November 21, 2008

U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room W12-
140
1200 New Jersey Avenue, SE
Washington, D.C. 20590-0001
www.regulations.gov

RE: Petition for Exemption from Title 14 CFR part 121, appendices I & J

Dear Docket:

Pursuant to Title 14 CFR § 11.15, the Aeronautical Repair Station Association (ARSA), on behalf of its members hereby petitions for an exemption from Title 14 CFR part 121, appendices I and J, Anti-Drug and Alcohol Misuse Prevention Program.[1] Specifically, it petitions for an exemption from the requirements of part 121, appendix I, § III and appendix J, § II(A). These provisions require any employee performing a safety-sensitive function for an employer, directly or by contract (including subcontract at any tier) be covered under a Department of Transportation/Federal Aviation Administration (DOT/FAA) drug and alcohol (D&A) testing program.

Extent of Relief Sought

The Association seeks an exemption from the cited DOT/FAA D&A requirements for the following person(s):

1. Covered employers using LONG-LOK Fasteners Corporation (LONG-LOK) to complete Airworthiness Directive (AD) 93-05-16;[2]
2. Companies called out to perform required work in an AD that do not have an existing FAA/DOT D&A program; and,
3. All entities performing alterations for a covered employer.

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[1] Unless otherwise noted all regulatory cites are to Title 14 CFR.
[2] *See* 14 CFR part 121, app. I, §§ II, IX(C) and app. J, §§ I(D), VII(C) (defining covered employer as a part 119 certificate holder with authority to operate under parts 121 and 135, an operator as defined in § 91.147 and individuals or companies that provide safety-sensitive services by contact, at any tier, to such part 119 certificate holders or § 91.147 operators).

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Reason for Relief Sought

Since the FAA extended the D&A requirements to include subcontractors at any tier of a contract, our member repair stations are increasingly faced with the dilemma of how to comply with an AD when it requires articles be returned to a specific manufacturer for alterations. These manufacturers often do not have a DOT/FAA D&A program as they are only permitted to rebuild or alter their own articles (see § 43.3(j)). In this regard, the FAA has failed to provide an explicit ruling on whether performing alterations is a safety-sensitive function under the current rules. As a result, repair stations performing work for covered employers must follow an AD that forces them into a possible regulatory violation for contracting work to a facility whose workers are not covered by a DOT-sanctioned program.

1. AD 93-05-16

A member repair station is currently tasked with performing AD 93-05-16 for a covered employer. The AD requires modification of the rudder power control valve on certain DC-9 and MD-88 model aircraft. The service bulletin (SB 27-321 and SB 27-321, revision 1 as an alternative means of compliance) specified in the AD requires returning the slide assembly to the manufacturer, LONG-LOK for installation of a self-locking element.

At the time of the AD's issuance, LONG-LOK (a non-certificated subcontractor) was not obligated to have a DOT/FAA D&A program. At present, LONG-LOK still does not have its own approved program despite the fact that it is the only facility able to accomplish the modification specified in AD 93-05-16. It is unreasonable to require every maintenance facility asked to perform this AD to bring LONG-LOK's designated employees under its own DOT/FAA D&A program for a single contract. Further, it is just as burdensome on LONG-LOK to have its employees included in numerous facilities' programs in order to accomplish this single AD. As a result the repair station is forced to request an exemption from the D&A rules in order to properly accomplish this AD without violating the regulations by contracting work to a non-covered facility.

2. AD Compliance

Undoubtedly, the situation with AD 93-05-16 is not unique. There are numerous ADs that predate the expanded D&A rule that will continue to cause conflict between complying with part 39 versus part 121, appendices I & J. In these situations when an operator contracts with a repair station to accomplish an AD and that AD *requires* a non-covered manufacturer to accomplish the work, § 39.11 requires the repair station to subcontract to the listed entity, unless an alternative means of compliance is approved.

When the manufacturer balks at implementing its own FAA/DOT program the repair station and ultimately the air carriers are stuck with the choices of not accomplishing the

AD or violating the AD or violating part 121, appendices I & J. In these situations the FAA should grant an exemption from the D&A requirements for both the manufacturer and any covered employer so the unsafe condition may be properly addressed without fear of regulatory violations for contracting to a non-covered source.

3. Alterations

The number of manufacturers without an FAA/DOT D&A program is due in large part, to their confusion over whether an alteration/modification is considered "aircraft maintenance and preventive maintenance" and therefore covered by the D&A rules.

Part 121, appendices I & J require that employees performing safety-sensitive functions for air carriers in the U.S. be subject to testing. Maintenance as defined in § 1.1 includes inspection, repair, overhaul, preservation and replacement of parts, while an alteration is a change or modification to an article (see Order 8900.1, vol. 4, ch. 9, § 1, para. 4-1178(A)(2)).

If alterations are considered maintenance for purposes of the D&A rules, then personnel performing them must be included in a DOT/FAA program. On the other hand, if alterations are not covered by the D&A rules, no federal testing would be authorized and a covered employer would be subject to sanctions if it errs on the side of caution and tests its subcontractors that only perform alterations (see 14 CFR part 121, app. I, § V(B)(6)(a)(2)).

Further, the confusion is not isolated to manufacturers and ADs. There are numerous repair stations and other non-certificated entities that perform alterations exclusively for U.S. carrier's or operators. These facilities are faced with the same dilemma concerning whether to include their employees or subcontractors in a sanctioned program.

Because a repair station working for air carriers must comply exactly with part 121 appendices I & J and the FAA has not provided guidance dictating whether an alteration is considered maintenance, an exemption from these requirements is warranted for any entity strictly performing alterations, whether the company is called out in an AD or is performing alterations independently for air carriers at any tier in a contract.

Exemption in Public Interest

An AD is a legally enforceable rule that dictates how to correct an unsafe condition that exists in a product and that is likely to exist in other products of the same design (see §§ 39.3, 39.5). The AD specifies inspections that must be carried out, conditions and limitations that must be complied with, and any actions that must be taken to resolve the unsafe condition (§ 39.11). An owner cannot legally operate its aircraft (and is in violation of the regulations) unless it has complied with all portions of the AD (§ 39.9).

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Therefore, it is in the public interest to ensure that all unsafe conditions that give rise to an AD are corrected as required. The public interest in properly correcting unsafe conditions by those technically qualified to do so outweighs the interest that the specific facility called out in the AD does not have DOT/FAA sanctioned testing program.

No Adverse Effect on Safety

Providing an exemption from the DOT/FAA D&A testing rules for covered employers using LONG-LOK to perform AD 93-05-16, any company called out in an AD without an existing program and all persons performing alterations would not adversely affect safety. The actual maintenance activities, including inspection and approval of the work for return to service are performed by certificated persons that are subject to the applicable testing requirements. Further, the FAA has already determined that in the interest of safety the manufacturer is the only entity with the requisite technical expertise to perform the work. Therefore, providing exemptions to these manufacturers reinforces the agency's own safety determination.

Federal Register Summary

On behalf of its members, ARSA seeks an exemption from Title 14 CFR part 121, appendices I & J. Specifically, the Association seeks an exemption for any person(s) using LONG-LOK Fasteners Corporation to accomplish Airworthiness Directive (AD) 93-05-16, any entities called out to perform required work in an AD without an existing FAA/DOT D&A program and any person(s) performing alterations for a covered employer.

Kind Regards,

Colin P. Carroll
Regulatory Counsel

Enclosures: Exhibit 1 – Airworthiness Directive 93-05-16
                 Exhibit 2 – Service Bulletin 27-371, revision 1

EXHIBIT 1:

Airworthiness Directive 93-05-16

Airworthiness Directive

⍗ Federal Register Information

⍗ Header Information
DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

Docket No. 93-NM-48-AD; Amendment 39-8698; AD 93-05-16 R1

Airworthiness Directives; MCDONNELL DOUGLAS DC-9 and C-9 (Military)
Airplanes, DC-9-80 Series Airplanes and MD-88 Airplanes
PDF Copy (If Available):

⍗ Preamble Information
AGENCY: Federal Aviation Administration, DOT

DATES: Effective November 18, 1993.

⍗ Regulatory Information
93-05-16 R1 MCDONNELL DOUGLAS: Amendment 39-8698. Docket
93-NM-48-AD. Revises AD 93-05-16, Amendment 39-8520 which superseded AD
91-18-03, Amendment 39-8006.

Applicability: Model DC-9 and C-9 (Military) airplanes as listed in McDonnell
Douglas DC-9 Alert Service Bulletin A27-327, Revision 2, dated July 14, 1992; and
Model DC-9-80 series airplanes and Model MD-88 airplanes as listed in McDonnell
Douglas MD-80 Alert Service Bulletin A27-317, Revision 2, dated May 22, 1992; on

which the rudder power control valve has not been modified in accordance with McDonnell Douglas Service Bulletin **27-321**, dated May 18, 1992, or a production equivalent; certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

NOTE: This AD requires the same actions as required by AD 93-05-16, amendment 39-8520, but is applicable to additional airplanes. Operators affected by this AD who have accomplished these actions previously in accordance with AD 93-05-16 are considered to be in compliance with this revised AD.

To prevent loss of rudder control, accomplish the following:

(a) For airplanes listed in McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 1, dated March 9, 1992, and in McDonnell Douglas MD-80 Alert Service Bulletin A27-317, Revision 2, dated May 22, 1992; on which the retention nut on the slide assembly of the rudder power control valve has not been inspected in accordance with McDonnell Douglas DC-9 Alert Service Bulletin A27-327, dated December 2, 1991, or Revision 1, dated March 9, 1992, or Revision 2, dated July 14, 1992; or McDonnell Douglas MD-80 Alert Service Bulletin A27-317, dated June 17, 1991, or Revision 1, dated January 14, 1992, or Revision 2, dated May 22, 1992: Within 90 days after April 23, 1993 (the effective date of AD 93-05-16, amendment 39-8520), inspect the retention nut on the rudder power control valve slide assembly to determine if a lockwire is installed, in accordance with McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 1, dated March 9, 1992; or McDonnell Douglas MD-80 Alert Service Bulletin A27-317, Revision 2, dated May 22, 1992; as applicable.

(1) If a lockwire is installed, no further action is required by this AD.

(2) If a lockwire is not installed, prior to further flight, adjust the retention nut, install a lockwire, and functionally check the rudder power control valve in accordance with the applicable service bulletin. No further action is required by this AD.

(b) For airplanes listed in McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 2, dated July 14, 1992, and not affected by paragraph (a) of this AD: Within 90 days after the effective date of this AD, inspect the retention nut on the rudder power control valve slide assembly to determine if a lockwire is installed, in accordance with McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 1, dated March 9, 1992, or Revision 2, dated July 14, 1992.

(1) If a lockwire is installed, no further action is required by this AD.

(2) If a lockwire is not installed, prior to further flight, adjust the retention nut, install a lockwire, and functionally check the rudder power control valve in accordance with the applicable service bulletin. No further action is required by this AD.

(c) Modification of the rudder power control valve by replacing the lockwire with a locking tab washer, in accordance with McDonnell Douglas Service Bulletin **27-321**, dated May 18, 1992, or a production equivalent, constitutes terminating action for

the requirements of this AD.

(d) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Los Angeles Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles ACO.

NOTE: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Los Angeles ACO.

(e) Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate the airplane to a location where the requirements of this AD can be accomplished.

(f) The inspection, adjustment, installation, and functional check shall be done in accordance with McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 1, dated March 9, 1992; McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 2, dated July 14, 1992; or McDonnell Douglas MD-80 Alert Service Bulletin A27-317, Revision 2, dated May 22, 1992; as applicable. The modification shall be done in accordance with McDonnell Douglas Service Bulletin **27-321**, dated May 18, 1992. The incorporation by reference of McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 2, dated July 14, 1992, was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. The incorporation by reference of McDonnell Douglas DC-9 Alert Service Bulletin A27-327, Revision 1, dated March 9, 1992; McDonnell Douglas MD-80 Alert Service Bulletin A27-317, Revision 2, dated May 22, 1992; and McDonnell Douglas Service Bulletin **27-321**, dated May 18, 1992; was approved previously by the Director of the Federal Register as of April 23, 1993 (58 FR 15760, March 24, 1993). Copies may be obtained from McDonnell Douglas Corporation, P.O. Box 1771, Long Beach, California 90846-1771, Attention: Business Unit Manager, Technical Publications - Technical Administrative Support, C1-L5B. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the FAA, Los Angeles Aircraft Certification Office, 3229 East Spring Street, Long Beach, California; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) This amendment becomes effective on November 18, 1993.

▽**Footer Information**

▽**Comments**

EXHIBIT 2:

Service Bulletin 27-371, revision 1

DOUGLAS AIRCRAFT COMPANY
MCDONNELL DOUGLAS

DC-9
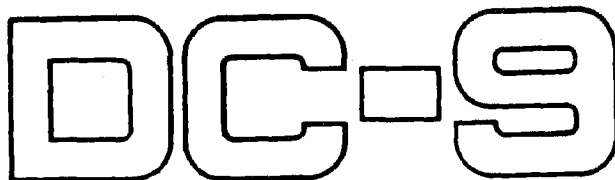
SERVICE BULLETIN CHANGE NOTIFICATION

NUMBER: 27-321 CN1

SUBJECT: FLIGHT CONTROLS - Rudder and Tab - Modify Rudder Power Control Valve
and Manifold Assembly.

AIRCRAFT: DC-9, Series 10, 20, 30, 40, 50, C-9, DC-9-81, -82, -83, and -87
(MD-81, -82, -83, and -87); MD-88

This Change Notification is published to inform affected operators that subject
Service Bulletin is to be changed as indicated below.

Page 35:   Change paragraph 3.A.(1) to read as follows:

Is

New Part No.	Qty Per Option I	Qty Per Option II	Key Word	Old Part No.	Instructions- Disposition
N-9167088		1	Nut	4917088-1	2/

Was

New Part No.	Qty Per Option I	Qty Per Option II	Key Word	Old Part No.	Instructions- Disposition
N-9167088	1	1	Nut	4917088-1	2/

This change will be incorporated in the next formal Service Bulletin revision;
however, no formal revision is planned at the present time.

JW
PDG-3

DOUGLAS AIRCRAFT COMPANY
MCDONNELL DOUGLAS CORPORATION
PRODUCT SUPPORT

SERVICE BULLETIN

REVISION TRANSMITTAL SHEET

FLIGHT CONTROLS - Rudder and Tab - Modify Rudder Power Control Valve and Manifold Assembly.

This page transmits Revision 1 for DC-9 Service Bulletin 27-321 to incorporate the following changes:

NOTE: This revision constitutes a complete reissue and reflects current operators of affected aircraft at time of issue.

Reason for Revision: To add a self-locking nut in addition to lockwire as an optional method of achieving dual (redundant) locking.

To add eleven aircraft to Service Bulletin Effectivity which did not have modification accomplished in production

No additional work is required by this revision for aircraft previously modified by prior issue of this Service Bulletin.

Pages 1 thru 3, 7 and 10:

Revised title.

Added second NOTE under title.

Changed page number to 1 of 36, was 1 of 31.

