



Alfa Laval three-screw pump

Alfa Laval 3S pumps



The 3S series is characterised by an innovative design for long service life, even in harsh operating conditions.

The thoroughly engineered 3S series is suitable for various applications. With a range consisting of 29 different pump sizes with delivery rates from 5–2,900 l/min@1450 rpm the 3S series is one of the most comprehensive three-screw pump ranges available on the market.

Furthermore, the individual pump sizes are available in several executions ensuring a high degree of flexibility when specifying a pump for specific system designs.

Applications

The 3S series consists of a broad range of pump sizes for lubricating, non-abrasive oil based liquids. 3S pumps are used in marine and industrial applications.

Examples are:

- Feed and circulation pumps for fuels and lubricants
- Lubricant and coolant pumps for gears, engines and hydraulic systems
- Feed and transfer pumps for oil burner technology

Benefits

Key benefits significant to the 3S pump design are:

- Minimized life cycle cost
- Low maintenance
- High quality
- Environmentally friendly
- High volumetric efficiency
- High energy efficiency

Design

The 3S series pump is designed with a lifetime-lubricated external ball bearing with an expected lifetime of 30,000 hours. With a weep hole just between the shaft seal and the bearing, preventing accumulation of residue, the bearing is well protected. The ball bearing is not exposed to the pumped liquid. The mechanical seal is well lubricated and cooled. The seal is designed to efficiently dissipate frictional heat. Consequently, the 3S series is characterised by an innovative design for long service life, even in harsh operating conditions.

Technical data

Materials

Pump casing	Nodular cast iron, EN-GJS-400
Screws	Nitration-hardened steel, 1.7139
Seal faces, mechanical seal	SiC/hard metal

Port connections

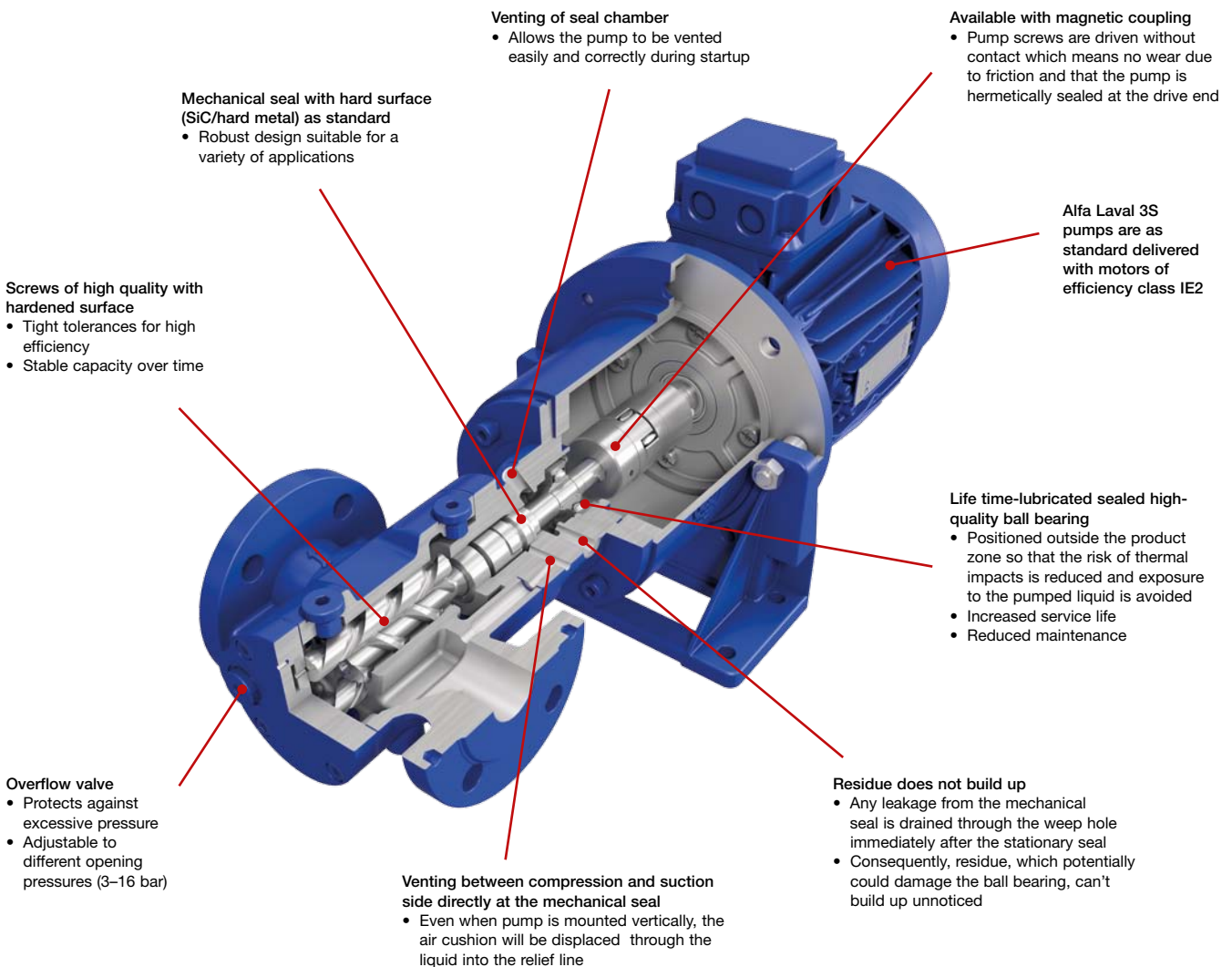
Flanges PN16 according to EN 1092-1 type B1/B2, in inline configuration or at the top. For 3S BT and 3S VT special counter flanges are required. A special flange design is used with 3S BS pumps.

