

# Screw Compressors

## ESD and FSD SERIES

Capacities from: 858 to 2015 cfm

Pressures from: 87 to 217 psig

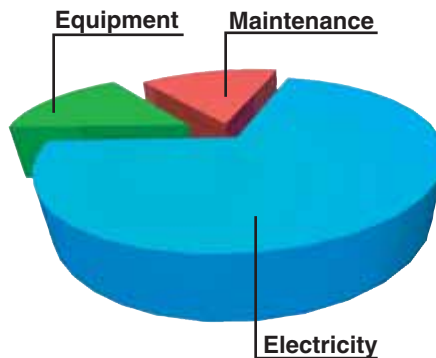


# Direct Drive Rotary Screw Compressor

## Maximum Efficiency and Reliability

For years, customers have relied on Kaeser for energy-efficient equipment and complete compressed air system solutions. Our research and development team continues to produce industry-leading compressor technology to meet virtually any compressed air application requirement. The ESD and FSD series rotary screw compressors are no exception.

Kaeser's ESD and FSD compressors combine our proprietary optimized Sigma Profile airend and Sigma Control system with the latest one-to-one drive technology. They also incorporate optimized designs for reducing maintenance, attenuating noise, and providing superior aftercooling. Manufactured according to strict ISO 9001 quality standards and designed for easy maintenance, our compressors provide exceptional energy savings and years of reliable service.



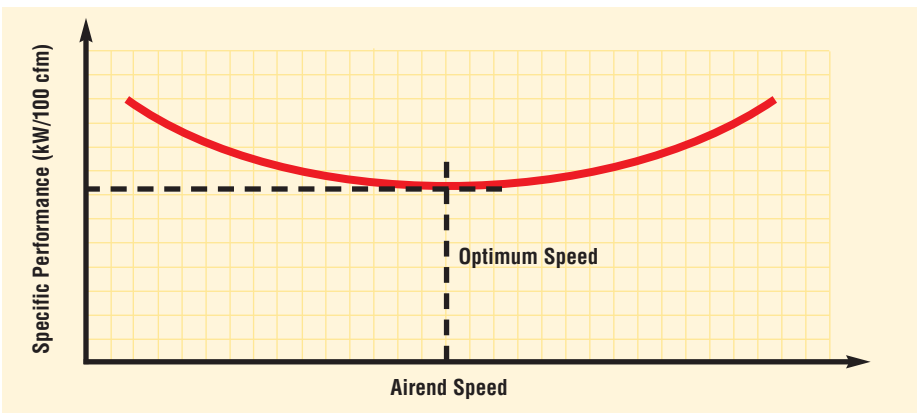
## 70% of Your Long Term Compressor Cost is Electricity

Analyze the total costs of a compressed air system and you'll realize that power cost is significant. In just one year it could exceed the cost of the compressor itself. Over a period of ten years, this could consume 70% of your overall costs.

That's why it is important to investigate energy efficiency when considering a new compressor.

Kaeser's proprietary Sigma Profile compresses air efficiently. It delivers up to 20% more cfm per horsepower than units with other airend designs.

## A Perfect Match



### 1 Inlet Filter

We protect our compressors with a 4 micron air intake filter. This extends airend life and fluid change intervals. The filter may be cleaned several times before replacement and is easily serviced. No tools required.



### 2 Sigma Profile Airend

Our single-stage, flooded rotary screw airend delivers pressures up to 217 psig. ESD and FSD airends are precision-machined to close tolerances and optimized in size and profile to match the low airend speeds with their best specific performance (see *A Perfect Match* curve below).



### 3 One-to-One Drive

Some compressors are called direct drive but are really gear-driven units. In Kaeser's ESD and FSD packages, the motor is directly connected to the airend with a maintenance-free coupling, providing maximum transmission efficiency. The airend and motor are connected by a casting which is doweled and pinned to assure perfect alignment.



### 4 Motor

TEFC, high efficiency, 460 or 575 V, 3-phase, 60 Hz, 1800 rpm, class F insulation. Other voltages are available. Magnetic Wye-Delta reduced-voltage starter (standard) ensures low starting current and smooth acceleration. Remote grease fittings make maintenance a breeze.



# ESD and FSD Series



*FSD Series Screw Compressor*

## Radial Fans

Powerful radial fans draw cool ambient air through the cooler. They are designed to provide higher static pressure which is ideally suited for ducting and heat recovery applications. The radial fans are extremely quiet, thermostatically controlled and consume less power than conventional axial fans, providing additional energy savings. FSD fan motor also features remote grease fittings for easy maintenance.



## Efficient Separator System

A combined fluid reservoir and separator tank with 3-stage separation system ensures minimal fluid carry-over. Kaeser's vertical separator vessel enables centrifugal action to remove most of the cooling fluid from the air. An in-depth 2-stage filter cartridge separates remaining fluid. This triple



action doubles the cartridge service life and reduces fluid carry over to 2 ppm or less (by weight). Quick-change devices on the separator and cooler allow easy and complete fluid changes. The ASME (or CRN) separator tank is equipped with quick-disconnect fittings for manual verification of separator element contamination. The fluid level is quickly checked with the easy-to-read level indicator.



