

SDROO SERIES

SX, SN

Stainless steel
multistage deep–well
submersible pump

*Operation
manual*



hydroo®

HYDROO Pump Industries SL

DECLARATION OF CONFORMITY

Machinery Directive: 98/37/EC, 2006/42/EC

Low Voltage Directive: 2006/95/EC

Electromagnetic Compatibility Directive: 2004/108/EC

Name of manufacturer or supplier

HYDROO PUMP INDUSTRIES, S.L.

Full postal address including country of origin

C/ La Banyeta Nova, 11 - P.I. La Banyeta, 17843 Palol de Revardit (Girona) - Catalonia - Spain

Description of product

SX, SN series are stainless steel multistage deep-well submersible pumps. Main advantages are the compact structure, good performance, high efficiency, energy savings, small volume and light weight. The pumps are designed for pumping thin, neutral, non-flammable, non-explosive liquid, without solid particles or fibers.

Name, type or model, batch or serial number

Name: SDROO series. SX, SN pumps are stainless steel multistage deep-well submersible pumps.
Model: SX, SN Series

Standards used, including number, title, issue date and other relative documents

EN ISO 12100-1:2003, EN ISO 12100-2:2003, EN809:1998+AC:2002,
EN ISO 14121-1:2007, EN 60204-1:2006, EN 61000-2-2005, EN 61000-6-4-2007.

Place of Issue

Palol de Revardit, Spain

Name of authorised representative

Miquel Coma

Position of authorised representative

General manager

Declaration

I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the provisions of the above Directives. For the most specific risks of this machine, safety and compliance with the essential requirements of the Directive has been based on elements of the above standards.

Authorized representative



Miquel Coma
CEO



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Read this manual carefully before install, operate the pump.

I. APPLICATIONS

- SX, SN stainless steel multistage deep-well submersible pump (abbreviate as pump in the following) is a new type of water-pumping machine. It is made by mature and advanced technology. It works with submersible motor. It can submerge in some depth and take place of traditional long shaft connected deep-well pump. The advantage of the pump is compact structure, good performance, high efficiency, energy saving, small volume, light weight. It runs stably and easy to install and operate. There is a built-in spring ball non-return valve in the pump lest water hammer impacts pump when the pump stops and water returns.

1. Applications

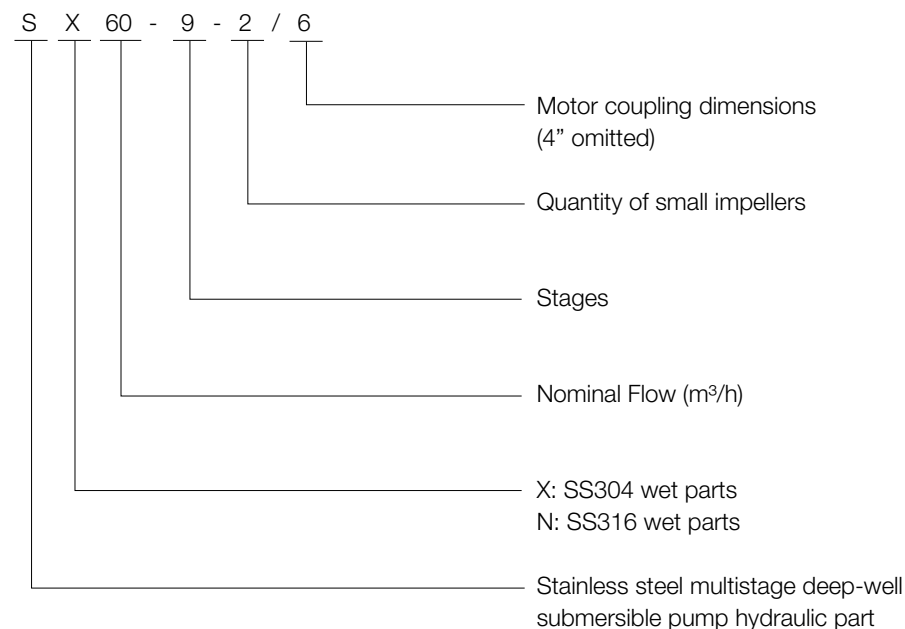
- The pumps are designed for pumping thin, neutral, non-flammable, non-explosive liquid, without solid particles or fibers. The pumping liquid should not corrupt material of pump;
- Deep-well pumping, farmland irrigating, farmland spraying;
- Water supply for homes, schools, high buildings;
- Well, vault and other water saving facilities;
- As part of irrigating system or irrigating;
- Boosting in water supply system;
- Cleaning system, food, drinking system;
- Agriculture, nursery, all kinds of gym and all kinds of water facilities

2. Operating conditions

- Max liquid temperature: +35 °C;
- Flow: 0.2~120m³/h
- Max working pressure: 38 Bar
- Liquid PH range: pH6.5~8.5;
- Max submerged depth: 50 m.

Note: When pumping liquids with density and/or viscosity higher than that of water, motors with correspondingly higher outputs must be used.

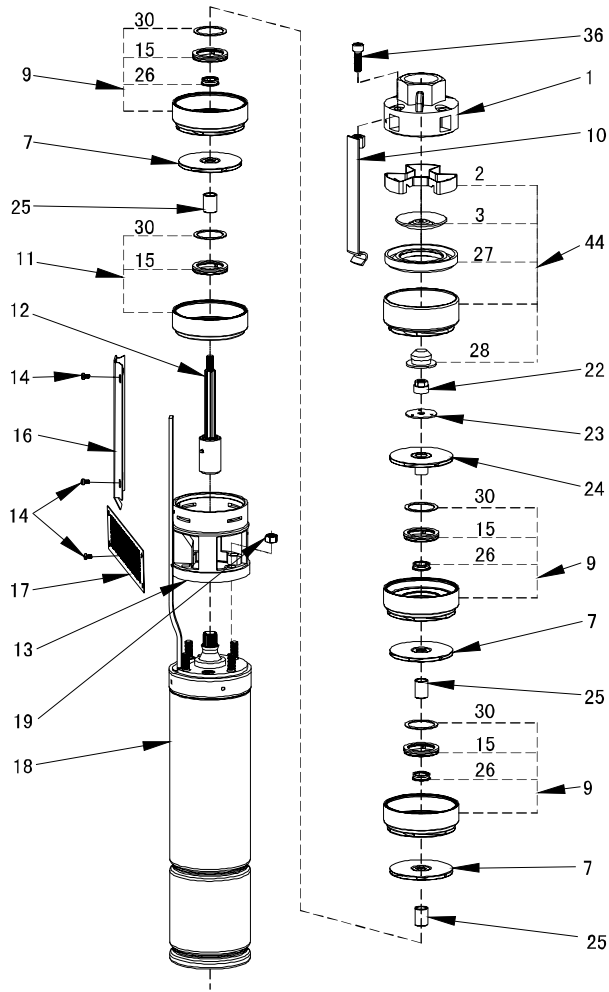
II. DEFINITION OF MODEL



III. CONSTRUCTION

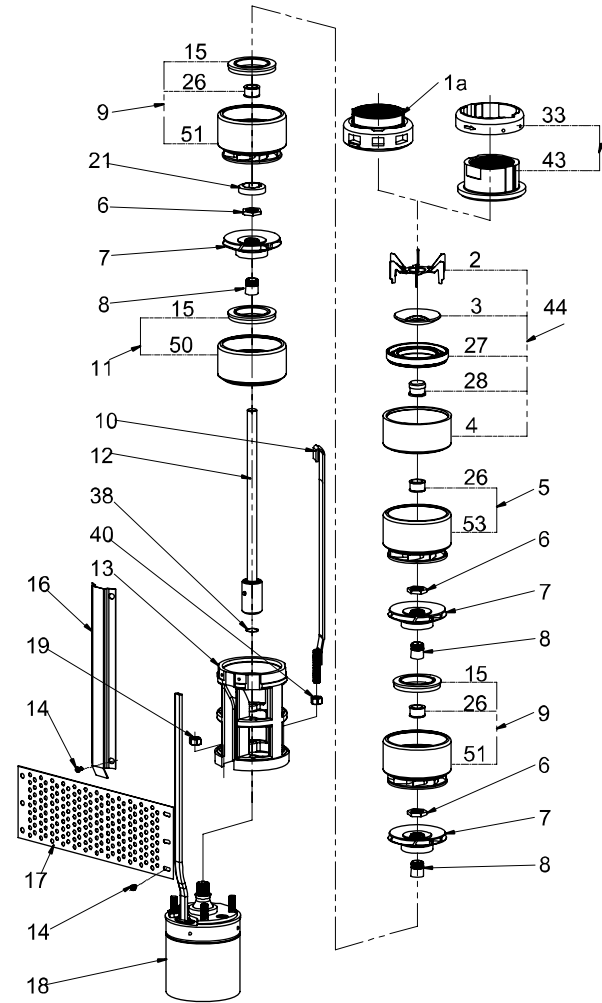
- Pump is composed of submersible motor and pump body.
- Pump key parts, such as diffuser, impeller, pump shaft are made of stainless steel. Suction interconnector and discharger head are precision casting parts.

