Atlas Copco

Oil-free centrifugal compressors

ZH 4000+-26000+

400-2750 kW/500-3500 hp

Atlas Copco

Turbo power, turbo value

Atlas Copco has been building turbo compressors for air separation, chemical, process and plant air applications for several decades. The ZH+ is the latest addition to this range of advanced compressed air solutions, used in large compressor rooms of 1-20 MW. Equipped to save energy and guarantee reliability, the ZH+ is ideal for customer processes with a fluctuating or constant air demand. Engineered using in-house technology, Atlas Copco's broad spectrum of matching compressor solutions can be perfectly integrated in multiple environments.

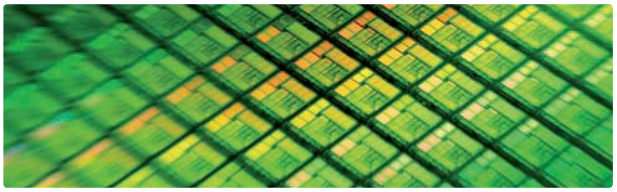
Process air

A continuous flow of air for petrochemical plants and oil & gas providers

The demands placed on equipment in the petrochemical and oil & gas industry are very high. A dependable stream of 100% certified oil-free compressed air is crucial to keep the production up and running at all times. Atlas Copco's ZH+ compressor solutions operate dependably in extreme temperatures and humidity conditions where high performance levels and reliability are essential.

Surface cleaning after etching

The complete compressed air solution for semiconductor and LCD manufacturers



During the etching process in semiconductor manufacturing, residue is created. To clean the surface and remove even the smallest particles, high quality compressed air is essential. Atlas Copco provides a broad line of certified 100% oil-free compressors: an integrated package design for long lasting performance, easy installation, operation and servicing.

Air separation

Innovative all-in-one compressor technology for air separation

Air separation plants and gas providers rely on a continuous supply of compressed air. To maximize productivity, downtime needs to be eliminated. With Atlas Copco's reliable oil-free compressors, customers obtain an all-in-one package incorporating the latest technology in a built-to-last design.

Control and instrumentation

Total reliability for the metal industry and shipyards

Some of today's toughest applications for compressed air can be found in the metal industry. During smelting, control and instrumentation, turbo compressors are used in high temperature environments. Metal plants and shipyards are up and running 24/7 and depend on a continuous flow of high quality air, day and night. Atlas Copco's robust ZH+ compressors meet the needs of this industry and offer a constant air flow. Uptime is guaranteed.

Fermentation, glass blowing, textile weaving and aeration

Continuity guaranteed for a wealth of applications

In many other industries air quality is paramount. The ZH+ provides a 100% certified supply of reliable oil-free air for a broad spectrum of industrial applications.

Keeping your production up and running

Designed, manufactured and tested to comply with ISO 9001 stipulations and API standards, the ZH+ guarantees maximum uptime. Built in accordance with long standing internal engineering practices, all ZH+ components are also easy to maintain, dismantle and re-assemble if required. In addition, advanced control and monitoring possibilities are available to make sure production interruptions are minimized.

Driving down energy costs

Over time, energy costs can amount to 80% of the total Life Cycle Costs of a compressor. Fully compliant with ISO 14001 standards, the ZH+ range lowers energy costs. The majority of the ZH+'s components including the backward leaning impeller, carbon ring air seals and inlet guide vanes, specifically designed to lower the pressure drops, provide the highest air volume at the lowest energy use. Delivering true performance, ZH+ compressors are measured according to ISO 5389 – ASME PTC10, with the Free Air Delivery (FAD) measured at the discharge of the compressor.

Assuring your peace of mind

From the factory to the field, Atlas Copco has the expertise and products, service and support to meet customer demands. Through interaction and dedicated service during all stages of the process – flow demand analysis, recommendations, implementation and follow-up – Atlas Copco has accomplished a broad customer base around the world. Hundreds of thousands of unfailing running hours give proof of our long-term local and global service and support commitment to engineering companies and contractors as well as end customers.

Easy installation

With the ZH+ compressor, Atlas Copco provides a complete solution without hidden costs. The integrated design includes internal piping, coolers, motor, lubrication, inlet guide vanes and control system. Every unit offers the dependability and performance of a state-of-the-art process compressor delivered as a ready to use package. Installation is fault-free, commissioning time is low and no external instrument air is required. You simply plug and run.

