

**KAESER**  
COMPRESSORS®

*Built for a lifetime.*



# Sigma Frequency Control

## SFC Series 22 - 110S

Capacities from: 30 to 664 cfm

Pressures from: 80 to 217 psig

[kaeser.com](http://kaeser.com)

# SFC 22 - 110S

## Variable Speed Technology from Kaeser

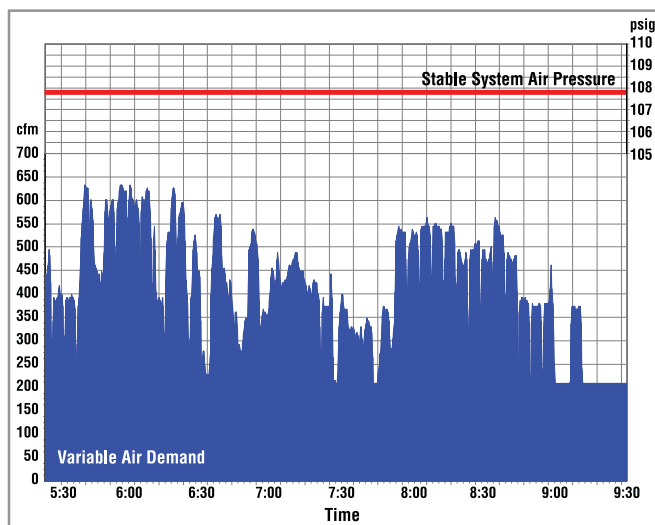
Kaeser Compressors has pushed the boundaries of compressed air efficiency once again with the latest generation of Sigma Frequency Control (SFC) rotary screw compressors. Using cutting edge Siemens drive technology, these units are able to meet varying demand while maintaining stable pressure. The result is exceptional reliability and superior energy efficiency. As a matter of fact, these units are up to 25% more efficient than the competition.

### Meeting varying loads

Most compressed air systems have varying loads and it is often more effective and efficient to apply multiple compressors to meet changing demand. In cases where the demand profile changes rapidly and frequently, variable frequency drive compressors may also be recommended. By varying the frequency of the input electricity to the motor, these compressors speed up and slow down to match their air output to your demand.

### Precise pressure control

Kaeser's SFC design includes highly accurate sensors to maintain stable pressure ( $\pm 1.5$  psig), without wasting air by over pressurizing the system (see Graph 1). This also increases reliability and product quality in your plant.



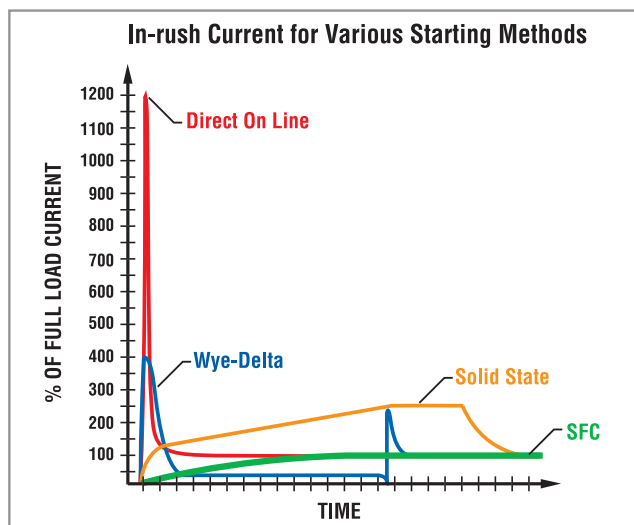
Graph 1

### Superior part-load performance

Kaeser's Sigma Frequency Control (SFC) units have superior part-load performance and make great trim load machines. They can be easily integrated into a multi-compressor system to provide faster response to variations in air consumption. At the same time, they can reduce electricity costs since their electrical consumption varies directly with air production.

