Piped Gas Installation and Legislations

7 Oct 2016
1120 – 1205hr



Smart Energy, Sustainable Future

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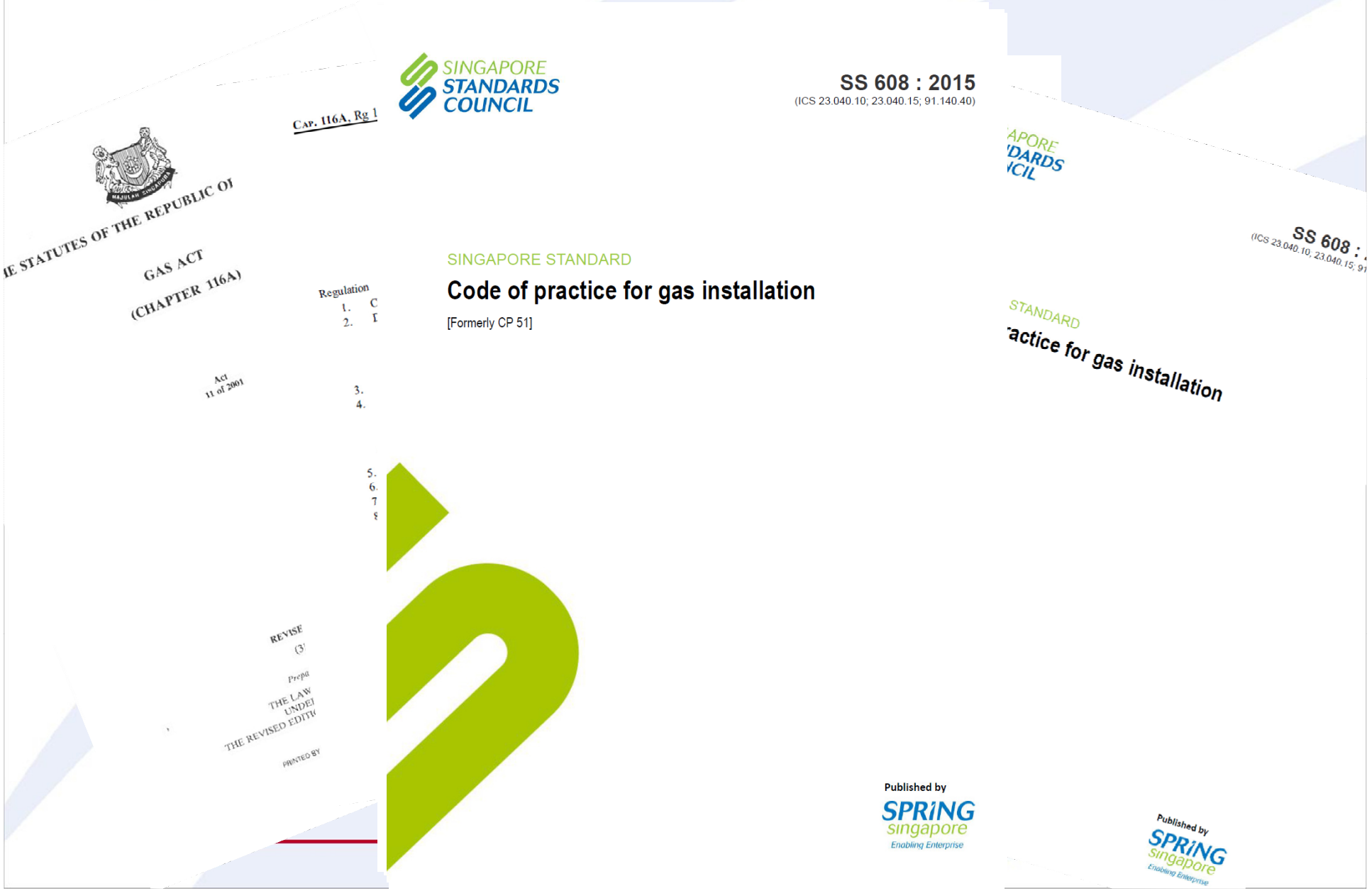
Topics

1. Legislations on gas installation
2. Role and responsibilities of PE and LGSW on gas installation
3. Compliance with Singapore Standard SS 608 Code of Practice for Gas Installation

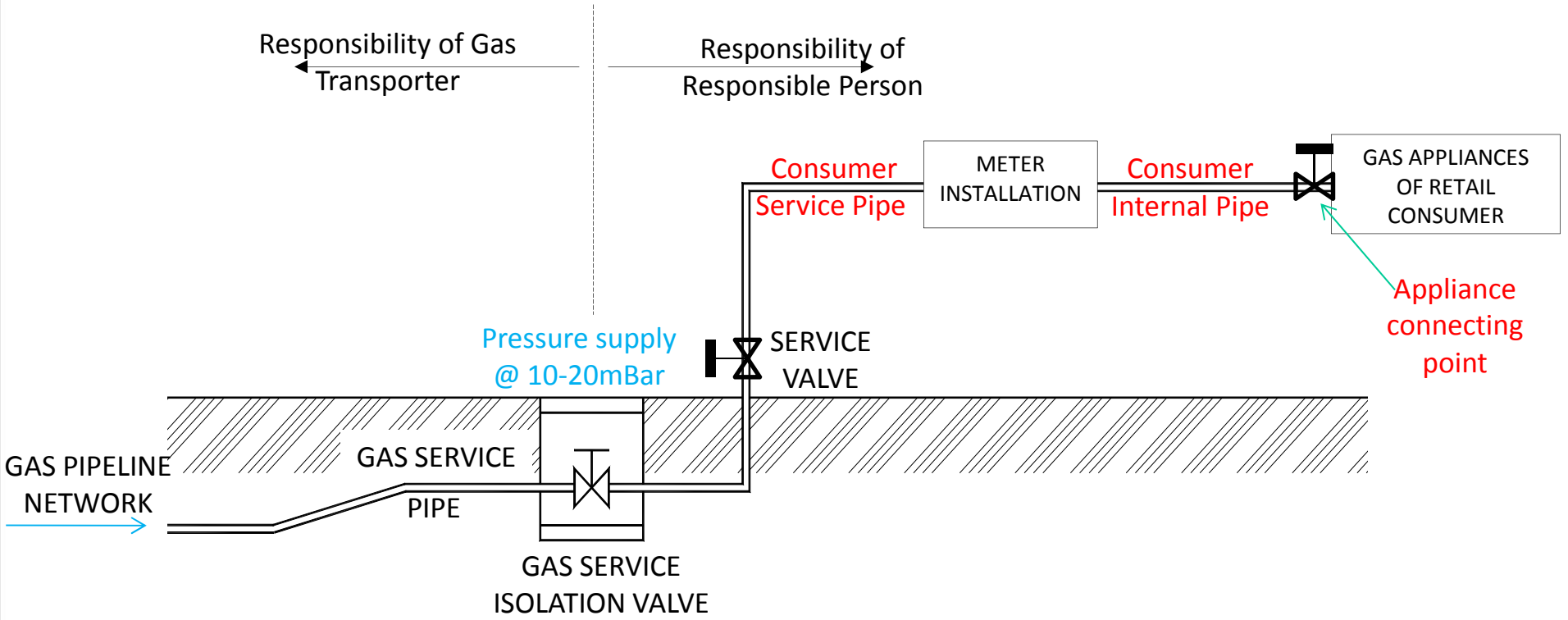
Legislations on

1. new gas supply,
2. existing gas installation
   a. A&A work and
   b. regular inspection

