HPC Compressed Air Systems

KAESER KOMPRESSOREN

Rotary Screw Compressors

DSD Series

With the world-renowned SIGMA PROFILE

Flow rate 3.25 to 24.2 m³/min, Pressure 5.5 to 15 bar

www.hpccompressors.co.uk

DSD series

KAESER KOMPRESSOREN pushes the boundaries of compressed air efficiency and availability once again with its latest generation of DSD series rotary screw compressors. Intelligent design solutions have not only lead to enhanced ease of operation and serviceability, but also give this series of class-defining compressors their distinctive and eye-catching appearance.

A true multi-saver

These high performance systems help save energy in many ways: 1. Flow-optimised SIGMA PROFILE rotors improve specific power. 2. The use of IE3 drive motors maximises energy efficiency (the use of these motors became mandatory in the EU and North America on the 1st of January 2015). 3. Kaeser's 1:1 drive design eliminates the transmission losses associated with gear or V-belt driven systems, as the motor directly drives the airend. 4. The SIGMA CONTROL 2 compressor controller optimises performance by using specially developed control algorithms.

Ease of maintenance ensures savings

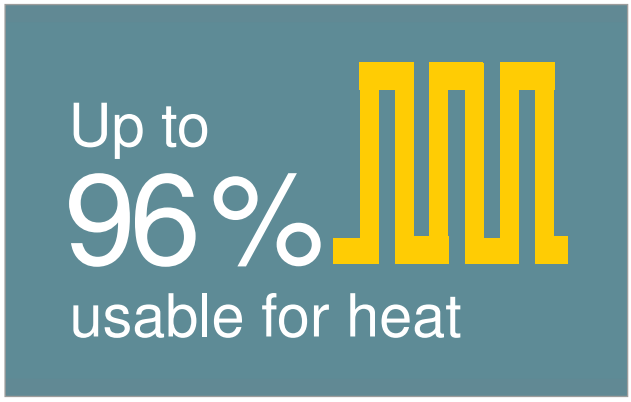
The distinctive and eye-catching design of these systems from the outside is complemented by intelligent component layout on the inside for even greater energy efficiency. For example, all service and maintenance points are within easy reach and directly accessible from the front of the unit. This not only saves time and money, but also maximises compressed air system availability.

Station components

DSD series rotary screw compressors are the perfect partners for high-efficiency industrial compressed air stations. The internal SIGMA CONTROL 2 compressor controller offers numerous communication channels, which allow seamless interaction with advanced master controllers, such as KAESER's SIGMA AIR MANAGER, and in-house centralised control systems. This enables simple set-up and achieves unprecedented levels of efficiency.

Enhanced cooling

KAESER's innovative cooling concept features external coolers to provide significant user advantages: because the ambient air that is drawn in is not "pre-warmed", it provides significantly enhanced cooling performance. Moreover, cooler status can be checked at a glance and these compact units can be easily cleaned from the outside.



Why choose heat recovery?

The question should in fact be: Why not? Amazingly, up to 100 percent of the (electrical) energy input to a compressor is converted into heat. Up to 96 percent of this energy can be recovered and reused for space heating or hot water production purposes. This not only reduces primary energy consumption, but also significantly improves the operational total energy balance.

Efficiency redefined

Image: DSD 202


Log-in successful
Change password:
Name:
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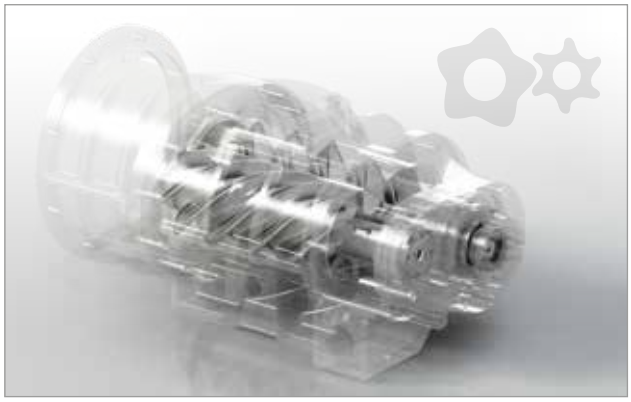
KAESER
RFID
SIGMA CONTROL 2
KAESER KOMPRESSOREN
02/20XX

KAESER quality and efficiency for every need



SIGMA PROFILE

At the heart of every DSD system lies a premium quality airend featuring KAESER's SIGMA PROFILE rotors. Operating at low speed, KAESER's airends are equipped with flow-optimised rotors for superior efficiency.

