

Atlas Copco



# Oil-injected rotary screw compressors

GA 90<sup>+</sup> - 160 (VSD<sup>+</sup>)



## ***Highest reliability, lowest operating costs***

The shortest route to maximize your profitability is to minimize your operational costs. With up to 80% of a compressor lifecycle cost coming from the energy it consumes, this should be a clear focus. Atlas Copco's GA compressors with SmartInjection enabled compression elements and IE4 or better class motors are designed to achieve significant energy savings while providing long and trouble-free life even in the harshest environmental conditions.

## Efficiency

At the heart of the GA compressors are state-of-the-art compression elements with SmartInjection technology and high efficiency oil cooled IE4 or better class motors. This highly efficient drive train coupled with generous cooling capacity, low internal pressure drops and precise control from the Elektronikon<sup>®</sup> Touch ensures optimum efficiency.

## Reliability

The GA compressor's drive train is IP66 rated protecting it completely from environmental dust and moisture ensuring it can operate reliably in the toughest conditions and at ambient temperatures up to 55°C/131°F.

## Serviceability

Service time is reduced to a minimum with all service parts grouped together for ease of access and, if greater access is required, the patented portal design enables full access to all components. Each component has also been designed for serviceability, halving the time required to service compared to traditional designs.





# Air quality

Atlas Copco is unique in being able to provide a complete range of in house designed products perfectly matched to provide clean dry air, optimum performance and Low Life Cycle costs.



## Clean air reduces operating costs.

It's important to have high quality air, because contaminated air creates extra costs. It is better to avoid system contamination rather than deal with the consequences such as product spoilage, maintenance costs, replacing pipe work or leakages. Atlas Copco offers a range of quality air solutions.

## Integrated air quality

The GA 90-160 VSD+ is designed to deliver quality air.

- Multiple smaller cartridges simplify and reduce service times and minimize oil carry over.
- The GA full feature comes with an integrated dryer for greater air quality.
- Guaranteed dewpoint of 3°C/37°F
- Continuously monitored dew point.
- New oil separator vessel with filter cartridges.



## Air dryers

Our range of air dryers protect your systems and processes in a reliable, energy-efficient and cost-effective way.

### Protecting your systems and processes

Treated air helps prevent pipework corrosion, product spoilage and premature failure of pneumatic equipment.

### Maintaining the quality of your end product

A complete range of products with dew points from +3 to -70 °C to ensure the correct air quality for your application.

### Energy-efficient air dryers

All our air dryers are designed to perform in the most energy-efficient and environmentally friendly way.