The complete oil-free turbo package

1 Easily accessible gearbox

- Horizontally-split.
- Easy access to gears and high/low speed bearings.
- Minimal downtime for inspection and maintenance.
- Maintenance-free flexible disk coupling.

2 High efficiency inter and aftercoolers with stainless steel bundles

- Low air approach temperature and pressure drop thanks to optimized air flow pattern through the shells and bundles.
- For higher reliability and easier maintenance, the intercoolers are separated from the compressor core unit.
- Stainless steel tubes and full epoxy coating inside the intercooler shells for higher resistance to corrosion.
- High efficiency condensate separation, up to 99%.
- Flexible connections to the interstage piping for easy inspection and maintenance.

3 Energy saving inlet guide vanes

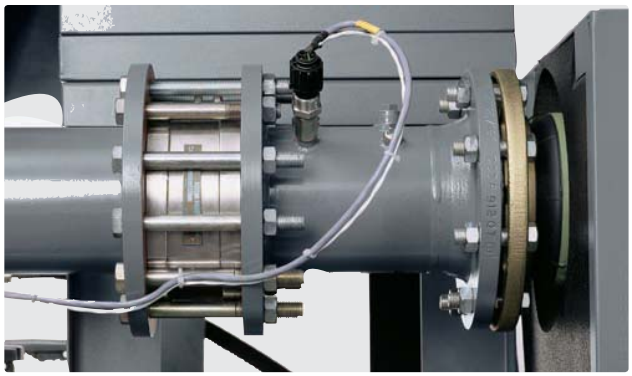
- Smart and efficient capacity control: adjustable inlet guide vanes save up to 9% in energy at reduced air demand.
- Flexible connection to the air filter housing.
- No external air required for operation of the valve.

4 Integrated blow-off valve and silencer

- No external air, no additional piping and no additional mounting required.
- Auto-dual and constant pressure control for cost efficient response to variable air demands.

5 Efficient and low maintenance inlet silencer and filter

- To reduce the noise level and protect the compression stage from particles, the inlet filter is combined with a silencer.
- Handy pressure drop indication on the control panel.
- Replacement after 8,000 hours.
- Integrated in compressor package.



6 Integrated discharge check valve

- High quality, corrosion-resistant check valve internals.
- Flexible air discharge connection for stress-free connection to the downstream air piping.
- Low pressure drop.

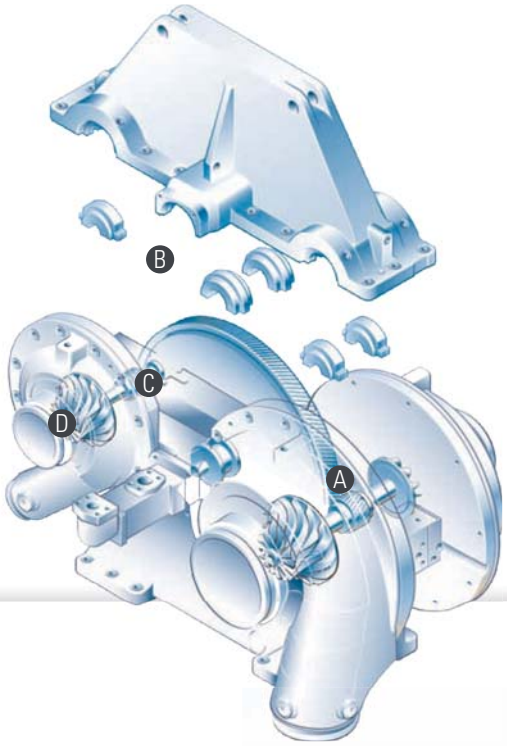
7 Mounted cooling water manifold

- Cooling water distribution to intercoolers, aftercooler and oil cooler.
- Individual adjustment of flow through intercoolers and aftercooler.
- Single water in/out flexible connections.

8 Complete oil system with oil reservoir, breathing system and auxiliary oil pump

- Fully equipped oil reservoir with temperature sensor and level sight glass.
- Shaft driven main oil pump and auxiliary oil pump for start-up and coast-down.
- Easily accessible oil cooler, sized for cooling water temperature up to 95°F /35°C.
- 10 micron oil filter to eliminate premature wear on bearings and gears.
- Electrically driven oil demister preventing oil fumes leaking to the atmosphere.

