In-Line Centrifugal Pumps with Frequency Inverter

GENiO INM SERIES

TECHNICAL MANUAL

Mas Grup

Revision No: 01

January/2018

GENiO INM Series

In-Line Centrifugal Pumps with Frequency Inverter

General Information

Mas Grup

Fields of Application

The MAS in-line **GENiO** INM pumps are designed for,

- Water supply, boosting
- Watering, sprinkling and dewatering
- Filling and discharging of tanks
- Circulating of hot and cold water,
- As condensate return pump,
- Circulating in swimming pools,
- In industrial and social facilities,
- Pumping of clean and sea water in ships

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 **GENiO** INM pumps are single-stage centrifugal pumps of non-self-priming type fitted with standard motors and mechanical shaft seals.
- The ease of installation of the frequency inverter directly on the motor, the compact design of the unit as well as its intelligent application and integration into the system, the connectivity of the different types of sensors, the quiet and safe operation are features of the design.
- The nominal flow rates and sizes of the pumps comply with the DIN 24 255 and EN 733 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.
- The motor shaft is passed into the pump shaft for coupling and no need to use any coupling for the system.
- The pump shaft, impeller and other parts can be removed without moving the suction and discharge pipe line and.volute casing. This makes assembly and maintenance much easier.

Shaft

Chromium steel (AISI 420) fine grained shafts are used on **GENiO** INM 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 **GENiO** INM 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

- **GENiO** INM 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

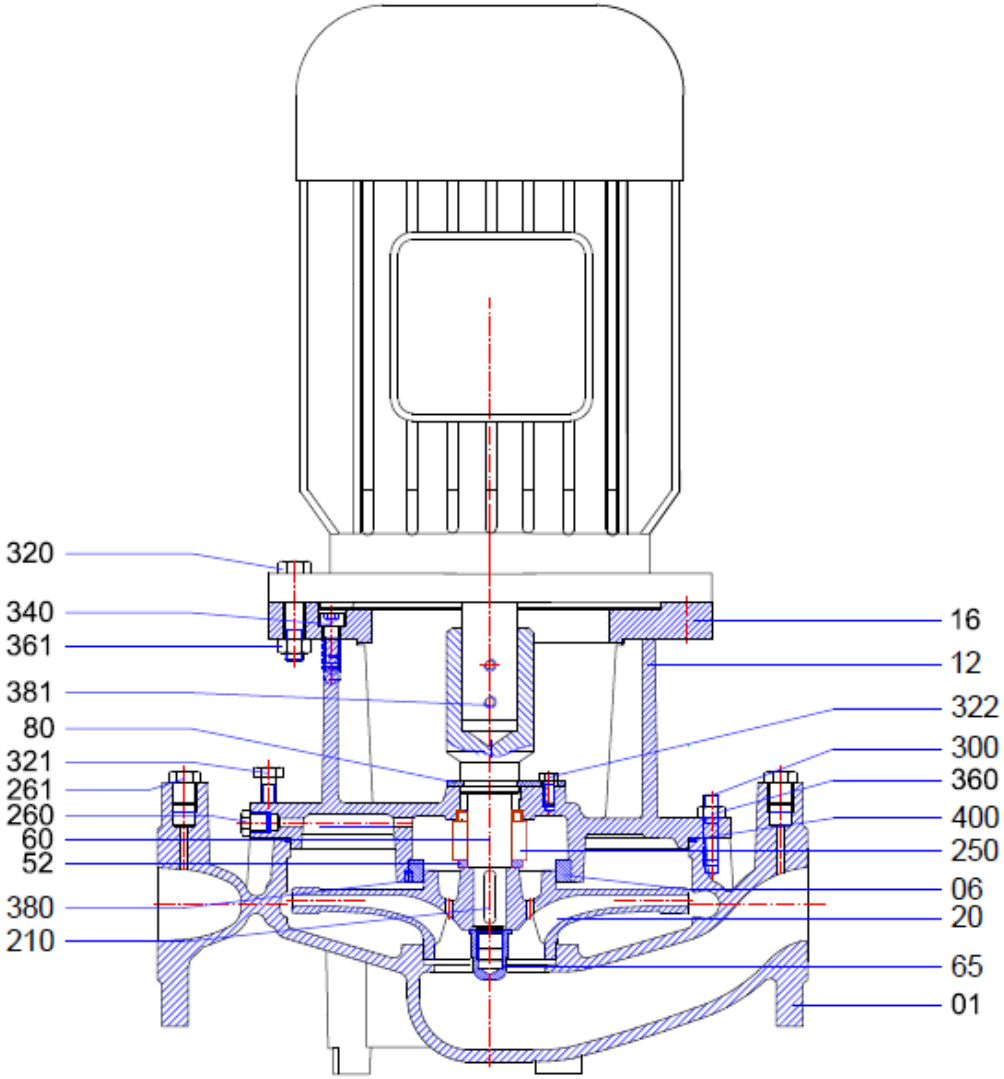
Flange (Suction)	DN 40 – DN 200
Flange (Discharge)	DN 40 – DN 200
Head pressure range	2 – 105 m
Capacity range	2 – 520 m³/h
Flange connection	PN 16
Operating pressure max.	10 bar
Casing test pressure	13 bar
Speed range	1000 – 3600 rpm
Media temperature min.	-25°C
Media temperature max.	+120°C
Ambient temperature	0°C - 60°C

Electrical datas	
Voltage	3x380 V
Frequency	50-60 Hz
Power P1	0,25 – 18,5 kW
Nominal current	0.67 – 32,3 A

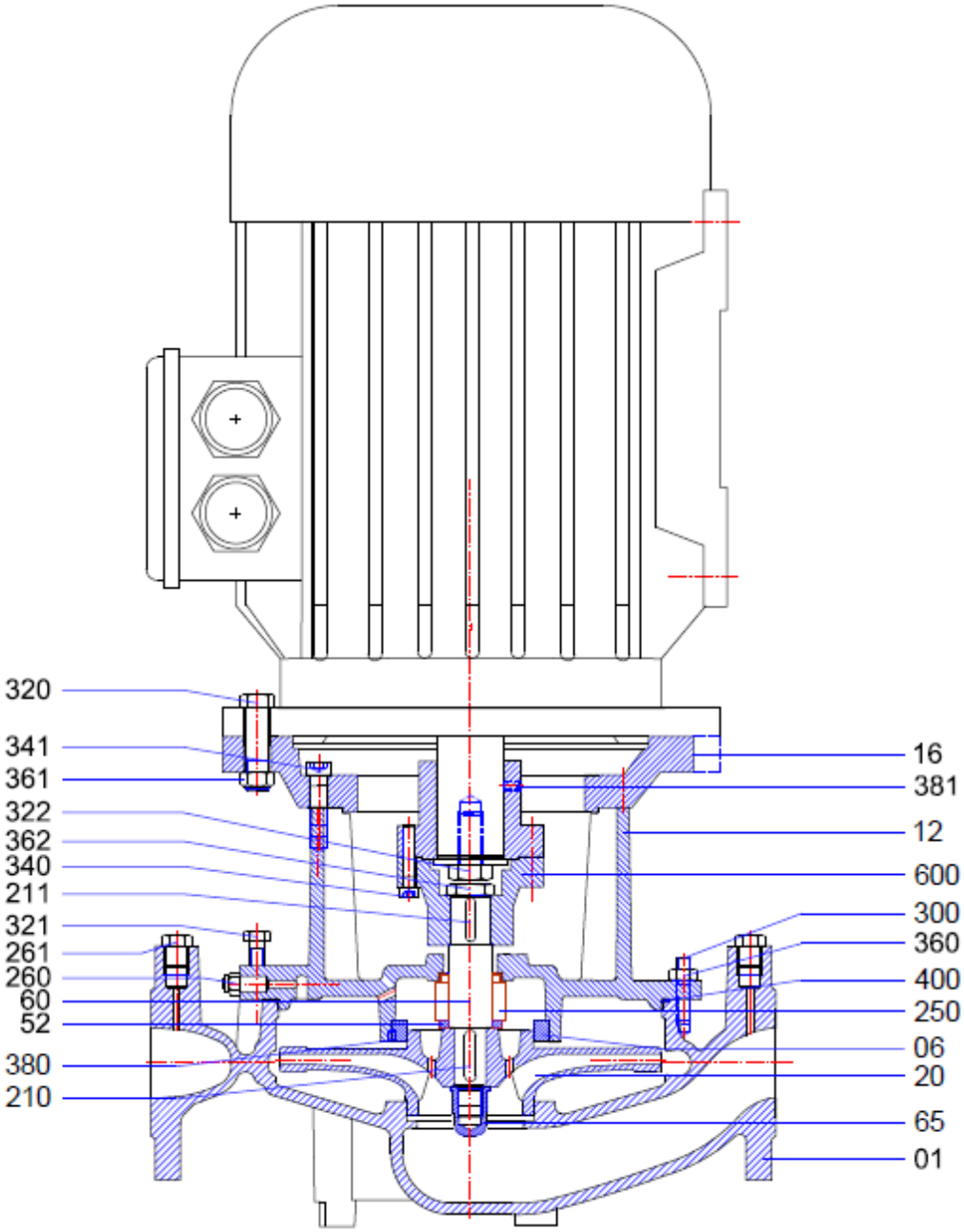
Inform us in your orders, for suction pressure above 7 Bar.

Driver

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



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

Material Options

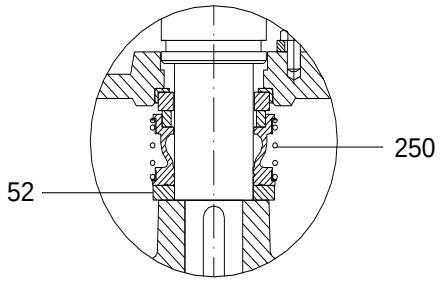
Components / Material. No	0.6025	0.7040	2.1050.01	1.4021	1.4301	1.4401
Pump Casing	●	o	o		o	o
Adapter	●	o	o		o	o
Impeller	●	o	o		o	o
Wear Ring	●	o	o		o	o
Shaft				●	o	o
Adapter (Motor)	●	o	o		o	o

● - 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

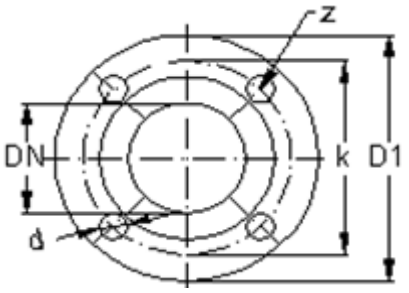


Burgmann MG1-G60- up to 12 Bar
(Independent on direction of rotation)

No	Part Name
52	Mechanical Seal Ring
250	Mechanical Seal

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

Flange Sizes

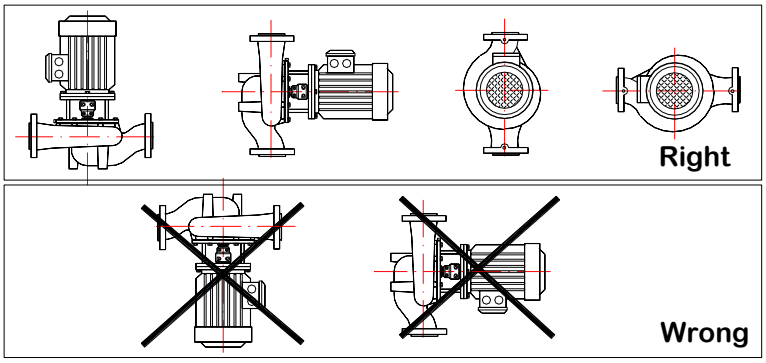
SuctionandDischargeFlangesSizes					
DNs DNd	ØD1	Øk	Ød	Z	
40	150	110	18	4	
50	165	125	18	4	
65	185	145	18	4	
80	200	160	18	8	
100	220	180	18	8	
125	250	210	18	8	
150	285	240	23	8	
200	340	295	23	12	

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

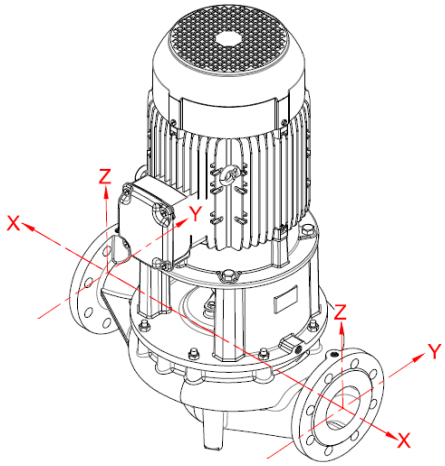
No	Pump Type	Flanges	
		DNs (mm) Suction	DNd (mm) Discharge
17	**GENiO** INM 100–160	100	100
18	**GENiO** INM 100–200		
19	**GENiO** INM 100–250		
20	**GENiO** INM 100–315		
21	**GENiO** INM 125–200	125	125
22	**GENiO** INM 125–250		
23	**GENiO** INM 125–315		
24	**GENiO** INM 150-200	150	150
25	**GENiO**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

Mounting Arrangement

GENiO INM 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
GENiO INM 40-125	40	595,3	476,2	523,82	428,58	500,01	619,06
GENiO INM 40-160							
GENiO INM 40-200							
GENiO INM 40-250							
GENiO INM 50-125	50	785,7	642,9	714,3	476,2	547,63	666,68
GENiO INM 50-160							
GENiO INM 50-200							
GENiO INM 50-250							
GENiO INM 65-125	65	1000	809,5	880,97	523,82	571,44	714,3
GENiO INM 65-160							
GENiO INM 65-200							
GENiO INM 65-250							
GENiO INM 80-160	80	1191	976,2	1071,45	547,63	619,06	761,92
GENiO INM 80-200							
GENiO INM 80-250							
GENiO INM 80-315							
GENiO INM 100-160	100	1595	1286	1428,6	595,25	690,49	833,35
GENiO INM 100-200							
GENiO INM 100-250							
GENiO INM 100-315							
GENiO INM 125-200	125	1881	1524	1690,51	714,3	904,78	1000
GENiO INM 125-250							
GENiO INM 125-315							
GENiO INM 150-200	150	2381	1929	2142,9	833,35	976,21	1190,5
GENiO INM 150-250							
GENiO INM 150-315							
GENiO INM 150-360							
GENiO INM 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 **GENiO** INM Pump Series is shown on the pump label.

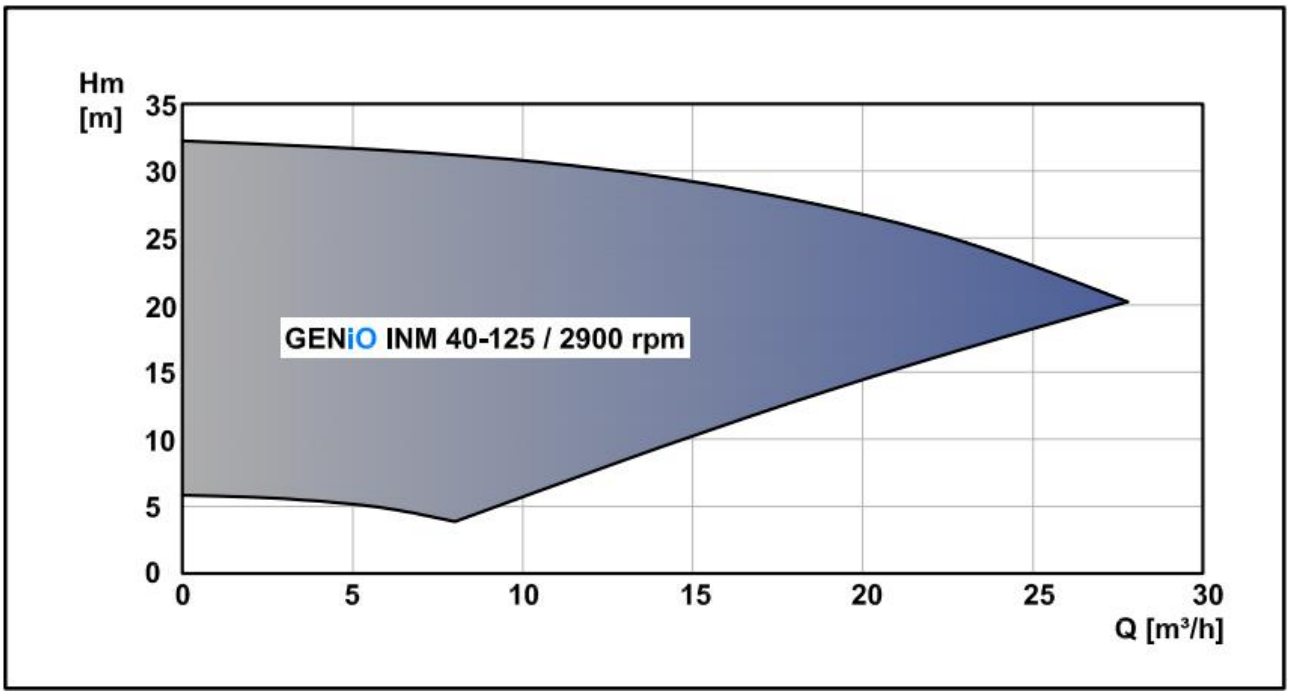
MEI values of MAS **GENiO** INM Pump Series are shown on the pump characteristic curves.

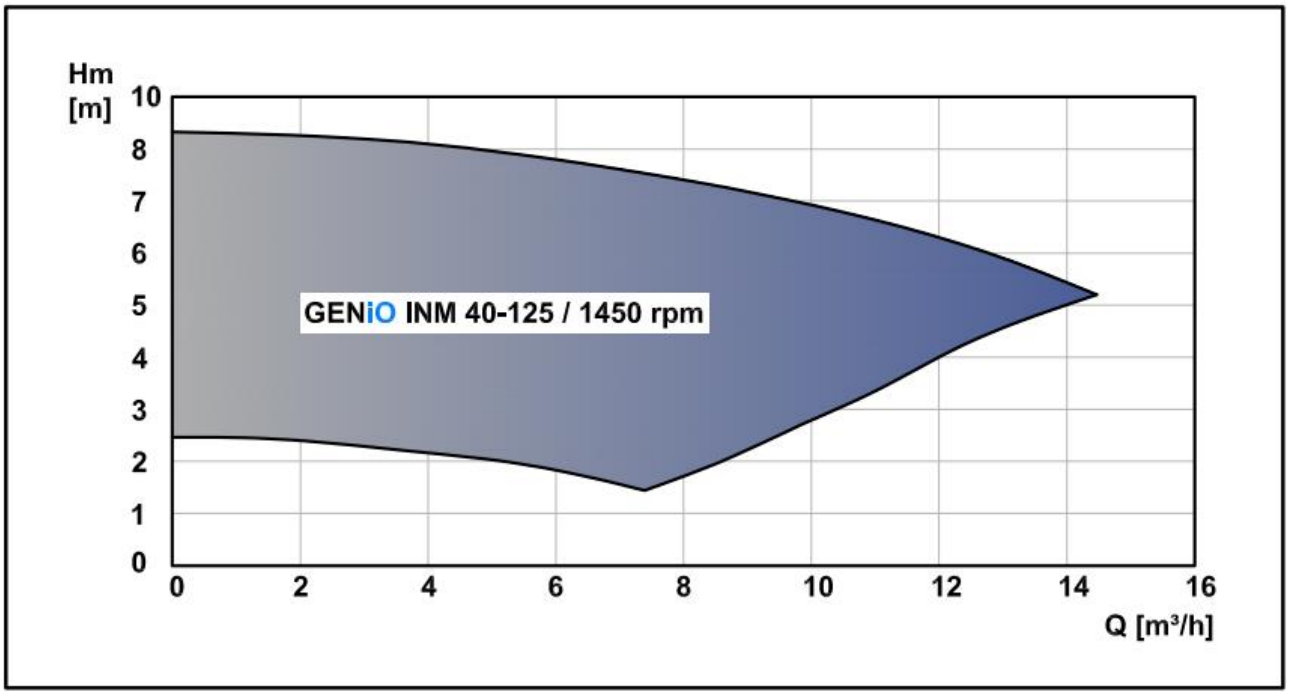
Minimum Efficiency Index for MAS **GENiO** INM Pump Series; Minimum 0.4. (MEI≥0,4)

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

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

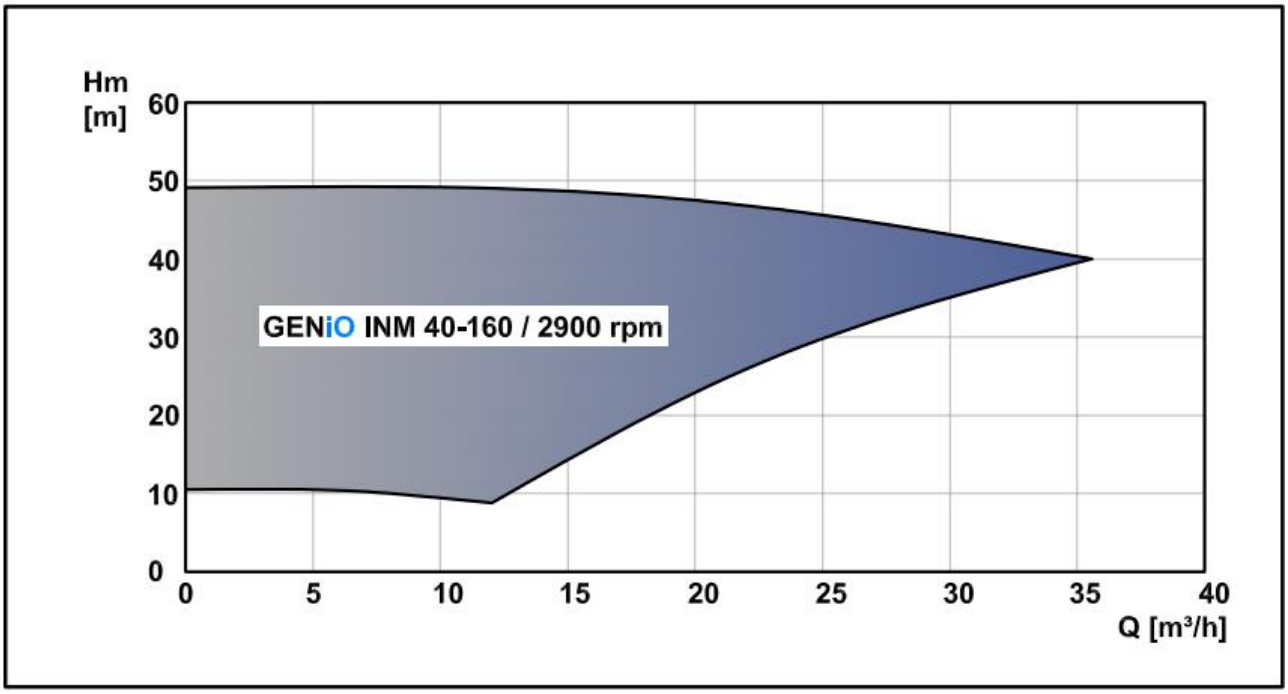
More information about the Ecodesign can be reached at www.europump.org

