LOWARA xylem

Technical brochure
Cod. 191005991 Rev. E Ed.05/2025

50 Hz

Z6 Series

6” Submersible Pumps and Electric Pumps
Z612, Z616, Z622, Z631, Z646 and Z660

ErP 2009/125/EC

xylem

Directive 2009/125/EC of the European Union

The **Directive 2005/32/EC** on energy-using products (**EuP**) and the subsequent **Directive 2009/125/EC** on energy-related products (**ErP**) established the ecodesign requirements for products to reduce their energy consumption and consequently their environmental impact.

These requirements apply to products placed and used in the European Economic Area (European Union plus Iceland, Liechtenstein and Norway) as a stand-alone unit or as integrated parts in other products.

The following tables show the Regulations that define the requirements applicable to Lowara products.

- Some types of **pump**, used for pumping clean water:

Regulations	From	Target
(EU) N. 547/2012 and subsequent updates	1 January 2015	**MEI** ≥ 0,4

- **Circulators** with a rated hydraulic output power of between 1 and 2500 W, designed for use in heating systems or in secondary circuits of cooling distribution systems:

Regulations	From	Target
(EC) N. 641/2009 and subsequent updates	1 August 2015	**EEI** < 0,23

- **Three-phase motors** with frequency 50 or 60 or 50/60 Hz and voltages between 50 and 1000 V (S1 and D.O.L.):

Regulations	From	Target
(EU) 2019/1781 and subsequent updates	1 July 2023	**IE2**: motors with a rated output ≥ 0,12 and < 0,749 kW **IE3**: motors with a rated output ≥ 0,75 and < 74,9 kW **IE4**: motors with a rated output ≥ 75 and < 200 kW **IE3**: motors with a rated output ≥ 201 and < 1000 kW

- **Single-phase motors** with frequency 50 or 60 or 50/60 Hz and voltages between 50 and 1000 V (S1 and D.O.L.):

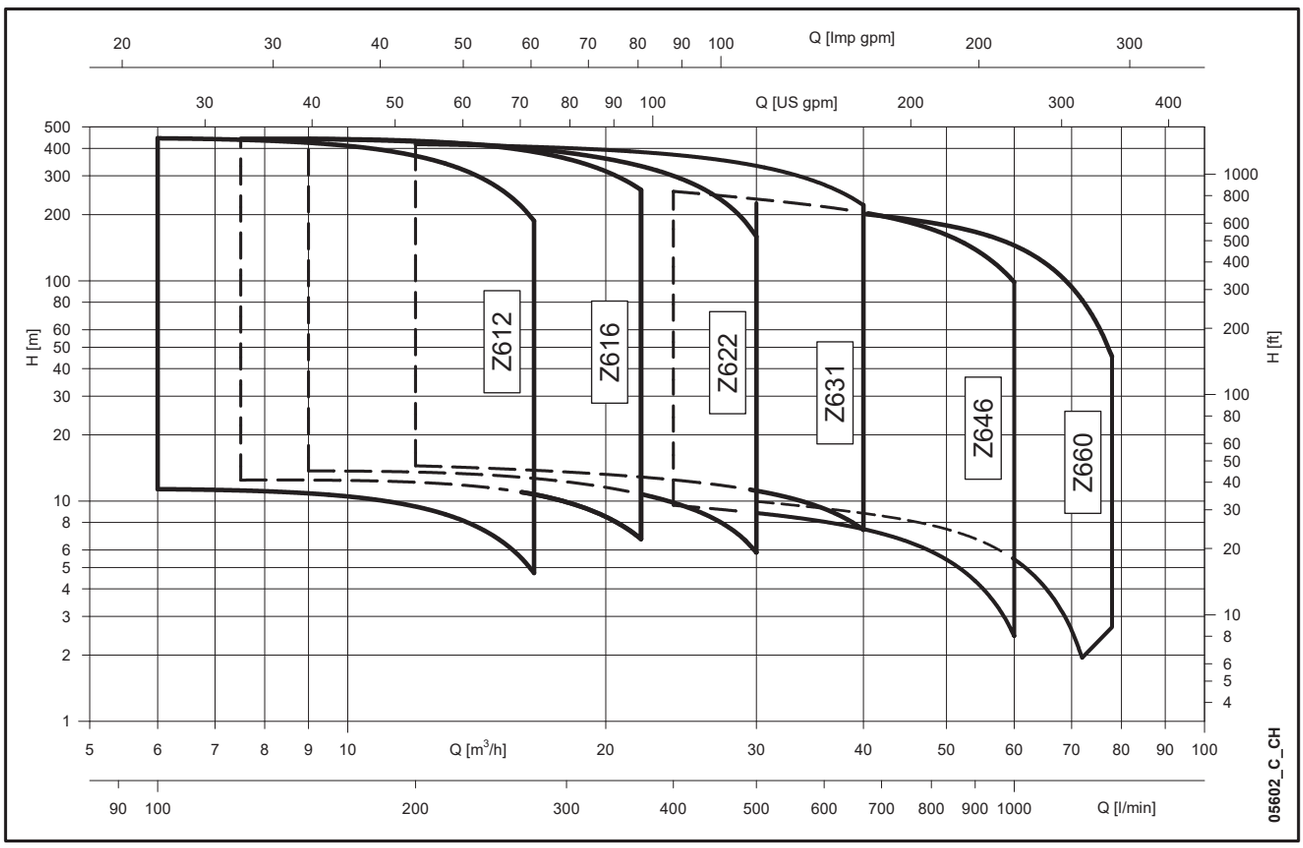
Regulations	From	Target
(EU) 2019/1781 and 2021/341	1 July 2023	**IE2**: motors with a rated output ≥ 0,12 kW

- **Variable speed drives** with three-phase input and rated output power from 0,12 kW up to 1000 kW, rated for operating with motor included in the same regulations:

Regulations	From	Target
(EU) 2019/1781 and 2021/341	1 July 2021	**IE2**

SOMMARIO

Z6 SERIES
HYDRAULIC PERFORMANCE RANGE



6” Submersible Electric Pumps

Z6 Series

MARKET SECTORS
RESIDENTIAL, AGRICULTURE, INDUSTRY.

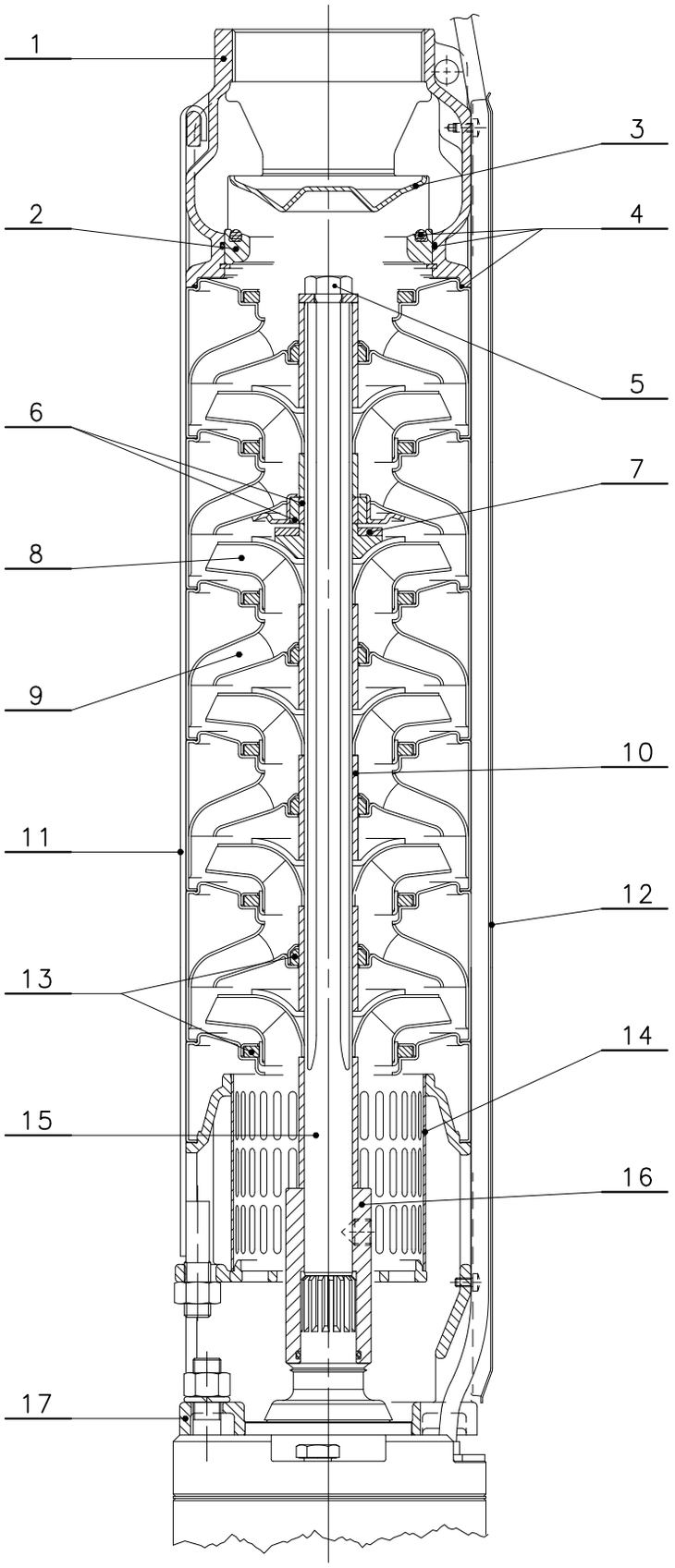
APPLICATIONS
- Groundwater supply
- Irrigation
- Groundwater lowering
- Fountains waterworks
- Pressure boosting
- Industrial applications
- Mine dewatering.

SPECIFICATIONS
- **Delivery**: up to 78 m^3/h.
- **Head**: up to 460 m.
- **Maximum overall diameter of pump:**
  142 mm (one cable guard included).
- **Maximum pump immersion depth:**
  300 m with L4C motors.
  350 m with L6W motors.
- **Maximum permissible quantity of suspended sand:**
  100 g/m^3.
- **Delivery port:**
  Rp 2 1/2” for Z612-Z616-Z622 versions.
  Rp 3” for Z631-Z646-Z660 versions.
- **Construction materials available:**
  AISI304 stainless steel (Z6),
  AISI316 stainless steel (ZN6).
- **All pumps can operate in a horizontal position.**
  Please ensure that the motor’s operating conditions are compatible with this configuration.

CONSTRUCTION CHARACTERISTICS
- **Head and motor support** made of microcast stainless steel.
- **Delivery port** equipped with holes for safety hooks .
- Stainless steel **integrated non-return valve**.
- Stainless steel **impeller** with removable wear ring.
- Stainless steel **shaft** protected by shaft sleeves.
- **Replaceable coupling**.

ACCESSORIES
- Coupling flanges.
- Control panels.
- Drop cables.
- Cable joints
- Cooling shrouds.

Z6 SERIES
PUMP SECTION AND LIST OF MAIN COMPONENTS



Z6 SERIES
TABLE OF MATERIALS

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)

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ZN6 SERIES
TABLE OF MATERIALS

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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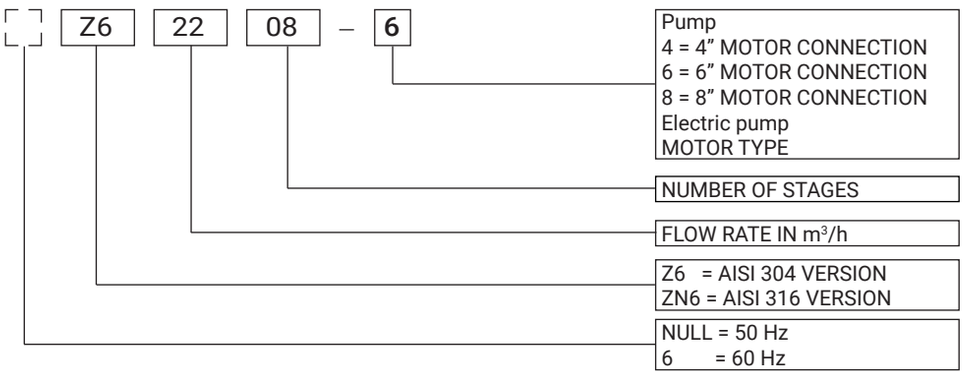
Z6 SERIES
IDENTIFICATION CODE

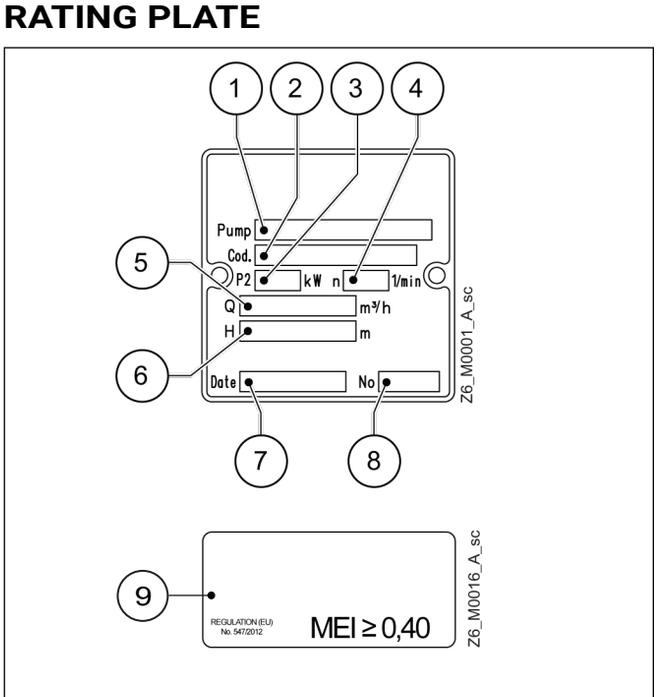


EXAMPLE :

Z622 08 - 6
6” Pump at 50 Hz, AISI 304, flow rate 22 m³/h, 8 stages, with 6” motor connection.

Z622 08 - L6W
6” Electric pump at 50 Hz, AISI 304, flow rate 22 m³/h, 8 stages, coupled to a 6” motor L6W.

RATING PLATE



LEGEND

1. Type
2. Identification code
3. Rated output
4. Speed
5. Flow rate range
6. Head range
7. Production date
8. Serial number
9. MEI label (Regulation (EU) n. 547/2012)

Z6 SERIES
PUMPS (ErP 2009/125/EC)

With the **Regulation (EU) N. 547/2012**, the European Commission has established the requirements of ecodesign for some typologies of pumps used for pumping clean water, placed on the market and operated as stand-alone units or as parts of other products.

For vertical multi-stage pumps (MS-V for the Regulations), the requirements refers to:
• just the pump and not the pump and motor assembly (electric or combustion);
• pumps with:
- a nominal pressure PN not higher than 25 bar (2500 kPa);
- a speed of 2900 min^{-1} (for electric pumps this means 50 Hz 2-pole electric motors);
- a maximum flow of 100 m^3/h;
• use with clean water at a temperature ranging from -10°C to 120°C (the test is performed with cold water at a temperature not higher than 40°C).

This regulation states that water pumps shall have index MEI coming from a dedicated formula which considers hydraulic efficiency values at 'best efficiency point' (BEP), 75 % of the flow at BEP (Part load – PL) and 110 % of the flow at BEP (Over load – OL).

The Regulation also establishes the following deadline:

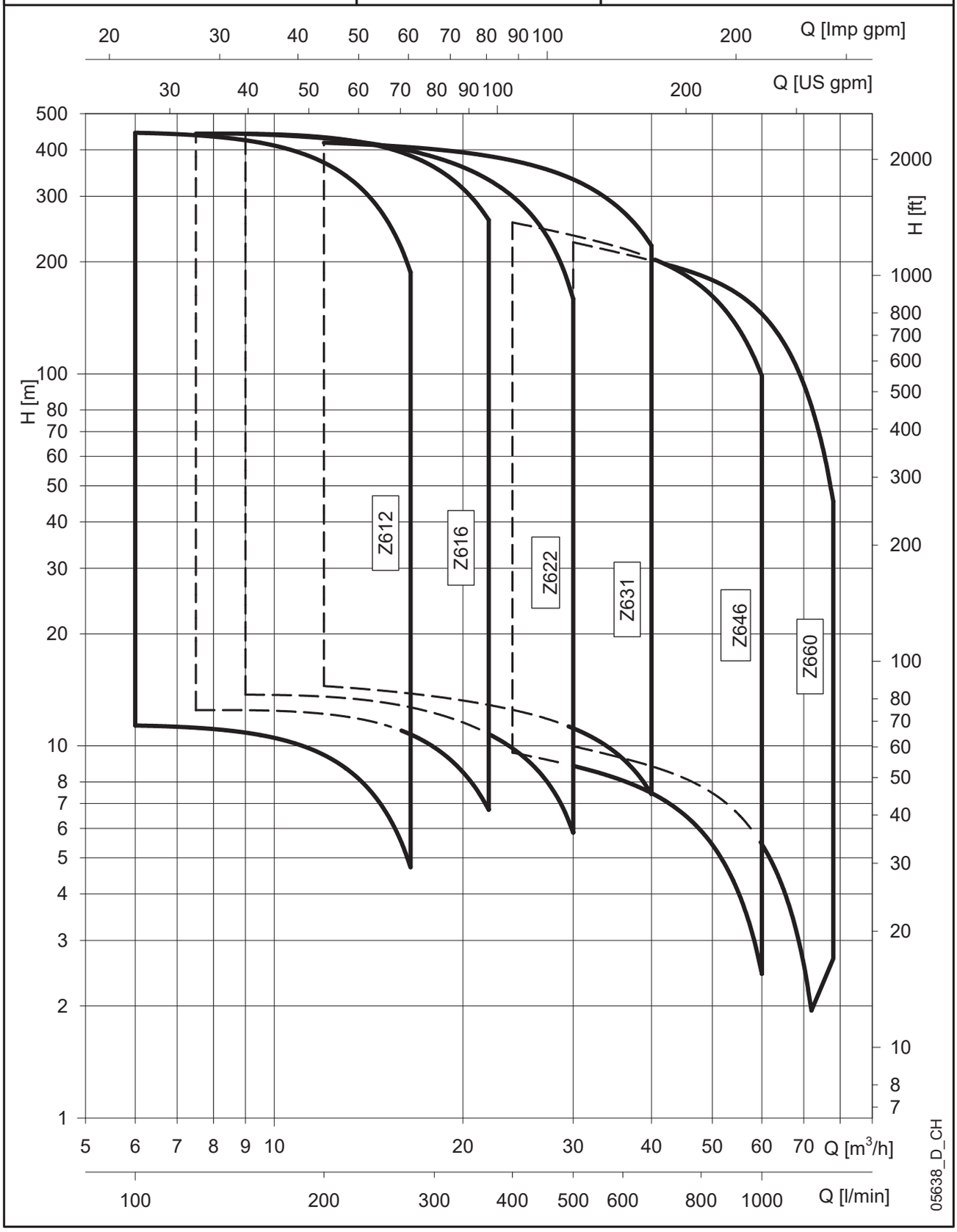
from	minimum efficiency index (MEI)
1st January 2015	MEI ≥ 0,4

Regulation (EU) n. 547/2012 – Annex II – point 2 (Product information requirements)

1) Minimum efficiency index: see the MEI column in the tables in the *Hydraulic performance* section.
2) The benchmark for most efficient water pumps is MEI ≥ 0,70.
3) Year of manufacture: see date on rating plate (≥ 2013).
4) Manufacturer: Lowara srl Unipersonale - Reg. No. 03471820260 - Montecchio Maggiore, Vicenza, Italy.
5) Product type: see the PUMP TYPE column in the tables in the *Hydraulic performance* section.
6) Hydraulic pump efficiency with trimmed impeller: not applicable to these products.
7) Pump performance curves, including the performance curve: see the *Operating Characteristics* graphs in the following pages.
8) The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
9) The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.
10) Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
11) "Designed for use below – 10 °C only": note not applicable to these products.
12) "Designed for use above 120 °C only": note not applicable to these products.
13) Specific instructions for pumps as per points 11 and 12: not applicable to these products.
14) "Information on benchmark efficiency is available at": www.europump.org (Ecodesign section).
15) The benchmark efficiency graphs with MEI = 0.7 and MEI = 0.4 are available at www.europump.org, (Ecodesign, Efficiency charts). Refer to "Multistage Vertical 2900 rpm"

Z6 SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

Z6	2900 [rpm]	ISO 9906:2012 - Grade 3B



Z612: FROM 1 TO 19 STAGES
HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	100	150	200	250	275
			m^3/h 0	6	9	12	15	16,5
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z612 01	0,55	0,40	11,3	11,3	10,9	9,5	6,7	4,7
Z612 02	1,1	0,40	22,6	22,7	21,7	19,1	14,4	11,1
Z612 03	1,5	0,40	33,9	34,0	32,6	28,7	21,6	16,6
Z612 04	2,2	0,40	45,2	45,4	43,4	38,3	28,8	22,2
Z612 05	3	0,40	56,5	56,7	54,3	47,6	34,9	25,8
Z612 06	3	0,40	67,8	68,0	65,1	57,2	42,1	31,4
Z612 07	4	0,40	79,1	79,4	76,0	66,6	48,8	36,1
Z612 08	4	0,40	90,4	90,7	86,9	76,4	56,7	42,9
Z612 09	5,5	0,40	101,7	102,1	97,7	85,6	62,4	45,8
Z612 10	5,5	0,40	113,0	113,4	108,6	95,1	69,7	51,5
Z612 11	5,5	0,40	124,3	124,7	119,4	104,8	77,1	57,4
Z612 12	7,5	0,40	135,6	136,1	130,3	114,1	83,5	61,6
Z612 13	7,5	0,40	146,8	147,4	141,1	123,7	90,6	66,9
Z612 14	7,5	0,40	158,1	158,8	152,0	133,4	98,6	73,8
Z612 15	7,5	0,40	169,4	170,1	162,9	143,2	106,5	80,8
Z612 16	9,3	0,40	180,7	181,5	173,7	152,4	112,1	83,4
Z612 17	9,3	0,40	192,0	192,8	184,6	162,0	119,6	89,5
Z612 18	9,3	0,40	203,3	204,1	195,5	171,8	127,7	96,6
Z612 19	9,3	0,40	214,6	215,5	206,3	181,5	135,3	102,9

* Efficiency index MEI

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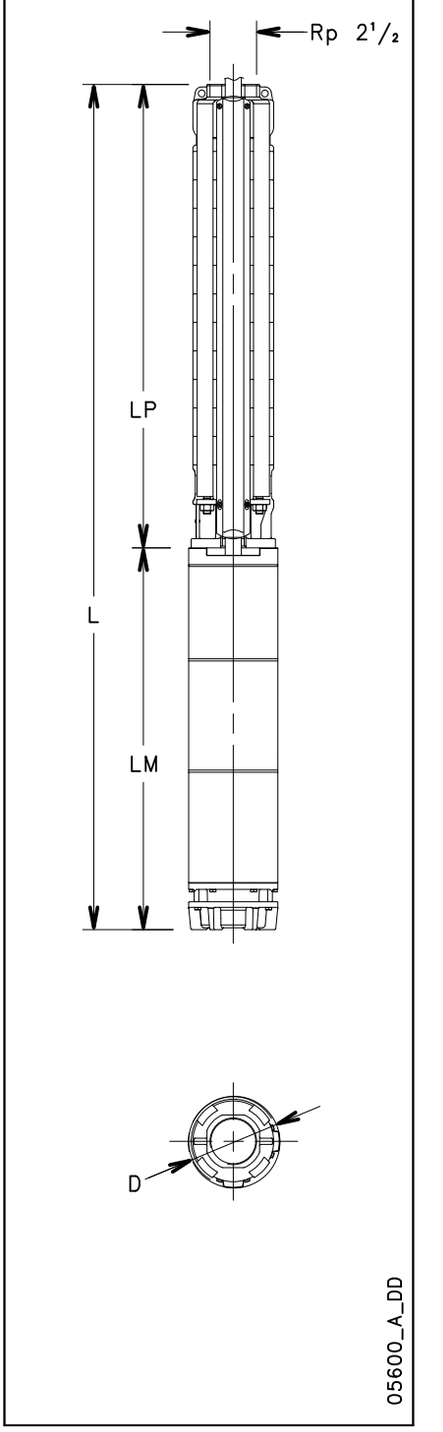

DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	Kg
Z612 01-L4C	0.55	616	236	380	142	144	15
Z612 02-L4C	1.1	712	286	426	142	144	20
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	35
Z612 07-L4C	4	1270	614	656	142	144	39
Z612 08-L4C	4	1316	614	702	142	144	40
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	53
Z612 13-L4C	7.5	1696	764	932	142	144	54
Z612 14-L4C	7.5	1742	764	978	142	144	55
Z612 15-L4C	7.5	1788	764	1024	142	144	56
Z612 07-L6W	4	1239	583	656	144	146	56
Z612 08-L6W	4	1285	583	702	144	146	57
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	75
Z612 17-L6W	9.3	1799	683	1116	144	146	76
Z612 18-L6W	9.3	1845	683	1162	144	146	77
Z612 19-L6W	9.3	1891	683	1208	144	146	78

