

**60 Hz**



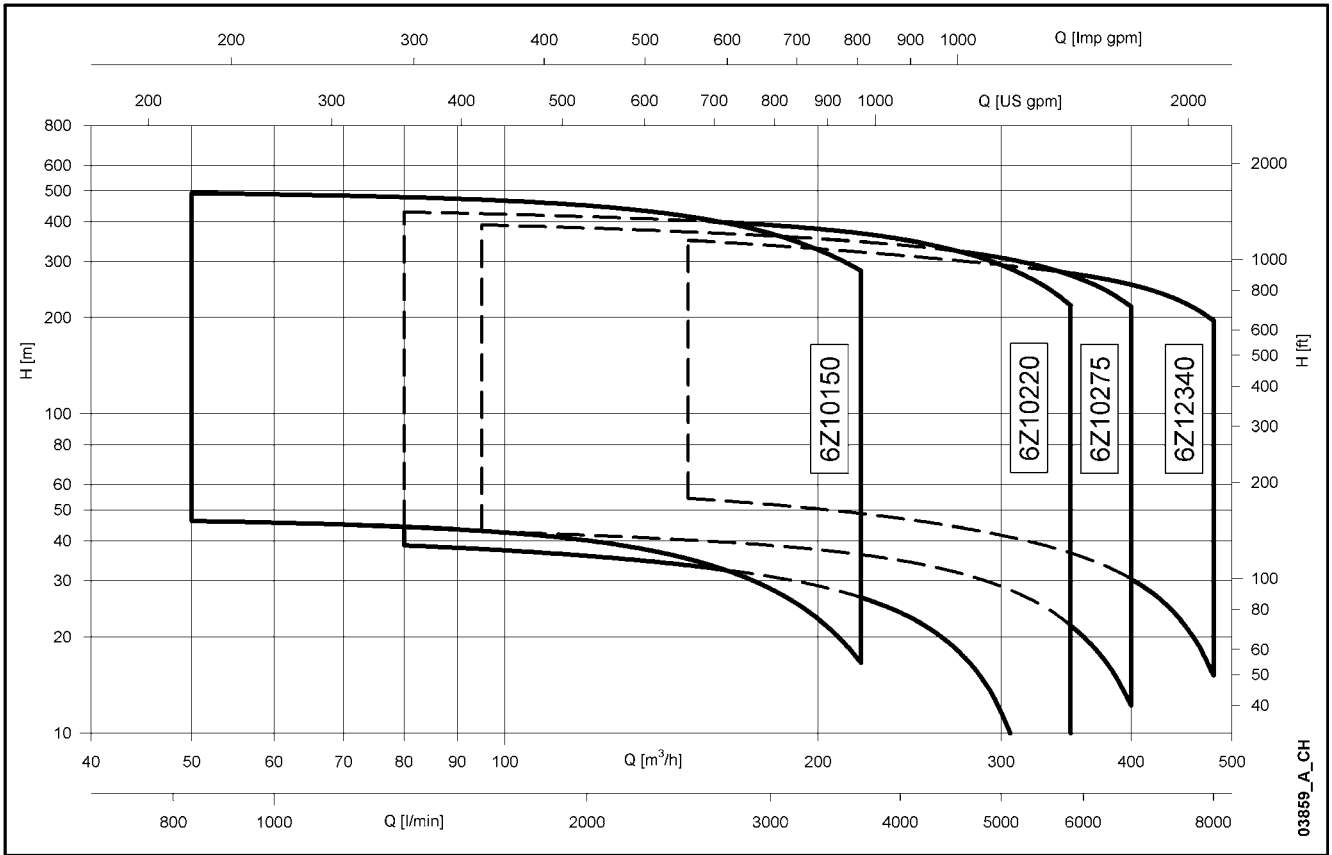
# 6Z10, 6Z12 Series

10" - 12" SUBMERSIBLE  
ELECTRIC PUMPS

Cod. 191015691 Rev.B Ed.08/2012

 **LOWARA**  
a xylem brand

**6Z10, 6Z12 SERIES  
HYDRAULIC PERFORMANCE RANGE AT 60 Hz**



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# 10" Submersible Electric Pumps

## 6Z10150 6Z10220 6Z10275 Series



### MARKET SECTORS

AGRICULTURAL, INDUSTRIAL, MUNICIPAL.

### APPLICATIONS

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

### SPECIFICATIONS

#### PUMP

- **Delivery:** up to 400 m<sup>3</sup>/h.
- **Head:** up to 520 m.
- Maximum pump overall diameter (2 cable covers included): 271 mm.
- Maximum electric pump immersion depth: 350 m with L6W, L8W, L10W and L12W motors.
- The content of sand should not exceed 50 g/m<sup>3</sup>, higher contents up to 100 g/m<sup>3</sup> can be admitted, if wear is tolerated.
- Horizontal installation possible (it is recommended to have an incline of at least 3° with the motor on the lowest position).
- Standard delivery outlet: Rp 6" according to EN 10226.
- Motor power: from 18,5 to 350 kW.
- Electric pumps with powers up to 300 kW are supplied with Lowara motor series. For larger powers please contact our sales network.

#### MOTOR

- L6W, L8W, L10W and L12W rewindable water filled three-phase motors.
- **Three-phase version:**
  - L6W: 4 to 18,5 kW, DOL 230 V, 60 Hz. 4 to 30 kW, Y/D 230 V, 60 Hz. 4 to 37 kW 380 V, 60 Hz. 4 to 37 kW 460 V, 60 Hz.
  - L8W: 30 to 93 kW 380 V, 60 Hz. 30 to 93 kW 460 V, 60 Hz.
  - L10W: 93 to 150 kW 380 V, 60 Hz. 93 to 150 kW 460 V, 60 Hz.
  - L12W: 185 to 300 kW 380 V, 60 Hz. 185 to 300 kW 460 V, 60 Hz.
- Maximum supply voltage variations: L6W, L8W, L10W, L12W ±10%.
- **Horizontal operation:** L6W, all versions are designed for horizontal installation, provided that

the direction of the axial thrust generated by the impellers is always from the pump to the motor. L8W, L10W, L12W available on requests for all versions.

- Maximum number of starts per hour: 15 (L6W), 10 (L8W) 8 (L10W) 4 (L12W).
- Maximum temperature of water in contact with motor: L6W, L8W, L10W and L12W 30°C.
- **Special versions: AISI 316 and Duplex materials, HT** for applications in high temperature environments (up to 60°C) or under inverter.

### CONSTRUCTION

#### FEATURES

#### PUMP

- Robust but lightweight, easy to maintain and with high corrosion resistance.
- **Impeller and diffusers** made of stainless steel castings.
- Delivery head and suction support of stainless steel castings.
- Stainless steel non return valve integrated, spring equipped.
- Stainless steel shaft.
- Guide bearings and wear rings ensure high reliability and long lasting hydraulic performances.
- The new design ensures high efficiency and low power consumption
- **Special versions:** 6ZR10 made of **Duplex** stainless steel.
- Coupling according to **NEMA** standard for 6" and 8" motor, with key connection for 10" and 12" motor.

### ACCESSORIES

- Coupling flange.
- Panels.
- Drop cables.
- Cooling shrouds.
- Temperature sensor **PT 100 / PTC**.

## TABLE OF MATERIALS 6Z10

COMPONENT	MATERIAL	DESIGNATION	
		EUROPE	USA
Delivery head / Valve Casing	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Valve	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Valve seat	NBR 90		
Valve spring	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
Diffuser / Bowl	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Diffuser O-Ring	NBR 70		
Impeller	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Taperlock	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Wear ring	POM		
Lower support / Suction Casing	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Suction strainer	Stainless steel	DIN 17440-X6CrNiMoTi17-12-2 (1.4571)	AISI 316Ti
Pump shaft	Stainless steel	EN 10088-1-X17CrNi16-2 (1.4057)	AISI 431
Coupling	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Bearing bush	EPDM + LOXAMID <sup>®</sup>		
Thrust Bearing	PTFE + 25% carbon		
Screw, stud, nut	Stainless steel	ISO 3506-1/2 A4-70	AISI 316
Cable protection	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304

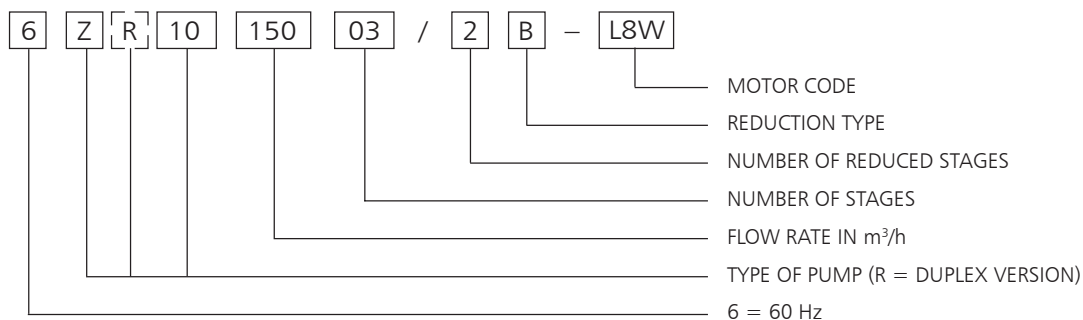
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## TABLE OF MATERIALS 6ZR10

COMPONENT	MATERIAL	DESIGNATION	
		EUROPE	USA
Delivery head / Valve Casing	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Valve	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Valve seat	NBR 90		
Valve spring	Hastelloy C4	DIN17744-NiMo16Cr16Ti (2.4610)	N06455
Diffuser / Bowl	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Diffuser O-Ring	NBR 70		
Impeller	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Taperlock	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Wear ring	POM		
Lower support / Suction Casing	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Suction strainer	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
Pump shaft	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Coupling	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Bearing bush	EPDM + LOXAMID <sup>®</sup>		
Thrust Bearing	PTFE + 25% carbon		
Screw, stud, nut	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Cable protection	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L

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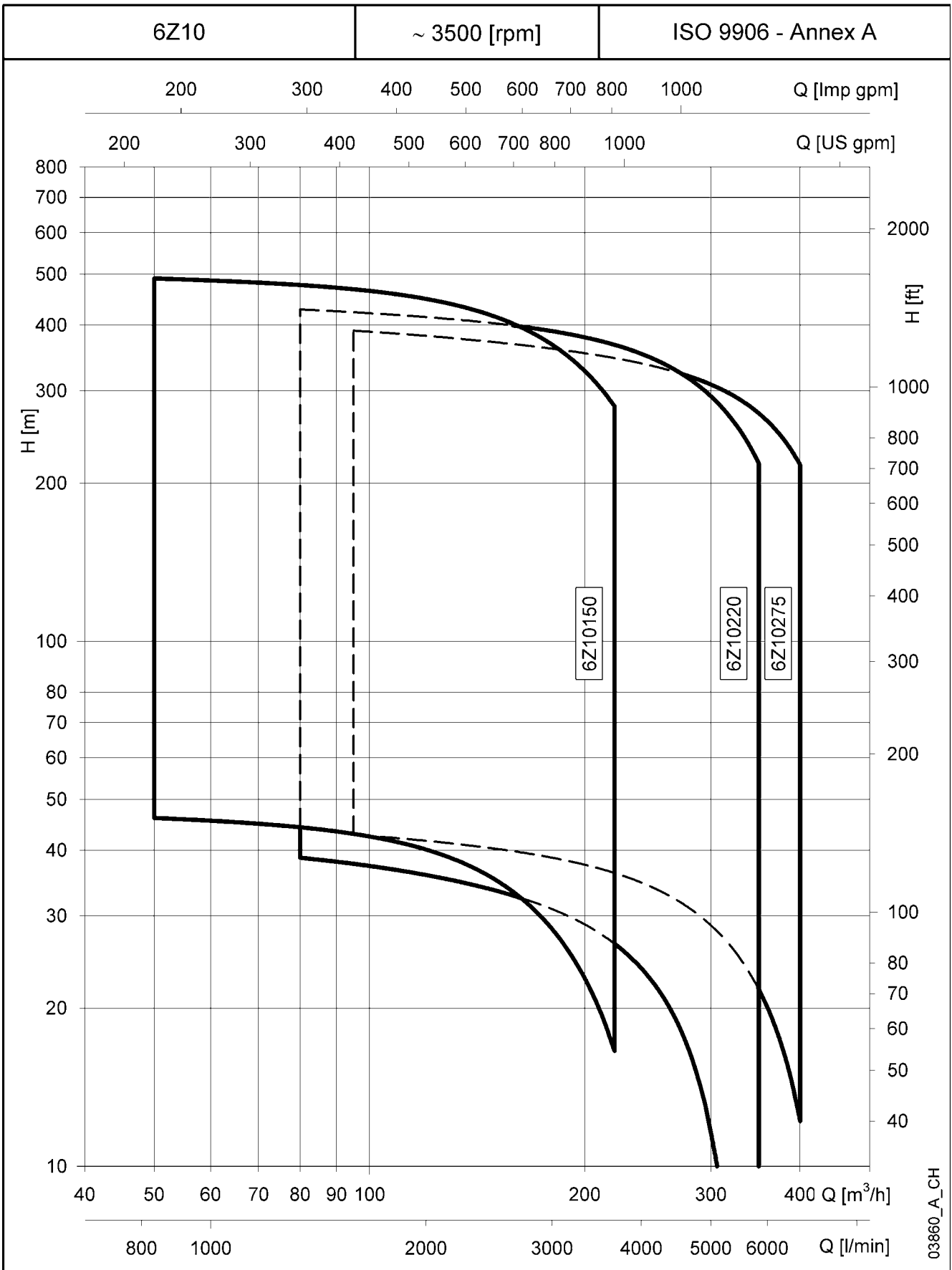
## IDENTIFICATION CODE



EXAMPLE : 6ZR10 150 03/2B - L8W

10" electric pump, 60 Hz, made of DUPLEX, flow rate 150 m<sup>3</sup>/h, 3 stages including 2 reduced ones, coupled to an 8" L8W motor.

**6Z10 SERIES  
HYDRAULIC PERFORMANCE RANGE AT 60 Hz**



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## 6Z10150 SERIES, 1 TO 4 STAGES OPERATING CHARACTERISTICS AT 60 Hz

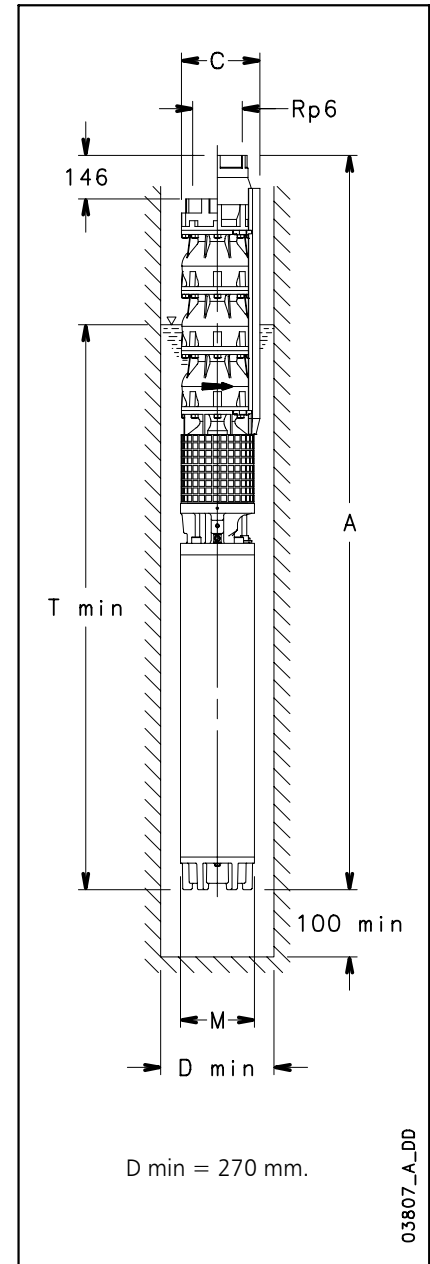
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	833	1667	2333	3000	3667
		m <sup>3</sup> /h	0	50	100	140	180	220
kW		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10150 01/1C	18,5	49,3	46	42,2	37	28,1	16,6	
6Z10150 01/1E	22	56,1	52,4	48,8	43,4	35,2	24	
6Z10150 01	30	65	61,3	58,3	53,3	46	35	
6Z10150 02/2C	37	99,2	92,6	85	74,5	56,8	33,8	
6Z10150 02/2E	45	112,2	104,7	97,6	86,8	70,4	48	
6Z10150 02/1A	55	127,1	119,6	113,5	103,7	88,6	66,9	
6Z10150 03/2C	67	163,8	153,5	142,6	127,5	102,3	68,6	
6Z10150 03/2B	75	179,4	168,3	158,1	142,7	119,5	86,1	
6Z10150 03/1A	83	192,8	181,6	172,4	157,8	135,3	102,8	
6Z10150 04/2C	93	229,1	215,1	201	181,2	148,5	104	
6Z10150 04/2B	110	249,7	234,6	221,4	201,3	170,9	127,1	
6Z10150 04	130	264,3	249,3	237,5	217,6	188,6	145	

6z10150-2p60-1\_a\_th

## DIMENSIONS AND WEIGHTS

PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
6Z10150 01/1C-L6W	18,5	1608	258	144	2503	122
6Z10150 01/1E-L6W	22	1648	258	144	2543	125
6Z10150 01-L6W	30	1856	258	144	2751	142
6Z10150 02/2C-L6W	37	2222	258	144	2851	176
6Z10150 02/2E-L8W	45	2116	258	192	2795	247
6Z10150 02/1A-L8W	55	2246	258	192	2925	273
6Z10150 03/2C-L8W	67	2602	258	192	3065	323
6Z10150 03/2B-L8W	75	2692	258	192	3155	340
6Z10150 03/1A-L8W	83	2752	258	192	3215	353
6Z10150 04/2C-L8W	93	3108	258	192	3355	397
6Z10150 04/2B-L10W	110	3092	259	236	3302	513
6Z10150 04-L10W	130	3242	259	236	3452	560

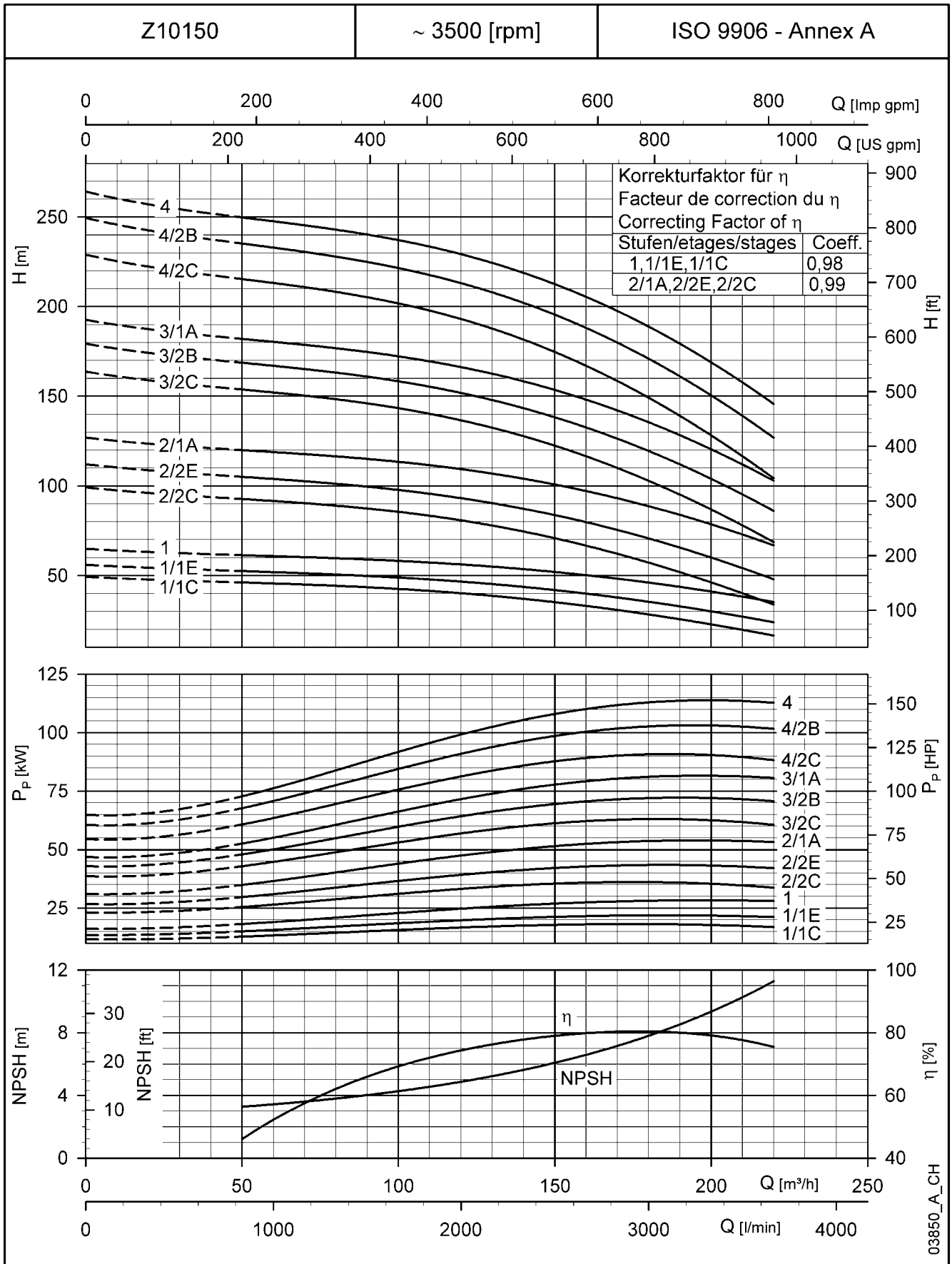
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- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 255 mm with L6W motor.  
C = 255 mm with L8W and L10W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,3 Kg.



**6Z10150 SERIES, 1 TO 4 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z10150 SERIES, 5 TO 8 STAGES OPERATING CHARACTERISTICS AT 60 Hz

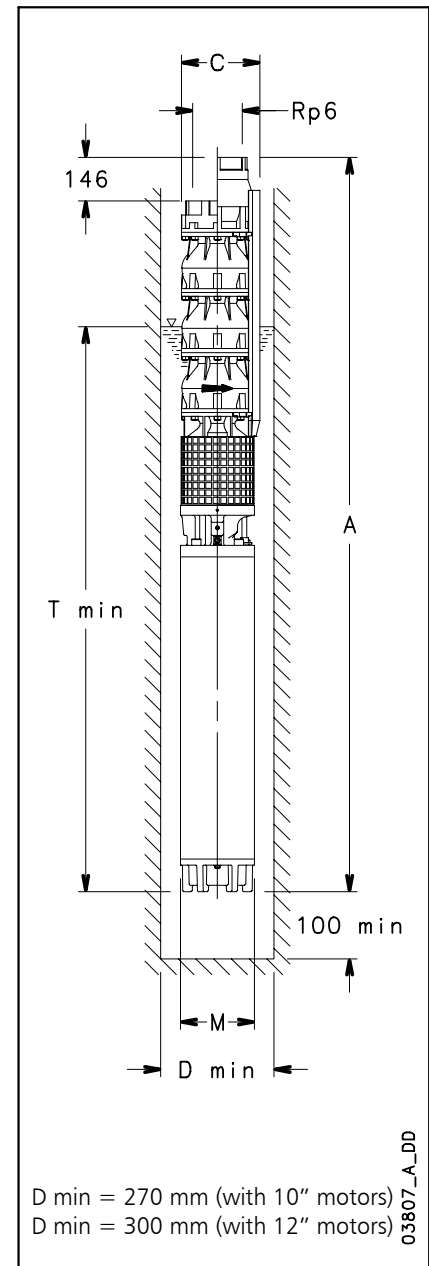
PUMP TYPE	RATED POWER  kW	Q = DELIVERY						
		l/min	0	833	1667	2333	3000	3667
		m <sup>3</sup> /h	0	50	100	140	180	220
		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10150 05/2C	130	298	280	263	239	199	144	
6Z10150 05/2B	130	313	295	278	253	216	161	
6Z10150 05	150	330	312	297	272	236	181	
6Z10150 06/2C	150	365	343	323	294	246	181	
6Z10150 06/2B	185	381	359	339	309	264	199	
6Z10150 06	185	395	373	355	325	282	216	
6Z10150 07/3B	185	439	413	390	355	302	226	
6Z10150 07	220	461	435	414	380	329	252	
6Z10150 08/3B	220	505	475	449	410	349	262	
6Z10150 08/1B	220	520	490	464	426	368	281	

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## DIMENSIONS AND WEIGHTS

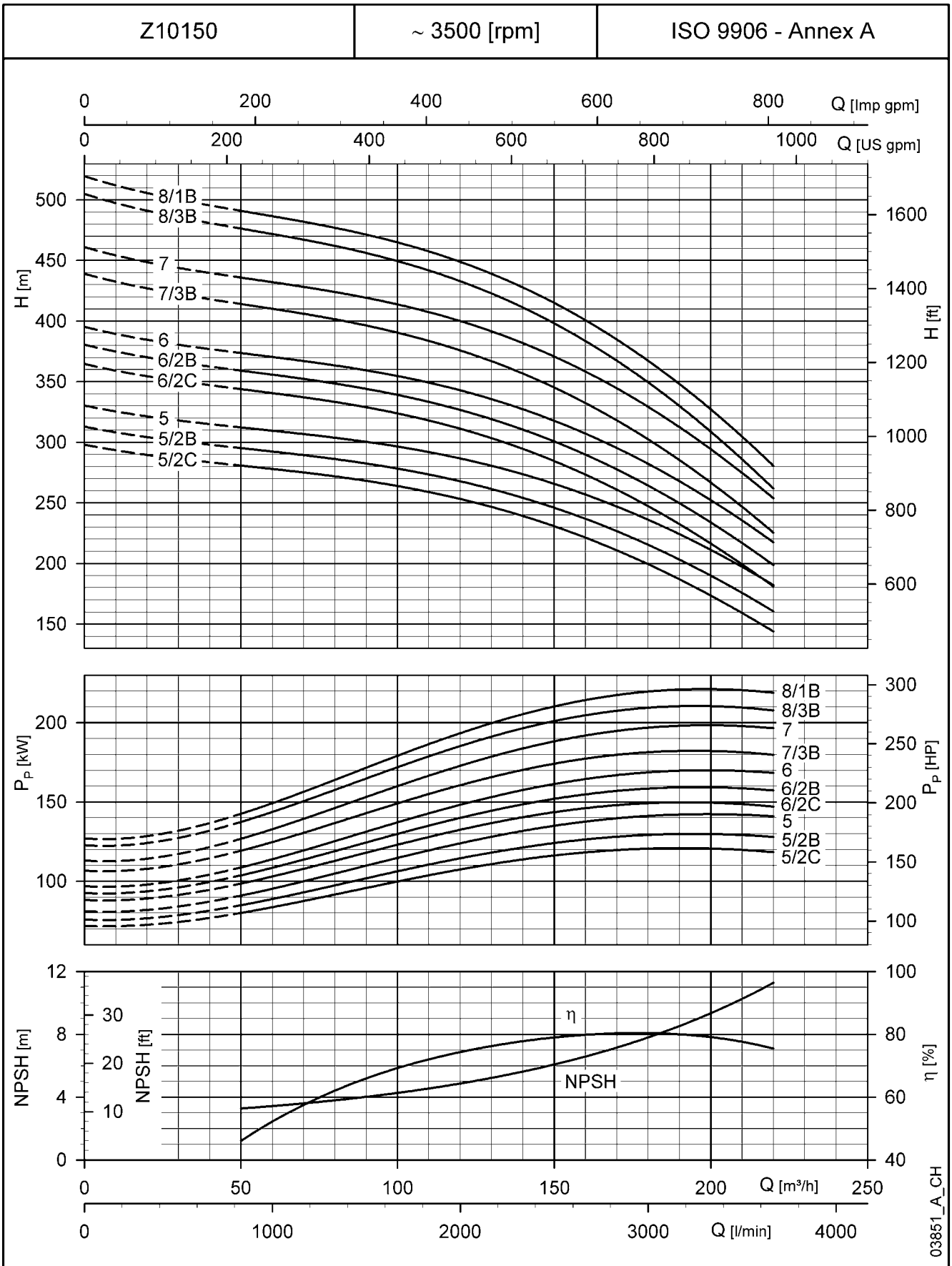
PUMP TYPE	RATED POWER  kW	DIMENSIONS (mm)				WEIGHT  kg (3)
		A (4)	C (1)	M	T (2)	
6Z10150 05/2C-L10W	130	3458	259	236	3452	580
6Z10150 05/2B-L10W	130	3458	259	236	3452	580
6Z10150 05-L10W	150	3588	259	236	3582	619
6Z10150 06/2C-L10W	150	3804	259	236	3582	639
6Z10150 06/2B-L10W	185	3561	283	276	3339	705
6Z10150 06-L10W	185	3561	283	276	3339	705
6Z10150 07/3B-L10W	185	3777	283	276	3339	724
6Z10150 07-L12W	220	3927	283	276	3489	788
6Z10150 08/3B-L12W	220	4143	283	276	3489	808
6Z10150 08/1B-L12W	220	4143	283	276	3489	808

6z10150-2p60-2\_a\_td



- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 255 mm with L10W motor.  
C = 280 mm with L12W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,3 Kg.

