

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1998-475-103(B) R4
In case of any difficulty, reference should be made to the French original issue.

AIRBUS INDUSTRIE

A340 aircraft

Landing gear - Steering limits and main landing gear inspections (ATA 32)

APPLICABILITY:

Airbus A340 aircraft, models -211, -212, -213, -311, -312, -313, all serial numbers.

REASONS:

This Airworthiness Directive (AD) was prompted by an incident that occurred in August 1998 when the right hand main landing gear (MLG) of an A340 aircraft fractured at landing.

Investigation revealed a fatigue crack initiation located in the upper part of the MLG main fitting cylindrical barrel. This fatigue crack results from high steering and/or high towing angles when turning the aircraft.

It was determined that all A330 and A340 MLG of any standard to date could be affected.

This condition, if not corrected could ultimately lead to a possible MLG failure on ground.

Several mandatory actions have been launched through AD 98-406-098(B) for A340 aircraft.

This AD was introduced because the operational procedures mandated previously revealed to be complicated and in the meantime, new modifications have become available.

AD 98-406-098(B) is replaced by this AD.

The Revision 1 of this AD:

- introduces an alternate means of compliance as described in the paragraph A)1) and
- corrects a discrepancy between English and French version at paragraph A4 of the French version.

The Revision 2 of this AD takes into account the availability of modification 46830 under AIRBUS INDUSTRIE Service Bulletin A340-31-4047 for automatic recording of all nose wheel steering (NWS) angle exceedance.

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Reason for Revision 3:

AIRBUS INDUSTRIE has designed Modification 47487 which introduces a scallop machining to the aft end of the MLG fitting in order to remove the areas where high stress concentrations have been found and to allow the NWS angles up to 72°.

In addition, the investigation results allow the NWS angle to be increased up to 72° for aircraft fitted with Modification 43029 (growth main fitting).

MLG modified in accordance with mod 47487 or 43029 are temporary life limited while awaiting completion of investigation and testing.

Reason for Revision 4:

The life limits have been removed from this AD and will be given either in AD 2001-378(B) or in the Chapter 5 of the AMM. In addition, the investigation results allow the NWS angle to be increased up to 72° for all aircraft which have NOT received modification 43029 nor modification 47487 provided that certain components are removed and destroyed at their fatigue life limits, as prescribed in AD 2001-378(B).

Eventually, as a result of an in-service evaluation, it is now acceptable to remove the ACMS software (Mod 47787) which automatically recorded NWS exceedances.

COMPLIANCE:

To prevent the possible failure of a MLG resulting from fatigue crack propagation, within 20 days after the effective date of the original issue of this AD or within the compliance time defined below, accomplish the following instead of the actions mandated by AD 98-406-098(B):

Configuration 1: A340 Aircraft fitted with "Basic" Main Strut and Dressings P/Ns 201254001-xxx to 201254032-xxx: aircraft which have NOT received on production modification 43029 (Growth main fitting) nor modification 47487 (Growth scallop main fitting).

A) Maintenance:

1. BSCU std 8C / 8D or tiller modification

- a) Not later than March 31, 2002, unless already accomplished, modify the aircraft steering system in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4154 (Mod 47500) - BSCU std 8D which limits the nose wheel steering angle to a maximum of 72° or, Service Bulletin A340-32-4131 (Mod 46863) - BSCU std 8C which limits the nose wheel steering angle to a maximum of 65°.

Accomplishment of this paragraph A)1)a) cancels the requirements of the following paragraph A)1)b) of this AD.

Note 1: When BSCU std 8D or 8C is installed, the NWS angle is limited for self-powered turns. The flight crew cannot override the angle limitation value which depends on the installed BSCU standard:

Installed BSCU standard	NWS angle limitation for self-powered turns	Remark
8D	72°	65° if tiller modification also installed (Mod 46804/SB A340-32-4128)
8C	65°	

Note 2: Tiller Modification 46804/SB A340-32-4128 can be removed in accordance with SB A340-32-4132 for aircraft fitted with BSCU std 8C or 8D.

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b) Pending accomplishment of the above paragraph A)1)a), unless accomplished previously, modify the aircraft steering system in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128 (Mod 46804).

Note: This modification is aimed at limiting the NWS angle through the NWS Handle to no more than 65°, using a stop, breakable in case of exceptional need.

