KAESER COMPRESSORS

Built for a lifetime.™

Premium Rotary Screw Compressors

SX - HSD Series

Capacities from: 8.8 to 3206 cfm
Pressures from: 50 to 217 psig

Kaeser Compressors, Inc.

At Kaeser, we pride ourselves on being the leading innovator in compressed air system technology. With over 90 years experience in precision manufacturing, we have a well-earned reputation for superior product quality and reliability. In the field, Kaeser specializes in individually evaluating each customer's compressed air application, and providing the most efficient and effective air system solution. Prompt and dependable customer service, quality assurance, training, and engineering support contribute to the value customers have come to expect from us. We aim for excellence in everything we do.

Today, Kaeser employs over 4,000 people and our growing subsidiary and distribution network provides air system solutions throughout the world.

Energy Saving Design

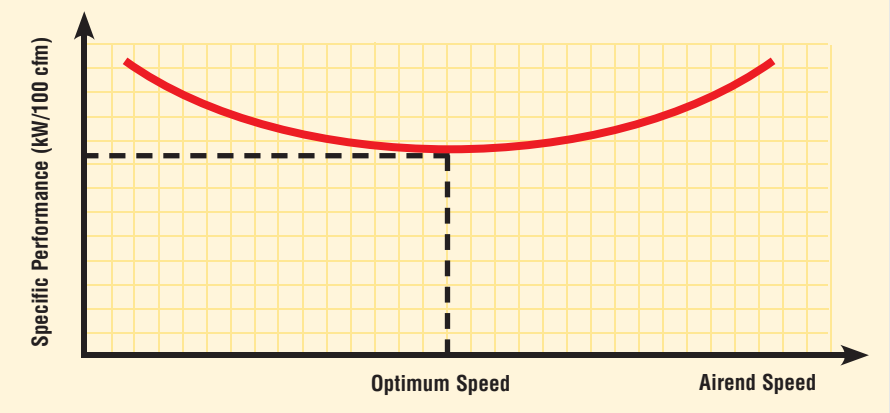
The Sigma Profile

Kaeser's proprietary Sigma Profile airend was introduced in 1975. It continues to be more efficient than conventional rotary screw designs, offering more compressed air per horsepower.

Efficiency and reliability are designed into the Sigma Profile airend with excellent airend inlet channel flow characteristics and a five-to-six lobe asymmetrical design. Kaeser also uses precision-aligned, high-quality roller bearings designed to withstand the most demanding conditions and extend service life.

Kaeser continues to refine and improve the airend design, and as a result, the optimized Sigma Profile airends offer unparalleled performance.

To ensure the highest quality and the closest tolerances, Kaeser's Sigma airends are precision machined in state-of-the-art machining centers. Our rigorous quality control and testing procedures ensure optimum performance.



A Perfect Match

Larger airends turning at slower speeds are more efficient and deliver more compressed air for the same drive power. Kaeser's design philosophy is to develop slower running airends with optimized profiles that can pay for themselves in a short period of time with increased energy savings.

Sigma Control™

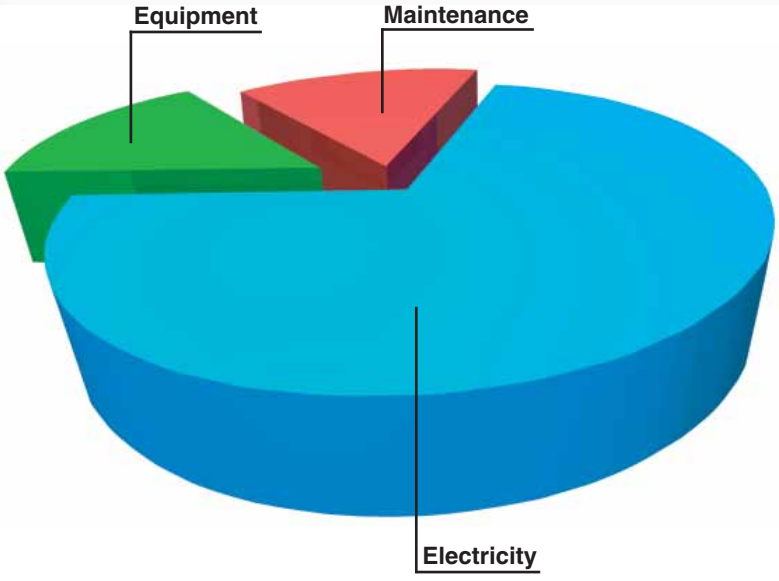
Developed by Kaeser in conjunction with Siemens AG, this patented compressor control features an industrial-based PC with an Intel® microprocessor inside. Five different compressor control configurations are available to precisely match compressor performance to air demand and increase energy savings.

