



# *Oil-free rotary screw compressors*

ZT 90-160 (FF) & ZT 90-160 VSD (FF)

*Atlas Copco*





## ***Setting the standard in energy efficiency, safety and reliability***

The shortest route to superior productivity is to minimize operational cost while maintaining an uninterrupted supply of the right quality of air. The Atlas Copco Z compressor series is focused on effectively saving energy, ensuring product safety – only oil-free machines exclude contamination risks for 100% – and guaranteeing the utmost reliability around the clock. And not just today, but day after day, year after year, with minimal maintenance cost, few service interventions and long overhaul intervals.

## Highest reliability

For 60 years, Atlas Copco Z compressors have set the benchmark for durability. They are built using long-standing internal engineering practices, and are designed and manufactured according to ISO 9001, ISO 14001, ISO 22000 & OHSAS 18001. The high-end ZT uses time-proven state-of-the-art screw technology, cooling and pulsation dampers and provides you with the highest reliability.

## 100% oil-free compressed air

The ZT offers you 100% pure, clean air that complies with ISO 8573-1 CLASS 0 (2010) certification. This means zero risk of contamination; zero risk of damaged products; zero risk of losses from operational downtime; and zero risk of damaging your company's hard-won professional reputation.

## Maximum energy efficiency

The ZT's superior oil-free screw elements provide the optimum combination of high Free Air Delivery (FAD) with the lowest energy consumption. Ample sized cooling, low pressure drops and an extremely efficient drive train result in the highest compressor package efficiency.

## The most complete package

With the ZT compressor, Atlas Copco provides a superior solution without hidden costs. The totally integrated, ready-to-use package includes internal piping, coolers, motor, lubrication and control system. The Full Feature version even integrates an IMD adsorption dryer for an impeccable end product. Installation is fault-free, commissioning time is low and no external instrument air is required. You simply plug and run.

## Global presence - local service

Our aftermarket product portfolio is designed to add maximum value for our customers by ensuring the optimum availability and reliability of their compressed air equipment with the lowest possible operating costs. We deliver this complete service guarantee through our extensive service organization, maintaining our position as leader in compressed air.



# 100% certified oil-free air

Atlas Copco is renowned for designing and manufacturing some of the most durable oil-free screw compressors. The ZT high-end rotary screw compressor comes out of this strong tradition. Ideal for industries where high quality oil-free air is key, the ZT offers the highest reliability and safety in combination with low energy costs.



## — Food & beverage

ZT air cooled oil-free air compressors provide 100% pure, clean, oil-free air for all kinds of applications in the food and beverage industry such as fermentation, packaging, aeration, transportation, filling & capping, cleaning, instrument air. Class 0 certified ZT rotary screw compressors avoid compromising the purity of your end product and ensure zero risk of contamination.

## — Textiles

The oil-free air ZT 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.







## Oil & gas

Through the years, we have built up extensive experience in providing compressed air and a strong global service support for the oil & gas industry. 100% oil-free compressed air is used for control and instrument air or buffer air.

