



EBARA

WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

50 Hz



WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

in AISI 304



4" borehole centrifugal electric pumps in AISI 304 with front wear ring impeller.

APPLICATIONS

- Moving clear water in wells
- Pressure boosting of clean water for agricultural, domestic or industrial use
- Irrigation
- Moving water in general

TECHNICAL DETAILS

- Easy to install
- Vertical or horizontal installation

PUMP TECHNICAL DATA

- Maximum immersion:
 - 350 m (with water filled motor)
 - 150 m (with oil filled motor)
 - Maximum temperature of the liquid: 40°C (depends on maximum motor temperature)
 - Maximum presence of sand: 50 ppm
 - Maximum chlorine ion density: 500 ppm
 - Discharge connection:
 - G1¼ for 4N1 - 4N2 - 4N4 models
 - G2 for 4N7 - 4N10 - 4N15 models
 - MEI > 0,1
- For further information please see our Data Book on the web site www.ebara-europe.com

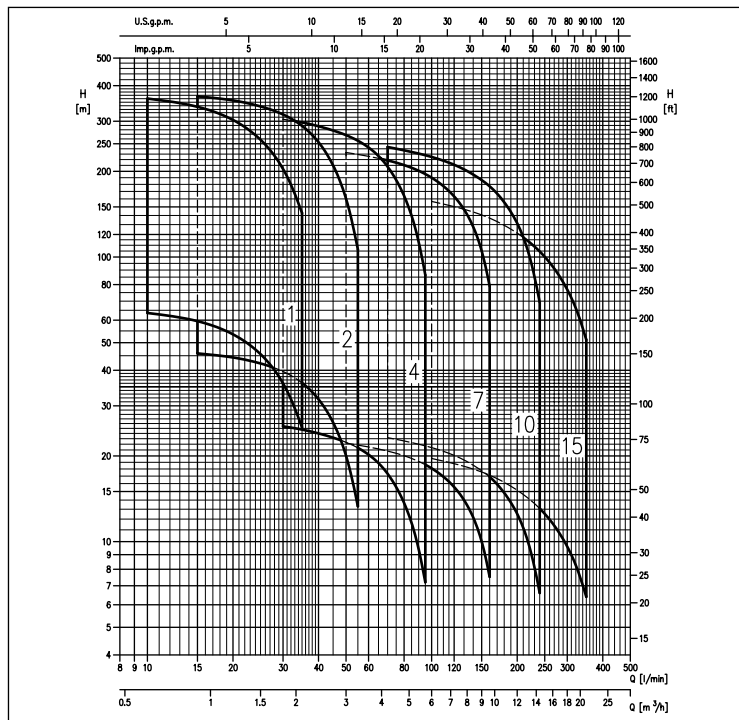
MOTOR TECHNICAL DATA

- 2 poles oil filled motor (OY) or water filled motor (WY)
- Max start-ups per hour: 30 (OY) - 20 (WY)
- Insulation class: F (OY) - B (WY)
- Protection degree: IP58 (OY) - IP68 (WY)
- 230V (±10%) 50Hz (OYM) single phase voltage, 380-415V (±10%) 50Hz (OY) three phase voltage
- 230V (-10%+6%) 50Hz (WYM) single phase voltage, 380-415V (-10%+6%) 50Hz (WY) three phase voltage
- For cables DIMENSIONSng please see page 10 or our Data Book on the web site www.ebara-europe.com

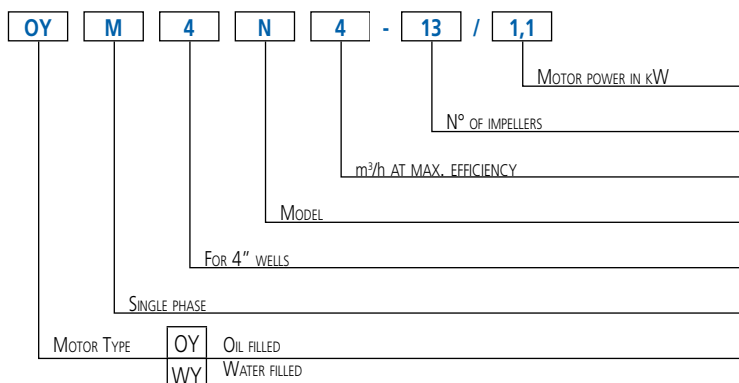
MATERIALS

- External casing, shaft and valve in EN 1.4301 (AISI 304)
- Discharge in EN 1.4308 (ASTM CF8)
- Impeller in Ixef®
- Diffuser in PPE+PS reinforced with fibreglass

PERFORMANCE RANGE (according to ISO 9906 Attachment A)