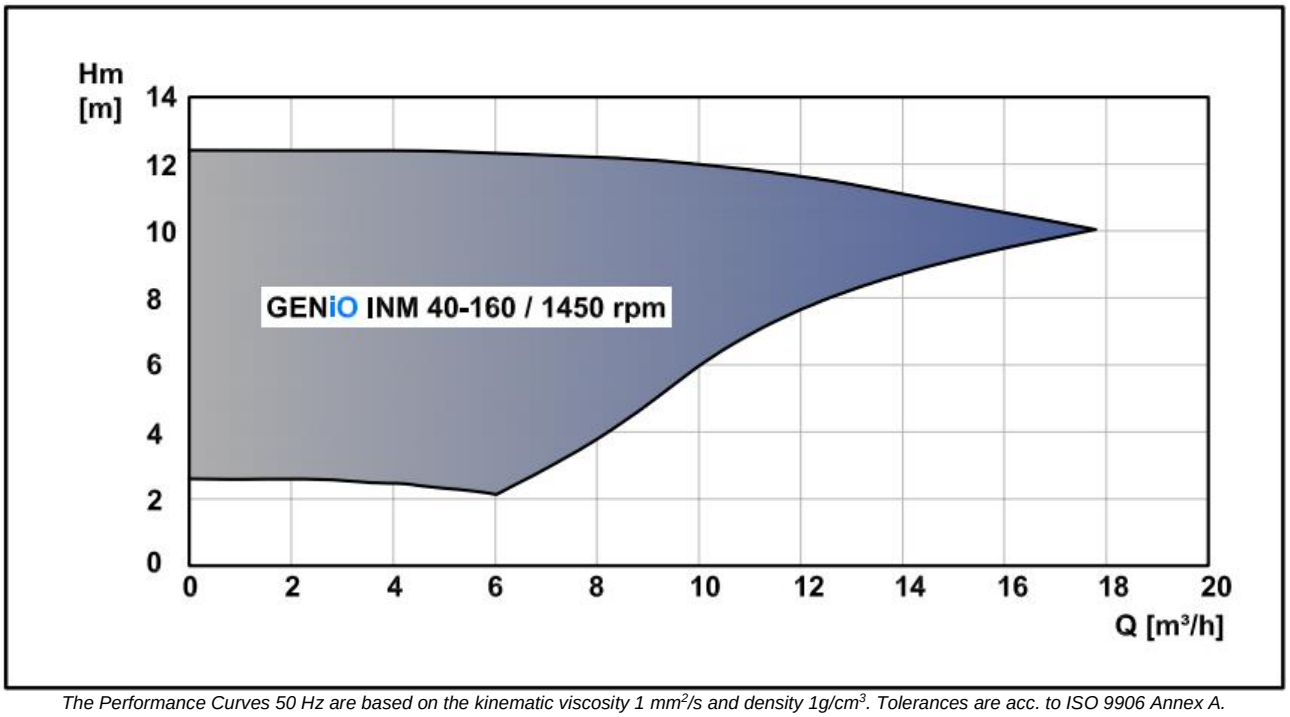




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

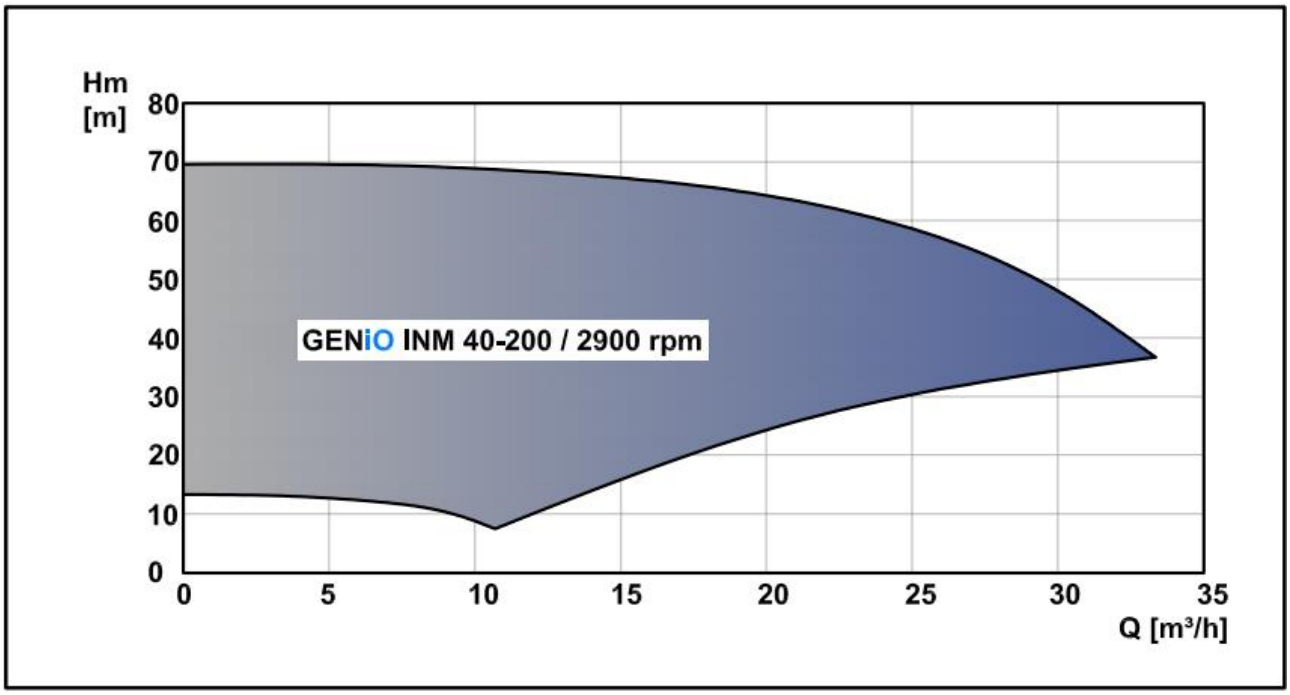
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

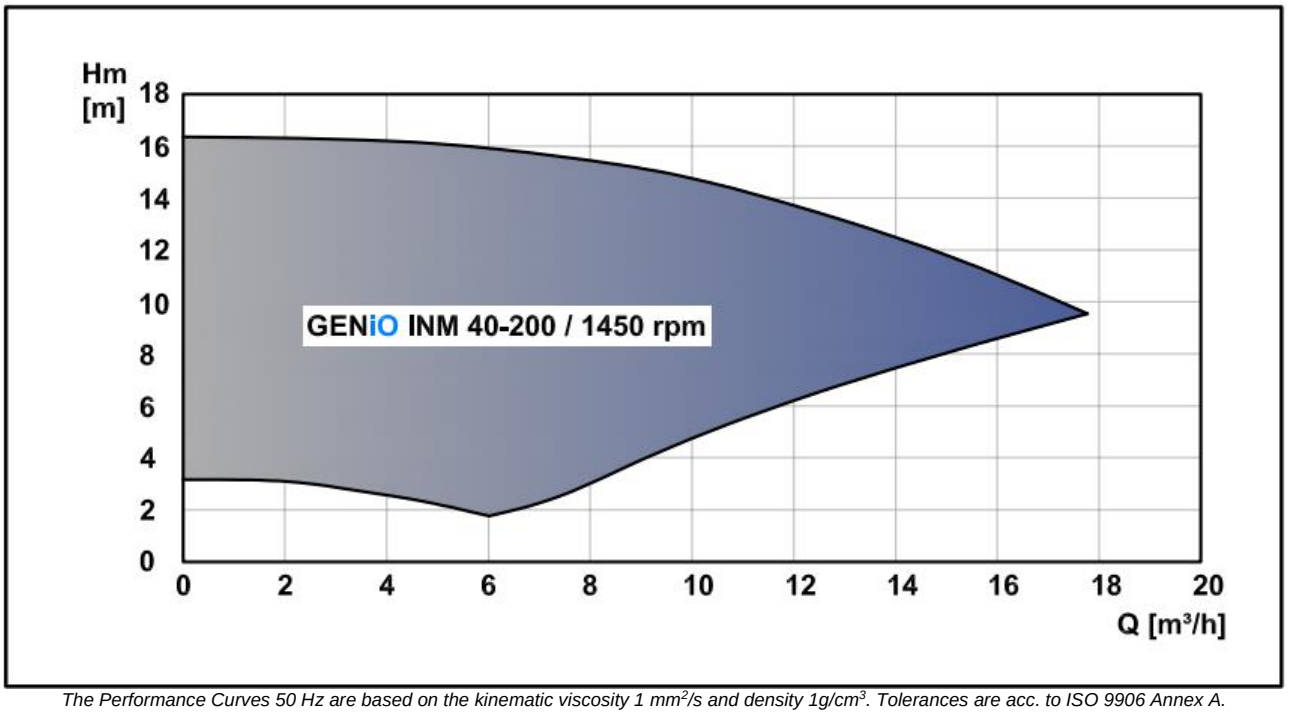




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

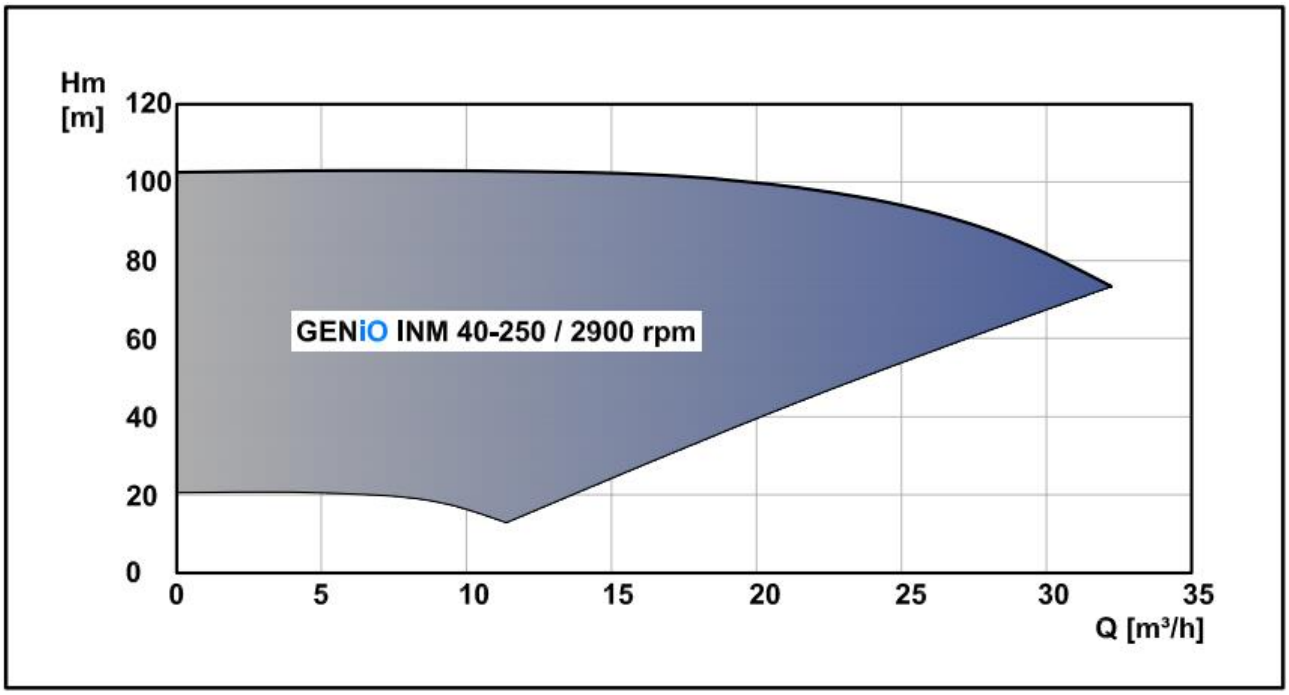
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

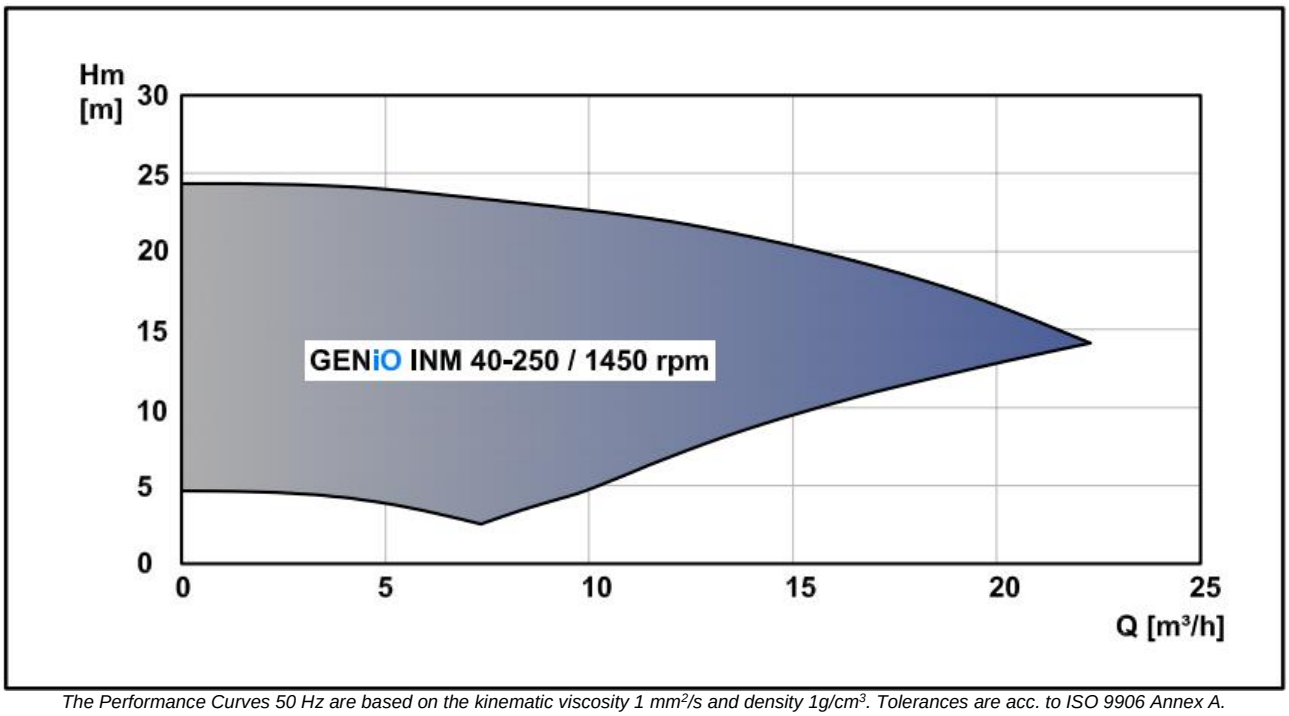




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

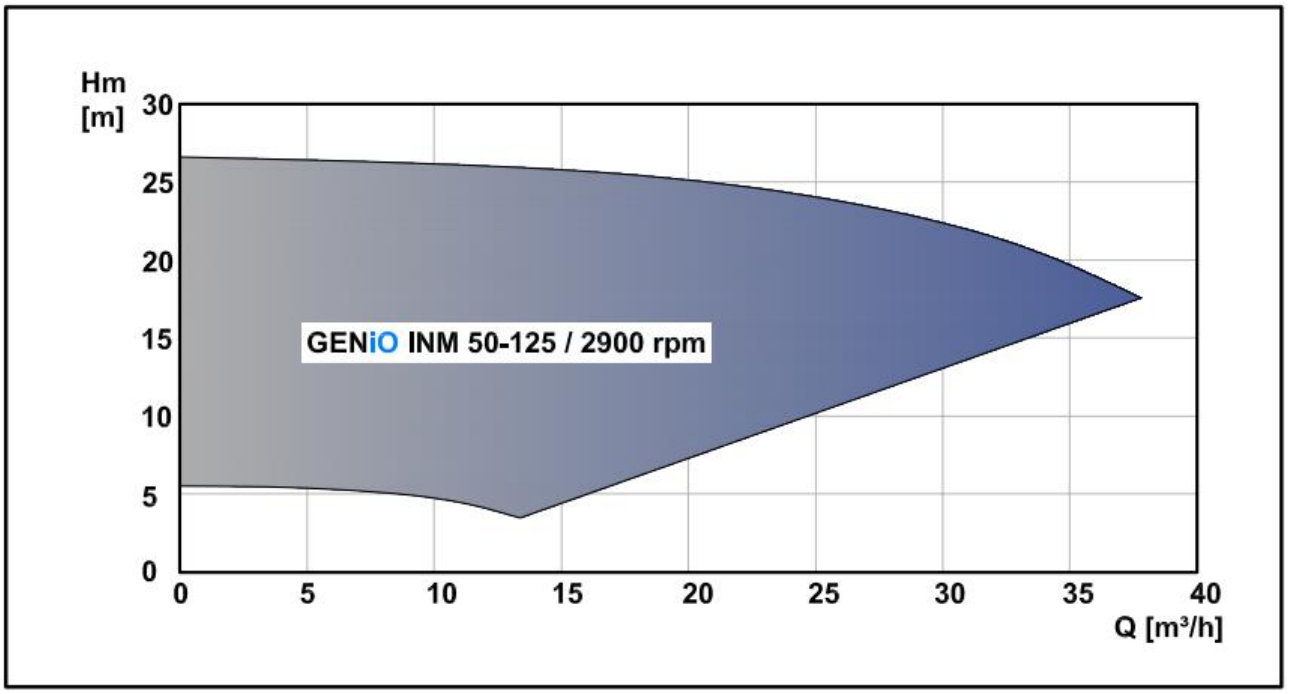
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

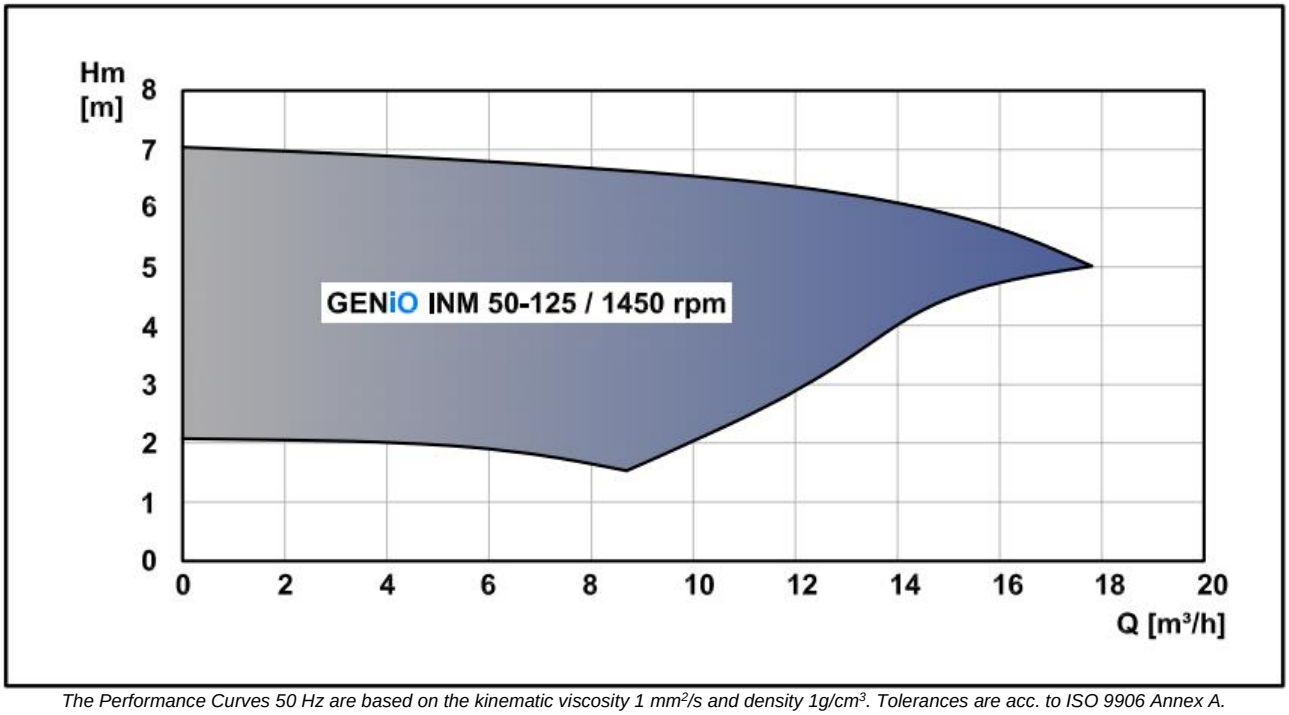




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

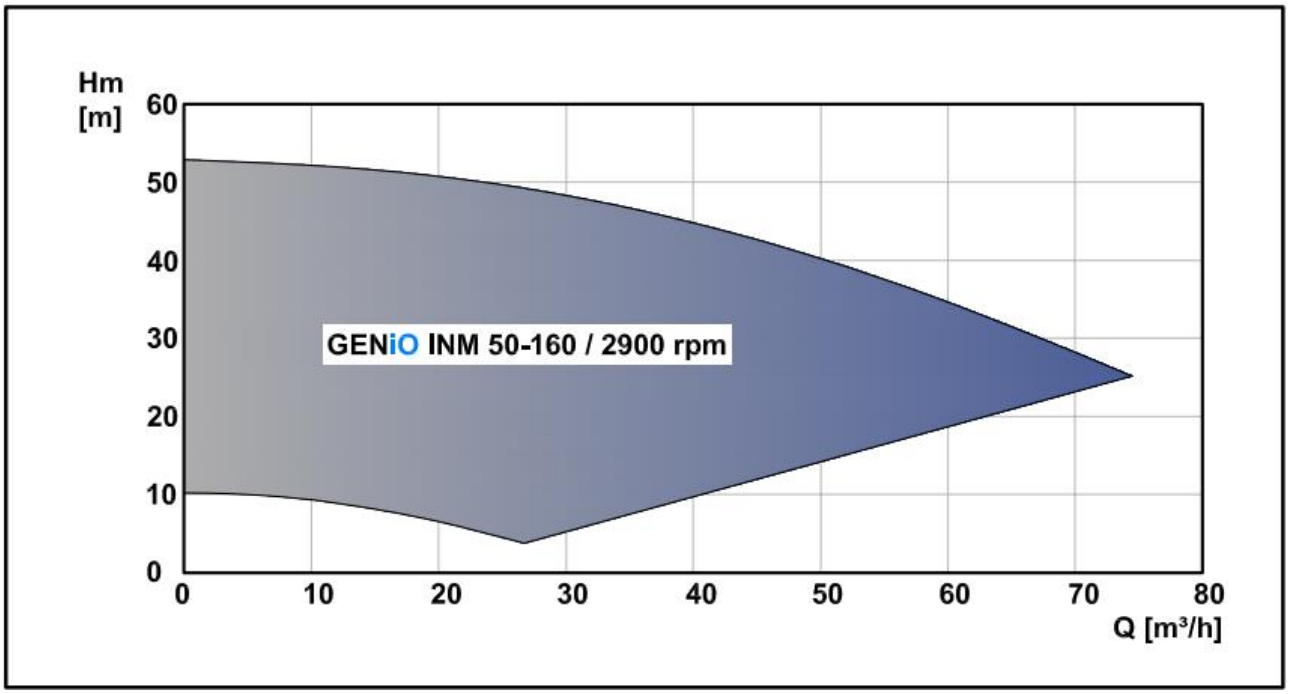
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

