910479-103 HPT/LPT ACC Valve Actuator to the engine by approved procedure in Reference (2), 72-00-40 Installation-09.

C. Recording Instruction

(1) A record of accomplishment is necessary.

MODIFICATION

BASE LINE

SB75-0008
(PARKER 5860017-75-51)
REPLACEMENT OF LVDT
COVER AND BODY BOSS
REWORK

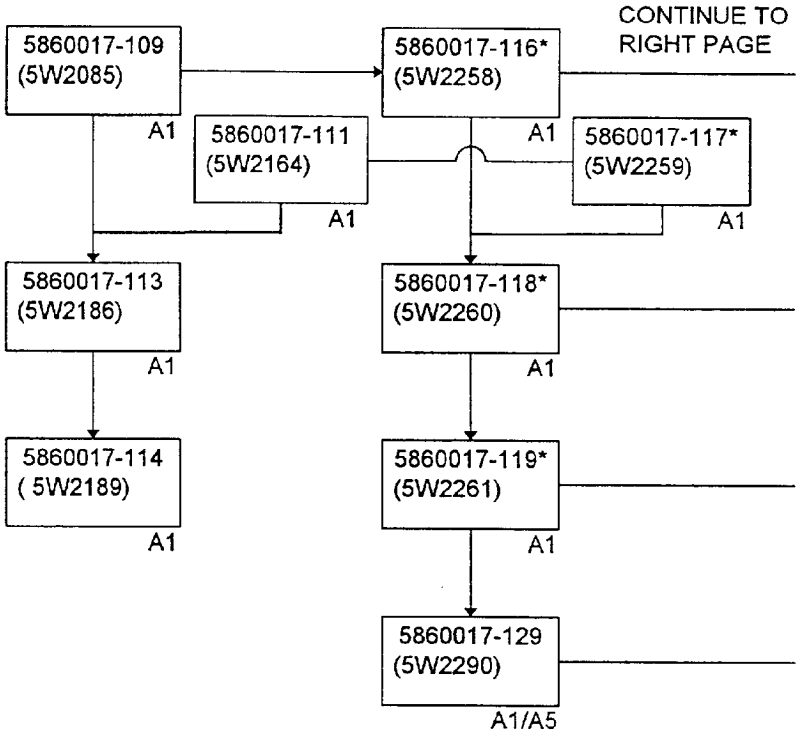
SB70-0113
(PARKER 5860017-75-57)
REINFORCED LVDT POSITION
INDICATOR SLOT END

SB70-0281
(PARKER 5860017-75-86)
ADDITIONAL CASTING BOSS
FOR SERVO VALVE
RETENTION PIN

SB75-0027
(PARKER 5860017-75-66)
INSTALLATION OF PIN RETURN
ON SERVO VALVE

SB75-0046
(PARKER 5860017-75-91
AND 5910479-75-92)
REPLACEMENT OF ROD END

PART NUMBER CHANGES



PART NUMBERS WITH " * " MARK
SHOW THE PARTS INCORPORATED THIS MODIFICATION

PART NUMBERS WITH " ** " MARK
SHOW THE PARTS INCORPORATED THIS MODIFICATION

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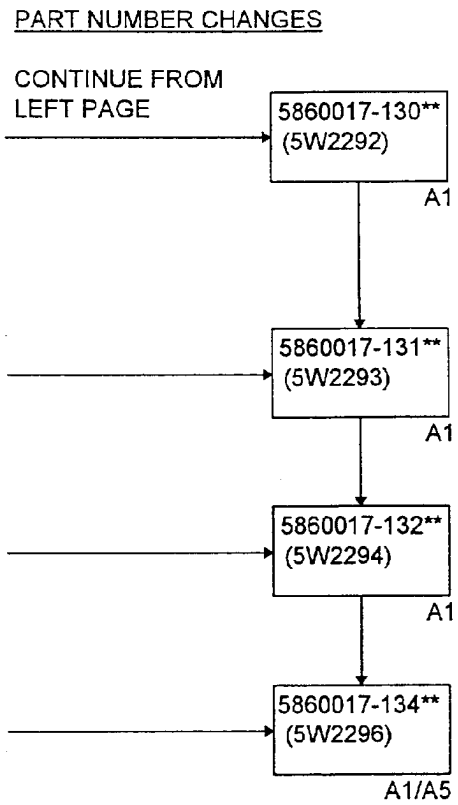
Family Tree - HPT/LPT ACC Valve Actuator Ref. Catalog Sequence No. 75-24-52 Fig. 01,
Item 100 (Part Number 5860017)
Fig.1 (Sheet 1 of 2)



NOTE: MODEL CODE SHOWN UNDER THE PART NUMBER BOXES INDICATES AFFECTED ENGINE MODELS.
A1 — FOR V2500-A1
A5 — FOR V2527-A5 AND V2530-A5
D5 — FOR V2525-D5 AND V2527-D5

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Family Tree - HPT/LPT ACC Valve Actuator Ref. Catalog Sequence No. 75-24-52 Fig. 01, Item 100 (Part Number 5860017)
Fig.1 (Sheet 2 of 2)

