



Large Rotary Screw Single- and Two-stage Air Compressors  
100-500 hp/75-350 kW



*Innovation*

*Reliability*

*Efficiency*

# Rotary Screw Air Compressors...Reliability

# Ingersoll Rand

Competing in today's business environment requires manufacturers to keep their operating systems up and running. When systems go down, production stops. **Reliable, flexible and easy to use equipment is essential for efficient operation.**

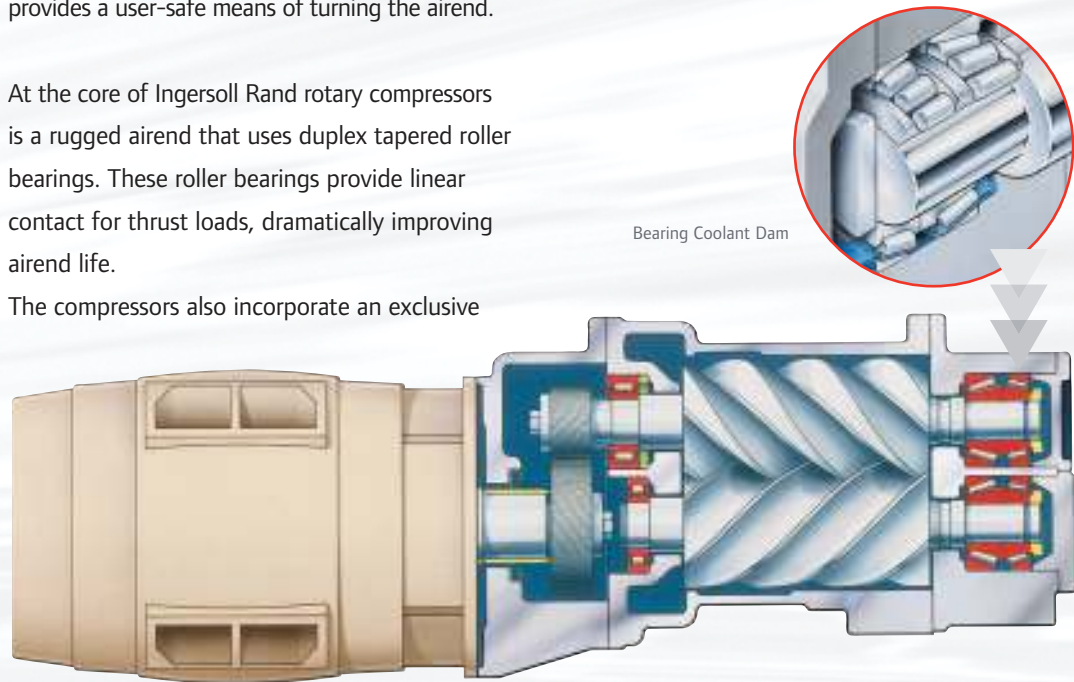
### The Reliability Imperative

Focusing on reliability, Ingersoll Rand rotary screw air compressors are designed with a unique, maintenance-free drive system — a simple gear drives the airend. Since the motor and airend are permanently aligned, no adjustments are needed during the course of normal operation. Additionally, since no inspection covers are required, the gear drive provides a user-safe means of turning the airend.

At the core of Ingersoll Rand rotary compressors is a rugged airend that uses duplex tapered roller bearings. These roller bearings provide linear contact for thrust loads, dramatically improving airend life.

The compressors also incorporate an exclusive

bearing coolant dam, assuring that coolant is present during the compressor's critical start-up phase, significantly extending the life of the bearings. Used in thousands of compressors throughout the world, Ingersoll Rand's airend has earned a reputation for trouble-free operation and minimal maintenance.



# at Your Fingertips

## **Precise One-touch Control with Intellisys®**

Whether the application requires eight hours of continuous-duty compressed air or an intermittent supply over a 24-hour period, the Intellisys® microprocessor is in complete control. The Intellisys controller provides quick, comprehensive access to your compressed air system at the touch of a button — nothing could be more intuitive and user-friendly. The compressor's operating parameters can be quickly and easily adjusted to meet the plant air system's requirements and minimize operating costs.

## **Automatic Service Prompts for Ensured Maintenance**

Intellisys indicates when it is time to perform maintenance. This function encourages routine service in a timely fashion, thereby increasing uptime.