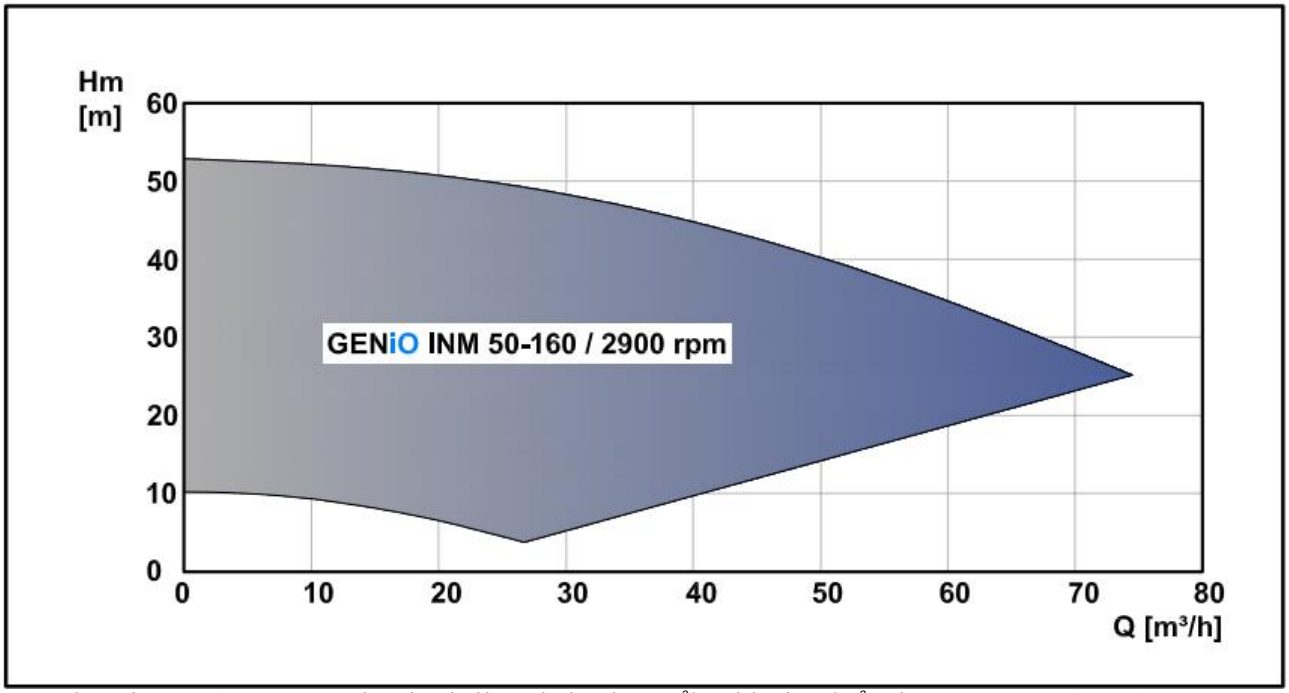




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

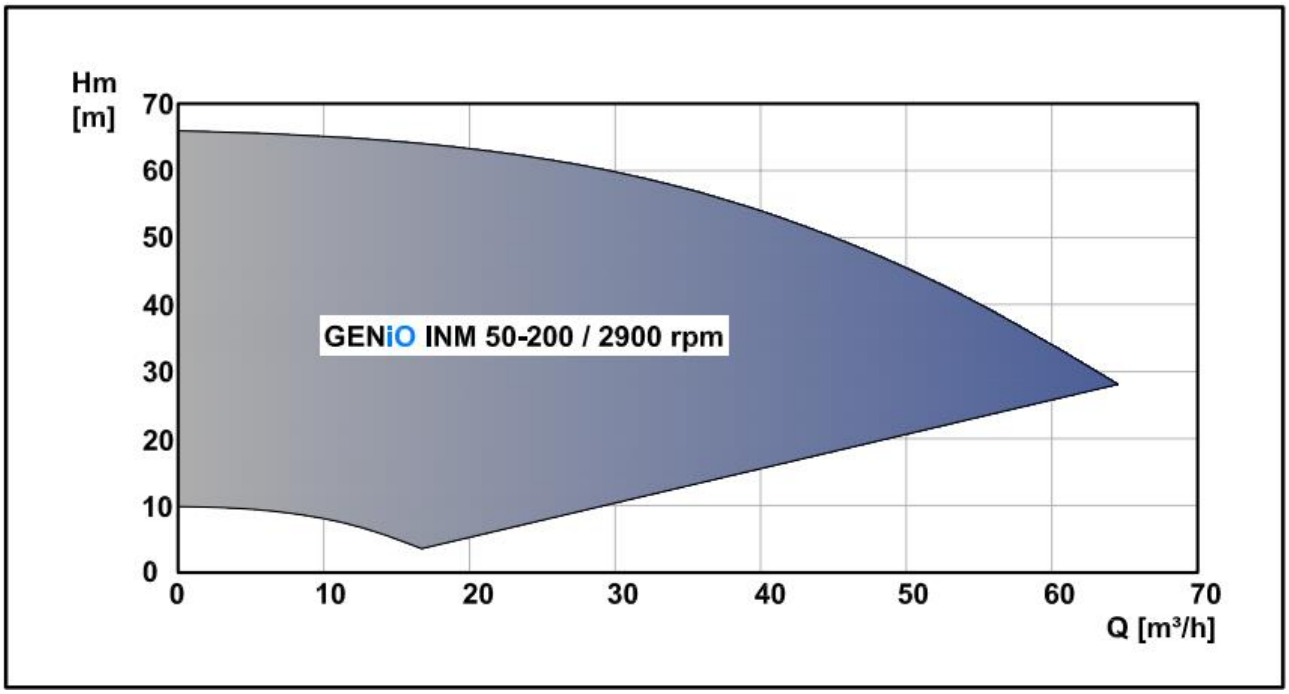
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

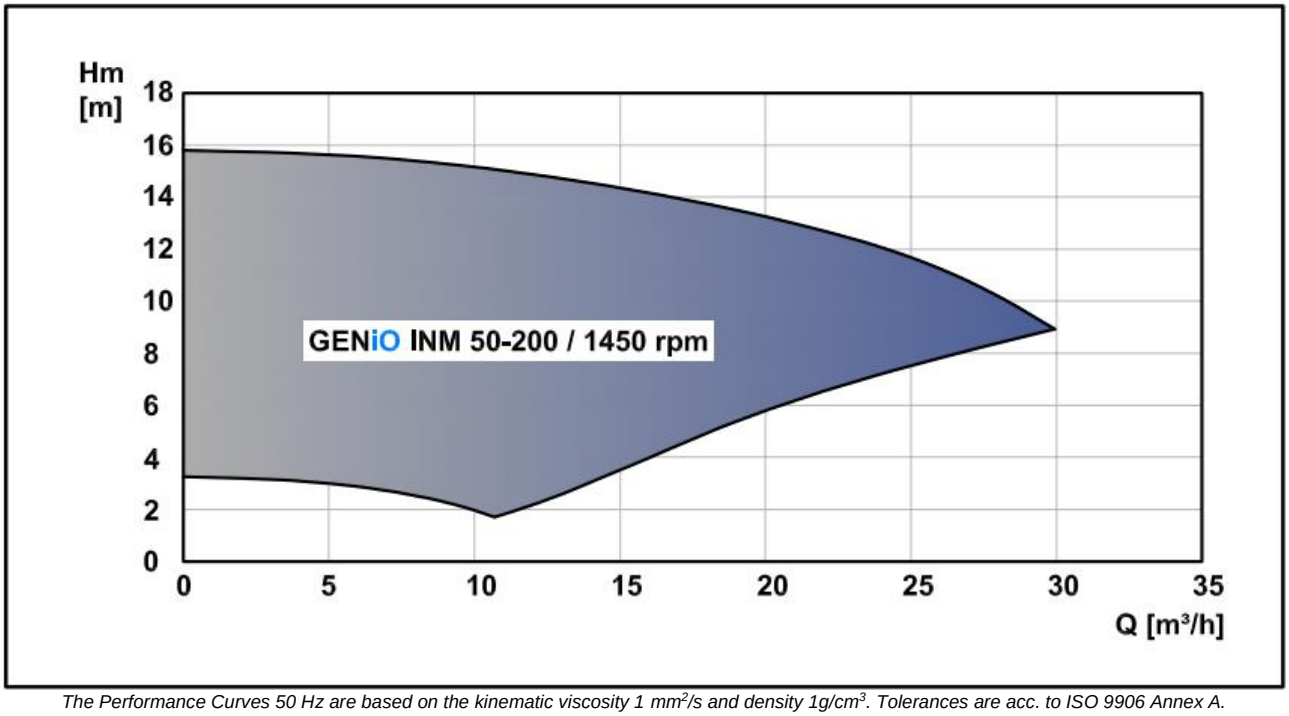




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

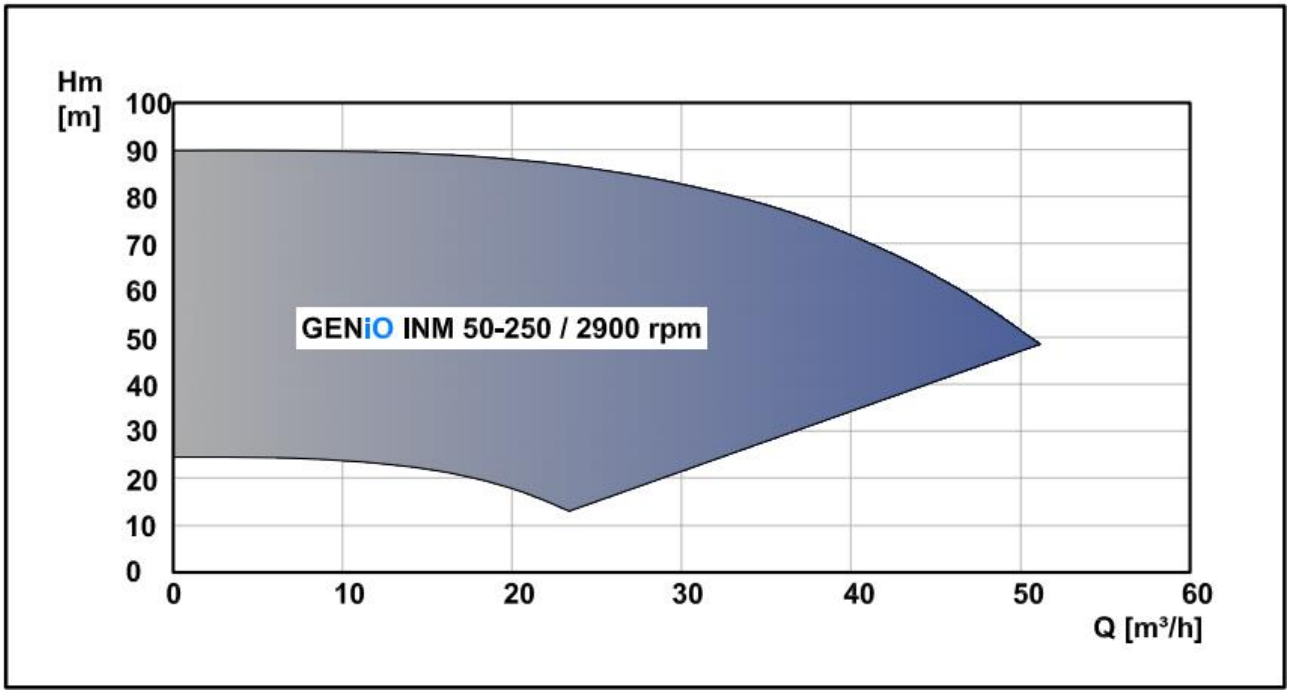
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

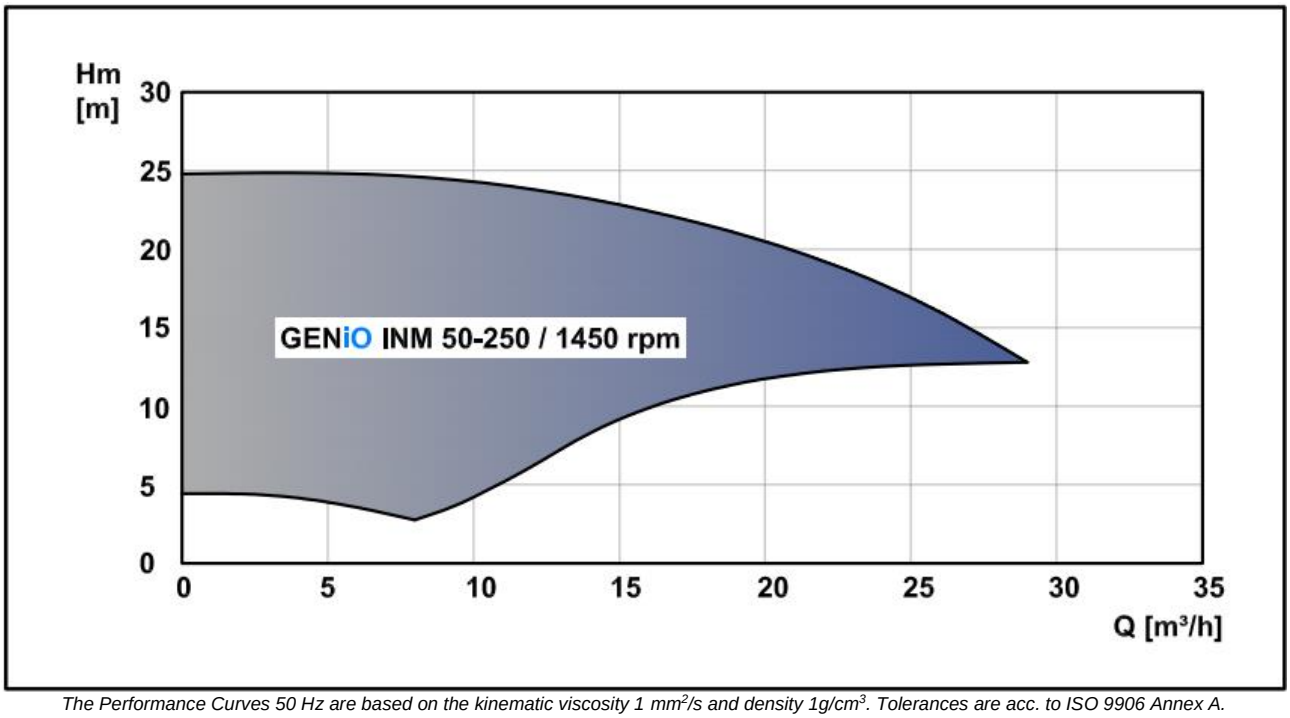




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

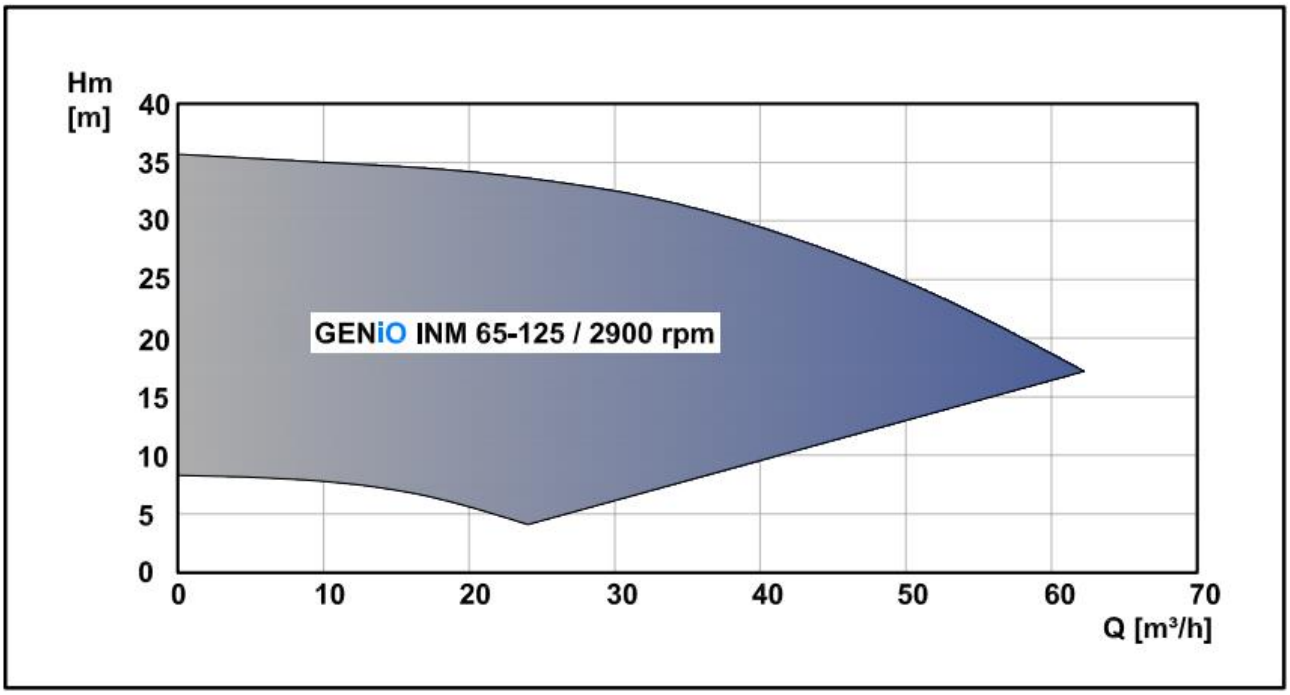
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

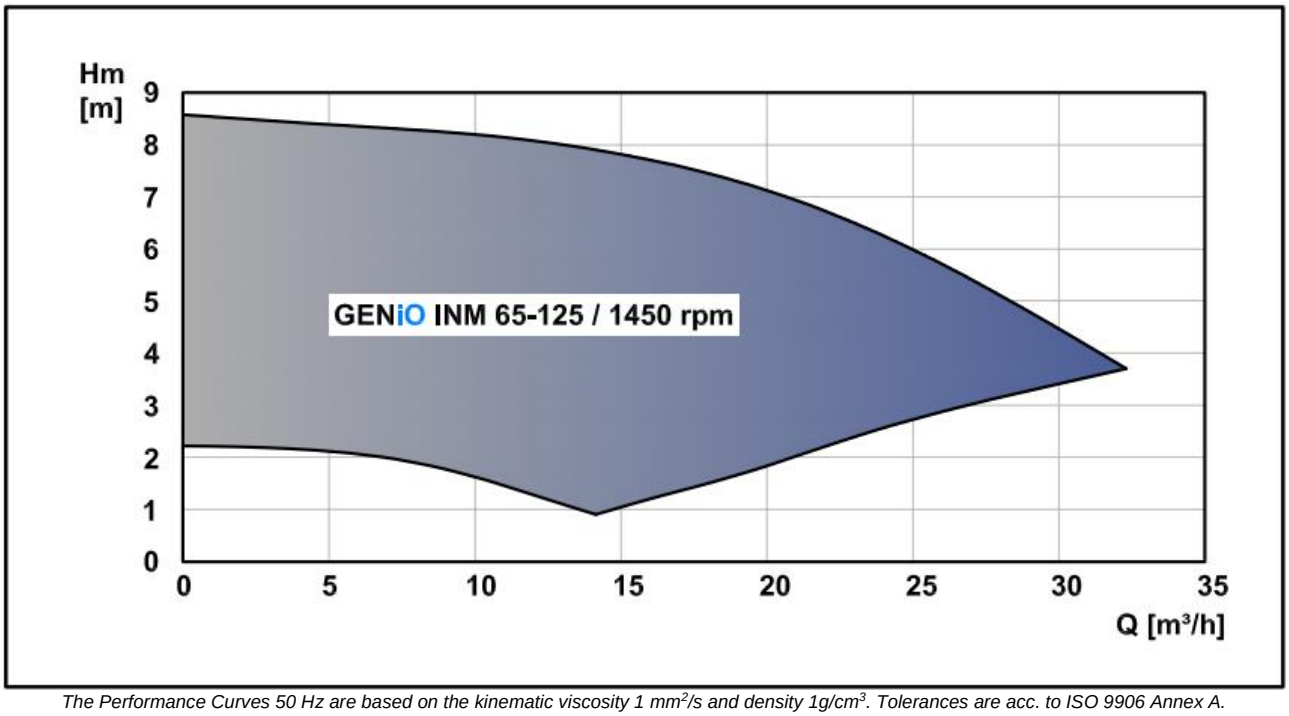




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

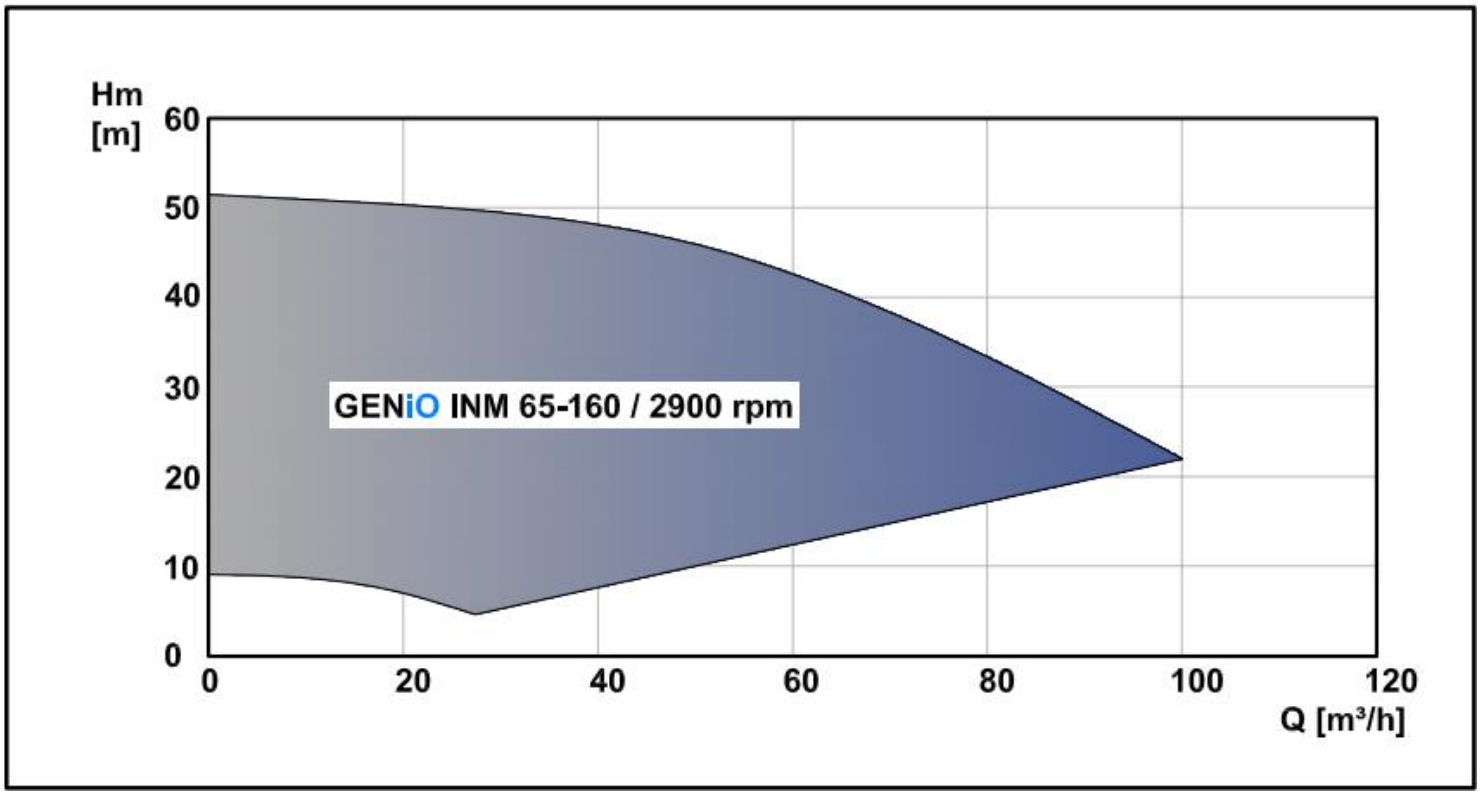
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

