

Atlas Copco

Oil-injected Rotary Screw Compressors

GA 90+-160+ / GA 110-160 VSD (90-160 kW / 125-200 hp)



Sustainable Productivity

Atlas Copco

Powerful efficiency to drive down energy costs

GA 90⁺-160⁺ / GA 110-160 VSD compressors provide high-quality compressed air in the harshest environmental conditions. Incorporating the latest generation of Atlas Copco's oil-injected screw element, they provide a long and trouble-free life at the lowest possible operating cost. Variable Speed Drive and energy recovery lead to significant reductions in energy use and cost. GA 90⁺-160⁺ / GA 110-160 VSD compressors are designed, manufactured and tested in accordance with ISO 9001, ISO 14001 and ISO 1217.

Cement industry

Reliability in a dusty environment



Whether compressed air is needed for bag filter houses or plant air for cement silos, absolute reliability in such dusty circumstances is a must. Thanks to their air and oil filtration process for heavy-duty environments, GA 90⁺-160⁺ / GA 110-160 VSD air compressors are designed to keep cement production lines up and running day in, day out.

Mining industry

Effective and highly performant



Compressed air is vital for the mining industry, especially underground where the risk of explosion prevents the use of other types of energy. Applications include dust bag filtration, tool cleaning, service air, ventilation air, and pneumatic tools such as rock drilling hammers and chisels. The effective, highly performant GA air compressors successfully accomplish these tasks even in the harshest conditions.

Process industry

A continuous flow of air



A dependable stream of compressed air is vital to keep production processes up and running at all times. Typical applications include actuation air or cooling air for manufacturing processes. Atlas Copco's GA compressors operate dependably in extreme humidity conditions where high performance levels and reliability are essential. Uptime is maximized, as is the profitability of processes.

General industry

Efficient



Around 75% of industrial companies use compressed air in their daily operations. This could be for general manufacturing, machinery operation, plant maintenance, cleaning, pneumatic tools and controls, sand- or shot-blasting. Atlas Copco's GA air compressors are designed for ultimate efficiency within all your industrial applications.



▶ Maximum energy efficiency

The innovative design of GA compressors (including screw element, motor, VSD-controlled cooling fans, etc.) reduces your energy and overall compressor lifecycle costs substantially. Variable Speed Drive (VSD) technology reduces energy costs by adjusting the air supply to your air demand. And by installing the optional energy recovery system, you can reduce your costs even further.

▶ Highest reliability

Atlas Copco's GA compressors ensure long and trouble-free lifetime at the lowest operating cost. At their heart are state-of-the-art compression elements based on innovative asymmetric rotor profiles and powered by a high efficiency electric motor. Combined with a built-to-last drive system and heavy duty air inlet filters, this results in maximum reliability to operate in the toughest conditions and at ambient temperatures up to 55°C/131°F.

▶ Keeping your production up and running

GA 90⁺-160⁺ / GA 110-160 VSD compressors are designed, manufactured and tested to comply with the ISO 9001, ISO 14001 and ISO 1217, guaranteeing maximum uptime. In addition, easily accessible major components, minimal service interventions and long overhaul intervals reduce maintenance time and costs. Integrated Elektronikon[®], ES monitoring and advanced control systems are available to optimize the entire compressed air system.

▶ Easy installation

GA compressors are delivered as pre-assembled packages. Installation is fault-free, commissioning time is low and no external instrumentation air is required. Simply put the machine on a flat floor, connect the power line and the compressed air outlet, and push the start button. In other words, just plug and run.

▶ Protecting your production

The Full Feature concept includes compressed air and air treatment equipment compactly integrated inside the compressor canopy. This limits the installation costs and space requirements. The aftercooler with integrated water separator immediately removes 100% of the condensate, resulting in higher air quality.

Superior efficiency in an integrated package

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1 State-of-the-art screw element

- Patented asymmetric rotor profile and meticulous bearings selection.
- Low wear and tear leads to increase reliability.
- Optimum combination of maximum free air delivery and low energy consumption.

