KAESER COMPRESSORS

Rotary Screw Compressors

ASD T SFC Series

Air delivery from 0.55 to 5.51 m³/min,
Pressure 5.5 to 15 bar

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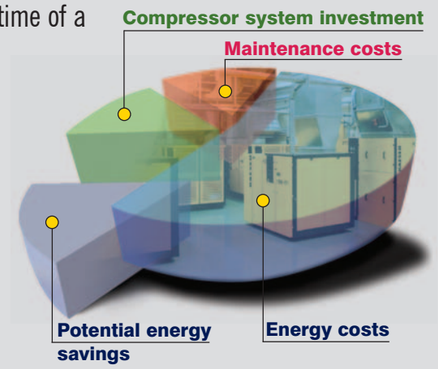
What do you look for in a compressor with variable frequency drive and refrigeration dryer?

As a user, you expect maximum efficiency, reliability and consistent air quality from your compressed air system. That may sound simple, but these advantages are influenced by many different factors:
Energy costs, for example, taken over the lifetime of a compressor, add up to a multiple of investment costs. Efficient energy consumption therefore plays a vital role in every compressed air system, as does reliability. It is also important that the compressed air system delivers condensate-free air in the correct volume and quality for the specific application. This not only increases system reliability, but also significantly reduces maintenance costs for the air distribution network, compressed air tools, pneumatic control systems and any other equipment that uses compressed air.



T SFC –
Integrated Modular Design

KAESER's solution: Versatile modular design

Available with a modular refrigeration dryer and/ or SFC variable frequency drive, ASD rotary screw compressors fulfil every customer requirement: they are highly energy efficient, quieter than quiet, require minimal maintenance, are extremely reliable and deliver the very best in air quality.
Furthermore, these turnkey compressed air systems are simple to install and offer outstanding versatility.

ASD – Efficiency as standard

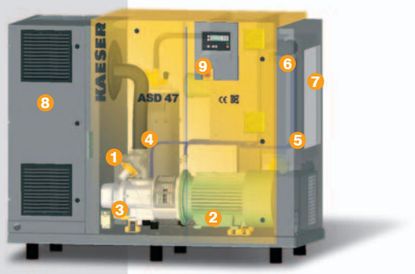
ASD series compressors with energy-saving 1:1 drive form the basis for KAESER's versatile modular concept. They are particularly efficient, durable and reliable as each is equipped a generously-sized low-speed airend featuring SIGMA PROFILE rotors.

T - Refrigeration dryer

ASD compressors can be supplied with an integrated refrigeration dryer module as required. The compressor and dryer are housed in separate cabinets with individual cooling air apertures to increase operational reliability.

SFC – Sigma Frequency Control

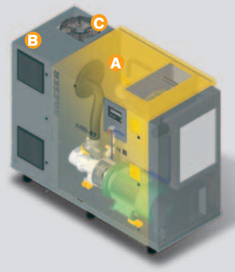
The SFC variable frequency drive module is available for all ASD compressor systems. The SFC module and the compressor are seamlessly integrated into a compact, hard-wired unit that delivers maximum performance, yet requires minimal floor space. Each package is delivered tested and ready for operation.



1. Inlet valve
2. Electric motor
3. Airend
4. Fluid separator with cartridge
5. Fluid cooler
6. Fluid filter
7. Compressed air after-cooler
8. Control cabinet for frequency controller
9. Controller with industrial computer

Maximum Flexibility

KAESER's versatile range of modular T SFC packages ensures that a model is available to suit every compressed air need. The refrigeration dryer module (C) transforms a standard rotary screw compressor into a compact compressed air system that delivers quality dried-air in accordance with highest standards. With the addition of the SFC module (B), the compressor speed can be automatically adjusted to meet varying air demand. All possible combinations of these three modules are available.



- A = ASD Series screw compressor
- B = SFC
- C = Refrigeration dryer (T)

ASD T with compact refrigeration dryer

ASD 47 T rear view

Thermal insulation is omitted from the illustration.

