In-Line Centrifugal Pumps

INM/INL SERIES (50 Hz.)

TECHNICAL MANUAL

Mas Grup

Revision No: 03

June/2018

INM/INL Series

In-Line Centrifugal Pumps

General Information

Mas Grup

Fields of Application

The MAS in-line pumps are designed for,

- Water supply,
- Boosting,
- Circulating of hot and cold water,
- In central heating and air-conditioning installations,
- Liquid transfer applications in industry, agriculture, etc.

Pumped Liquids

Thin, clean, non-aggressive and non-explosive liquids free from large solid particles or fibres.

Cooling liquids, not containing mineral oil. (Oil-resistant O-rings are available on request.)

For special applications, please consult to MAS DAF MAKİNA SAN. A.Ş.

Design

- The INM/INL pumps are single-stage centrifugal pumps of non-self-priming type fitted with standard motors and mechanical shaft seals.
- The nominal flow rates of the pumps comply with the DIN 24 255 standards.
- Pump flanges sizes according to EN 1092, PN 16. The dimensions of the suction and discharge ports are identical. Both pump flanges have pressure gage tapings.
- Single entry, closed impeller is hydraulically thrust compensated and dynamically balanced.
- A drain plug is fitted in the bottom of pump housing.
- The motor shaft is passed into the pump shaft for coupling and no need to use any coupling for the system.

Shaft

Chromium steel (AISI 420) fine grained shafts are used on INM/INL pumps. Motor shaft is passed into the pump shaft for coupling. For high powers, a coupling system is used between the motor shaft and pump shaft.

Bearings

For INM/INL series pumps, the motor shaft and pump shaft are passed into each other. The axial and the radial loads are carried by the bearing inside the motor. There is no need to use extra bearing for the pump. For high powers, a coupling system is used between the motor shaft and pump shaft.

Shaft Seal

- INM/INL pumps are fitted with a single, uncooled and unbalanced rubber bellow mechanical seal.
- Mechanical seal flushed from internal source.
- The circulation of liquid in the duct of the air vent screw ensures lubrication and cooling of the shaft seal.

For a medium different than water, please consult to MAS for selection of appropriate O-Ring and Mechanical Seal type.

Technical Data

• Suction Flange	: DN 40 - DN 250
• Discharge Flange	: DN 40 - DN 250
• Operating Pressure	: 10 Bar
• Test Pressure	: 13 Bar
• Operating Temperature	:-25 – 120°C
• Capacity Range	: 2 – 700 m³ / h
• Head Range	: 2 - 70 m
• Speed:	: 900-3600 RPM

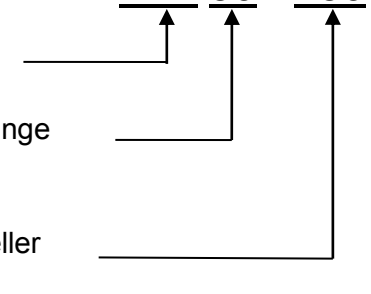
Inform us in your orders, for suction pressure above 7 Bar.

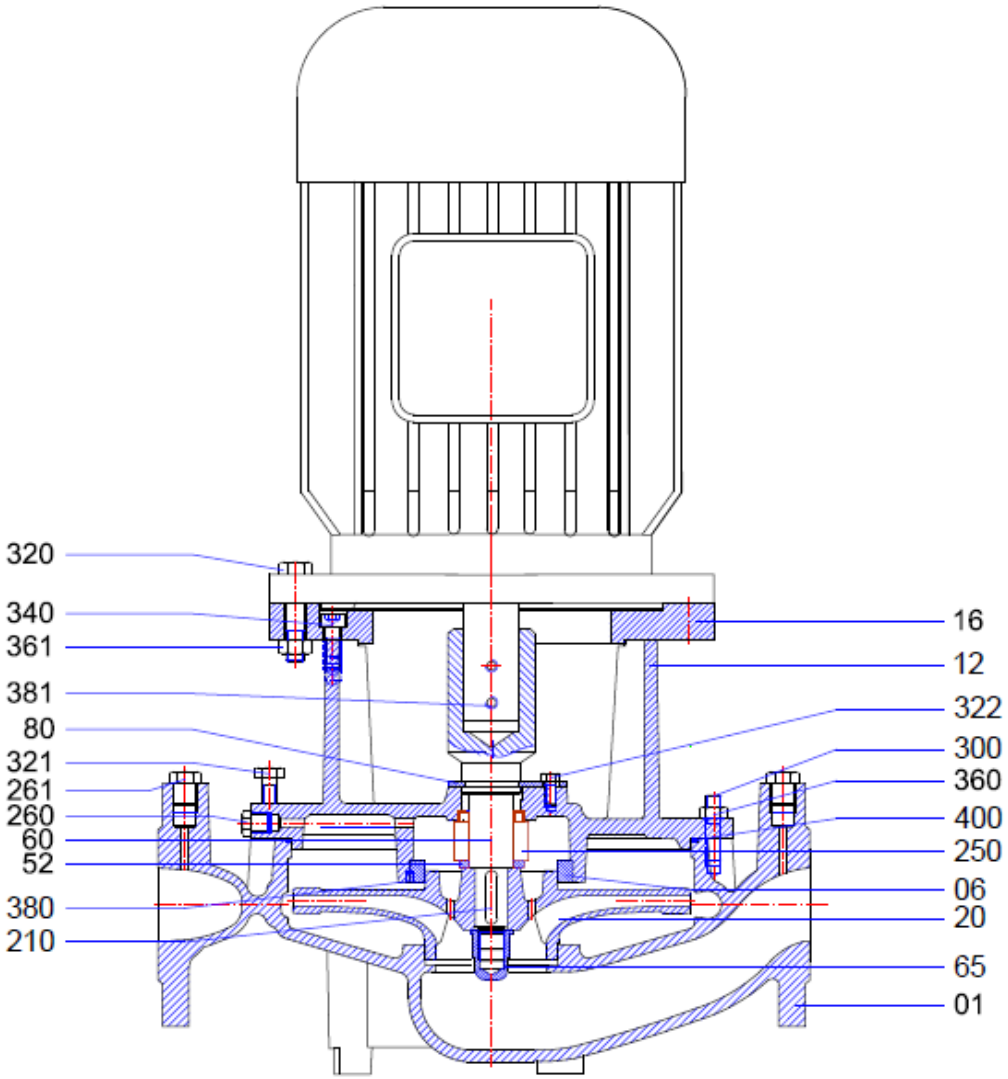
Driver

B5, B14 flanged, IP 55 and according to IEC electric motors are used for INM/INL series pumps. 50 Hz and 60 Hz can be used.

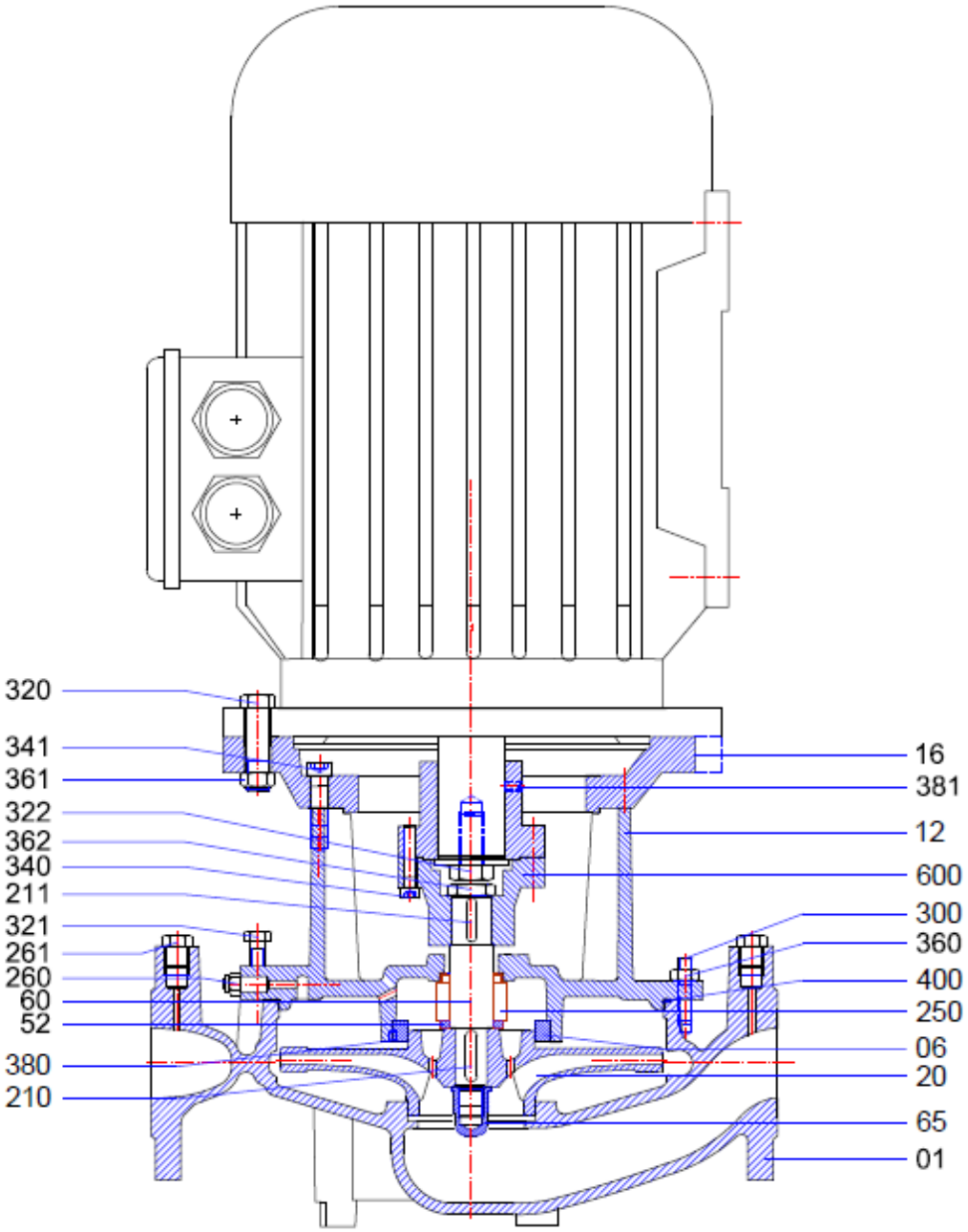
Identification Code

Example: INM 50 - 250

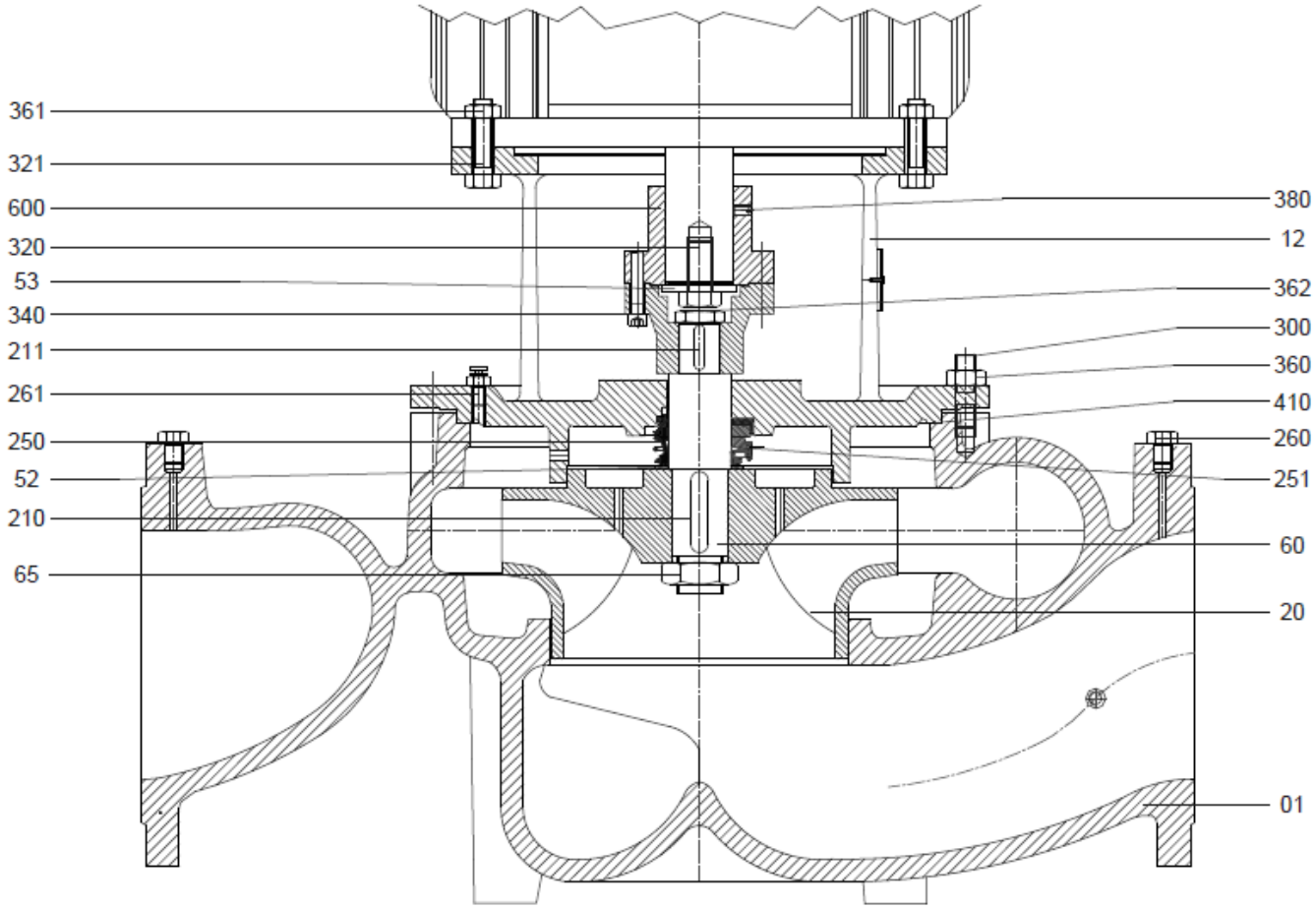




Part No	Part Name	Part No	Part Name
01	Pump Casing	261	Pipe Plug, Pressure Gauge
06	Wearing Ring	300	Stud, Pump Casing
12	Adapter	320	Hex Bolt
16	Motor Flange	321	Hex Bolt
20	Impeller	322	Hex Bolt
52	Mechanical Seal Ring	340	Cap Screw
60	Pump Shaft	360	Nut
65	Impeller Nut	361	Nut
80	Shackle	380	Set-Screw
210	Key, Impeller	381	Set-Screw
250	Mechanical Seal	400	O-Ring
260	Pipe Plug, Adapter		



Part No	Part Name	Part No	Part Name
01	Volute casing	300	Casing stud
06	Wear Ring	320	Hex Bolt
12	Adapter	321	Hex Bolt
16	Motor Flange	322	Hex Bolt
20	Impeller	340	Imbues Bolt
52	Mechanical Seal Ring	341	Imbues Bolt
60	Shaft	360	Nut
65	Impeller nut	361	Nut
210	Key, Impeller	362	Nut
211	Kama, coupling	380	Setscrew
250	Mechanical Seal	381	Setscrew
260	Solid plug	400	O-Ring
261	Drain plug	600	Rigid coupling



Part No	Part Name	Part No	Part Name
01	Volute casing	261	Stud (Adapter)
12	Adapter	300	Casing stud
20	Impeller	320	Hex Bolt (Coupling)
52	Mechanical Seal Ring	321	Hex Bolt (Adapter)
53	Coupling Front Bush	340	Imbues Bolt (Coupling)
60	Shaft	360	Nut(Casing)
65	Impeller nut	361	Nut(Adapter)
210	Key, Impeller	362	Nut(Coupling)
211	Key, Coupling	380	Setscrew
250	Mechanical Seal	410	Cylinder Head Gasket
251	Mechanical Seal	600	Rigid Coupling
260	Stud (casing)		

Material Options

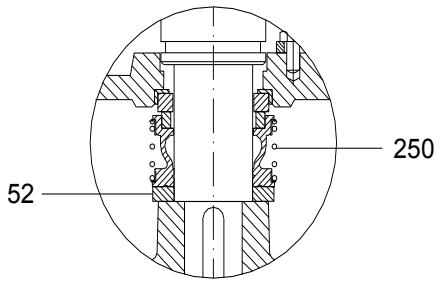
Components / Material. No	0.6025	0.7040	2.1050.01	1.4021	1.4301	1.4401
Pump Casing	●	o	o		o	o
Adapter	●	o	o		o	o
Impeller	●	o	o		o	o
Wear Ring	●	o	o		o	o
Shaft				●	o	o
Adapter (Motor)	●	o	o		o	o

● - Standard Manufacturing
o - Optional

Material Equivalent

Description	DIN 17007	EN-DIN	ASTM
Cast Iron	0.6025	GJL–250 (GG25)	A 48 Class 40-B
Nodular Cast Iron	0.7040	GJS–400–15 (GGG40)	A 536 Gr.60–40–18
Cast Bronze	2.1050.01	G-Cu Sn 10	B 584 C 90700
Chrome Steel	1.4021	X20 Cr 13	A 276 Type 420
Chrome Nickel Steel	1.4301	X5 Cr Ni18.9	A 276 Type 304
Chrome Nickel Molybdenum Steel	1.4401	X5 Cr NiMo 18.10	A 276 Type 316

Mechanical Seal Application

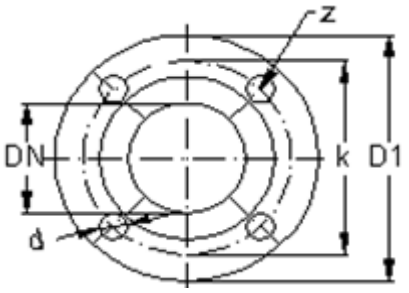


Burgmann MG1-G60- up to 12 Bar
(Independent on direction of rotation)

No	Part Name
52	Mechanical Seal Ring
250	Mechanical Seal

For different type of mechanical seal, please consult MAS representative.

Flange Sizes

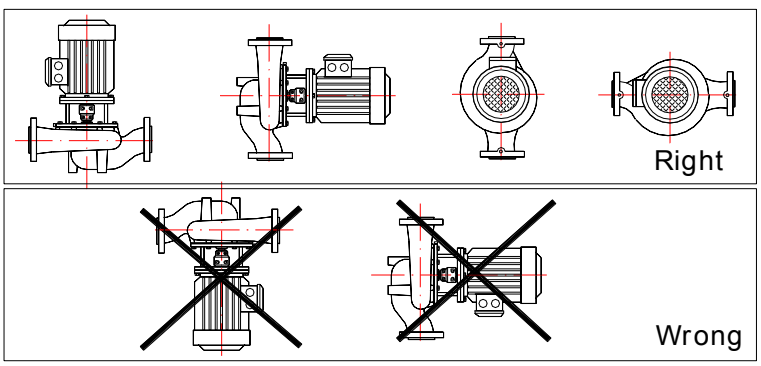
SuctionandDischargeFlangesSizes					
DNs DNd	ØD1	Øk	Ød	Z	
40	150	110	18	4	
50	165	125	18	4	
65	185	145	18	4	
80	200	160	18	8	
100	220	180	18	8	
125	250	210	18	8	
150	285	240	23	8	
200	340	295	23	12	

No	Pump Type	Flanges	
		DNs (mm) Suction	DNd (mm) Discharge
1	INM-H 40–125	40	40
2	INM-H 40–160		
3	INM 40–200		
4	INM 40–250		
5	INM-H 50–125	50	50
6	INM-H 50–160		
7	INM 50–200		
8	INM 50–250		
9	INM-H 65–125	65	65
10	INM-H 65–160		
11	INM 65–200		
12	INM 65–250		
13	INM 80–160	80	80
14	INM 80–200		
15	INM 80–250		
16	INM 80–315		

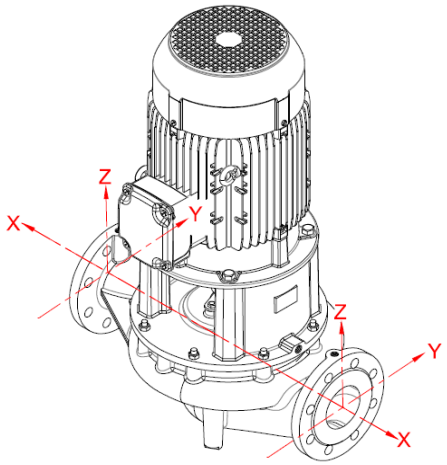
No	Pump Type	Flanges	
		DNs (mm) Suction	DNd (mm) Discharge
17	INM 100–160	100	100
18	INM 100–200		
19	INM 100–250		
20	INM 100–315		
21	INM 125–200	125	125
22	INM 125–250		
23	INM 125–315		
24	INM 150-200	150	150
25	INM 150-250		
26	INM 150-315		
27	INL 150-360		
28	INL 200-315	200	200

Mounting Arrangement

INM/INL Pumps can be installed with the motor (Motor Centre Line) in all positions between vertical and horizontal. To avoid that the water penetrates motor and bearings, the motor (terminal box) must never fall below the horizontal.



Permissible Forces and Moments at the Pump Flanges



The following condition must be satisfied;

$$\left[\frac{\sum(F_V)}{(F_{V\max})}\right]^2+\left[\frac{\sum(F_H)}{(F_{H\max})}\right]^2+\left[\frac{\sum(M_t)}{(M_{t\max})}\right]^2\le 1$$

$\sum(F_V)$, $\sum(F_H)$ and $\sum(M_t)$ are the sums of the absolute amounts of the corresponding loads applied to the supports. Neither the direction of the loads nor their distributions across the supports are taken into account in these sums.

PUMP TYPE	FORCES AND MOMENTS						
	DN FLANGE	SUCTION AND DISCHARGE FLANGE			SUCTION AND DISCHARGE FLANGE		
	mm	N			Nm		
		F_y	F_z	F_x	M_y	M_z	M_x
INM-H 40-125	40	595,3	476,2	523,82	428,58	500,01	619,06
INM-H 40-160							
INM 40-200							
INM 40-250							
INM-H 50-125	50	785,7	642,9	714,3	476,2	547,63	666,68
INM-H 50-160							
INM 50-200							
INM 50-250							
INM-H 65-125	65	1000	809,5	880,97	523,82	571,44	714,3
INM-H 65-160							
INM 65-200							
INM 65-250							
INM 80-160	80	1191	976,2	1071,45	547,63	619,06	761,92
INM 80-200							
INM 80-250							
INM 80-315							
INM 100-160	100	1595	1286	1428,6	595,25	690,49	833,35
INM 100-200							
INM 100-250							
INM 100-315							
INM 125-200	125	1881	1524	1690,51	714,3	904,78	1000
INM 125-250							
INM 125-315							
INM 150-200	150	2381	1929	2142,9	833,35	976,21	1190,5
INM 150-250							
INM 150-315							
INL 150-360							
INL 200-315	200	3040,2	2440,5	2713,8	1065	1223,2	1612,4

Product Information as per Regulation No. 547/2012 (for Water Pumps with a Maximum Shaft Power of 150 kW) Implementing "Ecodesign" Directive 2009/125/EC

Minimum Efficiency Index for MAS INM/INL Pump Series is shown on the pump label.

MEI values of MAS INM/INL Pump Series are shown on the pump characteristic curves.