SIGMA CONTROL 2: optimum efficiency

The internal SIGMA CONTROL 2 controller always ensures efficient control and monitoring of compressor operation. The large display and RFID reader ensure easy communication and maximum security. Multiple interfaces enable seamless networking capability, whilst the SD card slot makes updates quick and a easy.

High efficiency IE3 motors

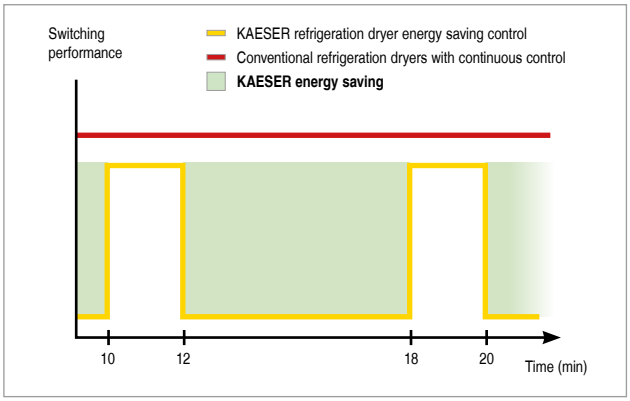
Needless to say, all KAESER DSD series rotary screw compressors are equipped with premium efficiency IE3 efficiency class drive motors. The use of IE3 drive motors became mandatory in the EU and North America on the 1st of January 2015.

Energy-saving 1:1 drive

With 1:1 direct drive, the drive motor and airend, together with the coupling and coupling flange, form a compact durable unit that incurs zero drive losses.

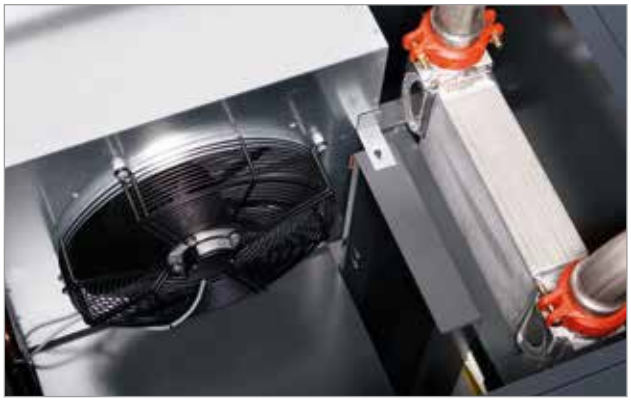
Image: DSD 172 T

DSD T: Energy-saving compressed air drying



Energy-saving control

The integrated refrigeration dryer in DSD-T units provides high-efficiency performance thanks to its energy-saving control. The dryer is therefore active only when compressed actually needs to be dried: as a result, this approach achieves the required compressed air quality with maximum efficiency.



Efficient cooling

A powerful fan and a separate enclosure ensure high thermal reserve for the integrated refrigeration dryer. This allows the required compressed air quality to be reliably maintained at all times even at high ambient temperatures.