The innovative ASD T series

Combining unrivalled reliability with outstanding efficiency, KAESER's new ASD T rotary screw compressor systems provide space-saving, energy efficient compressed air generation and treatment in a single compressor package.

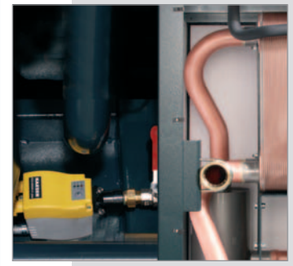
The addition of the integrated refrigeration dryer module transforms the high performance ASD compressor unit into a complete air supply system.

Easy to maintain, the dryer is contained in its own separate housing within the unit to prevent exposure to heat from the compressor package, considerably increasing operational reliability and enabling use in ambient operating conditions of up to +45°C.

Efficient centrifugal separator

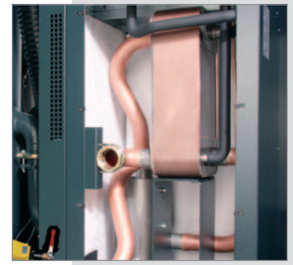
A centrifugal separator with an electronically controlled ECO DRAIN is installed between the compressor and the dryer. This ensures safe and efficient initial separation and drainage of the condensate even under conditions of high ambient temperature and humidity.

Refrigeration dryer with ECO DRAIN



The refrigeration dryer's electronically controlled ECO DRAIN operates according to the condensate level. This eliminates the pressure losses associated with conventional condensate drain systems and considerably enhances system performance and efficiency.

Stainless steel plate heat exchanger



The dryer's stainless steel plate heat exchanger is resistant to corrosion, clogging and deposits. Even with a fluctuating airflow the heat exchanger reliably separates the accumulating condensate from the air. The dryer's components and piping are designed to provide exceptional operational safety and reliability.

Turnkey operation

Contained in its own separate cabinet there is more than sufficient space to allow all the components in the dryer to be generously sized yet easily accessible for maintenance. This design also prevents exposure of the refrigeration dryer to any heat from the compressor package.

Individual cooling air apertures and intelligent design ensure outstanding reliability in ambient temperatures of up to +45°C, significantly increasing compressed air availability.

SIGMA CONTROL

The SIGMA CONTROL compressor controller constantly monitors the compressor, refrigeration dryer and condensate drains. If required, messages from the dryer can be defined as alarms and forwarded to a control centre.

ASD SFC – Ultimate efficiency

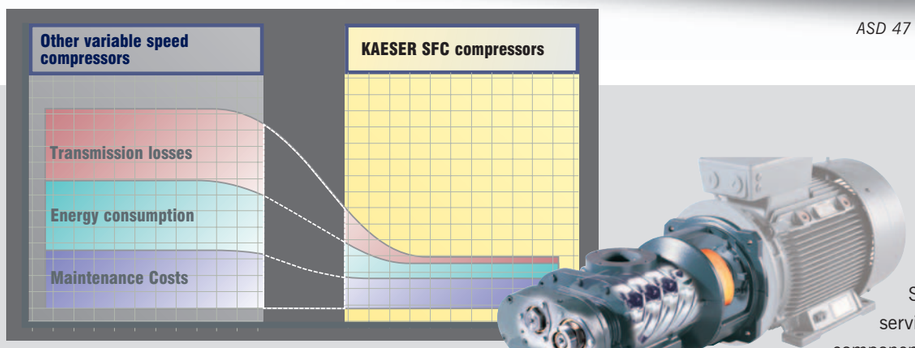
ASD 47 T SFC front view

The innovative ASD SFC series

Every KAESER rotary screw compressor is equipped with a large, efficient airend featuring high performance SIGMA PROFILE rotors. The airends in ASD units are powered by a direct drive system that eliminates the transmission losses associated with gear drive systems, enabling these compressors to provide significant energy savings.