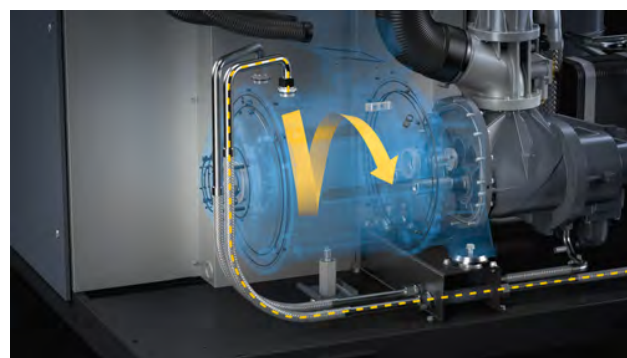


# GA air-cooled fixed speed pack



## Always operates reliably

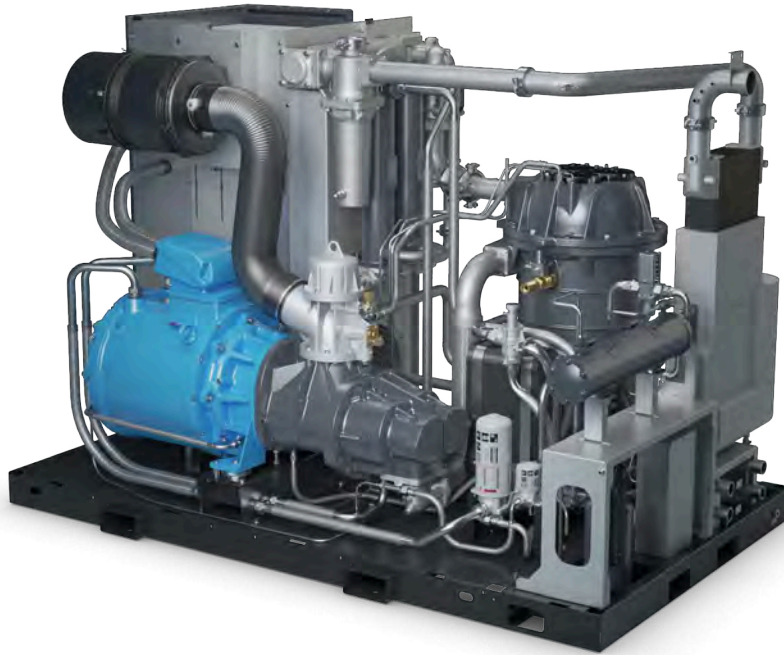
Separate oil flow to bearings for longer life and greater uptime.



## Highly reliable motor

The motor is designed for increased reliability even in tough environments. IP66 rated drive train is completely sealed against dust and moisture.

# GA water-cooled fixed speed FF



## Reduced service time for greater reliability

Minimizes disruption of the machine during service for better reliability.



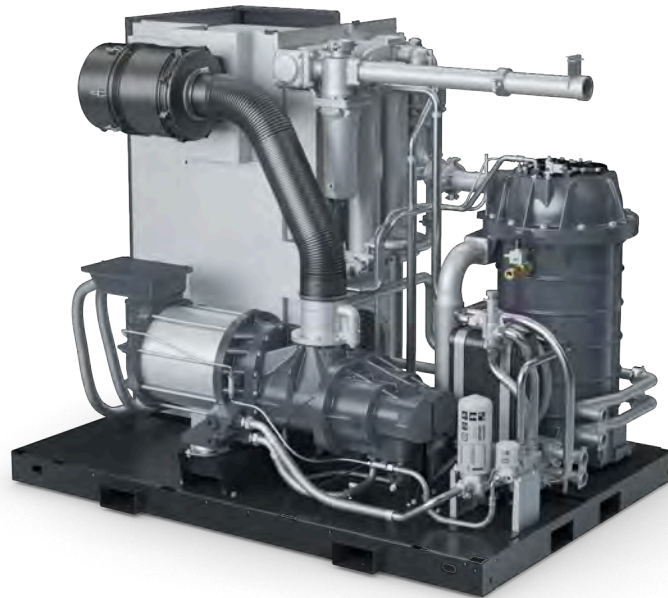
## Ready-to-use compact package

The GA Full Feature comes with an integrated dryer. Guaranteed dew point of 3°C/37°F (20°C ambient conditions).

No additional installation work of wires and pipes. Continuously monitored dew point.



# GA water-cooled VSD pack



## Ease of maintenance

Minimal service times with service parts grouped together for ease of access.

Minimizes disruption of the machine during service for better reliability.



## Up to 78% of energy recovered as hot water

- Optional integrated energy recovery system.
- Up to 78% energy recovered from integrated motor and element oil circuit.



# GA air-cooled VSD FF



## Operate at temperatures up to 46°C (115°F) as standard

VSD or Dual speed fans deliver energy efficiency in lower temperatures.

