

Guide to Seatbelt Assessment

Department of Transport & Main Roads - Compliance



Introduction

In 2012, TMR Vehicle Standards, in conjunction with Klippan (a seat belt manufacturer), created Vehicle Standards Instructions 10 (seatbelt assessment). The instruction is a guide for Transport Inspectors and Industry in assessing seat belts during a vehicle check.

This training package has been designed in consultation with the APV-T testing centre and TMR Vehicle Standards. It is designed to support Vehicle Standards Instructions 10 and to assist in distinguishing between acceptable wear and a defective seatbelt. The package will also provide recommended wording when a defect notice is issued.

Course Objectives

- ✓ Identify main seat belt components
- ✓ Assessing seatbelts, the criteria and what to look for
 - Visual and basic performance checks
 - AIS code of practice
 - Vehicle Standards Instructions 10
- ✓ Issuing a defect notice

Seat belt components

Typical 3 point retractor seatbelt



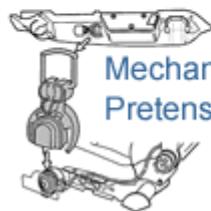
Seatbelt pretensioner

A pretensioner may be part of the seat belt stalk or retractor mechanism. There are various types of pretensioner designs including pyrotechnic, electric & mechanical. Usually fitted in conjunction with airbags.

Electric Pretensioner



Mechanical Pretensioner



Pyrotechnic Pretensioner



Seat belt assessment resources

- AIS Code of Practice Section 2 – Seat Belts (Reasons for rejection)
- [Vehicle Standards Instructions](#) - General10, Seat Belt Assessment
- Compliance Manual MV10 – Replacement Seat Belt Assemblies
- Compliance Manual – Defective vehicle types, classifications, categories

AIS Code of Practice

SEAT BELTS - Reasons for Rejection:

- All seat belts installed by the vehicle manufacturer as original equipment are not fitted. (Seat belts removed or added as part of an approved modification are permitted).
- Seat belt assemblies are not securely attached to the respective anchorage point and show signs of distortion, cracks, fractures or other damage likely to cause failure.
- Seat belt webbing is not correctly and firmly secured to each end fitting or is damaged, frayed, split, torn, altered or modified.
- The buckle and tongue mechanisms are not operational and effective.
- Seat belt retractors, locking mechanisms and pre-tensioners are not operational.
- Non retractable seat belts do not have sufficient adjustment to allow effective use of the belts and do not maintain the adjusted positions

AIS Code of Practice

SEAT BELTS (Condition) - Reasons for Rejection:

- The seatbelt assembly is not securely fixed to a seatbelt anchorage.
- A seatbelt component (eg protective plastic cover on buckle, tongue or retractor system) is damaged so that foreign objects may enter the interior components, or that they may cause damage to the interior components, mechanisms or webbing.
- The seatbelt webbing (including webbing attached to the buckle) has:
 - (a) a cut, including a cut on the surface, or
 - (b) a rip or tear, or
 - (c) fraying, or
 - (d) stretching (eg the belt has unusual web patterns or the webbing is deformed, will not lie flat, or is curled or rippled), or
 - (e) fading so that most of the colour has been bleached, and: shows signs of chalking, or a powdery residue is evident on the webbing or it has become stiff.
 - (f) been dyed to conceal fading, or
 - (g) contamination from grease, paint, solvents or similar products.

(h) been replaced or shows other signs of repair and there is no evidence of approval from the seatbelt manufacturer

- The seatbelt stitching:
 - (a) is damaged or insecure, or
 - (b) shows signs of home repair, eg gluing, stitching by hand or home sewing machine, staples, bolts, or rivets, or
 - (c) indicates that the 'rip stitch' system has been activated, ie the stitching is broken and a 'REPLACE BELT' label has been exposed near the lower seatbelt anchorage, or this label has been cut off.

- A buckle and tongue:
 - (a) are mismatched, or
 - (b) do not lock, or
 - (c) do not remain locked, or
 - (d) do not release easily, or
 - (e) are insecure when coupled.

