

**EBARA**

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## SPECIFICATIONS

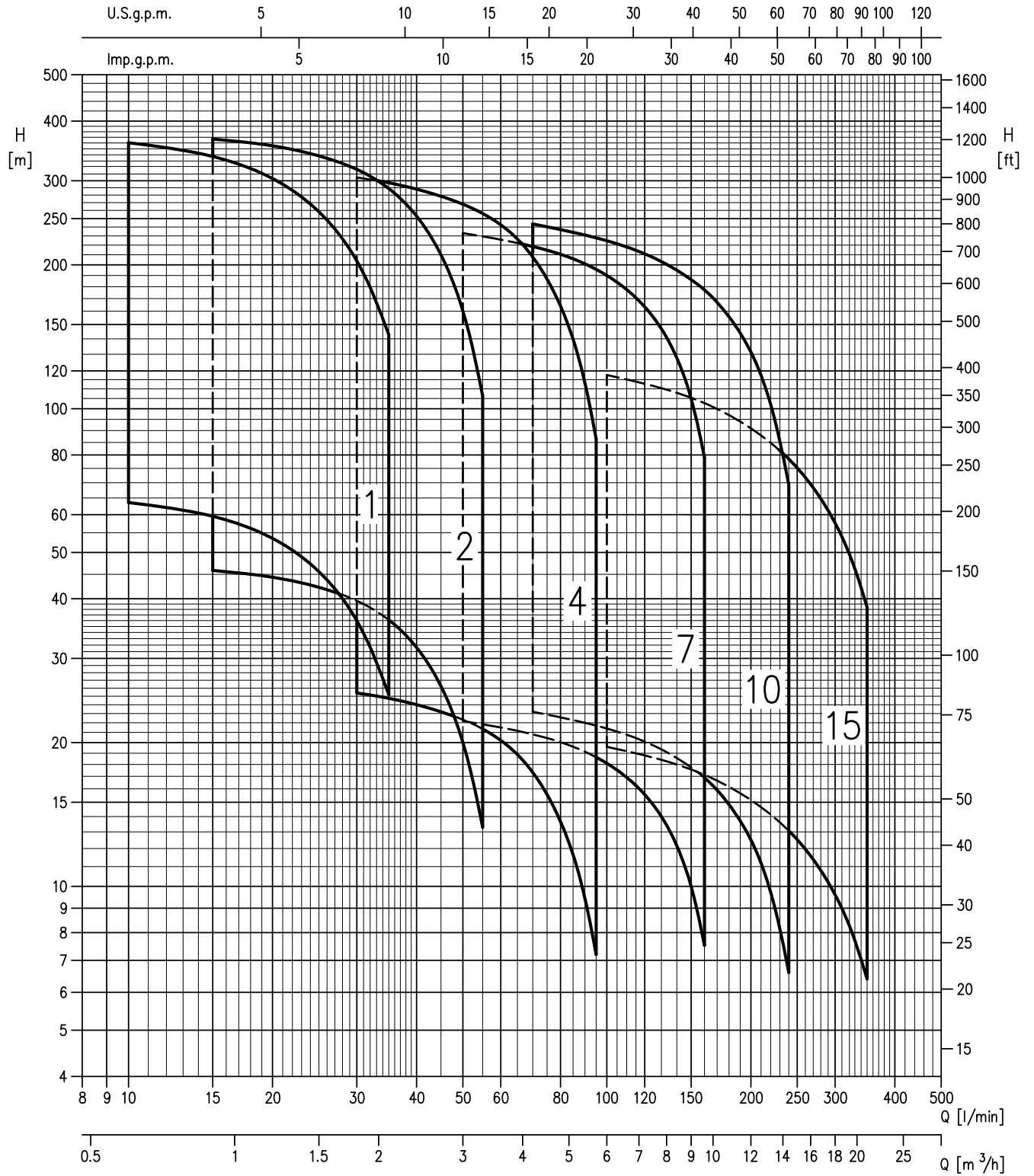
50Hz

PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	Maximum 40 (depends on maximum temperature motor)
	Sand content	Maximum : 50 parts per million
	Chlorine ion density	Maximum : 500 parts per million
Construction	Impeller	Closed centrifugal - Face clearance type
	Bearing	Sleeve type - Alumina (Ceramic) / EPDM rubber
Pipe connection	Suction	N/A
	Discharge	G1 1/4 (models 4N1, 4N2, 4N4) UNI ISO 228
		G2 (models 4N7, 4N10, 4N15) UNI ISO 228
Material	Impeller	Ixef®
	Intermediate casing	EN 1.4301 (AISI 304)
	Diffuser	PPO mod. + Glass Fiber
	Shaft	EN 1.4301 (AISI 304)
	Discharge casing	EN 1.4308 (ASTM CF8)
	Valve	EN 1.4301 (AISI 304)
	Bracket	EN 1.4308 (ASTM CF8)
Applicable standard of test		ISO 9906 - Annex A

MOTOR				
Type	Submersible oil filled (type O)		Submersible water filled (type W)	
Manufacturer	Sumoto		Franklin	
	Single phase	Three phase	Single phase	Three phase
Power rating	[kW]	0.37÷2.2	0.37÷7.5	0.37÷2.2
	[HP]	0.5÷3.0	0.5÷10	0.5÷3.0
No. of Poles	2			
Rated speed	Refer to each characteristic performance rotation speed as rated speed			
Insulation class	F		B	
Protection degree	IP 58		IP 68	
Maximum temperature [°C]	35		30	
Maximum immersion [m]	150		350	
Starts / hours	30		20	
Start type	Direct on line			
Frequency [Hz]	50 Hz			
Voltage [V]	230(+6-10%)	400(+6-10%)	230(±6%)	400(±6%)
Capacitor for start and run	Fitted in starter box	-	Fitted in starter box	-
Over load protection	Fitted in starter box	Provided by the user	Fitted in starter box	Provided by the user
Sealing liquid	Oil type: Marcol 82 (Esso)		Propylene Glycol 50% water solution	
Motor bracket	Brass		Brass with nickel plate	
Casing material	EN 1.4301 (AISI 304)			
Power cable	material	EPDM/Cross Seald Polyethylene		
	size [mm <sup>2</sup> ]	4x1.5		
	length [m]	L=1.75 (up to 2.2 kW) / L=2.5 (for 3 and 4 kW) / L=4 (for 5.5 and 7.5 kW)		
Flange mount	NEMA standard			

**SELECTION CHART**

50Hz



SELECTION CHART

50Hz

Pump type	Motor		Q=Capacity											
			l/min	0	10	15	20	25	30	35	45	55	75	95
	m <sup>3</sup> /h	0,0	0,6	0,9	1,2	1,5	1,8	2,1	2,7	3,3	4,5	5,7		
		kW	HP	H=Total Head										
4N1- 12	0,37	0,5	67	64	60	54	46	36	25	-	-	-	-	
4N1- 18	0,55	0,7	100	95	89	80	68	54	38	-	-	-	-	
4N1- 24	0,75	1,0	133	127	119	107	91	72	50	-	-	-	-	
4N1- 34	1,10	1,5	189	180	169	152	129	102	71	-	-	-	-	
4N1- 48	1,50	2,0	266	254	238	214	182	144	101	-	-	-	-	
4N1- 68	2,20	3,0	377	360	337	303	258	204	143	-	-	-	-	
4N2- 7	0,37	0,5	49	-	46	44	42	40	36	26	13	-	-	
4N2- 10	0,55	0,7	69	-	66	63	60	57	52	38	19	-	-	
4N2- 14	0,75	1,0	97	-	92	89	85	79	72	53	27	-	-	
4N2- 20	1,10	1,5	139	-	131	127	121	113	103	75	38	-	-	
4N2- 28	1,50	2,0	194	-	183	178	169	158	144	105	53	-	-	
4N2- 40	2,20	3,0	277	-	262	254	242	226	206	150	76	-	-	
4N2- 56	3,00	4,0	388	-	367	355	338	317	289	210	106	-	-	
4N4- 4	0,37	0,5	28	-	-	-	-	25	25	23	21	16	7	
4N4- 7	0,55	0,7	49	-	-	-	-	44	43	41	37	27	13	
4N4- 9	0,75	1,0	63	-	-	-	-	57	56	52	48	35	16	
4N4- 13	1,10	1,5	90	-	-	-	-	83	80	75	69	51	23	
4N4- 18	1,50	2,0	125	-	-	-	-	114	111	104	96	70	32	
4N4- 27	2,20	3,0	188	-	-	-	-	171	167	157	144	105	49	
4N4- 36	3,00	4,0	250	-	-	-	-	229	223	209	192	140	65	
4N4- 48	4,00	5,5	334	-	-	-	-	305	297	278	256	187	86	

