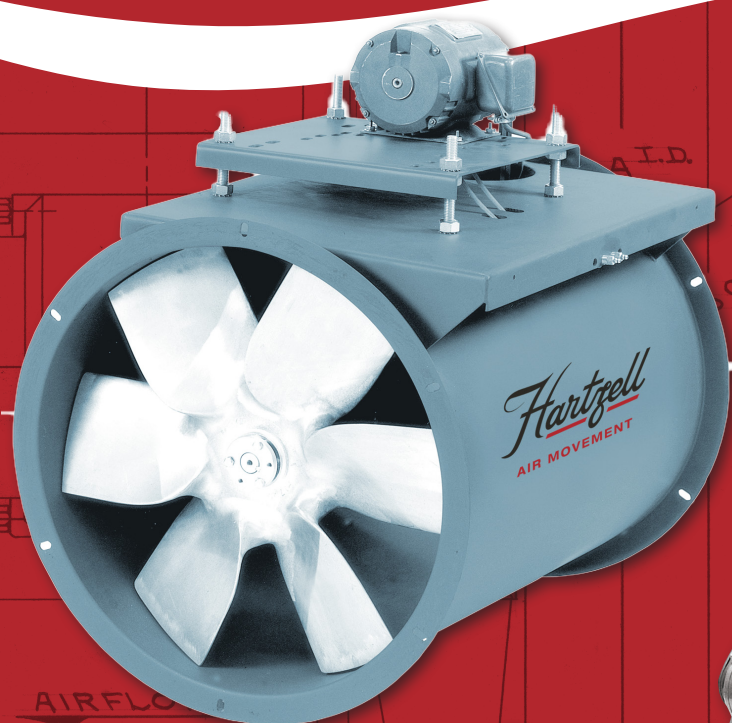




AIR MOVEMENT

Industrial Fan Guide



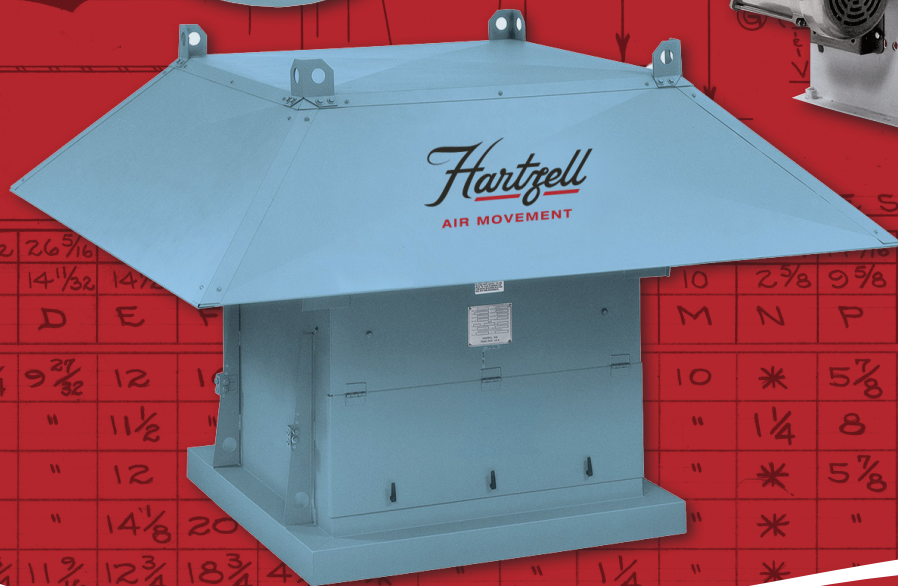
CONDUIT BOX M'T'G PLATE
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Hartzell Air Movement

910 S. Downing Street Piqua, OH 45356-0919

Contact

1-800-336-3267 | info@hartzell.com

Website

www.hartzellairmovement.com

THE HARTZELL DIFFERENCE

Building the highest quality fans in America for generations



QUALITY AT EVERY TURN.

Hartzell Air Movement exceeds the standard in the air movement industry, committed to delivering top-quality, reliable products. And our relationship with our customers, and our knowledgeable, inventive, flexible and hardworking employees are the reasons we've continued and thrived, right here in the USA, for six generations.