**6Z10150 SERIES, 5 TO 8 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



03851\_A\_CH

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

## 6Z10220 SERIES, 1 TO 3 STAGES OPERATING CHARACTERISTICS AT 60 Hz

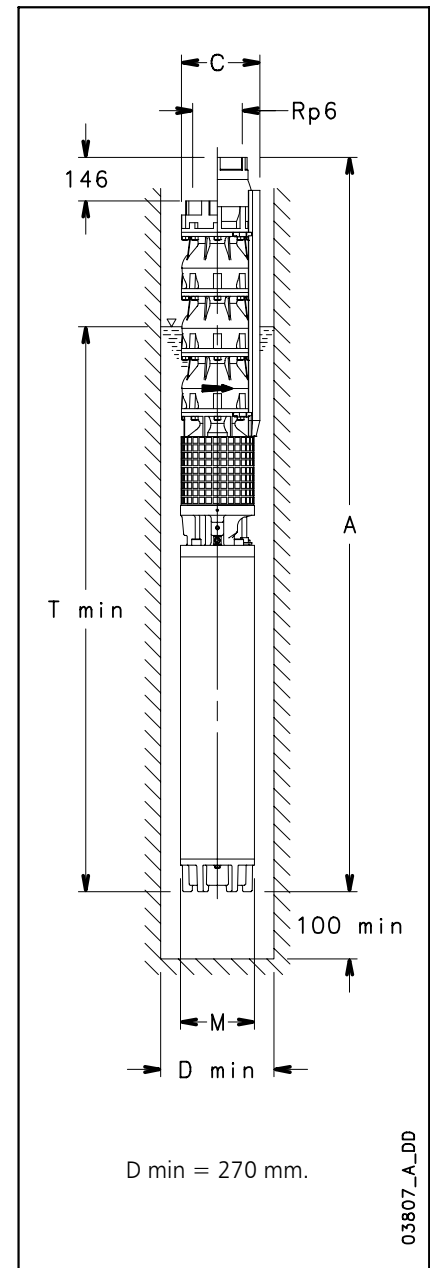
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1333	2667	4000	5000	5833
		m <sup>3</sup> /h	0	80	160	240	300	350
kW		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10220 01/1J	22	42,3	38,7	32,3	23,9	11,5		
6Z10220 01/1G	30	52,6	49	44	35,8	25,3	12,7	
6Z10220 01/1E	37	59,3	55,2	50,5	43,3	33,4	22	
6Z10220 01	45	65,3	60,4	55,8	49,4	40,3	30,1	
6Z10220 02/2C	52	95,9	88,7	77,7	60,6	39,2		
6Z10220 02/2G	60	104,6	97,4	87,5	71	50	24,7	
6Z10220 02/2B	67	109,9	102,5	93	77,3	56,4	31,9	
6Z10220 02/2E	75	118,5	110,3	101	86,5	66,8	44	
6Z10220 02	93	131,1	121,2	111,9	99,1	81	60,6	
6Z10220 03/3B	110	168	157	143	119	88	52	
6Z10220 03/3E	110	181	169	155	133	104	71	
6Z10220 03/1B	130	189	175	161	141	112	79	
6Z10220 03	130	199	184	170	151	124	93	

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## DIMENSIONS AND WEIGHTS

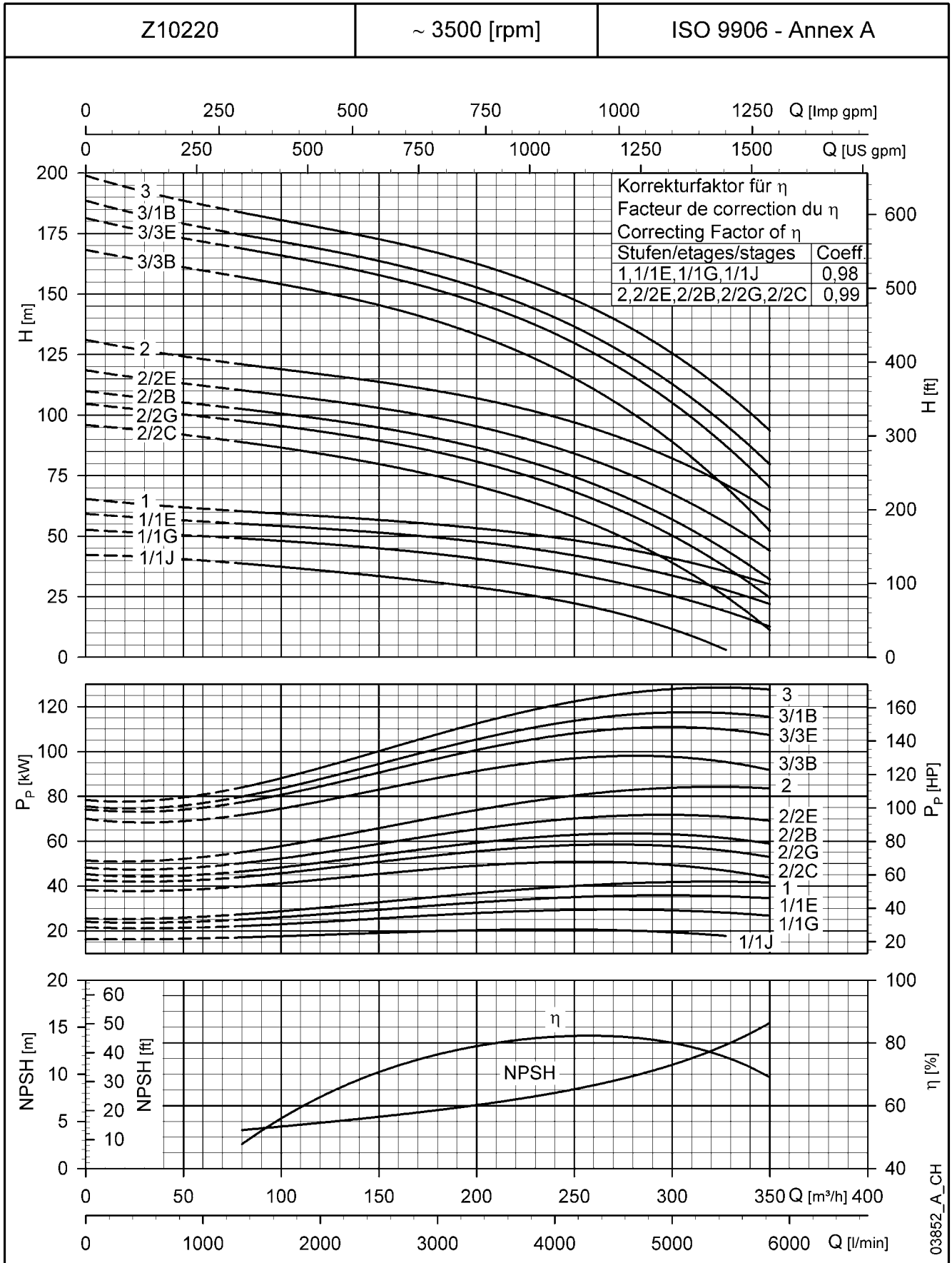
PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
6Z10220 01/1J-L6W	22	1648	258	144	3843	125
6Z10220 01/1G-L6W	30	1856	258	144	4051	142
6Z10220 01/1E-L6W	37	2006	258	144	4151	156
6Z10220 01-L8W	45	1900	258	192	4095	227
6Z10220 02/2C-L8W	52	2206	258	192	4185	267
6Z10220 02/2G-L8W	60	2296	258	192	4275	284
6Z10220 02/2B-L8W	67	2386	258	192	4365	302
6Z10220 02/2E-L8W	75	2476	258	192	4455	319
6Z10220 02-L8W	93	2676	258	192	4655	357
6Z10220 03/3B-L10W	110	2876	259	236	4602	493
6Z10220 03/3E-L10W	110	2876	259	236	4602	493
6Z10220 03/1B-L10W	130	3026	259	236	4752	540
6Z10220 03-L10W	130	3026	259	236	4752	540

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- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 255 mm with L6W motor.  
C = 255 mm with L8W and L10W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,3 Kg.

**6Z10220 SERIES, 1 TO 3 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z10220 SERIES, 4 TO 7 STAGES OPERATING CHARACTERISTICS AT 60 Hz

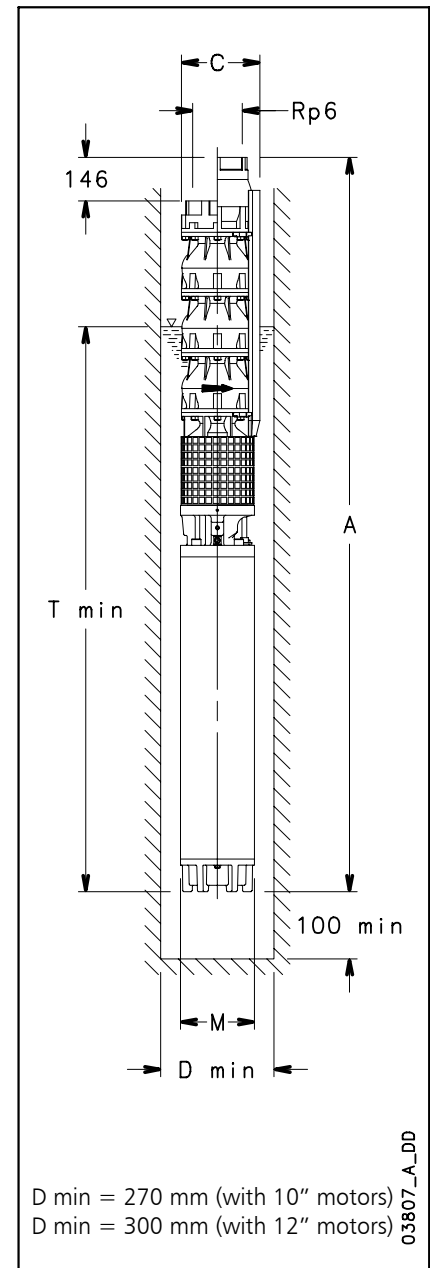
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1333	2667	4000	5000	5833
		m <sup>3</sup> /h	0	80	160	240	300	350
kW		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10220 04/3B	150	235	219	200	170	130	83	
6Z10220 04/2B	150	244	227	208	180	141	96	
6Z10220 04/2E	185	254	236	217	190	152	110	
6Z10220 04	185	266	246	227	202	166	125	
6Z10220 05/3B	185	301	280	256	221	172	114	
6Z10220 05/2E	220	320	297	274	241	194	141	
6Z10220 05	220	332	307	284	252	207	157	
6Z10220 06/3B	260	367	340	312	271	212	145	
6Z10220 06/2E	260	387	359	331	291	236	172	
6Z10220 06	260	399	369	341	303	249	188	
6Z10220 07/3B	300	434	403	370	322	255	177	
6Z10220 07/2E	300	452	419	386	341	276	202	
6Z10220 07	300	464	429	397	352	289	218	

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## DIMENSIONS AND WEIGHTS

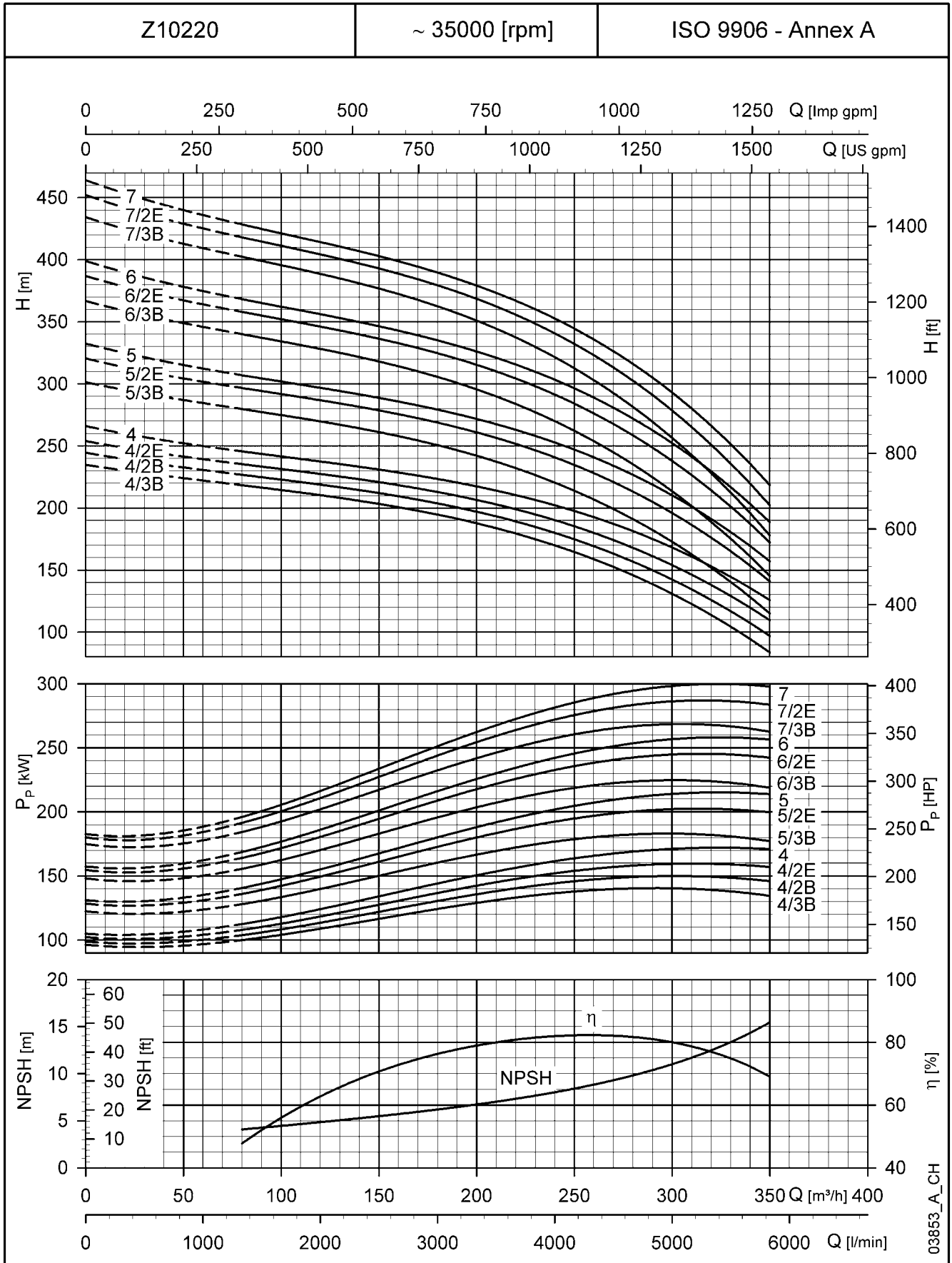
PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
6Z10220 04/3B-L10W	150	3372	259	236	4882	598
6Z10220 04/2B-L10W	150	3372	259	236	4882	598
6Z10220 04/2E-L12W	185	3129	283	276	4639	663
6Z10220 04-L12W	185	3129	283	276	4639	663
6Z10220 05/3B-L12W	185	3345	283	276	4639	683
6Z10220 05/2E-L12W	220	3495	283	276	4789	747
6Z10220 05-L12W	220	3495	283	276	4789	747
6Z10220 06/3B-L12W	260	3861	283	276	4939	830
6Z10220 06/2E-L12W	260	3861	283	276	4939	830
6Z10220 06-L12W	260	3861	283	276	4939	830
6Z10220 07/3B-L12W	300	4227	283	276	5089	915
6Z10220 07/2E-L12W	300	4227	283	276	5089	915
6Z10220 07-L12W	300	4227	283	276	5089	915

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- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 255 mm with L10W motor.  
C = 280 mm with L12W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,3 Kg.

**6Z10220 SERIES, 4 TO 7 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z10275 SERIES, 1 TO 3 STAGES OPERATING CHARACTERISTICS AT 60 Hz

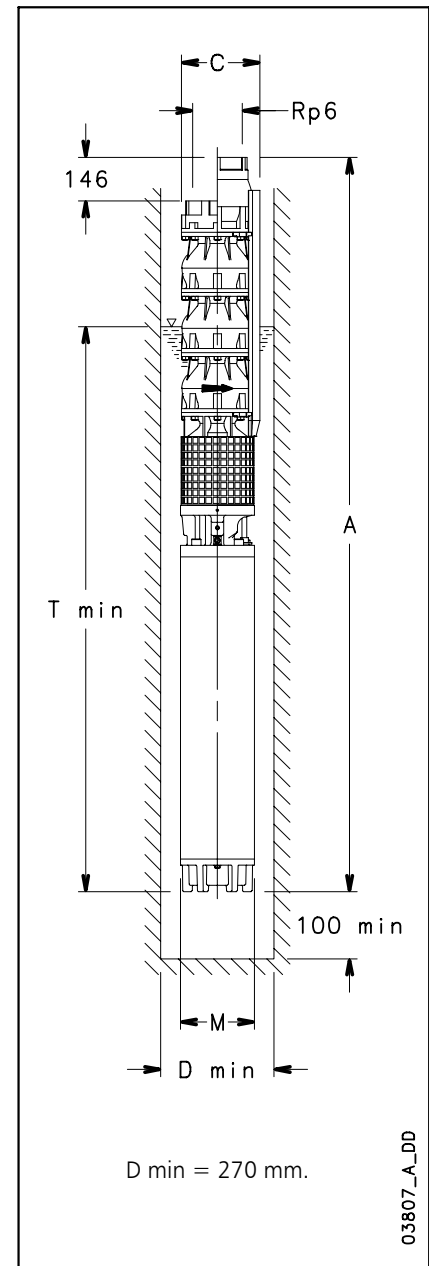
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1667	2917	4167	5417	6667
		m <sup>3</sup> /h	0	100	175	250	325	400
kW		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10275 01/1G	30	47,6	42,6	38,6	33,9	25,4	12,8	
6Z10275 01/1E	37	53,4	48,4	44,2	40,2	32,3	20,6	
6Z10275 01/1C	45	58,8	54,1	50,4	46,3	40,1	28,9	
6Z10275 02/2G	60	94,6	84,7	76,7	67,2	50,6	26	
6Z10275 02/2E	75	106,8	96,8	88,4	80,5	64,6	41,2	
6Z10275 02/2C	93	117,9	108,6	101,1	92,8	80,5	58,2	
6Z10275 02	110	123,3	114,3	107,1	98,6	87,2	66,4	
6Z10275 03/2B	110	161	146,4	134,5	121,3	99,2	64,5	
6Z10275 03/2A	130	173,6	159,2	147,3	135,3	114,9	81,3	
6Z10275 03	150	184,4	170,9	160,2	147,5	130,3	99	

6z10275-2p60-1\_a\_th

## DIMENSIONS AND WEIGHTS

PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
	kW					kg (3)
6Z10275 01/1G-L6W	30	1856	258	144	4051	142
6Z10275 01/1E-L6W	37	2006	258	144	4151	156
6Z10275 01/1C-L8W	45	1900	258	192	4095	228
6Z10275 02/2G-L8W	60	2296	258	192	4275	285
6Z10275 02/2E-L8W	75	2476	258	192	4455	320
6Z10275 02/2C-L8W	93	2676	258	192	4655	358
6Z10275 02-L10W	110	2660	259	236	4602	474
6Z10275 03/2B-L10W	110	2876	259	236	4602	493
6Z10275 03/2A-L10W	130	3026	259	236	4752	540
6Z10275 03-L10W	150	3156	259	236	4882	579

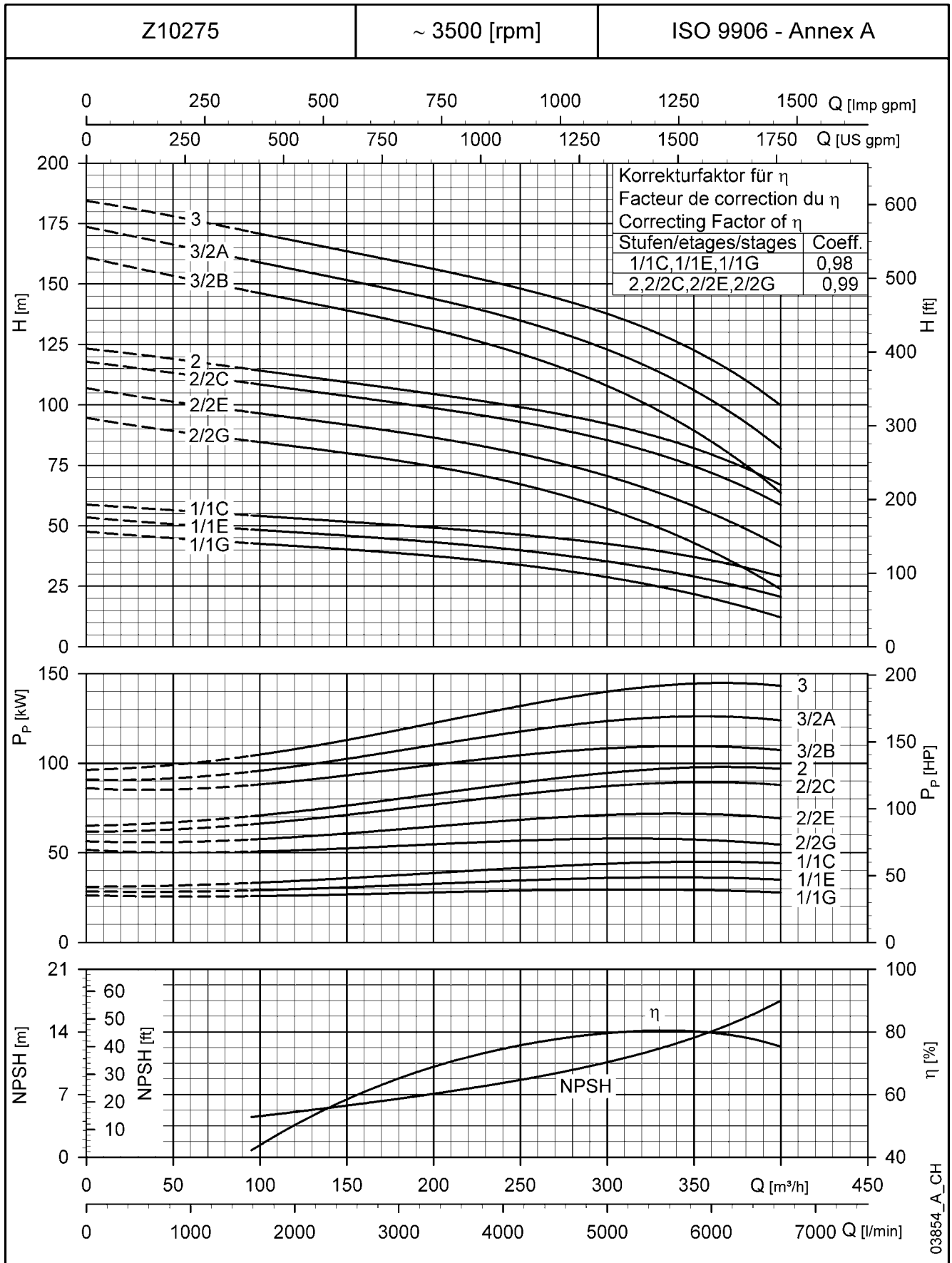
6z10275-2p60-1\_a\_td



- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 255 mm with L6W motor.  
C = 255 mm with L8W and L10W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,8 Kg.



**6Z10275 SERIES, 1 TO 3 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**

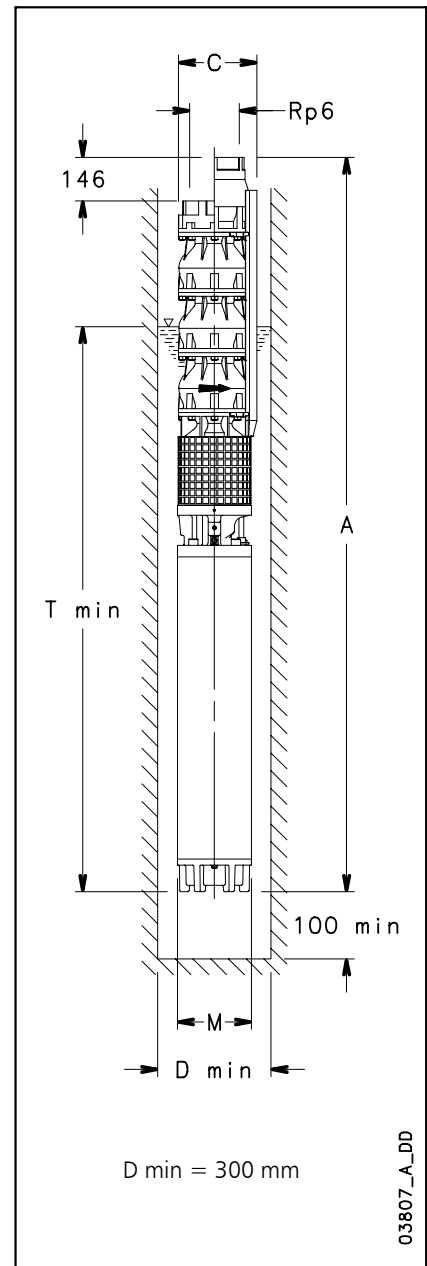


These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## 6Z10275 SERIES, 4 TO 7 STAGES OPERATING CHARACTERISTICS AT 60 Hz

PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1667	2917	4167	5417	6667
		m <sup>3</sup> /h	0	100	175	250	325	400
kW		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z10275 04/2B	185	223	204	188	171	143	99	
6Z10275 04/2A	185	236	217	201	185	159	115	
6Z10275 04	220	247	229	214	197	174	133	
6Z10275 05/2B	220	284	260	241	220	186	131	
6Z10275 05/2A	260	298	274	255	235	203	149	
6Z10275 05	260	307	285	267	246	217	165	
6Z10275 06/2B	260	345	317	295	269	230	164	
6Z10275 06/2A	300	359	331	308	284	246	181	
6Z10275 06	300	369	342	320	295	261	199	
6Z10275 07/2G	300	403	370	344,0	314	269	193	
6Z10275 07/2A	350	421	389	362	334	291	215	

6z10275-2p60-2\_a\_th



## DIMENSIONS AND WEIGHT

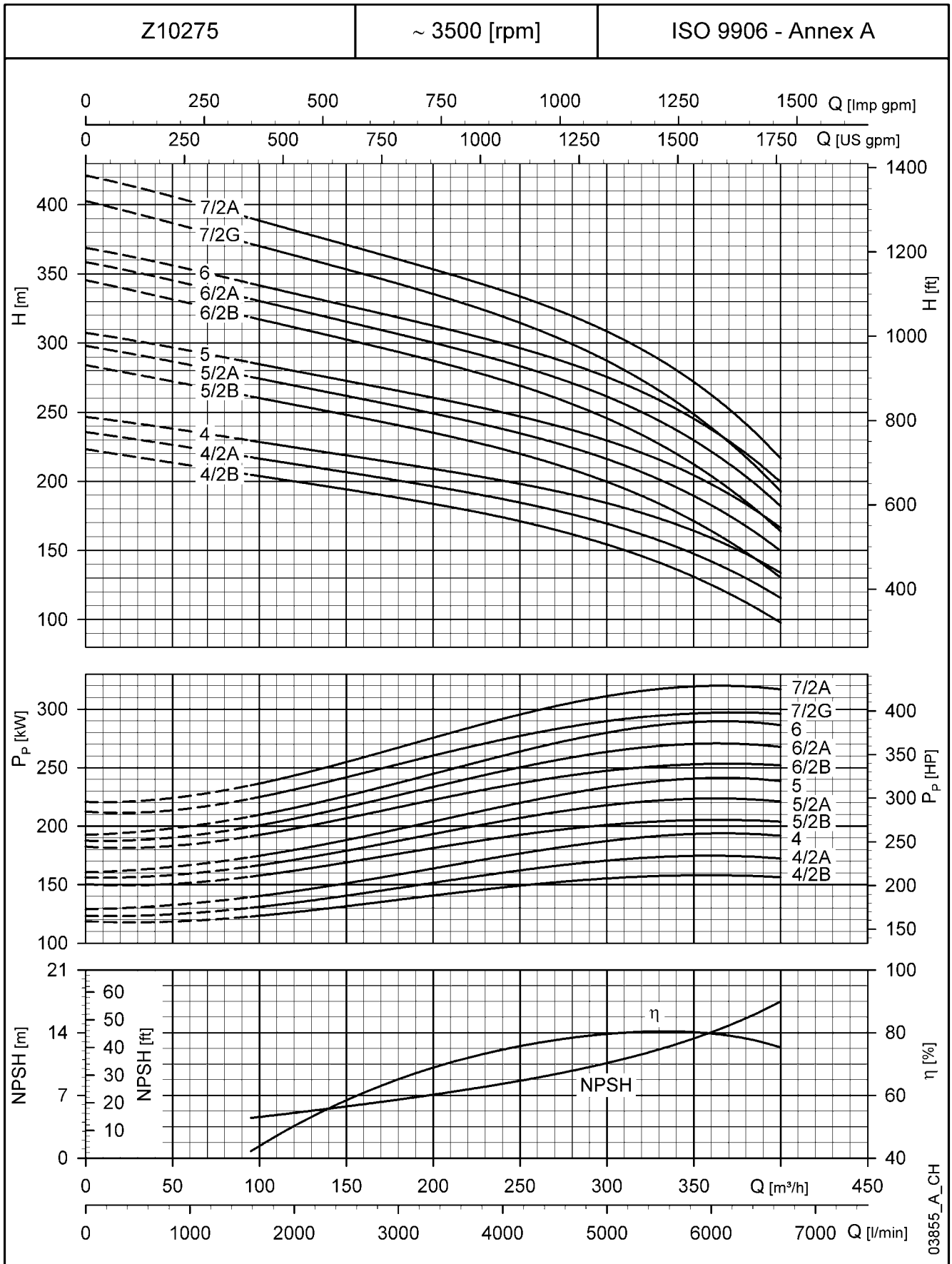
PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
	kW					kg (3)
6Z10275 04/2B-L12W	185	3129	283	276	4639	664
6Z10275 04/2A-L12W	185	3129	283	276	4639	664
6Z10275 04-L12W	220	3279	283	276	4789	728
6Z10275 05/2B-L12W	220	3495	283	276	4789	748
6Z10275 05/2A-L12W	260	3645	283	276	4939	812
6Z10275 05-L12W	260	3645	283	276	4939	812
6Z10275 06/2B-L12W	260	3861	283	276	4939	831
6Z10275 06/2A-L12W	300	4011	283	276	5089	896
6Z10275 06-L12W	300	4011	283	276	5089	896
6Z10275 07/2G-L12W	300	4227	283	276	5089	916
6Z10275 07/2A- **	350	-	-	-	-	-

\*\* For power above 350 kW please contact our sales network.