## **Timesaving Diagnostics**

Intellisys provides a fast diagnosis of system demand, displays a warning and stops the compressor if it exceeds operating parameters. It also provides a history of events leading up to the condition. This will keep troubleshooting expenses and downtime to a minimum. An easy-to-read, liquid crystal display (LCD) provides you with the critical details of the compressor's operation, allowing fast adjustments when necessary.

## **Digital Motor Control for Option for Maximum Precision\***

Our exclusive digitally-controlled stepper motor inlet valve system precisely matches the airflow to the system demand. Simply set the preferred system pressure and the built-in Intellisys microprocessor controller takes care of the rest.

For additional reliability, the inlet control system requires no routine maintenance. There are no pressure switches to manually recalibrate, no diaphragm valves that can stick open and no manual adjustments are required during the course of normal operation.

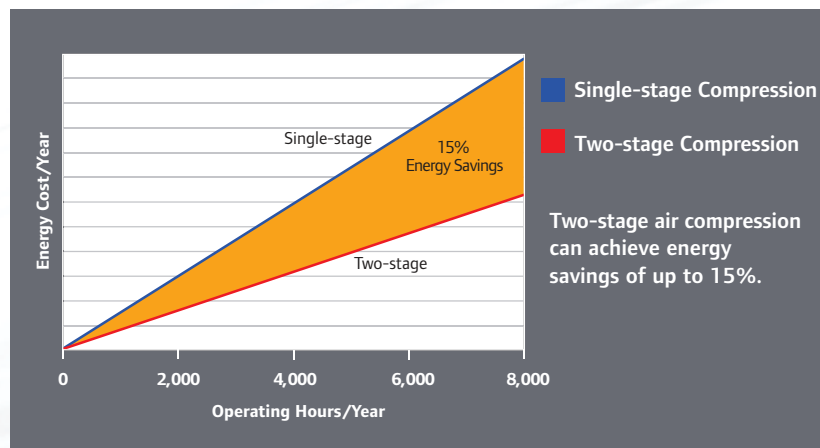


\*Standard in some markets

# Innovative Energy Efficient Design

**Energy efficiency is one of the most important considerations** in judging the successful operation of a compressed air system. Energy costs can often exceed the purchase price of equipment, even during the system's first year of operation.

On average, compressed air systems use 10% of the energy consumed by a production facility, so even small improvements help maximize plant energy efficiency. Ingersoll Rand's rotary screw air compressors are designed to help you reduce waste and lower your operating costs — here's how we do it.

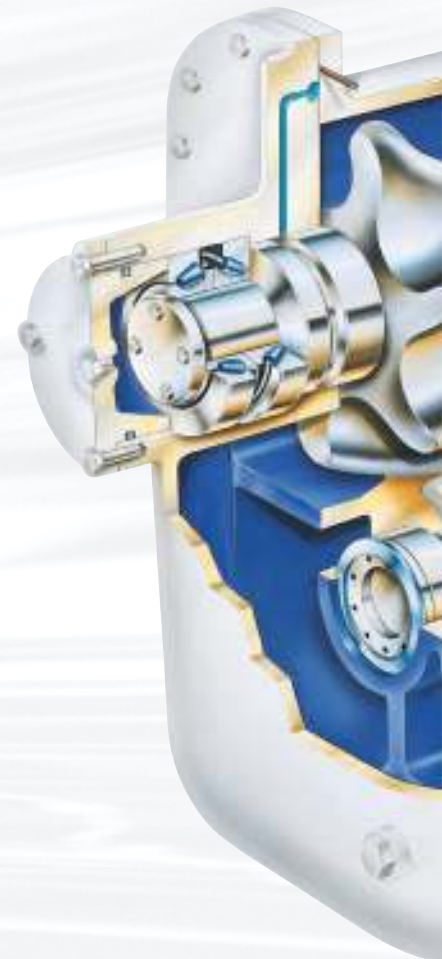


## Energy Efficient Aired...for 15% Energy Savings

If you're looking for the greatest efficiency possible, look no further than Ingersoll Rand two-stage compressors. The heart of the compressor is our time-proven two-stage airend. By compressing the air in two stages instead of one, energy savings of up to 15% are realized. The airend rotors are precision machined in a twenty-step process, ensuring unsurpassed rotor profile accuracy, repeatability and efficiency.