Considerable savings can also be achieved with the addition of a SIGMA FREQUENCY CONTROL (SFC) module.

Depending on the size of the compressor installation, energy consumption in larger compressed air systems can be reduced by up to 50%.



Outstanding performance

ASD SFC compressor packages are highly efficient direct drive units featuring variable speed control. With high efficiency performance throughout the entire control range, large, low speed airends featuring the energy saving SIGMA Profile have significant advantages over smaller, high speed airends.

All packages are designed to operate at full load, 7 days a week, yet require no additional maintenance.

Triple savings with 1:1 drive – Significantly increasing reliability and service life, **1:1 drive** reduces the number of components needed in comparison with gear drive and eliminates the associated transmission losses. Sound levels are also considerably lower. The benefits speak for themselves: **efficient power transmission**, **optimised energy consumption** and **reduced servicing / downtime costs**.

Zero Interference
The electro-magnetic compatibility (EMC) of the components and of the complete machine has been tested and certified in accordance with all applicable regulations.

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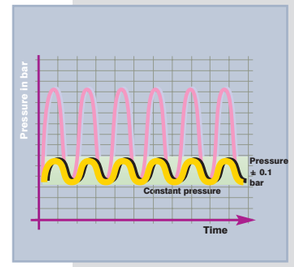
Perfect performance - even at high ambient temperatures

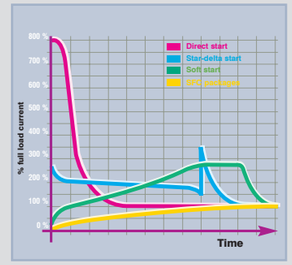
The generously sized SFC module with its efficiently-cooled control cabinet allows trouble-free operation in ambient temperatures up to +45 °C.

Precision pressure control



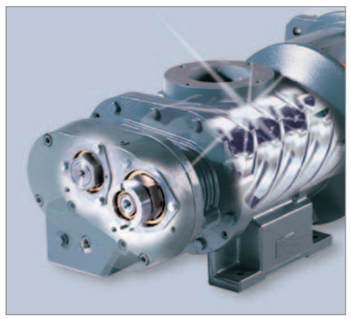
Air delivery from an ASD SFC compressor can be matched to actual air demand according to required system pressure by continuously adjusting drive motor speed (and therefore the airend) within its specified control range. Depending on the buffer capacity of the downstream air network, it is therefore possible to precisely maintain working pressure to within ±0.1 bar and, as a result, to reduce maximum system pressure. This can lead to significant savings, as each 1 bar reduction in pressure amounts to a 7 percent reduction in energy consumption.

Soft start with no current spikes



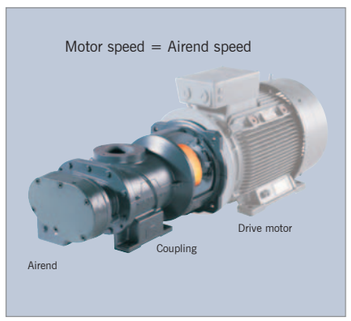
Soft start allows a gradual increase in drive motor current from zero to full load, enabling almost unlimited motor switching frequency i.e. the number of times the motor can be switched on within a defined time period without overheating. Current peaks that can potentially cause damage to power systems and equipment are reliably eliminated without the need for expensive electronics. In addition, the continuously variable acceleration and deceleration of moving parts reduces dynamic loading.

ASD T SFC – Eight Decisive Advantages



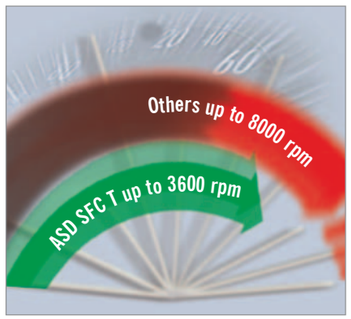
1 SIGMA PROFILE airend

A specific drive power can be used to turn a smaller airend at high speed or a larger airend at slow speed. Larger, low speed airends are more efficient, delivering more compressed air for the same drive power. That is why KAESER developed airends especially for the ASD series that are precisely matched to the individual drive power and motor speed of each machine in the range. The slightly higher cost of the larger airend is quickly recovered by the energy saved during operation.