Centrifugal separator with ECO-DRAIN

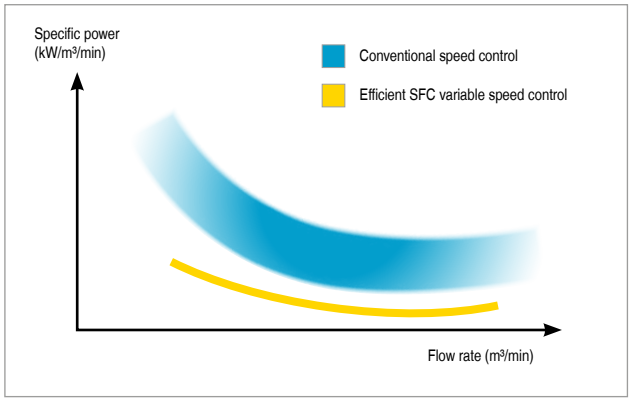
Before flowing into the refrigeration dryer, the compressed air from the compressor passes through KAESER's newly developed centrifugal separator which efficiently removes accumulating condensate. This reduces the load on the dryer and reduces energy consumption.

Service-friendly savings

Excellent accessibility to all maintenance and service-relevant components minimises maintenance effort and therefore costs. KAESER's newly developed centrifugal separator with electronic condensate drain is fitted as standard in T-version models.

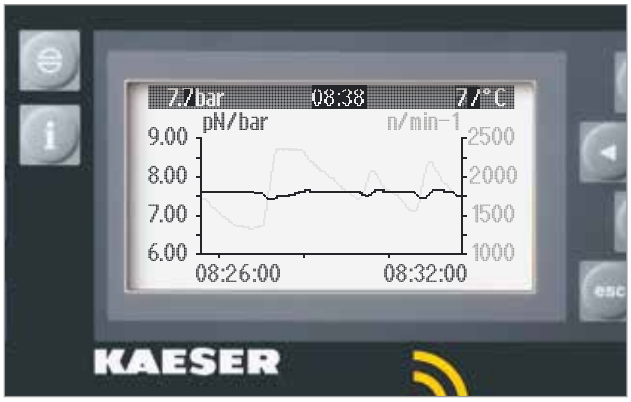
Image: DSD 172 T SFC

DSD SFC – Variable speed control with KAESER energy efficiency



Optimised specific power

The variable speed compressor is the most heavily loaded piece of equipment in every compressor station. DSD-SFC models are therefore designed to provide maximum efficiency without operating at extreme speeds. This saves energy, maximises service life and enhances reliability.



Precision pressure control

The volumetric flow rate can be adjusted within the control range according to pressure to suit actual compressed air demand. As a result, operating pressure is precisely maintained to within ±0.1 bar. This allows maximum pressure to be reduced which saves both energy and money.

Separate SFC control cabinet

The SFC (SIGMA FREQUENCY CONTROL) variable speed drive is housed in its own control cabinet to shield it from heat from the compressor. A separate fan keeps operating temperatures in the optimum range to ensure maximum performance and service life.

VDE
EMC

Zero Interference

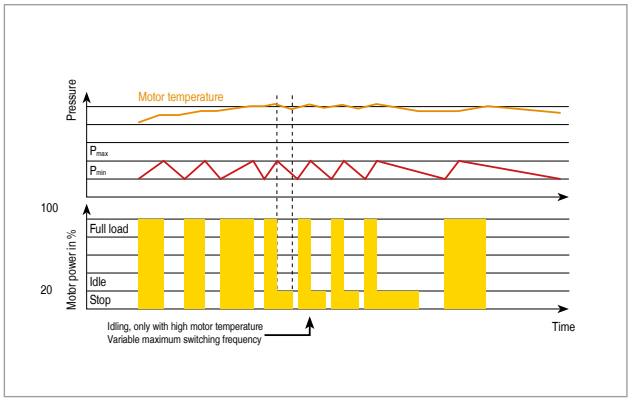
It goes without saying that the SFC control cabinet and SIGMA CONTROL 2 are tested and certified both as individual components and as a system to EMC directive EN 55011 for Class A1 industrial power supplies.

Image: DSD 202

Intelligent detail solutions

External lubrication

Electric motors must be lubricated while running. In DSD compressors, service staff can easily perform this task from the outside of the machine. This applies to both the compressor drive motor and the fan motors.



