



Easygas Downunder Cylinder Installation Manual



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REVISION HISTORY

Section	Page No.	Revision	Date	Authorised
Incorporated Revision History page to Manual	3	6	02/11/06	L. Nottidge
Changed picture (new logos on lid)	1	7	01/05/08	L. Nottidge
Introduced the new galvanised cylinder and removed old cathodic protection version	Various	7	01/05/08	L. Nottidge
Installation of Cylinder Assembly and added new picture	6	8	10/06/08	L. Nottidge
Modified Appendix A	10	8	10/06/08	L. Nottidge
Addition of more specific Installation Information	8 – 11	9	18/08/09	T.Dean
Addition of Appendix D (Manifolding of 2 EasyGas Cylinders)	14	9	18/08/09	T.Dean
Addition of Removal Instructions	13	9	18/08/09	T.Dean
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Change to distance from boundary	4	10	03/05/10	T.Dean
Correction of distance of cylinder to hazards	4	10	03/05/10	T. Dean
Change to defined depth of LPG pipework	4	10	03/05/10	T.Dean
Requirement to record and supply to Elgas the cylinder details changed	6	10	03/05/10	T.Dean
Removal of Photo showing steel barrel unions now not allowed	7	10	03/05/10	T.Dean
Change to defined depth of LPG pipework – Appendix A	10,11	10	03/05/10	T.Dean
Removal of Steel Barrel Unions for underground service	12	10	03/05/10	T.Dean
New drawing Appendix D	14	10	03/05/10	T.Dean
New requirements concerning repairs to Galvanising –	4	11	2/6/10	T. Dean
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Revision to Contents to reflect Part 1 numbering change	2	11	2/6/10	T. Dean
	All	12	12/11	T. Dean

Revisions to reflect New Zealand legislation	All	13	5/13	A. Mountfort/R. Smith
Revisions to amend post trial installations – insulation, compliance plates, protective concrete amendments	8,9,12,13	14	1/14	R. Smith
Revision by WORKSAFE NZ	All	15	6/15	Kim Comben
Revision by Elgas	All	16	7/16	R Smith
Revision by Worksafe	1.2; 2.2	17	8/16	Kim Comben

1. Installation Stage 1

1.1 Cylinder Coating Inspection

Before commencing activities on-site to excavate and prepare the installation, the Cylinder should be examined for damage to the galvanised coating: all chips, scuffs, scrapes and rust spots shall have appropriate repairs made. The repairs should be completed at the beginning of the installation so as to give the repaired coating the opportunity to dry before being placed underground.

Any damage to the coating shall be repaired with a cold galvanising paint: Jotun Galvanite is specified. Installers are required to have this paint and correct preparation and application materials available for use at every installation.

Any damage to the cylinder's galvanised coating, whether on its neck ring, foot ring or body, is to be prepared and then repaired:

1: Prepare damaged area to AS1627.2 (Metal Finishing – Preparation and pre-treatment of surfaces) Class 3 with a wire brush

Description: describes methods for hand tool and power tool cleaning of steel substrates before application of paints and related products. It applies both to new steelwork and to steel surfaces that have been coated previously and that show areas of breakdown requiring maintenance painting. it describes the equipment to be used and the procedure to be followed. This standard is identical with and has been reproduced from ISO 8504-3:1993.

2: Degrease the area

3: Apply 2 coats of Galvanite epoxy rich zinc primer to 125-150 µm dry film thickness

4: Allow at least 2 hours between coats

4: Observe good painting practice with respect to weather and application conditions

1.2 Location

1.2.1.1 Single Cylinder Installations

The cylinder should be located in a position so that:

- a. it complies with the Gas Installation Code (ANZS5601),
- b. it is placed in a position at least 1.5m (1500mm) from property boundaries,
- c. it can be accessed for insitu type filling by tanker truck and,
- d. The requirements of appendix C need to be applied. The defined zones must not extend beyond the property boundary.

The cylinder is supplied with an AFL valve (Automatic Fill Limiter) so the minimum requirement for the hazardous zone is 1.5m (1500mm), however there are situations where a smaller clearance can be obtained but you should first refer to a Test Certifier for advice on the requirements. The same applies for multiple cylinder installations.

1.2.1.2 Multi Cylinder Installations.

Any gas installation that exceeds 100kg needs to comply with the requirements of Schedule 10 of the Hazardous Substances (Dangerous Goods and scheduled Toxic Substances Transfer Notice 2004 (Gazette Notice No. 35).