## Power plants

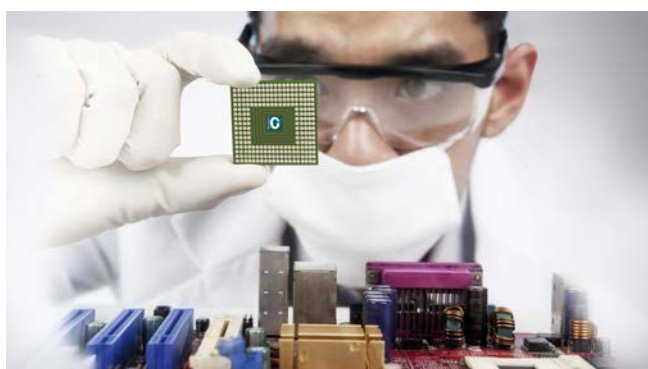
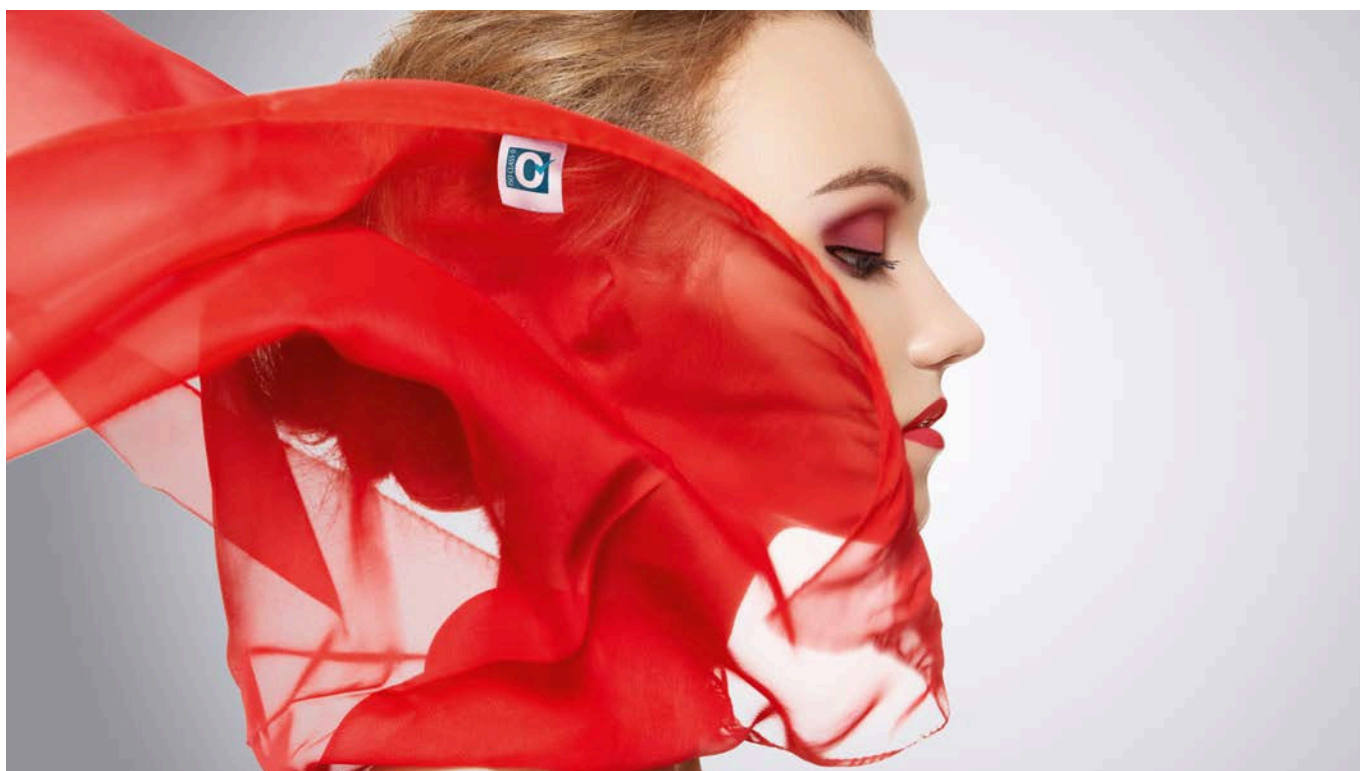
Power plants run round-the-clock to supply vital energy with a continuous supply of compressed air, critical for trouble-free continuous operation. ZT air cooled oil-free air compressors provide a reliable source of compressed air for applications such as flue gas desulphurization, oxidation air and fluidized beds.



## Pharmaceuticals

Strict moisture control is a key factor in the manufacture of most pharmaceuticals. Many materials used to produce pharmaceuticals have a physical affinity for moisture, which can cause powdered material to aggregate. Other powders that are formed into a tablet under high pressures will adhere only when in a dry state. Humidity can cause a tablet to crumble or the drug to decompose and diminish in its therapeutic value. To assure consistently high-quality drugs, the presence of dry air in the processing area and machinery is therefore vital.

# *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. 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 <sup>3</sup>
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).

