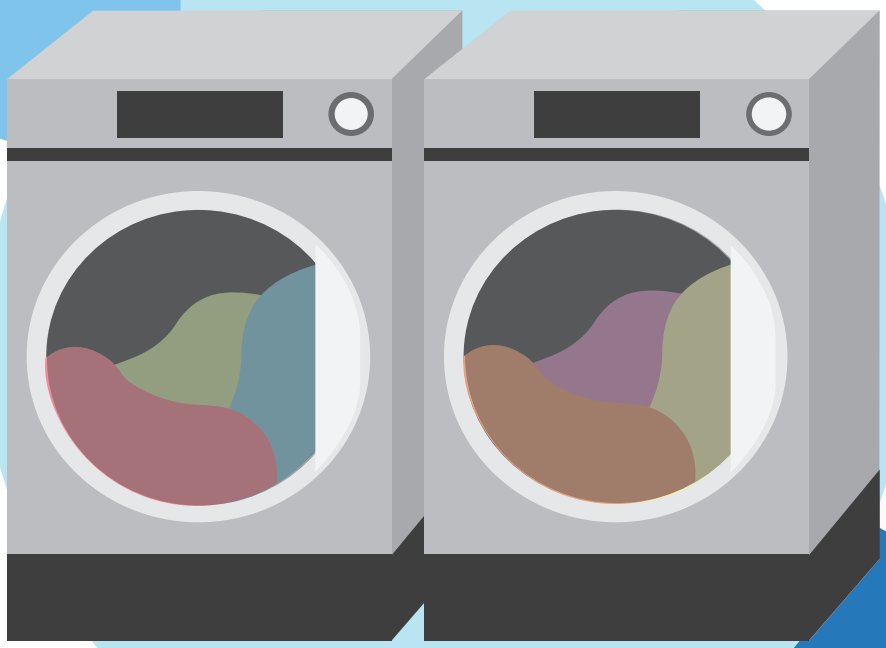
Code of Practice GU13



Commercial Gas Dryer

機電工程署
EMSD

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1 Foreword and Scope

1.1 This code outlines the minimum safety standards on gas supply and exhaust system of gas dryers to be followed by Registered Gas Contractors (hereafter abbreviated as RGC) and owners/operators of commercial type gas dryers up to 55 kW.

The code, however, is not applicable to domestic or industrial type gas dryers. For the purpose of this code, the following definition shall apply:

"domestic-type gas dryers" *means any gas dryer which falls within the definition of "domestic gas appliance" under Reg. 2 of Gas Safety (Installation and Use) Regulations, Cap. 51C.*

"industrial-type gas dryers" *means any gas dryer with power rating over 55kW.*

1.2 This code also outlines the installation and maintenance requirements of gas dryers and its associated installation for RGC / owner / operator to follow. Failure to observe the requirements might cause the gas installations to be unsafe under Regulation 31 of Gas Safety (Installation and Use) Regulations, Cap. 51C.

1.3 In general, commercial gas dryers are fuelled by 2 types of gas supply, i.e. (a) Town gas and (b) Liquefied petroleum gas summarized in Figure 1.

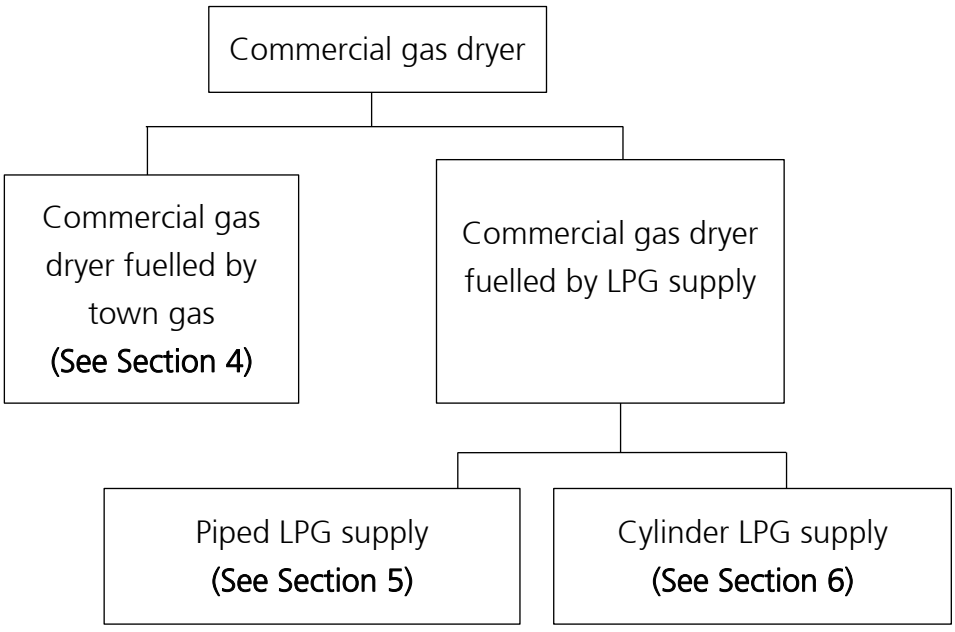


Figure 1 – Outline on Gas Supply to Commercial Gas Dryer

1.4 This code should not be regarded as exhaustive. It is the responsibility of the personnel in the gas industry and owners / operators of gas dryers to conduct safety and health risks assessment for protecting their workers and public safety. They should also establish the appropriate safety and health practices prior to the use of the code.

1.5 All the gas installations shall comply with the Gas Safety Ordinance (Cap. 51) and its Subsidiary Regulations. This code shall be read in conjunction with the relevant 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 relevant Ordinances and its Subsidiary Regulations of the Laws of Hong Kong, for example:

a. The Buildings Ordinance (Cap. 123)
b. The Electricity Ordinance (Cap. 406)
c. The Fire Services Ordinance (Cap. 95)
d. The Factory and Industrial Undertakings Ordinance (Cap. 59)
e. The Waterworks Regulations (Cap. 102A)
f. Occupational Safety and Health Ordinance (Cap. 509)

1.6 The RGC shall make reference to the following standards, codes of practice or guidelines in relation to gas installations:

a. Code of Practice GU01: Approval of Flexible Gas Tubing for Low Pressure Applications;
b. Code of Practice GU09: Low Pressure Regulators for Supplying Gas from LPG Cylinders Having less than 40 Litres Water Capacity;
c. Code of Practice GU12: Installation of Mechanical Exhaust System for Gas Appliances (Rated Heat Input up to 70 kW);
d. Code of Practice GU15: Flexible Gas Tubing for Commercial Applications;
e. Operating Procedures issued by the Hong Kong & China Gas Company Limited;
f. Codes of Practice for Hong Kong LPG Industry;
g. Codes of Practice for Minimum Fire Services Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment issued by Fire Services Department; and
h. Code of Practice for the Electricity (Wiring) Regulations.

2 Terminology

"gas appliance"	an appliance which uses gas to provide lighting, heating, or cooling, but does not include a boiler within the meaning of the Boilers and Pressure Vessels Ordinance, Cap. 56.
"gas distributor"	distributor of LPG as defined under Regulation 2 of the Gas Safety (Registration of Gas Supply Companies) Regulations, Cap. 51E.
"gas dryer"	a type of gas appliance which uses gas to provide heating for clothes drying.
"Gas Authority"	the authority appointed under Section 5 of the Gas Safety Ordinance, Cap. 51.
"flue"	a passage for conveying the products of combustion from a gas appliance to the outside air, and includes any part of the passage in a gas appliance ventilation duct which serves the purpose of a flue.
"interlock"	a device or function that ensures that the operation of item(s) of equipment is dependent upon the fulfilment of predetermined condition(s) by other item(s) of equipment.
"manufacturer"	the original designer and producer of a gas dryer.
"mechanical exhaust system (MES)"	a system to remove flue, vent gases or fumes produced from gas dryer mechanically. The system shall consist of an induced draft (suction) fan being operated under negative static pressure within purpose-built ducting, or mechanical ventilation system, if any.
"non-domestic gas appliance"	gas appliance which falls outside the meaning of domestic gas appliance as defined in the Gas Safety Ordinance, Cap. 51.