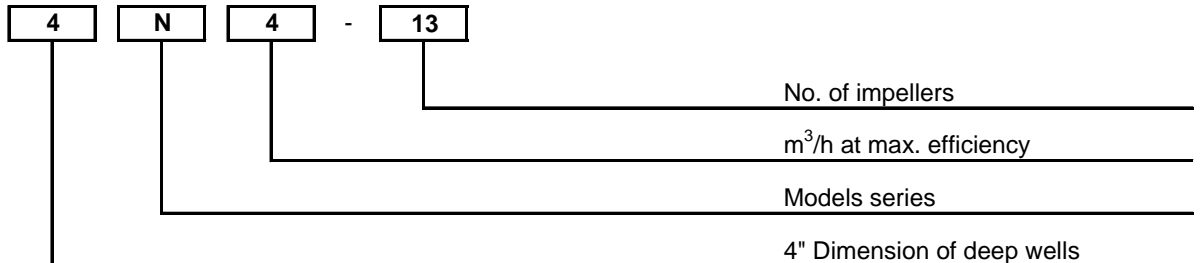
Pump type	Motor		Q=Capacity											
			l/min	0	50	70	100	130	160	200	240	280	320	350
	m <sup>3</sup> /h	0,0	3,0	4,2	6,0	7,8	9,6	12,0	14,4	16,8	19,2	21,0		
		kW	HP	H=Total Head										
4N7- 4	0,55	0,7	25	22	21	18	14	8	-	-	-	-	-	
4N7- 6	0,75	1,0	37	33	31	27	21	11	-	-	-	-	-	
4N7- 8	1,10	1,5	50	44	42	36	28	15	-	-	-	-	-	
4N7- 12	1,50	2,0	74	67	62	54	42	23	-	-	-	-	-	
4N7- 17	2,20	3,0	105	94	88	77	60	32	-	-	-	-	-	
4N7- 23	3,00	4,0	143	128	120	104	81	43	-	-	-	-	-	
4N7- 30	4,00	5,5	186	167	156	136	105	56	-	-	-	-	-	
4N7- 42	5,50	7,5	260	233	219	190	147	79	-	-	-	-	-	
4N10- 4	0,75	1,0	26	-	23	21	19	17	13	7	-	-	-	
4N10- 6	1,10	1,5	39	-	35	32	29	25	19	10	-	-	-	
4N10- 8	1,50	2,0	52	-	46	43	39	34	25	13	-	-	-	
4N10- 12	2,20	3,0	78	-	70	64	58	51	38	20	-	-	-	
4N10- 17	3,00	4,0	111	-	99	91	82	72	53	28	-	-	-	
4N10- 23	4,00	5,5	150	-	133	123	111	97	72	38	-	-	-	
4N10- 30	5,50	7,5	195	-	174	161	145	127	94	50	-	-	-	
4N10- 42	7,50	10,0	273	-	244	225	203	177	131	69	-	-	-	
4N15- 4	1,10	1,5	22	-	-	20	18	17	15	13	11	8	6	
4N15- 6	1,50	2,0	33	-	-	29	28	26	23	20	16	13	10	
4N15- 9	2,20	3,0	50	-	-	44	41	39	34	29	24	19	14	
4N15- 13	3,00	4,0	72	-	-	64	60	56	49	43	35	27	21	
4N15- 17	4,00	5,5	94	-	-	83	78	73	64	56	46	36	27	
4N15- 24	5,50	7,5	133	-	-	118	110	103	91	78	65	50	38	



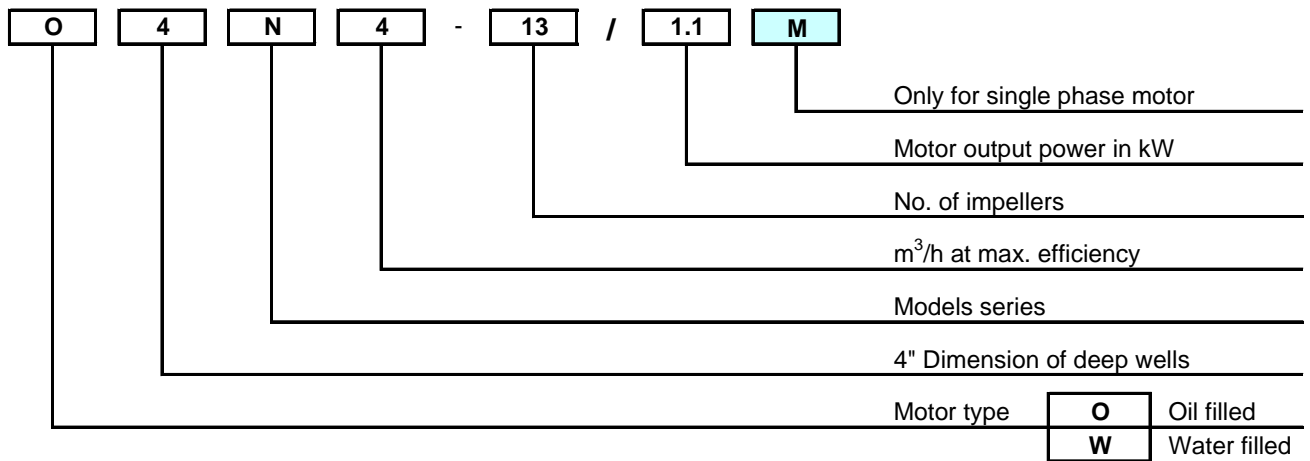
**TYPE KEY**

50Hz

EXAMPLE ( pump without motor ) :



EXAMPLE ( pump with motor ) :

