NK

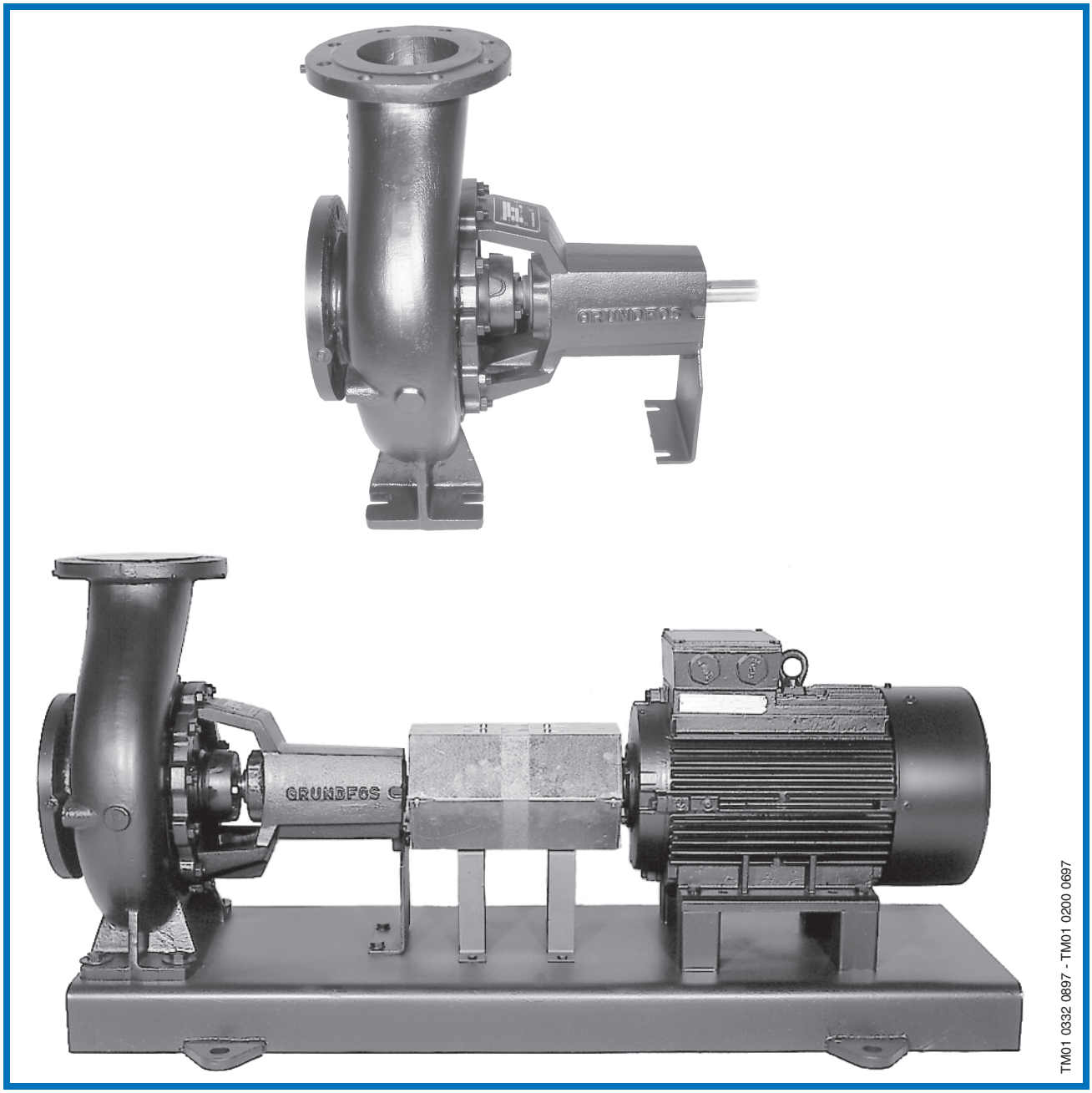
Standard Pumps

Water supply, boosting, circulation of water in heating and air-conditioning systems.
Liquid transfer in industry, agriculture, horticulture, etc.

In accordance with DIN 24 255.

Pump flange sizes:	DN 32-300
Maximum system pressure:	16 bar
Liquid temperature:	–40°C to +160°C

50 Hz



TM01 0332 0897 - TM01 0200 0697

GRUNDFOS®

Contents

General Data

Technical Data

Performance Ranges

Performance Curves, 2900 min^{-1}

Performance Curves, 1450 min^{-1}

Performance Curves, 970 min^{-1}

Applications

The pump is suitable for the pumping of thin, clean and non-aggressive liquids without solid particles or fibres in:

- District heating
- Water supply
- Airconditioning
- Cooling plants
- Industry
- Fire fighting
- Environment engineering

Operating Conditions

Flow	Max. 2000 m^3/h.
Head	Max. 150 m.
Liquid Temperature	–40°C up to +160°C.
Operating Pressure	Max. 10 or 16 bar. Operating pressure = inlet pressure + pressure against a closed valve (Q = 0).
Inlet Pressure	Max. 9 bar. Max. 7 bar for 400 mm impellers or bigger.

Pump

Non-self-priming single-stage centrifugal volute pump with axial suction port, radial discharge port and horizontal shaft components.

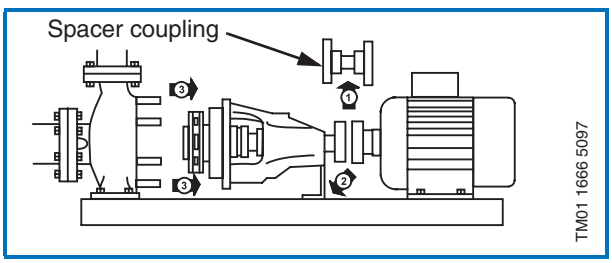
The NK pumps have dimensions and nominal performances according to DIN 24 255 (10 bar) but are designed for 16 bar operation wherever the shaft seal type allows it. NKG pumps according to DIN 24 256 (16 bar) are described in a separate booklet.

Types outside of the official DIN-norm (NK 200 and up) will be called "oversize". Dimensions can differ from other suppliers.

The suction and discharge flanges are according to DIN 2501 PN 10 or 16. All pumps are dynamically balanced according to ISO 1940 class 6.3 and impellers are hydraulically balanced.

Pump and motor are mounted on a common baseplate in accordance with DIN 24 259 in all-welded steel. Oversizes have profile base frames.

Due to the pump design the complete bearing assembly including impeller and shaft seal can be dismantled without removing the volute casing from the pipe system (back-pull-out system ③).



Flexible Coupling

Standard version or a spacer coupling which allows the motor to remain in place during the above mentioned dismantling to avoid subsequent alignment.

If the pump housing, motor or the entire unit is moved, alignment is always neccessary.

Bearing Assembly with Shaft

The bearing assembly includes two sturdy antifriction bearings lubricated for life. Oversize pumps with shaft d5 = 55 mm however, have open bearings with grease nipples.

A thrower on the shaft prevents liquid from entering the bearing housing.

In stuffing box versions the shaft is protected by a stainless steel sleeve at the shaft seal.

All the NK pumps according to DIN 24 255 are covered by only four sizes of shaft, shaft seal and bearings, and the oversizes by an additional three sizes.

Due to the ample sizes of the bearings and shaft the NK pumps can be driven by a belt drive, belt variator or a diesel engine, if required.

Shaft Seal

The standard version is provided with a mechanical Burgmann shaft seal according to DIN 24 960, Grundfos type BAQE. Depending on pumped liquid and operating conditions other types and stuffing boxes are available.

Back-to-back double mechanical shaft seals, and "quench", are available for all variants on request.

Motor

The motor is a totally enclosed, fan-cooled squirrel-cage Grundfos MMG motor dimensioned to IEC publication 72 and complying with IEC 34 and DIN 42 950.

Mounting Designation	B3 (IM 1001)
Enclosure Class	IP 55
Insulation Class	F (100°C)
Ambient Temperature	Max. 40°C
Voltages, 50/(60) Hz	3 x 220-240/380-415 V, (3 x 220-275/380-480 V), 3 x 380-415 Δ V, (3 x 380-480 Δ V)
Thermistor	TP 211 according to DIN 44 082 when P2 ≥ 3 kW

NK units with 60 Hz motors and NKE units with MGE motors are also available, but are described in separate booklets.

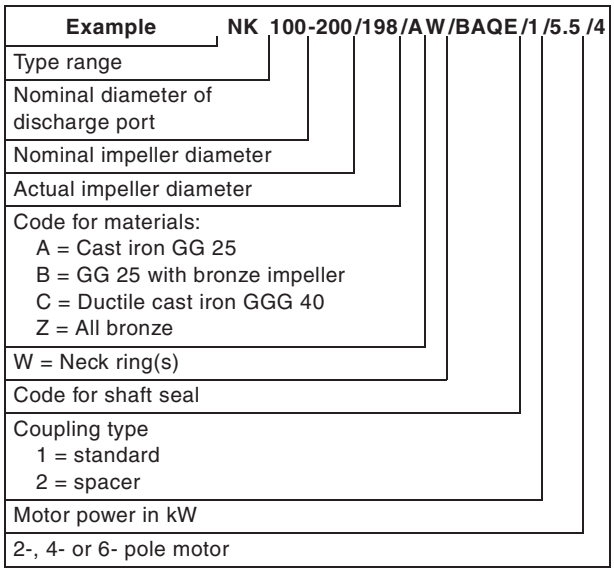
Other brands of motors can be mounted on request.

Surface Treatment

Minimum 40 µm black water based laquer (RAL 9017). Various RAL colors are available on request.

Type Key

For units without motor the motor data are left out, and for bare shaft pumps the coupling and motor data are left out.



The example describes an NK 100-200 with 198 mm impeller, in cast iron with neck rings, with BAQE shaft seal, standard coupling and a 4-pole 5.5 kW motor.

Specification of pump materials see, "Pump Material List" page 13.

Codes for Stuffing Box

Position	Code	Short Description of Seal
1	S	Packing type stuffing box
Position	**Code**	**Cooling**
2	N	Uncooled stuffing box
	K	Cooled stuffing box
Position	**Code**	**Barrier fluid**
3	E	With internal liquid
	F	With external liquid
	O	Without barrier fluid

Codes for Mechanical Shaft Seal

Position	Code	Short Description of Seal
1	A	O-ring seal with fixed seal driver
	B	Rubber bellows seal
	C	O-ring seal with spring as seal driver
	D	Balanced O-ring seal
	G	Rubber bellows seal with reduced seal faces
	M	Metal bellows seal
	X	Other
Position	**Code**	**Material**
2 & 3	A	Metal-impregnated carbon
	B	Synthetic-resin-impregnated carbon
	C	Other types of carbon
	S	Chromium steel
	U	Tungsten carbide
	Q	Silicon carbide
	V	Aluminium oxide (ceramic)
	X	Other types of ceramic/carbide
Position	**Code**	**Material**
4	P	Nitrile (NBR)
	S	Silicone rubber
	T	PTFE
	E	EPDM
	V	FKM
	M	PTFE-coated O-ring

Configuration Number Key

Each of the 8 digits in the configuration number describes one or more possibilities of variation in the construction of the pump (unit).

Example: The fourth digit determins if the pump is with or without neck rings as well as which material version.

The number is configured from the tables shown below:

Nominal Impeller Diameter [mm]	Code
125	1
160	2
200	3
250	4
315	5
360	7
400	8
500	9
310	A
320	C
330	B

Pump Type NK		Code
32		1
40		2
50		3
65	0-55 kW	4
80	0-55 kW	5
100	0-90 kW	6
125	0-90 kW	7
150	0-188 kW	8
65	56-200 kW *)	A
80	56-200 kW *)	B
100	91-200 kW *)	C
125	91-188 kW *)	D
200	0-300 kW *)	E
250	0-300 kW *)	F
300	0-300 kW *)	G
150	189-495 kW *)	H

*) Oversize

Code	NK Pump Material
1	A (cast iron GG 25)
2	B (GG 25 w/bronze impeller)
3	C (ductile cast iron GGG 40)
4	Z (all bronze)
5	A *)
6	B *)
7	C *)
8	Z *)

*) With neck ring(s)

Code	Single Shaft Seal
1	BAQE
3	DAQM *)
5	BQQV *)
7	BAQV *)
8	AQAE *)
9	AQAV *)
A	SNE *)
B	SNO *)
C	SNF *)
D	SKO *)
E	GQQE *)
F	GQQV *)
G	BQQE *)
H	AQQE *)
I	AQQV *)
Code	**Double Shaft Seal**
M	BAQE *)
N	DAQM *)
R	AQAE *)
V	AQQE *)
W	AQQV *)

*) Optional

Code	Coupling
0	Without coupling *)
1	Standard
2	Spacer

*) Bare shaft pump

Code	P2 kW max.
0	Bare shaft pump
1	0.37
2	0.55
3	0.75
4	1.1
5	1.5
6	2.2
7	3
8	4
9	5.5
A	7.5
B	11
C	15
D	18.5
E	22
F	30
G	37
H	45
K	55
L	75
M	90
N	110
P	132
Q	160
R	200
S	250
T	315
U	355

Code	Voltage	Pole
0	Exclusive of motor	
1	3X220-240/380-415V 50 Hz, 3X220-275/380-480V 60 Hz	2
2	3X380-415V 50 Hz, 3X380-480V 60 Hz	2
3	3X220-240/380-415V 50 Hz, 3X220-275/380-480V 60 Hz	4
4	3X380-415V 50 Hz, 3X380-480V 60 Hz	4
5	MGE-motor 3X380-415V 50/60 Hz	2
6	MGE-motor 3X380-415V 50/60 Hz	4
7	3X380-415V 50 Hz, 3X380-480V 60 Hz	6
8	3X220-240/380-415V 50 Hz, 3X220-275/380-480V 60 Hz	6

Configuration number	K	6	3	5	1	1	9	4
Bare shaft pump						0	0	0
Unit excl. motor								0
Complete unit								

Selection of Pumps for Various Liquids

Pumped Liquids	Max. limits solution, temperature, pressure	Materials and Shaft Seal								Notes	
		A Cast Iron		B Bronze Impeller		C Sph. Graphite Cast Iron		Z All Bronze			
		Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal		
Ammonia water	Max. 10%, 40°C, 16/12 bar	SNF	BAQE							Metals in pump must be all-ferrous Double seal	
Airconditioning	0°C to 30°C, 10/7 bar	SNE/SNO	BQQE								
Brackish water	Max. 40°C, 10/7 bar							SNE/SNO	BQQV	Hastelloy	
Brake fluid	Max. 40°C, 16/12 bar	SNE/SNO	BAQE								
Fire fighting water	16/12 bar			SNE/SNO	BAQE						
Fixative salt (sodium thiosulphate)	Max. 25°C, 16/12 bar	SNE/SNO	BAQV							Metals in pump must be all-ferrous	
Glycol-water mix	-20°C to 80°C, 16/12 bar	SNE/SNO	BAQE							If the liquid contains oil, choose FKM	
Glycol-water mix with additives	0°C to 80°C, 10/7 bar	SNE/SNO	BQQE								
	-20°C to 0°C, 10/7 bar	SNE/SNO	GQQE								
	-40°C to -20°C, 16/12 bar					SNE/SNO	AQQE				
Salt brine	Max. 15%, 0°C, 16/12 bar	SNE/SNO	BAQE							Double seal	
	Max. 15%, -30 to 0°C, 10/7 bar					SNE/SNO	AQQE				
Other coolants	-40°C to -20°C, 16 bar					SNE/SNO	AQAE			Contact Grundfos	
District heating water	Max. 120°C, 16 bar	SNE/SNO	BAQE							Nominal shaft diam. ≤ ø42 mm	
	Max. 120°C, 12 bar	SNE/SNO	BAQE							Nominal shaft diam. ≥ ø48 mm	
	Max. 120°C, 16 bar	SNE/SNO	AQAE								
	120°C to 140°C, 16 bar					SNE/SNO	AQAE				
	140°C to 160°C, 16 bar					SKO	DAQM			Cooling, Contact Grundfos	
Milk of lime (calcium hydroxide)	Max. 10%, 25°C, 10/7 bar	SNF	BQQE							Flush before long standstill periods	
Condensate	0°C to 100°C, 16/12 bar	SNE/SNO	BAQE								
Cooling water	0°C to 120°C, 16/12 bar	SNE/SNO	BAQE								
Sea water	Max. 40°C, 10/7 bar							SNE/SNO	BQQV	North Sea, Baltic Sea water.	Hast-elloy
	Max. 25°C, 10/7 bar			SNE/SNO	BQQV						
Soda lye (P3)	Max. 20%, 100°C, 10/7 bar	SNE/SNO	BQQE								
Fuel oil, diesel oil	16/12 bar		BAQV								

General Data

Pumped Liquids	Max. limits solution, temperature, pressure	Materials and Shaft Seal								Notes
		A Cast Iron		B Bronze Impeller		C Sph. Graphite Cast Iron		Z All Bronze		
		Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal	Stuffing Box	Mech. Seal	
Oil-water emulsion	16/12 bar	SNE/SNO	BAQV							
Clean water	16/12 bar	SNE/SNO	BAQE							
Raw water	10/7 bar	SNE/SNO	BQQV							
Swimming pool water (fresh water)	16/12 bar			SNE/SNO	BAQV					
Soda (sodium carbonate)	Saturated solution, 25°C, 10/7 bar	SNE/SNO	BQQE							Double seal
	16/16 bar		DQQE							
Water from storage reservoirs	10/7 bar			SNE/SNO	BQQE					
Partially demineralized water	Max. 100°C, 16/12 bar	SNE/SNO	BAQE							
Drinking water	Max. 100°C, 16/12 bar			SNE/SNO	BAQE					
Contaminated water	Max. 100°C, 10/7 bar	SNF	BQQV							Contact Grundfos

For liquids not mentioned in this table please contact Grundfos.

16/12 bar and 10/7 bar

The first figure is maximum pressure for nominal shaft diameters ≤ ø42 mm.
The second for nominal shaft diameters ≥ ø48 mm.

Nominal shaft diameter is the diameter of the pump shaft end (dimension **d5** on pages 18 - 20).

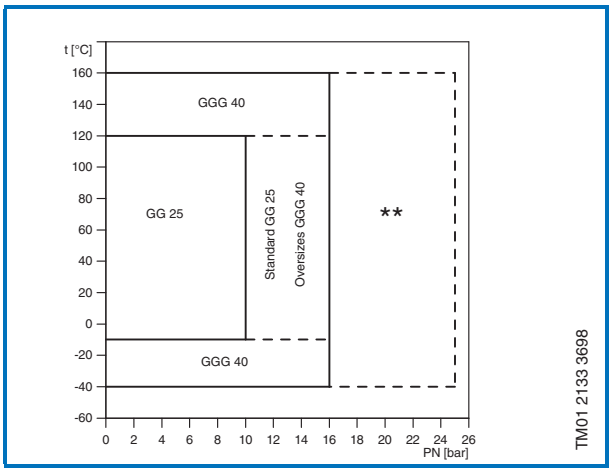
SNE/SNO

SNE for inlet pressure < 4 bar
SNO for inlet pressure > 4 bar.

Hastelloy

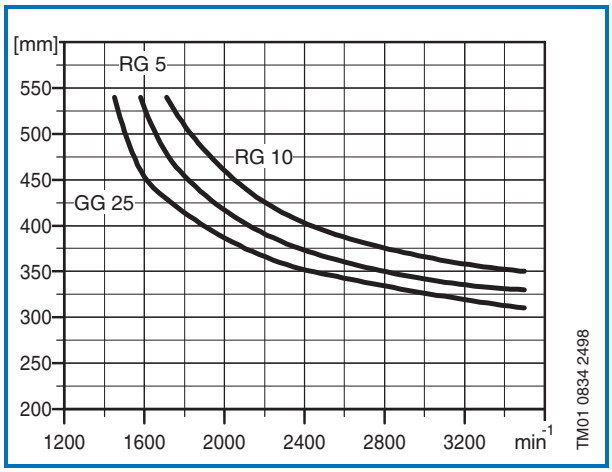
Hastelloy shaft seal metal parts for bronze pumps.

Operating Range



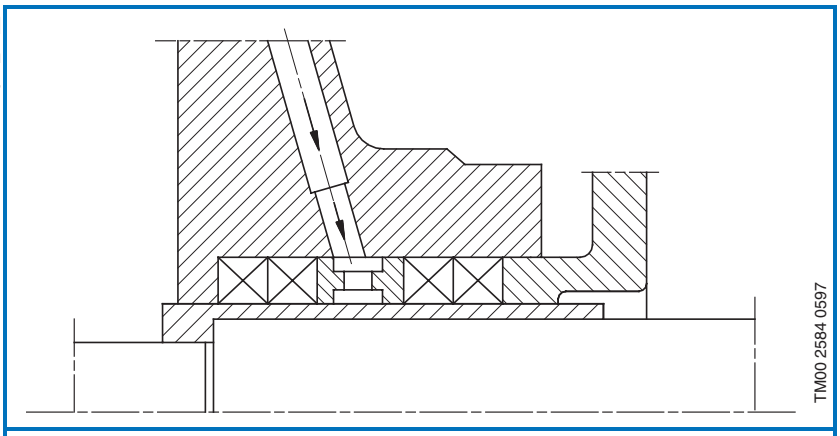
** Contact Grundfos

Impeller Speed Relative to Material and Size

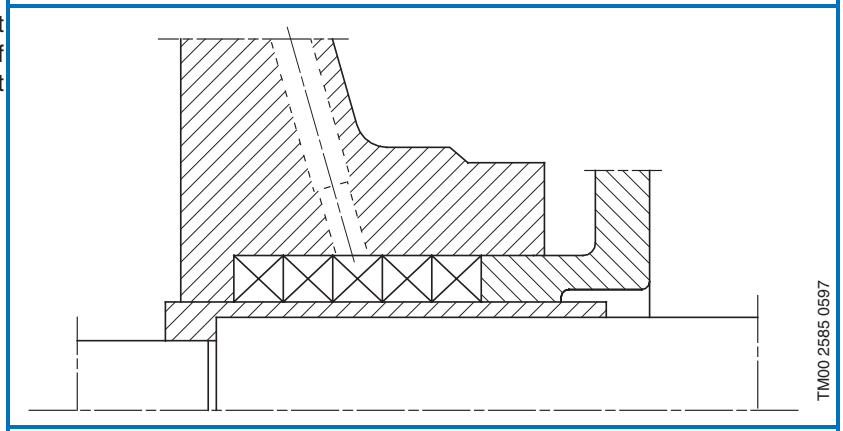


Stuffing Boxes

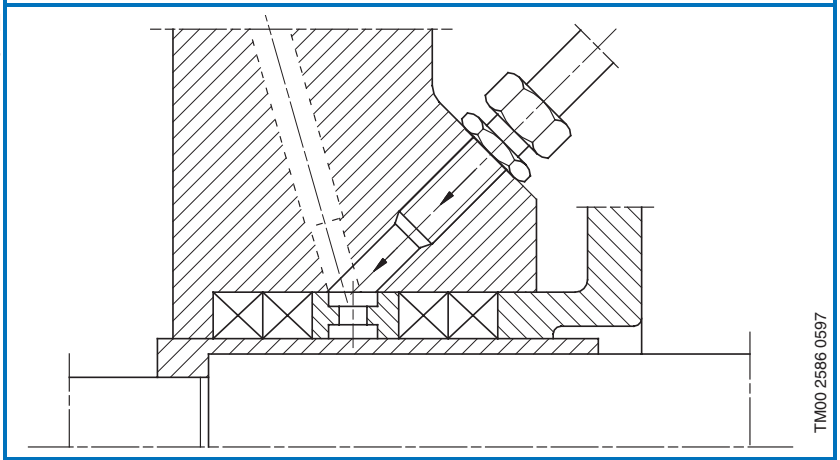
Uncooled stuffing box (**SNE**) with internal barrier fluid for the pumping of clean liquids in suction operation or at inlet pressures up to 4 bar.



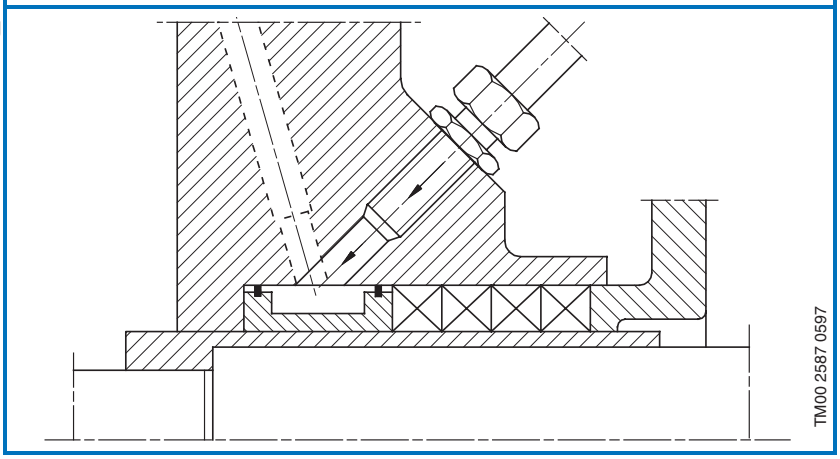
Uncooled stuffing box (**SNO**) without internal barrier fluid for the pumping of clean liquids in suction operation or at inlet pressures over 4 bar.



Uncooled stuffing box (**SNF**) with external barrier fluid for the pumping of contaminated and malodorous liquids.

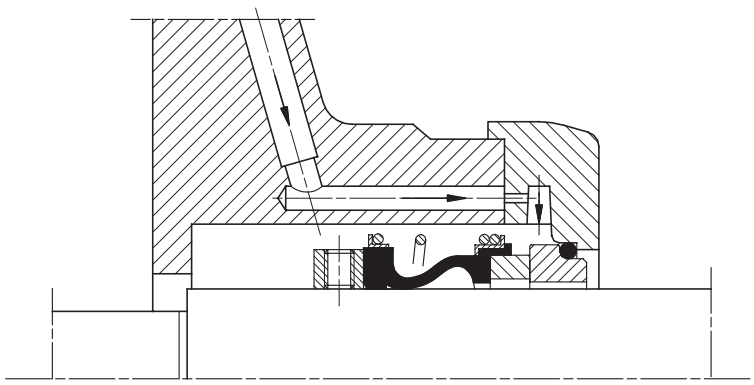


Cooled stuffing box (**SKO**) for the pumping of liquids up to 160°C.

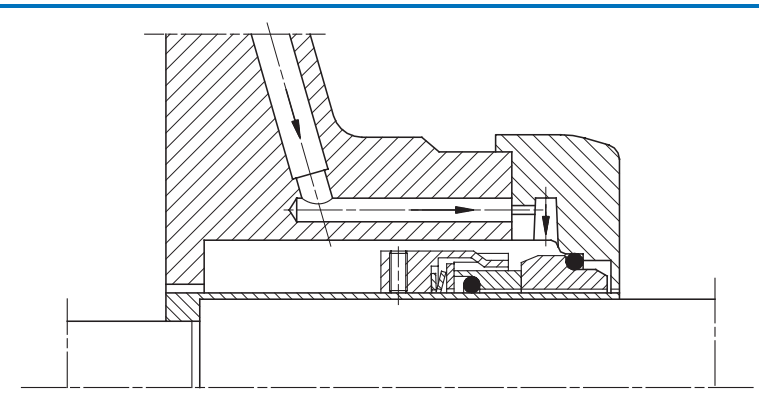


Mechanical Shaft Seals

Rubber bellows seal (**BAQE**), counteracts deposits from the pumped liquid.

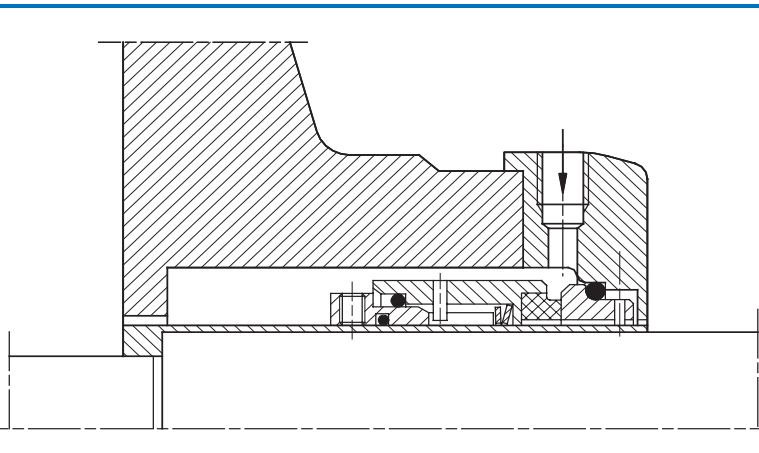


O-ring seal **(AQAE)**, unbalanced, for high pressures.



O-ring seal (**DAQM**), balanced, for high pressures and temperatures 140°C to 160°C.

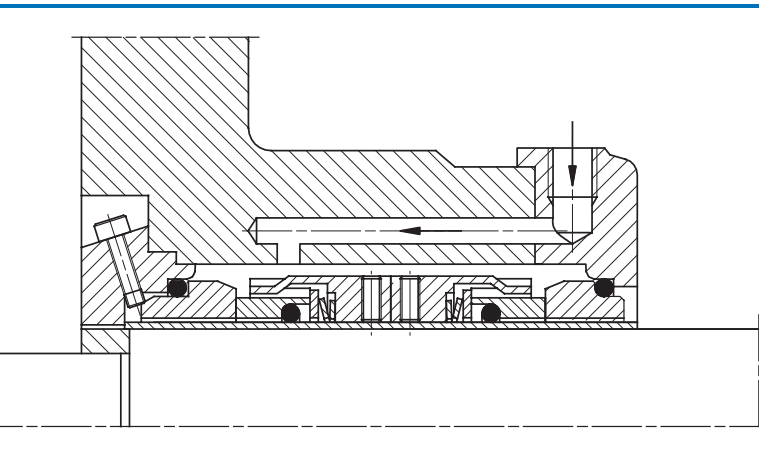
Cooled pumped liquid (120°C) is used for cooling the seal.



Double seal (**Back to back**) to protect the primary shaft seal against wear by precipitation of abrasive matters.

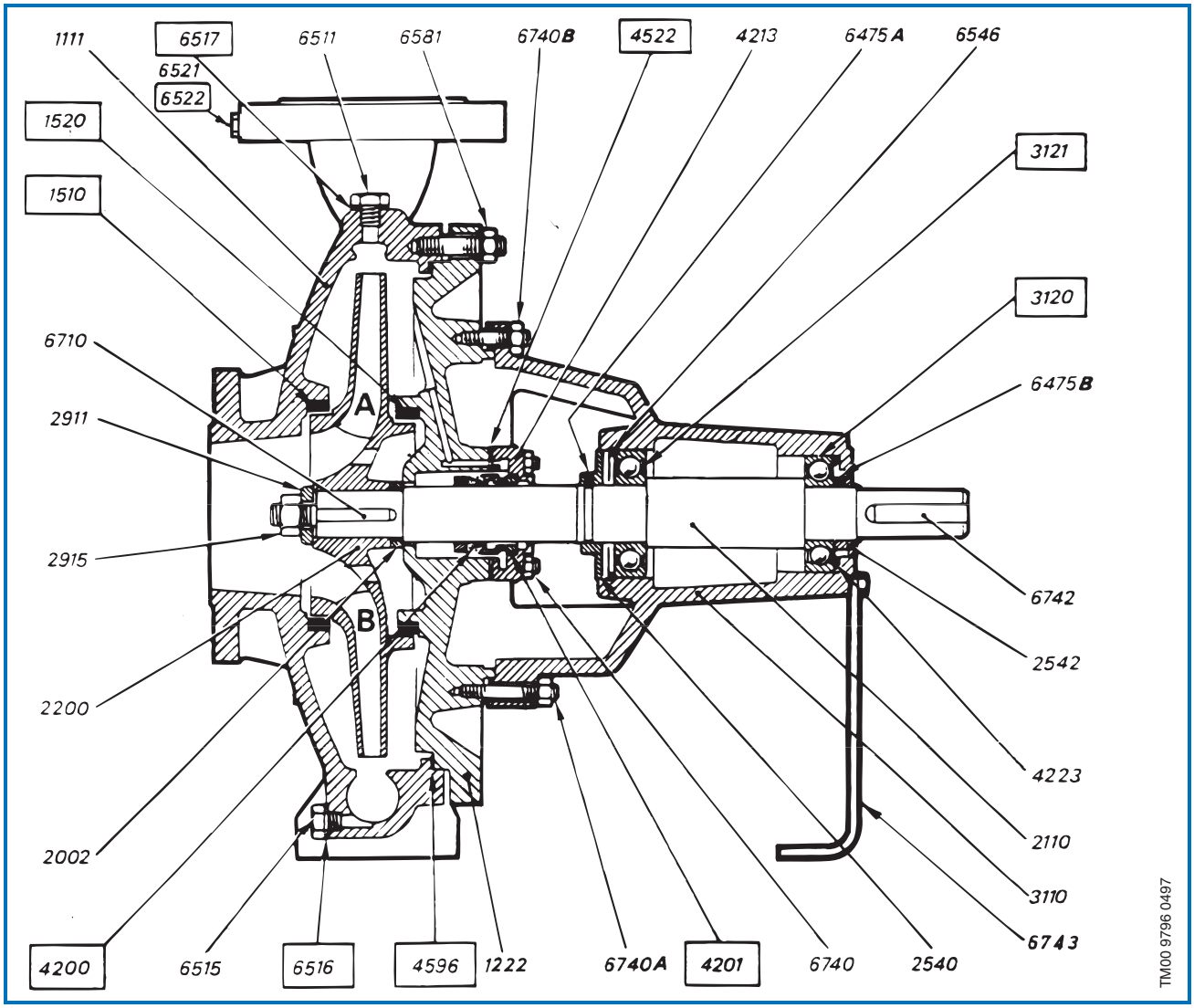
Quench above 80°C.

Available on request.



Sectional Drawing

NK 32-125 -> 150-400 and NK 250-310



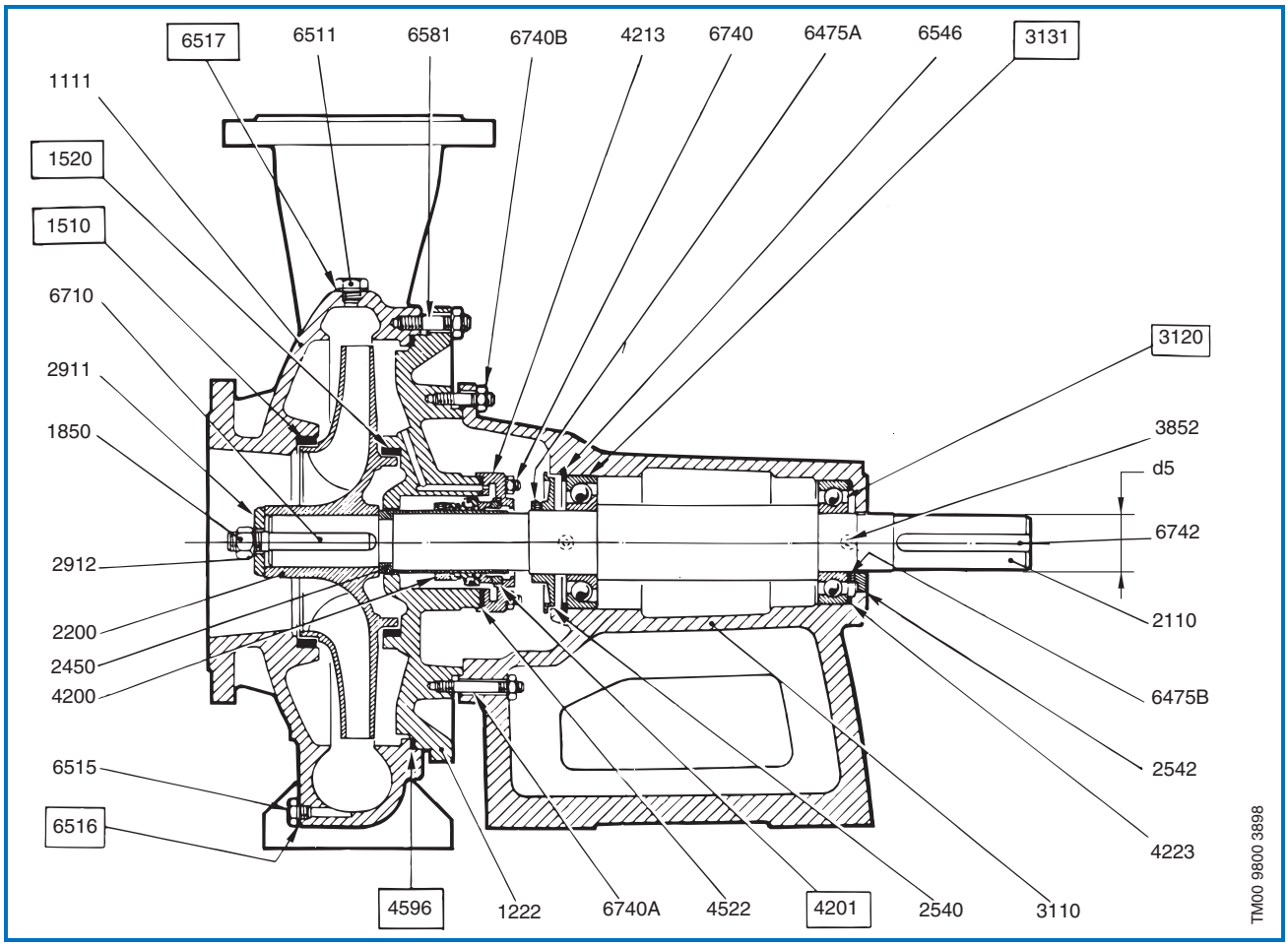
Legend: ☐: Recommended spare part.

A/B: Different hydraulical balancing.

Pos.	Description	Pos.	Description	Pos.	Description
1111	Pump casing	3120	Ball bearing	6516	Gasket
1222	Seal box	3121	Ball bearing	6517	Gasket
1510	Neck ring	4200	Rotary seal ring	6521	Pressure tapping plug
1520	Neck ring	4201	Stationary seat	6522	Gasket
2002	Spacer ring	4213	Cover for seal	6546	Circlip
2110	Shaft	4223	Elastic washer	6581	Stud + nut
2200	Impeller	4522	Gasket for cover	6710	Impeller key
2540	Thrower	4596	Gasket for pump	6740	Stud + nut
2542	Thrower	6475A	Thrower screw	6740A	Stud + nut
2911	Impeller washer	6475B	Thrower screw	6740B	Stud + nut
2915	Lock nut	6511	Priming plug	6742	Coupling key
3110	Bearing housing	6515	Drain plug	6743	Foot

Sectional Drawing

"Oversizes" NK 150-315, 200-500, 250-400, 250-500



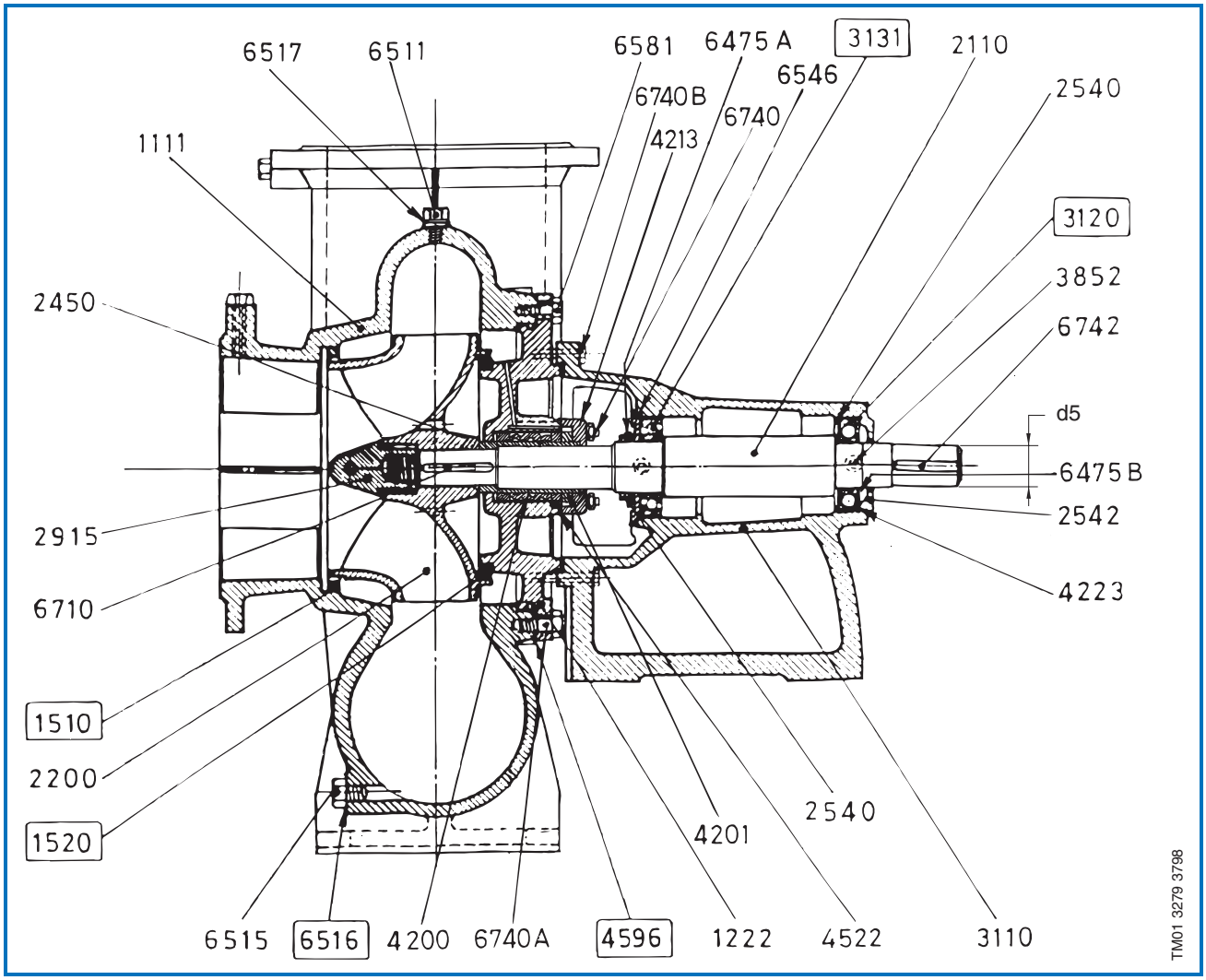
Legend:

[ ] :Recommended spare part.

Pos.	Description	Pos.	Description	Pos.	Description
1111	Pump casing	3110	Bearing housing	6511	Priming plug
1222	Seal box	3120	Ball bearing	6515	Drain plug
1510	Neck ring	3131	Ball bearing	6516	Gasket
1520	Neck ring	3852	Grease nipple	6517	Gasket
1850	Impeller counter nut	4200	Rotary seal ring	6546	Circlip
2110	Shaft	4201	Stationary seat	6581	Stud + nut
2200	Impeller	4213	Cover for seal	6710	Impeller key
2450	Shaft sleeve	4223	Elastic washer	6740	Stud + nut
2540	Thrower	4522	Gasket for cover	6740A	Stud + nut
2542	Thrower	4596	Gasket for pump	6740B	Stud + nut
2911	Impeller washer	6475A	Thrower screw	6742	Coupling key
2915	Impeller nut	6475B	Thrower screw		

Sectional Drawing

"Oversizes" NK 200-400, 250-330, 300-360



Legend:

[ ] : Recommended spare part.

Pos.	Description	Pos.	Description	Pos.	Description
1111	Pump casing	3110	Bearing housing	6511	Priming plug
1222	Seal box	3120	Ball bearing	6515	Drain plug
1510	Neck ring	3131	Ball bearing	6516	Gasket
1520	Neck ring	3852	Grease nipple	6517	Gasket
1850	Impeller counter nut	4200	Rotary seal ring	6546	Circlip
2110	Shaft	4201	Stationary seat	6581	Stud + nut
2200	Impeller	4213	Cover for seal	6710	Impeller key
2450	Shaft sleeve	4223	Elastic washer	6740	Stud + nut
2540	Thrower	4522	Gasket for cover	6740A	Stud + nut
2542	Thrower	4596	Gasket for pump	6740B	Stud + nut
2911	Impeller washer	6475A	Thrower screw	6742	Coupling key
2915	Impeller nut	6475B	Thrower screw		

Pump Material List

Pos.	Component	Version			
		Cast iron		Spheroidal graphite (ductile) cast iron	All bronze
		A	B Bronze impeller	C	Z
1111	Pump casing	GG 25		GGG 40.3	Rg 10 (SAE 63)
1222	Seal box				
1510	Neck ring	G-CuPb10Sn (SAE 660)			
1520	Neck ring				
1850	Impeller counter nut	DIN 985 St. 42			DIN 985, SS AISI 304
2002	Spacer ring	SS AISI 420 (x20Cr13)			AISI 304 (x2CrNi18-9)
2110	Shaft				
2200	Impeller	GG 25	Rg 5 (SAE 40)	GG 25	Rg 10 (SAE 63)
2540	Thrower	GG 25			
2542	Thrower				
2911	Impeller washer	SS AISI 420 (x20Cr13)			AISI 304 (x2CrNi18-9)
2915	Lock nut	DIN 985 St.42			DIN 985, SS AISI 304
3110	Bearing housing	GG 25			
3120	Ball bearing	DIN 625 / 628 SKF - FAG - RHP - NSK			
3121					
3131					
3852	Grease nipple	DIN 71412, Form D			
4200	Rotary seal ring	Burgmann mechanical seals			
4201	Stationary seat				
4213	Cover for seal	GG 25			Rg 10 (SAE 63)
4223	Elastic washer	High carbon finely tempered spring steel SAE 1070 - 1090			
4522	Gasket for cover	Asbestos free gaskets DIN FA 3535 and FKM			
4596	Gasket for pump				
6475A	Thrower screw	DIN 916, SS AISI 304			
6475B	Thrower screw				
6511	Priming plug	DIN 910			DIN 910 AISI 304 (x2CrNi18-9)
6515	Drain plug				
6516	Gasket	Copper			
6517	Gasket				
6521	Pressure tapping plug	DIN 910			DIN 910 AISI 304 (x2CrNi18-9)
6522	Gasket	Copper			
6546	Circlip	DIN 472			
6581	Stud + nut	ISO 8.8 34Cr4 + DIN 934			DIN 910 AISI 304 (x2CrNi18-9)
6710	Impeller key	DIN 6885 CK 45 K			DIN 6885 1.4571
6740	Stud + nut	ISO 8.8 34Cr4 + DIN 934			ISO 8.8 AISI 304 (x2CrNi18-9)
6740A	Stud + nut				
6740B	Stud + nut				
6742	Coupling key	DIN 6885 CK 45 K			DIN 6885 1.4571
6743	Foot	DIN 17100 / Sf 37.2			
2450	Shaft Sleeve *)	SS AISI 420 (x20Cr13)			AISI 304 (x2CrNi18-8)
4134	Lantern Ring	Rg 10 SAE 63			
6855	Gland Washer	SS AISI 420 (x20Cr13)			AISI 304 (x2CrNi18-8)
4120	Gland	GG 25			Rg10 (SAE 63)

*) Only stuffing box or nominal shaft diameters (d5) ≥ ø48 mm.

Motors

Selection of Motors

The power required to achieve the requested duty point can be found by means of the power chart below the performance chart (see pages 35-106). Find the power curve corresponding to the required QH-value (or interpolate between curves).
When deciding the motor size a safety margin acc. ISO 5199 must be added.
To decide the motor size select the P_2 that is the nearest higher than the required power, and choose the motor size next to it.

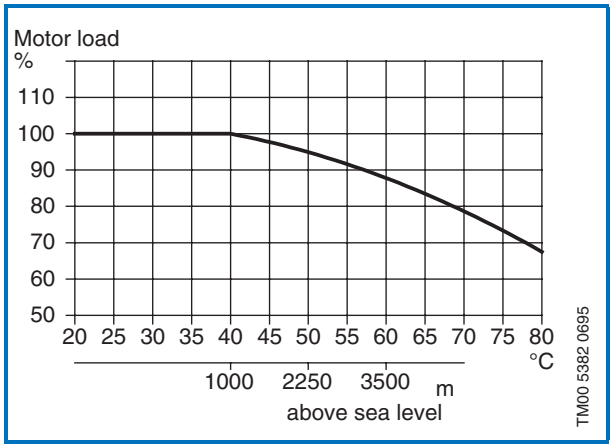
Safety Margins According to ISO 5199

Up to required pump shaft power: [kW]	Use motor output P_2: [kW]	Up to required pump shaft power: [kW]	Use motor output P_2: [kW]
322	355	15.9	18.5
286	315	12.8	15
227	250	9.1	11
181	200	6.1	7.5
145	160	4.3	5.5
120	132	3.2	4
100	110	2.3	3
81	90	1.7	2.2
68	75	1.1	1.5
49	55	0.81	1.1
40	45	0.55	0.75
32.5	37	0.40	0.55
26	30	0.27	0.37
19	22	0.18	0.25

Ambient Temperature

–30°C to +40°C.

Due to the low density and consequent low cooling effect of the air, operation at an ambient temperature above 40°C or at an altitude exceeding 1000 m above sea level requires a reduction of the rated motor load.



Spare Parts

Available Spare Parts Kits

1 Mechanical shaft seal complete
2 Soft packing rings
3 Bearings
4 Casing gaskets (standard or FKM)
5 Impeller
6 Shaft
7 Coupling complete (standard or spacer)
8 Rubber joints and pins for couplings
9 Neck rings
10 Nut, spacer and impeller key.
11 Service kit containing the above items 1 - 4 (according to pump version).
(The service kit items will cover service for two years of normal operation).

