



**SANJIVANI RURAL EDUCATION SOCIETY'S
SANJIVANI COLLEGE OF ENGINEERING KOPARGAON**



**DEPARTMENT OF ELECTRICAL
ENGINEERING**

Report

On

3D Modeling of a Motor Blower in Creo

Prepared by:

Mr. Rohit Rajaram Takpere

B.Tech in Electrical Engineering

Sanjivani College of Engineering, Kopargaoon

Dr. Dipesh B. Pardeshi

Hod Electrical

Introduction: -

An industrial blower is a specialized device designed to enhance airflow by utilizing an electric motor, impeller, and airfoils within a sealed housing. The main purpose of an industrial blower is to increase air movement and eliminate contaminants like dust, dirt, and particulate matter. These devices generate higher pressure than fans, typically achieving a pressure ratio between 1.11 and 1.2, placing them between fans and compressors in terms of both airflow and pressure capabilities.

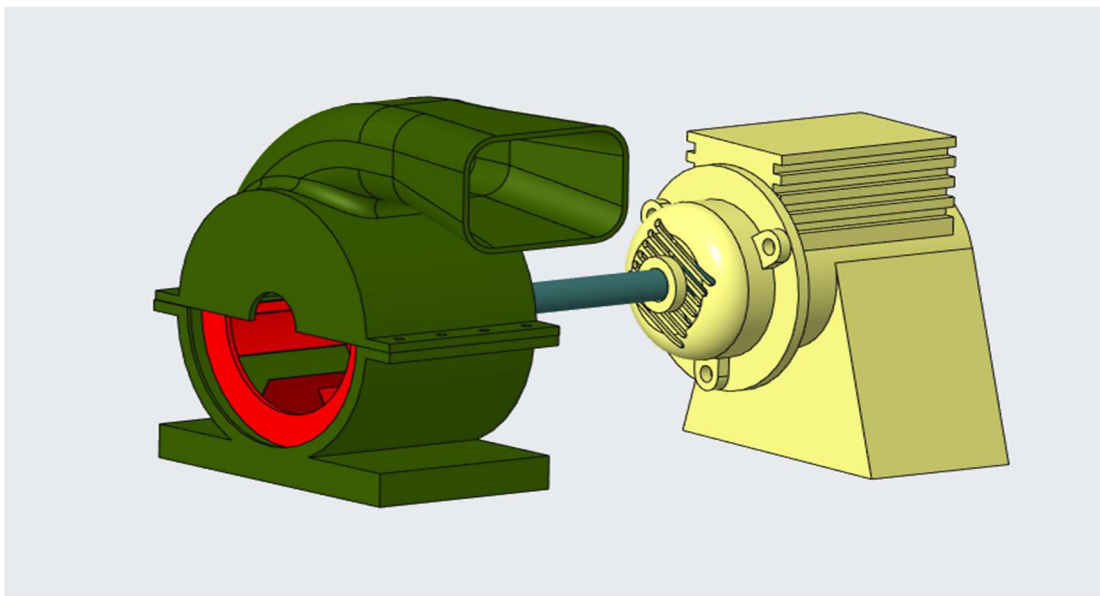
Industrial blowers are available in several types, each with distinct design and functionality:

1. Centrifugal Blowers: These utilize centrifugal force to move air and usually incorporate a gear system. They can be designed as either single-stage or multi-stage, depending on their application.
2. Axial Blowers: Resembling household fans, axial blowers feature a central shaft with blades attached, directing airflow along the axis of the shaft.
3. Positive Displacement Blowers: These operate based on a specific rotor geometry, making them suitable for applications that require consistent airflow at various pressures.

Industrial blowers are also categorized by the direction of airflow:

- Centrifugal Blowers: These blowers use centrifugal force to convert kinetic energy into potential energy, making them ideal for situations where high pressure and relatively low airflow are needed.
- Axial Blowers: These blowers move air parallel to the shaft, making them suitable for applications where high airflow is required with lower pressure.

Understanding the types and classifications of industrial blowers is essential to selecting the right blower for various industrial applications, such as ventilation, material handling, cooling, or dust control.