Overview of Gas Legislations



Gas installation



"gas installation" means a discrete grouping of gas fittings linking a gas service pipe to a gas appliance;

Gas Act

New Installation

Gas Supply and connection

Legislation requirements

New Gas Supply

1. Apply and seek approval for gas supply and connection
2. Application to the gas transporter and gas retailer shall accompanied by plan and specification
3. Construction of gas installation shall comply with SS608
4. Installation shall be protected against damage and corrosion
5. Appropriate test shall be conducted on the gas installation
6. Issue a statement of admittance or statement of turn-on
7. Safe use of gas installation

Regulation 3, 5, 9, 15 and 17

Existing installation

Replacement, addition & alteration

Inspection

Legislation requirements

Replacement and Addition & Alteration work

1. Made an application to the gas transporter or retailer for the approval

2. The gas transporter or retailer has approved the application

3. No person shall carry out any replacement of, or addition or alteration to, the gas installation or gas fitting

Regulation 14

Gas (Supply)(Amendment) 2015

No. S 23

These Regulations are the Gas (Supply) (Amendment) Regulations 2015 and come into operation on 1 Feb 2015.

Amendment of regulation 14

2. Regulation 14 of the Gas (Supply) Regulations (Rg 1) is amended —

(*a*) by deleting the words "any replacement of, or addition or alteration to," in paragraph (3) and substituting the words "any addition or alteration to"; and

(*b*) by deleting the word "replacement," in paragraph (3)(*a*).

Legislation requirements

Replacement and A&A work

(3) Where the consumer is not a direct access customer, no person shall carry out any addition or alteration to the consumer's internal pipe unless —

(*a*) he has made an application to the relevant gas retailer for the approval of such addition or alteration; and

[S 23/2015 wef 01/02/2015]

(*b*) the relevant gas retailer has approved the application.

[S 23/2015 wef 01/02/2015]

Regulation 14

Legislation requirements

Replacement and A&A work – Installation and testing

1. Construction of gas installation shall comply with SS608
2. Installation shall be protected against damage and corrosion
3. Work on premises not to affect existing gas installation
4. Work on pipe containing gas
5. Re-admitting gas on completion of work

Regulation 9, 15,16, 18 and 19

Legislation requirements

Inspection and Maintenance



Any gas installation shall –

(a) be in a safe and proper operating condition;

(b) function at all times in a reliable manner; and

(c) be reasonably protected against damage.

Regulation 10, 11, 12 and 13

Legislation requirements

Inspection and Maintenance



The responsible person shall for any premises to engage a licensed gas service worker or a professional engineer to certify the fitness of any gas installation or gas fitting.

Regulation 10, 11, 12 and 13

Inspection and Maintenance

CERTIFICATE OF FITNESS

Date: 11/08/2015

Our Ref: CER/15/769027/3004637062/1 (Please quote our letter Ref)

To: SP PowerGrid Ltd
24A Senoko Avenue
Singapore 758314

Email: spggasils@singaporepower.com.sg
Fax: 65955138

Name & Address of Premises Inspected / Tested :

SAFRA NATION SERVICE ASSOCIATION
60 YISHUN AVE 4
SINGAPORE 769027
Email:
(Optional: Please furnish your email address here if you would like us to acknowledge receipt of this Certificate of Fitness)

Specified Gas Installation / Gas fitting (Please tick as appropriate):

- [X] From GSIV to meter installation
- [ ] From meter installation to appliance(s)
- [ ] From GSIV to appliance(s) - If the Premise Owner is also Retail Consumer at the above Premise

I have inspected /conducted a soundness test on * the above specified gas installation / gas fitting on 11/08/2015 (date).

I hereby certify that the specified gas installation / gas fitting is fit for purpose.

Remarks (if any):
Owner advised to maintain paintwork of gas pipe.

ER / PE (MECH) / 11/08/2015
Signature / Date
Name of PE / ~~LGSW~~ *
PE / ~~LGSW~~ * Registration No.
PE / ~~LGSW~~ * Stamp

PROFESSIONAL ENGINEER SINGAPORE

* Please delete as appropriate

COF v4.1
GILS-60 (0713)

Inspection and Maintenance

Inspection Summary Report (Consumer's Service Pipe)

Ref No _____

Name of Premises:		
Address:		
Premises Type*:	Residential: Landed Property / Condominium	
	Non–Residential: Single Unit / Multi-tenanted Unit	
Name / Co. Of Responsible Person*:		
Date of Inspection:		
Date of next propose inspection:		
Type of leak test:	Soundness Test / Gas Detector Test *	
Soundness Testing Pres.: mm W.G. / kPa /psi		Duration(Min):
Gas detector used (Brand & Model No):		Calibrated date:

** Delete where appropriate*

Inspection Checklist (GSIV to Meter installation)

Items		Checked*	Remarks
	Inspection (Annually)		
1.	Is GSIV installed	Yes/No	
2.	Is service valve or riser valve installed	Yes/No	
3.	Is gas meter control valve installed	Yes/No	
4.	Any sunken ground along pipe route	Yes/No	
5.	Any pipe corroded	Yes/No	
6.	Any exposed PE pipe	Yes/No	
7.	Is pipe clearly identified	Yes/No	
8.	Any unauthorised installation / connection [If yes, immediately inform gas transporter and gas retailer]	Yes/No	
9.	Any deviation from SS 608 involving safety	Yes/No	
10.	Is the gas installation gas tight	Yes/No	
11.	Any other source of fuel (beside Town gas/ Natural gas)	Yes/No	
12.	Any pipe passing through protected areas	Yes/No	
	a. Is steel pipes with welded joints	Yes/No	

Inspection Summary Report (Consumer's Service Pipe)

Items		Checked*	Remarks
	b. Is galvanised iron and copper pipes with no joint	Yes/No	
	c. Is pipes installed within Masonry duct or Duct made of approved fire rated material with at least one end vented to a naturally ventilated spare	Yes/No	
13.	Is the gas supply pressure within supplied range	Yes/No	
	Soundness Test (Once in 3 Years)		
14.	Is pipe embedded / encased / concealed [If yes, clause 9.3(b) of GSC shall comply]	Yes/No	
	a. Is GSIV tested for gas tightness	Yes/No	
	b. Is service valve tested for gas tightness	Yes/No	
	c. Is pipe tested for tightness	Yes/No	

** Delete where appropriate*

Note: 1. Slowly turn on the valve to energize the gas supply.
2. The checklist given above is meant only as a guide to assist in the inspection and certification of the gas installation and appliances. It is by no means an exhaustive list.

