THE GOVERNMENT OF THE
HONG KONG SPECIAL ADMINISTRATIVE REGION

INSTALLATION REQUIREMENTS FOR DOMESTIC GAS WATER HEATERS

(RATED HEAT INPUT UP TO 70 kW)

CODE OF PRACTICE GU 03

Gas Authority
EMSD

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CONTENTS

1. Foreword

1.1 The purpose of this Code of Practice is to provide guidelines to gas appliance importers and suppliers, registered gas contractors and registered gas installers concerning the installation requirements for domestic gas water heaters in Hong Kong. This Code of Practice (hereinafter referred to as this Code) is approved and issued by the Gas Authority in accordance with Section 9 of the Gas Safety Ordinance, Cap. 51.

1.2 The guidelines contained in this Code should not be regarded as exhaustive. It is not intended to relieve persons from undertaking the work of their statutory responsibilities in accordance with safety legislation.

1.3 This Code has a special legal status. Although failure to observe any advice contained in this Code is not in itself an offence, that failure may be taken by a court in criminal proceedings as a relevant factor in determining whether or not a person has breached any of the provisions of the regulations to which the advice relates.

1.4 All gas installation work carried out in Hong Kong shall be in accordance with the Gas Safety Ordinance, Cap. 51 with particular reference to:-

(a) Gas Safety (Gas Supply) Regulations, Cap. 51;
(b) Gas Safety (Installation and Use) Regulations, Cap. 51;
(c) Gas Safety (Miscellaneous) Regulations, Cap. 51;
(d) Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations, Cap. 51 and
(e) Gas Safety (Registration of Gas Supply Companies) Regulations, Cap. 51.

1.5 Additionally the undernoted regulations shall apply as appropriate:

(a) Regulation 35A of the Building (Planning) Regulations, Cap. 123F;
(b) Waterworks Regulations, Cap. 102 and
(c) Electricity (Wiring) Regulations, Cap. 406.

1.6 This Code must be read in conjunction with the manufacturer's instructions and shall not supersede such instructions unless the latter conflict with statutory provisions. Attention is also drawn to the current edition of the undernoted regulations and codes of practice:-

(a) Code of Practice GU05 – Approval of Domestic Gas Appliances;
(b) Code of Practice GU09 – Low Pressure Regulators for Supplying Gas from LPG Cylinders having less than 40 litres Water Capacity;
(c) The Hong Kong & China Gas Co. Ltd.'s Operating Procedures - Service: Installation of Domestic Appliances, HKCG/SER/OP7;
(d) Code of Practice for the Electricity (Wiring) Regulations, Cap. 406;
(e) Hong Kong electricity supply companies' policy requirements, supply rules, installation guides and codes of practice and
(f) International/national standards referred to in Section 1.7.

1.7 The following international/national standards are for reference:-

BS 5440-1 Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases) – Part 1: Specification for installation and maintenance of flues, British Standards Institution

BS 5440-2 Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases) – Part 2 : Specification for installation and maintenance of ventilation for gas appliances, British Standards Institution

BS 5546 Specification for installation of hot water supplies for domestic purposes, using gas-fired appliances of rated input not exceeding 70 kW, British Standards Institution

AG 601 Gas Installations, The Australian Gas Association

1.8 This Code has been prepared by the Gas Authority in consultation with registered gas supply companies, registered gas contractors, importers and suppliers of domestic gas appliances in Hong Kong.

2. Scope and Terminology

2.1 This Code covers the new installation of instantaneous type gas water heaters and storage type gas water heaters which are designed, or intended, to be used in domestic premises irrespective of whether they are so used. It applies to gas water heaters which burn gas types defined in Section 2 of the Gas Safety Ordinance, Cap. 51.

2.2 The gas water heaters, having a rated heat input up to 70kW, are to be of a type and model approved by the Gas Authority in accordance with the Code of Practice GU05 before their installation takes place (subject to enactment of new legislation concerning approval of domestic gas appliances).

2.3 Terminology

2.3.1 Definitions of gas water heater types:-

"balanced flue"	a room-sealed gas water heater incorporating an air inlet-product outlet terminal designed to be exposed on an external wall.
"fanned draught"	a gas water heater with a flue system in which the draught is produced by a fan.
"flueless"	a gas water heater designed for use without connection to a flue conveying combustion products from spaces within the outer building wall of premises to external air.
"instantaneous"	a gas water heater in which water is heated only as it flows to the point of delivery.
"natural draught"	a gas water heater with a flue system in which the draught is provided by the thermal force arising from the heat of the products of combustion.
"open-flued"	a gas water heater designed to be connected to a flue system, its combustion air being drawn from the room or internal space in which it is installed.

"outdoor" a gas water heater that is designed, or intended to be used, for supply of hot water to a dwelling and only installed in a defined outdoor environment in the manner prescribed under this Code. In the case of an installation not connected to a flue, it should be located in a permanently well-ventilated open area external to the outer building wall/boundary, but within the designated property line (as shown in the Building Plan approved by the Buildings Authority) under the jurisdiction of the responsible person(s), and within which inhabitation is strictly prohibited.

