

# Atlas Copco Air Compressors

## ZR/ZT55-90-FF & ZR/ZT90 VSD-FF

Oil-free rotary screw compressor series  
with Variable Speed Drive and Full Feature variants

55-90 RIZT



TOTAL INTEGRATION  
MAXIMUM ENERGY SAVINGS





# The Total Energy Saving concept...

The shortest route to maximizing your profitability, is to minimize operational cost. Because energy consumption is the major factor in a compressor's life cycle cost, the focus in the design of the new Atlas

Copco Z compressors is on saving energy in every conceivable way. This focus is the basis for a total product development concept that encompasses every stage of R&D, manufacturing, installation and after sales service.



## The thorough needs assessment

Real savings rely on facts. Atlas Copco consultants assess the air demand profile of your application and suggest the best compressor selection for the job.



## The right core technology

Atlas Copco masters every compression principle and provides the most energy efficient technology for the required pressure and flow.



## The best drive arrangement

Fixed speed machines are fine when they can run at full load most of the time. But when air demand fluctuates, the Variable Speed Drive can achieve substantial savings of up to 35 %.

# Energy Circle



## The lowest operating cost

### Energy recovery

Heat from the compression process can be recovered and put to good use in endothermic processes, heating of buildings etc.



### The fully optimized system

A multi-compressor installation can be centrally controlled, to achieve a tight pressure band and the lowest overall energy cost.

### The innovative accessories

The integrated IMD adsorption dryer offers high quality dry air with the lowest pressure drop and uses the heat of the compressor for regeneration. These are two features that lead to significant energy savings.



## The highest reliability



### The professional follow-up

An Atlas Copco Service Contract will ensure you of the correct preventative maintenance, immediate response and genuine spare parts... all over the globe.

### The trouble-free installation & commissioning

An Atlas Copco oil-free compressor is truly plug-and-play. Put the machine on a flat floor, connect the power line and the compressed air outlet... and push the start button.





# ... combined with the Total Reliability concept

An energy efficient machine saves money only if it runs reliably around the clock. And not just today, but day after day, year after year; with minimal service interventions, long overhaul intervals, an extended lifetime

of all moving parts, individually and thoroughly tested. For over a century, Atlas Copco has been building machines that stand the test of time. With the proven Z compressors, reliability has never been so timeless.

## Reliability Circle



### The experienced partner

Atlas Copco is the world leader in compressed air technology, with over 100 years of experience in air compression systems.

### The integrated design

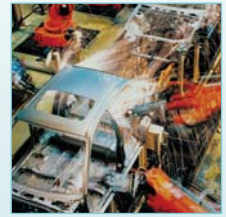
Internal piping, integral air dryer, integrated Variable Speed Drive, 100 % matched components... the only way to ensure total reliability.



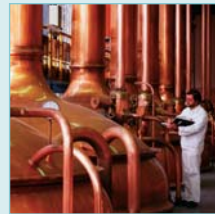
### The complete solution

Compressor, dryer, drive, filters, control system... they all carry the same mark of quality: the Atlas Copco logo.





Pushing the limits in  
energy efficiency



Pushing the limits in reliability

# Proven Z technology in one package

The Total Energy Saving Concept takes solid form in the new ZR/ZT55-90 VSD-FF compressors. This range combines two of the biggest energy savers within the Full Feature VSD compressor pack itself: the IMD dryer and the Variable Speed Drive.

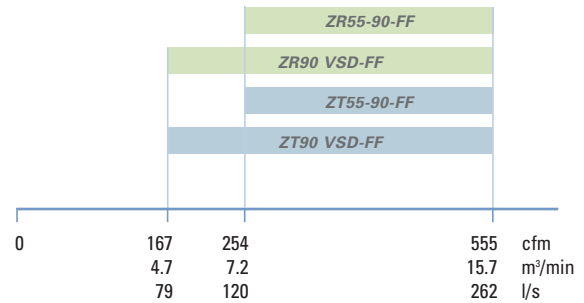
The ZR/ZT55-90 VSD-FF range comes in water and air cooled versions, both with a robust and reliable design, easy to service and environment friendly. Installation is straightforward and no special foundations are required.