MODIFICATION	PART NUMBER CHANGES
BASE LINE	5910479-102 (5W2252) D5
SB75-0046 (PARKER 5860017-75-91 AND 5910479-75-92) REPLACEMENT OF ROD END	5910479-103 (5W2297) D5

NOTE: MODEL CODE SHOWN UNDER THE PART NUMBER BOXES INDICATES AFFECTED ENGINE MODELS.
A1 — FOR V2500-A1
A5 — FOR V2527-A5 AND V2530-A5
D5 — FOR V2525-D5 AND V2527-D5

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Family Tree - HPT/LPT ACC Valve Actuator Ref. Catalog Sequence No. 75-24-52 Fig. 01, Item 100 (Part Number 5910479)
Fig.2

3. Material Information

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits associated with the Bulletin

None

B. Parts Affected by this Bulletin

NEW PART NO) (ATA NO)	QTY	EST'D UNIT PRICE ($)	KEYWORD	OLD PART NO (IPC NO)	INSTRUCTIONS DISPOSITION
For V2500-A1 Engines:					
5860017-134 (5W2296) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-129 (5W2290) (01-100)	(A)(B)(1D)
5860017-130 (5W2292) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-116 (5W2258) (01-100)	(1D)
5860017-131 (5W2293) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-118 (5W2260) (01-100)	(1D)
5860017-132 (5W2294) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-119 (5W2261) (01-100)	(1D)
5860017-133 (5W2295) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-124 (5W2279) (01-100)	(1D)
5943051-101 (75-24-52)	1		..Rod End	BRES4-2580 (01-104)	(A)(B)(S1)
For V2527-A5 and V2530-A5 Engines:					
5860017-134 (5W2296) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-129 (5W2290) (01-100)	(A)(B)(1D)
5860017-133 (5W2295) (75-24-52)	1		.Actuator, Valve HPT/LPT ACC	5860017-124 (5W2279) (01-100)	(1D)

5943051-101 (75-24-52)	1	..Rod End	BRES4-2580 (01-104)	(A)(B)(S1)

For V2525-D5 and V2528-D5 Engines:

5910479-103 (5W2297) (75-24-52)	1	.Actuator, Valve HPT/LPT ACC	5910479-102 (5W2252) (01-100)	(A)(B)(1D)
5943051-101 (75-24-52)	1	..Rod End	BRES4-2580 (01-104)	(A)(B)(S1)

C. Instruction/Disposition Code Statements

(A) New part is currently available for sale.
(B) Old parts will no longer be available for sale.
(1D) Old part can be modified and re-identified.
(S1) New part may be used in place of old part, but not vice-versa.

D. Expendable Parts required to incorporate this Bulletin

MS24665-151	2	.Pin, Cotter

NOTE: Consult following vendor for price information.

Parker Hannifin Corporation
Customer Support Commercial Division
16666 Von Karman Avenue
Irvine, CA 92714 USA
TEL: 714-660-8312
FAX: 714-660-8390

Customer Support Commercial

SERVICE BULLETIN

AIR	V2500 ENGINE - HPT/LPT ACC ACTUATOR	INCORPORATION OF NEW ROD END, P/N 5943051-101

1. Planning Information

A. Effectivity

This service bulletin is applicable to the HPT/LPT ACC Actuator (hereinafter referred to as the Actuator), part number (P/N) 5860017-116, -118, -119, -124, and -129, installed on the IAE V2500-A1/A5 engine.

B. Reason

This service bulletin is issued to introduce a new rod end, P/N 5943051-101. The rod end has been improved by the addition of a teflon liner to reduce excessive wear and avoid premature replacement as reported by some operators.

C. Description

(1) This service bulletin provides the operators the following information:

(a) Replacement instructions for the rod end, P/N 5943051-101.

(b) Reidentification procedures.

(2) Instructions to return the Actuator to Parker Hannifin Corporation for implementation of this service bulletin.

D. Compliance - Code 6

This service bulletin is classified as an Operation Improvement for the Actuator as defined by the ATA Implementation Guideline Manual (IGM) April 1976. Parker Hannifin Corporation recommends that this service bulletin be accomplished when the Actuator is disassembled sufficiently to afford access to the affected part.

E. Approval

This service bulletin has been reviewed by the Federal Aviation Administration (FAA), and the modifications herein comply with the applicable Federal Aviation Regulations (FAR) and are FAA approved for installation in the IAE V2500 engines.

F. Manpower

(1) Manpower estimates listed in Table 1 are based on work performed after the Actuator has been removed from the engine and do not include the time required to reinstall the Actuator on the engine.

(2) The time required is based on one individual performing all tasks listed in Table 1.

(3) Estimates shown are for each Actuator.

Man-Hours
Table 1

TASK	MAN-HOURS
1. Disassemble Actuator to remove rod end, P/N BRES-4-2580.	0.4
2. Assemble Actuator with new rod end, P/N 5943051-101.	0.6
3 Perform required tests in accordance with the CMM, ATA 75-24-52.	1.0
4. Reidentification of Actuator.	0.5
TOTAL	2.5

G. Weight and Balance

Not applicable.

H. Electrical Load Data

Not affected.

I. Software Accomplishment Summary

Not applicable.

J. References

Parker Hannifin Corporation Component Maintenance Manual (CMM), ATA 75-24-52.