IDENTIFICATION CODE



WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

in AISI 304

PERFORMANCE TABLES

Model	P ₂		Q=Flow rate										
	[HP]	[kW]	I/min	10	15	20	25	30	35	45	55	75	95
			m³/h	0,6	0,9	1,2	1,5	1,8	2,1	2,7	3,3	4,5	5,7
			H=Head [m]										
WINNER 4N1-12	0,5	0,37	64,0	60,0	54,0	46,0	36,0	25,0	-	-	-	-	
WINNER 4N1-18	0,7	0,55	95,0	89,0	80,0	68,0	54,0	38,0	-	-	-	-	
WINNER 4N1-24	1	0,75	127,0	119,0	107,0	91,0	72,0	50,0	-	-	-	-	
WINNER 4N1-34	1,5	1,1	180,0	169,0	152,0	129,0	102,0	71,0	-	-	-	-	
WINNER 4N1-48	2	1,5	254,0	238,0	214,0	182,0	144,0	101,0	-	-	-	-	
WINNER 4N1-68	3	2,2	360,0	337,0	303,0	258,0	204,0	143,0	-	-	-	-	
WINNER 4N2-7	0,5	0,37	-	46,0	44,0	42,0	40,0	36,0	26,0	13,0	-	-	
WINNER 4N2-10	0,7	0,55	-	66,0	63,0	60,0	57,0	52,0	38,0	19,0	-	-	
WINNER 4N2-14	1	0,75	-	92,0	89,0	85,0	79,0	72,0	53,0	27,0	-	-	
WINNER 4N2-20	1,5	1,1	-	131,0	127,0	121,0	113,0	103,0	75,0	38,0	-	-	
WINNER 4N2-28	2	1,5	-	183,0	178,0	169,0	158,0	144,0	105,0	53,0	-	-	
WINNER 4N2-40	3	2,2	-	262,0	254,0	242,0	226,0	206,0	150,0	76,0	-	-	
WINNER 4N2-56	4	3	-	367,0	355,0	338,0	317,0	289,0	210,0	106,0	-	-	
WINNER 4N4-4	0,5	0,37	-	-	-	-	25,0	25,0	23,0	21,0	16,0	7,0	
WINNER 4N4-7	0,7	0,55	-	-	-	-	44,0	43,0	41,0	37,0	27,0	13,0	
WINNER 4N4-9	1	0,75	-	-	-	-	57,0	56,0	52,0	48,0	35,0	16,0	
WINNER 4N4-13	1,5	1,1	-	-	-	-	83,0	80,0	75,0	69,0	51,0	23,0	
WINNER 4N4-18	2	1,5	-	-	-	-	114,0	111,0	104,0	96,0	70,0	32,0	
WINNER 4N4-27	3	2,2	-	-	-	-	171,0	167,0	157,0	144,0	105,0	49,0	
WINNER 4N4-36	4	3	-	-	-	-	229,0	223,0	209,0	192,0	140,0	65,0	
WINNER 4N4-48	5,5	4	-	-	-	-	305,0	297,0	278,0	256,0	187,0	86,0	

Model	P ₂		Q=Flow rate										
	[HP]	[kW]	I/min	50	70	100	130	160	200	240	280	320	350
			m³/h	3	4,2	6	7,8	9,6	12	14,4	16,8	19,2	21
			H=Head [m]										
WINNER 4N7-4	0,7	0,55	22,0	21,0	18,0	14,0	8,0	-	-	-	-	-	-
WINNER 4N7-6	1	0,75	33,0	31,0	27,0	21,0	11,0	-	-	-	-	-	-
WINNER 4N7-8	1,5	1,1	44,0	42,0	36,0	28,0	15,0	-	-	-	-	-	-
WINNER 4N7-12	2	1,5	67,0	62,0	54,0	42,0	23,0	-	-	-	-	-	-
WINNER 4N7-17	3	2,2	94,0	88,0	77,0	60,0	32,0	-	-	-	-	-	-
WINNER 4N7-23	4	3	128,0	120,0	104,0	81,0	43,0	-	-	-	-	-	-
WINNER 4N7-30	5,5	4	167,0	156,0	136,0	105,0	56,0	-	-	-	-	-	-
WINNER 4N7-42	7,5	5,5	233,0	219,0	190,0	147,0	79,0	-	-	-	-	-	-
WINNER 4N10-4	1	0,75	-	23,0	21,0	19,0	17,0	13,0	7,0	-	-	-	-
WINNER 4N10-6	1,5	1,1	-	35,0	32,0	29,0	25,0	19,0	10,0	-	-	-	-
WINNER 4N10-8	2	1,5	-	46,0	43,0	39,0	34,0	25,0	13,0	-	-	-	-
WINNER 4N10-12	3	2,2	-	70,0	64,0	58,0	51,0	38,0	20,0	-	-	-	-
WINNER 4N10-17	4	3	-	99,0	91,0	82,0	72,0	53,0	28,0	-	-	-	-
WINNER 4N10-23	5,5	4	-	133,0	123,0	111,0	97,0	72,0	38,0	-	-	-	-
WINNER 4N10-30	7,5	5,5	-	174,0	161,0	145,0	127,0	94,0	50,0	-	-	-	-
WINNER 4N10-42	10	7,5	-	244,0	225,0	203,0	177,0	131,0	69,0	-	-	-	-
WINNER 4N15-4	1,5	1,1	-	-	20,0	18,0	17,0	15,0	13,0	11,0	8,0	6,0	-
WINNER 4N15-6	2	1,5	-	-	29,0	28,0	26,0	23,0	20,0	16,0	13,0	10,0	-
WINNER 4N15-9	3	2,2	-	-	44,0	41,0	39,0	34,0	29,0	24,0	19,0	14,0	-
WINNER 4N15-13	4	3	-	-	64,0	60,0	56,0	49,0	43,0	35,0	27,0	21,0	-
WINNER 4N15-17	5,5	4	-	-	83,0	78,0	73,0	64,0	56,0	46,0	36,0	27,0	-
WINNER 4N15-24	7,5	5,5	-	-	118,0	110,0	103,0	91,0	78,0	65,0	50,0	38,0	-
WINNER 4N15-32	10	7,5	-	-	157,0	147,0	137,0	121,0	105,0	86,0	67,0	51,0	-

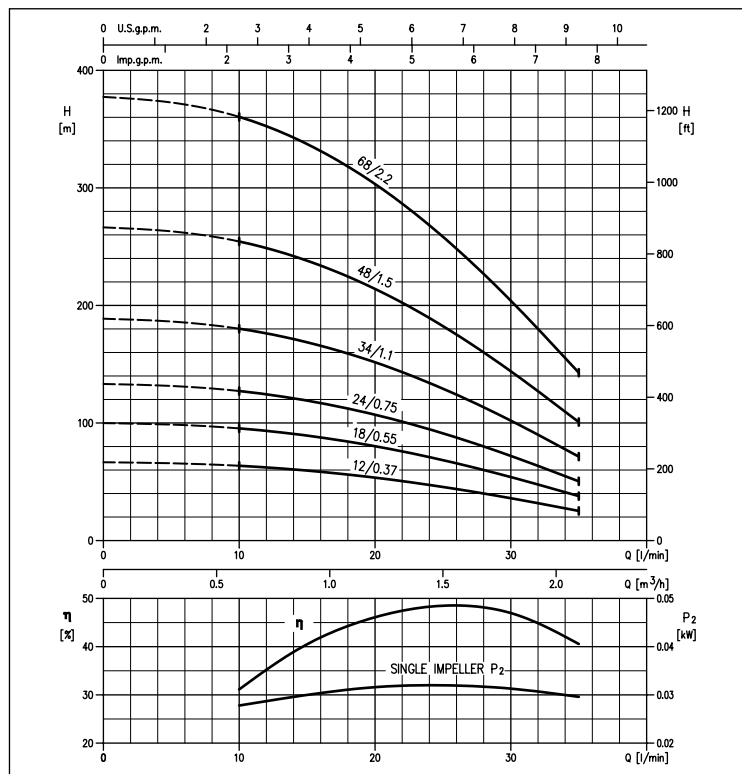
WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

