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

TOTAL INTEGRATION
MAXIMUM ENERGY SAVINGS

Atlas Copco

The 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.

Energy Circle

The right core technology

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

η-drive

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 %.

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. Two features that lead to significant energy savings.

Z - THE RIGHT CHOICE

Complete safety

The lowest energy cost

The highest reliability

100% oil-free air guaranteed

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.

Safe

Process and environment free from contamination

Simple

100 % oil-free air = no filters needed

Efficient

No filter pressure drop = less energy

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 Z-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.

Oil-free air, a matter of common sense

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 and long overhaul intervals.
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.

The experienced partner

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

Reliability Circle

The integrated design

Internal piping, integral air dryer, integrated Variable Speed Drive, 100 % matched components, consolidated controls… 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
safety



Pushing the limits in reliability

Proven Z-technology in one package

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

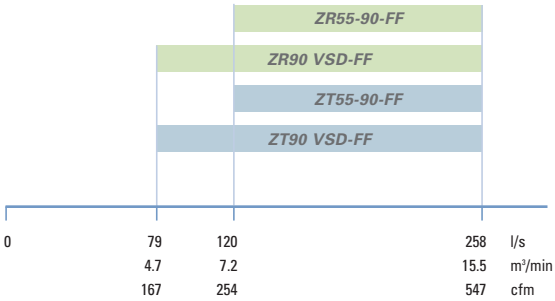
Within this range, the Total Energy Saving Concept takes solid form in the new ZR/ZT55-90 VSD-FF compressors. They combine two of the biggest energy savers within the Full Feature VSD compressor pack itself: the IMD dryer and the Variable Speed Drive.

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 watercooled versions
- Low cooling water consumption with watercooled variant
- Few consumables – low maintenance
- Proven reliability
- 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

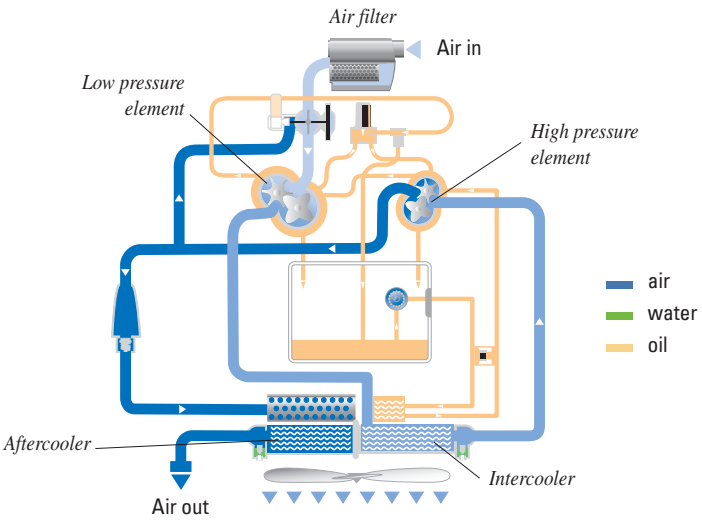
Capacity range (50 & 60 Hz)



ZT: Aircooled / ZR: Watercooled / VSD: Variable Speed Drive / FF: Full Feature
See data pages for range details

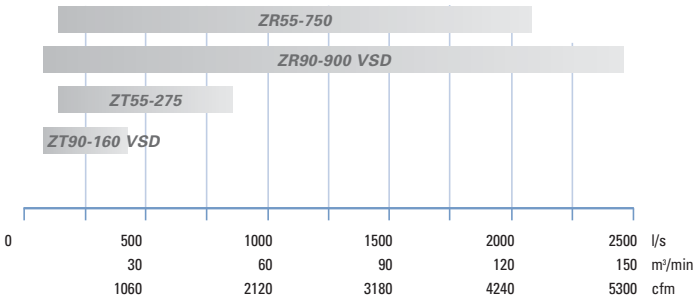
Aircooled ZT55-90 VSD with integrated VSD