Dynamic control

The dynamic control feature calculates run-on times based on the motor winding temperature. This reduces idling times and energy consumption. Additional control options are stored in the SIGMA CONTROL 2 and can be called up as required.

High residual thrust exhaust air

The integrated radial fans are considerably more efficient than axial fans and provide high residual thrust. This generally enables the warm exhaust air to be directly ducted away without the need for an auxiliary fan.

Service-friendly

Just like the air filter, which is simple to change from the front of the unit, all other maintenance components are also easy to access. This speeds up maintenance and service work tasks, thereby reducing operating costs and increasing availability.

Savings calculation example for warm air heat recovery in terms of fuel oil (DSD 202)

Maximum available heat capacity:		124 kW	
Fuel value per litre of fuel oil:		9.861 kWh/l	
Fuel oil heating efficiency:		0.9	
Price per litre of fuel oil:		0.70 €/l	1 kW = 1 MJ/h x 3.6
Cost saving:	$\frac{124 \text{ kW} \times 2000 \text{ h}}{0.9 \times 9.861 \text{ kWh/l}}$	x 0.70 €/l	**= €19,561 per year**

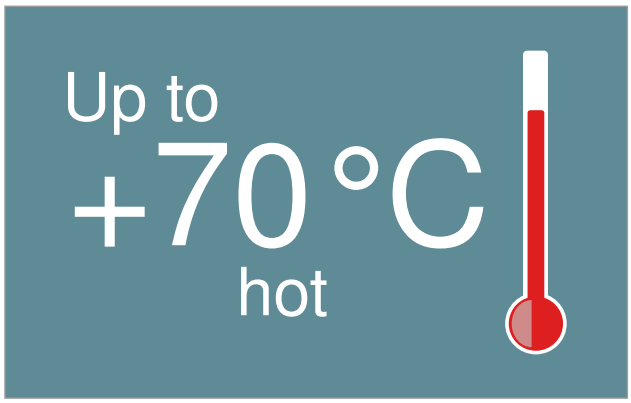
Save more energy through heat recovery

Systems for hot water usage

The integrated system comprising the plate heat exchanger, thermostatic valve and complete pipework requires no additional space in the compressor and can recover approximately 76 % of the overall power consumption of DSD compressors by utilising the heat in the water.

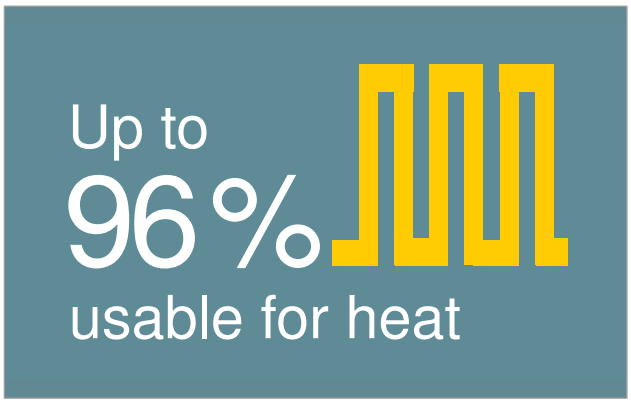
Warm exhaust air for space heating

It's heating made easy: thanks to the high residual thrust radial fan, exhaust (warm) air can be easily ducted away to spaces that require heating. This simple process is thermostatically controlled.



Process, heating and service water

Hot water – up to 70 °C – can be produced from reusable compressor heat via an optional plate-type heat exchanger system.



Heat recovery a win

Amazingly, 100 % of the electrical drive energy input to a compressor is converted into heat energy. From that, up to 96 % is available for heat recovery purposes. Use this potential to your advantage!


KAESER
DSD 172
SIGMA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Equipment

Complete unit

Ready for operation, fully automatic, silenced, vibration damped, all panels powder coated. Can be used in ambient temperatures up to +45 °C. Service-friendly design: the bearings for drive and fan motors can be lubricated externally.