2 Energy-saving 1:1 drive

The advantage of this drive is not just the elimination of transmission losses. The motor and airend are joined by the coupling and its housing to form a compact and durable unit that, apart from greasing of the motor bearings, requires no regular maintenance. Should the coupling ever need to be replaced, it takes just a few minutes without any disassembly of the unit, as the opening in the housing is more than large enough to replace the two coupling sections.



3 Large, low speed airends

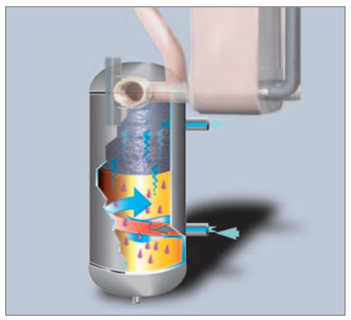
Each ASD SFC compressor has exactly the same mechanical components as those used in KAESER's fixed speed compressors. This not only ensures unrivalled reliability and compressed air availability, but also guarantees optimum energy efficiency. The most efficient method of producing compressed air is by using large, low speed airends – airends in ASD SFC compressors have a maximum rotation speed of approximately 3600 rpm. Further advantages include long service life and reduced maintenance requirement. The use of standardised drive motors also contributes to long-term compressed air availability.

4 SIGMA CONTROL

Based on robust PC architecture, the SIGMA Control offers the possibility of Dual, Quadro, Vario and Continuous control. Clearly marked navigation and input keys on the user interface are used to move around within the menu options of the four line alpha-numeric display. This powerful compressor controller can also display information in any 1 of 30 selectable languages at just the press of a button. The SIGMA CONTROL automatically controls and monitors the compressor package. The Profibus interface enables exchange of data and operational parameters allowing the SIGMA Control to communicate with other air management systems such as the SIGMA Air Manager. Connection of a modem even allows maintenance and alarm messages to be sent via SMS to relevant service locations.

5 Efficient stainless steel condensate separator

The separator tank in the refrigeration dryer is made of stainless steel and is therefore completely corrosion resistant. A deflector plate forces the compressed air streaming into the separator into rotary motion. The air then flows through a stainless steel wire mesh in which 99.9 percent of the water in the air is separated. This figure remains almost constant, despite fluctuating airflow, reliably maintaining the required pressure dew point. Solid particles are also washed out and eliminated together with the condensate.

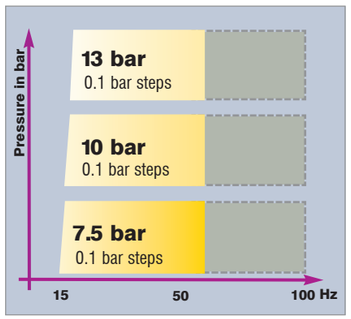


6 SFC module

Siemens frequency inverters are used exclusively in KAESER's speed controlled compressors for several reasons: Siemens manufacture the industrial PC-based SIGMA CONTROL compressor controller, which enables seamless communication with the SFC control cabinet. Furthermore, the worldwide presence of Siemens ensures dependable service. The SFC control cabinet and SIGMA CONTROL are tested and certified in accordance with all applicable electromagnetic compatibility regulations, both as individual components and as an integrated system.

7 Flexible pressure adjustment

The wide range of 1:1 drive airends available makes it possible to select the one that works most efficiently within the pressure and performance range required. This ensures that every ASD SFC compressor operates with the most efficient pressure frequency profile. Furthermore, the SIGMA CONTROL compressor controller is equipped with a pressure-to-frequency profile that guarantees maximum flexibility for air delivery and pressure whilst providing best possible efficiency.