IAE Service Bulletin V2500-ENG-75-0046

K. Other Publications Affected

This service bulletin will be incorporated into the Parker Hannifin Corporation CMM, ATA 75-24-52, at the next scheduled revision of the manual.

L. Family Tree

Table 2 shows the revised configuration numbers and IAE part numbers for Actuators upgraded with the improved rod end.

Family Tree
Table 2

OLD CONFIGURATION NO.	IAE PART NO.	NEW CONFIGURATION NO.	IAE PART NO.
5860017-116	5W2258	5860017-130	5W2292
5860017-118	5W2260	5860017-131	5W2293
5860017-119	5W2261	5860017-132	5W2294
5860017-124	5W2279	5860017-133	5W2295
5860017-129	5W2290	5860017-134	5W2296

2. Material Information

A. Material - Cost and Availability

(1) Operators who want to implement this service bulletin should order rod end, 5943051-101, and nameplate, 5943062-101 (for the -116 configuration) or 5903194-101 (for the -118, -119, -124, and -129 configurations). The rod end, 5943051-101, is available at a cost of $395.00 each, and the nameplate, 5943062-101 or 5903194-101, at a cost of $15.00 each. Parts will be delivered within 30 days after receipt of order. Operators may order parts from:

PARKER HANNIFIN CORPORATION	PHONE:	(714) 833-3000
Customer Support Commercial	FAX:	(714) 660-8390
16666 Von Karman Avenue	TELEX:	678304
Irvine, California 92714	SITA:	JNPPHCR
USA		

(2) Operators who want this service bulletin accomplished by Parker Hannifin Corporation may forward the Actuators to the address referenced in paragraph 2.A.(1). The cost for accomplishment of this service bulletin is $635.00. Turnaround time is 30 days after receipt of the Actuator.

(3) The change provisions referenced in this service bulletin will be valid for 24 months from the date of issuance. After that date, please refer to the Parker Airline Spare Parts Catalog or request a quotation from Parker Hannifin Corporation, Customer Support Commercial.

B. Material Necessary for Each Component

Table 3 shows the superseding part numbers and the disposition of hardware being replaced.

Material Information
Table 3

New P/N			Old P/N			Special Instructions/ Disposition
Dash Number	Nameplate P/N	Rod End P/N	Dash Number	Nameplate P/N	Rod End P/N	
-130	5943062-101	5943051-101	-116	N/A	BRES-4-2580	1) Add Nameplate 2) Scrap Rod End
-131	5903194-101	5943051-101	-118	Same	BRES-4-2580	Scrap
-132	5903194-101	5943051-101	-119	Same	BRES-4-2580	Scrap
-133	5903194-101	5943051-101	-124	Same	BRES-4-2580	Scrap
-134	5903194-101	5943051-101	-129	Same	BRES-4-2580	Scrap

C. Tooling

A special wrench, F80-0-50965, or equivalent, is used to hold actuator shaft, 5883368-101, when removing the rod end, BRES-4-2580. An adjustment aid, F80-0-50715, is used to establish the 0.890 inch (22,61mm) dimension from the rod end to the actuator body. A torque wrench, F80-4-50026, is used to tighten the jam nut, NAS509-4C. Tool drawings are available on a no charge basis from the address listed in paragraph 2.A.(1).

3. Accomplishment Instructions

A. Disassemble the Actuator to remove the rod end (125) according to CMM 75-24-52 DISASSEMBLY section and per the following instructions.

NOTE: Item numbers in parentheses refer to IPL Figure 1, CMM 75-24-52.

(1) Remove lockwire from insulation blanket (5) and remove insulation blanket from Actuator.

(2) Remove nameplate (153) and LVDT cover (140, 140B, 140C) per paragraph 2.B., steps (1) and (2). Keep nameplate for serial number data.

(3) Cut and remove lockwire from jam nut (130).

CAUTION: HANDLE LVDT (185) PROBES WITH CARE. HOLD LVDT PROBE BRACKET WITH A 5/8-INCH (16 MM) WRENCH. DO NOT BEND OR TWIST PROBES. THE LVDT WILL NOT OPERATE CORRECTLY WITH BENT OR TWISTED PROBES.

(4) Carefully remove the LVDT nut (160) and washer (165). Push the LVDT (185) probes into the LVDT body. Tape or tiewire the LVDT shims (170, 175, 180) to the threaded LVDT stud. Reassemble the LVDT nut (160) and washer (165) to the threaded LVDT stud after the LVDT probes clear the LVDT arm (155).

CAUTION: CAREFULLY LOOSEN JAM NUT (130). EXCESSIVE TORQUE MOTION CAN BREAK THE TAB ON THE TAB WASHER (135)

CAUTION: CAREFULLY HANDLE ACTUATOR SHAFT (257, 257A). DAMAGE TO THE SURFACE FINISH OF THE ACTUATOR SHAFT WILL CAUSE EXCESSIVE LEAKAGE DURING TEST AND OPERATION.

(5) Hold the rod end with a 10-inch (250 mm) crescent wrench, or equivalent, and loosen jam nut (130). Move tab washer (135) apart from LVDT arm (155, 155A).

(6) Hold flats of actuator shaft (257, 257A) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Loosen rod end (125) with a 10-inch (250 mm) crescent wrench, or equivalent. Remove rod end.

