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Agrément Certificate
00/3727
Product Sheet 2

NUAIRE POSITIVE INPUT VENTILATION SYSTEMS

FLATMASTER AND FLATMASTER 2000 POSITIVE INPUT VENTILATION SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems, continuously running, low-energy positive input ventilation systems (PIV) for use in flats or dwellings without a loft space.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Ventilation — the systems can provide up to 22 l·s⁻¹ of whole building ventilation and can satisfy, or contribute to satisfying, the requirements of the national Building Regulations (see section 6).

Behaviour in relation to fire — the grilles are made from thermoplastic material and can satisfy the relevant requirements of the national Building Regulations (see section 7).

Conservation of fuel and power — the specific fan power of the systems is less than the design limits for energy efficiency (see section 8).

Self-generated noise — the outlet noise from the systems should not be considered as intrusive (see section 9).

Durability — the systems are constructed from durable materials (see section 12).

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 21 December 2015

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 12 March 2009

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, the Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: B2(1)	Internal fire spread (linings)
Comment:	For the purpose of assessing the performance of the wall lining, the internal grille is not included. See section 7.1 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The external grille constitutes a small unprotected area. See section 7.2 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The systems can contribute to satisfying this Requirement. See section 6.5 of this Certificate.
Requirement: F1(1)	Means of ventilation
Comment:	The systems can contribute to satisfying this Requirement. See section 6.1 of this Certificate.
Requirement: L1(b)(i)(ii)	Conservation of fuel and power
Comment:	The systems can contribute to satisfying this Requirement. See section 8 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The systems are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation: 26	CO₂ emission rates for new buildings
Regulation: 26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation: 26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation: 26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:	The systems' contribution to satisfying these Regulations will depend on its mode of operation. See section 8 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The systems satisfy the requirements of this Regulation. See sections 11.1 and 12 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.3	Structural protection
Comment:	The penetration of an element of structure by the wall-mounted systems must be considered in relation to clause 2.3.4 ⁽¹⁾ of this Standard. See section 7.2 of this Certificate.
Standard: 2.5	Internal linings
Comment:	The internal grille can satisfy this Standard, with reference to clause 2.5.1 ⁽¹⁾ and 2.5.2 ⁽¹⁾ . See section 7.1 of this Certificate.
Standard: 2.6	Spread to neighbouring buildings
Comment:	The external grille must be treated as an unprotected area with reference to clause 2.6.2 ⁽¹⁾ . See section 7.2 of this Certificate.
Standard: 3.14	Ventilation
Comment:	The systems can contribute to satisfying this Standard, with reference to clauses 3.14.1 ⁽¹⁾ , 3.14.8 ⁽¹⁾ and 3.14.10 ⁽¹⁾ . See section 6.1 of this Certificate.
Standard: 3.15	Condensation
Comment:	The systems can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ and 3.15.2 ⁽¹⁾ . See section 6.5 of this Certificate.
Standard: 6.1(b)	Carbon dioxide emissions
Comment:	The specific fan powers should be used in SAP calculations. See section 8.2 of this Certificate.
Standard: 6.6(b)	Mechanical ventilation and air conditioning
Comment:	The systems can contribute to satisfying this Standard with reference to clause 6.6.3 ⁽¹⁾ . See section 8.1 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The systems can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. See section 8 of this Certificate.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for these systems under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ . (1) Technical Handbook (Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23	Fitness of materials and workmanship
Comment:		The systems are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The systems can contribute to satisfying this Regulation. See section 6.5 of this Certificate.
Regulation:	34	Internal fire spread – Linings
Comment:		For the purpose of assessing the performance of the wall lining, the internal grille is not included. See section 7.1 of this Certificate.
Regulation:	36	External fire spread
Comment:		The external grille must be treated as an unprotected area. See section 7.2 of this Certificate.
Regulation:	39(b)	Conservation measures
Comment:		The systems can contribute to satisfying this Regulation. See section 8 of this Certificate.
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		The specific fan powers should be used in SAP calculations. See section 8.1 of this Certificate.
Regulation:	65(1)	Means of ventilation
Comment:		The systems will contribute to satisfying this Regulation. See section 6.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 5 *Practicability of installation*, 10 *Provision of an electrical supply and electrical safety* (10.1 to 10.4) and 14 *Procedure* (14.4) of this Certificate.

The Electrical Equipment (Safety) Regulations 1994 and the Electromagnetic Compatibility Regulations 2005

These Regulations implement the Low Voltage Directive 2006/95/EC and the Electromagnetic Compatibility Directive 2004/108/EC and require manufacturers to carry out assessment of their products against the criteria given in the Directives. Declarations of Conformity have been provided by the Certificate holder. The BBA has not assessed the system for compliance with these Directives.

