KAESER COMPRESSORS

www.hpccompressors.co.uk

HPC | Compressed Air Systems

Rotary Screw Compressors SK Series

With the world-renowned SIGMA PROFILE

Air delivery from 0.43 to 2.20 m³/min – Pressure 8/11/15 bar

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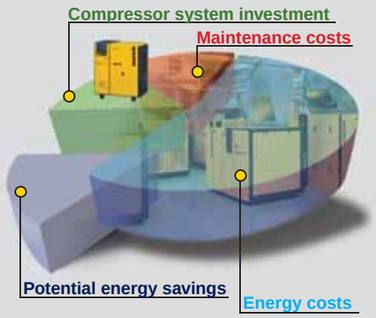
What do you expect from a compressor system?

As a compressed air user, you expect maximum efficiency and reliability from your 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 the production of compressed air, as does reliability of the compressor. In many cases, a reliable compressed air supply is essential to guarantee maximum performance from valuable production installations.

Reliability also ensures a supply of constant quality compressed air that optimises efficiency of the air treatment equipment downstream from the compressor.

With regards to noise protection, it is always better to keep noise emissions to a minimum from the outset by using a quiet compressor rather than have to retro-fit sound protection measures later on.

Last but not least, a truly efficient compressor is simple to maintain.

SK – Compact compressed air power

KAESER's Solution: The SK Series

User-friendly and easy to maintain, the new SK series rotary screw compressors from KAESER operate quietly and efficiently to provide a cost-effective and dependable source of quality compressed air.

All of these advantages are aided through innovations in the compressor unit, controller and cooling system.

The new SK series of rotary screw compressors is a meticulously engineered and reliable product range built to KAESER's renowned high quality standards.

1. Inlet valve (not visible)
2. Electric motor
3. V-belt drive with automatic belt tensioning (not visible)
4. Airend (not visible)
5. Separator with cartridge
6. Fluid cooler
7. Compressed air after-cooler
8. SIGMA CONTROL compressor controller
9. Refrigeration dryer (with SK T)
10. Air receiver

Energy-saving SIGMA PROFILE

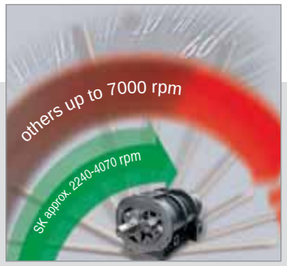
Each KAESER rotary screw compressor airend uses SIGMA PROFILE rotors – specially developed by KAESER – that require approximately 15 percent less energy than conventional rotors of the same air delivery capacity. The airends in SK units use even further refined rotors.

SIGMA CONTROL

The industrial PC-based compressor controller is designed to optimise energy efficiency whilst significantly increasing operational reliability. 'Traffic light' style LEDs clearly indicate system operational status at a glance.

Quieter than quiet

The new cooling system combines optimum sound damping with enhanced cooling. Normal conversation can take place right next to the running compressor.



Quietly powerful

As the most efficient way to achieve a given drive power, KAESER KOMPRESSOREN uses large, low speed airends in every rotary screw compressor. This ensures that the specific power is always within the optimal range. SK units use a flexible V-belt drive system to precisely determine airend speed dependent upon the airend being used. Further advantages of low airend speeds are that components are subjected to less wear and consequently last longer. The associated lower noise emissions are of particular importance for compressors installed directly in work environments.

SK – Maximum versatility

SK with energy-saving dryer

Air generation and treatment is made possible by selecting the SK T integrated refrigeration dryer module option. 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. The dryer also features an energy saving mode that can be selected via the SIGMA CONTROL.

Variable speed control also available

In certain cases, variable speed control can offer considerable advantages, which is why the SK 21 is also available with a KAESER SIGMA Frequency Control (SFC) module. The SFC module is integrated within the compressor's control cabinet and, just like the SIGMA CONTROL and SIGMA CONTROL BASIC compressor controllers, is manufactured to the very highest standards by Siemens.

Aircenter: The integrated solution

The compact SK Aircenter series from Kaeser provides cost-effective compressed air production, treatment and storage with minimal space requirement. The compressor, dryer and 350-litre air receiver are integrated within a single housing. Each unit is optionally available with a micro-filter or micro-filter combination.