## Excellence by design

- Completely oil-free – no risk of oil-contaminated air
- No oil in the condensate
- Completely ready-to-use package
- Easy, low cost installation – no foundations
- Air and water cooled versions
- Low cooling water consumption with water cooled variant
- Few consumables – low maintenance
- Proven reliability – 45,000 + units installed
- True performance as per ISO 1217, Annex C, Ed. 3
- Flexible as a base load or a top load machine
- Consistent performance over the lifetime
- Operator and service friendly
- Silenced package
- Very low vibration level
- Energy saving Variable Speed Drive & Full Feature versions available
- Integrated IMD dryer in FF version

## ZR/ZT55-90-FF and ZR/ZT90 VSD-FF

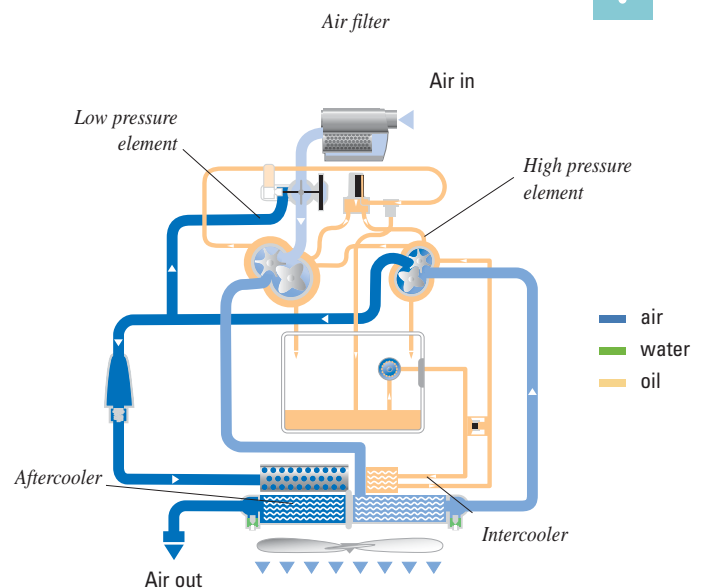
Capacity range (50 & 60 Hz)



ZT: Air cooled / ZR: Water cooled / VSD: Variable Speed Drive / FF: Full Feature  
See data pages for range details

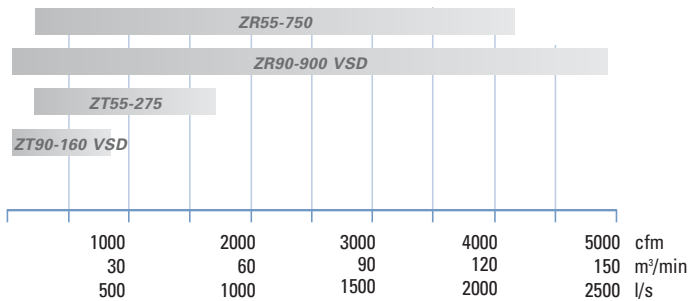


Air cooled ZT55-90 VSD with integrated VSD



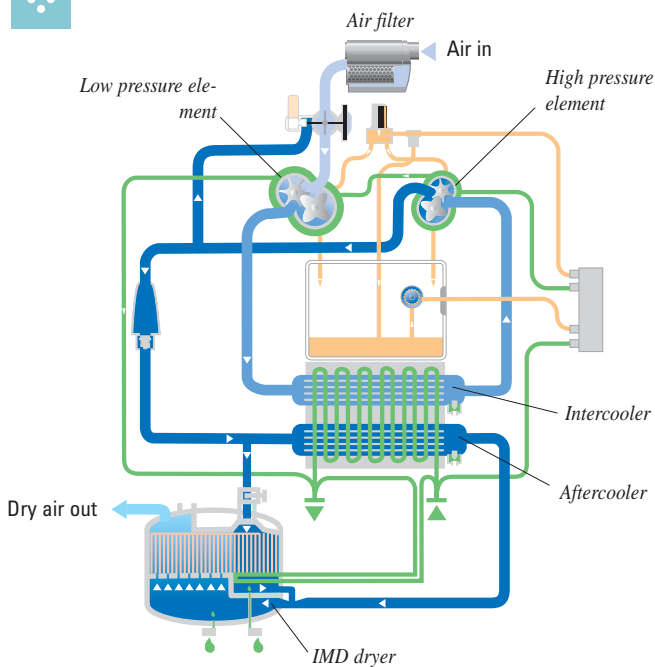
# Complete scope suiting all needs

Complete ZR/ZT range



Water cooled ZR55-90 VSD-FF

Integrated VSD, Full Feature version with IMD dryer



Many features are included as standard. Some applications may also need or benefit from additional options.