Upper Housing And Lower Housing: -



Upper Housing



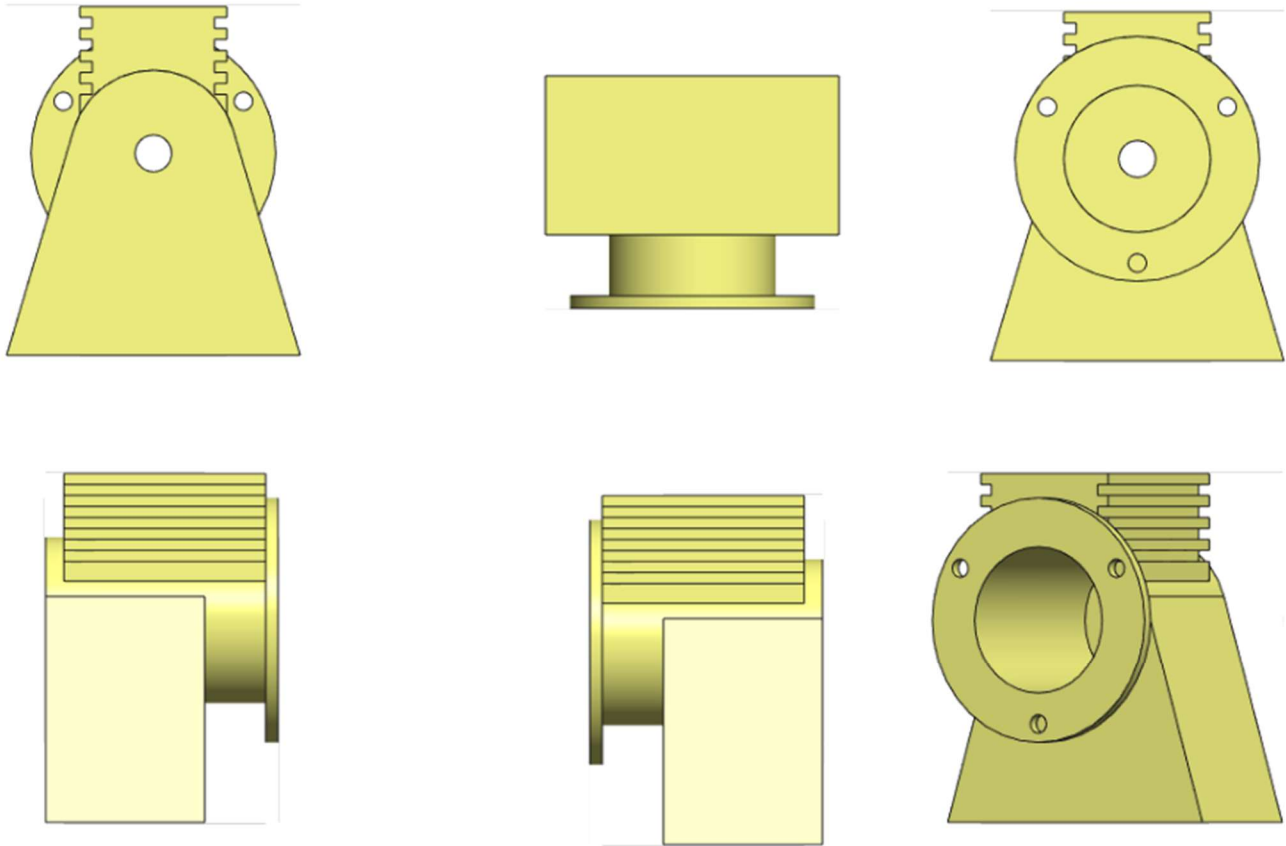
Lower Housing



Housing:

The blower assembly is enclosed in a housing, usually made of metal or plastic. This housing directs the airflow in a specific direction, either through the HVAC system's ducts or directly into a room, depending on the design.

