INTRODUCTION

8.1 Technological advancement has made the design of motor vehicles much safer than before. High strength steel offers passengers much better protection without adding undue weight to the vehicle. Antilock braking system improves vehicle performance in case of emergency braking. Padded interiors, special seating design and occupant restraints, such as safety belts and frontal and side airbags, enhance passenger safety during impact situations.

8.2 Despite modern designs that have made vehicles safer, the Panel considers that it is the way in which a vehicle is used and maintained that has the greatest bearing on safety. A proper control on their usage is therefore necessary.

8.3 As shown in Chapter 4, there has been an increase in the number of accidents involving public buses and public light buses in the past two decades. The Panel is of the view that more attention should be paid to these vehicle types. Taking into account suggestions received from the public, the Panel considers that two aspects relating to control of vehicle warrant more detailed examination. They are speed control and vehicle maintenance.

SPEED CONTROL

8.4 The high performance of vehicles is often subject to abuses, and speeding is a common problem. Apart from roadside enforcement, the Panel considers that in-vehicle equipment can be used to curb this undesirable driving behaviour. The following are some speed control devices.
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Speed display and warning devices

8.5 At present, there is no legal requirement for the installation of speed display or speed warning devices on motor vehicles. A trial scheme on the installation of speed display units (Figure 8.1) commenced in August 2002, and by April 2003, speed display units have been installed in 243 green minibuses (GMBs) running overnight routes. The Transport Department (TD) is at present closely monitoring the effectiveness of the device with reference to accident statistics, speeding offences and complaints.

8.6 The Panel recommends that, subject to an evaluation of the speed display units installed in GMBs running overnight routes, TD should extend their use to other public light buses.

8.7 Another type of speed display device is speed display lights at the front top of the driver cab (Figure 8.2). The function of these lights is to deter speeding by putting such vehicles under public surveillance.

8.8 The Panel has received suggestions to install speed display devices on top of heavy vehicles. The Panel notes that such a practice used to be adopted in Japan, but was found to be ineffective in view of the large amount of resources required for enforcement by the police. The Japanese authorities have since dropped the use of external speed display and opted for speed limiter instead.
Speed limiters

8.9 A speed limiter is a device that can limit the speed of a vehicle to a pre-set maximum value under certain operating conditions. There are a variety of products available in the market ranging from mechanical add-on devices to electronic engine management systems1 (Figure 8.3).

8.10 While at present there is no mandatory requirement for speed limiters to be installed in motor vehicles in Hong Kong, it is a common regulatory practice to install speed limiters on heavy goods vehicles in overseas countries, including Australia, European Union, Japan, and Singapore.

8.11 The Panel considers that there are merits in installing speed limiters in passenger services vehicles for better passenger safety. Members note that many new franchised buses have been installed with electronic engine management systems which have incorporated speed limiting functions. However, consideration should be given to formally requiring newly registered franchised buses to install speed limiters to ensure that the speed limiting device is present and functioning properly.

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1 Electronic engine management systems are used to manage engine operation and performance including engine speed, fuel supply and power.
8.12 The Panel also recommends that consideration be given for speed limiters to be installed in other heavy vehicles to enhance their safety. Members recognise that one issue to be addressed is the different speed limits adopted by heavy goods vehicles across the boundary. Medium and heavy goods vehicles are currently restricted to a maximum speed of 70 km/h in Hong Kong. However, the maximum speed limit of heavy goods vehicles on expressways in the Mainland is 90 km/h. While the speed limit differential between the two places can be overcome technically, there will be cost implications. The Panel recommends that relevant transport trades be consulted on the proposal.

8.13 The Panel is aware that speed limiters do not offer perfect solutions. They can only prevent speeding on roads with a speed limit equal to or higher than the set speed. They could also be susceptible to abuses and illegal modifications. Besides, almost all types of speed limiters fail to function when the vehicle is running downhill, as they only control the speed of the engine but not the wheels. Nonetheless, they are more effective than speed display units and are less costly than tachographs.

**Tachograph**

8.14 Besides controlling the speed of a vehicle by mechanical or electronic means, another option to deter speeding is to keep a full record of the operating conditions of the vehicle including its speed. A ‘tachograph’, often known as ‘black box’, is such a device.

8.15 The word ‘tachograph’ can be broken down into ‘tacho’, from the Greek word ‘takhos’, which means speed, and the word ‘graph’ a record. It is in essence a combination of a clock, a speedometer, an odometer, a tachometer and a recorder (Figure 8.4). During a trip, it continuously records vehicle operating information into circular charts inside the unit, depending on the technology used (Figure 8.5). This device is commonly used in some countries to control the duty cycle of drivers to prevent fatigue.
8.16 The information recorded in a tachograph is very useful for accident investigation, as it can, depending on the design, tell exactly what state the vehicle was in before the accident by giving information about speed, acceleration, distance travelled, emergency sirens and lights, brake applications, etc.

8.17 The Panel received suggestions to introduce the use of vehicle blackbox (i.e. tachograph) in heavy and passenger services vehicles. In view that a tachograph can serve accident investigation and fleet management purposes, the Panel recommends that TD explore the fitting of such devices in franchised buses, and, subject to evaluation of effectiveness, extend them to other passenger services vehicles.

