Ingersoll Rand

TURBO-AIR Compressors

Product Guide

ZERO True Oil-Free ISO 8573-1 Class 0

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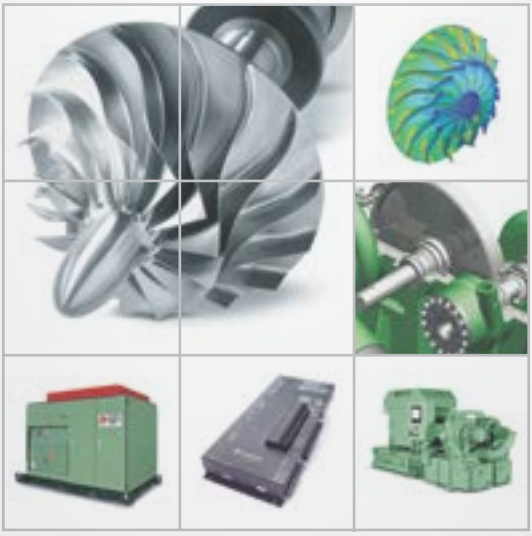
TURBO-AIR Centrifugal Compressors

The following pages highlight the TURBO-AIR series of compressors for plant air applications. These integrally geared centrifugal compressors offer top-notch performance and design flexibility for plant and process air applications.

The TURBO-AIR compressors are packaged on a common base for easy installation and are available in a number of capacities from 93 to 3355 kW (125 to 4500 hp).

Industries worldwide depend on TURBO-AIR compressors for efficient and reliable oil-free air. Common applications include, but are not limited to:

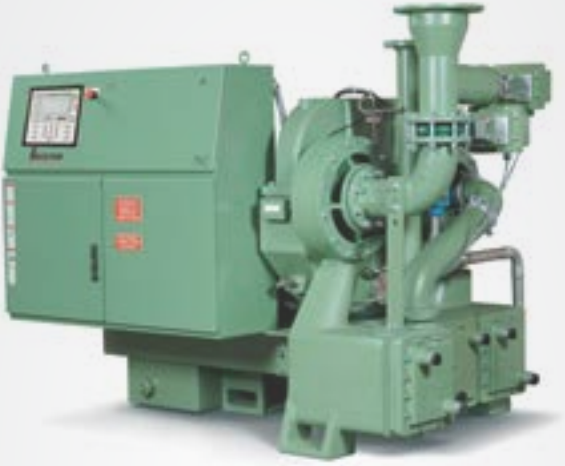
- Air separation
- Steel
- Mining
- Process air
- Textiles
- Food and beverage
- Automotive
- Pharmaceuticals
- Chemicals
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
- Petrochemical refineries



Compare the innovative centrifugal compressor technology of the TURBO-AIR product line with other machines, such as rotary screw compressors, and the advantages are clear

TURBO-AIR COMPRESSORS	OTHER COMPRESSORS
 LOW MAINTENANCE • Compression elements do not wear or require periodic replacement • Oil filter elements are easily replaced • Bearings designed for extended life	• Require regular maintenance and periodic replacement of air ends • Result in high operating expenses and significant machine downtime
 OIL-FREE AIR • 100% oil free per ISO 8573-1 certification • Prevent contamination of system	• Oil filters must be installed at discharge • Potential for oil carryover that fouls the process • Oil-free claim is dependent on uninterrupted seal gas supply
 HIGH RELIABILITY • Centrifugal compressors are proven to have long mean time between failures (MTBF), and independent research has shown industry-leading availability of 99.7% • Conservative high-quality gear design	• Contacting compression elements are subject to wear • Limited rotating element life • Designed-in wearing items to generate aftermarket revenues
 OPTIMUM CONTROL • Automatic operation for any operating condition • State-of-the-art MAESTRO™ suite of controls • PLC control available	• Limited control capability • Costly, high-maintenance variable speed configurations
 NO VIBRATION • Essentially vibration-free • No special foundation is required	• Special foundations needed to handle heavy weight • Precautions must be taken to prevent transmission of vibration to other equipment

TURBO-AIR 2000



Power
93 to 260 kW
(125 to 350 hp)