With Sigma Control compressor systems can be monitored and adjusted from any location worldwide. Sigma Control also features extensive capabilities for maintenance trending and air demand tracking.

Lower Long-Term Costs

Energy costs are a significant portion of any compressed air system's total life-time cost. In fact, the amount of energy required to run the compressor for just one year can exceed the compressor purchase price. Over a period of 10 years, this normally totals 70% of the overall costs.

With Kaeser's energy-saving screw compressors delivering up to 20% more air per horsepower, the cost-efficient choice is clear.



V-Belt Drive Compressors

How do Kaeser screw compressors work?

Atmospheric air is drawn through the inlet filter and valve 1 into the airend 2 where it is compressed. The airend is driven by an electric motor 3.

Synthetic cooling fluid, Sigma Premium Fluid, is injected into the airend to serve as coolant, lubricant and sealant. Under normal conditions the air reaches a temperature of about 180°F during compression.

A multi-stage separator 4 removes the coolant from the compressed air and the air emerges from the separator with a remaining fluid content of less than 3 ppm. The fluid then passes through the cooler 5, the filter 6 and back to the point of injection. A thermostatic valve 7 regulates and optimizes the fluid temperature.

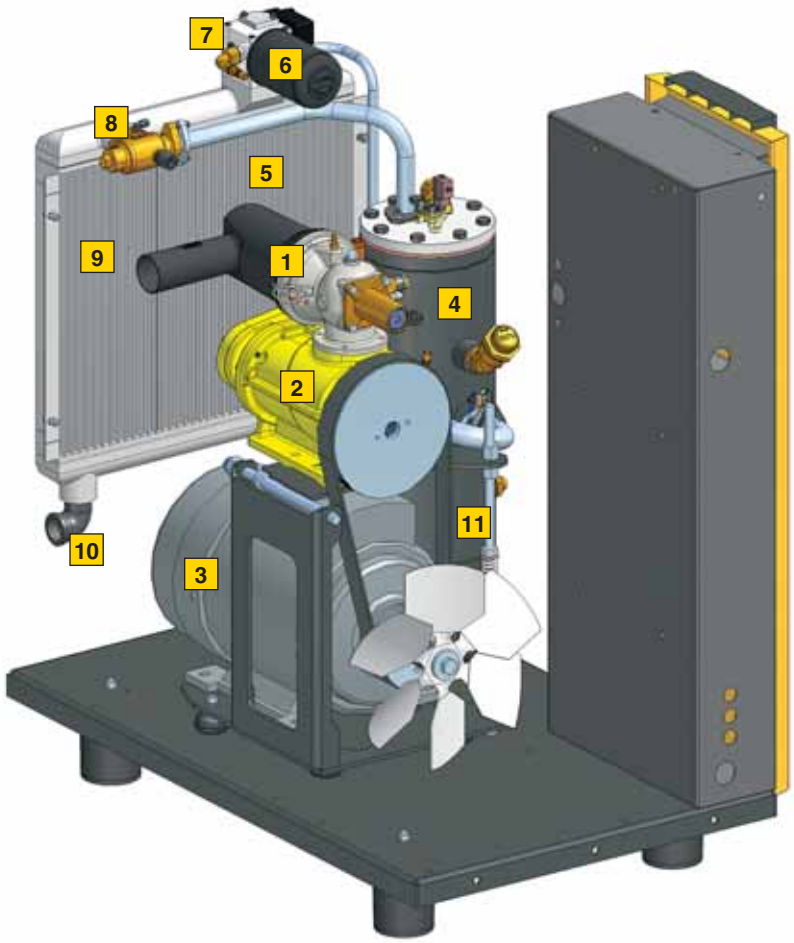
After leaving the separator, compressed air passes through the minimum pressure / check valve 8 and finally through the aftercooler 9, where it is cooled to within 10°F to 20°F above ambient temperature. Most of the moisture is now liquid and ready to be removed.

