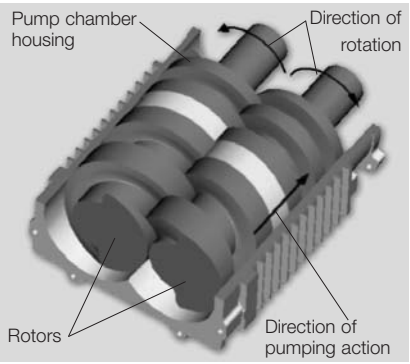
Product SCREWLINE
Dry Compressing Screw Vacuum Pump SCREWLINE

General

Principle of Operation

SCREWLINE vacuum pumps are dry compressing backing pumps, the operation of which is based on the screw principle. The pumping chamber of the pump is formed by two synchronised positive displacement rotors and the housing enclosing these. Since the rotors rotate in opposite directions, the chambers move steadily from the intake to the exhaust side of the pumps thereby resulting in a smooth pumping action (see figure below). Since with a single SCREWLINE rotor pair a multi-stage compression process is implemented, the component count in the pumping path is very low. In this way maintenance and servicing work is much simplified.



Principle of operation of the SCREWLINE pumps

Properties

The direct pumping path without multiple deflections for the medium make the SCREWLINE vacuum pumps highly insensitive to foreign materials. This ensures a high uptime in industrial processes.

The two non-contacting shaft-seals are practically wear-free, which allows for very long maintenance intervals.

For standard applications no purge gas is required. However, a purge gas supply can be connected as an option to purge the seals, should the application process require this.

Because of the cantilevered bearing arrangement for the SCREWLINE rotors, a potential source of failure (i.e. a bearing on the intake side) is entirely eliminated. On the one hand, no lubricants from the bearings can enter into the vacuum process, and the other hand also an impairment of the bearing by aggressive process media can be excluded.

A further benefit of the cantilevered bearing arrangement is the easy accessibility of the pump chamber. This innovative design feature allows the removal of the pump housing without time-consuming and costly disassembly of the bearings. Thus on-site cleaning of all surfaces in contact with the medium is possible. In particular, if the processes involved considerable amounts of contaminants this is a significant advantage which ensures a long uptime.

SP250 with silencer (horizontal)

Besides the integrated oil cooling arrangement for the rotors, the SCREWLINE pumps are air-cooled from the outside. Here rotor and housings are thermally linked via the oil cooler. Thus, SCREWLINE pumps adapt themselves ideally to the ambient conditions under changing operating situations.

A water-cooled version is offered as SCREWLINE SP630 F. This product version is intended for operation in air-conditioned rooms.

The SCREWLINE portfolio is completed through ATEX-certified variants.

Moreover, the SCREWLINE portfolio also includes pump versions suited for pumping pure oxygen (O_2).


Oil/water cooling unit SP630 F

Maintenance and Monitoring

During the development of the SCREWLINE pumps, special emphasis was placed on a particularly simple maintenance concept. This has been implemented through the cantilevered bearing arrangement, with all maintenance components and controls having been located on the so-called service side for easy accessibility. Thus, the space requirement which needs to be taken into account during planning has been optimized. The lower space requirement gives the user more flexibility during installation of the pump.

The monitoring system SP-GUARD was developed especially for constant real-time monitoring of the operational status of the SCREWLINE vacuum pumps. The operating parameters are constantly acquired and processed.

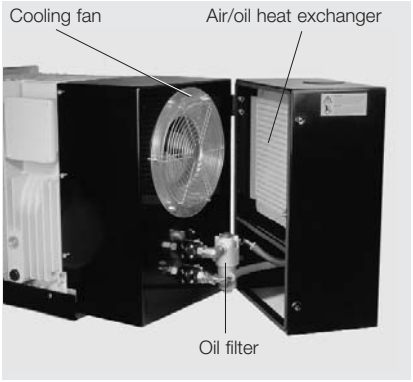
This enables the user to introduce preventive actions early enough so as to ensure trouble-free operation of his SCREWLINE vacuum pumps. The key current operating parameters can be read off from a local display. Moreover, connection to a PLC and remote monitoring is possible. Maintenance of the SCREWLINE pumps will generally be limited to a regular visual inspection of the pump and the annual change of gear oil and oil filter. The oil fill ports as well as the filters are readily accessible and can be easily exchanged.

With the aid of a flushing kit (optional) it is possible to clean the pump chamber, while the pump is operating without process. Deposits due to the process can thus be removed effectively and quickly without the need of having to disassemble the housing.

