

**For discussion
on 28 March 2011**

Legislative Council Panel on Transport

Regulation of Motorcycles

PURPOSE

This paper gives an account of the Administration's review of the construction of storage boxes on motorcycle (MC), and advises Members of a set of guidelines planned to be issued by the Transport Department (TD) to give advice on the installation of these storage boxes.

BACKGROUND

2. There had been some enquiries, following a few reports of traffic accidents involving food delivery MCs in the media in 2009, if the size and weight of storage boxes installed on MCs was a safety concern.

3. TD has conducted a review on the construction aspects of MCs fitted with storage boxes, taking into account accident statistics and overseas practices, and the findings are presented below.

EXISTING CONTROL ON STORAGE BOXES

4. There are no specific construction requirements for MC storage box in existing legislation, but all motor vehicles, including MCs, are subject to control under the Road Traffic Ordinance (Cap 374), and their construction and maintenance requirements are specified in the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap 374A). Some basic relevant provisions also applicable to MCs fitted with storage boxes include:

- (i) motor vehicles shall be soundly and properly constructed of suitable materials (Regulation 5(1) of Cap 374A);

- (ii) the maximum gross vehicle weight (GVW)¹ for a MC (i.e. 500kg) shall not be exceeded (Regulation 7(1) of Cap 374A); and
- (iii) the overhang shall not exceed 60% of the length between the centres of the front and rear wheels (Regulation 8 of Cap 374A).

5. Storage boxes on MCs are sometimes supplied and fitted by MC manufacturers. However, the storage boxes for delivery MCs are usually locally fabricated and fitted to suit the users' needs as aftermarket modifications. The arrangement and size of many common aftermarket MC storage boxes were found to be generally similar to some factory built storage boxes. These storage boxes should be installed in accordance with the relevant regulations mentioned above.

CONSIDERATIONS

(a) Accident Statistics

6. Annex 1 shows the number of accident involvements² for all motor vehicles, and for MCs in Hong Kong, between 2007 and 2010. There was a general downward trend in MC accidents over the 4-year period, and the percentage of MC accidents involving "vehicle contributory factors"³ were at about the same level as for all motor vehicles.

7. For comparison, a European study in 2009 reported that about 5.1% of MC accident cases in France, Germany, Netherlands, Spain and Italy involved vehicle contributory factors (mainly tyre, wheel and brake problems), while the figures for Hong Kong averaged at 4.4% from 2007 to 2010.

¹ Gross vehicle weight means the sum of the weights transmitted to the road surface by all the wheels of the vehicle, including the weight of the motorcycle, the driver and any passengers or load.

² A vehicle is "involved" in an accident when its driver or passengers are injured in an accident, when it hits a pedestrian or another vehicle whose driver or passengers are injured, or when it contributes to an accident.

³ "Vehicle contributory factor" means a factor classified as contributing to an accident and associated with an involved vehicle, such as mechanical defects, defective lighting, illegal tyres, body condition or overloading.

8. TD's records do not contain information on which MCs are equipped with storage boxes, and therefore statistics on accidents involving MCs with storage boxes are unavailable. We have approached some food delivery operators, who advised that their MCs with storage boxes are generally designed such that they could be safely driven, and they have also provided suitable training to all their delivery staff to help them enhance safety awareness. In the absence of supporting data, no conclusion could be drawn that MCs with storage box are accident-prone.

(b) Research on overseas control of motorcycle storage boxes

9. MCs with storage boxes are not uncommon in other jurisdictions. We have researched into available information on Europe, Japan, the US, Canada, Australia, Macau, Taiwan and Singapore regarding their control or guidance on the construction of storage boxes on MCs. It was found that there is no international regulation or standard on storage box of MC and no jurisdiction under review has specific requirements for storage boxes. However, the UK and the US have issued guidelines or code of practice about the construction and usage of storage box. A summary of findings is at **Annex 2**.

10. The Asia-Pacific Economic Cooperation (APEC) is currently undertaking a project aimed at identifying the most important MC safety issues and safety measures within the region. Upon our enquiry, the APEC working group concerned replied that MCs carrying storage boxes has not been identified as an issue.

11. London, which has over 5,000 food delivery companies employing over 13,000 motorcycle riders, carried out a study on the road safety of food delivery couriers in 2007. The study identified no issue with storage boxes on MCs.

(c) Academic Research on Stability of MCs

12. There is very little material on MC stability research in the public domain. The University of Melbourne carried out a research study on braking, stability and handling of MCs for the Australian Department of

Transport in 1983. The study found that the deleterious effects of added loads such as luggage racks generally require fairly extreme loadings or manoeuvres and high speeds to become a significant problem. One conclusion was that MCs with loading up to 10% GVW would not create instability of a significant problem unless at near-limit cornering, and that the added weight has a similar effect as a pillion passenger.

