Sauer Compressors

INCL. ALL NEW
L③vante SERIES

Every ship should have one!

COMMERCIAL **SHIPPING**

Dependable up to 500 bar – anywhere, anytime, anygas.

Sauer Compressors for Commercial Shipping.

International commercial shipping with its stringent requirements for quality and reliability is Sauer's traditional area of activity. Our starting and working air compressors have proven their reliability in this demanding market. They are among the most modern and most economic compressors available today.

In particular the low maintenance 3-stage air-cooled starting-air compressors have established themselves as benchmark for modern and cost effective starting-air compressors due to

- less temperature
- less maintenance cost
- less installation cost

With the Levante series, Sauer Compressors launched the next evolutionary step of their 3-stage air-cooled starting-air compressors. In keeping with the motto "Bigger, Better, but still Basic", the capacity has been increased to 460 m^3/h and the current concept has been enhanced in regard to safety and protection, usability and engine room compatibility. All this while maintaining what made these machines an industry standard in the past 40 years – their unrivalled reliability and ease of maintenance. In combination with the up to date Sauer MLC (Marine Logic Control), Sauer Compressors offers everything for a modern ship concept and Shipping 4.0.

3-stage air-cooled!

Our Product Range

Mistral

2-stage air-cooled
starting-air compressors
up to 80 m³/ h

page 4

Passat

3-stage air-cooled
starting-air compressors
up to 175 m³/ h

page 6

L③vante

3-stage air-cooled
starting-air compressors
up to 460 m³/ h

page 7

Your advantages by using
3-stage air-cooled compressors

page 8

Typhoon

2-stage water-cooled
starting-air compressors
up to 440 m³/ h

page 10

Controls

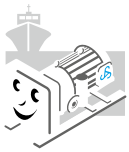
Compressor controls
MLC and RCC

page 11

SC

Control- and working-air
compressors
up to 520 m³/ h

page 12



Sauer Service
for Commercial Shipping

page 14

2-stage air-cooled starting-air compressors

Today, the principle of air cooling is an international shipbuilding standard when starting air compressors of less than 80 m³/h or 15 kW are concerned. Back in the 50s, Sauer had already started the development of air-cooled compressors in this capacity range as an alternative to water-cooled units which are in general high maintenance and more prone to failure.

Today, Sauer's 2-stage air-cooled starting-air compressors are among the most modern and low maintenance compressors available worldwide. More than a thousand of these dependable compressors are delivered to our customers every year.

If you require references, please do not hesitate to contact us at **sales@sauercompressors.de**

General advantages

- Low installation cost due to absence of cooling water circuit
- Light-weight and less space required for installation
- Reliable and safe to operate, even at ambient temperatures up to 60 °C
- Suitable for even the most difficult ambient conditions

Technical Data

MISTRAL series | Technical data for a final pressure of 30 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m³/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP 15 L Marine	40	2	2	1,180 1,480 1,780	12.0 15.0 18.0	2.7 3.4 4.1	3 4 5	135	855	600	630
WP 22 L Marine	40	2	2	1,180 1,480 1,780	17.0 21.0 25.0	3.5 4.4 5.4	4 5 6	135	855	600	630
WP 33 L Marine	35	2	2	1,180 1,480 1,780	23.0 30.0 35.0	5.1 6.5 7.8	6 7 9	145	890	600	630
WP 45 L Marine	40	2	2	1,180 1,480 1,780	40.0 50.0 60.0	7.6 9.6 11.5	9 11 13	318	1,214	742	820
WP 65 L Marine	40	2	2	1,180 1,480 1,780	53.0 67.0 80.0	10.2 12.8 15.4	12 15 18	328	1,254	742	820
H 25	30	2	2	50 double-strokes/ min	1.8	Hand air compressor		28	312	230	200

