



Alfa Laval SX UltraPure Rotary Lobe Pump

The Optimum Choice for High-Purity Processes

Application

The SX UltraPure range of rotary lobe pumps has been designed for use on wide ranging applications within the Pharmaceutical, Biotechnology and Personal Care industries. Being certified by EHEDG (European Hygienic Equipment Design Group) as fully CIP cleanable to their protocol, and is ideally suited to applications where cleanability and corrosion resistance is paramount.

In addition the SX UltraPure pump range also conforms to USA 3-A Hygienic Standard and all media contacting components are FDA compliant. The SX UltraPure pump operates with a high efficiency, low shear pumping action for assured gentle handling of delicate and sensitive media.

The SX UltraPure pump range is also classified for use in potentially explosive atmospheres.

The SX UltraPure range is compact in size, capable of flow rates up to 506 GPM and pressures up to 215 PSI.

Standard Design

Pump Gearbox


The SX UltraPure pump with its conventional lobe pump design concept has a robust stainless steel gearbox, which provides maximum shaft rigidity and easy oil seal replacement. The SX UltraPure range has a universal gearbox design. This gives the flexibility of mounting pumps with the inlet and outlet ports in either a vertical or horizontal plane, by changing the foot and its position.

Pump head Construction

The SX UltraPure pump has hygienic design full bore inlet and outlet ports to International Standards, maximising inlet and outlet port efficiency and NPSH characteristics. Vertical porting and unique rotorcase internal profile enhances self-draining and self venting while maintaining optimum volumetric efficiency.

The SX UltraPure pump has four lobe rotors, designed using CFD (Computational Fluid Dynamics) to develop the optimum rotor geometry - possibly the first rotary lobe pump to be developed using this technology. All rotors are rated to 302°F facilitating use with CIP/SIP processes.



 Authorized to carry the 3A symbol

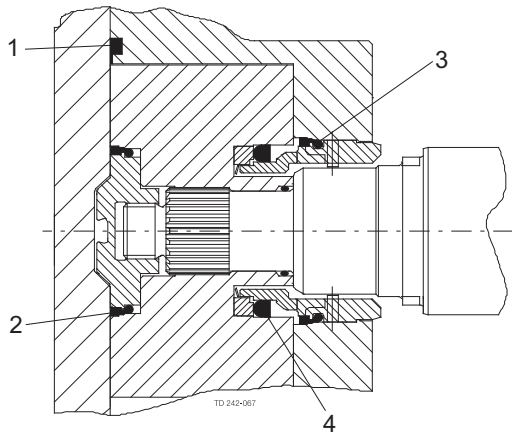
Materials of Construction

Pump gearbox - high quality stainless steel.

Pumphead - product wetted components in 316L - with material traceability 3.1 according to EN 10204. .

Product wetted elastomers of EPDM, MVQ, FPM all FDA conforming. All media contacting elastomers are controlled compression joints, the latest technology where static and dynamic elastomer seals are used to prevent pumped media leaking to atmosphere.

All product wetted elastomers are in compliance with FDA section 21 CFR 177.2600 & section 21 CFR 177.1550 (PTFE). The elastomers are furthermore in compliance with USP Class VI section 87/88 biological reactivity test, at 121°C



1. Front cover compression joint
2. Spline sealing cup seal
3. Cup seal
4. Squad ring

Weight

Model	Bare Shaft Pump lbs.	
	Horizontal porting	Vertical porting
SX UltraPure 1NLD	37	39
SX UltraPure 1WLD	39	41
SX UltraPure 2NLD	75	77
SX UltraPure 2WLD	77	79
SX UltraPure 3NLD	130	134
SX UltraPure 3WLD	134	138
SX UltraPure 4NLD	247	254
SX UltraPure 4WLD	260	267
SX UltraPure 5NLD	342	342
SX UltraPure 5WLD	364	364
SX UltraPure 6NLD	613	613
SX UltraPure 6WLD	639	639
SX UltraPure 7NLD	-	750
SX UltraPure 7WLD	-	798

Shaft Seal Options

- Single or single flush/quench (steam barrier for aseptic application) R00 type mechanical seals.
- Double R00 type mechanical seal for flush.

All sealing options are fully front loading and fully interchangeable without the need for additional housings or pump component changes. Specialised seal setting of the mechanical seal is not required as the seal is dimensionally set on assembly. This feature further enhances fast and efficient on-site seal interchangeability.

Materials for Mechanical Seals

As standard the SX UltraPure is supplied with EHEDG compliant Silicon Carbide/Silicon Carbide seal faces avoiding any risk of potential extractable contamination.

Pump Sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection.

