



# Ingersoll Rand Industrial Business Unit

Compressed Air System Solutions



## Contents

Introduction	3
Nirvana - Rotary Screw Air Compressors	4
2-Stage - Rotary Screw Air Compressors	6
Nirvana - Oil-Free Rotary Screw Air Compressors	10
SIERRA - Rotary Screw Air Compressors	12
Reciprocating Air Compressors	13
Intellisys Control / Air Treatment Refrigeration Air Dryers	14
Air Treatment - Air Filters & NL Module	15
Condensate Management / Separator	16
Air System Controller and Pressure Controller	17
Air Distribution	18
Audit Solutions / Air Receiver	19



## SOLUTIONIZING – THE COMPLETE COMPRESSED AIR SYSTEM

A complete compressed air system is much more than an air compressor. It's the complete system – the piping, filters, dryers, drains, hoses, valves and point-of-use tools. And it all needs to work at peak efficiency with the quality and reliability to get the job done.





## Putting Air to Work

For over 100 years, Ingersoll Rand has been the world leader in air compressors and air system accessories. We understand the needs and requirements for air systems and the business demands that are faced every day. Increasing energy costs and reduced margins require increased reliability and efficiency from not only your air compressor, but your entire air system.

Simply stated, your air system is much more than an air compressor. It's the complete system – the piping, filters, dryers, drains, hoses, valves and point-of-use tools. And it all needs to work at peak efficiency with the quality and reliability to get the job done.

## Solutionizing™ from Ingersoll Rand

We no longer consider ourselves an “air compressor company.” We are moving far from the typical point-solution for your business to become a provider of complete air solutions that save money from the compressor room all the way to the point-of-use. Ingersoll Rand is totally focused and dedicated to reducing your operational costs through efficient, reliable and energy-saving products, innovative maintenance services, controls and financing to maximize performance across your entire air system.

No matter the size of your operation, Ingersoll Rand is the source for complete and cost-effective air solutions for your business.

MORE THAN  
**100**  
YEARS



KNOWLEDGEABLE SALES STAFF



TECHNICAL ASSISTANCE



TECHNOLOGY LEADERSHIP

**Proven Source.  
Proven Solutions.**

# Nirvana® – Rotary Screw Air Compressors

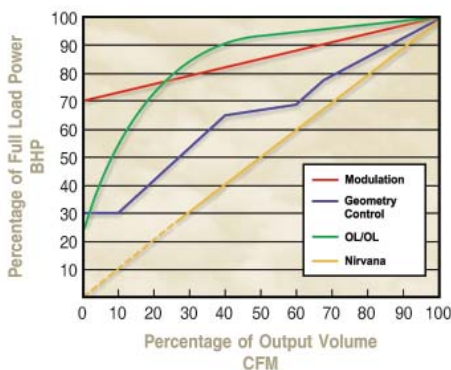


## INTRODUCING NIRVANA™. A TRUE VARIABLE SPEED DRIVE COMPRESSOR NOW AVAILABLE IN SINGLE AND TWO-STAGE

By matching a standard variable speed inverter with a HYBRID PERMANENT MAGNET® motor, IR is first-to-market with a true variable speed drive compressor. In both single and two-stage, the Nirvana compressor has fewer rotating parts than any other air compressor in its class. And the Hybrid Permanent Magnet motor driving the Nirvana compressor raises the standard on compressor reliability to an unequalled level. There are no motor bearings in the HPM® motor. And since the HPM motor directly drives the compressor, there are no gears, pulleys, belts, couplings or motor shaft seals to wear out, leak or need replacing. And there is nothing to get out of alignment. Coupled with IR's time-proven, reliable airend, Nirvana is as low-maintenance as an air compressor can get.

- Field-replaceable motor stator provides dramatically improved uptime
- Integral design, fewer parts and fewer connections help eliminate trouble spots, leaks and failures
- Time-proven quality airend and inverter
- Maximum efficiency at virtually any load

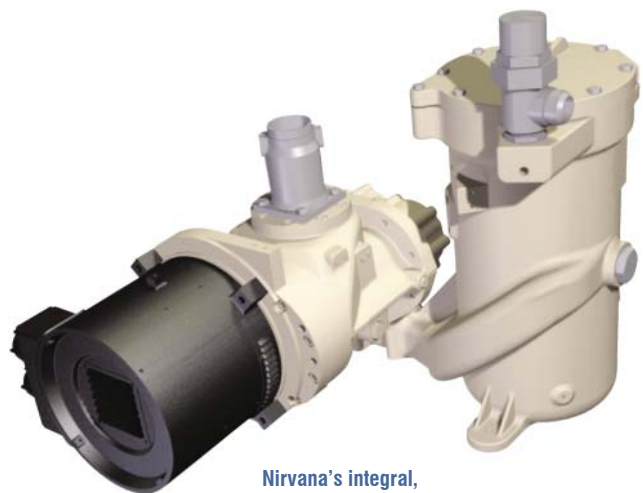
## Comparison of Rotary Capacity Controls



Nirvana compressors deliver constant pressure and maximum efficiency at any capacity.

\* The Nirvana motor turns off at 25% capacity and automatically turns on when air pressure decays.

## Variable Speed Drive, Contact-Cooled Rotary Screw Compressors

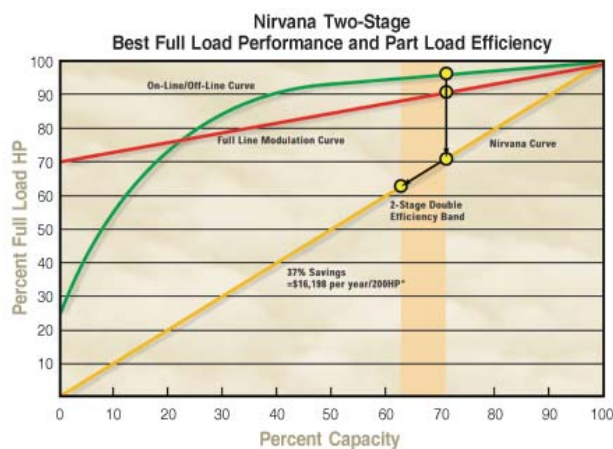


Nirvana's integral, single-point connection between airend and separator is virtually leak-free.