Proven turbo technology



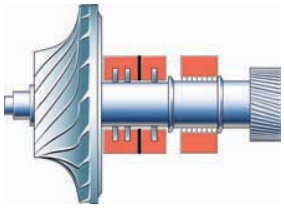
Easily accessible gearbox

A Bull gear and high speed pinions

- AGMA Q-13/ISO 1328-2 grade 4 quality gears for longer lifetime, minimized mechanical losses and lower noise levels.
- Full interchangeability of individual components.

B Reliable horizontally split bearings

- Flexible pad bearings and combined radial bearing/thrust bearing for extended lifetime, high reliability and stability, easy inspection.



C Oil and air seals

- Reliable long service life.
- Minimized compressed air leakage to atmosphere.
- No external instrument air required for "Class 0" certification.

D State-of-the-art impellers

- Exclusive backward leaning impeller design for greater operating flexibility with turndown ratio of up to 35%.
- Low operating costs thanks to power savings at fluctuating air demand.

CLASS 0: the industry standard

Oil-free air is used in all kinds of industries where air quality is paramount for the end product and production process. These applications include food and beverage processing, pharmaceutical manufacturing and packaging, chemical and petrochemical processing, semiconductor and electronics manufacturing, the medical sector, automotive paint spraying, textile manufacturing and many more. In these critical environments, contamination by even the smallest quantities of oil can result in costly production downtime and product spoilage.

First in oil-free air technology

Over the past sixty years Atlas Copco has pioneered the development of oil-free air technology, resulting in a range of air compressors and blowers that provide 100% pure, clean air. Through continuous research and development, Atlas Copco achieved a new milestone, setting the standard for air purity as the first manufacturer to be awarded ISO 8573-1 CLASS 0 certification.

Eliminating any risk

As the industry leader committed to meeting the needs of the most demanding customers, Atlas Copco requested the renowned TÜV institute to type-test its range of oil-free compressors and blowers. Using the most rigorous testing methodologies available, all possible oil forms were measured across a range of temperatures and pressures. The TÜV found no traces of oil at all in the output air stream. Thus Atlas Copco is not only the first compressor and blower manufacturer to receive CLASS 0 certification, but also exceeds ISO 8573-1 CLASS 0 specifications.

CLASS	Concentration total oil *(aerosol, liquid, vapor)* mg/m³
0	**As specified by the equipment user or supplier and more stringent than class 1**
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1 (2001) classes (the five main classes and the associated maximum concentration in total oil content).

CLASS 0 means:

Zero risk of contamination.

Zero risk of damaged or unsafe products.

Zero risk of losses from operational downtime.

Zero risk of damaging your company's hard-won professional reputation.

Total control, assured efficiency

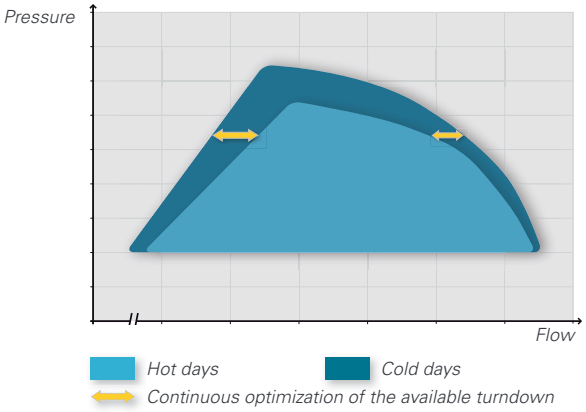
To help customers increase efficiency and reliability, Atlas Copco equips its compressed air products with advanced control and monitoring systems such as Elektronikon®, ES and AIRConnect. Easily expandable with extra sensors, digital contacts, fieldbus, Internet and SMS communication functions, the Elektronikon® controller can be adapted to specific customer needs.

Advanced control and monitoring

For optimal ease of use, the Elektronikon® display can be set to 27 different languages. To maximize energy efficiency, the Elektronikon® controls the main drive motor and regulates system pressure within a predefined and narrow pressure band. With a simple push of a button, users can remotely start and stop, load and unload the compressor.

