



# Testing Times

Issue 9

March 2000

## **Welcome to the second edition of the new look Testing Times.**

It is hoped that you found the new format easier on the eye and more suitable as a reference document. Talking about reference documents, have you all now got your copy of the new Road Safety (Vehicles)(Vehicle Standards) Regulations 1999? If you haven't you might be knocking back cars that you shouldn't and passing cars that you should knock back.



For the same reasons, you should also get the latest copies of the Vehicle Standards Information sheets (VSIs). They have all recently been amended to align with the new regulations. Contact the VicRoads Bookshop where you can buy either an insert set of VSIs to put into your existing folder or a complete new folder of the latest VSIs.

## **Good reasons not to machine brake disc rotors!**

Brakes function by converting kinetic energy into heat. The disc rotor is designed to absorb this heat and then dissipate it quickly. One of the critical design factors to do this effectively is the mass of the rotors. New rotors are a compromise between being heavy enough to not overheat and distort; yet light enough to cool quickly, limit unsprung mass and keep down the production costs.

While thick rotors are not too detrimental, the same cannot be said of thin or undersized rotors as they will quickly overheat and distort under hard braking. Therefore, **rotors should not be machined without very good reason and even then, never to less than the manufacturer's recommended minimum thickness** (usually marked on the rotor).



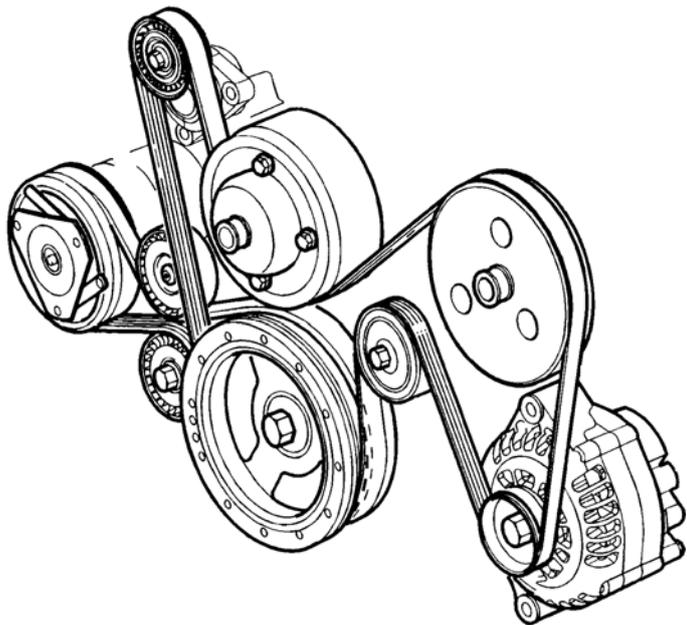
Machining is usually only required if the rubbing surfaces become spot glazed or distorted or grooved to the extent that new pads will not bed in quickly. Some circular grooving is quite acceptable but any deep grooving should be assessed to make sure it won't cause the disc to crack. If the deep grooving is OK structurally, no attempt should be made to remove it all as this will usually mean removing too much material. Remember, brakes have to work properly and reliably, not look pretty. Therefore, grooving is not enough reason by itself to machine disc rotors.

### In this issue:

Machining Disc Brake Rotors	P1
No Cause for Rejection!	
Flywheel Covers & Fan Shrouds	P2
Loose Coil Springs	P2
Braided Flexible Brake Lines	P3
Extra Seatbelts in the Rear	P3
Number Plates & Safety	P4
VicRoads' web site	P4

## **No cause for rejection!**

Flywheel covers and fan shrouds are fitted for a number of reasons, one of which is to help keep your fingers and clothing out of moving parts. The flywheel cover also helps keep dirt, sticks and rocks out of the clutch area – a big risk for 4WDs. The fan shroud can also make the fan more efficient helping to avoid overheating when driving slowly. This could be an important point on hot days in bumper to bumper traffic and for serious off-road work.



Interestingly, on modern cars with electric fans much of the shroud behind the radiator is more for keeping your fingers out of the typical maze of drive belts shown above rather than the fan itself.

There is a common belief that fan shrouds and flywheel covers must be present at a roadworthiness inspection. **This is not the case!** They are not called up in any regulations or the Australian Design Rules as their absence doesn't make driving the vehicle unsafe. They fall into the same category as tailgate struts and boot and bonnet stays – nice to have but not essential. However, if they are missing they sure do make it hard to work on the vehicle safely and in some cases, their absence could eventually lead to mechanical failure.

Where you encounter such missing items during a roadworthiness test, it would be wise to point out to the owner the potential risks. However, remember, a missing flywheel cover or fan shroud is not a reason to reject a vehicle in a roadworthiness test.