Motors

According to the IEC metric standard:

- 2 poles = 2,900/3,500 rpm at 50/60 Hz
- 4 poles = 1,450/1,750 rpm at 50/60 Hz
- 6 poles = 950/1,200 rpm at 50/60 Hz
- IP55, insulation class ICLF, efficiency class IE2

Design features



Operating data

Operating limits

Max. inlet pressure	
Mechanical sealed pump (SiC/hard metal)	6 bar
Magnetic coupled pumps	16 bar
Max. discharge pressure	
	16 bar
Max. differential pressure	
	16 bar
Valve setting pressures	
Adjustable	3–16 ± 0.2 bar
Temperature range	
Mechanical sealed pump (SiC/hard metal)	–20°C to +180°C
Magnetic coupled pumps	–20°C to +250°C
Viscosity	
	2–10,000 cSt
Max. rotation speed [min ⁻¹]	
50 Hz	2,900
60 Hz	3,500

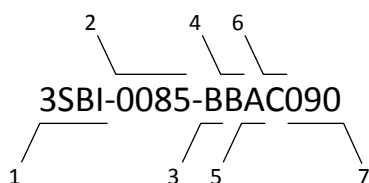
Pump testing

Every individual pump is performance tested before leaving the factory.

Certification

Upon request the Alfa Laval 3S pump may be certified according to the following class societies: ABS, BV, CCS, CR, DNV, GL, KR, LR, NK, PRS, RINA, RS.

Type code



- 1 Model (BI: Inline flange, VI: Vertical pedestal/Inline flange, BT: Top flange, VT: Vertical pedestal/Top flange, BS: Special top flange)
- 2 Size (nominal flow rate in l/min at 1,450 rpm in std. conditions)
- 3 Seal type (B: mechanical seal, D: magnetic coupling)
- 4 Safety valve setting (A: 3.0–5.9 bar, B: 6.0–9.9 bar, C: 10–16 bar)
- 5 Heating system (A: Without, B: Electric system, C: Fluid system)
- 6 Completion (A: Free shaft end, B: Flange mounted, C: Foot mounted, D: Flange mounted with motor, E: Foot mounted with motor)
- 7 IEC Frame size

3S models

The variety of models within the Alfa Laval 3S range enable numerous installation methods.



