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## LUFTDYKTIGHETSPÅBUD (LDP)

**MOTORER**  
  
ALLIED SIGNAL -1  
(Tidligere Garrett)

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Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

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### 95-011 KONTROLL AV BRENNSTOFFKONTROLLER

**Påbudet gjelder:**

AlliedSignal Inc. Modell TPE331-3, -5, -6, -10, -11U, og -12 turboprop motorer som har «fuel controll assembly» P/N 897770-1 t.o.m. 897770-8 og 897780-1 t.o.m. 897780-11 installert i samsvar med AlliedSignal Service Bulletin No TPE 331-73-0217, datert 09.07.93.

**Påbudet omfatter:**

Utfør tiltak som beskrevet i vedlagte kopi av FAA Priority Letter AD 94-26-07.

**Tid for utførelse:**

Til de tider som beskrevet i vedlagte kopi av FAA Priority Letter AD 94-26-07, med virkning fra denne LDP's gyldighetsdato.

**Referanse:**

FAA Priority Letter AD 94-26-07

**Gyldighetsdato:**

01.02.95.



# PRIORITY LETTER AIRWORTHINESS DIRECTIVE

FLIGHT STANDARDS SERVICE  
REGULATORY SUPPORT DIVISION  
P.O. BOX 26460  
OKLAHOMA CITY, OKLAHOMA 73125-0460

U.S. Department  
of Transportation  
Federal Aviation  
Administration

DATE: December 13, 1994  
94-26-07

This priority letter Airworthiness Directive (AD) is prompted by reports of excessive wear of the internal fuel control drive splines in fuel controls, Part Numbers (P/N) 897770-1 through -8, and 897780-1 through -11, installed on certain AlliedSignal Inc. TPE331 series turboprop engines. In two instances the spline wear resulted in loss of fuel control governor drive. If this occurs, the underspeed fuel governor increases fuel flow, while the overspeed governor is inoperative and cannot limit engine speed.

The FAA has determined that the most serious consequence of a loss of fuel control governor drive is during reverse thrust when the engine suddenly develops uncommanded forward thrust causing an asymmetric thrust condition on a twin-engine aircraft. Another serious consequence of a loss of fuel control governor drive is during engine start when rapid engine acceleration beyond normal idle speed could result in rotor speed sufficient to cause an uncontained turbine separation. During flight, when the propeller is in propeller-governing mode, the result will be uncommanded increased engine torque and turbine temperature. These conditions, if not corrected, could result in an uncontained engine failure, damage to the aircraft, or loss of aircraft control.

The FAA has reviewed and approved the technical contents of the following service bulletins (SB): AlliedSignal Inc. Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994, applicable to model TPE331-11U engines, that describes procedures for dimensionally inspecting fuel control drive shaft splines; AlliedSignal Inc. SB No. TPE331-73-0224, dated August 17, 1994, and Revision 1, dated September 8, 1994, applicable to model TPE331-11U engines, that describe procedures for replacing affected fuel controls with alternate fuel controls; AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994, applicable to certain TPE331-3, -5, -6, -10, and -12 series engines, that describe procedures for dimensionally inspecting fuel control drive shaft splines; and AlliedSignal Inc. SB No. TPE331-73-0228, dated September 16, 1994, applicable to certain TPE331-3, -5, -6, -10, and -12 series engines TPE331 engines, that describe procedures for replacing affected fuel controls with alternate fuel controls.

Since an unsafe condition has been identified that is likely to exist or develop on other engines of this same type design, this AD requires an amendment to the Emergency Procedures section of the applicable FAA Approved Airplane Flight Manual (AFM) for each applicable engine installation in an aircraft. This amendment to the applicable AFM describes conditions in flight, during ground start, and during reverse thrust operation that might indicate loss of fuel control governor drive, and provides required procedures for engine shutdown. These AFM changes have been coordinated with the FAA Directorate responsible for the certification of the aircraft involved.

In addition, this AD requires either initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear, or replacing the affected fuel controls with alternate fuel controls. Replacement with the alternate fuel controls constitutes terminating action to the repetitive inspections. The actions are required to be accomplished in accordance with the service bulletins described previously.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this Priority Letter.

**94-26-07 AlliedSignal Inc.:** Priority Letter issued on December 13, 1994. Docket No. 94-ANE-46.

**Applicability:** AlliedSignal Inc. Models TPE331-3, -5, -6, -10, -11U, and -12 series turboprop engines with fuel control assembly Part Numbers (P/N) 897770-1 through 897770-8 and 897780-1 through 897780-11 installed in accordance with AlliedSignal Inc. Service Bulletin (SB) No. TPE331-73-0217, dated July 9, 1993. These engines are installed on but not limited to Mitsubishi MU-2B series (MU-2 series) Solitaire/Marquise, Construcciones Aeronauticas, S.A. C-212 series, British Aerospace (BAe) Jetstream 3101 and 3201 (31 and 32) series, Fairchild SA226 and SA227 series (Swearingen Merlin and Metro series), Twin Commander Models 680, 690, 695 (Jetprop Commander), Short Brothers and Harland, Ltd. SC7 (Skyvan), Dornier 228 series, Beech Model B-100 series aircraft, and Ayres S-2R series aircraft.

