

# Rotary Screw Compressors SM Series

With the world-renowned SIGMA PROFILE 

Free air delivery 0.28 to 1.52 m<sup>3</sup>/min, pressures 5.5 to 15 bar



# SM Series

## SM – Long-term savings

Today's users expect maximum availability and efficiency from their compressors, regardless of size. SM series rotary screw compressors meet all of these needs and more. Not only do they deliver more compressed air for less power consumption, but they also combine ease of use and maintenance with exceptional versatility and environmentally responsible design.

### More air for your money

KAESER's engineers have significantly boosted the performance of SM series compressors compared to previous models. This impressive feat has been achieved both through airtight optimisation and the minimisation of internal pressure losses.

### Low energy consumption

The efficiency of a machine depends on the total costs incurred throughout the equipment's entire service life. With compressors, energy costs account for the lion's share of total expenditure. KAESER therefore designed its SM series compressors with optimum energy efficiency in mind. Refinements to the airtight with its energy-saving SIGMA PROFILE rotors, and the use of premium efficiency IE3 motors have significantly contributed to the increased performance of these versatile compressors. The addition of the SIGMA CONTROL 2 internal controller and KAESER's unique cooling system has helped to push the boundaries of efficiency even further.

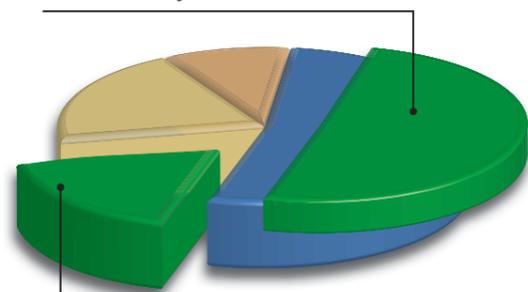
### Optimised design

The new SM models all share logical and user-friendly design throughout. For example, the left-hand enclosure panel can be removed in a few simple steps and allows excellent visibility of the system's intelligently laid out components. Needless to say, the new SM series was designed to ensure best possible access to all service points. When closed, the sound-absorbing compressor enclosure keeps operational sound levels to a minimum thereby ensuring a pleasantly quiet work environment. In addition, the enclosure features four inlet openings for separate airflow cooling of the compressor, the motor and the switching cabinet and for compressor intake air. Last, but not least, SM series compressors are impressively compact, which makes them the perfect choice for applications where space is at a premium.

### Modular system concept

SM series compressors are available as standard versions, as models that are equipped with an integrated high efficiency refrigeration dryer and as "AIRCENTER" models that also include an under-slung air receiver. KAESER's intelligent modular design therefore offers incredible flexibility. Moreover, all versions are available with an integrated frequency converter for infinitely variable speed control.

Potential energy cost savings with heat recovery



Energy cost savings through system optimisation



- Compressed air system investment
- Maintenance costs
- Energy costs
- Potential energy cost savings

## Quiet, dependable performance



Image: SM 12



# SM Series

**Design is in the details**



## SIGMA PROFILE airend

At the heart of every SM system lies a premium quality airend featuring KAESER's SIGMA PROFILE rotors. With optimised flow characteristics, these rotors play a key role in setting the new standard in specific power performance.



## Maximum efficiency: IE3 motors

Needless to say, all KAESER SM series rotary screw compressors are equipped with premium efficiency IE3 class drive motors.



## SIGMA CONTROL 2

The SIGMA CONTROL 2 ensures efficient control and system monitoring. The large display and RFID reader provide effective communication and maximum security. Multiple interfaces offer exceptional flexibility, whilst the SD card slot makes updates quick and easy.



## Dual-flow fan

The dual-flow fan supplies cooling air to both the drive motor and the entire package. Crescent-shaped fan blades help keep operating sound levels to an absolute minimum.

