



ROBUSCH

***High-efficiency oil-free  
Compressor Unit***



# ROBOX SCREW

## ROBOX SCREW:

Extremely efficient “oil free” compressor unit, able to reach **2500 mbar (g)** and a capacity of **10,000 m<sup>3</sup>/h.**



## ROBOX SCREW Low Pressure:

Thanks to the simplicity and essentiality of the components, even more so in its **BASE version**, proves to be the ideal solution for waste water treatment.

In addition it is able to satisfy even the most demanding needs of customers with a wide range of options available.

ROBOX screw Low Pressure reaches a pressure of **1000 mbar (g)** and a capacity of **10,500 m<sup>3</sup>/h.**

LOW PRESSURE



## ROBOX SCREW: Robuschi's solution for your application



In the industrial sector, **ROBOX screw** is mainly used in **pneumatic transport processes, for the transfer of powders or any type of granules (plastic, flours, seeds...)**. ROBOX screw ensures operation at lower temperatures (20% less temperature compared to other technologies), without danger of deterioration and/or pollution of the transported material (oil free).

The complete Robuschi unit can provide pressures up to 2.5 bar (g), guaranteeing thus the best energy efficiency.



In **waste water treatment** plants, energy consumption accounts for more than 60% of the annual cost. For this reason **ROBOX screw**, as well as its **Low Pressure version**, is the best answer to the need of reducing costs, as it allows **savings in excess of 30% compared to other technologies**. Robuschi unit can be the best choice for waste water treatment plants: Robuschi provides the maximum quantity of air with lower energy consumption, thanks to RSW internal compression and to the presence of a special silencer without sound-absorbing material, which prevents possible clogging of the ventilation systems. Moreover, thanks to the possibility of working also with pressures over 1 bar, ROBOX screw can supply sewage collection tanks of considerable heights. also with pressures over 1 bar, ROBOX screw can supply sewage collection tanks of considerable heights. This is perfectly compatible with the need for a better use of the urban spaces and with the increasing requests for low acoustic pollution.



In the **thermoelectric power stations**, **ROBOX screw** works together with traditional technologies in the FGD processes (desulphurisation of exhaust gas). This allows thus energy consumption year's savings of up to 300,000 kWh / for each 250 kw installed engine size.



**Efficient:** The Robuschi profile of the rotors (patent pending) allows the maximum efficiency at a reduced number of rounds with consequent energy savings.

