

**50 Hz**



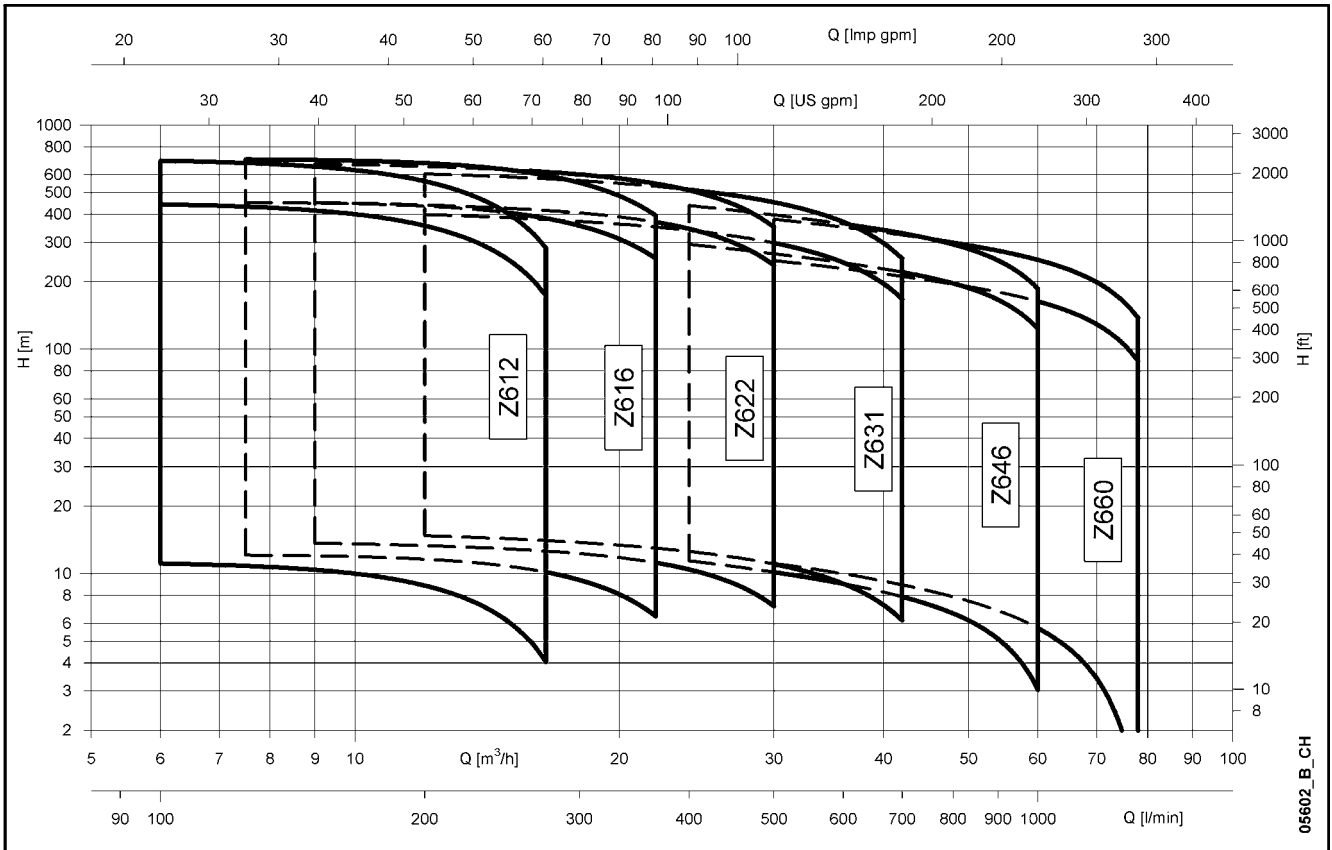
# Z612, Z616, Z622 Z631, Z646, Z660 Series

6" SUBMERSIBLE  
ELECTRIC PUMPS

Cod. 191005991 Rev.B Ed.08/2012

 **LOWARA**  
a xylem brand

**Z612, Z616, Z622, Z631, Z646, Z660 SERIES  
HYDRAULIC PERFORMANCE RANGE AT 50 Hz**



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## 6" Submersible Electric Pumps

### Z612, Z616 Z622, Z631 Z646, Z660 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 78 m<sup>3</sup>/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/m<sup>3</sup>.
- Standard delivery port:
  - **Standard version:** Rp 2 1/2" for Z612-Z616-Z622 versions. Rp 3" for Z631-Z646-Z660 versions.
  - **High head version:** Rp 3" for Z612-Z616-Z622-Z631 versions. Rp 4" for Z646-Z660 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).

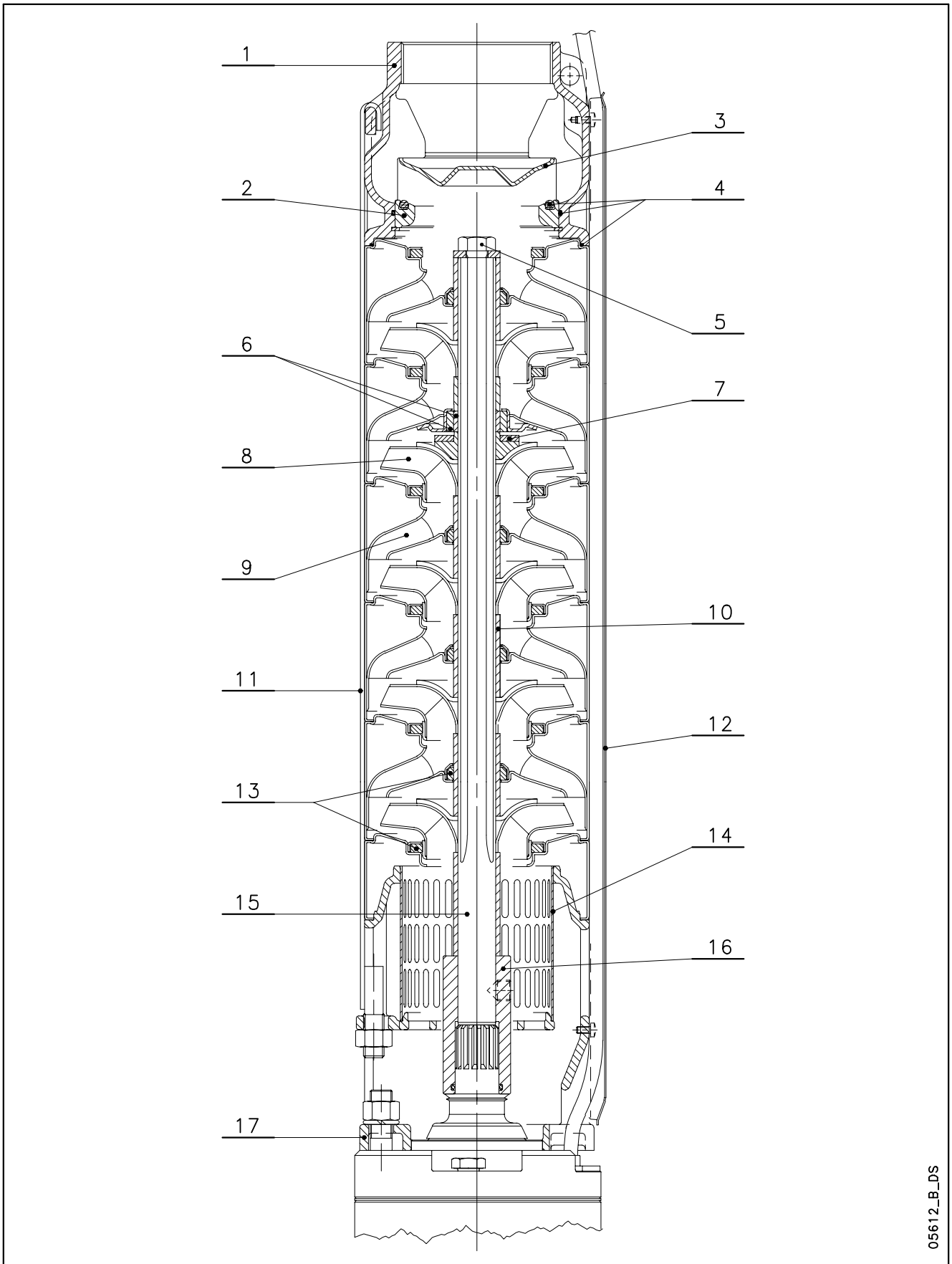
##### MOTOR

- Different voltages and frequencies.
- High temperature versions.

#### ACCESSORIES

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

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



05612\_B\_DS

## TABLE OF MATERIALS Z6

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)

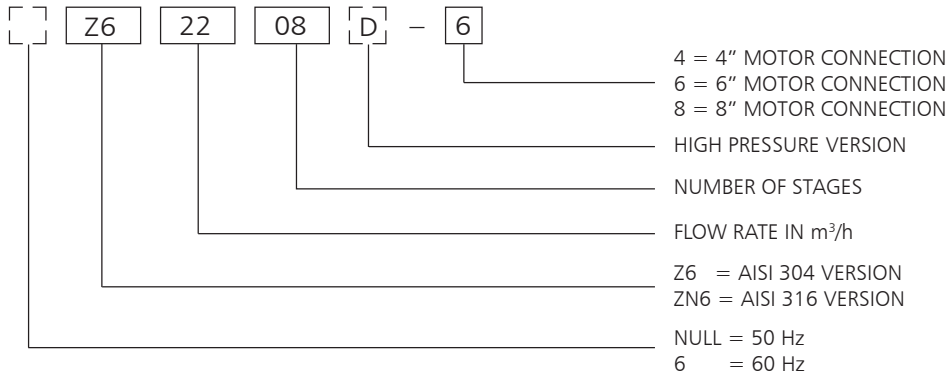
z6-50-304-en\_c\_tm

## TABLE OF MATERIALS ZN6

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)

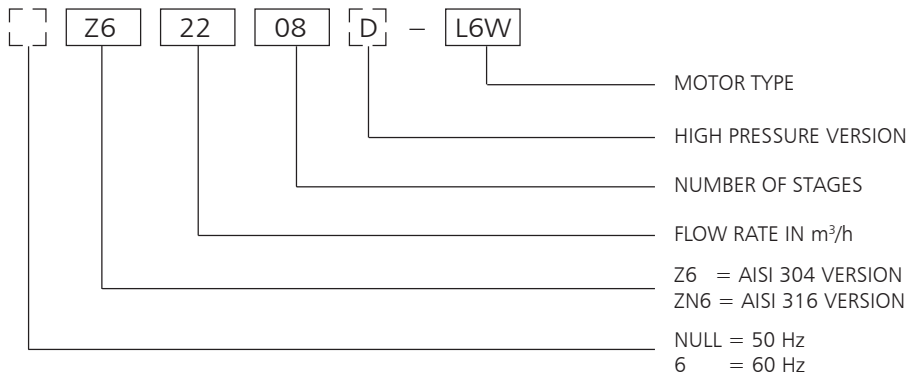
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## Z6 SERIES IDENTIFICATION CODE (PUMP)



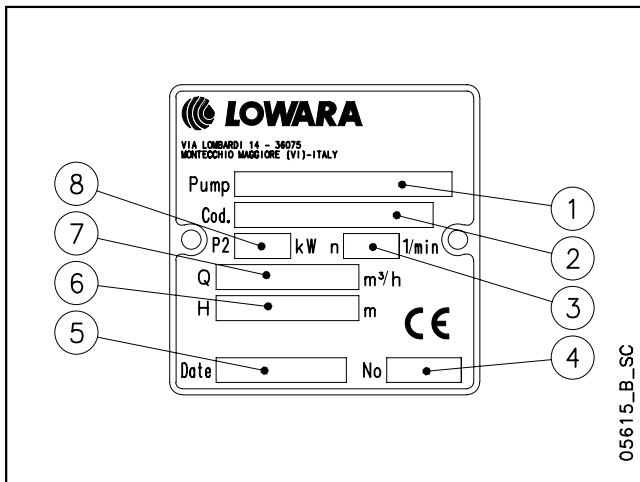
EXAMPLE : Z622 08 - 6  
6" Pump at 50 Hz, AISI 304, flow rate 22 m<sup>3</sup>/h, 8 stages, with 6" motor connection.

## IDENTIFICATION CODE (ELECTRIC PUMP)



EXAMPLE : Z622 08 - L6W  
6" Electric pump at 50 Hz, AISI 304, flow rate 22 m<sup>3</sup>/h, 8 stages, coupled to a 6" motor L6W.

## RATING PLATE

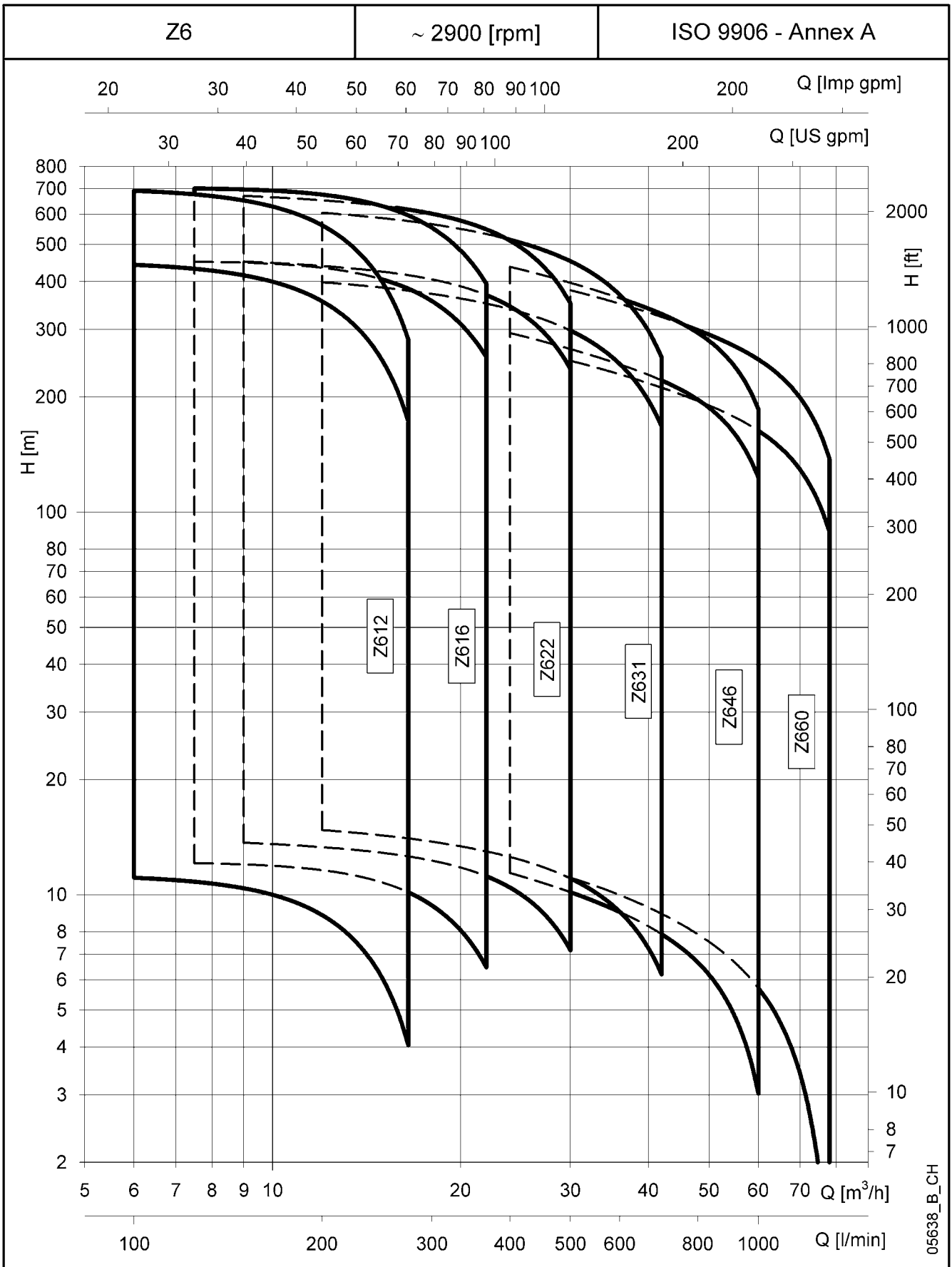


## LEGEND

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



**Z6 SERIES  
HYDRAULIC PERFORMANCE RANGE AT 50 Hz**



## Z612 SERIES, 1 TO 19 STAGES OPERATING CHARACTERISTICS AT 50 Hz

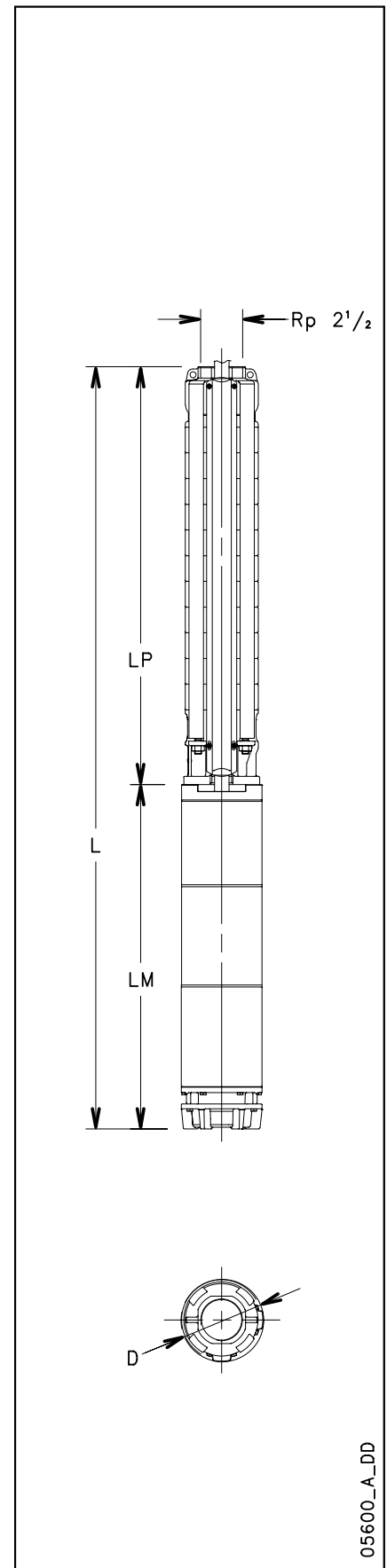
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		Vmin	0	100	150	200	250	275
		m <sup>3</sup> /h	0	6	9	12	15	16,5
H = TOTAL HEAD METRES COLUMN OF WATER								
Z612 01	0,55	11,5	11,1	10,4	8,9	6,0	4,0	
Z612 02	1,1	23,1	22,2	20,8	17,7	12,1	8,1	
Z612 03	1,5	34,7	33,3	31,2	26,5	18,1	12,1	
Z612 04	2,2	46,3	44,4	41,6	35,3	24,1	16,1	
Z612 05	3	59,0	57,6	54,6	47,2	33,5	23,7	
Z612 06	3	70,3	68,3	64,4	55,4	38,9	27,0	
Z612 07	4	82,5	80,7	76,4	66,1	46,9	33,2	
Z612 08	4	94,0	91,4	86,2	74,2	52,2	36,5	
Z612 09	5,5	107,2	105,1	99,7	86,5	61,8	44,1	
Z612 10	5,5	117,7	115,1	108,9	94,2	66,9	47,3	
Z612 11	5,5	129,2	125,9	118,9	102,5	72,3	50,7	
Z612 12	7,5	141,3	138,3	131,0	113,4	80,6	57,1	
Z612 13	7,5	152,8	149,1	141,0	121,7	86,1	60,5	
Z612 14	7,5	164,2	159,9	150,8	129,9	91,3	63,8	
Z612 15	7,5	175,6	170,4	160,5	137,7	96,3	66,8	
Z612 16	9,3	188,0	183,7	173,7	150,0	106,1	74,7	
Z612 17	9,3	199,4	194,4	183,5	158,1	111,5	78,0	
Z612 18	9,3	210,9	205,1	193,3	166,1	116,5	81,0	
Z612 19	9,3	222,3	215,6	202,8	173,9	121,4	83,9	

## DIMENSIONS AND WEIGHTS

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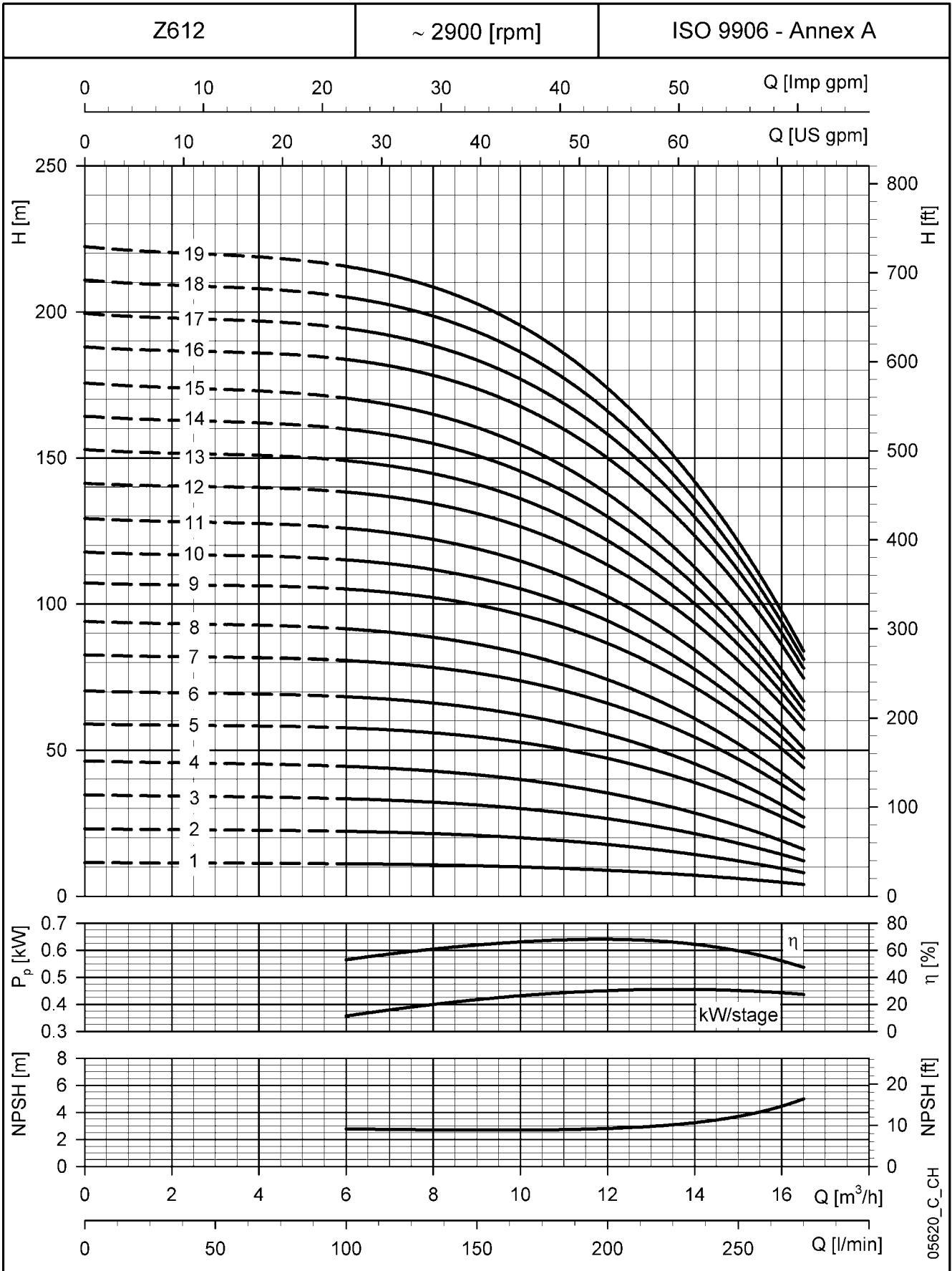
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z612 01-L4C	0,55	616	236	380	142	144	16
Z612 02-L4C	1,1	712	286	426	142	144	19
Z612 03-L4C	1,5	820	348	472	142	144	23
Z612 04-L4C	2,2	911	393	518	142	144	25
Z612 05-L4C	3	1108	544	564	142	144	34
Z612 06-L4C	3	1154	544	610	142	144	36
Z612 07-L4C	4	1270	614	656	142	144	40
Z612 08-L4C	4	1316	614	702	142	144	41
Z612 09-L4C	5,5	1432	684	748	142	144	45
Z612 10-L4C	5,5	1478	684	794	142	144	47
Z612 11-L4C	5,5	1524	684	840	142	144	48
Z612 12-L4C	7,5	1650	764	886	142	144	51
Z612 13-L4C	7,5	1696	764	932	142	144	52
Z612 14-L4C	7,5	1742	764	978	142	144	53
Z612 15-L4C	7,5	1788	764	1024	142	144	55
Z612 07-L6W	4	1239	583	656	144	146	54
Z612 08-L6W	4	1285	583	702	144	146	55
Z612 09-L6W	5,5	1361	613	748	144	146	61
Z612 10-L6W	5,5	1407	613	794	144	146	62
Z612 11-L6W	5,5	1453	613	840	144	146	63
Z612 12-L6W	7,5	1539	653	886	144	146	68
Z612 13-L6W	7,5	1585	653	932	144	146	69
Z612 14-L6W	7,5	1631	653	978	144	146	70
Z612 15-L6W	7,5	1677	653	1024	144	146	72
Z612 16-L6W	9,3	1753	683	1070	144	146	77
Z612 17-L6W	9,3	1799	683	1116	144	146	78
Z612 18-L6W	9,3	1845	683	1162	144	146	79
Z612 19-L6W	9,3	1891	683	1208	144	146	80

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**Z612 SERIES, 1 TO 19 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z612 SERIES, 20 TO 39 STAGES OPERATING CHARACTERISTICS AT 50 Hz

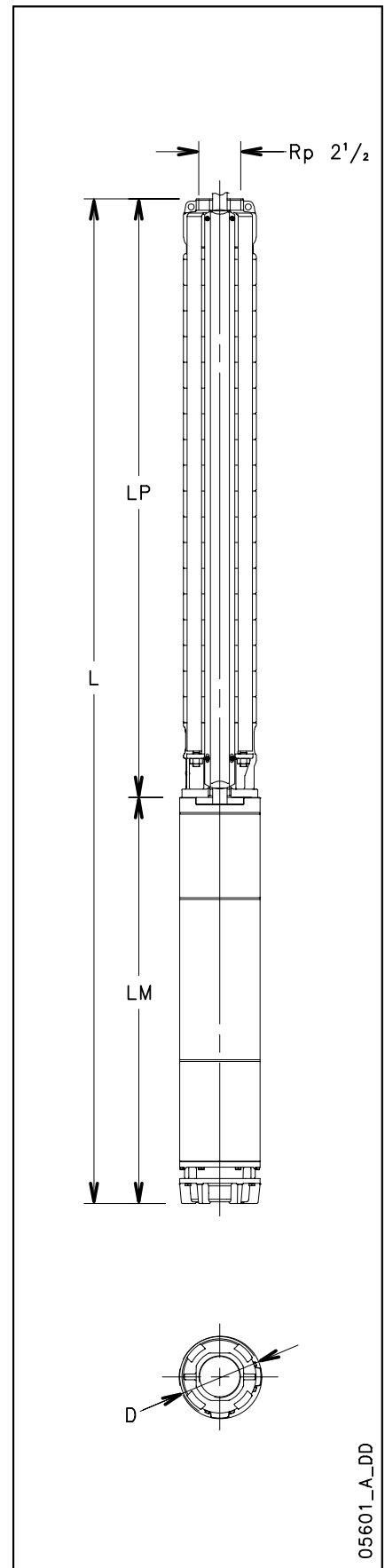
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	100	150	200	250	275
		m <sup>3</sup> /h	0	6	9	12	15	16,5
H = TOTAL HEAD METRES COLUMN OF WATER								
Z612 20	11	237,2	228,9	216,4	187,5	133,7	95,0	
Z612 21	11	248,7	239,5	226,2	195,5	139,0	98,4	
Z612 22	11	260,2	250,1	235,8	203,5	144,1	101,4	
Z612 23	11	271,7	260,5	245,4	211,4	149,2	104,5	
Z612 24	13	283,8	274,4	258,8	222,5	155,3	107,0	
Z612 25	13	295,2	285,0	268,5	230,5	160,3	109,9	
Z612 26	13	306,6	295,5	278,1	238,3	165,2	112,7	
Z612 27	13	318,0	306,0	287,6	246,0	169,8	115,3	
Z612 28	13	329,5	316,4	297,1	253,6	174,5	117,9	
Z612 29	15	344,4	334,0	315,1	272,2	194,1	138,3	
Z612 30	15	356,0	344,7	324,9	280,3	199,3	141,6	
Z612 31	15	367,3	355,3	334,6	288,2	204,3	144,7	
Z612 32	15	378,9	365,8	344,1	296,0	209,2	147,5	
Z612 33	18,5	389,0	379,1	357,5	308,1	218,2	154,2	
Z612 34	18,5	400,6	389,9	367,4	316,3	223,6	157,6	
Z612 35	18,5	412,1	400,5	377,1	324,3	228,6	160,6	
Z612 36	18,5	423,3	411,2	386,9	332,2	233,7	163,7	
Z612 37	18,5	434,7	421,7	396,4	340,0	238,7	166,8	
Z612 38	18,5	446,2	432,3	406,3	348,2	243,8	169,8	
Z612 39	18,5	457,6	442,8	415,7	355,9	248,7	172,7	

z612-2-50-en\_b\_th

## DIMENSIONS AND WEIGHTS

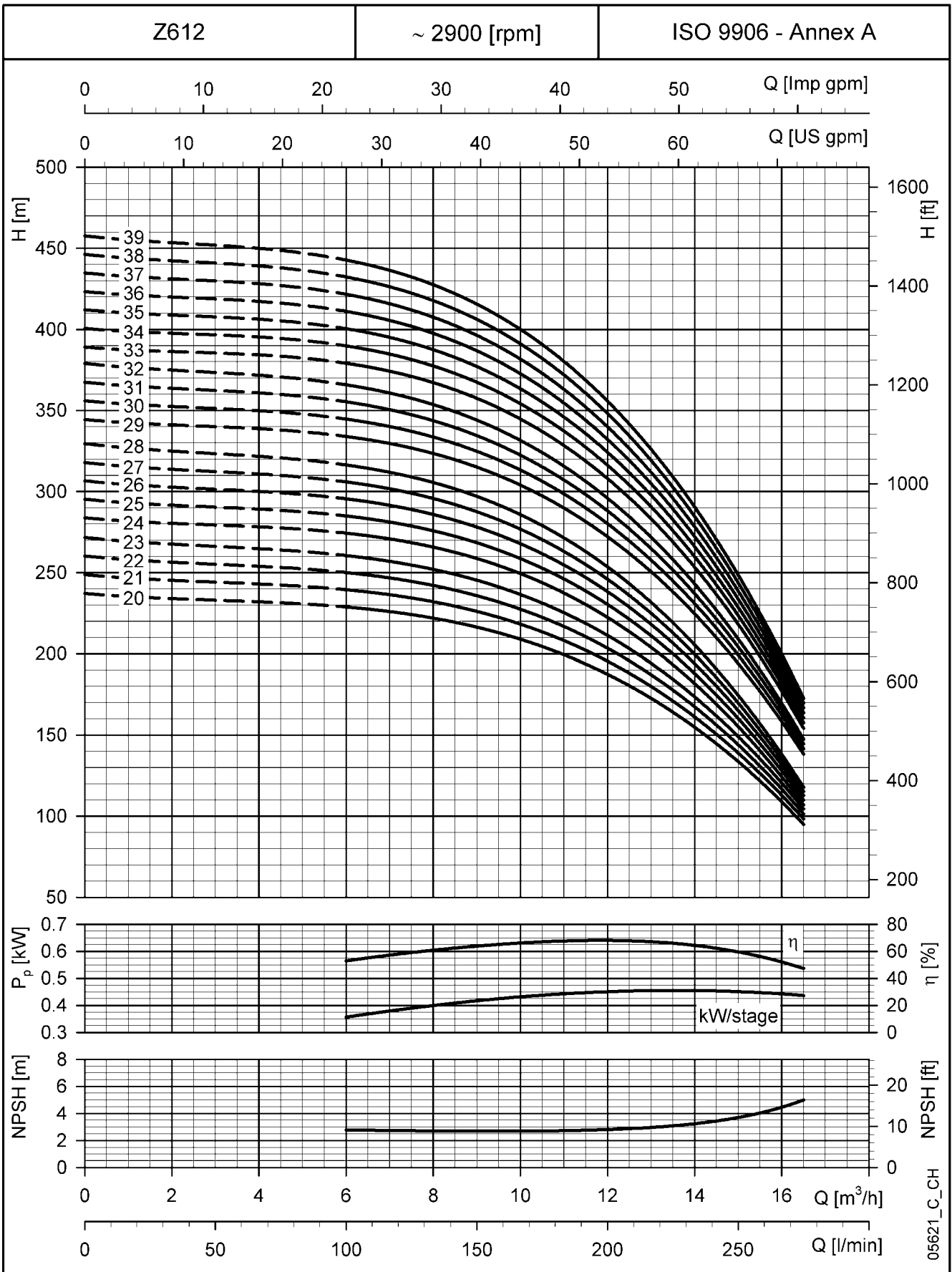
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z612 20-L6W	11	1977	723	1254	144	146	86
Z612 21-L6W	11	2023	723	1300	144	146	87
Z612 22-L6W	11	2069	723	1346	144	146	88
Z612 23-L6W	11	2161	723	1438	144	146	90
Z612 24-L6W	13	2247	763	1484	144	146	95
Z612 25-L6W	13	2293	763	1530	144	146	96
Z612 26-L6W	13	2339	763	1576	144	146	98
Z612 27-L6W	13	2385	763	1622	144	146	99
Z612 28-L6W	13	2431	763	1668	144	146	100
Z612 29-L6W	15	2547	833	1714	144	146	109
Z612 30-L6W	15	2593	833	1760	144	146	110
Z612 31-L6W	15	2639	833	1806	144	146	112
Z612 32-L6W	15	2685	833	1852	144	146	113
Z612 33-L6W	18,5	2801	903	1898	144	146	122
Z612 34-L6W	18,5	2847	903	1944	144	146	123
Z612 35-L6W	18,5	2893	903	1990	144	146	124
Z612 36-L6W	18,5	2985	903	2082	144	146	126
Z612 37-L6W	18,5	3031	903	2128	144	146	128
Z612 38-L6W	18,5	3077	903	2174	144	146	129
Z612 39-L6W	18,5	3123	903	2220	144	146	130

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**Z612 SERIES, 20 TO 39 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

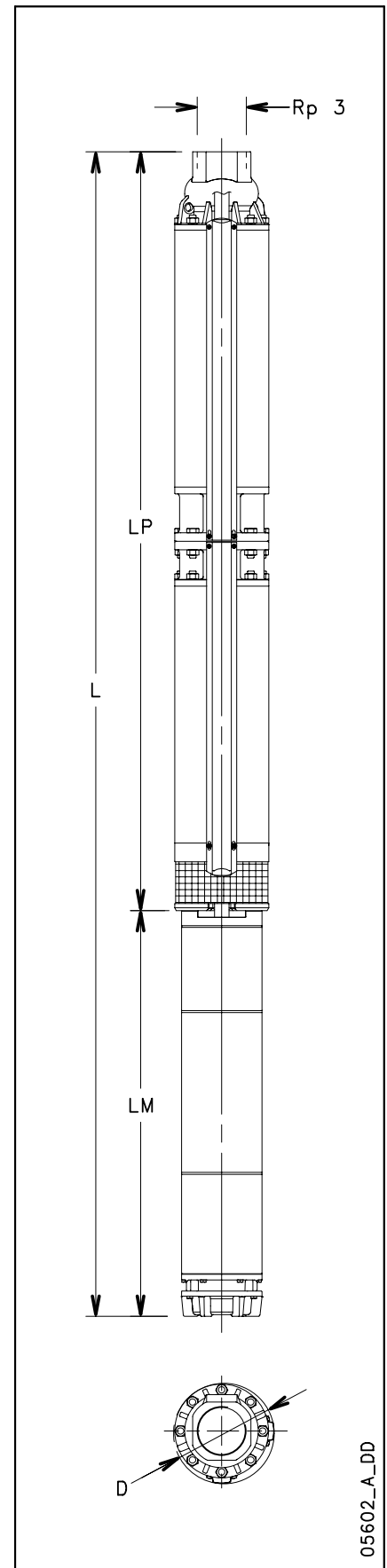


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z612 SERIES, 40 TO 60 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	100	150	200	250	275
		m <sup>3</sup> /h	0	6	9	12	15	16,5
H = TOTAL HEAD METRES COLUMN OF WATER								
Z612 40D	18,5	468,7	453,3	425,2	363,5	253,4	175,5	
Z612 41D	22	484,7	471,8	444,8	383,3	271,8	192,4	
Z612 42D	22	496,1	482,6	454,6	391,4	276,9	195,4	
Z612 43D	22	507,6	493,2	464,3	399,2	281,9	198,5	
Z612 44D	22	519,1	503,8	474,0	407,3	287,0	201,6	
Z612 45D	22	530,5	514,4	483,7	415,3	292,2	204,9	
Z612 46D	22	541,9	525,0	493,1	422,8	296,8	207,6	
Z612 47D	22	553,3	535,5	502,8	430,7	301,7	210,5	
Z612 48D	26	569,6	557,2	526,8	455,9	326,1	233,4	
Z612 49D	26	581,1	568,1	536,9	464,4	331,8	237,1	
Z612 50D	26	592,7	578,9	546,8	472,6	337,2	240,7	
Z612 51D	26	604,1	589,8	556,8	480,9	342,6	244,1	
Z612 52D	26	615,9	600,8	566,8	489,1	348,0	247,6	
Z612 53D	26	627,4	611,6	576,8	497,5	353,6	251,1	
Z612 54D	26	638,8	622,4	586,6	505,4	358,6	254,3	
Z612 55D	26	650,2	633,0	596,4	513,6	364,0	257,7	
Z612 56D	30	664,2	648,5	612,4	529,1	377,4	269,3	
Z612 57D	30	675,7	659,3	622,2	537,2	382,7	272,7	
Z612 58D	30	687,5	670,2	632,3	545,5	388,2	276,1	
Z612 59D	30	698,9	680,9	642,2	553,8	393,6	279,5	
Z612 60D	30	710,2	691,9	652,1	561,9	398,6	282,6	

z612-3-50-en\_b\_th



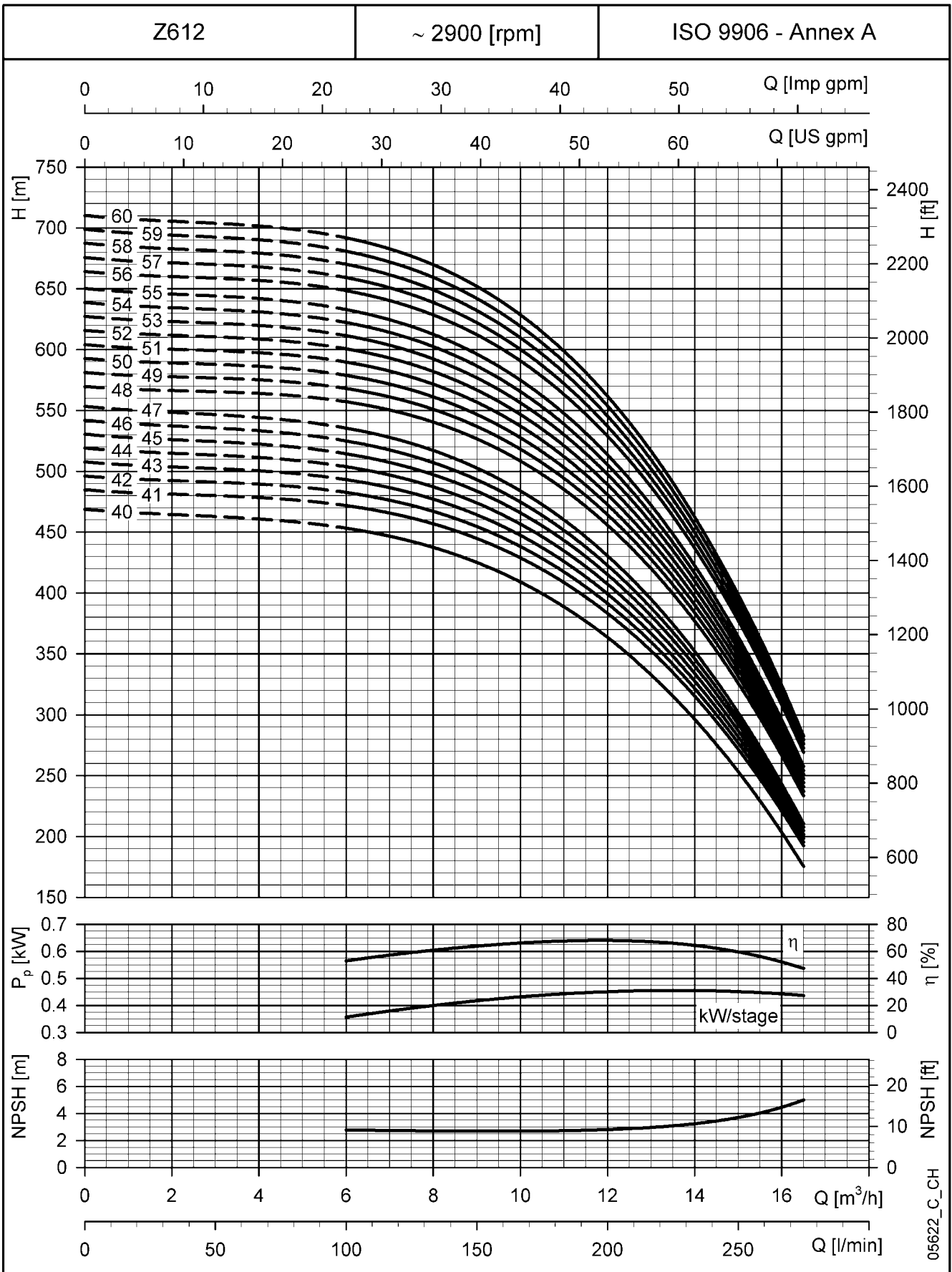
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## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z612 40D-L6W	18,5	3825	903	2922	177	180	188
Z612 41D-L6W	22	3865	943	2922	177	180	192
Z612 42D-L6W	22	3865	943	2922	177	180	193
Z612 43D-L6W	22	3865	943	2922	177	180	193
Z612 44D-L6W	22	3865	943	2922	177	180	194
Z612 45D-L6W	22	3865	943	2922	177	180	194
Z612 46D-L6W	22	3865	943	2922	177	180	195
Z612 47D-L6W	22	3865	943	2922	177	180	195
Z612 48D-L6W	26	4407	1071	3336	177	180	217
Z612 49D-L6W	26	4407	1071	3336	177	180	218
Z612 50D-L6W	26	4407	1071	3336	177	180	218
Z612 51D-L6W	26	4407	1071	3336	177	180	219
Z612 52D-L6W	26	4407	1071	3336	177	180	219
Z612 53D-L6W	26	4407	1071	3336	177	180	220
Z612 54D-L6W	26	4407	1071	3336	177	180	221
Z612 55D-L6W	26	4407	1071	3336	177	180	221
Z612 56D-L6W	30	4487	1151	3336	177	180	230
Z612 57D-L6W	30	4625	1151	3474	177	180	234
Z612 58D-L6W	30	4625	1151	3474	177	180	234
Z612 59D-L6W	30	4625	1151	3474	177	180	235
Z612 60D-L6W	30	4763	1151	3612	177	180	239

z612-3-50-en\_b\_td

**Z612 SERIES, 40 TO 60 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z616 SERIES, 1 TO 18 STAGES OPERATING CHARACTERISTICS AT 50 Hz