Electrical Data, 2-pole

3 x 220-240Δ/380-415Y

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	1.61/0.93	0.80	71.0	2823	490
0.55	2.22/1.28	0.82	76.0	2843	590
0.75	3.10/1.79	0.81	75.0	2874	610
1.1	4.16/2.40	0.83	80.0	2830	600
1.5	5.68/3.28	0.84	78.0	2850	620
2.2	8.35/4.82	0.85	80.0	2839	610
3.0	10.4/6.00	0.87	83.0	2853	650
4.0	12.8/7.38	0.91	86.0	2887	740
5.5	17.8/10.3	0.89	87.0	2916	830
7.5	23.9/13.8	0.89	87.0	2896	660
11	35.7/20.6	0.89	87.0	2935	730
15	47.1/27.2	0.90	89.0	2927	730
18.5	57.2/33.0	0.90	90.0	2932	800
22	67.9/39.2	0.90	90.0	2945	680
30	91.5/52.8	0.90	91.0	2946	610
37	112/64.4	0.91	91.0	2946	680
45	134/77.6	0.91	92.0	2962	740
55	167/96.4	0.89	93.0	2969	780
75	224/130	0.90	93.0	2963	690
90	261/151	0.92	94.0	2972	710
110	328/189	0.89	94.0	2982	840
132	379/219	0.91	94.5	2980	730
160	454/262	0.91	95.0	2984	670
200	573/331	0.94	96.0	2982	710
250	713/412	0.86	95.3	2981	490
315	895/517	0.86	95.8	2985	570

3 x 380-415Δ

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	0.93	0.80	71.0	2823	490
0.55	1.28	0.82	76.0	2843	590
0.75	1.79	0.81	75.0	2874	610
1.1	2.40	0.83	80.0	2830	600
1.5	3.28	0.84	78.0	2850	620
2.2	4.82	0.85	80.0	2839	610
3.0	6.00	0.87	83.0	2853	650
4.0	7.38	0.91	86.0	2887	740
5.5	10.3	0.89	87.0	2916	830
7.5	13.8	0.89	87.0	2896	660
11	20.6	0.89	87.0	2935	730
15	27.2	0.90	89.0	2927	730
18.5	33.0	0.90	90.0	2932	800
22	39.2	0.90	90.0	2945	680
30	52.8	0.90	91.0	2946	610
37	64.4	0.91	91.0	2946	680
45	77.6	0.91	92.0	2962	740
55	96.4	0.89	93.0	2969	780
75	130	0.90	93.0	2963	690
90	151	0.92	94.0	2972	710
110	189	0.89	94.0	2982	840
132	219	0.91	94.5	2980	730
160	262	0.91	95.0	2984	670
200	331	0.94	96.0	2982	710
250	412	0.86	95.3	2981	490
315	517	0.86	95.8	2985	570

Electrical Data, 4-pole

3 x 220-240Δ/380-415Y

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	1.82/1.05	0.73	69.0	1371	390
0.55	2.60/1.50	0.73	71.0	1402	460
0.75	3.46/2.00	0.73	74.0	1390	480
1.1	4.66/2.69	0.77	77.0	1407	480
1.5	6.13/3.54	0.79	78.0	1385	510
2.2	8.37/4.83	0.82	80.0	1411	560
3	11.4/6.59	0.81	82.0	1420	570
4	14.5/8.40	0.81	85.0	1438	620
5.5	19.5/11.3	0.82	86.0	1446	670
7.5	25.8/14.9	0.84	87.0	1445	730
11	36.9/21.3	0.85	88.0	1455	750
15	49.2/28.4	0.86	89.0	1450	790
18.5	59.4/34.3	0.87	89.0	1468	600
22	68.4/39.5	0.89	91.0	1468	710
30	93.9/54.2	0.87	92.0	1471	660
37	114/65.6	0.88	92.0	1475	630
45	136/78.6	0.89	93.0	1475	680
55	172/99.5	0.86	93.0	1476	630
75	228/132	0.88	94.0	1485	670
90	274/158	0.87	94.0	1487	770
110	328/189	0.89	95.0	1484	570
132	405/234	0.89	95.0	1487	590
160	468/270	0.90	95.0	1487	570
200	579/334	0.90	96.0	1486	570
250	729/421	0.92	95.8	1490	720
315	915/529	0.93	95.0	1489	670

3 x 380-415Δ

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	1.05	0.73	69.0	1371	390
0.55	1.50	0.73	71.0	1402	460
0.75	2.00	0.73	74.0	1390	480
1.1	2.69	0.77	77.0	1407	480
1.5	3.54	0.79	78.0	1385	510
2.2	4.83	0.82	80.0	1411	560
3	6.59	0.81	82.0	1420	570
4	8.40	0.81	85.0	1438	620
5.5	11.3	0.82	86.0	1446	670
7.5	14.9	0.84	87.0	1445	730
11	21.3	0.85	88.0	1455	750
15	28.4	0.86	89.0	1450	790
18.5	34.3	0.87	89.0	1468	600
22	39.5	0.89	91.0	1468	710
30	54.2	0.87	92.0	1471	660
37	65.6	0.88	92.0	1475	630
45	78.6	0.89	93.0	1475	680
55	99.5	0.86	93.0	1476	630
75	132	0.88	94.0	1485	670
90	158	0.87	94.0	1487	770
110	189	0.89	95.0	1484	570
132	234	0.89	95.0	1487	590
160	270	0.90	95.0	1487	570
200	334	0.90	96.0	1486	570
250	421	0.92	95.8	1490	720
315	529	0.93	95.0	1489	670

Electrical Data, 6-pole

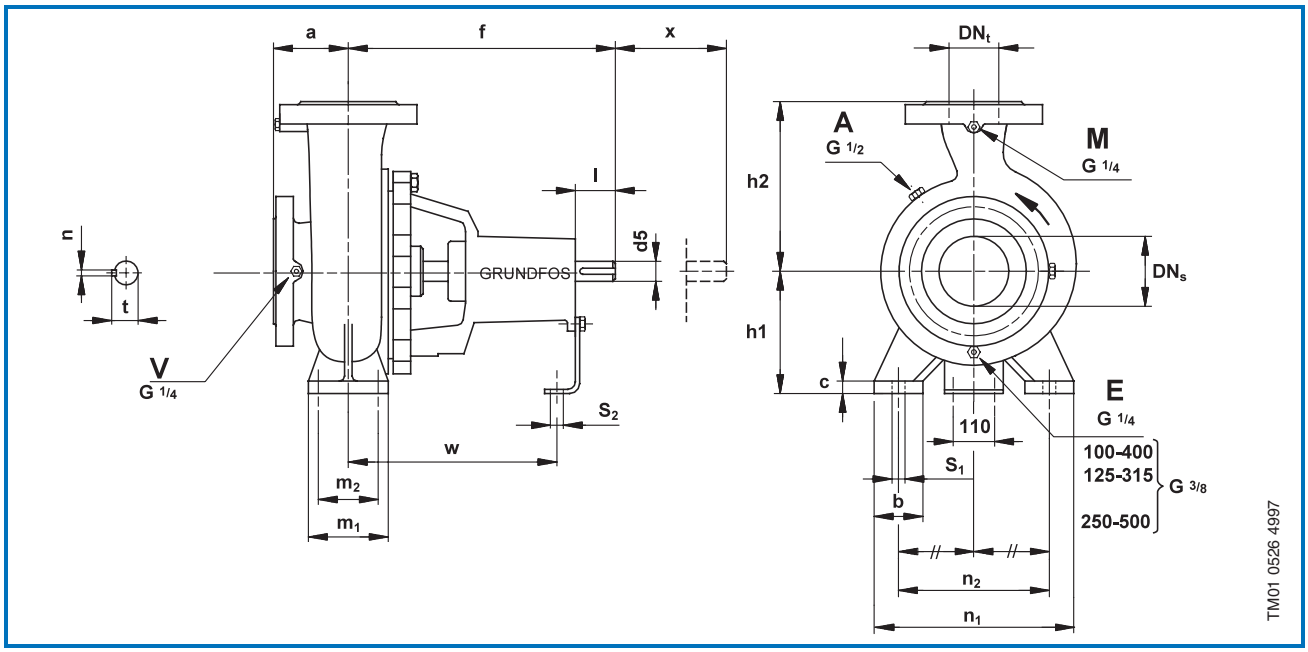
3 x 220-240Δ/380-415Y

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	2.18/1.26	0.69	61.0	905	300
0.55	3.00/1.73	0.71	65.0	907	330
0.75	3.91/2.26	0.71	68.0	914	380
1.1	5.39/3.11	0.73	71.0	910	400
1.5	6.72/3.88	0.74	75.0	932	460
2.2	9.35/5.40	0.75	78.0	932	470
3.0	12.3/7.13	0.77	81.0	939	570
4.0	15.8/9.11	0.77	82.0	963	610
5.5	21.0/12.1	0.78	84.0	964	650
7.5	28.4/16.4	0.76	87.0	966	630
11	40.7/23.5	0.76	89.0	970	660
15	52.1/30.1	0.81	89.0	976	630
18.5	62.9/36.3	0.82	90.0	979	610
22	72.4/41.8	0.84	90.0	978	620
30	98.0/56.6	0.83	91.0	983	600
37	116/66.9	0.87	92.0	980	670
45	141/81.3	0.86	92.0	985	690
55	173/99.7	0.86	93.0	986	700
75	238/138	0.83	94.0	991	610
90	288/166	0.84	94.0	987	590
110	341/197	0.85	94.0	991	770
132	409/236	0.85	95.0	992	720
160	481/278	0.87	95.0	991	640
200	600/346	0.88	95.8	991	630
250	748/432	0.88	94.9	990	670

3 x 380-415Δ

Motor [kW]	$I_{n\ [A]}$	Cos φ	$\eta_{max\ [\%]}$	n [min^{-1}]	$I_{st}/I_{n\ [\%]}$
0.37	1.26	0.69	61.0	905	300
0.55	1.73	0.71	65.0	907	330
0.75	2.26	0.71	68.0	914	380
1.1	3.11	0.73	71.0	910	400
1.5	3.88	0.74	75.0	932	460
2.2	5.4	0.75	78.0	932	470
3.0	7.13	0.77	81.0	939	570
4.0	9.11	0.77	82.0	963	610
5.5	12.1	0.78	84.0	964	650
7.5	16.4	0.76	87.0	966	630
11	23.5	0.76	89.0	970	660
15	30.1	0.81	89.0	976	630
18.5	36.3	0.82	90.0	979	610
22	41.8	0.84	90.0	978	620
30	56.6	0.83	91.0	983	600
37	66.9	0.87	92.0	980	670
45	81.3	0.86	92.0	985	690
55	99.7	0.86	93.0	986	700
75	138	0.83	94.0	991	610
90	166	0.84	94.0	987	590
110	197	0.85	94.0	991	770
132	236	0.85	95.0	992	720
160	278	0.87	95.0	991	640
200	346	0.88	95.8	991	630
250	432	0.88	94.9	990	670

Pump Dimensions and Weights

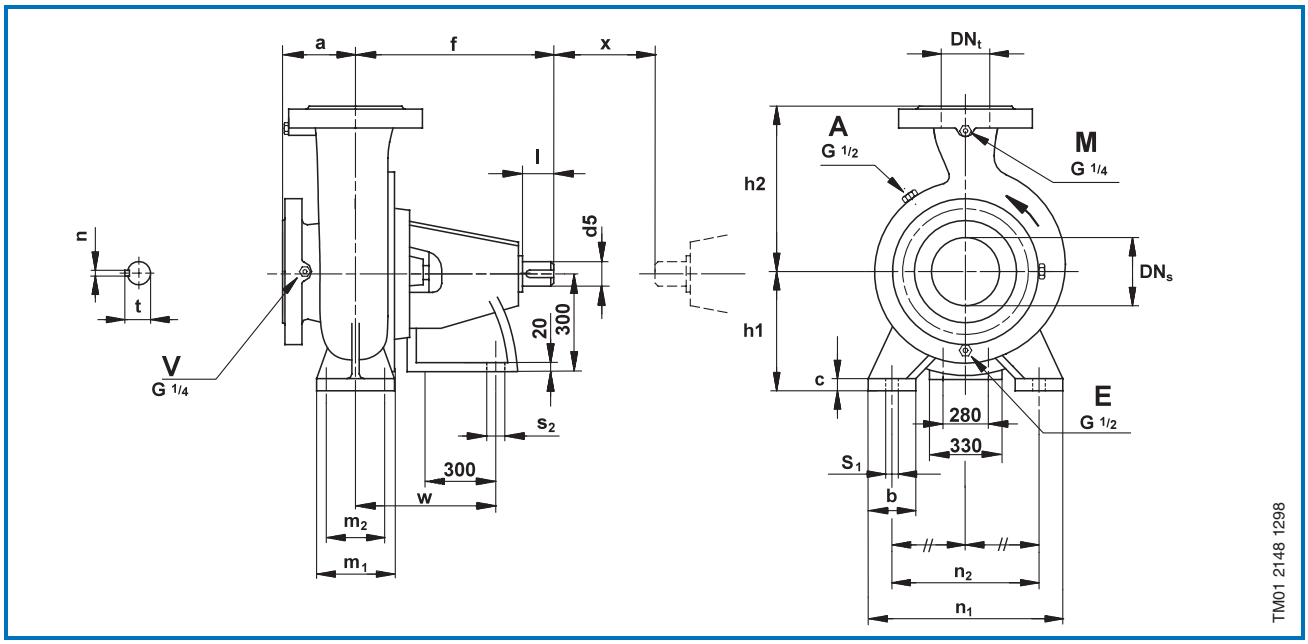


A	Priming plug
E	Drain plug
M	Pressure gauge tapping
V	Pressure/vacuum gauge tapping

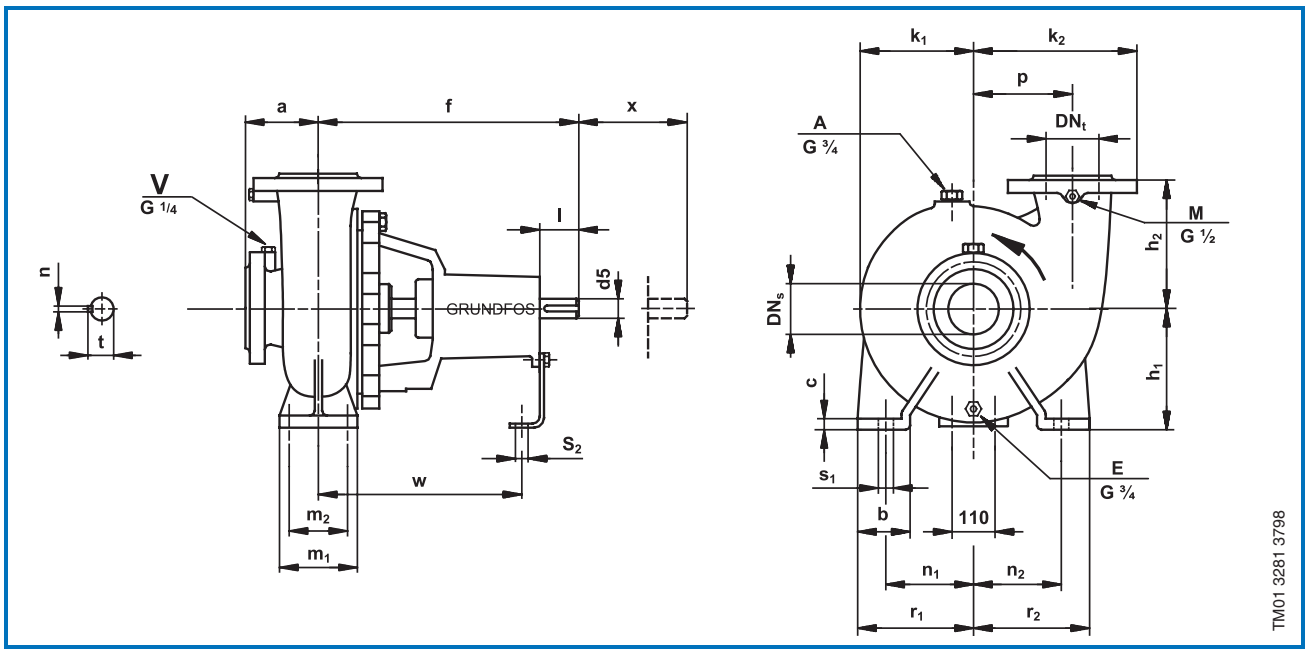
	Dimensions [mm]						Supporting Feet [mm]									Shaft [mm]					Weight [kg]
Type	DN_s	DN_t	a	f	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s_1	s_2	w	d5	l	t	n	x	
32-125	50	32	80	360	112	140	50	12	100	70	190	140	12	12	260	24	50	27	8	80	34
32-160					132	160					240	190									37
32-200					160	180					240	190									47
40-125	65	40	80	360	112	140	50	12	100	70	210	160	12	12	260	24	50	27	8	80	34
40-160			80		132	160	50		100	70	240	190									39
40-200			100		160	180	50		100	70	265	212									49
40-250			100		180	225	65		125	95	320	250									64
50-125	65	50	100	360	132	160	50	12	100	70	240	190	12	12	260	24	50	27	8	80	34
50-160					160	180	50		100	70	265	212									42
50-200					160	200	50		100	70	265	212									56
50-250					180	225	65		125	95	320	250									67
65-125	80	65	100	360	160	180	65	12	125	95	280	212	12	12	260	24	50	27	8	80	41
65-160			100	360	160	200	65	12	125	95	280	212	12		260	24	50	27	8	80	46
65-200			100	360	180	225	65	12	125	95	320	250	12		260	24	50	27	8	80	55
65-250			100	470	200	250	80	14	160	120	360	280	16		340	32	80	35	10	100	89
65-315			125	470	225	280	80	15	160	120	400	315	16		340	32	80	35	10	100	117
*65-315			125	530	225	280	80	15	160	120	400	315	16		370	42	110	45	12	100	136
80-160	100	80	125	360	180	225	65	12	125	95	320	250	12	12	260	24	50	27	8	80	55
80-200	100			470	180	250	65	12	125	95	345	280	12		340	32	80	35	10	100	73
80-250	100			470	200	280	80	14	160	120	400	315	14		340	32	80	35	10	100	93
80-315	100			470	250	315	80	16	160	120	400	315	16		340	32	80	35	10	100	123
*80-315	100			530	250	315	80	16	160	120	400	315	16		370	42	110	45	12	100	142
*80-400	125			530	280	355	80	16	160	120	435	355	16		370	42	110	45	12	140	198
100-200	125	100	125	470	200	280	80	14	160	120	360	280	16	12	340	32	80	35	10		83
100-250			140	470	225	280	80	15	160	120	400	315	16	12	340	32	80	35	10		101
100-315			140	470	250	315	80	16	160	120	400	315	16	12	340	32	80	35	10	100	130
*100-315			140	530	250	315	80	16	160	120	400	315	16	12	370	42	110	45	12		151
100-400			140	530	280	355	100	20	200	150	500	400	20	14	370	42	110	45	12		179
125-250	150	125	140	470	250	355	80	16	160	120	400	315	16	12	340	32	80	35	10	100	118
*125-250				530	250	355	80	16	160	120	400	315	16	12	370	42	110	45	12	120	139
125-315				530	280	355	100	20	200	150	500	400	20	14	370	42	110	45	12	120	170
125-400				530	315	400	100	20	200	150	500	400	20	14	370	42	110	45	12	120	193
150-315	200	150	160	530	280	400	100	20	200	150	550	450	20	14	370	42	110	45	12	120	210
150-400					315	450															

* Oversize

Pump Dimensions and Weights



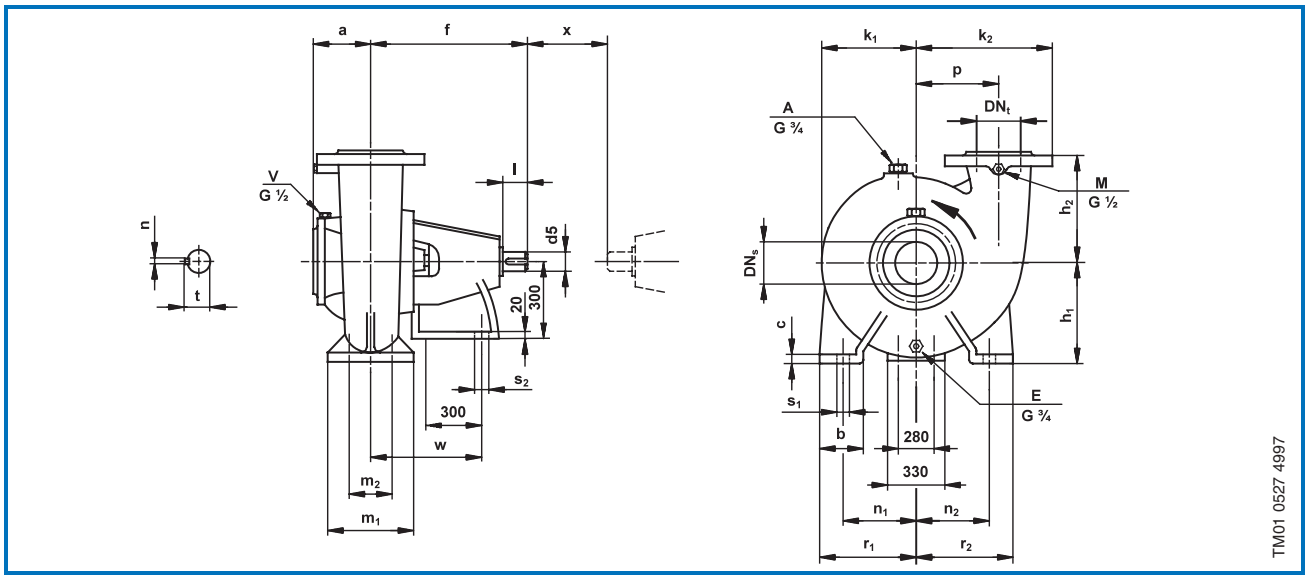
Type	Dimensions [mm]						Supporting Feet [mm]									Shaft [mm]					Weight [kg]
	DN_s	DN_t	a	f	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s_1	s_2	w	d5	l	t	n	x	
*150-315	200	150	160	700	280	400	100	20	200	150	550	450	20	24	515	55	140	59	16	120	235
*200-500	250	200	250	750	410	675	140	22	250	190	790	660	28		536					180	480
*250-400	300	250	200	740	400	600		20			700	580	28		530						415
*250-500			300	750	410	660		23			790	660			536						507



Type	Dimensions [mm]									Supporting Feet [mm]											Shaft [mm]					Weight [kg]
	DN_s	DN_t	a	f	h_1	h_2	k_1	k_2	p	b	c	m_1	m_2	n_1	n_2	r_1	r_2	s_1	s_2	w	d5	l	t	n	x	
*250-310	300	250	250	565	400	400	358	498	295	140	22	300	250	330	330	400	400	28	20	289	42	110	45	12	180	350

* Oversize

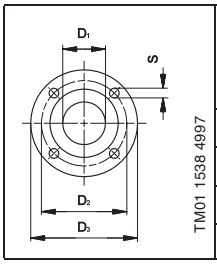
Pump Dimensions and Weights



Type	Dimensions [mm]									Supporting Feet [mm]											Shaft [mm]					Weight [kg]
	DN_s	DN_t	a	f	h_1	h_2	k_1	k_2	p	b	c	m_1	m_2	n_1	n_2	r_1	r_2	s_1	s_2	w	d5	l	t	n	x	
*200-400	250	200	180	750	400	400	268	460	290	130	25	300	230	155	215	220	280	28	24	536	55	140	59	16	200	405
*250-330	250	250	250	740	450	400	338	545	345	130	25	350	280	245	325	310	390	34	24	600	55	140	59	16	200	430
*300-360	300	300	300	760	520	440	410	580	355	160	25	320	280	337	337	420	420	26	24	540	55	140	59	16	280	560

* Oversize

Flange Dimensions [mm]



	DIN 2501 PN 16								DIN 2501 PN 10		
	Nominal diameter (DN)										
	32	40	50	65	80	100	125	150	200	250	300
D_1	32	40	50	65	80	100	125	150	200	250	300
D_2	100	110	125	145	160	180	210	240	295	350	400
D_3	140	150	165	185	200	220	250	285	340	395	445
S	4 x 18	4 x 18	4 x 18	4 x 18	8 x 18	8 x 18	8 x 18	8 x 22	8 x 22	12 x 22	12 x 22

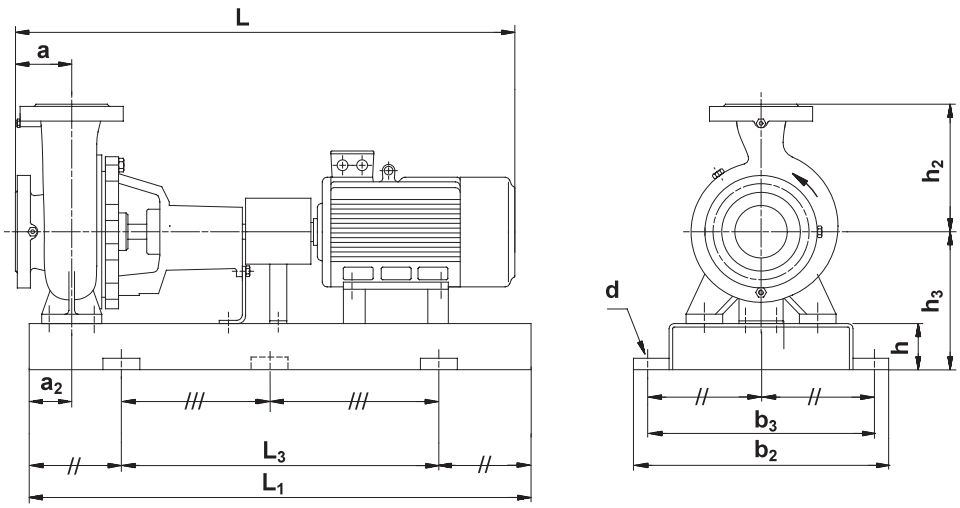
Oversizes

The DIN 24 255 describes only the standard types mentioned in the table on page 18.

The NK range is extended with bigger models (oversizes) for higher flows and pressures.

As a consequence bracket sizes, flange dimensions etc. for the oversize pumps can be different from other suppliers.

Unit Dimensions and Weights



The standard baseplate has only four holes for foundation bolts.

2900 min^{-1} (2-pole motors)																										
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
32-125	0.55 0.75-1.1	80	80	60	140	715	65	177	800	540	360	320	19	70	855	65	177	800	540	360	320	19	70
	1.5	90S				767								81	907			900	600	390	350		86
	2.2	90L				767			900	600	390	350		95	907								95
32-160	0.75-1.1	80	80	60	160	715	65	197	800	540	360	320	19	83	855	65	197	800	540	360	320	19	83
	1.5	90S				767								89	907			900	600	390	350		94
	2.2	90L				767			900	600	390	350		103	907								103
	3	100L				804								108	944								108
	4	112M				827								121	967	80	240	1000	660	450	400	24	131
	5.5	132S				940	80	240	1000	660	450	400	24	166	1080			1120	740	490	440		175
32-200	3	100L	80	60	180	804	65	225	900	600	390	350	19	118	944	65	225	900	600	390	350	19	116
	4	112M				827								131	967	80	240	1000	660	450	400	24	139
	5.5-7.5	132S				940	80	240	1000	660	450	400	24	174	1080			1120	740	490	440		185
40-125	0.75-1.1	80	80	60	140	715	65	177	800	540	360	320	19	79	855	65	177	800	540	630	320	19	82
	1.5	90S				767								90	907			900	600	390	350		93
	2.2	90L				767			900	600	390	350		95	907								97
	3	100L				804								100	944								102
40-160	2.2	90L	80	60	160	767	65	197	900	600	390	350	19	100	907	65	197	900	600	390	350	19	102
	3	100L				804								105	944								107
	4	112M				827								118	967	80	212	1000	660	450	400	24	131
	5.5-7.5	132S				940	80	212	1000	660	450	400	24	155	1080			1120	740	490	440		165
40-200	3	100L	100	60	180	804	65	225	900	600	390	350	19	115	944	65	225	900	600	390	350	19	117
	4	112M				827								128	967	80	240	1000	660	450	400	24	141
	5.5-7.5	132S				940	80	240	1000	660	450	400	24	165	1080			1120	740	490	440		176
	11-15	160M				1050			1120	740	490	440		220	1190			1250	840	540	490		235
40-250	5.5-7.5	132S	100	75	225	955	80	260	1120	740	490	440	24	187	1095	80	260	1120	740	490	440	24	192
	11-15	160M				1065			1250	840	540	490		252	1205			1250	840	540	490		260
	18.5	160L				1110								277	1250								280
	22	180M				1140								308	1280	100	280	1400	940	610	550	28	331
50-125	1.5	90S	100	60	160	767	65	197	800	540	360	320	19	86	907	65	197	900	600	390	350	19	93
	2.2	90L				767								95	907								97
	3	100L				804			900	600	390	350		101	944	80	212	1000	660	450	400	24	115
	4	112M				827								114	967								128
	5.5-7.5	132S				940	80	212	1000	660	450	400	24	145	1080			1120	740	490	440		159
50-160	3	100L	100	60	180	804	65	225	900	600	390	350	19	109	944	80	240	1000	660	450	400	24	128
	4	112M				827								122	967								141
	5.5-7.5	132S				940	80	240	1000	660	450	400	24	158	1080			1120	740	490	440		168
	11	160M				1050			1120	740	490	440		202	1190			1250	840	540	490		228

* Oversize

2900 min^{-1} (2-pole motors)																									
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
50-200	5.5-7.5	132S	100	60	200	940	80	240	1000	660	450	400	24	172	1080	80	240	1120	740	490	440	24	194
	11-15	160M				1050			1120	740	490	440		229	1190			1250	840	540	490		252
	18.5	160L				1095								254	1235								272
	22	180M				1125		260						285	1265		260						303
50-250	11-15	160M	100	75	225	1065	80	260	1250	840	540	490	24	276	1205	80	260	1250	840	540	490	24	263
	18.5	160L				1110								280	1250								283
	22	180M				1140								311	1280	100	280	1400	940	610	550	28	334
	30	200L				1220	100	280	1400	940	610	550	28	391	1360								396
65-125	4	112M	100	75	180	842	65	225	900	600	390	350	19	124	982	80	240	1000	660	450	400	29	142
	5.5-7.5	132S				955	80	240	1000	660	450	400	24	146	1095			1120	740	490	440		151
	11	160M				1065			1120	740	490	440		197	1205	100	260	1400	940	610	550	28	230
65-160	5.5-7.5	132S	100	75	200	955	80	240	1120	740	490	440	24	186	1095	80	240	1120	740	490	440	24	194
	11-15	160M				1065			1250	840	540	490		234	1205			1250	840	540	490		242
	18.5	160L				1110								259	1250								262
65-200	7.5	132S	100	75	225	955	80	260	1120	740	490	440	24	200	1095	80	260	1120	740	490	440	24	228
	11-15	160M				1065			1250	840	540	490		248	1205			1250	840	540	490		286
	18.5	160L				1110								268	1250								306
	22	180M				1140			1250		540		24	299	1280		280	1400	940	610	550	28	322
	30	200L				1220	100	300	1400	940	610	550		379	1360	100	300						384
65-250	18.5	160L	100	90	250	1232	80	280	1250	840	540	490	24	294	1372	80	280	1250	840	540	490	24	304
	22	180M				1262								338	1402			1400	940	610	550		356
	30-37	200L				1342	100	300	1400	940	610	550	28	421	1482	100	300	1600	1060	660	600	28	442
	45	225M				1397		325						493	1537		325						510
65-315	37	200L	125	90	280	1342	100	325	1400	940	610	550	28	478	1482	100	325	1600	1060	660	600	28	476
	45	225M				1397			1600	1060	660	600		552	1537								538
	55	250M				1507		350						631	1647		350	1800	1200	730	670		636
65-315 *	75	280S	125	90	280	1642	100	380	1800	1200	730	670		781	1782	100	380	1800	1200	730	670	28	786
	90	280M				1582								832	1722								837
80-160	7.5	132S	125	75	225	955	80	260	1120	740	490	440	24	162	1095	80	260	1120	740	490	440	24	176
	11-15	160M				1065			1250	840	540	490		248	1205			1250	840	540	490		251
	18.5	160L				1110								268	1250								271
	22	180M				1140			1250	840	540	950		304	1280			1400	940	610	550	28	322
	30	200L				1220	100	300	1400	940	610	550	28	379	1360	100	300						380
80-200	15	160M	125	75	250	1171	80	260	1250	840	540	490	24	247	1311	80	260	1250	840	540	490	24	293
	18.5	160L				1216								279	1356								313
	22	180M				1246		280						328	1386		280	1400	940	610	550		362
	30-37	200L				1326	100	300	1400	940	610	550	28	406	1466	100	300	1600	1060	660	600	28	432
	45	225M				1381		325						477	1521		325						494
80-250	18.5	160L	125	90	280	1232	80	280	1250	840	540	490	24	333	1372	80	280	1250	840	540	490	24	306
	22	180M				1262			1250	840	540	490		345	1402			1400	940	610	550		382
	30-37	200L				1342	100	300	1400	940	610	550	28	426	1482	100	300	1600	1060	660	600	28	452
	45	225M				1397		325						499	1537		325	1800	1200	730	670		514
	55	250M				1507		350	1600	1060	660	600		588	1647		350						612
	75	280S				1532		380	1800	1200	730	670		738	1672		380						743
80-315	45	225M	125	90	315	1397	100	350	1600	1060	660	600	28	584	1537	100	350	1800	1200	730	670	28	589
	55	250M				1507								659	1647								664
80-315 *	75	280S	125	90	315	1592	100	380	1800	1200	730	670	28	787	1732	100	380	1800	1200	730	670	28	792
	90	280M				1642								838	1782								843
	110	315S				1967	120	435	2000	1340	910	830		1194	2107	120	435	2000	1340	910	830		1224
	132	315M				1967								1272	2107								1302
100-200	22	180M	125	90	280	1262	80	280	1250	840	540	490	24	336	1402	80	280	1400	940	610	550	28	361
	30-37	200L				1342	100	300	1400	940	610	550	28	416	1482	100	300	1600	1060	660	600		442
	45	225M				1397		325						487	1537		325						504
	55	250M				1507		350	1600	1060	660	600		578	1647		350						602
	75	280S				1532		380	1800	1200	730	670		728	1672		380	1800	1200	730	670		733
100-250	37	200L	140	90	280	1342	100	325	1400	940	610	550	28	456	1482	100	325	1600	1060	660	600	28	492
	45	225M				1397			1600	1060	660	600		518	1537								566
	55	250M				1507		350						596	1647		350	1800	1200	730	670		620
	75	280S				1532		380	1800	1200	730	670		746	1672		380						751
	90	280M				1582								797	1722								802
	110	315S				1768	120	435	2000	1340	910	830		1180	1900	120	435	2000	1340	910	830		1190
100-315	55	250M	140	90	315	1507	100	350	1600	1060	660	600	28	630	1647	100	350	1800	1200	730	670	28	676
	75	280S				1532		380	1800	1200	730	670		800	1672		380						830
	90	280M				1582								900	1722								930
100-315 *	110	315S	140	90	315	1967	120	435	2000	1340	910	830	28	1203	2107	120	435	2000	1340	910	830	28	1233
	132	315M												1329									1335
	160-200	315L												1520									1527

* Oversize

2900 min^{-1} (2-pole motors)																									
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
125-250	37	200L	140	90	355	1448	100	350	1400	940	610	550	28	467	1590	100	350	1600	1060	660	600	28	498
	45	225M				1488			1600	1060	660	600		565	1625								539
	55	250M				1603								634	1740			1800	1200	730	670		637
	75	280S				1673		380	1800	1200	730	670		784	1810		380						740
	90	280M				1723								835	1860								840
125-250 *	110	315S	140	90	355	1967	120	435	2000	1340	910	830	28	1191	2107	120	435	2000	1340	910	830	28	1221
	132	315M												1269									1293
150-315	90	280M	160	110	400	1744	100	380	1800	1200	730	670	28	913	1884	100	380	1800	1200	730	670	28	911
	110	315S				1849	120	435	2000	1340	910	830		1295	1985	120	435	2000	1340	910	830		1292
	132	315M				1904								1373	2044								1370
	160	315Lk				1989							28 **	1507	2129								1556
150-315 *	200	315L	160	110	400	2159	120	435	2000	1340	910	830	28	1602	2299	120	435	2000	1340	910	830	28	1619
	250	355S				2216		475						1998	2356		475						2005
	315	355M				2216							28 **	2173	2556								2183

* Oversize

1450 min^{-1} (4-pole motors)																									
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
32-125	0.37	71	80	60	140	693	65	177	800	540	360	320	19	67	790	65	177	800	540	360	320	19	67
32-160	0.37	71	80	60	160	693	65	197	800	540	360	320	19	71	790	65	197	800	540	360	320	19	71
	0.55-0.75	80				738								83	835								83
32-200	0.37	71	80	60	180	693	65	225	800	540	360	320	19	81	790	65	225	800	540	360	320	19	84
	0.55-0.75	80				738								93	835			900	600	390	350		100
	1.1	90S				758								99	855								106
40-125	0.37	71	80	60	140	693	65	177	800	540	360	320	19	68	790	65	177	800	540	360	320	19	71
40-160	0.37	71	80	60	160	693	65	197	800	540	360	320	19	73	790	65	197	800	540	360	320	19	76
	0.55-0.75	80				738								85	835			900	600	390	350		92
	1.1	90S				758								91	855								98
40-200	0.55-0.75	80	100	60	180	758	65	225	900	600	390	350	19	100	855	65	225	900	600	390	350	19	102
	1.1	90S				778								106	875								108
	1.5	90L				803								110	900								112
40-250	0.75	80	100	75	225	758	80	260	1000	660	450	400	24	126	855	80	260	1000	660	450	400	24	128
	1.1	90S				778								132	875								134
	1.5	90L				803								136	900								138
	2.2-3	100L				848								144	945								146
50-125	0.37	71	100	60	160	713	65	197	800	540	360	320	19	68	810	65	197	800	540	360	320	19	71
	0.55-0.75	80				758								80	855			900	600	390	350		87
50-160	0.55-0.75	80	100	60	180	758	65	225	900	600	390	350	19	93	855	65	225	900	600	390	350	19	95
	1.1	90S				778								99	875								101
	1.5	90L				803								103	900								105
50-200	0.75	80	100	60	200	758	65	225	900	600	390	350	19	107	855	65	225	900	600	390	350	19	109
	1.1	90S				778								113	875								115
	1.5	90L				803								117	900								119
	2.2-3	100L				848								125	950								127
50-250	1.1	90S	100	75	225	778	80	260	1000	660	450	400	24	135	875	80	260	1000	660	450	400	24	140
	1.5	90L				803								139	900								144
	2.2-3	100L				848								142	945								150
	4	112M				863								160	960								162
65-125	0.55-0.75	80	100	75	180	758	65	225	900	600	390	350	19	92	855	65	225	900	600	390	350	19	76
	1.1	90S				778								98	875								82
	1.5	90L				803								102	900								104
65-160	0.75	80	100	75	200	758	65	225	900	600	390	350	19	97	855	65	225	900	600	390	350	19	109
	1.1	90S				778	80	240	1000	660	450	400	24	114	875	80	240	1000	660	450	400	24	116
	1.5	90L				803								118	900								120
	2.2-3	100L				848								126	945								128
65-200	1.1	90S	100	75	225	782	80	260	1000	660	450	400	24	123	922	80	260	1000	660	450	400	24	119
	1.5	90L												127									132
	2.2-3	100L				820			1120	740	490	440		142	960			1120	740	490	440		145
	4	112M				842								155	982								157

* Oversize

** Profile base frame with six holes for foundation bolts

1450 min^{-1} (4-pole motors)																									
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
65-250	2.2-3	100L	100	90	250	945	80	280	1120	740	490	440	24	176	1085	80	280	1120	740	490	440	24	178
	4	112M				967								189	1107								191
	5.5	132S				1077								210	1217								213
	7.5	132M												221									239
65-315	4	112M	125	90	280	967	80	305	1250	840	540	490	24	237	1107	80	305	1250	840	540	490	24	182
	5.5	132S				1077								259	1217								202
	7.5	132M												264									267
	11	160M				1187								304	1327								307
	15	160L				1232	100	325	1400	940	610	550	28	349	1372	100	325	1400	940	610	550	24	352
80-160	1.1	90S	125	75	225	782	80	260	1000	660	450	400	24	132	922	80	260	1000	660	450	400	24	128
	1.5	90L												136									132
	2.2-3	100L				820			1120	740	490	440		142	960			1120	740	490	440		145
80-200	2.2-3	100L	125	75	250	928	80	260	1120	740	490	440	24	160	1068	80	260	1120	740	490	440	24	164
	4	112M				951								173	1091								175
	5.5	132S				1061								194	1201			1250	840	540	490		212
	7.5	132M												205									232
80-250	3	100L	125	90	280	945	80	280	1250	840	540	490	24	198	1085	80	280	1250	840	540	490	24	201
	4	112M				967								209	1107								212
	5.5	132S				1077								229	1217								232
	7.5	132M												240									243
	11	160M				1187								283	1327								286
80-315	5.5	132S	125	90	315	1077	80	330	1250	840	540	490	24	255	1217	80	330	1250	840	540	490	24	262
	7.5	132M												266									273
	11	160M				1187								309	1327	100	350	1400	940	610	550	28	336
	15	160L				1232	100	350	1400	940	610	550	28	355	1372								358
	18.5	180M				1262								387	1402								390
80-400 *	11	160M	170	125	355	1282	100	380	1400	940	610	550	28	410	1422	100	380	1400	940	610	550	28	410
	15	160L				1327								431	1467								440
	18.5	180M				1357								463	1497			1600	1060	660	600		474
	22	180L				1397								484	1537								492
	30	200L				1437								545	1577								559
	37	225S				1522			1600	1060	660	600		602	1622								602
100-200	3	100L	125	90	280	945	80	280	1120	740	490	440	24	172	1085	80	280	1120	740	490	440	24	172
	4	112M				967								183	1007								183
	5.5	132S				1077								204	1217			1250	840	540	490		222
	7.5	132M												215									233
	11	160M				1187			1250	840	540	490		276	1327	100	300	1400	940	610	550	28	329
100-250	5.5	132S	140	90	280	1077	80	305	1250	840	540	490	24	234	1217	80	305	1250	840	540	490	24	240
	7.5	132M												244									271
	11	160M				1187								287	1327	100	315	1400	940	610	550	28	314
	15	160L				1232	100	325	1400	940	610	550	28	353	1372								356
	18.5	180M				1262								382	1402								390
	22	180L				1302	100		1400	940	610	550	28	390	1442								395
100-315	7.5	132M	140	90	315	1077	80	330	1250	840	540	490	24	279	1217	80	330	1250	840	540	490	24	302
	11	160M				1187								322	1327	100	350	1400	940	610	550	28	345
	15	160L				1232	100	350	1400	940	610	550	28	362	1372								365
	18.5	180M				1262								394	1402								397
	22	180L				1302								414	1442								419
	30	200L				1342								474	1550								480
100-400	15	160L	140	110	355	1333	100	380	1600	1060	660	600	28	430	1475	100	380	1600	1060	660	600	28	435
	18.5	180M				1343								462	1482								465
	22	180L				1302								480	1442								485
	30	200L				1342								536	1482								541
	37	225S				1397								581	1537								586
	45	225M												614				1800	1200	730	670		638
	55	250M				1507								671	1647								695
	75	280S				1532			1800	1200	730	670		850	1672								855
125-250	5.5	132S	140	90	355	1077	80	330	1250	840	540	490	24	250	1217	80	330	1250	840	540	490	24	257
	7.5	132M												261									288
	11	160M				1187								304	1327	100	350	1400	940	610	550	28	331
	15	160L				1232	100	350	1400	940	610	550	28	350	1372								353
	18.5	180M				1262								382	1402								385
	22	180L				1302								400	1442								403

* Oversize

** Profile base frame with six holes for foundation bolts

1450 min^{-1} (4-pole motors)																										
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight	With Spacer Coupling [mm]								Weight
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d	[kg]	L	h	h_3	L_1	L_3	b_2	b_3	d	[kg]
125-315	11	160M	140	110	355	1367	100	380	1600	1060	660	600	28	397	1407	100	380	1600	1060	660	600	28	400
	15	160L				1312								417	1452								420
	18.5	180M				1342								446	1482								449
	22	180L				1382								448	1522								471
	30	200L				1422								527	1562								532
125-400	15	160L	140	110	400	1312	100	415	1600	1060	660	600	28	450	1452	100	415	1600	1060	600	600	28	454
	18.5	180M				1342								482	1482								486
	22	180L				1382								500	1522								505
	30	200L				1422								556	1562								560
	37	225S				1507								597	1647			1800	1200	730	670		620
	45	225M												628									652
	55	250M				1587								685	1727								709
	75	280S				1612			1800	1200	730	670		864	1752								869
150-315	11	160M	160	110	400	1275	100	380	1600	1060	660	600	28	420	1415	100	380	1800	1200	730	670	28	424
	15	160L				1320								440	1460								445
	18.5	180M				1350			1800	1200	730	670		489	1490								494
	22	180L				1390								507	1530								530
	30	200L				1430								586	1570								591
	37	225S				1515								631	1655								636
	45	225M												664									669
150-400	22	180L	160	110	450	1382	100	415	1800	1200	730	670	28	516	1522	100	415	1800	1200	730	670	28	520
	30	200L				1422								572	1562								578
	37	225S				1507								613	1647								620
	45	225M												646									654
	55	250M				1587								721	1727								726
	75	280S				1612								881	1752								886
	90	280M				1683	120	435	2000	1340	910	830		980	1823	120	435	2000	1340	910	830		1010
	110	315S				2017								1266	2157								1298
200-400 *	45	225M	180	245	400	1797	160	470	1900	1500	680	620	18**	890	1997	160	470	1900	1500	680	620	18*	898
	55	250M		255		1877	180	490	2000	1600	690	625		942	2077	180	490	2000	1600	690	625		950
	75	280S				1902					715	650		1006	2102					715	650		1108
	90	280M				1952			2100	1700				1190	2152			2100	1700				1196
	110	315S				1375		495			750	685		1488	2507		495			750	685		1499
	132	315M					200	515	2200	1800	760	690		1639		200	515	2200	1800	760	690		1650
200-500 *	55	250M	250	175	675	1947	160	480	1900	1600	735	675	18**	1046	2147	160	480	1900	1600	735	675	18*	1054
	75	280S				1972	180	490	2000	1700	945	880		1200	2172	180	490	2000	1700	945	880		1210
	90	280M				2022								1301	2222								1312
	110	315S		185		2377		495	2100	1800				1579	2577		495	2100	1800				1590
	132	315M					200	515			955	885		1633		200	515			955	885		1744
	160	315Lk												1837									1858
	200	315L					220	535	2200	1900	965	890		1970		220	535	2200	1900	965	890		1986
	250	355S		132		2444	240	595	2300	2000	975	895	22**	2262	3044	240	595	2300	2000	975	895	22*	2283
250-310 *	30	200L	250	195	400	1597	140	480	1700	1500	950	830	18	630	1797	140	480	1700	1500	950	830	18	660
	37	225S				1682	160	505						680	1882	160	505	1800	1600		820		690
	45	225M												750									765
	55	250M		205		1762	180	510	1800	1600		820		795	1962		510	1900	170				810
	75	280S				1787		560				810		900	1987	180	560				810		920
250-330 *	55	250M	250	220	400	1937	120	570	2000	1340	910	830	28	940	2137	120	570	2000	1340	910	830	18	942
	75	280S				1962								1085	2162	160	460	2100	1800	850	790		1195
	90	280M				2012								1185	2212	180	480	2200	1900	860	795		1280
	110	315S				2367								1470	2567		495						1580
250-400 *	55	250M	200	175	600	1887	160	470	1900	1600	850	790	18**	1004	2087	160	470	1900	1600	850	790	18*	1012
	75	280S				1912	180	480	2000	1700	860	795		1158	2112	180	480	2000	1700	860	795		1170
	90	280M				1962								1258	2162								1270
	110	315S		185		2317		495	2100	1800				1536	2517		495	2100	1800				1547
	132	315M					200	515			870	800		1690		200	515			870	800		1701
	160	315Lk												1806									1822
	200	315L					220	535	2200	1900	880	805		1906		220	535	2200	1900	880	805		1920
250-500 *	90	280M	300	175	660	2072	180	490	2000	1700	945	800	18**	1416	2272	180	490	2000	1700	945	800	18*	1432
	110	315S		185		2427		495	2100	1800				1694	2627		495	2100	1800				1710
	132	315M					200	515			955	885		1830		200	515			955	885		1845
	160	315Lk												1930									1945
	200	315L					220	535	2200	1900	965	890		2030		220	535	2200	1900	965	890		2045
	250	355S		132		2894	240	595	2300	2000	975	890		2268	3094	240	595	2300	2000	975	890		2289
	315	355M		134			240	615	2400	2100	985	900	22**	2460		240	615	2400	2100	985	900	22*	1681

* Oversize

** Profile base frame with six holes for foundation bolts

1450 min^{-1} (4-pole motors)																								
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
300-360 *	55	250M	300	180	440	2007	180	700	2200	1900	860	795	22**	1150	2287	180	700	2200	1900	860	795	22*	1170
	75	280S				2032			2300	2000				1310	2312			2300	2000				1330
	90	280M				2082								1390	2362								1410
	110	315S				2437			2400	2100				1690	2712			2400	2100				1710
	132	315M												1840									1860

