



# Desiccant Air Dryers

*Heatless, Heated and Heated Blower*



*Reliability*

*Efficiency*

*Productivity*

# Desiccant Dryers...

When we designed the Ingersoll Rand heatless, heated and heated blower desiccant dryers we set our sights on creating **the most reliable desiccant dryers** you can operate. And our success was extraordinary. We set a new standard, and, in fact, rewrote the book.



## Desiccant

Our reliable high strength, non-acidic desiccant provides maximum performance and is easily stored and handled. Environmentally friendly, it eliminates worries associated with other types of dryers, such as refrigerant leaks, spills and disposal.



# Designed for Reliability

One look tells you that these dryers are like no others...extremely low silhouette...manifolds and valves within an arm's reach of the operator...readily accessible fill and drain ports...just a few of the differences apparent on the outside. Both externally and internally, each model combines innovative engineering and technically advanced, highly durable components to provide easy installation, operation, maintenance, and simply the most reliable desiccant dryers available.

## Easy to Maintain High-Performance Valves

With manifolds angled toward the center at the operator level, the valves are easily accessed for maintenance. A typical diaphragm valve in a heatless dryer can be rebuilt in less than ten minutes, without removing the valve from the manifold.



## Low Profile Design

Our easy access design places key maintenance points at operator level for faster servicing and less downtime. The lower silhouette also allows upright shipment and facilitates installation.



## State of the Art Controller

The advanced microprocessor controller maintains dryer performance at optimum levels. It constantly monitors dryer functions and provides an alert when maintenance is required so downtime is minimal.

# Selecting An Ingersoll Rand Desiccant Dryer

Each Ingersoll Rand desiccant dryer incorporates high-strength desiccant and durable, easily maintained valves for **unsurpassed reliability, performance and customer value.**

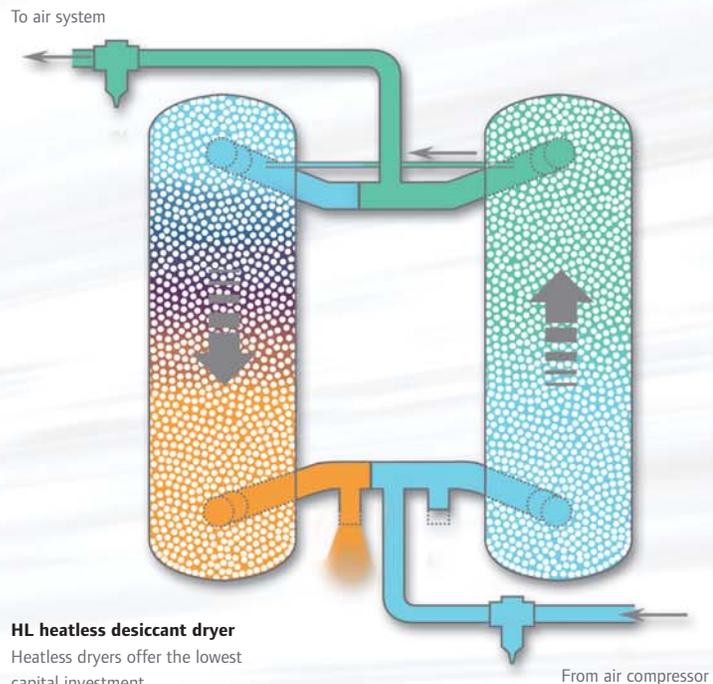
All three technologies – heatless, heated and heated blower – use twin desiccant towers and strategically positioned valves to dry the compressed air.

Whether using a heatless, heated or heated blower dryer, the compressed air produced is thoroughly dried as it is directed through the on-line desiccant-filled tower of the dryer. As the desiccant in this tower adsorbs moisture from the air, the desiccant in the dryer's

off-line tower is purged of moisture and readied for use. The basic difference in the three technologies is the manner in which moisture is desorbed from the desiccant, also known as regeneration.

## Heatless Dryers

Simplest of the three technologies, the heatless dryer diverts a portion of the dried compressed air to the off-line tower. This dry air then flows through and regenerates the desiccant. The purge air, now moisture laden, is harmlessly exhausted through a muffler to the atmosphere. Lowest in capital investment, this technology may be more expensive to operate because it requires a portion of the dried compressed air to be diverted from the air system for desiccant regeneration.