## Standard

- Air intake filter and silencer
- Air intake flexible
- Stainless steel inter- and aftercooler cores\*
- Inter and aftercooler water traps and electronic drains
- Outlet air silencer
- Terminal expansion joints – air and water side
- Outlet air flange
- Complete water circuit\*
- Single point inlet and outlet connection
- Back-flush arrangement for cooler cleaning\*
- Complete oil circuit pre-piped
- Built-in oil breather system
- AGMA Q13, DIN class 5 gears
- Electric motor pre-mounted
- IP 55 motors
- Y-D starters
- Pre-mounted electrical and VSD cubicles
- Silencing canopy
- Skid with no need for foundations
- Electronic drains
- Suppression of emissions/harmonic distortions in VSD

## Options

- Integrated IMD dryer in FF version
- Integrated VSD version
- Energy recovery\*\*
- Automatic water shut-off valve\*
- Anti-condensation heater for motor
- Thermistor motor winding protection
- Wooden packaging
- IT network for VSD

\* Only for water cooled versions

\*\* Only for water cooled versions with free-standing MD dryers

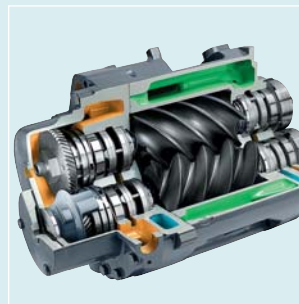


# Superior design in every detail



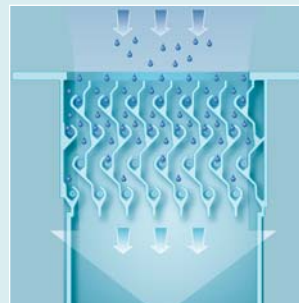
## Proven Z-technology

- ▶ 100% oil-free rotary screw compression
- ▶ high quality air
- ▶ low speed to capacity ratio
- ▶ high overall efficiency
- ▶ no oil disposal problems downstream



## Effective electronic water drains

- ▶ sensitive and precise operation
- ▶ reliable solid state actuation
- ▶ no loss of air
- ▶ alarm for malfunction on the Elektronikon® display



## Water separator

- ▶ the aluminium-labyrinth system efficiently separates the condensate from the compressed air
- ▶ electronic drains are offered as standard
- ▶ low moisture carry-over protects downstream equipment
- ▶ better dryer performance

### Superior element bearings

- ▶ high stability under varying load conditions
- ▶ easily adapt to changing loads
- ▶ no need for pre-lubrication/ stabilization time



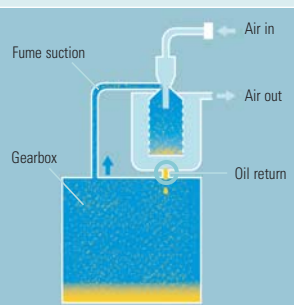
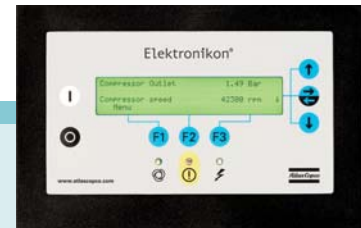
### High precision gears according to AGMA Q13/DIN Class 5

- ▶ long lifetime
- ▶ low transmission losses
- ▶ low noise and vibration



### Advanced Elektronikon® control and monitoring system

- ▶ overall system performance status with pro-active service indications, alarms for malfunctions and safety shutdowns
- ▶ multi-language selectable display
- ▶ all monitoring and control functions via one interface
- ▶ wide communication possibilities
- ▶ integration possible in many process control systems (field bus system)



### Gearbox breathing system

- ▶ simple filter combined with venturi system
- ▶ keeps the oil inside the gearbox
- ▶ no oil fumes in the atmosphere



