



Airworthiness Directive

AD No.: 2016-0046

Issued: 09 March 2016

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:

ATR-GIE AVIONS DE TRANSPORT RÉGIONAL

Type/Model designation(s):

ATR 42 and 72 aeroplanes

Effective Date: 11 March 2016

TCDS Number(s): EASA.A.084

Foreign AD: Not applicable

Supersedure: None

ATA 22 – Auto Flight – Auto Pilot and Yaw Damper – Operational Limitations Aircraft Flight Manual – Amendment

Manufacturer(s):

ATR-GIE Avions de Transport Régional (ATR), formerly Aerospatiale – Aeritalia, Aerospatiale – Alenia, Aerospatiale ATR – Alenia, EADS ATR – Alenia

Applicability:

ATR 42-500 and ATR 72-212A aeroplanes, all manufacturer serial numbers, if modified in production by incorporating ATR modification 6977 (New Avionics Suite Standard 2) or modified in service by incorporation of ATR Service Bulletin (SB) ATR42-31-0091, or ATR SB ATR72-31-1092, as applicable.

Reason:

Following investigations after EASA AD 2015-0237R1 was issued, additional flight tests evaluations performed on ATR aeroplanes equipped with New Avionics Suite Standard 2 have revealed an unsatisfactory behaviour of the Yaw Damper / Autopilot (YD/AP), when in 'single source operation' (i.e. one Air Data Computer (ADC) inoperative, one Attitude and Heading Reference System (AHRS) inoperative, or failure of both Direct Current (DC) Generators), upon a sudden engine power asymmetry at low Indicated Air Speed (IAS).

This unsatisfactory behaviour is due to the YD limited authority in single source and is characterised by inappropriate flight equilibrium, with important flight control efforts needed on the roll axis to safely control the aeroplane.



This condition, if not corrected, could result in loss of control of the aeroplane.

For the reasons described above, this AD requires amendment of the applicable Airplane Flight Manual (AFM) to introduce AP and YD operational restrictions, when in single source and operating at an IAS below 160kt.

This AD is considered an interim action and further AD action may follow.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

- (1) Within 15 days after the effective date of this AD, amend the applicable AFM as specified in Appendix 1 or Appendix 2, as applicable, inform the flight crew and, thereafter, operate the aeroplane accordingly.

Amending the AFM can be accomplished by inserting a copy of Appendix 1 or Appendix 2 of this AD, as applicable, into the applicable AFM.

- (2) Amending the applicable AFM to incorporate a later AFM revision, which includes the changes as required by this AD, is acceptable to comply with the requirements of paragraph (1) of this AD.

Ref. Publications:

ATR SB ATR42-31-0091, dated 17 December 2014.


ATR SB ATR72-31-1092, dated 07 October 2014.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
4. For any question concerning the technical content of the requirements in this AD, please contact: ATR - GIE Avions de Transport Régional, Continued Airworthiness Service, Tel.: +33 (0)5 62 21 62 21, Fax: +33 (0) 5 62 21 67 18, E-mail: continued.airworthiness@atr-aircraft.com.



Appendix 1 – AFM 42-500 amendment

 AFM	LIMITATIONS SYSTEMS	2-05	
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2.05.01 - AIR PRESSURIZATION

Maximum differential pressure 6.35 PSI
Maximum negative differential pressure - 0.5 PSI
Maximum differential pressure for landing 0.35 PSI
Maximum differential pressure for OVBD VALVE
full open selection 1 PSI
Maximum altitude for one bleed off operation 20000 ft

2.05.02 - HYDRAULIC SYSTEM

All hydraulic fluids compliant with technical specification : NSA 307110
Compliant fluids are listed in the AMM (Chapter 20, 20-31-30)

2.05.03 - LANDING GEAR

- Do not perform pivoting (sharp turns) upon a landing gear with fully braked wheels except in case of emergency.
- In case of ground speed over 165 kt all tires to be replaced.
- Towbarless Towing is prohibited, unless the towbarless towing operations are performed in compliance with the appropriate operational requirements (JAR-OPS-1 for Commercial Air Transportation) using towbarless towing vehicles that are designed and operated to preclude damage to the aeroplane nose wheel steering system or which provide a reliable and unmistakable warning when damage to the steering system may have occurred. Towbarless towing vehicles that are specifically accepted for ATR aircraft are listed in ATR Service Letter 42-09-5001.

