



The Optimum Choice for Ultra-Clean Processes

SX Rotary Lobe Pump

PD 66319 GB1 2001-07

Application

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

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

The SX range is compact in size, capable of flow rates up to 115 m³/h and pressures up to 15 bar.

Standard Design

Pump Gearbox

The SX pump with its conventional lobe pump design concept has a robust cast iron gearbox, which provides maximum shaft rigidity and easy oil seal replacement. The SX range in series 1 - 4 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 position. If EHEDG design and installation compliance and conformity to the Machinery Safety Directive 89/392/EEC (1989) is required, a dedicated vertical port option will be supplied. A quality epoxy paint system is used on the gearbox exterior for optimum protection against natural and corrosive elements.

Pumphead Construction

The SX pump has sanitary 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 whilst maintaining optimum volumetric efficiency.

The SX 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 150°C facilitating use with CIP/SIP processes.



SX Rotary Lobe Pump

Maximum Solid Size Capability

Pump Series	Max. Size of Spherical Solids (mm)
SX1	7
SX2	10
SX3	13
SX4	16
SX5	19
SX6	25
SX7	28

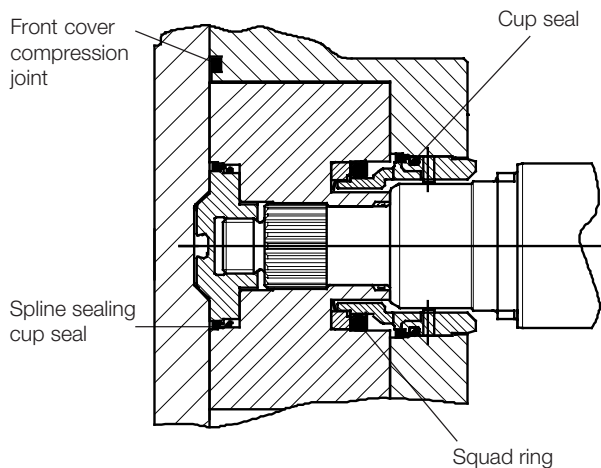
Materials of Construction

Pump gearbox – high quality grey cast iron.

Pumphead – product wetted components in 316L or equivalent stainless steel.

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.



Weight

Model	Bare Shaft Pump (kg)	
	Horizontal porting	Vertical porting
SX1/005	15	16
SX1/007	16	17
SX2/013	32	33
SX2/018	33	34
SX3/027	57	59
SX3/035	59	61
SX4/046	107	110
SX4/063	113	116
SX5/082	-	155
SX5/115	-	165
SX6/140	-	278
SX6/190	-	290
SX7/250	-	340
SX7/380	-	362

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

Carbon/Stainless Steel, Silicon Carbide/Silicon Carbide or variations of these materials to suit fluid being pumped and/or application requirements. The seal seat and face material combinations are all EHEDG compliant.

Pump Sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Customer 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

