



Testing Times

Welcome

Welcome to Edition 14 of Testing Times. We really have only got two subjects for this issue - lights & occupant restraints (well, headlights and fog lights & seatbelts and air bags - the others will have to wait for another issue). But these two subjects, or at least the parts that are covered, overflowed this issue and we had to drop the font a bit to get it all in. Hope you don't have too much trouble reading it.

Aiming Lights

Glare from misaligned lights on oncoming vehicles is one of the most common complaints from the public. If all LVTs ensure that lights are properly aligned at least the 600,000+ vehicles that get roadworthy tests each year won't cause a problem. Vehicles have three types of lights that require aiming; headlights, driving lights and front fog lights.

Headlights and fog lights are both set up in the low beam position and their correct aiming is a compulsory part of the roadworthy test.

Driving lights are usually set up to suit the driver with straight forward and level as a starting point. However, their aim is **not** a roadworthy item.

Foggy Thinking

While we are on the subject of lights, many cars sold in Australia have been designed for sale in the Northern European or US market and are fitted with front or rear (and sometimes both) fog lamps. With the snow, sleet, fog and rain in places like Northern Europe, these lights are an essential safety provision and the average European driver knows just when and how to use them. Unfortunately, some Australian drivers don't seem to know how to use these lights sensibly.

The use of red rear fog lamps is prohibited by law except in "abnormal atmospheric conditions" and the lamps are required to

have a telltale on the dash so the driver **should** know when they are on. These rear fog lights are very bright and destroy the night vision of following drivers (and the effectiveness of the brake lights) if used in anything but the thickest of fogs.

White front fog lamps, on the other hand, are allowed to be used at any time just as front dipped headlamps can be used any time. However, if front fog lamps are adjusted for their intended use they should not be a problem.

Why? Well, to be effective in fog, these lamps need to be mounted very low (as most are) and have a wide flat beam and be aimed outwards and well below the horizontal to stop them reflecting back off the fog and dazzling you, the driver. They are really to see the white lane lines as you creep slowly forward in that pea souper. As such, when properly fitted and aimed, they provide little long distance frontal illumination and, in normal daylight, they are not as effective for daytime running lights as low beam headlamps.

Unfortunately, because they have so little frontal penetration when set up properly, it seems that some drivers are adjusting them up, or fitting different lights, so that they shine further down the road and can be used to supplement, or in place of, low beam. Beaut! Now, because of their very low mounting they dazzle every oncoming driver.

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It is very important that LVT's check fog lamps and low beam headlamps to ensure that they only produce low beam and are correctly adjusted and won't dazzle others.

The Australian Vehicle Standards Rules (effectively the standards for registration) prohibit any lamp other than high beam headlamps from being adjusted in a way that could dazzle the driver of any approaching vehicle. The aiming requirements for front fog lamps is the same as for low beam headlights. Effectively, the top of the cut off or major part of the beam should be at least 50mm lower than the centre of the lamp at a distance of 7.5 metres. Even if they are adjusted this way but you still judge that they could dazzle another driver you should not issue a RWC.

Bright Lights!!

Years ago, to get better lights, you could simply bolt on a set of "FlameThrowers" that could melt your sunnies at 1000 yards. Alas, things are not so easy now. The front of many modern cars no longer suits fitting additional lamps. It's also difficult to upgrade the existing headlights as they are often uniquely designed for each make and model with no aftermarket units that will fit. Further, using higher wattage bulbs in the OE lamps can end up in a meltdown as the plastic reflectors cannot stand the heat. So what to do if you want better lights?

Well, some European makes and models are fitted with gas discharge lamps (sometimes called XGD lamps for Xenon Gas Discharge) that are MANY, MANY times brighter and MUCH, MUCH whiter than the lights fitted to the same models sold in Australia.



You thought Q1 bulbs were worlds ahead of the old tungsten filament globes when they first came out! Believe me, these gas discharge babies are light years (pun intended) ahead of the best Q1 bulbs despite the fact that they are often only rated at 35 watts.

So the answer is easy, isn't it? Simply get a set of the XGD lamps for your model and bolt them in.

NOT SO!! These lamps are so bright and have such a sharp low beam cut-off that special precautions are needed. In Europe the lamps must be fitted with a cleaning system to stop grime on the lens blurring the focus and the vehicle must also have a self-adjusting system to ensure that the lamps are always correctly aligned no matter how the vehicle is loaded.

