



Atlas Copco



Single and two-stage turbo compressors

ZHL 7-8

ZH⁺ & ZH 355-560

ZH⁺ & ZH 630-2250



ZH & ZHL range: high efficiency & reliability

Engineered using innovative in-house technology, the ZH and ZHL range captures years of experience in advanced compressed air solutions to save energy and guarantee reliability of oil-free air supply in multiple environments.

Driving down energy costs

Superior oil-free turbo air ends provide the optimum combination of a high flow with low energy consumption. Ample sized cooling, low pressure drops and an efficient drive train result in high compressor package efficiency. Further energy savings are possible with Atlas Copco's heat of compression MD, ND, XD dryers and/or our central controller Optimizer 4.0.

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, 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.

Keeping your production up and running

ZH & ZHL compressors are built using strict codes of Quality Control, and are designed, manufactured and tested in ISO 9001 accredited production facilities. They use Atlas Copco's proven, superior turbo technology and over-sized cooling for the highest efficiency and reliability, AGMA class A4/ISO 1328 class 4 gears for low noise and vibrations, high-grade stainless steel coolers for very long lifetime, and an integrated lubrication system. The result is the highest reliability you need.

Industries & applications

Your application deserves a reliable supply of oil-free compressed air at the lowest energy cost. Atlas Copco has been building oil-free centrifugal compressors for process and plant air applications for decades.

Food & beverage and Pharmaceuticals

Fermentation

Oil-free air for food & beverage and pharmaceutical manufacturing must be qualified to certain standards to avoid contamination. We are the first compressor manufacturer to receive certifications for a new industry standard of air purity.

On top of that, the delicate fermentation process requires an accurate flow control and quality air from the minimum to maximum demand as it is crucial to follow the exact fermentation recipe in order to succeed.



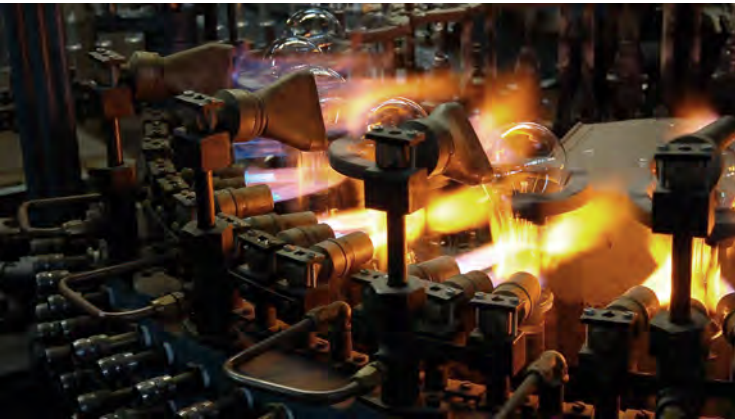
Marine

Hull lubrication

Your main goal when using hull lubrication technology is to reduce fuel consumption. Our ZH and ZHL ensure reliable operation and efficient operation, offering you high uptime and enabling you to save up to 8% (depending on the size of the vessel) on fuel.

Textile & fiber

The oil-free air ZH and ZHL compressors guarantee a CLASS 0 certified air quality for the highly sensitive production processes in the textile industry. This high-quality air is used in a variety of textile applications such as spinning, weaving, dyeing, texturizing, winding and coning.