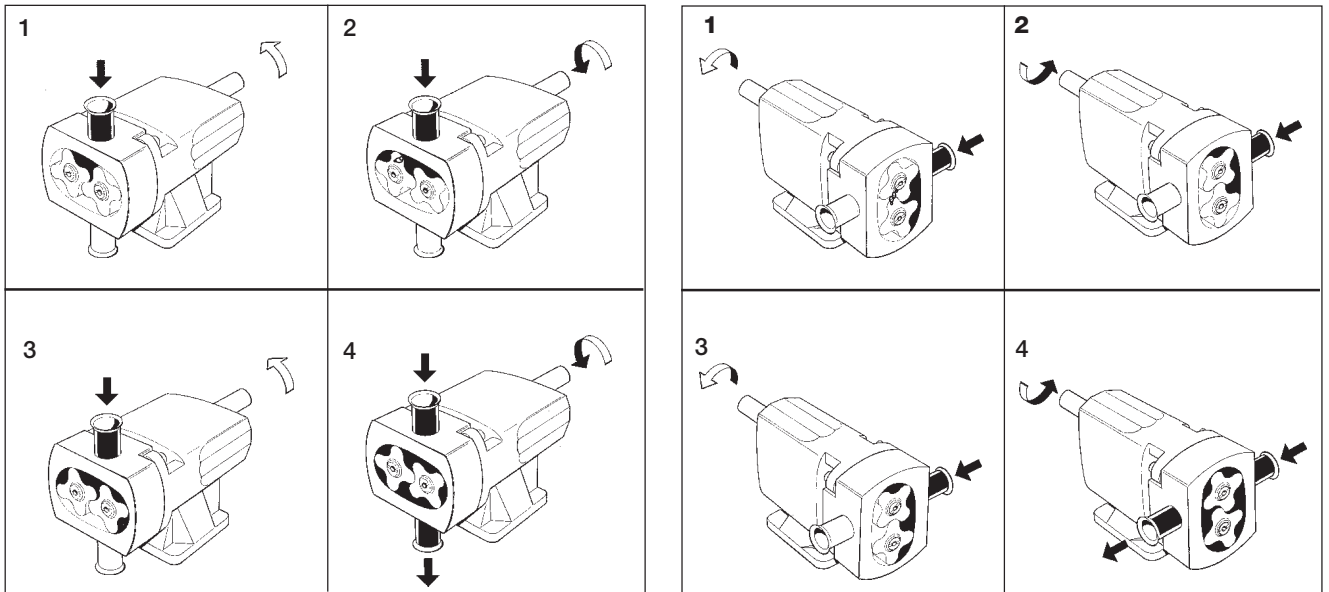
Standard Specification Options

- Screwed male inlet and outlet ports to DIN11851, SMS, ISS/IDF, RJT or Tri-clamp.
- Heating/Cooling Jacket for Rotorcase Cover.
- Electropolished product wetted components.
- Complete pump unit comprising: Pump + Baseplate (mild or stainless steel) + 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).
- Full material traceability on request to BSEN 10204.

Working Principle

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

Fig 1.



Flows/Pressures/Connections

SX Series	Build Selection		SX Model	Displacement			Inlet and Outlet Connection Size		Differential Pressure (see note 1)		Maximum Speed
	Pump head Code	Gearbox		Litres/rev	Imp gall/100 rev	US gall/100 rev	mm	in	bar	psi	
1	005	H or U	SX1/005/H or U SX1/007/H or U	0.05	1.11	1.32	25	1	12	175	1400
	007	H or U		0.07	1.54	1.85	40	1.5	7	100	1400
2	013	H or U	SX2/013/H or U SX2/018/H or U	0.128	2.82	3.38	40	1.5	15	215	1000
	018	H or U		0.181	3.98	4.78	50	2	7	100	1000
3	027	H or U	SX3/027/H or U SX3/035/H or U	0.266	5.85	7.03	50	2	15	215	1000
	035	H or U		0.35	7.70	9.25	65	2.5	7	100	1000
4	046	H or U	SX4/046/H or U SX4/063/H or U	0.46	10.12	12.15	50	2	15	215	1000
	063	H or U		0.63	13.86	16.65	65	2.5	10	145	1000
5	082	H	SX5/082/H SX5/115/H	0.82	18.04	21.67	65	2.5	15	215	600
	115	H		1.15	25.30	30.38	80	3	10	145	600
6	140	H	SX6/140/H SX6/190/H	1.40	30.80	36.99	80	3	15	215	500
	190	H		1.90	41.80	50.20	100	4	10	145	500
7	250	H	SX7/250/H SX7/380/H	2.50	55.00	66.05	100	4	15	215	500
	380	H		3.80	83.60	100.40	150	6	10	145	500

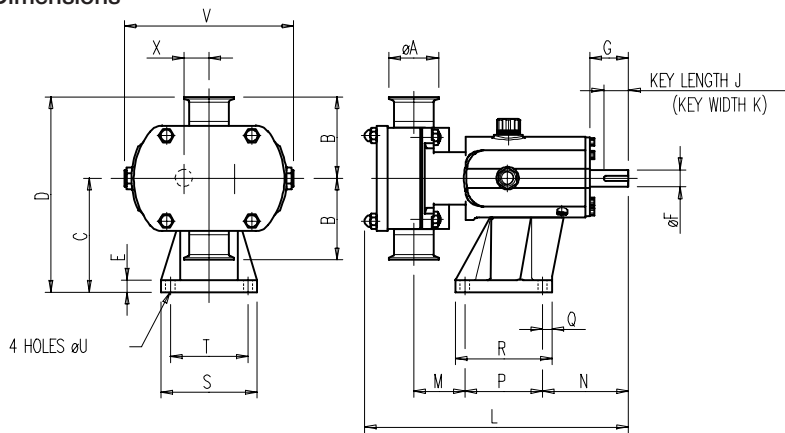
H - Vertical Port (EHEDG approved)