in AISI 304

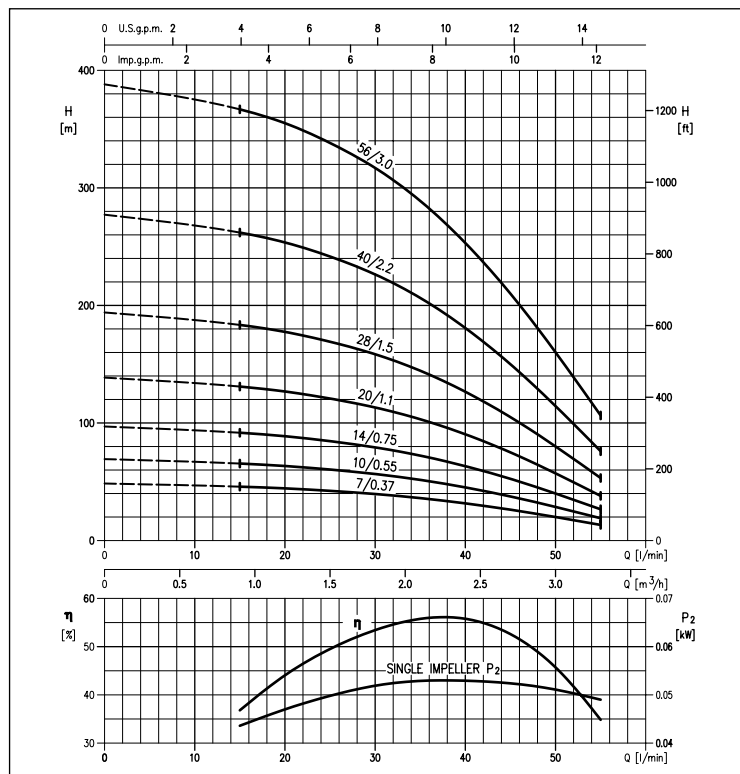
PERFORMANCE CURVES WINNER 4N1

(according to ISO 9906 Attachment A) - impeller diameter: 67,6 mm



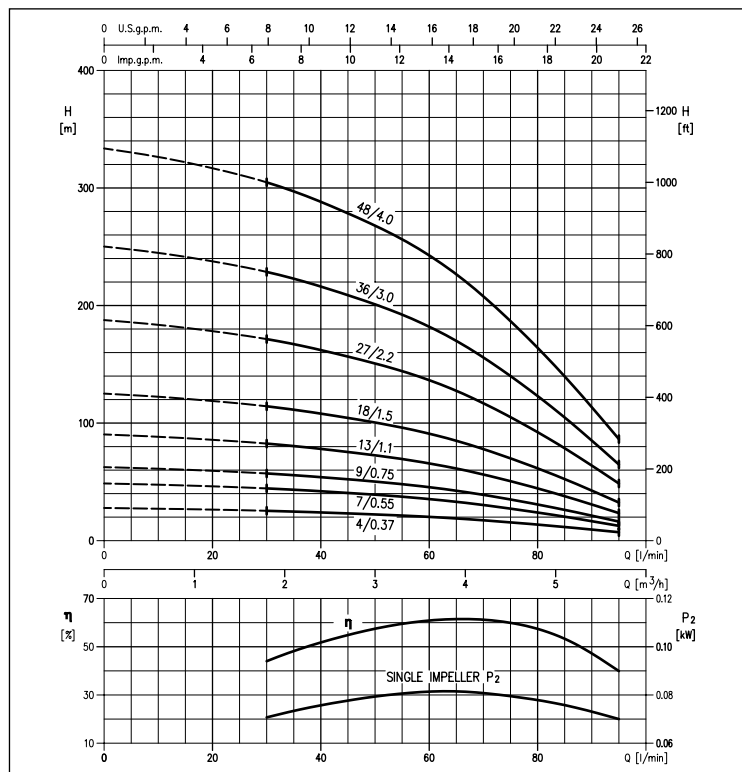
PERFORMANCE CURVES WINNER 4N2

(according to ISO 9906 Attachment A) - impeller diameter: 76 mm



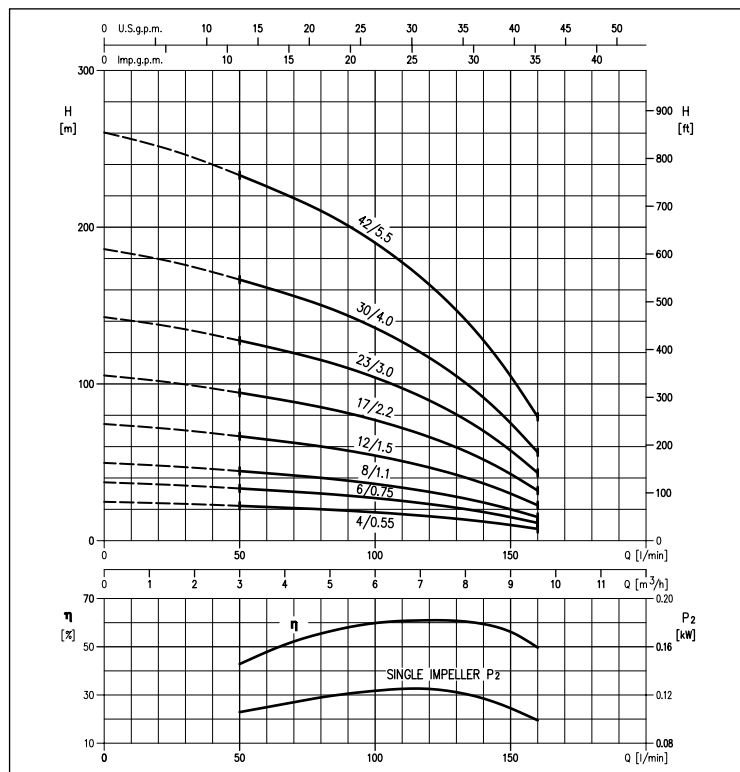
PERFORMANCE CURVES WINNER 4N4

(according to ISO 9906 Attachment A) - impeller diameter: 76 mm



PERFORMANCE CURVES WINNER 4N7

(according to ISO 9906 Attachment A) - impeller diameter: 74,2 mm

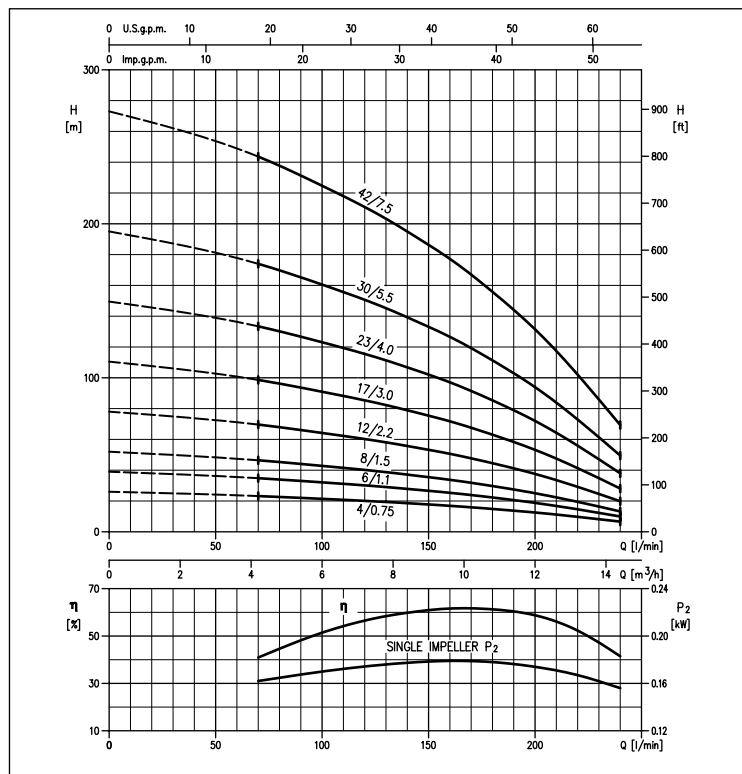


WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS in AISI 304

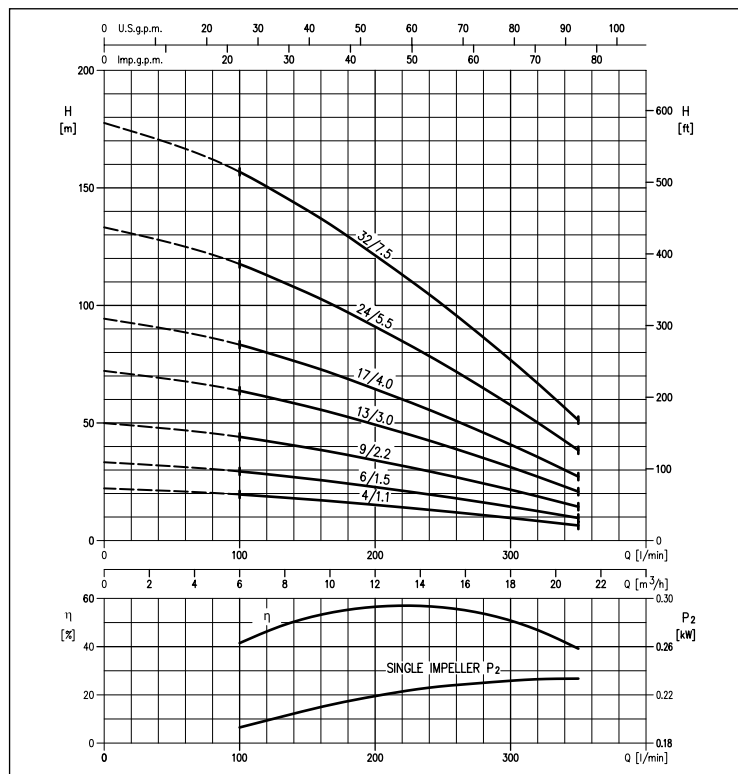
PERFORMANCE CURVES WINNER 4N10

(according to ISO 9906 Attachment A) - impeller diameter: 72 mm

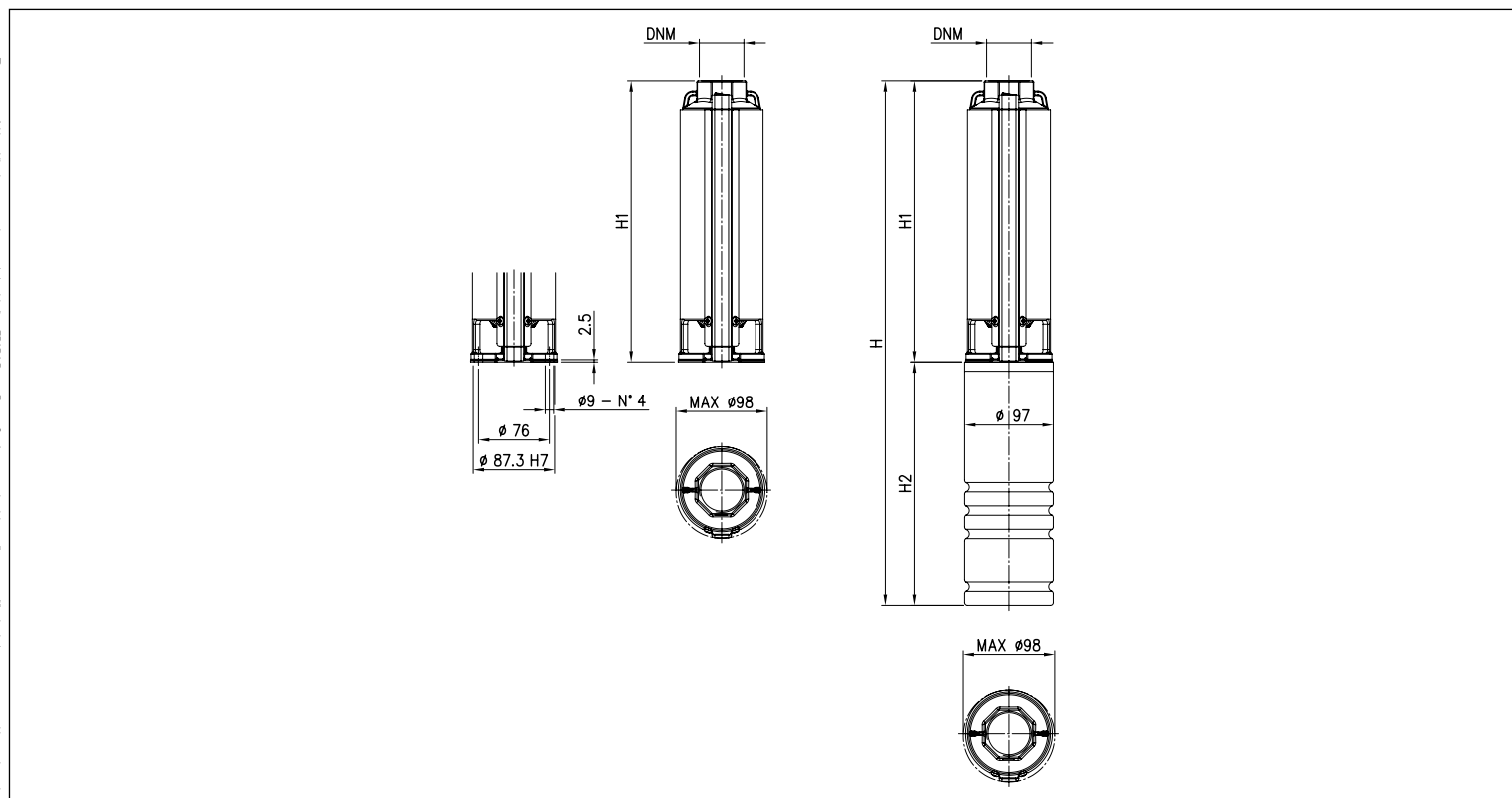


PERFORMANCE CURVES WINNER 4N15

(according to ISO 9906 Attachment A) - impeller diameter: 75,5 mm



DIMENSIONS



WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

in AISI 304

DIMENSIONAL TABLE

Model	P ₂		Pump without motor			Pump with oil motor filled						Pompa with water filled motor					
	[HP]	[kW]	H1 [mm]	DNM	Weight [kg]	Single phase			Three phase			Single phase			Three phase		