"room-sealed" a gas water heater which, when in operation, has the combustion air inlet and the combustion products outlet isolated from the room in which the appliance is installed.

"storage" a gas water heater in which a volume of water is heated under thermostatic control and stored for use when required.

2.3.2 Other definitions:-

"domestic gas appliance"
as defined under the Gas Safety Ordinance, Cap. 51, means a gas appliance (construed as gas water heater in this Code) which is designed or intended to be used primarily in domestic premises, irrespective of whether it is so used.

"flame failure protection"
an integral control device responsive to flame properties which by means of detecting the presence of a nominated flame will cause the gas supply to the domestic gas water heater burner(s) to shut off safely in the event of ignition failure or inadvertent flame extinction.

"Gas Authority"

the Authority appointed under Section 5 of the Gas Safety Ordinance, Cap. 51.

"importer"

a company in Hong Kong (as defined in Section 2 of the Gas Safety Ordinance, Cap. 51) engaged in the business of importation of domestic gas water heaters for use in Hong Kong.

"overheat protection"

a non-adjustable temperature actuated device designed to protect a gas water heater and its surroundings in the event of failure of the normal means of temperature control.

"Registered Gas Contractor"

means a person or a company who as a business carries out gas installation work and is registered under the Gas Safety Ordinance, Cap. 51.

"Registered Gas Installer"

means an individual who personally carries out gas installation work and is registered under the Gas Safety Ordinance, Cap. 51.

"supplier"

a company in Hong Kong (as defined in Section 2 of the Gas Safety Ordinance, Cap. 51) engaged in the supply of gas water heaters to end users.

3. Selection and Siting of Gas Water Heaters

3.1 The permitted siting of gas water heaters to be installed in various room types is outlined in Appendix A, GSO/IG/23-3/00.

3.2 For any new installation, room-sealed gas water heaters shall always be the first choice. When this is not feasible in locations, other than bathrooms or shower rooms, then fanned draught models should be used.

3.3 Room-sealed Models

(a) Room-sealed gas water heaters shall always be the first choice for new and replacement installations.

(b) The location of apertures for room-sealed balanced flue heaters in a new building is controlled under Regulation 35A of the Building (Planning) Regulations, Cap. 123F. Whenever a suitable aperture is provided, only a room-sealed model shall be installed and that aperture must be used, in accordance with Regulation 27 of the Gas Safety (Installation and Use) Regulations.

(c) The requirements contained in Regulation 35A of the Building (Planning) Regulations, Cap. 123F mainly apply to the siting of room-sealed apertures in new buildings. Appendix B outlines the acceptable locations of room-sealed gas water heater terminals. It is recognized that the provision of suitable apertures may, however, be difficult in existing dwellings and therefore fanned draught room-sealed models may offer a practical solution in the circumstance.

(d) Room-sealed gas water heaters can be installed in most locations although their installation in bedrooms or living rooms is not preferred.

(e) Particular attention should be given to those provisions within the Regulation 35A of the Building (Planning) Regulations, Cap. 123F and Appendix B of this Code concerning installations in lightwells. Where the dispersion of combustion products is likely to be difficult owing to building configurations, then the use of fanned draught room-sealed models will be preferred.

3.4 Open-flued Natural Draught Models

In accordance with Regulation 36 of the Gas Safety (Installation and Use) Regulations, Cap. 51, instantaneous gas water heater of this type shall not be installed.

3.5 Open-flued Fanned Draught Models

(a) In siting this type of gas water heater, the first choice should be to locate it in the kitchen, utility or balcony area with good ventilation. Since this heater requires air for combustion from the space in which it is located, reference shall be made to Section 4 of this Code to ensure adequate permanent ventilation is provided at all times.

(b) This type of gas water heater shall not be installed in bedrooms or living areas.

(c) New installation of this type of gas water heater for bathroom or shower room is not permitted. (Room-sealed models must be used for new installation and the requirements are in Section 3.3 of this Code). Replacement of open-flued fanned draught models will only be permitted on the basis of like for like exchange in accordance with Regulation 27(3) of the Gas Safety (Installation and Use) Regulations, Cap. 51.

3.6 Flueless Models

In accordance with Regulation 35 of the Gas Safety (Installation and Use) Regulations, this type of gas water heater shall not be installed.

3.7 Outdoor Models

(a) General

Gas water heaters may be installed outside premises, designated outdoor models not connected to a flue shall only be installed in strict compliance with requirements as detailed in this Section.

Outdoor models not connected to a flue shall only be provided on a "supply-install-and-maintain" basis by the importer of the appliance.

The importer, who shall also be the supplier, shall ensure that the design, construction and installation of the outdoor gas water heater not to be connected to a flue fully complies with the conditions and requirements in this Code, including but not limited to sections 2.2 and 3.7 in particular.

(b) Installation Requirements for Outdoor Gas Water Heaters Not Connected to a Flue

(i) Prohibited Locations

The heater shall not be wall-mounted and shall not be installed at any one of the following locations:

(1) within or adjacent to a balcony;
(2) in a light well with obstruction to the vertical flow of air or without vent to external air below the lowest terminal;
(3) in a re-entrant with obstruction to the vertical flow of air;
(4) in the underside of any structures, e.g. stairway;
(5) in a basement or a lower floor below grade;
(6) in a temporarily or permanently covered, sheltered or enclosed area such as housing, box/chamber, etc.;
(7) in a poorly ventilated area; or
(8) in proximity to air inlet or suction of other utility services.