## TWO-STAGE NIRVANA

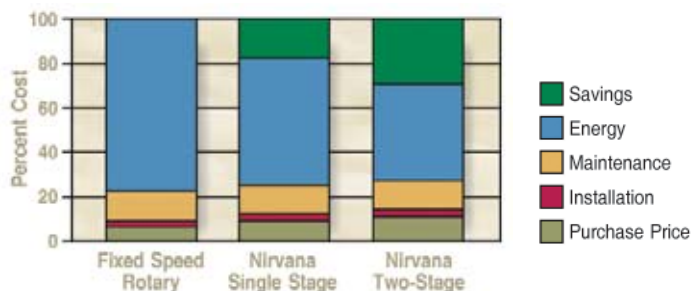


### Nirvana Two-Stage Beats the Performance of Any Other VFD Compressor at Full or Part Load



- The typical compressor operates at an average of 70% load.
- The Nirvana VSD decreases the overall energy cost 22%-30%, compared to a fixed speed rotary air compressor.
- The Nirvana two-stage produces approximately 11-15% more air than a single-stage air compressor.
- Maximum energy savings is achieved by the Nirvana two-stage yielding 33%-41% savings.

## Rotary 10 Year Life Cycle Cost



Rotary comparison at 70% average volume capacity;  
4,000 hours per year; .05/kWh

Traditional purchase decision factors represent only 20% of the cost to own and operate a rotary screw compressor while energy represents 80% of the life cycle cost. Only nirvana will save at least 28% of the energy cost over its life.

**NIRVANA WILL REDUCE THE TOTAL LIFE CYCLE COST TO OWN AND OPERATE AN AIR COMPRESSOR**

## 50 Hz Nirvana 37-160 kW Performance

Model	Free Air Delivery - M <sup>3</sup> / min				
	7.0 bar g	7.5 bar g	8.0 bar g	8.5 bar g	10.0 bar g
IRN37K-CC	6.6	6.4	6.3	6.2	5.7
IRN45K-CC	7.4	7.4	7.2	7.1	6.5
IRN55K-CC	10.7	10.2	9.8	9.4	8.5
IRN75K-CC	14.0	13.5	12.5	12.2	11.7
IRN90K-CC	18.0	17.1	16.5	15.3	14.0
IRN110K-CC	20.6	20.0	19.7	19.2	17.5
IRN132K-CC	24.4	23.5	23.1	22.3	21.0
IRN160K-CC	28.1	28.0	27.4	26.0	25.0

## 50 Hz Nirvana 75-225 kW 2-Stage Performance

Model	Free Air Delivery - M <sup>3</sup> / min				
	7.0 bar g	7.5 bar g	8.0 bar g	8.5 bar g	10.0 bar g
IRN75K-2S	16.2	15.7	15.2	14.2	13.1
IRN90K-2S	18.7	18.0	17.8	17.5	15.4
IRN110K-2S	23.0	22.1	21.5	20.4	18.9
IRN132K-2S	27.2	26.2	25.5	24.2	23.1
IRN160K-2S	31.2	31.1	30.6	29.6	27.2
IRN190K-2S	38.5	37.6	35.0	33.1	32.3
IRN225K-2S	45.5	44.7	43.1	41.8	40.4



# Rotary Screw Air Compressors

The rotary screw air compressor has become the most popular source of compressed air for industrial applications. A major reason is its simple compression concept.

Air enters a sealed chamber where it is trapped between two contra-rotating rotors. As the rotors intermesh, they reduce the volume of trapped air and deliver it compressed to the proper pressure level. This simple compression concept, with continuous contact cooling, allows the rotary screw air compressor to operate with temperatures approximately one half that generated by a reciprocating compressor. This lower temperature enables the rotary screw air compressor to operate in a "fully loaded" continuous duty cycle 24 hours per day, 365 days per year, if necessary.

Its ability to operate for extended periods of time makes the rotary compressor ideal for demanding industrial applications.

## Why Rotary?

- Designed to provide pulsation-free air 24 hours a day
- 100% continuous duty
- Quiet operation
- Energy efficient at full load
- Extended service intervals
- Reliable long life
- Improved air quality



**37-250 kW / 50-450 HP** 1-Stage

**90-350 kW / 125-500 HP** 2-Stage

## Energy Saving Control System

### Digital Control

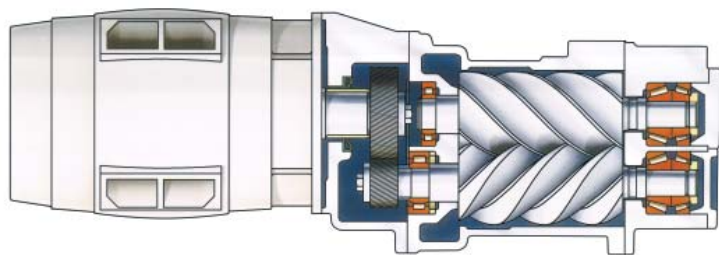
Our exclusive digitally controlled stepper motor inlet valve system precisely matches the airflow to the system demand. Just set the preferred system pressure and the built-in Intellisys microprocessor controller takes care of the rest.

To enhance reliability the inlet control system requires no maintenance. There are no pressure switches to manually recalibrate and no diaphragms that can stick open. Also no manual adjustments are required during the course of normal operation.

### Stepper Motor Control Inlet Valve

We equip each compressor with not one, but three separate control modes: On-line/Off-line, Upper Range Modulation, and Auto Control Select. Simply set the Intellisys controller to the desired control method, and the microprocessor does the rest.