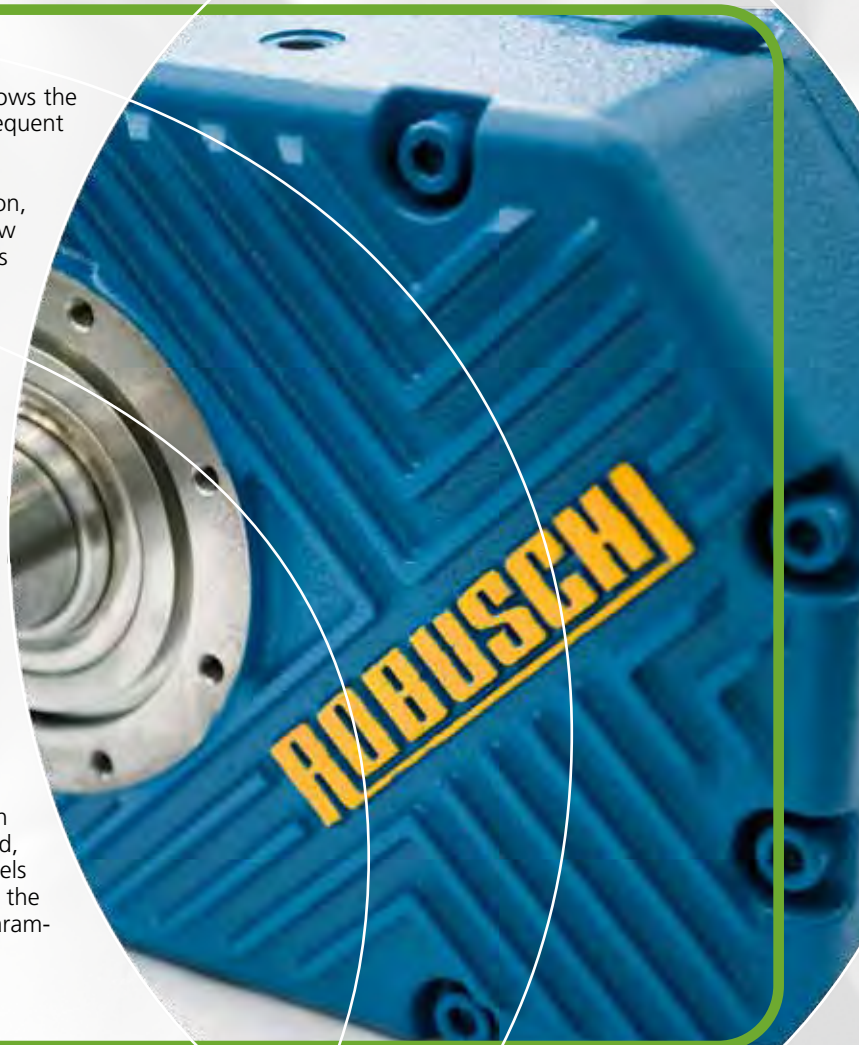
**Silent operation:** The high efficiency of the internal compression, along with special silencers and noise enclosure, guarantee a low noise emission of the compressor, allowing installations in various fields of application.

**Simple:** The experience acquired in the low-pressure sector, allowed Robuschi to develop **ROBOX screw** in an innovative way. This resulted in a considerable reduction in the number of parts of the compressor itself. The **Low Pressure version** has a highly simplified and compact layout, similar to that of the compressor units based on lobe blowers used in waste treatment plants all over the world.

**Compact:** **RSW** construction simplicity and a careful analysis of the layout of **ROBOX screw** components, ensure reduced dimensions compared to other standard compressors.

**Flexible:** The use of a belt drive allows the supply of the correct capacity required by the application. Moreover, it also allows the installation of the motor that is most suitable for the compressor absorbed power with, as a result, an operation at the point of best efficiency.

**Reliable:** The accurate analysis and the meticulous choice of each components of the compressor, as well as the low operating speed, guarantee **ROBOX screw** high reliability; whereas the control panels **SENTINEL 2** or **SENTINEL PRO** ensure the optimal operation of the machine thanks to the constant monitoring of the operating parameters.



**ROBOX**  
SCREW

**ROBOX**  
SCREW  
Low Pressure



**THE CORE OF THE SYSTEM:  
RSW, THE "OIL-FREE" SCREW COMPRESSOR**

**RSW**

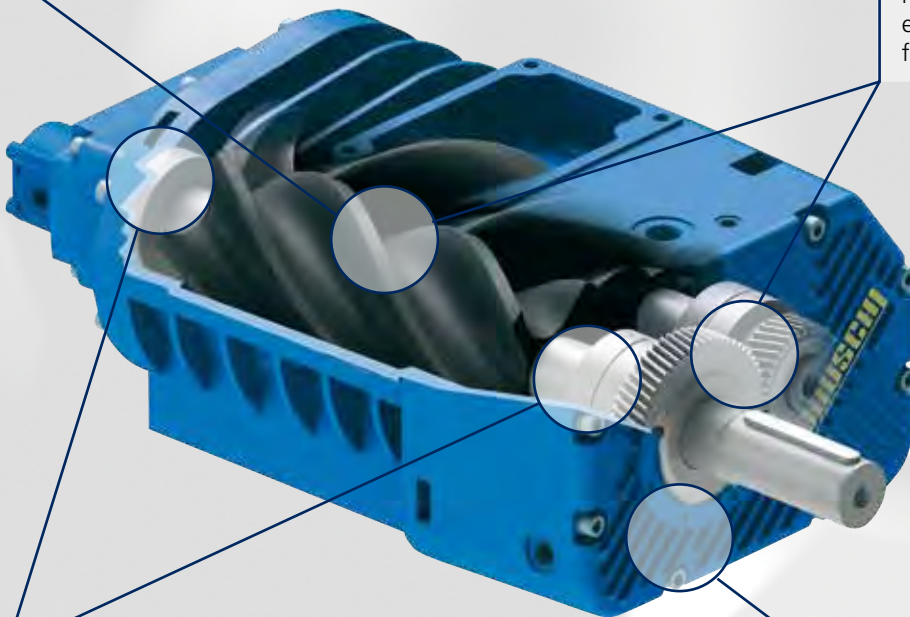
The **RSW** compressor is the combination of a careful and precise analysis of market changes, such as processing and waste water treatment industry, as well as of the clients' constantly evolving needs, and of Robuschi experience in low pressure combined with constant R&D activity.