* Oversize

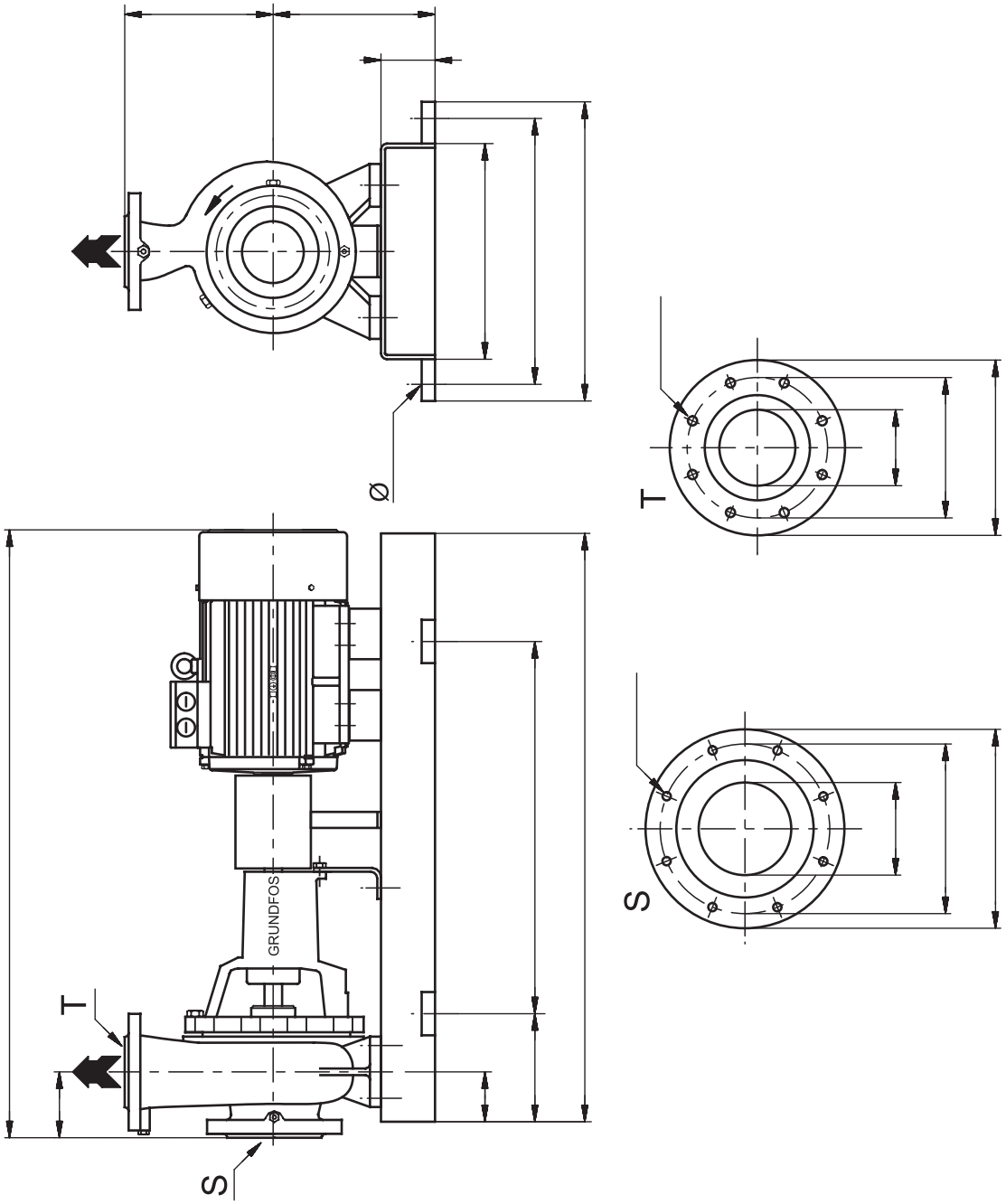
** Profile base frame with six holes for foundation bolts

970 min^{-1} (6-poled motors)																								
Type	Motor [kW]	Motor Size	Common [mm]			With Standard Coupling [mm]								Weight [kg]	With Spacer Coupling [mm]								Weight [kg]
			a	a_2	h_2	L	h	h_3	L_1	L_3	b_2	b_3	d		L	h	h_3	L_1	L_3	b_2	b_3	d	
100-200	1.5	100L	125	90	280	945	80	280	1120	740	490	440	24	170	1085	80	280	1120	740	490	440	24	170
	2.2	112M				967								182	1107								182
	3	132S				1077								200	1217			1250	840	540	490		212
	4	132M																					
125-250	2.2	112M	140	90	355	967	80	330	1250	840	540	490	24	232	1107	80	330	1250	840	540	490	24	232
	3	132S				1077								250	1217								250
	4	132M1												260									260
	5.5	132M2												271									271
	7.5	160M				1187								306	1327	100	350	1400	940	610	550	28	324
150-315	5.5	132M	160	110	400		100	380	1600	1060	660	600	28	395		100	380	1600	1060	660	600	28	395
	7.5	160M				1275								420	1415								420
	11	160L				1320								460	1460								460
	15	180L				1390			1800	1200	730	670		527	1530			1800	1200	730	670		527
200-400 *	18.5	200L1	180	200	400	1712	100	500	1800	1200	730	670	28	751	1912	100	500	1800	1200	730	670	28	750
	22	200L2												781									780
	30	225M				1797								827	1997	120	520	2000	1340	910	830		848
	37	250M				1877								948	2059								968
200-500 *	30	225M	250	175	675	1869	160	480	1900	1600	945	885	18	960	2077	160	480	2000	1700	945	885	18	960
	37	250M				1949								1080	2149			2100	1800				1085
	45	280S				1902			2000	1700				1205	2102								1220
	55	280M				1952								1265	2152								1278
	75	280M					180	490				880		1272		180	490				880		1285
250-310 *	11	160L	250	200	400	1487	140	480	1700	1400	950	890	18	560	1687	140	480	1700	1400	950	890	18	560
	15	180L				1557								600	1757								600
	18.5	200L1				1597								625	1797			1800	1500				640
250-330 *	18.5	200L1	250	225	400	1772	120	570	2000	1340	910	830	28	800	1972	120	570	2000	1340	910	830	28	800
	22	200L2												830									830
	30	225M				1857								874	2057								874
250-400 *	18.5	200L1	200	175	600	1722	160	470	1800	1500	850	790	18	814	1922	160	470	1900	1600	850	790	18	818
	22	200L2												844									848
	30	225M				1807								890	2007			2000	1700				900
	37	250M				1887			1900	1600				1017	2087								1075
	45	280S				1912	180	480				780		1150	2112	180	480	2100	1800		780		1229
	55	280M				1962			2000	1700				1208	2162								1288
250-500 *	45	280S	300	175	660	2022	180	490	2000	1700	945	880	18	1240	2222	180	490	2200	1900	945	880	18	1255
	55	280M				2072								1300	2272								1315
	75	315S						495	2200	1900	955	875		1700			495						1715
	90	315M				2427	200	515						1827	2627	200	515	2400	2100	955	875		1842
	110	315L1												1897									1912
300-360 *	22	200L2	300	180	440	1842	180	530	1800	1500	860	795	18	991	2122	180	530	2000	1700	860	795	18	1000
	30	225M				1927			1900	1600				1042	2207								1100
	37	250M				2207								1165	2287			2100	1800				1210
	45	280S				2032			2000	1700				1294	2312								1330
	55	280M				2082								1353	2362			2200	1900				1400

* Oversize

Quotation Drawing

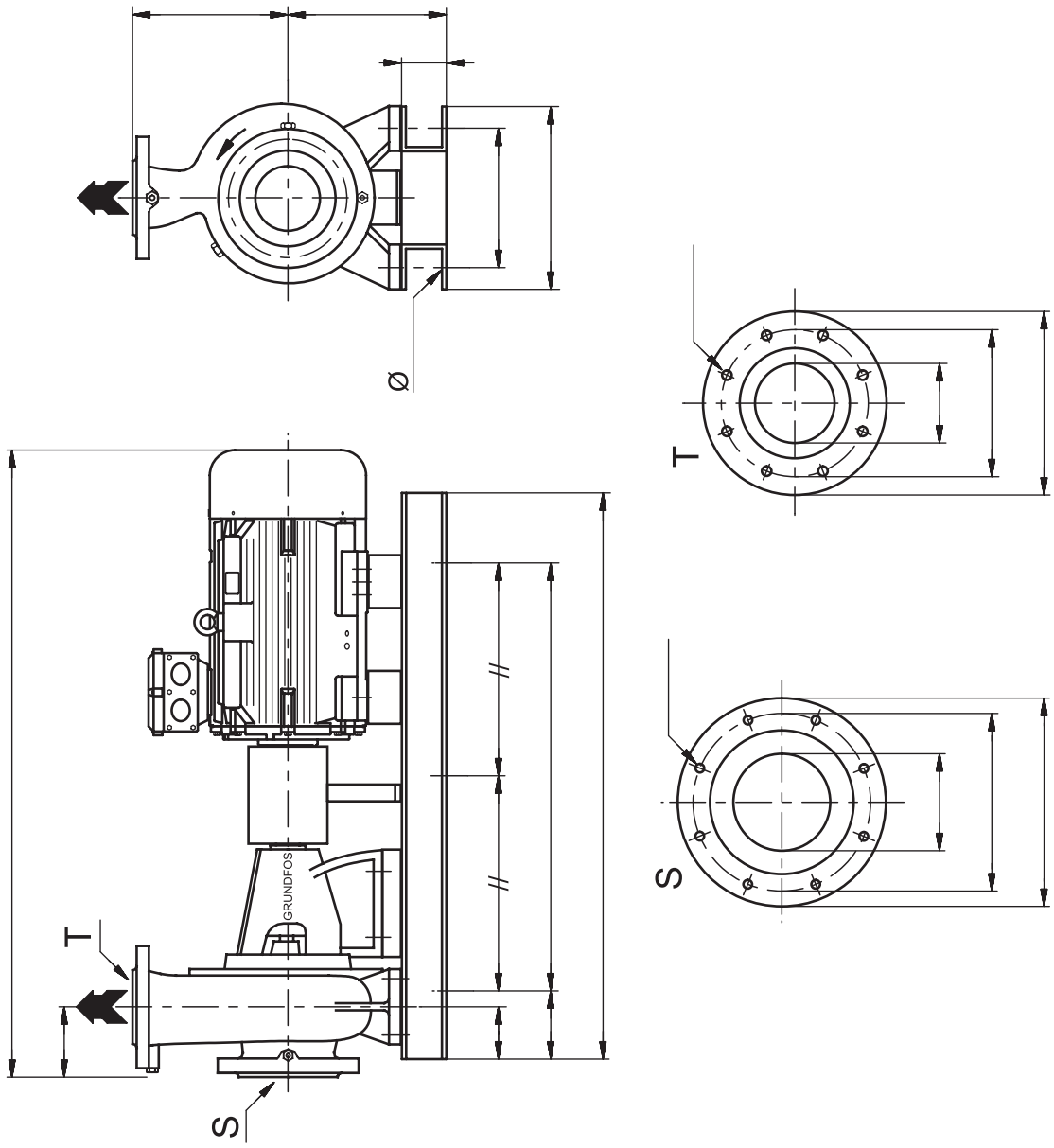
NK 32-125 -> 150-400



GRUNDFOS DK-8850 BJERRINGBRO DENMARK	Pump type:	Drawing No.: TM01 3486 4298 Projection:

Quotation Drawing

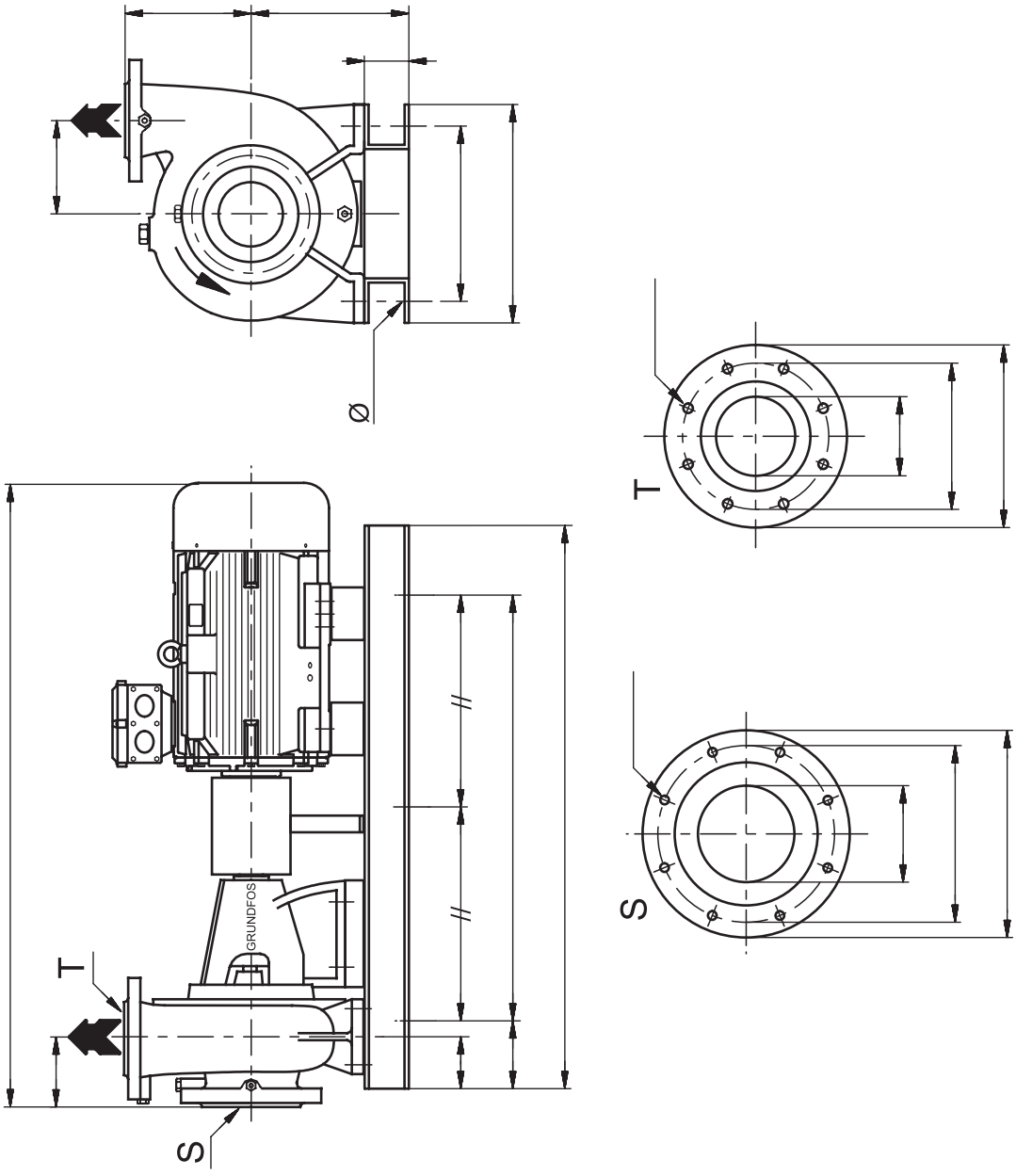
"Oversizes" NK 150-315, 200-500, 250-400, 250-500



GRUNDFOS DK-8850 BJERRINGBRO DENMARK	Pump type:	Drawing No.: TM01 3487 4298 Projection:

Quotation Drawing

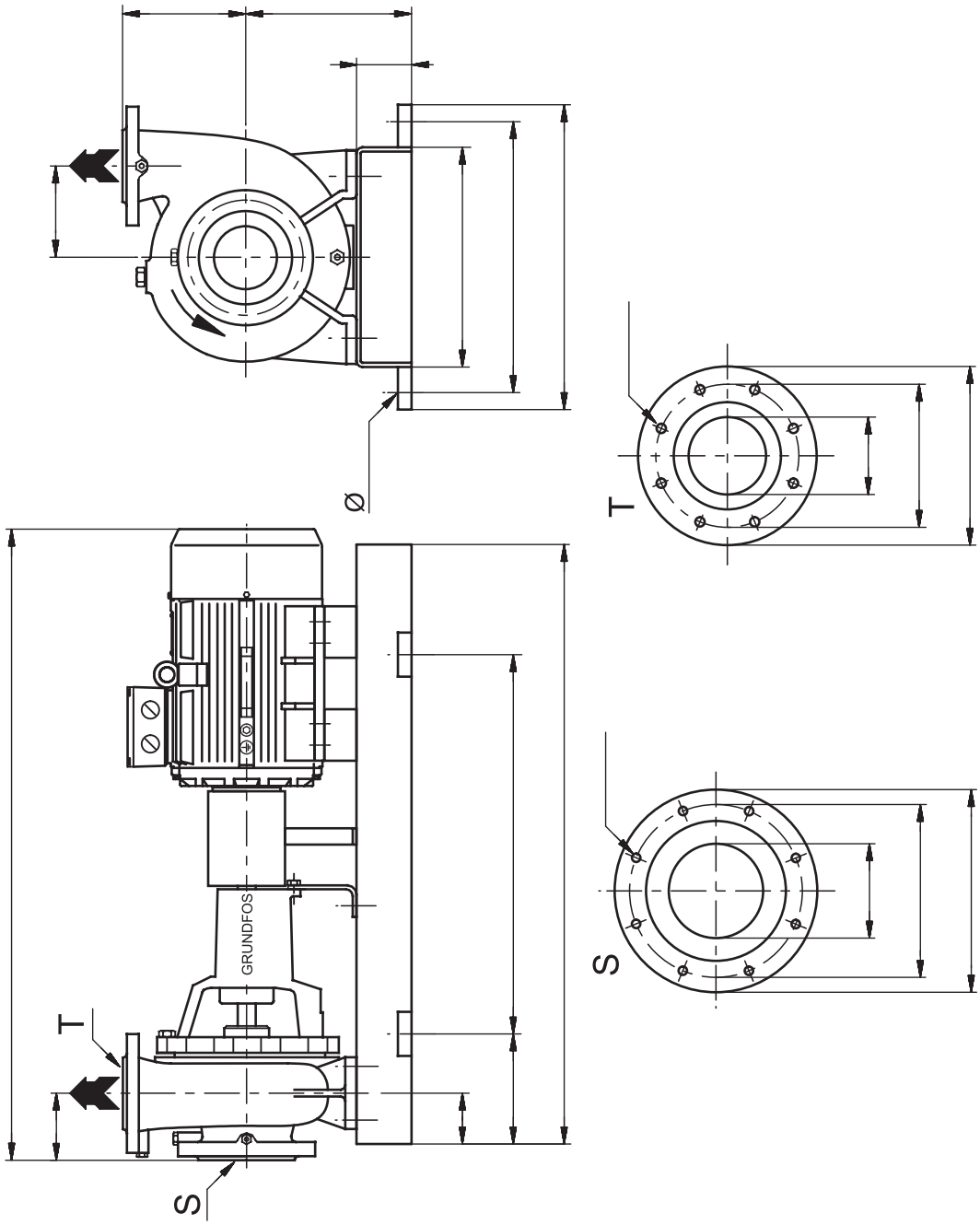
"Oversizes" NK 200-400, 250-330, 300-360



GRUNDFOS DK-8850 BJERRINGBRO DENMARK	Pump type:	Drawing No.: TM01 3488 4298 Projection:

Quotation Drawing

"Oversizes" NK 250-310



GRUNDFOS DK-8850 BJERRINGBRO DENMARK	Pump type:	Drawing No.: TM01 3489 4298 Projection:

Curve Conditions

Selection of Pumps

The guidelines below apply to the curves shown in the performance charts on pages 35 - 106.

- Tolerances according to:
  ISO 2548, Class C, annex B.
- The curves show pump performance with different impeller diameters at the nominal speed.
- The bold part of the curves show the **recommended** operating range.
- The thin parts show the **possible** operating range but the lower efficiency here might suggest the selection of a smaller/larger pump type.
- Due to the risk of overheating, a flow rate equal to 10% of the flow rate at maximum efficiency is needed at all times.
- The curves apply to the pumping of water at a temperature of +20°C and a kinematic viscosity of 1 mm^2/s (1 cSt).
- ETA: The dashed lines show values of the hydraulic efficiency of the pump.
- NPSH: The curves show average values measured under the same conditions as the performance curves.
- When dimensioning the pump, add a safety margin of at least 0.5 m.

Performance Tests

The requested duty point for every pump is tested according to ISO 2548, class C, annex B and without certification.

In case of pumps ordered with impeller diameter only (no requested duty point), the pump will be tested at a duty point which is 2/3 of the maximum flow of the published performance curve which is related to the ordered impeller diameter (according to ISO 2548, class C, annex B).

If the customer requires either more points on the curve to be checked or certain minimum performances or certificates, individual measurements must be made.

Certificates

Certificates have to be confirmed for every order and are available on request as follows:

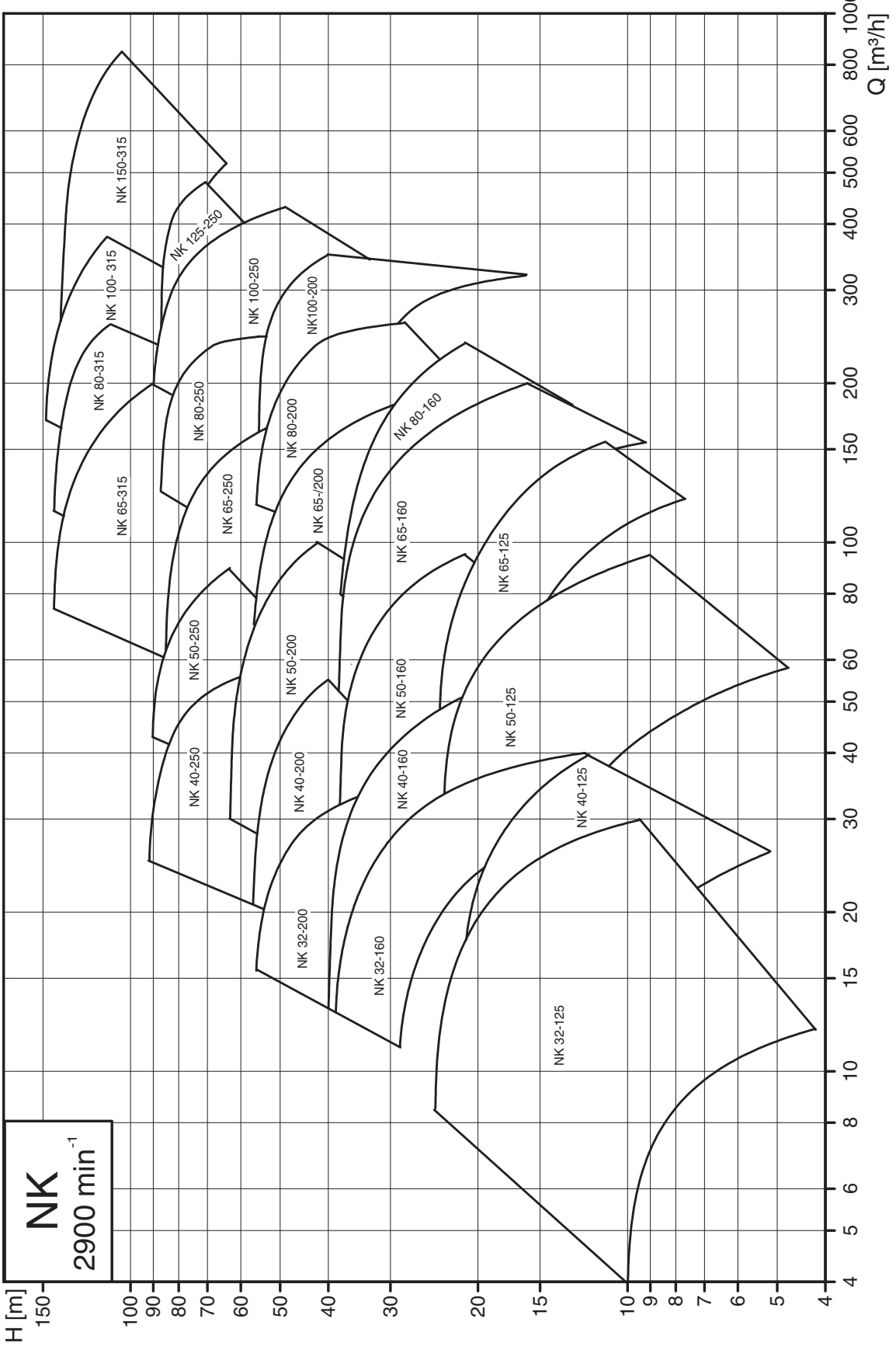
According to EN 10204

- Certificate for compliance with the order — EN 10204 - 2.1
- Pump certificate — EN 10204 - 2.2
- Works certificate — EN 10204 - 2.3
- Inspection certificate — EN 10204 - 3.1 B
- Inspection certificate — EN 10204 - 3.1 C

According to ISO 2548, Class C, annex B

- Certificate A
- Certificate A with approval of official inspector.

Performance Ranges



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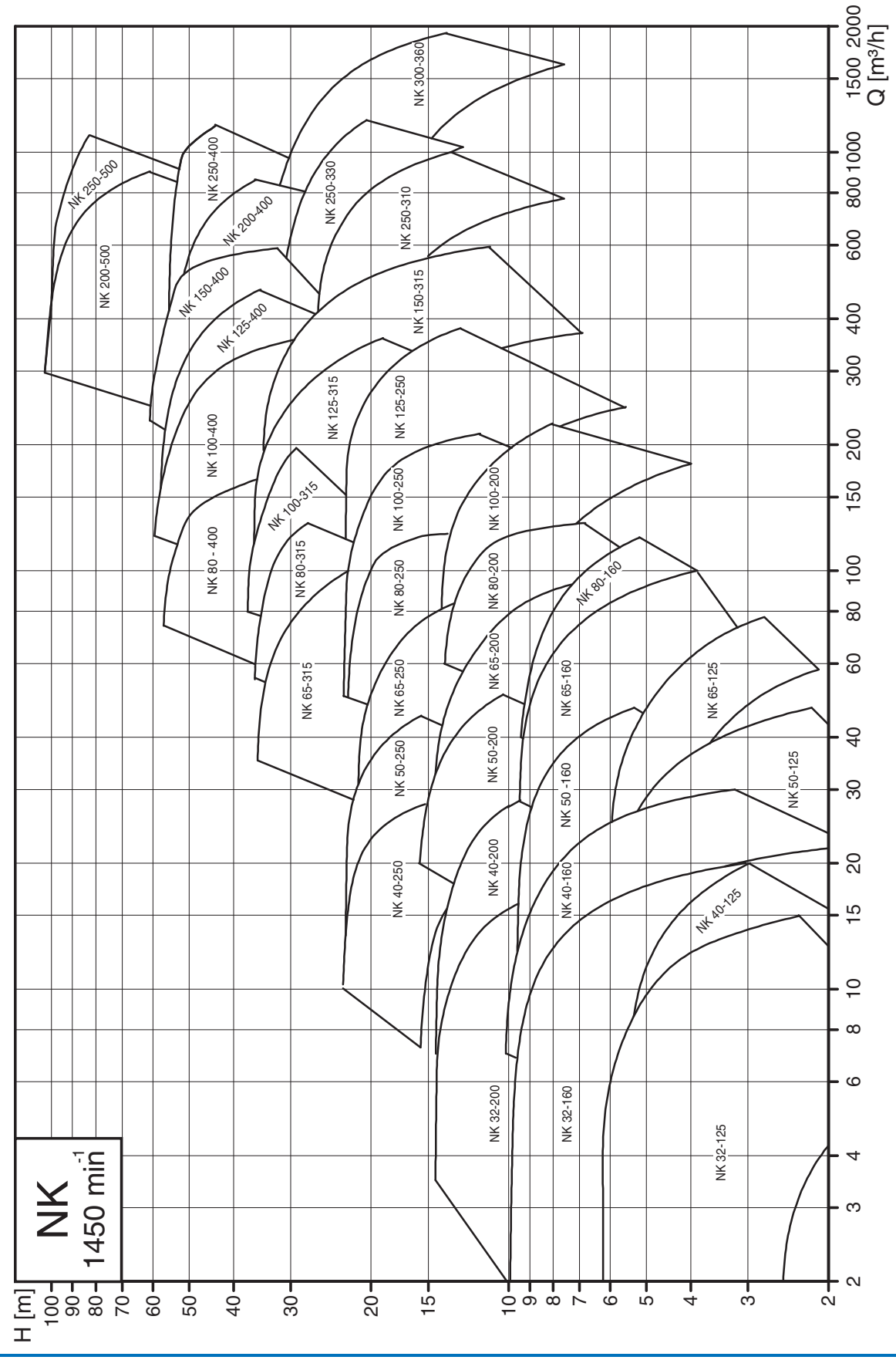
Performance Ranges



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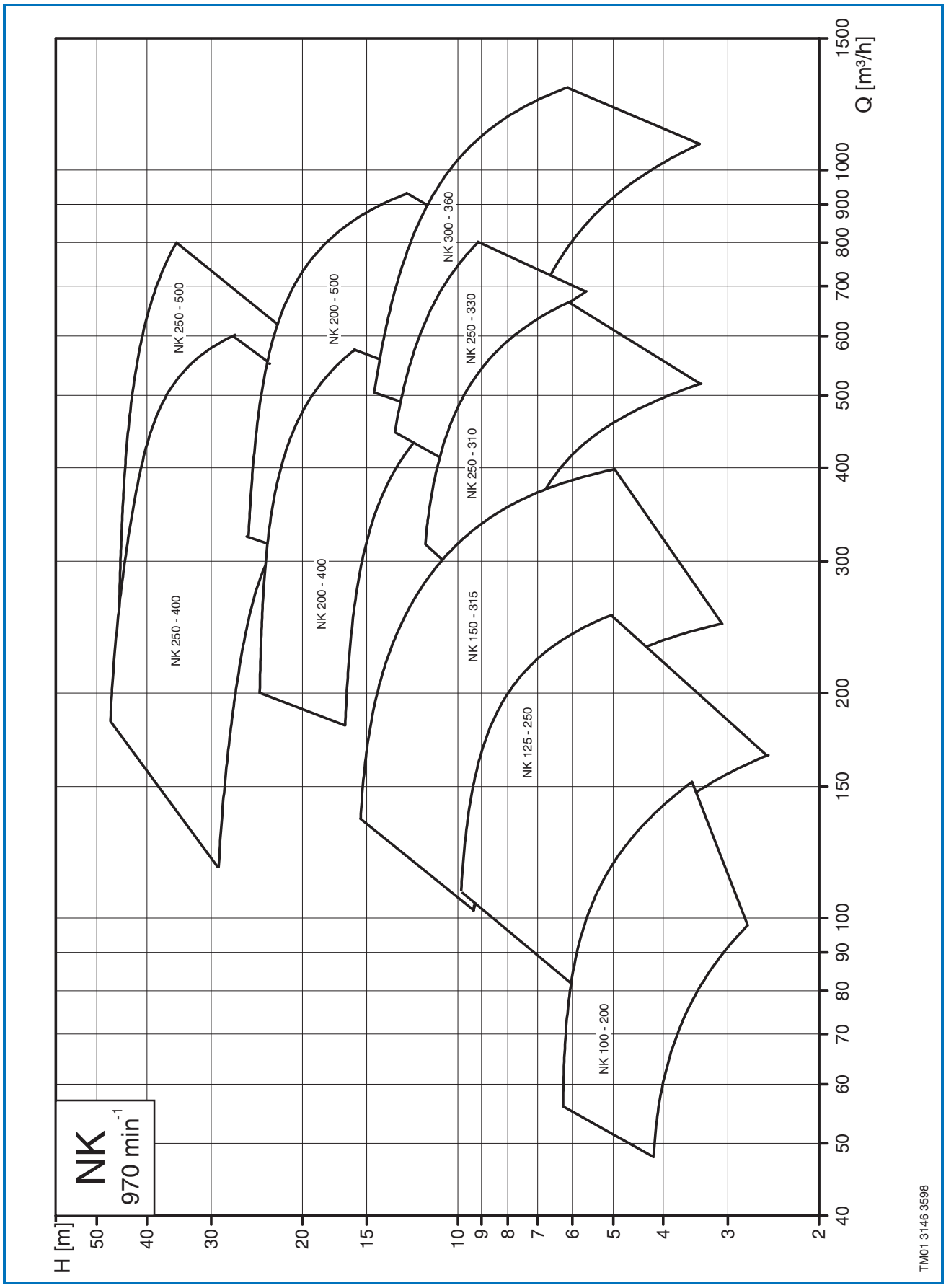
Performance Ranges



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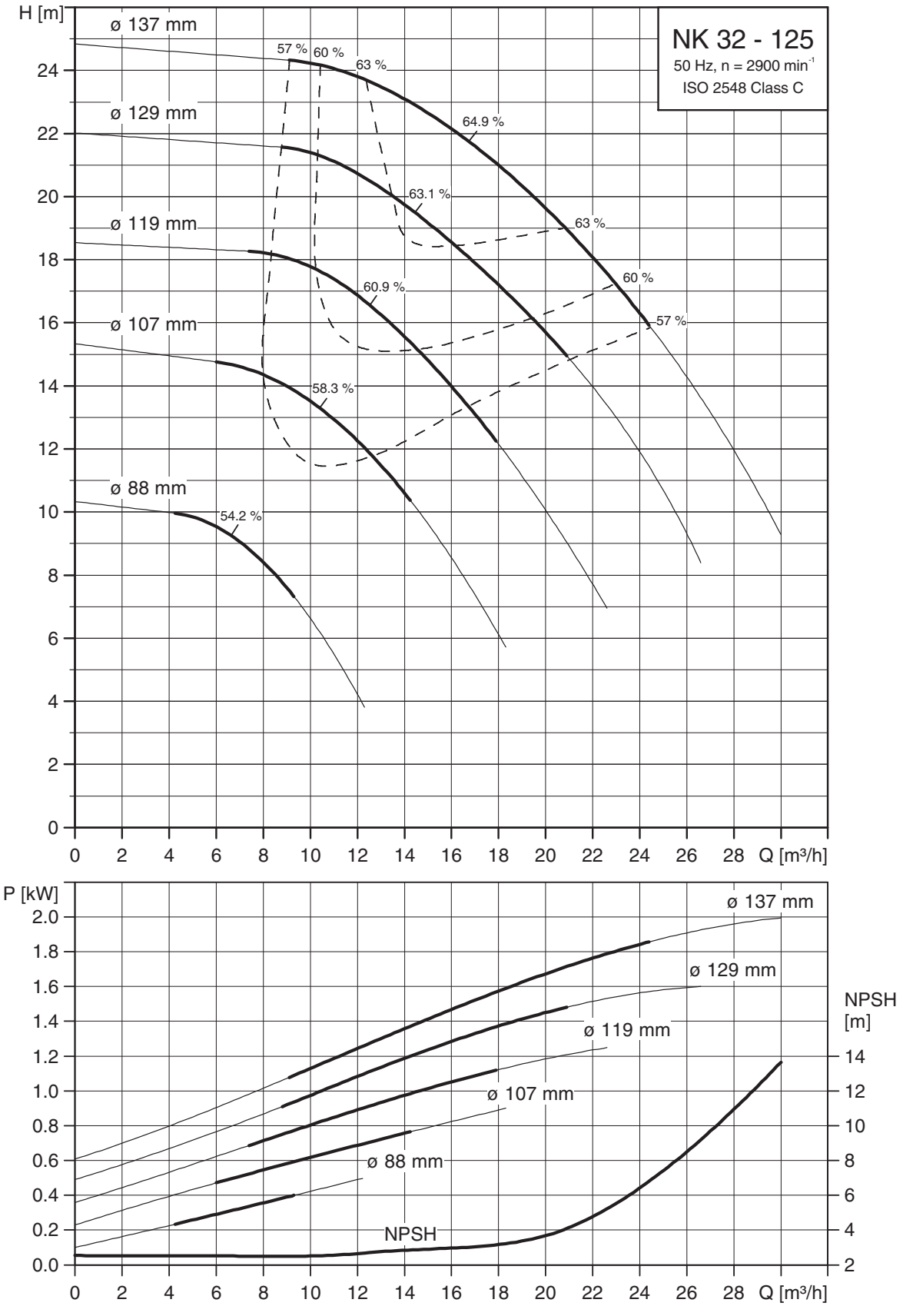
Performance Curves



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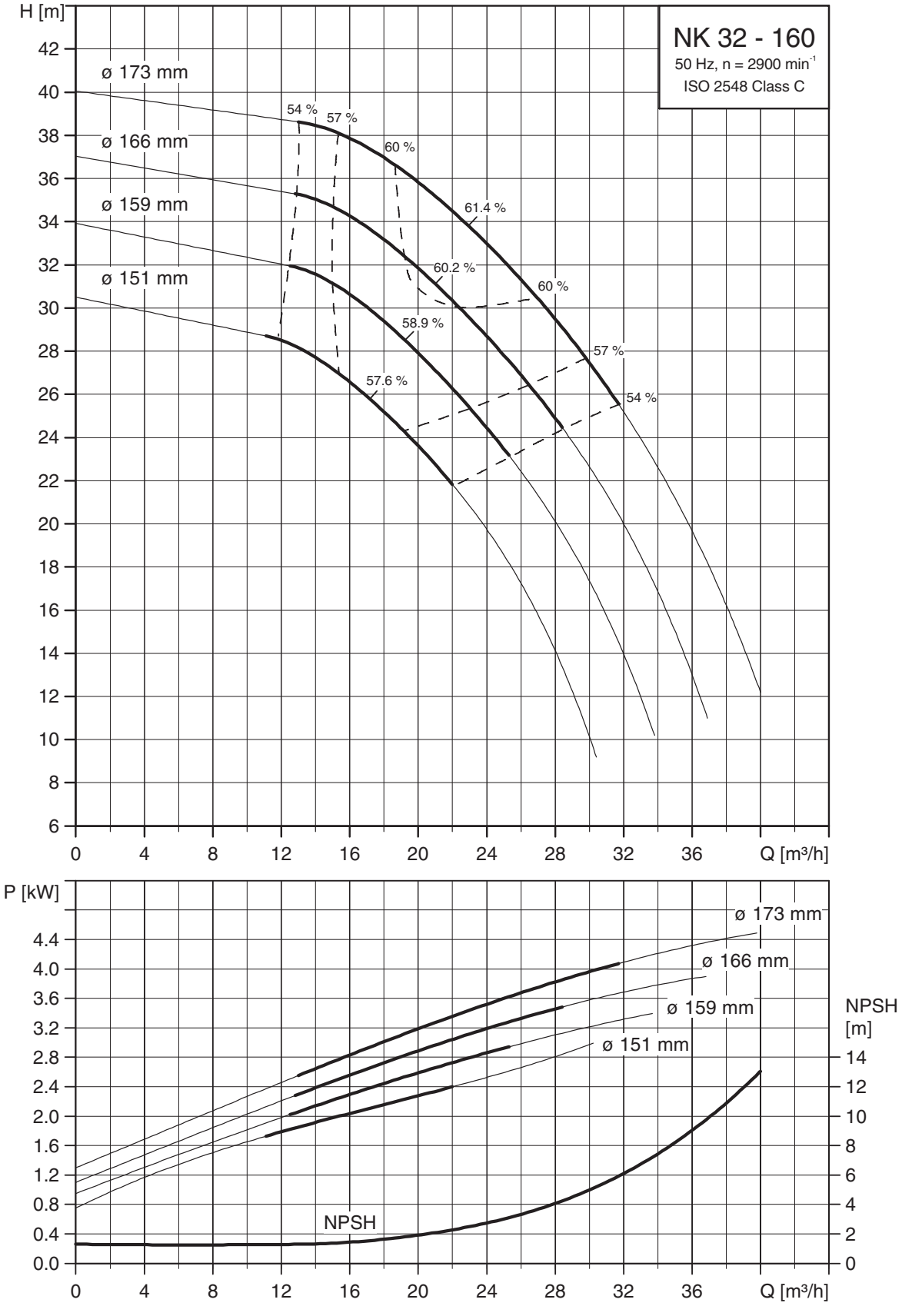
Performance Curves



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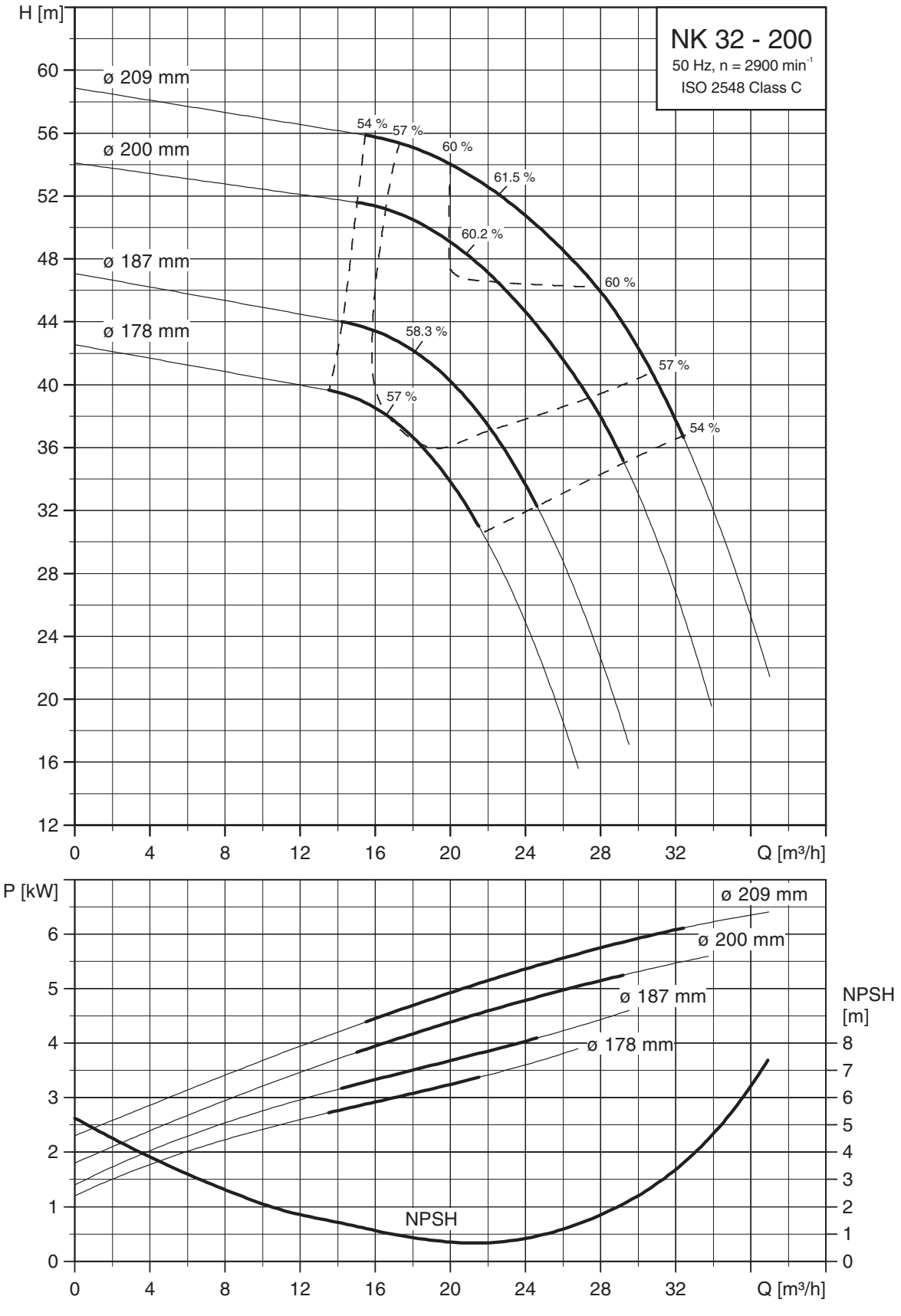
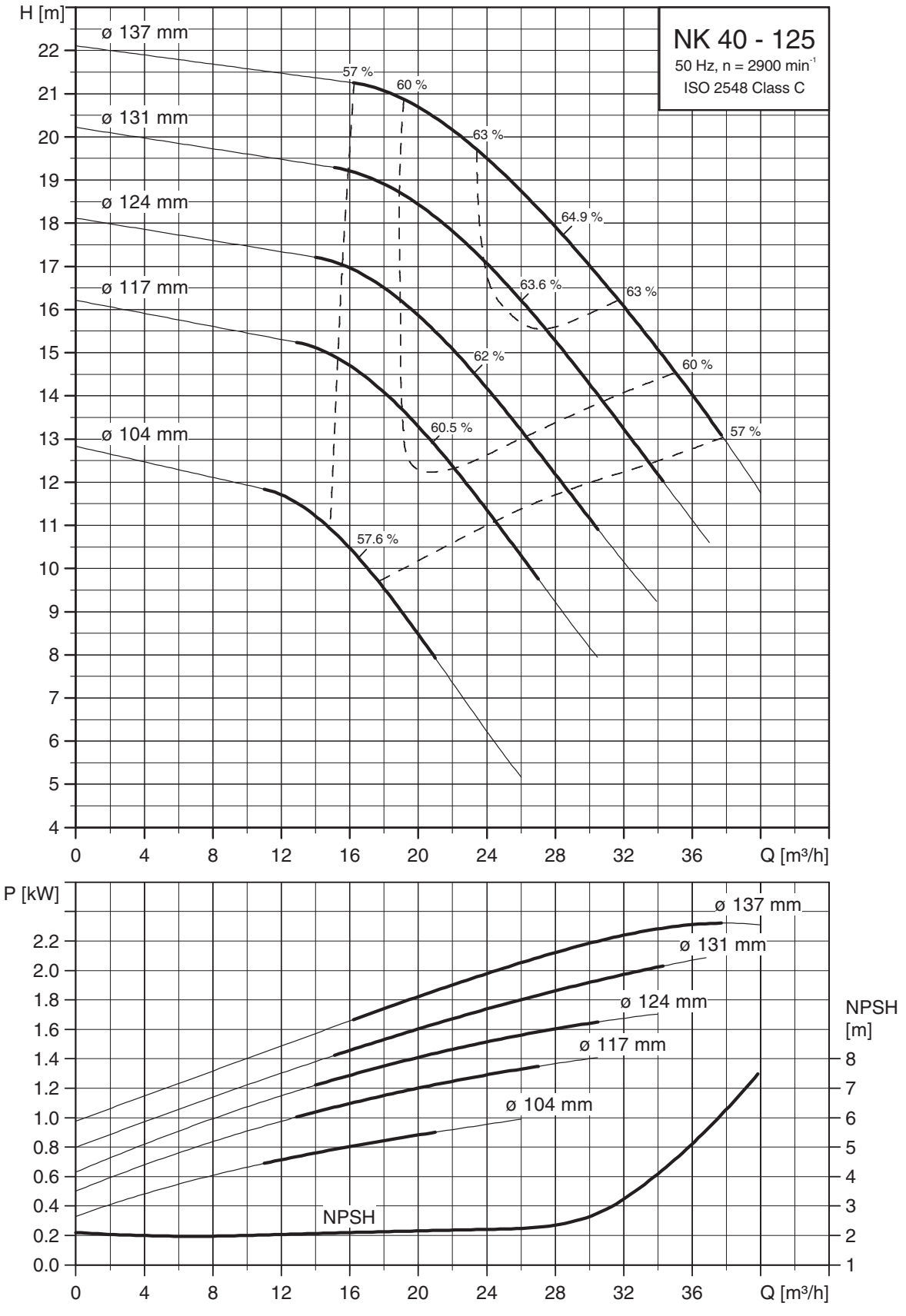
Performance Curves