2.05.04 - FLAPS

Holding with any flaps extended is prohibited in icing conditions (except for single engine operations).

2.05.05 - AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)


- Minimum height for autopilot engagement on take off : 100 ft.
- Limitation in use when in single source configuration (one ADC FAIL and/or, one AHRS FAIL, and/or DUAL DC GEN LOSS)
 - Do not use AP and/or YD:
 - below 1000 ft AGL and/or
 - IAS below 160 kt
 - Do not use AP with the stall warning inoperative
- NAV mode for VOR approach, using either autopilot or flight director is authorized only if :
 - a co-located DME is available, and
 - DME HOLD is not selected
- Minimum height for use of either autopilot or flight director :
 - Except during take off or executing an approach : 1000 ft
 - VS or IAS mode during approach : 160 ft
 - CAT 1 APP mode : 160 ft

Refer to 7.01.03 for CAT II operation

Mod : 5948 + 6977	ATR42 Model: 500
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Appendix 1 – (continued)

 AFM	EMERGENCY PROCEDURES ELECTRICAL SYSTEM	4 - 04	
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4 . 04 . 01 - DUAL DC GEN LOSS

PF CAPT
 DC GEN 1+2 OFF then ON

■ **If no generator recovered**

HYD GREEN PUMP OFF
 TRU ON

Make sure that TRU arrow illuminates and BAT arrows extinguish.
NOTE: If TRU FAULT LAND ASAP

MAN RATE KNOB 9 O'CLOCK
 CAB PRESS MODE SEL MAN
 AVIONICS VENT EXHAUST MODE OVRD
 BAT SW OVRD
 F/O ATT HDG SWITCH TO SYS 1
 F/O ADC SWITCH TO SYS 1
 AP USE AS RQD
 YD USE AS RQD

CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL
 use of AP and / or YD are prohibited for IAS < 160 kt

CAUTION : In single engine operation , AP may disconnect with
 rapid power change . Avoid large PL movement.

COM / SURV / NAV USE MCDU1
 XPDR SET XPDR 1
 ATC (VHF 1 or HF or HF 2) NOTIFY
 MIN CAB LIGHT OFF

NOTE: NAV lights switch set to ON is necessary to provide IEP illumination

TLU MAN MODE LO SPD

● **When TLU LO SPD illuminates**

TLU AUTO

CAUTION: Avoid large rudder input if IAS above 180 kt.

STICK PUSHER / SHAKER OFF
 STICK PUSHER / SHAKER FAULT procedure APPLY
 SIDE WINDOW / WINDSHIELD HTG OFF
 DE-/ANTI-ICING MODE SEL AUTO FAULT procedure APPLY
 AUTO PRESS FAULT procedure APPLY
 BUS EQPT LIST CHECK


NOTE: periodically compare PFD with IESI, crosscheck HDG / TK /
 STBY-HDG

..... to be continued next page .../...

Mod:5948+6977 ATR42 Model : 500




Appendix 1 – (continued)

 AFM	EMERGENCY PROCEDURES ELECTRICAL SYSTEM	4-04	
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<p>.../...</p> <p>● Before descent PAX INSTRUCTIONS USE PA HYD X FEED ON</p> <p><u>NOTE:</u> Selecting HYD X FEED ON allows to recover green hydraulic system</p> <p>● At touch down IDLE GATE LEVER PULL</p>			
Mod:5948 +6977		ATR42 Model : 500	



Appendix 1 – (continued)



PROCEDURES FOLLOWING FAILURES

SYSTEMS

5 - 04

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EASA APPROVED

FEB 16

5 . 04 . 11 - MISCELLANEOUS

► ONE AHRS FAIL

AFFECTED ATT / HDG SWITCHING ALTERNATE SYS

FD MODES CONFIRM

AP USE AS RQRD

YD USE AS RQRD

Note: RNP AR IS PROHIBITED IF NOT STARTED (if available).