Airend

Genuine KAESER single-stage rotary screw airend with energy-saving SIGMA PROFILE rotors and cooling-fluid injection for optimised rotor cooling, 1:1 direct drive.

Fluid and air flow

Dry-air filter with pre-separation, inlet silencer, pneumatic inlet and vent valves, cooling-fluid separator reservoir with three-stage separator system, pressure release valve, minimum pressure / check valve, fluid and compressed air aftercooler (air-cooled as standard). For T-versions: KAESER centrifugal separator with electronically controlled and energy saving condensate drain that operates without pressure loss; pipework and centrifugal separator made from stainless steel.

Water-cooled version (Option)

Fluid and compressed air aftercooler implemented as water-cooled plate type heat exchanger.

Optimised separator system

The combination of flow-optimised pre-separation and special separator cartridges results in minimal remaining fluid content of < 2 mg/m³ in the compressed air. This separator system requires less maintenance.

Heat recovery (Option)

With integrated fluid / water plate type heat exchanger.

Electrical components

Premium efficiency IE3 drive motor with PT100 coil temperature sensor for motor monitoring, ventilated IP 54 control cabinet, automatic star-delta protection combination, overload relay, control transformer. SFC version equipped with frequency converter for drive motor.

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, Dynamic 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.

Efficient dynamic control

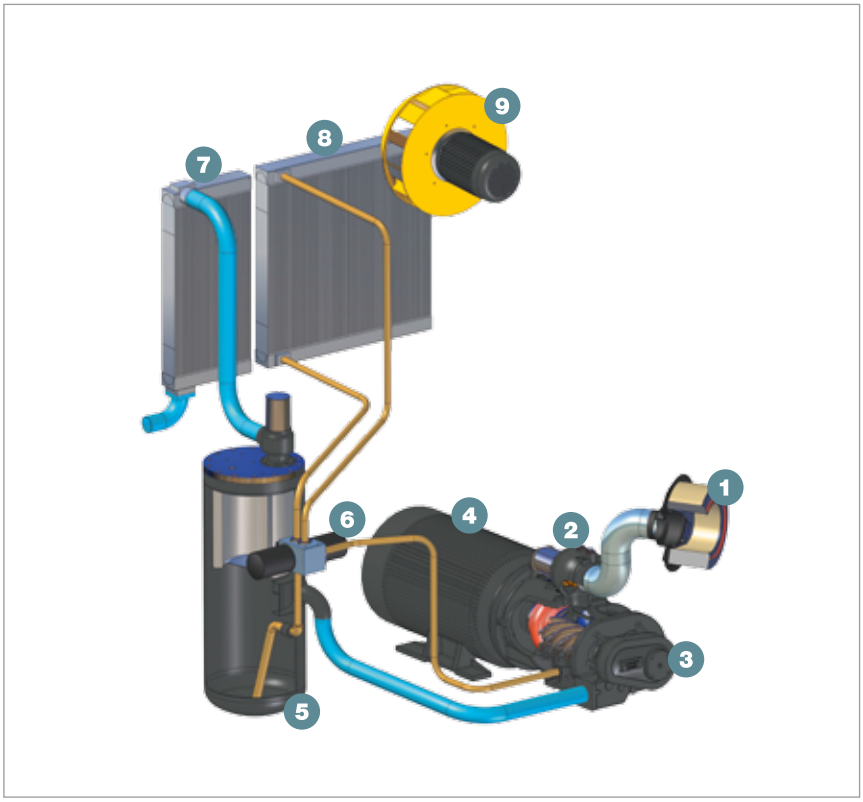
The dynamic control feature calculates run-on times based on the motor winding temperature. This reduces idling times and energy consumption. Additional control options are stored in the SIGMA CONTROL 2 and can be called up as required.