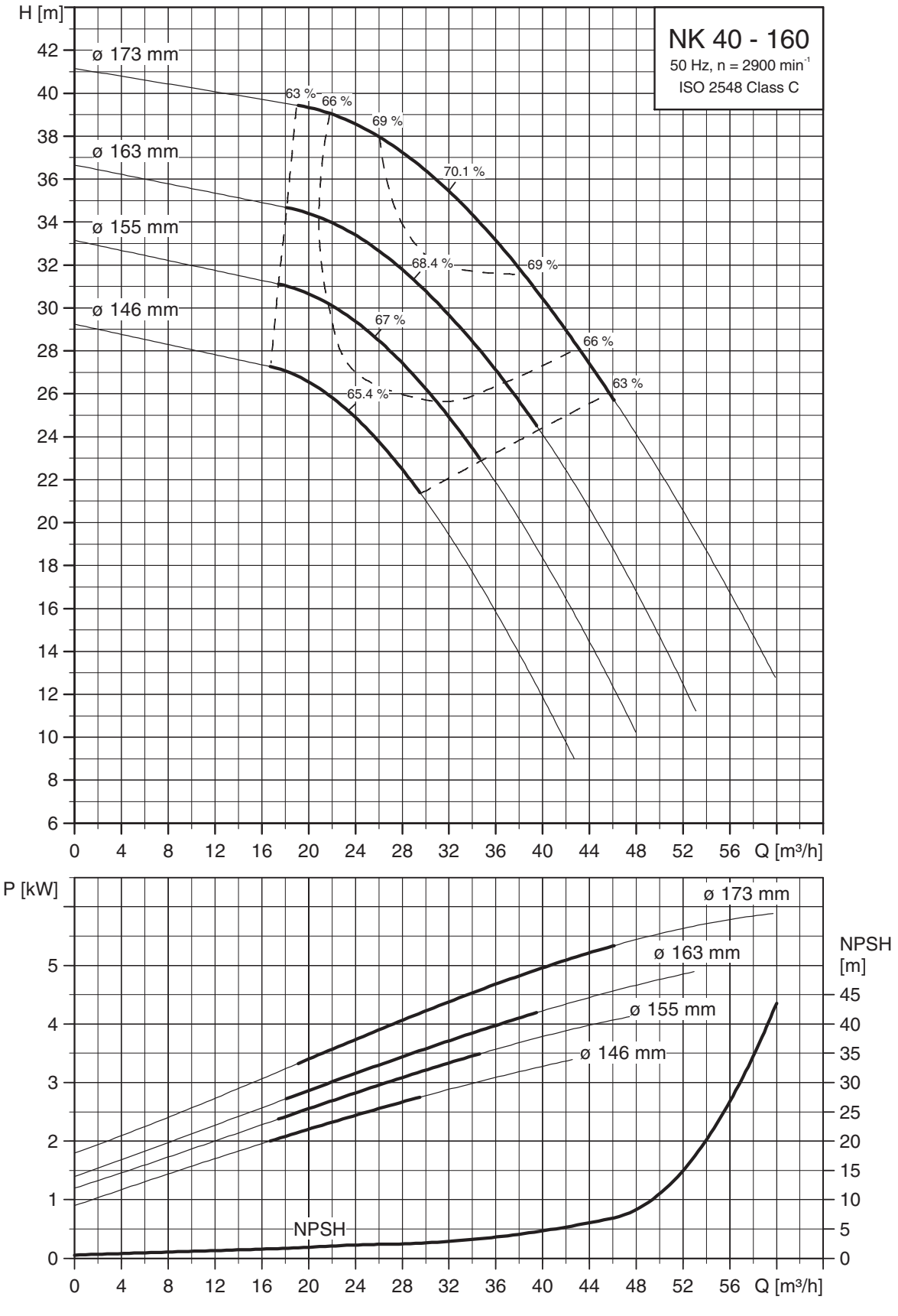
GRUNDFOS

Performance Curves



GRUNDFOS

Performance Curves



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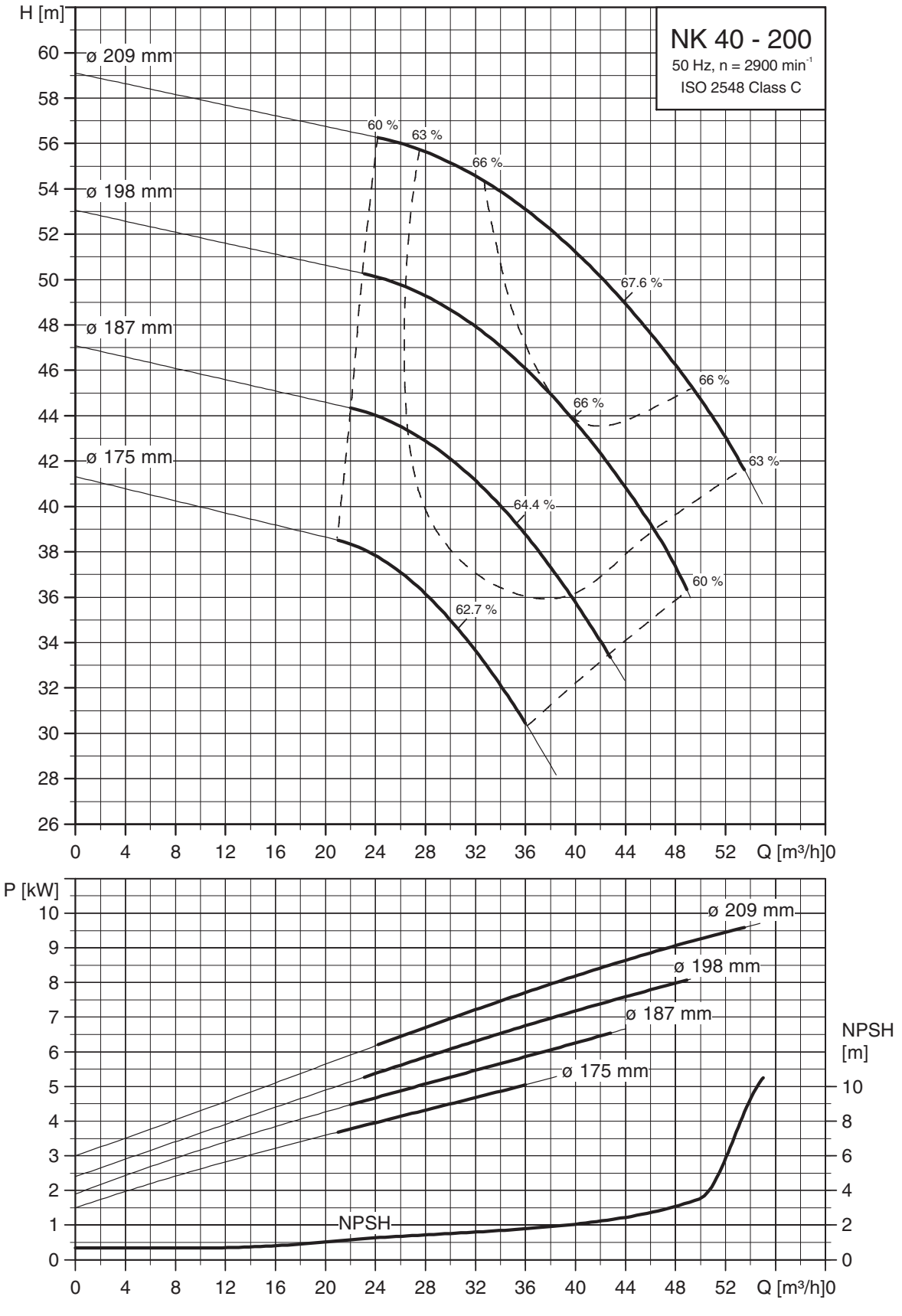
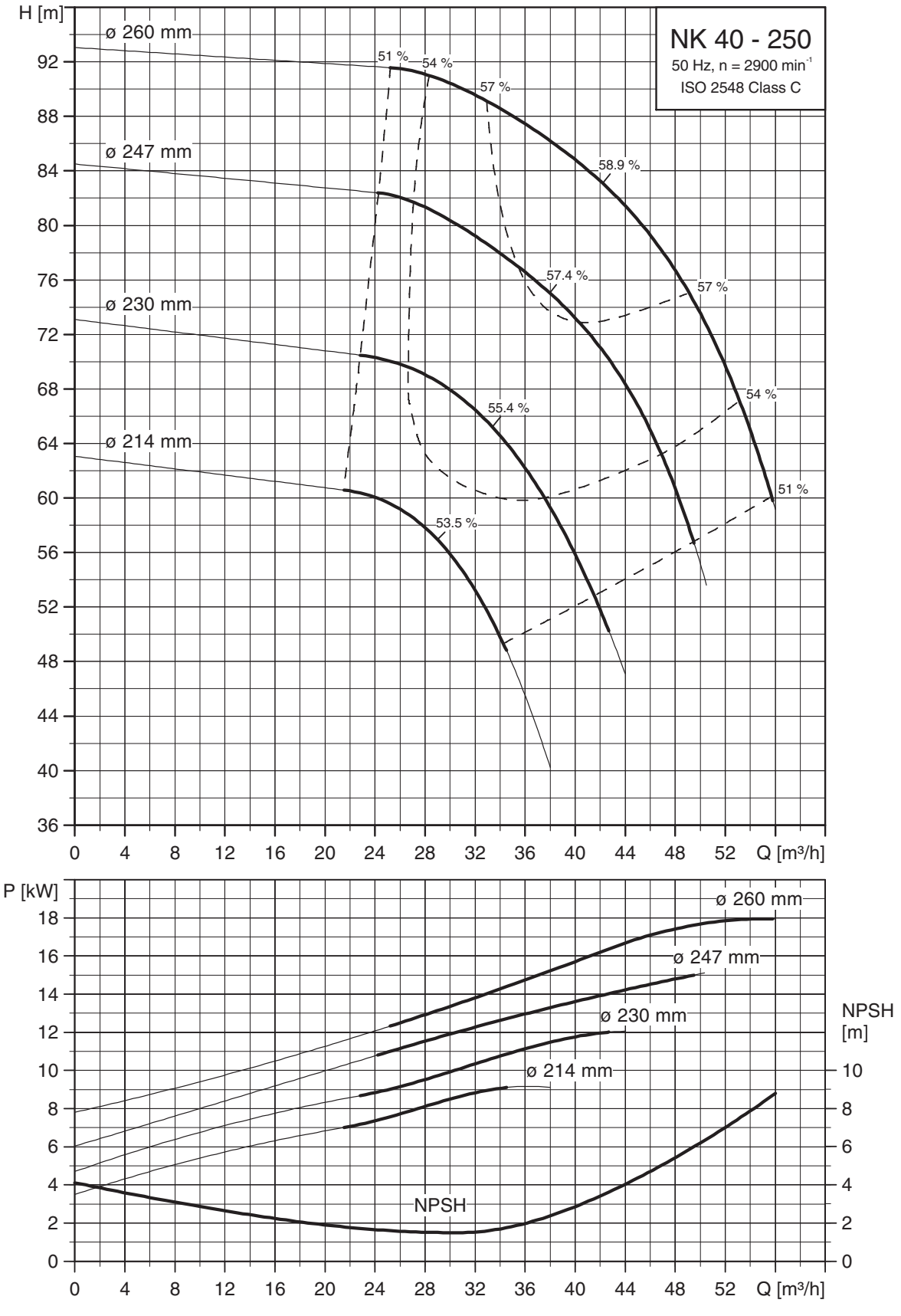
Performance Curves



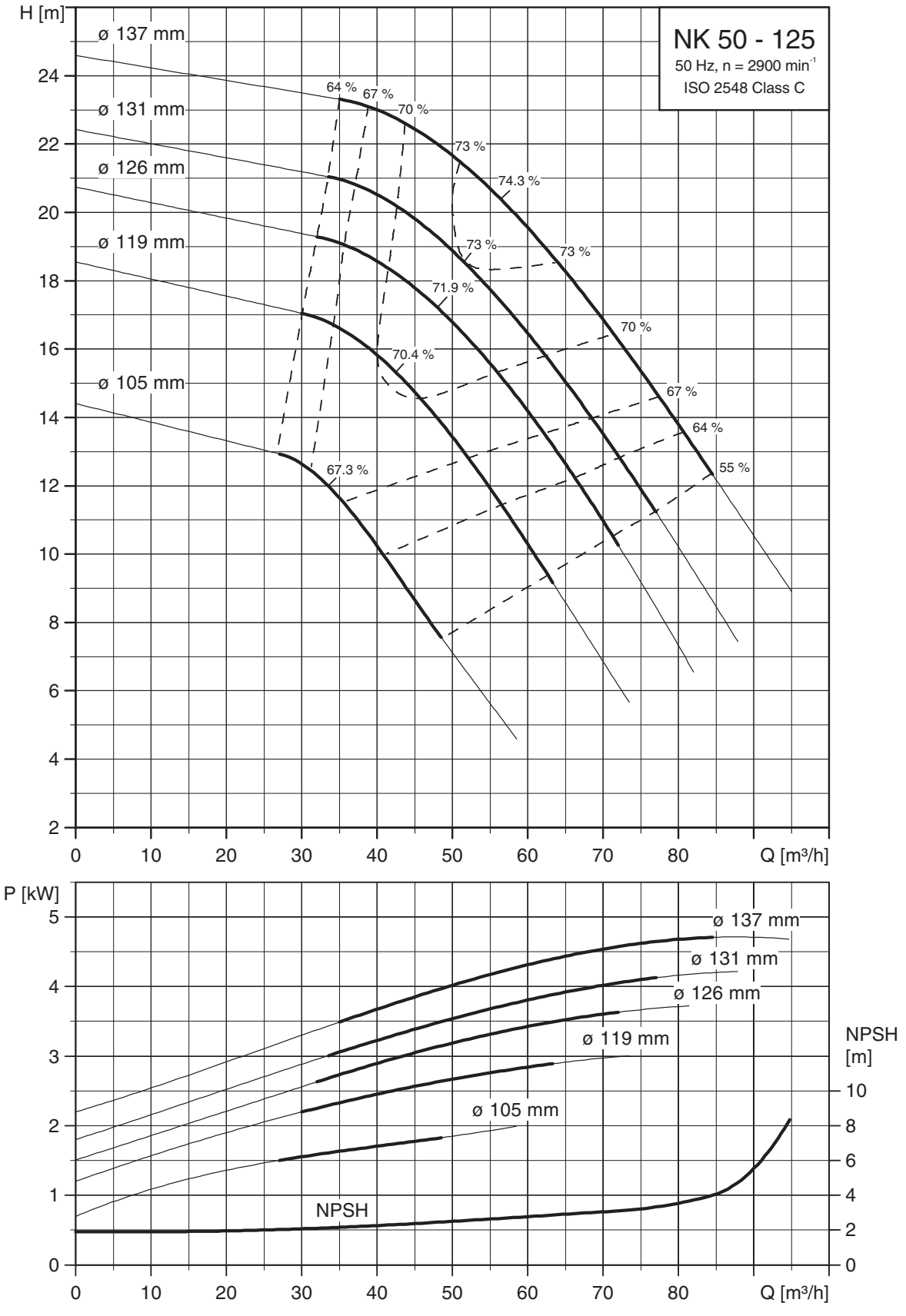
GRUNDFOS

Performance Curves

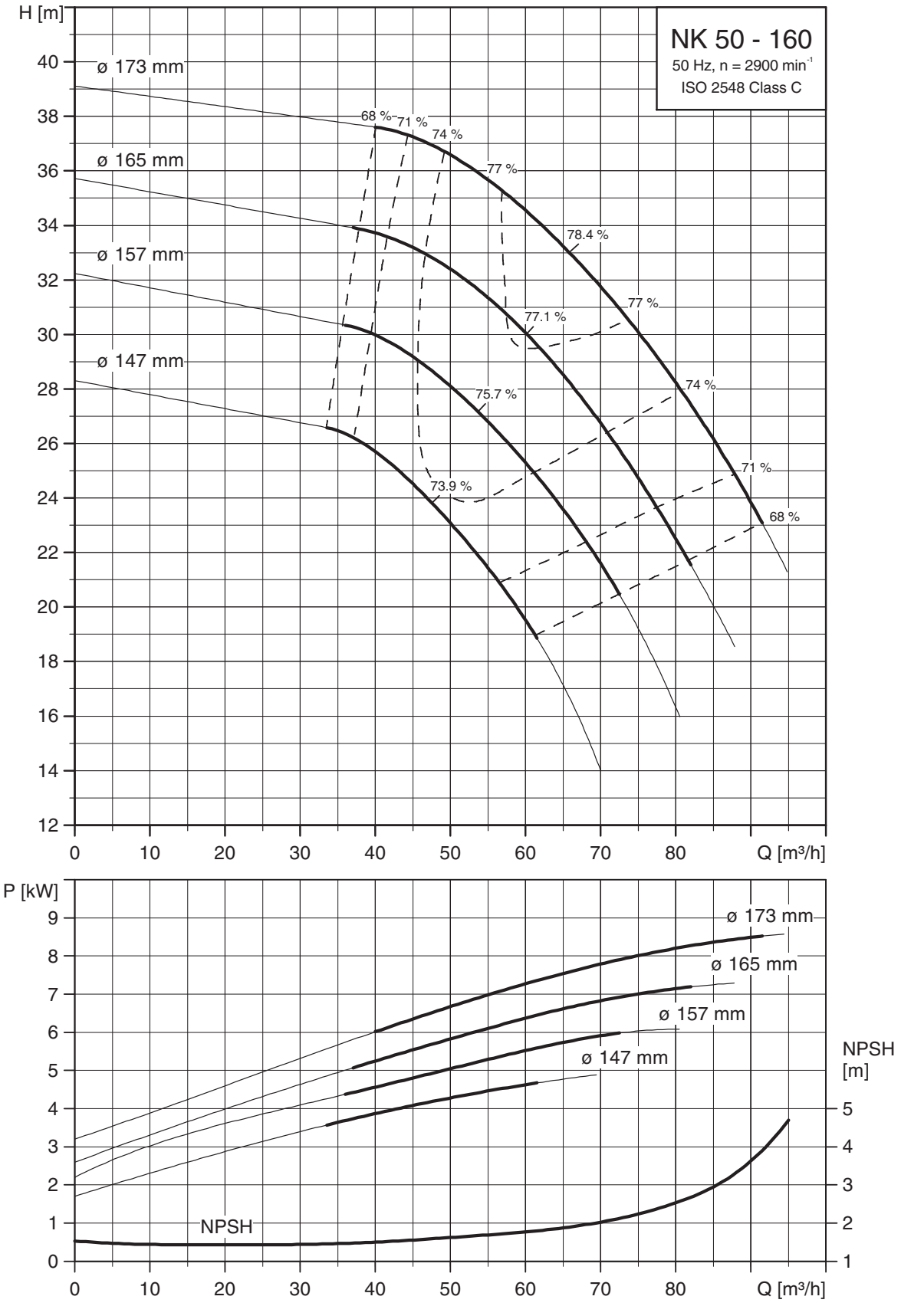


GRUNDFOS

Performance Curves



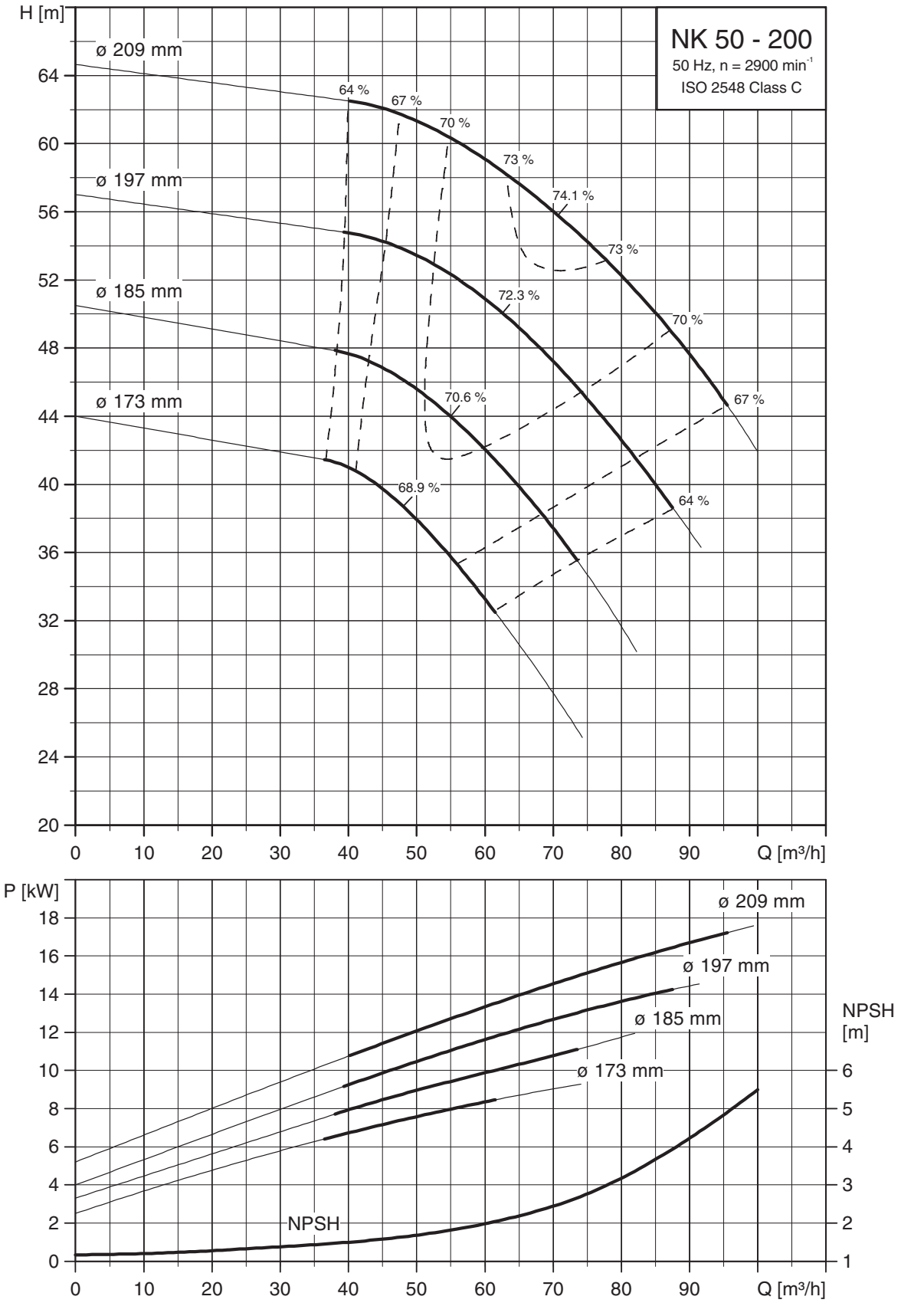
Performance Curves



TM00 0180 0499

GRUNDFOS

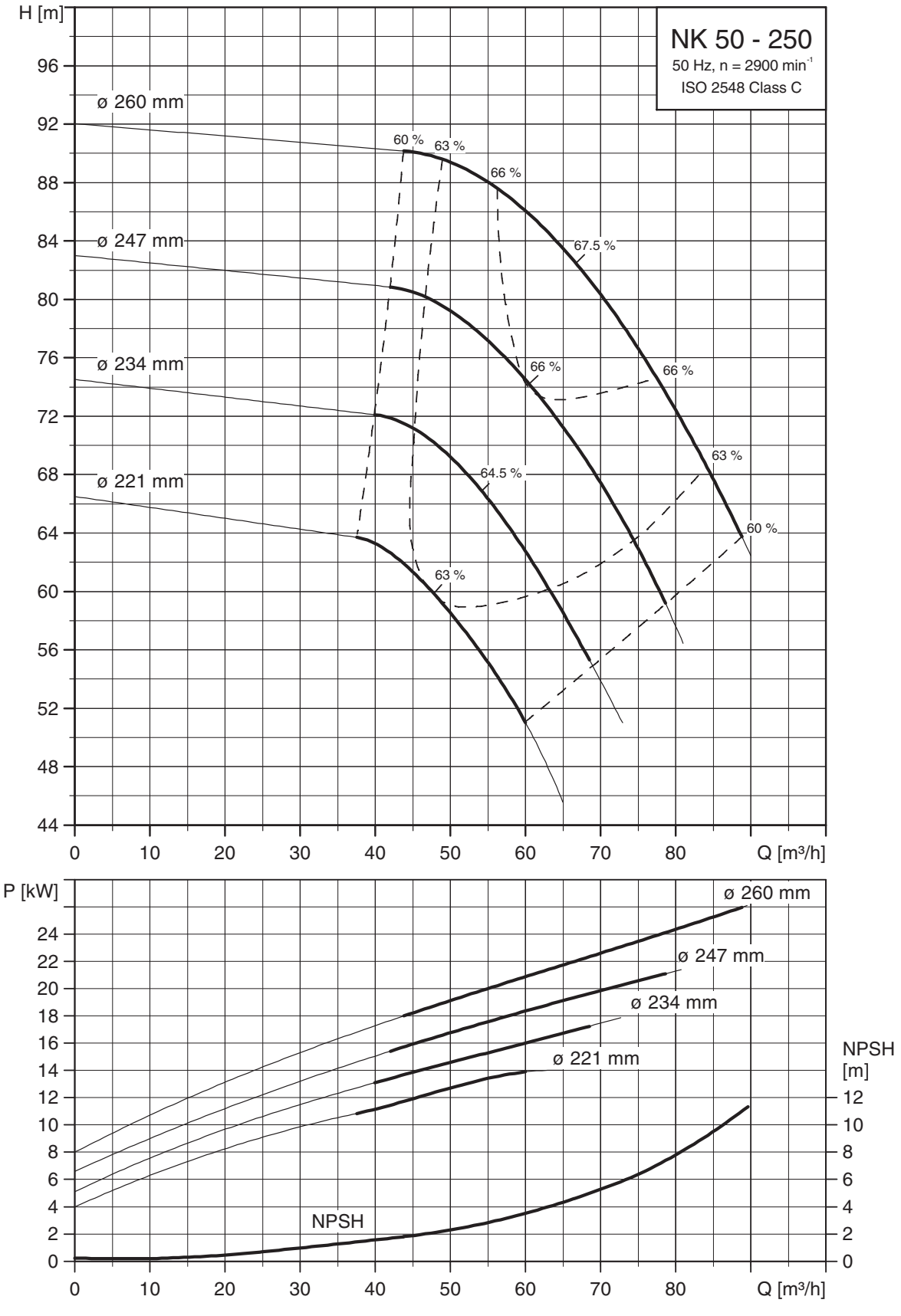
Performance Curves



TM00 0181 0499

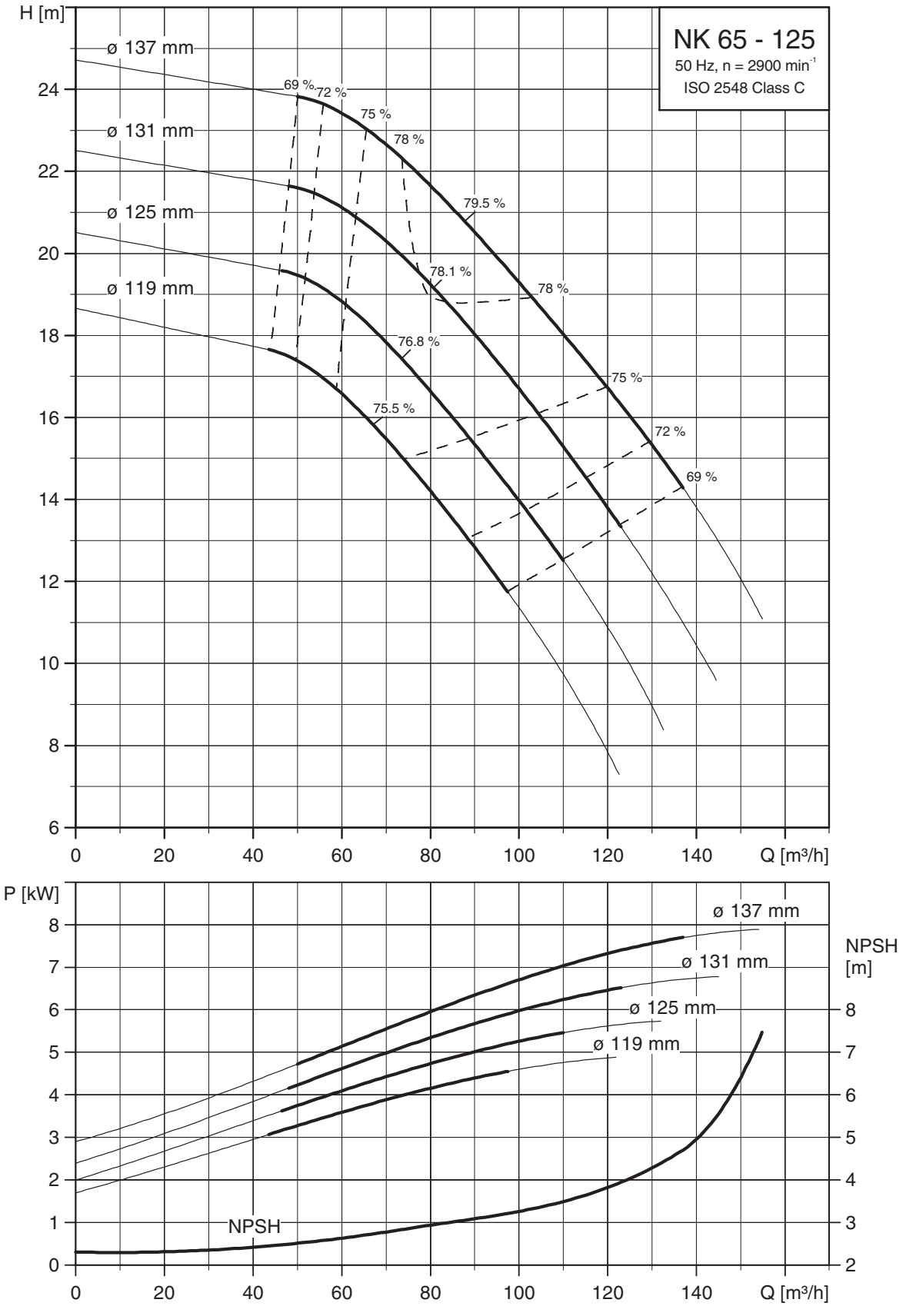
GRUNDFOS

Performance Curves



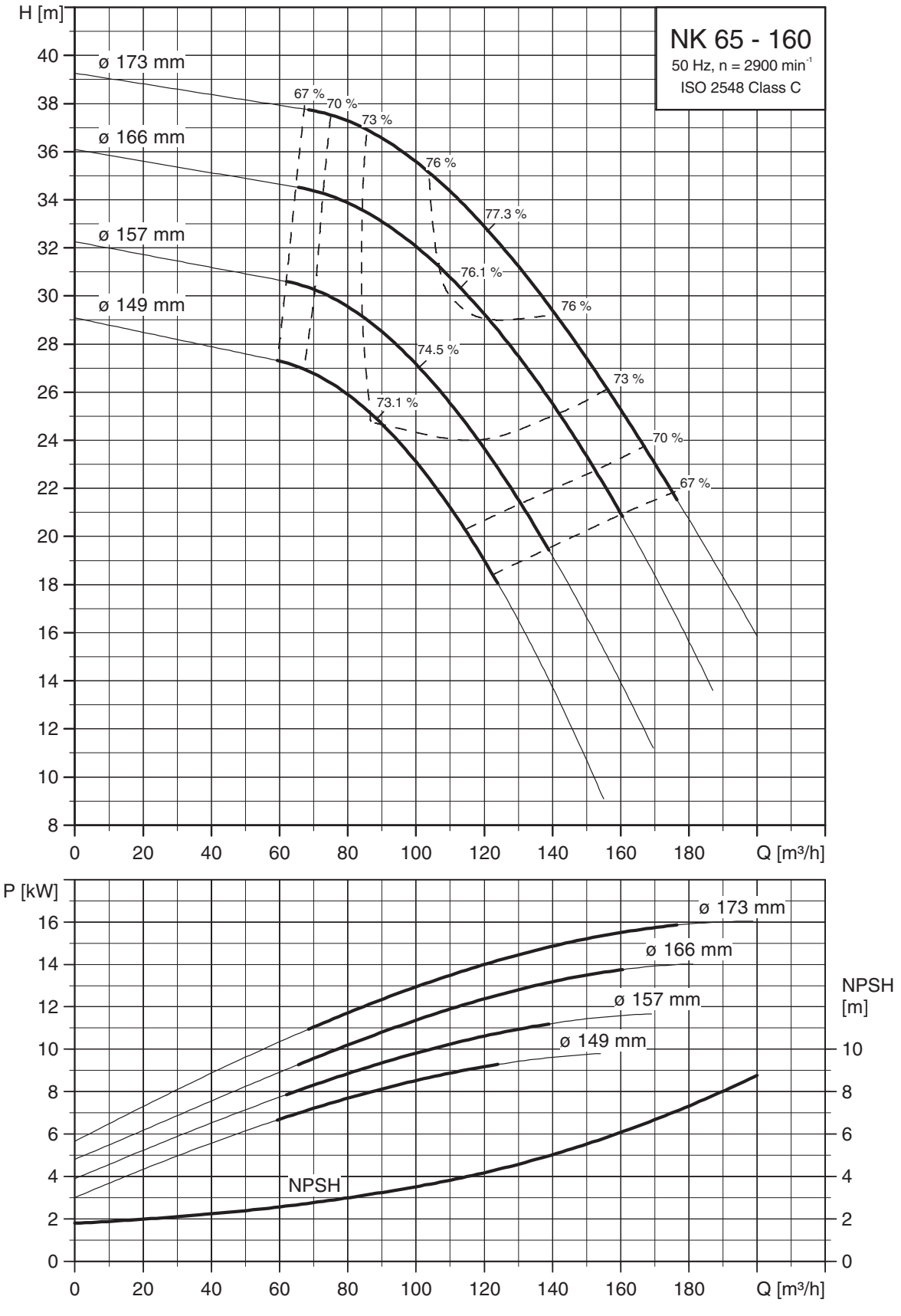
GRUNDFOS

Performance Curves



GRUNDFOS

Performance Curves



TM00 0184 0499

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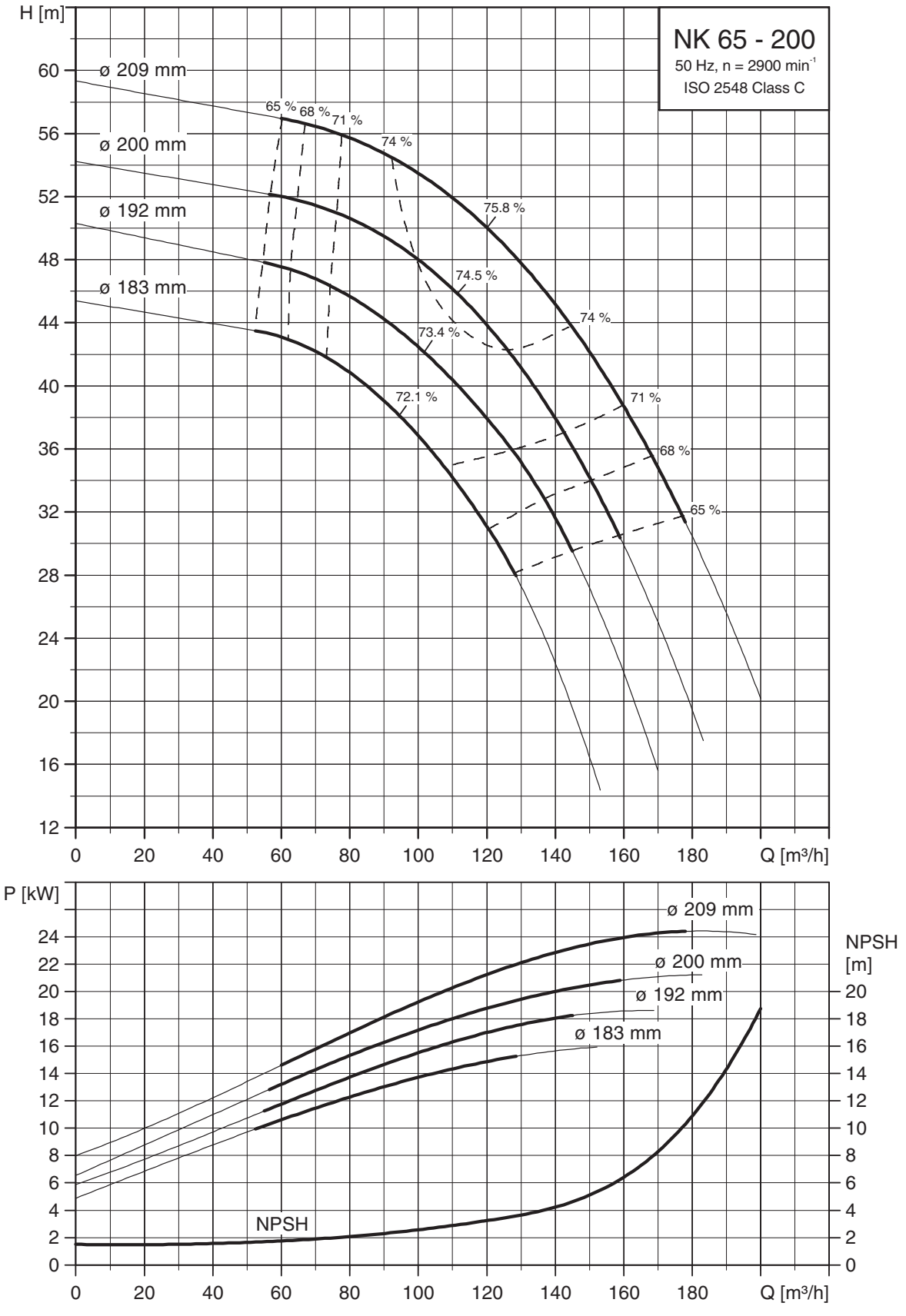

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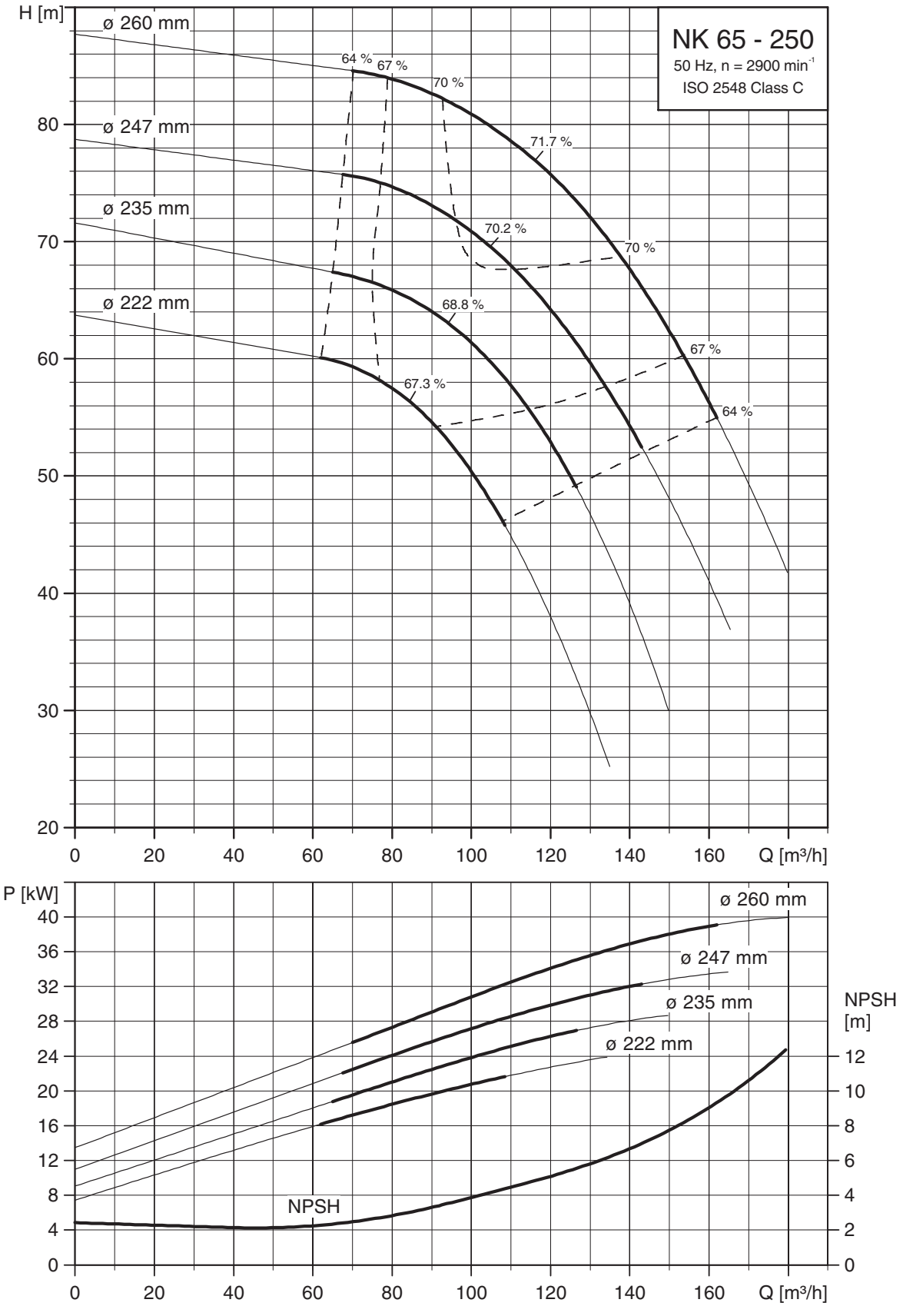

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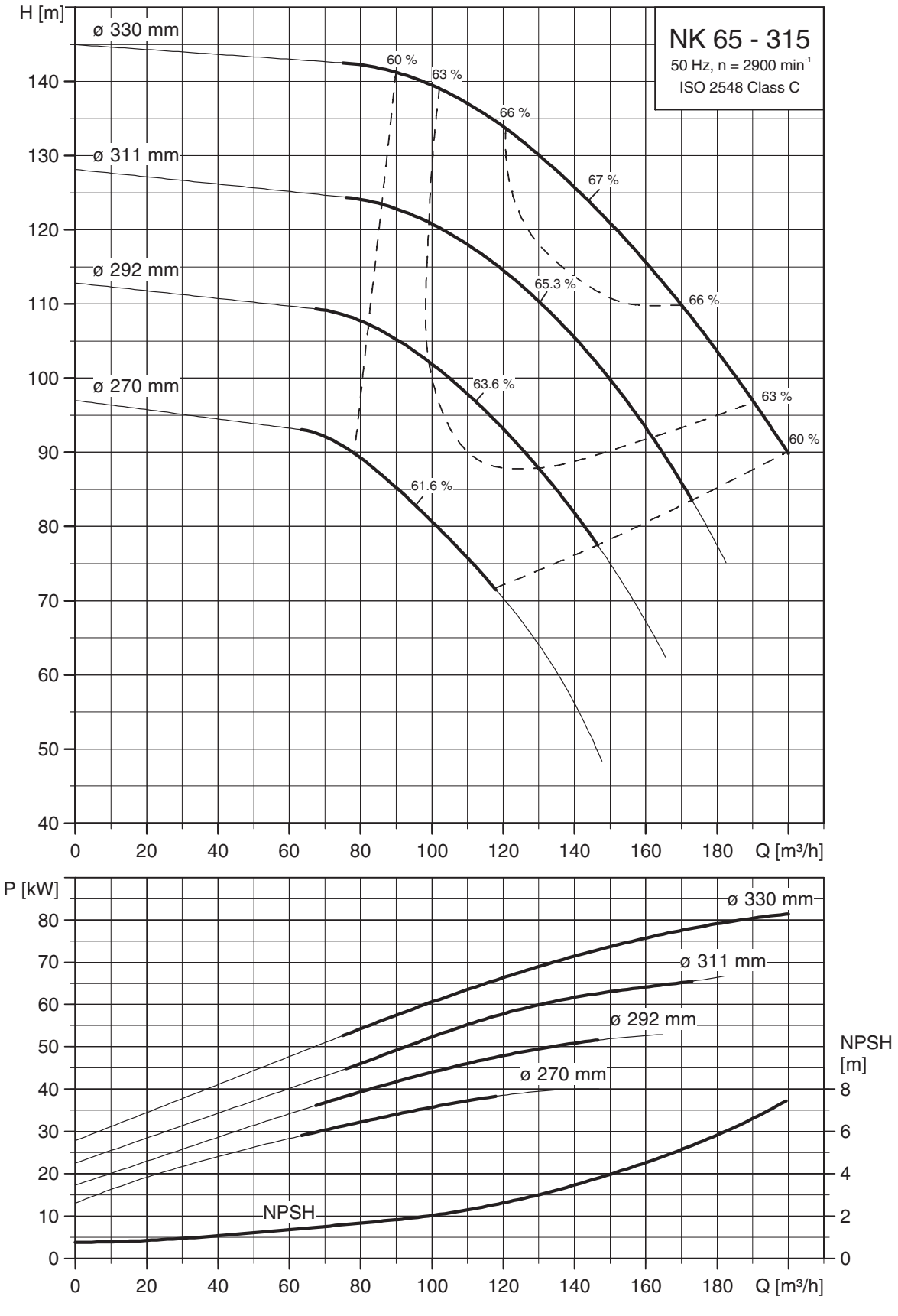

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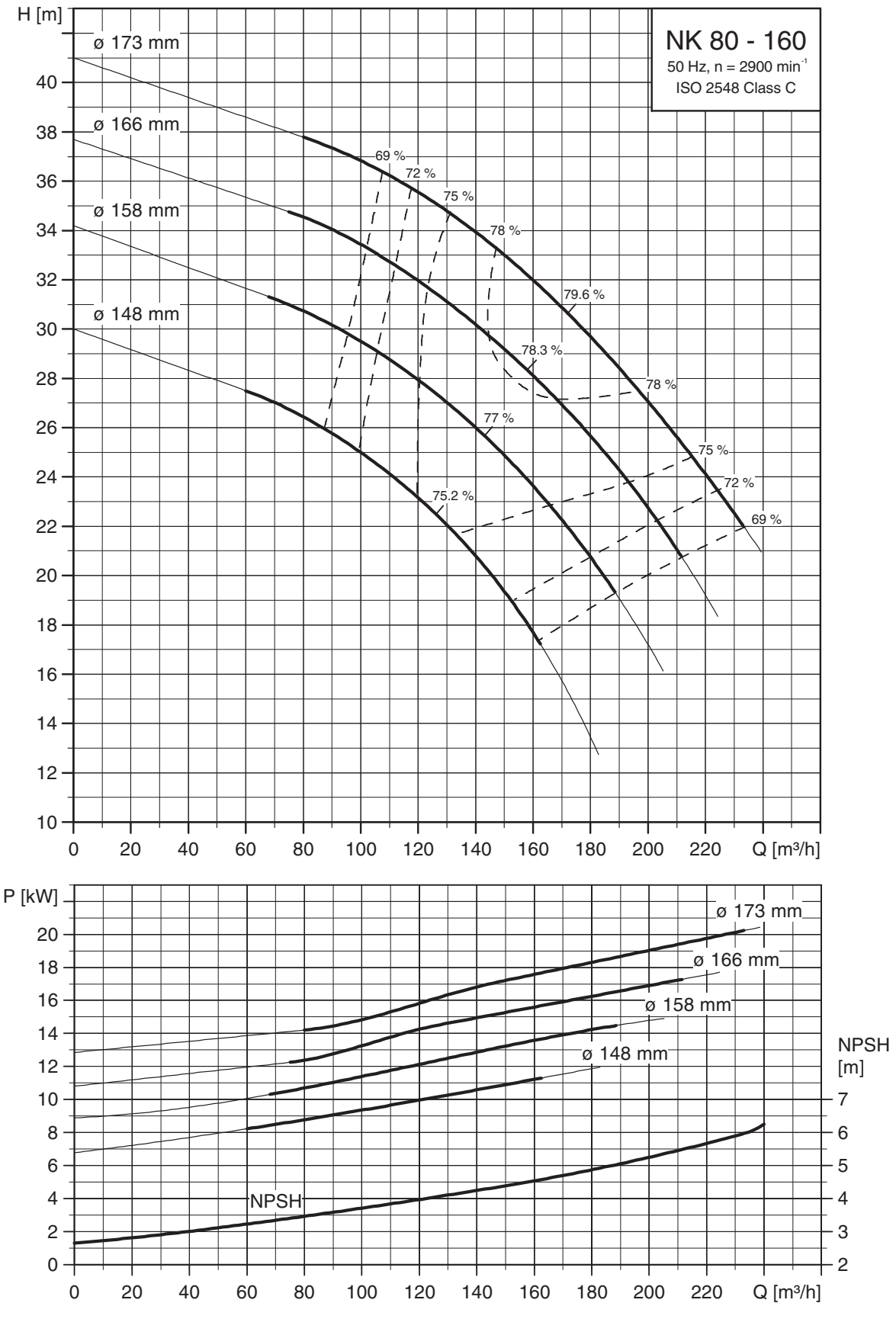

TM00 0187 0499

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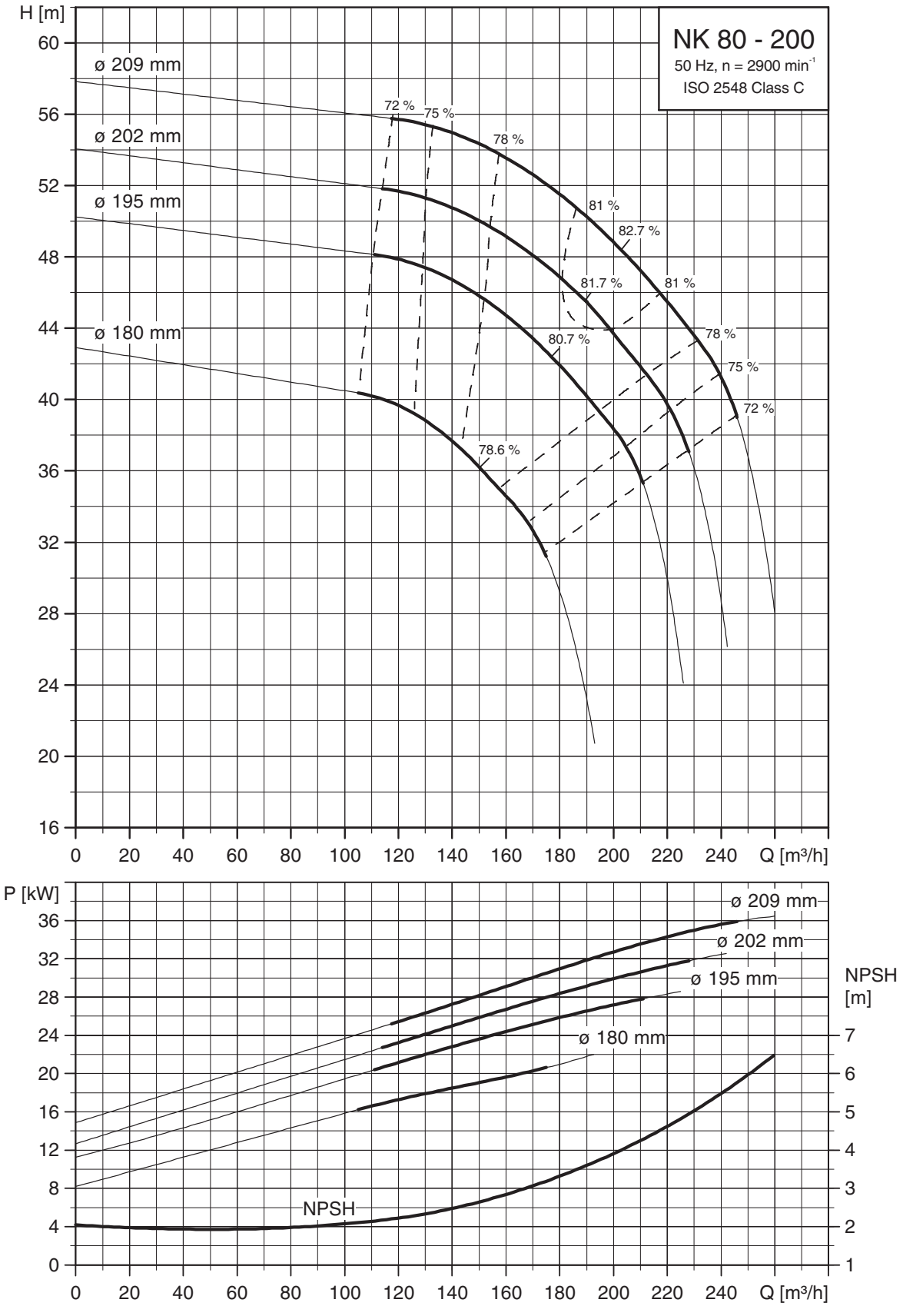