"outside air"	open and unobstructed atmospheric air, having open space on at least any one side, unless requirements specified in paragraphs 6 and 7 of the Buildings Department's Practice Notes for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers APP-27 are satisfied.
"Registered Gas Contractor (RGC)"	means a person or a company who as a business carries out gas installation work, engaged to conduct the gas installation and / or maintenance work, and is registered under the Gas Safety Ordinance, Cap. 51.
"Registered Gas Installer (RGI)"	means an individual, employed by a Registered Gas Contractor, who personally carries out gas installation works within specified class(es) and is registered under the Gas Safety Ordinance, Cap. 51.
"Registered Professional Engineer"	means a person registered under the Engineers Registration Ordinance (Cap. 409) within the disciplines of gas, mechanical, building services or another relevant discipline specified by the Gas Authority.

3 General Requirements for Commercial Gas Dryers

3.1 Gas Appliance and Gas Fittings Standards

3.1.1 The gas dryer shall conform to the manufacturer's specifications and the requirements of the Gas Safety (Installation and Use) Regulations (Cap. 51C).

3.1.2 The gas dryer, which can be either an internationally-approved type or a customer-built type, shall be safe for use with the type of gas supplied complete with supporting documents such as certificates. Gas pipes and fittings should comply with the relevant national or international standards.

3.1.3 Flame failure device shall be fitted in every gas dryer to prevent any hazards that might arise from the escape of unignited gas from burners.

3.1.4 Safety devices other than flame protection comprising such as low-pressure cut-off valves, air and gas pressure switches should also be fitted when necessary to provide additional safeguard to users.

3.1.5 Gas dryer should incorporate manually operated valves, automatic control valves and pressure regulators/governors where necessary, so as to facilitate both pressure and gas flow controls. They should also be fitted with sound ignition systems which can ignite the combustion properly.

3.2 Installation, Connection and Commissioning

3.2.1 The installation and commissioning of gas dryer shall follow the requirements of the technical manuals provided by the manufacturer of the gas dryer. Should there be any contradiction between the manufacturer's manuals and the statutory requirements stated under Cap. 51 and its subsidiary regulations, the statutory requirements shall prevail.

3.2.2 Installation, connection and commissioning of gas dryers shall only be undertaken by a qualified RGI employed by a RGC. The commissioning of all non-domestic gas installation work including the gas dryer shall only be undertaken by RGI having a Class 6 or 7.

3.2.3 The final connection to gas dryer may be rigid, or flexible, depending upon dryer type, size and manufacturer's requirements.

a. Gas pipes and fittings shall comply with the relevant national or international standards.

b. Rigid metallic pipework shall consist of steel or copper (compression) fittings to a recognized national or international standard.

c. Flexible tubing made of a non-metallic substance (i.e. flexible rubber

tube) shall not be used to connect to the gas dryer unless it is connected directly to a portable LPG cylinder.

d. Flexible tubing used shall be of a type approved by the Gas Authority. All low pressure flexible tubing used shall be of a type approved by the Gas Authority in accordance with the Code of Practice GU01 "Approval of Flexible Gas Tubing for Low Pressure Applications" or the Code of Practice GU15 "Flexible Gas Tubing for Commercial Applications". Approved flexible gas tubing under CoP GU01 bears an approved mark of the format "EMSD Approval GTxxxx" and an expiry date of service life.

3.2.4 Pressure regulating installations for the inlet gas supply shall comply with requirements for general safety and location specified in Regulations 21 and 22 of the Gas Safety (Gas Supply) Regulations (Cap. 51B). The pressure in an installation pipe shall be controlled such that the downstream pressure at the gas dryer comply with the design pressure of the gas dryer.

3.2.5 Gas supply pipework shall be installed in a safe and workmanlike manner in accordance with Regulations 17, 18 and 19 of the Gas Safety (Gas Supply) Regulations (Cap. 51B). Specific attention shall be given to means of protecting pipework against corrosion, mechanical damage; and provision of ventilation for service ducts. Gas pipework shall not be installed in unventilated voids.

3.2.6 An individual gas shut off valve shall be installed at the gas supply inlet for every gas dryer.

3.2.7 Gas dryer and its connections shall be tested for soundness after installation and they shall be fully commissioned following successful completion of soundness test based on the technical manual of the gas dryer manufacturer. The RGI shall also comply with all provisions of Regulation 30 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

3.2.8 In accordance to Regulation 26 of the Gas Safety (Installation and Use) Regulations, Cap. 51C, the RGI who installs the gas dryer shall leave with the responsible person for the premises in which such appliance is installed all operating instructions and instructions covering maintenance requirements provided by the manufacturer of such appliance.

4 Town Gas

4.1 General

4.1.1 Town gas is supplied to a gas dryer through a series of service risers, installation pipe, meter control valve, filter (if fitted), pressure regulator, gas meter and finally an individual gas shut off valve of the gas dryer. A typical town gas supply system for gas dryer (with optional pressure gauge fitted) is shown in Figure 2 below. The operating pressure of the system shall be less than 7.5 kPa.

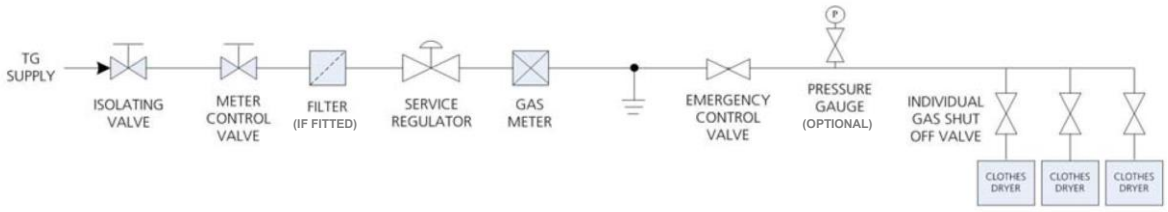


Figure 2 – Typical Town Gas Supply System for Gas Dryer

4.1.2 All town gas installation should be carried out in accordance with the current edition of Operating Procedures HKCG/SER/OP8 issued by the Hong Kong and China Gas Company Limited.

4.2 Gas Meter

4.2.1 Primary gas meter shall be installed as close as practical to the point of service entry into the premises and be suitably labelled in accordance with Regulation 13 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

4.2.2 Gas meter shall not be installed in areas designated as the only means of escape from premises. For meter installed in such a location prior to 1 April 1991, future replacements shall be in accordance with Regulation 10(1) of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

4.2.3 Installation of town gas meter shall be carried out in accordance with Operating Procedures HKCG/SER/OP5 issued by the Hong Kong and China Gas Company Limited.

4.3 Pipe Connection to Gas Dryer

4.3.1 The connections to gas dryer shall comply with Clause 3.2 of this Code.

4.3.2 Gas supply and internal installation pipework, up to individual dryer isolation valves, should be of steel construction, conforming to an international or

national standard as specified in the current edition of Operating Procedures issued by the Hong Kong and China Gas Company Limited.

4.3.3 Lengths of gas pipework installed within premises shall be kept to a minimum; and separated from electric conduit, or cable, by at least 25mm.