For the best overall efficiency, choose IR's patented Auto Control Select (ACS) system. ACS constantly monitors the compressor's operation and automatically adjusts the control system to the mode that best suits your system's needs: On-line/Off-line or Upper Range Modulation.



## Unparalleled Reliability

Our time-proven integral gear drive is the only maintenance-free drive system in the industry. The airend and motor are permanently aligned, so during the course of normal operation no adjustments are ever required.

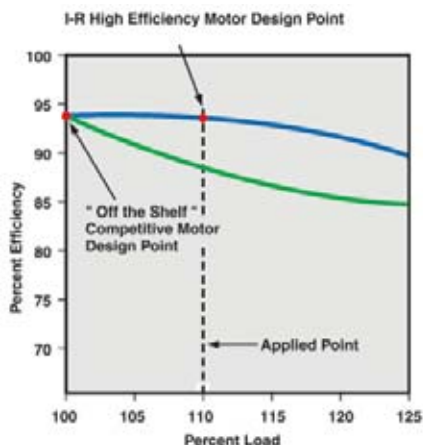
The drive train is totally enclosed so that no dust or dirt can penetrate, and our triple-lip shaft seal prevent leakage of coolant to the motor.

## Advanced Airend Design

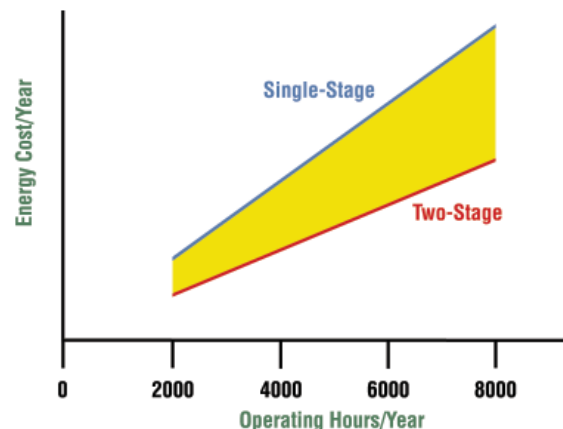
At the core of the copressor is our rugged and reliable airend. Used in thousands of compressors worldwide, our airend is known for trouble-free operation and minimal maintenance.

Our airends utilize only the highest quality duplex tapered roller bearings. Roller bearings provide line contact for thrust loads, and dramatically improve the life of the airend. The IR airend also incorporates a bearing coolant dam that traps coolant in the bearing during shutdown. This ensures proper bearing lubrication during the critical start-up phase, and longer bearing life.

## Energy Efficient Motor



Every rotary compressor incorporates a durable high efficiency motor. Our motors operate at peak efficiency under full load conditions, ensuring maximum energy savings.



## Two-Stage

### Energy Efficient Airend

If you're looking for the greatest efficiency possible from a rotary screw then our two-stage compressors are the answer. The heart of the compressor is our time-proven two-stage airend. By compressing the air in two steps instead of one, energy savings of up to 15% are realized.

The airend rotors are precision machined in a twenty-step process, ensuring unmatched rotor profile accuracy, repeatability, and efficiency.

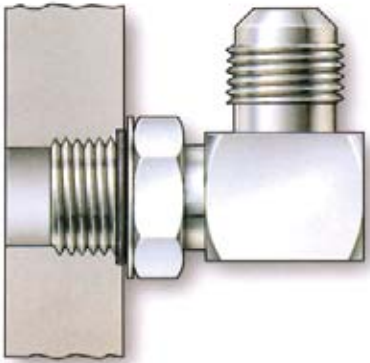
### Reduced Bearing Loads

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

### Coolant Curtain

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 lowers the energy required for compression. The coolant curtain also eliminates the need for an intercooler.

# Rotary Screw Air Compressors



## Inherent Leak-Free Design

By using SAE O-ring fittings on all connections 1/4" and larger, we've significantly reduced potential leakage problems associated with conventional threaded connections.

## 115°F/46°C Ambient

Rotary 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.

## Rugged Motor

The extra toughness built into the motor means it will run when other motors quit.

## Easy Connectivity

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



## The Rotary Package

To fit the need of your compressed air system, we offer you the choice of an air-cooled or water-cooled design.

## Factory-Tested

IR tests each and every compressor to ensure you receive the highest reliability and lowest operating cost available.



### Convenient Top Exhaust

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

### Quiet Enclosure

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

### Easy Serviceability

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

### End-to-End Cooling

The aftercooler is located at the inlet end of the package. This allows cool compressed air as low as 15°F/8°C above the ambient temperature to pass downstream to the air system.

### 8000 Hour/2-Year Lubricant

UltraCoolant reduces maintenance costs by lasting longer between changes. Also, because of UltraCoolant's superior separating properties, less coolant is passed downstream to the air system, further minimizing coolant costs.

### Star-Delta Starter

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

## 50Hz Rotary 37-250 kW Performance

Nominal kW	Free Air Delivery - M <sup>3</sup> / min <sup>(1)</sup>		
	ML 7.5 bar g	MM 8.5 bar g	MH 10 bar g
37 <sup>(2)</sup>	6.1	5.9	5.6
45	7.5	8.5	10.5
55	7.5	8.5	10.0
75	13.7	12.4	11.0
90	17.1	15.3	14.0
110	20.0	19.2	17.5
132	23.5	22.3	21.0
160	28.0	26.0	25.0
200	34.3	32.9	30.2
250	43.9	42.5	38.8

## 50Hz Rotary 90-350 kW 2-Stage Performance

Nominal kW	Free Air Delivery - M <sup>3</sup> / min <sup>(1)</sup>			
	ML 7.5 bar g	MM 8.5 bar g	MH 10 bar g	MXU 14 bar g
90-2S	18.0	17.5	15.4	12.5
110-2S	22.1	20.4	18.9	15.4
132-2S	26.2	24.2	23.1	18.4
160-2S	31.1	29.6	27.2	22.2
200-2S	41.5	38.8	36.2	29.6
250-2S	49.2	47.4	44.2	36.4
300-2S	60.2	56.0	52.1	44.3
350-2S	69.2	64.1	59.5	50.2

(1) FAD (Free Air Delivery) M<sup>3</sup>/Min. are ratings of full package performance in accordance with CAGI-PNEUROF acceptance test standard PN2CPTC2 or ISO1217: 1996 Annex C.