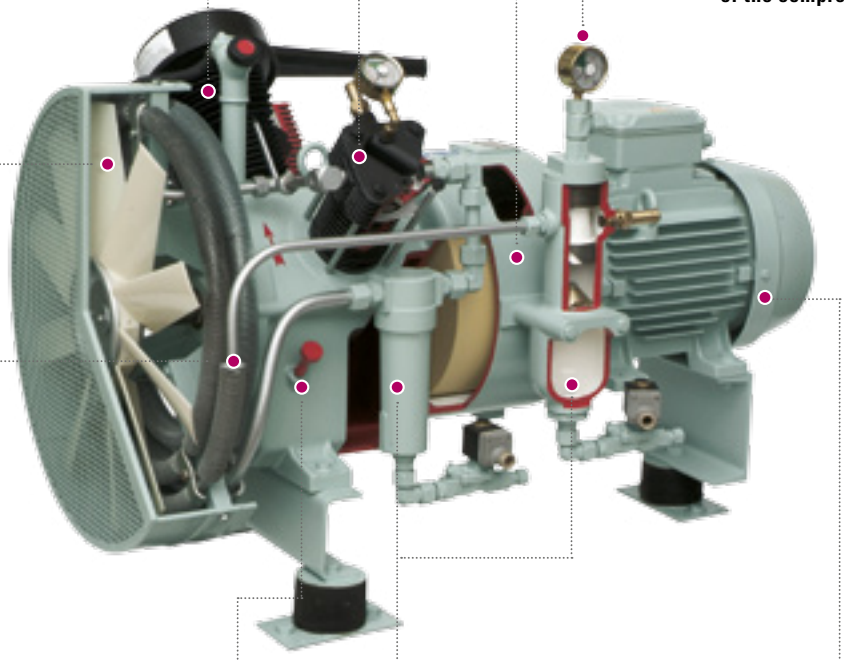
Performance data with 5% tolerance, referred to 20 °C and an air pressure of 1,013 mbar. Charging Capacity according to ship building regulations. Performance data on final pressure deviating from 30 bar upon request. Weights and dimensions for standard units with three-phase A. C. motor, IP 54, and flexible mounting. H 25 is also available with 30 and 63 l vessel.

High performance valves, friction-free operation for long maintenance intervals

Integrated flexible coupling, low-maintenance and safe

Compression in 2 cylinders, arranged in V-shape, with plunger piston

Monitoring: Safety valves and pressure gauges for all stages. Optional: Monitoring of the lubrication oil circuit as well as of the outlet temperature of the compressed air



Fan wheel directly installed on the crankshaft

Low recooling temperatures due to sufficiently dimensioned intermediate and aftercoolers and generous cylinder cooling

MISTRAL WP 45 – 65 L Marine

Reliable and failsafe splash lubrication

High-performance three-phase A. C. motors. Optional: Diesel motor drive

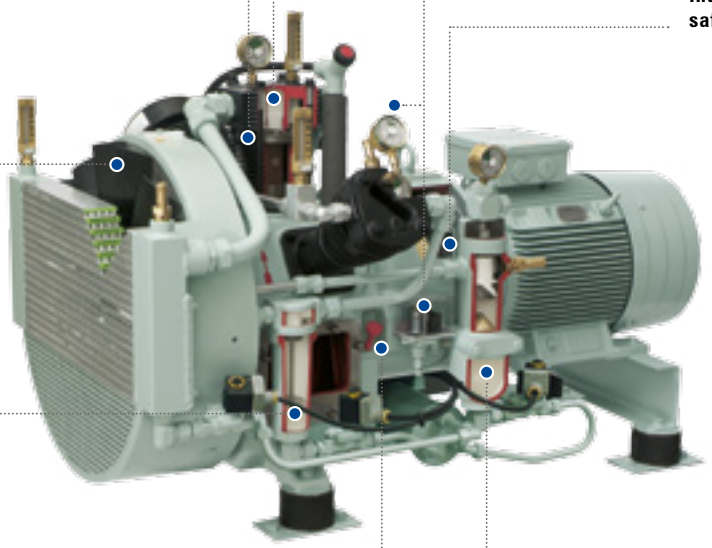
Attached separator after the 1st and the 2nd stage with automatic drainage and flexible mounting is included in the standard scope of delivery

MISTRAL MarineDiesel:

- Diesel driven for Black-Start and Emergency
- Hand- or Electric Start
- Available as Mistral WP 15 L, WP 22 L, WP 45 L and WP 65 L

3-stage air-cooled!

3-stage air-cooled starting-air compressor



PASSAT WP 81 – 101 L Marine

The 3-stage air-cooled compressors of the PASSAT series feature among the best-sellers in Sauer's product range. By combining 3-stage compression with air cooling, they offer low compression temperatures together with unmatched reliability, efficiency and ease of maintenance.