Added eleven aircraft to Service Bulletin Effectivity as follows:

OPR	FUS	(FSN)	OPR	FUS	(FSN)	OPR	FUS	(FSN)	OPR	FUS	(FSN)
AA	2000	(53286)	AS	2004	(53079)	AZ	2007	(53203)	SK	2003	(53368)
AA	2006	(53287)	AZ	2002	(53180)	AZ	2009	(53204)	ZBN	1959	(49852)
AO	2001	(53305)	AZ	2005	(53181)	CBF	2010	(53162)			

Page 19: Revised production effectivity statement.

Revised Key Word under spares affected.

Revised Reason.

Pages 20 and 21:   Added Option I heading to original Description.

Revised original Description.

Added Description for Option II.

Revised Approval statement.

Added Option I heading to original man-hours.

Added man-hours for Option II.

Revised paragraph 1.G.(1).

Page 22:   Added paragraphs 1.J.(1) and 1.J.(2). Reidentified subsequent paragraphs accordingly.

Added NOTE to References.

Revised drawing change letter for SR9270026 to "C", was blank.

Revised paragraph 1.J.(3).

Pages 23 and 24:   Identified original Accomplishment Instructions as Option I.

Revised Accomplishment Instructions for Option I.

Added new paragraph 2.E. Reidentified subsequent paragraphs accordingly.

Added Accomplishment Instructions for Option II.

Pages 25 thru 28:   Added Option I heading to Figure 1.

Deleted callouts for adding self-locking element.

Revised steps 1, 2, 4, 5, 6, 7, and 8.

Added NOTE under Option I heading.

Deleted step 10.

Revised title for Figure 1.

Pages 29 thru 34:   Added Figure 2 for Option II.

Pages 35   Added NOTE.
and 36:
Revised paragraphs 3.A.(1) and 3.A.(2).

Revised footnote 1/.

Deleted original footnote 2/.

Reidentified original footnote 3/ as footnote 2/.

Added new footnote 3/.

Deleted original paragraph 3.A.(3).

Added new paragraph 3.A.(3).

Revised paragraph 3.B.

NOTE: Service Bulletin 27-321 Summary has been revised to incorporate the intent of this revision.

JW
PDG-1

DC-9

REFERENCE:
BULLETIN 27-321

SERVICE BULLETIN SUMMARY

NOTE: This summary is for information only and reflects the intent of the attached FAA approved Service Bulletin.

SUBJECT: FLIGHT CONTROLS - Rudder and Tab - Modify Rudder Power Control Valve and Manifold Assembly.

NOTE

Service Bulletin 27-321 is affected by Federal Aviation Administration Airworthiness Directive No. 93-05-16 R1; Amendment 39-8698, effective November 18, 1993.

ANALYSIS: Provides information and material requirements to incorporate engineering which modifies the rudder power control valve and manifold assembly to add dual locking capability to the slide adjustment retention nut. Retention nut lockwire has been found to have been inadvertently left out during assembly of the valve, a condition addressed by inspections per previous Service Bulletins. Loss or backing off of the retention nut could result in loss of rudder control.

DESCRIPTION: Modifies the rudder power control valve and manifold assembly located in the aft fuselage at the lower end of the rudder hinge line as follows: Option I - (1) Replaces retention nut lockwire with a locking tab washer. (2) Machines a keyway in slide assembly to accept tab washer. (3) Bonds a self-locking element on the slide assembly per vendor special process and military specification MIL-F-18240E. (4) Modifies and reidentifies valve end cap, slide retainer, and slide nut. Option II -

(1) Replaces slide assembly retention nut with a self-locking nut. (2) Modifies and reidentifies valve end cap, slide retainer, and slide nut. This is an improvement change which will minimize the possibility of a retention nut not being locked or backing off.

EFFECTIVITY: DC-9, Series 10, 20, 30, 40, 50, C-9, DC-9-81, -82, -83, and -87 (MD-81, -82, -83, and -87); MD-88 aircraft. (See Service Bulletin 27-321 for detailed Effectivity.)
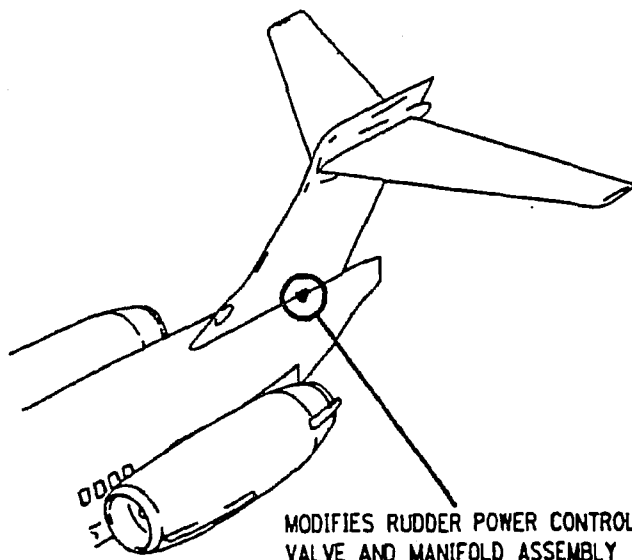
MODIFIES RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY

COMPLIANCE: Douglas Aircraft Company
recommends accomplishment at the
earliest practical maintenance period.

MANPOWER:	Option	
	I	II
Total Man-Hours	6.8	5.8
Total Elapsed Hours	6.8	5.8

MATERIAL INFORMATION: Parts/material
are to be procured from operator's
stock or supplier.

DC-9

SERVICE BULLETIN

FLIGHT CONTROLS - Rudder and Tab - Modify Rudder Power Control Valve and Manifold Assembly.

NOTE

This Service Bulletin is issued as a partial record-type change. Engineering drawings are furnished to support portions of this modification.

This Service Bulletin is affected by Federal Aviation Administration Airworthiness Directive No. 93-05-16 R1; Amendment 39-8698, effective November 18, 1993.

1. **Planning Information**:

   A. **Effectivity**:

      (1) **Aircraft Affected**:

      DC-9, Series 10, 20, 30, 40, 50, C-9,
      DC-9-81, -82, -83, and -87 (MD-81, -82, -83, and -87); MD-88

         (a) **Operator and Aircraft Number**:

Operator	Factory Serial No.			Operator	Factory Serial No.		
AA	49145			AA	49558	thru	49566
	49155			(cont)	49592	thru	49601
	49158	and	49159		49647	thru	49656
	49161	thru	49163		49675	thru	49684
	49167	and	49168		49730	thru	49739
	49171	thru	49181		49797	thru	49806
	49251				49890	thru	49899
	49253	thru	49259		49915	thru	49924
	49269	thru	49273		49987	thru	49996
	49286	thru	49329		53025	thru	53034
	49331	thru	49353		53083	thru	53092
	49451	thru	49460		53151	thru	53160
	49468	thru	49477		53247	thru	53256
	49553				53284	and	53287

DOUGLAS AIRCRAFT COMPANY
SERVICE BULLETIN

Operator	Factory Serial No.			Operator	Factory Serial No.		
AC	45845			AO	47076		
	47019				47080		
	47021	and	47022		47090	and	47091
	47024				47452		
	47069	thru	47071		47455		
	47195				47461		
	47198	and	47199		47504		
	47265	and	47266		47542		
	47289	and	47290		47556		
	47292	thru	47294		47637		
	47340	thru	47342		47640		
	47348	thru	47350		47642	thru	47644
	47353	and	47354		47675		
	47422				47678		
	47485				47704		
	47546				47707		
	47554				48104	thru	48106
	47557				53193	thru	53197
	47560				53303	and	53305
	47592						
	47598			AS	48079	and	48080
	47611				49103	and	49104
					49111		
AM	47006				49126		
	47106				49231	thru	49236
	47394				49363	thru	49365
	47501				49386	and	49387
	47549				49643		
	47594				49657	and	49658
	47602				49825		
	47607				49925		
	47609				53016		
	47650				53018	thru	53024
	48067	thru	48069		53052		
	48083				53063		
	48125	thru	48130		53074	thru	53079
	48150	and	48151				
	49149			AU	48024	and	48025
	49188	thru	49190		49784		
	49660				49934		
	49667				53117		
	49673						
	49726			AV	49939		
	49761				49942		
	49763	thru	49765		49944	thru	49948
	49826				53120		
	49889				53122	and	53123
	49926	thru	49929		53125		
	53017						
	53050	and	53051				
	53174	and	53175				

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Operator	Factory Serial No.			Operator	Factory Serial No.		
AY	47604	thru	47606	BW	49390		
	47613	and	47614		49400		
	47694	thru	47696		49448		
	47771	thru	47773		49568		
	48134	thru	48136		49575		
	49150	thru	49152		49632		
	49252				49786		
	49284				49789		
	49403	thru	49405		49824		
	49625						
	49741			CBF	49415		
	49904	thru	49906		49425		
	53244				49428		
	53246				49502		
					49505	and	49506
AZ	47038	and	47039		49508		
	47046	and	47047		49510		
	47101				49512		
	47128	and	47129		49514		
	47222	thru	47226		49516		
	47228	thru	47238		49518		
	47283				49520		
	47311				49522	thru	49524
	47432	thru	47437		49849	thru	49851
	47502				53162		
	47518	and	47519				
	47533			CEA	49140	and	49141
	47544				49355		
	47553				49501		
	47575				49503	and	49504
	47591				49507		
	47653				49509		
	49192	thru	49221		49511		
	49430	thru	49435		49513		
	49549	thru	49552		49515		
	49794	thru	49796		49517		
	49969	thru	49975		49519		
	53053	thru	53062		49521		
	53176	thru	53181				
	53203	and	53204	CO	45788	and	45789
					45791	thru	45793
BD	45712	and	45713		45847		
	45719				47067		
	45738	and	45739		47094		
	47430				47110	thru	47113
	47468				47218	and	47219
	47484				47281		
	47523				47423	and	47424
	47555				47487		
	47559				47490		
	47648				47520	and	47521
	47666				47524		

Operator	Factory Serial No.			Operator	Factory Serial No.		
CO (cont)	47531			DL (cont)	53241	thru	53243
	47535				53257	thru	53259
	47539				53266	thru	53268
	47638				53273	and	53274
	47765				53311	thru	53313
	47788				53338	and	53339
	47797	thru	47799		53341	thru	53346
	48022				53362	thru	53364
	48027				53370	thru	53372
	48044	and	48045		53378	thru	53380
	48056				53409	and	53410
	48062	and	48063				
	48066			EA	45733	and	45734
	48073	and	48074		45833	and	45834
	48111	thru	48113		45837		
	49102				45863	thru	45865
	49112	thru	49114		47120		
	49116	thru	49118		47181		
	49120	thru	49122		47215		
	49125				47327	and	47328
	49127				47677		
	49222				47682		
	49229						
	49246			EF	49807		
	49249	and	49250		53064	thru	53066
	49260	thru	49265		53118	and	53119
	49370	and	49371				
	49393	and	49394	EZ	47044		
	49439				47061		
	49441				47191		
	49444				47194		
	49450				47220		
	49478	thru	49494		47279		
	49525	and	49526		47355		
	49580	thru	49582		47414		
	49634	and	49635				
				FP	45702		
DL	49532	thru	49546				
	49573			GA	47385	and	47386
	49583	and	49584		47481		
	49591				47569		
	49644	thru	49646		47601		
	49705				47635		
	49711	thru	49723		47701		
	49810	thru	49819		47722		
	49878	thru	49887		47730		
	49976	thru	49984		47740		
	53115	and	53116		47744		
	53161				47789	thru	47795
	53172	and	53173				
	53214	and	53215				

Operator	Factory Serial No.			Operator	Factory Serial No.		
GB	45717			HA	47204		
	45728				47654		
	45874				47658		
	47003	and	47004		47661		
	47008	and	47009		47689		
	47040				47726		
	47065				47735		
	47072				47742		
	47074				47763	and	47764
	47084				47784		
	47147	and	47148		47796		
	47165				48122		
	47176						
	47201			IB	47037		
	47203				47079		
	47257	and	47258		47088	and	47089
	47269				47093		
	47273				47312	and	47313
	47291				47365		
	47314				47368		
	47317				47446	and	47447
	47325				47453	and	47454
	47363	and	47364		47456		
	47380	and	47381		47702		
	47384				47706		
	47403				48103		
	47413				49827	thru	49843
	47419				53207	thru	53213
	47426	and	47427				
	47462			IG	47655	thru	47657
	47464	and	47465		47713	thru	47715
	47494				49247	and	49248
	47497	thru	47499		49531		
	47509	thru	47512		49669		
	47522				49740		
	47528				49902	and	49903
	47543						
	47550	thru	47552	JD	47760	thru	47762
	47608				47767	and	47768
	47612				47780	and	47781
	47615	and	47616		48029	thru	48033
	47619	and	47620		48070	thru	48072
	47759				49280	thru	49283
					49461	thru	49467
GH	47755				49820	and	49821
					49907	and	49908
					53039	thru	53043

Operator	Factory Serial No.			Operator	Factory Serial No.		
JP	47239			NK	47268		
	47392				47478		
	47530				47526		
	47570				47547		
	48046						
	48048			NW	45705		
	48087				45707		
	49379				45729		
	49440				45744	and	45745
JU	47460				45747	thru	45749
	47470				45770		
	47532				45787		
	47562	and	47563		45790		
	47567	and	47568		45825		
	47571				45827		
	47582				45829	thru	45832
KE	49373	and	49374		47017	and	47018
	49416	thru	49419		47031		
	49785				47042		
	49787				47049		
LM	49123	and	49124		47063	and	47064
	49661				47073		
LV	47000				47078		
	47121				47083		
	47703				47097		
	47705				47103		
	47712				47114	thru	47117
	47719				47138	and	47139
	47721				47141	thru	47145
	47727				47149	and	47150
	47736	thru	47738		47155		
	47752				47158		
	47770				47160		
	47782				47162	thru	47164
	49395				47171		
	49567				47175		
	49659				47178	thru	47180
					47182	and	47183
ML	45835	and	45836		47185		
	45838	thru	45840		47205	and	47206
	45866	and	45867		47244		
	45869				47246	and	47247
	45876				47252	thru	47256
	47140				47263	and	47264
	47157				47280		
	47167	thru	47170		47282		
	47186				47286	thru	47288
	47548				47315	and	47316
	49727				47337	and	47338
					47346	and	47347
					47362		
					47369	and	47370
					47376		