If in the opinion of the inspector, the condition of the gas installation or gas fitting poses an immediate danger, he shall immediately inform the gas transporter to isolate or disconnect the supply of gas to that installation pending correction of the infractions.

Recommendation:_____

_____

_____

_____

_____

Certified by :_____
Name(LGSW/ PE)

Acknowledged by :_____
Name (Responsible person)

LGSW Lic/ PE No :_____

Signature & Date:_____

Signature & Date:_____

Inspection and Maintenance

SS 608 : 2015

10.2 Report

The competent person shall keep a copy of the report. The original copy of the report shall be given to the consumer or responsible person.

- The competent person shall prepare and keep a copy of the report.
- The original copy of the report shall be given to the consumer or responsible person.

SS608 Clause 10

Role and responsibilities of PE and LGSW



"**gas service work**" means any work carried out on any gas installation or gas appliance, in whole or in part, including any design, construction, installation, commissioning, erection, testing, repair, addition, alteration or maintenance work;

Gas Act

Gas Service Worker



"designated representative" means a professional engineer or a licensed gas service worker appointed by the developer or a responsible person for the premises;

Gas Act

Gas Service Worker



Competent person means a person who is trained, qualified, experienced and who is authorised or licensed by the relevant authorities to carry out gas service work.

SS608 Cl3.9

Gas Service Worker

No person shall —

(*a*)carry out or offer or undertake to carry out any gas service work; or

(*b*)advertise or otherwise hold himself out or conduct himself in any way or by any means as a gas service worker or as a person who carries out or who is qualified by any written law to carry out gas service work,

unless he is registered as a professional engineer and has a valid practising certificate under the Professional Engineers Act (Cap. 253), or holds a valid gas service worker licence in respect of the specific class of work being carried out or to be carried out.

Gas Act Section 11

Gas Service Worker



Any person who employs or instructs any person who is not a licensed gas service worker to carry out or cause to be carried out any gas service work shall be guilty of an offence.

Gas Act Section 13

Gas Service Worker

2 APPLICATION, CONNECTION AND TURN-ON OF GAS SUPPLY

2.1 Application for Gas Supply

2.1.1 An application from a retail consumer for a supply of gas or an increase to an existing supply thereof shall be made to a gas retailer in accordance with regulation 3 of the Regulations and the procedures stipulated in the relevant gas retailer's Handbook on Gas Supply.

2.1.2 Submission of plans for gas service works

A licensed gas service worker may submit plans for works on all retail consumers' internal pipes and meters.

Where any of the abovementioned works is meant for operating pressures above 30 mbars or involving specialised gas equipment not for cooking purposes, plans for the gas service works shall be submitted by a professional engineer.

2.1.3 Gas retailer shall approve plans submitted by an applicant with respect to Clause 2.1.1.

LGSW may submit plan;

- all consumers' internal pipes
- below 30 mbar

Role and responsibilities

Role

1. Design
2. Seek Approval
3. Install
4. Test
5. Commission
6. Handover the doc and gas installation

Responsibilities

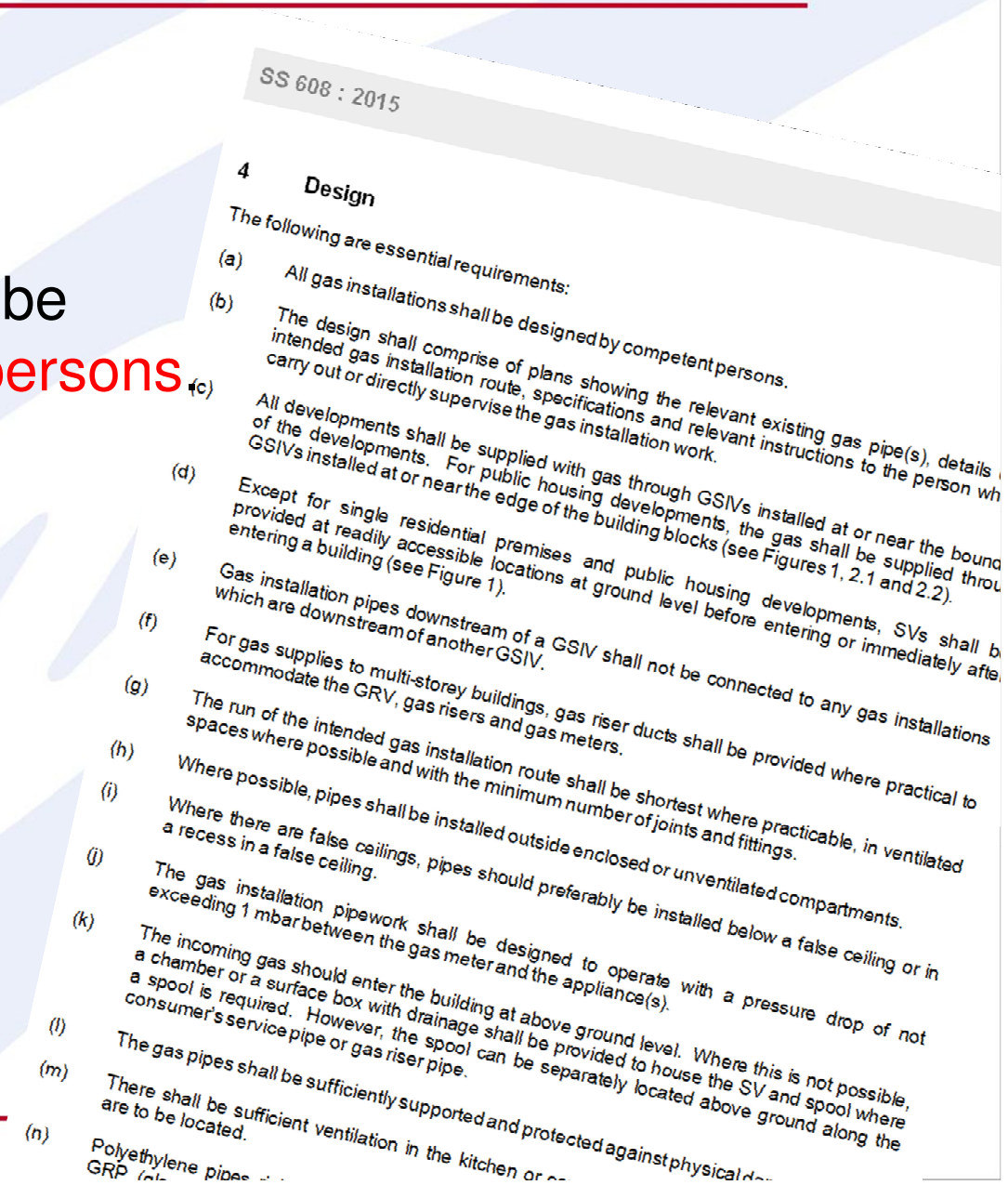
Gas Safety

a. No gas leak
b. Safe for use

Gas Service Worker

Design

All gas installations shall be designed by competent persons.



