Industrial Submersible Waste Water and Drainage Pumps

- **GMC** Submersible pumps with single channel impeller
- **GMN** Submersible pumps with multi channel impeller
- **GMV** Submersible pumps with vortex impeller

calpeda®

CE

GM Submersible pumps

The Impellers

GMV

Vortex impeller suitable for pumping liquids containing large solids and/or fibrous materials.
This type of impellers do not have closed channels. Impeller is located deep inside the volute casing. Pumping action is generated by vortex created within the fluid by rotation of the impeller. With this geometry they can tolerate large solids than other impeller types, more specifically they tolerate fibrous materials in the pumped liquid. Disadvantage of this impeller type is lower efficiency.

Applications:
Urban sewerage systems, animal breeding plants.

GMC

Single channel impeller, for liquids containing fibrous materials and/or suspended solids.
These non clogging impellers have large solid passages, high efficiencies and they do not strain motor power at low discharge head values.

Applications:
Purification plants, tanneries, animal breeding plants.

GMN

Closed multi - channel impeller, for clean liquids or light solids without filamentous materials.
For the discharge head values that can not attained with single vane impellers. They have smaller solid passages and in some cases water must be screened.

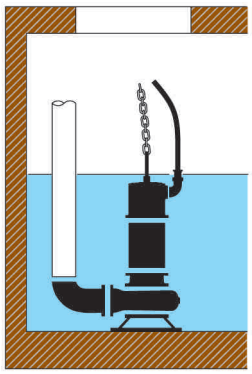
Applications:
Large drainage systems, purification plants.

GMG

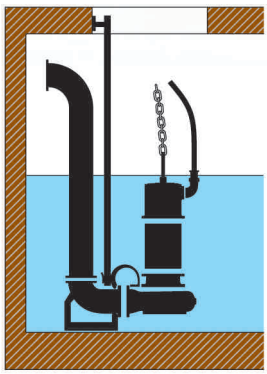
Multi - blade impeller with grinder constructed in stainless steel, particulary suitable as a grinder for paper or textile materials.

Applications:
Clearance of waste waters originating from service stations, residential communities, camping sites, etc.

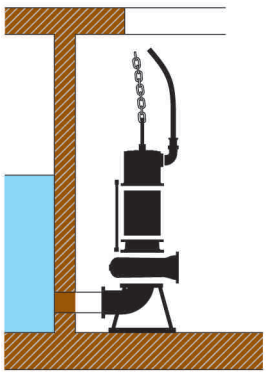
Installation Types



A) Free stand installation
This installation for is suitable for sumps with smooth and flat floors. Pump must stay on floor freely. Pump can be removed from sump by pulling out by chain. Can be used for small pumps.



B) Fixed installation with Automatic Coupling feet and guide rails
It is economic and practical installation form for stationary systems. Automatic coupling system consists of foot bend fixed on sump floor, guide rail and fixing flange which is fitted to the pump. Automatic coupling set components and discharge piping have to be installed before sump is filled with medium.
Operating principle: Fixing flange which is fitted to to the pump slides through the guide rails and pump is lowered to the sump by means of a chain. No dismantling or bolt removal required.



C) Dry pit installation. Pump equipped with cooling jacket.
This installation form is for pumps with cooling jacket and oil cooled pumps. Since these pumps can cool themselves they can operate out of water continuously.
Sump and pump are separated by a wall in dry installation. Pump room's floor is dry and maintenance and repair work can be done easily in pump room. Since pumps are fixed on concrete basement firmly operation is vibrationless, and station is more reliable.
A small drainage pump must be installed in pump room for leakage water.

In all installation forms discharge lines must be fitted with, valve, non return valve, dismantling piece and expansion joint.

GM

Submersible Waste Water And Sewage Pumps

calpeda®

Main Specificiations:
GM series pumps designed for pumping fluids which contents large solids. They have large capacity and power range available. There are several models and sizes.

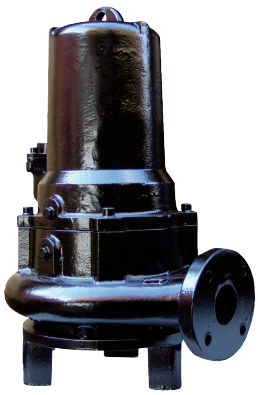
Applications:
- Domestic and industrial raw sewage water pumping.
- Waste water handling plants.
- In biologic cleaning plants for pumping active sludge.
- Pumping of floating solids in settlement pools.
- Pumping waste water to active screens.
- Pumping industrial and chemical waste water.
- Draining rain water.
- All kinds of drainage and dewatering.
- Pumping miscallaneous waters in industrial plants.

Fluid Types:
- Unscreened sewage and other waste water types with high solids concentration Pumps are designed to tolerate large solids (up to 200 mm diameter) without clogging.
- Water with sand content. Maximum grain size 25 mm. Liquid, sand ratio can be maximum % 6. For higher sand concentration preventive provisions are necessary.
- Maximum allowed fluid temperature is 40°C
- Maximum allowed medium density is 1,2 gr/cm^3,
- GM series pumps can not be used for pumping flammable and explosive fluids.