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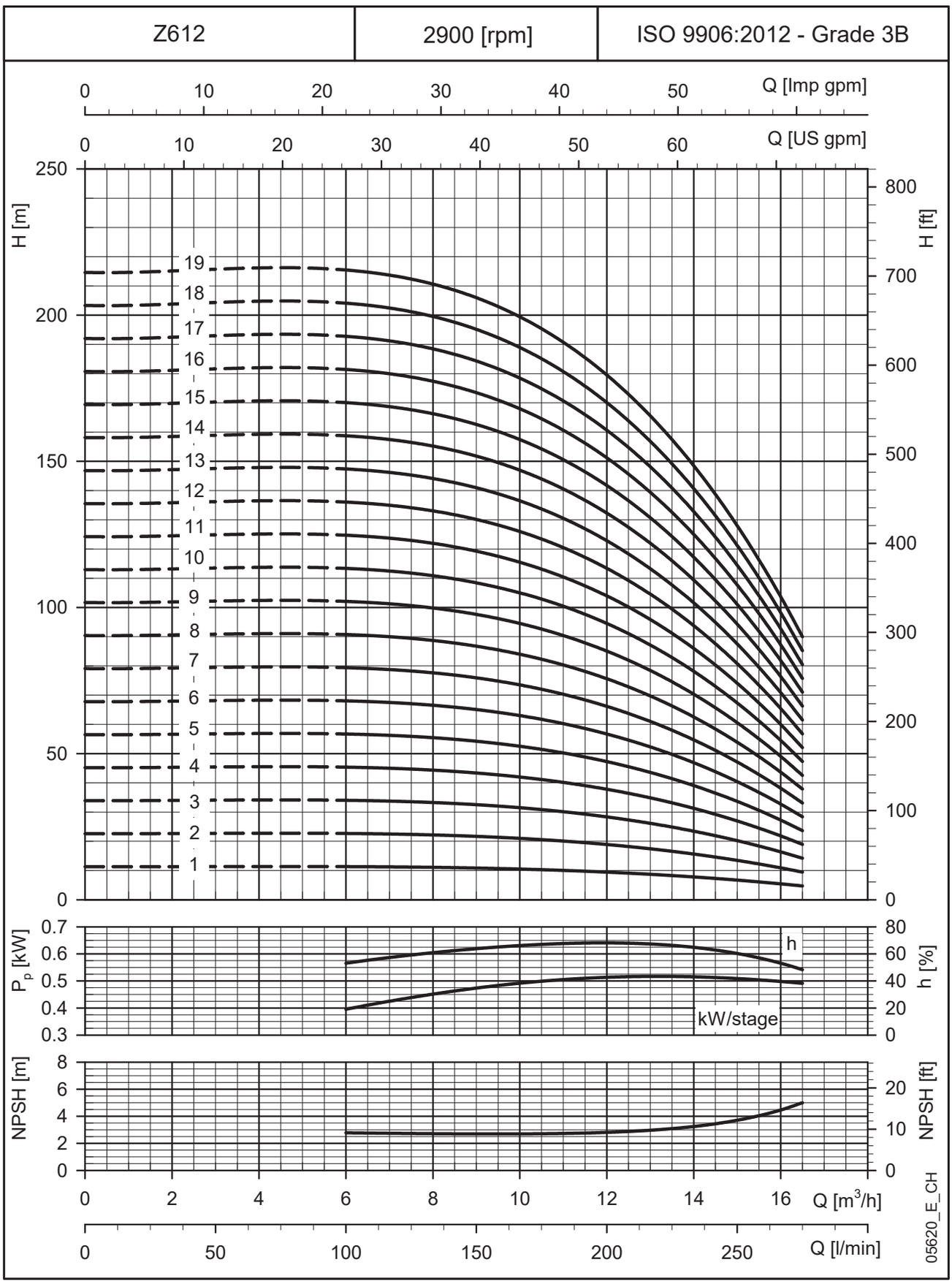
Z612: FROM 1 TO 19 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z612: FROM 20 TO 39 STAGES
HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min	0	100	150	200	250	275
			m^3/h	0	6	9	12	15	16,5
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER						
Z612 20	11	0,40	228,2	227,4	217,8	190,9	137,9	98,6
Z612 21	11	0,40	239,6	238,7	228,7	200,5	144,8	103,5
Z612 22	11	0,40	251,0	250,1	239,6	210,0	151,7	108,5
Z612 23	11	0,40	262,4	261,5	250,4	219,6	158,7	113,4
Z612 24	13	0,40	273,3	273,1	261,2	227,4	160,8	111,4
Z612 25	13	0,40	284,6	284,5	272,0	236,9	167,5	116,1
Z612 26	13	0,40	296,0	295,9	282,9	246,3	174,2	120,7
Z612 27	13	0,40	307,4	307,3	293,8	255,8	181,0	125,4
Z612 28	13	0,40	318,8	318,6	304,6	265,3	187,7	130,1
Z612 29	15	0,40	332,0	332,8	318,6	279,0	202,1	145,3
Z612 30	15	0,40	343,4	344,3	329,5	288,6	209,0	150,4
Z612 31	15	0,40	354,9	355,8	340,5	298,2	216,0	155,4
Z612 32	15	0,40	366,3	367,2	351,5	307,9	223,0	160,5
Z612 33	18,5	0,40	374,8	376,0	359,0	312,8	223,7	158,5
Z612 34	18,5	0,40	386,2	387,4	369,9	322,2	230,5	163,3
Z612 35	18,5	0,40	397,5	398,8	380,7	331,7	237,3	168,1
Z612 36	18,5	0,40	408,9	410,2	391,6	341,2	244,1	173,0
Z612 37	18,5	0,40	420,2	421,6	402,4	350,6	250,9	177,8
Z612 38	18,5	0,40	431,6	433,0	413,3	360,1	257,7	182,6
Z612 39	18,5	0,40	442,9	444,4	424,2	369,6	264,5	187,4

* Efficiency index MEI

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DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	kg
Z612 20-L6W	11	1977	723	1254	144	146	84
Z612 21-L6W	11	2023	723	1300	144	146	85
Z612 22-L6W	11	2069	723	1346	144	146	86
Z612 23-L6W	11	2161	723	1438	144	146	88
Z612 24-L6W	13	2247	763	1484	144	146	94
Z612 25-L6W	13	2293	763	1530	144	146	95
Z612 26-L6W	13	2339	763	1576	144	146	97
Z612 27-L6W	13	2385	763	1622	144	146	98
Z612 28-L6W	13	2431	763	1668	144	146	99
Z612 29-L6W	15	2547	833	1714	144	146	103
Z612 30-L6W	15	2593	833	1760	144	146	104
Z612 31-L6W	15	2639	833	1806	144	146	106
Z612 32-L6W	15	2685	833	1852	144	146	107
Z612 33-L6W	18.5	2801	903	1898	144	146	120
Z612 34-L6W	18.5	2847	903	1944	144	146	121
Z612 35-L6W	18.5	2893	903	1990	144	146	122
Z612 36-L6W	18.5	2985	903	2082	144	146	124
Z612 37-L6W	18.5	3031	903	2128	144	146	126
Z612 38-L6W	18.5	3077	903	2174	144	146	127
Z612 39-L6W	18.5	3123	903	2220	144	146	128

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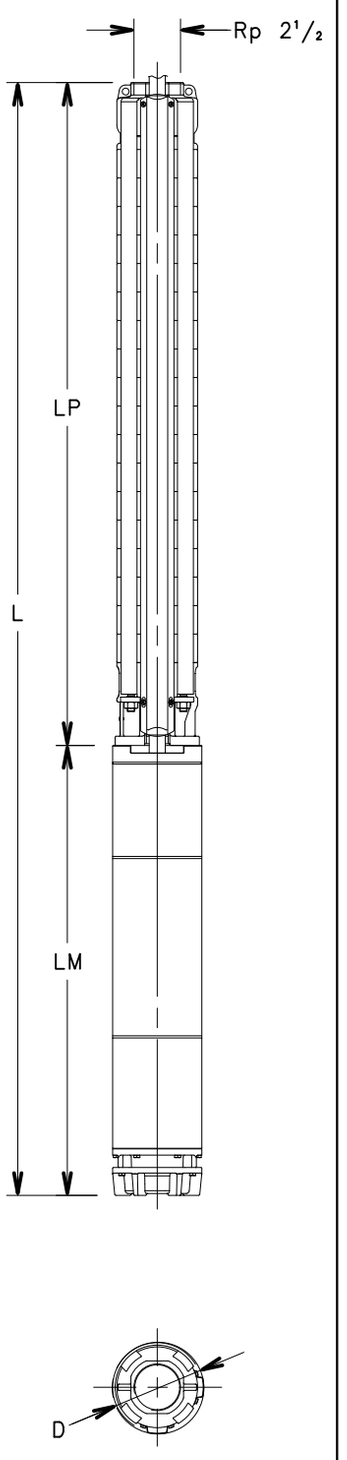

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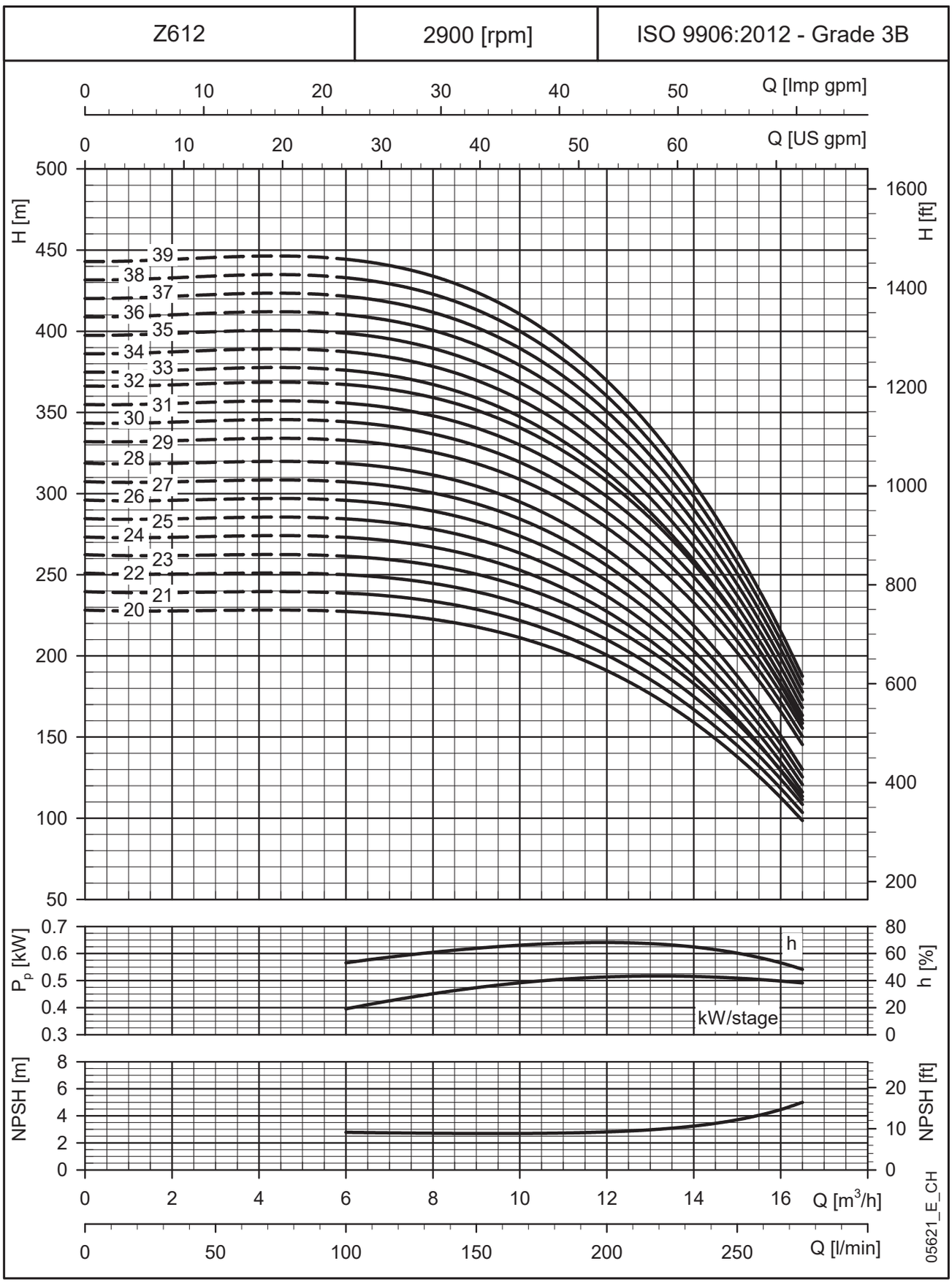
Z612: FROM 20 TO 39 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z616: FROM 1 TO 18 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	125	200	250	300	367
			m^3/h 0	7,5	12	15	18	22
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z616 01	0,75	0,40	12,1	12,5	12,2	11,4	9,9	6,7
Z616 02	1,5	0,40	24,1	24,4	24,0	22,7	20,2	14,8
Z616 03	2,2	0,40	36,1	36,6	36,0	34,0	30,3	22,1
Z616 04	3	0,40	48,0	48,9	48,0	45,3	40,3	29,6
Z616 05	4	0,40	60,0	61,1	60,0	56,6	50,4	37,0
Z616 06	5,5	0,40	72,3	73,6	72,2	68,0	60,3	44,1
Z616 07	5,5	0,40	84,3	86,1	84,4	79,5	70,5	51,7
Z616 08	7,5	0,40	96,3	98,4	96,5	90,8	80,6	59,1
Z616 09	7,5	0,40	108,6	110,8	108,6	102,2	90,7	66,8
Z616 10	7,5	0,40	121,1	123,3	120,6	113,4	100,3	72,4
Z616 11	9,3	0,40	133,2	135,6	132,7	124,8	110,4	79,6
Z616 12	9,3	0,40	145,6	148,0	145,1	136,7	121,4	88,1
Z616 13	11	0,40	157,7	160,3	157,2	148,1	131,5	95,5
Z616 14	11	0,40	169,5	172,8	169,4	159,7	142,1	104,2
Z616 15	11	0,40	181,6	185,2	181,5	171,1	152,2	111,6
Z616 16	11	0,40	193,7	197,5	193,6	182,5	162,4	119,0
Z616 17	13	0,40	206,3	209,7	205,0	192,3	169,8	124,1
Z616 18	13	0,40	218,5	222,1	217,1	203,6	179,8	131,4

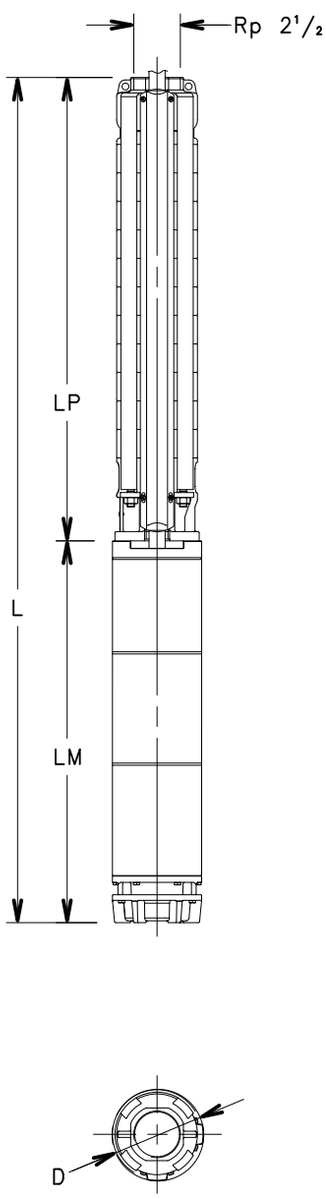
* Efficiency index MEI

z616-1-50-en_c_th

DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	kg
Z616 01-L4C	0.75	646	266	380	142	144	16
Z616 02-L4C	1.5	774	348	426	142	144	21
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	48
Z616 09-L4C	7.5	1512	764	748	142	144	49
Z616 10-L4C	7.5	1558	764	794	142	144	50
Z616 05-L6W	4	1147	583	564	144	146	54
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	69
Z616 12-L6W	9.3	1569	683	886	144	146	70
Z616 13-L6W	11	1655	723	932	144	146	75
Z616 14-L6W	11	1701	723	978	144	146	76
Z616 15-L6W	11	1747	723	1024	144	146	78
Z616 16-L6W	11	1793	723	1070	144	146	79
Z616 17-L6W	13	1879	763	1116	144	146	85
Z616 18-L6W	13	1925	763	1162	144	146	86

z616-1-50-en_b_td



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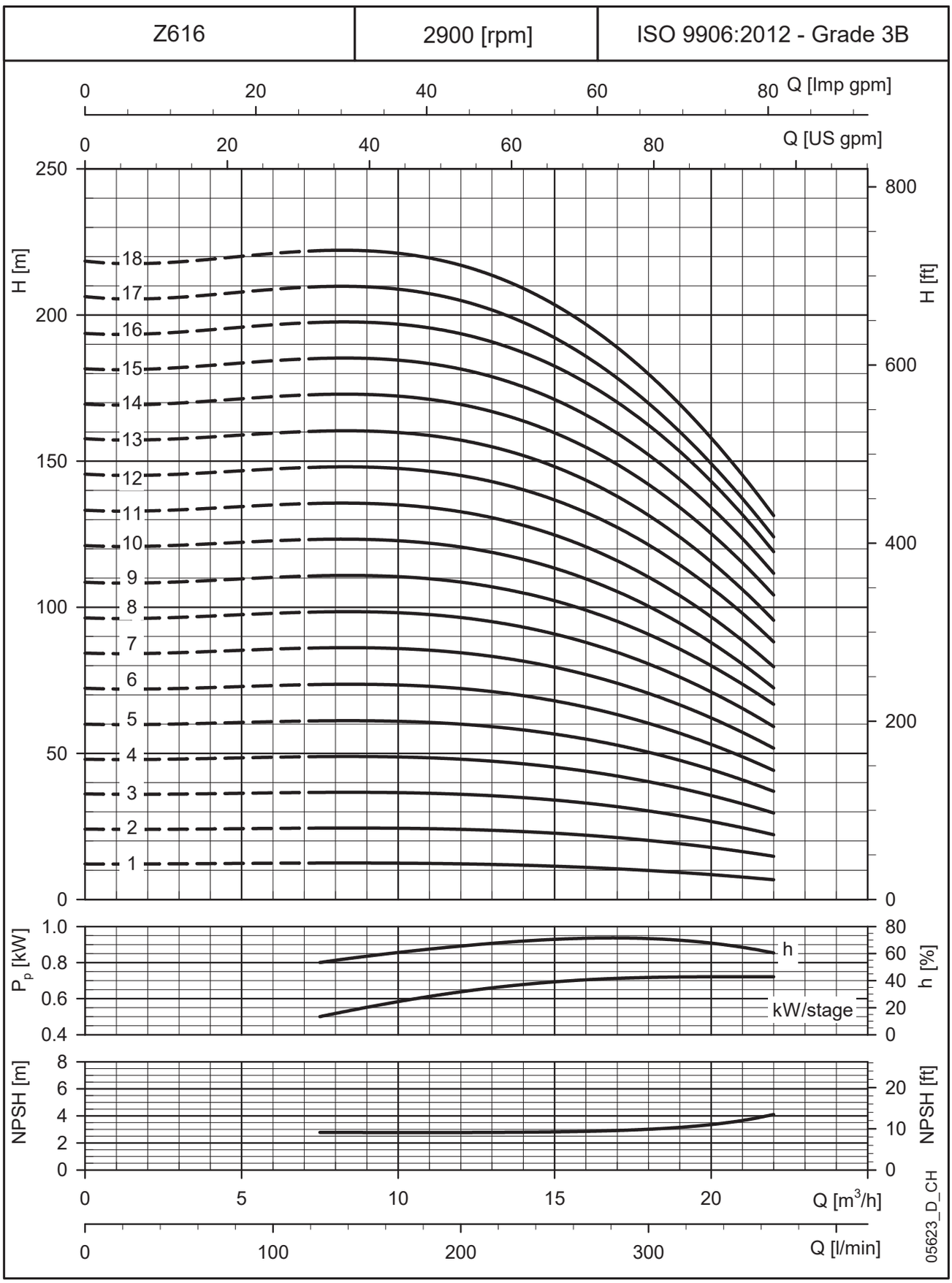
Z616: FROM 1 TO 18 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



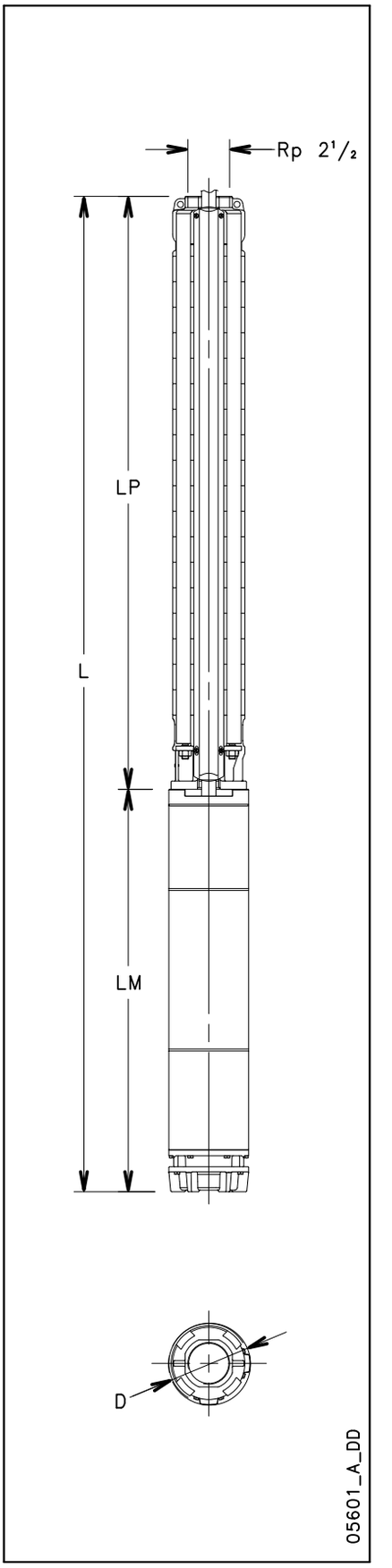
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

Z616: FROM 19 TO 36 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	125	200	250	300	367
			m^3/h 0	7,5	12	15	18	22
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z616 19	15	0,40	230,6	234,4	229,1	214,9	189,8	138,7
Z616 20	15	0,40	241,0	245,5	240,1	225,6	199,6	143,9
Z616 21	15	0,40	253,0	257,8	252,1	236,9	209,5	151,1
Z616 22	18,5	0,40	265,1	270,0	264,1	248,2	219,5	158,3
Z616 23	18,5	0,40	277,1	282,3	276,1	259,5	229,5	165,5
Z616 24	18,5	0,40	289,2	294,6	288,1	270,7	239,5	172,7
Z616 25	18,5	0,40	301,2	306,9	300,1	282,0	249,4	179,8
Z616 26	18,5	0,40	313,3	319,1	312,1	293,3	259,4	187,1
Z616 27	22	0,40	325,3	331,4	324,1	304,6	269,4	194,3
Z616 28	22	0,40	337,4	343,7	336,1	315,9	279,4	201,5
Z616 29	22	0,40	349,4	356,0	348,1	327,2	289,4	208,7
Z616 30	22	0,40	361,5	368,2	360,1	338,4	299,3	215,9
Z616 31	26	0,40	373,5	380,5	372,1	349,7	309,3	223,1
Z616 32	26	0,40	385,6	392,8	384,1	361,0	319,3	230,3
Z616 33	26	0,40	397,6	405,1	396,1	372,3	329,3	237,5
Z616 34	26	0,40	409,7	417,3	408,1	383,6	339,3	244,5
Z616 35	26	0,40	421,7	429,6	420,1	394,8	349,2	251,8
Z616 36	26	0,40	433,8	441,9	432,1	406,1	359,2	259,0