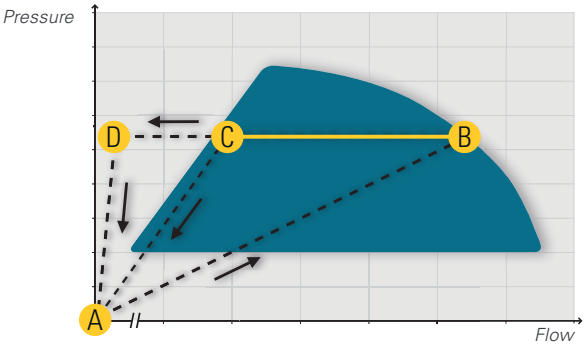
Maximized turndown

Advanced algorithms for surge protection and anticipation are available as standard to make sure the ZH+ will never run into unstable surge conditions. Furthermore, the algorithm allows the compressor to maximize the turndown range at any ambient condition throughout the season.



Unique switchable regulation methods

To lower energy consumption and optimize cost efficiency, two regulation methods are standard available and easily selectable: constant pressure control and auto-dual control. Depending on the use of air in your installation, you can easily switch between both methods. To guarantee a stable and continuous pressure in a wide operating range, constant pressure control is preferred. The compressor operates in the turndown area (B-C), while the excess of compressed air is bypassed (C-D) before going to no load. In case constant pressure is less critical for your application, auto-dual control is recommended with low power requirements. At low flow demand, the compressor goes immediately to no load (C-A).



A-B-C-A: auto-dual
A-B-C-D-A: constant pressure control

A: No load
B: Full load
C: Minimal load before blow-off
D: Minimal load

Dual pressure set point

The production process creates fluctuating levels of demand which can cause energy losses in low use periods. The Elektronikon® can manually or automatically create two different system pressure bands to optimize energy use and reduce costs at low use times.

ES - Fully optimized system

The ES multiple compressor controller optimizes the operation of up to 30 machines. The result is a substantial reduction in system pressure and energy consumption, in addition to minimal compressed air leakage and a more stable pressure across the network. On top of that ES has the following major energy saving features:

- Automatic selection of the most efficient mix of compressors to run.
- Elimination of blow-off regulation for centrifugal compressors.
- Continuous electrical power optimization.

AIRConnect – The ultimate in remote monitoring

With AIRConnect solutions Atlas Copco offers a comprehensive modular package for advanced remote monitoring, complete analysis and accurate management. It is fully customizable to meet specific customer needs: from simple alarm notification via e-mail or SMS to visualization via fieldbus, LAN or Internet, including advanced reporting services.

Protecting your reputation and production

Untreated compressed air contains moisture and possibly dirt particles that can damage your air system and contaminate your end product. The resulting maintenance costs far exceed air treatment costs. Atlas Copco believes in effective prevention and provides a complete range of air treatment solutions to protect investments, equipment, production processes and end products.

Increase production reliability

Low quality air heightens the risk of corrosion, which can lower the life span of production equipment. The air treatment solutions produce clean air that enhances your system's reliability, avoiding costly downtime and production delays.

Safeguard production quality

Compressed air coming into contact with your final products should not affect their quality. Atlas Copco provides clean, dry air to protect your production and reputation in the market.

Supreme energy and cost savings

Atlas Copco's quality air solutions stand for substantial energy savings all day, every day. Taking technology to a new level, these products achieve maximum cost savings.

Proven peace of mind

Building on know-how and years of experience, the entire Atlas Copco quality air range is produced in-house and tested using the most stringent methods in the industry.

A dryer solution for every need

Rotary drum heat of compression dryers

▶ ND -40°F/-4°F -40°C/-20°C ▶ MD -4°F/+37°F -20°C/+3°C

- Use of freely available heat of compression.
- Negligible power consumption.
- Variants with extra heat augmentation for lower dew points.

Heat reactivated adsorption dryer

▶ BD -94°F/-40°F/-4°F -70°C/-40°C/-20°C

- Use of electrical heaters for regenerating the desiccant.
- Limited pressure drop.
- Variants without loss of compressed air.