### The ultimate soft start

Our frequency drives are the ultimate soft starter for your motor using the lowest start-up current (see Graph 2). They eliminate heat spikes in motor windings, allowing unlimited motor starts. Of course, frequency drives usually have fewer starts/stops, which means less frequent loading and unloading, for less wear and tear on important mechanical parts.



Graph 2

**KAESER**

SFC  55

SIGMA 

IE4



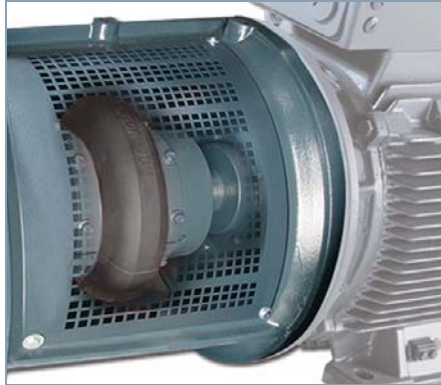


# Series Features



## Sigma Profile™ airend

Our single-stage, fluid-cooled rotary screw airend delivers pressures up to 217 psig and features our power saving Sigma Profile design. Our airends are precision machined and optimized in size and profile to match the airend speeds with their best specific performance. Unlike the competition, Kaeser makes many different airends so that we can apply them at their optimal speed and performance. See Graph 3.



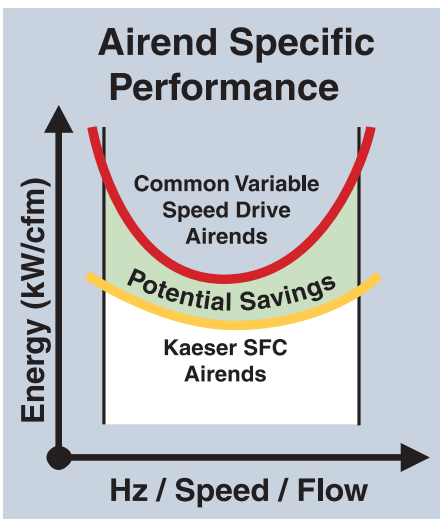
## True 1:1 direct drive

In our design, the motor is directly connected to the airend with a one-to-one coupling, providing maximum transmission efficiency. This true direct drive eliminates complex gear drive components, along with heat and power losses. It is also maintenance free, increasing reliability and uptime.



## Energy efficient drive motor

Kaeser uses energy efficient Totally Enclosed Fan Cooled (TEFC) motors with class F insulation for extra protection from heat and contaminants as standard. The motors are manufactured by Siemens so they can be best paired with the Siemens drive technology. The SFC 37-110S units feature cabinet-mounted remote grease fittings for simplified maintenance. 460 or 575 V, 3-phase, 60 Hz. Other voltages are available.



Graph 3



## One-to-One Direct Drive Airend RPM = Motor RPM



## Intelligent control and protection

To protect your investment and ensure the most efficient operation possible, we control these compressors with our Sigma Control 2™. This intelligent controller comes standard with multiple pre-programmed control profiles so you can select the one that best fits your application. Sigma Control 2 monitors more than 20 critical operating parameters, shuts the unit down to prevent damage, and signals if immediate service is required. It also tracks preventive maintenance intervals and provides notice when PMs are due. An RFID sensor provides secure access and simplifies managing maintenance intervals. An SD card slot with included SD card enables fast, easy software updates, storing key operational parameters, and offers long-term data storage for analyzing energy consumption and compressor operation. Sigma Control 2 has superior communications capabilities. An Ethernet port and built-in web-server facilitate integration into the IIoT. ModBus, Profinet, Profibus, Devicenet, and other industrial communications interfaces are also available as plug-in options for seamless integration into plant control/monitoring systems.

*See our Sigma Control 2 brochure for more information.*



## Inlet filter

We protect our compressors with a two-stage, 1 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.



## Electronic Thermal Management system

The innovative Electronic Thermal Management system dynamically regulates fluid temperature to avoid internal condensation build up, eliminating a common cause of lubricant degradation. It ensures a lower, stable operating temperature which extends airend and cooler life and increases energy efficiency. The ETM has an adjustable temperature setting making it perfectly suited for heat recovery applications.