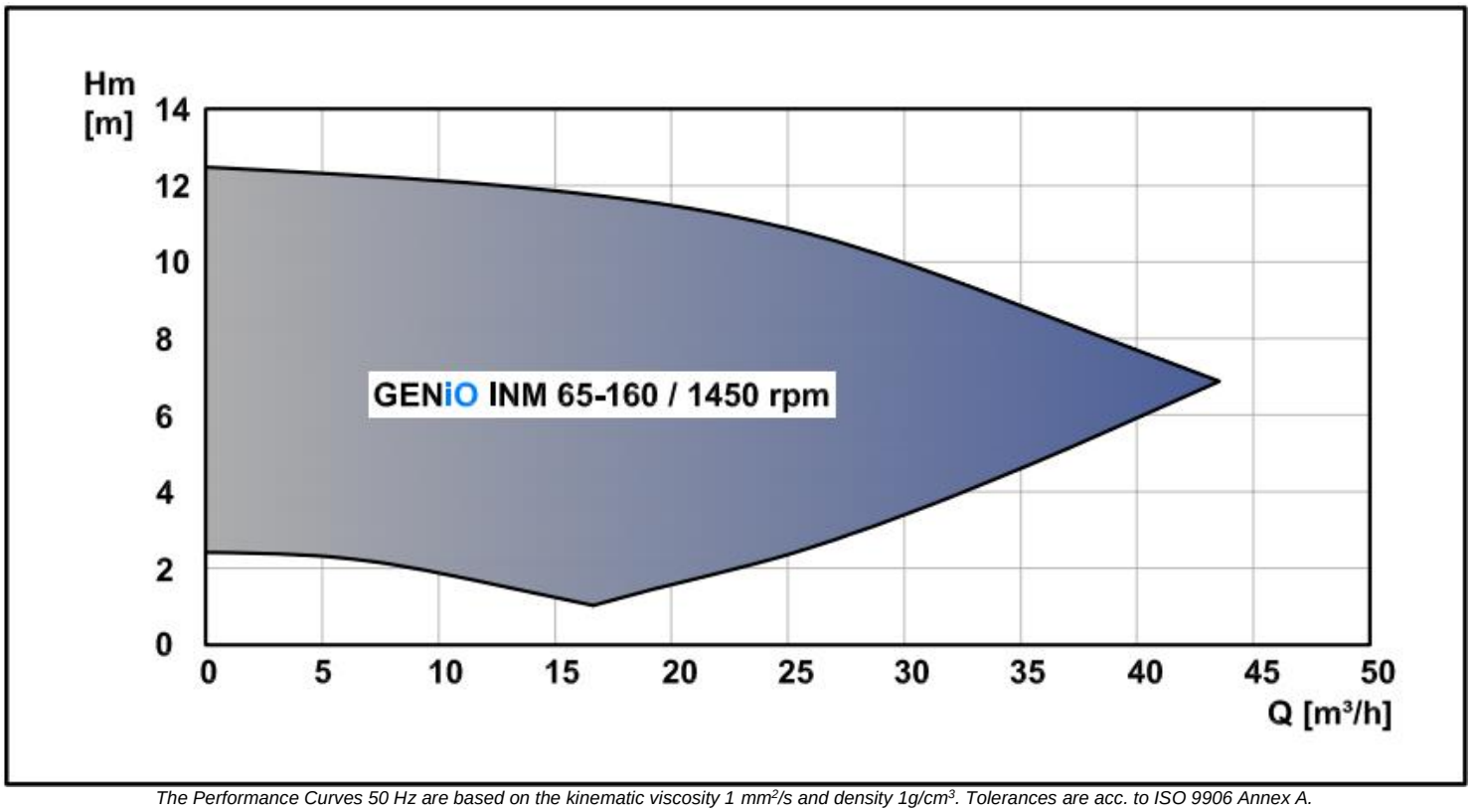




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

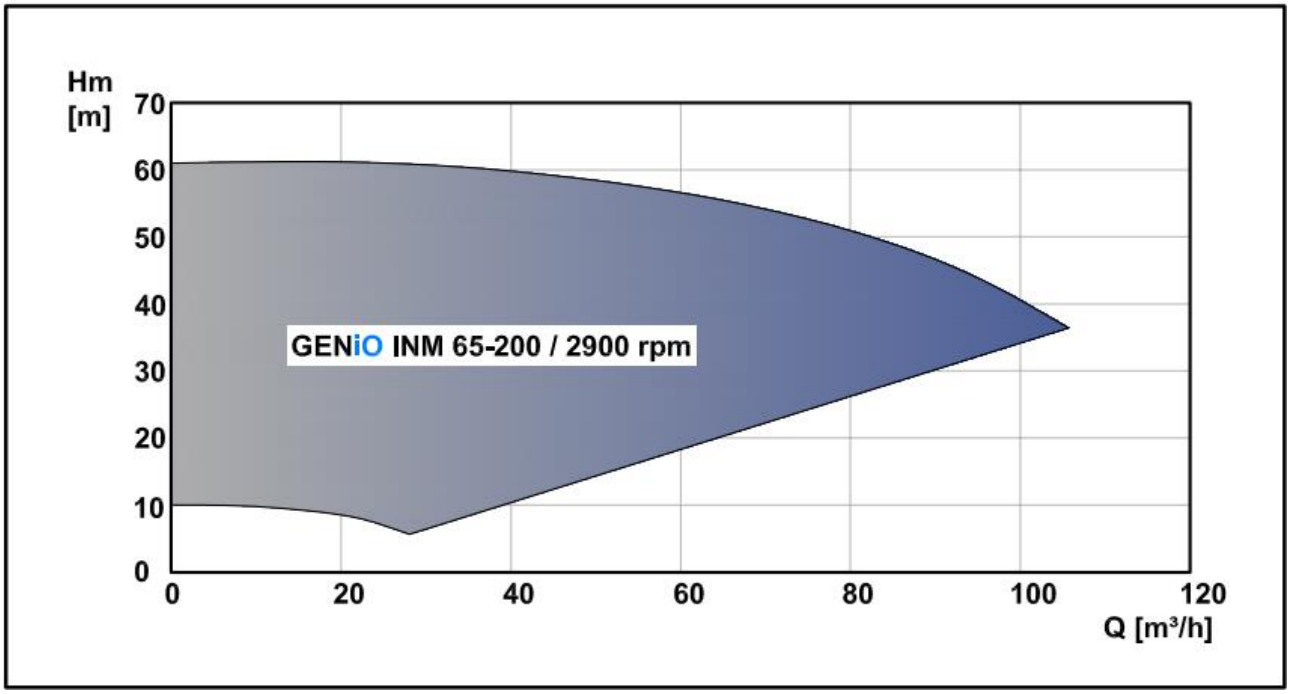
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

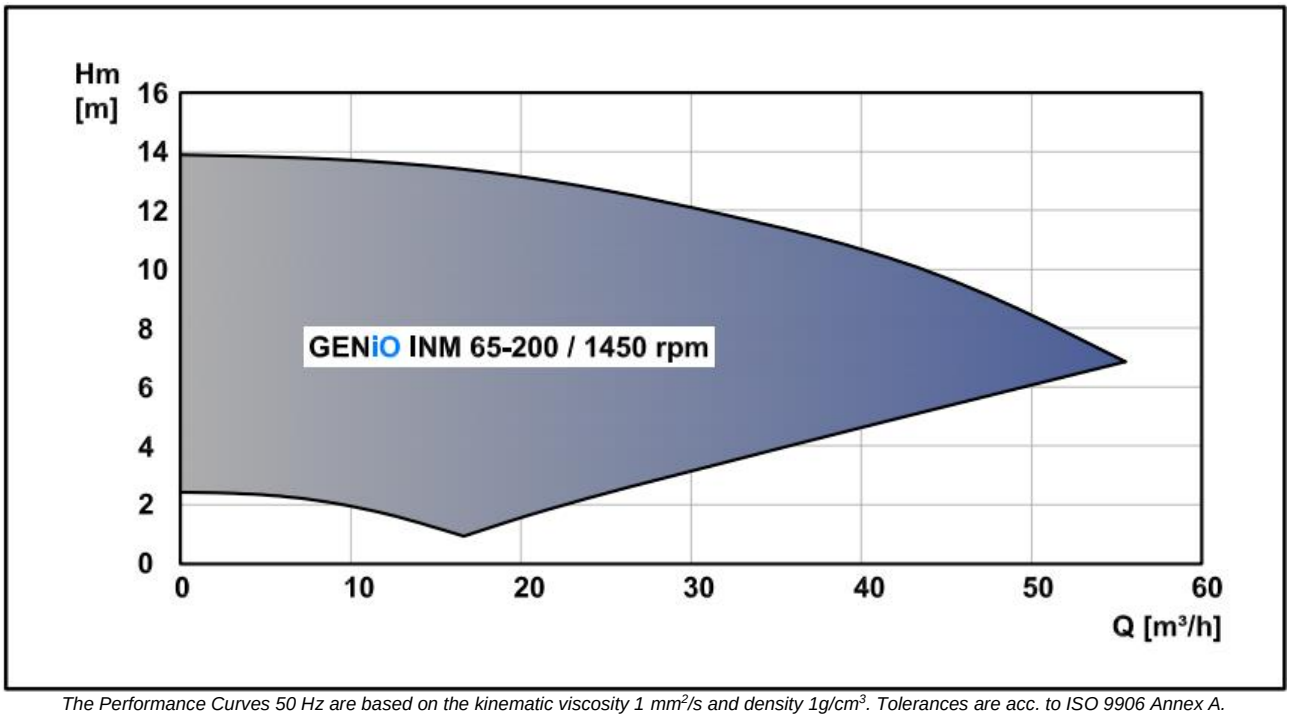




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

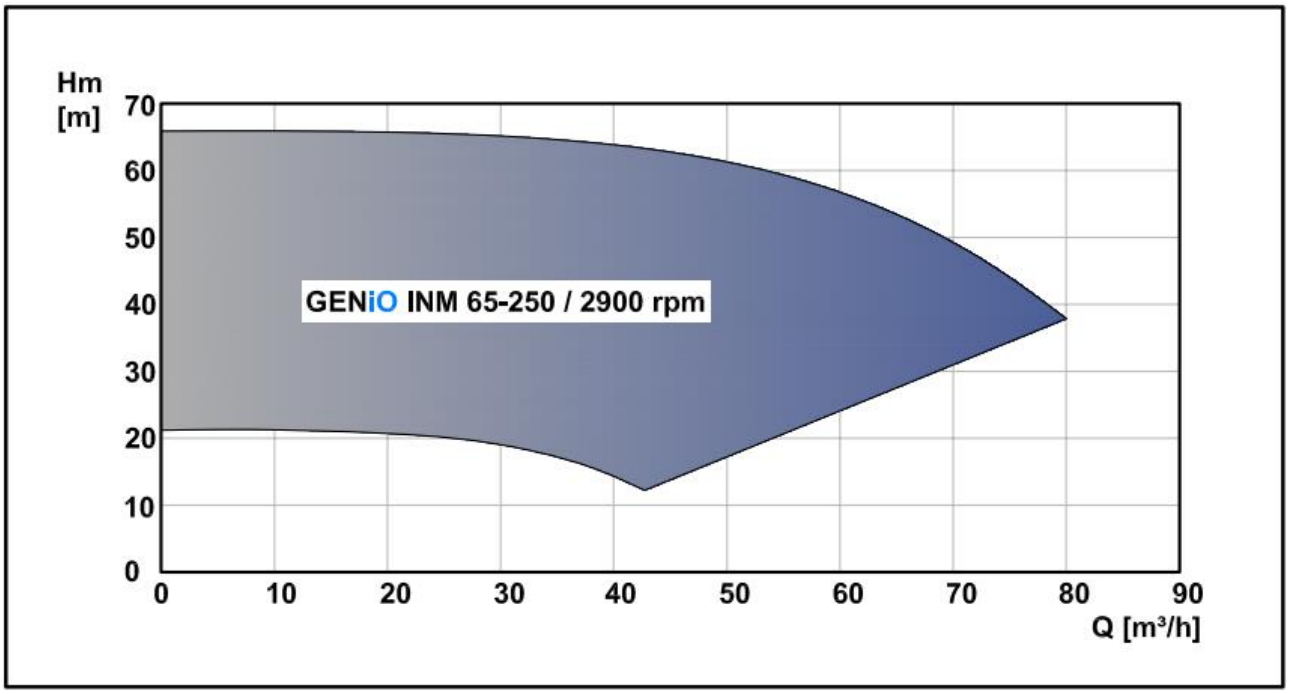
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

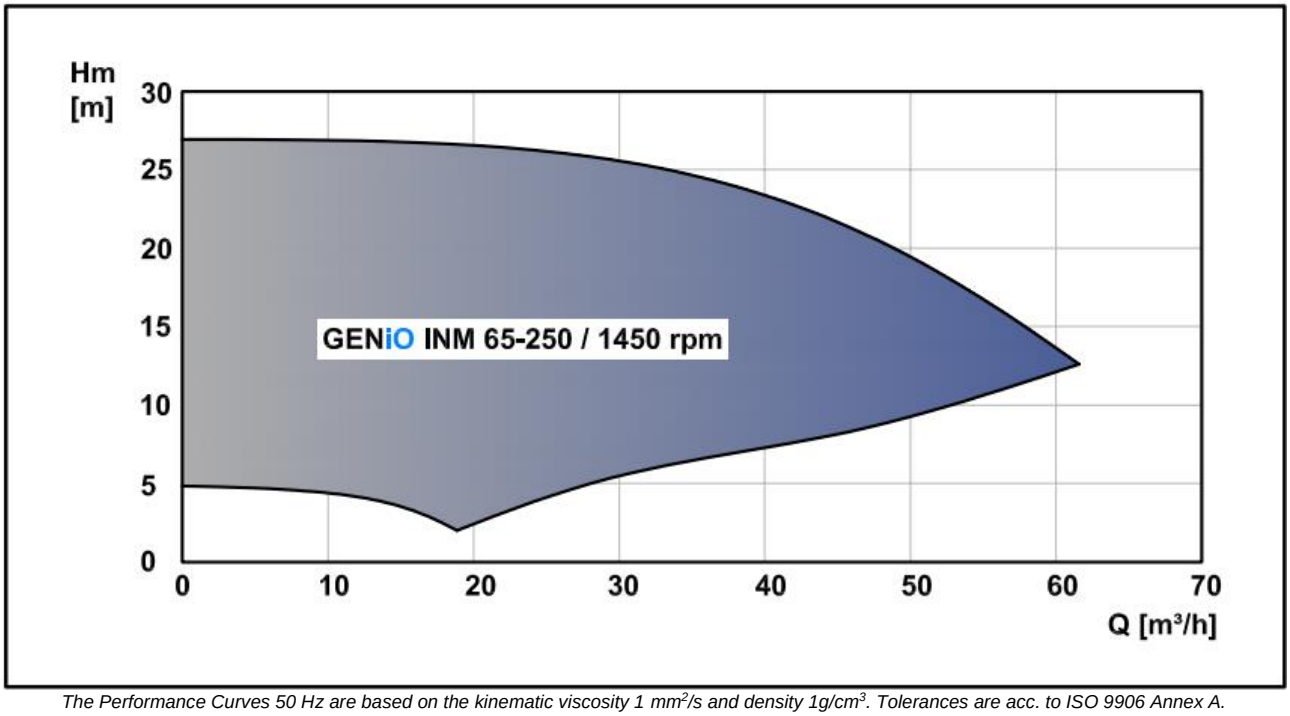




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

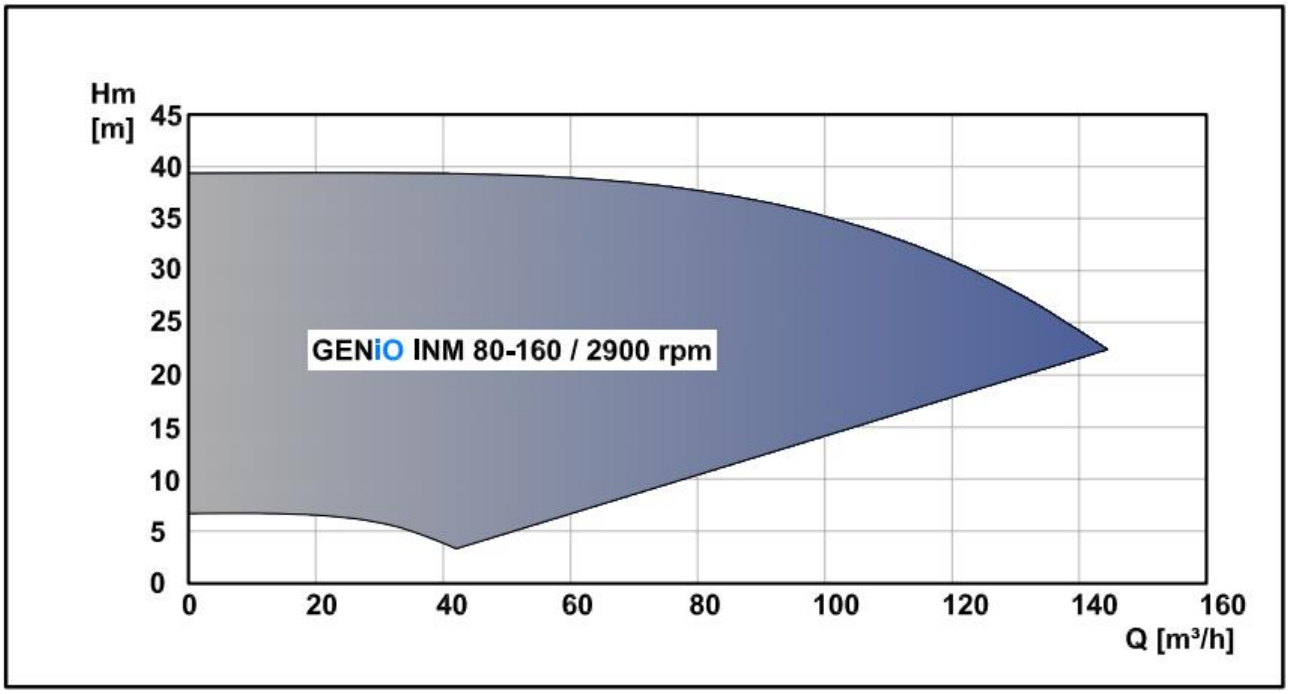
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

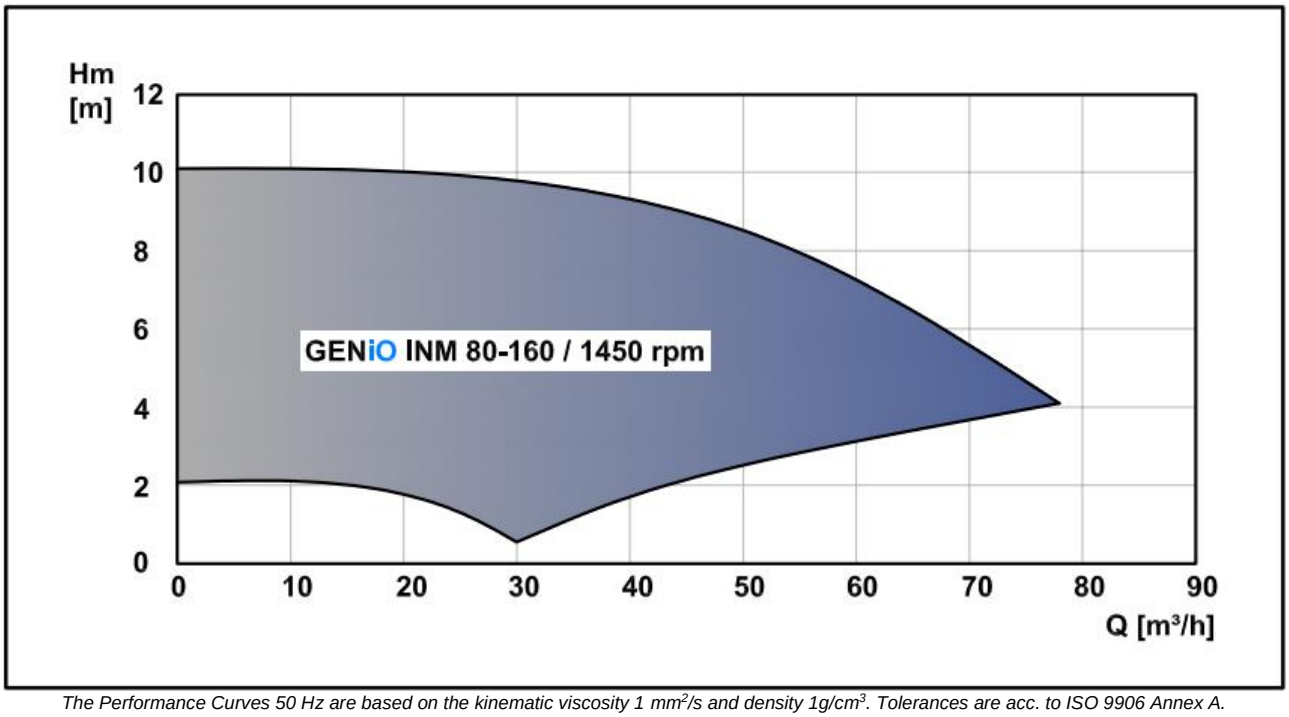




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

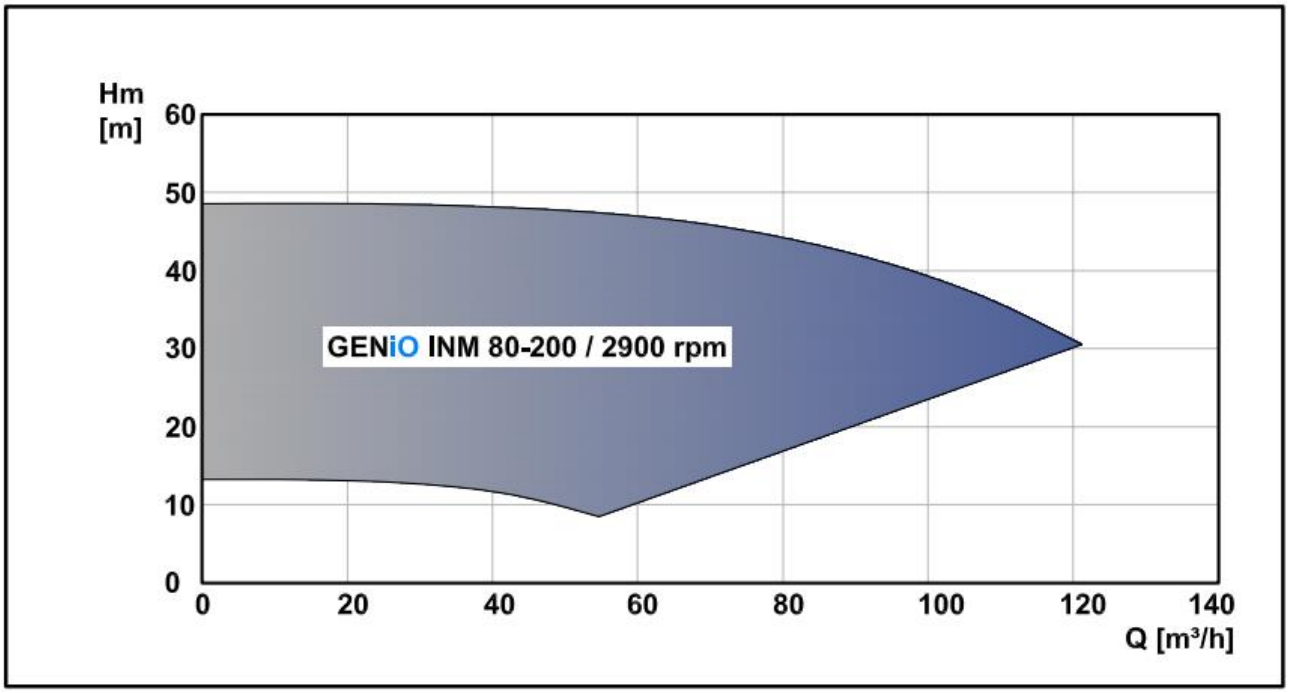
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