2 High-efficiency motor

- TEFC IP55 motor (Class F insulation B rise) protects against dust and chemicals.
- Continuous operation under severe ambient temperature conditions up to 55°C/131°F (standard up to 46°C/115°F).



3 Heavy-duty air inlet filter

- 2-stage dust removal system (99.9% for 3 micron).
- Reduces the dust load in the fine filter, doubling the filter element lifetime without reducing filter efficiency.
- Increases compressor components lifetime by protecting from wear, even in the dustiest environments.



4 Reliable loading/unloading valve

- Assures continuous optimized pressure in the system.
- Designed for lower pressure drops.
- Simple, maintenance-free structure with few moving parts.

7 8



5 Full Feature package

- Total compressed air system and air treatment equipment integrated inside the compressor canopy.
- Low space requirements and limited installation costs.

6 High-efficient air/oil separation system

- 3-stage separation system provides low residual oil content in the compressed air (less than 3 ppm).
- Low oil consumption ensures low maintenance costs and longer uptime.
- Reduction of pressure drops and energy costs.

7 Aftercooler with integrated water separator

- Immediately removes 100% of the condensate, delivering a higher quality of air than conventional external separators.
- Large-sized water outlet avoids risk of clogging and ensures worry-free operation.



8 Elektronikon®-controlled drains

- Increased energy efficiency (no loss of compressed air).
- No risk of condensate or water suspended in the compressed air.



9 VSD-driven radial cooling fans

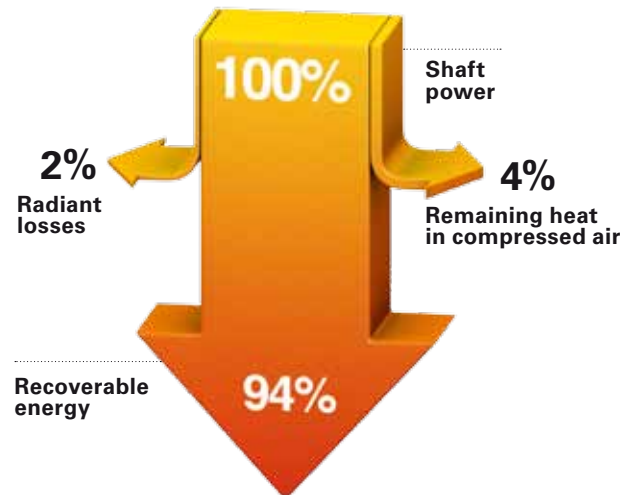
- Precise fan speed regulation optimizes cooling flow and reduces energy consumption in any conditions.
- Full electromagnetic compatibility (certified to the European Union's EMC, directive 89/336/EEC).
- Increased reliability thanks to the accurate oil temperature control up to 55°C/131°F (standard up to 46°C/115°F).
- Reduced noise level (up to 71 dB(A)).

Maximize your savings with energy recovery

The Kyoto directives and the continuing depletion of traditional energy sources mean that businesses throughout the world are making commitments to significantly reduce overall energy consumption. Through innovative products and solutions, Atlas Copco helps you achieve your goals in this area. When it comes to compressed air production – where energy costs can constitute 80% of total lifecycle costs – saving energy can also lead to substantial cost savings.

What energy?

Air compression creates heat that is normally wasted in the coolers. Atlas Copco-designed energy recovery systems enable the recovery of most of this heat. Recovery of energy from the shaft input of the compressor can be up to 94% of the compressor shaft power.

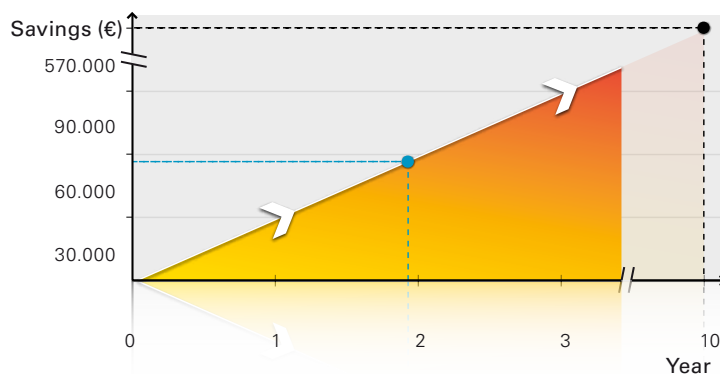


How is the energy recovered?

