



Code of Practice

for Installation of Electrically Operated Sliding Gates,
Sliding Glass Doors and Rolling Shutters

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Sliding Glass Doors and Rolling Shutters

Electrical & Mechanical Services Department
The Government of the Hong Kong Special Administrative Region

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Foreword

This Code of Practice has been compiled by the Electrical and Mechanical Services Department of the Government of the Hong Kong Special Administrative Region and is intended to give guidance on the safe design and installation of the following equipment:

- (a) Electrically operated sliding gates;
- (b) Electrically operated sliding glass doors;
- (c) Electrically operated rolling shutters.

This Code of Practice is issued for guidance only and may not be applicable in every case. It is not intended to relieve those involved in the design and installation of their obligation to ensure that such equipment is installed and operated in a safe manner.

Section 1 - Electrically Operated Sliding Gates

1.1 Scope of Application

This section covers the safe installation of electrically operated horizontally sliding gates usually situated at the main entrance to a building compound or garage. Some of these installations may be remotely controlled by portable radio transmitters.

1.2 General Design

All equipment installed outdoor shall be designed for its purpose and weatherproof. The person operating the gate shall have a clear view of the whole travel of the gate.

1.3 Travelling Speed

The closing/opening speed of the gate shall be such that the kinetic energy of the gate shall not exceed 15J.

$$\begin{aligned}\text{Kinetic energy} &= 1/2 mV^2, \text{ J} \\ \text{where } m &= \text{mass of the gate, kg} \\ V &= \text{average travelling speed of the gate, m/sec.}\end{aligned}$$

In any event, the maximum closing speed of the gate shall be limited to 0.2 m/sec.

1.4 Driving Unit

The driving unit shall consist of a torque limiter or friction clutch to avoid excessive driving torque and to provide protection against damage to mechanical parts when the sliding gate is stopped by obstacles.

1.5 Push Buttons

1.5.1 The movement of the gate shall be controlled by continuous pressure type push buttons or switches including those fitted in the remote control unit, i.e. the motion would persist *only* if the button or switch is being continuously pressed or held on manually. Each button or switch shall be suitably coloured and indicated in relation to its function.

1.5.2 The local control push buttons shall be located out of reach by children and preferably at a minimum height of 1.68 m.

1.5.3 At least one emergency stop push button should be provided adjacent to the gate in a conspicuous position to immediately stop the movement of the gate in case of need. Emergency stop buttons shall have a large red mushroom head and be suitably labelled in both English and Chinese.

1.6 Limit Switches and End Stoppers

1.6.1 The terminal stopping of the gate shall normally be effected by limit switches. The limit switches shall be robust in construction and suitable for outdoor operation.

1.6.2 At both ends of the travel, mechanical end stoppers shall be provided to prevent the gate from over-travel.

1.7 Electricity Supply and Earthing

The electrical wiring work of such gates shall comply with the requirements of the Electricity Ordinance (Cap. 406) and its associated Regulations. In particular, all metal work of the installation shall be properly earthed.

1.8 Safety Devices

For protection against accidental damage to passing objects or injury to persons, the gate should be provided with at least one of the following safety devices such that the closing of the gate could be stopped immediately and the gate shall be re-opened to its fully open position when an obstruction is detected.

1.8.1 At least three numbers of photoelectric sensors or similar devices shall be installed at appropriate levels to detect any obstacle in the path of the gate. The distance between any two consecutive sensors shall not exceed 600 mm and one of these shall be located at a height of no more than 100 mm from ground level. The sensors shall be effective for the entire width of the gate opening, and shall immediately stop the closing of the gate once an obstacle is detected and re-open the gate.

1.8.2 A contact switch, of the same height of the gate, fixed at the leading edge of the gate may be provided to perform the same functions as the photoelectric sensors described in Section 1.8.1 above.

1.8.3 Other types of safety devices such as proximity switches, electronic detectors and other similar devices are also acceptable provided that they can protect persons from injury, and objects from damage, in the complete path of the travel of the gate in the same manner as described above.

1.9 Manual Release Device

1.9.1 A simple manual release device shall be incorporated in the driving unit to release the gate from its locked position under power failure or emergency conditions.

1.9.2 When the gate is released from its locked position, it shall be capable of being moved manually by an adult.

1.9.3 An instruction for use of the manual release device shall be posted in a conspicuous position adjacent to the drive unit. The instruction shall be properly protected for durable use and frequent reference. The person(s) responsible for operation of the gate in particular the caretaker shall be trained on the use of the manual release device. Instructions shall be provided in English and Chinese.

1.10 Remote Control of the Gate

1.10.1 Remote Control equipment using radio as the transmission medium is governed by the Telecommunications Ordinance (Cap. 106). Owners of the equipment shall observe the licensing requirements laid down in this Ordinance and its subsidiary legislation. For details owners can approach the Office of the Telecommunications Authority.

1.10.2 It should be noted that the operation of radio remote control equipment is liable to interference from radio communication equipment, electrical apparatus and industrial equipment. The remote control equipment shall be so designed that the gate should continue to operate safely and comply with

this Code even in the presence of radio interference. Measures should also be taken to ensure that any false activation of the remote control equipment by radio noise or interference will not downgrade the safety standard as required by this Code.