4.3.4 Gas supply pipework inside premises shall operate at pressures not exceeding the design pressure of the gas dryer as per manufacturer's instructions. For gas dryers without manufacturer's instructions on designed working pressure, the supply pressure shall not be higher than 7.5 kPa; however, internal installation pipework should normally operate at not more than 2 kPa wherever possible. A pressure test point at a convenient location should be installed for testing purpose..

4.3.5 An emergency gas control valve shall be installed as close as possible to the point of gas service entry into the premises in an accessible location with appropriate indications. The location and labelling of the valve shall be in accordance with Regulation 8 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

4.3.6 A fire safety gas isolation valve shall be located external to the laundry area near the entrance for use by Fire Services Officers in an emergency. The valve shall be located in an accessible position, suitably labelled and protected against unauthorised interference; or,

If it is not possible to locate the fire safety valve external to the laundry area, then the fire safety gas isolation valve shall be installed within the laundry to be located immediately after the main entrance in an accessible position, suitably labelled and protected against unauthorised interference.

4.3.7 When town gas is supplied with an installation pipe of internal diameter greater than 50mm to a non-domestic premises with two or more floors or a floor having areas with a separate supply of gas, a readily accessible isolation valve should be installed and a line diagram in permanent form should be attached in a position as near, so far as is practicable, to the gas meter. The line diagram should indicate the position of all installation pipes, gas meter, emergency controls, isolation valves, pressure test points and electrical cross-bonding of the gas supply system in accordance with Regulation 22 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

5 Piped LPG Supply

5.1 General

5.1.1 LPG is supplied to a gas dryer from a bulk container of LPG at a dedicated site through a series of service risers, installation pipe, isolating valve, service regulator, gas meter, emergency control valve and finally to an individual gas shut off valve of the gas dryer. A typical piped LPG supply system for gas dryers (with optional pressure gauge fitted) is shown in Figure 3 below. The operating pressure of the system shall be less than 7.5 kPa.

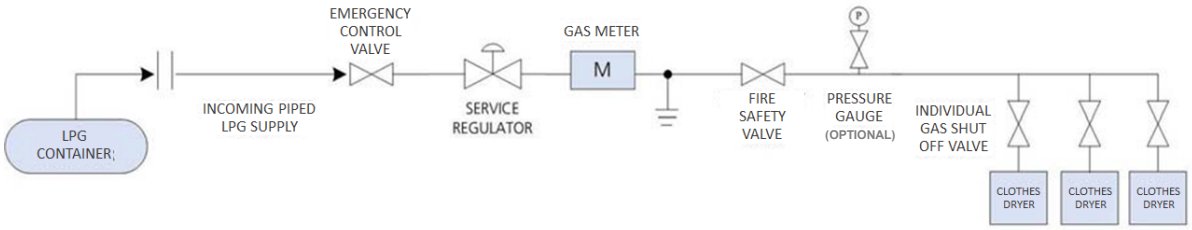


Figure 3 – A typical Piped LPG Supply System for Gas Dryers

5.2 Gas Meter

5.2.1 Primary gas meter shall be installed as close as practical to the point of service entry into the premises and be suitably labelled in accordance with Regulation 13 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

5.2.2 Gas meter shall not be installed in an area designated as the only means of escape from the premises. For meter installed in such a location prior to 1 April 1991, future replacements shall be in accordance with Regulation 10(1) of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

5.3 Pipe Connection to Gas Dryer

5.3.1 The connections to gas dryer shall comply with Clause 3.2 of this Code.

5.3.2 Gas supply and internal installation pipework, up to individual dryer isolation valves, shall be of steel construction, conforming to national and international standards as specified in the current edition of Codes of Practice for Hong Kong LPG Industry.

5.3.3 Lengths of gas pipework installed within premises shall be kept to a minimum; and separated from electric conduit, or cable, by at least 25mm.

5.3.4 Gas supply pipework inside premises shall operate at pressures not

exceeding the design pressure of the gas dryers as per manufacturer's instructions. For gas dryers without manufacturer's instructions on design working pressure, the supply pressure shall not be higher than 7.5 kPa. However, internal installation pipework should normally operate at 3 kPa wherever possible. A pressure test point at a convenient location should be installed for testing purpose.

5.3.5 An emergency gas control valve shall be installed as close as possible to the point of service entry into the premises in an accessible location with appropriate indications. The location and labelling of the valve shall be in accordance with Regulation 8 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

5.3.6 A fire safety gas isolation valve shall be located external to the laundry area near the entrance for use by Fire Services Officers in an emergency. The valve shall be located in an accessible position, suitably labelled and protected against unauthorised interference; or,

If it is not possible to locate the fire safety valve external to the laundry area, then the fire safety gas isolation valve shall be installed within the laundry to be located immediately after the main entrance in an accessible position, suitably labelled and protected against unauthorised interference.

5.3.7 When LPG is supplied with an installation pipe of internal diameter greater than 50mm to a non-domestic premises with two or more floors or a floor having areas with a separate supply of gas, a readily accessible isolation valve shall be installed and a line diagram in permanent form should be attached in a position as near, so far as is practicable, to the gas meter. The line diagram shall indicate the position of all installation pipes, gas meters, emergency controls, isolation valves, pressure test points and electrical cross-bonding of the gas supply system in accordance with Regulation 22 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

6 Cylinder LPG Supply

6.1 General Requirements

6.1.1 This section is written based on LPG system supplied by LPG cylinders having an aggregated water capacity not exceeding 130 litres. When laundry needs to store LPG cylinders with aggregated water capacity exceeding 130 litres, such gas installation is considered as a notifiable gas installation in accordance with the Gas Safety (Gas Supply) Regulations, Cap. 51B. The construction, usage, inspection, maintenance, etc. shall follow the requirements in the Code of Practice for Hong Kong LPG Industry Module 1 "LPG Compounds and Cylinder Stores" and shall be approved by the Gas Authority. The requirements beyond the LPG compounds / Cylinder stores shall comply with Section 5 of this Code of Practice on Piped LPG Supply.

6.1.2 LPG cylinders shall only be used where a piped gas supply is not available within the premises.

6.1.3 LPG cylinders used shall be capable of supplying gas at normal vaporisation rates (see Appendix 1) to meet total thermal input of gas dryers. External heat source (such as a water bath) shall not be used.

6.1.4 Care shall be taken to ensure that the total thermal input of gas dryers can be supplied by LPG cylinders operating at normal vaporisation rates and with an aggregate water capacity not exceeding 130 litres. Owner / operator shall consult with supplier of LPG cylinders to ensure the total storage capacity is within the statutory limit.

6.1.5 LPG cylinders shall be supplied by LPG distributors authorised by Registered Gas Supply Companies.

6.1.6 LPG cylinders with quick coupling type valves shall be used as far as possible. If LPG cylinders with POL valves are used, the owner / operator of the laundry should ask the LPG cylinder distributor to exchange them as far as possible.

6.1.7 Gas supply pipework inside premises shall operate at a pressure not exceeding the design pressure of the gas dryers as per manufacturer's instructions. For gas dryers without manufacturer's instructions on designed working pressure, the supply pressure shall not be higher than 7.5 kPa. However, internal installation pipework should normally operate at 3 kPa wherever possible. A pressure test point at a convenient location should be installed for testing purpose.

6.2 LPG Cylinder Storage Chamber: Location

6.2.1 LPG cylinder(s) should be stored in a designated storage chamber and supplied through installation pipes to gas dryer(s). Figure 4(a) and 4(b) show the typical low-pressure and high-pressure LPG cylinder supply systems for gas dryers.