						H2 [mm]	H [mm]	Weight [kg]	H2 [mm]	H [mm]	Weight [kg]	H2 [mm]	H [mm]	Weight [kg]	H2 [mm]	H [mm]	Weight [kg]
WINNER 4N1-12	0,5	0,37	353	G1 ¼	3,7	325	678	10,7	304	657	10,2	228	581	12,7	214	567	12,1
WINNER 4N1-18	0,75	0,55	458	G1 ¼	4,8	325	783	12,4	325	783	11,8	248	706	14,8	228	686	13,7
WINNER 4N1-24	1	0,75	563	G1 ¼	5,9	350	913	14,6	325	888	13,5	283	846	17,2	248	811	15,9
WINNER 4N1-34	1,5	1,1	738	G1 ¼	8,0	385	1123	18,3	350	1088	16,7	339	1077	21,9	283	1021	20,5
WINNER 4N1-48	2	1,5	1049	G1 ¼	11,8	420	1469	23,8	385	1434	22,2	350	1399	26,6	307	1356	25,3
WINNER 4N1-68	3	2,2	1399	G1 ¼	15,0	470	1869	29,2	420	1819	27,0	437	1836	33,7	339	1738	29,4
WINNER 4N2-7	0,5	0,37	265	G1 ¼	3,8	325	590	10,8	304	569	10,3	228	493	12,8	214	479	12,2
WINNER 4N2-10	0,75	0,55	318	G1 ¼	4,1	325	643	11,7	325	643	11,1	248	566	14,1	228	546	13,0
WINNER 4N2-14	1	0,75	388	G1 ¼	4,4	350	738	13,1	325	713	12,0	283	671	15,7	248	636	14,4
WINNER 4N2-20	1,5	1,1	493	G1 ¼	5,3	385	878	15,6	350	843	14,0	339	832	19,2	283	776	17,8
WINNER 4N2-28	2	1,5	633	G1 ¼	6,7	420	1053	18,7	385	1018	17,1	350	983	21,5	307	940	20,2
WINNER 4N2-40	3	2,2	909	G1 ¼	10,0	470	1379	24,2	420	1329	22,0	437	1346	28,7	339	1248	24,4
WINNER 4N2-56	4	3	1189	G1 ¼	13,0	-	-	-	544	1733	25,8	-	-	-	394	1583	29,8
WINNER 4N4-4	0,5	0,37	229	G1 ¼	2,4	325	554	9,4	304	533	8,9	228	457	11,4	214	443	10,8