### High efficiency cooling (water cooled ZR compressor)

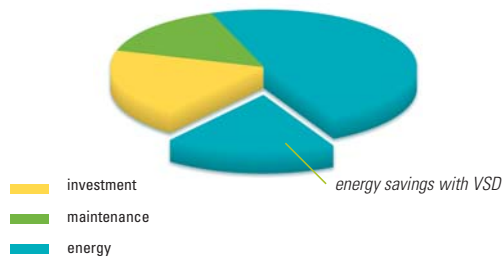
- ▶ tubes of special corrosion resistant stainless steel (R249)
- ▶ star profile increases heat transfer
- ▶ very low approach temperatures
- ▶ nearly perfect intercooling – saves energy
- ▶ enhanced water removal reduces moisture carry-over and dryer loads



# Why Variable Speed Drive (VSD) compressors ?

Because a VSD compressor precisely follows the varying air demand that is typical in most production facilities, it dramatically reduces the energy bill and provides numerous additional benefits. The result is a fast payback of the investment and huge yearly savings long after that.

Because energy constitutes the biggest portion of the life cycle cost of a compressor, these savings significantly impact the operational costs of your plant air system.



## Predicting your savings

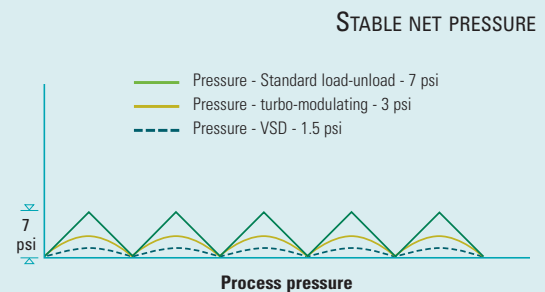
Call upon the expertise of Atlas Copco specialists and have an assessment carried out in your factory.

A detailed report will show your current operation and the achievable savings when adding a VSD solution to your plant air system.



## Direct energy savings of 15 to 35 %

- ▶ Unloaded running of a VSD compressor does not result in energy losses or in blowing off compressed air to the atmosphere.
- ▶ Load/no load transition losses are eliminated.
- ▶ The precise pressure control of the VSD compressor allows a tighter and often lower discharge working pressure, resulting in reduced energy consumption.

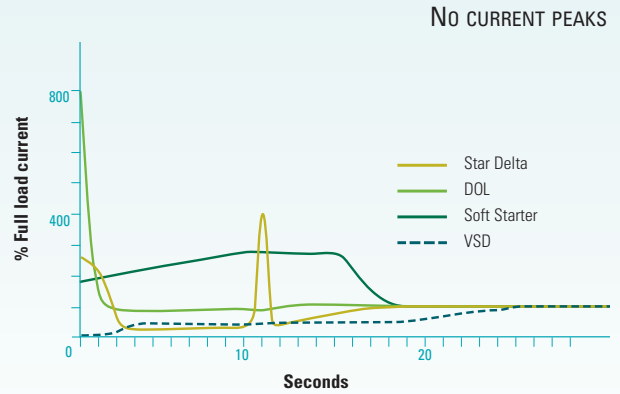


## Indirect savings

- ▶ The **lowered net pressure** obtained by the VSD compressor provides additional yearly savings:
  - other base-load compressors will consume less energy
  - leak losses - always present in compressed air systems - are significantly reduced: e.g. leakage at 90 psig would be 13 % less than at 100 psig
  - many compressed air applications consume less air at a reduced pressure, similar to leak reduction

### Additional VSD benefits

- ▶ The **constant net pressure** provides stability for all processes making use of compressed air.
- ▶ **Current peaks during start-up are eliminated**
  - VSD compressors can be started and stopped without limitation
  - frequent start-stop no longer leads to current peak penalties
  - the electrical installation can often be rated for a lower current, freeing up service normally reserved for short-circuit capacity ratings.



### Integrated VSD - The only way

All Atlas Copco VSD compressors are EMC tested and certified. External sources do not influence the compressor operation, nor does the compressor disturb other equipment via emission or via the power supply line.

The Elektronikon® system controls both the compressor and the integrated converter; this ensures maximum machine safety and allows easy networking of the compressor.

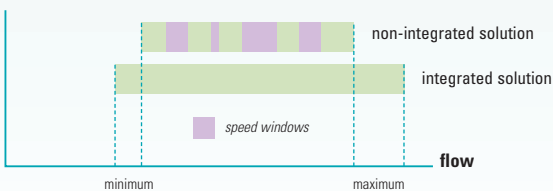
Mechanical enhancements are made to ensure that gears and bearings receive proper lubrication at all speeds and that all components operate well below critical vibrations.