Multiple installations of the Downunder. In addition to 1.2.1.1 a-d:

- a. Per Appendix D, the controlled zone for installations of two or three cylinders increases to 2m (2000mm). The placement of cylinders to a property boundary must be at least 2m (2000mm).
- b. Per Appendix C, the hazardous zone is still 1.5m (1500mm) but due to (a) cylinder installations should be increased to match the controlled clearances regulation.
- c. The installation exceeds 100kg and therefore a Test Certificate is required. Contact either the supplier or refer to the EPA website for a list of Test Certifiers.
- d. Additional hazardous signage is required if the amount of gas at the location exceeds 250kg
- e. The defined zones must not extend beyond the property boundary.

1.2.1.3 General installation requirements

- a. The cylinder canister(s) shall be positioned such that there is no possibility of surface or ground water to accumulate in the near vicinity of the installation.
- b. The underground system is not designed to support cars or regular pedestrian traffic; it must not be positioned where it will be subject to loading of the lid.

1.2.2 Specific Considerations - Single Cylinder Installations

Generally the location for the cylinder is chosen with consideration for the overall terrain and cylinders are not installed in depressions or locations which are not well drained or are subject to inundations.

Since the top of the canister lid is installed at ground level. The pipework penetrations are therefore by necessity less than 450 mm below ground level. The installation instructions require either the installation of a precast concrete block or toby over any pipes that are less than 450 mm below ground or for the pipes to be turned downward immediately after penetrating the canister. Refer to Appendix A drawing “**Cylinder installation showing concrete block to protect LPG outlet pipes**”. Backfilling of trenches associated with the pipework is undertaken to the ANZS 5601 Gasfitters Code and any leak which may occur is no more likely to follow the pipe/trench line than any other installation. All fittings used including the isolation fittings are approved for gas-use in New Zealand.

Three holes must be drilled into the underside of the top of the lid so that in the event of a gas leak through regulator failure or some other fitting, there is a way for the vapour to escape in a safe manner. These holes are to be drilled into the plastic, one of 15mm in the centre of the underside of the lid within the sealed area, and two opposing of 10mm, into the underside of the external section of the lid, i.e. outside of the sealed area. Please refer to diagram on page 16.

1.3 Manifolding Instructions

If there is a requirement to install 2 EasyGas cylinders manifolded together to support the gas vaporisation needs of an installation the cylinders shall be positioned and connected as per Appendix E ***Manifolding of 2 EasyGas Cylinders***.

1.4 Excavation

Excavate a hole 800 diameter x 1500 deep approximately refer Appendix A for a detailed drawing. Ensure the base is level and compacted. The canister top needs to be flush with the finished ground level.

Note: this excavation is deemed to be a confined space and all necessary precautions as per local regulations shall be taken to work within the excavation.

1.5 Concrete Anchor

It is expected that the canister remain empty until the cylinder is placed inside. The bottom section of the plastic canister shall be held onto the ground by external concrete ballast to overcome the upward buoyancy forces experienced when it is installed, especially in a high water table area.

Lower the canister base assembly in the excavation. Pour concrete mix around the canister bottom to secure as an anchor. Ensure that the canister assembly is kept in a vertical and true position at all times.

It is recommended a minimum 0.14 cubic metres of concrete anchor is required to keep the base, in clay soil. This is equivalent to approximately 15 x 20 kg dry pre-mix concrete bags. Installation in sandy soils may need additional anchorage i.e. More concrete mix. Please contact Elgas Technical for advice.

Backfill the remaining voids up to the top section of bottom section of the canister (bolts going into brass inserts formed into product) with crushed soil or sand to ensure that the canister walls are not damaged. The remaining gap to the finished ground level may be filled but will need to be removed during cylinder installation.



2. Installation Stage 2

2.1 Installation of Cylinder Assembly

Excavate and or hand dig dirt cover around the canister lid to expose the 6 off 6mm bolts going into brass inserts formed into product.

Remove Lid and canister top. Inspect the pit to ensure that it is clean from any water, debris etc.

Obtain and **write down** cylinder details: serial number, water capacity and other stamped details. This information must be supplied to Elgas before the cylinder can be filled.

Lower 90kg galvanised cylinder assembly supplied by Elgas. Avoid manual handling of the cylinder, as the tare weight of the cylinder assembly is approximately 75 kg. Avoid any debris or water entering the gap between the cylinder and the canister.

Fill the void between the plastic canister and the cylinder with clean washed builder's sand no greater than 2.5mm mesh, up to the top of the canister (make sure that no organic material is mixed with the sand).