(ii) Permitted Conditions

The heater shall only be installed in compliance with the following two conditions:-

(1) in a well-ventilated designated location as defined below that does not have any temporary or permanent structures or obstacles in it other than the mounting:
- in an open-top yard at ground level above grade; or
- on an open-top flat roof; or
- on an open-top podium; and

(2) on solid mounting complete with a safe and rigid non-combustible plinth or structure and external to the outer building wall/boundary and in such a way that there,

is always an open-top, well ventilated sterile zone of no less than 500 mm on each side of the heater and no less than 600 mm on the front side of the heater.

(c) Mounting of Heater

The heater shall not be wall-mounted. It shall be mounted in such an orientation that its flue terminal always discharges flue gas away from the outer building wall/boundary and to an external open area above grade. Adequate clearance shall be maintained between the outer building wall/boundary and the rear side of the heater. The heater shall be of floor-mounted type in accordance with the manufacturer's instructions.

(d) Locational Restrictions

The heater shall not be wall-mounted. It shall be mounted in such an orientation that its flue terminal always discharges flue gas away from the outer building wall/boundary and to an external open area above grade. Adequate clearance shall be maintained between the outer building wall/boundary and the rear side of the heater. The heater shall be of floor-mounted type in accordance with the manufacturer's instructions.

(e) Warning Notices/Messages

A warning label of durable, weatherproof material and ink with minimum size 130 mm x 130 mm containing information in both Chinese and English of character font size 11 or larger shall be affixed onto the heater in a conspicuous location. It shall incorporate information including but not limited to those listed in Appendix D – "Warning Notice and Warning Message in Connection with Outdoor Gas Water Heaters".

In addition, a warning notice/message in both Chinese and English containing the same information shall be sent to the developer/occupier/owner/tenant/customer who purchases or takes over the ownership/use of the heater with acknowledgement kept for record purposes.

Illustrative sample warning notice and sample warning message are given in Appendix D.

(f) Installation, Testing, Commissioning, Inspection and Maintenance

The importer shall be responsible for arranging a Registered Gas Contractor to conduct the installation, testing, commissioning, subsequent regular inspections and maintenance of individual units of each installed heater. At least one inspection shall be conducted every year to verify that all the prescribed conditions under Section 3.7 (a) to (e) have been complied with. The inspection report shall be kept for record purposes. It shall record all inspection results in accordance with a compliance checklist and shall bear the signature of the registered gas installer who carried out the work.

(g) Record Management

Full records, which may be inspected by the Gas Authority as and when required, shall be properly maintained by the importer within the life time of the heater, including but not limited to those outlined in Appendix E.

4. Ventilation

4.1 Air Supply

(a) In accordance with Regulation 23 of the Gas Safety (Installation and Use) Regulations, Cap. 51, a gas water heater shall be installed in a location with adequate permanent ventilation for complete combustion of gas, for proper flueing and to maintain the ambient temperature of the immediate surrounding within safe limits under normal operating conditions.

(b) The quality of air supply shall not be contaminated with combustion products, or contain chemical or inflammable vapours which could affect combustion.

(c) The minimum room/compartment ventilation requirements for each type of gas water heater are outlined in Appendix A, GSO/IG/23-3/00. Where a natural ventilation system is used, there shall be provision for permanent low and high level openings according to Appendix A, GSO/IG/23-3/00. The openings shall be fitted with grilles/louvres of minimal resistance and shall be sited so that they are not prone to blockage or flooding.

(d) Where room-sealed gas water heaters are installed in compartments, provision for heat relief in the form of ventilation should be made (see minimum compartment ventilation in Appendix A, GSO/IG/23-3/00).

(e) Appendix F illustrates diagrammatically the air supply openings required for room-sealed (natural draught) and open-flued fanned draught gas water heaters.

(f) For air supply and ventilation to a room housing storage type gas water heater(s), reference should be made to BS 5440 or equivalent and the manufacturer's instructions for compliance.

(g) Regulations 23 and 24(4) of the Gas Safety (Installation and Use) Regulations, Cap. 51 shall be satisfied at all times. When mechanical ventilation is deemed required, all air inlet and extraction fans shall be fitted with fail-safe automatic controls causing safety shut-down or lock-out of the heater in the event of the failure of the inlet and extraction air flow. The air supply to the gas water heater shall be in accordance with the manufacturer's instructions and in the absence of which, shall be provided with reference to Appendix G or equivalent international/national standards.

4.2 Flueing

(a) Regulations 24 of the Gas Safety (Installation and Use) Regulations, Cap. 51 shall be satisfied at all times. The flue termination requirements for each type of gas water heaters are outlined in Appendix A, GSO/IG/23-3/00.

(b) For fanned draught gas water heaters, reference should also be made to the manufacturer's instructions regarding the maximum length of flue pipe, maximum number of bends, etc.

