

Non Domestic Laundry Gas Appliance

Installation Code of Practice

Introduction

This code of practice has been produced with the assistance of all Companies within the OPL sector of SLEAT because of the concerns for safety within the industry. It had become quite obvious that there was not a clear understanding of how a gas appliance within the non domestic laundry sector worked and whilst the combustion requirement was considered, the drying needs weren't.

This code of practice goes to explain and quantify these details and is for use by the installer, maintainer and operator alike. It must be used in conjunction with manufacturers' instructions.

It is very important that this document is read *fully **before*** undertaking any work so that all areas of installation are carefully considered and a suitable risk assessment undertaken so the most appropriate location is found for the appliance and compliance with all services ensured.

Gas work

All gas work must be carried out by a business that is CORGI registered and using gas operatives who hold competency certification in the work to be undertaken. All gas work must conform to the Gas Safety (Installation & Use) Regulations as amended.

Gas Supply

All gas pipework must be installed in accordance with the Institution of Gas Engineers (IGE)UP/2 and (LPGA) COP22 and tested and purged in accordance with (IGE)UP/1A or (LPGA) TM62 for LP gas. The piping must be adequately sized to supply gas to each appliance and for the total consumption of gas appliances in the premises. In the main the laundry supply pipework does not need to exceed 28mm, if it does due consideration must be given as the maintenance operatives may require additional gas competencies to work on the installation.

Each appliance must have its own readily accessible isolation valve for servicing purposes. Where multiple machines are installed a readily accessible means of isolating all the gas in the room must be provided. This must not be located inside an enclosure.

The final connection to the appliance should be by means of a gas hose that is manufactured to BS669 part 2 or a double armoured style of hose, sheathed or unsheathed dependant on location, suitable for the family of gas utilised. It must allow a sufficient volume of gas to flow for the safe and correct operation of the appliance. An appropriate means of fixing the appliance must be made so as to prevent the hose being subjected to unnecessary strain.

Electrical Services

All electrical wiring must conform to **BS7671** as amended and reference will need to be made to the manufacturer's instructions to ensure correct final connection to the machine and suitable for the specific location.

Exhaust

The exhaust ducting is intended to remove the products of combustion and the air and water vapour used in the drying process. Commonly the dilution of air to products of combustion mix is in excess of 1:40.

The method and design of the ducting for the exhaust will have a major effect on the efficiency of the installed appliances. It will be noted from *table 1* that this type of equipment requires a substantial amount of fresh air for correct operation and this must be removed through the exhaust duct and discharged to outside atmosphere in a safe and satisfactory position.

The design of the exhaust system must therefore take account of the following:

It must terminate to outside atmosphere in a safe and satisfactory position

It must present a minimal resistance to airflow

It must be of smooth bore metal construction, as short as possible and with the minimum of bends and changes in direction.

It must be capable of withstanding the temperatures generated, commonly between 40° and 82°C.

It must include provision for internal access for cleaning and maintenance.

Appliance Connection

A very short length flexible ducting as specified by the appliance manufacturer, may be utilised to make the final connection to the appliance. This must not exceed 2m in length and be capable of withstanding the maximum known output temperature. The internal bore of the flex section however, must be maintained throughout its length i.e. it must not be kinked or deformed. It must not be used to change direction.

Ductwork

The ideal design is a straight, short smooth bore duct pipe from the outlet of the appliance directly to outside atmosphere at the outlet level of the dryer with a down turned terminal and no grille. In all cases, the manufacturer's installation instructions must be followed.

The exhaust duct must be adequately supported throughout its entire length and all joints must be sealed. Where sections are joined there must be minimal intrusions into the

airflow i.e. keep any self-tapping screws as short as possible so that they will not restrict airflow or act as an obstruction, gathering lint etc.

