

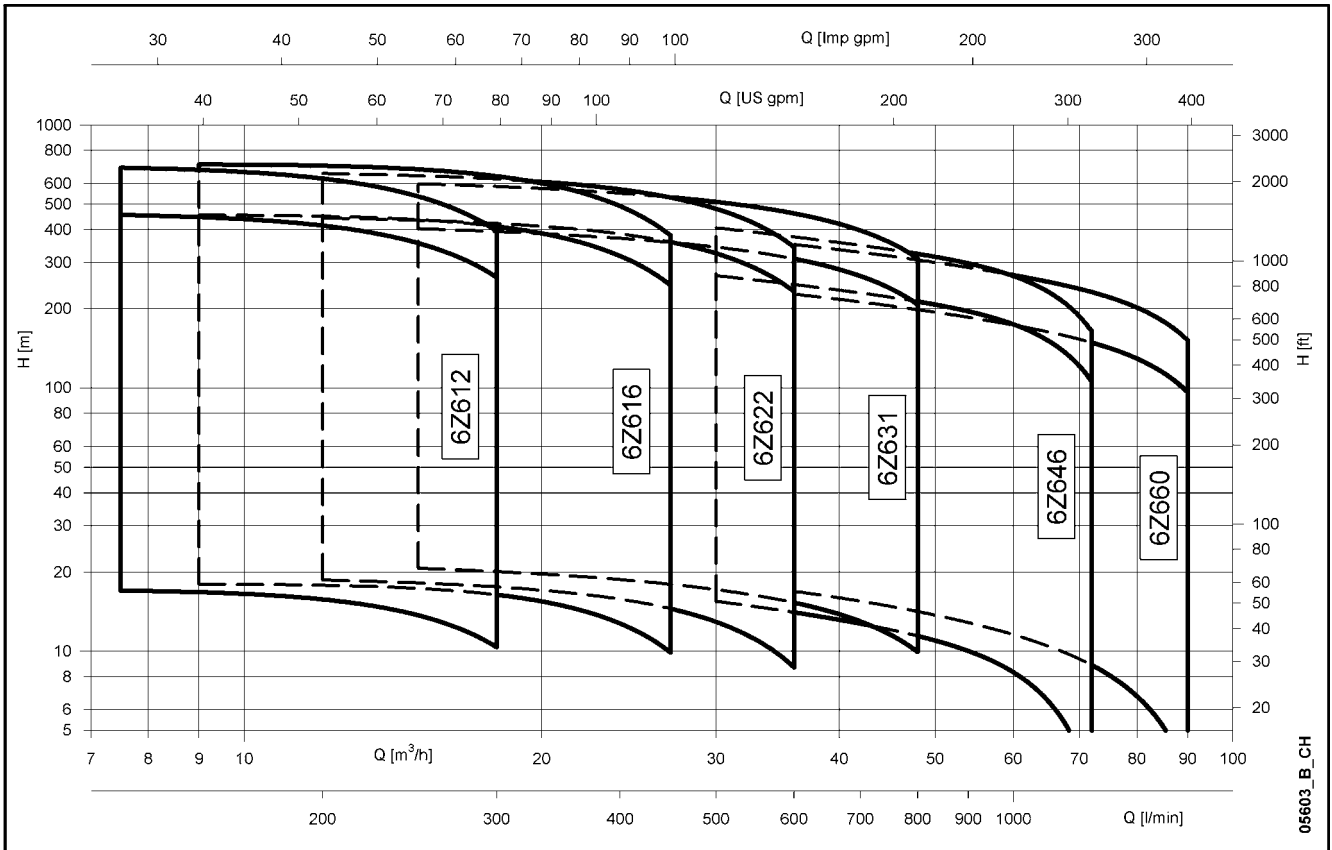


60 Hz

6Z612, 6Z616, 6Z622 6Z631, 6Z646, 6Z660 Series

6" SUBMERSIBLE
ELECTRIC PUMPS

**6Z612, 6Z616, 6Z622, 6Z631, 6Z646, 6Z660 SERIES
HYDRAULIC PERFORMANCE RANGE AT 60 Hz**



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CONTENTS

6Z6 Series Specifications	5
Table of Materials	7
Hydraulic Performance Range, 6Z6 Series 60 Hz	9
4OS Series Motors	49
L4C Series Motors	55
L6C Series Motors	61
L6W Series Motors	67
L8W Series Motors	75
Accessories	82
Technical Appendix	101

6" Submersible Electric Pumps

6Z612, 6Z616 6Z622, 6Z631 6Z646, 6Z660 Series



MARKET SECTORS

CIVIL, AGRICULTURAL, INDUSTRIAL.

APPLICATIONS

- Water supply from deep wells.
- Pressure boosting and water distribution in civil and industrial systems.
- Supply of surge tanks and reservoirs.
- Firefighting and washing systems.
- Water table level control.
- Irrigation.
- Mines.
- Golf courses.

SPECIFICATIONS

PUMP

- **Delivery:** up to 90 m³/h.
- **Head:** up to 700 m.
- Maximum overall diameter of pump:
 - **Standard version:** 142 mm (one cable guard included).
 - **High head version:** 177 mm (one cable guard and 6" motor coupling included). 193 mm (one cable guard and 8" motor coupling included).
- Maximum pump immersion depth: 300 m (with L4C motor) 350 m (with L6W and L8W motors).
- Maximum permissible quantity of suspended sand: 100 g/m³.
- Standard delivery port:
 - **Standard version:** Rp 2 1/2" for 6Z612-6Z616-6Z622 versions. Rp 3" for 6Z631-6Z646-6Z660 versions.
 - **High head version:** Rp 3" for 6Z612-6Z616-6Z622-6Z631 versions. Rp 4" for 6Z646-6Z660 versions.
- All the pumps can operate in the horizontal position (see operating limits in the motors section).

MOTOR

- L4C, L6W and L8W three-phase asynchronous liquid-cooled motors (see operating limits in the motors section).

CONSTRUCTION CHARACTERISTICS

PUMP

- Sturdy and lightweight, easy maintenance and resistant to corrosion in non-aggressive environments.
- **Head and motor support made of precision-cast stainless steel.**

- **Delivery port** equipped with holes for safety hooks and including delivery pipe fastening screws.
 - Stainless steel **integrated non-return valve.**
 - **Stainless steel impellers and diffusers.**
 - Stainless steel **impeller with removable wear ring.**
 - **Tungsten carbide upper and intermediate bearing.**
 - Technopolymer **shaft guide bearings** integrated in each stage.
 - **Self-centring wear rings** of technopolymer integrated in each stage.
 - **Stainless steel suction support.**
 - **Stainless steel shaft protected by stainless steel shaft sleeves.**
 - **Replaceable coupling.**
 - **The following elements combined:**
 - tungsten carbide guide bearing.
 - technopolymer floating wear rings.
 - sleeved shaft.
- guarantee maximum resistance to wear and ensure stable long-lasting hydraulic performances.**

OPTIONAL FEATURES

PUMP

- Different materials.
- Delivery ports with Rp 4" and 3" and 4" NPT.
- Versions for star/delta starting (SD).

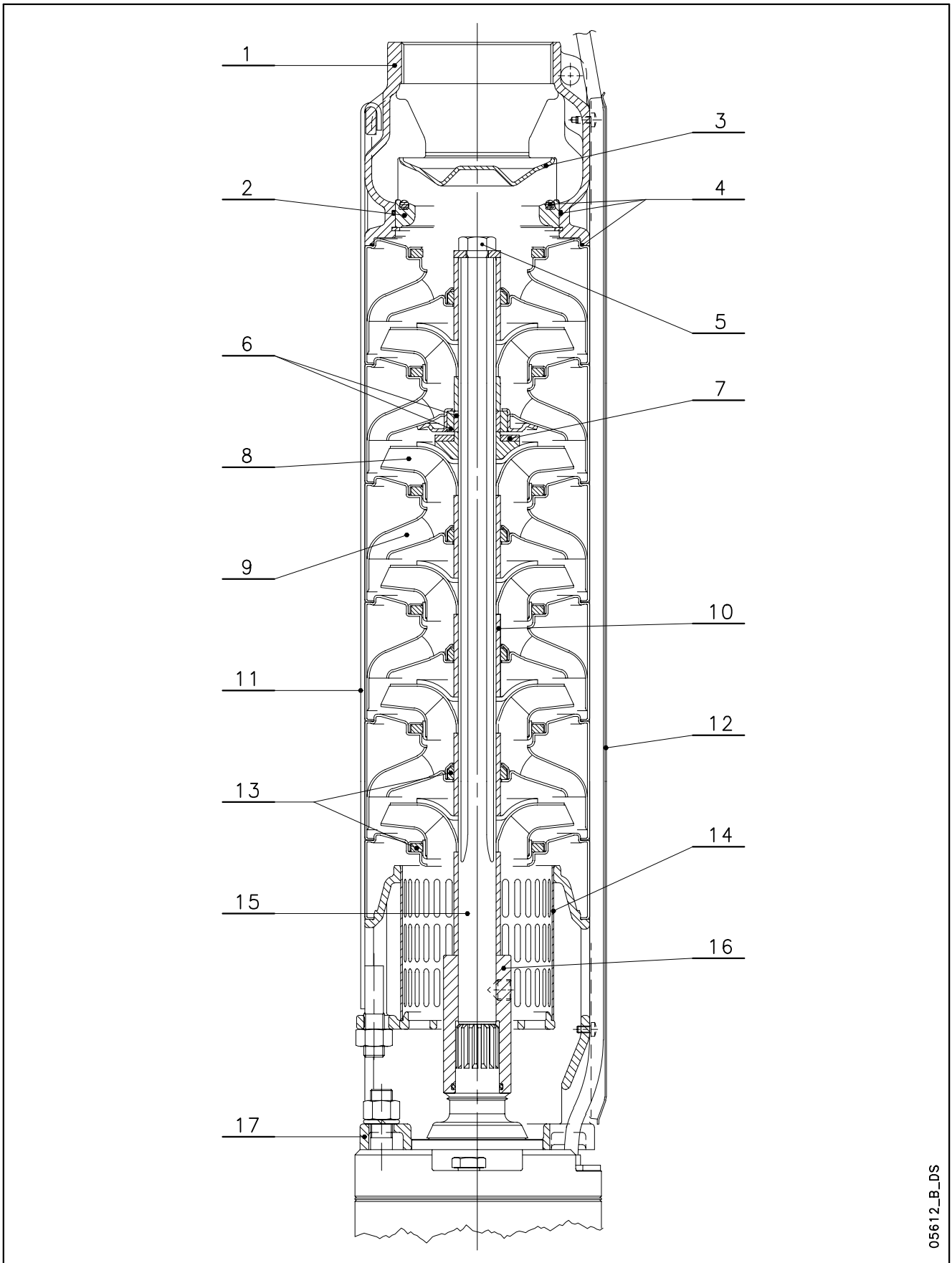
MOTOR

- Different voltages and frequencies.
- High temperature versions.

ACCESSORIES

- Coupling flange.
- Control panels.
- Drop cables.

**6Z6 PUMPS SERIES
PUMP SECTION AND LIST OF MAIN COMPONENTS**



05612_B_DS

TABLE OF MATERIALS 6Z6

REF. N°	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Discharge head	Stainless steel	EN 10213-4 - GX5CrNi19-10 (1.4308)	ASTM CF-8 (AISI 304 cast)
2	Valve support	Stainless steel	EN 10213-4 - GX5CrNi19-10 (1.4308)	ASTM CF-8 (AISI 304 cast)
3	Valve	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
4	Elastomers	EPDM		
5	Bolts and screws	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
6	Shaft sleeve and bushing	Tungsten carbide		
7	Thrust bearing	PTFE + Graphite		
8	Impeller	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
9	Diffuser	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
10	Spacer	Stainless steel	EN 10088-1 - X17CrNi16-2 (1.4057)	AISI 431
11	Tie rod	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
12	Cable guard	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
13	Wear rings	Technopolymer PPO		
14	Strainer	Stainless steel	EN 10088-1 - X5CrNi18-10 (1.4301)	AISI 304
15	Shaft	Stainless steel	EN 10088-1 - X17CrNi16-2 (1.4057)	AISI 431
16	Coupling	Stainless steel	EN 10088-1 - X17CrNi16-2 (1.4057)	AISI 431
17	Lower support	Stainless steel	EN 10213-4 - GX5CrNi19-10 (1.4308)	ASTM CF-8 (AISI 304 cast)

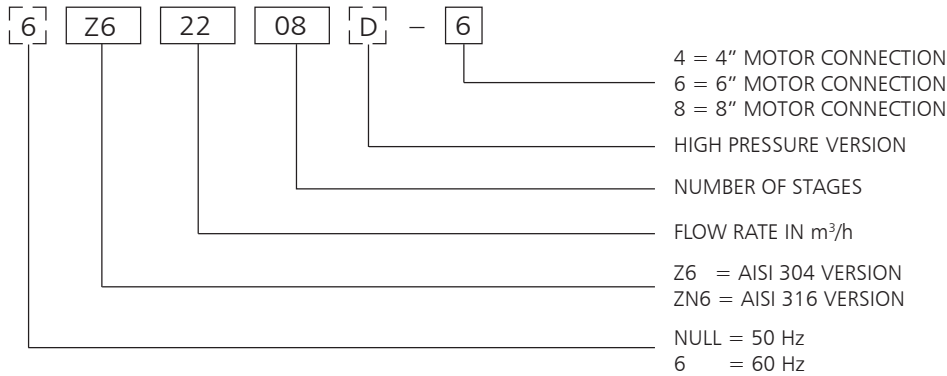
z6-50-304-en_c_tm

TABLE OF MATERIALS 6ZN6

REF. N°	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Discharge head	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
2	Valve support	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
3	Valve	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Elastomers	EPDM		
5	Bolts and screws	Stainless steel	EN 10088-1 - X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Shaft sleeve and bushing	Tungsten carbide		
7	Thrust bearing	PTFE + Graphite		
8	Impeller	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
9	Diffuser	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Spacer	Duplex stainless steel	EN 10088-1 - X2CrNiN23-4 (1.4362)	UNS S 32304
11	Tie rod	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
12	Cable guard	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
13	Wear rings	Technopolymer PPO		
14	Strainer	Stainless steel	EN 10088-1 - X2CrNiMo17-12-2 (1.4404)	AISI 316L
15	Shaft	Duplex stainless steel	EN 10088-1 - X2CrNiMoN22-5-3 (1.4462)	UNS S 31803
16	Coupling	Duplex stainless steel	EN 10088-1 - X2CrNiN23-4 (1.4362)	UNS S 32304
17	Lower support	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)

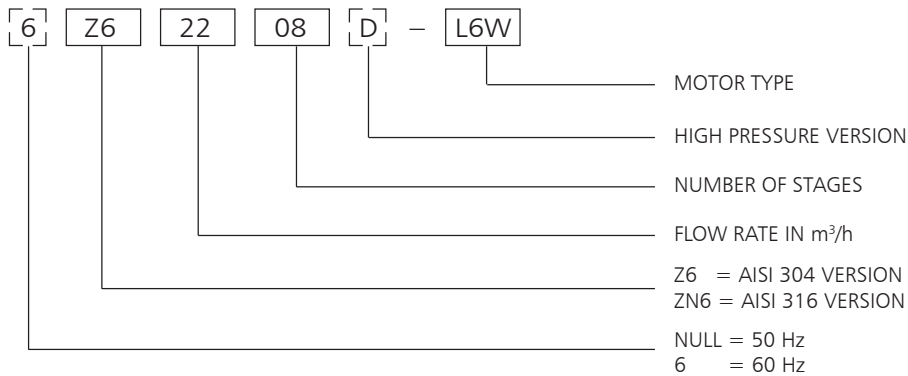
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6Z6 SERIES IDENTIFICATION CODE (PUMP)



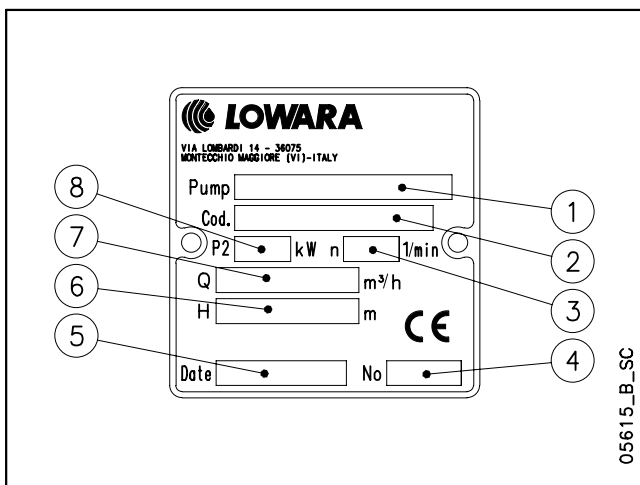
EXAMPLE : 6Z622 08 - 6
6" Pump at 60 Hz, AISI 304, flow rate 22 m³/h, 8 stages, with 6" motor connection.

IDENTIFICATION CODE (ELECTRIC PUMP)



EXAMPLE : 6Z622 08 - L6W
6" Electric pump at 60 Hz, AISI 304, flow rate 22 m³/h, 8 stages, coupled to a 6" motor L6W.

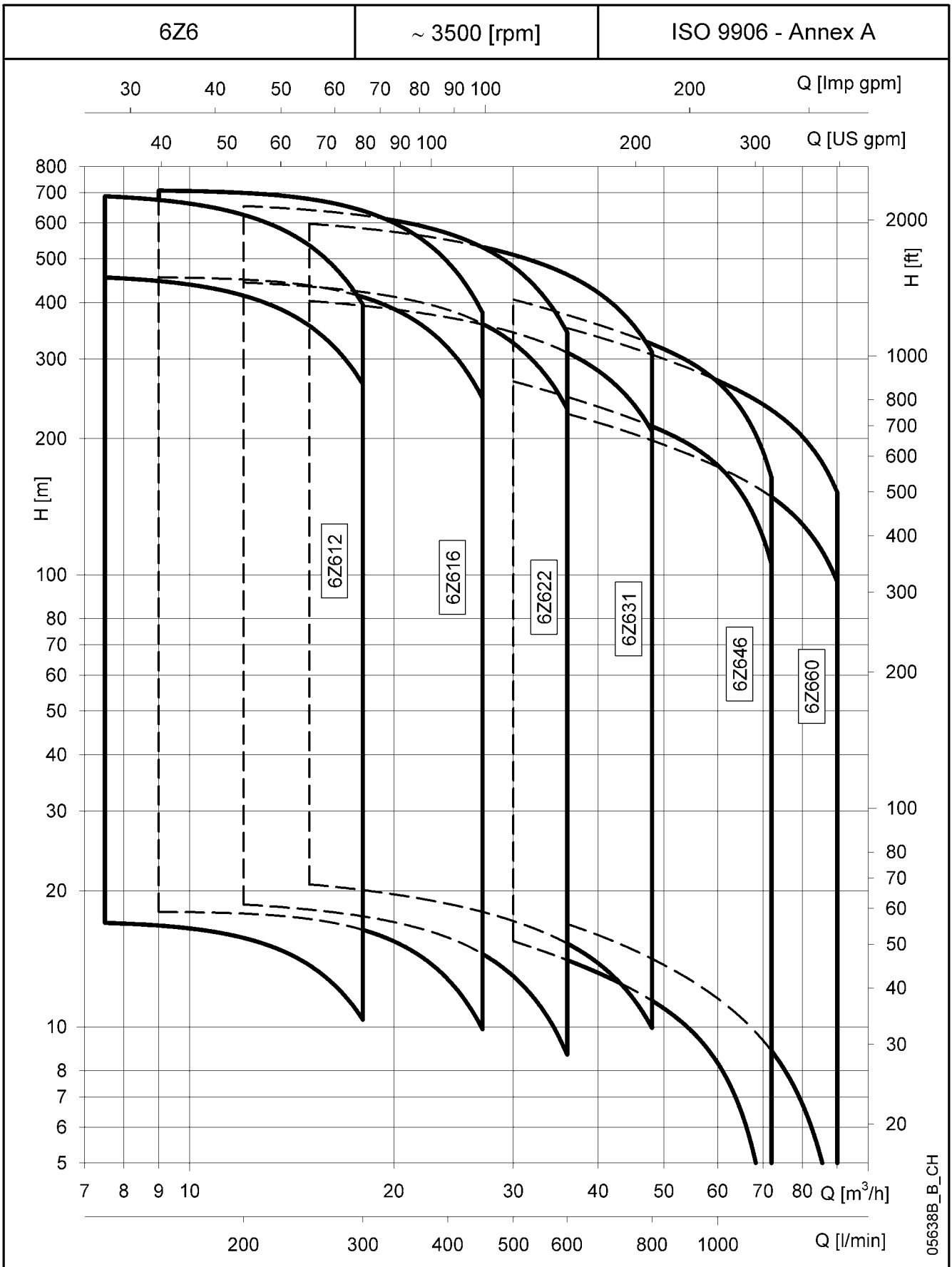
RATING PLATE



LEGEND

- 1 - Pump type
- 2 - Code
- 3 - Speed
- 4 - Serial number
- 5 - Date of manufacture
- 6 - Head range
- 7 - Delivery range
- 8 - Rated output

**6Z6 SERIES
HYDRAULIC PERFORMANCE RANGE AT 60 Hz**



6Z612 SERIES, 1 TO 13 STAGES OPERATING CHARACTERISTICS AT 60 Hz

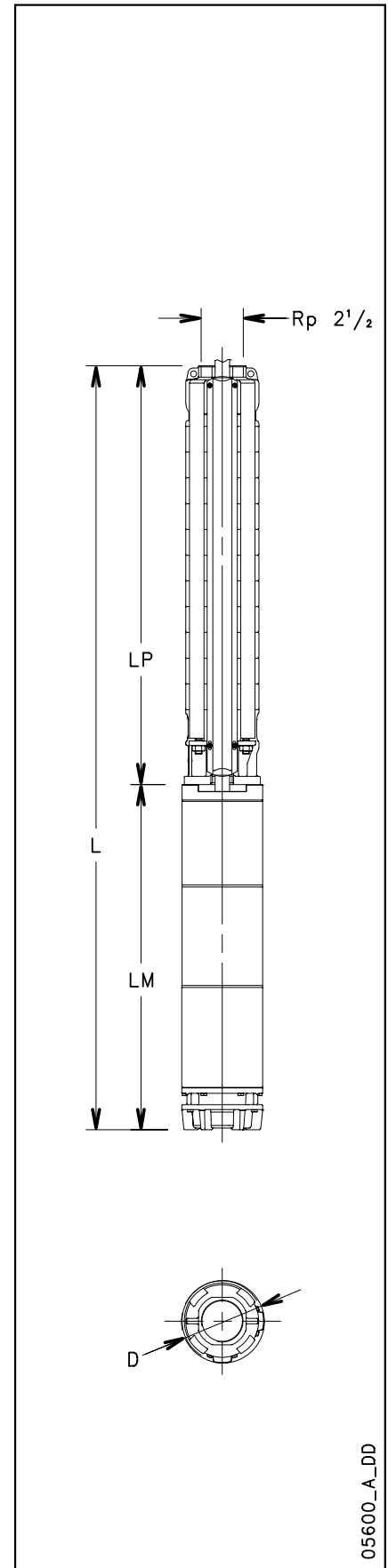
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	125	150	200	250	300
			m ³ /h	0	7,5	9	12	15	18
			H = TOTAL HEAD METRES COLUMN OF WATER						
6Z612 01	0,75	1,40	17,2	17,0	16,8	15,7	13,7	10,4	
6Z612 02	1,5	1,25	34,0	33,0	32,4	30,1	25,8	19,0	
6Z612 03	2,2	1,15	50,4	48,4	47,4	43,7	37,0	26,7	
6Z612 04	3	1,15	68,5	66,6	65,5	61,0	52,5	38,9	
6Z612 05	4	1,15	85,9	83,9	82,6	77,1	66,5	49,7	
6Z612 06	5,5	1,15	103,6	101,7	100,1	93,3	80,5	60,3	
6Z612 07	5,5	1,15	120,5	117,7	115,8	107,7	92,5	68,8	
6Z612 08	7,5	1,15	137,5	135,0	132,5	123,0	105,2	77,4	
6Z612 09	7,5	1,15	154,3	151,0	148,1	137,1	116,9	85,5	
6Z612 10	7,5	1,15	171,0	166,7	163,5	151,0	128,3	93,2	
6Z612 11	9,3	1,15	190,3	185,1	181,7	168,7	144,3	106,2	
6Z612 12	9,3	1,15	207,2	200,8	197,0	182,5	155,7	114,2	
6Z612 13	9,3	1,15	224,0	216,5	212,2	196,1	166,9	121,7	

DIMENSIONS AND WEIGHTS

6z612-1-60-en_b_th

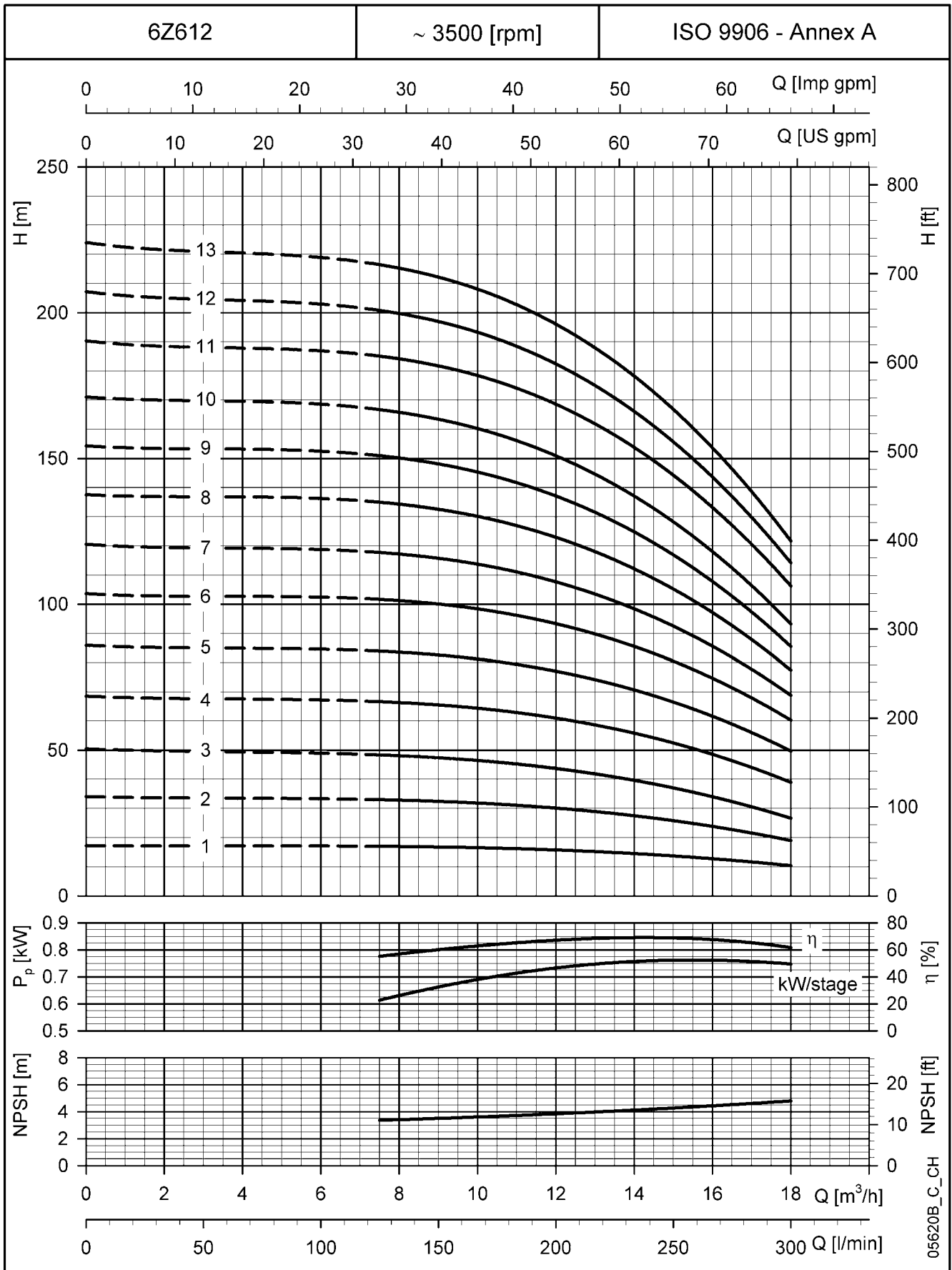
ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)						WEIGHT Kg
			L	LM	LP	ø D			
						1 Cable	2 Cables		
6Z612 01-L4C	0,75	1,40	666	286	380	142	144	19	
6Z612 02-L4C	1,5	1,25	817	391	426	142	144	24	
6Z612 03-L4C	2,2	1,15	883	411	472	142	144	26	
6Z612 04-L4C	3	1,15	1062	544	518	142	144	34	
6Z612 05-L4C	4	1,15	1178	614	564	142	144	38	
6Z612 06-L4C	5,5	1,15	1294	684	610	142	144	42	
6Z612 07-L4C	5,5	1,15	1340	684	656	142	144	43	
6Z612 08-L4C	7,5	1,15	1466	764	702	142	144	48	
6Z612 09-L4C	7,5	1,15	1512	764	748	142	144	49	
6Z612 10-L4C	7,5	1,15	1558	764	794	142	144	50	
6Z612 05-L6W	4	1,15	1147	583	564	144	146	52	
6Z612 06-L6W	5,5	1,15	1223	613	610	144	146	57	
6Z612 07-L6W	5,5	1,15	1269	613	656	144	146	58	
6Z612 08-L6W	7,5	1,15	1355	653	702	144	146	63	
6Z612 09-L6W	7,5	1,15	1401	653	748	144	146	65	
6Z612 10-L6W	7,5	1,15	1447	653	794	144	146	66	
6Z612 11-L6W	9,3	1,15	1523	683	840	144	146	71	
6Z612 12-L6W	9,3	1,15	1569	683	886	144	146	72	
6Z612 13-L6W	9,3	1,15	1615	683	932	144	146	73	

6z612-1-60-en_a_td



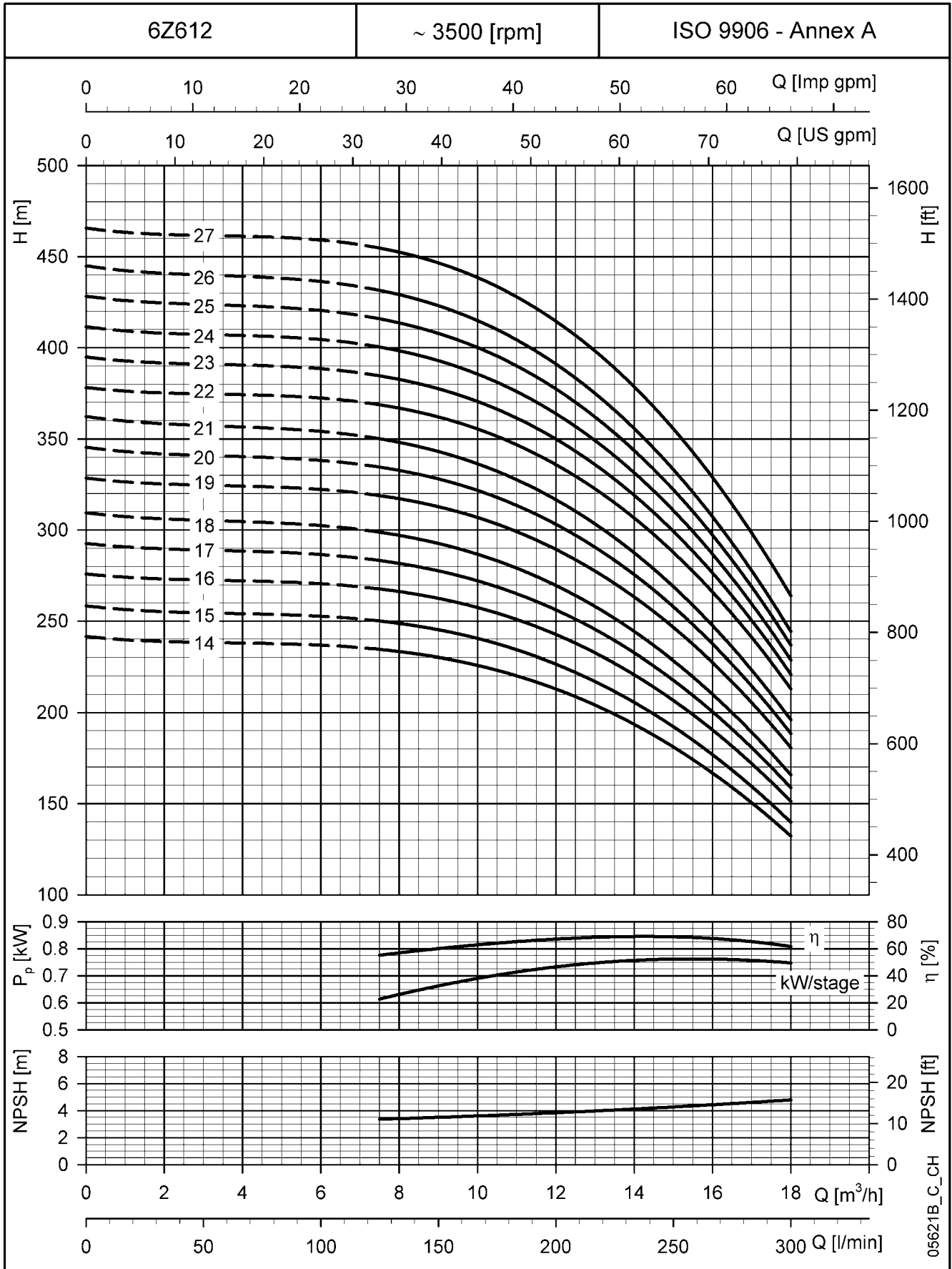
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**6Z612 SERIES, 1 TO 13 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



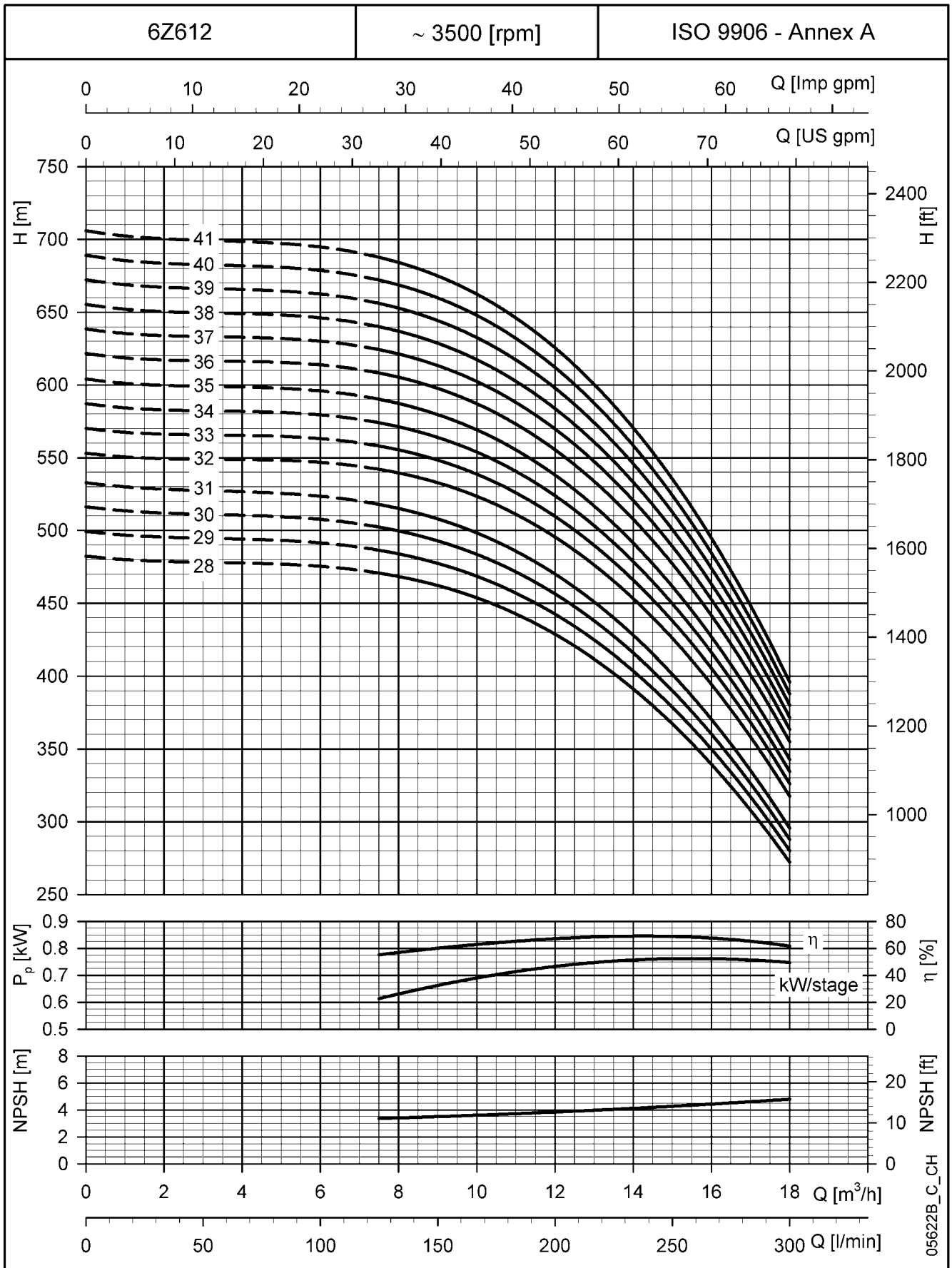
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z612 SERIES, 14 TO 27 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



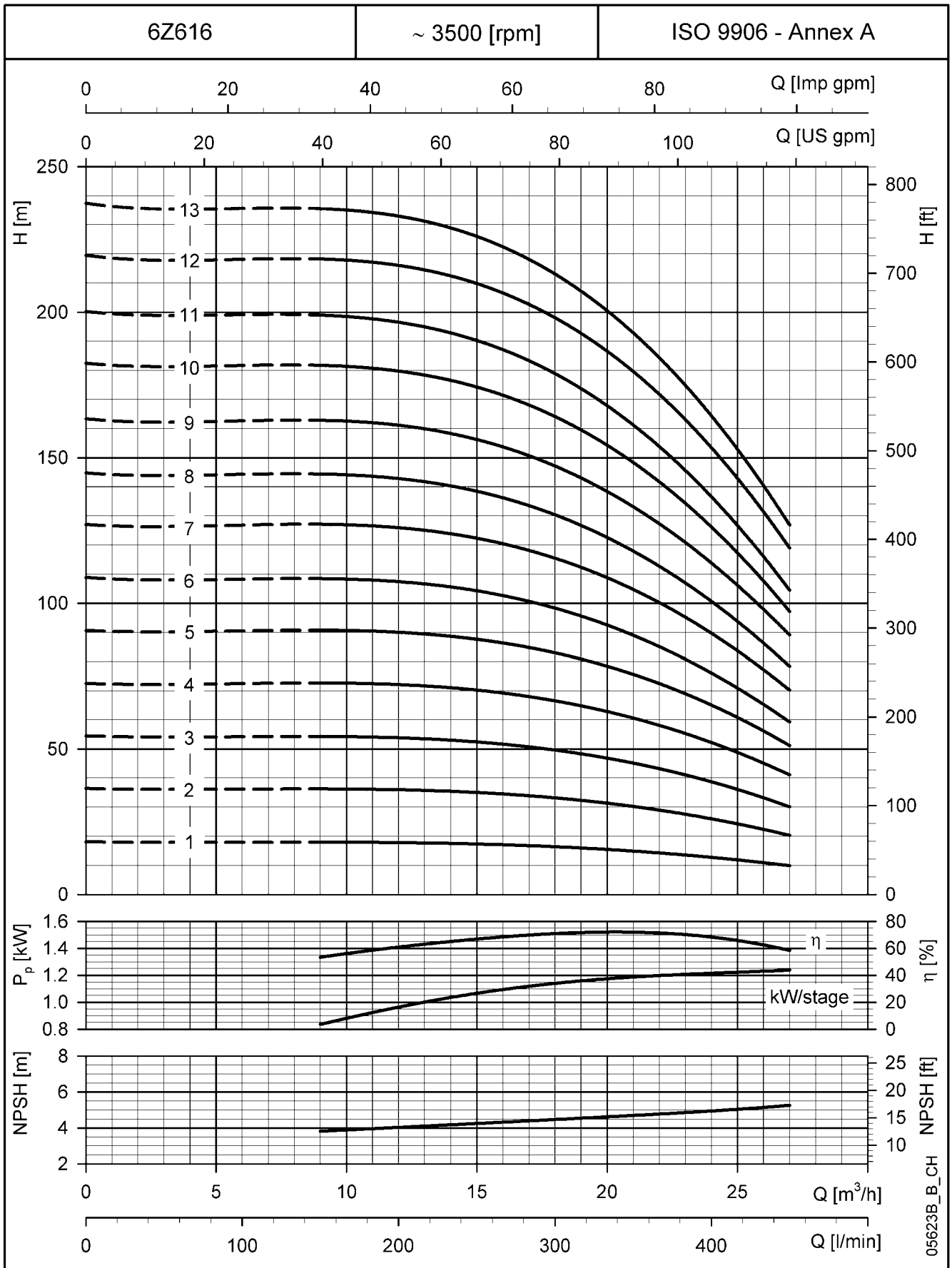
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z612 SERIES, 28 TO 41 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z616 SERIES, 1 TO 13 STAGES
OPERATING CHARACTERISTICS AT 60 Hz