## **Loose coil springs.**

The proper way to lower a vehicle with coil springs is to change the springs for ones with a lower installed height. These need to be correctly designed so that the springs do not become loose on full suspension droop.



Ideally, the springs should have the same free length like those above.

If the new springs have a shorter free length, then the suspension travel at full droop may need to be adjusted accordingly. Where the suspension travel is limited by the shocker length, such as on Commodores, shorter shockers matching the springs need to be fitted. This is the way the factory does it but it raises another potential problem. Care needs to be taken when replacing these shockers as if standard (but now incorrect) shockers are used the coils could fall out at the next big bump.



Incidentally, you should not have to reposition the springs when lowering a vehicle off a hoist. If you can easily move a spring out of position by hand while the vehicle is up on a hoist, then the same thing can happen on the road and the vehicle is unroadworthy.

## **Braided flexible brake lines.**

Flexible brake lines covered with steel braiding are often thought of as a performance improvement because they are sometimes used on racing cars. The braiding can increase the hose strength, protect it from damage and reduce swell, making the brakes more responsive. Some people also fit them just because they look good.

However braided flexible brake hoses are not necessarily suitable or safe for normal road use. For safety, the Australian Design Rules (ADRs) require that flexible brake hoses pass a "Whip Test". This is a durability test that involves flexing the hose many thousands of times to simulate typical road use.



Because braided line is more rigid, it does not always pass this test. This might be fine for drag and track racing conditions where suspension movements are limited and the components are regularly checked and often replaced, particularly if the vehicle is involved in a crash. But it is not so good for road use where the brake hoses may not be inspected for many years.

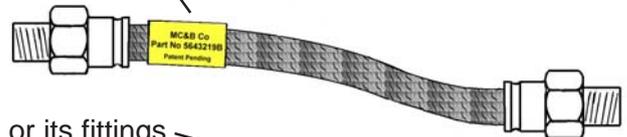
Braided flexible brake hose should only be accepted in a roadworthiness test if it meets one of the following:

- it was supplied as original equipment by the vehicle manufacturer; or
- it has the manufacturer's identification mark (ie trade mark, or trade name); or
- it is on a modified vehicle such as a rally car and covered by an engineer's report; or
- it is fitted to a pre1970 vehicle (these vehicles do not have to meet the ADRs).

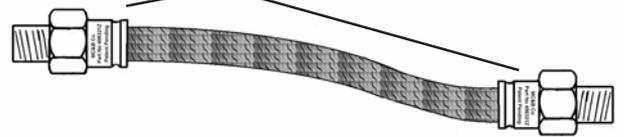
There does not appear to be any braided flexible brake lines supplied as original equipment on cars at the moment, although they are fitted as original equipment on a few motorcycles.

As it is hard to tell what is OK and what isn't, the ADRs and other industry standards require flexible brake hose to be permanently marked identifying its manufacturer. This is often done using a snug fitting sleeve placed over the hose before the end fittings are crimped on.

If a braided hose has clear identification marks on the hose



or its fittings

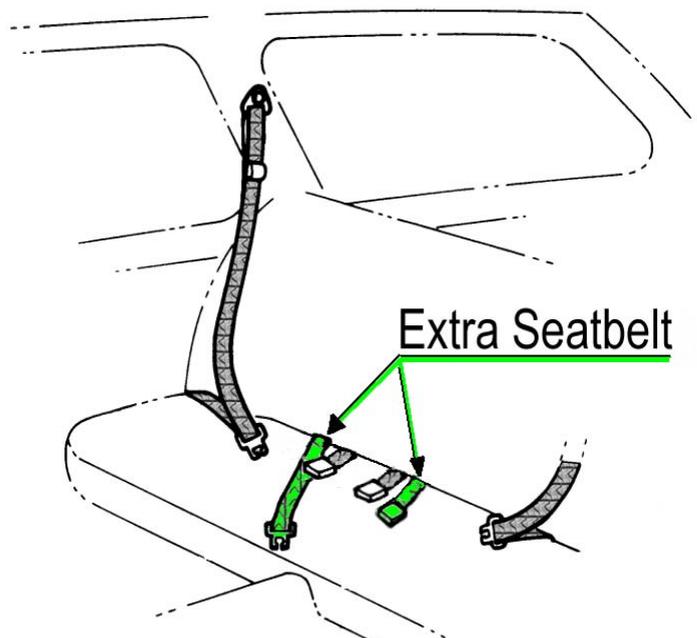


and it appears correctly fitted and has no signs of cracking near the ends, it should not be rejected.

