# YFIMF - INLINE FULLY MIXED FLOW FAN

INFINAIR™
INFINAIR ARABIA CO. LTD.

## Ratings and Applications

| | |
|---|---|
| Airflow Range | 1,000～100,000 m³/h (588~58,824 CFM) |
| Static Pressure Range | 1,000～2,150 Pa (4~8.63 in.WG.) |
| Drive Types | Direct / Belt drive / VFD |
| Mounting Types | Roof mounted / Base mounted / Ceiling hung |
| Applications | 1. General ventilation Ducted air supply and exhaust<br>2. Positive pressure air supply<br>3. Explosion-proof air supply and exhaust<br>4. Smoke removal<br>5. Laboratory exhaust |

## Wheel Technology

**1. Wheel in a New Form**

The mixed flow wheel includes a wheel cone carefully matched to the inlet cone for precise running tolerances to reduce air leakage and turbulence, improve efficiency and lower sound.

**2. Advanced Design**

The design of the flow passage is optimized through CFD simulation and experimental verification, dramatically improving the wheel efficiency over the traditional mixed flow wheel.

**3. Advanced Process**

Die-formed and continuously welded, the wheel and flow passage components are of high precision, high strength and greater reliability.

**4. High Balance Quality Grade**

The wheel has been dynamically balanced twice: after the continuous welding process and after epoxy coatings applied on the surface. The balance quality grade reaches AMCA 204-G2.5. This helps greatly improve wheel balance, reduce vibrations and lower sound.

**5. Optimum Sound Performance**

The mixed flow wheel takes on intermediate performance characteristics between the axial and centrifugal wheel. Tests in the AMCA accredited laboratory (AMCA 300 Standard) show that it has such optimum sound performance that a bystander would hear a more band sound.

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## General Features

**1. Performance Characteristics of Mixed Flow Type**

The mixed flow fan takes on intermediate performance characteristics between the axial and centrifugal fan and features higher efficiency and lower sound. It allows greater airflow than the centrifugal fan and produces higher pressure than the axial fan. The mixed flow fan has a smaller wheel diameter than the centrifugal fan at the same speed and has lower speed than the axial one with the same wheel diameter.

**2. High Efficiency and Lower Operation Costs**

The optimized wheel and guide grid help ensure optimum flow efficiency, reducing turbulence and leakage. The YFIMF Model fan is AMCA Certified for Fan Efficiency Grade and is rated Energy Label Grade 1.

**3. Better Sound Quality: Lower Sound Power**

The sound quality of a mixed flow fan benefits from the low sound design as well as the reduced overall sound power. The mixed flow fan has a much lower sound level than the axial fan and double inlet centrifugal fan at all octave bands. Moreover, its sound mostly falls into the low octave band (62.5-250Hz) and a bystander would hear a more band sound.

**4. Fans in Direct and Belt Drive Types for Flexible Model Selection**

- The direct drive type features high transmission efficiency, more compact design, low maintenance and no quick wear parts. For the fan of each specification, there are wheels of 6 different angles to choose from to meet the requirements for model selection.
- The belt drive type enables automatic matching in model selection and offers greater flexibility in responding to field conditions. Also, it is more convenient to repair and replace motor.

## Technical Information

**1. Quality Standards**

The fan shall be tested and certified in accordance with AMCA Standard 210 & 300. AMCA Seal for (Efficiency Sound, Air Performance and Fan Efficiency Grade) shall be tagged on each fan before leaving the factory as a standard seal.

The manufacturer shall obtain Production License for National Industrial Products and be certified by ISO 9001, ISO 14001, ISO 45001.

**2. Fan Type**

The YFIMF fan shall be of the mixed flow, belt / direct drive and inline type. It shall be in a cylindrical structure.

**3. Inlet**

The inlet shall be designed in line with aerodynamics and spun with high quality carbon steel. It shall be streamlined for better airflow movement and efficiency, reducing turbulence and sound.

**4. Housing**

The housing shall be in a two-cylinder structure: the inner cylinder and the fan housing interior to which the guide vanes are welded. The inner cylinder and the fan housing interior are rolled round and all welded with high quality carbon steel. The motor is located inside the inner cylinder supported by the guide vanes. Also, the guide vanes shall be a three dimensional curved surface to help improve the air performance and static pressure efficiency of the fan.

**5. Surface Processing**

The surface of the fan shall be polished to remove any protuberances, welding spatters, burrs, sharp edges, scrap iron and greasy dirt before being finished with electrostatic epoxy coatings. The surface shall be a level one without sags, cracks, cockles or detachment.

**6. Fan Parts and Drive Mechanism (For belt drive type only)**

| Fan Part | Description |
|---|---|
| Shaft | The shaft shall be made of 40Cr steel and heat treated through homogenizing furnace to the hardness level of HB250～280. It shall be treated through hardening and tempering and finish turning processes. The design speed of the shaft shall be at least 25% more than the maximum running speed of the fan. |
| Bearings | The lubricant spherical roller bearing fastened by set screws shall be used. The bearing L10 rating life shall be in excess of (80, 000 -150,000 hours) at the maximum cataloged operating speed as per the design. The bearing brand shall be internationally known, such as FYH and SKF. The extended copper lubrication pipe shall be there to feed lubricant with no need to disassemble the fan. |
| Belt | The belt shall be grease and oil and static proof and resistant to high temperature. |
| Pulley | The pulley shall be sized for a minimum of 150% of the driving power. The pulley shall be of cast iron type and taper sleeves shall be used to fix the pulley so that it can be easily removable.. |
| Motor | The motor shall be carefully matched to the fan load. It shall be (IP55,IP56, …etc) rated with Class F,H Insulation according to project specification . The motor bearing shall be of ball type and lubrication- free. Out of the air stream shall the motor and drive mechanism be located to avoid grease or dirt accumulation. |
| Belt Guard | The semi-enclosed belt guard shall be fitted to avoid injuries. |