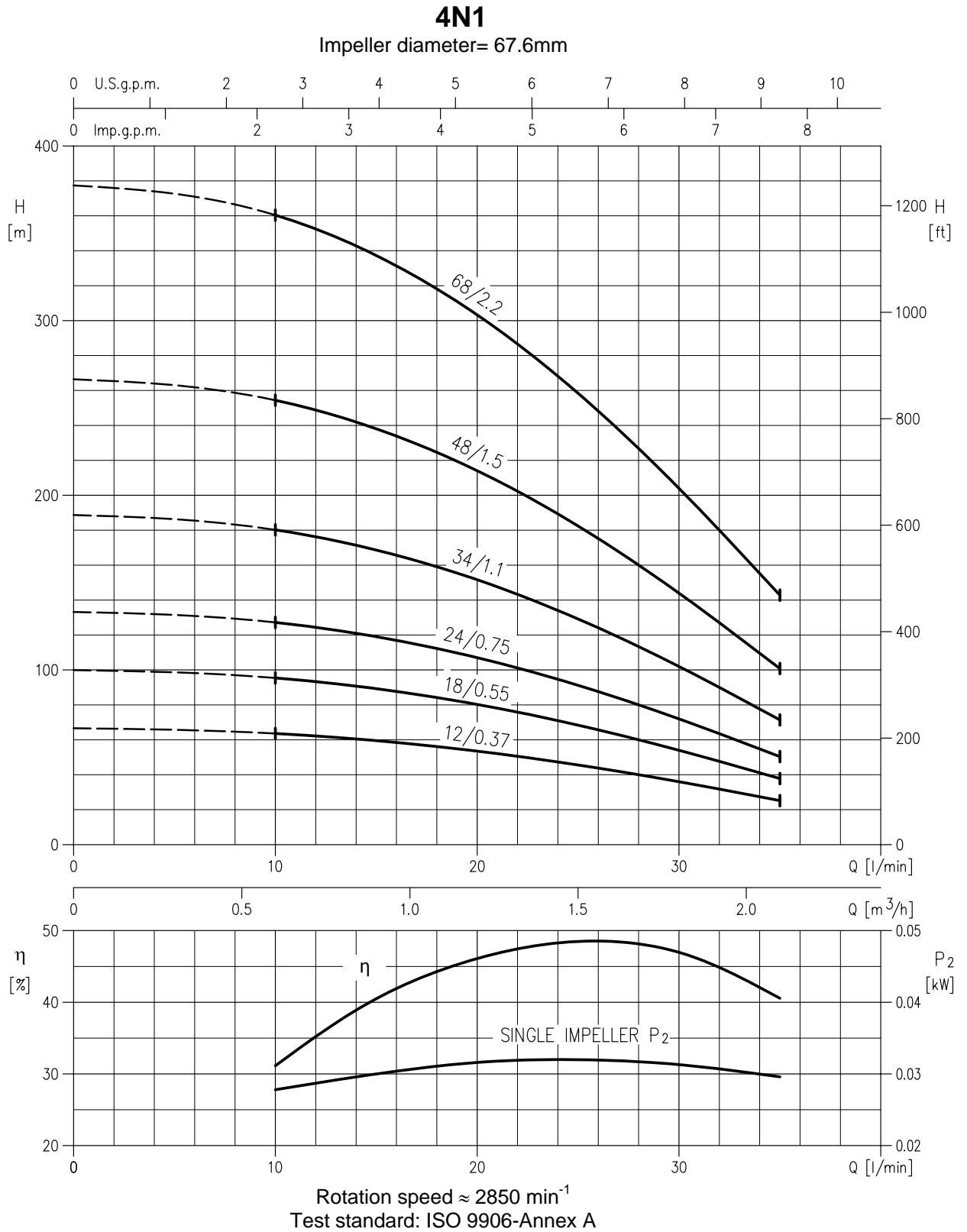


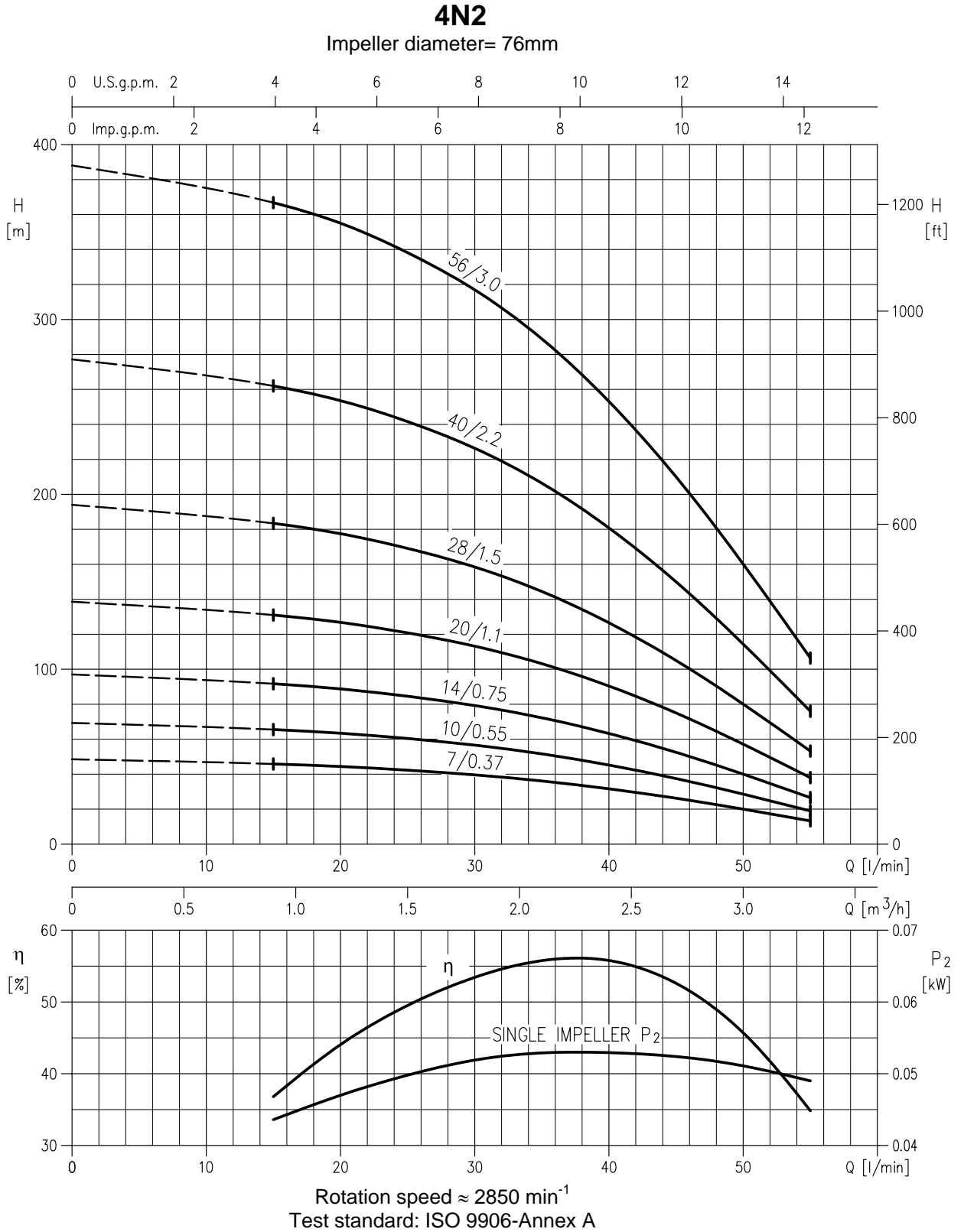
**PERFORMANCE CURVES**

The specifications below qualify the curves shown on the following pages.

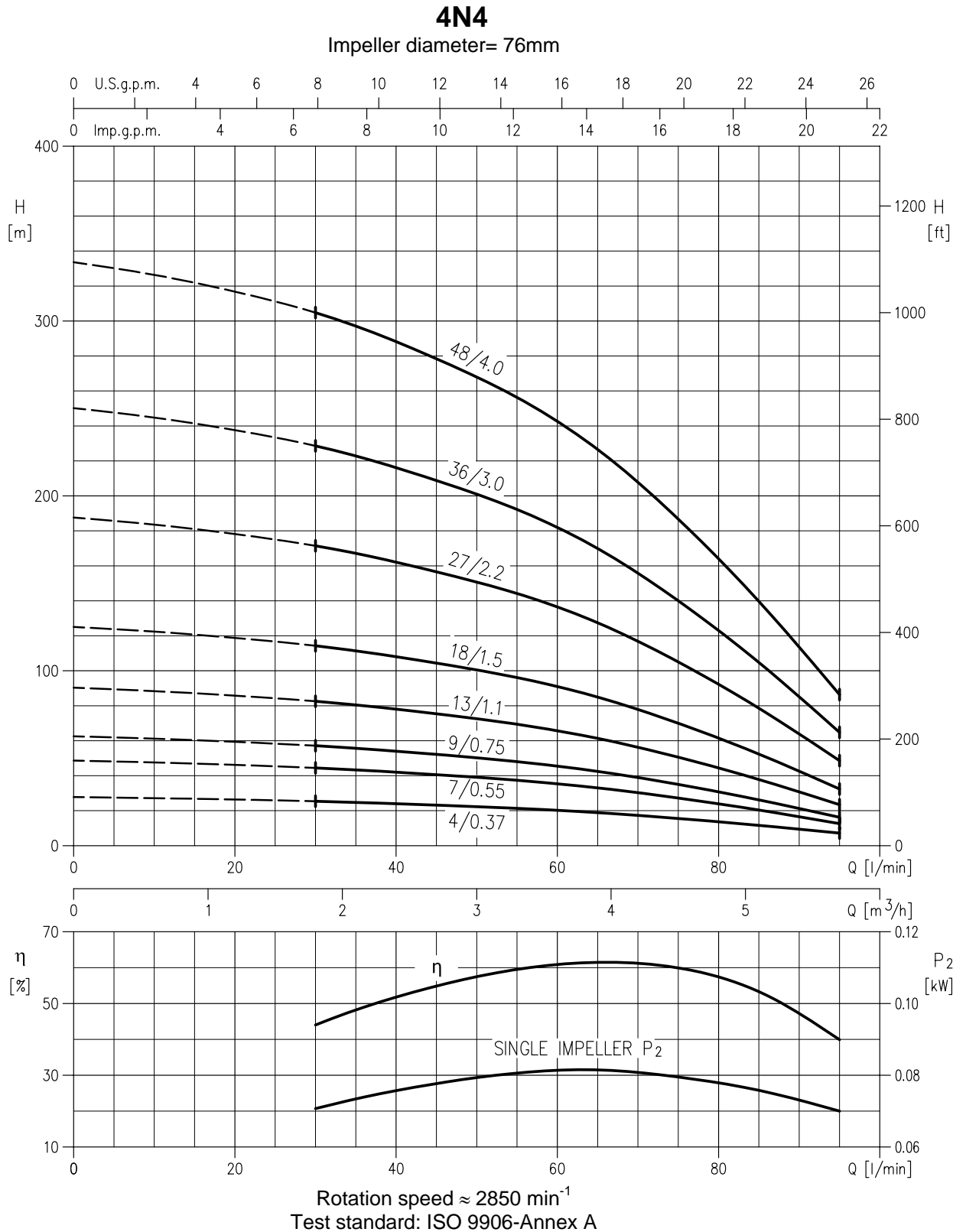
- ◆ Tolerances according to ISO 9906 Annex A
- ◆ The curves refer to effective speed of asynchronous motors at 50 Hz
- ◆ Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of  $\nu = 1 \text{ mm}^2/\text{s}$  (1 cSt)
- ◆ The continuous curves indicate the recommended working range. The dotted curve is only a guide.
- ◆ In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.
- ◆ Symbols explanation:

Q = volume flow rate  
 H = total head  
 $P_2$  = pump power input (shaft power)  
 $\eta$  = pump efficiency