NOTE: It may be necessary to turn the rod end (125) 1/4 turn with a 10-inch (250 mm) crescent wrench, or equivalent, to access the actuator shaft (257, 257A) with the special wrench, F80-0-50965.

(7) Remove jam nut (130) and tab washer (135) from the rod end (125).

B. Assemble the Actuator with the new rod end, P/N 5943051-101, according to CMM, ATA 75-24-52, ASSEMBLY section and per the following instructions.

(1) Install jam nut (130) onto rod end, 5943051-101. Install tab washer (135) onto rod end with the tab towards the threaded end of the rod end.

CAUTION: CLEAN THE THREADED INSERT OF ACTUATOR SHAFT ASSEMBLY (257, 257A) WITH A COTTON TIPPED SWAB AND ALCOHOL TO PREVENT THREAD DAMAGE WHEN INSTALLING THE ROD END, 5943051-101.

(2) Lubricate threads of rod end, 5943051-101, with red oil, MIL-H-5606, or equivalent, for ease of assembly. Hold flats of actuator shaft (257, 257A) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Install rod end, 5943051-101, through the LVDT arm (155, 155A) and into the actuator shaft assembly (250, 250A). Thread rod end into shaft with a 10-inch (250 mm) crescent wrench, or equivalent, until approximately seven threads of the rod end remain exposed from the jam nut (130).

CAUTION: ADJUSTMENT AID, F80-0-50715, MUST BE USED TO ESTABLISH THE 0.890 INCH (22,61 MM) DIMENSION. THIS DIMENSION IS CRITICAL TO ROD END TRAVEL.

(3) Install adjustment aid, F80-0-50715, onto actuator body assembly (360, 360A, 360B). Refer to Figure 1.

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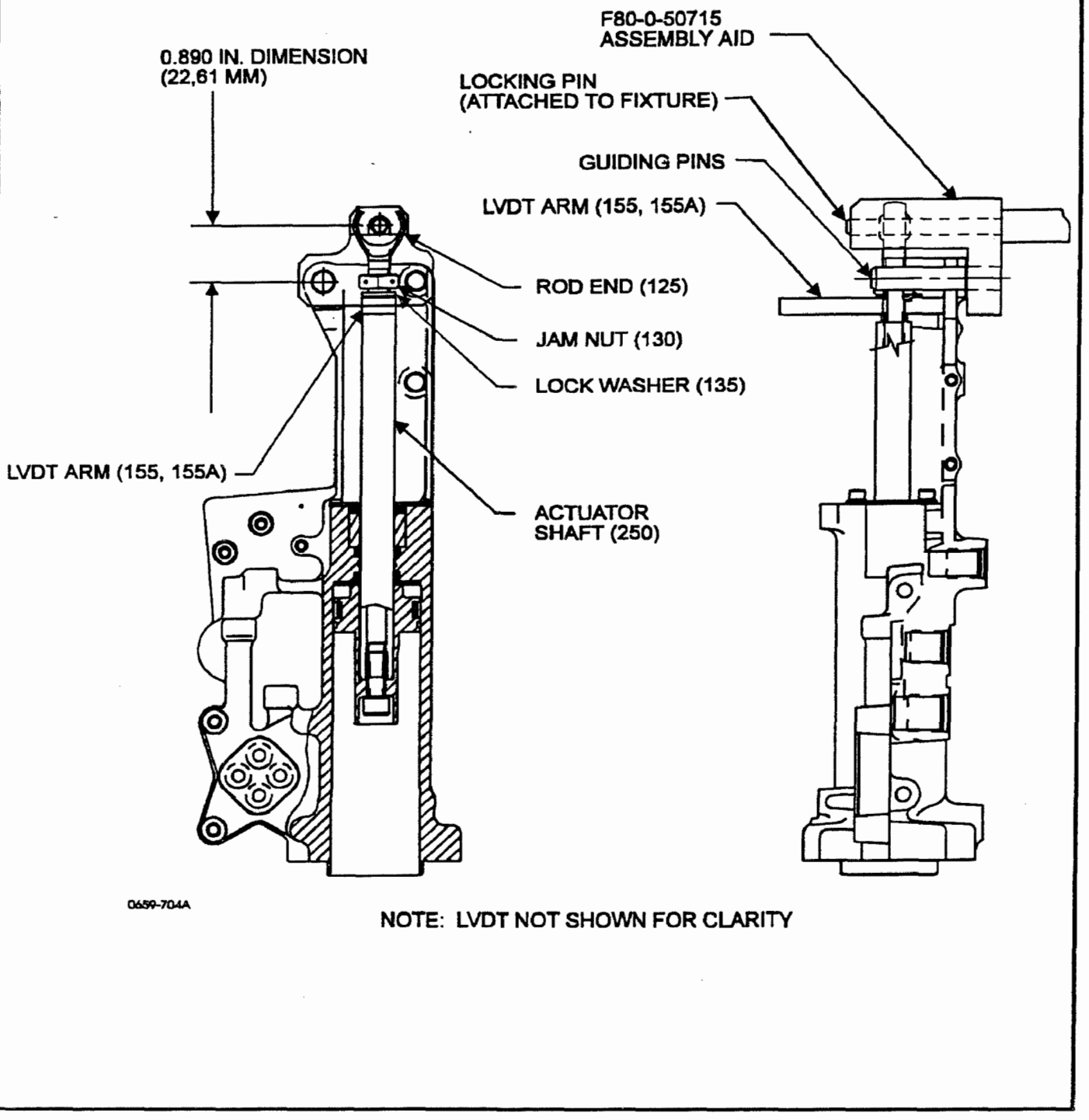

Adjustment Aid Installation
Figure 1

(4) Install locking pin into rod end, 5943051-101. This adjustment establishes the 0.890 inch (22,61 mm) dimension.