Place canister top back to the base and secure it with 6 off 6-mm stainless steel bolts insuring sealant is placed between the base and collar and externally coated with "Denso Tape" (TM) See Section 2.2 Diagrams with lid assembly.



Stainless steel bolts and top assembly

Void to be filled with builder's sand

2.2 Connections to Gas Supply

The Cylinder is now ready for gas piping connections. All entries and exits for piping through the canister top shall be watertight as far as practicable. Draw the gas supply line through the opening on the cylinder valve protection ring. Connect the gas supply line onto the regulator with appropriate fittings, as specified in AS/NZ5601.

Mark the gas connection outlet on the canister top and drill hole to suit the supply line to the building, coinciding with the one of the two openings in the cylinder valve protection ring (VPR).

Connect copper pipe (pigtail) from the outlet valve to the regulator. Regulator must be supplied by the fitter and be appropriately rated for the household load. The variety of Regulator is the responsibility of the Gas Fitter. This may be a dual stage or single stage regulator depending on requirements.

Note: As the cylinder is galvanised, copper fitting lines shall be fitted with an insulating kit inside the cylinder VPR to maintain electrical isolation.





LPG Regulator type as determined by the Gas fitter) and Pig Tail

3. Compliance Plates

As per New Zealand HSNO COP 50, the person responsible for carrying out of gas-fitting works on a qualifying gas installation must attach a Compliance Plate to the installation after the work is carried out.

For all Easygas DownUnder installations over 100kg, the first installation will require a Location Test Certificate. For multiple installations exceeding 300kg the LTC will need to be maintained on an Annual basis.

For installations between 100kg and 300kg (2-3 cylinders) a Compliance Validation Inspection may be carried out in accordance with HSNO COP50, the Compliance Plate **must be attached** to the internal face of the cylinder's Valve Protection Ring, using high strength industrial adhesive (commonly known as liquid nails).

4. Signage and Warning Labels on Access Lid

It is imperative that householders and general public are fully aware of the potential hazards in storage of LPG cylinder. Suitable warning labels are fixed onto the lid. For sites exceeding 250kg the Location requirements for signage will be in addition to those on the lid. See Elgas Technical for signs

5. Concrete Protection around Lid

To prevent mechanical or electrical equipment (Lawn mowers, trimmers and others) from damaging the plastic lid and from getting too close to the LPG equipment, a concrete protection collar around the lid may be desirable, but is not essential.

If considered desirable, a precast concrete collar of 50 x 700 mm is recommended around the canister top opening.

6. Filling of Cylinder

Tanker drivers fill the cylinders in accordance with the Procedures for the Filling of Elgas Easygas DownUnder Cylinders and in accordance with the NZLPGA Code of Practice – In Situ Filling of LPG Cylinders. HSNO COP 38

7. Warning

This product contains LPG for household and commercial use. LPG is flammable and hazardous. Uncontrolled escape of LP Gas can lead to serious fire and explosions causing property damage, personal injury from burns and frostbite, and death.

Elgas Easygas Cylinders shall be installed, maintained and filled by qualified persons trained and experienced in the use of LPG.

8. REMOVAL INSTRUCTIONS

At the end of the life of the installation, or for purposes of testing and maintenance, it will be necessary to remove the Downunder cylinder.

The requirement is to remove the lip and neck ring by excavating sufficient surrounding earth from the cylinder sleeve. It is not possible to remove the lower canister and concrete block without considerable mechanical excavation, so the canister will remain in place.

To remove the cylinder first close the isolation valve. Then all pipework should be removed from within the canister and the cylinder valve closed and plugged. It is not possible to remove the LPG from the cylinder as the cylinder is not fitted with a drain valve, therefore if possible the cylinder should be allowed to empty through normal use.

A garden hose should then be placed between the cylinder and canister and turned on – this will cause the cylinder to float and rise out of the canister.

Care should be taken during this operation as the cylinder may suddenly rise if it “hangs-up” and suddenly releases.