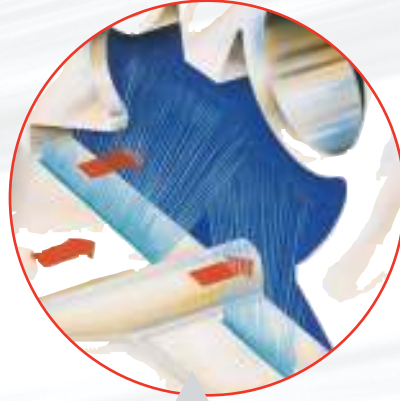
## Reduced Bearing Loads, Increased Life

A lower compression ratio in each stage reduces bearing loads and increases airend life. The use of the highest quality bearings available ensures years of reliable, efficient service.



**Coolant Curtain...for Even More Energy Savings**

One of the keys to the efficiency of the two-stage design is the coolant curtain. Significant cooling of the air is achieved by injecting atomized oil into the compressed air stream leaving the first stage. Lowering the air temperature prior to entering the second stage significantly decreases the energy required for compression. The coolant curtain also eliminates the need for an intercooler.



Ingersoll Rand offers industry-leading products and solutions that enable businesses around the world to reduce energy consumption and costs and decrease harmful environmental emissions. From air compressors that reduce energy consumption to electric-powered golf cars with near-zero emissions, Ingersoll Rand provides the knowledge, experience and solutions to help our clients achieve their sustainability goals.

# Superior Features That Reduce Operating Costs

Ingersoll Rand rotary screw compressors add unequalled reliability, efficiency and productivity to virtually any compressed air system, and could **save you 25-50% of your compressed air system operating costs.**

## Convenient Top Exhaust

The cooling air flow discharges from the top of the package facilitating easy ducting for removal and/or recovery of exhaust heat.

## Air-cooled or Water-cooled Packages

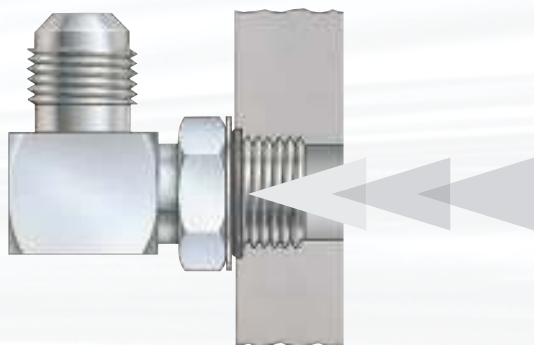
To fit the needs of the compressed air system Ingersoll Rand offers the choice of an air-cooled or water-cooled design.

## Easy Serviceability

Our total package is remarkably uncluttered, making servicing easy. All components are readily accessible behind easily removable panels.

## Star-delta Starter

This advanced starter gives the compressor a controlled, cushioned start, eliminating current surges and extending component life for increased system reliability.



## Inherent Leak-free Design

Using O-ring fittings significantly reduces the potential leakage problems associated with conventional threaded fittings.



### **Up to 115°F (46°C) Operating Ambient**

Our rotary screw compressors operate in high ambient conditions, making them suitable for locations around the world. Even if the compressor is not operated in sweltering climates, the high temperature rating ensures fewer nuisance shutdowns caused by fouled coolers.

### **End-to-end Cooling**

The aftercooler is located at the inlet end of the package. This allows cool compressed air as low as 46°F (8°C) above the ambient temperature to pass downstream to the air system.

### **Rugged Motor**

The extra toughness built into our electric motor means it will run when other motors do not. Maintenance and repair of the motor are just like any other electric motor.

### **Easy Connectivity**

The compressor is fully piped and wired, resulting in simple external connection of all utilities.

### **Quiet Enclosure**

A low sound enclosure is standard and keeps sound levels to a minimum.

### **Factory Tested**

Every rotary screw compressor undergoes state-of-the-art testing to ensure that you get the best possible performance under varying conditions.

## **8,000 Hour/2-year Lubricant**

Ultra Coolant™ reduces maintenance costs by lasting longer between changes. Also, because of its superior separation properties, less coolant is passed downstream to the air system, further minimizing coolant replacement costs. Finally, Ultra Coolant's biodegradable properties eliminate the need for an oil-water separator, thereby reducing the problems associated with condensate disposal (Subject to local approval).