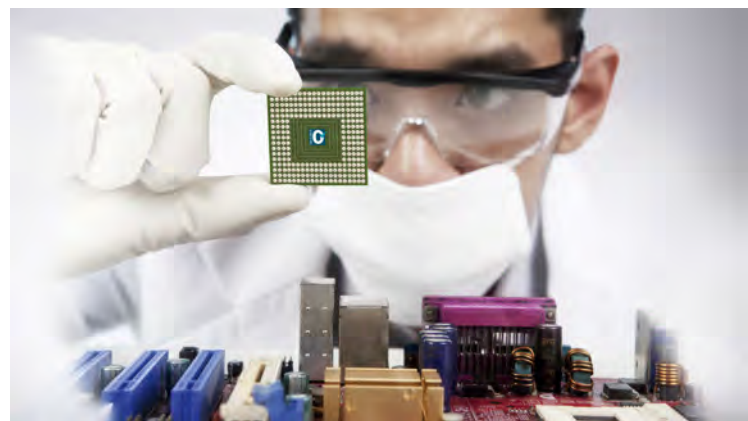


Glass

Atlas Copco's oil-free air ZH and ZHL compressors are often used in the glass blowing industry because of its higher pressure ratio for mold cooling up to 4 bar(e)/58 psig. It's 100% CLASS 0 certified oil-free air results in the highest quality air, while maintaining low energy consumption required for continuous operation.

Electronics

The demand for clean and dry high-quality air (CLASS 0), produced with optimal energy efficiency is essential in the electronics industry. Our ZH compressors are a perfect fit for applications such as the removal of microscopic debris from the surface of computer chips and computer boards.





Oil & gas

Sulfur recovery units (SRU)

Keeping costs low is key when dealing with non-profitable processes such as sulfur recovery. Compliant with the API 617 standards and designed for operation 24 hours a day, 7 days a week in processes with a high condensate potential, our turbo compressors ensure you continuous operation at a maximum load.

Air separation

Recently, larger consumers of compressed air in the Air Separation segment started to show interest in the standardized ZH compressor. Driven by internal cost saving exercises, the trend is to refurbish compressed air installation with pre-designed, off-the-shelf compressors in what used to be a very customized one-off market.



Class 0: the industry standard



Class 0: oil-free air

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. With our CLASS 0 products, no oil is added during the compression process, and thus provides you with 100% pure, clean air when the atmosphere doesn't contain any oil particles. 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.



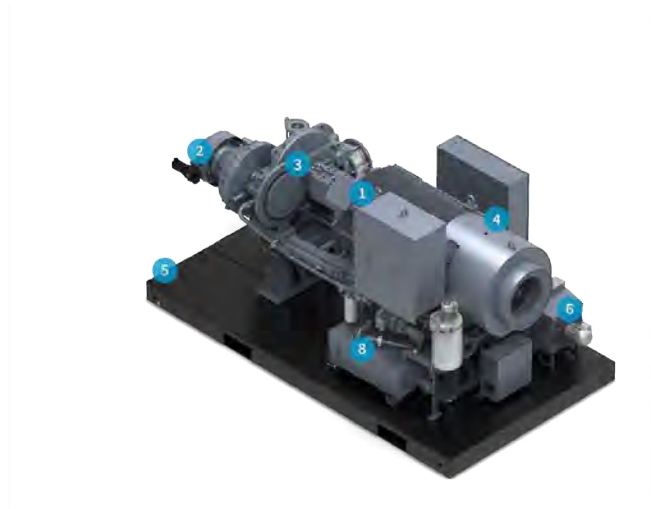
CLASS	Concentration total oil (aerosol, liquid, vapor) mg/m ³
0	As specified by the equipment user or supplier and more stringent than class 1
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1 (2010) classes (the five main classes and the associated maximum concentration in total oil content).

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.

Reliability - ZHL



1. Complete package - reduced installation costs

- All-in on standard package incorporating the latest technology in a built-to-last design
- Includes internal piping, coolers, motor, lubrication, inlet guide vanes and control system
- Integrated lube oil system reduces space and installation costs
- Installation is fault-free, and commissioning is quick
- Optional features for customization to a specific production environment

2. Energy saving inlet guide vanes with intelligent controls

- Reliable, smart and efficient capacity control saving up to 9% on energy consumption at reduced compressed air demand
- Reliable servo-motor actuator for accurate alignment with the variable air demand and large turndowns