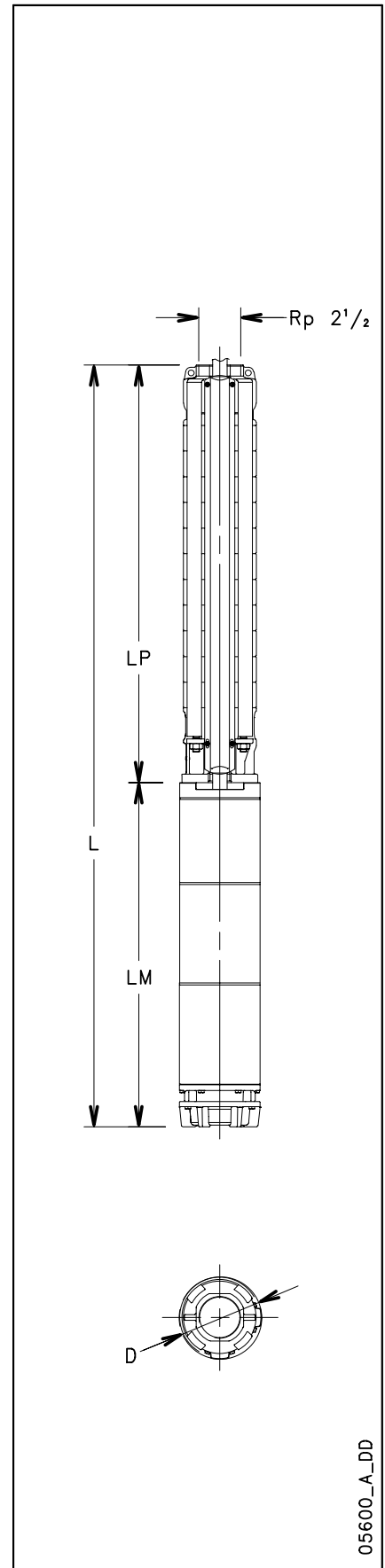
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	125	200	250	300	366,7
		m <sup>3</sup> /h	0	7,5	12	15	18	22
H = TOTAL HEAD METRES COLUMN OF WATER								
Z616 01	0,75	12,3	12,1	11,6	10,8	9,4	6,5	
Z616 02	1,5	24,7	24,1	23,1	21,4	18,6	12,7	
Z616 03	2,2	36,9	35,8	34,1	31,5	27,2	18,2	
Z616 04	3	49,9	49,5	47,8	44,6	39,3	28,2	
Z616 05	4	62,7	62,4	60,3	56,4	49,8	36,0	
Z616 06	5,5	75,7	75,5	73,3	68,7	60,8	44,3	
Z616 07	5,5	88,1	87,8	84,9	79,3	69,9	50,7	
Z616 08	7,5	100,7	100,6	97,5	91,2	80,6	58,6	
Z616 09	7,5	113,3	112,8	109,0	101,8	89,6	64,9	
Z616 10	7,5	126,0	124,7	120,0	111,6	97,6	68,7	
Z616 11	9,3	139,0	138,1	133,3	124,3	109,1	77,7	
Z616 12	9,3	151,7	150,1	144,9	135,2	118,8	85,0	
Z616 13	11	164,5	163,0	157,6	147,3	129,8	93,2	
Z616 14	11	176,6	175,1	168,9	157,8	139,0	100,3	
Z616 15	11	188,8	186,8	179,9	167,8	147,5	105,5	
Z616 16	11	201,1	198,5	190,8	177,6	155,7	110,9	
Z616 17	13	214,7	211,9	203,5	188,8	164,9	118,0	
Z616 18	13	227,0	223,6	214,3	198,5	173,0	123,5	

z616-1-50-en\_a\_th

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z616 01-L4C	0,75	646	266	380	142	144	17
Z616 02-L4C	1,5	774	348	426	142	144	22
Z616 03-L4C	2,2	865	393	472	142	144	24
Z616 04-L4C	3	1062	544	518	142	144	33
Z616 05-L4C	4	1178	614	564	142	144	37
Z616 06-L4C	5,5	1294	684	610	142	144	42
Z616 07-L4C	5,5	1340	684	656	142	144	43
Z616 08-L4C	7,5	1466	764	702	142	144	46
Z616 09-L4C	7,5	1512	764	748	142	144	48
Z616 10-L4C	7,5	1558	764	794	142	144	49
Z616 05-L6W	4	1147	583	564	144	146	52
Z616 06-L6W	5,5	1223	613	610	144	146	57
Z616 07-L6W	5,5	1269	613	656	144	146	58
Z616 08-L6W	7,5	1355	653	702	144	146	63
Z616 09-L6W	7,5	1401	653	748	144	146	65
Z616 10-L6W	7,5	1447	653	794	144	146	66
Z616 11-L6W	9,3	1523	683	840	144	146	71
Z616 12-L6W	9,3	1569	683	886	144	146	72
Z616 13-L6W	11	1655	723	932	144	146	77
Z616 14-L6W	11	1701	723	978	144	146	78
Z616 15-L6W	11	1747	723	1024	144	146	80
Z616 16-L6W	11	1793	723	1070	144	146	81
Z616 17-L6W	13	1879	763	1116	144	146	86
Z616 18-L6W	13	1925	763	1162	144	146	87

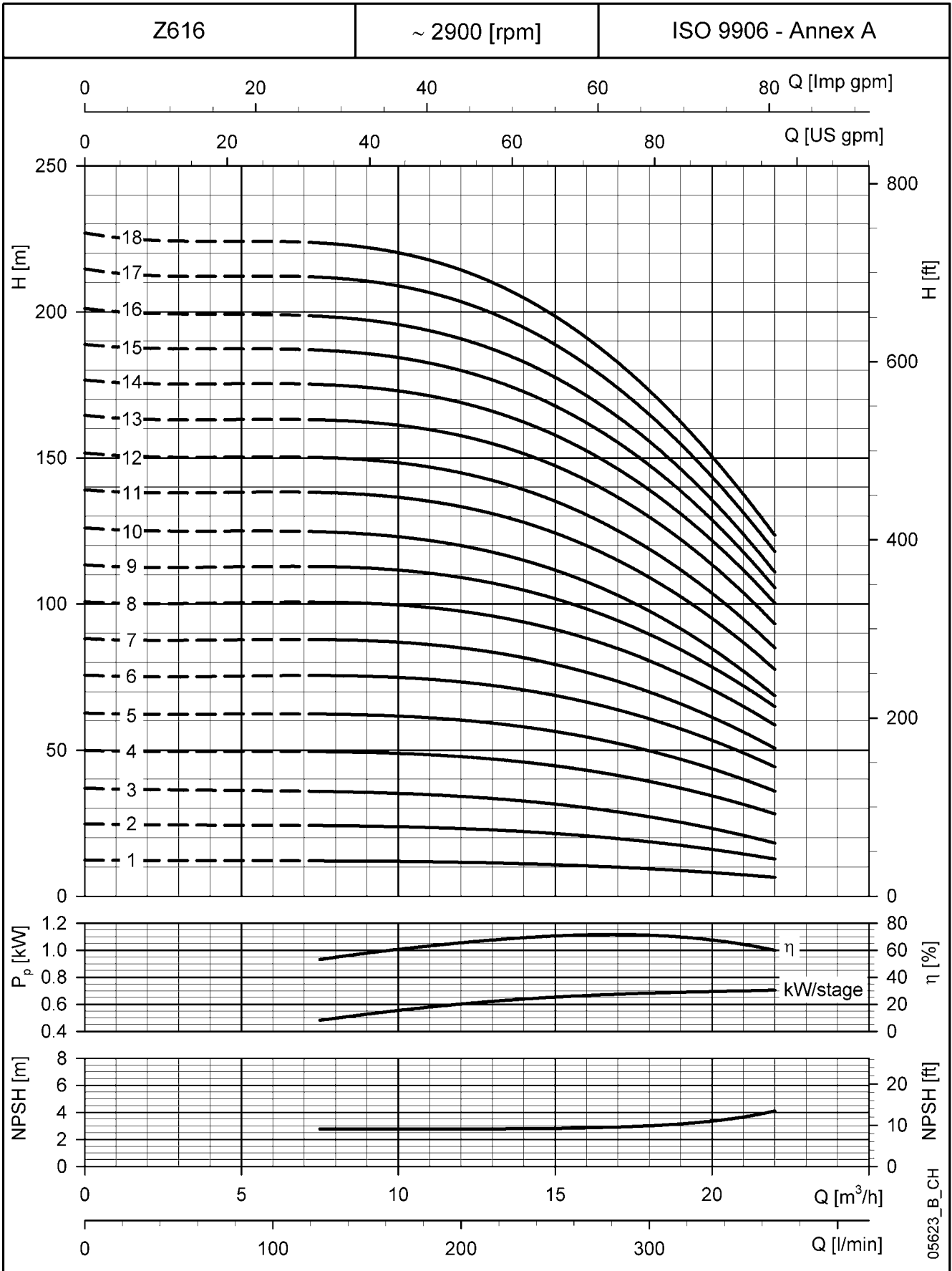
z616-1-50-en\_a\_td



05600\_A\_DD



**Z616 SERIES, 1 TO 18 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z616 SERIES, 19 TO 36 STAGES OPERATING CHARACTERISTICS AT 50 Hz

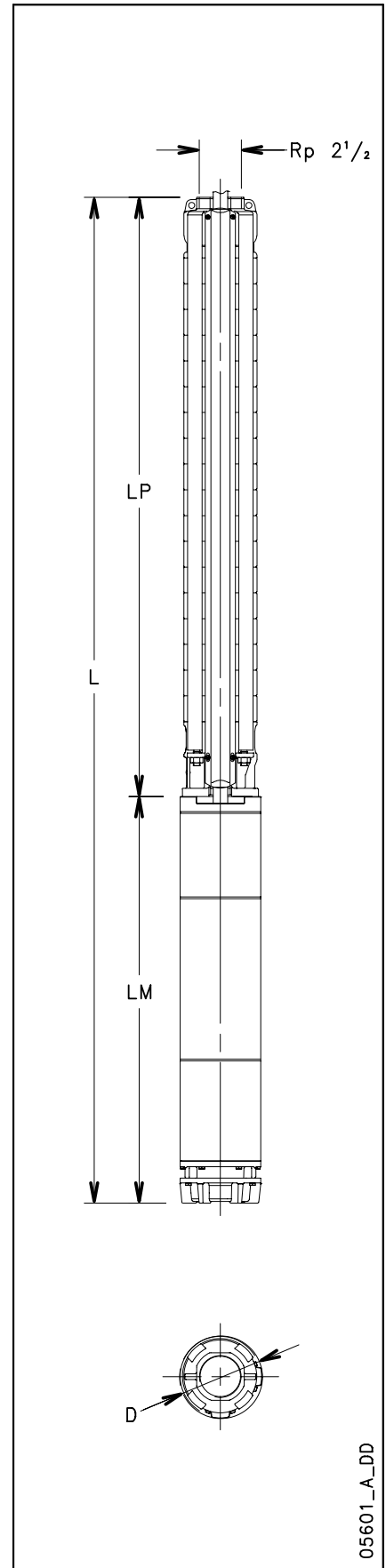
PUMP TYPE	RATED POWER kW	Q = DELIVERY					
		l/min 0	125	200	250	300	366,7
		H = TOTAL HEAD METRES COLUMN OF WATER					
		m <sup>3</sup> /h 0	7,5	12	15	18	22
Z616 19	15	240,1	237,5	228,4	212,2	185,6	133,4
Z616 20	15	250,7	248,1	238,6	221,8	194,1	137,1
Z616 21	15	262,9	259,7	249,4	231,7	202,3	142,1
Z616 22	18,5	276,4	274,6	264,9	247,0	216,9	154,4
Z616 23	18,5	288,5	286,4	276,0	257,1	225,5	160,1
Z616 24	18,5	300,9	298,2	287,0	267,1	233,9	165,5
Z616 25	18,5	313,0	310,0	298,0	277,0	242,2	171,2
Z616 26	18,5	325,3	321,5	308,8	286,8	250,5	176,0
Z616 27	22	340,3	337,9	325,8	303,9	267,0	190,3
Z616 28	22	352,7	349,7	337,0	314,0	275,5	195,8
Z616 29	22	364,8	361,6	348,1	324,1	284,1	201,6
Z616 30	22	377,1	373,2	358,9	333,9	292,4	206,7
Z616 31	26	391,8	391,0	378,3	353,9	312,1	225,1
Z616 32	26	404,2	403,0	389,7	364,3	321,0	230,9
Z616 33	26	416,8	415,1	401,1	374,8	330,0	237,0
Z616 34	26	429,1	427,1	412,5	385,0	338,6	242,9
Z616 35	26	441,4	439,0	423,7	395,3	347,5	248,6
Z616 36	26	453,8	450,9	434,9	405,5	356,1	254,0

z616-2-50-en\_a\_th

## DIMENSIONS AND WEIGHTS

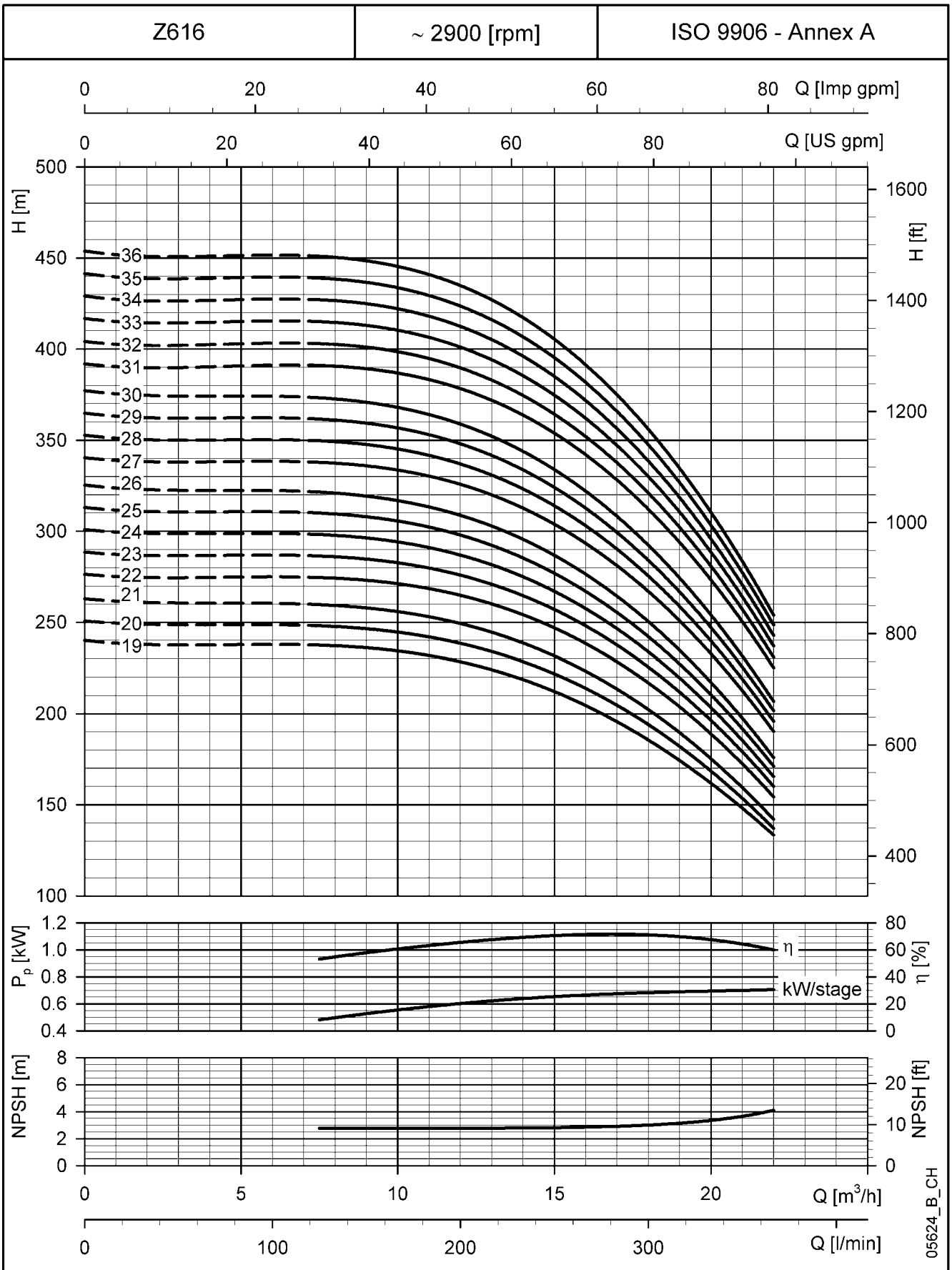
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z616 19-L6W	15	2041	833	1208	144	146	96
Z616 20-L6W	15	2087	833	1254	144	146	98
Z616 21-L6W	15	2133	833	1300	144	146	99
Z616 22-L6W	18,5	2249	903	1346	144	146	108
Z616 23-L6W	18,5	2341	903	1438	144	146	110
Z616 24-L6W	18,5	2387	903	1484	144	146	111
Z616 25-L6W	18,5	2433	903	1530	144	146	112
Z616 26-L6W	18,5	2479	903	1576	144	146	114
Z616 27-L6W	22	2565	943	1622	144	146	118
Z616 28-L6W	22	2611	943	1668	144	146	119
Z616 29-L6W	22	2657	943	1714	144	146	120
Z616 30-L6W	22	2703	943	1760	144	146	121
Z616 31-L6W	26	2877	1071	1806	144	146	132
Z616 32-L6W	26	2923	1071	1852	144	146	133
Z616 33-L6W	26	2969	1071	1898	144	146	134
Z616 34-L6W	26	3015	1071	1944	144	146	135
Z616 35-L6W	26	3061	1071	1990	144	146	136
Z616 36-L6W	26	3153	1071	2082	144	146	138

z616-2-50-en\_a\_td



05601\_A\_DD

**Z616 SERIES, 19 TO 36 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

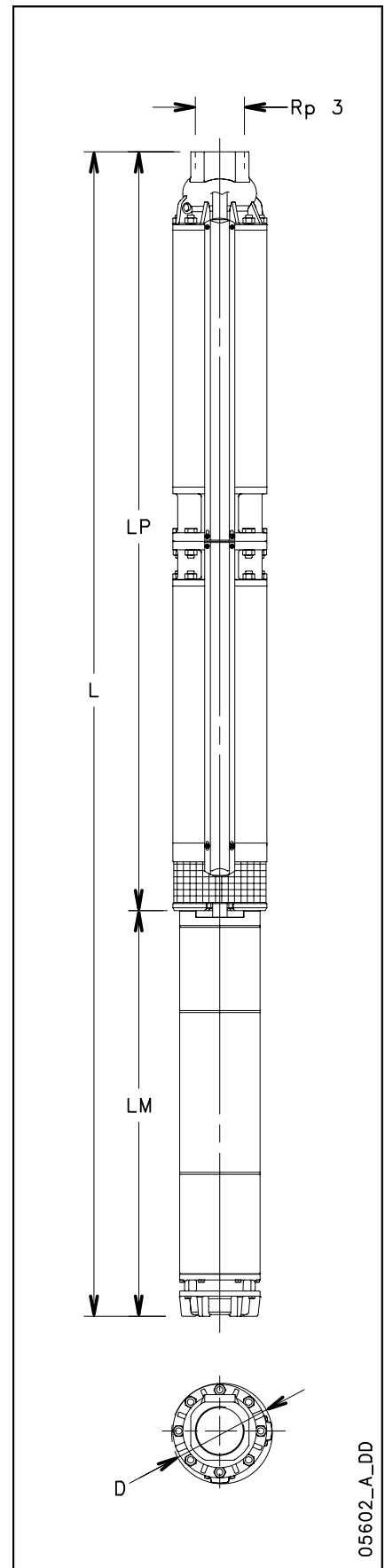


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z616 SERIES, 37 TO 56 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	125	200	250	300	366,7
		m <sup>3</sup> /h	0	7,5	12	15	18	22
H = TOTAL HEAD METRES COLUMN OF WATER								
Z616 37D	30	467,3	465,4	449,6	420,0	369,7	265,2	
Z616 38D	30	479,6	477,4	460,9	430,2	378,5	271,1	
Z616 39D	30	492,2	489,4	472,1	440,3	387,0	277,3	
Z616 40D	30	504,5	501,2	483,2	450,5	395,6	282,2	
Z616 41D	30	516,8	513,1	494,3	460,6	404,2	287,9	
Z616 42D	30	529,1	524,8	505,4	470,7	412,8	293,2	
Z616 43D	37	543,1	541,4	523,4	488,9	430,6	310,5	
Z616 44D	37	555,4	553,6	534,7	499,3	439,4	315,6	
Z616 45D	37	568,0	565,3	545,9	509,6	448,3	321,1	
Z616 46D	37	580,2	577,4	557,2	519,9	456,9	326,3	
Z616 47D	37	592,4	589,3	568,3	529,8	465,3	332,1	
Z616 48D	37	605,0	601,1	579,5	540,1	473,9	337,3	
Z616 49D	37	617,2	613,1	590,6	550,0	482,2	342,9	
Z616 50D	37	629,4	624,8	601,4	559,8	490,4	348,3	
Z616 51D	37	641,9	636,6	612,6	569,8	498,8	353,4	
Z616 52D	37	654,2	648,3	623,2	579,5	507,0	358,3	
Z616 53D	45	669,3	665,5	642,3	599,5	527,3	377,7	
Z616 54D	45	681,6	677,3	653,4	609,8	536,3	382,9	
Z616 55D	45	693,9	689,4	664,6	620,0	544,9	389,3	
Z616 56D	45	706,4	701,3	676,0	630,1	553,4	395,6	

z616-3-50-en\_a\_th



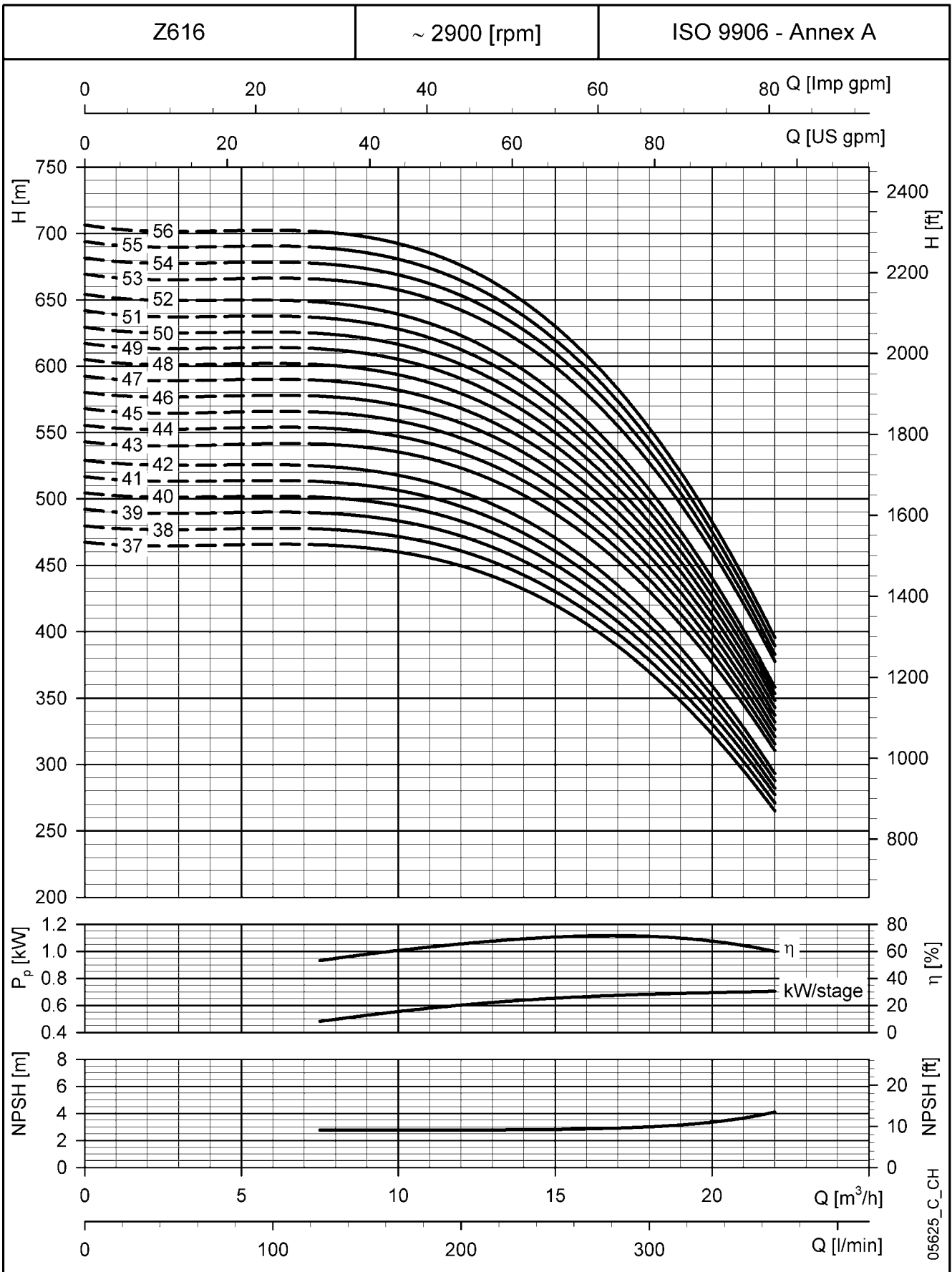
05602\_A\_DD

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z616 37D-L6W	30	3659	1151	2508	177	180	197
Z616 38D-L6W	30	3659	1151	2508	177	180	197
Z616 39D-L6W	30	4073	1151	2922	177	180	208
Z616 40D-L6W	30	4073	1151	2922	177	180	208
Z616 41D-L6W	30	4073	1151	2922	177	180	209
Z616 42D-L6W	30	4073	1151	2922	177	180	210
Z616 43D-L6W	37	4223	1301	2922	177	180	224
Z616 44D-L6W	37	4223	1301	2922	177	180	225
Z616 45D-L6W	37	4223	1301	2922	177	180	225
Z616 46D-L6W	37	4223	1301	2922	177	180	226
Z616 47D-L6W	37	4223	1301	2922	177	180	226
Z616 48D-L6W	37	4637	1301	3336	177	180	239
Z616 49D-L6W	37	4637	1301	3336	177	180	240
Z616 50D-L6W	37	4637	1301	3336	177	180	240
Z616 51D-L6W	37	4637	1301	3336	177	180	241
Z616 52D-L6W	37	4637	1301	3336	177	180	241
Z616 53D-L8W	45	4580	1195	3385	193	195	316
Z616 54D-L8W	45	4580	1195	3385	193	195	317
Z616 55D-L8W	45	4580	1195	3385	193	195	318
Z616 56D-L8W	45	4580	1195	3385	193	195	318

z616-3-50-en\_a\_td

**Z616 SERIES, 37 TO 56 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z622 SERIES, 1 TO 17 STAGES OPERATING CHARACTERISTICS AT 50 Hz

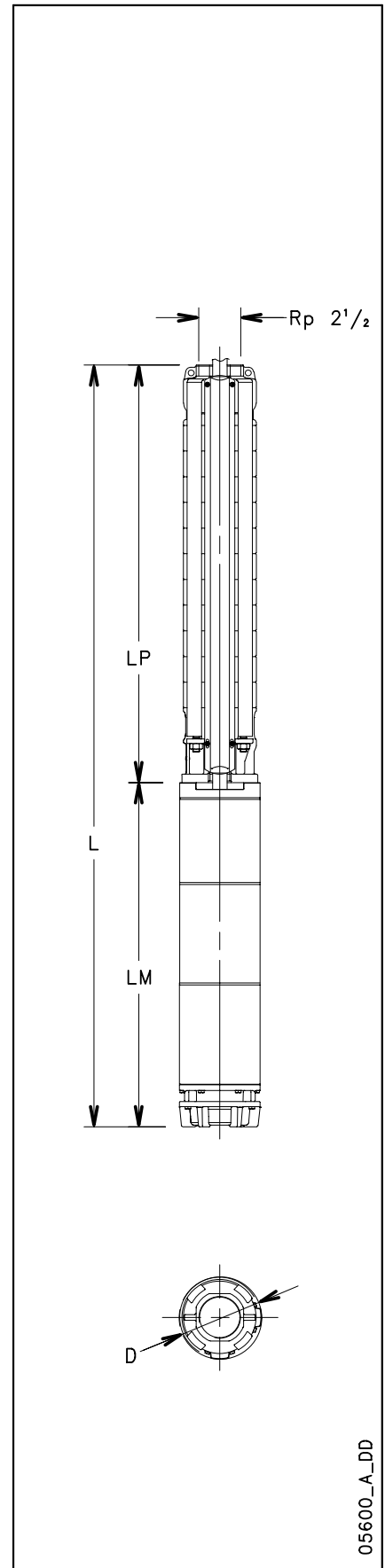
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		$l/min$	0	150	200	300	400	500
		$m^3/h$	0	9	12	18	24	30
H = TOTAL HEAD METRES COLUMN OF WATER								
Z622 01	1,1	13,8	12,8	12,4	11,2	9,2	5,9	
Z622 02	2,2	27,7	25,5	24,8	22,5	18,4	11,7	
Z622 03	3	42,8	40,3	39,3	36,3	30,5	20,6	
Z622 04	4	57,6	54,2	53,0	48,8	41,0	27,8	
Z622 05	5,5	72,4	68,3	66,8	61,8	52,2	35,9	
Z622 06	7,5	86,5	82,0	80,2	74,2	62,6	42,9	
Z622 07	7,5	100,1	94,7	92,6	85,3	71,6	48,3	
Z622 08	9,3	111,6	107,5	105,1	96,7	80,9	54,8	
Z622 09	9,3	124,8	120,0	117,2	107,4	89,4	60,0	
Z622 10	11	143,6	135,5	132,4	122,2	102,6	69,0	
Z622 11	11	157,0	148,0	144,6	133,0	111,2	74,0	
Z622 12	13	172,1	162,4	158,6	146,3	122,7	82,3	
Z622 13	13	184,3	173,6	169,4	155,6	129,6	85,5	
Z622 14	15	201,0	190,1	185,8	171,7	144,6	97,9	
Z622 15	15	214,4	202,7	198,1	182,7	153,3	103,1	
Z622 16	18,5	225,9	213,9	209,3	193,5	162,7	109,6	
Z622 17	18,5	239,3	226,5	221,4	204,3	171,4	114,8	

z622-1-50-en\_a\_th

## DIMENSIONS AND WEIGHTS

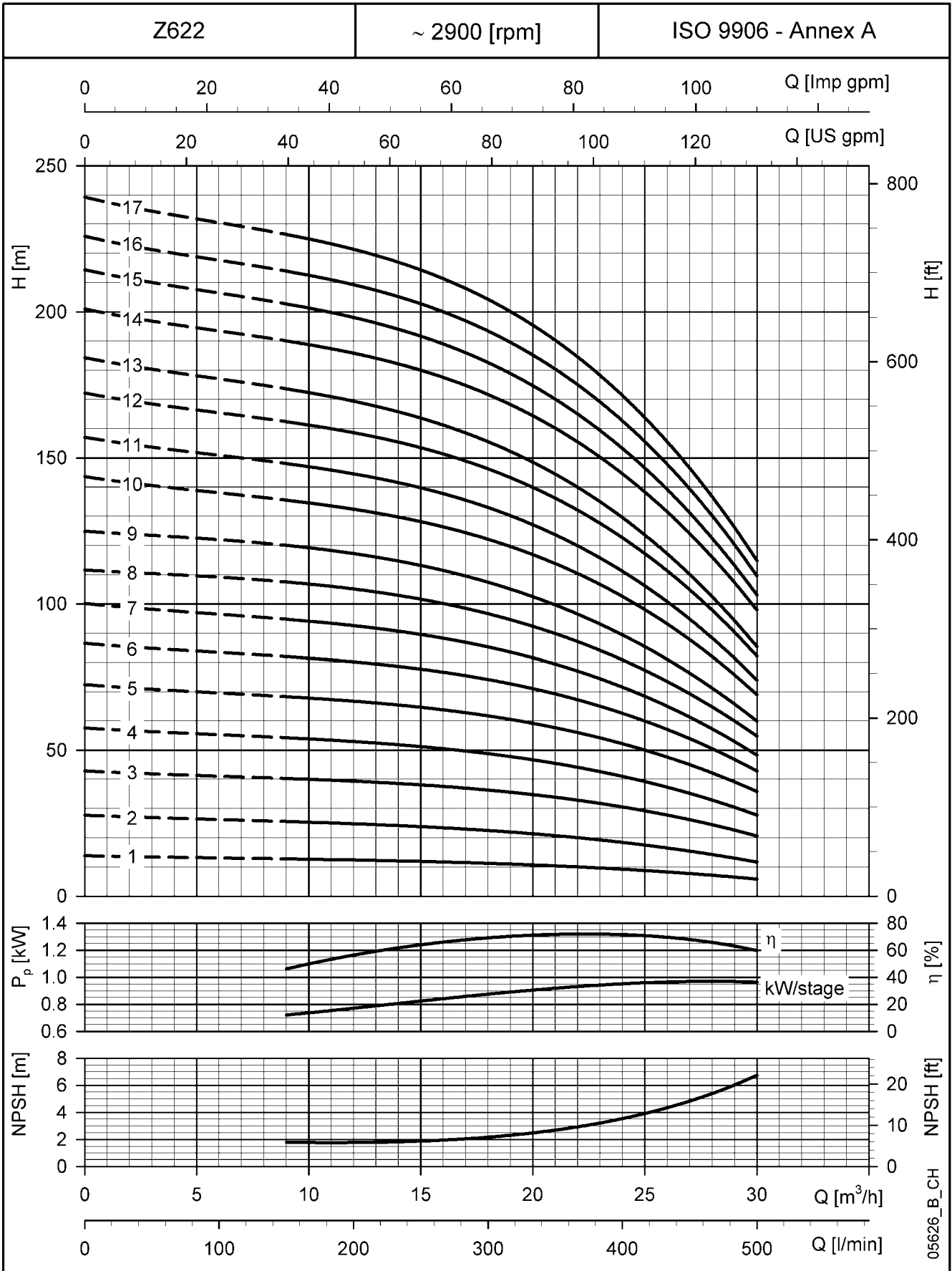
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	$\varnothing D$		
					1 Cable	2 Cables	
Z622 01-L4C	1,1	643	286	357	142	144	17
Z622 02-L4C	2,2	819	393	426	142	144	23
Z622 03-L4C	3	1039	544	495	142	144	32
Z622 04-L4C	4	1178	614	564	142	144	38
Z622 05-L4C	5,5	1317	684	633	142	144	42
Z622 06-L4C	7,5	1466	764	702	142	144	46
Z622 07-L4C	7,5	1535	764	771	142	144	47
Z622 04-L6W	4	1147	583	564	144	146	52
Z622 05-L6W	5,5	1246	613	633	144	146	57
Z622 06-L6W	7,5	1355	653	702	144	146	63
Z622 07-L6W	7,5	1424	653	771	144	146	64
Z622 08-L6W	9,3	1523	683	840	144	146	70
Z622 09-L6W	9,3	1592	683	909	144	146	71
Z622 10-L6W	11	1701	723	978	144	146	77
Z622 11-L6W	11	1770	723	1047	144	146	78
Z622 12-L6W	13	1879	763	1116	144	146	84
Z622 13-L6W	13	1948	763	1185	144	146	85
Z622 14-L6W	15	2087	833	1254	144	146	95
Z622 15-L6W	15	2156	833	1323	144	146	97
Z622 16-L6W	18,5	2295	903	1392	144	146	106
Z622 17-L6W	18,5	2364	903	1461	144	146	108

z622-1-50-en\_a\_td



05600\_A\_DD

**Z622 SERIES, 1 TO 17 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



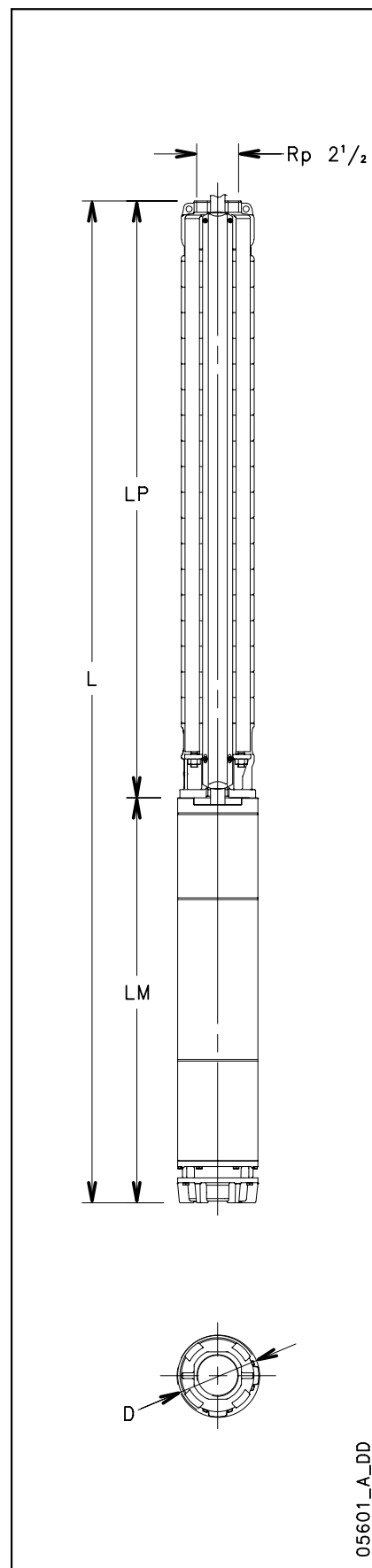
05626\_B\_CH

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

## Z622 SERIES, 18 TO 33 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	150	200	300	400	500
		H = TOTAL HEAD METRES COLUMN OF WATER						
		m <sup>3</sup> /h	0	9	12	18	24	30
Z622 18	18,5	252,5	238,8	233,4	215,0	179,9	119,8	
Z622 19	22	271,9	257,0	251,1	231,5	194,8	132,7	
Z622 20	22	285,4	269,7	263,3	242,5	203,7	138,0	
Z622 21	22	298,8	282,3	275,6	253,4	212,3	143,2	
Z622 22	22	312,2	294,8	287,6	264,1	220,8	148,2	
Z622 23	26	331,0	313,1	306,1	282,8	238,8	163,9	
Z622 24	26	344,7	326,0	318,5	294,0	247,9	169,7	
Z622 25	26	358,3	338,8	330,9	305,1	256,8	175,2	
Z622 26	26	371,8	351,5	343,3	316,1	265,6	180,5	
Z622 27	30	387,8	367,1	359,5	333,1	281,2	190,5	
Z622 28	30	401,4	379,9	371,8	344,2	290,1	196,0	
Z622 29	30	415,0	392,7	384,2	355,3	299,0	201,4	
Z622 30	30	428,5	405,3	396,5	366,4	307,9	206,6	
Z622 31	37	443,9	421,8	413,2	383,1	323,7	220,1	
Z622 32	37	457,6	434,7	425,7	394,4	332,7	225,7	
Z622 33	37	471,2	447,5	438,1	405,5	341,6	231,0	

z622-2-50-en\_a\_th



05601\_A\_DD

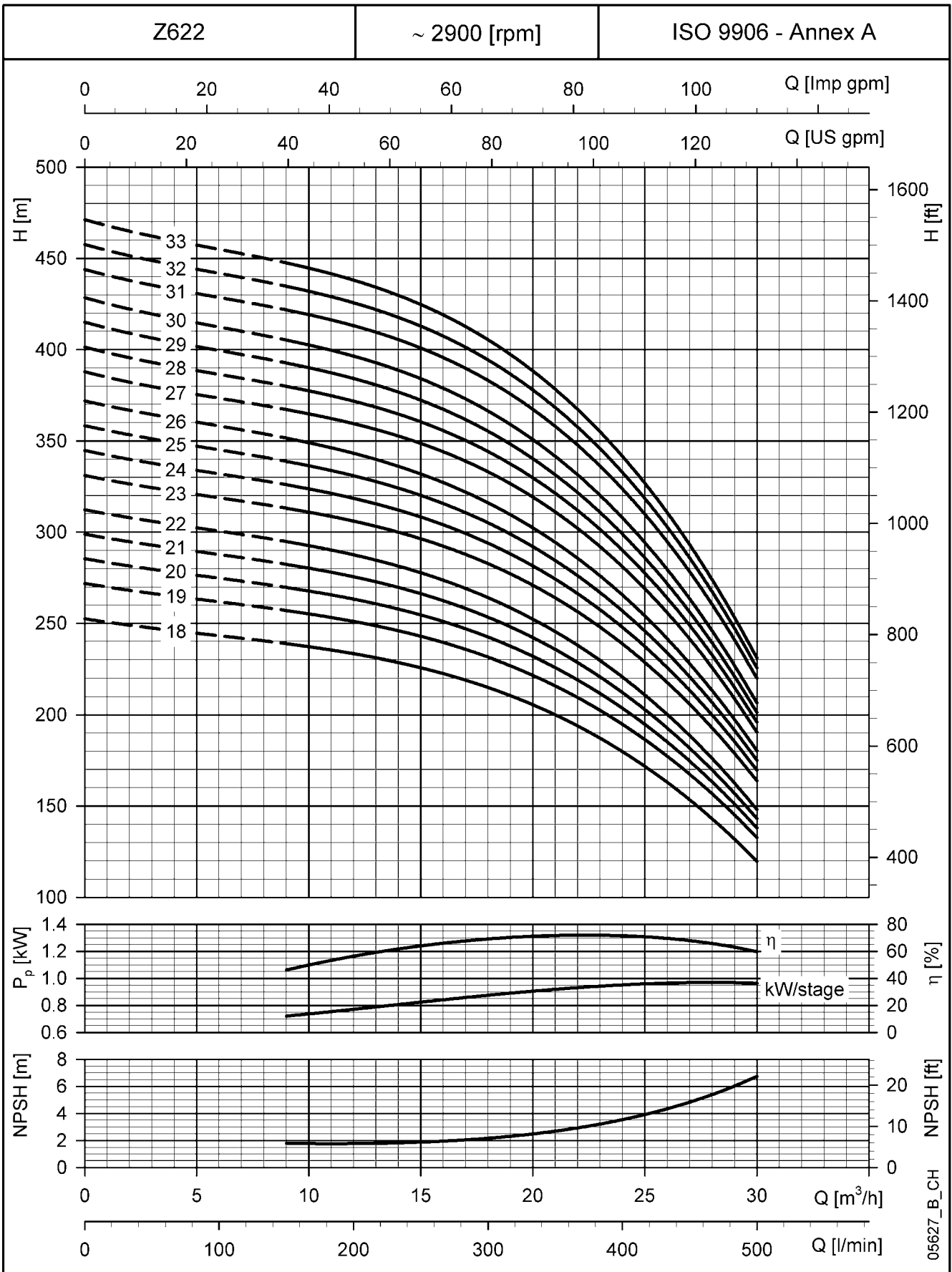
## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z622 18-L6W	18,5	2433	903	1530	144	146	109
Z622 19-L6W	22	2542	943	1599	144	146	114
Z622 20-L6W	22	2611	943	1668	144	146	116
Z622 21-L6W	22	2680	943	1737	144	146	117
Z622 22-L6W	22	2749	943	1806	144	146	119
Z622 23-L6W	26	2946	1071	1875	144	146	129
Z622 24-L6W	26	3015	1071	1944	144	146	131
Z622 25-L6W	26	3084	1071	2013	144	146	133
Z622 26-L6W	26	3153	1071	2082	144	146	134
Z622 27-L6W	30	3302	1151	2151	144	146	144
Z622 28-L6W	30	3371	1151	2220	144	146	145
Z622 29-L6W	30	3440	1151	2289	144	146	147
Z622 30-L6W	30	3509	1151	2358	144	146	148
Z622 31-L6W	37	3728	1301	2427	144	146	164
Z622 32-L6W	37	3797	1301	2496	144	146	165
Z622 33-L6W	37	3866	1301	2565	144	146	167

z622-2-50-en\_a\_td



**Z622 SERIES, 18 TO 33 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

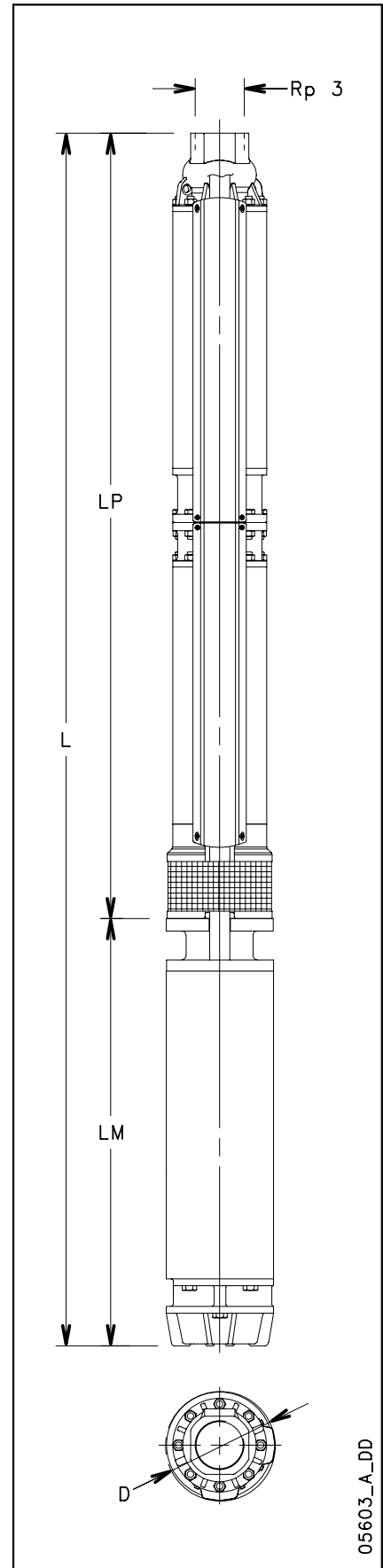


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z622 SERIES, 34 TO 50 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	150	200	300	400	500
		m <sup>3</sup> /h	0	9	12	18	24	30
H = TOTAL HEAD METRES COLUMN OF WATER								
Z622 34D	37	484,7	460,1	450,3	416,6	350,5	236,4	
Z622 35D	37	498,3	472,9	462,7	427,5	359,1	241,4	
Z622 36D	37	511,8	485,5	474,9	438,4	367,8	246,5	
Z622 37D	37	525,2	498,1	487,0	449,1	376,1	251,2	
Z622 38D	45	543,0	515,3	504,6	467,5	394,4	267,3	
Z622 39D	45	556,5	528,1	517,0	478,7	403,5	272,9	
Z622 40D	45	570,0	540,8	529,4	489,9	412,5	278,1	
Z622 41D	45	583,5	553,4	541,6	500,9	421,2	283,3	
Z622 42D	45	596,9	566,0	553,9	512,0	430,1	288,7	
Z622 43D	45	610,3	578,5	566,0	522,9	439,0	294,0	
Z622 44D	45	623,9	591,1	578,1	533,8	447,7	299,1	
Z622 45D	45	637,2	603,6	590,3	544,6	456,3	304,1	
Z622 46D	52	656,3	622,9	609,8	564,4	475,5	321,1	
Z622 47D	52	669,7	635,5	622,1	575,5	484,3	326,4	
Z622 48D	52	683,5	648,4	634,5	586,5	493,0	331,5	
Z622 49D	52	696,6	661,1	646,8	597,4	501,6	336,7	
Z622 50D	52	710,2	673,6	658,9	608,3	510,4	341,8	