1.11 Maintenance

- 1.11.1 The owner of the gate shall ensure that the installation is regularly maintained in accordance with the manufacturer's recommendations to keep it in good working order. Functional test of safety device described in section 1.8 shall be carried out at least weekly by the owner or any person appointed by the owner for the purpose.
- 1.11.2 Simple maintenance work such as regular cleaning of dirt from the photosensor, guide rail, application of lubrication and functional test of safety devices may be carried out by the owner or any person appointed by the owner who should be given clear written instructions.
- 1.11.3 The owner of the gate shall keep a log book for entering details of maintenance work carried out. The log book shall be available for inspection when required.

Section 2 - Electrically Operated Sliding Glass Doors

2.1 Scope of Application

This section covers the safe installation of electrically operated horizontally sliding glass doors usually situated at the entrance to shopping malls, hotels and office buildings.

2.2 Travelling Speed

2.2.1 The closing/opening speed of the door shall be such that the kinetic energy of the door shall not exceed 10J.

$$\text{Kinetic energy} = 1/2 mV^2, \text{ J}$$

where m = mass of the door system including mechanical elements rigidly connected to it, kg

V = average travelling speed of the door, m/sec.

In any event, the average closing speed of the door shall not exceed 0.3 m/sec.

2.2.2 The effort needed to prevent the door from closing shall not exceed 150N. This measurement shall not be made in the first third of the travel of the door.

2.3 Electricity Supply and Earthing

The electrical wiring work of such doors shall comply with the requirements of the Electricity Ordinance (Cap. 406) and its associated Regulations. In particular, all metal work of the installation shall be properly earthed.

2.4 Construction of Door

2.4.1 The door is to be glazed with flat safety glass. The type and thickness shall be selected using the normal practice for glazing for buildings.

2.4.2 All exposed edges of glass shall be ground, polished and rounded.

2.4.3 The size of each door panel shall not exceed 1500 mm in length and 2400 mm in height.

2.4.4 It is recommended that all clear plate glass shall have a colour strip stuck at approximate 1200 mm above floor level to indicate the presence of the clear plate glass.

2.5 Sensing Devices

2.5.1 The door shall be provided with sensing devices to detect motion in front of the door, activate the control mechanism and thus open and close the door.

2.5.2 Suitable sensor shall be selected to suit the purpose.

2.6 Safety Devices

2.6.1 In the event of either a power failure or a failure in the sensing device, the control mechanism will be automatically disconnected and the door can be opened or closed manually.

2.6.2 Optical or supersonic safety sensors or similar devices shall be installed at the rail area of the entrance to prevent closing of the door onto a person or an object remaining stationary between the door.

Section 3 - Electrically Operated Rolling Shutters

3.1 Scope of Application

This section covers the safe installation of electrically operated rolling shutters usually situated at the entrance to warehouses, garages etc. Some of these installation may be remotely controlled by portable radio transmitters. This section, however, precludes those installations of fire dampers and smoke dampers which shall be governed by Fire Services Department.

3.2 Travelling Speed

3.2.1 The closing and opening speed of the shutter shall not exceed 0.2 m/sec.

3.2.2 For the rolling shutter whose closing is by its own weight of slats, the closing speed may be controlled by a governor to limit the speed at 0.2 m/sec.

3.3 Push Buttons

3.3.1 The movement of the shutter shall be controlled by continuous pressure type push buttons, i.e. the motion would persist *only* if the button is being pressed or held on manually. Each button shall be suitably coloured and indicated in relation to its function.

3.3.2 The control push buttons shall be located out of reach by children and preferably at a minimum height of 1.68 m above finished floor level. When this minimum height cannot be achieved, the push buttons shall be enclosed in a lockable cabinet which shall usually be kept locked, or replaced by key switches.

3.3.3 An emergency stop push button shall be provided adjacent to the shutter to immediately stop the movement of the shutter in case of need. The emergency stop button shall have a large red mushroom head and be suitably labelled for the purpose.

3.3.4 The person operating the control push buttons shall have a clear view of the whole travel of the shutter.

3.4 Electricity Supply and Earthing

The electrical wiring work of rolling shutters shall comply with the requirements of the Electricity Ordinance (Cap. 406) and its associated Regulations. In particular, all metal work of the installation shall be properly earthed.

3.5 Manual Operation

In the event of a power failure, it should be able to operate the shutter manually with a handle or chain which forms an integral part of the system.

3.6 Remote Control of the Rolling Shutter

3.6.1 Remote Control equipment using radio as the transmission medium is governed by the Telecommunications Ordinance (Cap. 106). Owners of the equipment shall observe the licensing requirements laid down in this Ordinance and its subsidiary legislation. For details owners can approach the Office of the Telecommunications Authority.

3.6.2 It should be noted that the operation of radio remote control equipment is liable to interference from radio communication equipment, electrical

apparatus and industrial equipment. The remote control equipment shall be so designed that the shutter should continue to operate safely and comply with this Code even in the presence of radio interference. Measures should also be taken to ensure that any false activation of the remote control equipment by radio noise or interference will not downgrade the safety standard as required by this Code.