* Efficiency index MEI

z616-2-50-en_c_th

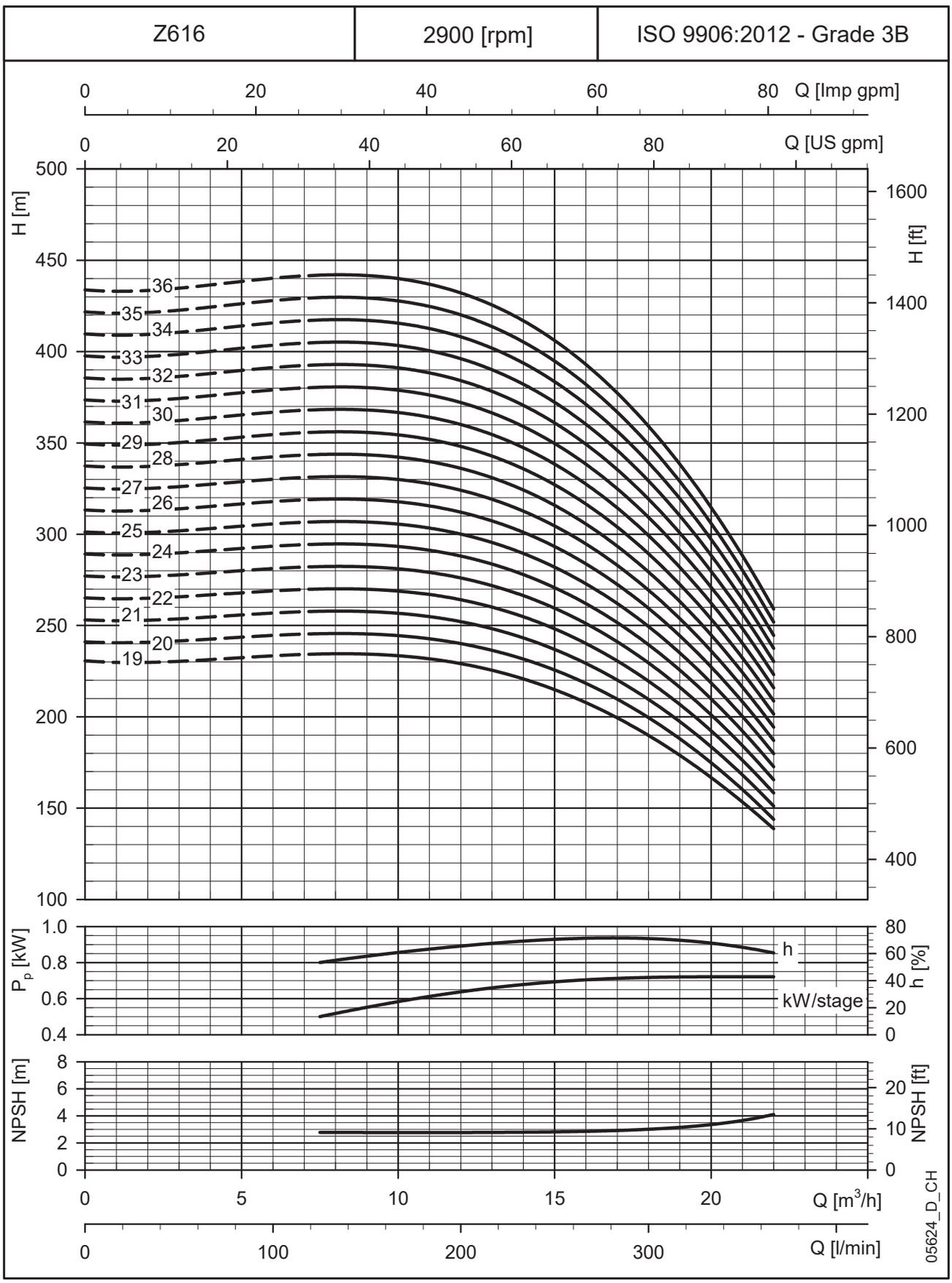


DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	kg
Z616 19-L6W	15	2041	833	1208	144	146	90
Z616 20-L6W	15	2087	833	1254	144	146	92
Z616 21-L6W	15	2133	833	1300	144	146	93
Z616 22-L6W	18.5	2249	903	1346	144	146	106
Z616 23-L6W	18.5	2341	903	1438	144	146	108
Z616 24-L6W	18.5	2387	903	1484	144	146	109
Z616 25-L6W	18.5	2433	903	1530	144	146	110
Z616 26-L6W	18.5	2479	903	1576	144	146	112
Z616 27-L6W	22	2545	923	1622	144	146	117
Z616 28-L6W	22	2591	923	1668	144	146	118
Z616 29-L6W	22	2637	923	1714	144	146	119
Z616 30-L6W	22	2683	923	1760	144	146	120
Z616 31-L6W	26	2819	1013	1806	144	146	136
Z616 32-L6W	26	2865	1013	1852	144	146	137
Z616 33-L6W	26	2911	1013	1898	144	146	138
Z616 34-L6W	26	2957	1013	1944	144	146	139
Z616 35-L6W	26	3003	1013	1990	144	146	140
Z616 36-L6W	26	3095	1013	2082	144	146	142

z616-2-50-en_b_td

Z616: FROM 19 TO 36 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



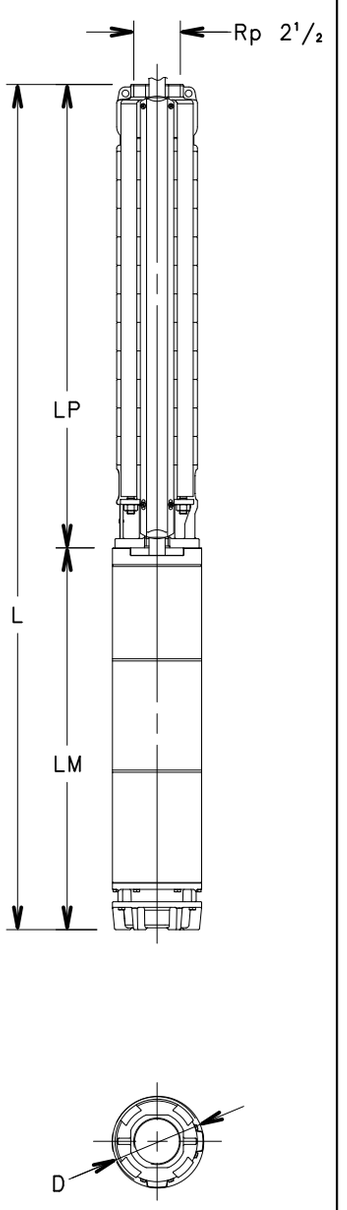
These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z622: FROM 1 TO 17 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER kW	RATED POWER MEI* ≥	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	0,40	14,5	13,7	13,6	12,2	9,9	5,8
Z622 02	2,2	0,40	33,6	27,2	26,8	23,7	19,0	10,3
Z622 03	3	0,40	42,8	40,8	39,8	35,7	28,5	17,2
Z622 04	4	0,40	56,9	54,2	52,9	47,0	37,1	20,2
Z622 05	5,5	0,40	73,2	68,0	66,2	58,6	46,1	25,2
Z622 06	5,5	0,40	88,0	81,6	79,5	70,3	55,3	30,2
Z622 07	7,5	0,40	101,3	95,1	92,4	81,7	64,3	35,3
Z622 08	7,5	0,40	116,0	108,7	105,6	93,4	73,5	40,4
Z622 09	9,3	0,40	129,9	122,7	119,3	105,5	83,3	46,5
Z622 10	9,3	0,40	143,4	136,0	132,2	117,4	92,0	50,5
Z622 11	11	0,40	156,3	148,1	143,9	127,2	99,0	53,3
Z622 12	11	0,40	170,8	161,6	157,0	138,7	108,0	58,2
Z622 13	13	0,40	185,1	175,5	170,5	151,0	117,8	63,1
Z622 14	13	0,40	199,6	189,0	183,6	162,6	126,8	68,0
Z622 15	15	0,40	213,5	202,0	196,3	173,6	135,1	72,0
Z622 16	15	0,40	228,0	215,5	209,4	185,2	144,1	76,8
Z622 17	15	0,40	242,5	229,0	222,5	196,8	153,0	81,6

* Efficiency index MEI

z622-1-50-en_c_th



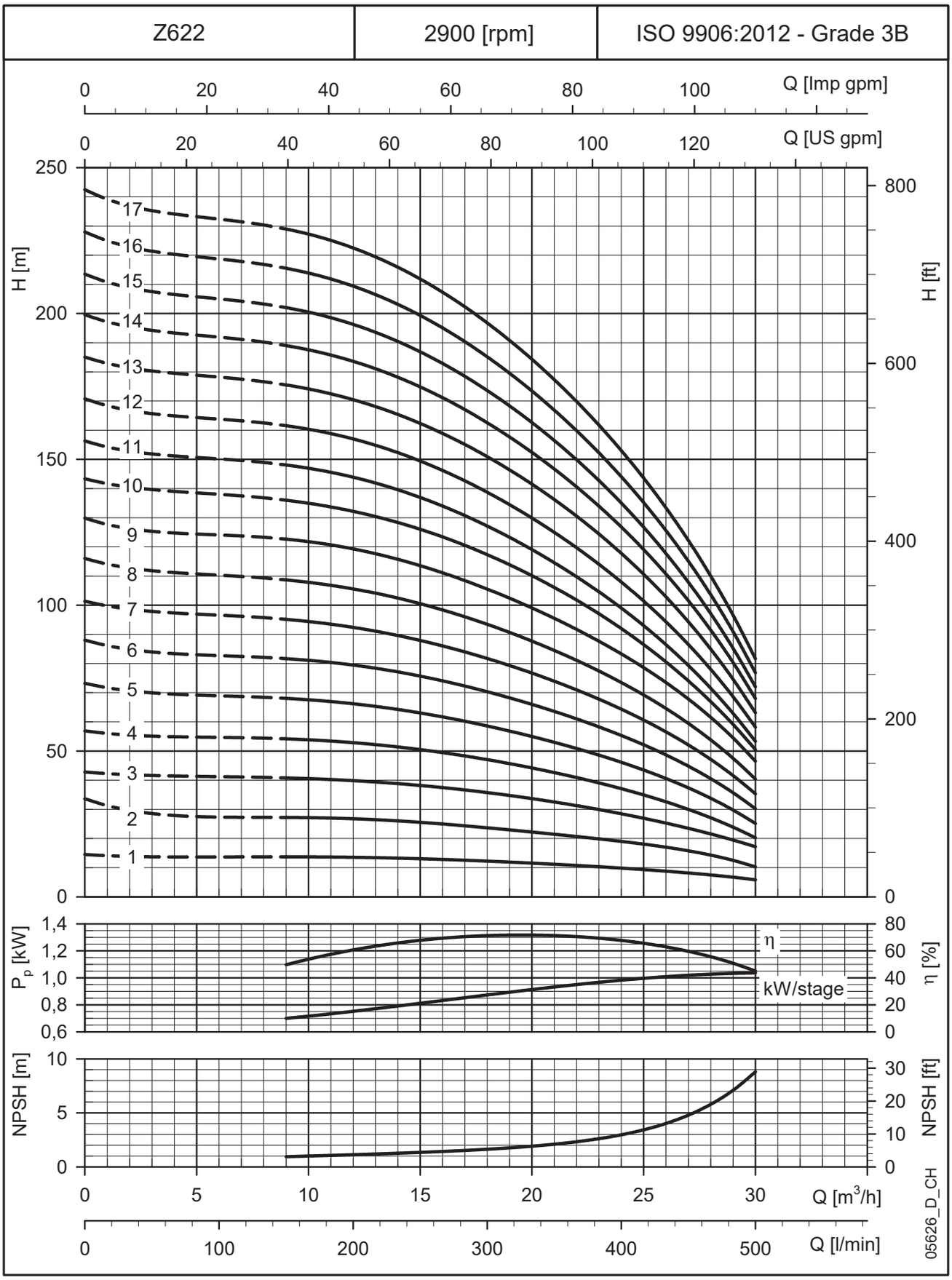
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm) L	LM	LP	ø D 1 Cable	ø D 2 Cables	WEIGHT kg
Z622 01-L4C	1.1	643	286	357	142	144	18
Z622 02-L4C	2.2	819	393	426	142	144	22
Z622 03-L4C	3	1039	544	495	142	144	32
Z622 04-L4C	4	1178	614	564	142	144	37
Z622 05-L4C	5.5	1317	684	633	142	144	42
Z622 06-L4C	5.5	1386	684	702	142	144	44
Z622 07-L4C	7.5	1535	764	771	142	144	49
Z622 08-L4C	7.5	1604	764	840	142	144	51
Z622 04-L6W	4	1147	583	564	144	146	54
Z622 05-L6W	5.5	1246	613	633	144	146	57
Z622 06-L6W	5.5	1315	613	702	144	146	59
Z622 07-L6W	7.5	1424	653	771	144	146	64
Z622 08-L6W	7.5	1493	653	840	144	146	66
Z622 09-L6W	9.3	1592	683	909	144	146	69
Z622 10-L6W	9.3	1661	683	978	144	146	71
Z622 11-L6W	11	1770	723	1047	144	146	76
Z622 12-L6W	11	1839	723	1116	144	146	78
Z622 13-L6W	13	1948	763	1185	144	146	84
Z622 14-L6W	13	2017	763	1254	144	146	86
Z622 15-L6W	15	2156	833	1323	144	146	91
Z622 16-L6W	15	2225	833	1392	144	146	92
Z622 17-L6W	15	2294	833	1461	144	146	94

z622-1-50-en_b_td

The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z622: FROM 1 TO 17 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z622: FROM 18 TO 33 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min	0	150	200	300	400	500
			m^3/h	0	9	12	18	24	30
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER						
Z622 18	18,5	0,40	253,2	241,9	235,4	207,7	160,1	87,1
Z622 19	18,5	0,40	267,3	255,3	248,5	219,3	169,0	92,0
Z622 20	18,5	0,40	281,7	268,7	261,6	230,8	177,9	96,8
Z622 21	18,5	0,40	295,8	282,2	274,7	242,4	186,8	101,7
Z622 22	22	0,40	308,2	294,3	286,2	253,4	196,0	102,2
Z622 23	22	0,40	322,3	307,7	299,3	264,9	204,8	106,9
Z622 24	22	0,40	336,5	321,0	312,2	276,5	213,7	111,5
Z622 25	22	0,40	350,8	334,5	325,3	287,9	222,6	116,2
Z622 26	26	0,40	363,9	347,8	338,7	301,3	236,4	125,4
Z622 27	26	0,40	378,0	361,1	351,7	312,9	245,5	130,2
Z622 28	26	0,40	392,0	374,4	364,6	324,6	254,5	135,0
Z622 29	26	0,40	406,3	387,8	377,6	336,1	263,6	139,9
Z622 30	30	0,40	419,5	401,3	390,6	347,6	272,8	144,6
Z622 31	30	0,40	433,4	414,6	403,6	359,2	281,9	149,4
Z622 32	30	0,40	447,5	428,0	416,8	370,8	290,9	154,3
Z622 33	30	0,40	461,8	441,3	429,7	382,4	300,0	159,1

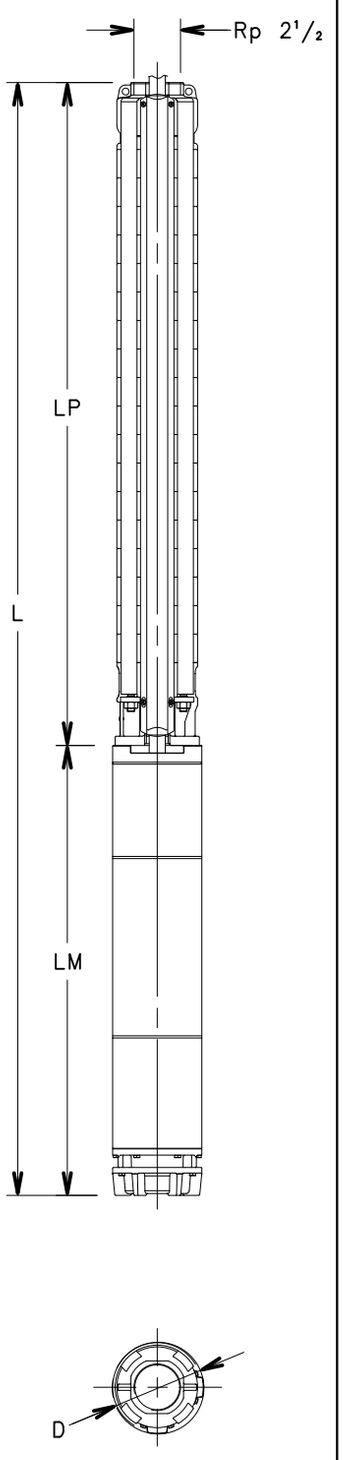
* Efficiency index MEI

z622-2-50-en_c_th

DIMENSIONS AND WEIGHTS

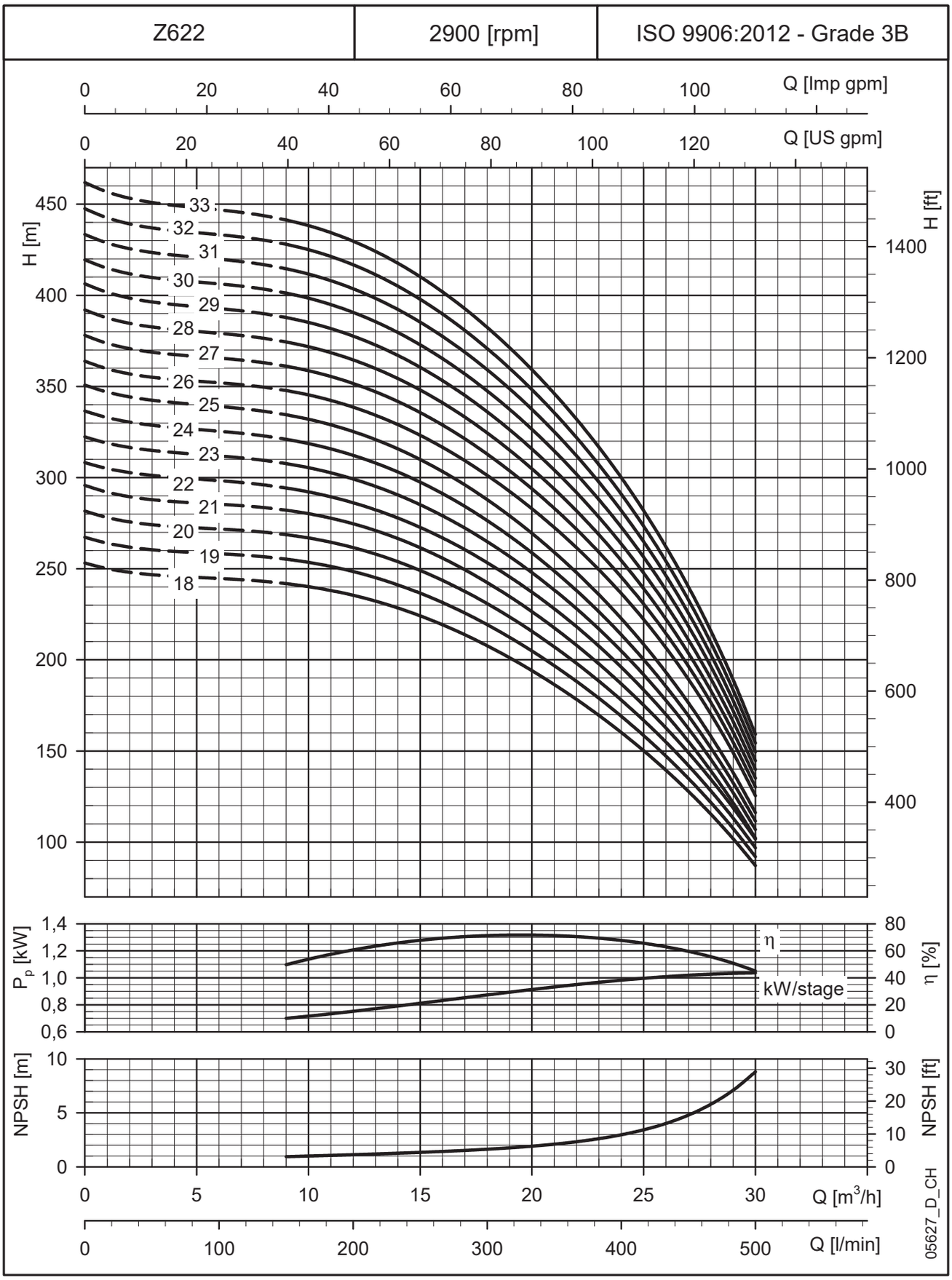
ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	Kg
Z622 18-L6W	18,5	2433	903	1530	144	146	107
Z622 19-L6W	18,5	2502	903	1599	144	146	109
Z622 20-L6W	18,5	2571	903	1668	144	146	111
Z622 21-L6W	18,5	2640	903	1737	144	146	112
Z622 22-L6W	22	2729	923	1806	144	146	118
Z622 23-L6W	22	2798	923	1875	144	146	119
Z622 24-L6W	22	2867	923	1944	144	146	121
Z622 25-L6W	22	2936	923	2013	144	146	123
Z622 26-L6W	26	3095	1013	2082	144	146	138
Z622 27-L6W	26	3164	1013	2151	144	146	140
Z622 28-L6W	26	3233	1013	2220	144	146	141
Z622 29-L6W	26	3302	1013	2289	144	146	143
Z622 30-L6W	30	3499	1141	2358	144	146	156
Z622 31-L6W	30	3568	1141	2427	144	146	158
Z622 32-L6W	30	3637	1141	2496	144	146	159
Z622 33-L6W	30	3706	1141	2565	144	146	161

z622-2-50-en_c_td



The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z622: FROM 18 TO 33 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



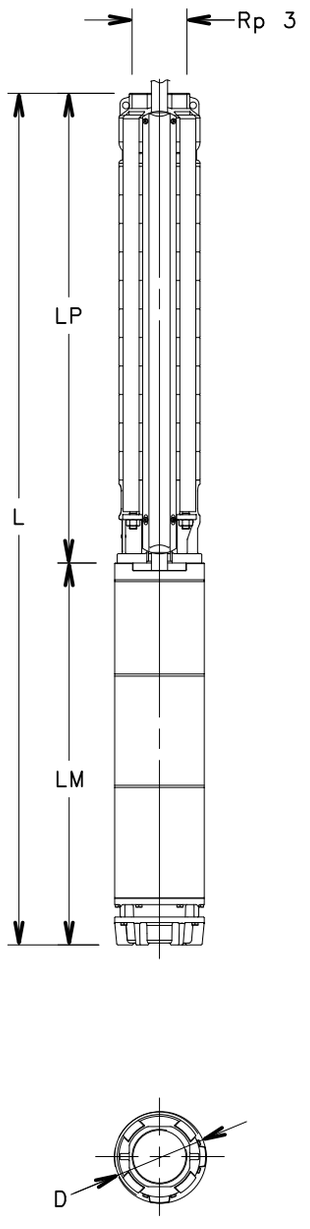
These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z631: FROM 1 TO 15 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	200	400	500	600	667
			m^3/h 0	12	24	30	36	40
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z631 01	1,5	0,40	15,2	14,5	12,5	11,2	9,2	7,4
Z631 02	3	0,40	30,8	28,8	25,4	22,4	18,1	14,4
Z631 03	4	0,40	46,2	43,2	38,1	33,6	27,1	21,6
Z631 04	5,5	0,40	61,3	57,9	51,3	45,4	37,1	29,9
Z631 05	7,5	0,40	76,6	72,3	64,1	56,7	46,3	37,3
Z631 06	7,5	0,40	92,0	86,9	77,3	68,8	56,6	46,0
Z631 07	9,3	0,40	106,6	101,9	91,1	81,2	66,9	54,5
Z631 08	11	0,40	121,8	116,4	104,1	92,8	76,4	62,3
Z631 09	11	0,40	137,3	130,8	116,8	104,1	85,9	70,1
Z631 10	13	0,40	152,5	145,3	129,8	115,7	95,4	77,9
Z631 11	15	0,40	167,8	159,8	142,8	127,2	105,0	85,7
Z631 12	18,5	0,40	182,8	174,8	156,5	139,5	115,2	94,1
Z631 13	18,5	0,40	198,1	189,3	169,5	151,2	124,8	102,0
Z631 14	18,5	0,40	213,3	203,9	182,6	162,8	134,4	109,8
Z631 15	22	0,40	226,7	215,7	192,3	171,0	140,5	114,0