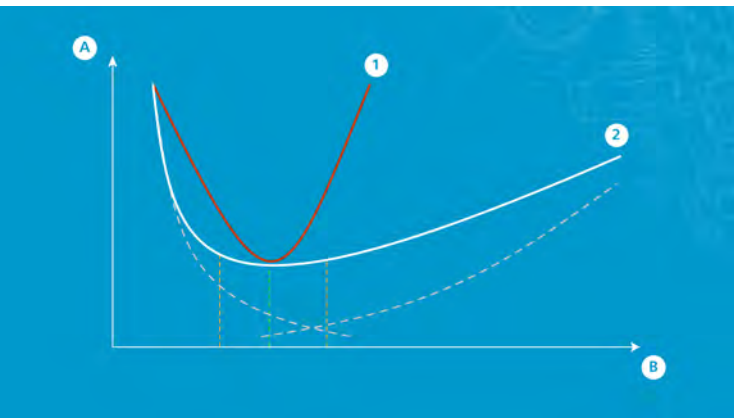


## High efficiency IE5 Permanent Magnet motor

The motor is designed for increased reliability even in tough environments. This IP66 rated motor is dust tight and protected against large amounts of water.

# Efficiency

Designed for optimal efficiency.



## Variable Speed Drive (VSD)

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.

### Legend

**A** = Losses

**B** = Speed

**1** = Total losses traditional element

**2** = Total losses AC element

## VSD savings

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.

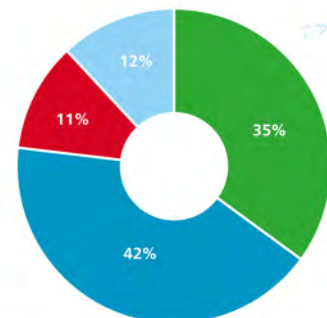
### Legend

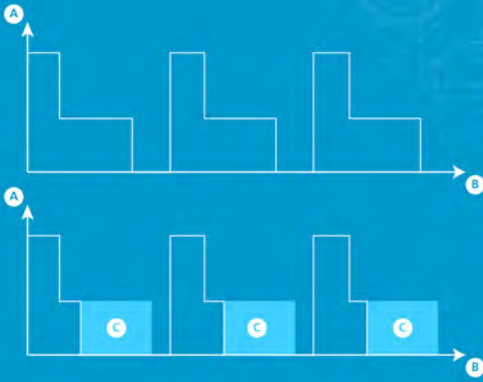
**42%** = Energy

**35%** = Energy savings with VSD

**12%** = Investment

**11%** = Maintenance





## 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<sup>®</sup> 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.

### Legend

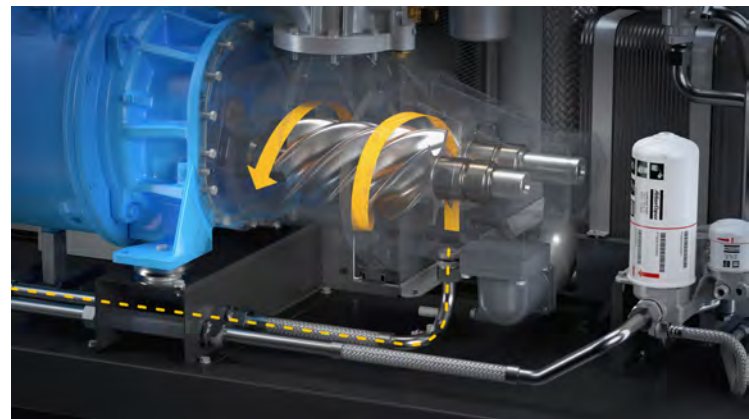
**A** = Power consumption

**B** = Time

**C** = Energy Saving

## Components designed for efficiency

- SmartInjection provides exact amount of oil required to element ensuring it always works at peak efficiency.
- High efficiency IE4 (Fixed Speed) and IE5 (VSD+) motor.
- Integrated energy recovery system recovers up to 78% of energy from integrated motor and element oil circuit.
- Dual speed or VSD fan for energy efficiency in lower temperatures.





## Elektronikon Mk5 touch

The Elektronikon<sup>®</sup> 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.

## 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.







## Optimizer 4.0

### 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.

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.