(5) Position tab washer (135) so that tab of washer aligns with slot in LVDT arm (155, 155A). Tighten jam nut (130) against tab washer. Remove adjustment aid, F80-0-50715.

(6) Hold flats of actuator shaft (257, 257A) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Use torque wrench, F80-4-50026, or equivalent, to run down and torque the jam nut (130) to 60 to 70 in-lb (6,8 to 7,9 N·m).

NOTE: Visually check to make sure that the rod end, 5943051-101, aligns with the clevis slot of actuator body assembly (360, 360A, 360B). If necessary, adjust until the rod end aligns with the clevis slot. Use torque wrench, F80-4-50026, or equivalent, to run down and torque the jam nut (130) to 60 to 70 in-lb (6,8 to 7,9 N·m) after adjustment.

(7) Remove the LVDT nut (160) and washer (165) from the threaded LVDT (185) stud. Remove the tape or tiewire that holds the shims (170, 175, 180) in place. Insert the threaded LVDT stud, with shims attached, through the LVDT arm (155). Reassemble the LVDT nut and washer to the LVDT stud. Hold the LVDT probe bracket with a 5/8-inch (16 mm) wrench to prevent the LVDT probes from twisting, and torque the nut (160) to 30 to 36 in-lb (3,4 to 4,1 N·m).

(8) Visually check to make sure that there is no interference between the LVDT arm (155) and the guide slot of the actuator body assembly (360, 360A, 360B).

C. Perform functional testing according to CMM, ATA 75-24-52, TESTING AND FAULT ISOLATION section per the following instructions.

(1) Install return fitting, F65-0-50369, and pressure fitting, F65-0-50370, into Actuator. Install Actuator onto test fixture, F65-0-50306.

(2) Perform functional testing of Actuator per CMM, ATA 75-24-52, TESTING AND FAULT ISOLATION, paragraph 9, steps A. through L.

(3) After functional testing, remove Actuator from test fixture, F65-0-50306. Apply an air source to the pressure fitting and cycle the Actuator to drain remaining fuel. Remove return fitting, F65-0-50369, and pressure fitting, F65-0-50370. Drain Actuator and install suitable plugs.

D. Complete assembly of the Actuator per the following instructions.

(1) Lockwire jam nut (130) to tab washer (130) and LVDT arm (155,155A) with MS20995N20 lockwire, per MS33540J, using a double-twist method.

(2) Install LVDT cover (140, 140B, 140C) onto dual LVDT (185) using washers (150) and screws (145, 145A, 145B). Torque screws to 10 to 11.5 in-lb (1,1 to 1,3 N·m).

E. Examine Actuator for general workmanship and visible defects.

F. Reidentification

(1) Remove nameplate (153) from cover assembly (140B, 140C) on the -118, -119, -124, and -129 configurations only. Clean the cover surface with acetone.

(2) Stamp new configuration number, revision letters, and IAE part number in the fields provided on the new nameplate, P/N 5903194-101 or 5943062-101.

(a) 5860017-116 (IAE 5W2258):

P/N 5860017-130		REV U
P/L 5861017-115		REV T
ACD NO 424JM	BLD STD	58
IAE P/N 5W2292		

(b) 5860017-118 (IAE 5W2260):

P/N 5860017-131		REV U
P/L 5891017-111		REV T
ACD NO 424JM	BLD STD	59
IAE P/N 5W2293		

(c) 5860017-119 (IAE 5W2261):

P/N 5860017-132		REV U
P/L 5891017-112		REV T
ACD NO 424JM	BLD STD	60
IAE P/N 5W2294		

(d) 5860017-124 (IAE 5W2279):

P/N 5860017-133		REV U
P/L 5891017-112		REV T
ACD NO 424JM	BLD STD	61
IAE P/N 5W2295		

(e) 5860017-129 (IAE 5W2290):

P/N 5860017-134		REV U
P/L 5891017-115		REV T
ACD NO 424JM	BLD STD	62
IAE P/N 5W2296		

(3) Position and install the nameplate on the cover assembly (140B, 140C). Install the nameplate over the stenciled nameplate on the cover assembly (140) for the -116 configuration.

G. Complete assembly of the Actuator per the following instructions.

Install insulation blanket (5) onto Actuator assembly. Pull insulation blanket tight and lace the capstans with lockwire, MS20995N20, according to MS33540J, using a double-twist method.

Customer Support Commercial

SERVICE BULLETIN

AIR	V2500 ENGINE - HPT/LPT ACC ACTUATOR	INCORPORATION OF NEW ROD END, P/N 5943051-101

1. Planning Information

A. Effectivity

This service bulletin is applicable to the HPT/LPT ACC Actuator (hereinafter referred to as the Actuator), part number (P/N) 5910479-102, installed on the IAE V2500-D5 engine.