# Engineering the Right System for Your Application

System Design 1  
Small system or single compressor



Compressor with integrated air treatment and bypass

## When Do I Use Integrated Dryers with My System?

Compressors with integrated dryers make sense for smaller systems of typically 50 hp (37 kW) and below, and point-of-use applications where a single compressor often carries the load of the entire system. In those cases, the compressor's discharge pressure is the system pressure and, as such, control issues do not arise.

System Design 2  
Larger, centralized system

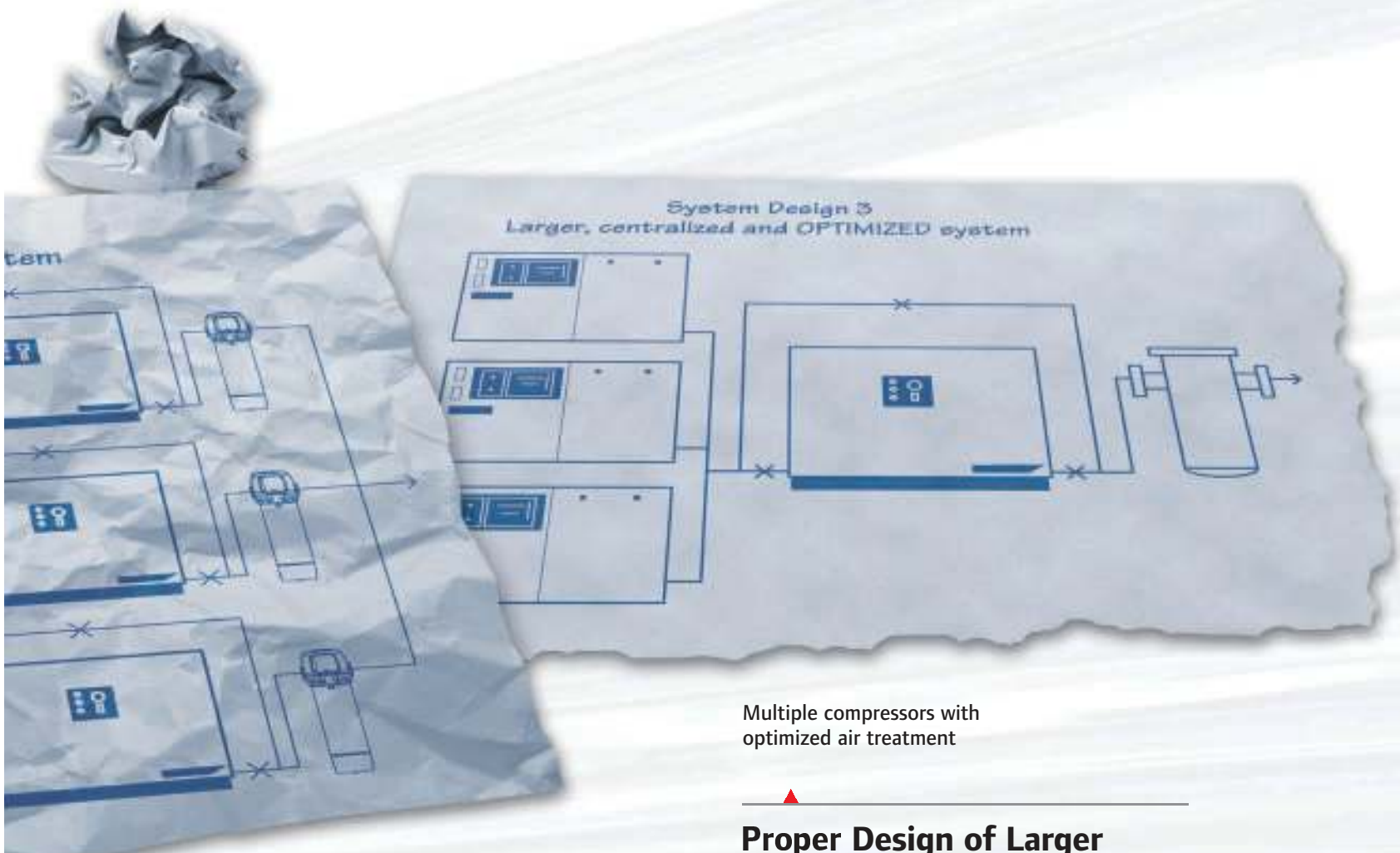


Multiple compressors with compressed air trains

## Avoid Problems of Compressed Air Trains

As systems grow, multiple compressors with connected or integrated air treatment can have negative effects on optimization and pressure stability. Multiple dryers and filters — in what are known as “compressed air trains” — cause significant system losses and make control optimization impossible.