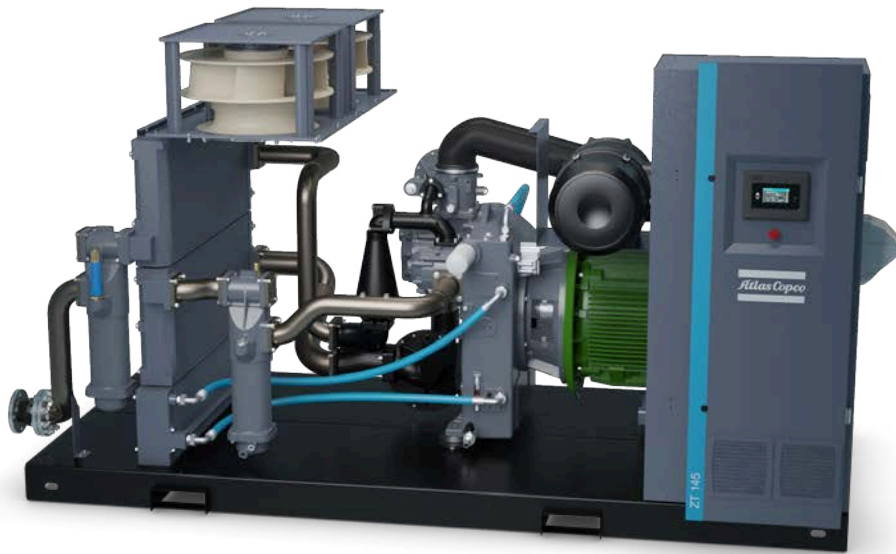
## Eliminating any risk

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.





# Proven Z technology: ZT (air-cooled) version



## 100% oil-free air (Class 0)

- Unique Z seal design guarantees 100% certified oil-free air.
- Superior rotor coating for high efficiency and durability.
- Cooling jackets to ensure world class compression in different conditions.

## High efficiency motor

- IP 55 TEFC motor protects against dust, chemicals and humidity.
- Continuous operation under severe ambient temperature conditions.

## Efficient intake air filtration

- 2-stage dust removal system (99,9% for 3 micron).
- Efficient protection of the compressor.
- Minimum intake losses and low pressure drop.

## High efficiency coolers

- Compact and efficient design with low air approach temperature and low pressure drop.
- Water separator to efficiently separate the condensate from the compressed air.
- Low moisture carry-over protects downstream equipment.





## Reliable load/unload regulation

- No external air supply required.
- Mechanical interlock of inlet and blow-off valve.
- Low unload power.



## Advanced touch screen monitoring system

- User-friendly Elektronikon® Touch, with enhanced connectivity potential.
- Integrated smart algorithms to optimize system pressure and maximize energy efficiency.
- Included warning indications, maintenance scheduling and online visualization of the machine's condition.

## Complete plug-and-play package

- All-in-one solution: fault-free installation, easy commissioning and quick start-up.
- Includes internal piping, coolers, motor, drive, lubrication and control system.



## Sound proof design

- Silenced canopy ensures optimal working conditions for everyone in the immediate environment.
- Optimized internal ducting and integrated pulsation damper to reduce the noise level.

## Ease of maintenance

- Minimal service time with service parts grouped together for ease of access.
- All components are designed for serviceability and long lasting lifetime.
- Optional service plans available to extend the warranty.

# VSD

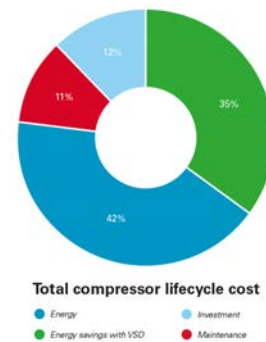
Variable Speed Drive

## Driving down energy costs

Over 80% of a compressor's lifecycle cost is taken up by the energy it consumes. Moreover, the generation of compressed air can account for more than 40% of a plant's total electricity bill. To cut your energy costs, Atlas Copco pioneered Variable Speed Drive (VSD) technology in the compressed air industry. VSD leads to major energy savings, while protecting the environment for future generations. Thanks to continual investments in this technology, Atlas Copco offers the widest range of integrated VSD compressors on the market.

## Energy savings up to 35%

Atlas Copco's VSD technology closely follows the air demand by automatically adjusting the motor speed. This results in large energy savings of up to 35%. The Life Cycle Cost of a compressor can be cut by an average of 22%. In addition, lowered system pressure with VSD minimizes energy use across your production dramatically.