# Service

Properly caring for your air compressor helps you lower your 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 expert professionals and ensure your business continues to run efficiently. Our plans cover repairs, preventative maintenance, spare parts, and more.

## Designed for serviceability

### Ease of maintenance

- Service parts grouped together for ease of access.
- Reduced service time for greater uptime.
- Portable design enables full access to all components.
- All components designed for serviceability.
- Oil cooled motors require no service interventions.



## Compressor oils, lubricants and fluids

Every type of compressor and vacuum pump needs a specific oil to achieve maximum uptime, performance and lifetime. Our compressed air fluids and lubricants cover all your needs.

### Unique mix of additives

Tailored to the specific needs of your equipment.

### Anti-oxidation

The high-quality oil ensures maximum protection.

### Prevent foaming

Anti-foaming improves your air quality.

## Maximize your resources with a Service Plan

Reduce your total cost of ownership and benefit from optimal performance

### Save costs

Optimal maintenance will reduce the operational cost of your compressed air and vacuum system.

### Increase operational efficiency

Our maintenance expertise makes life easier when it comes to resource management.

### High uptime and performance

Specialist service keeps your equipment running as it should, protecting your investment.



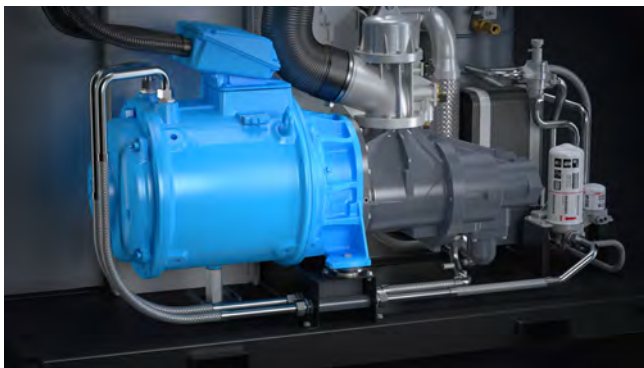
# Customized to your needs

A range of optional features are available to ensure the GA compressor is customized to the applications requirements

## High ambient temperature variant

Reliable and continuous operation of the compressor in hot and humid environments up to :

- max. 55°C ( 131°F ) for fixed speed pack
- max. 50°C ( 121°F ) for VSD pack



## Shock pulse monitoring

Continuous SPM “Shock Pulse Measurement” monitoring system of the compressor element & motor bearings. The sensors are connected to the Elektronikon<sup>®</sup> which is showing the individual vibration levels.

Alarm and/or shutdown levels can be programmed during commissioning of the compressor. With this monitoring system, the compressor can run longer, since overhaul can be done when needed and preventive maintenance can be organized.

## Energy recovery

The energy recovery system consists of a build-in stainless steel heat exchanger and thermostatic controlled system to recover the heat from the compressor in the form of warm water or hot water without any adverse influence on the compressor performance.







## Witness and performance test

Factory visit and witnessing of the standard performance test of the compressor. The compressor is tested following the Atlas Copco standard test procedure in accordance to the ISO 1217: 2009, annex “C” and “E” (4th edition) for full transparency and peace of mind.

## Food grade oil

The option “Roto-Foodgrade oil” allows you to operate the compressor in industries like packaging, pharmaceutical and food and beverage industry, where occasional contact is allowed in and around food processing areas.



## Integrated dryer

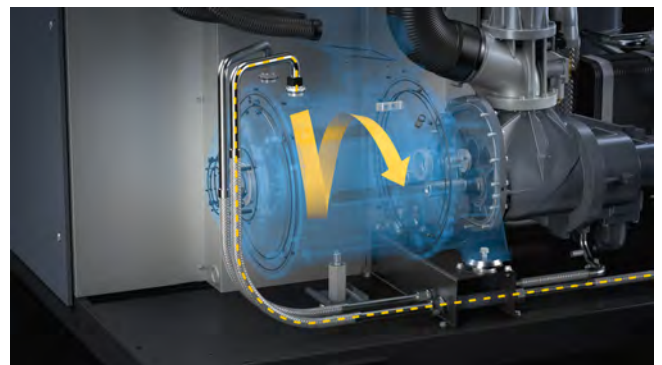
In a GA Full Feature compressor the refrigeration dryer is fully integrated in the compressor unit. This “all-in-one” feature not only reduces the space requirement for installing the compressor but also provides savings on piping installation cost.