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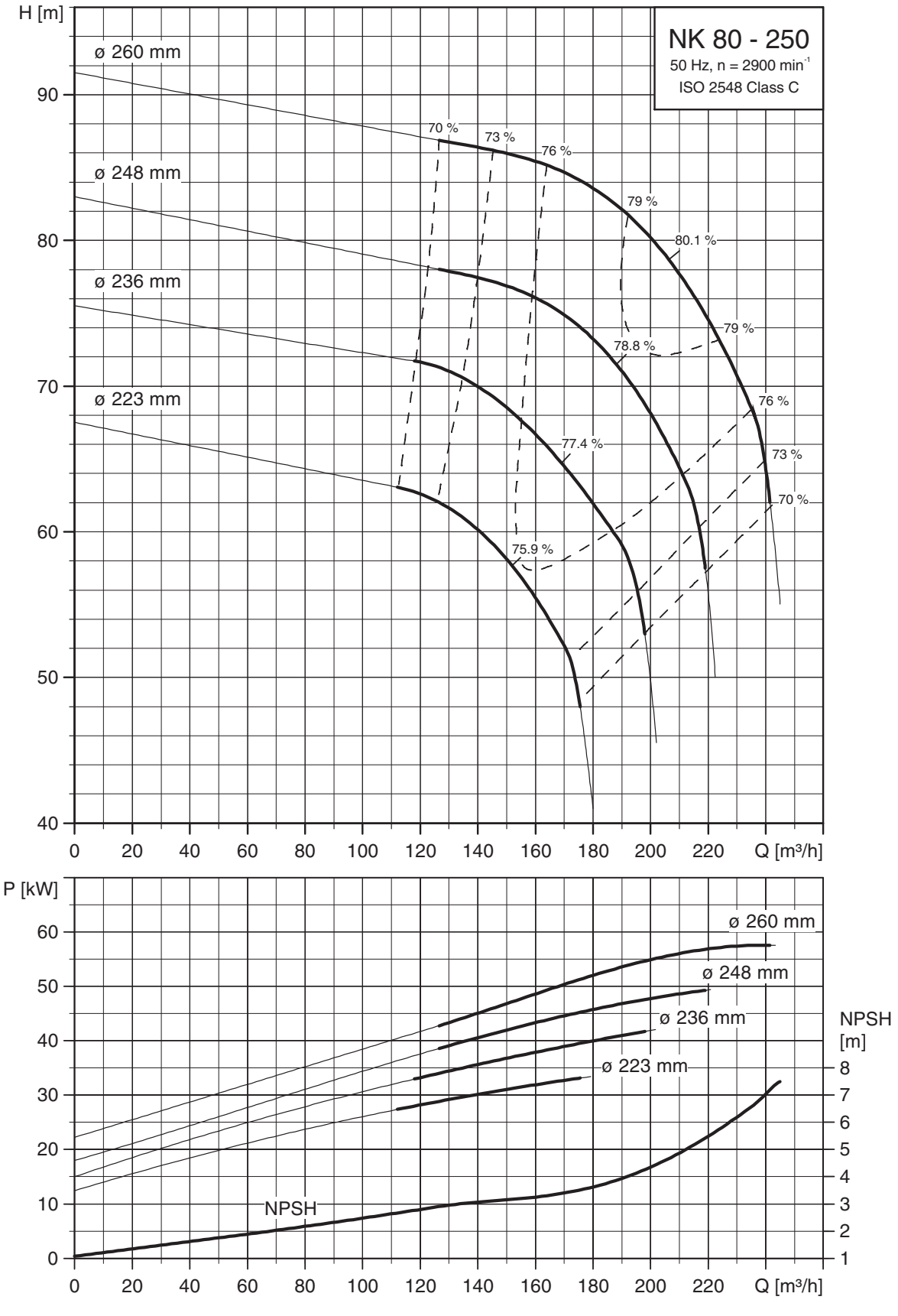

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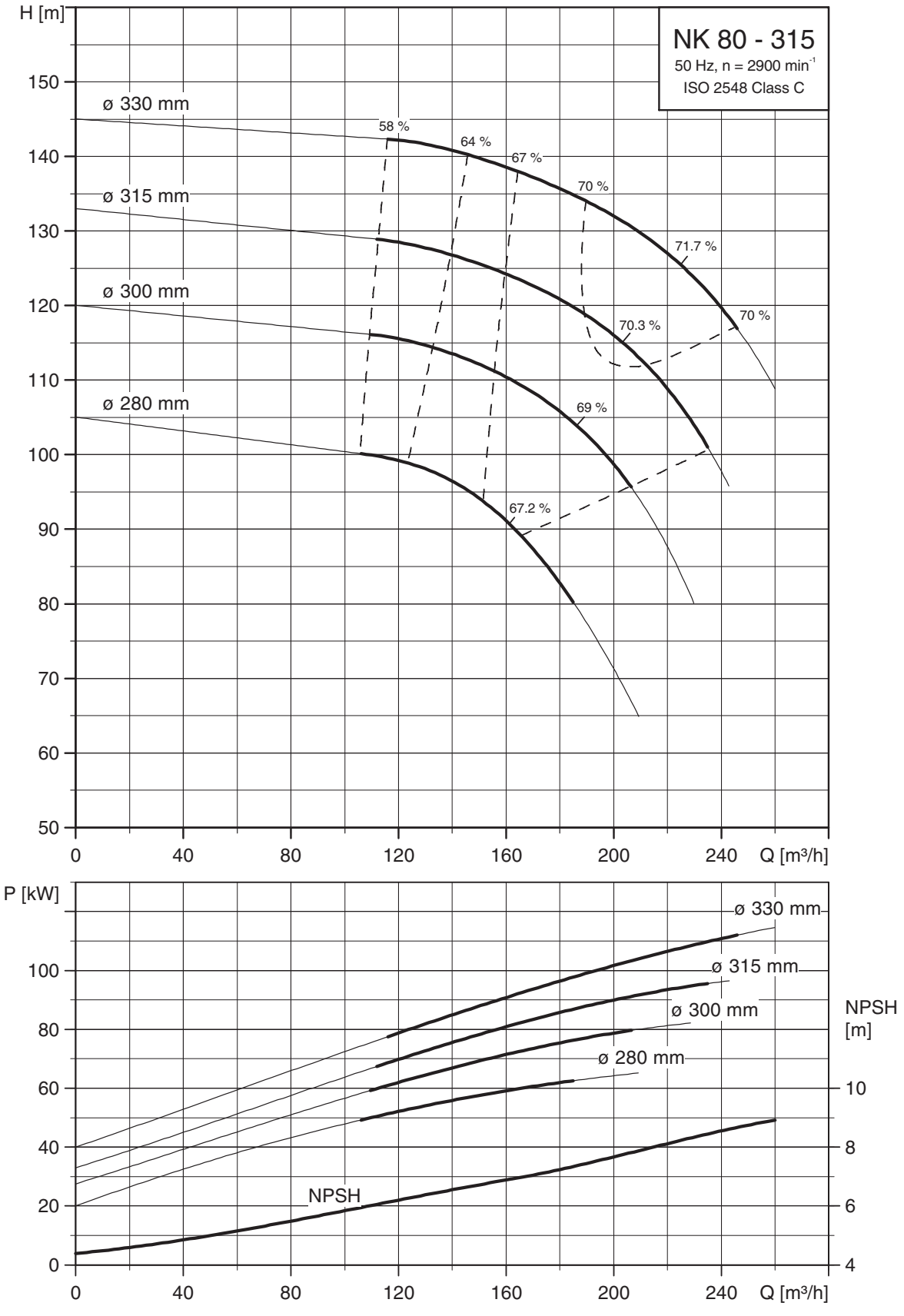

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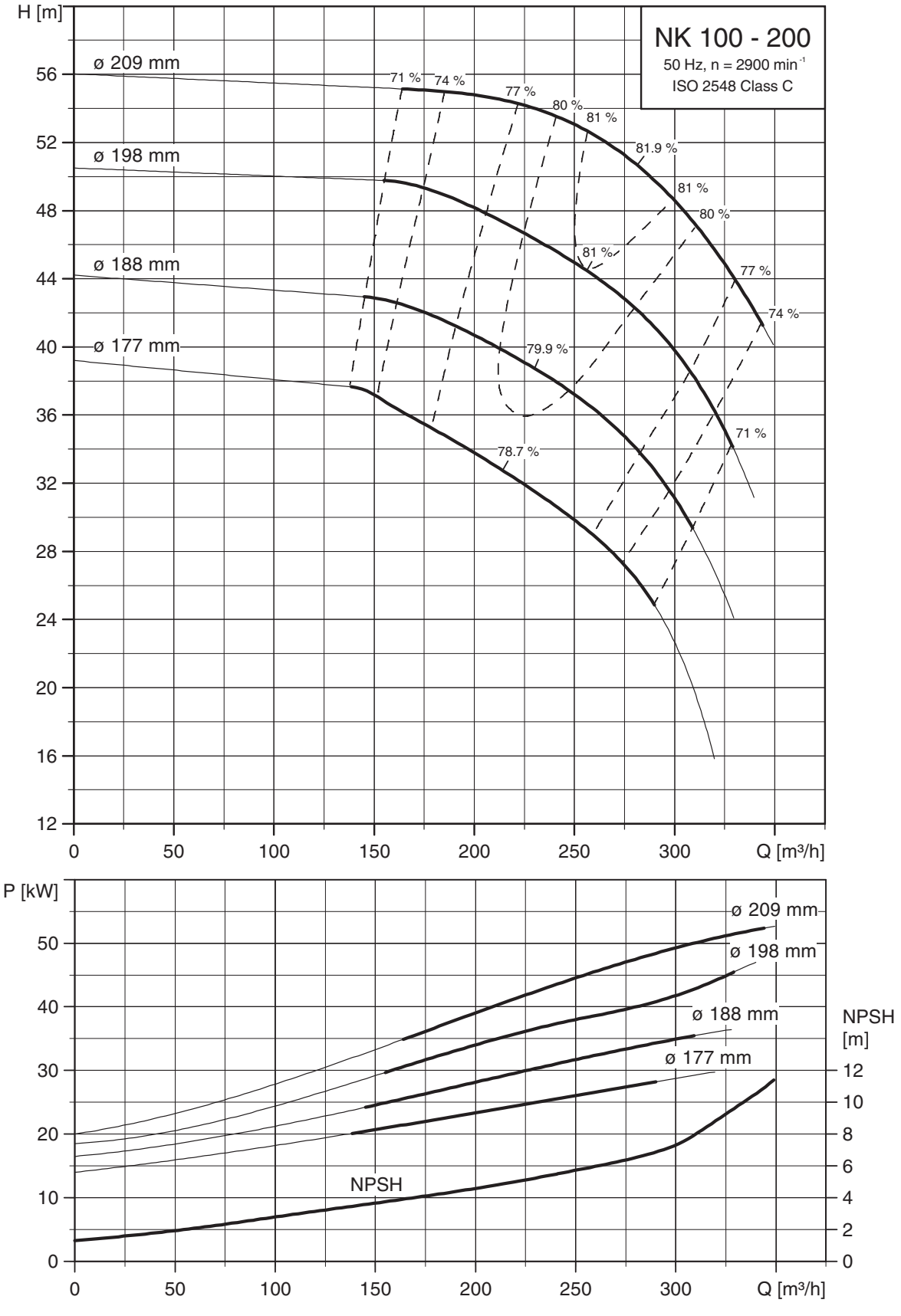

TM00 8905 0499

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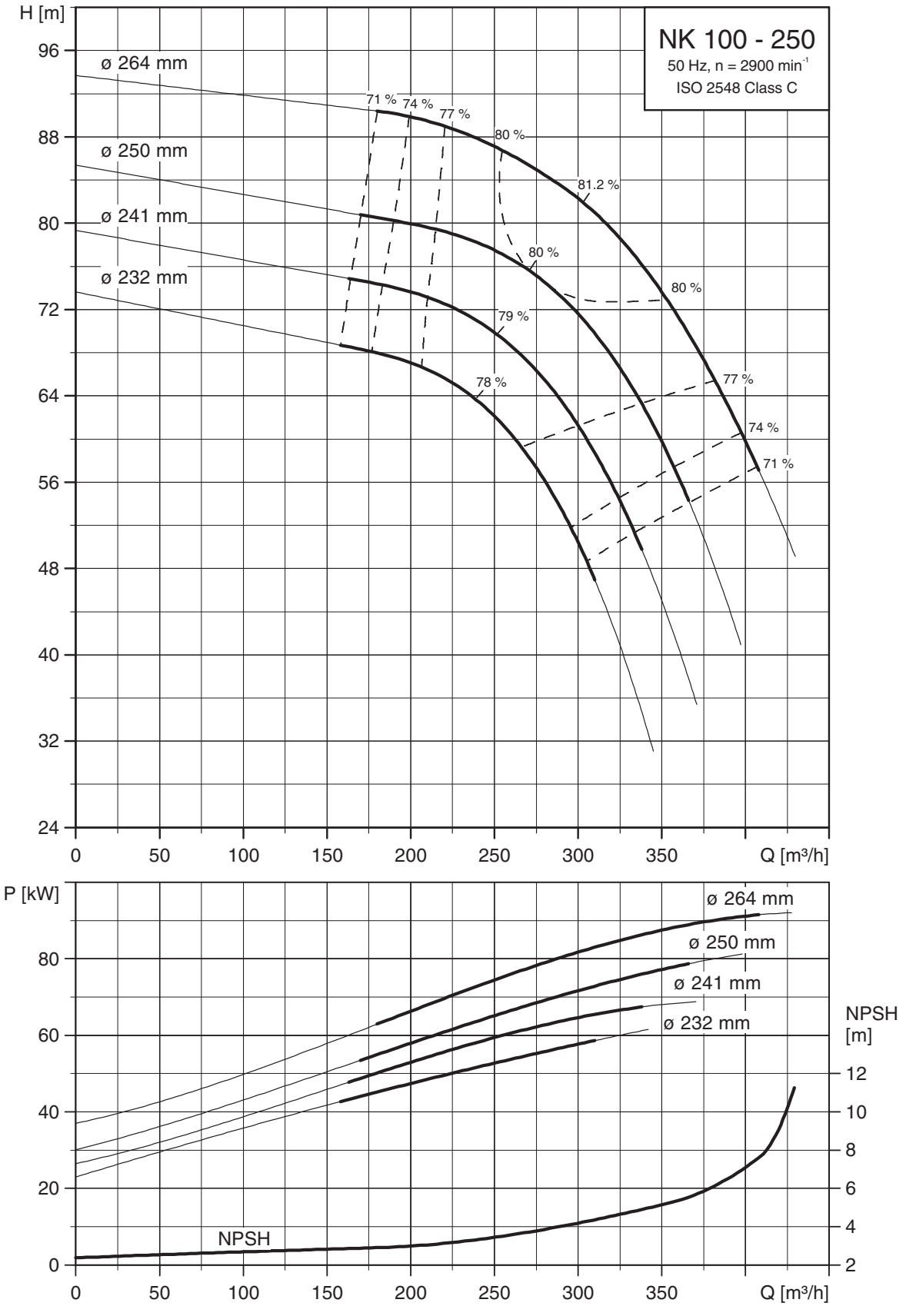

TM00 8906 0499

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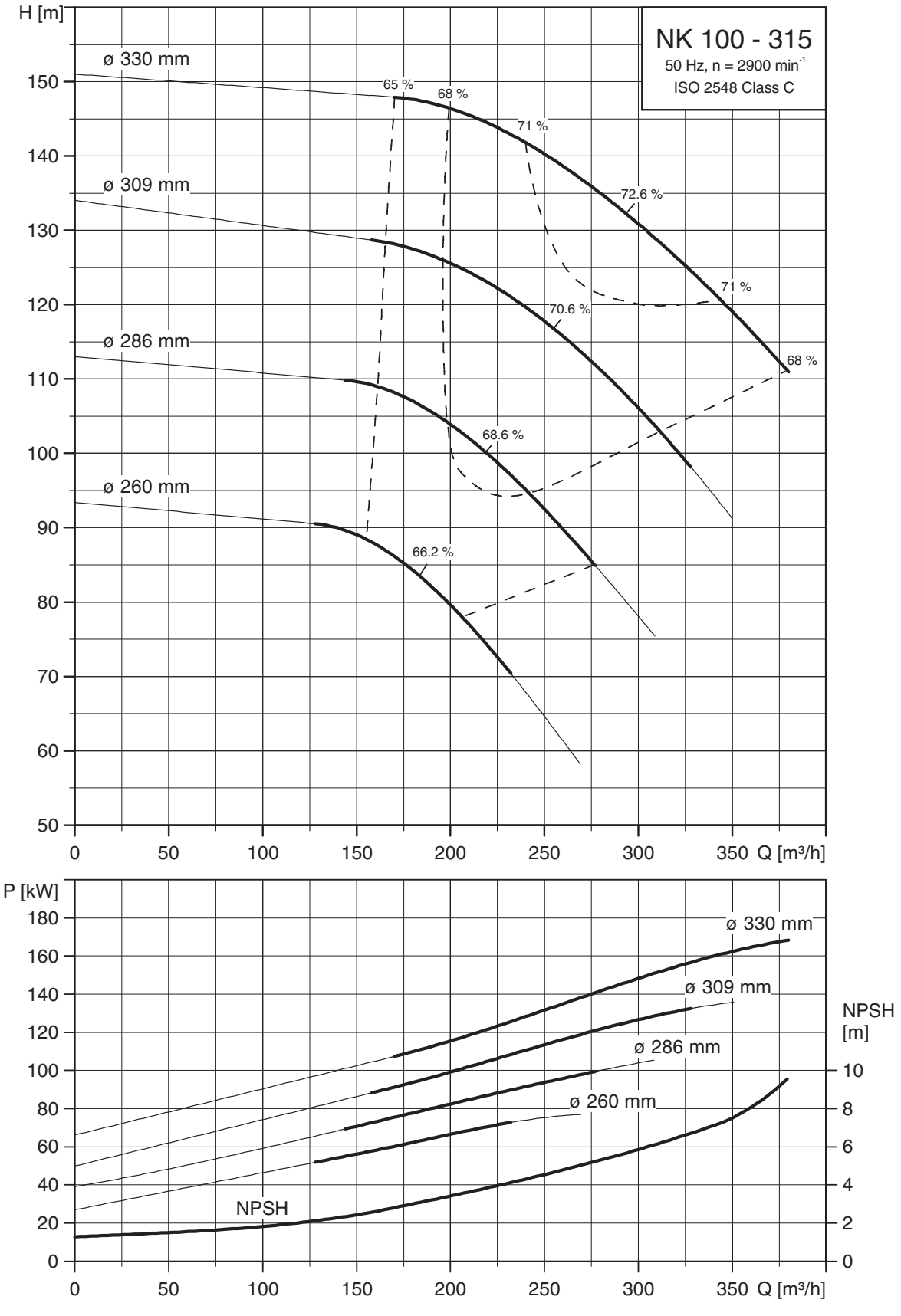

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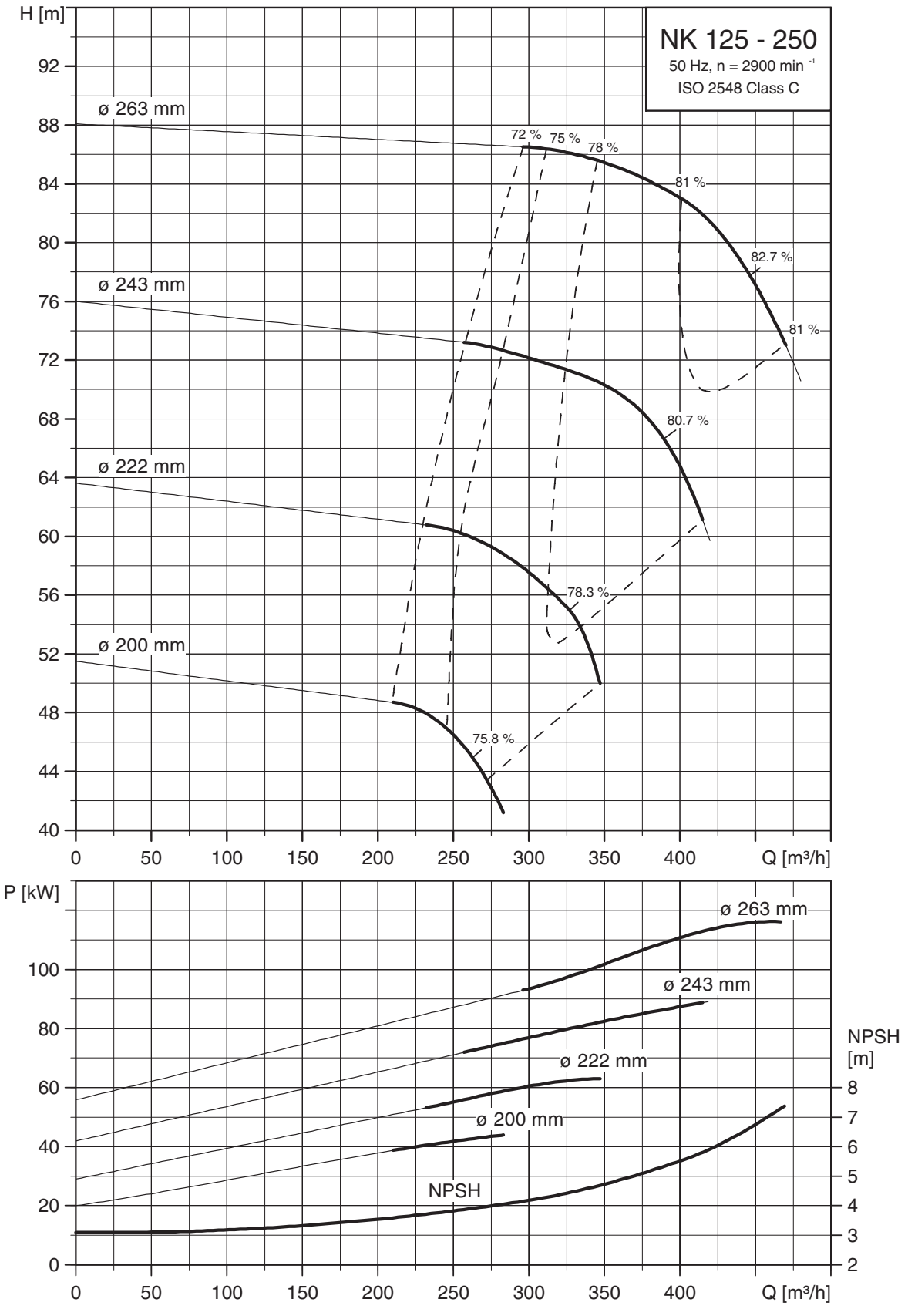

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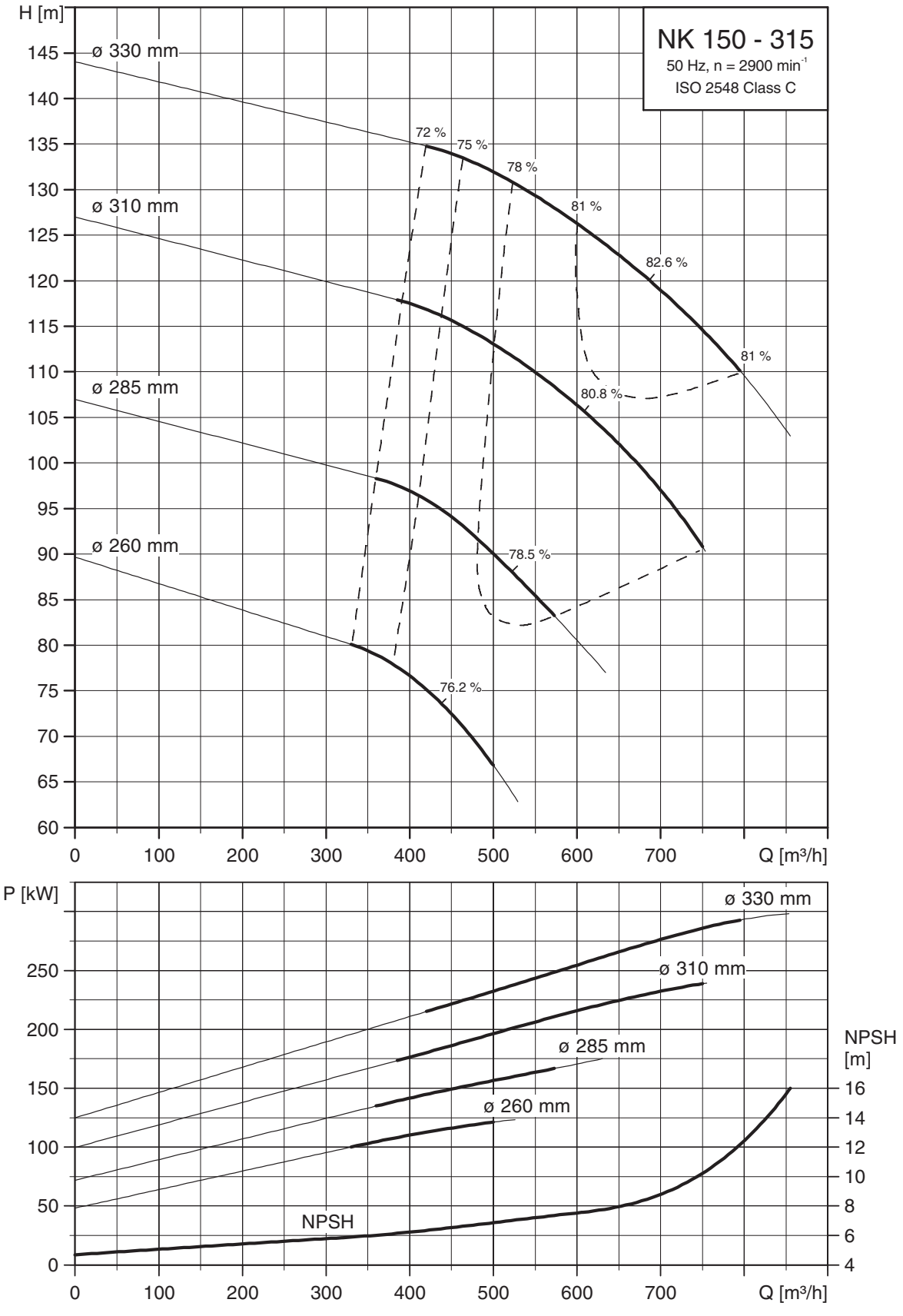

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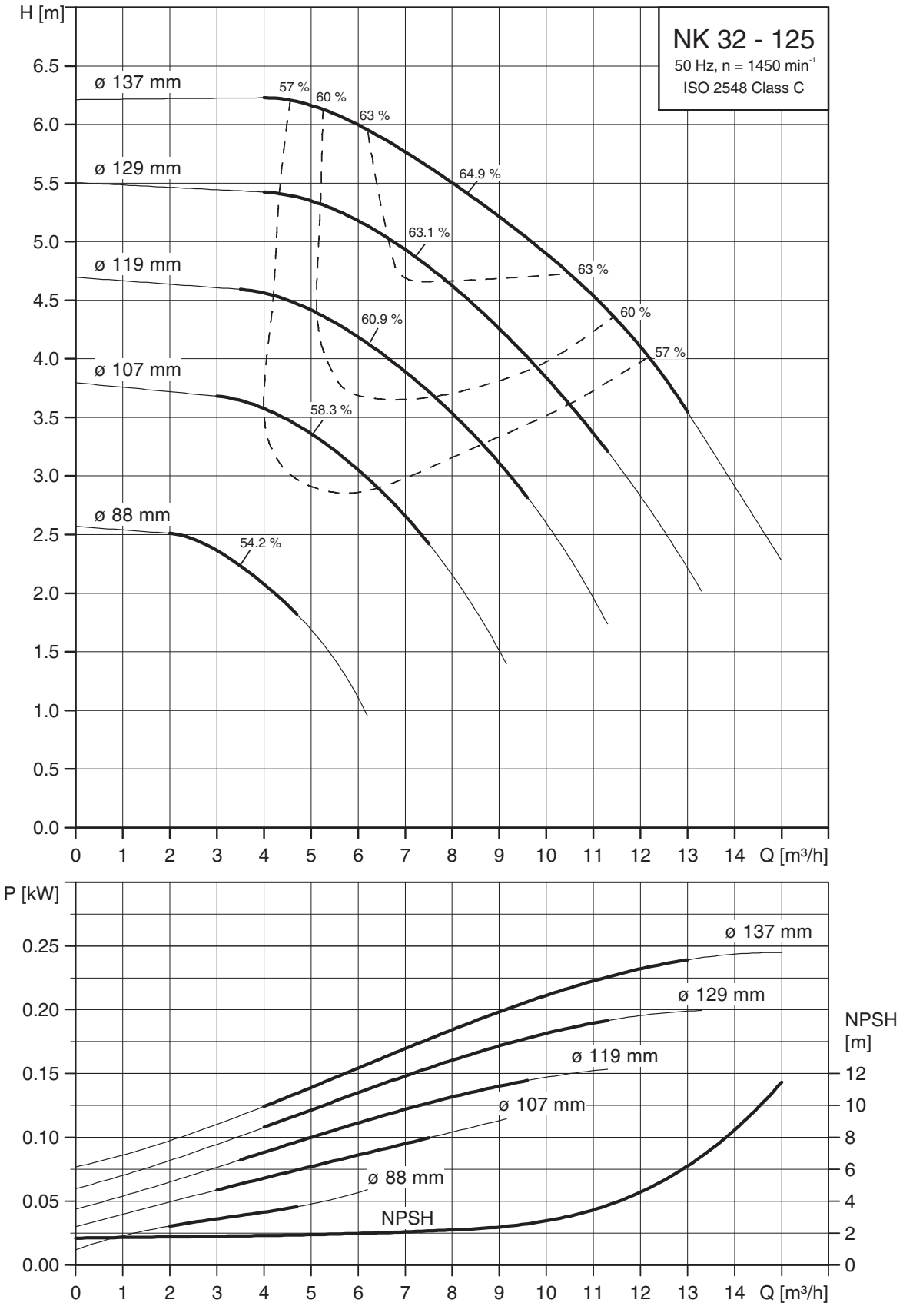

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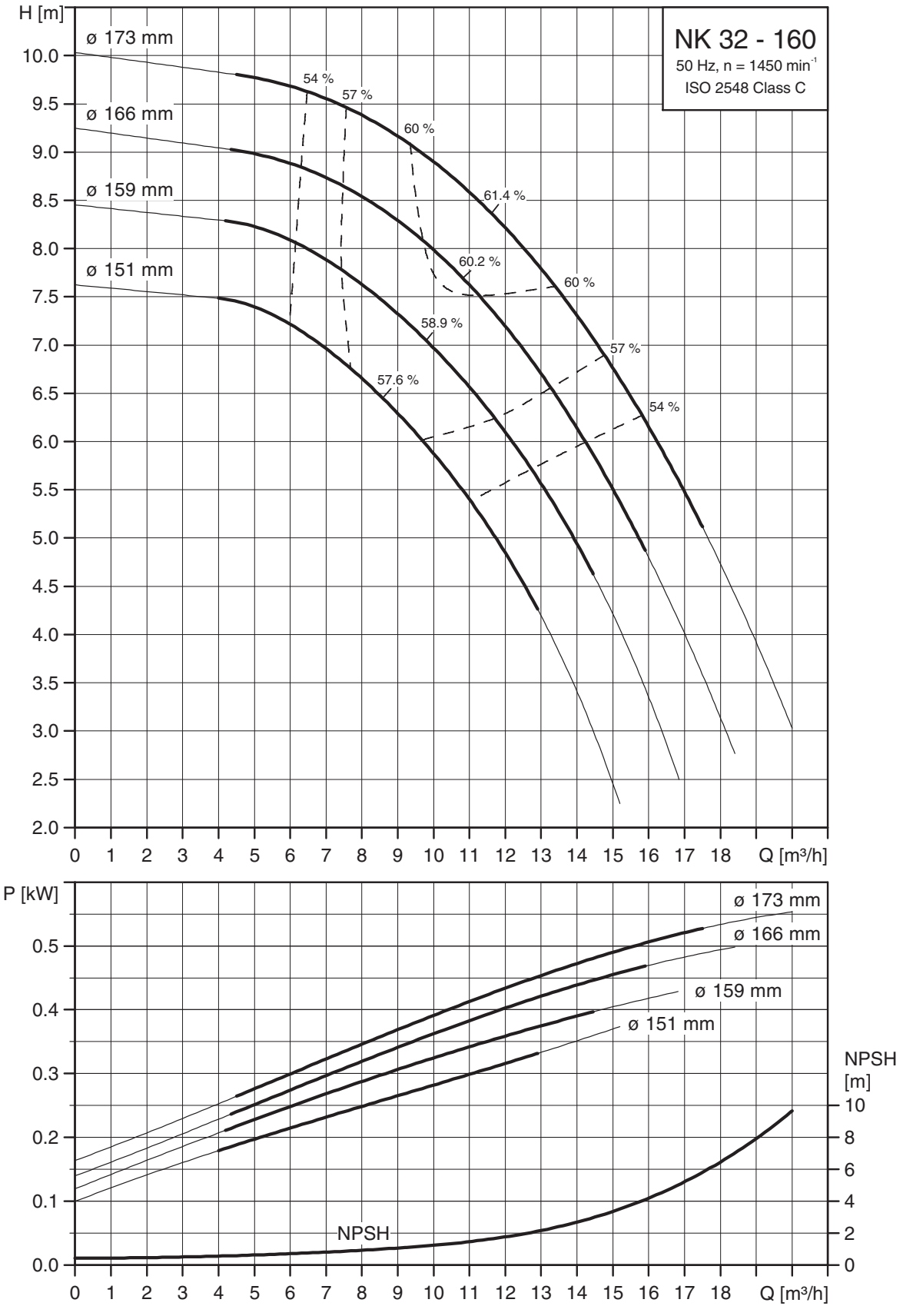

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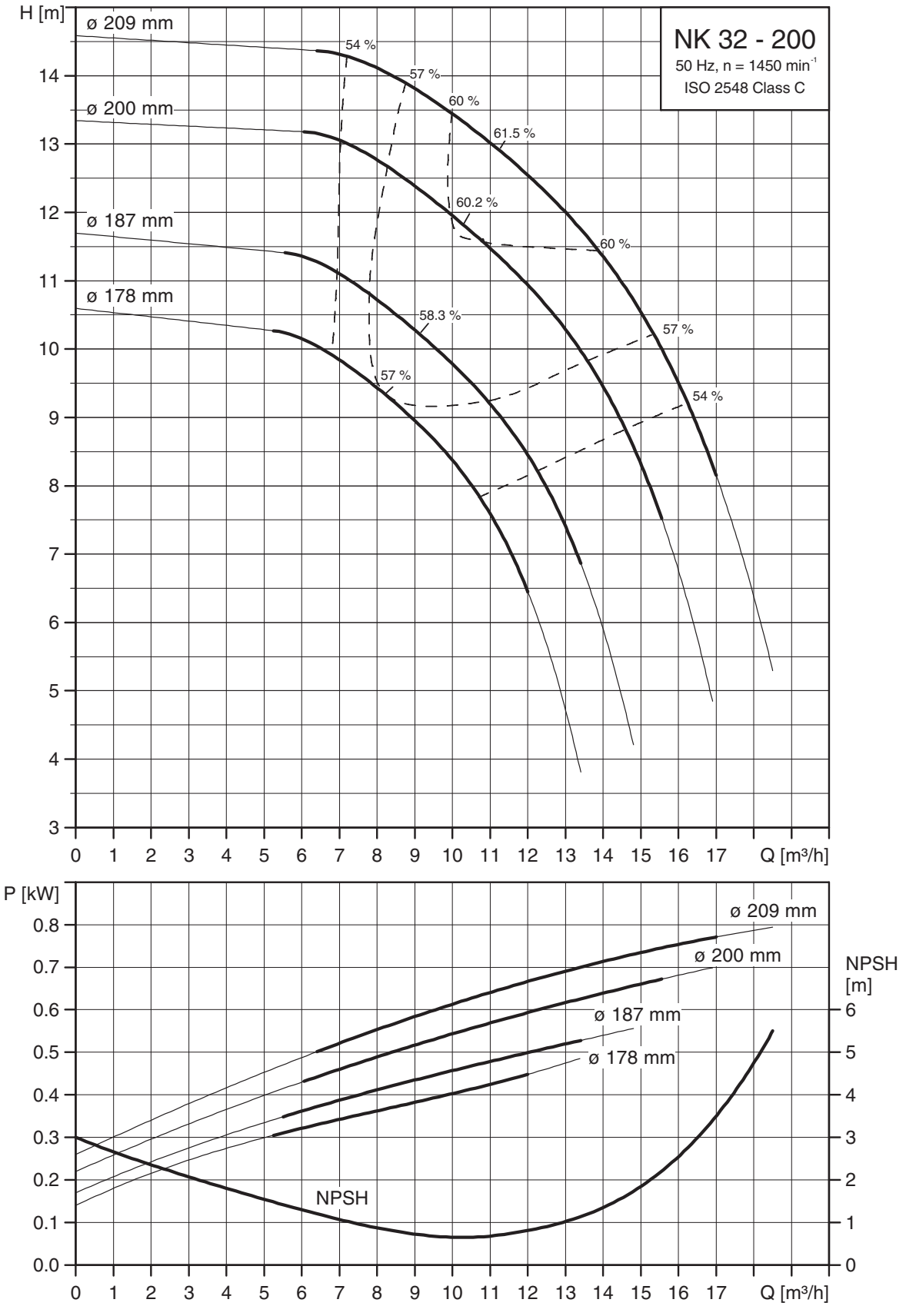

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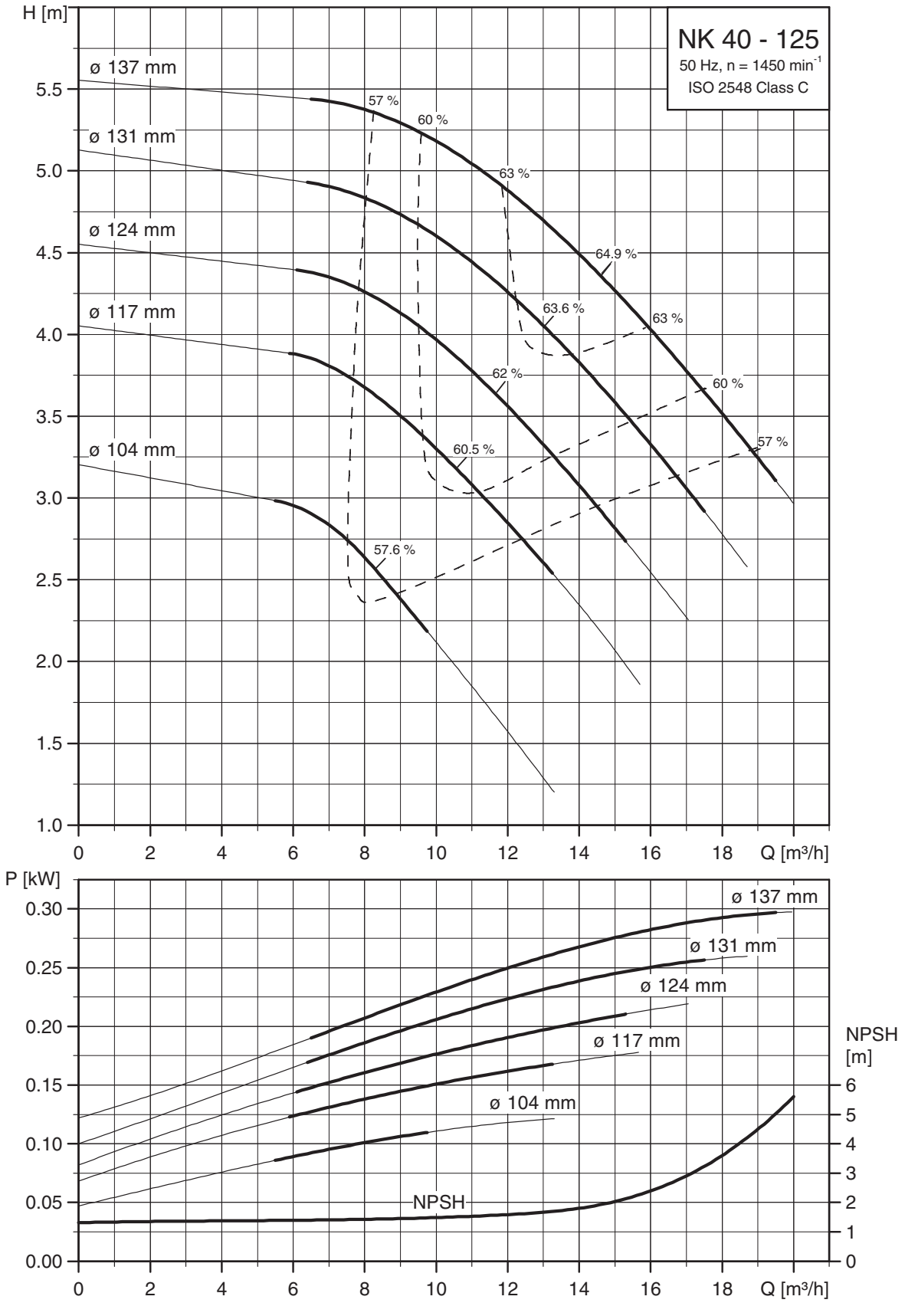

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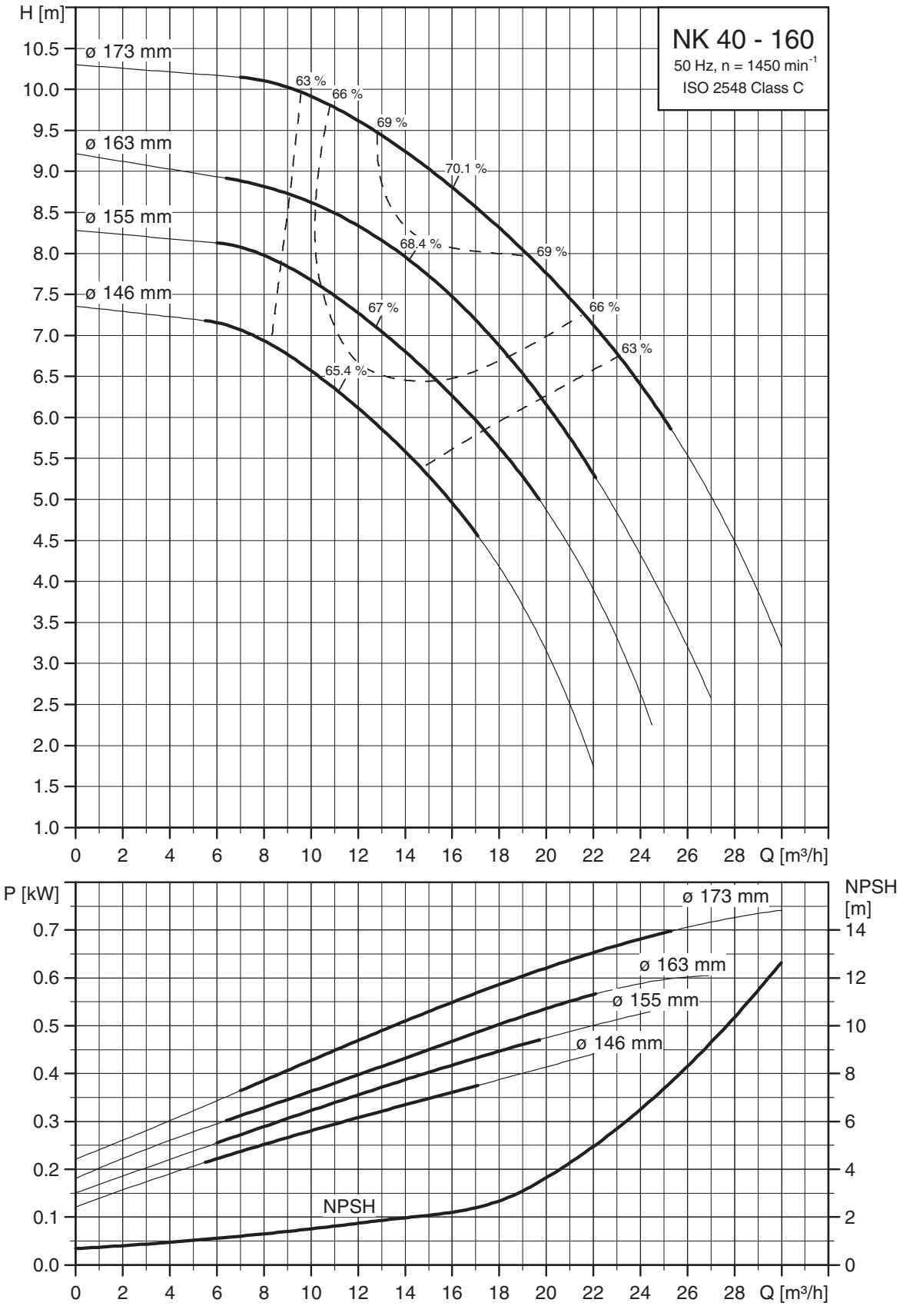

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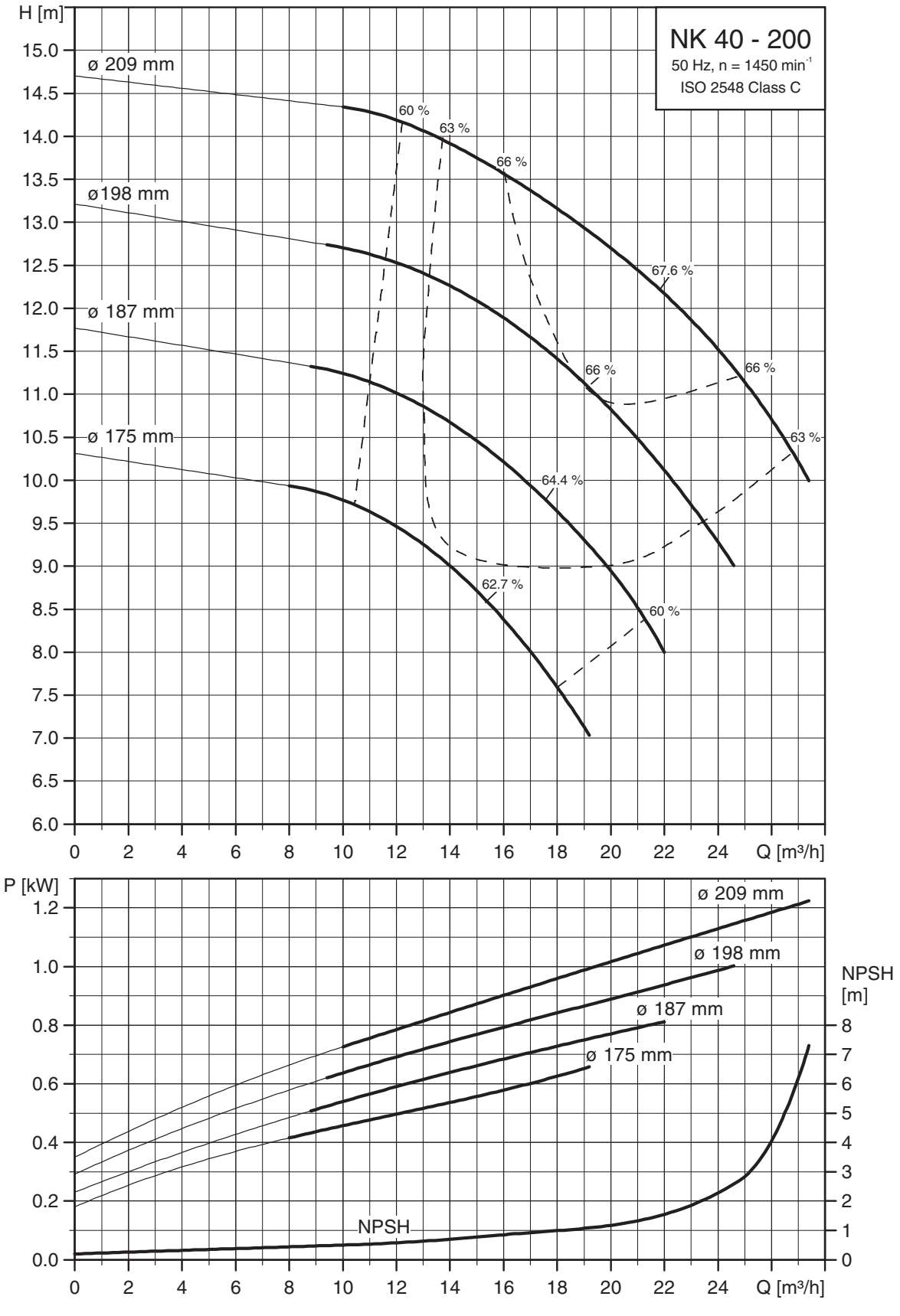

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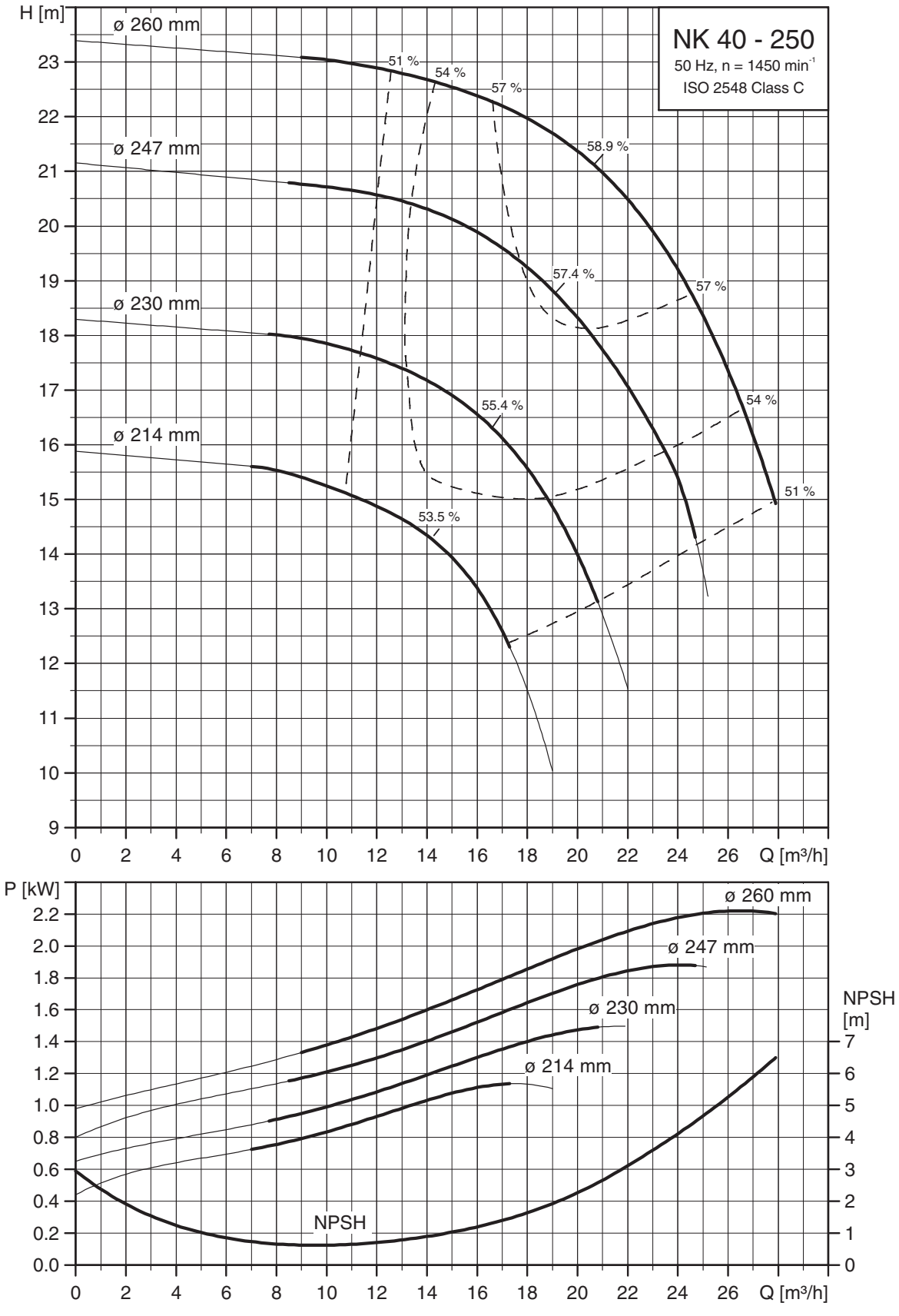