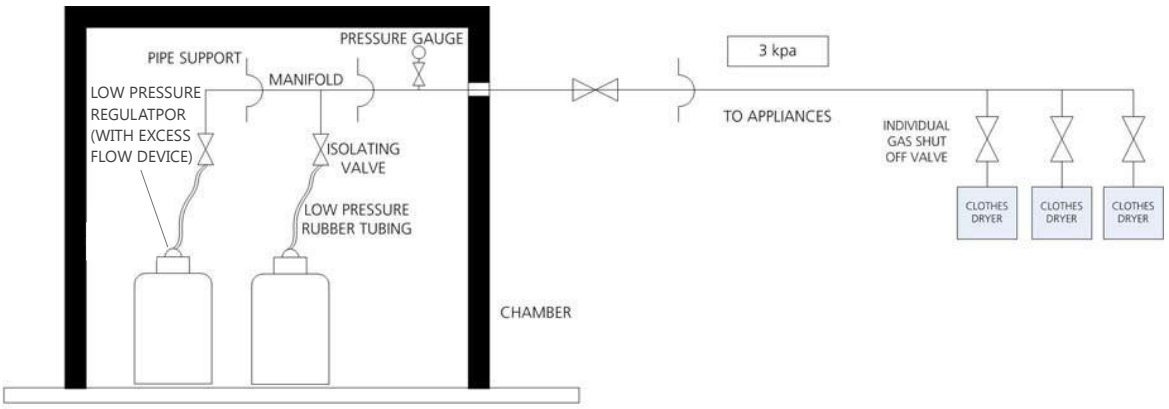


Figure 4(a) – A typical Low-Pressure LPG Cylinder Supply System

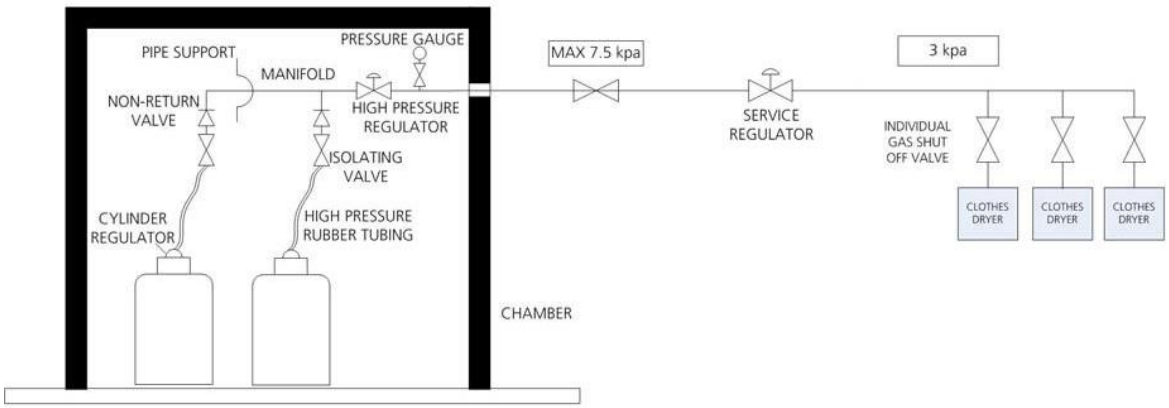


Figure 4(b) – A typical High-Pressure LPG Cylinder Supply System

6.2.2 LPG cylinders should be located in a purposely designed and built chamber facing open space or well-ventilated space. The requirements of the LPG cylinder storage chamber are stated in Appendix 2 of this Code of Practice. The chamber shall be designed specifically for the storage of LPG cylinders having an aggregate water capacity not exceeding 130 litres. It should be located outdoor in open air where possible, or indoor with adequate ventilation.

6.2.3 The location of the chamber shall not impede the means of escape from premises nor breach any structure which provides for interior fire separation.

6.2.4 The chamber shall not be located above, or within 1 metre from any drain.

6.2.5 The chamber shall be located at least 2 metres away from any fixed source of ignition or any electrical appliances/sockets.

6.2.6 The chamber shall not be located in any area where natural, low level ventilation cannot be provided. This precludes locations in basement areas for example.

6.3 LPG Cylinder Storage Chamber: Ventilation

6.3.1 The ventilation openings of a chamber shall normally communicate directly with open air areas which afford adequate air movement. Such ventilation openings shall not be directed into adjacent buildings; designated means of escape from premises; or hazardous areas. Ventilation openings shall be provided at both high and low level. The ventilation requirements of the LPG cylinder storage chamber are stated in Appendix 3 of this Code of Practice. The minimum free area shall be: -

- low level: 100 cm^2 or 1/100th of the chamber enclosed floor area, whichever is the greater; and

- high level: 50 cm^2 or 1/200th of the chamber enclosed floor area, whichever is the greater.

6.4 LPG Cylinder Storage Chamber: Construction

6.4.1 The chamber shall be constructed of concrete, or a material having at least 2-hour fire resistance period and sufficient mechanical strength.

6.4.2 Doors of the chamber shall have sufficient mechanical strength, and be fabricated from non-combustible metallic material (such as hot-dipped galvanised steel or stainless steel), and the material shall have at least 1-hour fire resistance period. Proper primer, under-coat and over-coat shall be applied to hot-dipped galvanised steel. Doors shall normally be kept closed, and locked if the chamber is external to the premises.

6.4.3 The chamber shall be suitably sized to allow for storage of all required LPG cylinders in an upright position; easy exchange of LPG cylinders; and safe operation of LPG control valves.

6.4.4 The chamber shall not contain electrical apparatus unless flameproof to national or international standards.

6.5 LPG Cylinder Storage Chamber: Safety Notices

6.5.1 The words of "LPG Cylinder Storage Chamber (石油氣瓶儲存室)" and "No Smoking (不准吸煙)", in English and Chinese, shall be prominently shown on the outside of the chamber doors.

6.5.2 Instructions concerning the safe exchange and safe use of LPG cylinders, in English and Chinese, shall be prominently displayed at all times on the inside of the chamber doors (see Appendix 4).

6.5.3 A label advising the users that the gas supply should be turned off at the cylinders whenever the premises is closed for business, in English and Chinese, shall be provided at the chamber.

6.6 LPG Cylinder Storage Chamber: Internal Gas Flow Controls and Internal Piping

6.6.1 The outlet gas supply pressure from the chamber should not exceed normal inlet pressure for low pressure gas application (i.e. 3 kPa). However, up to 7.5 kPa is allowed providing that the supply to gas dryer, designed to operate at 3 kPa, incorporates a service regulator, or each appliance is equipped with an individual regulator. The outlet pressure from the LPG cylinder may be controlled by means of an individual cylinder regulator recommended by the Registered Gas Supply Company and compatible with the LPG cylinder type; or by a properly secured manifold arrangement using a single regulator recommended by the Registered Gas Supply Company.

6.6.2 Where a manifold is connected to two or more LPG cylinders:

a. a non-return valve (for high pressure supply system only) or a low pressure cylinder regulator incorporated with excess flow device (for low pressure supply system only) shall be fitted to each LPG cylinder outlet connection;

b. high pressure flexible tubing with self-closing fitting shall be used as far as possible;

c. the length of flexible tubing for each LPG cylinder shall not exceed 1 metre (measurement excludes the connection fittings at both ends of the flexible tubing);

d. steel pipe shall be of a type conforming to national or international standards; and

e. the flexible tubing shall be of a type approved by the Gas Authority.

6.6.3 Adequate support shall be provided to pipework within the chamber to take the weight of disconnected pressure regulators during exchange of LPG

cylinders.