For these reasons, **RSW** is designed and developed by Robuschi: from the definition of the rotors' profile to the complete development of the compressor, which was expressly optimised to reach pressures of 2.5 bar (g).



**Efficient:** The Robuschi profile was designed by Robuschi engineers in order to obtain the maximum capacity at a lower energy consumption. Moreover, the rotors' coating makes **RSW** resistant to oxidation and preserves performance over time.

**Silent operation:** The compression efficiency is ensured by the innovative Robuschi profile of the rotors, and it guarantees a low-noise generation during the compression phase. The compression efficiency combined with the low-speed rotation of the rotors (up to 6000 rpm max) and to the lack of the step-up gear ensure sound emissions at the minimum levels for the category.



**Robust:** The **rotors**, which are equipped with wide-diameter shafts, reduce deformations caused by internal and external loads. This ensures the correct functioning of the compressor also in the most demanding conditions. The **bearings** last longer thanks to the reduced number of rounds and a high-efficiency belt drive. The **seals** of the conveyed gas and of the lubricating oil are "without wear".

**Simple:** The design and experimental analysis allowed the absence of the step-up gear and, for applications with reduced thermal conditions, the use of a lubrication system which is simplified compared to the forced-system type.

## COMPRESSOR UNIT

**ROBOX**  
SCREW

The low-pressure compressor unit, **ROBOX screw**, combines unique characteristics of the "oil-free" **RSW** screw compressor, with the consolidated characteristics of **ROBOX** compact units.

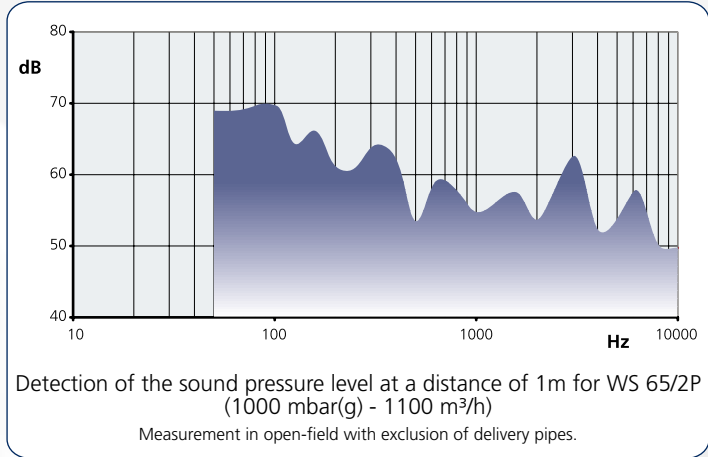
**ROBOX screw** is able to work at a pressure of 2,500 mbar (g) and a capacity of 10,000 m<sup>3</sup>/h.