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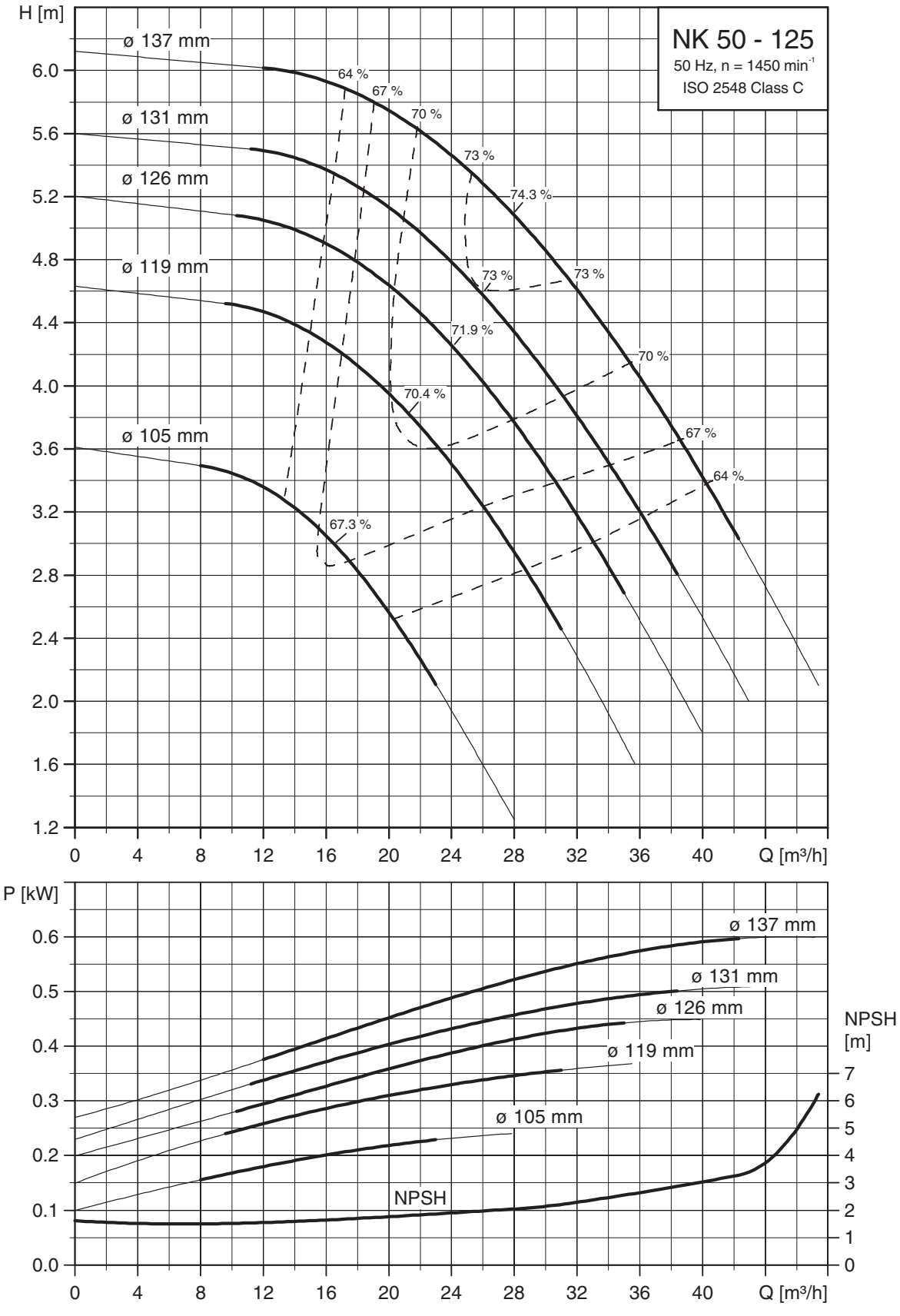

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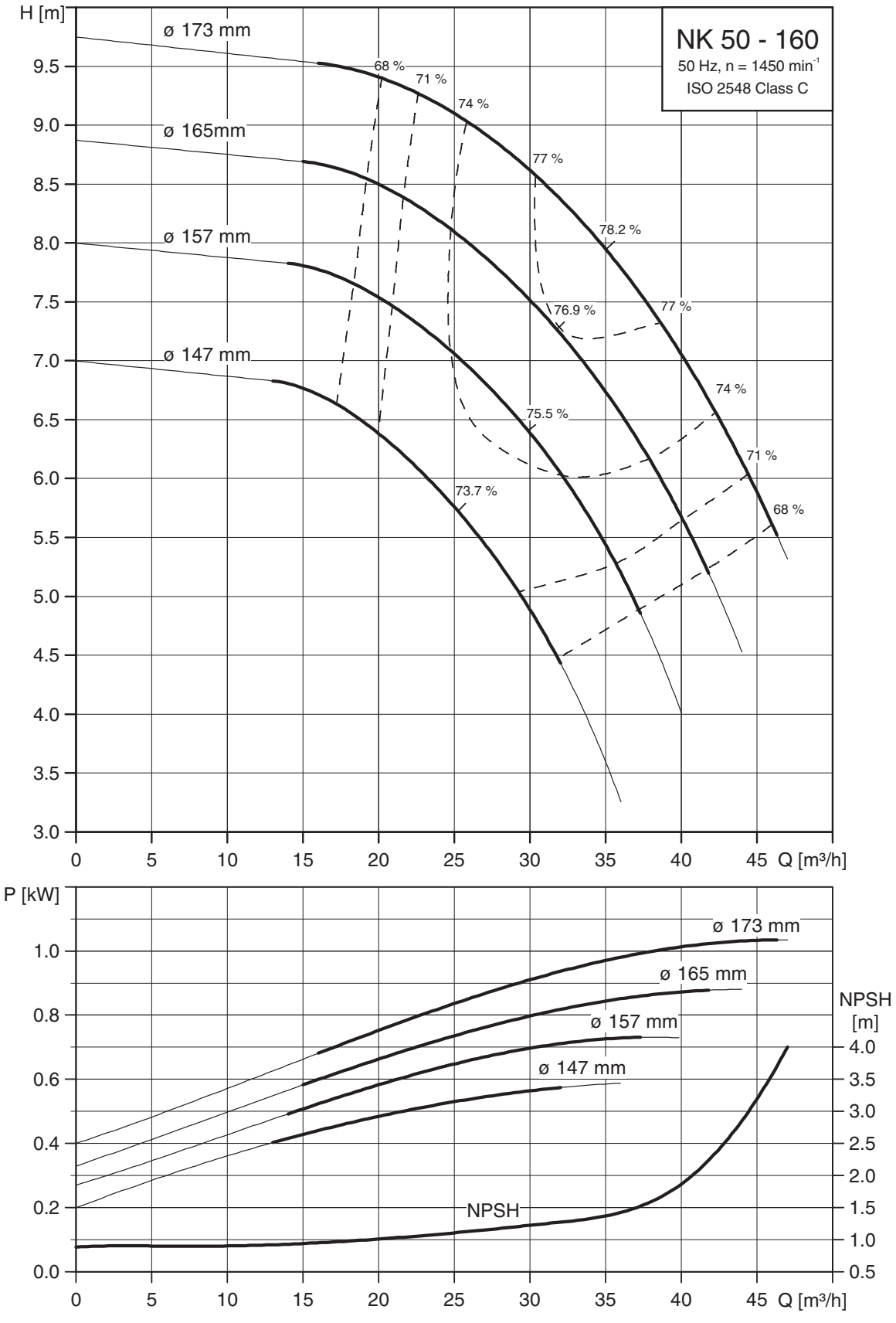

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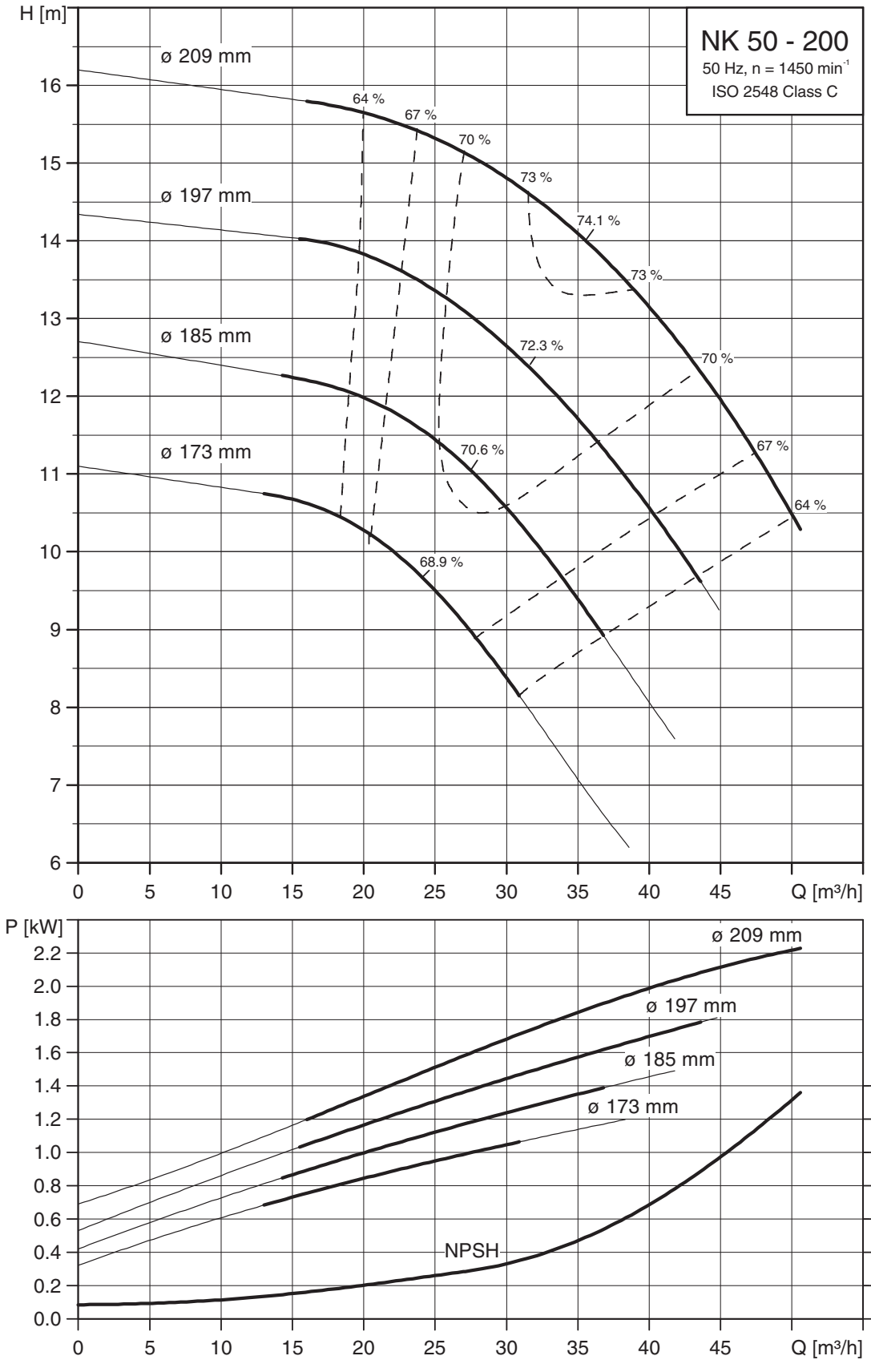

TM00 0152 0499

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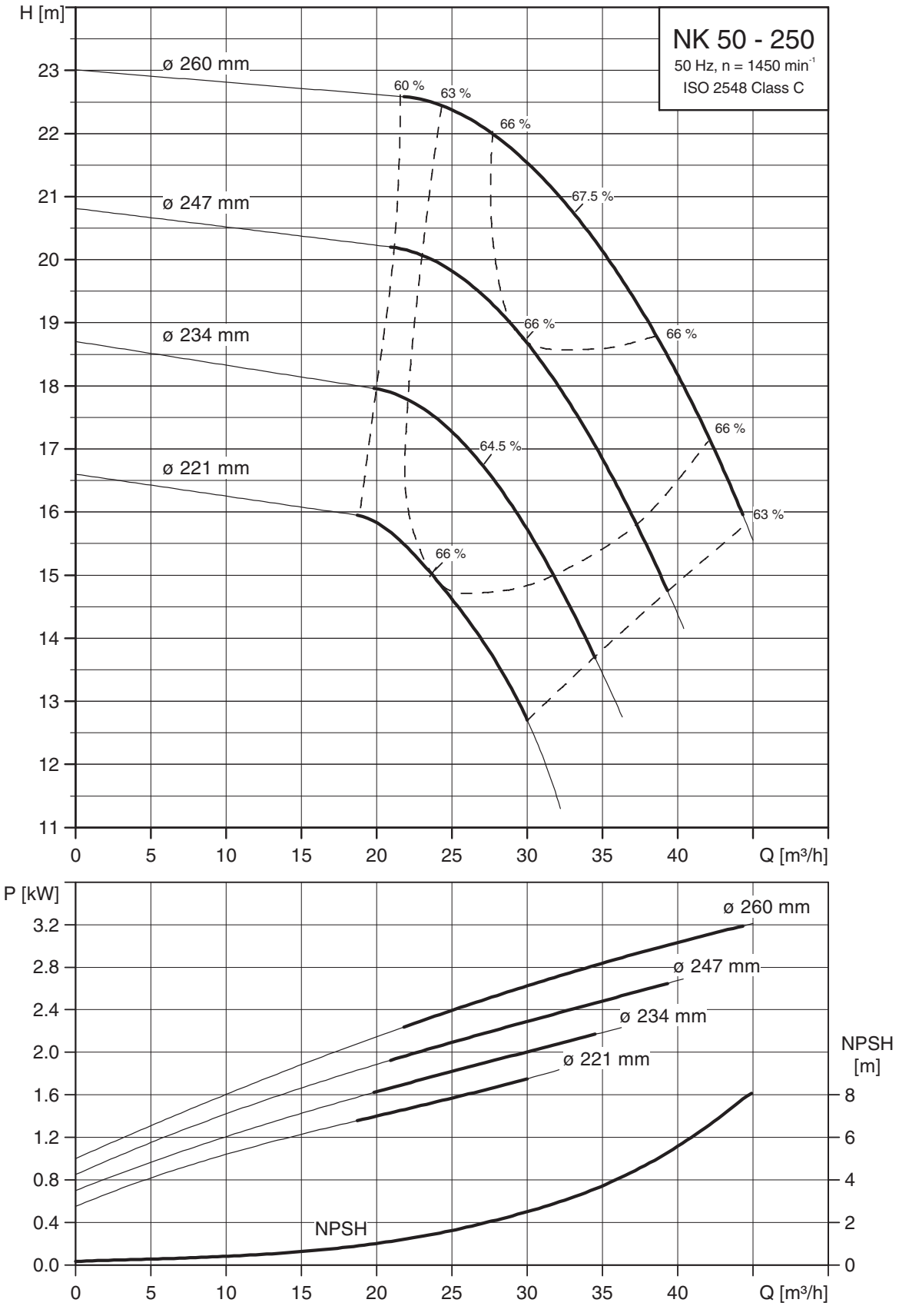

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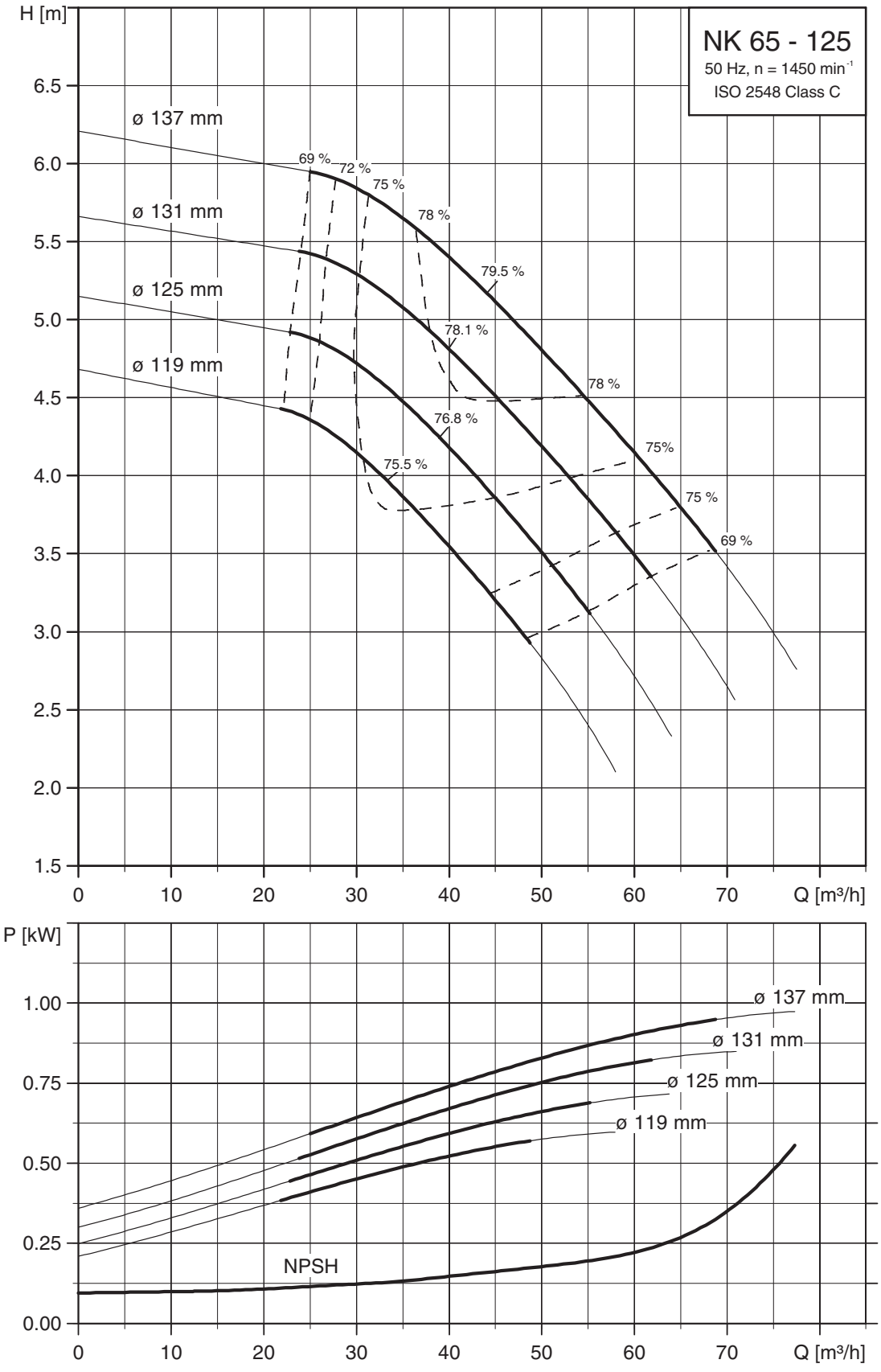

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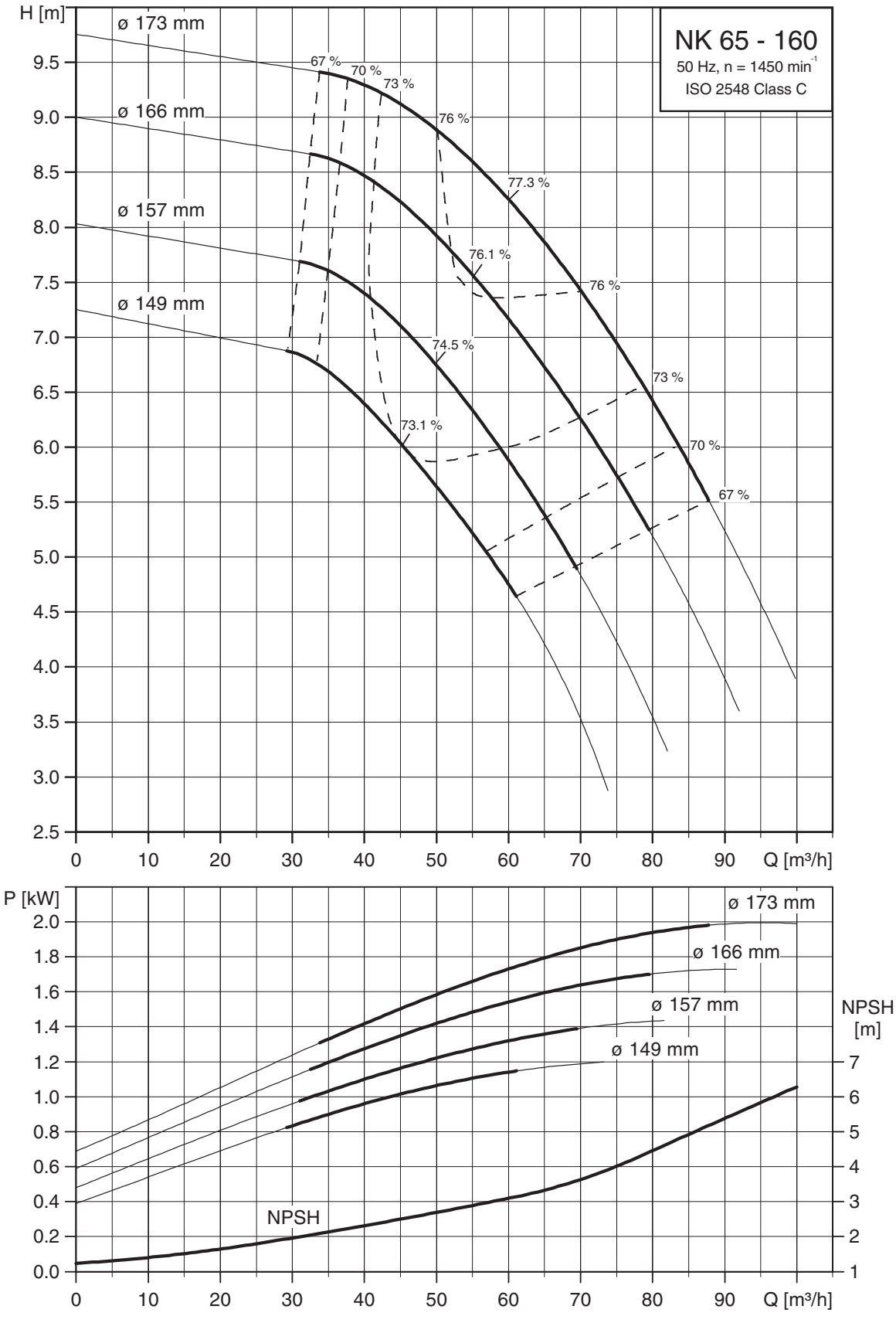

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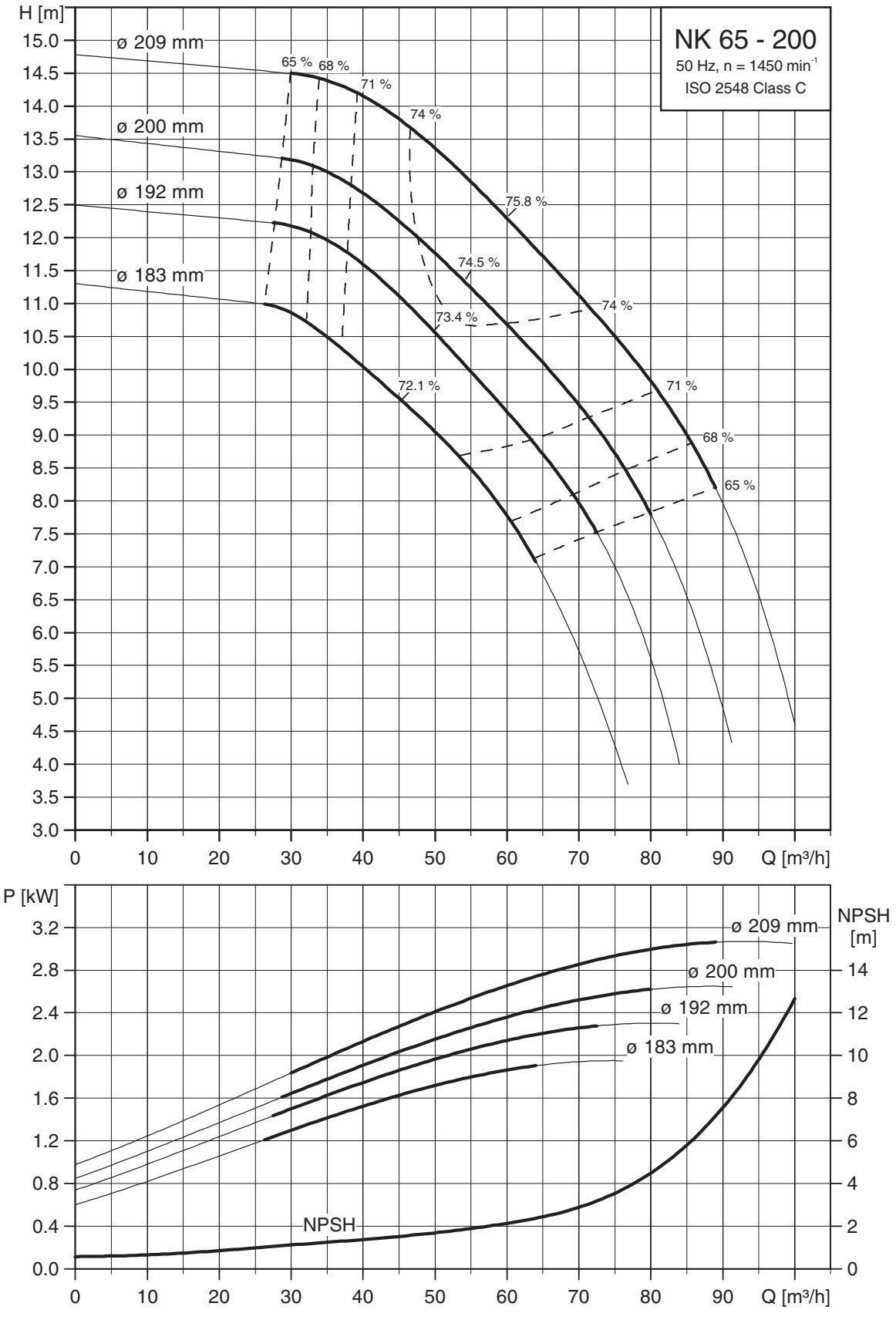

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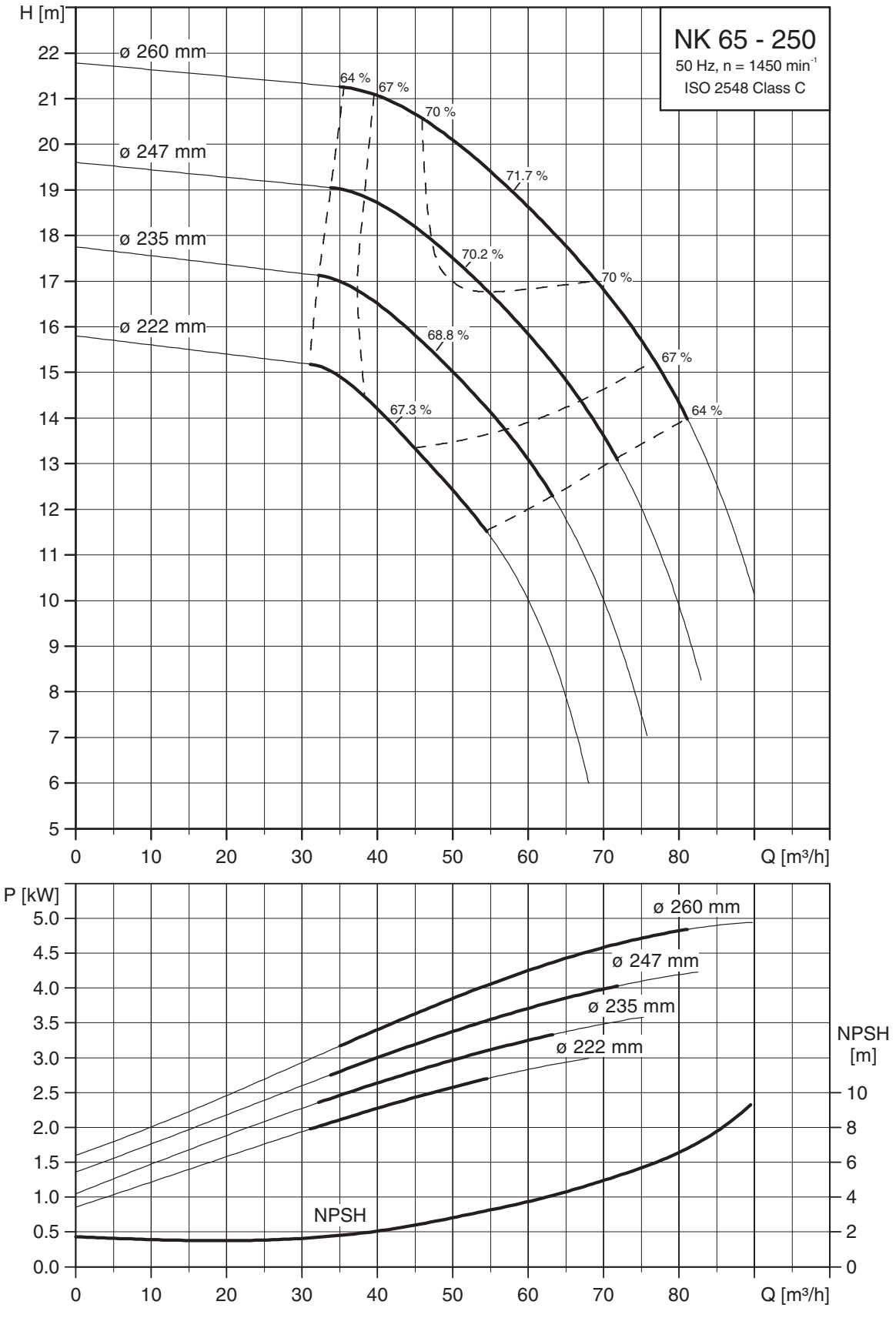

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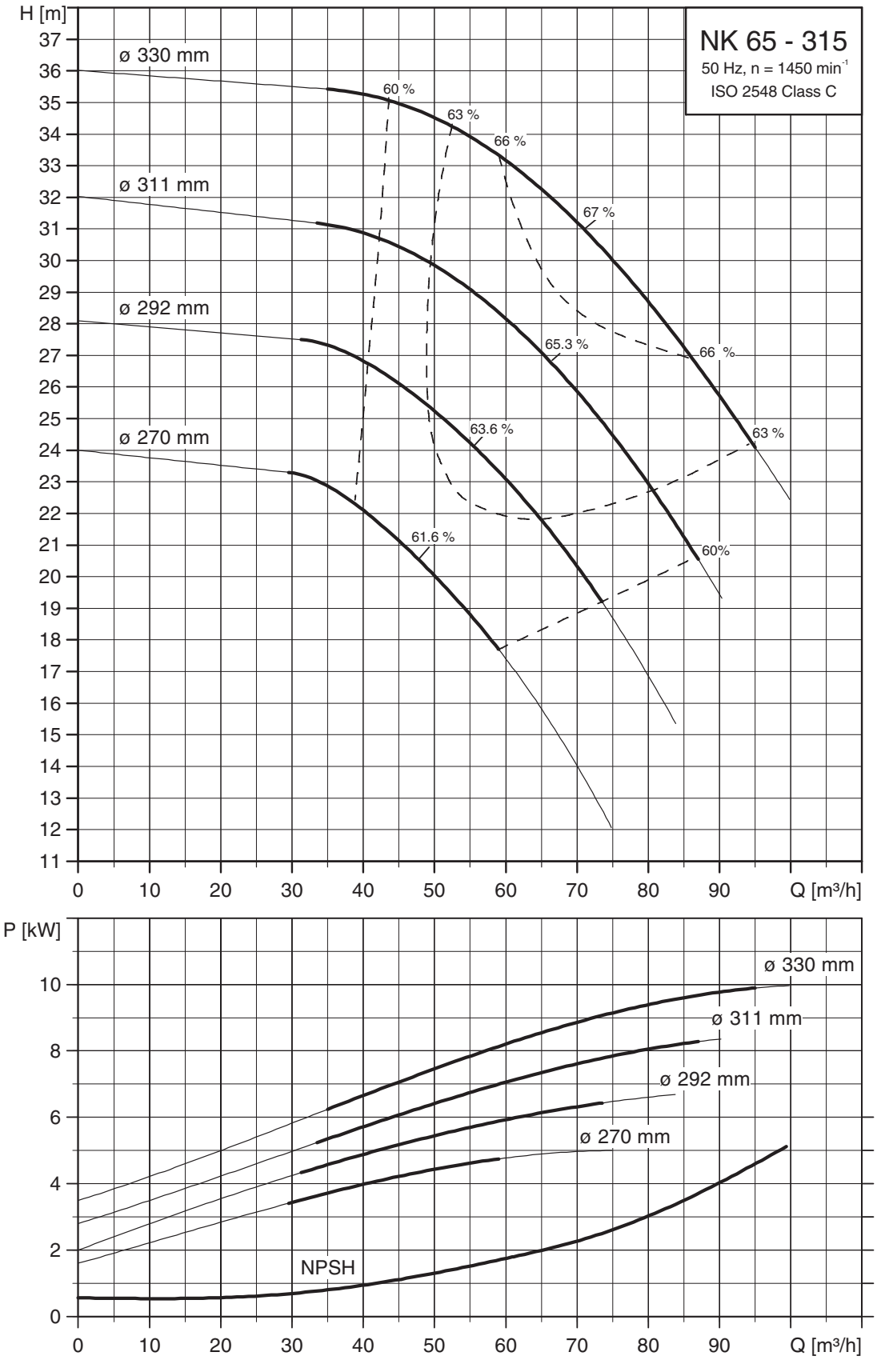

TM00 8910 0499

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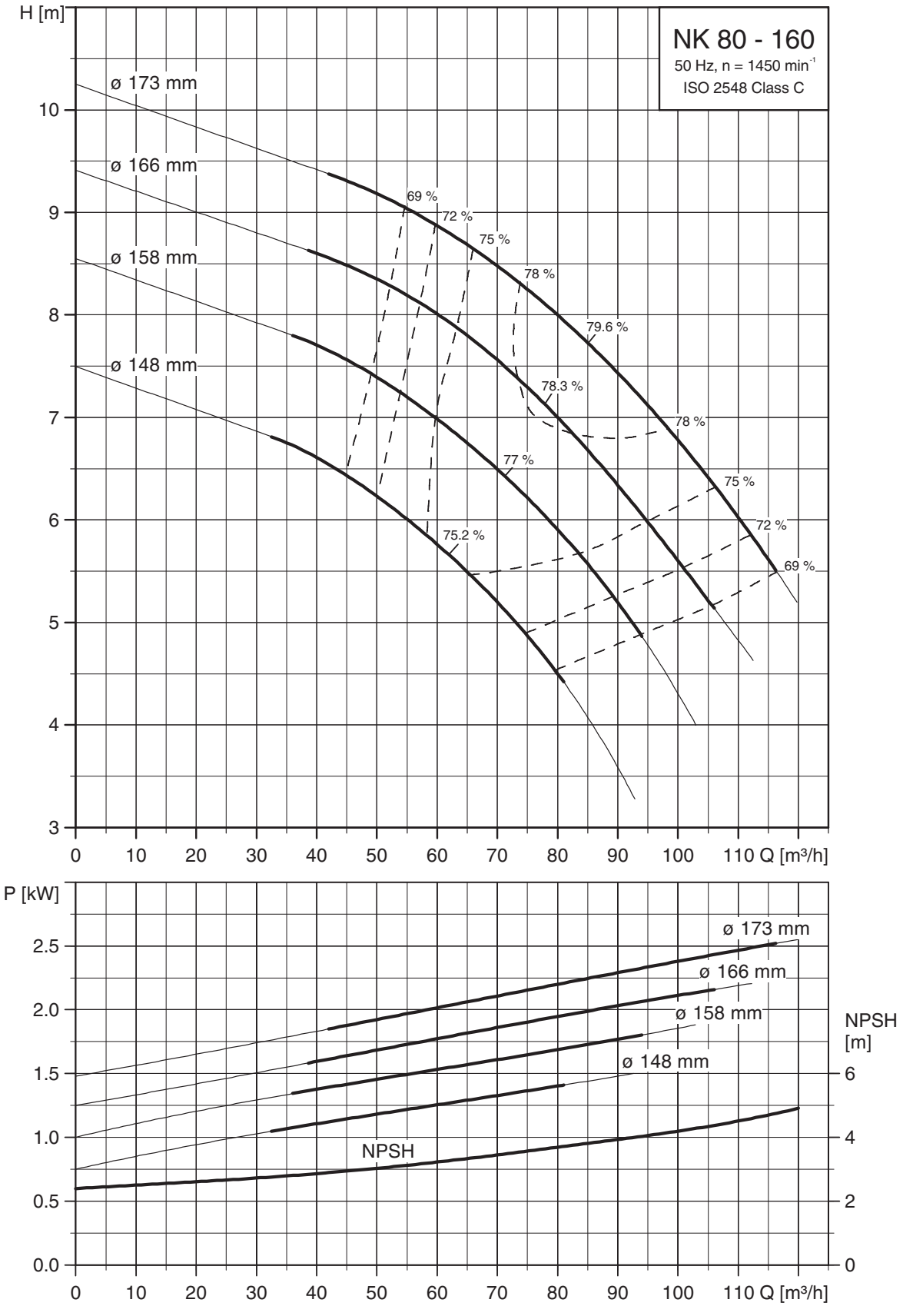

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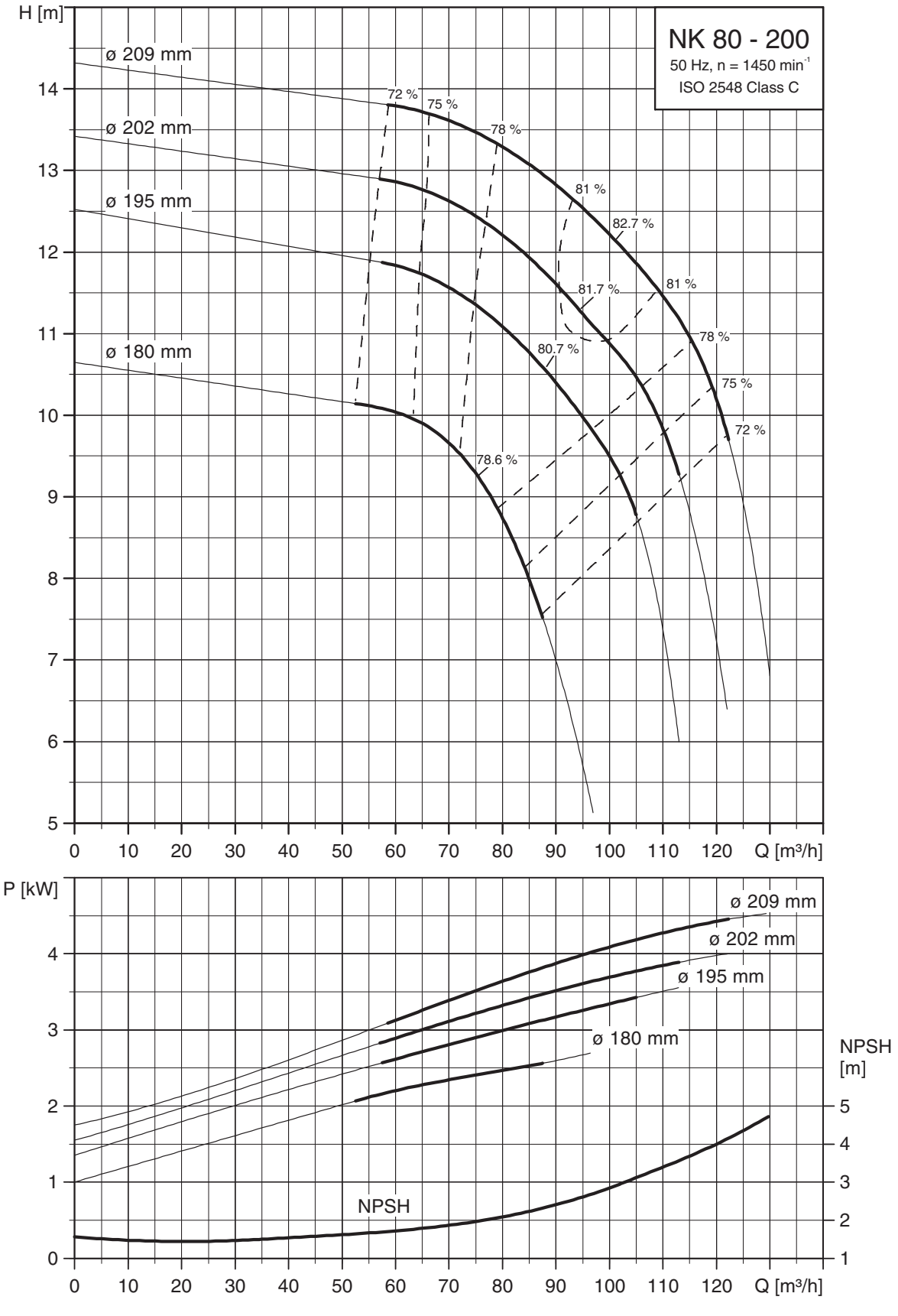

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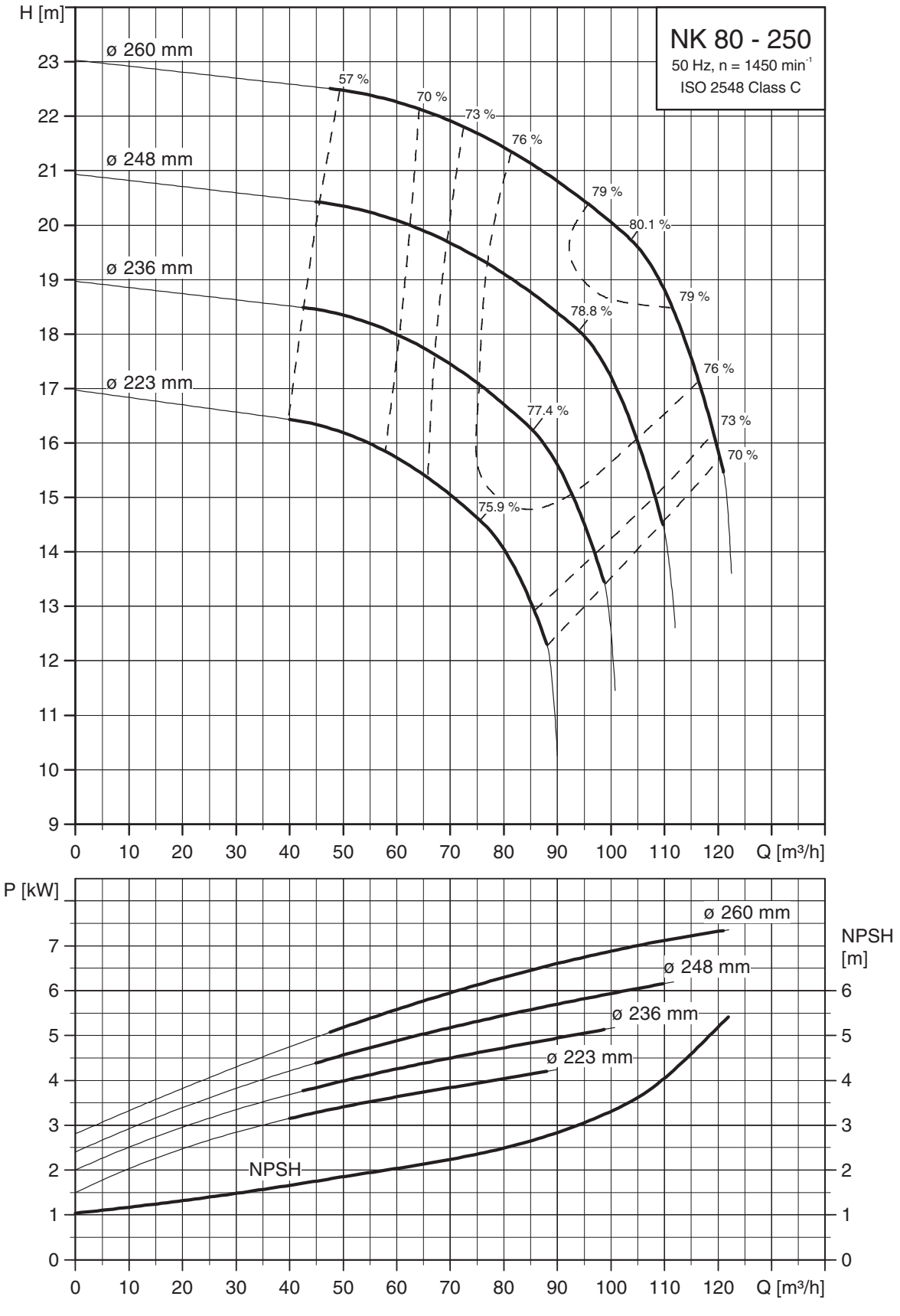

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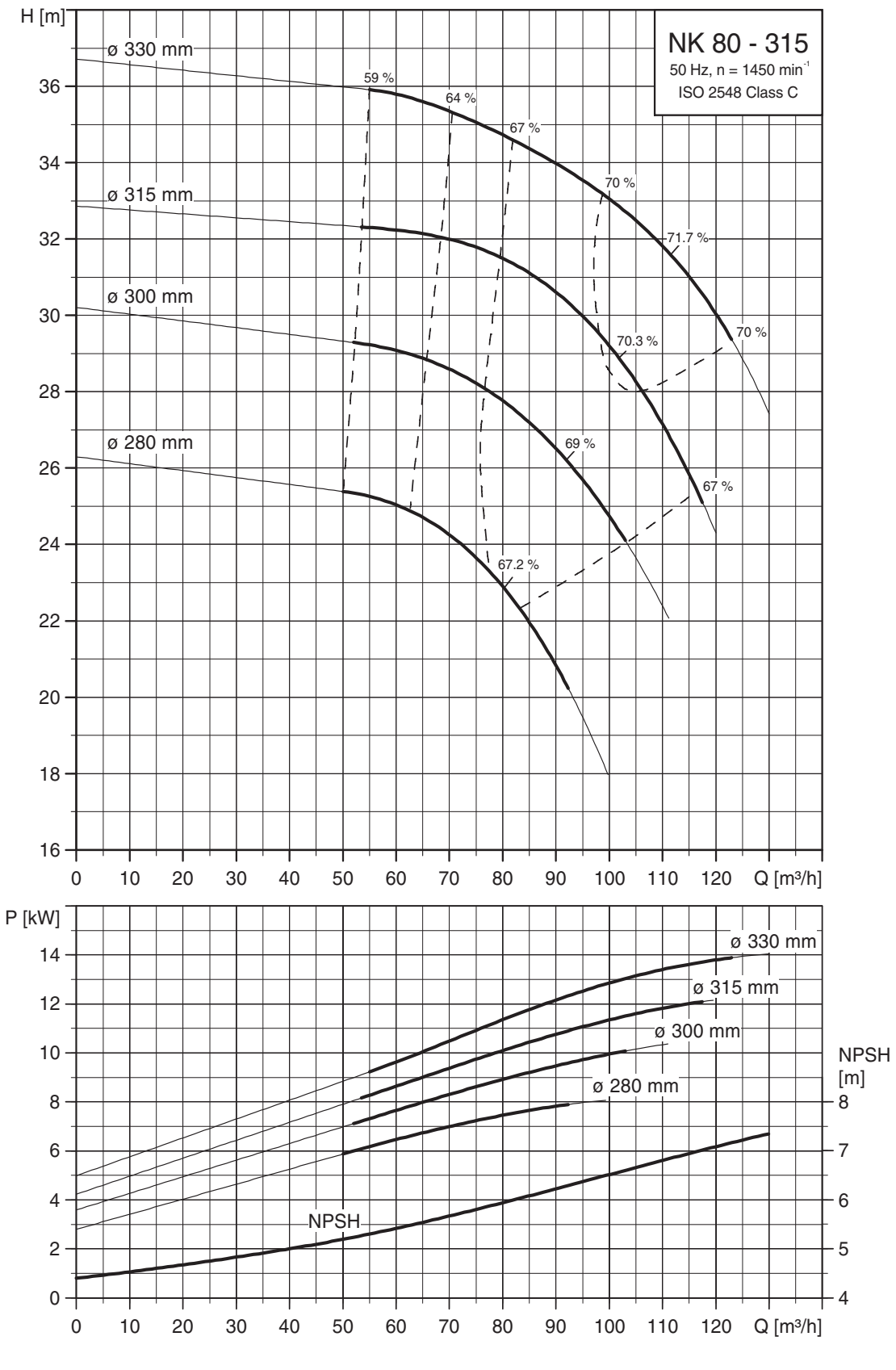