Also, cleaning of the air/oil heat exchanger can be done simply on-site by blowing out the heat exchanger with compressed air.

Accessories

SCREWLINE vacuum pumps offer to the user a high degree of flexibility. Inlet and exhaust connections are made through universal flanges, respectively clamped flanges, permit simple integration within the system. Through the accessories which are available, the pump can be optimally adapted to the individual requirements of differing applications.



Oil/water cooling unit SP630

The New Dry Compressing Screw Vacuum Pump for Industrial Applications

Pump system SCREWLINE SP630 with RUVAC WAU 2001

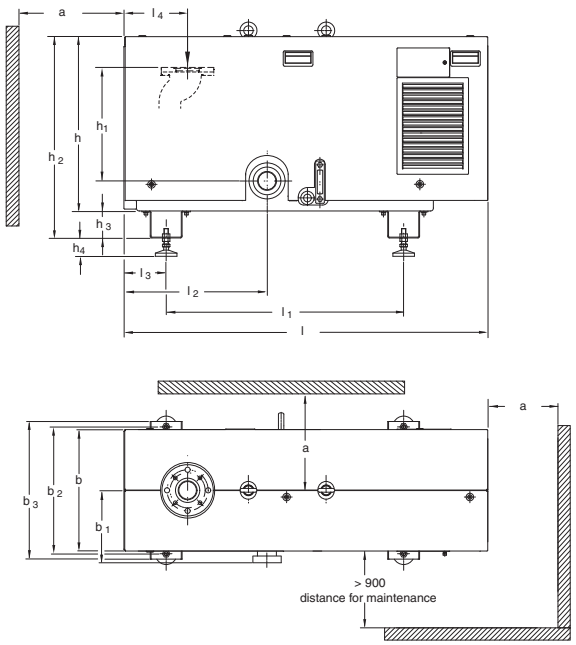
The SCREWLINE pumps were developed in view of the special requirements of industrial applications. The innovative design allows these pumps to be used whenever reliable, compact and low maintenance vacuum solutions are required.

Advantages to the User

- Minimum downtimes, maximum availability, highly rugged
  - The only vacuum pump with a cantilevered bearing arrangement in the industrial market
  - Monitoring through SP-GUARD
  - Highly tolerant of particles and vapours
- Low cost of ownership
  - No purge gas and no cooling water is required for standard applications
  - Low power consumption
  - No contaminated waste oil, no waste disposal costs
- Long maintenance intervals and low servicing complexity
  - Easy and rapid accessibility of all maintenance components and controls
  - Only an annual change of the gear oil is necessary
  - On-site cleaning of the rotors is easy to perform
- Highly flexible
  - Accessories are available for most demanding processes
  - The modular concept allows easy adaptation of the pumping speed of up to 2000 m^3/h by combination with RUVAC Roots vacuum pumps
  - Connections provided through universal flanges, respectively clamped flanges allow for simple and flexible integration within systems
  - Basic models plus accessories allow the pumps to be equipped according to specific requirements
- High pumping speed at low ultimate pressure
- Excellent suitability for the short cycles of load lock chambers or similar applications

Typical Applications

- Industrial furnaces
- Coating technology
- Load lock chambers
- Metallurgical systems
- Packaging technology
- Drying processes
- Degassing
- Research and development
- Lamps and tubes manufacture
- Automotive industry
- Packaging industry
- Space simulation
- Electrical engineering
- Energy research