## SILENT OPERATION

The **ROBOX screw** unit is characterised by an accurate choice of the components, which makes it particularly silent during the operation:

- **The RSW compressor**, which is the core of the unit, works with low-noise emissions in all working conditions, thanks to the compression efficiency, the low speed of the rotors, and to the absence of the step-up gear.
- **Silencers:** The **absorption silencer/filter on the suction inlet** of the compressor reduces noise in the most efficient way. The **reactive discharge silencer, without sound absorbing material**, drastically reduces each residual pulsation, which might propagate to the system's pipes.
- **High-efficiency belt drive with low-sound emission.**
- **The noise enclosure** is designed with optimised air passages and a high capacity to reduce the sound pressure. When the enclosure is installed, it is completely independent of the compressor, therefore there is no transmission of vibrations to the walls of the enclosure itself.



## MAXIMUM ENERGY SAVINGS

The innovative and unique **profile of Robuschi's rotors** optimises the ration between capacity and pressure thanks to the maximum performance of the internal compression. This increases thus the efficiency of the **ROBOX screw** unit. The characteristics of **ROBOX screw** ensure **high efficiency (>75%)** in a wide range of rotation of the compressor (from 100% to 25%), **by reducing thus the energy consumption** in any working condition. Moreover, energy savings increase with the use of Class IE2 motors and with the Class IE3 PREMIUM motors.



## The efficiency of a compressor and the simplicity of a lobe blower



### Robox screw Low Pressure: the best choice for the waste water treatment.

A compressor unit that is able to combine the simple operation of a classic lobe blower with such unique features of **RSW**, the "oil-free" screw compressor, as high efficiency and extremely silent operation.

**ROBOX screw Low Pressure** is able to work at a pressure of 1,000 mbar and at 10,500 m<sup>3</sup>/h.



# LOW Pressure

**ROBOX SCREW Low Pressure** is characterised by the following features:

**SIMPLICITY**

**SILENT OPERATION**

**ENERGY SAVING**



An extremely flexible compressor unit, able to adapt to different customer requirements, starting from an extremely simple and basic configuration, such as the **BASE** version, up to a more equipped version for the more demanding requirements.

It is distinguished for its compact layout,

thanks also to its peculiar **oil bath lubrication system**, thus combining the efficiency of a "oil free" screw compressor with the simplicity of the lobe blowers used in waste water treatment plants around the world.

The **BASE** version also includes a starter and safety valve VSM/P.

Furthermore, maintenance is made even easier thanks to the oil level positioned outside the noise enclosure.





## COMPACTNESS

The innovative design and extremely compact dimensions of **ROBOX screw** and **ROBOX screw Low Pressure** allow, in the best possible way, the increasing demand for reduced spaces available in the compressors' room. Moreover, the front-access maintenance makes it possible to install more units one next to each other, reducing further the compressors rooms space need.



## EASE OF INSTALLATION AND MAINTENANCE

The key feature of **ROBOX screw** and of its **Low Pressure version**, is the **ease of installation**, thanks to the effortless handling through the forklift and/or transpallet as well as the ease of electrical connection to the system (rear auxiliary panel - standard version).

The **RSW compressor's** main feature is its **constructive simplicity and robustness**, which ensures a longer operating life of the components and, therefore, a considerable reduction of maintenance costs.

**The unit's simple layout, together with the particular arrangement of its components, makes it possible to carry out all operations of ordinary maintenance from the front side:**

- immediate check of oil level;
- easy oil change;
- easy replacement of oil filter (**ROBOX SCREW**);
- easy adjustment of oil pressure (**ROBOX SCREW**);
- easy replacement of air filter;
- simple replacement of belt drive.



## SENTINEL

### Continuous monitoring of ROBOX screw and ROBOX screw Low Pressure

The **SENTINEL** control panel, in its two versions of **SENTINEL 2 (standard)** and **SENTINEL PRO (optional)**, guarantees proper supervision of the compressor unit.



### Sentinel 2 Electronic Monitoring Unit

**SENTINEL 2** is able to manage multiple functional parameters: suction pressure and oil pressure, discharge air and oil

temperature, oil level and electric control of the enclosure fan. Furthermore, the control panel is also equipped with a connection for the upload/download of the detected parameters and any alarms.