2. ACMS software: ACMS recording of NWS angle exceedances are no longer required on this aircraft configuration.

3. Nose landing gear (NLG) doors markings:

Unless accomplished previously, install Markings of the Steering angle limitation on NLG Doors in accordance with AIRBUS INDUSTRIE following instructions:

- Service Bulletin A340-32-4126 or Airbus Industrie Note 957.4055/98 or modification 46769 which installs markings for maximum towing/pushback turning angles (+/-60°), or
- Service Bulletin A340-32-4158 or modification 47701 which installs markings for maximum towing/pushback turning angles (+/-65°).

Note: If markings are installed on the NLG fittings in addition to the NLG doors markings, they must be installed in accordance with SB A340-32-4142 (Modification 47318) for 60° or with SB A340-32-4159 (Modification 47734) for 65°. Consistent angles (60° or 65°) must be used for the Nose Landing gear main fitting and door markings.

4. MLG Inspections for aircraft which are not fitted with BSCU standard 8C or 8D (i.e. which have only been fitted with the tiller mod) :

On aircraft having its MLG with more than 800 landings accumulated since new, within the next 120 landings since last inspection or the 800 landings threshold, and thereafter at intervals not to exceed 120 landings from the last inspection, perform MLG inspection, in accordance with the procedure specified in AIRBUS INDUSTRIE Service Bulletin A340-32A4124 Rev 1.

If a fault is found using the ultrasonic method, contact AIRBUS INDUSTRIE before any further flight.

5. Life limits : Refer to AD 2001-378(B).

B) Operations:

1. Towing and Pushback :

Aircraft Towing and Pushback Steering angle is limited to a maximum of 60 or 65° depending on the NLG doors markings installed in accordance with the above paragraph A)3) of this AD, using the procedure described in AIRBUS INDUSTRIE FOT 999.0099/98 Rev 2 of November 23, 1998.

2. Powered Taxi:

2.1. Steering limit angle

- For aircraft which are fitted with BSCU std 8C or tiller modification: do not exceed a 65° steering limit during taxi and powered turns.
- For aircraft which are fitted with BSCU std 8D: do not exceed a 72° steering limit during taxi and powered turns.

2.2. For aircraft which are not fitted with BSCU std 8C or 8D (i.e. which have only been fitted with the tiller mod):

- Do not use differential braking during taxi or turning at speeds less than 20kts.
- Do not use asymmetric thrust to tighten turns.

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2.3. For aircraft which are fitted with BSCU std 8C or 8D:

- No braked pivot turn is allowed (ie differential braking cannot be used to fully stop one main gear).
- Assymmetric thrust may be used to maintain the turn only, but NOT to tighten it.

C) Steering limits exceedance:

If the 65° stop on the hand wheel (Mod 46804 or SB A340-32-4128) is exceeded, accomplish the following within the next 4 flight cycles/landings:

1. Inspect the MLG in accordance with the procedure specified in AIRBUS INDUSTRIE Inspection Service Bulletin A340-32-A4124 Rev 1.

If a fault is found using the ultrasonic method, contact AIRBUS INDUSTRIE before any further flight.

2. In addition for the aircraft on which mod 46804 or SB A340-32-4128 has been embodied,

If a 65° limit is exceeded on the handwheel steering [...]:

- a) Reinstall a positive stop in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128.
- b) Re-rig the tiller in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128.

or Install BSCU std 8C or 8D in accordance with SB A340-32-4131 (mod 46863) or SB A340-32-4154 (mod 47500).

Note: Modification 46804/SB A340-32-4128 can be removed in accordance with SB A340-32-4132 for aircraft fitted with BSCU std 8C or 8D.

Configuration 2: A340 Aircraft fitted with "Growth" Main Strut and Dressings P/Ns 201489001-xxx to 201489004-xxx: A340 aircraft which have received on production modification 43029 (Growth main fitting) and which have not received modification 47487 (Growth Scallop main fitting).

A) Maintenance:

1. BSCU std 8C/8D or tiller modification

- a) Not later than March 31, 2002, unless already accomplished, modify the aircraft steering system in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4154 (Mod 47500) - BSCU std 8D which limits the nose wheel steering angle to a maximum of 72° or, Service Bulletin A340-32-4131 (Mod 46863) - BSCU std 8C which limits the nose wheel steering angle to a maximum of 65°.

Accomplishment of this paragraph A)1)a) cancels the requirements of the following paragraph A)1)b) of this AD.