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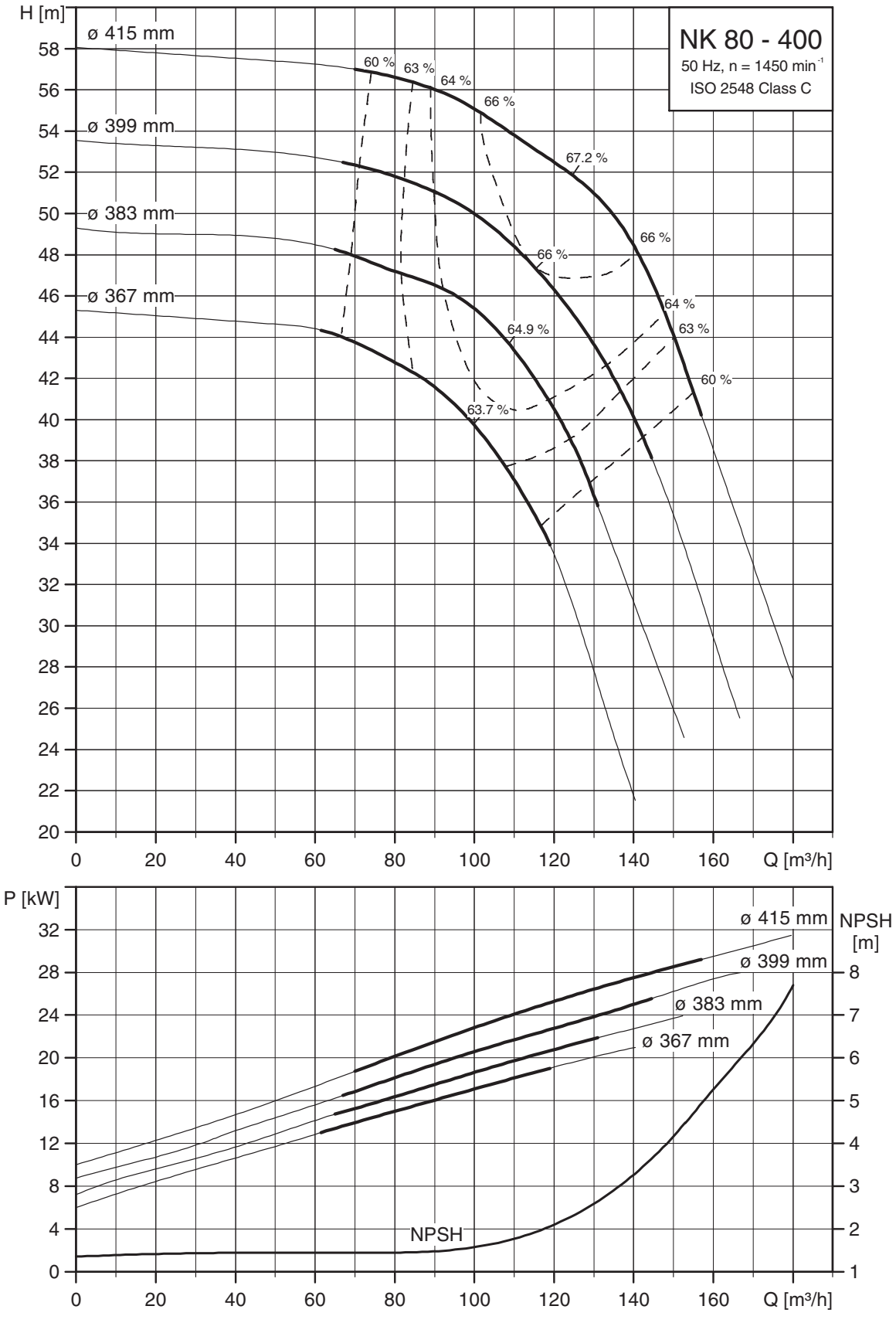

TM00 9837 0499

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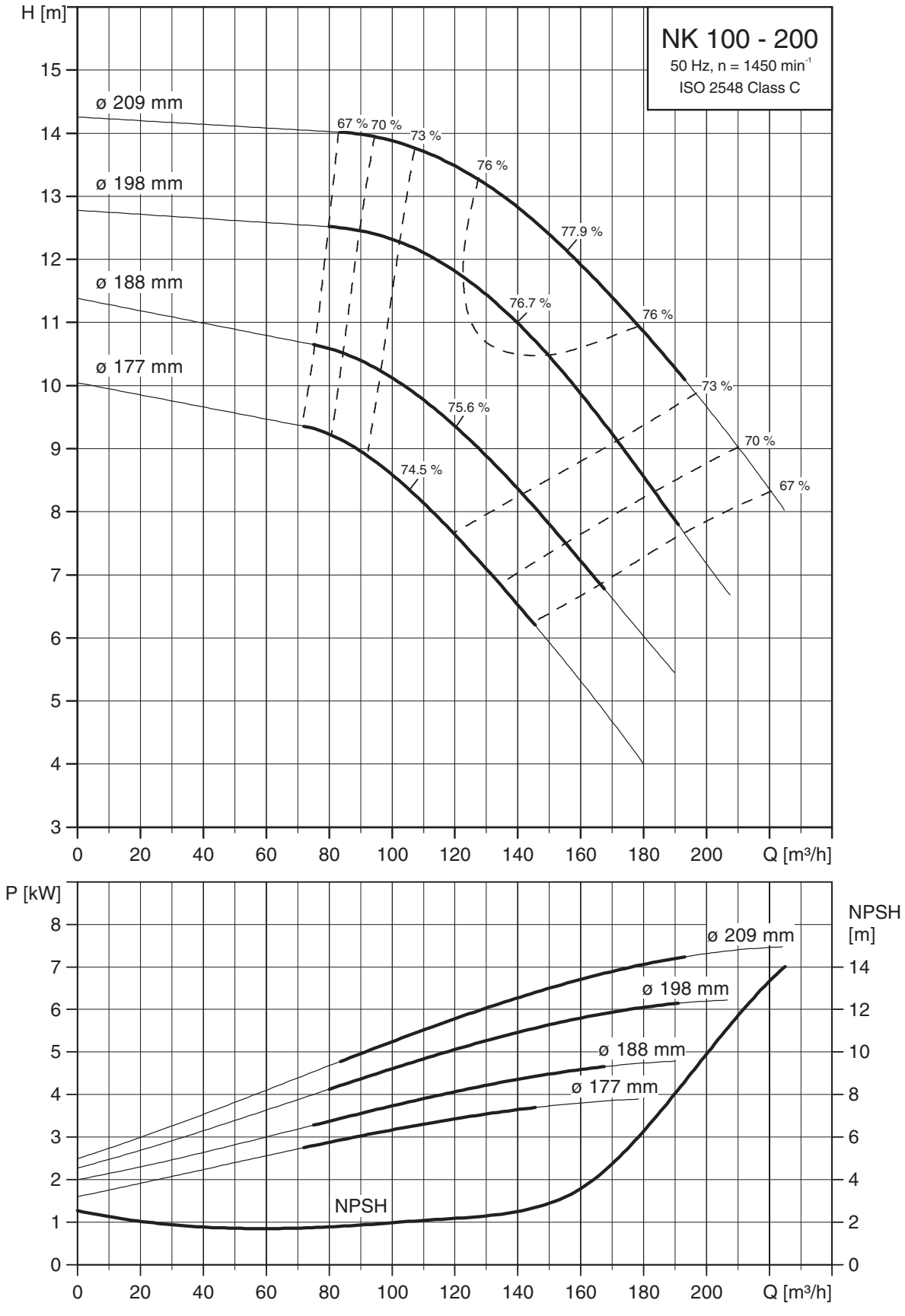

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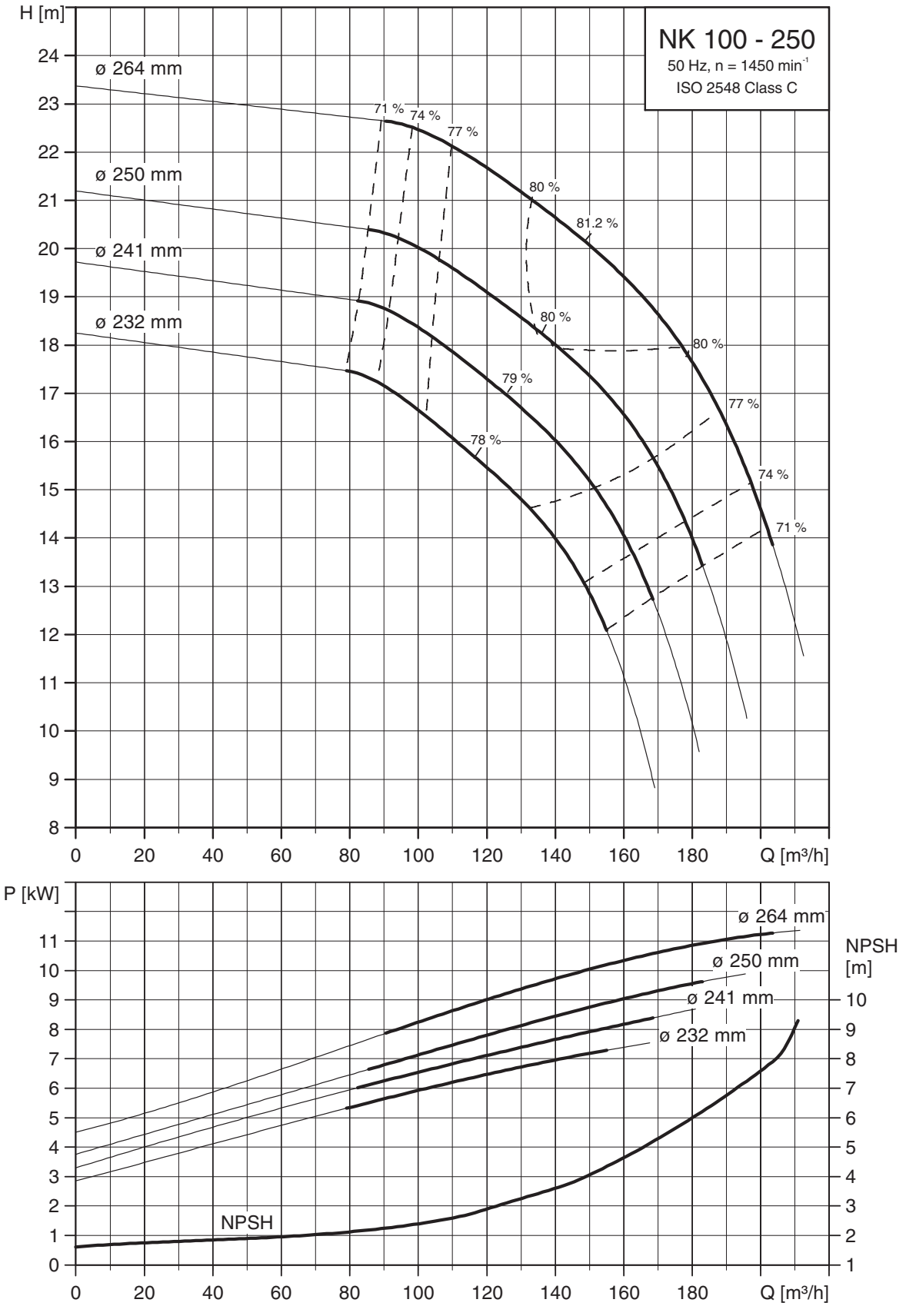

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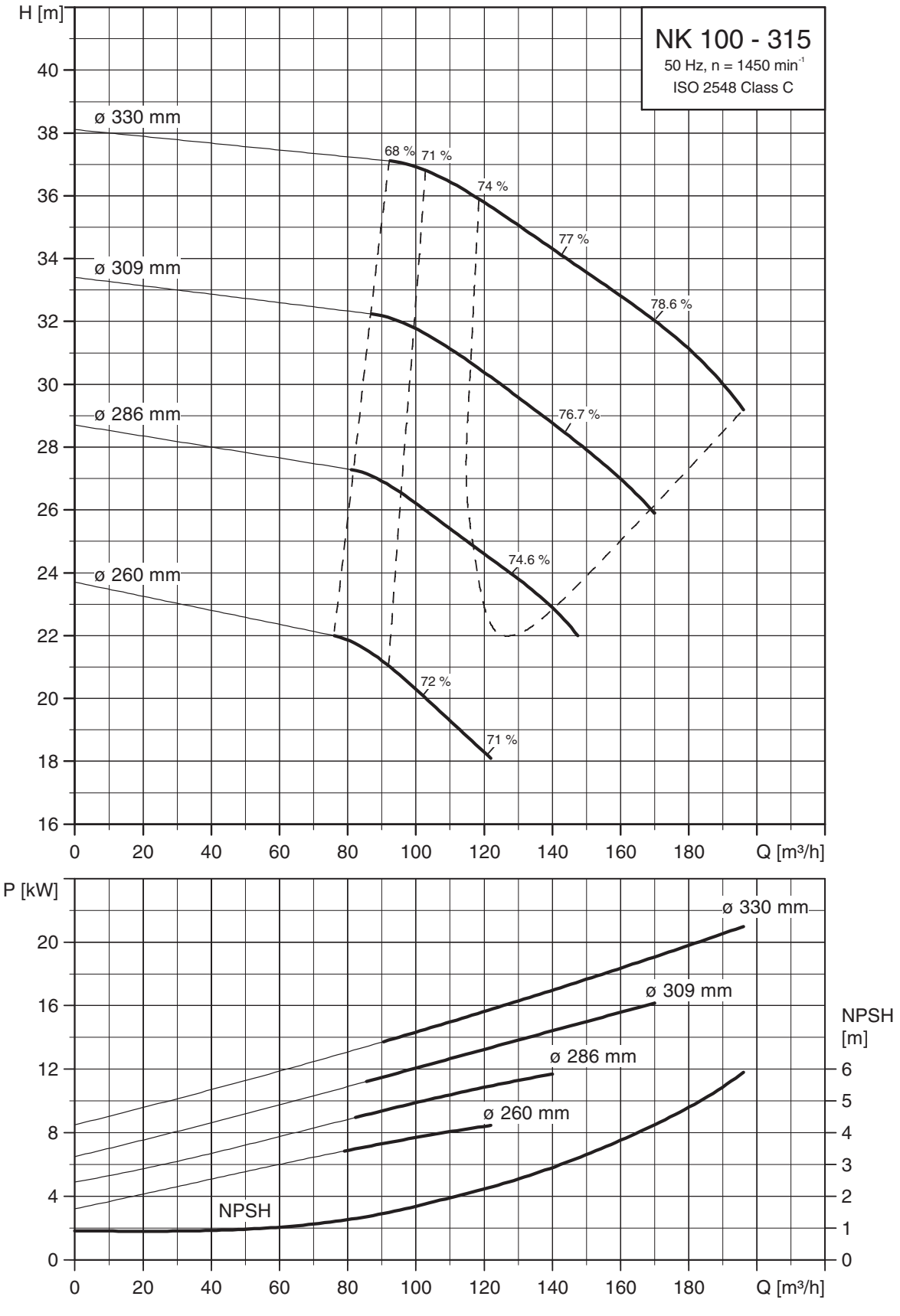

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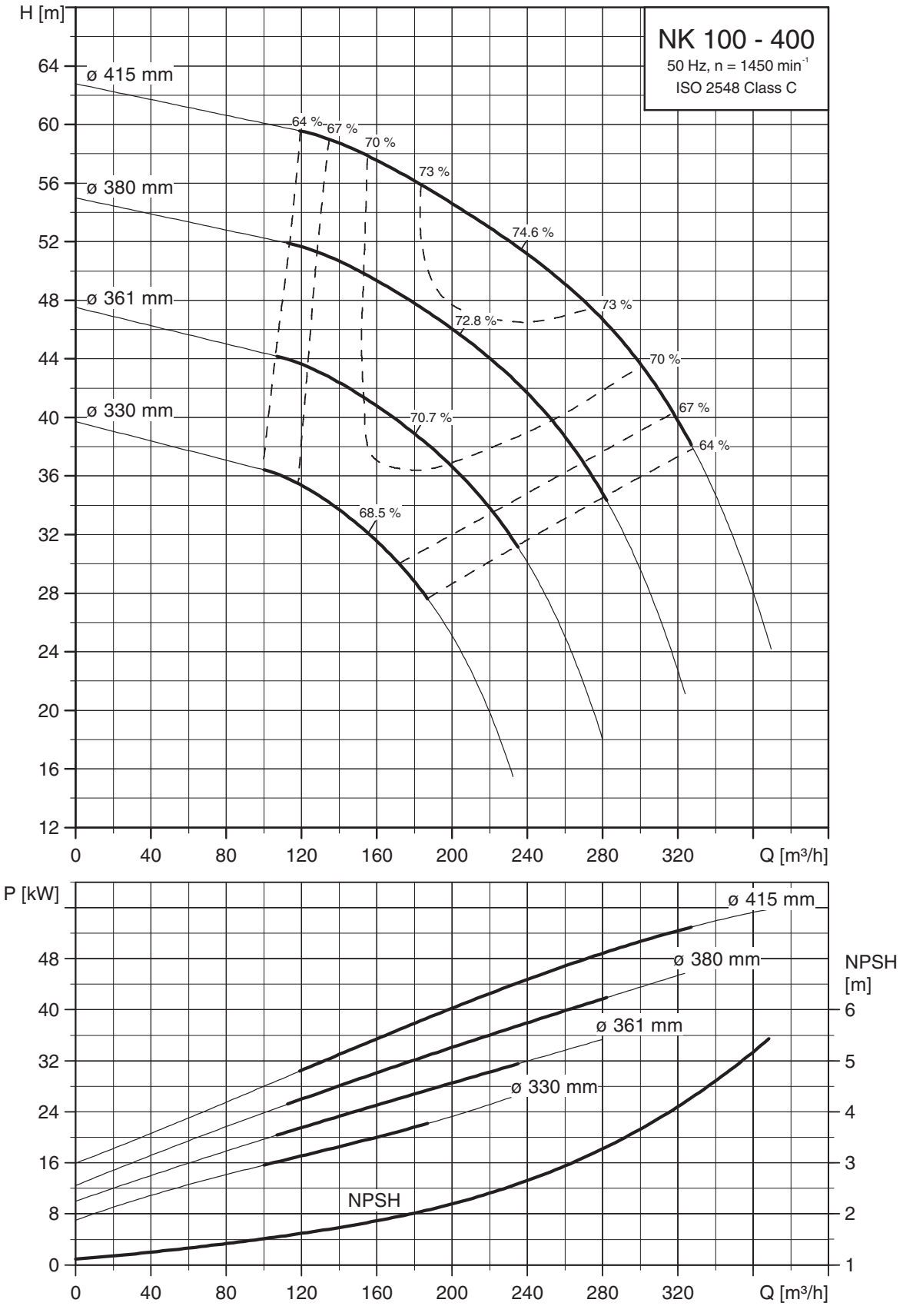

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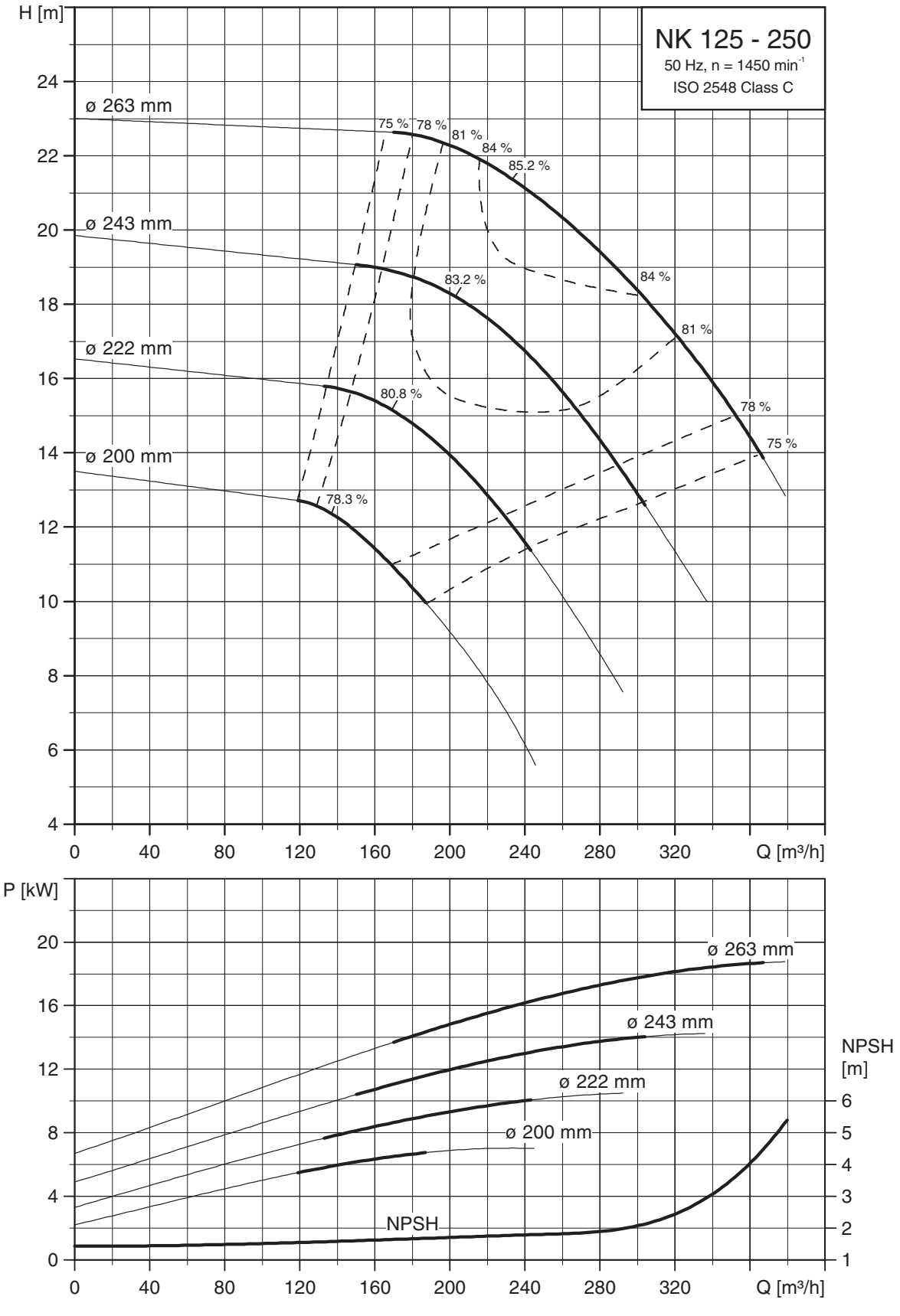

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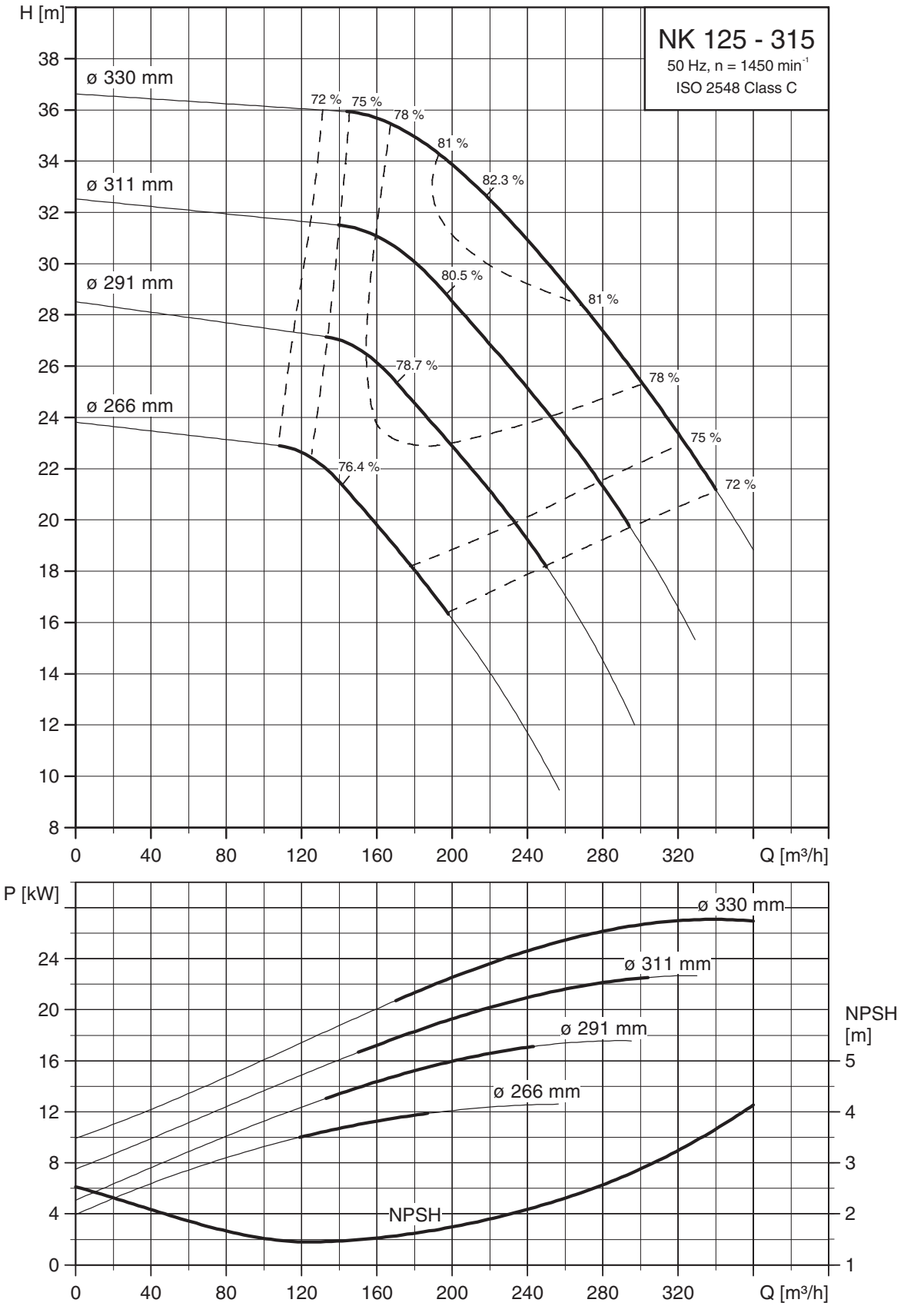

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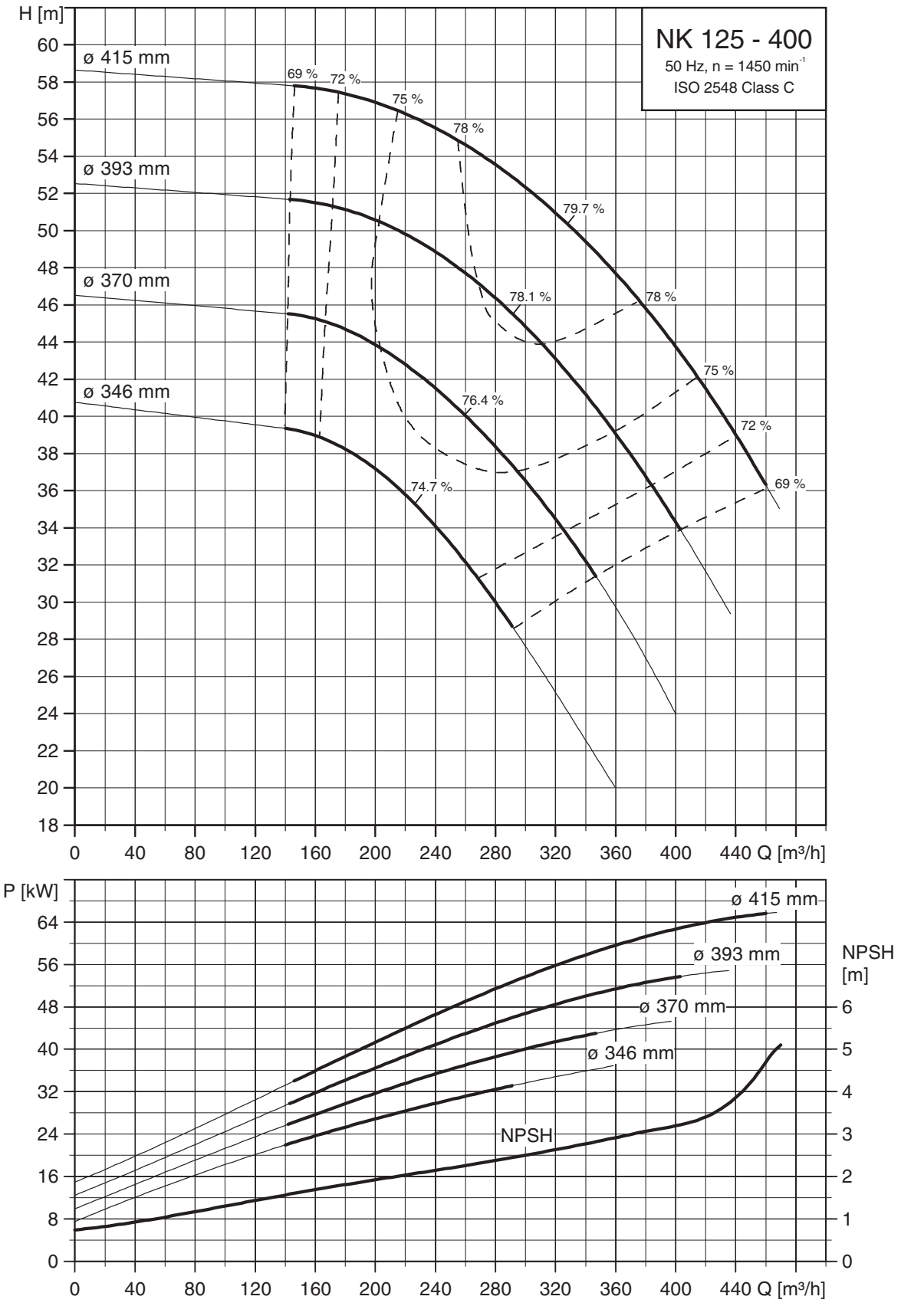

TM00 8900 0499

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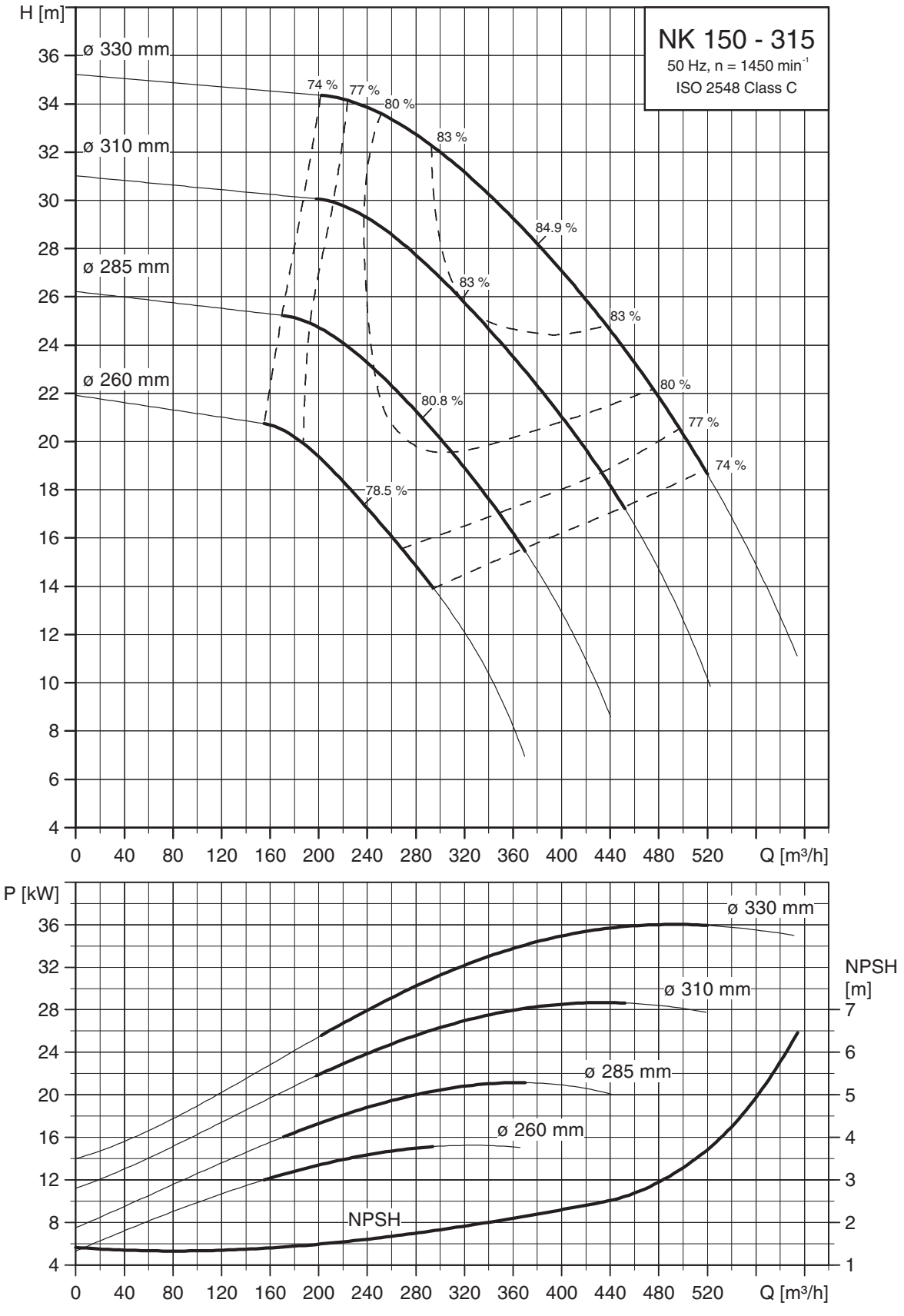

TM00 8913 0499

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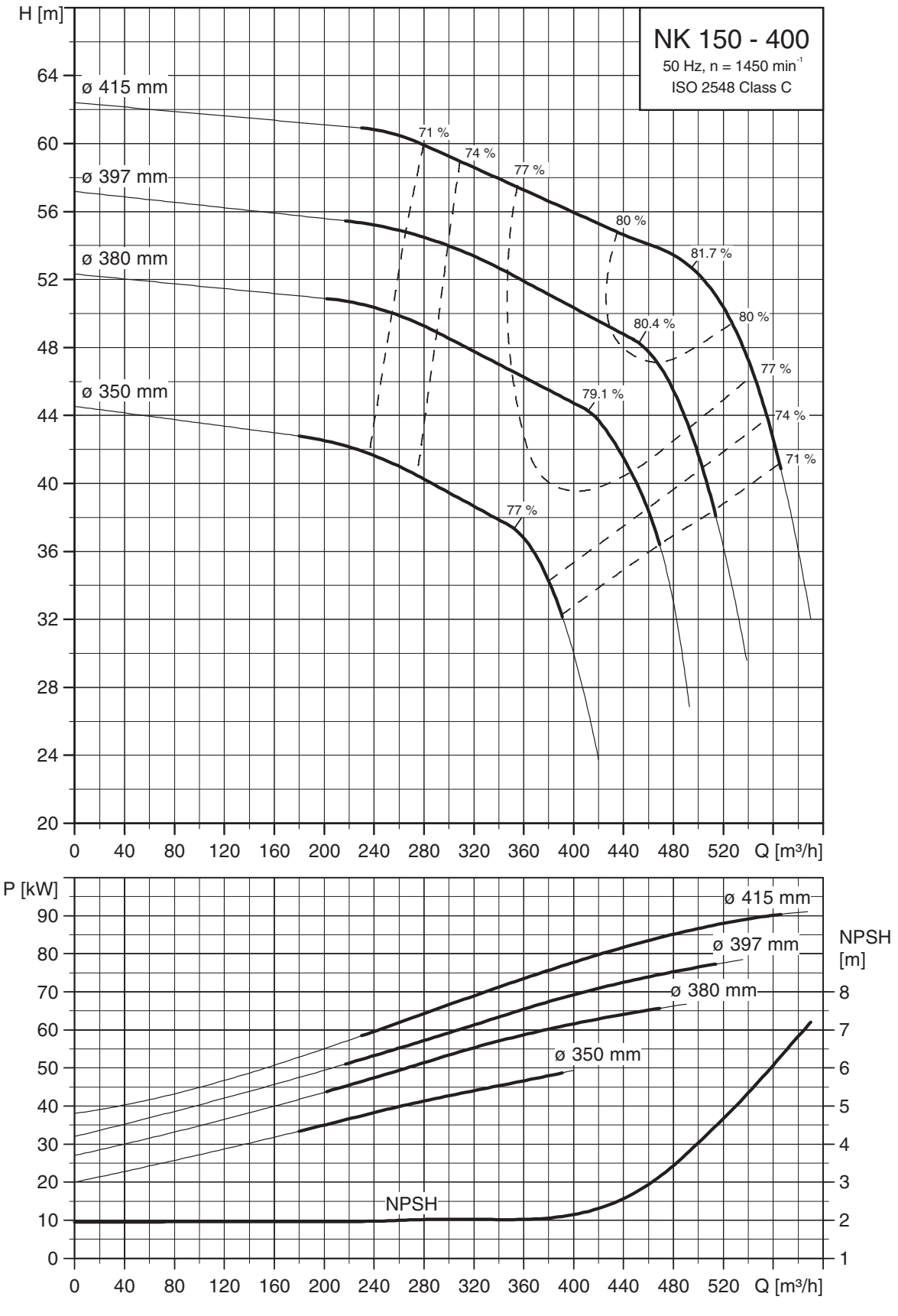

TM00 8901 0499

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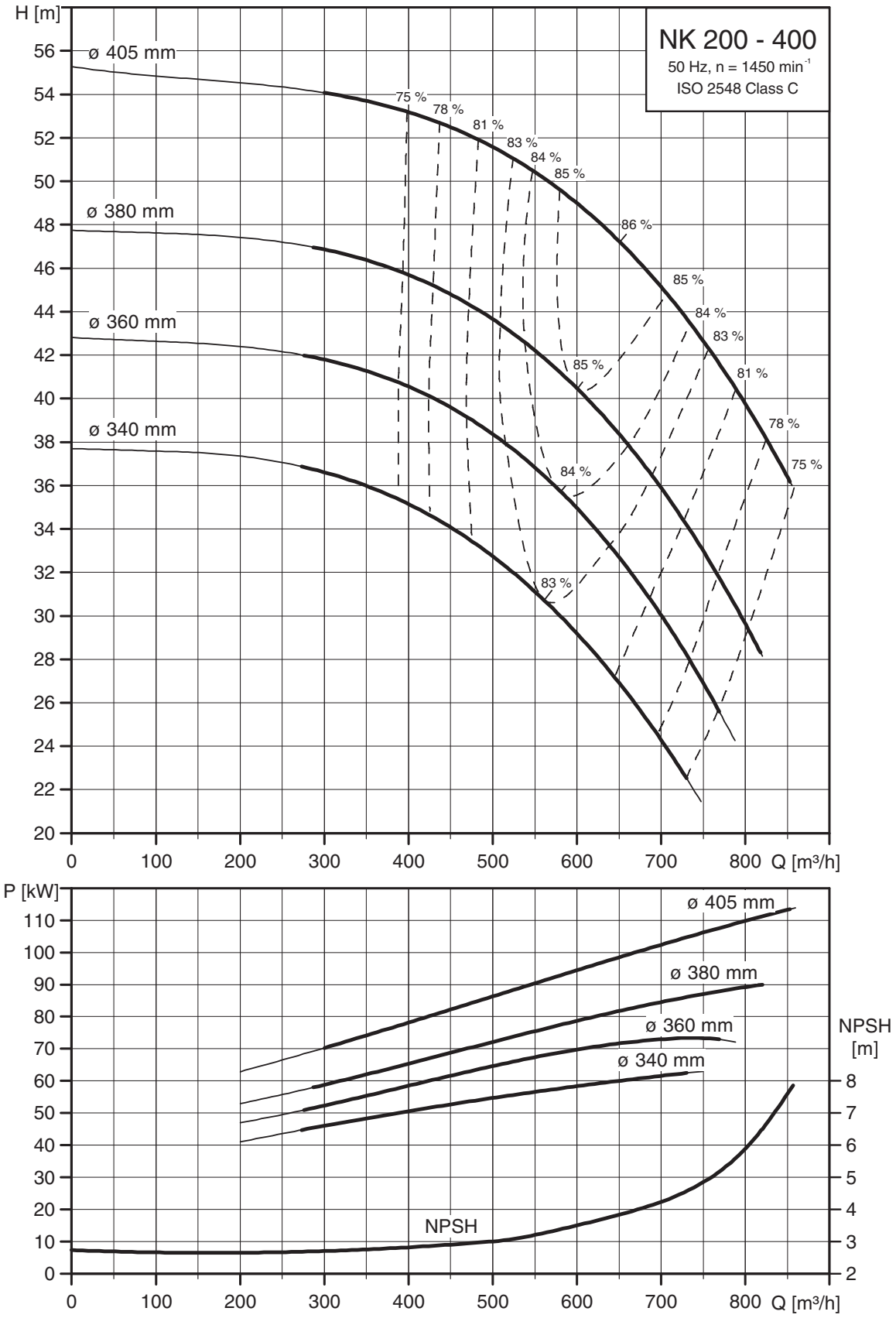

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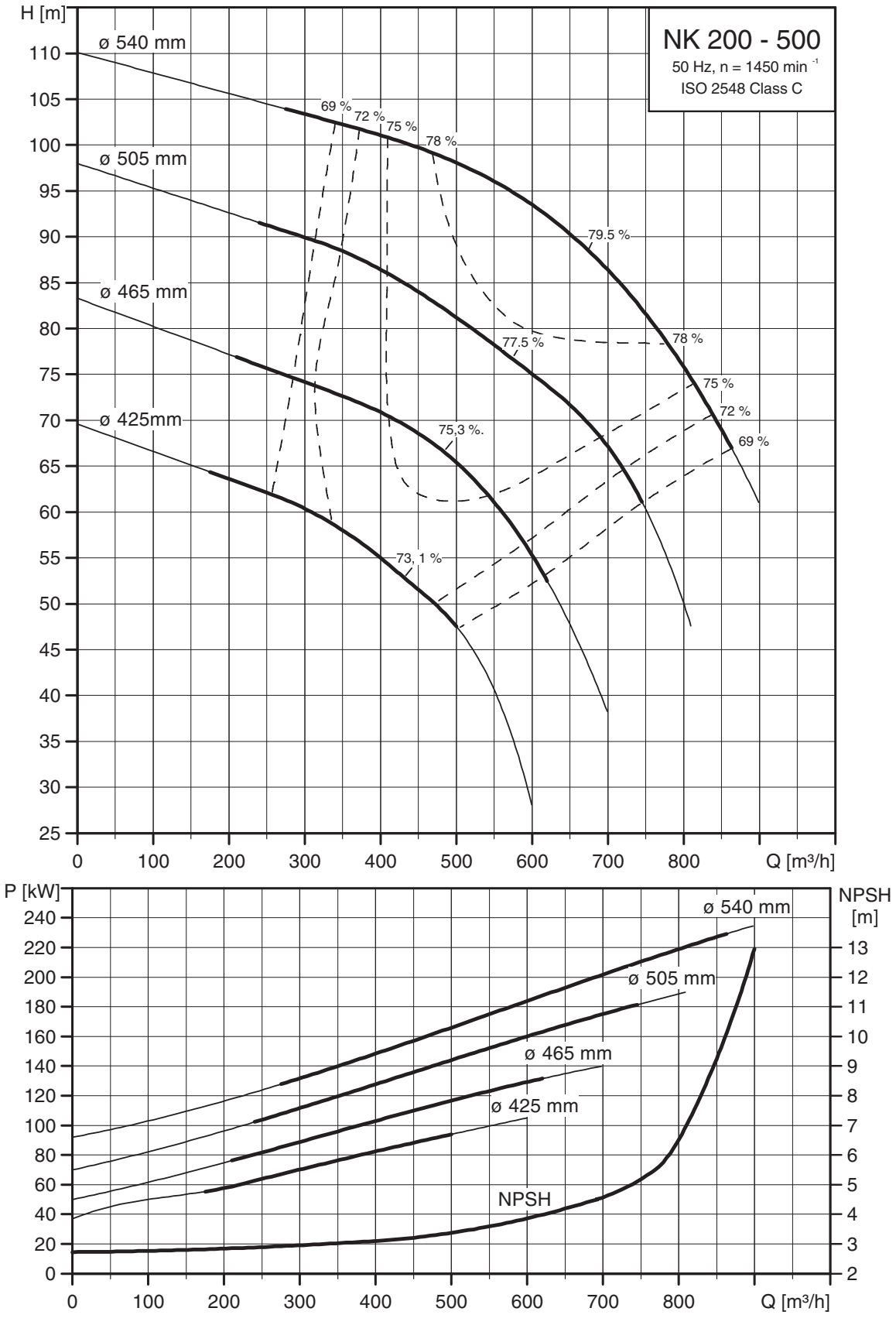

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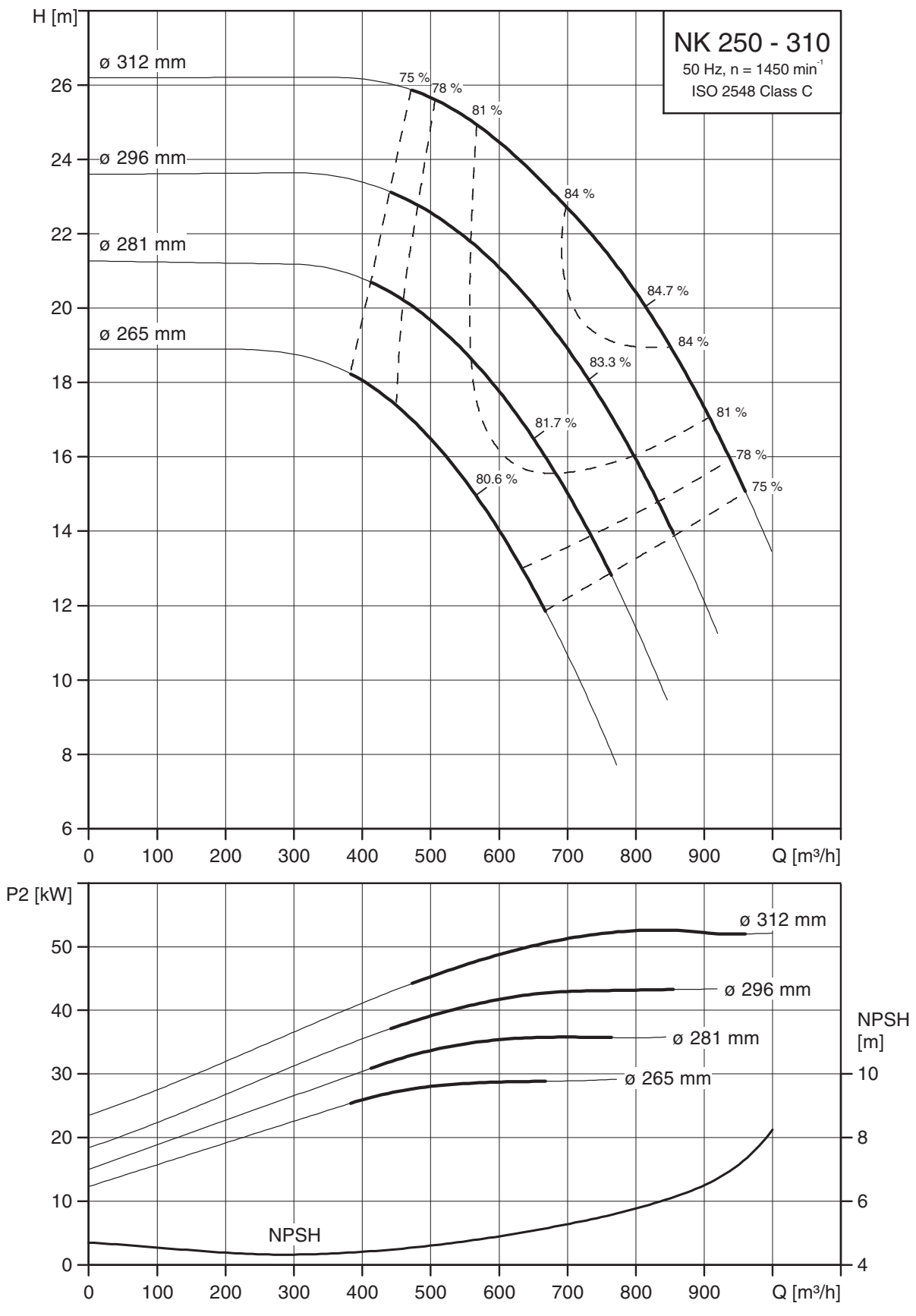

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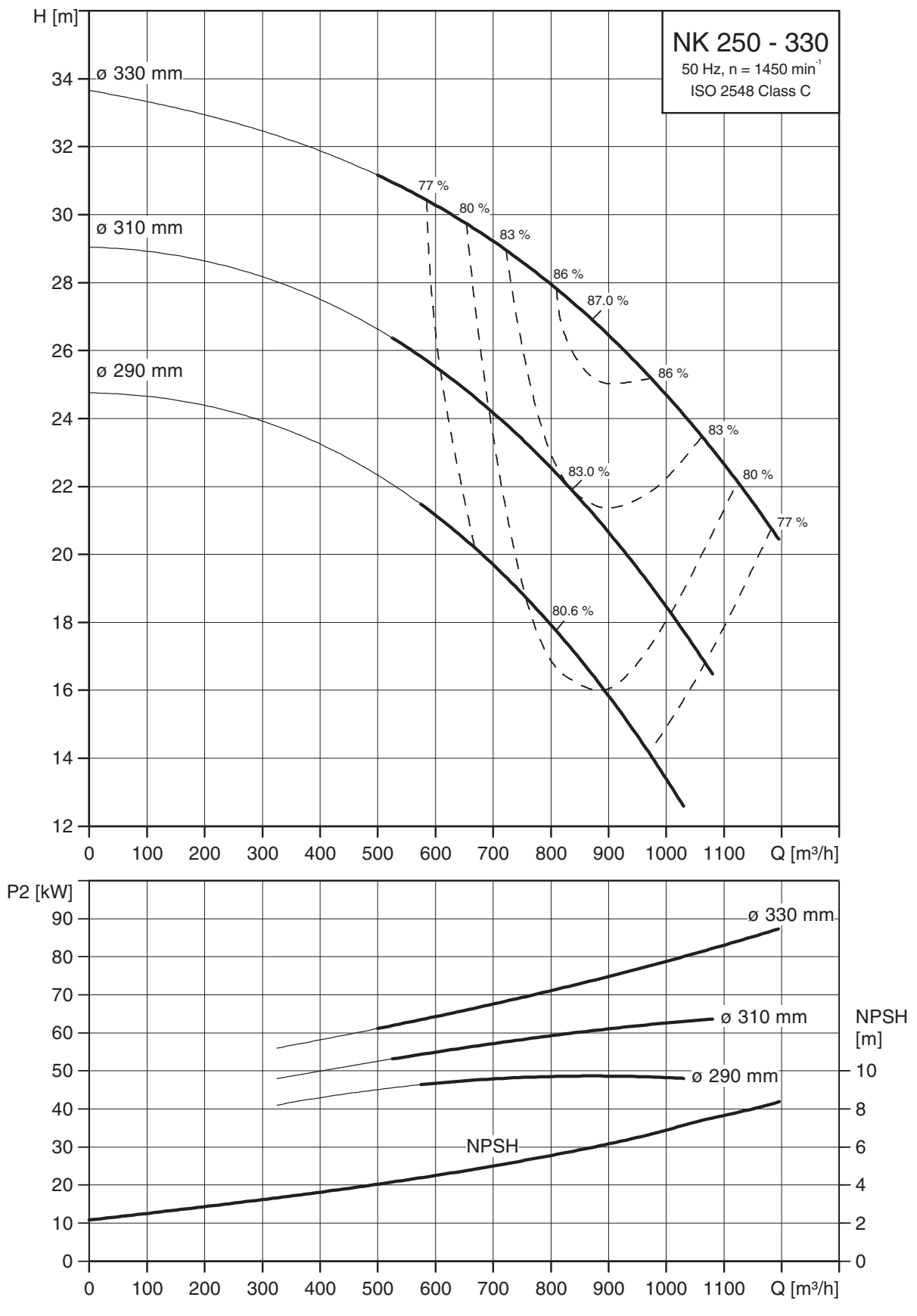