Gas discharge lamps are now allowed in the ADRs under the same conditions as they are allowed in Europe but many Australian specification vehicles are not being fitted with them and usually the headlamp cleaning and automatic adjusting systems are also left off to reduce costs when the vehicles are imported for sale here.

What this means is that if you come across a vehicle fitted with gas discharge lamps – the rear of the lamp is quite different from a normal lamp because of the high voltage starting system required – unless the vehicle is fitted with a lens cleaning system and has an automatic lamp adjusting system (this may be a self levelling suspension system) you should not issue a Roadworthiness Certificate as the vehicle does not comply with the standards.

Motor Cycle Inspections

One of the reasons for stressing the need to remove motorcycle fairings to inspect the frame has been the number of bikes found with cracked frames particularly around the head stem. There have been a couple of reported instances of head stems separating from the frame. This apparently has an interesting effect on the handling.



It appears that crashed bikes are being pulled straight by amateurs without an understanding of the side effects. If you suspect accident damage has not been repaired correctly it is recommended that you require that the motorcycle structural repair report be completed by a competent motorcycle frame repairer.

Seatbelts

Seatbelts are the single most important thing that has happened in vehicle safety and they have been shown to reduce the risk of injury or death in a crash by over 50%. But modern seatbelts are not the simple things they appear to be. They are carefully designed and tuned for each make and model vehicle and the wrong one or one that has been somehow damaged - perhaps by being worn in a previous serious crash - may be far less effective than it should be.

To be acceptable for the issue of a RWC, the seatbelts must be the correct ones for the vehicle, they must function properly and be essentially and apparently undamaged. Note that with the 1999 alignment of Victoria's vehicle registration standards with the national requirements, seatbelts are now only required on Victorian registered vehicles where the ADRs say so. Therefore, if seatbelts are fitted where they are not required, the vehicle should not be rejected if those seatbelts are not up to scratch but their inadequacies should be brought to the attention of the vehicle owner.

The following are a number of key seatbelt features that must be considered when inspecting seatbelts for a RWC.

1. Seatbelt Tags

Ever noticed that tag attached to the seatbelt usually near the outer end where it is attached to the floor sill or pan? That is the seatbelt's guarantee of quality. It says what standard the seatbelt meets and its date of manufacture and every legitimate seatbelt has one.

For various reasons these tags are being cut off. Why? Probably to hide something illegal about the vehicle or the seatbelt. If you encounter a vehicle that has the seatbelt tags removed you should reject it as you cannot be sure that the seatbelt is the correct one for the vehicle or that it meets the required standards.

2. Seatbelt Plastic Bits

Seatbelts have bits of plastic some of which are essential for the continued operation of the system while some are more for convenience.

For example, the plastic surround on a buckle prevents the mechanism getting jammed on seats and clothing but more importantly it stops objects getting inside the buckle and preventing it from locking securely (or releasing correctly). Any plastic pieces missing or likely to separate from the buckle surround that could allow objects to enter the buckle are grounds for rejection.

The plastic bits on the tongue might seem just to make it easier to hold but again they serve the important function of transferring the load from the webbing to the tongue and preventing abrasion of the webbing over time. Any missing bits in any area contacted by the webbing or any

cracks or damage likely to reduce the strength or security of the plastic bits in these areas is grounds for rejection.

Similarly, covers and guides for the retractor systems or pre-tensioner systems are there for a purpose. They stop clothing or other objects getting into or damaging the systems and preventing them operating correctly. Any bits missing or any cracking that is likely to cause bits to fall off these covers and guides is grounds for rejection.

The "buttons" sometimes stitched onto the webbing are to prevent the tongue sliding to the floor when it is released and makes the belt easier to put on again. This is an ADR requirement to ensure the tongue is always accessible. Should the buttons be removed not only is the compliance compromised but the seat belt may have been damaged in the process. This would be grounds for rejection.

3. Seatbelt Colour

Seatbelts for the Australian market are required to meet a sunlight degradation test. In this test the belt material is exposed to UV light until a set amount of fading has occurred and it is then tested for strength. While exposure to UV light does reduce the belt strength the amount of fading and loss of strength depends on a number of factors including the materials used in the belt and the colour fastness of the dyes.

Also, some colours fade much more readily than others. Consequently, a change in colour of a seatbelt with age due to UV degradation is not a good measure of the strength of the seatbelt and should not be a cause for rejection.