Technical Data

PASSAT series | Technical data for a final pressure of 30 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m^3/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP 81 L Marine	40	3	3	1,180 1,480 1,780	63 80 95	13.0 15.6 19.6	20 21 24	440	1,345	965	900
WP 101 L Marine	40	3	3	1,180 1,480 1,780	80 100 120	16.0 20.0 24.4	18 23 28	440	1,383	965	900
WP 121 L Marine	40	3	3	1,180 1,480 1,780	100 125 150	19.0 25.3 31.1	22 29 36	655	1,565	945	955
WP 151 L Marine	40	3	3	1,180 1,480 1,780	116 146 175	23.0 30.0 38.0	27 35 44	700	1,575	945	955

Performance data with 5 % tolerance, referred to 20 °C and an air pressure of 1,013 mbar. Charging Capacity according to ship building regulations. Performance data on final pressure deviating from 30 bar upon request. Weights and dimensions for standard units with three-phase A. C. motor, IP 54, and flexible mounting.

The next generation

CubeCooler:
Advanced high efficiency cooling arrangement reducing re-cooling temperatures by one-third

Protective Cover:
Enhanced safety and protection; no need for extra handrail

State-of-the-art Human Machine Interface with integrated gauge panel

Optimized cooling air flow, coolers arranged between motor and compressor

Easy access for regular watch-going and maintenance tasks

LEVANTE WP 320 – 460 L Marine

BIGGER

- Extended capacity range from 360 to 460 m³/h
- Enhanced safety and protection
- Improved cost benefit due to more simple engine room outfitting

BETTER

- Advanced high efficiency cooling arrangement
- Lowest vibration due to superior mass balance
- State-of-the-art Human Machine Interface

BUT STILL BASIC

- Classical, robust design of running gear and technical layout
- Fits into every engine room with a minimum of interfaces
- Easy access, easy inspection and maintenance-friendly design

Technical Data

Levante series | Technical data for a final pressure of 30 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m³/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP 180 L Marine	40	3	3	980 1,180	149 180	26.0 31.0	27 33	850	1,700	1,400	1,500
WP 275 L Marine	40	3	3	1,480 1,780	218 275	40.0 52.0	42 55	900	1,700	1,400	1,500
WP 320 L Marine	40	3	4	980 1,180	279 330	45.0 57.0	47 60	1350	1,900	1,400	1,500
WP 460 L Marine	40	3	4	1,480 1,780	400 460	77.0 90.0	81 94	1400	1,900	1,400	1,500

Performance data with 5 % tolerance, referred to 20 °C and an air pressure of 1,013 mbar. Charging Capacity according to ship building regulations. Performance data on final pressure deviating from 30 bar upon request. Weights and dimensions for standard units with three-phase A. C. motor, IP 54, and flexible mounting.

Advantages of Sauer 3-stage air-cooled compressors

3-stage air-cooled!

Today the Sauer Passat 3-stage air-cooled design is the leading starting air compressor in the world of shipping. Used by all major shipyards and shipowners as a standard – well known for its high quality and competiveness.

Less temperature due to lower stage pressure ratio!

In former times air-cooled compressors were limited to 80 m^3/h due to the high compression temperatures (above 250 °C). With the development of the 3-stage air-cooled compressors more than 30 years ago, a new generation of compressors appeared in the market.
The 3 stages are the reason for the lower temperatures (less than 170°C) and make satisfactory cooling by air possible.

Due to the laws of physics air is heated during compression. The final compression temperature depends on the compression-ratio in each stage. By dividing up the total compression-ratio into 3 stages, lower compression temperatures in the cylinders and valves can be achieved compared to 2-stage water-cooled compressors.

Sauer 3-stage air-cooled compressors – standard for international shipping.

Less maintenance cost due to longer maintenance intervals!

Due to the lower compression temperatures the thermal cracking of the lubricating oil will not be reached and consequently the compressor valves will not be soiled by oil coke. Thus Sauer Compressors can guarantee maintenance intervals up to 4,000 hours for the valves which reduce the maintenance costs compared to 2-stage water-cooled compressors. The reduced compression temperatures allow the use of standard mineral oil SAE 30 as it is used e.g. in 2- and 4-stroke diesel engines. The use of expensive synthetic oil is not required for proper performance.

Sauer 3-stage air-cooled compressors – for lowest operation costs of your ship.

Less installation cost due to no cooling water system!