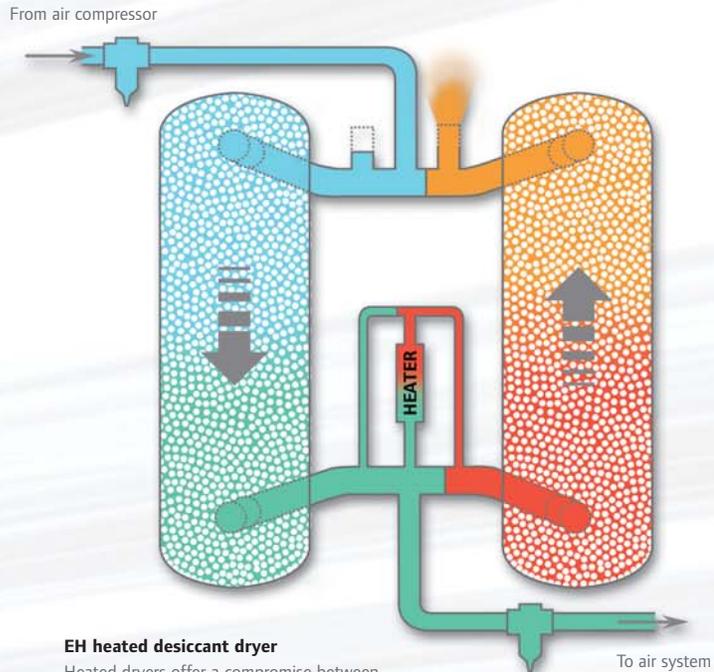
### Heated

These dryers operate similarly to heatless dryers, with a big exception. Dried air diverted from the air system is first passed through a high-efficiency external heater before entering the off-line tower to regenerate the desiccant. Since this heated air can hold considerably more moisture than unheated air, only about half the amount of dried compressed air is needed for regeneration. Although the addition of the heater and associated components raises the initial capital investment for a heated dryer, less diverted compressed air means lower operating costs.

### Heated Blower

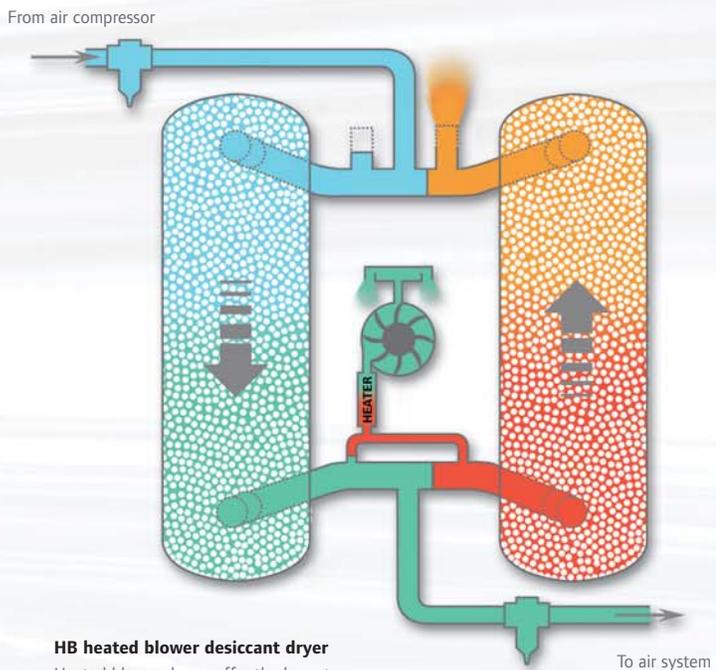
This type of dryer does not divert dried compressed air from the air system to remove moisture from the desiccant in the off-line tower. Rather, it employs its own high performance centrifugal blower to direct ambient air through a heater and then through the off-line tower. There, the stream of heated air regenerates the desiccant. Heated blower technology requires the highest initial capital investment, but with no or little diversion of compressed air from the system for regeneration, it offers significantly lower operating costs than the other two desiccant dryer technologies.

So, how do you select the right desiccant dryer technology? That depends on the variables, such as system demand, compressed air capacity, air quality requirements and applicable life cycle costs that are unique to your compressed air system.



**EH heated desiccant dryer**

Heated dryers offer a compromise between operating efficiency and capital investment.



**HB heated blower desiccant dryer**

Heated blower dryers offer the lowest operating cost.