WINNER 4N4-7	0,75	0,55	293	G1 ¼	3,0	325	618	10,6	325	618	10,0	248	541	13,0	228	521	11,9
WINNER 4N4-9	1	0,75	336	G1 ¼	3,4	350	686	12,1	325	661	11,0	283	619	14,7	248	584	13,4
WINNER 4N4-13	1,5	1,1	422	G1 ¼	4,3	385	807	14,6	350	772	13,0	339	761	18,2	283	705	16,8
WINNER 4N4-18	2	1,5	530	G1 ¼	5,4	420	950	17,4	385	915	15,8	350	880	20,2	307	837	18,9
WINNER 4N4-27	3	2,2	723	G1 ¼	7,3	470	1193	21,5	420	1143	19,3	437	1160	26,0	339	1062	21,7
WINNER 4N4-36	4	3	983	G1 ¼	11,0	-	-	-	544	1527	23,8	-	-	-	394	1377	27,8
WINNER 4N4-48	5,5	4	1241	G1 ¼	14,0	-	-	-	574	1815	29,3	-	-	-	543	1784	35,8
WINNER 4N7-4	0,75	0,55	285	G2	3,0	325	610	10,6	325	610	10,0	248	533	13,0	228	513	11,9
WINNER 4N7-6	1	0,75	356	G2	3,5	350	706	12,2	325	681	11,1	283	639	14,8	248	604	13,5
WINNER 4N7-8	1,5	1,1	427	G2	4,0	385	812	14,3	350	777	12,7	339	766	17,9	283	710	16,5
WINNER 4N7-12	2	1,5	569	G2	5,5	420	989	17,5	385	954	15,9	350	919	20,3	307	876	19,0
WINNER 4N7-17	3	2,2	746	G2	7,1	470	1216	21,3	420	1166	19,1	437	1183	25,8	339	1085	21,5
WINNER 4N7-23	4	3	959	G2	9,0	-	-	-	544	1503	21,8	-	-	-	394	1353	25,8
WINNER 4N7-30	5,5	4	1274	G2	12,8	-	-	-	574	1848	28,1	-	-	-	543	1817	34,6
WINNER 4N7-42	7,5	5,5	1700	G2	16,5	-	-	-	644	2344	35,1	-	-	-	653	2353	45,2