Customers choose Hartzell for our:

- Durability and high performance
- Low cost of ownership
- Leadership in performance testing and certification
- Advanced engineering and manufacturing processes
- Innovative design and manufacturing
- Trusted brand name

Experienced Hartzell team to assist you from design to shipping

ISO 9001:2015 Certification
AMCA Accredited Laboratory
Complete Fans and Blowers
Centrifugal Wheels
Airfoil Propellers



HARTZELL ADVANTAGES

A LIFETIME OF VALUE

- ☐ Industrial fans are field proven, 100% tested, with virtually no incident of return
- ☐ Energy efficient designs that provide a lower total cost of ownership

LEADERSHIP IN PERFORMANCE

- ☐ Products certified by AMCA that meet DOE recommended efficiencies
- ☐ Highly efficient industrial fan designs that are the quietest in the market
- ☐ Airfoil shape blades with industry leading measured efficiencies

ADVANCED ENGINEERING & MANUFACTURING

- ☐ Proven manufacturing techniques on state of the art equipment in ISO 9001:2015 registered facilities
- ☐ Engineering team utilizes the latest design tools in 3D CAD and other modeling software

CREATIVE DESIGN & MANUFACTURING TEAM

- ☐ Offering the greatest number of industrial fan design choices
- ☐ Building products to meet your rigorous application; no limiting catalog

TRUSTED BRAND NAME

- ☐ Extensive talent pool bringing over 145 years of knowledge and experience to you

5-YEAR WARRANTY

- ☐ The industry's first and only manufacturer that stands behind their products for a full 5-years



- ☒ Register your 5 year warranty
- ☒ Download your installation manual
- ☒ Order replacement parts



For more information, contact your local Hartzell Sales Representative. info@hartzell.com

HARTZELL WARRANTY

LIMITED WARRANTIES, LIMITATION OF LIABILITY, AND LIMITATION OF LIABILITY FOR BREACH OF WARRANTY

NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS

Hartzell does not warrant that said goods are of merchantable quality or that they are fit for any particular purpose. There is no implied warranty of merchantability and there is no implied warranty of fitness.

The details of the Hartzell warranty can be found at
<http://www.hartzellairmovement.com/warranty-service>

PERFORMANCE GUARANTEED

Your products are only as good as the components that go into them. We know you have high expectations, and so does Hartzell Air Movement. We know you expect the most reliable and durable industrial air movement products available, so we're holding ourselves to a higher standard. We're so sure that our products will out-perform industry standards, we're backing that promise with the industry's first – and only – five-year warranty.

At Hartzell, these are words we live by. They guide us every day. Good enough isn't how you design your products. It's not how we engineer, build and support our products — or provide ongoing service to our customers. When we looked at the industry standard two-year warranty, we knew we had to do better. And we did — by offering the Hartzell **FIVE-YEAR WARRANTY**.

Register for your 5year warranty at
<https://www.hartzellairmovement.com/warranty-and-parts/five-year-warranty>

Hartzell Air Movement
proudly manufactures our
fans right here in the USA!



MADE IN
U.S.A.

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Basics for Choosing Fans

The first thing to consider when choosing a fan is the amount of air that must be moved and its resistance. Taking into account specific application and performance criteria, choosing a centrifugal and axial fan generally requires taking into account the following criteria.

DIRECT VS BELT DRIVE

Belt drive fans offer the ability to adjust speed to balance the system if needed. They also offer more flexibility regarding the choice of motors and speeds. In terms of cost, belt drive fans typically cost less than direct drive fans of similar sizes with low speed motors.

Direct drive fans are usually preferred for tasks where access for maintenance is difficult. Maintenance costs are generally lower with direct-drive fans, as there are no belts or bearings to replace or pulleys to adjust.

LARGER VS SMALLER FANS

In most applications, various fans can meet the specified pressure and airflow requirements. Large fans tend to run slower and generate less noise; they also tend to have higher upfront costs but lower operating costs. Smaller fans have more stable performance curves, lower upfront costs, higher noise levels, and higher operating costs due to their high speeds.