Energy recovery systems are integrated modules that recover heat which is otherwise wasted. The heat in the form of hot water (85-90°C) is directly usable as a source of energy. The main module of the recovery system is built into the compressor.

Significant savings possible

The illustration indicates the savings possible with this energy recovery solution for a 160 kW compressor running 8,000 hours per year at full load and with full energy recovery. It is based on a fuel cost of €0.55 per liter. Energy is saved wherever the recovered energy is used as an auxiliary source, when it reduces your operating costs. The investment needed to link the hot oil circuit from the compressor to the existing water circuit is relatively modest and the time needed before seeing payback from your investment is generally very short.



- Investment in equipment (compressor with energy recovery) is paid back in less than 2 years
- Net gain of €570,000 in 10 years*

* Calculation only includes energy costs, as maintenance will remain approximately the same as for a standard compressor.

Applications for recovered energy

The recovered energy can be used for a number of uses in various industries. Applications can be either intermittent or continuous.

Intermittent, seasonal applications

These applications generally require a low demand for energy. Examples include hot water for space heating, showers and other similar applications.



Continuous demand applications

These are more typically process applications where there is a continuous demand for energy use, and can be divided into hot water or steam applications:

Hot process water

Hot water between 70° and 90°C (160° and 175°F) is required by a number of key industrial processes such as washing/cleaning, sanitizing, freeze protection, cooking in kitchens and canteens, desalination and process heating. The Atlas Copco energy recovery system is capable of continuously delivering hot water at 90°C (175°F) for such processes. A further advantage is that a boiler may no longer be required for such applications, which reduces investment and saves boiler fuel.



Process steam

Steam is often preferred to hot water due to its high heat carrying capacity. Steam is used to heat raw materials and treat semi-finished products. It is used in sterilization, bleaching and humidification processes, to drive turbines, and as a source of water for many industrial operations and chemical reactions. For such applications, the hot water delivered via the Atlas Copco energy recovery system is passed through a boiler as preheated feed water to generate steam. This results in substantial savings in boiler fuel.



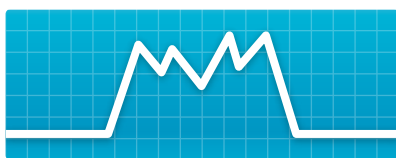
VSD: driving down your energy costs

Over 70% 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 already for several decades. 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.

What is VSD technology?

In almost every production environment, air demand fluctuates depending on different factors (time of the day, week or even month). Extensive measurements and studies of compressed air demand profiles show that many compressors have substantial variations in air demand. Only 8% of all installations have a more stable air demand. Tests prove that, even in this case, VSD compressors save energy.

Profile 1



64% of all installations

Factory working 24 hrs/day: low demand at night & high demand during the day

Profile 2



28% of all installations

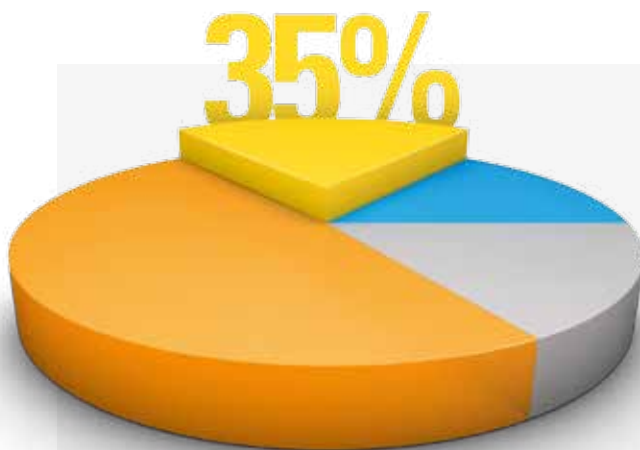
Factory working 2 shifts/day, no weekend work: erratically varying air demand

Profile 3



8% of all installations

Factory working 2 shifts/day, no weekend work: typical 'fixed' speed application



Energy savings of 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.