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z616 SERIES, 14 TO 25 STAGES OPERATING CHARACTERISTICS AT 60 Hz

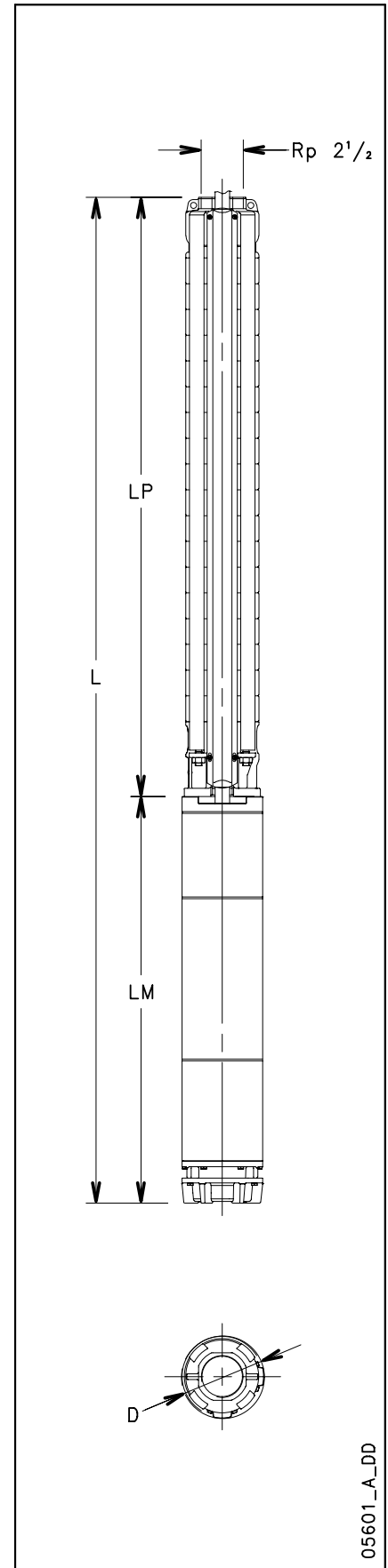
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	150	200	300	400	450
			m ³ /h	0	9	12	18	24	27
			H = TOTAL HEAD METRES COLUMN OF WATER						
6Z616 14	18,5	1,15	255,6	255,3	252,8	232,4	181,4	142,0	
6Z616 15	18,5	1,15	273,6	272,7	270,0	247,6	192,8	151,0	
6Z616 16	18,5	1,15	291,4	290,0	286,9	262,6	203,8	159,0	
6Z616 17	22	1,15	312,0	311,0	307,9	281,1	217,9	171,7	
6Z616 18	22	1,15	329,9	328,5	325,1	296,3	228,9	179,8	
6Z616 19	22	1,15	347,9	346,0	342,0	311,2	239,9	188,1	
6Z616 20	26	1,15	365,2	365,9	362,6	332,9	259,1	202,5	
6Z616 21	26	1,15	383,3	383,5	379,8	348,4	270,4	210,4	
6Z616 22	26	1,15	401,3	401,0	397,0	363,7	281,8	219,0	
6Z616 23	26	1,15	419,1	418,5	414,1	379,0	292,9	226,5	
6Z616 24	30	1,15	437,5	436,9	432,5	396,3	306,9	238,0	
6Z616 25	30	1,15	455,2	454,5	449,8	411,6	318,0	245,9	

6z616-2-60-en_a_th

DIMENSIONS AND WEIGHTS

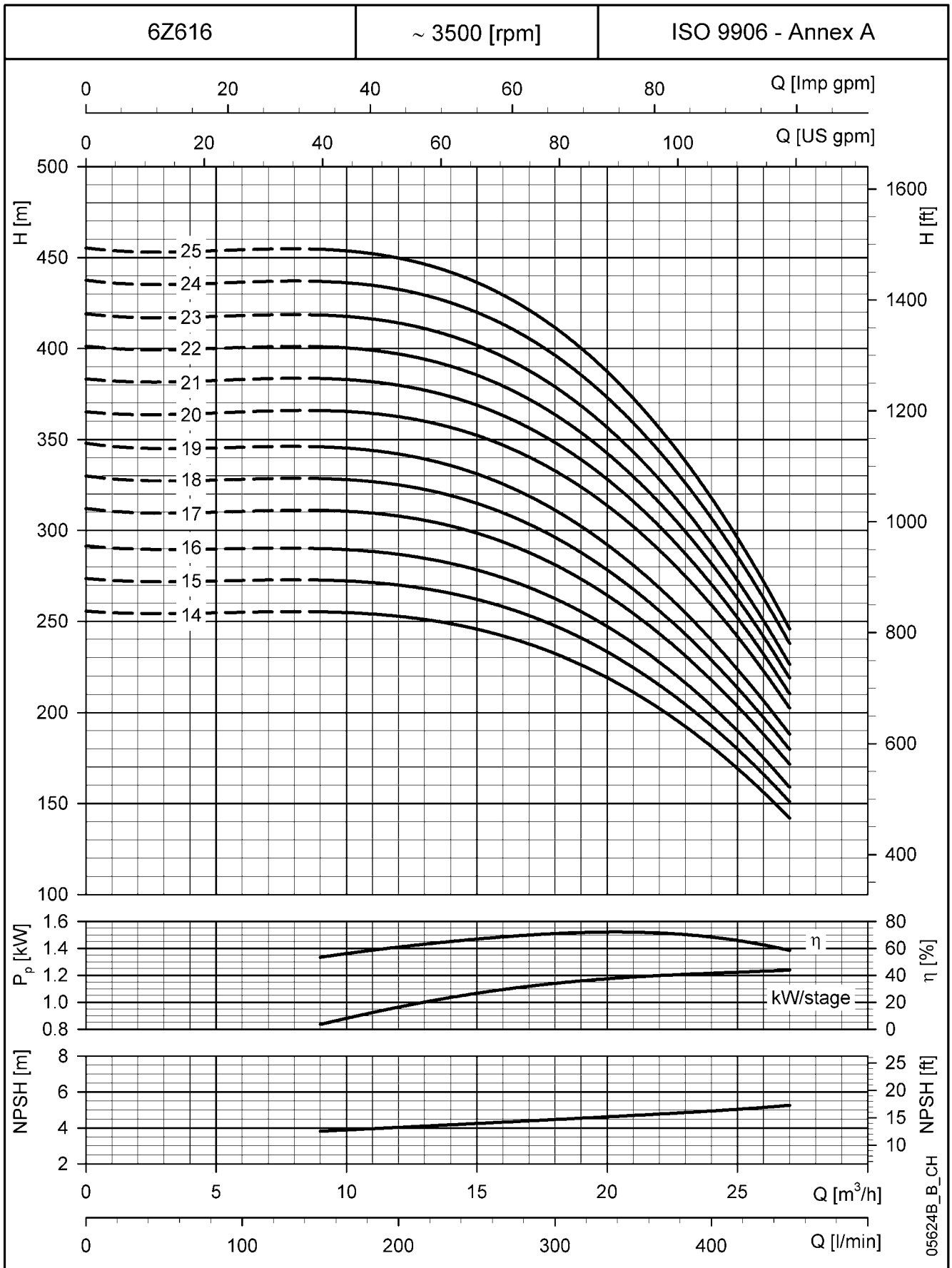
ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)					WEIGHT Kg
			L	LM	LP	ø D		
						1 Cable	2 Cables	
6Z616 14-L6W	18,5	1,15	1881	903	978	144	146	98
6Z616 15-L6W	18,5	1,15	1927	903	1024	144	146	100
6Z616 16-L6W	18,5	1,15	1973	903	1070	144	146	101
6Z616 17-L6W	22	1,15	2059	943	1116	144	146	105
6Z616 18-L6W	22	1,15	2105	943	1162	144	146	106
6Z616 19-L6W	22	1,15	2197	943	1254	144	146	108
6Z616 20-L6W	26	1,15	2371	1071	1300	144	146	119
6Z616 21-L6W	26	1,15	2417	1071	1346	144	146	120
6Z616 22-L6W	26	1,15	2463	1071	1392	144	146	121
6Z616 23-L6W	26	1,15	2509	1071	1438	144	146	122
6Z616 24-L6W	30	1,15	2635	1151	1484	144	146	131
6Z616 25-L6W	30	1,15	2681	1151	1530	144	146	132

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6Z616 SERIES, 14 TO 25 STAGES
OPERATING CHARACTERISTICS AT 60 Hz



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z616 SERIES, 26 TO 39 STAGES OPERATING CHARACTERISTICS AT 60 Hz

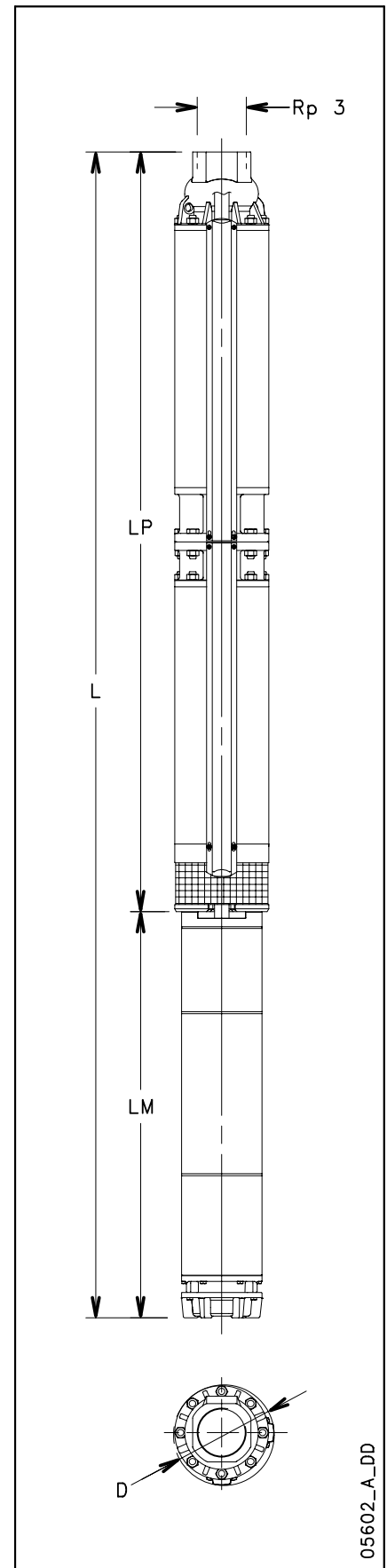
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	150	200	300	400	450
			m ³ /h	0	9	12	18	24	27
			H = TOTAL HEAD METRES COLUMN OF WATER						
6Z616 26D	30	1,15	473,2	471,8	466,7	426,6	329,0	254,1	
6Z616 27D	30	1,15	491,1	489,1	483,6	441,5	339,9	262,2	
6Z616 28D	37	1,15	510,2	509,8	504,6	462,1	357,7	277,4	
6Z616 29D	37	1,15	528,1	527,3	521,7	477,3	368,9	285,8	
6Z616 30D	37	1,15	546,0	544,8	538,8	492,2	380,0	294,9	
6Z616 31D	37	1,15	563,9	561,9	555,5	507,3	390,7	301,3	
6Z616 32D	37	1,15	581,7	579,2	572,4	522,2	401,7	309,8	
6Z616 33D	37	1,15	599,5	596,5	589,2	536,9	412,0	317,0	
6Z616 34D	37	1,15	617,4	613,6	605,9	551,4	422,3	324,4	
6Z616 35D	45	1,15	639,1	638,2	631,6	578,5	448,0	347,4	
6Z616 36D	45	1,15	657,0	655,7	648,8	593,8	459,4	356,0	
6Z616 37D	45	1,15	675,3	673,0	665,7	608,8	470,2	363,5	
6Z616 38D	45	1,15	693,1	690,5	682,7	623,9	481,4	371,6	
6Z616 39D	45	1,15	710,9	707,9	699,7	638,7	492,1	380,2	

6z616-3-60-en_a_th

DIMENSIONS AND WEIGHTS

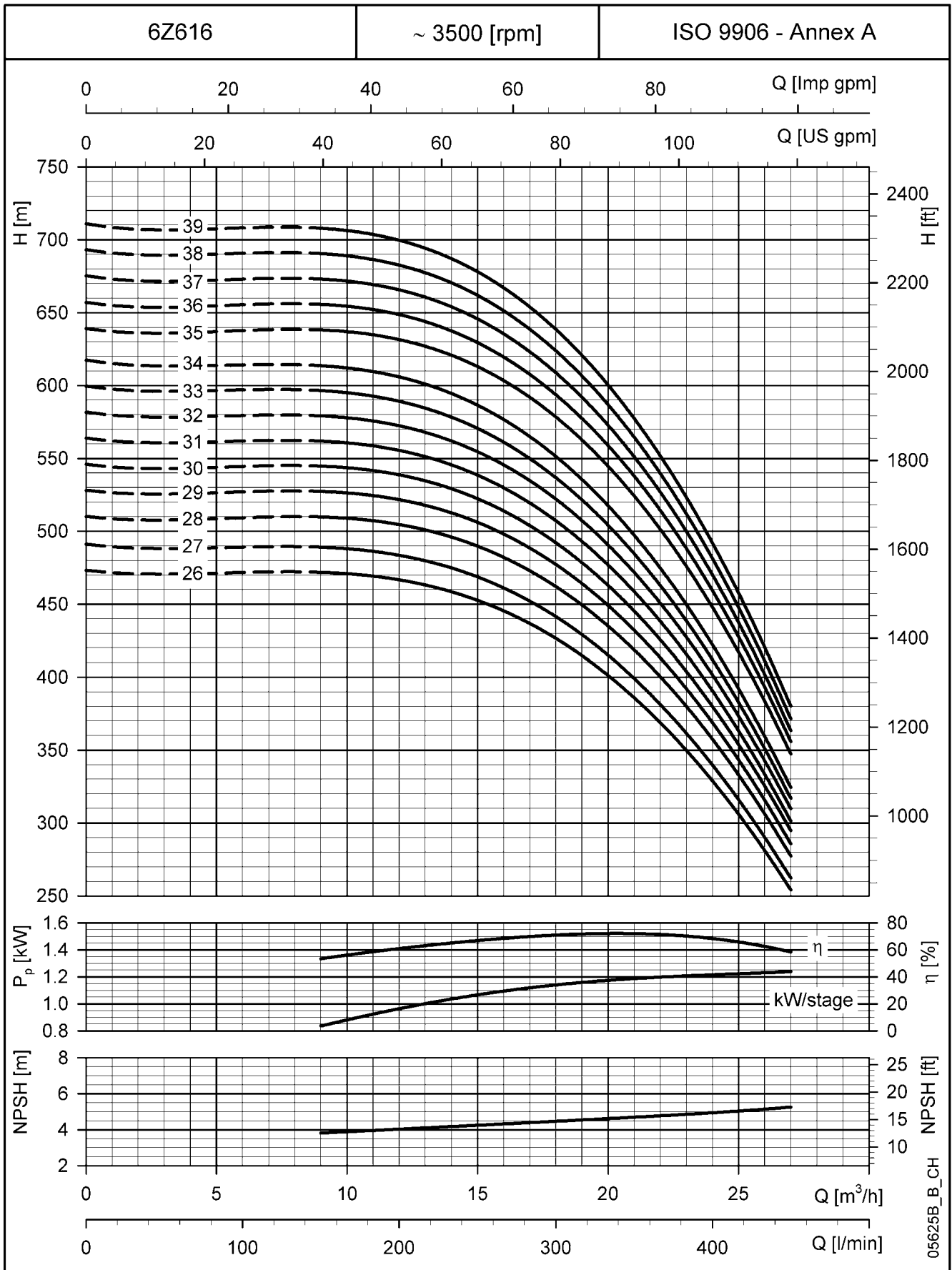
ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)						WEIGHT Kg
			L	LM	LP	ø D			
						1 Cable	2 Cables		
6Z616 26D-L6W	30	1,15	2861	1151	1710	177	180	164	
6Z616 27D-L6W	30	1,15	2861	1151	1710	177	180	165	
6Z616 28D-L6W	37	1,15	3011	1301	1710	177	180	179	
6Z616 29D-L6W	37	1,15	3149	1301	1848	177	180	184	
6Z616 30D-L6W	37	1,15	3149	1301	1848	177	180	185	
6Z616 31D-L6W	37	1,15	3809	1301	2508	177	180	207	
6Z616 32D-L6W	37	1,15	3809	1301	2508	177	180	208	
6Z616 33D-L6W	37	1,15	3809	1301	2508	177	180	208	
6Z616 34D-L6W	37	1,15	3809	1301	2508	177	180	209	
6Z616 35D-L8W	45	1,15	3752	1195	2557	193	195	284	
6Z616 36D-L8W	45	1,15	3752	1195	2557	193	195	285	
6Z616 37D-L8W	45	1,15	3752	1195	2557	193	195	285	
6Z616 38D-L8W	45	1,15	3752	1195	2557	193	195	286	
6Z616 39D-L8W	45	1,15	4166	1195	2971	193	195	296	

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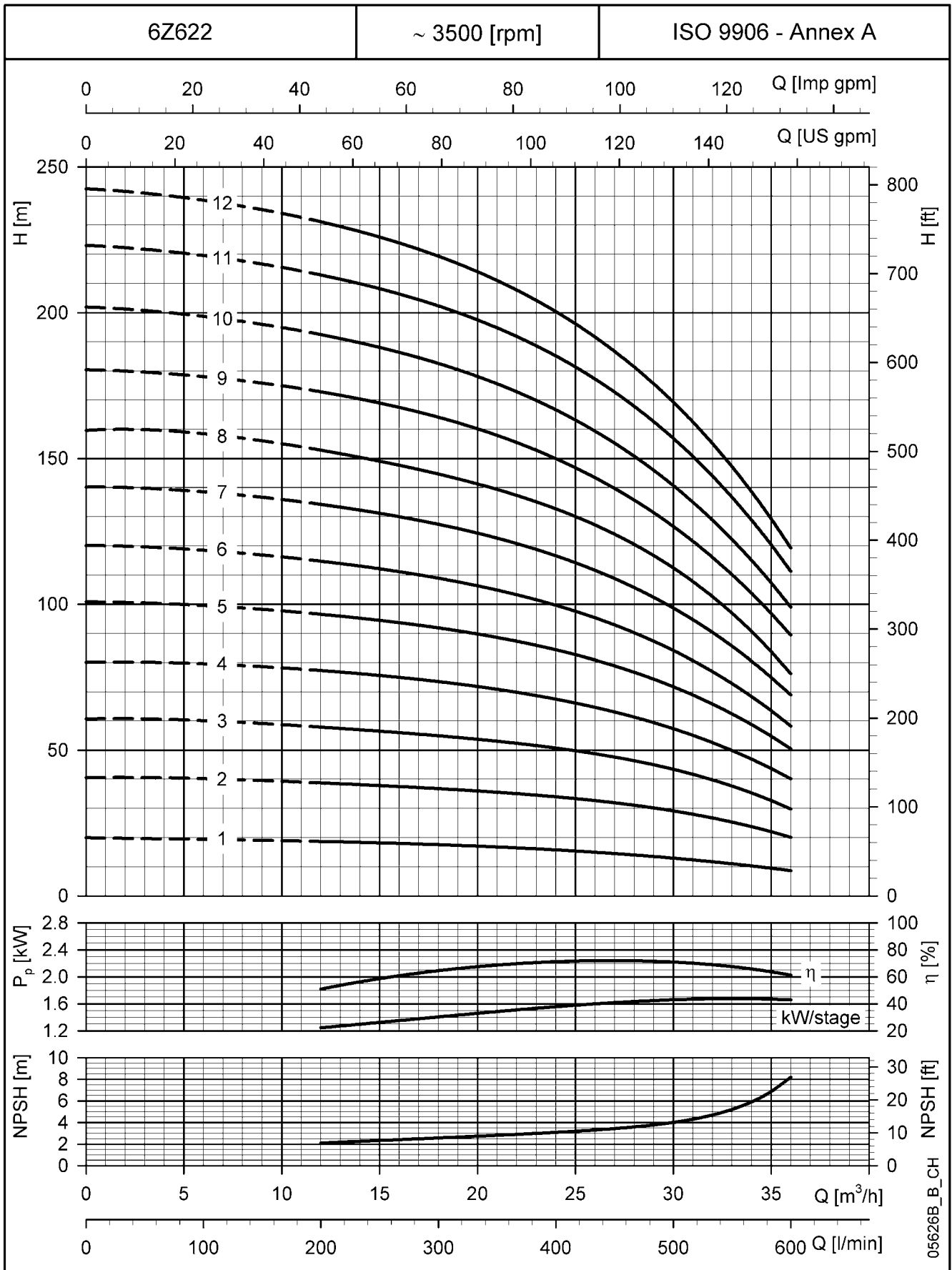
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**6Z616 SERIES, 26 TO 39 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



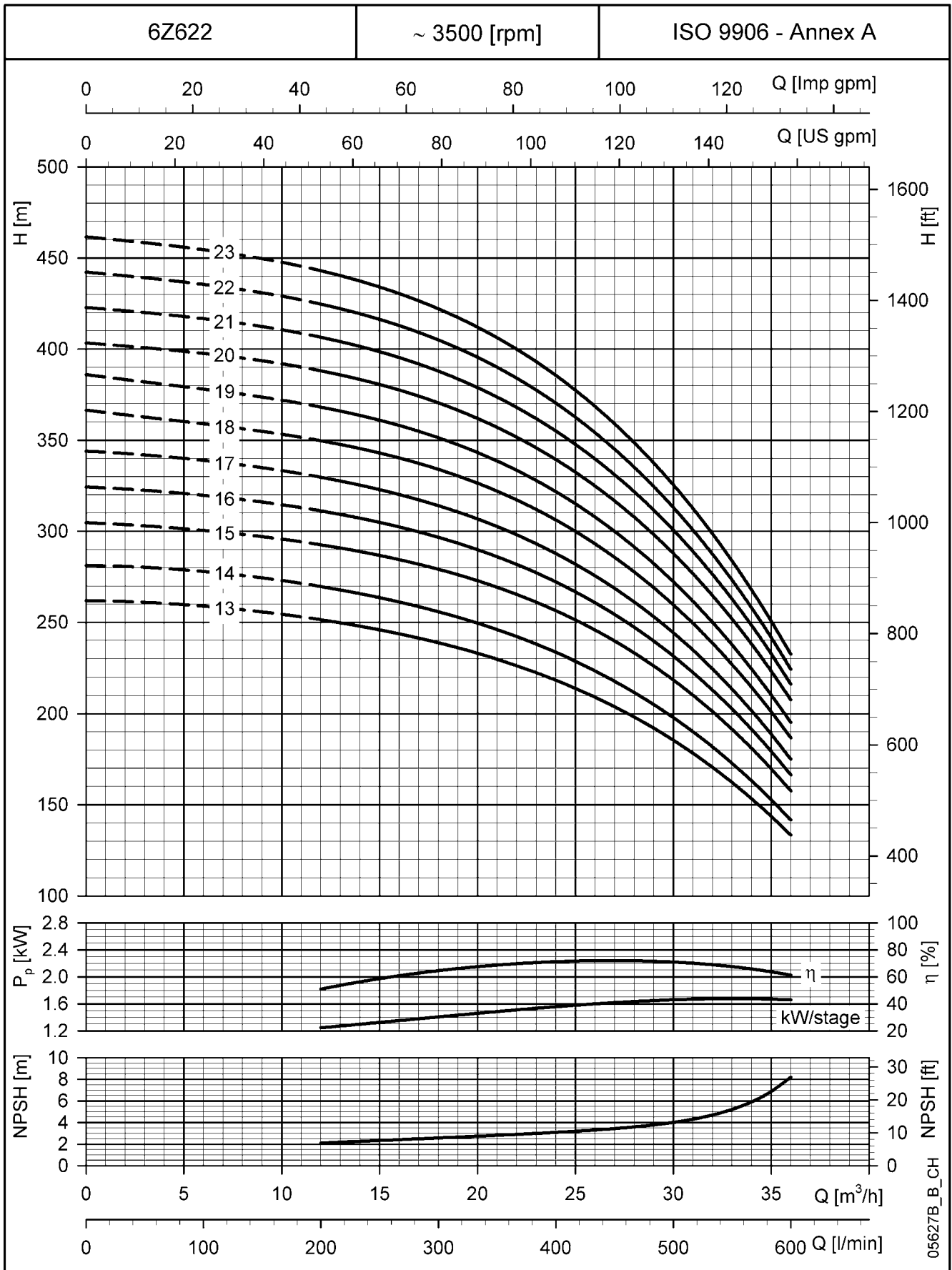
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z622 SERIES, 1 TO 12 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



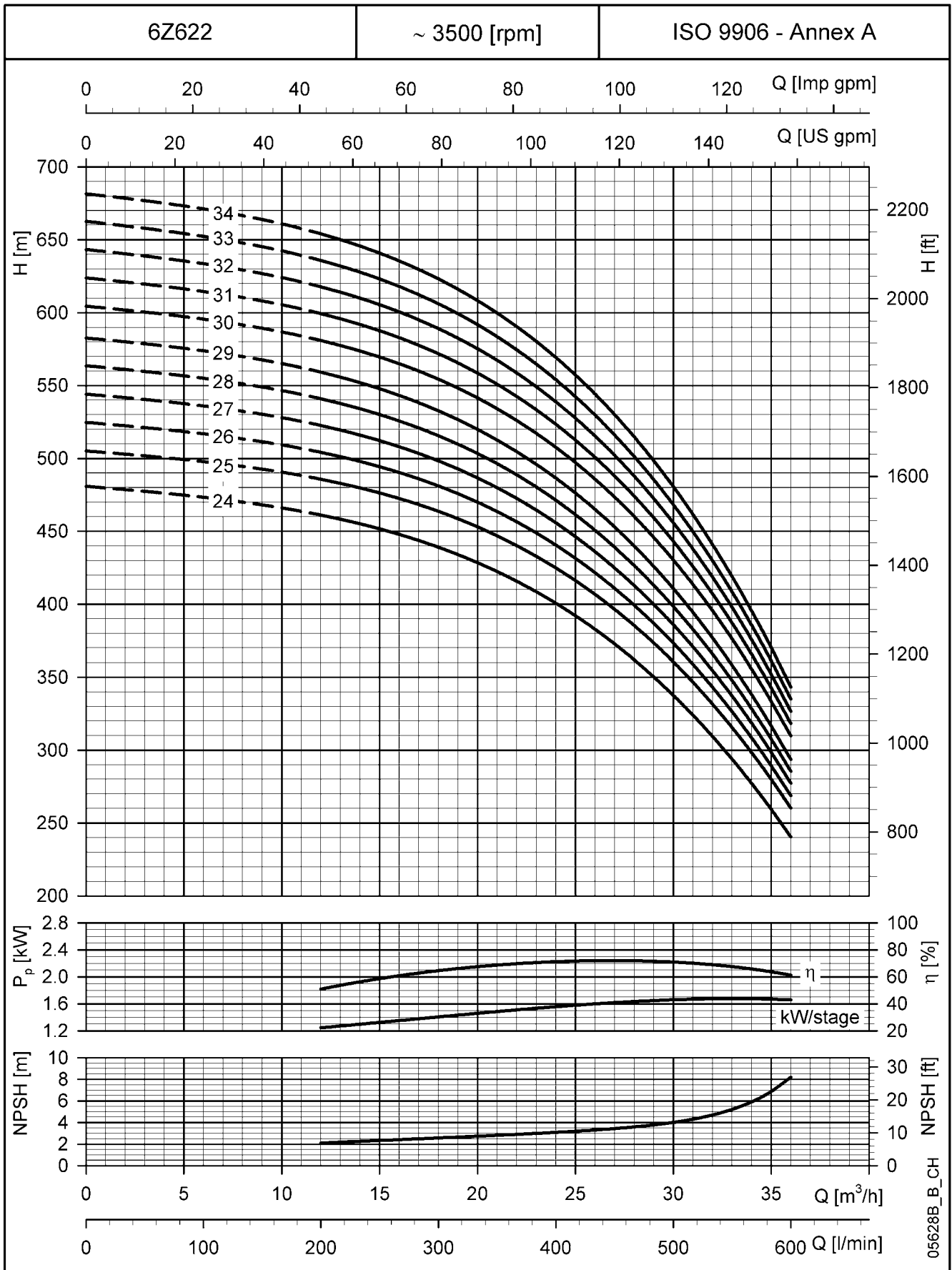
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z622 SERIES, 13 TO 23 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z622 SERIES, 24 TO 34 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z631 SERIES, 1 TO 19 STAGES OPERATING CHARACTERISTICS AT 60 Hz

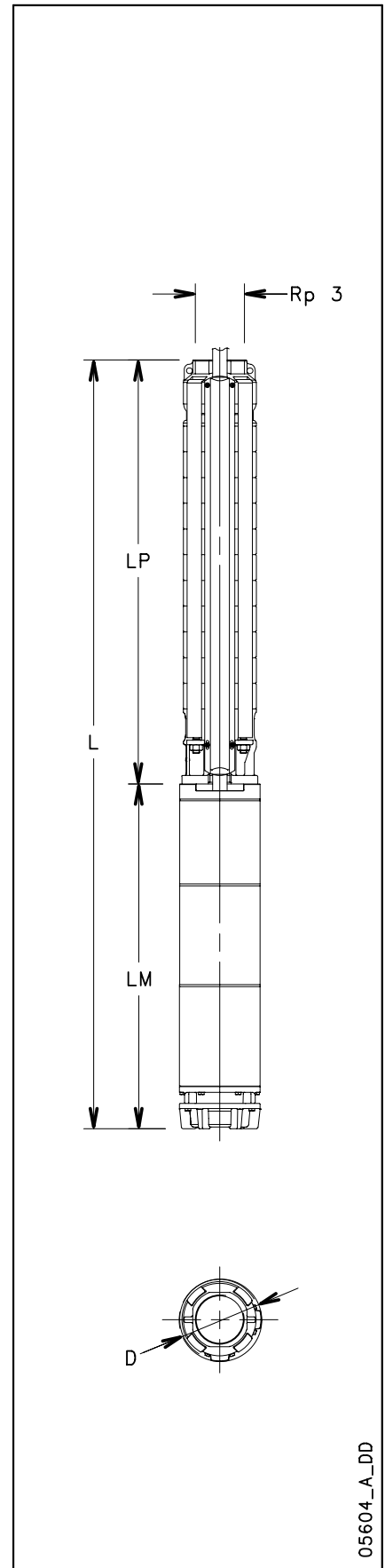
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	250	400	500	650	800
			m ³ /h	0	15	24	30	39	48
			H = TOTAL HEAD METRES COLUMN OF WATER						
	kW	S.F.							
6Z631 01	2,2	1,15	22,0	20,7	18,7	17,2	14,2	9,9	
6Z631 02	4	1,15	44,9	42,5	38,7	35,6	29,8	21,4	
6Z631 03	7,5	1,15	67,7	63,8	58,5	54,2	45,9	33,5	
6Z631 04	9,3	1,15	90,4	85,1	77,9	72,2	61,5	45,1	
6Z631 05	11	1,15	112,1	106,2	97,1	90,0	76,3	55,5	
6Z631 06	13	1,15	133,7	127,3	116,7	108,0	91,1	65,4	
6Z631 07	15	1,15	156,1	148,8	136,7	126,6	106,9	76,8	
6Z631 08	18,5	1,15	177,7	170,1	156,3	144,9	122,6	88,4	
6Z631 09	18,5	1,15	199,1	190,2	174,5	161,4	136,1	97,4	
6Z631 10	22	1,15	223,1	213,1	195,2	180,6	152,7	110,6	
6Z631 11	22	1,15	244,5	233,4	213,4	197,2	166,2	119,5	
6Z631 12	26	1,15	267,9	258,1	238,5	221,6	188,5	139,8	
6Z631 13	26	1,15	289,6	278,7	257,1	238,5	202,5	149,5	
6Z631 14	30	1,15	312,6	300,4	276,8	257,2	218,9	160,3	
6Z631 15	30	1,15	334,3	320,8	295,3	274,0	232,8	169,6	
6Z631 16	37	1,15	357,4	342,8	316,1	293,7	249,3	180,7	
6Z631 17	37	1,15	378,9	363,1	334,5	310,5	263,1	190,0	
6Z631 18	37	1,15	400,5	383,3	352,8	327,2	276,7	198,9	
6Z631 19	37	1,15	421,8	403,4	370,8	343,6	289,9	207,6	

6z631-1-60-en_a_th

DIMENSIONS AND WEIGHTS

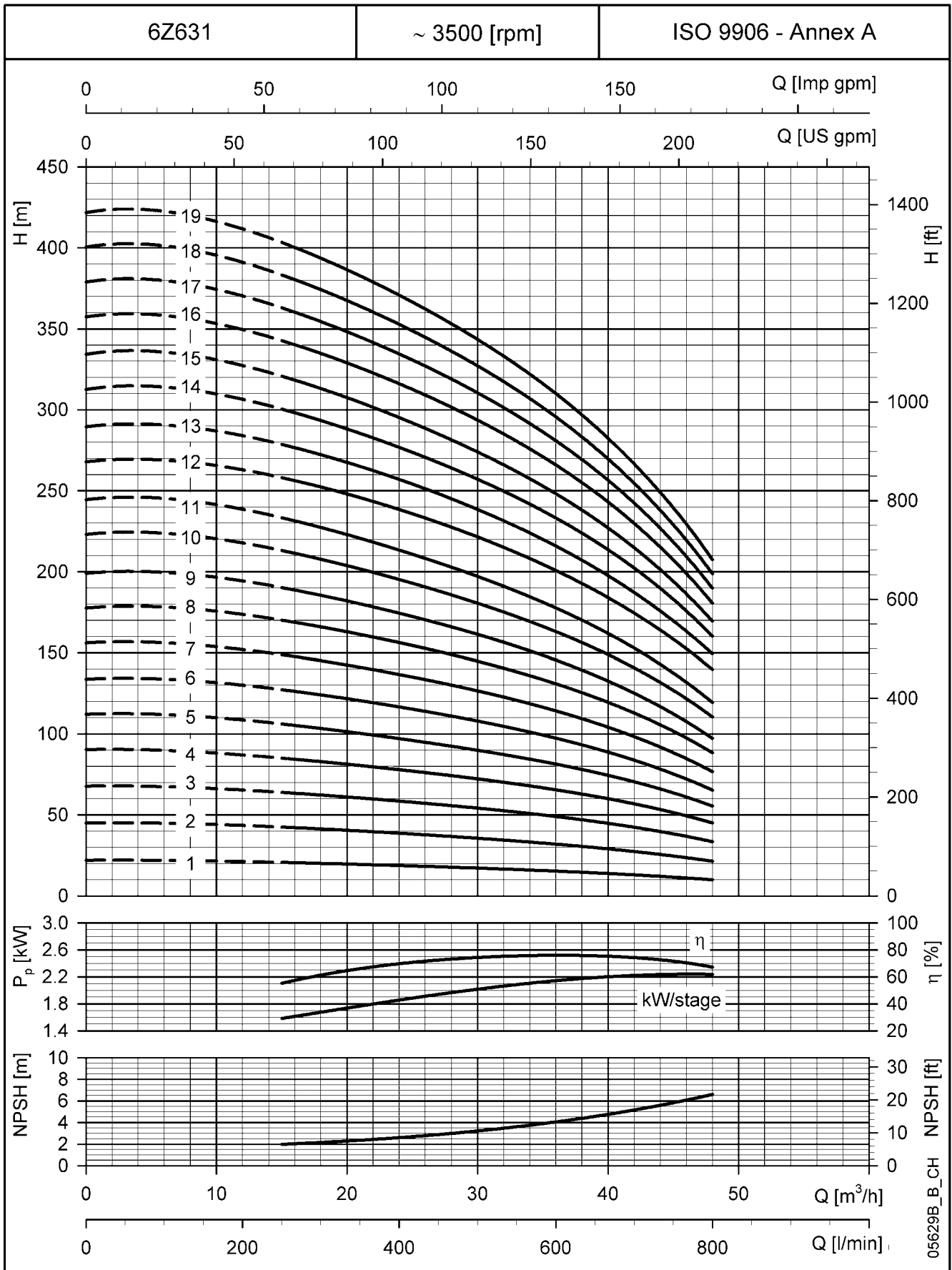
ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)						WEIGHT Kg
			L	LM	LP	ø D			
						1 Cable	2 Cables		
6Z631 01-L4C	2,2	1,15	778	411	367	142	144	24	
6Z631 02-L4C	4	1,15	1050	614	436	142	144	34	
6Z631 03-L4C	7,5	1,15	1269	764	505	142	144	42	
6Z631 02-L6W	4	1,15	1019	583	436	144	146	48	
6Z631 03-L6W	7,5	1,15	1158	653	505	144	146	58	
6Z631 04-L6W	9,3	1,15	1257	683	574	144	146	64	
6Z631 05-L6W	11	1,15	1366	723	643	144	146	69	
6Z631 06-L6W	13	1,15	1475	763	712	144	146	75	
6Z631 07-L6W	15	1,15	1614	833	781	144	146	84	
6Z631 08-L6W	18,5	1,15	1753	903	850	144	146	94	
6Z631 09-L6W	18,5	1,15	1822	903	919	144	146	95	
6Z631 10-L6W	22	1,15	1931	943	988	144	146	100	
6Z631 11-L6W	22	1,15	2000	943	1057	144	146	101	
6Z631 12-L6W	26	1,15	2197	1071	1126	144	146	112	
6Z631 13-L6W	26	1,15	2266	1071	1195	144	146	113	
6Z631 14-L6W	30	1,15	2415	1151	1264	144	146	123	
6Z631 15-L6W	30	1,15	2484	1151	1333	144	146	125	
6Z631 16-L6W	37	1,15	2703	1301	1402	144	146	140	
6Z631 17-L6W	37	1,15	2772	1301	1471	144	146	142	
6Z631 18-L6W	37	1,15	2841	1301	1540	144	146	143	
6Z631 19-L6W	37	1,15	2910	1301	1609	144	146	145	