B. Reason

This service bulletin is issued to introduce a new rod end, P/N 5943051-101. The rod end has been improved by the addition of a teflon liner to reduce excessive wear and avoid premature replacement as reported by some operators.

C. Description

(1) This service bulletin provides the operators the following information:

(a) Replacement instructions for the rod end, P/N 5943051-101.

(b) Reidentification procedures.

(2) Instructions to return the Actuator to Parker Hannifin Corporation for implementation of this service bulletin.

D. Compliance - Code 6

This service bulletin is classified as an Operation Improvement for the Actuator as defined by the ATA Implementation Guideline Manual (IGM) April 1976. Parker Hannifin Corporation recommends that this service bulletin be accomplished when the Actuator is disassembled sufficiently to afford access to the affected part.

E. Approval

This service bulletin has been reviewed by the Federal Aviation Administration (FAA), and the modifications herein comply with the applicable Federal Aviation Regulations (FAR) and are FAA approved for installation in the IAE V2500 engines.

F. Manpower

(1) Manpower estimates listed in Table 1 are based on work performed after the Actuator has been removed from the engine and do not include the time required to reinstall the Actuator on the engine.

(2) The time required is based on one individual performing all tasks listed in Table 1.

(3) Estimates shown are for each Actuator.

Man-Hours
Table 1

TASK	MAN-HOURS
1. Disassemble Actuator to remove rod end, P/N BRES-4-2580.	0.4
2. Assemble Actuator with new rod end, P/N 5943051-101.	0.6
3. Perform required tests in accordance with the CMM, ATA 75-24-72.	1.0
4. Reidentification of Actuator.	0.5
TOTAL	2.5

G. Weight and Balance

Not applicable.

H. Electrical Load Data

Not affected.

I. Software Accomplishment Summary

Not applicable.

J. References

Parker Hannifin Corporation Component Maintenance Manual (CMM), ATA 75-24-72.

IAE Service Bulletin V2500-ENG-75-0046.

K. Other Publications Affected

This service bulletin will be incorporated into the Parker Hannifin Corporation CMM, ATA 75-24-72, at the next scheduled revision of the manual.

L. Family Tree

Table 2 shows the revised configuration numbers and IAE part numbers for Actuators upgraded with the improved rod end.

Family Tree
Table 2

OLD CONFIGURATION NO.	IAE PART NO.	NEW CONFIGURATION NO.	IAE PART NO.
5910479-102	5W2252	5910479-103	5W2297

2. Material Information

A. Material - Cost and Availability

(1) Operators who want to implement this service bulletin should order rod end, 5943051-101, and nameplate, 5913509-101. The rod end, 5943051-101, is available at a cost of $395.00 each, and the nameplate, 5913509-101, at a cost of $51.00 each. Parts will be delivered within 30 days after receipt of order. Operators may order parts from:

PARKER HANNIFIN CORPORATION	PHONE:	(714) 833-3000
Customer Support Commercial	FAX:	(714) 660-8390
16666 Von Karman Avenue	TELEX:	678304
Irvine, California 92714	SITA:	JNPPHCR
USA		

(2) Operators who want this service bulletin accomplished by Parker Hannifin Corporation may forward the Actuators to the address referenced in paragraph 2.A.(1). The cost for accomplishment of this service bulletin is $635.00. Turnaround time is 30 days after receipt of the Actuator.

(3) The change provisions referenced in this service bulletin will be valid for 24 months from the date of issuance. After that date, please refer to the Parker Airline Spare Parts Catalog or request a quotation from Parker Hannifin Corporation, Customer Support Commercial.

B. Material Necessary for Each Component

Table 3 shows the superseding part numbers and the disposition of hardware being replaced.

Material Information
Table 3

New P/N			Old P/N			Special Instructions/ Disposition
Dash Number	Nameplate P/N	Rod End P/N	Dash Number	Nameplate P/N	Rod End P/N	
-103	5913509-101	5943051-101	-102	Same	BRES-4-2580	Scrap

C. Tooling

A special wrench, F80-0-50965, or equivalent, is used to hold actuator shaft, 5883368-101, when removing the rod end, BRES-4-2580. An adjustment aid, F80-0-50882, is used to establish the 0.890 inch (22,61mm) dimension from the rod end to the actuator body. A torque wrench, F80-4-50026, is used to tighten the jam nut, NAS509-4C. Tool drawings are available on a no charge basis from the address listed in paragraph 2.A.(1).

3. Accomplishment Instructions

A. Disassemble the Actuator to remove the rod end (170) according to CMM 75-24-72 DISASSEMBLY section and per the following instructions.

NOTE: Item numbers in parentheses refer to IPL Figure 1, CMM 75-24-72.

(1) Remove lockwire from insulation blanket (5) and remove insulation blanket from Actuator.

(2) Remove nameplate (145) and LVDT cover (140) per paragraph 2.B., steps (1) and (2). Keep nameplate for serial number data.

(3) Cut and remove lockwire from jam nut (175).