(2) Banded V-belt drive with automatic tensioner.

*Above models are available with stand alone VFD (Variable Frequency Drive)*

# Nirvana® – Rotary Oil Free Screw Air Compressors

## Ingersoll Rand : Your Oil-Free Resource

If you need oil-free air, Ingersoll Rand is here to help. We'll listen to what you need. Then we'll use our decades of leadership in the oil-free market to help you design the best oil-free system for your application. Today, we're the only manufacturer that can supply you with oil-free compressed air in all three technologies: rotary screw, reciprocating and centrifugal. And since each technology has its benefits, we can help you select the one that works best for your application.



## Variable Speed Drive, Oil-Free Rotary Screw Compressors

### INTRODUCING NIRVANA OIL-FREE. A TRUE VARIABLE SPEED DRIVE OIL-FREE AIR COMPRESSOR

Only Ingersoll Rand offers Nirvana Oil-Free, the world's first true variable speed oil-free compressor for critical oil-free applications requiring the highest quality of air and the greatest reliability available on the market. By matching an innovative modular variable speed inverter with a HYBRID PERMANENT MAGNET® motor, IR is again first-to-market, this time with a true variable-speed drive, oil-free air compressor. The two-stage Nirvana Oil-Free compressor has fewer rotating parts than any other rotary air compressor in its class. And the Hybrid Permanent Magnet motor driving the Nirvana Oil-Free raises the standard on compressor reliability to an unequaled level. There are no motor bearings in the HPM® motor. And since the HPM motor directly drives the compressor, there are no pulleys, belts or couplings to wear out, leak or need replacing. And there is nothing to get out of alignment. Coupled with IR's time-proven, reliable two-stage oil-free airend, Nirvana Oil-Free is as reliable as an air compressor can get.

- **Field-replaceable motor stator provides dramatically improved uptime**
- **Time-proven reliable Oil-Free two stage airend**
- **Ultracoat Solving the need for better oil-free performance and energy savings**
- **Unequaled efficiency and reliability. Nirvana saves energy**



Nirvana Oil-Free's integral design, patented packaging and HPM motor eliminate trouble spots, efficiency loss and failure.

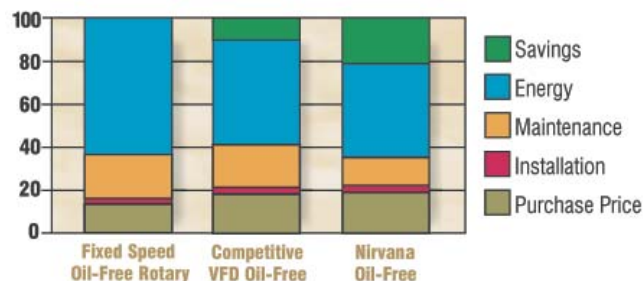
## ULTRACOAT. SOLVING THE NEED FOR BETTER OIL-FREE PERFORMANCE AND ENERGY SAVINGS

The challenge: to give our customers an oil-free rotary compressor that operates at peak performance throughout its lifetime. With the introduction of our fixed speed oil-free compressor, SIERRA, we introduced UltraCoat. After 10 years of superior performance and peak performance in real world applications, UltraCoat has proven to be unmatched in its performance. We use UltraCoat to protect every SIERRA airend and now every NIRVANA Oil-Free airend. Ingersoll Rand's exclusive UltraCoat rotor and housing coating process uses a mechanical and chemical bond to insure the thinnest coating with the tightest possible grip. First, the rotor and housing surfaces are mechanically prepared to accept the coating. Then UltraCoat is precision-applied to insure the most even coat possible. Finally, all surfaces are heat-cured to solidify the mechanical/chemical bond. Compared to other coatings, UltraCoat delivers longer life and 10% energy savings. To help our customers get the best performance, we didn't limit our design efforts to the coating. We selected stainless steel and aluminum for the piping linking the intercooler with the stainless steel second-stage rotors. Condensation created in the cooling process cannot corrode these materials, eliminating the possibility of rust formation and carry through, further lengthening the life of the coating and rotors. Design innovations such as this and Ultracoat is what separates Nirvana Oil-Free from any other compressor in its class.



Surface preparation creates minute crevices in our rotors and housing that tightly grip the ultracoat coating. The result is the most durable performance on the market, lowering our customers' energy costs and increasing the life of the airend in their nirvana oil-free compressor.

## OIL-FREE ROTARY 10 YEAR LIFE CYCLE COST



Comparison at 70% average volume capacity; 4,000 hours per year; .05/kWh Comparison at 70% average volume capacity; 4,000 hours per year; .05/kWh

Traditional purchase decision factors represent only 20% of the cost to own and operate a rotary screw compressor while energy represents 60% of the life cycle cost. Only nirvana will save at least 30% of the energy cost over its life.

### NIRVANA WILL REDUCE THE TOTAL LIFE CYCLE COST TO OWN AND OPERATE AN AIR COMPRESSOR

IR's exclusive VSD makes possible a range of operating characteristics that produce this unequalled energy efficiency. In a conventional air compressor, starting up the motor creates an enormous energy draw, as much as 800% of the full-load normal running current. Nirvana's HPM drive system limits the in-rush current to less than 100%. This significant decrease in starting amp requirements minimizes peak charges, leading to a lower energy bill.