4. Seatbelt Stiffness

Seat belt webbing stiffness on the other hand is a reasonable indicator of its strength as the webbing stiffens and weakens with UV exposure. Seat belt webbing is constantly bent back and forth around the fittings as the belt is used and if it is not pliable this constant flexing will gradually cause fibres to break reducing the webbing's strength. In a crash the most loaded points are where it passes through – and gets bent sharply around – fittings. Again, a stiff belt is more likely to break at these points. Any seatbelt webbing that is abnormally stiff or that creaks or groans when you flex it or has visible breaking/crumbling fibres (or produces these when you flex it sharply) should be rejected.



5. Seatbelt Stitching

On many older vehicles the stitching on the seatbelt was the real weakness. The fixed seatbelt ends were either anchored to the rear parcel shelf or the "B" pillar and the stitching on the ends was exposed to the sun where it quickly degraded from UV exposure. The manufacturers fitted plastic sleeves over these ends to stop this. Where any stitching on these ends is exposed it should be examined closely and if more than a few stitches are dried out and brittle or broken the seatbelt should be rejected.

Fireworks in Cars

They may not have all the flash and colour of fireworks but airbags and some seat belt pre-tensioning systems also use pyrotechnics – a fancy word for explosives. And just like fireworks, once they have "gone off" they won't go off again. The same applies for those seatbelt pre-tensioning systems that use strong springs or torsion bars and ratchets – just like their explosive counterparts, they also will only go off once.



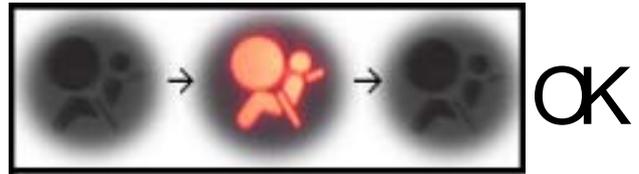
But what happens with these "once only" systems when they have gone off? The correct answer is that they should be replaced with new units. However, new ones are not cheap and some unscrupulous repairers are hiding the fact that they have gone off. Fired airbags are being removed and the plastic covers carefully welded up again and the "seat belt fired" warning tags (which only appear when the belts have "fired") are being cut off.

So how can you check for this? All vehicles fitted with airbags have a diagnostic system with a restraint system warning lamp that comes on **and stays on** if the system is faulty. This includes if any part of the firing system is "open circuit" which it will be if any of the airbags or seat belt pre-tensioners have fired. OK, so you say the easy way around this is to remove the globe and the warning lamp won't come on, right!

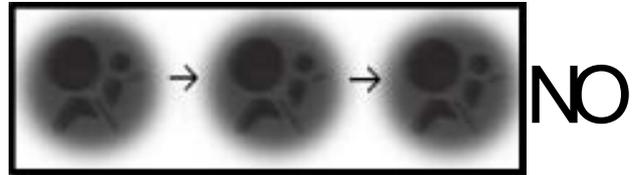


Ah Ha! The diagnostic system is smarter than that. Every time the engine is started the indicator lamp first comes on to show that the globe is OK and the system is being checked and it then goes off if everything is correct. So it's simple to check that the airbag is present and functional. Turn the ignition on or start the engine and watch the indicator light.

If it comes on and goes off again as shown below all is well.



If it stays off like below, reject the vehicle.



The seatbelts are also fairly easy to check. The pyrotechnic systems use the same computer that controls the airbags and the same diagnostic system. If any of the seat belts have "fired" the warning lamp will not function correctly. With the mechanical ones, even if the fired tags are cut off, the position of the buckle will generally be a dead give away as it will not project out of the housing as far as an unfired unit.

You might be thinking, "What about the really smart cars where only the airbags or pyrotechnic seatbelt pre-tensioning systems for occupied seats activate in a crash?" In these vehicles the diagnostic system will still indicate a failure if any one of the systems has been fired and not replaced.

There are a number of claims running against testers at the moment because the airbags had fired and the warning lamps were not working but the tester hadn't checked for the correct operation of the lamp. Don't you get caught out. Make sure you check that the warning lamp operates correctly before you issue a RWC.

Fees

Annual renewal of your licence is \$15.50.

A new licence, or if you change the location of your testing premises, or to add additional premises onto your licence, costs \$78.00 per site.

A book of 100 Roadworthiness Certificates now costs \$118.00 (including GST)

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