3. Easily accessible gearbox

Horizontally-split gearbox with quick access to gears, bearings, air/oil seals to ensure short inspection and maintenance times

4. Broad selection of motors

- Variety of motor choices (IP55, IP23, air or water cooled)
- Highest level efficiency

5. Compact design

Saves valuable and often expensive floor space in a facility

6. Oil cooler

- Designed to keep oil at right temperature in all conditions
- Watercooled or aircooled depending on customer request

7. Blow-off valve

- Reliable servo-motor actuator
- Auto-dual and Constant Pressure Control modes for cost-efficient variable compressed air demands
- Optional blow-off silencer available



8. On board full oil lubrication system

- Includes oil reservoir with heater, temperature monitoring and level sight glass
- Main shaft driven oil pump, supported by auxiliary oil pump during start-up and coast-down
- Breather system preventing oil fumes
- Flexible leakage-free connections

Key features



Complete package

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- Includes internal piping, coolers, motor, lubrication, inlet guide vanes and control system.
- Installation is fault-free, and commissioning is quick.
- Optional features for customization to a specific production environment.

Easy commissioning

- No external air, no additional piping and no additional mounting required.
- Integrated blow-off valve: Auto-dual and Constant Pressure Control modes for cost-efficient response to variable air demands.



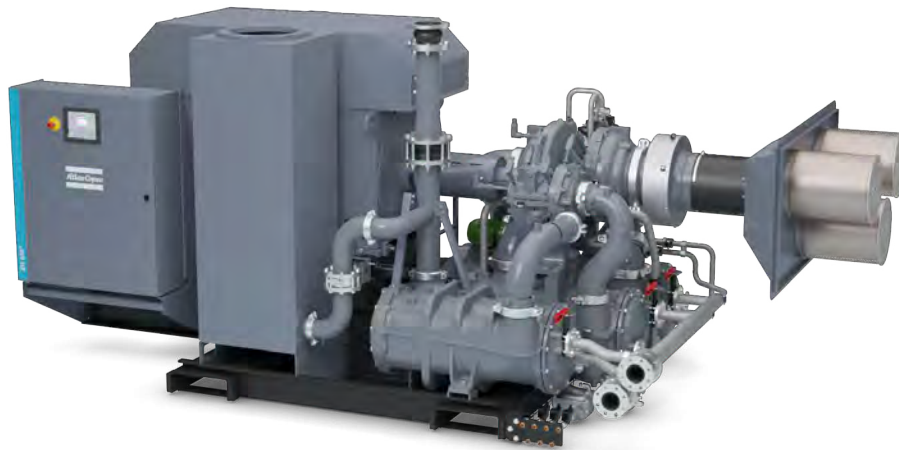
Silent compressor

- Inlet filter is combined with a silencer to reduce noise level and protect the compression stage.
- Handy pressure drop indication on the control panel.

Soundproof design

- Ensures optimal working conditions for everyone in the immediate environment.

ZH⁺ & ZH 630-1600



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- Inlet filter is combined with a silencer to reduce noise level and protect the compression stage.
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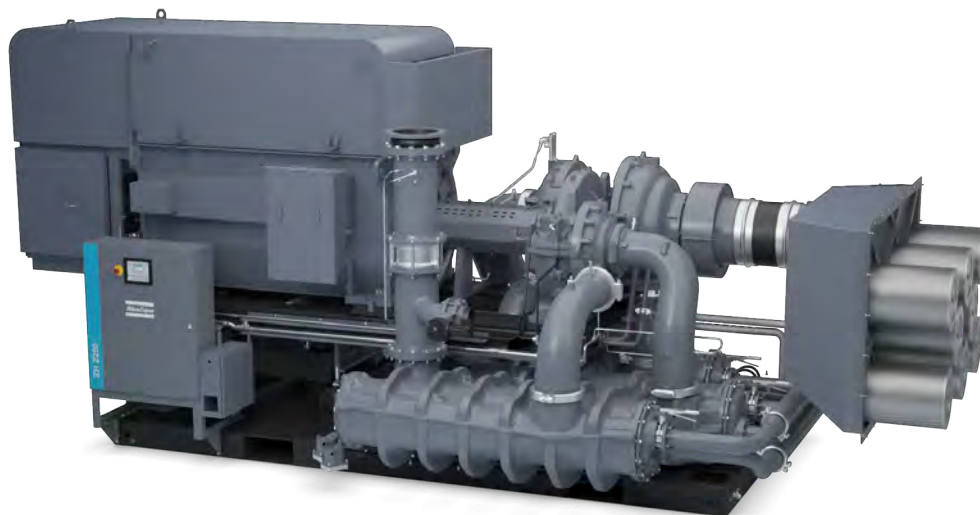
Complete package