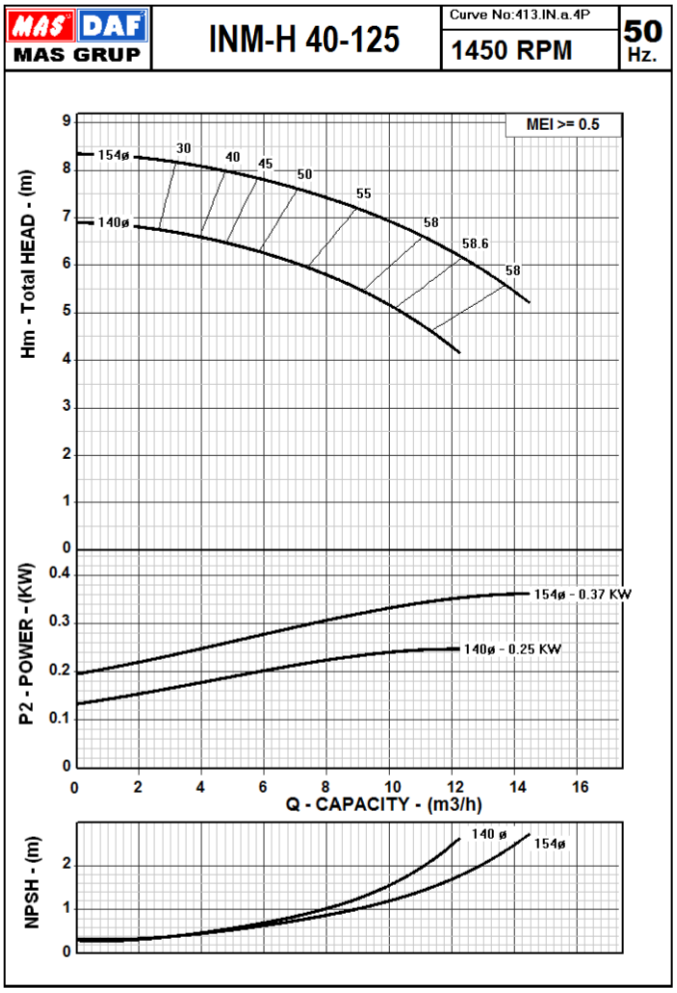
Minimum Efficiency Index for MAS INM/INLPump Series; Minimum 0.4. (MEI≥0,4)

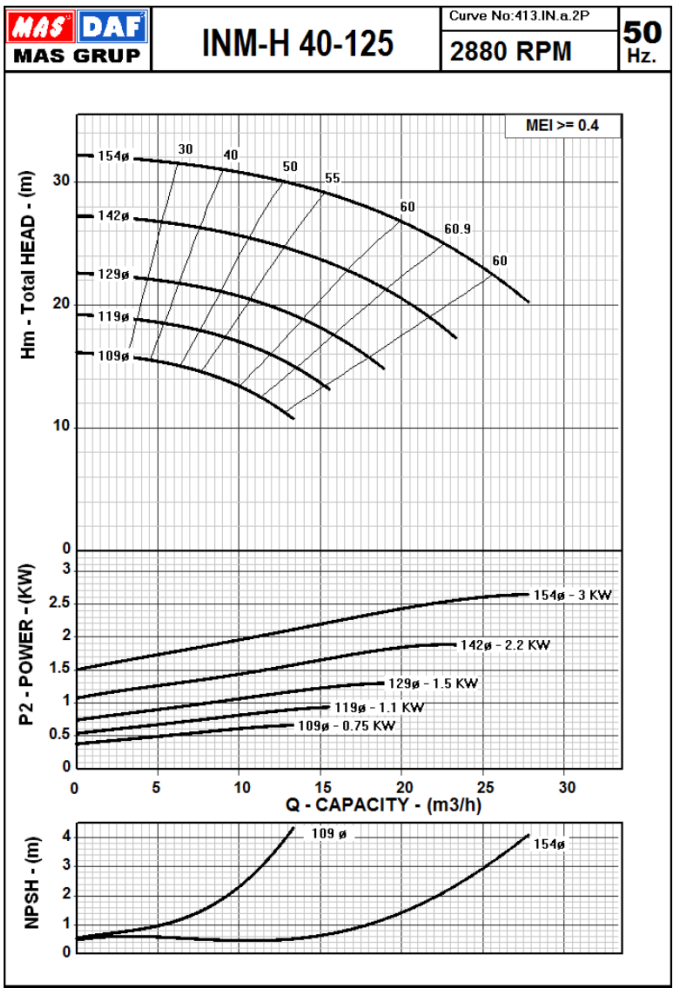
Efficiency values of the pump characteristic curves, which are cut diameter, are expressed in %.

INM/INL Series water pumps, the pump efficiency can be achieved more than fix speed in case of variable speed control.

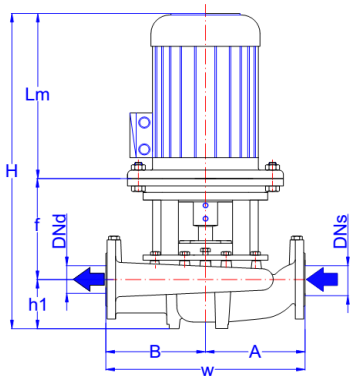
More information about the Ecodesign can be reached at www.europump.org

Pump Label





The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	Mm	mm	mm	mm	mm	mm	
40-125	4 pole	0.25	71	217	40	462	105	140	300	160	140	Ø25
		0,37	71	217		462	105	140	300	160	140	Ø25
	2 pole	0,75	80	238	40	483	105	140	300	160	140	Ø25
		1,1	90S	258		503	105	140	300	160	140	Ø25
		1,5	90L	283		528	105	140	300	160	140	Ø25
		2.2	90L	283		528	105	140	300	160	140	Ø25
		3	100L	315		590	105	170	300	160	140	Ø25

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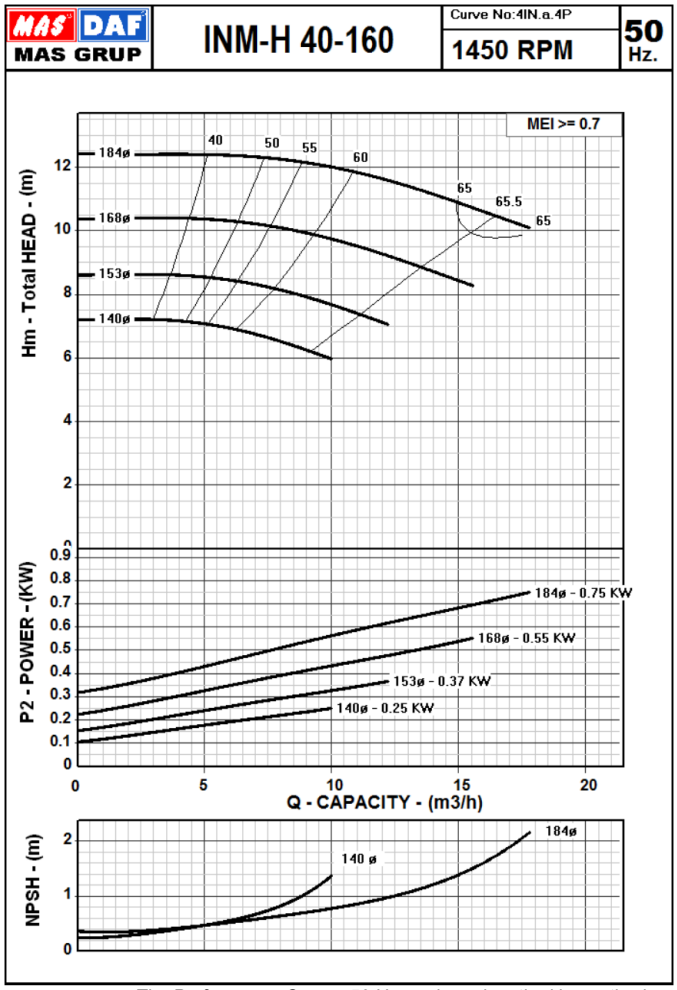

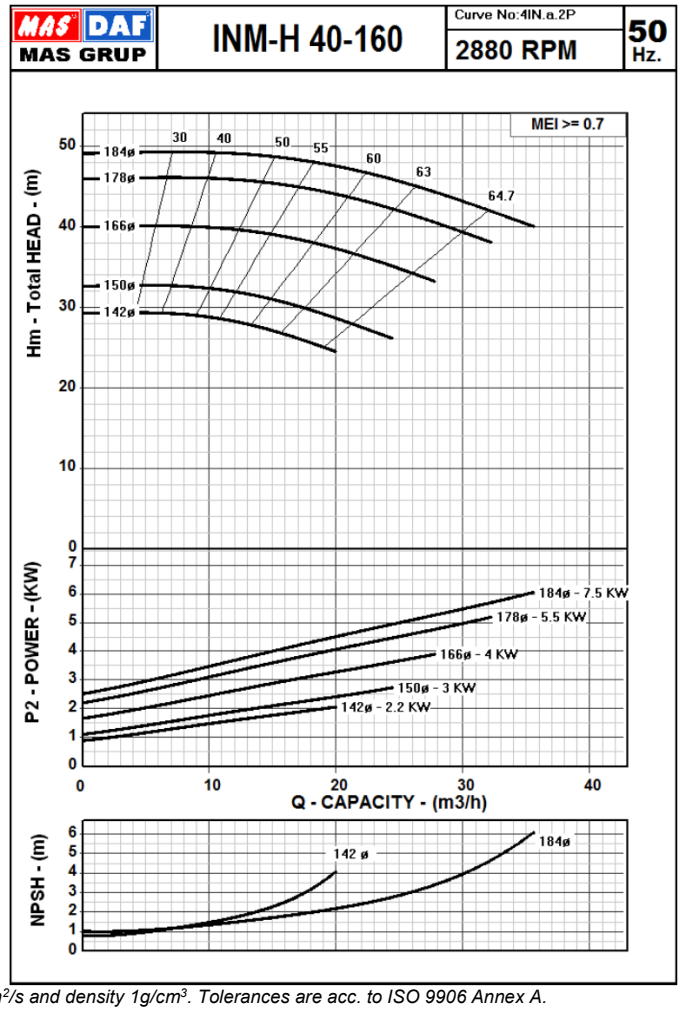

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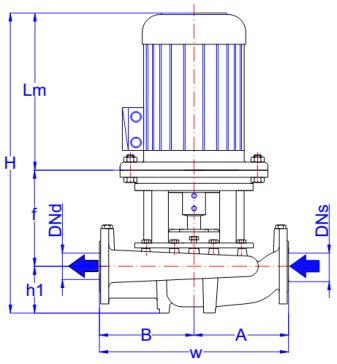

		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
40-160	4 pole	0.25	71	217	40	462	105	140	340	180	160	Ø25
		0,37	71	217		462	105	140	340	180	160	Ø25
		0,55	80	238		483	105	140	340	180	160	Ø25
		0.75	80	238		483	105	140	340	180	160	Ø25
	2 pole	2.2	90L	283	40	528	105	140	340	180	160	Ø25
		3	100L	315		590	105	170	340	180	160	Ø25
		4	112M	332		607	105	170	340	180	160	Ø25
		5,5	132S	375		650	105	170	340	180	160	Ø25
		7,5	132S	375		650	105	170	340	180	160	Ø25

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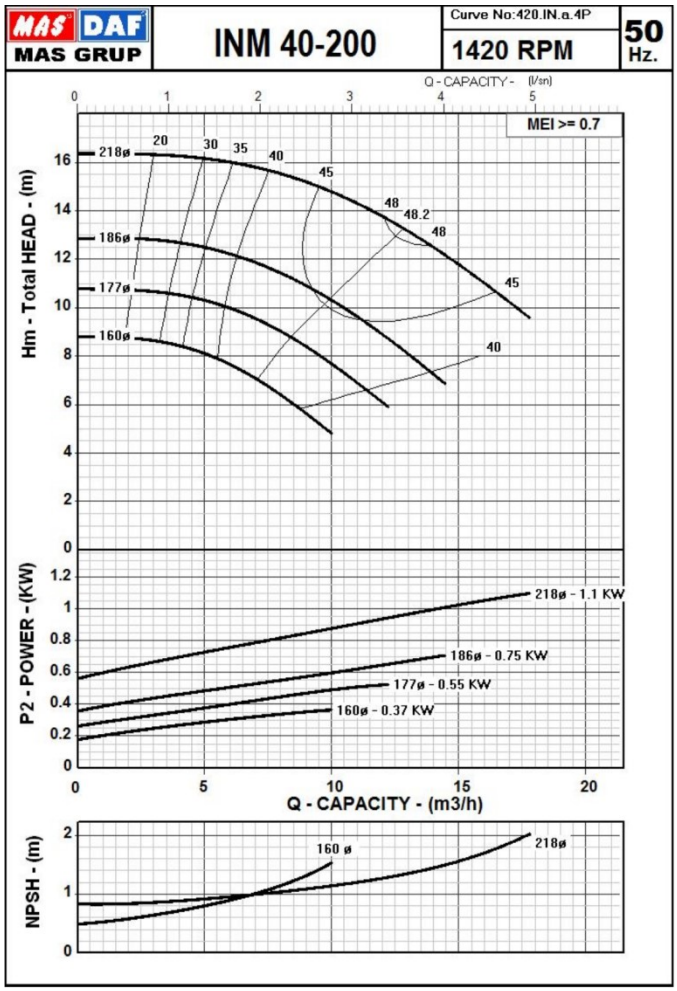

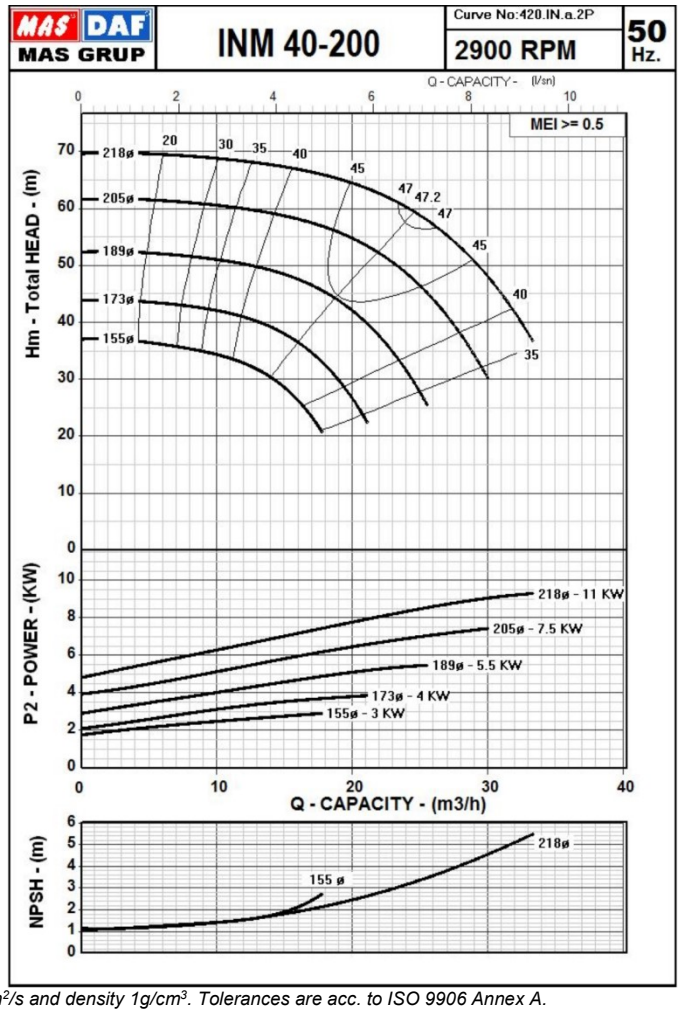

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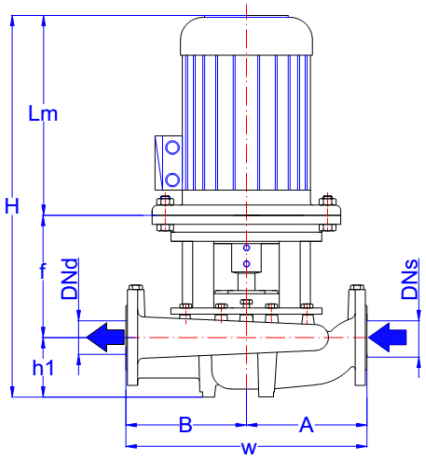

		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
40-200	4 poles	0.37	71	217	40	447	95	135	380	190	190	Ø 20
		0.55	71	217		447	95	135	380	190	190	Ø 20
		0,75	80	238		493	95	160	380	190	190	Ø 20
		1.1	90S	258		513	95	160	380	190	190	Ø 20
	2 poles	3	100L	315	40	590	95	180	380	190	190	Ø 20
		4	112M	332		607	95	180	380	190	190	Ø 20
		5,5	132S	375		675	95	205	380	190	190	Ø 30
		7,5	132S	375		675	95	205	380	190	190	Ø 30
		11	160M	491		816	95	230	380	190	190	Ø 30

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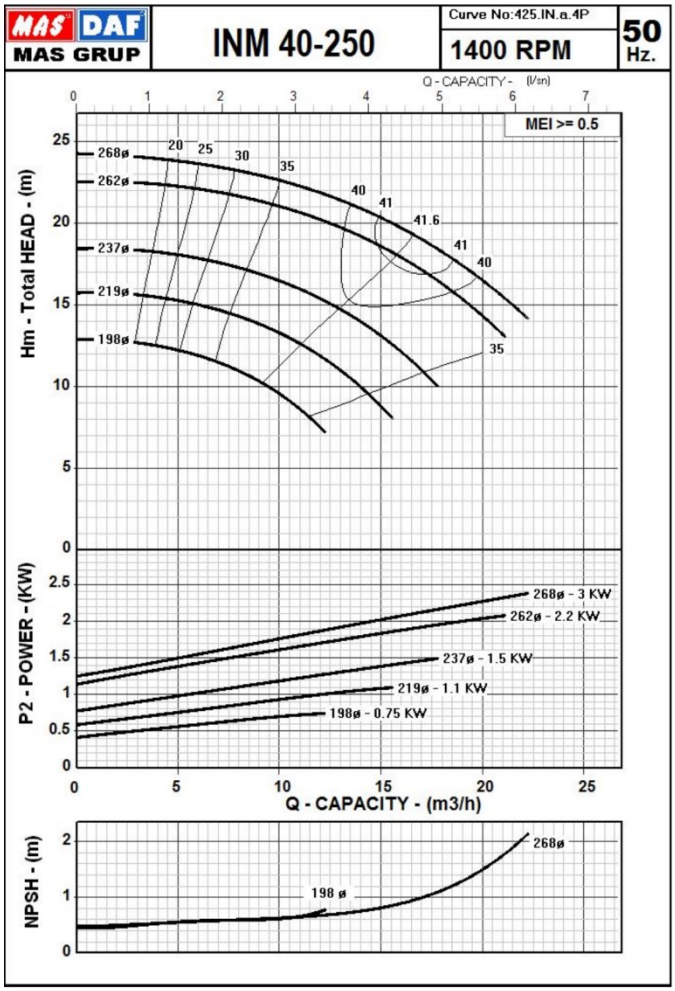

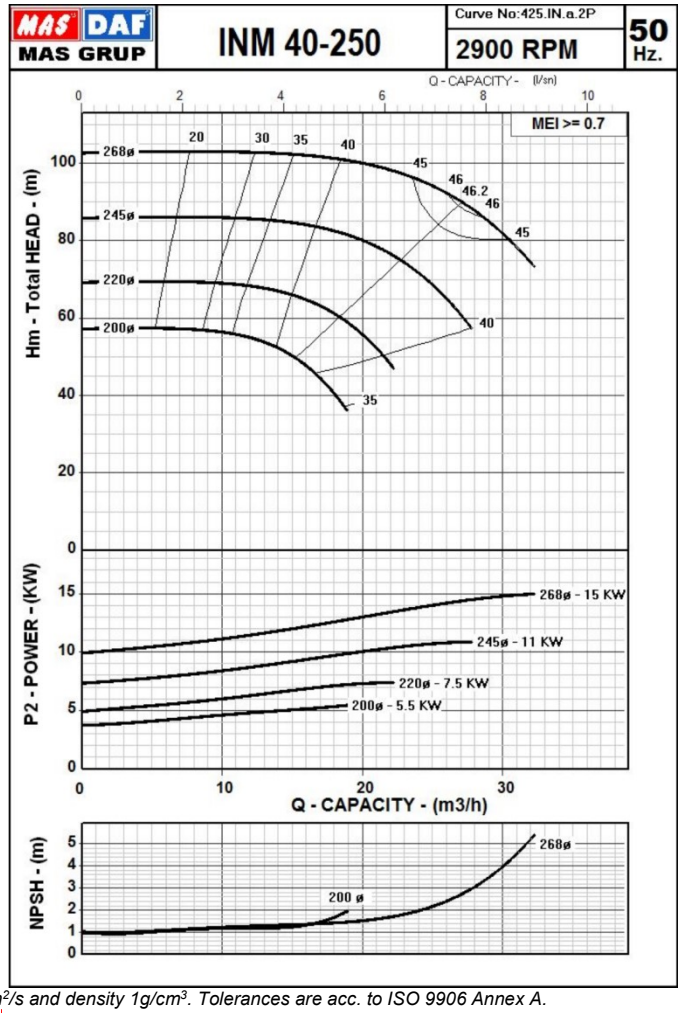

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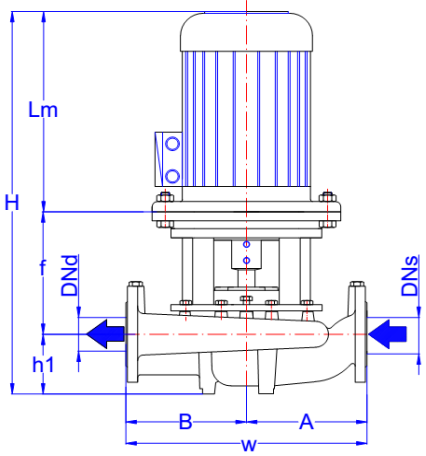

		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
40-250	4 poles	0.75	80	238	40	507	100	169	440	215	225	Ø 20
		1.1	90S	258		527	100	169	440	215	225	Ø 20
		1,5	90L	283		552	100	169	440	215	225	Ø 20
		2,2	100L	315		603.5	100	188.5	440	215	225	Ø 20
		3	100L	315		603.5	100	188.5	440	215	225	Ø 20
	2 poles	5.5	132S	375	40	688	100	213	440	215	225	Ø 30
		7.5	132S	375		688	100	213	440	215	225	Ø 30
		11	160M	491		829	100	238	440	215	225	Ø 30
		15	160M	491		829	100	238	440	215	225	Ø 30

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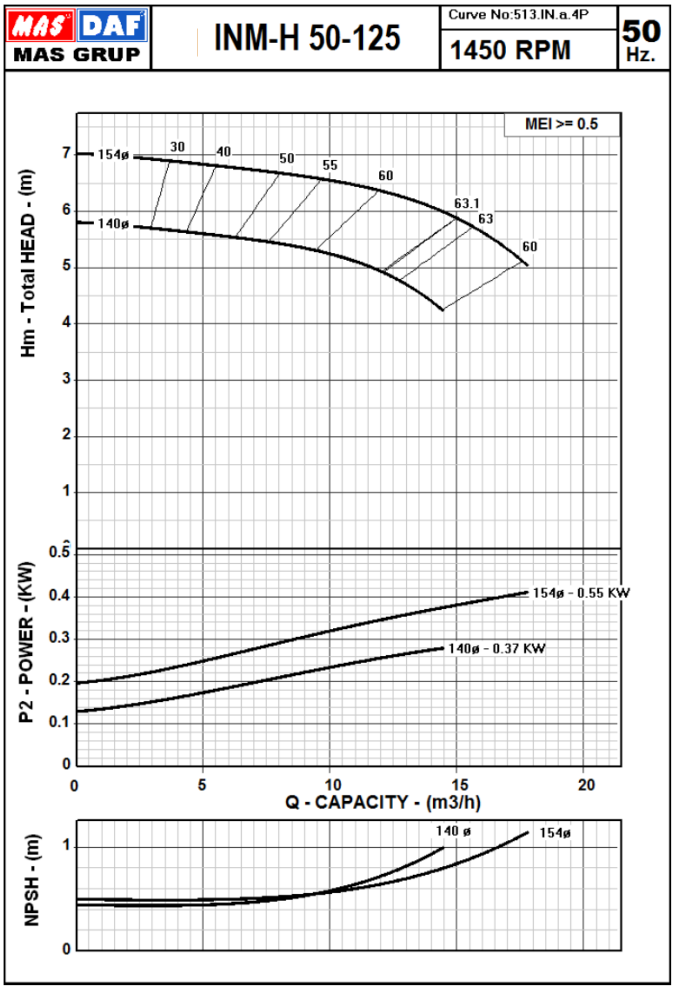