# SM T (SFC) Series

**Also available with refrigeration dryer and variable speed control**



Image: SM 12 T



### SM with energy-saving dryer

The compressed air refrigeration dryer is installed in a separate enclosure to prevent exposure to heat from the compressor package. The automatic dryer shutdown feature further aids energy-efficient performance.



### Optional variable speed control

The use of variable speed control can provide definite advantages for specific applications, which is why the SM 12 is also available with this feature. The frequency converter is integrated into the compressor system's control cabinet.



### Even quieter

The new cooling system provides outstanding cooling performance and enables optimum sound-proofing. Normal conversation can take place right next to the running compressor.



### Maintenance friendly

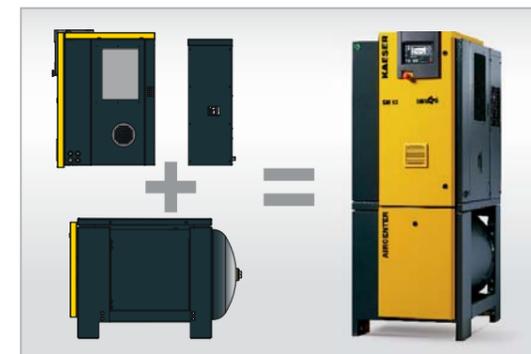
All maintenance work can be carried out from one side of the unit. The left housing cover is easily removed to allow excellent component accessibility.



Image: AIRCENTER 12

# AIRCENTER

**The compact and efficient compressed air package**



### Connect and go

Simply connect this compact compressed air package to the power supply and compressed air distribution network and you're ready to go - that's it!



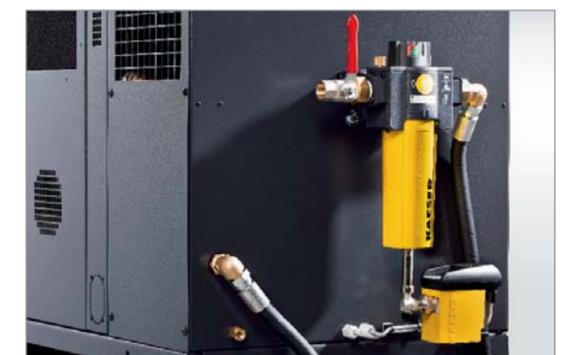
### Durable air receiver

The 270-litre air receiver is especially designed for installation in AIRCENTER systems. All inner and outer surfaces are coated to provide excellent corrosion protection and ensure long service life.



### Service-friendly design

The left-hand housing cover is easily removed to allow easy accessibility to all service points. Inspection glasses allow convenient inspection of fluid levels and drive belt tension whilst the unit is in operation.



### KAESER FILTER for pure, clean air

With minimal differential pressure and ensuring optimum efficiency, KAESER FILTER (option) products are able to provide compressed air of all purity classes as per ISO 8573-1 and allow quick and easy filter element changes. They are available in four filter grades.



**KAESER**

7.8bar 09:26 75°C  
LASTLAUF  
Taste ein gA Last  
Lauf 18005h Last 17805h  
Wartung ic 1995h  
www.kaeser.com  
**KAESER**  
RFID  
SIGMA CONTROL 2

**SM12**

**SIGMA**

## Equipment

### Complete unit

Ready-to-run, fully automatic, super-silenced, vibration damped, all panels powder coated. Suitable for use in ambient temperatures up to +45°C.

### Rotary screw airend

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

### Electric motor

Premium efficiency IE3 motor, quality German manufacture, IP 54.

### Fluid and air flow

'Honeycomb' air intake filter, pneumatic inlet and venting valves, cooling fluid separator tank with triple separation system, pressure relief valve, minimum pressure/check valve, thermostatic valve and fluid filter within the cooling fluid circuit, fluid/compressed air combination cooler.

### Refrigeration dryer (with 'T' version)

With electronically-controlled condensate drain. Refrigerant compressor with energy-saving, cycling shutdown feature; linked to operational status of the compressor when inactive. Alternatively, continuous operation can be selected on site.