### 50 Hz Nirvana Oil Free 37-160 kW Performance

Model	Free Air Delivery - M <sup>3</sup> / min				
	7.0 bar g	7.5 bar g	8.0 bar g	8.5 bar g	10.0 bar g
IRN37K-OF	5.7	5.4	5.3	5.1	4.6
IRN45K-OF	6.7	6.5	6.4	6.2	5.7
IRN55K-OF	9.4	9.0	8.8	8.5	7.8
IRN75K-OF	12.3	11.9	11.7	11.3	10.6
IRN90K-OF	14.8	14.4	13.8	13.4	12.1
IRN110K-OF	18.1	17.8	17.2	16.7	15.4
IRN132K-OF	21.5	21.2	20.6	20.1	18.6
IRN160K-OF	25.5	25.4	24.5	24.1	22.8



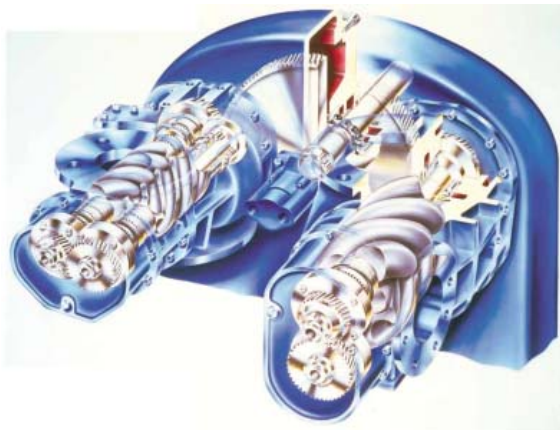
# SIERRA® – Rotary Screw Air Compressors

## SUPERIOR TECHNOLOGY

The heart of the SIERRA oil-free rotary screw air compressor is our superior twostage compression module. Our rotors are precision-machined in a twenty-step manufacturing process that ensures unmatched rotor profile accuracy and repeatability. By using the highest quality bearings and precision gearing to maintain exact alignment of the rotors, you are assured of years of reliable, efficient service.

Generously sized, anti-friction bearings easily handle all expected loads to keep the airend running smoothly. In the vital sealing arrangement, the SIERRA uses durable stainless steel for the air seals and a timeproven labyrinth design for the oil seals. This combination protects the rotors from lubrication impurities while keeping the loss of air through leakage to an absolute minimum, ensuring the continuous flow of clean, oil-free compressed air.

The precision gearing incorporated in the compression module drive design optimizes both speed and rotor timing, providing trouble-free performance over a long life. And the improved lip seal on the bull gear drive input shaft eliminates any opportunity for oil leakage into the SIERRA package.



### CMC Controller Featuring

- Provide a list of last 224 events
- Service scheduling
- Power outage restart



## ULTRACOAT

Surface preparation creates minute crevices in our rotors and housing that tightly grip the ultracoat coating. The result is the most durable performance on the market, lowering our customers' energy costs and increasing the life of the airend in their nirvana oil-free compressor.

## 50 Hz Sierra 200-300 kW Performance

Model	Free Air Delivery - M <sup>3</sup> / min		
	SL 7 bar g	SM 8.5 bar g	SH 10 bar g
200	35.0	32.6	27.4
250	45.2	41.5	35.5
300	-	-	43.3

- Above models available in air and water-cooled version with stand alone VFD ( Variable Frequency Drive )

# Reciprocating Air Compressors

## Industrial Star

The Ingersoll Rand industrial star range Oil-Free Compressor Packages are self contained compressed air power plants, engineered into an unusually compact skid mounted unit that has everything you need, to generate dependable low-cost air power. There is nothing more to buy or install. The completely assembled unit with interconnecting piping and cabling is factory tested and eliminates costly start-up delays due to elaborate installation and commissioning at site, incorrectly placed accessories, defective switches, lost components etc. The compact unit is easy to install, occupies less floor space and is equipped so as to offer a single point water inlet / outlet connection and air outlet connection.

Available in Oil-Free construction, these packages are economical to use on account of its lower installation costs, lower maintenance as well as operating costs. The standard package includes a compressor, Vee belt drive & belt guard, electric motor, vertical aftercooler & air receiver with standard fittings, starter and control panel with adequate safety shutdown systems, necessary piping & hardware, and with optional air dryer and compressed air filters.



### 50 Hz Industrial Star 20-240 kW Performance

Model	Discharge Pressure PSIG	MHP	Capacity in CFM	Capacity in M <sup>3</sup> /HR
IS 1-20	100	20	68	115
IS 1-30	100	30	104	177
IS 1-40	100	40	148	252
IS 1-50	100	50	181	308
IS 1-60	100	60	227	386
IS 1-75	100	75	288	489
IS 1-100	100	100	423	718
IS 1-120	100	120	526	893
IS 1-150	100	150	647	1099
IS 1-180	100	180	788	1339
IS 1-215	100	215	927	1574
IS 1-240	100	240	998	1696
IS 1-20H	125	20	58	98
IS 1-30H	125	30	90	154
IS 1-40H	125	40	128	217
IS 1-50H	125	50	161	274
IS 2-60H	125	60	238	405
IS 2-75H	125	75	296	503
IS 2-100H	125	100	391	665
IS 2-120H	125	120	483	822
IS 2-150H	125	150	603	1025
IS 2-180H	125	180	700	1190
IS 2-215H	125	215	862	1465
IS 2-240H	125	240	947	1609

- Atmospheric pressure : 14.7 PSIA, Temperature - 95 °F & 70% RH considered
- Cooling water inlet temperature 32 °C considered & cooler CTD will be 20 °F
- The performance is at the compressor discharge flange
- The performance is subjected to tolerances as per test standard



## Intellisys Gives You Total Control of Your Compressed Air Delivery



Whether you need continuous duty compressed air or an intermittent supply, Intellisys puts you in complete control.

With Intellisys, you are always in command. You can quickly and easily adjust the operating parameters of the compressor to meet your plant air system's requirements and minimize operating costs.