6.7 LPG Cylinder Supply: Pipework and Control Valves

6.7.1 Gas pipework running from the LPG cylinder storage chamber to appliances shall be of steel construction to a standard included within the current edition of Codes of Practice for Hong Kong LPG Industry; be suitably protected against corrosion; and securely fixed to walls.

6.7.2 An isolation valve, labelled in English and Chinese, shall be provided in the gas supply immediately outside the LPG cylinder storage chamber. In the case where the chamber is located near the point of service entry into the premises, the installation of an emergency gas control valve will suffice.

6.7.3 The LPG supply pipe shall be clearly identified by suitable marking, painting or label as LPG pipe, preferably within an interval of less than 1 meter as far as practicable. Gas pipework shall be kept to a minimum; and separated from electric conduit, or cable, by at least 25mm.

6.7.4 An emergency gas control valve shall be installed as close as possible to the point of service entry into the premises in an accessible location with appropriate indications unless the LPG cylinder is connected directly to the gas dryer via flexible gas tubing. The location and labelling of the valve shall be in accordance with Regulation 8 of the Gas Safety (Installation and Use) Regulations, Cap. 51C.

6.8 Safety Precautions

6.8.1 To ensure the safe use of LPG cylinders, the following safety precautions shall be followed by the owner / operator of gas dryers:-

a. It is an offence under the Gas Safety (Gas Supply) Regulations, Cap. 51B to keep LPG cylinders having an aggregate nominal water capacity exceeding 130 litres. Do not store or keep LPG cylinders (including emptied cylinder) having a total aggregate water capacity exceeding 130 litres, including those cylinders placed inside the chamber.

b. Before leaving the LPG cylinder storage chamber or when LPG is not in use, turn off all the branch valves and the cylinder valves.

c. Always keep the LPG cylinder chamber doors unobstructed.

d. Close and lock the chamber when exchange of LPG cylinders is

completed.

e. Do not store easily combustible articles (e.g. clothing, wooden boards, aerosol can, etc.) in the vicinity of the LPG cylinders.

f. Be alert to deal with LPG leakage at any time. If in doubt, turn off the emergency valve and LPG cylinder isolation valves. Keep the area well-ventilated. Should there be no further gas leak, find a safe location and call the gas supply company or the gas distributor. Extinguish any naked flames and do not operate electrical switches.

g. The 24-hour emergency telephone number of gas supply company should be displayed at a prominent location.

h. In case of emergency or continual gas leak, please call 999.

6.8.2 When LPG cylinder is empty, the user should ask the LPG cylinder distributor to exchange them. If the users have to exchange the LPG cylinders themselves, the steps stated in the notice on "Instructions for Safe Exchange of LPG Cylinders" (Appendix 4) shall be followed.

7 Requirements on Gas Dryer Exhaust System

7.1 The installation requirements and procedures of the gas dryer exhaust system shall follow the technical manuals as recommended by the gas dryer manufacturer. The owner / operator of gas dryers shall properly store and keep the technical manuals for future reference.

7.2 Installation works of a gas dryer and associated exhaust flue system shall be carried out by a qualified RGI employed by a RGC. The part of the exhaust system which is not supplied by the gas appliance manufacturer shall be installed, tested and commissioned by a specialist ventilation subcontractor. No matter which party installed the exhaust system, the RGC shall be responsible to inspect the exhaust system as a whole installation. If non-compliance with statutory requirements or manufacturer's recommendations on the installed exhaust system is observed during inspection, the RGC shall notify the owner / operator of gas dryers to follow-up immediately. The owner / operator shall arrange the specialist ventilation subcontractor to conduct rectification works as soon as possible, and arrange the RGC to conduct follow-up safety inspection after the rectification work is completed.

7.3 Exhaust ductwork dimensions, straight run length and number of elbows shall be properly sized and calculated based on recommendations and formula given by the manufacturer. The designed maximum static back pressure of the exhaust system must not exceed the maximum allowable pressure drop specified by the manufacturer.

7.4 Exhaust gas of a gas dryer shall be exhausted to outside air by the shortest possible route with minimum number of elbows, bents and lengths as far as practicable in accordance with the manufacturer's instructions. A typical exhaust pipe arrangement is shown in Figure 5 below:

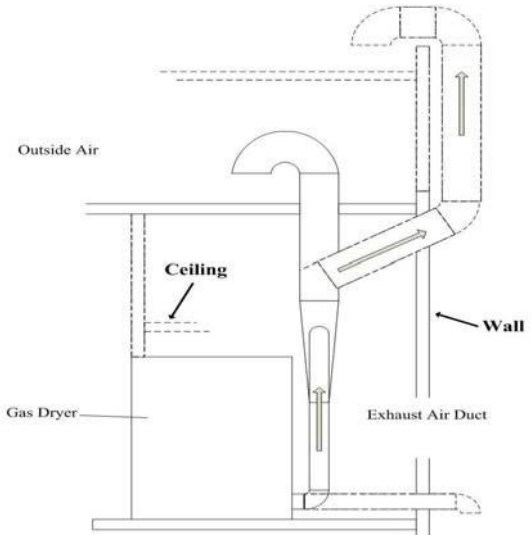


Figure 5 – Typical Sectional View on Exhaust Duct Arrangement for Gas Dryer

7.5 Exhaust ductwork shall not be plastic or thin foil flexible ducts. All exhaust ductwork installed shall be made of galvanised sheet metal of minimum 0.5mm thickness or other non-combustible material which must be equivalent in strength and corrosion resistance to ducts made of galvanised sheet metal of 0.5mm thickness.

7.6 Ductwork inside air-conditioned area or close to combustible material / human access shall be suitably insulated to having the ductwork external surface temperature not exceeding 45 degree Celsius.

7.7 Interior surfaces of exhaust ducts shall be smooth and free of any obstacles. All ductwork shall be joined by riveted or flanged joint in order to avoid any protrusions where may permit the accumulation of lint. Sheet metal screws shall not be used to join sections of metal ductwork. 90 degree connection in ducting shall be avoided in the exhaust system.

7.8 Inspection doors shall be installed at the beginning and ending of air ductwork for periodic inspection and cleaning purposes. Intermediate openings or openings at other locations recommended by the manufacturer in the exhaust ductwork should also be provided to facilitate inspection and easy cleaning.

7.9 Screens, louvers, caps or wire mesh is not recommended to be installed at the opening of the exhaust ductwork. Detailed installation requirements should refer to the manufacturer's recommendation, or be endorsed either by the manufacturer or a Registered Professional Engineer for special applications.

7.10 The flue terminal of the exhaust duct shall not directly point to the air inlet or outlet of other utilities or appliances, such as kitchen exhaust, air conditioning system, etc.

7.11 Exhaust ductwork of gas dryer should preferably not be connected to exhaust system of other kinds of application, such as central air conditioning system for general indoor air conditioning purpose. Where unavoidable, an interlock shall be provided to ensure the gas dryer is not operated unless the mechanical exhaust system of other kinds of application is in normal safe working order. Relevant technical requirements on interlocking device for gas appliances shall comply with the Code of Practice GU12 "Installation of Mechanical Exhaust System for Gas Appliances (Rated Heat Input up to 70 kW)".