### Electrical components

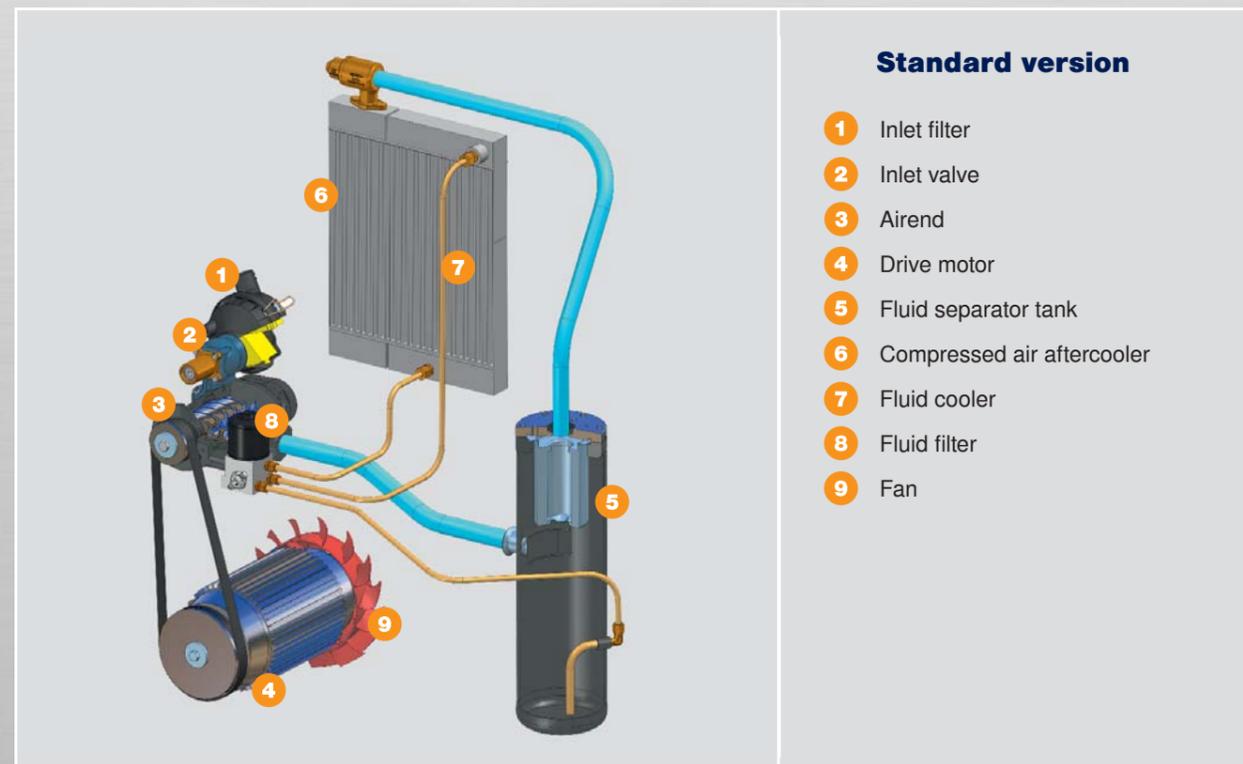
Ventilated IP 54 control cabinet, automatic star-delta starter, overload relay, control transformer.

### SIGMA CONTROL 2

"Traffic light" LED indicators show operational status at a glance, plain text display, 30 selectable languages, soft-touch keys with icons, fully automated monitoring and control. Selection of Dual, Quadro, Vario and continuous control as standard. Interfaces: Ethernet; additional optional communication modules for Profibus DP, Modbus, Profinet and Devicenet. SD-card slot for data-logging and updates. RFID reader, web server.