* Efficiency index MEI

z631-1-50-en_c_th

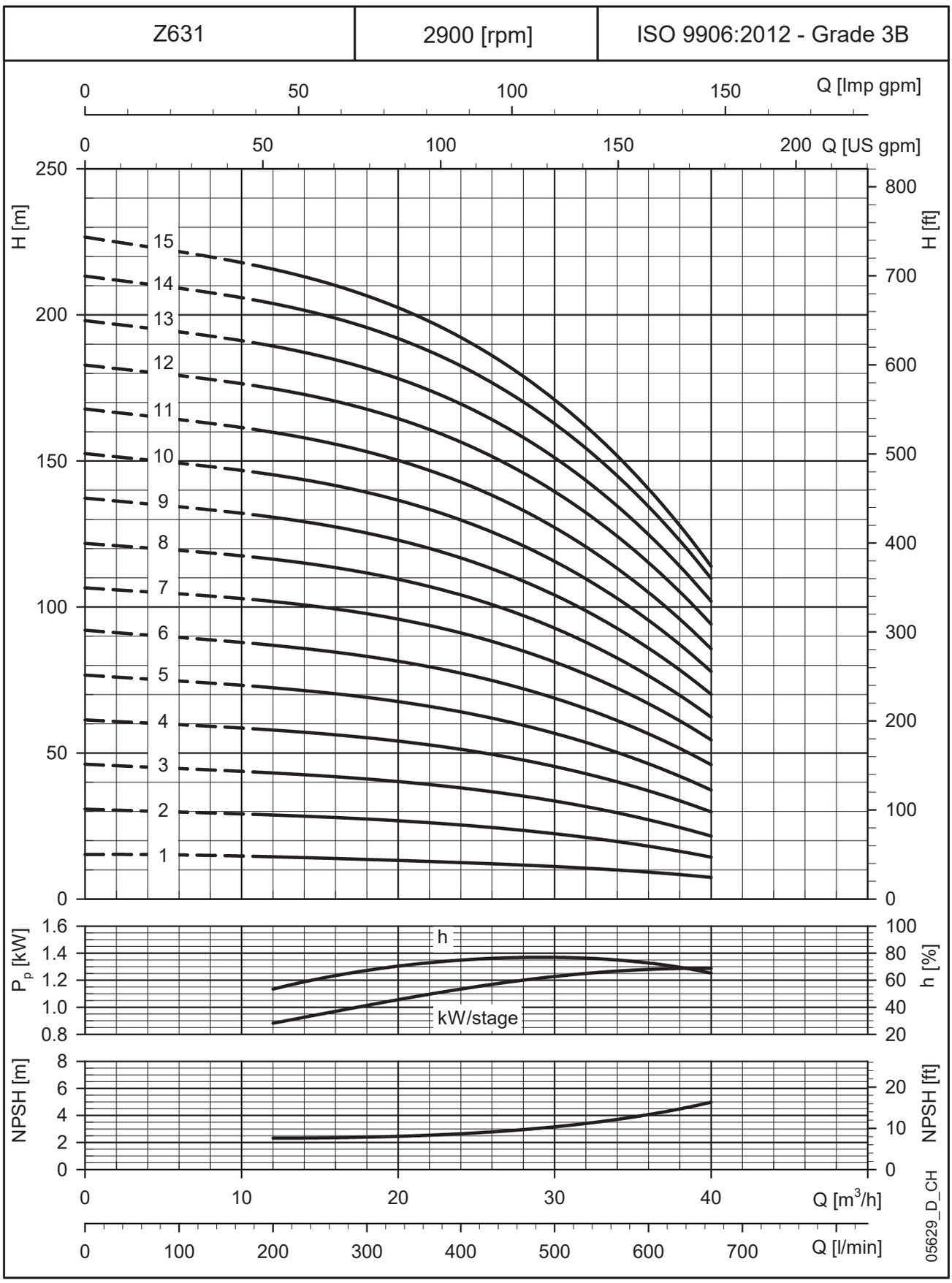


DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	kg
Z631 01-L4C	1.5	715	348	367	142	144	20
Z631 02-L4C	3	980	544	436	142	144	30
Z631 03-L4C	4	1119	614	505	142	144	35
Z631 04-L4C	5.5	1258	684	574	142	144	41
Z631 05-L4C	7.5	1407	764	643	142	144	46
Z631 06-L4C	7.5	1476	764	712	142	144	48
Z631 03-L6W	4	1088	583	505	144	146	52
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	66
Z631 08-L6W	11	1573	723	850	144	146	72
Z631 09-L6W	11	1642	723	919	144	146	73
Z631 10-L6W	13	1751	763	988	144	146	80
Z631 11-L6W	15	1890	833	1057	144	146	84
Z631 12-L6W	18.5	2029	903	1126	144	146	98
Z631 13-L6W	18.5	2098	903	1195	144	146	99
Z631 14-L6W	18.5	2167	903	1264	144	146	101
Z631 15-L6W	22	2256	923	1333	144	146	107

z631-1-50-en_b_td

Z631: FROM 1 TO 15 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



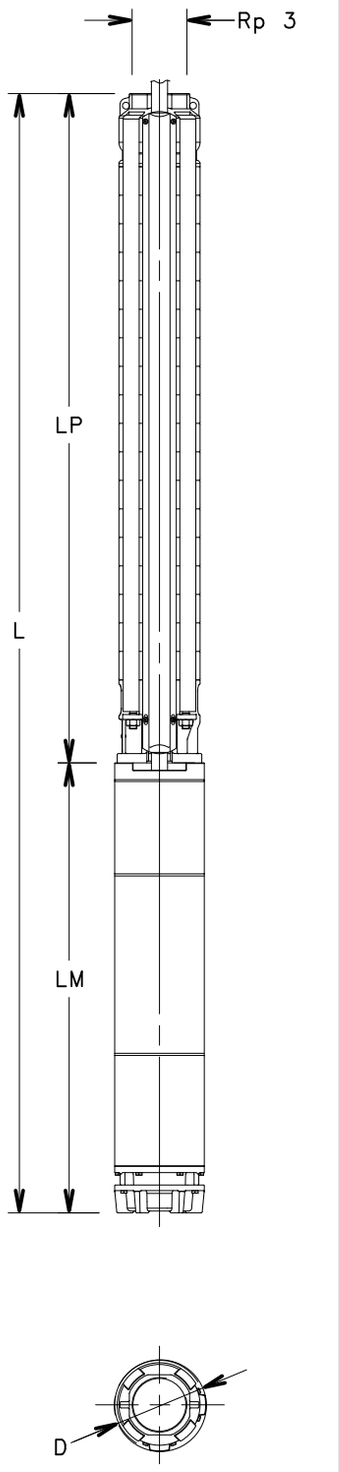
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

Z631: FROM 16 TO 29 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER kW	RATED POWER MEI* ≥	Q = DELIVERY l/min	0	200	400	500	600	667
			m^3/h	0	12	24	30	36	40,0002
			H = TOTAL HEAD METRES COLUMN OF WATER						
Z631 16	22	0,40		241,8	230,1	205,1	182,4	149,8	121,6
Z631 17	22	0,40		255,9	244,5	218,5	194,3	159,7	129,6
Z631 18	26	0,40		270,9	258,9	231,3	205,8	169,1	137,2
Z631 19	26	0,40		286,0	273,3	244,2	217,2	178,5	144,8
Z631 20	26	0,40		301,0	287,6	257,0	228,6	187,9	152,4
Z631 21	30	0,40		316,1	302,0	269,9	240,0	197,2	160,1
Z631 22	30	0,40		331,1	316,4	282,7	251,5	206,6	167,7
Z631 23	30	0,40		346,9	331,4	296,9	264,2	216,8	175,2
Z631 24	37	0,40		363,6	347,4	311,2	277,0	227,2	183,7
Z631 25	37	0,40		377,0	360,2	322,7	287,2	235,6	190,5
Z631 26	37	0,40		392,1	374,7	335,6	298,7	245,0	198,1
Z631 27	37	0,40		407,2	389,1	348,5	310,1	254,5	205,7
Z631 28	37	0,40		422,3	403,5	361,4	321,6	263,9	213,3
Z631 29	37	0,40		437,3	417,9	374,3	333,1	273,3	221,0

* Efficiency index MEI

z631-2-50-en_c_th

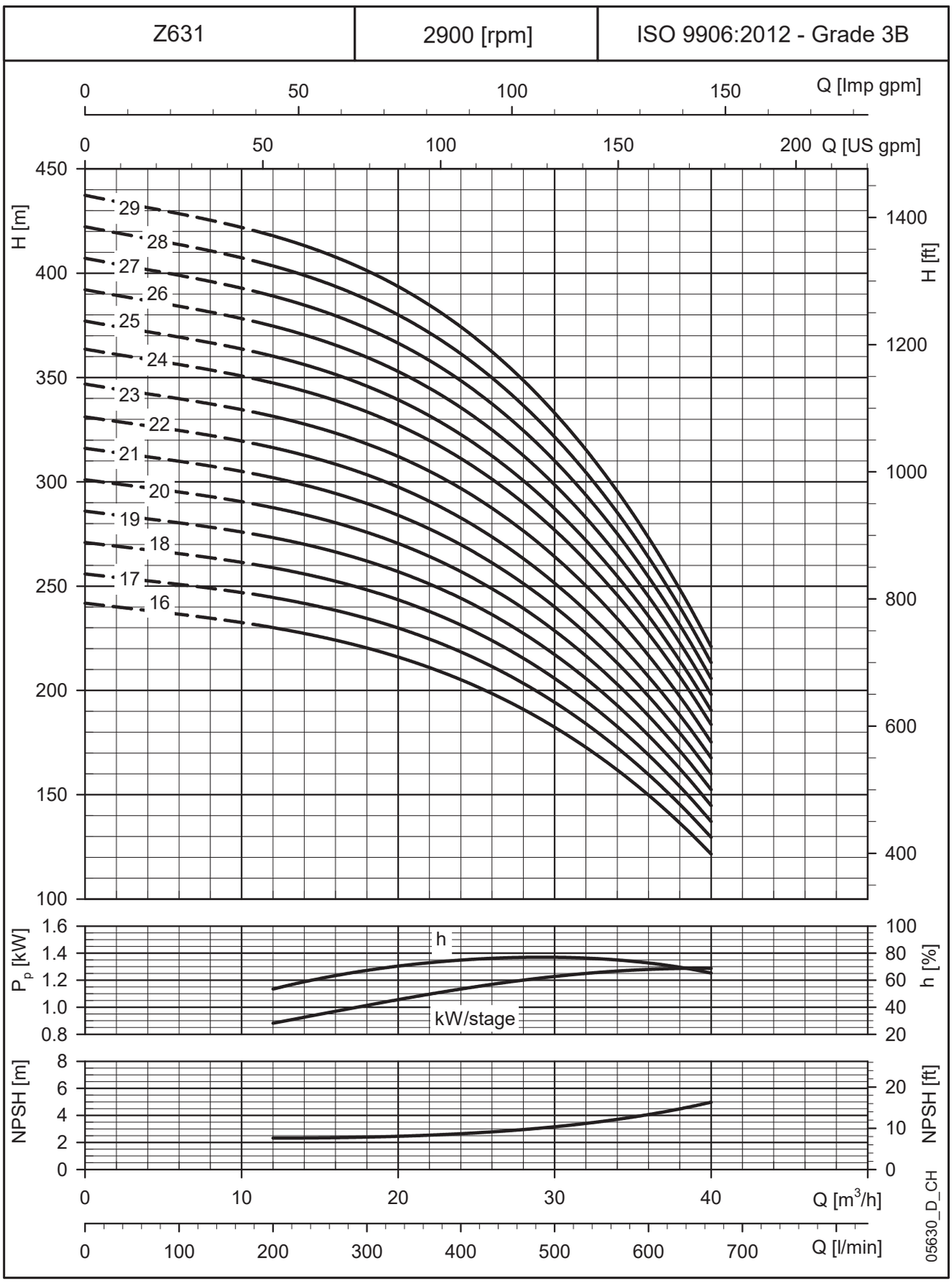


DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm) L	LM	LP	ø D 1 Cable	ø D 2 Cables	WEIGHT kg
Z631 16-L6W	22	2325	923	1402	144	146	108
Z631 17-L6W	22	2394	923	1471	144	146	110
Z631 18-L6W	26	2553	1013	1540	144	146	125
Z631 19-L6W	26	2622	1013	1609	144	146	127
Z631 20-L6W	26	2691	1013	1678	144	146	128
Z631 21-L6W	30	2888	1141	1747	144	146	142
Z631 22-L6W	30	2957	1141	1816	144	146	144
Z631 23-L6W	30	3026	1141	1885	144	146	145
Z631 24-L6W	37	3205	1251	1954	144	146	159
Z631 25-L6W	37	3274	1251	2023	144	146	160
Z631 26-L6W	37	3343	1251	2092	144	146	162
Z631 27-L6W	37	3412	1251	2161	144	146	164
Z631 28-L6W	37	3481	1251	2230	144	146	165
Z631 29-L6W	37	3550	1251	2299	144	146	167

z631-2-50-en_c_td

Z631: FROM 16 TO 29 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



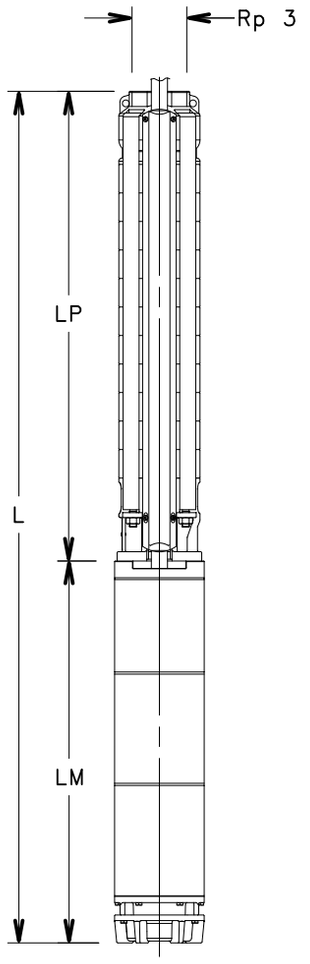
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

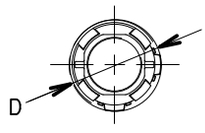
Z646: FROM 1 TO 12 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	400	600	700	800	1000
			m^3/h 0	24	36	42	48	60
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z646 01	1,5	0,40	14,3	9,6	8,1	7,1	5,9	2,4
Z646 02	3	0,40	29,7	20,2	17,1	15,4	13,3	7,2
Z646 03	4	0,40	44,7	31,0	26,3	23,8	20,8	12,0
Z646 04	5,5	0,40	60,3	41,2	34,9	31,7	27,6	15,8
Z646 05	7,5	0,40	74,5	51,7	43,8	39,8	34,8	20,3
Z646 06	7,5	0,40	89,3	62,0	52,6	47,7	41,8	24,4
Z646 07	9,3	0,40	104,2	72,7	61,7	56,2	49,3	29,1
Z646 08	11	0,40	116,4	82,4	70,2	63,8	55,7	32,8
Z646 09	11	0,40	130,6	92,7	78,9	71,7	62,6	36,9
Z646 10	13	0,40	142,8	103,0	87,7	79,8	70,0	41,6
Z646 11	15	0,40	162,7	112,6	95,0	86,0	75,1	43,6
Z646 12	15	0,40	177,5	122,8	103,6	93,8	81,8	47,6

* Efficiency index MEI

z646-1-50-en_c_th





05604_A_DD

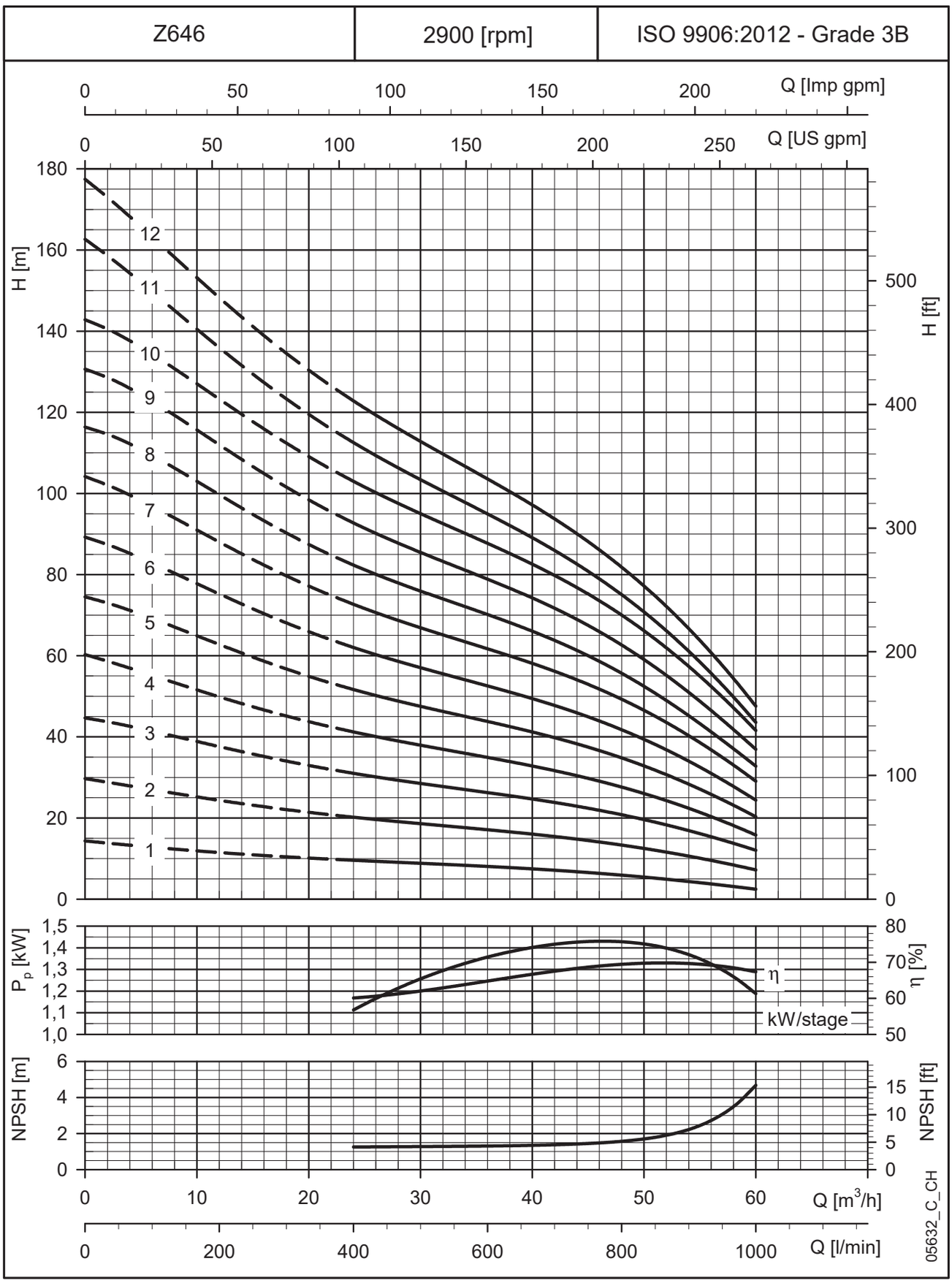
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	Kg
Z646 01-L4C	1,5	761	348	413	142	144	21
Z646 02-L4C	3	1072	544	528	142	144	32
Z646 03-L4C	4	1257	614	643	142	144	38
Z646 04-L4C	5,5	1442	684	758	142	144	44
Z646 05-L4C	7,5	1637	764	873	142	144	51
Z646 03-L6W	4	1226	583	643	144	146	55
Z646 04-L6W	5,5	1371	613	758	144	146	59
Z646 05-L6W	7,5	1526	653	873	144	146	66
Z646 06-L6W	7,5	1641	653	988	144	146	68
Z646 07-L6W	9,3	1786	683	1103	144	146	73
Z646 08-L6W	11	1941	723	1218	144	146	79
Z646 09-L6W	11	2056	723	1333	144	146	82
Z646 10-L6W	13	2211	763	1448	144	146	89
Z646 11-L6W	15	2396	833	1563	144	146	95
Z646 12-L6W	15	2511	833	1678	144	146	97

z646-1-50-en_b_td

The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z646: FROM 1 TO 12 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



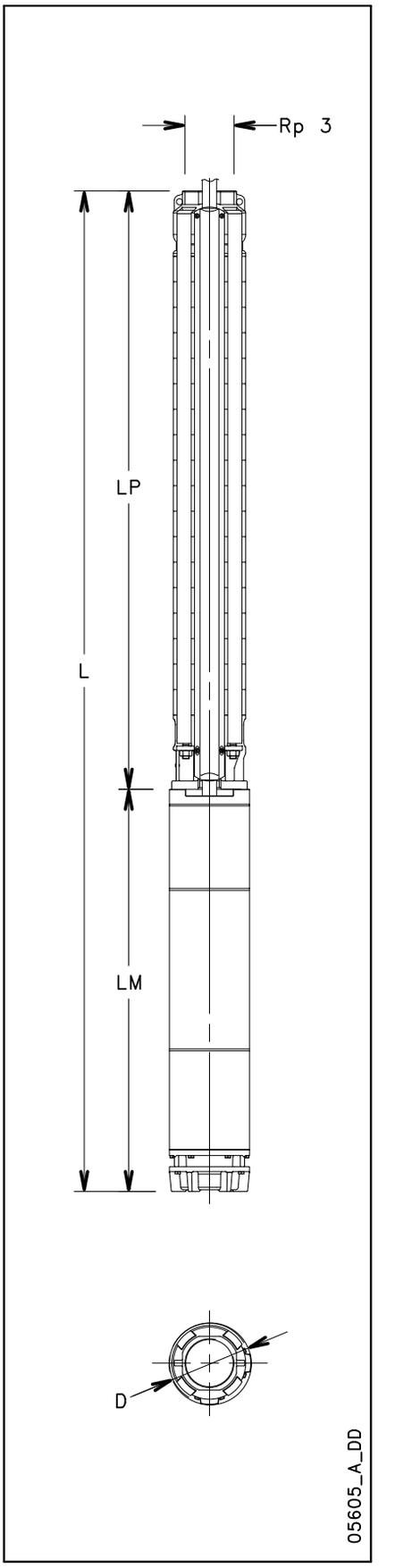
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

Z646: FROM 13 TO 25 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	400	600	700	800	1000
			m^3/h 0	24	36	42	48	60
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z646 13	18,5	0,40	184,7	132,7	112,6	102,1	89,0	51,7
Z646 14	18,5	0,40	198,8	143,0	121,2	110,0	95,9	55,7
Z646 15	18,5	0,40	212,6	153,2	129,9	117,8	102,8	59,6
Z646 16	26	0,40	228,2	162,8	138,1	125,4	109,2	62,4
Z646 17	26	0,40	242,5	173,0	146,8	133,2	116,0	66,3
Z646 18	26	0,40	256,2	183,2	155,4	141,0	122,8	70,2
Z646 19	26	0,40	265,9	195,1	166,1	150,9	131,9	76,5
Z646 20	26	0,40	279,4	205,4	174,9	158,8	138,8	80,6
Z646 21	26	0,40	293,3	215,7	183,6	166,7	145,7	84,6
Z646 22	30	0,40	305,4	224,6	191,2	173,6	151,3	86,9
Z646 23	30	0,40	319,0	234,8	199,9	181,5	158,2	90,9
Z646 24	30	0,40	332,7	245,0	208,6	189,4	165,1	94,9
Z646 25	37	0,40	347,9	255,1	217,3	197,3	172,0	98,8

* Efficiency index MEI

z646-2-50-en_c_th



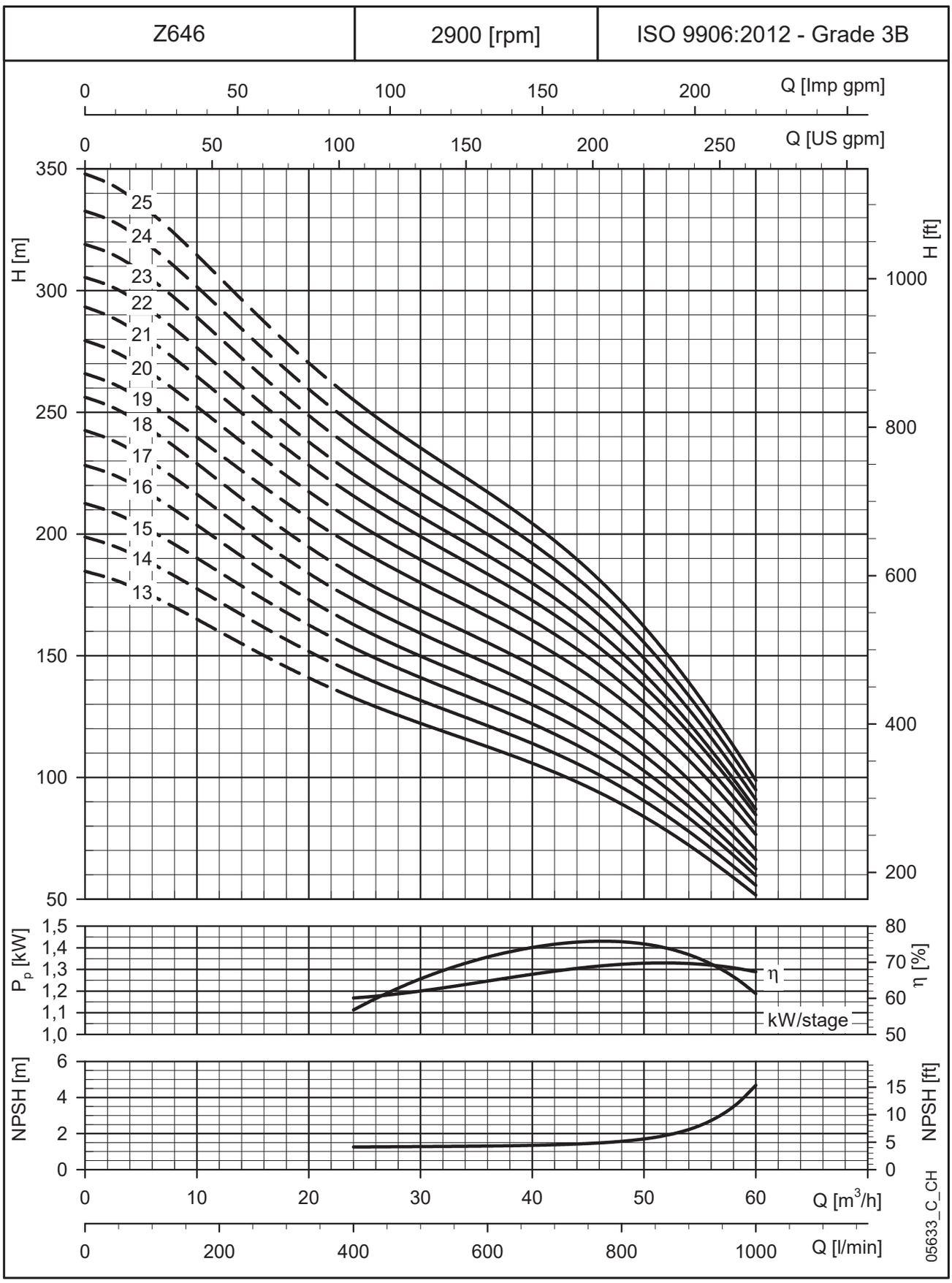
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 Cables	Kg
Z646 13-L6W	18,5	2696	903	1793	144	146	112
Z646 14-L6W	18,5	2811	903	1908	144	146	114
Z646 15-L6W	18,5	2926	903	2023	144	146	117
Z646 16-L6W	26	3151	1013	2138	144	146	137
Z646 17-L6W	26	3266	1013	2253	144	146	140
Z646 18-L6W	26	3381	1013	2368	144	146	142
Z646 19-L6W	26	3496	1013	2483	144	146	145
Z646 20-L6W	26	3611	1013	2598	144	146	147
Z646 21-L6W	26	3726	1013	2713	144	146	150
Z646 22-L6W	30	3969	1141	2828	144	146	164
Z646 23-L6W	30	4084	1141	2943	144	146	167
Z646 24-L6W	30	4199	1141	3058	144	146	169
Z646 25-L6W	37	4424	1251	3173	144	146	184

z646-2-50-en_b_td

The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z646: FROM 13 TO 25 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