### Features

- Total control at your fingertips
- Easy operation
- Adjustable operating parameters
- Built-in sequencer
- Timesaving diagnostics
- Comprehensive data display
- Giving you complete flexibility
- Multiple unit sequencer
- Remote communications capability
- Automatic power outage restart option
- Remote start/stop
- NEMA 4 electrical option

## Refrigeration Air Dryers

A noncycling refrigerated air dryer by Ingersoll Rand. The TSC dryer is designed with the quality expected from an Ingersoll Rand - manufactured product, coupled with value-added innovations for those applications requiring liquid-free air.



Incorporating the high-quality design of the Ingersoll Rand TS dryer, the TSC also includes innovative component features that offer reliable and efficient compressed air increasing productivity for process applications. These design innovations include a 3-in-1 heat exchanger and microchannel condenser.

### Features

- Consistently delivers dry process air with minimal pressure drop
- High inlet temperatures to 60°C will be accepted with no nuisance shutdowns
- Electrostatic-charged panel filter included on all models for increased package performance
- Refrigeration Expansion valve offers more precise control under varying heat loads from the compressed air and varying ambient temperatures resulting in less risk of product spoilage through dewpoint slippage
- Design uses environmentally friendly R404A
- "Smart" drain recognizes ambient conditions to adjust dwell time and minimize the loss of valuable compressed air

Model	Rated Flow (m <sup>3</sup> /min)
TSC 2	10.5
TSC 3	12.8
TSC 4	16.6
TSC 5	19.6
TSC 6	23.2
TSC 7	26.5

Rated at 7 barg Inlet Air Pressure, 60 °C Inlet Air Temperature and Ambient Air Temperature of 46 °C



# Air Treatment

## Compressed Air Filters

Ingersoll Rand coalescing filters save energy and protect your tools, machinery and equipment from harmful contaminants by effectively removing solid particulates, liquid water, oil and aerosols from compressed air.



The GP Series removes particulates down to 1.0 micron, which meets General Industry requirements for coarse filtration. The HE Series removes contaminants down to .01 micron, which meets stringent compressed air filtration requirements. The AC Series removes oil vapour and hydrocarbon odour, which gives a maximum remaining oil content of <math><0.003 \text{ mg/m}^3</math> (<math><0.003 \text{ ppm}</math>) excluding methane @ 21 °C. The DP Series removes dust particle down to 1 micron. The new filter design is easy to install and is loaded with standard features to reduce maintenance and downtime. All filters feature a 10-year warranty on housing.

Filter Series GP/HE/AC/DP	Pipe Size	Flow Rates @ 7 bar g (100 psi g)	
		m <sup>3</sup> /min	cfm
(Series) 19	G <sup>1</sup> / <sub>4</sub>	0.53	19
(Series) 40	G <sup>3</sup> / <sub>8</sub>	1.12	40
(Series) 64	G <sup>1</sup> / <sub>2</sub>	1.80	64
(Series) 123	G <sup>3</sup> / <sub>4</sub>	3.45	123
(Series) 216	G1	6.05	216
(Series) 275	G 1 <sup>1</sup> / <sub>4</sub>	7.70	275
(Series) 350	G 1 <sup>1</sup> / <sub>2</sub>	9.80	350
(Series) 481	G 1 <sup>1</sup> / <sub>2</sub>	13.46	481
(Series) 563	G2	15.76	563
(Series) 706	G2	19.76	706
(Series) 850	G2 <sup>1</sup> / <sub>2</sub>	23.80	850
(Series) 1100	G3	30.80	1100
(Series) 1380	G3	38.63	1380

Above Filters also available upto 16500 cfm capacity.

## NL Module

### The Top-Performing Filter

Ingersoll Rand's NL Module is the best long-term buy in compressed air filtration. It provides true oil-free air while requiring virtually no maintenance or added cost for throwaway filter elements. Its high-quality design means no system downtime from premature failure of poorly constructed elements.



The NL Module is a self-cleaning, coalescing-type filter separator designed to remove oil and water aerosols with a minimum of pressure drop. Its special fiberglass filtration system is capable of removing aerosol down to .5 parts per million by weight.

This reliable, remarkably efficient filter offers the following features:

- The unique pleated element design results in element life of up to 3 years under normal service.
- Based on field experience, expected pressure drop after 3 years is approximately 1.0 psig.
- It collects particles greater than 3 microns at 100% efficiency and filters out particles down to 0.1 microns at 99.98% efficiency.

Non-Lube Module Data: 99.99999% D.O.P. Efficiency.  
Removes oil and water liquid/mist down to 0.5 PPM by weight.

Model	SCFM Flow	Delta P Indicator	Inlet / Discharge
NLM 300	300	Standard	2.0 NPT
NLM 500	500	Standard	2.5 NPT
NLM 1000	1000	Standard	4.0" 150# ANSI Fig.
NLM 1500	1500	Standard	4.0" 150# ANSI Fig.
NLM 2100	2100	Standard	4.0" 150# ANSI Fig.
NLM 3600	3600	Standard	4.0" 150# ANSI Fig.

Maximum Pressure 150 psig  
Maximum Temperature 93 °C

# Condensate Management

## DRAIN VALVES

### System Saver Drains (SSD-Plus)

The Ingersoll Rand System Saver Drains have an electronic level sensing capability which only discharges when condensate is present, thus preventing unnecessary loss of valuable compressed air. This intelligent sensing system operates with all levels of condensate from 100% oil to 100% water. The System Saver Drains can be purchased as a bare drain valve or as a kit. The kit simplifies installation by supplying not only the bare drain valve, but also a ball valve and an adapter fitting.

- Designed to complement all compressed air systems including compressors, filters, water separators, dryers, coolers and receivers
- Easy mounting and installation – no additional mounting brackets required
- Zero air loss, zero energy loss, less maintenance and easy-to-access components



Model	Maximum Operating Pressure PSIG	Electrical Requirements	Input Power (watts)	Compressor Capacity SCFM	Refrigerator Dryer SCFM	Connections	
						Inlet	Outlet
SSD7-Plus	232	230-1-50	26 W	175	303	1-4" NPT (1)	3/8" i/d hose 10mm
SSD14-Plus	174	230-1-50	26 W	349	607	1/2" NPT (2)	5/16" i/d hose 8mm

## DRAIN VALVES

### Pneumatic No-Loss Drain (PNLD)

The Ingersoll Rand Pneumatic No-Loss Drain (PNLD) is a heavy-duty industrial drain valve that will not waste compressed air. The PNLD does not require the use of electricity, any pre-setting or manual intervention. The drain is compatible with all types of lubricants and has a 7/16th discharge orifice to prevent clogging.