## Integral moisture separator

A new moisture separator is integrated into the stainless steel discharge piping. Our unique design maximizes separation with minimal pressure loss. A zero loss Eco-Drain is standard to automatically remove the captured moisture.



## Fluid separation system

Our 3-stage separation system ensures very low fluid carry-over (1-3 ppm), and extended filter service life. Our no-leak design features rigid steel piping, flexible connections, and vibration isolators. Each pressure vessel is ASME coded (CRN in Canada) and includes wet side/dry side fittings to check differential pressure, an easy to read fluid level indicator, and our unique quick fluid drain system.

## Parallel 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. A powerful radial fan pulls air through the coolers and creates a vacuum within the cabinet that effectively cools the motor even under severe operating conditions. Top exhaust allows for easy heat recovery and reduces the system footprint.



## Extremely low sound and vibration

All 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, our compressors are about 10 dB(A) quieter than conventional compressors of equal performance with sound levels as low as 69 dB(A).





# SFC Drive Features



- Operates across a very wide range of flow (20 -100%) while maintaining a safe operating temperature.
- Dedicated drive cabinet cooling fans for better ventilation and reliability, even in extreme conditions.
- Electromagnetic interference (EMI) filters are used to mitigate feedback and electrical noise that can be induced into the plant electrical grid.
- Line reactors reduce the harmonic distortion that naturally occurs while operating VFDs, and improve the input current waveform to the drive.
- Safe Torque Off (STO) is a safety feature that quickly stops the motor and ensures no torque generating energy can unintentionally start the motor. It offers a quicker switching cycle over mechanical components and eliminates the need for a contactor on the line side of the drive.
- Shielded motor cables reduce electromagnetic radiation that may affect other electrical devices.
- Siemens drives for the latest technology, reliability, world wide support, and easy integration into system controls.