By abolishing the cooling water circuit with its flanges, packings, fittings and cooling water pumps, a higher reliability and an easier control and supervision of the compressors is achieved.

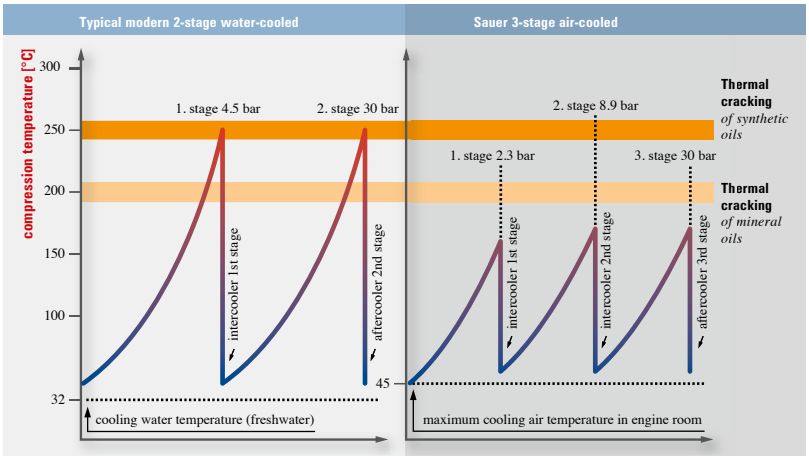
The simple way of cooling is also the reason for more and more shipyards to prefer air-cooled compressors. In addition to the fact that an auxiliary with less interfaces is installed, the weight and space is smaller thus enabling lighter and less expensive foundations. In total, cost savings of up to 7,500 USD per ship are possible during installation. The ventilation of the engine room has not to be increased, the compressors just need to be taken into consideration in the arrangement of the ventilation.

Sauer 3-stage air-cooled compressors – the most competitive option also for shipyard and shipowner.

Passat

L3vante

Temperature rise of air during compression



Temperatures rise so far during compression.Temperatures calculated based on the laws of physics and technical regulations. Above mentioned temperatures occur in the cylinders/valves and cannot be compared with temperatures displayed on compressors by standard thermometers.

3rd stage
air-cooled valve
after 2,500 hours

2nd stage
water-cooled valve
after 800 hours

- Extended life time of the valves (up to 4,000 hours) with less maintenance costs due to lowest compression temperatures
- Reduced crew costs due to easy maintenance
- Designed for use with standard mineral oil SAE30
- No corrosion or water leakages
- Operation of air-cooled compressors independent from central CW system, as emergency compressor

Fits in every engine room.

