



Government of Western Australia
Department of Mines, Industry Regulation and Safety

GUIDE

Dangerous goods safety matters – self check guide for petrol stations



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Introduction

This self-check guide will assist in the safe operation of supervised self-service petrol stations. It does not apply to unsupervised self-service petrol stations or underground liquefied petroleum gas (LP gas) tanks. The guide identifies key elements that an individual without extensive knowledge or training can check. Attending to these key elements can significantly minimise the risk from dangerous goods at petrol stations.

The guide does not cover design matters, such as the kinds of safety valves for use on an LP Gas tank. Although design requirements are still applicable to the site and compliance is necessary, these issues should have been addressed as a part of the dangerous goods licensing process. Service station operators are generally not expected to have the expertise necessary to assess design criteria.

Not all regulatory requirements for a petrol station are addressed. The definitive statutory requirements are contained in the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (the Storage and Handling Regulations) and supporting codes of practice.

Why is self-checking important?

Over the years, petrol stations have evolved from having a primary business focus on selling fuel, to a business focus that includes selling coffee, food, ice, firewood, LP Gas exchange cylinders and other goods. With this increasing shop-front activity, it is easy to forget the inherent risks and dangers that exist at these dangerous goods sites.

Petrol stations are unique dangerous goods sites because the general public actively handles the dangerous goods, such as flammable liquids (petrol), liquefied petroleum gas (LP Gas) and combustible liquids (diesel), with little or no training. Refuelling a vehicle is now so commonplace in most people's lives that it is often assumed to be an entirely safe process. Although there are very few incidents at petrol stations, an accident could have serious consequences, including personal injury, property damage and even death. However, the potentially significant risk can be minimised by taking some simple steps to prevent incidents.

Petrol station operators must also ensure that employees do not become complacent about the dangers on their site. Employees must be well trained in emergency response procedures so they can react immediately and appropriately to incidents.

Using this guide

Under the provisions of the *Dangerous Goods Safety Act 2004*, the approved codes of practice that apply to petrol stations are Australian Standards AS 1940:2017 *The storage and handling of flammable and combustible liquids* and AS/NZS 1596:2014 *The storage and handling of LP gas*. Compliance with these codes is an accepted means of minimising the risk from dangerous goods. The checklist in this guide refers to the specific clauses of the relevant Australian Standard or Storage and Handling Regulations.

It is recommended that petrol stations are routinely assessed for compliance using this guide. Those using the guide do not require extensive training or qualifications, and the illustrations will help in understanding the more detailed information.

Notes:

1. AS 1940 - Australian Standard AS1940: 2017 *The storage and handling of flammable and combustible liquids*
2. AS/NZS 1596 - Australian Standard AS/NZS 1596:2014 *The storage and handling of LP Gas*
3. DGSH - *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*
4. *Flammable liquids include petroleum products. Combustible liquids include diesel*
5. *Public place - Any place, other than private property, that is open to the public, including a street or road*





General requirements

Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
Emergency provisions						
1				Emergency procedures are available for fire, spillage, accident, equipment failure and other potential abnormalities or emergencies	9.3.1(d) & 10.2.2	11.3.1(c) & 12.2.2
2				Employees are trained in the use of emergency equipment	7.6.2(q)	11.3.1(d)
3				Emergency plan is regularly reviewed and updated as required	10.2.2	12.2.2
4				Spill kit is complete and readily available (see Figure 1)	7.6.2(n) & 9.4	–
5				Telephone is located adjacent to the control console	7.3.6(c)	–
6				List of emergency telephone numbers, including the fire brigade, ambulance services and other emergency responders is prominently displayed near the control centre (console) telephone	7.3.6(c)	–
Main emergency stop						
7				Main emergency stop is available to shut off power to all dispensing units	7.2.4	10.5.14
8				Main emergency stop is readily accessible in an emergency (i.e. there is clear access to the emergency stop with no obstructions such as racks, shelves or spill kits)	7.2.4	10.5.14(f)
9				Main emergency stop activation device (e.g. switch or button) is clearly labelled 'EMERGENCY STOP'	7.2.4	Appendix D2.1
10				Main emergency stop is routinely tested to ensure it functions properly <i>Note: Every emergency stop point at LP Gas installations must be tested at least monthly</i>	9.3.1(c)	11.5.2(a)
Lighting						
11				Areas around the dispensers and payment unit are sufficiently lit to provide a safe working environment whenever the unit is available for service <i>Note: A user should be able to read the signs without strain. A minimum value of 50 lux is required for LP Gas filling and is recommended for flammable liquid filling)</i>	3.6	10.2.2

Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
Fire extinguishers (see Figure 2)						
12				Minimum of two powder-type fire extinguishers provided at service station	11.9.1	13.6 & 13.7.5
13				Minimum rating of at least 2A 60B(E) per extinguisher	11.4.2(a)	13.7.5
14				Extinguishers are located near dispensers or other item being protected	11.3.3	13.3.4
15				Extinguishers are accessible without undue danger in an emergency	11.3.3	13.3.4
16				Fire extinguishers are routinely serviced at least every 6 months	11.3.10	13.7.5
17				Each extinguisher location is marked by a 'FIRE EXTINGUISHER' sign mounted at least 2 m above ground	11.4.1	-
Documentation and records						
18				Manifest is available and maintained	DGSH ³ r. 78	-
19				Site plan is available and maintained	DGSH ³ r. 78	-
20				Risk assessment is available and maintained	DGSH ³ r. 48	-
21				Safety data sheets (SDSs) are readily available and maintained	DGSH ³ r. 79	-
22				Inventory records are maintained and reconciled for flammable and combustible liquids received, stored and dispensed	7.6.1	-
23				Whenever discrepancies in the records indicate possible leakage, the dangerous goods installation is checked and any leaks rectified	7.6.1	-
24				Records are maintained for operational training and retraining in use of the LP Gas system including, maintenance, inspection and managing abnormal incidents and near misses	-	11.4.3





Dispenser and underground tank requirements

Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
Dispensers (see Figure 3)						
25				Emergency stop on each dispenser is regularly tested (e.g. monthly) for compliant operation	9.3.1(c) & 9.3.3(c)	–
26				Petrol fuel dispenser units are located at least 4 m from the property boundary	7.3.2	–
27				Impact protection is installed (e.g. bollards) or dispenser is located so potential damage (e.g. from vehicles) is minimised	7.3.2	–
28				Hoses are free of cracks, fractures, leakage, or movement between hose and fittings	6.2.4	–
29				Prominent 'STOP ENGINE – NO SMOKING' sign is displayed on or near the dispenser <i>Note: The standard 'no smoking' warning symbol may be used in lieu of the words 'no smoking'</i>	7.2.5	–
30				Lettering on the 'STOP ENGINE – NO SMOKING' sign is at least 50 mm high	7.2.5	–
31				There is no latching device on the nozzle of self-service dispensers or where there is a preset facility (i.e. a dispenser where a value or quantity of fuel may be pre-selected)	7.4.1(d) & 7.4.2	–
Underground flammable liquid and combustible liquid tanks ⁴ (see Figure 4)						
32				Vent terminals for underground flammable liquid (e.g. petroleum) tanks have a flame arrester fitted <i>Note: Flame arrester may also satisfy the protective cage requirement below</i>	5.4.5	–
33				There are no combustible materials (e.g. wood chips, dry leaves, rubbish) within 3 m of the vent pipes	DGSH ³ r. 67	–
34				The vent outlet is 4 m or more above ground level and for petrol at least 4 m laterally from any opening into a building and 2 m for diesel.	5.4.4	–
35				Ignition sources (e.g. electrics, overhead power lines) are outside the hazardous area (i.e. more than 1.5 m in all directions, from vent outlet to ground level)	DGSH ³ r. 56	–

Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
LP gas vehicle filling						
36				Communication system is available so attendant can speak to anyone using the LP Gas dispenser	–	10.5.18.3(d)
37				Two spare standard metal automotive filler caps (spare fuel caps) are kept on site in case the vehicle fill point leaks	–	10.3.5
38				Signs with standard warning symbols of at least 100 mm diameter or words saying 'STOP ENGINE – NO SMOKING' (in red or dark lettering at least 50 mm high on a white background) are displayed at or adjacent to the filling area	–	Appendix D5.1
39				Driver instruction signs are displayed in a readily visible location at each LP Gas dispenser (see Figure 5)	–	Appendices D5.2.2 & D5.2.3 & Figure D2
40				Dispensers have signs with LP Gas filling instructions (see Figure 6)	–	Appendix D5.2.4 & Figure D4
41				A sign with the LP Gas emergency procedure is readily visible outside the service station building and another sign with the procedure is prominently displayed inside the building or office	–	Appendix D5.3
42				Hoses are free of cracks, fractures, leakage, or movement between hose and fittings, and are inspected at least monthly	–	5.6.5 & 11.5.5
43				Fuel is not released when the unconnected (i.e. not attached to a vehicle fill point) nozzle trigger is operated	–	10.3.4
44				For dispensers that are open to the public, the nozzle can be locked to the dispenser when the unit is not available for operation	–	10.5.17
45				Self-service dispensers are supervised from a control centre (console) by an attendant who is specifically in charge of fuel dispensing	–	10.5.18.1





LP gas requirements

Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
LP gas above-ground tanks (see Figure 7)						
46				An emergency information panel (EIP) placard is posted on above-ground tanks or at tank storage areas	-	Appendix D2.3(c)
47				There is a sign at the above-ground tank or tank storage area showing the phone number of the tank owner or a contractor that provides 24-hour specialist advice for LP Gas <i>Note: This information can be provided on the EIP</i>	-	Appendix D2.3
48				There is a sign at the above-ground tank or tank storage area showing either standard warning symbols of at least 100 mm diameter or words saying 'FLAMMABLE GAS' and 'NO SMOKING', or a warning sign (in lettering of at least 50 mm high) prohibiting smoking and ignition sources	-	Appendix D2.3
49				If the area is isolated by a fence, the signs must be visible from outside the fence and all points of access	-	Appendix D2.3
50				Each activation point for the LP Gas emergency shut-down system is marked 'LP GAS EMERGENCY STOP' in red lettering at least 40 mm high on a white background	-	Appendix D2.1 (a)
51				Each activation point for the emergency shut-down system has a sign with instructions (in red or dark lettering at least 20 mm high on a white background) on how to activate the system <i>Note: The instructions may be given on same sign as 'LP GAS EMERGENCY STOP'</i>	-	Appendix D2.1 (b)
52				Tanks are at least 6 m from any other above-ground tank, package store or filling area for flammable or combustible materials	-	6.2.5(a)
53				Tanks are at least 2 m from any vent outlet of a flammable liquid store (e.g. vents for underground tanks)	-	6.2.5(c)
54				Tank impact protection is at least equivalent to highway crash barriers (i.e. 'W' guard railing), and is about 700 mm high and at least 1.5 m from the tank	-	6.12.4 & 10.5.15
55				There are no combustible materials within 3 m of the LP Gas tanks	-	DGSH ³ r. 67
56				The site has a clear exit for fuel tankers so vehicles leave by driving forward without needing to reverse	-	10.5.12
57				Tanks that are no longer in service have been decommissioned and gas-freed	-	11.2.7
58				For single tanks with a capacity of 8 kL or less, there must be access to a tap with sufficient water pressure to operate a garden hose	-	13.5.1 (b)