Thanks to the permanent supervision of **SENTINEL 2**, even the maintenance operations required for the compressor become simpler, given that they are regularly indicated on the display without the need for a continuous verification by the technicians.



### Sentinel PRO Electronic Monitoring Unit

#### SENTINEL PRO

Robuschi has developed an advanced continuous monitoring system (as an alternative to the standard version of SENTINEL 2) to ensure the highest efficiency and reliability of the **ROBOX screw** unit through the control of the following parameters: suction and discharge pressure, oil pressure, discharge air temperature, oil temperature, verification of rotation direction and compressor speed, electric control of the enclosure fan, connection system for the upload/download of the detected parameters and any alarms.

It is configured with an LCD display, with remote connection via MODBUS communication protocol and GSM device and possible integrated management of the compressor parameters and, where present, the frequency changer. With its advanced functions, SENTINEL PRO highlights and transmits in real time the unit's performance.



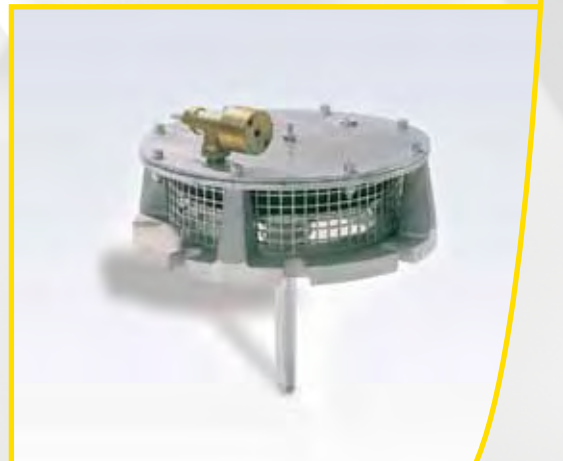
## OPTIONALS AND ACCESSORIES

The options available are:

- **ATEX certifications**
- **Version for the conveyance of special gases (nitrogen, biogas, He ....)**
- **Vacuum version**

The accessories available are as follows:

- **Main electric motor board panel** for different starting systems
- **Emergency kit** including button and safety relay module
- **Device ensuring the start under load of the compressor**
- **System for vacuum/load intermittent operation** of the compressor without the need for stopping the electric motor.
- **Heat exchanger** gas/liquid or gas/air to cool down the gas discharged from the compressor before sending it to the system or to recover the energy.
- **Forced lubrication system**  
(for Low Pressure and Low Pressure base version).
- **Kit *SENTINEL 2* e *SENTINEL PRO*** with rear auxiliary panel included  
(for Low Pressure base version).
- Reactive type **discharge silencer** (for Low Pressure base version).