The maximum pressure is 200 PSIG, and the operating temperature range is 2 °C to 65 °C.

- Designed to complement all compressed air systems including compressors, filters, water separators, dryers, coolers and receivers
- Easy mounting and installation – no additional mounting brackets required
- Zero air loss, zero energy loss, less maintenance and easy-to-access components
- Three-year warranty



Model	Compressor Capacity SCFM	CCN	Connections		Pilot	Condensate Capacity (oz)	Dry Weight (lbs)	Single Cycle Discharge @ 100 PSIG (oz)
			Inlet	Outlet				
PNLD16	400	42528661	1/2" NPT (top) 3/8" NPT (bottom)	3/8" NPT	n/a	16	7	12
PNLD52	>400	42528679	1/2" NPT (top) 1/2" NPT (bottom)	1/2" NPT	1/8" NPT	52	13	44

## SEPARATORS

### PolySep Condensate Separator

The unique design of the PolySep system is used to separate oil from condensate. Available in models for capacity 30 SCFM to 1125 SCFM.



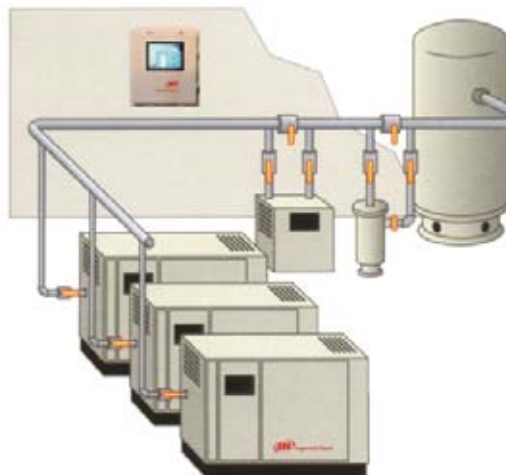
## Intellisys Energy Optimizer™ Air System Controller



With the Intellisys Energy Optimizer™ (IEO) controlling the air system, the inefficient offsetting pressure values are eliminated. Instead, the operating parameters of the compressors are stabilized in relation to one another, controlling “drift” and allowing the system to operate with an optimum mix of compressors based on measured air delivery.

### Features :

- For systems of upto 8 rotary/recip compressors
- Save energy by reducing control pressure band
- Optimize Nirvana Compressor in your system
- Maximize total system performance through management of compressors and Intelliflow
- Ease of operation with intuitive 10.4" color touchscreen



## IntelliFlow™ Air System Pressure Controller



In a properly audited compressed air system an IR Intelliflow system pressure controller can lower demand system pressure significantly. By Performing an audit on a compressed air system, the lowest possible operating air pressure will be learned. Using this knowledge, proper storage and Intelliflow's unique ability to meter compressed air at a constant pressure, overall demand side pressure can be lowered. By lowering demand side pressure, leaks will consume less compressed air, thus saving considerable energy.

### Features :

- Increase your facilities reliability and productivity by providing consistent tight downstream pressure control
- Significantly reduce energy consumption by reducing flow through leaks and artificial demand
- Eliminate compressed air interruptions by allowing compressors sufficient time to react to events



Model	Flow (m³/min) @ 8.6 bar(g)¹		
	Minimum	Maximum	CPN
IR-BP-BV 50	4.8	24.1	42548719
IR-BP-BV 80	8.7	44.5	42548727
IR-BP-BV 100	14.0	85.9	42548743
IR-BP-BV 150	29.0	222.4	42548768
IR-BP-BV 200	29.0	222.4	42550970



# Air Distribution



## Introducing A Whole New Evolution In Piping . . .

### Simplair. Simplicity, Versatility, Performance In One Integrated System

In the past, compressed air users have been burdened by the limitations of traditional piping systems – difficult installation and modification, poor air quality, and high-pressure losses are all common problems. Now, Simplair solves these problems with its unique 15 mm (½") to 150 mm (6") Piping System that makes installation fast, simple, and economical.

Thanks to a revolutionary design, Simplair means big benefits for your business.

- Low operation costs
- Fast installation
- Simple connections
- High flow performance
- Low pressure drip
- Outstanding structural strength
- Lightweight components
- Non-corrosive

Constructed of anodized aluminum extrusion, Simplair is a modular piping system that's ideal for compressed air installations of any size. Yet despite its quick, easy assembly, Simplair offers unexpected flow rates of upto 8,000 cfm for compressor room applications and 16,000 cfm for most factory loop systems.

With Simplair, you gain advantages formerly unheard of in integrated piping systems.

### Advantages

#### Flexible Design

Simplair's modular design means quick, easy installation. Even system modifications can be completed in seconds, minimizing downtime.

#### Superior Performance

The smooth bore of tubing prevents high-pressure losses, and allows higher flow rates than traditional piping systems.

#### Easy Expansion

Because outlets and connections can be made in seconds, expansion is simple with minimum cost and production disruptions.

#### High Air Quality

Each tube is anodized to prevent corrosion from forming inside pipes, affording contaminant-free air throughout the system.