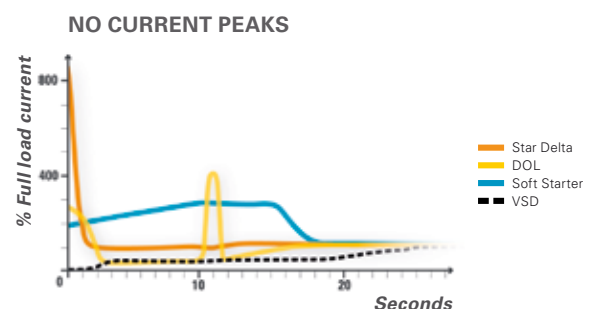
Total compressor Life Cycle Cost

- Energy
- Investment
- **Energy savings with VSD**
- Maintenance

Additional VSD benefits

VSD leads to other benefits in addition to energy savings. VSD compressors can be started and stopped without limitations. The constant net pressure provides stability for all processes that use compressed air. Furthermore, current peaks during start-up are eliminated:

- Frequent start-ups no longer lead to current peak penalties.
- The electrical installation can often be rated for a lower current.



Highly performant VSD technology

The GA VSD reduces energy costs by:

- Eliminating the inefficient transition period from full to no load power.
- Avoiding excessive off-load power consumption.
- Maintaining the net pressure band within 0.10 bar, 1.5 psi.
- Reducing overall average working pressure.
- Minimizing system leakage due to a lower system pressure.
- Increasing flexibility with soft starting gradual motor ramp-up to avoid electricity surges.
- Offering flexible pressure selection from 4 to 13 bar with electronic gearing to ensure lowered electricity costs.

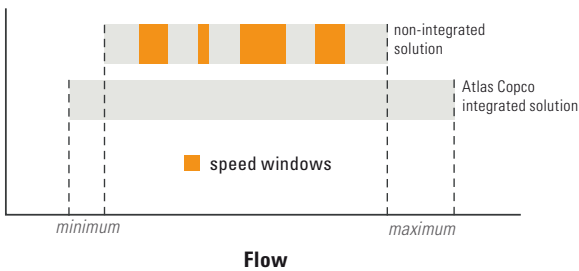
Integrated VSD – the smart choice

- 1 The Elektronikon® system controls both the compressor and the integrated converter; thus ensuring maximum machine safety as well as easy networking of the compressor.
- 2 All Atlas Copco VSD compressors are EMC tested and certified. External sources do not influence the compressor operation, nor does the compressor affect the operation of other instruments via emissions or via the power supply line.
- 3 Mechanical enhancements ensure that all the components operate below critical vibration levels within the complete compressor speed range.
- 4 The frequency converter, low consumption, cooling fan ensures stable operation even in high ambient temperatures up to 50°C /122°F*.

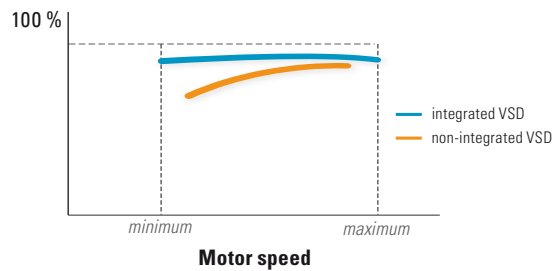
* Standard up to 46°C/114.8°F, optional high ambient version up to 50°C/122°F.



OPERATING RANGE



COMBINED MOTOR/CONVERTER EFFICIENCY



• The machine is tested for the complete speed range to eliminate any 'speed windows' that could jeopardize the energy savings and the stable net pressure. (Turndown capability of the compressor is maximized to 80-85%.)

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

Find out how much you can save

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

Step ahead in control and monitoring

The advantages of controlling and monitoring your compressed air system are considerable. They include lower energy costs, reduced maintenance time and costs, and reduced stress on the entire air system. The GA 90+ -160+ / GA 110-160 VSD range is fully equipped with the Elektronikon®, ES and AirConnect™ systems.