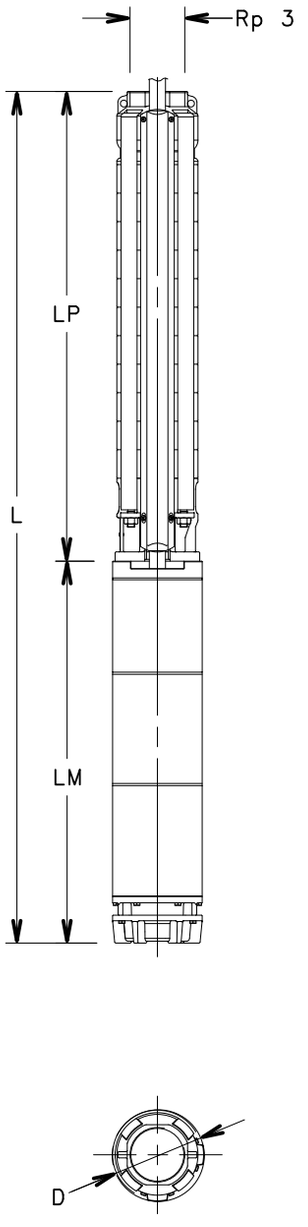
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

Z660: FROM 1 TO 10 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY					
			l/min 0	500	700	900	1100	1300
			m^3/h 0	30	42	54	66	78
	kW	MEI* ≥	H = TOTAL HEAD METRES COLUMN OF WATER					
Z660 01	2,2	0,40	15,8	10,0	8,6	6,8	3,8	
Z660 02	4	0,40	31,3	21,0	18,2	15,0	9,9	2,7
Z660 03	5,5	0,40	45,7	31,9	27,6	23,2	16,0	5,7
Z660 04	7,5	0,40	59,5	42,8	37,3	31,3	21,7	8,4
Z660 05	7,5	0,40	73,1	53,6	46,5	39,1	27,2	10,3
Z660 06	9,3	0,40	89,6	65,0	56,4	47,6	33,5	13,2
Z660 07	11	0,40	102,0	75,0	65,2	54,9	38,7	15,1
Z660 08	13	0,40	113,1	84,2	73,6	62,0	42,9	16,2
Z660 09	15	0,40	127,0	96,0	83,9	71,0	49,6	19,5
Z660 10	15	0,40	144,5	107,8	93,8	79,3	56,1	22,8

* Efficiency index MEI

z660-1-50-en_c_th



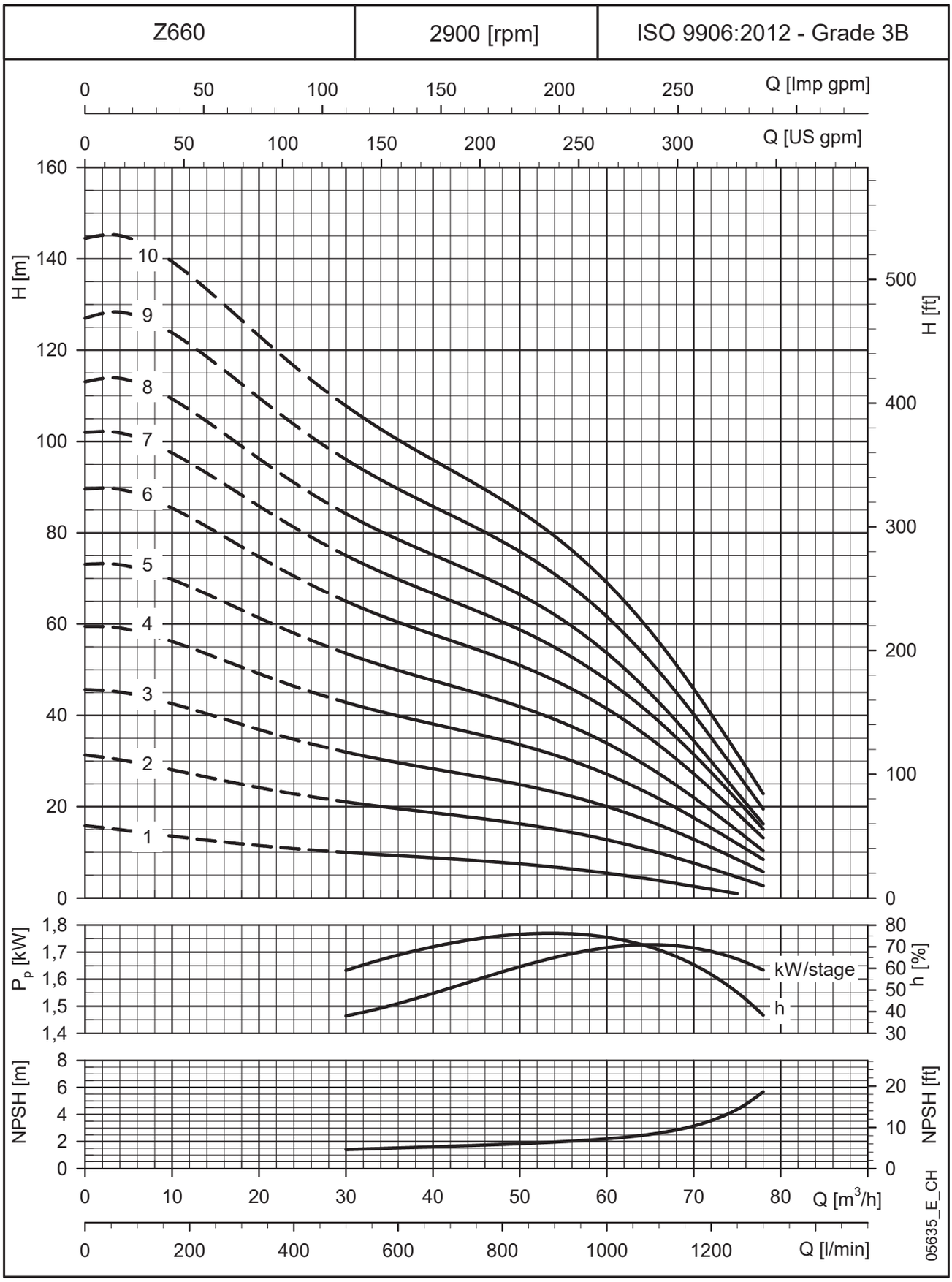
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm)					WEIGHT
		L	LM	LP	ø D		
					1 Cable	2 CableS	Kg
Z660 01-L4C	2,2	806	393	413	142	144	22
Z660 02-L4C	4	1142	614	528	142	144	35
Z660 03-L4C	5,5	1327	684	643	142	144	42
Z660 04-L4C	7,5	1522	764	758	142	144	48
Z660 02-L6W	4	1111	583	528	144	146	52
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	7,5	1526	653	873	144	146	66
Z660 06-L6W	9,3	1671	683	988	144	146	70
Z660 07-L6W	11	1826	723	1103	144	146	77
Z660 08-L6W	13	1981	763	1218	144	146	84
Z660 09-L6W	15	2166	833	1333	144	146	90
Z660 10-L6W	15	2281	833	1448	144	146	92

z660-1-50-en_b_td

The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z660: FROM 1 TO 10 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



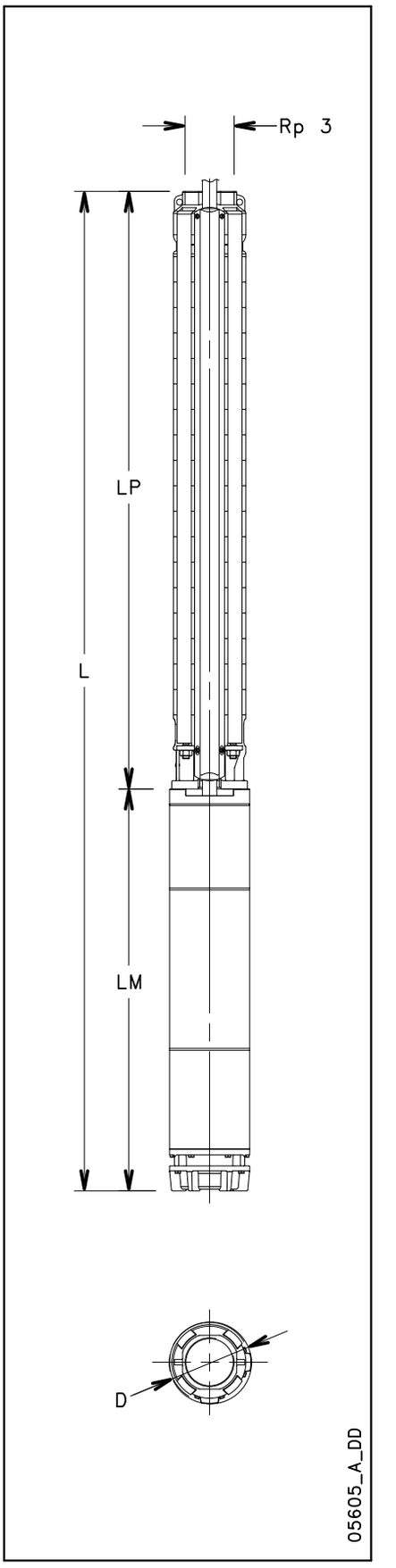
These performances are valid for liquids with density ρ = 1.0 kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

Z660: FROM 11 TO 21 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER kW	RATED POWER MEI* ≥	Q = DELIVERY l/min 0	500	700	900	1100	1300
			m^3/h 0	30	42	54	66	78
			H = TOTAL HEAD METRES COLUMN OF WATER					
Z660 11	18,5	0,40	160,9	118,2	102,9	86,9	61,3	25,6
Z660 12	18,5	0,40	173,7	129,0	112,3	94,8	66,8	28,0
Z660 13	22	0,40	189,2	139,4	121,9	102,7	71,3	28,2
Z660 14	22	0,40	201,5	150,2	131,3	110,6	76,8	30,4
Z660 15	22	0,40	213,3	160,9	140,6	118,5	82,4	32,6
Z660 16	26	0,40	230,2	171,1	149,6	126,6	89,6	36,2
Z660 17	26	0,40	242,8	181,8	159,0	134,5	95,2	38,5
Z660 18	26	0,40	254,4	192,5	168,3	142,4	100,7	40,8
Z660 19	30	0,40	280,2	204,2	178,4	151,1	105,3	41,1
Z660 20	30	0,40	292,6	215,0	187,8	159,0	110,8	43,3
Z660 21	37	0,40	314,0	225,7	197,3	167,1	116,2	45,4

* Efficiency index MEI

z660-2-50-en_c_th



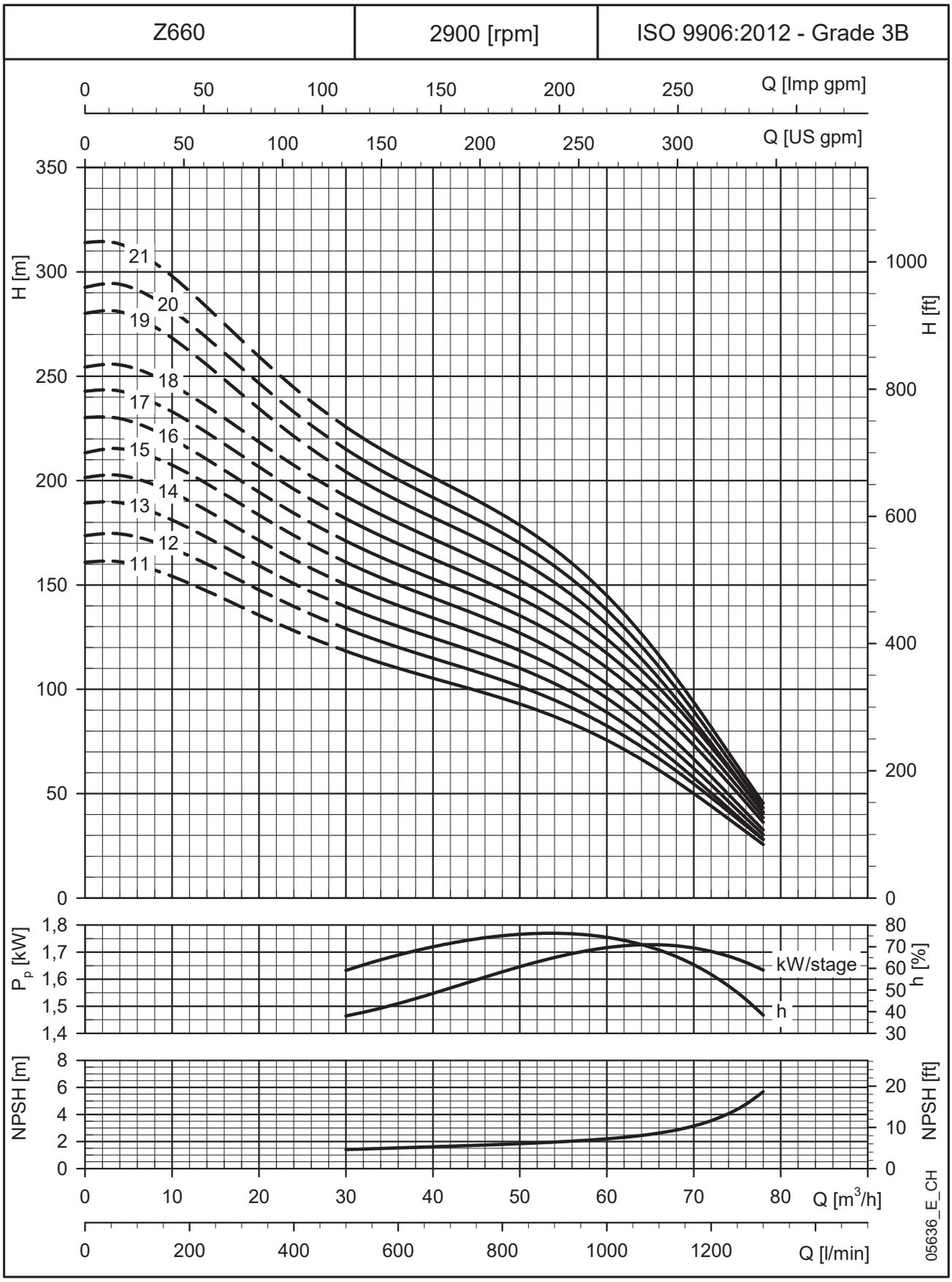
DIMENSIONS AND WEIGHTS

ELECTRO PUMP TYPE	RATED POWER kW	DIMENSIONS (mm) L	LM	LP	ø D 1 Cable	ø D 2 Cables	WEIGHT Kg
Z660 11-L6W	18,5	2466	903	1563	144	146	107
Z660 12-L6W	18,5	2581	903	1678	144	146	109
Z660 13-L6W	22	2716	923	1793	144	146	116
Z660 14-L6W	22	2831	923	1908	144	146	118
Z660 15-L6W	22	2946	923	2023	144	146	121
Z660 16-L6W	26	3151	1013	2138	144	146	137
Z660 17-L6W	26	3266	1013	2253	144	146	140
Z660 18-L6W	26	3381	1013	2368	144	146	142
Z660 19-L6W	30	3624	1141	2483	144	146	157
Z660 20-L6W	30	3739	1141	2598	144	146	159
Z660 21-L6W	37	3964	1251	2713	144	146	174

z660-2-50-en_c_td

The electropump is not available as a complete unit. Pump end and motor must be ordered as two separate items.

Z660: FROM 11 TO 21 STAGES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

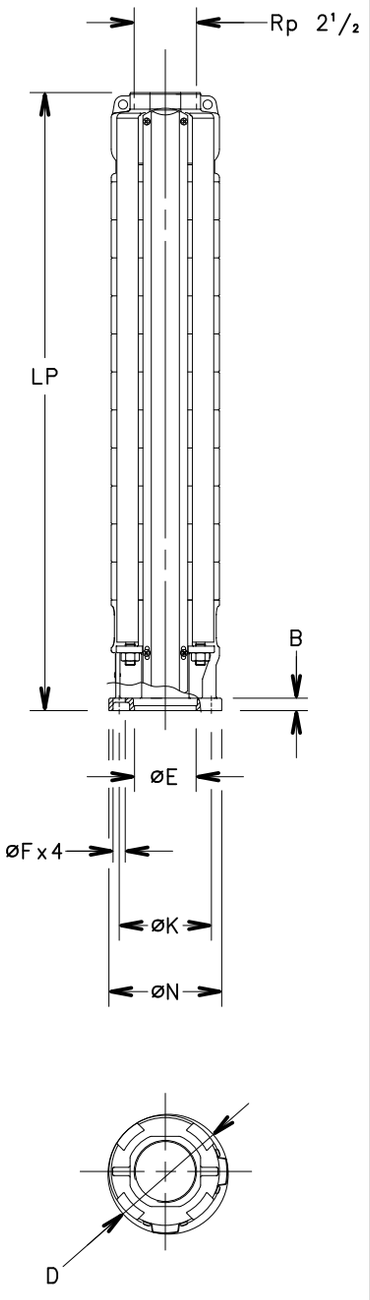


These performances are valid for liquids with density ρ = 1.0 kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

Z612 SERIES
PUMPS DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min^{-1} kW	DIMENSIONS (mm)			WEIGHT
			ø D		
		LP	1 Cable	2 Cables	kg
Z612 01-4	0.5	380	142	144	9
Z612 02-4	1.0	426	142	144	10
Z612 03-4	1.5	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	2.8	610	142	144	15
Z612 07-4	3.3	656	142	144	16
Z612 08-4	3.7	702	142	144	17
Z612 09-4	4.2	748	142	144	19
Z612 10-4	4.6	794	142	144	20
Z612 11-4	5.1	840	142	144	21
Z612 12-4	5.5	886	142	144	22
Z612 13-4	6.0	932	142	144	23
Z612 14-4	6.4	978	142	144	24
Z612 15-4	6.9	1024	142	144	26
Z612 07-6	3.3	656	142	144	16
Z612 08-6	3.7	702	142	144	17
Z612 09-6	4.2	748	142	144	19
Z612 10-6	4.6	794	142	144	20
Z612 11-6	5.1	840	142	144	21
Z612 12-6	5.5	886	142	144	22
Z612 13-6	6.0	932	142	144	23
Z612 14-6	6.4	978	142	144	24
Z612 15-6	6.9	1024	142	144	26
Z612 16-6	7.4	1070	142	144	27
Z612 17-6	7.8	1116	142	144	28
Z612 18-6	8.3	1162	142	144	29
Z612 19-6	9.1	1208	142	144	30
Z612 20-6	9.3	1254	142	144	32
Z612 21-6	9.7	1300	142	144	33
Z612 22-6	10.2	1346	142	144	34
Z612 23-6	10.7	1438	142	144	36
Z612 24-6	11.0	1484	142	144	37
Z612 25-6	11.5	1530	142	144	38
Z612 26-6	11.9	1576	142	144	40
Z612 27-6	12.4	1622	142	144	41
Z612 28-6	12.8	1668	142	144	42
Z612 29-6	13.5	1714	142	144	43
Z612 30-6	14.0	1760	142	144	44
Z612 31-6	14.5	1806	142	144	46
Z612 32-6	14.9	1852	142	144	47
Z612 33-6	15.1	1898	142	144	48
Z612 34-6	15.6	1944	142	144	49
Z612 35-6	16.1	1990	142	144	50
Z612 36-6	16.5	2082	142	144	52
Z612 37-6	17.0	2128	142	144	54
Z612 38-6	17.4	2174	142	144	55
Z612 39-6	17.9	2220	142	144	56

z612p-2p50-en_c_td



PUMPS MOTOR CONNECTION

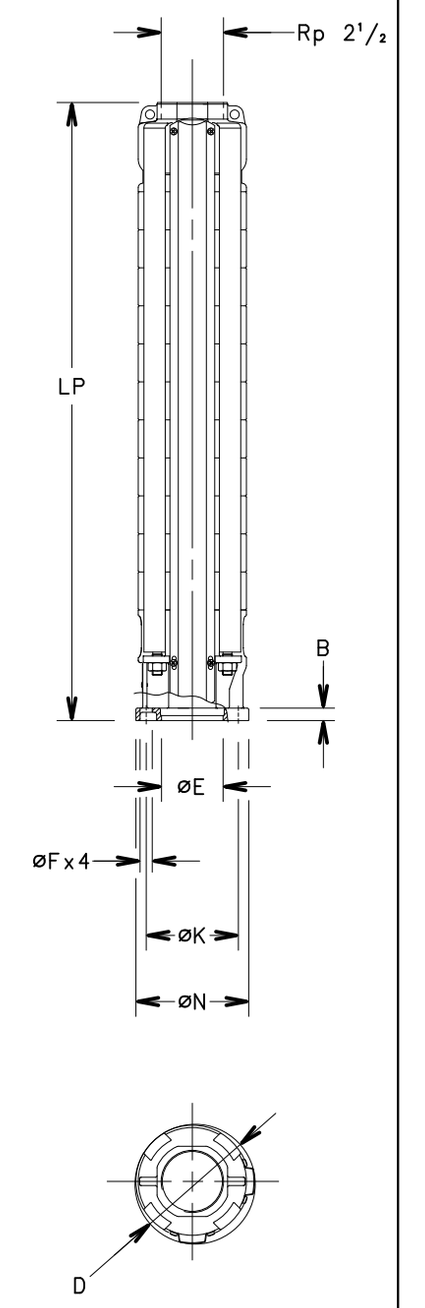
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

z6-mtcn-2p50-en_a_td

Z616 SERIES
PUMPS DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min^{-1} kW	DIMENSIONS (mm)			WEIGHT
			ø D		
		LP	1 Cable	2 Cables	kg
Z616 01-4	0.7	380	142	144	9
Z616 02-4	1.6	426	142	144	10
Z616 03-4	2.4	472	142	144	12
Z616 04-4	3.1	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	6.7	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	6.7	748	142	144	19
Z616 10-6	7.3	794	142	144	20
Z616 11-6	8.0	840	142	144	21
Z616 12-6	8.7	886	142	144	22
Z616 13-6	9.4	932	142	144	23
Z616 14-6	10.2	978	142	144	24
Z616 15-6	10.9	1024	142	144	26
Z616 16-6	11.7	1070	142	144	27
Z616 17-6	12.2	1116	142	144	28
Z616 18-6	12.9	1162	142	144	29
Z616 19-6	13.6	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	24.3	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_b_td