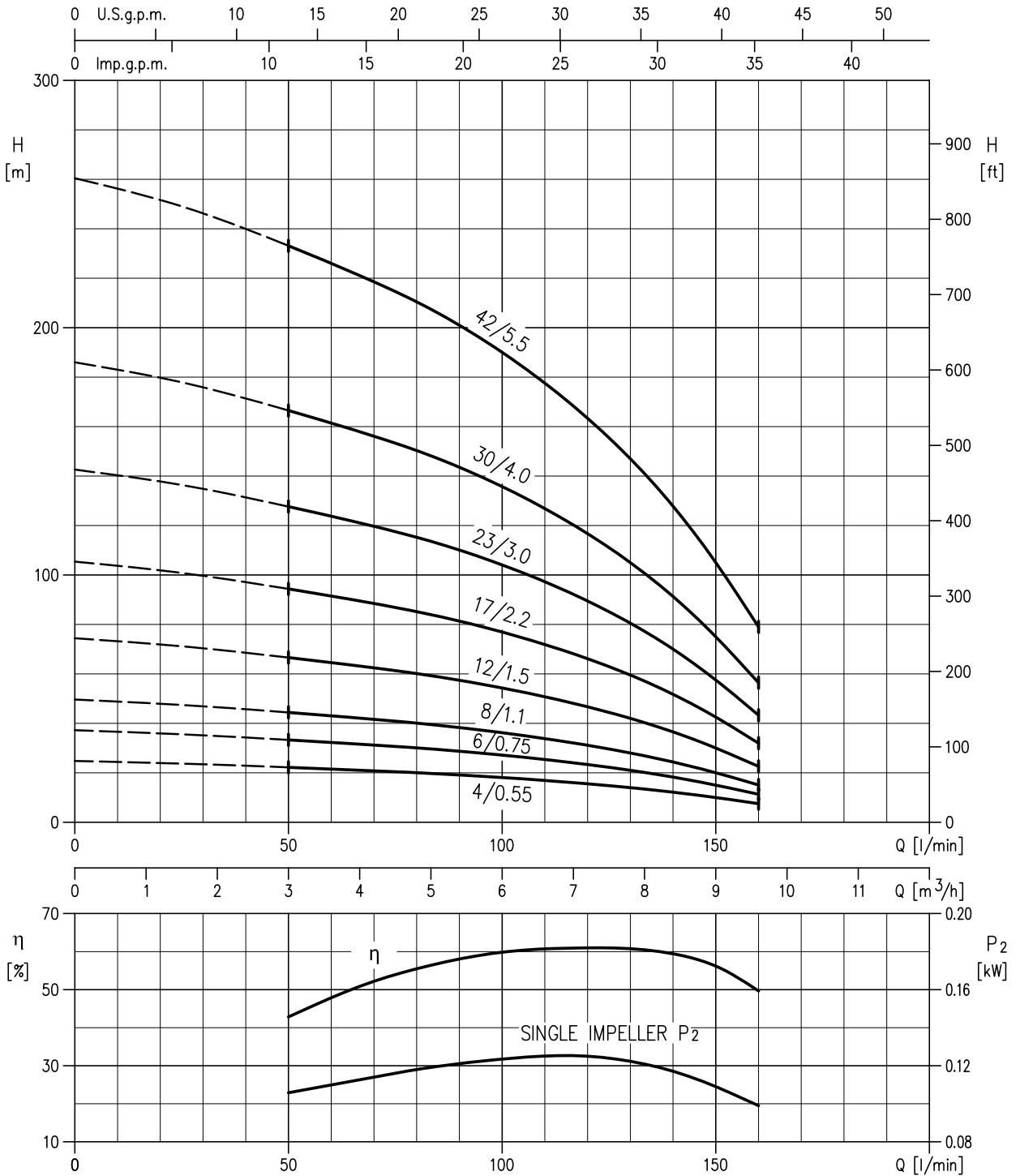






**4N7**

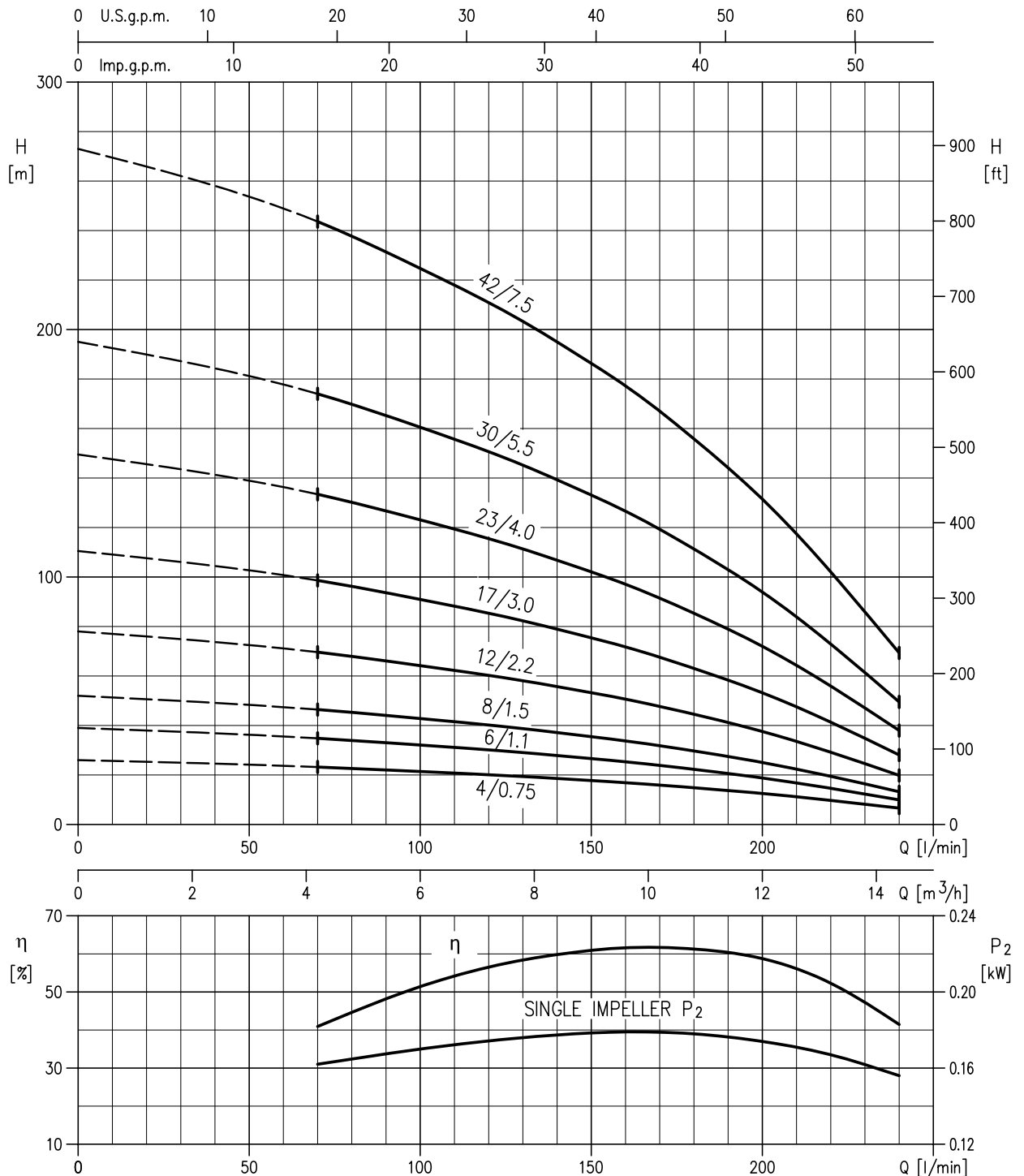
Impeller diameter= 74.2mm



Rotation speed  $\approx 2850 \text{ min}^{-1}$   
 Test standard: ISO 9906-Annex A