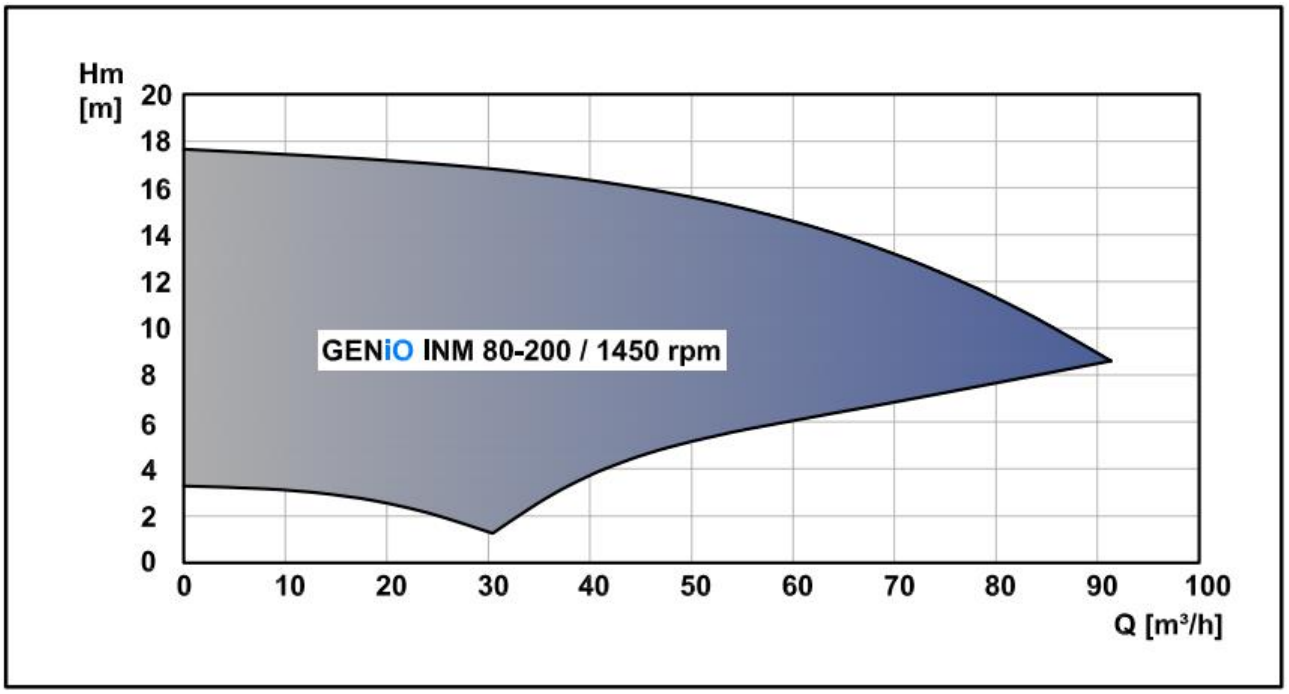




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

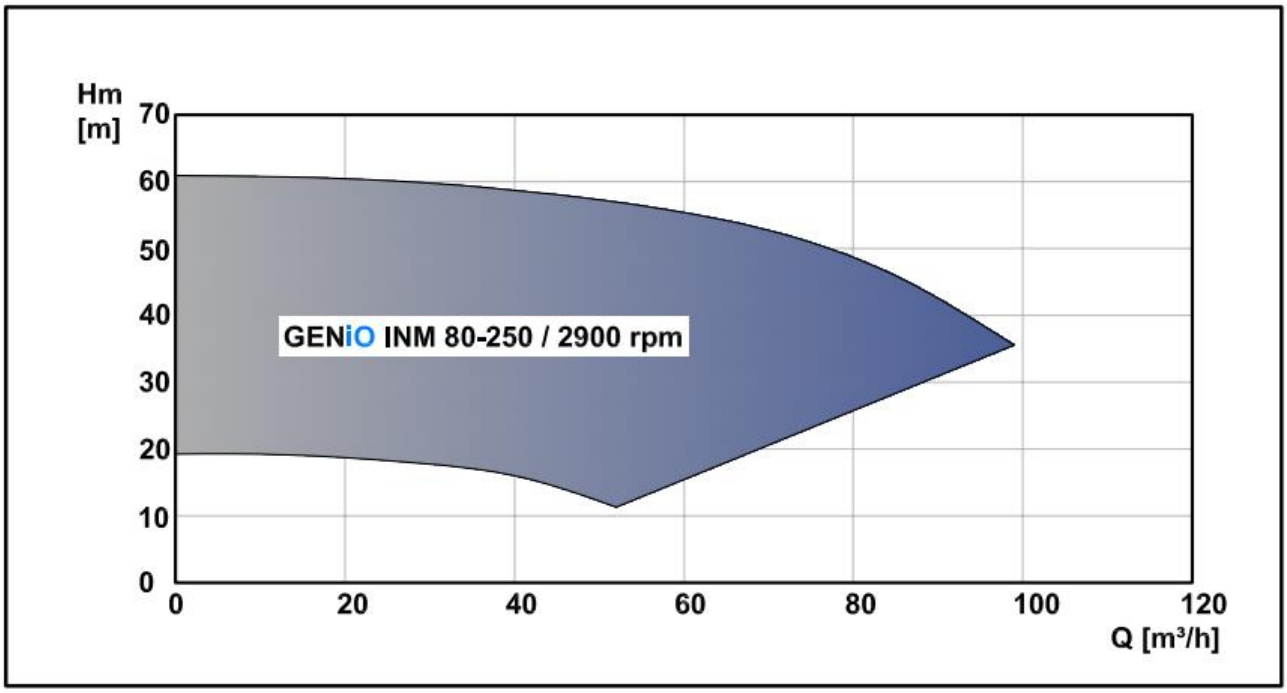
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

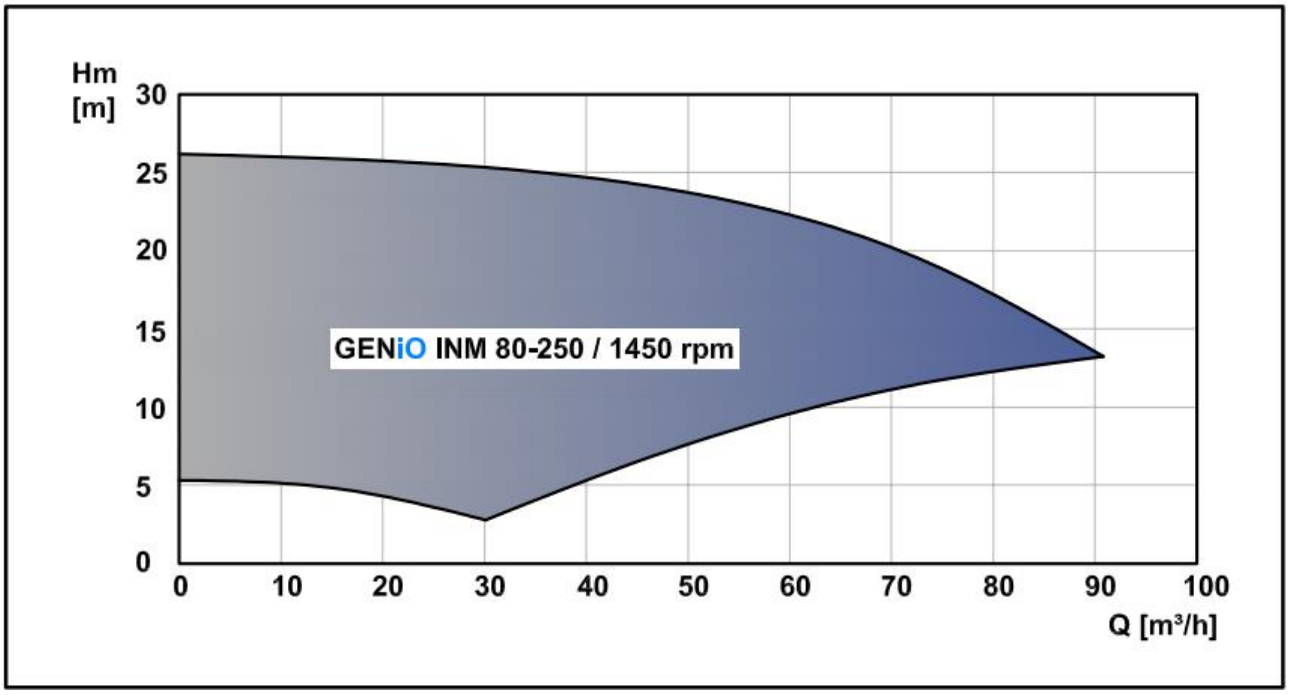




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

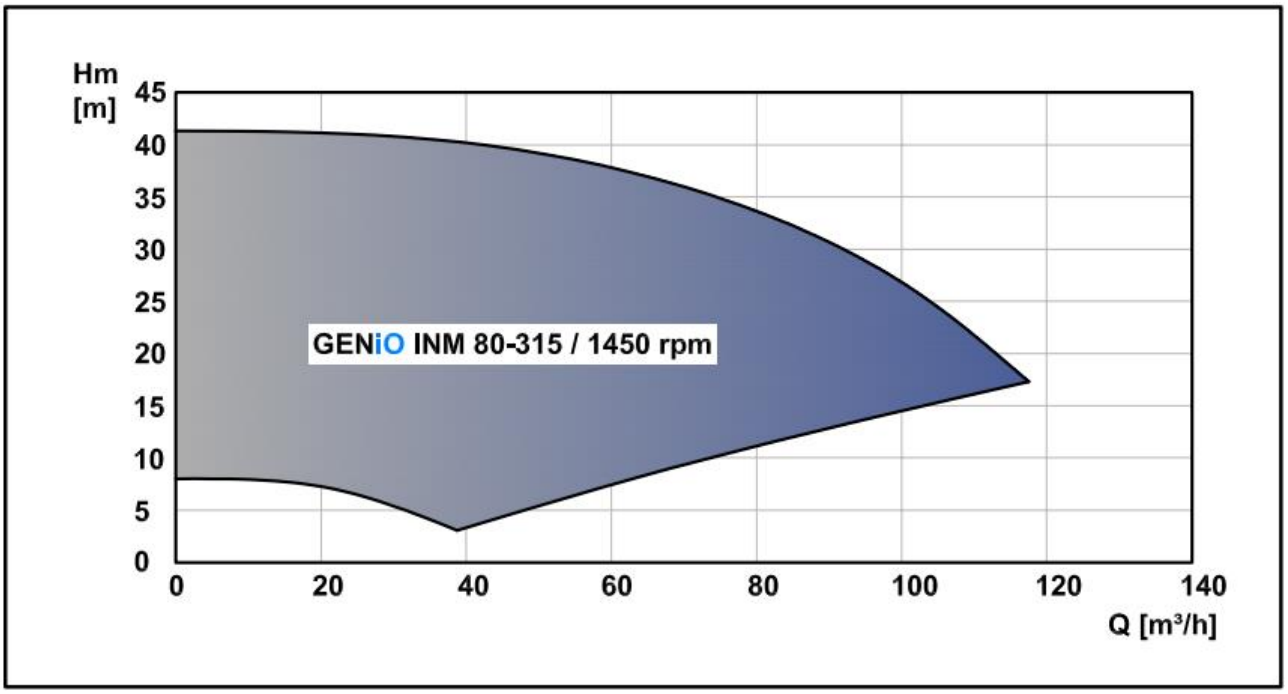
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

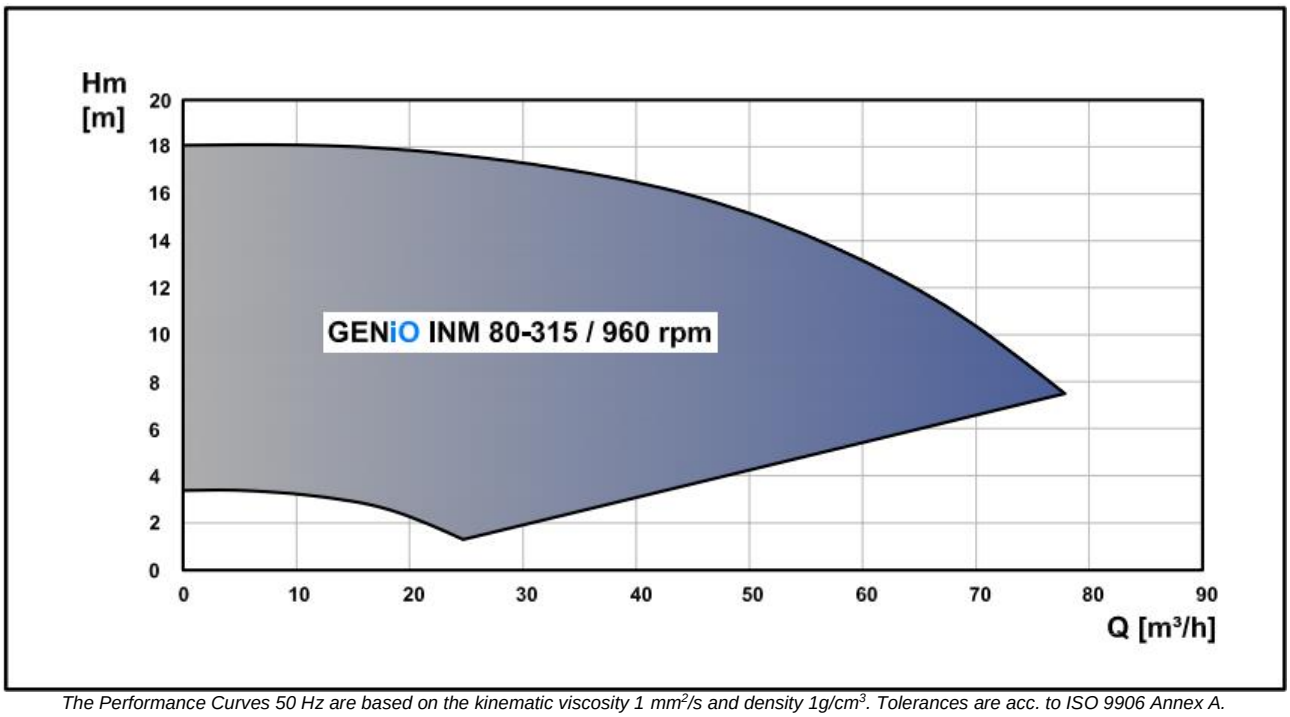




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

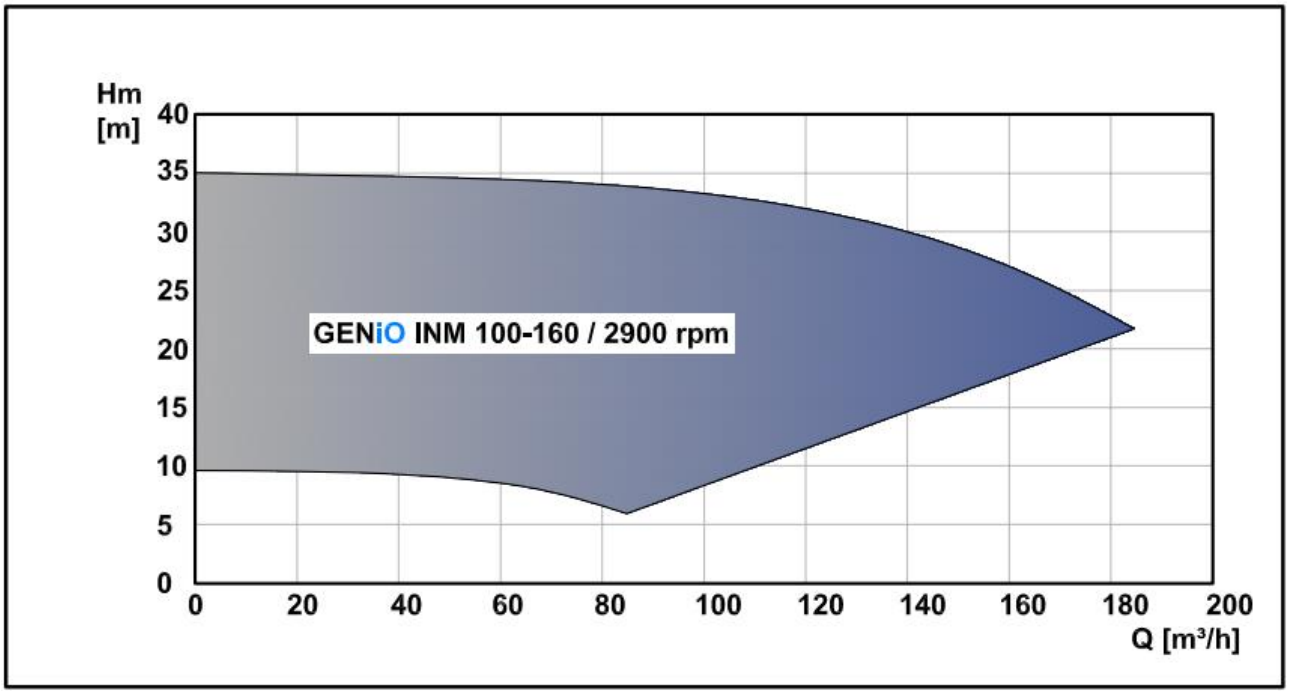
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

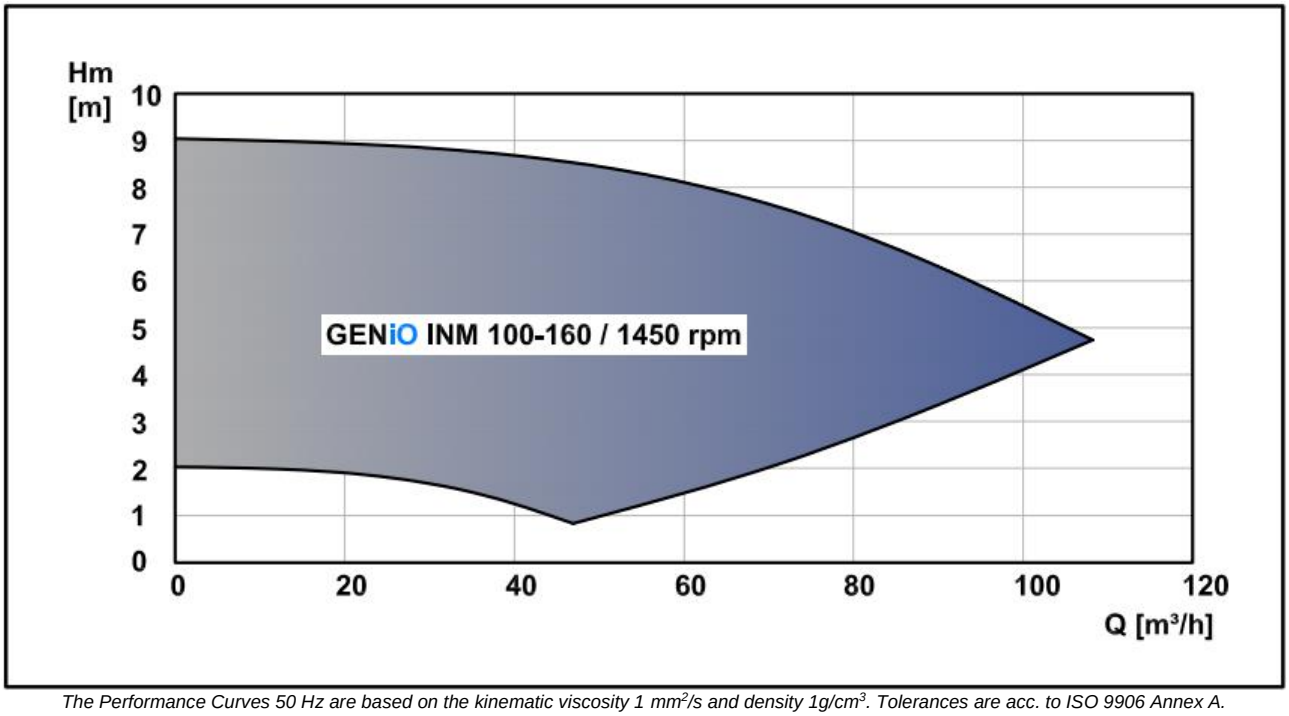




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

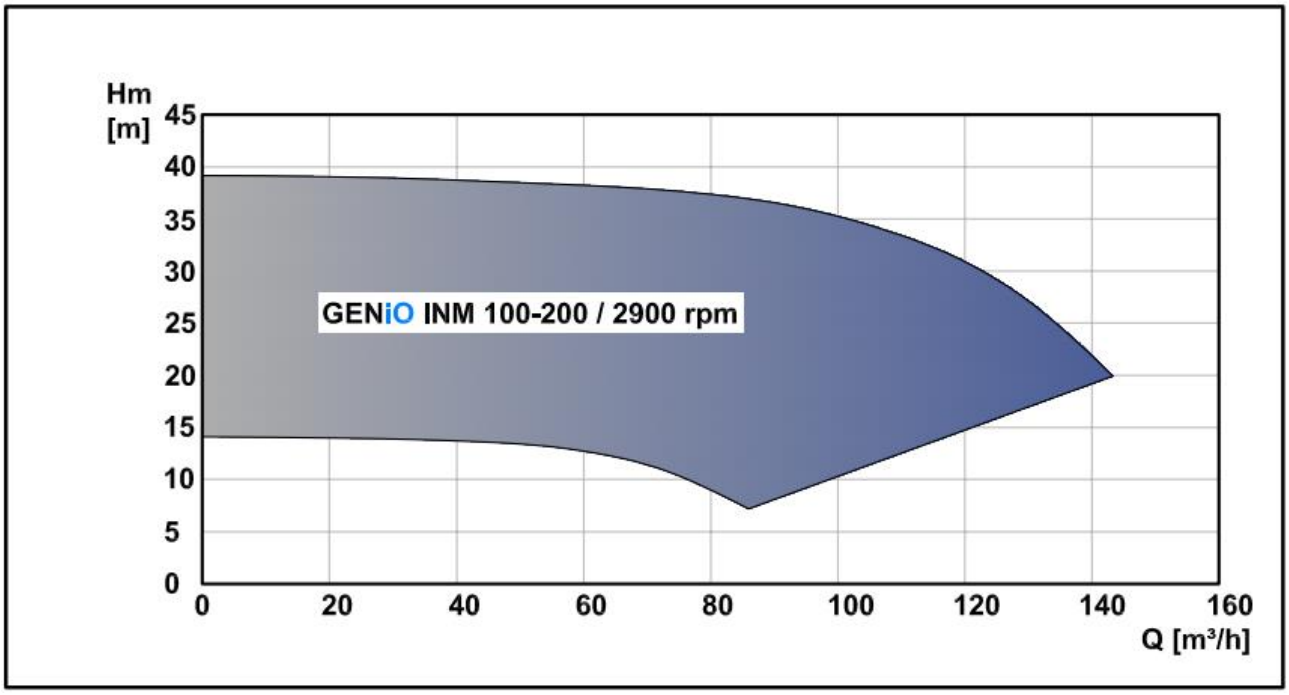
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

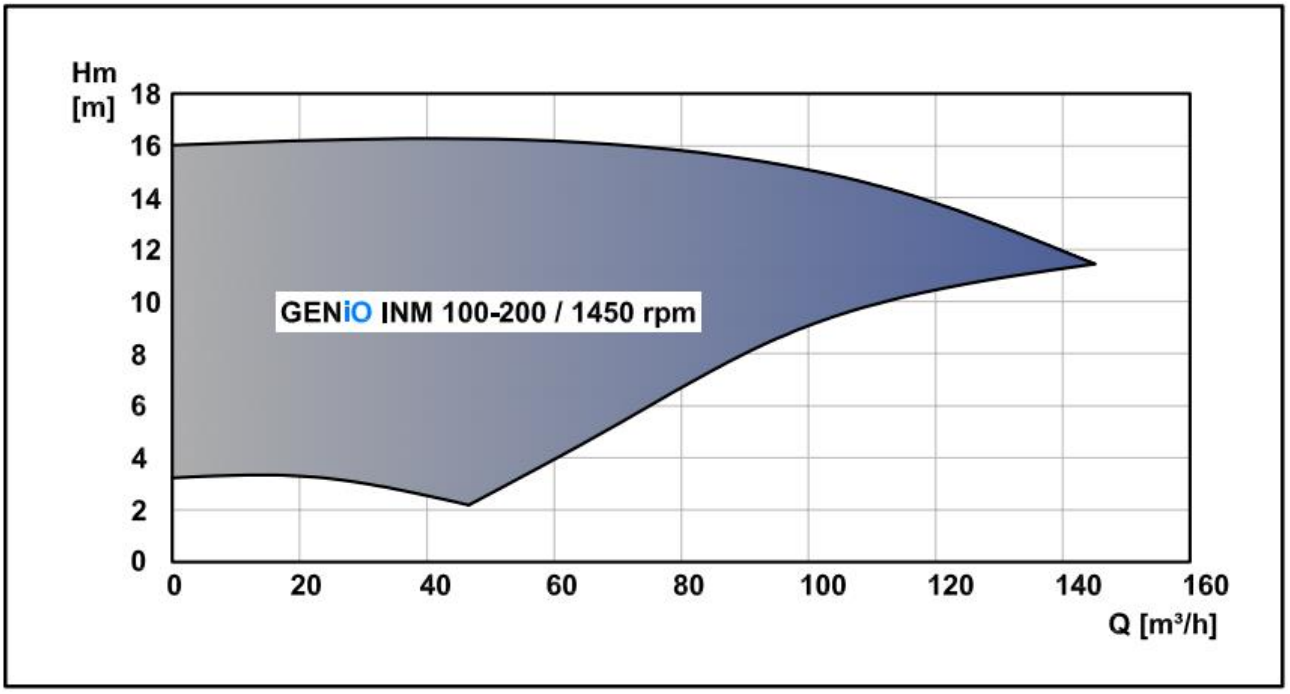




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

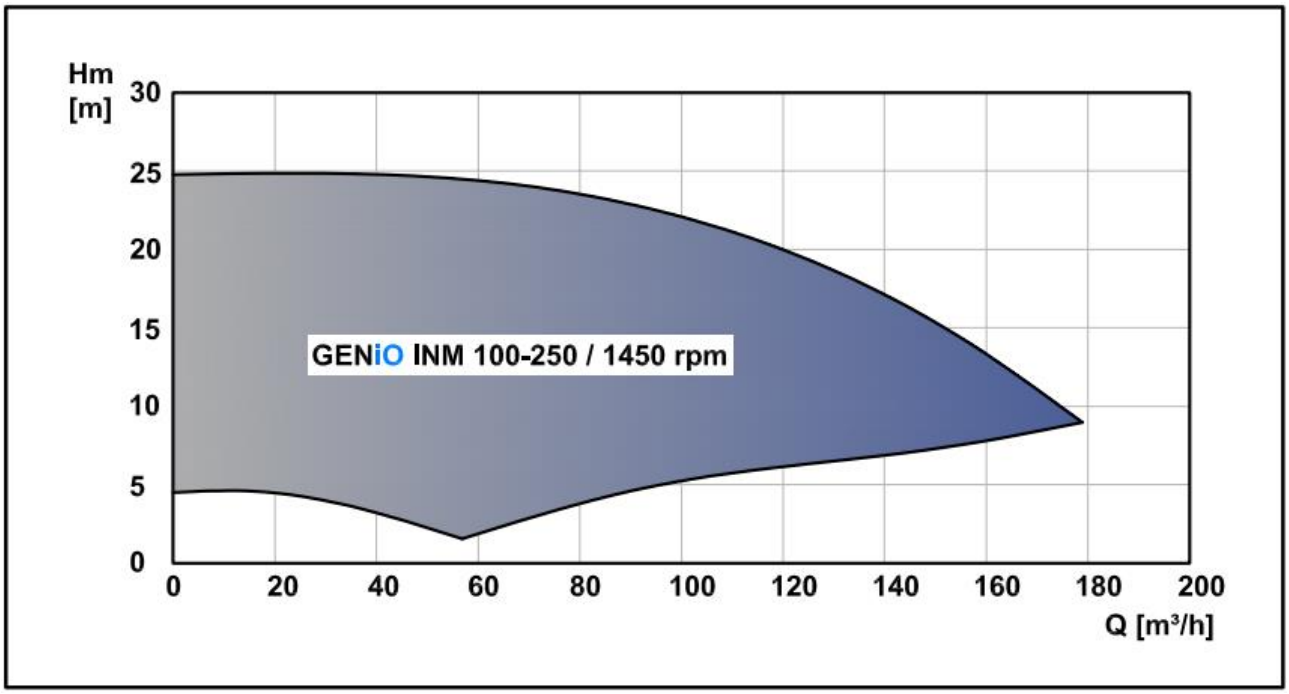
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