The air leaves the compressor through a threaded or flanged connection 10.

Versatile V-belt Drive

Kaeser was one of the first compressor manufacturers to implement the V-belt drive. Kaeser screw compressors with V-belt drive are economical and reliable.

An important feature is automatic belt tensioning 11, which ensures excellent transmission efficiency and reduced maintenance costs. Screw compressors with V-belt drives are also especially flexible and can be easily modified if a change in working pressure becomes necessary.



Sigma Profile airend

Kaeser uses a number of newly designed airends. They 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 on Page 4).

Sigma Control Basic

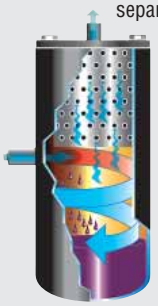
A simple and reliable interface offers convenient pressure control and system monitoring with status displays and service indicators. Displays include discharge pressure and temperature, load and service hours as well as fault indicators.

Sigma Control

Developed by Kaeser in conjunction with Siemens AG, this patent-pending compressor control features an industrial based PC with an Intel® microprocessor inside. Five different compressor control configurations are available to precisely match compressor performance to air demand and increase energy savings.

Efficient separator system

Units are fitted with a redesigned, high-efficiency separator system. Most of the cooling fluid is initially separated from the air by centrifugal force in the separator tank. Any remaining fluid is separated by a fine filter in the separator cartridge. This action doubles the cartridge service life and reduces fluid carryover to 3 ppm or less.



Cooling air filter mats

Ambient air used for cooling is usually contaminated. Models SX-AS feature enclosure filter mats, through which cooling air is drawn into the cabinet to prevent clogging of the cooler.

Motor

TEFC, high efficiency, 460 or 575 V, 3-phase, 60 Hz, 1800 or 3600 rpm, class F insulation, and EPAct compliant. Tri-voltage on SX, SM, SK and AS units. Other voltages are available. Easy access grease fittings make maintenance a breeze.

One-to-One Direct Drive Compressors

Optimized Efficiency

In Kaeser packages, one-to-one drive reduces the number of components needed compared to a gear-driven 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 one-to-one drive provides triple savings: no-loss power transmission, lower power consumption, and reduced maintenance and related downtime costs.

Airend RPM = Motor RPM

Drive Motor

Airend

Unique Air Flow Design

The one-to-one direct drive units feature a low noise radial fan and a new “split cooling air flow” design that dramatically reduces noise levels and provides optimum cooling. Cooling air is drawn directly from ambient air, routed through the coolers and exhausted upward through the cooler box.

Plus, the coolers are conveniently located on the outside of the unit so that dust and dirt build-up are easily monitored, accessed and removed without dismantling the coolers.

Sigma Profile airend

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Sigma Control

Developed by Kaeser in conjunction with Siemens AG, this patent-pending compressor control features an industrial-based PC with an Intel® microprocessor inside. Five different compressor control configurations are available to precisely match compressor performance to air demand and increase energy savings.

Motor

TEFC, high efficiency, 460 or 575 V, 3-phase, 60 Hz, 1200, 1800, or 3600 rpm, class F insulation, and EPAct compliant. Other voltages are available. Grease fittings make maintenance a breeze. Tri-voltage motors are standard on ASD units.

One-to-one drive

Some compressors are called direct drive but are really gear-driven units. In Kaeser’s direct drive units, 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.

Radial fan

A powerful radial fan draws cool ambient air through the cooler. It is designed to provide higher static pressure which is ideally suited for ducting and heat recovery applications. The radial fan is extremely quiet and consumes less power than conventional axial fans, providing additional energy savings.