- All-in-one standard package incorporating the latest technology in a built-to-last design.
- Includes internal piping, coolers, motor, lubrication, inlet guide vanes and control system.
- Installation is fault-free, and commissioning is quick.
- Optional features for customization to a specific production environment.

Soundproof design

- Ensures optimal working conditions for everyone in the immediate environment.

ZH 1000-3150



Optimal energy usage

- Our unique design allows a turndown of over 25% before blow-off, maximizing energy savings and minimizing operating costs.
- Standard inlet guide vanes save up to 9% more energy at reduced flows compared to competitive units.
- Our technology minimizes our customers' operating costs.

Reduced installation cost

- Integrated lube oil system reduces space and installation costs.
- Flexible connections to minimize the potential for leakage.
- Oil temperature sensors for continuous monitoring.

Short inspection and maintenance time

- Atlas Copco-designed horizontally split gearbox significantly reduces maintenance time, ensuring our customers optimize their production time.
- Designed for preventive maintenance, keeping your investment safe for a long operational life.
- We believe in designing our products to minimize our customers' maintenance costs.

Broad selection of motors

- Variety of motor choices (IP55, IP23, air or water cooled)
- Highest level efficiency

Minimizing your lifecycle costs

With Energy Costs accounting for approximately 85% of the life cycle costs over a 5 year period. We believe it is important to design the most energy efficient solutions.



Smart AIR solutions

Atlas Copco masters each compression principle and offers the most energy efficient technology for your application. We like to design and build the most energy efficient technology but the most efficient compressor or dryer does not necessarily mean the most energy efficient compressed air system.

Before designing a smart AIR solution, we first of all analyze air demand patterns, pressure and air quality requirements. From this analysis we can start to select the most appropriate technologies to maximize efficiency.

- Oil-free turbo compressor ZH or ZHL
- Elektronikon Controller on all products
- MD Dryer rotating drum desiccant dryer
- Zero loss condensate drains
- Medium pressure receiver
- D 2 stage oil free Booster
- High Pressure Receiver
- ER Energy Recovery unit
- Optimizer 4.0 stem controller
- Air distribution system

Energy efficient air drying

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.

Efficient IGV

When dealing with applications that require a variable air flow delivery, you need a unit that matches the power consumption to the flow demand of the application in order to limit your energy costs. The accurate movement of the capacity controlled inlet guide vanes (IGV) ensure reliable operation and a large turndown, helping you save up to 9% on energy at reduced air demand.

Gear set

The gear set consist out of a pinion gear (the smaller gear) and a bull gear (the larger gear) and are responsible for transmitting the power from the motor to the impeller. Choosing the right gear set with the right gear ratio ensures you have the most energy efficient unit as it guarantees the right speed for your application can be achieved. The helical design of both the pinions and the bull gear result in a high overall reliability as they can cope with the higher forces and reduce the vibrations and wear on the components.