6z631-1-60-en_a_td

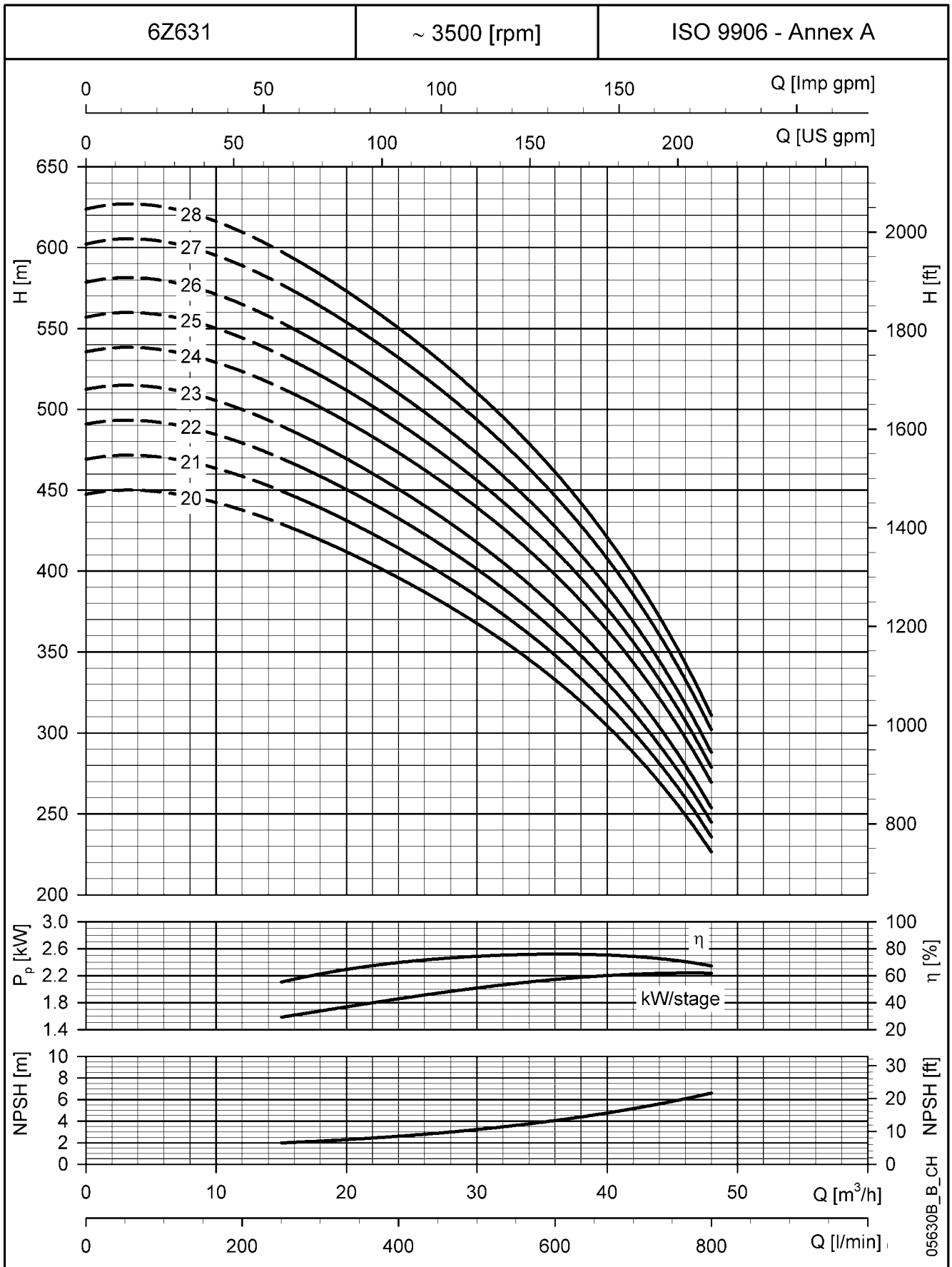


05604_A_DD

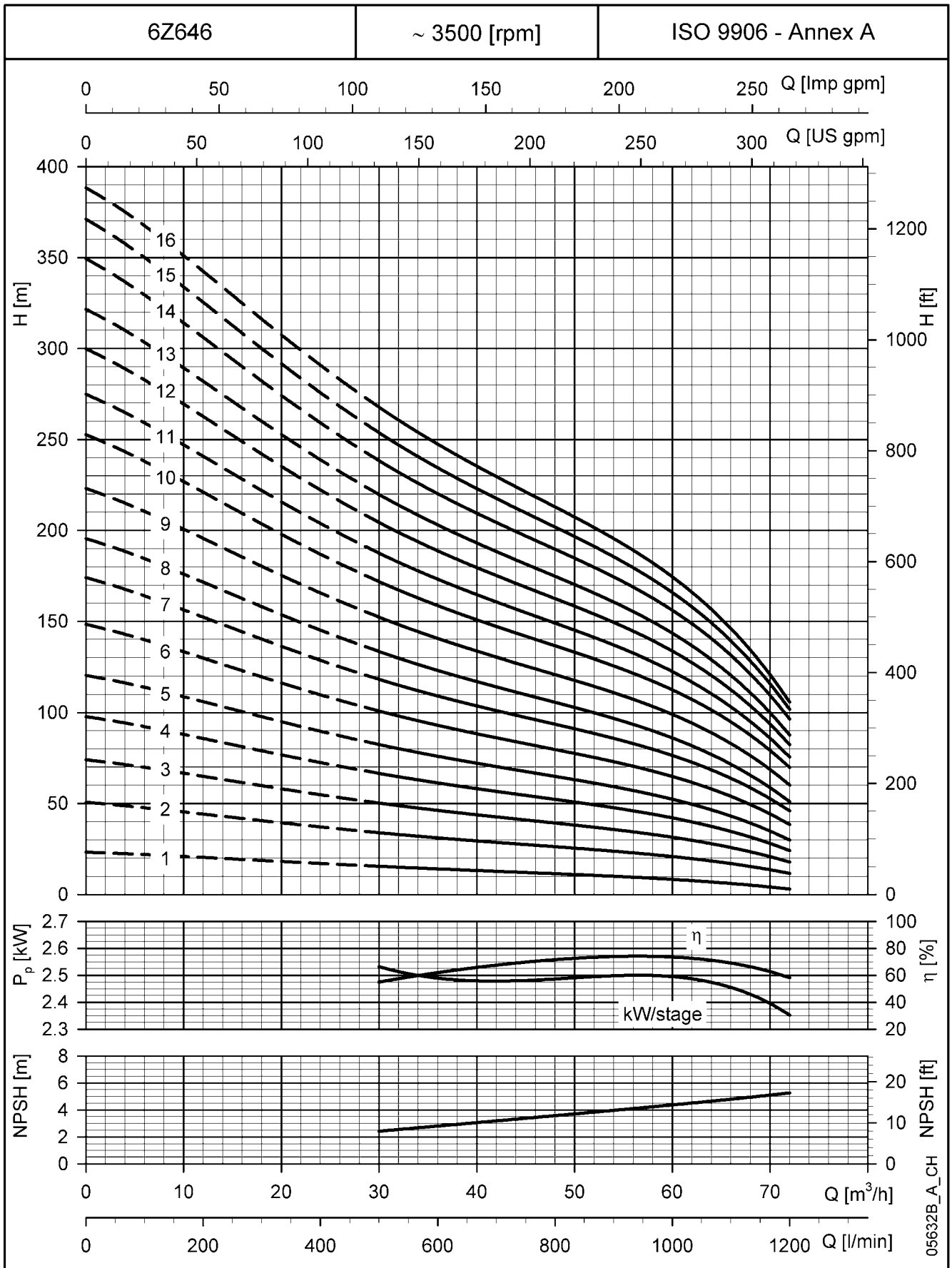
**6Z631 SERIES, 1 TO 19 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z631 SERIES, 20 TO 28 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**

 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z646 SERIES, 1 TO 16 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z646 SERIES, 17 TO 24 STAGES OPERATING CHARACTERISTICS AT 60 Hz

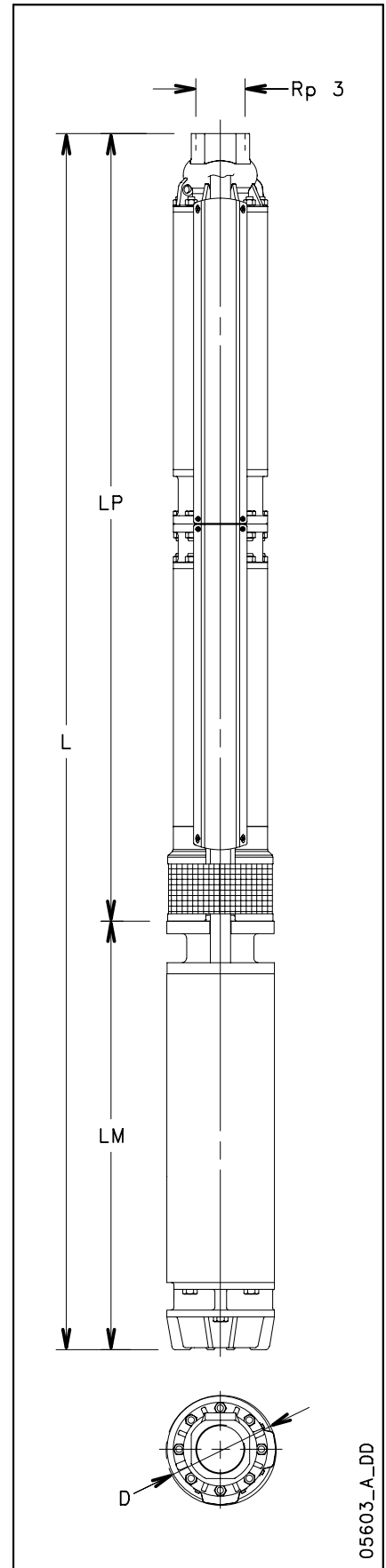
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	500	600	800	1000	1200
			m ³ /h	0	30	36	48	60	72
kW		S.F.	H = TOTAL HEAD METRES COLUMN OF WATER						
6Z646 17D	45	1,15	427,0	290,8	268,7	231,7	191,1	119,1	
6Z646 18D	45	1,15	449,2	306,3	283,1	244,1	201,0	124,5	
6Z646 19D	45	1,15	471,2	321,6	297,3	256,2	210,8	129,7	
6Z646 20D	52	1,15	501,5	341,4	315,5	272,1	224,4	139,5	
6Z646 21D	52	1,15	523,6	356,8	329,8	284,5	234,4	144,8	
6Z646 22D	52	1,15	545,3	372,2	344,1	296,6	244,2	150,3	
6Z646 23D	52	1,15	567,1	387,5	358,2	308,8	253,8	155,3	
6Z646 24D	55	1,15	591,8	406,3	375,6	324,0	266,8	164,6	

6z646-2-60-en_a_th

DIMENSIONS AND WEIGHTS

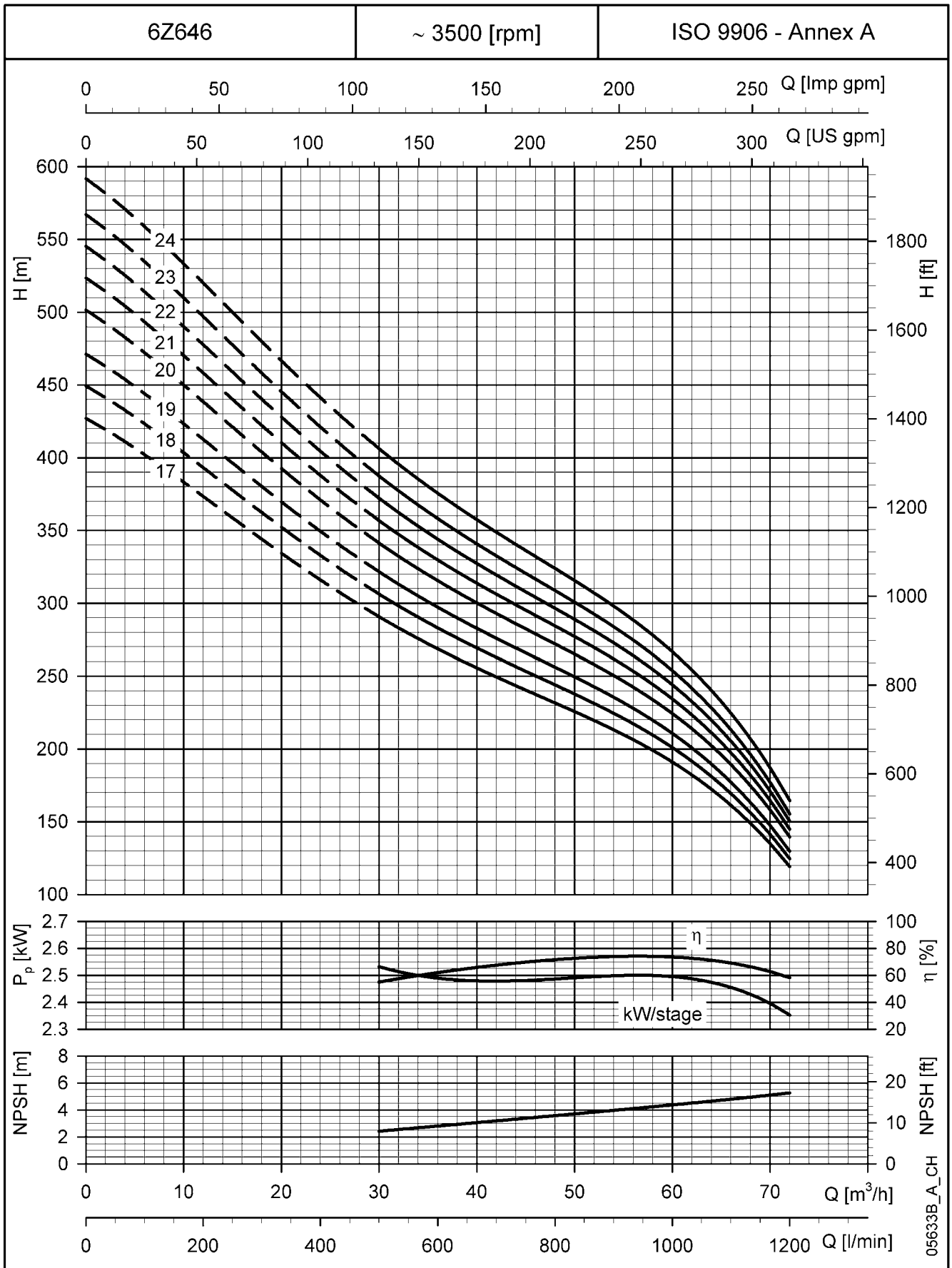
ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)						WEIGHT Kg
			L	LM	LP	ø D			
						1 Cable	2 Cables		
6Z646 17D-L8W	45	1,15	3759	1195	2564	193	195	278	
6Z646 18D-L8W	45	1,15	3759	1195	2564	193	195	279	
6Z646 19D-L8W	45	1,15	3759	1195	2564	193	195	281	
6Z646 20D-L8W	52	1,15	4672	1287	3385	193	195	325	
6Z646 21D-L8W	52	1,15	4672	1287	3385	193	195	326	
6Z646 22D-L8W	52	1,15	4672	1287	3385	193	195	328	
6Z646 23D-L8W	52	1,15	4672	1287	3385	193	195	329	
6Z646 24D-L8W	55	1,15	4710	1325	3385	193	195	336	

6z646-2-60-en_a_td



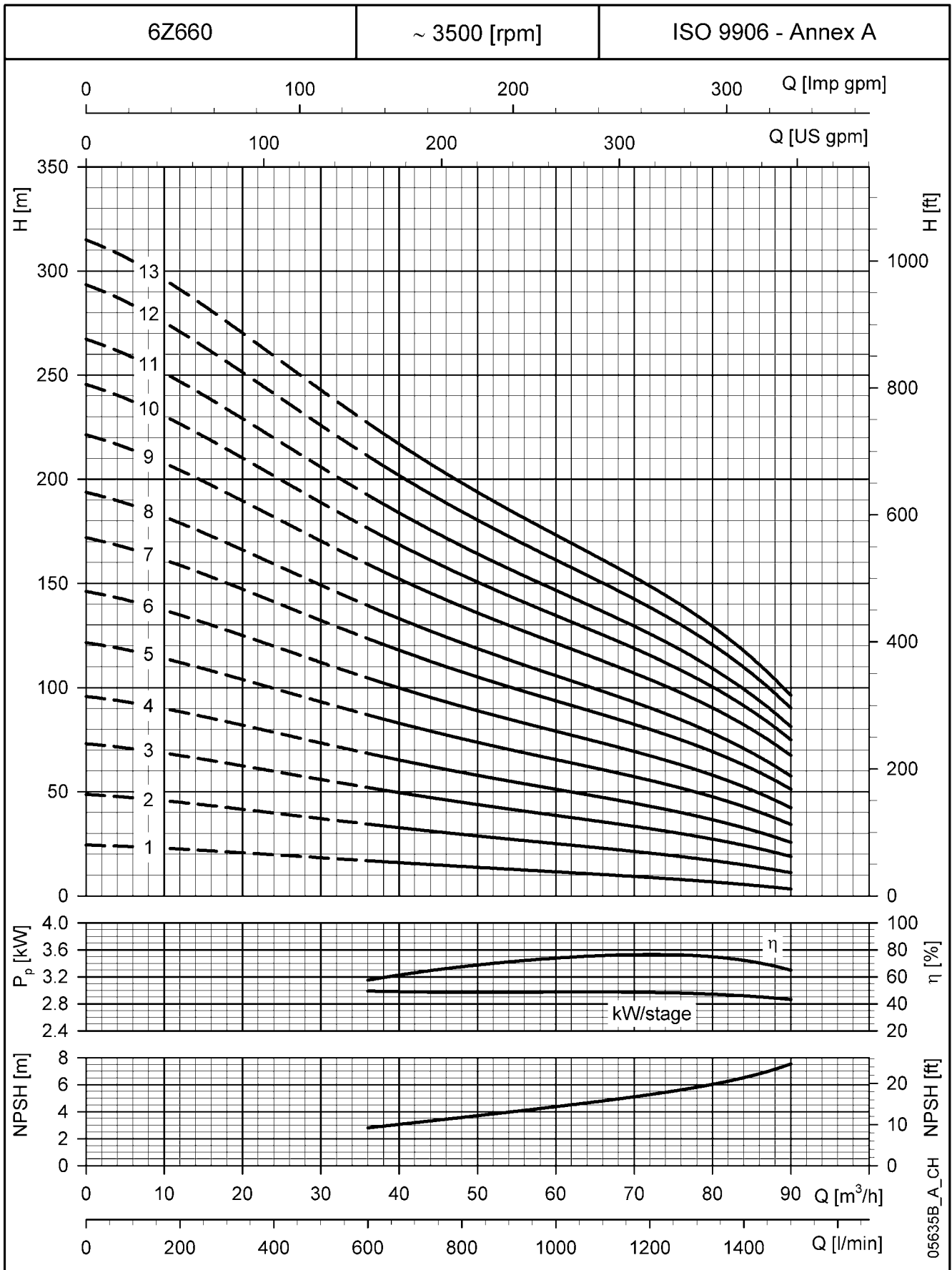
05603_A_DD

**6Z646 SERIES, 17 TO 24 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

**6Z660 SERIES, 1 TO 13 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

6Z660 SERIES, 14 TO 20 STAGES OPERATING CHARACTERISTICS AT 60 Hz

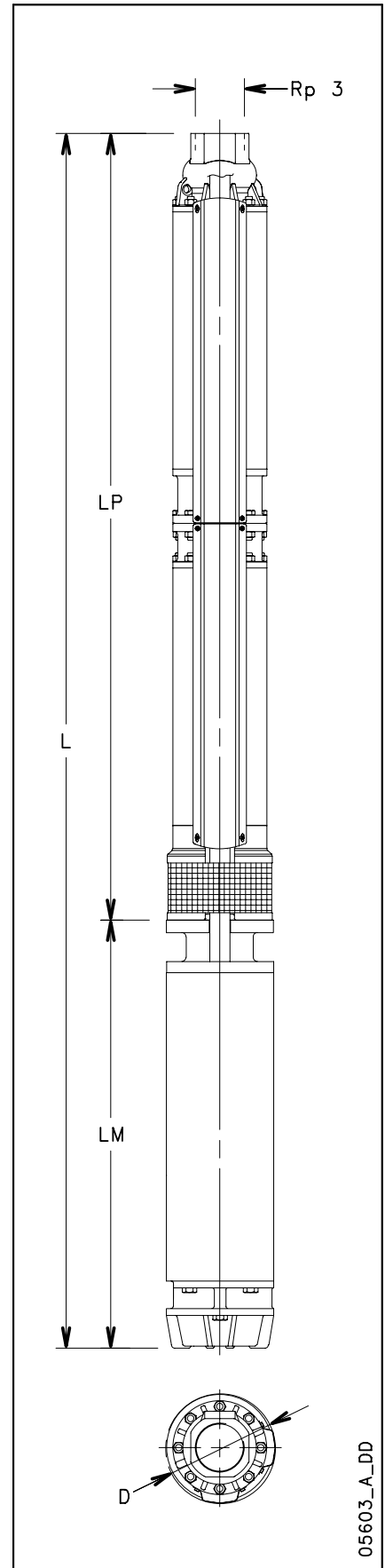
PUMP TYPE	RATED POWER		Q = DELIVERY						
			l/min	0	600	750	1000	1250	1500
			m ³ /h	0	36	45	60	75	90
kW		S.F.	H = TOTAL HEAD METRES COLUMN OF WATER						
6Z660 14D	45	1,15	345,2	248,4	224,5	190,1	156,4	107,9	
6Z660 15D	45	1,15	367,5	264,5	239,0	202,4	166,4	114,4	
6Z660 16D	45	1,15	389,5	280,4	253,4	214,5	176,2	120,7	
6Z660 17D	52	1,15	417,2	300,2	271,4	230,0	189,2	130,5	
6Z660 18D	52	1,15	439,5	316,3	285,9	242,2	199,2	136,8	
6Z660 19D	52	1,15	461,2	332,1	300,2	254,3	208,9	143,0	
6Z660 20D	55	1,15	486,3	351,0	317,4	268,9	221,3	152,3	

6Z660-2-60-en_a_th

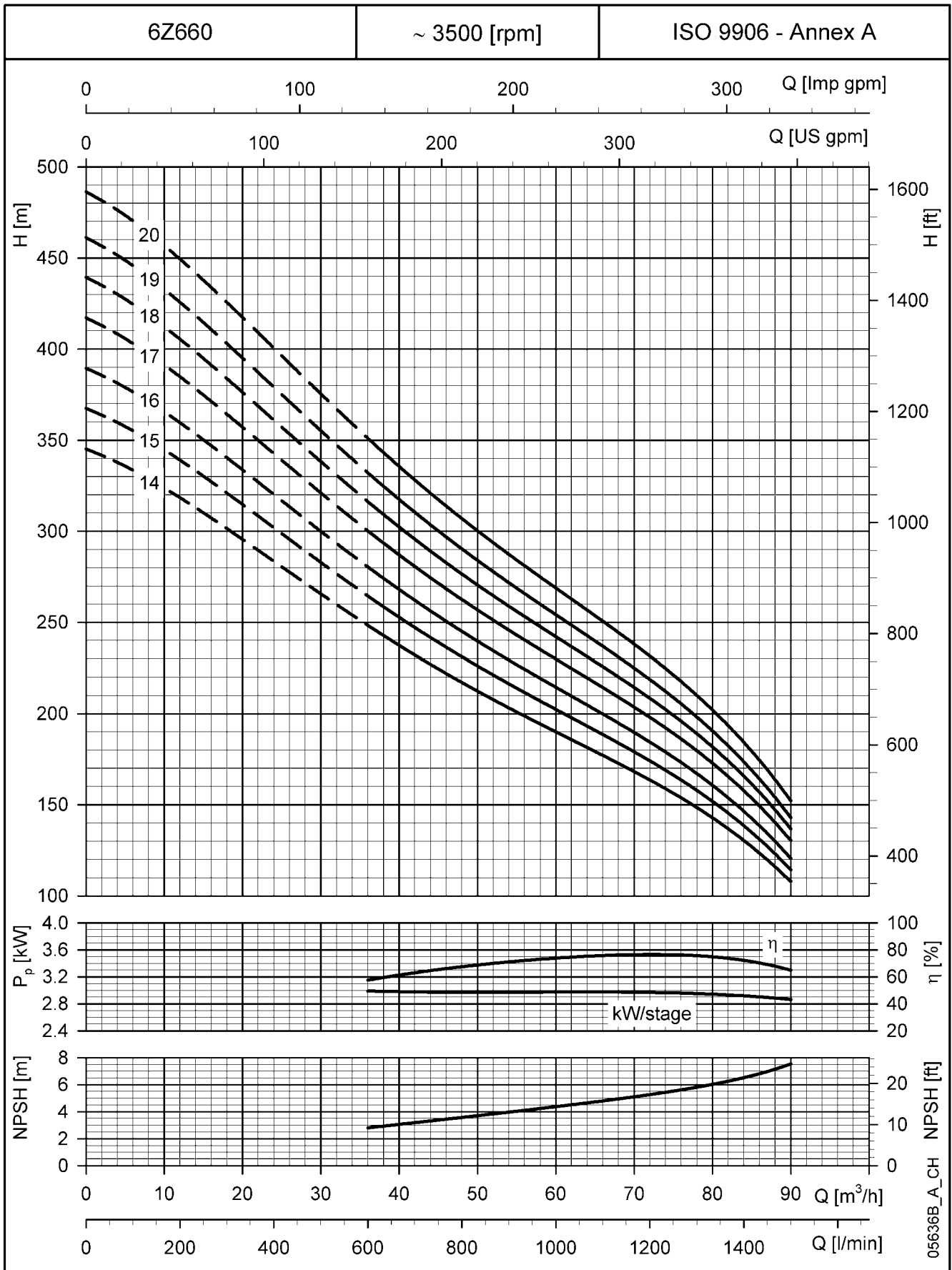
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER		DIMENSIONS (mm)						WEIGHT Kg
			L	LM	LP	ø D			
						1 Cable	2 Cables		
6Z660 14D-L8W	45	1,15	3299	1195	2104	193	195	262	
6Z660 15D-L8W	45	1,15	3299	1195	2104	193	195	263	
6Z660 16D-L8W	45	1,15	3759	1195	2564	193	195	277	
6Z660 17D-L8W	52	1,15	3849	1285	2564	193	195	298	
6Z660 18D-L8W	52	1,15	3849	1285	2564	193	195	299	
6Z660 19D-L8W	52	1,15	3849	1285	2564	193	195	301	
6Z660 20D-L8W	55	1,15	4710	1325	3385	193	195	331	

6Z660-2-60-en_a_td



**6Z660 SERIES, 14 TO 20 STAGES
OPERATING CHARACTERISTICS AT 60 Hz**



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

4" Submersible motors

Submersible liquid-cooled motors. The choice of component materials ensures optimum operating performances, superior quality, reliability and ease of installation.

4OS Series 60 Hz



SPECIFICATIONS

- **Stainless steel** outer sleeve.
- Shaft extension and coupling dimensions to **NEMA** standards.
- **Rewindable stator.**
- Class **F insulation.**
- Protection class: **IP68.**
- **Internal fluid** according to standards for oils in contact with foodstuffs (F.D.A. - FOOD AND DRUG ADMINISTRATION).
- Compensating bellows for internal liquid expansion.
- Axial load supported by angular bearings.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth:** 150 m.
- Maximum **number of starts per hour** at regular intervals: 30 for direct start; 20 for impedance start.
- Maximum supply **voltage variations** allowed : 220V -6%; 230V +6%. 380V ±10%.
- Maximum water **temperature** : 35°C. Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket of at least 0,08 m/s.
- Water **pH:** 4÷8.
- **Axial thrust:** 3000 N from 0,37 to 2,2 kW; 6500 N from 3 to 7,5 kW.
- **Extractable supply cable** fitted with watertight connector.
- **Versions:**
 - Single-phase: 0,37 to 2,2 kW 220-230 V, 60 Hz
 - Three-phase: 0,37 to 7,5 kW 220-230 V, 60 Hz 0,37 to 7,5 kW 380 V, 60 Hz.
- Horizontal operation up to 2,2 kW.
- Inverter applications.

OPTIONAL FEATURES

- Special voltages.

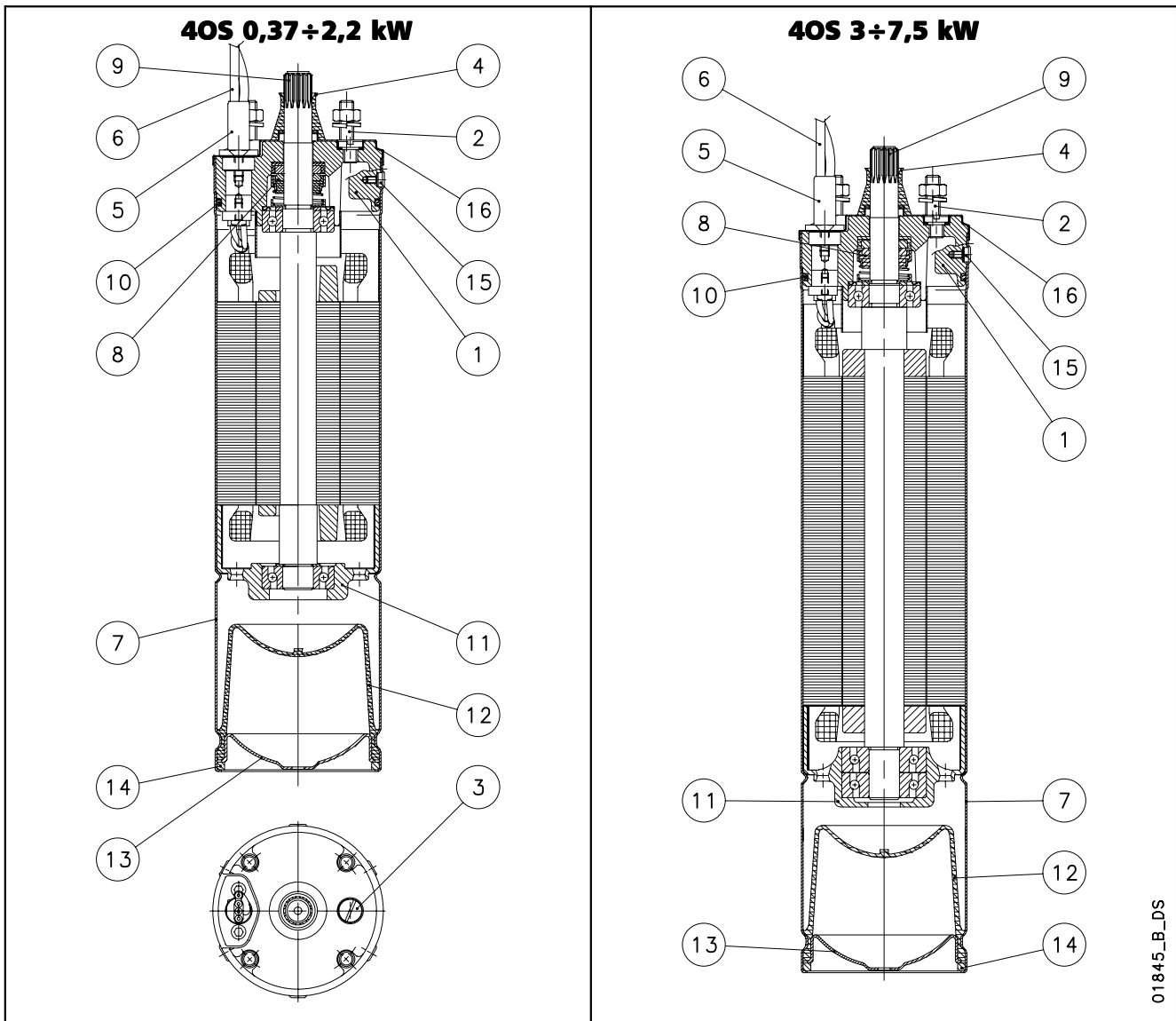
Rewindable stator

Liquid suitable for use with foodstuffs (complies with FDA)

High starting torque

Power supply cable with extractable connector

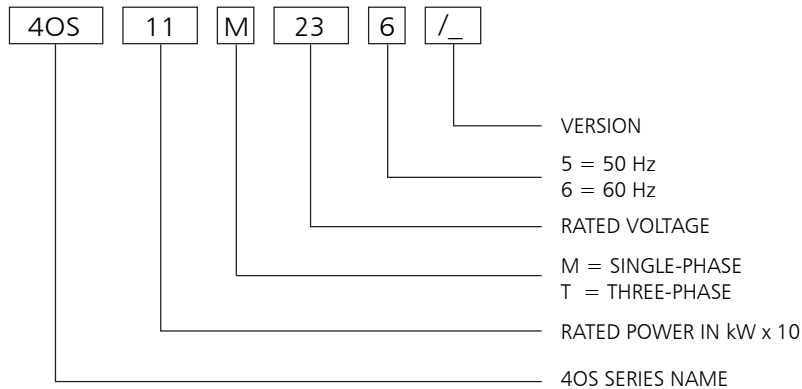
40S MOTOR SERIES MOTOR CROSS SECTION AND TABLE OF MATERIALS



01845_B_DS

REF. N.	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Head	Cast iron	UNI EN 5007 G20	ASTM A159-70-G3500
2	Studs	Stainless steel	EN 10088-3-X5CrNi18-10 (1.4301)	AISI 304
3	Filling screw	Brass	EN12165-CuZn40Pb2 (CW617N)	
4	Sand guard	NBR		
5	Connector sleeve	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
6	Cable	Epdm		
7	Outer sleeve	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
8	Mechanical seal	Carbon / Ceramic		
9	Shaft end for P ≤ 2.2 kW	Stainless steel	EN 10088-3-X8CrNiS18-9 (1.4305)	AISI 303
	Shaft end for 3 ≤ P ≤ 7.5 kW	Stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	ASTM A 182: F51
10	Elastomers	NBR		
11	Lower bracket	Cast iron	UNI EN 5007 G20	ASTM A159-70-G3500
12	Compensating diaphragm	NBR		
13	Lower protection	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
14	Snap ring	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
15	Screws, nuts, washers	Stainless steel	EN 10088-3-X5CrNi18-10 (1.4301)	AISI 304
16	Upper cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
	Cooling liquid	Non toxic oil		

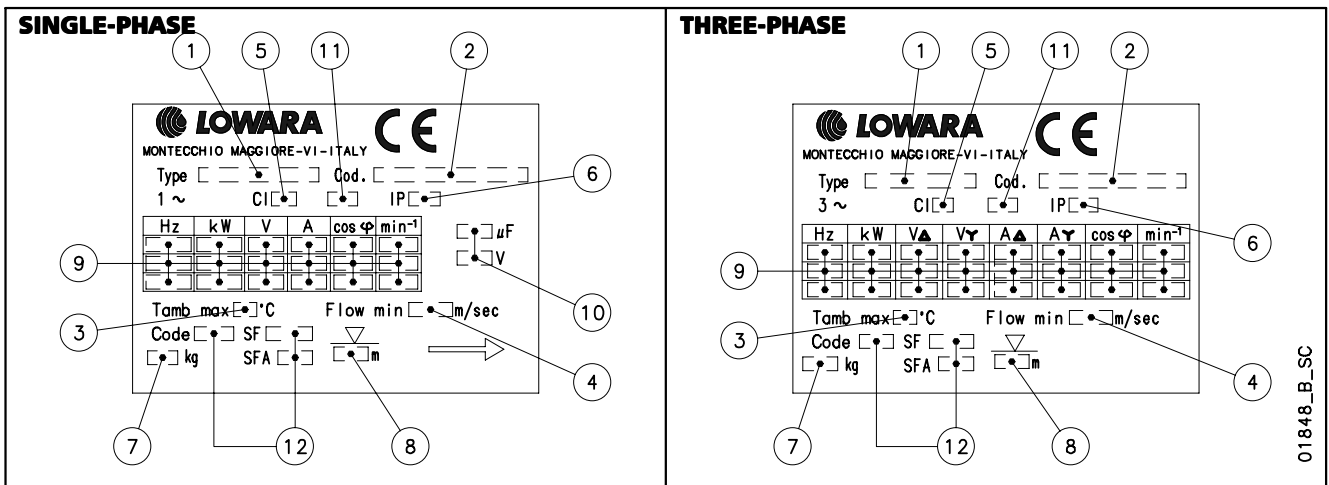
40S MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : 40S11M236/C

40S MOTOR :
RATED POWER 1,1 kW; SINGLE-PHASE;
RATED VOLTAGE 230 V; 60 Hz; /C VERSION.

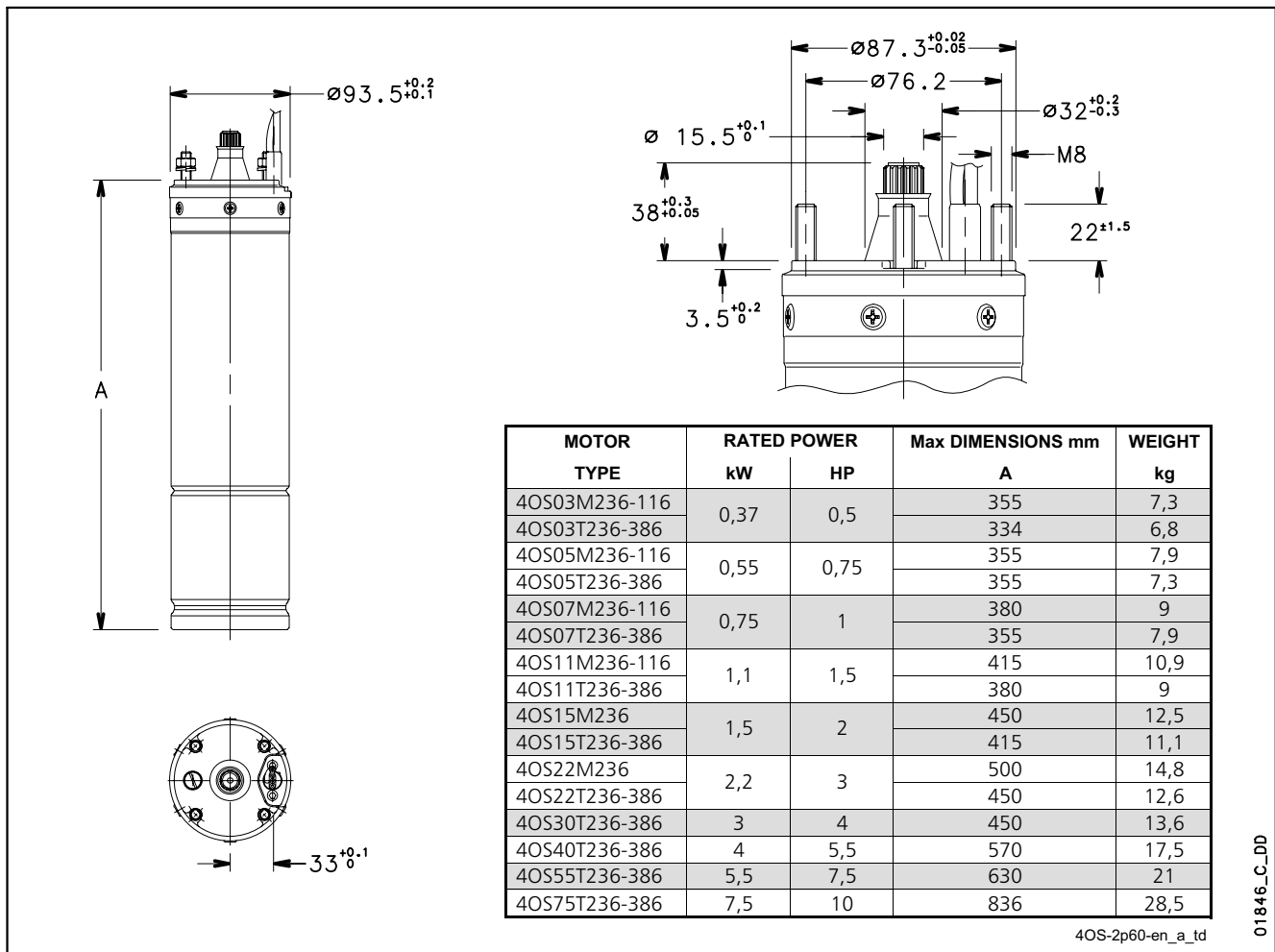
RATING PLATE



LEGEND

- | | |
|---|--|
| <ul style="list-style-type: none"> 1 - Motor type 2 - Code 3 - Maximum water temperature 4 - Minimum water velocity 5 - Insulation class 6 - Protection class | <ul style="list-style-type: none"> 7 - Weight 8 - Maximum immersion depth 9 - Operating characteristics 10 - Capacitor type 11 - Service type 12 - Characteristics at service factor |
|---|--|

4OS MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



4OS-2p60-en_a_td

SINGLE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	CAPACITOR	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT ON-LINE STARTING			SERVICE FACTOR	SERVICE FACTOR AMPS	MAX WATER TEMP.	CABLE TYPE		
	kW	HP			V	μF	V	A	rpm	η %	cosφ				Is/In	Ts/Tn	Tmax/Tn
4OS03M236	0,37	0,5	220	20	450	3,40	3495	49,7	0,99	4,00	1,23	2,98	1,6	4,50	35	4x1.5	1,75
			230			3,45	3500	47,4	0,98	4,13	1,35	3,26		4,42			
4OS05M236	0,55	0,75	220	25	450	4,66	3445	54,3	0,99	3,26	0,84	2,26	1,5	6,23	35	4x1.5	1,75
			230			4,73	3460	52,2	0,97	3,36	0,92	2,47		6,00			
4OS07M236	0,75	1	220	35	450	5,87	3460	59,8	0,97	3,85	0,74	2,47	1,4	7,41	35	4x1.5	1,75
			230			6,09	3470	56,9	0,94	3,88	0,82	2,72		7,36			
4OS11M236	1,1	1,5	220	40	450	7,61	3450	66,2	0,99	3,64	0,79	2,27	1,3	9,34	35	4x1.5	1,75
			230			7,48	3460	64,4	0,99	3,87	0,87	2,49		9,05			
4OS15M236	1,5	2	220	50	450	10,1	3435	67,8	0,99	3,90	0,63	2,26	1,25	12,2	35	4x1.5	1,75
			230			10,1	3445	66,1	0,97	4,08	0,70	2,49		11,9			
4OS22M236	2,2	3	220	50	450	15,2	3405	70,5	0,93	3,14	0,50	1,79	1,15	17,1	35	4x1.5	2,5
			230			15,7	3420	68,2	0,90	3,18	0,55	1,97		17,1			
4OS03M116	0,37	0,5	110	80	250	6,81	3495	49,8	0,99	4,00	1,23	2,97	1,6	9,02	35	4x1.5	1,75
			115			6,91	3500	47,5	0,98	4,22	1,36	3,32		8,86			
4OS05M116	0,55	0,75	110	100	250	9,68	3480	53,4	0,98	3,63	0,63	2,72	1,5	12,3	35	4x1.5	1,75
			115			10,2	3490	49,9	0,94	3,54	0,67	2,98		12,3			
4OS07M116	0,75	1	110	140	250	11,5	3480	60,7	0,98	4,05	0,56	2,94	1,4	14,5	35	4x1.5	1,75
			115			11,9	3490	57,8	0,95	4,06	0,59	3,02		14,3			
4OS11M116	1,1	1,5	110	160	250	20,1	3465	69,1	0,99	4,05	0,46	2,37	1,3	18,1	35	4x1.5	1,75
			115			14,5	3475	67,3	0,98	4,46	0,49	2,57		17,7			

Ts/Tn = ratio between starting torque and nominal torque.