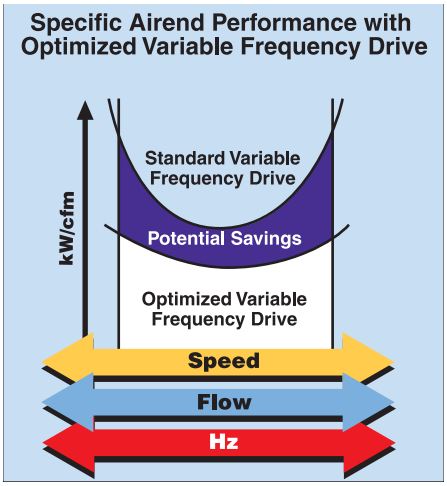
Efficient separator system

Units are fitted with a redesigned, high-efficiency separator system. Most of the cooling fluid is initially separated from the air by centrifugal force in the separator tank. Any remaining fluid is separated by a 2-stage filter in the separator cartridge. This *triple* action doubles the cartridge service life and reduces fluid carryover to less than 3 ppm.

Sigma Frequency Control

Unmatched Performance

Kaeser Sigma Frequency Control combines Siemens AG drive technology with our proprietary Sigma Profile airend and Sigma Control system. Our engineers have optimized airend design to accommodate a wide flow range with unmatched efficiency. Drive motor and airend operate at low rotational speeds, resulting in exceptional reliability and long life. Kaeser's SFC units range from 8 to 515 kW and are incredibly quiet, with noise levels as low as 67 dB(A). Many SFC models are also available with integrated dryers.



Integrated System Design

Even though variable frequency drive compressors can have an effective flow range of 20% to 100%, the efficiency (kW/cfm) is not constant over the whole speed range. The best efficiency is normally between 40% and 85%. As the graph illustrates, the Sigma Profile airend has a clear efficiency advantage over a wider flow range than its competition.

Integrated Systems

Kaeser rotary screw compressors are also available in a variety of configurations. These package systems can be customized to suit your specific compressed air and clean air treatment needs.

AS Series with integrated refrigerated air dryer

CSD Series direct drive compressor with integral refrigerated dryer and Sigma Frequency Control

AirCenters come with integral refrigerated dryer and ASME coded receiver tank

"T" Series

While all Kaeser compressors are available as stand alone units, most models are also available with clean air treatment equipment built in.

The "T" series rotary screw compressors feature integral refrigerated dryers with stainless steel, plate-type heat exchangers, moisture separators and condensate drains. These work together to remove moisture and other contaminants from your air system to improve product quality and help reduce wear on production equipment.

The T models include a new space-saving cabinet that reduces overall footprint and provides easy access to service points. They also feature single point hook up to simplify your installation.

AirCenters

To further reduce your installation time and space requirements, Kaeser offers its AirCenters. These are complete air systems that include not only the dryer but the air receiver tank as well. Available with either one (simplex) or two (duplex) Sigma rotary screw compressors, they come pre-assembled with a refrigerated air dryer mounted on a horizontal receiver tank. Available in a wide range of models from 5 to 60 hp, these units are perfect for small shops or plants. All systems are completely piped and wired, and ready for installation. Clean Air Treatment Packages with coalescing filters and condensate drains are available options.

State-of-the-Art Manufacturing

Kaeser's extensive manufacturing facilities in Coburg, Germany, cover over 25 acres. State-of-the-art Computer Numerically Controlled (CNC) machining equipment and highly accurate lathe, milling and grinding machines produce our proprietary airends, housings and other components to very precise tolerances.

The assembly facilities are carefully planned to produce large numbers of compressors in the most efficient and expedient manner. Highly skilled technicians assemble each unit according to our ISO 9001:2008/14001:2004 procedures. The finished products must meet strict quality standards and pass through a rigorous inspection and testing program before shipment.

Precision milling and grinding

Sigma Profile rotors are precision-machined and finished on a CNC grinder to an accuracy of 1/1000 mm.

Continuous quality control

The airend's finished dimensions are measured and verified using the latest in 3-D computer technology.

Meticulous airend assembly

Highly trained specialists assemble each airend according to our strict ISO 9001:2008 standards.

Research and Development Center

Research and development

Kaeser's research and development team continues to produce industry leading air system technology. All of our products are designed individually for efficiency, reliability and minimal maintenance, and are built to work together for an unparalleled systems and solutions approach to each application.

Advanced machining centers

State-of-the-art machining centers in climate-controlled rooms produce the Sigma Profile rotors and casings. These machining centers operate 24 hours a day to keep up with demand for Kaeser premium quality compressors.