6z10275-2p60-2\_a\_td

- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 280 mm with L12W motor.
- 2) T min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 146 mm, and reduce weight by 8,8 Kg.

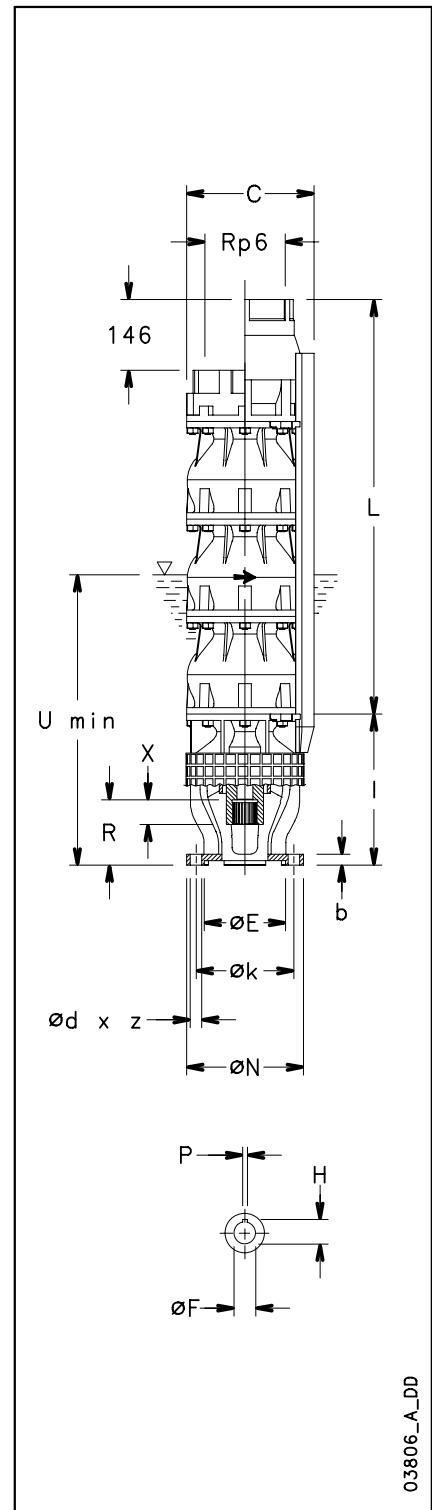
**6Z10275 SERIES, 4 TO 7 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z10150 PUMP SERIES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX POWER ABSORBED BY PUMP kW	DIMENSIONS (mm)			WEIGHT kg <sup>(3)</sup>	Ø MIN. WELL mm
		L <sup>(4)</sup>	C <sup>(1)</sup>	U <sup>(2)</sup>		
6Z10150 01/1C	18,1	442	258	1600	47,2	270
6Z10150 01/1E	22,0	442	258	1600	47,2	270
6Z10150 01	27,7	442	258	1600	47,2	270
6Z10150 02/2C	36,1	658	258	1600	67,7	270
6Z10150 02/2E	44,0	658	258	1600	67	270
6Z10150 02/1A	53,6	658	258	1600	67	270
6Z10150 03/2C	63,8	874	258	1600	87,1	270
6Z10150 03/2B	72,9	874	258	1600	87,1	270
6Z10150 03/1A	81,2	874	258	1600	87,1	270
6Z10150 04/2C	91,4	1090	258	1600	106,9	270
6Z10150 04/2B	100,5	1090	258	1600	111,8	270
6Z10150 04	110,6	1090	258	1600	111,8	270
6Z10150 05/2C	119,1	1306	258	1600	131,6	270
6Z10150 05/2B	128,2	1306	258	1600	131,6	270
6Z10150 05	138,3	1306	258	1600	131,6	270
6Z10150 06/2C	146,7	1522	258	1600	151,4	270
6Z10150 06/2B	155,8	1522	271	1600	152,2	300
6Z10150 06	165,9	1522	271	1600	152,2	300
6Z10150 07/3B	178,4	1738	271	1600	172	300
6Z10150 07	193,6	1738	271	1600	172	300
6Z10150 08/3B	206,1	1954	271	1600	191,8	300
6Z10150 08/1B	216,2	1954	271	1600	191,8	300



### MOTOR COUPLING

6z10150p-60\_a\_td

MOTOR CONNECTION	DIMENSIONS (mm)							
	N	k	d	z	b	E <sup>H7</sup>	R	I
6" (NEMA)	182	111,2	13,5	4	17	76,2	73	263
8" (NEMA)	182	152,4	18	4	17	127	101,45	263
10"	232	190,5	22	4	15	127	101,45	300
12"	232	190,5	22	4	15	127	126,85	300

COUPLING	DIMENSIONS (mm)			
	Profile of gear coupling according to NEMA			
	NUMBER OF TEETH	DIAMETRICAL PITCH	PRESSURE ANGLE	X
6" (NEMA)	15	16/32	30°	20
8" (NEMA)	23	16/32	30°	38

COUPLING	DIMENSIONS (mm)			
	F <sup>+0.084 +0.059</sup>	H <sup>+0.1</sup>	P <sup>+0.05 +0.02</sup>	X
10"	42,85	47,6	9,5	84
12"	49,212	54,5	12,7	95

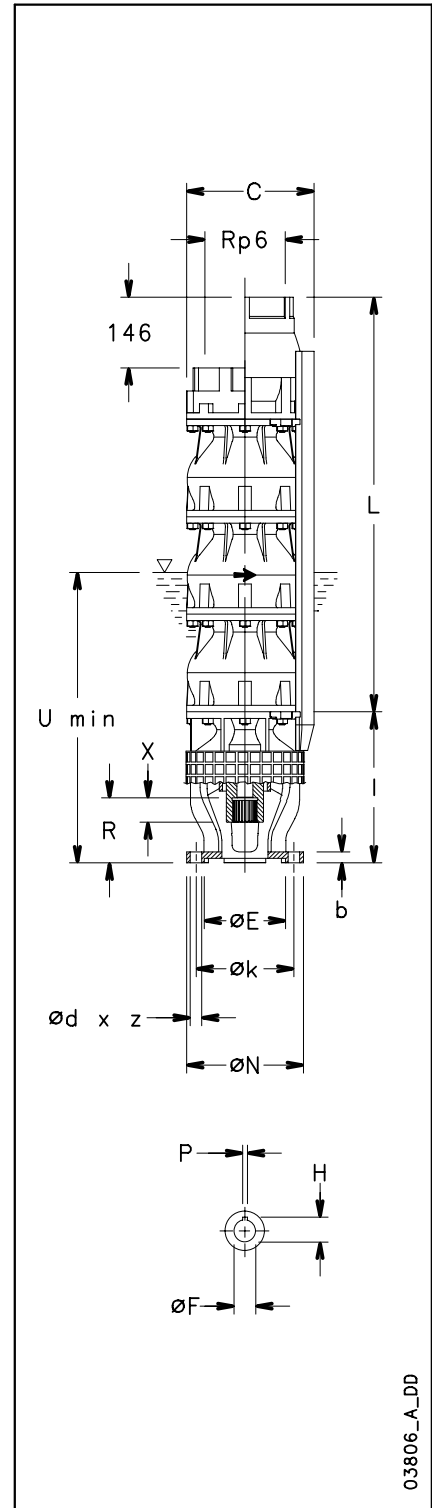
z10-mtcn-50-en\_b\_td

03806\_A\_DD

- 1) Max pump diameter with 2 motor cables included.
- 2) U min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.
- 3) Weight with non-return valve. For pumps without non-return valve, reduce by 8,3 Kg.
- 4) For pumps without non-return valve, reduce dimension L by 146 mm.

## 6Z10220 PUMP SERIES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX POWER ABSORBED BY PUMP kW	DIMENSIONS (mm)			WEIGHT kg <sup>(3)</sup>	Ø MIN. WELL mm
		L <sup>(4)</sup>	C <sup>(1)</sup>	U <sup>(2)</sup>		
6Z10220 01/1J	20,9	442	258	2900	47,3	270
6Z10220 01/1G	29,3	442	258	2900	47,3	270
6Z10220 01/1E	35,9	442	258	2900	47,3	270
6Z10220 01	41,9	442	258	2900	46,2	270
6Z10220 02/2C	51,2	658	258	2900	66,9	270
6Z10220 02/2G	58,6	658	258	2900	66,9	270
6Z10220 02/2B	63,4	658	258	2900	66,9	270
6Z10220 02/2E	71,8	658	258	2900	66,9	270
6Z10220 02	83,8	658	258	2900	66,9	270
6Z10220 03/3B	95,1	874	258	2900	91,1	270
6Z10220 03/3E	107,7	874	258	2900	91,1	270
6Z10220 03/1B	115,5	874	258	2900	91,1	270
6Z10220 03	125,7	874	258	2900	91,1	270
6Z10220 04/3B	137,0	1090	258	2900	110,4	270
6Z10220 04/2B	147,2	1090	258	2900	110,4	270
6Z10220 04/2E	155,6	1090	271	2900	110,4	300
6Z10220 04	167,6	1090	271	2900	110,4	300
6Z10220 05/3B	178,9	1306	271	2900	130,5	300
6Z10220 05/2E	197,5	1306	271	2900	130,5	300
6Z10220 05	209,5	1306	271	2900	130,5	300
6Z10220 06/3B	220,8	1522	271	2900	149,8	300
6Z10220 06/2E	239,4	1522	271	2900	149,8	300
6Z10220 06	251,4	1522	271	2900	149,8	300
6Z10220 07/3B	262,7	1738	271	2900	169,1	300
6Z10220 07/2E	281,3	1738	271	2900	169,1	300
6Z10220 07	293,3	1738	271	2900	169,1	300



## MOTOR COUPLING

6z10220p-60\_a\_td

MOTOR CONNECTION	DIMENSIONS (mm)							
	N	k	d	z	b	E <sup>H7</sup>	R	I
6" (NEMA)	182	111,2	13,5	4	17	76,2	73	263
8" (NEMA)	182	152,4	18	4	17	127	101,45	263
10"	232	190,5	22	4	15	127	101,45	300
12"	232	190,5	22	4	15	127	126,85	300

COUPLING	DIMENSIONS (mm)			
	Profile of gear coupling according to NEMA			
	NUMBER OF TEETH	DIAMETRICAL PITCH	PRESSURE ANGLE	X
6" (NEMA)	15	16/32	30°	20
8" (NEMA)	23	16/32	30°	38

COUPLING	DIMENSIONS (mm)			
	F <sup>+0.084 +0.059</sup>	H <sup>+0.1</sup>	P <sup>+0.05 +0.02</sup>	X
10"	42,85	47,6	9,5	84
12"	49.212	54,5	12,7	95

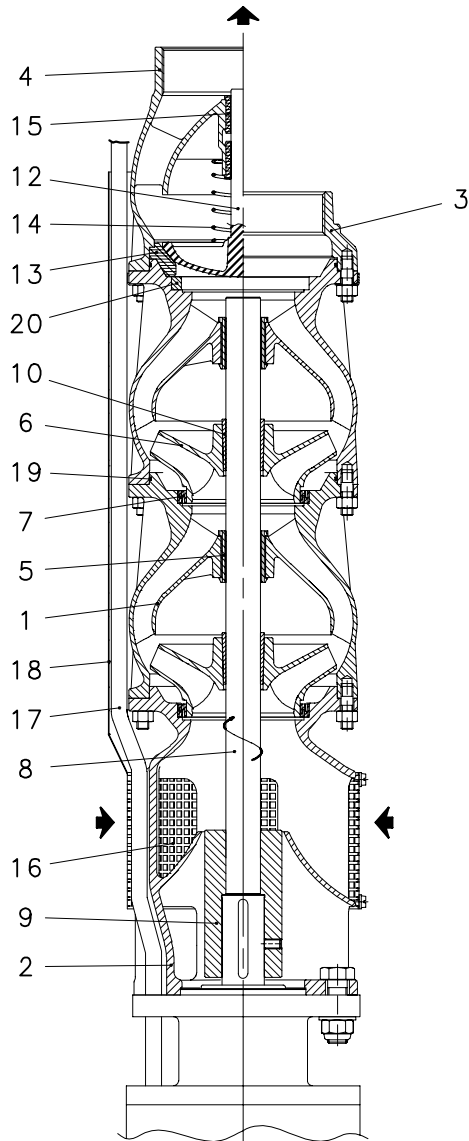
z10-mtcn-50-en\_b\_td

03806\_A\_DD

- 1) Max pump diameter with 2 motor cables included.
- 2) U min valid only for max flow speed of 4,5 m/s between pump and perforation pipe.
- 3) Weight with non-return valve. For pumps without non-return valve, reduce by 8,3 Kg.
- 4) For pumps without non-return valve, reduce dimension L by 146 mm.



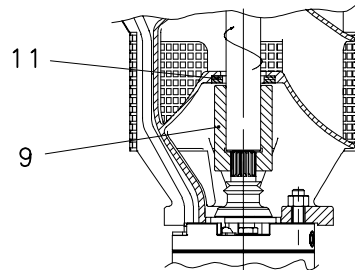
**6Z10 SERIES  
PUMP CROSS SECTION AND LIST OF COMPONENTS**



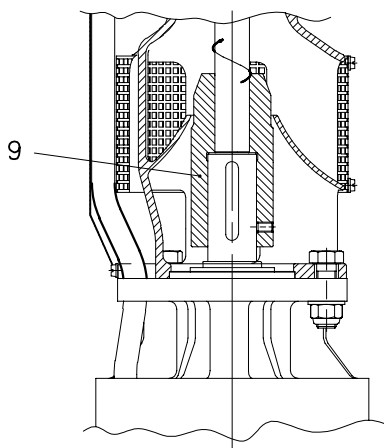
REF. N.	DESCRIPTION
1	Stage casing
2	Suction casing
3	Delivery casing
4	Valve body
5	Bearing bush
6	Impeller
7	Wear ring
8	Shaft
9	Coupling
10	Locking sleeve
11	Thrust bearing
12	Valve plate
13	Valve seat
14	Valve spring
15	Wing valve
16	Suction strainer
17	Cable
18	Cable protection
19	O-ring
20	Intermediate ring

z10-2p50-en\_a\_tp

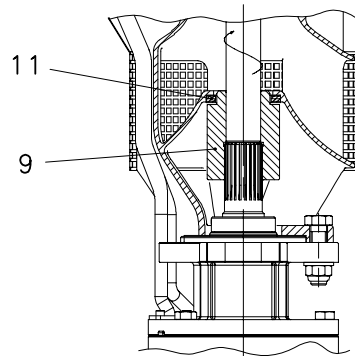
MOT. L10W



MOT. L6W  
( 6" NEMA )



MOT. L12W



MOT. L8W  
( 8" NEMA )

03801\_A\_DS





## 12" Submersible Electric Pumps

### 6Z12340 Series



#### MARKET SECTORS

AGRICULTURAL, INDUSTRIAL, MUNICIPAL.

#### APPLICATIONS

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

#### SPECIFICATIONS

##### PUMP

- **Delivery:** up to 480 m<sup>3</sup>/h.
- **Head:** up to 390 m.
- Maximum pump overall diameter (2 cable covers included): 302 mm.
- Maximum electric pump immersion depth: 350 m with L8W, L10W and L12W motors.
- The content of sand should not exceed 50 g/m<sup>3</sup>, higher contents up to 100 g/m<sup>3</sup> can be admitted, if wear is tolerated.
- Horizontal installation possible (it is recommended to have an incline of at least 3° with the motor on the lowest position).
- Standard delivery outlet: 8" NPT according to API.
- Motor power: from 45 to 350 kW.
- Electric pumps with powers up to 300 kW are supplied with Lowara motor series. For larger powers please contact our sales network.

##### MOTOR

- L8W, L10W and L12W rewindable water filled three-phase motors.
- **Three-phase version:**  
L8W: 30 to 93 kW 380 V, 60 Hz.  
30 to 93 kW 460 V, 60 Hz.  
L10W: 93 to 150 kW 380 V, 60 Hz.  
93 to 150 kW 460 V, 60 Hz.  
L12W: 185 to 300 kW 380 V, 60 Hz.  
185 to 300 kW 460 V, 60 Hz.
- Maximum supply voltage variations: L8W, L10W, L12W ±10%.
- **Horizontal operation:**  
L8W, L10W and L12W all versions are designed for horizontal installation, provided that the direction of the axial thrust generated by the impellers is always from the pump to the motor.

- Maximum number of starts per hour: 10 (L8W) 8 (L10W) 4 (L12W).
- Maximum temperature of water in contact with motor: L8W, L10W and L12W 30°C.
- **Special versions: AISI 316 and Duplex materials, HT** for applications in high temperature environments (up to 60°C) or under inverter.

#### CONSTRUCTION

##### FEATURES

##### PUMP

- Robust but lightweight, easy to maintain and with high corrosion resistance.
- **Impeller** and **diffusers** made of stainless steel castings.
- Delivery head and suction support of stainless steel castings.
- Stainless steel non return valve integrated, spring equipped.
- Stainless steel shaft.
- Guide bearings and wear rings ensure high reliability and long lasting hydraulic performances.
- The new design ensures high efficiency and low power consumption.
- **Special versions:** 6ZR12 made of **Duplex** stainless steel.
- Coupling according to **NEMA** standard for 8" motor, with key connection for 10" and 12" motor.

#### ACCESSORIES

- Coupling flange.
- Panels.
- Drop cables.
- Cooling shrouds.
- Temperature sensor **PT 100 / PTC**.

## TABLE OF MATERIALS 6Z12

COMPONENT	MATERIAL	DESIGNATION	
		EUROPE	USA
Delivery head / Valve Casing	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Valve	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Valve seat	NBR 90		
Valve spring	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
Diffuser / Bowl	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Diffuser O-Ring	NBR 70		
Impeller	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Taperlock	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Wear ring	POM		
Lower support / Suction Casing	Stainless steel	EN 10213-4-GX5CrNi19-10 (1.4308)	A744-CF 8
Suction strainer	Stainless steel	DIN 17440-X6CrNiMoTi17-12-2 (1.4571)	AISI 316Ti
Pump shaft	Stainless steel	EN 10088-1-X17CrNi16-2 (1.4057)	AISI 431
Coupling	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Bearing bush	EPDM + LOXAMID <sup>®</sup>		
Thrust Bearing	PTFE + 25% carbon		
Screw, stud, nut	Stainless steel	ISO 3506-1/2 A4-70	AISI 316
Cable protection	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304

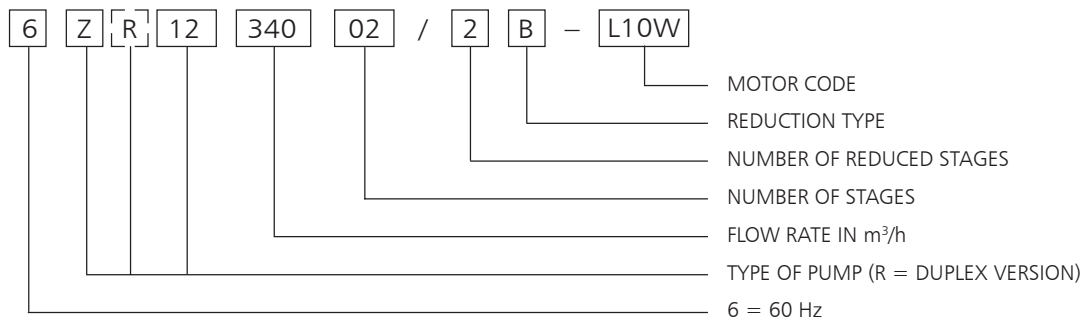
zr12-2p50-en\_b\_tm

## TABLE OF MATERIALS 6ZR12

COMPONENT	MATERIAL	DESIGNATION	
		EUROPE	USA
Delivery head / Valve Casing	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Valve	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Valve seat	NBR 90		
Valve spring	Hastelloy C4	DIN17744-NiMo16Cr16Ti (2.4610)	N06455
Diffuser / Bowl	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Diffuser O-Ring	NBR 70		
Impeller	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Taperlock	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Wear ring	POM		
Lower support / Suction Casing	Duplex stainless steel	EN 10213-4-GX2CrNiMoCuN25-6-3-3 (1.4517)	
Suction strainer	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L
Pump shaft	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Coupling	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Bearing bush	EPDM + LOXAMID <sup>®</sup>		
Thrust Bearing	PTFE + 25% carbon		
Screw, stud, nut	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
Cable protection	Stainless steel	EN 10088-1X1NiCrMoCu25-20-5 (1.4539)	AISI 904L

zr12-2p50-en\_a\_tm

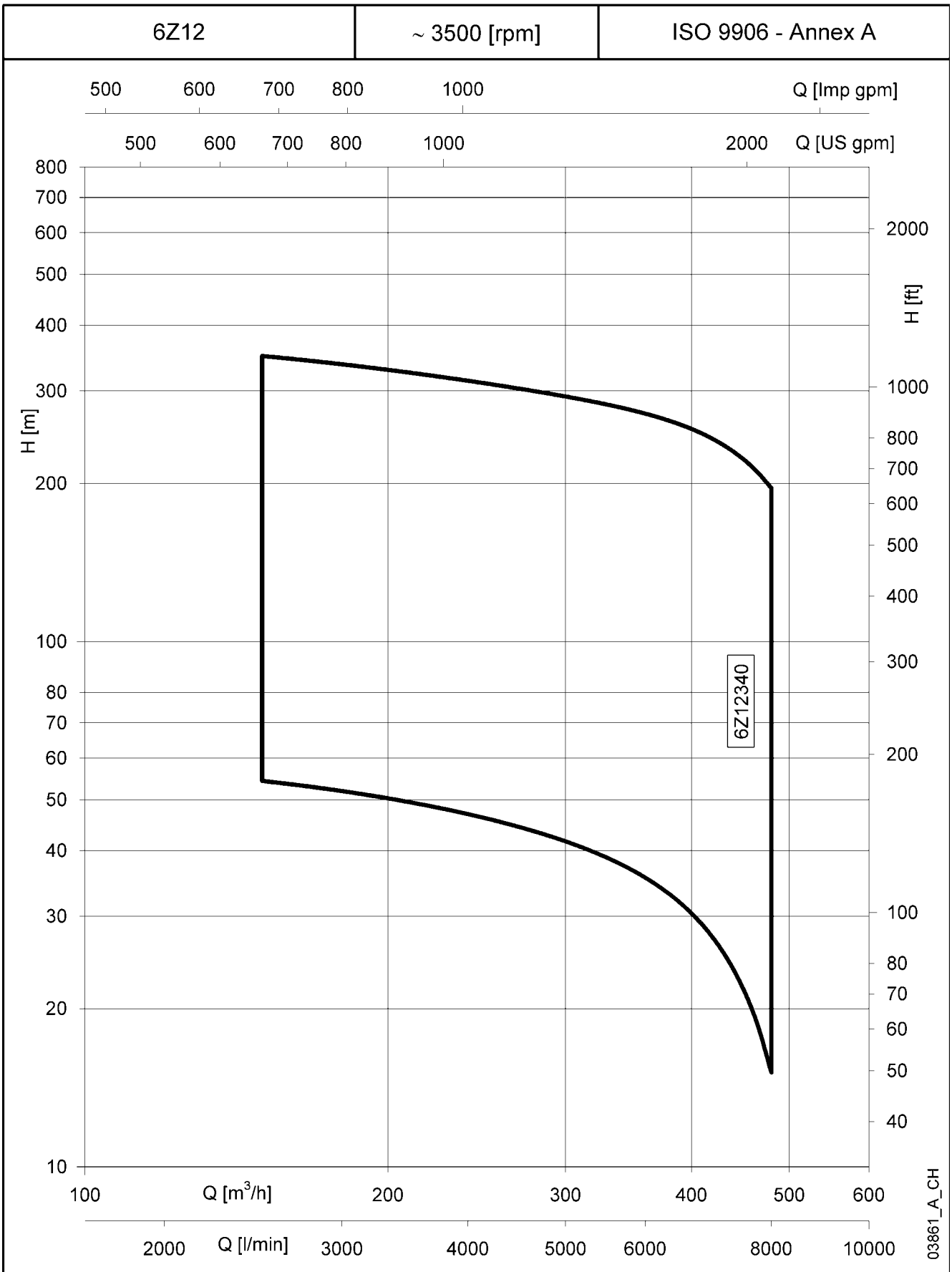
## IDENTIFICATION CODE



EXAMPLE : 6ZR12 340 02/2B - L10W

12" electric pump, 60 Hz, made of DUPLEX, flow rate 340 m<sup>3</sup>/h, 2 stages including 2 reduced ones, coupled to an 10" L10W motor.

**6Z12 SERIES  
HYDRAULIC PERFORMANCE RANGE AT 60 Hz**



## 6Z12340 SERIES, 1 STAGE OPERATING CHARACTERISTICS AT 60 Hz

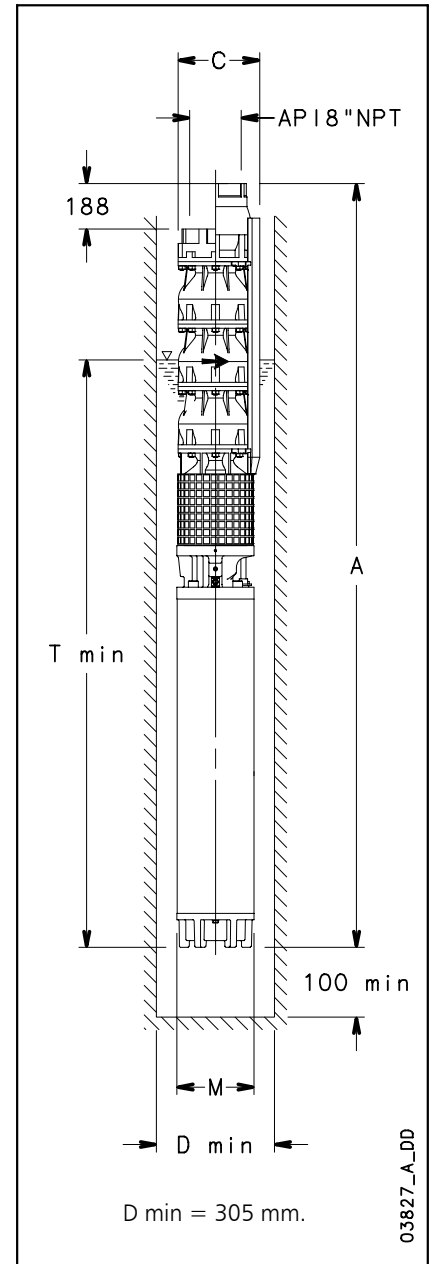
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1667	3333	5000	6667	8000
		m <sup>3</sup> /h	0	100	200	300	400	480
		H = TOTAL HEAD METRES COLUMN OF WATER						
	kw							
6Z12340 01/1H	45	60,3	57,4	50,4	41,4	30,4	-	
6Z12340 01/1B	52	66,2	62,4	55,4	47	37,1	22,6	
6Z12340 01/1F	60	71	66,7	59,5	51,6	42,5	29	
6Z12340 01/1E	67	75,1	70,7	63,3	55,6	47,5	34,7	
6Z12340 01	75	80,2	75,7	67,7	60,4	53,6	42,2	

6z12340-2p60-1\_a\_th

## DIMENSIONS AND WEIGHTS

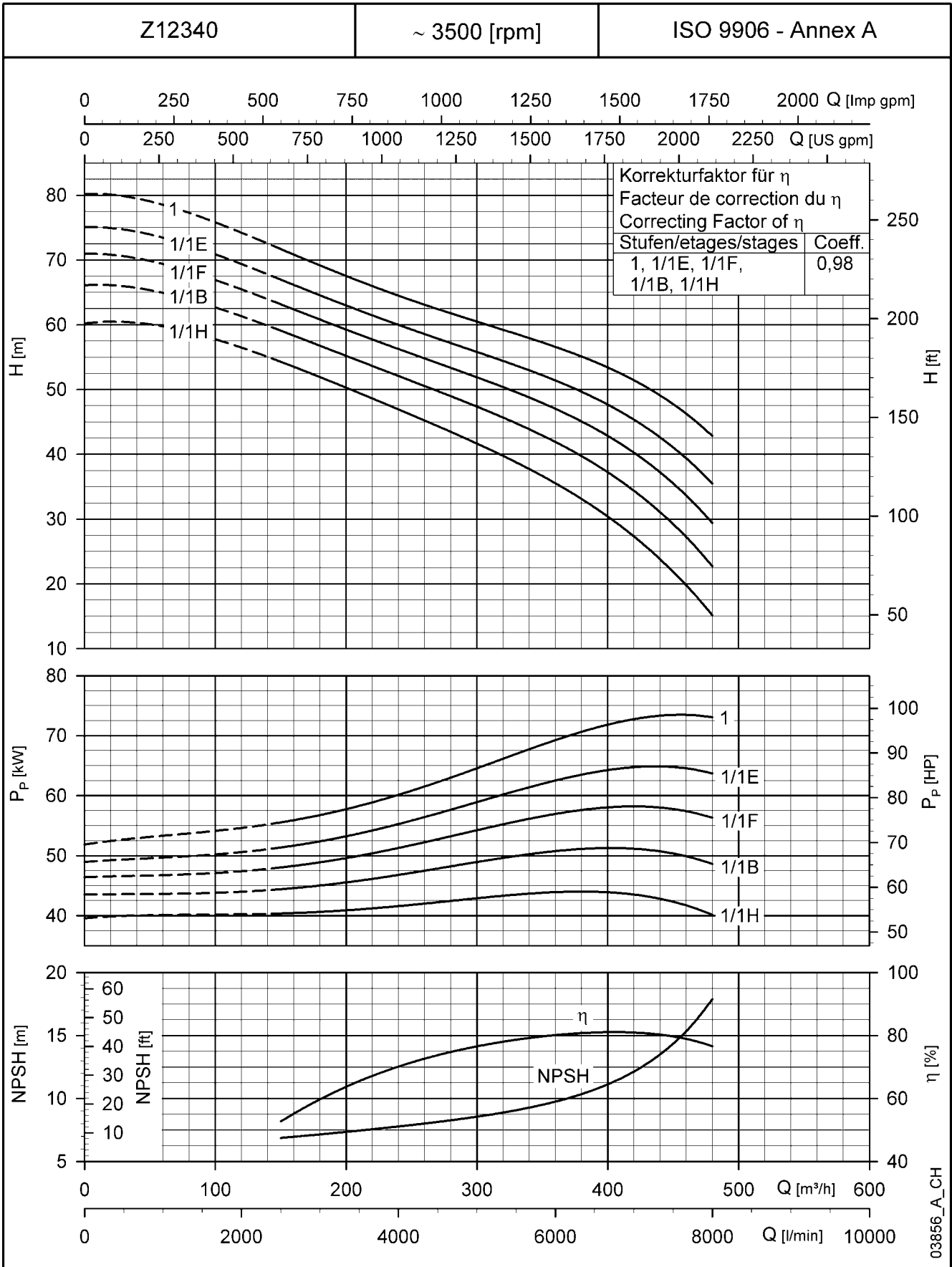
PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
	kw					kg (3)
6Z12340 01/1H-L8W	45	1945	290	192	4095	252
6Z12340 01/1B-L8W	52	2035	290	192	4185	272
6Z12340 01/1F-L8W	60	2125	290	192	4275	289
6Z12340 01/1E-L8W	67	2215	290	192	4365	307
6Z12340 01-L8W	75	2305	290	192	4455	324

6z12340-2p60-1\_a\_td



- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 285 mm with L8W motor.
- 2) T min valid only for max flow speed of 6,8 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 188 mm, and reduce weight by 16,7 Kg.