SS 608 : 2015

4 Design

The following are essential requirements:

(a) All gas installations shall be designed by competent persons.

(b) The design shall comprise of plans showing the relevant existing gas pipe(s), details intended gas installation route, specifications and relevant instructions to the person wh carry out or directly supervise the gas installation work.

(c) All developments shall be supplied with gas through GSIVs installed at or near the bound of the developments. For public housing developments, the gas shall be supplied throu GSIVs installed at or near the edge of the building blocks (see Figures 1, 2.1 and 2.2).

(d) Except for single residential premises and public housing developments, SVs shall b provided at readily accessible locations at ground level before entering or immediately afte entering a building (see Figure 1).

(e) Gas installation pipes downstream of a GSIV shall not be connected to any gas installations which are downstream of another GSIV.

(f) For gas supplies to multi-storey buildings, gas riser ducts shall be provided where practical to accommodate the GRV, gas risers and gas meters.

(g) The run of the intended gas installation route shall be shortest where practicable, in ventilated spaces where possible and with the minimum number of joints and fittings.

(h) Where possible, pipes shall be installed outside enclosed or unventilated compartments.

(i) Where there are false ceilings, pipes should preferably be installed below a false ceiling or in a recess in a false ceiling.

(j) The gas installation pipework shall be designed to operate with a pressure drop of not exceeding 1 mbar between the gas meter and the appliance(s).

(k) The incoming gas should enter the building at above ground level. Where this is not possible, a chamber or a surface box with drainage shall be provided to house the SV and spool where a spool is required. However, the spool can be separately located above ground along the consumer's service pipe or gas riser pipe.

(l) The gas pipes shall be sufficiently supported and protected against physical

(m) There shall be sufficient ventilation in the kitchen or

(n) are to be located.

Polyethylene pipes

GRP

Gas Service Worker

SS 608 : 2015

7 Installation

The following are essential requirements:

(a) All gas service works shall be carried out, or directly supervised, by competent persons.

(b) The gas installation shall be constructed according to the design, material specifications and instructions as specified by the relevant competent person who provided the design.

(c) Should deviations be required, the competent person carrying out the construction shall consult the competent person who carried out the design.

(d) Any deviations shall be documented and endorsed in as-built drawings.

(e) Installation pipes shall be kept clean and free of all foreign materials.

(f) All gas pipe openings shall be covered when no person is attending to the installation work.

(g) The installation pipes shall be adequately supported at all times.

(h) Gas pipes shall be prevented from physical contact with other services

(i) The competent person who is supervising or directly carrying out the installation work shall be responsible to ensure that the proper materials are used in the construction.

(j) All gas pipes except those within dwelling units shall be painted canary yellow to colour code BS 381C colour number 309 or identified by yellow bands in conspicuous locations. The word "GAS" together with an arrow signage showing the direction of the flow of gas shall be indicated on the gas pipe at intervals of not more than 3 m.

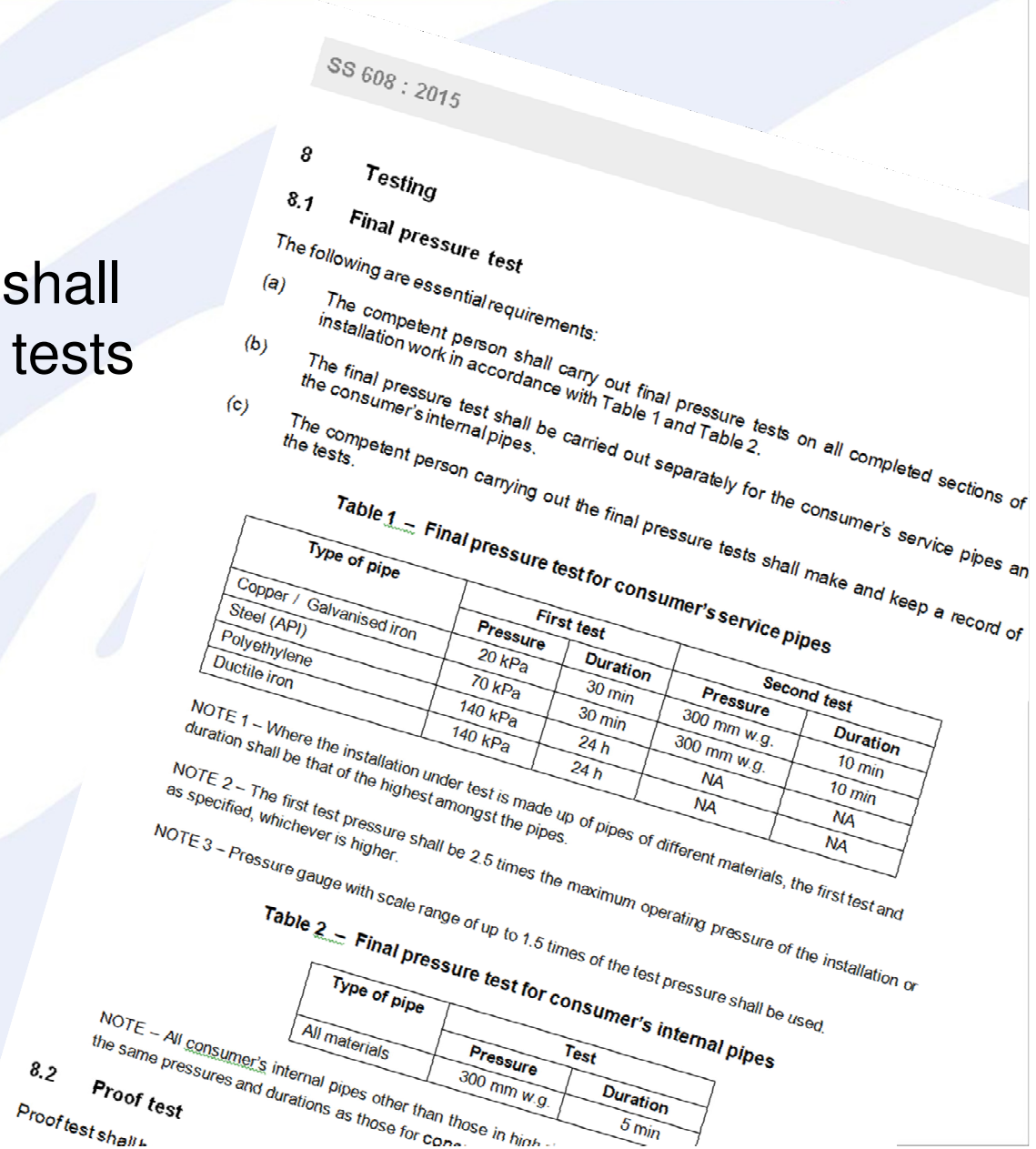
Installation

All gas service works shall be carried out, or directly supervised, by competent persons.