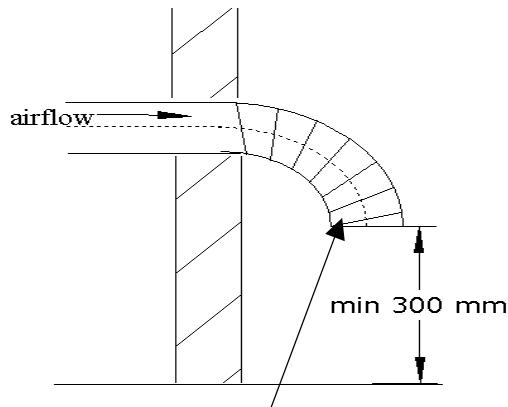
There will be lint in small quantities moving with the airflow and for this reason neither filters in the flow nor grilles are recommended as they will impair airflow and lead to further problems and may pose a fire hazard.

Where the design is to be a single duct for multiple dryers the minimum overall cross sectional area of the duct must not be less than the total sum of the cross sectional areas of all the dryer exhaust outlets.

Suitable inspection openings for the removal of lint are required along the ductwork where appropriate.

Termination

The termination in outside atmosphere can have a detrimental effect on the overall efficiency of the equipment if this impairs the airflow and for this reason an open method must be adopted that prevents ingress of weather, whilst protecting the airflow from prevailing winds.

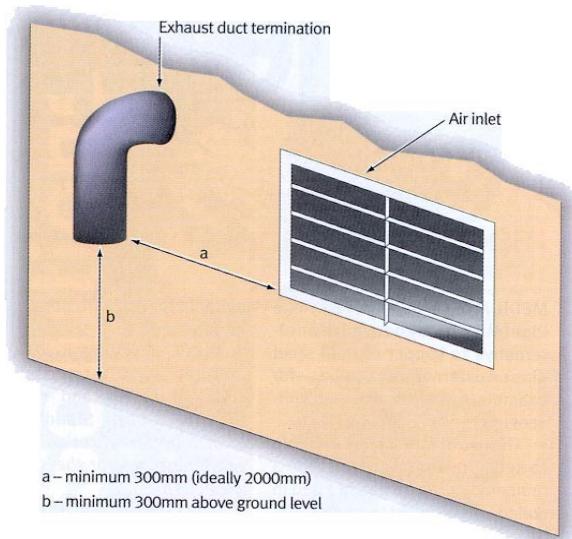


DO NOT fit any grille or restrict the outlet in any way either at the termination or at any point along the ducting

Diagram I

A 45 or 90° elbow (as per *Diagram I*) may be used to achieve this. A minimum clearance of 300mm from ground level should be provided.

The termination must be at least 300 mm and should ideally be 2m from any opening or fresh air inlet into the building (as per *Diagram II*). The configuration of the exhaust termination in respect of the make up air inlet grille should not allow recirculation of the exhausted damp warm air back into the make up air vent.



NB. Every precaution should be taken to prevent damp, warm exhaust air from recirculating through the make up air grille

Diagram II

Exhaust testing

Testing airflow, as indicated in the manufacturers specification must be carried out to check that the ducting is within the specified parameters. The exhaust system must be tested to ensure that all products of combustion and water vapour etc. are being removed to outside air. The airflow pressure measured must be less than 1.25mb (0.5" WG) when tested in the exhaust ducting within 500mm from the appliance with it operational and at normal running temperature.

In the case where more than one appliance is connected to a common duct, the system should be tested for its exhaust capabilities, with one appliance in operation, and again with all appliances working and all non permanent openings closed ie doors, windows &c.. During the test(s) any other air extraction systems in the vicinity must be operating at maximum and where they can be operated in extract or induce modes, the tests must be carried out in both modes i.e. in "worst case" conditions

Ventilation - Make Up Air

This equipment moves large amounts of air to achieve the drying process as can seen from the table below. Careful consideration must be given to ensure that clean, cool air is introduced directly from the outside atmosphere to allow the drying process to occur whilst ensuring suitable levels of air for combustion. Air for combustion of the gas, commonly takes around 2 - 6% of the total air volume required. There will also be loose lint that is ejected through the exhaust system and consideration must be given to ensure that this is not allowed to build up in any ventilation system or openings so that it either blocks the incoming flow or causes a fire hazard.