SX, SN 1, 3, 5-080701



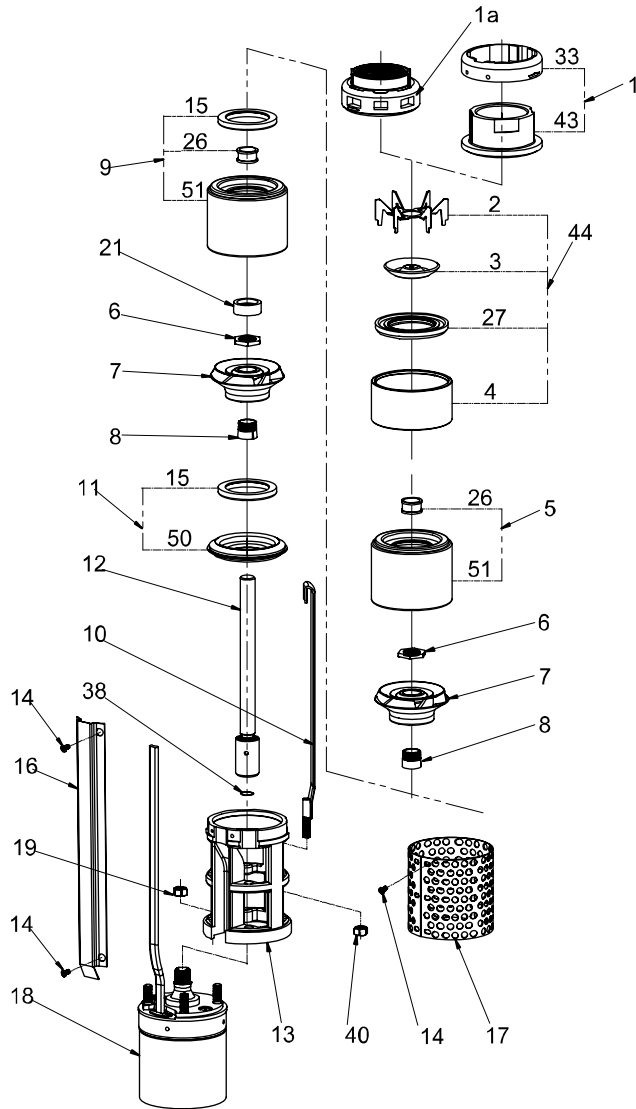
1. Discharge head
2. Valve cover retainer
3. Valve cap
7. Impeller
9. Diffuser
10. Straps
11. Inducer
12. Pump shaft
13. Suction interconnector
14. Screw M4*8
15. Neck ring
16. Cable guard
17. Strainer
18. Submersible motor
19. Nut M8
22. Shaft lock nut
23. Wearing plate
24. Outlet impeller
25. Impeller sleeve
26. Shaft ring
27. Valve bottom
28. Shaft supporter
30. Floating seal ring
36. Bolt M8*20
44. Check valve

SX, SN 8-111202



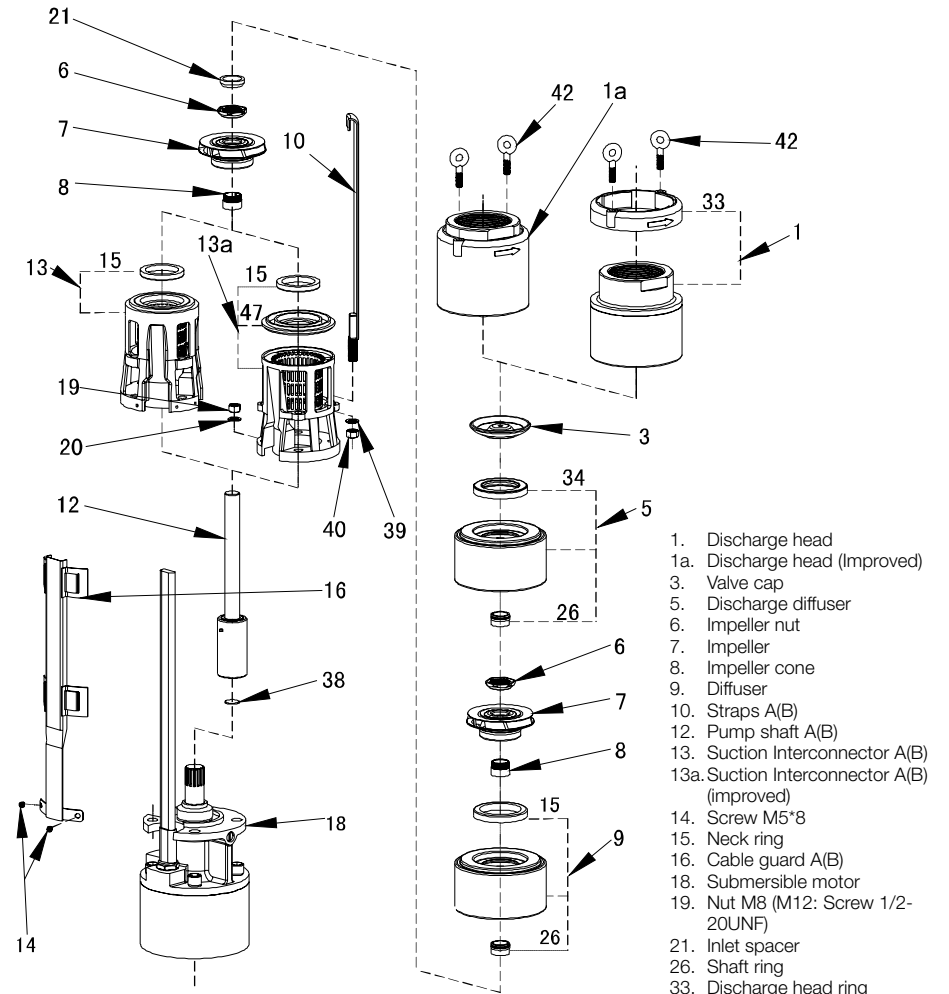
1. Discharge head
- 1a. Discharge head (Improved)
2. Valve cover retainer
3. Valve cap
4. Valve body
5. Discharge diffuser
6. Impeller nut
7. Impeller
8. Impeller cone
9. Diffuser
10. Straps
11. Inducer
12. Pump shaft (6")
13. Suction Interconnector (6")
14. Screw M4*8
15. Neck ring
16. Cable guard (6")
17. Strainer (6")
18. Submersible motor
19. Nut M8 (M12: bolt 1/2-20 UNF)
21. Inlet spacer
26. Shaft ring
27. Valve bottom
28. Shaft supporter
33. Discharge head ring
38. O ring 25.4*3 (special for 6" pump shaft)
40. Nut M8
43. Discharge
44. Check valve
50. Welding part of inducer
51. Welding part of diffuser
53. Welding part of discharge diffuser