## ROBOX screw PERFORMANCES

### ROBOX SCREW

#### OPERATION

DP= 1 bar

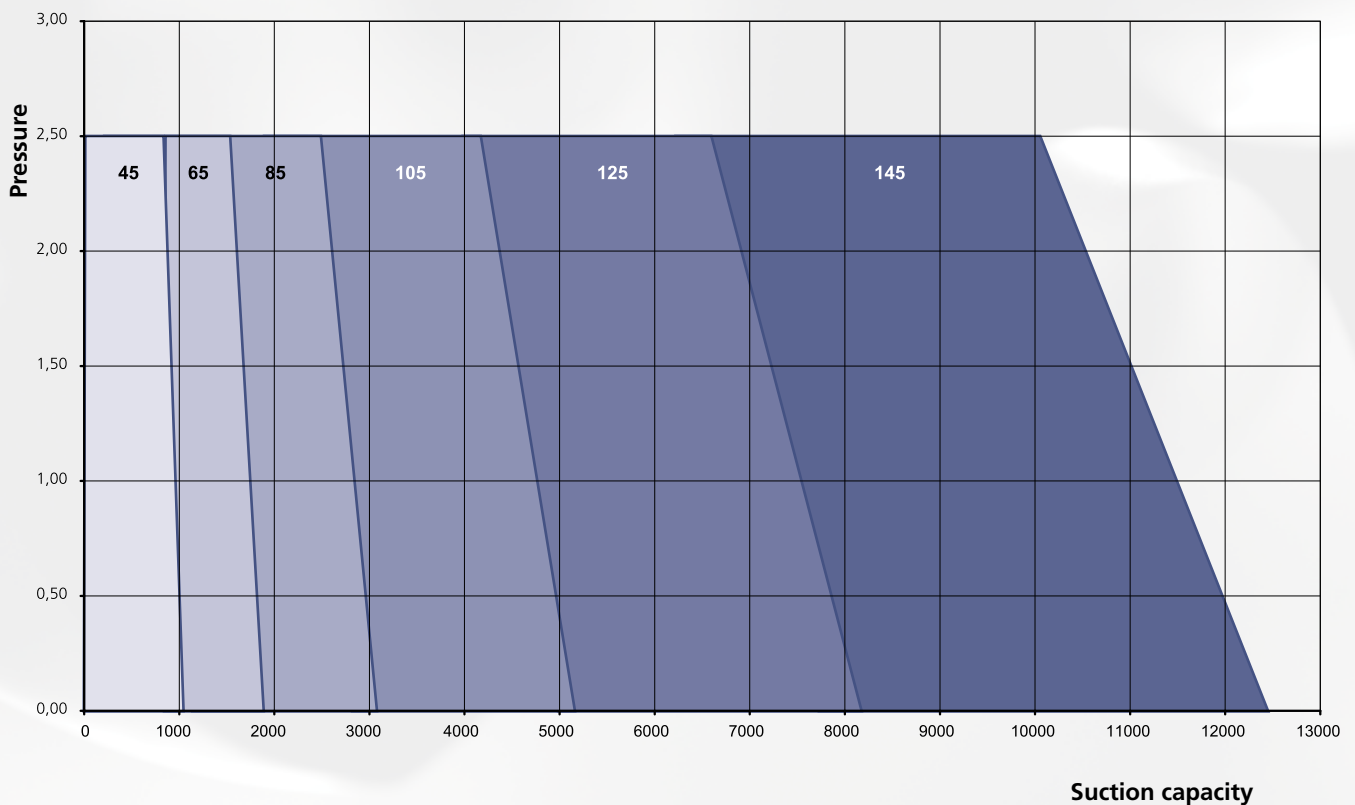
DP= 2,5 bar

ROBOX screw Size	RSW Size	Capacity		Motor	
		m <sup>3</sup> /h	kW	m <sup>3</sup> /h	kW
2	45	840	30	770	55
	65	1100	37	960	75
3	65	1680	55	1540	110
	85	2400	75	2200	132
4	105	4500	132	4200	315
	125	4800	160	4400	*315
5	125	7100	200	6500	*400
	145	10500	315	10000	*600

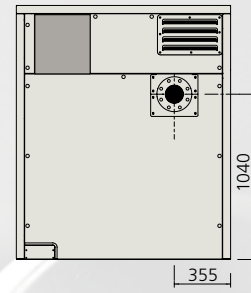
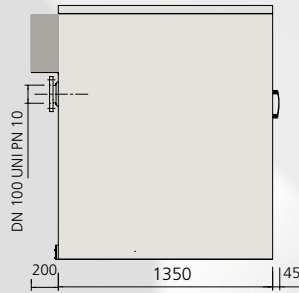
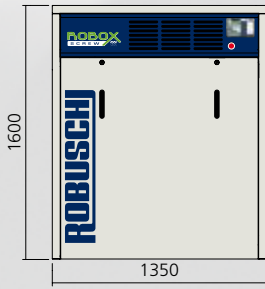
\* Version with direct coupling.