The *Make Up Air* inlet vent must be at least 300mm and ideally should be 2m away from any exhaust point to prevent wet, warm air being re-introduced into the system. Where extract fans or similar are installed the effect on exhaust and make up airflow must be considered. It must not adversely affect the operation of the equipment or alter the safety of other equipment either in that room or adjacent rooms in a detrimental way. Where the *Make Up Air* supply utilises input fans or similar, these devices must be positively interlocked with a manual reset in the *gas supply* so as to prevent combustion taking place in the dryer in the event of a failure

Generic model	Air flow	Minimum Free Air Ventilation Size
13kg (30lb)	9.9 – 19.8 m ³ /min (350 – 700 ft ³ /min)	1000 cm ² (155 in ²)
23kg(50lb)	19.8 – 22.7 m ³ /min (700 – 800 ft ³ /min)	1500 cm ² (233 in ²)
34kg(75lb)	22.7 – 32.6 m ³ /min (800 – 1150 ft ³ /min)	2250 cm ² (349 in ²)

Table I

The '*minimum free air*' refers to a **permanent** non-closable supply of air, available directly or via ducting from outside atmosphere.

Any obstructions such as louvres or grilles must be deducted from the overall size of a vent and the vent increased in physical size until the minimum size is achieved. It is acceptable to oversize the make up air.

It is also worth noting that there is a model of dryer marketed called a stacker, stack dryer or similar. This refers to a piece of equipment where two dryers are mounted in one case on top of each other. Sometimes to highlight the matter the individual units are called 'pockets'. In any event, for installation purposes, each 'pocket' must be considered as an individual dryer, and the make up air must be allowed for each 'pocket'.

Commissioning

The appliance(s) must be commissioned in accordance with the manufacturers' instructions and statutory regulations. Testing and purging of the appliance, downstream of the appliance isolation valve must be carried out using an appropriate method. This may be using leak detection fluid if the pipework has not been dismantled and you have no reason to believe that there is an unsafe situation nor can you smell gas. The exhaust system must be tested to ensure that it is effectively removing the products of combustion safely to outside atmosphere.

Throughout this process due care must be given to any *unsafe situations* and full inspection during commissioning is appropriate to ensure no dangers exist or could exist. Necessary action must be taken if an *immediately dangerous* or *at risk* situations are encountered and further details can be found in the **Gas Industry Unsafe Situations procedure** available from CORGI publications. Appropriate documentation, duly signed must be completed before leaving site.

Normative Documents

1. The Gas Safety (Installation & Use) Regulations
2. The Building Regulations Approved Document.
3. BS 669 part 2
4. Manufacturer's Installation Specifications
5. BS 7671 (16th edition IEE regulations)
6. Institute of Gas Engineers UP/1A and UP/2
7. LPGA code of practice (COP) 22
8. TM62 technical detail on soundness testing for LP gas installations
9. The Gas Industry Unsafe Situations procedure
10. Local bye - laws

GLOSSARY

BSI	<i>British Standards Institute</i>
Commissioning	Putting appliance into operation as per manufacturers specification
CORGI	<i>The Council for Registered Installers</i>
Dilution	Mixture of products
Duct	The pipe used to transmit products of combustion together with the supersaturated warm drying air to atmosphere
Exhaust Duct	Single walled pipe – the means of removing the moist air to atmosphere
Free air	The area of <i>unrestricted</i> ventilation opening
IGE	<i>Institute of Gas Engineers</i>
LPGA	Liquefied Petroleum Gas Association
Make Up Air	Air required to replace that which is used in the combustion and drying process
Permanent	Unable to reduce or restrict – commonly referred to as 'fixed' without a <i>tool</i>
Products of Combustion	Mixture of waste gases as a result of combustion commonly referred to as 'POC'
SLEAT	<i>Society of Laundry Engineers and Allied Trades</i>

Acknowledgements

To all those who helped and proof read this document and offered input, not forgetting those outside bodies who offered words of wisdom, our grateful thanks.

Current details can be obtained from the SLEAT website www.sleat.co.uk or by contacting the Secretary directly

You do not have to be a SLEAT member to take advantage of the ACS courses arranged through SLEAT.

**The Society of Laundry Engineers
And Allied Trades Limited
Suite 7 Southernhay
207 Hook Road
Chessington
Surrey
KT9 1HJ**

Tel: 020-8391 2266
Fax: 020-8391 4466
Email: admin@sleat.co.uk