Tmax/Tn = ratio between maximum torque and nominal torque.

4osm-2p60-en_b_te

40S MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT ON-LINE STARTING			SERVICE FACTOR SF	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE	
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn	Tmax/Tn				N x A mm ²	L m
40S03T236	0,37	0,5	220	2,68	3485	58,5	0,62	6,40	5,71	4,73	1,6	3,17	35	4x1.5	1,75
			230	2,93	3495	56,4	0,56	6,19	6,33	5,25					
40S05T236	0,55	0,75	220	3,26	3430	62,3	0,71	5,52	4,40	3,22	1,5	4,00	35	4x1.5	1,75
			230	3,45	3450	61,1	0,65	5,48	4,91	3,59					
40S07T236	0,75	1	220	4,54	3450	66,3	0,66	5,58	4,23	3,27	1,4	5,21	35	4x1.5	1,75
			230	5,01	3465	63,7	0,59	5,32	4,69	3,62					
40S11T236	1,1	1,5	220	5,66	3425	71,5	0,72	5,45	3,80	2,89	1,3	6,53	35	4x1.5	1,75
			230	6,06	3445	70,1	0,65	5,37	4,24	3,22					
40S15T236	1,5	2	220	7,45	3430	74,4	0,71	5,73	3,64	3,01	1,25	8,40	35	4x1.5	1,75
			230	7,98	3445	72,6	0,65	5,62	4,05	3,35					
40S22T236	2,2	3	220	10,8	3425	75,7	0,71	5,53	3,63	2,90	1,15	11,6	35	4x1.5	2,5
			230	11,9	3440	72,6	0,64	5,32	4,04	3,22					
40S30T236	3	4	220	13,2	3455	76,3	0,79	5,41	2,44	2,79	1,15	14,5	35	4x1,5	2,5
			230	13,8	3470	75,7	0,72	5,46	2,72	3,11					
40S40T236	4	5,5	220	15,7	3435	78,9	0,85	5,85	1,81	2,70	1,15	17,7	35	4x1.5	2,5
			230	15,7	3455	78,8	0,81	6,17	2,02	3,01					
40S55T236	5,5	7,5	220	21,4	3415	78,6	0,86	5,48	1,63	2,51	1,15	24,4	35	4x2.5	2,5
			230	21,2	3440	78,5	0,83	5,81	1,82	2,79					
40S75T236	7,5	10	220	33,5	3460	78,7	0,75	6,28	2,53	3,41	1,15	36,8	35	4x2.5	4
			230	35,4	3475	77,6	0,68	6,26	2,81	3,79					
40S03T386	0,37	0,5	380	1,55	3485	58,5	0,62	6,40	5,71	4,73	1,6	1,83	35	4x1.5	1,75
40S05T386	0,55	0,75	380	1,88	3430	62,3	0,71	5,52	4,40	3,22	1,5	2,31	35	4x1.5	1,75
40S07T386	0,75	1	380	2,62	3450	66,3	0,66	5,58	4,23	3,27	1,4	3,01	35	4x1.5	1,75
40S11T386	1,1	1,5	380	3,27	3425	71,5	0,72	5,45	3,80	2,89	1,3	3,77	35	4x1.5	1,75
40S15T386	1,5	2	380	4,30	3430	74,4	0,71	5,73	3,64	3,01	1,25	4,85	35	4x1.5	1,75
40S22T386	2,2	3	380	6,25	3425	75,7	0,71	5,53	3,63	2,90	1,15	6,69	35	4x1.5	2,5
40S30T386	3	4	380	7,61	3455	76,3	0,79	5,41	2,44	2,79	1,15	8,35	35	4x1,5	2,5
40S40T386	4	5,5	380	9,05	3435	78,9	0,85	5,85	1,81	2,70	1,15	10,2	35	4x1.5	2,5
40S55T386	5,5	7,5	380	12,3	3415	78,6	0,86	5,48	1,63	2,51	1,15	14,1	35	4x1.5	2,5
40S75T386	7,5	10	380	19,4	3460	78,7	0,75	6,28	2,53	3,41	1,15	21,2	35	4x1.5	4

Ts/Tn = ratio between starting torque and nominal torque.

Tmax/Tn = ratio between maximum torque and nominal torque.

4ost-2p60-en_b_te

4" Submersible motors

L4C Series 60 Hz



Submersible canned motors.
The choice of component materials ensures optimum operating performances, superior quality, reliability and ease of installation.

SPECIFICATIONS

- **Stainless steel** outer sleeve.
- Shaft extension and coupling dimensions to **NEMA** standards.
- Class **F insulation**.
- Protection class: **IP68**.
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Lip seal** protected by sand guard.
- Maximum **immersion depth**: 300 m.
- Maximum **number of starts per hour** at regular intervals:
40 for direct start;
20 for impedance start.
- Maximum supply **voltage variations** allowed : $\pm 6\%$.
- Maximum water **temperature**: 35°C.
Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket of at least 0,3 m/s.
- **Axial thrust**:
2000 N from 0,37 to 1,1 kW;
3000 N from 1,5 to 2,2 kW;
6000 N from 3 to 7,5 kW.
- **Extractable supply cable** fitted with watertight connector.
- **Versions**:
- Single-phase:
0,37 to 3,7 kW 220-230 V, 60 Hz
0,37 to 0,75 kW 110-115 V, 60 Hz
(0,37 to 0,75 kW with built in automatic reset overload protection).
- Three-phase:
0,37 to 5,5 kW 220-230 V, 60 Hz
0,37 to 7,5 kW 380 V, 60 Hz.
- Can also operate in horizontal position, provided that the associated pump can apply an axial thrust of at least 100 N on the entire operating field.

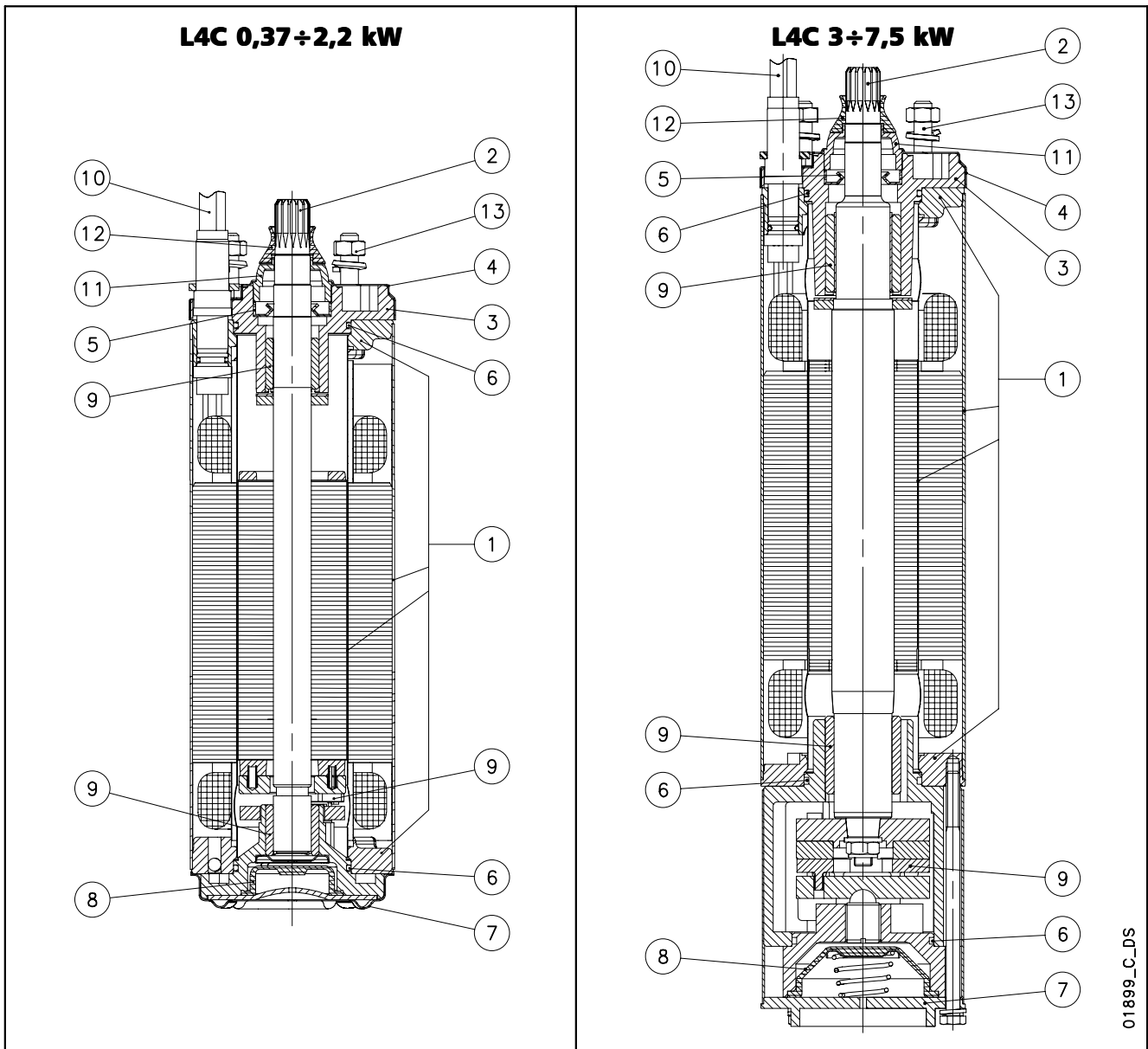
OPTIONAL FEATURES

- Special voltages.
- Inverter applications.

High starting torque

Power supply cable with extractable connector

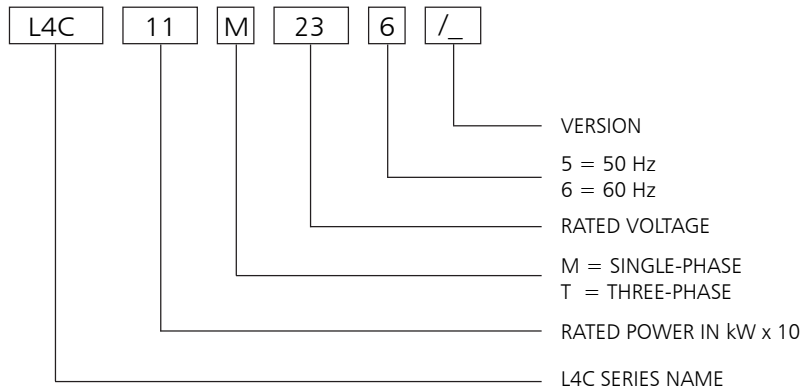
L4C MOTOR SERIES MOTOR CROSS SECTION AND TABLE OF MATERIALS



01899_C_DS

REF N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Inner, outer sleeves and flanges	Stainless steel	EN 10088-1-X2CrNi18-9 (1.4307)	AISI 304L
2	Shaft extension (up to 2.2 kW)	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
	Shaft extension (from 3 kW)	Stainless steel	EN 10088-3-X3CrNiMoN27 (1.4460)	AISI 329
3	Upper bracket	Cast iron	EN-GJL-200 EN 1561	Class 25 B
4	Upper cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
5	Lip seal	NBR		
6	Elastomers	NBR		
7	Lower cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
8	Compensating bellows	EPDM		
9	Bearings	Carbon-graphite		
10	Cable	EPDM		
11	Fixed sand guard	Nylon		
12	Removable sand guard	NBR		
13	Bolts and screws	Stainless steel	UNI EN ISO 3506-1 Grade A2	
	Cooling liquid	Demineralized water + antifreeze		

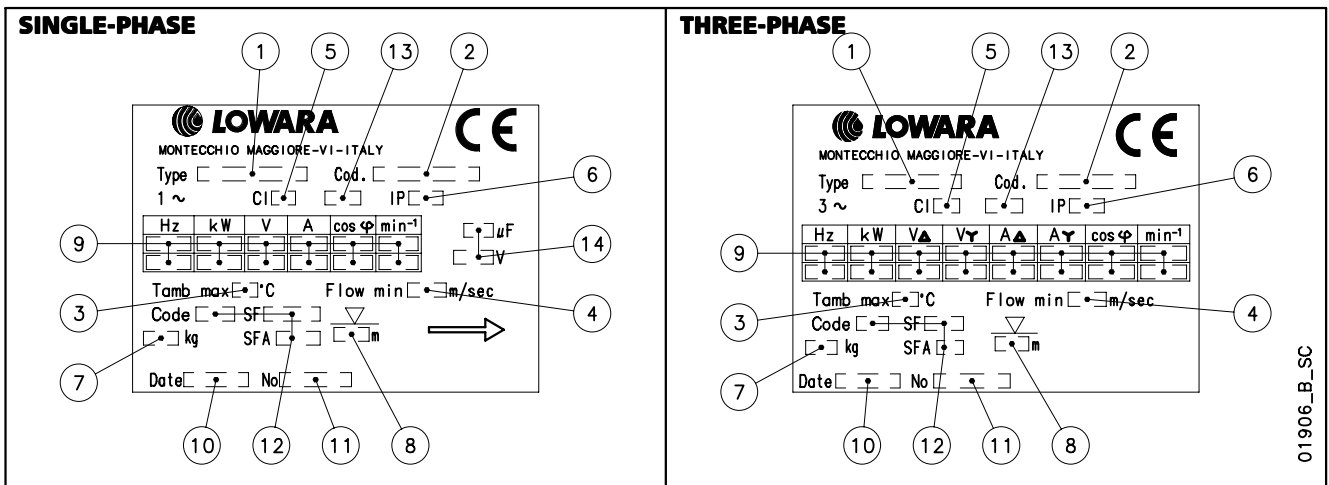
L4C MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L4C11M236

L4C MOTOR :
RATED POWER 1,1 kW; SINGLE-PHASE;
RATED VOLTAGE 230 V; 60 Hz.

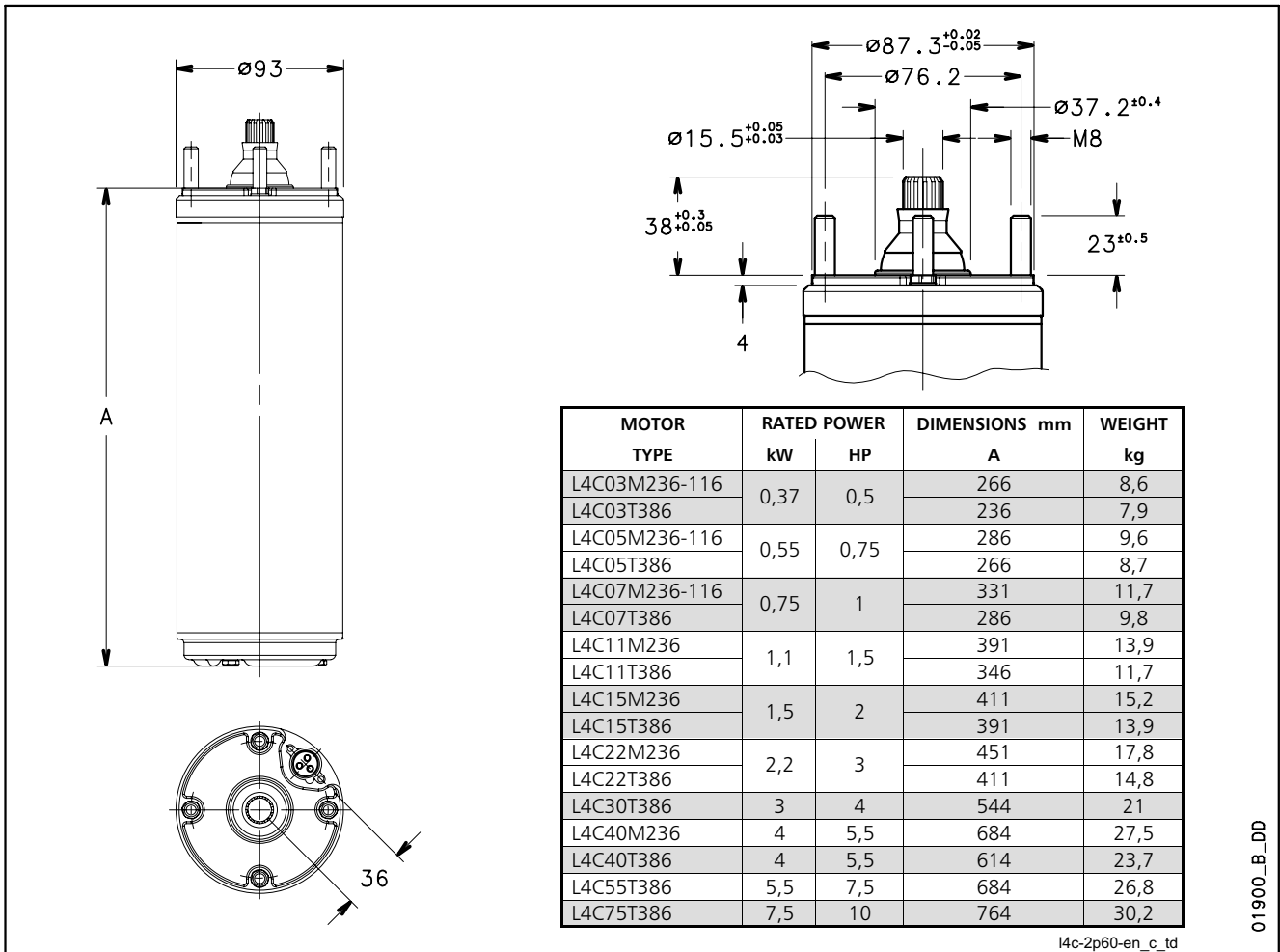
RATING PLATE



LEGEND

- | | |
|-------------------------------|--|
| 1 - Motor type | 8 - Maximum immersion depth |
| 2 - Code | 9 - Operating characteristics |
| 3 - Maximum water temperature | 10 - Production date |
| 4 - Minimum water velocity | 11 - Serial number |
| 5 - Insulation class | 12 - Characteristics at service factor |
| 6 - Protection class | 13 - Service type |
| 7 - Weight | 14 - Capacitor type |

L4C MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



l4c-2p60-en_c_tld

SINGLE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		SERVICE FACTOR	RATED VOLTAGE	CAPACITOR		OPERATING CHARACTERISTICS AT FULL (S.F.) POWER				DIRECT STARTING	MAX WATER TEMPERATURE °C	CABLE TYPE		
	kW	HP			μF	V	A	rpm	η %	cosφ			Ts/Tn*	Is/In	Nc x sec mm ²
L4C03M236	0,37	0,5	1,6	220	20	450	5,3	3460	55,0	0,93	0,60	4,00	35	4x1.5	1,7
				230			5,5	3480	52,0	0,89	0,65	3,87			
L4C05M236	0,55	0,75	1,5	220	25	450	7,0	3460	60,0	0,89	0,60	3,90	35	4x1.5	1,7
				230			7,4	3485	57,0	0,84	0,65	3,70			
L4C07M236	0,75	1	1,4	220	35	450	8,5	3485	59,0	0,93	0,60	5,00	35	4x1.5	1,7
				230			8,9	3500	57,0	0,89	0,65	4,80			
L4C11M236	1,1	1,5	1,3	220	40	450	12,2	3480	61,0	0,88	0,66	4,30	35	4x1.5	1,7
				230			12,7	3485	58,0	0,84	0,72	4,10			
L4C15M236	1,5	2	1,25	220	50	450	13,1	3430	65,0	0,98	0,60	4,30	35	4x1.5	1,7
				230			12,8	3455	65,0	0,97	0,65	4,60			
L4C22M236	2,2	3	1,15	220	50	450	17,6	3410	68,0	0,96	0,44	3,30	35	4x1.5	1,7
				230			17,1	3420	67,0	0,96	0,48	3,60			
L4C40M236	4	5,5	1,15	220	75	450	30,7	3440	74,0	0,93	0,32	3,80	35	4x2	2,7
				230			29,7	3460	74,0	0,92	0,34	4,10			
L4C03M116	0,37	0,5	1,6	110	80	450	10,6	3460	55,0	0,93	0,60	4,00	35	4x1.5	1,7
				115			11,0	3480	52,0	0,89	0,65	3,87			
L4C05M116	0,55	0,75	1,5	110	100	450	14,0	3460	60,0	0,89	0,60	3,90	35	4x1.5	1,7
				115			14,8	3485	57,0	0,84	0,65	3,70			
L4C07M116	0,75	1	1,4	110	140	450	17,0	3485	59,0	0,93	0,60	5,00	35	4x1.5	1,7
				115			17,8	3500	57,0	0,89	0,65	4,80			

* Ts/Tn = ratio between starting torque and nominal torque.

L4C MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		SERVICE FACTOR	RATED VOLTAGE	OPERATING CHARACTERISTICS AT FULL (S.F.) POWER				DIRECT STARTING		MAX WATER TEMPERATURE °C	CABLE TYPE	
	kW	HP			S. F.	V	A	rpm	η %	cos ϕ		Ts/Tn*	Is/In
L4C03T236	0,37	0,5	1,6	220	3,5	3400	57,0	0,78	3,2	4,6	35	4x1.5	1,7
				230	3,8	3415	51,0	0,76	3,4	5,0			
L4C05T236	0,55	0,75	1,5	220	4,6	3440	58,0	0,82	3,6	5,1	35	4x1.5	1,7
				230	4,8	3450	56,0	0,77	4,0	5,4			
L4C07T236	0,75	1	1,4	220	5,3	3450	69,0	0,74	4,2	5,3	35	4x1.5	1,7
				230	5,6	3460	65,0	0,72	4,8	5,7			
L4C11T236	1,1	1,5	1,3	220	7,5	3450	68,0	0,75	4,1	6,0	35	4x1.5	1,7
				230	7,8	3465	65,0	0,72	4,5	6,6			
L4C15T236	1,5	2	1,25	220	9,4	3470	73,0	0,71	5,0	6,1	35	4x1.5	1,7
				230	9,8	3490	70,0	0,68	5,4	6,7			
L4C22T236	2,2	3	1,15	220	11,5	3450	76,0	0,77	4,8	6,6	35	4x1.5	1,7
				230	12	3470	72,0	0,75	5,2	7,1			
L4C30T236	3	4	1,15	220	16,5	3460	73,0	0,73	4,2	7,2	35	4x1,5	2,7
				230	17,3	3480	72,0	0,70	4,4	7,5			
L4C40T236	4	5,5	1,15	220	18,8	3470	82,0	0,80	4,0	6,8	35	4x2	2,7
				230	19,2	3490	78,0	0,78	4,4	7,4			
L4C55T236	5,5	7,5	1,15	220	25,4	3480	83,0	0,80	3,8	6,9	35	4x2	2,7
				230	26	3500	80,0	0,78	4,2	7,5			
L4C03T386	0,37	0,5	1,6	380	2,3	3415	51,0	0,76	3,2	5,2	35	4x1.5	1,7
L4C05T386	0,55	0,75	1,5	380	2,9	3450	56,0	0,77	3,6	5,8	35	4x1.5	1,7
L4C07T386	0,75	1	1,4	380	3,4	3460	65,0	0,72	4,2	5,8	35	4x1.5	1,7
L4C11T386	1,1	1,5	1,3	380	4,7	3465	65,0	0,72	4,1	6,6	35	4x1.5	1,7
L4C15T386	1,5	2	1,25	380	5,9	3490	70,0	0,68	5,0	6,8	35	4x1.5	1,7
L4C22T386	2,2	3	1,15	380	7,2	3470	72,0	0,75	4,8	7,1	35	4x1.5	1,7
L4C30T386	3	4	1,15	380	9,5	3460	73,0	0,73	4,2	7,2	35	4x1,5	1,7
L4C40T386	4	5,5	1,15	380	11,6	3490	78,0	0,78	4,0	7,5	35	4x1.5	2,7
L4C55T386	5,5	7,5	1,15	380	15,7	3500	80,0	0,78	3,8	7,5	35	4x1.5	2,7
L4C75T386	7,5	10	1,15	380	20	3480	81,0	0,80	3,9	7,1	35	4x2	3,5

* Ts/Tn = ratio between starting torque and nominal torque.

l4ct-2p60-en_d_te

6" Submersible motors

Submersible canned motors. The choice of component materials ensures optimum operating performances, superior quality, reliability and ease of installation.

L6C Series 60 Hz



SPECIFICATIONS

- **Stainless steel** outer sleeve.
- Shaft extension and coupling dimensions to **NEMA** standards.
- Class **F insulation**.
- Protection class: **IP68**.
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth**: 250 m.
- Maximum **number of starts per hour** at regular intervals: 25 for direct start.
- Maximum supply **voltage variations** allowed: $\pm 10\%$.
- Maximum water **temperature**: 35°C.
Max. temperature applies to motors working in an installation capable of delivering a flow of water around the motor jacket of at least 0,2 m/s.

• Axial thrust:

16000 N from 4 to 22 kW;
27000 N from 30 to 37 kW.

• Extractable supply cable

fitted with watertight connector.

• Versions:

- Three-phase:

4 to 22 kW 230 V, 60 Hz.

4 to 37 kW 380 V, 60 Hz.

4 to 37 kW 460 V, 60 Hz.

- Motors with double cable outlet for star/delta start can be supplied upon request.

- Can also operate in horizontal position, provided that the associated pump can apply an axial thrust of at least 250 N on the entire operating field.

- Screws included.

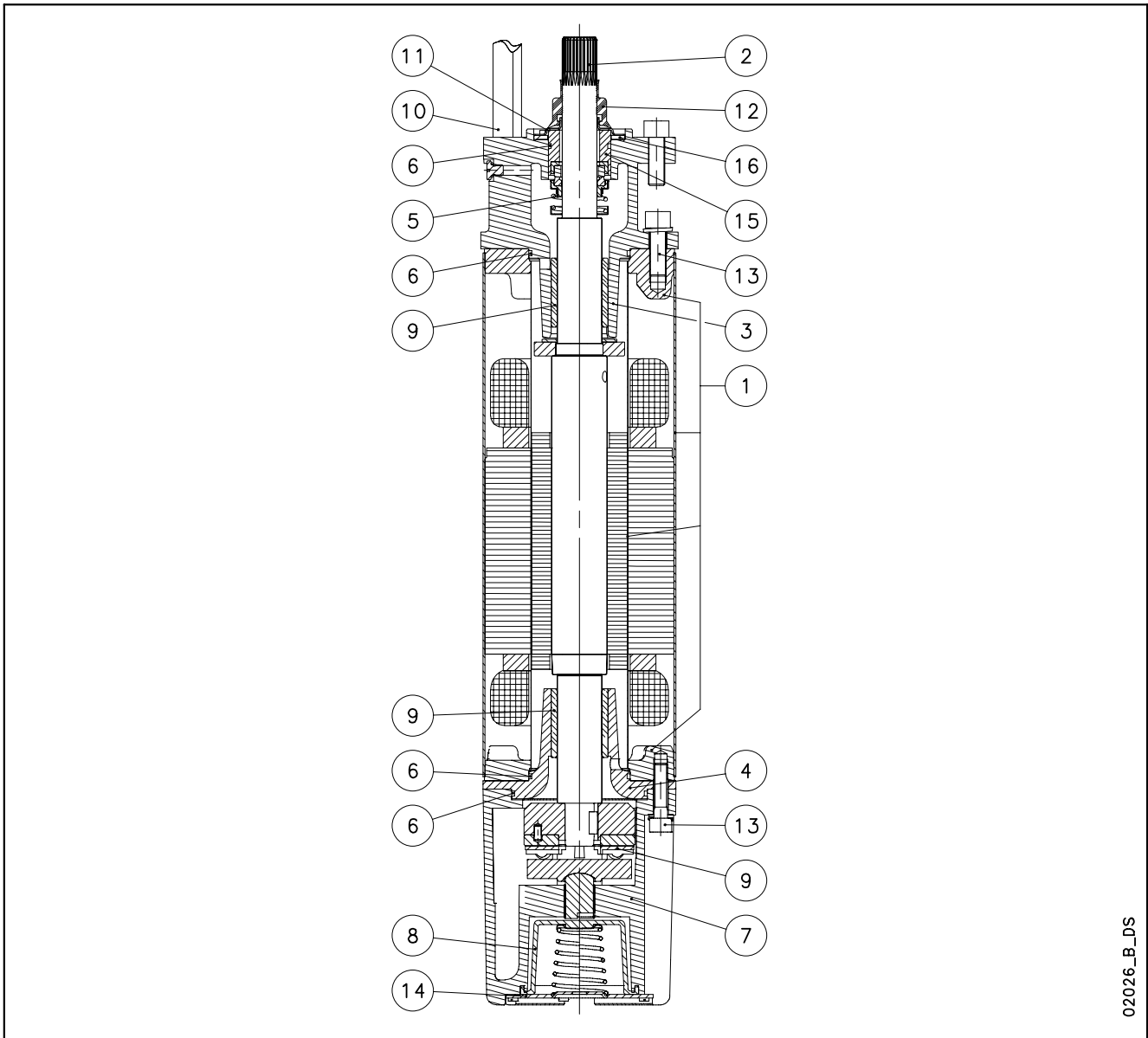
OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.
- Inverter applications.
- Temperature sensor **PT 100 / PTC**.

High starting torque

Power supply cable with extractable connector

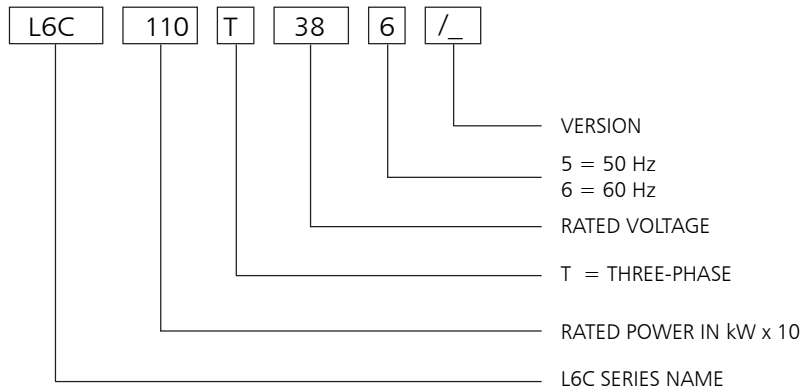
L6C MOTOR SERIES MOTOR CROSS SECTION AND TABLE OF MATERIALS



02026_B_DS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Inner and outer sleeve	Stainless steel	EN 10088-1-X2CrNi18-9 (1.4307)	AISI304L
	Flange	Carbon steel	EN 10025 - S355JR (Fe 510-B)	ASTM A105
2	Shaft extension	Stainless steel (Duplex)	EN 10095 X3CrNiMoN27-5-2 (1.4460)	AISI329
3	Upper bracket	Cast iron	EN-GJL-200	Class 25 B
4	Intermediate bracket	Cast iron	EN-GJL-200	Class 25 B
5	Mechanical seal	Carbon graphite / Aluminium oxide		
6	Elastomers	NBR		
7	Lower bracket	Cast iron	EN-GJL-200	Class 25 B
8	Compensating bellows	NBR		
9	Bearings	Carbon-graphite		
10	Cable	EPDM		
11	Fixed sand guard	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
12	Removable sand guard	NBR		
13	Bolts and screws	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
14	Lower cover	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
15	Mechanical seal spacer	A105 nichel plated		
16	Sand guard gasket	CR neoprene		
	Cooling liquid	Demineralized water + antifreeze		

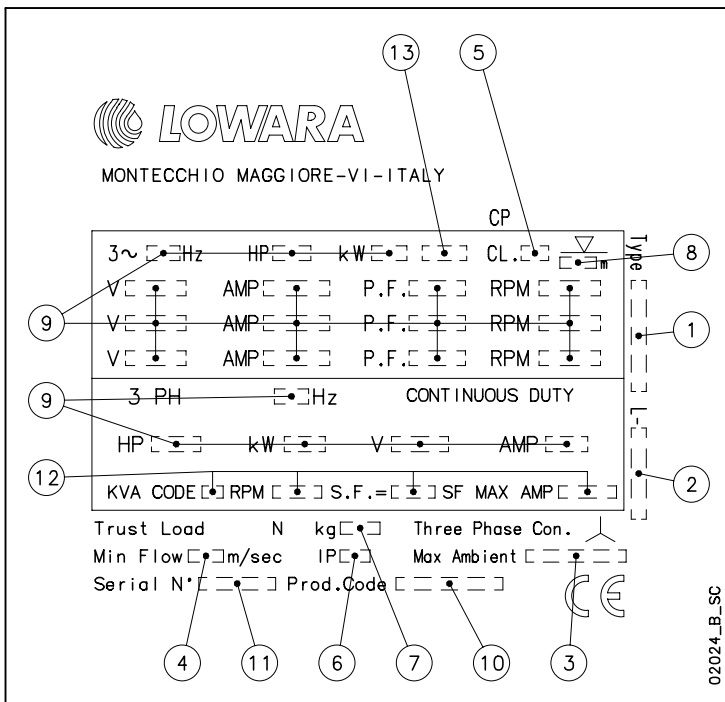
L6C MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L6C110T386

L6C MOTOR :
RATED POWER 11 kW; THREE-PHASE;
RATED VOLTAGE 380 V; 60 Hz.

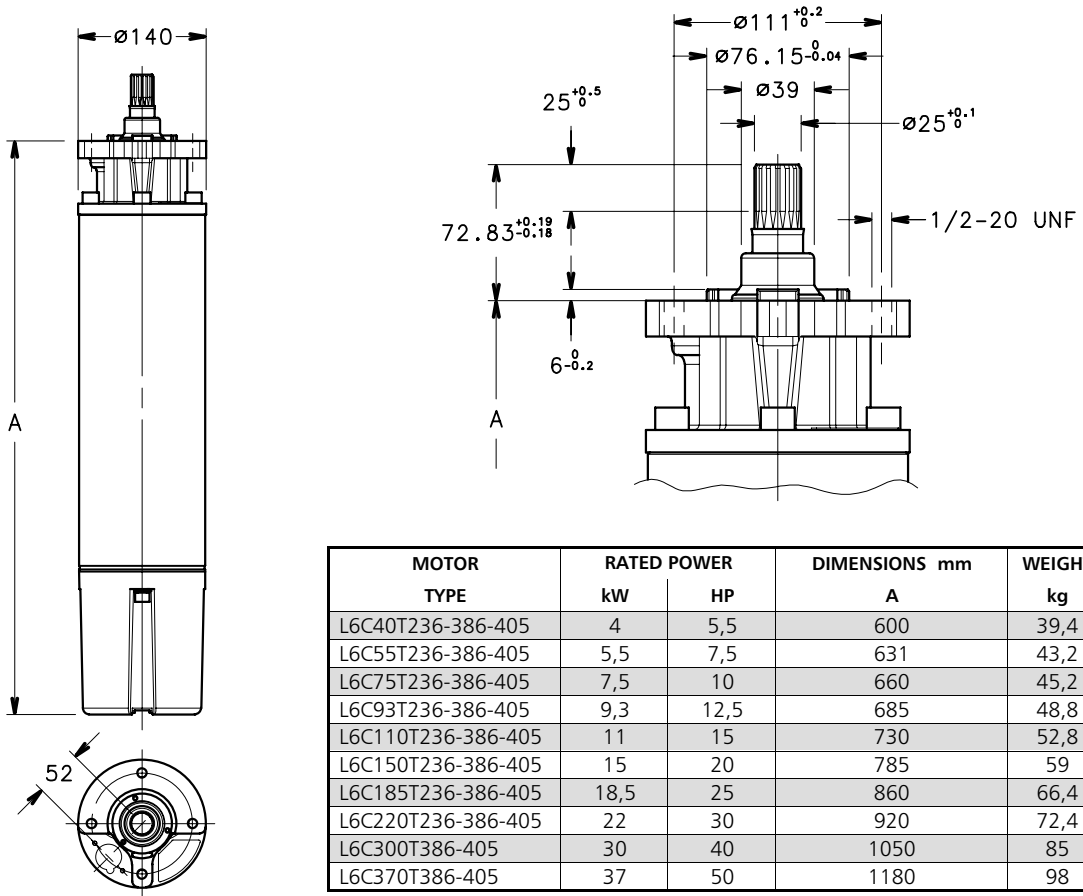
RATING PLATE



LEGEND

- 1 - Motor type
- 2 - Code
- 3 - Maximum water temperature
- 4 - Minimum water velocity
- 5 - Insulation class
- 6 - Protection class
- 7 - Weight
- 8 - Maximum immersion depth
- 9 - Operating characteristics
- 10 - Production date
- 11 - Serial number
- 12 - Characteristics at service factor
- 13 - Service type

**L6C MOTOR SERIES
DIMENSIONS AND WEIGHTS AT 60 Hz**



MOTOR TYPE	RATED POWER		DIMENSIONS mm	WEIGHT
	kW	HP	A	kg
L6C40T236-386-405	4	5,5	600	39,4
L6C55T236-386-405	5,5	7,5	631	43,2
L6C75T236-386-405	7,5	10	660	45,2
L6C93T236-386-405	9,3	12,5	685	48,8
L6C110T236-386-405	11	15	730	52,8
L6C150T236-386-405	15	20	785	59
L6C185T236-386-405	18,5	25	860	66,4
L6C220T236-386-405	22	30	920	72,4
L6C300T386-405	30	40	1050	85
L6C370T386-405	37	50	1180	98

l6c-2p60-en_c_tld

02027_B_DD

L6C MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		SERVICE FACTOR	RATED VOLTAGE	OPERATING CHARACTERISTICS AT FULL (S.F.) POWER					DIRECT STARTING		MAX WATER TEMPERATURE °C	CABLE TYPE	
	kW	HP			S. F.	V	A	rpm	η %	cosφ	Ts/Tn*		Is/In	Nc x sec mm ²
L6C40T236	4	5,5	1,15	230	19,0	3470	79,0	0,80	1,7	5,45	35	4x4	4	
L6C40T386				380	11,5	3470	79,0	0,80	1,7	5,50		4x4		
L6C40T405				460	9,5	3470	79,0	0,80	1,7	5,54		4x4		
L6C55T236	5,5	7,5	1,15	230	26,6	3450	77,0	0,80	1,8	5,00	35	4x4	4	
L6C55T386				380	16,1	3450	77,0	0,80	1,8	5,00		4x4		
L6C55T405				460	13,1	3450	77,0	0,80	1,8	5,00		4x4		
L6C75T236	7,5	10	1,15	230	33,0	3440	80,0	0,81	2,0	5,45	35	4x4	4	
L6C75T386				380	20,0	3440	80,0	0,81	2,0	5,50		4x4		
L6C75T405				460	16,5	3440	80,0	0,81	2,0	5,50		4x4		
L6C93T236	9,3	12,5	1,15	230	41,2	3450	82,0	0,80	2,1	4,80	35	4x6	4	
L6C93T386				380	25,0	3450	82,0	0,80	2,1	4,80		4x4		
L6C93T405				460	20,6	3450	82,0	0,80	2,1	4,80		4x4		
L6C110T236	11	15	1,15	230	46,6	3465	85,0	0,82	2,2	5,20	35	4x6	4	
L6C110T386				380	28,2	3465	85,0	0,82	2,2	5,20		4x4		
L6C110T405				460	23,3	3465	85,0	0,82	2,2	5,20		4x4		
L6C150T236	15	20	1,15	230	61,6	3440	85,0	0,83	2,4	5,45	35	4x6	4	
L6C150T386				380	37,3	3440	85,0	0,83	2,4	5,45		4x4		
L6C150T405				460	30,8	3440	85,0	0,83	2,4	5,45		4x4		
L6C185T236	18,5	25	1,15	230	80,0	3440	86,0	0,80	2,5	5,70	35	4x8	4	
L6C185T386				380	48,4	3440	86,0	0,80	2,5	5,70		4x6		
L6C185T405				460	40	3440	86,0	0,80	2,5	5,70		4x6		
L6C220T236	22	30	1,15	230	99,6	3440	86,0	0,77	2,6	5,80	35	4x8	4	
L6C220T386				380	60,2	3440	86,0	0,77	2,6	5,80		4x6		
L6C220T405				460	49,8	3440	86,0	0,77	2,6	5,80		4x6		
L6C300T386	30	40	1,15	380	75,0	3440	85,0	0,82	2,6	6,20	35	4x8	4	
L6C300T405				460	62,0	3440	85,0	0,82	2,6	6,20		4x6		
L6C370T386	37	50	1,15	380	90,0	3440	84,0	0,88	2,6	6,20	35	4x8	4	
L6C370T405				460	77,0	3440	84,0	0,88	2,6	6,20		4x8		

* Ts/Tn = ratio between starting torque and nominal torque.

l6c-2p60-en_e_te

6" Submersible motors

L6W Series 60 Hz



Water filled submersible motors.