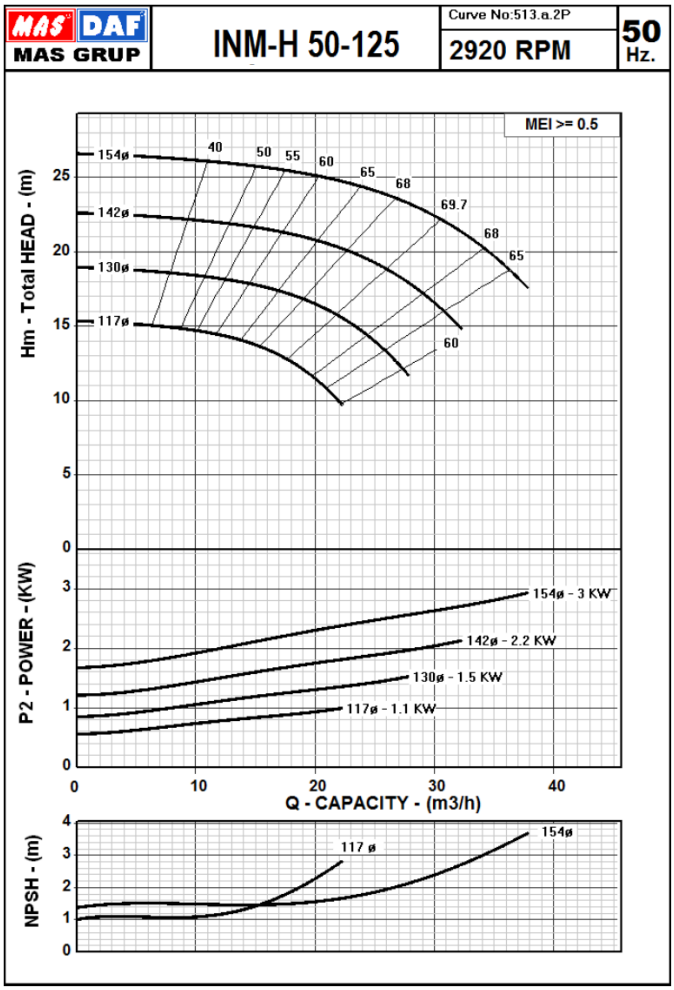

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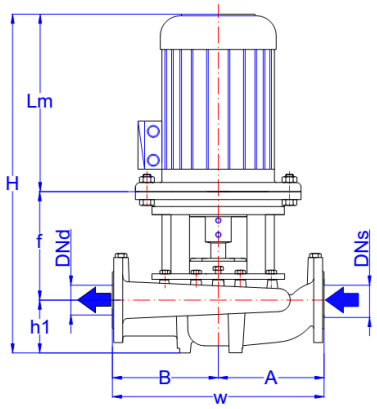

		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
50-125	4 pole	0.37	71	217	50	467	110	140	320	170	150	Ø25
		0.55	80	238		488	110	140	320	170	150	Ø25
		0,75	80	238		488	110	140	320	170	150	Ø25
	2 pole	1,5	90L	283	50	533	110	140	320	170	150	Ø25
		2.2	90L	283		533	110	140	320	170	150	Ø25
		3	100L	315		595	110	170	320	170	150	Ø25
		4	112M	332		612	110	170	320	170	150	Ø25
		5,5	132S	375		655	110	170	320	170	150	Ø25

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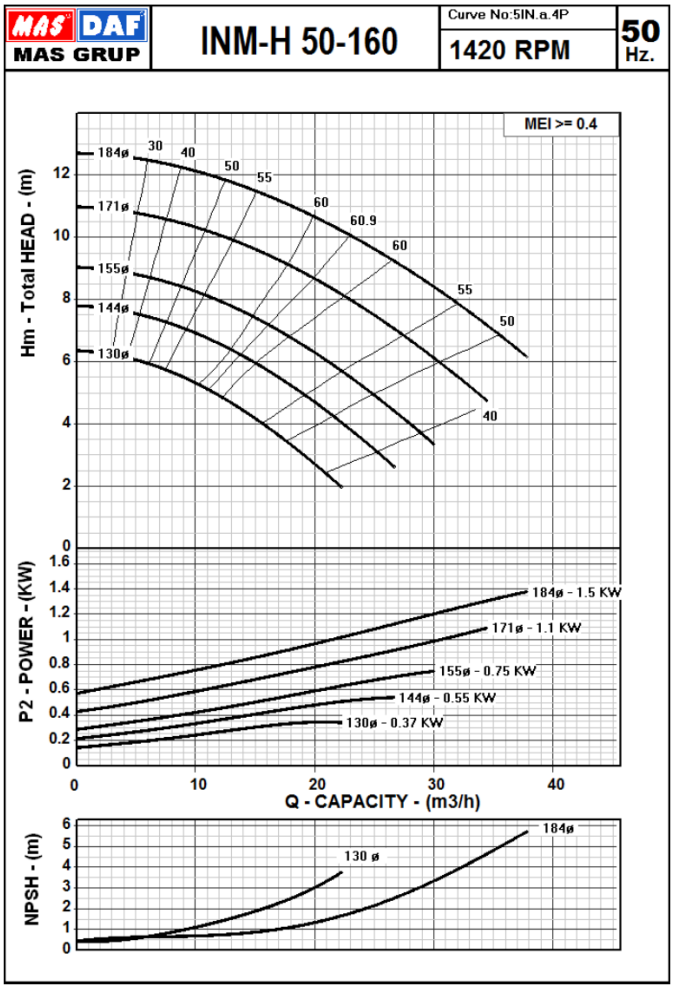
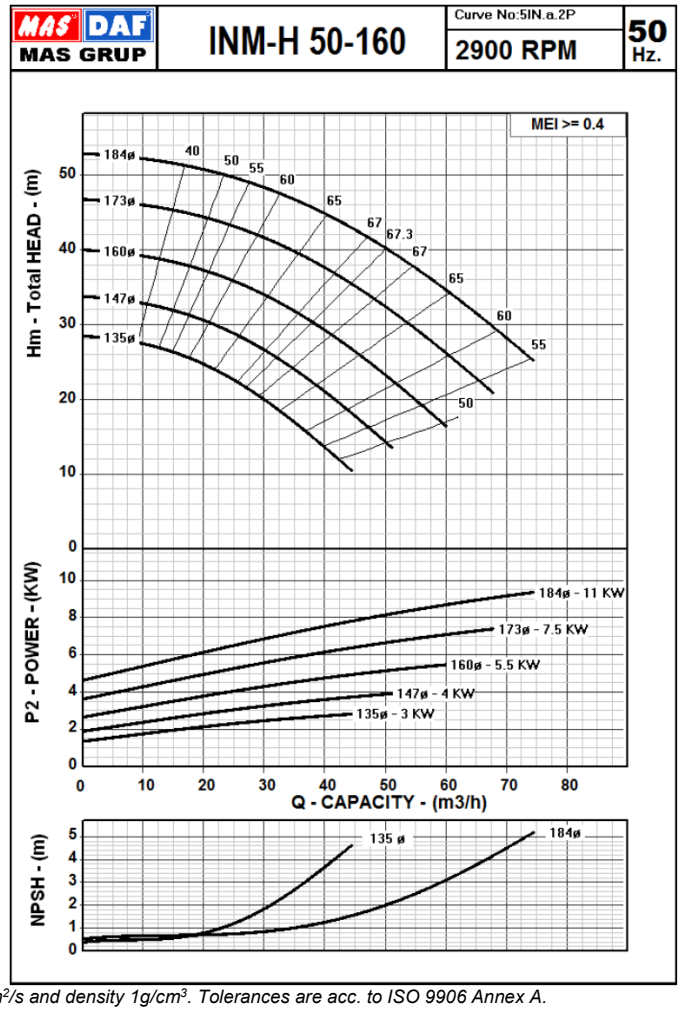
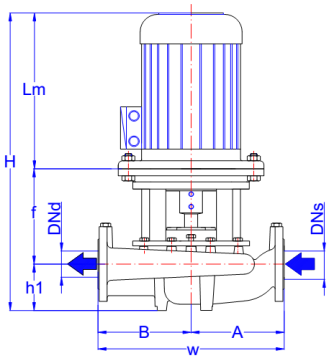




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	Mm	Mm	mm	mm	mm	mm	
50-160	4 pole	0.37	71	217	50	482	125	140	360	190	170	Ø25
		0.55	80	238		503	125	140	360	190	170	Ø25
		0,75	80	238		503	125	140	360	190	170	Ø25
		1,1	90S	258		523	125	140	360	190	170	Ø25
		1,5	90L	283		548	125	140	360	190	170	Ø25
	2 pole	3	100L	315	50	610	125	170	360	190	170	Ø25
		4	112M	332		627	125	170	360	190	170	Ø25
		5,5	132S	375		670	125	170	360	190	170	Ø25
		7,5	132S	375		670	125	170	360	190	170	Ø25
		11	160M	491		816	125	200	360	190	170	Ø25

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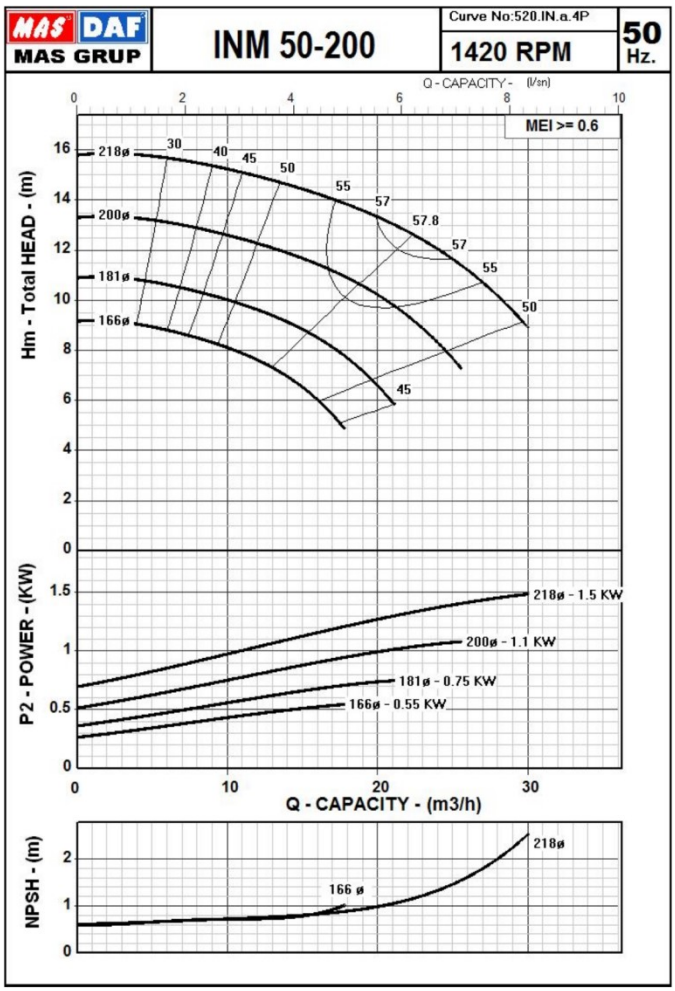
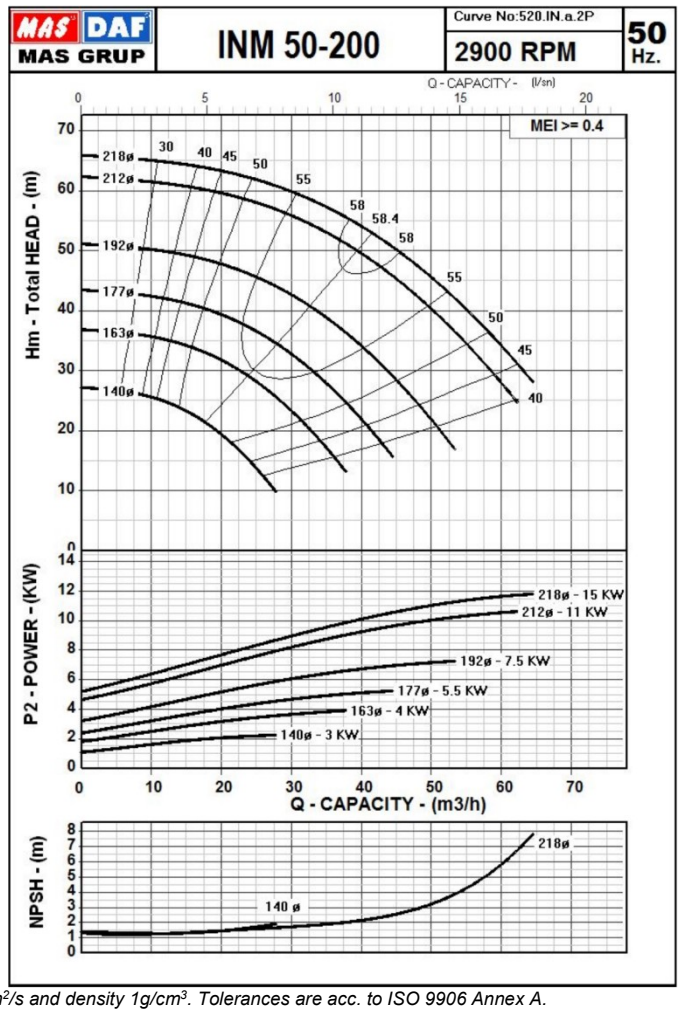
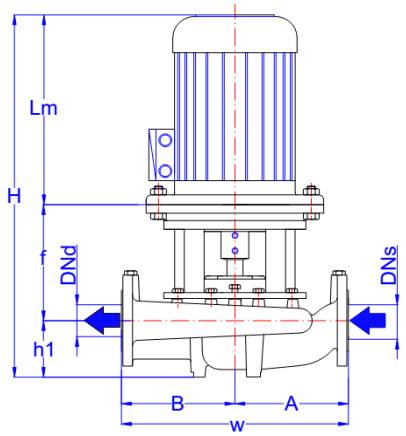




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
50-200	4 poles	0.55	71	217	50	472	110	145	400	200	200	Ø 20
		0.75	80	238		508	110	160	400	200	200	Ø 20
		1,1	90S	258		528	110	160	400	200	200	Ø 20
		1.5	90L	283		553	110	160	400	200	200	Ø 20
	2 poles	3	100L	315	50	605	110	180	400	200	200	Ø 20
		4	112M	332		622	110	180	400	200	200	Ø 20
		5.5	132S	375		690	110	205	400	200	200	Ø 30
		7,5	132S	375		690	110	205	400	200	200	Ø 30
		11	160M	491		831	110	230	400	200	200	Ø 30
		15	160M	491		831	110	230	400	200	200	Ø 30

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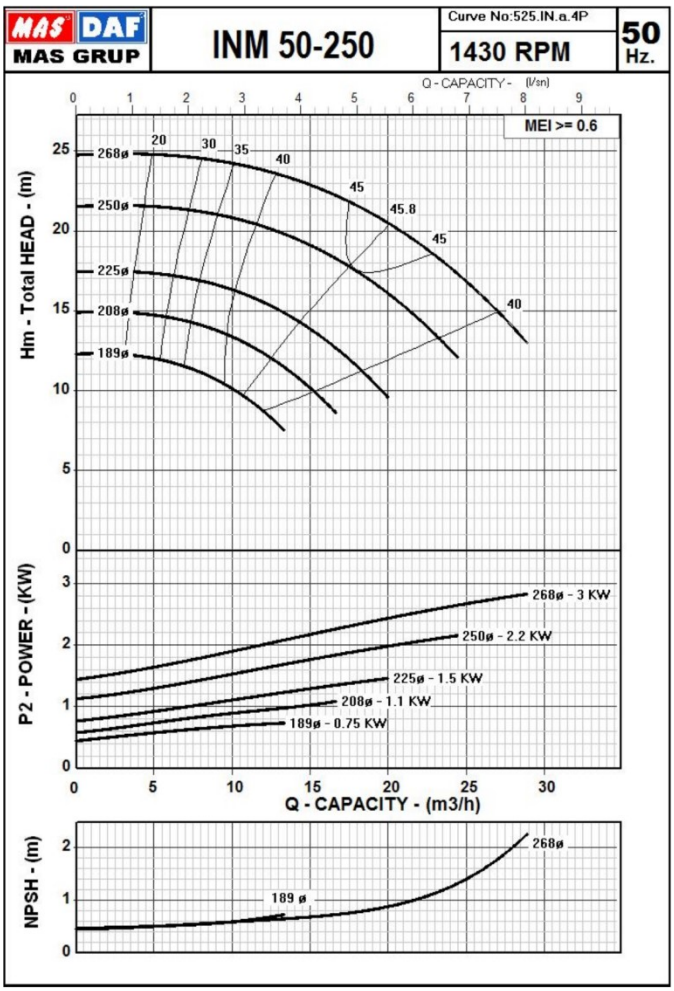
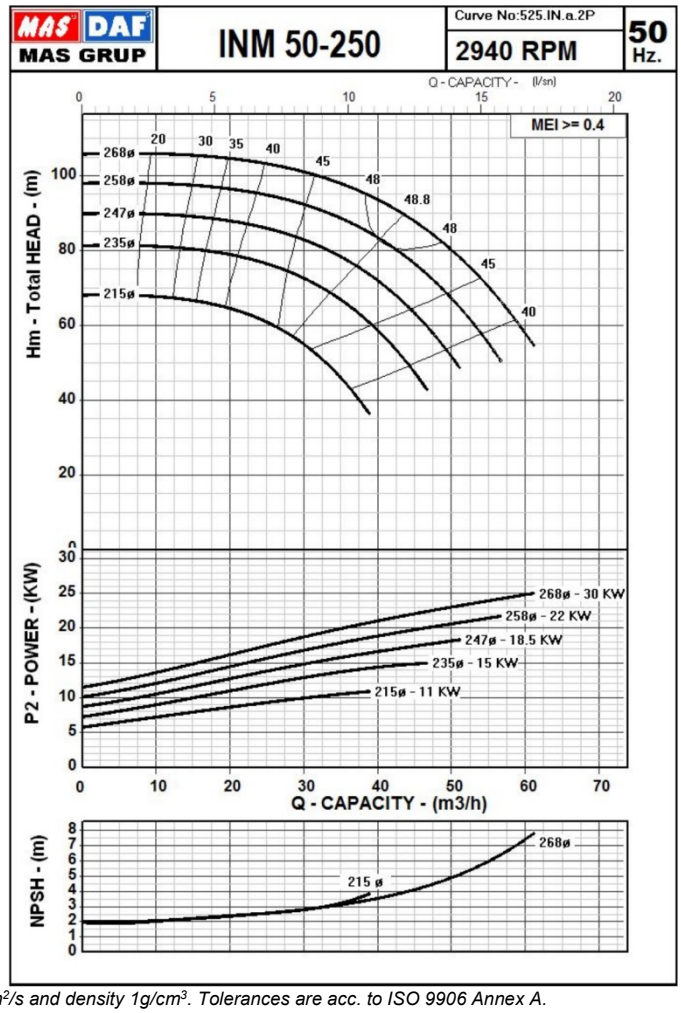
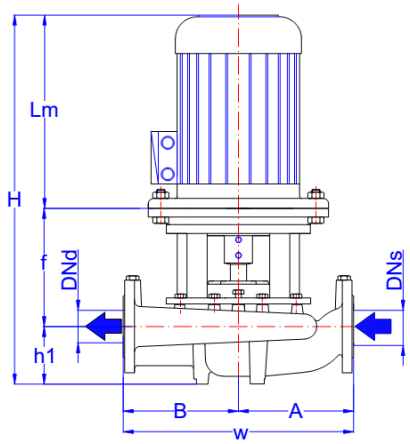




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
50-250	4 poles	0.75	80	238	50	513	115	160	440	215	225	Ø 20
		1.1	90S	258		533	115	160	440	215	225	Ø 20
		1.5	90L	283		558	115	160	440	215	225	Ø 20
		2,2	100L	315		610	115	180	440	215	225	Ø 20
		3	100L	315		610	115	180	440	215	225	Ø 20
	2 poles	11	160M	491	50	836	115	230	440	215	225	Ø 30
		15	160M	491		836	115	230	440	215	225	Ø 30
		18.5	160L	491		836	115	230	440	215	225	Ø 30
		22	180M	549		894	115	230	440	215	225	Ø 30
		30	200L	637		982	115	230	440	215	225	Ø 35

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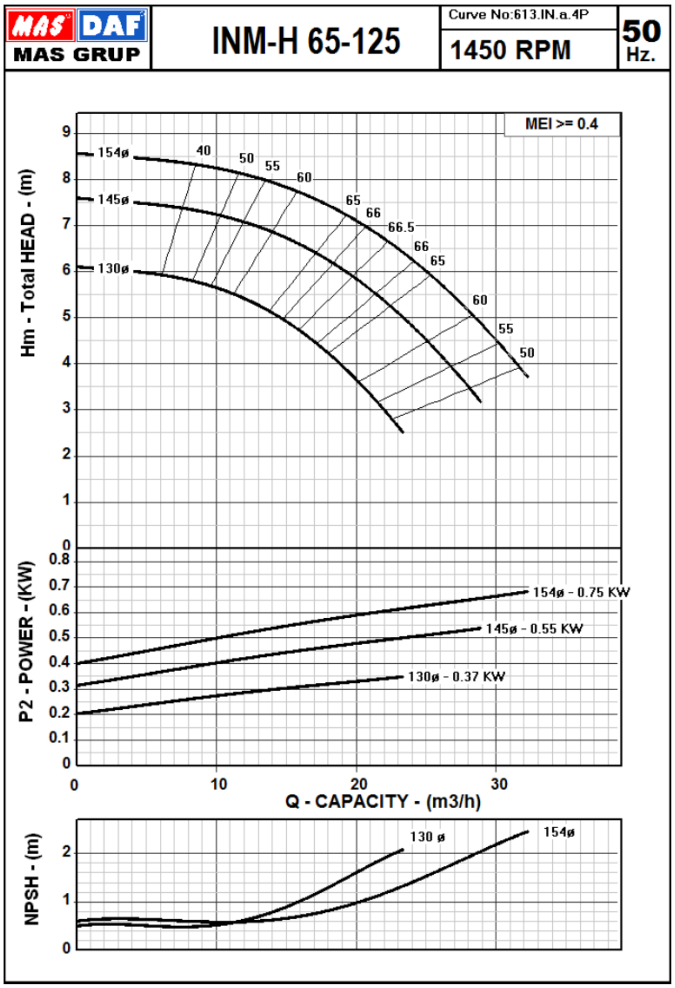
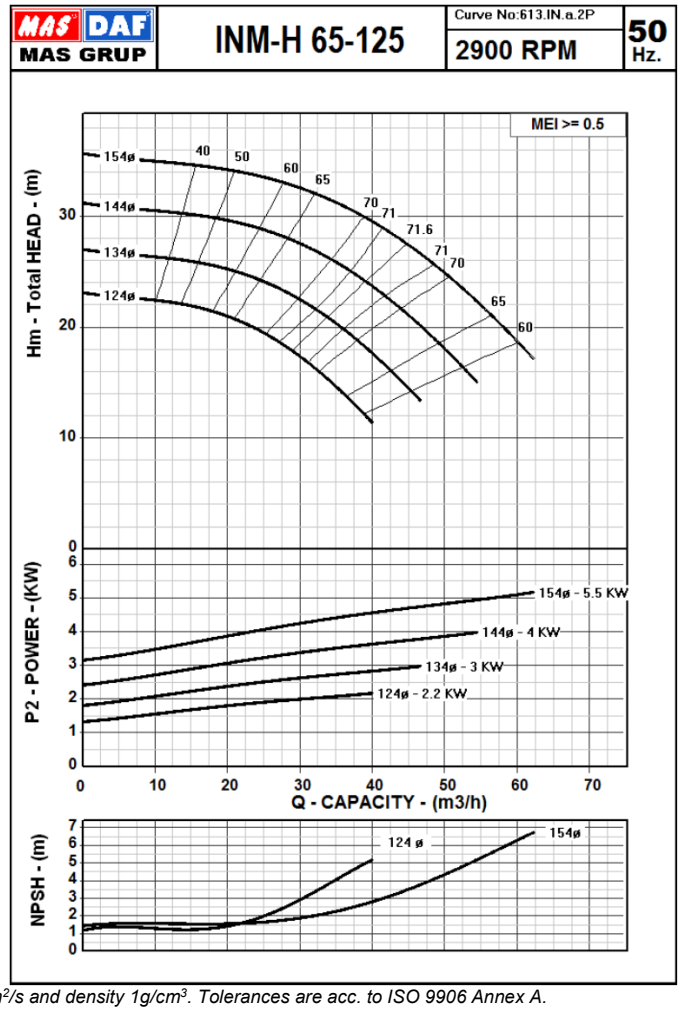
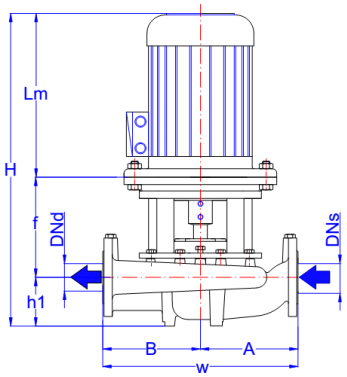