## What is unique about the integrated Atlas Copco VSD?

1. The Elektronikon® controls both the compressor and the integrated converter, ensuring maximum machine safety within parameters.
2. Flexible pressure selection with VSD reduces electricity costs.
3. Specific converter and motor design (with protected bearings) for the highest efficiency across the speed range.
4. Electric motor specifically designed for low operating speeds with clear attention to motor cooling and compressor cooling requirements.
5. All Atlas Copco VSD compressors are EMC tested and certified. Compressor operation does not influence external sources and vice versa.
6. Mechanical enhancements ensure that all components operate below critical vibration levels throughout the entire compressor speed range.
7. A highly efficient frequency converter in a cubicle ensures stable operation in high ambient temperatures up to 50°C/122°F
8. No 'speed windows' that can jeopardize the energy savings and the stable net pressure. Turndown capability of the compressor is maximized to 70-75%.
9. Net pressure band is maintained within 0.10 bar, 1.5 psi.

# Monitoring and control

How to get the most from the least

## Elektronikon® MK5 Touch

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

The full color touch 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 integrated webpage.
- Integrated **SMARTLINK**
- Support for 31 different languages, including character based languages.

## Online & mobile monitoring

Monitor your machines over the ethernet with the Elektronikon® unit controller and the **SMARTLINK** service. Monitoring features include warning indications, compressor shut-down, sensor trending and maintenance scheduling.





## Dual set-point and automatic stop

Most production processes create fluctuating levels of demand which, in turn, can create energy waste in low use periods. Using the Elektronikon® unit controller, you can manually or automatically switch between two different setpoints to optimize energy use and reduce costs at low use times. In addition, the sophisticated algorithm runs the drive motor only when needed. As the desired setpoint is maintained while the drive motor's run time is minimized, energy consumption is kept to a minimum.

## 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.



# 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.

## Full VSD Benefits

With Optimizer 4.0 you can realize the full energy saving potential of VSD (Variable Speed Drive). It regulates the VSD to ensure that the compressed air output is proportional to the demand, preventing higher pressures than required, excess unloaded running, and spiraling energy costs.

## 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.

## Optimizing Wear and Tear

Optimizer 4.0 comes in different variants, for up to 4, up to 8 or over 8 machines and centrifugals.

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.



# Protecting your production



## Air treatment

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.



# Services

Properly caring for your air compressor lowers operating costs and minimizes 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 experts and ensure your business continues to run efficiently.



## Total Responsibility Plan

### Complete compressor care

On-time maintenance by expert service engineers.

### Total risk coverage

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

### Ultimate efficiency

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

## AIRnet

AIRnet is a piping solution that guarantees operational excellence for compressed air, vacuum, nitrogen and other inert gas applications. Available in aluminium and stainless steel.

### Fast, easy and reliable

**AIRnet Aluminium** is the most effective solution for your air or gas network. Its fast and easy installation gets your operations up and running in record time. AIRnet is leak-proof and corrosion-free. Its pipes and fittings come with a 10-year warranty.

### Safe, Solid and Clean

**AIRnet Stainless Steel** piping system ensures 100% oil free air delivery from the generation to the point of use, in compliance with the highest quality standards.





## 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

AIRScan offers a reliable analysis and actionable insights for energy efficiency improvements.

### Save energy: up to 30 % of your costs

Our unique compressor audit software simulates various configurations of your compressed air installation. This allows us to provide realistic projections on potential energy savings.

### Clear report

An AIRScan report provides a summary for decision makers, as well as an in-depth evaluation of problems and solutions for your technicians.



# Optimize your system

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

## Options

	ZT 110 - 275 (VSD)
Monitoring & Protection bundle (Anti-Condensation heaters / SPM equipment / PT 1000 in the windings & bearings)	•
<b>SMARTLINK</b>	•
Kit for purge of dry air during standstill	•
Silicone-free rotor	•
Anchor pads	•
Wooden case protection packaging	•
High ambient temperature version*	•
Test certificate	•
Witnessed performance test	•
IT Network (VSD)	•

(\*): Maximum intake/cooling air temperature is 50°C/122 °F for HAT versions.  
Please note the availability of the option depends on the chosen configuration.

• : Optional



# Optimize your system

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



## Engineered solutions

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, often in remote locations.

## Innovative technology

All equipment is covered by our manufacturer warranty. The reliability, longevity and performance of our equipment will not be compromised. A global aftermarket operation employing 360 field service engineers in 160 countries ensures reliable maintenance by Atlas Copco as part of a local service operation.