(d) Guidelines from MC Manufacturers

13. MC manufacturers normally carry out extensive tests to validate that their designs are safe. Most of them also publish guidance on carrying loads, cargo and passengers in the vehicle owner's manuals. In general, warnings are usually given that loads may affect stability and handling, and drivers are advised to drive with extra caution or ride at reduced speeds. Sometimes, cargo load limits are also set out in addition to the overall weight limit of the motorcycle. The manufacturers' advice on load limits varies between MC models due to different designs. Because of this, it is not possible to generalize the advices into universally applicable guidelines on load size or load limits. It is therefore important for users to consult the manufacturers or the owner manuals.

CONCLUSION AND WAY FORWARD

14. Based on available evidence and information on overseas practices, there is little support to indicate that addition of storage boxes on MC is a major safety issue, and there does not appear to be an immediate need to introduce specific legislative control for MC storage boxes. However, to raise awareness of the operators and MC drivers on the safe installation and use of storage box, TD has formulated, and plans to issue, a set of guidelines (at **Annex 3**) on the installation of aftermarket storage boxes, taking into account relevant information from overseas research and owners' manuals of MC manufacturers. The guidelines represent good practices for reference by users. MC owners, especially large fleet owners, will be encouraged to follow the guidelines and disseminate relevant messages to all their drivers. The food delivery operators approached by TD have indicated support in following the proposed guidelines.

15. TD consulted the Road Safety Research Committee (RSRC) of the Road Safety Council in October 2010. Members of RSRC generally shared the views of TD. Their suggestions on the content of the guidelines have been incorporated into the version in Annex 3. The guidelines will also be reviewed from time to time for updating as needed.

16. TD will closely monitor the situation and review the issue again when necessary.

ADVICE SOUGHT

17. Members are invited to note the content of this paper.

Transport Department
March 2011

**Number of Involvements of Motor Vehicles and MCs
in Accidents by Vehicle Contributory Factors in 2007-2010****1. Motor Vehicle Accident Involvements**

Accident Involvements	2007	2008	2009	2010
Accidents involving vehicle contributory factors ¹	1,274	928	924	733
Accidents involving non-vehicle factors (such as environment, and condition or actions of driver/casualty)	20,243	19,204	18,684	19,674
Total	21,517	20,132	19,608	20,407
Percentage of Accident Involvement involving vehicle contributory factors	5.9%	4.6%	4.7%	3.6%

2. MC Accident Involvements

Accident Involvements	2007	2008	2009	2010
Accidents involving vehicle contributory factors	172	120	103	76
Accidents involving non-vehicle factors (such as environment, and condition or actions of driver/casualty)	2,755	2,493	2,453	2,352
Total	2,927	2,613	2,556	2,428
Percentage of Accident Involvement involving vehicle contributory factors	5.9%	4.6%	4.0%	3.1%

¹ "Vehicle contributory factor" means a factor classified as contributing to the accident and associated with an involved vehicle, such as mechanical defects, defective lighting, illegal tyres, body condition or overloading.

Overseas Control of Storage Boxes

Jurisdiction	Regulations, Standards and Guidelines reviewed	Control on Storage Box
Europe	EC Directives made by the European Community	No requirement
UK	Road Vehicles (Construction and Use) Regulations	No requirement
	MOT Inspection Manual (Department for Transport)	
	Code of Practice for Home Delivery Operators and Drivers (jointly prepared by the Department for Transport and the trade)	Delivery boxes must be suitable for fitting to two-wheel vehicles. Boxes must not imbalance the motorcycle and should ideally be of “soft” construction.
	Courier Code (jointly prepared by the Department for Transport and the trade)	No requirement
Japan	Japan Technical Standard for Construction and Device of Motor Vehicles	No requirement
USA and Canada	Federal/Canadian Motor Vehicle Safety Standards	No requirement
	California Motorcycle Handbook	Check the motorcycle owner’s manual for information on carrying cargo. Keep the load low. Place the load over or in front of the rear axle. Distribute the load evenly.
	New Jersey Motorcycle Manual	
Australia	Australia Design Standard	No requirement
	Vehicle Standards Bulletins (Department of Infrastructure and Transport)	
	Guidelines for Modifications to Motorcycles (New South Wales Roads and Traffic Authority)	
	Guidelines of All about modifications to motor vehicles (Queensland Transport)	
Singapore	Road Traffic Act (Chapter 276)	No requirement
	Guidelines for Vehicle Modifications (Land Transport Authority)	
Macau	Road Traffic Regulations	No requirement
Taiwan	Road Traffic Security Regulations	No requirement

**Guidelines for Adding Non-factory Built Storage Box
on Motor Cycles**

Relevant Regulations to be Observed

The Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap 374A) require MCs to be soundly and properly constructed of suitable materials. They need to be designed with safety in mind, be securely fitted and without sharp protrusions.

In any case, no MC shall exceed the maximum gross vehicle weight of 500kg, and the overhang of any vehicle must not exceed 60% of the length between the front and rear wheel centres.