**6Z12340 SERIES, 1 STAGE  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z12340 SERIES, 2 TO 3 STAGES OPERATING CHARACTERISTICS AT 60 Hz

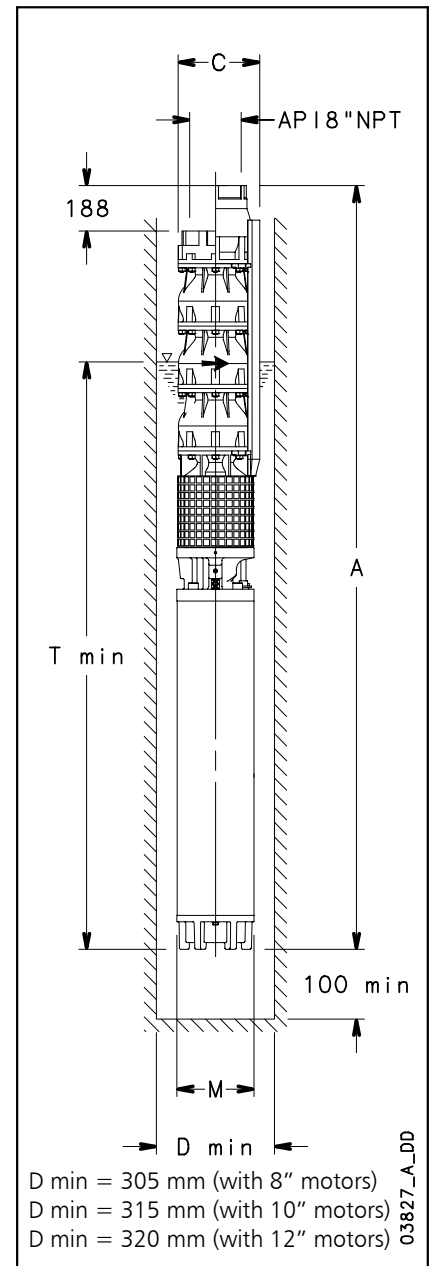
PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1667	3333	5000	6667	8000
		m <sup>3</sup> /h	0	100	200	300	400	480
		H = TOTAL HEAD METRES COLUMN OF WATER						
6Z12340 02/2H	93	121	115	101	83	61	-	
6Z12340 02/2B	110	133	125	111	94	74	-	
6Z12340 02/2F	130	145	136	122	105	87	61	
6Z12340 02/1B	130	149	141	126	110	93	69	
6Z12340 02/1D	150	160	151	135	120	106	83	
6Z12340 03/2H	185	205	194	173	147	119	-	
6Z12340 03/3F	185	217	204	182	158	131	91	
6Z12340 03/2F	220	226	213	191	167	142	105	
6Z12340 03/2E	220	235	221	198	175	152	116	
6Z12340 03/1E	220	240	227	203	180	158	124	
6Z12340 03	260	245	232	208	186	166	133	

6z12340-2p60-2\_a\_th

## DIMENSIONS AND WEIGHTS

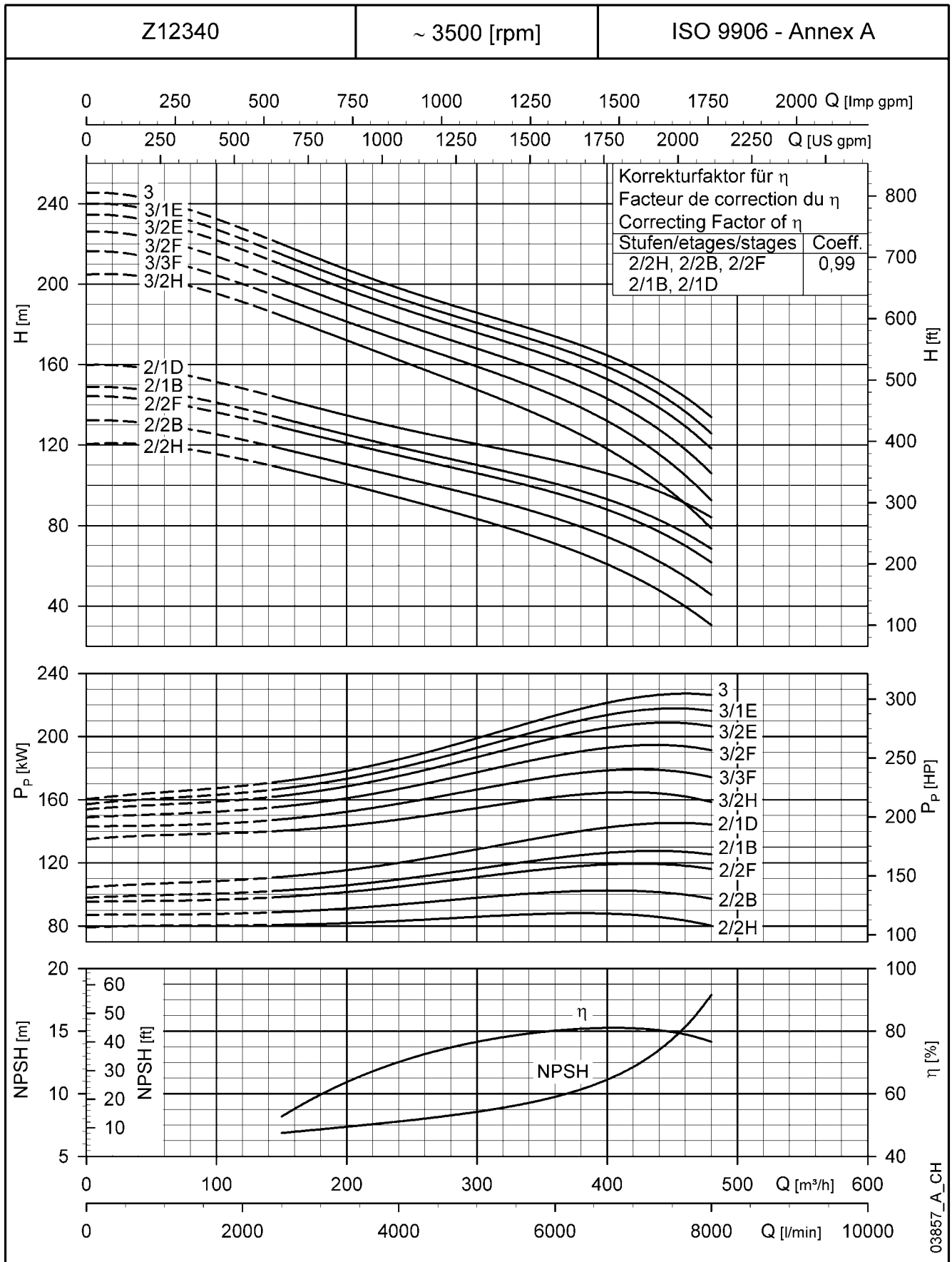
PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
		kg (3)				
6Z12340 02/2H-L8W	93	2740	290	192	4655	390
6Z12340 02/2B-L10W	110	2747	302	236	4602	501
6Z12340 02/2F-L10W	130	2897	302	236	4752	548
6Z12340 02/1B-L10W	130	2897	302	236	4752	548
6Z12340 02/1D-L10W	150	3027	302	236	4882	587
6Z12340 03/2H-L12W	185	3019	306	276	4639	682
6Z12340 03/3F-L12W	185	3019	306	276	4639	682
6Z12340 03/2F-L12W	220	3169	306	276	4789	746
6Z12340 03/2E-L12W	220	3169	306	276	4789	746
6Z12340 03/1E-L12W	220	3169	306	276	4789	746
6Z12340 03-L12W	260	3319	306	276	4939	810

6z12340-2p60-2\_a\_td



- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 285 mm with L8W motor.  
C = 293 mm with L10W motor and C = 300 mm with L12W motor.
- 2) T min valid only for max flow speed of 6,8 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 188 mm, and reduce weight by 16,7 Kg.

**6Z12340 SERIES, 2 TO 3 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z12340 SERIES, 4 TO 5 STAGES OPERATING CHARACTERISTICS AT 60 Hz

PUMP TYPE	RATED POWER	Q = DELIVERY						
		l/min	0	1667	3333	5000	6667	8000
		m <sup>3</sup> /h	0	100	200	300	400	480
		H = TOTAL HEAD METRES COLUMN OF WATER						
		kW						
6Z12340 04/2H	260	287	272	242	209	174		
6Z12340 04/3F	260	298	281	252	220	186	135	
6Z12340 04/2F	300	307	290	259	228	196	148	
6Z12340 04/2E	300	316	298	267	236	206	159	
6Z12340 04/1E	300	321	303	272	241	212	166	
6Z12340 04	350	328	310	278	248	222	178	
6Z12340 05/4F	350	372	350	313	274	231	166	
6Z12340 05/3F	350	381	359	322	283	242	180	
6Z12340 05/2F	350	391	369	331	292	252	193	

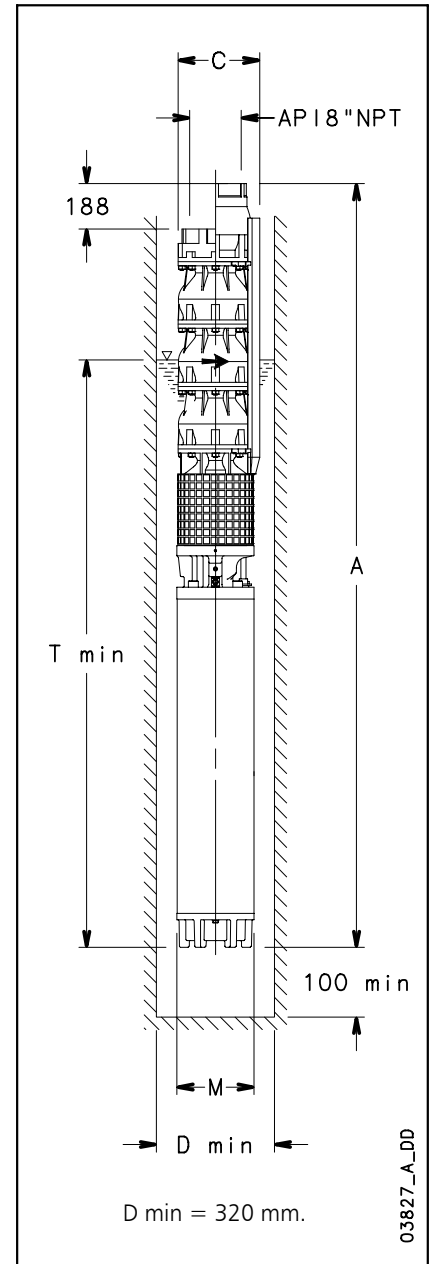
6z12340-2p60-3\_a\_th

## DIMENSIONS AND WEIGHTS

PUMP TYPE	RATED POWER	DIMENSIONS (mm)				WEIGHT
		A (4)	C (1)	M	T (2)	
		kW				
		kg (3)				
6Z12340 04/2H-L12W	260	3554	306	276	4939	837
6Z12340 04/3F-L12W	260	3554	306	276	4939	837
6Z12340 04/2F-L12W	300	3704	306	276	5089	902
6Z12340 04/2E-L12W	300	3704	306	276	5089	902
6Z12340 04/1E-L12W	300	3704	306	276	5089	902
6Z12340 04- **	350	-	-	-	-	-
6Z12340 05/4F- **	350	-	-	-	-	-
6Z12340 05/3F- **	350	-	-	-	-	-
6Z12340 05/2F- **	350	-	-	-	-	-

\*\* For power above 350 kW please contact our sales network.

6z12340-2p60-3\_a\_td



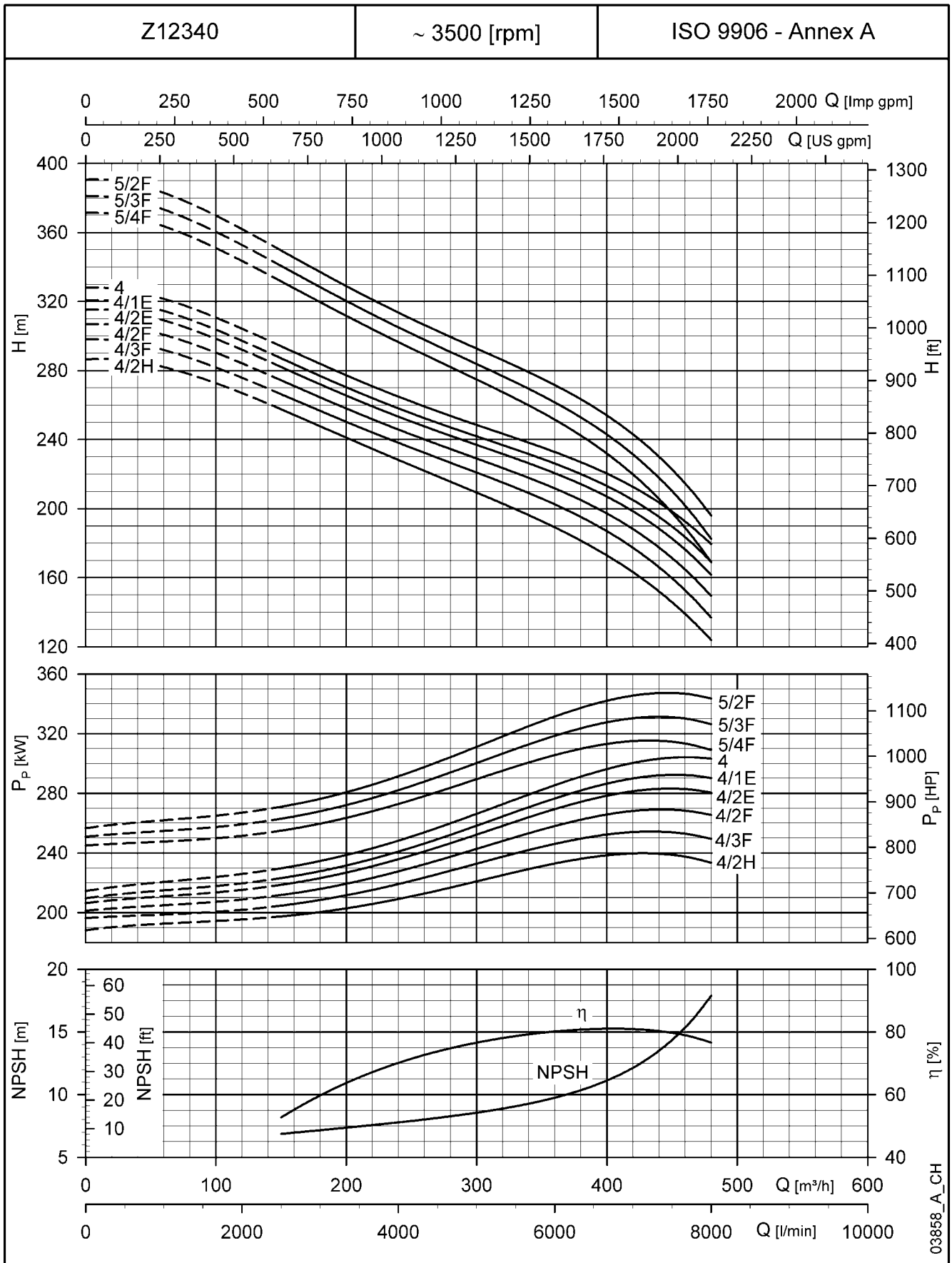
03827\_A\_DD

D min = 320 mm.

- 1) Max electric pump diameter with 2 motor cables included.  
In case of 1 motor cable C = 300 mm with L12W motor.
- 2) T min valid only for max flow speed of 6,8 m/s between pump and perforation pipe.  
In case this velocity is exceeded, please contact our sales network.
- 3) Without cables.
- 4) For pumps without non-return valve, reduce dimension A by 188 mm, and reduce weight by 16,7 Kg.



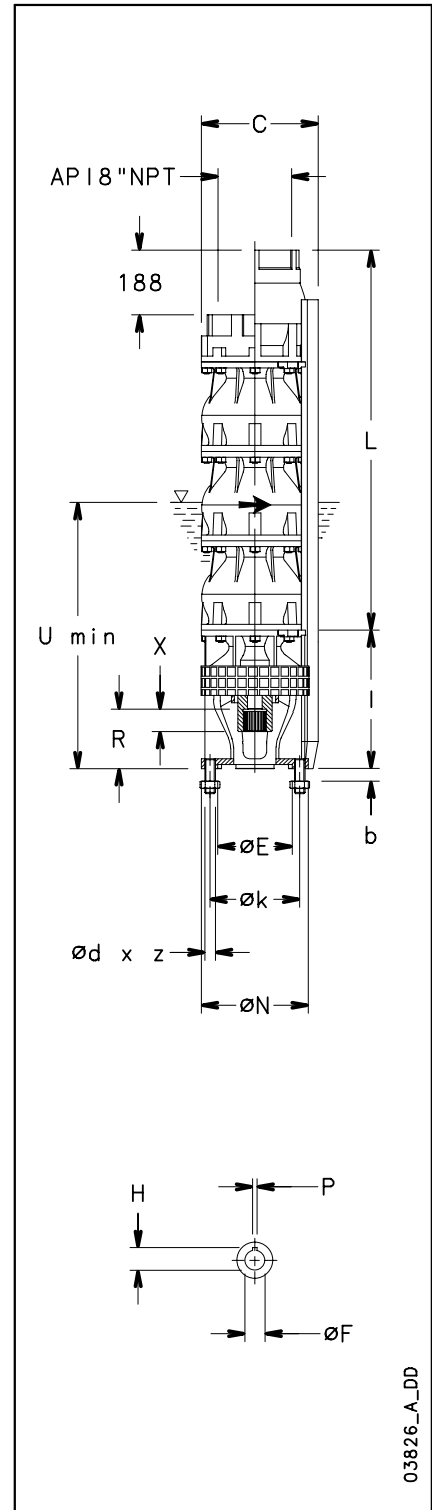
**6Z12340 SERIES, 4 TO 5 STAGES  
OPERATING CHARACTERISTICS AT 60 Hz**



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

## 6Z12340 PUMP SERIES DIMENSIONS AND WEIGHTS

PUMP TYPE	MAX POWER ABSORBED BY PUMP kW	DIMENSIONS (mm)			WEIGHT kg <sup>(3)</sup>	Ø MIN. WELL mm
		L <sup>(4)</sup>	C <sup>(1)</sup>	U <sup>(2)</sup>		
6Z12340 01/1H	44,5	510	290	2900	72	305
6Z12340 01/1B	51,2	510	290	2900	72	305
6Z12340 01/1F	58,4	510	290	2900	72	305
6Z12340 01/1E	65,0	510	290	2900	72	305
6Z12340 01	74,2	510	290	2900	72	305
6Z12340 02/2H	89,0	745	290	2900	99,3	305
6Z12340 02/2B	102,4	745	302	2900	99,3	315
6Z12340 02/2F	116,8	745	302	2900	99,3	315
6Z12340 02/1B	125,4	745	302	2900	99,3	315
6Z12340 02/1D	142,2	745	302	2900	99,3	315
6Z12340 03/2H	163,2	980	302	2900	129,4	315
6Z12340 03/3F	175,2	980	302	2900	129,4	315
6Z12340 03/2F	191,0	980	302	2900	129,4	320
6Z12340 03/2E	204,2	980	302	2900	129,4	320
6Z12340 03/1E	213,4	980	302	2900	129,4	320
6Z12340 03	222,6	980	302	2900	129,4	320
6Z12340 04/2H	237,4	1215	302	2900	156,7	320
6Z12340 04/3F	249,4	1215	302	2900	156,7	320
6Z12340 04/2F	265,2	1215	302	2900	156,7	320
6Z12340 04/2E	278,4	1215	302	2900	157,5	320
6Z12340 04/1E	287,6	1215	302	2900	157,5	320
6Z12340 04	296,8	1215	302	2900	157,5	320
6Z12340 05/4F	307,8	1450	302	2900	184,8	320
6Z12340 05/3F	323,6	1450	302	2900	184,8	320
6Z12340 05/2F	339,4	1450	302	2900	184,8	320



03826\_A\_DD

## MOTOR COUPLING

6z12340p-60\_a\_td

MOTOR CONNECTION	DIMENSIONS (mm)							
	N	k	d	z	b	E <sup>H7</sup>	R	I
8" (NEMA)	185	152,4	M16	4	20	127	101,45	240
10"	232	190,5	M20	4	22	127	101,45	300
12"	232	190,5	M20	4	23	127	126,85	300

COUPLING	DIMENSIONS (mm)			
	NUMBER OF TEETH	DIAMETRAL PITCH	PRESSURE ANGLE	X
8" (NEMA)	23	16/32	30°	38

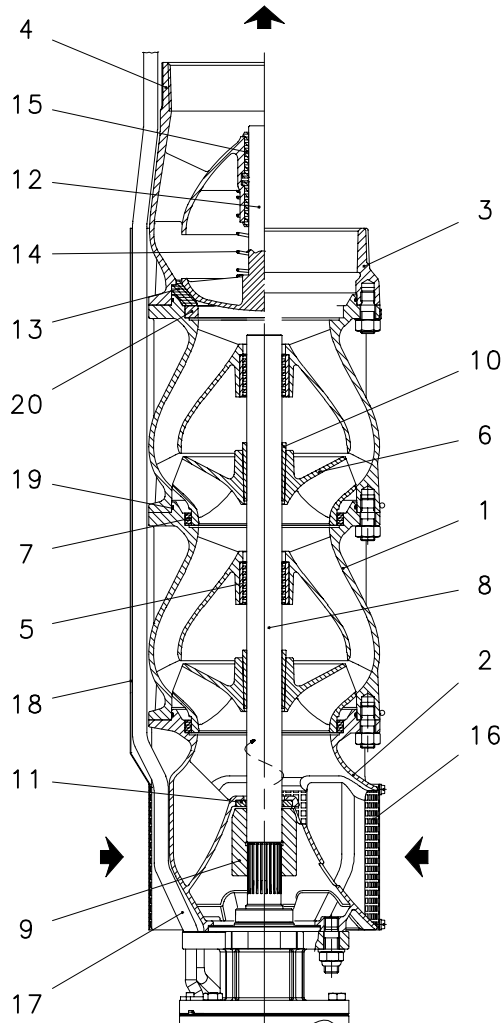
  

COUPLING	DIMENSIONS (mm)			
	F	H	P	X
10"	42,85 <sup>h6</sup>	47,6	9,5	86
12"	49,212 <sup>h6</sup>	54,5	12,7	95

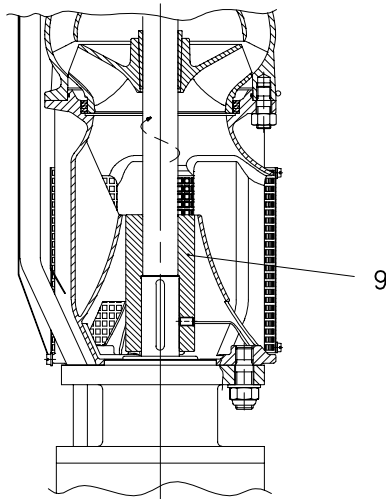
z12-mtcn-50-en\_a\_td

- 1) Max pump diameter with 2 motor cables included.
- 2) U min valid only for max flow speed of 6,8 m/s between pump and perforation pipe.
- 3) Weight with non-return valve. For pumps without non-return valve, reduce by 16,7 Kg.
- 4) For pumps without non-return valve, reduce dimension L by 188 mm.

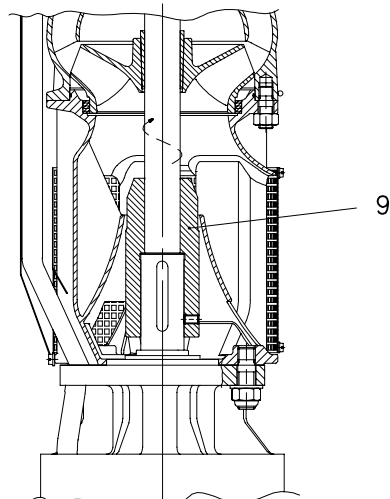
**6Z12 SERIES  
PUMP CROSS SECTION AND LIST OF COMPONENTS**



MOT. L8W  
( 8" NEMA )



MOT. L10W



MOT. L12W

REF. N.	DESCRIPTION
1	Stage casing
2	Suction casing
3	Delivery casing
4	Valve body
5	Bearing bush
6	Impeller
7	Wear ring
8	Shaft
9	Coupling
10	Locking sleeve
11	Thrust bearing
12	Valve plate
13	Valve seat
14	Valve spring
15	Wing valve
16	Suction strainer
17	Cable
18	Cable protection
19	O-ring
20	Intermediate ring

z12-2p50-en\_a\_tp



## 6" Submersible motors

### L6W Series 60 Hz



Water filled submersible motors.