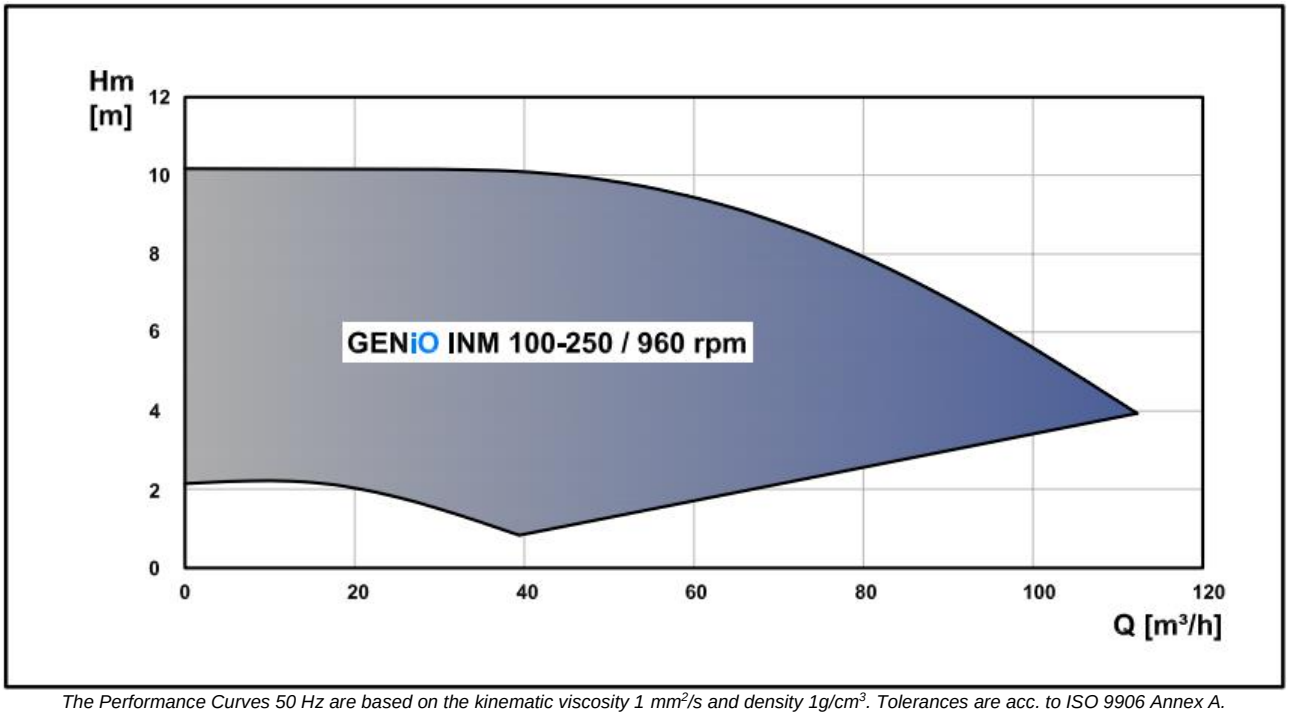




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

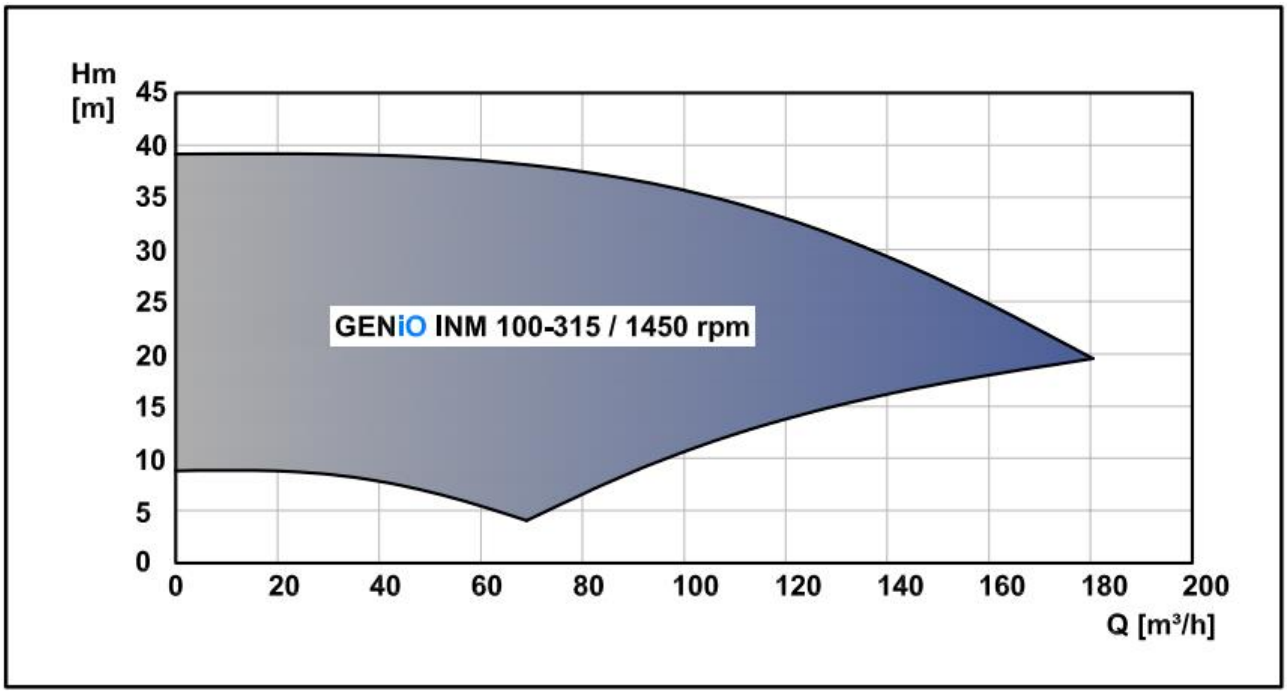
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

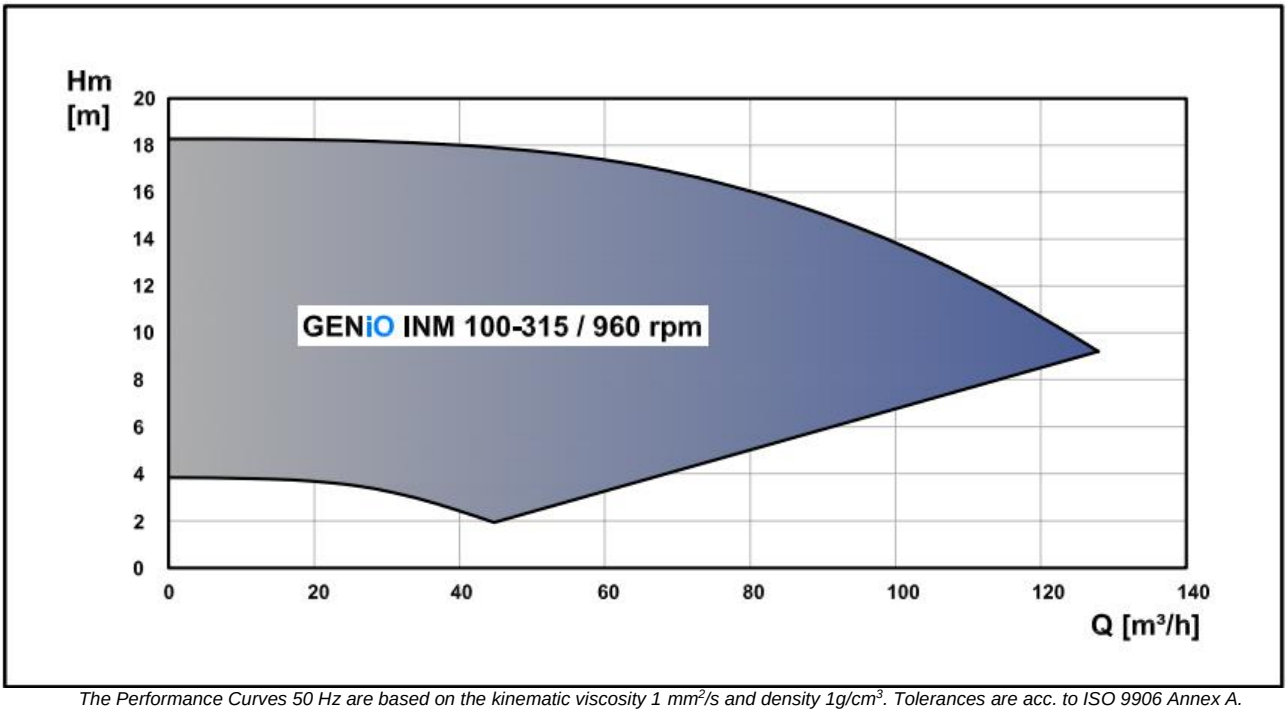




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

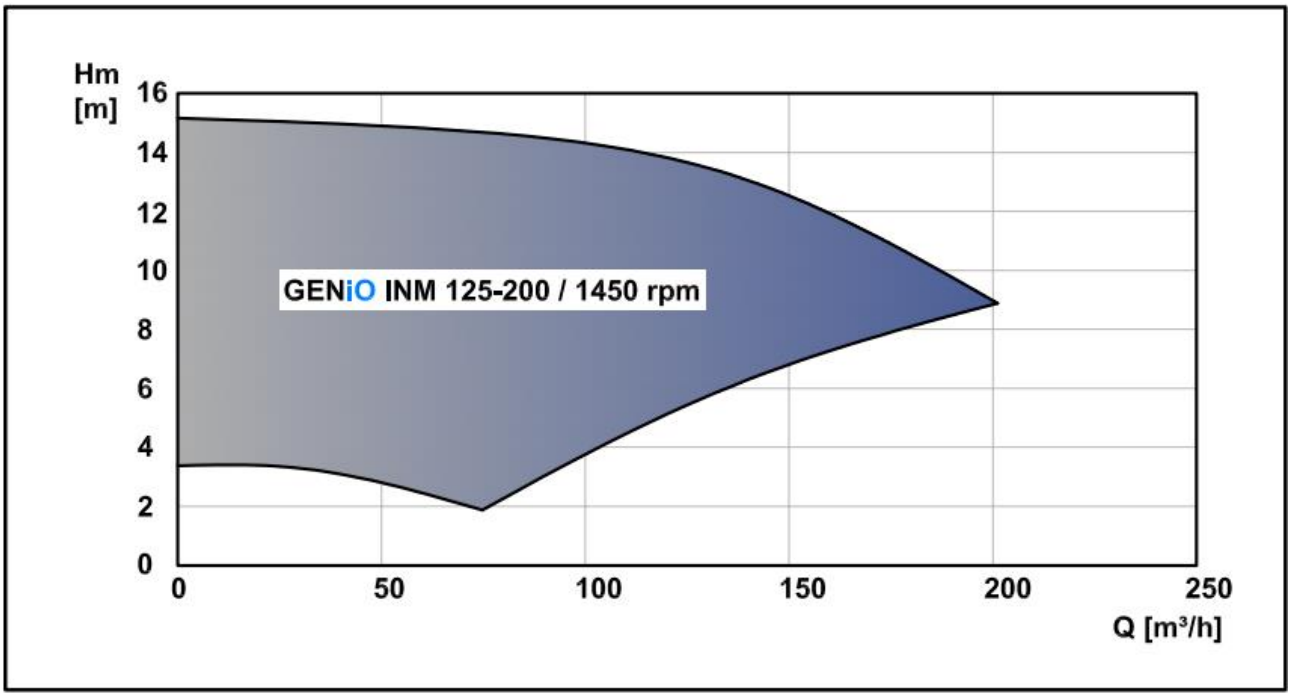
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

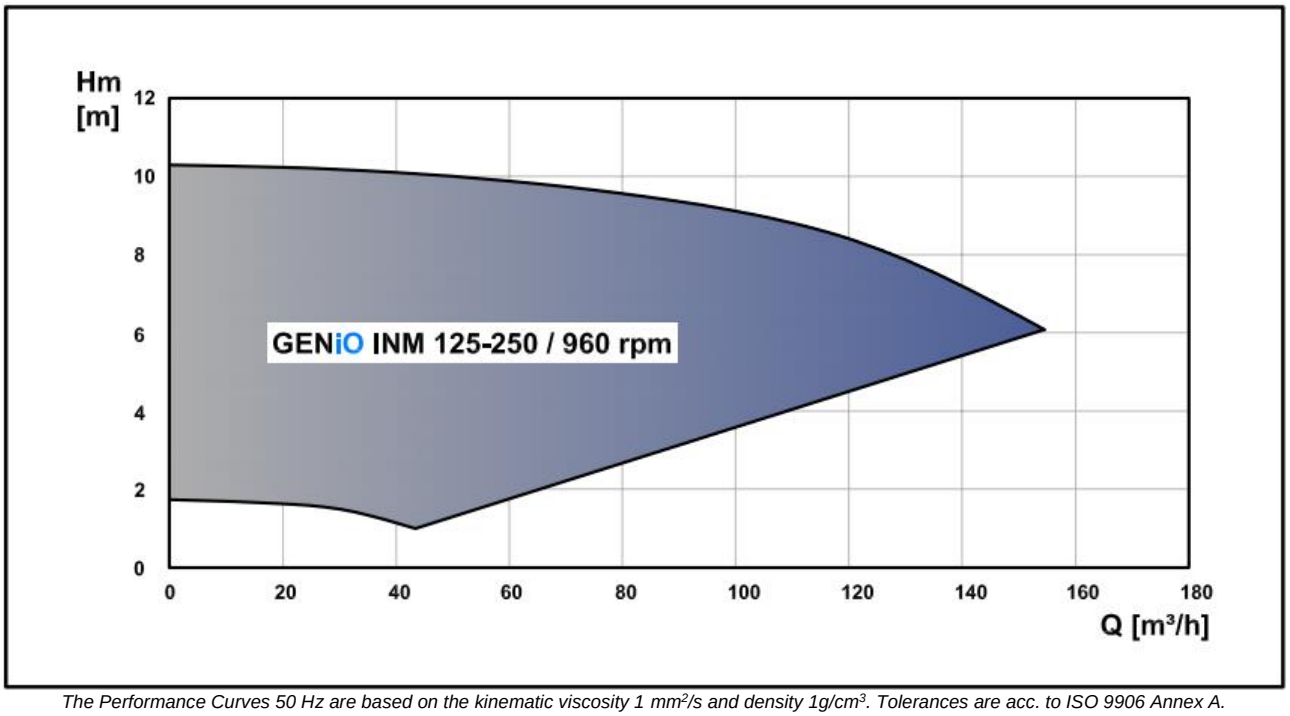




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

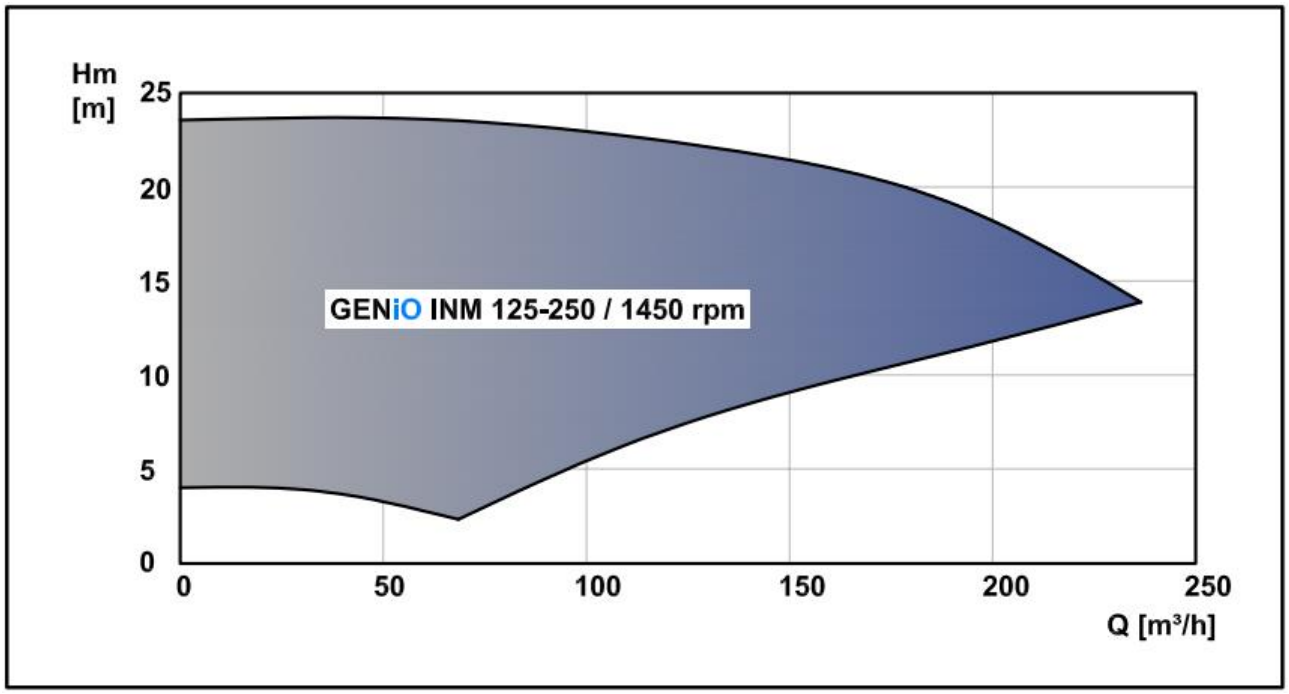
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.





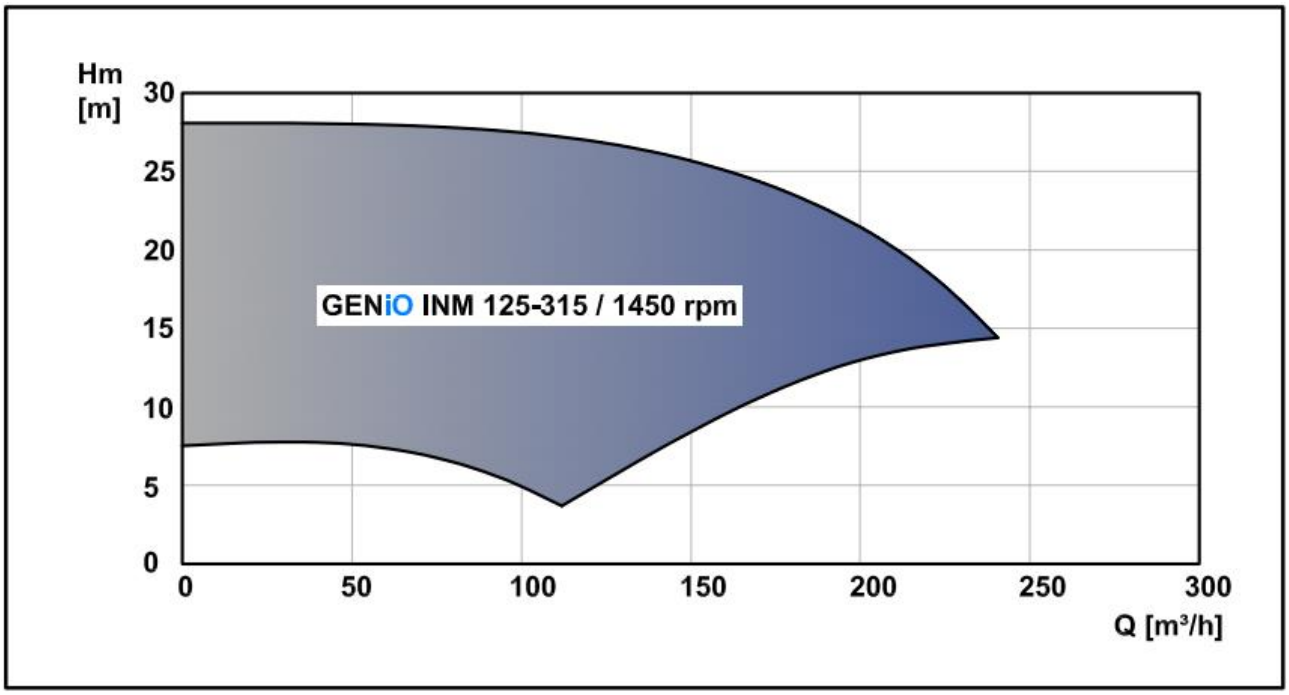
The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

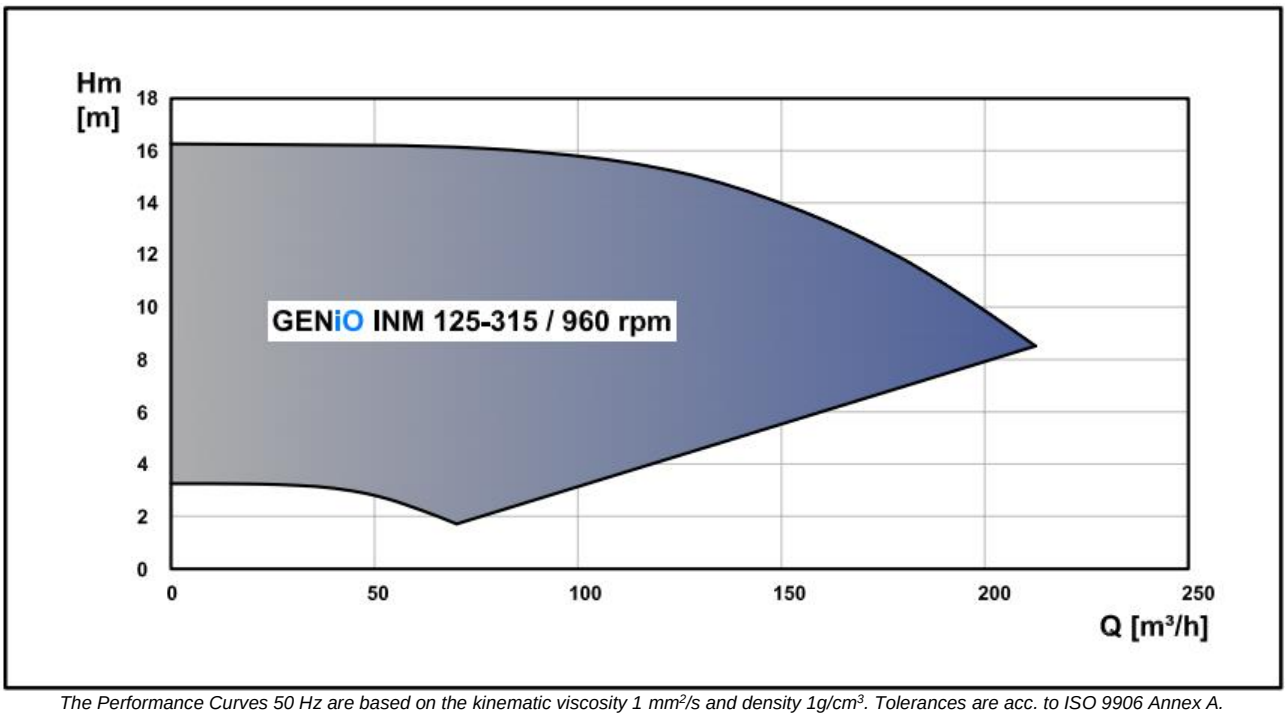
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.