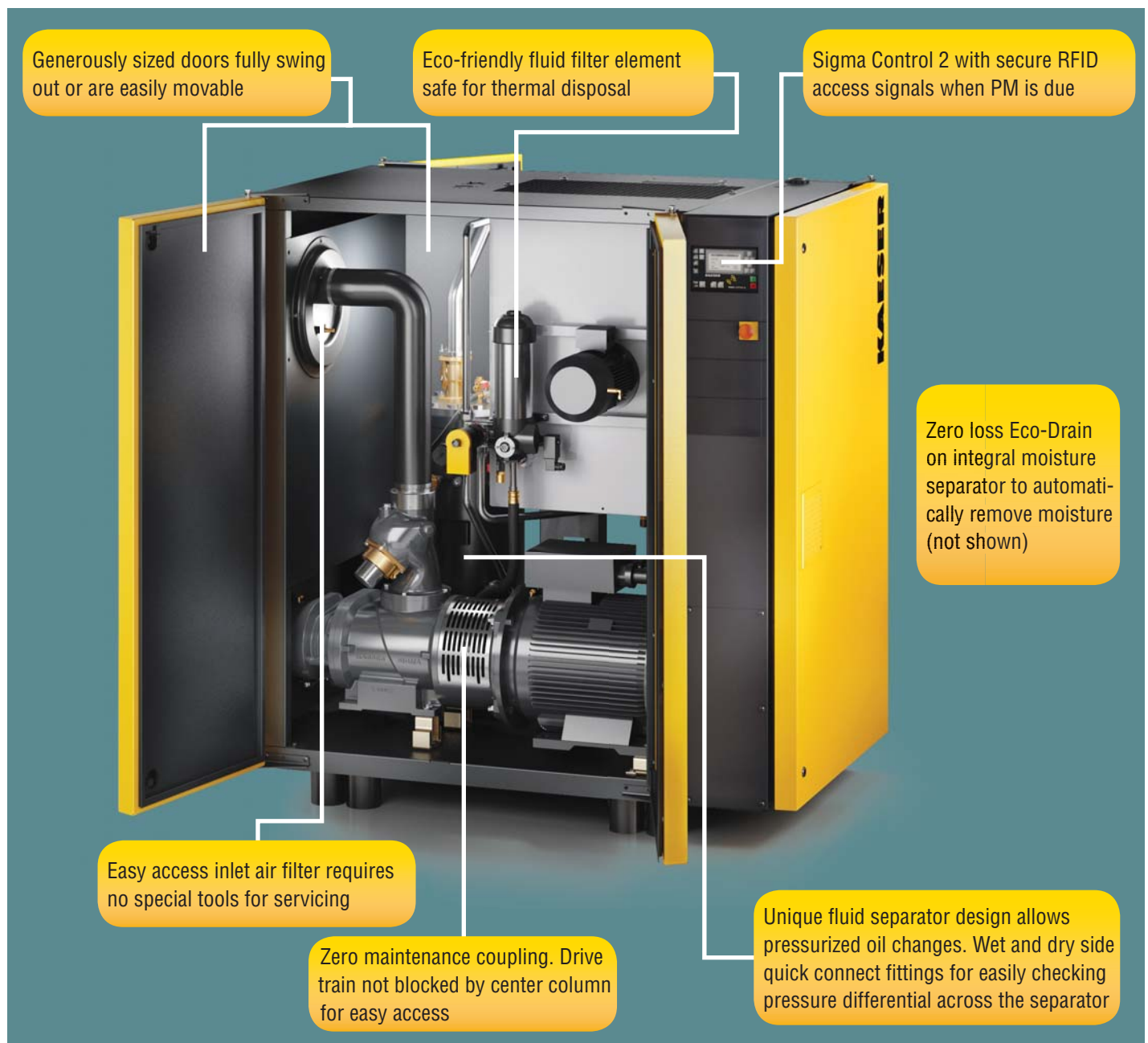
# Service-friendly Design

The SFC 22-110S rotary screw compressors feature an open package layout. All of the major components are easily accessible reducing preventive maintenance time by as much as 50% when compared to other similarly sized units. Additionally, there is no central column that needs to be removed to access the motor or airend.

For installations where space is limited, both the front and back doors of the package fully swing out, making it possible

to perform maintenance from the front or back of the package. Each door can also be removed for even more service accessibility options.

When you consider the energy efficiency savings and the maintenance costs savings, it's clear that owning a *Built for a lifetime™* Kaeser compressor will save you money, year after year.





# Integrated Dryer Option

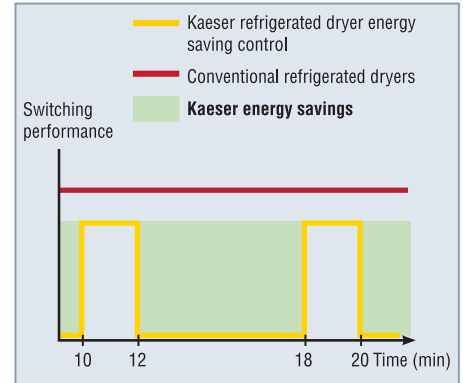
## Premium compressed air quality

SFC 22-110S models are available with an integrated refrigerated dryer. The dryer is located in a separate cabinet so it is not exposed to preheated air or contaminants from the compressor package.



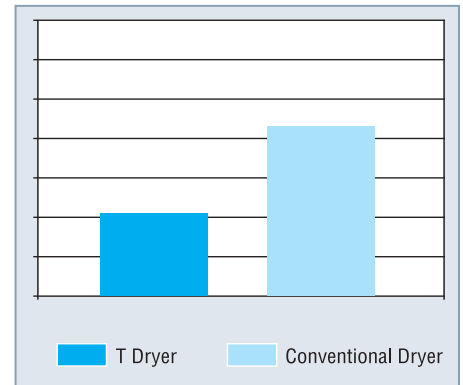
### Refrigerated dryer with Eco-Drain

The refrigerated dryer also features a zero loss Eco-Drain which is monitored by the Sigma Control 2. The advanced level-controlled condensate drain eliminates the compressed air losses associated with solenoid valve control. This saves energy and considerably enhances the reliability of the compressed air supply.