Operator	Factory Serial No.			Operator	Factory Serial No.		
NW (cont)	47382	and	47383	RS	45715	and	45716
	47389	thru	47391		45721	and	45722
	47395	and	47396		45735		
	47404	thru	47406		45742		
	47415	thru	47417		45776		
	47425				45780	and	45781
	47439	and	47440		45783		
	47450				47048		
	47458	and	47459		47125		
	47469				47127		
	47472	and	47473				
	47479	and	47480	SK	47301	thru	47303
	47517				47305	thru	47308
	47566				47360	and	47361
	47572	and	47573		47492	and	47493
	47647				47513		
	47651	and	47652		47596	and	47597
	47659	and	47660		47599		
	47664				47610		
	47708	thru	47710		47623	and	47624
	47716	thru	47718		47626	thru	47634
	47724				47646		
	47729				47725		
	47739				47747	and	47748
	47756	thru	47758		47750		
	47769				47766		
	47774	thru	47776		47777	thru	47779
	47785	thru	47787		49380	thru	49383
	48054	and	48055		49420	thru	49423
	48057				49436	thru	49438
	48086				49554	and	49555
	48088	and	48089		49603		
	48091				49605	thru	49614
	48100	thru	48102		49728		
	48107	thru	48110		49909	thru	49914
	48121				49998	and	49999
	48148	and	48149		53000	thru	53002
	49110				53004	thru	53011
					53275		
OS	48015	thru	48021		53294	thru	53296
	48059				53314	and	53315
	49115				53336	and	53337
	49164				53340		
	49278	and	49279		53347	and	53348
	49372				53365		
	49411	thru	49414		53368		
	49877						
	49888			SR	48002	thru	48014
	49933				49100		
	53245				49356	thru	49359
					49570	thru	49572
					49844		
					53149	and	53150

Operator	Factory Serial No.			Operator	Factory Serial No.		
TI	47016			US	45846		
					45868		
TK	45774				47020		
	47397				47023		
	47442				47026		
	47451				47050	thru	47054
	47488	and	47489		47057	and	47058
	47534				47066		
	47674				47068		
	47723				47099		
					47130		
TW	45772	and	45773		47146		
	45798	and	45799		47188	and	47189
	47001				47207	thru	47210
	47027	thru	47030		47212		
	47033				47216		
	47035				47310		
	47082				47332		
	47095	and	47096		47334	thru	47336
	47107	thru	47109		47351	and	47352
	47134	thru	47137		47371	thru	47375
	47172	thru	47174		47420	and	47421
	47248	thru	47251		47429		
	47324				47505		
	47343	thru	47345		47507	and	47508
	47357				47564		
	47409				47574		
	47411	and	47412		47576		
	47491				47583		
	47589				47588		
	47603				47590		
	47617	and	47618		47593		
	47669				48026		
	47676				48028		
	47711				48034	thru	48043
	47734				48049		
	48123	and	48124		48052	and	48053
	49153	and	49154		48092	thru	48099
	49156	and	49157		48114	thru	48120
	49160				48131		
	49165	and	49166		48138	thru	48147
	49169	and	49170		48154	thru	48159
	49182	thru	49187		49119		
	49230				49138	and	49139
	49245				49142	and	49143
	49266	and	49267		49237		
	49366	thru	49369		49429		
	49426	and	49427		49443		
	49527	thru	49530				
	49701	thru	49704				
	53137	thru	53141				

Operator	Factory Serial No.			Operator	Factory Serial No.		
VC	45875			XYX	45696		
	47036				45711		
	47098				45718		
	47272				45725		
	47330	and	47331		45727		
	47399				45795		
	47401				45841	and	45842
	47679				47102		
	47743				47132	and	47133
	47745				47190		
					48132	and	48133
VE	45710				49760		
	47104	and	47105		49762		
	47665						
	47683			XZA	49724		
	47685				49779	and	49780
	47692				49845		
					49848		
WU	49624						
	49985			XZD	45826		
					47011		
XGN	49808				47152		
					47418		
XLL	47672	and	47673				
	47680			X5A	45828		
	49402				47012		
	49449				47014		
	49602				47055		
	49670	and	49671		47062		
	49767	thru	49769		47086		
	49846	and	49847		47153		
	49854						
	49856	and	49857	X7C	49792		
	53012	thru	53015				
				YA	45732		
XQQ	49424						
	49604			YBB	49101		
	49615				49277		
	49788				49569		
	49793				49930		
	49931	and	49932				
	53044	thru	53046	YFD	49725		
	53124				49778		
XRI	49391	and	49392	YGA	49398		
	49628	and	49629		49619	and	49620
XX1	45844			YHG	53121		

Operator	Factory Serial No.			Operator	Factory Serial No.		
YPA	49384			ZIG	47595		
	49556	and	49557		47600		
YUZ	45720			ZIL	45698	and	45699
					47060		
ZAF	47241	and	47242				
	47295			ZJ6	45775		
	47297	thru	47300				
	47366	and	47367	ZKG	47690		
	47448	and	47449		49809		
	47467						
	47471			ZKL	47045		
	47475				47154		
	47495						
	47536	thru	47538	ZK7	45740		
	47540	and	47541				
	47668			ZL1	49576		
	47670	and	47671		49662		
					49707		
ZBM	47087				49822	and	49823
					49968		
ZBN	49852				49986		
ZB2	47259			ZMF	47260	thru	47262
	47276				47278		
					47319		
ZCA	45714				47686		
	45736				47688		
	45743				47693		
	45785	and	45786		47728		
	47043				47731	thru	47733
	47059				47746		
	47085				47749		
	47122				47751		
	47126				47753		
ZCP	47151			ZNV	47041		
					47221		
ZDF	45872	and	45873		47410		
	47270	and	47271		47428		
					47431		
ZD9	49935	thru	49937		47474		
	49940	and	49941		47476	and	47477
	49949				47496		
	49951	and	49952		47545		
					47565		
ZEZ	47525				47577	and	47578
					47580	and	47581
ZE9	47527				47584	thru	47587
					47639		
ZGM	45778				47681		
	45782						
	45784						

Operator	Factory Serial No.			Operator	Factory Serial No.		
ZNV (cont)	47684			Z1J	49144		
	47687				49401		
	47698	thru	47700		49574		
	48137				49626		
	48165	and	48166		49631		
					49642		
ZOQ	47274				49668		
	47284				49777		
					49791		
ZO8	47161				49943		
	47402				49950		
ZO9	48051			Z2L	47663		
	48058						
				Z3V	49585	thru	49587
ZQE	49442				49641		
	49708				49710		
ZQF	49663			Z3Z	45703		
					45723		
ZQO	47193				47156		
	47408						
				Z4B	45695		
ZQU	49901						
				Z4Q	49759		
ZQY	47166				49766		
	47187						
	47214			Z4U	47529		
ZQ2	45731			Z5B	47007		
					47323		
ZQ4	49385				47358		
ZQ9	47005			Z5F	47783		
	47131						
	47202			Z5X	47119		
	47326						
	47329			Z5Y	45737		
					45741		
ZRS	45797				45779		
					45843		
ZWH	47466				47662		
	47486						
	47516			Z6H	45871		
					47217		

Operator	Factory Serial No.			Operator	Factory Serial No.		
Z6K	49389			Z8H	45706		
	49396	and	49397	Z9R	49577		
	49578				49579		
	49623				49621	and	49622
	49706				49627		
	49938				49630		
	53198	and	53199		49672		
					49790		
Z6R	47438				49900		
	47697						
	47754			Z9U	49399		
					49617	and	49618
Z7B	45730				49709		
					49855		
Z7R	47514						
				1K	47013		
Z8F	47010						
	47015						

(b) Other Aircraft:

Factory Serial No.

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47177
47275
47277
47285
47318
47320    thru    47322
47359
47377    thru    47379
47443    thru    47445
49388
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NOTE: Aircraft listed under Other Aircraft are
affected by this Service Bulletin but were
not assigned to any specific operator at
time of Service Bulletin issue.

DOUGLAS AIRCRAFT COMPANY
SERVICE BULLETIN

(c) Manufacturer's Fuselage and Factory Serial Numbers:

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
1	(45695)	56	(45739)	111	(47063)	161	(47073)	212	(47140)	263	(47172)
2	(45696)	57	(45770)	112	(45846)	163	(47079)	213	(47113)	264	(45790)
4	(45711)	59	(45798)	113	(47019)	164	(47080)	214	(47131)	265	(47166)
5	(45698)	60	(45734)	114	(45782)	165	(47044)	215	(47134)	266	(47167)
6	(45712)	61	(45706)	115	(47012)	167	(47110)	216	(47155)	267	(47181)
7	(45714)	62	(45740)	116	(45839)	168	(47046)	217	(45789)	268	(47313)
8	(45699)	63	(45723)	117	(45840)	169	(47139)	218	(47114)	269	(47065)
9	(45713)	64	(45785)	118	(47050)	170	(47152)	219	(47086)	270	(47072)
10	(45715)	65	(45795)	119	(47026)	171	(45788)	220	(47104)	271	(47182)
13	(45716)	66	(45741)	120	(47064)	172	(47040)	221	(47105)	272	(47183)
14	(45728)	67	(45825)	121	(47037)	173	(47016)	223	(47062)	273	(47173)
15	(45702)	68	(45829)	122	(47057)	174	(47030)	224	(47122)	275	(47185)
16	(45729)	69	(45799)	123	(47058)	175	(47069)	225	(47129)	276	(47186)
17	(45718)	70	(45707)	124	(45863)	176	(47070)	226	(47146)	277	(47121)
18	(45719)	71	(45775)	125	(47059)	177	(47083)	227	(47141)	278	(47195)
19	(45725)	72	(45776)	126	(47020)	178	(47035)	228	(47156)	279	(47314)
20	(45717)	73	(45833)	127	(45787)	179	(47084)	229	(47132)	280	(47191)
21	(45703)	75	(45830)	128	(45783)	180	(47088)	230	(47133)	281	(47241)
23	(45842)	76	(45831)	129	(47013)	181	(47082)	232	(47142)	282	(47187)
25	(45735)	79	(45826)	130	(45864)	182	(47111)	233	(47135)	283	(45867)
26	(45742)	81	(47004)	131	(47051)	183	(47047)	234	(47087)	284	(47150)
27	(45720)	82	(45778)	132	(47027)	184	(47045)	235	(47106)	285	(47151)
28	(45843)	83	(47000)	133	(47021)	185	(47153)	236	(47107)	286	(47174)
29	(45743)	84	(45832)	134	(47076)	186	(47017)	237	(47093)	290	(45868)
30	(45772)	85	(45834)	135	(45827)	187	(47031)	238	(47143)	291	(47188)
31	(45744)	86	(47003)	136	(47038)	188	(47071)	239	(47144)	292	(47246)
32	(45745)	87	(47007)	137	(45865)	189	(47089)	240	(47190)	293	(47207)
33	(45844)	88	(47043)	138	(45866)	190	(47090)	241	(47160)	294	(47252)
34	(45731)	90	(45786)	139	(47085)	191	(47095)	242	(45828)	295	(47253)
35	(47048)	91	(45845)	140	(45784)	192	(47096)	243	(47136)	296	(47220)
37	(45730)	92	(45779)	141	(47014)	193	(47097)	244	(47251)	297	(47249)
39	(45773)	93	(45780)	142	(47052)	194	(47055)	245	(47204)	298	(47175)
40	(45747)	94	(47001)	143	(47067)	195	(47101)	246	(47148)	299	(47222)
41	(45732)	95	(45835)	144	(47022)	197	(47099)	247	(47145)	300	(47223)
42	(47049)	96	(45836)	145	(47028)	198	(47102)	248	(47158)	301	(47254)
43	(45727)	97	(47010)	146	(47078)	199	(47112)	249	(47161)	302	(47198)
44	(45721)	98	(47008)	147	(47033)	200	(47041)	250	(47205)	303	(47189)
45	(45736)	99	(47006)	149	(47094)	201	(47154)	251	(47108)	304	(47242)
46	(45841)	100	(45710)	150	(47066)	202	(47149)	252	(47109)	305	(47221)
47	(45748)	101	(45781)	151	(47005)	203	(47018)	255	(47162)	306	(47214)
48	(45733)	102	(47011)	152	(47009)	205	(47103)	256	(47163)	307	(47208)
49	(45737)	103	(45837)	154	(47039)	206	(47091)	257	(47248)	308	(47116)
50	(45749)	104	(45838)	156	(47015)	207	(47061)	258	(47137)	309	(47250)
51	(45797)	107	(47053)	157	(47029)	208	(47147)	259	(47164)	310	(47255)
53	(45705)	108	(47098)	158	(47023)	209	(47120)	260	(47165)	311	(47193)
54	(45738)	109	(47060)	159	(47024)	210	(47128)	261	(47115)	312	(47218)
55	(45722)	110	(47054)	160	(47068)	211	(47130)	262	(47312)	313	(47215)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
314	(47176)	372	(45792)	423	(47168)	479	(47382)	532	(47429)	583	(47517)
315	(47216)	373	(47276)	424	(47169)	480	(47410)	533	(47411)	584	(47465)
316	(47224)	374	(47270)	425	(47170)	482	(47402)	534	(47412)	585	(47445)
317	(47225)	375	(47036)	426	(47318)	483	(47354)	535	(47450)	586	(47505)
318	(47138)	376	(47074)	427	(47281)	484	(47364)	536	(47414)	589	(47425)
319	(47117)	377	(47297)	428	(47232)	485	(47345)	537	(47434)	590	(47469)
320	(47263)	378	(47119)	429	(47233)	486	(47042)	538	(47383)	591	(47470)
321	(47199)	379	(47277)	430	(47399)	487	(47405)	539	(47367)	593	(47523)
322	(47157)	380	(47278)	431	(47350)	488	(47361)	540	(47435)	594	(47507)
323	(47178)	381	(45793)	432	(47303)	489	(47389)	541	(47436)	595	(47508)
324	(47194)	382	(47301)	433	(47315)	490	(47390)	542	(47385)	596	(47472)
325	(47219)	383	(47292)	434	(47319)	491	(47391)	543	(47384)	597	(47280)
326	(47256)	384	(47293)	435	(47234)	492	(47362)	544	(47437)	598	(47473)
327	(47209)	385	(47317)	436	(47235)	493	(47334)	545	(47438)	599	(47491)
328	(47206)	386	(47257)	438	(47300)	494	(47335)	547	(47451)	600	(47474)
329	(47264)	387	(47258)	439	(47316)	495	(47359)	548	(47448)	601	(47494)
330	(47177)	388	(47125)	441	(47305)	496	(47377)	549	(47459)	602	(47419)
331	(45869)	389	(47271)	442	(47351)	497	(47409)	550	(47386)	603	(47526)
333	(47226)	390	(47272)	444	(47401)	498	(47244)	551	(47370)	604	(47497)
335	(47179)	391	(47327)	445	(47363)	499	(47406)	552	(47449)	605	(47479)
336	(45774)	392	(47328)	446	(47282)	500	(47336)	553	(47487)	606	(47522)
337	(47279)	394	(45847)	447	(47392)	501	(47439)	554	(47404)	607	(47480)
339	(47265)	395	(47230)	449	(47310)	502	(47440)	555	(47395)	609	(47430)
340	(47295)	396	(47231)	450	(47236)	504	(47365)	556	(47420)	610	(47535)
341	(47210)	397	(47283)	451	(47237)	505	(47368)	557	(47396)	611	(47468)
342	(47247)	398	(47311)	452	(47355)	506	(47371)	558	(47421)	612	(47478)
343	(47291)	399	(47298)	453	(47352)	507	(47403)	559	(47492)	613	(47477)
344	(45871)	400	(47202)	454	(47320)	508	(47378)	560	(47490)	614	(47518)
345	(45872)	401	(47203)	455	(47321)	509	(47379)	561	(47446)	615	(47519)
347	(47273)	402	(47294)	456	(47322)	511	(47415)	562	(47493)	616	(47481)
348	(47274)	403	(47340)	458	(47394)	512	(47416)	563	(47447)	617	(47528)
349	(45791)	404	(47341)	459	(47201)	513	(47372)	564	(47462)	618	(47527)
350	(45873)	405	(47126)	460	(47343)	514	(47380)	565	(47453)	619	(47514)
351	(45874)	406	(47329)	461	(47332)	515	(47325)	566	(47498)	621	(47466)
352	(47266)	407	(47330)	462	(47306)	516	(47326)	567	(47454)	622	(47547)
353	(47289)	408	(47331)	463	(47307)	517	(47376)	568	(47499)	623	(47550)
354	(47180)	409	(47259)	464	(47346)	518	(47417)	569	(47476)	624	(47530)
355	(47228)	410	(47260)	465	(47238)	519	(47381)	570	(47418)	625	(47529)
356	(47229)	411	(47261)	466	(47239)	520	(47431)	571	(47501)	626	(47532)
359	(47286)	412	(47262)	467	(47408)	521	(47413)	572	(47426)	627	(47460)
360	(47217)	413	(47284)	468	(47323)	522	(47373)	573	(47427)	628	(47486)
363	(47275)	414	(47285)	469	(47324)	523	(47374)	574	(47502)	629	(47521)
364	(47287)	415	(47337)	471	(47353)	524	(47442)	575	(47464)	630	(47516)
365	(45875)	416	(47338)	472	(47344)	525	(47432)	576	(47422)	631	(47525)
366	(45876)	417	(47127)	473	(47171)	526	(47433)	577	(47443)	632	(47524)
367	(47290)	418	(47342)	474	(47308)	527	(47488)	578	(47444)	633	(47548)
368	(47212)	419	(47348)	475	(47360)	528	(47489)	579	(47455)	634	(47551)
369	(47288)	420	(47349)	476	(47357)	529	(47369)	580	(47456)	635	(47520)
370	(47268)	421	(47299)	477	(47358)	530	(47366)	581	(47423)	636	(47397)
371	(47269)	422	(47302)	478	(47347)	531	(47375)	582	(47424)	637	(47539)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
638	(47531)	690	(47574)	744	(47629)	799	(47688)	852	(47739)	902	(47784)
639	(47549)	691	(47566)	745	(47630)	800	(47686)	853	(47724)	903	(47796)
640	(47552)	692	(47581)	747	(47614)	801	(47699)	854	(47729)	904	(47785)
641	(47533)	694	(47573)	748	(47632)	802	(47689)	855	(47748)	905	(47786)
642	(47553)	695	(47571)	749	(47642)	803	(47692)	856	(47754)	906	(47789)
643	(47509)	696	(47584)	750	(47643)	804	(47693)	857	(47742)	907	(47790)
644	(47534)	697	(47583)	751	(47615)	805	(47694)	858	(47728)	908	(47791)
645	(47510)	698	(47585)	752	(47633)	806	(47695)	859	(47743)	910	(47792)
646	(47458)	699	(47588)	754	(47635)	807	(47659)	860	(47731)	911	(47793)
647	(47467)	700	(47587)	755	(47646)	808	(47696)	861	(47732)	912	(47787)
648	(47484)	701	(47582)	756	(47634)	809	(47698)	862	(47733)	913	(47797)
650	(47471)	702	(47578)	757	(47654)	810	(47660)	863	(47745)	914	(47798)
651	(47504)	703	(47590)	759	(47616)	811	(47700)	864	(47746)	915	(47794)
652	(47542)	704	(47580)	760	(47653)	812	(47661)	865	(47749)	916	(47795)
653	(47475)	705	(47593)	761	(47648)	813	(47708)	866	(47751)	918	(47799)
654	(47543)	706	(47591)	762	(47617)	814	(47709)	867	(47753)	919	(48114)
655	(47546)	707	(47586)	763	(47655)	815	(47712)	868	(47734)	920	(48115)
656	(47495)	708	(47572)	764	(47618)	816	(47697)	869	(47735)	921	(48116)
657	(47556)	709	(47595)	765	(47668)	817	(47702)	870	(47750)	922	(48117)
658	(47554)	710	(47600)	767	(47644)	818	(47710)	871	(47759)	923	(48111)
659	(47536)	711	(47589)	768	(47619)	819	(47704)	872	(47752)	924	(48015)
660	(47452)	712	(47592)	769	(47670)	820	(47713)	873	(47756)	925	(48103)
661	(47557)	713	(47597)	771	(47650)	821	(47706)	874	(47760)	926	(48112)
662	(47537)	714	(47596)	772	(47666)	822	(47701)	875	(47761)	927	(48100)
663	(47461)	715	(47601)	773	(47647)	823	(47707)	876	(47762)	928	(48104)
664	(47560)	716	(47599)	774	(47671)	824	(47714)	877	(47757)	929	(48105)
665	(47538)	717	(47594)	775	(47664)	825	(47715)	878	(47755)	930	(48113)
666	(47485)	718	(47602)	776	(47669)	826	(47722)	879	(47763)	931	(48101)
667	(47555)	719	(47598)	777	(47620)	827	(47736)	880	(47758)	932	(48102)
668	(47540)	720	(47603)	778	(47672)	828	(47730)	881	(47769)	933	(48106)
669	(47428)	721	(47607)	779	(47673)	829	(47737)	882	(47764)	934	(48123)
670	(47541)	722	(47604)	780	(47651)	830	(47738)	883	(47771)	935	(48121)
671	(47545)	723	(47609)	781	(47680)	831	(47725)	884	(47774)	936	(48107)
672	(47559)	724	(47605)	782	(47675)	832	(47716)	885	(47767)	937	(48108)
673	(47496)	725	(47610)	783	(47656)	833	(47717)	886	(47766)	938	(48002)
675	(47565)	726	(47611)	784	(47681)	834	(47718)	887	(47768)	939	(48109)
676	(47544)	727	(47606)	785	(47676)	835	(47740)	888	(47775)	940	(48131)
677	(47511)	728	(47623)	786	(47684)	837	(47744)	889	(47776)	941	(48016)
678	(47512)	730	(47638)	787	(47657)	838	(47723)	890	(47772)	942	(48118)
679	(47513)	731	(47637)	788	(47682)	839	(47747)	891	(47773)	943	(48119)
680	(47575)	732	(47608)	789	(47678)	841	(47703)	892	(47770)	944	(48003)
681	(47564)	733	(47624)	790	(47658)	842	(47705)	893	(47782)	945	(48110)
682	(47576)	734	(47640)	791	(47677)	843	(47690)	894	(47780)	946	(48034)
683	(47569)	735	(47639)	792	(47683)	844	(47711)	895	(47781)	947	(48125)
684	(47570)	736	(47612)	793	(47674)	845	(47719)	896	(47777)	948	(48024)
685	(47562)	738	(47626)	794	(47685)	847	(47721)	897	(47778)	949	(48120)
686	(47577)	739	(47627)	795	(47687)	848	(47727)	898	(47779)	950	(48004)
687	(47563)	740	(47628)	796	(47665)	849	(47726)	899	(47783)	951	(48126)
688	(47567)	742	(47613)	797	(47679)	850	(47662)	900	(47765)	952	(48025)
689	(47568)	743	(47631)	798	(47652)	851	(47663)	901	(47788)	953	(48029)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
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955	(48035)	1007	(48055)	1058	(48159)	1108	(49160)	1158	(49256)	1208	(49374)
956	(48132)	1008	(48041)	1059	(48097)	1109	(49161)	1159	(49262)	1209	(49284)
957	(48005)	1009	(48042)	1060	(48098)	1110	(49162)	1160	(49257)	1210	(49291)
958	(48017)	1010	(48043)	1061	(49116)	1111	(49163)	1161	(49258)	1211	(49292)
959	(48133)	1011	(48072)	1062	(49110)	1112	(49171)	1162	(49259)	1212	(49293)
960	(48026)	1012	(48056)	1063	(49117)	1113	(49172)	1163	(49263)	1213	(49294)
961	(48127)	1013	(48014)	1064	(49111)	1114	(49173)	1164	(49269)	1214	(49295)
962	(48030)	1014	(48150)	1065	(49118)	1115	(49174)	1165	(49270)	1215	(49296)
963	(48036)	1015	(48062)	1066	(49114)	1116	(49175)	1166	(49271)	1216	(49297)
964	(48128)	1016	(48079)	1067	(48099)	1117	(49165)	1167	(49272)	1217	(49298)
965	(48037)	1017	(48151)	1068	(49112)	1118	(49169)	1168	(49273)	1218	(49299)
966	(48006)	1018	(48073)	1069	(49113)	1119	(49170)	1169	(49252)	1219	(49300)
967	(48044)	1019	(48066)	1070	(49119)	1120	(49176)	1170	(49202)	1220	(49301)
968	(48129)	1020	(48063)	1071	(49120)	1121	(49177)	1171	(49264)	1221	(49302)
969	(48031)	1021	(48138)	1072	(49121)	1122	(49178)	1172	(49188)	1222	(49303)
970	(48045)	1022	(48080)	1073	(49122)	1123	(49179)	1173	(49189)	1223	(49304)
971	(48007)	1023	(48057)	1074	(49125)	1124	(49180)	1174	(49203)	1224	(49355)
972	(48122)	1024	(48139)	1075	(49123)	1125	(49181)	1175	(49286)	1225	(49380)
973	(48027)	1025	(49100)	1076	(49102)	1126	(49192)	1176	(49287)	1226	(49305)
974	(48052)	1026	(48074)	1077	(49124)	1127	(49193)	1177	(49231)	1227	(49306)
975	(48051)	1027	(48140)	1078	(48021)	1128	(49182)	1178	(49232)	1228	(49307)
976	(48130)	1028	(48067)	1079	(48022)	1129	(49183)	1179	(49204)	1229	(49308)
977	(48046)	1029	(48086)	1080	(49126)	1130	(49194)	1180	(49190)	1230	(49279)
978	(48032)	1030	(48141)	1081	(48165)	1131	(49184)	1181	(49277)	1231	(49381)
979	(48028)	1031	(48068)	1082	(49127)	1132	(49185)	1182	(49164)	1232	(49382)
980	(48134)	1032	(48069)	1083	(49103)	1133	(49186)	1183	(49278)	1233	(49212)
981	(48008)	1033	(48142)	1084	(48166)	1134	(49187)	1184	(49205)	1234	(49235)
982	(48137)	1034	(48092)	1085	(49104)	1135	(49115)	1185	(49265)	1235	(49236)
983	(48049)	1035	(48087)	1086	(49149)	1136	(49195)	1186	(49250)	1236	(49383)
984	(48148)	1036	(48143)	1087	(49150)	1137	(49196)	1187	(49288)	1237	(49384)
985	(48009)	1037	(48088)	1088	(49151)	1138	(49197)	1188	(49206)	1238	(49266)
986	(48053)	1038	(48089)	1089	(49152)	1139	(49222)	1189	(49207)	1239	(49267)
987	(48135)	1039	(48144)	1090	(49138)	1140	(49229)	1190	(49208)	1240	(49425)
988	(48033)	1041	(48091)	1091	(49139)	1141	(49230)	1191	(49209)	1241	(49428)
990	(48149)	1042	(48145)	1092	(49140)	1142	(49198)	1192	(49210)	1242	(49429)
991	(48058)	1043	(48083)	1093	(49141)	1143	(49199)	1193	(49289)	1243	(49213)
992	(48010)	1044	(48146)	1094	(49142)	1144	(49237)	1194	(49280)	1244	(49385)
993	(48136)	1045	(48020)	1095	(49143)	1145	(49245)	1195	(49290)	1245	(49214)
994	(48011)	1046	(48154)	1096	(49144)	1146	(49246)	1196	(49366)	1246	(49309)
995	(48018)	1047	(48059)	1097	(49145)	1147	(49200)	1197	(49367)	1247	(49310)
996	(48054)	1048	(48147)	1098	(49166)	1148	(49201)	1198	(49368)	1248	(49311)
997	(48012)	1049	(48093)	1099	(49167)	1149	(49249)	1199	(49369)	1249	(49312)
999	(48070)	1050	(48155)	1100	(49168)	1150	(49260)	1200	(49281)	1250	(49356)
1000	(48013)	1051	(49101)	1101	(49153)	1151	(49247)	1201	(49373)	1251	(49357)
1001	(48019)	1052	(48156)	1102	(49154)	1152	(49248)	1202	(49211)	1252	(49372)
1002	(48038)	1053	(48094)	1103	(49155)	1153	(49261)	1203	(49233)	1253	(49215)
1003	(48039)	1054	(48157)	1104	(49156)	1154	(49251)	1204	(49234)	1254	(49420)
1004	(48071)	1055	(48095)	1105	(49157)	1155	(49253)	1205	(49379)	1255	(49313)
1005	(48048)	1056	(48158)	1106	(49158)	1156	(49254)	1206	(49370)	1256	(49314)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
1257	(49315)	1307	(49332)	1357	(49401)	1407	(49459)	1457	(49585)	1507	(49594)
1258	(49316)	1308	(49481)	1358	(49442)	1408	(49460)	1458	(49571)	1508	(49673)
1259	(49317)	1309	(49482)	1359	(49461)	1409	(49468)	1459	(49657)	1509	(49595)
1260	(49415)	1310	(49219)	1360	(49491)	1410	(49469)	1460	(49559)	1510	(49596)
1261	(49402)	1311	(49333)	1361	(49492)	1411	(49582)	1461	(49658)	1511	(49597)
1262	(49216)	1312	(49334)	1362	(49531)	1412	(49411)	1462	(49560)	1512	(49607)
1263	(49421)	1313	(49448)	1363	(49504)	1413	(49574)	1463	(49671)	513	(49598)
1264	(49422)	1314	(49483)	1364	(49493)	1414	(49575)	1464	(49617)	1514	(49510)
1265	(49318)	1315	(49484)	1365	(49538)	1415	(49556)	1465	(49579)	1515	(49599)
1266	(49319)	1316	(49485)	1366	(49539)	1416	(49541)	1466	(49667)	1516	(49600)
1267	(49320)	1317	(49486)	1367	(49567)	1417	(49470)	1467	(49668)	1517	(49609)
1268	(49217)	1318	(49439)	1368	(49494)	1418	(49471)	1468	(49572)	1518	(49501)
1269	(49390)	1319	(49220)	1369	(49580)	1419	(49634)	1469	(49573)	1519	(49613)
1270	(49391)	1320	(49335)	1370	(49344)	1420	(49635)	1470	(49583)	1520	(49647)
1271	(49416)	1321	(49336)	1371	(49345)	1421	(49642)	1471	(49584)	1521	(49648)
1272	(49392)	1322	(49441)	1372	(49346)	1422	(49576)	1472	(49586)	1522	(49611)
1273	(49321)	1323	(49444)	1373	(49347)	1423	(49643)	1473	(49644)	1523	(49713)
1274	(49218)	1324	(49450)	1374	(49348)	1424	(49412)	1474	(49561)	1524	(49714)
1275	(49363)	1325	(49337)	1375	(49349)	1425	(49507)	1475	(49562)	1525	(49405)
1276	(49364)	1326	(49388)	1376	(49350)	1426	(49472)	1476	(49464)	1526	(49649)
1277	(49365)	1327	(49338)	1377	(49431)	1427	(49473)	1477	(49462)	1527	(49650)
1278	(49417)	1328	(49339)	1378	(49432)	1428	(49433)	1478	(49701)	1528	(49651)
1279	(49393)	1329	(49340)	1379	(49554)	1429	(49662)	1479	(49702)	1529	(49652)
1280	(49322)	1330	(49221)	1380	(49568)	1430	(49404)	1480	(49645)	1530	(49715)
1281	(49323)	1331	(49397)	1381	(49505)	1431	(49474)	1481	(49646)	1531	(49716)
1282	(49282)	1332	(49398)	1382	(49527)	1432	(49475)	1482	(49509)	1532	(49717)
1283	(49423)	1333	(49389)	1383	(49528)	1433	(49542)	1483	(49619)	1533	(49718)
1284	(49424)	1334	(49430)	1384	(49581)	1434	(49543)	1484	(49620)	1534	(49653)
1285	(49394)	1335	(49487)	1385	(49351)	1435	(49602)	1485	(49563)	1535	(49654)
1286	(49395)	1336	(49341)	1386	(49352)	1436	(49557)	1486	(49564)	1536	(49655)
1287	(49386)	1337	(49342)	1387	(49353)	1437	(49663)	1487	(49707)	1537	(49511)
1288	(49387)	1338	(49532)	1388	(49451)	1438	(49659)	1488	(49463)	1538	(49626)
1289	(49324)	1339	(49343)	1389	(49452)	1439	(49476)	1489	(49703)	1539	(49822)
1290	(49325)	1340	(49525)	1390	(49453)	1440	(49570)	1490	(49704)	1540	(49823)
1291	(49443)	1341	(49533)	1391	(49454)	1441	(49477)	1491	(49705)	1541	(49587)
1292	(49501)	1342	(49526)	1392	(49455)	1442	(49603)	1492	(49711)	1542	(49709)
1293	(49478)	1343	(49399)	1393	(49456)	1443	(49544)	1493	(49669)	1543	(49615)
1294	(49358)	1344	(49534)	1394	(49418)	1444	(49545)	1494	(49672)	1544	(49549)
1295	(49326)	1345	(49437)	1395	(49540)	1445	(49660)	1495	(49621)	1545	(49656)
1296	(49327)	1346	(49503)	1396	(49529)	1446	(49434)	1496	(49565)	1546	(49675)
1297	(49479)	1347	(49535)	1397	(49530)	1447	(49546)	1497	(49566)	1547	(49710)
1298	(49480)	1348	(49536)	1398	(49457)	1448	(49591)	1498	(49622)	1548	(49512)
1299	(49283)	1349	(49359)	1399	(49426)	1449	(49508)	1499	(49623)	1549	(49724)
1300	(49502)	1350	(49488)	1400	(49506)	1450	(49553)	1500	(49712)	1550	(49676)
1301	(49328)	1351	(49489)	1401	(49427)	1451	(49558)	1501	(49605)	1551	(49677)
1302	(49329)	1352	(49490)	1402	(49555)	1452	(49661)	1502	(49624)	1552	(49725)
1303	(49436)	1353	(49438)	1403	(49419)	1453	(49670)	1503	(49625)	1553	(49728)
1304	(49440)	1354	(49449)	1404	(49403)	1454	(49577)	1504	(49435)	1554	(49824)
1305	(49396)	1355	(49537)	1405	(49569)	1455	(49578)	1505	(49592)	1555	(49678)
1306	(49331)	1356	(49400)	1406	(49458)	1456	(49604)	1506	(49593)	1556	(49614)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
1557	(49679)	1607	(49733)	1657	(49766)	1707	(49896)	1757	(49972)	1807	(49851)
1558	(49680)	1608	(49816)	1658	(49519)	1708	(49897)	1758	(49923)	1808	(53161)
1559	(49769)	1609	(49515)	1659	(49912)	1709	(49898)	1759	(49924)	1809	(53022)
1560	(49681)	1610	(49726)	1660	(49800)	1710	(49978)	1760	(49987)	1810	(53172)
1561	(49708)	1611	(49618)	1661	(49801)	1711	(49979)	1761	(49889)	1811	(53173)
1562	(49682)	1612	(49817)	1662	(49802)	1712	(49980)	1762	(49973)	1812	(53000)
1563	(49683)	1613	(49818)	1663	(49803)	1713	(49796)	1763	(49842)	1813	(53028)
1564	(49684)	1614	(49706)	1664	(49878)	1714	(49834)	1764	(49934)	1814	(53029)
1565	(49730)	1615	(49821)	1665	(49913)	1715	(49926)	1765	(49900)	1815	(53001)
1566	(49731)	1616	(49925)	1666	(49879)	1716	(49927)	1766	(49901)	1816	(53030)
1567	(49732)	1617	(49641)	1667	(49828)	1717	(49835)	1767	(49905)	1817	(53149)
1568	(495 3)	1618	(49740)	1668	(49968)	1718	(53051)	1768	(49988)	1818	(53015)
1569	(49606)	1619	(49734)	1669	(49804)	1719	(49969)	1769	(49989)	1819	(53031)
1570	(49719)	1620	(49760)	1670	(49779)	1720	(49930)	1770	(49990)	1820	(53032)
1571	(49720)	1621	(49727)	1671	(49520)	1721	(49836)	1771	(49843)	1821	(53023)
1572	(49608)	1622	(49516)	1672	(49805)	1722	(49899)	1772	(49849)	1822	(53033)
1573	(49845)	1623	(49761)	1673	(49806)	1723	(49915)	1773	(49935)	1823	(53214)
1574	(49721)	1624	(49762)	1674	(49780)	1724	(49523)	1774	(49974)	1824	(53215)
1575	(49722)	1625	(49909)	1675	(49856)	1725	(49981)	1775	(49975)	1825	(53024)
1576	(49723)	1626	(49763)	1676	(49880)	1726	(49982)	1776	(53044)	1826	(53034)
1577	(49825)	1627	(49784)	1677	(49881)	1727	(49466)	1777	(53045)	1827	(49612)
1578	(49826)	1628	(49785)	1678	(49829)	1728	(49855)	1778	(49936)	1828	(53083)
1579	(49844)	1629	(49819)	1679	(49882)	1729	(49916)	1779	(53018)	1829	(49807)
1580	(49627)	1630	(49741)	1680	(49904)	1730	(49837)	1780	(49991)	1830	(53084)
1581	(49846)	1631	(49786)	1681	(49413)	1731	(53052)	1781	(49992)	1831	(53150)
1582	(49628)	1632	(49764)	1682	(49414)	1732	(49928)	1782	(49993)	1832	(53241)
1583	(49629)	1633	(49517)	1683	(49883)	1733	(49838)	1783	(53019)	1833	(53242)
1584	(49550)	1634	(49777)	1684	(49830)	1734	(49907)	1784	(49937)	1834	(53243)
1585	(49847)	1635	(49735)	1685	(49884)	1735	(49917)	1785	(49938)	1835	(53002)
1586	(49551)	1636	(49787)	1686	(49890)	1736	(53012)	1786	(49906)	1836	(49808)
1587	(49767)	1637	(49788)	1687	(49857)	1737	(49970)	1787	(49939)	1837	(49933)
1588	(49810)	1638	(49910)	1688	(49831)	1738	(53013)	1788	(49940)	1838	(49985)
1589	(49514)	1639	(49795)	1689	(49885)	1739	(49839)	1789	(53020)	1839	(53085)
1590	(49811)	1640	(49736)	1690	(49521)	1740	(53014)	1790	(49994)	1840	(53086)
1591	(49630)	1641	(49737)	1691	(49886)	1741	(49929)	1791	(49995)	1841	(53087)
1592	(49848)	1642	(49789)	1692	(49888)	1742	(49467)	1792	(49996)	1842	(49986)
1593	(49812)	1643	(49790)	1693	(49914)	1743	(49918)	1793	(49941)	1843	(49809)
1594	(49877)	1644	(49791)	1694	(49891)	1744	(49919)	1794	(53046)	1845	(53257)
1595	(49768)	1645	(49765)	1695	(49892)	1745	(49840)	1795	(53115)	1846	(53004)
1596	(49631)	1646	(49778)	1696	(49893)	1746	(49524)	1796	(53116)	1847	(53198)
1597	(49552)	1647	(49518)	1697	(49894)	1747	(49983)	1797	(53017)	1848	(53258)
1598	(49820)	1648	(49738)	1698	(49895)	1748	(49984)	1798	(49850)	1849	(53259)
1599	(49813)	1649	(49739)	1699	(49887)	1749	(49908)	1799	(49942)	1850	(53016)
1600	(49794)	1650	(49797)	1700	(49976)	1750	(49920)	1800	(49998)	1851	(53063)
1601	(49854)	1651	(49798)	1701	(49977)	1751	(49841)	1801	(53021)	1852	(53088)
1602	(49814)	1652	(49799)	1702	(49522)	1752	(49921)	1802	(53025)	1853	(53089)
1603	(49632)	1653	(49911)	1703	(49832)	1753	(49922)	1803	(49999)	1854	(53174)
1604	(49465)	1654	(49827)	1704	(53050)	1754	(49931)	1804	(53026)	1855	(53005)
1605	(49815)	1655	(49792)	1705	(49610)	1755	(49971)	1805	(53027)	1856	(53054)
1606	(49759)	1656	(49793)	1706	(49833)	1756	(49932)	1806	(53053)	1857	(53055)

FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)	FUS	(FSN)
1858	(53090)	1883	(53155)	1908	(53064)	1933	(53256)	1958	(53363)	1984	(53122)
1859	(53266)	1884	(53156)	1909	(53251)	1934	(49952)	1959	(49852)	1985	(53348)
1860	(53267)	1885	(53157)	1910	(53252)	1935	(53141)	1960	(53062)	1986	(53380)
1861	(53268)	1886	(53138)	1911	(53194)	1936	(53341)	1961	(53364)	1987	(53123)
1862	(53207)	1887	(49943)	1912	(53311)	1937	(53296)	1962	(53337)	1988	(53076)
1863	(53091)	1888	(49944)	1913	(49950)	1938	(53066)	1963	(53370)	1989	(53285)
1864	(53092)	1889	(49945)	1914	(53312)	1939	(53342)	1964	(53120)	1990	(53409)
1865	(53208)	1890	(53193)	1915	(49951)	1940	(53197)	1965	(53371)	1991	(53124)
1866	(53151)	1891	(53158)	1916	(53009)	1941	(53343)	1966	(53284)	1992	(53410)
1867	(53209)	1892	(53159)	1917	(53294)	1942	(53059)	1967	(53340)	1993	(53125)
1868	(53175)	1893	(53160)	1918	(53246)	1943	(53344)	1968	(53199)	1994	(53178)
1869	(53006)	1894	(53057)	1919	(53253)	1944	(53060)	1969	(53042)	1995	(53077)
1870	(53273)	1895	(53008)	1920	(53254)	1945	(53041)	1970	(53372)	1996	(53078)
1871	(53210)	1896	(53275)	1921	(53010)	1946	(53314)	1971	(53121)	1997	(53179)
1872	(53137)	1897	(53040)	1922	(53295)	1947	(53315)	1972	(53176)	1998	(53365)
1873	(53274)	1898	(49946)	1923	(53140)	1948	(49902)	1973	(53177)	2000	(53286)
1874	(53211)	1899	(53139)	1924	(53313)	1949	(49903)	1974	(53303)	2001	(53305)
1875	(53152)	1900	(49947)	1925	(53065)	1950	(53345)	1975	(53304)	2002	(53180)
1876	(53153)	1901	(53244)	1926	(53338)	1951	(53117)	1976	(53074)	2003	(53368)
1877	(53212)	1902	(53247)	1927	(53058)	1952	(53346)	1977	(53075)	2004	(53079)
1878	(53154)	1903	(53248)	1928	(53339)	1953	(53336)	1978	(53245)	2005	(53181)
1879	(53213)	1904	(53249)	1929	(53195)	1954	(53118)	1979	(53347)	2006	(53287)
1880	(53056)	1905	(49948)	1930	(53196)	1955	(53362)	1980	(53378)	2007	(53203)
1881	(53039)	1906	(49949)	1931	(53011)	1956	(53119)	1982	(53043)	2009	(53204)
1882	(53007)	1907	(53250)	1932	(53255)	1957	(53061)	1983	(53379)	2010	(53162)

Option I of this modification will be incorporated prior to delivery on all applicable DC-9, -81, -82, -83, -87, and MD-88 aircraft, manufacturer's fuselage numbers 1981, 1999, 2008, 2011, and subsequent.

(2) **Spares Affected**:

Part No.	Key Word
5914190-Any Configuration	Rudder Power Control Valve and Manifold Assembly
5914066-Any Configuration	Rudder Power Control Actuator Assembly

B. **Reason**:

This Service Bulletin provides information and material requirements to incorporate engineering which modifies the rudder power control valve and manifold assembly to add dual locking capability to the slide adjustment retention nut. Retention nut lockwire has been found to have been inadvertently left out during assembly of the valve, a condition addressed by inspections per previous Service Bulletins. Loss or backing off of the retention nut could result in loss of rudder control. This is an improvement change which will minimize the possibility of a retention nut not being locked or backing off.

DOUGLAS AIRCRAFT COMPANY
SERVICE BULLETIN

C. **Description:**

This Service Bulletin modifies the rudder power control valve and manifold assembly located in the aft fuselage at the lower end of the rudder hinge line as follows:

Option I

(1) Replaces retention nut lockwire with a locking tab washer.

(2) Machines a keyway in slide assembly to accept tab washer.

(3) Bonds a self-locking element on the slide assembly per vendor special process and military specification MIL-F-18240E.

(4) Modifies and reidentifies valve end cap, slide retainer, and slide nut.

Option II

(1) Replaces slide assembly retention nut with a self-locking nut.

(2) Modifies and reidentifies valve end cap, slide retainer, and slide nut.

D. **Compliance:**

It is recommended that this modification be accomplished at the earliest practical maintenance period.

E. **Approval:**

The resultant modification described in paragraph 1.C has been shown to comply with the applicable Federal Aviation Regulations and Revision 1, is approved by the Manager, Los Angeles Aircraft Certification Office, FAA Northwest Mountain Region, on January 21, 1994, and is approved as an alternate means of compliance with Airworthiness Directive No. 93-05-16 R1; Amendment 39-8698.

F. **Manpower:**

NOTE: Man-hours are estimated based on work to be performed by skilled personnel on aircraft/unit which has been placed in a maintenance status. The man-hour/elapsed time estimates do not include:

1. Preparation for the modification: Examples; defueling, purging, placing work stands, opening standard access doors, obtaining tools, and jacking when not essential to the modification.

2. Nonproductive elapsed time: Examples; sealant or adhesive cure time, cleaning, paint drying time, lunch and/or rest periods, and quality assurance inspections.

3. Administrative functions: Examples; planning,
    engineering liaison, parts requisition, shift change
    coordination, and report writing.

Operators should take the above into consideration when
scheduling this modification.

Man-hours do not include time for machine work required per Option I
or II to accomplish this modification.