SIGMA AIR MANAGER 2 (SAM)

The further-refined Adaptive 3-D^{advanced} Control predictively calculates and compares various operating scenarios and selects the most efficient to suit the compressed air application’s specific needs, which enables compressor flow rate and energy consumption to be precisely adjusted to match actual compressed air demand. In combination with the integrated multi-core industrial PC processor, the Adaptive 3-D^{advanced} Control is able to ensure optimised performance at all times. Furthermore, the SIGMA NETWORK bus converters (SBC) provide a host of possibilities to enable the system to be individually tailored to meet exact user requirements. The SBC can be equipped with digital and analogue input and output modules, as well as with SIGMA NETWORK ports, to enable seamless display of flow rate, pressure dew point, power or alarm message information.

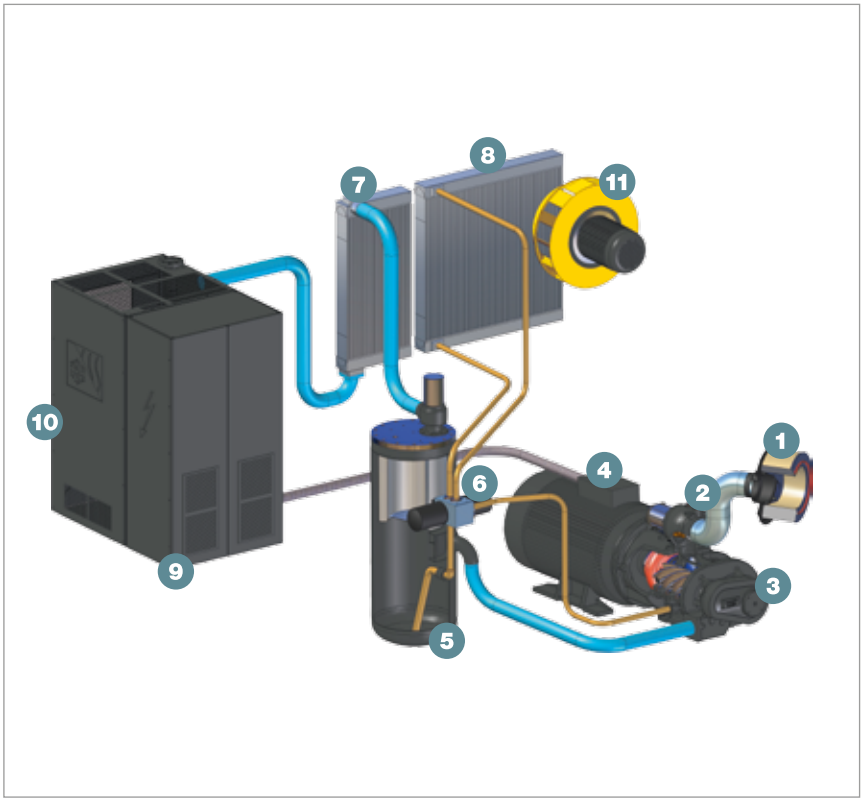
Amongst other key features, the SIGMA AIR MANAGER 2 provides long-term data storage capability for reporting, controlling and audits, as well as for energy management tasks as per ISO 50001.

General design



Standard version

(1) Inlet filter
(2) Intake valve
(3) Airend
(4) Drive motor
(5) Fluid separator tank
(6) Fluid filter
(7) Compressed air aftercooler
(8) Fluid cooler
(9) Fan



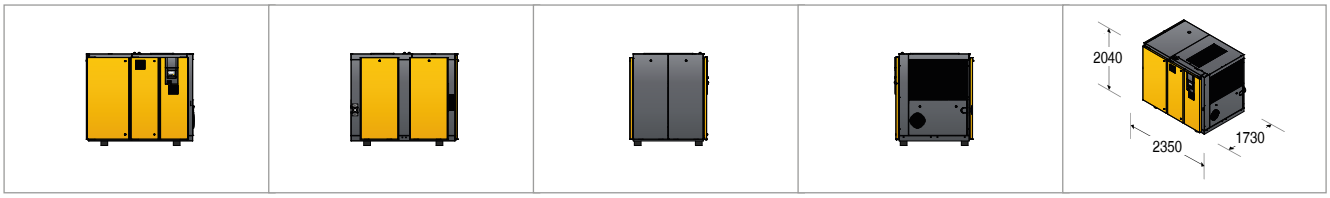
T SFC version

(1) Inlet filter
(2) Intake valve
(3) Airend
(4) Drive motor
(5) Fluid separator tank
(6) Fluid filter
(7) Compressed air aftercooler
(8) Fluid cooler
(9) Frequency converter (Option)
(10) Refrigeration dryer (Option)
(11) Fan