WHEN WINGS LEVELED :

PERIODICALLY COMPARE PFD with IESI.

CROSSCHECK HDG / TK / STBY-COMPASS

CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL

use of AP and / or YD are prohibited for IAS < 160 kt

CAUTION : In single engine operation, AP may disconnect with

rapid power change. Avoid large PL movement.

► AHRS 1 + 2 LOSS

PF CAPT

IESI USE

STBY COMPASS USE

AIRCRAFT STABILIZE SPEED AND LEVEL

VISUAL FLYING CONDITIONS MAINTAIN IF POSSIBLE

ATC NOTIFY

FMS PROG PAGE USE

Note: PFD ATT and HDG are lost, ILS deviation and ADF BRG are valid

Note: TERRAIN PICTURE DISPLAY IS AVAILABLE

Note: RNP AR IS PROHIBITED (if available)

► AHRS NOT ALIGN

■ If AHRS not align on ground

AIRCRAFT STOP UNTIL ALERT DISAPPEARS

■ If AHRS not align in flight

AHRS FAULT IDENTIFIED

AIRCRAFT STABILIZE SPEED AND LEVEL DURING 90s

■ If alert disappears

AP may be re-engaged

■ If AHRS NOT ALIGN persists after 3 minutes


ONE AHRS FAIL procedure APPLY

Mod : 5948 + 6977

ATR42 Model : 500




Appendix 1 – (continued)

 AFM	PROCEDURES FOLLOWING FAILURES SYSTEMS	5 - 04 PAGE : 17 820 EASA APPROVED FEB 16
<p>5 . 04 . 11 - MISCELLANEOUS</p> <p>► ADC FAIL</p> <p>■ If one ADC fail</p> <p>AFFECTED ADC SWITCHING ALTERNATE SYS FD MODES CONFIRM AP USE AS RQRD YD USE AS RQRD</p> <p>PERIODICALLY COMPARE IAS/ALT ON PFDs WITH IESI</p> <p>CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL use of AP and / or YD are prohibited for IAS < 160 kt</p> <p>CAUTION : In single engine operation , AP may disconnect with rapid power change . Avoid large PL movement.</p> <p>CAUTION : baro setting is available only on non affected side</p> <p><u>Note</u> : RNP AR IS PROHIBITED IF NOT STARTED (if available)</p> <p>■ If ADC 1 lost</p> <p>LANDING ELEVATION SET PRESSURE ALTITUDE</p> <p>■ If ADC 1 + 2 are lost</p> <p>PF CAPT IESI USE MAN RATE KNOB 9 O'CLOCK CAB PRESS MODE SEL MAN AUTO PRESS FAULT procedure APPLY ENG PARAMETERS MONITOR TCAS STBY GPWS OFF TLU HI or LO ACCORDING TO IAS TLU FAULT procedure APPLY</p> <p><u>Note</u>: DE-/ANTI-ICING auto mode selection is lost. <u>Note</u> : RNP AR IS PROHIBITED (if available)</p>		
Mod : 5948 + 6977	ATR42 Model : 500	



Appendix 2 – AFM 72-212A

 ATR 72 A AFM	LIMITATIONS SYSTEMS	2-05	
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		EASA APPROVED	FEB 16

2.05.01 - PRESSURIZATION

Maximum differential pressure 6.35 PSI
 Maximum negative differential pressure - 0.5 PSI
 Maximum differential pressure for landing 0.35 PSI
 Maximum differential pressure for OVBD VALVE
 full open selection 1 PSI
 Maximum altitude for one bleed off operation 20000 ft