Aircooled ZT: air/oil/coolant flow



Complete scope suiting all needs

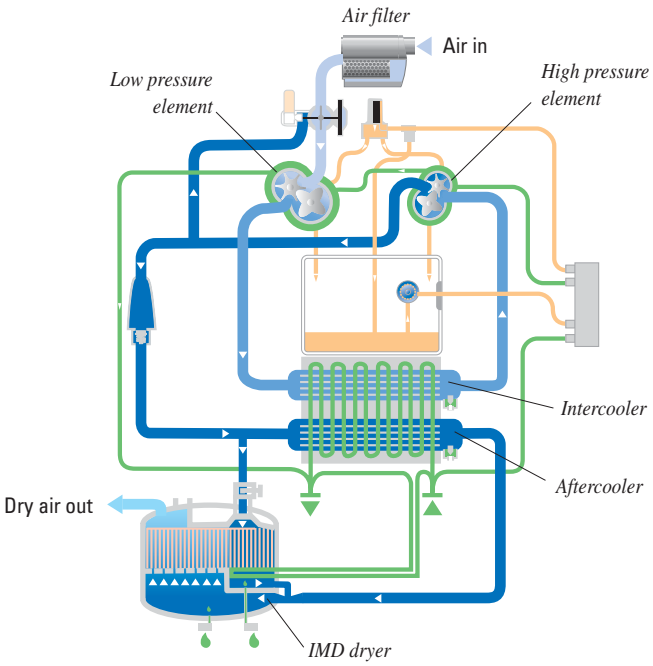
Complete ZR/ZT range



Watercooled ZR55-90 VSD-FF

Integrated VSD, Full Feature version with IMD dryer

Watercooled ZR-FF: air/oil/coolant flow



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 class 13, DIN class 5 gears
- ☑ Electric motor pre-mounted
- ☑ IP 55 motors
- ☑ 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 (as variant)
- ☐ Integrated VSD version (as variant)
- ☐ Energy recovery**
- ☐ Automatic water shut-off valve*
- ☐ Anti-condensation heater for motor
- ☐ Thermistor motor winding protection
- ☐ Wooden packaging
- ☐ IT network for VSD

* *For watercooled versions*

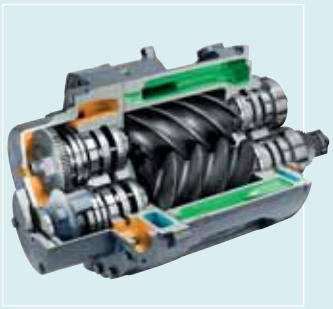
** *Only for watercooled versions with free-standing MD dryers*

Superior design in every detail

ZR Watercooled

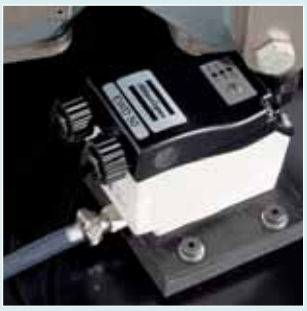
Proven Z-technology

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

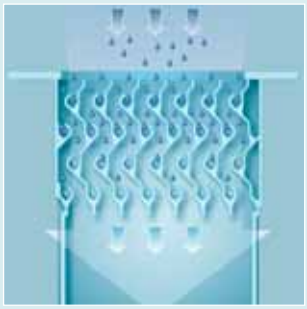


Effective electronic water drains

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



ZT Aircooled



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

Advanced Elektronikon® control and monitoring system

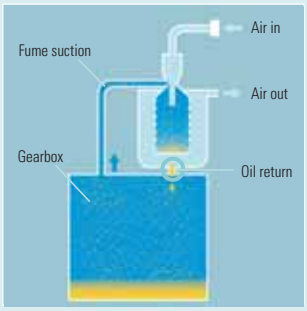
- overall system performance status with pro-active service indications, alarms for malfunctions and safety shutdowns
- multi-language selectable display
- all monitoring and control functions via one interface
- wide communication possibilities
- integration possible in many process control systems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

Superior element bearings

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

High precision gears according to AGMA Q13/DIN Class 5

- long lifetime
- low transmission losses
- low noise and vibration
- complete interchangeability



Gearbox breathing system

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

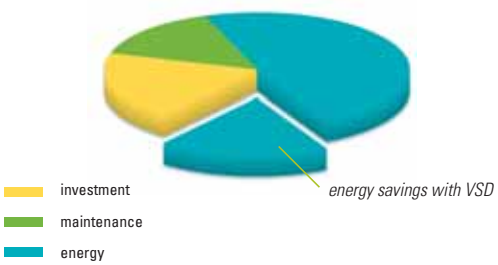
High efficiency cooling *(watercooled ZR compressor)*

- 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 many 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 have a significant impact on the operational costs of your compressed air system.