Gas Service Worker

Testing

The competent person shall carry out final pressure tests on all completed gas installation work



SS 608 : 2015

8 Testing

8.1 Final pressure test

The following are essential requirements:

(a) The competent person shall carry out final pressure tests on all completed sections of installation work in accordance with Table 1 and Table 2.

(b) The final pressure test shall be carried out separately for the consumer's service pipes an the consumer's internal pipes.

(c) The competent person carrying out the final pressure tests shall make and keep a record of the tests.

Table 1 – Final pressure test for consumer's service pipes

Type of pipe	First test		Second test	
	Pressure	Duration	Pressure	Duration
Copper / Galvanised iron	20 kPa	30 min	300 mm w.g.	10 min
Steel (API)	70 kPa	30 min	300 mm w.g.	10 min
Polyethylene	140 kPa	24 h	NA	NA
Ductile iron	140 kPa	24 h	NA	NA

NOTE 1 – Where the installation under test is made up of pipes of different materials, the first test and duration shall be that of the highest amongst the pipes.

NOTE 2 – The first test pressure shall be 2.5 times the maximum operating pressure of the installation or as specified, whichever is higher.

NOTE 3 – Pressure gauge with scale range of up to 1.5 times of the test pressure shall be used.

Table 2 – Final pressure test for consumer's internal pipes

Type of pipe	Test	
	Pressure	Duration
All materials	300 mm w.g.	5 min

NOTE – All consumer's internal pipes other than those in high the same pressures and durations as those for cop

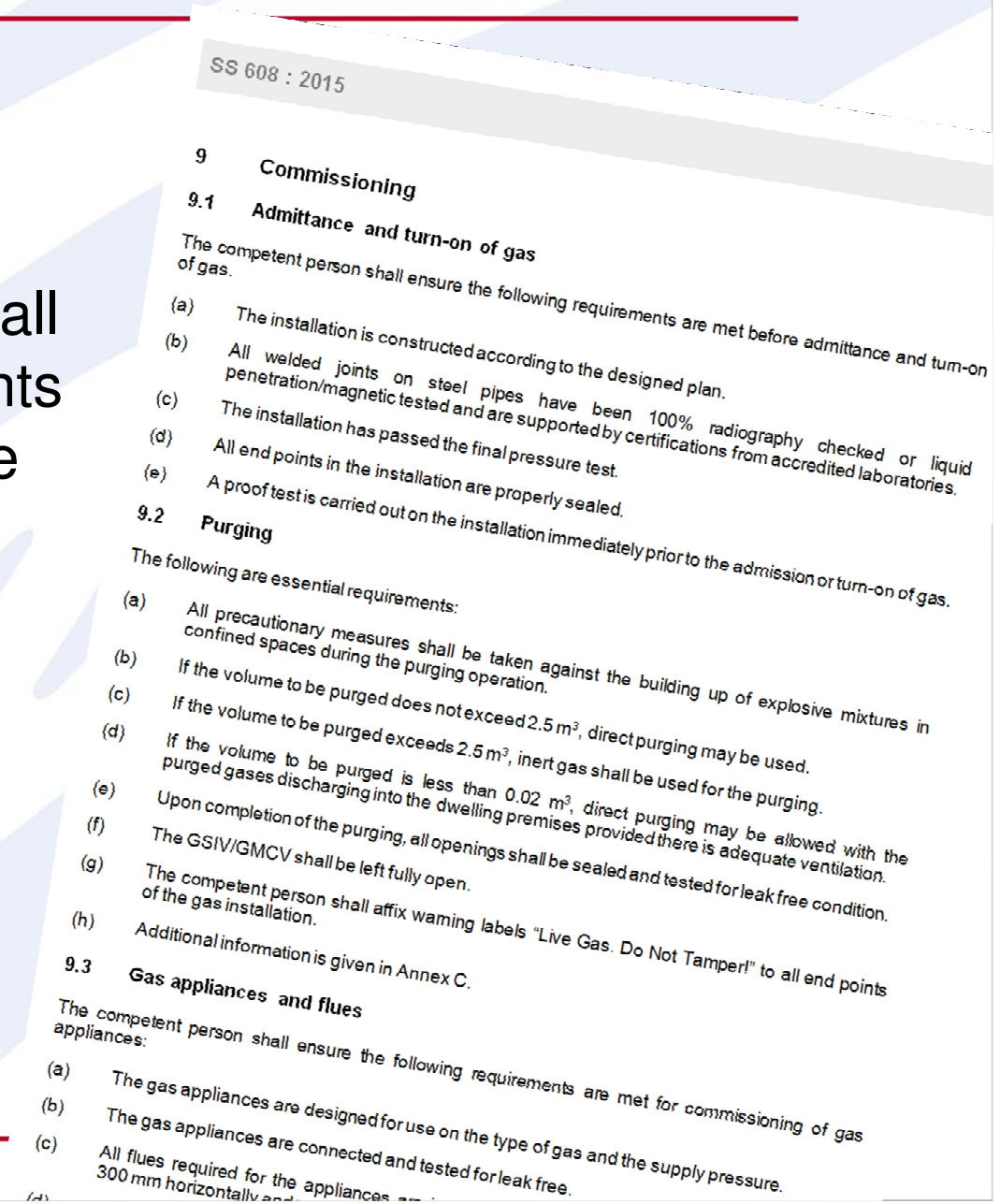
8.2 Proof test

Proof test shall

Gas Service Worker

Commissioning

The competent person shall ensure that all requirements are met before admittance and turn-on of gas.



SS 608 : 2015

9 Commissioning

9.1 Admittance and turn-on of gas

The competent person shall ensure the following requirements are met before admittance and turn-on of gas.

(a) The installation is constructed according to the designed plan.

(b) All welded joints on steel pipes have been 100% radiography checked or liquid penetration/magnetic tested and are supported by certifications from accredited laboratories.

(c) The installation has passed the final pressure test.

(d) All end points in the installation are properly sealed.

(e) A proof test is carried out on the installation immediately prior to the admission or turn-on of gas.

9.2 Purging

The following are essential requirements:

(a) All precautionary measures shall be taken against the building up of explosive mixtures in confined spaces during the purging operation.

(b) If the volume to be purged does not exceed 2.5 m^3, direct purging may be used.

(c) If the volume to be purged exceeds 2.5 m^3, inert gas shall be used for the purging.

(d) If the volume to be purged is less than 0.02 m^3, direct purging may be allowed with the purged gases discharging into the dwelling premises provided there is adequate ventilation.

(e) Upon completion of the purging, all openings shall be sealed and tested for leak free condition.

(f) The GSIV/GMCV shall be left fully open.

(g) The competent person shall affix warning labels "Live Gas. Do Not Tamper!" to all end points of the gas installation.