2.05.02 - HYDRAULIC SYSTEM

All hydraulic fluids compliant with technical specification : NSA 307110
 Compliant fluids are listed in the AMM (Chapter 20, 20-31-30)

2.05.03 - LANDING GEAR

- Do not perform pivoting (sharp turns) upon a landing gear with fully braked wheels except in case of emergency.
- In case of ground speed over 165 kt all tires to be replaced.
- Towbarless Towing is prohibited, unless the towbarless towing operations are performed in compliance with the appropriate operational requirements (JAR-OPS-1 for Commercial Air Transportation) using towbarless towing vehicles that are designed and operated to preclude damage to the aeroplane nose wheel steering system or which provide a reliable and unmistakable warning when damage to the steering system may have occurred. Towbarless towing vehicles that are specifically accepted for ATR aircraft are listed in ATR Service Letter 72-09-6001.

2.05.04 - FLAPS

Holding with any flaps extended is prohibited in icing conditions (except for single engine operations).

2.05.05 - AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

- Minimum height for autopilot engagement on take off : 100 ft.
- Limitation in use when in single source configuration (one ADC FAIL and/or, one AHRS FAIL, and/or DUAL DC GEN LOSS)
 - Do not use AP and/or YD:
 - below 1000 ft AGL and/or
 - IAS below 160 kt
 - Do not use AP with the stall warning inoperative
- NAV mode for VOR approach, using either autopilot or flight director is authorized only if :
 - a co-located DME is available, and
 - DME HOLD is not selected
- Minimum height for use of either autopilot or flight director :
 - Except during take off or executing an approach : 1000 ft
 - VS or IAS mode during approach : 160 ft
 - CAT 1 APP mode : 160 ft


Refer to 7.01.03 for CAT II operation

.../...

Mod : 5948 + 6977	Model : 212 A
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Appendix 2 – (continued)

 ATR 72-600 AFM	EMERGENCY PROCEDURES ELECTRICAL SYSTEM	4 -04	
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4 . 04 . 01 - DUAL DC GEN LOSS

PF CAPT
 DC GEN 1+2 OFF then ON

■ **If no generator recovered**

HYD GREEN PUMP OFF
 TRU ON

Make sure that TRU arrow illuminates and BAT arrows extinguish.

NOTE: If TRU FAULT LAND ASAP

MAN RATE KNOB 9 O'CLOCK
 CAB PRESS MODE SEL MAN
 AVIONICS VENT EXHAUST MODE OVBD
 BAT SW OVRD
 F/O ATT HDG SWITCH TO SYS 1
 F/O ADC SWITCH TO SYS 1
 AP USE AS RQD
 YD USE AS RQD

CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL
 use of AP and / or YD are prohibited for IAS < 160 kt

CAUTION : In single engine operation , AP may disconnect with
 rapid power change . Avoid large PL movement.

COM / SURV / NAV USE MCDU1
 XPDR SET XPDR 1
 ATC (VHF 1 or HF or HF 2) NOTIFY
 MIN CAB LIGHT OFF

NOTE: NAV lights switch set to ON is necessary to provide IEP illumination

TLU MAN MODE LO SPD

● **When TLU LO SPD illuminates**

TLU AUTO

CAUTION: Avoid large rudder input if IAS above 180 kt.

STICK PUSHER / SHAKER OFF
 STICK PUSHER / SHAKER FAULT procedure APPLY
 SIDE WINDOW / WINDSHIELD HTG OFF
 DE-/ANTI-ICING MODE SEL AUTO FAULT procedure APPLY
 AUTO PRESS FAULT procedure APPLY
 BUS EQPT LIST CHECK


NOTE: periodically compare PFD with IESI, crosscheck HDG / TK /
 STBY-HDG

..... to be continued next page .../...