## PRIORITY LETTER AIRWORTHINESS DIRECTIVE

**Compliance:** Required as indicated, unless accomplished previously.

To prevent failure of the fuel control governor drive from excessive wear of the internal fuel control drive splines, which can result in loss of aircraft control, accomplish the following:

(a) Amend the applicable FAA Approved Airplane Flight Manual (AFM) to provide interim emergency procedures to flight crews, within 20 calendar days after receipt of this priority letter Airworthiness Directive (AD), by adding the following to the Emergency Procedures section. This may be accomplished by inserting a copy of this AD into the AFM:

**Inflight:** in the event of an uncommanded engine torque and turbine temperature increase, or if engine power fails to respond when the power level is retarded, shut down the affected engine as soon as possible consistent with the safe operation of the aircraft.

**Warning:** be aware that the affected engine with a failed fuel control governor drive will typically exhibit an increase in power, and if the accepted "dead foot--dead engine" logic is employed, the wrong engine could be shut down because the malfunction will result in an increase in forward thrust from the affected engine. Use caution and monitor cockpit engine indications to aid in identifying the failure mode and the malfunctioning engine.

**During Ground Start:** if an engine exhibits rapidly increasing RPM above idle values, immediately terminate the start.

If an engine has been shutdown inflight as a result of exhibiting an uncontrolled increase in torque and turbine temperature, do not attempt a ground start until the fuel control is inspected in accordance with the applicable service bulletin.

**During Reverse Operation:** if an engine suddenly develops forward thrust, immediately terminate reverse thrust. If necessary, shutdown both engines in order to maintain directional control."

(b) For AlliedSignal Model TPE331-11U engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Alert Service Bulletin (SB) No. TPE331-A73-0221, Revision 2, dated October 10, 1994. The initial inspection compliance times start upon receipt of this priority letter AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal SB No. TPE331-73-0224, dated August 17, 1994, or Revision 1 of that SB, dated September 8, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (b)(1) of this AD.

(c) For AlliedSignal TPE331-3, -5, -6, -10, and -12 series engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994. The initial inspection compliance times become effective upon receipt of this priority letter AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal Inc. SB No. TPE331-73-0228, dated September 16, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (c)(1) of this AD.

(d) For the purpose of this AD, specific driveshaft operating hours as referenced in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994, and AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994, may be calculated using fuel control time tracking based on engine operating hours.

(e) 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. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles Aircraft Certification Office.

**NOTE:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the Los Angeles Aircraft Certification Office.

(f) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(g) Copies of the applicable service information may be obtained from AlliedSignal Inc., Aviation Services Division, Data Distribution, Dept. 64-3/2102-1M, P.O. Box 29003, Phoenix, AZ 85038-9003; telephone (602) 365-2548. This information may be examined at the FAA, New England Region, Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, MA.

(h) Priority Letter AD 94-26-07, issued December 13, 1994, becomes effective upon receipt.

FOR FURTHER INFORMATION CONTACT: Joseph Costa, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate, 3960 Paramount Blvd., Lakewood, CA 90712-4137; telephone (310) 627-5246; fax (310) 627-5210.

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## LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER  
  
ALLIED SIGNAL - 2  
(Tidligere Garrett)

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Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

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### 95-033 "FUEL CONTROL GOVERNOR DRIVE"

**Påbudet gjelder:**

Allied Signal Inc. Modell TPE331-3, -5, -6, -10, -11U og -12, med serienummer som listet i vedlagte kopi av FAA AD 94-26-07.

**Påbudet omfatter:**

Utfør tiltak som beskrevet i vedlagte kopi av FAA AD 94-26-07.

**Tid for utførelse:**

Til de tider og intervaller som beskrevet i vedlagte kopi av FAA AD 94-26-07, med virkning fra denne LDP's gyldighetsdato.

**Referanse:**

FAA AD 94-26-07.

**Gyldighetsdato:**

05.05.95.



# AIRWORTHINESS DIRECTIVE

REGULATORY SUPPORT DIVISION  
P.O. BOX 26460  
OKLAHOMA CITY, OKLAHOMA 73125-0460

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Federal Aviation Regulations, Part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference FAR Subpart 39.3).