SX, SN 12-111202



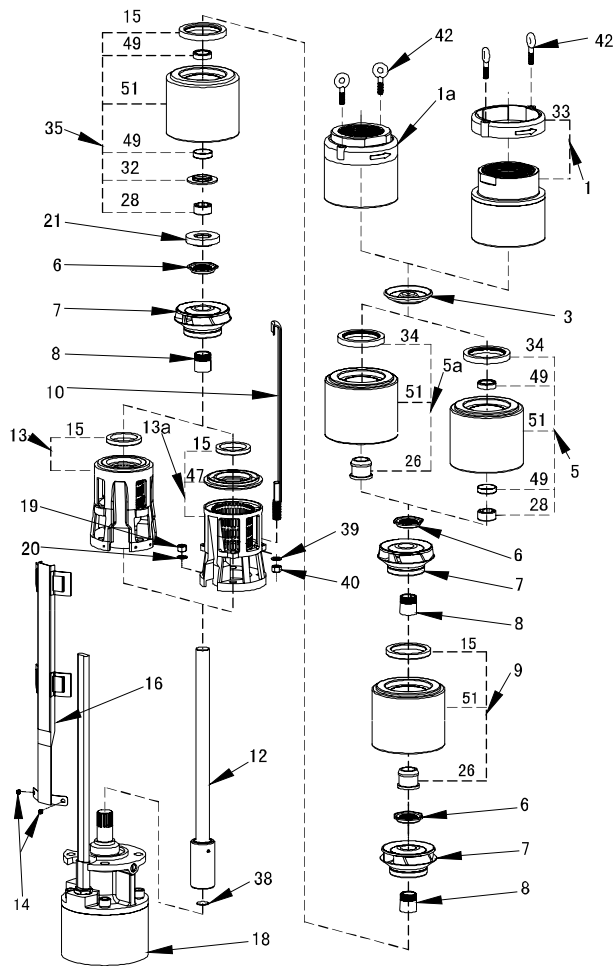
- 1. Discharge head
- 1a. Discharge head (Improved)
- 2. Valve cover retainer
- 3. Valve cap
- 4. Valve body
- 5. Discharge diffuser
- 6. Impeller nut
- 7. Impeller
- 8. Impeller cone
- 9. Diffuser
- 10. Straps
- 11. Inducer
- 12. Pump shaft (6")
- 13. Suction Interconnector (6")
- 14. Screw M4*8
- 15. Neck ring
- 16. Cable guard (6")
- 17. Strainer (6")
- 18. Submersible motor
- 19. Nut M8 (M12: Bolt 1/2-20UNF)
- 21. Inlet spacer
- 26. Shaft ring
- 27. Valve bottom
- 33. Discharge head ring
- 38. O ring 25.4*3 (Special for 6" pump shaft)
- 40. Nut M8
- 43. Discharge
- 44. Check valve
- 50. Welding pan of inducer
- 51. Welding part of diffuser

SX, SN 17-080701



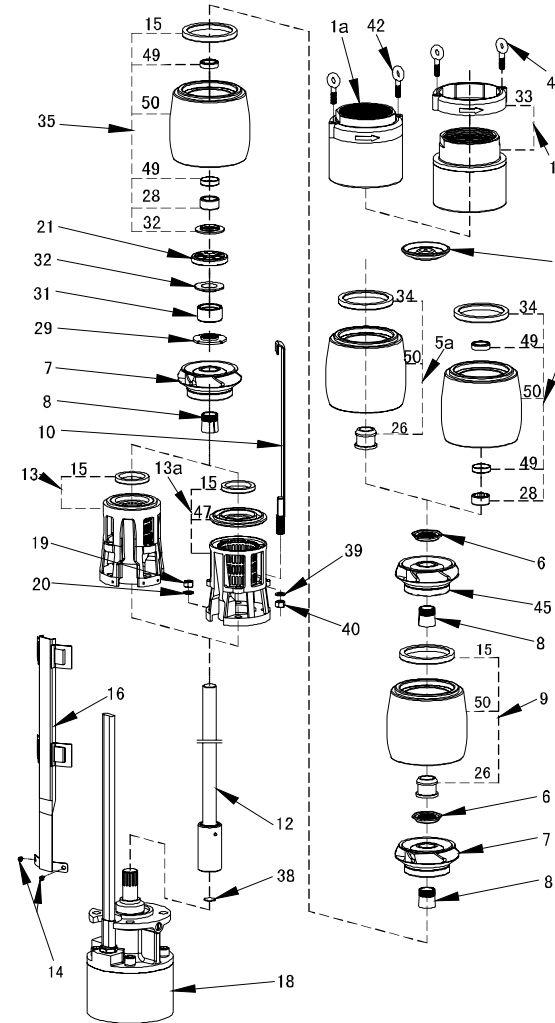
- 1. Discharge head
- 1a. Discharge head (Improved)
- 3. Valve cap
- 5. Discharge diffuser
- 6. Impeller nut
- 7. Impeller
- 8. Impeller cone
- 9. Diffuser
- 10. Straps A(B)
- 12. Pump shaft A(B)
- 13. Suction Interconnector A(B)
- 13a. Suction Interconnector A(B) (improved)
- 14. Screw M5*8
- 15. Neck ring
- 16. Cable guard A(B)
- 18. Submersible motor
- 19. Nut M8 (M12: Screw 1/2-20UNF)
- 21. Inlet spacer
- 26. Shaft ring
- 33. Discharge head ring
- 34. Discharge ring
- 38. O ring 25.4*3 (Special for shaft B)
- 39. Washer
- 40. Nut M8
- 42. Lifting eye bolt M8
- 47. Interconnection ring

SX, SN 30-090102



1. Discharge head
- 1a. Discharge head (Improved)
3. Valve cap
5. Discharge diffuser
- 5a. Discharge diffuser (Improved)
6. Impeller nut
7. Impeller
8. Impeller cone
9. Diffuser
10. Straps A(B)
12. Pump shaft A(B)
13. Suction Interconnector A(B)
- 13a. Suction Interconnector A(B) (improved)
14. Screw M5*8
15. Neck ring
16. Cable guard A(B)
18. Submersible motor
19. Nut M8 (M12: Screw 1/2-20UNF)
20. Washer
21. Inlet spacer
26. Shaft ring
32. Inlet wearing plate
33. Discharge head ring
34. Discharge ring
35. Suction diffuser
38. O ring 25.4*3 (Special for shaft B)
39. Washer
40. Nut
42. Lifting eye bolt M8
47. Interconnection ring
49. Ring for diffuser
51. Diffuser part