7.12 Separate exhaust ductwork should be installed for each individual gas dryer as far as reasonably practicable in order to eliminate the chance of leaking flue gas from an idle dryer. If this is not feasible, the air ductwork of multiple gas dryer shall be sized and enlarged in accordance with requirements specified by the manufacturer. Besides, the RGC shall design and install the multiple exhaust air ductwork so that flue gas from any one of the operating gas dryers shall not flow back into other operating or non-operating gas dryer(s). A typical layout of multiple gas exhaust system is shown in Figure 6 below:

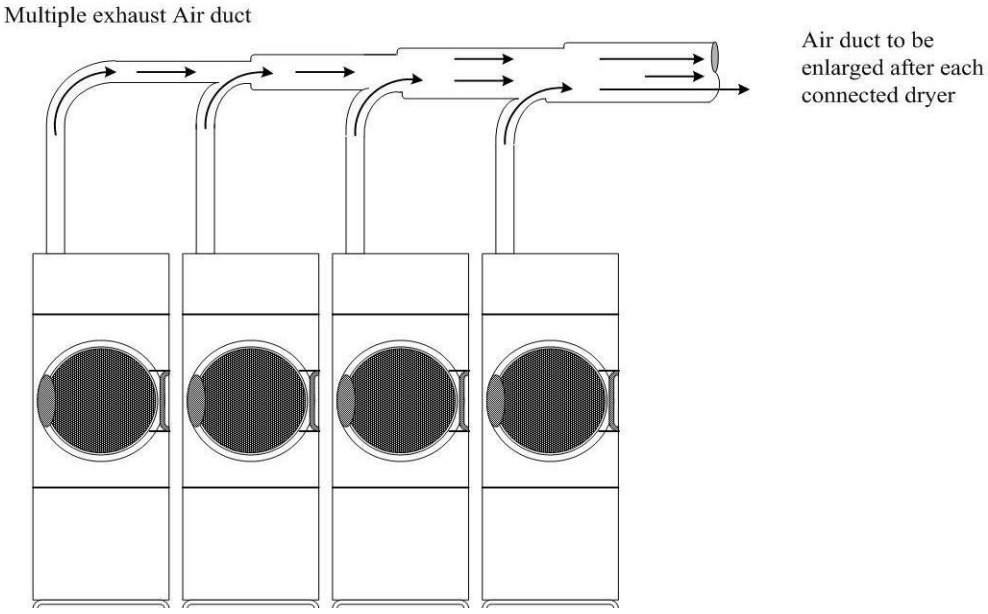


Figure 6 – Typical Layout of Multiple Exhaust System

7.13 In multiple dryer exhaust system, individual ducts shall enter the bottom or side of the main exhaust duct at an angle not more than 45 degree in the direction of airflow or other maximum allowable angle as specified by the manufacturer.

90 degree connection or sharp elbow should be avoided in the exhaust ductwork (see Figure 7).

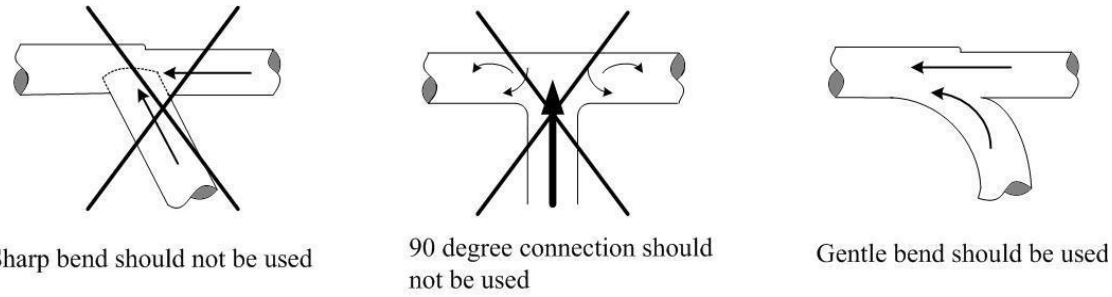


Figure 7 – Typical Bends and Connections

7.14 Exhaust fan or booster fan is not recommended to be used in the exhaust ductwork system. If it is unavoidable, exhaust/booster fans shall be installed closed to the outlet of the exhaust ductwork. Besides, selection and installation of the exhaust/booster fans shall comply with the technical specifications and instructions as recommended by the manufacturer, or be endorsed by the manufacturer for special applications. An interlocking device shall be installed between the gas supply system and the ventilation system in order to avoid danger arising from accumulation of exhaust gas. Relevant technical requirements on interlocking device for gas appliances shall comply with the Code of Practice 12 "Installation of Mechanical Exhaust System for Gas Appliances (Rated Heat Input up to 70 kW)".

7.15 If the exhaust ductwork is equipped with fire damper(s), an interlocking device shall be installed between the gas supply system and the fire damper(s) in order to cut off the gas supply when the fire damper(s) is deployed.

7.16 The exhaust ductwork of the gas dryer should not be connected with an exhaust ductwork of kitchen exhaust system.

7.17 Sufficient fresh air shall be provided for air consumption of gas dryer. The fresh air requirement shall follow the technical manual given by the gas dryer manufacturer.

7.18 The owner of gas dryers and RGC shall keep the following documentary records for a period of at least two years:

- manufacturer's instructions and associated contractor's manuals and maintenance agreement;
- testing and commissioning reports on new installation;
- regular inspection and testing reports;

- any follow-up work completed or in progress; and
- maintenance log including date of previous inspections, fault reports, if any, and the next scheduled date of inspection.

8 Maintenance

8.1 Gas Installation

8.1.1 The owner / operator of gas dryers shall arrange regular safety inspection of gas installations (including the exhaust system) by a registered gas supply company / RGC once every 12 months to ensure such installations are in safe and proper working condition.

8.1.2 Inspection and servicing of gas dryers shall only be undertaken by a qualified RGI employed by an RGC. The servicing of all non-domestic gas installation work including the gas dryer shall only be undertaken by RGI qualified to Class 7 registration.

8.1.3 The gas dryer shall be checked and serviced in accordance with the recommendations of the manufacturer. If any operational irregularities are observed, repair or replacement should be arranged immediately. A typical inspection safety checklist is attached in Appendix 5.

8.1.4 Flexible gas rubber tubing shall be inspected regularly for any cracks or abnormal condition. Expired gas tubing shall be considered as a faulty gas fitting, the owner shall arrange an RGC to replace it before the expiry date printed on the tubing. Such works shall only be undertaken by RGIs qualified to Class 7 registration.

8.2 Exhaust System

8.2.1 Lint from thermistor, thermostat, filter elements and dryer cabinet shall be cleaned or replaced periodically based on the prescribed manufacturer's instructions. Also, the gas dryers shall be checked and serviced in accordance with the recommendations of the gas dryer manufacturer.

8.2.2 Owner / operator of gas dryers shall clean and remove lint and debris inside exhaust ductwork regularly based on the manufacturer's recommendations and in any case the frequency should preferably not be less than once per month. In case there is air leakage from exhaust ductwork, it shall be properly repaired or replaced the whole section if considered necessary by qualified technicians. It is an offence under Gas Safety (Installation and Use) Regulation, Cap. 51C to use a gas appliance that the products of combustion from such appliance cannot be safely removed.

8.2.3 For exhaust system equipped with exhaust or booster fans, regular inspection shall include servicing, cleaning and testing of the installations associated with mechanical exhaust system (MES) (including the gas dryer(s), the associated control, the interlock with the operation of MES, and the temperature sensing device at the exhaust duct (if fitted).

8.2.4 If the RGC observes any non-compliance with statutory requirements or manufacturer's recommendations on the exhaust system during the regular safety inspection, the RGC shall notify the owner / operator of gas dryers to follow-up immediately. The owner / operator shall arrange a specialist ventilation subcontractor to conduct rectification works as soon as possible, and arrange the RGC to conduct follow-up safety inspection after the rectification work is completed.

9 Miscellaneous

9.1 Training

9.1.1 The owner of gas dryers shall provide necessary information, as well as operation, cleaning and safety precaution training of the gas dryer to their operators who are involved in the operation of the dryers.