This modification may be accomplished in the following approximate
man-hours or elapsed hours per aircraft:

	Man-Hours Per Options	
Work Phases	I	II
Gain Access	0.4	0.4
Remove	1.0	1.0
Modify (Bench)	3.0	2.0
Install	1.0	1.0
Functional Test	1.0	1.0
Close Up	0.4	0.4
Total Man-Hours	6.8	5.8
Total Elapsed Hours	6.8	5.8

G. Material - Cost and Availability:

(1) Aircraft:

    (a) Parts/materials required to accomplish this modification are
         listed in paragraph 3.A and are to be procured from operator's
         stock or supplier.

    (b) Slide assembly affected by Option I of this Service Bulletin
         is to be returned to the following address for installation of
         a self-locking element per Military Specification MIL-F-18240E.

         Reference this Service Bulletin number and direct inquiries
         regarding cost and turnaround time to:

                 LONG-LOK Fasteners Corporation
                 Eastern Division
                 10630 Chester Road
                 Cincinnati, Ohio 45215
                 (DC-9 Service Bulletin 27-321)

(2) Spares:

    Procurement of parts/materials required for modification of spares
    is the same as indicated in paragraph 1.G.(1).

H. **Tooling - Price and Availability:**

None.

I. **Weight and Balance:**

None.

J. **References:**

(1) This Service Bulletin may be accomplished in conjunction with DC-9 Service Bulletin 27-301 for convenience.

(2) Federal Aviation Administration Airworthiness Directive No. 93-05-16 R1; Amendment 39-8698, effective November 18, 1993.

(3) Data used in preparation of this Service Bulletin:

NOTE: Engineering drawings, noted with an asterisk, are not required by the operator to plan or accomplish this Service Bulletin. All required information from these drawings has been incorporated into this Service Bulletin.

Data Identification	Change	Type of Data
MIL-F-18240E		Military Specification
MM Chapters 6, 27, and 29		Maintenance Manual
OM Chapter 27		Overhaul Manual
*SR09270026	C	Service Rework Drawing

(4) Data previously supplied by original issue in support of Option I of this Service Bulletin:

Data Identification	Change	Type of Data
MIL-F-18240E		Military Specification

K. **Publications Affected:**

The modification outlined in this Service Bulletin affects the following DC-9 publications:

Publication	Chapter/Section
Illustrated Parts Catalog	27-20
Overhaul Manual	27-20

L. **Electrical Load Data:**

Not affected.

M. **Software Accomplishment Summary:**

Not affected.

2. <u>Accomplishment Instructions</u>:

<u>WARNING</u>: TO AVOID INJURY TO MAINTENANCE PERSONNEL
OR DAMAGE TO EQUIPMENT, MAKE CERTAIN
ADEQUATE PRECAUTIONS ARE TAKEN WHILE
PERFORMING ANY WORK IF ELECTRICAL POWER
IS APPLIED TO THE AIRCRAFT.

<u>CAUTION</u>: ELECTRICALLY GROUND THE AIRCRAFT.

<u>NOTE</u>: Chapters within parentheses refer to
sections of the Maintenance Manual.

Option I

A. Gain access to modification area by opening access door 6101A.
(See chapter 6-11-6 for DC-9, chapter 6-25-00 for MD-80.)

B. Depressurize hydraulic system. (See chapter 29-00-0, paragraph entitled
"Depressurize/Pressurize Hydraulic System" for DC-9, chapter 29-00-00 for
MD-80.)

C. Remove and retain 5914066-(any configuration) rudder power control
actuator assembly and attaching parts. (See chapter 27-20-8, paragraph
entitled "Rudder Hydraulic Power Package – Removal/Installation" for DC-9,
chapter 27-20-08 for MD-80.)

D. Modify 5914190-(any configuration) rudder power control valve and manifold
assembly per Figure 1.

Reidentify modified 5914190-5501 assembly as 5914190-5503.
Reidentification of any other configuration of valve and
manifold assembly is at operator's option.

<u>NOTE</u>: Return slide assembly to supplier for installation
of self-locking element per military specification
MIL-F-18240E. See paragraph 1.G.(1)(a) for
shipping and pricing information.

E. Perform slide centering adjustment of rudder power control valve and
manifold assembly per Overhaul Manual, chapter 27-20-7, page 11, step (22).

F. Reidentify rudder power control actuator assembly as follows:

<u>New Part No.</u>	<u>Old Part No.</u>
5914066-5567	5914066-5555
5914066-5569	5914066-5557
5914066-5571	5914066-5559
5914066-5573	5914066-5561
5914066-5575	5914066-5563
5914066-5577	5914066-5565

Reidentification of any other configuration of rudder power
control actuator assembly not shown is at operator's option.

G. Install modified and reidentified rudder power control actuator assembly.
(See chapter 27-20-8, paragraph entitled "Rudder Hydraulic Power Package –
Removal/Installation" for DC-9, chapter 27-20-08 for MD-80.)

H. Pressurize hydraulic system and check for leakage. (See chapter
    29-00-0, paragraph entitled "Depressurize/Pressurize Hydraulic System"
    for DC-9, chapter 29-00-00 for MD-80.)

I. Functionally check rudder power control actuator. (See chapter 27-20-8,
    paragraph entitled "Adjustment/Test Rudder Hydraulic Power Package"
    for DC-9, chapter 27-20-08 for MD-80.)

J. Close access door.

Option II

A. Gain access to modification area by opening access door 6101A.
    (See chapter 6-11-6 for DC-9, chapter 6-25-00 for MD-80.)

B. Depressurize hydraulic system. (See chapter 29-00-0, paragraph entitled
    "Depressurize/Pressurize Hydraulic System" for DC-9, chapter 29-00-00
    for MD-80.)

C. Remove and retain 5914066-(any configuration) rudder power control
    actuator assembly and attaching parts. (See chapter 27-20-8, paragraph
    entitled "Rudder Hydraulic Power Package - Removal/Installation" for
    DC-9, chapter 27-20-08 for MD-80.)

D. Modify 5914190-(any configuration) rudder power control valve and
    manifold assembly per Figure 2.

    Reidentify modified 5914190-5501 assembly as SR09270026-5.
    Reidentification of any other configuration of valve and manifold
    assembly is at operator's option.

E. Perform slide centering adjustment of rudder power control valve
    and manifold assembly per Overhaul Manual, chapter 27-20-7, page
    12A, step (22A).

F. Reidentify rudder power control actuator assembly as follows:

New Part No.	Old Part No.
5914066-5567	5914066-5555
5914066-5569	5914066-5557
5914066-5571	5914066-5559
5914066-5573	5914066-5561
5914066-5575	5914066-5563
5914066-5577	5914066-5565

    Reidentification of any other configuration of rudder power
    control actuator assembly not shown is at operator's option.

G. Install modified and reidentified rudder power control actuator assembly.
    (See chapter 27-20-8, paragraph entitled "Rudder Hydraulic Power Package -
    Removal/Installation" for DC-9, chapter 27-20-08 for MD-80.)

H. Pressurize hydraulic system and check for leakage. (See chapter 29-00-0,
    paragraph entitled "Depressurize/Pressurize Hydraulic System" for DC-9,
    chapter 29-00-00 for MD-80.)

I. Functionally check rudder power control actuator. (See chapter 27-20-8,
    paragraph entitled "Adjustment/Test Rudder Hydraulic Power Package"
    for DC-9, chapter 27-20-08 for MD-80.)

J. Close access door.

TOLERANCES

IN. = INCHES   MM = MILLIMETERS

ANGLES   ± 0° 30'
3 PLACE DECIMAL ± .015 IN. (0.38 MM)
2 PLACE DECIMAL ± .03 IN. (0.8 MM)

EXCEPT SPECIFIED TOLERANCES SHOWN

OPTION I

NOTE: RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY IS NOT SHOWN
FOR CLARITY. DETAILS SHOWN ARE THOSE REMOVED DURING DISASSEMBLY
THAT REQUIRE MODIFICATION.

(1) (NOT SHOWN) DISASSEMBLE RUDDER POWER CONTROL MANIFOLD AND VALVE ASSEMBLY TO REMOVE SLIDE
ASSEMBLY PER OVERHAUL MANUAL, CHAPTER 27-20-7, PARAGRAPH ENTITLED "RUDDER POWER CONTROL
VALVE AND MANIFOLD ASSEMBLY - DISASSEMBLY".

NOTE: SLIDE AND SLEEVE ASSEMBLY MUST BE RETAINED AS A MATCHED SET.

(2) (NOT SHOWN) DISCARD ONE 2917049-1 GUIDE.

(3) MACHINE LOCKING TAB WASHER KEYWAY IN SLIDE ASSEMBLY.

(4) (NOT SHOWN) RETURN SLIDE ASSEMBLY TO SUPPLIER FOR INSTALLATION OF SELF-LOCKING ELEMENT PER
MILITARY SPECIFICATION MIL-F-18240E.

(5) REIDENTIFY SLIDE ASSEMBLY AS SR09270026-3.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

6 4917087-501
RETAINER

.937 IN.
(23.8 MM)
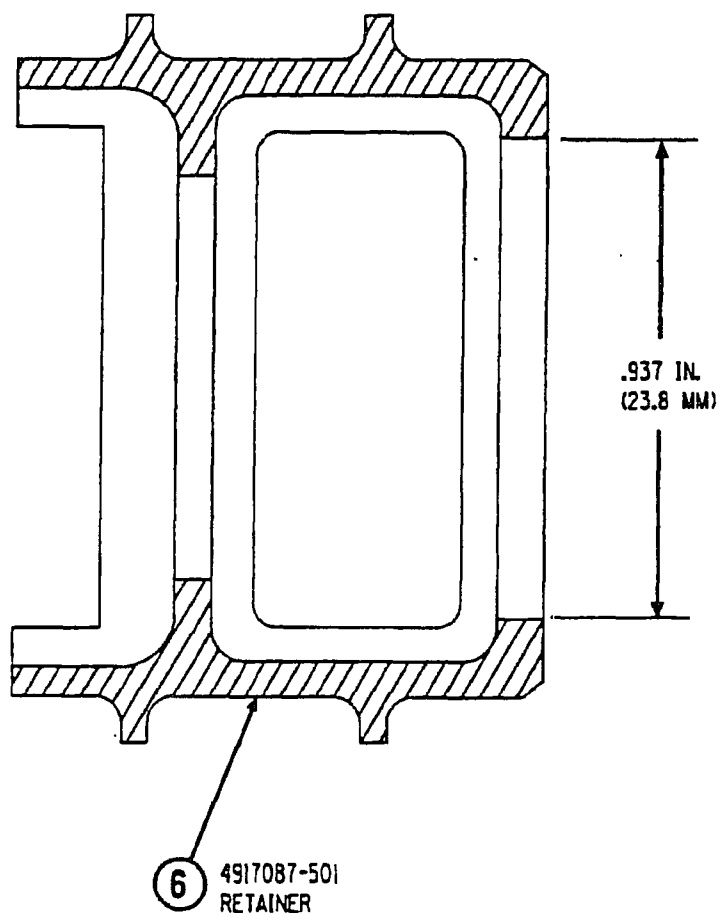
▮ 6 MACHINE 4917087-1 RETAINER OPENING TO DIMENSIONS SHOWN. REIDENTIFY RETAINER AS 4917087-501.

▮ RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

.615/.619 IN.
(15.62/15.72 MM)

.4965/.4985 IN.
(12.611/12.662 MM)

⑦ 4917088-501
NUT

4917086-501 ⑧
CAP

.005/.015
IN. RADIUS

.500 IN.
(12.70 MM)

.061/.067
IN. DIA

.125 IN.
(3.18 MM)

.125 IN.
(3.18 MM)

.093 IN.
(2.36 MM)
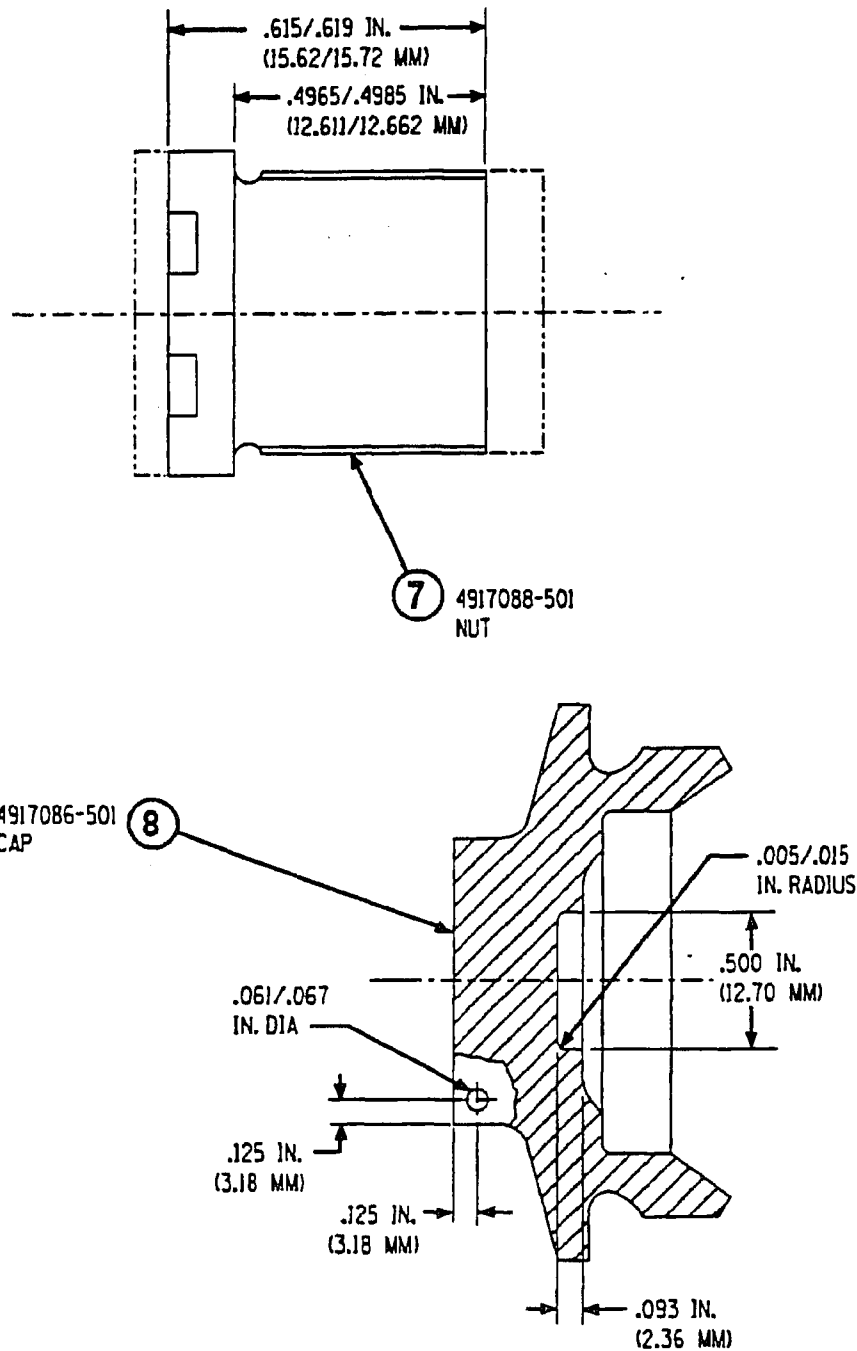
⑦ MACHINE 4917088-1 NUT TO DIMENSIONS SHOWN. REIDENTIFY NUT AS 4917088-501.