z622-3-50-en\_a\_th



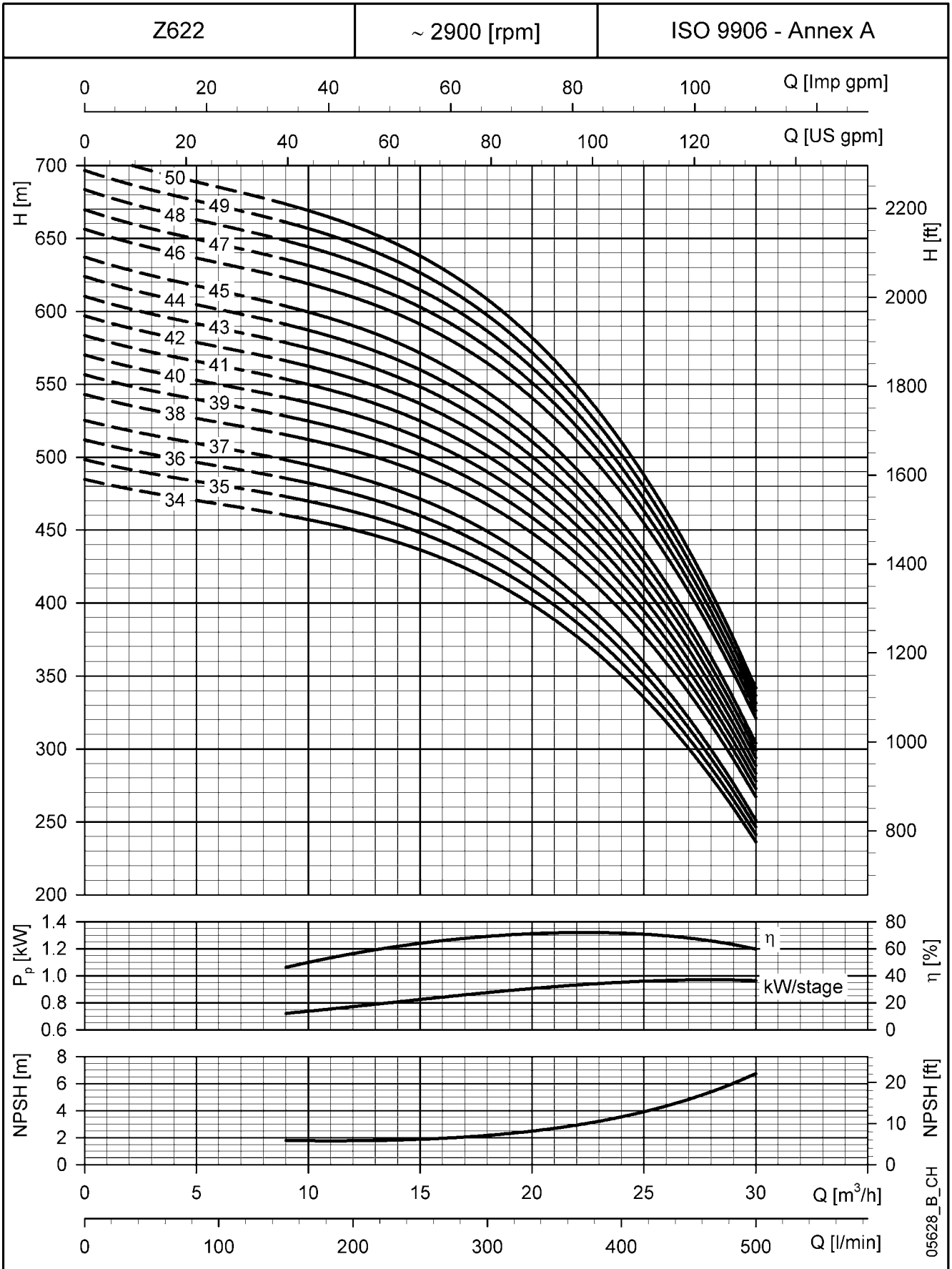
05603\_A\_DD

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z622 34D-L6W	37	4223	1301	2922	177	180	221
Z622 35D-L6W	37	4637	1301	3336	177	180	233
Z622 36D-L6W	37	4637	1301	3336	177	180	234
Z622 37D-L6W	37	4637	1301	3336	177	180	235
Z622 38D-L8W	45	4580	1195	3385	193	195	310
Z622 39D-L8W	45	4580	1195	3385	193	195	311
Z622 40D-L8W	45	4580	1195	3385	193	195	311
Z622 41D-L8W	45	4718	1195	3523	193	195	315
Z622 42D-L8W	45	4718	1195	3523	193	195	316
Z622 43D-L8W	45	4856	1195	3661	193	195	321
Z622 44D-L8W	45	4856	1195	3661	193	195	321
Z622 45D-L8W	45	5063	1195	3868	193	195	327
Z622 46D-L8W	52	5153	1285	3868	193	195	348
Z622 47D-L8W	52	5153	1285	3868	193	195	348
Z622 48D-L8W	52	5360	1285	4075	193	195	355
Z622 49D-L8W	52	5360	1285	4075	193	195	356
Z622 50D-L8W	52	5360	1285	4075	193	195	357

z622-3-50-en\_a\_td

**Z622 SERIES, 34 TO 50 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z631 SERIES, 1 TO 15 STAGES

### OPERATING CHARACTERISTICS AT 50 Hz

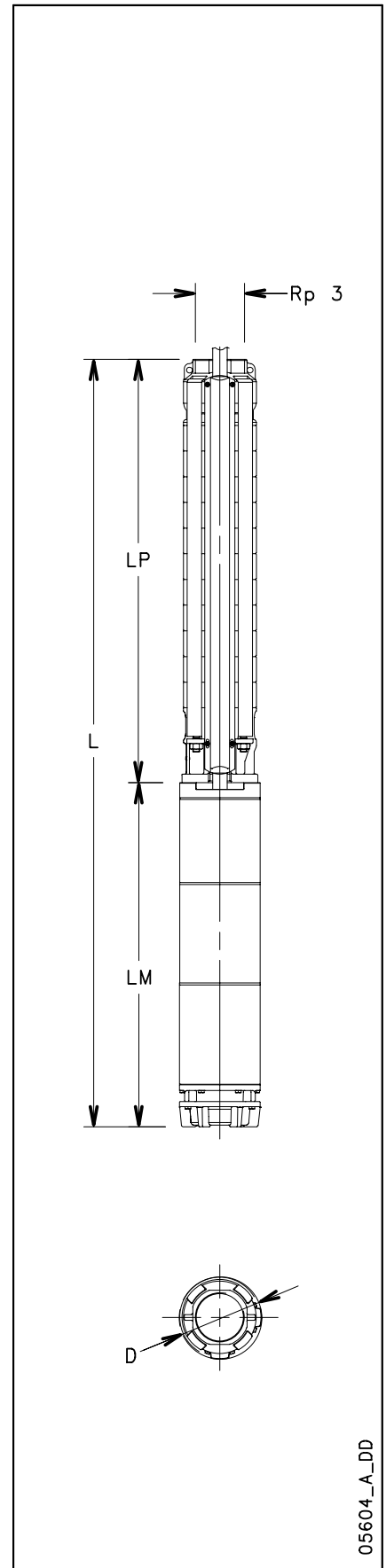
PUMP TYPE	RATED POWER kW	Q = DELIVERY					
		l/min m <sup>3</sup> /h	0	200	400	500	600
		H = TOTAL HEAD METRES COLUMN OF WATER					
Z631 01	1,5	15,6	14,3	12,3	10,7	8,5	6,6
Z631 02	3	31,7	29,3	25,4	22,2	17,8	14,1
Z631 03	4	47,4	43,8	37,9	33,1	26,4	20,7
Z631 04	5,5	63,1	58,8	51,3	45,1	36,5	29,2
Z631 05	7,5	78,7	73,4	64,0	56,2	45,4	36,3
Z631 06	7,5	93,9	87,2	75,9	66,6	53,7	42,9
Z631 07	9,3	109,2	102,7	89,9	79,1	64,2	51,5
Z631 08	11	124,7	117,3	102,9	90,6	73,5	59,1
Z631 09	11	139,8	130,8	114,0	100,0	80,9	64,7
Z631 10	13	155,7	145,9	127,5	112,0	90,9	73,0
Z631 11	15	171,8	161,1	141,2	124,4	101,2	81,6
Z631 12	18,5	188,1	177,5	156,4	138,3	113,2	91,9
Z631 13	18,5	203,0	191,4	168,2	148,4	121,1	97,9
Z631 14	18,5	218,0	205,2	179,8	158,3	128,7	103,6
Z631 15	22	233,6	219,3	192,3	169,5	138,1	111,4

z631-1-50-en\_a\_th

## DIMENSIONS AND WEIGHTS

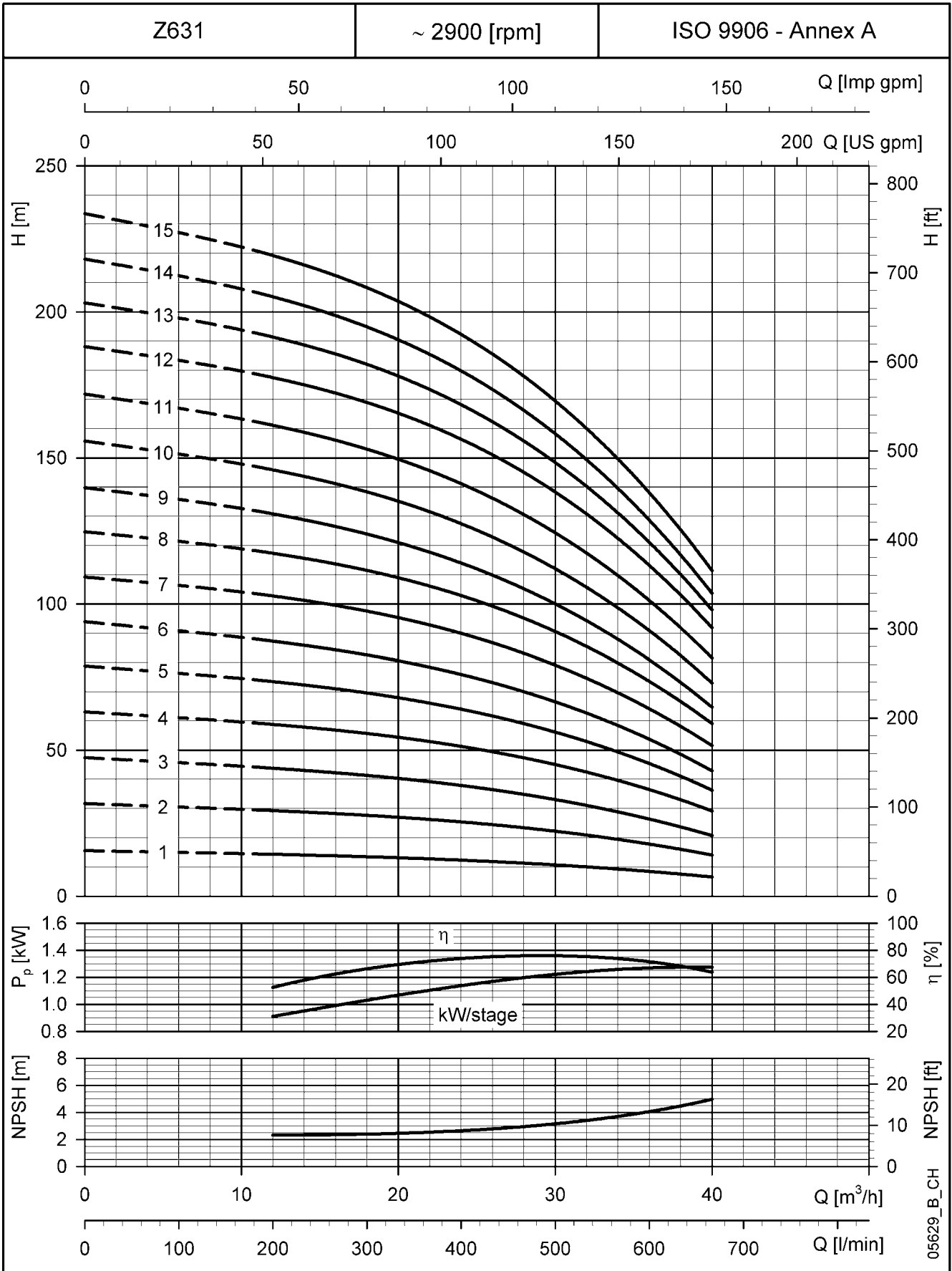
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z631 01-L4C	1,5	715	348	367	142	144	21
Z631 02-L4C	3	980	544	436	142	144	31
Z631 03-L4C	4	1119	614	505	142	144	35
Z631 04-L4C	5,5	1258	684	574	142	144	40
Z631 05-L4C	7,5	1407	764	643	142	144	44
Z631 06-L4C	7,5	1476	764	712	142	144	46
Z631 03-L6W	4	1088	583	505	144	146	50
Z631 04-L6W	5,5	1187	613	574	144	146	56
Z631 05-L6W	7,5	1296	653	643	144	146	61
Z631 06-L6W	7,5	1365	653	712	144	146	63
Z631 07-L6W	9,3	1464	683	781	144	146	67
Z631 08-L6W	11	1573	723	850	144	146	74
Z631 09-L6W	11	1642	723	919	144	146	75
Z631 10-L6W	13	1751	763	988	144	146	81
Z631 11-L6W	15	1890	833	1057	144	146	90
Z631 12-L6W	18,5	2029	903	1126	144	146	100
Z631 13-L6W	18,5	2098	903	1195	144	146	101
Z631 14-L6W	18,5	2167	903	1264	144	146	103
Z631 15-L6W	22	2276	943	1333	144	146	108

z631-1-50-en\_a\_td



05604\_A\_DD

**Z631 SERIES, 1 TO 15 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

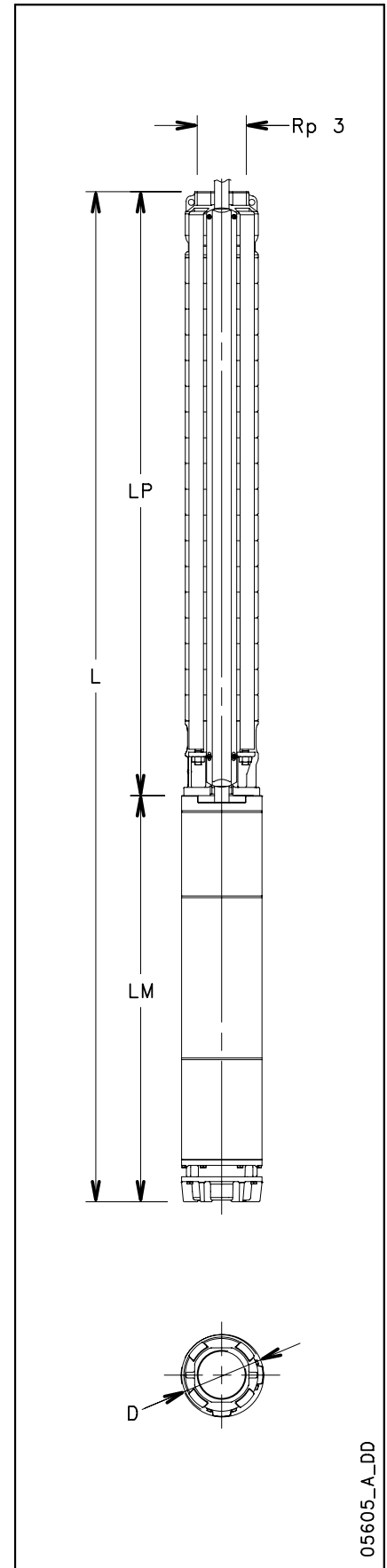


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z631 SERIES, 16 TO 29 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	200	400	500	600	666,7
		m <sup>3</sup> /h	0	12	24	30	36	40
		H = TOTAL HEAD METRES COLUMN OF WATER						
Z631 16	22	248,5	233,0	203,9	179,4	145,7	117,2	
Z631 17	22	262,4	246,9	215,9	189,7	153,7	123,2	
Z631 18	26	280,6	265,1	233,8	206,7	169,1	137,1	
Z631 19	26	295,5	279,2	245,7	217,0	177,1	143,3	
Z631 20	26	310,6	292,9	257,5	227,0	185,0	149,2	
Z631 21	30	327,0	308,8	271,8	240,0	195,9	158,5	
Z631 22	30	342,0	322,5	283,5	250,1	203,8	164,5	
Z631 23	30	357,2	336,7	296,0	260,7	211,6	169,7	
Z631 24	37	376,2	355,7	314,1	277,7	226,5	182,8	
Z631 25	37	389,6	367,9	324,5	286,5	233,4	188,0	
Z631 26	37	404,7	381,8	336,1	296,4	241,0	193,7	
Z631 27	37	419,6	395,6	347,8	306,3	248,6	199,4	
Z631 28	37	434,5	409,4	359,3	316,0	255,9	204,8	
Z631 29	37	449,1	423,1	370,7	325,6	263,1	210,0	

z631-2-50-en\_a\_th



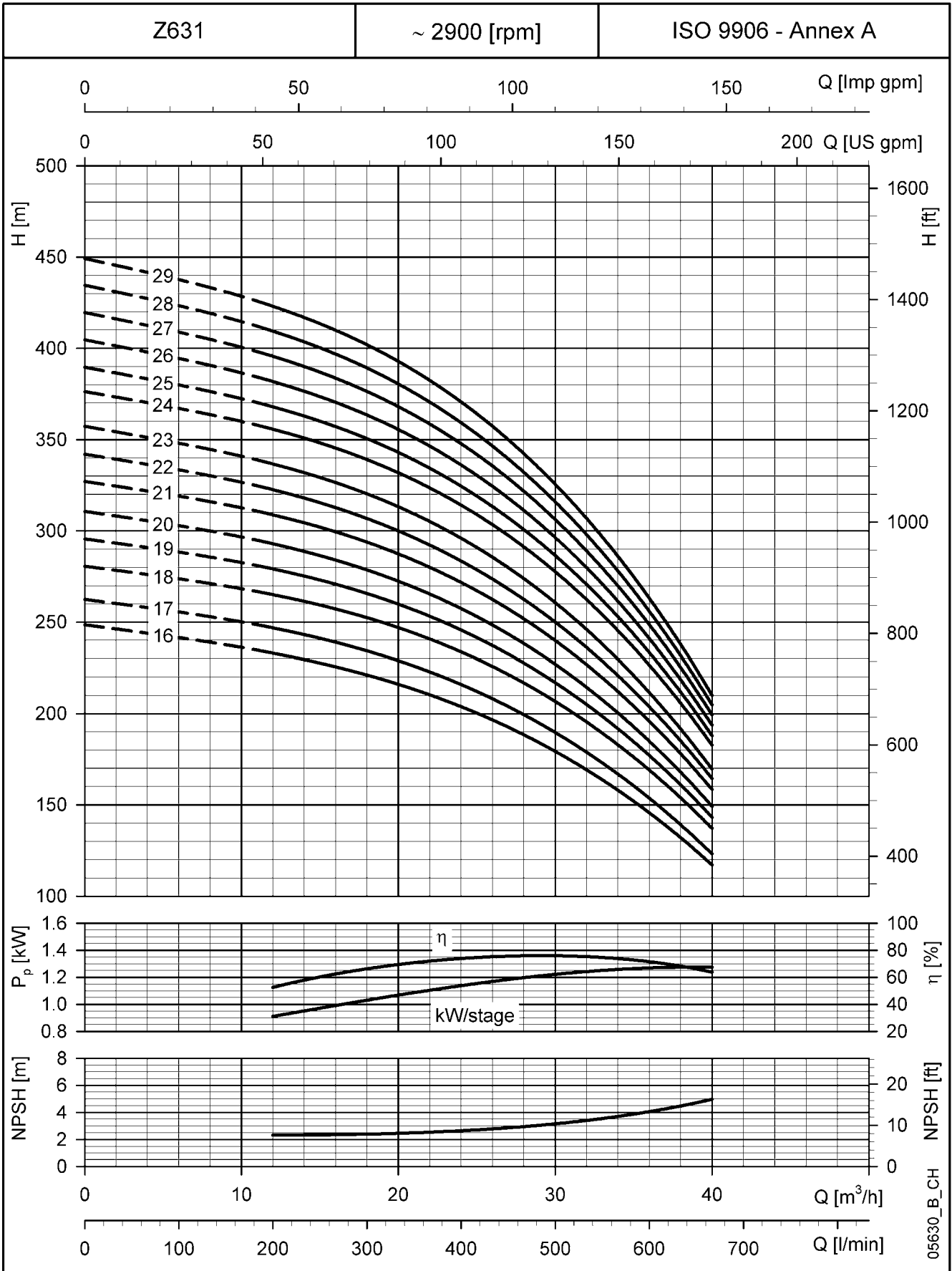
05605\_A\_DD

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z631 16-L6W	22	2345	943	1402	144	146	109
Z631 17-L6W	22	2414	943	1471	144	146	111
Z631 18-L6W	26	2611	1071	1540	144	146	121
Z631 19-L6W	26	2680	1071	1609	144	146	123
Z631 20-L6W	26	2749	1071	1678	144	146	124
Z631 21-L6W	30	2898	1151	1747	144	146	134
Z631 22-L6W	30	2967	1151	1816	144	146	136
Z631 23-L6W	30	3036	1151	1885	144	146	137
Z631 24-L6W	37	3255	1301	1954	144	146	153
Z631 25-L6W	37	3324	1301	2023	144	146	154
Z631 26-L6W	37	3393	1301	2092	144	146	156
Z631 27-L6W	37	3462	1301	2161	144	146	158
Z631 28-L6W	37	3531	1301	2230	144	146	159
Z631 29-L6W	37	3600	1301	2299	144	146	161

z631-2-50-en\_a\_td

**Z631 SERIES, 16 TO 29 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

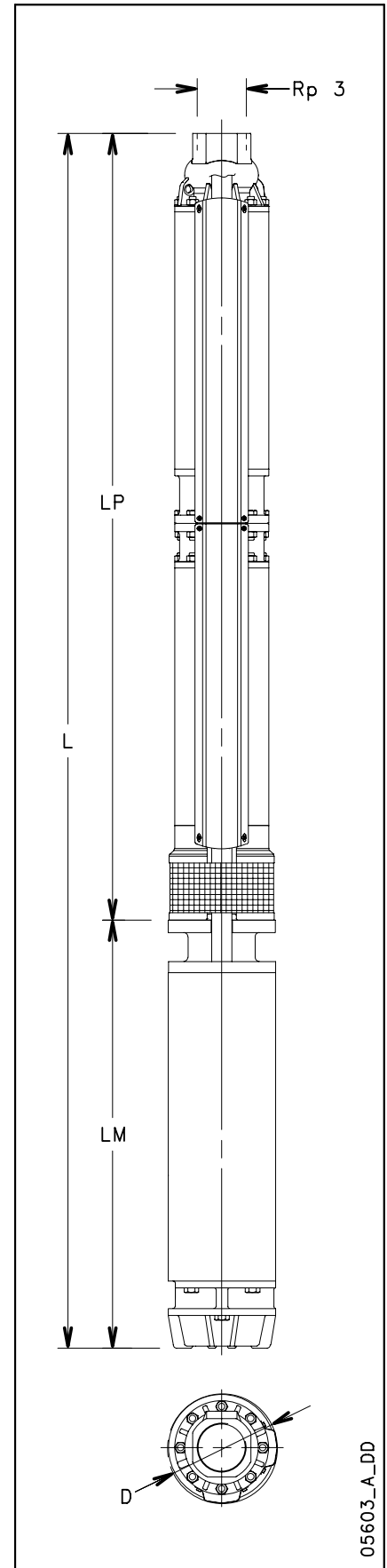


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z631 SERIES, 30 TO 43 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	200	400	500	600	666,7
		m <sup>3</sup> /h	0	12	24	30	36	40
		H = TOTAL HEAD METRES COLUMN OF WATER						
Z631 30D	45	467,2	440,6	388,4	342,8	279,1	224,5	
Z631 31D	45	482,2	454,3	400,1	352,9	286,9	230,4	
Z631 32D	45	497,1	468,1	411,8	362,9	294,7	236,3	
Z631 33D	45	511,9	481,7	423,4	372,9	302,3	242,1	
Z631 34D	45	526,7	495,5	434,8	382,4	309,6	247,5	
Z631 35D	45	541,4	509,1	446,3	392,2	317,1	253,0	
Z631 36D	52	556,2	522,5	457,5	401,8	324,3	258,3	
Z631 37D	52	574,7	542,0	476,8	420,1	341,1	273,7	
Z631 38D	52	589,8	555,8	488,3	429,9	348,5	279,2	
Z631 39D	52	604,5	569,4	499,8	439,6	355,9	284,6	
Z631 40D	52	619,4	583,1	511,1	449,2	363,2	290,0	
Z631 41D	52	634,1	596,7	522,4	458,6	370,3	295,2	
Z631 42D	55	652,3	614,8	540,5	476,1	386,4	309,8	
Z631 43D	55	667,0	628,4	552,0	485,9	393,9	315,4	

z631-3-50-en\_a\_th



05603\_A\_DD

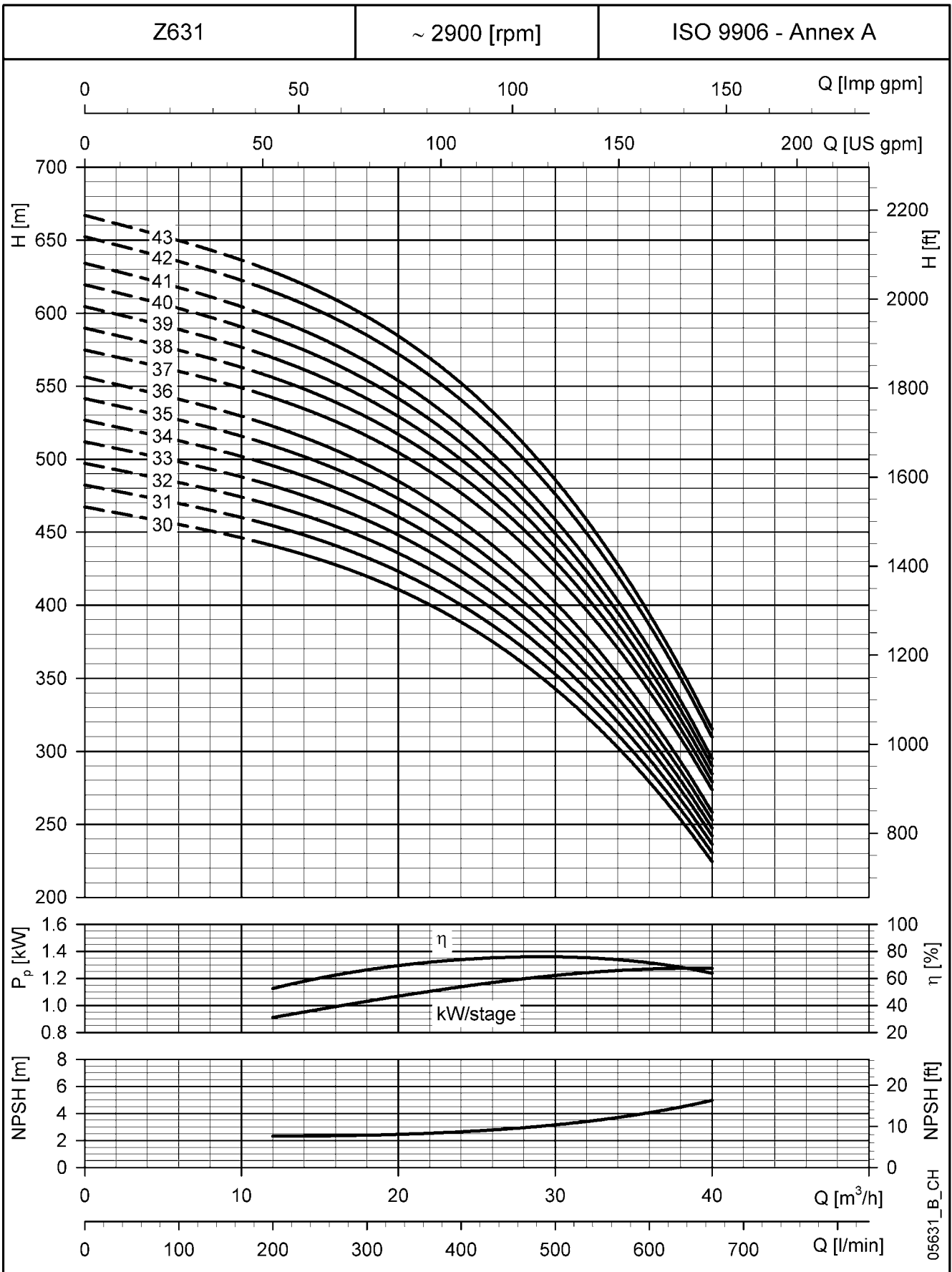
## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z631 30D-L8W	45	4166	1195	2971	193	195	292
Z631 31D-L8W	45	4166	1195	2971	193	195	293
Z631 32D-L8W	45	4166	1195	2971	193	195	294
Z631 33D-L8W	45	4166	1195	2971	193	195	295
Z631 34D-L8W	45	4166	1195	2971	193	195	295
Z631 35D-L8W	45	4580	1195	3385	193	195	308
Z631 36D-L8W	52	4670	1285	3385	193	195	328
Z631 37D-L8W	52	4670	1285	3385	193	195	329
Z631 38D-L8W	52	4670	1285	3385	193	195	330
Z631 39D-L8W	52	4670	1285	3385	193	195	331
Z631 40D-L8W	52	4670	1285	3385	193	195	331
Z631 41D-L8W	52	4808	1285	3523	193	195	335
Z631 42D-L8W	55	4848	1325	3523	193	195	342
Z631 43D-L8W	55	4986	1325	3661	193	195	347

z631-3-50-en\_a\_td



**Z631 SERIES, 30 TO 43 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

**Z646 SERIES, 1 TO 12 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

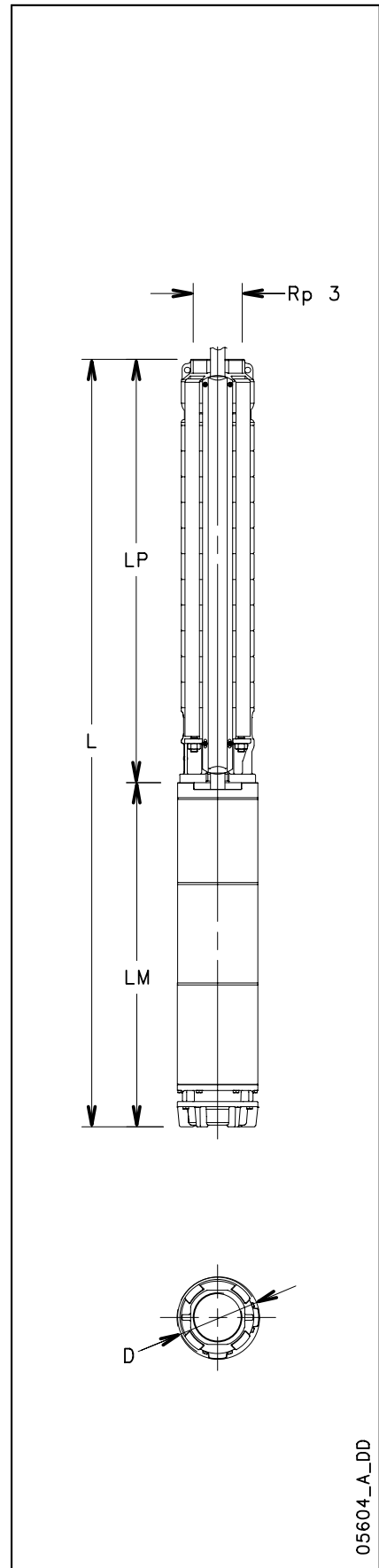
PUMP TYPE	RATED POWER kW	Q = DELIVERY					
		$\text{l/min}$	400	600	700	800	1000
		$\text{m}^3/\text{h}$	24	36	42	48	60
H = TOTAL HEAD METRES COLUMN OF WATER							
Z646 01	1,5	16,9	11,4	9,0	7,9	6,7	3,0
Z646 02	3	35,1	24,0	19,4	17,4	15,2	8,8
Z646 03	5,5	52,3	35,9	29,3	26,4	23,3	14,0
Z646 04	7,5	69,0	47,6	39,0	35,3	31,2	18,9
Z646 05	7,5	83,1	58,1	47,7	43,1	38,1	22,7
Z646 06	9,3	100,6	70,1	57,6	52,1	46,2	27,9
Z646 07	11	117,3	81,7	67,3	60,9	54,0	32,7
Z646 08	13	137,1	93,4	76,7	69,5	61,6	36,9
Z646 09	13	152,7	106,0	87,4	79,3	70,5	43,5
Z646 10	15	166,8	116,3	95,9	86,9	77,2	47,0
Z646 11	18,5	186,9	129,8	107,1	97,2	86,5	53,7
Z646 12	18,5	201,2	140,2	115,7	105,0	93,3	57,3

z646-1-50-en\_a\_th

**DIMENSIONS AND WEIGHTS**

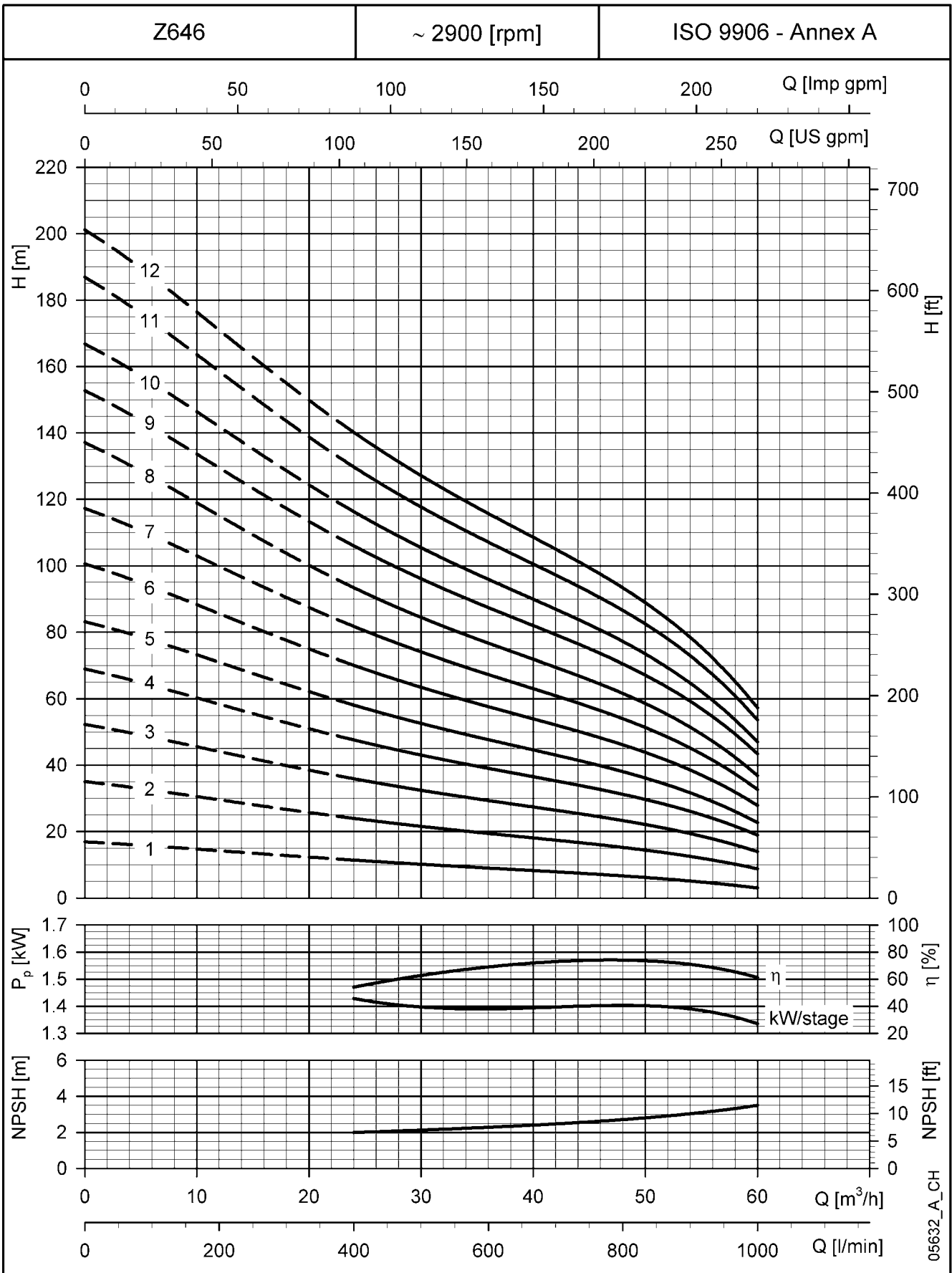
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	$\varnothing$ D		
					1 Cable	2 Cables	
Z646 01-L4C	1,5	761	348	413	142	144	22
Z646 02-L4C	3	1072	544	528	142	144	32
Z646 03-L4C	5,5	1327	684	643	142	144	42
Z646 04-L4C	7,5	1522	764	758	142	144	46
Z646 05-L4C	7,5	1637	764	873	142	144	49
Z646 03-L6W	5,5	1256	613	643	144	146	57
Z646 04-L6W	7,5	1411	653	758	144	146	63
Z646 05-L6W	7,5	1526	653	873	144	146	66
Z646 06-L6W	9,3	1671	683	988	144	146	72
Z646 07-L6W	11	1826	723	1103	144	146	79
Z646 08-L6W	13	1981	763	1218	144	146	85
Z646 09-L6W	13	2096	763	1333	144	146	88
Z646 10-L6W	15	2281	833	1448	144	146	98
Z646 11-L6W	18,5	2466	903	1563	144	146	109
Z646 12-L6W	18,5	2581	903	1678	144	146	111

z646-1-50-en\_a\_td



05604\_A\_DD

**Z646 SERIES, 1 TO 12 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

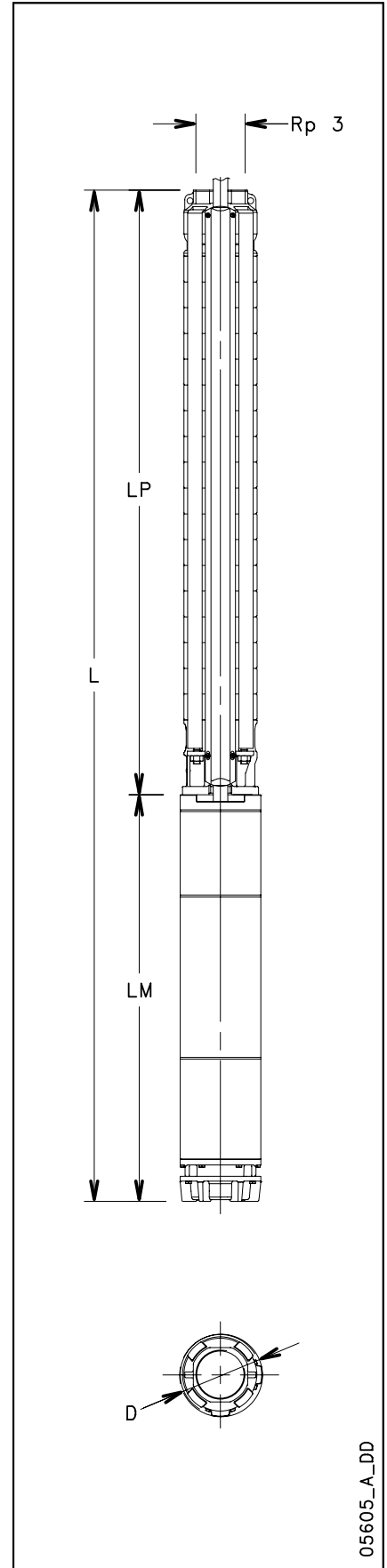


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## Z646 SERIES, 13 TO 25 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min m <sup>3</sup> /h	0	400	600	700	800	1000
		H = TOTAL HEAD METRES COLUMN OF WATER						
Z646 13	22	221,6	154,4	127,5	115,9	103,3	64,8	
Z646 14	22	235,4	164,9	136,2	123,7	110,2	68,6	
Z646 15	22	248,8	175,0	144,6	131,2	116,8	72,1	
Z646 16	26	276,0	191,7	158,6	144,2	128,8	82,0	
Z646 17	26	290,6	202,4	167,4	152,2	135,8	86,0	
Z646 18	30	310,0	215,4	178,3	162,2	144,9	92,1	
Z646 19	30	324,7	226,1	187,1	170,1	151,9	96,1	
Z646 20	30	339,1	236,7	195,8	177,9	158,7	100,0	
Z646 21	37	361,2	251,8	208,4	189,6	169,5	108,2	
Z646 22	37	375,7	262,5	217,3	197,7	176,6	112,3	
Z646 23	37	389,8	273,0	225,9	205,4	183,4	116,0	
Z646 24	37	403,6	283,3	234,5	213,2	190,2	119,6	
Z646 25	37	417,1	293,6	243,0	220,8	196,8	123,1	

z646-2-50-en\_a\_th



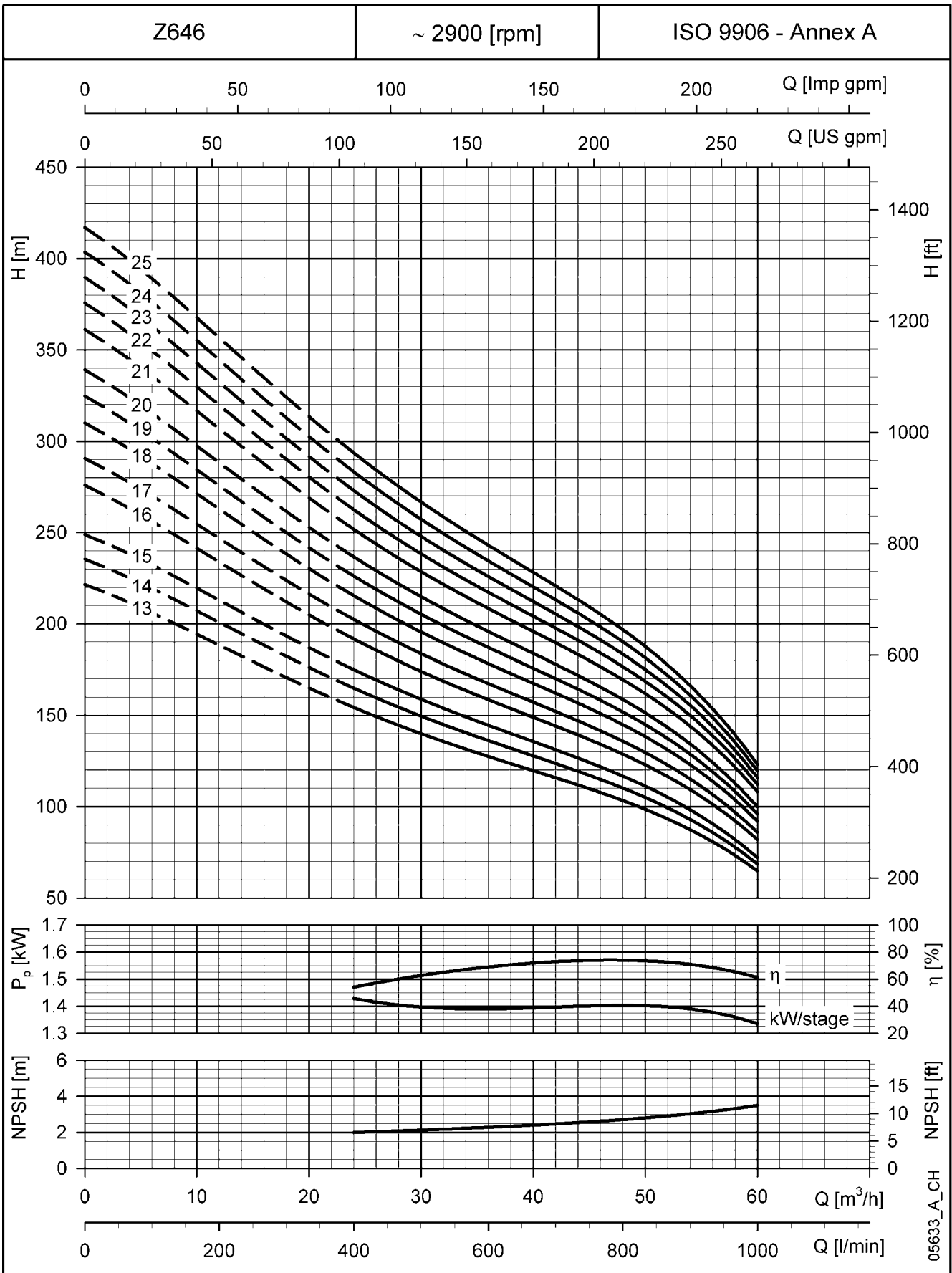
05605\_A\_DD

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z646 13-L6W	22	2736	943	1793	144	146	117
Z646 14-L6W	22	2851	943	1908	144	146	119
Z646 15-L6W	22	2966	943	2023	144	146	122
Z646 16-L6W	26	3209	1071	2138	144	146	133
Z646 17-L6W	26	3324	1071	2253	144	146	136
Z646 18-L6W	30	3519	1151	2368	144	146	146
Z646 19-L6W	30	3634	1151	2483	144	146	149
Z646 20-L6W	30	3749	1151	2598	144	146	151
Z646 21-L6W	37	4014	1301	2713	144	146	168
Z646 22-L6W	37	4129	1301	2828	144	146	170
Z646 23-L6W	37	4244	1301	2943	144	146	173
Z646 24-L6W	37	4359	1301	3058	144	146	175
Z646 25-L6W	37	4474	1301	3173	144	146	178

z646-2-50-en\_a\_td

**Z646 SERIES, 13 TO 25 STAGES**  
**OPERATING CHARACTERISTICS AT 50 Hz**



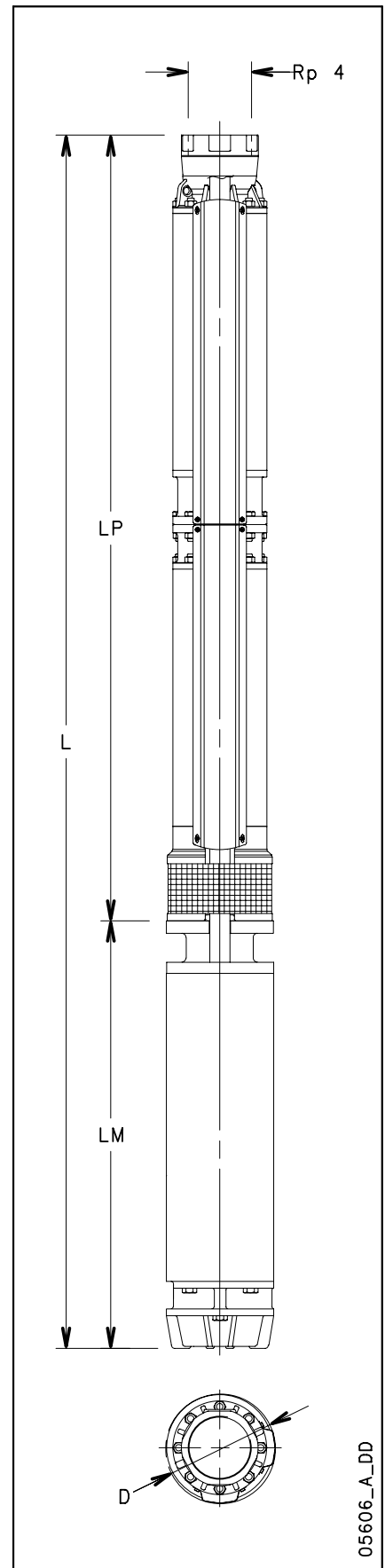
05633\_A\_CH

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

## Z646 SERIES, 26 TO 37 STAGES OPERATING CHARACTERISTICS AT 50 Hz

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		Vmin	0	400	600	700	800	1000
		m <sup>3</sup> /h	0	24	36	42	48	60
H = TOTAL HEAD METRES COLUMN OF WATER								
Z646 26D	45	447,2	310,1	256,7	233,6	208,7	132,7	
Z646 27D	45	462,1	320,8	265,5	241,5	215,6	136,5	
Z646 28D	45	476,8	331,4	274,2	249,4	222,6	140,5	
Z646 29D	45	491,8	341,8	282,9	257,2	229,5	144,0	
Z646 30D	45	506,1	352,2	291,5	264,9	236,2	147,8	
Z646 31D	45	520,4	362,4	299,9	272,5	242,9	151,2	
Z646 32D	52	543,0	379,6	314,3	285,9	255,3	161,9	
Z646 33D	52	557,2	390,0	323,0	293,7	262,1	165,5	
Z646 34D	52	570,9	400,2	331,3	301,2	268,8	169,2	
Z646 35D	52	584,7	410,5	339,9	308,9	275,4	172,4	
Z646 36D	52	598,0	420,4	348,1	316,3	281,9	175,9	
Z646 37D	55	626,5	437,4	362,2	329,4	294,0	185,8	