(h) Additional information is given in Annex C.

9.3 Gas appliances and flues

The competent person shall ensure the following requirements are met for commissioning of gas appliances:

(a) The gas appliances are designed for use on the type of gas and the supply pressure.

(b) The gas appliances are connected and tested for leak free.

(c) All flues required for the appliances ... 300 mm horizontally ...

Gas Service Worker

SS 608 : 2015

10 Inspection and maintenance

10.1 Checking for proper operation

The inspection and maintenance work shall be carried out regularly by a competent person. The competent person who carries out the maintenance work shall carry out the following:

(a) test the gas installation for gas tightness;

(b) check to ensure the identification markings on gas pipes are intact;

(c) check to ensure no unauthorised work has been carried out;

(d) check to ensure all valves are operating and functioning satisfactorily;

(e) test to ensure the gas pressure is within the supplied range;

(f) check to ensure all interlocking systems are functioning correctly;

(g) check to ensure all by-pass valves are in the closed position and locked;

(h) test the operation of the gas appliances and ensure that they are working safely and satisfactorily; and

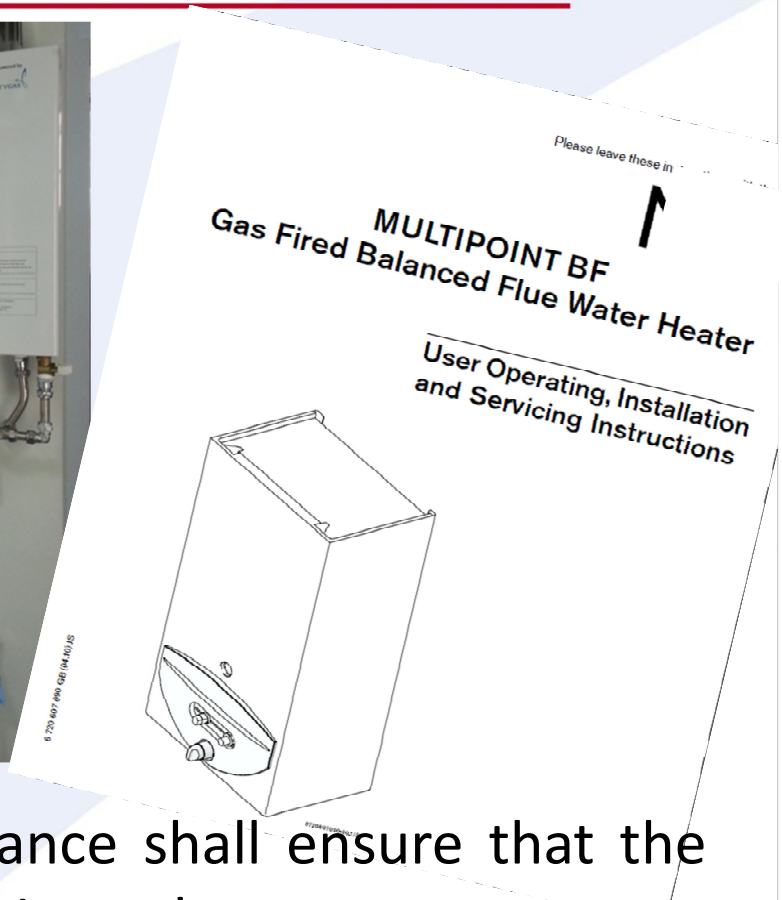
(i) prepare a report certifying that installation and appliances have been checked and that it is safe to continue using the installation and appliances.

The inspection and maintenance work shall be carried out regularly by a competent person.

Legislation requirements

Gas Appliance





Regulation 20

Any person who installs any gas appliance shall ensure that the appliance can be used without constituting a danger to any person or property, and for this purpose, he shall ensure that the gas appliance is installed in accordance with the specifications of the manufacturer.

Legislation requirements

Gas Appliance

Any person who carries out any installation, maintenance or repair of a gas appliance at a time when gas is being supplied to the premises in which the gas appliance is installed shall, immediately after completion of such installation, maintenance or repair, test the gas appliance and its connection to the gas installation.

1. To check

   (a) is safe to be used;

   (b) is gas-tight; and

   (c) compliance with Regulations.

2. Issue a written statement certifying the gas appliance is safe for use.

Regulation 21

Legislation requirements



Gas Appliance

Statement of Safe for Use

Date: _____

Our Ref: _____

Retailer Reference Number: _____

To: Gas consumer _____

Dear Sir

Commissioning of Gas Appliance

(Project Name) _____

(Address of Premises/Development) _____

We have tested the gas appliances (as attached or listed) to be gas tight and safe to use with *town gas / natural gas in accordance to Regulation 21 of Gas (Supply) Regulations.

Commission date: _____

Attachment: _____
(Commissioning report, list of gas appliances, etc, where applicable)

We have also demonstrated and advised the *client / users on the operation and maintenance of the listed gas appliances.

This is for your information and record.

Yours faithfully

Acknowledged by,

_____ _____

Signature and Stamp of *PE / LGSW / Date

Signature of Owner Representative

cc : 1) Gas Retailer
2) PE / LGSW
3) Consultant (if any)

*: delete where not applicable

Gas Appliance

SS 608 : 2015

9.3 Gas appliances and flues

The competent person shall ensure the following requirements are met for commissioning of gas appliances:

(a) The gas appliances are designed for use on the type of gas and the supply pressure.

(b) The gas appliances are connected and tested for leak free.

(c) All flues required for the appliances are in place and the flue terminals are located at least 300 mm horizontally and vertically away from bedroom windows and openings.

(d) All the appliances are tested and operating satisfactorily to manufacturers' instructions.

(e) The consumer or responsible person has been shown the proper and safe way to use the appliances (see Annex D)

Gas appliances and flues

Designed, installed, tested and operating satisfactorily to manufacturers' instructions

Gas installation compliance with SS 608

Compliance with standards

Inherent Hazards of Town Gas & Natural Gas

Toxicity

a) Town gas contains 2-5 % carbon monoxide, CO
b) Incomplete combustion produces CO
c) Inhaling carbon monoxide causes CO poisoning

Fire

a) Town gas and natural gas are flammable gases
b) The gases will burn when lit by naked light or spark

Explosion

a) Town gas and natural gas will form explosive mixtures with air
b) Explosive mixture of town gas contains 3-55 % of gas in air
c) Explosive mixture of natural gas contains 5-15 % of gas in air
d) The presence of naked light or spark in an explosive mixture will result in a spontaneous explosion