Special attention is given to the electric motor, which is specifically designed for VSD operation. Bearings are protected against induced bearing currents and both motor and converter are perfectly tuned to obtain the best efficiency over the entire speed range.

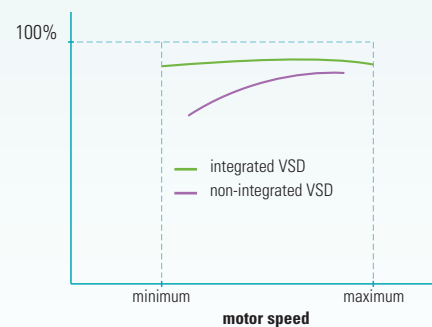
The machine is tested for the complete speed range to eliminate all "speed windows" that can jeopardize the energy savings and the stable net pressure



### OPERATING RANGE



### COMBINED MOTOR/CONVERTER EFFICIENCY

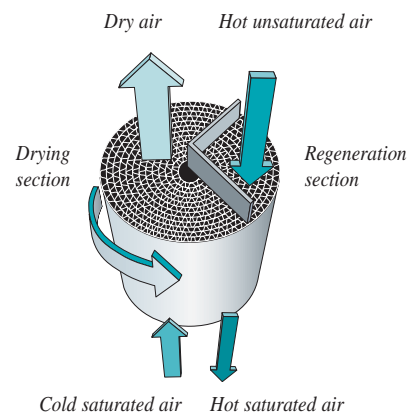


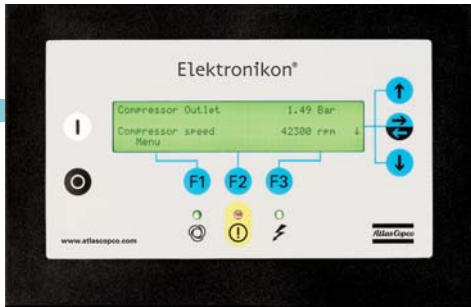
# The Full Feature compressor – a compact, all-in-one quality air solution

The Full Feature concept is a total installation, providing dry compressed air out of the box. Integrating the IMD dryer and the Variable Speed Drive results in a compact package that offers high quality air at the lowest cost with the highest reliability.

- ▶ The IMD adsorption dryer eliminates the moisture before it even enters the air net, ensuring a reliable process and an impeccable end product. No external energy is needed for the IMD, resulting in large savings over the years.
- ▶ The pressure drop is minimal, which again cuts down the operating cost.
- ▶ Significantly reduced floor space thanks to the efficient integration of the dryer into the compressor canopy:
  - 20% for the air cooled ZT FF
  - 40% for the water cooled ZR FF.
- ▶ The Full Feature compressor is a pre-wired and pre-piped solution, ready to use.

The IMD drying principle





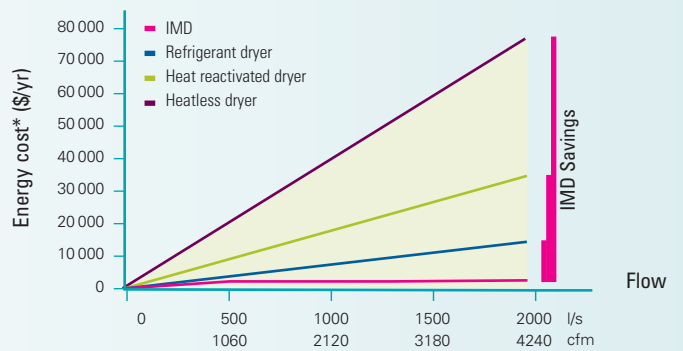
### Advanced condition monitoring

One integrated control and monitoring system for compressor and dryer

## Energy savings with Full Feature

### Direct Savings

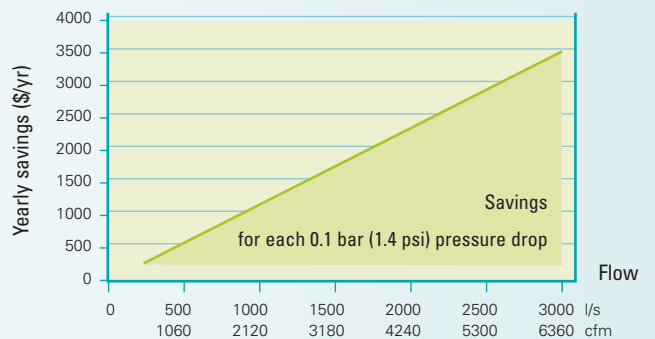
The IMD drying process requires no external energy; over time this results in large savings.