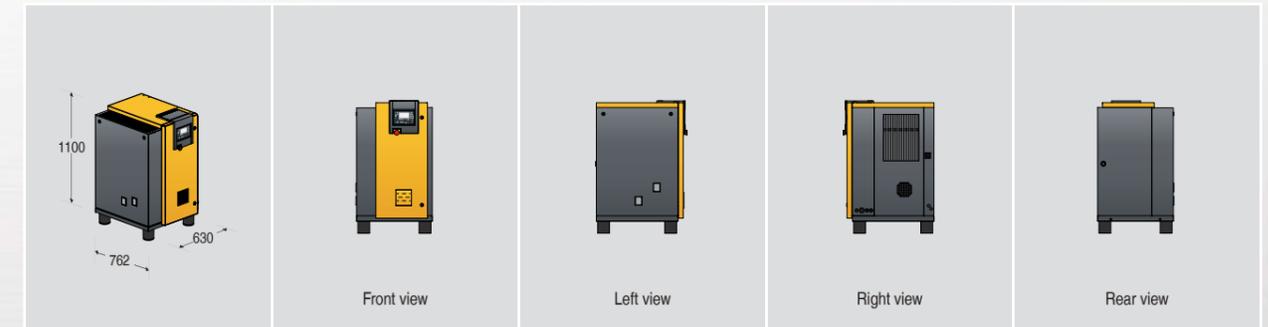
SM series rotary screw compressors also optionally available with SIGMA CONTROL BASIC.