Additional Information

NHBC Standards 2014

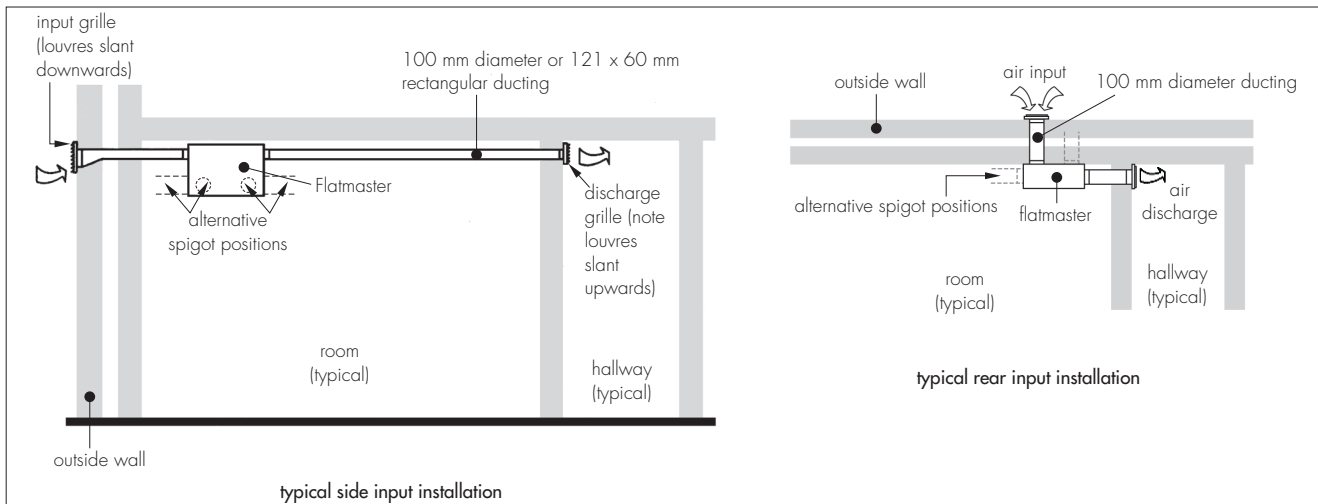
NHBC accepts the use of the Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.1 *Internal services*, Clauses D10 and D15.

Technical Specification

1 Description

1.1 The Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems comprise a fan unit mounted on the wall together with filters and plastic ducting. The ducting draws air through a grille on an outside wall, through the unit and is ducted to the internal grille, which is placed on an internal wall of a central area (such as a hallway) (see Figure 1).

Figure 1 Typical installation of Flatmaster unit



1.2 The Flatmaster 2000 unit includes a remote manual boost switch for temporary increased airflow. When additional heating of the incoming air is required, the thermostatically controlled integral heater can be used. The heater has a manual override. The heater, when enabled, is activated when the temperature of the incoming air falls below 10°C, unless set to a different temperature. This feature is intended to minimise discomfort caused by cold air and has not been assessed as a secondary heating system, however indicative assessments suggest that the heater may be on for between 5% and 9% of the time, depending on fan speed setting, during a typical heating season.

1.3 The systems incorporate a selector switch, allowing different settings (see Tables 1 and 2). The setting required is dependent upon the size of the property, layout and the level of moisture being produced in the property.

Table 1 Indicative performance levels⁽¹⁾ for Flatmaster

Fan speed setting	Airflow (l·s ⁻¹)	Power (W)	Specific fan power (W·l ⁻¹ ·s ⁻¹)
low	13	3.1	0.2
medium	18	5.7	0.3
high	22	9.4	0.4

(1) Results at free air (0 Pa).

Table 2 Indicative performance levels⁽¹⁾⁽²⁾ for Flatmaster 2000

Fan speed setting	Airflow (l·s ⁻¹)	Power (heater off) (W)	Specific fan power (heater off) (W·l ⁻¹ ·s ⁻¹)	Power (heater on) (W)
low	11.9	3.0	0.25	287
medium	16.5	5.5	0.33	287
high	20.3	9.2	0.45	293
boost	31.7	35.0	1.11	316

(1) Results at free air (0 Pa).

(2) Unit tested with internal and external grilles, straight ducting and transition fittings.

1.4 The main components comprise:

- fan unit (Flatmaster) or fan unit with integral heater (Flatmaster 2000)
- plastic ducting⁽¹⁾
- external grille⁽¹⁾
- internal grille⁽¹⁾
- remote boost switch
- filters.

(1) Sourced via the Certificate holder or externally (outside the scope of this Certificate).

1.5 The control electronics of the systems have not been assessed by the BBA.

2 Manufacture

2.1 The production process consists of the assembly and testing of printed circuit boards and the mechanical assembly of the fan unit.