Multiple compressors with optimized air treatment

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## Proper Design of Larger Centralized Systems

Eliminating integral compressed air trains allows for system design optimization. There are a number of benefits associated with a centralized air system with fewer dryers, such as:

They can also cause:

- Higher energy losses due to pressure drops
  - Dew point variability
  - Increased maintenance due to frequent compressor cycling from variable pressure drops across each train
  - Artificially higher supply pressure required to account for variable pressure drop and control issues
  - Reduced effective pressure control band due to need to respond to the highest pressure drop in the train
- Dryers can be sized to optimize the system
  - Lower energy losses through lower pressure drop with lower loads
  - Better dew point control
  - Compressor controls manage a single air treatment system
  - Energy savings and minimized CO<sub>2</sub> emissions through reduced compressor pressure setting
  - Stabilized pressure

# Auditing, Service and Maintenance



## ▶ Papermaking

Even in the harshest manufacturing environments, rotary screw compressors add unequalled reliability, efficiency and productivity to your air system.



## ▶ Food Packaging

Ingersoll Rand drives productivity within this and other continuous or batch process industries by delivering advanced technology compressor solutions that provide low life-cycle costs.



## ▶ Textiles

Garment manufacturing requires a reliable source of clean, dry compressed air, which is why Ingersoll Rand has been a critical supplier to this industry for many years.

**No matter what the industry or location,** Ingersoll Rand is committed to serving you 24 hours a day, seven days a week. Our worldwide network of distributors, engineers and certified, factory-trained technicians are a phone call away — ready to support you with innovative and cost-effective service solutions that will keep you running at peak performance.

PackageCare is a service contract designed to help customers get the most out of their air system investment. Whether it's Ingersoll Rand equipment or a competitor's, a new compressor or used, with PackageCare customers get hassle-free system reliability, backed by the most comprehensive service program in the industry. We're the only OEM in the industry offering this type of service coverage.





### ▶ Metal Forming

Compressed air is too important to take chances, so engineers can maximize production uptime by specifying Ingersoll Rand rotary screw compressors, featuring our unique maintenance-free drive system.



### ▶ Assembly

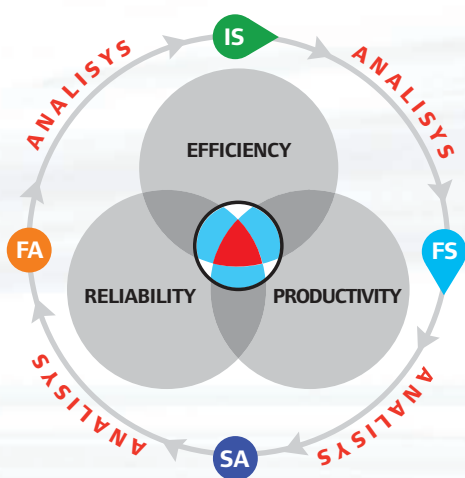
Few industries have a greater need for energy efficiency — our single- and two-stage rotary screw compressors offer the best efficiency over the widest operating range.



### ▶ Printing

The printing industry relies heavily on compressed air, from pre-press through printing to shipping. High quality air and stable pressure are critical to minimize production interruption.

## Ingersoll Rand Audit Portfolio



Optimized Production



Starting Points



### IS Intellisurvey

- Automated compressor audit
- Detailed air profile
- Identify fast-track savings opportunities

### FS Feasibility Study

- Analysis by walking around
- Interview operations, finance, management
- Identify potential opportunities from a supply-side audit or full-system audit

### SA Supply-side Audit

- Differentials, signals and set point management
- Pressure-drop management yields significant energy savings
- Air-quality management results in significant productivity improvements

### FA Full-system Audit

- All audit components previously identified, plus...
- An exact match of optimal demand-side requirements minimize compressed air consumption

# A Configuration for Every Need

## 60 Hz Single-stage 250-450 hp Performance

Nominal hp	Free Air Delivery cfm				Length in	Width in	Height in	Weight lb
	XF 100 psig	EP 125 psig	HP 140 psig	XP 165 psig				
250	1,213	1,066	979	864	148	76	86	10,840
300	1,359	1,252	1,150	-	148	76	86	11,440
300E	1,506	1,363	1,285	-	148	76	86	11,440
350	1,695	1,537	1,451	-	160	82	95	12,815
400	1,899	1,719	1,626	-	160	82	95	12,815
450	2,050	1,886	1,833	-	160	82	95	12,815