The robust design together with excellent choice of materials ensures optimal performance, ease of installation and reliability in all applications. For extremely demanding operation as high water temperature or aggressive environments special versions are available.

SPECIFICATIONS

- **Stainless steel** outer sleeve.
- Shaft extension and coupling dimensions to **NEMA** standards.
- **Rewindable stator.**
- Class **Y insulation.**
- Protection class: **IP68.**
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth:** 350 m.
- Maximum **number of starts per hour** at regular intervals: 15.
- Maximum supply **voltage variations** allowed : $\pm 10\%$.
- Maximum water **temperature:** 30°C.
Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket as following:
Standard versions 0,2 m/s (4÷9,3 kW), 0,3 m/s (11÷30 kW) and 0,5 m/s (37 kW).
HT versions 0,2 m/s (5,5÷7,5 kW), 0,3 m/s (9,3÷26 kW) and 0,5 m/s (30 kW).
- **Axial thrust:**
16000 N from 4 to 22 kW;
30000 N from 26 to 37 kW.
- **Power supply** cable suitable for drinkable water.
- **Versions:**
- Three-phase:
4 to 18,5 kW, DOL 230 V, 60 Hz.
4 to 30 kW, Y/D 230 V, 60 Hz.
4 to 37 kW 380 V, 60 Hz.
4 to 37 kW 460 V, 60 Hz.

• Horizontal operation:

- valid for all versions provided that the direction of the axial thrust generated by the impellers is always from the pump to the motor.
- Flat power supply cable.
- Screws included.

SPECIAL VERSIONS

- Motors with double cable outlet for star/delta start.
- **L6WN series:** complete range available realized of AISI 316 stainless steel.
- **L6WR series:** complete range available realized of Duplex stainless steel.
- **HT series:** complete range available for all the L6W/N/R construction, realized for applications in high temperature environments (**up to 60°C**) or under inverter.

OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.

ACCESSORIES

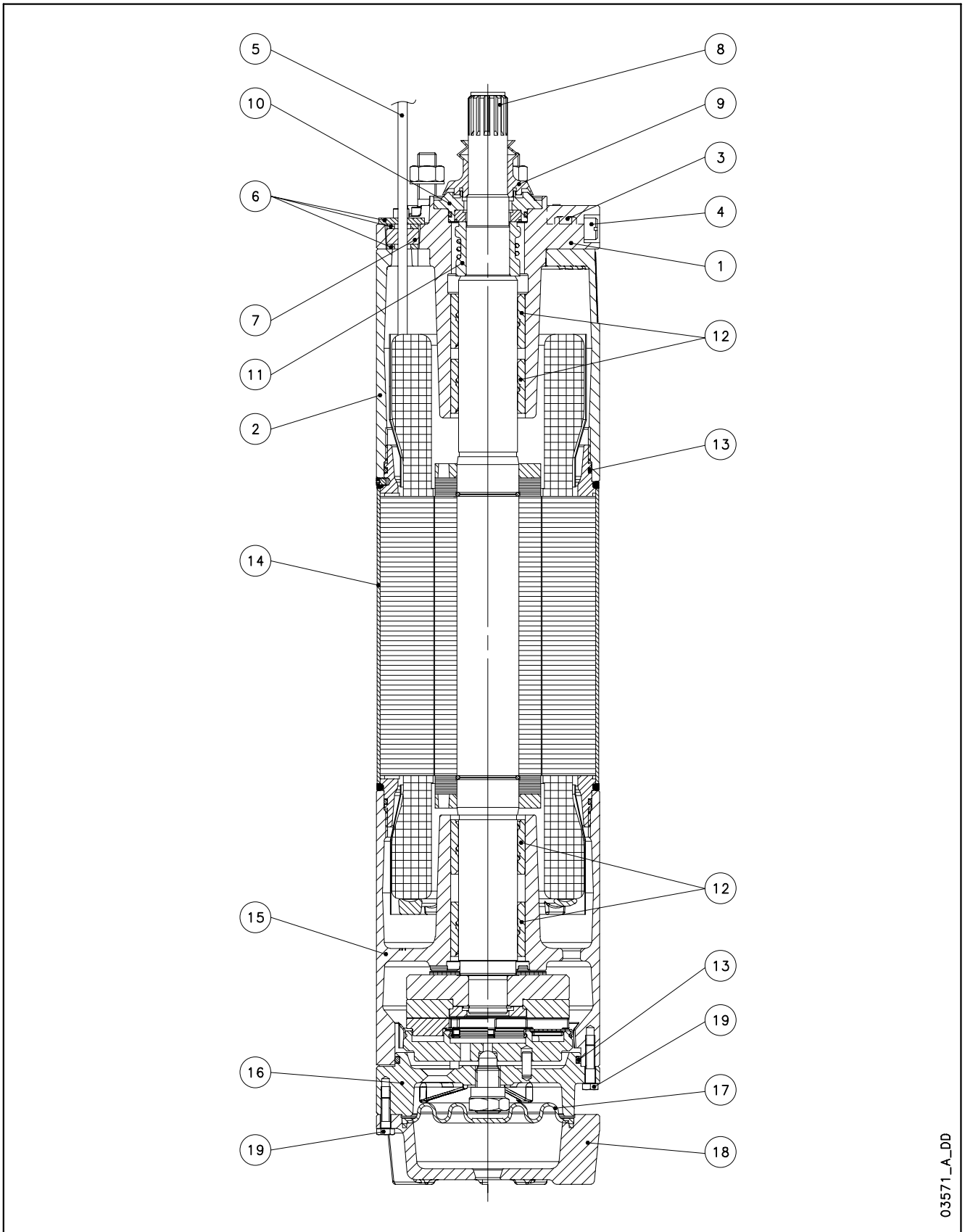
- Temperature sensor **PT 100 / PTC.**

Rewindable stator

Thrust bearing Kingsbury type

Mechanical seal

**L6W - L6WN - L6WR MOTOR SERIES
MOTOR CROSS SECTION**



03571_A_DD

L6W TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Cast iron	EN-GJL-200	Class 25 B
2	Spacer	Cast iron	EN-GJL-200	Class 25 B
3	Filling plug + OR	Stainless steel+NBR	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
4	Vent valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
7	Cable gland	EPDM		
8	Shaft end	Stainless steel	EN 10088-1-X20Cr13 (1.4021)	AISI420
9	Removable sand guard	EPDM		
10	Mechanical seal cover	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	ASTM CF-8 (AISI 304 cast)
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1-X2CrNi19-11 (1.4306)	AISI304L
15	Lower bracket	Cast iron	EN-GJL-200	Class 25 B
16	Thrust bearing bracket	Cast iron	EN-GJL-200	Class 25 B
17	Diaphragm	EPDM		
18	Lower cover	Cast iron	EN-GJL-200	Class 25 B
19	Bolts and screws	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
	Cooling liquid	Water + antifreeze		

L6w-2p50-en_b_tm

L6WN TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
2	Spacer	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
3	Filling plug + OR	Stainless steel+NBR	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
4	Vent valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Cable seal	EPDM		
8	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
9	Removable sand guard	EPDM		
10	Mechanical seal cover	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
15	Lower bracket	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
16	Thrust bearing bracket	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
17	Diaphragm	EPDM		
18	Lower cover	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
19	Bolts and screws	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
	Cooling liquid	Water + antifreeze		

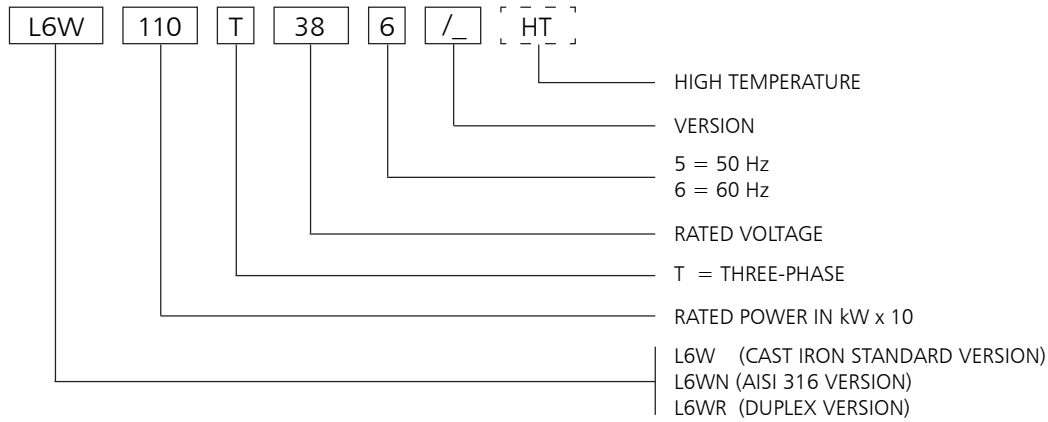
L6wn-2p50-en_b_tm

L6WR TABLE OF MATERIALS

REF. N°	PART	MATERIALE	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
2	Spacer	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
3	Filling plug + OR	Duplex s. s.+NBR	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
4	Vent valve	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
7	Cable gland	EPDM		
8	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
9	Removable sand guard	EPDM		
10	Mechanical seal cover	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
15	Lower bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
16	Thrust bearing bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
17	Diaphragm	EPDM		
18	Lower cover	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
19	Bolts and screws	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
	Cooling liquid	Water + antifreeze		

L6wr-2p50-en_b_tm

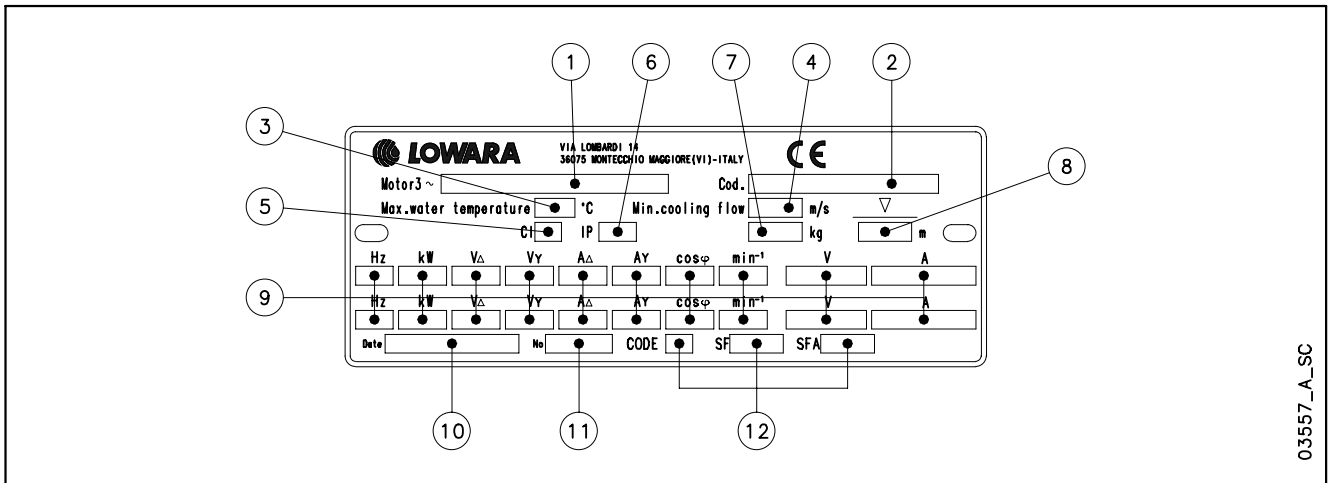
L6W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L6W110T386/A HT

L6W MOTOR :
 RATED POWER 11 kW; THREE-PHASE;
 RATED VOLTAGE 380 V; 60 Hz; /A VERSION; HIGH TEMPERATURE

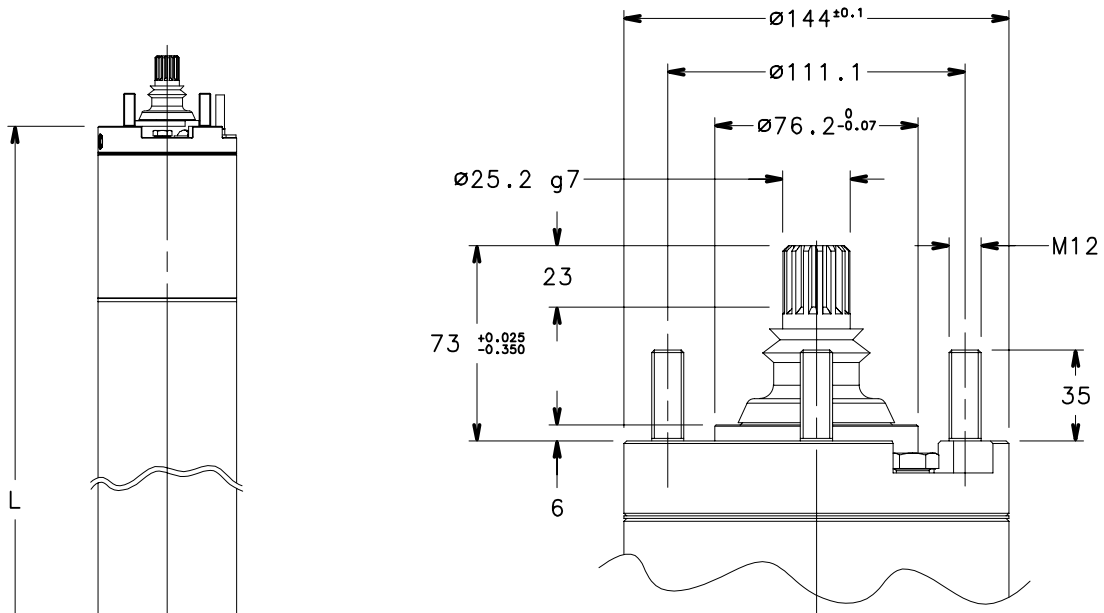
RATING PLATE



LEGEND

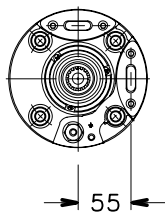
- | | |
|-------------------------------|--|
| 1 - Motor type | 7 - Weight |
| 2 - Code | 8 - Maximum immersion depth |
| 3 - Maximum water temperature | 9 - Operating characteristics |
| 4 - Minimum water velocity | 10 - Production date |
| 5 - Insulation class | 11 - Serial number |
| 6 - Protection class | 12 - Characteristics at service factor |

L6W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L6W40T236-386-405	4	5,5	583	38
L6W55T236-386-405	5,5	7,5	613	42
L6W75T236-386-405	7,5	10	653	46
L6W93T236-386-405	9,3	12,5	683	50
L6W110T236-386-405	11	15	723	54
L6W130T236-386-405	13	17,5	763	58
L6W150T236-386-405	15	20	833	66
L6W185T236-386-405	18,5	25	903	74
L6W220T236-386-405	22	30	943	77
L6W260T236-386-405	26	35	1071	86
L6W300T236-386-405	30	40	1151	94
L6W370T236-386-405	37	50	1301	108

l6w-2p60_a_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L6W40T236-386-405 HT	4	5,5	613	42
L6W55T236-386-405 HT	5,5	7,5	653	46
L6W75T236-386-405 HT	7,5	10	683	50
L6W93T236-386-405 HT	9,3	12,5	723	54
L6W110T236-386-405 HT	11	15	763	58
L6W130T236-386-405 HT	13	17,5	833	66
L6W150T236-386-405 HT	15	20	903	74
L6W185T236-386-405 HT	18,5	25	943	77
L6W220T236-386-405 HT	22	30	1071	86
L6W260T236-386-405 HT	26	35	1151	94
L6W300T236-386-405 HT	30	40	1301	108

l6w-ht-2p60_a_td

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L6W MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT ON-LINE STARTING			SERVICE FACTOR	SERVICE FACTOR AMPS	MAX WATER TEMP.	CABLE TYPE						
	kW	HP		V	A	rpm	η %	cos ϕ	Is/In	Ts/Tn				Tmax/Tn	SF	SFA	°C	Sec. (mm ²)		
																		DOL	Y/D	L (m)
L6W40T236	4	5,5	230	17,3	3500	72,8	0,80	4,51	1,28	2,01	1,15	19,0	30	4	4	4				
L6W40T386			380	9,94	3490	73,0	0,84	4,75	1,29	2,02		11,2								
L6W40T405			460	8,09	3485	73,0	0,85	4,82	1,29	2,02		9,16								
L6W55T236	5,5	7,5	230	24,3	3505	75,4	0,75	5,01	1,59	2,54	1,15	26,4	30	4	4	4				
L6W55T386			380	13,7	3495	76,3	0,80	5,38	1,60	2,55		15,1								
L6W55T405			460	10,9	3490	76,8	0,82	5,59	1,60	2,55		12,2								
L6W75T236	7,5	10	230	30,6	3500	78,2	0,79	5,33	1,69	2,49	1,15	33,6	30	4	4	4				
L6W75T386			380	17,4	3490	78,8	0,83	5,67	1,70	2,50		19,4								
L6W75T405			460	14,1	3485	78,9	0,84	5,78	1,70	2,50		15,8								
L6W93T236	9,3	12,5	230	37,6	3495	79,4	0,78	5,52	1,84	2,69	1,15	41,3	30	4	4	4				
L6W93T386			380	21,3	3485	79,9	0,83	5,90	1,85	2,70		23,8								
L6W93T405			460	17,3	3480	80,0	0,84	6,00	1,85	2,70		19,5								
L6W110T236	11	15	230	43,5	3490	80,3	0,79	5,38	1,52	2,56	1,15	47,9	30	6	4	4				
L6W110T386			380	24,7	3480	80,7	0,84	5,73	1,53	2,57		27,8		4						
L6W110T405			460	20,2	3475	80,8	0,85	5,79	1,53	2,57		22,8								
L6W130T236	13	17,5	230	52,5	3495	80,5	0,77	5,33	1,66	2,55	1,15	57,4	30	6	4	4				
L6W130T386			380	29,5	3485	81,2	0,82	5,74	1,67	2,55		32,9		4						
L6W130T405			460	23,3	3475	81,4	0,86	6,00	1,67	2,56		26,4								
L6W150T236	15	20	230	56,4	3485	83,1	0,80	6,21	1,93	3,02	1,15	62,5	30	10	4	4				
L6W150T386			380	32,5	3470	83,3	0,84	6,52	1,94	3,03		36,6		4						
L6W150T405			460	27,2	3475	83,3	0,83	6,44	1,94	3,03		30,5								
L6W185T236	18,5	25	230	71,1	3495	83,4	0,78	6,24	2,39	3,10	1,15	78,2	30	10	6	4				
L6W185T386			380	40,4	3485	83,8	0,83	6,65	2,40	3,11		45,1		4	4					
L6W185T405			460	32,6	3480	83,9	0,85	6,81	2,40	3,11		36,7		6						
L6W220T236	22	30	230	82,5	3510	84,8	0,79	5,70	0,98	2,95	1,15	91,9	30	-	6	4				
L6W220T386			380	47,5	3500	84,7	0,83	5,99	0,98	2,96		53,8		6	4					
L6W220T405			460	40,0	3500	84,7	0,82	5,88	0,98	2,96		45,0								
L6W260T236	26	35	230	107	3510	84,4	0,72	5,45	1,17	2,81	1,15	117	30	-	10	4				
L6W260T386			380	59,8	3500	85,0	0,78	5,90	1,18	2,82		66,5		6	4					
L6W260T405			460	47,8	3495	85,0	0,80	6,10	1,18	2,82		53,7								
L6W300T236	30	40	230	112	3510	84,4	0,79	6,04	2,49	2,75	1,15	126	30	-	10	4				
L6W300T386			380	64,9	3500	84,4	0,83	6,31	2,49	2,75		72,6		10	4					
L6W300T405			460	53,9	3505	84,5	0,83	6,28	2,49	2,75		61,0								
L6W370T386	37	50	380	86,2	3495	83,4	0,78	5,40	1,32	2,63	1,15	95,9	30	10	6	4				
L6W370T405			460	68,6	3490	83,6	0,81	5,61	1,32	2,63		77,1		4						

Ts/Tn = ratio between starting torque and nominal torque.

I6w-2p60_d_te

Tmax/Tn = ratio between maximum torque and nominal torque.

L6W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT ON-LINE STARTING			SERVICE FACTOR	SERVICE FACTOR AMPS	MAX WATER TEMP.	CABLE TYPE							
	THREE-PHASE	kW		HP	V	A	rpm	η %	cos ϕ	Is/In				Ts/Tn	Tmax/Tn	SF	SFA	°C	Sec. (mm ²)		
																			DOL	Y/D	L (m)
L6W40T236 HT	4	5,5	230	21,3	3530	72,3	0,65	5,74	2,21	3,52	1,15	22,4	45	4	4	4					
L6W40T386 HT			380	11,5	3525	74,0	0,71	6,43	2,21	3,52							12,3				
L6W40T405 HT			460	9,04	3520	74,9	0,74	6,76	2,21	3,53							9,74				
L6W55T236 HT	5,5	7,5	230	26,2	3525	76,1	0,69	6,23	2,34	3,45	1,15	27,9	45	4	4	4					
L6W55T386 HT			380	14,4	3520	77,6	0,75	6,86	2,34	3,45							15,5				
L6W55T405 HT			460	11,5	3520	78,0	0,77	7,10	2,34	3,45							12,5				
L6W75T236 HT	7,5	10	230	33,5	3515	78,2	0,72	6,21	2,30	3,36	1,15	36,0	45	4	4	4					
L6W75T386 HT			380	18,5	3510	79,4	0,78	6,81	2,31	3,37							20,2				
L6W75T405 HT			460	14,9	3505	79,7	0,79	6,98	2,31	3,37							16,4				
L6W93T236 HT	9,3	12,5	230	39,5	3510	79,8	0,74	5,87	1,81	3,05	1,15	42,7	45	6	4	4					
L6W93T386 HT			380	22,0	3500	80,8	0,80	6,38	1,82	3,06							24,2				
L6W93T405 HT			460	17,8	3495	81,0	0,81	6,51	1,82	3,06							19,7				
L6W110T236 HT	11	15	230	48,2	3515	79,9	0,72	5,81	1,98	3,04	1,15	51,7	45	6	4	4					
L6W110T386 HT			380	26,4	3505	71,1	0,78	6,42	1,99	3,05							28,9				
L6W110T405 HT			460	20,5	3500	81,7	0,82	6,83	1,99	3,05							22,8				
L6W130T236 HT	13	17,5	230	56,5	3510	81,9	0,71	6,21	2,24	3,50	1,15	60,7	45	10	4	4					
L6W130T386 HT			380	31,3	3500	82,9	0,76	6,78	2,25	3,51							34,1				
L6W130T405 HT			460	24,6	3495	83,5	0,80	7,13	2,25	3,52							27,1				
L6W150T236 HT	15	20	230	63,3	3515	82,7	0,72	7,02	2,98	3,86	1,15	68,2	45	10	4	4					
L6W150T386 HT			380	35,0	3510	83,5	0,78	7,68	2,99	3,86							38,3				
L6W150T405 HT			460	28,0	3505	83,9	0,80	7,93	2,99	3,87							30,9				
L6W185T236 HT	18,5	25	230	74,1	3520	84,6	0,74	6,77	1,94	3,25	1,15	81,2	45	-	6	4					
L6W185T386 HT			380	41,6	3515	85,2	0,79	7,30	1,94	3,25							46,3				
L6W185T405 HT			460	35,0	3520	85,0	0,78	7,17	1,94	3,25							38,8				
L6W220T236 HT	22	30	230	97,7	3525	84,0	0,67	5,97	1,40	3,35	1,15	105	45	10	10	4					
L6W220T386 HT			380	53,5	3520	85,0	0,73	6,59	1,40	3,36							58,6				
L6W220T405 HT			460	42,3	3515	85,2	0,77	6,89	1,40	3,36							46,8				
L6W260T236 HT	26	35	230	102	3525	84,4	0,76	6,64	2,89	3,19	1,15	112	45	-	10	4					
L6W260T386 HT			380	57,7	3515	84,7	0,81	7,10	2,89	3,19							64,8				
L6W260T405 HT			460	48,0	3520	84,7	0,80	7,05	2,89	3,19							53,7				
L6W300T386 HT	30	40	380	75,2	3520	83,7	0,73	6,19	1,64	3,28	1,15	82,1	45	-	6	4					
L6W300T405 HT			460	58,8	3515	84,2	0,76	6,54	1,64	3,28							64,9				

Ts/Tn = ratio between starting torque and nominal torque.

l6w-ht-2p60_b_te

Tmax/Tn = ratio between maximum torque and nominal torque.

8" Submersible motors

L8W Series 60 Hz



Rewindable stator

Thrust bearing Kingsbury type

Mechanical seal

Water filled submersible motors.

The robust design together with excellent choice of materials ensures optimal performance, ease of installation and reliability in all applications. For extremely demanding operation as high water temperature or aggressive environments special versions are available.

SPECIFICATIONS

- **Stainless steel** outer sleeve.
- Shaft extension and coupling dimensions to **NEMA** standards.
- **Rewindable stator.**
- Class **Y insulation.**
- Protection class: **IP68.**
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth:** 350 m.
- Maximum **number of starts per hour** at regular intervals: 10.
- Maximum supply **voltage variations** allowed : $\pm 10\%$.
- Maximum water **temperature:** 30°C.
Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket of at least 0,5 m/s.
- **Axial thrust:** 50000 N from 30 to 93 kW.
- **Power supply** cable suitable for drinkable water.
- **Versions:**
 - Three-phase: 30 to 93 kW 380 V, 60 Hz.
 - 30 to 93 kW 460 V, 60 Hz.

• **Horizontal operation:** valid for all versions provided that the direction of the axial thrust generated by the impellers is always from the pump to the motor.

SPECIAL VERSIONS

- Motors with double cable outlet for star/delta start.
- **L8WN series:** complete range available realized of AISI 316 stainless steel.
- **L8WR series:** complete range available realized of Duplex stainless steel.
- **HT series:** complete range available for all the L8W/N/R construction, realized for applications in high temperature environments (**up to 60°C**) or under inverter.

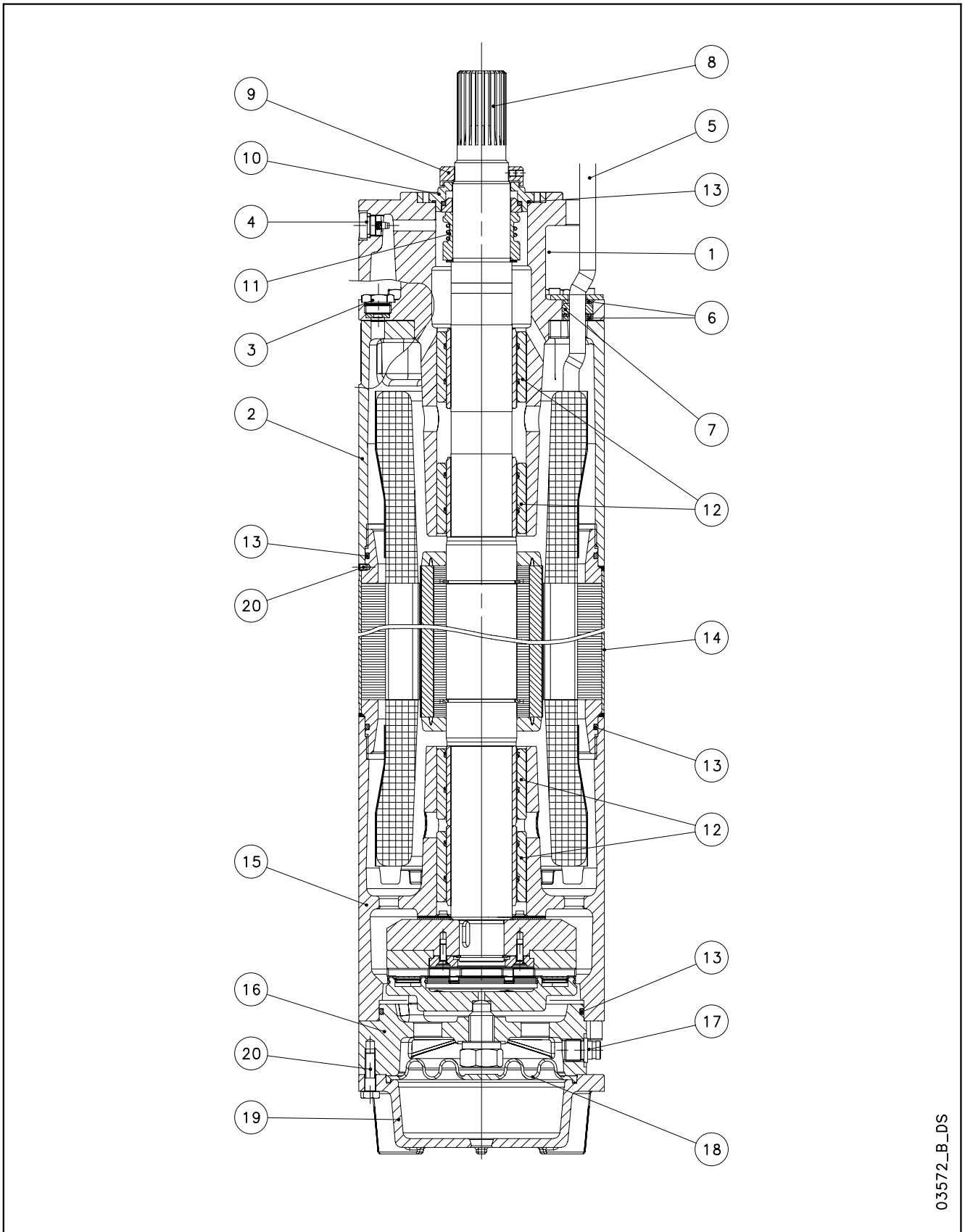
OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.

ACCESSORIES

- Temperature sensor **PT 100 / PTC.**

**L8W - L8WN - L8WR MOTOR SERIES
MOTOR CROSS SECTION**



03572_B_DS

L8W TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Cast iron	EN-GJL-200	Class 25 B
2	Spacer	Cast iron	EN-GJL-200	Class 25 B
3	Filling plug + OR	Stainless steel+NBR	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
4	Vent valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
7	Cable gland	EPDM		
8	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
9	Removable sand guard	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Mechanical seal cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1-X2CrNi19-11 (1.4306)	AISI304L
15	Lower bracket	Cast iron	EN-GJL-200	Class 25 B
16	Thrust bearing bracket	Cast iron	EN-GJL-200	Class 25 B
17	Filling valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
18	Diaphragm	EPDM		
19	Lower cover	Cast iron	EN-GJL-200	Class 25 B
20	Bolts and screws	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
	Cooling liquid	Water + antifreeze		

L8w-2p50-en_a_tm

L8WN TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
2	Spacer	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
3	Filling plug + OR	Stainless steel+NBR	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
4	Vent valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Cable gland	EPDM		
8	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
9	Removable sand guard	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Mechanical seal cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
15	Lower bracket	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
16	Thrust bearing bracket	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
17	Filling valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
18	Diaphragm	EPDM		
19	Lower cover	Stainless steel	EN 10213-4 - GX5CrNiMo19-11-2 (1.4408)	ASTM CF-8M (AISI 316 cast)
20	Bolts and screws	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
	Cooling liquid	Water + antifreeze		

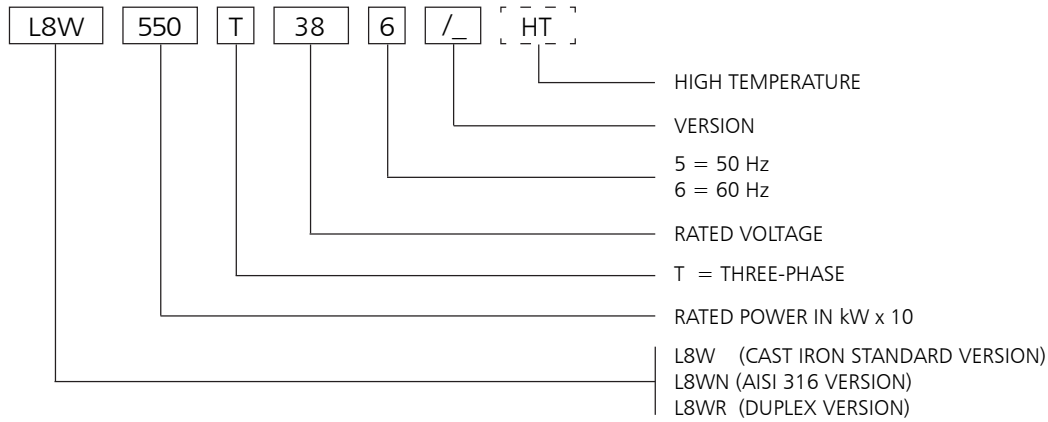
L8wn-2p50-en_a_tm

L8WR TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
2	Spacer	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
3	Filling plug + OR	Duplex s. s.+NBR	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
4	Vent valve	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
5	Cable	EPR		
6	Cable gland plate	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
7	Cable gland	EPDM		
8	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
9	Removable sand guard	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
10	Mechanical seal cover	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
11	Mechanical seal	Carbon graphite / Aluminium oxide		
12	Bush bearings	Carbon graphite		
13	Elastomers	NBR		
14	Motor sleeve	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
15	Lower bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
16	Thrust bearing bracket	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
17	Filling valve	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
18	Diaphragm	EPDM		
19	Lower cover	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
20	Bolts and screws	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
	Cooling liquid	Water + antifreeze		

L8wr-2p50-en_a_tm

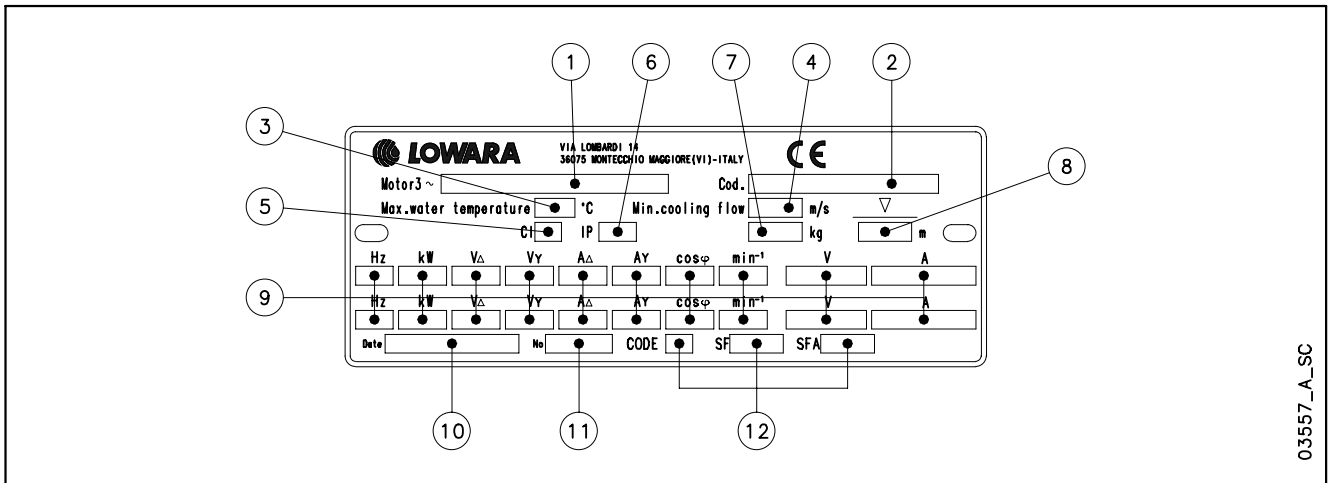
L8W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L8W550T386/A HT