U - Universal mounting (non EHEDG approved)

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

Bareshaft Pump Dimensions

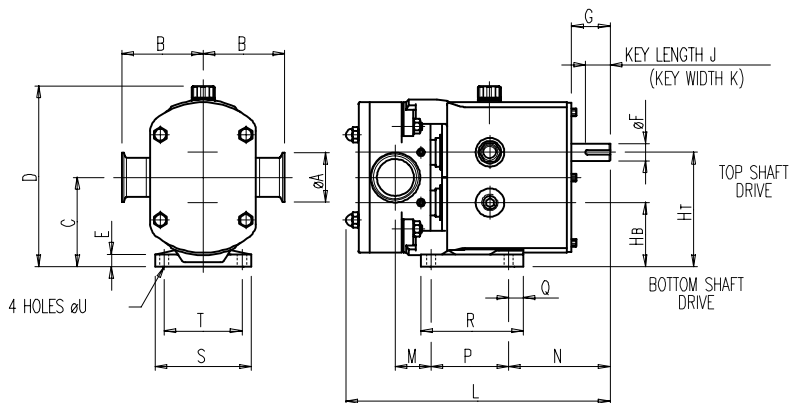
Vertically ported



ALL DIMENSIONS IN MM

PUMP	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	V	X
SX1/005	25	95	113	208	15	16	40	30	5	281	53	100	80	22	114	104	80	10	174	23.5
SX1/007	40	95	113	208	15	16	40	30	5	294	60	100	80	22	114	104	80	10	174	23.5
SX2/013	40	105	147	252	15	22	50	32	6	325	59	111	100	12	124	124	100	12	213	32.5
SX2/018	50	105	147	252	15	22	50	32	6	341	66	111	100	12	124	124	100	12	213	32.5
SX3/027	50	125	175	300	22	28	61	40	8	431	71	142	155	15	185	155	125	14	246	37.5
SX3/035	65	125	175	300	22	28	61	40	8	447	77	142	155	15	185	155	125	14	246	37.5
SX4/046	50	150	213	363	25	38	80	63	10	514	74	174	200	17	234	184	150	14	301	49.5
SX4/063	65	150	213	363	25	38	80	63	10	533	81	174	200	17	234	184	150	14	301	49.5
SX5/082	65	175	256.5	431.5	30	45	110	70	14	599	61	264	200	20	240	220	180	14	344	60
SX5/116	80	175	256.5	431.5	30	45	110	70	14	626	81	264	200	20	240	220	180	14	344	60
SX6/140	80	190	295	485	30	48	110	70	14	687	77	267	260	20	300	250	210	14	400	70
SX6/190	100	190	295	485	30	48	110	70	14	715	89	267	260	20	300	250	210	14	400	70
SX7/250	100	205	365	570	30	60	110	90	18	763	94	288	280	25	330	290	240	18	475	81.5
SX7/380	150	205	365	570	30	60	110	90	18	817	121	288	280	25	330	290	240	18	475	81.5

Horizontally ported



ALL DIMENSIONS IN MM

PUMP	A	B	C	D	E	F	G	HB	HT	J	K	L	M	N	P	Q	R	S	T	U
SX1/005	25	95	90.5	189	10	16	40	67	114	30	5	281	29	124	80	10	100	100	80	10
SX1/007	40	95	90.5	189	10	16	40	67	114	30	5	294	36	124	80	10	100	100	80	10
SX2/013	40	105	115	233	15	22	50	82.5	147.5	32	6	325	39	131	100	19	132	124	100	12
SX2/018	50	105	115	233	15	22	50	82.5	147.5	32	6	341	46	131	100	19	132	124	100	12
SX3/027	50	125	137.5	272	18	28	60	100	175	40	8	431	68	175	125	30	181	154	125	14
SX3/035	65	125	137.5	272	18	28	60	100	175	40	8	447	74	175	125	30	181	154	125	14
SX4/046	50	150	163	325	20	38	80	113.5	212.5	63	10	514	74	225	150	35	202	184	150	14
SX4/063	65	150	163	325	20	38	80	113.5	212.5	63	10	533	81	225	150	35	202	184	150	14

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The information contained herein is correct at the time of issue, but may be subject to change without prior notice.

How to contact Alfa Laval

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