**4N10**

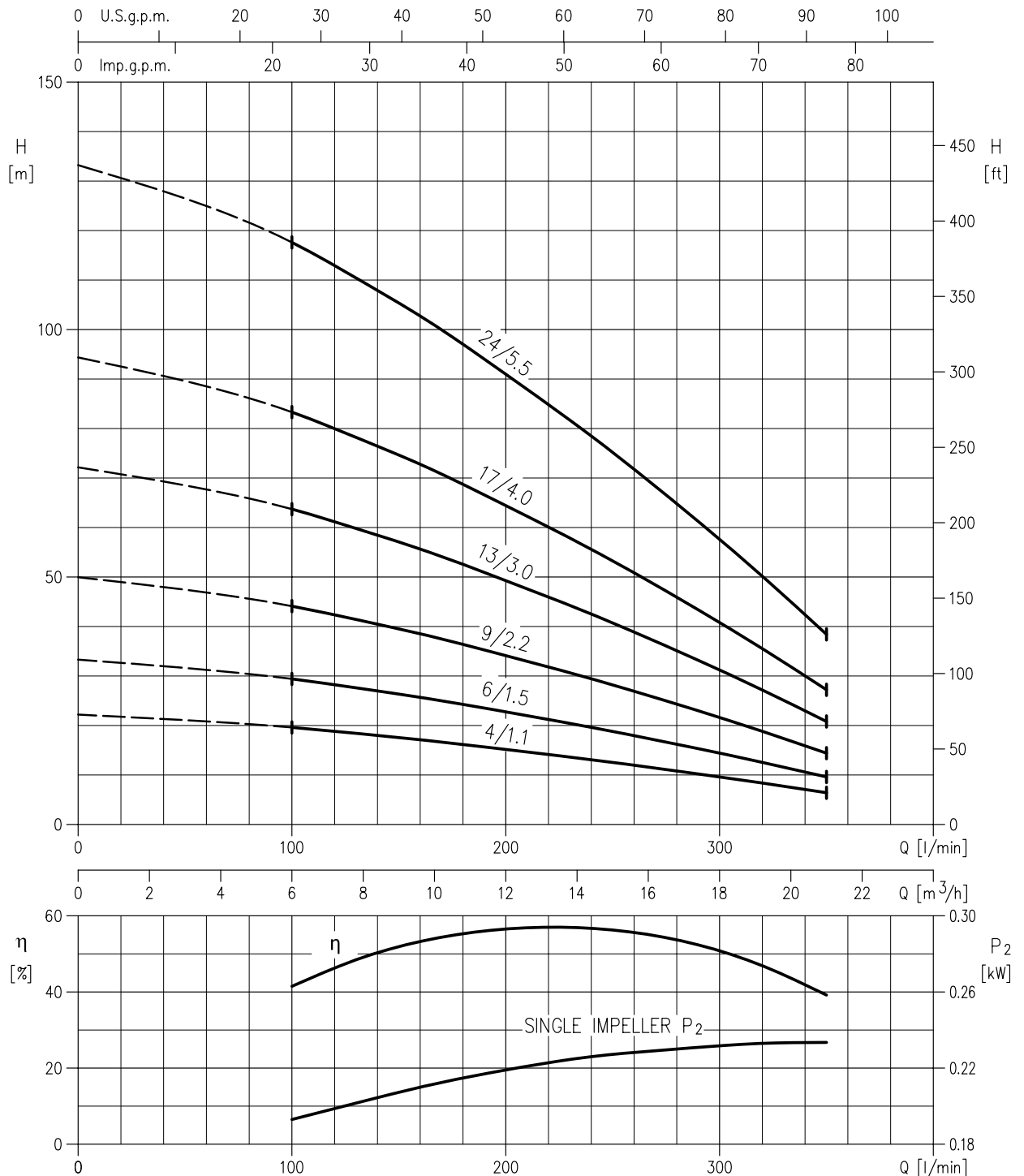
Impeller diameter= 72mm



Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906-Annex A

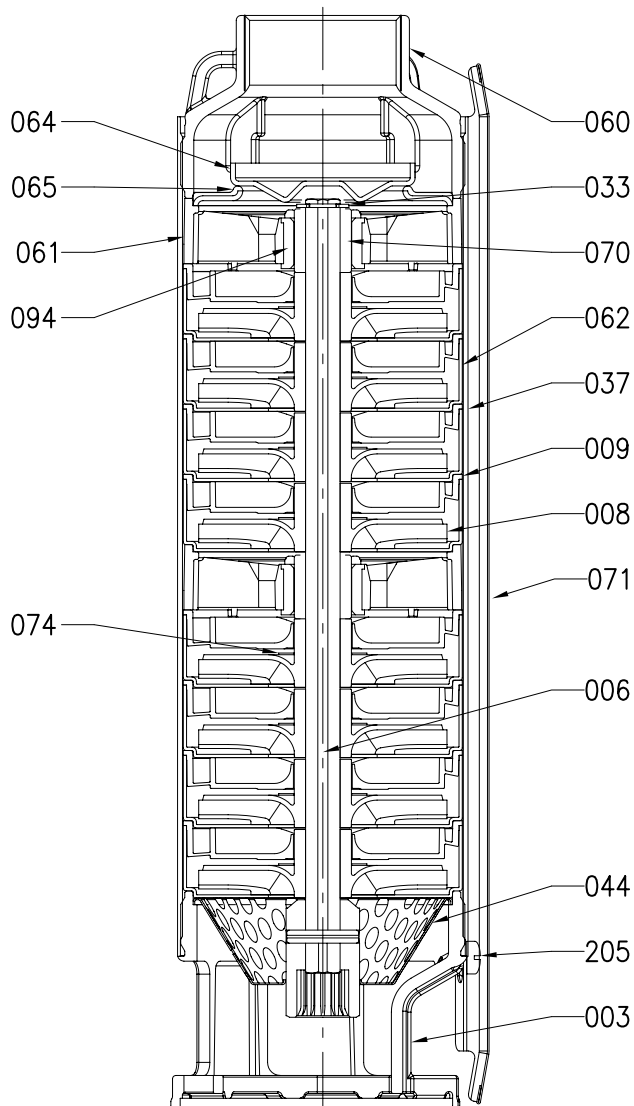
**4N15**

Impeller diameter= 75.5mm

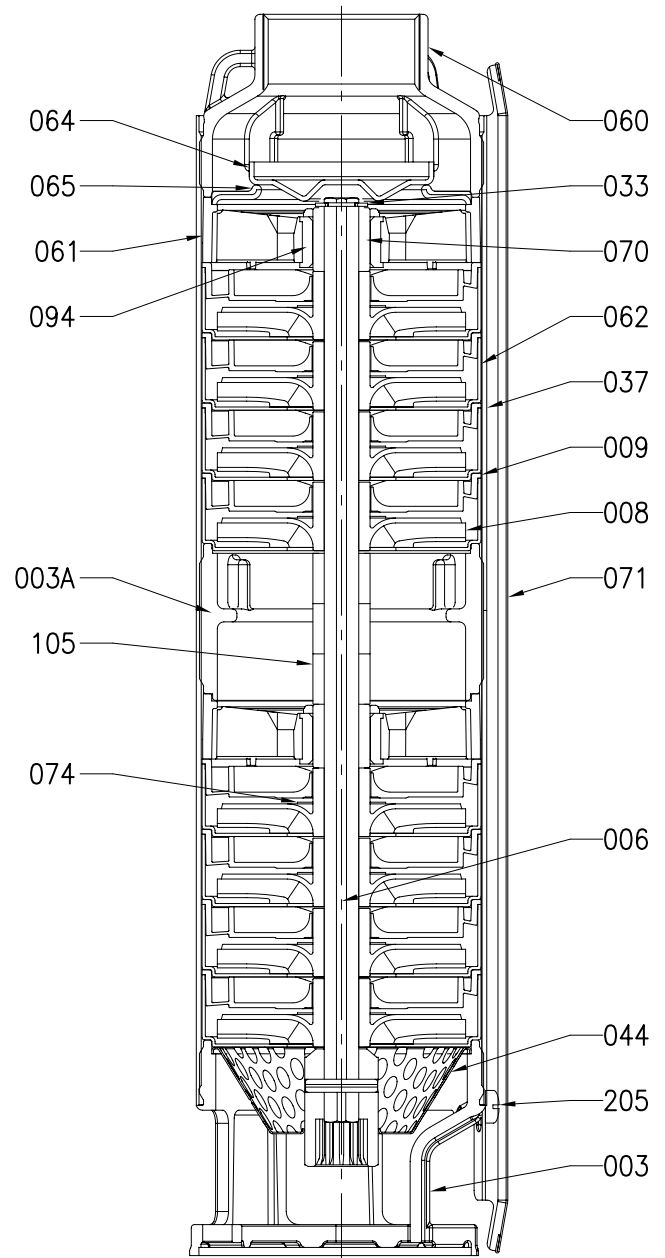


Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906-Annex A

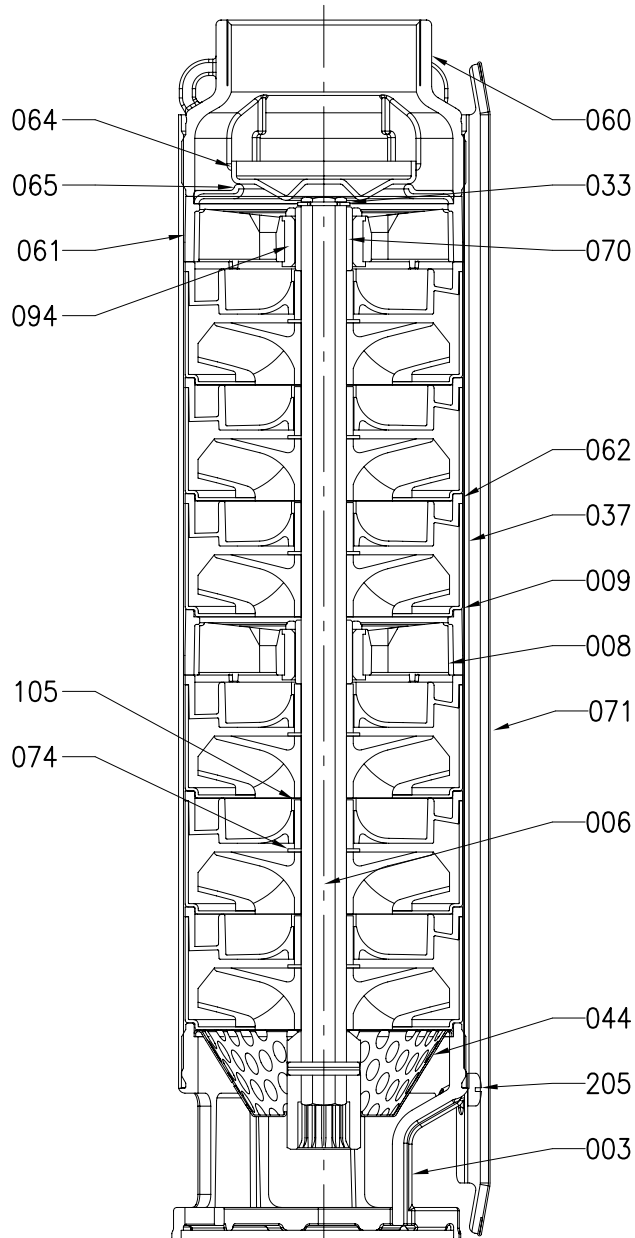
**SINGLE PUMP CASING**



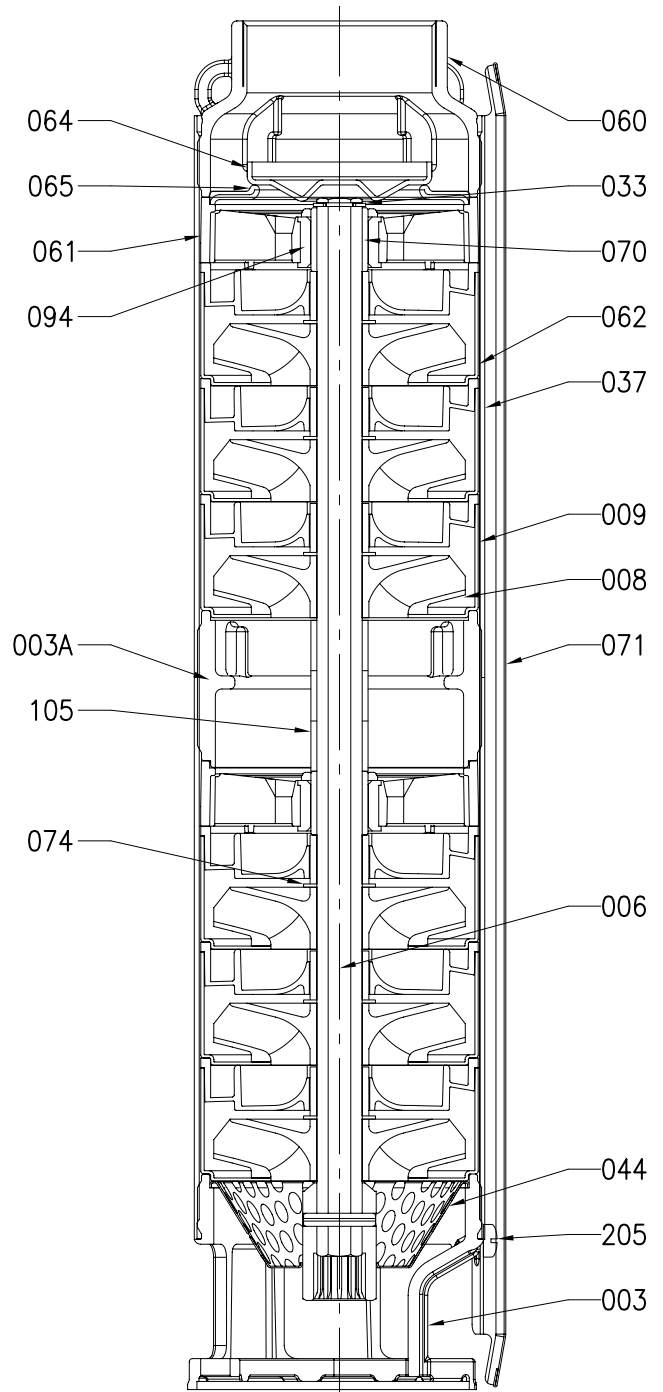
**DOUBLE PUMP CASING**



**SINGLE PUMP CASING**



**DOUBLE PUMP CASING**



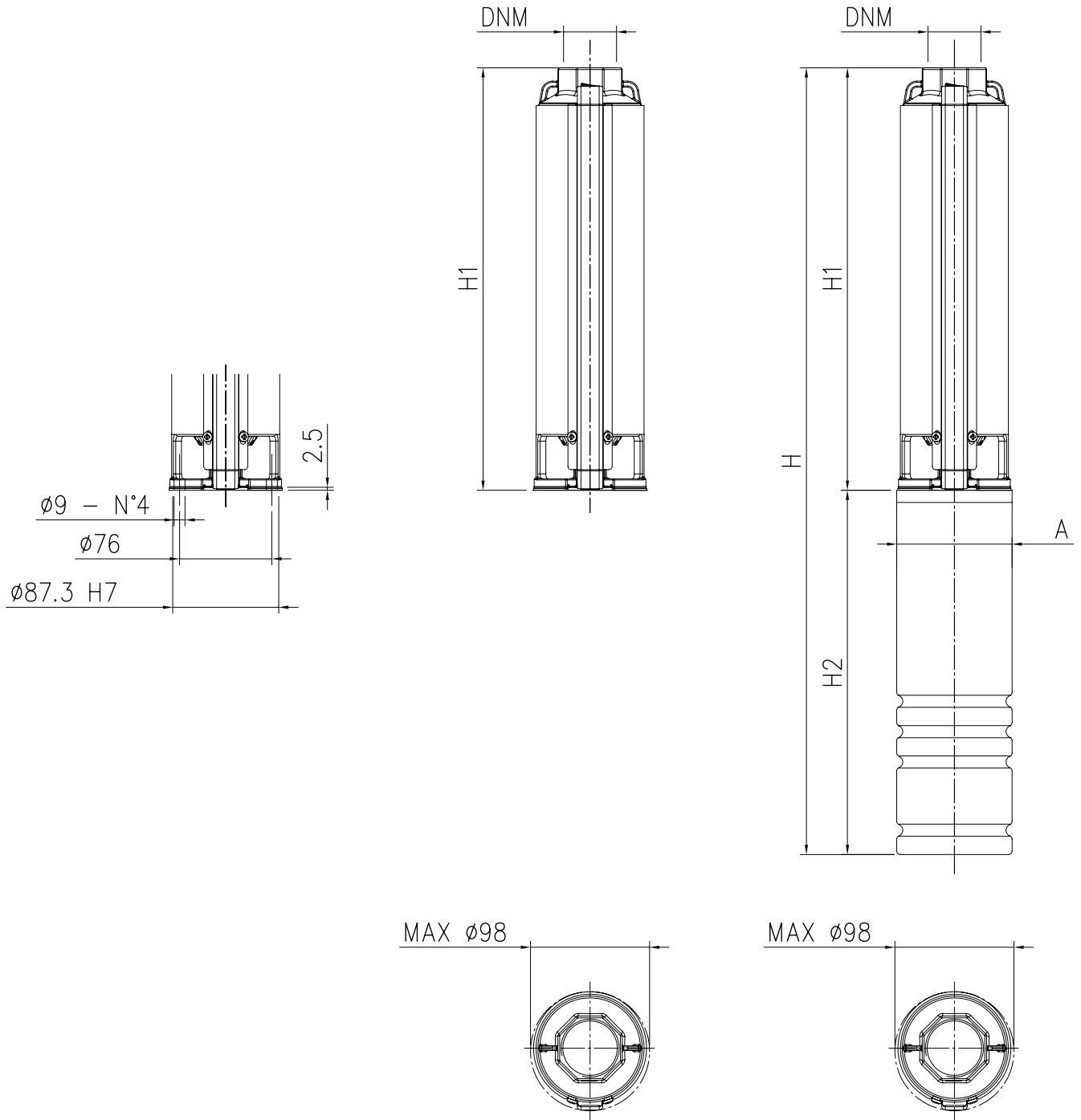
Pos.	PART.NAME	MATERIAL	Q.TY
003	Bracket	EN 1.4308 (ASTM CF8)	1
003A	Join ring	EN 1.4308 (ASTM CF8)	[*]
006	Pump shaft with coupling	EN 1.4401 (AISI 304)	1
008	Impeller	Ixef <sup>®</sup>	[*]
009	Diffuser	PPO mod. + Glass Fiber	[*]
033	Elastic Ring	EN 1.4301 (AISI 304)	1
037	Outer casing	EN 1.4301 (AISI 304)	[*]
044	Strainer	EN 1.4301 (AISI 304)	1
060	Discharge casing	EN 1.4308 (ASTM CF8)	1
061	Upper / Intermediate bracket	PPO mod. + Glass Fiber	[*]
062	Stage housing	EN 1.4301 (AISI 304)	[*]
064	Valve	EN 1.4301 (AISI 304)	1
065	Valve seat	EN 1.4301 (AISI 304) + EPDM Rubber	1
070	Shaft sleeve bearing	Alumina (Ceramic)	[*]
071	Cable guard	EN 1.4301 (AISI 304)	1
074	Thrust washer	EN 1.4301 (AISI 304)	[*]
094	Bearing	EPDM Rubber	[*]
105	Spacer	PPO mod. + Glass Fiber	[*]
205	Screw (M4 x 6 UNI 7687)	EN 1.4301 (AISI 304)	2