## Innovative engineering

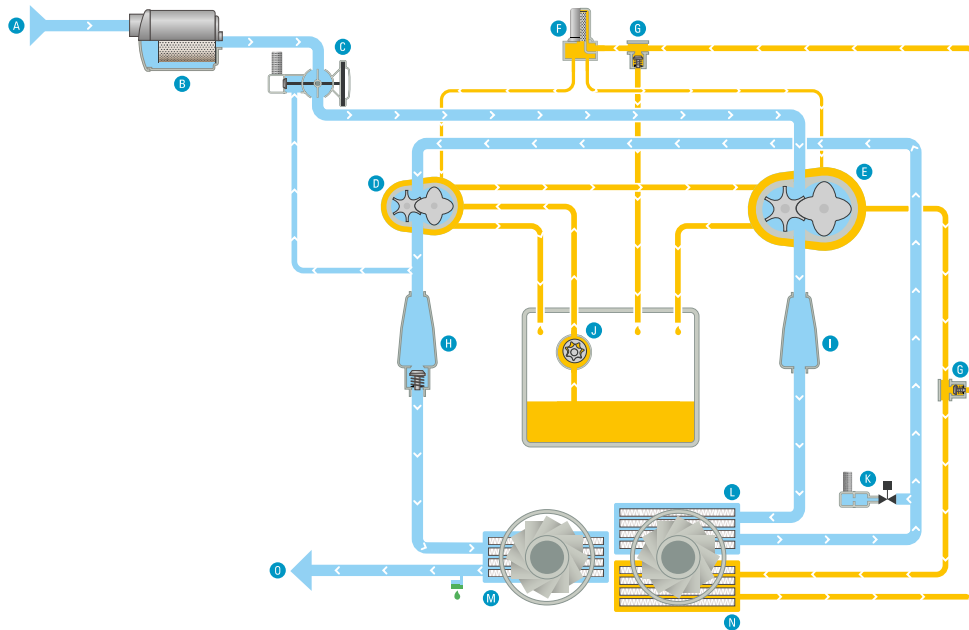
Each project is unique and by entering into partnership with our customers, we can appreciate the challenge at hand, ask the relevant questions and design the best engineered solution for all your needs.



# Flowchart ZT

Process flow, oil flow and cooling flow - step by step

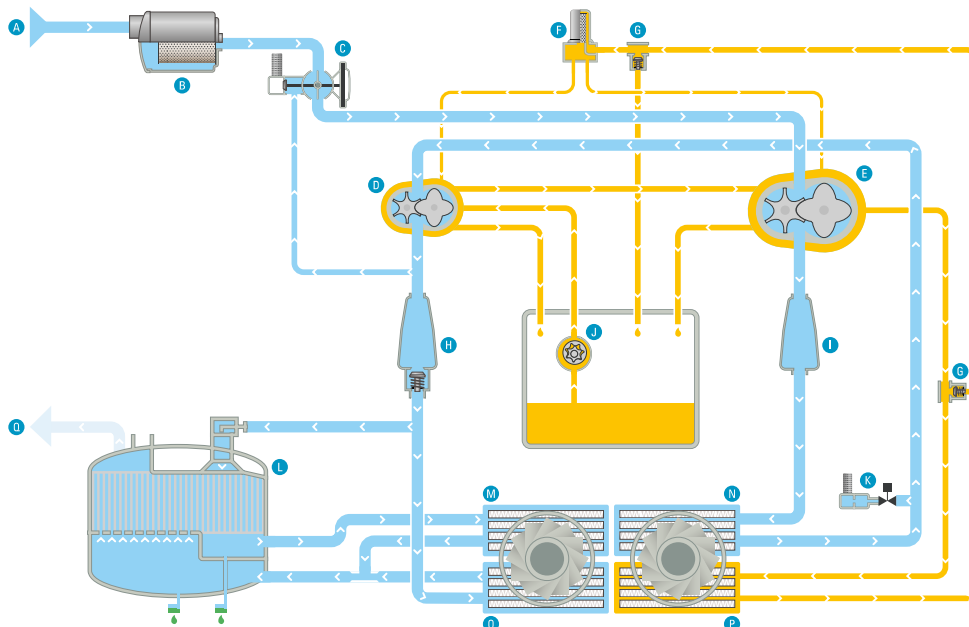
ZT 90-160 (VSD)



- A Air in
- B Air filter
- C Throttle valve (with blow off)
- D High pressure element
- E Low pressure element
- F Oil filter
- G Bypass valve
- H Pulsation damper (with check valve)
- I Pulsation damper
- J Oil pump
- K Blow off valve
- L Intercooler
- M Aftercooler
- N Oil cooler
- O Air out