(c) For storage type gas water heaters, reference should be made to BS 5440 or equivalent and the manufacturer's instructions.

5. Gas Supply

5.1 All gas installation work shall be carried out in accordance with Parts II, IV and V of the Gas Safety (Installation and Use) Regulations, Cap. 51.

5.2 Attention is drawn to the necessity for ensuring that the gas water heater is compatible with the respective gas type and supply pressure to which it is being connected. Reference should also be made to the manufacturer's instructions in this regard.

5.3 Metallic piping shall be used to connect a gas water heater to the gas supply. A gas isolation cock, which cannot be accidentally operated, shall be fitted close to the gas water heater. The number of fittings and connections used when installing gas water heaters should be kept to a minimum.

5.4 The installation, soundness testing and purging procedures of the respective registered gas supply company in Hong Kong shall be followed.

5.5 In the case of storage type water heaters, provision shall be made to ensure overpressurisation shall not occur within the storage container (see Section 7.4) in the event of thermostat failure. This may include a temperature or pressure activated safety device to isolate the gas supply in such circumstance.

6. Electrical Requirements

6.1 The electrical supply and its protection must comply with the current requirements laid down in the Supply Rules of local electrical supply companies, the Code of Practice for the Electricity (Wiring) Regulations, Cap. 406 published by the Electrical & Mechanical Services Department and the latest edition of the Institution of Electrical Engineers' Wiring Regulations.

6.2 Special attention should be drawn to the installation of fanned draught gas water heaters in bathrooms or shower rooms:-

(a) The control switch and transformer unit external to the heater shall be installed outside the bathroom or shower room.

(b) No socket outlets shall be provided inside the bathroom or shower room.

(c) The characteristics of the protection devices and earthing arrangement shall comply with the relevant regulations and codes of practices referred to in Section 6.1 of this Code especially concerning protection against electric shock from indirect contact with a live conductor. The installation of a safety device, such as a residual current device, will ensure that the disconnection of the electrical supply occurs within 0.4 second of the indirect contact taking place.

7. Water Supply, Discharge and Pressure Release

7.1 The gas water heater shall satisfy the relevant provisions under the Waterworks Regulations, Cap. 102.

7.2 The gas water heater should be suitable for use under the static head of fresh water supply normally available in Hong Kong, and/or should be compatible with the water supply pressure to which it is being connected, as specified by the Water Authority.

7.3 It is desirable that hot water pipes should be suitably insulated for heat conservation purposes, where applicable.

7.4 Unvented storage gas water heaters shall be provided with means to prevent overpressure in the event of thermostat failure, to include a pressure relief valve and a high temperature cut-out device or temperature relief valve. The outlet of relief valve(s) shall not be restricted.

8. Commissioning

8.1 The installed gas water heater shall be commissioned in accordance with Regulation 30 of the Gas Safety (Installation and Use) Regulations, Cap. 51.

8.2 An inspection of completed installation work should be carried out in the first instance to ascertain that the gas water heater has been installed in accordance with the manufacturer's instructions and this Code.

8.3 The gas installation pipework and gas water heater shall then be pressure tested for soundness.

8.4 After the installation passed the pressure test, purging operation shall be proceeded. The purging shall be carried out according to the manufacturer's instructions.

8.5 The whole of the water system should be thoroughly flushed out ensuring that special instructions by the manufacturer are followed.

8.6 The gas water heater should be lit in the sequence described in the manufacturer's instructions.

8.7 All the gas water heater controls, both manual (front panel knobs) and automatic (thermostats, flame failure protection, etc.), should be checked in order to ensure they are functioning correctly. The manufacturer's instructions should be referred to for relevant details.

8.8 For fanned draught gas water heaters, safety devices which operate in the event of fan failure should be checked to ensure compliance with manufacturer's specifications.

9. Labelling and Advice to Customers

9.1 Labelling

The Registered Gas Installer should ensure that any labels provided or required by the manufacturer which describe user's operating procedures, safety information, warning notices, etc are in both Chinese and English languages and affixed onto the gas water heater at a prominent position. A special label should be affixed to outdoor type gas water heaters, the requirements are outlined in Section 3.7 (e) of this Code.

9.2 Advice to Customers

(a) The customers should be provided with the user's instructions in both Chinese and English supplied by the manufacturer in accordance with Regulation 26 of the Gas Safety (Installation and Use) Regulations, Cap. 51.

(b) The correct operation procedures for the gas water heater and its control should be demonstrated to the customers before use. The customers should be advised of any precautions necessary for the safe operation of the gas water heater.

(c) The customers should be advised that for continued efficient and safe operation of the gas water heater, it is important that regular servicing is carried out at least once a year by a Registered Gas Installer in accordance with the manufacturer's instructions and the relevant codes of practice.

(d) The customers with outdoor gas water heaters installed should be given special advice as outlined in Section 3.7(e) of this Code.

Appendix A

(GSO/IG/23-3/00)

Criteria for Installation of Domestic Gas Water Heaters

- This code shall be read in conjunction with the manufacturer's instructions and shall not supersede such instructions unless the latter conflicts with statutory provisions.