LOWER VS HIGH STATIC PRESSURE

Fans that deal with high static pressures operate at higher speeds and produce higher tip speeds resulting in higher sound levels. Conversely, in lower pressure applications, fans generally run at lower speeds, produce lower sound levels, and are recommended for sound sensitive applications.

HOW ACCESSORIES AFFECT STATIC PRESSURE

When calculating a fan's static pressure load, all accessory losses must be taken into account. For example, when using fans with properly applied accessories, lower pressure capacities can be specified.

When fans are over-specified to compensate for losses from unnecessary accessories, both cost and sound levels can be higher than necessary as the fan will need to operate at higher speeds resulting in higher power consumption.

MOTOR SERVICE FACTOR

Some motors are cooled by the airstream. With an uninterrupted flow of cooling air, motors may be operated in their service factor range (up to 15% above the motor nameplate horsepower) without damage due to overheating. Motors not in the airstream, exposed to higher ambient temperatures or operated on a VFD will have a lower usable service factors.

Certified AMCA Lab

PRODUCT CONCEPT

Reliable, efficient performance is the underlying principle of the product concept of every Hartzell fan that is built. This principle is adhered to in the early design and development stages of the prototype and is demonstrated by the special care given to the development of propeller and wheel patterns in the pattern shop.

PROTOTYPE DEVELOPMENT

- After completion of the fan pattern, it is taken to the Research & Development Lab for testing and further refinement.
- Hartzell laboratory is AMCA* accredited to test for air and sound performance and is located on the grounds of the main Hartzell plant in Piqua, Ohio.
- In addition to the 12 ft. test chambers capable of 50,000 CFM at up to 24" W.G. pressures, Hartzell Air Movement added a small test chamber capable of 10,000 CFM at up to 80" W.G. pressures. The lab is also equipped with precision instruments for sound and vibration testing.
- Hartzell has an overspeed cell for fans up to 200 HP.
- Additional equipment allows for Hartzell to conduct overspeed tests, check sound levels, critical frequencies and vibration stresses.

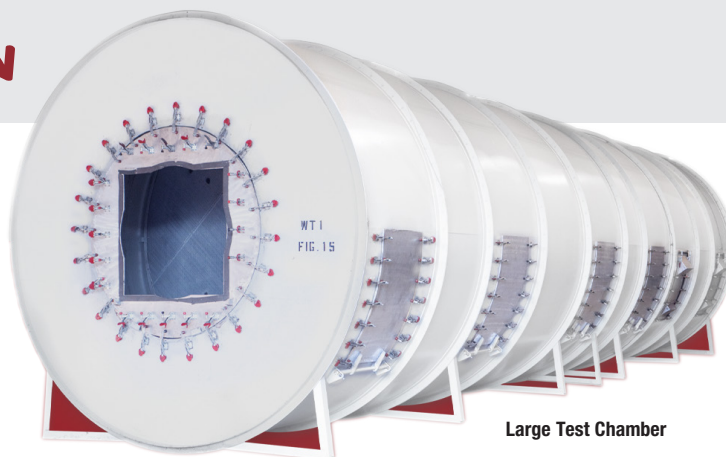
CERTIFIED FAN RATINGS

- Hartzell Air Movement is a charter member of the Air Movement and Control Association International, Inc. (AMCA) which has adopted AMCA Standard 210 "Laboratory Methods of Testing Fans for Rating" and AMCA Standard 300 "Reverberant Room Method for Sound Testing of Fans".
- Hartzell pioneered the testing of its products in accordance with the AMCA Standard test codes.

QUALITY

The quality of Hartzell's air moving products is ensured by a Quality Assurance Program that is certified to ISO 9001:2015. Hartzell Air Movement has made this investment in modern, sophisticated engineering methods in order to provide the best possible quality products for your use.