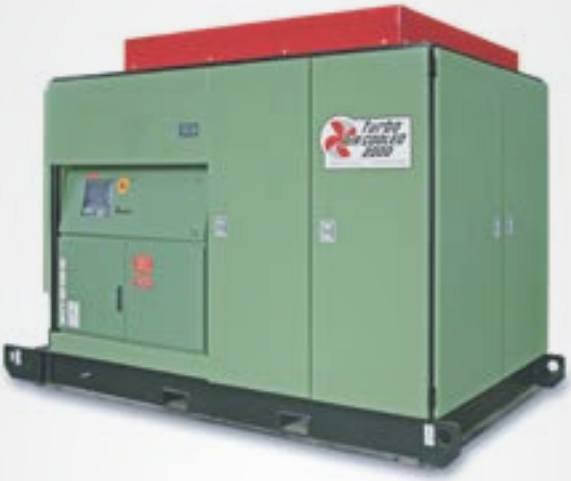
True Oil-Free ZERO ISO 8573-1 Class 0

Flow
14.3 to 48.1 m^3/min
(505 to 1700 CFM)

Pressure
3.5 to 10.3 barg
(50 to 150 psig)

Applications
- Air separation
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
- Petrochemical refineries
- Other

TURBO-AIR COOLED 2000



Power
93 to 260 kW
(125 to 350 hp)

True Oil-Free ZERO ISO 8573-1 Class O

Flow
15.6 to 48.1 m^3/min
(550 to 1700 CFM)

Pressure
3.8 to 10.3 barg
(55 to 150 psig)

Applications
- Air separation
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
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- Snowmaking
- Power generation
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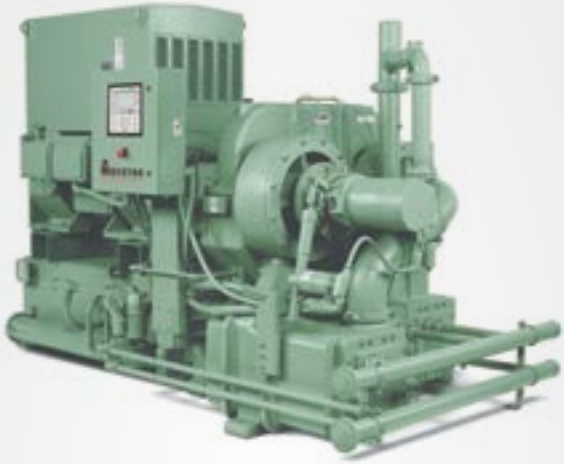
- Other

TURBO-AIR 3000



Power
300 to 600 kW
(400 to 800 hp)

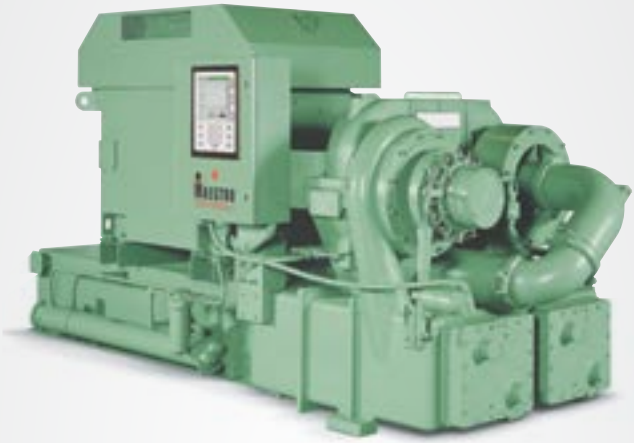
ZERO True Oil-Free ISO 8573-1 Class 0

Flow
57 to 113 m^3/min
(2000 to 4000 CFM)

Pressure
3.5 to 10.3 barg
(50 to 150 psig)

Applications
- Air separation
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
- Petrochemical refineries
- Other

TURBO-AIR 6000



Power
600 to 1305 kW
(800 to 1750 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

Flow
113 to 227 m^3/min
(4000 to 8000 CFM)

Pressure
3.5 to 10.3 barg
(50 to 150 psig)

Applications
- Air separation
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
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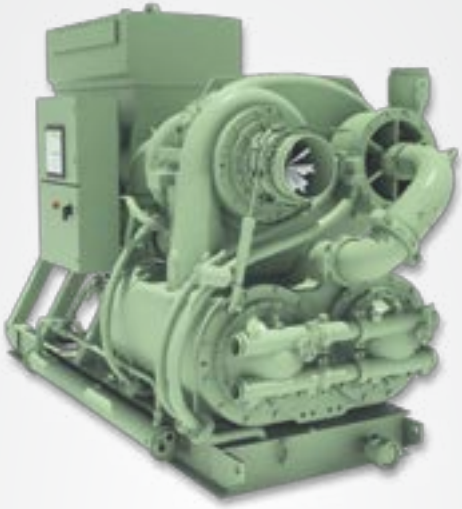
TURBO-AIR NX 8000