Mod:5948+6977 Model : 212 A



Appendix 2 – (continued)

 ATR 72 A AFM	EMERGENCY PROCEDURES ELECTRICAL SYSTEM	4 - 04	
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.../...

- **Before descent**
 - PAX INSTRUCTIONS USE PA
 - HYD X FEED ON

NOTE: Selecting HYD X FEED ON allows to recover green hydraulic system


- **At touch down**
 - IDLE GATE LEVER PULL

Mod:5948 +6977

Model : 212 A



Appendix 2 – (continued)

 ATR 72 A AFM	PROCEDURES FOLLOWING FAILURES SYSTEMS	5 - 04	
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5 . 04 . 11 - MISCELLANEOUS

► **ADC FAIL**

■ **If one ADC fail**

AFFECTED ADC SWITCHING	ALTERNATE SYS
FD MODES	CONFIRM
AP USE	AS RQRD
YD USE	AS RQRD

PERIODICALLY COMPARE IAS/ALT ON PFDs WITH IESI

CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL
use of AP and / or YD are prohibited for IAS < 160 kt

CAUTION : In single engine operation , AP may disconnect with rapid power change . Avoid large FL movement.

CAUTION : baro setting is available only on non affected side

Note : RNP AR IS PROHIBITED IF NOT STARTED (if available)

■ **If ADC 1 lost**

LANDING ELEVATION	SET PRESSURE ALTITUDE
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■ **If ADC 1 + 2 are lost**

PF	CAPT
IESI	USE
MAN RATE KNOB	9 O'CLOCK
CAB PRESS MODE SEL	MAN
AUTO PRESS FAULT procedure	APPLY
ENG PARAMETERS	MONITOR
TCAS	STBY
GPWS	OFF
TLU	HI or LO ACCORDING TO IAS
TLU FAULT procedure	APPLY


Note: DE-/ANTI-ICING auto mode selection is lost.

Note : RNP AR IS PROHIBITED (if available)

Mod : 5948 + 6977	Model : 212 A
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Appendix 2 – (continued)

 ATR 72 A AFM	PROCEDURES FOLLOWING FAILURES SYSTEMS	5 - 04	
		PAGE : 18	820
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5 . 04 . 11 - MISCELLANEOUS

► **ONE AHRS FAIL**

AFFECTED ATT / HDG SWITCHING ALTERNATE SYS
 FD MODES CONFIRM
 AP USE AS RQRD
 YD USE AS RQRD

Note: RNP AR IS PROHIBITED IF NOT STARTED (if available).

WHEN WINGS LEVELED :
 PERIODICALLY COMPARE PFD with IESI.
 CROSSCHECK HDG / TK / STBY-COMPASS

CAUTION : use of AP and / or YD are prohibited below 1000 ft AGL
 use of AP and / or YD are prohibited for IAS < 160 kt

CAUTION : In single engine operation , AP may disconnect with
 rapid power change . Avoid large FL movement.

► **AHRS 1 + 2 LOSS**

PF CAPT
 IESI USE
 STBY COMPASS USE
 AIRCRAFT STABILIZE SPEED AND LEVEL
 VISUAL FLYING CONDITIONS MAINTAIN IF POSSIBLE
 ATC NOTIFY
 FMS PROG PAGE USE

Note: PFD ATT and HDG are lost, ILS deviation and ADF BRG are valid
Note: TERRAIN PICTURE DISPLAY IS AVAILABLE
Note: RNP AR IS PROHIBITED (if available)

► **AHRS NOT ALIGN**

■ **If AHRS not align on ground**
 AIRCRAFT STOP UNTIL ALERT DISAPPEARS

■ **If AHRS not align in flight**
 AHRS FAULT IDENTIFIED
 AIRCRAFT STABILIZE SPEED AND LEVEL DURING 90s

■ **If alert disappears**
 AP may be re-engaged

■ **If AHRS NOT ALIGN persists after 3 minutes**
 ONE AHRS FAIL procedure APPLY

Mod : 5948 + 6977

Model : 212 A