### Energy-saving control

The integrated refrigerated dryer in Kaeser units provides high efficiency performance thanks to its energy-saving control. The dryer is active only when compressed air actually needs to be dried: This approach achieves the required compressed air quality with maximum efficiency.



### Minimal refrigerant required

The integrated refrigerated dryers in Kaeser's T units require approximately 50% less refrigerant than conventional dryers due to an advanced, heat exchanger design. This provides cost savings that are also environmentally friendly. The compact design weighs less and requires less floor space, adding additional savings.

# Heat Recovery Ready

## The next level of energy savings

The rise in energy prices is an unwelcome reality in today's manufacturing and business environment. While the rate of price increases for natural gas, heating oil, and other sources may vary from year to year, the upward trajectory is clear. Energy cost reduction strategies are vital to staying competitive.

Compressing air converts the electrical energy you pay for into heat. Our compressors are available with a heat recovery option to easily recover up to 76% of this energy. You can harness additional heat recovery by ducting exhaust air. In all, up to 96% of input energy can be recovered as heat.

Heat recovery can also be incorporated into water-cooled rotary screw compressor applications. The recovered heat can be used to warm process water, service water, and other fluids.

When you consider that a 125 hp compressor running full time at 10 cents/kWh uses approximately \$95,000 per year in energy, the potential savings and benefits are significant.

The SFC 22-110S units can come ready to be connected to internal stainless steel plate type heat exchangers.

*For additional information on heat recovery, see our whitepaper "Turning Air Compressors into an Energy Source."*



*Air-cooled, fluid-injected screw compressors with internal heat exchangers and controls to tap into the thermal energy of the cooling fluid. The additional ducting removes the hot air that was not rejected by the hot water recovery system.*