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENEL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
65-125	4 pole	0.37	71	217	65	487	130	140	340	180	160	Ø25
		0.55	80	238		508	130	140	340	180	160	Ø25
		0,75	80	238		508	130	140	340	180	160	Ø25
	2 pole	2.2	90L	283	65	553	130	140	340	180	160	Ø25
		3	100L	315		615	130	170	340	180	160	Ø25
		4	112M	332		632	130	170	340	180	160	Ø25
		5,5	132S	375		675	130	170	340	180	160	Ø25

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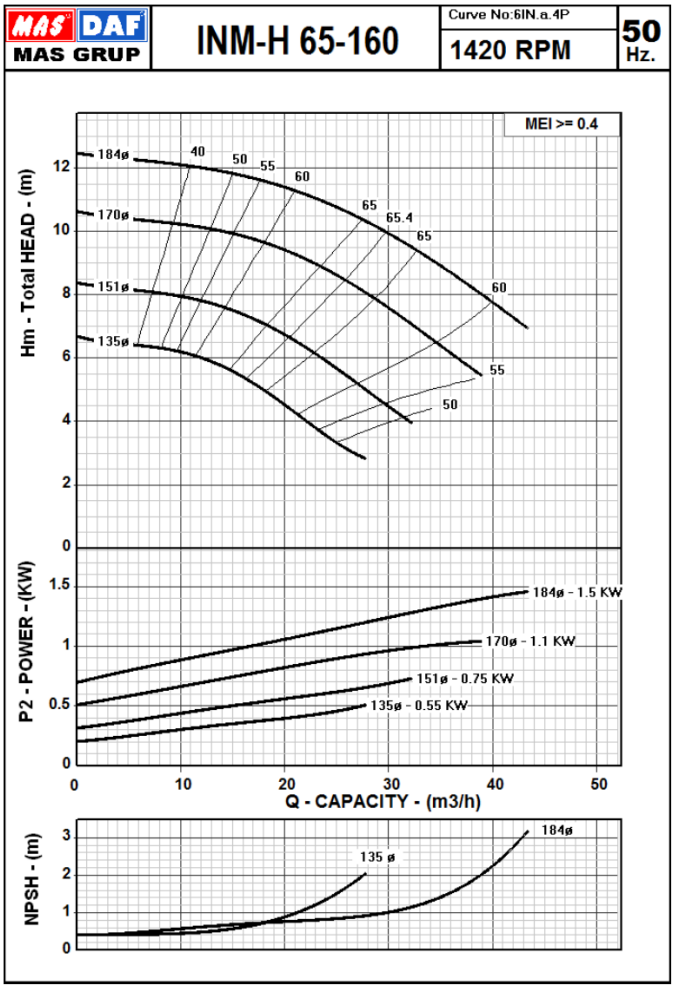
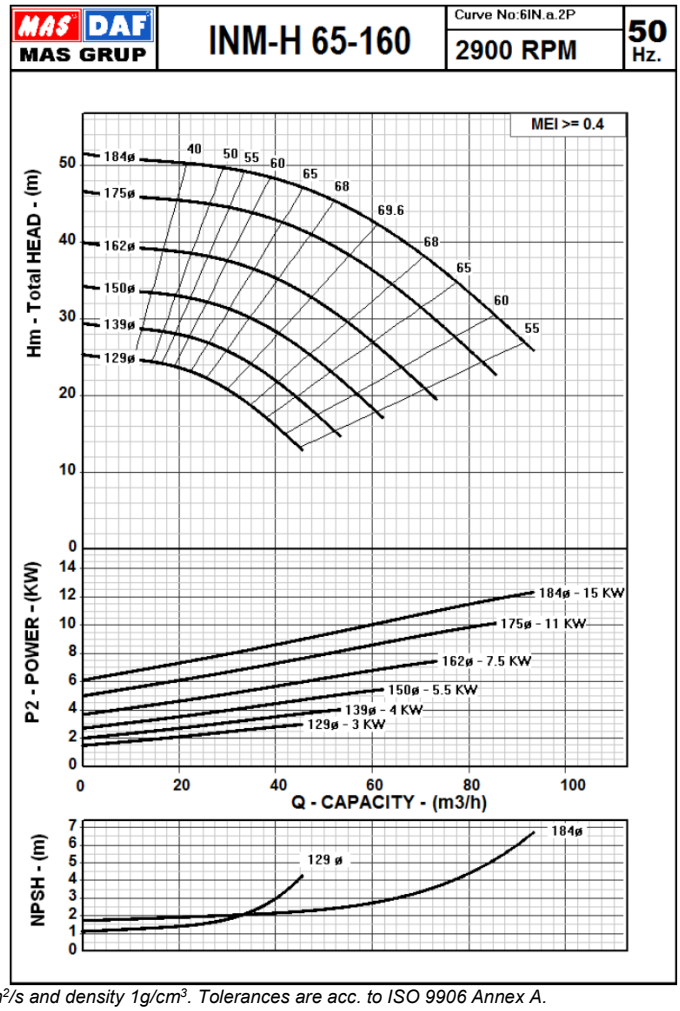
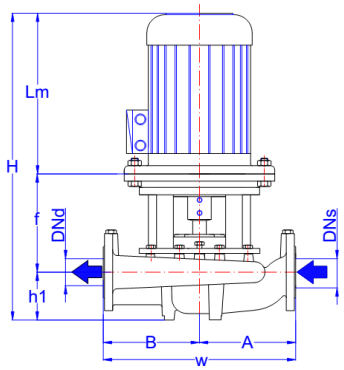




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	Mm	mm	mm	mm	mm	mm	
65-160	4 pole	0.37	71	217	65	489	130	142	390	210	180	Ø25
		0.55	80	238		510	130	142	390	210	180	Ø25
		0,75	80	238		510	130	142	390	210	180	Ø25
		1,1	90S	258		530	130	142	390	210	180	Ø25
		1,5	90L	283		555	130	142	390	210	180	Ø25
	2 pole	3	100L	315	65	617	130	172	390	210	180	Ø25
		4	112M	332		634	130	172	390	210	180	Ø25
		5,5	132S	375		677	130	172	390	210	180	Ø25
		7,5	132S	375		677	130	172	390	210	180	Ø25
		11	160M	491		823	130	202	390	210	180	Ø25
		15	160M	491		823	130	202	390	210	180	Ø25

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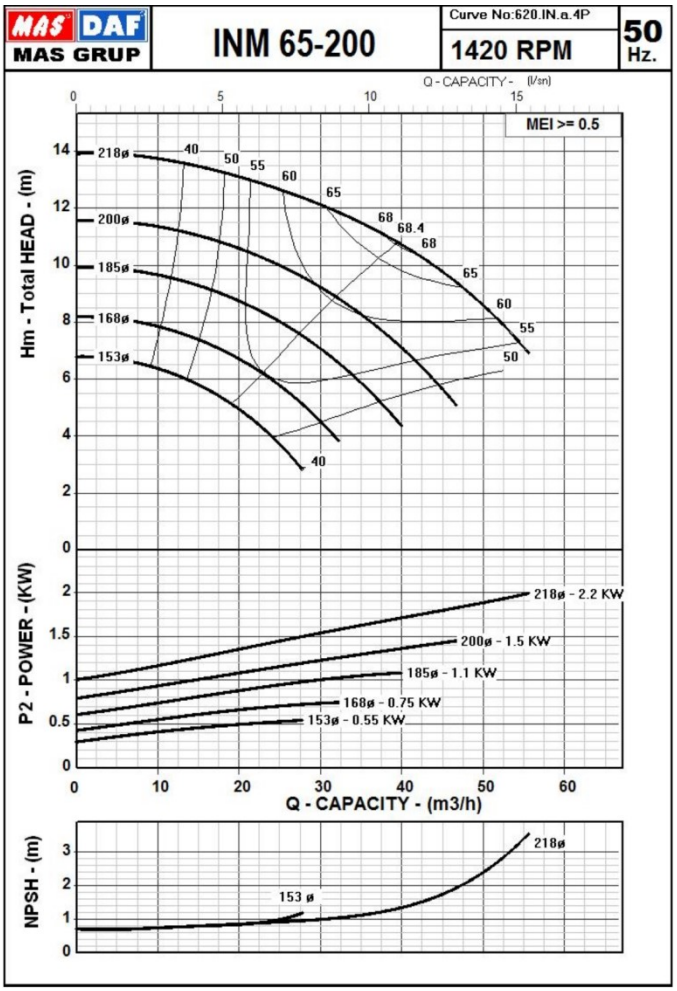
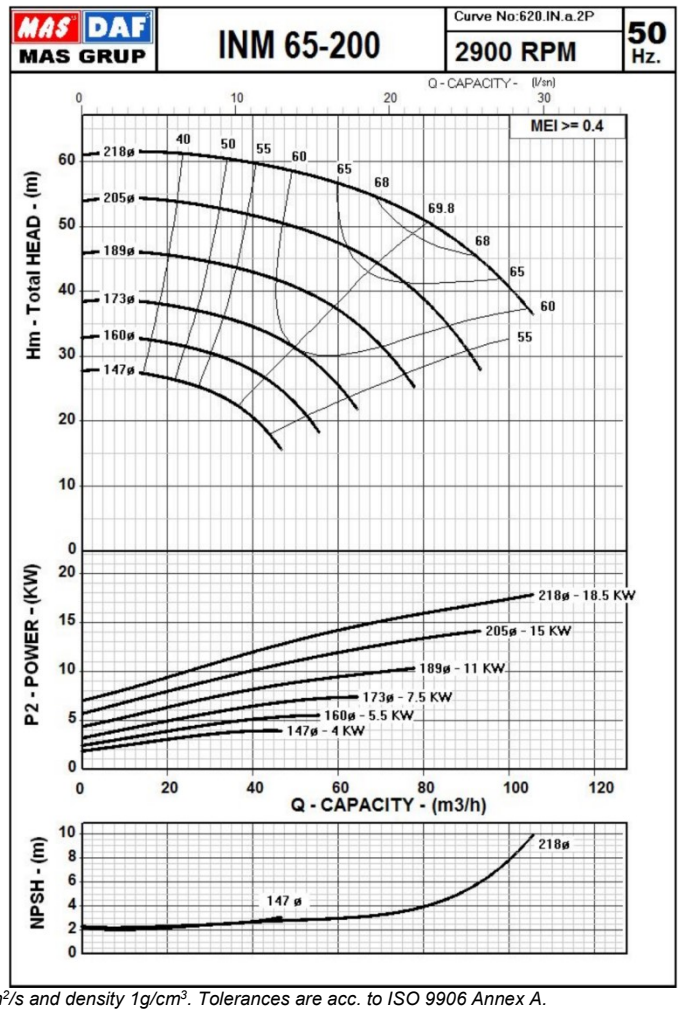
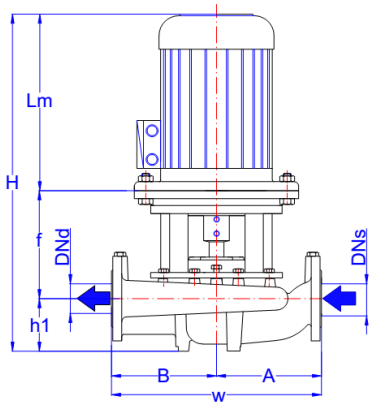




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
65-200	4 poles	0.55	71	217	65	477	115	145	460	230	230	Ø 20
		0.75	80	238		513	115	160	460	230	230	Ø 20
		1.1	90S	258		533	115	160	460	230	230	Ø 20
		1.5	90L	283		558	115	160	460	230	230	Ø 20
		2,2	100L	315		610	115	180	460	230	230	Ø 20
	2 poles	4	112M	332	65	627	115	180	460	230	230	Ø 20
		5.5	132S	375		695	115	205	460	230	230	Ø 30
		7.5	132S	375		695	115	205	460	230	230	Ø 30
		11	160M	491		836	115	230	460	230	230	Ø 30
		15	160M	491		836	115	230	460	230	230	Ø 30
		18,5	160L	491		836	115	230	460	230	230	Ø 30

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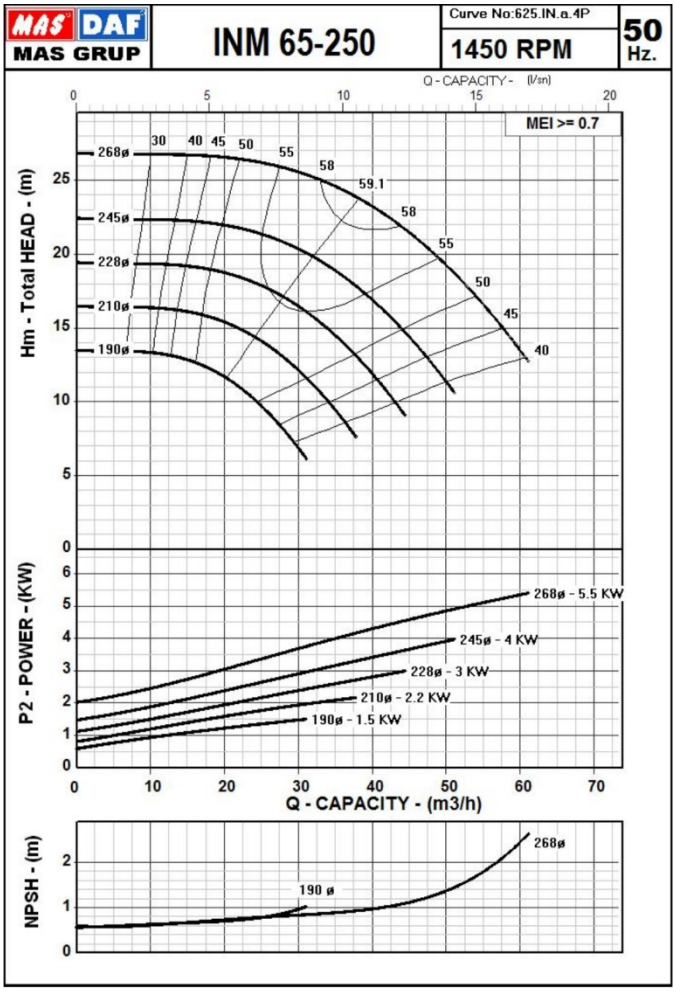
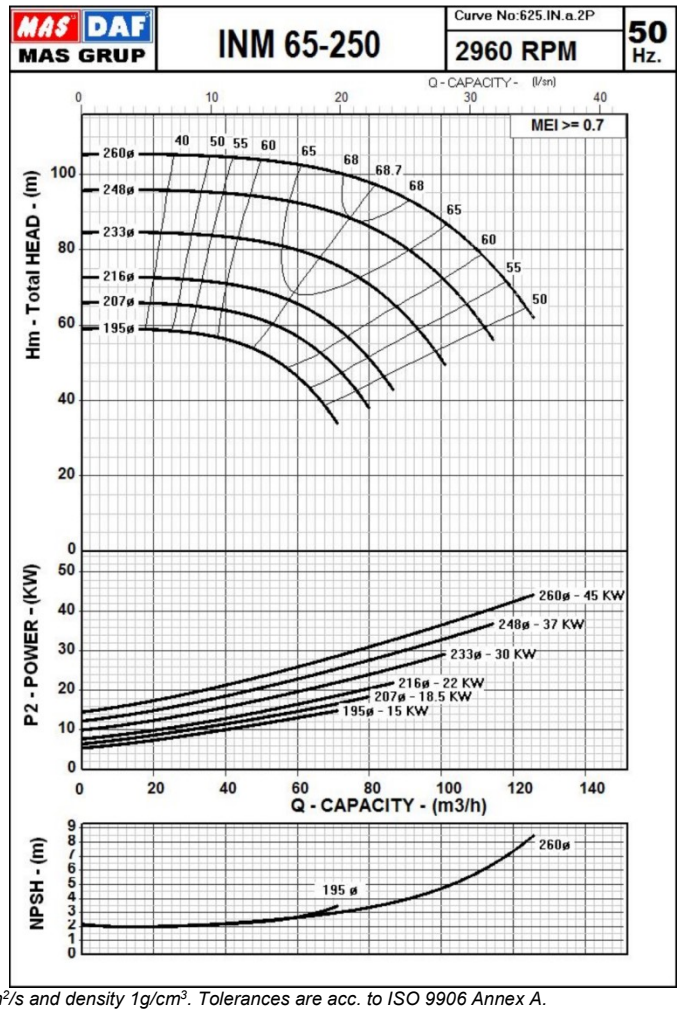
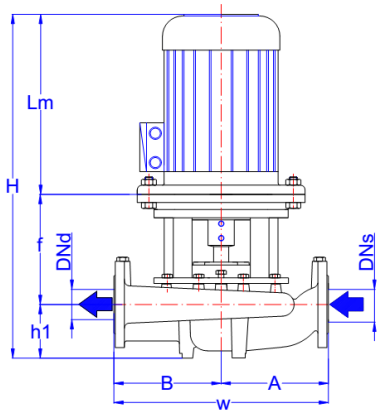




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
65-250	4 poles	1.5	90L	283	65	578	135	160	480	245	235	Ø 20
		2.2	100L	315		630	135	180	480	245	235	Ø 20
		3	100L	315		630	135	180	480	245	235	Ø 20
		4	112M	332		647	135	180	480	245	235	Ø 20
		5,5	132S	375		715	135	205	480	245	235	Ø 30
	2 poles	15	160M	491	65	856	135	230	480	245	235	Ø 30
		18.5	160L	491		856	135	230	480	245	235	Ø 30
		22	180M	549		914	135	230	480	245	235	Ø 30
		30	200L	637		1032	135	260	480	245	235	Ø 35
		37	200L	637		1032	135	260	480	245	235	Ø 35
		45	225M	680		1075	135	260	480	245	235	Ø 35

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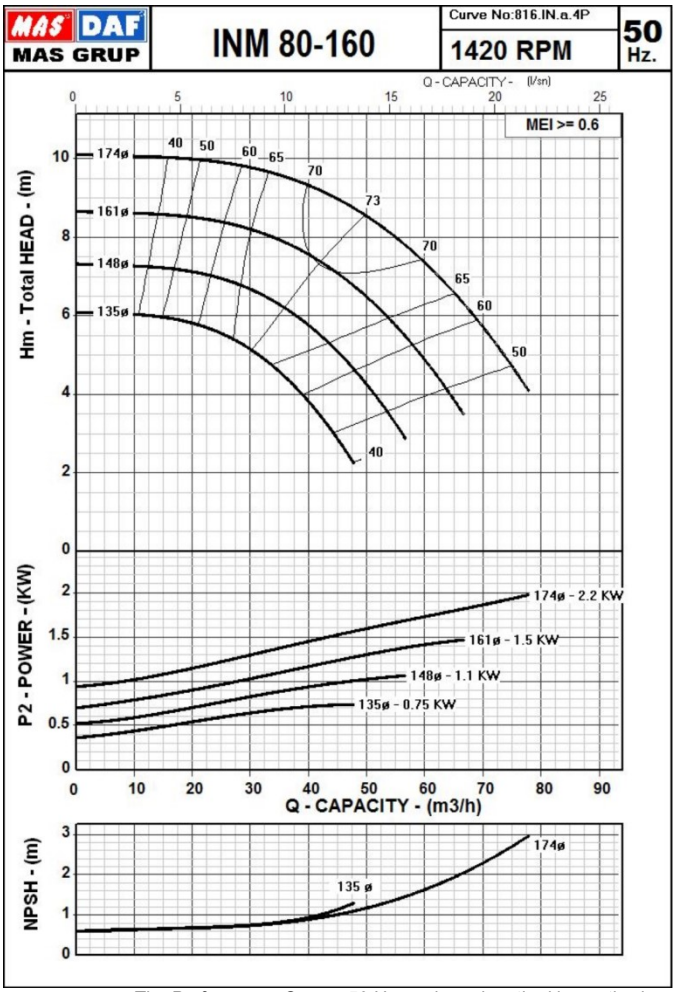
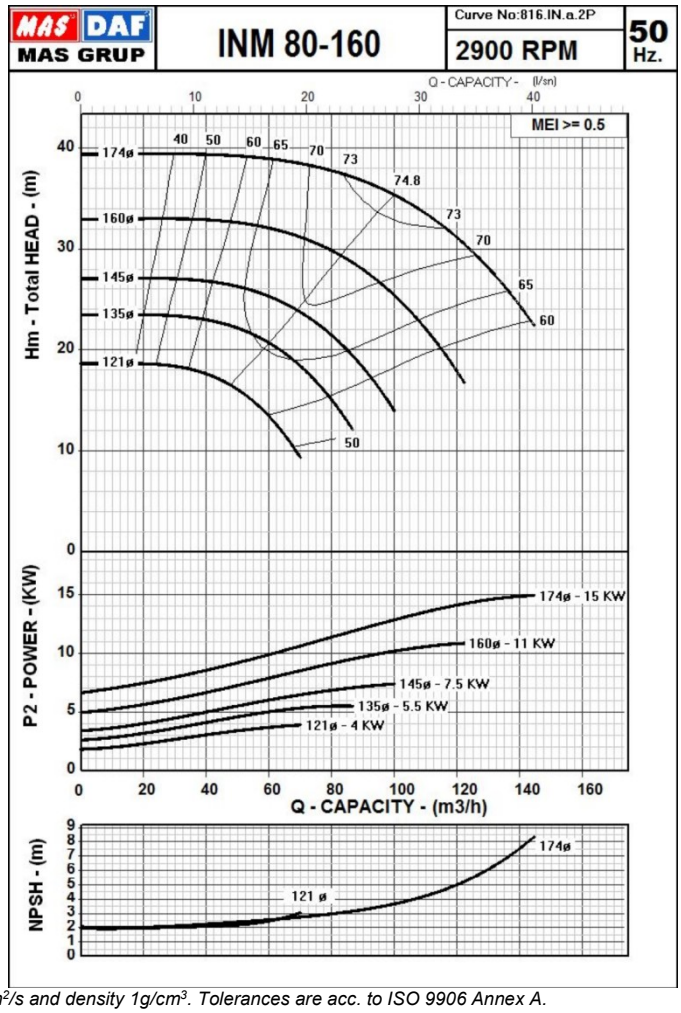
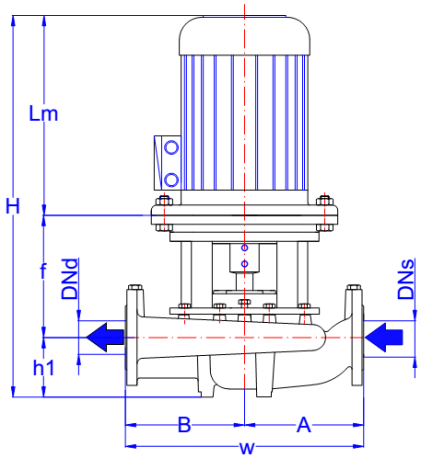