## Unique Air Flow Design Optimizes Cooling

In Kaeser's "split-cooling" design, two separate cooling air inlet zones for the coolers and drive motor ensure optimum cooling. Drawing ambient air directly across the coolers and motor through separate zones eliminates preheating and results in longer lubricant life and a cooler running motor. This also results in much lower approach temperatures, improving moisture separation and air quality.

To increase reliability and reduce maintenance costs, the coolers are conveniently located on the outside of the unit, where dust and dirt build-up are easily seen and can be removed without dismantling the cooler.

Powerful radial fans pull air through the coolers and create a vacuum within the cabinet that effectively cools the motor even under severe operating conditions. Top exhaust allows for convenient ducting and reduces the system footprint.

## Sigma Control

Sigma Control is a modern, compact, industrial PC-based control system with an Intel® processor and real-time



operating system. Sigma Control monitors all critical compressor functions and presents operating status, maintenance reminders or trouble alerts on a plain text display in up to 30 languages. An event history facilitates troubleshooting and record keeping. Sigma Control has three communication ports built-in (RS 232, RS 485, Profibus) with open architecture for integration into plant control systems. Five different compressor control configurations are available to match compressor performance to air demand and increase energy savings.

## Extremely Low Noise and Vibration

All ESD and FSD models come standard with Kaeser's superior cabinet that features complete metal enclosures with sound proofing liners and heavy-duty vibration isolation. Using one-to-one direct drive and our unique cooling airflow design with radial fans greatly reduces internal noise and vibration.

As a result, the ESD and FSD series are about 10 dB(A) quieter than conventional compressors of equal performance with noise emissions as low as 76 dB(A).



### Air Flow Paths

- Compressed air cooling
- Fluid cooling
- Compressed air
- Motor cooling

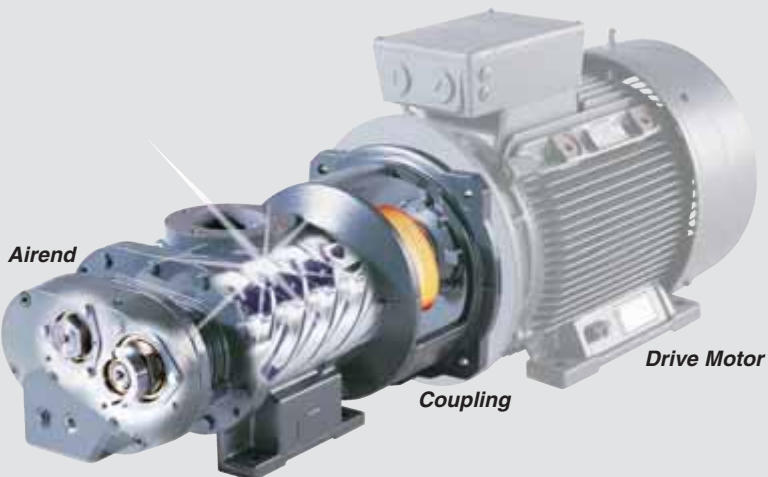
ESD Series Screw Compressor

## Optimized Efficiency

In ESD and FSD packages, one-to-one drive reduces the number of components needed compared to a gear drive unit thus increasing reliability and service life.

Kaeser has selected oversized airends specifically matched to produce the required output in flow and pressure. Compared to compressors using small, high-speed gear-driven airends, the ESD and FSD one-to-one drive provides triple savings: no-loss power transmission, improved power consumption, and reduced maintenance and related downtime costs.

$$\text{Airend RPM} = \text{Motor RPM}$$



## One-to-One Direct Drive

# Options

## Water-Cooled

Standard units are air-cooled, but water-cooling is available.

## Power Supply

Medium voltage 2300 V and 4600 V (60 or 50 Hz) as well as 400 V - 50 Hz

## Sigma Frequency Control

ESD and FSD units are available with optional SFC variable frequency drive.



### SFC Features

- Superior part-load efficiency
- Stable system pressure
- Siemens drive system technology for reliability and efficiency
- Drive includes EMI filter, contactor for galvanic separation and a line reactor
- Drive cabinet cooling fans



Drive system technology from Siemens provides superior reliability and drive efficiency. Kaeser SFC drive includes EMI filters, contactor for galvanic separation and a line reactor providing superior protection. Drive cabinet cooling fans ensure proper operating temperature.