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

#### SPECIFICATIONS

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

#### • Horizontal operation:

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

#### SPECIAL VERSIONS

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

#### OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.

#### ACCESSORIES

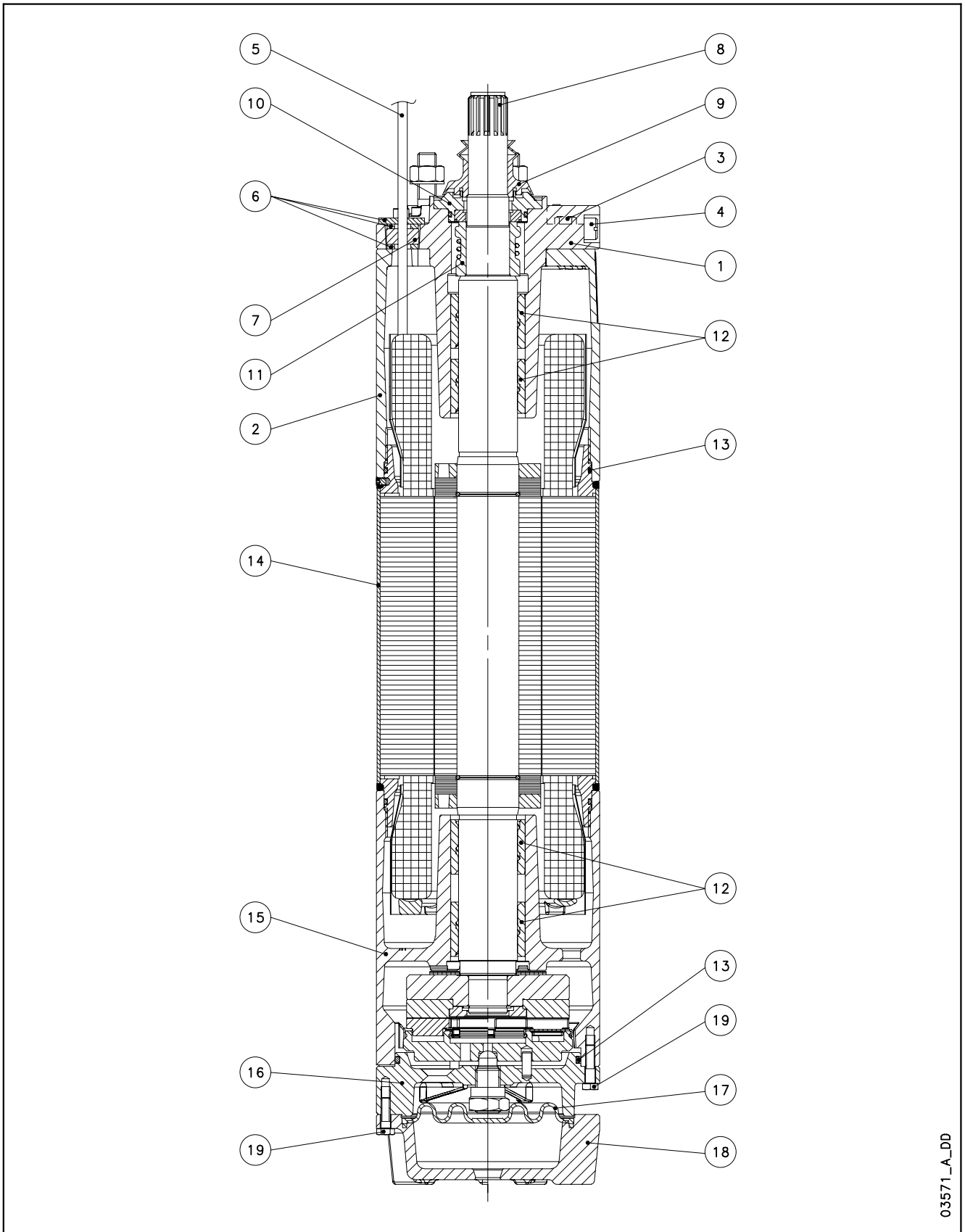
- Temperature sensor **PT 100 / PTC.**

**Rewindable stator**

**Thrust bearing Kingsbury type**

**Mechanical seal**

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



03571\_A\_DD

## L6W TABLE OF MATERIALS

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

L6w-2p50-en\_b\_tm

## L6WN TABLE OF MATERIALS

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

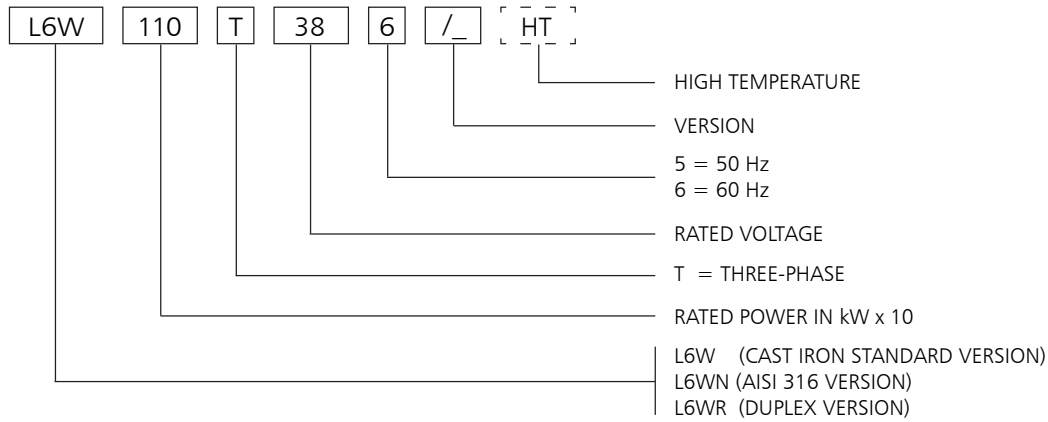
L6wn-2p50-en\_b\_tm

## L6WR TABLE OF MATERIALS

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

L6wr-2p50-en\_b\_tm

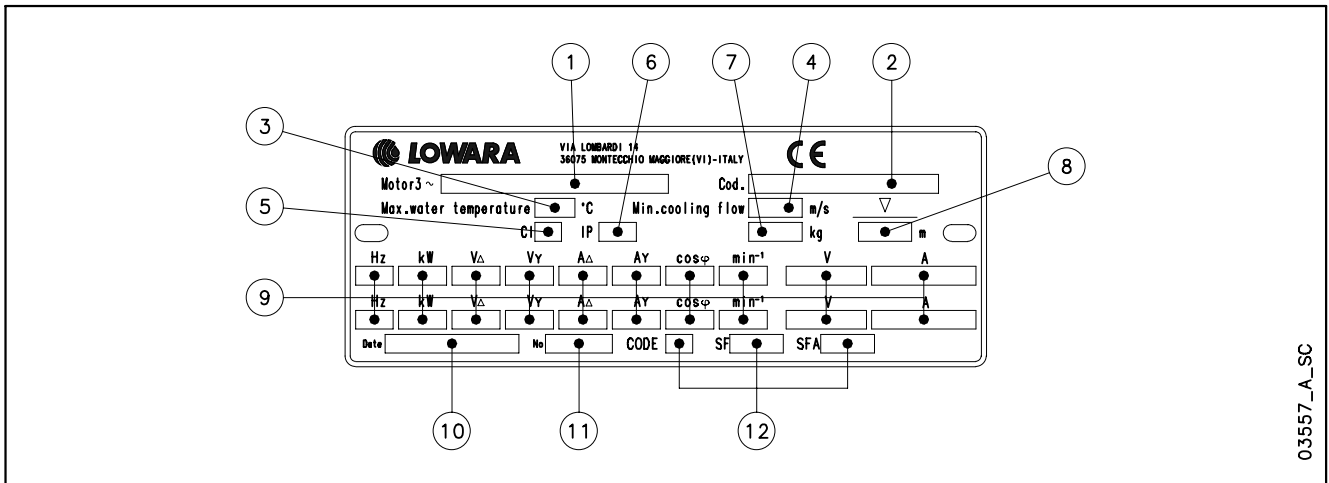
## L6W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L6W110T386/A HT

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

## RATING PLATE

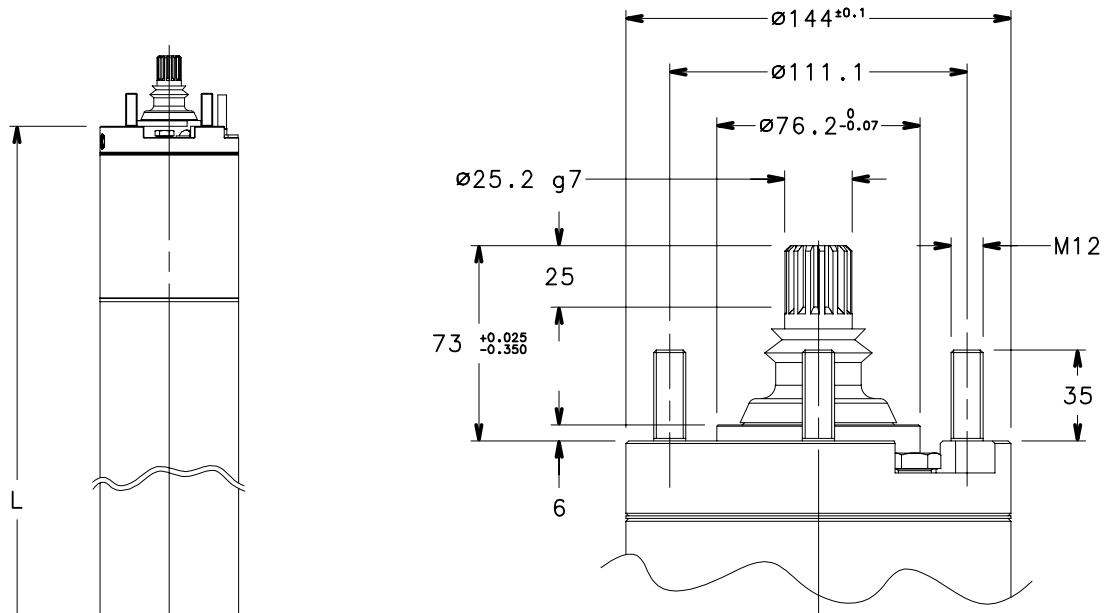


## LEGEND

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

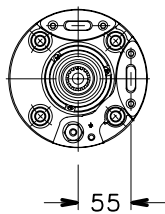


## L6W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



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

l6w-2p60\_a\_td



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

l6w-ht-2p60\_a\_td

03570\_D\_DD

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

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

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

I6w-2p60\_d\_te

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

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

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

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

l6w-ht-2p60\_b\_te

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



## 8" Submersible motors

### L8W Series 60 Hz



**Rewindable stator**

**Thrust bearing Kingsbury type**

**Mechanical seal**

Water filled submersible motors.

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

#### **SPECIFICATIONS**

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

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

#### **SPECIAL VERSIONS**

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

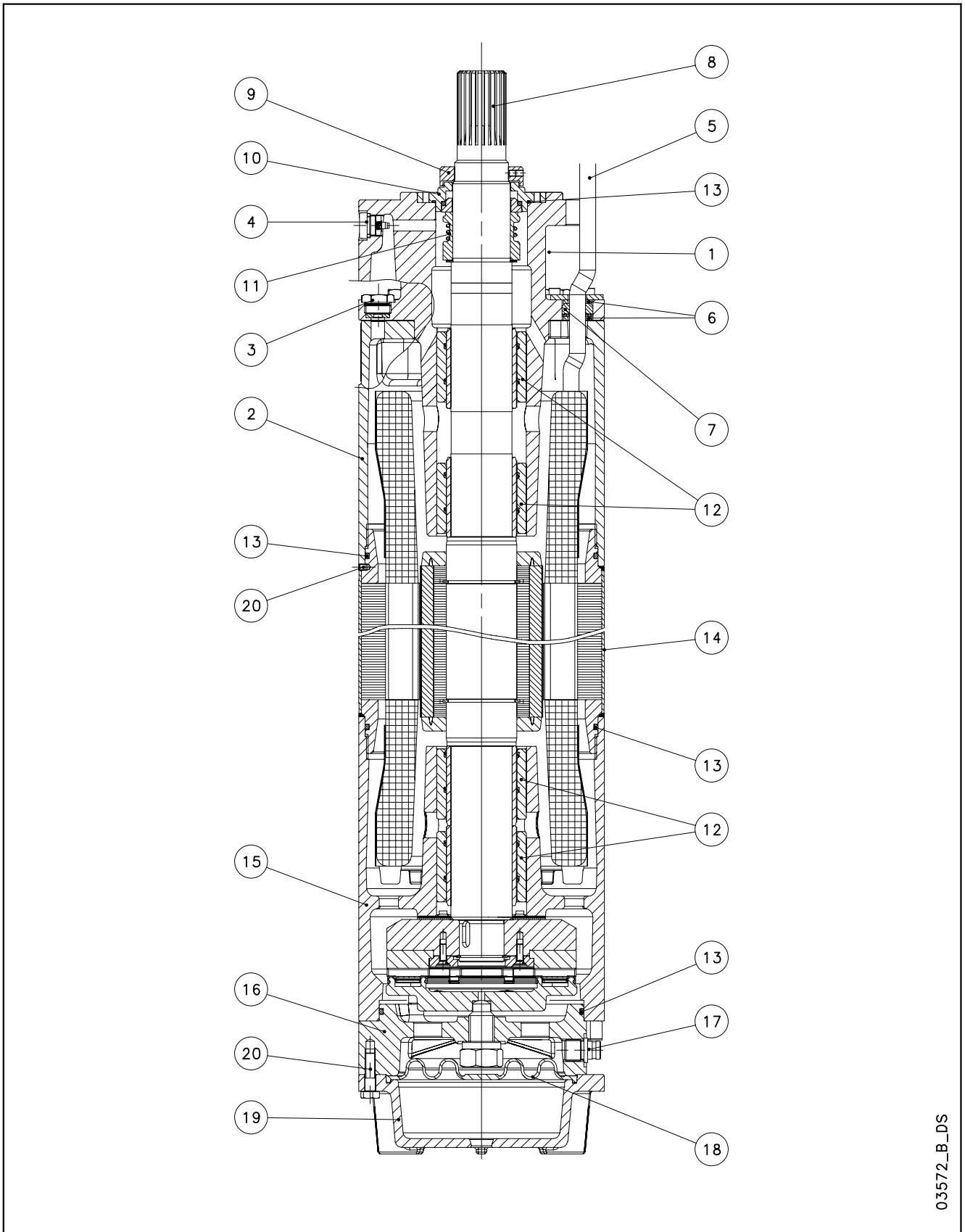
#### **OPTIONAL FEATURES**

- Silicon Carbide mechanical seal.
- Special voltages.

#### **ACCESSORIES**

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

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



03572\_B\_DS

## L8W TABLE OF MATERIALS

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

L8w-2p50-en\_a\_tm

## L8WN TABLE OF MATERIALS

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

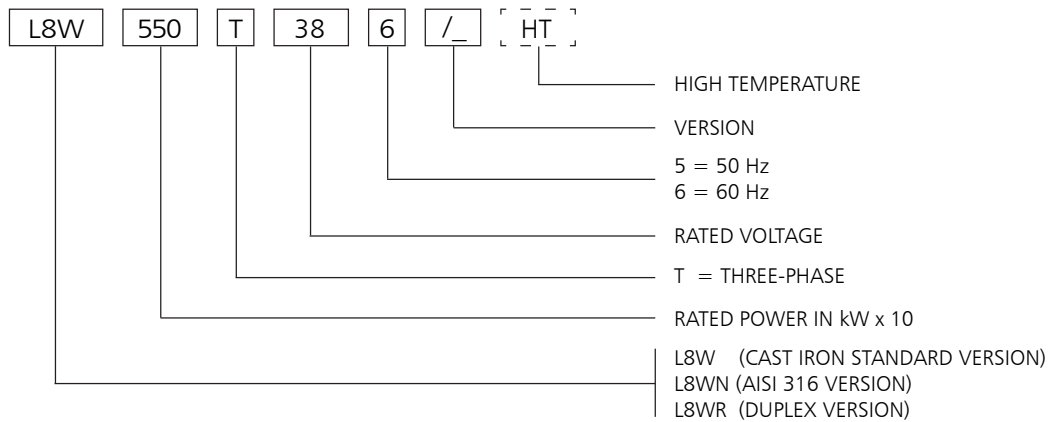
L8wn-2p50-en\_a\_tm

## L8WR TABLE OF MATERIALS

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

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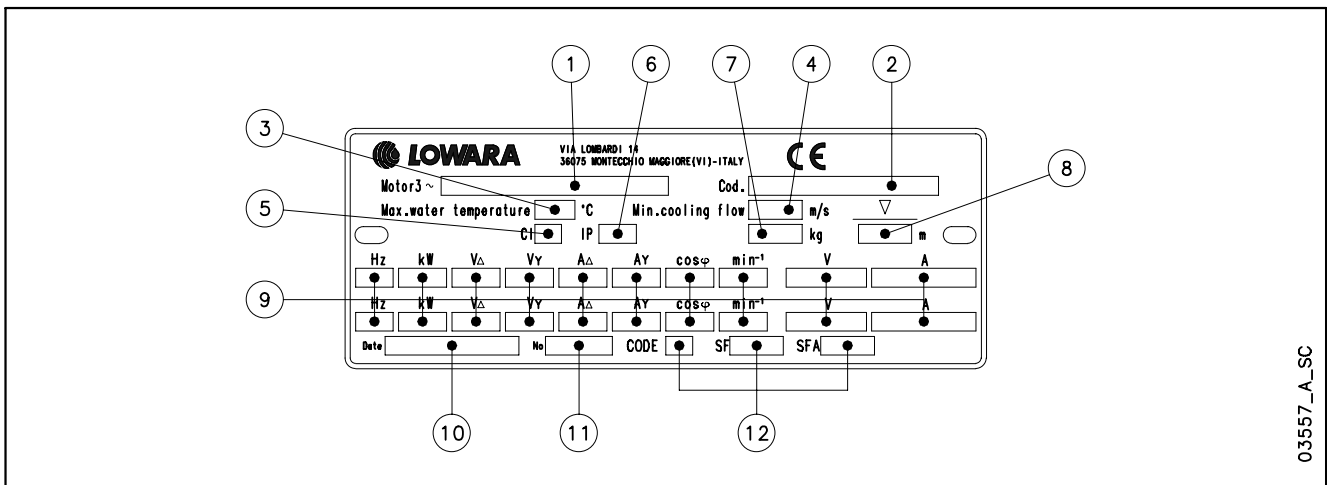
## L8W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L8W550T386/A HT

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

## RATING PLATE

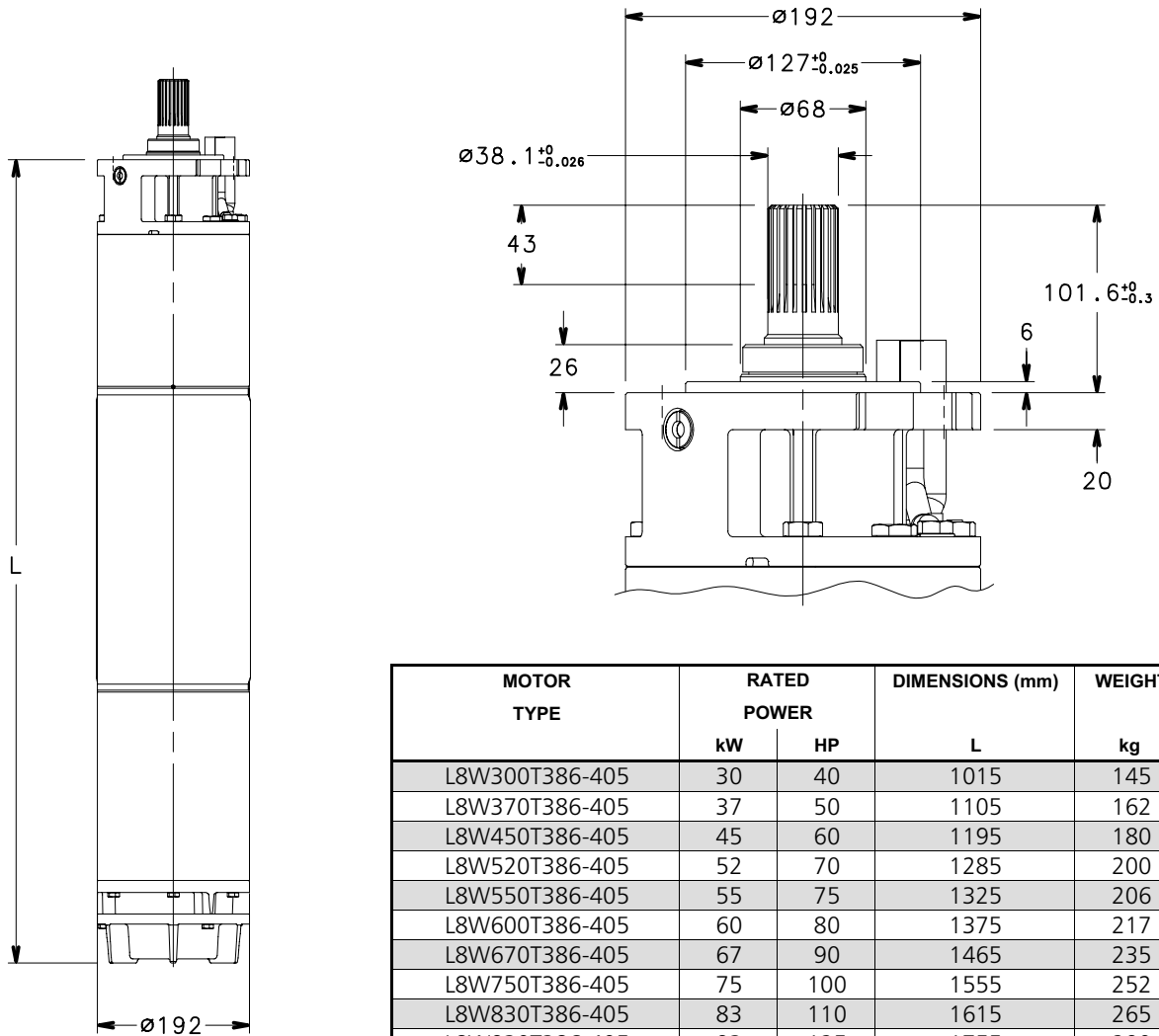


## LEGEND

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

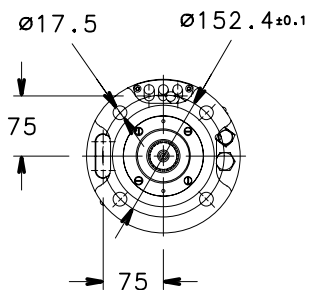


## L8W MOTOR SERIES DIMENSIONS AND WEIGHTS AT 60 Hz



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

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

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

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

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

l8w-2p60\_c\_te

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

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

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

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

l8w-ht-2p60\_a\_te

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



## 10" Submersible motors

### L10W Series 60 Hz



Water filled submersible motors.

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

#### SPECIFICATIONS

- **Stainless steel** outer sleeve.
- **Rewindable stator.**
- **Class Y insulation.**
- Protection class: **IP68.**
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth:** 350 m.
- Maximum **number of starts per hour** at regular intervals: 8.
- Maximum supply **voltage variations** allowed :  $\pm 10\%$ .
- Maximum water **temperature:** 30°C.  
Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket of at least 0,5 m/s.
- **Axial thrust:** 65000 N from 93 to 150 kW.
- **Power supply** cable suitable for drinkable water.
- **Versions:**
  - Three-phase:
    - 93 to 150 kW 380 V, 60 Hz.
    - 93 to 150 kW 460 V, 60 Hz.
- **Horizontal operation:** valid for all versions provided that the direction of the axial thrust generated by the impellers is always from the pump to the motor.

#### SPECIAL VERSIONS

- Motors with double cable outlet for star/delta start.
- **L10WN series:** complete range available realized of AISI 316 stainless steel.
- **L10WR series:** complete range available realized of Duplex stainless steel.
- **HT series:** complete range available for all the L10W/N/R construction, realized for applications in high temperature environments (**up to 60°C**) or under inverter.

#### OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.

#### ACCESSORIES

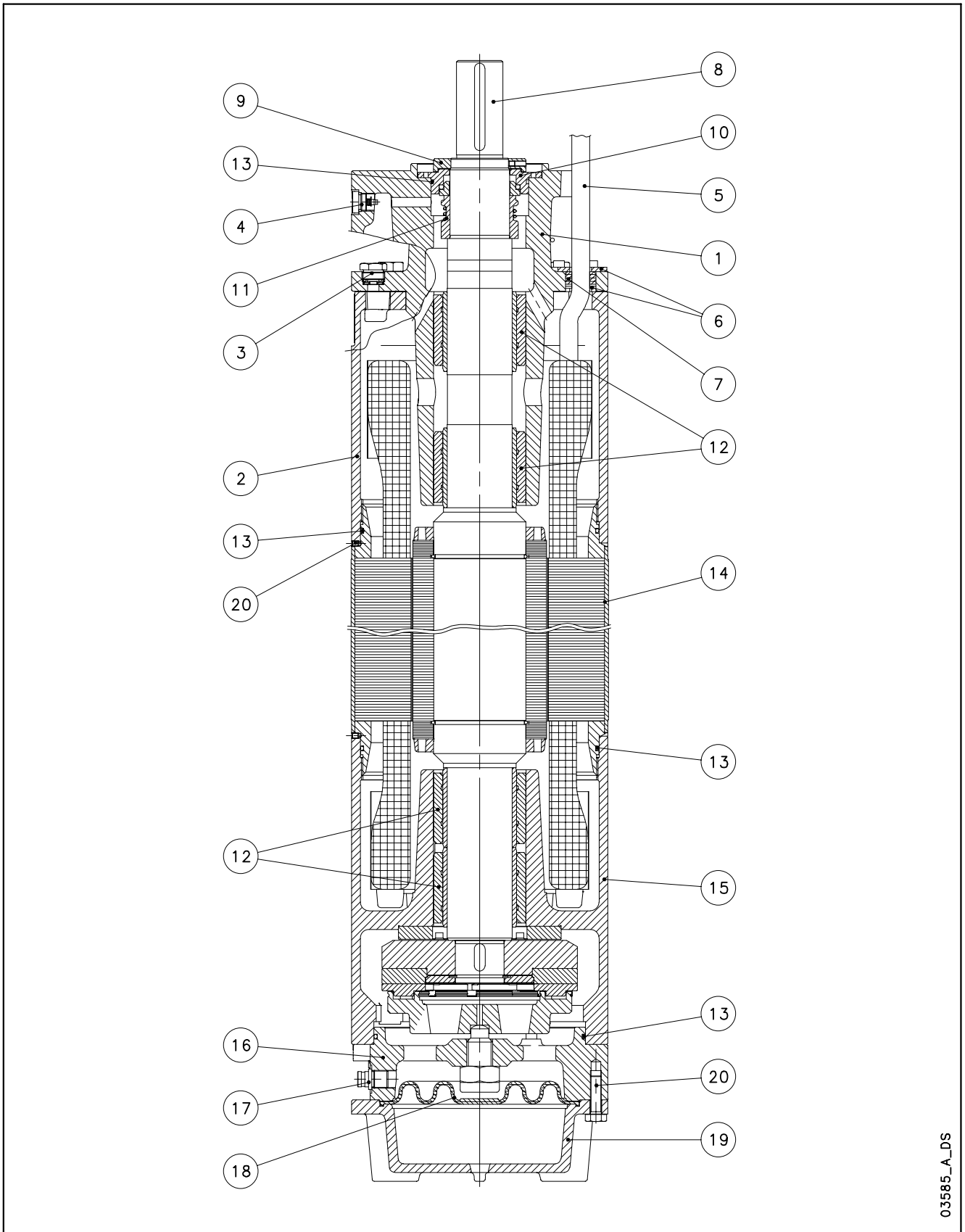
- Temperature sensor **PT 100 / PTC.**

**Rewindable stator**

**Thrust bearing Kingsbury type**

**Mechanical seal**

**L10W - L10WN - L10WR MOTOR SERIES  
MOTOR CROSS SECTION**



03585\_A\_DS

## L10W TABLE OF MATERIALS

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

L10w-2p50-en\_a\_tm

## L10WN TABLE OF MATERIALS

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

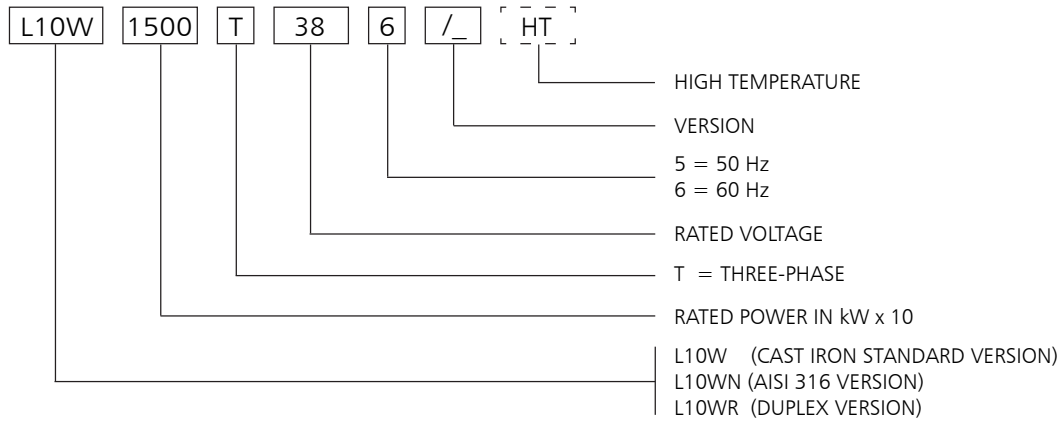
L10wn-2p50-en\_a\_tm

## L10WR TABLE OF MATERIALS

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

L10wr-2p50-en\_a\_tm

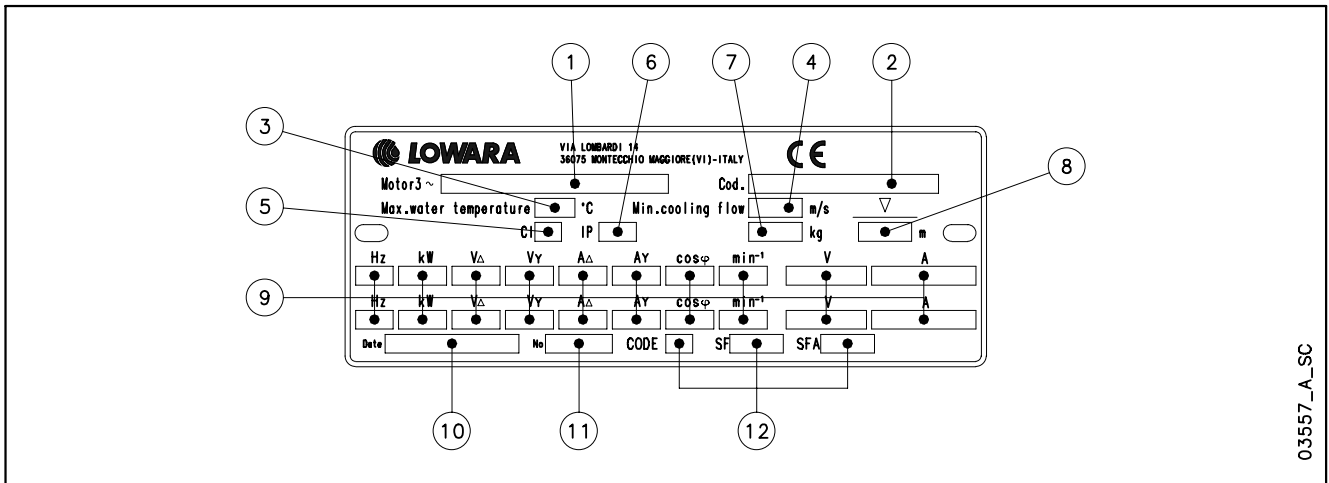
## L10W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L10W1500T386/A HT