[\*] See table pag.303

Pump type	Quantity for model									
	N°003A	N°008	N°009	N°037	N°061	N°062	N°070	N°074	N°094	N°105
4N1- 12	-	12	12	1	1	12	1	12	1	-
4N1- 18	-	18	18	1	1	18	1	18	1	-
4N1- 24	-	24	24	1	1	24	1	24	1	-
4N1- 34	-	34	34	1	1	34	1	34	1	-
4N1- 48 [*]	1	48	48	2	2	48	2	48	2	1
4N1- 68 [*]	1	68	68	2	2	68	2	68	2	1
4N2- 7	-	7	7	1	1	7	1	7	1	-
4N2- 10	-	10	10	1	1	10	1	10	1	-
4N2- 14	-	14	14	1	1	14	1	14	1	-
4N2- 20	-	20	20	1	1	20	1	20	1	-
4N2- 28	-	28	28	1	1	28	1	28	1	-
4N2- 40 [*]	1	40	40	2	2	40	2	40	2	1
4N2- 56 [*]	1	56	56	2	2	56	2	56	2	1
4N4- 4	-	4	4	1	1	4	1	4	1	-
4N4- 7	-	7	7	1	1	7	1	7	1	-
4N4- 9	-	9	9	1	1	9	1	9	1	-
4N4- 13	-	13	13	1	1	13	1	13	1	-
4N4- 18	-	18	18	1	1	18	1	18	1	-
4N4- 27	-	27	27	1	1	27	1	27	1	-
4N4- 36 [*]	1	36	36	2	2	36	2	36	2	1
4N4- 48 [*]	1	48	48	2	2	48	2	48	2	1
4N7- 4	-	4	4	1	1	4	1	4	1	4
4N7- 6	-	6	6	1	1	6	1	6	1	6
4N7- 8	-	8	8	1	1	8	1	8	1	8
4N7- 12	-	12	12	1	1	12	1	12	1	12
4N7- 17	-	17	17	1	1	17	1	17	1	17
4N7- 23	-	23	23	1	1	23	1	23	1	23
4N7- 30 [*]	1	30	30	2	2	30	2	30	2	33
4N7- 42 [*]	1	42	42	2	2	42	2	42	2	45
4N10- 4	-	4	4	1	1	4	1	4	1	4
4N10- 6	-	6	6	1	1	6	1	6	1	6
4N10- 8	-	8	8	1	1	8	1	8	1	8
4N10- 12	-	12	12	1	1	12	1	12	1	12
4N10- 17	-	17	17	1	1	17	1	17	1	17
4N10- 23	-	23	23	1	1	23	1	23	1	23
4N10- 30 [*]	1	30	30	2	2	30	2	30	2	33
4N10- 42 [*]	1	42	42	2	2	42	2	42	2	45
4N15- 4	-	4	4	1	1	4	1	-	1	12
4N15- 6	-	6	6	1	1	6	1	-	1	18
4N15- 9	-	9	9	1	1	9	1	-	1	27
4N15- 13	-	13	13	1	1	13	1	-	1	39
4N15- 17	-	17	17	1	1	17	1	-	1	51
4N15- 24 [*]	1	24	24	2	2	24	2	-	2	72

[\*] See drawing pag. 300 - pag. 301



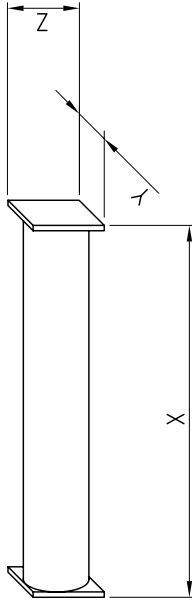


Pump can be coupled with NEMA standard 4" motor

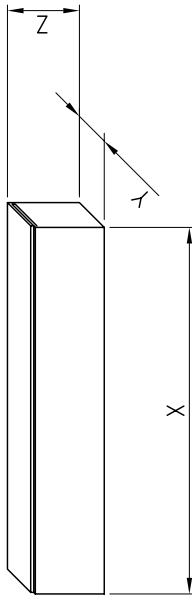
Pump type	Power		Pump without motor		Pump with oil filled motor						Pump with water filled motor					
					single phase			three phase			single phase			three phase		
	kW	HP	H1 [mm]	DNM	A [mm]	H2 [mm]	H [mm]	A [mm]	H2 [mm]	H [mm]	A [mm]	H2 [mm]	H [mm]	A [mm]	H2 [mm]	H [mm]
4N1- 12	0,37	0,5	332	G 1 1/4	97	325	657	97	304	636	97	242	574	97	223	555
4N1- 18	0,55	0,75	437	G 1 1/4	97	325	762	97	325	762	97	271	708	97	242	679
4N1- 24	0,75	1	542	G 1 1/4	97	350	892	97	325	867	97	299	841	97	271	813
4N1- 34	1,1	1,5	717	G 1 1/4	97	385	1102	97	350	1067	97	356	1073	97	299	1016
4N1- 48	1,5	2	1028	G 1 1/4	97	420	1448	97	385	1413	97	384	1412	97	327	1355
4N1- 68	2,2	3	1378	G 1 1/4	97	470	1848	97	420	1798	97	460	1838	97	356	1734
4N2- 7	0,37	0,5	245	G 1 1/4	97	325	570	97	304	549	97	242	487	97	223	468
4N2- 10	0,55	0,75	297	G 1 1/4	97	325	622	97	325	622	97	271	568	97	242	539
4N2- 14	0,75	1	367	G 1 1/4	97	350	717	97	325	692	97	299	666	97	271	638
4N2- 20	1,1	1,5	472	G 1 1/4	97	385	857	97	350	822	97	356	828	97	299	771
4N2- 28	1,5	2	612	G 1 1/4	97	420	1032	97	385	997	97	384	996	97	327	939
4N2- 40	2,2	3	888	G 1 1/4	97	470	1358	97	420	1308	97	460	1348	97	356	1244
4N2- 56	3	4	1168	G 1 1/4	97	-	-	97	544	1712	97	-	-	97	423	1591
4N4- 4	0,37	0,5	208	G 1 1/4	97	325	533	97	304	512	97	242	450	97	223	431
4N4- 7	0,55	0,75	273	G 1 1/4	97	325	598	97	325	598	97	271	544	97	242	515
4N4- 9	0,75	1	316	G 1 1/4	97	350	666	97	325	641	97	299	615	97	271	587
4N4- 13	1,1	1,5	402	G 1 1/4	97	385	787	97	350	752	97	356	758	97	299	701
4N4- 18	1,5	2	509	G 1 1/4	97	420	929	97	385	894	97	384	893	97	327	836
4N4- 27	2,2	3	703	G 1 1/4	97	470	1173	97	420	1123	97	460	1163	97	356	1059
4N4- 36	3	4	962	G 1 1/4	97	-	-	97	544	1506	97	-	-	97	423	1385
4N4- 48	4	5,5	1220	G 1 1/4	97	-	-	97	574	1794	97	-	-	97	583	1803
4N7- 4	0,55	0,75	262	G 2	97	325	587	97	325	587	97	271	533	97	242	504
4N7- 6	0,75	1	333	G 2	97	350	683	97	325	658	97	299	632	97	271	604
4N7- 8	1,1	1,5	404	G 2	97	385	789	97	350	754	97	356	760	97	299	703
4N7- 12	1,5	2	546	G 2	97	420	966	97	385	931	97	384	930	97	327	873
4N7- 17	2,2	3	724	G 2	97	470	1194	97	420	1144	97	460	1184	97	356	1080
4N7- 23	3	4	937	G 2	97	-	-	97	544	1481	97	-	-	97	423	1360
4N7- 30	4	5,5	1251	G 2	97	-	-	97	574	1825	97	-	-	97	583	1834
4N7- 42	5,5	7,5	1677	G 2	97	-	-	97	644	2321	97	-	-	97	698	2375
4N10- 4	0,75	1	262	G 2	97	350	612	97	325	587	97	299	561	97	271	533
4N10- 6	1,1	1,5	333	G 2	97	385	718	97	350	683	97	356	689	97	299	632
4N10- 8	1,5	2	404	G 2	97	420	824	97	385	789	97	384	788	97	327	731
4N10- 12	2,2	3	546	G 2	97	470	1016	97	420	966	97	460	1006	97	356	902
4N10- 17	3	4	724	G 2	97	-	-	97	544	1268	97	-	-	97	423	1147
4N10- 23	4	5,5	937	G 2	97	-	-	97	574	1511	97	-	-	97	583	1520
4N10- 30	5,5	7,5	1251	G 2	97	-	-	97	644	1895	97	-	-	97	698	1949
4N10- 42	7,5	10	1677	G 2	97	-	-	97	805	2482	97	-	-	97	774	2451
4N15- 4	1,1	1,5	440	G 2	97	385	825	97	350	790	97	356	796	97	299	739
4N15- 6	1,5	2	600	G 2	97	420	1020	97	385	985	97	384	984	97	327	927
4N15- 9	2,2	3	840	G 2	97	470	1310	97	420	1260	97	460	1300	97	356	1196
4N15- 13	3	4	1160	G 2	97	-	-	97	544	1704	97	-	-	97	423	1583
4N15- 17	4	5,5	1480	G 2	97	-	-	97	574	2054	97	-	-	97	583	2063
4N15- 24	5,5	7,5	2106	G 2	97	-	-	97	644	2750	97	-	-	97	698	2804