3S BI
Inline flange with or without bracket foot
Sizes: 0005–2900



3S BT
Top flange with or without bracket foot
Sizes: 0005–0210



3S VI
Inline flange on vertical pedestal
Sizes: 0005–2900



3S VT
Top flange on vertical pedestal
Sizes: 0005–0210



3S BS
Special top flange with or without bracket foot
Sizes: 0015–0085

Capacity table

Pump size	50 Hz, $\Delta p = 4$ bar						60 Hz, $\Delta p = 4$ bar					
	Q [l/hour] @ viscosity [mm ² /s] /50°C											
	RPM	13	40	180	380	700	RPM	13	40	180	380	700
0005	2,800	516	552	582	588	594	3,400	648	684	708	720	720
	1,400	216	252	276	288	288	1,700	282	312	342	348	354
07.5	2,800	792	840	876	882	888	3,400	984	1,032	1,068	1,080	1,086
	1,400	336	384	420	432	438	1,700	432	480	516	528	534
0010	2,800	1,068	1,122	1,170	1,182	1,188	3,400	1,326	1,386	1,428	1,440	1,446
	1,400	462	522	564	576	582	1,700	594	648	696	708	714
0015	2,800	1,626	1,692	1,746	1,764	1,770	3,400	2,010	2,076	2,130	2,148	2,154
	1,400	726	798	852	864	876	1,700	918	990	1,044	1,056	1,068
0020	2,800	2,136	2,226	2,298	2,316	2,328	3,400	2,646	2,736	2,808	2,826	2,838
	1,400	960	1,050	1,116	1,140	1,152	1,700	1,212	1,302	1,374	1,392	1,404
0032	2,800	3,456	3,564	3,642	3,666	3,678	3,400	4,254	4,356	4,440	4,464	4,476
	1,400	1,596	1,704	1,788	1,806	1,824	1,700	1,998	2,100	2,184	2,208	2,220
0042	2,800	4,608	4,746	4,854	4,884	4,902	3,400	5,670	5,808	5,916	5,946	5,964
	1,400	2,130	2,268	2,376	2,412	2,430	1,700	2,658	2,802	2,910	2,940	2,958
0055	2,800	6,324	6,504	6,648	6,684	6,708	3,400	7,776	7,956	8,100	8,136	8,160
	1,400	2,940	3,120	3,258	3,300	3,324	1,700	3,666	3,846	3,984	4,026	4,050
0075	2,800	8,184	8,394	8,562	8,610	8,634	3,400	10,050	10,260	10,428	10,476	10,500
	1,400	3,828	4,038	4,206	4,254	4,278	1,700	4,764	4,974	5,142	5,184	5,214
0085	2,800	9,132	9,354	9,522	9,570	9,600	3,400	11,208	11,424	11,598	11,646	11,670
	1,400	4,296	4,512	4,686	4,734	4,758	1,700	5,334	5,550	5,724	5,772	5,796
0105	2,800	10,794	11,130	11,400	11,472	11,514	3,400	13,290	13,626	13,890	13,962	14,010
	1,400	4,980	5,316	5,580	5,652	5,700	1,700	6,222	6,558	6,828	6,900	6,942
0118	2,800	13,044	13,338	13,572	13,638	13,674	3,400	15,996	16,290	16,524	16,590	16,626
	1,400	6,156	6,450	6,684	6,744	6,786	1,700	7,632	7,926	8,160	8,220	8,262
0160	2,800	18,216	18,612	18,930	19,014	19,068	3,400	22,332	22,728	23,046	23,130	23,184
	1,400	8,610	9,006	9,324	9,414	9,462	1,700	10,668	11,064	11,382	11,472	11,520
0210	2,800	24,024	24,474	24,834	24,936	24,996	3,400	29,412	29,868	30,228	30,324	30,384
	1,400	11,442	11,898	12,258	12,360	12,414	1,700	14,142	14,592	14,952	15,054	15,108
0235	2,800	26,070	26,532	26,892	26,994	27,054	3,400	31,866	32,364	32,724	32,826	32,886