L10W MOTOR :  
 RATED POWER 150 kW; THREE-PHASE;  
 RATED VOLTAGE 380 V; 60 Hz; /A VERSION; HIGH TEMPERATURE

## RATING PLATE

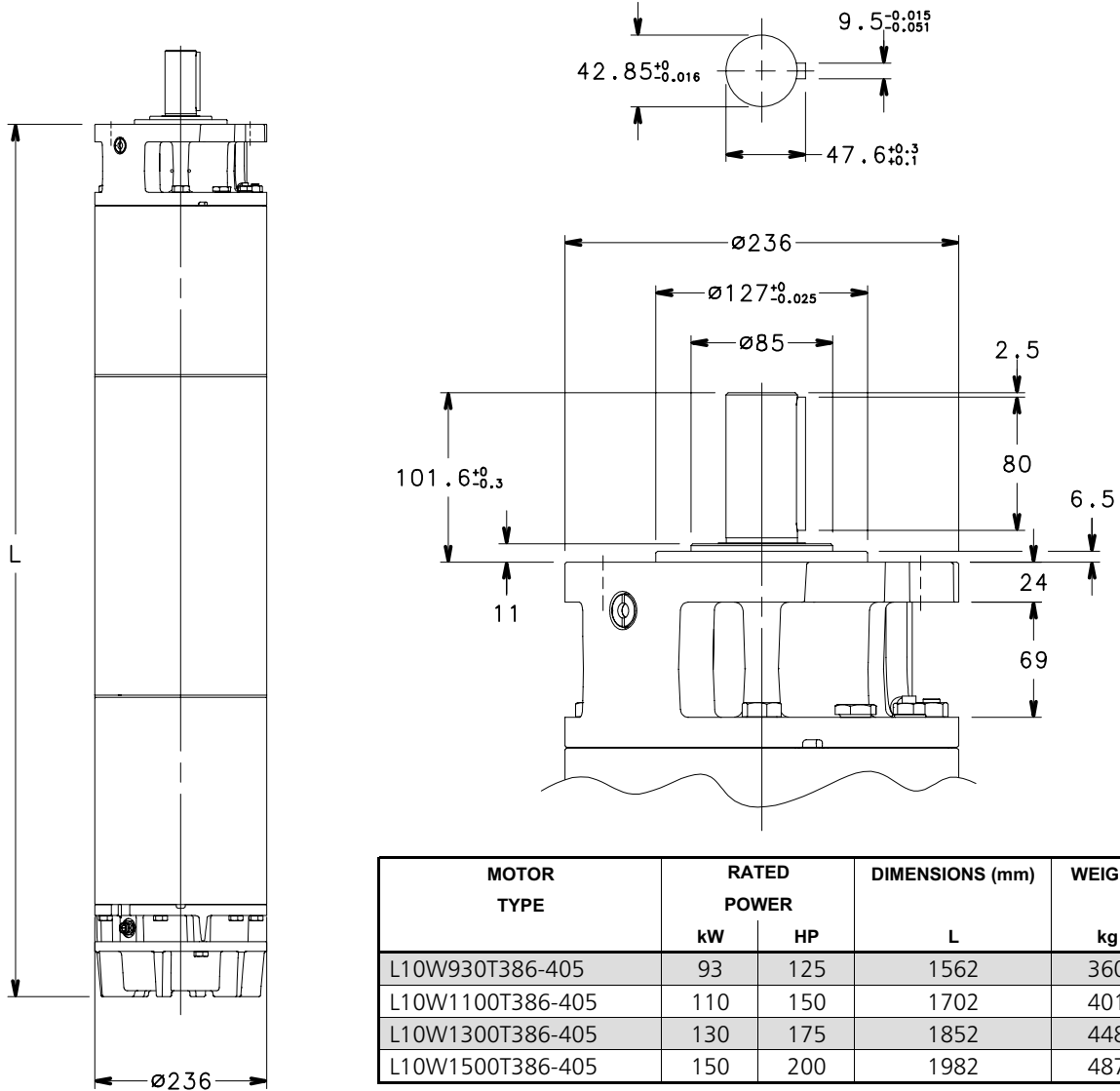


## LEGEND

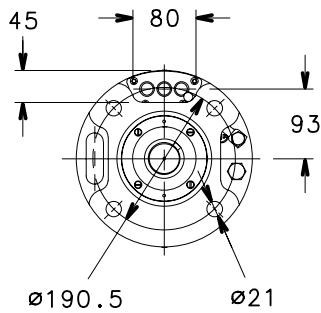
- 1 - Motor type
- 2 - Code
- 3 - Maximum water temperature
- 4 - Minimum water velocity
- 5 - Insulation class
- 6 - Protection class
- 7 - Weight
- 8 - Maximum immersion depth
- 9 - Operating characteristics
- 10 - Production date
- 11 - Serial number
- 12 - Characteristics at service factor



**L10W MOTOR SERIES  
DIMENSIONS AND WEIGHTS AT 60 Hz**



l10w-2p60\_a\_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm)	WEIGHT
	kW	HP		
L10W830T386-405 HT	83	110	1562	360
L10W930T386-405 HT	93	125	1702	401
L10W1100T386-405 HT	110	150	1852	448
L10W1300T386-405 HT	130	175	1982	487

l10w-ht-2p60\_a\_td

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## L10W MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER			DIRECT ON-LINE STARTING			SERVICE FACTOR SF	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE Sec. (mm <sup>2</sup> )			
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	DOL	Y/D	L (m)
	L10W930T386 L10W930T405	93	125	380 460	199 164	3510	85,0	0,84	5,55	1,02	2,22	1,15	228 189	30	50 35	25 16
L10W1100T386 L10W1100T405	110	150	380 460	275 227	3520	85,5	0,82	6,38	1,43	2,19	1,15	316 261	30	70 50	25 16	5
L10W1300T386 L10W1300T405	130	175	380 460	286 236	3520	85,5	0,81	6,31	1,5	2,22	1,15	329 271	30	70 50	35 25	5
L10W1500T386 L10W1500T405	150	200	380 460	329 272	3525	85,5	0,81	6,24	1,56	2,22	1,15	379 313	30	70 70	35 35	5

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

l10w-2p60\_b\_te

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

## L10W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER			DIRECT ON-LINE STARTING			SERVICE FACTOR SF	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE Sec. (mm <sup>2</sup> )			
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	DOL	Y/D	L (m)
	L10W830T386 HT L10W830T405 HT	83	110	380 460	180 149	3530	85,2	0,82	6,11	1,15	2,48	1,15	202 167	45	50 35	25 16
L10W930T386 HT L10W930T405 HT	93	125	380 460	212 175	3545	86,0	0,78	8,27	1,69	2,58	1,15	236 195	45	70 50	25 16	5
L10W1100T386 HT L10W1100T405 HT	110	150	380 460	254 210	3545	87,6	0,75	7,09	1,77	2,62	1,15	281 232	45	70 50	35 25	5
L10W1300T386 HT L10W1300T405 HT	130	175	380 460	298 246	3550	86,4	0,77	6,90	1,80	2,56	1,15	330 273	45	70 70	35 35	5

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

l10w-ht-2p60\_a\_te

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

## 12" Submersible motors

### L12W Series 60 Hz



Water filled submersible motors.

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

#### SPECIFICATIONS

- **Stainless steel** outer sleeve.
- **Rewindable stator.**
- **Class Y insulation.**
- Protection class: **IP68.**
- Compensating bellows for internal liquid expansion.
- Axial load supported by Kingsbury type thrust bearing.
- **Mechanical seal** protected by sand guard.
- Maximum **immersion depth:** 350 m.
- Maximum **number of starts per hour** at regular intervals: 4.
- Maximum supply **voltage variations** allowed :  $\pm 10\%$ .
- Maximum water **temperature:** 30°C.  
Max. temperature applies to motors working in a installation capable of delivering a flow of water around the motor jacket of at least 0,5 m/s.
- **Axial thrust:** 65000 N from 185 to 300 kW.
- **Power supply** cable suitable for drinkable water.
- **Versions:**
  - Three-phase:
    - 185 to 300 kW 380 V, 60 Hz.
    - 185 to 300 kW 460 V, 60 Hz.
- **Horizontal operation:** valid for all versions provided that the direction of the axial thrust generated by the impellers is always from the pump to the motor.

#### SPECIAL VERSIONS

- Motors with double cable outlet for star/delta start.
- **L12WN series:** complete range available realized of AISI 316 stainless steel.
- **L12WR series:** complete range available realized of Duplex stainless steel.
- **HT series:** complete range available for all the L12W/N/R construction, realized for applications in high temperature environments (**up to 60°C**) or under inverter.

#### OPTIONAL FEATURES

- Silicon Carbide mechanical seal.
- Special voltages.

#### ACCESSORIES

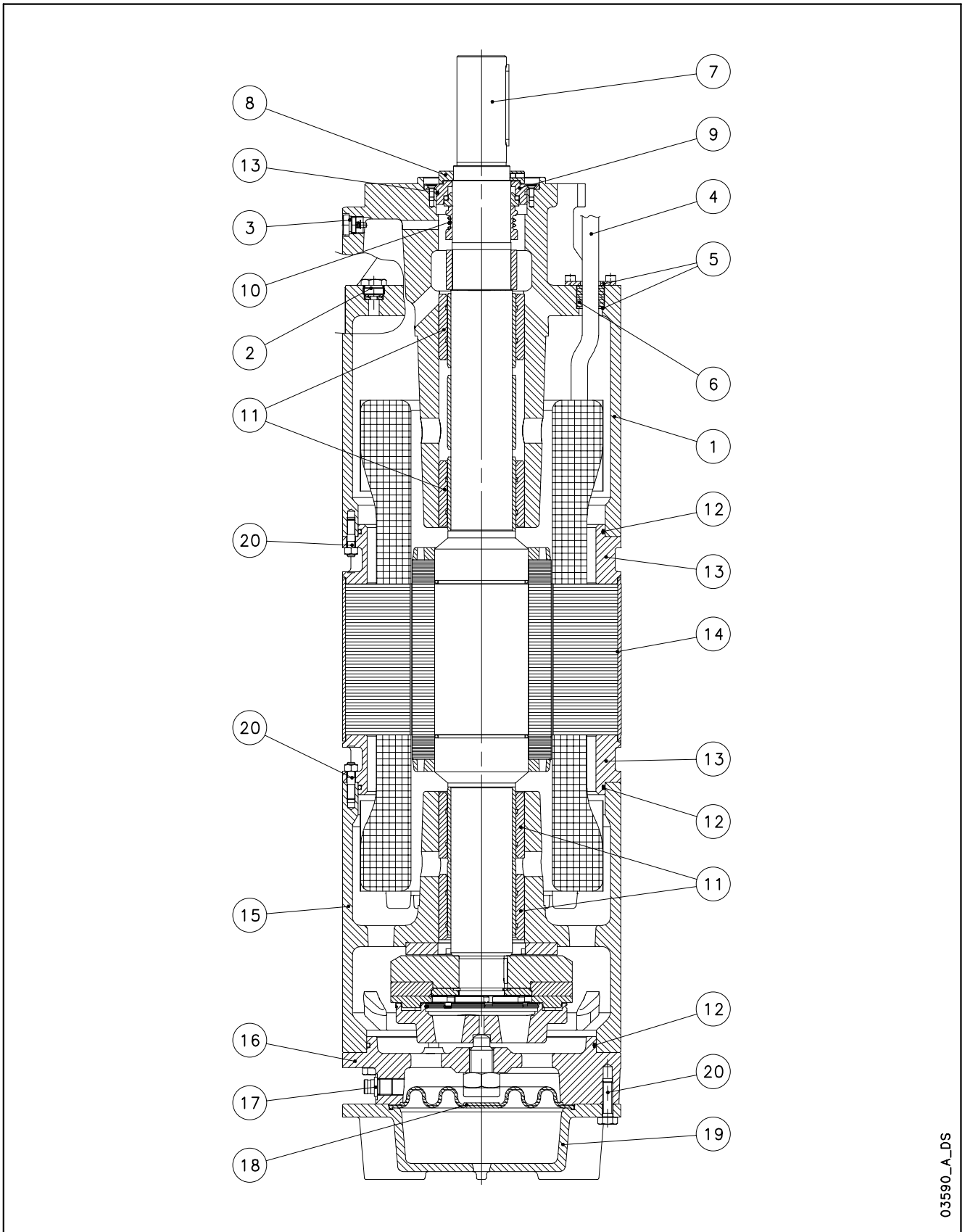
- Temperature sensor **PT 100 / PTC.**

**Rewindable stator**

**Thrust bearing Kingsbury type**

**Mechanical seal**

**L12W - L12WN - L12WR MOTOR SERIES  
MOTOR CROSS SECTION**



03590\_A\_DS

## L12W TABLE OF MATERIALS

REF. N°	PART	MATERIAL	DESIGNATION	
			EUROPE	USA
1	Upper bracket	Cast iron	EN-GJL-200	Class 25 B
2	Filling plug + OR	Stainless steel+NBR	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
3	Vent valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
4	Cable	EPR		
5	Cable gland plate	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Cable gland	EPDM		
7	Shaft end	Duplex stainless steel	EN 10088-1-X2CrNiMoN22-5-3 (1.4462)	A276/A790-S31803
8	Removable sand guard	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
9	Mechanical seal cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Mechanical seal	Carbon graphite / Aluminium oxide		
11	Bush bearings	Carbon graphite		
12	Elastomers	NBR		
13	Stator flanges	Steel	UNI 3158 - Fe 52	
14	Motor sleeve	Stainless steel	EN 10088-1-X2CrNi19-11 (1.4306)	AISI304L
15	Lower bracket	Cast iron	EN-GJL-200	Class 25 B
16	Thrust bearing bracket	Cast iron	EN-GJL-200	Class 25 B
17	Filling valve	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
18	Diaphragm	EPDM		
19	Lower cover	Cast iron	EN-GJL-200	Class 25 B
20	Bolts and screws	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI304
	Cooling liquid	Water + antifreeze		

L12w-2p50-en\_a\_tm

## L12WN TABLE OF MATERIALS

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

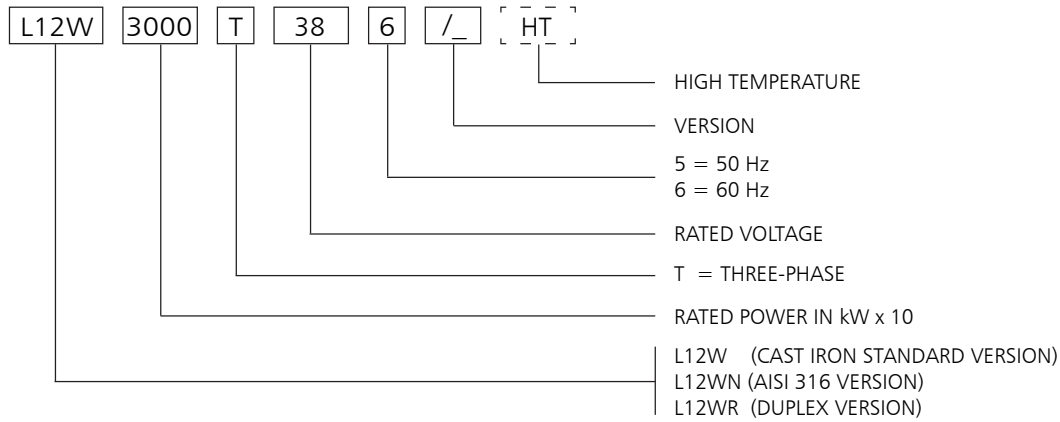
L12wn-2p50-en\_a\_tm

## L12WR TABLE OF MATERIALS

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

L12wr-2p50-en\_a\_tm

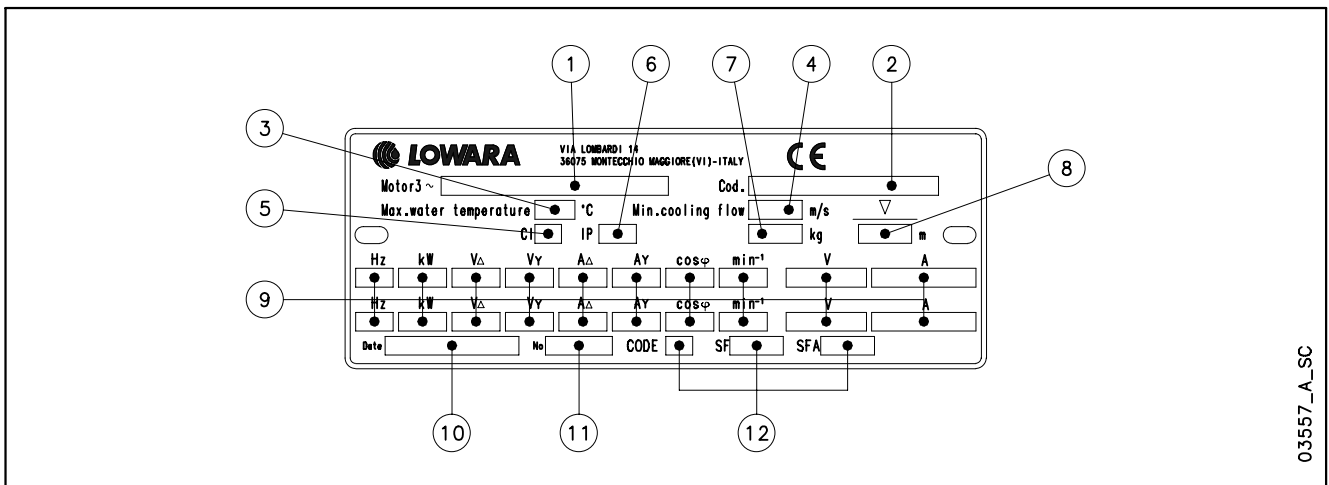
## L12W MOTOR SERIES IDENTIFICATION CODE



EXAMPLE : L12W3000T386/A HT

L12W MOTOR :  
 RATED POWER 300 kW; THREE-PHASE;  
 RATED VOLTAGE 380 V; 60 Hz; /A VERSION; HIGH TEMPERATURE

## RATING PLATE

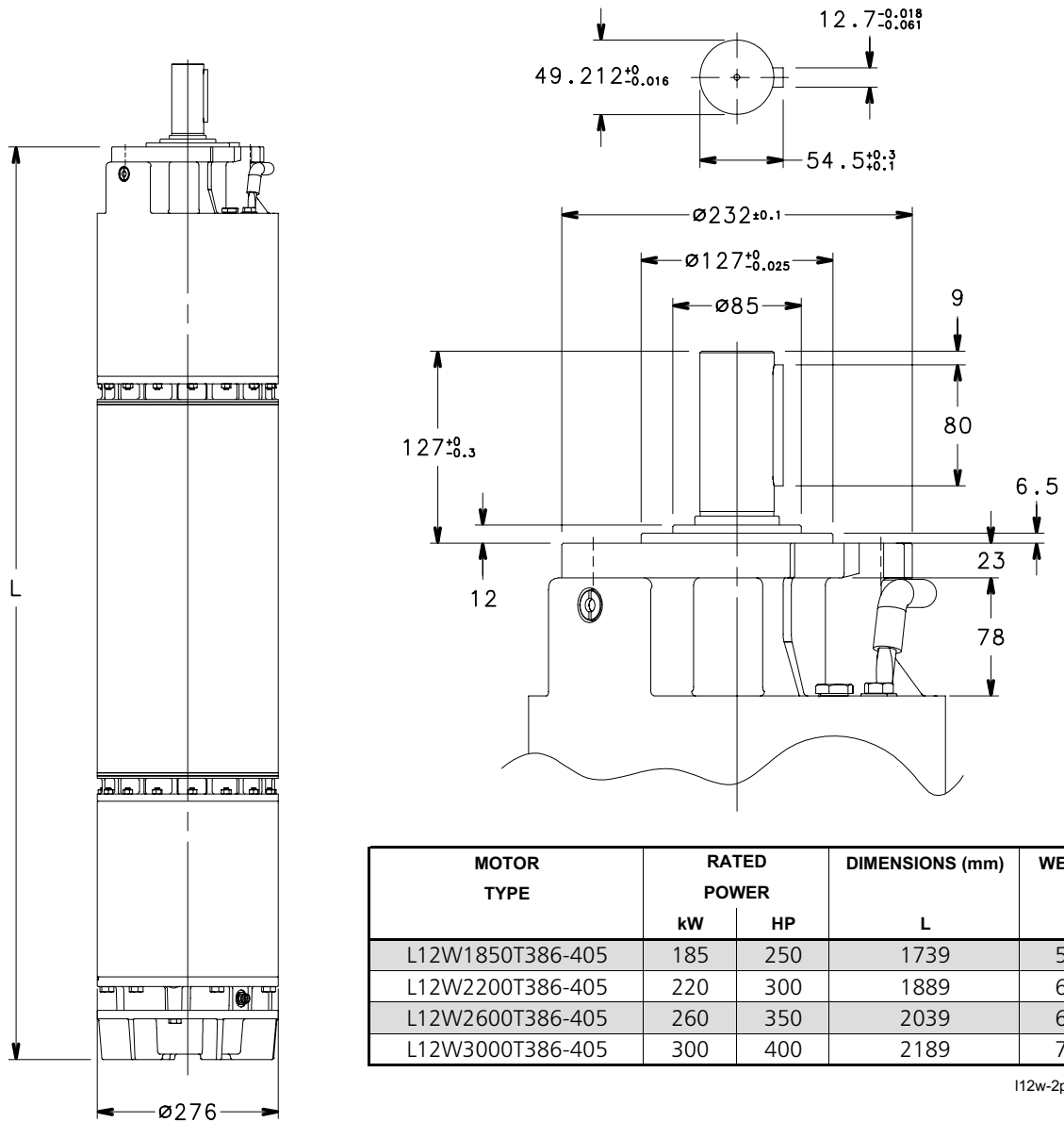


## LEGEND

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

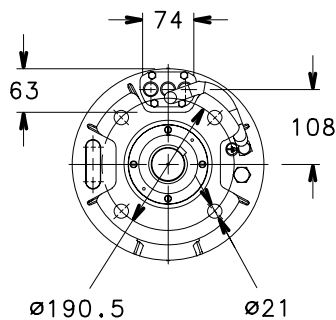
# L12W MOTOR SERIES

## DIMENSIONS AND WEIGHTS AT 60 Hz



MOTOR TYPE	RATED POWER		DIMENSIONS (mm)	WEIGHT
	kW	HP		
L12W1850T386-405	185	250	L	kg
L12W2200T386-405	220	300	1739	552
L12W2600T386-405	260	350	1889	616
L12W3000T386-405	300	400	2039	680
			2189	745

l12w-2p60\_a\_td



MOTOR TYPE	RATED POWER		DIMENSIONS (mm)	WEIGHT
	kW	HP		
L12W1500T386-405 HT	150	200	L	kg
L12W1850T386-405 HT	185	250	1739	552
L12W2200T386-405 HT	220	300	1889	616
L12W2600T386-405 HT	260	350	2039	680
			2189	745

l12w-ht-2p60\_a\_td

0.3553\_C\_DD

## L12W MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER			DIRECT STARTING			SERVICE FACTOR SF	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE			
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	Sec. (mm <sup>2</sup> )		
											DOL	Y/D	L (m)			
L12W1850T386	185	250	380	387	3515	85,5	0,85	6,59	1,50	2,22	1,15	445	30	95	50	5
L12W1850T405			460	320								368		70	35	
L12W2200T386	220	300	380	466	3515	85,5	0,84	6,66	1,41	2,22	1,15	536	30	120	70	5
L12W2200T405			460	385								443		95	50	
L12W2600T386	260	350	380	541	3515	86,0	0,85	6,05	1,41	2,22	1,15	622	30	150	70	5
L12W2600T405			460	447								514		120	50	
L12W3000T386	300	400	380	620	3515	86,5	0,85	6,43	1,18	2,22	1,15	713	30	-	95	5
L12W3000T405			460	512								589		2x70	70	

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

l12w-2p60\_b\_te

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

## L12W HT MOTOR SERIES THREE-PHASE OPERATING CHARACTERISTICS AT 60 Hz

MOTOR TYPE THREE-PHASE	RATED POWER		RATED VOLTAGE V	OPERATING CHARACTERISTICS AT RATED POWER			DIRECT STARTING			SERVICE FACTOR SF	SERVICE FACTOR AMPS SFA	MAX WATER TEMP. °C	CABLE TYPE			
	kW	HP		A	rpm	η %	cosφ	Is/In	Ts/Tn				Tmax/Tn	Sec. (mm <sup>2</sup> )		
											DOL	Y/D	L (m)			
L12W1850T386 HT	150	200	380	321	3545	88,0	0,82	7,96	1,85	2,74	1,15	363	45	95	50	5
L12W1850T405 HT			460	265								300		70	35	
L12W1850T386 HT	185	250	380	395	3540	88,0	0,80	7,86	1,68	2,64	1,15	442	45	120	70	5
L12W1850T405 HT			460	326								365		95	50	
L12W2200T386 HT	220	300	380	448	3535	89,0	0,82	7,31	1,67	2,62	1,15	514	45	150	70	5
L12W2200T405 HT			460	370								425		120	50	
L12W2600T386 HT	260	350	380	539	3525	88,5	0,83	7,40	1,36	2,56	1,15	611	45	-	95	5
L12W2600T405 HT			460	445								505		2x70	70	

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

l12w-ht-2p60\_a\_te

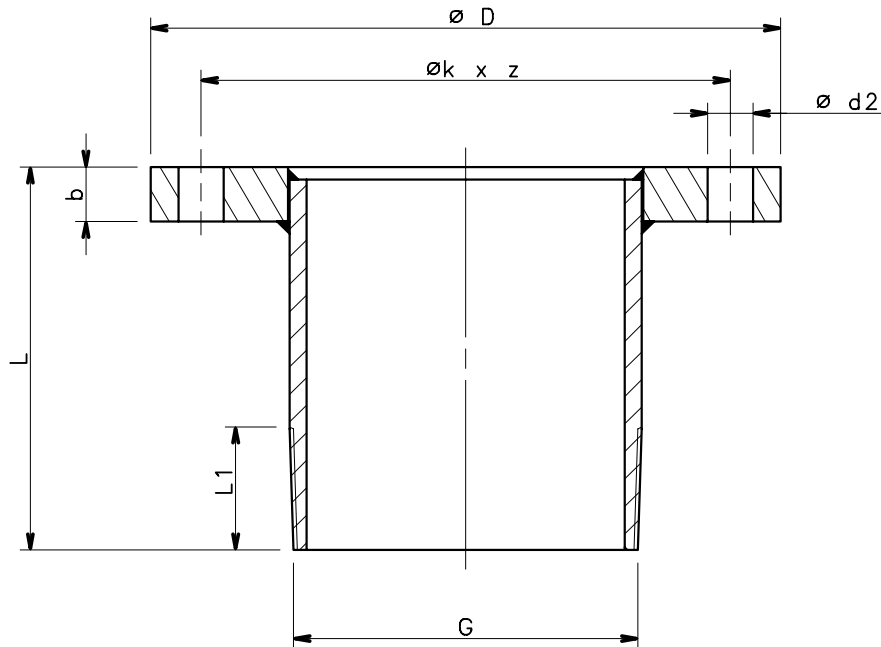
Tmax/Tn = ratio between maximum torque and nominal torque.