Product/Fluid Data

- Fluid to be pumped
- Viscosity
- SG/Density
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Standard Specification Options

- Screwed male inlet and outlet ports to DIN11851, SMS, RJT, Triclamp for ASME, DIN 32676 Clamp, DIN 11864-1 (Union) Form A, DIN 11864-2 (Flange) Form A or DIN 11864-3 (Clamp) Form A.
- Heating/Cooling Jacket for Rotorcase Cover.
- Product wetted surface finish electropolished to Ra 15 µin.
- Passivated surface.
- Surface finish measurement with certificate.
- Hydrostatic testing with certificate.
- ATEX compliance.
- Complete pump unit comprising: Pump + stainless steel baseplate + coupling with guard + Geared electric motor suitable for (or supplied with) frequency speed control or manual variable speed drive (advise motor enclosure and electrical supply).
- Low delta ferrite material for product wetted components.
- High alloy materials for product wetted components i.e AL6XN or Titanium.

Q-doc

Standard documentation package:

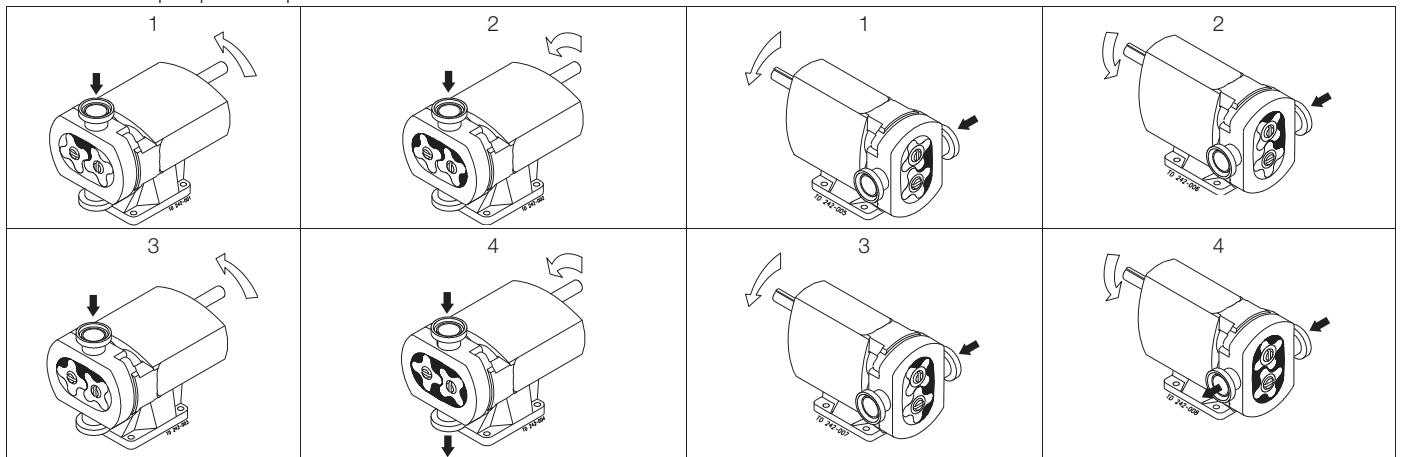
- Declaration of compliance with Regulation (EC) No.: 1935/2004
- Declaration of compliance to EN 10204 type 3.1 (MTR)
- Declaration of compliance to the U.S. Food & Drug Administration CFR 21 (non-metallic parts)
- Declaration of compliance to the U.S. Pharmacopeia (Elastomers and polymers)
- TSE (Transmissible Spongiform Encephalopathy) / ADI (Animal Derivative Ingredient) declaration
- Declaration of surface finish compliance
- Declaration of passivation and electro polishing (if specified)
- 3.1 certification in accordance to EN10204
- Pump performance test certificate

Optional documentation:

- Hydrostatic test certificate
- Surface measurement report

Working Principle

The positive displacement of the SX UltraPure pump is provided by non-contacting, contra rotating four lobe rotors within a fully swept pump chamber. All SX UltraPure pumps are capable of bi-rotational flow without modification.