SX, SN 42, 60-090102

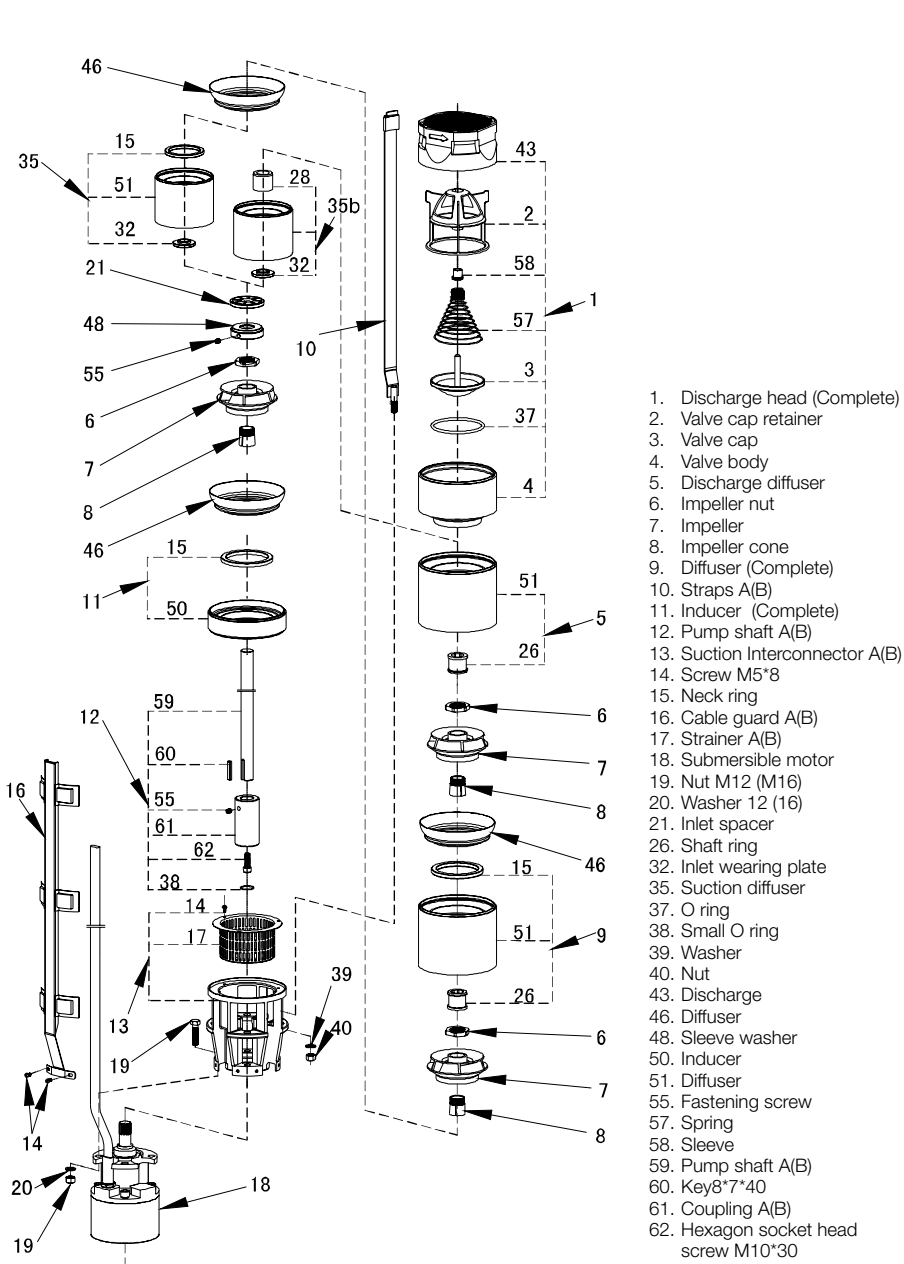


1. Discharge head
- 1a. Discharge head (SX/SN42 improved)
3. Valve cap
5. Discharge diffuser
- 5a. Discharge diffuser (improved)
6. Impeller nut
7. Impeller
8. Impeller cone
9. Diffuser
10. Straps A(B)
12. Pump shaft A(B)
13. Suction interconnector A(B)
- 13a. Suction interconnector A(B) (improved)
14. Screw M5*8
15. Neck ring
16. Cable guard A(B)
18. Submersible motor
19. Nut M8 (M12: Screw 1/2-20UNF)
20. Washer
21. Inlet shaft
26. Shaft ring
28. Inlet shaft ring
29. Inlet impeller nut
31. Inlet impeller nut
32. Inlet wearing plate
33. Discharge head ring (only or SX/SN42)
34. Discharge ring
35. Suction diffuser
38. O ring 25.4*3 (Special for shaft B)
39. Washer
40. Nut
42. Lifting eye bolt M8
45. Small impeller (Only SX/SN60 has it)
47. Interconnection ring
49. Ring for diffuser
50. Inducer part

SX, SN 75, 95-081201

IV. INSTALLATION AND CONNECTING

Drawing 1
Pump installation
and dimensions



1. Discharge head (Complete)
2. Valve cap retainer
3. Valve cap
4. Valve body
5. Discharge diffuser
6. Impeller nut
7. Impeller
8. Impeller cone
9. Diffuser (Complete)
10. Straps A(B)
11. Inducer (Complete)
12. Pump shaft A(B)
13. Suction Interconnector A(B)
14. Screw M5*8
15. Neck ring
16. Cable guard A(B)
17. Strainer A(B)
18. Submersible motor
19. Nut M12 (M16)
20. Washer 12 (16)
21. Inlet spacer
26. Shaft ring
32. Inlet wearing plate
35. Suction diffuser
37. O ring
38. Small O ring
39. Washer
40. Nut
43. Discharge
46. Diffuser
48. Sleeve washer
50. Inducer
51. Diffuser
55. Fastening screw
57. Spring
58. Sleeve
59. Pump shaft A(B)
60. Key8*7*40
61. Coupling A(B)
62. Hexagon socket head screw M10*30

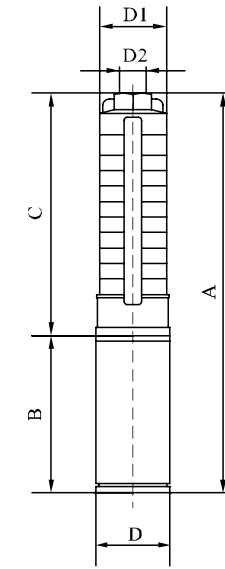


Table 1. SX/SN 1 Pump size and dimensions 50 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN1-6	667	370	297	96	100	Rp1 1/4	12
SX/SN1-9	730	370	360				13
SX/SN1-13	824	380	444				15
SX/SN1-17	928	400	528				17
SX/SN1-21	1052	440	612				19
SX/SN1-25	1136	440	696				20
SX/SN1-28	1229	470	759				23
SX/SN1-32	1313	470	843				24
SX/SN1-36	1397	470	927				25
SX/SN1-39	1500	510	990				29
SX/SN1-42	1563	510	1053				30
SX/SN1-46	1647	510	1137				31
SX/SN1-50	1731	510	1221	32			

Table 1. SX/SN 3 Pump size and dimensions 50 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN3-6	667	370	297	96	100	Rp1 1/4	12
SX/SN3-9	740	380	360				13
SX/SN3-12	823	400	423				16
SX/SN3-15	926	440	486				18
SX/SN3-18	999	440	549				19
SX/SN3-22	1103	470	633				22
SX/SN3-27	1248	510	738				27
SX/SN3-32	1353	510	843				28
SX/SN3-38	1589	620	969				31
SX/SN3-43	1694	620	1074				32

Table 1. SX/SN 8 Pump size and dimensions 50 Hz

Model	Size (mm)						D2	Weight (kg)	
	A	B	C	D		D1		With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN8-5	853	400	453	96	/	100	Rp2	16	
SX/SN8-7	977	440	537					19	
SX/SN8-10	1133	470	663					22	
SX/SN8-12	1257	510	747					27	
SX/SN8-15	1383	510	873					29	
SX/SN8-18	1619	620	999		32				
SX/SN8-21	1875	750	1125		35			41	
SX/SN8-25	2043	750	1293		37			43	
SX/SN8-30	2343	840	1503		43			51	
SX/SN8-37	2637	840	1797		46			54	
SX/SN8-44	3011	920	2091	55	66				
SX/SN8-50	3263	920	2343	58	69				

Table 1. SX/SN 5 Pump size and dimensions 50 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN5-4	625	370	255	96	100	Rp1 1/2	12
SX/SN5-6	677	380	297				13
SX/SN5-8	739	400	339				15
SX/SN5-12	863	440	423				17
SX/SN5-17	998	470	528				21
SX/SN5-21	1122	510	612				26
SX/SN5-25	1206	510	696				27
SX/SN5-29	1400	620	780				29
SX/SN5-33	1484	620	864				30
SX/SN5-38	1719	750	969				33
SX/SN5-43	1824	750	1074	35			

Table 1. SX/SN 12 Pump size and dimensions 50 Hz

Model	Size (mm)						D2	Weight (kg)	
	A	B	C	D		D1		With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN12-5	1005	470	535	96	/	100	Rp2	21	
SX/SN12-7	1175	510	665					26	
SX/SN12-10	1480	620	860					30	
SX/SN12-13	1805	750	1055					34	40
SX/SN12-15	2025	840	1185					38	46
SX/SN12-18	2220	840	1380		40			48	
SX/SN12-21	2495	920	1575		47			58	
SX/SN12-25	2755	920	1835		50			61	

Table 1. SX/SN 17 Pump size and dimensions 50 Hz

Model	Size (mm)						D2	Weight (kg)	
	A	B	C	D		D1		With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN17-1	708	380	328	96	/	133	Rp2 1/2	17	
SX/SN17-2	828	440	388					21	
SX/SN17-3	959	510	449					28	
SX/SN17-4	1019	510	509					29	
SX/SN17-5	1190	620	570					32	
SX/SN17-6	1380	750	630					35	41
SX/SN17-7	1441	750	691					36	42
SX/SN17-8	1591	840	751					41	49
SX/SN17-9	1652	840	812					42	50
SX/SN17-10	1712	840	872					43	51
SX/SN17-11	1853	920	933	49	60				
SX/SN17-12	1913	920	993	50	61				
SX/SN17-13	1974	920	1054	51	62				
SX/SN17-14	2000	870	1130	143	/	133	Rp2 1/2		75
SX/SN17-15	2061	870	1191					76	
SX/SN17-16	2121	870	1251					77	
SX/SN17-17	2182	870	1312					78	
SX/SN17-18	2292	920	1372					85	
SX/SN17-19	2353	920	1433					86	
SX/SN17-20	2413	920	1493					87	
SX/SN17-21	2534	980	1554					95	
SX/SN17-22	2594	980	1614					96	
SX/SN17-23	2655	980	1675					98	
SX/SN17-24	2715	980	1735	99					
SX/SN17-25	2826	1030	1796	106					
SX/SN17-26	2886	1030	1856	107					