Impeller selections

The impeller type material is crucial in defining the turndown and efficiency of your unit. The material, weight and shape (e.g. back leaning) of the impeller define the efficiency of the airflow and the power needed. E.g. a rough surface will cause more turbulence whilst a heavy impeller requires more power, making it less efficient. By offering multiple backward leaning impeller types with a dedicated design for each power and pressure variant, our specialists can always offer you the most energy efficient solution for your application.

Efficient inlet filter and silencer

- Stand-alone optional inlet filter is combined with a silencer to reduce noise level and protect the compression stage
- Pressure drop indication on the control panel to monitor best performance.

Monitoring and control

How to get the most from the least

Monitoring and control

The Elektronikon[®] unit controller is specially designed to maximize the performance of your compressors and air treatment equipment under a variety of conditions. Our solutions provide you with key benefits such as increased energy efficiency, lower energy consumption, reduced maintenance times and less stress... less stress for both you and your entire air system.



Intelligence is part of the package

High resolution color display gives you an easy to understand readout of the equipment's running conditions.

- Clear icons and intuitive navigation provides you fast access to all of the important settings and data.
- Monitoring of the equipment running conditions and maintenance status; bringing this information to your attention when needed.
- Operation of the equipment to deliver specifically and reliably to your compressed air needs.
- Built in remote control and notifications functions provided as standard, including simple to use ethernet based communication.
- Support for 31 different languages, including character based languages.

Online monitoring

Monitor your compressors over the ethernet with the Elektronikon[®] unit controller. Monitoring features include warning indications, compressor shut-down and maintenance scheduling. An Atlas Copco App is available for iPhone/Android phones as well as iPad and Android tablets. It allows fingertip monitoring of your compressed air system through your own secured network.



Dual pressure set-point

Most production processes create fluctuating levels of demand which, in turn, can create energy waste in low use periods. Using the graphic Elektronikon[®] unit controller, you can manually or automatically create two different system pressure bands to optimize energy use and reduce costs at low use times.

SMARTLINK

Monitor your compressed air installation with SMARTLINK

Knowing the status of your compressed air equipment at all times is the surest way to achieve optimal efficiency and maximum availability.

Go for energy efficiency

Customized reports on the energy efficiency of your compressor room.

Increase uptime

All components are replaced on time, ensuring maximum uptime.

Save money

Early warnings avoid breakdowns and production loss.



Evolving towards compressed air management

SMARTLINK Service

A mouse-click reveals the online service log. Get quotes for parts and additional service quickly and easily.

SMARTLINK Uptime

Uptime additionally sends you an e-mail or text message whenever a warning requires your attention.

SMARTLINK Energy

Energy gives you customized reports on the energy efficiency of your compressor room, in compliance with ISO 50001.

Optimize your compressed air system

Minimizing Excess Pressure

Optimizer 4.0 minimizes the generation of excess compressed air by starting and stopping compressors. Its user friendly interface enables you to set multiple pressure bands, allowing you to optimize your compressor installation for varying circumstances, such as non-productive hours.

Improving Uptime

Optimizer 4.0 effectively eliminates production downtime caused by unexpected system pressure drops, because it regulates the system pressure instead of the compressor output pressure.

This means Optimizer 4.0 will automatically adjust the system pressure to compensate for pressure drops due to filters, piping and dryers for example.

We also provide additional functionality and services on Optimizer 4.0 to ensure that your energy savings will stand the test of time. Even when your installation needs adaptations or your demand changes.



Customized to your needs

Atlas Copco recognizes the need to combine our serially produced compressors and dryers with the specifications and standards applied by major companies for equipment purchases. Strategically located departments within the Atlas Copco Group take care of the design and manufacturing of customized equipment to operate at extreme temperatures.

Engineered solutions

Innovative technology

Atlas Copco equipment is covered by our manufacturer warranty. The reliability, longevity and performance of our equipment will not be compromised. A global aftermarket operation in 160 countries ensures reliable maintenance.

Innovative systems

Project management can be complex. We have developed an Internet based application called IC³ to give a transparent view of data and drawings and to easily contribute to the project if required.