- for any new installation, room-sealed gas water heaters must always be the first choice – when this is not feasible in locations, other than bathrooms/shower rooms, then fanned draught models should be used.

<table>
<tr><th colspan="4" rowspan="2">Room Type and Installation</th><th colspan="2">Requirements of Each Type of Gas Water Heater</th></tr>
<tr><th>Room-Sealed</th><th>Open-Flued Fanned Draught</th></tr>
<tr><td colspan="2" rowspan="2">Bathroom or Shower Room</td><td colspan="2">New</td><td rowspan="2">Yes</td><td>No</td></tr>
<tr><td colspan="2">Replacement</td><td>Yes
Provided it was installed before 1.1.94 and to be replaced by another open-flued fanned draught type</td></tr>
<tr><td colspan="2" rowspan="2">Kitchen or Utility</td><td colspan="2">New</td><td rowspan="2">Yes</td><td rowspan="2">Yes</td></tr>
<tr><td colspan="2">Replacement</td></tr>
<tr><td colspan="2" rowspan="2">Balcony</td><td colspan="2">New</td><td rowspan="2">Yes</td><td rowspan="2">Yes</td></tr>
<tr><td colspan="2">Replacement</td></tr>
<tr><td colspan="2" rowspan="2">Bedroom or Living Room</td><td colspan="2">New</td><td rowspan="2">Not Preferred</td><td rowspan="2">No</td></tr>
<tr><td colspan="2">Replacement</td></tr>
<tr><td colspan="4">Minimum Room Ventilation (Note 1)
Free air vent area/kW (Note 2)
5 l/min — 7kW-
7 l/min — 12kW-
9 l/min — 16kW-
11 l/min — 20kW-
13 l/min — 24kW-
28kW-
(Approx. Hot Water Capacity)
70kW</td><td>Not Required</td><td>5 cm^2/kW for heater with rated heat input in excess of 7kW and up to 70 kW</td></tr>
<tr><td rowspan="4">Minimum Compartment Ventilation (Free air vent area/kW) (Note 3)</td><td rowspan="2">To Room</td><td>High Level</td><td>10 cm^2/kW*</td><td>10 cm^2/kW</td></tr>
<tr><td>Low Level</td><td>10 cm^2/kW*</td><td>20 cm^2/kW</td></tr>
<tr><td rowspan="2">To Outside</td><td>High Level</td><td>5 cm^2/kW*</td><td>5 cm^2/kW</td></tr>
<tr><td>Low Level</td><td>5 cm^2/kW*</td><td>10 cm^2/kW</td></tr>
<tr><td colspan="4">Flue Termination</td><td>Natural Draught
Shall comply with Regulation 35A of the Building (Planning) Regulations
Fanned Draught
Minimum 300 mm below any opening</td><td>Minimum 300 mm below any opening into a building</td></tr>
</table>

* The requirement is for natural draught models only. As for fanned draught models, reference should be made to the manufacturer's instructions.

Note 1 Room ventilation means ventilation communicating directly with outside air.

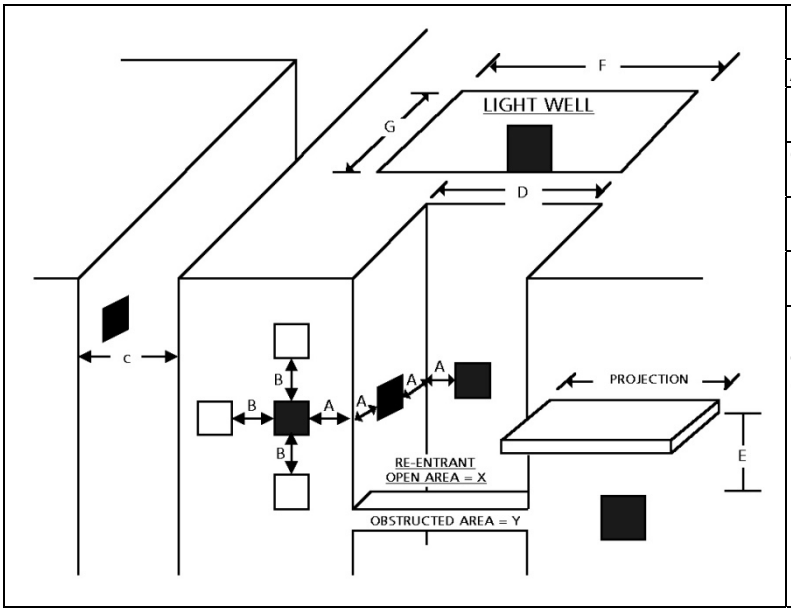
Note 2 Permanent opening shall be an air vent without obstruction.

Note 3 Compartment ventilation means ventilation not communicating directly with outside air.

Appendix B

Acceptable Locations of Room-Sealed Gas Water Heater Terminals

EXTERNAL VIEW



	Dimension	Minimum Distance
A	From any corner of building	300 mm*
B	From any adjacent opening into building	300 mm
C	From facing wall or boundary	1 500 mm*
D	Minimum plan width of re-entrant	1 500 mm*
E	Below a balcony or similar projection	300 mm*
F & G	Light well plan area (F x G) 10 or less storeys 11-19 storeys 20 or more storeys	 3 000 mm 4 000 mm 5 000 mm

* May be reduced for fanned draught models.
See manufacturer's instructions.