No additional air duct

Self-regulating cooling

No cooling water

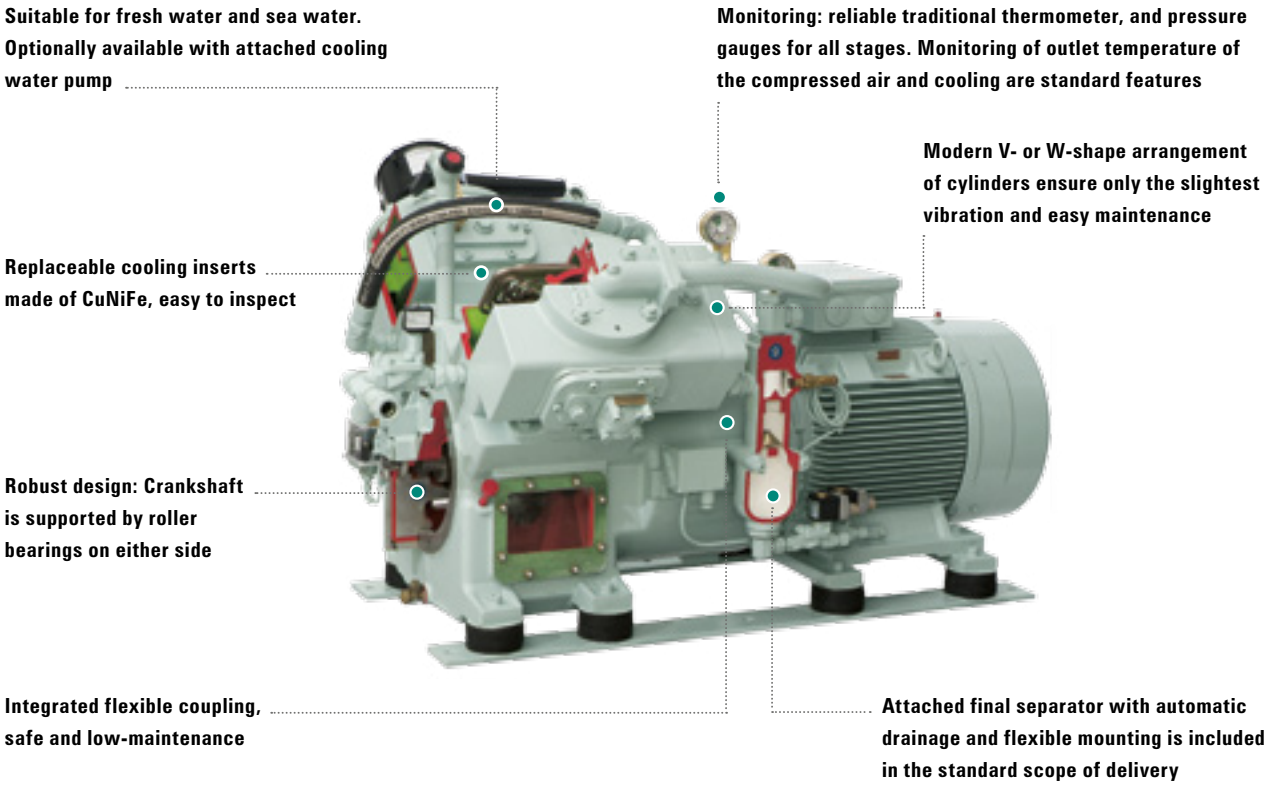
Any place

Features:

- Available from 60 up to 460 m³/h capacity
- Final pressure up to 45 bar
- More than 15,000 units sold since 1970
- Suitable for continuous running 24/7
- Separator mounted after each stage
- Reliable and safe operation up to 60 °C

2-stage water-cooled starting-air compressors

The 2-stage water-cooled compressors of the TYPHOON series offer a proven alternative for applications in which air-cooled compressors are not suitable. Decades of experience and continuous further development of these robust machines ensure maximum reliability and efficiency.



TYPHOON WP 200 – 240 MARINE

Technical Data

TYPHOON series | Technical data for a final pressure of 30 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m^3/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP 100 Marine	30	2	2	1,180 1,480 1,780	80 100 120	15.9 19.5 23.6	22 29 35	500	1,340	700	850
WP 200 Marine	30	2	2	1,180 1,480 1,780	133 166 200	26.0 33.7 39.6	28 37 43	770 800 800	1,459 1,695 1,695	1,025	886
WP 240 Marine	30	2	2	1,180 1,480 1,780	166 208 250	32.1 40.9 48.8	35 45 54	850	1,535	1,025	886
WP 400 Marine	30	2	3	1,180 1,480 1,780	292 366 440	52.2 72.5 81.5	57 80 89	1,350	1,810	1,165	1,095

Performance data with 5% tolerance, referred to 20 °C and an air pressure of 1013 mbar. Charging Capacity according to shipbuilding regulations.
Performance data on final pressure deviating from 30 bar upon request. Weights and dimensions for standard units with three-phase A. C. motor, IP 54, and flexible mounting. Cooling water requirement referred to a $\Delta t = 10$ K

Compressor Controls

Sauer Marine Logic Control (MLC)

Electronic Compressor Control
Advanced Embedded Control Solution

- Fully automatic compressor control
- Monitoring and protection of compressor function
- PLC (pre-programmed logic control) for simple operation
- Monochrome graphic display, LED LCD backlight
- Text & Graphic Display for easy understanding
- Simple and easy operation

✔ In compliance with classification requirements
✔ Robust design for marine ambient conditions
✔ Integrated lead/lag function for balancing running hours with up to 8 compressors
✔ Flexible connectivity and interfaces – ready for Shipping 4.0

Sauer Relay Compressor Control (RCC)

Relay Compressor Control

✔ In compliance with classification requirements
✔ Robust design for marine ambient conditions
✔ Optional **Sauer EcoBox** available for lead/lag control and selection of starting sequence of compressors

Control- and working-air compressors

Technical Data

SC series | Screw-type compressor, air-cooled | Technical data for a final pressure of 8 bar