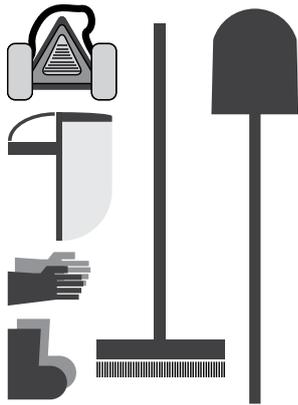
Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
59			N/A	Hose reels are installed near all tanks with capacities greater than 8 kL Note: Fire extinguishers of type 2A 60B(E) may be substituted for hose reels where there is a single tank with a capacity of 16 kL or less and the water supply is insufficient	-	13.5.1(c)
60				There are enough hose reels to ensure that water hose nozzles can reach everywhere within 5 m of the tank and tanker standing area	-	13.7.2
61				The ground below tanks and for at least 1.5 m beyond each tank is either paved or resistant to saturation by flammable liquids	-	10.5.3(a)
LP gas cylinder exchange facilities (see Figure 8)						
62				Cylinder cages are outdoors	-	Appendix F
63				The capacity of each cylinder within a cage is 25 L or less	-	Appendix F
64				The maximum aggregate capacity of cylinders per cage, or groups of cages, is 2,500 L	-	Appendix F
65				The front of each cage has a dangerous goods class label (i.e. red diamond-shaped sign for Division 2.1 flammable gases) measuring 250 mm square	-	Appendix F
66				The front of each cage has a 'FLAMMABLE GASES – NO SMOKING, NO FLAME' warning sign Note: Standard warning symbols may be used instead	-	Appendix F
67				Cages are separated by at least 3 m from groups of cylinder cages (no more than 2,500 L per group)	-	Appendix F
68				Cages are separated by at least 1 m from any building opening	-	Appendix F
69				Cages are separated by at least 1 m from the hose reach of an LP Gas decanting cylinder	-	Appendix F
70				Cages are separated by at least 1.5 m horizontally from any ignition source	-	Appendix F
71				Cages are separated by at least 0.5 m vertically from any ignition source	-	Appendix F
72				Cages are separated by at least 1.5 m from any pit, drain, basement, public place ⁵ or fuel dispenser	-	Appendix F
73				Cages are separated by at least 5 m from any LP Gas tank	-	Appendix F
74				Cages are separated by at least 3 m from any above-ground tank containing dangerous goods other than LP Gas	-	Appendix F
75				Cages are separated by at least 3 m horizontally from any accumulation of combustible materials (e.g. rubbish bin, firewood, engine oil)	-	DGSH ³ r. 67





Item no.	Yes	No	N/A	Requirements	Reference ¹ AS 1940	Reference ² AS/NZS 1596
76				Cages are separated by at least 2 m from any structure limiting access past the cage	–	Appendix F
77				Cages are clear on at least two sides from any wall, solid display or other item that could restrict air flow	–	Appendix F
Operating procedures						
78				There must be no smoking or ignition sources within 3 m of any point where flammable liquid might be exposed	7.6.2(a)	–
79				Vehicle engines must be switched off while refuelling	7.6.2(b)	10.4
80				Pilot lights that could come into contact with flammable vapour must be turned off in camper vans and caravans before refuelling	7.6.2(c)	–
81				Spillage and overfilling must be prevented during the filling of storage tanks	7.6.2(d)	–
82				Fill and dip caps (e.g. underground tanks) must be maintained in a liquid-tight condition	7.6.2(e)	–
83				Plastic containers that do not comply with AS/NZS 2906 are not permitted to be filled	7.6.2(g)	–
84				Containers must be on the ground while being filled at a fuel dispenser (i.e. must not be in or on a vehicle or trailer)	7.6.3	–
85				There are procedures to manage spills, especially a spill of flammable liquid on clothing	7.6.2(i)	–
86				Children under the age of 15 years are not permitted to operate fuel dispensers	7.6.2(o)	–
87				There are no combustible materials in the fill point spill box for underground tanks	DGSH 3 r. 67	
88				There is no liquid in the spill containment sumps (if fitted) under spill boxes	DGSH 3 r. 58	

Figure 1 Spill kit



- Broom
- Shovel
- Face shield
- Chemical-resistant boots
- Gloves
- Suitable respirator



Bin with tight-fitting lid

Non-combustible absorbent material such as sand or fuller's earth



Containment boom(s)

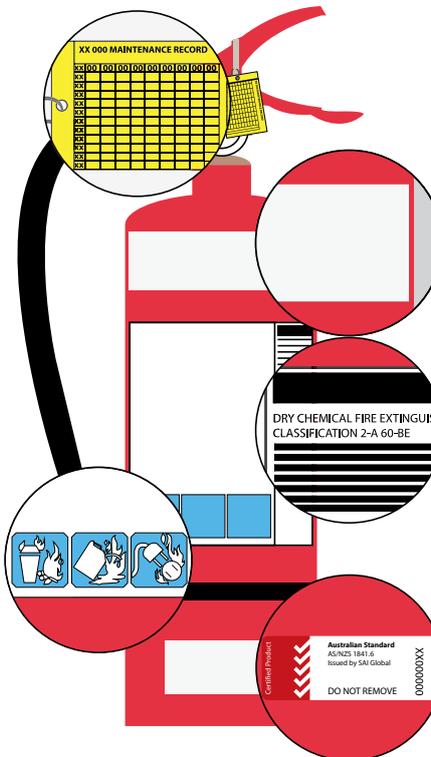


Drain protectors



Figure 2 Fire extinguisher

Service tag punched within the last 6 months



Label indicates use for paper (A), flammable liquid (B) and electrical (E) fires

Powder-type fire extinguisher (indicated by white band)