# Ingersoll Rand HL Heatless Desiccant Dryer



HL heatless desiccant dryer

Available in flows ranging from 2.5 nm<sup>3</sup>/min. (90 scfm) to 141.6 nm<sup>3</sup>/min. (5,000 scfm), Ingersoll Rand HL heatless desiccant dryers are designed to ensure a constant -40°C (-40°F) or optionally -70°C (-100°F) pressure dew point, virtually eliminating costly interruption of production due to moisture. Clean air is further assured by use of strategically placed filters: a pre-filter to remove oil and contaminants in air

entering the dryer, and an after-filter to make sure that only clean dried air exits the dryer. As an additional design precaution, the dryer's switching valves are normally open and purge valves normally closed to allow air flow through the dryer in case of power loss.

A standard feature of every Ingersoll Rand heatless desiccant dryer is its NEMA 4 package, providing increased protection of electrical components, as well as advanced digital dryer controls and displays. It includes a NEMA 4 electrical enclosure to protect against water and condensation, a UL/ULC panel and an advanced digital electronic controller. In addition, every HL comes standard with a compressor interlock feature. This substantially prolongs compressor life and improves reliability.

While reliability has been a key focus of its design, the Ingersoll Rand HL heatless desiccant dryer is also a leader in its class for energy efficiency and the health and safety of operating personnel and the environment.

# Ingersoll Rand EH Heated and HB Heated Blower Desiccant Dryers



EH heated desiccant dryer

Ingersoll Rand EH heated desiccant dryers incorporate an external heater to heat dry purge air. This allows EH dryers to divert significantly less dry air from the air system for regenerating desiccant than is required by heatless dryers.

Available in sizes ranging from 4.2 nm<sup>3</sup>/min. (150 scfm) to 226.5 nm<sup>3</sup>/min. (8,000 scfm), Ingersoll Rand EH dryers deliver -40°C (-40°F) pressure dew point air for critical applications.

Ingersoll Rand HB heated blower desiccant dryers are equipped with dedicated durable centrifugal blowers to provide purge air for regeneration, eliminating the need to divert dry compressed air from the air system. Instead, the blower directs ambient air through an external heater and then through the off-line tower to regenerate the desiccant. This means more compressed air is available for critical downstream applications. Available in sizes from 4.2 nm<sup>3</sup>/min. (150 scfm) to 226.5 nm<sup>3</sup>/min. (8,000 scfm), Ingersoll Rand HB dryers deliver -40°C (-40°F) pressure dew point air.

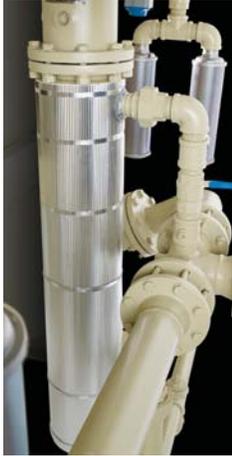
The EH and HB dryers use high-performance ball or butterfly valves for switching and purge operations. These non-lubricated valves are designed specifically for high temperature applications and feature stainless steel internals as well as filled PTFE seats and include double-acting pneumatic actuators.

Both EH heated and HB heated blower models provide the reliability and safety features of heatless dryers, with increased energy efficiency. These features include heatless back-up mode in the event of a heater or blower malfunction and an innovative solid-state relay heater control to extend valve and heater life. NEMA 4 electrical enclosures are standard and include an advanced multi-function digital controller.



HB heated blower desiccant dryer

# Benefits Of Desiccant Dryers



High efficiency heater reduces air needed to regenerate desiccant.

All of our desiccant dryers are designed with **energy efficiency, reliability, productivity and safety** in mind:

- Engineered for low pressure drop through valve selection, tower size and filter design.
- Optional Energy Management System (EMS) reduces purge consumption while maintaining a constant dew point, monitors the dew point and extends the dryer cycle to greatly reduce energy costs.
- Large sound attenuating purge mufflers minimize noise and include built-in relief valves to enhance safety.
- Low profile places valves at operator's level and provides ready access to fill and drain ports, increasing operator safety and ease of maintenance.
- Pre-filter and after-filter protect desiccant and downstream air from oil contamination and particulates to help improve air quality, increasing productivity.
- Easy to replace stainless steel desiccant screen keeps downtime to a minimum.
- Heater and/or blower controlled by outlet regeneration temperature that shuts off to save electrical power once desiccant has been thoroughly regenerated (available with EMS on heated dryers).



After-filters help improve air quality, increasing productivity.

Low profile design with angled manifolds makes maintenance a snap!



Stainless steel desiccant screens prevent contamination of the downstream air system and are easily removed for cleaning.