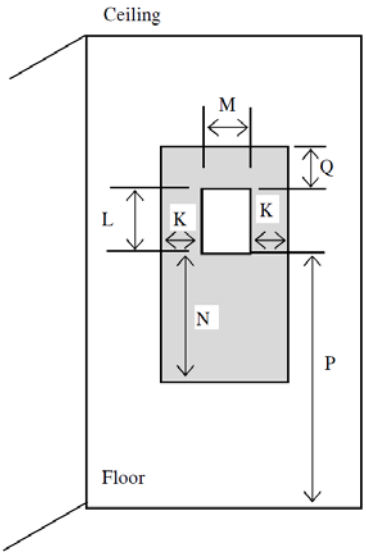
Light Wells

No obstruction to the vertical flow of air.
Vented to external air, below the lowest terminal. The vents to have a minimum area of 0.05 m^2 for each terminal facing into the light well. Minimum internal dimension of vents to be 200 mm.
Additional vents to be provided where air conditioners take air from light well.
See limitations on plan dimensions (F x G),

Re-entrants

No obstruction to the vertical flow of air.
Tie beams should not reduce the open area of the face of the re-entrant by more than 20% at any storey [i.e. Y $\leqq$ 20% (X + Y)]
See limitation on minimum plan width (D).

INTERNAL VIEW



Dimension		Minimum
K N Q	Unobstructed area	100 mm 150 mm 50 mm
P	Height above floor	200 mm
L x M	Standard size	420 x 320 mm or 240 x 240 mm
	Non standard	to suit

* Unobstructed area shaded

Amendments of Appendix B were made in accordance with the "Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (APP-27)" issued by Buildings Department

Appendix C

Minimum Separation Distances and Additional Restrictions For Outdoor Gas Water Heaters

- This Code shall be read in conjunction with the manufacturer's instructions and shall not supersede such instructions unless the latter conflict with statutory provisions.

  Minimum separation distances are summarized in Tables 1 & 2 and the surroundings are delineated in Figures 1 & 2. Separation distance refers to the shortest distance between the edge of the outdoor gas water heater (hereinafter called the heater) and the nearest edge/corner of other openings/objects.

(a) Table 1 shows the separation distances from adjacent openings such as windows, doors, etc.

Dimension	Description			Minimum Separation Distance (mm)	
				For Natural Draft Category	For Fanned Draft Category
P	Point-to-point from an opening on a lateral wall	Rating (MJ/h)	Not above 150	500	300
			>150 to 200	1,500	500
			>200	1,500	1,500
---	Horizontally in the direction of discharge for fan-assisted models			---	1,500
Q	Horizontally from an opening on a wall behind the water heater	Rating (MJ/h)	Not above 150	500	300
			>150	1,500	300
R	Vertically from an opening on a wall behind the water heater	Rating (MJ/h)	Not above 150	1,000	300
			>150	1,500	300