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
80-160	4 poles	0.75	80	238	80	543	135	170	440	220	220	Ø 20
		1,1	90S	258		563	135	170	440	220	220	Ø 20
		1,5	90L	283		588	135	170	440	220	220	Ø 20
		2,2	100L	315		640	135	190	440	220	220	Ø 20
	2 poles	4	112M	332	80	657	135	190	440	220	220	Ø 20
		5.5	132S	375		720	135	210	440	220	220	Ø 30
		7,5	132S	375		720	135	210	440	220	220	Ø 30
		11	160M	491		866	135	240	440	220	220	Ø 30
		15	160M	491		866	135	240	440	220	220	Ø 30

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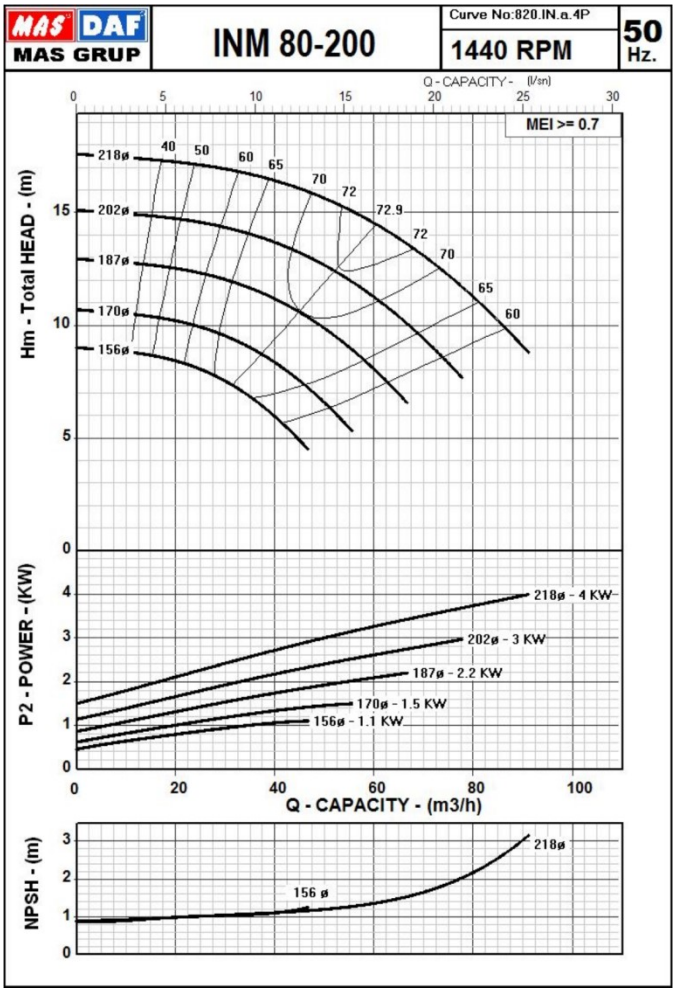
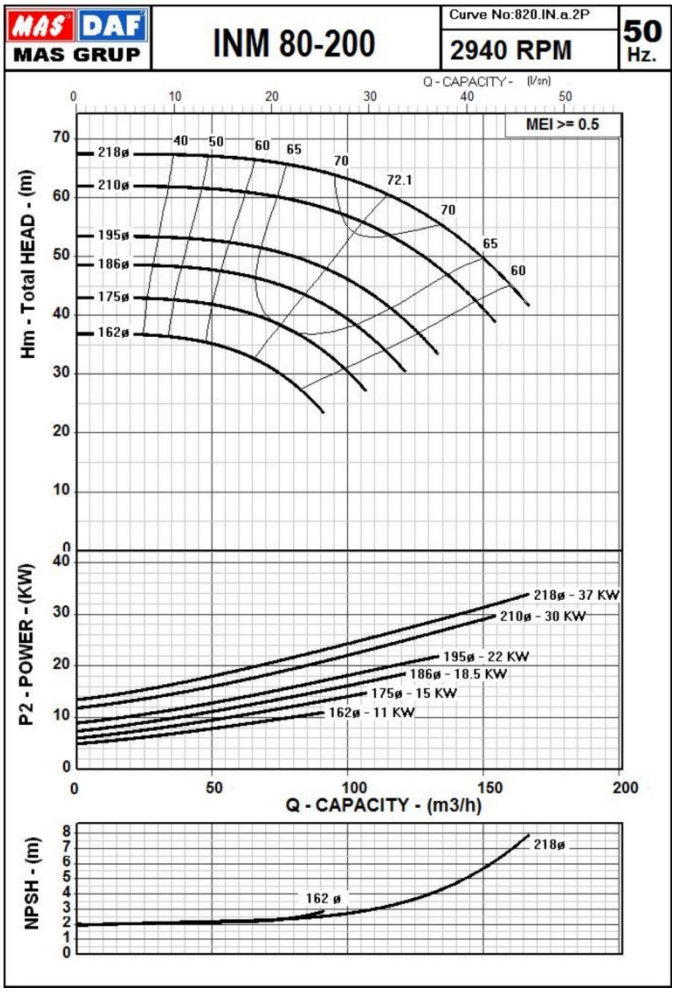
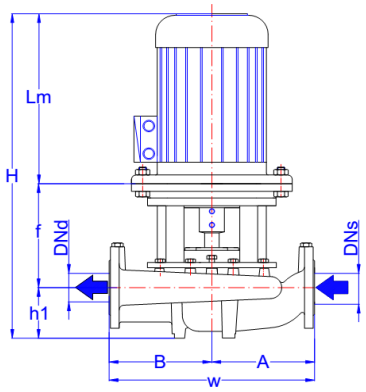




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
80-200	4 poles	1.1	90S	258	80	558	140	160	500	250	250	Ø 20
		1.5	90L	283		583	140	160	500	250	250	Ø 20
		2.2	100L	315		635	140	180	500	250	250	Ø 20
		3	100L	315		635	140	180	500	250	250	Ø 20
		4	112M	332		652	140	180	500	250	250	Ø 20
	2 poles	11	160M	491	80	861	140	230	500	250	250	Ø 30
		15	160M	491		861	140	230	500	250	250	Ø 30
		18.5	160L	491		861	140	230	500	250	250	Ø 30
		22	180M	549		919	140	230	500	250	250	Ø 30
		30	200L	637		1037	140	260	500	250	250	Ø 35
		37	200L	637		1037	140	260	500	250	250	Ø 35

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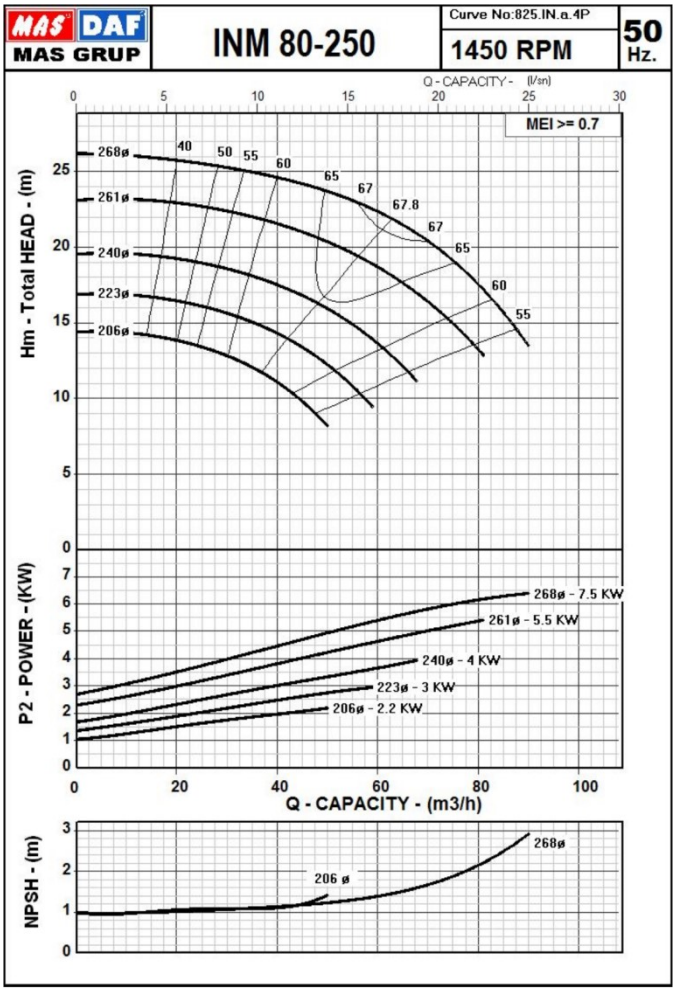
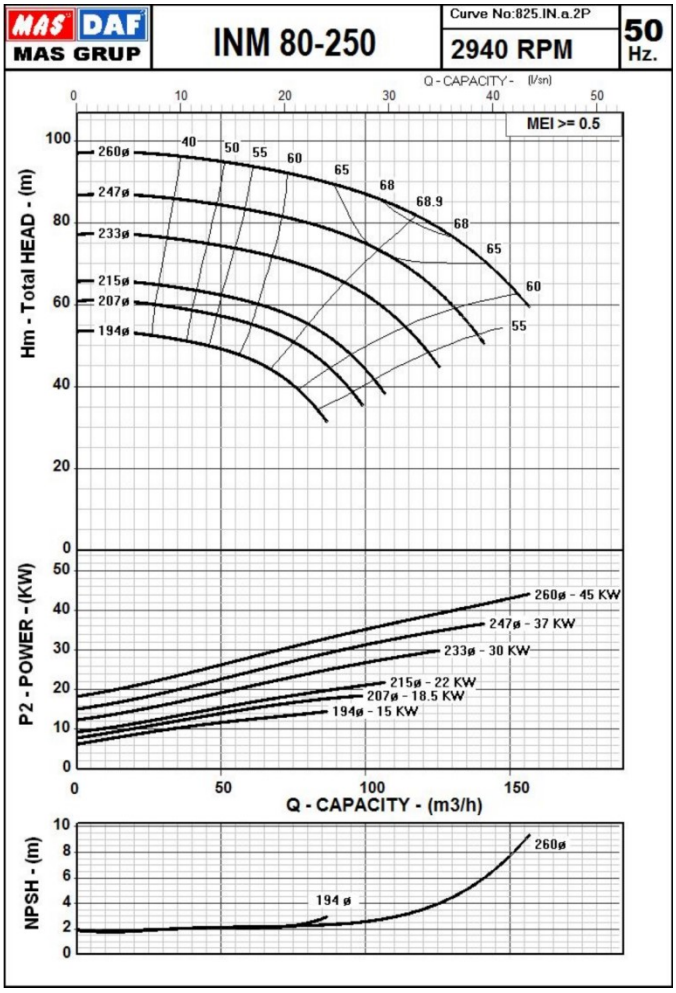
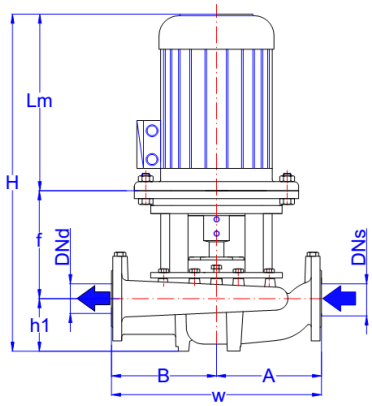




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density $1g/cm^3$. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
80-250	4 poles	2.2	100L	315	80	650	145	190	550	270	280	Ø 20
		3	100L	315		650	145	190	550	270	280	Ø 20
		4	112M	332		667	145	190	550	270	280	Ø 20
		5,5	132S	375		735	145	215	550	270	280	Ø 30
		7,5	132M	421		781	145	215	550	270	280	Ø 30
	2 poles	15	160M	491	80	876	145	240	550	270	280	Ø 30
		18.5	160L	491		876	145	240	550	270	280	Ø 30
		22	180M	549		934	145	240	550	270	280	Ø 30
		30	200L	637		1052	145	270	550	270	280	Ø 35
		37	200L	637		1052	145	270	550	270	280	Ø 35
		45	225M	680		1095	145	270	550	270	280	Ø 35

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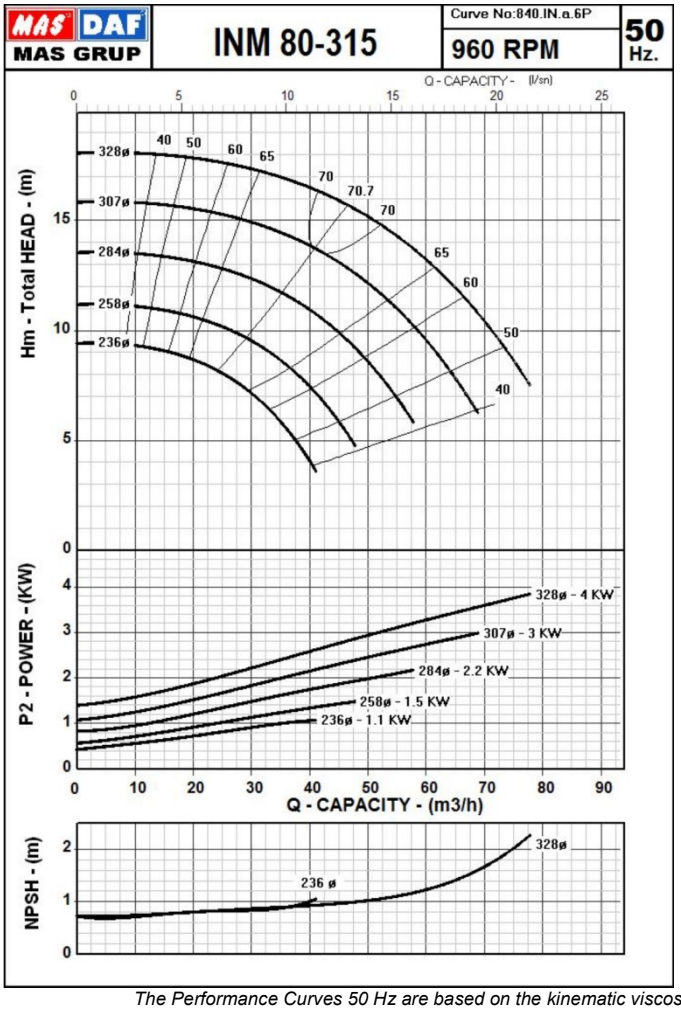
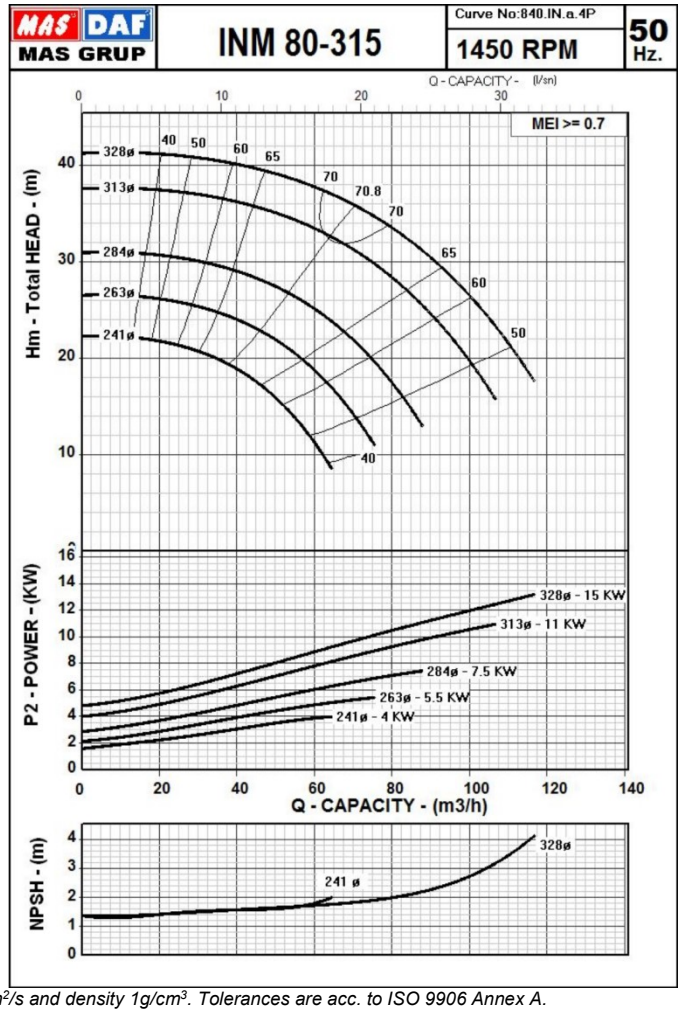
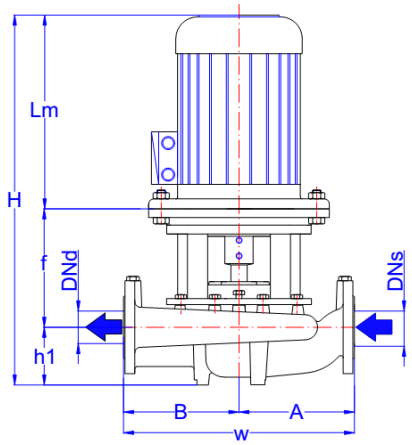




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
80-315	6 poles	1.1	90L	283	80	633	160	190	600	300	300	Ø 20
		1.5	100L	315		665	160	190	600	300	300	Ø 20
		2.2	112M	332		682	160	190	600	300	300	Ø 20
		3	132S	375		750	160	215	600	300	300	Ø 20
		4	132M	421		796	160	215	600	300	300	Ø 20
	4 poles	4	112M	332	80	682	160	190	600	300	300	Ø 20
		5.5	132S	375		750	160	215	600	300	300	Ø 30
		7.5	132M	421		796	160	215	600	300	300	Ø 30
		11	160M	491		891	160	240	600	300	300	Ø 30
		15	160L	491		891	160	240	600	300	300	Ø 30

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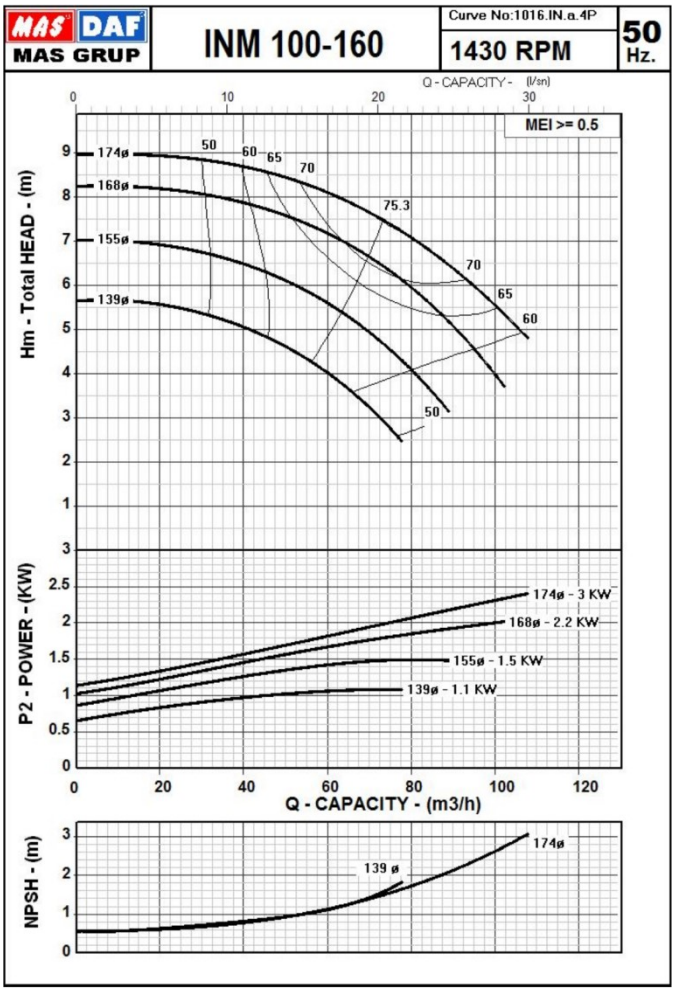
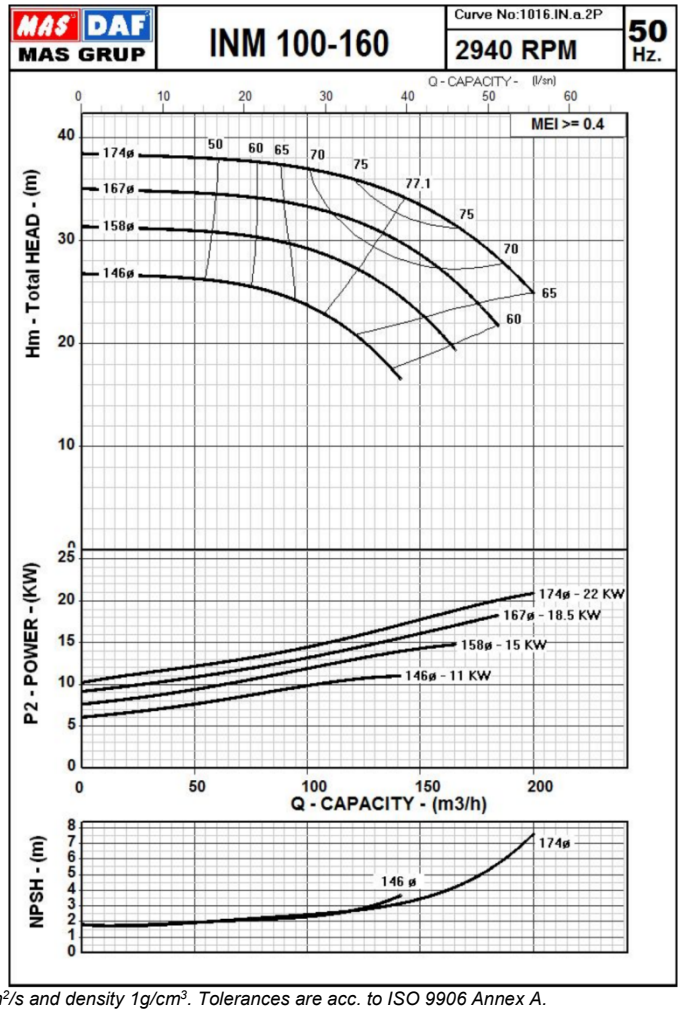
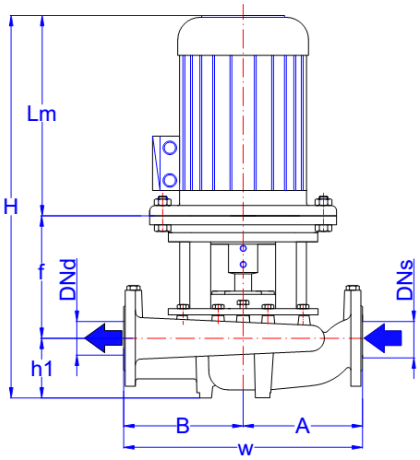