Important Messages

- a) Drivers must be aware that any additional weight and accessories on a MC may affect its stability, performance and handling, and should adjust the driving style and speed accordingly.
- b) The contents of the storage box should be placed such that the weight is evenly distributed and prevented from shifting as far as possible.
- c) Check regularly to ensure that all tyres are properly inflated and maintained.

DO's and DON'Ts

DO :

- Always consult the manufacturer's instructions given in the owner's manual or other documents issued by the manufacturer to make sure that the size, positioning and load capacity of the storage box are compatible with the original motor cycle designs. In case of need, consult the MC manufacturer or the local motor cycle agent for their advice before installing a storage box.

- Choose a storage box that is of smooth edges and not wider than the original factory fitted handle bars.
- Position the storage box where it does not cause the MC to be unstable, for example as near to the centre of the MC as possible or according to the advice or guidelines of the MC manufacturer. In any case, the overall centre of gravity of the MC must be kept forward of the rear axle.
- Ensure that the storage box is mounted securely and is symmetrically positioned along the longitudinal axis of the motor cycle.
- Affix one or two horizontal red reflective strip(s) at the rear of the storage box to increase conspicuity.
- For storage boxes with rear opening swing doors, double locks or catches should be installed.

DO NOT :

- Use the MC to carry any passenger if the overall free length of the rider seat is less than 600 mm. (For any reduction of passenger seating capacity, the Transport Department should be notified of using Form TD 559 - Notice of Change of Personal Particulars or Vehicle Particulars.)

Transport Department

Diagrams of Position of Storage Box (For Reference Only)

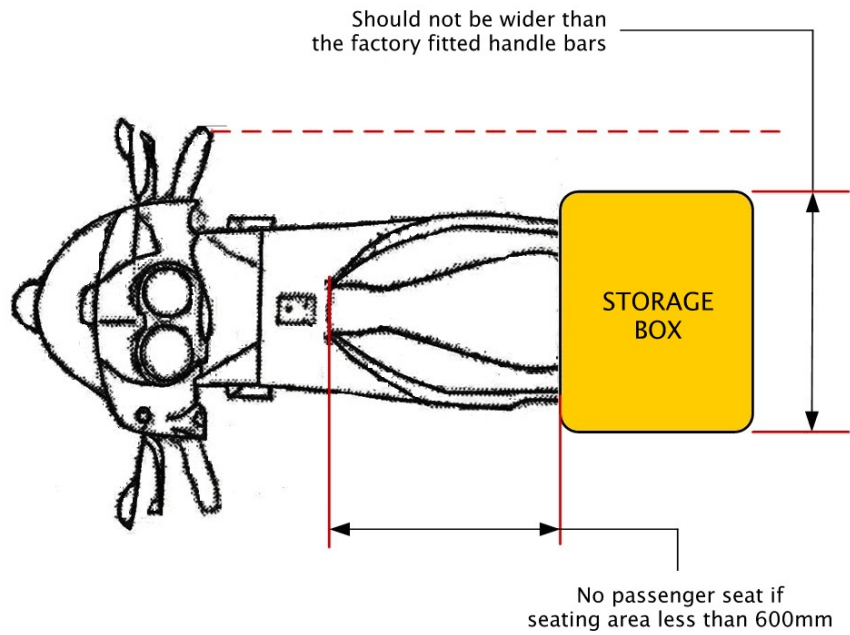


Diagram 1: Top view

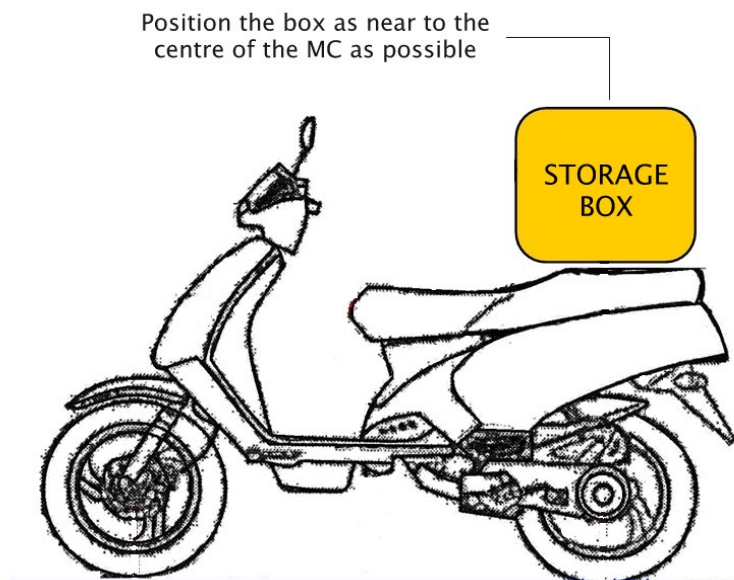


Diagram 2: Side view