Type	Version	Final pressure max. bar	Motor rpm	Capacity m^3/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
SC 15	MA 50 MA 60	12	3,000 3,600	80 95	11.0 12.5	10.6 11.5	320	1,140	660	1,040
SC 22	MA 50 MA 60	12	3,000 3,600	106 117	14.9 15.5	14.4 15.9	340	1,140	660	1,040
SC 26	MA 50 MA 60	12	3,000 3,600	150 170	18.0 19.0	17.8 21.1	450	1,275	810	1,175
SC 31	MA 50 MA 60	12	3,000 3,600	170 200	21.0 25.0	21.1 25.4	485	1,275	810	1,175
SC 42	MA 50 MA 60	12	3,000 3,600	235 270	27.5 30.5	27.6 30.6	580	1,275	810	1,175
SC 52	MA 50 MA 60	12	3,000 3,600	280 310	35.0 37.5	35.4 38.9	585	1,275	810	1,175
SC 61	MA 50 MA 60	12	3,000 3,600	390 420	44.0 51.0	43.2 49.7	995	1,520	850	1,400
SC 76	MA 50 MA 60	12	3,000 3,600	460 520	53.8 63.4	52.8 60.9	1,095	1,610	850	1,400

Note: Higher capacity available – please ask for a quote.

MISTRAL series | Piston compressor, air-cooled | Technical data for a final pressure of 10 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m^3/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP 33 L Marine	12	2	2	1,180 1,480 1,780	25 32 37	4.6 5.9 7.0	6.0 9.0 10.0	145	890	600	630
WP 65 L Marine	12	2	2	1,180 1,480 1,780	58 72 84	8.7 10.9 13.2	15.0 17.0 20.0	328	1,254	742	820
WP 146 L Marine	12	2	2	1,180 1,480 1,780	118 150 180	17.5 22.0 26.0	19.0 24.0 29.0	500	1,415	869	877
WP 226 L Marine	12	2	3	1,180 1,480 1,780	220 275 330	24.6 33.2 41.6	27.0 37.0 46.0	720	1,720	1,028	1,014

TYPHOON series | Piston compressor, water-cooled | Technical data for a final pressure of 10 bar

Type	Final pressure max. bar	Stages	Cylinder	Speed rpm	Charging Capacity m^3/h	Power Consumption kW	Heat Dissipation kJ/sec	Weight kg	Length mm	Width mm	Height mm
WP100 Marine	12	2	2	1,180 1,480 1,780	85 107 125	14.3 17.6 21.3	17 21 26	500	1,340	700	850
WP 200 Marine	12	2	2	1,180 1,480 1,780	145 180 215	23.4 30.3 35.6	28 37 44	770	1,459	1,025	886
WP 240 Marine	12	2	2	1,180 1,480 1,780	178 223 268	28.9 36.8 43.9	35 45 54	850	1,535	1,025	886
WP 400 Marine	12	2	3	1,180 1,480 1,780	312 386 460	47.0 65.3 73.4	57 80 89	1,350	1,818	1,165	1,095

Performance data with 5% tolerance, referred to 20 °C and an air pressure of 1,013 mbar. Capacity of screw-type compressors according to DIN-ISO 1217 Annex C. Weights and dimensions for standard units with three-phase A. C. motor, IP 54, and flexible mounting. Water-cooled screw-type compressors upon request. * Larger capacity up to 2000 m^3/h or capacity for other final pressures upon request.

SC 15 – 22

Screw-type compressors, unlike oscillating reciprocating compressors, compress air in rotating screws, and operate without valves.

Sauer Screw-type compressors offer much more than industry compressors since they are the synthesis of thousands of industry compressors and of our fundamental knowledge of the requirements of international shipping. The particular design features of Sauer's screw-type compressors ensure trouble-free operation on the seven seas.

Mistral WP 146 L Marine & WP 226 L Marine

As an alternative to the screw-type compressor, Sauer is able to deliver reciprocating **piston-type compressors** based on the well-known range of starting-air compressors. Compared with screw-type compressors, these types are more suitable for shorter operation intervals due to their lower energy consumption as they are start-stop controlled.

The distinct advantages of piston compressors are the standardised parts and the similarity in terms of design with air-cooled starting-air compressors. If you choose your ship compressors carefully, your starting, control and working air compressors will all have the same wearing parts.