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
100-160	4 poles	1,1	90S	258	100	583	155	170	500	250	250	Ø 20
		1,5	90L	283		608	155	170	500	250	250	Ø 20
		2,2	100L	315		660	155	190	500	250	250	Ø 20
		3	100L	315		660	155	190	500	250	250	Ø 20
	2 poles	11	160M	491	100	886	155	240	500	250	250	Ø 30
		15	160M	491		886	155	240	500	250	250	Ø 30
		18.5	160L	491		886	155	240	500	250	250	Ø 30
		22	180M	549		944	155	240	500	250	250	Ø 30

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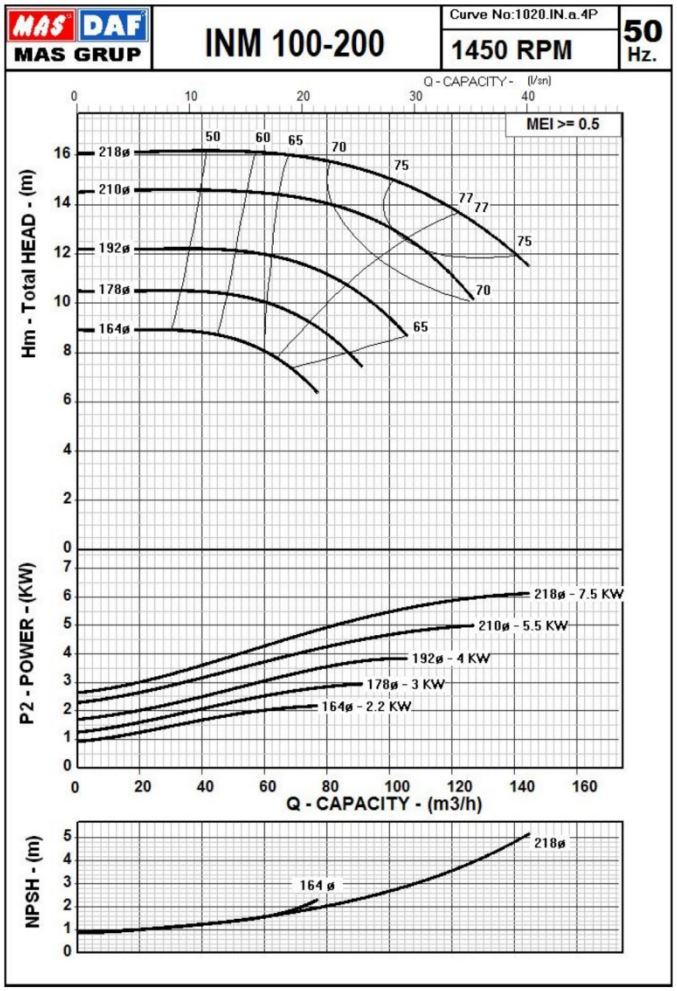
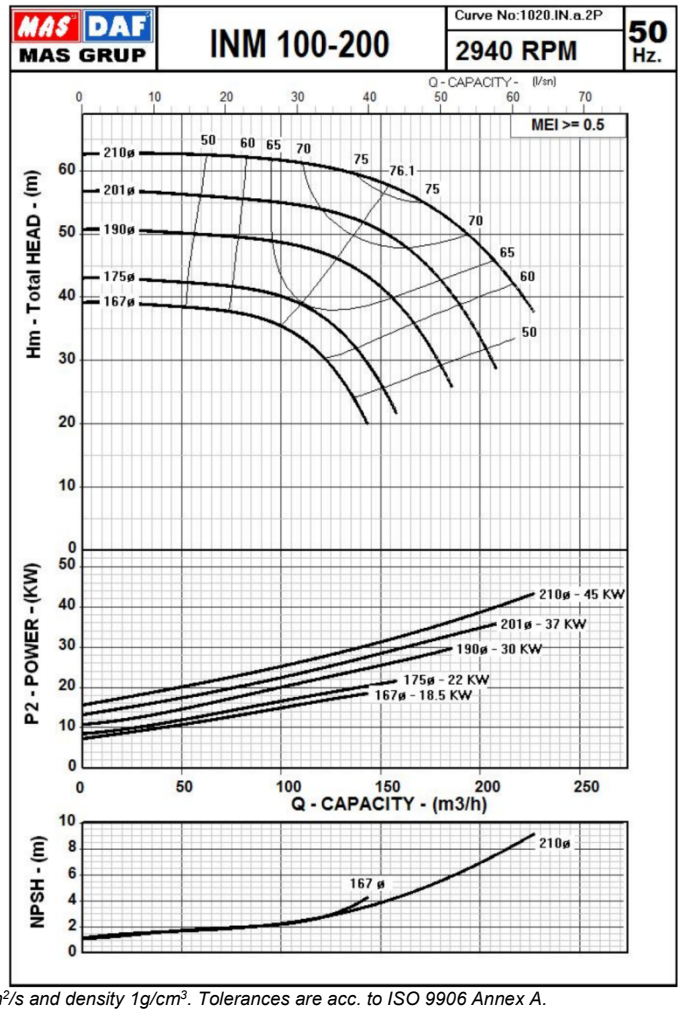
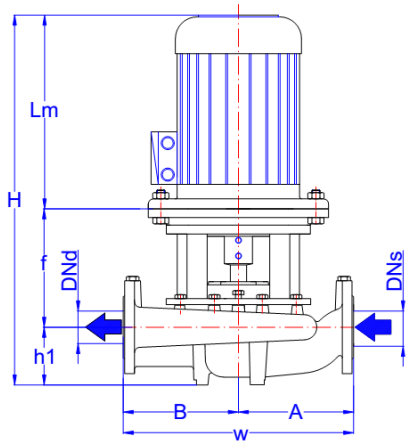




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
100-200	4 poles	2.2	100L	315	100	685	180	190	550	275	275	Ø 20
		3	100L	315		685	180	190	550	275	275	Ø 20
		4	112M	332		702	180	190	550	275	275	Ø 20
		5,5	132S	375		770	180	215	550	275	275	Ø 30
		7,5	132M	421		816	180	215	550	275	275	Ø 30
	2 poles	18.5	160L	491	100	911	180	240	550	275	275	Ø 30
		22	180M	549		969	180	240	550	275	275	Ø 30
		30	200L	637		1087	180	270	550	275	275	Ø 35
		37	200L	637		1087	180	270	550	275	275	Ø 35
		45	225M	680		1130	180	270	550	275	275	Ø 35

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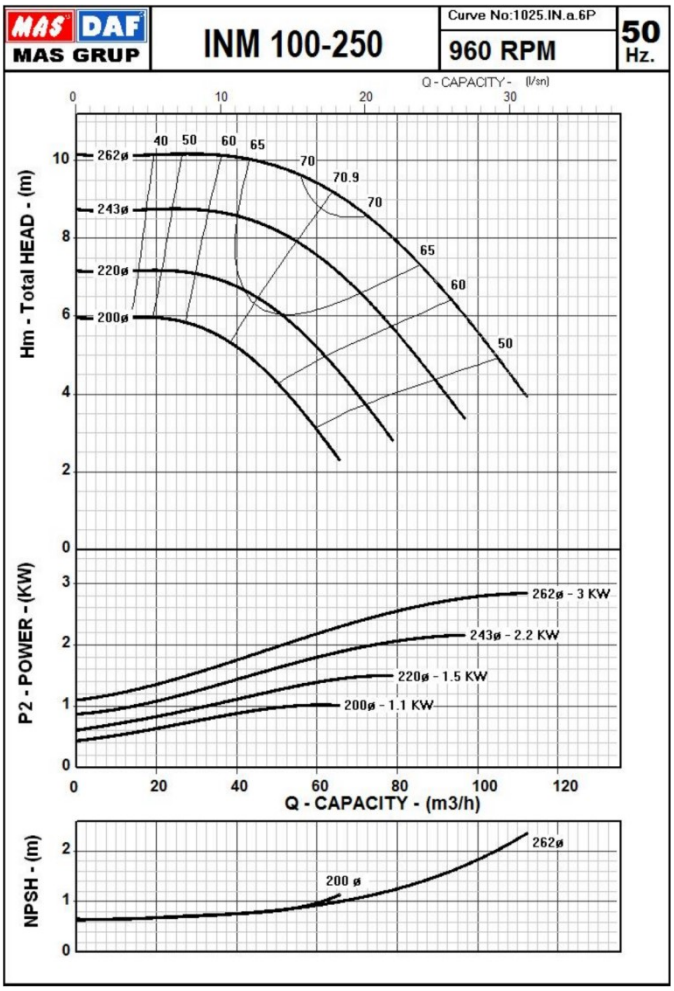
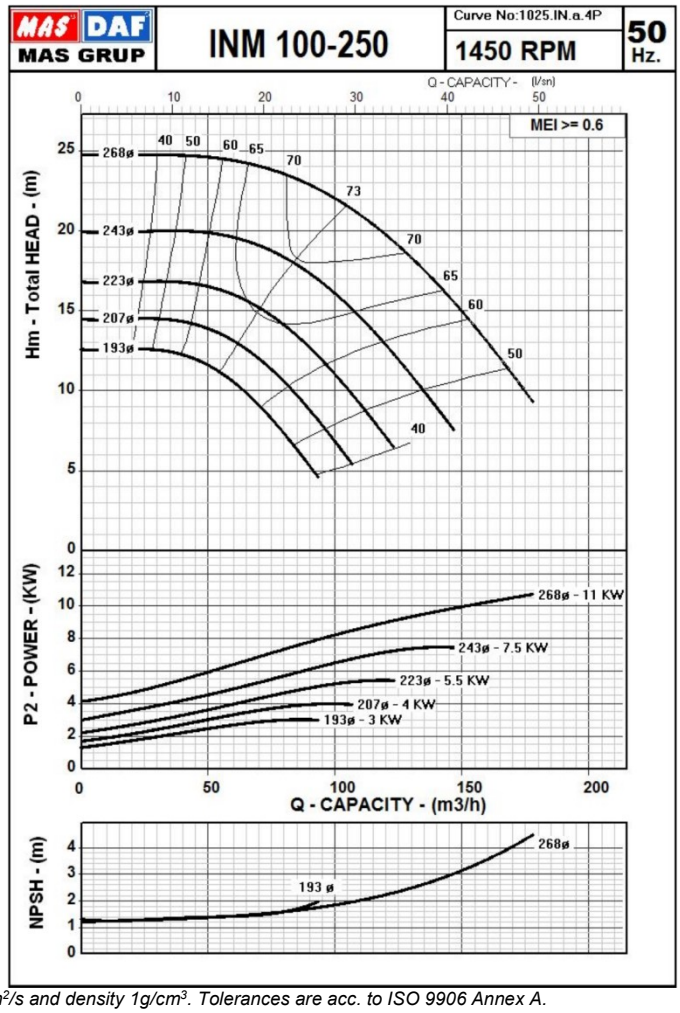
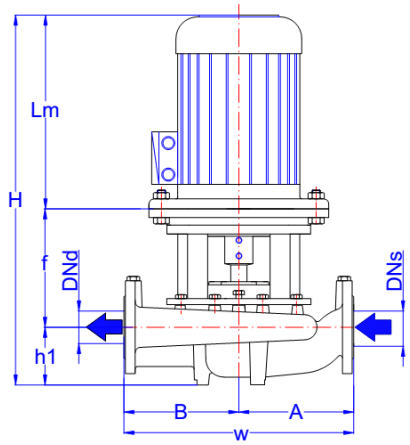




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
100-250	6 poles	1.1	90L	283	100	648	190	175	600	320	280	Ø 20
		1.5	100L	315		695	190	190	600	320	280	Ø 20
		2.2	112M	332		712	190	190	600	320	280	Ø 20
		3	132S	375		780	190	215	600	320	280	Ø 20
	4 poles	3	100L	315	100	695	190	190	600	320	280	Ø 20
		4	112M	332		712	190	190	600	320	280	Ø 20
		5,5	132S	375		780	190	215	600	320	280	Ø 30
		7,5	132M	421		826	190	215	600	320	280	Ø 30
		11	160M	491		921	190	240	600	320	280	Ø 30

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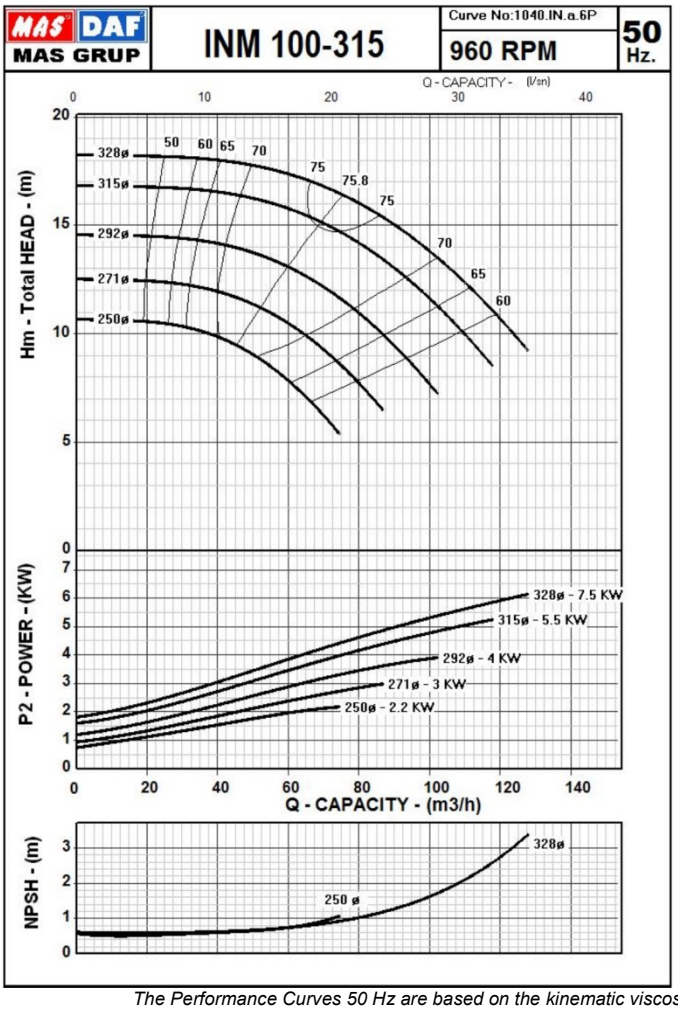
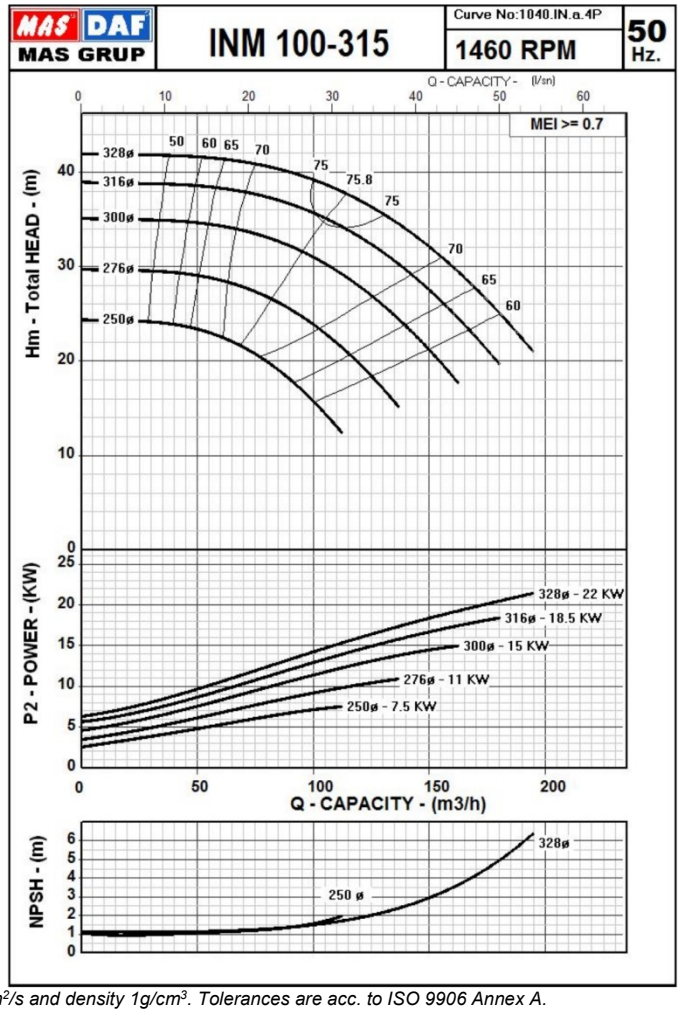
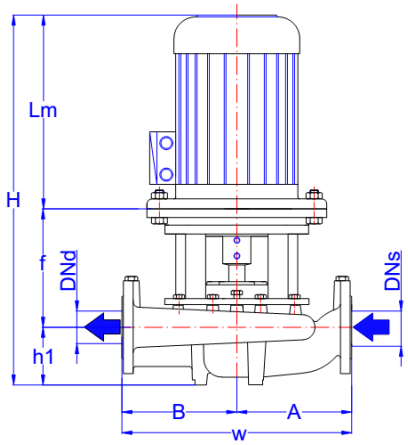




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
100-315	6 poles	2,2	112M	332	100	712	190	190	650	335	315	Ø 20
		3	132S	375		755	190	190	650	335	315	Ø 20
		4	132M	421		801	190	190	650	335	315	Ø 20
		5,5	132M	421		801	190	190	650	335	315	Ø 20
		7,5	132M	421		826	190	215	650	335	315	Ø 20
	4 poles	7.5	132M	421	100	826	190	215	650	335	315	Ø 30
		11	160M	491		921	190	240	650	335	315	Ø 30
		15	160L	491		921	190	240	650	335	315	Ø 30
		18,5	180M	549		979	190	240	650	335	315	Ø 30
		22	180L	549		979	190	240	650	335	315	Ø 30

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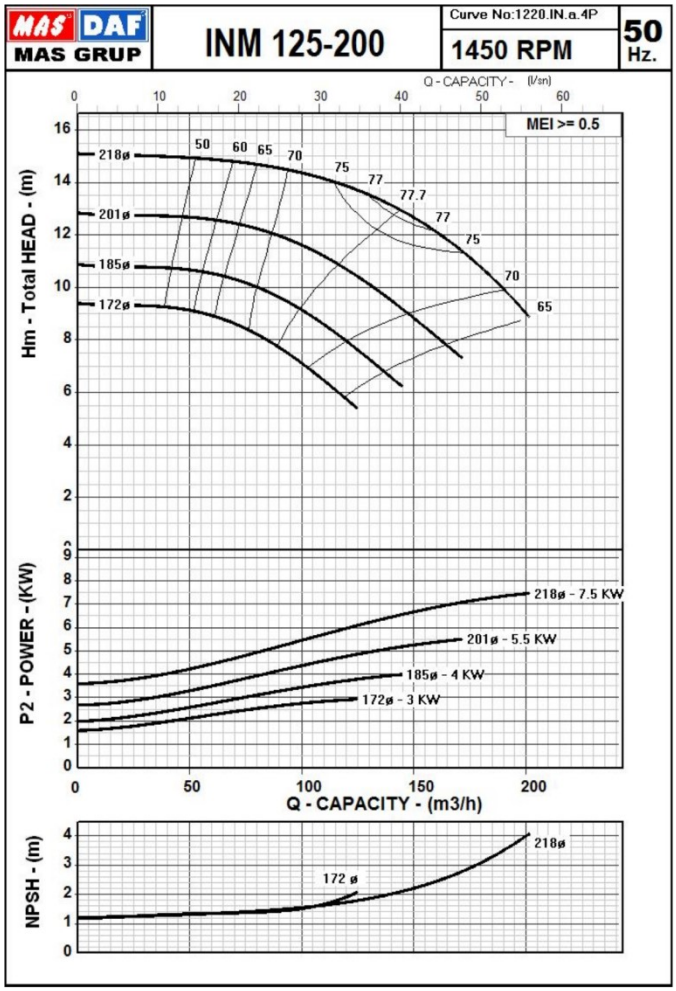
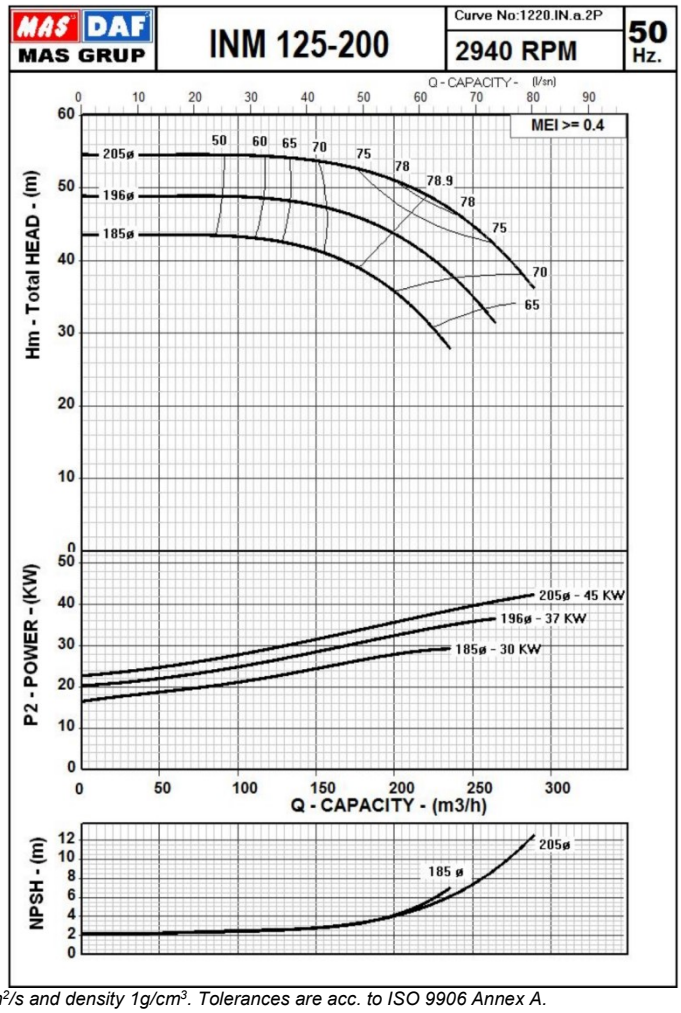
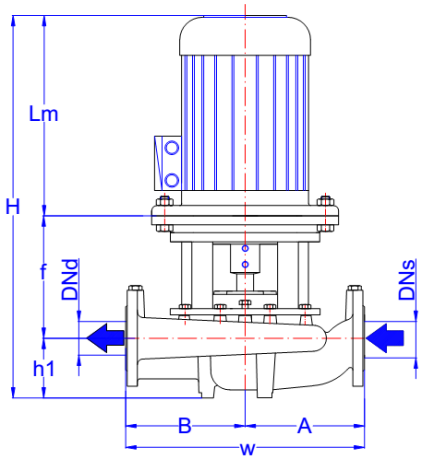




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
125-200	4 poles	3	100L	315	125	740	210	215	600	300	300	Ø 30
		4	112M	332		757	210	215	600	300	300	Ø 30
		5,5	132S	375		825	210	240	600	300	300	Ø 30
		7,5	132M	421		871	210	240	600	300	300	Ø 30
	2 poles	30	200L	637	125	1117	210	270	600	300	300	Ø 35
		37	200L	637		1117	210	270	600	300	300	Ø 35
		45	225M	680		1160	210	270	600	300	300	Ø 35