- A component is missing, or is cracked, distorted, damaged or deteriorated in such a way that:
 - (a) its strength or integrity is reduced, or
 - (b) it may damage another component or the webbing, or
 - (c) foreign matter may enter the interior of the mechanism, or
 - (d) the seatbelt or a seatbelt component cannot function as intended.

- A seatbelt stalk:
 - (a) (wire-cable type) shows broken wires, or
 - (b) (plastic-covered webbing type) webbing has deteriorated, or is frayed, cut or faded, or
 - (c) (solid metal type) is corroded, cracked or buckled, or
 - (d) is not the correct type for the vehicle or the seating position.

- A seatbelt pretensioning system has not been replaced after activation.

AIS Code of Practice

SEAT BELTS (Performance) - Reasons for Rejection:

- The seatbelt webbing of a retractor-type seatbelt does not easily pull out from the retractor.
- The seatbelt webbing of a retractor-type seatbelt has difficulty retracting, eg is slow or intermittent, or does not fully retract.
- A static seatbelt cannot be adjusted to fit a variety of persons.
- The seatbelt is not of sufficient length to fit a variety of persons.
- A seatbelt is located so that it cannot be readily fastened or released by the wearer.
- The web and/or vehicle sensitivity of a dual-sensitive retractor type seatbelt fitted in a front seating position does not function correctly.
- The vehicle sensitivity of a single-sensitive retractor type seatbelt fitted in a front seating position does not function correctly.

- The web sensitivity of a dual-sensitive retractor type seatbelt fitted in a rear seating position does not function correctly.
- The vehicle sensitivity of a single-sensitive retractor type seatbelt fitted in a rear seating position does not function correctly.

Replacement Seat Belt Assemblies

- When seat belt assemblies are replaced (irrespective of year model of the vehicle), they must be replaced with either the manufacturer's replacement component, or a suitable after market replacement seat belt assembly for the make and model of the vehicle involved.
- To ensure that the level of occupant protection offered by the vehicle manufacturer is not downgraded, under no circumstances is the replacement seat belt assembly to be of a lower standard than that of the original seat belt assembly it replaces.

Check it – Change it

Seat Belt Safety Check List

TONGUE AND BUCKLE ASSEMBLY

- | PASS | FAIL | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Check the engagement of tongue and buckle. The buckle and tongue assembly should securely latch together with no freeplay (limited movement). |
| <input type="checkbox"/> | <input type="checkbox"/> | The tongue should eject actively when released. |
| <input type="checkbox"/> | <input type="checkbox"/> | There should be no visible cracks on the buckle and the buckle cover must be intact. |
| <input type="checkbox"/> | <input type="checkbox"/> | The tongue should have no metal deformation, webbing marks, or visible cracks on metal or plastic sections. |



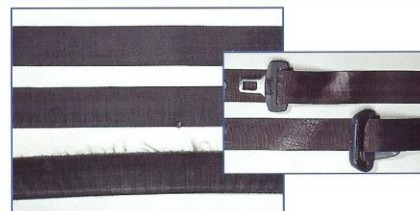
RETRACTOR

- | PASS | FAIL | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Pull the belt out as far as it will go then release it. The belt should return all the way to the retractor without sticking, gripping or stalling. |
| <input type="checkbox"/> | <input type="checkbox"/> | The retractor should lock if the webbing is pulled out suddenly. |



WEBBING

- | PASS | FAIL | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | The webbing should be securely attached to its end fittings displaying no stretching or pulled stitching. |
| <input type="checkbox"/> | <input type="checkbox"/> | The webbing should be flat throughout its entire length. |
| <input type="checkbox"/> | <input type="checkbox"/> | Look for plastic burn marks, frayed stitching and any signs of rippling. |
| <input type="checkbox"/> | <input type="checkbox"/> | Look for fading - exposure to sunlight can reduce the strength by up to 50%. |



ANCHORAGE

- | PASS | FAIL | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Ensure all anchorages are free from corrosion and securely fastened to the vehicle structure. |
| <input type="checkbox"/> | <input type="checkbox"/> | All mounting points should not show any signs of deformation. |



Note: Any failed items must result in the complete replacement of the seatbelt assembly. Belts should be replaced with brand new belts, not second hand, as per legislation.