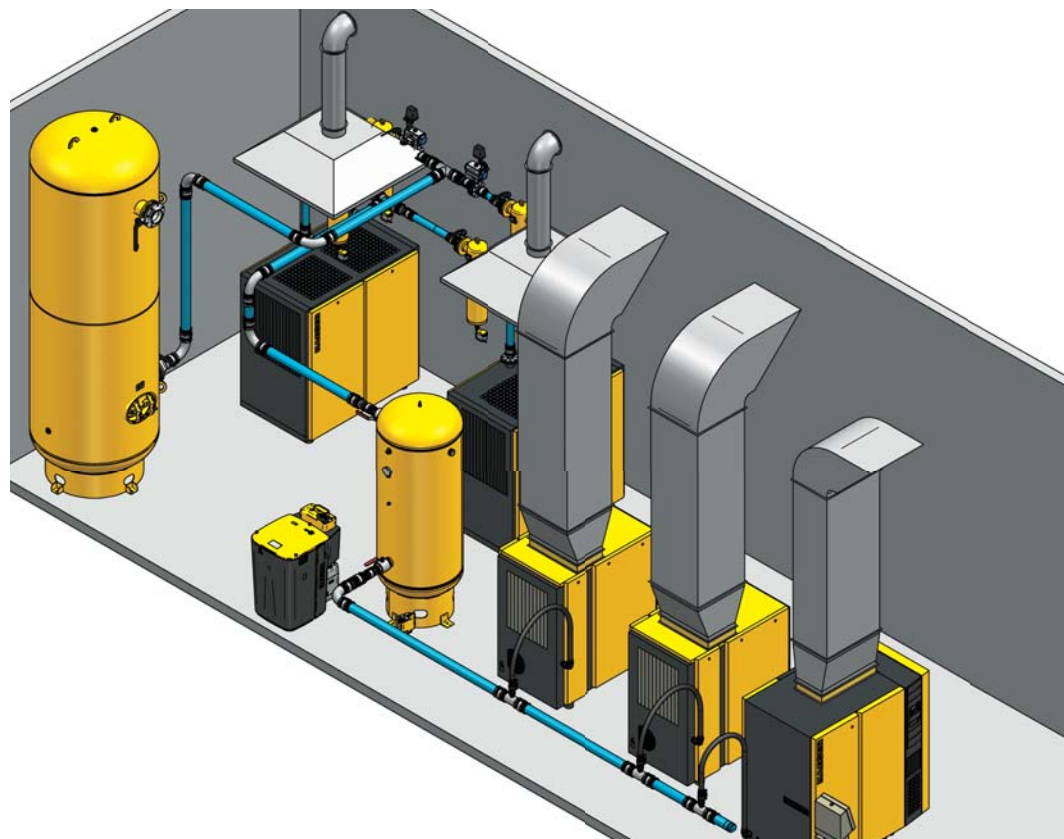
# Compressed Air System Design

## Analysis that goes well beyond the basics

Using our Air Demand Analysis (ADA) and Kaeser Energy Saving System (KESS) we can evaluate your existing installation and identify solutions that will achieve the greatest efficiency without compromising pressure/flow requirements or system reliability.

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

Kaeser's CAD drawings help visualize new equipment and how it will fit into the building along with existing equipment, piping, walls, vents, etc. This facilitates installation planning.



# Technical Specifications

## for Air-Cooled Units

Model	Pressure Range (1) (psig)	*Capacity for 460V (2) (cfm)		Rated Motor Power (hp)	Dimensions W x D x H (in.)	Weight (3) (lb.)	Sound Level (4) (dB(A))				
		Min	Max								
SFC 22 SFC 22T	110	37	163	30	60¾ x 35½ x 60¼ 73 x 35½ x 60¼	1665	69				
	125	37	154			1874					
SFC 30S SFC 30ST	110	38	185	40		65½ x 40½ x 66 <sup>7</sup> / <sub>8</sub> 81¼ x 40½ x 66 <sup>7</sup> / <sub>8</sub>	1669	69			
	125	37	174				1878				
SFC 30 SFC 30T	110	46	217	40			69¼ x 43¾ x 74¾ 85 x 43¾ x 74¾	1753	70		
	125	48	206					1962			
SFC 37 SFC 37T	110	54	254	50				83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾	2359	74	
	125	54	241						2645		
SFC 45S SFC 45ST	110	69	289	60					83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾	2425	74
	125	69	273							2645	
SFC 45 SFC 45T	110	69	308	60	83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾					2778	73
	125	69	293							3131	
SFC 55 SFC 55T	110	77	372	75		83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾				3042	74
	125	76	355							3395	
SFC 75S SFC 75ST	110	100	461	100			83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾			3086	75
	125	100	439							3505	
SFC 90S SFC 90ST	110	120	507	100				83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾		4050	73
	125	118	481							4519	
SFC 110S SFC 110ST	110	136	616	125					83 x 50¾ x 76¾ 98¾ x 50¾ x 76¾	4460	74
	125	134	585							4938	

**\*Performance data values are only valid for 460V/3 ph/60 Hz. Please consult Kaeser for 575V availability and data.**

(1) Other pressures available from 80 to 217 psig. (2) Performance rated in accordance with ISO 1217, Annex E test code. (3) Weights may vary slightly depending on airend model. (4) Per ISO 2151 using ISO 9614-2.

SFC 37-110S compressors are available water-cooled with stainless steel, plate type heat exchangers as standard equipment. Shell and tube heat exchangers are available on request.

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



# The world is our home

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

With innovative products and services, Kaeser Compressors' 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. Every Kaeser customer benefits from the decades of knowledge and experience gained from hundreds of thousands of installations worldwide and over ten thousand formal compressed air system audits.

These advantages, coupled with Kaeser's worldwide service organization, ensure that our compressed air products and systems deliver superior performance with maximum uptime.



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