Table 1. SX/SN 30 Pump size and dimensions 50Hz

Model	Size (mm)						D2	Weight (kg)	
	A	B	C	D		D1		With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN30-1	802	440	362	96	/	133	Rp3	20	
SX/SN30-2	968	510	458					28	
SX/SN30-3	1174	620	554					31	
SX/SN30-4	1400	750	650					35	41
SX/SN30-5	1586	840	746					40	48
SX/SN30-6	1682	840	842					42	50
SX/SN30-7	1858	920	938					49	60
SX/SN30-8	1954	920	1034					51	62
SX/SN30-9	2016	870	1146						75
SX/SN30-10	2112	870	1242						77
SX/SN30-11	2208	870	1338		79				
SX/SN30-12	2354	920	1434		85				
SX/SN30-13	2450	920	1530	143	/	133	Rp3		87
SX/SN30-14	2606	980	1626					96	
SX/SN30-15	2702	980	1722					98	
SX/SN30-16	2848	1030	1818					106	
SX/SN30-17	2944	1030	1914					108	
SX/SN30-18	3100	1090	2010					117	
SX/SN30-19	3196	1090	2106					119	
SX/SN30-20	3292	1090	2202					120	
SX/SN30-21	3388	1090	2298					122	
SX/SN30-22	3554	1160	2394					138	
SX/SN30-23	3650	1160	2490	140					
SX/SN30-24	3746	1160	2586	142					
SX/SN30-25	3842	1160	2682	144					

Table 1. SX/SN 17 Pump size and dimensions 50 Hz

Model	Size (mm)					D1	D2	Weight (kg)	
	A	B	C	D				With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN42-1	888	510	378	96	/	150	Rp3	29	
SX/SN42-2	1444	620	491					33	
SX/SN42-3	1637	870	604					40	48
SX/SN42-4	1750	920	717					47	58
SX/SN42-5	1829	920	830					49	60
SX/SN42-6	1992	870	959	143	150	Rp3		73	
SX/SN42-7	2165	920	1072				80		
SX/SN42-8	2328	980	1185				89		
SX/SN42-9	2441	1030	1298				97		
SX/SN42-10	2614	1030	1411				100		
SX/SN42-11	2727	1090	1524				109		
SX/SN42-12	2910	1090	1637				111		
SX/SN42-13	3023	1160	1750				127		
SX/SN42-14	3136	1160	1863				129		
SX/SN42-15	3319	1160	1976				131		
SX/SN42-16	3432	1230	2089				145		
SX/SN42-17	3645	1230	2202				147		
SX/SN42-18	3758	1330	2315	162					
SX/SN42-19	3871	1330	2428	164					
SX/SN42-20	4224	1330	2541	167					
SX/SN42-21	4337	1570	2654	192					
SX/SN42-22	2594	1570	2767	194					

Table 1. SX/SN 60 Pump size and dimensions 50 Hz

Model	Size (mm)					D1	D2	Weight (kg)	
	A	B	C	D				With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN60-1	878	510	368	96	/	150	Rp4	30	
SX/SN60-2-2	1101	620	481					33	
SX/SN60-2	1231	750	481					35	41
SX/SN60-3	1434	840	594					41	49
SX/SN60-4	1627	920	707					48	59
SX/SN60-5	1690	870	820	143	150	Rp4		72	
SX/SN60-6	1869	920	949				78		
SX/SN60-7	2042	980	1062				87		
SX/SN60-8-2	2155	980	1175				88		
SX/SN60-8	2205	1030	1175				96		
SX/SN60-9-2	2318	1030	1288				97		
SX/SN60-9	2378	1090	1288				105		
SX/SN60-10	2491	1090	1401				107		
SX/SN60-11	2674	1160	1514				123		
SX/SN60-12	2787	1160	1627				125		
SX/SN60-13	2900	1160	1740				127		
SX/SN60-14	3083	1230	1853				141		
SX/SN60-15	3196	1230	1966	143					
SX/SN60-16	3409	1330	2079	158					
SX/SN60-17	3522	1330	2192	160					
SX/SN60-18	3635	1330	2305	162					
SX/SN60-19	3988	1570	2418	188					
SX/SN60-20	4101	1570	2531	190					
SX/SN60-21	4214	1570	2644	191					

Table 1. SX/SN 75 Pump size and dimensions 50 Hz

Model	Size (mm)								D1	D2	Weight (kg)	
	A		B		C		D				With 4" motor	With 6" motor
	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 4" motor	With 6" motor				
SX/SN75-1	1268		780		488		143		197	Rp5	56	
SX/SN75-2	1424	1411	810	780	614	631	143	78			97	
SX/SN75-3	1660	1577	920	820	740	757		92			116	
SX/SN75-4	1896	1743	1030	860	866	883		110			134	
SX/SN75-5	2082	1899	1090	890	992	1009		122			152	
SX/SN75-6	2278	2075	1160	940	1118	1135		141			178	
SX/SN75-7	2574	2311	1330	1050	1244	1261		171			211	
SX/SN75-8	2700	2437	1330	1050	1370	1387		176			216	
SX/SN75-9	3066	2663	1570	1150	1496	1513		204			233	
SX/SN75-10	3192	2789	1570	1150	1622	1639		209			238	
SX/SN75-11		3005		1240		1765					256	
SX/SN75-12		3131		1240		1891		261				
SX/SN75-13		3387		1370		2017		279				
SX/SN75-14		3513		1370		2143		285				
SX/SN75-15		3639		1370		2269		290				
SX/SN75-16		3885		1490		2395	/	309				
SX/SN75-17		4011		1490		2521		315				
SX/SN75-18		4187		1540		2647		341				
SX/SN75-19		4313		1540		2773		346				
SX/SN75-20		4439		1540		2899		351				

Table 1. SX/SN 95 Pump size and dimensions 50 Hz

Model	Size (mm)								D1	D2	Weight (kg)	
	A		B		C		D				With 4" motor	With 6" motor
	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 4" motor	With 6" motor				
SX/SN95-1	1268		780		488		143		197	Rp5	57	
SX/SN95-2	1484	1431	870	800	614	631	143	83			105	
SX/SN95-3	1720	1617	980	860	740	757		100			129	
SX/SN95-4	1956	1773	1090	890	866	883		119			148	
SX/SN95-5	2152	1949	1160	940	992	1009		138			175	
SX/SN95-6	2348	2125	1230	990	1118	1135		155			188	
SX/SN95-7	2574	2311	1330	1050	1244	1261		174			213	
SX/SN95-8	2940	2537	1570	1150	1370	1387		202			231	
SX/SN95-9	3066	2663	1570	1150	1496	1513		208			237	
SX/SN95-10		2879		1240		1639		/			254	
SX/SN95-11		3005		1240		1765					260	
SX/SN95-12		3261		1370		1891	279					
SX/SN95-13		3387		1370		2017	284					
SX/SN95-14		3513		1370		2143	290					
SX/SN95-15		3759		1490		2269	310					
SX/SN95-16		3885		1490		2395	316					
SX/SN95-17		4061		1540		2521	342					
SX/SN95-18		4187		1540		2647	348					

Table 2 SX/SN 1 Pump size and dimensions 60 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN1-4	625	370	255	96	100	Rp1 1/4	12
SX/SN1-7	698	380	318				14
SX/SN1-10	781	400	381				16
SX/SN1-15	926	440	486				18
SX/SN1-20	1061	470	591				22
SX/SN1-25	1206	510	696				27
SX/SN1-29	1290	510	780				28
SX/SN1-35	1526	620	906				30