	1,400	12,462	12,924	13,284	13,386	13,446	1,700	15,378	15,840	16,200	16,302	16,362
0275	2,800	31,284	31,836	32,274	32,394	32,460	3,400	38,286	38,832	39,270	39,390	39,462
	1,400	14,958	15,504	15,942	16,062	16,134	1,700	18,456	19,008	19,440	19,560	19,632
0370	2,800	40,980	41,628	42,144	42,288	42,366	3,400	50,112	50,760	51,270	51,414	51,498
	1,400	19,680	20,328	20,844	20,988	21,066	1,700	24,246	24,894	25,410	25,548	25,632
0450	2,800	49,422	50,400	51,174	51,390	51,528	3,400	60,534	61,512	62,286	62,502	62,628
	1,400	23,490	24,468	25,242	25,458	25,584	1,700	29,046	30,024	30,798	31,014	31,140
0550	2,800	60,930	61,716	62,340	62,514	62,616	3,400	74,406	75,198	75,822	75,996	76,098
	1,400	29,478	30,270	30,894	31,068	31,170	1,700	36,216	37,008	37,632	37,806	37,908
0660	2,800	74,766	75,828	76,668	76,902	77,034	3,400	91,356	92,418	93,258	93,486	93,624
	1,400	36,060	37,122	37,962	38,190	38,328	1,700	44,352	45,414	46,254	46,488	46,620
0851	2,800	88,488	89,550	90,390	90,624	90,762	3,400	108,018	109,080	109,920	110,154	110,292
	1,400	42,918	43,980	44,820	45,054	45,192	1,700	52,680	53,748	54,588	54,822	54,954
0951	2,800	107,616	109,908	111,720	112,224	112,512	3,400	131,898	134,190	136,002	136,506	136,536
	1,400	50,946	53,238	55,050	55,554	55,848	1,700	63,090	65,382	67,194	67,698	67,728
1101	2,800	126,966	128,322	129,396	129,696	129,864	3,400	154,896	156,258	157,326	157,626	157,800
	1,400	61,788	63,150	64,218	64,518	64,692	1,700	75,756	77,112	78,186	78,486	78,654
1301	2,800	146,124	148,302	150,024	150,504	150,780	3,400	178,602	180,780	182,502	182,982	183,258
	1,400	70,344	72,522	74,244	74,724	75,000	1,700	86,586	88,764	90,486	90,960	91,242
1500	2,800	168,264	171,048	173,250	173,862	174,216	3,400	205,812	208,596	210,798	211,404	211,764
	1,400	80,658	83,442	85,644	86,256	86,610	1,700	99,432	102,216	104,418	105,030	105,384
1700	2,800	196,926	200,148	202,698	203,406	203,814	3,400	240,846	244,068	246,618	247,326	247,740
	1,400	94,440	97,662	100,212	100,920	101,334	1,700	116,400	119,628	122,172	122,880	123,294
2200	2,800	253,488	256,866	259,530	260,274	260,706	3,400	309,612	312,990	315,654	316,398	316,830
	1,400	122,532	125,910	128,574	129,318	129,750	1,700	150,594	153,972	156,636	157,380	157,812
2500	2,800	284,406	288,192	291,186	292,020	292,506	3,400	347,376	351,162	354,156	354,990	355,470
	1,400	137,478	141,264	144,258	145,092	145,572	1,700	168,960	172,752	175,746	176,574	177,060
2900	2,800	321,498	325,782	329,166	330,108	330,654	3,400	392,682	396,966	400,350	401,292	401,838
	1,400	155,406	159,690	163,074	164,016	164,562	1,700	190,998	195,282	198,666	199,608	200,154