- Air
- Condensate
- Oil

ZT 90-160 (VSD) FF



- A Air in
- B Air filter
- C Throttle valve (with blow off)
- D High pressure element
- E Low pressure element
- F Oil filter
- G Bypass valve
- H Pulsation damper (with check valve)
- I Pulsation damper
- J Oil pump
- K Blow off valve
- L Rotary drum dryer (integrated MD)
- M Regeneration cooler
- N Intercooler
- O Aftercooler
- P Oil cooler
- Q Air out

- Air
- Dry compressed air
- Condensate
- Oil

# Technical specifications

## ZT 90-160 (FF)

TYPE	Working pressure (1)		Free Air Delivery (2)			Installed motor power kW / hp	Noise level (3) dB(A)	Weight			
	bar(e)	psig	l/s	m³/min	cfm			Pack		Full Feature (iMD)	
								kg	lb	kg	lb
<b>50 Hz</b>											
ZT 90 - 7.5	7.5	100	236	14.2	500						
ZT 90 - 8.6	8.6	125	223	13.4	473	90 / 120	79	3850	8500	4250	9400
ZT 90 - 10	10	145	211	12.7	447						
ZT 110 - 7.5	7.5	100	314	18.8	664						
ZT 110 - 8.6	8.6	125	293	17.6	621	110 / 150	79	3850	8500	4250	9400
ZT 110 - 10	10	145	273	16.4	579						
ZT 132 - 7.5	7.5	100	358	21.5	758						
ZT 132 - 8.6	8.6	125	334	20.0	707	132 / 175	79	3850	8500	4250	9400
ZT 132 - 10	10	145	310	18.6	656						
ZT 145 - 7.5	7.5	100	387	23.2	820						
ZT 145 - 8.6	8.6	125	359	21.5	760	145 / 200	79	3850	8500	4250	9400
ZT 145 - 10	10	145	346	20.7	732						
ZT 160 - 7.5	7.5	100	428	25.7	906						
ZT 160 - 8.6	8.6	125	412	24.7	873	160 / 215	79	3850	8500	4250	9400
ZT 160 - 10	10	145	393	23.6	833						
<b>60 Hz</b>											
ZT 90 - 8.6	8.6	125	236	14.2	500	90 / 120	79	3850	8500	4250	9400
ZT 90 - 10.4	10.4	150	227	13.6	481						
ZT 110 - 8.6	8.6	125	323	19.4	683						
ZT 110 - 10.4	10.4	150	303	18.2	643	110 / 150	79	3850	8500	4250	9400
ZT 145 - 8.6	8.6	125	389	23.3	824						
ZT 145 - 10.4	10.4	150	352	21.1	746	145 / 200	79	3850	8500	4250	9400
ZT 160 - 8.6	8.6	125	419	25.1	887						
ZT 160 - 10.4	10.4	150	390	23.4	827	160 / 215	79	3850	8500	4250	9400

(1) For the FF variant, please consult Atlas Copco.

(2) Unit performance measured according to ISO 1217, Annex C, Edition 4 (2009) Reference conditions:

- Relative humidity 0%.
- Absolute inlet pressure 1 bar (14.5 psi).
- Intake air temperature 20°C (68°F).

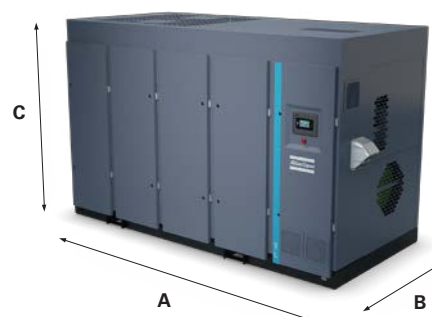
Free Air Delivery (FAD) is measured at the following working pressures:

- 7.5 / 8.6 bar version at 7 bar.
- 10.4 bar version at 9 bar.

(3) A-weighted emission sound pressure level at the work station (LpWSAd).

Measured according to ISO 2151: 2008 using ISO 9614-2 (sound intensity scanning method). The added correction factor (+/- 3 dB(A)) is the total uncertainty value (KpAd) conform with the test code.