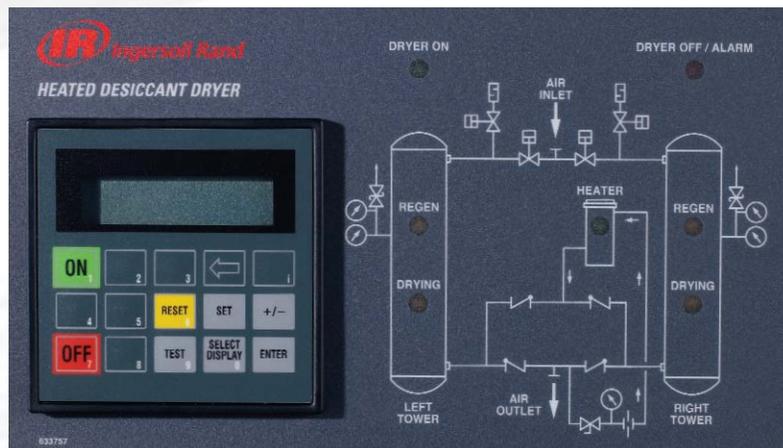
# Ingersoll Rand Desiccant Dryer Controls

All Ingersoll Rand desiccant dryers, models HL, EH and HB, are supplied with a digital electronic multi-function controller as standard equipment. This is the dryer's command center.

The advanced digital controller is programmed to execute all valve switching functions, as well as to completely monitor dryer operations.

Further, it is MODBUS compatible permitting connection to MODBUS-capable networks and making some remarkable enhanced dryer operating functions. The controller's full-featured panel includes:

- Backlit LCD display for viewing critical dryer parameters in all lighting conditions
- Integrated keypad, providing user with access to all internal functions and selectable displays
- Schematic depiction of dryer offering visual indication of current operating status
- Remote alarm contact
- Failure code storage
- Multiple displays, from "Dryer On/Off Control" to "Regeneration Sequence Status"



# Ingersoll Rand...At Your Service

**No matter where your facility is located,** Ingersoll Rand is committed to serving you 24 hours a day, seven days a week. We're available to support you with innovative and cost-effective service solutions that will keep you running at peak performance.

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



### Air Quality

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



### Environmental

- Condensate management
- Lubricants
- Water filtration



### Installation

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



### Maintenance

- Hard parts
- Consumables
- Service contracts



### Power Management

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



### Energy Efficiency

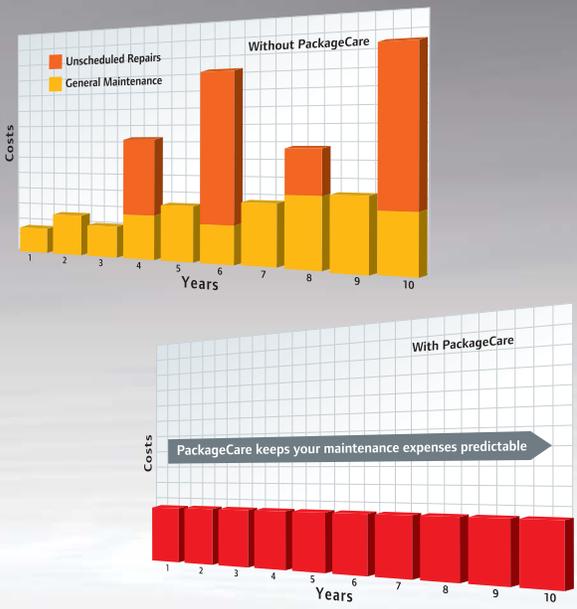
- System air pressure controllers
- Automated air system controls
- No-loss drains
- System audits



Let Ingersoll Rand handle the pressures of owning a compressed air system with our signature service contract.

With PackageCare, you can...

- Control costs and keep your equipment running at peak efficiency.
- Maintain or improve the operational efficiency of any compressor, regardless of age, make or model.
- Protect yourself from all repair and replacement expenses over the life of the agreement.
- Ensure long-term value and satisfaction from your system.