PUMPS MOTOR CONNECTION

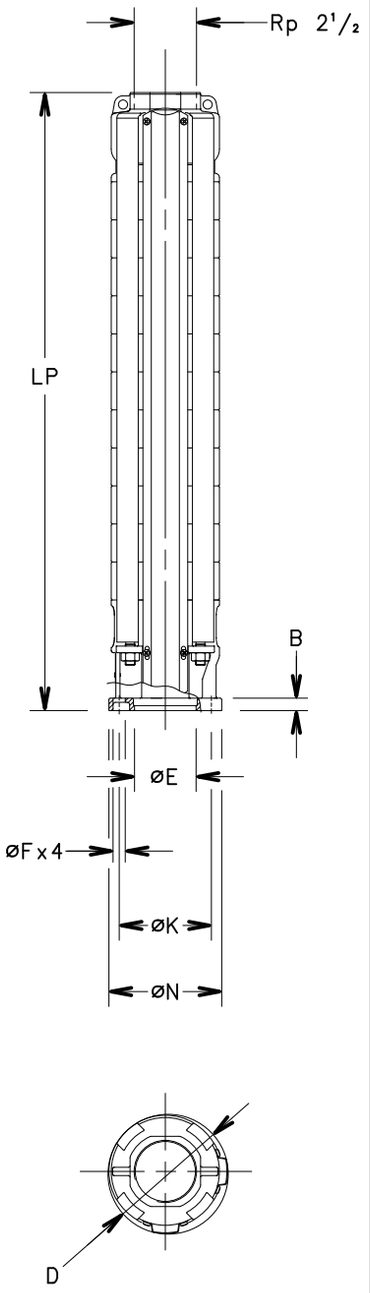
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

z6-mtcn-2p50-en_a_td

Z622 SERIES
PUMPS DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min^{-1} kW	DIMENSIONS (mm)			WEIGHT
			ø D		
		LP	1 Cable	2 Cables	kg
Z622 01-4	1.0	357	142	144	9
Z622 02-4	1.9	426	142	144	10
Z622 03-4	2.8	495	142	144	12
Z622 04-4	3.7	564	142	144	14
Z622 05-4	4.4	633	142	144	15
Z622 06-4	5.3	702	142	144	17
Z622 07-4	6.3	771	142	144	18
Z622 08-4	7.2	840	142	144	20
Z622 04-6	3.7	564	142	144	14
Z622 05-6	4.4	633	142	144	15
Z622 06-6	5.3	702	142	144	17
Z622 07-6	6.3	771	142	144	18
Z622 08-6	7.2	840	142	144	20
Z622 09-6	8.0	909	142	144	21
Z622 10-6	8.9	978	142	144	23
Z622 11-6	9.7	1047	142	144	24
Z622 12-6	10.6	1116	142	144	26
Z622 13-6	11.5	1185	142	144	27
Z622 14-6	12.4	1254	142	144	29
Z622 15-6	13.3	1323	142	144	31
Z622 16-6	14.2	1392	142	144	32
Z622 17-6	15.0	1461	142	144	34
Z622 18-6	15.9	1530	142	144	35
Z622 19-6	16.8	1599	142	144	37
Z622 20-6	17.7	1668	142	144	39
Z622 21-6	18.5	1737	142	144	40
Z622 22-6	19.6	1806	142	144	42
Z622 23-6	20.5	1875	142	144	43
Z622 24-6	21.4	1944	142	144	45
Z622 25-6	22.3	2013	142	144	47
Z622 26-6	22.9	2082	142	144	48
Z622 27-6	23.7	2151	142	144	50
Z622 28-6	24.6	2220	142	144	51
Z622 29-6	25.5	2289	142	144	53
Z622 30-6	26.4	2358	142	144	54
Z622 31-6	27.3	2427	142	144	56
Z622 32-6	28.1	2496	142	144	57
Z622 33-6	29.0	2565	142	144	59

z622p-2p50-en_b_td



PUMPS MOTOR CONNECTION

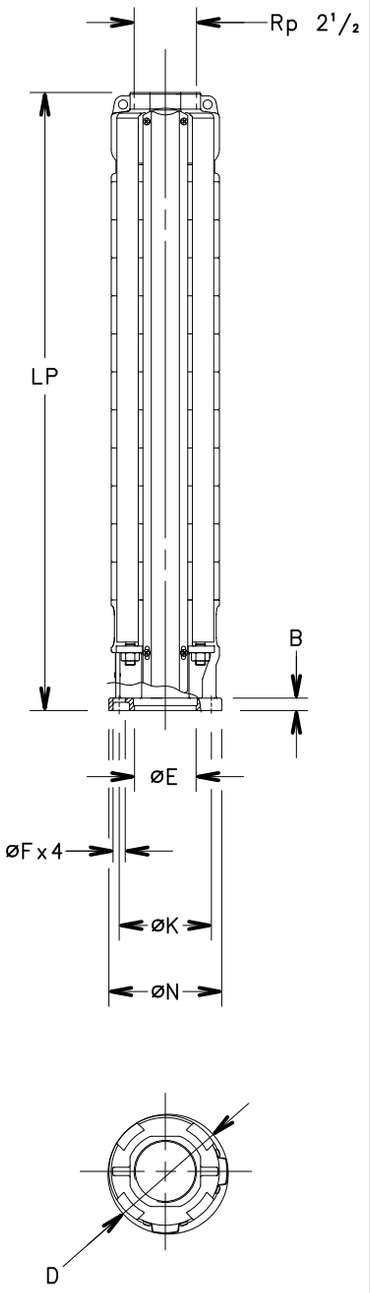
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

z6-mtcn-2p50-en_a_td

Z631 SERIES
PUMPS DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min^{-1} kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D 1 Cable	ø D 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

z631p-2p50-en_b_td



PUMPS MOTOR CONNECTION

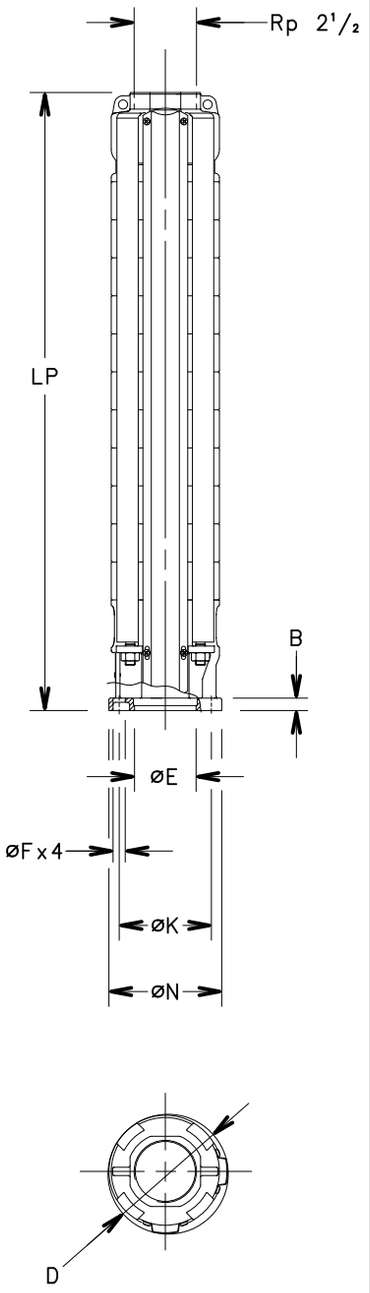
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

z6-mtcn-2p50-en_a_td

Z646 SERIES
PUMPS DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX PUMP POWER at 2900 min^{-1} kW	DIMENSIONS (mm)			WEIGHT kg
		LP	ø D 1 Cable	ø D 2 Cables	
Z646 01-4	1,3	413	142	144	10
Z646 02-4	2,4	528	142	144	12
Z646 03-4	3,7	643	142	144	15
Z646 04-4	4,7	758	142	144	17
Z646 05-4	6,1	873	142	144	20
Z646 06-4	7,3	988	142	144	22
Z646 03-6	3,7	643	142	144	15
Z646 04-6	4,7	758	142	144	17
Z646 05-6	6,1	873	142	144	20
Z646 06-6	7,3	988	142	144	22
Z646 07-6	8,4	1103	142	144	25
Z646 08-6	9,6	1218	142	144	27
Z646 09-6	10,8	1333	142	144	30
Z646 10-6	12,0	1448	142	144	32
Z646 11-6	13,3	1563	142	144	35
Z646 12-6	14,5	1678	142	144	37
Z646 13-6	15,6	1793	142	144	40
Z646 14-6	16,8	1908	142	144	42
Z646 15-6	18,0	2023	142	144	45
Z646 16-6	19,3	2138	142	144	47
Z646 17-6	20,5	2253	142	144	50
Z646 18-6	21,7	2368	142	144	52
Z646 19-6	22,7	2483	142	144	55
Z646 20-6	23,9	2598	142	144	57
Z646 21-6	25,1	2713	142	144	60
Z646 22-6	26,4	2828	142	144	62
Z646 23-6	27,5	2943	142	144	65
Z646 24-6	28,7	3058	142	144	67
Z646 25-6	29,9	3173	142	144	70

z646p-2p50-en_b_td



PUMPS MOTOR CONNECTION

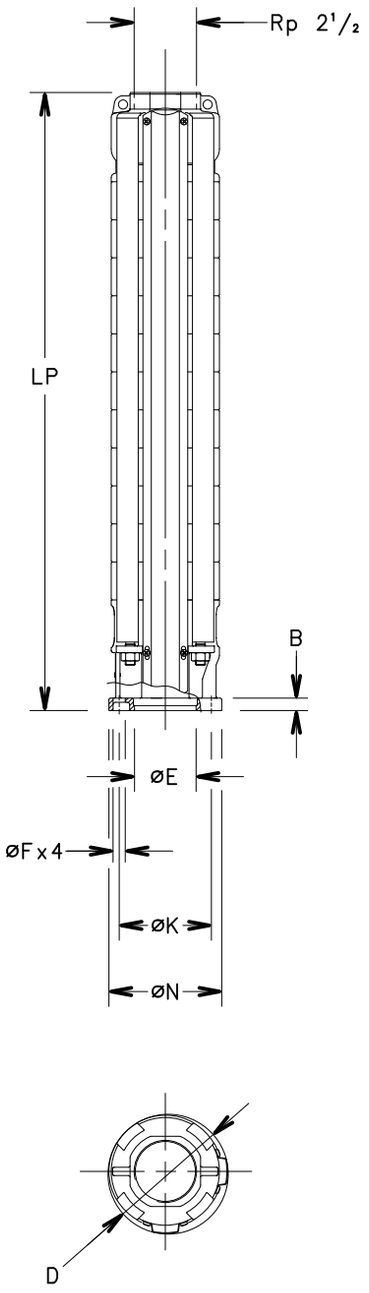
MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
4" (NEMA)	130	76,2	9,5	10,5	87,3
6" (NEMA)	136	111,1	14,5	15	76,2
Coupling 4" and 6" according to NEMA standards					

z6-mtcn-2p50-en_a_td

Z660 SERIES
PUMPS DIMENSIONS AND WEIGHTS

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

z660p-2p50-en_b_td



PUMPS MOTOR CONNECTION

MOTOR	DIMENSIONS (mm)				
	N	K	F	B	E ^{H7}
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

ACCESSORIES

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

MOTOR TYPE 4OS - 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

4OS-2p50-en_e_tc

MOTOR TYPE 4OS - 4" THREE-PHASE	RATED POWER		RATED CURRENTE 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.

4OS-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	CONTROL PANEL TYPE					
	kW	HP	A	Q1D/...	Q3D/...	Q3I/...	Q3A/...	Q3Y/...	Q3SF/...
	4	5,5	11,0	...55	...40-75	...40-75	...40-75	...40-75	-
	5,5	7,5	14,6	...75	...40-75	...40-75	...40-75	...40-75	-
	7,5	10	18,3	...92	...75-92	...75-92	...75-92	...75-92	...150
	9,3	12,5	22,8	...110	...92-110	...92-110	...92-110	...92-110	...150
	11	15	26,0	...150	...110-150	...110-150	...110-150	...110-150	...150
	15	20	34,2	-	...150-185	...150-185	...150-185	...150-185	...185
	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.

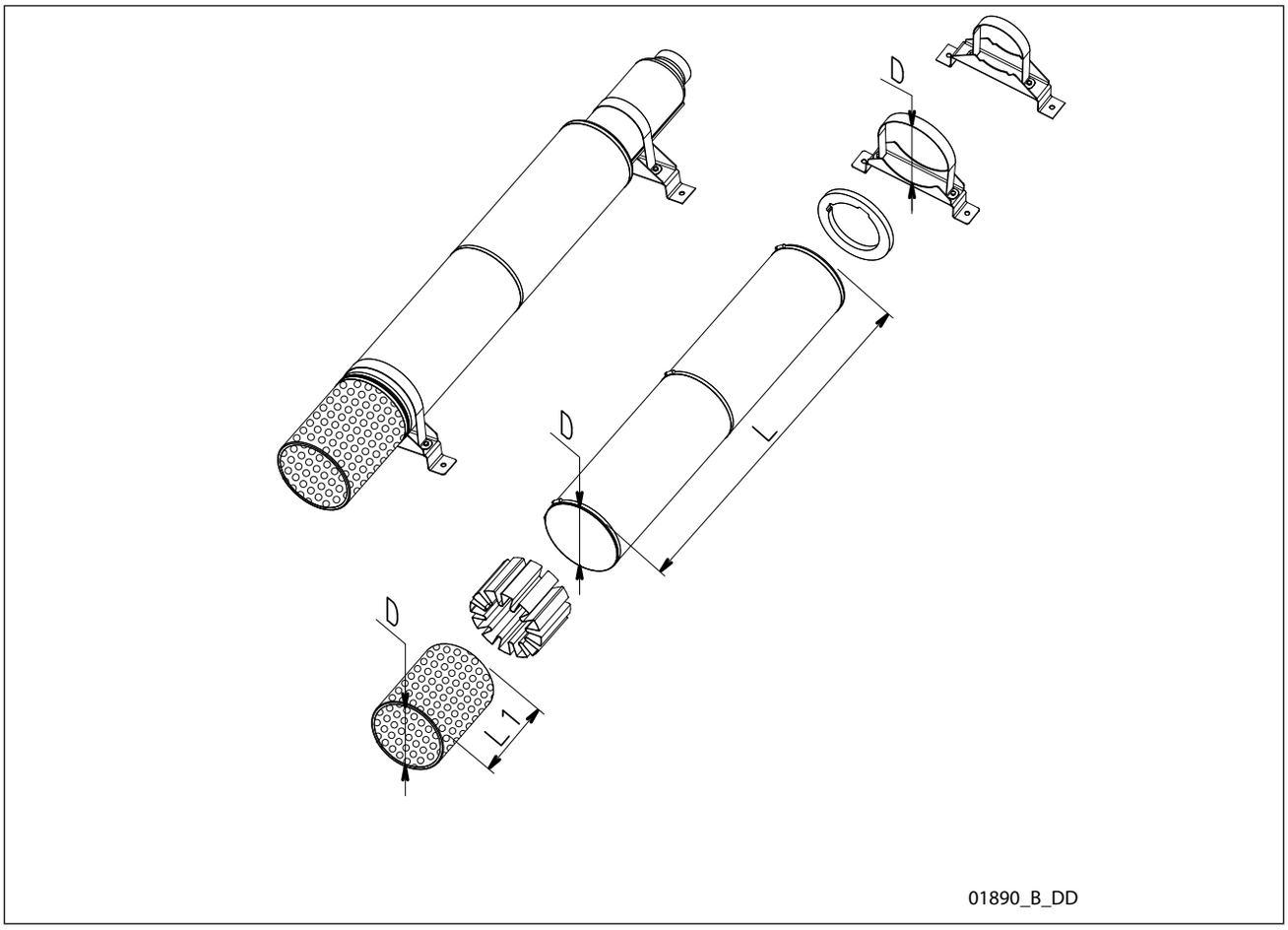
L6c-2p50-en_g_tc

MOTOR TYPE L6W - 6" THREE-PHASE	RATED POWER		RATED CURRENT 380-415 V	PANEL TYPE					
	kW	HP	A	Q1D/...	Q3D/...	Q3I/...	Q3A/...	Q3Y/...	Q3SF/...
	4	5,5	9,89	...55	...40-75	...40-75	...40-75	...40-75	-
	5,5	7,5	12,7	...75	...40-75	...40-75	...40-75	...40-75	-
	7,5	10	17,0	...92	...75-92	...75-92	...75-92	...75-92	...150
	9,3	12,5	20,5	...110	...92-110	...92-110	...92-110	...92-110	...150
	11	15	24,2	...150	...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	...185
	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	4	5,5	10,5	...55	...40-75	...40-75	...40-75	...40-75	-
L6W HT - 6"	5,5	7,5	13,4	...75	...40-75	...40-75	...40-75	...40-75	-
THREE-PHASE	7,5	10	17,3	...92	...75-92	...75-92	...75-92	...75-92	...150
	9,3	12,5	20,8	...110	...92-110	...92-110	...92-110	...92-110	...150
	11	15	23,9	...150	...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	...185
	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_e_tc

COOLING SHROUDS



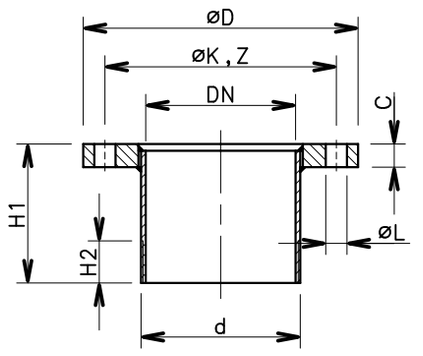
01890_B_DD

PUMP TYPE	MOTOR TYPE				COOLING SET SHROUD (D x L)	COOLING SET FILTER (D x L1)	COOLING SET BRACKETS (D)
	4OS/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			D160X1000	D160X158	D160 - 2pcs
	7,5	7,5					
Z660	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	D180X1500	D180X192	D180 - 3pcs
			-	26			
			30	30			
			37	37			
Z660			4	4	D200X1000	D200X192	D200 - 2pcs
			5,5	5,5			
			7,5	7,5			
			9,3	9,3			
			11	11			
			-	13			
			15	15			
			18,5	18,5			
			22	22	D200X1500	D200X192	D200 - 3pcs
			-	26			
			30	30			
			37	37			

Note: Not available for high pressure version.

z6_kit-raf50-en_b_ta

THREADED FLANGES ISO

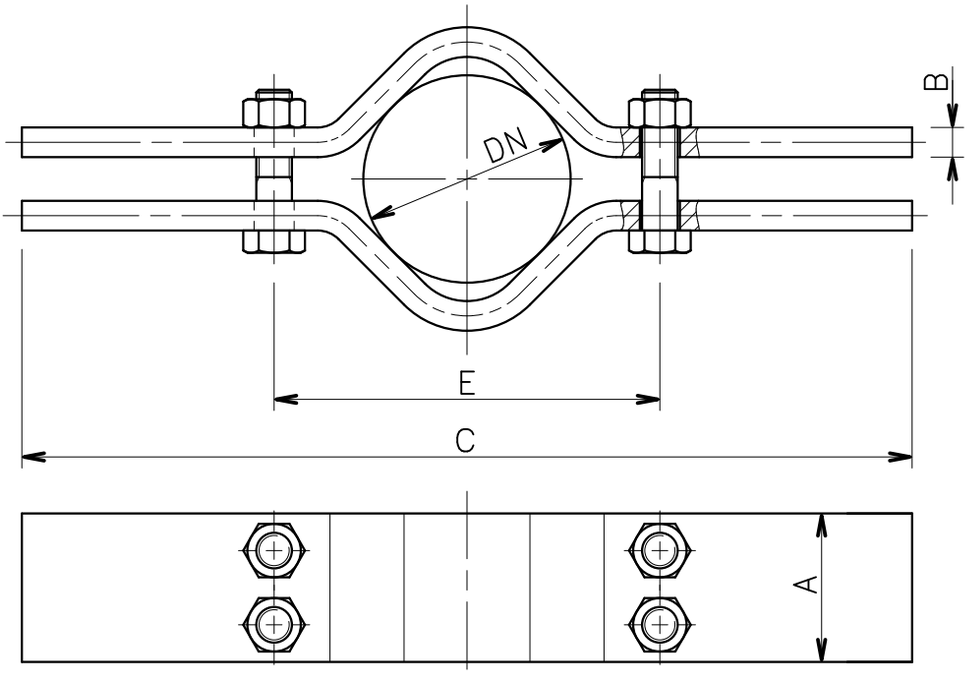


THREADING UNI ISO 7/1 d	Dimensions (mm) Flange according to EN 1092-1 DN	PN	Ø D	Ø K	Z	Ø L	C	H1	H2
R 2 1/2	65	40	185	145	8	18	24	100	30
R 3	80	40	200	160	8	18	26	110	35
R 4	100	40	235	190	8	22	26	120	40

z6-flange-en_a_td

03731A_A_SC

CARRYING CLAMPS



03730_A_SC

Ø PIPE NOMINAL DN		CARRYNG CLAMPS Dimensions (mm) A	B	C	E	SCREW	Pmax (1) kg	PIPE WEIGHT Flanged kg/m	Threaded kg/m	Water kg/m
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

4OS - L4C - L6C - L6W - L8W - L10W - L12W 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
4OS	all models	1,00	1,00	1,00	0,90	0,80	0,70	0,60	-
L4C		1,00	1,00	1,00	0,95	0,90	0,85	0,80	-
L6C		1,00	1,00	1,00	0,95	0,80	0,75	0,70	0,60
L6W		1,00	1,00	0,75	-	-	-	-	-
L8W		1,00	1,00	0,75	-	-	-	-	-
L10W		1,00	1,00	0,75	-	-	-	-	-
L12W		1,00	1,00	0,75	-	-	-	-	-
L6W..HT		1,00	1,00	1,00	1,00	1,00	0,85	0,75	0,65
L8W..HT		1,00	1,00	1,00	1,00	1,00	0,85	0,75	0,65
L10W..HT		1,00	1,00	1,00	1,00	1,00	0,85	0,75	0,65
L12W..HT		1,00	1,00	1,00	1,00	1,00	0,85	0,75	0,65

4OS-LC-LW-derating-en_b_te

EXAMPLE 1
A 2,2 kW 4OS motor is to be used in 50°C water.
Motor power at 50 °C = 2,2 x 0,7 = 1,54 kW

EXAMPLE 2
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

EXAMPLE 3
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

EXAMPLE 4
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 lenghts 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 lenghts 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 lenght of 120 m or immediately above it and then read off the corresponding cross-section in that column.
In this case, the 4 mm^2 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

	THREE CORE FLAT					FOUR CORE FLAT					SINGLE CORE ROUND			FOUR CORE ROUND		
SECTION mm^2	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	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm²								
							mm²	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
							Maximum lenght in metres								
4OS03M235	0,37	0,5	220	0,98	3,01	4		107	179	288	432				
			230	0,96	3,06										
			240	0,93	3,16										
4OS05M235	0,55	0,75	220	0,98	4,07			79	132	213	319				
			230	0,96	4,13										
			240	0,92	4,25										
4OS07M235	0,75	1	220	0,99	5,44			58	98	158	237	409			
			230	0,97	5,45										
			240	0,94	5,58										
4OS11M235	1,1	1,5	220	0,99	7,45			42	71	115	172	298	469		
			230	0,98	7,37										
			240	0,95	7,55										
4OS15M235	1,5	2	220	0,98	10,0			31	53	86	129	223	351	542	
			230	0,96	10,1										
			240	0,92	10,5										
4OS22M235	2,2	3	220	0,99	14,3			20	36	58	89	154	244	377	528
			230	0,97	14,1										
			240	0,94	14,4										
4OS40M235	4	5,5	220	0,96	25,7			-	18	31	49	86	137	212	296
			230	0,94	24,9										
			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_e_te

4OS THREE-PHASE, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES, DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x …mm²								
							mm²	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
							Maximum lenght in metres								
4OS03T235	0,37	0,5	220	0,78	2,04	4		229	381						
			230	0,72	2,08										
			240	0,68	2,15										
4OS05T235	0,55	0,75	220	0,80	2,79			163	271						
			230	0,75	2,86										
			240	0,71	2,96										
4OS07T235	0,75	1	220	0,78	3,76			124	206	331					
			230	0,71	3,95										
			240	0,67	4,16										
4OS11T235	1,1	1,5	220	0,80	5,06			89	149	240	358				
			230	0,74	5,18										
			240	0,70	5,42										
4OS15T235	1,5	2	220	0,78	6,95			66	110	178	266	455			
			230	0,72	7,24										
			240	0,68	7,64										
4OS22T235	2,2	3	220	0,80	9,72			45	76	123	185	317			
			230	0,74	10,0										
			240	0,69	10,5										
4OS30T235	3	4	220	0,85	12,1			33	57	93	140	241	376		
			230	0,81	12,0										
			240	0,77	12,3										
4OS40T235	4	5,5	220	0,85	16,4			23	41	67	102	177	277		
			230	0,80	16,5										
			240	0,76	17,0										
4OS55T235	5,5	7,5	220	0,83	22,9			-	28	48	73	128	201	306	
			230	0,78	23,0										
			240	0,73	23,7										
4OS75T235	7,5	10	220	0,82	31,0			-	19	34	53	94	148	227	314
			230	0,76	31,4										
			240	0,71	32,4										
4OS03T405	0,37	0,5	380	0,78	1,18			685							
			400	0,72	1,20										
			415	0,68	1,24										
4OS05T405	0,55	0,75	380	0,80	1,61			489							
			400	0,75	1,65										
			415	0,71	1,71										
4OS07T405	0,75	1	380	0,78	2,20			367							
			400	0,71	2,30										
			415	0,67	2,40										
4OS11T405	1,1	1,5	380	0,80	2,90			271	451						
			400	0,74	3,00										
			415	0,70	3,10										
4OS15T405	1,5	2	380	0,78	4,00			201	334						
			400	0,72	4,20										
			415	0,68	4,40										
4OS22T405	2,2	3	380	0,80	5,60			139	232	374					
			400	0,74	5,80										
			415	0,69	6,10										
4OS30T405	3	4	380	0,85	7,00			104	174	281	421				
			400	0,81	7,00										
			415	0,77	7,10										
4OS40T405	4	5,5	380	0,85	9,50			75	127	206	309				
			400	0,80	9,50										
			415	0,76	9,80										
4OS55T405	5,5	7,5	380	0,83	13,2			53	92	150	226	389			
			400	0,78	13,3										
			415	0,73	13,7										
4OS75T405	7,5	10	380	0,82	17,9			37	66	109	166	288	451		
			400	0,76	18,1										
			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	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x …mm² (2W: 3G x …mm²)								
							mm²	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
							Maximum lenght in metres								
L4C03M235 (2W)	0,37	0,5	220	0,96	3,20	4		103	172	278	416				
			230	0,97	3,30										
			240	0,91	3,40										
L4C05M235 (2W)	0,55	0,75	220	0,95	4,30			76	127	205	307				
			230	0,94	4,60										
			240	0,90	4,80										
L4C07M235 (2W)	0,75	1	220	0,93	6,00			57	96	155	232	398			
			230	0,92	6,20										
			240	0,85	6,50										
L4C11M235 (2W)	1,1	1,5	220	0,94	8,10			40	68	110	166	286	448		
			230	0,92	8,10										
			240	0,87	8,30										
L4C15M235	1,5	2	220	0,96	10,4			30	52	84	126	218	343	527	
			230	0,93	10,4										
			240	0,90	10,7										
L4C22M235	2,2	3	220	0,96	15,4			19	34	56	84	146	231	355	496
			230	0,94	15,0										
			240	0,91	15,3										
L4C40M235	4	5,5	220	0,93	29,9			-	15	27	42	75	120	185	259
			230	0,90	29,8										
			240	0,87	29,7										