The Elektronikon® controller can be adapted to your specific needs. By controlling the main drive motor and regulating system pressure within a predefined, narrow pressure band, energy efficiency is significantly optimized. Remotely starting, stopping, loading and unloading the compressor also could not be easier: simply push a button. The controller offers simple, central monitoring and can manage up to 4 compressors simultaneously. For optimal ease of use, its display can be set to 27 different languages.



Elektronikon® controller

- User-friendly: intuitive navigation system.
- Continuous and accurate monitoring of the compressor's operating parameters.
- Reliable, durable keyboard.

Key features

- Display can be set in 27 languages.
- Automatic restart after voltage failure.
- Remote start, stop, load, unload.
- Dual pressure set point.
- Delayed Second Stop function.
- Saver Cycle Control minimizes energy consumption.

Dual pressure set point

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



ES – Multi-control, multi-benefits

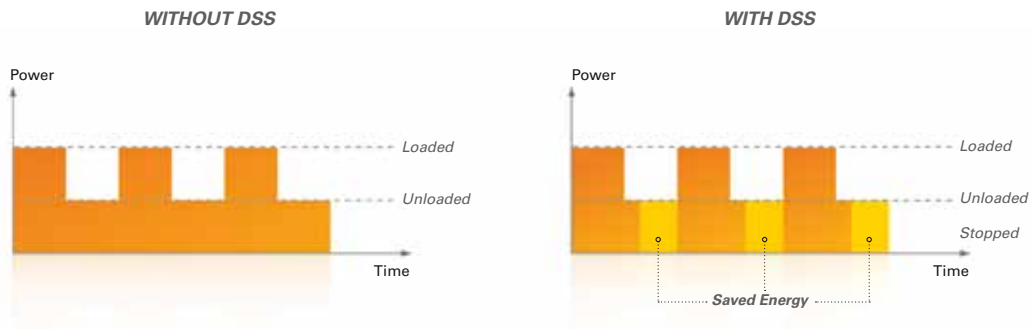


The ES 130 multiple compressor controller optimizes the operation of up to 30 machines. The result is a substantial reduction in system pressure and energy consumption, in addition to minimal compressed air leakage and a more stable pressure across the network. On top of that ES 130 has the following major energy saving features:

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

Delayed Second Stop

Atlas Copco's sophisticated Delayed Second Stop (DSS) function runs the drive motor of the GA compressor only when needed. The Elektronikon® therefore minimizes drive motor run time while maintaining the desired system pressure. This keeps energy consumption reduced to a minimum.



AIRConnect™ – The ultimate in remote monitoring

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



Integrated quality air to protect your production

Untreated compressed air contains moisture and possibly dirt particles that can damage your air system and contaminate your end product. The resulting maintenance costs far exceed air treatment costs. Our compressors provide clean, dry air that improves your system's reliability, avoiding costly downtime and safeguarding the quality of your products.

All-in-one quality air production

Compressed air coming into contact with your final products should not affect their quality. The GA 90*-160*/GA 110-160 VSD FF provide clean, dry air that will protect the product reputation on the market. Atlas Copco's quality air solutions stand for substantial energy savings all day, every day. Clean, treated air reduces the risk of corrosion and leaks in your compressed air system reducing further down your energy bill. The GA FF is a ready-to-use and compact package. All the wires and pipes are assembled in the factory, so there is no need for additional installation work.



Integrated purity

The filters and integrated refrigerant-type air dryer efficiently remove moisture, aerosols and dirt particles to protect your investment. This quality air expands the lifetime of the equipment, increasing efficiency and ensuring quality in your final product.

Features of the extreme duty integrated refrigerant dryer:

- The unique and patented Saver Cycle Control stops the dryer when the compressor is stopped or in unload mode, drastically reducing the power consumption. The dew point is continuously monitored and the dryer is started again when the dew point starts to increase.
- By adjusting the speed of the refrigerant compressor, the integrated VSD dryer control* provides maximum energy saving in low load conditions.
- The dryers can perform at ambient conditions of up to 46°C/115°F. High ambient temperature version available for temperatures up to 50°C as an option.
- Compressor and dryer are designed to work optimally together to perform smoothly under the most critical conditions.