Technical specification

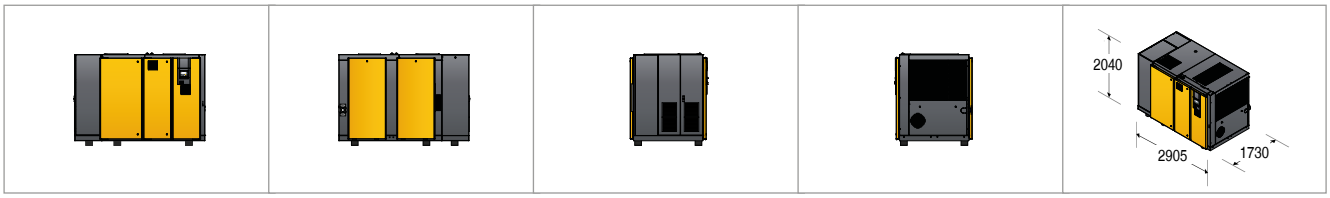
Standard version

Model	Working pressure bar	Flow rate *) overall machine at working pressure m³/min	Max. working pressure bar	Nominal motor power kW	Dimensions W x D x H mm	Connection Compressed air	Sound pressure level **) dB(A)	Mass kg
DSD 142	7.5	13.62	9	75	2350 x 1730 x 2040	DN 65	68	2700
DSD 172	7.5	16.12	8.5	90	2350 x 1730 x 2040	DN 65	69	2850
	10	13.20	12					
DSD 202	7.5	20.46	8.5	110	2350 x 1730 x 2040	DN 65	70	3200
	10	15.52	12					
	13	12.68	15					
DSD 238	7.5	23.80	8.5	132	2350 x 1730 x 2040	DN 65	71 78	3400
	10	19.92	12					
	13	14.80	15					



SFC - Version with variable speed drive

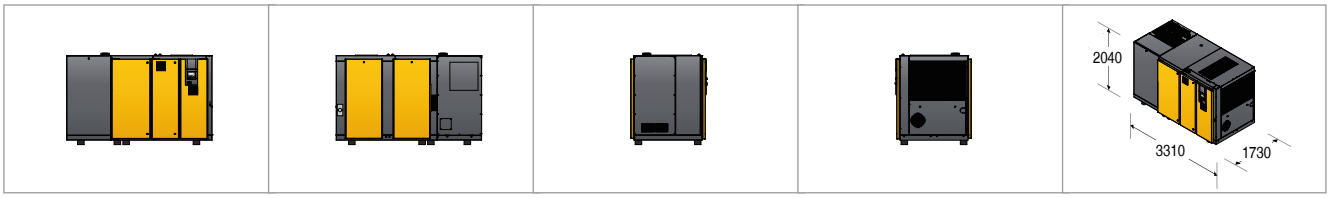
Model	Working pressure bar	Flow rate *) overall machine at working pressure m³/min	Max. working pressure bar	Nominal motor power kW	Dimensions W x D x H mm	Connection Compressed air	Sound pressure level **) dB(A)	Mass kg
DSD 142 SFC	7.5	3.60 - 14.80	9	75	2905 x 1730 x 2040	DN 65	69	3100
DSD 172 SFC	7.5	3.60 - 16.33	10	90	2905 x 1730 x 2040	DN 65	70	3250
	10	3.55 - 14.20	10					
DSD 202 SFC	7.5	4.25 - 20.30	10	110	2905 x 1730 x 2040	DN 65	71	3650
	10	4.00 - 17.30	10					
	13	3.25 - 14.95	15					
DSD 238 SFC	7.5	5.93 - 22.50	10	132	2905 x 1730 x 2040	DN 65	72 79	3850
	10	6.60 - 20.00	10					
	13	3.56 - 16.00	15					