Standard SK series model

Maintenance friendly

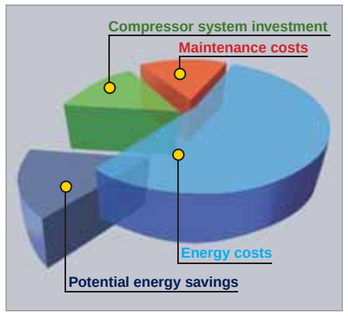
All maintenance work can be carried out from one side of the unit. The left housing cover is easily removed to allow excellent component accessibility. Fluid levels can also be easily inspected without having to remove the housing cover. 'T' versions are equipped with an additional service opening for the test button on the refrigeration dryer's electronic condensate drain.

EMC certified

Electromagnetic compatibility (EMC) is particularly important for variable speed compressors. All SK 21 SFC components and systems are tested for electromagnetic compatibility to Class A1 (industrial systems) and Class B (domestic systems) in accordance with EN 55011.

Energy savings

Energy consumption accounts for over 70 % of compressed air costs. Consequently, this can amount to a significant sum even for smaller compressed air systems, which is why KAESER uses the very latest technology to ensure that every compressor provides best possible energy efficiency. These compressors form the basis for reliable and cost-effective compressed air production as part of a correctly planned and integrated compressed air supply system.

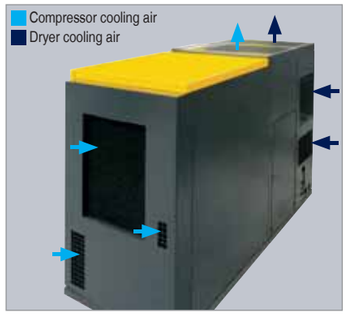


Alternative controller: SIGMA CONTROL BASIC

If the comprehensive communication capability of the SIGMA CONTROL is not required, SK models are also available with the SIGMA CONTROL BASIC compressor controller. This controller offers the possibility of "Dual" and "Quadro" control to achieve significant energy savings and operates via an electronic pressure sensor with low switching differential. With the addition of an optional plug-in memory module, the SIGMA CONTROL BASIC is also able to communicate with the SIGMA AIR MANAGER master controller. This feature enables the compressor to be easily integrated within a centrally controlled compressed air installation.

Efficient cooling air flow system

Just like KAESER's larger units, SK compressors also have separate air intakes for the air/fluid cooler, motor and compressed air, resulting in significant reserves even in high ambient temperatures. Taking in motor cooling air from the surroundings ensures reliable and effective motor cooling even under adverse conditions. The compression process is also enhanced by directly sucking in air for compression from the ambient surroundings. The air intakes are specially designed to draw cooling air in slowly in order to keep sound levels to an absolute minimum. KAESER's modular design concept enables refrigeration dryers in 'T' units to be installed in their own separate housing and to have their own individual cooling system, significantly contributing to high efficiency and reliability.



Complete unit

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

Sound insulation

Lined with washable foam, anti-vibration mounts, double vibration damped.

Airend

Genuine KAESER single-stage rotary screw airend with SIGMA PROFILE rotors and cooling-fluid injection for optimised rotor cooling.

Electric motor

German made premium efficiency (EFF1) electric motor to IP55 and insulation class F for additional reserve.

V-belt drive with automatic belt tensioning

Durable V-belt drive with automatic tensioning device for extended belt life.

Fluid and air flow

Dry-air filter, pneumatic inlet and vent valves, cooling fluid reservoir with three-stage separator system, pressure release valve, minimum pressure/check valve, thermostatic valve and micro-filter in cooling fluid system.

Cooling

Air-cooled: separate aluminium coolers for compressed air and fluid, axial fan fitted to motor drive shaft.

Electrical components

Ventilated control cabinet to IP 54, automatic star-delta starter, motor-overload protection, control transformer.

SIGMA CONTROL

Interfaces for data communication, comprising: RS 232 for a modem, RS 485 for a slave compressor in base-load sequencing mode (not with SFC version), Profibus DP interface for data networks. Prepared for Teleservice.