* GA VSD Full Feature only

Configure your GA VSD for the air quality you need		ISO Quality Class	Dirt Particle Size	Water Pressure Dew Point	Oil Concentration
	GA	3.-4	3 microns	-	3 ppm
	GA FF with ID	3.4.4	3 microns	+3°C, 37°F	3 ppm
	GA FF with ID & general purpose coalescing filter	2.4.2	1 micron	+3°C, 37°F	0.1 ppm

The table values reflect the maximum limits according to the temperatures ISO gravity class. Water pressure dew point based on 100% RH at 20°C/68°F.

Optimize your system

Scope of supply

Air circuit

- Heavy-duty air inlet filters and flexibles
- Air intake valve (not on VSD units)
- Full load/no load regulation system (not for VSD)

Oil circuit

- Heavy-duty oil filters
- Complete oil circuit
- Air/oil separator

Cooling circuit

- Compressed air aftercooler and oil cooler
- Stainless steel tube and Shell coolers for water-cooled versions
- VSD cooling fans for air-cooled versions
- Integrated water separator
- Electronic water drains with no loss of compressed air
- Complete air, oil, water circuit

Electrical components

- TEFC IP55 Class F electric motor
- Starters (Star-Delta)
- Pre-mounted electrical VSD cubicles (only for VSD units)
- Elektronikon® control system

Framework

- Flexible vibration dampers
- Silenced canopy
- Structural skid with no need for foundations
- Suppression of emissions/harmonic distortions

Mechanical approval

- ASME approval
- CE approval
- Other country specific approvals

Additional features & options

Options	GA 90*-160*	GA 110-160	GA 110-160 VSD
Full Feature: integrated ID refrigerant dryer	■	■	■
Integrated DD pre-filter (only with integrated dryer)	■	■	■
Integrated energy recovery system	■	■	■
Separate air intake	■	■	■
Modulation control	■	■	-
High ambient version (up to 55°C/131°F*)	■	■	■
Phase sequence reply	■	■	Standard**
PT1000 Thermal protection in the main motor windings and bearings	■	■	Standard**
Oversized main motor	■	-	-
Anti-condensation heater in the main motor	■	■	-
VSD cabinet heavy duty filtration (applicable for VSDs)	-	-	■
Nema 4 cubicle	■	■	-
Roto-Xtend Duty fluid 8000h	■	■	■
NPT connections	■	■	■
Anchor pads	■	■	■
Performance test certificate	■	■	■
Witnessed performance test	■	■	■
Material certificates	■	■	■
Sea worthy packaging	■	■	■
Rain protection kit	■	■	-
IT/NT network system	■	■	■
SPM vibration monitoring system	■	■	■
GSM alarm messaging system	■	■	■
Automatic water shut of valve for water cooler units	■	■	■
Thermostatic water regulating valve	-	-	■

* GA Full Feature 50°C/122°F; GA VSD 50°C/122°F; GA fix speed Pack 55°C/131°F
 ** Functionalities integrated in the frequency converter protections

■ Optional - Not available



Compressor type	Dimensions																	
	Air-cooled Pack						Air-cooled Full Feature						Water-cooled Pack & Full Feature					
	L		W		H		L		W		H		L		W		H	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
GA 90*-160*	2600	102	2000	79	2000	79	3200	126	2000	79	2000	79	2600	102	1630	64	2000	79
GA 110-160	2600	102	2000	79	2000	79	3200	126	2000	79	2000	79	2600	102	1632	64	2000	79
GA 110-160 VSD	3200	132	2000	79	2000	79	3800	150	2002	79	2347	92	3200	156	1630	64	2347	92



Driven by innovation

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



Building on interaction

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



A committed business partner

With a presence in over 170 countries, we will deliver high-quality customer service anywhere, anytime. Our highly skilled technicians are available 24/7 and are supported by an efficient logistics organization, ensuring fast delivery of genuine spare parts when you need them. We are committed to providing the best possible know-how and technology to help your company produce, grow, and succeed. With Atlas Copco you can rest assured that your superior productivity is our first concern!