L8W MOTOR :
 RATED POWER 55 kW; THREE-PHASE;
 RATED VOLTAGE 380 V; 60 Hz; /A VERSION; HIGH TEMPERATURE

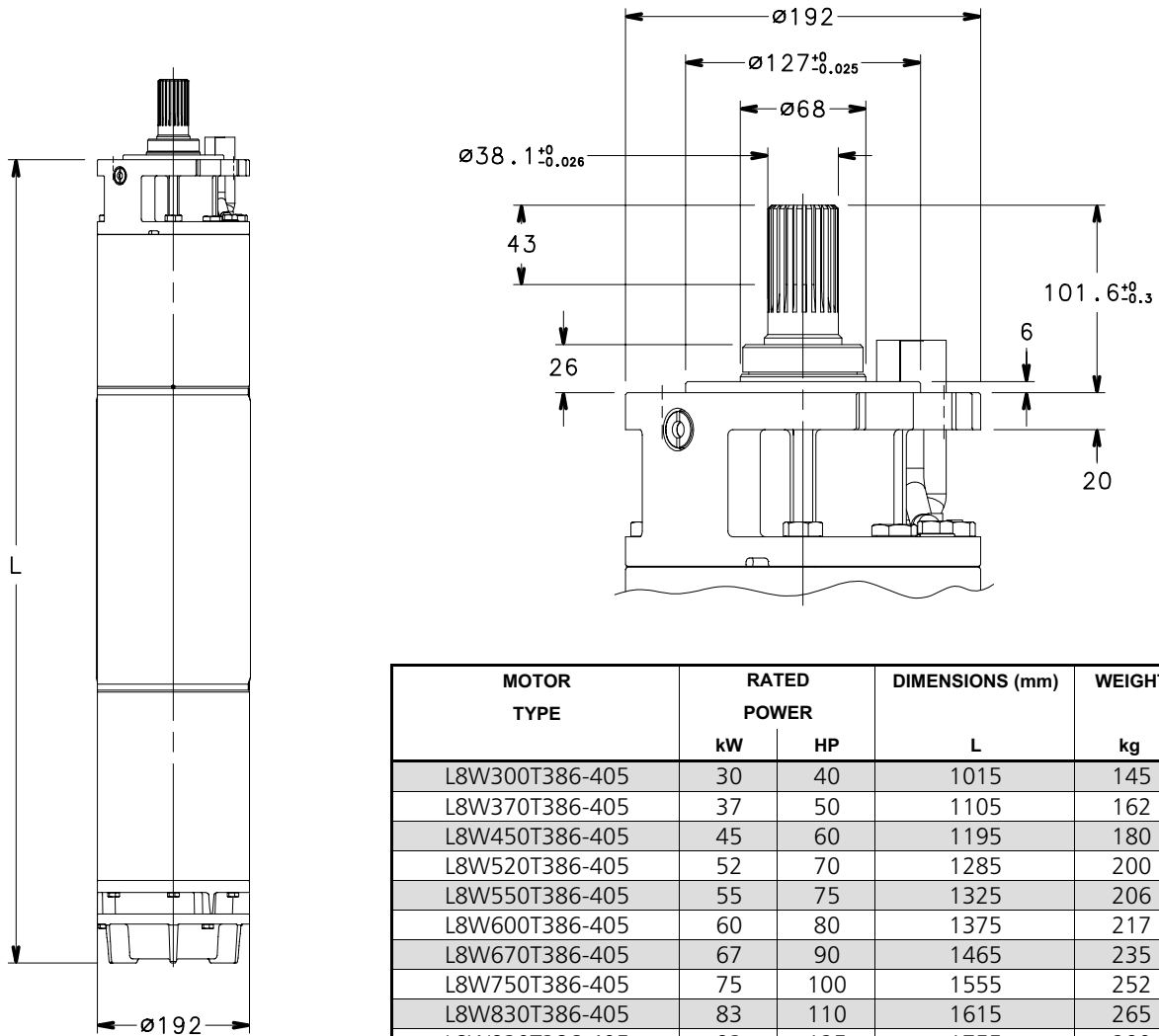
RATING PLATE



LEGEND

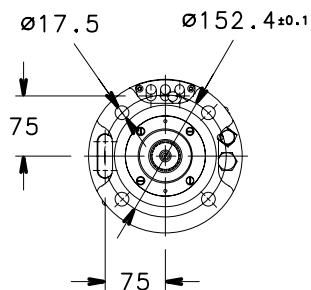
- | | |
|-------------------------------|--|
| 1 - Motor type | 7 - Weight |
| 2 - Code | 8 - Maximum immersion depth |
| 3 - Maximum water temperature | 9 - Operating characteristics |
| 4 - Minimum water velocity | 10 - Production date |
| 5 - Insulation class | 11 - Serial number |
| 6 - Protection class | 12 - Characteristics at service factor |

L8W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



MOTOR TYPE	RATED POWER		DIMENSIONS (mm)	WEIGHT
	kW	HP	L	kg
L8W300T386-405	30	40	1015	145
L8W370T386-405	37	50	1105	162
L8W450T386-405	45	60	1195	180
L8W520T386-405	52	70	1285	200
L8W550T386-405	55	75	1325	206
L8W600T386-405	60	80	1375	217
L8W670T386-405	67	90	1465	235
L8W750T386-405	75	100	1555	252
L8W830T386-405	83	110	1615	265
L8W930T386-405	93	125	1755	290

l8w-2p60_a_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm)	WEIGHT
	kW	HP	L	kg
L8W300T386-405 HT	30	40	1105	162
L8W370T386-405 HT	37	50	1195	180
L8W450T386-405 HT	45	60	1285	200
L8W520T386-405 HT	52	70	1325	206
L8W550T386-405 HT	55	75	1375	217
L8W600T386-405 HT	60	80	1465	235
L8W670T386-405 HT	67	90	1555	252
L8W750T386-405 HT	75	100	1615	265
L8W830T386-405 HT	83	110	1755	290

l8w-ht-2p60_a_td

03550_C_DD

L8W MOTOR SERIES

THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT ON-LINE STARTING			SERVICE FACTOR	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE		
	kW	HP		V	A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	DOL	Y/D
			Sec. (mm ²)													
L8W300T386	30	40	380	67,8	3470	81,5	0,83	5,50	1,04	2,22	1,15	78,0	30	10	6	5,5
L8W300T405			460	56,0								64,4		10	4	
L8W370T386	37	50	380	83,5	3475	81,5	0,83	5,26	1,04	2,23	1,15	96,1	30	16	6	5,5
L8W370T405			460	69,0								79,4		10	6	
L8W450T386	45	60	380	99,3	3480	83	0,83	4,98	0,98	2,22	1,15	114	30	16	10	5,5
L8W450T405			460	82,0								94,3		16	6	
L8W520T386	52	70	380	116	3475	83	0,82	5,56	1,06	2,22	1,15	134	30	25	10	5,5
L8W520T405			460	96,0								110		16	10	
L8W550T386	55	75	380	121	3475	83,5	0,83	5,44	1,06	2,24	1,15	139	30	25	10	5,5
L8W550T405			460	100								115		16	10	
L8W600T386	60	80	380	130	3480	84	0,84	5,07	1,04	2,23	1,15	149	30	25	16	5,5
L8W600T405			460	107								123		16	10	
L8W670T386	67	90	380	146	3480	84	0,83	5,13	1,03	2,23	1,15	168	30	35	16	5,5
L8W670T405			460	121								139		25	10	
L8W750T386	75	100	380	162	3485	84	0,84	5,04	1,01	2,22	1,15	187	30	35	16	5,5
L8W750T405			460	134								154		25	16	
L8W830T386	83	110	380	179	3485	84	0,84	4,79	0,97	2,28	1,15	206	30	35	16	5,5
L8W830T405			460	148								170		35	16	
L8W930T386	93	125	380	201	3490	84	0,84	4,6	1,02	2,22	1,15	231	30	50	25	5,5
L8W930T405			460	166								191		35	16	

Ts/Tn = ratio between starting torque and nominal torque.

l8w-2p60_c_te

Tmax/Tn = ratio between maximum torque and nominal torque.

L8W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER			DIRECT ON-LINE STARTING			SERVICE FACTOR SF	SERVICE FACTOR SFA	MAX WATER TEMP. °C	CABLE TYPE			
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	Sec. (mm ²)		
			DOL							Y/D	L (m)					
L8W300T386 HT	30	40	380	70,5	3510	83,7	0,79	6,24	1,28	2,75	1,15	78,7	45	10	6	5,5
L8W300T405 HT			460	58,2								65,0		10	4	
L8W370T386 HT	37	50	380	81,1	3515	84,0	0,80	6,09	1,19	2,70	1,15	92,0	45	16	6	5,5
L8W370T405 HT			460	67,0								76,0		10	6	
L8W450T386 HT	45	60	380	99,9	3505	84,0	0,79	6,47	1,22	2,57	1,15	107	45	16	10	5,5
L8W450T405 HT			460	82,5								88,0		16	6	
L8W520T386 HT	52	70	380	114	3495	84,0	0,83	5,79	1,12	2,37	1,15	129	45	25	10	5,5
L8W520T405 HT			460	94,0								106		16	10	
L8W550T386 HT	55	75	380	120	3505	84,5	0,82	5,47	1,13	2,43	1,15	136	45	25	10	5,5
L8W550T405 HT			460	99,1								112		16	10	
L8W600T386 HT	60	80	380	133	3505	85,3	0,81	5,64	1,15	2,49	1,15	149	45	25	16	5,5
L8W600T405 HT			460	110								123		16	10	
L8W670T386 HT	67	90	380	146	3510	85,4	0,82	5,58	1,13	2,49	1,15	166	45	35	16	5,5
L8W670T405 HT			460	121								137		25	10	
L8W750T386 HT	75	100	380	161	3505	83,6	0,83	5,33	1,07	2,52	1,15	185	45	35	16	5,5
L8W750T405 HT			460	133								153		25	16	
L8W830T386 HT	83	110	380	177	3520	85,8	0,82	5,23	1,14	2,49	1,15	197	45	35	16	5,5
L8W830T405 HT			460	146								163		35	16	

Ts/Tn = ratio between starting torque and nominal torque.

l8w-ht-2p60_a_te

Tmax/Tn = ratio between maximum torque and nominal torque.

ACCESSORIES

Motor - Control Panel Combination Table	83
Electrical Panels	86
Level control panel	94
Level probe module	95
Lightning protection	96
Cooling shrouds	97
ISO Threaded flanges and supporting collars	100

4OS - L4C SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE 4OS - 4" SINGLE-PHASE	RATED POWER		CURRENT AT S.F. 220-230 V	CAPACITOR	PANEL TYPE				
	kW	HP	A	µF / 450 V	QSC...	QSCS...			
	0,37	0,5	4,50	20	...036	...036			
	0,55	0,75	6,23	25	...056	...056			
	0,75	1	7,41	35	...076	...076			
	1,1	1,5	9,34	40	...116	...116			
	1,5	2	12,2	50	...156	...156			
	2,2	3	17,1	50	...226	...226			

For different voltages, please contact our sales network.

4OSM-2p60-en_b_tc

MOTOR TYPE 4OS - 4" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V	PANEL TYPE					
	kW	HP	A	QTD/...	Q3D/...	Q3I/...	Q3A/...	*Q3Y/...	Q3SF/...
	0,37	0,5	1,83	...05-07	...05-07	-	-	-	-
	0,55	0,75	2,31	...05-07	...05-07	-	-	-	-
	0,75	1	3,01	...07-15	...07-15	-	-	-	-
	1,1	1,5	3,77	...07-15	...07-15	-	-	-	-
	1,5	2	4,85	...15-22	...15-22	-	-	-	-
	2,2	3	6,69	...22-40	...22-40	-	-	-	-
	3	4	8,35	...22-40	...22-40	-	-	-	-
	4	5,5	10,2	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	5,5	7,5	14,1	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	7,5	10	21,2	-	...92-110	...92-110	...92-110	...92-110	...150

For different voltages, please contact our sales network.

4OST-2p60-en_b_tc

* require 6-wire suitable motor

MOTOR TYPE L4C - 4" SINGLE PHASE	RATED POWER		CURRENT AT S.F. 220-230 V	CAPACITOR	PANEL TYPE				
	kW	HP	A	µF / 450 V	QSC/...	QSCS/...			
	0,37	0,5	5,5	20	...036	...036			
	0,55	0,75	7,4	25	...056A	...056A			
	0,75	1	8,9	35	...076	...076			
	1,1	1,5	12,7	40	...116A	...116A			
	1,5	2	13,1	50	...156	...156			
	2,2	3	17,6	50	...226	...226			
	3,7	5	30,7	75	...406	...406			

For different voltages please contact our sales network

L4cm-2p60_d_tc

MOTOR TYPE L4C - 4" THREE PHASE	RATED POWER		CURRENT AT S.F. 380 V	PANEL TYPE					
	kW	HP	A	QTD/...	Q3D/...	Q3I/...	Q3A/...	*Q3Y/...	Q3SF/...
	0,37	0,5	2,3	...05-07	...05-07	-	-	-	-
	0,55	0,75	2,9	...07-15	...07-15	-	-	-	-
	0,75	1	3,4	...07-15	...07-15	-	-	-	-
	1,1	1,5	4,7	...15-22	...15-22	-	-	-	-
	1,5	2	5,9	...15-22	...15-22	-	-	-	-
	2,2	3	7,2	...22-40	...22-40	-	-	-	-
	3	4	9,5	...22-40	...22-40	-	-	-	...75
	4	5,5	11,6	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	5,5	7,5	15,7	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	7,5	10	20	-	...92-110	...92-110	...92-110	...92-110	...150

For different voltages please contact our sales network

L4ct-2p60_b_tc

* Require 6-wire suitable motor

L6C - L6W SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE L6C - 6" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V A	PANEL TYPE					
	kW	HP		QTD/...	Q3D/...	*Q3Y/...	Q3I/...	Q3A/...	Q3SF/...
	4	5,5		11,5	...40-75	...40-75	...40-75	...40-75	...40-75
5,5	7,5	16,1	...75-92	...75-92	...75-92	...75-92	...75-92	...75	
7,5	10	20	-	...92-110	...92-110	...92-110	...92-110	...150	
9,3	12,5	25	-	...110-150	...110-150	...110-150	...110-150	...150	
11	15	28,2	-	...110-150	...110-150	...110-150	...110-150	...150	
15	20	37,3	-	...150-185	...150-185	...150-185	...150-185	...220	
18,5	25	48,4	-	...185-220	...185-220	...185-220	...185-220	...300	
22	30	60,2	-	...220-300	...220-300	...220-300	...220-300	...370	
30	40	75	-	-	...370-450	...370-450	...370-450	...450	
37	50	90	-	-	...450-550	...450-550	...450-550	...550	

For different voltages please contact our sales network

L6c-2p60_b_tc

* require 6-wire suitable motor

MOTOR TYPE L6W - 6" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V A	PANEL TYPE					
	kW	HP		QTD/...	Q3D/...	Q3I/...	Q3A/...	Q3Y/...	Q3SF/...
	4	5,5		11,2	...40-75	...40-75	...40-75	...40-75	...40-75
5,5	7,5	15,1	...40-75	...40-75	...40-75	...40-75	...40-75	...75	
7,5	10	19,4	...75-92	...75-92	...75-92	...75-92	...75-92	...150	
9,3	12,5	23,8	-	...92-110	...92-110	...92-110	...92-110	...150	
11	15	27,8	-	...110-150	...110-150	...110-150	...110-150	...150	
13	17,5	32,9	-	...150-185	...150-185	...150-185	...150-185	...220	
15	20	36,6	-	...150-185	...150-185	...150-185	...150-185	...220	
18,5	25	45,1	-	...185-220	...185-220	...185-220	...185-220	...300	
22	30	53,8	-	...220-300	...220-300	...220-300	...220-300	...300	
26	35	66,5	-	...300-370	...300-370	...300-370	...300-370	...370	
30	40	72,6	-	...300-370	...300-370	...300-370	...300-370	...370	
37	50	95,9	-	-	...450-550	...450-550	...450-550	...550	
MOTOR TYPE L6W HT - 6" THREE-PHASE	4	5,5	12,3	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	5,5	7,5	15,5	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	7,5	10	20,2	...92-110	...92-110	...92-110	...92-110	...92-110	...150
	9,3	12,5	24,2	-	...92-110	...92-110	...92-110	...92-110	...150
	11	15	28,9	-	...110-150	...110-150	...110-150	...110-150	...150
	13	17,5	34,1	-	...150-185	...150-185	...150-185	...150-185	...220
	15	20	38,3	-	...150-185	...150-185	...150-185	...150-185	...220
	18,5	25	46,3	-	...185-220	...185-220	...185-220	...185-220	...300
	22	30	58,6	-	...220-300	...220-300	...220-300	...220-300	...300
	26	35	64,8	-	...300-370	...300-370	...300-370	...300-370	...370
30	40	82,1	-	...370-450	...370-450	...370-450	...370-450	...450	

For different voltages, please contact our sales network.

L6w-2p60_b_tc

L8W SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE L8W - 8" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V A	PANEL TYPE				
	kW	HP		Q3I/...	Q3A/...	Q3SF/...		
	30	40	78,0	...370-450	...370-450	...450		
	37	50	96,1	...450-550	...450-550	...550		
	45	60	114	...550-750	...550-750	...590		
	52	70	134	...550-750	...550-750	...750		
	55	75	139	...750-900	...750-900	...750		
	60	80	149	...750-900	...750-900	...900		
	67	90	168	...750-900	...750-900	...900		
	75	100	187	...900-1100	...900-1100	...1100		
	83	110	206	...900-1100	...900-1100	...1100		
	93	125	231	...1100-1320	...1100-1320	...1100		
MOTOR TYPE L8W HT - 8" THREE-PHASE	30	40	78,7	...370-450	...370-450	...450		
	37	50	92,0	...450-550	...450-550	...550		
	45	60	107	...450-550	...450-550	...590		
	52	70	129	...550-750	...550-750	...750		
	55	75	136	...550-750	...550-750	...750		
	60	80	149	...750-900	...750-900	...900		
	67	90	166	...750-900	...750-900	...900		
	75	100	185	...900-1100	...900-1100	...900		
	83	110	197	...900-1100	...900-1100	...1100		

For different voltages, please contact our sales network.

L8w-2p60_c_tc

Single-phase Electric Panel

APPLICATIONS

- Protection and control of a single-phase submersible electric pump for 4" wells.

QSC Series (60 Hz)

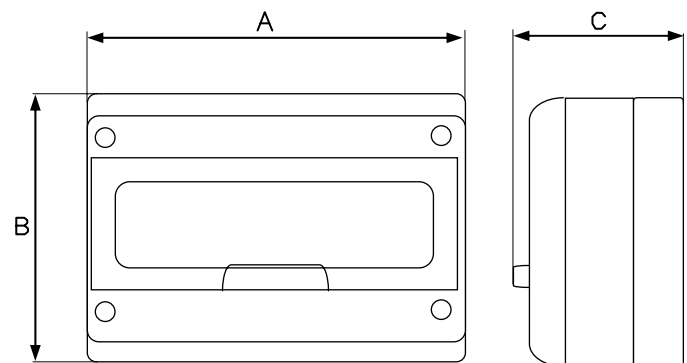


SPECIFICATIONS

- Main switch for manual control.
- Supply voltage: 1 x 230 V \pm 10%.
- Frequency: 60 Hz.
- Power: 0,37 to 4 kW.
- Direct motor start.
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Incorporated capacitor.
- Main switch with thermal protection.

OPTIONAL ACCESSORIES

- DPF single-phase module for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg	CAPACITOR μ F/450V
		kW	HP		A mm	B mm	C mm		
QSC/036	1 x 230 V \pm 10 %	0,37	0,5	4 \div 6,3	205	220	160	1,7	20
QSC/056	1 x 230 V \pm 10 %	0,55	0,75	4 \div 6,3	205	220	160	1,7	25
QSC/056A	1 x 230 V \pm 10 %	0,55	0,75	6,3 \div 10	205	220	160	1,7	25
QSC/076	1 x 230 V \pm 10 %	0,75	1	6,3 \div 10	205	220	160	1,7	35
QSC/116	1 x 230 V \pm 10 %	1,1	1,5	6,3 \div 10	205	220	160	1,7	40
QSC/116A	1 x 230 V \pm 10 %	1,1	1,5	10 \div 16	205	220	160	1,7	40
QSC/156	1 x 230 V \pm 10 %	1,5	2	10 \div 16	205	220	160	1,7	50
QSC/226	1 x 230 V \pm 10 %	2,2	3	16 \div 20	205	220	160	2,7	50
QSC/406	1 x 230 V \pm 10 %	4	5,5	25 \div 32	280	220	160	3	75

Single-phase Electric Panel

APPLICATIONS

- Protection and control of a single-phase submersible electric pump for 4" wells.

QSCS Series (60 Hz)



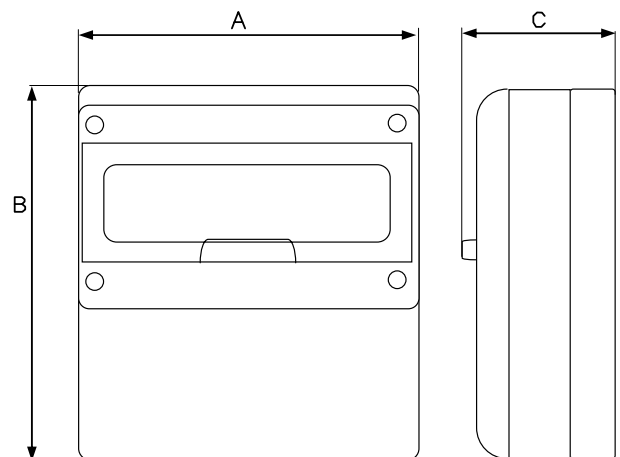
SPECIFICATIONS

- Automatic control through an external enable contact.
- Supply voltage: 1 x 230 V \pm 10%.
- Frequency: 60 Hz.
- Power: 0,37 to 2,2 kW.
- Direct motor start.
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Incorporated capacitor.

- Main switch with thermal protection.
- Dry running control with float or minimum pressure switch (available separately).

OPTIONAL ACCESSORIES

- DPF single-phase module for overvoltage protection (lightning protector).
- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg	CAPACITOR μ F/450V
		kW	HP		A mm	B mm	C mm		
QSCS/036	1 x 230 V \pm 10 %	0,37	0,5	4 \div 6,3	280	370	160	3,7	20
QSCS/056	1 x 230 V \pm 10 %	0,55	0,75	4 \div 6,3	280	370	160	3,7	25
QSCS/056A	1 x 230 V \pm 10 %	0,55	0,75	6,3 \div 10	280	370	160	3,7	25
QSCS/076	1 x 230 V \pm 10 %	0,75	1	6,3 \div 10	280	370	160	3,7	35
QSCS/116	1 x 230 V \pm 10 %	1,1	1,5	6,3 \div 10	280	370	160	3,7	40
QSCS/116A	1 x 230 V \pm 10 %	1,1	1,5	10 \div 16	280	370	160	3,7	40
QSCS/156	1 x 230 V \pm 10 %	1,5	2	10 \div 16	280	370	160	3,7	50
QSCS/226	1 x 230 V \pm 10 %	2,2	3	16 \div 20	280	370	160	3,7	50
QSCS/406	1 x 230 V \pm 10 %	4	5,5	25 \div 32	280	370	160	4	75

CB-QSCS6-en_d_te

Three-phase Electric Panel

APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

QTD Series



SPECIFICATIONS

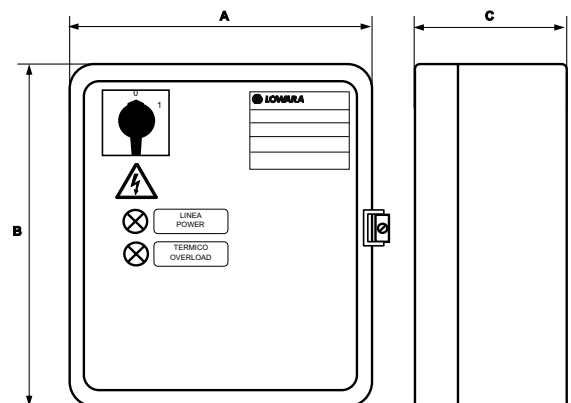
- Control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- Power: 0,25 to 9,2 kW.
- Direct motor start.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Ready for installation of dry running control float or pressure switch (to be ordered separately).
- Power and thermal overload indicator lights.

OPTIONAL ACCESSORIES

- VR3 three-phase module for overvoltage protection (lightning protector).
- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).

SELECTION

- For a suitable choice of control panel, be sure the electrical input of the motor (Ampere) is included in the rated current value mentioned in the table below.



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QTD/02-03	3 x 400 V \pm 10 %	0,25-0,37	0,33-0,50	0,63 \div 1	235	265	150	5,8
QTD/03-05	3 x 400 V \pm 10 %	0,37-0,55	0,55-0,75	1 \div 1,6	235	265	150	5,8
QTD/05-07	3 x 400 V \pm 10 %	0,55-0,75	0,75-1	1,6 \div 2,5	235	265	150	5,8
QTD/07-15	3 x 400 V \pm 10 %	0,75-1,5	1-2	2,5 \div 4	235	265	150	5,8
QTD/15-22	3 x 400 V \pm 10 %	1,5-2,2	2-3	4 \div 6,3	235	265	150	5,8
QTD/22-40	3 x 400 V \pm 10 %	2,2-4	3-5,5	6,3 \div 10	235	265	150	5,8
QTD/40-75	3 x 400 V \pm 10 %	4-7,5	5,5-10	10 \div 16	235	265	150	5,8
QTD/75-92	3 x 400 V \pm 10 %	7,5-9,2	10-12,5	16 \div 20	235	265	150	5,8

Three-phase Electric Panel

APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

Q3D Series



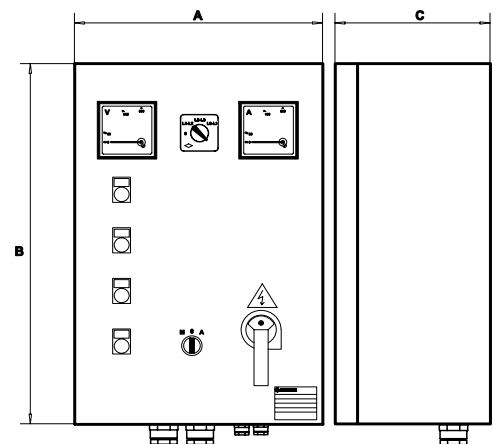
SPECIFICATIONS

- Manual control through an Auto/Man selector switch.
- Automatic control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- 24 V AC low voltage auxiliary circuit.
- Power: 0,25 to 37 kW.
- Direct motor start.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Power, pump running, thermal overload and dry running indicator lights.

- Ready for installation of dry running control float or pressure switch (to be ordered separately). Can be equipped with electronic protection module with electrodes.

OPTIONAL ACCESSORIES

- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).
- Float.
- Pressure switch.
- VR3/SCA3 three-phase module for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
Q3D/02-03	3 x 400 V \pm 10 %	0,25-0,37	0,33-0,50	0,63 \div 1	300	400	200	15
Q3D/03-05	3 x 400 V \pm 10 %	0,37-0,55	0,5-0,75	1 \div 1,6	300	400	200	15
Q3D/05-07	3 x 400 V \pm 10 %	0,55-0,75	0,75-1	1,6 \div 2,5	300	400	200	15
Q3D/07-15	3 x 400 V \pm 10 %	0,75-1,5	1-2	2,5 \div 4	300	400	200	15
Q3D/15-22	3 x 400 V \pm 10 %	1,5-2,2	2-3	4 \div 6,3	300	400	200	15
Q3D/22-40	3 x 400 V \pm 10 %	2,2-4	3-5,5	6,3 \div 10	300	400	200	15
Q3D/40-75	3 x 400 V \pm 10 %	4-7,5	5,5-10	10 \div 16	300	400	200	15
Q3D/75-92	3 x 400 V \pm 10 %	7,5-9,2	10-12,5	16 \div 20	300	400	200	15
Q3D/92-110	3 x 400 V \pm 10 %	9,2-11	12,5-15	20 \div 25	300	400	200	20
Q3D/110-150	3 x 400 V \pm 10 %	11-15	15-20	22 \div 32	400	500	200	20
Q3D/150-185	3 x 400 V \pm 10 %	15-18,5	20-25	28 \div 40	400	500	200	20
Q3D/185-220	3 x 400 V \pm 10 %	18,5-22	25-30	36 \div 50	400	600	200	27
Q3D/220-300	3 x 400 V \pm 10 %	22-30	30-40	45 \div 63	400	600	200	27
Q3D/300-370	3 x 400 V \pm 10 %	30-37	40-50	57 \div 75	400	600	200	27

Three-phase Electric Panel

Q3Y Series



APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

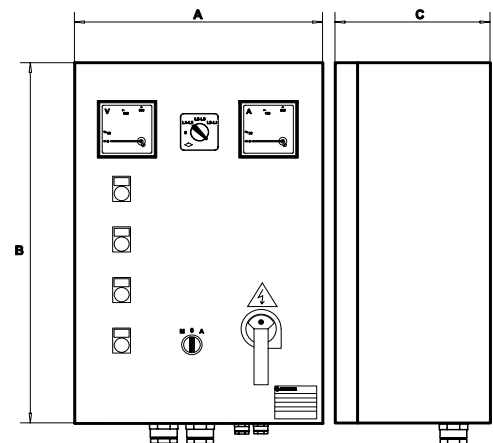
SPECIFICATIONS

- Manual control through an Auto/Man selector switch.
- Automatic control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- 24 V AC low voltage auxiliary circuit.
- Power: 4 to 315 kW.
- Star-delta starting.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Power, pump running, thermal overload and dry running indicator lights.

- Ready for installation of dry running control float or pressure switch (to be ordered separately). Can be equipped with electronic protection module with electrodes.

OPTIONAL ACCESSORIES

- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).
- Float.
- Pressure switch.
- VR3/SCA3 three-phase module for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
Q3Y/40-75	3 x 400 V \pm 10 %	4-7,5	5,5-10	10 \div 16	400	600	200	23
Q3Y/75-92	3 x 400 V \pm 10 %	7,5-9,2	10-12,5	16 \div 20	400	600	200	23
Q3Y/92-110	3 x 400 V \pm 10 %	9,2-11	12,5-15	20 \div 25	400	600	200	23
Q3Y/110-150	3 x 400 V \pm 10 %	11-15	15-20	22 \div 32	400	600	200	23
Q3Y/150-185	3 x 400 V \pm 10 %	15-18,5	20-25	28 \div 40	400	600	200	23
Q3Y/185-220	3 x 400 V \pm 10 %	18,5-22	25-30	36 \div 50	500	700	200	32
Q3Y/220-300	3 x 400 V \pm 10 %	22-30	30-40	45 \div 63	500	700	200	32
Q3Y/300-370	3 x 400 V \pm 10 %	30-37	40-50	57 \div 75	600	800	250	68
Q3Y/370-450	3 x 400 V \pm 10 %	37-45	50-60	70 \div 90	600	800	250	80
Q3Y/450-550	3 x 400 V \pm 10 %	45-55	60-75	80 \div 108	600	900	250	80
Q3Y/550-750	3 x 400 V \pm 10 %	55-75	75-100	105 \div 138	600p	1300p	300p	109
Q3Y/750-900	3 x 400 V \pm 10 %	75-90	100-125	138 \div 185	600p	1300p	300p	109
Q3Y/900-1100	3 x 400 V \pm 10 %	90-110	125-150	175 \div 210	600p	1500p	300p	120
Q3Y/1100-1320	3 x 400 V \pm 10 %	110-132	150-180	210 \div 260	800p	1700p	400p	130
Q3Y/1320-1600	3 x 400 V \pm 10 %	132-160	180-218	250 \div 305	800p	1700p	400p	130
Q3Y/1600-2000	3 x 400 V \pm 10 %	160-200	218-273	290 \div 400	800p	1900p	400p	140
Q3Y/2000-2500	3 x 400 V \pm 10 %	200-250	273-340	400 \div 460	1000p	1900p	400p	180
Q3Y/2500-3150	3 x 400 V \pm 10 %	250-315	340-430	450 \div 580	1000p	1900p	400p	180

Dimensions note : P indicates floor mounted control panel.

CB-Q3Y-en_c_te

Three-phase Electric Panel

Q3I Series



APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

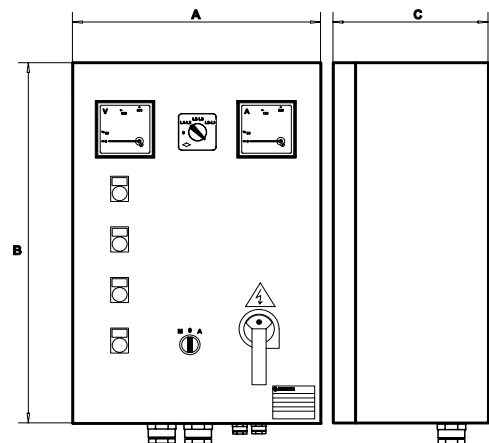
SPECIFICATIONS

- Manual control through an Auto/Man selector switch.
- Automatic control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- 24 V AC low voltage auxiliary circuit.
- Power: 4 to 315 kW.
- Impedance start.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Power, pump running, thermal overload and dry running indicator lights.

- Ready for installation of dry running control float or pressure switch (to be ordered separately). Can be equipped with electronic protection module with electrodes.

OPTIONAL ACCESSORIES

- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).
- Float.
- Pressure switch.
- VR3/SCA3 three-phase module for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
Q3I/40-75	3 x 400 V \pm 10 %	4-7,5	5,5-10	10 \div 16	400	600	250	35
Q3I/75-92	3 x 400 V \pm 10 %	7,5-9,2	10-12,5	16 \div 20	400	600	250	35
Q3I/92-110	3 x 400 V \pm 10 %	9,2-11	12,5-15	20 \div 25	400	600	250	35
Q3I/110-150	3 x 400 V \pm 10 %	11-15	15-20	22 \div 32	500	700	250	50
Q3I/150-185	3 x 400 V \pm 10 %	15-18,5	20-25	28 \div 40	500	700	250	50
Q3I/185-220	3 x 400 V \pm 10 %	18,5-22	25-30	36 \div 50	500	700	250	50
Q3I/220-300	3 x 400 V \pm 10 %	22-30	30-40	45 \div 63	500	700	250	65
Q3I/300-370	3 x 400 V \pm 10 %	30-37	40-50	57 \div 75	500	700	250	65
Q3I/370-450	3 x 400 V \pm 10 %	37-45	50-60	70 \div 90	600	900	250	65
Q3I/450-550	3 x 400 V \pm 10 %	45-55	60-75	80 \div 108	600p	1300p	300p	100
Q3I/550-750	3 x 400 V \pm 10 %	55-75	75-100	105 \div 138	600p	1300p	300p	100
Q3I/750-900	3 x 400 V \pm 10 %	75-90	100-125	138 \div 185	600p	1500p	300p	100
Q3I/900-1100	3 x 400 V \pm 10 %	90-110	125-150	175 \div 210	800p	1700p	400p	100
Q3I/1100-1320	3 x 400 V \pm 10 %	110-132	150-180	210 \div 260	800p	1700p	400p	150
Q3I/1320-1600	3 x 400 V \pm 10 %	132-160	180-218	250 \div 305	800p	1700p	400p	150
Q3I/1600-2000	3 x 400 V \pm 10 %	160-200	218-273	290 \div 400	800p	1900p	400p	160
Q3I/2000-2500	3 x 400 V \pm 10 %	200-250	273-340	400 \div 460	1000p	1900p	400p	180
Q3I/2500-3150	3 x 400 V \pm 10 %	250-315	340-430	450 \div 580	1000p	1900p	400p	200

Dimensions note : P indicates floor mounted control panel.

CB-Q3I-en_c_te

Three-phase Electric Panel

Q3A Series



APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

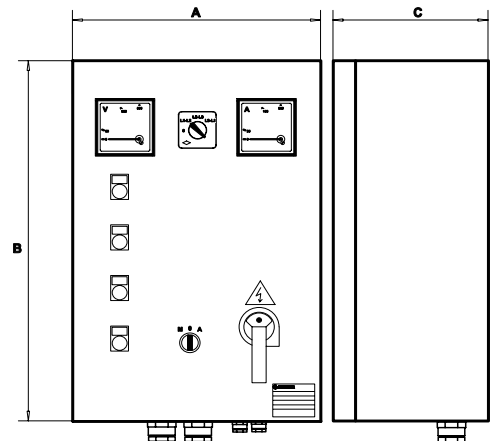
SPECIFICATIONS

- Manual control through an Auto/Man selector switch.
- Automatic control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- 24 V AC low voltage auxiliary circuit.
- Power: 4 to 315 kW.
- Starting autotransformer.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Power, pump running, thermal overload and dry running indicator lights.

- Ready for installation of dry running control float or pressure switch (to be ordered separately). Can be equipped with electronic protection module with electrodes.

OPTIONAL ACCESSORIES

- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).
- Float.
- Pressure switch.
- VR3/SCA3 three-phase module for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
Q3A/40-75	3 x 400 V \pm 10 %	4-7,5	5,5-10	10 \div 16	500	700	250	50
Q3A/75-92	3 x 400 V \pm 10 %	7,5-9,2	10-12,5	16 \div 20	500	700	250	50
Q3A/92-110	3 x 400 V \pm 10 %	9,2-11	12,5-15	20 \div 25	500	700	250	50
Q3A/110-150	3 x 400 V \pm 10 %	11-15	15-20	22 \div 32	500	700	250	50
Q3A/150-185	3 x 400 V \pm 10 %	15-18,5	20-25	28 \div 40	500	700	250	50
Q3A/185-220	3 x 400 V \pm 10 %	18,5-22	25-30	36 \div 50	500	700	250	50
Q3A/220-300	3 x 400 V \pm 10 %	22-30	30-40	45 \div 63	600	900	300	80
Q3A/300-370	3 x 400 V \pm 10 %	30-37	40-50	57 \div 75	600	900	300	80
Q3A/370-450	3 x 400 V \pm 10 %	37-45	50-60	70 \div 90	600p	1300p	300p	90
Q3A/450-550	3 x 400 V \pm 10 %	45-55	60-75	80 \div 108	600p	1500p	300p	120
Q3A/550-750	3 x 400 V \pm 10 %	55-75	75-100	105 \div 138	600p	1500p	300p	120
Q3A/750-900	3 x 400 V \pm 10 %	75-90	100-125	138 \div 185	600p	1700p	400p	150
Q3A/900-1100	3 x 400 V \pm 10 %	90-110	125-150	175 \div 210	800p	1900p	400p	150
Q3A/1100-1320	3 x 400 V \pm 10 %	110-132	150-180	210 \div 260	800p	1900p	400p	200
Q3A/1320-1600	3 x 400 V \pm 10 %	132-160	180-218	250 \div 305	800p	1900p	400p	200
Q3A/1600-2000	3 x 400 V \pm 10 %	160-200	218-273	290 \div 400	800p	1900p	400p	230
Q3A/2000-2500	3 x 400 V \pm 10 %	200-250	273-340	400 \div 460	1000p	1900p	400p	230
Q3A/2500-3150	3 x 400 V \pm 10 %	250-315	340-430	450 \div 580	1000p	1900p	400p	250

Dimensions note : P indicates floor mounted control panel.

CB-Q3A-en_c_te

Three-phase Electric Panel

Q3SF Series



APPLICATIONS

- Protection and control of a three-phase surface or submersible electric pump.

SPECIFICATIONS

- Manual control through an Auto/Man selector switch.
- Automatic control through an external enable contact.
- Supply voltage: 3 x 400 V \pm 10%.
- Frequency: 50/60 Hz.
- 24 V AC low voltage auxiliary circuit.
- Power: 5,5 to 110 kW.
- Softstart with torque control.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Dry running indicator light.
- Power - pump running - malfunction LEDs on starter keypanel.
- ON/OFF selector switch for activation of by-pass contactor.
- Ready for installation of dry running control float or pressure switch (to be ordered separately). Can be equipped with electronic protection module with electrodes.

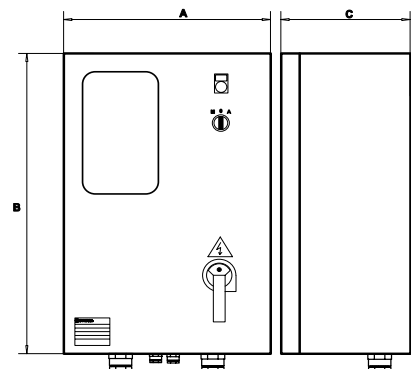
Protections against phase failure / phase sequence / frequency out of limits on power supply line.
Low-voltage protection on auxiliary circuits.
Protection against starter overtemperature / overload / malfunction.
Protection against overload / locked rotor / current asymmetry on motor side.
Short-circuit protection on inputs and outputs.
RS232 interface for remote control and RS485 for use of remote keypanel.
Incorporated by-pass contactor.

OPTIONAL ACCESSORIES

- KSL series 24 V level kit. Probe module for protection against dry running (set of three electrodes included in the supply).
- Float.
- Pressure switch.
- VR3/SCA3 three-phase module for overvoltage protection (lightning protector).