Ergonomic control panel

Red, yellow and green LEDs show operational status at a glance. Also features a 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, 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 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 780)

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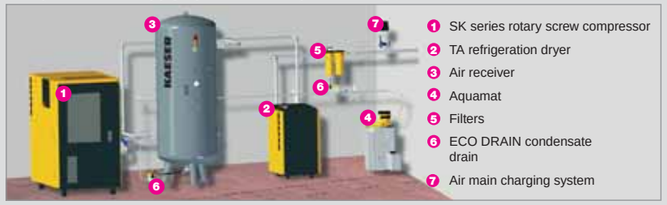
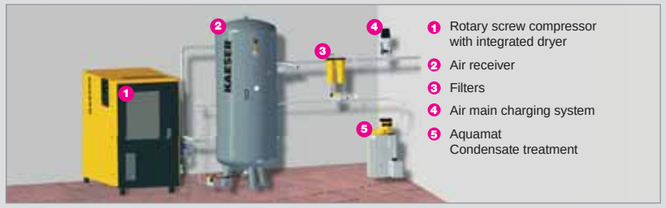
Professional planning

Compressed air supply system with separate components



Compressed air supply system with T-version compressor



Only properly designed air systems can meet the demands for air quality, availability and efficiency that are placed on a modern compressed air supply. For outstanding efficiency and maximum savings, let KAESER design your air system.

Technical specifications – SK

Standard version

Rated motor power kW	Model	Working pressure bar	FAD *) m³/min	Max. operating pressure bar	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
		7.5	1.80	8			
11	SK 21	10	1.53	11	64	1010 x 704 x 1200	320
		13	1.14	15			
		7.5	2.20	8			
15	SK 24	10	1.86	11	65	1010 x 704 x 1200	320
		13	1.40	15			

T – Version with integrated refrigeration dryer (Refrigerant 134a)

Model	Working pressure bar	FAD *) m³/min	Max. operating pressure bar	Dryer power consumption kW	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
	7.5	1.80	8				
SK 21 T	10	1.53	11	0.43	64	1335 x 704 x 1200	380
	13	1.14	15				
	7.5	2.20	8				
SK 24 T	10	1.86	11	0.43	65	1335 x 704 x 1200	380
	13	1.40	15				

SFC – With variable speed drive

Rated motor power kW	Model	Working pressure bar	FAD *) m³/min	Max. operating pressure bar	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
		7.5	0.51 – 1.95	8			
11	SK 21 SFC	10	0.55 – 1.61	11	66	1010 x 704 x 1200	330
		13	0.43 – 1.24	15			

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

Model	Working pressure bar	FAD range m³/min	Max. operating pressure bar	Dryer power consumption kW	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
	7.5	0.51 – 1.95	8				
SK 21 T SFC	10	0.55 – 1.61	11	0.43	66	1335 x 704 x 1200	390
	13	0.43 – 1.24	15				

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

AIRCENTER – With refrigeration dryer and compressed air receiver

Rated motor power kW	Model	Working pressure bar	FAD *) m³/min	Max. operating pressure bar	Dryer power consumption kW	Air receiver capacity	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
		7.5	1.80	8					
11	AIRCENTER 21	10	1.53	11	0.43	350	64	1440 x 795 x 1827	515
		13	1.14	15					
		7.5	2.20	8					
15	AIRCENTER 24	10	1.86	11	0.43	350	65	1440 x 795 x 1827	515
		13	1.40	15					

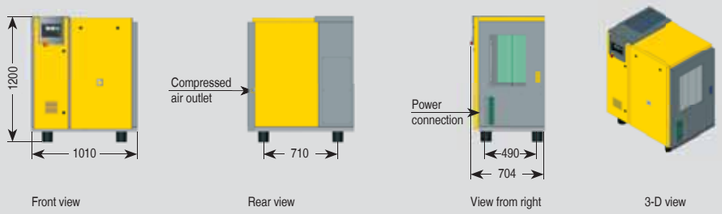
AIRCENTER SFC-With variable speed drive

Model	Working pressure bar	FAD range m³/min	Max. operating pressure bar	Sound level **) dB(A)	Dimensions W x D x H mm	Weight kg
	7.5	0.51 - 1.95	8			
AIRCENTER 21 SFC	10	0.55 - 1.61	11	66	1440 x 795 x 1827	525
	13	0.43 - 1.24	15			