Environmentally friendly powder coating system

All Kaeser rotary screw compressors feature powder-coated enclosures. Our unique powder coating technique applies a super fine glaze to each individual enclosure panel without polluting the surrounding environment. The panels are baked at 350°F for a corrosion-proof and scratch-resistant finish.

Comprehensive unit testing

Once the manufacturing and assembly process is complete, each screw compressor undergoes a comprehensive testing schedule to verify its mechanical and electrical operation prior to shipment. These strict testing standards ensure the highest product quality available.

Compressed air system analysis

Both new installations and system optimizations require a complete and thorough application

and system analysis. Once the actual compressed air usage and clean air treatment requirements have been determined, the system can be designed and installed to achieve maximum efficiency. Once a complete Compressed Air System Analysis has been performed, Kaeser's factory-trained representatives can make recommendations for optimizing the compressed air system.

Energy consumption measurement

A compressor's energy consumption should be continuously monitored over a specific period

of time to accurately capture and record the actual kilowatt usage including periods of peak demand. This information provides feedback for process improvement and production strategies. A Kaeser air system specialist will be able to evaluate all data and identify the correct and most efficient compressor control system for the application.

Air flow measurement

Kaeser's air flow measurement system uses mass flow meters to record the actual amount

of compressed air being used at any given time - not just an average flow. An accurate air demand profile is essential to improving an air system's productivity, reliability and efficiency.

Comprehensive Consulting Services & After-Sales Service

Kaeser Compressors is more than just high quality air compressors. Kaeser offers a complete air system analysis and a wide range of consulting services in conjunction with our national distributor network. Understanding the specific compressed air need is essential to an efficient system. Kaeser provides comprehensive solutions to complex compressed air systems with innovative services including:

- **Air system design**
- **Maintenance and service training**
- **Seminars on system design**
- **System audit services:**
  - ✓ **Air Demand Analysis (ADA)**
  - ✓ **Air flow measurement**
  - ✓ **Air quality analysis**
  - ✓ **Energy consumption**
  - ✓ **Leak detection**
  - ✓ **Compressor fluid analysis**

Factory-trained Sales and Service

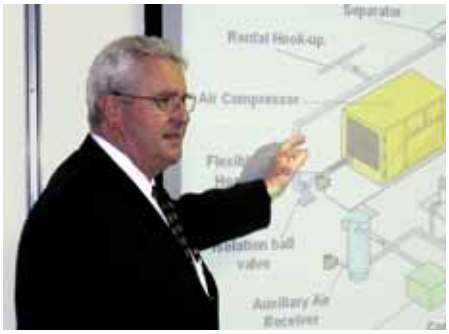
Kaeser is committed to providing the best after-sales service in the industry through our factory-trained, national distribution network. We have implemented the Kaeser Factory Certified Training (KFaCT) program to ensure the highest standards in local service.

KFaCT incorporates information on system basics, air system installation, maintenance, troubleshooting and clean air treatment.

Kaeser's training program was developed in conjunction with standards from the Department of Energy's Compressed Air Challenge and the Compressed Air and Gas Institute and includes non-Kaeser training materials to give technicians quality, unbiased education in compressed air systems.

Kaeser Compressed Air Seminars

Kaeser's Compressed Air Seminars are designed to provide helpful information for air system specifiers and end users. These seminars are available on both general and industry specific levels, depending on the customer's need.



Focused on system design with an emphasis on reliability and energy efficiency, Kaeser's seminars are intended for plant engineers and maintenance managers. Topics include installation considerations, system audits, and suggestions for preventive maintenance.

Kaeser also offers Service Schools designed specifically for existing Kaeser owners to train users on preventive maintenance, troubleshooting and repair. Each seminar is tailored to meet the customers' needs and includes classroom lectures and hands-on training. Our schools are conducted at our training facility or on-site at the customer's facility.

Compressed air system design

For specialized systems or unique requirements, Kaeser's highly trained engineers provide expert applications assistance. Kaeser uses state-of-the-art CAD systems to lay out the proposed system and produce traditional two- and three-dimensional drawings for project execution. Variables such as distance, diameters, equipment order, location, accessories and connections can be reviewed and modified, if necessary, prior to installation.