Refrigerant dryer

▶ FD +37°F/+68°F +3°C/+20°C

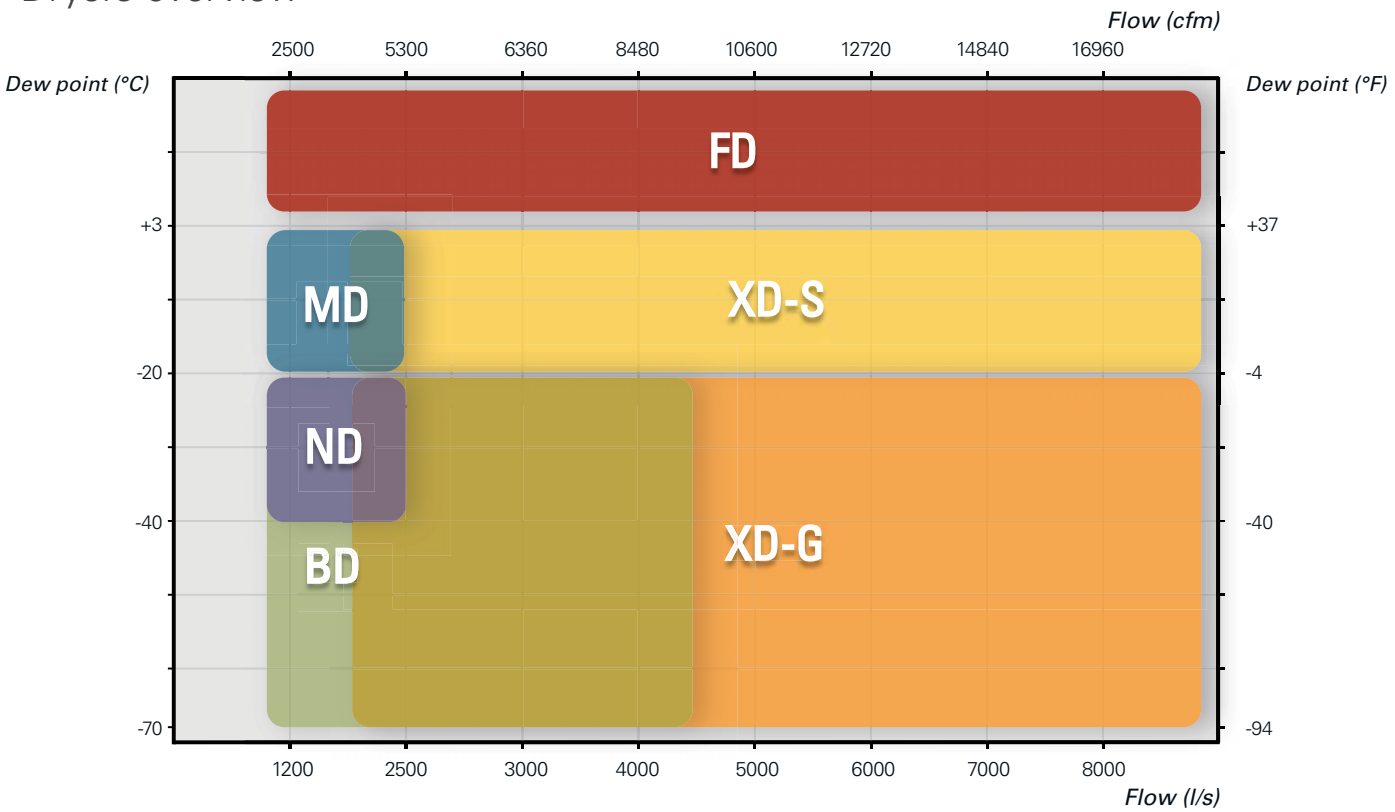
- Use of cooling circuit for cooling down compressed air.
- Guaranteed pressure dew points.
- Lowest energy consumption in all operating conditions.
- Air and water cooled variants.

Heat of compression reactivated adsorption dryers

▶ XD-G -94°F/-40°F/-4°F -70°C/-40°C/-20°C ▶ XD-S -4°F/+37°F -20°C/+3°C

- Use of freely available heat of compression.
- Limited pressure drop.
- Variants for dew point suppression and guaranteed dew point.
- Variants without loss of compressed air.