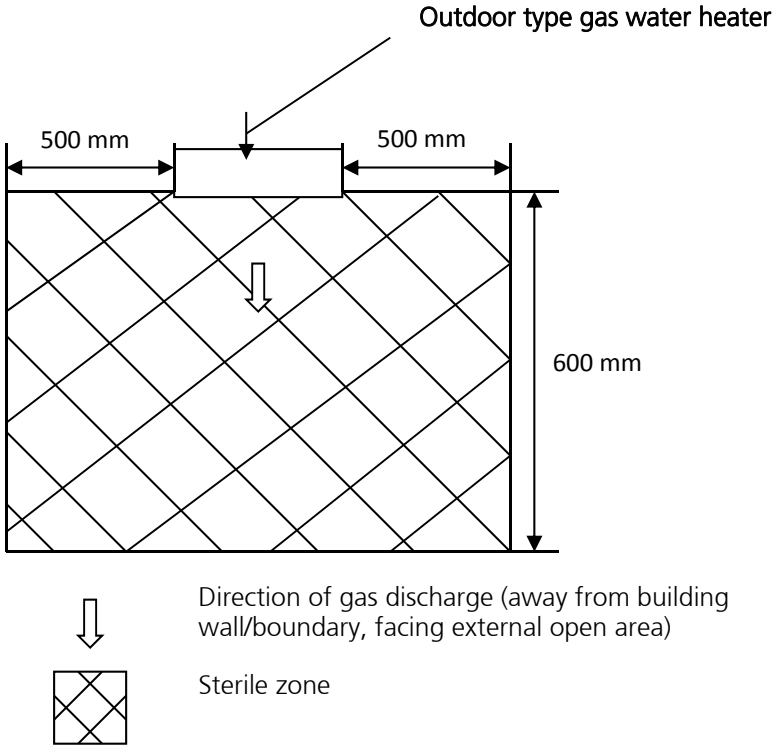
Conversion: 1 MJ/h = 0.28 kW

(b) Table 2 shows the separation distances from adjacent objects

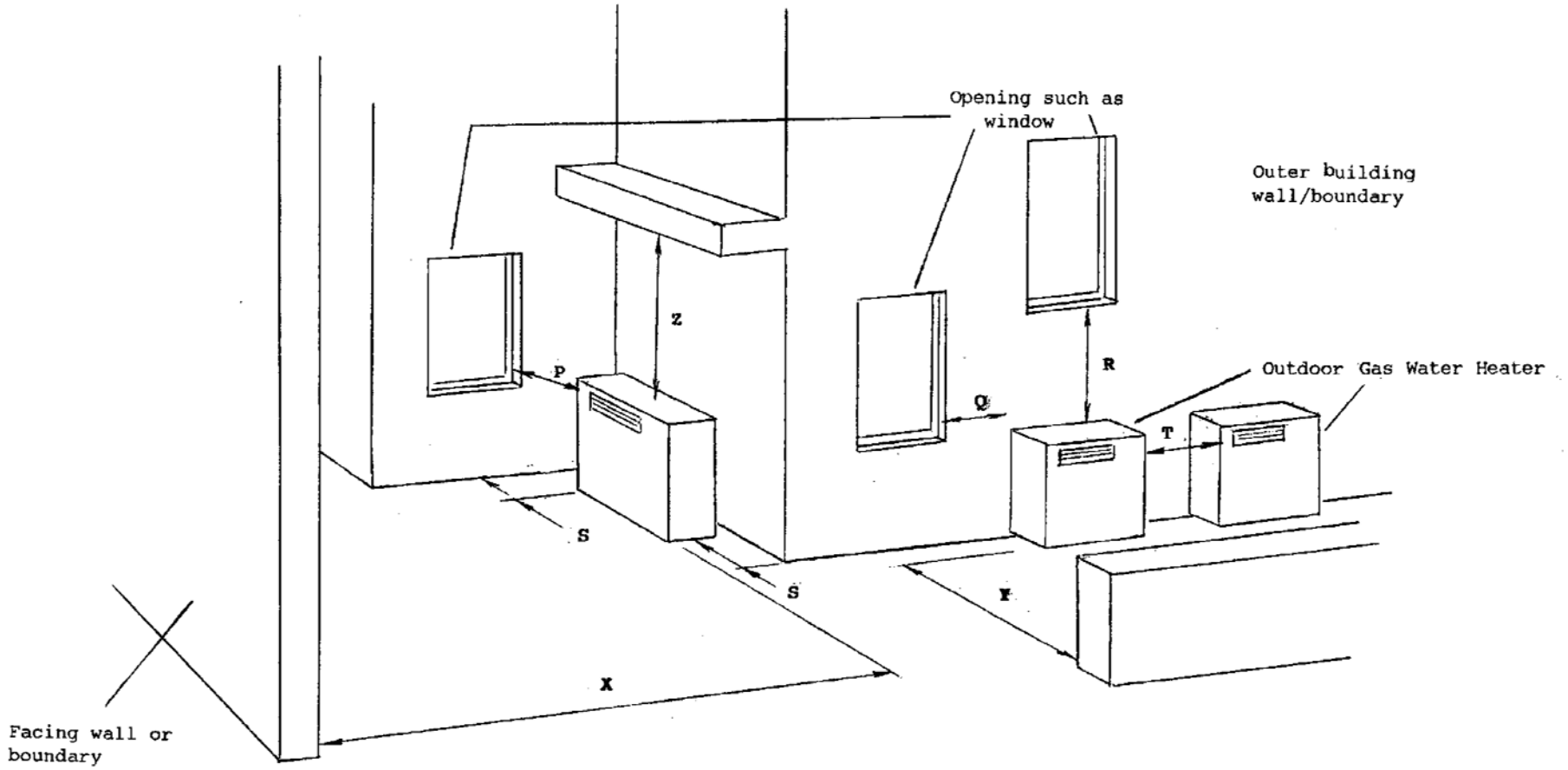
Dimension	Description	Minimum Separation Distance (mm)
S	From a return wall or external corner	500
T	From another heater or appliance (side)	500
X	From facing wall or boundary	1,500
Y	From facing obstruction	600
Z	Below eave or similar projection	500
---	From gas meter, electric meter or devices that may generate sparks	1,000 and not directly below
---	Form ground level to flue terminal	500
---	From pipes	150
---	From combustibles	500

The front, top and sides of the heater shall be unobstructed at all times. Should it be installed under an eave or similar projection, the projected area under the eave or similar projection shall not cover the heater entirely. The flue terminal of the heater should not directly point to the inlet or outlet or ducting of other utilities or appliances, e.g. split type air conditioners.

(c) Figure 1 shows the plan view of a sterile zone of no less than 500 mm on each side of the heater and no less than 600 mm to the front of the heater:



(d) Figure 2 shows the minimum separation distances depicted in Tables 1 and 2.