z646-3-50-en\_a\_th



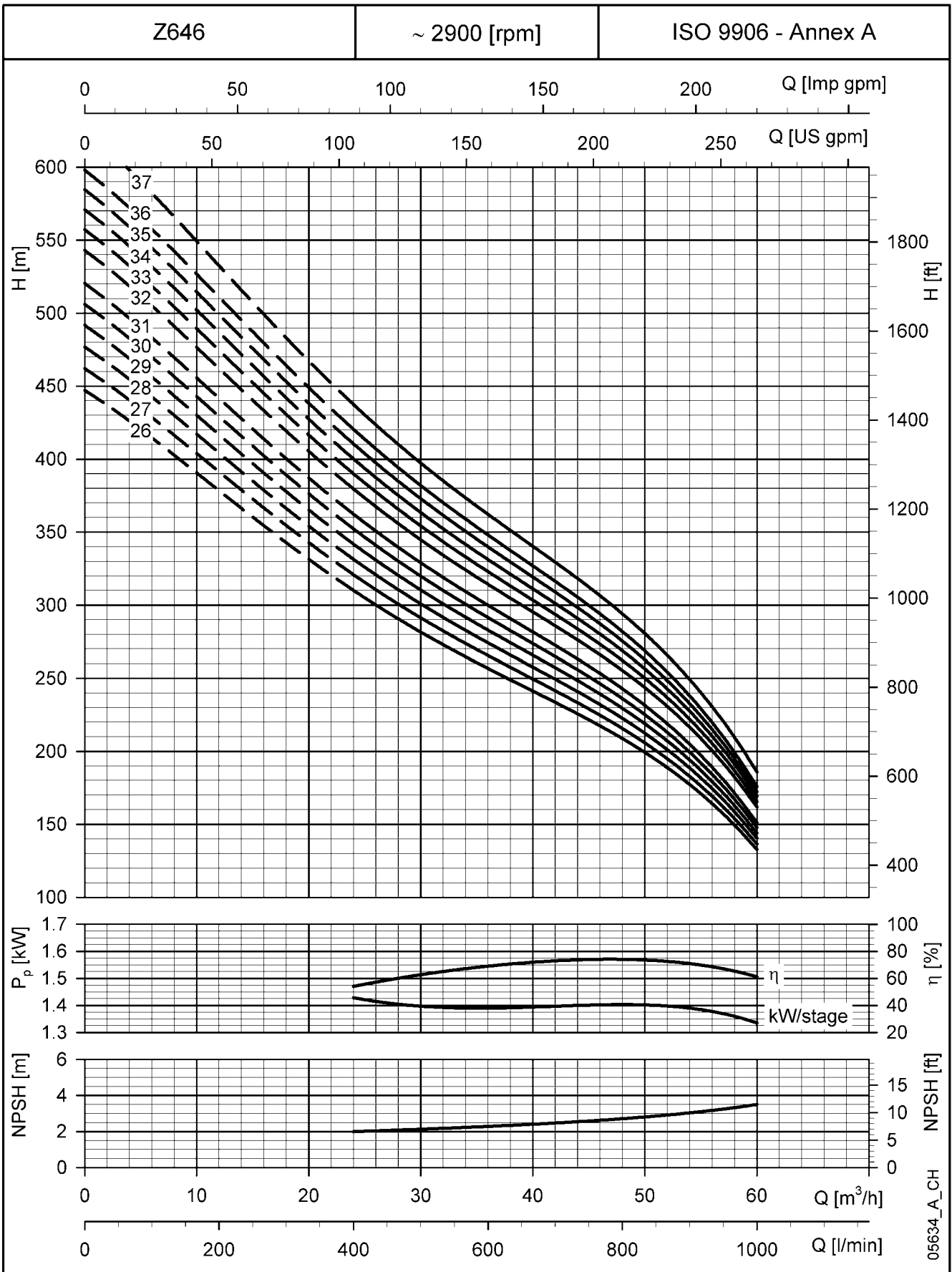
05606\_A\_DD

## DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z646 26D-L8W	45	4925	1195	3730	193	195	320
Z646 27D-L8W	45	4925	1195	3730	193	195	322
Z646 28D-L8W	45	5270	1195	4075	193	195	332
Z646 29D-L8W	45	5270	1195	4075	193	195	333
Z646 30D-L8W	45	5270	1195	4075	193	195	335
Z646 31D-L8W	45	5385	1195	4190	193	195	337
Z646 32D-L8W	52	5820	1285	4535	193	195	367
Z646 33D-L8W	52	5820	1285	4535	193	195	368
Z646 34D-L8W	52	5820	1285	4535	193	195	370
Z646 35D-L8W	52	6280	1285	4995	193	195	383
Z646 36D-L8W	52	6280	1285	4995	193	195	384
Z646 37D-L8W	55	6320	1325	4995	193	195	392

z646-3-50-en\_a\_td

**Z646 SERIES, 26 TO 37 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

**Z660 SERIES, 1 TO 10 STAGES**  
**OPERATING CHARACTERISTICS AT 50 Hz**

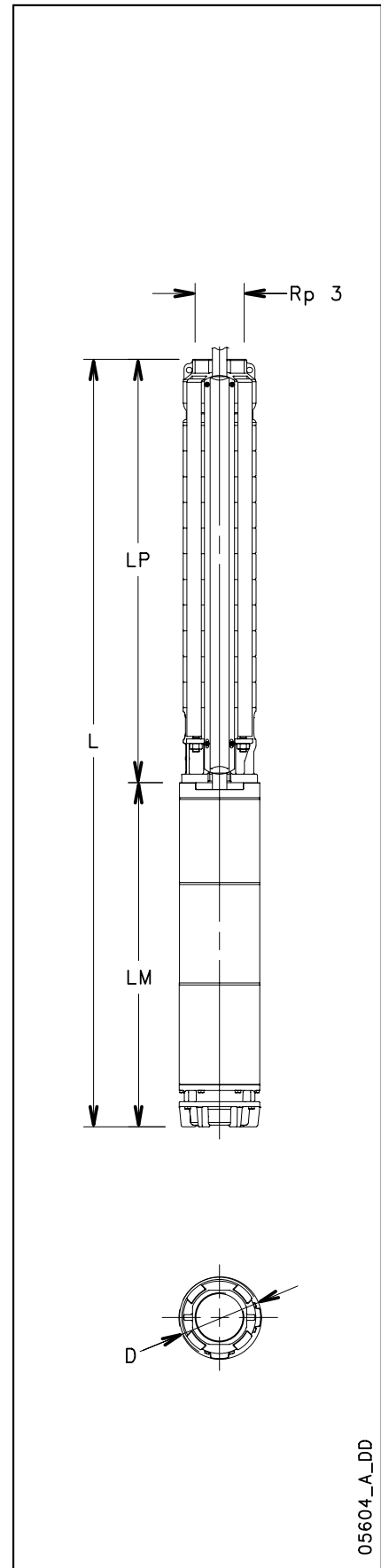
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	500	700	900	1100	1300
		m <sup>3</sup> /h	0	30	42	54	66	78
H = TOTAL HEAD METRES COLUMN OF WATER								
Z660 01	2,2	16,2	11,1	8,9	6,8	4,4		
Z660 02	4	33,5	23,6	19,6	16,0	12,0	5,9	
Z660 03	5,5	50,0	35,4	29,7	24,6	18,9	10,2	
Z660 04	7,5	66,0	46,9	39,5	33,0	25,6	14,2	
Z660 05	9,3	82,4	58,7	49,5	41,5	32,5	18,5	
Z660 06	11	98,5	70,2	59,4	49,9	39,2	22,6	
Z660 07	13	115,0	82,0	69,4	58,5	46,2	26,9	
Z660 08	15	132,0	94,2	79,8	67,3	53,4	31,5	
Z660 09	18,5	150,1	107,1	90,9	76,8	61,3	37,0	
Z660 10	18,5	164,7	117,6	99,8	84,4	67,1	40,0	

z660-1-50-en\_a\_th

**DIMENSIONS AND WEIGHTS**

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	∅ D		
					1 Cable	2 CableS	
Z660 01-L4C	2,2	806	393	413	142	144	23
Z660 02-L4C	4	1142	614	528	142	144	36
Z660 03-L4C	5,5	1327	684	643	142	144	42
Z660 04-L4C	7,5	1522	764	758	142	144	46
Z660 02-L6W	4	1111	583	528	144	146	50
Z660 03-L6W	5,5	1256	613	643	144	146	57
Z660 04-L6W	7,5	1411	653	758	144	146	63
Z660 05-L6W	9,3	1556	683	873	144	146	70
Z660 06-L6W	11	1711	723	988	144	146	76
Z660 07-L6W	13	1866	763	1103	144	146	83
Z660 08-L6W	15	2051	833	1218	144	146	93
Z660 09-L6W	18,5	2236	903	1333	144	146	104
Z660 10-L6W	18,5	2351	903	1448	144	146	106

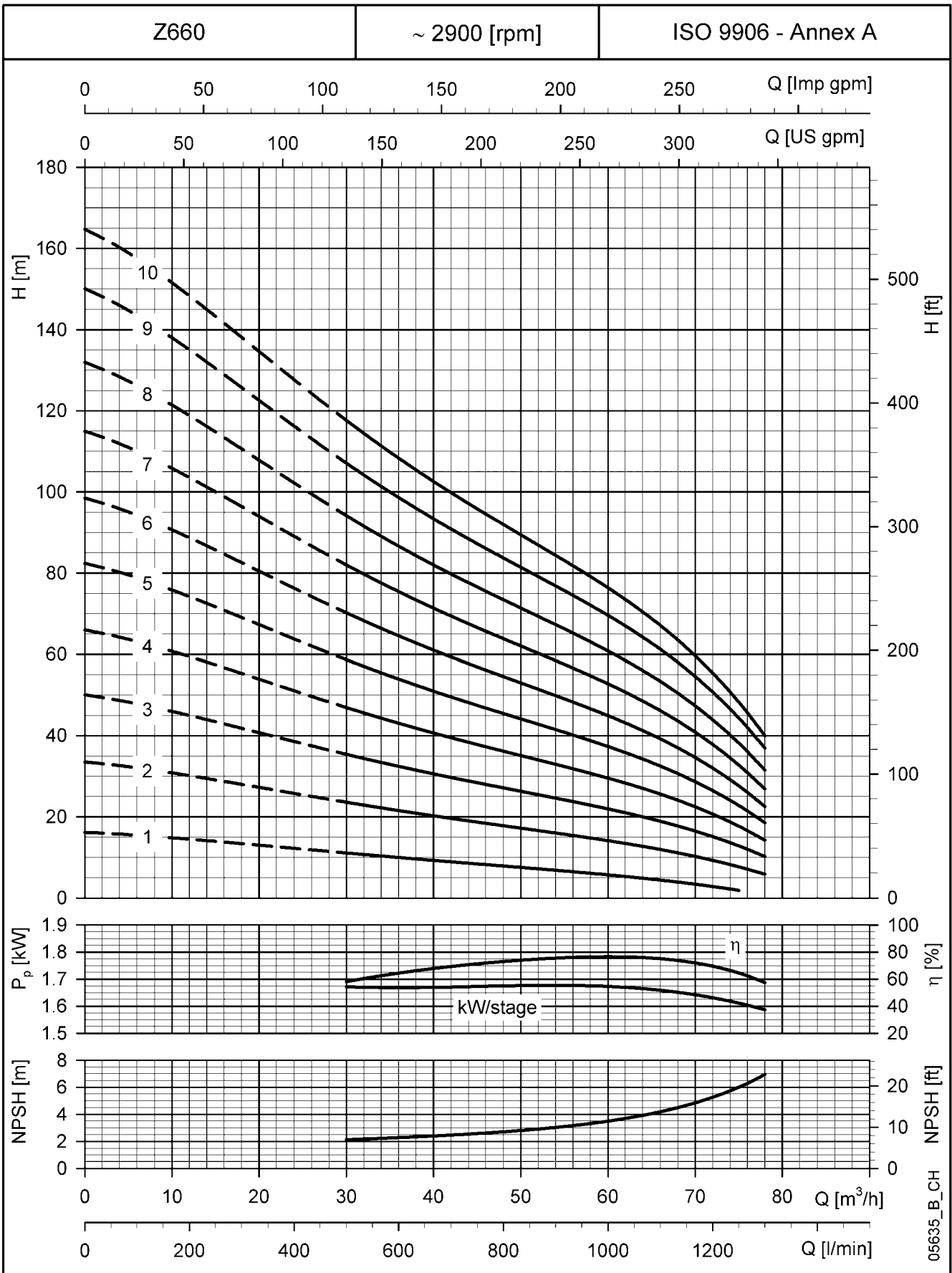
z660-1-50-en\_a\_td



05604\_A\_DD



**Z660 SERIES, 1 TO 10 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

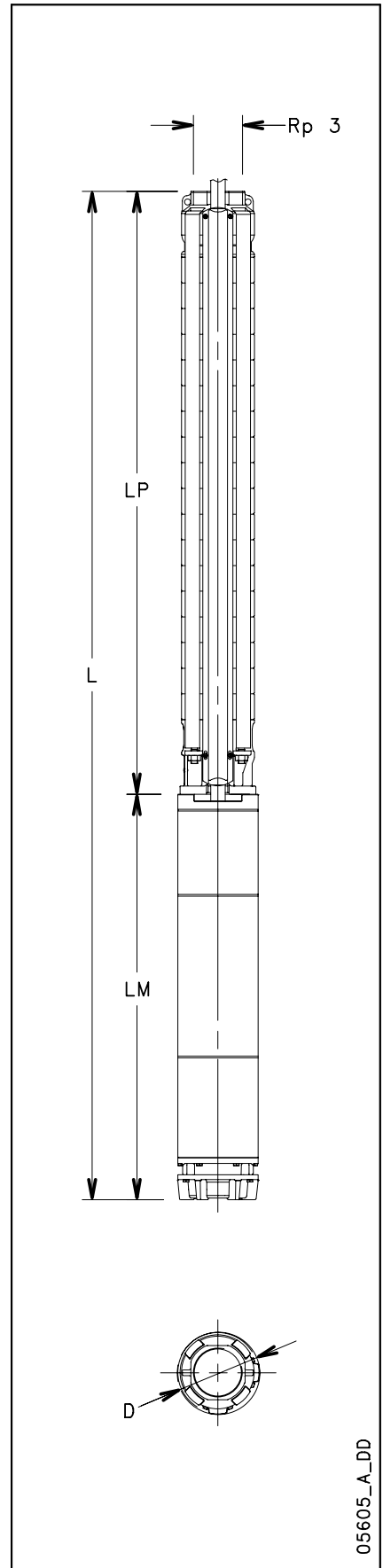


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

**Z660 SERIES, 11 TO 21 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**

PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min	0	500	700	900	1100	1300
		m <sup>3</sup> /h	0	30	42	54	66	78
H = TOTAL HEAD METRES COLUMN OF WATER								
Z660 11	22	183,6	131,3	111,6	94,6	75,7	46,3	
Z660 12	22	198,1	141,9	120,5	102,1	81,6	49,4	
Z660 13	22	211,8	152,2	129,2	109,3	87,2	52,1	
Z660 14	26	234,8	168,1	143,0	121,5	97,8	60,8	
Z660 15	26	249,5	178,8	152,1	129,1	103,7	63,9	
Z660 16	30	267,6	191,7	163,1	138,6	111,6	69,4	
Z660 17	30	282,2	202,2	172,1	146,2	117,5	72,5	
Z660 18	37	302,6	216,9	184,7	157,1	126,8	79,6	
Z660 19	37	317,2	227,6	193,8	164,8	132,8	82,8	
Z660 20	37	331,3	238,0	202,6	172,2	138,6	85,8	
Z660 21	37	345,5	248,4	211,4	179,6	144,3	88,6	

z660-2-50-en\_a\_th



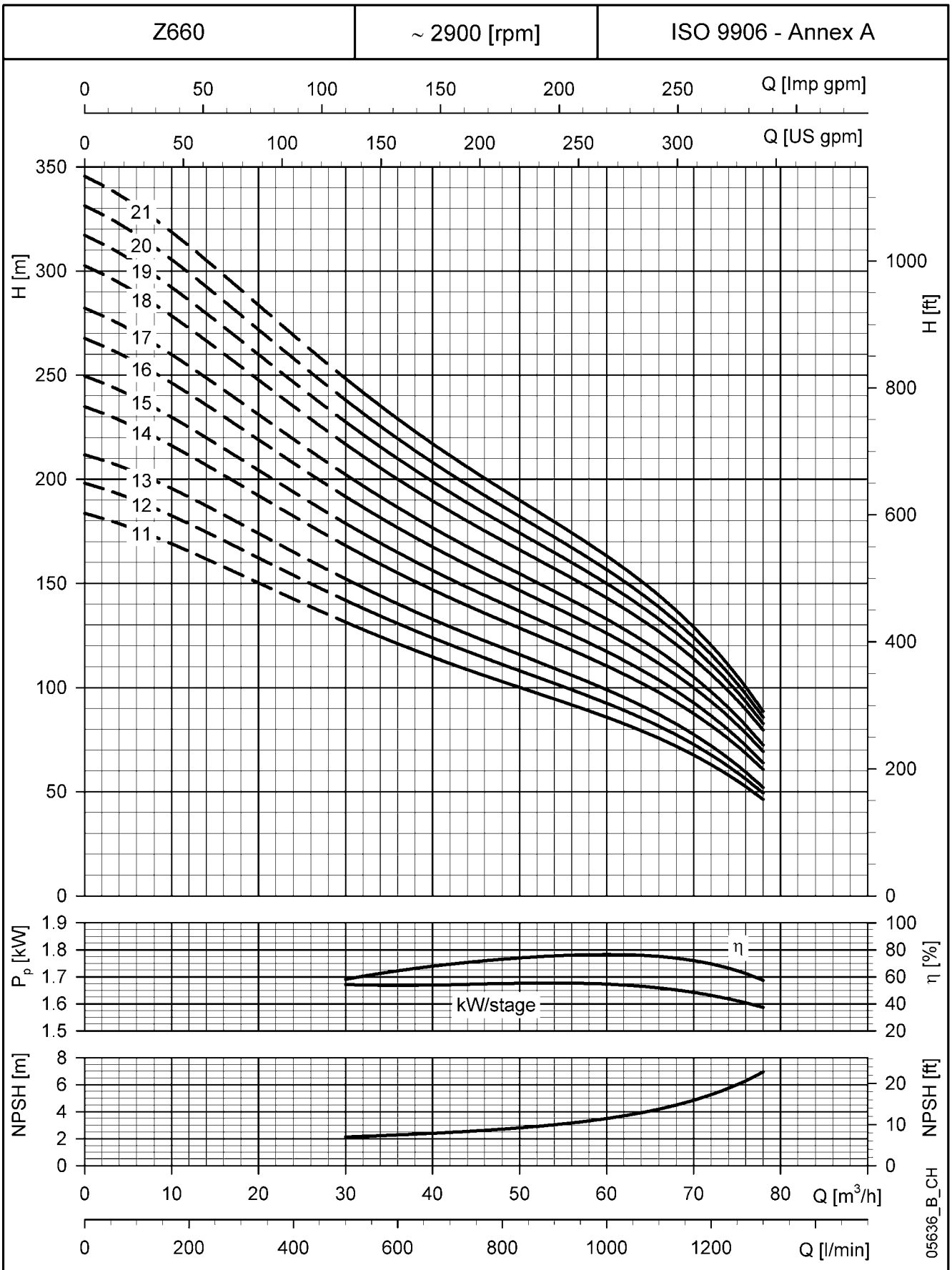
05605\_A\_DD

**DIMENSIONS AND WEIGHTS**

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z660 11-L6W	22	2506	943	1563	144	146	112
Z660 12-L6W	22	2621	943	1678	144	146	114
Z660 13-L6W	22	2736	943	1793	144	146	117
Z660 14-L6W	26	2979	1071	1908	144	146	128
Z660 15-L6W	26	3094	1071	2023	144	146	131
Z660 16-L6W	30	3289	1151	2138	144	146	141
Z660 17-L6W	30	3404	1151	2253	144	146	144
Z660 18-L6W	37	3669	1301	2368	144	146	160
Z660 19-L6W	37	3784	1301	2483	144	146	163
Z660 20-L6W	37	3899	1301	2598	144	146	165
Z660 21-L6W	37	4014	1301	2713	144	146	168

z660-2-50-en\_a\_td

**Z660 SERIES, 11 TO 21 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

**Z660 SERIES, 22 TO 32 STAGES**  
**OPERATING CHARACTERISTICS AT 50 Hz**

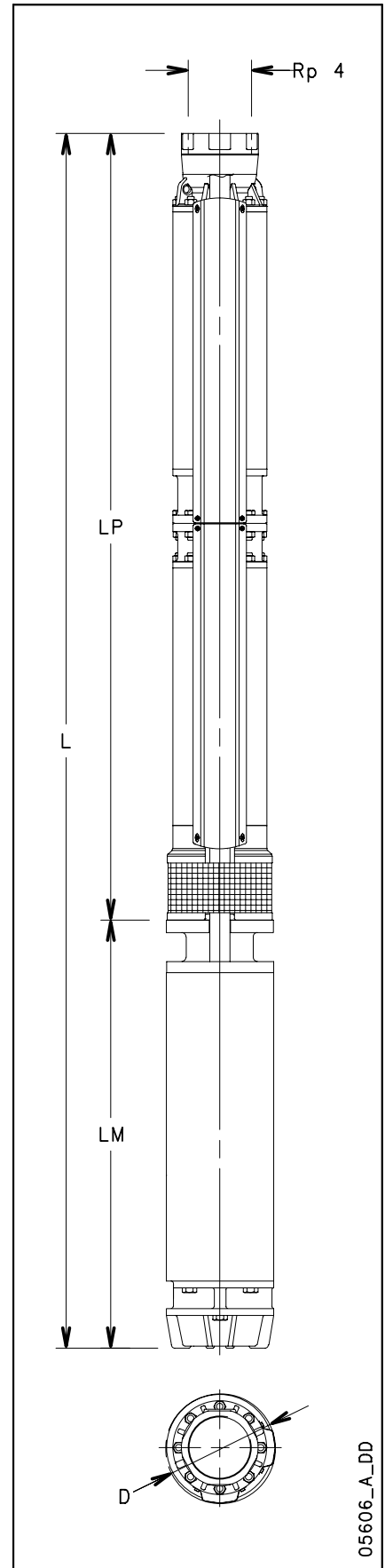
PUMP TYPE	RATED POWER kW	Q = DELIVERY						
		l/min m <sup>3</sup> /h	0	500	700	900	1100	1300
		H = TOTAL HEAD METRES COLUMN OF WATER						
Z660 22D	45	369,0	264,0	224,9	191,4	154,5	96,7	
Z660 23D	45	384,0	274,8	234,1	199,2	160,5	99,9	
Z660 24D	45	398,7	285,4	243,1	206,7	166,4	103,1	
Z660 25D	45	413,3	295,9	251,9	214,2	172,3	106,1	
Z660 26D	45	427,9	306,3	260,8	221,7	178,0	108,9	
Z660 27D	52	449,5	322,5	274,8	233,9	188,7	117,9	
Z660 28D	52	463,8	333,0	283,6	241,2	194,5	120,8	
Z660 29D	52	477,7	343,3	292,3	248,6	200,3	123,7	
Z660 30D	52	491,7	353,5	301,0	255,8	205,7	126,4	
Z660 31D	55	515,0	369,4	314,7	267,9	216,2	134,8	
Z660 32D	55	529,3	379,8	323,6	275,3	221,9	137,8	

z660-3-50-en\_a\_th

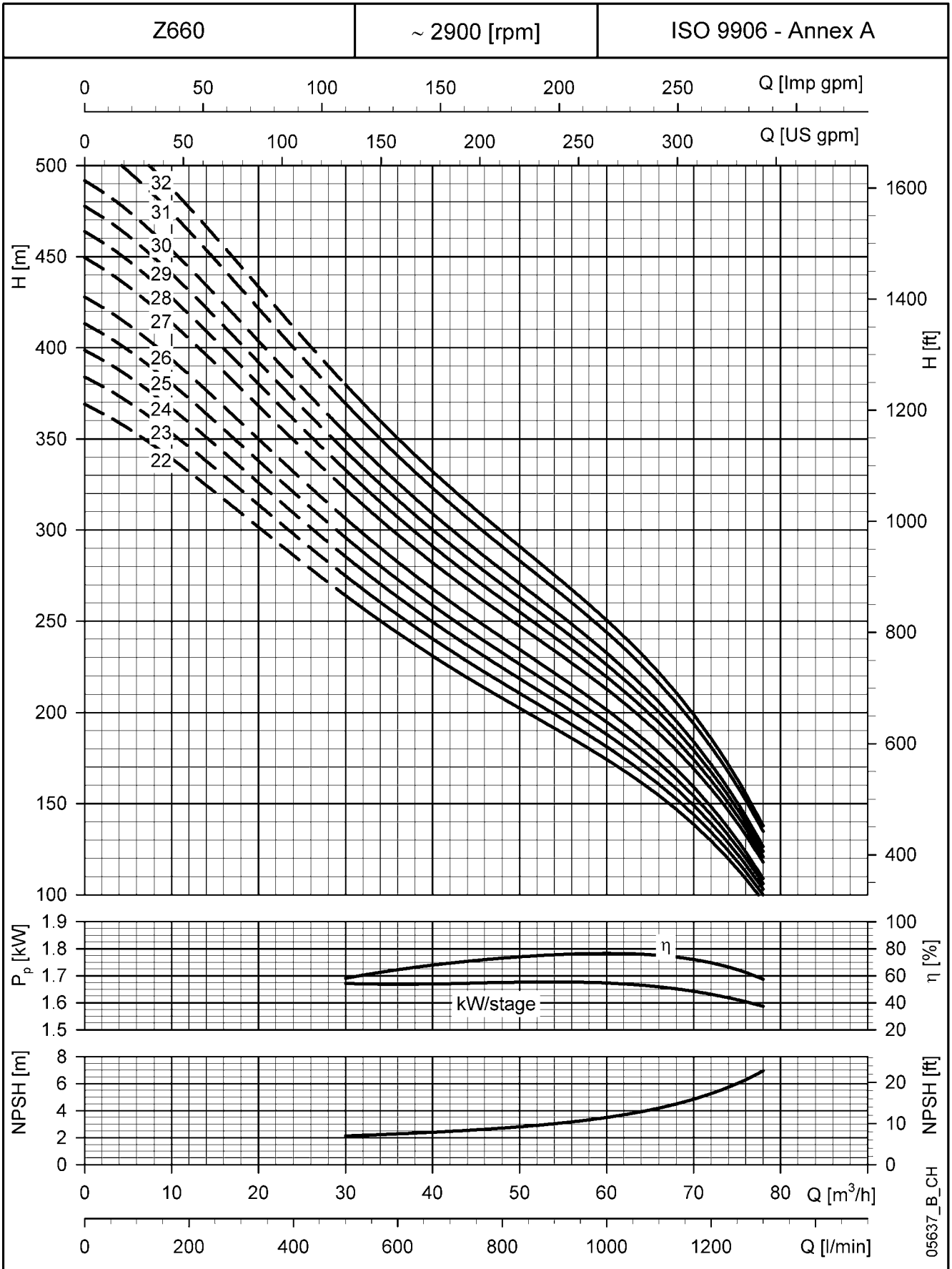
**DIMENSIONS AND WEIGHTS**

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT Kg
		L	LM	LP	ø D		
					1 Cable	2 Cables	
Z660 22D-L8W	45	4580	1195	3385	193	195	308
Z660 23D-L8W	45	4580	1195	3385	193	195	309
Z660 24D-L8W	45	4580	1195	3385	193	195	310
Z660 25D-L8W	45	4925	1195	3730	193	195	319
Z660 26D-L8W	45	4925	1195	3730	193	195	320
Z660 27D-L8W	52	5015	1285	3730	193	195	342
Z660 28D-L8W	52	5360	1285	4075	193	195	352
Z660 29D-L8W	52	5360	1285	4075	193	195	353
Z660 30D-L8W	52	5360	1285	4075	193	195	355
Z660 31D-L8W	55	5515	1325	4190	193	195	363
Z660 32D-L8W	55	5860	1325	4535	193	195	373

z660-3-50-en\_a\_td



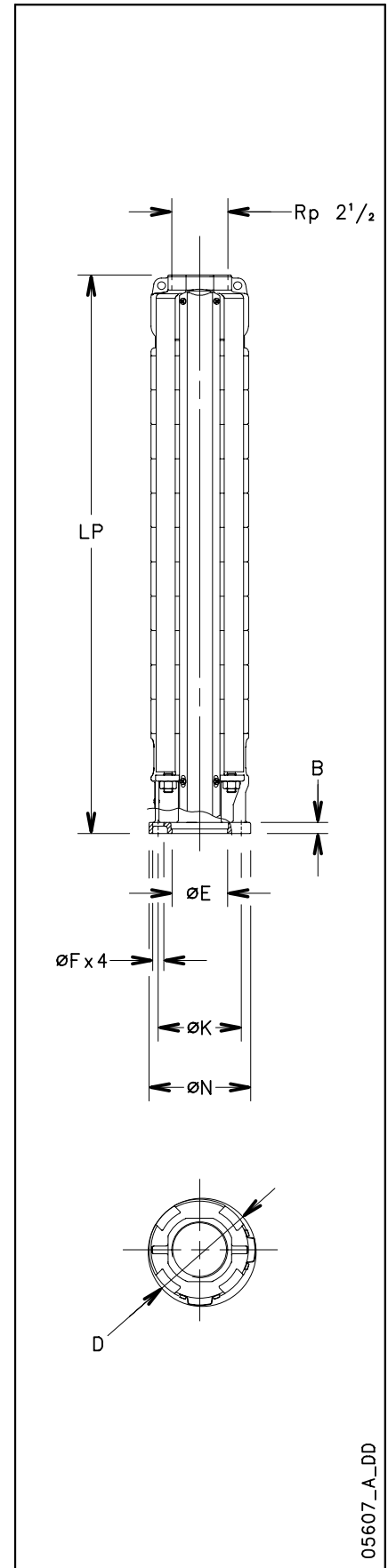
**Z660 SERIES, 22 TO 32 STAGES  
OPERATING CHARACTERISTICS AT 50 Hz**



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

## Z612 PUMP SERIES, 1 TO 39 STAGES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z612 01-4	0,5	380	142	144	9
Z612 02-4	1,0	426	142	144	10
Z612 03-4	1,4	472	142	144	12
Z612 04-4	1,9	518	142	144	13
Z612 05-4	2,4	564	142	144	14
Z612 06-4	2,9	610	142	144	15
Z612 07-4	3,4	656	142	144	16
Z612 08-4	3,9	702	142	144	17
Z612 09-4	4,4	748	142	144	19
Z612 10-4	4,8	794	142	144	20
Z612 11-4	5,3	840	142	144	21
Z612 12-4	5,8	886	142	144	22
Z612 13-4	6,3	932	142	144	23
Z612 14-4	6,7	978	142	144	24
Z612 15-4	7,2	1024	142	144	26
Z612 07-6	3,4	656	142	144	16
Z612 08-6	3,9	702	142	144	17
Z612 09-6	4,4	748	142	144	19
Z612 10-6	4,8	794	142	144	20
Z612 11-6	5,3	840	142	144	21
Z612 12-6	5,8	886	142	144	22
Z612 13-6	6,3	932	142	144	23
Z612 14-6	6,7	978	142	144	24
Z612 15-6	7,2	1024	142	144	26
Z612 16-6	7,7	1070	142	144	27
Z612 17-6	8,2	1116	142	144	28
Z612 18-6	8,7	1162	142	144	29
Z612 19-6	9,1	1208	142	144	30
Z612 20-6	9,6	1254	142	144	32
Z612 21-6	10,1	1300	142	144	33
Z612 22-6	10,6	1346	142	144	34
Z612 23-6	11,1	1438	142	144	36
Z612 24-6	11,5	1484	142	144	37
Z612 25-6	11,9	1530	142	144	38
Z612 26-6	12,4	1576	142	144	40
Z612 27-6	12,9	1622	142	144	41
Z612 28-6	13,4	1668	142	144	42
Z612 29-6	13,9	1714	142	144	43
Z612 30-6	14,3	1760	142	144	44
Z612 31-6	14,8	1806	142	144	46
Z612 32-6	15,3	1852	142	144	47
Z612 33-6	16,0	1898	142	144	48
Z612 34-6	16,3	1944	142	144	49
Z612 35-6	16,8	1990	142	144	50
Z612 36-6	17,3	2082	142	144	52
Z612 37-6	17,8	2128	142	144	54
Z612 38-6	18,2	2174	142	144	55
Z612 39-6	18,7	2220	142	144	56



z612p-2p50-en\_b\_td

## MOTOR CONNECTION

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2

Coupling 4" and 6" according to NEMA standards

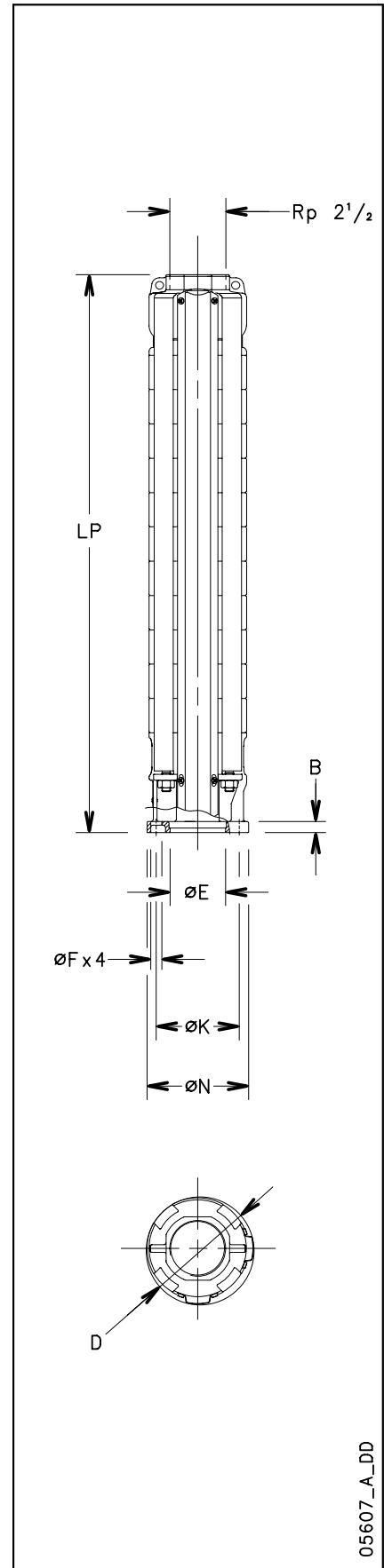
z6-mtcn-2p50-en\_a\_td

05607\_A\_DD



## Z616 PUMP SERIES, 1 TO 36 STAGES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z616 01-4	0,8	380	142	144	9
Z616 02-4	1,7	426	142	144	10
Z616 03-4	2,5	472	142	144	12
Z616 04-4	3,0	518	142	144	13
Z616 05-4	3,8	564	142	144	14
Z616 06-4	4,5	610	142	144	15
Z616 07-4	5,2	656	142	144	16
Z616 08-4	5,9	702	142	144	17
Z616 09-4	6,6	748	142	144	19
Z616 10-4	7,3	794	142	144	20
Z616 05-6	3,8	564	142	144	14
Z616 06-6	4,5	610	142	144	15
Z616 07-6	5,2	656	142	144	16
Z616 08-6	5,9	702	142	144	17
Z616 09-6	6,6	748	142	144	19
Z616 10-6	7,3	794	142	144	20
Z616 11-6	8,1	840	142	144	21
Z616 12-6	8,6	886	142	144	22
Z616 13-6	9,3	932	142	144	23
Z616 14-6	10,0	978	142	144	24
Z616 15-6	10,8	1024	142	144	26
Z616 16-6	11,5	1070	142	144	27
Z616 17-6	12,3	1116	142	144	28
Z616 18-6	13,1	1162	142	144	29
Z616 19-6	13,8	1208	142	144	30
Z616 20-6	14,3	1254	142	144	32
Z616 21-6	15,0	1300	142	144	33
Z616 22-6	15,7	1346	142	144	34
Z616 23-6	16,4	1438	142	144	36
Z616 24-6	17,1	1484	142	144	37
Z616 25-6	17,9	1530	142	144	38
Z616 26-6	18,6	1576	142	144	40
Z616 27-6	19,3	1622	142	144	41
Z616 28-6	20,0	1668	142	144	42
Z616 29-6	20,7	1714	142	144	43
Z616 30-6	21,4	1760	142	144	44
Z616 31-6	22,1	1806	142	144	46
Z616 32-6	22,8	1852	142	144	47
Z616 33-6	23,5	1898	142	144	48
Z616 34-6	24,2	1944	142	144	49
Z616 35-6	25,0	1990	142	144	50
Z616 36-6	25,7	2082	142	144	52



z616p-2p50-en\_a\_td

### MOTOR CONNECTION

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

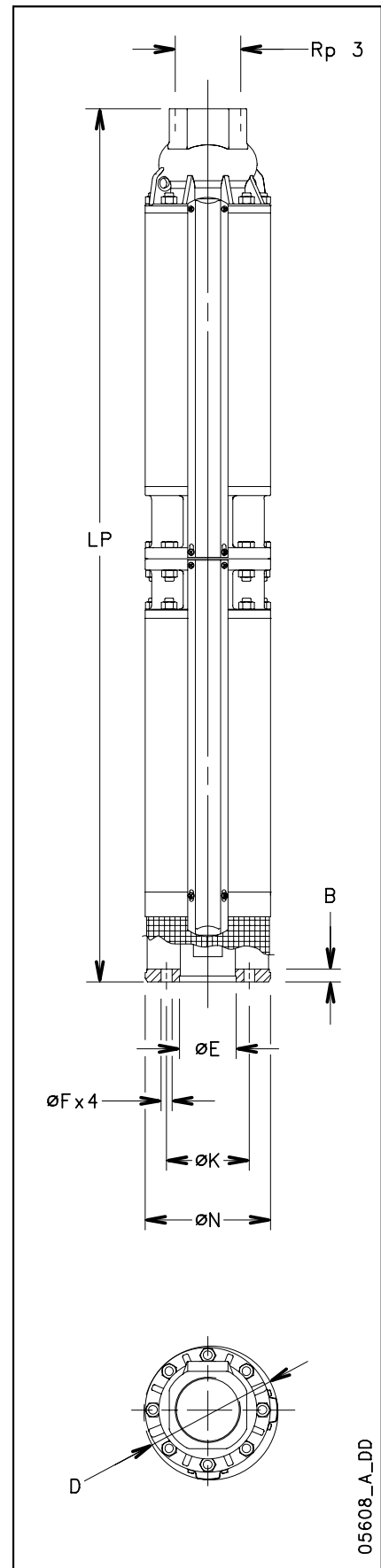
z6-mtcn-2p50-en\_a\_td

05607\_A\_DD



**Z616 PUMP SERIES, 37 TO 56 STAGES  
DIMENSIONS AND WEIGHTS**

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z616 37D-6	26,4	2508	177	180	103
Z616 38D-6	27,1	2508	177	180	103
Z616 39D-6	27,8	2922	177	180	114
Z616 40D-6	28,5	2922	177	180	114
Z616 41D-6	29,3	2922	177	180	115
Z616 42D-6	30,0	2922	177	180	116
Z616 43D-6	30,6	2922	177	180	116
Z616 44D-6	31,4	2922	177	180	117
Z616 45D-6	32,1	2922	177	180	117
Z616 46D-6	32,8	2922	177	180	118
Z616 47D-6	33,5	2922	177	180	118
Z616 48D-6	34,3	3336	177	180	131
Z616 49D-6	35,0	3336	177	180	132
Z616 50D-6	35,7	3336	177	180	132
Z616 51D-6	36,4	3336	177	180	133
Z616 52D-6	37,2	3336	177	180	133
Z616 53D-8	37,8	3385	193	195	136
Z616 54D-8	38,6	3385	193	195	137
Z616 55D-8	39,3	3385	193	195	138
Z616 56D-8	40,0	3385	193	195	138



**MOTOR CONNECTION**

z616pl-2p50-en\_a\_td

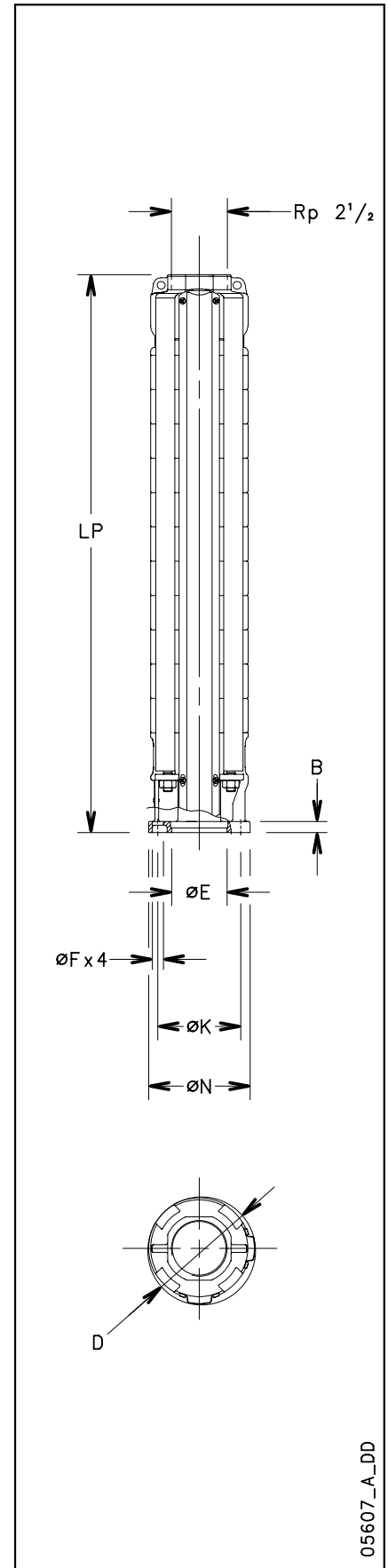
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
6" (NEMA)	168	111,1	14,5	17	76,2
8" (NEMA)	188	152,4	17,5	18	127
Coupling 6" and 8" according to NEMA standards					

z6b-mtcn-2p50-en\_a\_td

05608\_A\_DD

## Z622 PUMP SERIES, 1 TO 33 STAGES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z622 01-4	1,1	357	142	144	9
Z622 02-4	2,1	426	142	144	10
Z622 03-4	3,1	495	142	144	12
Z622 04-4	4,1	564	142	144	14
Z622 05-4	5,2	633	142	144	15
Z622 06-4	6,1	702	142	144	17
Z622 07-4	7,1	771	142	144	18
Z622 04-6	4,1	564	142	144	14
Z622 05-6	5,2	633	142	144	15
Z622 06-6	6,1	702	142	144	17
Z622 07-6	7,1	771	142	144	18
Z622 08-6	8,0	840	142	144	20
Z622 09-6	9,0	909	142	144	21
Z622 10-6	10,2	978	142	144	23
Z622 11-6	11,2	1047	142	144	24
Z622 12-6	12,3	1116	142	144	26
Z622 13-6	13,3	1185	142	144	27
Z622 14-6	14,2	1254	142	144	29
Z622 15-6	15,2	1323	142	144	31
Z622 16-6	16,3	1392	142	144	32
Z622 17-6	17,4	1461	142	144	34
Z622 18-6	18,4	1530	142	144	35
Z622 19-6	19,4	1599	142	144	37
Z622 20-6	20,4	1668	142	144	39
Z622 21-6	21,4	1737	142	144	40
Z622 22-6	22,4	1806	142	144	42
Z622 23-6	23,4	1875	142	144	43
Z622 24-6	24,5	1944	142	144	45
Z622 25-6	25,5	2013	142	144	47
Z622 26-6	26,5	2082	142	144	48
Z622 27-6	27,2	2151	142	144	50
Z622 28-6	28,2	2220	142	144	51
Z622 29-6	29,2	2289	142	144	53
Z622 30-6	30,2	2358	142	144	54
Z622 31-6	31,5	2427	142	144	56
Z622 32-6	32,5	2496	142	144	57
Z622 33-6	33,5	2565	142	144	59



z622p-2p50-en\_a\_td

### MOTOR CONNECTION

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2

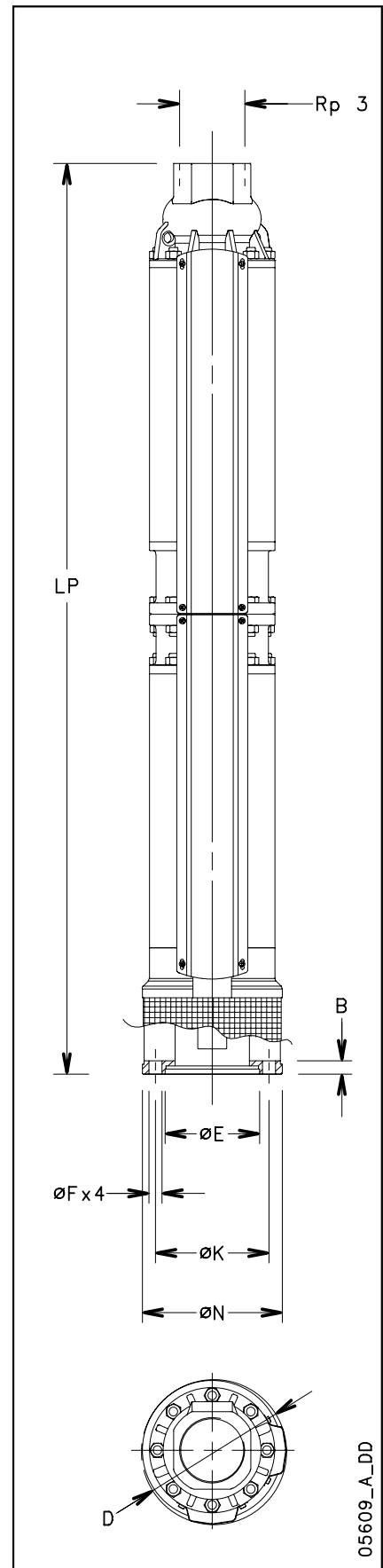
Coupling 4" and 6" according to NEMA standards

z6-mtcn-2p50-en\_a\_td

05607\_A\_DD

**Z622 PUMP SERIES, 34 TO 50 STAGES  
DIMENSIONS AND WEIGHTS**

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z622 34D-6	34,5	2922	177	180	113
Z622 35D-6	35,6	3336	177	180	125
Z622 36D-6	36,6	3336	177	180	126
Z622 37D-6	37,6	3336	177	180	127
Z622 38D-8	38,6	3385	193	195	130
Z622 39D-8	39,6	3385	193	195	131
Z622 40D-8	40,6	3385	193	195	131
Z622 41D-8	41,7	3523	193	195	135
Z622 42D-8	42,7	3523	193	195	136
Z622 43D-8	43,7	3661	193	195	141
Z622 44D-8	44,7	3661	193	195	141
Z622 45D-8	45,7	3868	193	195	147
Z622 46D-8	46,7	3868	193	195	148
Z622 47D-8	47,8	3868	193	195	148
Z622 48D-8	48,8	4075	193	195	155
Z622 49D-8	49,8	4075	193	195	156
Z622 50D-8	50,8	4075	193	195	157



z622pl-2p50-en\_a\_td

**MOTOR CONNECTION**

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
6" (NEMA)	168	111,1	14,5	17	76,2
8" (NEMA)	188	152,4	17,5	18	127