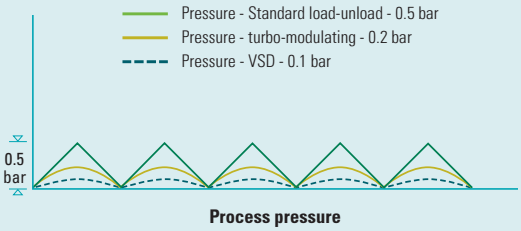
Predicting your savings

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 compressed air system.

Direct energy savings of up to 35 %

- Low load operation 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.

STABLE NET PRESSURE



Indirect savings

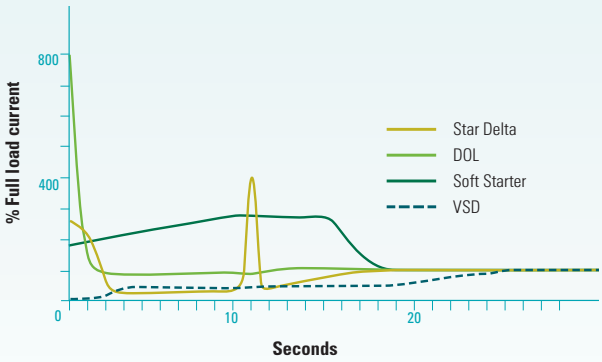
- The **lowered net pressure** obtained by the VSD compressor provides additional yearly savings:
  - other base-load compressors will consume up to 5 % less energy
  - leak losses - always present in compressed air systems - are significantly reduced: e.g. leakage at 6 bar(e) would be 13 % less than at 7 bar
  - many compressed air applications consume less air at a reduced pressure, similar to leak reduction

  In addition to the direct savings, the combination of above elements could add up to another 10 % energy savings on the complete compressed air installation.

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-stops no longer lead to current peak penalties
  - the electrical installation can often be rated for a lower current, meaning savings in investment.

NO CURRENT PEAKS



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 emissions or via the power supply line.

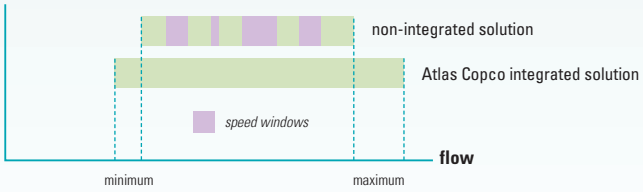
The Elektronikon® system controls both the compressor and the integrated converter; this ensures maximum machine safety and allows easy networking of the compressor.

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.

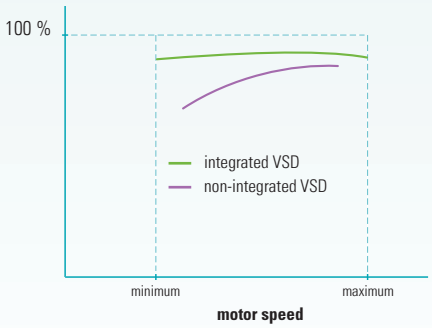
Special attention is given to the electric motor, which is specifically designed for VSD operation (inverter duty motors). Bearings are protected against induced bearing currents and both motor and converter are perfectly tuned to obtain the best efficiency over the entire speed range.

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

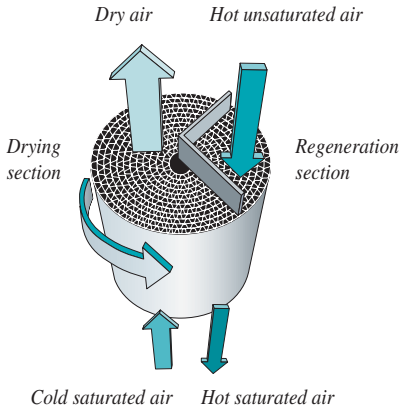


The Full Feature compressor – a compact, all-in-one quality air solution

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

- The IMD adsorption dryer eliminates the moisture before it enters the air net, ensuring a reliable process and an impeccable end product. No external energy is needed for the IMD to dry the air, 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 aircooled ZT FF
  -40 % for the watercooled ZR FF.
- The Full Feature compressor is a pre-wired and pre-piped solution, ready to use.