\* Assumption – 1kWh = \$ 0.05

### Indirect Savings

Other than direct energy input, the pressure drop in dryers causes indirect energy consumption as well. IMD dryers have a very low pressure drop, which leads to a further reduction in energy cost.





# Reliable technology for tough conditions



## ContainAIR is out there

Be it for a temporary need or simply because there is no room inside your factory, Atlas Copco ContainAIR delivers air wherever you need it. Installed in a 15 ft. container, the ContainAIR ZT90 has all the features of its stationary oil-free relatives, but adds flexibility and mobility.

Totally self-contained and rugged, it runs around the clock. Winterized versions are optional.

When the going gets tough, ContainAIR gets going.

## HAT version keeps cool in hot spots

Operating air compressors in very hot environments has been a challenge to plant engineers for many years. Often, the only solution was to order custom built units, at high additional expense and with long and unpredictable delivery times.

### Standard solution

With the new ZT High Ambient Temperature (HAT) compressors, Atlas Copco offers an off-the-shelf standard solution. ZT HAT compressors operate comfortably at high intake and cooling air temperatures of up to 122 °F. Reliable operation is ensured by...

- ▶ adapted mechanical design
- ▶ forced component cooling
- ▶ proper motor sizing

The ZT HAT is a thoroughly tested package to prevent any uncertainties and surprises.



# True performance...

# ... throughout its lifetime

When specifying the true performance of an air compressor, at least three parameters must be considered:

## Capacity

The standard to which the capacity is measured

## Working pressure

The point where the delivery pressure is measured

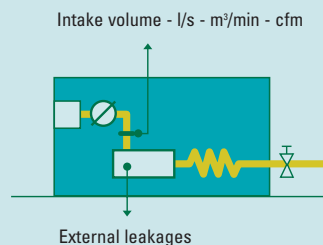
## Power consumption

The compressor shaft-power required at an effective working pressure (including all internal losses from inlet to outlet)

The drive mode with regard to transmission losses.

### Intake volume

*Inlet flow referred to compressor element inlet conditions. Seal leakages and inlet losses should not deprive you the air you paid for.*

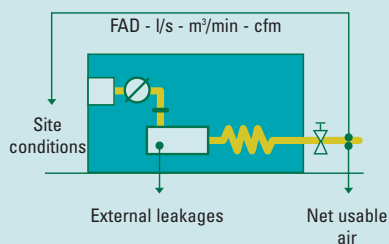


Atlas Copco Z-compressors are measured according to ISO 1217, Annex C, Edition 3, stipulating the FAD measurement at the end of the package, net of all losses.

Atlas Copco specifications correspond to the capacity and pressure which the customer receives, not to what the compressor draws in. Differences can be substantial.

### Delivered volume

*FAD according to ISO 1217, Annex C, Edition 3. A Z-compressor gives truly what is promised.*



Atlas Copco's Aftersales Service operation is unrivalled in the compressed air industry.

- ▶ High quality service is delivered locally: Atlas Copco's Aftersales is present in 150 countries around the world.
- ▶ Our service plans perfectly meet the requirements of your business and ensure a constant productivity at peak level.
- ▶ Consultancy services and on-site measurements help optimizing the complete air net, minimizing leaks losses and maximizing energy savings.
- ▶ A sophisticated logistics concept brings spare parts to your doorstep in record time, across the globe. After all, only genuine Atlas Copco spare parts, produced on the same assembly lines as your compressor, can guarantee a long lifetime and uninterrupted operation.