Table 2 SX/SN 5 Pump size and dimensions 60Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN5-3	614	380	234	96	100	Rp1 1/2	12
SX/SN5-5	676	400	276				14
SX/SN5-7	758	440	318				16
SX/SN5-10	851	470	381				19
SX/SN5-14	975	510	465				24
SX/SN5-19	1190	620	570				27
SX/SN5-22	1383	750	633				29
SX/SN5-26	1467	750	717				30
SX/SN5-34	1725	840	885				35

Table 2 SX/SN 3 Pump size and dimensions 60 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN3-3	604	370	234	96	100	Rp1 1/4	12
SX/SN3-5	656	380	276				13
SX/SN3-7	718	400	318				15
SX/SN3-10	821	440	381				17
SX/SN3-14	935	470	465				20
SX/SN3-19	1080	510	570				25
SX/SN3-23	1274	620	654				28
SX/SN3-27	1358	620	738				29
SX/SN3-33	1614	750	864				32

Table 2 SX/SN 8 Pump size and dimensions 60 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN8-3	809	440	369	96	100	G2	17
SX/SN8-4	851	440	411				18
SX/SN8-5	923	470	453				22
SX/SN8-7	1047	510	537				25
SX/SN8-8	1089	510	579				26
SX/SN8-9	1241	620	621				28
SX/SN8-11	1325	620	705				29
SX/SN8-12	1497	750	747				31
SX/SN8-15	1623	750	873				32
SX/SN8-18	1839	840	999				37
SX/SN8-21	1965	840	1125				39
SX/SN8-25	2213	920	1293				46
SX/SN8-28	2339	920	1419				47

Table 2 SX/SN 12 Pump size and dimensions 60 Hz

Model	Size (mm)					D2	Weight (kg)
	A	B	C	D	D1		
SX/SN12-3	915	510	405	96	100	G2	24
SX/SN12-4	980	510	470				25
SX/SN12-5	1155	620	535				28
SX/SN12-7	1415	750	665				29
SX/SN12-8	1570	840	730				35
SX/SN12-10	1700	840	860				36
SX/SN12-12	1910	920	990				42
SX/SN12-14	2040	920	1120				43

Table 2 SX/SN 17 Pump size and dimensions 60 Hz

Model	Size (mm)					D1	D2	Weight (kg)	
	A	B	C	D				With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN17-1	767	440	327	96	/	133	Rp2 1/2	20	
SX/SN17-2	898	510	388					27	
SX/SN17-3	1068	620	448					30	
SX/SN17-4	1259	750	509					33	39
SX/SN17-5	1409	840	569					37	45
SX/SN17-6	1550	920	630					43	54
SX/SN17-7	1610	920	690					44	55
SX/SN17-8	1621	870	751					143	/
SX/SN17-9	1681	870	811	63					
SX/SN17-10	1808	920	888	77					
SX/SN17-11	1868	920	948	78					
SX/SN17-12	1989	980	1009	87					
SX/SN17-13	2049	980	1069	88					
SX/SN17-14	2160	1030	1130	95					
SX/SN17-15	2230	1030	1190	96					
SX/SN17-16	2341	1090	1251	104					
SX/SN17-17	2401	1090	1311	105					
SX/SN17-18	2462	1090	1372	106					

Table 2 SX/SN 30 Pump size and dimensions 60 Hz

Model	Size (mm)					D1	D2	Weight (kg)	
	A	B	C	D				With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN30-1	832	470	362	96	/	133	Rp3	22	
SX/SN30-2	1078	620	458					29	
SX/SN30-3	1394	840	554					37	45
SX/SN30-4	1570	920	650					44	55
SX/SN30-5	1666	920	746						56
SX/SN30-6	1728	870	858						69
SX/SN30-7	1874	920	954						77
SX/SN30-8	2030	980	1050						86
SX/SN30-9	2176	030	1242	/	143	133	Rp3	93	
SX/SN30-10	2272	1030	1338					95	
SX/SN30-11	2428	1090	1434					103	
SX/SN30-12	2524	1090	1530					105	
SX/SN30-13	2690	1160	1626					121	
SX/SN30-14	2786	1160	1722					123	
SX/SN30-15	2952	1230	1818					135	
SX/SN30-16	3048	1230	1914					137	
SX/SN30-17	2144	1230	1853					139	

Table 2 SX/SN 42 Pump size and dimensions 60 Hz

Model	Size (mm)					D1	D2	Weight (kg)	
	A	B	C	D				With 4" motor	With 6" motor
				With 4" motor	With 6" motor				
SX/SN42-1	998	620	378	96	/	150	Rp3	31	
SX/SN42-2	1331	840	491						38
SX/SN42-3	1474	870	604	/	143				67
SX/SN42-4	1653	920	733						75
SX/SN42-5	1826	980	846						83
SX/SN42-6	2049	1090	959						98
SX/SN42-7	2162	1090	1072						100
SX/SN42-8	2345	1160	1185						117
SX/SN42-9	2528	1230	1298						125
SX/SN42-10	2741	1330	1411						141
SX/SN42-11	2854	1330	1524						143
SX/SN42-12	3207	1570	1637						173
SX/SN42-13	3320	1570	1750						175
SX/SN42-14	3433	1570	1863						177

Table 2 SX/SN 75 Pump size and dimensions 60 Hz

Model	Size (mm)								D1	D2	Weight (kg)			
	A		B		C		D				With 4" motor	With 6" motor		
	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 4" motor	With 6" motor						
SX/SN75-1	1298	1285	810	780	488	505	143	184	197	Rp5	70	79		
SX/SN75-2	1594	1491	980	860	614	631						94	123	
SX/SN75-3	1900	1697	1160	940	740	757						126	162	
SX/SN75-4	2196	1993	1330	1050	866	883						156	195	
SX/SN75-5	2562	2159	1570	1150	992	1009						184	212	
SX/SN75-6		2375		1240		1135					/		229	
SX/SN75-7		2501		1240		1261							235	
SX/SN75-8		2757		1370		1387							253	
SX/SN75-9		3003		1490		1513						192		272
SX/SN75-10		3179		1540		1639								298
SX/SN75-11		3305		1540		1765		304						

Table 2 SX/SN 60 Pump size and dimensions 60 Hz

Model	Size (mm)					D1	D2	Weight (kg)		
	A	B	C	D				With 4" motor	With 6" motor	
				With 4" motor	With 6" motor					
SX/SN60-1	1108	750	358	96	/	143	150	Rp4	36	44
SX/SN60-2	1381	920	471							44
SX/SN60-3-2	1404	920	584						45	63
SX/SN60-3	1480	870	610						67	
SX/SN60-4	1703	980	723						81	
SX/SN60-5	1866	1030	836						89	
SX/SN60-6	2039	1090	949						98	
SX/SN60-7	2222	1160	1062						114	
SX/SN60-8-2	2335	1160	1175						116	
SX/SN60-8	2405	1230	1175						128	
SX/SN60-9-2	2518	1230	1288						130	
SX/SN60-9	2618	1330	1288						144	
SX/SN60-10	2787	1330	1401		146					
SX/SN60-11	3084	1570	1514		171					
SX/SN60-12	3197	1570	1627		173					

Table 2 SX/SN 95 Pump size and dimensions 60Hz

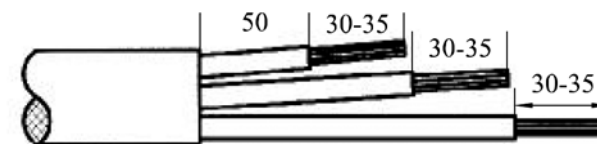
Model	Size (mm)								D1	D2	Weight (kg)			
	A		B		C		D				With 4" motor	With 6" motor		
	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 6" motor	With 8" motor	With 4" motor	With 6" motor						
SX/SN95-1	1298	1285	810	780	488	505	143	184	197	Rp5	71	80		
SX/SN95-2	1644	1491	1030	860	614	631						101	124	
SX/SN95-3	1900	1697	1160	940	740	757						127	163	
SX/SN95-4	2196	1993	1330	1050	866	883						158	196	
SX/SN95-5	2562	2159	1570	1150	992	1009						186	214	
SX/SN95-6		2375		1240		1135					/		232	
SX/SN95-7		2631		1370		1261							250	
SX/SN95-8		2877		1490		1387						192		270
SX/SN95-9		3003		1490		1513								276
SX/SN95-10		3179		1540		1639								302

Caution: The size B is changed with different motors supplied by different factories.