*** Product laboratory data based on tests in an AMCA Accredited Laboratory are not to be construed as being licensed to bear the AMCA Seal.**



Large Test Chamber



Wind tunnel and calibration equipment

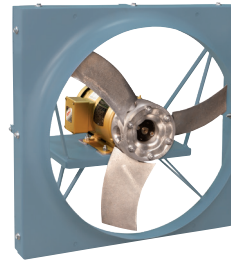
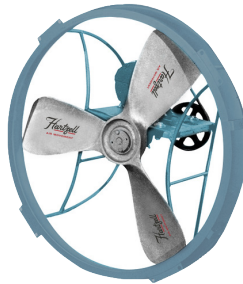
General Ventilation Equipment

Hartzell Air Movement offers an array of quality built general ventilation equipment to help move uncontained air more effectively than ever. Our selection includes dilution ventilation (intake, exhaust, filtered, and re-circulation) and personnel or equipment cooling.

- Longer service life and superior performance compared to competition
- Economical, yet rugged enough for heavy-duty, demanding applications
- Multiple propeller options to meet your specific demands
- Customized solutions for special applications
- Motors and drives quickly accessible for easy maintenance

PROPELLER FANS AND WALL VENTILATORS

Designed for general ventilation, smoke and fume removal, cooling, air supply or exhaust applications, our propeller fans and wall ventilators include standard and lo-noise ring and panel fans as well as reversible and belted high-volume ring fans.



Ring and Panel Fans available in standard or reverse flow, general industrial duty or heavy industrial duty.

Sizes 12" – 144"

Airflows from 1,475 – 327,000 CFM
Series 01, 02, 08, 09, 10, 14

COOL BLAST FANS

Cool Blast fans are ideal for cooling personnel or equipment, smoke diffusion, product cooling and insect dissipation.



Cool Blast Fans

Sizes 20" – 48"

Airflows from 4,168 – 32,700 CFM
Series 20, 21, 22, 23

ROOF VENTILATORS

Hartzell roof ventilators are designed as packaged units, ready for installation and available in exhaust, intake, reversible and recirculating configurations.



Upblast and Smoke Ventilators

Sizes 18" – 84"

Airflows up to 115,000 CFM
Series 69



Swingout Upblast Roof Ventilators

Sizes 12" – 60"

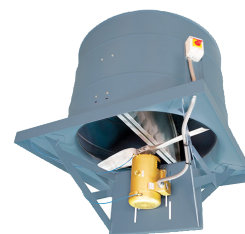
Airflows up to 64,000 CFM
Series 69S



Hooded and Re-circulating Roof Ventilators

Sizes 18" – 84"

Airflows up to 135,500 CFM
Series 15, 16, 17, 19, 26, 27



Upblast Exhauster

Direct Drive

Sizes 12" – 84"

Airflows up to 88,000 CFM
Series 61

Process Ventilation Equipment

Hartzell Air Movement provides a complete line of process ventilation fans and blowers to help you control or contain the movement of air contaminated by fumes, dust, corrosives, high temperatures or materials from one point to another.

- Wide range of types and styles for air volume, static pressure and temperature challenges
- Heavy-duty equipment for industrial demands
- One-stop source for all your fan needs
- Innovative, versatile designs and quality construction built to last
- The right fan for every job
- Customized solutions for your unique ventilation problems

AXIAL FLOW FANS

Direct and belt drive axial flow fans designed to handle a broad range of static pressures for process and air temperature applications.



Duct Fans

Sizes 12" – 96"
Airflows from 1,500 – 156,000 CFM at free air and static pressures to 2 1/2".
Series 31, 38, 39, 39V, 47, 52



Duct Axial Fans

Sizes 10" – 60"
Airflows from 600 – 70,000 CFM at free air and static pressures to 4 1/2".
Optional High Temperature Construction
Series 46, 46V, 48, 48V



Vaneaxial Fans (Fixed Pitch)

Sizes 18" – 60"
Airflows from 1,250 – 107,000 CFM at free air and static pressures to 10".
Series 50, 53C, 54, 55, 56

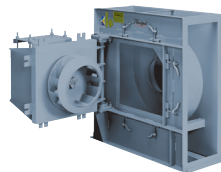


Vaneaxial Fans (Adjustable Pitch)

Sizes 35" – 79"
Airflows from 200,000 CFM and static pressures to 8".
Series 65, 65C, 66, 67

CENTRIFUGAL FANS

Variety of types and sizes of backward curve, airfoil and material handling fans designed to accommodate both clean air and material conveying applications at ambient and higher temperatures.