WINNER 4N10-4	1	0,75	285	G2	3,0	350	635	11,7	325	610	10,6	283	568	14,3	248	533	13,0
WINNER 4N10-6	1,5	1,1	356	G2	3,6	385	741	13,9	350	706	12,3	339	695	17,5	283	639	16,1
WINNER 4N10-8	2	1,5	427	G2	4,1	420	847	16,1	385	812	14,5	350	777	18,9	307	734	17,6
WINNER 4N10-12	3	2,2	569	G2	5,5	470	1039	19,7	420	989	17,5	437	1006	24,2	339	908	19,9
WINNER 4N10-17	4	3	746	G2	7,3	-	-	-	544	1290	20,1	-	-	-	394	1140	24,1
WINNER 4N10-23	5,5	4	959	G2	9,0	-	-	-	574	1533	24,3	-	-	-	543	1502	30,8
WINNER 4N10-30	7,5	5,5	1274	G2	12,8	-	-	-	644	1918	31,4	-	-	-	653	1927	41,5
WINNER 4N10-42	10	7,5	1700	G2	16,6	-	-	-	805	2505	43,6	-	-	-	731	2431	49,3
WINNER 4N15-4	1,5	1,1	463	G2	4,5	385	848	14,8	350	813	13,2	339	802	18,4	283	746	17,0
WINNER 4N15-6	2	1,5	623	G2	5,5	420	1043	17,5	385	1008	15,9	350	973	20,3	307	930	19,0
WINNER 4N15-9	3	2,2	863	G2	7,0	470	1333	21,2	420	1283	19,0	437	1300	25,7	339	1202	21,4
WINNER 4N15-13	4	3	1183	G2	10,0	-	-	-	544	1727	22,8	-	-	-	394	1577	26,8
WINNER 4N15-17	5,5	4	1503	G2	12,0	-	-	-	574	2077	27,3	-	-	-	543	2046	33,8
WINNER 4N15-24	7,5	5,5	2129	G2	20,0	-	-	-	644	2773	38,6	-	-	-	653	2782	48,7
WINNER 4N15-32	10	7,5	2769	G2	29,0	-	-	-	805	3574	56,0	-	-	-	731	3500	61,7

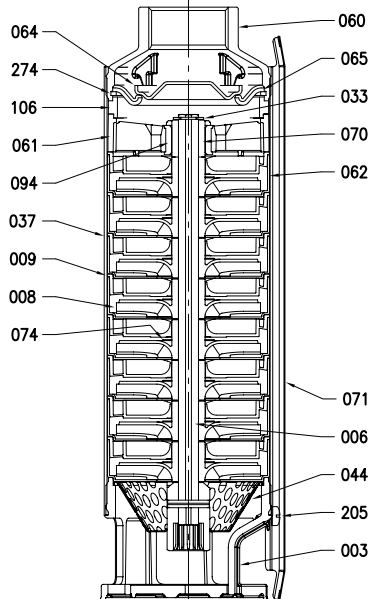
WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