The IMD drying principle



Aircooled
ZT90 VSD-FF

Advanced condition monitoring

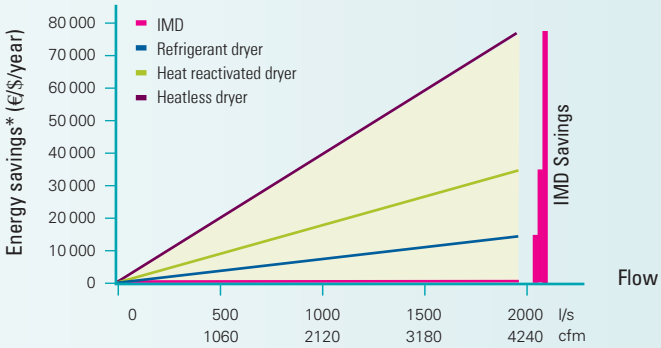
One integrated control and monitoring system for compressor and dryer

Watercooled
ZR90 VSD-FF

Energy savings with Full Feature

Direct Savings

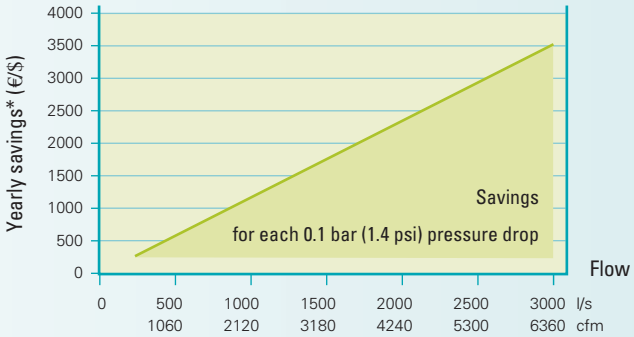
The IMD drying process requires no external energy; over time this results in large savings.



* Assumptions: 1kWh = 0.05 €/$ – 8000 h/year

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

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 50 °C.

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.

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. (4.6 m) container, ContainAIR 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.

True performance

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

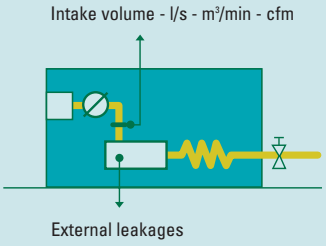
The point where the delivery pressure is measured

Power consumption

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

The drive mode with regard to transmission losses.

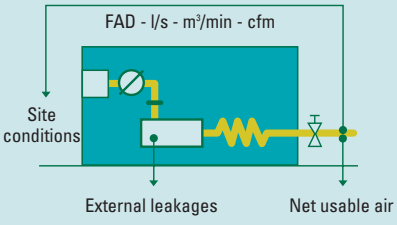
Intake volume
Inlet flow referred to compressor element inlet conditions. Seal leakages and inlet losses should not deprive you the air you paid for.



Atlas Copco Z-compressors are measured according to ISO 1217, Annex C, Edition 3, stipulating the FAD measurement at the outlet 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 sucks in. Differences can be substantial.