8 Specific power is the key

Large, low speed airends are more efficient than small high speed airends because they supply more air for the same drive power. This is not just the case at full load, but also applies throughout the entire control range, which is particularly important for variable speed machines. The specific energy requirement of 6.7 kW per m³/min for a KAESER SFC compressor operating at 7.5 bar can be considered as an excellent indication of the machine's efficiency. Variable frequency controlled compressors are only truly efficient if they have low energy consumption throughout their entire control range.

Equipment

Complete unit
Ready for operation, fully automatic, super silenced, vibration damped, all panels powder coated

Sound insulation
Lined with glass-fibre laminated mineral wool, maximum 69 dB(A) to PN8NTC 2.3 at one metre distance, free-field measurement

Vibration damping
Dual anti-vibration mountings using rubber bonded metal elements

Airend
Genuine KAESER single-stage rotary screw airend with SIGMA PROFILE and cooling fluid injection

Drive
Direct, torsional-elastic coupling, without gearing

Electric motor
Premium efficiency electric motor of quality German manufacture to IP 55 and Insulation Class F for additional reserve

Connection from motor to airend
Airend with integral coupling flange

Electrical components

Control cabinet to IP 54, control transformer, Siemens Masterdrive with control unit, volt-free contacts for ventilation control

Fluid and air flow
Dry air intake filter with pre-filtration, pneumatic inlet and venting valves, fluid reservoir with three-stage separator system, pressure relief valve, minimum pressure / check valve, thermostatic valve and fluid micro-filter, all fully piped using flexible couplings

Cooling
The standard version is air cooled, separate aluminium coolers for compressed air and fluid, radial fan driven by its own motor

Refrigeration dryer
CFC-free, R 134a refrigerant, fully insulated, hermetically sealed refrigerant circuit, hot-gas bypass control, electronic condensate drain and centrifugal separator upstream

SIGMA CONTROL
Interfaces for data communication comprising RS 232 for a modem or printer, RS 485 for a slave compressor in base load sequencing mode and a Profibus DP interface for data networks. Prepared for Teleservice

Ergonomic control panel

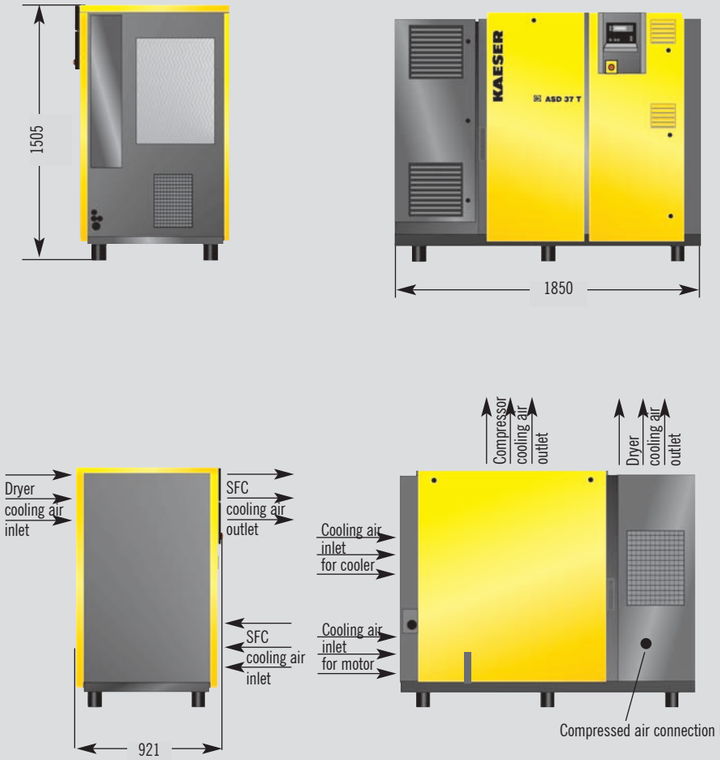
Red, yellow and green LEDs show the operational state of the machine at a glance. Also features a four-line plain text display, 30 selectable languages, touch keys with icons and a duty cycle indicator.