## General design

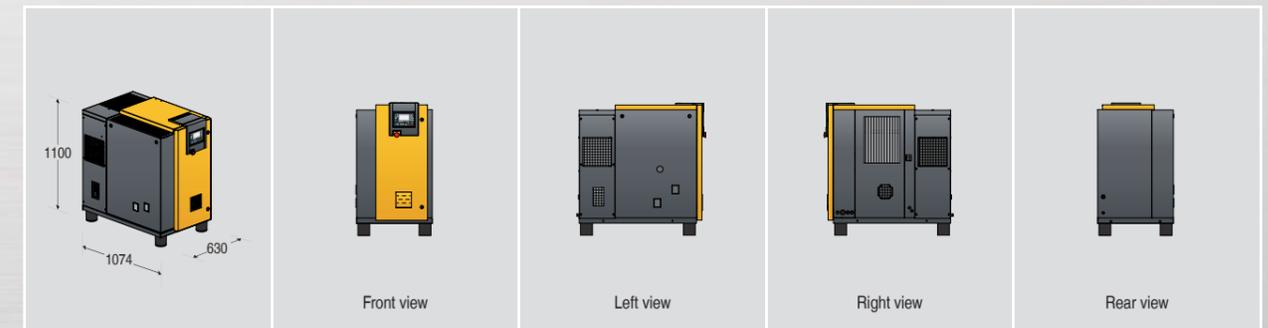


## Views

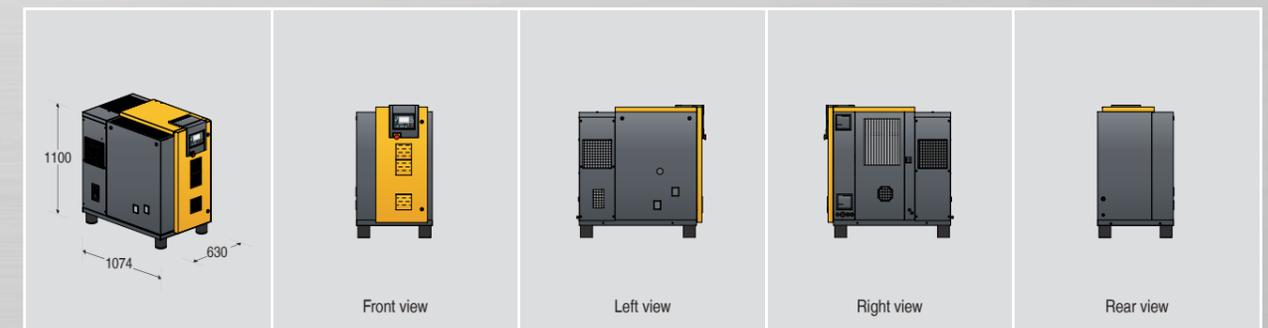
### Standard version



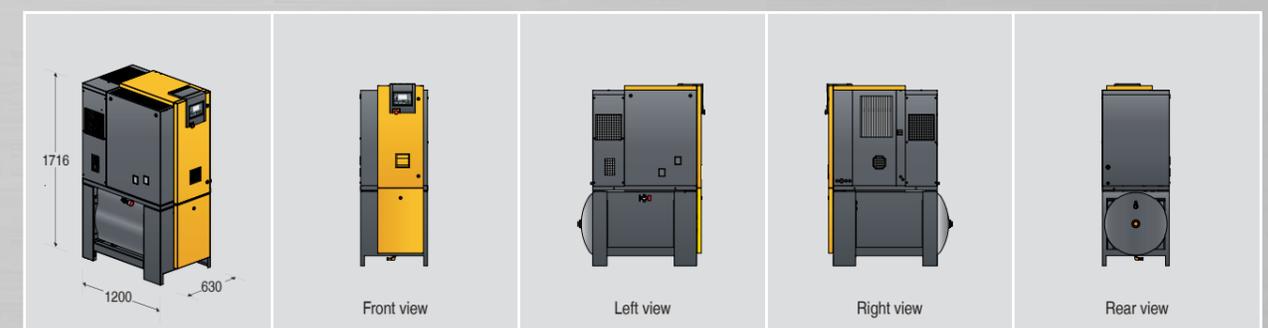
### Version with integrated refrigeration dryer



### Version with refrigeration dryer and variable speed drive



### AIRCENTER series



## Technical Specifications

### Standard version

Model	Working pressure	FAD *)	Max. working pressure	Rated motor power	Refrigeration dryer power consumption	Compressed air connection	Dimensions W x D x H	Sound pressure level **)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
<b>SM 9</b>	7.5 10 13	0.90 0.75 0.56	8 11 15	5.5	–	G ¾	630 x 762 x 1100	64	200
<b>SM 12</b>	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	–	G ¾	630 x 762 x 1100	65	210
<b>SM 15</b>	7.5 10 13	1.50 1.26 0.99	8 11 15	9	–	G ¾	630 x 762 x 1100	66	220

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

Model	Working pressure	FAD *)	Max. working pressure	Rated motor power	Refrigeration dryer power consumption	Compressed air connection	Dimensions W x D x H	Sound pressure level **)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
<b>SM 9 T</b>	7.5 10 13	0.90 0.75 0.56	8 11 15	5.5	0.31	G ¾	630 x 1074 x 1100	64	275
<b>SM 12 T</b>	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	0.31	G ¾	630 x 1074 x 1100	65	285
<b>SM 15 T</b>	7.5 10 13	1.50 1.26 0.99	8 11 15	9	0.32	G ¾	630 x 1074 x 1100	66	295

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

Model	Working pressure	FAD *)	Max. working pressure	Rated motor power	Refrigeration dryer power consumption	Compressed air connection	Dimensions W x D x H	Sound pressure level **)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
<b>SM 12 SFC</b>	7.5 10 13	0.35 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	7.5	–	G ¾	630 x 762 x 1100	67	220
<b>SM 12 T SFC</b>	7.5 10 13	0.35 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	7.5	0.31	G ¾	630 x 1074 x 1100	67	295

### AIRCENTER – Version with refrigeration dryer and compressed air receiver

Model	Working pressure	FAD *)	Max. working pressure	Rated motor power	Refrigeration dryer power consumption	Air receiver volume	Comp-pressed air connection	Dimensions W x D x H	Sound pressure level **)	Weight
	bar	m³/min	bar	kW	kW	l		mm	dB(A)	kg
<b>AIRCENTER 9</b>	7.5 10 13	0.90 0.75 0.56	8 11 15	5.5	0.31	270	G ¾	630 x 1200 x 1716	64	390
<b>AIRCENTER 12</b>	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	0.31	270	G ¾	630 x 1200 x 1716	65	400
<b>AIRCENTER 15</b>	7.5 10 13	1.50 1.26 0.99	8 11 15	9	0.32	270	G ¾	630 x 1200 x 1716	66	410