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



Global presence Local service

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 leak losses and maximizing energy savings.
- A sophisticated logistics concept brings genuine parts to your doorstep in record times, across the globe. After all, only genuine Atlas Copco 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 Watercooled oil-free compressors	Free air delivery [1]			Installed motor		Cooling water consumption [2]		Pressure dewpoint [4]	Sound pressure level [5]
						ZR	ZR-FF	ZR-FF	
Type	l/s	m³/min	cfm	kW	hp	l/s	l/s	°C	dB(A)
50 Hz units									
ZR55 - 7.5	143	8.6	303	55	75	0.9	1.3	-24	65
ZR55 - 8.6	131	7.9	278	55	75	0.9	1.3	-24	65
ZR55 - 10	121	7.3	257	55	75	0.9	1.3	-25	65
60 Hz units									
ZR55 - 7.25	155	9.3	329	55	75	1	1.4	-24	65
ZR55 - 9	138	8.3	293	55	75	1	1.4	-25	65
ZR55 - 10.4	128	7.7	271	55	75	1	1.4	-25	65
50 Hz units									
ZR75 - 7.5	194	11.6	411	75	100	1.2	1.8	-26	65
ZR75 - 8.6	184	11.0	390	75	100	1.2	1.8	-26	65
ZR75 - 10	174	10.4	369	75	100	1.2	1.8	-27	65
60 Hz units									
ZR75 - 7.25	213	12.8	452	75	100	1.3	1.9	-26	65
ZR75 - 9	194	11.6	411	75	100	1.3	1.9	-27	65
ZR75 - 10.4	185	11.1	392	75	100	1.3	1.9	-27	65
50 Hz units									
ZR90 - 7.5	234	14.0	496	90	120	1.4	2.1	-27	65
ZR90 - 8.6	220	13.2	466	90	120	1.4	2.1	-28	65
ZR90 - 10	209	12.5	443	90	120	1.4	2.1	-28	65
60 Hz units									
ZR90 - 7.25	262	15.7	555	90	120	1.6	2.3	-26	65
ZR90 - 9	235	14.1	498	90	120	1.6	2.3	-28	65
ZR90 - 10.4	224	13.4	475	90	120	1.6	2.3	-29	65

ZT/ZT-FF Aircooled oil-free compressors	Free air delivery [1]			Installed motor		Installed fan motor		Pressure dewpoint [4]	Sound pressure level [5]
						ZT	ZT-FF	ZT-FF	
Type	l/s	m³/min	cfm	kW	hp	kW	kW	°C	dB(A)
50 Hz									
ZT55 - 7.5	142	8.5	301	55	75	2	3.1	-28	72
ZT55 - 8.6	130	7.8	276	55	75	2	3.1	-28	72
ZT55 - 8.6 HAT [6]	120	7.2	254	55	75	2	-	-	72
ZT55 - 10	120	7.2	254	55	75	2	3.1	-28	72
60 Hz									
ZT55 - 7.25	154	9.2	326	55	75	2	3.6	-28	72
ZT55 - 8.6 HAT [6]	127	7.6	269	55	75	2	-	-	72
ZT55 - 9	137	8.2	290	55	75	2	3.6	-28	72
ZT55 - 10.4	127	7.6	269	55	75	2	3.6	-29	72
50 Hz									
ZT75 - 7.5	193	11.6	409	75	100	3.6	4.7	-30	72
ZT75 - 8.6	184	11.0	390	75	100	3.6	4.7	-30	72
ZT75 - 8.6 HAT [6]	174	10.4	369	75	100	3.6	-	-	72
ZT75 - 10	174	10.4	369	75	100	3.6	4.7	-31	72
60 Hz units									
ZT75 - 7.25	212	12.7	449	75	100	3.8	5.6	-30	72
ZT75 - 8.6 HAT [6]	184	11.1	390	75	100	3.8	-	-	72
ZT75 - 9	194	11.6	411	75	100	3.8	5.6	-31	72
ZT75 - 10.4	184	11.0	390	75	100	3.8	5.6	-31	72
50 Hz units									
ZT90 - 7.5	233	14.0	494	90	120	3.6	4.7	-31	72
ZT90 - 8.6	220	13.2	466	90	120	3.6	4.7	-32	72
ZT90 - 8.6 HAT [6]	208	12.5	441	90	120	3.6	-	-	72
ZT90 - 10	208	12.5	441	90	120	3.6	4.7	-32	72
60 Hz units									
ZT90 - 7.25	261	15.7	553	90	120	3.8	5.6	-32	72
ZT90 - 8.6 HAT [6]	222	13.3	470	90	120	3.8	-	-	72
ZT90 - 9	236	14.2	500	90	120	3.8	5.6	-32	72
ZT90 - 10.4	222	13.3	471	90	120	3.8	5.6	-33	72