Prime functions
Fully automatic monitoring and regulation of airend discharge temperature, monitoring of motor current, direction of airend rotation, air filter, fluid filter and fluid separator cartridge, display of performance data, service intervals of primary components, operating hours, status data and event memory data. Selection of Dual, Quadro, Vario and Continuous control modes as required.

(For further information refer to SIGMA CONTROL/SIGMA CONTROL BASIC brochure P-780)

KAESER COMPRESSORS

Dimensions:



ASDT SFC Technical specifications

T - version with integrated refrigeration dryer (refrigerant R134a)

Rated motor power	Model	Working pressure	FAD*) Complete unit at working pressure	Max. pressure	Dryer power consumption	Sound level**)	Weight
kW		bar	m³/min	bar	kW	dB(A)	kg
		7.5	3.15	8			
18.5	ASD 32 T	10	2.27	11	0.5	65	740
		13	2.09	15			
		7.5	3.91	8			
22	ASD 37 T	10	3.13	11	0.5	66	820
		13	2.66	15			
		7.5	4.57	8			
25	ASD 47 T	10	3.84	11	0.8	66	830
		13	3.01	15			
		7.5	5.51	8			
30	ASD 57 T	10	4.44	11	0.8	69	890
		13	3.67	15			

SFC module with variable speed drive

Model	Working pressure	FAD*) Complete unit at working pressure	Max. pressure	Sound level**)	Weight
	bar	m³/min	bar	dB(A)	kg
	7.5	0.69 - 3.3	10	67	715
ASD 32 SFC	10	0.90 - 2.86	10		
	13	0.82 - 4.05	8.5		
	7.5	0.61 - 3.55	15	68	790
ASD 37 SFC	10	0.56 - 3.17	15		
	13	1.07 - 4.92	8.5		
	7.5	0.79 - 4.12	11	68	800
ASD 47 SFC	10	0.60 - 3.60	15		
	13				

T SFC - Version with variable speed drive and integrated refrigeration dryer

Model	Working pressure	FAD*) Complete unit at working pressure	Max. working pressure	Dryer power consumption	Sound level**)	Weight	Dimensions
	bar	m³/min	bar	kW	dB(A)	kg	L x W x H
	10	0.69 - 3.3	10				
ASD 32 T SFC	13	0.90 - 2.86	10	0.5	67	825	1850 x 921 x 1505
	7.5	0.82 - 4.05	8.5				
ASD 37 T SFC	10	0.61 - 3.55	15	0.5	68	900	1850 x 921 x 1505
	13	0.56 - 3.17	15				
	7.5	1.07 - 4.92	8.5				
ASD 47 T SFC	10	0.79 - 4.12	11	0.8	68	910	1850 x 921 x 1505
	13	0.60 - 3.60	15				
							1850 x 921 x 1505