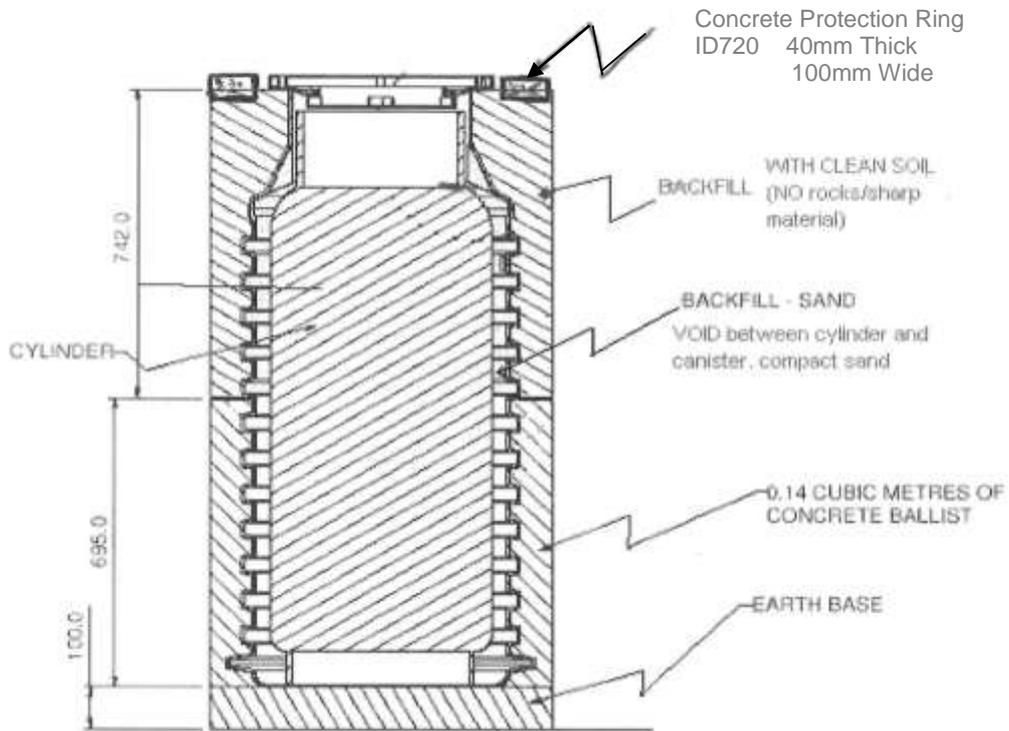
Guide the cylinder up and out, eventually standing and transporting it standing up as it will still have LPG vapour and perhaps some liquid in it.

If it is to be refitted, the lower canister will have to be emptied of the remaining sand and water mixture – to be clean and dry prior to refit to allow the replaced cylinder to be reinstated as per these instructions.