# Technical data

## ZR/ZT55-90-FF compressor range

ZR/ZR-FF Water cooled oil-free compressors	Free air delivery <sup>(1)</sup>			Installed motor		Cooling water consumption <sup>(2)</sup>		Pressure dewpoint <sup>(4)</sup>	Sound pressure level <sup>(5)</sup>	
	Type	l/s	m <sup>3</sup> /min	cfm	kW	hp	ZR	ZR-FF	ZR-FF °F	dB(A)
							gpm	gpm		
<b>50 Hz units</b>										
ZR55 - 7.5	143	8.6	303	55	75	14	21	-11	65	
ZR55 - 8.6	131	7.9	278	55	75	14	21	-11	65	
ZR55 - 10	121	7.3	257	55	75	14	21	-13	65	
<b>60 Hz units</b>										
ZR55 - 7.25	155	9.3	329	55	75	16	22	-11	65	
ZR55 - 9	138	8.3	293	55	75	16	22	-13	65	
ZR55 - 10.4	128	7.7	271	55	75	16	22	-13	65	
<b>50 Hz units</b>										
ZR75 - 7.5	194	11.6	411	75	100	19	29	-15	65	
ZR75 - 8.6	184	11.0	390	75	100	19	29	-15	65	
ZR75 - 10	174	10.4	369	75	100	19	29	-17	65	
<b>60 Hz units</b>										
ZR75 - 7.25	213	12.8	452	75	100	21	30	-15	65	
ZR75 - 9	194	11.6	411	75	100	21	30	-17	65	
ZR75 - 10.4	185	11.1	392	75	100	21	30	-17	65	
<b>50 Hz units</b>										
ZR90 - 7.5	234	14.0	496	90	125	22	33	-17	65	
ZR90 - 8.6	220	13.2	466	90	125	22	33	-18	65	
ZR90 - 10	209	12.5	443	90	125	22	33	-18	65	
<b>60 Hz units</b>										
ZR90 - 7.25	262	15.7	555	90	125	25	37	-15	65	
ZR90 - 9	235	14.1	498	90	125	25	37	-18	65	
ZR90 - 10.4	224	13.4	475	90	125	25	37	-20	65	

ZT/ZT-FF Air cooled oil-free compressors	Free air delivery <sup>(1)</sup>			Installed motor		Installed fan motor		Pressure dewpoint <sup>(4)</sup>	Sound pressure level <sup>(5)</sup>	
	Type	l/s	m <sup>3</sup> /min	cfm	kW	hp	ZT	ZT-FF	ZT-FF °F	dB(A)
							hp	hp		
<b>50 Hz</b>										
ZT55 - 7.5	142	8.5	301	55	75	4	5	-18	72	
ZT55 - 8.6	130	7.8	276	55	75	4	5	-18	72	
ZT55 - 8.6 HAT <sup>(6)</sup>	120	7.2	254	55	75	4	-	-	72	
ZT55 - 10	120	7.2	254	55	75	4	5	-18	72	
<b>60 Hz</b>										
ZT55 - 7.25	154	9.2	326	55	75	4	7	-18	72	
ZT55 - 8.6 HAT <sup>(6)</sup>	127	7.6	269	55	75	4	-	-	72	
ZT55 - 9	137	8.2	290	55	75	4	7	-18	72	
ZT55 - 10.4	127	7.6	269	55	75	4	7	-20	72	
<b>50 Hz</b>										
ZT75 - 7.5	193	11.6	409	75	100	7	8	-22	72	
ZT75 - 8.6	184	11.0	390	75	100	7	8	-22	72	
ZT75 - 8.6 HAT <sup>(6)</sup>	174	10.4	369	75	100	7	-	-	72	
ZT75 - 10	174	10.4	369	75	100	7	8	-24	72	
<b>60 Hz units</b>										
ZT75 - 7.25	212	12.7	449	75	100	7	10	-22	72	
ZT75 - 8.6 HAT <sup>(6)</sup>	184	11.1	390	75	100	7	-	-	72	
ZT75 - 9	194	11.6	411	75	100	7	10	-24	72	
ZT75 - 10.4	184	11.0	390	75	100	7	10	-24	72	
<b>50 Hz units</b>										
ZT90 - 7.5	233	14.0	494	90	125	7	8	-24	72	
ZT90 - 8.6	220	13.2	466	90	125	7	8	-27	72	
ZT90 - 8.6 HAT <sup>(6)</sup>	208	12.5	441	90	125	7	-	-	72	
ZT90 - 10	208	12.5	441	90	125	7	8	-27	72	
<b>60 Hz units</b>										
ZT90 - 7.25	261	15.7	553	90	125	7	10	-27	72	
ZT90 - 8.6 HAT <sup>(6)</sup>	222	13.3	470	90	125	7	-	-	72	
ZT90 - 9	236	14.2	500	90	125	7	10	-27	72	
ZT90 - 10.4	222	13.3	471	90	125	7	10	-27	72	