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.

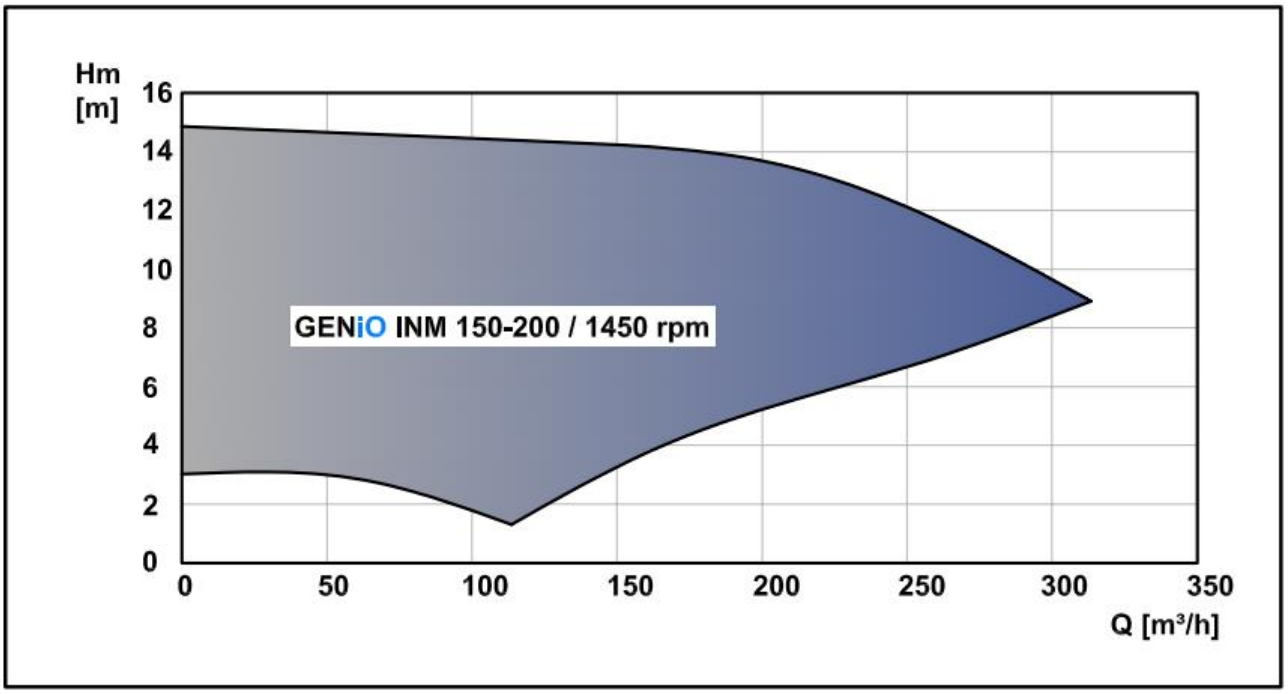
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

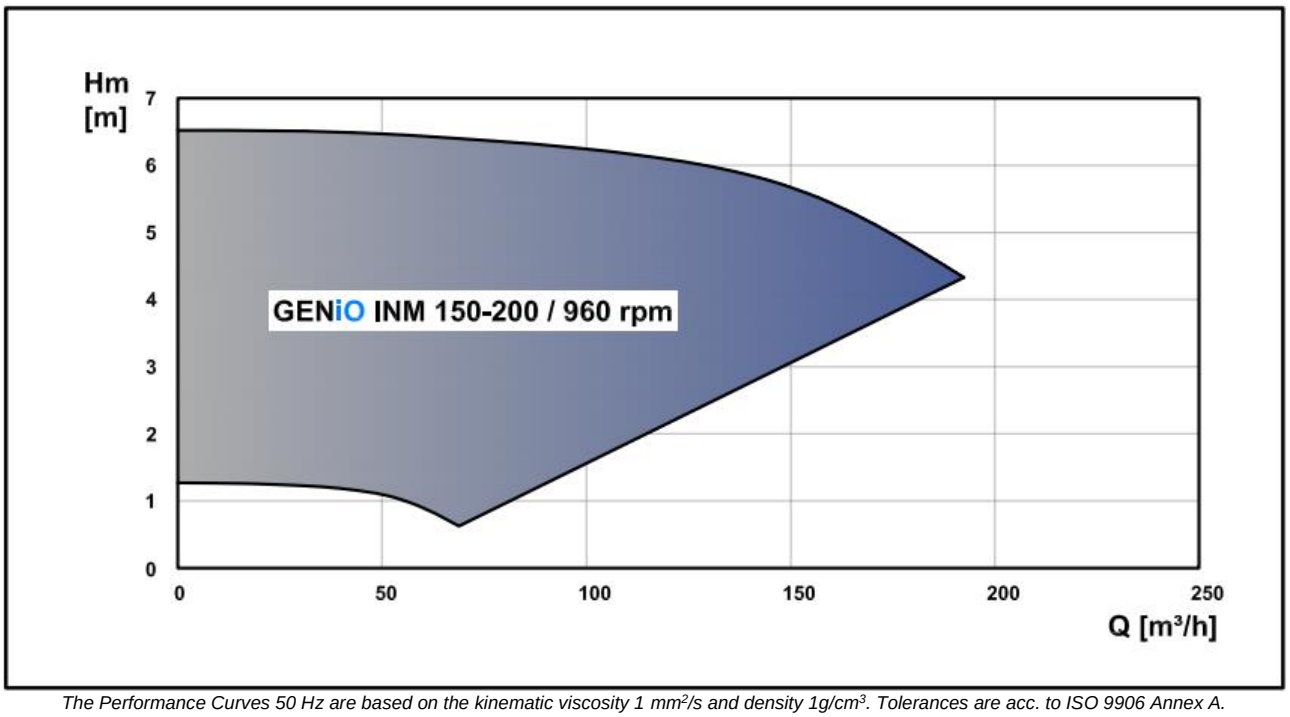




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

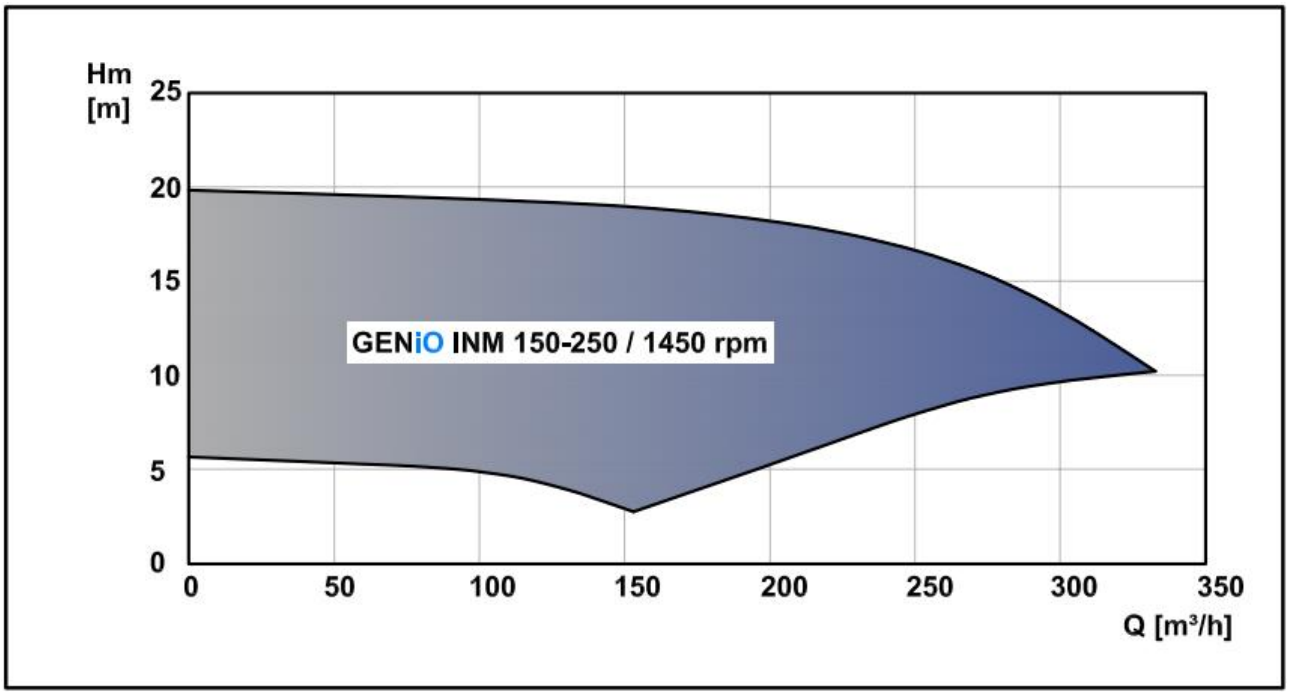
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

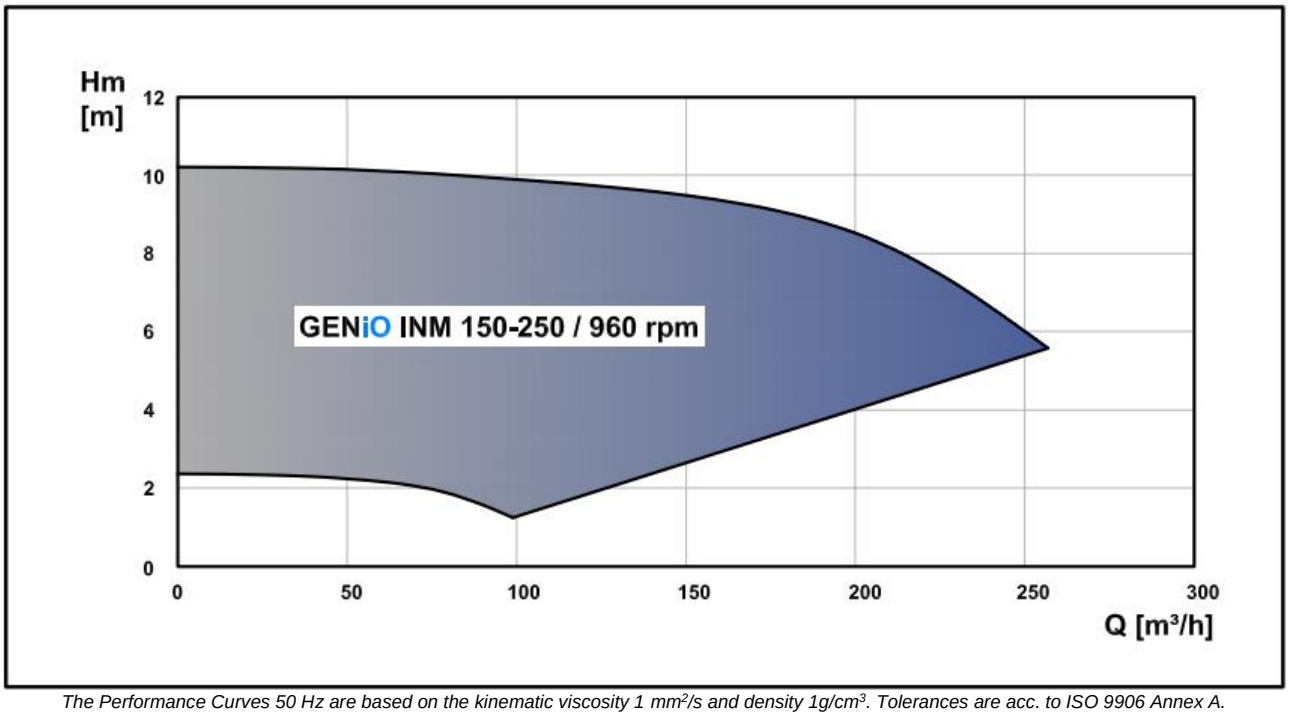




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

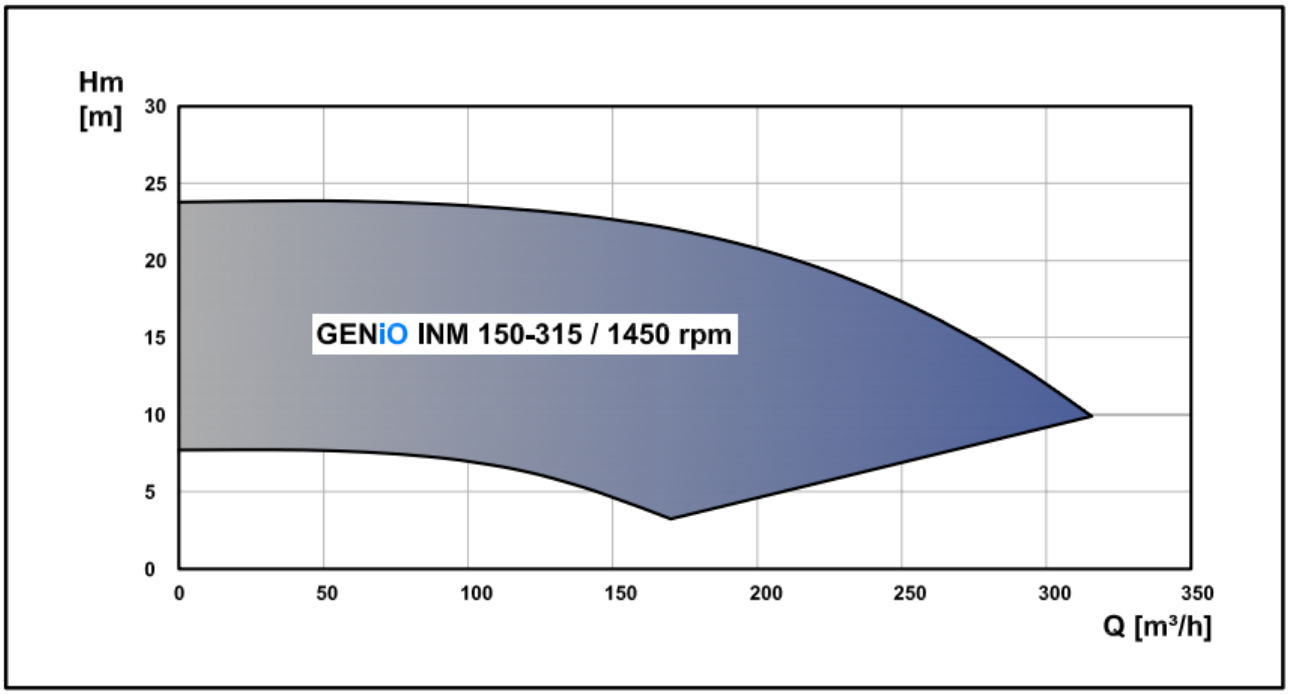
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

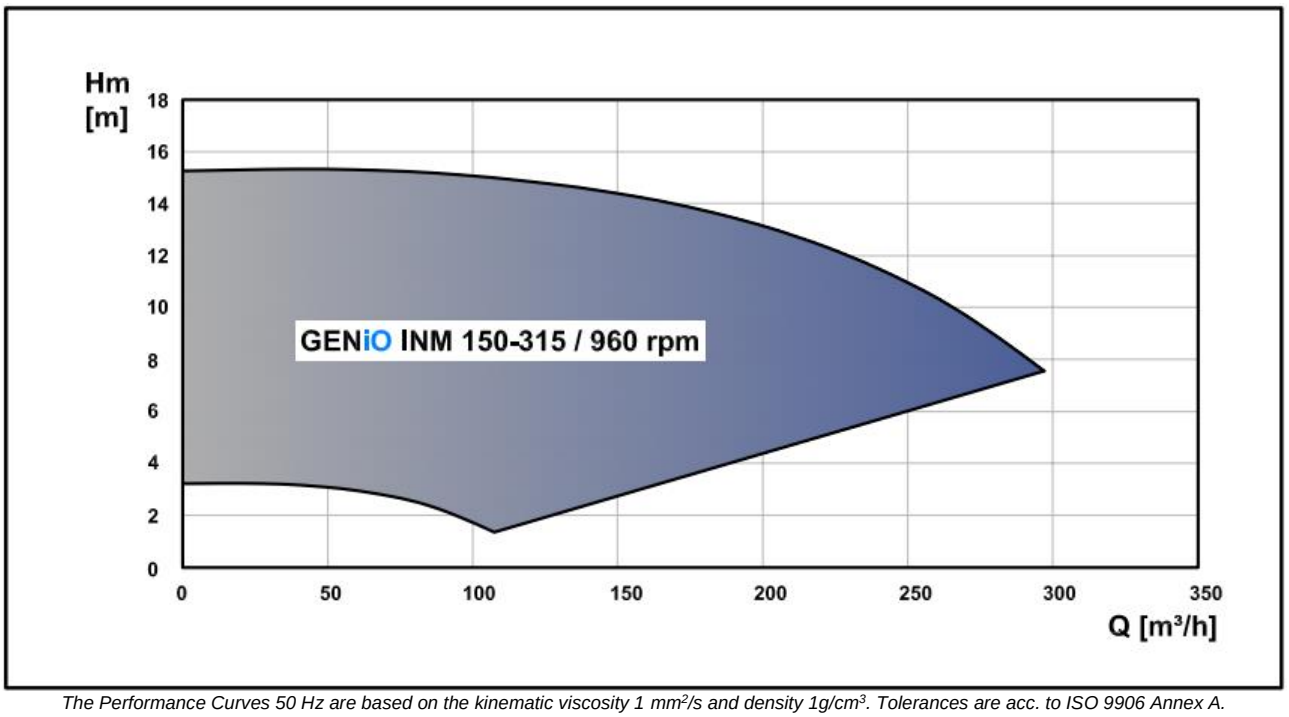




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.

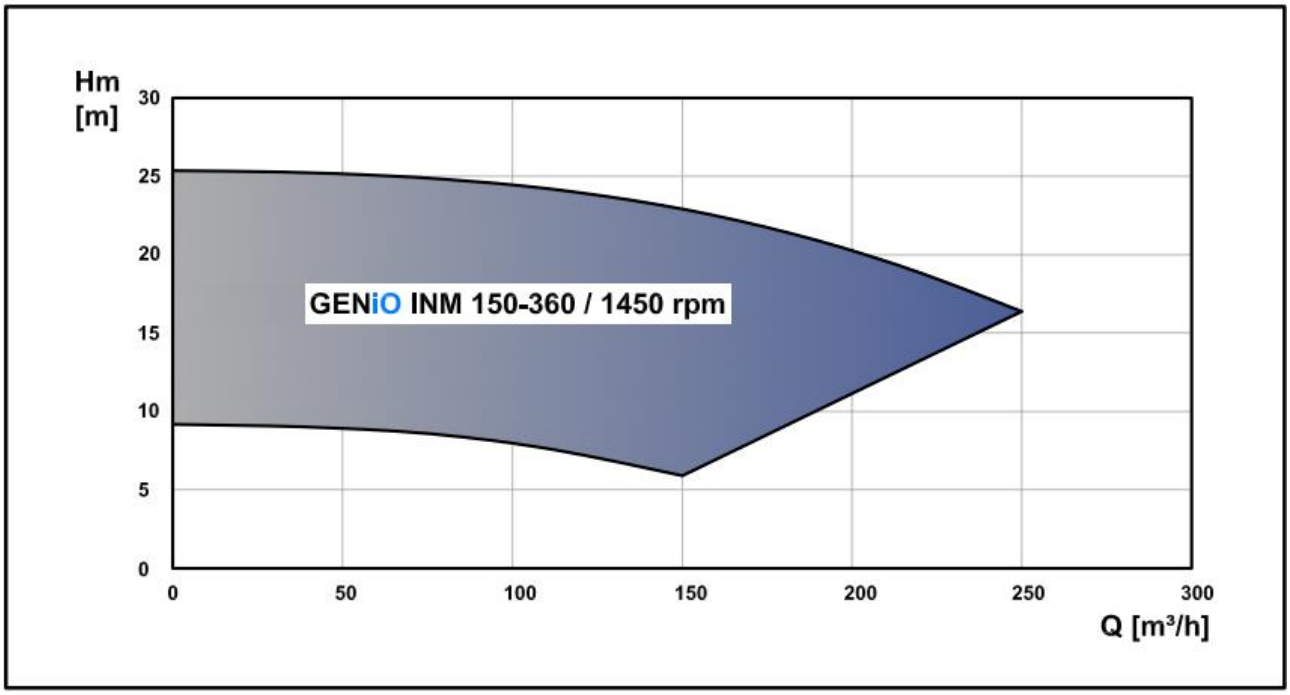
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.

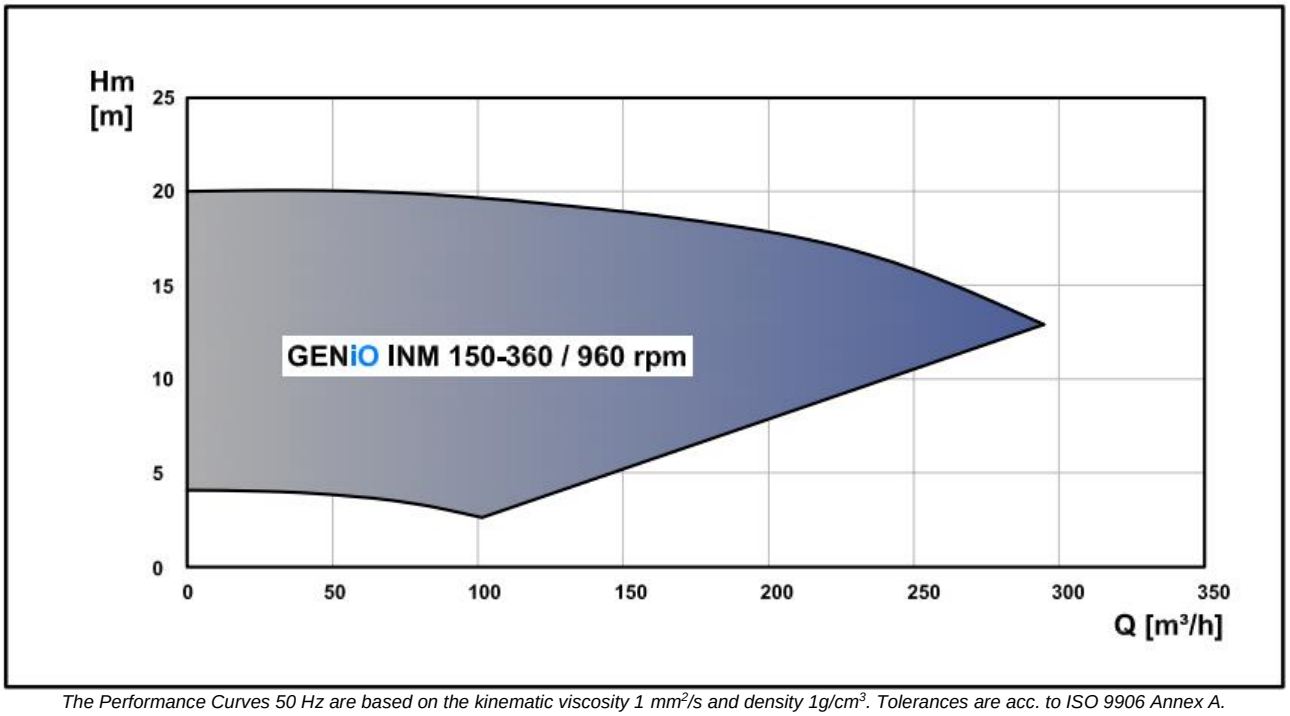




The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

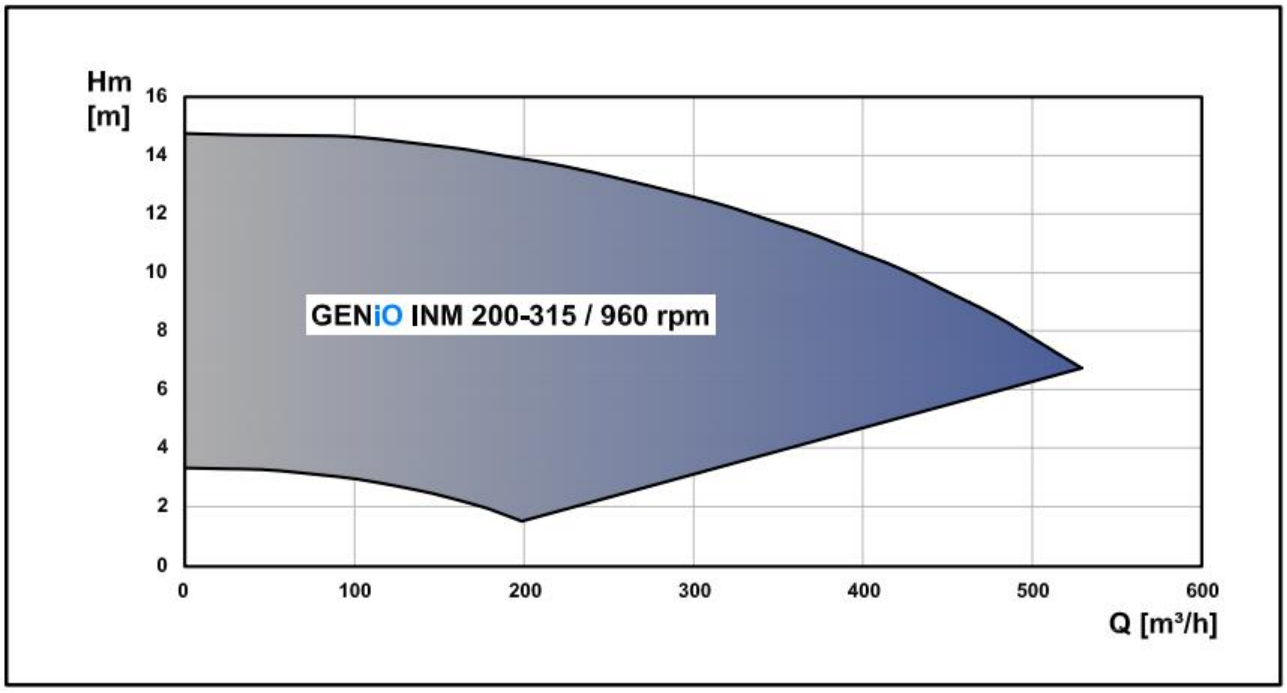
All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.