⑧ MACHINE 4917086-1 CAP TO DIMENSIONS SHOWN. REIDENTIFY CAP AS 4917086-501.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATON

MS27111-3
LOCKING TAB
WASHER

MS25082-C6
NUT

VIEW A-A

4917088-501
NUT

2917049-1
GUIDE (REF)

S2431221-6C10H
WASHER

5914190-(ANY CONFIGURATION)
RUDDER POWER
CONTROL VALVE (REF)

(11)

MS25082-C6
NUT

4917086-1
END CAP

MS27111-3
LOCKING TAB
WASHER

4965426-1
GUIDE

SR09270026-3
SLIDE ASSY

A

A

(9) (NOT SHOWN) REASSEMBLE AND ADJUST/TEST VALVE ASSEMBLY PER OVERHAUL
MANUAL, CHAPTER 27-20-7.

(10) INSTRUCTIONS DELETED BY REVISION 1.

(11) INSTALL END CAP, TIGHTEN TO A TORQUE OF 25 TO 35 FOOT-POUNDS AND SAFETY CAP USING
MS20995C32 LOCKWIRE.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION
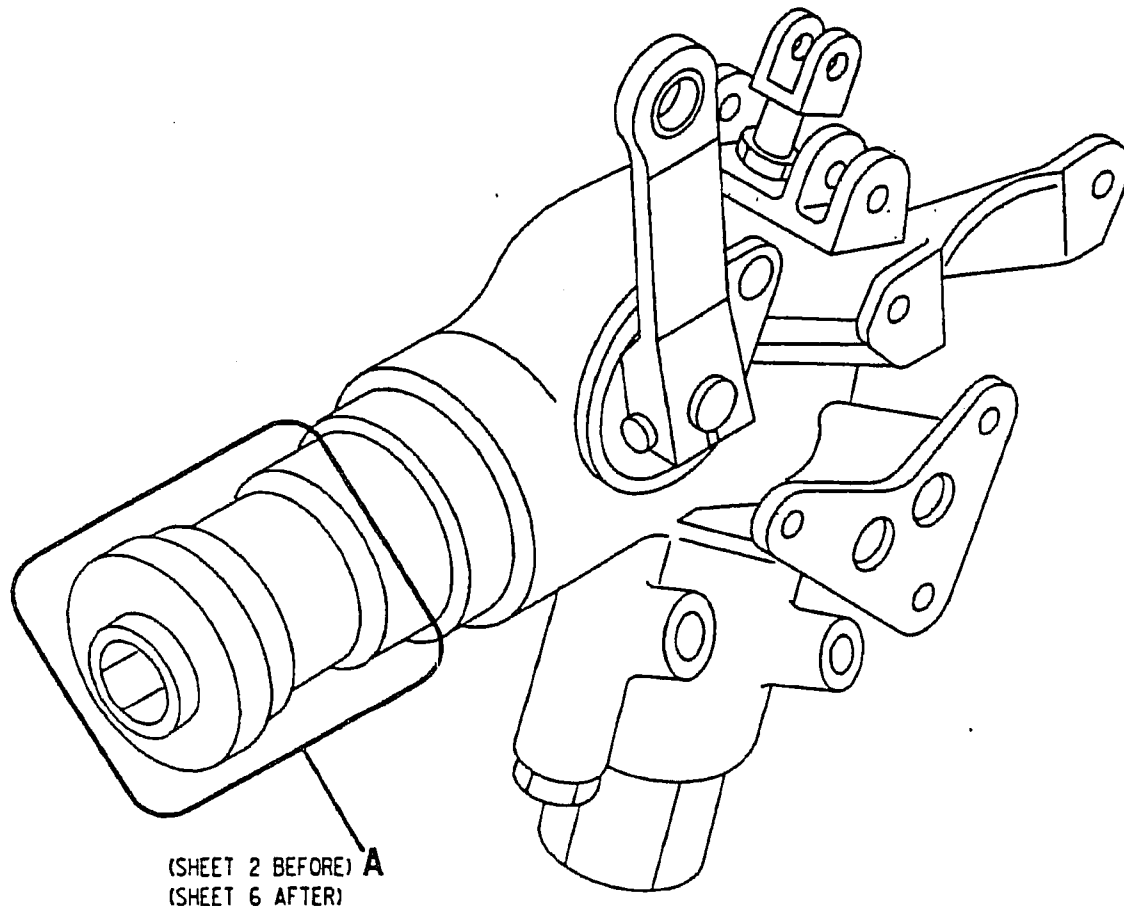
(SHEET 2 BEFORE) **A**
(SHEET 6 AFTER)

VALVE SHOWN REMOVED
FROM ACTUATOR ASSEMBLY
FOR CLARITY

TOLERANCES

IN. = INCHES   MM = MILLIMETERS

ANGLES	± 0° 30'
3 PLACE DECIMAL	± .015 IN. (0.38 MM)
2 PLACE DECIMAL	± .03 IN. (0.8 MM)

EXCEPT SPECIFIED TOLERANCES SHOWN

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

FIGURE 2 (SHEET 1 OF 6)

4917086-1
END CAP (1)
(REF)

2919050-1
SPRING
(REF) (1)

(1) 4917087-1
RETAINER
(REF)

(1) (2) S2431221-6C10-H
WASHER (REF)

(2) S124682-6D12-3
WASHER (REF)

(1)

B

MS20995NC51
LOCKWIRE (1)
(REF)

4917088-1 (1)
NUT (REF)

(SHEET 3) **B**

(SHEET 3) **C**

(SHEET 4) **D**

(SHEET 5) **E**

NAS1612-20 (1)
PACKING
(REF)

(1) 2956086-1
GUIDE SPRING
(REF)

(1) 2917049-1
GUIDE (REF)
(2 PLACES)

VIEW A
BEFORE MODIFICATION
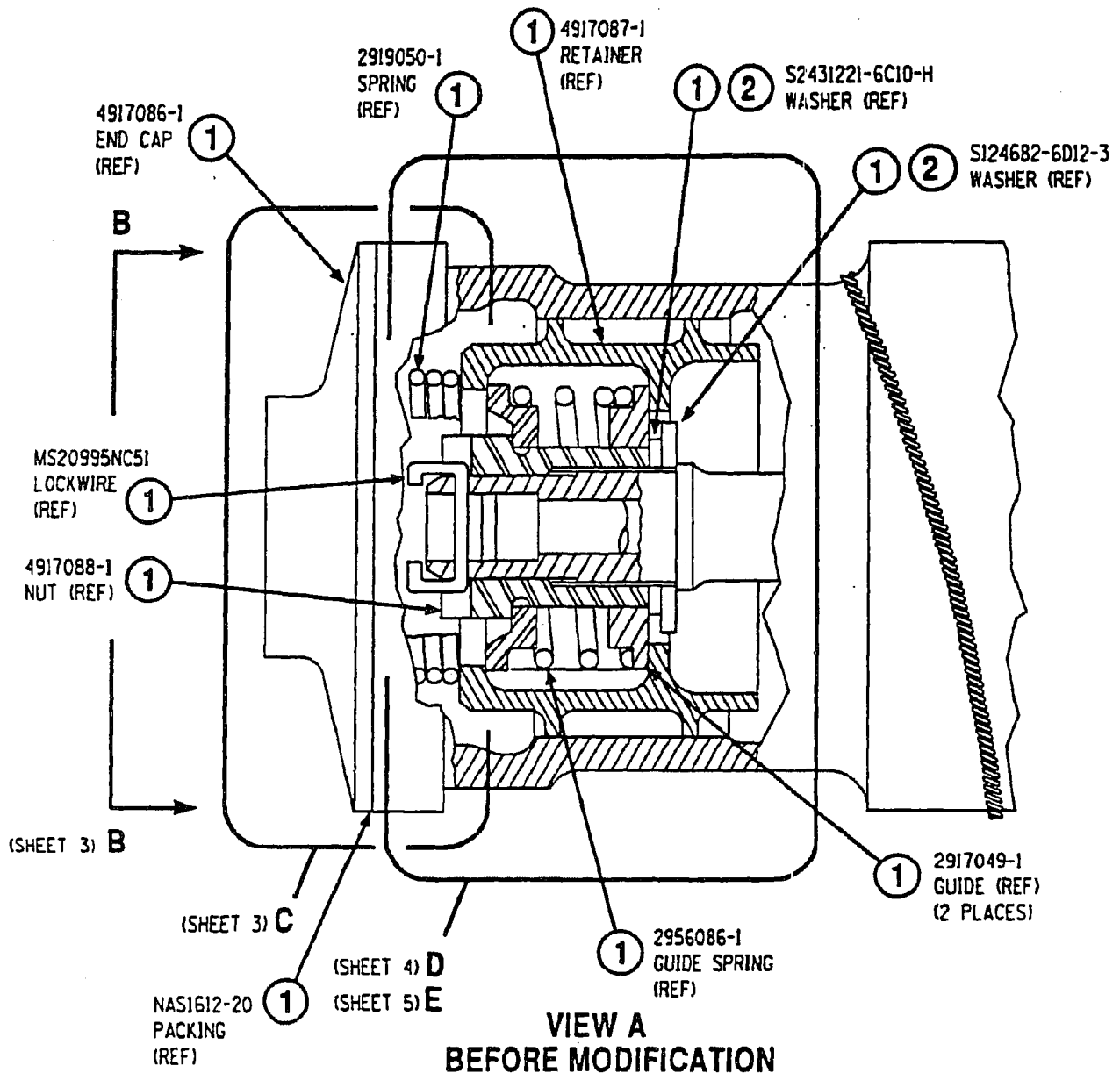
OPTION II

NOTE: USE OVERHAUL MANUAL, CHAPTER 27-20-7 FOR REFERENCE
DURING DISASSEMBLY/ASSEMBLY OF VALVE.

(1) REMOVE END CAP, PACKING, SPRING, LOCKWIRE, RETENTION NUT, RETAINER, TWO GUIDES AND SPRING, AND TWO
WASHERS. RETAIN ALL PARTS EXCEPT PACKING, LOCKWIRE AND RETENTION NUT.

(2) (NOT SHOWN) MEASURE AND RECORD STACK-UP THICKNESS OF RETAINED WASHERS. DISCARD WASHERS AFTER
MEASUREMENT.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

1 4917088-1
NUT (REF)

VIEW B-B

4917086-1 3
CAP (REF)

.005/.015
IN. RADIUS

.500 IN.
(12.70 MM)

.061/.067
IN. DIA

.125 IN.
(3.18 MM)

.125 IN.
(3.18 MM)

.093 IN.
(2.36 MM)

VIEW C
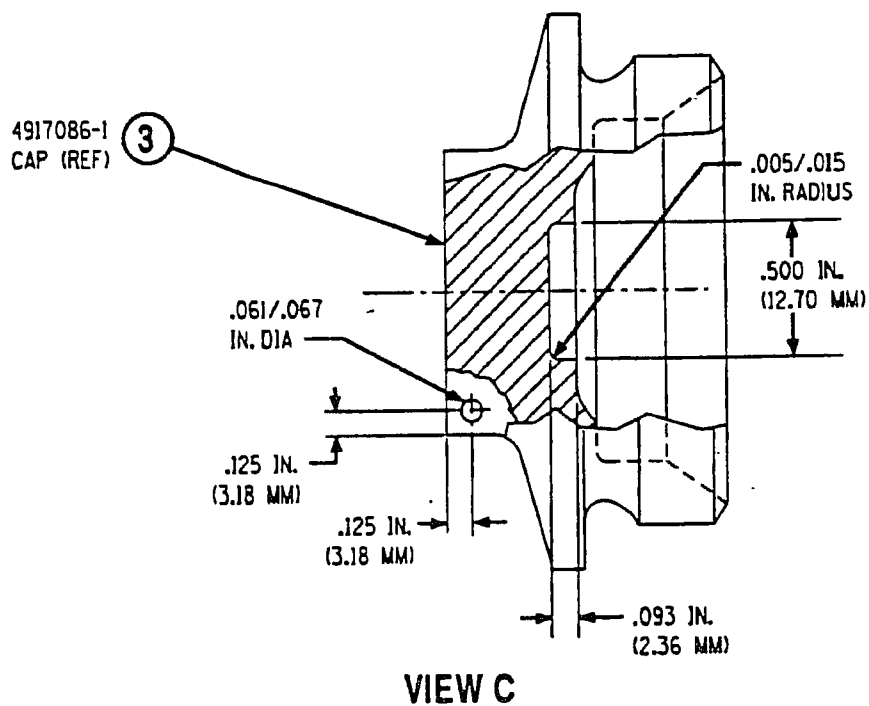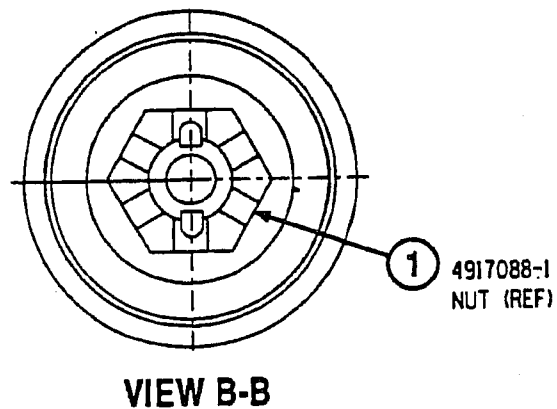
3 MACHINE RETAINED END CAP TO DIMENSIONS SHOWN. REIDENTIFY END CAP AS 4917086-501.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

SHOULDER

N-9167088
NUT (REF)

④

FACE

④ THIS DIMENSION SHOULD BE THE SAME TO
WITHIN ± .005-INCH (.13 MM) TOLERANCE.
IF THE NUT IS TOO LONG, MACHINE THE FACE.
IF THE NUT IS TOO SHORT, MACHINE THE SHOULDER.

④ MACHINE NUT TO DIMENSION SHOWN TO MATCH
RETAINER IF REQUIRED.