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

l4cm-cavi-50-en_e_te

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

MOTOR TYPE THREE-PHASE	RATED POWER Kw	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x …mm²								
							mm²	1,5	2,5	4	6	10	16	25	35
							A max	23	32	42	54	75	100	127	158
							Maximum lenght in metres								
L4C03T235	0,37	0,5	220	0,69	2,60			190	316						
			230	0,70	2,70										
			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	4		569							
			400	0,70	1,60										
			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	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x …mm²							
							mm²	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
							Maximum lenght in metres								
L6C40T235	4	5,5	220	0,80	17,8			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			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			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			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			-	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			-	-	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			-	-	35	59	94	133	187	257
			230	0,80	71,0										
			240	0,73	72,7										
L6C220T235	22	30	220	0,88	82,3			-	-	-	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			147	222	382					
			400	0,75	14,0										
			415	0,71	14,6										
L6C75T405	7,5	10	380	0,82	17,6			112	169	293	459				
			400	0,78	18,0										
			415	0,73	18,3										
L6C93T405	9,3	12,5	380	0,82	21,7			88	135	236	371	565			
			400	0,80	22,0										
			415	0,79	22,8										
L6C110T405	11	15	380	0,87	25,0			71	110	193	305	466			
			400	0,82	25,5										
			415	0,79	26,0										
L6C150T405	15	20	380	0,84	33,5			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			-	65	119	191	294	409		
			400	0,80	41,0										
			415	0,73	42,0										
L6C220T405	22	30	380	0,88	47,5			-	50	94	153	237	332	467	
			400	0,84	47,0										
			415	0,80	47,5										
L6C300T405	30	40	380	0,89	63,0			-	-	65	109	173	245	346	480
			400	0,85	61,5										
			415	0,80	63,5										
L6C370T405	37	50	380	0,87	79,5			-	-	-	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	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm² + 3 x ...mm²							
							mm²	4	6	10	16	25	35	50	70
							A max*	73	94	130	173	220	274	333	426
							Maximum lenght 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			259	388						
			400	0,75	14,0										
			415	0,71	14,6										
L6C75T405	7,5	10	380	0,82	17,6			199	299	513					
			400	0,78	18,0										
			415	0,73	18,3										
L6C93T405	9,3	12,5	380	0,82	21,7			160	241	415					
			400	0,80	22,0										
			415	0,79	22,8										
L6C110T405	11	15	380	0,87	25,0			130	197	340	533				
			400	0,82	25,5										
			415	0,79	26,0										
L6C150T405	15	20	380	0,84	33,5			98	150	260	408				
			400	0,80	33,4										
			415	0,76	34,2										
L6C185T405	18,5	25	380	0,83	40,5			80	123	216	340	518			
			400	0,80	41,0										
			415	0,73	42,0										
L6C220T405	22	30	380	0,88	47,5			63	98	173	274	421			
			400	0,84	47,0										
			415	0,80	47,5										
L6C300T405	30	40	380	0,89	63,0			44	70	126	202	312	435		
			400	0,85	61,5										
			415	0,80	63,5										
L6C370T405	37	50	380	0,87	79,5			-	53	99	160	248	347	487	
			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	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm²								
							mm²	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
							Maximum lenght in metres								
L6W40T405	4	5.5	380	0.89	9.72	4		193	289	498					
			415	0.84	9.17										
L6W55T405	5.5	7.5	380	0.86	12.8			150	225	389					
			415	0.79	12.7										
L6W75T405	7.5	10	380	0.86	17.5			107	163	282	443				
			415	0.78	17.6										
L6W93T405	9.3	12.5	380	0.88	20.9			86	132	230	363	555			
			415	0.82	20.3										
L6W110T405	11	15	380	0.89	24.5			71	110	193	306	469			
			415	0.84	23.1										
L6W130T405	13	17.5	380	0.85	30.0			58	91	162	257	394	546		
			415	0.76	30.2										
L6W150T405	15	20	380	0.87	33.9			49	77	139	222	341	474		
			415	0.81	32.2										
L6W185T405	18.5	25	380	0.87	40.2			-	63	115	185	286	398		
			415	0.80	39.3										
L6W220T405	22	30	380	0.87	47.5			-	50.8	94.8	154	240	335	471	
			415	0.81	46.6										
L6W260T405	26	35	380	0.87	55.6			-	-	78	129	202	284	399	
			415	0.81	54.2										
L6W300T405	30	40	380	0.87	63.0			-	-	67	112	176	249	351	485
			415	0.80	61.7										
L6W370T405	37	50	380	0.86	77.9			-	-	-	87	139	199	282	391
			415	0.79	77.2										

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

l6w-cavi-50-en_e_te

L6W HT, 50 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm²								
							mm2	4	6	10	16	25	35	50	70
							A max	42	54	75	100	127	158	192	246
							Maximum lenght in metres								
L6W40T405 HT	4	5.5	380	0.76	11.4	4		190	285	489					
			415	0.66	13										
L6W55T405 HT	5.5	7.5	380	0.85	14.0			138	208	359					
			415	0.77	14.6										
L6W75T405 HT	7.5	10	380	0.89	17.7			102	156	271	425				
			415	0.82	17.3										
L6W93T405 HT	9.3	12.5	380	0.90	22.0			80	122	214	338	518			
			415	0.85	20.3										
L6W110T405 HT	11	15	380	0.89	24.5			71	110	193	305	468			
			415	0.84	23.1										
L6W130T405 HT	13	17.5	380	0.88	30.5			55	87	154	245	377	524		
			415	0.83	28.7										
L6W150T405 HT	15	20	380	0.87	34.2			48	77	138	220	338	470		
			415	0.81	32.5										
L6W185T405 HT	18.5	25	380	0.87	40.4			-	63	114	184	284	396		
			415	0.81	39										
L6W220T405 HT	22	30	380	0.87	48.3			-	49.6	92.8	151	235	329	462	
			415	0.81	46.9										
L6W260T405 HT	26	35	380	0.89	57.1			-	-	74	123	193	272	383	
			415	0.83	54.4										
L6W300T405 HT	30	40	380	0.88	64.1			-	-	64	108	171	242	342	
			415	0.82	61.8										
L6W370T405 HT	37	50	380	0.88	79.8			-	-	-	83	133	190	271	377
			415	0.82	77										

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

l6w-ht-cavi-50-en_d_te

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

MOTOR TYPE THREE-PHASE	RATED POWER Kw	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm² + 3 x ...mm²								
							mm²	4	6	10	16	25	35	50	70
							A max*	73	94	130	173	220	274	333	426
							Maximum lenght in metres								
L6W40T405	4	5.5	380	0.89	9.72	4		-	-						
			415	0.84	9.17										
L6W55T405	5.5	7.5	380	0.86	12.8			132	197	338					
			415	0.79	12.7										
L6W75T405	7.5	10	380	0.86	17.5			96	144	247					
			415	0.78	17.6										
L6W93T405	9.3	12.5	380	0.88	20.9			78	117	202	316				
			415	0.82	20.3										
L6W110T405	11	15	380	0.89	24.5			65	99	171	267				
			415	0.84	23.1										
L6W130T405	13	17.5	380	0.85	30.0			55	83	144	226				
			415	0.76	30.2										
L6W150T405	15	20	380	0.87	33.9			47	71	124	196	299			
			415	0.81	32.2										
L6W185T405	18.5	25	380	0.87	40.2			39	60	104	164	252			
			415	0.80	39.3										
L6W220T405	22	30	380	0.87	47.5			32	49.6	87.5	139	212	295		
			415	0.81	46.6										
L6W260T405	26	35	380	0.87	55.6			26	41	74	117	180	251		
			415	0.81	54.2										
L6W300T405	30	40	380	0.87	63.0			22	35.7	64.3	103	159	221	309	
			415	0.80	61.7										
L6W370T405	37	50	380	0.86	77.9			-	28	51	83	128	179	250	344
			415	0.79	77.2										

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

L6W-cavi-SD-50-en_e_te

*A max is the maximum rated current of the motor

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

MOTOR TYPE THREE-PHASE	RATED POWER Kw	RATED POWER HP	RATED VOLTAGE V	Cos φ	RATED CURRENT A	VOLTAGE DROP %	Cable cross section: 4G x ...mm² + 3 x ...mm²								
							mm²	4	6	10	16	25	35	50	70
							A max*	73	94	130	173	220	274	333	426
							Maximum lenght in metres								
L6W40T405 HT	4	5.5	380	0.76	11.4	4		-							
			415	0.66	13										
L6W55T405 HT	5.5	7.5	380	0.85	14.0			-							
			415	0.77	14.6										
L6W75T405 HT	7.5	10	380	0.89	17.7			-							
			415	0.82	17.3										
L6W93T405 HT	9.3	12.5	380	0.90	22.0			-							
			415	0.85	20.3										
L6W110T405 HT	11	15	380	0.89	24.5			65	98	170	267				
			415	0.84	23.1										
L6W130T405 HT	13	17.5	380	0.88	30.5			52	79	137	216				
			415	0.83	28.7										
L6W150T405 HT	15	20	380	0.87	34.2			46	71	123	194	296			
			415	0.81	32.5										
L6W185T405 HT	18.5	25	380	0.87	40.4			38	59	104	164	250			
			415	0.81	39										
L6W220T405 HT	22	30	380	0.87	48.3			31	48.6	85.9	136	209	289		
			415	0.81	46.9										
L6W260T405 HT	26	35	380	0.89	57.1			32	48	83	129	197	272		
			415	0.83	54.4										
L6W300T405 HT	30	40	380	0.88	64.1			22	35	62	100	154	215	301	
			415	0.82	61.8										
L6W370T405 HT	37	50	380	0.88	79.8			-	-	48.6	78.9	123	172	241	332
			415	0.82	77.0										

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

l6w-ht-cavi-SD-50-en_d_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^2)												
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150
4OS L4C	0,37 - 7,5	Resin-filled method	GR11	GR11	GR12	GR12	GR12	GR13	GR13	GR14	GR14	GR15	GR15	GR16	-
		Heat-shrink method	GT11	GT11	GT12	GT12	GT13	GT14	GT15	GT16	-	-	-	-	-
		Tape method	Self-vulcanizing tape + self-vulcanizing sealing putty and PVC tape (1)												
L6C L6W	4 - 37	Resin-filled method	-	-	GR12	GR12	GR12	GR13	GR13	GR14	GR14	GR15	GR15	GR16	-
		Heat-shrink method	-	-	GT12	GT12	GT13	GT14	GT15	GT16	-	-	-	-	-
		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^2)												
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150
L6C L6W	4 - 37	Resin-filled method	-	-	GR12	GR12	GR12	GR13	GR13	GR14	GR14	GR15	GR15	GR16	-
		Heat-shrink method	-	-	GT12	GT12	GT13	GT14	GT15	GT16	-	-	-	-	-
		Tape method	Self-vulcanizing tape + PVC tape												

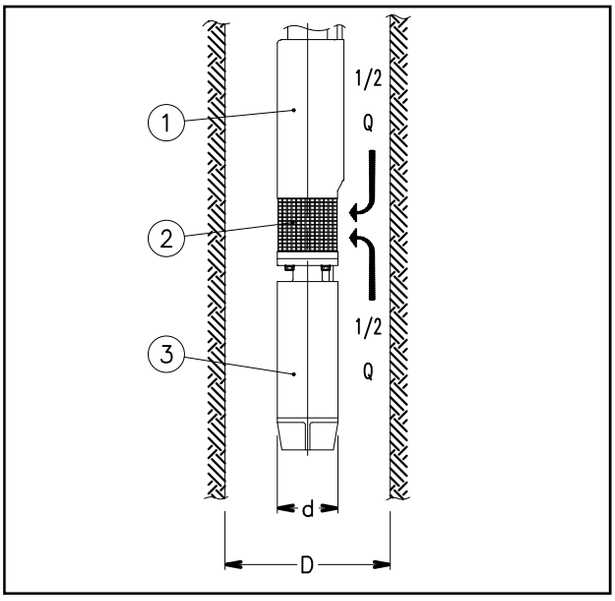
MOTOR TYPE	POWER kW	TYPE OF SPLICE	SINGLE-CORE DROP CABLE - SECTION (mm^2)												
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150
L8W L10W L12W	30 - 300	Resin-filled method	-	-	-	GR12	GR12	GR17	GR17	GR17	GR18	GR18	GR18	GR19	GR19
		Heat-shrink method	-	-	-	-	-	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing 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 x D [mm]	TYPE	L x D [mm]	TYPE	L x D [mm]	TYPE	L x D [mm]
GR11	190 x 45	GR14	357 x 62	GT11	330	GT14	330
GR12	190 x 51	GR15	325 x 95	GT12	330	GT15	500
GR13	240 x 62	GR16	520 x 100	GT13	330	GT16	500

L-giunzioni-en_e_te

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



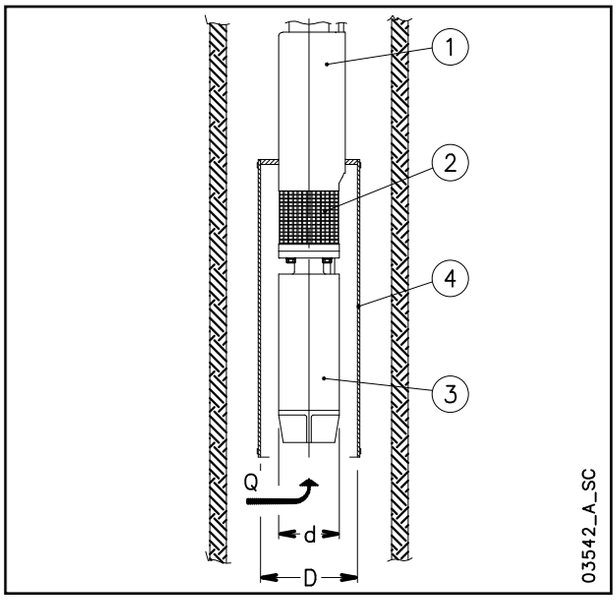
The following formula is used to verify whether the speed of the fluid that flows around the motor of a submersible pump is high enough to guarantee the proper cooling of the motor:

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

Where:
- **-Q** in [m^3/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] is the diameter of the well;
- **-d** in [m] is the diameter of the motor (3);
- **-v** in [m/s] is the calculated speed of the fluid that flows around the motor.

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

Example:
An electric pump OZ630/12
(motor diameter d = 0.144 m) operates in an 8" well (well diameter D = 0.203 m)
with flow rateQ = 20 m^3/h = 0.0055 m^3/s.
Speed of fluid v = (0.0055/2) / {π·[(0.203)²/4 − (0.144)²/4]} = 0.17 m/s.
The minimum speed required for proper motor cooling is v_m = 0.20 m/s.
Because $v < v_m$, it will be necessary to mount a cooling sleeve.



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

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

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

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

Example:
A motor coupled to the electric pump OZ615/24 (motor diameter d = 0.144 m), which operates with flow rate Q = 15 m^3/h = 0.0042 m^3/s,
requires a minimum speed of the fluid of
v_m = 0.20 m/s.
Cooling sleeve diameter D = {4·[(0.0042/(0.2·π)+(0.144)²/4] }$^{0.5}$ = 0.217 m.

ASYNCHRONOUS MOTOR STARTING SYSTEMS

Direct

Suitable for low-power motors.
The starting current (Is) is much higher than the rated current (In).
Starting current Is = In x 4 ÷ 8
Starting torque Ts = Tn x 2 ÷ 3

Indirect

• Star/Delta

The starting current (Is) is three times less than the direct starting current.
Starting current Is = In x 1.3 ÷ 2.7
Starting torque Ts = Tn x 0.7 ÷ 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.

Rated voltage Un = 400 V
Starting voltage Us = Un x 0,7 = 280 V

Starting current

$$Is = In \times 4 \div 8 \times \left(\frac{Us}{Un}\right) = In \times 3 \div 6$$

Starting torque

$$Ts = Tn \times 2 \div 3 \times \left(\frac{Us}{Un}\right)^2 = Tn \times 1 \div 1{,}5$$

Autotransformer

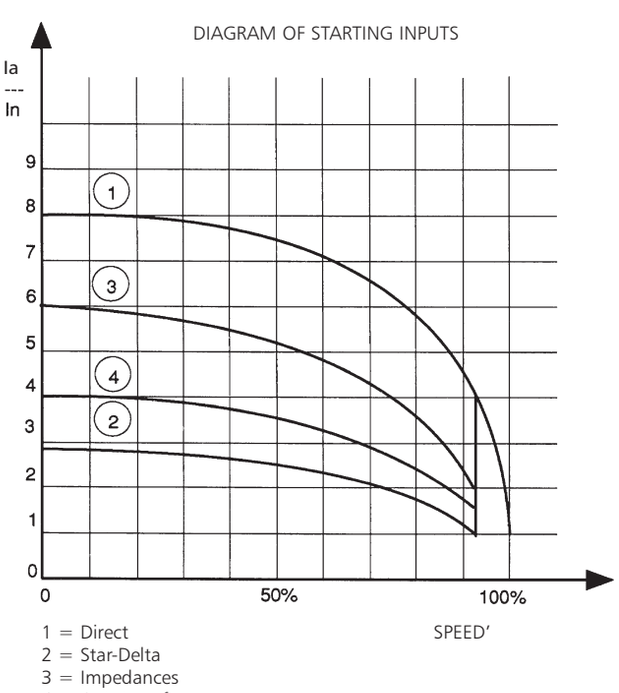
The pump is started with a voltage which is lower than the rated one.
The Lowara panels use an autotransformer with a voltage that is 70% the value of the line voltage.
The switch to the rated voltage occurs without any interruptions of the power supply.
Rated voltage Un = 400 V

Starting current

$$Is = In \times 4 \div 8 \times \left(\frac{Us}{Un}\right) = In \times 3 \div 6$$

Starting torque

$$Ts = Tn \times 2 \div 3 \times \left(\frac{Us}{Un}\right)^2 = Tn \times 1 \div 1{,}5$$



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 substitutefor 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

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

$$f = \frac{1}{\sqrt{(0{,}857 \times Nr \times Na)}}$$ Coefficient for apartments with one bathroom and flush tank WC

$$f = \frac{1}{\sqrt{(0{,}857 \times Nr \times Na)}}$$ Coefficient for apartments with one bathroom and controlled flushing system WC

$$f = \frac{1{,}03}{\sqrt{(0{,}545 \times Nr \times Na)}}$$ Coefficient for apartments with two bathrooms and flush tank WC

$$f = \frac{0{,}8}{\sqrt{(0{,}727 \times Nr \times Na)}}$$ Coefficient for apartments with two bathrooms and controlled flushing system WC

f= coefficient; Nr= number of delivery points; Na= number of apartments

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

TABLE OF WATER REQUIREMENTS IN CIVIL USERS

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

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

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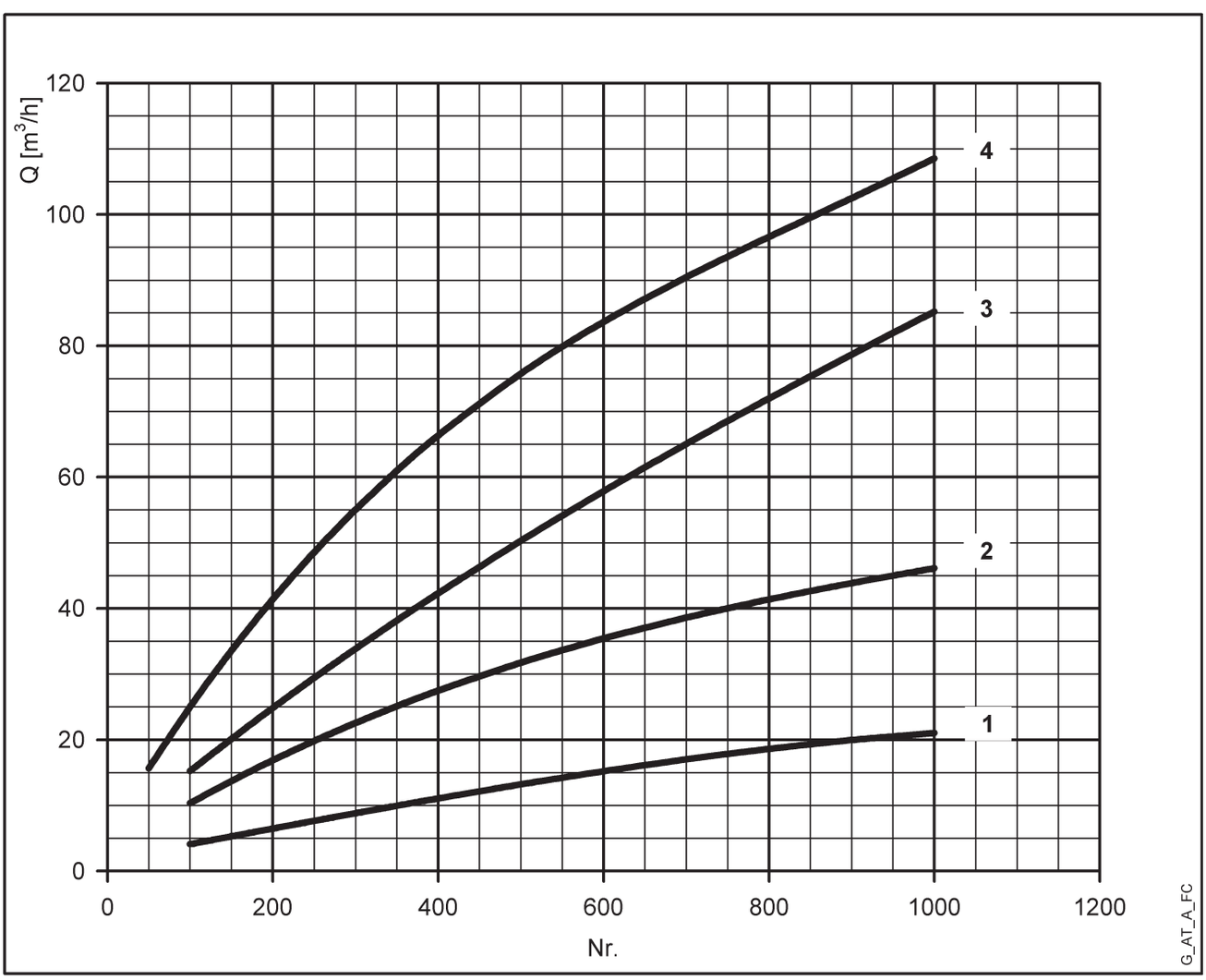
WATER REQUIREMENTS FOR COMMUNITY BUILDINGS

The requirements of buildings intended for specific uses, such as **offices, residential units, hotels, department stores, nursing homes** and so on, are different from those of condominiums, and both their global daily water consumption and the maximum contemporaneity flow rate are usually greater.
The **diagram of water requirements for community buildings** shows the maximum contemporaneity flow rate of some types of communities, for guidance.
These requirements must be determined case by case with the utmost accuracy, using analytical calculation methods,according to particular needs and local provisions.



For seaside resorts, the flow rate must be increased by at least 20%.
1= Offices (N. of people)
2= Department stores (N. of people)
3= Nursing homes (N. of beds)
4= Hotels, residences (N. of beds)

NPSH

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

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

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

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

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

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

hp + hz ≥ (NPSHr + 0.5) + hf + hpv ①

where:

hp is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid; hp is the quotient between the barometric pressure and the specific weight of the liquid.

hz is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.; hz is negative when the liquid level is lower than the pump axis.

hf is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.

hpv is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. hpv 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 117-118 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 γ = 1 kg/dm^3
Flow rate required: 30 m^3/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^3/h, di 2,5 m.