Dryers overview



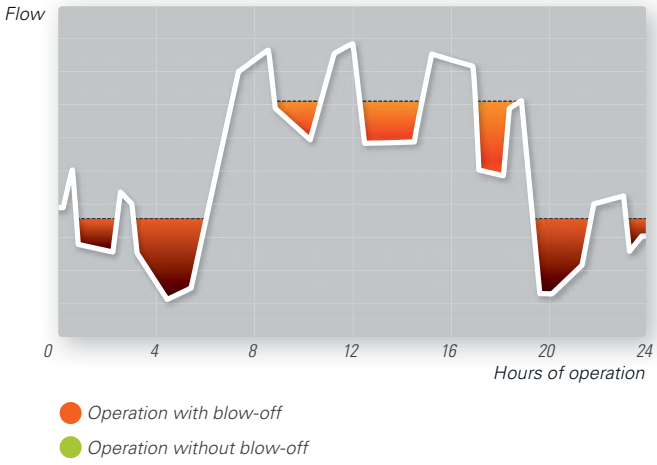
To further protect your investment, equipment and processes, Atlas Copco presents a full line-up of innovative quality air solutions to suit the high quality requirements of your specific application.

The magic formula: turbo + screw

Obtain the most efficient compressor solution for your high capacity application in the market by combining the advanced turbo technology of the ZH+ with the regulating capabilities of the ZR screw compressor with Variable Speed Drive (VSD). Eliminating costly blow-off in all operating conditions, this combination is ideal to achieve the highest return on investment while enjoying the benefits of the ZH+ turbo and ZR screw technology.

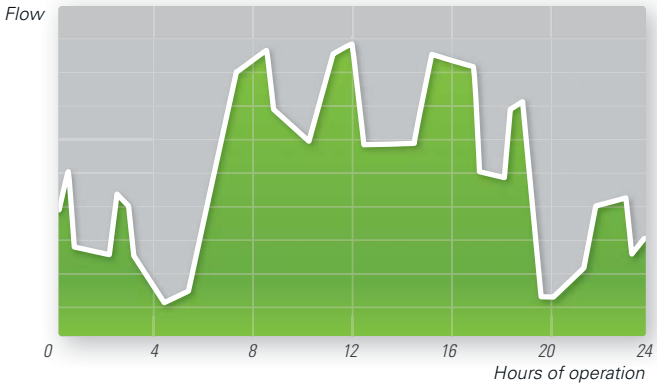
Reduced blow-off

While turbo compressors are very efficient in turndown, a lot of energy is wasted during blow-off by expanding part of the compressed air into the blow-off valve and silencer. By combining two turbo compressors in an erratically varying air demand, the expensive blow-off is reduced but not completely eliminated.



Eliminated blow-off

Atlas Copco's unique Variable Speed Drive (VSD) technology closely follows the air demand by automatically adjusting the motor speed. When combining the ZH+ turbo compressor and the ZR screw compressor with VSD, the highest efficiency is achieved by completely eliminating blow-off.



Find out how much you can save

Atlas Copco can help you map the load/air demand profile of your current compressor and blower installation and indicate potential energy savings with VSD compressors and blowers. **For more information, please contact your local Atlas Copco representative.**

Optimize your system

With the ZH+, Atlas Copco provides an all-in-one standard package incorporating the latest technology in a built-to-last design. To further optimize your ZH+'s performance or to simply tailor it to your specific production environment, optional features are available.

Standard scope of supply assembled and tested in the factory

Air circuit

- Air intake filter and silencer
- Inlet guide vanes
- Check valve
- Compensator on air outlet *(DIN/ANSI)*
- Integrated blow-off valve and silencer

Oil circuit

- Complete lubrication system

Cooling circuit

- Cooling water manifold
- Drain traps on all coolers
- Compensator on water outlet *(DIN/ANSI)*

Electrical components

- IP23 motor
- Elektronikon® control, monitoring and safety system

Additional features & options

GENERAL
Aftercooler
Silencing canopy
Electronic drains
Duplex oil filter
Ready for MD/ND dryer integration
Without air intake filter, silencer and aftercooler *(ZH 16000+/26000+)*
Water reverse valve
Water shut-off valve
MOTOR
IP55/TEFC enclosure for medium voltage motors
PT100 motor winding protection
PT100 motor bearing protection
Anti-condensation heaters
EXTERNAL CONTROLS
PLC
Modbus
Profibus
EtherNet/IP
OTHER OPTIONS
Nitrogen execution
Heat recovery