Motor: -

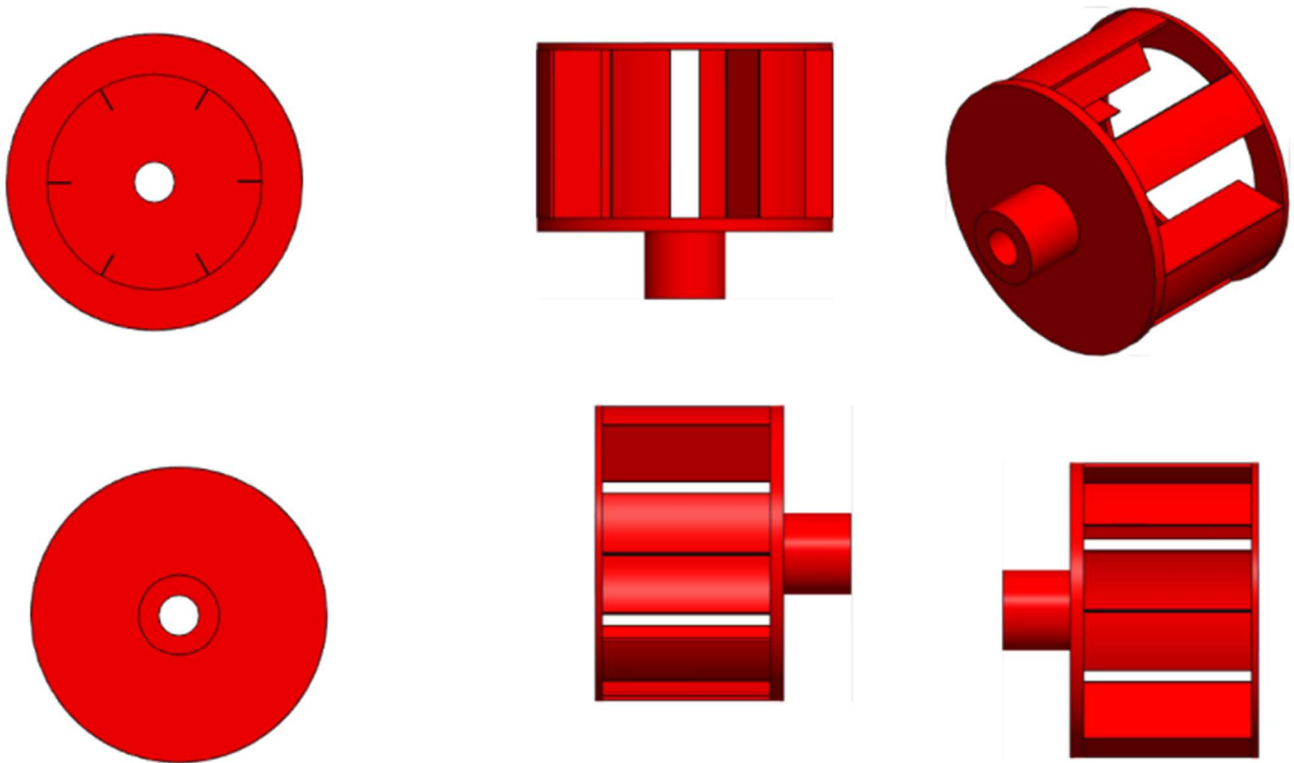


A blower motor is a critical component in HVAC systems (heating, ventilation, and air conditioning) and other air-moving equipment. It drives the fan or blower wheel that moves air through the ductwork, into spaces, or through a system for various purposes such as heating, cooling, ventilation, or air circulation. Here's a detailed overview of blower motors:

Key Functions of a Blower Motor

1. **Air Circulation:** The blower motor powers the fan that pushes air through the ducts of an HVAC system, distributing heated or cooled air throughout a building to maintain comfortable indoor temperatures.
2. **Ventilation:** By moving air through a building, blower motors help ventilate indoor spaces, reducing the concentration of indoor pollutants and maintaining air quality.
3. **Air Filtration:** The blower motor assists in drawing air through filters in the HVAC system, removing dust, allergens, and other particulates to improve indoor air quality.
4. **Humidity Control:** In HVAC systems, the blower motor also plays a role in controlling humidity by circulating air over cooling coils that remove moisture from the air.

Blower: -



A blower in a ventilation system is a crucial component that facilitates the movement of air throughout a space, ensuring proper ventilation, air quality, and temperature regulation. Blowers in ventilation systems are designed to maintain a consistent flow of fresh air into a building while expelling stale or contaminated air out, which is essential for maintaining a healthy indoor environment.

Key Functions of a Blower in a Ventilation System

1. **Air Movement:** The primary function of a blower in a ventilation system is to move air through the ductwork and into various areas of a building. This movement helps distribute fresh air and remove stale air, thereby improving indoor air quality.
2. **Temperature Regulation:** By facilitating the flow of air, blowers help regulate indoor temperatures. In heating or cooling applications, blowers distribute conditioned air evenly throughout a space, ensuring consistent temperatures and comfort levels.
3. **Air Quality Improvement:** Blowers aid in reducing indoor air pollutants such as dust, allergens, fumes, and odors by continuously circulating air through filters and removing contaminated air from indoor spaces.

