

## **Model 9-19№16D Centrifugal Fan**

# **Usage Directions**

## **一、 Uses of the Fan**

Model 9-19N<sub>0</sub>16D Centrifugal Air-blower possesses the advantages of higher efficiency, lower noises, smooth functional curve and wider efficient area compared to other models of the same kind.

This model is used to ventilate forges with high pressure by force, and also widely in conveying minerals, air and other special gases. The air blower must be under special treatment when conveying special gases.

## **二、 Model of the Air-blower**

This type is N<sub>0</sub>16. It uses one-way air absorption. Its impeller is left rotation. The exit direction angle is 90°, The transmission mode is Pattern D.

## **三、 Main parts**

Structural characteristics: This fan is formed by impeller, machine outer-cover, air-entrance, stands and so on.

1. Impeller: It uses sixteen vanes, with forward winding type. The outer edge highest circling speed of the vane expanding device is within 140m/s. After the vane is finished, it has been tested in both still and movable modes. Therefore, its movement is steady and reliable.

2. Outer-cover: The steel plates are welded to form the worm shape as one piece.

3. The air-entrance is made a whole structure using convergence flowing shape.

4. Transmission group is formed by main axle, bearing box, shaft coupling and so on. The main bearing is made of high quality steel and is supported by the whole structure. The rolling bearing is lubricated. It is lubricated using bearing grease.

#### **四、 Installment, Adjust and Trial Run**

1. Pre-installment: Every part of the air-blower must be checked completely, to ensure the parts are not faulty and the vanes are in right rotation. Make sure each part is connected tightly and that the vanes, main axle, bearing and so on have not been damaged, and that the transmission group is flexible. If some problems appear, it must be adjusted and repaired immediately.

2. Installment: Check next to see if sundry goods and tools remain within the machine. Put some grease or mechanical oil on the joint surface to prevent rust for easy dismantling. Parts of the air-blower, the base connection of the entrance and exit tunnels must be naturally coincident. Don't connect them by force, or by putting pressure on the parts of the air-blower. Make sure the air-blower axle line is in a horizontal line.

3. Installment demands:

( 1 ) Install it according to the position and size marked in the drawing. For air-blower's efficient work, make sure the axle direction and radial clearance of the air-entrance and the vanes match the demands of

the drawing.

(2) After installment, turn the rotor by hand, check its flexibility. If there are inner collisions and scratches, adjust it immediately.

(3) Trial run of the Air-blower. After the complete installment and check, the air-blower can be used under trial run.

To prevent the electric motor being burnt by overloading, its start and trial run must be carried out without loading (that is: shut adjusting air-entrance, open adjusting air-exit slightly). If everything is perfect, open the valve till the work condition is in set quota. In the run, watch the change of electric current constantly. Notice: The return circuit electric current must not go beyond the rated data of the electric motor.

## **五、 Operation:**

### **1. Pre-start:**

(1) Shut the air-entrance regulator, and ensure the air-exit regulator is slightly open.

(2) Check the space size of every part of the blower. Make sure the movable parts and fixed parts do not have collisions and rubs.

### **2. Post-start.**

After the blower works normally, check if the bearing temperature is normal. Attention: the surface temperature must not be over  $70^{\circ}\text{C}$ , the bearing temperature rising must be under  $40^{\circ}\text{C}$ . If there appears to be abnormally loud noises, vibrations and collisions as well as rapidly rising

bearing temperatures ,stop the run immediately.

## **六、 Maintenance and Repair Work of the Fan**

To avoid artificially imposed obstacles, accidents , to prevent the occurrence of the natural stoppage of the air-blower ,electric motor and so on ,to make equipment efficiency yield well, and to lengthen the service life of the equipment ,the air-blower maintenance and repair work must be carried out regularly.

### **1. Points for attention in the air-blower maintenance and repair work**

( 1 ) The run must be carried out when air-blower's equipment is working normally.

( 2 ) Remove the inner amasses, dirt and other odds and ends to prevent rust.

( 3 ) To ensure of personal safety, the maintenance and repair work must be done when the equipment is NOT working.

### **2. Some items for attention in the normal run.**

( 1 )In the course of starting ,stopping working or running, if anything appears abnormal, the air-blower must be immediately stopped and checked .After checking the causes ,remove the stoppage and any other hidden dangers where necessary.

( 2 ) Change grease after each dismantling .In the normal situation ,the need to change the grease

is according to the machine's working hours and the practical

working surroundings .

## **七、Stoppages and Causes:**

### **(一) Quake violently**

1. Axles of the air-blower and electric motor are not concentric.
2. Internal frictions between the air-blower cover or air-entrance and vanes.
3. The looseness of the base or it is not firm.
4. The vane rivet is loose or the vane becomes deformed.
5. The connection between vane axle and axle hole is not tight.
6. Shaft coupling is not in good in alignment or the connecting bolt is loose.
7. The connecting bolts between the cover, bearing base and stand bearing base and its cover are loose.
8. Produce resonance because of the incorret installation of the air-entrance , and exit tunnel.
9. Vanes have amassed dirt, the vanes are damaged or have become deformed ,and the axle is twisted and so on ,which cause rotor unbalanced.

### **(二) The temperature of the bearing is rising too fast.**

1. Bearing box quakes violently.
2. Grease is not good quality, has gone bad or becomes contaminated with dirt, sand ,amass and so on ,or the grease filling amount is incorrect.

3. The connecting bolt between bearing cover and its base is too tight or loose.

4. Installment between axle and rolling bearing is not level. The front and back bearings are not concentric.

5. The rolling bearing is damaged or twisted.

(三) The electric current is beyond the set data or temperature rising is too high.

1. Air-exit tunnel valve is not shut when starting.

2. Electric voltage of power supply is low or lack of phases.

3. Influenced by the violent quake of the bearing box.

4. Main axle running speed is beyond rated value.

5. Rate of flow is beyond rated value or wind tube leaks air.

6. Air-density sent by air-blower is too high.

7. Shaft coupling connection is not correct. Leather washer is tight or space is not even.

8. Influenced by the worse or “sick” working conditions of the other paralleled air-blowers.