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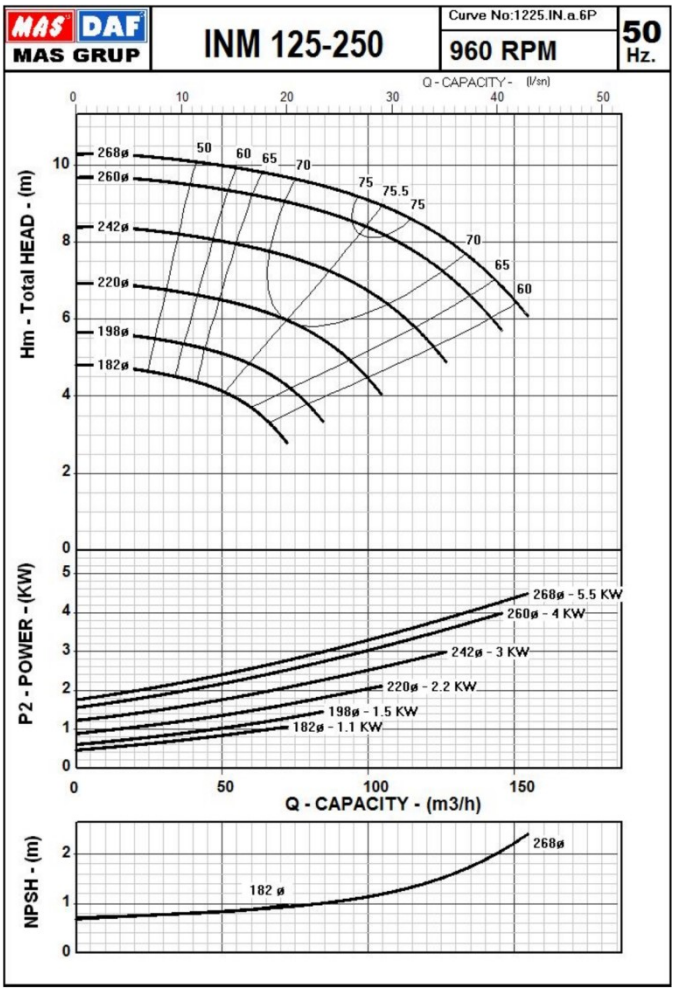
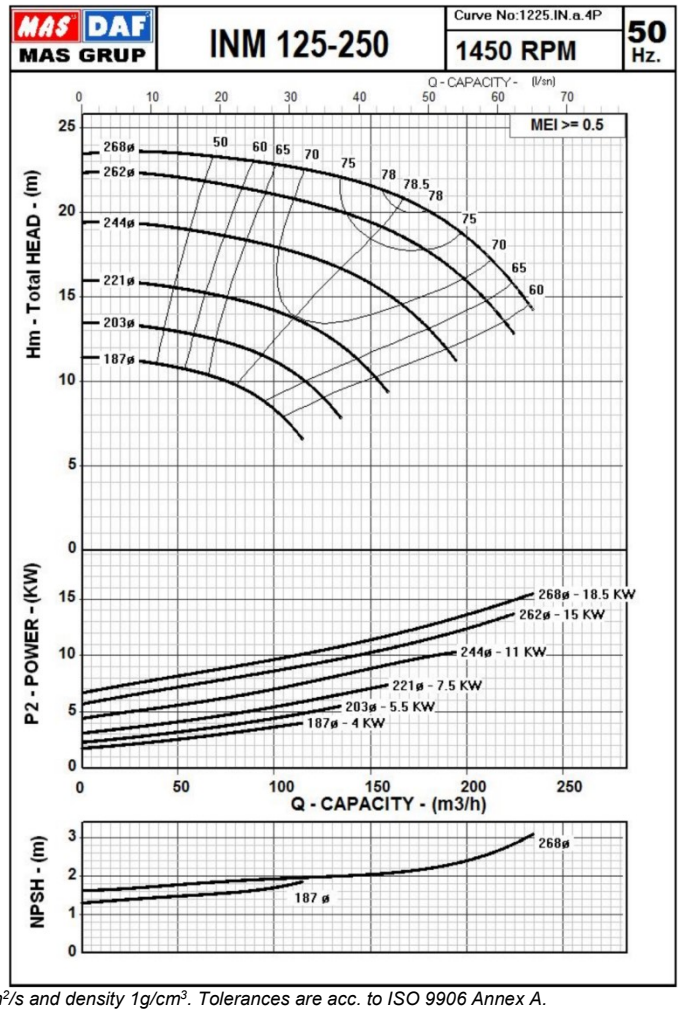
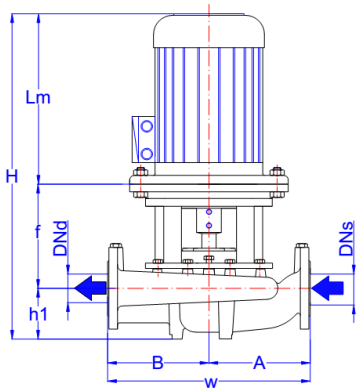




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
125-250	6 poles	1.1	90L	283	125	668	210	175	650	350	300	Ø 20
		1.5	100L	315		715	210	190	650	350	300	Ø 20
		2.2	112M	332		732	210	190	650	350	300	Ø 20
		3	132S	375		800	210	215	650	350	300	Ø 20
		4	132M	421		846	210	215	650	350	300	Ø 20
		5.5	132M	421		846	210	215	650	350	300	Ø 30
	4 poles	4	112M	332	125	732	210	190	650	350	300	Ø 20
		5.5	132S	375		800	210	215	650	350	300	Ø 30
		7.5	132M	421		846	210	215	650	350	300	Ø 30
		11	160M	491		941	210	240	650	350	300	Ø 30
		15	160L	491		941	210	240	650	350	300	Ø 30
		18,5	180M	549		999	210	240	650	350	300	Ø 30

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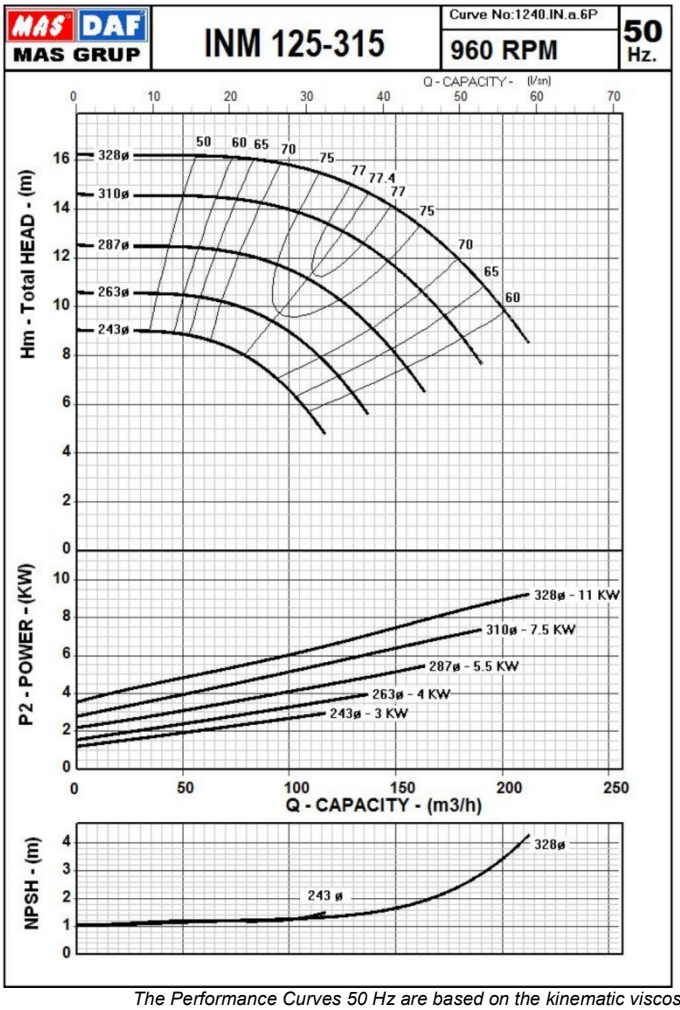
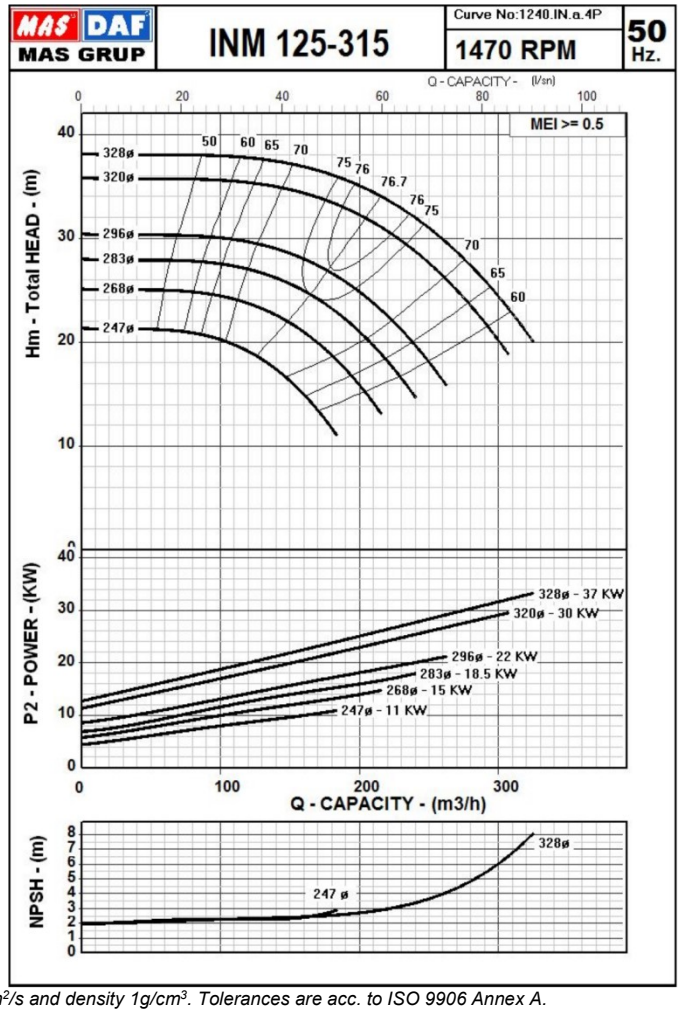
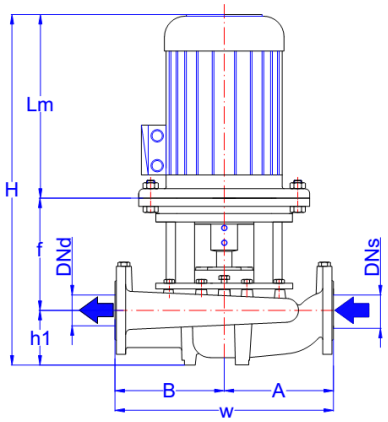




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
125-315	6 poles	3	132S	375	125	830	210	245	700	370	330	Ø 20
		4	132M	421		876	210	245	700	370	330	Ø 20
		5.5	132M	421		876	210	245	700	370	330	Ø 30
		7.5	160M	491		971	210	270	700	370	330	Ø 30
		11	160L	491		971	210	270	700	370	330	Ø 30
	4 poles	11	160M	491	125	971	210	270	700	370	330	Ø 30
		15	160L	491		971	210	270	700	370	330	Ø 30
		18,5	180M	549		1029	210	270	700	370	330	Ø 30
		22	180L	549		1029	210	270	700	370	330	Ø 30
		30	200L	637		1147	210	300	700	370	330	Ø 35
		37	225S	655		1215	210	350	700	370	330	Ø 35

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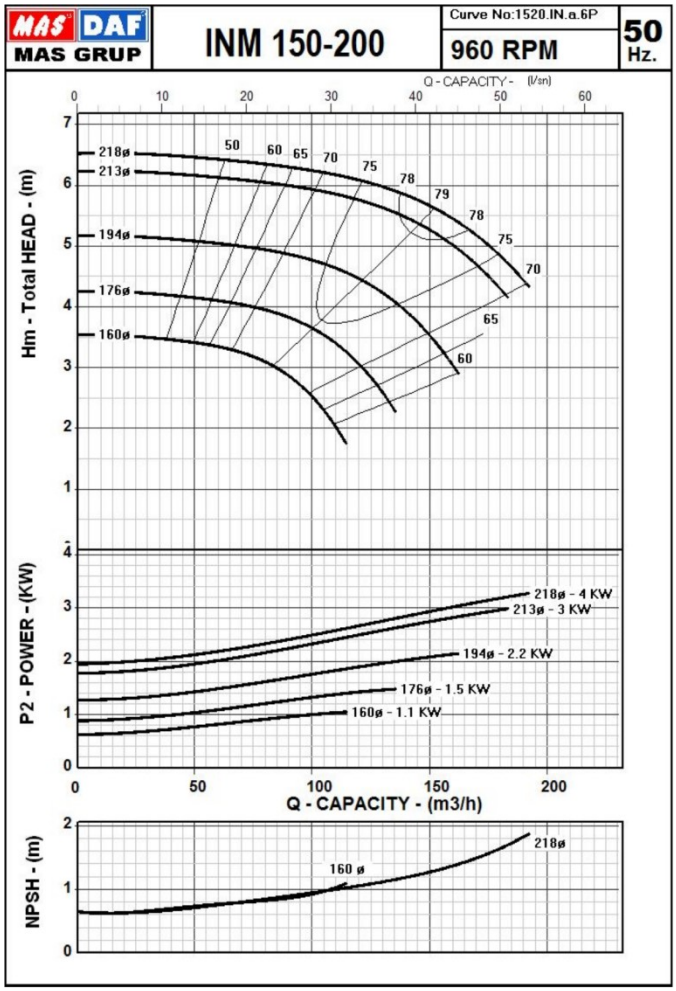
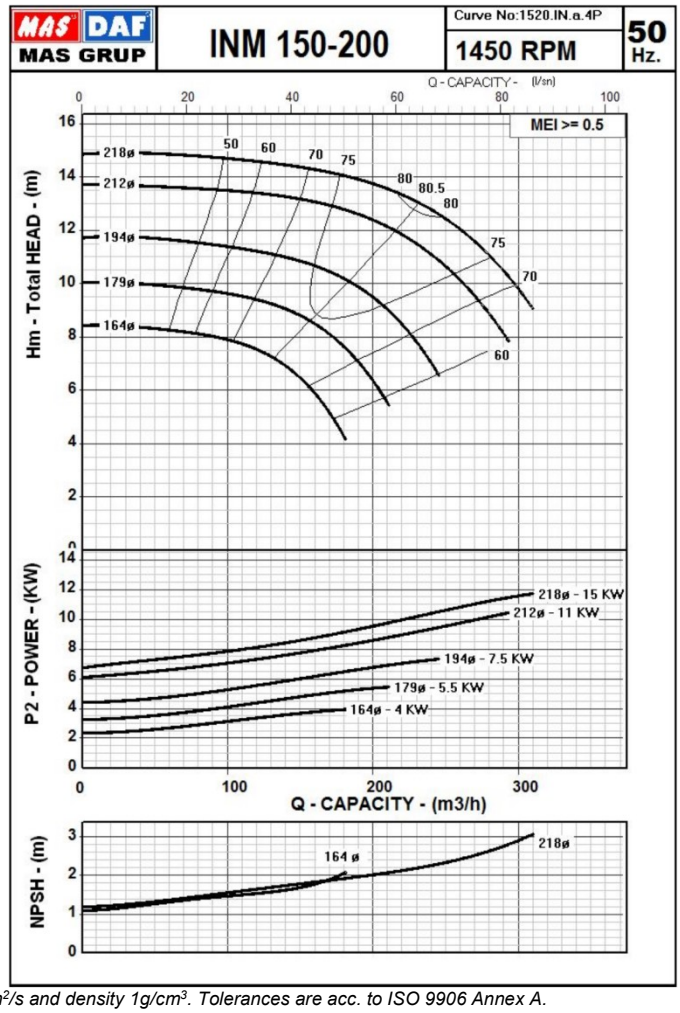
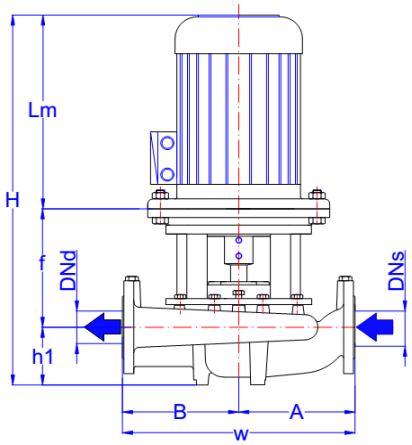




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
150-200	6 poles	1.1	90L	283	150	688	190	215	670	315	355	Ø 20
		1.5	100L	315		735	190	230	670	315	355	Ø 20
		2.2	112M	332		752	190	230	670	315	355	Ø 20
		3	132S	375		820	190	255	670	315	355	Ø 20
		4	132M	421		866	190	255	670	315	355	Ø 20
	4 poles	4	112M	332	150	752	190	230	670	315	355	Ø 20
		5.5	132S	375		820	190	255	670	315	355	Ø 30
		7.5	132M	421		866	190	255	670	315	355	Ø 30
		11	160M	491		961	190	280	670	315	355	Ø 30
		15	160L	491		961	190	280	670	315	355	Ø 30

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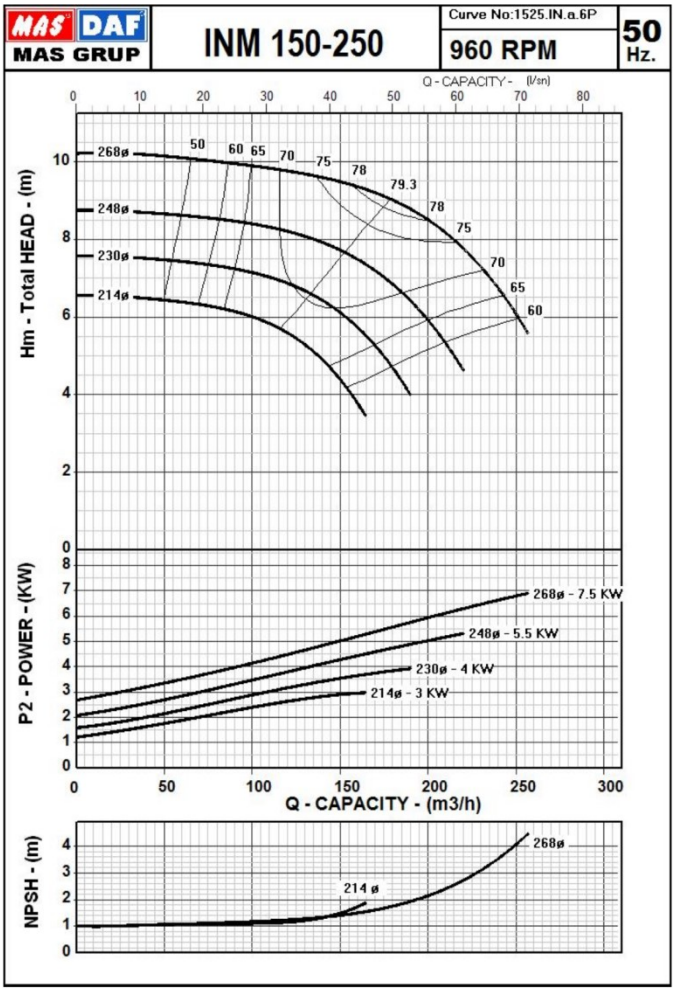
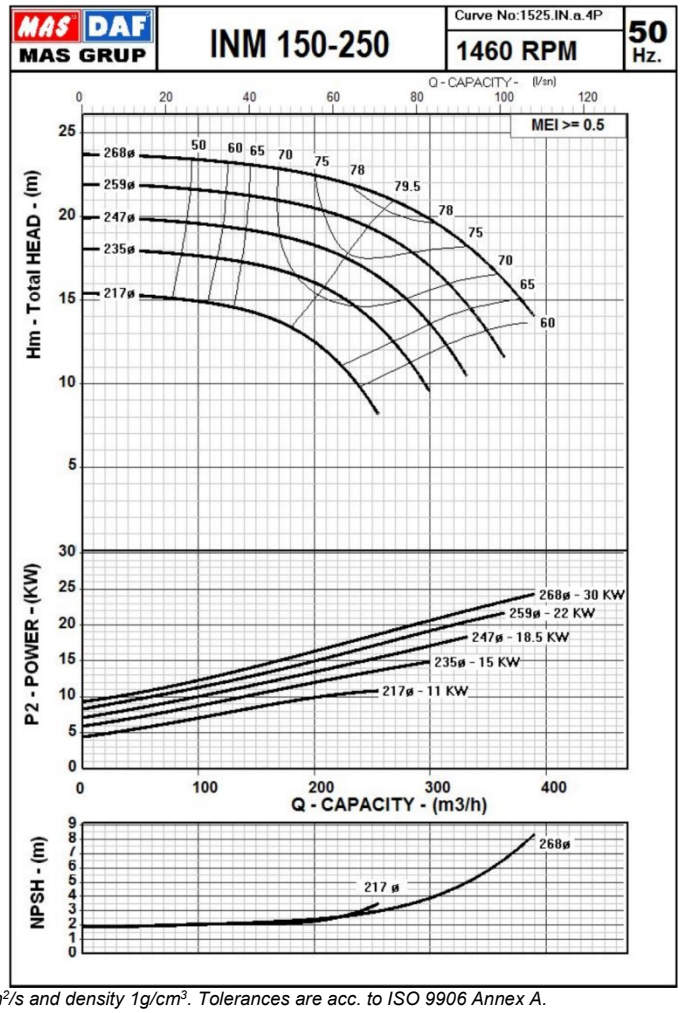
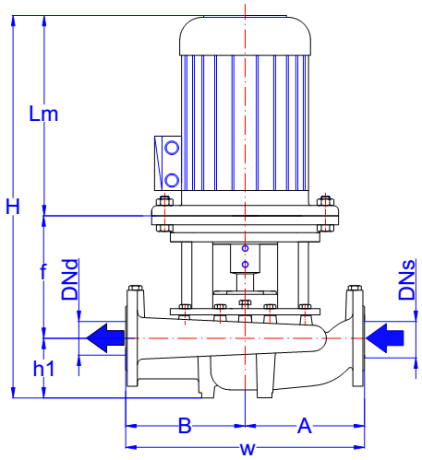




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
150-250	6 poles	3	132S	375	150	830	180	275	670	315	355	Ø 20
		4	132M	421		876	180	275	670	315	355	Ø 20
		5.5	132M	421		876	180	275	670	315	355	Ø 30
		7.5	160M	491		971	180	300	670	315	355	Ø 30
	4 poles	11	160M	491	150	971	180	300	670	315	355	Ø 30
		15	160L	491		971	180	300	670	315	355	Ø 30
		18,5	180M	549		1029	180	300	670	315	355	Ø 30
		22	180L	549		1029	180	300	670	315	355	Ø 30
		30	200L	637		1147	180	330	670	315	355	Ø 30