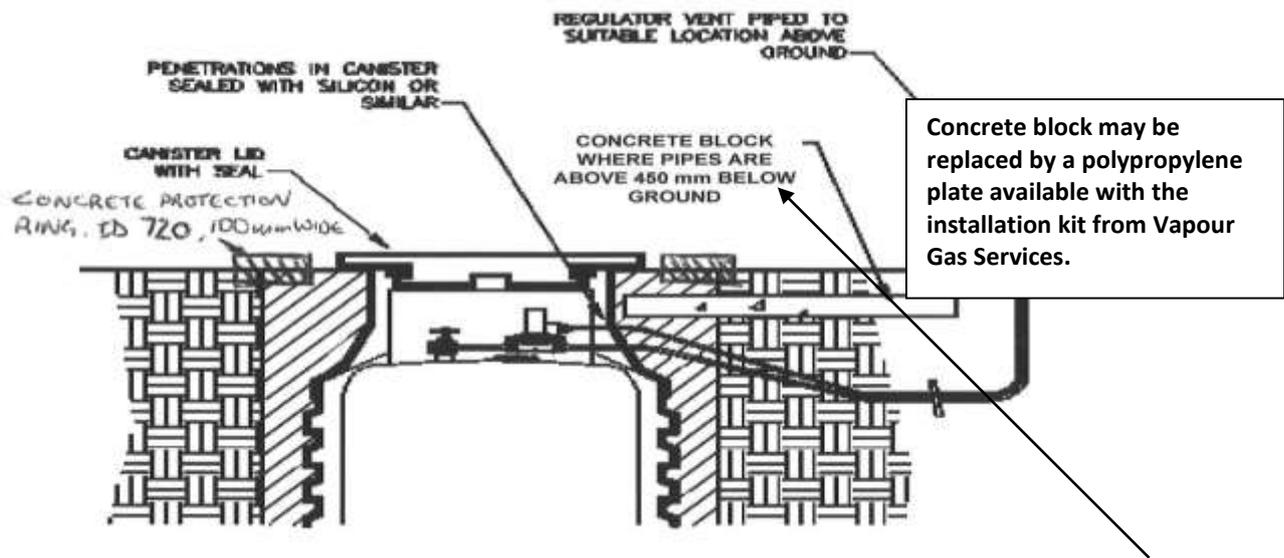
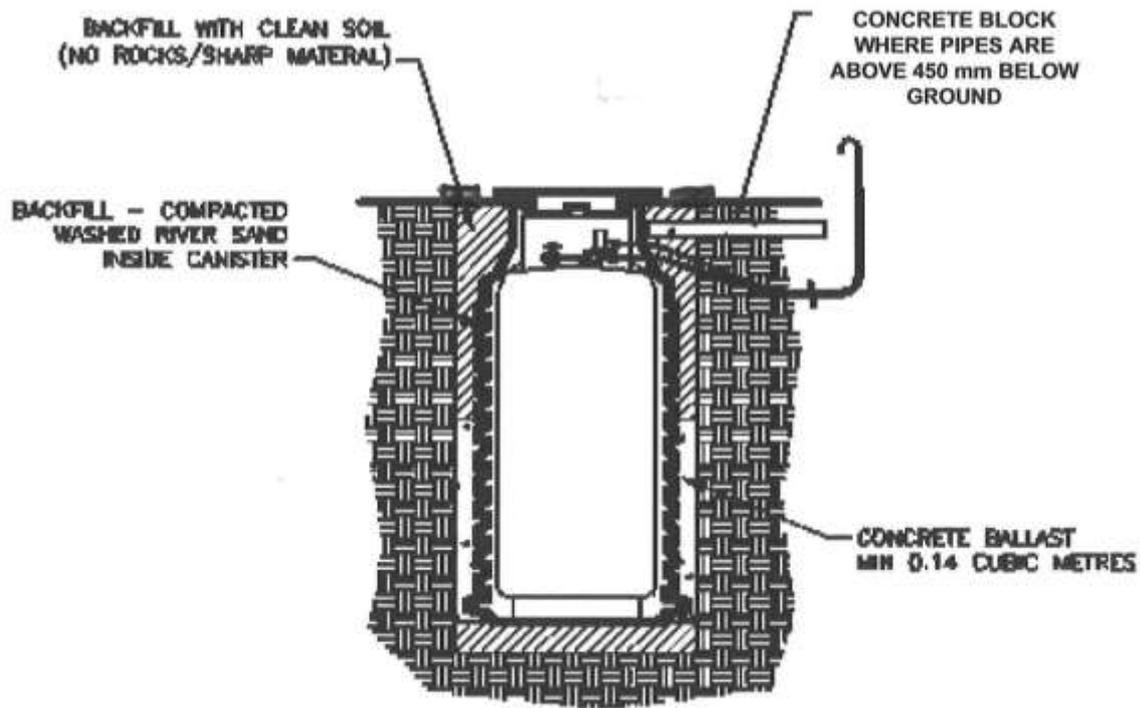
If the installation is to be abandoned the hole **MUST** be filled with suitable soil or hard fill mixture as soon as possible to eliminate the possibility of personnel injury due to the large hole. Fill material should be of good quality and stamped into place as appropriate, a slight mound should be left for later settling of the material.

Appendix A

Canister and Cylinder Installation Details

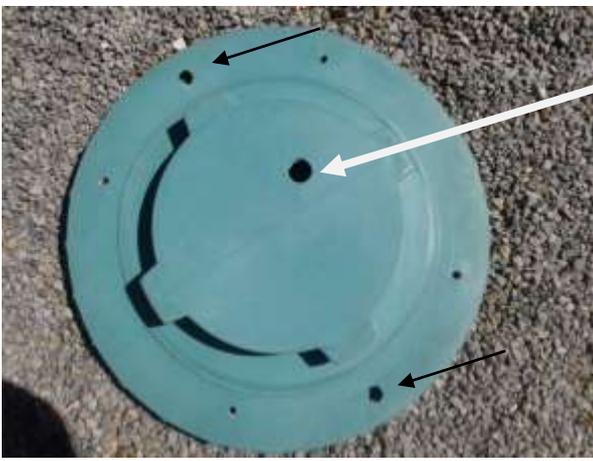


Cylinder installation showing concrete block or alternatives to protect LPG outlet pipes