Kaeser Genuine Parts

Kaeser Genuine Parts are engineered to keep your compressed air system running at peak performance. From seals and gaskets, to belts and hoses, and valves and pumps, each part must meet Kaeser's stringent ISO 9001:2008 quality manufacturing requirements. This quality commitment ensures that each Kaeser Genuine Part will maximize equipment service life. Kaeser Genuine Parts ensures the correct fit, proper performance and maximum efficiency for your compressed air system.

System Controls

Sigma Air Manager

Sigma Air Manager (SAM) is the first master controller to combine the benefits of a modern industrial PC with Internet technology in a compressed air system.

Sigma Air Manager uniquely provides energy-saving, demand-related pressure band control with a clear visualization of operational data.

Sigma Air Control

Sigma Air Manager features Sigma Air Control *basic*, a software interface that displays a compressed air system's real-time operational status through a standard Internet browser. The optional Sigma Air Control *plus* adds the ability to store operational data and make it available for reporting, system audits, control optimization and long term trending.

Custom Designed Solutions

Kaeser products can be found in every area of manufacturing and processing including the metal, automotive, chemical, plastic, printing, woodworking and textile industries. Non-industrial facilities such as hospitals, laboratories and high-rise buildings frequently rely on Kaeser to supply their compressed air needs.

Our factory-trained representatives work closely with our application engineers to design a complete, custom system tailored to the end-user's requirements. Whether it's a systems enhancement for a small collision center or a complete turnkey installation for a chemical processing plant, Kaeser will recommend the right solution based on operating conditions, air quality needs, capacity and pressure requirements, and application-specific regulations.

Installations and Applications

Direct drive compressors

Kaeser one-to-one drive technology is bringing improved efficiency and energy savings to facilities all over the world. Located at high altitude, this 250 hp ESD unit provides efficient plant air at a specialty water bottler. Part of the ESD's output feeds a high pressure PET bottling process.

Frequency Control compressors

Some compressed air applications require reliable and consistent air pressure, but have large fluctuations in air flow demand. This is the perfect application for Kaeser's Sigma Frequency Control compressors. Whether used as a trim machine for a multiple unit installation, or as the sole source of compressed air, these reliable units offer unparalleled efficiency and extremely low noise levels.

Desiccant dryers

For applications that require extremely low pressure dewpoints, Kaeser offers a complete line of desiccant dryers and clean air treatment equipment. The Kaeser Adsorption Desiccant dryer shown in this micro-chip manufacturing plant produces dewpoints as low as -100°F.

Mobilair™ portable compressors

Kaeser offers a complete line of portable rotary screw compressors to the mining, construction and rental markets. Designed to offer more cfm per fuel consumption, Mobilair™ compressors offer rugged dependability and consistent performance for applications such as demolition, sandblasting and on-site service.

Rotary Screw Compressors

SX Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
SX 3	12.0	12.0	9.2	—	—
SX 4	15.9	15.9	12.7	9.5	8.8
SX 5	21.2	21.2	17.0	13.4	12.7
SX 7.5	28.3	28.3	23.7	19.4	18.7

SM Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
SM 7.5	32	32	26	20	19
SM 10	42	42	35	28	26
SM 15	53	53	44	35	34

SK Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
SK 15	64	64	54	41	40
SK 20	78	78	65	49	48

AS Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
AS 20	92	92	77	60	59
AS 25	111	111	94	73	72
AS 30	124	124	104	84	83

ASD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
ASD 25	112	112	90	89	72
ASD 30	132	132	111	110	85
ASD 40S	163	162	129	127	106
ASD 40	192	191	162	159	123

BSD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
BSD 40	194	193	159	157	—
BSD 50	237	236	191	190	154
BSD 60	290	288	232	230	185

CSD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
CSD 60	292	290	233	232	186
CSD 75	346	345	285	283	226
CSD 100S	418	417	342	340	272
CSD 100	497	494	411	337	332
CSD 125	569	566	486	408	402

DSD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
DSD 125	573	570	429	424	—
DSD 150	674	671	553	544	—
DSD 175	851	660	647	636	526
DSD 200	867	861	650	639	530
DSD 250	1010	1003	846	837	615

ESD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
ESD 250	1298	1293	988	869	858
ESD 300	1490	1293	1284*	981	—

** at 145 psig*

NOTE: SX through DSD Series are also available with integral dryer

FSD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
FSD 350	1529	1522	1282	1271	—
FSD 400	1752	1744	1730**	—	—
FSD 450	1997	1989	1509	1497	1250