Coupling 6" and 8" according to NEMA standards

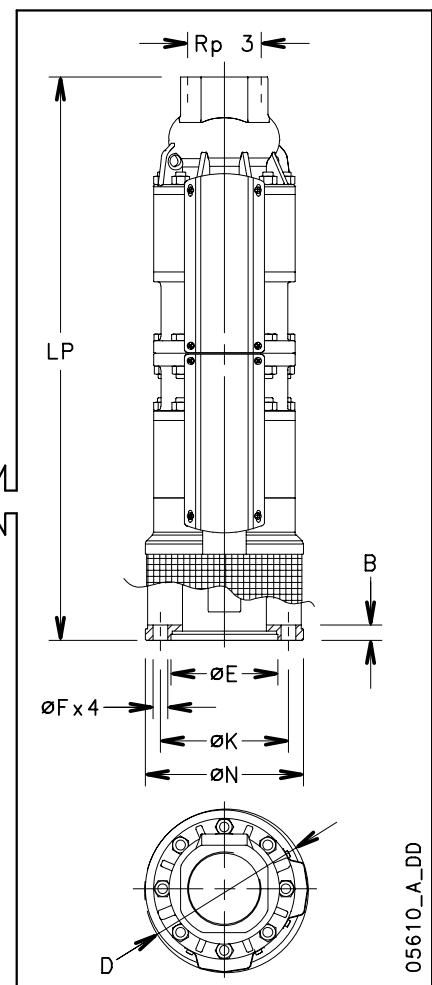
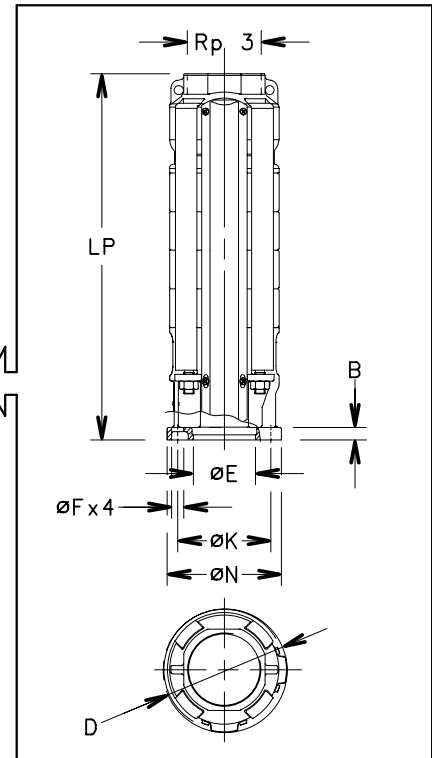
z6b-mtcn-2p50-en\_a\_td

05609\_A\_DD

**Z631 PUMP SERIES  
DIMENSIONS AND WEIGHTS**

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z631 01-4	1,3	367	142	144	9
Z631 02-4	2,6	436	142	144	10
Z631 03-4	3,9	505	142	144	12
Z631 04-4	5,2	574	142	144	14
Z631 05-4	6,6	643	142	144	15
Z631 06-4	7,8	712	142	144	17
Z631 03-6	3,9	505	142	144	12
Z631 04-6	5,2	574	142	144	14
Z631 05-6	6,6	643	142	144	15
Z631 06-6	7,8	712	142	144	17
Z631 07-6	9,2	781	142	144	18
Z631 08-6	10,5	850	142	144	20
Z631 09-6	11,7	919	142	144	21
Z631 10-6	13,0	988	142	144	23
Z631 11-6	14,3	1057	142	144	24
Z631 12-6	15,7	1126	142	144	26
Z631 13-6	17,0	1195	142	144	27
Z631 14-6	18,3	1264	142	144	29
Z631 15-6	19,6	1333	142	144	31
Z631 16-6	20,9	1402	142	144	32
Z631 17-6	22,0	1471	142	144	34
Z631 18-6	23,2	1540	142	144	35
Z631 19-6	24,5	1609	142	144	37
Z631 20-6	25,8	1678	142	144	38
Z631 21-6	27,1	1747	142	144	40
Z631 22-6	28,4	1816	142	144	42
Z631 23-6	30,1	1885	142	144	43
Z631 24-6	31,6	1954	142	144	45
Z631 25-6	32,7	2023	142	144	46
Z631 26-6	34,0	2092	142	144	48
Z631 27-6	35,3	2161	142	144	50
Z631 28-6	36,7	2230	142	144	51
Z631 29-6	38,0	2299	142	144	53

Z631 30D-8	39,3	2971	193	195	112
Z631 31D-8	40,6	2971	193	195	113
Z631 32D-8	41,9	2971	193	195	114
Z631 33D-8	43,2	2971	193	195	115
Z631 34D-8	44,5	2971	193	195	115
Z631 35D-8	45,8	3385	193	195	128
Z631 36D-8	47,1	3385	193	195	128
Z631 37D-8	48,4	3385	193	195	129
Z631 38D-8	49,7	3385	193	195	130
Z631 39D-8	51,1	3385	193	195	131
Z631 40D-8	52,4	3385	193	195	131
Z631 41D-8	53,7	3523	193	195	135
Z631 42D-8	55,0	3523	193	195	136
Z631 43D-8	56,3	3661	193	195	141



z631p-2p50-en\_a\_td

05610\_A\_DD

**MOTOR CONNECTION**

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
8" (NEMA)	188	152,4	17,5	18	127

Coupling 4" - 6" and 8" according to NEMA standards

z6c-mtcn-2p50-en\_a\_td

**Z646 PUMP SERIES  
DIMENSIONS AND WEIGHTS**

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z646 01-4	1,5	413	142	144	10
Z646 02-4	3,0	528	142	144	12
Z646 03-4	4,5	643	142	144	15
Z646 04-4	6,0	758	142	144	17
Z646 05-4	7,5	873	142	144	20
Z646 03-6	4,5	643	142	144	15
Z646 04-6	6,0	758	142	144	17
Z646 05-6	7,5	873	142	144	20
Z646 06-6	9,0	988	142	144	22
Z646 07-6	10,5	1103	142	144	25
Z646 08-6	12,0	1218	142	144	27
Z646 09-6	13,5	1333	142	144	30
Z646 10-6	15,0	1448	142	144	32
Z646 11-6	16,5	1563	142	144	35
Z646 12-6	18,0	1678	142	144	37
Z646 13-6	19,5	1793	142	144	40
Z646 14-6	21,0	1908	142	144	42
Z646 15-6	22,5	2023	142	144	45
Z646 16-6	24,1	2138	142	144	47
Z646 17-6	25,6	2253	142	144	50
Z646 18-6	27,1	2368	142	144	52
Z646 19-6	28,6	2483	142	144	55
Z646 20-6	30,1	2598	142	144	57
Z646 21-6	31,6	2713	142	144	60
Z646 22-6	33,1	2828	142	144	62
Z646 23-6	34,6	2943	142	144	65
Z646 24-6	36,1	3058	142	144	67
Z646 25-6	37,6	3173	142	144	70

Z646 26D-8	39,1	3730	193	195	140
Z646 27D-8	40,6	3730	193	195	142
Z646 28D-8	42,1	4075	193	195	152
Z646 29D-8	43,6	4075	193	195	153
Z646 30D-8	45,1	4075	193	195	155
Z646 31D-8	46,6	4190	193	195	157
Z646 32D-8	48,1	4535	193	195	167
Z646 33D-8	49,6	4535	193	195	168
Z646 34D-8	51,1	4535	193	195	170
Z646 35D-8	52,6	4995	193	195	183
Z646 36D-8	54,1	4995	193	195	184
Z646 37D-8	55,6	4995	193	195	186

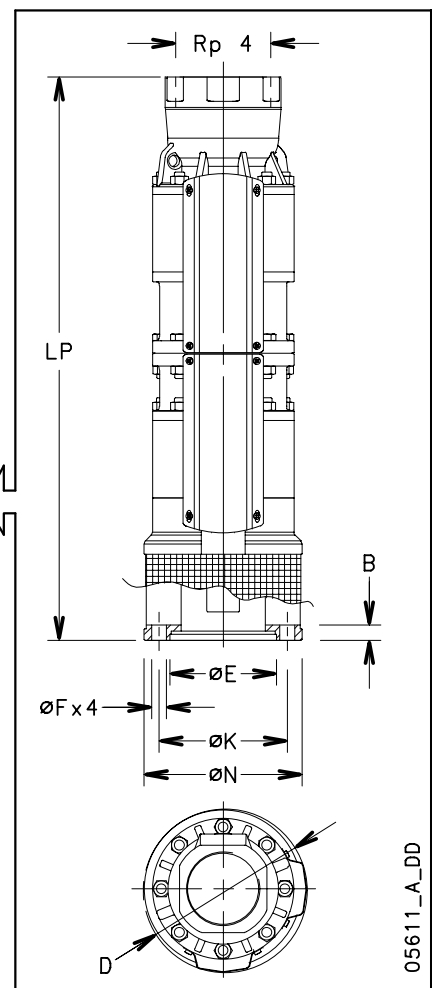
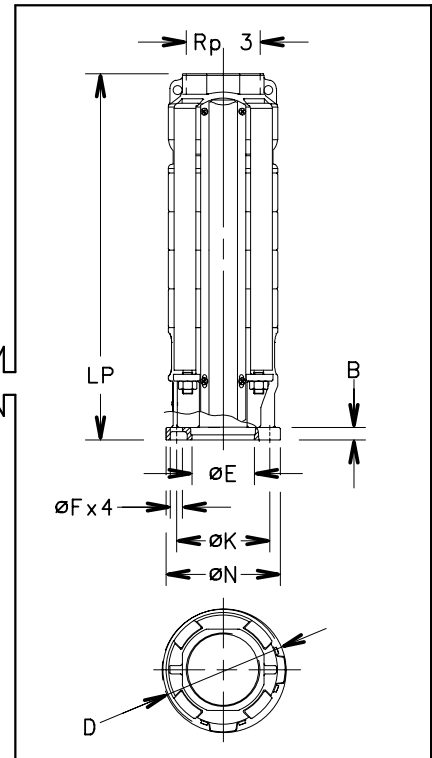
z646p-2p50-en\_a\_td

**MOTOR CONNECTION**

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
8" (NEMA)	188	152,4	17,5	18	127

Coupling 4" - 6" and 8" according to NEMA standards

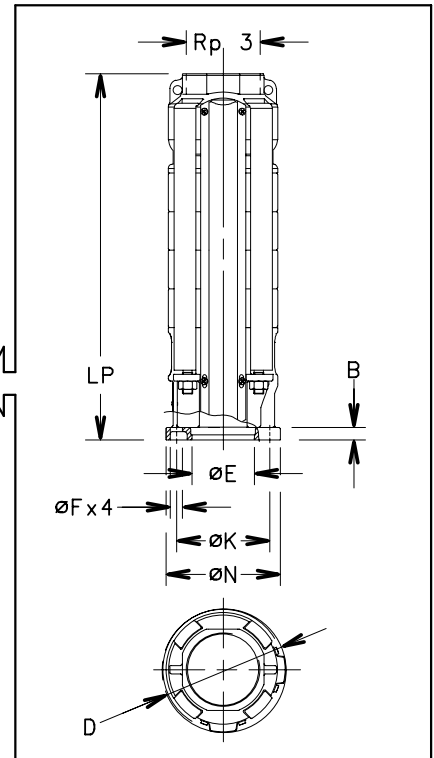
z6c-mtcn-2p50-en\_a\_td



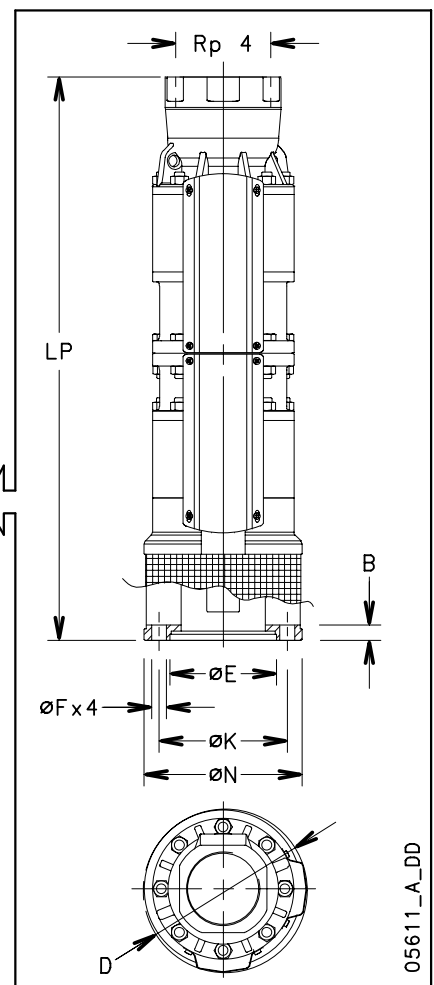
05611\_A\_DD

## Z660 PUMP SERIES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min <sup>-1</sup> kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D		
			1 Cable	2 Cables	
Z660 01-4	1,8	413	142	144	10
Z660 02-4	3,5	528	142	144	12
Z660 03-4	5,3	643	142	144	15
Z660 04-4	7,1	758	142	144	17
Z660 02-6	3,5	528	142	144	12
Z660 03-6	5,3	643	142	144	15
Z660 04-6	7,1	758	142	144	17
Z660 05-6	8,8	873	142	144	20
Z660 06-6	10,6	988	142	144	22
Z660 07-6	12,4	1103	142	144	25
Z660 08-6	14,2	1218	142	144	27
Z660 09-6	15,9	1333	142	144	30
Z660 10-6	17,7	1448	142	144	32
Z660 11-6	19,5	1563	142	144	35
Z660 12-6	21,2	1678	142	144	37
Z660 13-6	23,0	1793	142	144	40
Z660 14-6	24,8	1908	142	144	42
Z660 15-6	26,5	2023	142	144	45
Z660 16-6	28,3	2138	142	144	47
Z660 17-6	30,1	2253	142	144	50
Z660 18-6	31,8	2368	142	144	52
Z660 19-6	33,6	2483	142	144	55
Z660 20-6	35,4	2598	142	144	57
Z660 21-6	37,1	2713	142	144	60



Z660 22D-8	38,9	3385	193	195	128
Z660 23D-8	40,7	3385	193	195	129
Z660 24D-8	42,4	3385	193	195	130
Z660 25D-8	44,2	3730	193	195	139
Z660 26D-8	46,0	3730	193	195	140
Z660 27D-8	47,8	3730	193	195	142
Z660 28D-8	49,5	4075	193	195	152
Z660 29D-8	51,3	4075	193	195	153
Z660 30D-8	53,1	4075	193	195	155
Z660 31D-8	54,8	4190	193	195	157
Z660 32D-8	56,6	4535	193	195	167



z660p-2p50-en\_a\_td

05611\_A\_DD

## MOTOR CONNECTION

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E <sup>H7</sup>
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
8" (NEMA)	188	152,4	17,5	18	127

Coupling 4" - 6" and 8" according to NEMA standards

z6c-mtcn-2p50-en\_a\_td

## 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



#### 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 :  
230V  $\pm 10\%$ ,  
400V  $\pm 10\%$ .
- 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 4 kW 220-240 V, 50 Hz
  - Three-phase:  
0,37 to 7,5 kW 220-240 V, 50 Hz  
0,37 to 7,5 kW 380-415 V, 50 Hz.
- Horizontal operation up to 2,2 kW.
- Inverter applications.

#### OPTIONAL FEATURES

- Special voltages.

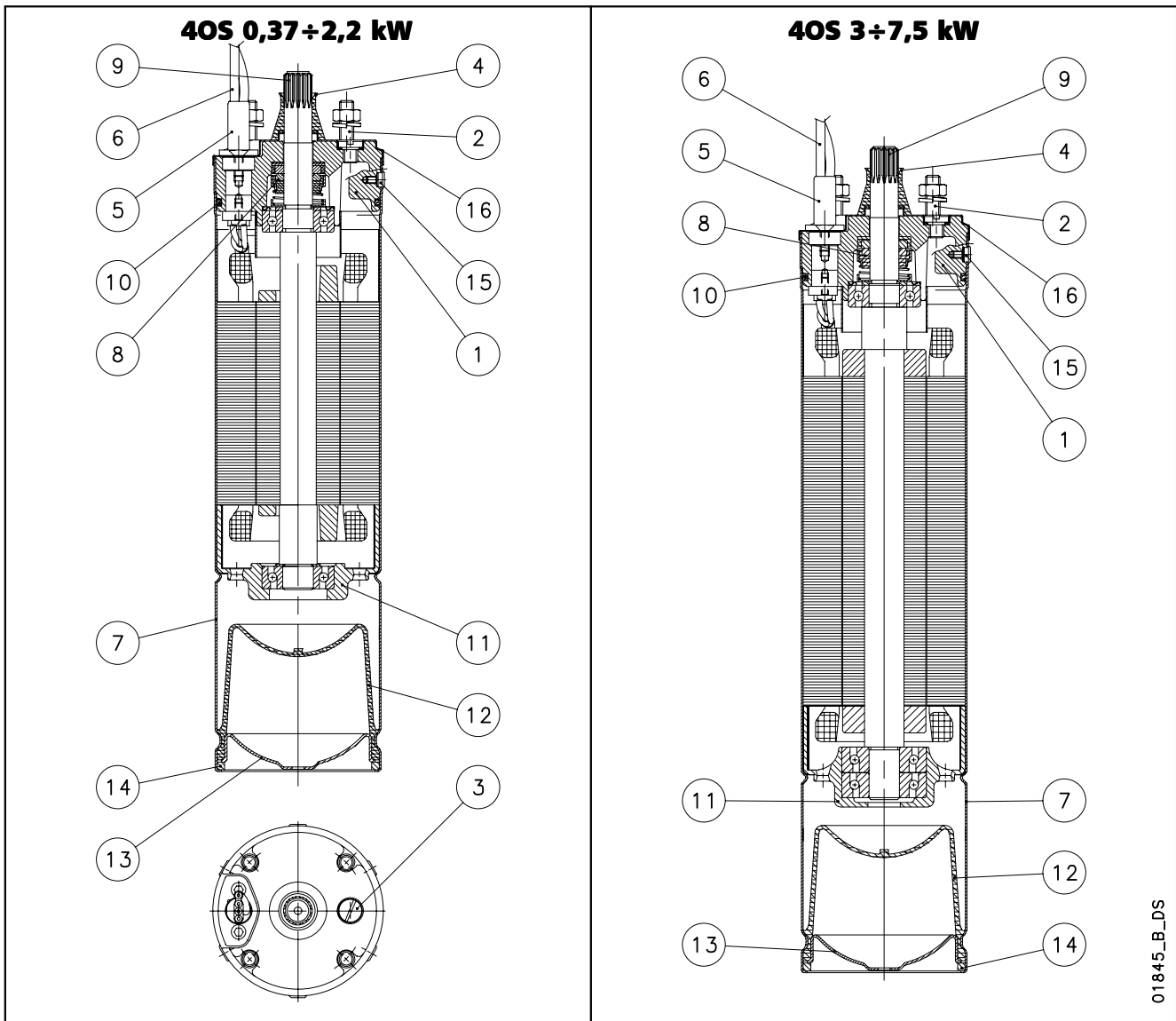
**Rewindable stator**

**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

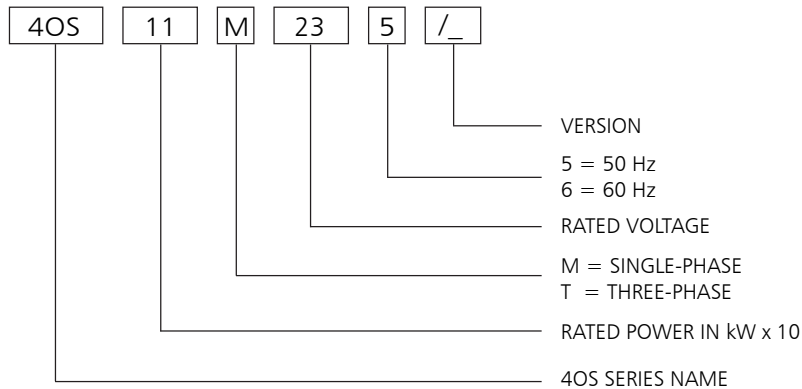


01845\_B\_DS

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		



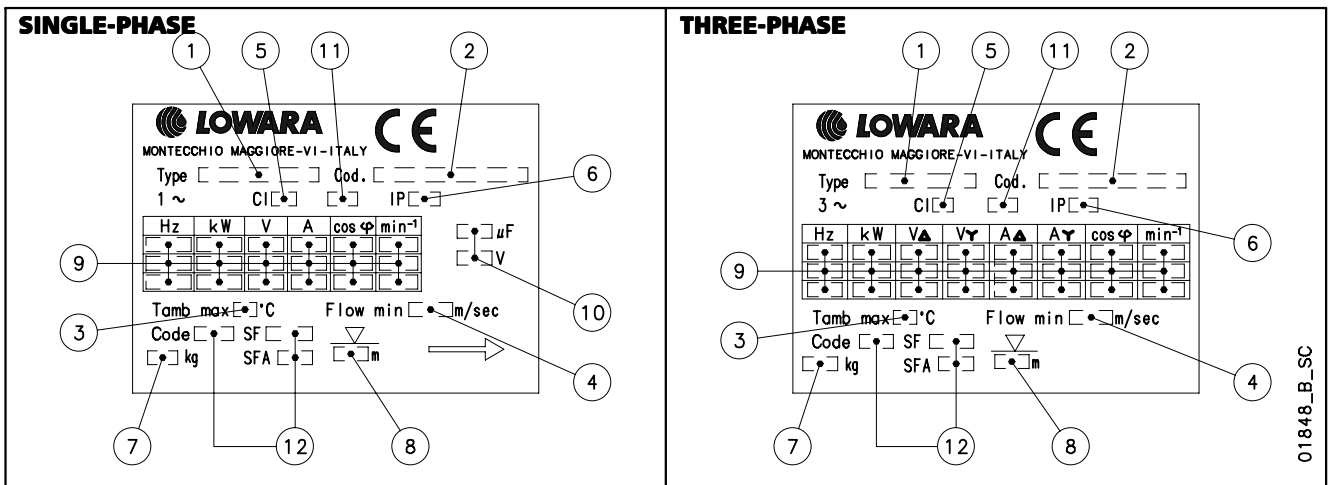
## 40S MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : 40S11M235/C

40S MOTOR :  
RATED POWER 1,1 kW; SINGLE-PHASE;  
RATED VOLTAGE 230 V; 50 Hz; /C VERSION.

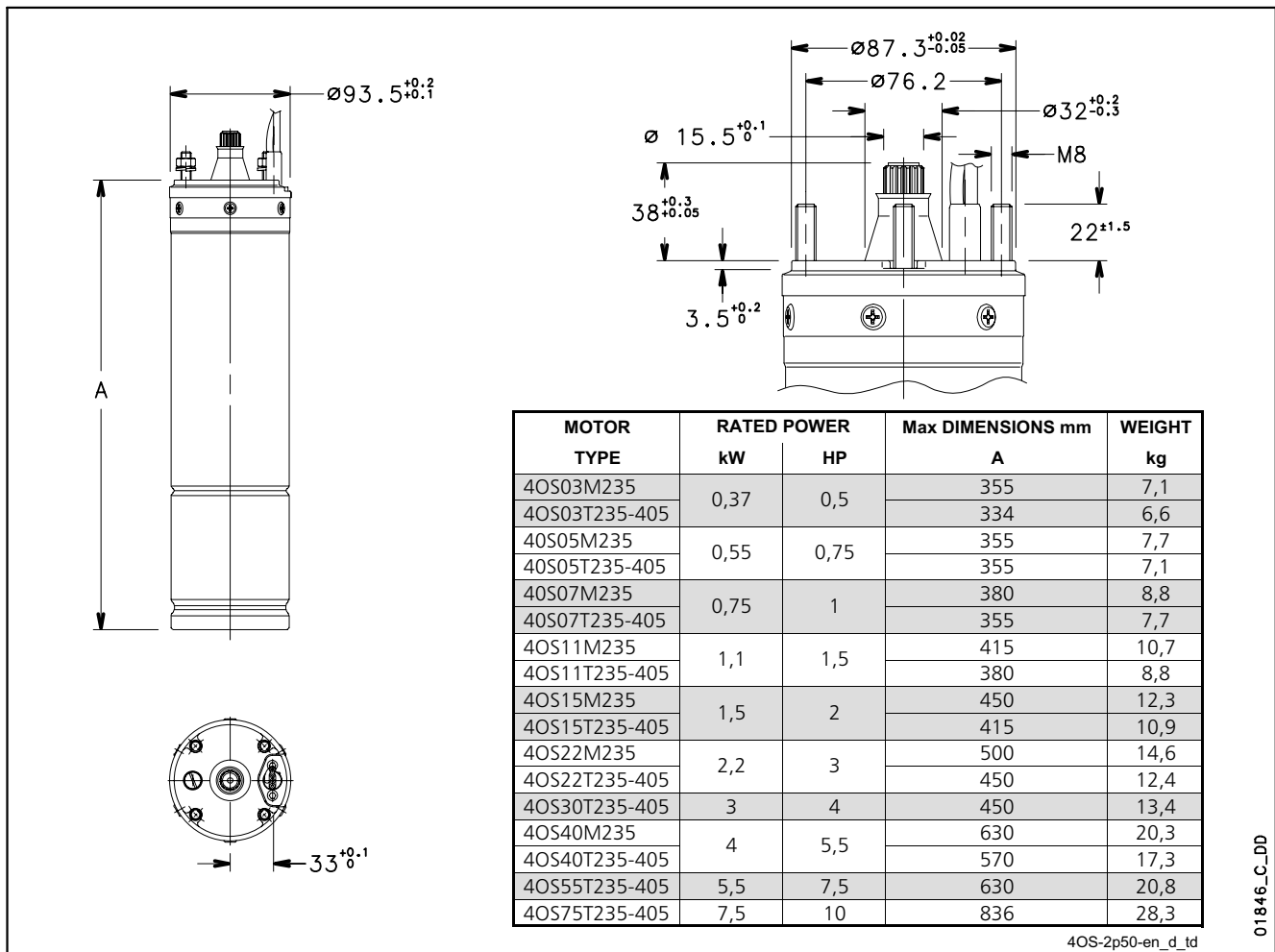
## RATING PLATE



## LEGEND

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1 - Motor type</li> <li>2 - Code</li> <li>3 - Maximum water temperature</li> <li>4 - Minimum water velocity</li> <li>5 - Insulation class</li> <li>6 - Protection class</li> </ul> | <ul style="list-style-type: none"> <li>7 - Weight</li> <li>8 - Maximum immersion depth</li> <li>9 - Operating characteristics</li> <li>10 - Capacitor type</li> <li>11 - Service type</li> <li>12 - Characteristics NEMA MG1 (60 Hz)</li> </ul> |
|---|---|

## 40S MOTOR SERIES DIMENSIONS AND WEIGHTS AT 50 Hz



4OS-2p50-en\_d\_td

01846\_C\_DD

## SINGLE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	CAPACITOR	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE	CABLE TYPE				
	kW	HP			V	μF/450V	RATED CURRENT					Ts/Tn*	Is/In	°C	Nc x sec	L
							A	rpm	η %	cosφ						
4OS03M235	0,37	0,5	220	16	3,0	2835	56,8	0,98	0,56	3,08	35	4x1.5	1,75			
			230		3,1	2845	54,7	0,96	0,62	3,17						
			240		3,2	2860	52,5	0,93	0,68	3,2						
4OS05M235	0,55	0,75	220	20	4,1	2815	62,4	0,98	0,60	2,93	35	4x1.5	1,75			
			230		4,1	2830	60,4	0,96	0,66	3,02						
			240		4,3	2845	58,4	0,92	0,72	3,06						
4OS07M235	0,75	1	220	30	5,4	2825	63,3	0,99	0,57	3,07	35	4x1.5	1,75			
			230		5,5	2840	61,6	0,97	0,63	3,2						
			240		5,6	2855	59,9	0,94	0,69	3,27						
4OS11M235	1,1	1,5	220	40	7,5	2820	67,6	0,99	0,62	2,97	35	4x1.5	1,75			
			230		7,4	2840	66,3	0,98	0,68	3,14						
			240		7,6	2850	63,9	0,95	0,74	3,2						
4OS15M235	1,5	2	220	50	10,0	2830	69,3	0,98	0,48	3,1	35	4x1.5	1,75			
			230		10,1	2845	67,6	0,96	0,53	3,22						
			240		10,5	2855	64,9	0,92	0,58	3,22						
4OS22M235	2,2	3	220	70	14,3	2805	71,1	0,99	0,46	2,71	35	4x1.5	2,5			
			230		14,1	2820	69,6	0,97	0,50	2,86						
			240		14,4	2840	67,7	0,94	0,55	2,93						
4OS40M235	4	5,5	220	90	25,7	2850	73,8	0,96	0,42	3,48	35	4 x 2	2,5			
			230		24,9	2870	74,0	0,94	0,46	3,76						
			240		24,8	2880	73,4	0,92	0,50	3,94						

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

## 40S MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE	CABLE TYPE	
				RATED CURRENT	rpm	$\eta$ %	cos $\phi$				Nc x sez	L
	kW	HP						V	A			
4OS03T235	0,37	0,5	220	2,0	2835	62	0,78	3,4	5,1	35	4x1,5	1,75
			230	2,1	2855	62	0,72	3,8	5,3			
			240	2,2	2865	61	0,68	4,1	5,3			
4OS05T235	0,55	0,75	220	2,8	2795	65	0,8	2,8	4,6	35	4x1,5	1,75
			230	2,9	2820	64	0,75	3,1	4,7			
			240	3,0	2835	63	0,71	3,4	4,7			
4OS07T235	0,75	1	220	3,8	2790	68	0,78	3,3	4,6	35	4x1,5	1,75
			230	4,0	2815	67	0,71	3,6	4,7			
			240	4,2	2825	65	0,67	3,9	4,6			
4OS11T235	1,1	1,5	220	5,1	2780	72	0,8	2,7	4,2	35	4x1,5	1,75
			230	5,2	2810	71	0,74	3,0	4,4			
			240	5,4	2820	70	0,7	3,2	4,3			
4OS15T235	1,5	2	220	7,0	2790	73	0,78	3,0	4,7	35	4x1,5	1,75
			230	7,2	2815	72	0,72	3,4	4,8			
			240	7,6	2825	70	0,68	3,7	4,7			
4OS22T235	2,2	3	220	9,7	2785	74	0,80	2,3	4,7	35	4x1,5	2,5
			230	10,0	2810	74	0,74	2,6	4,8			
			240	10,5	2825	73	0,69	2,7	4,7			
4OS30T235	3	4	220	12,1	2810	77	0,85	1,8	4,2	35	4x1,5	2,5
			230	12,0	2830	77	0,81	2,0	4,5			
			240	12,3	2845	77	0,77	2,2	4,6			
4OS40T235	4	5,5	220	16,4	2810	75	0,85	2,2	4,8	35	4x1,5	2,5
			230	16,5	2840	76	0,80	2,4	5,0			
			240	17,0	2850	75	0,76	2,6	5,0			
4OS55T235	5,5	7,5	220	22,9	2795	76	0,83	1,8	4,6	35	4x1,5	2,5
			230	23,0	2820	77	0,78	2,0	4,8			
			240	23,7	2840	77	0,73	2,2	4,9			
4OS75T235	7,5	10	220	31,0	2820	78	0,82	1,9	4,9	35	4x1,5	4
			230	31,4	2850	79	0,76	2,1	5,1			
			240	32,4	2860	78	0,71	2,3	5,1			
4OS03T405	0,37	0,5	380	1,2	2835	62	0,78	3,4	5,1	35	4x1,5	1,75
			400	1,2	2855	62	0,72	3,8	5,3			
			415	1,2	2865	61	0,68	4,1	5,3			
4OS05T405	0,55	0,75	380	1,6	2795	65	0,8	2,8	4,6	35	4x1,5	1,75
			400	1,7	2820	64	0,75	3,1	4,7			
			415	1,7	2835	63	0,71	3,4	4,7			
4OS07T405	0,75	1	380	2,2	2790	68	0,78	3,3	4,6	35	4x1,5	1,75
			400	2,3	2815	67	0,71	3,6	4,7			
			415	2,4	2825	65	0,67	3,9	4,6			
4OS11T405	1,1	1,5	380	2,9	2780	72	0,8	2,7	4,2	35	4x1,5	1,75
			400	3,0	2810	71	0,74	3,0	4,4			
			415	3,1	2820	70	0,7	3,2	4,3			
4OS15T405	1,5	2	380	4,0	2790	73	0,78	3,0	4,7	35	4x1,5	1,75
			400	4,2	2815	72	0,72	3,4	4,8			
			415	4,4	2825	70	0,68	3,7	4,7			
4OS22T405	2,2	3	380	5,6	2785	74	0,80	2,3	4,7	35	4x1,5	2,5
			400	5,8	2810	74	0,74	2,6	4,8			
			415	6,1	2825	73	0,69	2,7	4,7			
4OS30T405	3	4	380	7,0	2810	77	0,85	1,8	4,2	35	4x1,5	2,5
			400	7,0	2830	77	0,81	2,0	4,5			
			415	7,1	2845	77	0,77	2,2	4,6			
4OS40T405	4	5,5	380	9,5	2810	75	0,85	2,2	4,8	35	4x1,5	2,5
			400	9,5	2840	76	0,80	2,4	5,0			
			415	9,8	2850	75	0,76	2,6	5,0			
4OS55T405	5,5	7,5	380	13,2	2795	76	0,83	1,8	4,6	35	4x1,5	2,5
			400	13,3	2820	77	0,78	2,0	4,8			
			415	13,7	2840	77	0,73	2,2	4,9			
4OS75T405	7,5	10	380	17,9	2820	78	0,82	1,9	4,9	35	4x1,5	4
			400	18,1	2850	79	0,76	2,1	5,1			
			415	18,7	2860	78	0,71	2,3	5,1			

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



## 4" Submersible motors

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

### L4C Series



#### 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 220-240 V, 50 Hz (0,37 to 1,1 kW with built in automatic reset overload protection).
  - Single-phase with built-in capacitor (Two Wire):  
0,37 to 1,1 kW 220-240 V, 50 Hz.
  - Three-phase:  
0,37 to 5,5 kW 220-240 V, 50 Hz  
0,37 to 7,5 kW 380-415 V, 50 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.

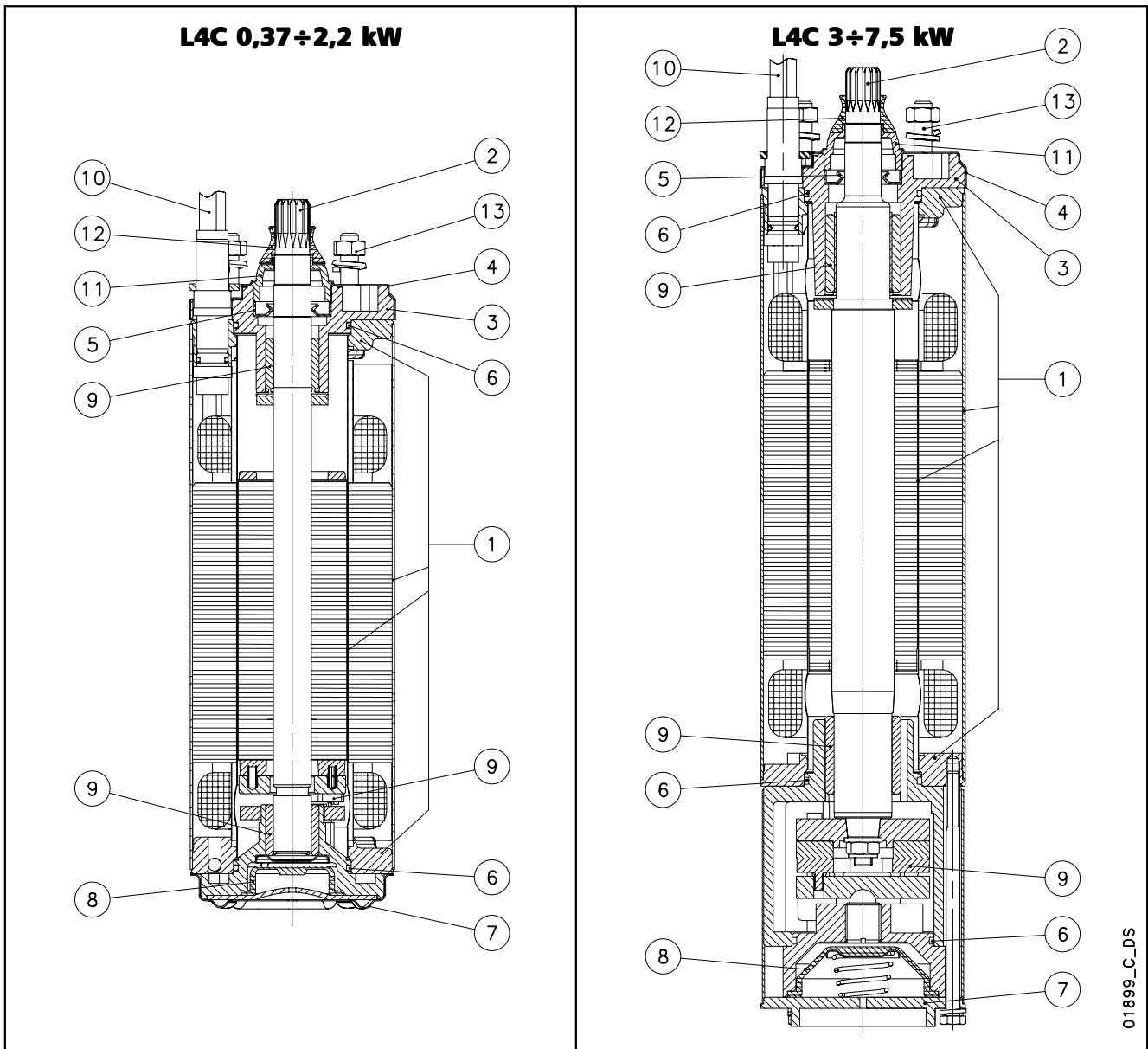
#### OPTIONAL FEATURES

- Special voltages.
- Inverter applications.

**High starting torque**

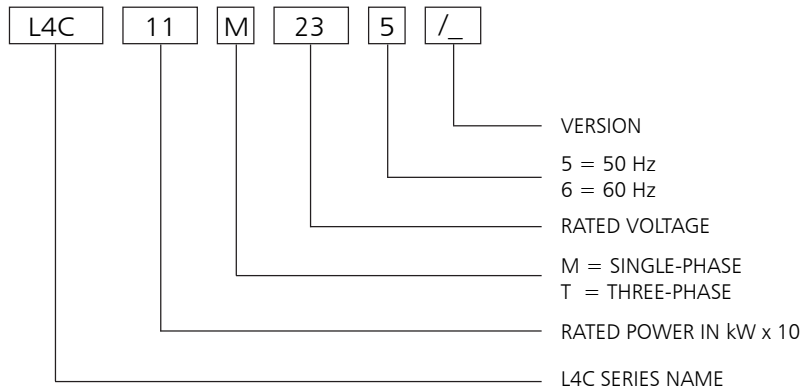
**Power supply cable with extractable connector**

## L4C MOTOR SERIES MOTOR CROSS SECTION AND TABLE OF MATERIALS



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		

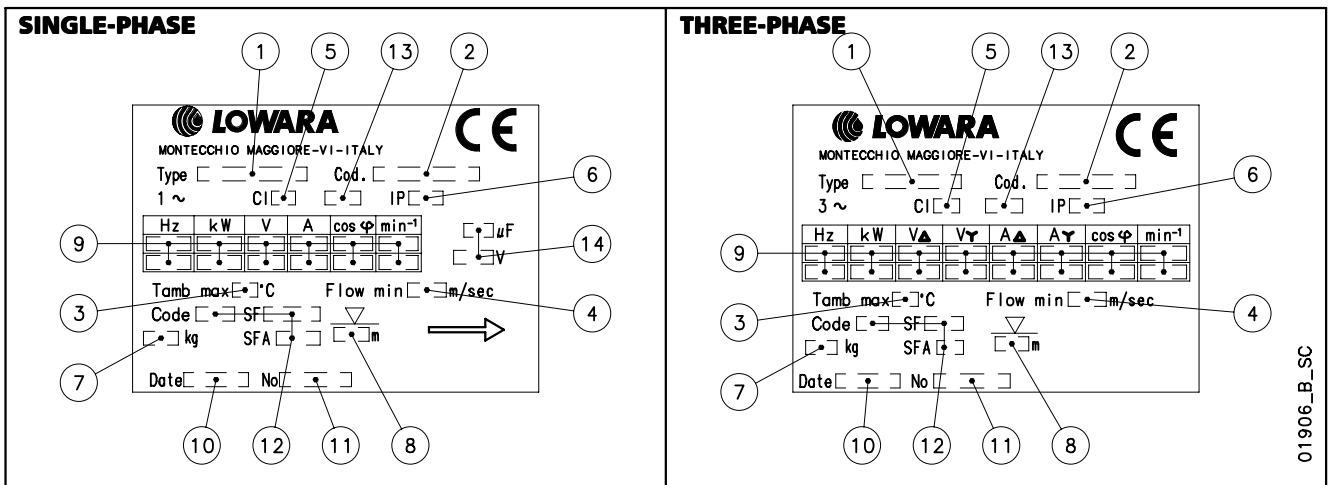
## L4C MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L4C11M235

L4C MOTOR :  
RATED POWER 1,1 kW; SINGLE-PHASE;  
RATED VOLTAGE 230 V; 50 Hz.

