

**TLTV - Aircraft NLG Steering and Tractive Force Protection
Systems or Alerting Devices - Inspection, Maintenance
and Calibration Requirements**

FOREWORD

This SAE Aerospace Recommended Practice (ARP) describes the requirements and procedures for the inspection, maintenance and calibration of towbarless towing vehicles (TLTV) aircraft nose landing gear (NLG) tractive force (where applicable) and steering protection systems or alerting devices.

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1. SCOPE:

- 1.1 To list the documentation required to ensure inspection, maintenance and calibration of the TLTV's aircraft NLG steering and tractive protection systems or alerting devices can be carried out in accordance with the requirements of this document and the referenced standards.
- 1.2 To specify inspection, maintenance and calibration requirements and procedures.
- 1.3 To specify special tools requirements.
- 1.4 To specify training requirements.
- 1.5 To specify recording, traceability and accountability requirements.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

ARP5283	TLTV Test Specification - Industry Wide Towbarless, Towing Vehicle Test Specification Compiled by Airbus, Boeing, McDonnell Douglas and Fokker
ARP4852	Specification for Towbarless Pushback Vehicles
ARP4853	Specification for Towbarless Tow Vehicles
ARP5285	Towbarless Tractor Operating Procedures
ARP5911	Regional Aircraft Towbarless Tow Vehicle - Test Requirements
ARP5916	Design Specification for Regional Aircraft Towbarless Tow Vehicle for Pushback and/or Maintenance Towing Operations

2.2 Applicable References:

TLTV manufacturers' inspection, calibration and maintenance requirements and procedures.
TLTV manufacturers' maintenance manuals.
Applicable airframe manufacturers' towbarless vehicle test requirements or criteria documents.
Applicable airframe manufacturers' manuals.

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3. DEFINITIONS:

- 3.1 TLTV - towbarless towing vehicle
- 3.2 NLG - Aircraft's nose landing gear

4. GENERAL REQUIREMENTS:

- 4.1 The TLTV aircraft NLG tractive force and steering protection systems or alerting devices which in the event of failure or malfunction, would as a consequence of failure not preclude potential damage to the aircraft's nose landing gear and it's steering system must be inspected, maintained, tested and calibrated to TLTV manufacturers requirements for all the designated aircraft types which the TLTV is designed to handle.
- 4.2 Inspection, maintenance and calibration schedules, any special tools and training requirements for the TLTV's protection systems or alerting devices must be available.
- 4.3 The TLTV's aircraft NLG protection systems or alerting devices must be inspected, maintained and calibrated in accordance with the requirements of this document and the TLTV manufacturers maintenance manuals and schedules.
- 4.4 The organization responsible for the maintenance of the TLTV must keep documented records of each TLTV's aircraft NLG protection systems or alerting devices inspection, maintenance and calibration in maintained files to be made available for review and audit by the regulatory authorities when requested.
- 4.5 Records should be kept for a minimum period of 2 years or in accordance with the requirements of the controlling regulatory authority.

5. MANUFACTURERS MAINTENANCE MANUALS:

- 5.1 The TLTV manufacturers' maintenance manual shall incorporate a separate section covering the inspection, maintenance and calibration of the TLTV aircraft NLG steering and tractive force protection systems or alerting devices.

The maintenance manual shall -

- 5.1.1 Detail the scope of the aircraft NLG steering and tractive force protection systems or alerting devices.
- 5.1.2 List applicable reference documents
- 5.1.3 List applicable equipment required to perform the inspection, calibration and maintenance tasks.

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- 5.1.4 Include trouble shooting sections.
- 5.1.5 List inspection, maintenance and calibration intervals.
- 5.1.6 List all items to be checked/calibrated.
- 5.1.7 Detail against each task full instructions on how the task/calibration should be carried out.

6. INSPECTION, MAINTENANCE AND CALIBRATION REQUIREMENTS:

- 6.1 The TLTV manufacturer shall publish inspection, calibration and maintenance check lists for each model of TLTV.
- 6.2 Each check list shall include:
 - 6.2.1 Detail the scope of the check list.
 - 6.2.2 List applicable reference documents.
 - 6.2.3 List applicable equipment required to perform the inspection, calibration and maintenance tasks.
 - 6.2.4 List inspection, maintenance and calibration intervals in hours run and/or calendar interval.
 - 6.2.5 List all items to be checked/calibrated on the TLTV aircraft NLG steering and tractive force protection systems or alerting devices.
 - 6.2.6 Provide for the TLTV serial/chassis/fleet number to be recorded.
 - 6.2.7 Provide for a reference number to be recorded.
 - 6.2.8 Provide for details of defects and actions required to be recorded.
 - 6.2.9 Provide for each checkable item/task to be signed off and dated when complete by the qualified and authorized person completing the task.
 - 6.2.10 Provide for the completed check list to be signed off by the qualified and authorized person completing the tasks and counter signed and dated by an authorized person when all tasks and actions have been completed.

7. CALIBRATION:

- 7.1 Inspection, maintenance and calibration of the TLTV's aircraft's NLG steering and tractive force protection systems or alerting devices must be carried out in strict accordance with the TLTV manufacturers check list and maintenance instructions as contained in the TLTV's maintenance manual.

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- 7.2 The TLTV's aircraft NLG steering and tractive force protection systems or alerting devices must be calibrated at service intervals as specified in the TLTV manufacturers maintenance manual.
 - 7.3 Each calibration must be carried out in accordance with the TLTV manufacturers inspection/ maintenance/calibration check list using the tools and equipment listed in the TLTV manufacturer's maintenance manual or suitable equivalents.
 - 7.4 Any tools used in the inspection maintenance and calibration tasks must themselves be calibrated against known standards where applicable.
 - 7.5 The qualified and authorized person performing the inspection, maintenance and calibration tasks must sign off and date each task as it is completed on the maintenance check list.
 - 7.6 The check list must be signed off by the qualified and authorized person performing the inspection, maintenance and calibration tasks and countersigned and dated by an authorized person when all tasks and resulting actions have been completed.
8. SPECIAL TOOLS:
- 8.1 The TLTV manufacturer must list in his maintenance manuals and check lists any special tools that are required to perform the inspection, maintenance and calibration requirements.
 - 8.2 Where appropriate instructions regarding the calibration of the special tools must be provided.
 - 8.3 The re-calibration of any special tools must be performed and recorded at periods not exceeding the tool manufacturer's requirements.
 - 8.4 Instructions on how to use any special tools must be detailed in the TLTV's maintenance manual.
9. TRAINING:
- 9.1 The personnel maintaining the TLTV must be provided with appropriate and adequate training in the inspection, maintenance and calibration of the TLTV's and aircraft NLG steering and tractive force protection systems or alerting devices.
 - 9.2 The TLTV manufacturer must be able to provide appropriate and formal training.
 - 9.3 Personnel successfully completing formal training courses should be recorded as being qualified.
10. MAINTENANCE, INSPECTION & CALIBRATION RECORDS:
- 10.1 Records must be kept of all inspections, maintenance and calibration checks of the TLTV aircraft NLG steering and tractive force protection systems or alerting devices for a minimum period of 2 years. Other relevant maintenance/inspection records should also be kept.