*** FSD 400: Maximum with this airend is 145 psig*

HSD Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)				
	80 - 110	111 - 125	126 - 150	151 - 175	176 - 217
HSD 500	2278	2264	1833	1815	—
HSD 550	2536	2521	1978	1956	1632
HSD 600	2776	2762	2235	2214	1773
HSD 650	3016	3002	2493	2472	1914

Variable Speed Drive

SFC Series

Model	Minimum Capacity (cfm) at Stated Pressure Range (psig)					
	Min / Max	90 - 110	111 - 125	126 - 145	146 - 175	176 - 217
SFC 8	MIN	13	12	13	11	10
	MAX	48	48	42	31	30
SFC 11	MIN	18	17	19	17	12
	MAX	75	74	63	49	48
SFC 18S	MIN	33	32	27	23	21
	MAX	113	113	98	78	77
SFC 18	MIN	24	23	22	—	—
	MAX	129	125	116	—	—
SFC 22	MIN	29	29	28	19	29
	MAX	158	149	139	126	108
SFC 30S	MIN	38	37	36	25	35
	MAX	203	194	180	154	135
SFC 37	MIN	55	54	42	32	30
	MAX	242	226	201	177	158
SFC 45	MIN	69	68	53	51	37
	MAX	311	291	261	237	206
SFC 55	MIN	82	81	66	65	46
	MAX	381	367	337	306	254
SFC 75S	MIN	102	102	77	76	63
	MAX	469	438	399	360	305
SFC 90S	MIN	120	118	100	76	103
	MAX	515	476	441	387	343
SFC 110S	MIN	139	138	119	116	88
	MAX	633	613	546	498	431
SFC 75*	MIN	127	126	126	—	—
	MAX	559	528	512	—	—
SFC 90**	MIN	127	126	125	—	—
	MAX	627	595	547	—	—
SFC 110	MIN	150	147	141	118	161
	MAX	735	692	629	568	473
SFC 132S	MIN	209	208	279	118	161
	MAX	830	780	706	606	526
SFC 132	MIN	209	208	279	130	161
	MAX	920	867	788	675	579
SFC 160	MIN	230	226	198	191	117
	MAX	1074	1017	929	837	664
SFC 200	MIN	298	297	228	222	177
	MAX	1300	1236	1095	999	848
SFC 250	MIN	360	357	300	293	208
	MAX	1430	1338	1285	1165	936
SFC 315	MIN	470	466	346	339	314
	MAX	2090	1987	1769	1628	1448
SFC 410	MIN	413	410	346	339	—
	MAX	2624	2525	2259	2144	—
SFC 515	MIN	410 •	353	346	339	—
	MAX	2984 •	2633	2543	2423	—

• @ 116 psig

**Maximum pressure for SFC 75 is 130 psig*
***Maximum pressure for SFC 90 is 145 psig*

Kaeser's U.S. Headquarters in Fredericksburg, Virginia

Mission Statement

We strive to earn our customers' trust by supplying high quality Kaeser air compressors, related compressed air equipment and premium blower systems. Our products are designed for reliable performance, easy maintenance, and energy efficiency. Prompt and dependable customer service, quality assurance, training, and engineering support contribute to the value our customers have come to expect from Kaeser. Our employees are committed to implementing and maintaining the highest standards of quality to merit customer satisfaction. We aim for excellence in everything we do.

Our engineers continue to refine manufacturing techniques and take full advantage of the newest machining innovations. Extensive commitment to research and development keeps our products on the leading edge of technology to benefit our customers.

KAESER COMPRESSORS

Built for a lifetime.™

Corporate Headquarters:
PO Box 946
Fredericksburg, Virginia 22404
Phone 540-898-5500
Fax 540-898-5520
www.kaeser.com

Certified Management Systems
ISO 9001:2008 Quality
ISO 14001:2004 Environmental

ENERGY STAR PARTNER

Member of COMPRESSED AIR AND GAS INSTITUTE CAGI
www.cagi.org

The Air Systems Specialist

With over 90 years of experience, Kaeser is the air systems specialist. Our extensive 120,000 square foot facility allows us to provide unequaled 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.

USSCRWBULLTN