**Without PackageCare**

Year	General Maintenance (Yellow)	Unscheduled Repairs (Orange)
1	Low	None
2	Low	None
3	Low	None
4	Low	Low
5	Low	Low
6	Low	High
7	Low	Low
8	Low	Low
9	Low	Low
10	Low	High

**With PackageCare**

PackageCare keeps your maintenance expenses predictable

Year	Costs (Red)
1	Low
2	Low
3	Low
4	Low
5	Low
6	Low
7	Low
8	Low
9	Low
10	Low

## Desiccant Dryer Performance

Model	Capacity		Heater kW	Blower kW	Blower hp	In/Out Connection	Dimensions						Weight	
	-40°C Dew Point nm <sup>3</sup> /min	scfm					Width mm	Width in	Depth mm	Depth in	Height mm	Height in	kg	lb
HL90	2.5	90	-	-	-	1 NPT	1,029	40.5	762	30.0	1,603	63.1	215	475
HL120	3.4	120	-	-	-	1 NPT	1,029	40.5	762	30.0	1,603	63.1	255	563
HL160	4.5	160	-	-	-	1½ NPT	1,130	44.5	813	32.0	1,679	66.1	321	707
HL200	5.7	200	-	-	-	1½ NPT	1,130	44.5	813	32.0	1,679	66.1	332	731
HL250	7.1	250	-	-	-	1½ NPT	1,232	48.5	813	32.0	1,697	66.8	394	869
HL300	8.5	300	-	-	-	2 NPT	1,232	48.5	813	32.0	1,697	66.8	419	924
HL400	11.3	400	-	-	-	2 NPT	1,334	52.5	919	36.2	1,722	67.8	506	1,115
HL500	14.2	500	-	-	-	2 NPT	1,435	56.5	1,008	39.7	2,096	82.5	709	1,564
HL600	17.0	600	-	-	-	2 NPT	1,435	56.5	1,078	42.4	2,096	82.5	755	1,664
HL800	22.7	800	-	-	-	3 NPT	1,626	64.0	1,302	51.3	2,226	87.6	915	2,017
HL1000	28.3	1,000	-	-	-	3 NPT	1,626	64.0	1,302	51.3	2,226	87.6	1,015	2,237
HL1200	34.0	1,200	-	-	-	3 NPT	1,626	64.0	1,302	51.3	2,226	87.6	1,100	2,424
HL1500	42.5	1,500	-	-	-	4 FLG	1,981	78.0	1,391	54.8	2,032	80.0	1,349	2,974
HL1800	51.0	1,800	-	-	-	4 FLG	2,134	84.0	1,540	60.6	2,334	91.9	1,771	3,905
HL2100	59.5	2,100	-	-	-	4 FLG	2,134	84.0	1,540	60.6	2,334	91.9	1,941	4,279
HL2700	76.4	2,700	-	-	-	4 FLG	2,134	84.0	1,550	60.8	2,334	91.9	2,234	4,926
HL3300	93.4	3,300	-	-	-	6 FLG	2,440	96.0	1,676	66.0	2,540	100.0	1,338*	2,950*
HL4000	113.3	4,000	-	-	-	6 FLG	2,440	96.0	1,676	66.0	2,540	100.0	1,361*	3,000*
HL5000	141.6	5,000	-	-	-	6 FLG	2,590	102.0	1,830	72.0	2,337	92.0	1,792*	3,950*
EH150	4.2	150	2.0	-	-	1 NPT	1,130	44.5	813	32.0	1,676	66.0	344	758
EH200	5.7	200	3.0	-	-	1½ NPT	1,232	48.5	813	32.0	1,702	67.0	414	913
EH250	7.1	250	3.0	-	-	1½ NPT	1,334	52.5	889	35.0	1,727	68.0	508	1,119
EH300	8.5	300	3.0	-	-	1½ NPT	1,334	52.5	889	35.0	1,727	68.0	540	1,191
EH400	11.3	400	4.5	-	-	2 NPT	1,435	56.5	864	34.0	2,083	82.0	698	1,539
EH500	14.2	500	4.5	-	-	2 NPT	1,435	56.5	864	34.0	2,083	82.0	774	1,707
EH600	17.0	600	6.0	-	-	3 NPT	1,626	64.0	1,194	47.0	2,184	86.0	1,075	2,369
EH800	22.7	800	9.0	-	-	3 NPT	1,626	64.0	1,194	47.0	2,184	86.0	1,216	2,681
EH1000	28.3	1,000	9.0	-	-	3 NPT	1,994	78.5	1,219	48.0	2,032	80.0	1,380	3,043
EH1200	34.0	1,200	12.0	-	-	3 NPT	1,994	78.5	1,219	48.0	2,032	80.0	1,490	3,285
EH1500	42.5	1,500	15.0	-	-	3 NPT	2,134	84.0	1,397	55.0	2,337	92.0	2,032	4,480
EH1800	51.0	1,800	18.0	-	-	4 FLG	2,134	84.0	1,524	60.0	2,337	92.0	2,248	4,956
