JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 8627-1 : 2006

(JRAIA)

Gas engine driven heat pump air conditioners— Part 1 : General requirements

ICS 97.100.20

Reference number : JIS B 8627-1 : 2006 (E)

Date of Establishment: 2000-07-20
Date of Revision: 2006-11-20
Date of Public Notice in Official Gazette: 2006-11-20
Investigated by: Japanese Industrial Standards Committee
Standards Board
Technical Committee on Industrial Machinery

JIS B 8627-1:2006, First English edition published in 2007-10

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

Printed in Japan

KK/AT

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Refrigeration and Air conditioning Industry Association (JRAIA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS B 8627-1** : 2000 is replaced with this Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS B 8627 consists of the following parts under the general title "*Gas engine driven heat pump air conditioners*":

Part 1 : General requirements

Part 2 : Non-ducted gas engine driven heat pump air conditioners—Testing and rating for performance

Part 3 : Ducted gas engine driven heat pump air conditioners—Testing and rating for performance

Gas engine driven heat pump air conditioners— Part 1 : General requirements

1 Scope This Japanese Industrial Standard specifies the heat pump air conditioner which drives the compressor of a vapor compression refrigeration cycle by a gas engine (hereafter referred to as "engine") using city gas or liquefied petroleum gas as a fuel and utilizes engine exhaust heat recovery during the heating period for the purpose of the indoor comfortable air conditioning (hereafter referred to as "gas heat pump") with the rated cooling capacity of 85 kW or less.

In addition, those described below are not included.

a) Gas heat pump for cooling only

b) Gas heat pump of which the cooling system of a condenser during the cooling period uses a water-cooled system

c) Gas heat pump with the heating function by an electric heater or an auxiliary electric heater

d) Gas heat pump of which the temperature condition of entering air, etc. is specific [1)]

e) Gas heat pump of which the main purpose is air conditioning for machinery and food

f) Gas heat pump of which the main purpose is air conditioning attained by introducing only outdoor air indoors

g) Gas heat pump of which the main purpose is air conditioning in a vehicle

h) Gas heat pump of which the purpose is to use for other specific applications

i) Gas heat pump of which the multiple outdoor units are used by combining them

j) Gas heat pump which is capable of cooling and heating simultaneously

k) Gas heat pump to which the generator is added.

Note [1)] For example, the gas heat pump for a computer room, all fresh type, etc.

2 Normative references The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0203 *Taper pipe threads*

JIS B 7951 *Continuous analyzer for carbon monoxide in ambient air*

JIS B 7982 *Automated measuring systems and analyzers for nitrogen oxides in flue gas*

JIS B 8620 *Safety code for small refrigerating equipment*

JIS B 8627-2 *Gas engine driven heat pump air conditioners—Part 2: Non-ducted gas engine driven heat pump air conditioners—Testing and rating for performance*

JIS B 8627-3 *Gas engine driven heat pump air conditioners—Part 3: Ducted gas engine driven heat pump air conditioners—Testing and rating for performance*

JIS C 1509-1 *Electroacoustics—Sound level meters—Part 1: Specifications*

JIS C 1509-2 *Electroacoustics—Sound level meters—Part 2: Pattern evaluation tests*

JIS C 3306 *Polyvinyl chloride insulated flexible cords*

JIS C 9335-1 *Household and similar electrical appliances—Safety—Part 1: General requirements*

JIS C 9335-2-40 *Household and similar electrical appliances—Safety—Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*

JIS K 0151 *Non-dispersive infrared gas analyzer*

JIS K 2211 *Refrigerating machine oils*

JIS K 5600-5-4 *Testing methods for paints—Part 5: Mechanical property of film—Section 4: Scratch hardness (Pencil method)*

JIS K 8116 *Ammonium chloride*

JIS S 2093 *Test methods of gas burning appliances for domestic use*

JIS S 2145 *Metallic flexible hoses for gas*

JIS S 6006 *Pencils, coloured pencils and leads for them*

JIS Z 8731 *Acoustics—Description and measurement of environmental noise*

JIS Z 9211 *Technical terms used in energy management*

3 Terms and definitions For the purpose of this Standard, the following definitions apply.

3.1 Terms on system and structure

3.1.1 non-ducted type type which is used by free delivery of air indoors mainly

3.1.2 ducted type type which is used by connecting ducts mainly

3.1.3 multiple combination type type which has multiple combinations of indoor units which can connect to one outdoor unit

3.1.4 representative combination representative combination of indoor units of a multiple combination type gas heat pump of which the shape shall be made to be optimum for use and in principle a four-way-discharge ceiling recessed cassette type (hereafter referred to as “four-way cassette type”)

3.1.5 multi-type type which connects two or more indoor units to one outdoor unit and controls the indoor units individually