Typical dew point of a refrigerant dryer is +3°C (37.4°F) at reference conditions.

## Motor thermal protection

Five (PT-1000) temperature sensors are installed in the main motor of which 2 sensors are monitoring the bearings and 3 sensors are monitoring the windings.

The relevant temperatures are shown on the Elektronikon<sup>®</sup> display and alarms and shutdowns are programmed to protect the compressor motor.



# Technical specifications

## GA 90+ - 160 (50 Hz)

Type	Maximum working pressure				Capacity FAD (1)			Installed motor power	Noise level (2)	Weight			
	Standard		Full Feature (3)		Standard / Full Feature (3)					Standard		Full Feature (3)	
	bar(e)	psig	bar(e)	psig	l/s	m <sup>3</sup> /min	cfm	kW	dB(A)	kg	lb	kg	lb
GA 90+ - 5.5 bar	5.5	80	5.3	77	353	21.2	748	90	76	2800	6173	3200	7055
GA 90+ - 7.5 bar	7.5	109	7.3	106	297	17.8	629			2800	6173	3200	7055
GA 90+ - 8.5 bar	8.5	123	8.3	120	284	17.0	602			2800	6173	3200	7055
GA 90+ - 10 bar	10	145	9.8	142	260	15.6	551			2800	6173	3200	7055
GA 110 - 5.5 bar	5.5	80	5.3	77	424	25.4	898	110	77	2700	5952	3100	6834
GA 110 - 7.5 bar	7.5	109	7.3	106	370	22.2	784			2700	5952	3100	6834
GA 110 - 8.5 bar	8.5	123	8.3	120	347	20.8	735			2700	5952	3100	6834
GA 110 - 10 bar	10	145	9.8	142	316	19.0	670			2700	5952	3100	6834
GA 132 - 5.5 bar	5.5	80	5.3	77	502	30.1	1064	132	78	2800	6173	3200	7055
GA 132 - 7.5 bar	7.5	109	7.3	106	440	26.4	932			2800	6173	3200	7055
GA 132 - 8.5 bar	8.5	123	8.3	120	414	24.8	877			2800	6173	3200	7055
GA 132 - 10 bar	10	145	9.8	142	382	22.9	809			2800	6173	3200	7055
GA 160 - 7.5 bar	7.5	109	7.3	106	525	31.5	1112	160	78	2900	6393	3300	7275
GA 160 - 8.5 bar	8.5	123	8.3	120	495	29.7	1049			2900	6393	3300	7275
GA 160 - 10 bar	10	145	9.8	142	460	27.6	975			2900	6393	3300	7275

**FAD(1) is measured at the following working pressures:**

	Standard	FF
5.5 bar version at	5 bar	5 bar
7.5 bar version at	7 bar	7 bar
8.5 bar version at	8 bar	8 bar
10 bar version at	9.5 bar	9.5 bar