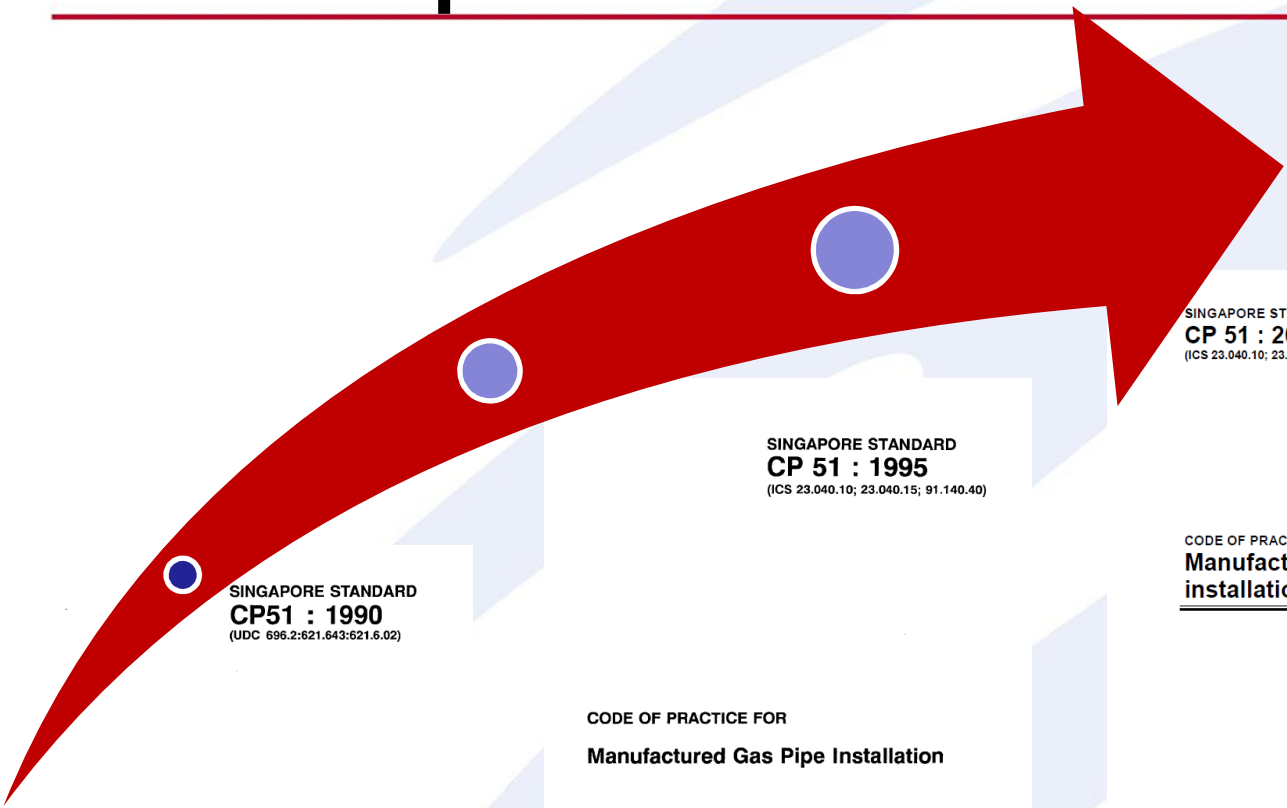
Compliance with standards

Essential Requirements to Counter Inherent Hazards

SS 608 provides the essential requirements to avoid the consequences of the inherent hazards of the gases

1. Essential Requirements for Design
2. Essential Requirements for Pipework
3. Essential Requirements for installation
4. Essential Requirements for Materials
5. Essential Requirements for Testing
6. Essential Requirements for Commissioning
7. Essential Requirements for Inspection and Maintenance

Compliance with standards



SINGAPORE STANDARD
CP51 : 1990
(UDC 696.2:621.643:621.6.02)

CODE OF PRACTICE FOR
Manufactured Gas Pipe Installation
(Incorporating Amendment No. 1, June 1991)

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Singapore Institute of Standards and Industrial Research
1 Science Park Drive, Singapore 0511
Cable: SISIR SINGAPORE
Telex: RS 28499 SISIR
ISBN 9971-67-389-4

SINGAPORE STANDARD
CP 51 : 1995
(ICS 23.040.10; 23.040.15; 91.140.40)

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1 Science Park Drive
Singapore 118221
ISBN 9971-67-525-0

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CP 51 : 2004
(ICS 23.040.10; 23.040.15; 91.140.40)

CODE OF PRACTICE FOR
Manufactured gas pipe installation

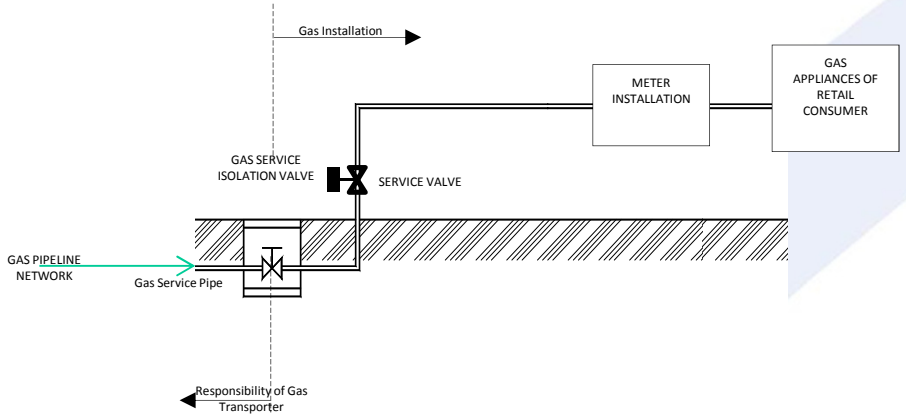
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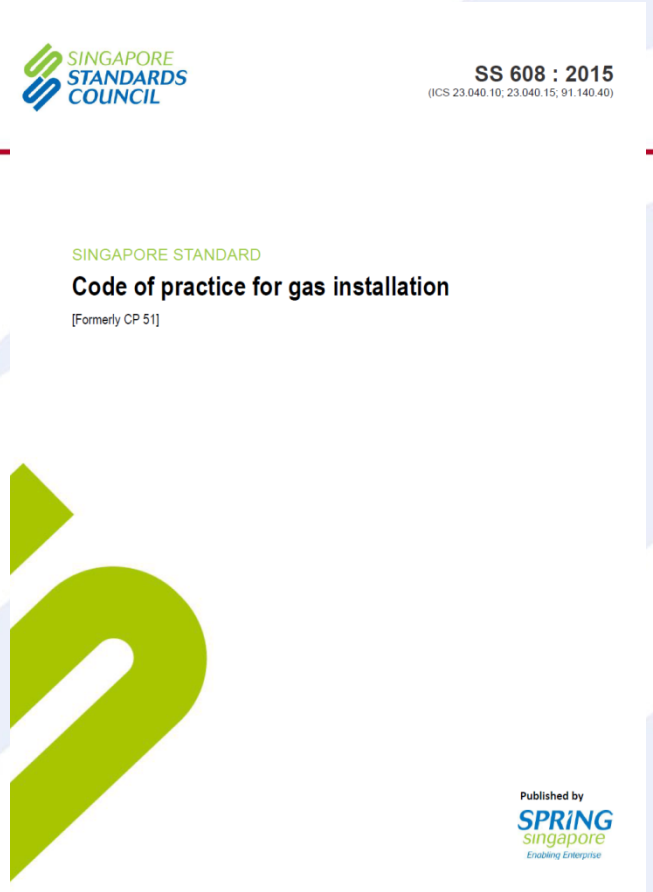
Compliance with standards

Scope of SS 608

1. gas service work downstream of the GSIV
2. essential requirements in safe and good practices
3. pressure up to 50 kPa
4. new and existing gas installations
5. include gas appliance







Compliance with standards

A gas service worker shall ensure that any gas service work which he carries out is in compliance with the Singapore Standard SS608:2015.