### AIRCENTER SFC – Version with variable speed drive

Model	Working pressure	FAD *)	Max. working pressure	Rated motor power	Refrigeration dryer power consumption	Air receiver volume	Comp-pressed air connection	Dimensions W x D x H	Sound pressure level **)	Weight
	bar	m³/min	bar	kW	kW	l		mm	dB(A)	kg
<b>AIRCENTER 12 SFC</b>	7.5 10 13	0.35 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	7.5	0.31	270	G ¾	630 x 1200 x 1716	67	410

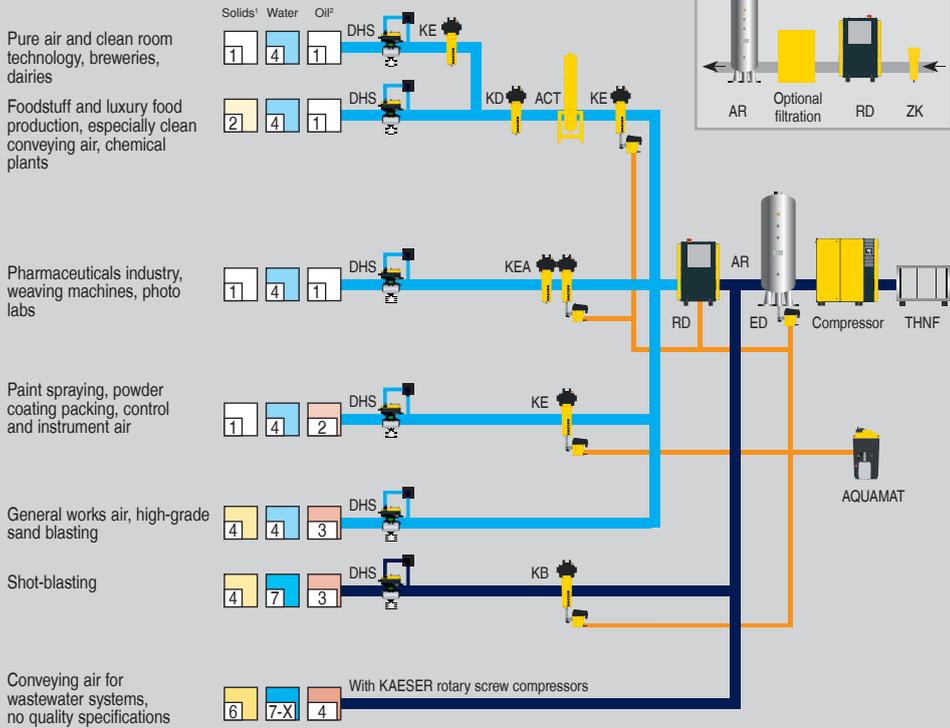
\*) FAD complete system as per ISO 1217: 2009, Annex C: Absolute intake pressure 1 bar (a), cooling and air intake temperature 20 °C

\*\*) Sound pressure level as per ISO 2151 and basic standard ISO 9614-2, operation at maximum working pressure and maximum speed; tolerance: ± 3 dB (A)