Label indicates fire rating, which must be at least 2A 60B(E) [e.g. can be 2A 80B(E), 3A 60B(E), 3A 80B(E) or above]

Label indicates compliance with Australian Standards



Figure 3 Petroleum fuel dispenser

STOP ENGINE – NO SMOKING sign displayed (lettering at least 50 mm high)

No latching mechanism on pump dispenser nozzle that could hold nozzle open

Hoses are free of cracks, cuts, fractures, leakage, and movement between hose and fittings

Bollards in place to protect against vehicle impact

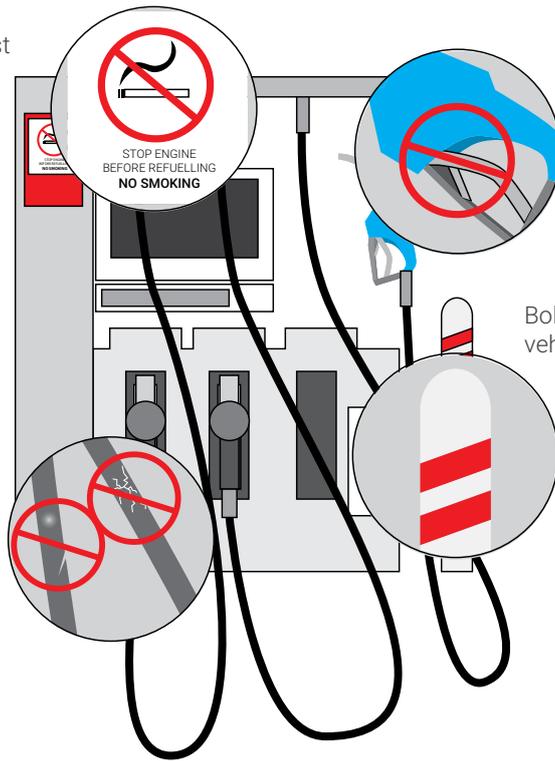


Figure 4 Vent outlets

Flame arrester fitted on vent terminals for flammable liquid underground tanks

1.5 m exclusion zone in all directions for ignition sources (e.g. electrics, overhead power lines)

No combustible material within a 3 m exclusion zone surrounding vent pipes (e.g. no woodchips, mulch, trees, shrubs, signs or rubbish)