**Vehicle Examination**

8.18 Another aspect of vehicle safety is to ensure that the vehicles are properly maintained and their mechanical parts are in good operating condition. The Panel has examined the current vehicle examination regime. The Vehicle Safety and Standards Division (VSSD) of TD is responsible for formulating vehicle construction and maintenance standards, and conducting and monitoring statutory vehicle examinations to ensure the safety of vehicles on the road.
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Legal requirements

8.19 Each vehicle is required to be roadworthy and to be registered/licensed before it can be used on the road.

8.20 The relevant laws related to vehicle safety and roadworthiness are summarised below –

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>Cap 374</td>
<td>Road Traffic Ordinance</td>
</tr>
<tr>
<td>Cap 374A</td>
<td>Road Traffic (Construction and Maintenance of Vehicles) Regulations (specifies basic technical requirements for all vehicles)</td>
</tr>
<tr>
<td>Cap 374F</td>
<td>Road Traffic (Safety Equipment) Regulations (specifies requirements for seat belts, helmets and fire extinguishers)</td>
</tr>
<tr>
<td>Cap 374H</td>
<td>Specification of Safety Glass Notice</td>
</tr>
<tr>
<td>Cap 230</td>
<td>Public Bus Services Ordinance (regulates the maintenance of franchised buses)</td>
</tr>
</tbody>
</table>

8.21 The law only specifies the minimum requirements. The ultimate responsibility for the detailed design and construction rests with the vehicle manufacturer, while the vehicle owner is responsible for upkeeping the vehicles in good operating condition.
**Requirements for All Classes of Vehicles**

**Vehicle type approval**

8.22 New vehicle models of all classes of vehicles have to undergo a type approval process before they can be registered and licensed for use on the road. This process aims to ensure the vehicles’ roadworthiness and compliance with the design and construction requirements stipulated in the Road Traffic (Construction and Maintenance of Vehicles) Regulations.

8.23 The type approval process involves checking of technical specifications and associated documentation from vehicle manufacturers as well as an examination of a sample vehicle.

**Annual examination**

8.24 Except for motorcycles, and cars not older than six years, all other classes of vehicles are required to undergo an annual examination to ensure their roadworthiness before they can be re-licensed.

**Call up inspections**

8.25 Any motor vehicle may be called up for vehicle examination. Call-up inspections are generally initiated by public complaints or referrals by the Hong Kong Police Force (HKPF). Upon receipt of a complaint or referral, a Vehicle Inspection Office of TD would issue a Vehicle Examination Order to the vehicle owner for delivering the vehicle concerned to government vehicle examination centres on a specified date for an examination of the items causing the complaint/referral.
Roadside enforcement

8.26 Roadside enforcement is a very effective measure to ensure that the vehicle owners or drivers maintain their vehicles in a roadworthy condition and in compliance with relevant regulations. Vehicles can be selected randomly for examination and directed to the check sites by a police officer. Vehicle examiners will inspect and check the mechanical components of the vehicles and condition of the bodywork against applicable construction and maintenance standards.

8.27 The Panel notes that in the UK, roadside checks are held over the country, at roadside as well as permanent sites such as weighbridge stations. Members recommend that apart from the existing vehicle examination centres, temporary or permanent check sites for roadside enforcement be established in Hong Kong, and preferably be located close to major trunk roads or expressways.

8.28 The Panel also recommends that joint roadside spot checks on heavy vehicles by the HKPF and Vehicle Examiners from TD be stepped up.

Additional Requirements for Commercial Vehicles and Passenger Services Vehicles

Pre-registration examination

8.29 Subsequent to the type approval, new commercial vehicles including goods vehicles, buses, light buses, taxis, and trailers are required to undergo a pre-registration examination to confirm their conformity with the type-approved design before their first registration.

8.30 For vehicles carrying large numbers of passengers, such as franchised and non-franchised buses, they are required to undergo a Certificate of Fitness (COF) examination in lieu of a Certificate of Roadworthiness (COR) examination at certain intervals.
Additional requirements for franchised buses

8.31 The Panel notes that franchised buses are subject to additional requirements under the Public Bus Services Ordinance (Cap 230). Franchised bus companies are required to carry out maintenance and repair as the Commissioner for Transport may specify, and TD’s examiners are empowered to inspect the buses and maintenance facilities at any reasonable time.

8.32 Franchised bus companies are required to inspect the overall condition of their buses at least once per month. Each bus company has its own additional programmes, e.g. checking wheel, tyres or brakes at specified intervals, and requiring their bus drivers and depot staff to report any observable defects. TD closely monitors the maintenance programme of franchised bus companies and holds regular meetings with their engineering departments to discuss ways to enhance bus design and maintenance.

8.33 In addition, TD also conducts annual COR examinations and COF examinations at certain intervals as well as spot checks on in-service franchised buses to ensure their safety and roadworthiness. Any defects found will need to be rectified before the bus can resume service. Prosecution may be instituted if particularly serious defects are found.

Stability test

8.34 An additional stability test (tilt test) is applicable to both franchised and non-franchised buses and light buses. The stability of a double-decked bus is checked by loading weights in relative positions to represent the driver and a full complement of passengers on the upper deck. If the surface on which the vehicle stands were tilted to either side at an angle of 28 degrees from the horizontal, at which point overturning occurs, the vehicle fails the test (Figure 8.6).

Figure 8.6 – A bus undergoing stability test
8.35 At the moment, the stability test requirement is only applicable to buses and light buses under the existing regulations. **The Panel recommends that the feasibility of extending the stability test to heavy goods vehicles be explored.**

**Qualification of vehicle mechanics**

8.36 The Panel received a suggestion to improve the quality of mechanics for vehicle maintenance. The Panel agrees that the quality and experience of vehicle mechanics and the facilities of the servicing and repair workshops are essential to ensure the maintenance standard and thus roadworthiness of vehicles. To this end, the Environment, Transport and Works Bureau commissioned a consultancy study on devising a regulatory scheme for the vehicle maintenance trade in 2003. The results are expected to be available at the end of 2003. **The Panel supports measures to enhance the quality and service of vehicle mechanics.**