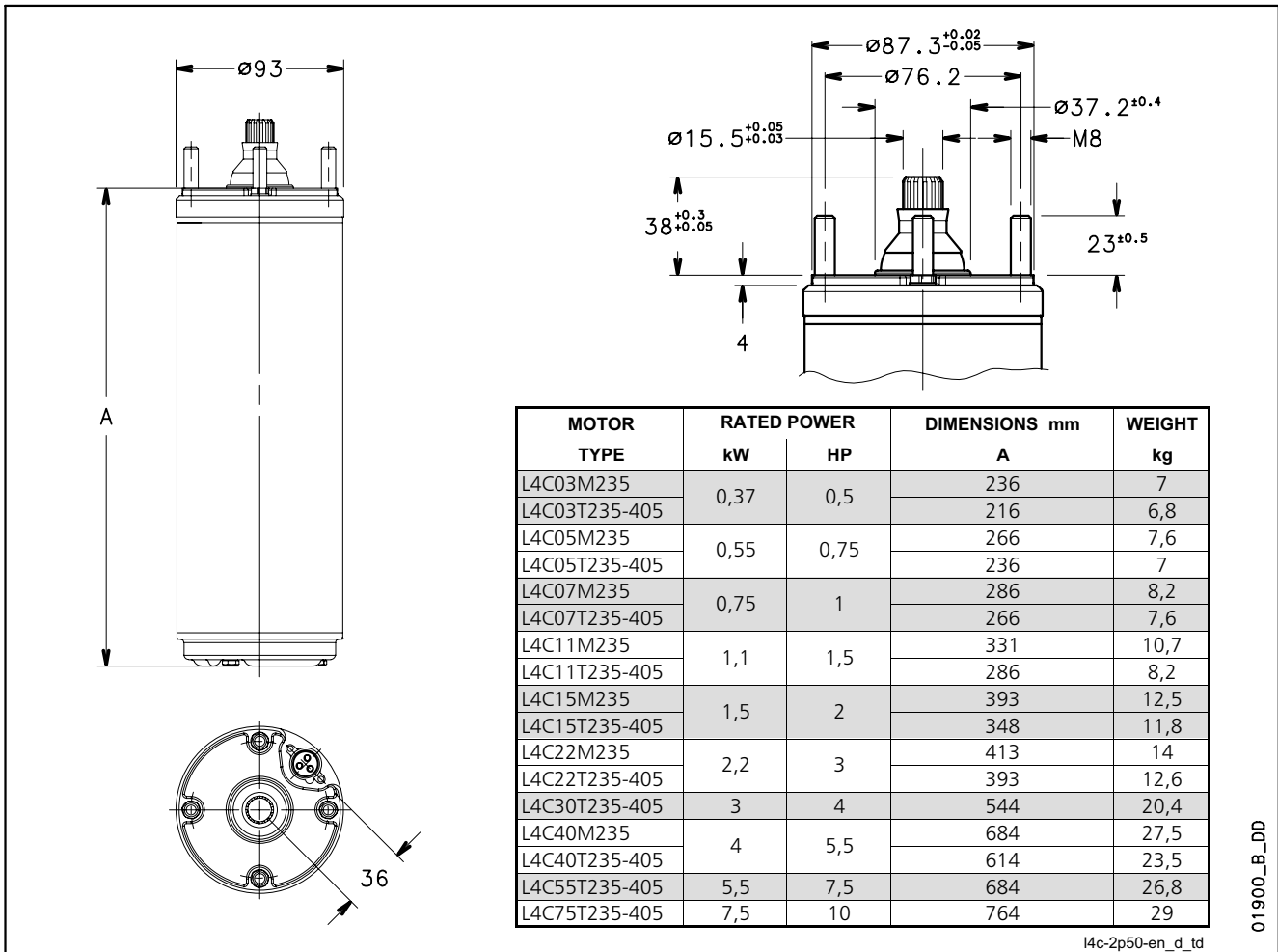
## RATING PLATE



## 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 NEMA MG1 (60 Hz) |
| 6 - Protection class          | 13 - Service type                     |
| 7 - Weight                    | 14 - Capacitor type                   |

## L4C MOTOR SERIES DIMENSIONS AND WEIGHTS AT 50 Hz



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l4c-2p50-en\_d\_td

## SINGLE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	CAPACITOR	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE	CABLE TYPE	
	kW	HP			V	μF/450V	RATED CURRENT	A	rpm	η %		cosφ	Ts/Tn*
L4C03M235	0,37	0,5	220	16	3,2	2810	53	0,96	0,63	2,68	35	4x1,5	1,7
			230			2820	54	0,97	0,69	2,72			
			240			2830	50	0,91	0,75	2,76			
L4C05M235	0,55	0,75	220	20	4,3	2810	61	0,95	0,62	3,3	35	4x1,5	1,7
			230			2820	56	0,94	0,68	3,2			
			240			2830	54	0,90	0,74	3,26			
L4C07M235	0,75	1	220	30	6	2810	60	0,93	0,63	3,18	35	4x1,5	1,7
			230			2820	58	0,92	0,66	3,2			
			240			2830	56	0,85	0,75	3,2			
L4C11M235	1,1	1,5	220	40	8,1	2800	67	0,94	0,60	3,48	35	4x1,5	1,7
			230			2835	65	0,92	0,60	3,54			
			240			2850	63	0,87	0,62	3,62			
L4C15M235	1,5	2	220	50	10,4	2800	67	0,96	0,74	3,3	35	4x1,5	1,7
			230			2820	66	0,93	0,74	3,38			
			240			2835	64	0,90	0,76	3,46			
L4C22M235	2,2	3	220	70	15,4	2740	68	0,96	0,54	3,1	35	4x1,5	1,7
			230			2770	68	0,94	0,54	3,2			
			240			2790	66	0,91	0,54	3,3			
L4C40M235	4	5,5	220	90	29,9	2820	70	0,93	0,46	3,5	35	4x2	2,7
			230			2830	68	0,90	0,51	3,6			
			240			2840	65	0,87	0,60	3,4			

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



## L4C MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE °C	CABLE TYPE	
	kW	HP		A	rpm	$\eta$ %	cos $\phi$	Ts/Tn*	Is/In		Nc x sec mm <sup>2</sup>	L m
L4C03T235	0,37	0,5	220	2,6	2810	51	0,69	2,7	3,7	35	4x1.5	1,7
			230	2,7	2820	53	0,7	3	3,7			
			240	3,1	2830	48	0,67	3,2	3,4			
L4C05T235	0,55	0,75	220	3,1	2820	61	0,77	2,8	4,3	35	4x1.5	1,7
			230	3,3	2830	60	0,71	3,1	4,2			
			240	3,5	2840	60	0,66	3,3	4,2			
L4C07T235	0,75	1	220	4	2820	65	0,77	2,9	5	35	4x1.5	1,7
			230	4,1	2830	63	0,73	3,2	5,1			
			240	4,5	2840	63	0,66	3,5	4,8			
L4C11T235	1,1	1,5	220	5,6	2820	62	0,8	3	4	35	4x1.5	1,7
			230	5,7	2830	64	0,76	3,3	4,2			
			240	6,2	2840	63	0,73	3,6	4			
L4C15T235	1,5	2	220	7,4	2820	68	0,77	3,1	4,2	35	4x1.5	1,7
			230	7,6	2830	68	0,72	3,4	4,3			
			240	8	2840	67	0,68	3,7	4,3			
L4C22T235	2,2	3	220	10	2810	72	0,8	3	4,3	35	4x1.5	1,7
			230	10,2	2820	71	0,78	3,2	4,4			
			240	10,7	2830	70	0,7	3,5	4,4			
L4C30T235	3	4	220	13,7	2830	75	0,77	3	4,6	35	4x1.5	2,7
			230	14,3	2840	74	0,71	3,3	4,6			
			240	15,2	2850	70	0,68	3,5	4,5			
L4C40T235	4	5,5	220	16,4	2840	76	0,81	3,10	5,6	35	4x2	2,7
			230	17,3	2850	75	0,79	3,40	5,6			
			240	18,2	2860	72	0,74	3,70	5,5			
L4C55T235	5,5	7,5	220	23,4	2840	78	0,79	3	5,4	35	4x2	2,7
			230	24,2	2850	77	0,74	3,4	5,5			
			240	25	2860	76	0,7	3,6	5,5			
L4C03T405	0,37	0,5	380	1,5	2810	51	0,69	2,7	3,8	35	4x1.5	1,7
			400	1,6	2820	53	0,7	3	3,8			
			415	1,8	2830	48	0,67	3,2	3,4			
L4C05T405	0,55	0,75	380	1,8	2820	61	0,77	2,8	4,2	35	4x1.5	1,7
			400	1,9	2830	60	0,71	3,1	4,2			
			415	2	2840	60	0,66	3,3	4,1			
L4C07T405	0,75	1	380	2,3	2820	65	0,77	2,9	5	35	4x1.5	1,7
			400	2,4	2830	63	0,73	3,2	5			
			415	2,6	2840	63	0,66	3,5	4,8			
L4C11T405	1,1	1,5	380	3,3	2820	62	0,8	3	4	35	4x1.5	1,7
			400	3,4	2830	64	0,76	3,3	4,1			
			415	3,6	2840	63	0,73	3,6	4			
L4C15T405	1,5	2	380	4,3	2820	68	0,77	3,1	4,2	35	4x1.5	1,7
			400	4,4	2830	68	0,72	3,4	4,3			
			415	4,6	2840	67	0,68	3,7	4,3			
L4C22T405	2,2	3	380	5,8	2810	72	0,8	3	4,1	35	4x1.5	1,7
			400	5,9	2820	71	0,78	3,2	4,4			
			415	6,2	2830	70	0,7	3,5	4,3			
L4C30T405	3	4	380	7,9	2830	75	0,77	3	4,5	35	4x1.5	2,7
			400	8,3	2840	74	0,71	3,3	4,6			
			415	8,8	2850	70	0,68	3,5	4,5			
L4C40T405	4	5,5	380	9,5	2840	76	0,81	3,1	5,6	35	4x1.5	2,7
			400	10	2850	75	0,79	3,4	5,6			
			415	10,5	2860	72	0,74	3,7	5,5			
L4C55T405	5,5	7,5	380	13,5	2840	78	0,79	3	5,4	35	4x1.5	2,7
			400	14	2850	77	0,74	3,4	5,5			
			415	14,5	2860	76	0,7	3,6	5,5			
L4C75T405	7,5	10	380	17	2840	80	0,84	2,6	4,7	35	4x2	3,5
			400	17,4	2850	79	0,79	2,9	4,8			
			415	18,1	2860	76	0,75	3,1	4,8			

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



## 6" Submersible motors

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

### L6C Series



#### 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 220-240 V, 50 Hz.  
4 to 37 kW 380-415 V, 50 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.

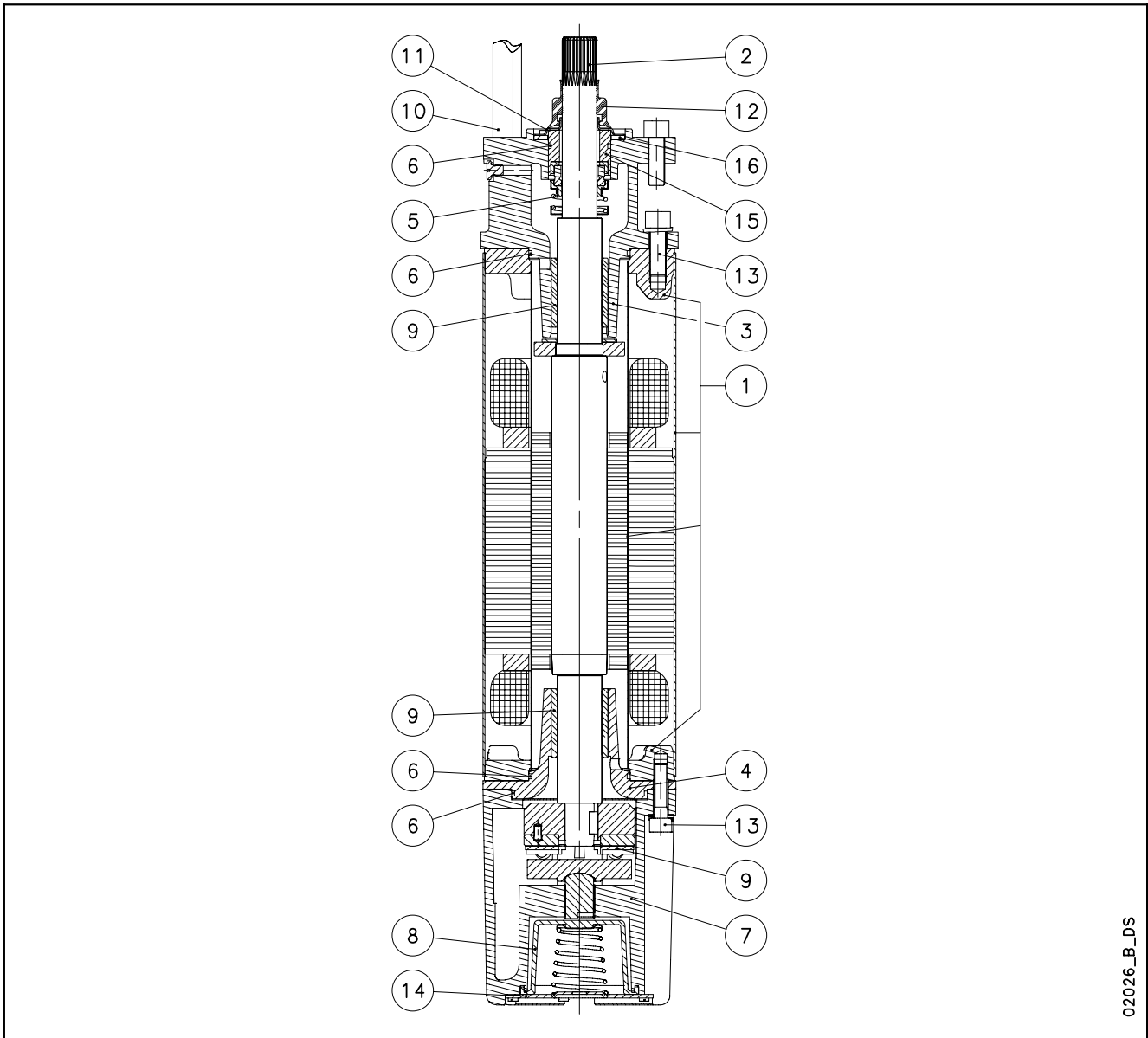
#### OPTIONAL FEATURES

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

**High starting torque**

**Power supply cable with extractable connector**

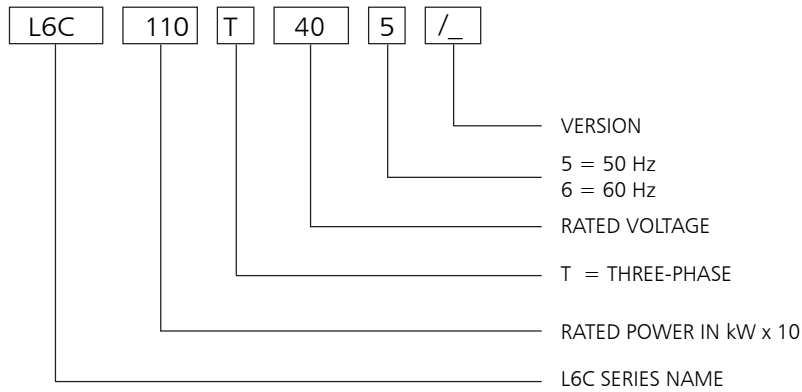
## L6C MOTOR SERIES MOTOR CROSS SECTION AND TABLE OF MATERIALS



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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		

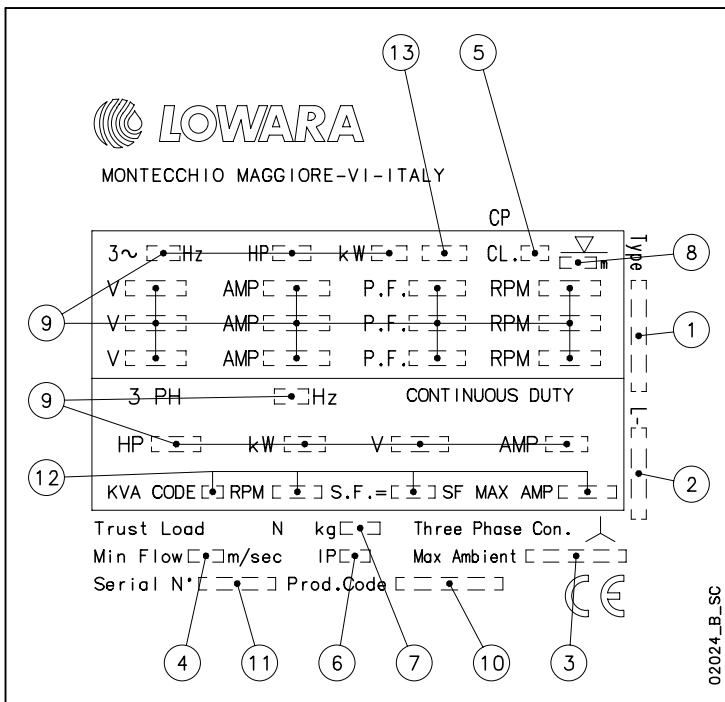
## L6C MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L6C110T405

L6C MOTOR :  
RATED POWER 11 kW; THREE-PHASE;  
RATED VOLTAGE 400 V; 50 Hz.

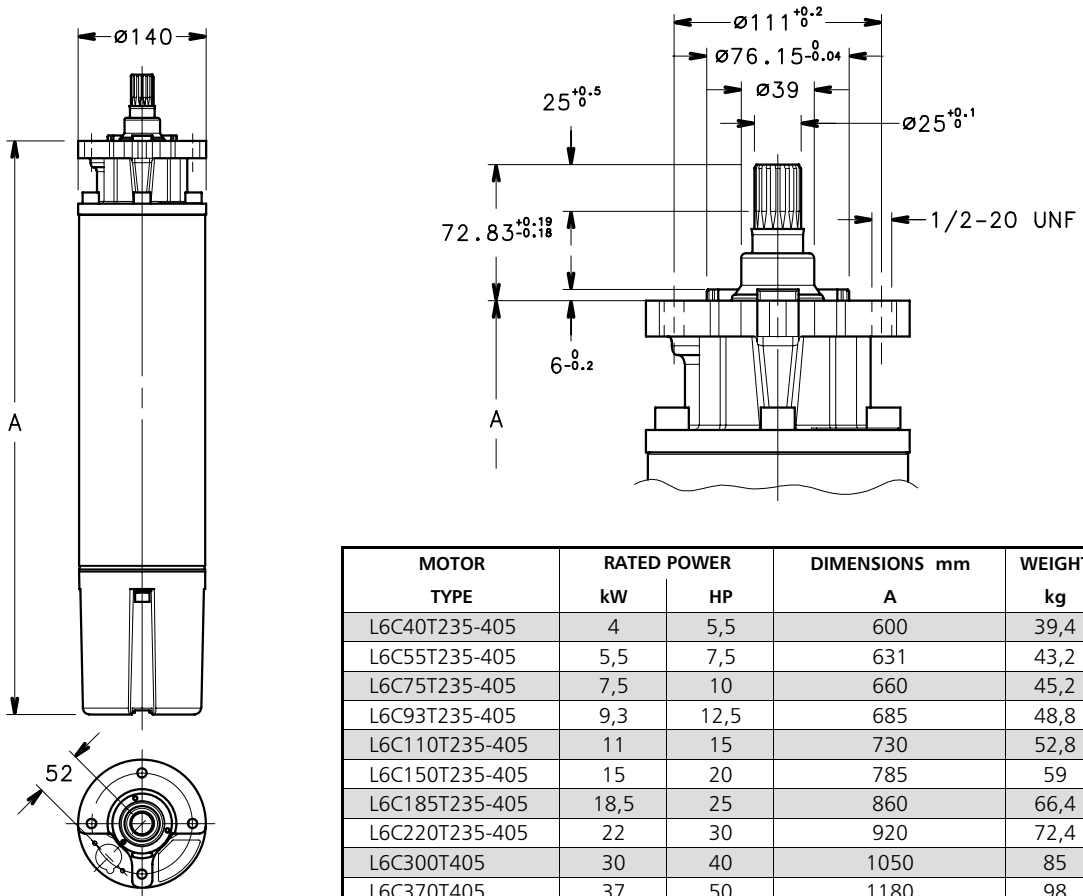
## RATING PLATE



## 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 50 Hz**



MOTOR TYPE	RATED POWER		DIMENSIONS mm A	WEIGHT kg
	kW	HP		
L6C40T235-405	4	5,5	600	39,4
L6C55T235-405	5,5	7,5	631	43,2
L6C75T235-405	7,5	10	660	45,2
L6C93T235-405	9,3	12,5	685	48,8
L6C110T235-405	11	15	730	52,8
L6C150T235-405	15	20	785	59
L6C185T235-405	18,5	25	860	66,4
L6C220T235-405	22	30	920	72,4
L6C300T405	30	40	1050	85
L6C370T405	37	50	1180	98

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## L6C MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE °C	CABLE TYPE	
	kW	HP		V	RATED CURRENT A	rpm	η %	cosφ	Ts/Tn*		Is/In	Nc x sec mm <sup>2</sup>
L6C40T235	4	5,5	220	17,8	2825	75	0,8	1,7	3,9	35	4x4	4
			230	18,4	2845	74	0,75	1,7	3,9			
			240	19,1	2860	74	0,7	1,7	3,8			
L6C55T235	5,5	7,5	220	24,1	2820	77	0,8	1,8	3,8	35	4x4	4
			230	24,2	2845	76	0,75	1,8	3,8			
			240	25,3	2860	76	0,71	1,8	3,6			
L6C75T235	7,5	10	220	30,5	2820	78	0,82	2	3,9	35	4x4	4
			230	31,2	2840	77	0,78	2	3,9			
			240	31,7	2850	77	0,73	2	4			
L6C93T235	9,3	12,5	220	37,6	2820	78	0,82	2,1	3,8	35	4x6	4
			230	38,1	2840	79	0,8	2,1	3,9			
			240	39,5	2850	78	0,79	2,15	3,9			
L6C110T235	11	15	220	43,3	2815	77	0,87	2,1	4,5	35	4x6	4
			230	44,2	2840	78	0,82	2,1	4,5			
			240	45,0	2845	77	0,79	2,15	4,5			
L6C150T235	15	20	220	58,0	2810	80	0,84	2,2	4,1	35	4x8	4
			230	57,9	2840	81	0,8	2,2	4,1			
			240	59,2	2850	81	0,76	2,25	4,1			
L6C185T235	18,5	25	220	70,1	2820	81	0,83	2,3	4,3	35	4x8	4
			230	71,0	2845	82	0,8	2,3	4,3			
			240	72,7	2855	82	0,73	2,35	4,3			
L6C220T235	22	30	220	82,3	2810	81	0,88	2,3	4	35	4x8	4
			230	81,4	2825	82	0,84	2,3	4,1			
			240	82,3	2835	82	0,8	2,35	4,2			
L6C40T405	4	5,5	380	10,3	2825	75	0,8	1,7	3,9	35	4x4	4
			400	10,6	2845	74	0,75	1,7	3,9			
			415	11	2860	74	0,7	1,7	3,8			
L6C55T405	5,5	7,5	380	13,9	2820	77	0,8	1,8	3,8	35	4x4	4
			400	14	2845	76	0,75	1,8	3,8			
			415	14,6	2860	76	0,71	1,8	3,6			
L6C75T405	7,5	10	380	17,6	2820	78	0,82	2	3,9	35	4x4	4
			400	18	2840	77	0,78	2	3,9			
			415	18,3	2850	77	0,73	2	4			
L6C93T405	9,3	12,5	380	21,7	2820	78	0,82	2,1	3,8	35	4x4	4
			400	22	2840	79	0,8	2,1	3,9			
			415	22,8	2850	78	0,79	2,15	3,9			
L6C110T405	11	15	380	25	2815	77	0,87	2,1	4,5	35	4x4	4
			400	25,5	2840	78	0,82	2,1	4,5			
			415	26	2845	77	0,79	2,15	4,5			
L6C150T405	15	20	380	33,5	2810	80	0,84	2,2	4,1	35	4x4	4
			400	33,4	2840	81	0,8	2,2	4,1			
			415	34,2	2850	81	0,76	2,25	4,1			
L6C185T405	18,5	25	380	40,5	2820	81	0,83	2,3	4,3	35	4x6	4
			400	41	2845	82	0,8	2,3	4,3			
			415	42	2855	82	0,73	2,35	4,3			
L6C220T405	22	30	380	47,5	2810	81	0,88	2,3	4	35	4x6	4
			400	47	2825	82	0,84	2,3	4,1			
			415	47,5	2835	82	0,8	2,35	4,2			
L6C300T405	30	40	380	63	2810	82	0,89	2,4	4	35	4x8	4
			400	61,5	2830	82	0,85	2,4	4,1			
			415	63,5	2840	81	0,8	2,45	3,9			
L6C370T405	37	50	380	79,5	2820	82	0,87	2	3,7	35	4x8	4
			400	79,3	2830	81	0,84	2,2	3,9			
			415	80	2840	81	0,8	2,3	4			

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

l6c-2p50-en\_f\_te





## 6" Submersible motors

### L6W Series



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 37 kW 380-415 V, 50 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

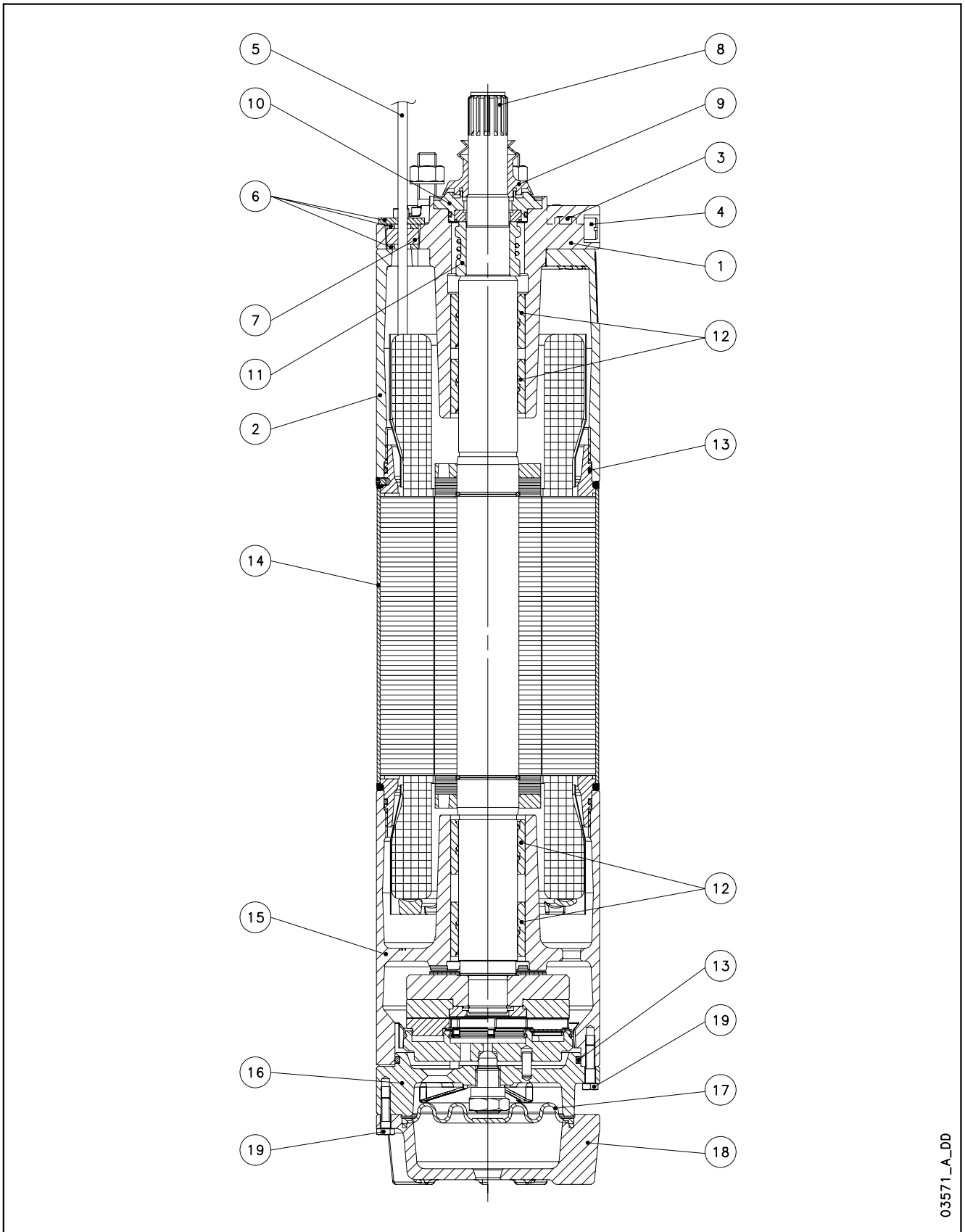
- Temperature sensor **PT 100 / PTC.**

**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		

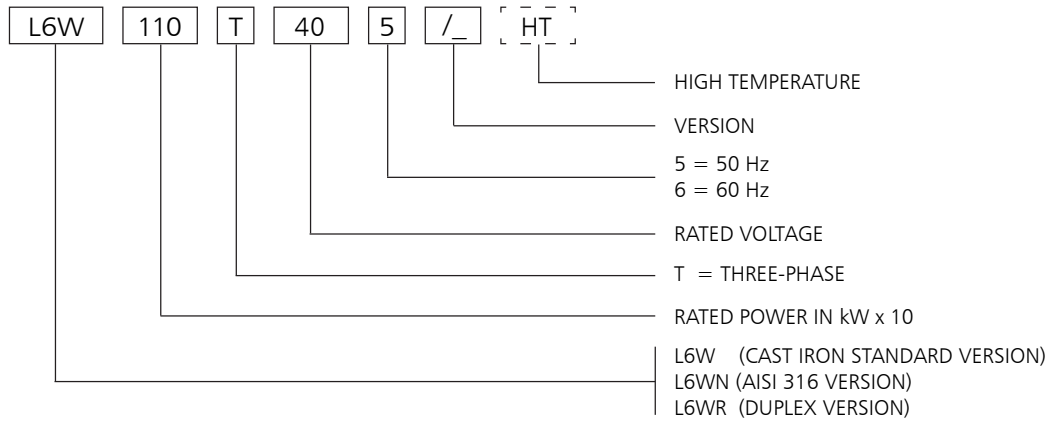
L6wn-2p50-en\_b\_tm

## 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

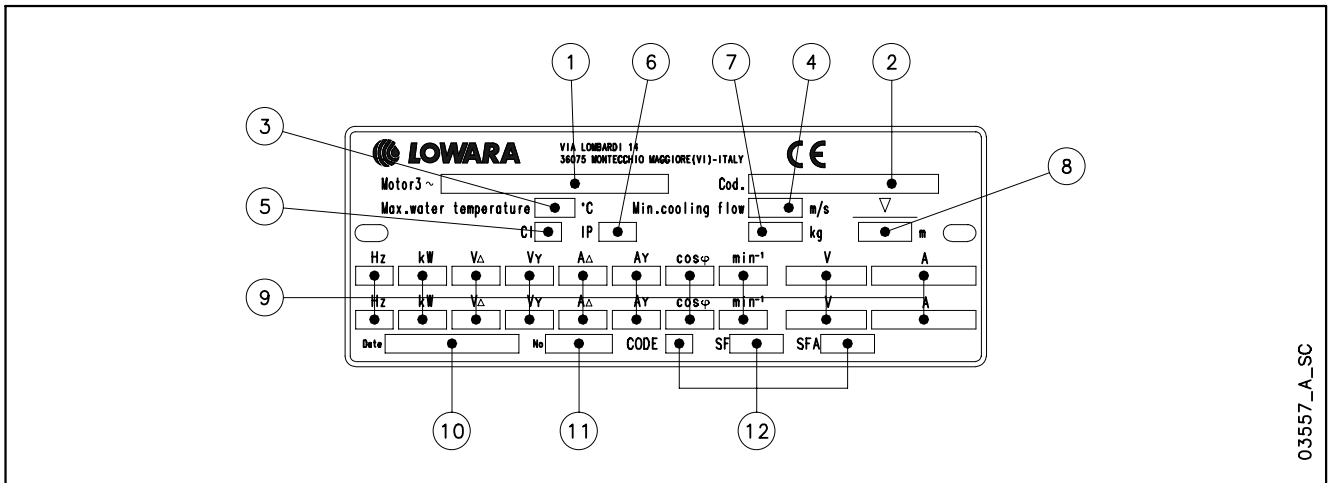
## L6W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L6W110T405/A HT

L6W MOTOR :  
RATED POWER 11 kW; THREE-PHASE;  
RATED VOLTAGE 400 V; 50 Hz; /A VERSION; HIGH TEMPERATURE

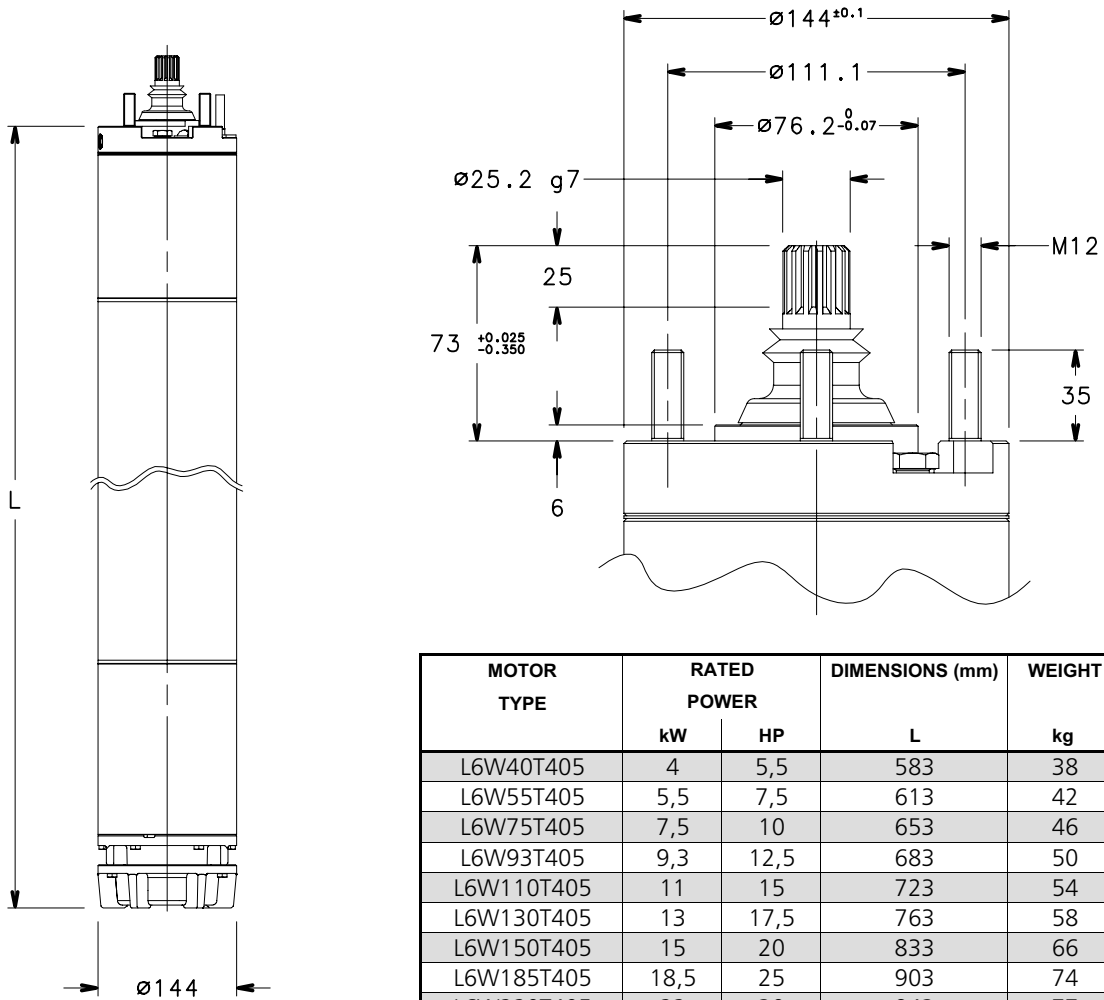
## RATING PLATE



## LEGEND

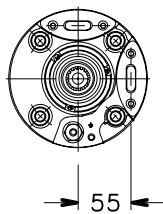
- 1 - Motor type
- 2 - Code
- 3 - Maximum water temperature
- 4 - Minimum water velocity
- 5 - Insulation class
- 6 - Protection class
- 7 - Weight
- 8 - Maximum immersion depth
- 9 - Operating characteristics
- 10 - Production date
- 11 - Serial number
- 12 - Characteristics at service factor

## L6W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 50 Hz



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L6W40T405	4	5,5	583	38
L6W55T405	5,5	7,5	613	42
L6W75T405	7,5	10	653	46
L6W93T405	9,3	12,5	683	50
L6W110T405	11	15	723	54
L6W130T405	13	17,5	763	58
L6W150T405	15	20	833	66
L6W185T405	18,5	25	903	74
L6W220T405	22	30	943	77
L6W260T405	26	35	1071	86
L6W300T405	30	40	1151	94
L6W370T405	37	50	1301	108

l6w-2p50-en\_b\_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L6W40T405 HT	4	5,5	613	42
L6W55T405 HT	5,5	7,5	653	46
L6W75T405 HT	7,5	10	683	50
L6W93T405 HT	9,3	12,5	723	54
L6W110T405 HT	11	15	763	58
L6W130T405 HT	13	17,5	833	66
L6W150T405 HT	15	20	903	74
L6W185T405 HT	18,5	25	943	77
L6W220T405 HT	22	30	1071	86
L6W260T405 HT	26	35	1151	94
L6W300T405 HT	30	40	1301	108

l6w-ht-2p50-en\_a\_td

03570\_D\_DD

## L6W MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER					DIRECT START		MAX WATER TEMPERATURE	CABLE TYPE		
	THREE-PHASE	kW		HP	RATED CURRENT	rpm	$\eta$ %	$\cos\phi$	Ts/Tn*	Is/In		°C	Sec. (mm <sup>2</sup> )	
			V	A							DOL	Y/D	L (m)	
L6W40T405	4	5,5	380	9,89	2835	68,1	0,9	1,00	3,56	30	4	-	4	
			400	9,26	2865	71,0	0,88	1,13	4,00					
			415	9,13	2880	71,5	0,85	1,21	4,20					
L6W55T405	5,5	7,5	380	12,7	2855	75,4	0,88	1,18	4,37	30	4	4	4	
			400	12,4	2875	75,7	0,85	1,31	4,70					
			415	12,5	2885	75,4	0,82	1,42	4,85					
L6W75T405	7,5	10	380	17,0	2840	74,9	0,9	1,26	4,34	30	4	4	4	
			400	16,4	2860	76,0	0,87	1,41	4,74					
			415	16,2	2875	76,5	0,84	1,52	4,96					
L6W93T405	9,3	12,5	380	20,5	2840	77,6	0,89	1,51	4,64	30	4	4	4	
			400	20,0	2860	78,2	0,86	1,68	5,01					
			415	19,9	2870	78,3	0,83	1,81	5,21					
L6W110T405	11	15	380	24,2	2830	77,2	0,9	1,44	4,38	30	4	4	4	
			400	23,5	2850	78,0	0,87	1,47	4,75					
			415	23,4	2865	78,0	0,84	1,73	4,94					
L6W130T405	13	17,5	380	28,1	2830	77,9	0,9	1,31	4,53	30	4	4	4	
			400	27,1	2855	78,9	0,88	1,47	4,93					
			415	27,0	2865	79,1	0,9	1,59	5,15					
L6W150T405	15	20	380	32,1	2830	80,2	0,88	1,55	4,88	30	4	4	4	
			400	31,5	2855	80,6	0,85	1,72	5,25					
			415	31,3	2865	80,9	0,82	1,86	5,46					
L6W185T405	18,5	25	380	38,5	2845	81,8	0,89	1,77	5,23	30	6	4	4	
			400	37,6	2860	82,4	0,86	1,97	5,65					
			415	37,5	2870	82,4	0,83	2,13	5,86					
L6W220T405	22	30	380	47,3	2865	81,7	0,87	0,86	4,60	30	6	4	4	
			400	46,5	2880	82,2	0,83	0,96	4,93					
			415	46,7	2890	82,2	0,8	1,04	5,09					
L6W260T405	26	35	380	56,5	2860	81,9	0,85	1,58	4,82	30	6	4	4	
			400	55,4	2880	82,7	0,82	1,76	5,18					
			415	55,7	2890	82,7	0,79	1,90	5,35					
L6W300T405	30	40	380	63,8	2870	82,3	0,87	1,07	4,94	30	10	4	4	
			400	62,3	2890	83,1	0,84	1,19	5,32					
			415	62,0	2900	83,3	0,81	1,29	5,55					
L6W370T405	37	50	380	81,8	2845	79,6	0,86	1,03	4,25	30	10	4	4	
			400	79,1	2870	81,2	0,83	1,15	4,63					
			415	79,4	2880	80,8	0,80	1,25	4,79					

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

l6w-2p50-en\_f\_te

## L6W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE °C	CABLE TYPE		
	THREE-PHASE kW	HP		RATED CURRENT A	rpm	η %	cosφ	Ts/Tn*	Is/In		Sec. (mm <sup>2</sup> )		
											DOL	Y/D	L (m)
L6W40T405 HT	4	5,5	380	9,81	2905	76,9	0,81	1,65	5,65	45	4	4	4
			400	10,1	2915	75,5	0,76	1,83	5,78				
			415	10,5	2920	74,2	0,72	1,98	5,77				
L6W55T405 HT	5,5	7,5	380	12,9	2895	77,1	0,84	1,75	5,71	45	4	4	4
			400	13,0	2905	77,0	0,79	1,95	5,96				
			415	13,4	2915	76,3	0,75	2,10	6,03				
L6W75T405 HT	7,5	10	380	16,9	2880	79,2	0,85	1,89	5,64	45	4	4	4
			400	16,9	2890	79,0	0,81	2,11	5,91				
			415	17,3	2900	78,3	0,77	2,27	6,00				
L6W93T405 HT	9,3	12,5	380	20,6	2865	79,2	0,87	1,72	5,13	45	4	4	4
			400	20,4	2880	79,3	0,83	1,82	5,44				
			415	20,8	2890	78,4	0,79	2,07	5,53				
L6W110T405 HT	11	15	380	23,8	2870	80,1	0,88	1,57	5,35	45	4	4	4
			400	23,6	2885	80,1	0,84	1,75	5,69				
			415	23,9	2890	79,8	0,80	1,89	5,83				
L6W130T405 HT	13	17,5	380	28,3	2860	81,8	0,85	1,80	5,55	45	4	4	4
			400	28,1	2875	81,4	0,82	2,01	5,87				
			415	28,4	2885	81,4	0,78	2,17	6,03				
L6W150T405 HT	15	20	380	31,8	2880	83,6	0,86	2,21	6,33	45	6	4	4
			400	31,9	2890	83,4	0,82	2,46	6,65				
			415	32,5	2900	82,8	0,78	2,65	6,77				
L6W185T405 HT	18,5	25	380	40,3	2895	83,9	0,83	1,04	5,40	45	6	4	4
			400	40,5	2905	83,5	0,79	1,15	5,65				
			415	41,6	2910	83,0	0,75	1,24	5,71				
L6W220T405 HT	22	30	380	48,5	2890	83,6	0,82	1,89	5,62	45	6	4	4
			400	48,6	2905	83,6	0,78	2,10	5,90				
			415	49,7	2910	83,2	0,74	2,26	5,99				
L6W260T405 HT	26	35	380	55,7	2895	83,8	0,85	1,24	5,66	45	10	4	4
			400	55,2	2905	84,0	0,81	1,38	6,00				
			415	55,8	2915	83,9	0,77	1,49	6,17				
L6W300T405 HT	30	40	380	67,1	2885	82,2	0,83	1,29	5,18	45	10	4	4
			400	67,1	2900	82,8	0,78	1,44	5,46				
			415	68,8	2910	81,8	0,74	1,55	5,52				

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

l6w-ht-2p50-en\_c\_te





## 8" Submersible motors

### L8W Series



**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 380-415 V, 50 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.