Technical data

ZR/ZT90 VSD-FF compressors

ZR VSD / ZR VSD-FF Watercooled oil-free compressors	Free air delivery (1)			Installed motor		Cooling water consumption (2)		Pressure dewpoint (4)	Sound pressure level (5)
						ZR	ZR-FF	ZR-FF	
Type	l/s	m³/min	cfm	kW	hp	l/s	l/s	°C	dB(A)
ZR90 VSD-9 bar (e) 50/60 Hz				90	120	1.5	2.3	-27	65
Max (3)	258	15.5	547						
Min	79	4.7	167						
ZR90 VSD-10.4 bar (e) 50/60 Hz				90	120	1.5	2.3	-29	65
Max (3)	232	13.9	492						
Min	99	5.9	210						

ZT VSD / ZT VSD-FF Aircooled oil-free compressors	Free air delivery (1)			Installed motor		Installed fan motor		Pressure dewpoint (4)	Sound pressure level (5)
						ZT	ZT-FF	ZT-FF	
Type	l/s	m³/min	cfm	kW	hp	kW	kW	°C	dB(A)
ZT90 VSD-9 bar (e) 50/60 Hz				90	120	3.8	4.7	-30	72
Max (3)	256	15.4	543						
Min	78	4.7	165						
ZT90 VSD-10. 4 bar (e) 50/60 Hz				90	120	3.8	4.7	-32	72
Max (3)	232	13.9	492						
Min	99	5.9	210						

(1) Reference Conditions:
- Dry air
- Absolute inlet pressure 1 bar (a)
- Cooling and air intake temperature 20 °C
- Nominal working pressure
- Performance of the compressor package measured according to ISO 1217, Third Edition, Annex C

(2) Cooling water temperature rise of 15 °C

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

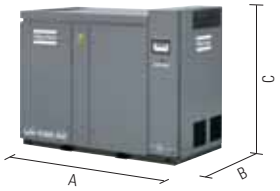
(4) Pressure dewpoint is specified for
- 20 °C cooling air/water temperature
- relative humidity of 60 %
- nominal working pressure
- load level of minimum 50 %

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

(6) Maximum intake / cooling air temperature is 50 °C for HAT versions

Conversions
- 1 kg = 2.2 lbs
- 1 mm = 0.039 inch
- °F = °C x 9/5 + 32

Dimensions & weight



Compressor pack units	Weight (approx.)	Dimensions		
		A	B	C
Type 50/60 Hz	kg	mm	mm	mm
ZR55	1580	2100	1376	1900
ZR75	1655	2100	1376	1900
ZR90	1720	2100	1376	1900
ZT55	1580	2100	1376	2150
ZT75	1655	2100	1376	2150
ZT90	1720	2100	1376	2150
ZR90 VSD	1940	2550	1376	1980
ZT90 VSD	1940	2550	1376	2150

Compressor Full Feature units	Weight (approx.)	Dimensions		
		A	B	C
Type 50/60 Hz	kg	mm	mm	mm
ZR55 FF	1830	2100	1376	1900
ZR75 FF	1905	2100	1376	1900
ZR90 FF	1970	2100	1376	1900
ZT55 FF	2180	2800	1376	2150
ZT75 FF	2255	2800	1376	2150
ZT90 FF	2320	2800	1376	2150
ZR90 VSD FF	2190	2550	1376	1980
ZT90 VSD FF	2540	3190	1376	2150

The face of innovation

What sets Atlas Copco apart as a company is our conviction that we can only excel in what we do, if we provide the best possible know-how and technology to really help our customers produce, grow and succeed.

There is a unique way of achieving that - we simply call it the Atlas Copco way. It builds on **interaction**, on long-term relationships and involvement in the customers' process, needs and objectives. It means having the flexibility to adapt to the diverse demands of the people we cater for.

It's the **commitment** to our customers' business that drives our effort towards increasing their productivity through better solutions. It starts with fully supporting existing products and continuously doing things better, but it goes much further, creating advances in technology through **innovation**. Not for the sake of technology, but for the sake of our customer's bottom line and peace-of-mind.

That is how Atlas Copco will strive to remain the first choice, to succeed in attracting new business and to maintain our position as the industry leader.

ISO 9001
A consistent quality earned us the industry's leadership and the customer's trust.

ISO 14001
Atlas Copco's Environmental Management System forms an integral part of each business process.

Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.

Atlas Copco

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