Technical Details:
Motor: Submersible electric motor operates with 3 phase 400 V AC (+/- % 5) power supply.
Insulation class of motors is F, protection class is IP 68. H class insulation or different operating voltage or frequency is availble upon request.

Motor Cooling: Motors are cooled externally by surrounding medium. In order to have sufficient cooling motor must be submerged up to the top.

Shaft Sealing: Between motor and pumped fluid high quality double mechanical seal is used, seals operate in oil chamber. (Up to 11 kW, single mechanical seal is used)



Bearings: Rotor is supported by means of two heavy duty ball bearings on upperside and lower side.These bearings are selected to support axial and radial loads.

Motor Over Heat Protection System: Stator windings protected against over heat by 120 °C termistors.

Water Leakage Warning System: An electrode system is used which generates a warning signal in case of water leakage caused by worn out mechanical seal or any other reason.

Cable Connection: H07RN-F type rubber coated cables with flexible cores used. They are durable against corrosiveness of sewage water. Pumps supplied with 10 m cable as standard. Do not transport pump by pulling the cable.

Volute Casing: Volute casings are with concentric discharge and have large crossection. They are designed not to be clogged by the solid that can pass through impeller.

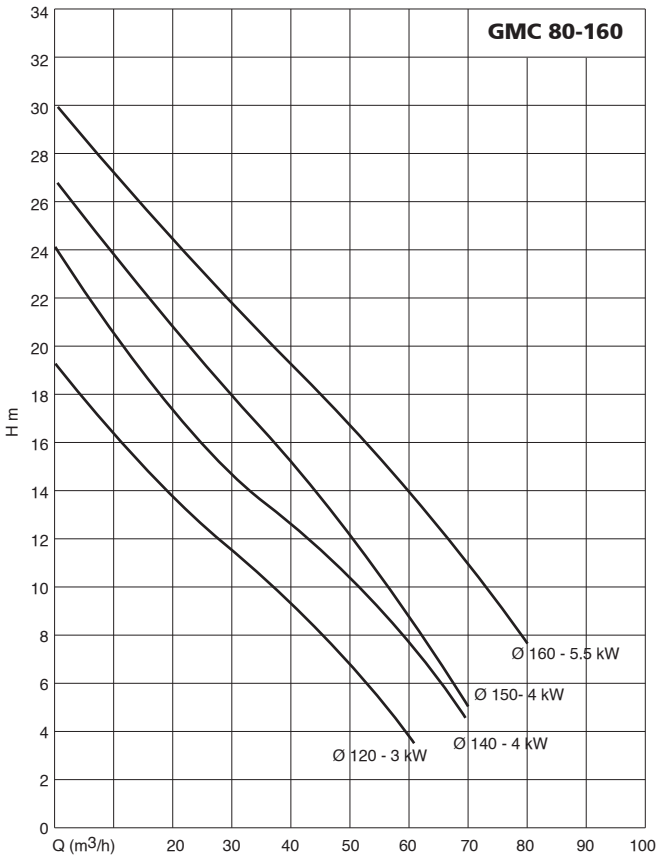
Materials:
Pumps can be manufactured with different material types if requested by client or it is needed because of liquid properties.

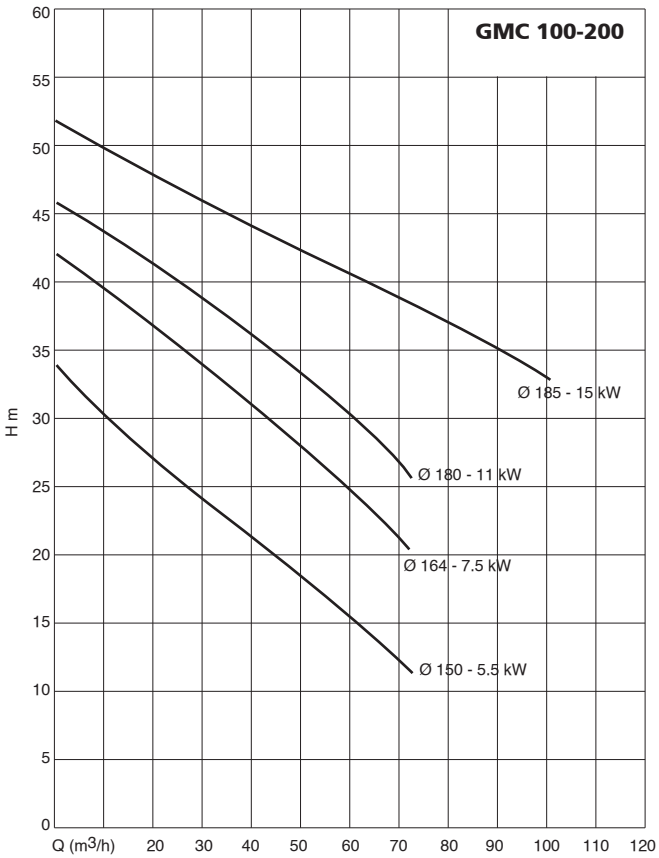
Motor casing - volute casing	Cast iron GG-25
Impeller	Cast iron GG-25
Shaft	Stainless steel (1.4021)
Bolts - Nuts	Stainless steel
Mechanical seal	SIC/SIC - NBR
Cable	H07RN-f