# Technical data

## ZR/ZT90 VSD-FF compressors

ZR VSD / ZR VSD-FF Water cooled oil-free compressors	Free air delivery <sup>(1)</sup>			Installed motor		Cooling water consumption <sup>(2)</sup>		Pressure dewpoint <sup>(4)</sup>	Sound pressure level <sup>(5)</sup>	
	Type	l/s	m <sup>3</sup> /min	cfm	kW	hp	ZR	ZR-FF	ZR-FF °F	dB(A)
							gpm	gpm		
<b>ZR90 VSD-9 bar (e) 50/60 Hz</b>					90	120	24	36	-17	65
Max <sup>(3)</sup>	258	15.5	547							
Min	79	4.7	167							
<b>ZR90 VSD-10.4 bar (e) 50/60 Hz</b>					90	120	24	36	-20	65
Max <sup>(3)</sup>	232	13.9	492							
Min	99	5.9	210							

ZT VSD / ZT VSD-FF Air cooled oil-free compressors	Free air delivery <sup>(1)</sup>			Installed motor		Installed fan motor		Pressure dewpoint <sup>(4)</sup>	Sound pressure level <sup>(5)</sup>	
	Type	l/s	m <sup>3</sup> /min	cfm	kW	hp	ZT	ZT-FF	ZT-FF °C	dB(A)
							kW	kW		
<b>ZT90 VSD-9 bar (e) 50/60 Hz</b>					90	120	5	6	-22	72
Max <sup>(3)</sup>	256	15.4	543							
Min	78	4.7	165							
<b>ZT90 VSD-10.4 bar (e) 50/60 Hz</b>					90	120	5	6	-26	72
Max <sup>(3)</sup>	232	13.9	492							
Min	99	5.9	210							

(1) Reference Conditions:

- Dry air
- Absolute inlet pressure 14.5 psia
- Cooling and air intake temperature 68 °F
- Nominal working pressure
- Performance of the compressor package measured according to ISO 1217, Third Edition, Annex C

(2) Cooling water temperature rise of 59 °F

(3) Max. capacity is at reference pressure and not at max. pressure

(4) Pressure dewpoint is specified for

- 68 °F cooling air/water temperature
- relative humidity of 60 %
- nominal working pressure
- load level of minimum 50 %

(5) ± 3 dB(A) according to Pneuport PN 8 NTC 2.2 test code measured at a distance of 1 m

(6) Maximum intake / cooling air temperature is 122 °F for HAT versions

### Dimensions & weight



Compressor pack units	Weight (approx.)	Dimensions		
		L	W	H
Type	lbs.	in.	in.	in.
50/60 Hz				
ZR55	3480	83	54	75
ZT55	3480	83	54	85
ZR75	3650	83	54	75
ZT75	3650	83	54	85
ZR90	3790	83	54	75
ZT90	3790	83	54	85
ZR90 VSD	4280	100	54	78
ZT90 VSD	4280	100	54	85

Compressor Full Feature units	Weight (approx.)	Dimensions		
		L	W	H
Type	lbs.	in.	in.	in.
50/60 Hz				
ZR55 FF	4030	83	54	75
ZR75 FF	4200	83	54	75
ZR90 FF	4340	83	54	75
ZT55 FF	4800	102	54	85
ZT75 FF	4970	102	54	85
ZT90 FF	5110	102	54	85
ZR90 VSD FF	4830	100	54	78
ZT90 VSD FF	5600	126	54	85



The face of interaction

What sets Atlas Copco apart? Our belief that, to excel, we must provide the best possible know-how and technology in ways that our customers value. Whether we're fully supporting existing products or advancing technology through innovation, we constantly focus on customer needs.

The Atlas Copco way of doing business grows from ongoing interaction, long-term relationships, and a commitment to understanding each customer's process and objectives. As a result, every compressed air solution we create helps a customer operate with greater efficiency, economy, and productivity.

Satisfying customer needs effectively has made Atlas Copco the number one compressor manufacturer in the world. We will continue to attract new business through our unwavering conviction to creating products and ideas that help our customers succeed.

Member:



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 air system.

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



Atlas Copco Compressors Inc.  
161 Lower Westfield Road  
Holyoke, MA 01040  
Tel. 413-536-0600 Fax. 413-536-0091  
www.atlascopco.com