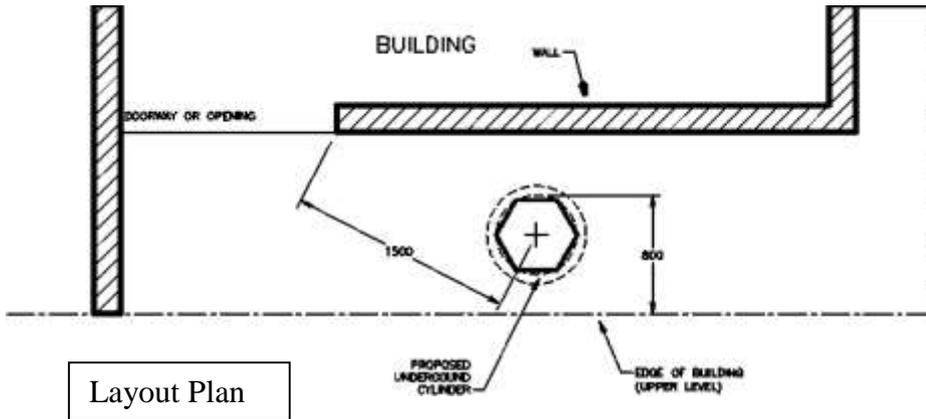
*Concrete block may be replaced by a polypropylene plate available with the installation kit from Vapour Gas Services.

Cylinder Installation showing detail of 'pipe away' of Regulator Vent
 Suitable terminal locations could include the frame of the house being serviced or a post in a protected location slightly away from the Cylinder. This process can also be amended by the drilling of suitable holes in the lid of the canister as illustrated. If chosen, this option removes the need to install regulator vent pipe.

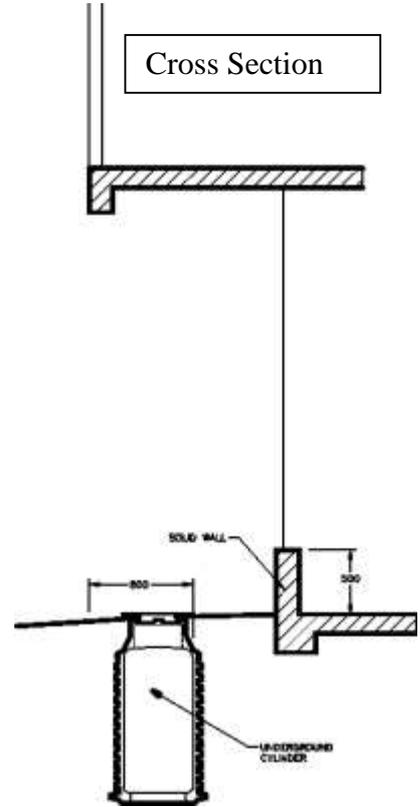


Ventilation holes. Note that four of the holes in the outer ring are factory drilled. The larger inner hole and the two larger outer holes are an addition, allowing ventilation of the upper cylinder cavity with no chance of water ingress

Installation position of Cylinders with respect to buildings
With verandahs or overhanging construction



Layout Plan



Cross Section

Appendix B

INSULATING KITS FOR LPGas PIPELINES

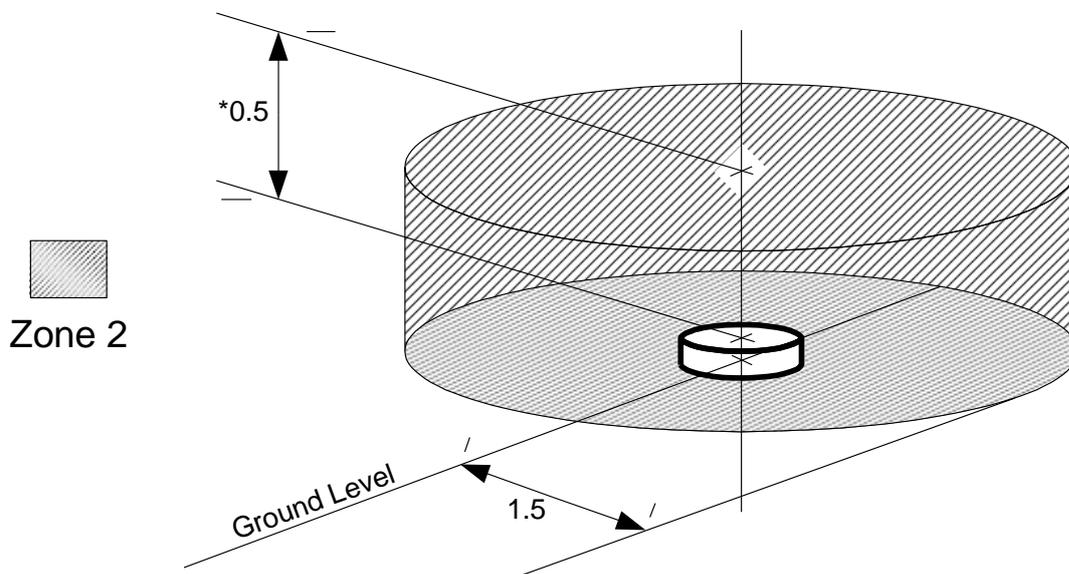
1. Copper pipe with nylon socket as insulation



