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# GB

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## JB/T 8941.1-2014

Replacing JB/T 8941.1-1999

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### Roots type blowers for general purpose

#### – Part 1: Specification

一般用途罗茨鼓风机

第 1 部分：技术条件

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## Foreword

JB/T 8941, Roots type blowers for general purpose, is divided into two parts:

- Part 1: Specification;
- Part 2: Performance test methods.

This Part is the 1<sup>st</sup> part of JB/T 8941.

This Part was drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces JB/T 8941.1-1999, Roots type blowers for general purpose – Part 1: Specification; and compared with JB/T 8941.1-1999, the main technical changes of this Part are as follows:

- in Scope, “transfer air and neutral un-toxic gas” is changed into “transfer air, non-toxic gas, non-explosive gas”; “the air inlet temperature is not higher than 40°C” is changed into “the air inlet temperature is not higher than 45°C”;
- in Normative references, “GB/T 13384-1992, General specification for packaging of mechanical and electrical products” is changed into “JB/T 6444, General specifications for packaging of fans, blowers and compressors”;
- it adds the definition of “standard volume flow”;
- it changes “The service life is not less than 10 years” into “The service life is not less than 15 years”;
- it changes “The service life of synchromesh gear is not less than 25 000 h in design” into “The service life of synchromesh gear is not less than 40 000 h in design”;
- it changes “The accuracy of synchromesh gear is not lower than grade 7-7-7 as specified in GB/T 10095” into “The accuracy of synchromesh gear is not lower than grade 6 as specified in GB/T 10095.1 to GB/T 10095.2-2008”;
- it adds “For blowers with impeller of diameter greater than 750 mm, temperature measurement device shall be provided at the position of bearing when forced lubrication is used for bearing”;
- it adds “There shall be safety warnings when the surface temperature of blowers and accessories exceeds 80°C”;

# Roots type blowers for general purpose

## Part 1: Specification

### 1 Scope

This Part of JB/T 8941 specifies the terms and definitions, requirements, test method, inspection rules, marking, packaging, storage and guarantee period of roots type blowers for general purpose (including single-stage, double-stage and package blowers of positive- and negative-pressure).

This Part applies to roots type blowers for general purpose (hereinafter referred to as blowers) which are used to transfer air and neutral non-toxic, non-explosive gas. The air inlet temperature of blowers is not higher than 45°C; the content of solid particles in gas is not greater than 100 mg/m<sup>3</sup>; the maximum size of particles is not greater than half of the minimum working clearance of all relative movement parts in the air cylinder of blowers.

### 2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated editions apply to this document. For undated references, their latest editions (including all amendments) apply to this document.

GB/T 2888, *Methods of noise measurement for fans, blowers, compressors and roots blowers*

GB/T 10095.1-2008, *Cylindrical gears – System of accuracy – Part 1: Definitions and allowable values of deviations relevant to corresponding flanks of gear teeth*

GB/T 10095.2-2008, *Cylindrical gears – System of accuracy – Part 2: Definitions and allowable values of deviations relevant to radial composite deviations and runout information*

GB/T 13306, *Plates*

GB/T 6444, *Mechanical vibration - Balancing vocabulary*

GB/T 8941.2, *Roots type blowers for general purpose – Part 2: Performance test method*

**4.1.3** The accuracy of synchromesh gear of blowers is not lower than grade 6 as specified in GB/T 10095.1 to GB/T 10095.2-2008.

**4.1.4** It shall be ensured that the lubrication of synchronous gear and bearing of blowers is reliable.

**4.1.5** Shell and wall panel of blowers shall be of one-piece or split-up-and-down structure, in order to ensure the shell and wall panel can be aligned conveniently and correctly in reassembly.

**4.1.6** Impeller and shaft can be of one-piece structure or other structure to connect together, but any loosening between the two is not allowed.

**4.1.7** For blowers with impeller of diameter greater than 750 mm, temperature measurement device shall be provided at the position of bearing when forced lubrication is used for bearing.

**4.1.8** Drive system of blowers shall be provided with reliable safety measures.

**4.1.9** There shall be safety warnings when the surface temperature of blowers and accessories exceeds 80°C.

**4.1.10** Check valve or other device shall be generally installed in the gas exhaust piping of blowers, in order to prevent the gas at the outlet of blowers flowing back or the rotor of blowers being reversed abnormally.

**4.1.11** Pressure release valve shall be provided at the outlet of blowers (or the inlet of negative-pressure blowers) in accordance with the operating requirements of the device.

**4.1.12** Proper sound elimination and sound insulation devices shall be selected in accordance with the requirements of the service environment on noise.

## **4.2** Performance requirements

**4.2.1** The deviations between volume flow, energy volume ratio and design volume flow, energy volume ratio of blowers (excluding packaged blowers) shall not exceed the values specified in Table 1.

**Table 1 – Allowable deviations of volume flow and energy volume ratio**

Volume flow under design conditions m <sup>3</sup> /min	Deviation between measured and design volume flows %	Deviation between measured and design energy volume ratio %
≤ 0.5	± 7	+ 8
> 0.5 to 1.5	± 6	+ 7

#### 4.4 Assembling requirements

**4.4.1** The parts of blowers shall be inspected by the quality department of the manufacturer; the outsourced parts shall be provided with compliance certificate or quality certificate, which shall be inspected by the manufacturer; the parts can be assembled after washing and the oil-way becomes unblocked.

**4.4.2** Accurate and reliable mounting and good interchangeability shall be ensured for gear.

**4.4.3** The clearance between driving impeller and driven impeller of blowers, the clearance between impeller and shell, and the clearance between impeller end face and wall panel shall be as specified in the drawings.

**4.4.4** The joint of the exposed parts of blowers shall be smooth. The alignment tolerances for the joint of shell and wall panel, the joint of split shell and wall panel and the joint of wall panel and fuel tank shall not exceed the specifications of Table 2.

**Table 2 – Alignment tolerance limits**

Nominal diameter of inlet and outlet of blowers	Alignment tolerance limit
≤ 200	3
> 200 to 350	4
> 350	5

**4.4.5** Checking positions for the cleanliness degree of blowers:

- a) gear box (main oil tank): including oil tank cavity, gear and other parts in gear box. If gear box also works as oil tank, lubrication oil is also included;
- b) auxiliary oil tank: including oil tank cavity and lubrication oil;
- c) bearing assembly: including bearing seat, bearing cap inner wall, bearing and lubrication oil (grease).

**4.4.6** Checking method for the cleanliness degree of blowers:

Take apart the detachable part of the product designated to be the object of checking; use a clean brush and gasoline (or kerosene) to clean the positions required to be checked piece by piece; use filter water to filter the washings; dry them; weigh foreign matter separately: the milligrams of the foreign matter is the cleanliness degree of the part.

**4.4.7** The cleanliness degree of blowers is specified in Table 3.