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Technical Specification for General Purposes Centrifugal Fans

一般用途离心通风机 技术条件

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Foreword

This Standard was adjusted into the machinery industry standard by GB/T 13275-1991 *Technical Specification for General Purposes Centrifugal Fans.*

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Fans (SAC/TC187).

Drafting organizations of this Standard: Shenyang Blower Works Research Institute.

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This Standard was first-time published.

Technical Specification for General Purposes Centrifugal Fans

1 Scope

This Standard specifies the technical requirements, test methods, inspection rules, warranty period, mark and package of general purposes centrifugal fans (hereinafter referred to as “fan”).

This Standard is applicable to the ventilation system, air conditioner, and centrifugal fan used for the industrial production. Its transport medium is air or other gas mixture containing no corrosive substance, with the maximum fan pressure no greater than 30kPa. The medium inlet temperature shall be no greater than 80°C, the dust content and the content of other solid impurities shall be no more than 100mg/m^3; the medium shall contain no sticky or other materials.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 275 Shaft and Housing Fits for Rolling Bearings

GB/T 1171 Classical V-Belt for General Drive

GB/T 1236 Industrial Fans - Performance Testing Using Standardized Airways

GB/T 2888 Methods of Noise Measurement for Fans Blowers Compressors and Roots Blowers

GB/T 3181 Colour Standard for Paint Film

GB/T 3235 Basic Types, Sizes Parameters and Performance Curve of Fans

GB/T 4323 Pin Coupling with Elastic Sleeve

GB/T 10178 Industrial Fans - Performance Testing In-Situ

GB/T 13306 Plates

GB/T 19074 Industrial Fans - Mechanical Safety of Fans – Guarding

JB/T 6444 General Specifications for Packaging of Fans Blowers Compressors

JB/T 6445 Overspeed Test for Industrial Fan Impeller

JB/T 6886 Technical Specification for Fan Painting

JB/T 6887 Technical Condition of Cast Iron for Fans Blower and Compressors

JB/T 6888 Technical Condition of Cast Steel Used for Fan Blower and Compressor

JB/T 8689 Fan Vibration Detection and Its Limited Value

JB/T 8690 Industrial Fans Noise Limited Value

JB/T 9101 Fan Rotor Balance

JB/T 10213 Specifications for Fan Welding Inspection

JB/T 10214 Specifications of Riveting and Welding Part for Fans

3 Technical Requirements

3.1 Drawing and technical document

The fan shall conform to the provisions of this Standard, and be manufactured as per the drawing and technical document approved by the stipulated procedure, as well as the agreement between supplier and purchaser.

3.2 Product performance

3.2.1 Aerodynamic performance test shall be carried out against each series of fans; and draw the typical aerodynamic performance curve.

3.2.2 At rated speed, in the working area, the deviation between the actually measured aerodynamic performance curve and the typical performance curve of fan shall conform to the following provisions:

a) Under prescribed pressure or static press of the fan, the corresponding flow deviation is ±5%; or under the prescribed flow, the corresponding deviation of fan pressure or static press is ±5%;

performed.

3.3.5 Bearing

3.3.5.1 Generally, the fan selects rolling bearing or sliding bearing, their specifications and dimensions shall conform to the provisions of relevant standards.

3.3.5.2 Select the thrust bearing that can withstand the additional thrust generated by the fan.

3.3.5.3 The fit between sliding bearing and shaft & shell shall conform to the provisions of GB/T 275.

3.3.5.4 Bearing shall be firmly installed in the bearing housing; each bearing shall maintain the same axial center.

3.3.5.5 The sliding bearing shall select the lubricating grease or thin oil lubrication that meet the usage conditions.

3.3.5.6 The shaft hole on the bearing shall be equipped with shaft seal that prevent the leakage of lubricating grease or thin oil lubrication, as well as the erosion of impurities.

3.3.6 Coupling

The fan shall select coupling as per GB/T 4323.

3.3.7 Belt pulley

3.3.7.1 Generally, fan shall select the ordinary V-belt pulley, made of cast iron.

3.3.7.2 The ordinal V-belt shall conform to the provisions of GB/T 1171; the belt speed shall not exceed 25m/s.

3.3.7.3 The not fully machined belt pulley shall perform balance calibration as per the provisions of JB/T 9101.

3.3.8 Inlet deflector

3.3.8.1 Generally, for the fan with Device No. 7.1 and above shall be equipped with inlet deflector and other adjusting device.

3.3.8.2 The deflector can be made into axial or radial forms, the fan generally select the axial deflector.

3.3.8.3 Generally, the deflector is adjusted manually; if it is required by the purchaser, it can select the automatically adjusting deflector.

3.3.2.9 For the direct drive fan, the shell shall be firmly connected with the motor or base seat, so that the shell center maintains consistently with the motor axis; and have sufficient strength to withstand the dynamic load during the running period; for the fan with other running modes, the shell center shall be consistent with the bearing axis.

3.3.2.10 The pipes connecting with the inlet and outlet of the shell shall be equipped with independently support, and no outside force is allowed to exerted to the shell.

3.3.2.11 Shell shall be equipped with lifting lugs.

3.3.3 Impeller

3.3.3.1 Generally, the impeller has the welding structure; the welding quality shall conform to the provisions of JB/T 10213.