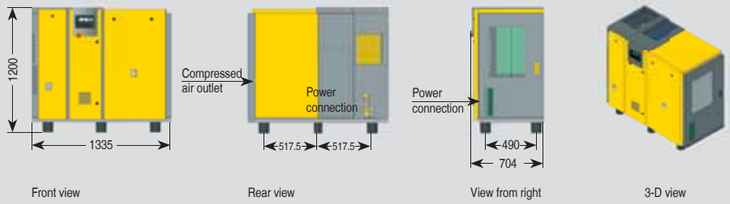
*) FAD to ISO 1217: 1996, Annex C. **) Sound level to PN8NTC2.3 at 1m distance, free-field measurement

Dimensions

Standard version

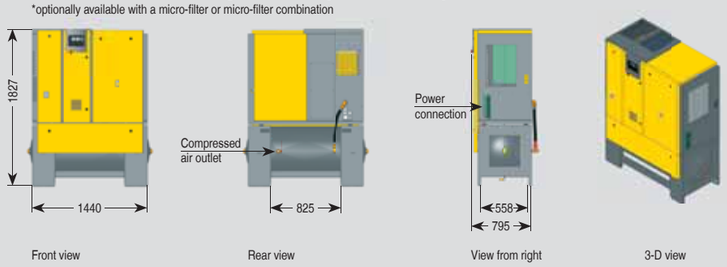


T - Version with integrated refrigeration dryer



Aircenter – With refrigeration dryer and compressed air receiver

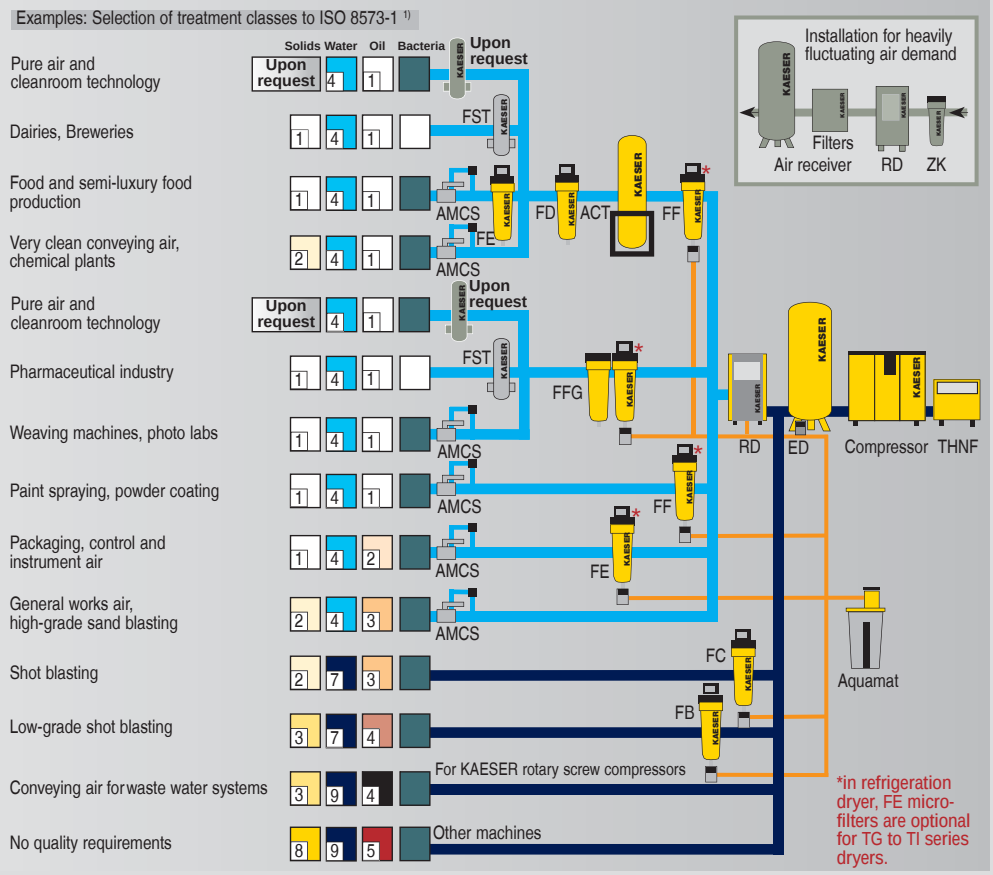
*optionally available with a micro-filter or micro-filter combination