Dimensional data

		3S BI								
		[mm]								
Pump size	Motor size	DNs	DNd	LL	L4	L5	L6	L7	H1	g
0005-0020	80	25	25	124	175	201	90	60	112	150
	90	25	25	124	175	201	90	60	112	150
	100/112	25	25	124	155	201	97	60	132	150
0032-0042	80	32	32	124	201	244	90	60	112	170
	90	32	32	124	201	244	90	60	112	170
	100/112	32	32	135	192	244	97	60	132	170
0055-0118	80	50	50	124	221	290	90	60	112	220
	90	50	50	124	221	290	90	60	112	220
	100/112	50	50	135	212	290	97	60	132	220
	132	50	50	168	224	290	116	80	160	220
0160-0275	160	50	50	188	209	290	150	110	180	220
	100/112	80	80	175	300	364	97	60	132	250
	132	80	80	168	272	364	116	80	160	250
	160	80	80	188	257	364	150	110	180	250
0370-0450	180	80	80	204	313	364	305	265	235	250
	132	100	100	168	288	396	116	80	160	270
	160	100	100	204	289	396	150	110	180	270
	180	100	100	204	329	396	305	265	235	270
0550-0660	200	100	100	204	319	396	350	300	260	270
	160	125	100	228	447	556	305	265	235	360
	180	125	100	228	447	556	305	265	235	360
	200	125	100	228	437	556	350	300	260	360
	225S	125	100	285	768	556	368	286	225	360
	225M2	125	100	234	717	556	395	311	225	360
0851-0951	225M4	125	100	285	768	556	395	311	225	360
	250	125	100	248	750	556	444	349	280	360
	160	150	125	250	528	681	305	265	235	450
	180	150	125	250	528	681	305	265	235	450
	200	150	125	250	518	681	350	300	260	450
	225S	150	125	282	818	681	368	286	225	450
	225M2/4	150	125	282	818	681	395	311	225	450
	250	150	125	284	839	681	444	349	280	450
1101-1301	280S	150	125	289	866	681	485	368	280	450
	280M	150	125	289	866	681	536	419	280	450
	160	150	125	250	528	681	305	265	235	450
	180	150	125	250	528	681	305	265	235	450
	200	150	125	250	518	681	350	300	260	450
	225S	150	125	282	818	681	368	286	225	450
	225M2/4	150	125	282	818	681	395	311	225	450
	250	150	125	284	839	681	444	349	280	450
1500-1700	280S	150	125	289	866	681	485	368	280	450
	280M	150	125	289	866	681	536	419	280	450
	200	200	150	270	889	864	370	305	225	520
2200-2900	225S	200	150	305	940	864	368	286	225	520
	225M4	200	150	305	940	864	395	311	225	520
	200	200	150	270	944	974	370	305	225	585
2200-2900	225S	200	150	305	995	974	368	286	225	585
	225M4	200	150	305	995	974	395	311	225	585
	250	200	150	301	1010	974	445	349	250	585
	280S	200	150	306	1037	974	439	368	280	585
	280M	200	150	306	1037	974	439	368	280	585