3.3.3.2 The wheel disc and hub adopt clearance fit, generally connect with rivets; the riveting quality shall conform to the provisions of JB/T 10214; welding structure form can also be adopted between the wheel disc and hub.

3.3.3.3 The splicing of wheel disc and wheel cap shall ensure the strength, and conform to the provisions of JB/T 10214.

3.3.3.4 Each impeller shall perform balance calibration, its balance quality grade shall conform to the provision of JB/T 9101.

3.3.3.5 The impeller shall meet the requirement for 110% maximum working speed, and conform to the provisions of JB/T 6445.

3.3.3.6 Generally, the impeller and spindle are connected with key; the hole and shaft are generally transitionally fit; there is fastening device in the vertical position of the shaft, which shall not be loose during the running period.

3.3.3.7 Impeller shall have sufficient rigidity; no deformation shall be generated during the handling and running processes.

3.3.3.8 The molded line, splicing and processing accuracy of blade shall conform to the provisions of JB/T 10214.

3.3.3.9 The unprocessed surface of the impeller shall, according to GB/T 3181, paint bright red R03 and conform to the provisions of contract.

3.3.4 Spindle

3.3.4.1 Generally, the spindle is made of superior-quality carbon steel or alloy steel; and has sufficient strength and rigidity.

3.3.4.2 When spindle is made of forged steel, stress relief treatment shall be

3.7.1.5 The bearing place shall be free from oil leakage.

3.7.1.6 The processing surfaces of spindle, coupling, belt pulley shall be painted with grease or use other methods to perform the anti-rust action.

3.7.1.7 Before shipment, the inside and outside of the fan shall be cleaned.

3.7.2 Complete set

3.7.2.1 The general supply scope of fan shall contain the following contents:

a) Fan body;

b) Motor;

c) Transmission gear (excluding direct connection);

d) Coupling (coupling transmission mode);

e) Belt pulley and ordinary V-belt (belt transmission mode);

f) Guard (excluding direct connection);

g) Guide rail (belt transmission mode);

h) Ground bolt;

i) Product certificate;

j) Product instruction book.

3.7.2.2 According to the demand of the purchaser, the fan with Device No.7.1 and above is provided with deflector and other adjusting devices.

3.7.2.3 According to the demand of the purchaser, the muffler and monitoring instrument can be provided.

3.7.3 Installation

3.7.3.1 The purchaser is responsible for the fan installation. If necessary, the supplier shall send for experienced technical personnel to provide technical services for the installation and start.

3.7.3.2 If necessary, the supplier shall provide the data involving the installation requirements.

a) When assembling and transporting in the whole machine form, the estimated weight of the fan;

5 Inspection Rules

5.1 Each fan shall leave the factory only when it is tested qualified by the Technical Inspection Department of Manufacturer, and attached with the product certificate.

5.2 Inspection classification

The fan inspection can be divided into exit-factory inspection and type inspection.

5.3 Exit-factory inspection

The exit-factory inspection items of fan shall include the following ones:

a) Mechanical running test of fan;

b) Balance calibration of rotating part;

c) Inspection of parts quality, appearance quality, assembly quality, and painting quality;

d) Inspection of complete set of product (including the completeness of the exit-factory documents);

e) Inspection of requirements for radial unilateral clearance between air inlet and impeller wheel cap inlet.

5.4 Type inspection

The type inspection items of fan shall include the following ones:

a) Exit-factory inspection items;

b) Aerodynamic performance test of fan;

c) Noise test of fan;

d) Impeller overspeed test.

5.5 In case of one of the following conditions, the fan type inspection shall be performed:

a) The first-time produced products after identifying and finalizing, or old products produced in other factories;

b) After the formal production, when the significant changes of structure, material, process may influence the product performance;

wheel cap inlet shall conform to the provisions of 3.5.4.

5.9 In the fan mechanical running test, aerodynamic performance test, impeller overspeed test, and noise test, if there is 1 item is disqualified; then sample the double number of fans for the same batch; if it is still disqualified after that, then inspect the fans one by one.

6 Warranty Period

6.1 Under the condition that the purchaser complies with the fan installation and usage rules, the warranty period shall be 8000h since the fan is formally used, but it shall not exceed 18 months since the delivery date, and it shall be limit by the date of the earlier between the two dates above.

6.2 Within the warranty period, if the fan is damaged or can't work normally due to the bad manufacture quality or material defect, the suppler shall repair or replace freely for the purchaser.

7 Mark and Package

7.1 Mark

7.1.1 Product mark

7.1.1.1 The nameplate shall be placed on the obvious positions of the fan and auxiliary equipment, its contents shall be as follows:

a) Model and name;

b) Major technical parameters: fan pressure (static press) in Pa, kPa; flow in m^3/min; motor power in kW; speed in r/min;

c) Product number;

d) Manufacture date;

e) Manufacturer name.

7.1.1.2 On the fan (or parts), the mark of impeller (or rotor) rotation direction and adjusting position shall be made.

7.1.1.3 Product plate dimension and technical requirements shall conform to the provisions of GB/T 13306.

7.1.2 Package mark

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