2.2 All components and raw materials are inspected by the manufacturer. Items designated as critical to the operation or performance of the fan are sampled in accordance with the requirements of BS 6001-1 : 1999. All completed units are inspected to ensure correct assembly, operation and electrical safety.

2.3 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.4 The management system of NuAire Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BSI (Certificates FM 00149 and EMS 517710).

3 Delivery and site handling

3.1 The units are supplied in cardboard cartons and include the fan unit, optional boost switch (for Flatmaster 2000), installation instructions and ducting, internal grille and external grille (if supplied). Each carton bears the BBA logo incorporating the number of this Certificate.

3.2 Boxes should be stored internally and kept dry.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems.

Design Considerations

4 Use

4.1 The Flatmaster and Flatmaster 2000 Positive Input Ventilation Systems are continuously-running, low-energy, positive input ventilation systems and will contribute to eliminating or reducing surface condensation in dwellings as the unit supplies the building with air drawn from outside.

4.2 Before work commences, the installer must ensure familiarity and compliance with all national and local requirements.

4.3 The unit transfers air from the outside to the inside via an arrangement of rigid plastic ducting and connectors to a grille or grilles, depending on the layout of the dwelling.

4.4 The units are suitable for use in one- and two-storey flats. The internal grille should be sited in a central area (such as a hallway).

4.5 Reasonable provision should be made to ensure that the owner/occupier of the flat is provided with sufficient information about the system so that it can be operated and maintained effectively.

5 Practicability of installation

Although the systems are designed to be installed by a competent general builder, or a contractor, experienced with these types of systems, the provision of an electrical supply and the connection of the unit to the supply should be carried out only by a suitably qualified electrician. See section 10 and the *Installation* part of this Certificate.

6 Ventilation



6.1 The ventilation rates are given in Tables 1 and 2 of this Certificate.

6.2 Specifiers must ensure that in the overall design:

(a) all rooms have an appropriately-sized ventilation opening, for example an opening window, for rapid (purge) ventilation

(b) any kitchen, bathroom, utility room or sanitary accommodation is directly accessible from the central hallway into which the unit delivers air

(c) internal doors are not tight fitting; an undercut of 10 mm above the floor finish should be sufficient (standard methods of construction should provide sufficient leakage)

(d) flat volume is $> 120 \text{ m}^3$ and airtightness is $> 3 \text{ m}^3 (\text{h}\cdot\text{m}^2)^{-1}$ at 50 Pa.

6.3 Where a design condition specified in section 6.2 of this Certificate is not met, additional measures should be considered, as appropriate. For example, wet rooms with no openable window must have continuous low-level-rate mechanical extract ventilation with boost facility. Remote wet rooms with openable windows must have air transfer grilles or continuous low-level-rate mechanical extract ventilation with boost or (for toilets only) trickle vents. Small and airtight flats [see section 6.2(d) of this Certificate] must include trickle ventilators.

6.4 Designers should refer to documents supporting the national Building Regulations for detailed guidance.



6.5 The systems will contribute to eliminating or reducing condensation in flats when installed in accordance with the manufacturer's instructions and this Certificate. The systems supply the flat with air drawn from outside which, normally, will have a moisture content less than that in the flat.

7 Behaviour in relation to fire



7.1 The surface area covered by the internal grille is small enough not to have an adverse effect on the spread of fire in the internal lining of the wall in which it is installed and can be ignored.

7.2 The external grille constitutes an unprotected area which may be disregarded provided the appropriate minimum distances from other unprotected areas are maintained, thus:

England and Wales — the distances given in Approved Document B, Diagram 20

Scotland — Mandatory Standard 2.6, clause 2.6.2⁽¹⁾ — the grille should not be fitted to walls 500 mm or less from a boundary. Edge protection of the penetration is not normally required to meet Mandatory Standard 2.3, clause 2.3.4⁽¹⁾, but may be necessary where the proximity of other penetrations constitutes a potential weakness

(1) Technical Handbook (Domestic).

Northern Ireland — the distances given in Technical Booklet E, Diagram 4.4.

7.3 Where the systems are installed in flats where regulations require the provision of a protected entrance hall or protected enclosure and the outlet of the systems is within that enclosure, it is necessary to ensure that the safety of the enclosure is not compromised either in relation to its fire resistance or the entry of smoke. Smoke detectors must be connected to the fan unit so that it shuts down if smoke enters the ductwork. Ductwork must be of steel, with the point of penetration fire stopped, or if non fire-resistant ducting is used, it must be protected in fire-resisting construction up to the point where it penetrates the wall of the protected entrance hall or protected enclosure. Where the systems are installed in flats where these regulatory provisions do not apply, good installation practice should be observed; for example, the use of smoke detectors to control the fan, to ensure that occupant safety levels are not reduced.