Appendix C

ELGAS

HAZARDOUS AREA EASYGAS DOWNUNDER INSTALLATIONS Filling without Gas Bleeding, Outdoors



* This dimension is measured above the finished level of the container lid

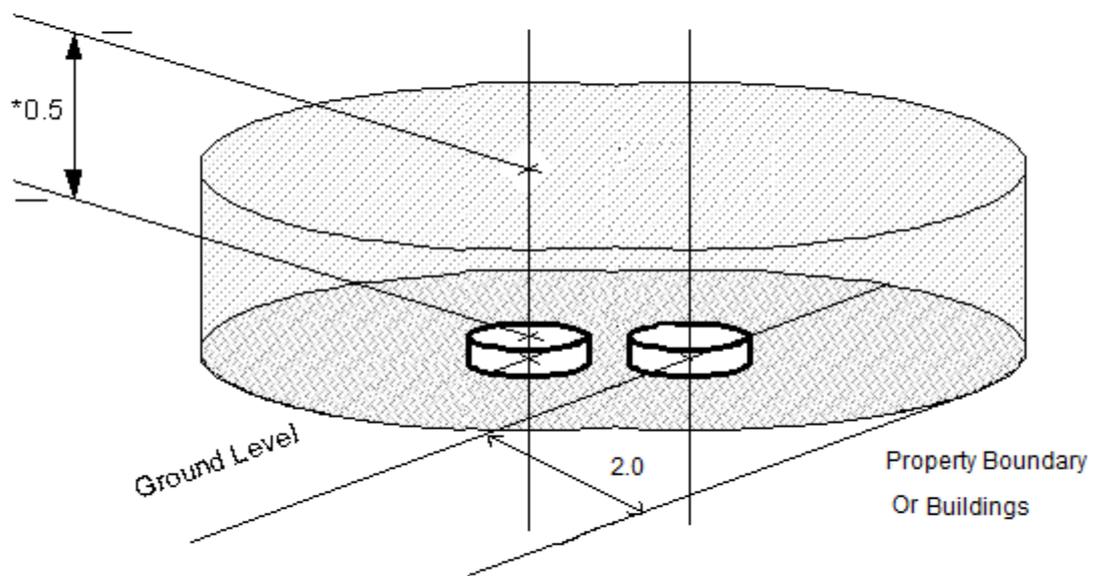
Drawn - 15/05/06 - tfd - Copyright © Elgas Ltd
Dimensions in m - Drawing Not to Scale

Appendix D

ELGAS

EASYGAS DOWNUNDER INSTALLATIONS

MULTI CYLINDER ISOLATION DISTANCES



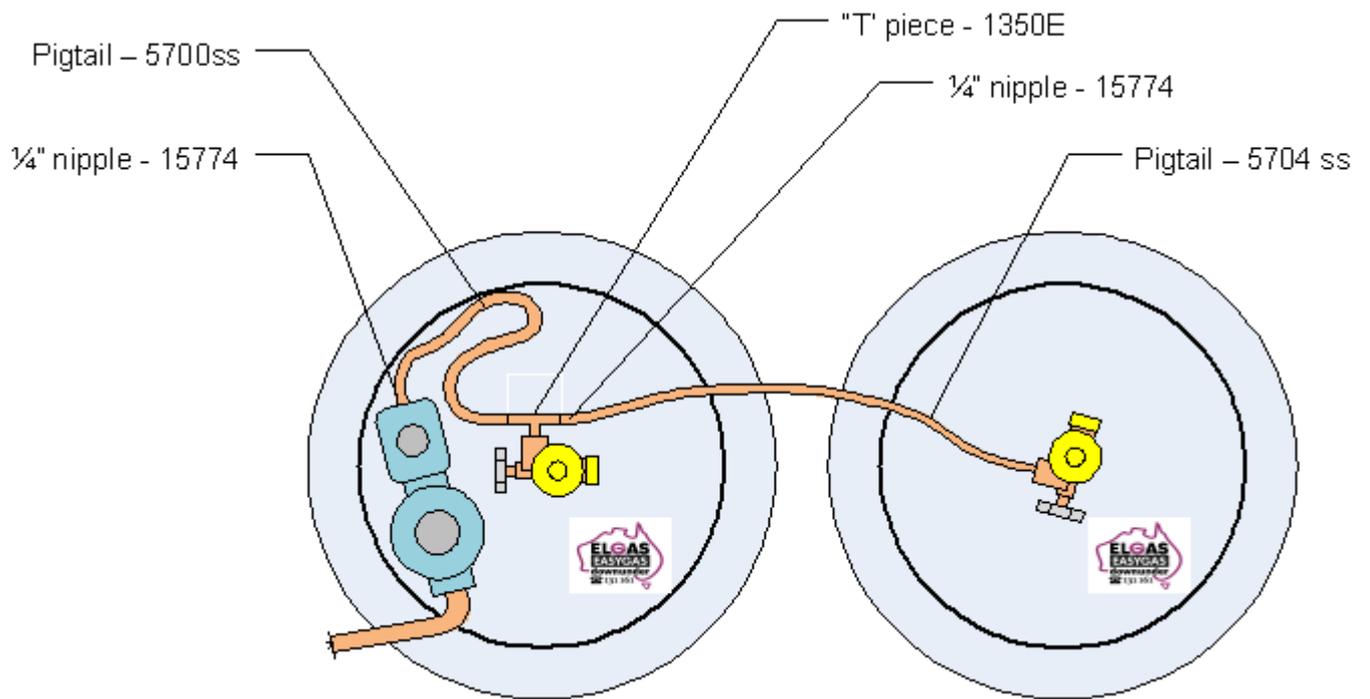
* This dimension is measured above the finished level of the container lid