#### Leak-Free Seals

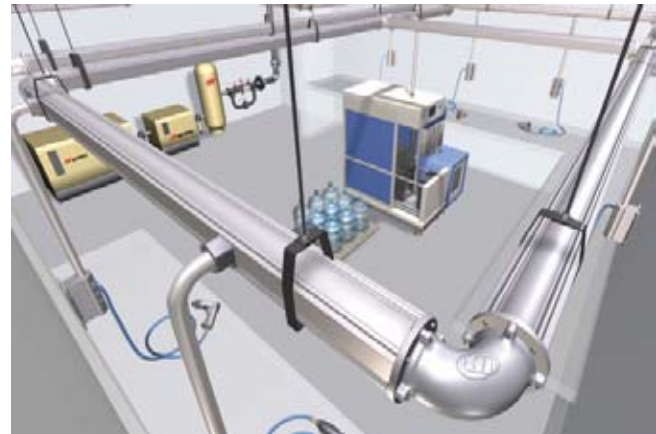
Our positive "O" ring seal ensures that leaks will not occur at any stage of the system's life.

#### Lightweight Material

Simplair offers the same structural strength of traditional piping, but with less than a quarter of the weight, making it the perfect choice for roof structures, walls or machinery.

#### Sleek Appearance

Ergonomically designed to fit the demands of modern production facilities, Simplair can enhance any working environment.





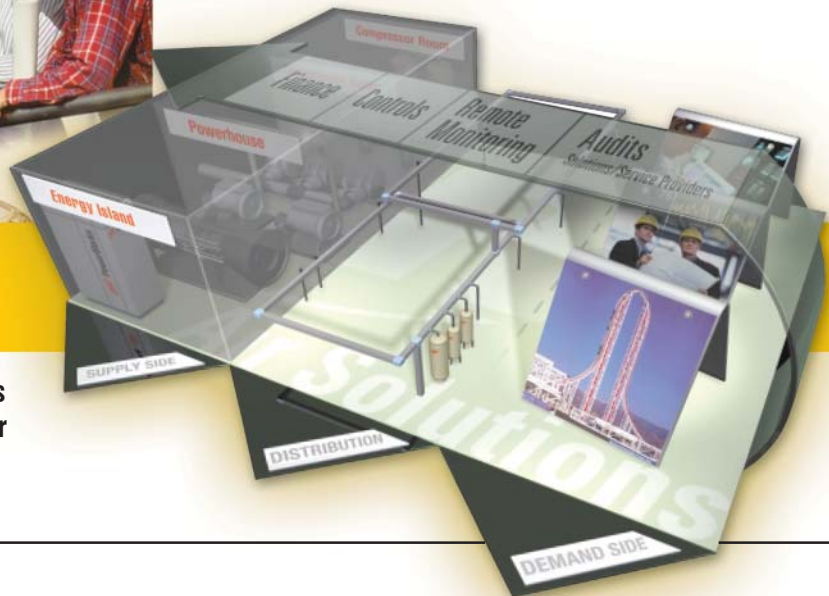
## Ingersoll Rand's Complete Consultancy Services

Your air system problems require total solutions. IR Audit Solutions will help you define system problems, whether they are in demand, distribution or supply, and develop cost-efficient solutions that meet your return on investment goals.

IR Air Solutions is helping customers optimize their systems and even more ...

- ✓ Reduce operating costs
- ✓ Improve productivity and reliability
- ✓ Improve quality
- ✓ Reduce capital spending
- ✓ Stabilize system pressure

**We offer compressors on rent also carryout Air System Management and air over fence projects.**



The world's top name in Air Compressors is also the top name to remember in their Air Audit Solutions as well.

## Air Receiver

### We need an Air Receiver for...

- Adequate Storage to maintain pressure
- Maintain the required flow rate without significant pressure decay
- Primary receiver -- Isolate the compressor from demand events
- Reduce / eliminate compressor cycling
- Allow the compressor to remain unloaded for a longer time
- Backup for compressor failure



CCN	Description
70277843	Receiver 0.5 M <sup>3</sup>
70277793	Receiver 1 M <sup>3</sup>
70277991	Receiver Ver 1.5 M <sup>3</sup>
70278007	Receiver Air Ver 2 M <sup>3</sup>
70278015	Receiver Air Ver 2 M <sup>3</sup>
70278023	Receiver Air Ver 3 M <sup>3</sup>
70277819	Receiver 4 M <sup>3</sup>
70277512	Receiver 5 M <sup>3</sup>
70277520	Receiver 10 M <sup>3</sup>

- BS 5169 Class-II with Accessories
- Contact us for customized receiver sizing and pressure rating

# More Than Air. Solutions.

Online Solutions: [www.air.irco.com](http://www.air.irco.com)



**ISO 9001 and ISO 14001 Certified**

Ingersoll-Rand compressors are not designed, intended or approved for breathing air applications. Ingersoll-Rand does not approve specialized equipment for breathing air applications and assumes no responsibility or liability for compressors used for breathing air service.

Nothing contained on these pages is intended to extend any warranty or representation, expressed or implied, regarding the product described herein. Any such warranties or other terms and conditions of sale of products shall be in accordance with Ingersoll-Rand's standard terms and conditions of sale for such products, which are available upon request.

Product improvement is a continuing goal at Ingersoll-Rand. Designs and specifications are subject to change without notice or obligation.



## **Ingersoll-Rand (India) Ltd.**

21-30, GIDC Estate, Naroda, Ahmedabad - 382 330, India.

Phone : (079) 2282 0123, 2282 0323

Fax : (079) 2282 1003, 2282 1256, 2282 0568

E-mail : [airsolutionsindia@irco.com](mailto:airsolutionsindia@irco.com)

**Regional Offices :** **Western Region** (HQ : Mumbai): Ph.: (022) 5697 5555 **Eastern Region** (HQ : Kolkata): Ph.: (033) 2401 1224 **Southern Region** (HQ : Chennai, TN & Kerala): Ph.: (044) 2852 0900. (HQ: Bangalore, Karnataka): Ph.: (080) 2219 2500-10 (HQ : Secunderabad, AP): Ph.: (040) 2784 9782 **Northern Region** (HQ : Delhi): Ph.: (011) 2646 7242 **Central Region** (HQ : Nagpur): Ph.: (071) 2253 3697