8 Conservation of fuel and power



8.1 The specific fan power of the systems (see Tables 1 and 2) does not exceed the maximum design limit of $0.5 \text{ W}\cdot\text{l}^{-1}\cdot\text{s}^{-1}$ specified in supporting documents to the national Building Regulations.

8.2 For the purposes of SAP calculations, the systems may be modelled in the same way as a continuously-operating extract fan, with an air throughput of 0.5 ach (air changes per hour) plus infiltration and a specific fan power of $0.5 \text{ W}\cdot\text{l}^{-1}\cdot\text{s}^{-1}$.

9 Self-generated noise

The outlet noise is given in Table 3 of this Certificate.

Table 3 Nominal outlet noise

Fan speed setting	Outlet noise [dB(A) at 3 m]	
	Flatmaster	Flatmaster 2000
low	15	13
medium	18	23
high	23	29
boost	—	41

10 Provision of an electrical supply and electrical safety

10.1 For electrical safety, provision of an electrical supply and the connection of the unit to the supply should be carried out by a qualified electrician.

10.2 The systems should be connected to a suitable mains electrical supply through an isolating spur. A fuse rated at a maximum of 1A should be used. The provision of the electrical supply should be in accordance with the IET Wiring Regulations.

10.3 In England and Wales, all installations must satisfy the requirements of The Building Regulations 2010 (England and Wales) (as amended), Part P Electrical Safety. Notification should be made to the Local Authority Building Control in advance of installation. As an alternative to this procedure, electrical connections can be carried out by a person registered with a government-approved competent persons' scheme for electrical work, using materials suitable for the purpose.

10.4 In Scotland, to satisfy the requirements of Mandatory Standard 4.5, with reference to clause 4.5.1⁽¹⁾ of The Building (Scotland) Regulations 2004 (as amended), all installations should be designed, constructed and tested such that they are in accordance with the requirements of BS 7671 : 2008.

(1) Technical Handbook – (Domestic).

11 Maintenance



11.1 The units are fitted with filters which should be cleaned at one- to two-yearly intervals (can be vacuum cleaned) under normal operating conditions.

11.2 The ducting should not require maintenance unless it is subject to impact damage.

11.3 The motor is fitted with a sealed-for-life bearing that will not require maintenance or lubrication.

12 Durability



12.1 The fan unit case is constructed of durable materials and, under normal operating conditions, will have a life equal to that of the dwelling in which it is installed.

12.2 The ducting, fan motor and other electrical components may require replacing during the lifetime of the unit.

Installation

13 General

13.1 Installation of the unit should be in accordance with the manufacturer's instructions provided with each unit (see also section 10).

13.2 The unit can be installed in different configurations and is supplied with enough interchangeable spigots to enable it to be used with either round (100 mm) or rectangular (121 mm by 60 mm) ducting, ensuring that the minimum number of bends is used. The unit can be turned through 180° to any angle if required.

13.3 The louvres of the external grille must slant downwards and those of the internal grille must slant upwards.

13.4 The internal grille must not be placed within 1.5 m of a smoke alarm.

13.5 When it is not possible to fit the unit directly to an outside wall, the ducting which delivers air from the external grille to the unit (cold side ducting) must be insulated to prevent condensation forming on the surface in extreme conditions.

14 Procedure

14.1 The unit has four mounting pads. These pads are marked through when the unit is in the correct position. Holes are drilled in the wall and suitable rawl plugs inserted. The PCB cover is removed and the electrical cable is fed through the grommet hole (standard 1 mm three core lighting cable is recommended) in the rear of the unit. The unit is screwed to the wall.

14.2 The correct airflow direction is set up and the deflector plate is fitted. The transformation piece should be on the appropriate scroll outlet and must be fitted into the chosen spigot insert, prior to fitting. For internal/external grille installation, see Figure 1.

14.3 All necessary ducting must be supplied and fitted by the installer.

14.4 The unit must be connected to a suitable electrical supply through an isolating spur.

14.5 The power supply to the unit should be switched on.

14.6 The selector switch on the fan unit should be set to the required setting dependent on the size and layout of the property and the level of moisture being produced in the property.

14.7 The unit should be checked for correct operation in accordance with the relevant requirements of the *Domestic Ventilation Compliance Guide*. Note, this is a requirement in England and Wales.

15 Tests

Test data were examined relating to:

- outlet noise
- fan performance.

16 Investigations

16.1 The performance in use was examined by a survey of users of the systems as part of the original assessment.

16.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality of components used.

Bibliography

BS 6001-1 : 1999 *Sampling procedures for inspection by attributes — Sampling schemes indexed by acceptable quality limit (AQL) for lot-by-lot inspection*

BS 7671 : 2008 *Requirements for electrical installations — IET Wiring Regulations — Seventeenth Edition*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

17.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

17.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

17.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.