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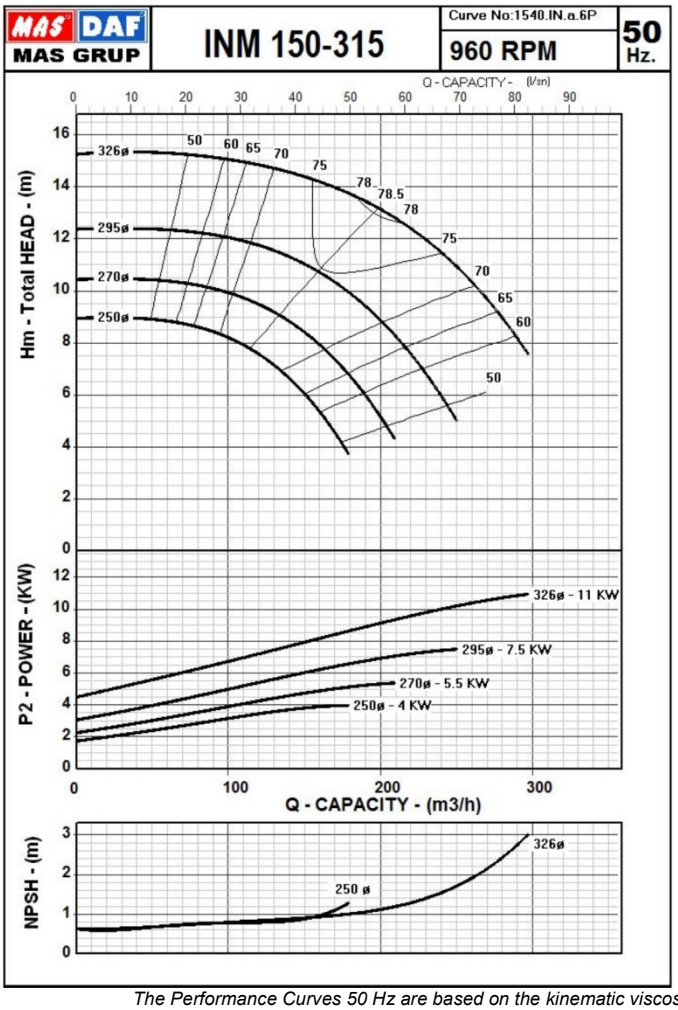
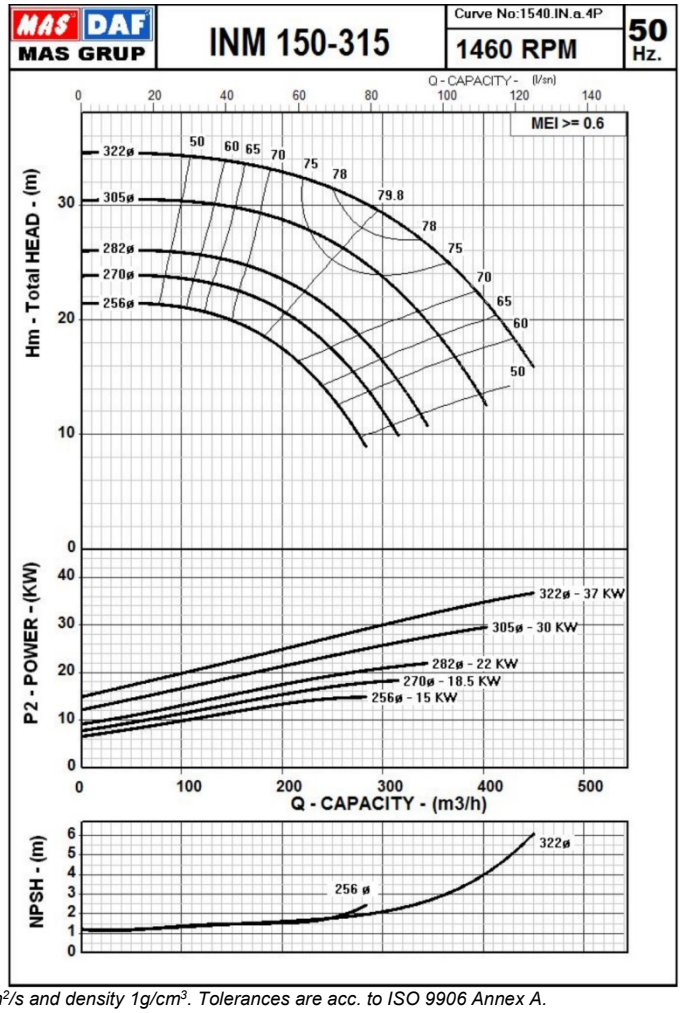
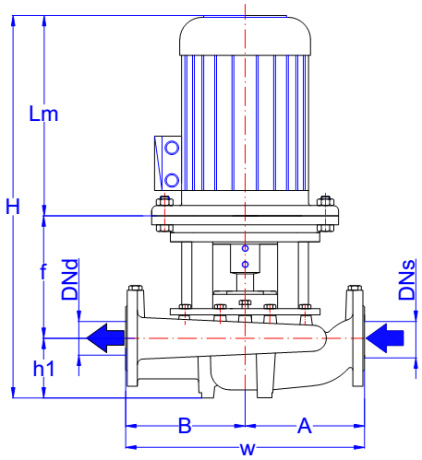




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
150-315	6 poles	4	132M	421	150	911	210	280	770	390	380	Ø 20
		5.5	132M	421		911	210	280	770	390	380	Ø 30
		7.5	160M	491		1006	210	305	770	390	380	Ø 30
		11	160L	491		1006	210	305	770	390	380	Ø 30
	4 poles	15	160L	491	150	1006	210	305	770	390	380	Ø 30
		18,5	180M	549		1064	210	305	770	390	380	Ø 30
		22	180L	549		1064	210	305	770	390	380	Ø 30
		30	200L	637		1182	210	335	770	390	380	Ø 35
		37	225S	655		1250	210	385	770	390	380	Ø 35

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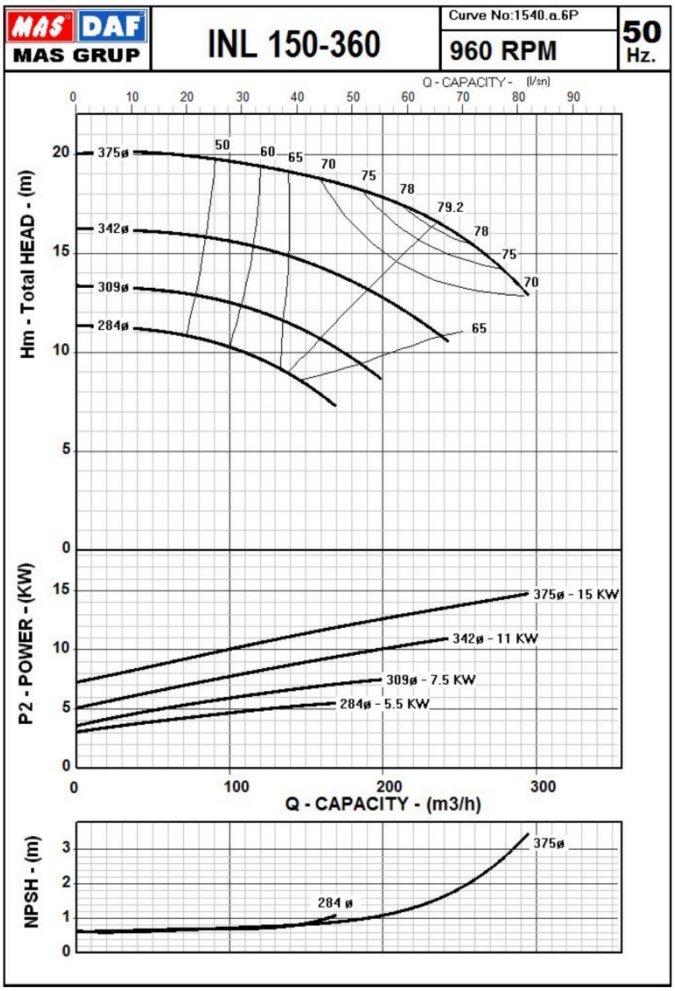
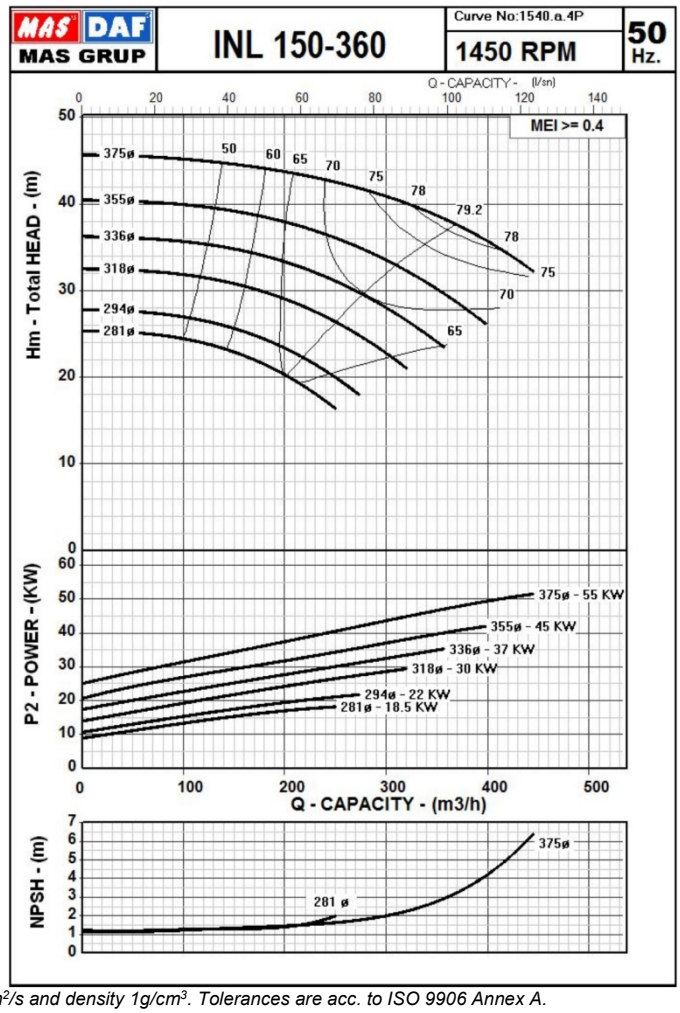
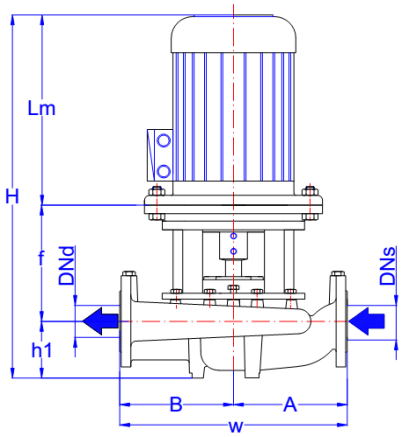




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
150-360	6 poles	5.5	132M	421	150	1021	190	410	800	400	400	Ø 50
		7.5	160M	491		1091	190	410	800	400	400	Ø 50
		11	160L	491		1091	190	410	800	400	400	Ø 50
		15	180L	549		1149	190	410	800	400	400	Ø 50
	4 poles	18,5	180M	549	150	1149	190	410	800	400	400	Ø 50
		22	180L	549		1149	190	410	800	400	400	Ø 50
		30	200L	637		1237	190	410	800	400	400	Ø 50
		37	225S	655		1255	190	410	800	400	400	Ø 50
		45	225M	680		1280	190	410	800	400	400	Ø 50
		55	250M	755		1355	190	410	800	400	400	Ø 50

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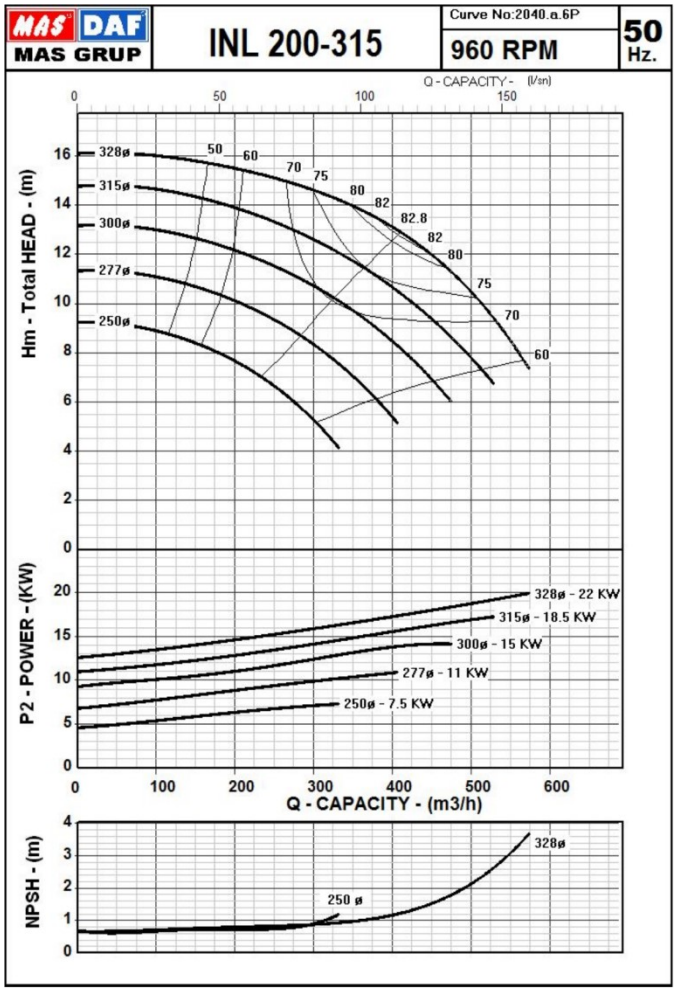
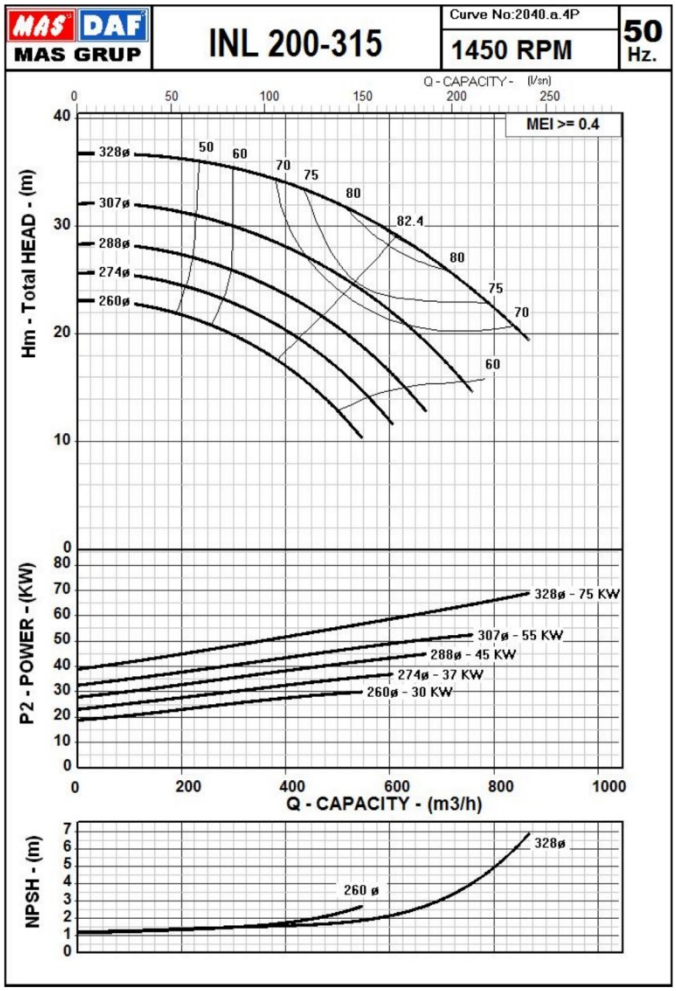
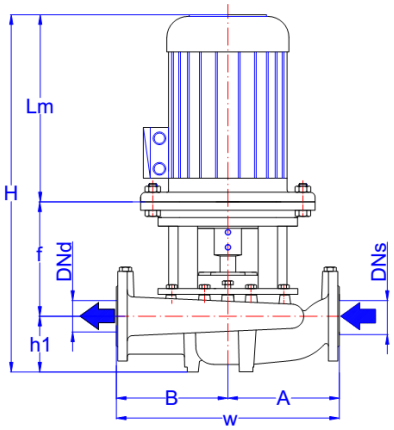




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.



		MOTOR			FLANGES	GENERAL	PUMP					Mechanical Seal
		KW	IEC	Lm	DNs - DNd	H	h1	f	W	A	B	Nominal Impeller Diameter
				mm	mm	mm	mm	mm	mm	mm	mm	
200-315	6 poles	7.5	160M	491	200	1136	200	445	850	400	450	Ø 50
		11	160L	491		1136	200	445	850	400	450	Ø 50
		15	180L	549		1194	200	445	850	400	450	Ø 50
		18.5	200L	637		1282	200	445	850	400	450	Ø 50
		22	200L	637		1282	200	445	850	400	450	Ø 50
	4 poles	30	200L	637	200	1282	200	445	850	400	450	Ø 50
		37	225S	655		1300	200	445	850	400	450	Ø 50
		45	225M	680		1325	200	445	850	400	450	Ø 50
		55	250M	755		1400	200	445	850	400	450	Ø 50
		75	280S	767		1412	200	445	850	400	450	Ø 50

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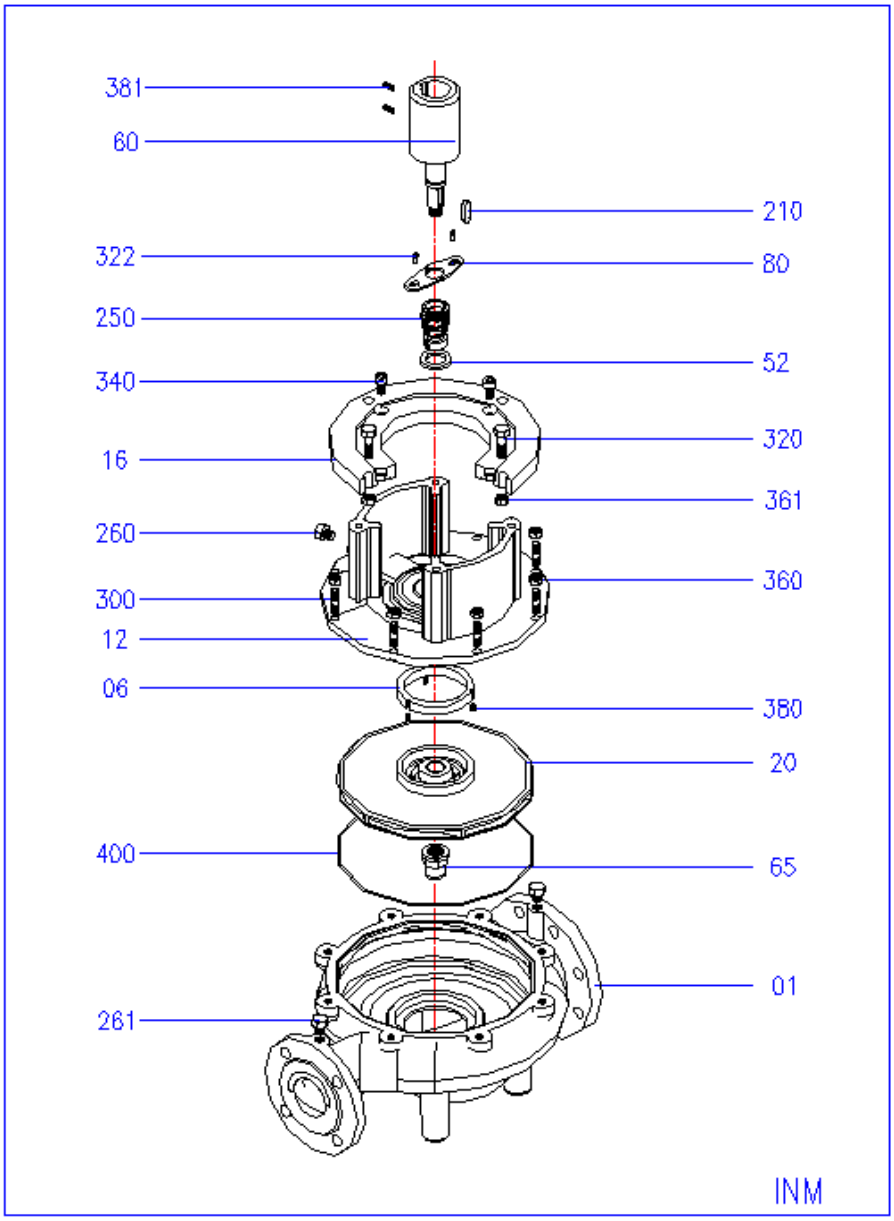
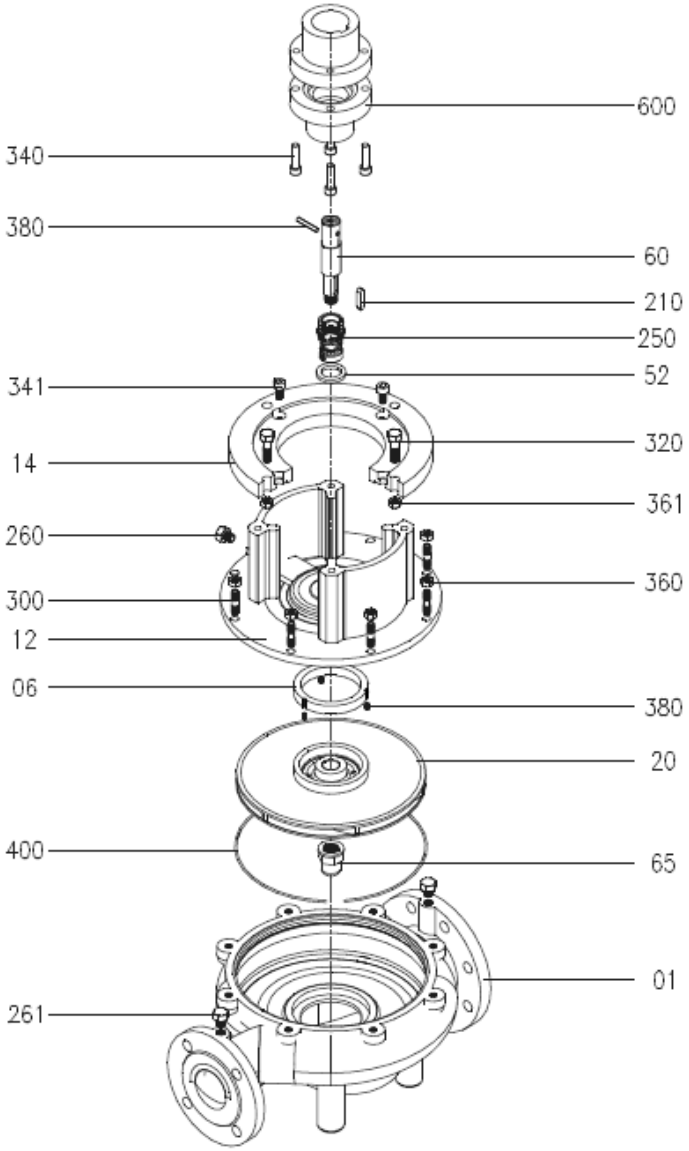


PART NO	PART NAME	PART NO	PART NAME
01	Pump Casing	260	Drain Plug
06	Wearing Ring	261	Plug
12	Adapter	300	Stud for Casing
16	Motor Adapter	320	Hexagonal Bolt
20	Impeller	322	Hexagonal Bolt
52	Mechanical Seal Ring	340	Cap Screw
60	Pump Shaft	360	Nut
65	Impeller Nut	361	Nut
80	Shackle	380	Setscrew
210	Impeller Key	381	Setscrew
250	Mechanical Seal	400	O-Ring



PART NO	PART NAME	PART NO	PART NAME
01	Pump Casing	261	Plug, Pressure gauge
06	Wearing Ring	300	Stud for Casing
12	Adapter	320	Hexagonal Bolt
14	Motor Flange	340	Cap Screw
20	Impeller	341	Cap Screw
52	Mechanical Seal Ring	360	Nut
60	Pump Shaft	361	Nut
65	Impeller Nut	380	Setscrew
210	Impeller Key	381	Setscrew
250	Mechanical Seal	400	O-Ring
260	Plug, Adapter	600	Rigid Coupling

Mas Grup

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