Technical specifications

ZH 7000⁺-26000⁺ *(50 Hz)*

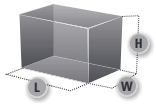
50 Hz	Free air delivery[1]				Installed motor power[2]	
	cfm		m³/h		kW	
	Min	Max	Min	Max	Min	Max
THREE-STAGE, WATER-COOLED						
ZH 7000⁺	2050	4600	3500	7800	400	800
ZH 10000⁺	3050	7000	5200	11800	630	1120
ZH 15000⁺	4700	10600	8000	18000	1000	1850
ZH 26000⁺	7000	16000	12000	27000	1600	2750
TWO-STAGE, WATER-COOLED						
ZH 7000⁺	2050	4600	3500	7800	315	500
ZH 10000⁺	3050	7000	5200	11800	450	800
ZH 15000⁺	4700	10600	8000	18000	700	1250
ZH 26000⁺	7000	16000	12000	27000	1250	2000

50 Hz	Dimensions[3]						Weight[3]	
	mm			in				
	L	W	H	L	W	H	kg	lb
THREE-STAGE, WATER-COOLED								
ZH 7000⁺	4060	2120	2400	160	83	94	8000	17600
ZH 10000⁺	5250	2120	2400	207	83	94	12000	26500
ZH 15000⁺	5800	2370	2630	228	93	104	18000	40000
ZH 26000⁺	7300	3120	3500	287	123	138	30000	66000
TWO-STAGE, WATER-COOLED								
ZH 7000⁺	4060	2120	2400	160	83	94	6500	14300
ZH 10000⁺	5250	2120	2400	207	83	94	10500	23000
ZH 15000⁺	5800	2370	2630	228	93	104	15000	33000
ZH 26000⁺	7300	3120	3500	287	123	138	30000	66000

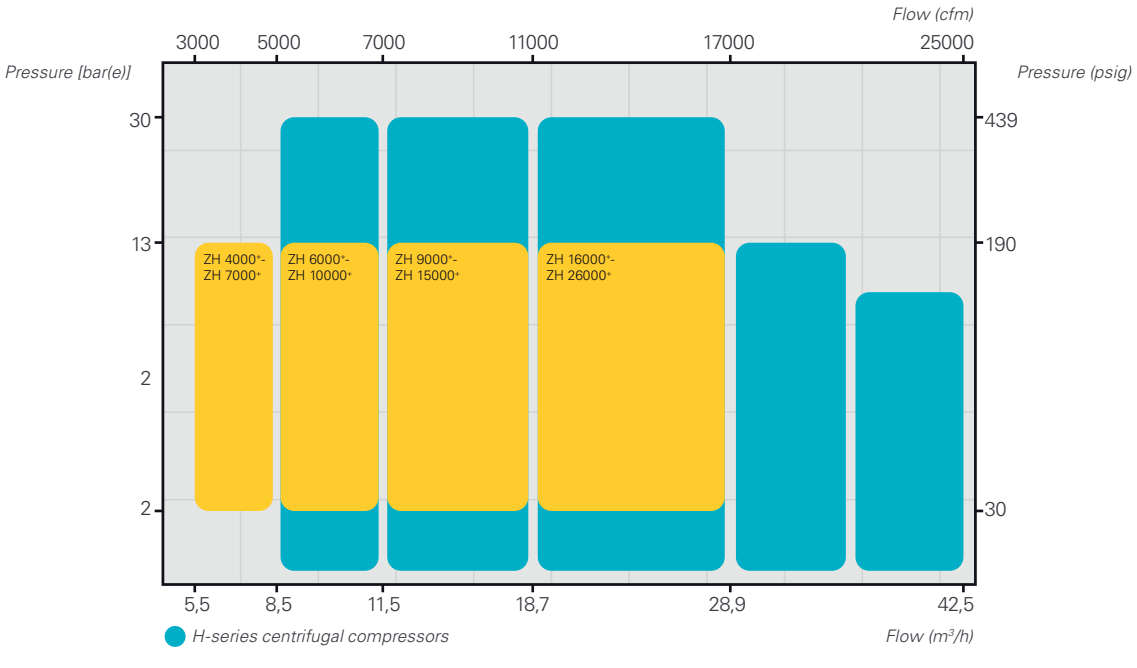
[1] Free air delivery according to ASME PCT10 and ISO 5389
[2] Depending on pressure variant
[3] With silencing canopy and standard medium voltage motor

Sound pressure level:
According to ISO 2151:2004 and using ISO 9614-2.