Swing-Out Centrifugals

Sizes 12" – 60"
Series 03S, 05S



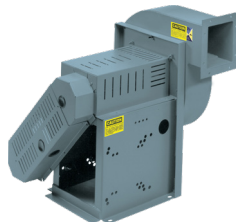
Backward Curved Centrifugal Fans

Sizes 12" – 66"
Airflows up to 169,500 CFM and static pressure to 24"
Series 03



Square Type BC Fans

Sizes 10" – 33"
Airflows up to 23,000 CFM and static pressures to 6"
Series 03Q



Industrial Exhausters come in multiple wheel types

Sizes 12" – 57"
Airflows up to 46,000 CFM and static pressure to 46"
Series 05



Flange Mounted Centrifugal Exhausters

Sizes 12" – 30"
Airflows 11,000-21,500 CFM and static pressure 8" or 16"
Series 03F, 05F



Double-Wide Centrifugal Fans

Sizes 10" – 60"
Airflows up to 186,000 CFM and static pressure to 14"
Series 13

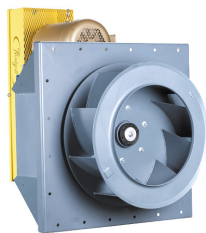


In-line Centrifugal Fans

Sizes 12" – 49"

Airflows up to 75,000 CFM and static pressures to 16"

Series 04

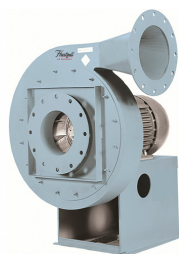


Plug Fans

Sizes 12" – 36"

Airflow up to 28,000 CFM and static pressure to 12"

Series 12

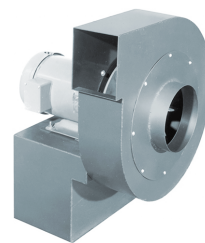


Turbo Pressure Blowers

Sizes 14" – 26"

Airflows up to 5,250 CFM and static pressures to 60"

Series 07T



Pressure Blowers

Sizes 11", 12" and 14"

Airflows up to 1,600 CFM and static pressures to 14"

Series 07

Fiberglass Equipment

Hartzell Air Movement pioneered the development of fiberglass corrosion resistant fans and blowers. And today we manufacture one of the most complete lines of fiberglass products in the industry, a line that includes fans for general and process ventilation applications. Fiberglass construction is recommended where corrosive elements exist in fume or vapor form.

- ☐ Broad range of products for any corrosive application
- ☐ Lightweight, yet extremely strong for a long service life
- ☐ A variety of fiberglass props with airfoil design
- ☐ Moisture-resistant coating (HartKoate) available where both moisture and corrosives exist in the airstream
- ☐ Time-tested, reliable performance and long-lasting durability

GENERAL VENTILATION

Our fiberglass wall and roof ventilators are a major advantage for general ventilation applications where concentrations of corrosive elements exceed the limits of standard fans. Fiberglass also offers additional advantages such as weight, high strength to weight ratio and dimensional stability.



Fiberglass Upblast and Downblast Dome Exhausters in belt & direct drive

Sizes 12" – 40"

Airflows up to 22,000 CFM and static pressures to 3"

Series 82, 83, 87, 88

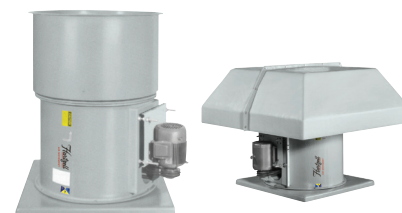


Fiberglass Wall Ventilators (Direct Drive ONLY)

Sizes 12" – 60"

Airflows up to 55,500 CFM

Series 59



Fiberglass Upblast and Hooded Roof Ventilators in belt & direct drive

Sizes 12" – 60"

Airflows up 62,000 CFM

Series 37, 57, 58E

Fiberglass Equipment

PROCESS VENTILATION: AXIAL

Fiberglass direct and belt drive axial flow fans designed for a corrosive air-stream application where standard metallic fans will not work due to the environment.