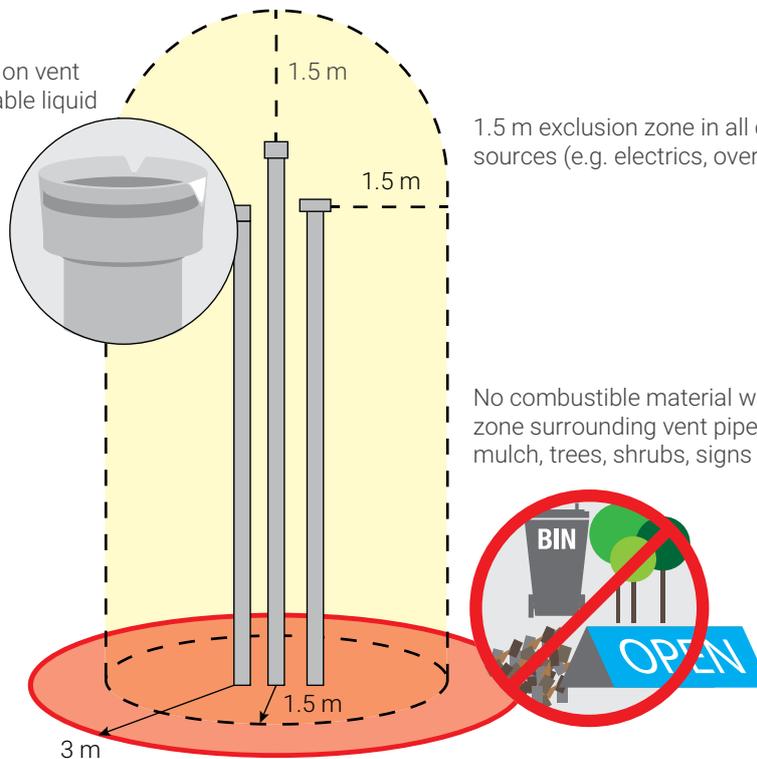


Figure 5 LP gas warning sign

LP GAS WARNING
HIGHLY FLAMMABLE
LIQUID UNDER PRESSURE

Stop engine

No mobile phones

No flames or pilot lights

No smoking

Avoid contact-LP Gas may cause cold burns

Do not fill cylinders. For vehicles only

NOTES:

WARNING — RED (Signal Red R13)

TEXT — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

CIRCLE & SLASH SYMBOL INSTRUCTION — RED — BLACK

Figure 6 LP gas vehicle refuelling instruction sign

LP GAS FILLING
INSTRUCTIONS

STAY AT VEHICLE FILL POINT DURING FILLING. DON'T OVERLY STRAIN THE HOSE.

Check vehicle fill point

- Must be clean
- Rubber seal shall be in place
- Rubber seal and thread shall be in good condition

Connect nozzle

- Align connector to avoid cross-threading
- Turn connector clockwise until tight.

Squeeze lever fully and hold. If leak occurs:

- Release lever
- Seek assistance immediately

WARNING! DO NOT JAM LEVER OPEN WITH OBJECT

When filled release lever

- Expect small discharge of LP Gas

WARNING! RELEASE THE LEVER LATCH IMMEDIATELY BEFORE DISCONNECTING THE NOZZLE

Disconnect nozzle and stow

NOTES:

INSTRUCTIONS — BLUE (Bright Blue B23)

SQUARE & INSTRUCTION SYMBOL & TEXT GASKET — BLUE — BLACK — RED (Signal Red R13)