RETAINER

VIEW D

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

⑥ 2917049-1 GUIDE (REF) (2 PLACES)

⑥ 4917087-1 RETAINER (REF)

N-9167088 NUT (REF) ⑥⑦

— 3917089-1 SLIDE (REF)

MS20995NC51 LOCKWIRE ⑧

⑤ S124682-6D12-3 WASHER

⑤ S2431221-6C10-H WASHER (USE AS REQD FOR ADJUSTMENT)

2956086-1 GUIDE SPRING (REF) ⑥
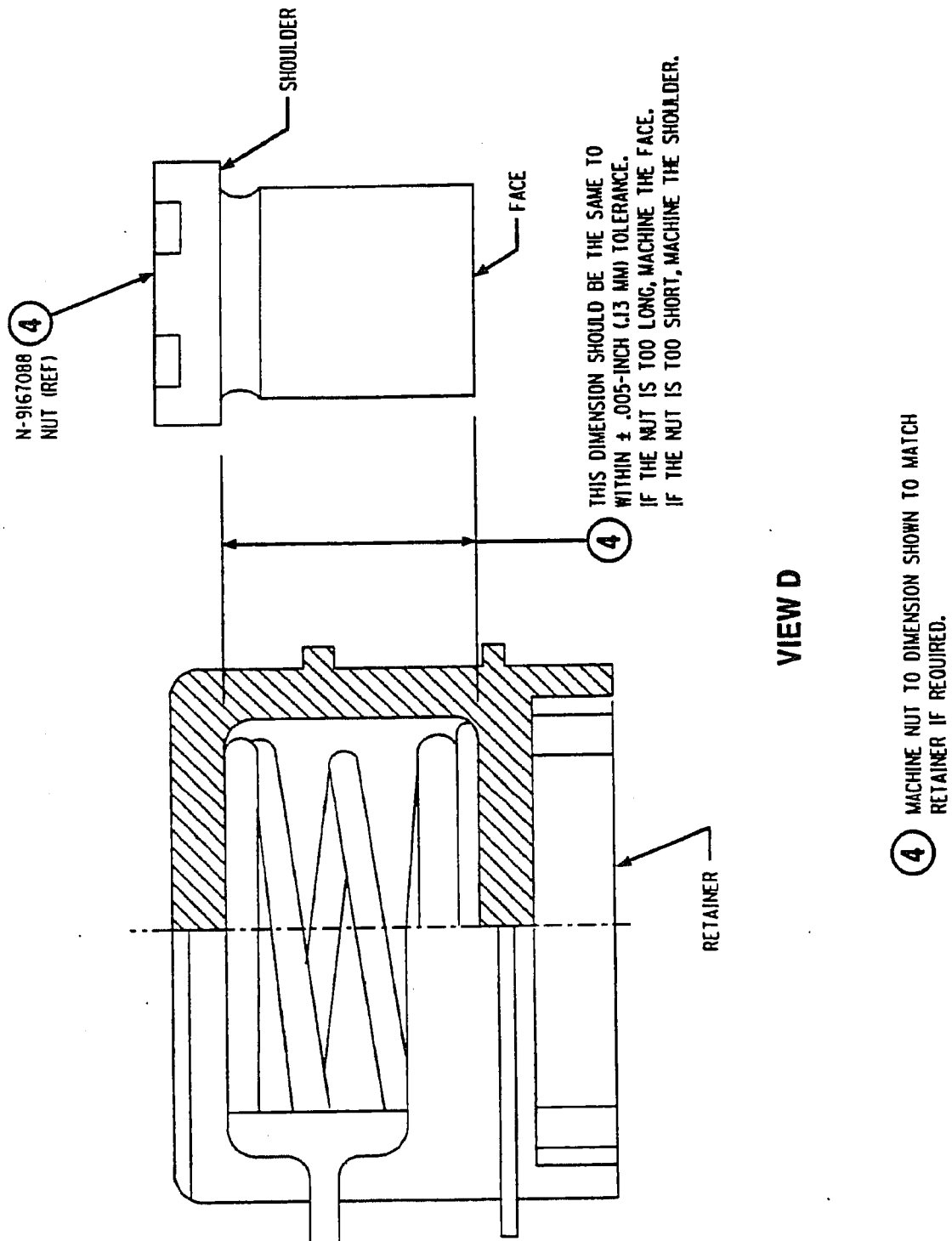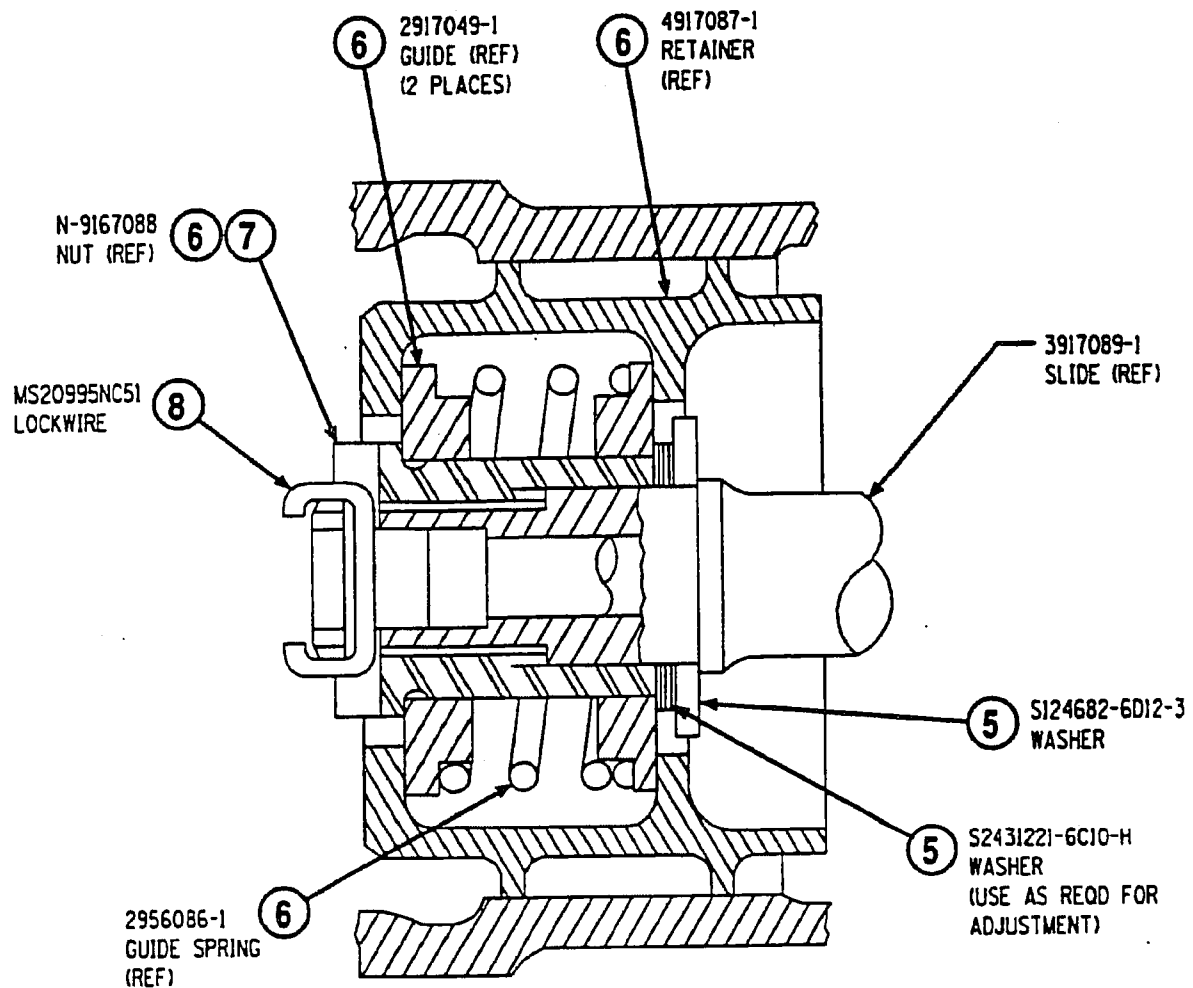
VIEW E

⑤ INSTALL TWO NEW WASHERS. MAKE SURE STACK-UP THICKNESS OF WASHERS IS SAME AS PREVIOUSLY RECORDED THICKNESS OF DISCARDED WASHERS.

⑥ REINSTALL TWO GUIDES AND SPRING, RETAINER, AND NEW RETENTION NUT.

⑦ TIGHTEN RETENTION NUT TO A TORQUE OF 50 TO 75 INCH-POUNDS.

NOTE: ALIGNMENT OF SLOT IN NUT WITH HOLE IN SLIDE IS TO BE WITHIN THIS TORQUE VALUE.

⑧ INSTALL LOCKWIRE.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

SR09270026-5
VALVE ASSY

2919050-1
SPRING
(REF)   (9)

4917086-501 (9)
END CAP

MS20995NC32 (9)
LOCKWIRE

NAS1612-20 (9)
PACKING

VIEW A
AFTER MODIFICATION
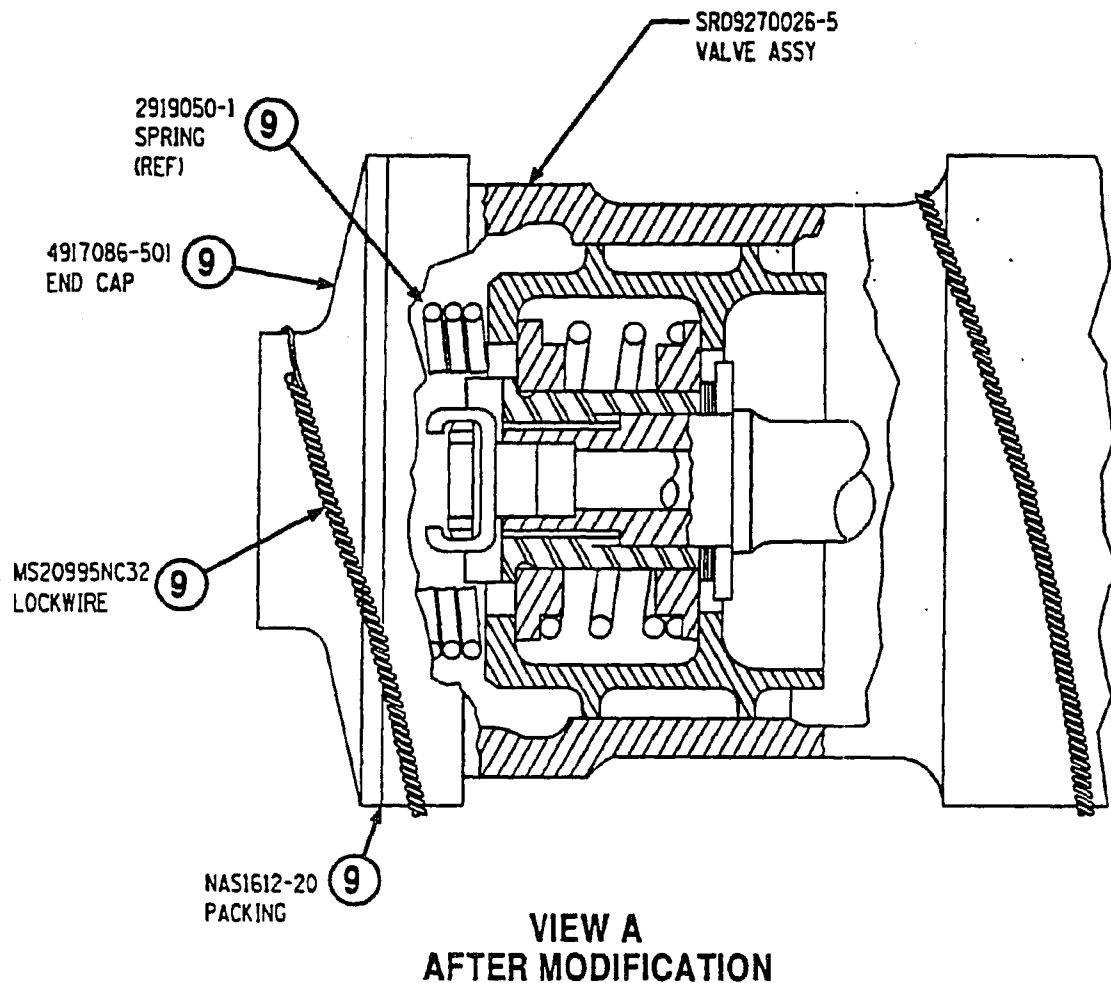
(9) INSTALL RETAINED SPRING, NEW PACKING AND MODIFIED AND REIDENTIFIED END CAP. TIGHTEN CAP
TO A TORQUE OF 25 TO 35 FOOT-POUNDS. SAFETY END CAP USING LOCKWIRE.

RUDDER POWER CONTROL VALVE AND MANIFOLD ASSEMBLY - MODIFICATION

3. Material Information:

NOTE: Except as noted, old and new parts
are interchangeable. However, the
operator should consider that use
of old parts will cancel the intent
of this Service Bulletin.

A. The basis for the following material data is per aircraft.

(1) Parts/materials to be procured from operator's stock or source
indicated. See paragraph 1.G.(1). Discard old parts.

New Part No.	Qty Per Option I	II	Key Word	Old Part No.	Instructions-Disposition
MS20995C32	2 Ft	2Ft	Lockwire	(.032-Inch Dia/Cres)	
MS20995NC51	2 In.	2 In.	Lockwire	(.051-Inch Dia/Monel)	
MS25082-C6	1		Nut		
MS27111-3	1		Locking Tab Washer		
NAS1612-20	1	1	Packing		1/
N-9167088	1	1	Nut	4917088-1	2/
S124682-6D12-3		1	Washer	S124682-6D12-6	1/
S2431221-6C10-H	1	1	Washer	S2431221-6C10-4	1/
4965426-1	1		Guide	2917049-1	1/

1/ May be procured from: Douglas Aircraft Company
P.O. Box 1771
Long Beach, California 90801
Attn: Part Sales - Commercial 78-22

CAGE
88277

2/ May be procured from: Fortner Engineering and
Manufacturing Incorporated.
918 Thompson Avenue
Glendale, California 91201-2012

52767

(2) Parts to be modified and reidentified by operator:

New Part No.	Qty Per Option I	II	Key Word	Old Part No.
SR09270026-5		1	Valve and Manifold Assembly	5914190-5501
4917086-501	1	1	Cap	4917086-1
4917087-501	1		Retainer	4917087-1
4917088-501	1		Nut	4917088-1

New Part No.	Qty Per Option I	II	Key Word	Old Part No.
5914066-5567	1	1	Actuator Assembly	5914066-5555
or				
5914066-5569				5914066-5557
or				
5914066-5571				5914066-5559
or				
5914066-5573				5914066-5561
or				
5914066-5575				5914066-5563
or				
5914066-5577				5914066-5565
5914190-5503	1		Valve and Manifold Assembly	5914190-5501

(3) Part to be modified by noted supplier and reidentified by the operator per Option I. See paragraph 1.G.(1)(b) for procurement instructions.

New Part No.	Qty Per Option I	Key Word	Old Part No.	Instructions-Disposition
SR09270026-3	1	Slide Assembly	3917089-1	3/

3/ Address and return for modification to:

LONG-LOK Fasteners Corporation
Eastern Division
10630 Chester Road
Cincinnati, Ohio 45215.
(DC-9 Service Bulletin 27-321)

B. **The basis for the following material data is per spares.**

Modify and reidentify spare 5914190-any configuration rudder power control valve and manifold assembly and 5914066-any configuration rudder power actuator assembly per this Service Bulletin. Parts requirements are identical to those listed in paragraph 3.A.(1).

Any inquiries regarding accuracy, timeliness, completeness, and legibility of this Alert Service Bulletin should be directed to the local DAC Field Representative, or:

Douglas Aircraft Company
P.O. Box 1771
Long Beach, California 90801
Attn: Business Unit Manager
Service Bulletins
Service Changes and Modification Kits
Product Support 76-40
(MD-80 Service Bulletin 27-321)

GSA/JW
PDG

Bulletin 27-321

May 18/92

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