- SX/SN pump is installed by lifting and put it into water. Discharger head is connected by screw thread pipe. Raiser pipe is connected with discharger head. The strainer in the suction should be dipped into liquid;
- If pump and motor are supplied separately, when installation, place motor in vertical position, dismantle cable guard and strainer, (SX/SN 17 to SX/SN95 need not to dismantle strainer), clean the face of pump and motor, clamp pump part with clasper for lifting. Aim motor cable to the groove of suction interconnector, fit the pump unit on motor, be careful that the motor shaft extender is fit with the pump unit coupling, tighten the motor nuts, draw the cable from groove of suction interconnector, fixed it with the cable guard, fix the strainer.
- Fit cable guard for SX/SN 1 to SX/SN 12. Dismantle strainer, release a strap near the suction interconnector, take it out. Place the cable on the pump part. Put on cable guard. (If there is a clip on the cable guard, use one shape screw driver to tenderly open the strap on the pump. Clip the foot of cable guard on the strap). Put on the strap, tighten it. Tighten the 2 screws on the 2 ends of cable guard.
- Fit cable guard for SX/SN 17 to SX/SN 95. Release a strap near the suction interconnector, (if there are double cable guards, release the strap on the middle of the 2 grooves.) take it out. Follow the orders as above.
- According to the model of the screw thread of the water outjoint, use suitable pipe joint and pipe. Suggest using galvanized pipe or seamless steel tube or stretchy plastic pipe). According to the depth of the well and installation position, make the pipe with suitable length. Tighten the screw thread joint. Seal the jointing by polytetrafluoroethylene sticky strap or similar sealing things.
- To lift pump, do not lift the pump by the cable or cable guard. Recommend to tie two galvanized low carbon steel wire on the hanging ear on the two sides of discharger head. Or clamp the motor head with two semicircular steel plates. Use steel strings to lift it. User proper steel strings according to the weight of the pump. Clamp the cable on the steel string. Note the cable should be looser than the steel string in order not to let the weight force the cable when lifting pump.

2. Electrical connection

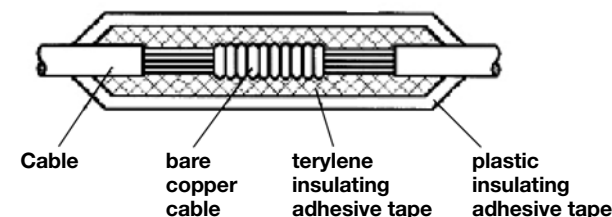
If the cable of submersible motor is not long enough, extending cable should be connected. Cable should be connected by authorized electrician. The length of the cable depends on the depth of well and the location of electronic control cabinet. The cross section area depends on the installation length, motor power, starting way. The connector of motor cable and the extending cable should be secured sealed, insulated and stronger. The connection requirement is simplified as follows.



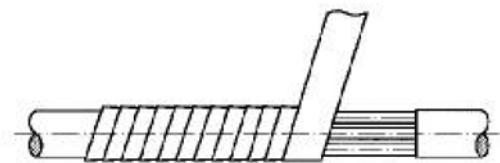
- 1) Bare the copper cable of motor cable for 30-35 mm as following figure. Clean the copper cable with emery cloth till brightened. Bare the other three cables like this and clean them by emery cloth.
- 2) Connect the motor cable with extending cable as the figure shows. Cross the cables one pair by one pair. Then bind them tightly and separately like the following figure by a thin cooper string. Cut off the remains cooper string. Flat them by scissors until you do not feel pricked by hand. Three cables should bound like this.



- 3) Prepare a small iron box or small iron pot which can be dipped by three connectors. Put soldering tin on the pot and heat it until it is melt. Daub the three connectors with some soldering tin and put it into the pot and weld them tightly. It is required that the cover of welded connector should be smooth. There should be no burr and connectors should be welded tightly in fact. If they are not welded tightly or they are not smooth, it should be done again until it is done as required.
- 4) As the following drawing, wrap the connectors with terylene insulating adhesive tape and make sure it press the half of the first round. (It is half terrace packing method.) Wrap it for 8 to 12 rounds. After wrapping, wrap it twice with plastic adhesive tape to protect it safely.



- 5) Wrap the three connectors with plastic insulating adhesive tape as fig. shows. Wrap it two layers.



Plastic insulating adhesive tape: 2 layers wrapping

- 6) After wrapping them, dip them into cool water. After 1 2 hours, test insulation with 500M ohm meter and it should not lower than 50M ohm. Or wrap it again until it is done as required.
- Before pump installation, you should connect power supply cables and electrical meters cables correctly and check power voltage and frequency.
 - Motor shall be connected with a fast and effective motor starter, to ensure that the motor will not be damaged by lack of phase, unstable voltage or overload.

V. NOTES FOR PUMP BEFORE STARTING

- Sand and dust should be less than 50g/m³ when pumping water. In order to cool the motor and keep the flowing unblocked and let the pump work longer.
- Before running, inner part of 6", 8" water-filling motor should be filled with water fully. Refer to the motor warning plate or refer to the requirement of motor operation manual.
- The amount of hydrochloric in water should not more than 1.5mg/l; Amount of chlorine should less than 400mg/l.
- Amount of flowing out water should be enough as running pump required.

Warning: Pump is prohibited to run without water.

VI. START-UP AND OPERATION

1. After pump is connected correctly and submerged, when started, outlet valve should be opened 1/3 of nominal flow.
2. Check the rotating direction
 - The arrow on the outlet indicates the correct direction of pump. That is, from the outlet, pump shall run counter-clockwisely. Before submerged, put the pump vertically and put it on a iron cradle, switch on and off (Note that switch on and off instantly) to check the direction of coupling. Or it can be checked as follows.
 - Start pump, check flow and speed of flowing or pressure of outlet;
 - Stop pump, exchange the two cables of power supply;
 - Start pump, check flow and speed of flowing or pressure of outlet;
 - Stop pump, compare the results before and after exchange the cables.
 - The result of bigger flow and higher speed and higher press is the correct way of cable connecting.
3. Read the current meter, adjusting outlet valve, ensure the current will not exceed the motor nominal current when running.
4. When stopping, it is suggested that adjust the flow at 0.1 times of nominal flow and switch off. Shut off the connecting meters and monitor devices be fore shut off.

VII. FREQUENCY OF PUMP STARTS

In order to run pump well, it is suggested pump shall not be started more than 30 times per hour if the motor power is less than or equal to 3k W. Pump shall not be started more than 20 times per hour if the motor power is big than 3kW. If the pump is not used for years, it should be run at least 0.5 hours twice a year.

VIII. MAINTENANCE AND SERVICE

When pump is defect for some reasons, it will be repaired as follows.

1. General checking
 - Switch off power, lift the pump by hand chain block and lever or by electric hoist.
 - Check inlet of pump, to check if pump is blocked by fibers or not, to check if the strainer is cracked or not.
 - Check the pump appearance to find if it is mechanically damaged or not. Check the housing of pump and motor to find if it is badly corrupted.

Check the connectors of cables are disconnected or not.

– Loosen the bolts on the strainer, dismantle the strainer. (For SX/SN17 or bigger pump, it is not necessary to dismantle the strainer.) Move pump shaft or coupling by hand or clamp, to make sure it turns freely and there is no noise due to blocking.

2. Motor checking

– Before ex-work, 4” submersible motor is filled with lubricator called MARCOL82 or similar non-polluting, anti-corrosive lubricator, which cools and lubricate motor. If the surface of running motor is too hot or the sensor shows the temperature rise quickly, it is necessary to replace motor or repair pump part.

– Cabinet of 6” or 8” water cooling motor is filled with clean neutral water. If the surface of running motor is too hot or the sensor shows the temperature rise quickly, it is necessary to check the cooling liquid in motor.

When filling, loose the filling screw on the top of the motor.(If there is air vent screw opposite, the air vent screw should be loosened too.) Filling with injector until it is full. Then tighten liquid closing screw. Test motor without load. When testing, man should not approach it. Be careful the extended shaft of motor (When necessary, do a formal test for motor)

3. Assemble and dismantle pump

Dismantle and check and repair the pump as follows.