9.1.2 For gas dryer fuelled by cylinder type LPG, the owner of gas dryers shall provide adequate training to their operators regarding safety procedures on exchange of LPG cylinders.

9.1.3 The owner / operator of gas dryers shall observe all the safety issues stated in this Code of Practice. In particular, the owner / operator shall stop using the gas dryers if at any time he / she knows or has reason to suspect any of the following:-

- that there is insufficient supply of air available for gas dryer for proper combustion at the point of combustion;
- that the removal of the products of combustion from the gas dryer is not being or cannot safely be carried out (e.g. apparent damage to the exhaust ductwork); or
- any gas fittings (i.e. flexible gas tubing and gas regulators) had expired.

9.2 Housekeeping

9.2.1 The owner / operator of gas dryers shall maintain at least 1 metre clearance of combustible materials such as clothes and plastic bags, etc. from gas dryers.

9.3 Fire Safety Precaution

9.3.1 The owner / operator of gas dryers shall provide adequate firefighting equipment (such as fire extinguishers) next to the gas dryers for extinguishing fire in case of emergency.

9.3.2 Fire drill is recommended to be carried out by the owner / operator of gas dryers on a regular basis.

9.4 Safety Notices

9.4.1 The owner / operator shall provide a safety notice with wording "Keep well ventilation when dryer(s) in operation / 乾衣機操作時須保持空氣流通", which shall be fixed permanently at a conspicuous location on the gas dryer.

Appendix 1

LPG Cylinder Draw-off Rates

The possible vaporisation/draw-off rate of a cylinder depends on many factors, such as air temperature, amount of LPG remaining in the cylinder, pattern of usage, and regulator capacity. The designer to ensure that a safe continuous supply of gas to the appliances can be maintained at all times.

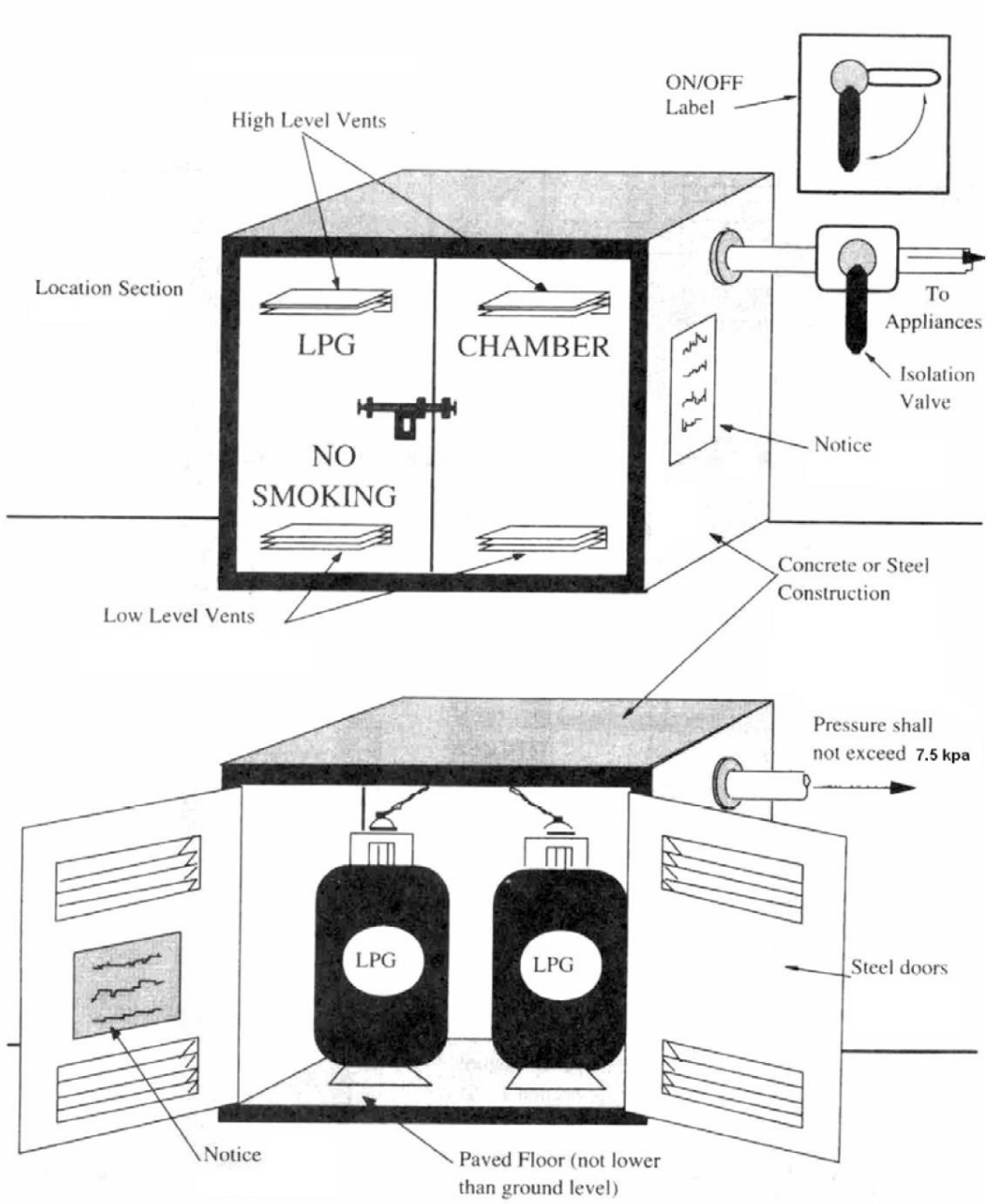
As a rough guide, the following figures, which will vary according to conditions, may be referred to when designing an installation:

Cylinder Capacity	Full Cylinder Peak Rate	50% Full Cylinder Rate	25% Full Cylinder Rate
10-16 kg	3.0 kg/hr	1.6 kg/hr	1.2 kg/hr

(Note: Reduced draw-off rates will be encountered in the winter months because of lower air temperatures.)