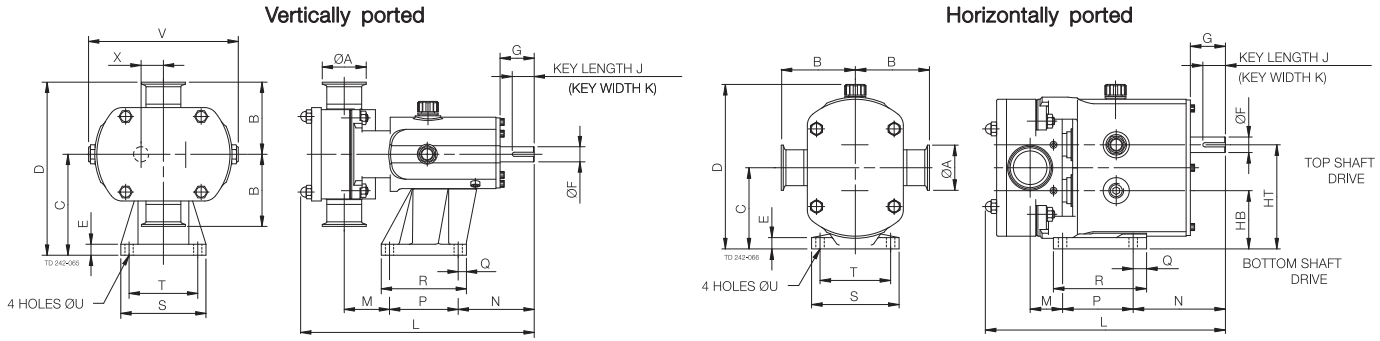


Flows/Pressures/Connections

SX Model	Displacement			Inlet and Outlet Connection Size		Differential Pressure (see note 1)		Maximum Speed
	Litre/rev	Imp gall/100 rev	US gall/100 rev	mm	in	bar	psi	rev/min
SX UltraPure 1NDL	0.05	1.11	1.32	25	1	12	175	1200
SX UltraPure 1WLD	0.07	1.54	1.85	40	1.5	7	100	1200
SX UltraPure 2NDL	0.128	2.82	3.38	40	1.5	15	215	1000
SX UltraPure 2WLD	0.181	3.98	4.78	50	2	7	100	1000
SX UltraPure 3NDL	0.266	5.85	7.03	50	2	15	215	1000
SX UltraPure 3WLD	0.35	7.70	9.25	65	2.5	7	100	1000
SX UltraPure 4NDL	0.46	10.12	12.15	50	2	15	215	1000
SX UltraPure 4WLD	0.63	13.86	16.65	65	2.5	10	145	1000
SX UltraPure 5NDL	0.82	18.04	21.67	65	2.5	15	215	600
SX UltraPure 5WLD	1.15	25.30	30.38	80	3	10	145	600
SX UltraPure 6NDL	1.40	30.80	36.99	80	3	15	215	500
SX UltraPure 6WLD	1.90	41.80	50.20	100	4	10	145	500
SX UltraPure 7NDL	2.50	55.00	66.05	100	4	15	215	500
SX UltraPure 7WLD	3.80	83.60	100.40	150	6	10	145	500

Note 1. These pressure ratings may vary for pumps with certain threaded connections.

Bareshaft Pump Dimensions



All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	V	X
SX UltraPure 1NLD	1.00	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	10.87	2.13	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX UltraPure 1WLD	1.50	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	11.38	2.36	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX UltraPure 2NLD	1.50	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	12.76	2.32	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX UltraPure 2WLD	2.00	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	13.39	2.60	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX UltraPure 3NLD	2.00	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	16.97	2.83	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX UltraPure 3WLD	2.50	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	17.60	3.03	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX UltraPure 4NLD	2.00	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	20.24	2.95	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX UltraPure 4WLD	2.50	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	20.98	3.19	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX UltraPure 5NLD	2.50	6.89	10.12	17.01	1.18	1.77	4.33	2.76	0.55	23.58	2.40	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.58	2.36
SX UltraPure 5WLD	3.00	6.86	10.12	17.01	1.18	1.77	4.33	2.76	0.55	24.65	3.19	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.58	2.36
SX UltraPure 6NLD	3.00	7.48	11.61	19.09	1.18	1.89	4.33	2.76	0.55	27.05	3.03	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX UltraPure 6WLD	4.00	7.48	11.61	19.09	1.18	1.89	4.33	2.76	0.55	28.15	3.50	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX UltraPure 7NLD	4.00	8.07	14.37	22.44	1.18	2.36	4.33	3.54	0.71	30.04	3.70	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21
SX UltraPure 7WLD	6.00	8.07	14.37	22.44	1.18	2.36	4.33	3.54	0.71	32.17	4.76	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21

All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	HB	HT	J	K	L	M	N	P	Q	R	S	T	U
SX UltraPure 1NLD	1.00	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	10.87	1.46	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX UltraPure 1WLD	1.50	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	11.38	1.69	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX UltraPure 2NLD	1.50	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	12.76	1.54	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX UltraPure 2WLD	2.00	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	13.39	1.81	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX UltraPure 3NLD	2.00	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	16.97	2.72	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX UltraPure 3WLD	2.50	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	17.60	2.91	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX UltraPure 4NLD	2.00	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	20.24	2.95	8.86	5.91	1.38	7.95	7.24	5.91	0.55
SX UltraPure 4WLD	2.50	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	20.98	3.19	8.86	5.91	1.38	7.95	7.24	5.91	0.55
SX UltraPure 5NLD	2.50	6.89	7.68	14.80	0.79	1.77	4.33	5.31	10.04	2.76	0.55	23.58	1.81	10.98	7.09	1.38	10.83	8.27	7.09	0.55
SX UltraPure 5WLD	3.00	6.89	7.68	14.80	0.79	1.77	4.33	5.31	10.04	2.76	0.55	24.65	2.60	10.98	7.09	1.38	10.83	8.27	7.09	0.55
SX UltraPure 6NLD	3.00	7.48	8.86	16.89	0.79	1.89	4.33	6.10	11.61	2.76	0.55	27.05	3.07	10.47	10.2	1.57	14.57	8.66	7.48	0.55
SX UltraPure 6WLD	4.00	7.48	8.86	16.89	0.79	1.89	4.33	6.10	11.61	2.76	0.55	28.15	3.54	10.47	10.2	1.57	14.57	8.66	7.48	0.55

Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.us to access the information direct.