Shaft: -

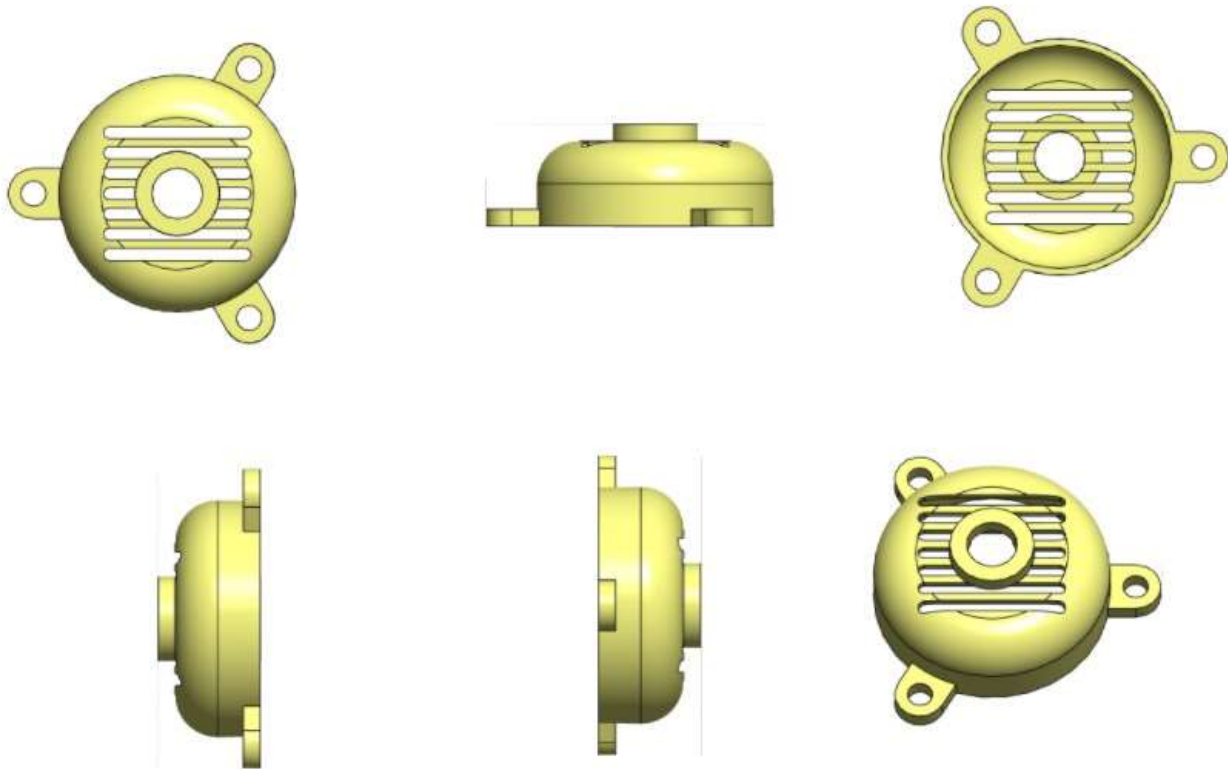


The shaft of a motor is a key mechanical component that plays a crucial role in transmitting the rotational force (torque) generated by the motor to other components or systems, such as gears, pulleys, or fans. It is a cylindrical piece of metal that extends from the motor's rotor (the rotating part of the motor) and serves as the output axis for the motor's mechanical power.

Key Functions of a Motor Shaft

1. **Torque Transmission:** The primary function of the motor shaft is to transfer the torque generated by the motor's rotor to the connected machinery or load. This enables the motor to drive a variety of devices, such as blowers, pumps, fans, and conveyors.
2. **Support for Rotating Components:** The shaft provides support for rotating components attached to it, such as impellers, fans, or gears. It ensures these components rotate smoothly and efficiently with minimal vibration or misalignment.
3. **Power Delivery:** The shaft allows the delivery of mechanical power from the motor to the application or process. This power can be used to perform work, such as moving air, driving a conveyor belt, or powering an industrial machine.