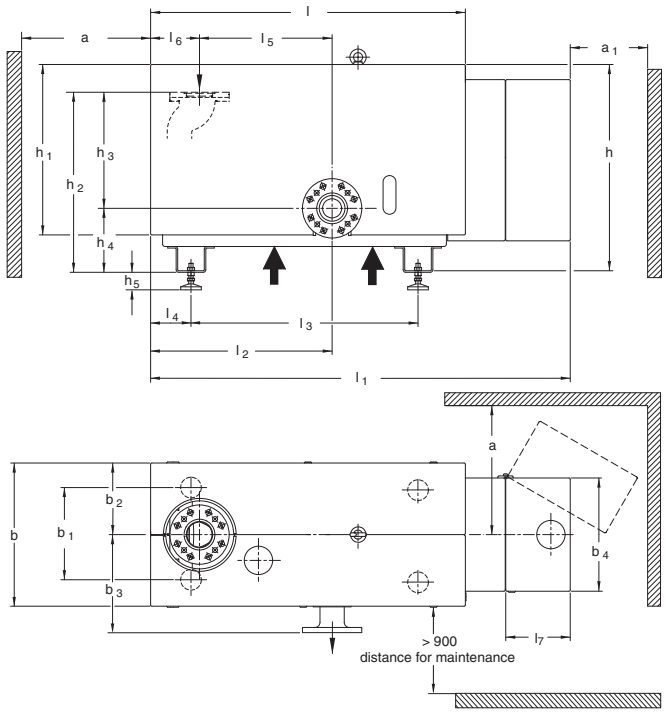


	a	b	b_1	b_2	b_3
mm	> 500	450	268	470	510
in.	> 19.69	17.72	10.55	18.50	20.08

	h	h_1	h_2	h_3	h_4
mm	646	385	746	100	68 - 75
in.	25.43	15.16	29.37	3.94	2.68 - 2.95

	l	l_1	l_2	l_3	l_4
mm	1348	880	529	156	236
in.	53.08	34.65	20.83	6.14	9.29

Dimensional drawing for the SCREWLINE SP250

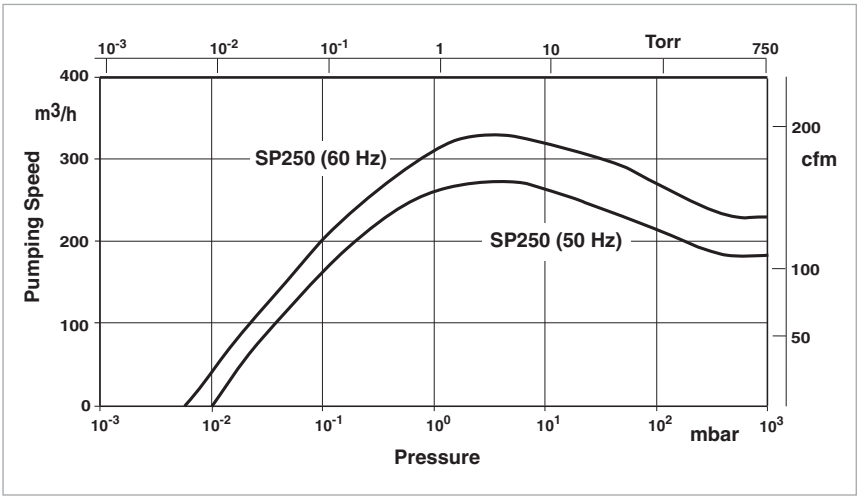


	a	a_1	b	b_1	b_2	b_3	b_4
mm	> 500	> 300	555	470	276	380	439
in.	> 19.69	> 11.81	21.85	18.05	10.87	14.96	17.28

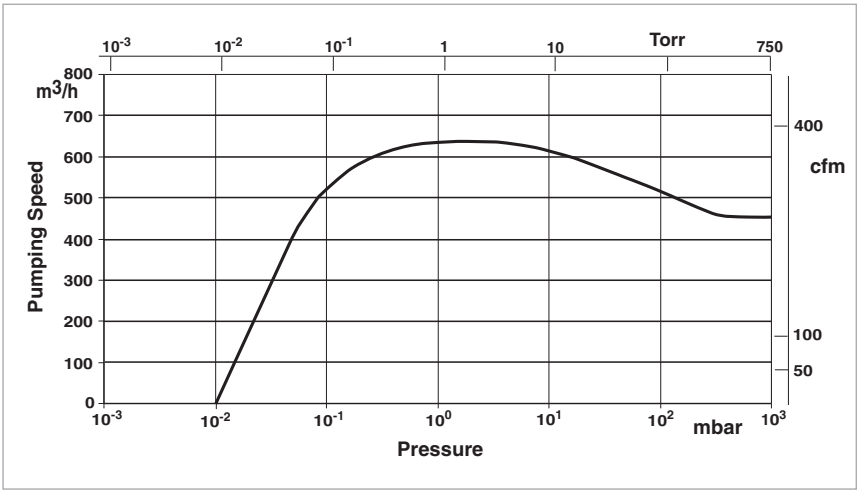
	h	h_1	h_2	h_3	h_4	h_5	l
mm	806	636	698	450	248	68	1220
in.	31.73	25.04	27.48	17.72	9.76	2.68	48.03

	l_1	l_2	l_3	l_4	l_5	l_6	l_7
mm	1626	703	880	157	514	189	250
in.	64.02	27.68	34.65	6.18	20.24	7.44	9.84

Dimensional drawing for the SCREWLINE SP630



Effective pumping speed of the SCREWLINE SP250 for air, without gas ballast (50/60 Hz)



Effective pumping speed of the SCREWLINE SP630 for air, without gas ballast