– Loosen the fixing bolts of cable guard. Dismantle the cable guard.

– Loosen the socket hexagon cap screw, dismantle 4 straps, take out discharger head, non-return valve, check if there is silt in the cabinet. Check if non-return valve cap can move freely.

– Take out the discharge diffuser, loosen the shaft lock nut, take out the wearing plate. Take out impeller, impeller sleeve, diffuser in return.

Check the parts if they are cleaned or not. Check the parts if they are badly twisted or not.

– Take out the pump shaft, align it if it is bended.

Clean all parts before assemble, especially clean the interface. Reverse the process above can disassemble a pump. To be simplified as follows. For SX/SN 1,3,5 pumps

– Position motor vertically, put suction interconnector on the motor, tighten nuts, socket the pump shaft on the extended pump shaft.

– Put a sleeve on the shaft, be careful, put on the gaskets, put as much as the dismantled gaskets. Put the inducer on the suction interconnector, put on the impeller, sleeve, diffuser. Then put on impeller, sleeve, diffuser.

Continue the assemble order as above till the outlet impeller.

– Put on axial wearing plate, tighten lock nut. Fit non-return valve, discharger head, fit straps. Tighten nuts. Place cables flat, tighten cable guard, fit strainer.

For SX/SN 8,12 pumps

– Position motor vertically, put a 3.5mm thickness gasket on the outlet of motor. (Note that the OD of the gasket should be not bigger than the OD 87.3 of suction interconnector.)Put on suction interconnector, socket the pump shaft on the extended pump shaft. Tighten nuts between suction interconnector and the motor. Make 2 simple clamps. Insert them from the rectangle hole to clamp the pump shaft. Fix it with the footer to make the pump shaft touch the face of extended motor shaft tightly.

– Combine screw thread cones with impellers. Then screw impeller nut.

This part is named impeller in the following.

– Put inlet diffuser (for SX/SN12, it was inducer) on pump shaft, put on impellers home, press impellers, tighten impeller nut, put on inlet sleeve, put on diffuser. Continue the assemble order as above till the last impeller.

– Loosen suction interconnector and motor nut, take out gasket, take out two clamps. Put the pump part on the motor. Tighten motor nuts.

– Put on discharge diffuser, non-return valve, discharger head, fit straps. Tighten nuts. Place cables flat, tighten cable guard, fit strainer.

For SX/SN17 to SX/SN60 pumps

– Position motor vertically, put a 3.5mm thickness gasket on the outlet of motor. (Be careful, for 4” motor, the OD of the gasket should be not bigger than the OD 87.3 of suction interconnector; for 6” motor, ID should be bigger than the diameter 76.2), Put on suction interconnector, socket the pump shaft on the extended pump shaft. Tighten nuts between suction interconnector and the motor.

– Combine screw thread cones with impellers. Then screw impeller nut. This part is named impeller in the following.(For SX/SN42 and SX/SN60 pump, there is a nut assemble with wearing plate, which is used with inlet impeller).

Put impeller (for SX/SN42, SX/SN60, it was inlet impeller) on pump shaft home. Clamp the pump shaft with two simple clamps. Strain it with two steel strings.(To make the pump shaft touch the face of extended motor shaft tightly.)

Then press impeller with hand hardly, tighten nuts.(For SX/SN 42,SX/SN60 make a special wrench). (Note not bend the pump shaft). Then put on inlet sleeve.

– Put on inlet diffuser (For SX/SNI 7, it is diffuser), put diffusers down to bottom. Tighten nuts as the way above. Put on diffuser. Continue the assemble order as above till the last impeller.

– Loosen suction interconnector and motor nut, take out gasket. Put the pump part on the motor. Tighten motor nuts.

– Put on discharge diffuser, non-return valve, discharge head, fit straps. Screw nuts. Place cables flat, fit cable guard, tighten nuts of straps.

For SX/SN75, SX/SN95 pumps

- Position motor vertically, put a 1.5mm thickness gasket on the outlet of motor. (Be careful, for 6” motor, ID should be bigger than the diameter 76.2; for 8” motor, ID should be bigger than the diameter 127), Put on suction interconnector, socket the pump shaft on the extended pump shaft. Tighten nuts between suction interconnector and the motor.
- Combine screw thread cones with impellers. Then screw impeller nut. This part is named impeller in the following.
- Put impeller on pump shaft home. Clamp the pump shaft with two simple clamps. Strain it with two steel strings.(To make the pump shaft touch the face of extended motor shaft tightly.) Then press impeller with hand hardly, tighten nuts. Note not bend the pump shaft). Then put on inlet sleeve.
- Put on inlet diffuser, put diffusers down to bottom. Tighten nuts as the way above. Put on diffuser. Continue the assemble order as above till the last impeller.
- Loosen suction interconnector and motor nut, take out gasket. Put the pump part on the motor. Tighten motor nuts.
- Put on discharge diffuser, valve body, valve cap, valve cap retainer, discharger head. Attention: Paint seal glue between discharge head and valve body.

XIII. TROUBLE SHOOTING

When pump is defect for some reasons, it will be repaired as follows.

Phenomena	Cause	Solution	Remarks
The pump does not run	1. Power supply is disconnected.	1. Check cables.	
	2. The fuses are blown.	2. Replace the blown fuses. If the new ones blow too, the electric installation and the submersible drop cable should be checked.	
	3. The motor starter overload has tripped out.	3. Reset the motor starter overload. If it trips out again, check the voltage.	
	4. The control circuit has been interrupted or is defective.	4. Check the electric installation.	
	5. The dry-running protection has cut off the electricity supply to the pump, due to low water level.	5. Check the water level. If it is OK, check the water level electrodes/level switch.	
Device trips out or switched off	1. Fuses are blown.	1. Replace the blown fuses.	In the case of 4) and 5), users shall not disassemble and repair the pump by themselves.
	2. Something wrong with contacts of overload device.	2. Check starter.	
	3. Cable connection is loose or there is something wrong with power supply.	3. Check cable connection and power supply.	
	4. Motor coil is defective.	4. Replace motor.	
	5. Mechanical part of pump is blocked.	5. Check and repair pump.	
Overload device of motor starter trips out occasionally	1. The setting of overload is too low.	1. Reset overload setting.	
	2. Periodic power supply fault.	2. Check power supply.	
	3. Low voltage at peak time.	3. Add regulator.	

Phenomena	Cause	Solution	Remarks
Abnormal vibration or noise from pump	1. Inlet strainer is blocked.	1. Change water source and clean strainer.	In the case of 3, users shall not disassemble the pump by themselves.
	2. Pump rotates reversely.	2. Check rotation of pump.	
	3. Mechanical part of pump is rubbed.	3. Check pump.	
Pumps no water	1. The discharge valve is closed.	1. Open the valve.	In the case of 5, Users shall not disassemble the pump by themselves.
	2. No water or too low water level in borehole.	2. Increase the installation depth of the pump.	
	3. The non-return valve is stuck in its shut position.	3. Pull out the pump and clean or replace the valve.	
	4. The inlet strainer is choked up.	4. Pull out the pump and clean the strainer.	
	5. The pump is defective.	5. Repair/replace the pump.	
The pumped water is not constant	1. There is not sufficient water in pump inlet.	1. Improve system and increase water.	
	2. Liquid level is low.	2. Try to lift liquid level	
	3. Inlet is partly blocked by impurities.	3. Check and clear impurities.	
There is a little water pumped	1. Inlet liquid level is too low.	1. Let pump submerge more deeply.	
	2. Pump turns reversely.	2. Check the direction of pump turning.	
	3. Strainer is blocked.	3. Clean inlet.	
	4. Pipes jammed or leak	4. Repair pipes.	
	5. Chose the wrong model.	5. Choose a new model.	
Pump runs but gives no water	1. Strainer is jammed by impurities.	1. Check and clean strain.	
	2. Discharge valve is closed.	2. Open valve.	
	3. Part of raiser pipe leaked.	3. Check pipes.	

IV. IMPORTANT NOTICE

1. Customers will not be advised if this manual is updated.
2. Pump will be guaranteed for one year under normal operation with the correct model. Wearing part is not included.
3. Users shall be responsible for the damage if they disassemble the pumps by themselves in guaranteed period.

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