Depending on model:
- 80 to 85 dB*(A)* without silencing canopy
- 70 to 74 dB*(A)* with silencing canopy



ZH⁺ range overview



Technical specifications

ZH 4000+-16000+ *(60 Hz)*

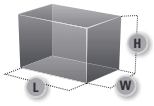
60 Hz	Free air delivery[1]				Installed motor power[2]	
	cfm		m³/h		hp	
	Min	Max	Min	Max	Min	Max
THREE-STAGE, WATER-COOLED						
ZH 4000+	2050	4600	3500	7800	500	1000
ZH 6000+	3050	7000	5200	11800	800	1500
ZH 9000+	4700	10600	8000	18000	1250	2250
ZH 16000+	7000	16000	12000	27000	2000	3500
TWO-STAGE, WATER-COOLED						
ZH 4000+	2050	4600	3500	7800	400	700
ZH 6000+	3050	7000	5200	11800	600	1000
ZH 9000+	4700	10600	8000	18000	900	1500
ZH 16000+	7000	16000	12000	27000	1500	2500

60 Hz	Dimensions[3]						Weight[3]	
	mm			in				
	L	W	H	L	W	H	kg	lb
THREE-STAGE, WATER-COOLED								
ZH 4000+	4060	2120	2400	160	83	94	8000	17600
ZH 6000+	5250	2120	2400	207	83	94	12000	26500
ZH 9000+	5800	2370	2630	228	93	104	18000	40000
ZH 16000+	7300	3120	3500	287	123	138	30000	66000
TWO-STAGE, WATER-COOLED								
ZH 4000+	4060	2120	2400	160	83	94	6500	14300
ZH 6000+	5250	2120	2400	207	83	94	10500	23000
ZH 9000+	5800	2370	2630	228	93	104	15000	33000
ZH 16000+	7300	3120	3500	287	123	138	30000	66000

[1] Free air delivery according to ASME PCT10 and ISO 5389
[2] Depending on pressure variant
[3] With silencing canopy and standard medium voltage motor

Sound pressure level:
According to ISO 2151:2004 and using ISO 9614-2.

Depending on model:
- 80 to 85 dB*(A)* without silencing canopy
- 70 to 74 dB*(A)* with silencing canopy



Driven by innovation

With more than 135 years of innovation and experience, Atlas Copco delivers the products and services to help maximize your company's efficiency and productivity. As an industry leader, we are dedicated to offering high air quality at the lowest possible cost of ownership. Through continuous innovation, we strive to safeguard your bottom line and bring you peace of mind.

Building on interaction

As part of our long-term relationship with our customers, we have accumulated extensive knowledge of a wide diversity of processes, needs and objectives. This gives us the flexibility to adapt and efficiently produce customized compressed air solutions that meet and exceed your expectations.

A committed business partner

Our commitment to you does not simply end when your Atlas Copco products have been delivered and installed. We have an extensive range of aftermarket services to offer you continued support, whenever you need it. With a presence in over 160 countries, we can deliver high-quality customer service anytime, anywhere. Our highly skilled technicians are available 24/7 to answer any queries you may have. And all of this is backed by an efficient logistics organization, ensuring fast delivery of genuine spare parts when you need them. With Atlas Copco you can rest assured that your sustainable productivity will always be our first concern!

www.atlascopco.us

866-344-4887

GLOBAL100

U.S. GREEN BUILDING COUNCIL MEMBER

Member of COMPRESSED AIR AND GAS INSTITUTE CAGI

KNOW PRESSURE COMPRESSED AIR CHALLENGE SPONSOR

1310 9057 25 FAB 6/10 1M

Atlas Copco

LLOYD'S REGISTER QUALITY ASSURANCE ISO14001

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001

Danger: Compressed air should never be supplied as breathing air unless air is properly purified for breathing. Atlas Copco assumes no responsibility or liability related to the purchaser's/user's breathing system.

The information contained herein is general in nature and is not intended for specific construction, installation or application purposes.