(d) **Figure 2 : Pictorial View showing Minimum Separation Distances**

Appendix D

Warning Notice and Warning Message in Connection with Outdoor Gas Water Heaters

Sample warning notice to be affixed to an outdoor gas water heater not connected to a flue is given below:-

安全告示/指示 SAFETYNOTICE/MESSAGE

警告

1. 本熱水器是戶外式燃氣熱水器。祇准於屋宇以外的、露天的特定地方安裝。必須確保周圍空氣流通。阻礙通風，會有性命危險。
2. 在本熱水器所在處之左方、右方或頂方距離不少於 0.5 米內及前方不少於 0.6 米範圍內，不得有任何障礙物或建築物之部份存在。
3. 須由政府註冊氣體工程承辦商聘用之註冊氣體裝置技師進行安裝及作定期安全檢查及維修。每年至少一次。
4. 如有任何查詢/緊急事故，請致電

xxx 公司
電話 xxxx xxxx xxxx xxxx 傳真 xxxx xxxx

CAUTION

1. This is an OUTDOOR type gas water heater. It must ONLY be installed in a prescribed outdoor open space and must be well-ventilated. It is hazardous to life if ventilation is impaired.
2. There should not be and OBJECT or STRUCTURE on or near the heater.
   Minimum Distance must always be KEPT as follows:
   To Left-hand or Right-hand sides or ABOVE the heater: 0.5m
   In FRONT of the heater: 0.5m
3. Installation and subsequent maintenance or safety inspection, which should be conducted at least once a year, must be carried out by Registered Gas Installer (RGI) employed by Registered Gas Contractor (RGC).
4. For enquiry/emergency services, please call

xxx Co.
Telephone xxxx xxxx xxxx xxxx Fax xxxx xxxx

Additionally, a warning notice/message in both Chinese and English shall be sent to the developer/occupier/owner/tenant/customer who purchases or takes over the ownership/use of the heater. It shall incorporate information including but not limited to the following:-

(i) Statement indicating that the heater is of outdoor type, which must require permanent open ventilation at all times;
(ii) Specified sterile zone complete with dimensions;
(iii) Installation, regular maintenance and annual inspections to be undertaken by a Registered Gas Installer employed by a Registered Gas Contractor is a must; and contact/emergency telephone number of Registered Gas Contractor.

Appendix E

Record Management by Importer for Importer for Outdoor Gas Water Heaters

Full records, which may be inspected by the Gas Authority as and when required, shall be properly maintained by the supplier within the life time of the heater, including but not limited to the following:-

New Installation, Testing and Commissioning

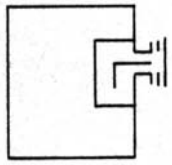
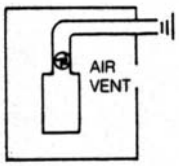
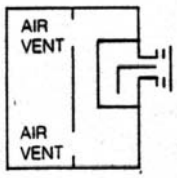
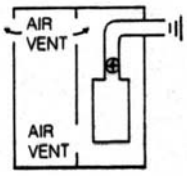
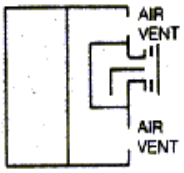
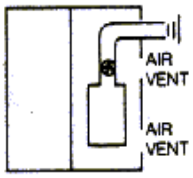
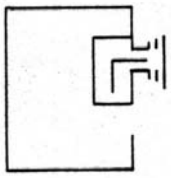
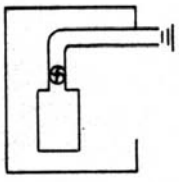
(i) Location of heater;
(ii) As-built drawings and photographs;
(iii) Technical details of heater;
(iv) Testing and commissioning reports.

Regular Inspections and Maintenance

(i) Inspection reports including compliance checklists;
(ii) Maintenance/incident records;
(iii) Other documents as required by the Gas Authority.

Appendix F

Air Supply Openings for Room-Sealed (Natural Draught) and Open-Fled Fanned Draught Gas Water Heaters

Type / Location	Room-Sealed * (Natural Draught)	Open-Flued Fanned Draught
In room		
In compartment open to room		
In compartment open to outside		
In balcony		

* For room-sealed fanned draught gas water heaters, reference should be made to manufacturer's instructions.

Appendix G

AIR REQUIREMENTS – MECHANICAL VENTILATION FOR DOMESTIC GAS WATER HEATER

Type of Appliance burner	Low level mechanical air supply		High level exhaust			Position of openings in relation to each other
	Minimum air flow required L/s	Location of opening	Mechanical L/s	Natural (See Note 1) Size of opening (min.) cm^2	Location of opening	
Atmospheric	Rated heat input (kW) x 1.8 (See Note 2)	The distance between the lower edge of the opening and the floor shall not be more than 5% of the total height of the enclosure, room or plant room	Between 1/4 and 1/3 of the rate of inlet air required	Rated heat input (kW) x 5.4 (See Note 2)	The distance between the top edge of the opening and the ceiling shall not be more than 5% of the total height of the enclosure, room or plant room	Opening to be located to provide a flow of air across the area
Fanned induced draught	Rated heat input (kW) x 1.08 (See Note 2)					

(Source: Adapted from AG601)

NOTES:

1. A natural air supply with a mechanical exhaust is not permitted.
2. Appliance input is to include the total of all appliances in the area including those using other fuels.