Note 1: When BSCU std 8D or 8C is installed, the NWS angle is limited for self-powered turns. The flight crew cannot override the angle limitation value which depends on the installed BSCU standard:

Installed BSCU standard	NWS angle limitation for self-powered turns	Remark
8D	72°	65° if tiller modification also installed (Mod 46804/SB A340-32-4128)
8C	65°	

Note 2: Tiller Modification 46804/SB A340-32-4128 can be removed in accordance with SB A340-32-4132 for aircraft fitted with BSCU std 8C or 8D.

.../...

b) Pending accomplishment of the above paragraph A)1)a), unless accomplished previously, modify the aircraft steering system in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128 (Mod 46804).

Note: This modification is aimed at limiting the Nose Wheel Steering (NWS) angle through the NWS Handle to no more than 65°, using a stop, breakable in case of exceptional need.

2. ACMS software:

ACMS recording of NWS angle exceedances are no longer required on this aircraft configuration.

3. NLG doors markings:

Unless accomplished previously, install Markings of the Steering angle limitation on NLG Doors in accordance with AIRBUS INDUSTRIE:

- Service Bulletin A340-32-4126 or Airbus Industrie Note 957.4055/98 or modification 46769 which installs markings for maximum towing/pushback turning angles (+/-60°), or
- Service Bulletin A340-32-4158 or modification 47701 which installs markings for maximum towing/pushback turning angles (+/-65°)

Note: If markings are installed on the NLG fittings in addition to the NLG doors markings, they must be installed in accordance with SB A340-32-4142 (Modification 47318) for 60° or with SB A340-32-4159 (Modification 47734) for 65°. Consistent angles (60° or 65°) must be used for the Nose Landing gear main fitting and door markings.

4. MLG Inspections for aircraft which are not fitted with the BSCU standard 8C or 8D (i.e. which are only fitted with the tiller mod):

On aircraft having its MLG with more than 800 landings accumulated since new, within the next 120 landings since last inspection or the 800 landings threshold, and thereafter at intervals not to exceed 120 landings from the last inspection, perform MLG inspection, in accordance with the procedure specified in AIRBUS INDUSTRIE Service Bulletin A340-32A4124 Rev 1.

If a fault is found using the ultrasonic method, contact AIRBUS INDUSTRIE before any further flight.

Note: For aircraft fitted with BSCU std 8C or 8D no inspection is required.

5. Temporary Life limits for aircraft fitted with the BSCU standard 8C or 8D the life limits will be published in the AMM Chapter 5.

B) Operations:

1. Towing and Pushback:

Aircraft Towing and Pushback Steering angle is limited to a maximum of 60 or 65° depending on the NLG doors markings installed in accordance with the above paragraph A)3) of this AD, using the procedure described in AIRBUS INDUSTRIE FOT 999.0099/98 Rev 2 of November 23, 1998.

2. Powered Taxi :

2.1. Steering limit angle

- For aircraft which are fitted with BSCU std 8C or tiller modification: do not exceed a 65° steering limit during taxi and powered turns.
- For aircraft which are fitted with BSCU std 8D: do not exceed a 72° steering limit during taxi and powered turns.

2.2. For aircraft which are not fitted with BSCU std 8C or 8D (i.e. which have only been fitted with the tiller mod):

- Do not use differential braking during taxi or turning at speeds less than 20kts.
- Do not use asymmetric thrust to tighten turns.

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2.3. For aircraft which are fitted with BSCU std 8C or 8D:

- No braked pivot turn is allowed (i.e. differential braking cannot be used to fully stop one main gear).
- Asymmetric thrust may be used to maintain the turn only, but NOT to tighten it.

C) Steering limits exceedance:

For aircraft which are not fitted with BSCU std 8C or 8D and which are fitted with tiller modification 46804 or SB A340-32-4128:

1. If the 65° stop on the hand wheel is exceeded, [...] accomplish the following within the next 4 flight cycles/landings:

- Inspect the MLG in accordance with the procedure specified in AIRBUS INDUSTRIE Inspection Service Bulletin A340-32-A4124 Rev 1.
- If a fault is found using the ultrasonic method, contact AIRBUS INDUSTRIE before any further flight.

2. In addition, if a 65° limit is exceeded on the handwheel steering [...]:

- a) Reinstall a positive stop in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128.
- b) Re-rig the tiller in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4128.

or Install BSCU std 8C in accordance with SB A340-32-4131 (mod 46863) or BSCU std 8D in accordance with SB A340-32-4154 (mod 47500).