Power
750 to 1700 kW
(1000 to 2250 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

Flow
135 to 305 m^3/min
(4850 to 10,800 CFM)

Pressure
3.5 to 14.5 barg
(50 to 210 psig)

Applications
- Air separation
- Nitrogen boosting
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
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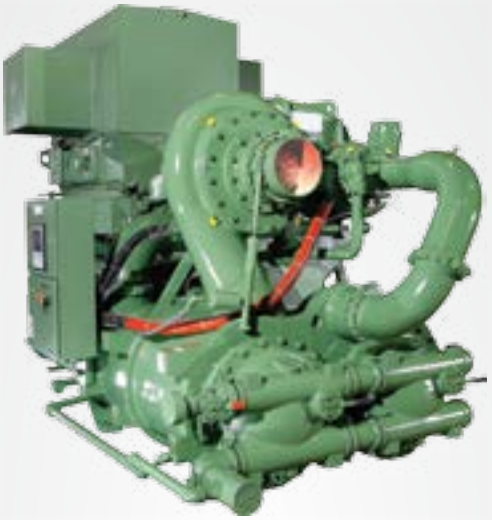
- Other

TURBO-AIR NX 12000



Power
1120 to 2237 kW
(1500 to 3000 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

Flow
212 to 430 m^3/min
(7500 to 15,200 CFM)

Pressure
3.5 to 14.5 barg
(50 to 210 psig)

Applications
- Air separation
- Nitrogen boosting
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
- Petrochemical refineries
- Other

TURBO DryPak

Power
112 to 600 kW
(150 to 800 hp)

Flow
15.6 to 113 m^3/min
(550 to 4000 CFM)

True Oil-Free ZERO ISO 8573-1 Class 0

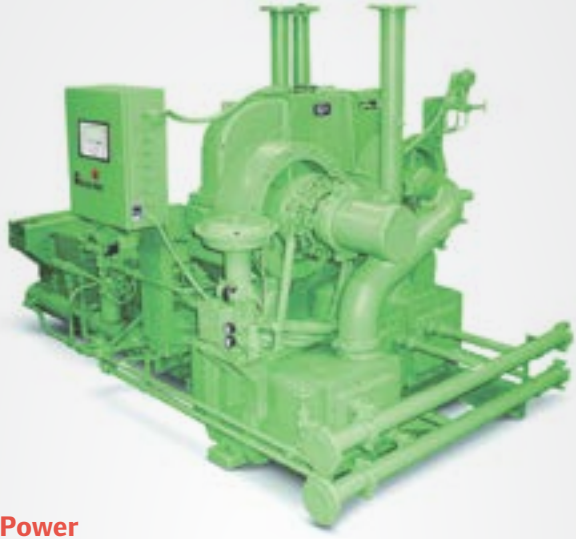
Pressure
3.8 to 10.3 barg
(55 to 150 psig)

Applications

- Air separation
- Steel
- Mining
- Automotive
- Process air
- Textiles
- Food and beverage
- Electronics
- Aerospace
- Industrial gases
- Oil and gas refineries
- Snowmaking
- Power generation
- Instrument air
- Petrochemical refineries
- Other

The complete system package delivers -40° F (-40° C) dew point compressed air with low operating costs

Twin-Turbo



Power
112 to 3355 kW
(150 to 4500 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

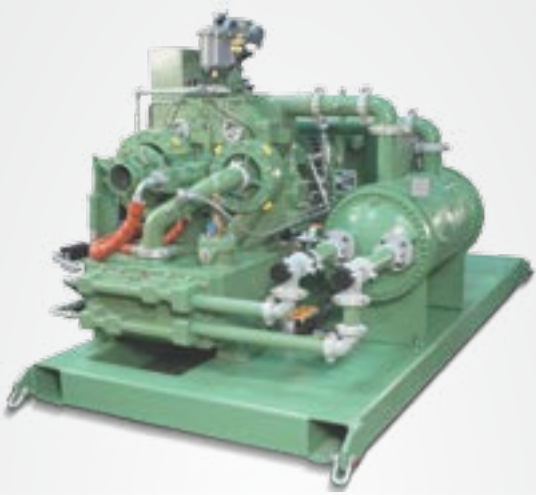
Flow
30 to 425 m^3/min
(1065 to 15,000 CFM)

Pressure
3.8 to 5.9 barg
(55 to 85 psig)

Booster Pressure Ratio
Up to 2.0

Applications
- Dual process requirements
- Air and nitrogen boosting

TURBO-AIR 2040



Power
375 to 600 kW
(500 to 800 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