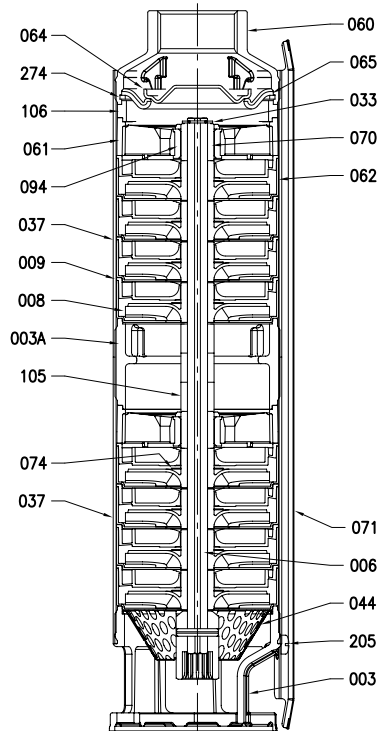
in AISI 304

SECTIONAL VIEW WINNER 4N1-4N2-4N4

Single pump casing

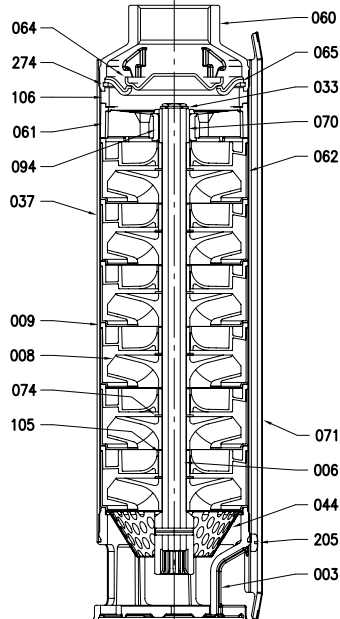


Double pump casing

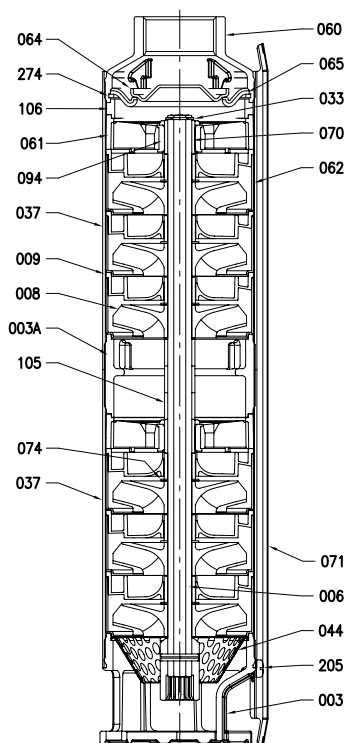


SECTIONAL VIEW WINNER 4N7-4N10-4N15

Single pump casing



Double pump casing



WINNER 4N

4" BOREHOLE CENTRIFUGAL ELECTRIC PUMPS

in AISI 304

MATERIALS TABLE

Rif.	Name	Material	Rif.	Name	Material
003	Bracket	EN 1.4308 (ASTM CF8)	062	Stage housing	EN 1.4301 (AISI 304)
003A	Join ring	EN 1.4308 (ASTM CF8)	064	Valve	EN 1.4301 (AISI 304)
006	Pump shaft with coupling	EN 1.4301 (AISI 304)	065	Valve seat	EN 1.4301 (AISI 304) + EPDM rubber
008	Impeller	Ixef®	070	Shaft sleeve bearing	Alumina (Ceramic)
009	Diffuser	PPE+PS reinforced with fibreglass	071	Cable guard	EN 1.4301 (AISI 304)
033	Seeger Ring	EN 1.4301 (AISI 304)	074	Thrust washer	EN 1.4301 (AISI 304)
037	External casing	EN 1.4301 (AISI 304)	094	Bearing	EPDM rubber
044	Strainer	EN 1.4301 (AISI 304)	105	Spacer	PPE+PS reinforced with fibreglass
060	Discharge casing	EN 1.4308 (ASTM CF8)	205	Screw (M4 x 6 UNI 7687)	EN 1.4301 (AISI 304)
061	Upper/Intermediate bracket	PPO reinforced with fibreglass	274	Elastic ring	EN 1.4310 (AISI 302)

ELECTRIC DATA TABLE WINNER 4N WITH OIL FILLED MOTOR

P _i		Hight Thrust	Single phase 230V				Three phase 380V				Three phase 415V			
[HP]	[kW]	[N]	P _i	I _{in}	I _a	Power factor	P _i	I _{in}	I _a	Power factor	P _i	I _{in}	I _a	Power factor
0,5	0,37	1500	0,78	3,6	10,2	0,94	0,66	1,4	5,0	0,72	0,83	1,6	5,0	0,72
0,75	0,55	1500	0,97	4,5	13,6	0,94	0,94	1,9	7,0	0,75	1,08	2,0	7,0	0,75
1	0,75	1500	1,32	6,0	18,5	0,96	1,17	2,4	10,0	0,74	1,38	2,6	10,0	0,74
1,5	1,1	1500	1,83	8,2	26,0	0,97	1,56	3,2	14,0	0,74	1,81	3,4	14,0	0,74
2	1,5	1500	2,48	11,0	34,0	0,98	2,09	4,4	17,0	0,72	2,38	4,6	17,0	0,72
3	2,2	4400	3,27	14,8	48,0	0,96	-	-	-	-	-	-	-	-
3	2,2	1500	-	-	-	-	3,00	6,0	24,0	0,76	3,39	6,2	24,0	0,76
3	2,2	5000	-	-	-	-	3,02	5,6	23,0	0,82	3,42	5,8	23,0	0,82
4	3	5000	-	-	-	-	4,05	7,7	30,0	0,80	4,49	7,8	30,0	0,80
5,5	4	5000	-	-	-	-	5,24	9,7	45,0	0,82	5,78	9,8	45,0	0,82
7,5	5,5	5000	-	-	-	-	7,37	13,5	55,0	0,83	8,23	13,8	55,0	0,83
10	7,5	4400	-	-	-	-	9,75	19,0	72,0	0,78	10,93	19,5	72,0	0,78

ELECTRIC DATA TABLE WINNER 4N WITH WATER FILLED MOTOR

P _i		Spinta	Single phase 230V				Three phase 380V				Three phase 415V			
[HP]	[kW]	[N]	P _i	I _{in}	I _a	Power factor	P _i	I _{in}	I _a	Power factor	P _i	I _{in}	I _a	Power factor
0,5	0,37	3000	0,69	3,3	12,6	0,91	0,57	1,1	5,1	0,79	0,58	1,14	5,61	0,71
0,75	0,55	3000	0,93	4,3	17,7	0,94	0,83	1,6	7,0	0,79	0,86	1,7	7,7	0,7
1	0,75	3000	1,28	5,7	22,7	0,98	1,07	2,0	10,1	0,81	1,10	2,1	10,9	0,73
1,5	1,1	3000	1,78	8,4	33,9	0,92	1,51	2,8	15,3	0,82	1,54	2,9	16,7	0,74
2	1,5	3000	2,34	10,7	41,7	0,95	2,13	3,9	19,7	0,83	2,10	4,0	21,5	0,73
3	2,2	4000	3,28	14,7	61,8	0,97	2,91	5,4	28,3	0,82	3,00	5,8	30,9	0,72
4	3	4000	-	-	-	-	3,99	7,4	39,9	0,82	4,09	7,9	43,6	0,72
5,5	4	6500	-	-	-	-	5,24	9,7	54,1	0,82	5,38	10,4	59,1	0,72
7,5	5,5	6500	-	-	-	-	7,05	12,6	73,3	0,85	7,08	12,8	80,1	0,77
10	7,5	6500	-	-	-	-	9,74	17,2	94,3	0,86	9,74	17,6	103,0	0,77