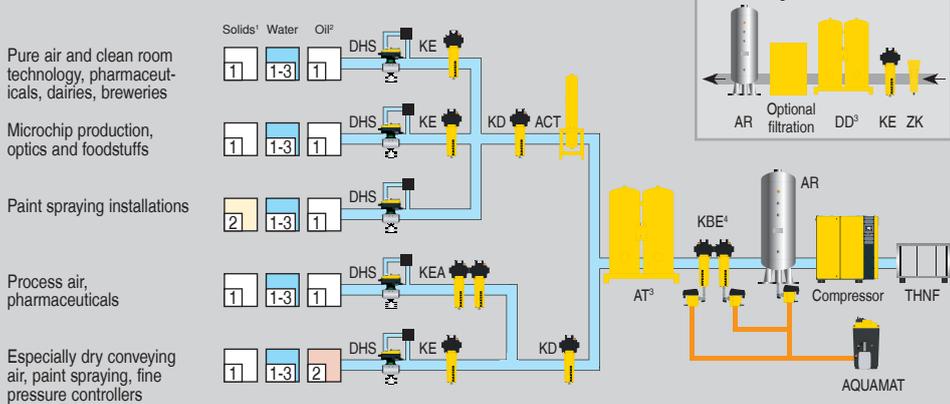
### Choose the required grade of treatment according to your field of application:

Examples: Selection of treatment classes to ISO 8573-1 (2010)

#### Air treatment with refrigeration dryer



#### Compressed air treatment with desiccant dryer



<sup>1)</sup> Achievable particle class with expert-implemented pipework and commissioning.  
<sup>2)</sup> Achievable total oil content with use of recommended compressor oils and unloaded intake air.  
<sup>3)</sup> High temperature filters and possibly an aftercooler are required downstream from heat-regenerated desiccant dryers.  
<sup>4)</sup> The use of an 'Extra Combination' (a filter combination comprising a KB and downstream KE filter) is recommended for critical applications requiring exceptionally high compressed air purity (e.g. in the electronics and optics sectors).

	Explanation
ACT	Activated carbon adsorber
AQUAMAT	AQUAMAT
DD	Desiccant dryer
DHS	Air-main charging system
AR	Air receiver
ED	ECO-DRAIN
KA	Activated carbon filter, adsorption
KB	Coalescence filter, Basic
KBE	Extra Combination
KD	Particulate filter, dust
KE	Coalescence filter, Extra
KEA	Carbon Combination
RD	Refrigeration dryer
THNF	Bag filter
ZK	Centrifugal separator

#### Compressed air quality classes to ISO 8573-1(2010):

Solid particles/dust			
Class	Max. particle count per m <sup>3</sup> * of a particle size d in [µm]		
	0.1 ≤ d ≤ 0.5	0.5 ≤ d ≤ 1.0	1.0 ≤ d ≤ 5.0
0	Please consult KAESER regarding specific requirements		
1	≤ 20,000	≤ 400	≤ 10
2	≤ 400,000	≤ 6,000	≤ 100
3	Not defined	≤ 90,000	≤ 1,000
4	Not defined	Not defined	≤ 10,000
5	Not defined	Not defined	≤ 100,000
Class Particle concentration C <sub>p</sub> in mg/m <sup>3</sup> *			
6	0 < C <sub>p</sub> ≤ 5		
7	5 < C <sub>p</sub> ≤ 10		
X	C <sub>p</sub> > 10		

Water	
Class	Pressure dew point, in °C
0	Please consult KAESER regarding specific requirements
1	≤ -70 °C
2	≤ -40 °C
3	≤ -20 °C
4	≤ +3 °C
5	≤ +7 °C
6	≤ +10 °C
Class Concentration of liquid water C <sub>w</sub> in g/m <sup>3</sup> *	
7	C <sub>w</sub> ≤ 0.5
8	0.5 < C <sub>w</sub> ≤ 5
9	5 < C <sub>w</sub> ≤ 10
X	C <sub>w</sub> > 10

Oil	
Class	Total oil concentration (fluid, aerosol + gaseous) mg/m <sup>3</sup> *
0	Please consult KAESER regarding specific requirements
1	≤ 0.01
2	≤ 0.1
3	≤ 1.0
4	≤ 5.0
X	> 5.0

\*) With reference conditions 20°C, 1 bar(a), 0%



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