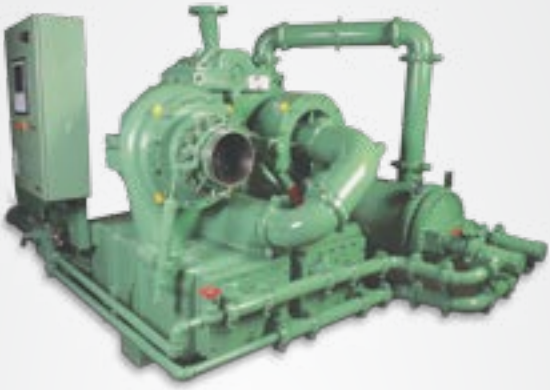
Flow
42 to 51 m^3/min
(1500 to 1800 CFM)

Pressure
Up to 42 barg
(Up to 610 psig)

Applications
- Soot blowing
- Chemicals
- Bottle blowing
- Automotive
- Nitrogen boosting
- Aircraft testing
- Wind tunnel testing

For high-pressure applications

TURBO-AIR 6040



Power
Up to 1700 kW
(Up to 2250 hp)

ZERO True Oil-Free ISO 8573-1 Class 0

Flow
127 to 167 m^3/min
(4500 to 6000 CFM)

Pressure
Up to 42 barg
(Up to 610 psig)

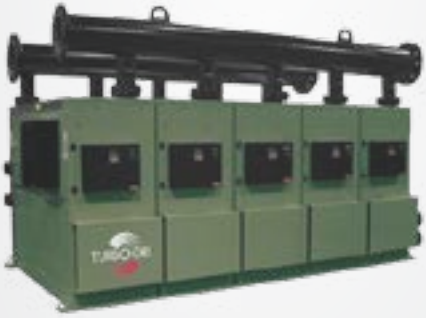
Applications
- Soot blowing
- Chemicals
- Bottle blowing
- Automotive
- Nitrogen boosting
- Aircraft testing
- Wind tunnel testing

For high-pressure applications

TURBO-DRI
Refrigerated Air Dryers

TNC Non-cycling
ISO Dew Point
Air Quality Class: 4
1000 to 8000 CFM (28 to 227 m^3/min)
Guaranteed to 35° F to 39° F (2° C to 5° C)
pressure dew points

Reduces energy consumption while maintaining a true and constant dew point



TCD Cycling
ISO Dew Point
Air Quality Class: 4
500 to 19,200 CFM (14 to 544 m^3/min)
Guaranteed to 35° F to 39° F (2° C to 5° C)
pressure dew points

TURBO-DRI
Desiccant Air Dryers

A desiccant dryer that is reliable and easy to use

THL Heatless Desiccant
ISO Dew Point Air Quality Class: 1-2
500 to 5000 CFM (14 to 142 m^3/min)
-40° F to -100° F (-40° C to -73° C)
pressure dew points

Energy conscious, reliable air

TEH Externally Heated
ISO Dew Point Air Quality Class: 1-2
500 to 8000 CFM (14 to 227 m^3/min)
-40° F to -100° F (-40° C to -73° C)
pressure dew points

A full-featured desiccant dryer with added energy savings

THB Heated Blower
ISO Dew Point Air Quality Class: 2-3
500 to 12000 CFM (14 to 340 m^3/min)
Nominal to -40° F (-40° C)
pressure dew points

Descriptive Specifications

Compressor Case: An exclusive two-piece main casting incorporates intercoolers and air passages, reducing the potential for leaks and minimizing pressure losses for increased efficiency. This arrangement reduces overall size without sacrificing accessibility.

Gearbox: The gearbox is split at the horizontal centerline of the shaft. The split casing allows for quick and easy inspection of the working parts without costly disruption of the major compressor piping assemblies.

Rotors: Standard TURBO-AIR compressors contain two rotors. Each impeller is cantilevered into the compressor case with the rotor shaft supported by two hydrostatic-squeeze film bearings mounted in the gear case. The two rotors are driven at different speeds by a bullgear typically driven by an electric motor. This arrangement allows each set of impellers to operate at its optimum speed, flow and efficiency.

Speed Increasing Gears: The speed increasing gears are the high-speed, precision-ground, single-helical type and designed in accordance with AGMA standards. The high quality of these precision-ground gears results in high efficiency, long life and low noise-level gear operation.

Bearings: Rotors are supported on our patented hydrostatic-squeeze film bearings with an oil film that varies little over a broad range of operation from unloaded to fully loaded. Axial alignment of rotating elements is maintained and thrust loads are absorbed by thrust collars, or by conservatively sized thrust bearings on each pinion shaft.