**94-26-07 AlliedSignal Inc.:** Amendment 39-9178. Docket 94-ANE-46.

**Applicability:** AlliedSignal Inc. Models TPE331-3, -5, -6, -10, -11U, and -12 series turboprop engines with fuel control assembly Part Numbers (P/N) 897770-1 through 897770-8 and 897780-1 through 897780-11 installed in accordance with AlliedSignal Inc. Service Bulletin (SB) No. TPE331-73-0217, dated July 9, 1993. These engines are installed on but not limited to Mitsubishi MU-2B series (MU-2 series) Solitaire/Marquise, Construcciones Aeronauticas, S.A. C-212 series, British Aerospace (BAe) Jetstream 3101 and 3201 (31 and 32) series, Fairchild SA226 and SA227 series (Swearingen Merlin and Metro series), Twin Commander Models 680, 690, 695 (Jetprop Commander), Short Brothers and Harland, Ltd. SC7 (Skyvan), Dornier 228 series, Beech Model B-100 series aircraft, and Ayres S-2R series aircraft.

**Compliance:** Required as indicated, unless accomplished previously.

To prevent failure of the fuel control governor drive from excessive wear of the internal fuel control drive splines, which can result in loss of aircraft control, accomplish the following:

(a) Amend the applicable FAA Approved Airplane Flight Manual (AFM) to provide interim emergency procedures to flight crews, within 20 calendar days after the effective date of airworthiness directive (AD), by adding the following to the Emergency Procedures section. This may be accomplished by inserting a copy of this AD into the AFM:

**"Inflight:** in the event of an uncommanded engine torque and turbine temperature increase, or if engine power fails to respond when the power level is retarded, shut down the affected engine as soon as possible consistent with the safe operation of the aircraft.

**Warning:** be aware that the affected engine with a failed fuel control governor drive will typically exhibit an increase in power, and if the accepted "dead foot--dead engine" logic is employed, the wrong engine could be shut down because the malfunction will result in an increase in forward thrust from the affected engine. Use caution and monitor cockpit engine indications to aid in identifying the failure mode and the malfunctioning engine.

**During Ground Start:** if an engine exhibits rapidly increasing RPM above idle values, immediately terminate the start.

If an engine has been shutdown inflight as a result of exhibiting an uncontrolled increase in torque and turbine temperature, do not attempt a ground start until the fuel control is inspected in accordance with the applicable service bulletin.

**During Reverse Operation:** if an engine suddenly develops forward thrust, immediately terminate reverse thrust. If necessary, shutdown both engines in order to maintain directional control."

(b) For AlliedSignal Model TPE331-11U engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Alert Service Bulletin (SB) No. TPE331-A73-0221, Revision 2, dated October 10, 1994. The initial inspection compliance times start upon the effective date of this priority letter AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal SB No. TPE331-73-0224, dated August 17, 1994, or Revision 1 of that SB, dated September 8, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (b)(1) of this AD.

(c) For AlliedSignal TPE331-3, -5, -6, -10, and -12 series engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994. The initial inspection compliance times become effective upon the effective date of this AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal Inc. SB No. TPE331-73-0228, dated September 16, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (c)(1) of this AD.

(d) For the purpose of this AD, specific driveshaft operating hours as referenced in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994, and AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994, may be calculated using fuel control time tracking based on engine operating hours.

(e) 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. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles Aircraft Certification Office.

NOTE: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the Los Angeles Aircraft Certification Office.

(f) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(g) The actions required by this AD shall be done in accordance with the following SB's:

Document No.	Pages	Revision	Date
AlliedSignal Inc. Alert SB No. TPE331-A73-0226	1-8	Original	October 10, 1994
Woodward SB No. WG64050	1-13	Original	October 3, 1994
Total pages: 21.			
AlliedSignal Inc. Alert SB No. TPE331-A73-0221	1-3 4	2 Original	October 10, 1994 June 27, 1994
Woodward SB No. WG64047	1-12	4	October 3, 1994
Total pages: 16.			
AlliedSignal Inc. SB No. TPE331-73-0224	1 2 3-4	1 Original 1	September 8, 1994 August 17, 1994 September 8, 1994
Total pages: 4.			
Woodward SB No. WG4044	1-3	Original	June 28, 1993
Total pages: 3.			

NOTE: The Woodward SB's are attached to the AlliedSignal Alert SB's.

<b>Document No.</b>	<b>Pages</b>	<b>Revision</b>	<b>Date</b>
AlliedSignal Inc. SB No. TPE331-73-0228	1-10	Original	September 16, 1994

Total pages: 10.

AlliedSignal Inc. SB No. TPE331-73-0217	1-10	Original	July 9, 1993
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Total pages: 10.

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from AlliedSignal Inc., Aviation Services Division, Data Distribution, Dept. 64-3/2102-1M, P.O. Box 29003, Phoenix, AZ 85038-9003; telephone (602) 365-2548. Copies may be inspected at the FAA, New England Region, Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(h) This amendment becomes effective April 18, 1995, to all persons except those persons to whom it was made immediately effective by priority letter AD 94-26-07, issued December 13, 1994, which contained the requirements of this amendment.

**FOR FURTHER INFORMATION CONTACT:**

Joseph Costa, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate, 3960 Paramount Blvd., Lakewood, CA 90712-4137; telephone (310) 627-5246; fax (310) 627-5210.