TYPE	A (Length)		B (Width)		C (Height)	
	mm	inch	mm	inch	mm	inch
ZT 90 - 160	3400	135	1650	65	2150	85
ZT 90 - 160 FF (iMD)	4085	160	1650	65	2150	85





# Technical specifications

## ZT 90-160 VSD (FF)

TYPE	Working pressure (1)			Free Air Delivery (2)								Installed motor power kW / hp	Noise level (3) dB(A)	Weight				
		bar(e)	psig	l/s		m³/min		cfm		Pack				Full Feature (iMD)				
										kg	lb			kg	lb			
ZT 90 VSD - 8.6	Minimum	4	60	100	-	252	6.0	-	15.1	212	-	534	90 / 120	79	3850	8500	4250	9400
	Effective	7	100	100	-	252	6.0	-	15.1	212	-	534						
	Maximum	8.6	125	100	-	235	6.0	-	14.1	212	-	498						
ZT 90 VSD - 10.4	Minimum	6	90	165	-	232	9.9	-	13.9	350	-	492	90 / 120	79	3850	8500	4250	9400
	Effective	9	130	165	-	232	9.9	-	13.9	350	-	492						
	Maximum	10.4	150	191	-	217	11.5	-	13.0	405	-	460						
ZT 110 VSD - 8.6	Minimum	4	60	100	-	295	6.0	-	17.7	212	-	625	110 / 150	79	3850	8500	4250	9400
	Effective	7	100	100	-	295	6.0	-	17.7	212	-	625						
	Maximum	8.6	125	100	-	273	6.0	-	16.4	212	-	579						
ZT 110 VSD - 10.4	Minimum	6	90	165	-	267	9.9	-	16.0	350	-	566	110 / 150	79	3850	8500	4250	9400
	Effective	9	130	165	-	267	9.9	-	16.0	350	-	566						
	Maximum	10.4	150	191	-	255	11.5	-	15.3	405	-	540						
ZT 132 VSD - 8.6	Minimum	4	60	125	-	357	7.5	-	21.4	265	-	757	132 / 175	79	3850	8500	4250	9400
	Effective	7	100	125	-	357	7.5	-	21.4	265	-	756						
	Maximum	8.6	125	125	-	336	7.5	-	20.2	265	-	712						
ZT 132 VSD - 10.4	Minimum	6	90	165	-	331	9.9	-	19.9	350	-	702	132 / 175	79	3850	8500	4250	9400
	Effective	9	130	165	-	331	9.9	-	19.9	350	-	701						
	Maximum	10.4	150	191	-	316	11.5	-	19.0	405	-	670						
ZT 160 VSD - 8.6	Minimum	4	60	144	-	410	8.6	-	24.6	305	-	870	160 / 215	79	3850	8500	4250	9400
	Effective	7	100	144	-	410	8.6	-	24.6	305	-	869						
	Maximum	8.6	125	144	-	385	8.6	-	23.1	305	-	816						
ZT 160 VSD - 10.4	Minimum	6	90	165	-	378	9.9	-	22.7	350	-	802	160 / 215	79	3850	8500	4250	9400
	Effective	9	130	165	-	378	9.9	-	22.7	350	-	801						
	Maximum	10.4	150	191	-	361	11.5	-	21.7	405	-	765						

(1) For the FF variant, please consult Atlas Copco.

(2) Unit performance measured according to ISO 1217, Annex C & E, Edition 4 (2009)  
Reference conditions:

- Absolute inlet pressure 1 bar (14.5 psi)

- Intake air temperature 20°C (68°F)

Free Air Delivery (FAD) is measured at maximum working pressure.

(3) A-weighted emission sound pressure level at the work station (LpWSAd).

Measured according to ISO 2151: 2008 using ISO 9614-2 (sound intensity scanning method).

The added correction factor (+/- 3 dB(A)) is the total uncertainty value (KpAd) conform with the test code.

TYPE	A (Length)		B (Width)		C (Height)	
	mm	inch	mm	inch	mm	inch
ZT 90 - 160	3400	135	1650	65	2150	85
ZT 90 - 160 FF (iMD)	4085	160	1650	65	2150	85





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## ***COMMITTED TO SUSTAINABLE PRODUCTIVITY***

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.



ISO 9001 • ISO 14001  
OHSAS 18001  
ISO 22000

[www.atlascopco.com](http://www.atlascopco.com)