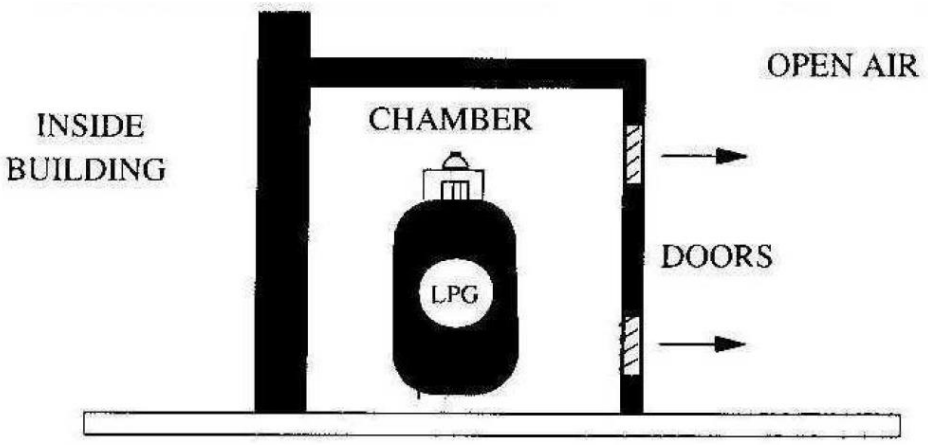
Appendix 2

A Typical LPG Cylinder Storage Chamber

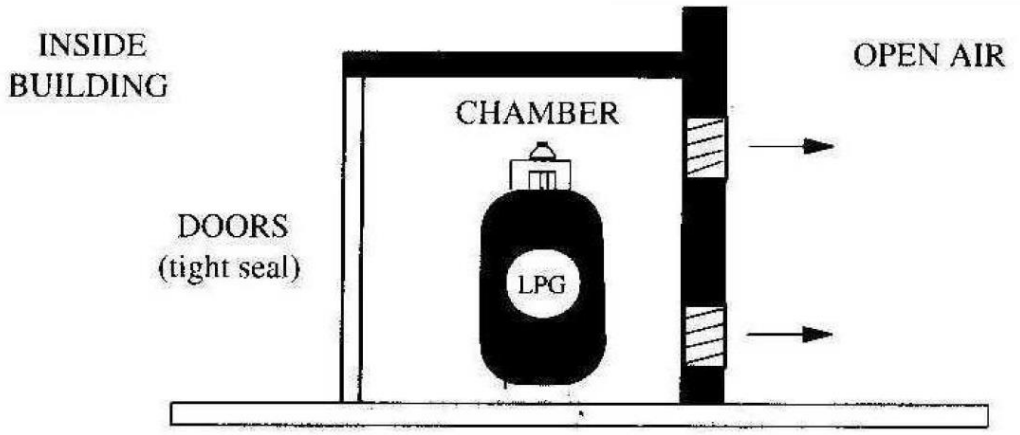


Appendix 3

Location and Ventilation of LPG Cylinder Storage Chambers



Chamber Located in Open Air / Venting into Open Air



Chamber Located inside Building / Venting into Open Air

Appendix 4

Notices at LPG Cylinder Storage Chambers

Instructions for Safe Exchange of LPG Cylinders (Quick coupling type)

Before changing

a. Turn off all related gas appliances and valves.
b. Ensure good ventilation and no naked flames in the vicinity.
c. No hand tools should be used throughout the changing process.

Exchange the LPG cylinder

a. Switch off the pressure regulator, and disconnect the regulator from the used LPG cylinder.
b. Check the cylinders, the pressure regulator, the flexible gas tubing and the connection joint for damage, leak or loose connection.
c. Firmly re-connect the pressure regulator to the new LPG cylinder, and check for smell or hissing sound of gas leaking from the joint. Switch on the pressure regulator.
d. If everything is in order, operation of the gas appliances can be resumed.

Instructions for Safe Exchange of LPG Cylinders (POL type)

Before changing

a. Turn off all related gas appliances and valves.
b. Ensure good ventilation and no naked flames in the vicinity.
c. No hand tools should be used throughout the changing process.

Disconnect the used LPG cylinder

a. Close the cylinder valve completely by turning it clockwise.
b. Hold the regulator firmly with one hand and turn its handwheel clockwise with another hand to disconnect the regulator.
c. Check the regulator and its rubber ring, and ensure there is no crack or damage.

Connect the new LPG cylinder

a. Remove the seal plug of the LPG cylinder.
b. Check the cylinder valve and its inner thread, and ensure there is no obvious damage.
c. Hold the regulator firmly with one hand and turn its handwheel anticlockwise with another hand until tight interlock with the cylinder valve is secured.

Check after changing

a. Pull and turn the regulator lightly to check that the regulator and the cylinder valve are closely connected.
b. Open the cylinder valve by turning it anticlockwise. Apply soapy water at the joint and confirm that no bubbles appear.
c. Check for smell or hissing sound from the joint.
d. If everything is in order, operation of the gas appliances can be resumed.

Appendix 4

Notices at LPG Cylinder Storage Chambers

Safe Use of LPG

a. Before leaving the LPG cylinder storage chamber or when LPG is not in use, please turn off all the branch valves and the cylinder valves.
b. Always keep the LPG cylinder chamber doors unobstructed.
c. Close and lock the chamber when exchange of LPG cylinders is completed.
d. Do not store flammable substances in the vicinity of the LPG cylinders.
e. Be alert to deal with LPG leakage at any time. If in doubt, turn off the emergency valve and LPG cylinder valves. Keep the area well-ventilated. Find a safe location and call the gas supply company or the gas distributor immediately. Extinguish any naked flames but do not operate electrical switches.
f. RGSC 24-hour Emergency Telephone Numbers: XXXX XXXX (to be provided by authorised LPG distributor)
g. In case of emergency, call 999.

Appendix 5

Registered Gas Contractor Telephone No.:	Registered Gas Contractor Number and Company Seal

Laundry Customer Safety Check Record

Customer's A/C No.:	Customer's Name:	Customer's Telephone No.:

Installation Address:

		Normal	Improvement required	N/A
(A) Gas Supply System	1. LPG Cylinder (if applicable) _____kg _____nos _____kg _____nos			
	2. Regulator (if applicable) Manufacture Date_____ Model _____ (Shall be replaced in accordance with the manufacturer's guidance)	☐	☐	☐
	3. Flexible gas tubing Expiry Date_____ Model _____ (Shall be replaced in accordance with the manufacturer's guidance)	☐	☐	☐
	4. Gas tubing clip	☐	☐	☐
	5. Location of the LPG Cylinder(s) (if applicable)	☐	☐	☐
	6. Gas Soundness Test	☐	☐	☐
(B) Gas Dryer	Brand_____ Model _____ (Recommended to be installed in accordance with the manufacturer's guidance*)			
	1. Vent openings are not blocked.	☐	☐	☐
	2. Kept away from miscellaneous objects and combustibles. *Delete where not applicable	☐	☐	☐
	Suggestion:			
(C) Exhaust System	1. Exhaust to open space directly.	☐	☐	☐
	2. Exhaust pipes are made of galvanised sheet metal (except other materials recommended by the manufacturer).	☐	☐	☐
	3. Inner wall of exhaust pipes is clean, smooth and without blockage.	☐	☐	☐
	4. Ductwork inside air-conditioned area or close to combustible material / human access is suitably insulated.	☐	☐	☐
	5. Inspection doors are installed at the beginning and ending of air ductwork.	☐	☐	☐
	6. Screens, louvers, caps or wire mesh is not installed at the ductwork.	☐	☐	☐
	7. The flue terminal of the exhaust duct is not directly point to the air inlet or outlet of other utilities or appliances.	☐	☐	☐
	8. Individual ducts enter the bottom or side of the main exhaust duct at an angle not more than 45 degree in the direction of airflow (except other maximum allowable angle as specified by the manufacturer).	☐	☐	☐
	9. Exhaust/booster fans is installed closed to the outlet of the exhaust ductwork (only applicable to mechanical exhaust system).	☐	☐	☐
	Interlock device is installed and running normally (only applicable to mechanical exhaust system or exhaust ductwork equipped with fire damper(s)).	☐	☐	☐
	Suggestion: The owner/operator (shall / is not required*) to arrange a specialist ventilation subcontractor to conduct rectification work as soon as possible and arrange RGC to conduct follow-up safety inspections afterwards. *Delete where not applicable			
(D) Other Suggestion	1. The regulator should be turned off after use every time. If the appliance is not use for a prolonged time, the regulator should be disconnected and the LPG cylinder should be removed (if applicable). 2. LPG cylinders should be kept in an upright position with good ventilation, far away from heat and fire source (if applicable). 3. Instruction notice for replacement of LPG cylinders and valve on/off warning labels should be displayed at prominent places (if applicable). 4. The shop owner should keep this record for two years and submit a copy to the LPG distributor. 5. The shop owner should purchase LPG cylinders from distributors approved by the registered gas supply companies (if applicable). 6. The shop should be equipped with appropriate firefighting facilities.			

Overall system

Safe ☐ Unsafe ☐ Improvement required ☐

I understand the content of the above recommendations and certify that the safety check has been completed.

Customer's signature _____

RGI signature _____

RGI No. _____

Class _____

Date of check _____