Regulation 9

Compliance with standards

Gas (Supply) (Amendment) Regulations 2016

No. S288/2016

These Regulations are the Gas (Supply) (Amendment) Regulations 2016 and come into operation on 1 July 2016.

Amendment of regulation 9

3. Regulation 9 of the principal Regulations is amended by deleting the words "Singapore Standard CP 51, or with such other standards or codes of practice as the Authority may require" and substituting the words "Singapore Standard SS 608:2015".

Compliance with standards

GAS INSTALLATION, GAS FITTING AND GAS APPLIANCE

Compliance with standards

9. A gas service worker shall ensure that any gas service work which he carries out is in compliance with the Singapore Standard SS 608:2015.

[S 288/2016 wef 01/07/2016]

ENERGY MARKET AUTHORITY
Smart Energy, Sustainable Future

Circular No: RD/G01/2016
Date of Issue : 16 Feb 2016

To: All Licensed Gas Service Workers

Dear Sirs

COMPLIANCE WITH SINGAPORE STANDARD SS608 : 2015 CODE OF PRACTICE FOR GAS INSTALLATION

Currently, a licensed gas service worker shall ensure that any gas service work he carries out is in compliance with the Singapore Standard CP51:2004 Code of Practice for Manufactured Gas Pipe Installation.

2 SPRING Singapore has on 3 Dec 2015 published the Singapore Standard SS608:2015 Code of Practice for Gas Installation, which supercedes CP51:2004.

3 To minimize disruption to existing projects and for the industry to adapt to the requirements of SS608:2015, a transition period will be given before SS608:2015 is made mandatory on 1 Jul 2016. During the transition period, you may comply with either CP51:2004 or SS608:2015 for your projects. With effect from 1 Jul 2016, all new gas installations, and replacement of or addition and alteration to existing gas installations shall comply with SS608:2015.

4 Licensed gas service workers are advised to familiarise themselves with the Singapore Standard SS608:2015 which may be purchased from Toppan Leefung Pte Ltd at 1 Kim Seng Promenade, #18-01/06, Great World City, East Tower, Singapore 237994 or online at http://www.singaporestandardseshop.sg.

5 For further clarification, please contact our officers at 63767582 or 63767592.

Yours faithfully

YEO YEK SENG
DEPUTY CHIEF EXECUTIVE
REGULATION DIVISION

Transition period – effective date

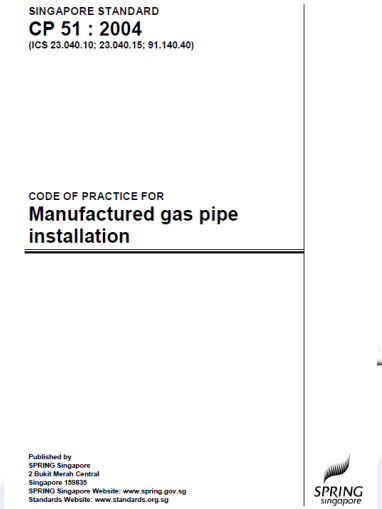
3 Dec 2015

20 Apr 2016

1 July 2016
Effective date

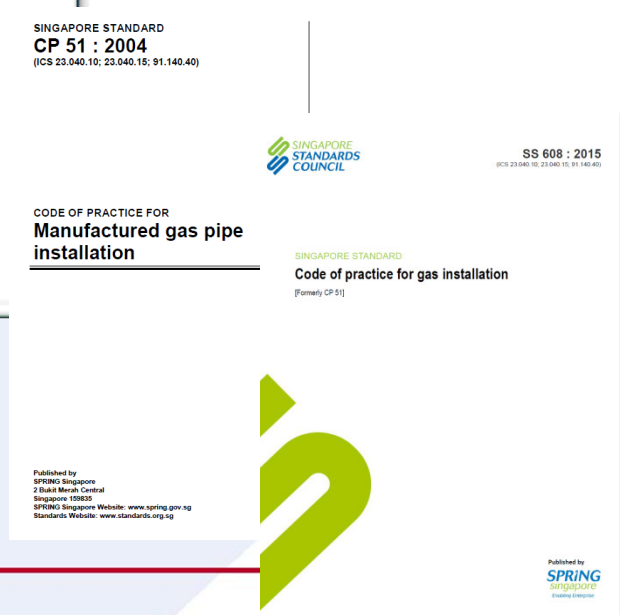
Project 1

CP51



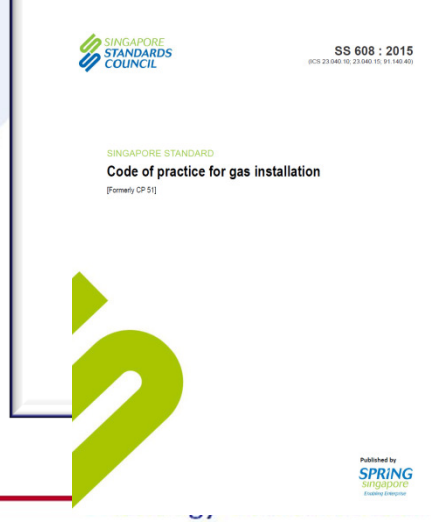
Project 2

CP51 or SS 608



Project 3

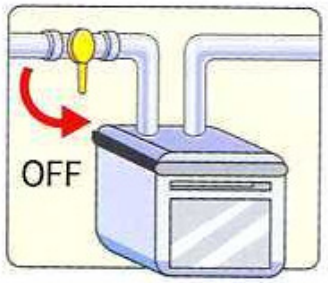
SS 608



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Safety Tips

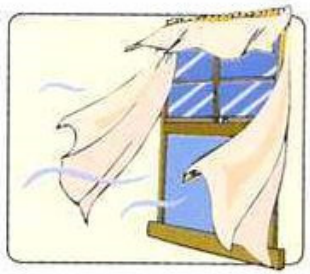
In case of gas leak

1. 

Turn OFF the gas meter valve

2. Do not ON or OFF any electrical appliances 

3. Never try to detect leak with a flame 

4. 
Open all windows and doors
Evacuate from the premises

5. Call 24-hr hotline at **1800-752 1800** 

Energy Market A