CAUTION: HANDLE LVDT (215) PROBES WITH CARE. HOLD LVDT PROBE BRACKET WITH A 5/8-INCH (16 MM) WRENCH. DO NOT BEND OR TWIST PROBES. THE LVDT WILL NOT OPERATE CORRECTLY WITH BENT OR TWISTED PROBES.

(4) Carefully remove the LVDT nut (190) and washer (195). Push the LVDT (215) probes into the LVDT body. Tape or tiewire the LVDT shims (200, 205, 210) to the threaded LVDT stud. Reassemble the LVDT nut (190) and washer (195) to the threaded LVDT stud after the LVDT probes clear the LVDT arm (185).

CAUTION: CAREFULLY LOOSEN JAM NUT (175). EXCESSIVE TORQUE MOTION CAN BREAK THE TAB ON THE TAB WASHER (180)

CAUTION: CAREFULLY HANDLE ACTUATOR SHAFT (275). DAMAGE TO THE SURFACE FINISH OF THE ACTUATOR SHAFT WILL CAUSE EXCESSIVE LEAKAGE DURING TEST AND OPERATION.

(5) Hold the rod end (170) with a 10-inch (250 mm) crescent wrench, or equivalent, and loosen jam nut (170). Move tab washer (180) apart from LVDT arm (185).

(6) Hold flats of actuator shaft (275) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Loosen rod end (170) with a 10-inch (250 mm) crescent wrench, or equivalent. Remove rod end.

NOTE: It may be necessary to turn the rod end (170) 1/4 turn with a 10-inch (250 mm) crescent, or equivalent, to access the actuator shaft (275) with the special wrench, F80-0-50965.

(7) Remove jam nut (175) and tab washer (180) from the rod end (170).

B. Assemble the Actuator with the new rod end, P/N 5943051-101, according to CMM, ATA 75-24-72, ASSEMBLY section and per the following instructions.

(1) Install jam nut (175) onto rod end, 5943051-101. Install tab washer (180) onto rod end with the tab towards the threaded end of the rod end.

CAUTION: CLEAN THE THREADED INSERT OF ACTUATOR SHAFT ASSEMBLY (275) WITH A COTTON TIPPED SWAB AND ALCOHOL TO PREVENT THREAD DAMAGE WHEN INSTALLING THE ROD END, 5943051-101.

(2) Lubricate threads of rod end, 5943051-101, with red oil, MIL-H-5606, or equivalent, for ease of assembly. Hold flats of actuator shaft (275) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Install rod end, 5943051-101, through the LVDT arm (185) and into the actuator shaft assembly (275). Thread rod end into shaft with a 10-inch (250 mm) crescent wrench, or equivalent, until approximately seven threads of the rod end remain exposed from the jam nut (175).

CAUTION: ADJUSTMENT AID, F80-0-50882, MUST BE USED TO ESTABLISH THE 0.890 INCH (22,61 MM) DIMENSION. THIS DIMENSION IS CRITICAL TO ROD END TRAVEL.

(3) Install adjustment aid, F80-0-50882, onto actuator body assembly (365). Refer to Figure 1.

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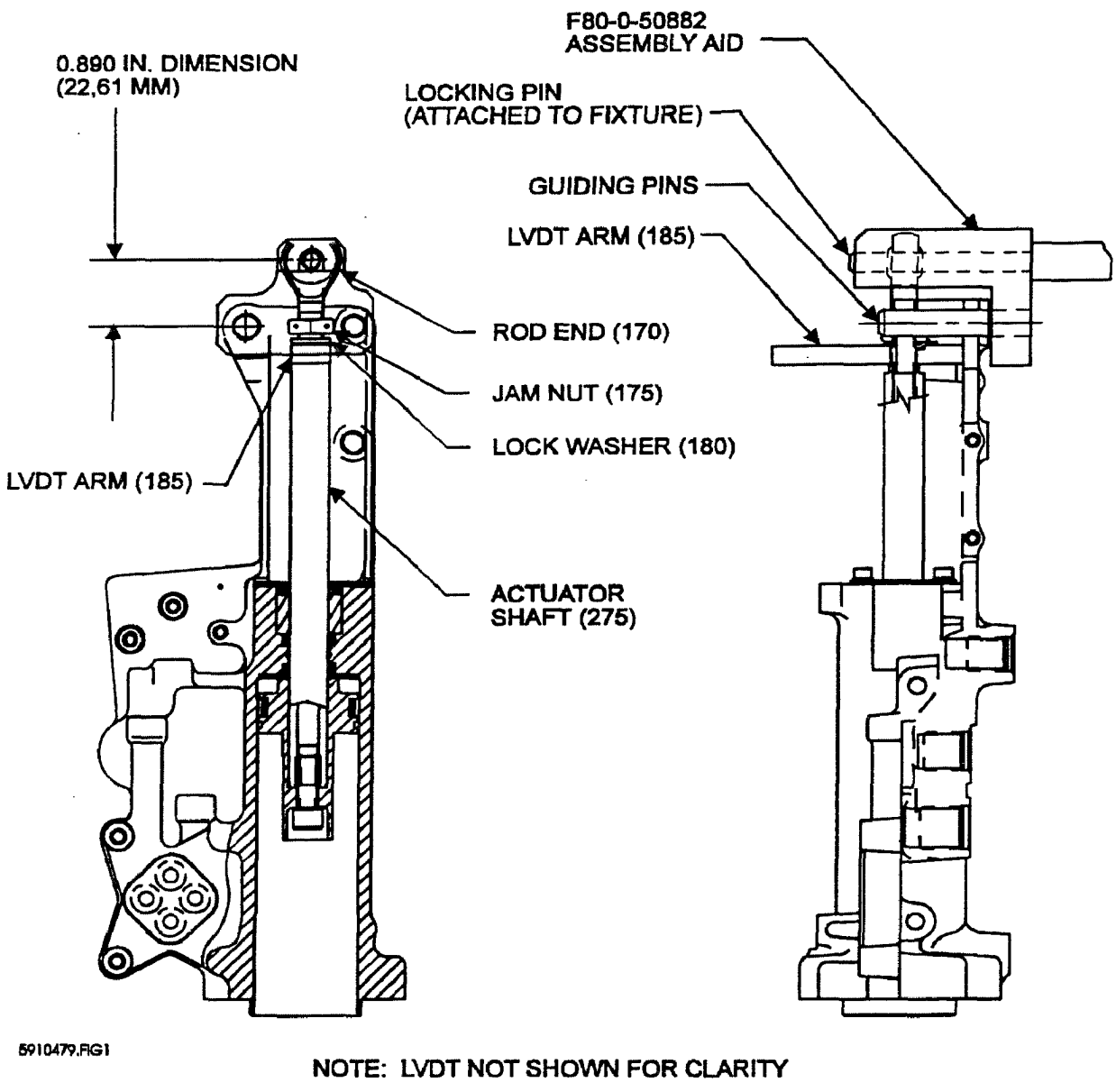