SQUARE & INSTRUCTION SYMBOL & TEXT GASKET — BLUE — BLACK — RED

SQUARE & INSTRUCTION SYMBOL & TEXT LEVER & ARROW — BLUE — BLACK — RED

WARNING & TEXT — RED

SQUARE & INSTRUCTION SYMBOL & TEXT LEVER & ARROW — BLUE — BLACK — RED

SQUARE & INSTRUCTION ARROW — BLUE — RED



Figure 7 LP gas tank

Emergency instructions

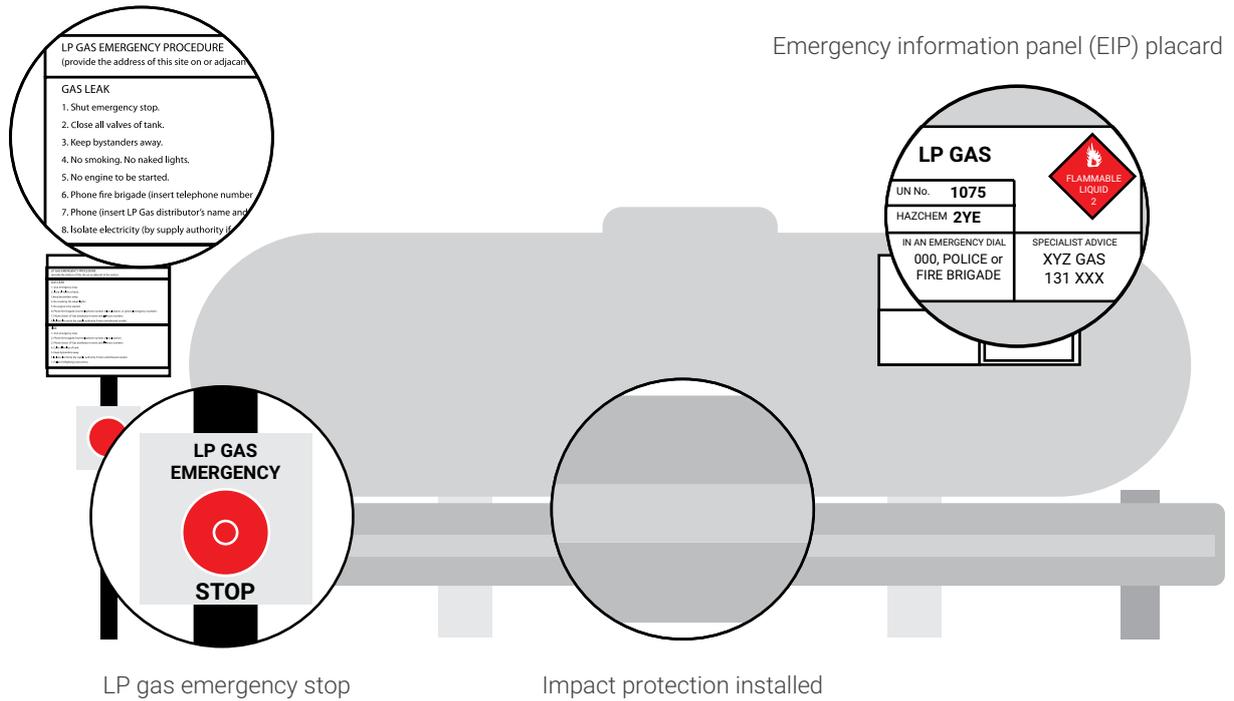
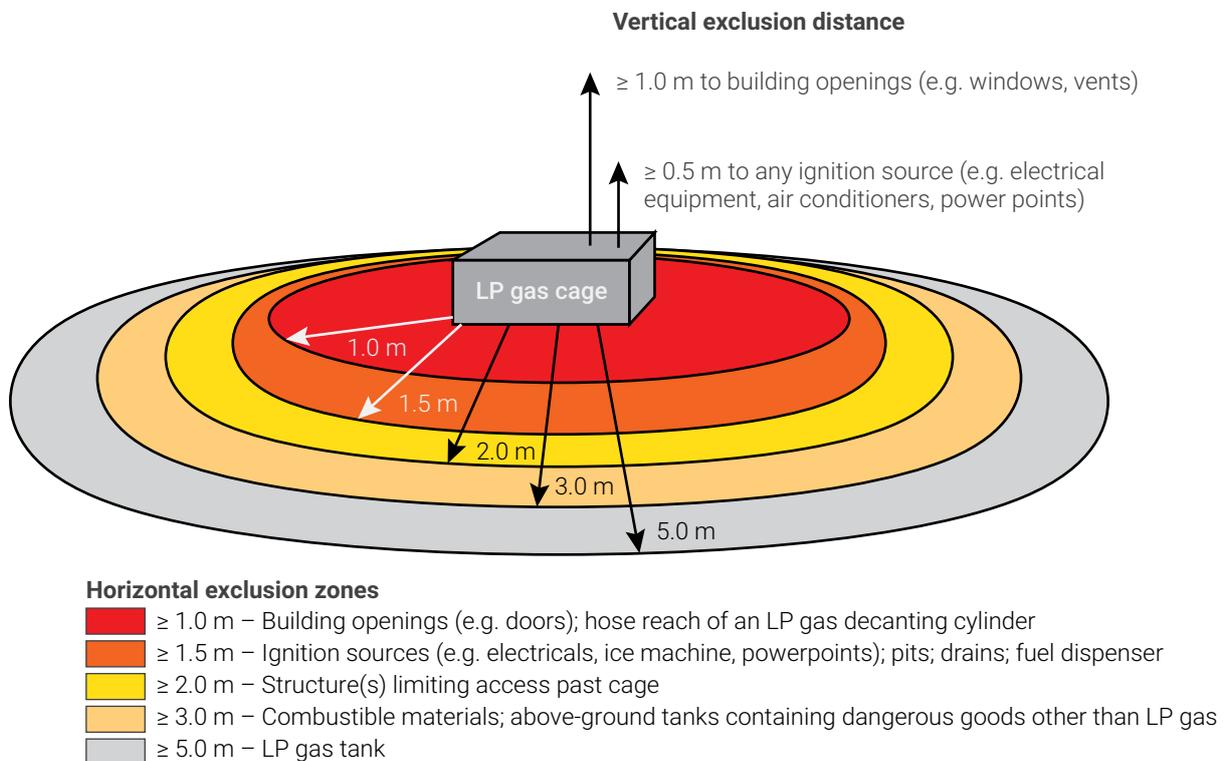


Figure 8 Separation distances from LP gas cylinder cages





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