Cover: -

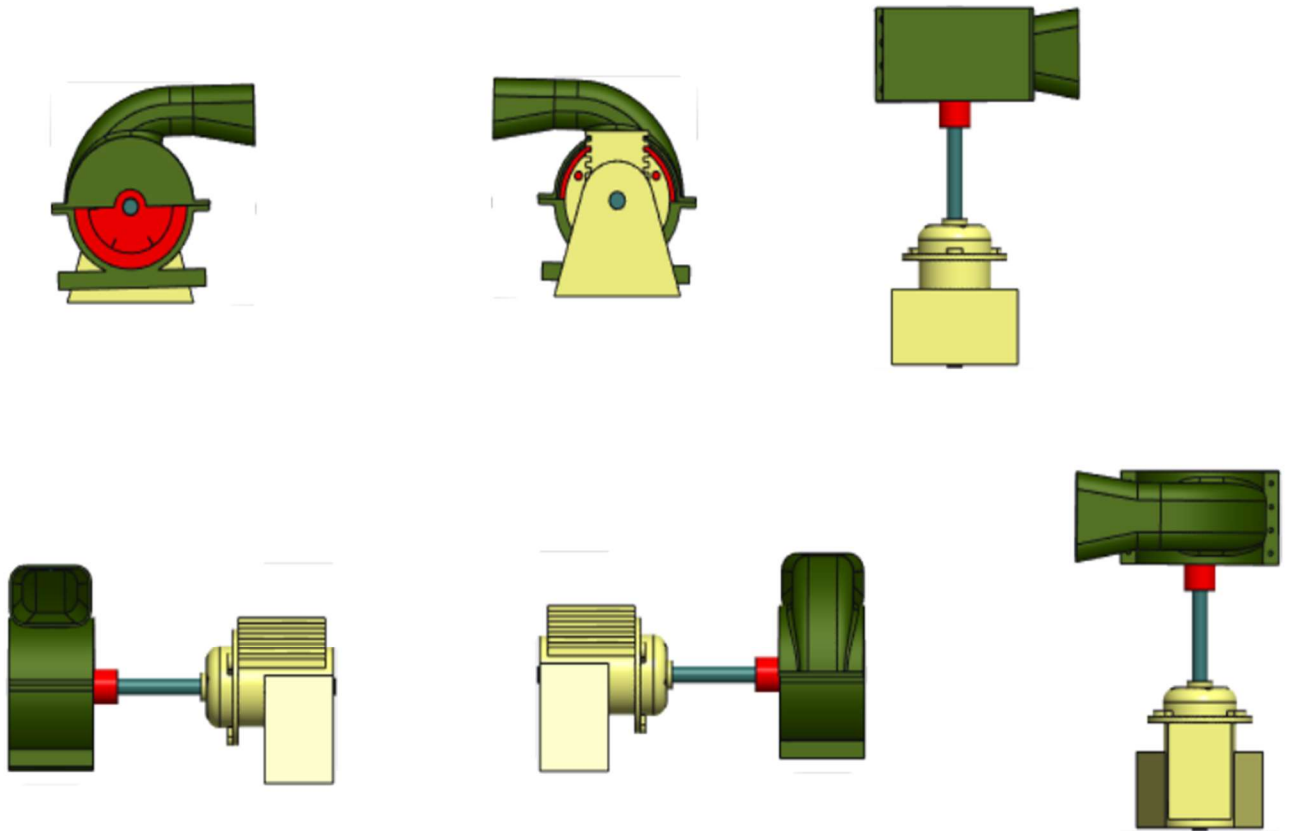


The cover of a motor, often referred to as the motor enclosure or housing, is an essential component designed to protect the motor and its internal parts from external factors such as dust, dirt, moisture, and physical damage. It also plays a role in ensuring the motor operates efficiently and safely.

Key Functions of a Motor Cover

1. **Protection:** The primary function of the motor cover is to safeguard the internal components of the motor, such as the rotor, stator, and bearings, from environmental contaminants. This protection helps to extend the motor's lifespan and maintain its performance.
2. **Safety:** The cover provides a safety barrier to prevent accidental contact with the moving parts of the motor. This reduces the risk of injury to personnel operating or working near the motor.
3. **Cooling:** Many motor covers are designed to facilitate airflow and cooling. Proper ventilation and cooling help prevent overheating, which can damage the motor and affect its efficiency.

Views Of Assembly: -



Conclusion: -

Designing a motor blower in Creo involves several crucial steps to ensure a functional and efficient air-moving device. The process begins with conceptual design, where the blower's purpose is defined, and initial sketches are created to outline its basic configuration. Detailed modeling follows, using Creo to develop precise 3D models of components such as the motor, fan blades, and housing, ensuring proper fit and alignment.