STATIC STARTER CHARACTERISTICS

- Static starter for gradual start-up/shutdown, featuring: keypanel with liquid crystal display showing voltage, absorbed current, $\cos \Phi$, operating hours, number of starts, last twenty messages on system status (events / alarms).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
Q3SF 75	3 x 400 V \pm 10 %	5,5 - 7,5	7,5 - 10	8,5 \div 17	400	600	250	35
Q3SF 150	3 x 400 V \pm 10 %	9,2 - 15	12,5 - 20	15 \div 30	500	700	250	40
Q3SF 220	3 x 400 V \pm 10 %	18,5 - 22	25 - 30	28 \div 45	500	700	250	40
Q3SF 300	3 x 400 V \pm 10 %	30	40	42 \div 60	600	900	300	90
Q3SF 370	3 x 400 V \pm 10 %	37	50	55 \div 75	600	900	300	90
Q3SF 450	3 x 400 V \pm 10 %	45	60	70 \div 85	600	900	300	90
Q3SF 550	3 x 400 V \pm 10 %	55	75	80 \div 110	600	900	300	90
Q3SF 590	3 x 400 V \pm 10 %	59	80	105 \div 125	600	900	300	90
Q3SF 750	3 x 400 V \pm 10 %	75	100	120 \div 142	600p	1700p	400p	120
Q3SF 900	3 x 400 V \pm 10 %	90	125	135 \div 190	600p	1700p	400p	120
Q3SF 1100	3 x 400 V \pm 10 %	110	150	185 \div 245	600p	1700p	400p	120

Dimensions note : P indicates floor mounted control panel.

CB-Q3SF-en_b_te

Level Control Panel

APPLICATIONS

- Accessory for electric pump control panels, suitable for tank filling or drainage applications or for activation of audible or visual alarms.

QCL5 Series



SPECIFICATIONS

- Automatic control through probes.
- Supply voltage: 1 x 230 V \pm 10% or 1 x 24 V \pm 10%.
- Frequency: 50/60 Hz.
- Voltage to probes: 15 V AC at 0,5 mA max.
- Switch contact 48 V AC at 3 A max (250 W max).
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Electrodes suitable for water at a maximum temperature of 40°C.
- Set of three electrodes included in the supply.

OPTIONAL ACCESSORIES

- Drop cable with circular cross section.

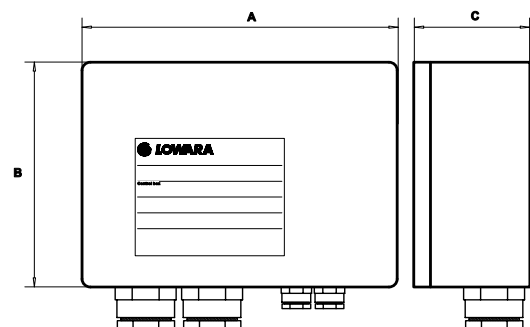
For connection of the electrodes to the panel we recommend the following cross sections:

LENGHT m		CABLE SECTION mm ²
0	50	0,5
50	100	0,75
100	200	1,0
200	400	2,5

CB-CASEL-en_b_te

Three-pole cables can be used for short lengths.

Otherwise we recommend the use of unipolar cables placed at suitable distance from each other to prevent the capacitive effect of the cable from interfering with the proper operation of the electronic module.



TYPE	POWER SUPPLY			CONTACT			DIMENSIONS A x B x C mm	WEIGHT Kg
	VOLTAGE V	FREQUENCY Hz	POWER W	TYPE	RANGE V	A		
QCL5/24	1 x 24	50/60	2	NO-C-NC	48	3	90 x 130 x 60	0,5
QCL5/230	1 x 230	50/60	2					

CB-QCL5-en_a_te

Kit 24 V Level Probe

APPLICATIONS

- Accessory for electric panels.

KSL Series



SPECIFICATIONS

- Electronic module for use of probes as protection against dry running.
- Supply voltage:
1 x 24 V \pm 10% for model SLD/24.
- Frequency: 50/60 Hz.
- Absorbed power: 3,5 VA max.
- Voltage to probes:
7,5 V AC at 0,4 mA max.
- Switch contact 24 V AC at 5 A max (250 W max).
- Designed for installation on Lowara electric panels featuring DIN bar.
- Electrodes suitable for water at a maximum temperature of 60°C.

CONSTRUCTION CHARACTERISTICS

- Module made of plastic material with DIN bar attachment.
- Cables with quick plug-in connectors.
- Set of three electrodes included in the supply.
- Electrodes with nylon 6 body, stainless steel sensitive element brass washer and nitrile rubber seal.

OPTIONAL ACCESSORIES

- Drop cable with circular cross section.

For connection of the electrodes to the panel we recommend the following cross sections:

LENGHT m		CABLE SECTION mm ²
0	50	0,5
50	100	0,75
100	200	1,0
200	400	2,5

CB-CASEL-en_b_te

Three-pole cables can be used for short lengths.

Otherwise we recommend the use of unipolar cables placed at suitable distance from each other to prevent the capacitive effect of the cable from interfering with the proper operation of the electronic module.

TYPE	POWER SUPPLY		CONTACT			DIMENSIONS A x B x C mm	WEIGHT Kg	PANELS	
	MAIN V	POWER VA	TYPE	RANGE V~	A				
KIT KSL/24	1x24	50/60 Hz	3,5	N0-C-NC	250	8	90 x 36 x 60	0,5	QSCS-QM-QTD-Q3D-Q3Y-Q3A-Q3I-Q3SF

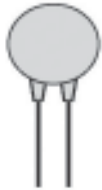
CB-SLD-en_b_te

Lightning Protection

APPLICATIONS

- Accessory for electric panels.

DPF Series



SPECIFICATIONS

- Varistor for overvoltage protection of single-phase lines. To be connected between the phase and neutral conductor.
- Operating voltage: 460 V AC.
- Maximum varistor voltage: 750 V with 100 A peak current.

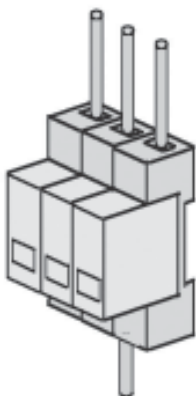
VR Series



SPECIFICATIONS

- Varistors for overvoltage protection of three-phase lines.
- To be connected between the phases (VR3 model).
- Operating voltage: 460 V AC.
- Maximum varistor voltage: 750 V with 100 A peak current.
- Designed for installation on Lowara electric panels featuring DIN bar.

SCA3 Series



SPECIFICATIONS

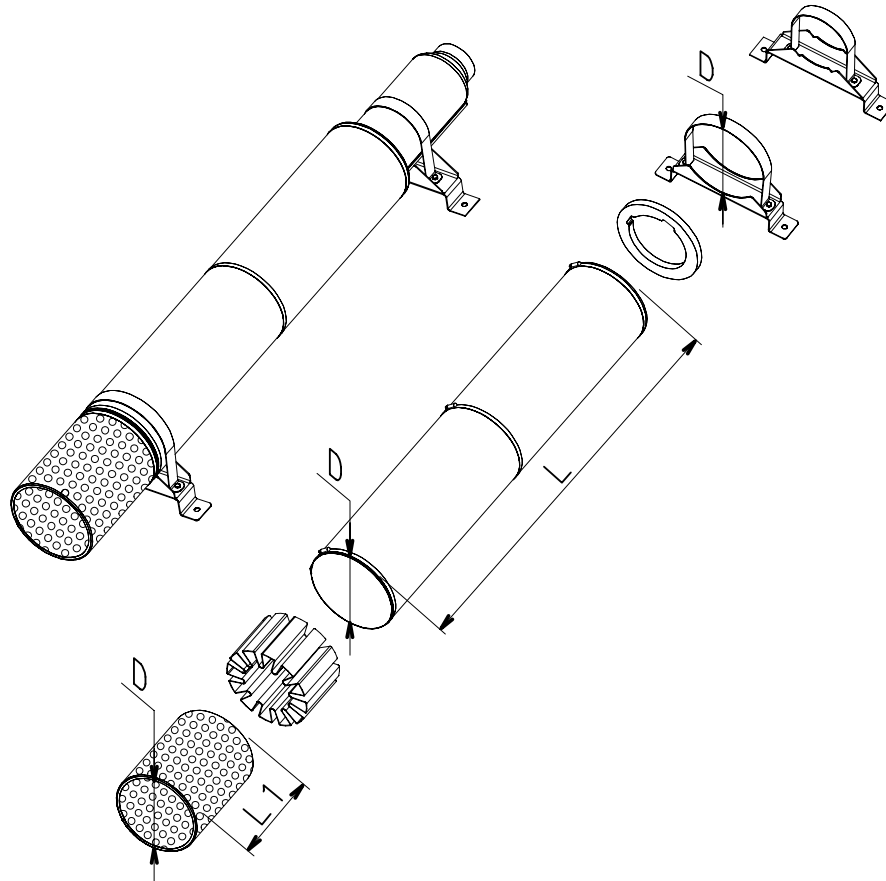
- Lightning arresters for overvoltage protection of three-phase lines. To be connected between the phases and the heart conductor,
- Operating voltage: 500 V AC.
- Maximum varistor voltage: 2,5 kW with 40 kA peak current.
- Designed for installation on Lowara electric panels featuring DIN bar.

TYPE	VOLTAGE V	PANELS
DPF	1 x 220-240 50/60 Hz	QSM - QSC - QSCS - QPC
KIT VR1	1 x 220-230 50/60 Hz	QM - QDRM - QDRM2 - QDRMC - QDRMC2
KIT VR3	3 x 400 50/60 Hz	QTD - QDR - QDR2 - Q3D
KIT SCA 3	3 x 400 50/60 Hz	Q3Y-Q3A-Q3I-Q3SF-Q3D

COOLING SHROUDS

COOLING SHROUDS

01890_B_DD



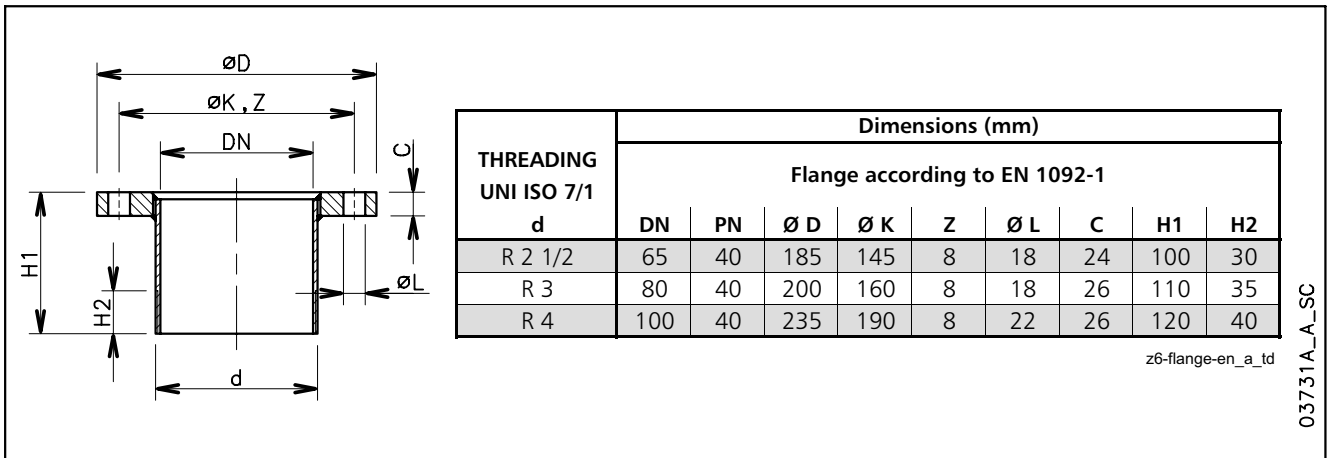
COOLING SHROUDS 6Z6 PUMP SERIES - 4" and 6" MOTORS COMBINATION TABLE

PUMP TYPE	MOTOR TYPE				COOLING SET SHROUD (D x L)	COOLING SET FILTER (D x L1)	COOLING SET BRACKETS (D)
	40S/B	L4C	L6C	L6W			
6Z612 6Z616 6Z622 6Z631 6Z646	0,55	0,55			D160X800	D160X158	D160 - 2pcs
	0,75	0,75					
	1,1	1,1					
	1,5	1,5					
	2,2	2,2					
	3	3					
	4	4					
	5,5	5,5					
6Z660	7,5	7,5			D160X1000	D160X158	D160 - 2pcs
	4	4			D180X1000	D180X192	D180 - 2pcs
	5,5	5,5					
7,5	7,5						
6Z612 6Z616 6Z622 6Z631 6Z646			3	3	D180X1000	D180X192	D180 - 2pcs
			4	4			
			5,5	5,5			
			7,5	7,5			
			9,3	9,3			
			11	11			
			-	13			
			15	15			
			18,5	18,5			
			22	22			
			-	26			
			30	30			
6Z660			37	37	D180X1500	D180X192	D180 - 3pcs
			4	4			
			5,5	5,5			
			7,5	7,5			
			9,3	9,3			
			11	11			
			-	13			
			15	15			
			18,5	18,5			
			22	22			
			-	26			
			30	30			
6Z660			37	37	D200X1000	D200X192	D200 - 2pcs
			4	4			
			5,5	5,5			
			7,5	7,5			
			9,3	9,3			
			11	11			
			-	13			
			15	15			
			18,5	18,5			
			22	22			
			-	26			
			30	30			
		37	37	D200X1500	D200X192	D200 - 3pcs	

Note: Not available for high pressure version.

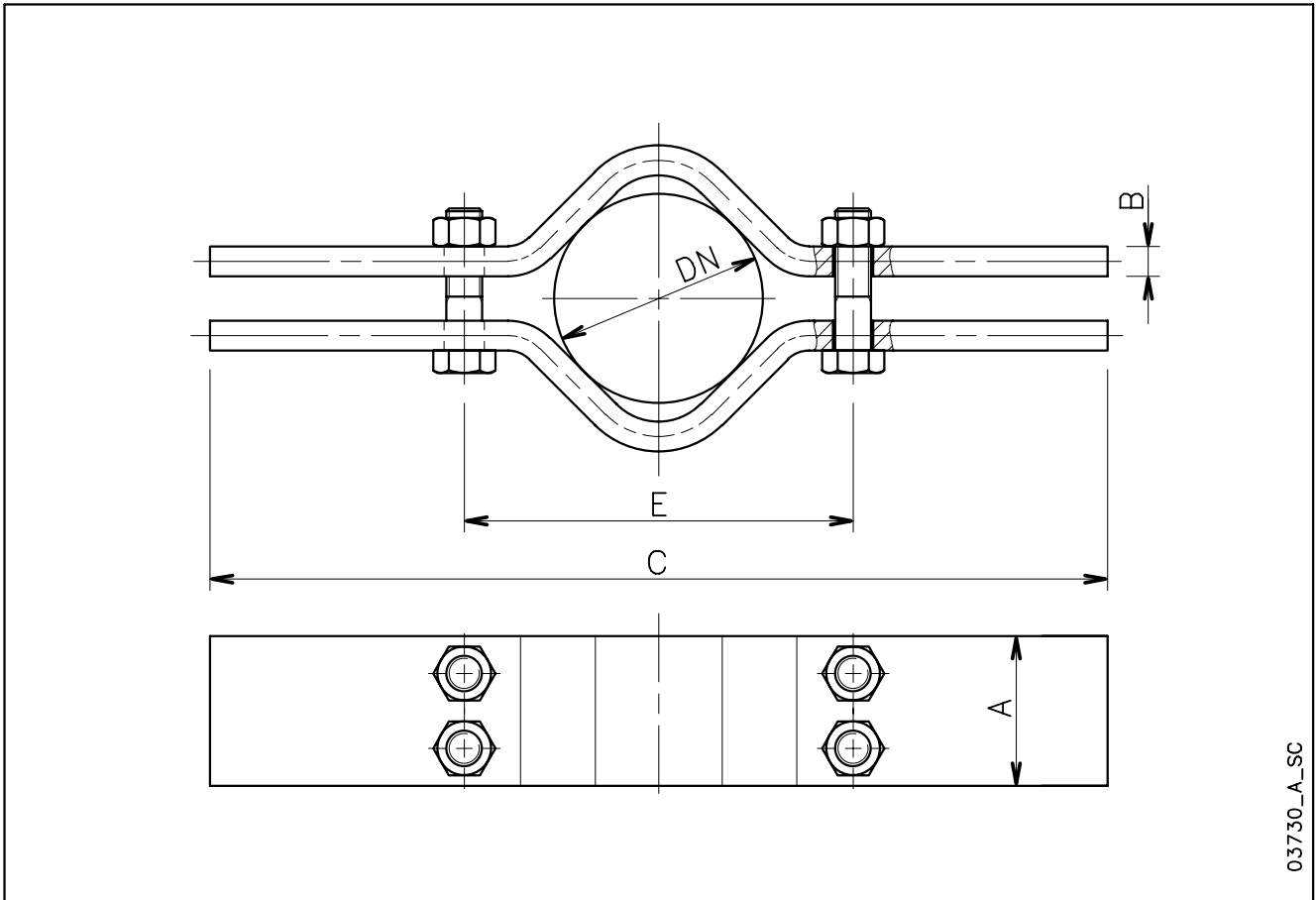
6Z6_kit-raf60-en_b_ta

ISO-THREADED FLANGES



03731A_A_SC

CARRYING CLAMPS



03730_A_SC

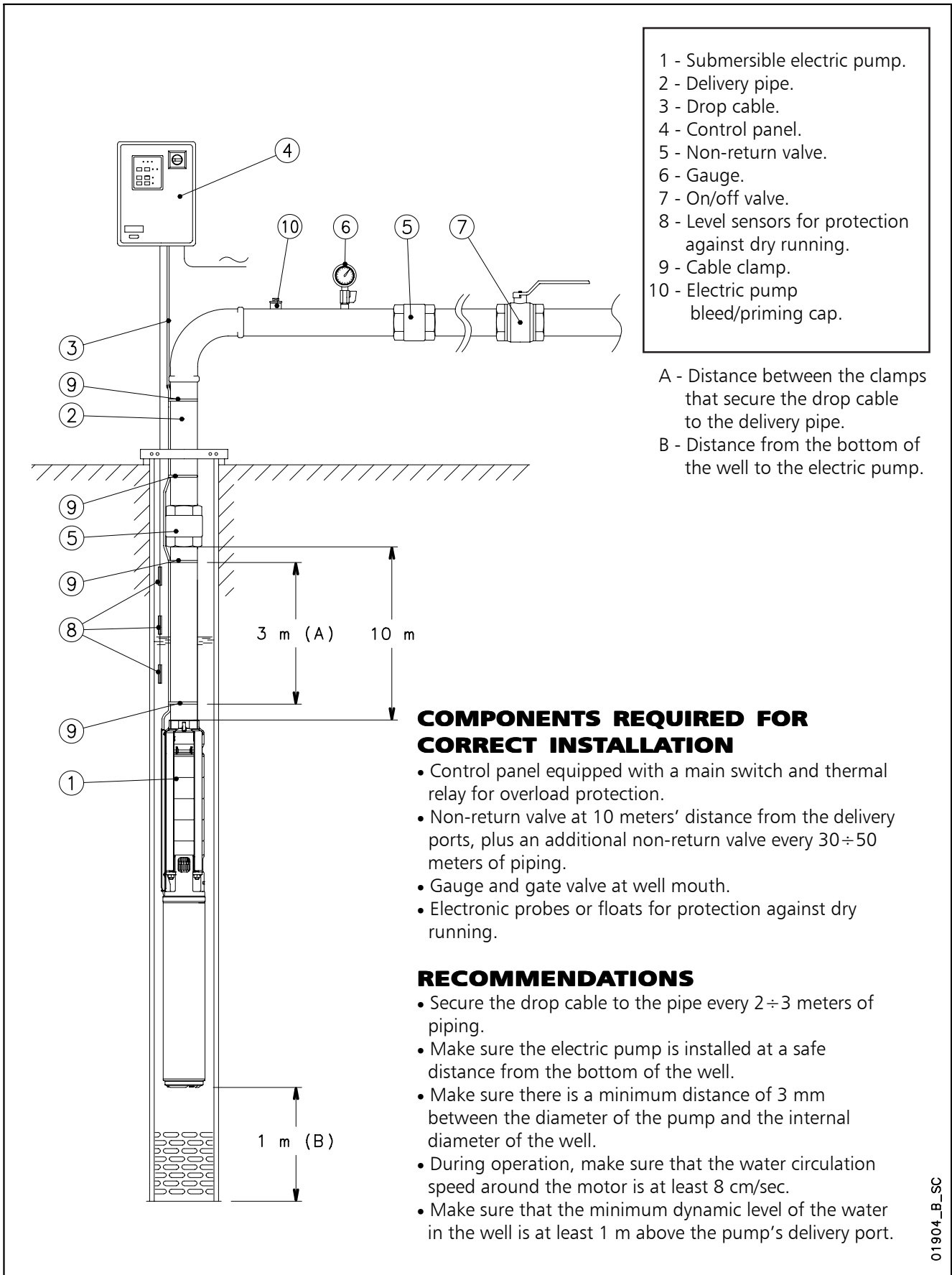
\varnothing PIPE NOMINAL DN	CARRYING CLAMPS							PIPE WEIGHT		
	Dimensions (mm)					Pmax ⁽¹⁾ kg	Flanged kg/m	Threaded kg/m	Water kg/m	
	A	B	C	E	SCREW					
65	R 2 1/2	50	15	600	130	M16x90	1300	6,7	8,0	3,3
80	R 3	80	15	600	180	M20x70	3400	8,4	10,5	5,0
100	R 4	80	15	600	180	M20x110	3400	20,5	15,0	7,9

1) Max weight allowable.

z6-clamp-en_a_td

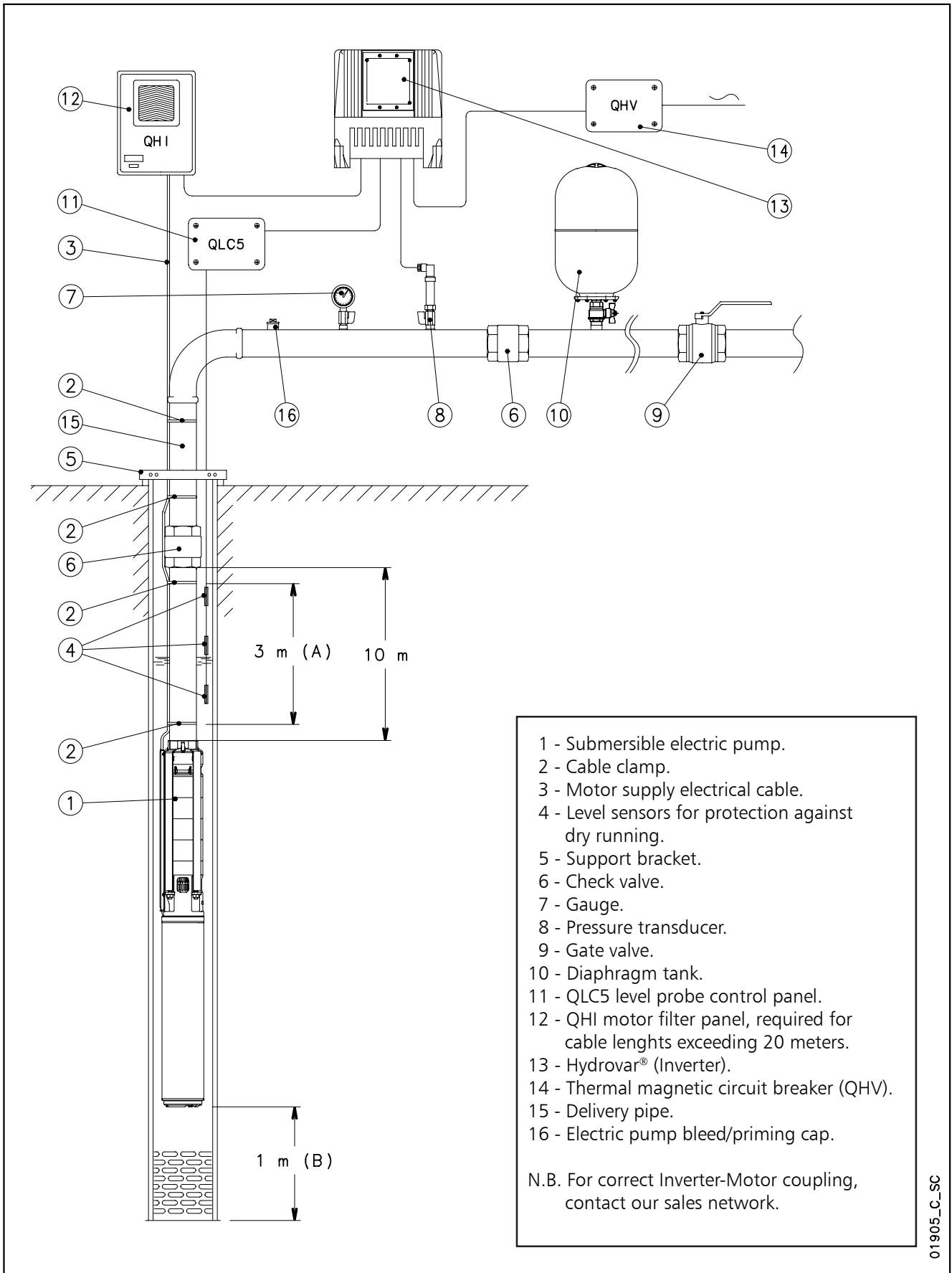
TECHNICAL APPENDIX

SUBMERSIBLE ELECTRIC PUMP INSTALLATION DIAGRAM



01904_B_SC

EXAMPLE OF INSTALLATION OF A SUBMERSIBLE ELECTRIC PUMP CONTROLLED BY AN INVERTER (HYDROVAR®)



40S MOTOR SERIES

TABLE OF POWER REDUCTION COEFFICIENTS WITH INCREASED WATER TEMPERATURE

MOTOR TYPE	RATED POWER kW	TEMPERATURE °C					
		30	35	40	45	50	55
40S	all models	1	1	0,9	0,8	0,7	0,6

40S-derating-50-en_a_te

EXAMPLE:

A 2,2 kW 40S motor is to be used in 50°C water.

Motor power at 50 °C = 2,2 x 0,7 = 1,54 kW

L4C MOTOR SERIES

TABLE OF POWER REDUCTION COEFFICIENTS WITH INCREASED WATER TEMPERATURE

MOTOR TYPE	RATED POWER kW	TEMPERATURE °C					
		30	35	40	45	50	55
L4C	all models	1	1	0,95	0,9	0,85	0,8

L4c-derating-50-en_b_te

EXAMPLE:

A 2,2 kW L4C motor is to be used in 50°C water.

Motor power at 50 °C = 2,2 x 0,85 = 1,87 kW

L6C MOTOR SERIES

TABLE OF POWER REDUCTION COEFFICIENTS WITH INCREASED WATER TEMPERATURE

MOTOR TYPE	RATED POWER kW	TEMPERATURE °C					
		35	40	45	50	55	60
L6C	all models	1	0,95	0,8	0,75	0,7	0,6

L6c-derating-50-en_b_te

EXAMPLE:

A 7,5 kW L6C motor is to be used in 45°C water.

Motor power at 50 °C = 7,5 x 0,8 = 6 kW

L6W - L8W MOTOR SERIES

TABLE OF POWER REDUCTION COEFFICIENTS WITH INCREASED WATER TEMPERATURE

MOTOR TYPE	RATED POWER kW	TEMPERATURE °C							
		25	30	35	40	45	50	55	60
STD	all models	1	1	0,75	-	-	-	-	-
HT	all models	1	1	1	1	1	0,85	0,75	0,65

(1) Standard winding for water temperature up to 35 °C.

Lw-derating-en_a_te

(2) Special winding for water temperature from 35 °C to 60 °C.

EXAMPLE:

A 15 kW L6W motor is to be used in 35°C water.

Motor power at 35 °C = 15 x 0,75 = 11,25 kW

SELECTING CABLE CROSS-SECTIONS FOR SUBMERSIBLE MOTORS

To select the cross-section of power cables for submersible pumps, consult the tables shown below. In these tables, the maximum lengths of the power cable for each cross-section are shown for each motor and next to the various input voltage ratings.

Therefore, to find the required cable cross-section, simply read off the maximum permitted lengths for each cross-section next to the selected motor and required input voltage.

E.g.:

A 100 m long power cable must be matched with a 230V L4C07M236 motor.

To determine the cross-section of the cable, simply move along the row of the 230V motor until you find the maximum length of 100 m or immediately above it and then read off the corresponding cross-section in that column.

In this case, the 4 mm² cable is selected.

N.B.: the tables include specific data (current and power factor) for each motor and voltage rating based on a maximum voltage drop of 4% (HD 384.5), a maximum cable temperature of 90°C, water installation similar to air installation at a temperature of 30°C.

CABLE TYPES

SECTION mm ²	THREE CORE FLAT					FOUR CORE FLAT					SINGLE CORE ROUND			FOUR CORE ROUND		
	Hmin mm	Lmin mm	Hmax mm	Lmax mm	Weight kg/km	Hmin mm	Lmin mm	Hmax mm	Lmax mm	Weight kg/km	Dmin mm	Dmax mm	Weight kg/km	Dmin mm	Dmax mm	Weight kg/km
4	8	19,2	9	20,8	250	8	25,2	9	26,8	395	6,5	7,5	92	14	16,1	360
6	8	19,2	9	20,8	325	8	25,2	9	26,8	470	7,4	8	118	15,7	18	475
10	8	19,2	9	20,8	535	8	25,2	9	26,8	710	8,6	10	183	20,9	23,9	836
16	-	-	-	-	-	-	-	-	-	-	9,6	11	251	23,8	27,1	1145
25	-	-	-	-	-	-	-	-	-	-	11	13	362	28,9	32,9	1716
35	-	-	-	-	-	-	-	-	-	-	12,5	14,5	497	-	-	-
50	-	-	-	-	-	-	-	-	-	-	15	17	669	-	-	-
70	-	-	-	-	-	-	-	-	-	-	17,5	19,5	901	-	-	-
95	-	-	-	-	-	-	-	-	-	-	20,5	22,5	1141	-	-	-
120	-	-	-	-	-	-	-	-	-	-	22	24,4	1435	-	-	-
150	-	-	-	-	-	-	-	-	-	-	25,2	28,3	1795	-	-	-
185	-	-	-	-	-	-	-	-	-	-	27,6	31	2156	-	-	-
240	-	-	-	-	-	-	-	-	-	-	30,6	34,5	2760	-	-	-

L-cavi-en_a_td

4OS SINGLE-PHASE, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE SINGLE-PHASE	RATED POWER		RATED VOLTAGE V	Cos φ	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ²									
	Kw	HP					mm ²	1,5	2,5	4	6	10	16	25	35	
							A max	23	32	42	54	75	100	127	158	
Maximum length in metres																
4OS03M236	0,37	0,5	220	0,99	4,50	4		71	118	191	286					
			230	0,98	4,42											
4OS05M236	0,55	0,8	220	0,99	6,23			51	85	137	206	356				
			230	0,97	6,00											
4OS07M236	0,75	1	220	0,97	7,41			43	73	117	176	304				
			230	0,94	7,36											
4OS11M236	1,1	1,5	220	0,99	9,34			33	56	91	137	237	373			
			230	0,99	9,05											
4OS15M236	1,5	2	220	0,99	12,2			25	42	69	104	181	285	441		
			230	0,97	11,9											
4OS22M236	2,2	3	220	0,93	17,1			17	31	51	78	135	212	324		
			230	0,90	17,1											
4OS03M116	0,37	0,5	110	0,99	9,02			17	29	47	71	123	193	299	418	
			115	0,98	8,86											
4OS05M116	0,55	0,75	110	0,98	12,3			12	21	35	52	91	143	220	307	
			115	0,94	12,3											
4OS07M116	0,75	1	110	0,98	14,5			10	18	29	44	76	120	186	259	
			115	0,95	14,3											
4OS11M116	1,1	1,5	110	0,99	18,1		8	14	23	35	60	96	148	208		
			115	0,98	17,7											

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

4osm-b_cavi-60_d_te

4OS THREE-PHASE, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	Cos φ	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ²													
	Kw	HP					mm ²	1,5	2,5	4	6	10	16	25	35					
							A max	23	32	42	54	75	100	127	158					
												Maximum length in metres								
4OS03T236	0,37	0,5	220	0,62	3,17	4		184	305											
			230				0,56	3,31												
4OS05T236	0,55	0,75	220	0,71	4,00	4		127	212	339										
			230				0,65	4,05												
4OS07T236	0,75	1	220	0,66	5,21	4		104	174	279	414									
			230				0,59	5,51												
4OS11T236	1,1	1,5	220	0,72	6,53	4		76	127	204	304									
			230				0,65	6,70												
4OS15T236	1,5	2	220	0,71	8,40	4		59	99	160	239	407								
			230				0,65	8,73												
4OS22T236	2,2	3	220	0,71	11,6	4		41	71	115	172	294	454							
			230				0,64	12,5												
4OS30T236	3	4	220	0,79	14,5	4		29	50	82	124	213	331							
			230				0,72	14,8												
4OS40T236	4	5,5	220	0,85	17,7	4		21	37	62	94	163	254	386						
			230				0,81	17,4												
4OS55T236	5,5	7,5	220	0,86	24,4	4		-	33	52	78	133	206	312	428					
			230				0,83	23,8												
4OS75T236	7,5	10	220	0,75	36,8	4		-	-	29	47	84	133	201	276					
			230				0,68	38,1												
4OS03T386	0,37	0,5	380	0,62	1,83			552												
4OS05T386	0,55	0,75	380	0,71	2,31			382												
4OS07T386	0,75	1	380	0,66	3,01			315	522											
4OS11T386	1,1	1,5	380	0,72	3,77			230	383											
4OS15T386	1,5	2	380	0,71	4,85			180	301	482										
4OS22T386	2,2	3	380	0,71	6,69			129	217	349	519									
4OS30T386	3	4	380	0,79	8,35			92	156	251	376									
4OS40T386	4	5,5	380	0,85	10,2			69	118	191	287	492								
4OS55T386	5,5	7,5	380	0,86	14,1			47	82	135	203	351								
4OS75T386	7,5	10	380	0,75	21,2			32	59	99	150	261	406							

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

4ost-b_cavi-60_c_te

L4C SINGLE-PHASE, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE	RATED POWER		RATED VOLTAGE	Cos φ	CURRENT AT S.F.	VOLTAGE DROP	Cable cross section: 4G x ...mm ²												
							mm ²	1,5	2,5	4	6	10	16	25	35				
							A max	23	32	42	54	75	100	127	158				
SINGLE-PHASE	Kw	HP	V		A	%	Maximum lenght in metres												
L4C03M236	0,37	0,5	220	0,93	5,3	4													
			230	0,89	5,5														
L4C05M236	0,55	0,75	220	0,89	7,0														
			230	0,84	7,4		49,6	83,4	135	202	346								
L4C07M236	0,75	1	220	0,93	8,5														
			230	0,89	8,9		40	68	110	165	284	443							
L4C11M236	1,1	1,5	220	0,88	12,2														
			230	0,84	12,7		27,5	47,2	77	116	199	312							
L4C15M236	1,5	2	220	0,98	13,1														
			230	0,97	12,8		23	39	65	98	170	267	412						
L4C22M236	2,2	3	220	0,96	17,6														
			230	0,96	17,1		16,3	29	48,1	73,2	127	201	309						
L4C40M236	4,0	5,5	220	0,93	30,7														
			230	0,92	29,7		-	15	26	41	73	116	179	249					
L4C03M116	0,37	0,5	110	0,93	10,6														
			115	0,89	11,0		15,2	26	42,3	63,6	110	172	262	364					
L4C05M116	0,55	0,75	110	0,89	14,0														
			115	0,84	14,8		12	20	33	50	86	134	205	282					
L4C07M116	0,75	1	110	0,93	17,0														
			115	0,89	17,8	9,03	16,1	26,6	40,5	70,2	110	168	232						

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l4cm-cavi-60-en_b_te

L4C THREE-PHASE, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE	RATED POWER		RATED VOLTAGE	Cos φ	CURRENT AT S.F.	VOLTAGE DROP	Cable cross section: 4G x ...mm ²											
							mm ²	1,5	2,5	4	6	10	16	25	35			
							A max	23	32	42	54	75	100	127	158			
THREE-PHASE	Kw	HP	V		A	%	Maximum length in metres											
L4C03T236	0,37	0,5	220	0,78	3,5	4		131	218									
			230	0,76	3,8													
L4C05T236	0,55	0,75	220	0,82	4,6			95,8	160	257								
			230	0,77	4,8													
L4C07T236	0,75	1	220	0,74	5,3			92,9	155	249	371							
			230	0,72	5,6													
L4C11T236	1,1	1,5	220	0,75	7,5			63	106	171	255							
			230	0,72	7,8													
L4C15T236	1,5	2	220	0,71	9,4			52,2	88,4	143	213	363						
			230	0,68	9,8													
L4C22T236	2,2	3	220	0,77	11,5			39,5	67,7	110	165	282	438					
			230	0,75	12													
L4C30T236	3	4	220	0,73	16,5			27,4	48,4	79,8	121	207	321					
			230	0,7	17,3													
L4C40T236	4	5,5	220	0,8	18,8			20,6	36,9	61,3	93,2	161	252	380				
			230	0,78	19,2													
L4C55T236	5,5	7,5	220	0,8	25,4			-	25,6	43,6	67,3	118	185	280	385			
			230	0,78	26													
L4C03T386	0,37	0,5	380	0,76	2,3			359										
L4C05T386	0,55	0,75	380	0,77	2,9			281										
L4C07T386	0,75	1	380	0,72	3,4		255	425										
L4C11T386	1,1	1,5	380	0,72	4,7		184	306										
L4C15T386	1,5	2	380	0,68	5,9		154	257	413									
L4C22T386	2,2	3	380	0,75	7,2		114	191	307	458								
L4C30T386	3	4	380	0,73	9,5		86,8	147	238	355								
L4C40T386	4	5,5	380	0,78	11,6		65,3	112	181	272	466							
L4C55T386	5,5	7,5	380	0,78	15,7		45,8	80,3	132	199	343							
L4C75T386	7,5	10	380	0,8	20		-	59,3	98,9	151	261	408						

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l4c-cavi-60-en_b_te

L6C, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE	RATED POWER		RATED VOLTAGE	Cos φ	CURRENT AT S.F.	VOLTAGE DROP	Cable cross section: 4G x ...mm ²								
							mm ²	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
THREE-PHASE	Kw	HP	V		A	%	Maximum length in metres								
L6C40T236	4	5,5	230	0,80	19,0	4		63	96	167	260	393	539		
L6C40T386			380	0,80	11,5		179	268	460						
L6C40T405			460	0,80	9,5		264	394							
L6C55T236	5,5	7,5	230	0,80	26,6		43	67	117	184	279	384	527		
L6C55T386			380	0,80	16,1		125	189	327	509					
L6C55T405			460	0,80	13,1		189	284	488	758					
L6C75T236	7,5	10	230	0,81	33,0		33	52	92	146	222	306	421		
L6C75T386			380	0,81	20,0		98	149	258	404					
L6C75T405			460	0,81	16,5		146	221	381	594					
L6C93T236	9,3	12,5	230	0,80	41,2		25	40	73	116	178	245	338	457	
L6C93T386			380	0,80	25,0		77	118	207	325	492				
L6C93T405			460	0,80	20,6		116	177	307	479					
L6C110T236	11	15	230	0,82	46,6		-	33	62	99	153	212	294	399	
L6C110T386			380	0,82	28,2		-	101	178	281	427				
L6C110T405			460	0,82	23,3		-	151	264	414					
L6C150T236	15	20	230	0,83	61,6		-	-	43	72	112	157	219	299	
L6C150T386			380	0,83	37,3		-	72	130	207	317	438			
L6C150T405			460	0,83	30,8		-	109	194	307	468				
L6C185T236	18,5	25	230	0,80	80,0		-	-	-	54	86	121	169	232	
L6C185T386			380	0,80	48,4		-	53	99	161	248	343	474		
L6C185T405			460	0,80	40		-	83	150	240	367	506			
L6C220T236	22	30	230	0,77	99,6		-	-	-	42	68	97	137	187	
L6C220T386			380	0,77	60,2		-	-	79	130	202	280	387	523	
L6C220T405			460	0,77	49,8		-	65	120	195	300	414			
L6C300T386	30	40	380	0,82	75,0		-	-	55	94	150	211	296	405	
L6C300T405			460	0,82	62,0		-	-	87	144	225	314	438		
L6C370T386	37	50	380	0,88	90,0		-	-	-	70	114	164	233	325	
L6C370T405			460	0,88	77,0		-	-	-	104	166	237	335	463	