EH2100	59.5	2,100	18.0	-	-	4 FLG	2,134	84.0	1,524	60.0	2,337	92.0	2,427	5,350
EH3000	84.9	3,000	30.0	-	-	4 FLG	2,438	96.0	1,854	73.0	2,540	100.0	3,515	7,750
EH4000	113.3	4,000	36.0	-	-	6 FLG	2,591	102.0	2,134	84.0	2,337	92.0	4,965	10,950
EH5000	141.6	5,000	50.0	-	-	6 FLG	3,048	120.0	2,311	91.0	2,464	97.0	6,009	13,248
EH6000	169.9	6,000	60.0	-	-	6 FLG	3,353	132.0	2,413	95.0	2,616	103.0	7,120	15,696
EH8000	226.5	8,000	75.0	-	-	8 FLG	3,962	156.0	2,565	101.0	2,667	105.0	8,122	17,910
HB150	4.2	150	3.0	0.75	1.0	1 NPT	1,143	45.0	840	33.0	1,676	66.0	476	1,050
HB200	5.7	200	4.5	0.75	1.0	1½ NPT	1,245	49.0	940	37.0	1,702	67.0	522	1,150
HB250	7.1	250	6.0	1.1	1.5	1½ NPT	1,350	53.0	970	38.0	1,727	68.0	635	1,400
HB300	8.5	300	6.0	1.1	1.5	1½ NPT	1,350	53.0	970	38.0	1,727	68.0	680	1,500
HB400	11.3	400	9.0	1.5	2.0	2 NPT	1,450	57.0	1,220	48.0	2,108	83.0	862	1,900
HB500	14.2	500	12.0	1.5	2.0	2 NPT	1,450	57.0	1,220	48.0	2,108	83.0	953	2,100
HB600	17.0	600	12.0	3.7	5.0	3 NPT	1,620	64.0	1,500	59.0	2,235	88.0	1,270	2,800
HB800	22.7	800	18.0	3.7	5.0	3 NPT	1,620	64.0	1,500	59.0	2,235	88.0	1,452	3,200
HB1000	28.3	1,000	24.0	5.6	7.5	3 NPT	1,980	78.0	1,500	59.0	2,032	80.0	1,709	3,767
HB1200	34.0	1,200	24.0	5.6	7.5	3 NPT	1,980	78.0	1,500	59.0	2,032	80.0	1,860	4,100
HB1500	42.5	1,500	30.0	11.2	15.0	3 NPT	2,490	98.0	1,650	65.0	2,337	92.0	2,502	5,515
HB1800	51.0	1,800	36.0	11.2	15.0	4 FLG	2,490	98.0	1,730	68.0	2,337	92.0	2,773	6,113
HB2100	59.5	2,100	45.0	11.2	15.0	4 FLG	2,490	98.0	1,700	67.0	2,337	92.0	3,135	6,911
HB3000	84.9	3,000	60.0	14.9	20.0	6 FLG	3,050	120.0	1,980	78.0	2,540	100.0	4,413	9,730
HB4000	113.3	4,000	80.0	18.7	25.0	6 FLG	3,200	126.0	2,110	83.0	2,337	92.0	5,519	12,167
HB5000	141.6	5,000	100.0	22.4	30.0	6 FLG	3,500	138.0	2,210	87.0	2,464	97.0	6,472	14,720
HB6000	169.9	6,000	125.0	22.4	30.0	6 FLG	3,810	150.0	2,390	94.0	2,616	103.0	7,911	17,440
HB8000	226.5	8,000	175.0	29.8	40.0	8 FLG	4,270	168.0	2,490	98.0	2,667	105.0	9,026	19,900

Performance data per ISO 7183: Compressed-air dryers - Specifications and testing

Maximum working pressure is 10.3 bar g (150 psig)

Desiccant is factory installed on all models except: HL3300-HL5000; EH3000-EH8000, HB3000-HB8000

Dimensions and weights are approximate

\*Dryer weight shown does not include desiccant. Desiccant shipped separately.



Ingersoll Rand Industrial Technologies provides products, services and solutions that enhance our customers' energy efficiency, productivity and operations. Our diverse and innovative products range from complete compressed air systems, tools and pumps to material and fluid handling systems and environmentally friendly microturbines. We also enhance productivity through solutions created by Club Car®, the global leader in golf and utility vehicles for businesses and individuals.

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