## **ACCESSORIES**

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## ISO THREADED FLANGES

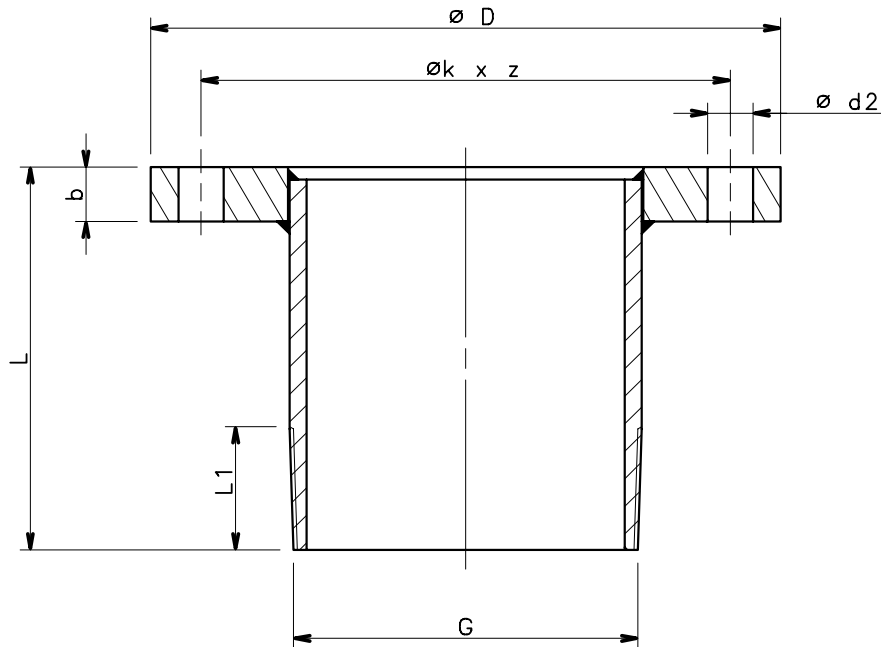


PUMP TYPE	THREADING G	Dimensions (mm)									
		Flange according to EN 1092-1								L	L1
		DN	PN	Ø D	Ø d	Ø k	b	Ø d2	Z		
6Z10150 6Z10220 6Z10275	EN 10226-1 R 6	150	10 ÷ 16	285	212	240	22	22	8	198	40
		150	25 ÷ 40	300	218	250	28	26	8	218	40
		150	63	345	218	280	36	33	8	238	40
		200	10	340	268	295	24	22	8	357	40
		200	16	340	268	295	24	22	12	357	40
		200	25	360	278	310	30	26	12	375	40
		200	40	375	285	320	34	30	12	383	40
6Z12340	ANSI B1.20.1 API 8 NPT	200	10	340	-	295	26	22	8	150	55
		200	16	340	-	295	30	22	12	150	55
		200	25	360	-	310	34	26	12	150	55
		200	40	375	-	320	40	30	12	150	55
		200	63	415	-	345	42	36	12	150	55

Material : Stainless steel EN 10088-1 - X6CrNiMoTi17-12-2 (1.4571) AISI 316Ti. (Other materials available on request).

6z-flange-r\_a\_td

## ANSI (API) THREADED FLANGE

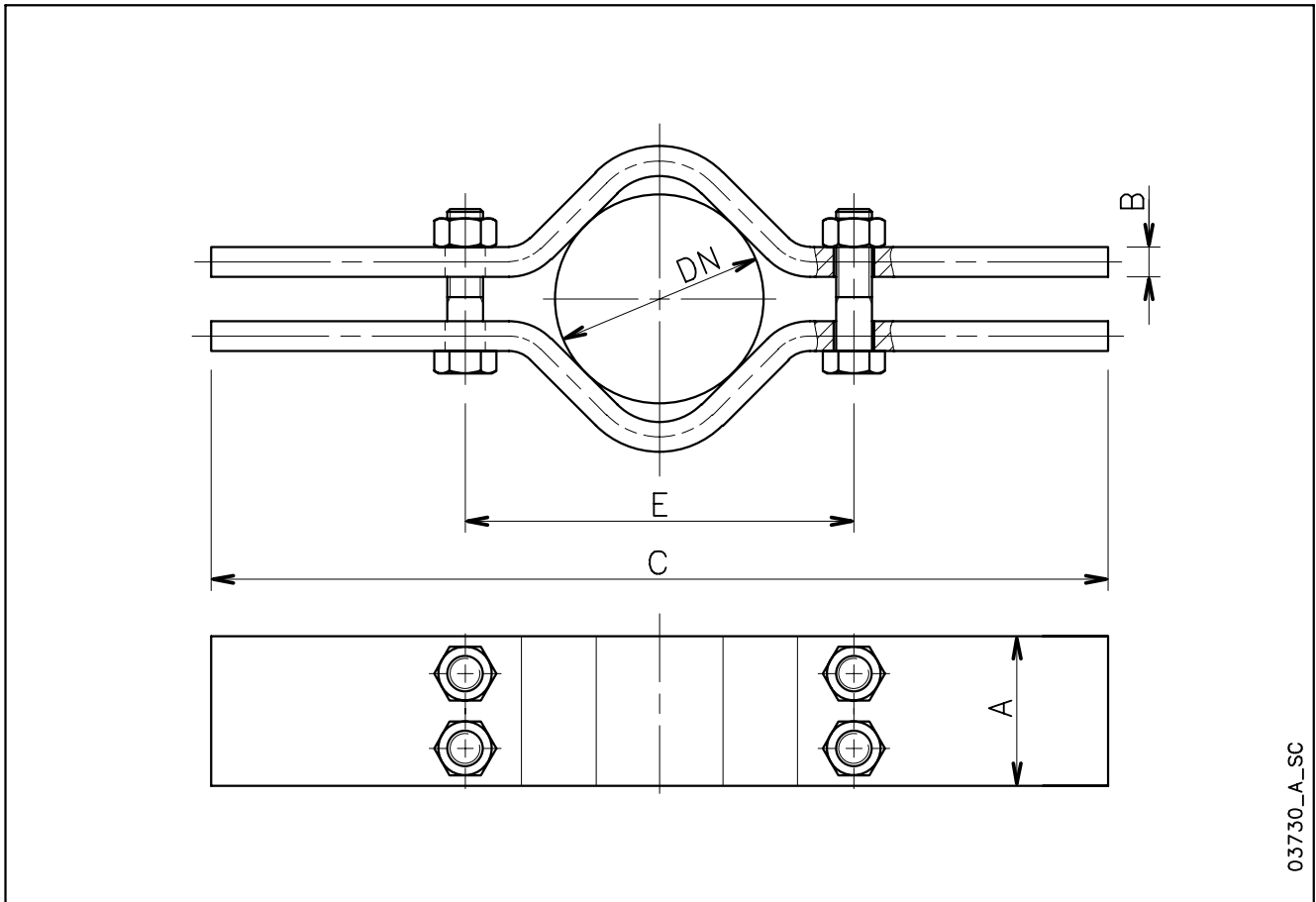


PUMP TYPE	THREADING EN 10226-1 G	Dimensions (mm)									
		Flange according to ASME B16.5								L	L1
		DN	Class	Ø D	Ø d	Ø k	b	Ø d2	Z		
6Z10150 6Z10220 6Z10275	R 6	6"	150	280	216	241	25	22	8	232	40
		6"	300	317	216	270	37	22	12	242	40
		6"	600	356	216	292	54	29	12	266	40
		8"	150	343	270	298	28	22	8	397	40
		8"	300	381	270	330	41	25	12	406	40
		8"	600	419	270	349	62	32	12	434	40

Material : Stainless steel EN 10088-1 - X6CrNiMoTi17-12-2 (1.4571) AISI 316Ti. (Other materials available on request).

6z-flange-api\_a\_td

## CARRYING CLAMPS



03730\_A\_SC

NOMINAL PIPE DIAMETER DN		CARRYING CLAMPS						PIPE WEIGHT		
		Dimensions (mm)					Pmax <sup>(1)</sup> kg	Flanged kg/m	Threaded kg/m	Water kg/m
		A	B	C	E	SCREW				
65	R 2 1/2"	50	15	600	130	M16x90	1300	6,7	8,0	3,3
80	R 3"	80	15	600	180	M20x70	3400	8,4	10,5	5,0
100	R 4"	80	15	600	180	M20x110	3400	20,5	15,0	7,9
125	R 5"	100	20	600	260	M24x90	7250	27,5	18,5	12,3
150	R 6"	100	20	600	260	M24x130	7250	33,0	22,0	17,6
175	R 7"	120	25	800	360	M30x110	9750	27,0	25,5	24,0
200	R 8"	120	25	800	360	M30x150	9750	33,0	34,0	31,5
250	R 10"	120	25	800	360	M30x220	9750	48,0	48,0	49,0

1) Max admissible weight.

clamp-en\_b\_td

NOTE. Two sets of clamps are necessary for the installation of one unit.

Material : EN 10027-1-S235JR (1.0038) painted.

## L6W - L8W MOTOR SERIES MOTOR - CONTROL PANEL COMBINATION TABLE

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

For different voltages, please contact our sales network.

L6w-2p60\_b\_tc

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

For different voltages, please contact our sales network.

L8w-2p60\_c\_tc

## L10W - L12W MOTOR SERIES MOTOR - CONTROL PANEL COMBINATION TABLE

MOTOR TYPE L10W - 10" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V A	PANEL TYPE					
	kW	HP		Q3I/...	Q3A/...	Q3SF/...			
	93	125	228	...1100-1320	...1100-1320	...1100			
	110	150	316	...1600-2000	...1600-2000	(1)			
	130	175	329	...1600-2000	...1600-2000	(1)			
	150	200	379	...1600-2000	...1600-2000	(1)			
<b>MOTOR TYPE</b>	83	110	202	...900-1100	...900-1100	...1100			
<b>L10W HT - 10"</b>	93	125	236	...1320-1600	...1320-1600	...1100			
<b>THREE-PHASE</b>	110	150	281	...1320-1600	...1320-1600	(1)			
	130	175	330	...1600-2000	...1600-2000	(1)			

(1) On request.

L10w-2p60\_c\_tc

For different voltages, please contact our sales network.

MOTOR TYPE L12W - 12" THREE-PHASE	RATED POWER		CURRENT AT S.F. 380 V A	PANEL TYPE					
	kW	HP		Q3I/...	Q3A/...	Q3SF/...			
	185	250	445	...2000-2500	...2000-2500	(1)			
	220	300	536	...2500-3150	...2500-3150	(1)			
	260	350	622	(1)	(1)	(1)			
	300	400	713	(1)	(1)	(1)			
<b>MOTOR TYPE</b>	150	200	363	...1600-2000	...1600-2000	(1)			
<b>L12W HT - 12"</b>	185	250	442	...2000-2500	...2000-2500	(1)			
<b>THREE-PHASE</b>	220	300	514	...2500-3150	...2500-3150	(1)			
	260	350	611	(1)	(1)	(1)			

(1) On request.

L12w-2p60\_c\_tc

For different voltages, please contact our sales network.

## Three-phase Electric Panel

### APPLICATIONS

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

## QTD Series



### SPECIFICATIONS

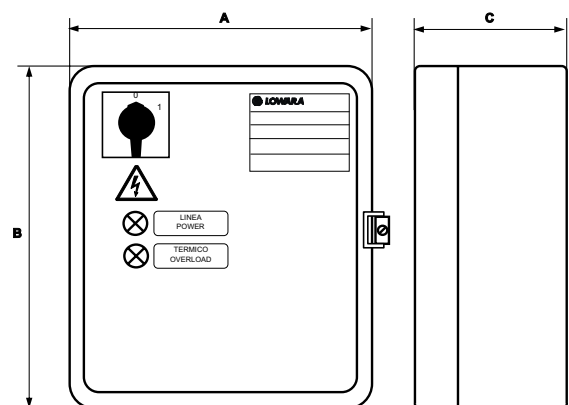
- Control through an external enable contact.
- Supply voltage: 3 x 400 V  $\pm$  10%.
- Frequency: 50/60 Hz.
- Power: 0,25 to 9,2 kW.
- Direct motor start.
- Short-circuit and overload protection.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative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

### OPTIONAL ACCESSORIES

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

### SELECTION

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



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

## Three-phase Electric Panel

### APPLICATIONS

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

### Q3D Series



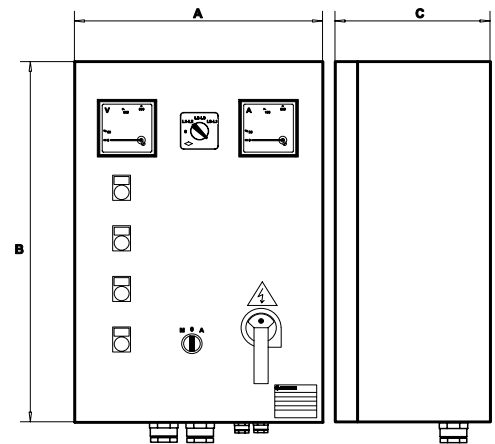
### SPECIFICATIONS

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

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

### OPTIONAL ACCESSORIES

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



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



## Three-phase Electric Panel

### Q3Y Series



### APPLICATIONS

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

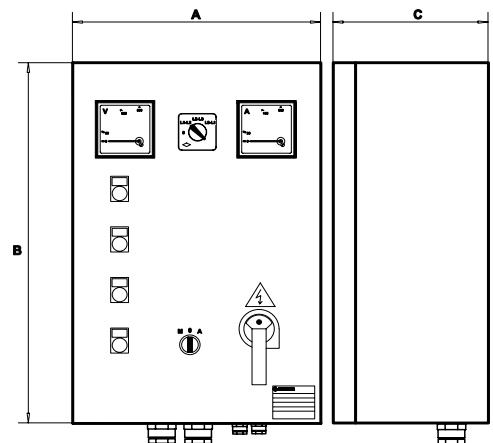
### SPECIFICATIONS

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

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

### OPTIONAL ACCESSORIES

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



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

Dimensions note : P indicates floor mounted control panel.

CB-Q3Y-en\_c\_te

## Three-phase Electric Panel

### Q3I Series



### APPLICATIONS

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

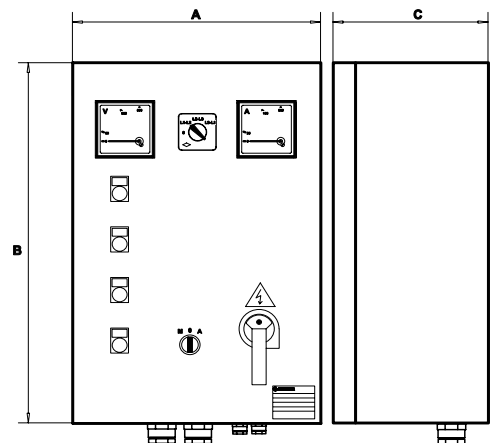
### SPECIFICATIONS

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

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

### OPTIONAL ACCESSORIES

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



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

Dimensions note : P indicates floor mounted control panel.

CB-Q3I-en\_c\_te

## Three-phase Electric Panel

### Q3A Series



### APPLICATIONS

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

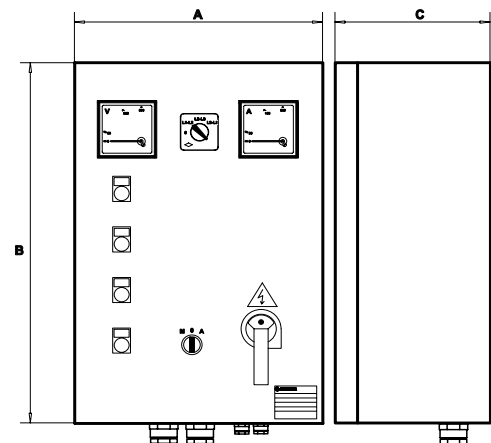
### SPECIFICATIONS

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

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

### OPTIONAL ACCESSORIES

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



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

Dimensions note : P indicates floor mounted control panel.

CB-Q3A-en\_c\_te

## Three-phase Electric Panel

### Q3SF Series



### APPLICATIONS

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

### SPECIFICATIONS

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

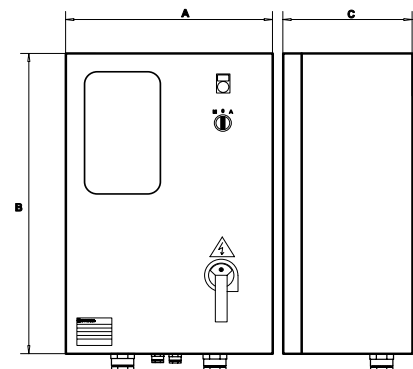
Protections against phase failure / phase sequence / frequency out of limits on power supply line.  
 Low-voltage protection on auxiliary circuits.  
 Protection against starter overtemperature / overload / malfunction.  
 Protection against overload / locked rotor / current asymmetry on motor side.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

### OPTIONAL ACCESSORIES

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

### STATIC STARTER CHARACTERISTICS

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



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

Dimensions note : P indicates floor mounted control panel.

CB-Q3SF-en\_b\_te

## Level Control Panel

### APPLICATIONS

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

## QCL5 Series



### SPECIFICATIONS

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

### OPTIONAL ACCESSORIES

- Drop cable with circular cross section.

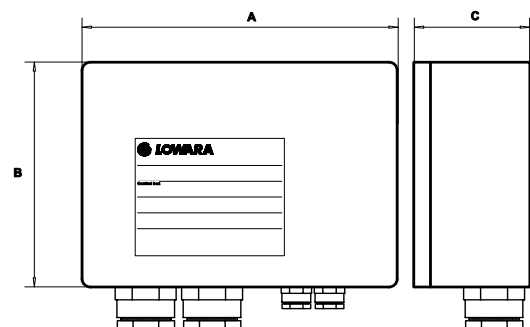
For connection of the electrodes to the panel we recommend the following cross sections:

LENGHT m		CABLE SECTION mm <sup>2</sup>
0	50	0,5
50	100	0,75
100	200	1,0
200	400	2,5

CB-CASEL-en\_b\_te

Three-pole cables can be used for short lengths.

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



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

CB-QCL5-en\_a\_te

## Kit 24 V Level Probe

### APPLICATIONS

- Accessory for electric panels.

## KSL Series



### SPECIFICATIONS

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

### CONSTRUCTION CHARACTERISTICS

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

### OPTIONAL ACCESSORIES

- Drop cable with circular cross section.

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

LENGHT m		CABLE SECTION mm <sup>2</sup>
0	50	0,5
50	100	0,75
100	200	1,0
200	400	2,5

CB-CASEL-en\_b\_te

Three-pole cables can be used for short lengths.

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

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

CB-SLD-en\_b\_te

## Lightning Protection

### APPLICATIONS

- Accessory for electric panels.

## DPF Series



### SPECIFICATIONS

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

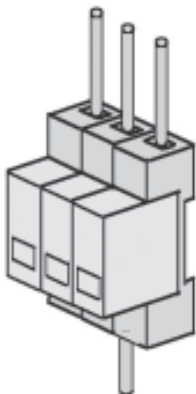
## VR Series



### SPECIFICATIONS

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

## SCA3 Series



### SPECIFICATIONS

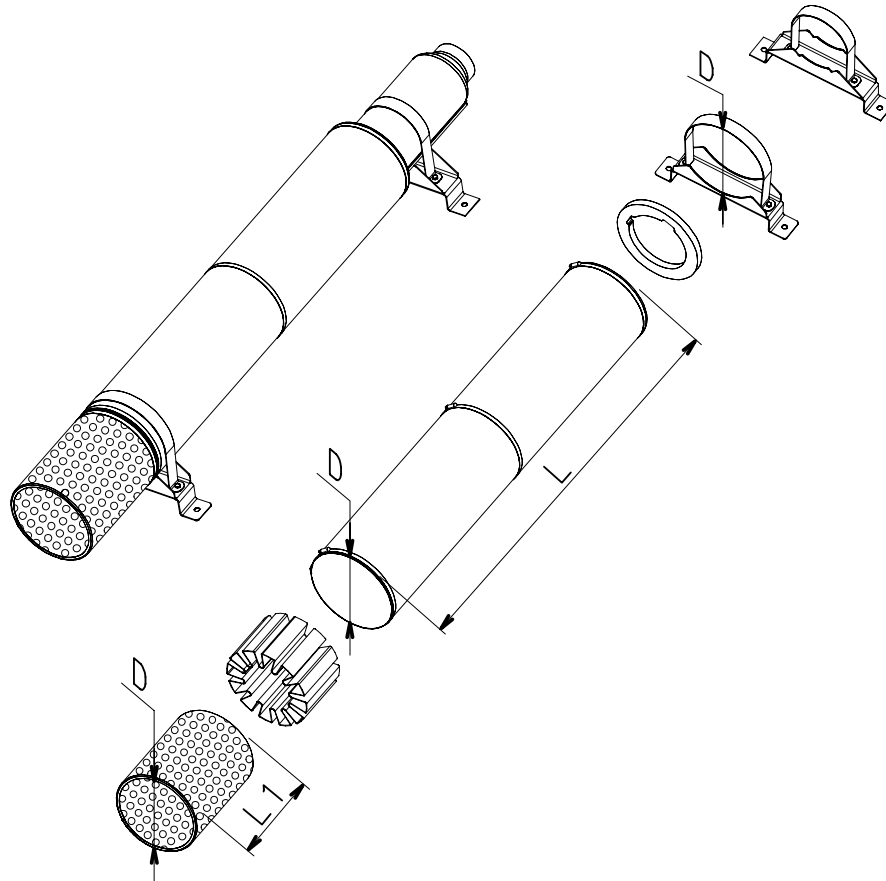
- Lightning arresters for overvoltage protection of three-phase lines. To be connected between the phases and the heart conductor,
- Operating voltage: 500 V AC.
- Maximum varistor voltage: 2,5 kW with 40 kA peak current.
- Designed for installation on Lowara electric panels featuring DIN bar.

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

CB-VR-en\_c\_te

**COOLING SHROUDS**

01890\_B\_DD





## COOLING SHROUDS 6Z10-6Z12 PUMP SERIES 6", 8", 10" and 12" MOTORS COMBINATION TABLE

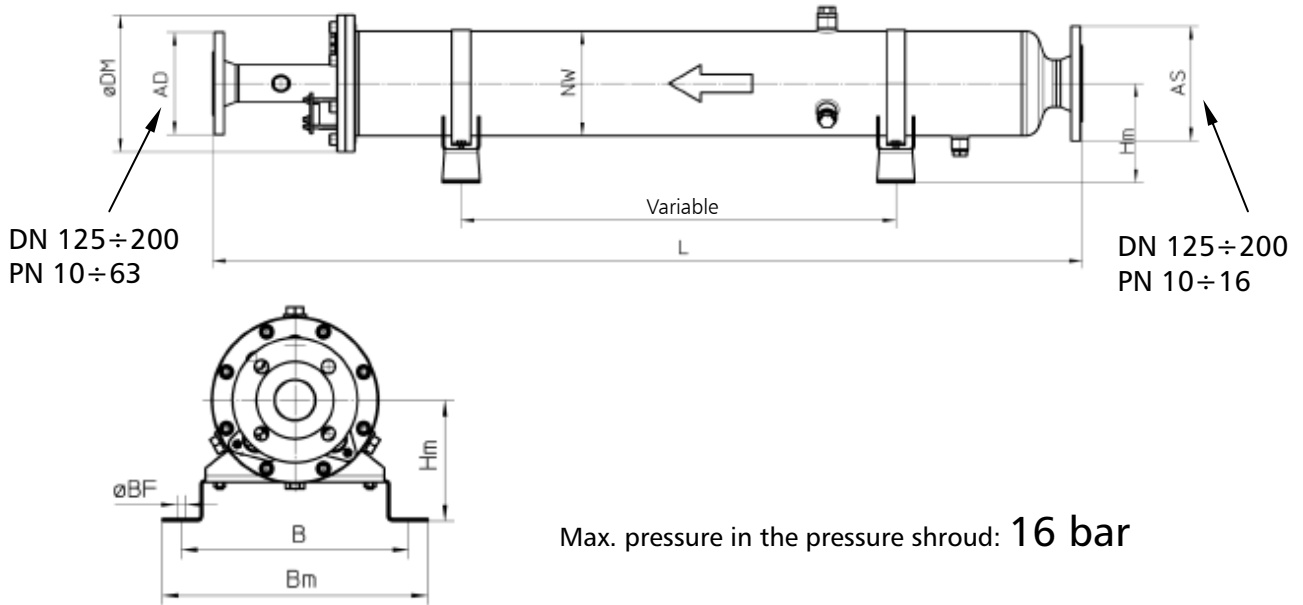
PUMP TYPE	MOTOR TYPE					COOLING SET SHROUD (D x L)	COOLING SET FILTER (D x L1)	COOLING SET BRACKETS (D)
	L6C	L6W	L8W	L10W	L12W			
6Z10150 6Z10200 6Z10220	18,5	18,5				D285X1250	D285X385	D285 - 2PZ
	22	22						
	-	26						
	30	-						
	-	30						
6Z10275	37	37				D285X1500	D285X385	D285 - 3PZ
	30	-				D330X1250	D330X385	D330 - 2PZ
	-	30				D330X1500	D330X385	D330 - 3PZ
6Z10150 6Z10200 6Z10220	37	37				D330X1250	D330X385	D330 - 2PZ
			30			D330X1500	D330X385	D330 - 3PZ
			37					
			45					
			52					
			55			D330X1750	D330X385	D330 - 3PZ
			60					
			67					
			75					
		83						
		93			D330X2000	D330X385	D330 - 3PZ	
6Z10275			30			D380X1250	D380X385	D380 - 2PZ
			37			D380X1500	D380X385	D380 - 3PZ
			45					
			52					
			55					
			60			D380X1750	D380X385	D380 - 3PZ
			67					
			75					
			83					
		93						
			110		D380X2000	D380X385	D380 - 3PZ	
6Z10150				130		D330X2000	D330X385	D330 - 3PZ
				150		D330X2250	D330X385	D330 - 3PZ
6Z10200				110		D380X2000	D380X385	D380 - 3PZ
6Z10220				130		D380X2250	D380X385	D380 - 3PZ
6Z10275				150		D380X2250	D380X385	D380 - 3PZ
6Z10150 6Z10200 6Z10220					185	D380X2000	D380X385	D380 - 3PZ
					220	D380X2250	D380X385	D380 - 3PZ
					260			
					300			
					185	D420X2000	D420X385	D420 - 3PZ
6Z10275					220	D420X2250	D420X385	D420 - 3PZ
					260	D420X2500	D420X385	D420 - 3PZ
					300			
6Z12340			45			D380X1500	D380X385	D380 - 3PZ
			52					
			55					
			60					
			67			D380X1750	D380X385	D380 - 3PZ
			75					
			83					
			93					
				110		D380X2000	D380X385	D380 - 3PZ
				130		D420X2000	D420X385	D420 - 3PZ
				150		D420X2250	D420X385	D420 - 3PZ
					185	D450X2000	D450X385	D450 - 3PZ
					220	D450X2250	D450X385	D450 - 3PZ
					260			
				300				
				300	D450X2500	D450X385	D450 - 3PZ	

Material : Stainless steel EN 10088-1 - X5CrNi18-10 (1.4301) AISI 304. (Other materials available on request).