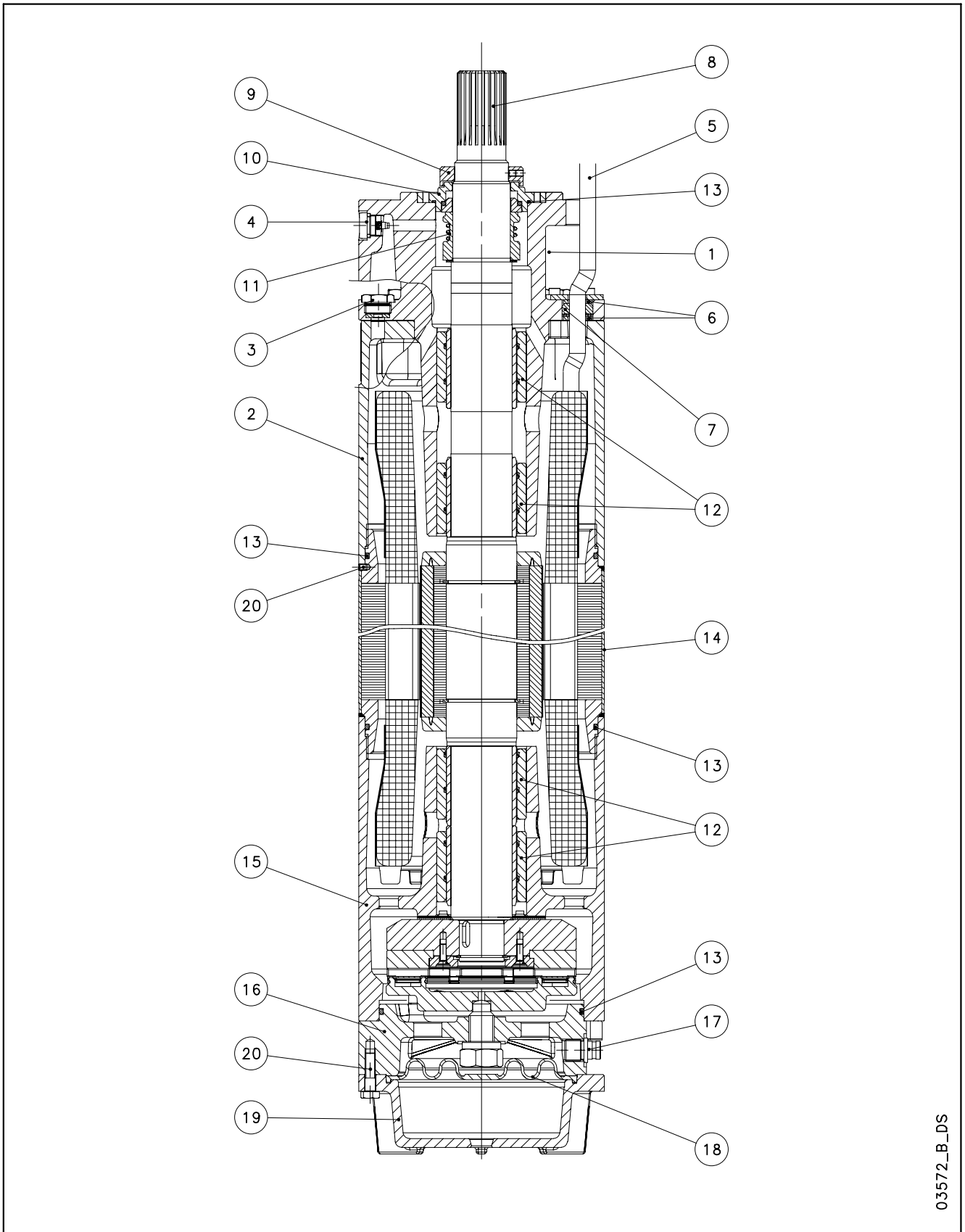
#### OPTIONAL FEATURES

- 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		

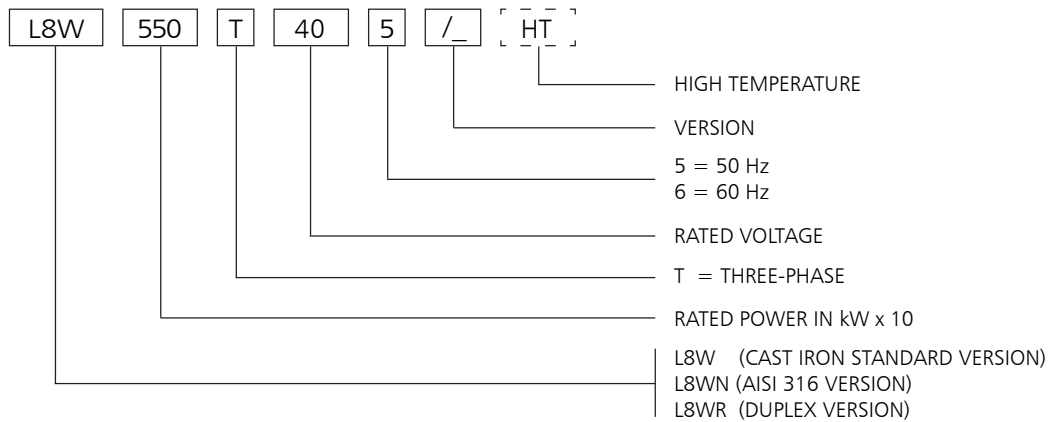
L8wn-2p50-en\_a\_tm

## 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

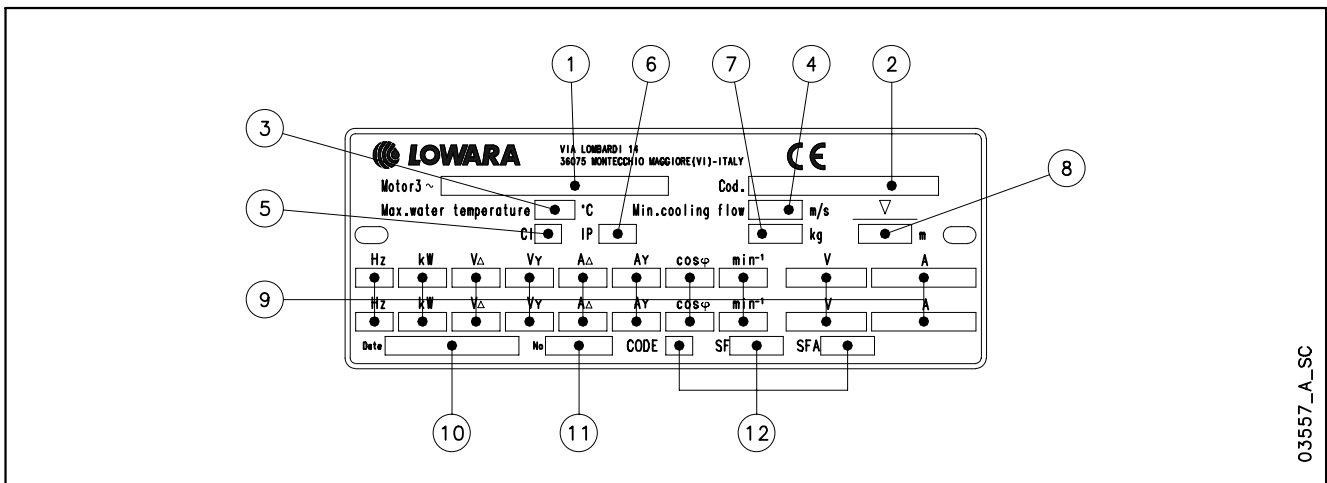
## L8W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L8W550T405/A HT

L8W MOTOR :  
 RATED POWER 55 kW; THREE-PHASE;  
 RATED VOLTAGE 400 V; 50 Hz; /A VERSION; HIGH TEMPERATURE

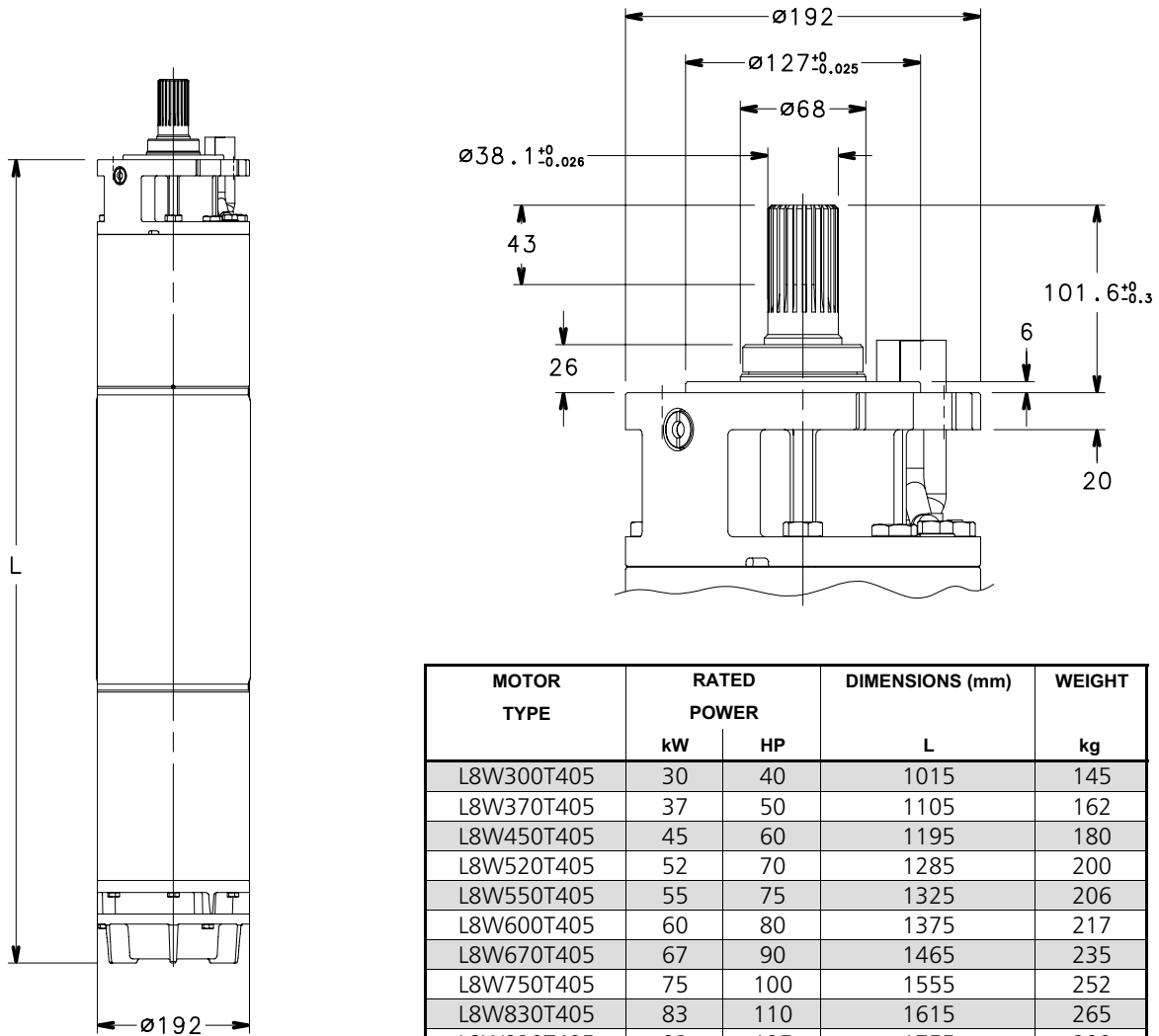
## RATING PLATE



## LEGEND

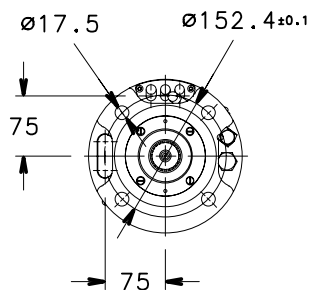
- 1 - Motor type
- 2 - Code
- 3 - Maximum water temperature
- 4 - Minimum water velocity
- 5 - Insulation class
- 6 - Protection class
- 7 - Weight
- 8 - Maximum immersion depth
- 9 - Operating characteristics
- 10 - Production date
- 11 - Serial number
- 12 - Characteristics at service factor

## L8W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 50 Hz



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L8W300T405	30	40	1015	145
L8W370T405	37	50	1105	162
L8W450T405	45	60	1195	180
L8W520T405	52	70	1285	200
L8W550T405	55	75	1325	206
L8W600T405	60	80	1375	217
L8W670T405	67	90	1465	235
L8W750T405	75	100	1555	252
L8W830T405	83	110	1615	265
L8W930T405	93	125	1755	290

l8w-2p50-en\_a\_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm) L	WEIGHT kg
	kW	HP		
L8W300T405 HT	30	40	1105	162
L8W370T405 HT	37	50	1195	180
L8W450T405 HT	45	60	1285	200
L8W520T405 HT	52	70	1325	206
L8W550T405 HT	55	75	1375	217
L8W600T405 HT	60	80	1465	235
L8W670T405 HT	67	90	1555	252
L8W750T405 HT	75	100	1615	265
L8W830T405 HT	83	110	1755	290

l8w-ht-2p50-en\_a\_td

03550\_C\_DD

## L8W MOTOR SERIES

### THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE	CABLE TYPE		
	THREE-PHASE	kW		HP	RATED CURRENT	rpm	$\eta$ %	cos $\phi$	Ts/Tn*		Is/In	°C	Sec. (mm <sup>2</sup> )
			V	A							DOL	Y/D	L (m)
L8W300T405	30	40	380	65,0	2905	83,0	0,85	1,20	4,67	30	10	6	5,5
			400	62,0	2900	83,0	0,84	1,15	4,69				
			415	59,0	2900	83,0	0,84	1,09	4,70				
L8W370T405	37	50	380	81,0	2840	80,5	0,87	1,04	4,19	30	10	6	5,5
			400	78,5	2860	81,0	0,84	1,14	4,54				
			415	76,0	2870	81,5	0,83	1,23	4,88				
L8W450T405	45	60	380	92,0	2850	82,0	0,87	0,92	3,72	30	16	6	5,5
			400	89,0	2870	82,0	0,85	1,01	3,98				
			415	89,0	2880	83,5	0,83	1,09	4,23				
L8W520T405	52	70	380	110	2840	82,0	0,86	1,14	3,90	30	16	6	5,5
			400	108	2865	82,0	0,85	1,15	4,20				
			415	104	2885	82,5	0,82	1,16	4,50				
L8W550T405	55	75	380	118	2840	82,0	0,87	1,26	3,57	30	16	10	5,5
			400	114	2870	82,0	0,85	1,27	3,88				
			415	110	2885	82,5	0,83	1,27	4,19				
L8W600T405	60	80	380	124	2855	82,0	0,87	1,12	4,18	30	16	10	5,5
			400	120	2875	82,5	0,85	1,23	4,49				
			415	118	2885	83,5	0,83	1,33	4,80				
L8W670T405	67	90	380	138	2850	82,5	0,88	0,98	4,22	30	25	10	5,5
			400	133	2870	83,0	0,86	1,07	4,52				
			415	132	2885	83,5	0,83	1,16	4,82				
L8W750T405	75	100	380	156	2860	82,0	0,87	0,92	4,10	30	25	16	5,5
			400	152	2875	82,5	0,85	1,01	4,41				
			415	148	2885	83,0	0,82	1,10	4,72				
L8W830T405	83	110	380	172	2860	83,0	0,87	0,91	4,12	30	35	16	5,5
			400	168	2870	83,5	0,84	1,00	4,39				
			415	163	2880	84,0	0,82	1,08	4,66				
L8W930T405	93	125	380	192	2850	83,0	0,87	0,84	3,38	30	35	16	5,5
			400	186	2860	83,5	0,85	0,92	3,84				
			415	180	2885	84,0	0,83	1,00	4,30				

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

l8w-2p50-en\_d\_te

## L8W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 50 Hz

MOTOR TYPE	RATED POWER		RATED VOLTAGE	OPERATING CHARACTERISTICS AT RATED POWER				DIRECT START		MAX WATER TEMPERATURE °C	CABLE TYPE		
	THREE-PHASE	kW		HP	RATED CURRENT	A	rpm	η %	cosφ		Ts/Tn*	Is/In	Sec. (mm <sup>2</sup> )
			V	A	rpm	η %	cosφ	Ts/Tn*	Is/In	°C	DOL	Y/D	L (m)
L8W300T405 HT	30	40	380	66,6	2865	82,5	0,84	1,29	5,10	45	10	6	5,5
			400	64,5	2885	83,0	0,81	1,41	5,52				
			415	62,4	2895	83,5	0,8	1,53	5,94				
L8W370T405 HT	37	50	380	77,5	2865	84,0	0,86	1,12	4,41	45	16	6	5,5
			400	75,0	2885	84,0	0,84	1,23	4,72				
			415	75,0	2895	85,5	0,82	1,33	5,02				
L8W450T405 HT	45	60	380	97,8	2860	83,0	0,83	1,33	4,39	45	16	6	5,5
			400	96,0	2885	83,0	0,82	1,34	4,73				
			415	92,4	2905	83,5	0,79	1,35	5,06				
L8W520T405 HT	52	70	380	110	2835	83,0	0,86	1,33	3,84	45	16	10	5,5
			400	106	2865	83,0	0,84	1,34	4,17				
			415	102	2880	83,5	0,82	1,34	4,51				
L8W550T405 HT	55	75	380	117	2865	83,5	0,86	1,23	4,44	45	16	10	5,5
			400	113	2885	84,0	0,84	1,34	4,77				
			415	111	2895	85,0	0,82	1,46	5,10				
L8W600T405 HT	60	80	380	127	2860	83,5	0,87	1,10	4,60	45	25	10	5,5
			400	122	2880	84,0	0,85	1,20	4,93				
			415	121	2895	84,5	0,82	1,30	5,25				
L8W670T405 HT	67	90	380	141	2870	82,5	0,85	1,03	4,55	45	25	16	5,5
			400	137	2885	83,0	0,83	1,13	4,89				
			415	133	2895	83,5	0,8	1,24	5,24				
L8W750T405 HT	75	100	380	156	2905	82,5	0,86	1,02	4,55	45	35	16	5,5
			400	152	2915	83,0	0,83	1,12	4,85				
			415	147	2925	83,5	0,81	1,21	5,15				
L8W830T405 HT	83	110	380	171	2875	84,5	0,86	0,95	3,79	45	35	16	5,5
			400	166	2885	85,0	0,84	1,04	4,30				
			415	161	2910	85,5	0,82	1,13	4,82				

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

l8w-ht-2p50-en\_a\_te

**ACCESSORIES**

Motor - Control Panel Combination Table .....	<b>89</b>
Electrical Panels .....	<b>92</b>
Level control panel .....	<b>103</b>
Level probe module .....	<b>104</b>
Lightning protection .....	<b>105</b>
Cooling shrouds .....	<b>106</b>
ISO Threaded flanges and supporting collars .....	<b>108</b>



## 40S - L4C SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE 40S - 4" SINGLE-PHASE	RATED POWER		RATED CURRENT 220-240 V	CAPACITOR	PANEL TYPE				
	kW	HP	A	µF / 450 V	QSM...	QPC...	QPCS...	QSC...	QSCS...
	0,37	0,5	3,2	16	...03	...03	...03	...03	...03
0,55	0,75	4,3	20	...05	...05	...05	...05	...05	
0,75	1	5,6	30	...07	...07	...07	...07	...07	
1,1	1,5	7,6	40	...11	...11	...11	...11	...11	
1,5	2	10,5	50	-	...15	...15	...15	...15	
2,2	3	14,4	70	-	...22	...22	...22	...22	
4	5,5	24,9	90	-	-	-	...40	...40	

40S-2p50-en\_e\_tc

MOTOR TYPE 40S - 4" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V	PANEL TYPE				
	kW	HP	A	QTD/...	Q3D/...	Q3I/...	Q3A/...	Q3SF/...
	0,37	0,5	1,2	...03-05	...03-05	-	-	-
0,55	0,75	1,7	...05-07	...05-07	-	-	-	
0,75	1	2,4	...05-07	...05-07	-	-	-	
1,1	1,5	3,1	...07-15	...07-15	-	-	-	
1,5	2	4,4	...15-22	...15-22	-	-	-	
2,2	3	6,1	...15-22	...15-22	-	-	-	
3	4	7,1	...22-40	...22-40	-	-	-	
4	5,5	9,8	...22-40	...22-40	-	-	-	
5,5	7,5	13,7	...40-75	...40-75	...40-75	...40-75	...75	
7,5	10	18,7	...75-92	...75-92	...75-92	...75-92	...150	

For different voltages, please contact our sales network.

40S-2p50-en\_e\_tc

MOTOR TYPE L4C - 4" SINGLE-PHASE	RATED POWER		RATED CURRENT 220-240 V	CAPACITOR	PANEL TYPE				
	kW	HP	A	µF / 450 V	QSM...	QPC...	QPCS...	QSC...	QSCS...
	0,37	0,5	3,4	16	...03	...03	...03	...03	...03
0,55	0,75	4,8	20	...05	...05	...05	...05	...05	
0,75	1	6,5	30	...07	...07	...07	...07	...07	
1,1	1,5	8,3	40	...11	...11	...11	...11	...11	
1,5	2	10,7	50	-	...15	...15	...15	...15	
2,2	3	15,3	70	-	...22	...22	...22	...22	
4	5,5	29,9	90	-	-	-	...40	...40	

L4c-2p50\_i\_tc

MOTOR TYPE L4C - 4" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V	PANEL TYPE				
	kW	HP	A	QTD/...	Q3D/...	Q3I/...	Q3A/...	Q3SF/...
	0,37	0,5	1,8	...05-07	...05-07	-	-	-
0,55	0,75	2	...05-07	...05-07	-	-	-	
0,75	1	2,6	...07-15	...07-15	-	-	-	
1,1	1,5	3,6	...07-15	...07-15	-	-	-	
1,5	2	4,6	...15-22	...15-22	-	-	-	
2,2	3	6,2	...15-22	...15-22	-	-	-	
3	4	8,8	...22-40	...22-40	-	-	-	
4	5,5	10,5	...40-75	...40-75	-	-	-	
5,5	7,5	14,5	...40-75	...40-75	...40-75	...40-75	...75	
7,5	10	18,1	...75-92	...75-92	...75-92	...75-92	...150	

For different voltages please contact our sales network.

L4c-2p50\_i\_tc

## L6C - L6W SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE L6C - 6" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V A	PANEL TYPE					
	kW	HP		QTD/...	Q3D/...	Q3I/...	Q3A/...	Q3Y/...	Q3SF/...
	4	5,5		11,0	...40-75	...40-75	...40-75	...40-75	...40-75
5,5	7,5	14,6	...40-75	...40-75	...40-75	...40-75	...40-75	...75	
7,5	10	18,3	...75-92	...75-92	...75-92	...75-92	...75-92	...150	
9,3	12,5	22,8	-	...92-110	...92-110	...92-110	...92-110	...150	
11	15	26,0	-	...110-150	...110-150	...110-150	...110-150	...150	
15	20	34,2	-	...150-185	...150-185	...150-185	...150-185	...220	
18,5	25	42,0	-	...185-220	...185-220	...185-220	...185-220	...220	
22	30	47,5	-	...185-220	...185-220	...185-220	...185-220	...300	
30	40	63,5	-	...300-370	...300-370	...300-370	...300-370	...370	
37	50	80,0	-	-	...370-450	...370-450	...370-450	...450	

For different voltages, please contact our sales network.

L6c-2p50-en\_e\_tc

MOTOR TYPE L6W - 6" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V A	PANEL TYPE					
	kW	HP		QTD/...	Q3D/...	Q3I/...	Q3A/...	Q3Y/...	Q3SF/...
	4	5,5		9,89	...40-75	...40-75	...40-75	...40-75	...40-75
5,5	7,5	12,7	...40-75	...40-75	...40-75	...40-75	...40-75	...75	
7,5	10	17,0	...75-92	...75-92	...75-92	...75-92	...75-92	...150	
9,3	12,5	20,5	-	...92-110	...92-110	...92-110	...92-110	...150	
11	15	24,2	-	...110-150	...110-150	...110-150	...110-150	...150	
13	17,5	28,1	-	...110-150	...110-150	...110-150	...110-150	...150	
15	20	32,1	-	...150-185	...150-185	...150-185	...150-185	...220	
18,5	25	38,5	-	...185-220	...185-220	...185-220	...185-220	...220	
22	30	47,3	-	...220-300	...220-300	...220-300	...220-300	...300	
26	35	56,5	-	...220-300	...220-300	...220-300	...220-300	...300	
30	40	63,8	-	...300-370	...300-370	...300-370	...300-370	...370	
37	50	81,8	-	-	...370-450	...370-450	...370-450	...450	
MOTOR TYPE L6W HT - 6" THREE-PHASE	4	5,5	10,5	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	5,5	7,5	13,4	...40-75	...40-75	...40-75	...40-75	...40-75	...75
	7,5	10	17,3	...75-92	...75-92	...75-92	...75-92	...75-92	...150
	9,3	12,5	20,8	-	...92-110	...92-110	...92-110	...92-110	...150
	11	15	23,9	-	...110-150	...110-150	...110-150	...110-150	...150
	13	17,5	28,4	-	...110-150	...110-150	...110-150	...110-150	...150
	15	20	32,5	-	...150-185	...150-185	...150-185	...150-185	...220
	18,5	25	41,6	-	...185-220	...185-220	...185-220	...185-220	...220
	22	30	49,7	-	...220-300	...220-300	...220-300	...220-300	...300
	26	35	55,8	-	...220-300	...220-300	...220-300	...220-300	...300
30	40	68,8	-	...300-370	...300-370	...300-370	...300-370	...370	

For different voltages, please contact our sales network.

L6w-2p50-en\_c\_tc

## L8W SERIES MOTORS MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE L8W - 8" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V A	PANEL TYPE					
	kW	HP		Q3D/...	Q3I/...	Q3A/...	Q3SF/...		
	30	40	65	...300-370	...300-370	...300-370	...370		
	37	50	81	-	...370-450	...370-450	...450		
	45	60	92	-	...450-550	...450-550	...550		
	52	70	110	-	...550-750	...550-750	...590		
	55	75	118	-	...550-750	...550-750	...590		
	60	80	124	-	...550-750	...550-750	...750		
	67	90	138	-	...750-900	...750-900	...900		
	75	100	156	-	...750-900	...750-900	...900		
	83	110	172	-	...750-900	...750-900	...900		
	93	125	192	-	...900-1100	...900-1100	...1100		
<b>MOTOR TYPE L8W HT - 8" THREE-PHASE</b>	30	40	66,6	...300-370	...300-370	...300-370	...370		
	37	50	77,5	-	...370-450	...370-450	...450		
	45	60	97,8	-	...450-550	...450-550	...550		
	52	70	110	-	...550-750	...550-750	...590		
	55	75	117	-	...550-750	...550-750	...590		
	60	80	127	-	...550-750	...550-750	...750		
	67	90	141	-	...750-900	...750-900	...900		
	75	100	156	-	...750-900	...750-900	...900		
	83	110	171	-	...750-900	...750-900	...900		

For different voltages, please contact our sales network.

L8w-2p50-en\_b\_tc

## Single-phase Electric Panel

### APPLICATIONS

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

## QSM Series

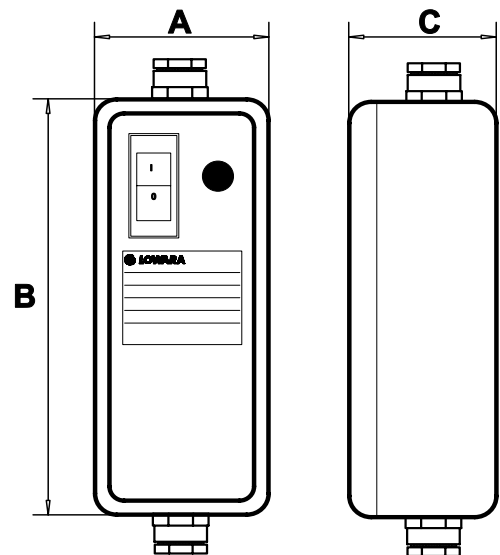


### SPECIFICATIONS

- Main switch for manual control.
- Supply voltage: 1 x 220-240 V  $\pm$ 5%.
- Frequency: 50 Hz.
- Power: 0,25 to 1,1 kW.
- Direct motor start.
- 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.
- Plastic enclosure.
- Incorporated capacitor.
- Thermal protection with motor protector inside the panel.

### OPTIONAL FEATURES

- QSM PF version with overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	CAPACITOR 450V uF	DIMENSIONS			WEIGHT Kg
		kW	HP			A mm	B mm	C mm	
QSM 02	220-240	0,25	0,33	2,6	12,5	80	210	65	0,45
QSM 03	220-240	0,37	0,5	3,4	16	80	210	65	0,45
QSM 05	220-240	0,55	0,75	4,8	20	80	210	65	0,45
QSM 07	220-240	0,75	1	6,5	30	80	210	65	0,45
QSM 11	220-240	1,1	1,5	8,3	40	80	210	65	0,45

## Single-phase Electric Panel

### APPLICATIONS

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

## QPC Series

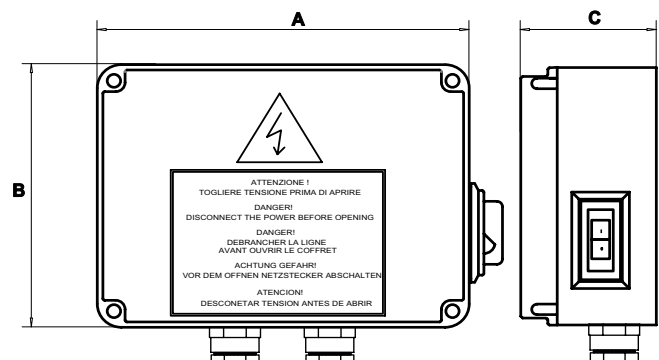


### SPECIFICATIONS

- Main switch for manual control.
- Supply voltage: 1 x 230 V  $\pm$  10%.
- Frequency: 50 Hz.
- Power: 0,25 to 2,2 kW.
- Direct motor start.
- 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 with fins.
- Plastic enclosure.
- Incorporated capacitor.
- Main switch with manual-reset thermal protection and power indicator light.

### OPTIONAL ACCESSORIES

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



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg	CAPACITOR $\mu$ F/450V
		kW	HP		A	B	C		
QPC/02	1 x 230 V $\pm$ 10 %	0,25	0,33	3	170	170	75	1,1	12,5
QPC/03	1 x 230 V $\pm$ 10 %	0,37	0,5	4	170	170	75	1,1	16
QPC/05	1 x 230 V $\pm$ 10 %	0,55	0,75	5	170	170	75	1,1	20
QPC/07	1 x 230 V $\pm$ 10 %	0,75	1	6	170	170	75	1,1	30
QPC/11	1 x 230 V $\pm$ 10 %	1,1	1,5	9	170	170	75	1,1	40
QPC/15	1 x 230 V $\pm$ 10 %	1,5	2	11	170	170	75	1,1	50
QPC/22	1 x 230 V $\pm$ 10 %	2,2	3	16	170	170	127	1,2	70

## Single-phase Electric Panel

### APPLICATIONS

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

## QPCS Series



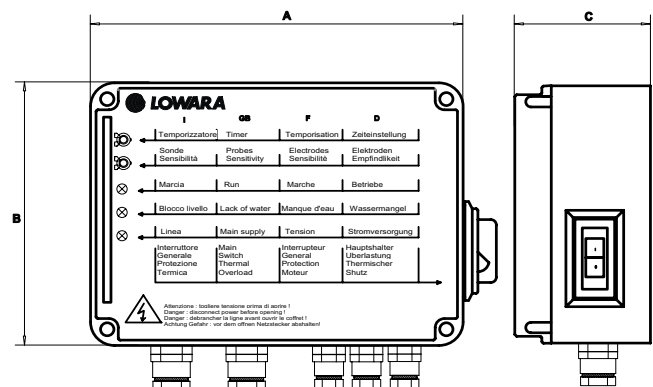
### SPECIFICATIONS

- Automatic control through an external enable contact.
- Supply voltage: 1 x 230 V  $\pm$  10%.
- Frequency: 50 Hz.
- Power: 0,25 to 2,2 kW.
- 12 V AC low-voltage auxiliary circuit.
- Direct motor start.
- 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 with fins.
- Plastic enclosure with transparent cover.
- Incorporated capacitor.

- Main switch with manual-reset thermal protection and power indicator light.
- Power, pump running, level control LED.
- Overvoltage discharges.
- Dry running control through probes or float or minimum pressure switch.

### OPTIONAL ACCESSORIES

- Set of 3 electrodes (probes) without cable.
- Float.
- Pressure switch.



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg	CAPACITOR $\mu$ F/450V
		kW	HP		A	B	C		
QPCS/02	1 x 230 V $\pm$ 10 %	0,25	0,33	3	200	150	80	1,3	12,5
QPCS/03	1 x 230 V $\pm$ 10 %	0,37	0,5	4	200	150	80	1,3	16
QPCS/05	1 x 230 V $\pm$ 10 %	0,55	0,75	5	200	150	80	1,3	20
QPCS/07	1 x 230 V $\pm$ 10 %	0,75	1	6	200	150	80	1,3	30
QPCS/11	1 x 230 V $\pm$ 10 %	1,1	1,5	9	200	150	80	1,3	40
QPCS/15	1 x 230 V $\pm$ 10 %	1,5	2	11	200	150	80	1,3	50
QPCS/22	1 x 230 V $\pm$ 10 %	2,2	3	16	200	150	80	1,3	70

## Single-phase Electric Panel

### APPLICATIONS

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

## QSC Series

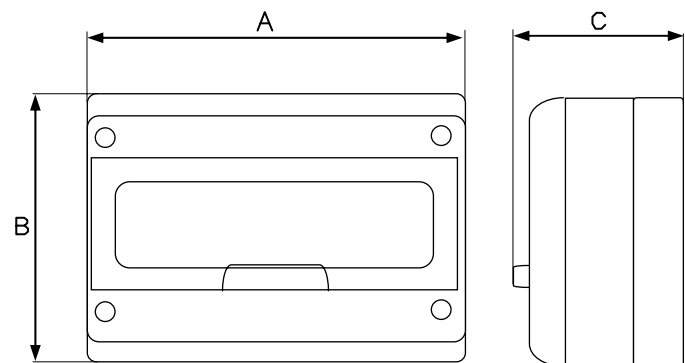


### SPECIFICATIONS

- Main switch for manual control.
- Supply voltage: 1 x 230 V  $\pm$  10%.
- Frequency: 50 Hz.
- Power: 0,25 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 manual-reset 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 $\mu$ F/450V
		kW	HP		A mm	B mm	C mm		
QSC/02	1 x 230 V $\pm$ 10 %	0,25	0,33	2,5 $\div$ 4	205	220	160	1,7	12,5
QSC/03	1 x 230 V $\pm$ 10 %	0,37	0,5	4 $\div$ 6,3	205	220	160	1,7	16
QSC/05	1 x 230 V $\pm$ 10 %	0,55	0,75	4 $\div$ 6,3	205	220	160	1,7	20
QSC/07	1 x 230 V $\pm$ 10 %	0,75	1	4 $\div$ 6,3	205	220	160	1,7	30
QSC/11	1 x 230 V $\pm$ 10 %	1,1	1,5	6,3 $\div$ 10	205	220	160	1,7	40
QSC/15	1 x 230 V $\pm$ 10 %	1,5	2	10 $\div$ 16	205	220	160	1,7	50
QSC/22	1 x 230 V $\pm$ 10 %	2,2	3	16 $\div$ 20	205	220	160	2,7	70
QSC/40	1 x 230 V $\pm$ 10 %	4	5,5	25 $\div$ 32	280	220	160	3	90

CB-QSC-en\_d\_te

## Single-phase Electric Panel

### APPLICATIONS

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

## QSCS Series



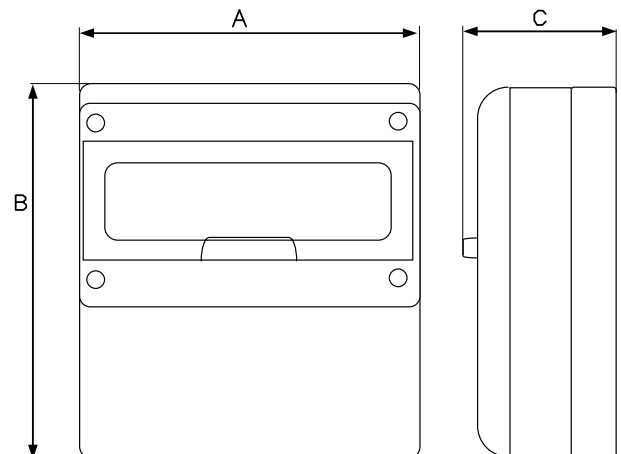
### SPECIFICATIONS

- Automatic control through an external enable contact.
- Supply voltage: 1 x 230 V  $\pm$  10%.
- Frequency: 50 Hz.
- Power: 0,25 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 manual-reset 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 $\mu$ F/450V
		kW	HP		A mm	B mm	C mm		
QSCS/02	1 x 230 V $\pm$ 10 %	0,25	0,33	2,5 $\div$ 4	280	370	160	3,7	12,5
QSCS/03	1 x 230 V $\pm$ 10 %	0,37	0,5	4 $\div$ 6,3	280	370	160	3,7	16
QSCS/05	1 x 230 V $\pm$ 10 %	0,55	0,75	4 $\div$ 6,3	280	370	160	3,7	20
QSCS/07	1 x 230 V $\pm$ 10 %	0,75	1	4 $\div$ 6,3	280	370	160	3,7	30
QSCS/11	1 x 230 V $\pm$ 10 %	1,1	1,5	6,3 $\div$ 10	280	370	160	3,7	40
QSCS/15	1 x 230 V $\pm$ 10 %	1,5	2	10 $\div$ 16	280	370	160	3,7	50
QSCS/22	1 x 230 V $\pm$ 10 %	2,2	3	16 $\div$ 20	280	370	160	3,7	70
QSCS/40	1 x 230 V $\pm$ 10 %	4	5,5	25 $\div$ 32	280	370	160	4	90

CB-QSCS-en\_c\_te



## Three-phase Electric Panel

### APPLICATIONS

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

## QTD Series



### SPECIFICATIONS

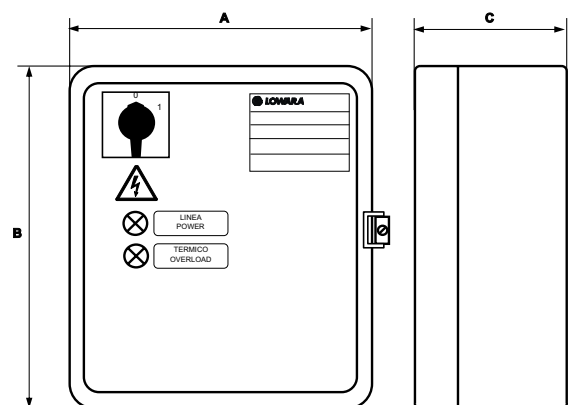
- Control through an external enable contact.
- Supply voltage: 3 x 400 V  $\pm$  10%.
- Frequency: 50/60 Hz.
- Power: 0,25 to 9,2 kW.
- Direct motor start.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative 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 2,5	235	265	150	5,8
QTD/07-15	3 x 400 V $\pm$ 10 %	0,75-1,5	1-2	2,5 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



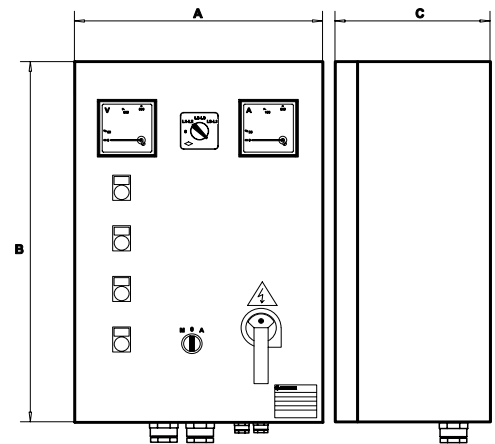
### SPECIFICATIONS

- 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 ÷ 1	300	400	200	15
Q3D/03-05	3 x 400 V $\pm$ 10 %	0,37-0,55	0,5-0,75	1 ÷ 1,6	300	400	200	15
Q3D/05-07	3 x 400 V $\pm$ 10 %	0,55-0,75	0,75-1	1,6 ÷ 2,5	300	400	200	15
Q3D/07-15	3 x 400 V $\pm$ 10 %	0,75-1,5	1-2	2,5 ÷ 4	300	400	200	15
Q3D/15-22	3 x 400 V $\pm$ 10 %	1,5-2,2	2-3	4 ÷ 6,3	300	400	200	15
Q3D/22-40	3 x 400 V $\pm$ 10 %	2,2-4	3-5,5	6,3 ÷ 10	300	400	200	15
Q3D/40-75	3 x 400 V $\pm$ 10 %	4-7,5	5,5-10	10 ÷ 16	300	400	200	15
Q3D/75-92	3 x 400 V $\pm$ 10 %	7,5-9,2	10-12,5	16 ÷ 20	300	400	200	15
Q3D/92-110	3 x 400 V $\pm$ 10 %	9,2-11	12,5-15	20 ÷ 25	300	400	200	20
Q3D/110-150	3 x 400 V $\pm$ 10 %	11-15	15-20	22 ÷ 32	400	500	200	20
Q3D/150-185	3 x 400 V $\pm$ 10 %	15-18,5	20-25	28 ÷ 40	400	500	200	20
Q3D/185-220	3 x 400 V $\pm$ 10 %	18,5-22	25-30	36 ÷ 50	400	600	200	27
Q3D/220-300	3 x 400 V $\pm$ 10 %	22-30	30-40	45 ÷ 63	400	600	200	27
Q3D/300-370	3 x 400 V $\pm$ 10 %	30-37	40-50	57 ÷ 75	400	600	200	27

## Three-phase Electric Panel

### Q3Y Series



### APPLICATIONS

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

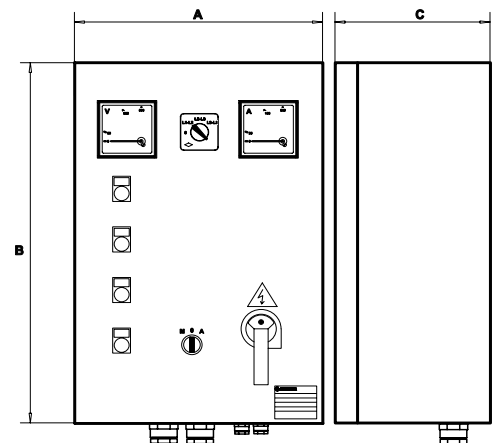
### SPECIFICATIONS

- 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.

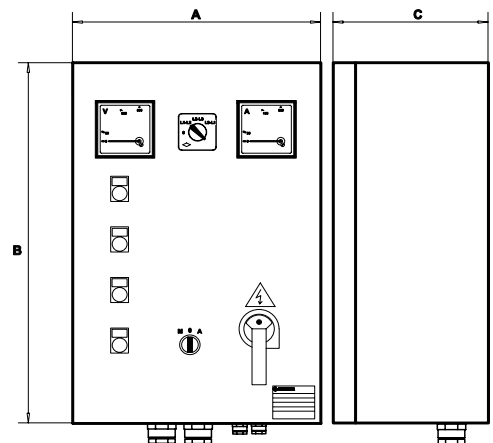
### SPECIFICATIONS

- 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.

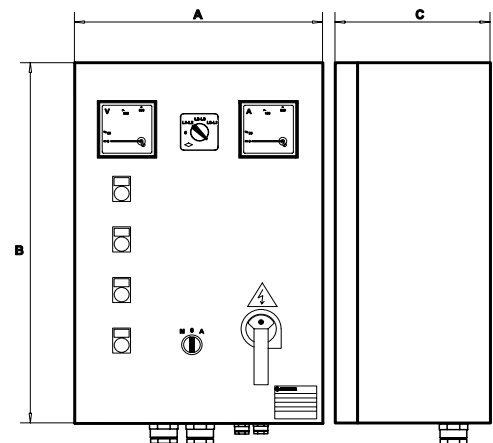
### SPECIFICATIONS

- 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 keypad.
- 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.

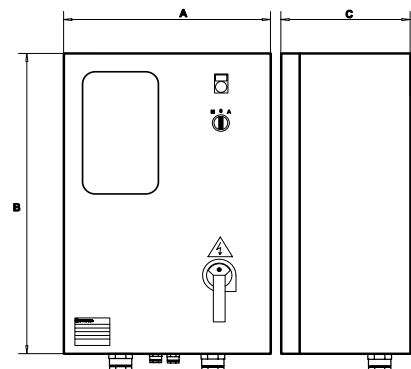
Protections against phase failure / phase sequence / frequency out of limits on power supply line.  
Low-voltage protection on auxiliary circuits.  
Protection against starter overtemperature / overload / malfunction.  
Protection against overload / locked rotor / current asymmetry on motor side.  
Short-circuit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

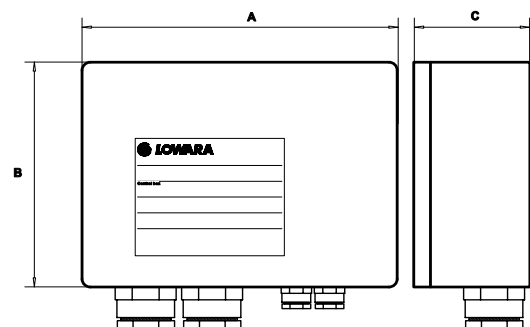
For connection of the electrodes to the panel we recommend the following cross sections:

LENGHT m		CABLE SECTION mm <sup>2</sup>
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 <sup>2</sup>
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

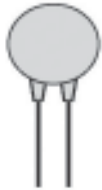


## Lightning Protection

### 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.

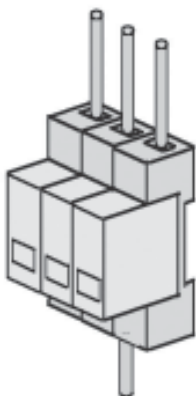
## VR Series



### 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



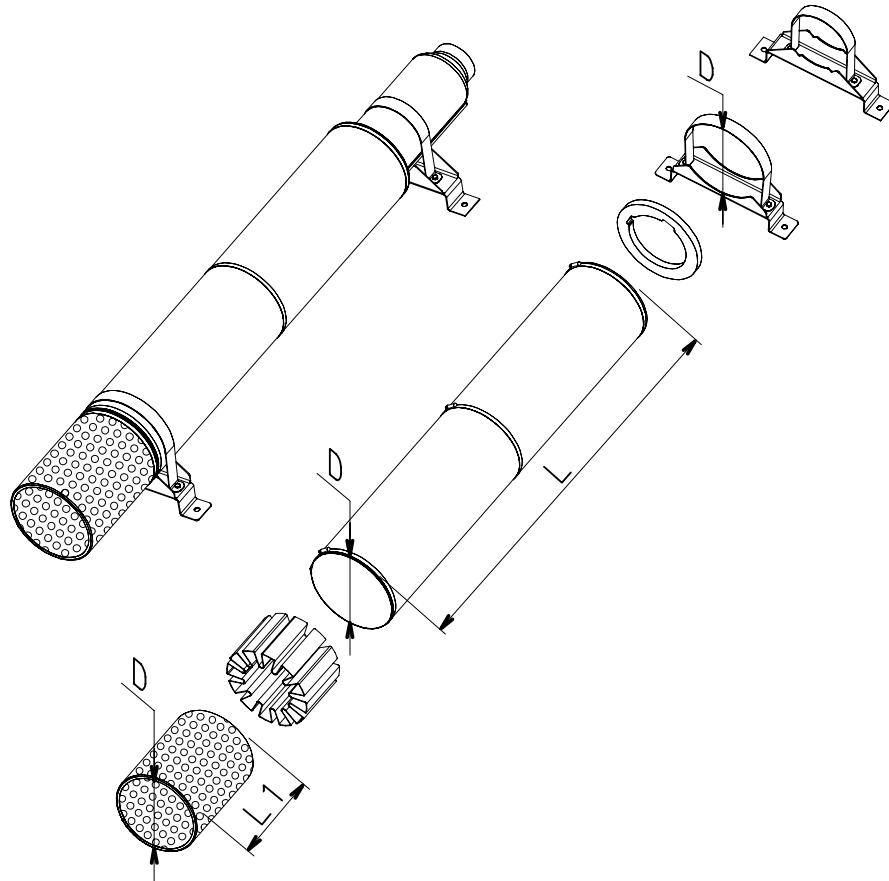
### SPECIFICATIONS

- 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**

01890\_B\_DD



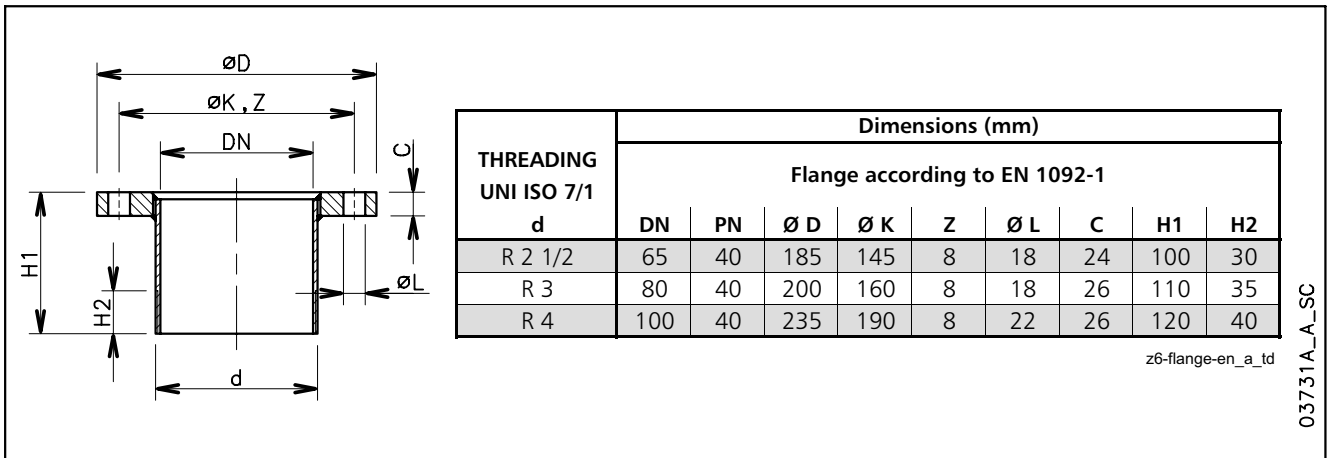
## COOLING SHROUDS Z6 PUMP SERIES - 4" and 6" MOTORS COMBINATION TABLE

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			
Z612 Z616 Z622 Z631 Z646	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					
Z660	7,5	7,5			D160X1000	D160X158	D160 - 2pcs
	4	4			D180X1000	D180X192	D180 - 2pcs
	5,5	5,5					
7,5	7,5						
Z612 Z616 Z622 Z631 Z646			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			
Z660			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			
Z660			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				
Z660			22	22	D200X1500	D200X192	D200 - 3pcs
			-	26			
			30	30			
			37	37			
			4	4			
			5,5	5,5			

Note: Not available for high pressure version.