*) Flow rate complete system as per ISO 1217: 2009 Annex C: Absolute inlet pressure 1 bar (a), cooling and air inlet temperature 20 °C
**) Sound pressure level as per ISO 2151 and basic standard ISO 9614-2, tolerance: ± 3 dB (A)

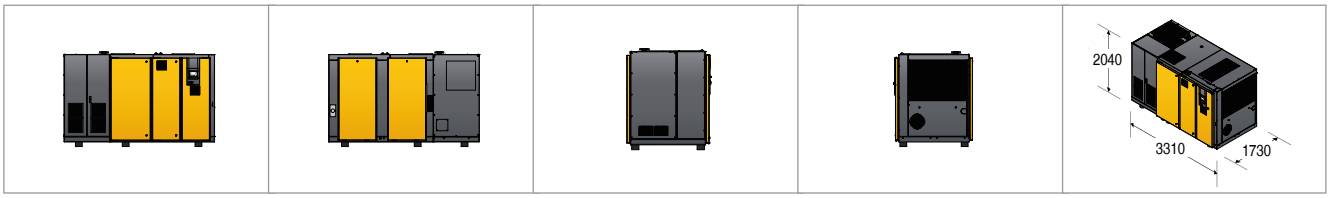
T - Version with integrated refrigeration dryer (R-134a refrigerant)

Model	Working pressure bar	Flow rate *) overall machine at working pressure m³/min	Max. working pressure bar	Nominal motor power kW	Refrigeration dryer power consumption **) kW	Dimensions W x D x H mm	Connection Compressed air	Sound pressure level **) dB(A)	Mass kg
DSD 142 T	7.5	13.62	9	75	2.1	3310 x 1730 x 2040	DN 65	68	3100
DSD 172 T	7.5	16.12	8.5	90	2.1	3310 x 1730 x 2040	DN 65	69	3230
	10	13.20	12						
DSD 202 T	7.5	20.46	8.5	110	2.35	3310 x 1730 x 2040	DN 65	70	3730
	10	15.52	12						
	13	12.68	15						
DSD 238 T	7.5	23.80	8.5	132	2.35	3310 x 1730 x 2040	DN 65	71 79	3870
	10	19.92	12						
	13	14.80	15						



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

Model	Working pressure bar	Flow rate *) overall machine at working pressure m³/min	Max. working pressure bar	Nominal motor power kW	Refrigeration dryer power consumption **) kW	Dimensions W x D x H mm	Connection Compressed air	Sound pressure level **) dB(A)	Mass kg
DSD 142 T SFC	7.5	3.60 - 14.80	9	75	2.1	3310 x 1730 x 2040	DN 65	69	3400
DSD 172 T SFC	7.5	3.60 - 16.33	10	90	2.1	3310 x 1730 x 2040	DN 65	70	3530
	10	3.55 - 14.20	10						
DSD 202 T SFC	7.5	4.25 - 20.30	10	110	2.35	3310 x 1730 x 2040	DN 65	71	4080
	10	4.00 - 17.30	10						
	13	3.25 - 14.95	15						
DSD 238 T SFC	7.5	5.93 - 22.50	10	132	2.35	3310 x 1730 x 2040	DN 65	72 79	4220
	10	6.60 - 20.00	10						
	13	3.56 - 16.00	15						



The world is our home

As one of the world's largest compressed air systems providers and compressor manufacturers, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiary companies and authorised partners.

With innovative products and services, KAESER KOMPRESSOREN's experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency. Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the KAESER group's global computer network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that every product operates at the peak of its performance at all times and provides maximum availability.

HPC Compressed Air Systems

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