Fiberglass Duct Fans

Sizes 12" – 60"

Airflows of 1,300 to 62,000 CFM at free air and pressures to 1 1/4"

Series 28, 34



Fiberglass Bypass Fans

Sizes 24" – 48"

Airflows up to 46,000 and static pressures to 4"

Series 28B, 29B



Fiberglass Duct Axial Fans

Sizes 12" – 60"

Airflows up to 68,000 CFM and static pressures to 4 1/2"

Series 29, 29V, 35, 35V

PROCESS VENTILATION: CENTRIFUGAL

Fiberglass Backward Inclined centrifugal fans offer non-overloading, high efficiency, low noise and economy for handling both fumes and vapors in a corrosive atmosphere. Fiberglass radial blowers are less efficient, overloading, and more suitable for the greasy and dirty environments where low flow and medium to high pressures are needed.



Backward Curved Centrifugal Fans

Sizes 12" – 60"

Airflows up to 100,000 CFM and static pressures to 30"

Series 41



Fiberglass In-line Centrifugal Fans

Sizes 12" – 60"

Airflows up to 85,000 CFM and static pressures to 12"

Series 40



Fiberglass Radial Blowers

Sizes 12" – 33"

Airflows up to 11,400 CFM and static pressures to 16"

Series 42, 43

FIBERGLASS AIR CONTROL PRODUCTS

Hartzell offers a wide variety of fiberglass dampers for many back draft and volume control applications. Designed for corrosive applications and available in standard or custom sizes.



Fiberglass End Pivoted Shutter
for gravity backdraft prevention
in lower velocity systems

Series FEP



Fiberglass Center-Pivoted High-Velocity Damper for volume control

Series FCO, FCP



Fiberglass Fixed Blade Drainable Louver
for air intake, exhaust or pressure relief
applications

Series FFL



Fiberglass Center-Pivoted Damper

for low velocity, volume control in low
pressure applications

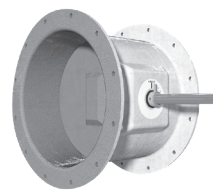
Series FLC



Fiberglass Backdraft Damper

for high velocity back draft prevention in low
to high pressure applications

Series FVB, FAB



Fiberglass Round Isolation Damper

for component or branch isolation in
low to high pressure systems

Series FRL, FRH



Fiberglass Round Inlet Vane Damper

for volume control in low to high
pressure systems

Series FIV

Heating Equipment

You can use our equipment to supply tempered make-up air in the plant to help eliminate negative pressure and “sick building syndrome” or as a total fresh air system. We also have door heaters to meet all plant heating requirements, as well as recirculation and cooling.

- ☐ High BTU's in a small package
- ☐ Most efficient method available for heating supply air from outdoors
- ☐ Helps other fan systems and process equipment operate more effectively

GAS EQUIPMENT

All designed to eliminate hot and cold spots in the plant, supplying fresh, clean air at the right temperature. Existing ventilation systems will work better, which accommodates more effective employees and production systems. Modular design that can be configured to meet specific requirements.



Vertical and Horizontal Econo Unit
for lower cost alternative to make-up air problems. Heating capacities from 950,000 to 2,900,000 BTU.
Airflow up to 23,500 CFM at static pressure of 1/4"
Series 78H, 78V



Gas Fired Door Heaters
Available with heating capacities from 700,000 to 990,000 BTU. Airflows up to 7,900 CFM at free air
Series 79

Performance Guaranteed



Your products are only as good as the components that go into them. We know you have high expectations, and so does Hartzell Air Movement. We know you expect the most reliable and durable industrial air movement products available, so we're holding ourselves to a higher standard. We're so sure that our products will out-perform industry standards, we're backing that promise with the industry's first – and only – five-year warranty.

At Hartzell, these are words we live by. They guide us every day. Good enough isn't how you design your products. It's not how we engineer, build and support our products — or provide ongoing service to our customers. When we looked at the industry standard two-year warranty, we knew we had to do better. And we did — by offering the Hartzell **FIVE-YEAR WARRANTY**.

Specialty and OEM Products

Hartzell Air Movement also offers a wide variety of products designed and built for special applications and for the unique demands of OEMs.