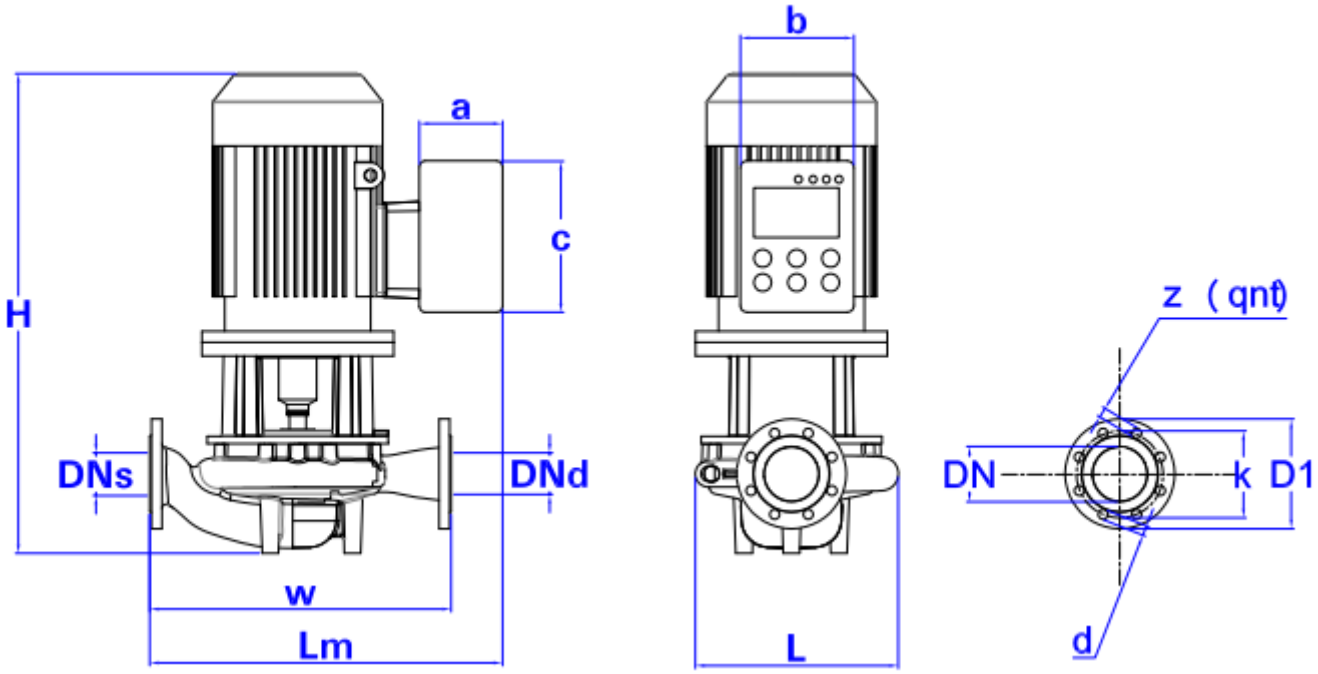
The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm^2/s and density 1g/cm^3. Tolerances are acc. to ISO 9906 Annex A.

All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.



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.

All hydraulic areas of pumps are stated with impeller diameters with 18,5 kW and below motor power which working frequency is between 50 Hz and 30 Hz.



PUMP TYPE		MOTOR	INVERTER			GENERAL			FLANGE				
			a	b	c	W	L	H	DN	ØD1	Øk	Ød	z
		kW	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
GENiO INM 40-125	4 Pole	0.25	121	146	210	300	213	462	40	150	110	18	4
		0,37						462					
	2 Pole	0,75	121	146	210	300	213	483	40	150	110	18	4
		1,1						503					
		1,5						528					
		2.2						528					
		3	144	172	240			590					
GENiO INM 40-160	4 Pole	0.25	121	146	210	340	246	462	40	150	110	18	4
		0.37						462					
		0.55						483					
		0.75						483					
	2 Pole	2.2	121	146	210	340	246	528	40	150	110	18	4
		3	144	172	240			590					
		4						607					
		5.5						650					
		7.5						650					

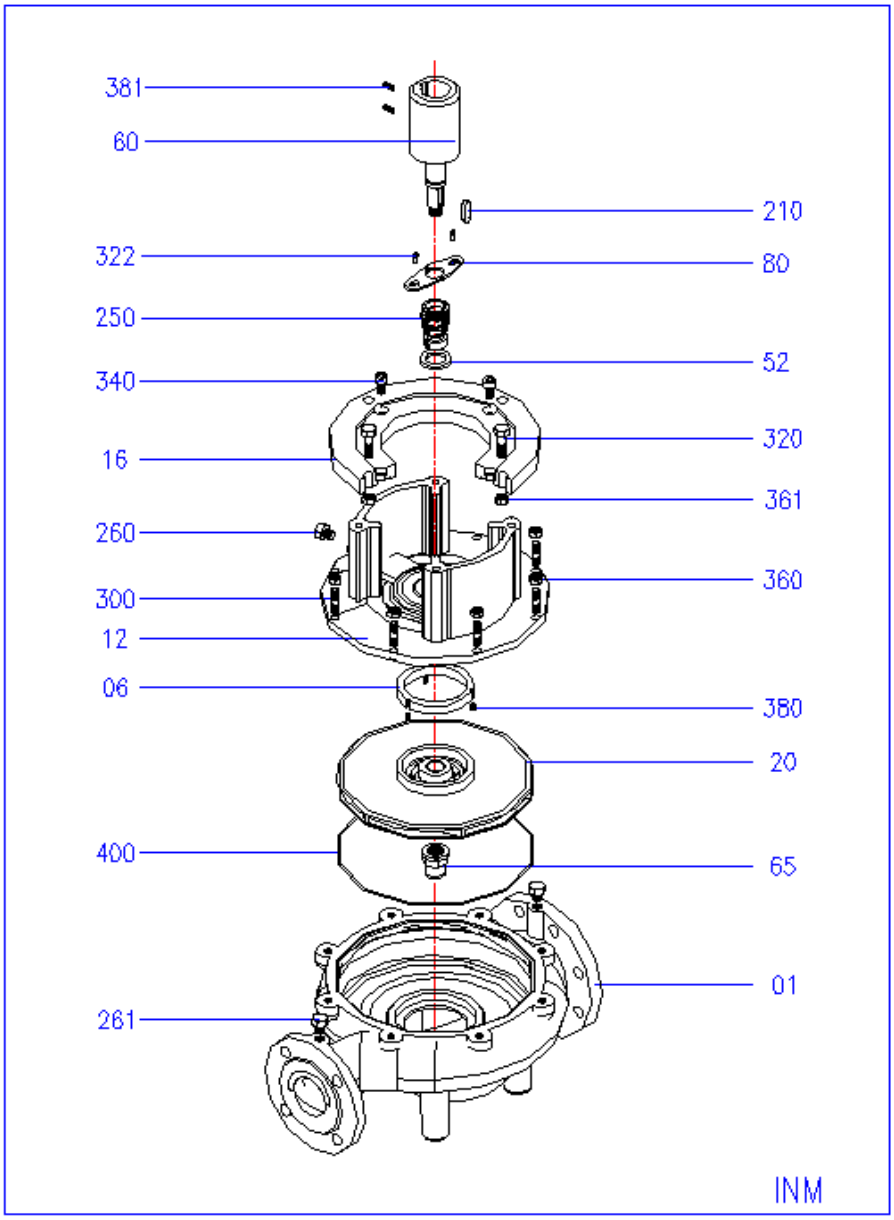
GENiO INM 40-200	4 Pole	0.37	121	146	210	380	270	447	40	150	110	18	4
		0.55						447					
		0.75						493					
		1.1						513					
	2 Pole	3	144	172	240	380	270	590	40	150	110	18	4
		4						607					
		5.5						675					
		7.5						675					
		11	154	218	300			816					
GENiO INM 40-250	4 Pole	0.75	121	146	210	440	330	507	40	150	110	18	4
		1.1						527					
		1.5						552					
		2.2						603.5					
		3	144	172	240			603.5					
	2 Pole	5.5	144	172	240	440	330	688	40	150	110	18	4
		7.5						688					
		11	154	218	300			829					
		15						829					
GENiO INM 50-125	4 Pole	0.37	121	146	210	320	230	467	50	165	125	18	4
		0.55						488					
		0,75						488					
	2 Pole	1,5	121	146	210	320	230	533	50	165	125	18	4
		2.2						533					
		3	144	172	240			595					
		4						612					
		5,5						655					
GENiO INM 50-160		0.37	121	146	210	360	250	482	50	165	125	18	4
		0.55						503					
		0.75						503					
		1.1						523					
		1.5						548					
	2 Pole	3	144	172	240	360	250	610	50	165	125	18	4
		4						627					
		5.5	144	172	240			670					
		7.5						670					
		15	154	218	300			816					
GENiO INM 50-200	4 Pole	0.55	121	146	210	400	285	452	50	165	125	18	4
		0.75						508					
		1.1						528					
		1.5						553					
	2 Pole	3	144	172	240	400	285	605	50	165	125	18	4
		4						622					
		5.5						690					
		7.5						690					
		11	154	218	300			831					
		15						831					

GENiO INM 50-250	4 Pole	0.75	121	146	210	400	285	513	50	165	125	18	4
		1.1						533					
		1.5						558					
		2.2						610					
		3	144	172	240			610					
	2 Pole	11	154	218	300	440	330	836	50	165	125	18	4
		15						836					
		18.5						836					
GENiO INM 65-125	4 Pole	0.37	121	146	210	340	230	487	65	185	145	18	4
		0.55						508					
		0,75						508					
	2 Pole	2.2	121	146	210	340	230	553	65	185	145	18	4
		3	144	172	240			615					
		4						632					
		5,5						675					
GENiO INM 65-160	4 Pole	0.37	121	146	210	400	270	489	65	185	145	18	4
		0.55						510					
		0.75						510					
		1.1						530					
		1.5						555					
	2 Pole	3	144	172	240	400	270	617	65	185	145	18	4
		4						634					
		5.5						677					
		7.5						677					
		11	154	218	300			823					
		15						823					
GENiO INM 65-200	4 Pole	0.55	121	146	210	460	320	477	65	185	145	18	4
		0.75						513					
		1.1						533					
		1.5						558					
		2.2						610					
	2 Pole	4	144	172	240	460	320	627	65	185	145	18	4
		5.5						695					
		7.5						695					
		11	154	218	300			836					
		15						836					
		18.5						836					
GENiO INM 65-250	4 Pole	1.5	121	146	210	480	350	578	65	185	145	18	4
		2.2						630					
		3	144	172	240			630					
		4						647					
		5.5						715					
	2 Pole	15	154	218	300	480	350	856	65	185	145	18	4
		18.5						856					

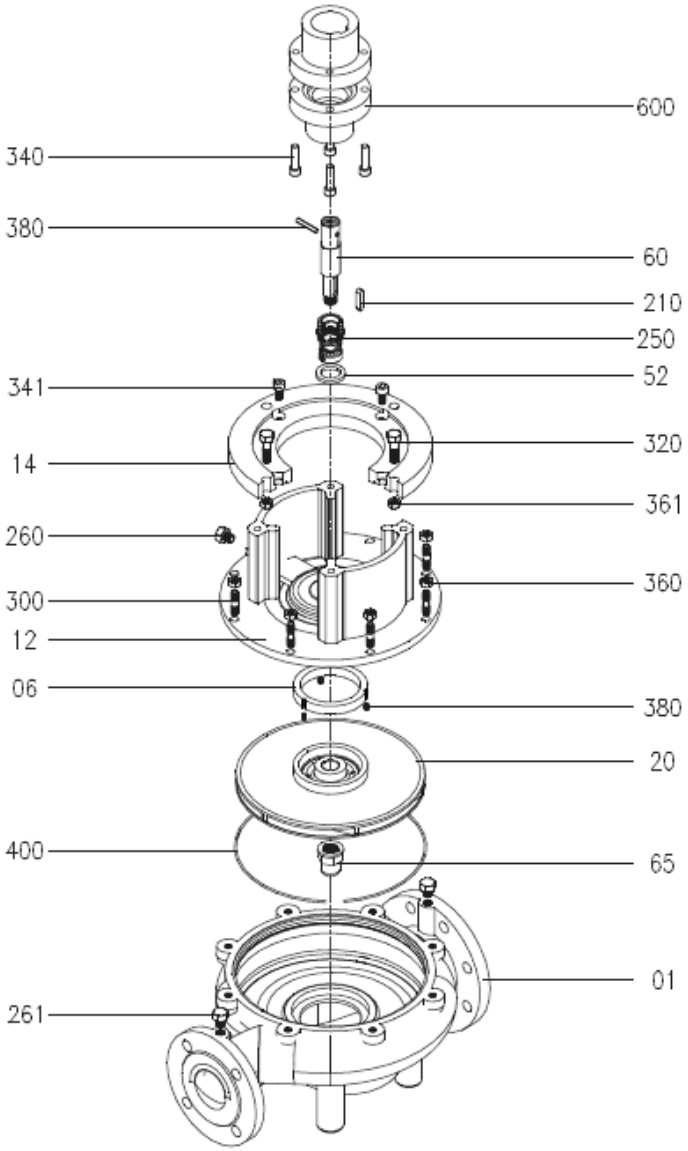
GENiO INM 80-160	4 Pole	0.75	121	146	210	480	350	578	65	185	145	18	4
		1.1						630					
		1.5	144	172	240			630					
		2.2						715					
	2 Pole	4	144	172	240	440	290	657	80	200	160	18	8
		5.5						720					
		7.5						720					
		11	154	218	300			866					
		15						866					
GENiO INM 80-200	4 Pole	1.1	121	146	210	500	320	558	80	200	160	18	8
		1.5						583					
		2.2						635					
		3	144	172	240			635					
		4						652					
	2 Pole	11	154	218	300	500	320	861	80	200	160	18	8
		15						861					
		18.5						861					
GENiO INM 80-250	4 Pole	2.2	121	146	210	550	375	650	80	200	160	18	8
		3	144	172	240			650					
		4						667					
		5.5						735					
		7.5						781					
	2 Pole	15	154	218	300	550	375	876	80	200	160	18	8
		18.5						876					
GENiO INM 80-315	6 Pole	1.1	121	146	210	600	420	633	80	200	160	18	8
		1.5						665					
		2.2						682					
		3	144	172	240			750					
		4						796					
	4 Pole	4	144	172	240	600	420	682	80	200	160	18	8
		5.5						750					
		7.5						796					
		11	154	218	300			891					
		15						891					
GENiO INM 100-160	4 Pole	1.1	121	146	210	500	330	583	100	220	180	18	8
		1.5						608					
		2.2						660					
		3	144	172	240			660					
	2 Pole	11	154	218	300	500	330	886	100	220	180	18	8
		15						886					
		18.5						886					
GENiO INM 100-200	4 Pole	2.2	121	146	210	550	355	685	100	220	180	18	8
		3	144	172	240			685					
		4						702					
		5.5						770					
		7.5						816					
	2 Pole	18.5	154	218	300	550	355	911	100	220	180	18	8

GENiO INM 100-250	6 Pole	1.1	121	146	210	600	390	648	100	220	180	18	8
		1.5						695					
		2.2						712					
		3	144	172	240			780					
	4 Pole	3	144	172	240	600	390	695	100	220	180	18	8
		4						712					
		5.5						780					
		7.5						826					
		11	154	218	300			921					
GENiO INM 100-315	6 Pole	2.2	121	146	210	650	455	712	100	220	180	18	8
		3	144	172	240			755					
		4						801					
		5.5						801					
		7.5						826					
	4 Pole	7.5	144	172	240	650	455	826	100	220	180	18	8
		11	154	218	300			921					
		15						921					
		18.5						979					
GENiO INM 125-200	4 Pole	3	144	172	240	600	385	740	125	250	210	18	8
		4						757					
		5.5						825					
		7.5						871					
GENiO INM 125-250	6 Pole	1.1	121	146	210	650	445	668	125	250	210	18	8
		1.5						715					
		2.2						732					
		3	144	172	240			800					
		4						846					
		5.5						846					
	4 Pole	4	144	172	240	650	445	732	125	250	210	18	8
		5.5						800					
		7.5						846					
		11	154	218	300			941					
		15						941					
		18.5						999					
GENiO INM 125-315	6 Pole	3	144	172	240	700	490	830	125	250	210	18	8
		4						876					
		5.5						876					
		7.5						971					
		11	154	218	300			971					
	4 Pole	11	154	218	300	700	490	971	125	250	210	18	8
		15						971					
		18.5						1029					

	6 Pole	1.1	121	146	210	670	455	688	150	285	240	23	8
		1.5						735					
		2.2						752					
		3	144	172	240			820					
		4						866					
GENiO INM 150-200													
	4 Pole	4	144	172	240	670	455	752	150	285	240	23	8
		5.5						820					
		7.5						866					
		11	154	218	300			961					
		15						961					
	6 Pole	3	144	172	240	670	465	648	100	220	180	18	8
		4						695					
		5.5						712					
		7.5						780					
GENiO INM 150-250													
	4 Pole	11	154	218	300	670	465	971	150	285	240	23	8
		15						971					
		18.5						1029					
	6 Pole	4	144	172	240	770	550	911	150	285	240	23	8
		5.5						911					
		7.5						1006					
GENiO INM 150-315		11	154	218	300			1006					
	4 Pole	15	154	218	300	770	550	1006	150	285	240	23	8
		18.5						1064					
	6 Pole	5.5	144	172	240	800	570	1021	150	285	240	23	8
		7.5						1091					
		11	154	218	300			1091					
GENiO INM 150-360		15						1149					
	4 Pole	18.5	154	218	300	800	570	1149	150	285	240	23	8
	6 Pole	7.5	144	172	240	850	660	1136	200	340	295	23	12
		11	154	218	300			1136					
GENiO INM 200-315		15						1194					
		18.5						1282					



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

Usage Areas of GENiO Frequency Inverter

GENiO on-motor invertors hold the system on adjusted pressure by changing the working frequency of motors and provide the energy saving than the system with pressure switch. Concerning the usage area; those can be used on the areas from one-pump-systems to the six-pump-systems which constant pressure is asked. There is not any limitation.

General Specifications of GENiO Frequency Inverter

- Instant pressure value, frequency, current value, rotation of motor, output voltage, output power, analogue values from sensors and set pressure value can be read through the LCD graphic display.
- Rotation system, distributing management period equally to pumps (line control) in multi-pumps systems.
- It can communicate with external units (building automation system or PLC etc.) by RS 485 cable with MOD-BUS communication protocol.
- It alarms by showing error code on the display in case of failure.
- It has the protection against high and low pressure.
- Maximum and minimum operating frequencies of the invertor can be set.
- Cooling fan of the frequency invertor can operate on mode of automatic or continuous working.
- Operating continuity of the system is provided by deactivating faulty pump and putting into use stand-by pump automatically in multi-pumps systems.
- The system stops the pumps automatically by passing stand-by mode in case of unnecessary conditions.
- The pumps can operate at specified frequency value without the sensor through emergency mode selection.
- Motor rotation direction can be changed on the program.
- It has five different types of protection against operation without water in case of water lack:
  - According to current of the motor
  - According to outlet pressure of the system
  - According to inlet pressure of the system
  - By making a connection of floater
  - By making a connection of fluid level electrode on the suction collector
- It has the protection against over-current, over-voltage and phase failure.
- Record of last two failures can be displayed.
- Total operating time of each pump can be displayed.
- Date and time setting feature is available (Real Time Clock – RTC).
- It can operate according to the preset time and date or preset set pressure by the time-adjusted operation mode option.
- English and Turkish language options are available.
- Set pressure of the system can be fixed easily.
- It is possible to set which parameters can be displayed on the screen.

- The acceleration and deceleration times of the pumps can be set.
- It is password-protected against unauthorized persons.
- It has the protection against frost with antifreeze feature.
- Two pumps can be operated with a frequency inverter by using relay output.
- Frequency inverters communicate with RS 458 cable between each other so six pumps can operate together with multi-pumps system option.
- Proces control characteristic can be calibrated by changing PID parameters.
- It can montaged directly on motor and it does not need any external control panel, necessary cabling is decreased so it has compact and portable design.
- 0.75 – 18.5 kW power range.
- 380 V three phase input voltage.
- 50-60 Hz input frequency.
- 0-600 Hz output frequency.
- It has IP 65 high protection class.
- It can be programmed easily.
- It has two digital inputs and relay outputs.
- It has two pressure transmitter inputs (analogue). If the transmitter fails it can step in with the other transmitter. The transmitters which can work with frequency inverter:
  - 4-13 V operating voltage, 0-10 V output
  - 10-30 V operating voltage, 4-20 mA output
  - 10 V operating voltage, 4-20 mA output
- It can provide 24 V for external devices.

NOTE: Genio on-motor frequency invertors are protected by the circuit braker inside the control panel and the system is protected by the EMC filter from the electromagnetic waves which affect the other devices and the nonlinear load based current&voltage which affect the sinus wavelength.

Mas Grup

Head Office / Service Center:
Aydınlı Mah. Birlik OSB. 1.No'lu Cadde No:17 Tuzla - İSTANBUL / TURKEY
Tel: +90 (216) 456 47 00 pbxFax: +90 (216) 455 14 24

Ankara Regional Directorate:
Aşağı Öveçler Mah. 1329 Sok. No:6/9 Öveçler ANKARA / TURKEY
Tel: +90 (312) 472 81 60-67 Fax:+90 (312) 472 82 51

Factory:
1. Organize Sanayi Bölgesi Parsel 249/5 Beyköy - DÜZCE / TURKEY
Tel: +90 (380) 553 73 88 Fax: +90 (380) 553 71 29