Drawn - 15/05/06 - tfd - Copyright © Elgas Ltd

Dimensions in m - Drawing Not to Scale

Appendix E

Manifolding of 2 EasyGas Cylinders



Appendix F

Jotun Galvanite Specifications

Technical Data Galvanite

Product description

Galvanite is a single pack, zinc-rich primer for repair of damaged or degraded galvanized surfaces or as a zinc primer for properly prepared steel surfaces.

Recommended use

General purpose primer for repair of welding or other damage to galvanized surfaces. May also be used as a zinc-rich primer for steel surfaces.

Film thickness and spreading rate

Minimum Maximum Typical

Film thickness, dry (µm) 30 75 40

Film thickness, wet (µm) 55 135 70

Theoretical spreading rate (m²/l) 18,3 7,3 13,8

Physical properties

Colour Light metallic grey. Weathers to a galvanized appearance

Solids (vol %)* 55 ± 2

Flash point 25°C ± 2 (Setaflash)

Abrasion resistance Good

Chemical resistance Good

Flexibility Good

*Measured according to ISO 3233:1998 (E)

Surface preparation

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504.

Other surfaces

The coating may be used on other substrates. Please contact your local Jotun office for more information.

Galvanite Page 2 of 3

Condition during application

The temperature of the substrate should be minimum 5°C and at least 3°C above the dew point of the air, temperature and relative humidity measured in the vicinity of the substrate. Good ventilation is required in confined areas to ensure correct drying.

Application methods

Spray Conventional or airless spray may be used for larger areas.

Brush Recommended

Roller Recommended

Application data

Thinner/Cleaner Jotun Thinner No. 7

Guiding data airless spray

Pressure at nozzle 5-10MPa (700-1400 psi)

Nozzle tip 0.38-0.53 mm(0.015-.021")

Spray angle 40-80°

Filter Check to ensure that filters are clean

Drying time

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with:

* Good ventilation (Outdoor exposure or free circulation of air)

* Typical film thickness

* One coat on top of inert substrate

Substrate temperature 5°C 10°C 23°C 40°C

Surface dry 2 h 1 h 30 min 7 min

Through dry 8 h 4 h 2 h 45 min

Dry to recoat, minimum 48 h 24 h 16 h 6 h

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

Typical paint system

Galvanite 2 x 40 micron (Dry Film Thickness)

Other systems may be specified, depending on area of use

Storage

The product must be stored in accordance with national regulations. Storage conditions are to keep the containers in a dry, cool, well ventilated space and away from source of heat and ignition. Containers must be kept tightly closed.

Handling

Handle with care. Stir well before use.

Packing size

4 litres in a 5 litre container.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not breathe or inhale mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

For detailed information on the health and safety hazards and precautions for use of this product, we refer to the Material Safety Data Sheet.

DISCLAIMER

The information in this data sheet is given to the best of our knowledge based on laboratory testing and practical experience. However, as the product can be used under conditions beyond our control, we can only guarantee the quality of the product itself. We also reserve the right to change the given data without notice. Minor product variations may be implemented in order to comply with local requirements.

If there is any inconsistency in the text the English (UK) version will prevail.

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THIS DATA SHEET SUPERSEDES THOSE PREVIOUSLY ISSUED