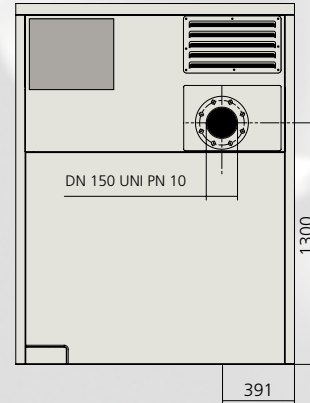
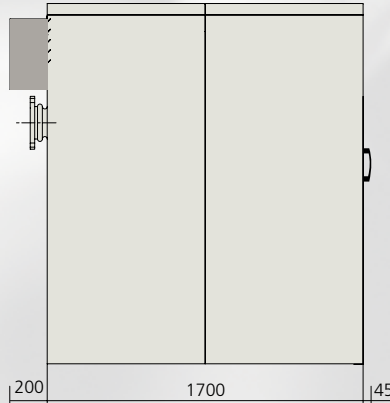
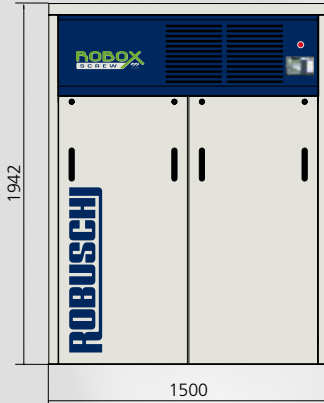
## RSW FIELDS OF OPERATION



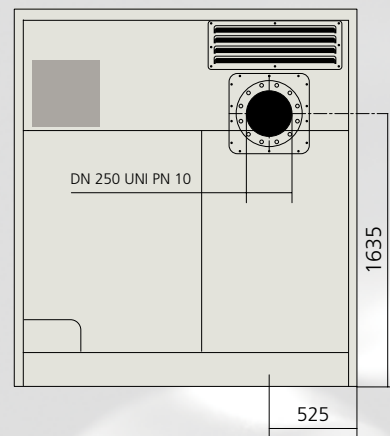
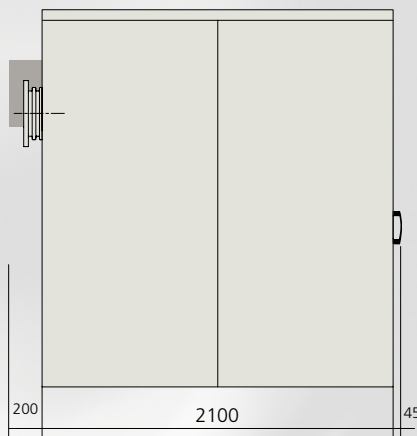
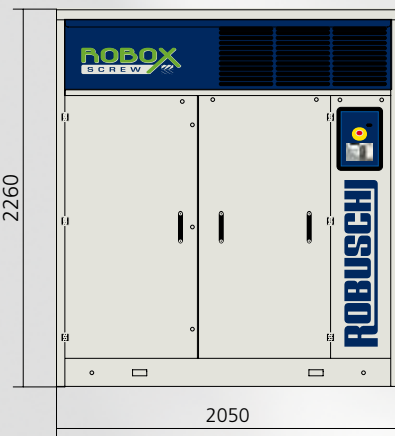
# DIMENSIONS AND OVERALL SIZE (mm)