## Dimensions

	L	W	H
	mm	mm	mm
GA 90+ - 160	2500	1785	2020
GA 90+ - 160 (FF)	2900	1785	2020

# Technical specifications

## Technical specifications GA 90+ - 160 (60 Hz)

TYPE	Maximum working pressure				Capacity FAD (1)			Installed motor power	Noise level (2)	Weight			
	Standard		Full Feature (3)		Standard / Full Feature (3)					Standard		Full Feature (3)	
	bar(e)	psig	bar(e)	psig	l/s	m <sup>3</sup> /min	cfm	hp	dB(A)	kg	lb	kg	lb
GA 90+ - 75 psi	5.5	80	5.3	77	316	19.0	670	125	76	3100	3834	3450	7606
GA 90+ - 100 psi	7.4	107	7.2	104	303	18.2	642			3100	3834	3450	7606
GA 90+ - 125 ps	9.1	132	8.9	129	271	16.3	547			3100	3834	3450	7606
GA 90+ - 150 psi	10.9	158	10.7	155	243	14.6	515			3100	3834	3450	7606
GA 110 - 75 psi	5.5	80	5.3	77	425	25.5	901	150	77	2600	5732	3050	6724
GA 110 - 100 psi	7.4	107	7.2	104	372	22.3	788			2600	5732	3050	6724
GA 110 - 125 psi	9.1	132	8.9	129	333	20.0	706			2600	5732	3050	6724
GA 110 - 150 psi	10.9	158	10.7	155	298	17.9	631			2600	5732	3050	6724
GA 132 - 75 psi	5.5	80	5.3	77	505	30.3	1070	175	77	2700	5952	3150	6945
GA 132 - 100 psi	7.4	107	7.2	104	446	26.8	945			2700	5952	3150	6945
GA 132 - 125 psi	9.1	132	8.9	129	400	24.0	848			2700	5952	3150	6945
GA 132 - 150 psi	10.9	158	10.7	155	354	21.2	750			2700	5952	3150	6945
GA 160 - 100 psi	7.4	107	7.2	104	529	31.7	1121	215	78	2900	6393	3250	7165
GA 160 - 125 ps	9.1	132	8.9	129	480	28.8	1017			2900	6393	3250	7165
GA 160 - 150 psi	10.9	158	10.7	155	439	26.3	930			2900	6393	3250	7165

**FAD(1) is measured at the following working pressures:**

	Standard	FF
75 psi version at	73 psi	73 psi
100 psi version at	100 psi	100 psi
125 psi version at	125 ps	125 psi
150 psi version at	150 psi	150 psi

## Dimensions

	L	W	H
	inch	inch	inch
GA 90+ - 160	98.5	70.3	79.5
GA 90+ - 160	114.2	70.3	79.5

# Technical specifications

## Technical specifications GA 110-160 VSD+ (50 Hz)

TYPE		Maximum working pressure				Capacity FAD (1)			Installed motor Power	Noise level (2)	Weight			
		Standard		Full Feature (3)		Standard / Full Feature (3)					Standard		Full Feature (3)	
		bar(e)	psig	bar(e)	psig	l/s	m <sup>3</sup> /min	cfm			kg	lb	kg	lb
GA 110 VSD+ - 8.5 bar	Minimum	5	72	5	72	104-407	6.2-24.4	202-862	110	77	2400	5291	2800	6173
	Nominal	7	101	7	101	101-390	6.1-23.4	214-826						
	Maximum	8.5	123	8.3	120	100-356	6.0-21.4	212-754						
GA 110 VSD+ - 10 bar	Minimum	6	87	6	87	102-405	6.1-24.3	216-858	110	77	2400	5291	2800	6173
	Nominal	9.5	138	9.5	138	97-332	5.8-19.5	206-703						
	Maximum	10	145	9.8	142	96-325	5.8-19.5	203-689						
GA 132 VSD+ - 8.5 bar	Minimum	5	72	5	72	104-485	6.2-29.1	220-1028	132	77	2500	5512	2950	6504
	Nominal	7	101	7	101	101-463	6.1-27.8	214-981						
	Maximum	8.5	123	8.3	120	100-427	6.0-25.6	212-905						
GA 132 VSD+ - 10 bar	Minimum	6	87	6	87	102-402	6.1-24.1	216-852	132	77	2500	5512	2950	6504
	Nominal	9.5	138	9.5	138	97-396	5.8-23.8	206-839						
	Maximum	10	145	9.8	142	96-391	5.8-23.5	203-828						
GA 160 VSD+ - 8.5 bar	Minimum	5	72	5	72	104-590	6.2-35.4	220-1250	160	78	2550	5622	3000	6614
	Nominal	7	101	7	101	101-551	6.1-33.1	214-1168						
	Maximum	8.5	123	8.3	120	100-511	6.0-30.7	212-1083						
GA 160 VSD+ - 10 bar	Minimum	6	87	6	87	102-492	6.1-29.5	216-1042	160	78	2550	5622	3000	6614
	Nominal	9.5	138	9.5	138	97-480	5.8-28.8	206-1017						
	Maximum	10	145	9.8	142	96-471	5.8-28.3	203-998						