- ☐ Reliable, proven performance for marine applications
- ☐ Dimensional stability assures trouble-free operation
- ☐ Customized to meet your specific requirements
- ☐ Quick turnaround on OEM products and parts deliveries
- ☐ Competitive pricing

MARINE DUTY FANS

Marine duty axial and centrifugal fans designed specifically to meet the severe application conditions found in typical marine environments. Designed for reliability, low maintenance, long life, corrosion resistance and heavy duty construction.



Marine Duct Axial®

Sizes 10" – 60"

Airflows up to 92,000 CFM
and static pressures to 4"

Series 38M, 39M, 44M, 44VM, 47M



Marine Centrifugal Fans

Sizes 12" – 33"

Airflows up to 27,000 CFM

Series 03M



Marine Vaneaxial Blowers

Sizes 8" – 79"

Airflows up to 200,000 CFM

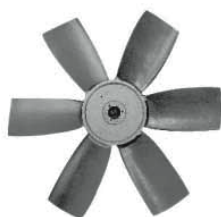
Series 50M, 53CM, 56M, 65M, 65CM

OEM PRODUCTS AND PARTS

Hartzell meets the needs of OEMs with both standard and customized products designed specifically for the OEM's equipment, package or system requirements. Hartzell's product lines and customization capabilities provide solutions for a broad range of environmental air moving problems

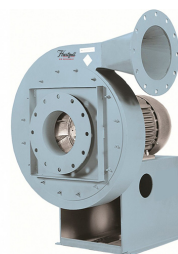
Other OEM Products:

Duct Fans, Plug Fans, DWDI Fans, Square Centrifugal Fans, Bin Vent Fans.



Hartzell Propellers

Available in various sizes, blade types and materials in 2, 3, 4, 6 and 8 bladed props.



Turbo Pressure Blowers

Sizes 14" to 26"

Airflows up to 5,250 CFM
and static pressures to 60"



Hartzell Centrifugal Wheels

Come in a variety of sizes and wheel widths; backward curved, radial, material and air handling wheels are also available.

WARRANTY | PARTS | SERVICES

At Hartzell, building long-term customer relationships is as important to us as building our products, and that includes reliable, long-term support. We do it with our unparalleled 5-year warranty, our expert field service, and our stress-free replacement parts. So whether you have an issue, question, or suggestion, our team is here for you.



The first and only 5-year warranty in the industry

We're so confident in our designs, materials, and workmanship, that every product we sell is backed up with a full 5-year warranty. We're the first—and still the only—industrial air movement manufacturer who offers that kind of performance guarantee.

Replacement Parts

Hartzell products are built to last, and designed to be maintained long-term, not discarded. Which means lower costs for you, and less waste. Our online replacement parts warranty portal lists every item we've sold since 2006. Simply register, enter the model and serial number of the product in question, and we'll get you back to business in no time. If you don't have the model number available, just snap a photo on your phone and a sales rep can take it from there.



Field Service Agreements

Hartzell's qualified technicians know our air movement systems inside and out, so whether you need routine checkups, are looking to optimize your system, or are troubleshooting an issue, we're here to help keep everything in top condition.

WE OFFER:

- Startups
- Vibration Analysis
- Balance Analysis
- IOM Training & Presentations
- Laser Alignment

Start Up Services

Our commitment to our customers doesn't end when we make a sale—that's when it begins. Utilizing our Startup Services, Hartzell expert technicians will ensure your new air movement equipment is perfectly installed, aligned, and inspected, so that they work flawlessly from the first moment they're powered on.

OUR STARTUP SERVICES INCLUDE:

- Regular or routine inspection
- Vibration Analysis
- Routine Maintenance
- Document findings or reports





Create a custom 3D model in seconds!

- ☐ Delivers quick response time
- ☐ Generates 2D drawings and 3D fan models
- ☐ Provides access to curves and specifications on AMCA tested and certified products
- ☐ Building Information Modeling (BIM) Integration
- ☐ Database includes a multitude of fans to fit hundreds of applications

Get started today at www.hartzellflow.com

Craig Equipment Company

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TF: 800-928-7100 • T: 502-245-4840 • F: 502-245-1665

craig-equip.com



www.hartzellairmovement.com

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