6Z10-6Z12\_kit-raf60\_a\_ta

**BOOSTER SHROUD**

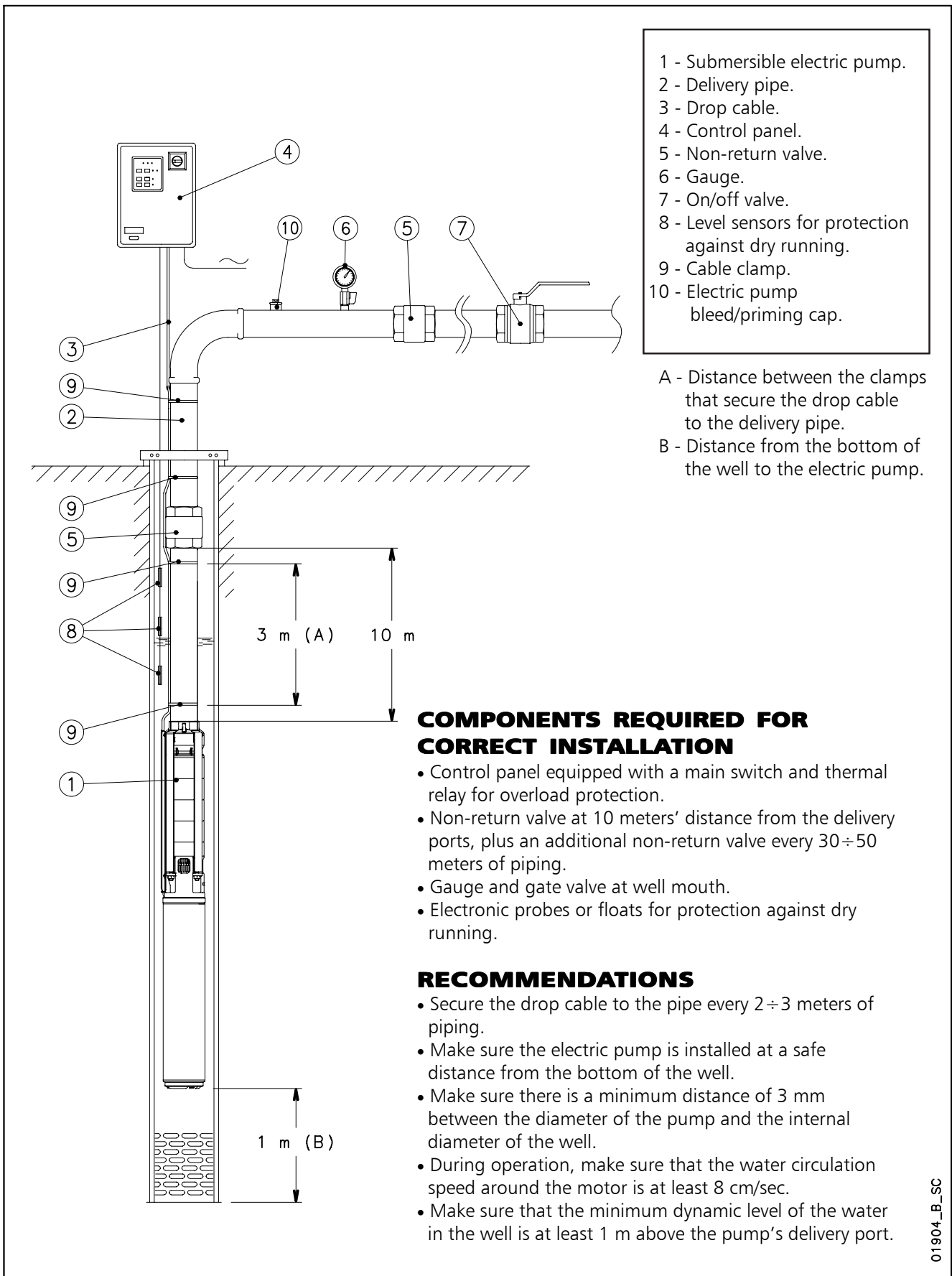
Pressure shroud on request



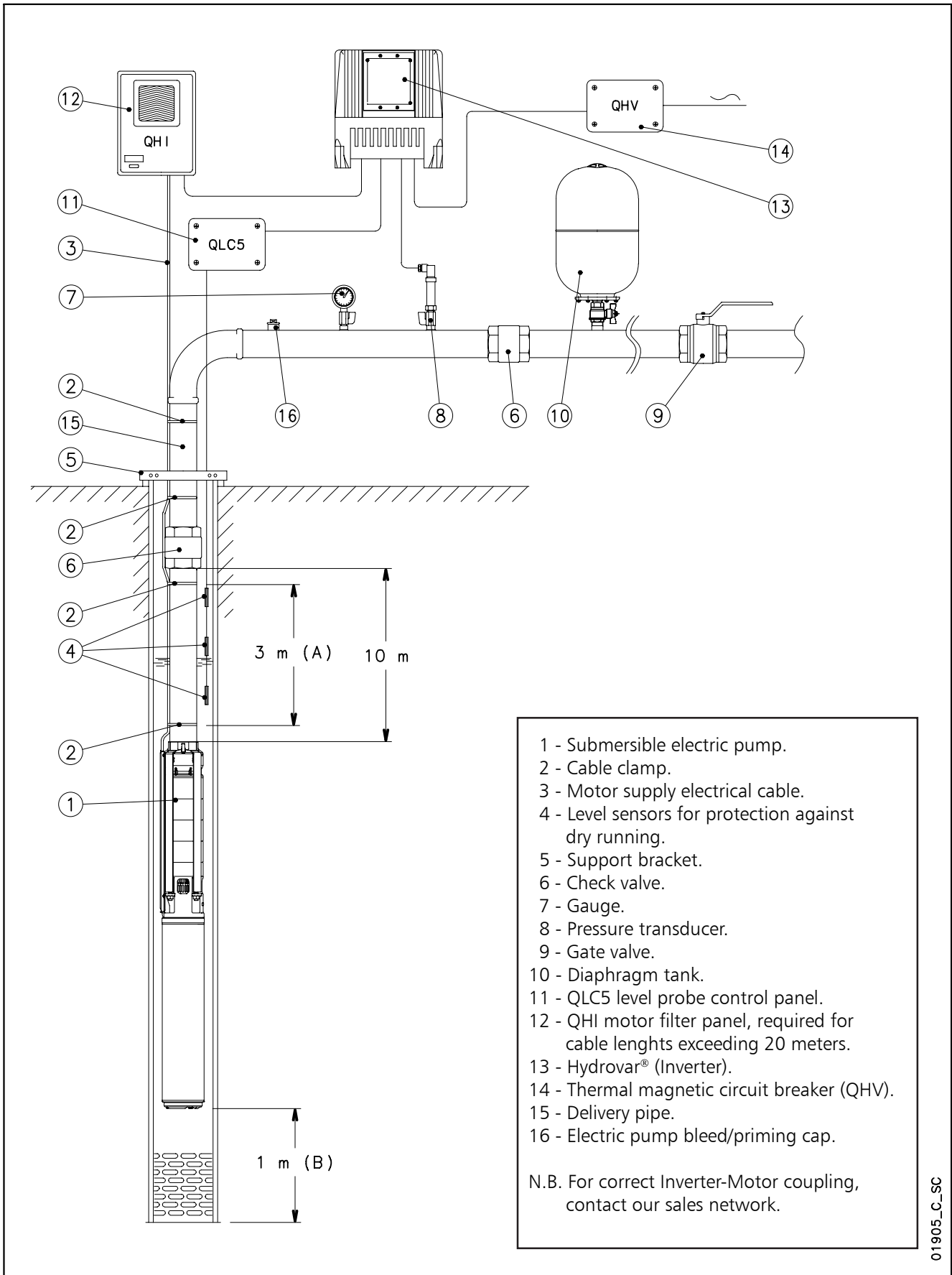
Max. pressure in the pressure shroud: **16 bar**

# **TECHNICAL APPENDIX**

**SUBMERSIBLE ELECTRIC PUMP INSTALLATION DIAGRAM**



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



## 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
STD	all models	1	1	0,75	-	-	-	-	-
HT	all models	1	1	1	1	1	0,85	0,75	0,65

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

Lw-derating-en\_a\_te

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

### EXAMPLE:

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

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

## SELECTING CABLE CROSS-SECTIONS FOR SUBMERSIBLE MOTORS

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

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

E.g.:

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

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

In this case, between 73 and 116 metres, the second value corresponding to a 4 mm<sup>2</sup> cable is selected.

N.B.: the tables include specific data (current and power factor) for each motor and voltage rating based on a maximum voltage drop of 4% (HD 384.5), a maximum cable temperature of 80°C, water installation similar to air installation at a temperature of 30°C.

## CABLE TYPES

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

L-cavi-en\_a\_td

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

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

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

l6w\_cavi-60\_b\_te

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

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

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

l6w\_cavi-SD-60\_b\_te

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



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

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

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

l8w\_cavi-60\_b\_te

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

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

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

l8w\_cavi-SD-60\_a\_te

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

## L10W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw HP		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm2	50	70	95	120	150	185	240	300
							A max	192	246	298	346	399	456	538	621
Maximum lenght in metres															
L10W930T386	93	125	380	0,86	228	4	-	112	148	187	225	262	318	365	
L10W930T405			460	0,86	189		117	172	225	281	336	390	470	538	
L10W1100T386	110	150	380	0,83	316		-	-	-	127	155	182	221	254	
L10W1100T405			460	0,83	261		-	-	154	194	234	273	329	377	
L10W1300T386	130	175	380	0,82	329		-	-	-	121	148	174	211	242	
L10W1300T405			460	0,82	271		-	-	147	186	224	261	314	359	
L10W1500T386	150	200	380	0,83	379		-	-	-	-	124	147	180	209	
L10W1500T405			460	0,83	313		-	-	-	156	190	223	270	311	

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

l10w\_cavi-60\_b\_te

## L10W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw HP		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup> + 3 x ...mm <sup>2</sup>								
							mm2	25	35	50	70	95	120	150	185
							A max*	220	274	333	426	516	599	691	790
Maximum lenght in metres															
L10W930T386	93	125	380	0,86	228	4	-	105	153	216	277	342	405	468	
L10W930T405			460	0,86	189		111	161	231	323	411	506			
L10W1100T386	110	150	380	0,83	316		-	-	104	151	195	242	288	332	
L10W1100T405			460	0,83	261		-	109	161	229	293	361	426	490	
L10W1300T386	130	175	380	0,82	329		-	-	99	145	188	233	276	318	
L10W1300T405			460	0,82	271		-	105	154	220	282	347	409	470	
L10W1500T386	150	200	380	0,83	379		-	-	-	120	158	198	236	274	
L10W1500T405			460	0,83	313		-	-	127	185	239	296	352	406	

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

l10w\_cavi-SD-60\_a\_te

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

## L12W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES DOL (DIRECT ON LINE) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup>								
							mm2	50	70	95	120	150	185	240	300
							A max	192	246	298	346	399	456	538	621
Maximum length in metres															
L12W1850T386	185	250	380	0,86	445	4	-	-	-	-	-	120	151	177	
L12W1850T405			460	0,86	368		-	-	-	-	155	184	228	266	
L12W2200T386	220	300	380	0,85	536		-	-	-	-	-	-	120	142	
L12W2200T405			460	0,85	443		-	-	-	-	146	183	215		
L12W2600T386	260	350	380	0,85	622		-	-	-	-	-	-	-	-	
L12W2600T405			460	0,85	514		-	-	-	-	-	-	153	181	
L12W3000T386	300	400	380	0,88	713		-	-	-	-	-	-	-	-	
L12W3000T405			460	0,88	589		-	-	-	-	-	-	-	156	

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

l12w\_cavi-60\_b\_te

## L12W, 60 Hz: SIZING OF ETHYLENE-PROPILENE (EPR) CABLES Y/Δ (STAR / DELTA) STARTING

MOTOR TYPE THREE-PHASE	RATED POWER Kw   HP		RATED VOLTAGE V	Cos φ AT S.F.	CURRENT AT S.F. A	VOLTAGE DROP %	Cable cross section: 4G x ...mm <sup>2</sup> + 3 x ...mm <sup>2</sup>								
							mm2	50	70	95	120	150	185	240	300
							A max*	333	426	516	599	691	790	932	1076
Maximum length in metres															
L12W1850T386	185	250	380	0,86	445	4	-	-	128	162	197	230	280	322	
L12W1850T405			460	0,86	368		-	148	196	246	295	343	415	476	
L12W2200T386	220	300	380	0,85	536		-	-	-	129	158	187	228	263	
L12W2200T405			460	0,85	443		-	-	157	198	240	280	339	390	
L12W2600T386	260	350	380	0,85	622		-	-	-	-	132	157	193	224	
L12W2600T405			460	0,85	514		-	-	129	165	201	237	289	333	
L12W3000T386	300	400	380	0,88	713		-	-	-	-	-	133	167	197	
L12W3000T405			460	0,88	589		-	-	-	138	171	204	252	295	

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

l12w\_cavi-SD-60\_a\_te

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

## SPLICE BETWEEN DROP CABLE AND MOTOR CABLE

MOTOR TYPE	POWER kW	TYPE OF SPLICE	FOUR-CORE DROP CABLE - SECTION (mm <sup>2</sup> )																
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	
4OS L4C	0,37 - 7,5	Resin-filled method	GR1	GR1	GR1	GR2	GR2	GR6	GR6	GR6	GR4	GR5	GR5	-	-	-	-	-	
		Heat-shrink method	GT1	GT1	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + self-vulcanizing sealing putty and PVC tape (1)																
L6C L6W	4 - 37	Resin-filled method	-	-	GR1	GR2	GR2	GR6	GR6	GR6	GR4	GR5	GR5	-	-	-	-	-	
		Heat-shrink method	-	-	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + self-vulcanizing sealing putty and PVC tape (1)																

MOTOR TYPE	POWER kW	TYPE OF SPLICE	THREE-CORE DROP CABLE - SECTION (mm <sup>2</sup> )															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
L6C L6W	4 - 37	Resin-filled method	-	-	GR1	GR1	GR2	GR2	GR6	GR6	GR6	GR4	GR5	-	-	-	-	-
		Heat-shrink method	-	-	GT2	GT2	GT3	GT4	GT5	GT6	-	-	-	-	-	-	-	-
		Tape method	Self-vulcanizing tape + PVC tape															

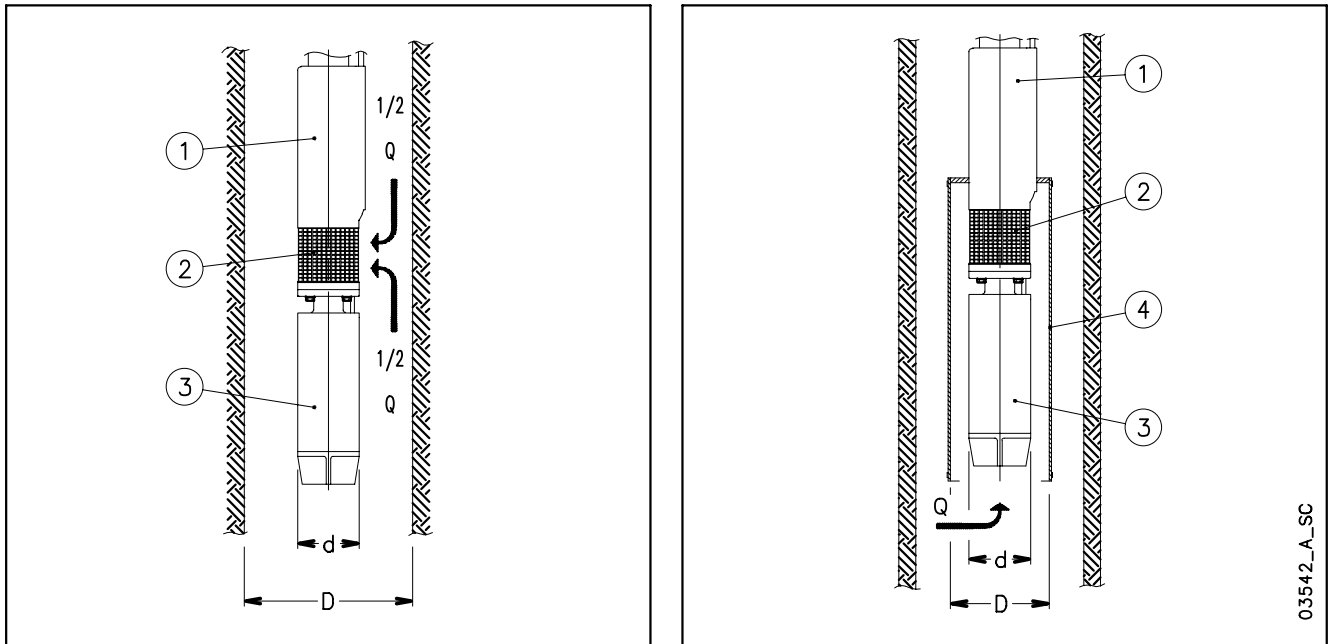
MOTOR TYPE	POWER kW	TYPE OF SPLICE	SINGLE-CORE DROP CABLE - SECTION (mm <sup>2</sup> )															
			1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
L8W L10W L12W	30 - 300	Resin-filled method	-	-	-	GR1	GR1	GR1	GR1	GR1	GR1	GR2	GR2	GR2	GR6	GR6	GR6	GR4
		Heat-shrink method	-	-	-	-	-	-	-	-	-	-	-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

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

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

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



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

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

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

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

### Example:

An electric pump OZ630/12 (motor diameter d = 0.144 m) operates in an 8" well (well diameter D = 0.203 m) with flow rate Q = 20 m<sup>3</sup>/h = 0.0055 m<sup>3</sup>/s.

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

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

Because v < v<sub>m</sub>, it will be necessary to mount a cooling sleeve.

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

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

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

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

### Example:

A motor coupled to the electric pump OZ615/24 (motor diameter d = 0.144 m), which operates with flow rate Q = 15 m<sup>3</sup>/h = 0.0042 m<sup>3</sup>/s, requires a minimum speed of the fluid of v<sub>m</sub> = 0.20 m/s.

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

## ASYNCHRONOUS MOTOR STARTING SYSTEMS

### Direct

Suitable for low-power motors.

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

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

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

### Indirect

#### • Star/Delta

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

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

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

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

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

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

#### • Impedances

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

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

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

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

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

Starting current

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

Starting torque

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

### Autotransformer

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

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

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

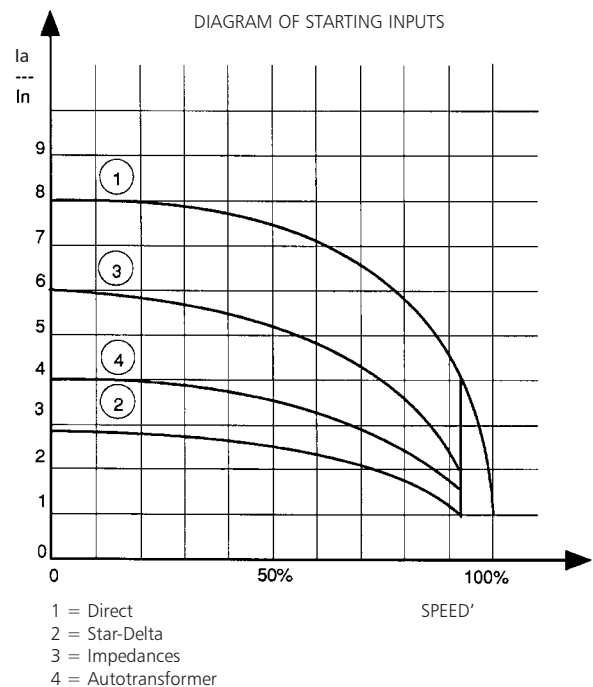
$$\text{Rated voltage } U_n = 400 \text{ V}$$

Starting current

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

Starting torque

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



## WATER REQUIREMENTS IN CIVIL USERS

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

### Water requirements in condominiums

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

### MAXIMUM CONSUMPTION FOR EACH DELIVERY POINT

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

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

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

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



## TABLE OF WATER REQUIREMENTS IN CIVIL USERS

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

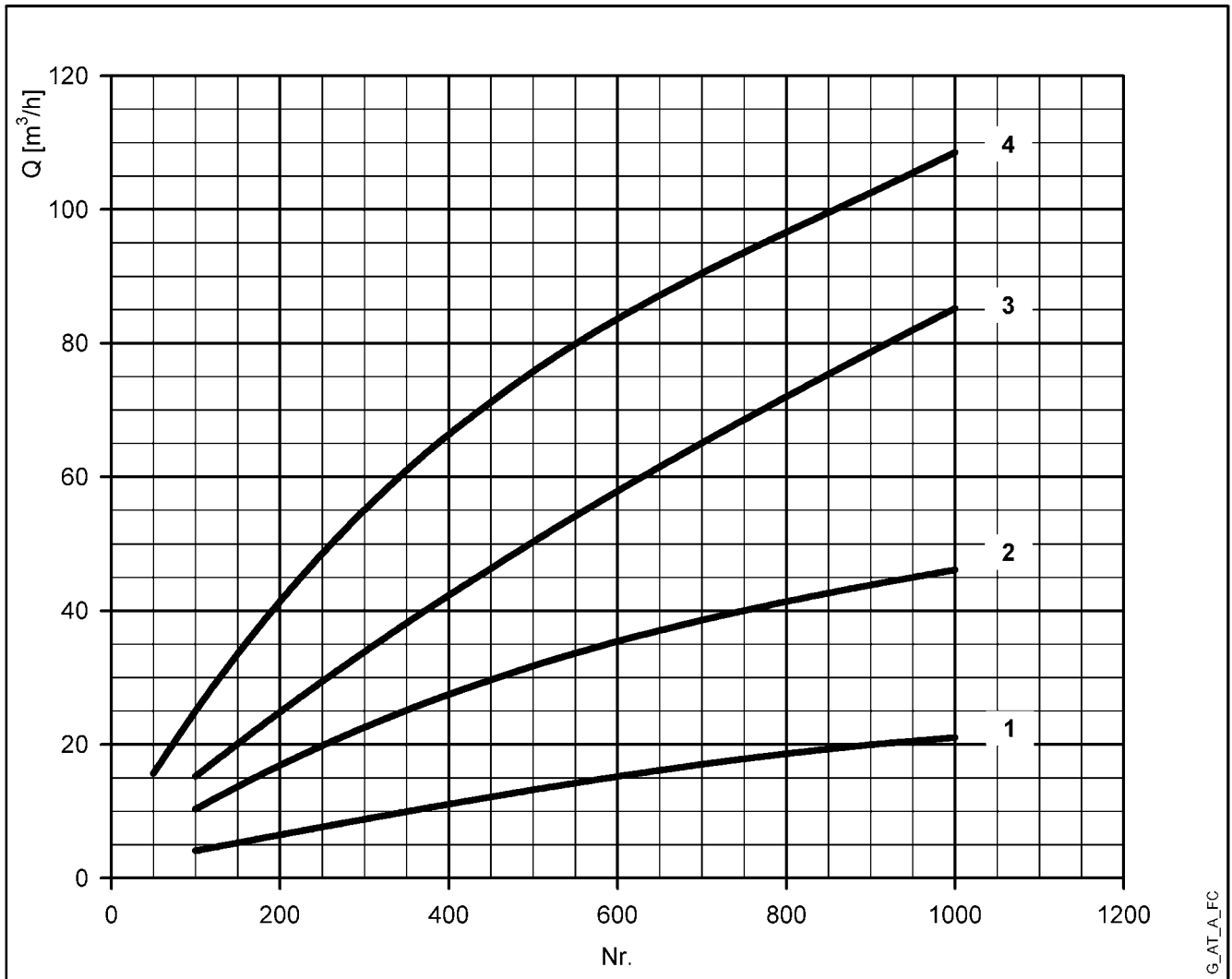
For seaside resorts, a flow rate increased by at least 20% must be considered.

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## WATER REQUIREMENTS FOR COMMUNITY BUILDINGS

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

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



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

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

## NPSH

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

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

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

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

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

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

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

where:

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

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

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

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

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

Friction loss is shown in the tables at pages 101-102 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

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

Flow rate required: 30 m<sup>3</sup>/h

Head for required delivery: 43 m.

Suction lift: 3,5 m.

The selection is an FHE 40-200/75 pump whose NPSH required value is, at 30 m<sup>3</sup>/h, di 2,5 m.

For water at 15 °C

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

The H<sub>f</sub> flow resistance in the suction line with foot valves is ~ 1,2 m.

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

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

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

The relation is therefore verified.

## TECHNICAL APPENDIX VAPOUR PRESSURE PS VAPOUR PRESSURE AND $\rho$ DENSITY OF WATER TABLE

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

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

G-at-pct\_a\_th

hr = flow resistance for 100m of straight pipeline (m)  
V = water speed (m/s)

## FLOW RESISTANCE

### TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

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

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

G-a-pcv\_a\_th

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

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

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

## VOLUMETRIC CAPACITY

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

## PRESSURE AND HEAD

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

## LENGTH

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

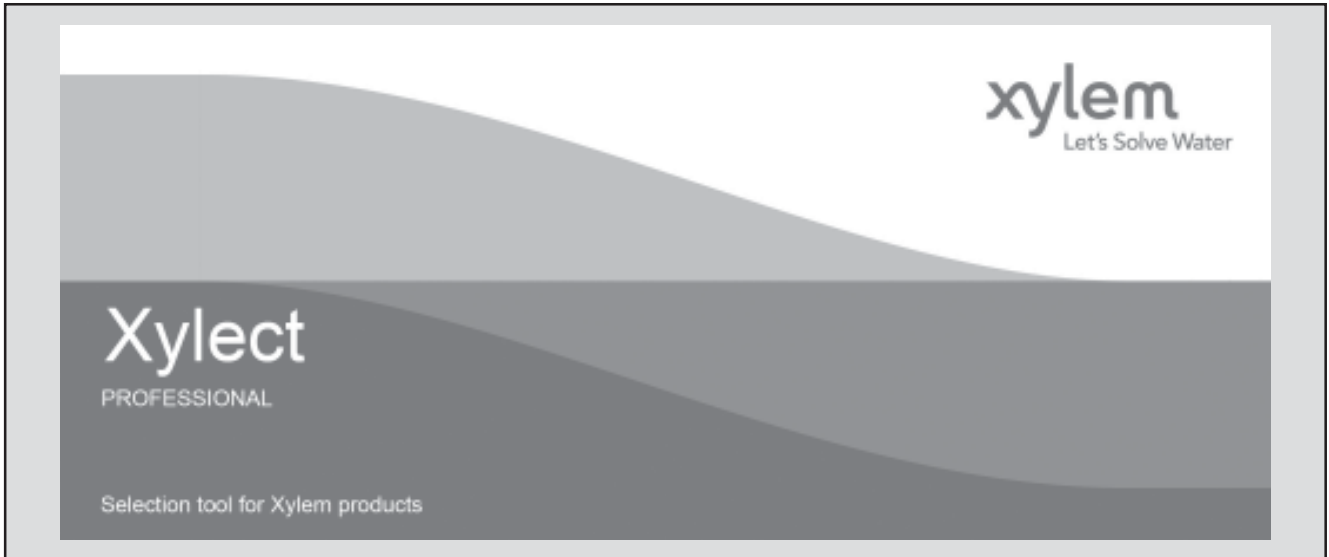
## VOLUME

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

G-at\_pp-en\_a\_sc

## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Xylect



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

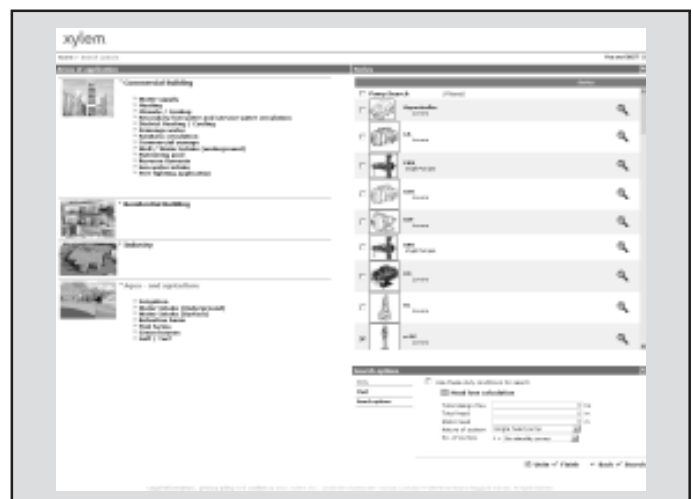
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

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

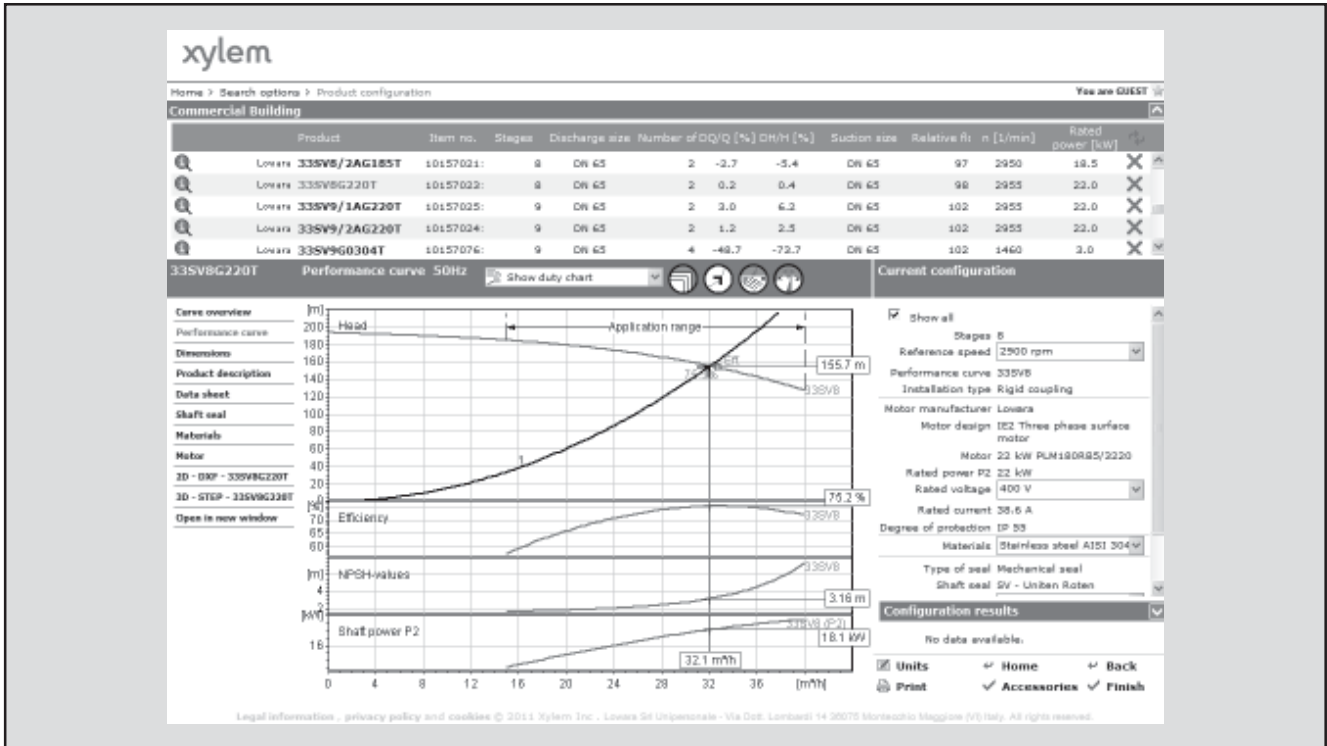


*The search by application guides users not familiar with the product range to the right choice.*



## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Xylect



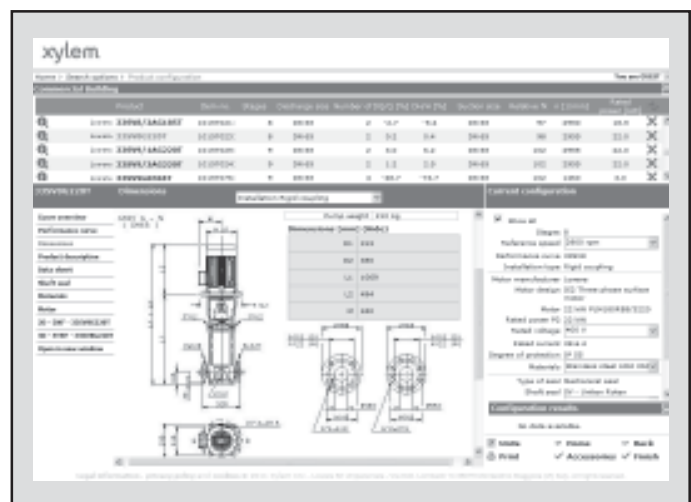
The detailed output makes it easy to select the optimal pump from the given alternatives.

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

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

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

For more information about Xylect please contact our sales network or visit [www.xylect.com](http://www.xylect.com).



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





# Xylem |'zīləm|

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

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

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