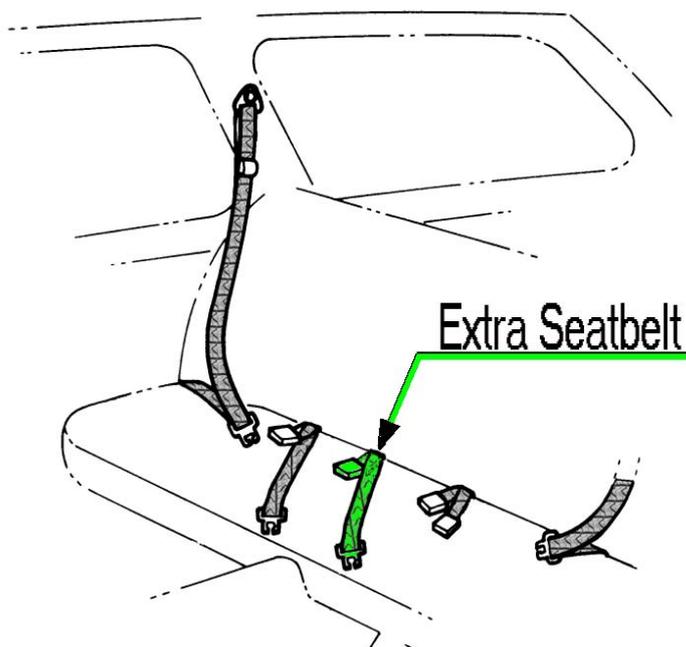
## **Extra seatbelts in the rear.**

The ADRs require seat belts to be provided for adult seating positions, but in car rear seats more children than adults can be comfortably carried. But what about a seat belt for the extra child?

For vehicles with just the two lap/sash seat belts originally fitted for the outboard seating positions Vehicle Standards Information (VSI) sheet 15 provides for fitting an extra lap belt in the middle. This will allow three children to be safely carried in the space provided for two adults.



For vehicles where a centre lap belt was also fitted (to accommodate a third adult) another centre lap belt may be fitted to provide for four children across the rear seat.



The bad news is that an additional lap belt cannot be fitted to vehicles that currently provide a lap sash seat belt for the centre rear passenger. The parts don't fit together and fitting an additional lap/sash seat belt is not on – the sash parts will be dangerously close to the throats and necks of the wearers and likely to cause serious injuries in a crash.

### **Number plates and safety**

While obscured or illegible number plates are illegal, they do not make the vehicle unsafe to drive. Consequently, obscured or illegible number plates are not a reason to reject a vehicle during a roadworthiness test.

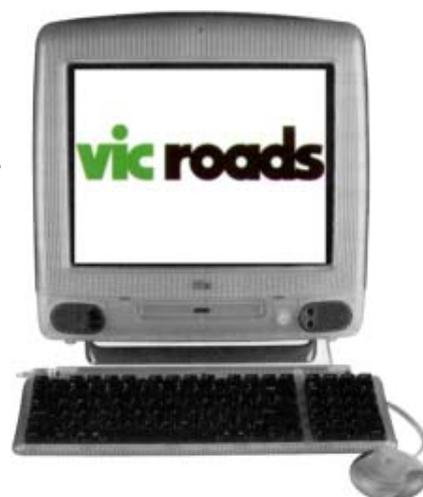


### **VicRoads' web site**

If you come across a problem and cannot find your Vehicle Standards Information (VSI) sheets or are not sure you have the latest version, visit VicRoads' web site. Here you will find the latest version of all VSIs as well as a lot of other useful information about road safety in general.

To get there is as easy as entering **[www.vicroads.vic.gov.au/road\\_safe](http://www.vicroads.vic.gov.au/road_safe)** into your web browser and pressing return.

This takes you to the Road Safety page and when it opens you can go to the **[A to Z index](#)** and get a listing of all the topics you can choose from.



To go directly to the vehicle section click on the [**[V](#)**] in the strip of letters across the page.

If you want to find out something more general just go to **[www.vicroads.vic.gov.au](http://www.vicroads.vic.gov.au)** and browse around.

### **A reminder about fee changes**

A gentle reminder. The fee for the annual renewal of your licence is now \$15.50. Also, if you change your testing premises or want additional premises on your licence, a fee of \$78.00 now applies.

And don't forget, a book of 100 Roadworthiness Certificates now costs \$105.00.

*Note:*

*All supplies can be obtained from  
VicRoads' Bookshop  
Ground Floor  
60 Denmark Street  
KEW VIC 3101*

*Phone (03) 9854 2782 or Fax (03) 9854 2468*

*Open weekdays between 8.30am and 4.30pm*