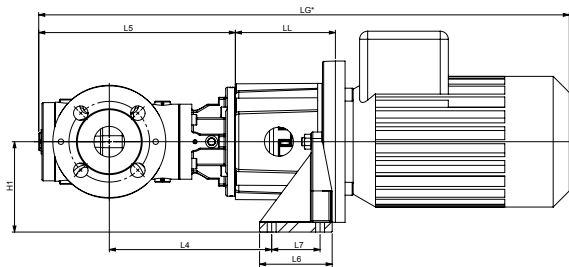
		3S BT									
		[mm]									
Pump size	Motor size	DNs	DNd	LL	L5	L6	L7	L8	L10	H1	H2
0005-0020	80	25	25	124	95	229	90	60	122	60	112
	90	25	25	124	95	229	90	60	122	60	112
	100/112	25	25	124	95	229	97	60	102	60	132
0032-0042	80	32	32	124	127	280	90	60	128	80	112
	90	32	32	124	127	280	90	60	128	80	112
	100/112	32	32	135	127	280	97	60	119	80	132
0055-0118	80	50	50	124	155	337	90	60	144	110	112
	90	50	50	124	155	337	90	60	144	110	112
	100/112	50	50	135	155	337	97	60	135	110	132
	132	50	50	168	155	337	116	80	147	110	160
0160-0210	160	50	50	188	155	337	150	110	132	110	180
	100/112	65	65	175	180	395	97	60	200	110	132
	132	65	65	168	180	395	116	80	172	110	160
	160	65	65	188	180	395	150	110	157	110	180
	180	65	65	204	180	395	305	265	213	110	235

Notes: LG measure depending on motor specification. For other 3S variants, please ask Alfa Laval.

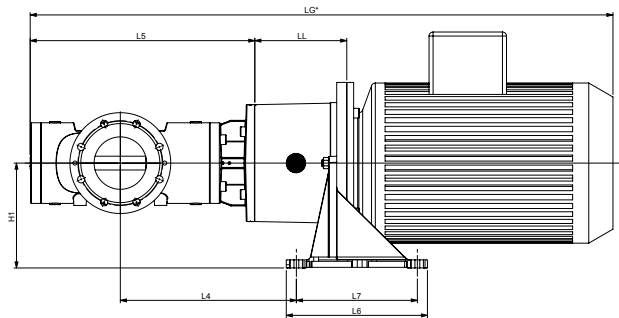
Dimensional drawings

3S BI

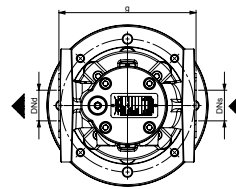
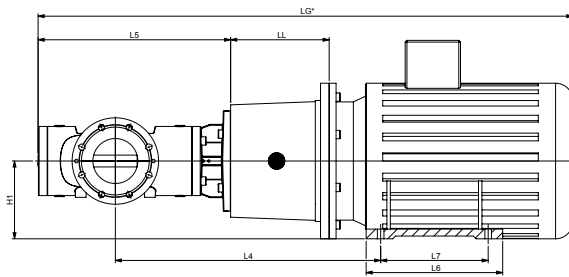
3S BI 0005–0450 to frame size 160



3S BI 0160–1301 to frame size 200

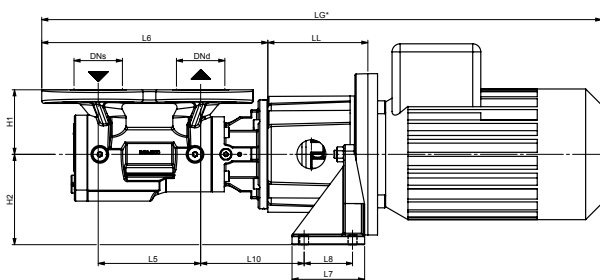


3S BI 0550–2900 from frame size 225

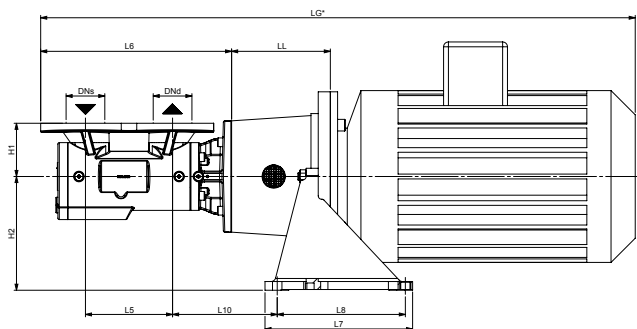


3S BT

3S BT 0005–0210 to frame size 160



3S BT 0160–0210 frame size 180



EMD00458EN 1304

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

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com