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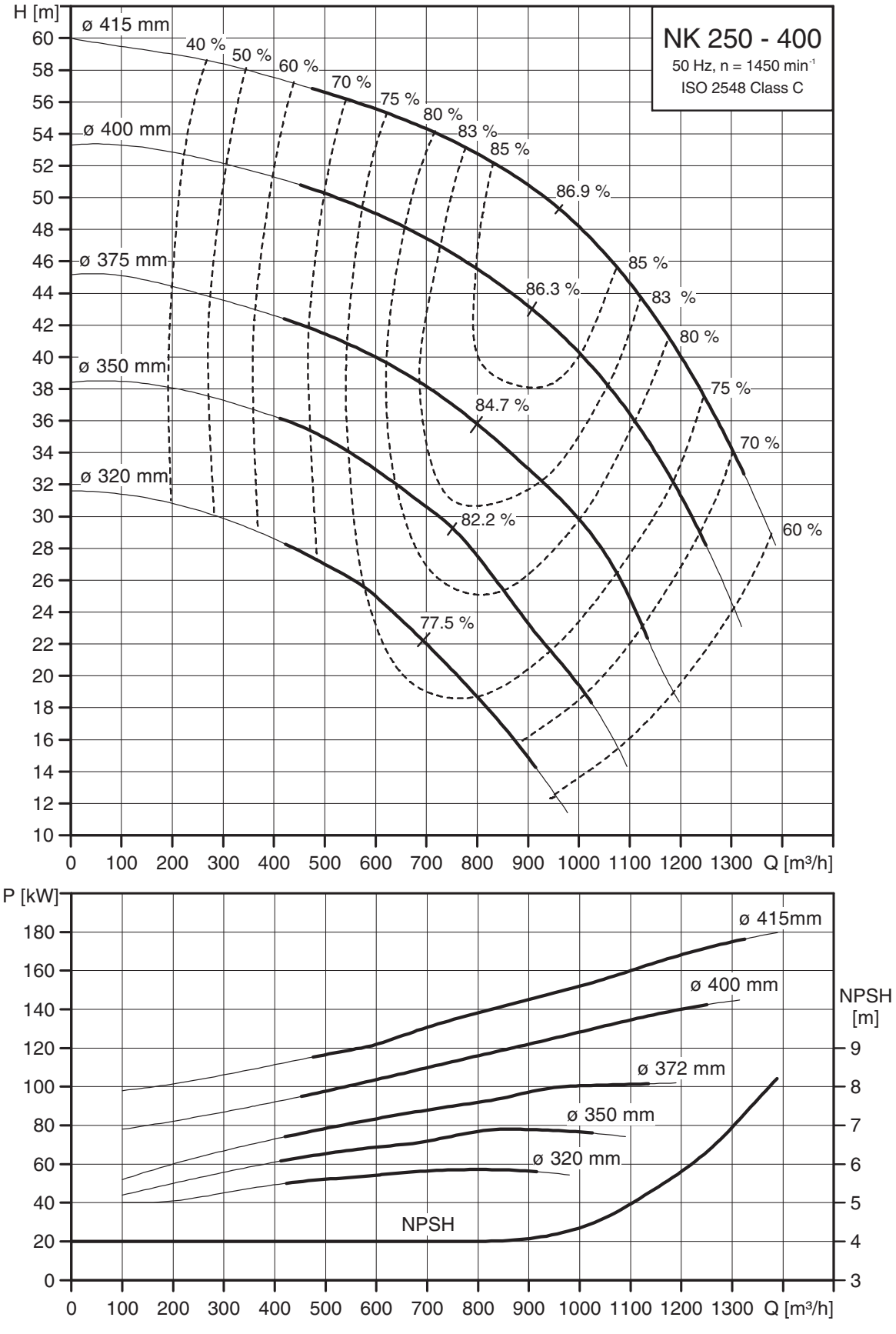

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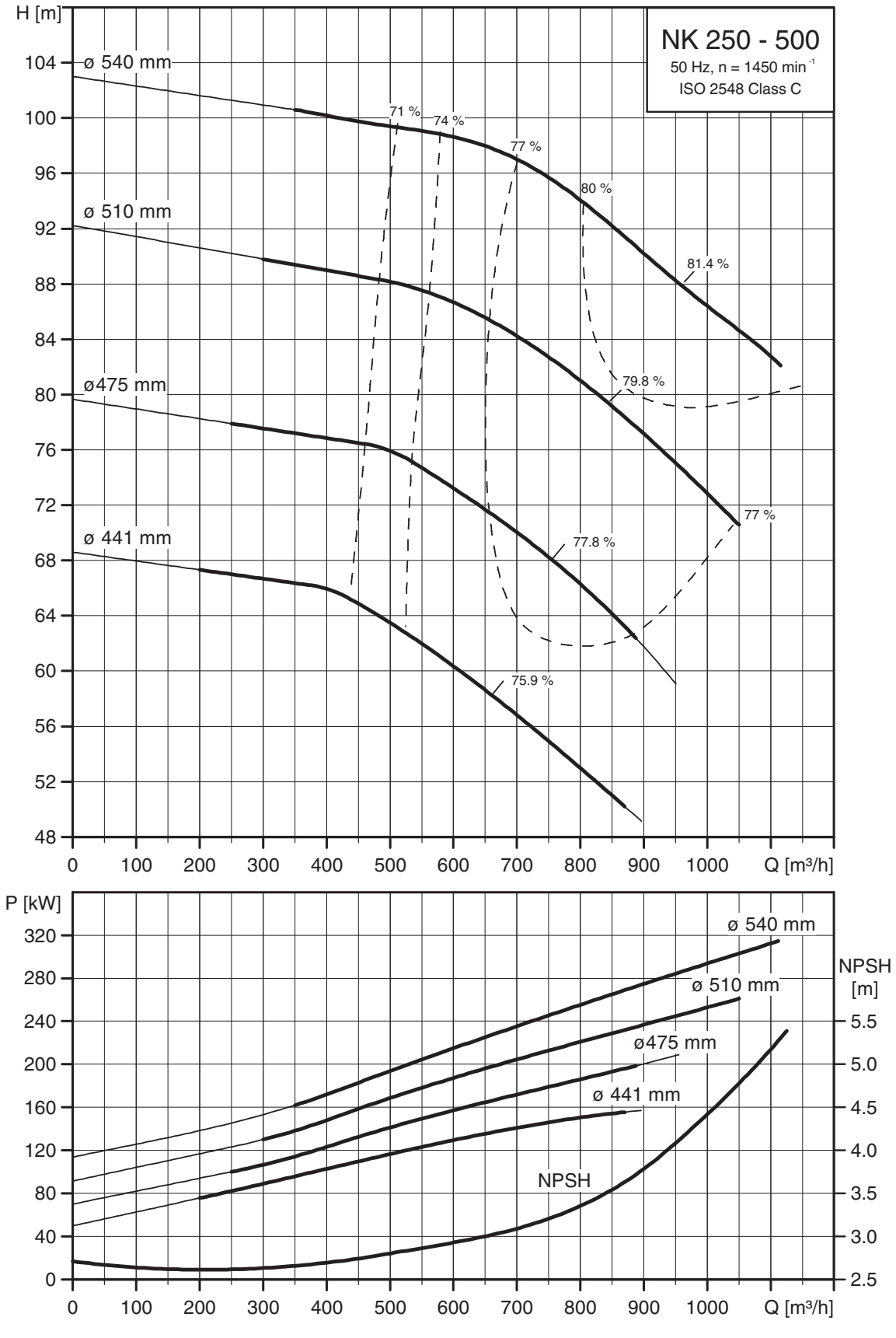

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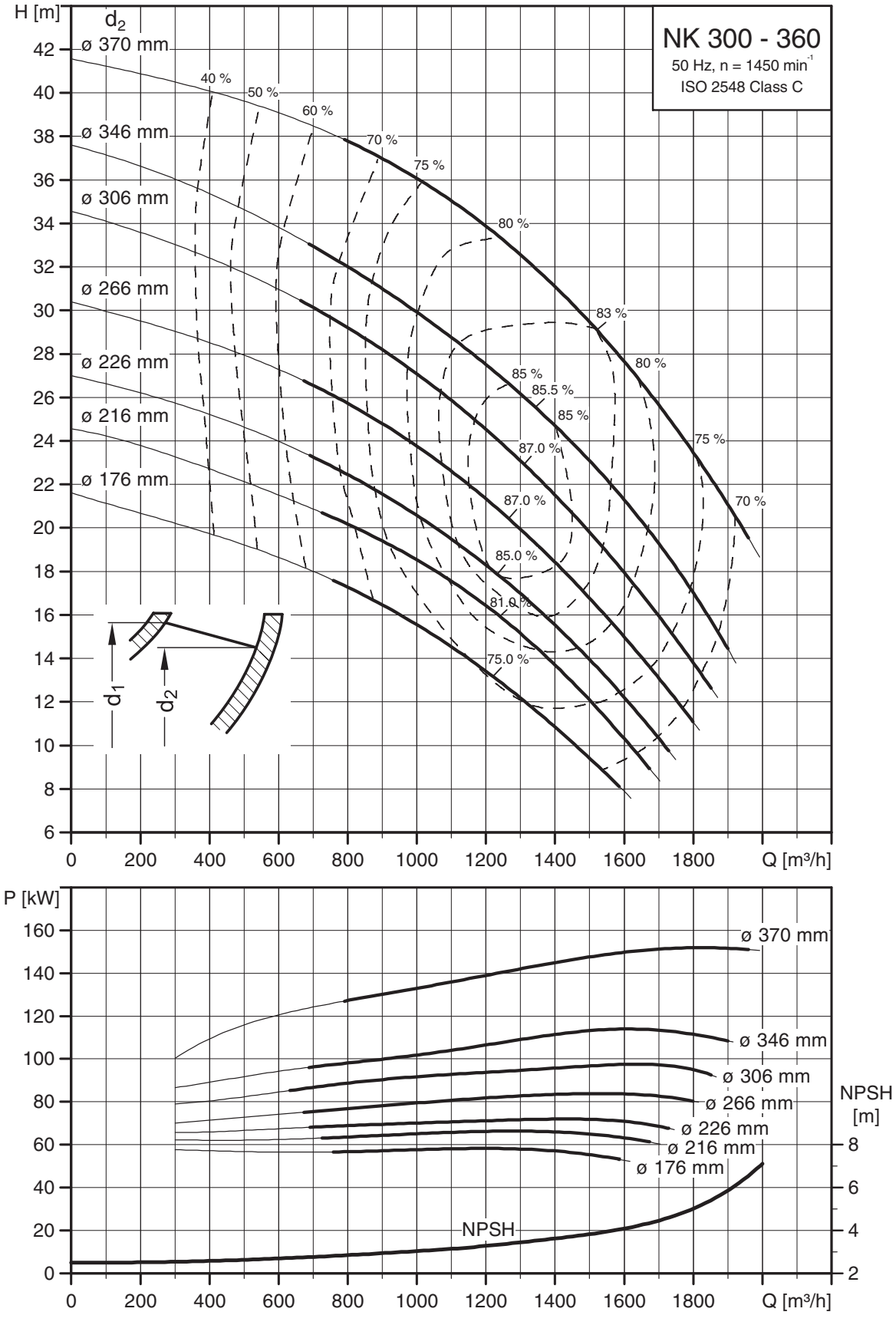

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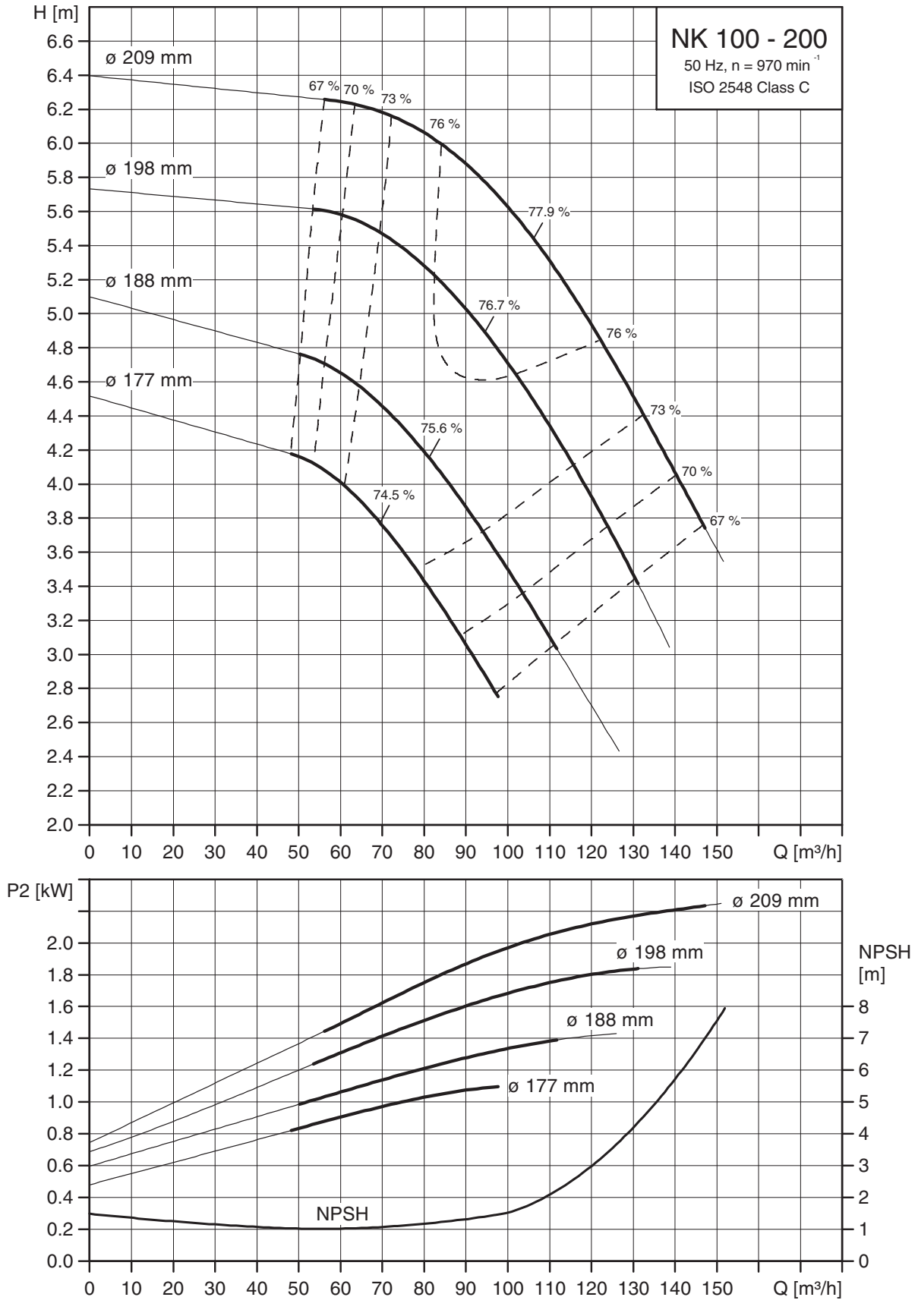

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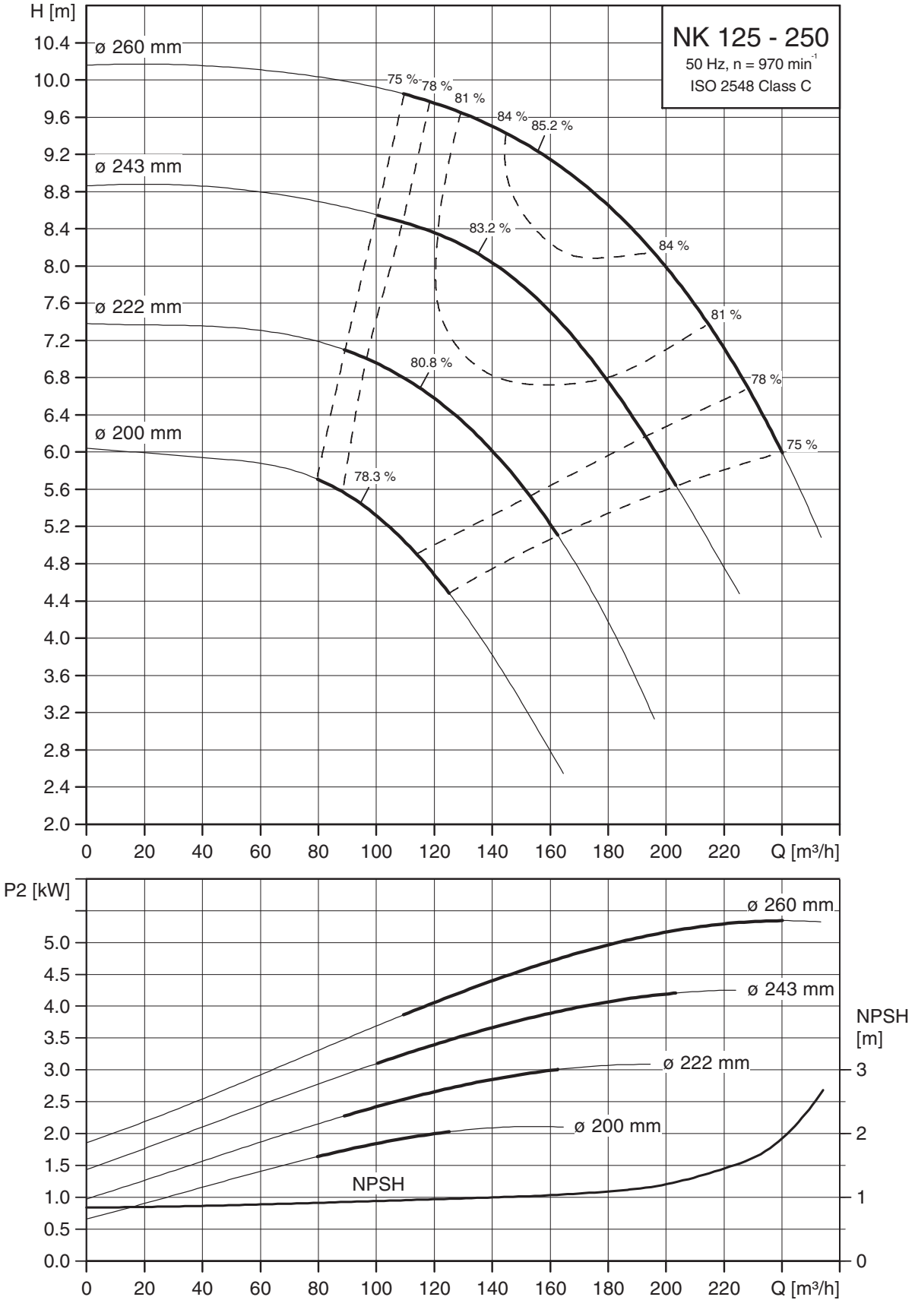

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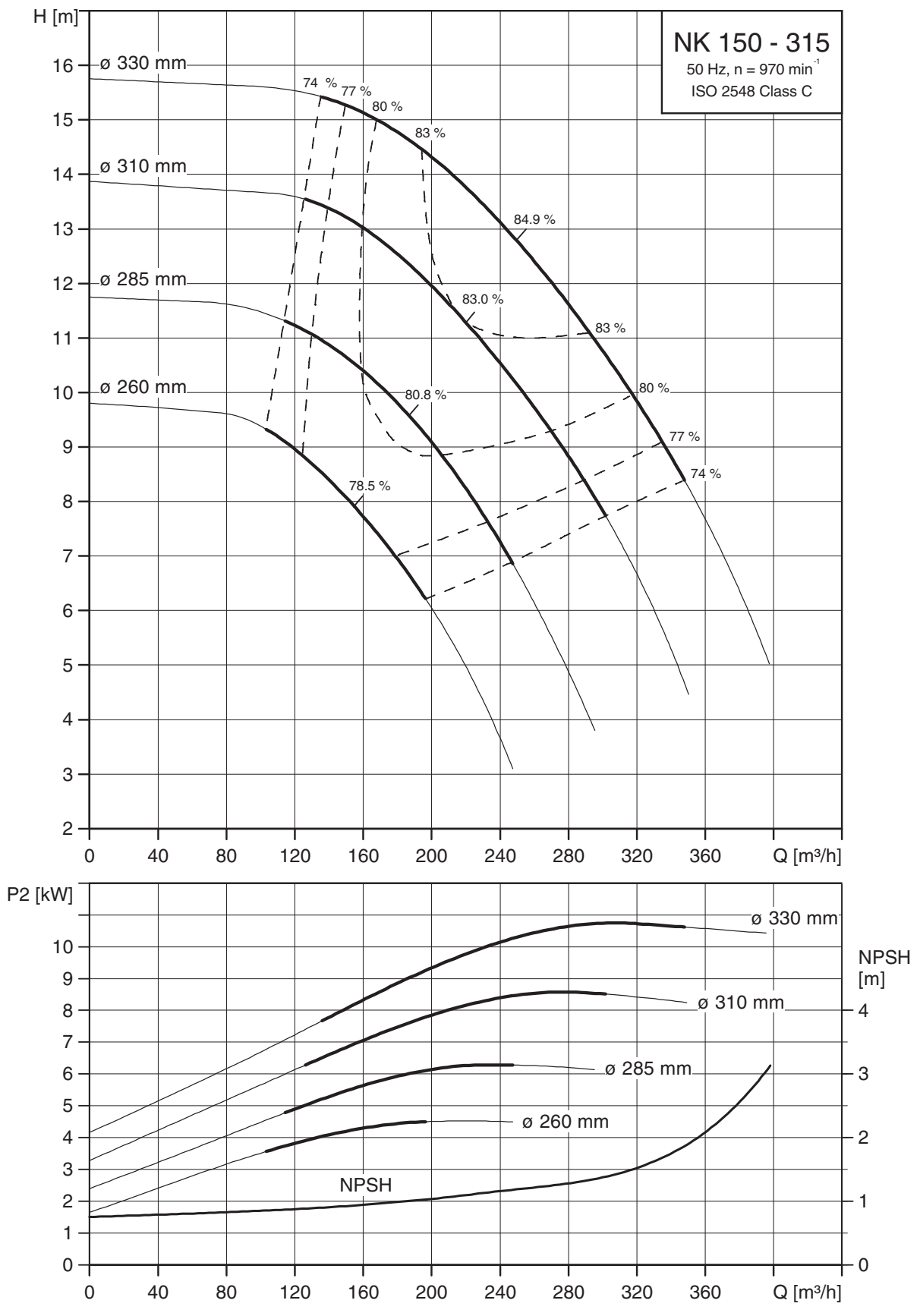

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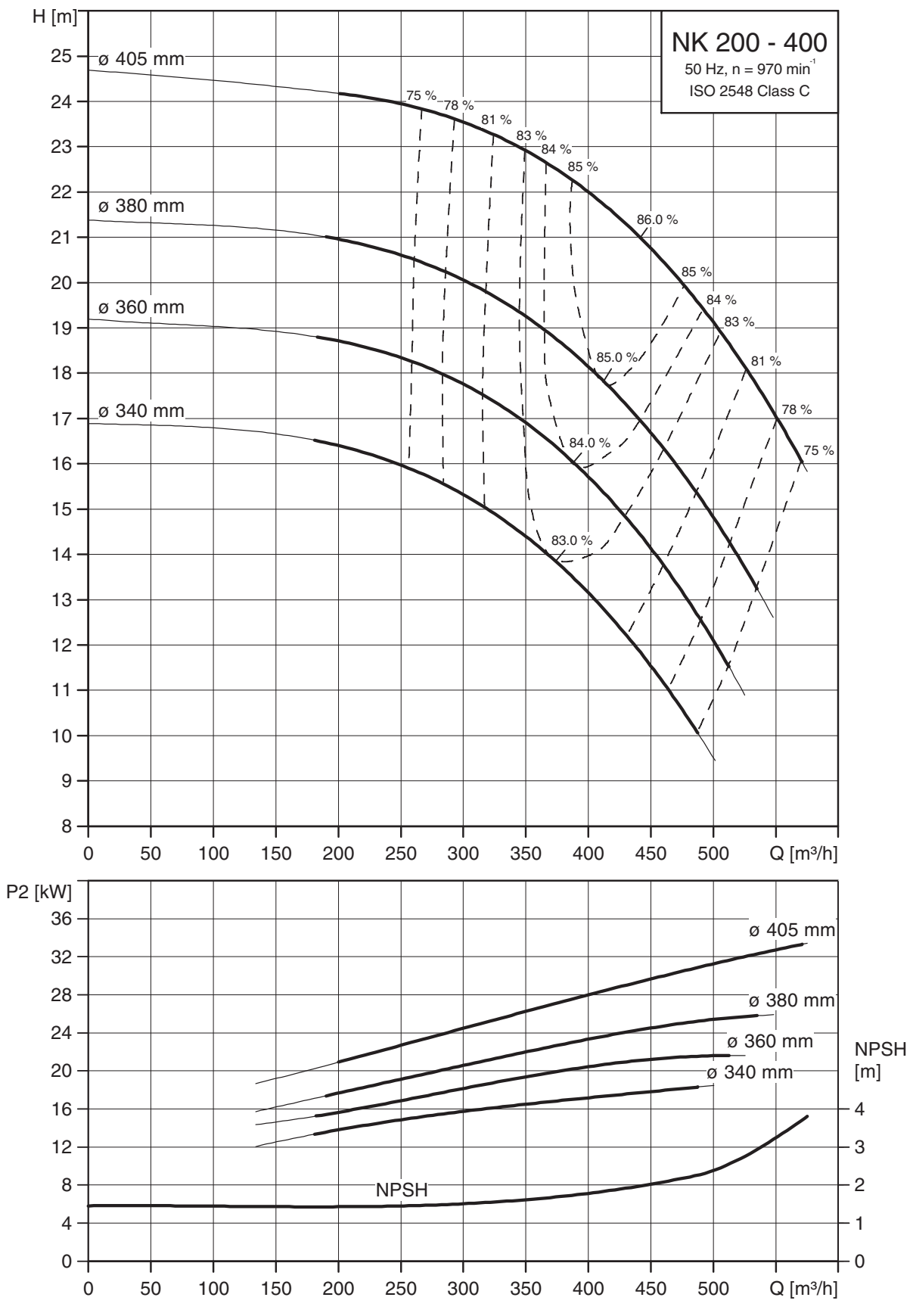

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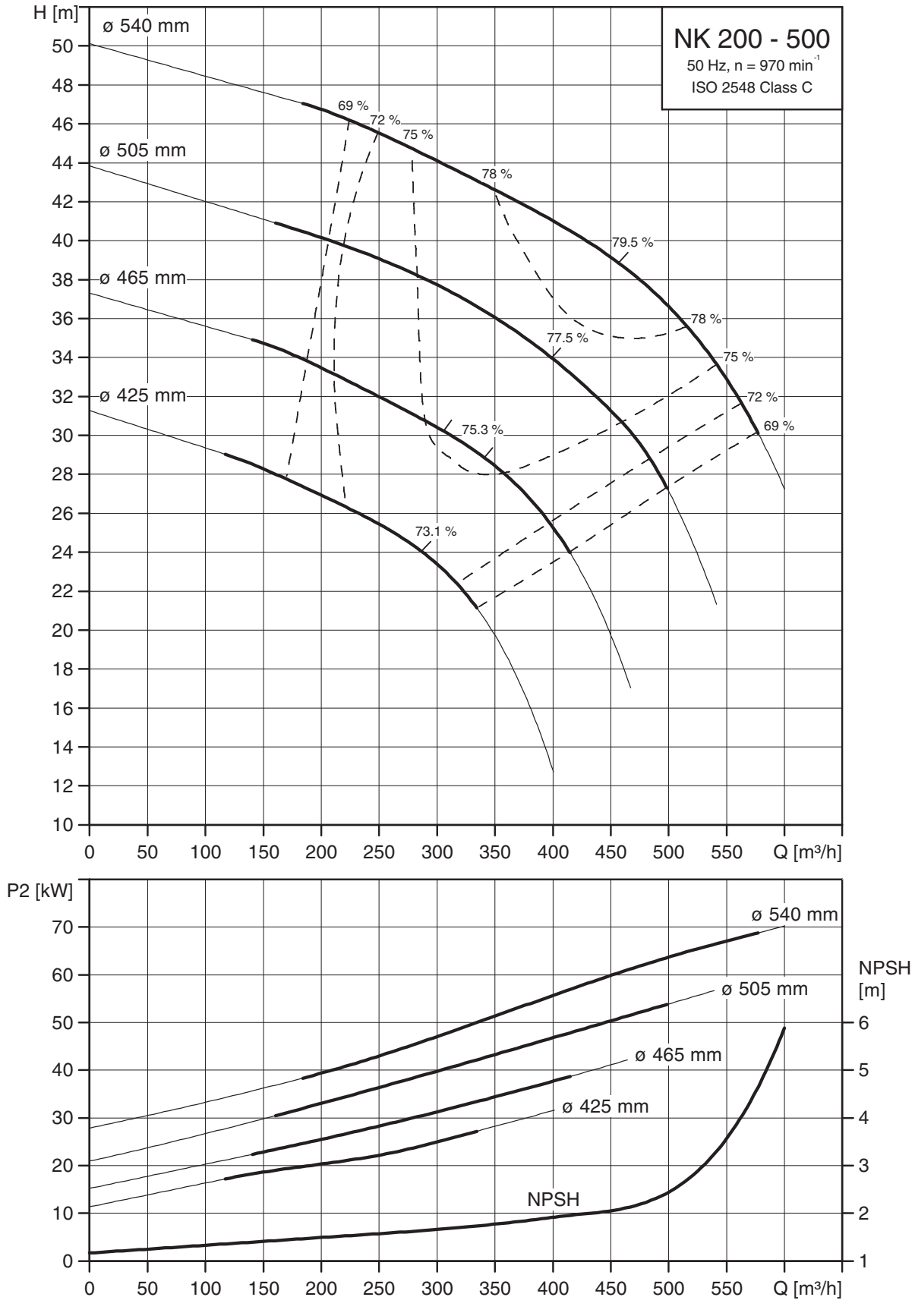

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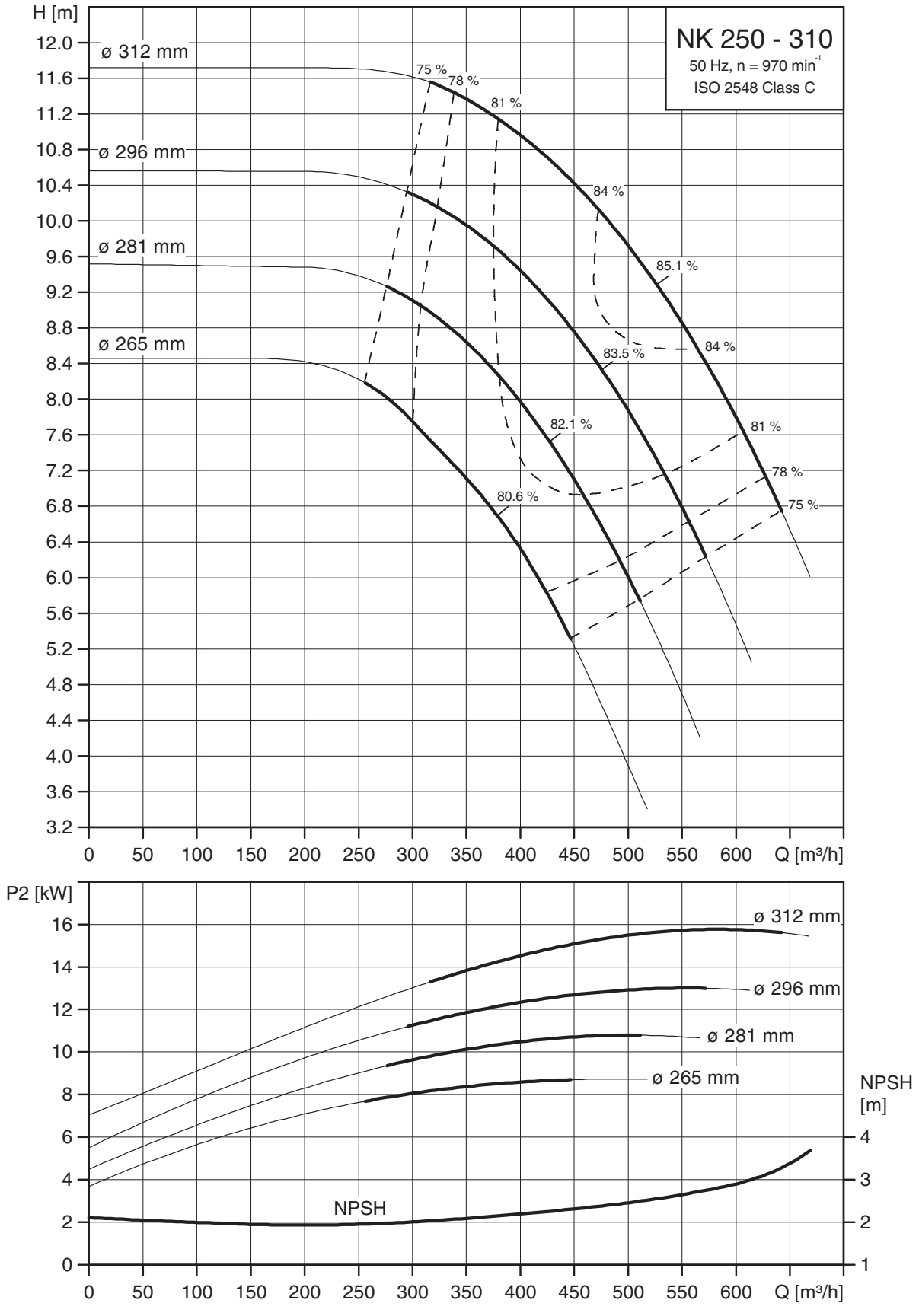

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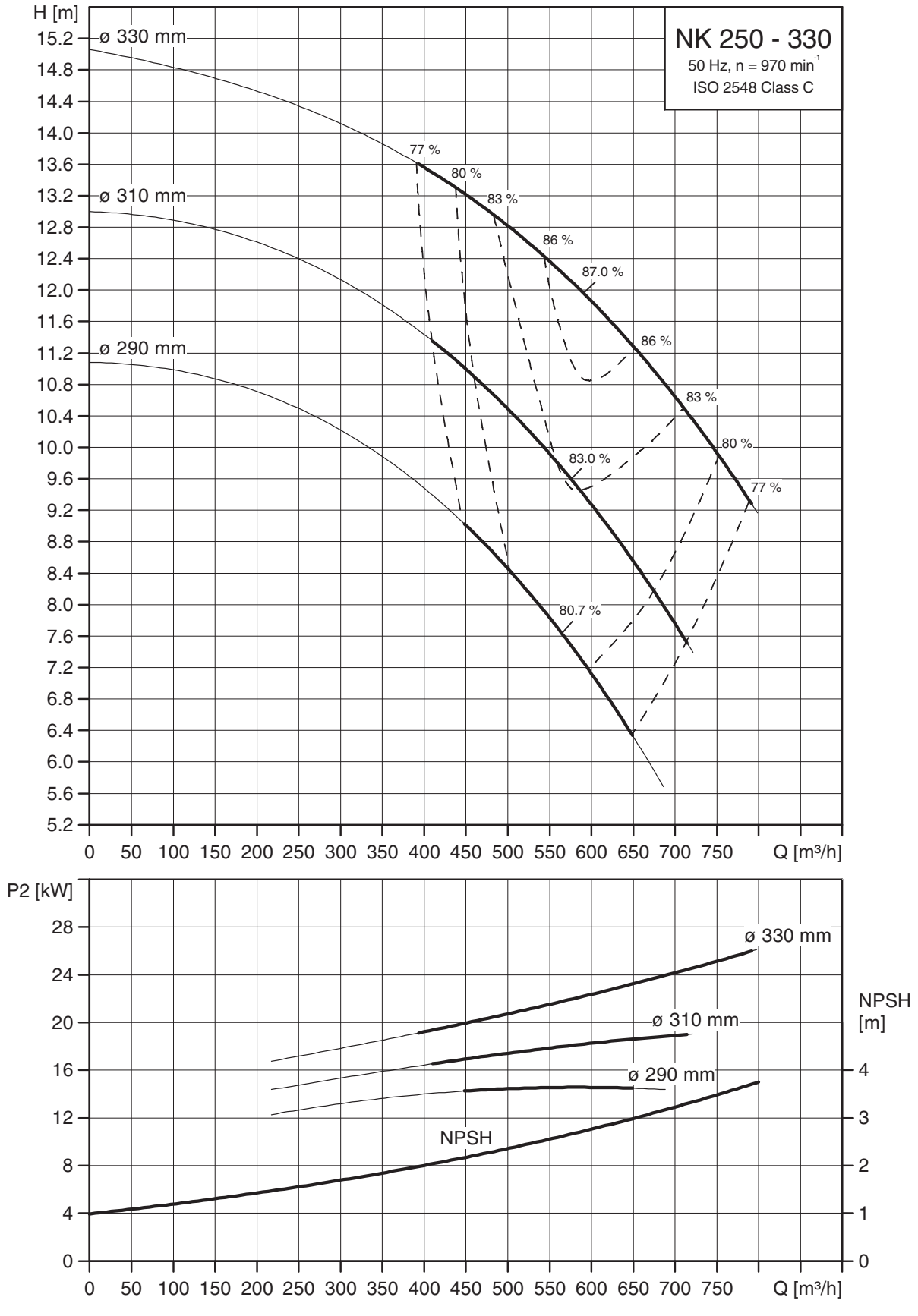

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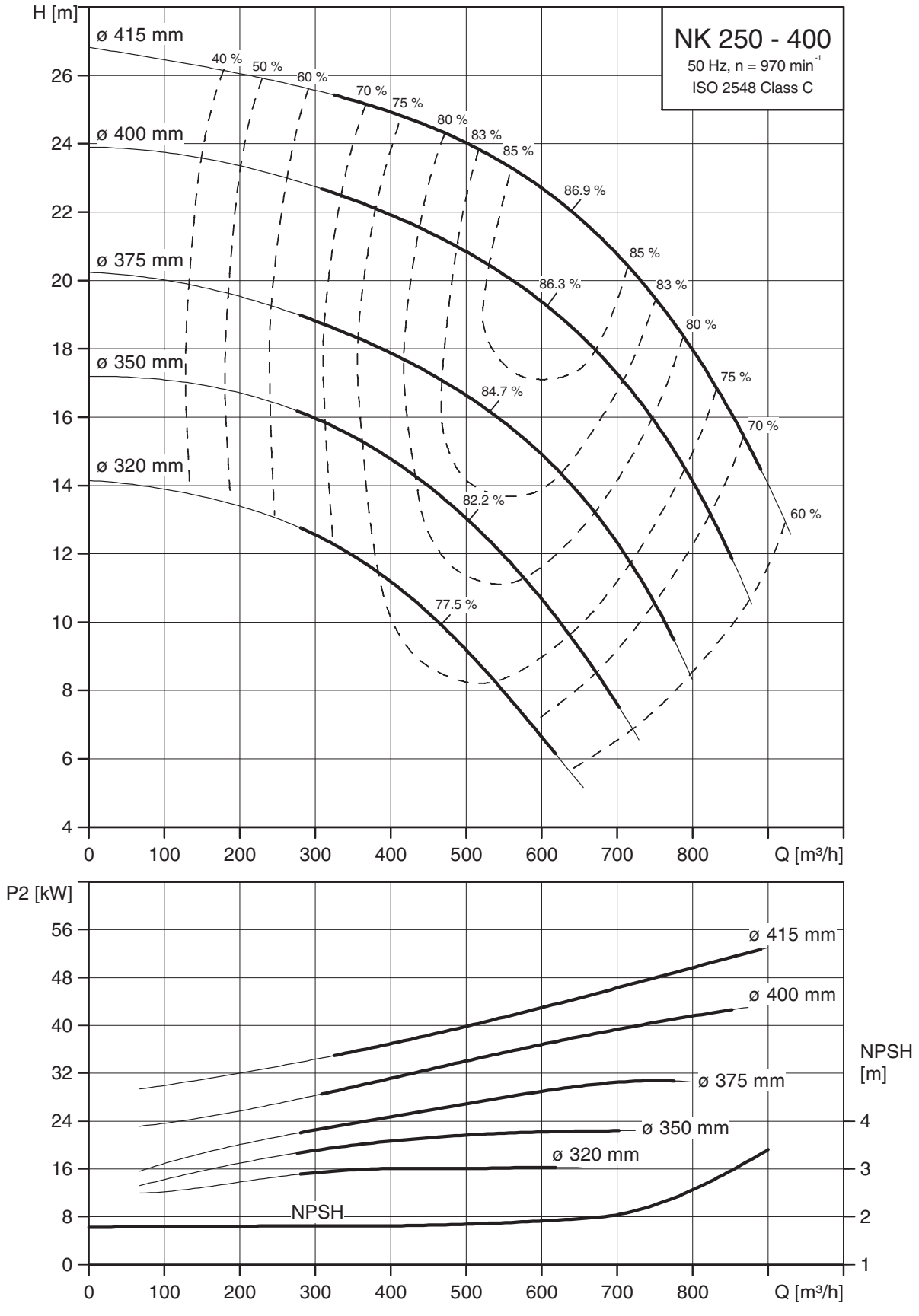
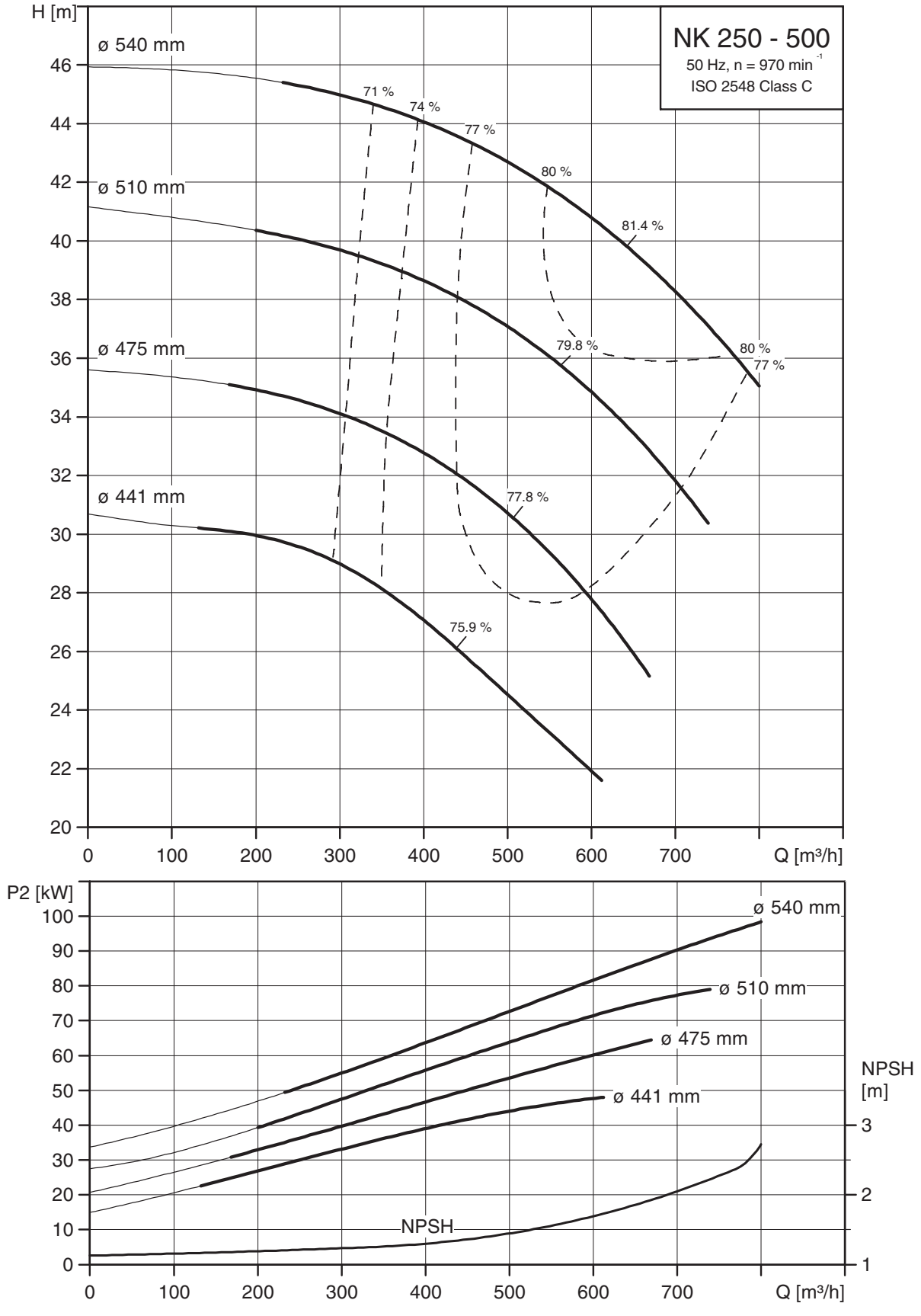
Performance Curves



Performance Curves



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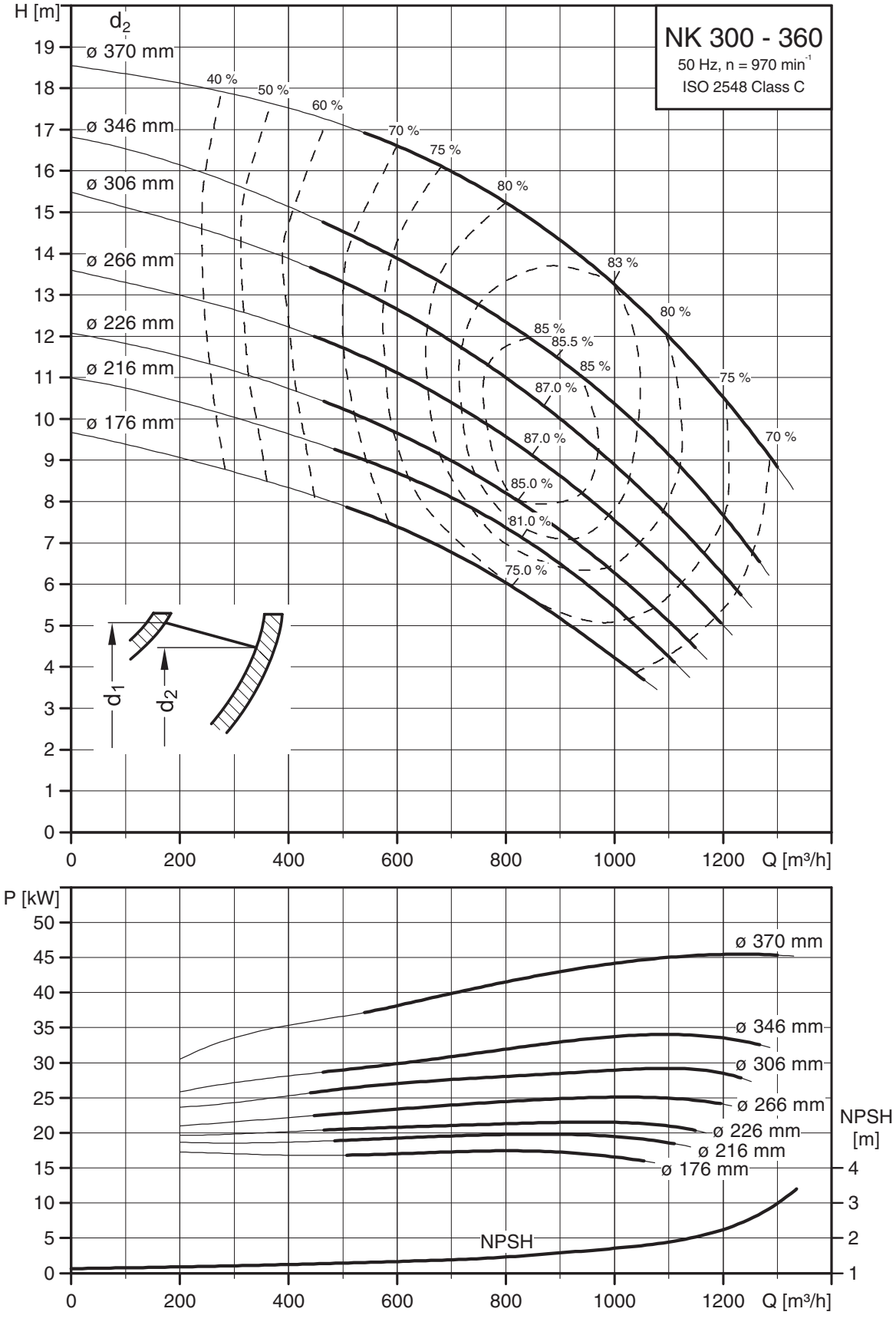
Performance Curves



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