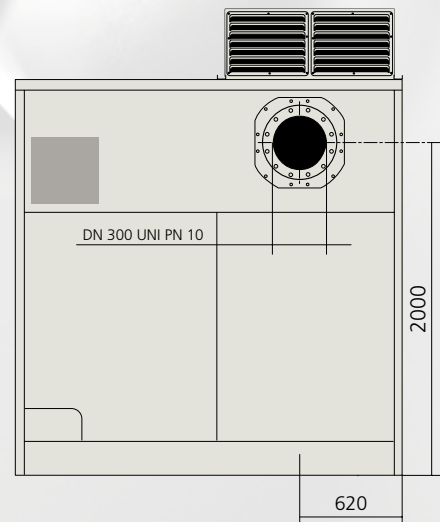
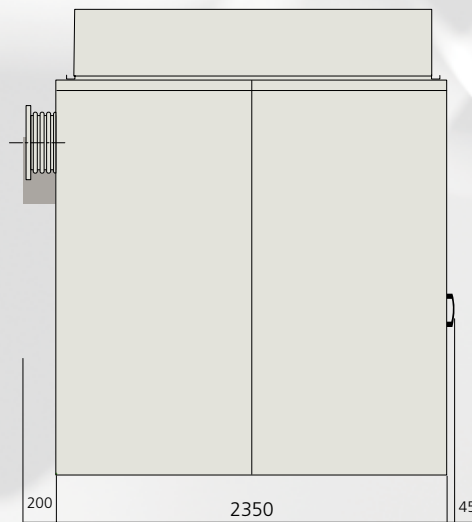
**ROBOX SCREW 2**



**ROBOX SCREW 3**



**ROBOX SCREW 4**



**ROBOX SCREW 5**

**ROBUSCHI®**

G E R M A N Y

Ahnser Strasse 5 - 31675 Bückeburg - Germany  
Tel. +49 5722 2856-0 - Fax +49 5722 2856-99  
E-mail: robuschi@robuschi.de - www.robuschi.de

**ROBUSCHI®**

D A N M A R K

Fuglebaekvej 3 A, 1 - 2770 Kastrup - Denmark  
Tel. +45 70257800 - Fax +45 70 257900  
E-mail: sales@robuschi.dk - www.robuschi.dk

**ROBUSCHI®**

F R A N C E

6, rue de la Grande Borne - 77990 Le Mesnil Amelot - France  
Tel. +33 1 60037569 - Fax +33 1 60037577  
E-mail: robuschi@orange.fr - www.robuschi.fr

**ROBUSCHI®**

B E N E L U X

Kanaaldijk 100 - 6956 AX Spankeren - Netherlands  
Tel. +31 313 41 5570 - Fax +31 313 41 5433  
E-mail: robuschi@robuschi-benelux.nl - www.robuschi-benelux.nl

**ROBUSCHI®**

U S A I n c.

3801 Beam Road, Suite F - Charlotte, NC 28217  
Tel: 704-424 1018 - Fax: 704-424 1019 - Toll free: 877-424-1020  
E-mail: sales@robuschiusa.com - www.robuschiusa.com

**ROBUSCHI®**

C H I N A

218 Tianmu Road West - Suit 1208, Building No. 2, Kerry Everbright City - 200070 Shanghai - China  
Tel. +86 21 6317 5461 / +86 21 6317 6461 - Fax +86 21 6317 7312  
E-mail: robuschichina@robuschichina.com - www.robuschichina.com

**ROBUSCHI®**

d o B R A S I L

Centro Administrativo Rio Negro - Conjuntos 25 e 26 - Edifício Jaçari - Alameda Rio Negro 585  
CEP 06454-000 - Alphaville/Barueri - SP - Brasil  
Tel +55 11 4191-2322 - Fax +55 11 4191-2277  
E-mail: robuschi@robuschi.com.br - www.robuschi.com.br

**ROBUSCHI®****ROBUSCHI S.p.A.**  
**Head office and factory**

Via S. Leonardo, 71/A - 43122 Parma - Italy  
Tel. +39 0521 274911/91 - Fax +39 0521 771242  
E-mail: robuschi@robuschi.it - www.robuschi.com

**FILIALE DI MILANO**

Via XXV Aprile, 2 - 20097 S. Donato (Milano) - Italy  
Tel. +39 02 51628065 - Fax +39 02 51620224  
E-mail: robuschimi@robuschi.it

**FILIALE DI PADOVA**

Piazza Zanellato,5 - 35129 Padova - Italy  
Tel. +39.049.8078260 - Fax +39.049.8078183  
E-mail: robuschipd@robuschi.it

**ROBOX**  
S C R E W 

Robuschi reserve the right to make any modification aimed at the continual improvement of their products.

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