**FAD(1) is measured at the following working pressures:**

	Standard	FF
8.5 bar version at	7 bar	7 bar
10 bar version at	9.5 bar	9.5 bar

## Dimensions

	L	W	H
	mm	mm	mm
GA 110-160 VSD+	2500	1785	2020
GA 110-160 VSD+ (FF)	2900	1785	2020



# Technical specifications

## Technical specifications GA 110-160 VSD+ (60 Hz)

TYPE		Maximum working pressure				Capacity FAD (1)			Installed motor power	Noise level (2)	Weight			
		Standard		Full Feature (3)		Standard / Full Feature (3)					Standard		Full Feature (3)	
		bar(e)	psig	bar(e)	psig	l/s	m <sup>3</sup> /min	cfm			hp	dB(A)	kg	lb
GA 110 VSD+ - 125 psi	Minimum	5	72	5	72	104-407	6.2-24.4	220-862	150	78	2400	5291	2800	6173
	Nominal	6.9	100	6.9	100	101-390	6.1-23.4	214-826						
	Maximum	9.1	132	8.9	129	97-343	5.8-20.6	206-727						
GA 110 VSD+ - 150 psi	Minimum	6	87	6	87	102-405	6.1-24.3	216-858	150	78	2400	5291	2800	6173
	Nominal	10.4	151	10.4	151	96-315	5.8-18.9	203-667						
	Maximum	10.9	158	10.7	155	95-309	5.7-18.5	201-655						
GA 132 VSD+ - 125 psi	Minimum	5	72	5	72	104-485	6.2-29.1	220-1028	175	78	2500	5512	2950	6504
	Nominal	6.9	100	6.9	100	101-466	6.1-28.0	214-987						
	Maximum	9.1	132	8.9	129	98-412	5.9-24.7	208-973						
GA 132 VSD+ - 150 psi	Minimum	6	87	6	87	102-402	6.1-24.1	216-852	175	78	2500	5512	2950	6504
	Nominal	10.4	151	10.4	151	96-378	5.8-22.7	203-801						
	Maximum	10.9	158	10.7	155	95-372	5.7-22.3	201-788						
GA 160 VSD+ - 125 psi	Minimum	5	72	5	72	104-590	6.2-35.4	220-1250	215	78	2550	5622	3000	6614
	Nominal	6.9	100	6.9	100	101-555	6.1-33.3	214-1176						
	Maximum	9.1	132	8.9	129	98-495	5.9-29.7	208-1049						
GA 160 VSD+ - 150 psi	Minimum	6	87	6	87	102-492	6.1-29.5	216-1042	215	78	2550	5622	3000	6614
	Nominal	10.4	151	10.4	151	96-456	5.8-27.4	203-966						
	Maximum	10.9	158	10.7	155	95-449	5.7-26.9	201-951						

**FAD(1) is measured at the following working pressures:**

	Standard	FF
5.5 bar version at	5 bar	5 bar
7.5 bar version at	7 bar	7 bar
8.5 bar version at	8 bar	8 bar
10 bar version at	9.5 bar	9.5