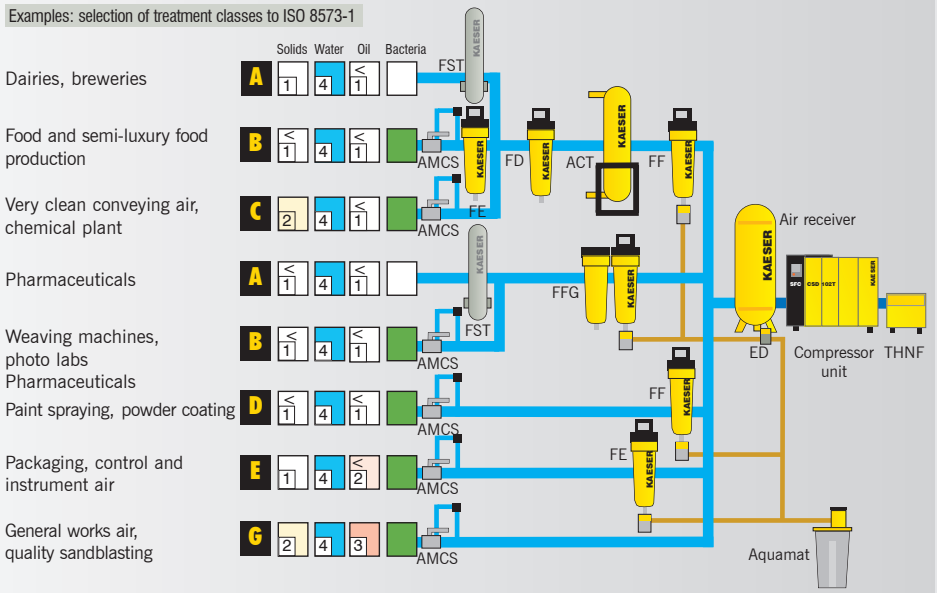
*) FAD to ISO 1217: 1996, Annex C; **) Sound level to PN8NTC 2.3 at 1m distance, free-field measurement

Different fields of application require different grades of air treatment

Choose the required grade of treatment according to your field of application:

Air treatment using a refrigeration dryer (+3 °C pressure dew point)

Examples: selection of treatment classes to ISO 8573-1



- **A** Oil vapour content ≤ 0.003 mg/m³, particle retention > 0.01 µm, sterile, odourless and tasteless
- **B** Oil vapour content ≤ 0.003 mg/m³, particle retention > 0.01 µm
- **C** Oil vapour content ≤ 0.003 mg/m³, particle retention > 1 µm
- **D** Aerosol oil≤ 0.001 mg/m³ particle retention > 0.01 µm
- **E** Aerosol oil ≤ 0.01 mg/m³, particle retention > 0.01 µm
- **G** Aerosol oil ≤ 1 mg/m³ particle retention > 1 µm

Contaminants:

- \+ solids -
- \+ water -
- \+ oil -
- \+ bacteria -

Explanation:

THNF = bag filter
cleans dusty and highly contaminated intake air

ZK = centrifugal separator
separates accumulating condensate

ED = ECO Drain
electronic level-controlled condensate drain

FD = particulate filter 1 µm
separates dust particles (attrition) 1 µm

FE = micro-filter 0.01 ppm
separates aerosol oils and solid particles >0.01 µm, oil content ≤0.01 mg/m³

FF = micro-filter 0.001 ppm
separates aerosol oils and solid particles >0.01 µm, oil content ≤0.001 mg/m³

FG = activated carbon filter
for adsorption of oil vapours, oil vapour content ≤0.003 mg/m³

FFG = combination filter
comprising FF and FG

rotary screw compressor SFC T
rotary screw compressor with attached refrigeration dryer; pressure dew point down to +3 °C; compressor available with variable frequency drive

FST = sterile filter for bacteria-free air

Aquamat = condensate treatment system

AMCS = air-main charging system

Degree of filtration:

ISO 8573-1 Class	Solid particles: Max. no. of particles per m³ with size d (µm) 0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	Oil: µm	mg/m³	Humidity: Pressure dew point (x = liquid water in mg/m³)	Overall oil content mg/m³
0	as specified by user						
1	100	1	0	–	–	≤ -70 °C	≤ 0.01
2	100000	1000	10	–	–	≤ -40 °C	≤ 0.1
3	–	10000	500	–	–	≤ -20 °C	≤ 1.0
4	–	–	1000	–	–	≤ +3 °C	≤ 5.0
5	–	–	20000	–	–	≤ +7 °C	–
6		–		≤ 5	≤ 5	≤ +10 °C	–
7		–		≤ 40	≤ 10	x ≤ 0.5	–
8		–		–	–	0.5 < x ≤ 5.0	–
9		–		–	–	5.0 < x ≤ 10.0	–

LGA InterCert Certified QM-System ISO 9001:2000
LGA InterCert Certified EM-System ISO 14001

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