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l6c_cavi-60-en_c_te

L6C, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ² + 3 x ...mm ²												
	Kw	HP					mm ²	4	6	10	16	25	35	50	70				
							A max*	73	94	130	173	220	274	333	426				
							Maximum length in metres												
L6C40T236	4	5,5	230	0,80	19,0	4		114	170	292	453								
L6C40T386			380	0,80	11,5		314	468											
L6C40T405			460	0,80	9,5		460												
L6C55T236	5,5	7,5	230	0,80	26,6		80	120	207	323	487								
L6C55T386			380	0,80	16,1		223	333											
L6C55T405			460	0,80	13,1		333	497											
L6C75T236	7,5	10	230	0,81	33,0		62	95	164	257	388	533							
L6C75T386			380	0,81	20,0		176	264	453										
L6C75T405			460	0,81	16,5		260	389											
L6C93T236	9,3	12,5	230	0,80	41,2		49	76	132	207	313	430							
L6C93T386			380	0,80	25,0		141	212	365	568									
L6C93T405			460	0,80	20,6		209	314	538										
L6C110T236	11	15	230	0,82	46,6		42	65	113	178	271	373	514						
L6C110T386			380	0,82	28,2		121	183	316	492									
L6C110T405			460	0,82	23,3		179	270	464										
L6C150T236	15	20	230	0,83	61,6		29	46	83	132	202	278	385	522					
L6C150T386			380	0,83	37,3		88	135	234	367	556								
L6C150T405			460	0,83	30,8		132	200	345	540									
L6C185T236	18,5	25	230	0,80	80,0		-	34	64	103	158	218	301	407					
L6C185T386			380	0,80	48,4		67	105	184	289	439								
L6C185T405			460	0,80	40		102	156	272	426									
L6C220T236	22	30	230	0,77	99,6		-	-	50	83	128	178	246	332					
L6C220T386			380	0,77	60,2		53	84	150	238	361	496							
L6C220T405			460	0,77	49,8		82	127	223	351	532								
L6C300T386	30	40	380	0,82	75,0		-	60	111	178	274	379	524						
L6C300T405			460	0,82	62,0		58	93	166	264	404	558							
L6C370T386	37	50	380	0,88	90,0		-	44	84	137	213	299	418	574					
L6C370T405			460	0,88	77,0		40	66	122	197	305	425							

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l6c_cavi-SD-60_a_te

*A max is the maximum rated current of the motor

L6W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ²								
	Kw	HP					mm2	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
Maximum length in metres															
L6W40T236	4	5,5	230	0,83	19,0	4		61	93	161	252	382	525		
L6W40T386			380	0,87	11,2		170	255	438						
L6W40T405			460	0,87	9,2		253	379							
L6W55T236	5,5	7,5	230	0,79	26,4		44	68	120	188	284	390			
L6W55T386			380	0,84	15,1		128	194	334	521					
L6W55T405			460	0,85	12,2		192	289	497						
L6W75T236	7,5	10	230	0,82	33,6		32	50	89	141	216	297	411		
L6W75T386			380	0,86	19,4		96	146	253	396					
L6W75T405			460	0,87	15,8		143	216	374	585					
L6W93T236	9,3	12,5	230	0,82	41,3		24	39	71	113	174	241	333	451	
L6W93T386			380	0,86	23,8		76	117	204	321	489				
L6W93T405			460	0,87	19,5		114	173	301	472					
L6W110T236	11	15	230	0,83	47,9		-	32	59	95	147	205	284	386	
L6W110T386			380	0,87	27,8		62	97	172	271	414				
L6W110T405			460	0,87	22,8		95	146	256	403	614				
L6W130T236	13	17,5	230	0,81	57,4		-	-	48	79	124	172	239	325	
L6W130T386			380	0,85	32,9		52	82	146	232	354	490			
L6W130T405			460	0,88	26,4		80	123	217	343	524				
L6W150T236	15	20	230	0,84	62,5		-	-	42	70	109	153	214	293	
L6W150T386			380	0,87	36,6		44	70	127	203	312	433			
L6W150T405			460	0,86	30,5		68	107	190	301	460				
L6W185T236	18,5	25	230	0,82	78,2		-	-	-	54	86	122	171	235	
L6W185T386			380	0,86	45,1		-	55	101	164	253	351	489		
L6W185T405			460	0,87	36,7		-	85	153	245	376	522			
L6W220T236	22	30	230	0,82	91,9		-	-	-	44	71,1	102	144	198	
L6W220T386			380	0,85	53,8		-	44	83	136	211	295	411		
L6W220T405			460	0,84	45,0		-	68	125	202	312	433	601		
L6W260T236	26	35	230	0,76	117		-	-	-	-	56	81	115	159	
L6W260T386			380	0,81	66,5		-	-	66	110	173	243	338	461	
L6W260T405			460	0,83	53,7		-	-	103	168	261	363	505		
L6W300T236	30	40	230	0,82	126	-	-	-	-	47,2	69,7	100	141		
L6W300T386			380	0,86	72,6	-	-	55	94	150	212	298	410		
L6W300T405			460	0,86	61,0	-	-	85	141	221	310	433	594		
L6W370T386	37	50	380	0,82	95,9	-	-	-	68	112	160	226	313		
L6W370T405			460	0,84	77,1	-	-	-	108	172	244	343	471		

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

I6w_cavi-60_b_te

L6W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ² + 3 x ...mm ²												
	Kw	HP					mm ²	4	6	10	16	25	35	50	70				
							A max*	73	94	130	173	220	274	333	426				
							Maximum length in metres												
L6W40T236	4	5,5	230	0,83	19,0	4		110	165	282	440								
L6W40T386			380	0,87	11,2		297	445											
L6W40T405			460	0,87	9,2		441												
L6W55T236	5,5	7,5	230	0,79	26,4		81	123	211	329	496								
L6W55T386			380	0,84	15,1		227	340	582										
L6W55T405			460	0,85	12,2		338	505											
L6W75T236	7,5	10	230	0,82	33,6		61	92	160	249	378	519							
L6W75T386			380	0,86	19,4		172	258	443										
L6W75T405			460	0,87	15,8		254	380											
L6W93T236	9,3	12,5	230	0,82	41,3		48	74	129	202	307	421							
L6W93T386			380	0,86	23,8		139	209	360	562									
L6W93T405			460	0,87	19,5		204	307	528										
L6W110T236	11	15	230	0,83	47,9		40	62	109	172	261	360	496						
L6W110T386			380	0,87	27,8		116	176	304	476									
L6W110T405			460	0,87	22,8		174	261	450										
L6W130T236	13	17,5	230	0,81	57,4		33	51	92	145	221	304	419	567					
L6W130T386			380	0,85	32,9		99	151	261	409									
L6W130T405			460	0,88	26,4		147	222	384										
L6W150T236	15	20	230	0,84	62,5		28	45	81	128	197	272	377	512					
L6W150T386			380	0,87	36,6		86	131	229	359	548								
L6W150T405			460	0,86	30,5		129	195	338	529									
L6W185T236	18,5	25	230	0,82	78,2		21	35	64	103	158	219	304	412					
L6W185T386			380	0,86	45,1		68	106	186	293	447								
L6W185T405			460	0,87	36,7		104	159	276	434									
L6W220T236	22	30	230	0,82	91,9		-	28	53	86	133	185	257	350					
L6W220T386			380	0,85	53,8		56	88	155	246	376	519							
L6W220T405			460	0,84	45,0		85	131	230	362	552								
L6W260T236	26	35	230	0,76	117		-	-	41	69	108	151	209	283					
L6W260T386			380	0,81	66,5		44	71	128	205	313	432							
L6W260T405			460	0,83	53,7		69	109	193	305	464								
L6W300T236	30	40	230	0,82	126	-	-	35	59	94	132	185	253						
L6W300T386			380	0,86	72,6	37	60	110	177	273	379	527							
L6W300T405			460	0,86	61,0	57	90	162	258	396	549								
L6W370T386	37	50	380	0,82	95,9	-	-	83	135	210	293	407	553						
L6W370T405			460	0,84	77,1	-	69	127	205	316	438								

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l6w_cavi-SD-60_b_te

*A max is the maximum rated current of the motor

L8W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw HP		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm ²										
							mm2	10	16	25	35	50	70	95	120	150	
							A max	75	100	127	158	192	246	298	346	399	
							Maximum lenght in metres										
L8W300T386	30	40	380	0,83	78,0	4		-	89	142	201	282	387	485			
L8W300T405			460	0,83	64,4		81	136	213	299	418						
L8W370T386	37	50	380	0,83	96,1			-	68	110	158	224	310	391	478		
L8W370T405			460	0,83	79,4			-	105	168	238	335	460				
L8W450T386	45	60	380	0,85	114			-	52	87	127	182	255	324	398		
L8W450T405			460	0,85	94,3			-	82	134	193	273	379	479			
L8W520T386	52	70	380	0,83	134			-	-	-	106	154	217	276	339	442	
L8W520T405			460	0,83	110			-	-	112	163	232	324	409	501		
L8W550T386	55	75	380	0,85	139			-	-	-	99	144	205	262	323	426	
L8W550T405			460	0,85	115			-	-	104	152	219	306	389	478		
L8W600T386	60	80	380	0,85	149			-	-	-	90	133	189	243	301	398	
L8W600T405			460	0,85	123			-	-	95	140	202	284	362	446		
L8W670T386	67	90	380	0,86	168			-	-	-	113	163	212	263	352		
L8W670T405			460	0,86	139			-	-	-	118	173	247	316	391	516	
L8W750T386	75	100	380	0,85	187			-	-	-	99	145	189	235	318		
L8W750T405			460	0,85	154			-	-	-	104	154	220	284	351	465	
L8W830T386	83	110	380	0,85	206			-	-	-	-	128	168	211	288		
L8W830T405			460	0,85	170			-	-	-	-	135	196	254	315	421	
L8W930T386	93	125	380	0,87	231			-	-	-	-	109	146	184	257		
L8W930T405			460	0,87	191			-	-	-	-	114	169	221	277	377	

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l8w_cavi-60_b_te

L8W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE	RATED POWER		RATED VOLTAGE	Cos φ AT S.F.	CURRENT AT S.F.	VOLTAGE DROP	Cable cross section: 4G x ...mm ² + 3 x ...mm ²									
							mm ²	4	6	10	16	25	35	50	70	95
							A max*	73	94	130	173	220	274	333	426	516
THREE-PHASE	Kw	HP	V		A	%	Maximum length in metres									
L8W300T386	30	40	380	0,83	78,0	4		-	57	105	169	260	361	500		
L8W300T405			460	0,83	64,4			55	88	158	251	385				
L8W370T386	37	50	380	0,83	96,1			-	-	81	134	208	290	403		
L8W370T405			460	0,83	79,4			-	67	124	201	309	429			
L8W450T386	45	60	380	0,85	114			-	-	64	107	169	237	332	456	
L8W450T405			460	0,85	94,3			-	52	99	162	252	352	491		
L8W520T386	52	70	380	0,83	134			-	-	-	90	143	203	285	391	
L8W520T405			460	0,83	110			-	-	83	138	216	303	422		
L8W550T386	55	75	380	0,85	139			-	-	-	84	134	191	269	371	
L8W550T405			460	0,85	115			-	-	77	128	203	285	399		
L8W600T386	60	80	380	0,85	149			-	-	-	77	124	177	250	345	487
L8W600T405			460	0,85	123			-	-	70	118	188	265	372		
L8W670T386	67	90	380	0,86	168			-	-	-	64	106	152	217	302	430
L8W670T405			460	0,86	139			-	-	-	100	161	229	324	447	
L8W750T386	75	100	380	0,85	187			-	-	-	-	94	136	195	272	389
L8W750T405			460	0,85	154			-	-	-	89	144	206	292	403	
L8W830T386	83	110	380	0,85	206			-	-	-	-	82	121	174	244	352
L8W830T405			460	0,85	170			-	-	-	77,6	127	184	261	363	
L8W930T386	93	125	380	0,87	231			-	-	-	-	69	103	150	213	313
L8W930T405			460	0,87	191			-	-	-	-	108	158	227	318	458

Exposed cable laid at a temperature of 30°C, maximum conductor temperature of 90°C

l8w_cavi-SD-60_a_te

*A max is the maximum rated current of the motor

SPLICE BETWEEN DROP CABLE AND MOTOR CABLE

MOTOR TYPE	POWER kW	TYPE OF JOINT	FOUR-CORE DROP CABLE - SECTION (mm ²)															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
4OS L4C	0,37 - 7,5	Resin-filled method	GR2	GR2	GR2 GR6	GR2 GR6	GR2 GR6	GR6 GR7	GR6 GR7	GR7 GR5	GR5	GR5	GR5	-	-	-	-	-
		Heat-shrink method	GT1	GT1	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + self-vulcanizing sealing putty and PVC tape (1)															
L6C L6W	4 - 37	Resin-filled method	GR2	GR2	GR2 GR6	GR2 GR6	GR2 GR6	GR6 GR7	GR6 GR7	GR7 GR5	GR5	GR5	GR5	-	-	-	-	-
		Heat-shrink method	GT1	GT1	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + self-vulcanizing sealing putty and PVC tape (1)															

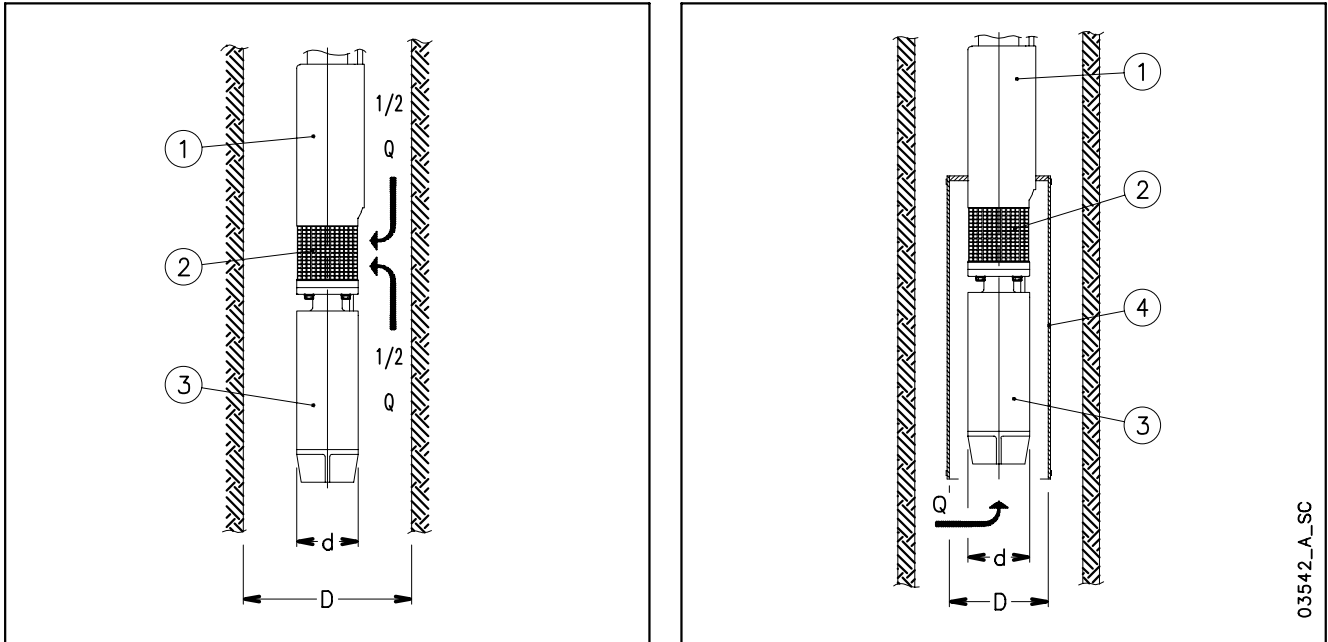
MOTOR TYPE	POWER kW	TYPE OF JOINT	THREE-CORE DROP CABLE - SECTION (mm ²)															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
L6C L6W	4 - 37	Resin-filled method	GR2	GR2	GR2 GR6	GR2 GR6	GR2 GR6	GR6 GR7	GR6 GR7	GR7 GR5	GR5	GR5	GR5	-	-	-	-	-
		Heat-shrink method	GT1	GT1	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + PVC tape															

MOTOR TYPE	POWER kW	TYPE OF JOINT	SINGLE-CORE DROP CABLE - SECTION (mm ²)															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
L8W L10W L12W	30 - 300	Resin-filled method	-	GR1	GR1	GR1	GR1	GR1	GR1 GR3	GR1 GR3	GR1 GR3	GR3 GR4	GR3 GR4	GR3 GR4	GR3 GR4	GR3 GR4	GR4	GR4
		Heat-shrink method	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + PVC tape															

(1) Use self-vulcanizing sealing putty to fill in the gaps between the three-conductor cable and the ground cable in the area covered by the final layer of tape, to restore continuity to the protective sheath.

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CALCULATING THE SPEED OF THE FLUID THAT FLOWS AROUND A SUBMERGED MOTOR AND SIZING OF THE COOLING SLEEVE



The following formula is used to verify whether the speed of the fluid that flows around the motor of a submersible pump is high enough to guarantee the proper cooling of the motor:

$$v = \frac{\frac{Q}{2}}{\pi \cdot \left(\frac{D^2}{4} - \frac{d^2}{4} \right)}$$

Where: Q in [m³/s] is the operating flow rate of the electric pump; only half of this flow is taken into account, because the fluid which is sucked into the area of the filter (2), comes from the motor side (3) as well as from the pump side (1);
D in [m] corresponds to the diameter of the well;
d in [m] corresponds to the diameter of the motor (3);
v in [m/s] is the calculated speed of the fluid that flows around the motor.

Now, compare the speed thus calculated (v) with the minimum speed required for correct cooling of the motor (v_m): if v ≥ v_m it means that the motor is properly cooled, if v < v_m will be necessary to mount a cooling sleeve (4).

Example:

An electric pump OZ630/12 (motor diameter d = 0.144 m) operates in an 8" well (well diameter D = 0.203 m) with flow rate Q = 20 m³/h = 0.0055 m³/s.

Speed of fluid v = (0.0055/2) / {π·[(0.203)²/4 – (0.144)²/4]} = 0.17 m/s.

The minimum speed required for proper motor cooling is v_m = 0.20 m/s.

Because v < v_m, it will be necessary to mount a cooling sleeve.

The following formula is used to determine the maximum diameter of a cooling sleeve to be mounted on a submersible motor:

$$D = \sqrt{4 \cdot \left(\frac{Q}{v \cdot \pi} + \frac{d^2}{4} \right)}$$

Where: Q in [m³/s] is the operating flow rate of the electric pump; the entire flow is taken into account because the fluid comes from the motor side (3) only;
D in [m] corresponds to the diameter of the cooling sleeve (4);
d in [m] corresponds to the diameter of the motors(3);
v_m in [m/s] is the minimum speed of the fluid that flows around the motor.

If the electric pump operates at different flow rate, the minimum flow rate must be taken into account for calculating the diameter of the cooling sleeve.

Example:

A motor coupled to the electric pump OZ615/24 (motor diameter d = 0.144 m), which operates with flow rate Q = 15 m³/h = 0.0042 m³/s, requires a minimum speed of the fluid of v_m = 0.20 m/s.

Cooling sleeve diameter D = {4·[(0.0042/(0.2·π)+(0.144)²/4]}^{0.5} = 0.217 m.

ASYNCHRONOUS MOTOR STARTING SYSTEMS

Direct

Suitable for low-power motors.

The starting current (I_s) is much higher than the rated current (I_n).

$$\text{Starting current } I_s = I_n \times 4 \div 8$$

$$\text{Starting torque } T_s = T_n \times 2 \div 3$$

Indirect

• Star/Delta

The starting current (I_s) is three times less than the direct starting current.

$$\text{Starting current } I_s = I_n \times 1.3 \div 2.7$$

$$\text{Starting torque } T_s = T_n \times 0.7 \div 1$$

In the star to delta changeover phase (approx. 70 ms) the motor is not supplied and tends to reduce its rotation speed.

In the case of submersible electric pumps with power above 10 HP, the modest mass of the rotor causes a slowdown at changeover, so that the initial Star supply phase is rendered partially useless.

In such cases we recommend using impedance panels or an autotransformer.

• Impedances

The motor is started with a voltage which is lower than the rated one, and which is obtained by means of impedances.

The Lowara panels use impedances which cut down to 70% the starting voltage.

The switch to the rated voltage takes place without any interruptions of the power supply.

$$\text{Rated voltage } U_n = 400 \text{ V}$$

$$\text{Starting voltage } U_s = U_n \times 0,7 = 280 \text{ V}$$

Starting current

$$I_s = I_n \times 4 \div 8 \times \left(\frac{U_s}{U_n} \right) = I_n \times 3 \div 6$$

Starting torque

$$T_s = T_n \times 2 \div 3 \times \left(\frac{U_s}{U_n} \right)^2 = T_n \times 1 \div 1,5$$

Autotransformer

The pump is started with a voltage which is lower than the rated one.

The Lowara panels use an autotransformer with a voltage that is 70% the value of the line voltage.

The switch to the rated voltage occurs without any interruptions of the power supply.

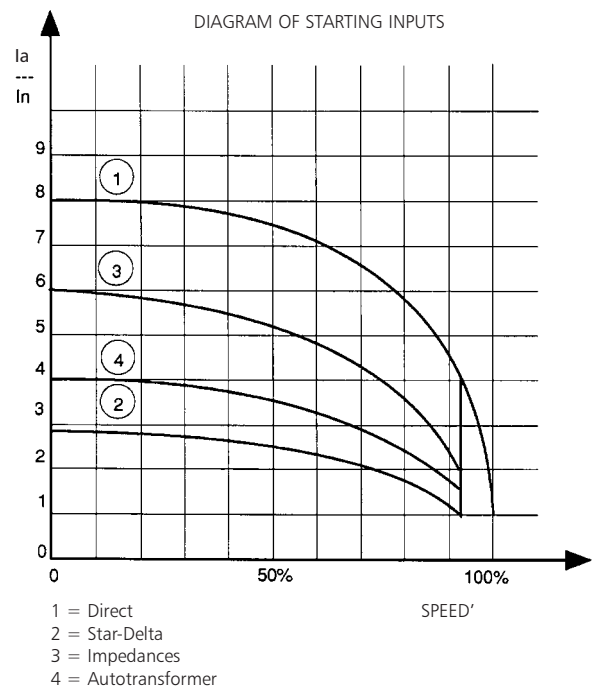
$$\text{Rated voltage } U_n = 400 \text{ V}$$

Starting current

$$I_s = I_n \times 4 \div 8 \times \left(\frac{U_s}{U_n} \right) = I_n \times 3 \div 6$$

Starting torque

$$T_s = T_n \times 2 \div 3 \times \left(\frac{U_s}{U_n} \right)^2 = T_n \times 1 \div 1,5$$



WATER REQUIREMENTS IN CIVIL USERS

Determination of the water requirement depends on the type of users and contemporaneity factor. The calculation may be subject to regulations, standards or customs that may vary from country to country. The calculation method shown below is an example based on practical experience, designed to provide a reference value and not a substitute for detailed analytical calculation.

Water requirements in condominiums

The **consumption table** shows the maximum values for each delivery point, depending on the plumbing amenities.

MAXIMUM CONSUMPTION FOR EACH DELIVERY POINT

TYPE	CONSUMPTION (l/min)
Sink	9
Dishwasher	10
Washing machine	12
Shower	12
Bathtub	15
Washbasin	6
Bidet	6
Flush tank WC	6
Controlled flushing system WC	90

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The **sum of the water consumption values** of each delivery point determines the maximum theoretical requirement, which must be reduced according to the **contemporaneity coefficient**, because in actual fact the delivery points are never used all together.

$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}}$	Coefficient for apartments with one bathroom and flush tank WC
$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}}$	Coefficient for apartments with one bathroom and controlled flushing system WC
$f = \frac{1,03}{\sqrt{(0,545 \times Nr \times Na)}}$	Coefficient for apartments with two bathrooms and flush tank WC
$f = \frac{0,8}{\sqrt{(0,727 \times Nr \times Na)}}$	Coefficient for apartments with two bathrooms and controlled flushing system WC
f= coefficient; Nr= number of delivery points; Na= number of apartments	

The **table of water requirements in civil users** shows the maximum contemporaneity flow-rate values based on the **number of apartments** and the type of WC for apartments with one bathroom and two bathrooms. As regards apartments with one bathroom, 7 drawing points have been taken into consideration, while 11 points have been considered for apartments with two bathrooms. If the number of drawing points or apartments is different, use the formulas to **calculate** the requirement.

TABLE OF WATER REQUIREMENTS IN CIVIL USERS

NUMBER OF APARTMENTS	WITH FLUSH TANK WC		WITH CONTROLLED FLUSHING SYSTEM WC	
	1	2	1	2
	FLOW RATE (l/min)			
1	32	40	60	79
2	45	56	85	111
3	55	68	105	136
4	63	79	121	157
5	71	88	135	176
6	78	97	148	193
7	84	105	160	208
8	90	112	171	223
9	95	119	181	236
10	100	125	191	249
11	105	131	200	261
12	110	137	209	273
13	114	143	218	284
14	119	148	226	295
15	123	153	234	305
16	127	158	242	315
17	131	163	249	325
18	134	168	256	334
19	138	172	263	343
20	142	177	270	352
21	145	181	277	361
22	149	185	283	369
23	152	190	290	378
24	155	194	296	386
25	158	198	302	394
26	162	202	308	401
27	165	205	314	409
28	168	209	320	417
29	171	213	325	424
30	174	217	331	431
35	187	234	357	466
40	200	250	382	498
45	213	265	405	528
50	224	280	427	557
55	235	293	448	584
60	245	306	468	610
65	255	319	487	635
70	265	331	506	659
75	274	342	523	682
80	283	354	540	704
85	292	364	557	726
90	301	375	573	747
95	309	385	589	767
100	317	395	604	787
120	347	433	662	863
140	375	468	715	932
160	401	500	764	996
180	425	530	811	1056
200	448	559	854	1114

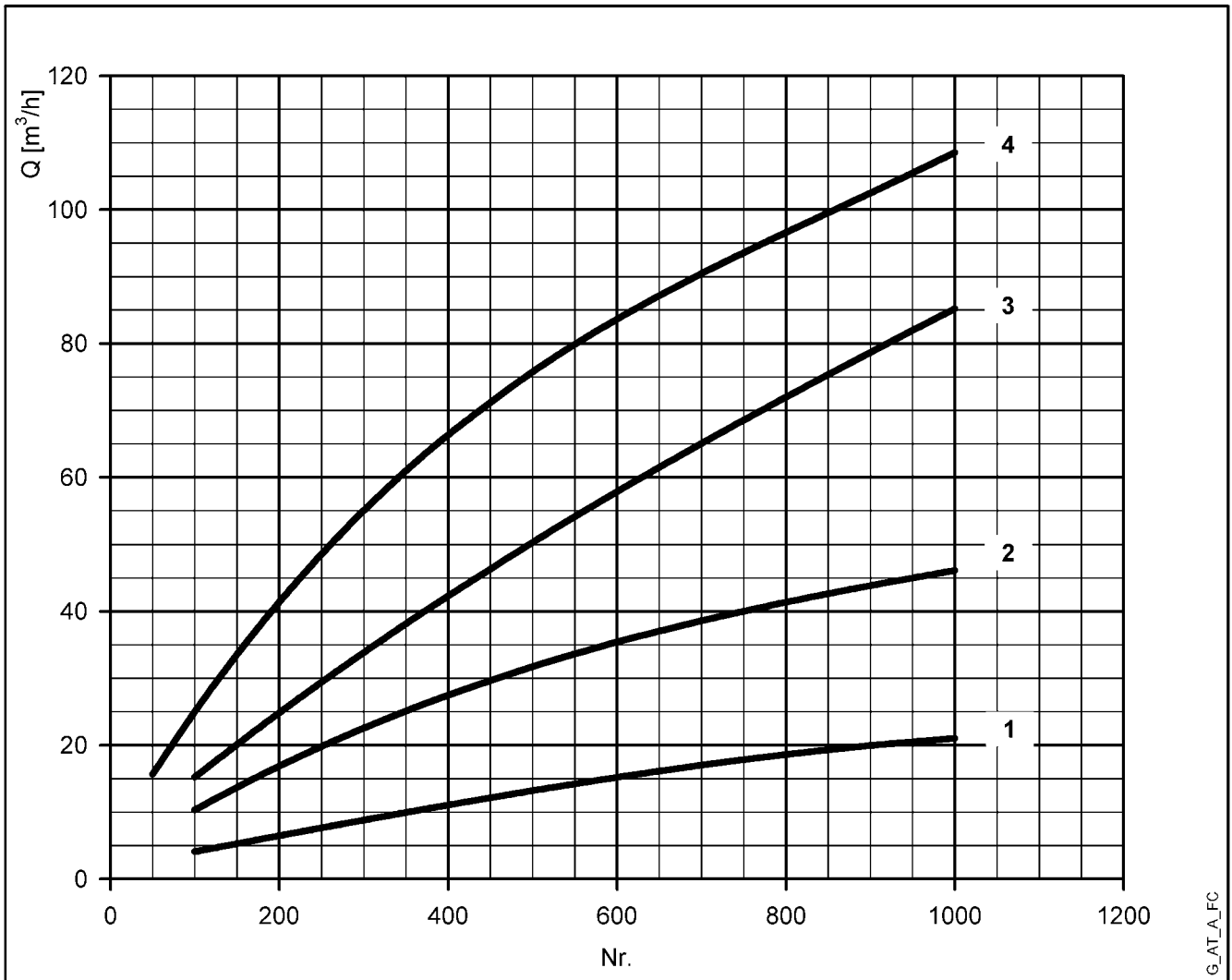
For seaside resorts, a flow rate increased by at least 20% must be considered.

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WATER REQUIREMENTS FOR COMMUNITY BUILDINGS

The requirements of buildings intended for specific uses, such as **offices, residential units, hotels, department stores, nursing homes** and so on, are different from those of condominiums, and both their global daily water consumption and the maximum contemporaneity flow rate are usually greater. The **diagram of water requirements for community buildings** shows the maximum contemporaneity flow rate of some types of communities, for guidance.

These requirements must be determined case by case with the utmost accuracy, using analytical calculation methods, according to particular needs and local provisions.



For seaside resorts, the flow rate must be increased by at least 20%.

- 1 = Offices (N. of people)
- 2 = Department stores (N. of people)
- 3 = Nursing homes (N. of beds)
- 4 = Hotels, residences (N. of beds)

NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height h_z at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (\text{NPSH}_r + 0.5) + h_f + h_{pv} \quad \textcircled{1}$$

where:

- h_p** is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid; h_p is the quotient between the barometric pressure and the specific weight of the liquid.
- h_z** is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.; h_z is negative when the liquid level is lower than the pump axis.
- h_f** is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.
- h_{pv}** is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. h_{pv} is the quotient between the Pv vapour pressure and the liquid's specific weight.
- 0,5** is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

Water temperature (°C)	20	40	60	80	90	110	120
Suction loss (m)	0,2	0,7	2,0	5,0	7,4	15,4	21,5

Elevation above sea level (m)	500	1000	1500	2000	2500	3000
Suction loss (m)	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables at pages 124-125 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

Liquid: water at ~15°C $\gamma = 1 \text{ kg/dm}^3$

Flow rate required: 30 m³/h

Head for required delivery: 43 m.

Suction lift: 3,5 m.

The selection is an FHE 40-200/75 pump whose NPSH required value is, at 30 m³/h, di 2,5 m.

For water at 15 °C

$$h_p = P_a / \gamma = 10,33\text{m}, h_{pv} = P_v / \gamma = 0,174\text{m} (0,01701 \text{ bar})$$

The H_f flow resistance in the suction line with foot valves is ~ 1,2 m.

By substituting the parameters in formula $\textcircled{1}$ with the numeric values above, we have:

$$10,33 + (-3,5) \geq (2,5 + 0,5) + 1,2 + 0,17$$

from which we have: 6,8 > 4,4

The relation is therefore verified.

TECHNICAL APPENDIX VAPOUR PRESSURE PS VAPOUR PRESSURE AND ρ DENSITY OF WATER TABLE

t °C	T K	ps bar	ρ kg/dm ³	t °C	T K	ps bar	ρ kg/dm ³	t °C	T K	ps bar	ρ kg/dm ³
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	443,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

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FLOW RESISTANCE

TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

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The table is valid for the Hazen Williams coefficient $C = 100$ (cast iron pipework). For steel pipework, multiply the values by 1.41. For stainless steel, copper and coated cast iron pipework, multiply the values by 1.85.

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by the manufacturers.

VOLUMETRIC CAPACITY

Litres per minute l/min	Cubic metres per hour m ³ /h	Cubic feet per hour ft ³ /h	Cubic feet per minute ft ³ /min	Imp. gal. per minute Imp. gal./min	US gal. per minute Us gal./min
1,000	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	1,000	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	1,000	0,0167	0,1038	0,1247
28,3168	1,6990	60,0000	1,000	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	1,000	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	1,000

PRESSURE AND HEAD

Newton per square metre N/m ²	kilo Pascal kPa	bar bar	Pound force per square inch psi	metre of water m H ₂ O	millimetre of mercury mm Hg
1,000	0,0010	1 x 10 ⁻⁵	1.45 x 10 ⁻⁴	1.02 x 10 ⁻⁴	0,0075
1000,0000	1,000	0,0100	0,1450	0,1020	7,5006
1 x 10 ⁵	100,0000	1,000	14,5038	10,1972	750,0638
6894,7570	6,8948	0,0689	1,000	0,7031	51,7151
9806,6500	9,8067	0,0981	1,4223	1,000	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	1,000

LENGHT

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
1,000	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	1,000	0,0100	0,3937	0,0328	0,0109
1000,0000	100,0000	1,000	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	1,000	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	1,000	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	1,000

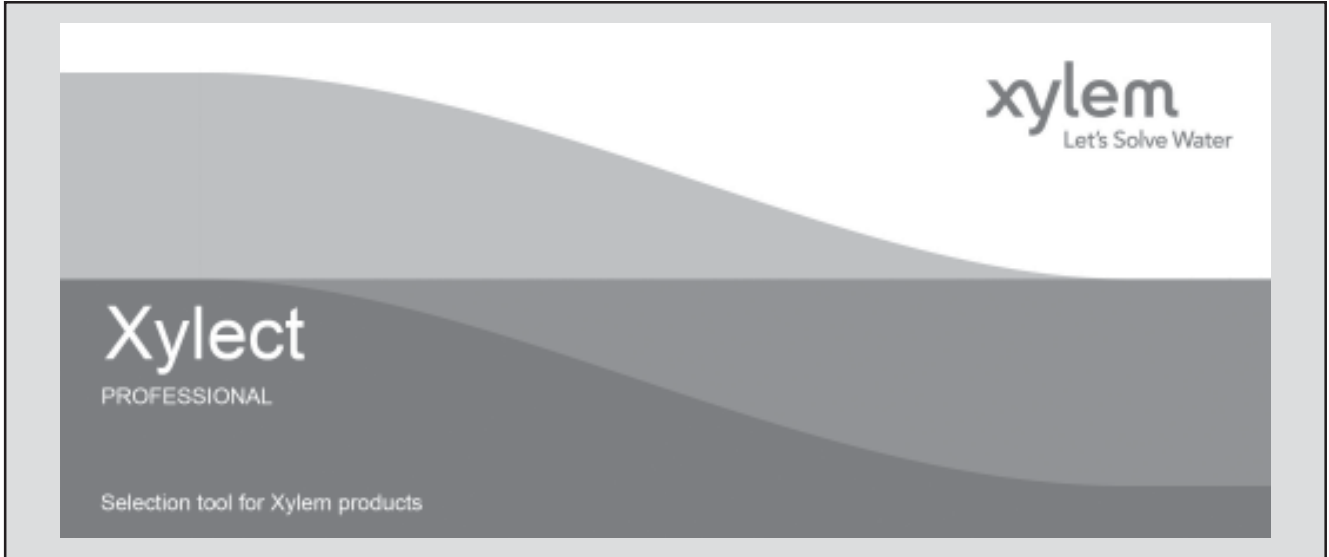
VOLUME

cubic metre m ³	litre litro	millilitre ml	imp. Gallon imp. gal.	US gallon US gal.	cubic foot ft ³
1,000	1000,0000	1 x 10 ⁶	219,9694	264,1720	35,3147
0,0010	1,000	1000,0000	0,2200	0,2642	0,0353
1 x 10 ⁻⁶	0,0010	1,000	2.2 x 10 ⁻⁴	2.642 x 10 ⁻⁴	3.53 x 10 ⁻⁵
0,0045	4,5461	4546,0870	1,000	1,2009	0,1605
0,0038	3,7854	3785,4120	0,8327	1,000	0,1337
0,0283	28,3168	28316,8466	6,2288	7,4805	1,000

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FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



Xylect is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

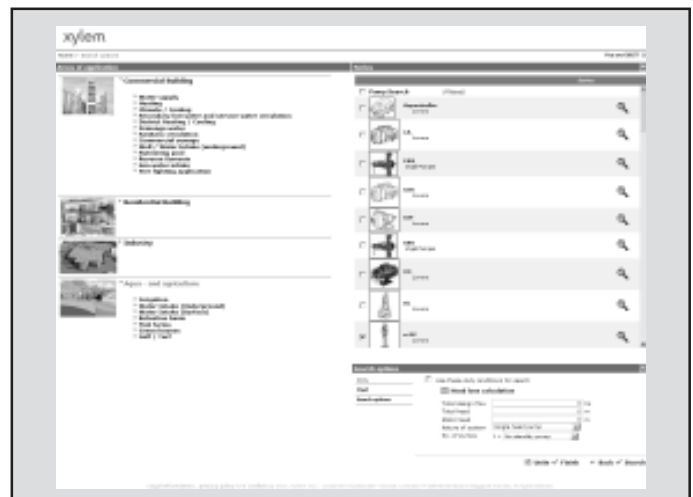
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



The search by application guides users not familiar with the product range to the right choice.

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



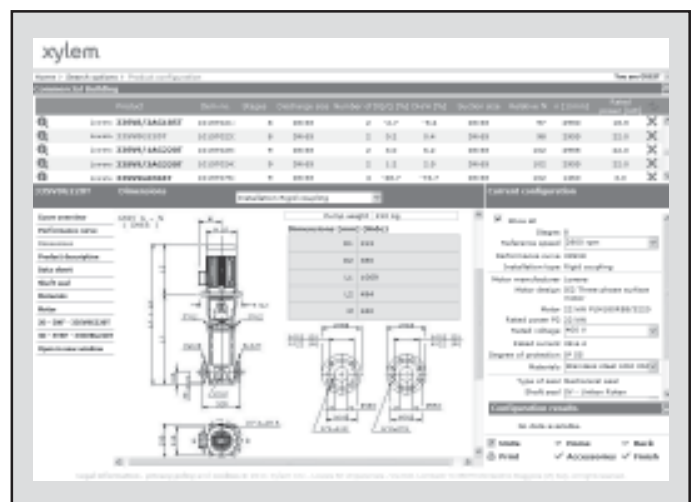
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Xylect is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Xylect users

Every user has a My Xylect space, where all projects are saved.

For more information about Xylect please contact our sales network or visit www.xylect.com.



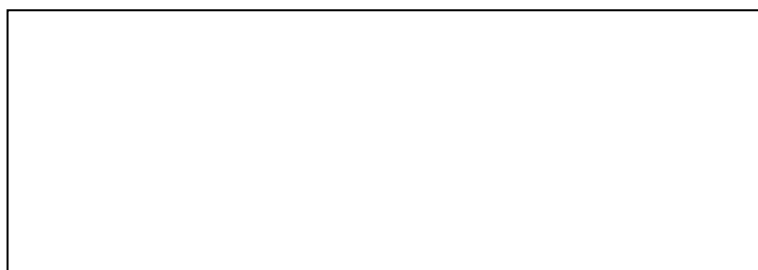
Dimensional drawings appear on the screen and can be downloaded in dxf format.

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xylem.com.



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