type 2



type 1



Pump type	Pump without motor				Pump with oil filled motor				Pump with water filled motor				
	X [mm]	Y [mm]	Z [mm]	Weight [Kg]	X [mm]	Y [mm]	Z [mm]	Weight [Kg]	X [mm]	Y [mm]	Z [mm]	Weight [Kg]	type
4N1-12	350	100	100	3.8	800	100	100	10.8	640	100	100	10.3	1
4N1-18	495	100	100	4.8	800	100	100	12.4	800	100	100	11.8	1
4N1-24	640	100	100	5.9	1035	100	100	14.6	1035	100	100	13.5	1
4N1-34	800	100	100	8.0	1300	100	100	18.3	1300	100	100	16.7	1
4N1-48	1035	100	100	11.8	1530	100	100	23.8	1530	100	100	22.2	1
4N1-68	1300	100	100	15.0	2430	100	100	29.2	2430	100	100	27.0	2
4N2-7	350	100	100	3.8	640	100	100	10.8	640	100	100	10.3	1
4N2-10	350	100	100	4.1	640	100	100	11.7	800	100	100	11.1	1
4N2-14	495	100	100	4.4	800	100	100	13.1	800	100	100	12.0	1
4N2-20	495	100	100	5.3	1035	100	100	15.6	1035	100	100	14.0	1
4N2-28	640	100	100	6.7	1035	100	100	18.7	1035	100	100	17.1	1
4N2-40	1035	100	100	10.0	1530	100	100	24.2	1300	100	100	22.0	1
4N2-56	1300	100	100	13.0	-	-	-	-	1810	100	100	25.8	2
4N4-4	350	100	100	2.4	640	100	100	9.4	640	100	100	8.9	1
4N4-7	350	100	100	3.0	640	100	100	10.6	640	100	100	10.0	1
4N4-9	350	100	100	3.4	800	100	100	12.1	640	100	100	11.0	1
4N4-13	495	100	100	4.3	800	100	100	14.6	800	100	100	13.0	1
4N4-18	640	100	100	5.4	1035	100	100	17.4	1035	100	100	15.8	1
4N4-27	800	100	100	7.3	1530	100	100	21.5	1300	100	100	19.3	1
4N4-36	1035	100	100	11.0	-	-	-	-	1530	100	100	23.8	1
4N4-48	1300	100	100	14.0	-	-	-	-	1810	100	100	29.3	2
4N7-4	350	100	100	2.9	640	100	100	10.5	640	100	100	10.5	1
4N7-6	350	100	100	3.6	800	100	100	12.3	800	100	100	12.3	1
4N7-8	495	100	100	4.3	1035	100	100	14.6	800	100	100	14.7	1
4N7-12	640	100	100	5.5	1035	100	100	17.5	1035	100	100	17.5	1
4N7-17	800	100	100	7.1	1300	100	100	21.3	1300	100	100	19.9	1
4N7-23	1035	100	100	9.0	-	-	-	-	1530	100	100	24.3	1
4N7-30	1300	100	100	12.8	-	-	-	-	2430	100	100	31.4	2
4N7-42	1810	100	100	18.5	-	-	-	-	3000	100	100	43.5	2
4N10-4	350	100	100	3.0	640	100	100	11.7	640	100	100	10.6	1
4N10-6	350	100	100	3.6	800	100	100	13.9	800	100	100	12.3	1
4N10-8	495	100	100	4.3	1035	100	100	16.3	800	100	100	14.7	1
4N10-12	640	100	100	5.6	1035	100	100	19.8	1035	100	100	17.6	1
4N10-17	800	100	100	7.1	-	-	-	-	1300	100	100	19.9	1
4N10-23	1035	100	100	9.1	-	-	-	-	1530	100	100	24.4	1
4N10-30	1300	100	100	12.8	-	-	-	-	2430	100	100	31.4	2
4N10-42	1810	100	100	16.6	-	-	-	-	3000	100	100	43.6	2
4N15-4	640	100	100	4.1	1035	100	100	14.4	1035	100	100	12.8	1
4N15-6	800	100	100	5.5	1300	100	100	17.5	1300	100	100	15.9	1
4N15-9	1035	100	100	7.5	1530	100	100	21.7	1530	100	100	20.1	1
4N15-13	1300	100	100	10.0	-	-	-	-	1810	100	100	22.8	2
4N15-17	1810	100	100	13.0	-	-	-	-	2430	100	100	28.3	2
4N15-24	2430	100	100	18.0	-	-	-	-	3000	100	100	36.6	2



**oil filled motor**

Output power		Single phase						Three phase					
[kW]	HP	Input [kW]	Volt [V]	IN [A]	IA [A]	Efficiency [%]	Power factor	Input [kW]	Volt [V]	IN [A]	IA [A]	Efficiency [%]	Power factor
0,37	0,5	0,61	230V	4,5	13,6	61	0,94	0,60	400V	2	7	62	0,75
0,55	0,75	0,90		4,5	13,6	61	0,94	0,89		2	7	62	0,75
0,75	1	1,19		6	18,5	63	0,96	1,12		2,6	10	67	0,74
1,1	1,5	1,64		8,2	26	67	0,97	1,64		3,4	14	67	0,74
1,5	2	2,31		11	34	65	0,98	2,21		4,6	17	68	0,72
2,2	3	3,24		14,8	48	68	0,96	2,97		6,2	24	74	0,76
3	4	/		/	/	/	/	4,00		8	34	75	0,78
4	5,5	/		/	/	/	/	5,33		10,2	47	75	0,78
5,5	7,5	/		/	/	/	/	7,24		14,4	58	76	0,79
7,5	10	/		/	/	/	/	10,42		19,5	72	72	0,78

**water filled motor**

Output power		Single phase						Three phase					
[kW]	HP	Input [kW]	Volt [V]	IN [A]	IA [A]	Efficiency [%]	Power factor	Input [kW]	Volt [V]	IN [A]	IA [A]	Efficiency [%]	Power factor
0,37	0,5	0,70	230V	3,4	11,2	53	0,93	0,56	400V	1,1	4,7	66	0,70
0,55	0,75	1,00		4,3	16,1	63	0,94	0,96		1,6	6,4	67	0,75
0,75	1	1,25		5,7	21,1	60	0,98	1,09		2,1	9,3	69	0,75
1,1	1,5	1,77		8,6	31,5	62	0,94	1,51		3	14,5	73	0,76
1,5	2	2,27		10,6	35,4	66	0,95	2,05		4	19,2	73	0,76
2,2	3	3,33		15,5	56,7	66	0,97	2,93		5,9	28,9	75	0,75
3	4	/		/	/	/	/	3,95		7,8	41,6	76	0,75
4	5,5	/		/	/	/	/	5,13		10	58,0	78	0,78
5,5	7,5	/		/	/	/	/	7,24		13,7	76,0	76	0,79
7,5	10	/		/	/	/	/	10,14		18,4	102,0	74	0,79

EXAMPLE : MOTOR 0.75 kW 230 V CABLE LENGTH 70 m - 4x2,5 mm<sup>2</sup>

**Single phase**

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)						
kW	HP	4x1	4x1,5	4x2,5	4x4	4x6	4x10	4x16
0,37	0,5	50	75	128	-	-	-	-
0,55	0,75	38	57	95	152	-	-	-
0,75	1	30	45	75	120	174	-	-
1,1	1,5	22	33	53	85	127	210	-
1,5	2	-	23	38	63	92	154	246
2,2	3	-	-	28	45	67	112	180

**Three phase**

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)						
kW	HP	4x1	4x1,5	4x2,5	4x4	4x6	4x10	4x16
0,37	0,5	240	-	-	-	-	-	-
0,55	0,75	164	246	-	-	-	-	-
0,75	1	133	200	333	-	-	-	-
1,1	1,5	97	146	244	390	-	-	-
1,5	2	72	109	180	290	435	-	-
2,2	3	51	78	130	207	310	516	-
3	4	41	62	104	167	250	416	-
4	5,5	31	46	77	124	186	310	496
5,5	7,5	-	33	56	90	135	225	360
7,5	10	-	-	-	66	100	165	270

(\*) Maximum cable length with a voltage drop of 3% at 30°C ambient temperature.

If the operating voltage  $U_i$  in the installation is different from the nominal voltage  $U_n$ , it is possible to calculate the permissible maximum length  $L_{max}$  with the following formula:

$$L_{max} = L_{tab} (U_i / U_n)^2$$