CABLES DIMENSIONING FOR MOTORS 4" (OIL)

CABLE SELECTION

example: Motor 1,1 kW - 230V Single phase - Cable lenght 120 m 4x6 mm²

Motor	HP	kW	Type of cable							
			4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
4" type Single phase 230V - 50 Hz	0.5	0.37	50	75	100	125	-	-	-	-
	0.75	0.55	38	57	76	95	152	-	-	-
	1	0.75	30	45	60	75	120	174	-	-
	1.5	1.1	22	33	43	53	85	127	210	-
	2	1.5	-	23	31	38	63	92	154	246
	3	2.2	-	-	22	28	45	67	112	180

CABLES DIMENSIONING FOR MOTORS 4" (OIL)

CABLE SELECTION

example: Motor 4 kW - 380-415V Three phase - Cable lenght 40 m 4x1,5 mm²

Motor	HP	kW	Type of cable							
			4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
4" type Three phase 380-415V - 50 Hz	0.5	0.37	240	-	-	-	-	-	-	-
	0.75	0.55	164	246	328	-	-	-	-	-
	1	0.75	133	200	266	333	-	-	-	-
	1.5	1.1	97	146	195	244	390	-	-	-
	2	1.5	72	109	145	180	290	435	-	-
	3	2.2	51	78	103	130	207	310	516	-
	4	3	41	62	83	104	167	250	416	-
	5.5	4	31	46	62	77	124	186	310	496
	7.5	5.5	-	33	45	56	90	135	225	360
	10	7.5	-	-	-	-	66	100	165	270

CABLES DIMENSIONING FOR MOTORS 4" (WATER)

CABLE SELECTION

example: Motor 0,75 kW - 230V Single phase - Cable lenght 50 m 4x2 mm²

Motor	HP	kW	Type of cable							
			4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
4" type Single phase 230V - 50 Hz	0.5	0.37	50	76	101	126	-	-	-	-
	0.75	0.55	39	58	77	97	155	-	-	-
	1	0.75	29	44	58	73	117	175	-	-
	1.5	1.1	20	30	40	50	79	119	198	-
	2	1.5	-	23	31	39	62	93	156	249
	3	2.2	-	-	23	28	45	68	113	181

CABLES DIMENSIONING FOR MOTORS 4" (WATER)

CABLE SELECTION

example: Motor 4 kW - 380-415V Three phase - Cable lenght 200 m 4x6 mm²

Motor	HP	kW	Type of cable							
			4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
4" type Three phase 380-415V - 50 Hz	0.5	0.37	325	-	-	-	-	-	-	-
	0.75	0.55	223	335	446	-	-	-	-	-
	1	0.75	167	251	335	418	-	-	-	-
	1.5	1.1	120	179	239	299	478	-	-	-
	2	1.5	86	129	172	215	343	515	-	-
	3	2.2	61	91	122	152	243	365	609	-
	4	3	45	67	89	112	179	268	446	-
	5.5	4	34	51	68	85	135	203	338	541
	7.5	5.5	-	40	53	66	106	159	266	425
	10	7.5	-	-	-	-	78	117	196	313

SPECIFIC PERFORMANCE

The specifications below qualify the curves shown in our catalogues and Data Book (see www.ebara-europe.com). All the performance curves are calculated according to ISO 9906 Attachment A.

Tolerance according to ISO 9906 Attachment A. The curves refer to an effective speed of the 50 Hz asynchronous motors.

The measurements are made with water temperature of 20°C and cinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt).

During the pump selection, consider to get a safety margin of at least 0.5 m.

The continuous curves indicate the recommended working range. The dotted curve is only a guide.

In order to prevent the risk of overheating, the pumps must not be used at a flow rate below 10% of the maximum efficiency flow rate.

During selection of the pumps, there is a safety margin of at least 1 m.

Symbols:

- Q = Volume flow rate [m^3/h]
- H = Total head [m]
- P¹ = Power absorbed by the electric line
- P² = Pump power input (shaft power)
- η = Pump efficiency
- NPSH = Net positive suction head required by the pump
- MEI = Minimum Efficiency Index

The minimum efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.



DNV BUSINESS ASSURANCE

MANAGEMENT SYSTEM CERTIFICATE

Certificato No. / Certificate No. **CERT-17819-2006-AQ-VEN-SINCERT**

Si attesta che / This is to certify that

EBARA PUMPS EUROPE S.p.A.

Sede e Stabilimento di Brendola: Via Pacinotti, 32 - 36040 Brendola (VI) - Italy
Stabilimento di Cles: Via Campo Sportivo, 30 - 38023 Cles (TN) - Italy
Filiale di Palermo: Via Don Luigi Sturzo, 181/183 - Z.I. - 90040 Carini (PA) - Italy
Filiale di Cagliari: Via del Fangario, 29 - 09122 Cagliari (CA) - Italy

è conforme ai requisiti della norma per i sistemi di gestione:
has been found to conform to the management system standard:

UNI EN ISO 9001:2008 (ISO 9001:2008)

Questa Certificazione è valida per il seguente campo applicativo:
This Certificate is valid for the following product or service ranges:

Progettazione, produzione, vendita e commercializzazione di pompe e sistemi di pompaggio
(Settore EA : 18 - 17)

Design, manufacture, sales and trade of pumps and pumping systems
(Sector EA : 18 - 17)

Data Prima Emissione/Initial Certification Date:

2006-10-13

Il Certificato è valido fino al:
This Certificate is valid until:

2015-10-10

L'audit è stato eseguito sotto la supervisione di:
The audit has been performed under the supervision of

Michele Gaiba
Lead Auditor



Luogo e Data/Place and Date:

Agrate Brianza (MB), 2012-10-02

Per l'Organismo di Certificazione:
For the Accredited Unit:



Zeno Beltrami
Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione.
Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.

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