Typhoon WP 200 Marine & WP 240 Marine

Our Recommendation
Sauer delivers both types of compressors. For requirements under 100 m^3/h, we recommend that you use piston compressors and for performance requirements over 300 m^3/h, we recommend screw compressors. For the 100 m^3/h to 300 m^3/h range we also recommend screw compressors, provided that the annual operation time is higher than 4,000 hours.

For more information or references please do not hesitate to contact us at **sales@sauercompressors.de**

SCR system for NO_x reduction

You need a compressor for your SCR system?

Please contact us and we will help you in dimensioning and selection of the right compressor for your system:
sales@sauercompressors.de

Sauer Service for Commercial Shipping

Sauer Service – As individual as your needs

“A product is only as good as the support provided by the company who sold it.”
If you have ever had to wait for a spare part or a service technician to get your system up and running, you will fully agree with this statement.

When you select Sauer Compressors you are not only choosing the most reliable and low maintenance products, you are choosing outstanding customer service.

“Product support that will never let you down.”

Our product support includes, but is not limited to:

- Maintenance and Service Schedules
- Inspection and Service Contracts
- Supply of Genuine Sauer Spare Parts
- Technical Support – Troubleshooting
- Training
- High Quality Spare Part Production

service@sauercompressors.de

Sauer Service-Stations:
www.sauercompressors.com

World Wide Service Organization

Subsidiaries and service organizations located in more than 50 countries worldwide including the US, Germany, France, UK, China, Czech Republic, Italy, Brazil and India …

- Service Stations and service engineers on all continents and major ports
- Fast delivery of the Genuine Sauer Spares from Sauer Service Stations
- In 36 hours to nearly any place in the world

Sauer Training-Centre

Knowledge and experience are the most valuable keys to success.

The knowledge and experience of engineers and mechanics are the basics for good service work. Enhancing and polishing skills are very important to focus on.

Technical Service

- Commissioning, repairs and maintenance
- Investigation of damages and recommendation a proposal for repair and avoidance of such damages in the future
- Close contact of the service department with the design and quality department at Sauer
- Well trained engineers are available for any service worldwide

Training

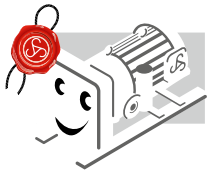
- In-house training
- On-site training
- Repair and depot level training
- On-the-job training
- Train the trainer seminars
- Sauer Training Container

Sauer Service Products

Genuine Sauer Spare Parts

Always state-of-the-art

Genuine Sauer
Spare Parts



Use Genuine Sauer Spare Parts and open the door to the advantages of the Sauer Service.

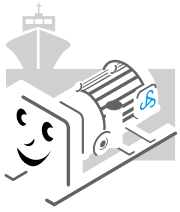
- Guaranteed life time for the spare parts
- All spare parts ex stock
- Free technical support and bulletins by Sauer Service
- All parts will be delivered with Sauer Certificate of Conformity and Authenticity

Genuine Sauer Spare Parts –
always state-of-the-art!

Sauer Easy Care

Your maintenance has never been so easy

Sauer
Easy Care



Sauer Easy Care is a simple and easy maintenance concept with guaranteed maintenance intervals, highest operational reliability at lowest costs.

Sauer Easy Care takes away your pressure

- to keep the budget
- to keep the ship in operation
- to save time in the office and on the ship

Sauer Easy Care –
your maintenance has never been so easy!

Sauer Fix Budget

The smartest service solution

Sauer
Fix Budget

Sauer Fix Budget is your trouble-free package without any surprise for your budget. All parts to keep your compressors in operation are covered by fixed annual fees.

It is a life time warranty insurance for your compressors.

Sauer Fix Budget –
the smartest service solution!

Sauer Easy Exchange

Your change to success

Sauer
Easy Exchange

- Are you having problems with spare parts or getting spares at all?
- Is there any risk that your ship will go ‘off-hire’ because your compressors are unreliable?
- However you are unable to alocate the budget for new compressors?

We minimize your investment cost for new compressors including complete maintenance with guaranteed annual rates and a return of investment.

Sauer Easy Exchange – your change to success!

Your local partner:

J.P. Sauer & Sohn Maschinenbau GmbH
P.O. Box 92 13, 24157 Kiel/Germany

PHONE + 49 431 3940-0
FAX + 49 431 3940-24
E-MAIL info@sauercompressors.de
WEB www.sauercompressors.com

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