## 60 Hz Two-stage 100-500 hp Performance

Nominal hp	Free Air Delivery cfm				Length in	Width in	Height in	Weight lb
	XFE 100 psig	EPE 125 psig	HPE 140 psig	HXPE 200 psig				
100	547	495	458	-	123	63	75	6,050
125	664	601	567	443	123	63	75	6,770
150	812	720	681	537	123	63	75	6,820
200	1,060	970	903	720	123	63	75	7,020
250	1,380	1,249	1,167	960	148	76	85	13,080
300	1,685	1,476	1,428	1,185	148	76	85	13,080
350	1,899	1,740	1,669	1,366	160	82	96	14,685
400	2,200	1,991	1,924	1,543	160	82	96	14,685
450	2,405	2,245	2,099	1,739	160	82	96	14,685
500	2,600	2,425	2,266	1,879	160	82	96	14,685

## 50 Hz Single-stage 200-250 kW Performance

Nominal kW	Free Air Delivery m <sup>3</sup> /min			Length mm	Width mm	Height mm	Weight kg
	ML 7.5 bar g	MM 8.5 bar g	MH 10.0 bar g				
200	33.8	29.6	27.1	3,759	1,930	2,191	5,189
250	38.2	35.0	32.1	4,064	2,083	2,416	5,813

## 50 Hz Two-stage 75-350 kW Performance

Nominal kW	Free Air Delivery m <sup>3</sup> /min				Length mm	Width mm	Height mm	Weight kg
	ML 7.5 bar g	MM 8.5 bar g	MH 10.0 bar g	MXU 14.0 bar g				
75	15.7	14.2	13.1	-	3,270	1,620	1,900	2,690
90	18.0	17.5	15.4	12.5	3,270	1,620	1,900	2,710
110	22.1	20.4	18.9	15.4	3,270	1,620	1,900	2,860
132	26.2	24.2	23.1	18.4	3,270	1,620	1,900	3,120
160	31.1	29.6	27.2	22.2	3,270	1,620	1,900	3,120

Nominal kW	Free Air Delivery m <sup>3</sup> /min				Length mm	Width mm	Height mm	Weight kg
	ML 7.5 bar g	MM 8.5 bar g	MH 10.0 bar g	MXU 14.0 bar g				
200	41.5	38.8	36.2	28.6	4,000	1,930	2,146	5,460
250	49.2	47.4	44.2	36.4	4,000	1,930	2,416	5,540
300	60.2	56.0	52.1	44.3	4,000	1,930	2,416	6,870
350	69.2	64.1	59.5	50.2	4,000	1,930	2,416	6,900

Notes: 1) FAD (Free Air Delivery) cfm and m<sup>3</sup>/min are ratings of full package performance in accordance with CAGI-PNEUROP acceptance test standard PN2CPTC2 or ISO1217: 1996 Appendix C.

## Count on Ingersoll Rand for All Your Air System Requirements



### Air Quality

- Filtration
- Dryers
- Point-of-use air treatment
- Air sampling test kits
- Dew point meters



### Environmental

- Condensate management
- Lubricants
- Water filtration



### Installation

- SimplAir piping system
- Fusible disconnects
- Intelliflow system pressure control
- Drains



### Maintenance

- Hard parts
- Consumables
- PM contracts



### Power Management

- Variable speed drives
- Line reactors
- System controllers
- Safety switches



### Energy Efficiency

- System air pressure controllers
- Automated air system controls
- No-loss drains
- System audits







Ingersoll Rand (NYSE:IR) advances the quality of life by creating and sustaining safe, comfortable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Schlage®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; secure homes and commercial properties; and increase industrial productivity and efficiency. Ingersoll Rand products range from complete compressed air systems, tools and material and fluid handling systems. The diverse and innovative products, services and solutions enhance our customers' energy efficiency, productivity and operations. Ingersoll Rand is a \$14 billion global business committed to a world of sustainable progress and enduring results. For more information, visit [ingersollrand.com](http://ingersollrand.com) or [ingersollrandproducts.com](http://ingersollrandproducts.com).



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