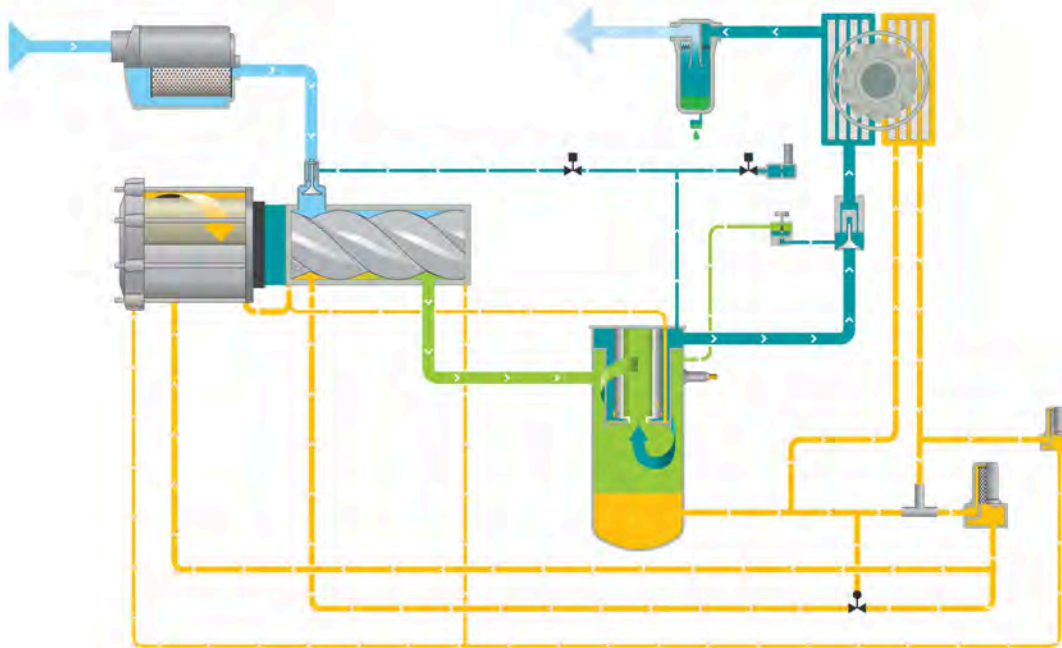
# Technical specifications

## Dimensions

	L	W	H
	mm	mm	mm
GA 90+ - 160	2500	1785	2020
GA 90+ - 160 (FF)	2900	1785	2020

# Flowchart

The oil & air flow, step by step



## 1. Filtration & compression

The air is drawn into the compressor through the inlet filter and is compressed in the oil injected rotary screw compression element via the air intake (load-unload) valve. Lubrication fluid is injected during the compression phase into the air. This not only reduces the wear of the elements but also cools them.

## 2. Air & oil separation

The compressed air/oil mixture passes through a non-return valve to the oil separator element to separate the oil from the air.

The wet compressed air, represented by the dark blue/gree then passes through a minimum pressure valve and is cooled by an air-cooled aftercooler.

## 3. Cooling

Low noise axial cooling fans provide cooling air to the oil cooler and after cooler, ensuring satisfactory running temperatures as well as ventilating the compressor enclosure and electrical control panel.

#### 4. Moisture separator

The condensed moisture is removed by a low pressure drop moisture separator and electronic condensate drain. This results in dry compressed air is that can be used in your application.



#### 5. Oil flow

Lubrication fluid contained in the oil receiver flows under differential pressure to a thermostatic bypass valve, air cooled oil cooler, high efficiency oil filter and oil stop valve before being injected into the compression element where it cools, seals and lubricates the compression process.

The high efficiency oil filter provides superior filtration compared to conventional filters resulting in cleaner lubricant. The thermostatic bypass valve ensures that the compressor quickly reaches optimum operating temperature on start-up and maintains temperature during periods of low load by allowing cold lubricant to bypass the oil cooler.









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