Adjustment Aid Installation
Figure 1

(4) Install locking pin into rod end, 5943051-101. This adjustment establishes the 0.890 inch (22,61 mm) dimension.

(5) Position tab washer (180) so that tab of washer aligns with slot in LVDT arm (185). Tighten jam nut (175) against tab washer. Remove adjustment aid, F80-0-50882.

(6) Hold flats of actuator shaft (275) with special wrench, F80-0-50965, or equivalent, to prevent actuator shaft from turning. Use torque wrench, F80-4-50026, or equivalent, to run down and torque the jam nut (175) to 60 to 70 in-lb (6,8 to 7,9 N·m).

NOTE: Visually check to make sure that the rod end, 5943051-101, aligns with the clevis slot of actuator body assembly (365). If necessary, adjust until the rod end aligns with the clevis slot. Use torque wrench, F80-4-50026, or equivalent, to run down and torque the jam nut (175) to 60 to 70 in-lb (6,8 to 7,9 N·m) after adjustment.

(7) Remove the LVDT nut (190) and washer (195) from the threaded LVDT (215) stud. Remove the tape or tiewire that holds the shims (200, 205, 210) in place. Insert the threaded LVDT stud with shims attached, through the LVDT arm (185). Reassemble the LVDT nut and washer to the LVDT stud. Hold the LVDT probe bracket with a 5/8-inch (16 mm) wrench to prevent the LVDT probes from twisting, and torque the LVDT nut to 30 to 36 in-lb (3,4 to 4,1 N·m).

(8) Visually check to make sure that there is no interference between the LVDT arm (185) and the guide slot of the actuator body assembly (365).

C. Perform functional testing according to CMM, ATA 75-24-72, TESTING AND FAULT ISOLATION section per the following instructions.

(1) Install return fitting, F65-0-50369, and pressure fitting, F65-0-50370, into Actuator. Install the Actuator onto test fixture, F65-0-50495.

(2) Perform functional testing of Actuator per CMM, ATA 75-24-72, TESTING AND FAULT ISOLATION section, paragraph 9, steps A. through L.

(3) After functional testing, remove Actuator from test fixture, F65-0-50495. Apply an air source to the pressure fitting and cycle the Actuator to drain remaining fuel. Remove return fitting, F65-0-50369, and pressure fitting, F65-0-50370. Install suitable plugs.

D. Complete assembly of the Actuator per the following instructions.

(1) Lockwire jam nut (175) to tab washer (180) and LVDT arm (185) with MS20995N20 lockwire, per MS33540J, using a double-twist method.

(2) Install LVDT cover (140) onto dual LVDT (215) using washers (165) and screws (150, 155). Torque screws to 10 to 11.5 in-lb (1,1 to 1,3 N·m).

E. Examine Actuator for general workmanship and visible defects.

F. Reidentification

(1) Remove nameplate (145) from cover assembly (140). Clean the cover surface with acetone.

(2) Stamp new configuration number, revision letters, and IAE part number in the fields provided on the new nameplate, P/N 5913509-101.

5910479-102 (IAE 5W2252):

P/N 5910479-103	REV E
P/L 5911479-103	REV G
ACD NO 455JM	BLD STD 4
IAE P/N 5W2297	

(3) Position and install the nameplate on the cover assembly (140).

G. Complete assembly of the Actuator per the following instructions.

Install insulation blanket (5) onto Actuator assembly. Pull insulation blanket tight and lace the capstans with lockwire, MS20995N20, according to MS33540J, using a double-twist method.