Innovative engineering

Each project is unique and by entering into partnership with our customers, we can appreciate the challenge at hand, ask the relevant questions and design the best engineered solution for all your needs.



Optimize your system

Standard scope of supply

Air circuit	Inlet guide vanes
	Fully coated air path
	Integrated blow-off valve
Oil circuit	Fully integrated lubrication system
General	Motor
	Elektronikon® control module
	SMARTLink

Optional features

Options
After cooler
Air cooled oil cooler
Check valve
Air outlet compensator
Blow-off silencer
Inlet filter & silencer
Dual oil filter
Extended motor protection kit (anti-condensation heater + PT100's in windings and bearings)
Full instrumentation package: full data package (extra temperature and pressure sensors on stage inlet) & full core monitoring (XYZ vibration sensors + PT1000's on high speed bearings)
Material & core test certificates

Services

Properly caring for your air compressor helps you lower your operating costs and minimises the risk for unplanned breakdowns or production stops. Atlas Copco offers energy efficiency checks, service, repairs, spare parts and maintenance plans for all air compressors. Entrust your servicing to our expert professionals and ensure your business continues to run efficiently. Our plans cover repairs, preventative maintenance, spare parts, and more.

Total responsibility plan

Complete compressor care with our Total Responsibility Plan

We take care of all your compressor maintenance, upgrades, repairs and even breakdowns for an all-inclusive price.

Complete compressor care

On-time maintenance by expert service engineers, genuine parts, proactive upgrades and compressor overhauls.

Total risk coverage

This means we take care of all your compressor repairs and even breakdowns, without extra charges.

Ultimate efficiency

Fitting the latest drive line components gives you as-new levels of compressor efficiency and reliability.

AIRScan

Audit your compressed air installation with AIRScan

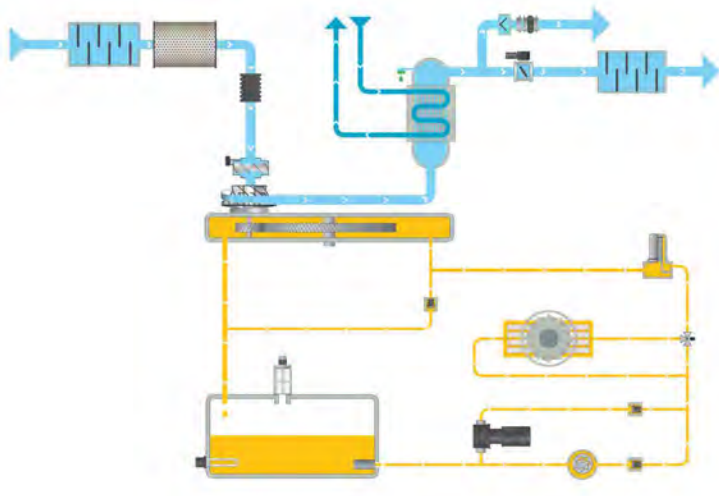
AIRScan offers a reliable analysis and well-founded recommendations to improve your energy efficiency.

Go for energy efficiency

Save energy: up to 30 % of your costs

Clear report

Flowchart - ZHL air cooled



1. Inlet filter

Optional air inlet filters with a high purity level.

2. Inlet baffles

Optional inlet baffles to reduce the noise level, making the machine significantly more silent.

3. Inlet guide vanes

Before entering the turbo module, the process air passes by the inlet guide vanes. Those regulate the amount of air flow according to the customer's application.

4. Impeller

The process air is blown by a highly reliable and efficient impeller.

5. Aftercooler

An optional aftercooler further cools down the process air, up to the temperature level of the customer's application.

6. Blow-off valve & silencer

The blow-off valve together with its silencer, form a protection to prevent surge and to cope with different fluctuations of the application.

7. Check valve

Finally, the process air passes by the optional check valve which is a protection against backflow.