3.1.6 standard combination standard combination of the indoor units of a multi-type gas heat pump, which satisfies the following conditions:

— the shape of the indoor unit shall be made to be optimum for use and in principle a four-way-cassette type;

— the number of the indoor units shall be in principle, when there are connecting ports for every indoor unit in the outdoor unit, the number of those connecting ports and when there are not individual connecting ports, the minimum number of the indoor units in the same room (two or more units). However, for the combination, marketability shall be taken into consideration;

— the capacity of the indoor unit in which the ratio of the sum of cooling capacity of the indoor unit to the cooling capacity of the outdoor unit becomes 1 (the value nearest to 1 when there is no combination in which the ratio becomes 1) shall be selected.

3.2 Terms on cooling performance and heating performance

3.2.1 rated cooling capacity capacity given by indicating the amount of heat expressed in kW which a gas heat pump removes from inside the room on the equipment name plate under the test condition of cooling capacity specified in **4.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.2 rated cooling sensible heat factor (**SHF**) sensible heat factor specified in **3.14** of **JIS B 8627-2** and **JIS B 8627-3** during the operation in which a gas heat pump shows the rated cooling capacity

3.2.3 rated cooling gas consumption consumption given by indicating the amount of gas expressed in kW which a gas heat pump consumes on the equipment name plate under the test condition of cooling capacity specified in **4.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.4 rated cooling power consumption power consumption given by indicating the effective power consumption expressed in kW on the equipment name plate under the test condition of cooling capacity specified in **4.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.5 intermediate cooling capacity amount of heat expressed in kW to be removed from inside the room when measured at the setting in which a gas heat pump shows the capacity of one-half the rated cooling capacity under the rated cooling performance test condition specified in clause **9**

NOTE : The intermediate cooling capacity shall be expressed in a unit of 0.1 kW in the range of 50 % ± 5 % of the rated cooling capacity. However, when the minimum capacity of the equipment exceeds 55 % of the rated cooling capacity, the value at that time shall be taken as intermediate capacity.

3.2.6 intermediate cooling gas consumption gas consumption expressed in kW to consume when measured at the setting in which a gas heat pump shows the capacity of one-half the rated cooling capacity under the rated cooling performance test condition specified in clause **9**

NOTE : The indicated value of intermediate cooling gas consumption shall be expressed in kW and in a unit of 0.1 kW. However, when the minimum cooling capacity of the equipment exceeds 55 % of the rated cooling capacity, the value at that time shall be taken as intermediate cooling gas consumption.

3.2.7 rated heating standard capacity capacity given by indicating the amount of heat expressed in kW which a gas heat pump adds to inside the room on the equipment name plate under the heating capacity test condition (standard) specified in **5.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.8 rated heating standard gas consumption gas consumption given by indicating the amount of gas expressed in kW which a gas heat pump consumes on the equipment name plate under the heating capacity test condition (standard) specified in **5.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.9 rated heating standard power consumption power consumption given by indicating the sum of the effective power consumption expressed in kW which a gas heat pump consumes on the equipment name plate under the heating capacity test condition (standard) specified in **5.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.10 intermediate heating standard capacity amount of heat expressed in kW which a gas heat pump adds to inside the room when measured at the setting in which a gas heat pump shows the capacity of one-half the rated heating standard capacity under the rated heating performance test condition specified in clause **9**

NOTE : The intermediate heating standard capacity shall be expressed in a unit of 0.1 kW in the range of 50 % ± 5 % of the rated heating standard capacity. However, when the minimum heating capacity of the equipment exceeds 55 % of the rated heating standard capacity, the value at that time shall be taken as intermediate heating capacity.

3.2.11 intermediate heating standard gas consumption the amount of gas expressed in kW which a gas heat pump consumes when measured at the setting in which a gas heat pump shows the capacity of one-half the rated heating standard capacity under the rated heating performance test condition specified in clause **9**

NOTE : The indicated value of intermediate heating gas consumption shall be expressed in kW and in a unit of 0.1 kW. However, when the minimum heating capacity of the equipment exceeds 55 % of the rated cooling capacity, the value at that time shall be taken as intermediate heating gas consumption.

3.2.12 rated heating low-temperature capacity capacity given by indicating the amount of heat expressed in kW which a gas heat pump adds to inside the room on the equipment name plate under the heating capacity test condition (low temperature) specified in **5.2** of **JIS B 8627-2** and **JIS B 8627-3**

3.2.13 rated heating low-temperature gas consumption gas consumption given by indicating the amount of gas expressed in kW which a gas heat pump consumes in the operation manual under the heating capacity test condition (low temperature) specified in **5.2** of **JIS B 8627-2** and **JIS B 8627-3**