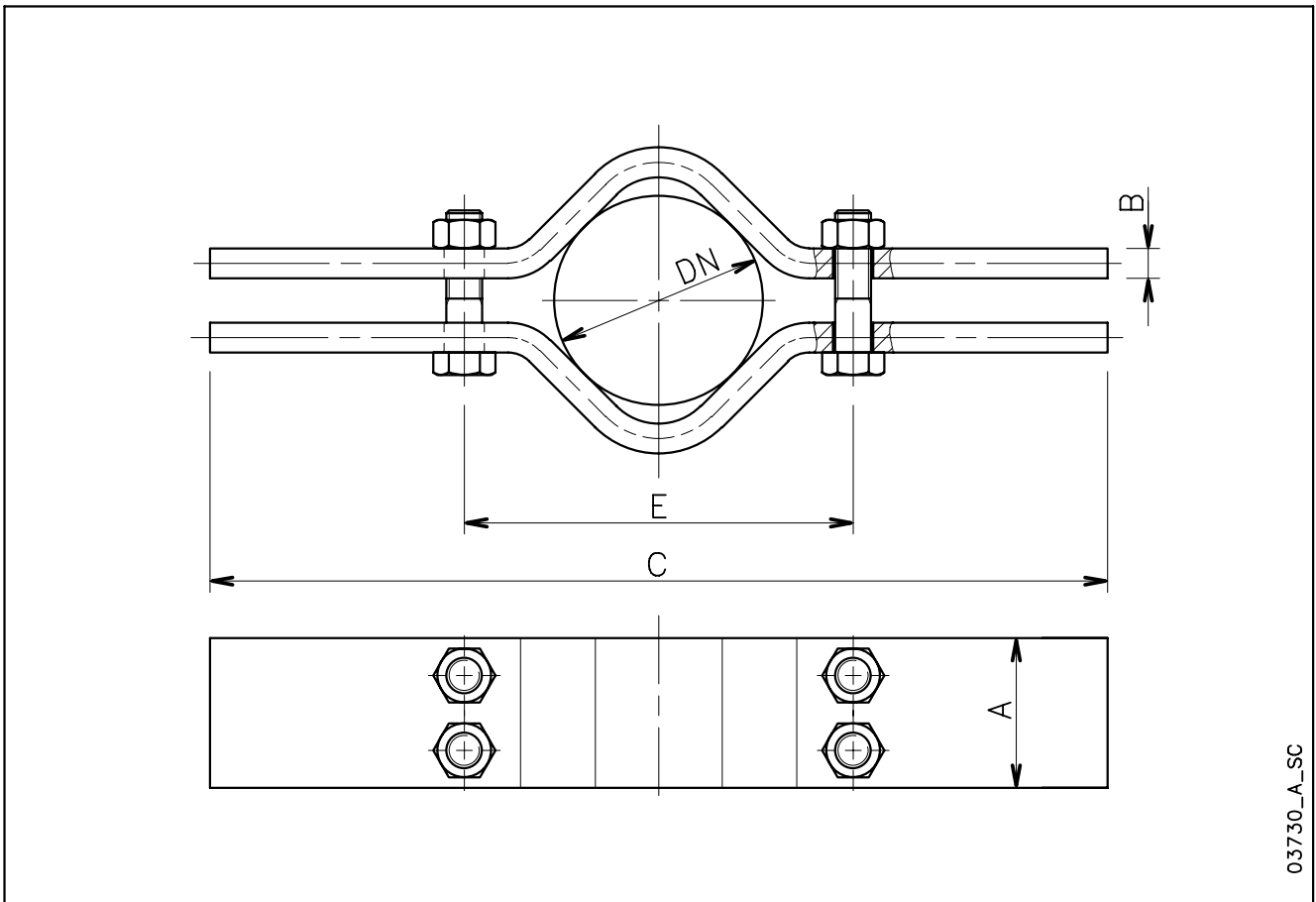
z6\_kit-raf50-en\_b\_ta

## ISO-THREADED FLANGES



03731A\_A\_SC

## CARRYING CLAMPS



03730\_A\_SC

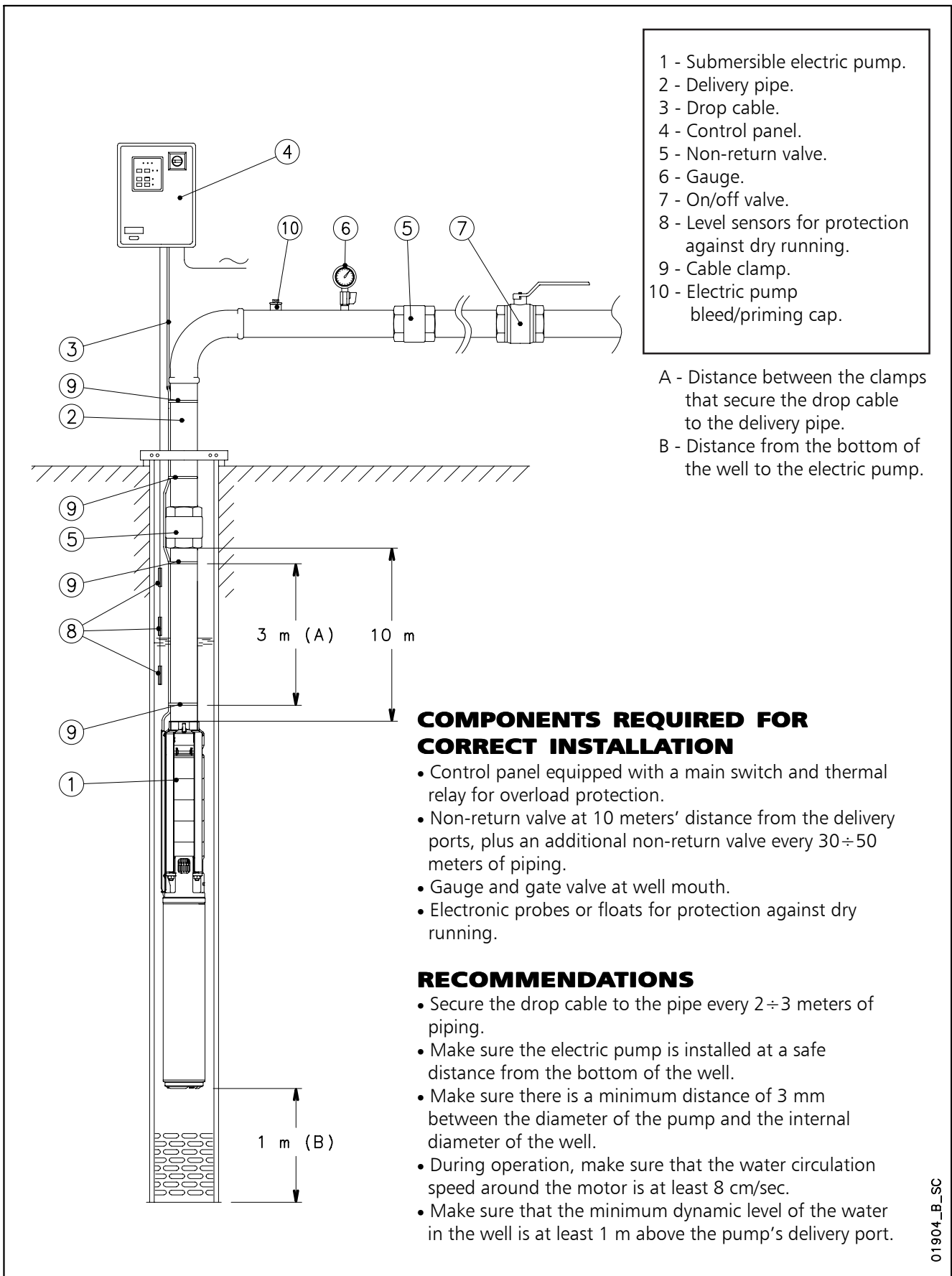
Ø PIPE NOMINAL DN	CARRYING CLAMPS							PIPE WEIGHT		
	Dimensions (mm)					Pmax <sup>(1)</sup> kg	Flanged kg/m	Threaded kg/m	Water kg/m	
	A	B	C	E	SCREW					
65	R 2 1/2	50	15	600	130	M16x90	1300	6,7	8,0	3,3
80	R 3	80	15	600	180	M20x70	3400	8,4	10,5	5,0
100	R 4	80	15	600	180	M20x110	3400	20,5	15,0	7,9

1) Max weight allowable.

z6-clamp-en\_a\_td

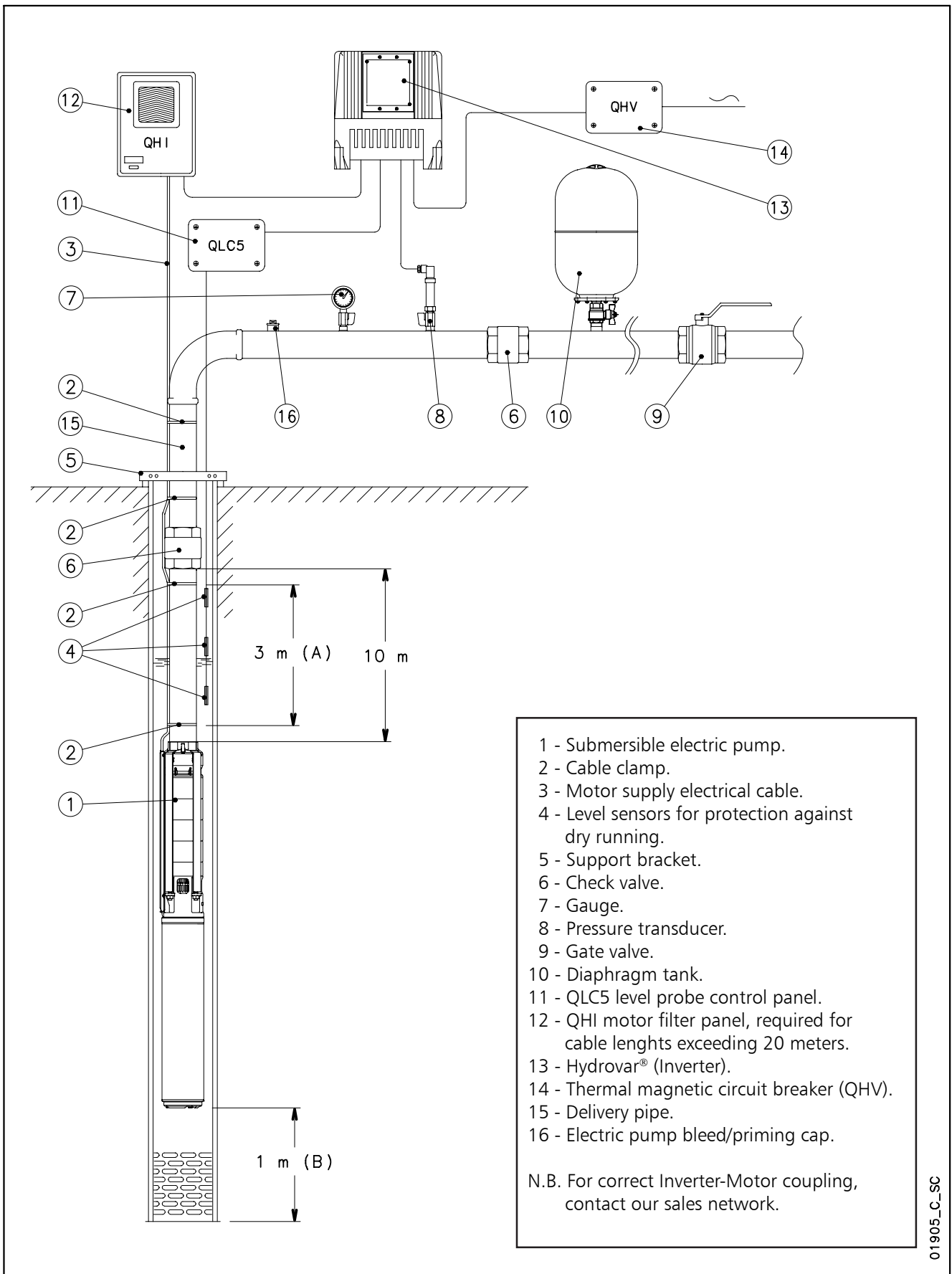
# **TECHNICAL APPENDIX**

**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 120 m long power cable must be matched with a 230V L4C07M235 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 120 m or immediately above it and then read off the corresponding cross-section in that column.

In this case, the 4 mm<sup>2</sup> 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 <sup>2</sup>	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, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE SINGLE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm <sup>2</sup>	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
Maximum length in metres															
4OS03M235	0,37	0,5	220	0,98	3,01	4									
			230	0,96	3,06			107	179	288	432				
			240	0,93	3,16										
4OS05M235	0,55	0,75	220	0,98	4,07										
			230	0,96	4,13			79	132	213	319				
			240	0,92	4,25										
4OS07M235	0,75	1	220	0,99	5,44										
			230	0,97	5,45			58	98	158	237	409			
			240	0,94	5,58										
4OS11M235	1,1	1,5	220	0,99	7,45										
			230	0,98	7,37			42	71	115	172	298	469		
			240	0,95	7,55										
4OS15M235	1,5	2	220	0,98	10,0										
			230	0,96	10,1		31	53	86	129	223	351	542		
			240	0,92	10,5										
4OS22M235	2,2	3	220	0,99	14,3										
			230	0,97	14,1		20	36	58	89	154	244	377	528	
			240	0,94	14,4										
4OS40M235	4	5,5	220	0,96	25,7										
			230	0,94	24,9		-	18	31	49	86	137	212	296	
			240	0,92	24,8										

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

4osm-b-cavi-50-en\_c\_te

### 4OS THREE-PHASE, 50 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	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm <sup>2</sup>	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
Maximum length in metres															
4OS03T235	0,37	0,5	220	0,78	2,04	4									
			230	0,72	2,08			229	381						
			240	0,68	2,15										
4OS05T235	0,55	0,75	220	0,80	2,79	4									
			230	0,75	2,86			163	271						
			240	0,71	2,96										
4OS07T235	0,75	1	220	0,78	3,76	4									
			230	0,71	3,95			124	206	331					
			240	0,67	4,16										
4OS11T235	1,1	1,5	220	0,80	5,06	4									
			230	0,74	5,18			89	149	240	358				
			240	0,70	5,42										
4OS15T235	1,5	2	220	0,78	6,95	4									
			230	0,72	7,24			66	110	178	266	455			
			240	0,68	7,64										
4OS22T235	2,2	3	220	0,80	9,72	4									
			230	0,74	10,0			45	76	123	185	317			
			240	0,69	10,5										
4OS30T235	3	4	220	0,85	12,1	4									
			230	0,81	12,0			33	57	93	140	241	376		
			240	0,77	12,3										
4OS40T235	4	5,5	220	0,85	16,4	4									
			230	0,80	16,5			23	41	67	102	177	277		
			240	0,76	17,0										
4OS55T235	5,5	7,5	220	0,83	22,9	4									
			230	0,78	23,0			-	28	48	73	128	201	306	
			240	0,73	23,7										
4OS75T235	7,5	10	220	0,82	31,0	4									
			230	0,76	31,4			-	19	34	53	94	148	227	314
			240	0,71	32,4										
4OS03T405	0,37	0,5	380	0,78	1,18	4									
			400	0,72	1,20			685							
			415	0,68	1,24										
4OS05T405	0,55	0,75	380	0,80	1,61	4									
			400	0,75	1,65			489							
			415	0,71	1,71										
4OS07T405	0,75	1	380	0,78	2,20	4									
			400	0,71	2,30			367							
			415	0,67	2,40										
4OS11T405	1,1	1,5	380	0,80	2,90	4									
			400	0,74	3,00			271	451						
			415	0,70	3,10										
4OS15T405	1,5	2	380	0,78	4,00	4									
			400	0,72	4,20			201	334						
			415	0,68	4,40										
4OS22T405	2,2	3	380	0,80	5,60	4									
			400	0,74	5,80			139	232	374					
			415	0,69	6,10										
4OS30T405	3	4	380	0,85	7,00	4									
			400	0,81	7,00			104	174	281	421				
			415	0,77	7,10										
4OS40T405	4	5,5	380	0,85	9,50	4									
			400	0,80	9,50			75	127	206	309				
			415	0,76	9,80										
4OS55T405	5,5	7,5	380	0,83	13,2	4									
			400	0,78	13,3			53	92	150	226	389			
			415	0,73	13,7										
4OS75T405	7,5	10	380	0,82	17,9	4									
			400	0,76	18,1			37	66	109	166	288	451		
			415	0,71	18,7										

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

4os-b-cavi-50-en\_b\_te

## L4C SINGLE-PHASE, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE SINGLE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>												
							mm <sup>2</sup>	1,5	2,5	4	6	10	16	25	35				
							A max	23	32	42	54	75	100	127	158				
Maximum length in metres																			
L4C03M235	0,37	0,5	220	0,96	3,20	4													
			230	0,97	3,30			103	172	278	416								
			240	0,91	3,40														
L4C05M235	0,55	0,75	220	0,95	4,30														
			230	0,94	4,60			76	127	205	307								
			240	0,90	4,80														
L4C07M235	0,75	1	220	0,93	6,00														
			230	0,92	6,20			57	96	155	232	398							
			240	0,85	6,50														
L4C11M235	1,1	1,5	220	0,94	8,10														
			230	0,92	8,10			40	68	110	166	286	448						
			240	0,87	8,30														
L4C15M235	1,5	2	220	0,96	10,4														
			230	0,93	10,4		30	52	84	126	218	343	527						
			240	0,90	10,7														
L4C22M235	2,2	3	220	0,96	15,4														
			230	0,94	15,0		19	34	56	84	146	231	355	496					
			240	0,91	15,3														
L4C40M235	4	5,5	220	0,93	29,9														
			230	0,90	29,8		-	15	27	42	75	120	185	259					
			240	0,87	29,7														

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

l4cm-cavi-50-en\_d\_te

## L4C THREE-PHASE, 50 Hz: SIZING OF ETHYLENE-PROPYLENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>										
							mm <sup>2</sup>	1,5	2,5	4	6	10	16	25	35		
							A max	23	32	42	54	75	100	127	158		
												Maximum length in metres					
L4C03T235	0,37	0,5	220	0,69	2,60	4											
			230	0,70	2,70		190	316									
			240	0,67	3,10												
L4C05T235	0,55	0,75	220	0,77	3,10		152	253	407								
			230	0,71	3,30												
			240	0,66	3,50												
L4C07T235	0,75	1	220	0,77	4,00		118	196	315								
			230	0,73	4,10												
			240	0,66	4,50												
L4C11T235	1,1	1,5	220	0,80	5,60		80	134	216	323							
			230	0,76	5,70												
			240	0,73	6,20												
L4C15T235	1,5	2	220	0,77	7,40		62	105	169	253	433						
			230	0,72	7,60												
			240	0,68	8,00												
L4C22T235	2,2	3	220	0,80	10,0	43	74	120	180	308							
			230	0,78	10,2												
			240	0,70	10,7												
L4C30T235	3	4	220	0,77	13,7	32	55	90	135	232	362						
			230	0,71	14,3												
			240	0,68	15,2												
L4C40T235	4	5,5	220	0,81	16,4	24	43	71	108	187	292	443					
			230	0,79	17,3												
			240	0,74	18,2												
L4C55T235	5,5	7,5	220	0,79	23,4	-	29	49	75	131	205	312					
			230	0,74	24,2												
			240	0,70	25,0												
L4C03T405	0,37	0,5	380	0,69	1,50												
			400	0,70	1,60	569											
			415	0,67	1,80												
L4C05T405	0,55	0,75	380	0,77	1,80	454											
			400	0,71	1,90												
			415	0,66	2,00												
L4C07T405	0,75	1	380	0,77	2,30	355											
			400	0,73	2,40												
			415	0,66	2,60												
L4C11T405	1,1	1,5	380	0,80	3,30	238	396										
			400	0,76	3,40												
			415	0,73	3,60												
L4C15T405	1,5	2	380	0,77	4,30	189	315										
			400	0,72	4,40												
			415	0,68	4,60												
L4C22T405	2,2	3	380	0,80	5,80	134	224	361									
			400	0,78	5,90												
			415	0,70	6,20												
L4C30T405	3	4	380	0,77	7,90	101	169	273	409								
			400	0,71	8,30												
			415	0,68	8,80												
L4C40T405	4	5,5	380	0,81	9,50	80	136	221	331								
			400	0,79	10,0												
			415	0,74	10,5												
L4C55T405	5,5	7,5	380	0,79	13,5	54	94	153	231	398							
			400	0,74	14,0												
			415	0,70	14,5												
L4C75T405	7,5	10	380	0,84	17,0	-	68	113	172	297	466						
			400	0,79	17,4												
			415	0,75	18,1												

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

l4c-cavi-50-en\_d\_te

## L6C, 50 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	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm <sup>2</sup>	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
Maximum length in metres															
L6C40T235	4	5,5	220	0,80	17,8	4		65	99	171	268	406	559		
			230	0,75	18,4										
			240	0,70	19,1										
L6C55T235	5,5	7,5	220	0,80	24,1	4		47	72	125	197	300	413	572	
			230	0,75	24,2										
			240	0,71	25,3										
L6C75T235	7,5	10	220	0,82	30,5	4		34	54	95	151	231	320	444	
			230	0,78	31,2										
			240	0,73	31,7										
L6C93T235	9,3	12,5	220	0,82	37,6	4		26	42	76	121	186	258	359	489
			230	0,80	38,1										
			240	0,79	39,5										
L6C110T235	11	15	220	0,87	43,3	4		-	33	61	99	153	214	299	412
			230	0,82	44,2										
			240	0,79	45,0										
L6C150T235	15	20	220	0,84	58,0	4		-	-	44	73	115	161	226	311
			230	0,80	57,9										
			240	0,76	59,2										
L6C185T235	18,5	25	220	0,83	70,1	4		-	-	35	59	94	133	187	257
			230	0,80	71,0										
			240	0,73	72,7										
L6C220T235	22	30	220	0,88	82,3	4		-	-	-	46	74	106	152	212
			230	0,84	81,4										
			240	0,80	82,3										
L6C40T405	4	5,5	380	0,80	10,3	4		201	301	517					
			400	0,75	10,6										
			415	0,70	11,0										
L6C55T405	5,5	7,5	380	0,80	13,9	4		147	222	382					
			400	0,75	14,0										
			415	0,71	14,6										
L6C75T405	7,5	10	380	0,82	17,6	4		112	169	293	459				
			400	0,78	18,0										
			415	0,73	18,3										
L6C93T405	9,3	12,5	380	0,82	21,7	4		88	135	236	371	565			
			400	0,80	22,0										
			415	0,79	22,8										
L6C110T405	11	15	380	0,87	25,0	4		71	110	193	305	466			
			400	0,82	25,5										
			415	0,79	26,0										
L6C150T405	15	20	380	0,84	33,5	4		51	81	145	231	355	493		
			400	0,80	33,4										
			415	0,76	34,2										
L6C185T405	18,5	25	380	0,83	40,5	4		-	65	119	191	294	409		
			400	0,80	41,0										
			415	0,73	42,0										
L6C220T405	22	30	380	0,88	47,5	4		-	50	94	153	237	332	467	
			400	0,84	47,0										
			415	0,80	47,5										
L6C300T405	30	40	380	0,89	63,0	4		-	-	65	109	173	245	346	480
			400	0,85	61,5										
			415	0,80	63,5										
L6C370T405	37	50	380	0,87	79,5	4		-	-	-	84	135	193	274	381
			400	0,84	79,3										
			415	0,80	80,0										

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

l6c-cavi-50-en\_f\_te

## L6C, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup> + 3 x ...mm <sup>2</sup>								
							mm <sup>2</sup>	4	6	10	16	25	35	50	70
							A max*	73	94	130	173	220	274	333	426
Maximum length in metres															
L6C40T405	4	5,5	380	0,80	10,3	4	352	525							
			400	0,75	10,6										
			415	0,70	11,0										
L6C55T405	5,5	7,5	380	0,80	13,9		4	259	388						
			400	0,75	14,0										
			415	0,71	14,6										
L6C75T405	7,5	10	380	0,82	17,6			4	199	299	513				
			400	0,78	18,0										
			415	0,73	18,3										
L6C93T405	9,3	12,5	380	0,82	21,7				4	160	241	415			
			400	0,80	22,0										
			415	0,79	22,8										
L6C110T405	11	15	380	0,87	25,0	4				130	197	340	533		
			400	0,82	25,5										
			415	0,79	26,0										
L6C150T405	15	20	380	0,84	33,5		4			98	150	260	408		
			400	0,80	33,4										
			415	0,76	34,2										
L6C185T405	18,5	25	380	0,83	40,5			4		80	123	216	340	518	
			400	0,80	41,0										
			415	0,73	42,0										
L6C220T405	22	30	380	0,88	47,5				4	63	98	173	274	421	
			400	0,84	47,0										
			415	0,80	47,5										
L6C300T405	30	40	380	0,89	63,0	4				44	70	126	202	312	435
			400	0,85	61,5										
			415	0,80	63,5										
L6C370T405	37	50	380	0,87	79,5		4			-	53	99	160	248	347
			400	0,84	79,3										
			415	0,80	80,0										

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

l6c-cavi-SD-50-en\_b\_te

\*A max is the maximum rated current of the motor

## L6W, 50 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	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm2	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
Maximum length in metres															
L6W40T405	4	5,5	380	0,90	9,89	4		187	281	484					
			415	0,85	9,13										
L6W55T405	5,5	7,5	380	0,88	12,7			148	222	384					
			415	0,82	12,5										
L6W75T405	7,5	10	380	0,90	17,0			106	161	279	439				
			415	0,84	16,2										
L6W93T405	9,3	12,5	380	0,89	20,5			87	133	233	366	561			
			415	0,83	19,9										
L6W110T405	11	15	380	0,90	24,2			71	110	194	306	470			
			415	0,84	23,4										
L6W130T405	13	17,5	380	0,90	28,1			60	93	165	262	403	561		
			415	0,85	27,0										
L6W150T405	15	20	380	0,88	32,1			52	82	146	233	358	498		
			415	0,82	31,3										
L6W185T405	18,5	25	380	0,89	38,5			-	65	118	190	294	410		
			415	0,83	37,5										
L6W220T405	22	30	380	0,87	47,3		-	51	95,1	155	241	337	472		
			415	0,80	46,7										
L6W260T405	26	35	380	0,85	56,5		-	-	78	129	202	284	398		
			415	0,79	55,7										
L6W300T405	30	40	380	0,87	63,8		-	-	66	110	174	245	346	479	
			415	0,81	62,0										
L6W370T405	37	50	380	0,86	81,8		-	-	-	82	132	188	267	372	
			415	0,80	79,4										

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

l6w-cavi-50-en\_c\_te



## L6W, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup> + 3 x ...mm <sup>2</sup>											
							mm <sup>2</sup>	4	6	10	16	25	35	50	70			
							A max*	73	94	130	173	220	274	333	426			
							Maximum length in metres											
L6W40T405	4	5,5	380 415	0,90 0,85	9,89 9,13	4		327	490									
L6W55T405	5,5	7,5	380 415	0,88 0,82	12,7 12,5			260	389									
L6W75T405	7,5	10	380 415	0,90 0,84	17,0 16,2			189	283	488								
L6W93T405	9,3	12,5	380 415	0,89 0,83	20,5 19,9			157	237	408								
L6W110T405	11	15	380 415	0,90 0,84	24,2 23,4			131	197	341	535							
L6W130T405	13	17,5	380 415	0,90 0,85	28,1 27,0			111	169	293	460							
L6W150T405	15	20	380 415	0,88 0,82	32,1 31,3			99	150	261	410							
L6W185T405	18,5	25	380 415	0,89 0,83	38,5 37,5			80	122	214	337	517						
L6W220T405	22	30	380 415	0,87 0,80	47,3 46,7			64	99,5	176	278	426						
L6W260T405	26	35	380 415	0,85 0,79	56,5 55,7			53	83	148	236	362	502					
L6W300T405	30	40	380 415	0,87 0,81	63,8 62,0			44	70,2	127	203	313	436					
L6W370T405	37	50	380 415	0,86 0,80	81,8 79,4			-	52	96	157	243	340	476				

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

l6w-cavi-SD-50-en\_c\_te

\*A max is the maximum rated current of the motor

## L8W, 50 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	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>									
							mm2	10	16	25	35	50	70	95	120	
							A max	75	100	127	158	192	246	298	346	
							Maximum length in metres									
L8W300T405	30	40	380	0,85	65,0	4		65	110	173	244	344	475			
			415	0,84	59,0											
L8W370T405	37	50	380	0,87	81,0			47	82	132	189	268	374	476		
			415	0,83	76,0											
L8W450T405	45	60	380	0,87	92,0			-	69	113	163	233	327	417	516	
			415	0,83	88,5											
L8W520T405	52	70	380	0,86	110			-	-	91	133	192	271	347	430	
			415	0,82	104											
L8W550T405	55	75	380	0,87	118			-	-	82	121	176	250	321	399	
			415	0,83	110											
L8W600T405	60	80	380	0,87	124			-	-	77	114	166	236	305	378	
			415	0,83	118											
L8W670T405	67	90	380	0,88	138			-	-	-	98	145	208	270	337	
			415	0,83	132											
L8W750T405	75	100	380	0,87	156			-	-	-	84	125	182	237	296	
			415	0,82	148											
L8W830T405	83	110	380	0,87	172			-	-	-	-	111	162	212	266	
			415	0,82	163											
L8W930T405	93	125	380	0,87	192			-	-	-	-	95	142	187	236	
			415	0,83	180											

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

l8w-cavi-50-en\_b\_te

## L8W, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/ $\Delta$ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos $\phi$	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup> + 3 x ...mm <sup>2</sup>								
							mm <sup>2</sup>	6	10	16	25	35	50	70	95
							A max*	94	130	173	220	274	333	426	516
Maximum length in metres															
L8W300T405	30	40	380	0,85	65,0	4		70	127	203	313	435			
			415	0,84	59,0										
L8W370T405	37	50	380	0,87	81,0			52	96	157	244	341	478		
			415	0,83	76,0										
L8W450T405	45	60	380	0,87	92,0			44	83	136	212	298	419		
			415	0,83	88,5										
L8W520T405	52	70	380	0,86	110			-	67	112	176	248	350	484	
			415	0,82	104										
L8W550T405	55	75	380	0,87	118			-	60	102	161	228	323	447	
			415	0,83	110										
L8W600T405	60	80	380	0,87	124			-	56	96	152	216	306	425	541
			415	0,83	118										
L8W670T405	67	90	380	0,88	138		-	-	83	133	191	271	378	483	
			415	0,83	132										
L8W750T405	75	100	380	0,87	156		-	-	71	116	167	239	334	427	
			415	0,82	148										
L8W830T405	83	110	380	0,87	172		-	-	62,2	103	149	214	301	385	
			415	0,82	163										
L8W930T405	93	125	380	0,87	192		-	-	53	89	131	189	267	343	
			415	0,83	180										

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

l8w-cavi-SD-50-en\_b\_te

\*A max is the maximum rated current of the motor

## SPLICE BETWEEN DROP CABLE AND MOTOR CABLE

MOTOR TYPE	POWER kW	TYPE OF SPLICE	FOUR-CORE DROP CABLE - SECTION (mm <sup>2</sup> )																
			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	GR1	GR1	GR1	GR2	GR2	GR6	GR6	GR6	GR4	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	-	-	GR1	GR2	GR2	GR6	GR6	GR6	GR4	GR5	GR5	-	-	-	-	-	
		Heat-shrink method	-	-	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 SPLICE	THREE-CORE DROP CABLE - SECTION (mm <sup>2</sup> )															
			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	-	-	GR1	GR1	GR2	GR2	GR6	GR6	GR6	GR4	GR5	-	-	-	-	-
		Heat-shrink method	-	-	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + PVC tape															

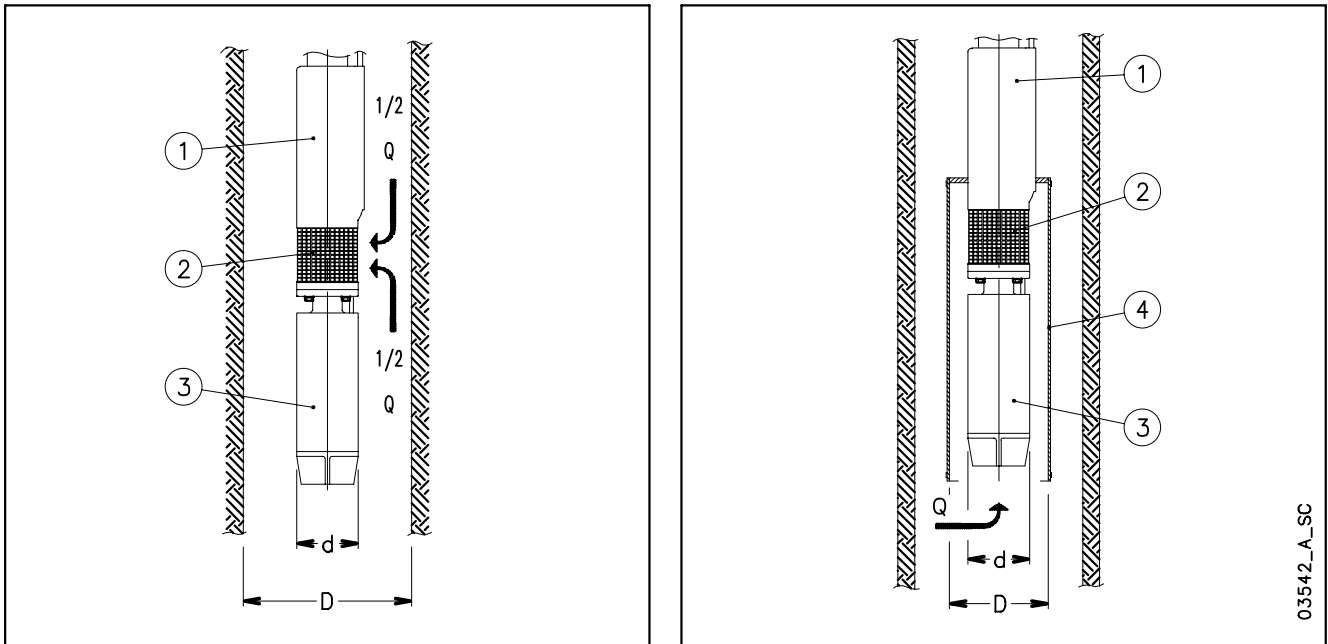
MOTOR TYPE	POWER kW	TYPE OF SPLICE	SINGLE-CORE DROP CABLE - SECTION (mm <sup>2</sup> )															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
L8W L10W L12W	30 - 300	Resin-filled method	-	-	-	GR1	GR1	GR1	GR1	GR1	GR1	GR2	GR2	GR2	GR6	GR6	GR6	GR4
		Heat-shrink method	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		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.

RESIN-FILLED SPLICES				HEAT-SHRINK SPLICES			
TYPE	L [mm]	TYPE	L [mm]	TYPE	L [mm]	TYPE	L [mm]
GR1	148 x 32	GR5	369 x 76	GT1	450	GT4	450
GR2	178 x 36	GR6	270 x 55	GT2	450	GT5	500
GR4	319 x 63			GT3	450	GT6	500

L-giunzioni-en\_d\_te

## 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 [m<sup>3</sup>/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<sub>m</sub>): if v ≥ v<sub>m</sub> it means that the motor is properly cooled, if v < v<sub>m</sub> 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 m<sup>3</sup>/h = 0.0055 m<sup>3</sup>/s.

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

The minimum speed required for proper motor cooling is v<sub>m</sub> = 0.20 m/s.

Because v < v<sub>m</sub>, 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 [m<sup>3</sup>/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<sub>m</sub> 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 m<sup>3</sup>/h = 0.0042 m<sup>3</sup>/s, requires a minimum speed of the fluid of v<sub>m</sub> = 0.20 m/s.

Cooling sleeve diameter D = {4·[(0.0042/(0.2·π)+(0.144)<sup>2</sup>/4]}<sup>0.5</sup> = 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.

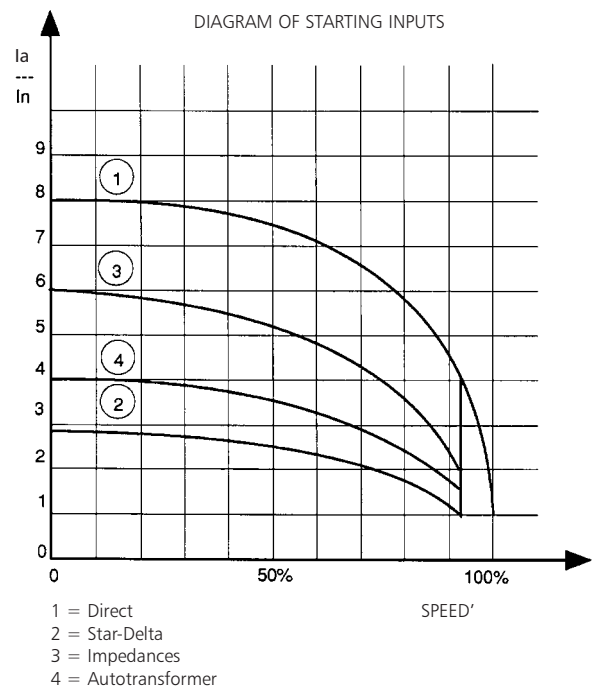
$$\text{Rated voltage } U_n = 400 \text{ V}$$

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

G-at-cm\_a\_th

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.

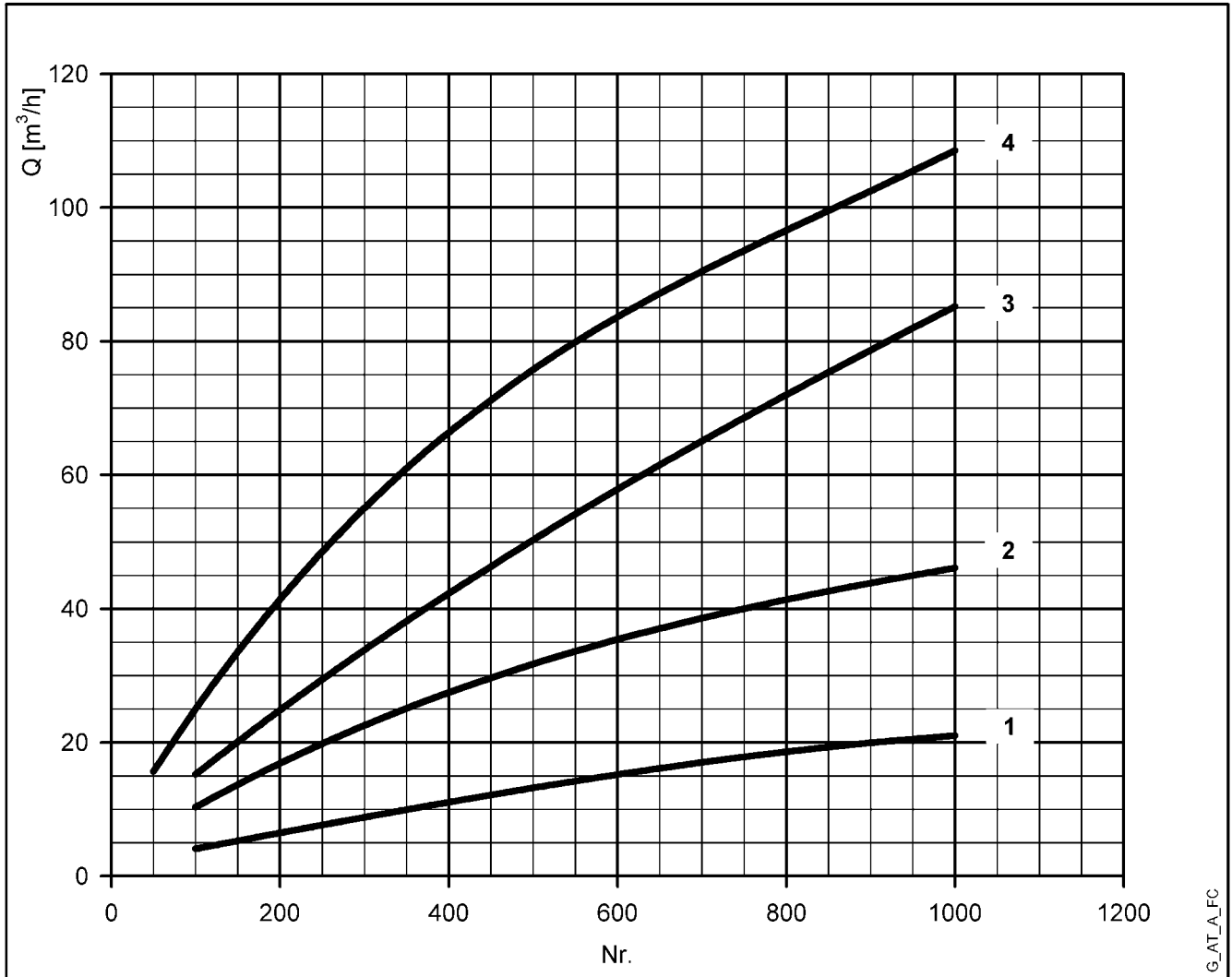
G-at-fi\_a\_th



## 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 132-133 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 m<sup>3</sup>/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 m<sup>3</sup>/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.





## 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

G-a-pcv\_a\_th

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

## PRESSURE AND HEAD

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

## LENGTH

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

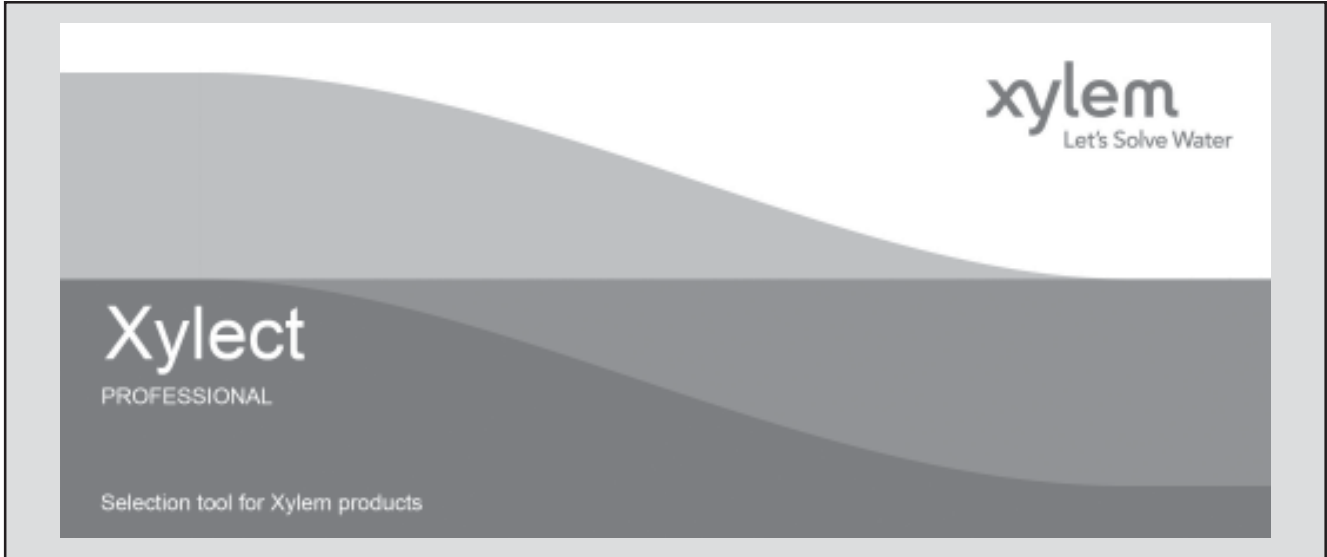
## VOLUME

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

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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.

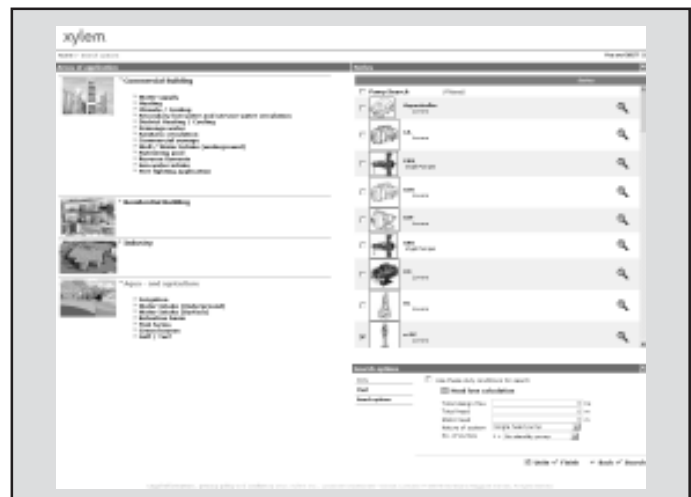
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

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



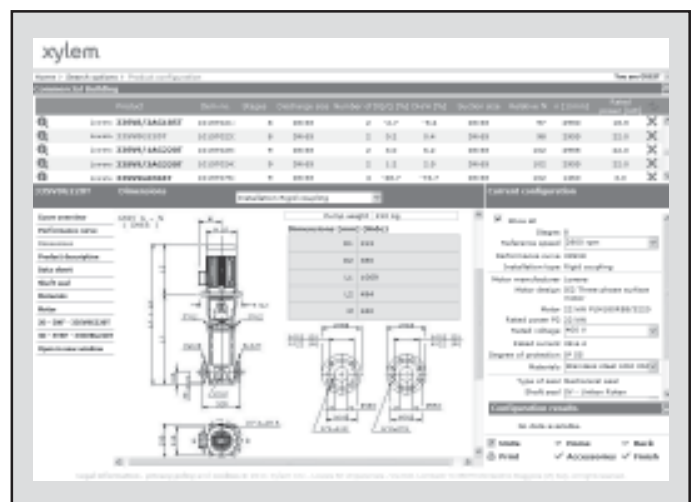
The detailed output makes it easy to select the optimal pump from the given alternatives.

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](http://www.xylect.com).



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





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# 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](http://xylem.com).**

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