For water at 15 °C

hp = Pa / γ = 10,33m, hpv = Pv / γ = 0,174m (0,01701 bar)

The Hf flow resistance in the suction line with foot valves is ~ 1,2 m.
By substituting the parameters in formula with the numeric values above, we have:

10,33 + (-3,5) ≥ (2,5 + 0,5) + 1,2 + 0,17

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

The relation is therefore verified.

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

t	T	ps	ρ
°C	K	bar	kg/dm³
0	273,15	0,00611	0,9998
1	274,15	0,00657	0,9999
2	275,15	0,00706	0,9999
3	276,15	0,00758	0,9999
4	277,15	0,00813	1,0000
5	278,15	0,00872	1,0000
6	279,15	0,00935	1,0000
7	280,15	0,01001	0,9999
8	281,15	0,01072	0,9999
9	282,15	0,01147	0,9998
10	283,15	0,01227	0,9997
11	284,15	0,01312	0,9997
12	285,15	0,01401	0,9996
13	286,15	0,01497	0,9994
14	287,15	0,01597	0,9993
15	288,15	0,01704	0,9992
16	289,15	0,01817	0,9990
17	290,15	0,01936	0,9988
18	291,15	0,02062	0,9987
19	292,15	0,02196	0,9985
20	293,15	0,02337	0,9983
21	294,15	0,24850	0,9981
22	295,15	0,02642	0,9978
23	296,15	0,02808	0,9976
24	297,15	0,02982	0,9974
25	298,15	0,03166	0,9971
26	299,15	0,03360	0,9968
27	300,15	0,03564	0,9966
28	301,15	0,03778	0,9963
29	302,15	0,04004	0,9960
30	303,15	0,04241	0,9957
31	304,15	0,04491	0,9954
32	305,15	0,04753	0,9951
33	306,15	0,05029	0,9947
34	307,15	0,05318	0,9944
35	308,15	0,05622	0,9940
36	309,15	0,05940	0,9937
37	310,15	0,06274	0,9933
38	311,15	0,06624	0,9930
39	312,15	0,06991	0,9927
40	313,15	0,07375	0,9923
41	314,15	0,07777	0,9919
42	315,15	0,08198	0,9915
43	316,15	0,09639	0,9911
44	317,15	0,09100	0,9907
45	318,15	0,09582	0,9902
46	319,15	0,10086	0,9898
47	320,15	0,10612	0,9894
48	321,15	0,11162	0,9889
49	322,15	0,11736	0,9884
50	323,15	0,12335	0,9880
51	324,15	0,12961	0,9876
52	325,15	0,13613	0,9871
53	326,15	0,14293	0,9862
54	327,15	0,15002	0,9862

t	T	ps	ρ
°C	K	bar	kg/dm³
55	328,15	0,15741	0,9857
56	329,15	0,16511	0,9852
57	330,15	0,17313	0,9846
58	331,15	0,18147	0,9842
59	332,15	0,19016	0,9837
60	333,15	0,1992	0,9832
61	334,15	0,2086	0,9826
62	335,15	0,2184	0,9821
63	336,15	0,2286	0,9816
64	337,15	0,2391	0,9811
65	338,15	0,2501	0,9805
66	339,15	0,2615	0,9799
67	340,15	0,2733	0,9793
68	341,15	0,2856	0,9788
69	342,15	0,2984	0,9782
70	343,15	0,3116	0,9777
71	344,15	0,3253	0,9770
72	345,15	0,3396	0,9765
73	346,15	0,3543	0,9760
74	347,15	0,3696	0,9753
75	348,15	0,3855	0,9748
76	349,15	0,4019	0,9741
77	350,15	0,4189	0,9735
78	351,15	0,4365	0,9729
79	352,15	0,4547	0,9723
80	353,15	0,4736	0,9716
81	354,15	0,4931	0,9710
82	355,15	0,5133	0,9704
83	356,15	0,5342	0,9697
84	357,15	0,5557	0,9691
85	358,15	0,5780	0,9684
86	359,15	0,6011	0,9678
87	360,15	0,6249	0,9671
88	361,15	0,6495	0,9665
89	362,15	0,6749	0,9658
90	363,15	0,7011	0,9652
91	364,15	0,7281	0,9644
92	365,15	0,7561	0,9638
93	366,15	0,7849	0,9630
94	367,15	0,8146	0,9624
95	368,15	0,8453	0,9616
96	369,15	0,8769	0,9610
97	370,15	0,9094	0,9602
98	371,15	0,9430	0,9596
99	372,15	0,9776	0,9586
100	373,15	1,0133	0,9581
102	375,15	1,0878	0,9567
104	377,15	1,1668	0,9552
106	379,15	1,2504	0,9537
108	381,15	1,3390	0,9522
110	383,15	1,4327	0,9507
112	385,15	1,5316	0,9491
114	387,15	1,6362	0,9476
116	389,15	1,7465	0,9460
118	391,15	1,8628	0,9445

t	T	ps	ρ
°C	K	bar	kg/dm³
120	393,15	1,9854	0,9429
122	395,15	2,1145	0,9412
124	397,15	2,2504	0,9396
126	399,15	2,3933	0,9379
128	401,15	2,5435	0,9362
130	403,15	2,7013	0,9346
132	405,15	2,867	0,9328
134	407,15	3,041	0,9311
136	409,15	3,223	0,9294
138	411,15	3,414	0,9276
140	413,15	3,614	0,9258
145	418,15	4,155	0,9214
155	428,15	5,433	0,9121
160	433,15	6,181	0,9073
165	438,15	7,008	0,9024
170	433,15	7,920	0,8973
175	448,15	8,924	0,8921
180	453,15	10,027	0,8869
185	458,15	11,233	0,8815
190	463,15	12,551	0,8760
195	468,15	13,987	0,8704
200	473,15	15,550	0,8647
205	478,15	17,243	0,8588
210	483,15	19,077	0,8528
215	488,15	21,060	0,8467
220	493,15	23,198	0,8403
225	498,15	25,501	0,8339
230	503,15	27,976	0,8273
235	508,15	30,632	0,8205
240	513,15	33,478	0,8136
245	518,15	36,523	0,8065
250	523,15	39,776	0,7992
255	528,15	43,246	0,7916
260	533,15	46,943	0,7839
265	538,15	50,877	0,7759
270	543,15	55,058	0,7678
275	548,15	59,496	0,7593
280	553,15	64,202	0,7505
285	558,15	69,186	0,7415
290	563,15	74,461	0,7321
295	568,15	80,037	0,7223
300	573,15	85,927	0,7122
305	578,15	92,144	0,7017
310	583,15	98,70	0,6906
315	588,15	105,61	0,6791
320	593,15	112,89	0,6669
325	598,15	120,56	0,6541
330	603,15	128,63	0,6404
340	613,15	146,05	0,6102
350	623,15	165,35	0,5743
360	633,15	186,75	0,5275
370	643,15	210,54	0,4518
374,15	647,30	221,20	0,3154

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TABLE OF FLOW RESISTANCE IN 100 m OF STRAIGHT CAST IRON PIPELINE (HAZEN-WILLIAMS FORMULA C=100)

FLOW RATE			NOMINAL DIAMETER in mm and inches																
m^3/h	l/min		15 1/2"	20 3/4"	25 1"	32 1 1/4"	40 1 1/2"	50 2"	65 2 1/2"	80 3"	100 4"	125 5"	150 6"	175 7"	200 8"	250 10"	300 12"	350 14"	400 16"
0,6	10	v	0,94	0,53	0,34	0,21	0,13												
		hr	16	3,94	1,33	0,40	0,13												
0,9	15	v	1,42	0,80	0,51	0,31	0,20												
		hr	33,9	8,35	2,82	0,85	0,29												
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17											
		hr	57,7	14,21	4,79	1,44	0,49	0,16											
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21											
		hr	87,2	21,5	7,24	2,18	0,73	0,25											
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25											
		hr	122	30,1	10,1	3,05	1,03	0,35											
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30											
		hr	162	40,0	13,5	4,06	1,37	0,46											
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20										
		hr		51,2	17,3	5,19	1,75	0,59	0,16										
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25										
		hr		77,4	26,1	7,85	2,65	0,89	0,25										
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30										
		hr		108	36,6	11,0	3,71	1,25	0,35										
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35										
		hr		144	48,7	14,6	4,93	1,66	0,46										
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40										
		hr		185	62,3	18,7	6,32	2,13	0,59										
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30									
		hr			77,5	23,3	7,85	2,65	0,74	0,27									
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33									
		hr			94,1	28,3	9,54	3,22	0,90	0,33									
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41									
		hr			142	42,8	14,4	4,86	1,36	0,49									
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32								
		hr				59,9	20,2	6,82	1,90	0,69	0,23								
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37								
		hr				79,7	26,9	9,07	2,53	0,92	0,31								
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42								
		hr				102	34,4	11,6	3,23	1,18	0,40								
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34							
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20							
18	300	v					3,98	2,55	1,51	1,00	0,64	0,41							
		hr					72,8	24,6	6,85	2,49	0,84	0,28							
24	400	v					5,31	3,40	2,01	1,33	0,85	0,54	0,38						
		hr					124	41,8	11,66	4,24	1,43	0,48	0,20						
30	500	v					6,63	4,25	2,51	1,66	1,06	0,68	0,47						
		hr					187	63,2	17,6	6,41	2,16	0,73	0,30						
36	600	v						5,10	3,02	1,99	1,27	0,82	0,57	0,42					
		hr						88,6	24,7	8,98	3,03	1,02	0,42	0,20					
42	700	v						5,94	3,52	2,32	1,49	0,95	0,66	0,49					
		hr						118	32,8	11,9	4,03	1,36	0,56	0,26					
48	800	v						6,79	4,02	2,65	1,70	1,09	0,75	0,55					
		hr						151	42,0	15,3	5,16	1,74	0,72	0,34					
54	900	v						7,64	4,52	2,99	1,91	1,22	0,85	0,62					
		hr						188	52,3	19,0	6,41	2,16	0,89	0,42					
60	1000	v							5,03	3,32	2,12	1,36	0,94	0,69	0,53				
		hr							63,5	23,1	7,79	2,63	1,08	0,51	0,27				
75	1250	v							6,28	4,15	2,65	1,70	1,18	0,87	0,66				
		hr							96,0	34,9	11,8	3,97	1,63	0,77	0,40				
90	1500	v							7,54	4,98	3,18	2,04	1,42	1,04	0,80				
		hr							134	48,9	16,5	5,57	2,29	1,08	0,56				
105	1750	v							8,79	5,81	3,72	2,38	1,65	1,21	0,93				
		hr							179	65,1	21,9	7,40	3,05	1,44	0,75				
120	2000	v								6,63	4,25	2,72	1,89	1,39	1,06	0,68			
		hr								83,3	28,1	9,48	3,90	1,84	0,96	0,32			
150	2500	v								8,29	5,31	3,40	2,36	1,73	1,33	0,85			
		hr								126	42,5	14,3	5,89	2,78	1,45	0,49			
180	3000	v									6,37	4,08	2,83	2,08	1,59	1,02	0,71		
		hr									59,5	20,1	8,26	3,90	2,03	0,69	0,28		
210	3500	v									7,43	4,76	3,30	2,43	1,86	1,19	0,83		
		hr									79,1	26,7	11,0	5,18	2,71	0,91	0,38		
240	4000	v									8,49	5,44	3,77	2,77	2,12	1,36	0,94		
		hr									101	34,2	14,1	6,64	3,46	1,17	0,48		
300	5000	v										6,79	4,72	3,47	2,65	1,70	1,18		
		hr										51,6	21,2	10,0	5,23	1,77	0,73		
360	6000	v										8,15	5,66	4,16	3,18	2,04	1,42		
		hr										72,3	29,8	14,1	7,33	2,47	1,02		
420	7000	v											6,61	4,85	3,72	2,38	1,65	1,21	
		hr											39,6	18,7	9,75	3,29	1,35	0,64	
480	8000	v											7,55	5,55	4,25	2,72	1,89	1,39	
		hr											50,7	23,9	12,49	4,21	1,73	0,82	
540	9000	v											8,49	6,24	4,78	3,06	2,12	1,56	1,19
		hr											63,0	29,8	15,5	5,24	2,16	1,02	0,53
600	10000	v												6,93	5,31	3,40	2,36	1,73	1,33
		hr												36,2	18,9	6,36	2,62	1,24	0,65

The hr values must be multiplied by:

0,71 for galvanized or painted steel pipes

0,54 for stainless steel or copper pipes

0,47 for PVC or PE pipes

hr = flow resistance for 100 m of straight pipeline (m)

V = water speed (m/s)

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FLOW RESISTANCE

TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

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

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

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The table is valid for the Hazen Williams coefficient C = 100 (cast iron pipework). For steel pipework, multiply the values by 1.41. For stainless steel, copper and coated cast iron pipework, multiply the values by 1.85.
When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.
The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by the manufacturers.

VOLUMETRIC CAPACITY

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

PRESSURE AND HEAD

Newton per square metre N/m^2	kilo Pascal kPa	bar bar	Pound force per square inch psi	Metre of water m H_2O	Millimetre of mercury mm Hg
1,0000	0,0010	1×10^{-5}	$1,45 \times 10^{-4}$	$1,02 \times 10^{-4}$	0,0075
1 000,0000	**1,0000**	0,0100	0,1450	0,1020	7,5006
1×10^5	100,0000	**1,0000**	14,5038	10,1972	750,0638
6 894,7570	6,8948	0,0689	**1,0000**	0,7031	51,7151
9 806,6500	9,8067	0,0981	1,4223	**1,0000**	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	**1,0000**

LENGTH

Millimetre mm	Centimetre cm	Metre m	Inch in	Foot ft	Yard yd
1,0000	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	**1,0000**	0,0100	0,3937	0,0328	0,0109
1 000,0000	100,0000	**1,0000**	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	**1,0000**	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	**1,0000**	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	**1,0000**

VOLUME

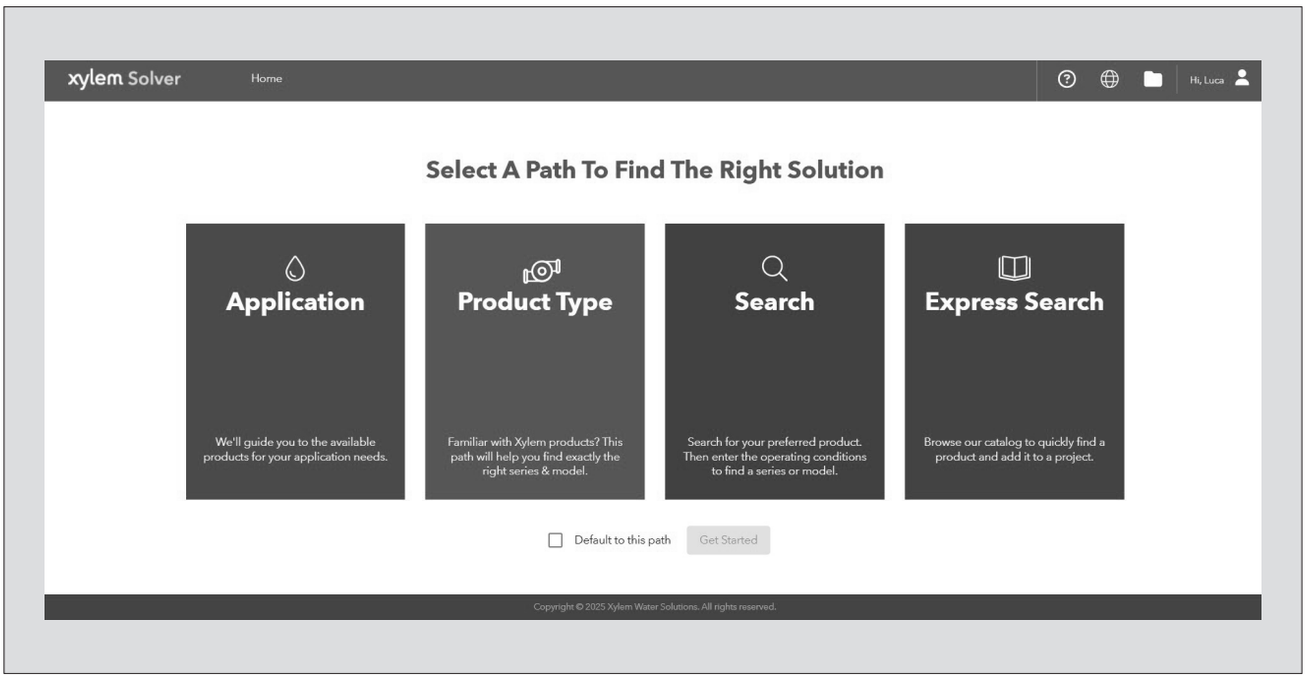
Cubic metre m^3	Litre L	Millilitre ml	Imperial gallon imp. gal.	U.S. gallon US gal.	Cubic foot ft^3
1,0000	1 000,0000	1×10^6	219,9694	264,1720	35,3147
0,0010	**1,0000**	1 000,0000	0,2200	0,2642	0,0353
1×10^{-6}	0,0010	**1,0000**	$2,2 \times 10^{-4}$	$2,642 \times 10^{-4}$	$3,53 \times 10^{-5}$
0,0045	4,5461	4 546,0870	**1,0000**	1,2009	0,1605
0,0038	3,7854	3 785,4120	0,8327	**1,0000**	0,1337
0,0283	28,3168	28 316,8466	6,2288	7,4805	**1,0000**

TEMPERATURE

Water	Kelvin K	Celsius °C	Fahrenheit °F	$°F = °C \times \frac{9}{5} + 32$ $°C = (°F - 32) \times \frac{5}{9}$
icing	273,1500	0,0000	32,0000	
boiling	373,1500	100,0000	212,0000	

G-at_pp-en_b_sc

FURTHER PRODUCT SELECTION AND DOCUMENTATION
Xylem Solver



Xylem Solver is pump solution selection software with an extensive online database of product information across the entire Xylem 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.

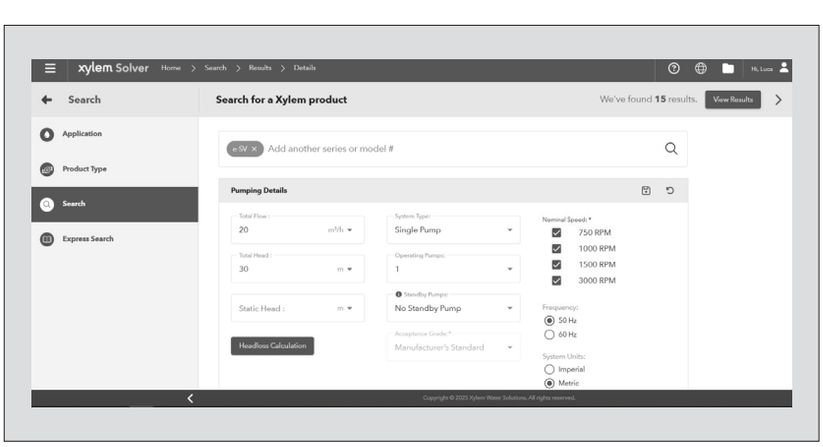
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Xylem products.

The search can be made by:

- Application
- Product type
- Duty point

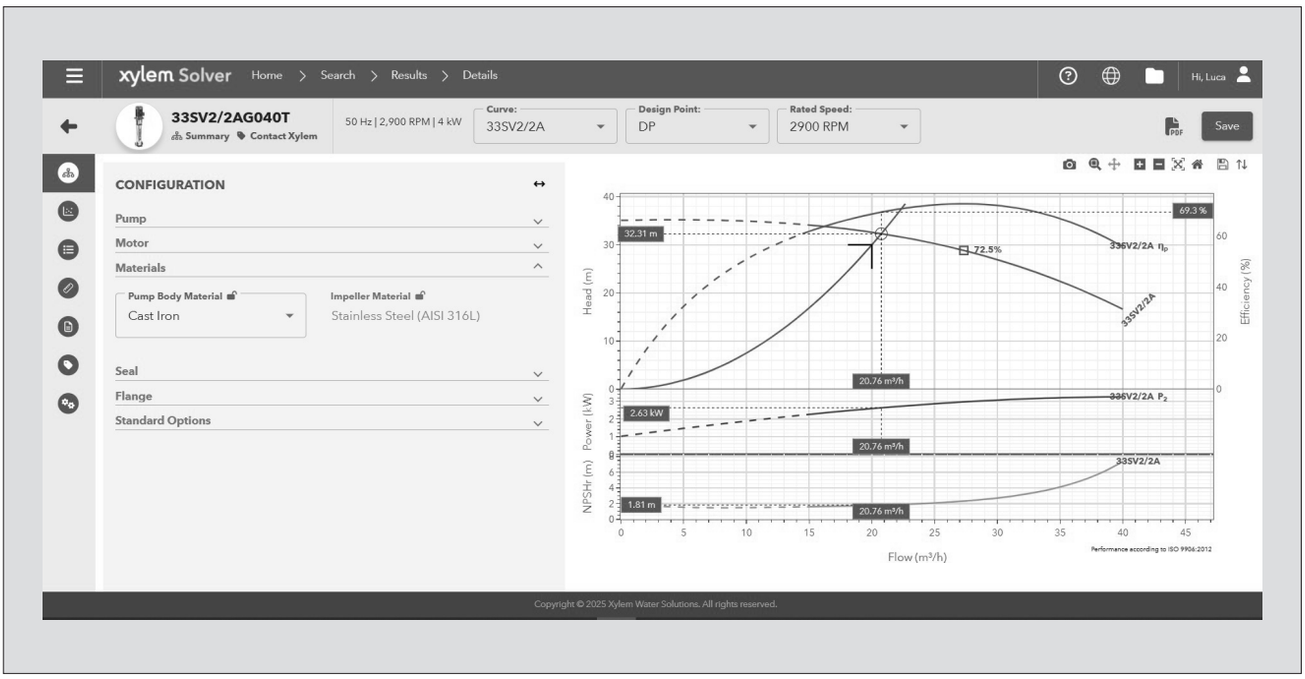
Xylem Solver gives a detailed output:

- List with search results in which you can compare up to four products
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf, stp and BIM files



Once a product series has been selected, input design criteria to select pumps that meet the design requirements.

FURTHER PRODUCT SELECTION AND DOCUMENTATION
Xylem Solver



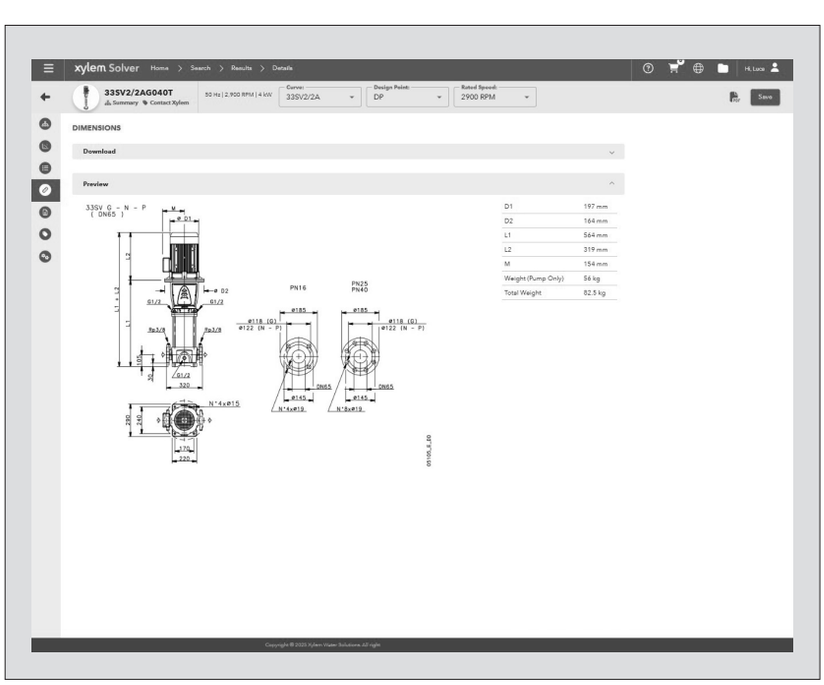
The detailed output makes it easy to select the optimal pump from the given alternatives.

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

- Set own standard units
- Create and save projects

Every registered user has a proper space, where all projects are saved.

For more information about Xylem Solver please contact our sales network or visit **https://solver.xylem.com.**



The dimensions tab shows technical drawings, dimensions, and CAD files when available.

TECHNICAL APPENDIX

Xylem |'zīləm|

1) the tissue in plants that brings water and nutrients upward from the roots.
2) a leading global water solutions company.

Xylem is the connective tissue and system in plants which cleanses and transports water from the root to where it is needed most to sustain life.

And this is the essence of Xylem as a company. We are committed to driving sustainable impact by ensuring our connected technologies and solutions support our customers and the communities they serve, to tackle the water challenges that matter most to them.

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

Brown Brothers Engineers Australia Pty Ltd
Member of AxFlow Group
1300 4 BBENG
www.brownbros.com.au

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0508 4 BBENG
www.brownbros.co.nz