8. Integrated main pump

The integrated main pump ensures the oil flow through the reservoir, cooler and gearbox. An additional auxiliary pump is used during start – ups.

9. Heater

During a cold start, the heater rises the oil temperature to the correct level to deliver the proper viscosity.

10. Thermostatic valve

Depending on the temperature of the oil, the thermostatic valve will by-pass the cooler to speed up the heating process and temperature regulation. This feature has a sufficient impact on the reliability and efficiency of the machine.

11. Oil filter

The oil filter guarantees the purity to deliver the highest reliability.

12. Gearbox

Inside the gearbox the oil will lubricate and cool down the bull and pinion gear.

13. Double seal

To guarantee the air quality, a unique double seal design is implemented. On the shaft is a carbon ring air seal together with a labyrinth oil seal, those ensure 100% oil-free air at all time.

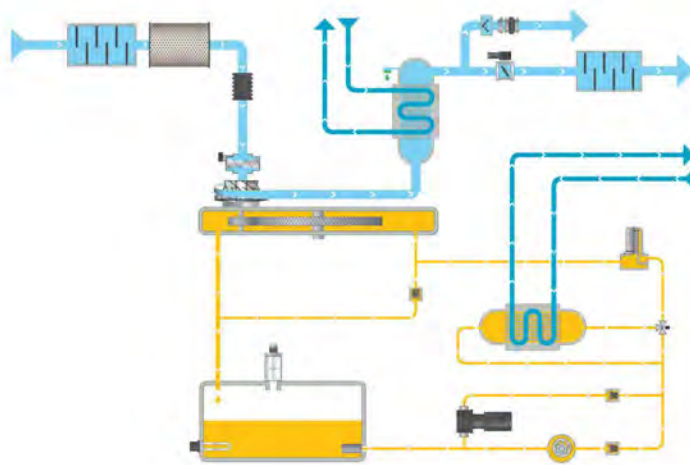
14. Oil reservoir

To protect the oil reservoir from the expanding oil fumes, a demister is installed to improve the reliability of the unit and to prevent contamination in the blower room. No external fan is required, so this is beneficial for the savings.

15. Oil cooler

The oil cooler can be delivered as water cooled or air cooled, and is therefore independent of other flows and more reliable.

Flowcharts - ZHL water cooled



1. Inlet filter

Optional air inlet filters with a high purity level.

2. Inlet baffles

Optional inlet baffles to reduce the noise level, making the machine significantly more silent.

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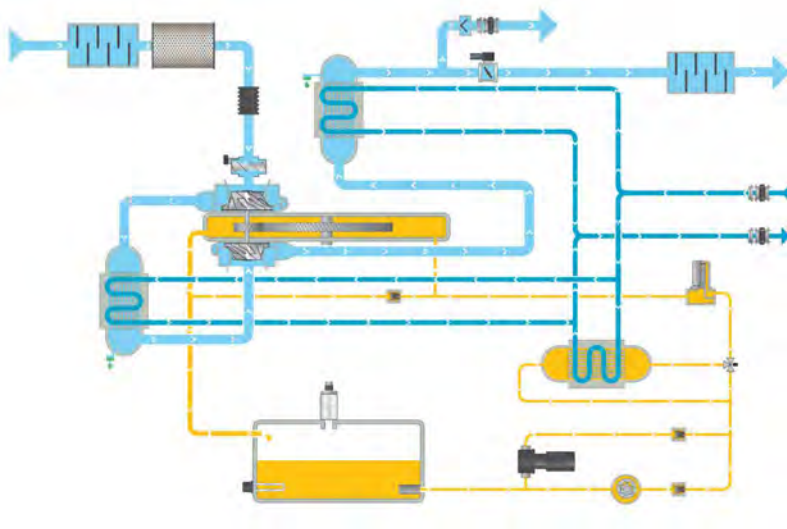
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Flowcharts - ZH



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Notes

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