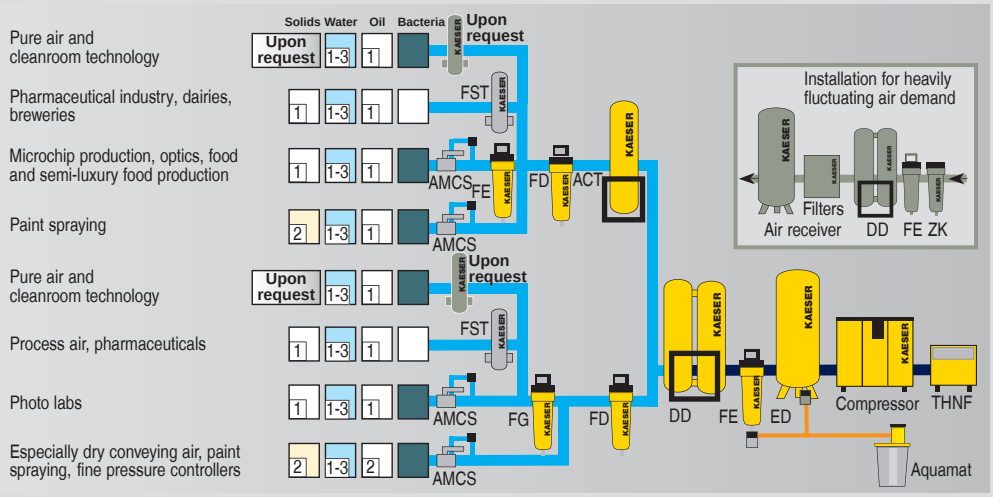
Choose the required grade of treatment according to your field of application:

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

Examples: Selection of treatment classes to ISO 8573-1 [1]



For air mains subject to sub-zero temperatures:
Compressed air treatment with a desiccant dryer (down to -70 °C pressure dew point)



Explanation:

THNF = Bag filter
Cleans dusty and heavily contaminated intake air

ZK = Centrifugal separator
Separates accumulating condensate

ED = Eco Drain
Electronic level-controlled condensate drain

FB = Pre-filter

FC = Pre-filter

FD = Particulate filter (attrition)

FE = Micro-filter Separates aerosol oil and solid particles

FF = Micro-filter
Separates aerosol oil and solid particles

FG = Activated carbon filter
For adsorption of oil vapours

FFG = Activated carbon and micro-filter combination

RD = Refrigeration dryer
For drying compressed air, pressure dew point to +3 °C

DD = Desiccant dryer
For drying compressed air, pressure dew point to -70 °C

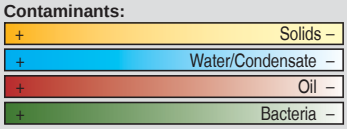
ACT = Activated carbon adsorber
For adsorption of oil vapours

FST = Sterile filter
For sterile compressed air

Aquamat = Condensate treatment system

AMCS = Air-main charging system

Contaminants:



Degree of filtration:

Class ISO 8573-1	Solid particles[1])		Humidity[2])	Total oil content[2])
	Max. particle size µm	Max. particle concentration mg/m³	Pressure dew point (x = liquid water in g/m³)	mg/m³
0	e.g. Consult Kaeser regarding pure air and cleanroom technology			
1	0.1	0.1	≤ - 70	≤ 0.01
2	1	1	≤ - 40	≤ 0.1
3	5	5	≤ - 20	≤ 1
4	15	8	≤ + 3	≤ 5
5	40	10	≤ + 7	–
6	–	–	≤ + 10	–
7	–	–	x ≤ 0.5	–
8	–	–	0.5 < x ≤ 5	–
9	–	–	5 < x ≤ 10	–

[1]) to ISO 8573-1:1991
[2]) to ISO 8573-1:2001

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