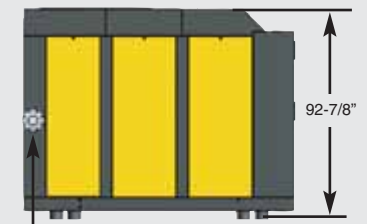
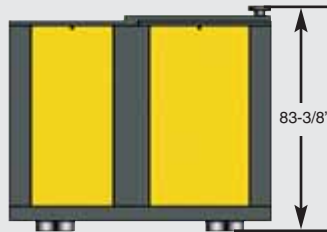
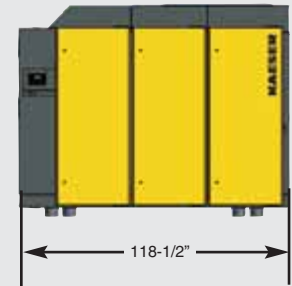
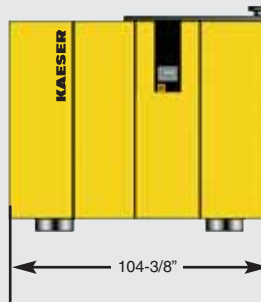
# Dimensions

Dimensions are for reference only — please contact Kaeser for dimensional drawings.

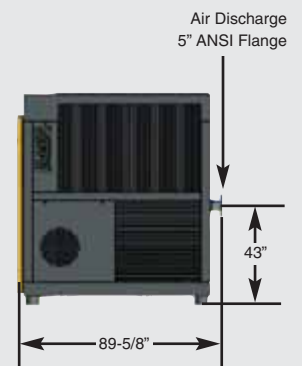
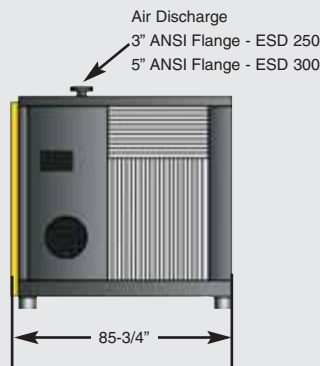
ESD



FSD



Air Discharge



# Compressed Air System Design

Kaeser's team of engineers are always at your service to help design or optimize your compressed air system. With decades of experience in system design, special applications and energy audits, our entire team can meet your unique requirement.

Using specialized tools such as our Air Demand Analysis and Kaeser Energy Saving System we can provide an accurate assessment of your existing installation and use predictive models to demonstrate how proposed changes will improve your system performance.

Then, using a state-of-the-art CAD software, Kaeser can lay out the proposed system and produce traditional two-dimensional and three-dimensional drawings. This is a huge benefit in project planning. It helps you visualize not only new equipment, but also how it will fit into the building along with existing equipment, piping, walls, vents, etc. This helps ensure smooth installation, good access for service and reliable operation.

From complex installations to challenging environments to limited space, Kaeser can design and lay out a system to meet your specified requirements for performance and reliability.

## Technical Specifications

Model	Pressure Range (psig)	Capacity (cfm) <sup>1</sup>	Rated Motor Power (hp)	Dimensions	Noise Level (dB(A)) <sup>2</sup>	Weight (lb)
ESD 250	110	1298	250	104 <sup>3</sup> / <sub>8</sub> x 85 <sup>3</sup> / <sub>4</sub> x 83 <sup>3</sup> / <sub>8</sub>	76	11,200
	125	1293				
	145	989				
	190	865				
ESD 300	110	1490	300	104 <sup>3</sup> / <sub>8</sub> x 85 <sup>3</sup> / <sub>4</sub> x 83 <sup>3</sup> / <sub>8</sub>	79	12,000
	125	1293				
	145	1284				
	190	977				
FSD 350	110	1529	350	118 <sup>1</sup> / <sub>2</sub> x 89 <sup>5</sup> / <sub>8</sub> x 92 <sup>7</sup> / <sub>8</sub>	83	11,245
	125	1522				
	145	1284				
	175	1271				
FSD 400	110	1752	400	118 <sup>1</sup> / <sub>2</sub> x 89 <sup>5</sup> / <sub>8</sub> x 92 <sup>7</sup> / <sub>8</sub>	83	12,410
	125	1744				
	145	1730				
FSD 450	100	2003	450	118 <sup>1</sup> / <sub>2</sub> x 89 <sup>5</sup> / <sub>8</sub> x 92 <sup>7</sup> / <sub>8</sub>	83	13,450
	110	1997				
	125	1989				
	145	1511				
	175	1497				
	190	1264				
	217	1250				

(1) Performance rated in accordance with CAGI/PNEUROP PN2CPTC2 test code. (2) Measured at 3 feet according to CAGI. (3) Weights may vary slightly depending on airend model.

**Specifications are subject to change without notice.**



# KAESER COMPRESSORS

**Built for a lifetime.™**

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Certified Management Systems



## The Air Systems Specialist

With over 85 years of experience, Kaeser is the air systems specialist. Our extensive 100,000 square foot facility allows us to provide unequalled product availability. With service centers nationwide and our 24-hour emergency parts guarantee, Kaeser customers can rely on the best after-sales support in the industry. Kaeser stands committed to providing the highest quality air system for your specific compressed air needs.