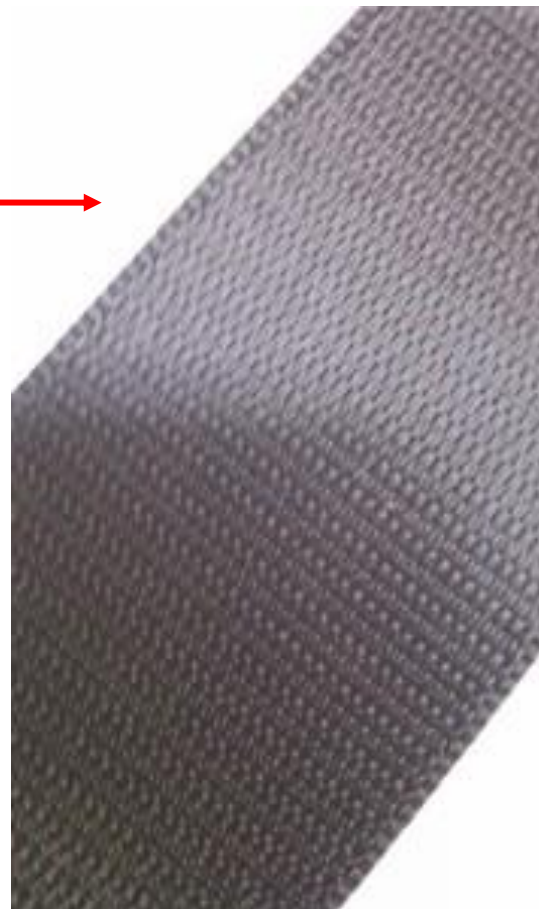


Minor wear on outer edges of seat belt webbing is acceptable. The following examples have passed ADR4/04 dynamic testing.....





Edging/overlocking
Minor wear 'fluffing' acceptable



Examples of typical seat belt webbing wear/damage

Defects or acceptable wear ? Discuss.....



Great state. Great opportunity.



Great state. Great opportunity.





Great state. Great opportunity.

Identifying a deployed seat belt pre-tensioner

- a seat belt pre-tensioner is usually designed to deploy in conjunction with the airbag/s.
- a pre-tensioner that is incorporated into the seat belt stalk will collapse when deployed (refer to left image). In most cases the buckle will drop below the level of the seat base when deployed. Certain manufacturers' designs will also display an alert tab.
- a pre-tensioner that is incorporated into the seat belt retractor will usually cause the retractor to lock-up if it has been deployed.



Issuing a defect notice for failed seatbelts

- Transport Inspectors do not have access to seat belt testing equipment/facilities. A visual inspection and evaluation is our inspection method.
- As a result of these limitations, there are often situations where inspectors cannot categorically conclude that a seat belt, which in their determination appears to have visual defects, will fail an ADR4/04 dynamic test at an accredited testing facility.
- If a defective seat belt is found, it is only necessary to 'cease use' that particular seat rather than the entire vehicle; unless obviously the drivers seat belt is defective.
- When it is determined that a defect notice is required to be issued for seat belt condition, the wording should be carefully considered in regards to instructing the replacement of seat belts or identifying the seat belt as 'defective'.
- Recommended wording for a seat belt defect notice
'Provide documentary evidence from the vehicle manufacturer or the manufacturers' authorised agent, that the seat belt is not defective, otherwise replace the defective seat belt'
Clearance method : If this is the only item a **Self Clearing** with documentary evidence of seat belt compliance attached to defect notice is to be returned to TMR.

Clearance Method

- If the seat belt/s are the only item on the defect notice then a **Self Clearing** method should be used.
- If there are more than one item on the defect notice then the clearance method should be treated as normal. That is, either AIS or TMR clearance depending on the classification of the defective items.

Questions/Comments ??