Seals: Non-contacting labyrinth seals are used. The accuracy of construction in conjunction with the atmospheric air space between the air and oil labyrinth seals results in a reliable and minimum leakage seal, and the non-contacting design does not wear or require instrument air for permissive starting.

Intercoolers: Removable, water-in-tube intercooler bundles cool the air stream between compression stages. The intercoolers are designed with aluminum or copper fins extending from the tube surface into the air stream to provide excellent heat transfer performance and no internal obstructions.

Oil-free Air by Design: TURBO-AIR products are certified to ISO 8573-1 Class Zero. This certification officially acknowledges the ability of our compressors to produce 100% oil-free air. For certain applications, such as PET bottle blowing, food packaging, air separation, pharmaceutical development and chemical manufacturing, even trace amounts of oil contamination can ruin production. Poor air quality can cause production downtime and may impact not only cost, but also reputation. Our customers can rest knowing that the use of the TURBO-AIR series of compressors reduces the risk of oil contamination by virtue of design itself. The most thorough testing methods, conducted in a controlled environment to meet the ISO and TÜV standards, were utilized for the ISO 8573-1 Class Zero certification. Under these test conditions, no traces of oil could be detected and the compressed air was categorized Class Zero in terms of oil content.

True Oil-Free ZERO ISO 8573-1 Class O

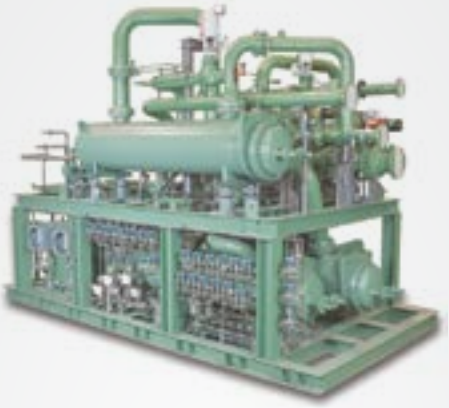
We Offer More

In addition to our TURBO-AIR series of products, we offer engineered air, industrial and process gas centrifugal compressors designed for specific applications with a wide range of capacities and power ranges. Our MSG® (Multi-Stage Geared) compressors are application engineered with a number of available configurations:

- Flows from 70 to 3800 m^3/min (2500 to 135,000 CFM)
- Input capacity to over 18,650 kW (25,000 hp)
- Discharge pressures to 100 barg (1450 psig)

4MSG-16/15 Air Compressor

TAE-55 Air Compressor



Multi-Process CO Compressor

3R2MSG-5G/30 Gas Compressor

Fuel Gas Booster Skid

Compliances and Certifications

ISO 9001:2008 and ISO 14001:2004 certified quality systems.

API, CE Marking – Machinery directive 2006/42/ED, PED, ATEX, China code, GOST, KOSHA, ASME and Class Zero compliance.

Performance Testing

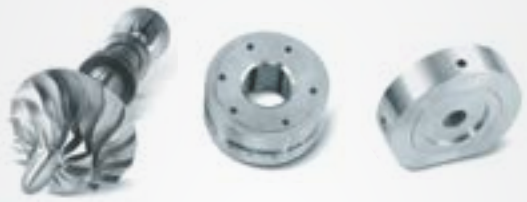
To guarantee performance to both customer and manufacturer specifications, every design is fully tested for aerodynamic and mechanical performance. Upon request, testing observation and complete testing documentation is available.

Compressor Controls

Each TURBO-AIR compressor comes standard with the new MAESTRO Universal control system, featuring advanced communication and control schemes. Custom PLC controls are available as an option.

Customer Support and Services

We have over 80 representatives and distributors worldwide to service your needs wherever your application is located. We keep life cycle records on every unit we manufacture, enabling us to better serve our customers now and in the future.



Replacement Parts

Genuine OEM parts have been produced in the same facility for over 60 years. Parts are cross checked against unit maintenance records to ensure correctness.

Repair Expertise

State-of-the-art equipment is available for turnkey repairs. There are several strategically placed repair center locations to serve a broad customer base including:

- Houston, TX
- Buffalo, NY
- Milan, Italy

Maintenance and Start-Up Services

Certified service technicians are available to help install and start up new compressor installations. preventative maintenance services are also available to help keep compressors running efficiently and reliably.

Technical Training

Training sessions are available at an installation site or at one of our facilities.

Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a $13 billion global business committed to a world of sustainable progress and enduring results.

centrifugal.ingersollrand.com

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