Note: Modification 46804 / SB A340-32-4128 can be removed in accordance with SB A340-32-4132 for aircraft fitted with BSCU std 8C or 8D.

Configuration 3: A340 Aircraft fitted with "Scalloped Growth" Main Strut and Dressings P/Ns 201489001-xxx to 201489004-xxx post-Mod 47487/SB A340-32-4150: aircraft which have received on production modification 47487 or SB A340-32-4150.

A) Maintenance:

1. BSCU standard 8C/8D

Unless accomplished previously, modify the aircraft steering system in accordance with AIRBUS INDUSTRIE Service Bulletin A340-32-4154 (Mod 47500) - BSCU std 8D which limits the nose wheel steering angle to a maximum of 72° or, Service Bulletin A340-32-4131 (Mod 46863) - BSCU std 8C which limits the nose wheel steering angle to a maximum of 65°.

Note 1: The NWS angle is limited for self-powered turns. The flight crew cannot override the angle limitation value which depends on the installed BSCU standard:

Installed BSCU standard	NWS angle limitation for self-powered turns
8D	72°
8C	65°

Note 2: If tiller modification 46804/SB A340-32-4128 is installed then it must be removed in accordance with SB A340-32-4132.

2. ACMS software:

ACMS recording of NWS angle exceedances are no longer required on this aircraft configuration.

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3. NLG door markings:

Unless accomplished previously, install Markings of the Steering angle limitation on NLG Doors in accordance with AIRBUS INDUSTRIE:

- Service Bulletin A340-32-4126 or Airbus Industrie Note 957.4055/98/modification 46769 which installs markings for maximum towing/pushback turning angles (+/-60°), or
- Service Bulletin A340-32-4158 or modification 47701 which installs markings for maximum towing/pushback turning angles (+/-65°)

Note: If markings are installed on the NLG fittings in addition to the NLG door markings, they must be installed in accordance with SB A340-32-4142 (Modification 47318) for 60° or with SB A340-32-4159 (Modification 47734) for 65°. Consistent angles (60° or 65°) must be used for the Nose Landing gear main fitting and door markings.

4. Inspection requirements: None.

5. Temporary Life limits for aircraft fitted with the BSCU standard 8C or 8D: the life limits will be published in the AMM Chapter 5.

B) Operations:

1. Towing and Pushback:

Aircraft Towing and Pushback Steering angle is limited to a maximum of 60 or 65° depending on the NLG doors markings installed in accordance with the above paragraph A)3) of this AD, using the procedure described in AIRBUS INDUSTRIE FOT 999.0099/98 Rev 2 of November 23, 1998.

2. Powered Taxi:

2.1. Do not exceed a 65° (BSCU std 8C) or 72°(BSCU std 8D), steering limit during taxi and powered turns

2.2. No braked pivot turn is allowed (ie differential braking cannot be used to fully stop one main gear).

2.3. Asymmetric thrust may be used to maintain the turn only, but NOT to tighten it.

[...]

REF: AIRBUS INDUSTRIE Service Bulletin A340-32A4124 Revision 1
AIRBUS INDUSTRIE Service Bulletin A340-32-4126
AIRBUS INDUSTRIE Service Bulletin A340-32-4128
AIRBUS INDUSTRIE Service Bulletin A340-32-4131
AIRBUS INDUSTRIE Service Bulletin A340-32-4132
AIRBUS INDUSTRIE Service Bulletin A340-32-4142
AIRBUS INDUSTRIE Service Bulletin A340-32-4150
AIRBUS INDUSTRIE Service Bulletin A340-32-4154
AIRBUS INDUSTRIE Service Bulletin A340-32-4158
AIRBUS INDUSTRIE Service Bulletin A340-32-4159
AIRBUS INDUSTRIE FOT 999.0099/98 Revision 2 dated November 23, 1998
AIRBUS INDUSTRIE Service Bulletin A340-31-4047
AIRBUS INDUSTRIE Service Bulletin A340-31-4055
Any further approved revision of these SB's or FOT's is acceptable.

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This Revision 4 replaces AD 1998-475-103(B) R3 dated July 26, 2000.

EFFECTIVE DATES :

**Original AD : Upon receipt of the telegraphic AD
issued on NOVEMBER 23, 1998**
Revision 1 : MAY 01, 1999
Revision 2 : OCTOBER 16, 1999
Revision 3 : AUGUST 05, 2000
Revision 4 : SEPTEMBER 15, 2001

SUPERSEDED