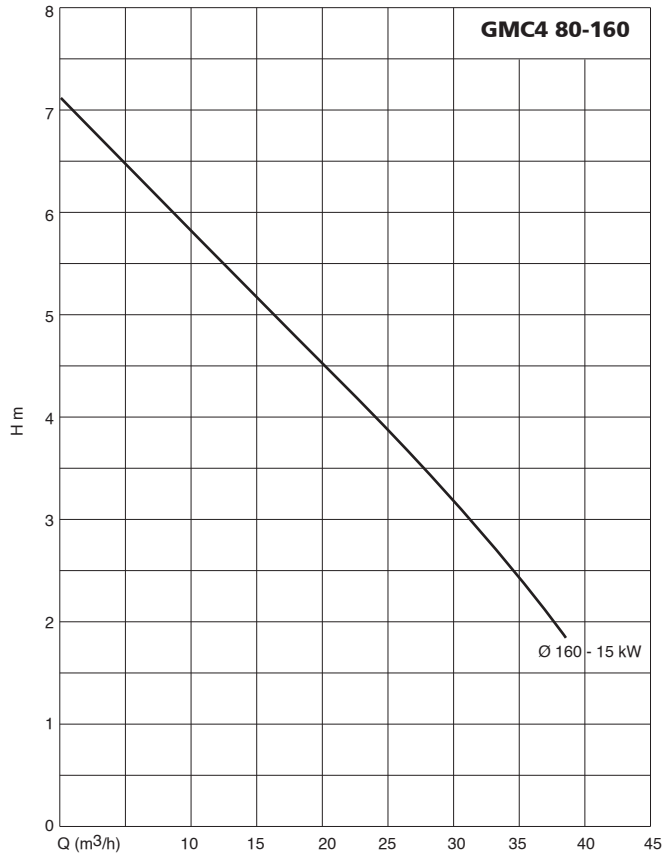
B GM V 4 50 - 200 / 2.2

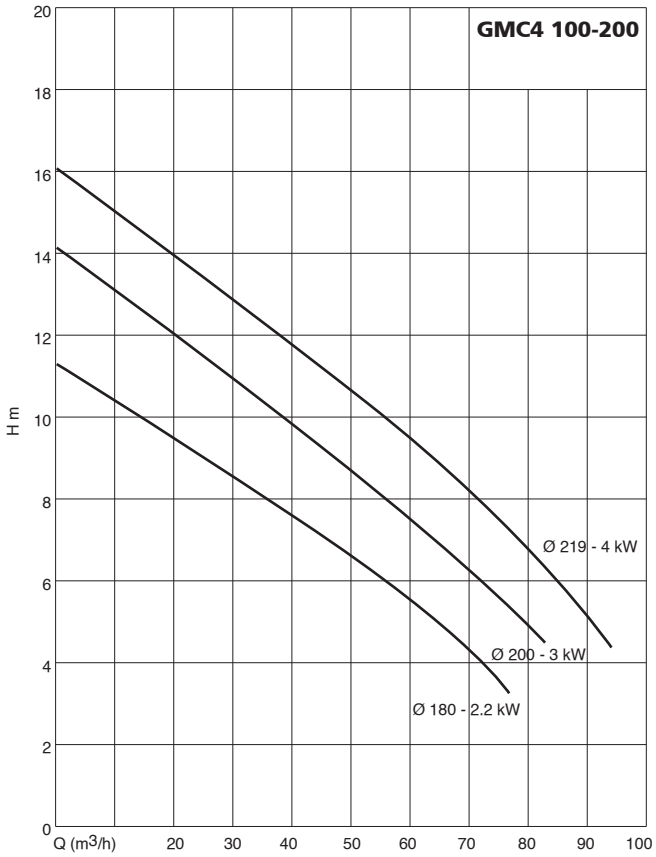
- 2.2 — Nominal motor power (kW)
- 200 — Impeller nominal diameter
- 50 — Pump outlet diameter
- 4 — 4-6-8 poles motor (No indication: 2 poles)
- V — Impeller types: V = Vortex, C = Single channel, N = Multi channels, G = Grinder
- GM — Series
- B — Version: B = Bronze, I = AISI 304 / AISI 316 Stainless Steel, DI = Duplex Stainless Steel, (No indication = cast iron version)

Characteristic curves of GMC pumps with single channel impeller









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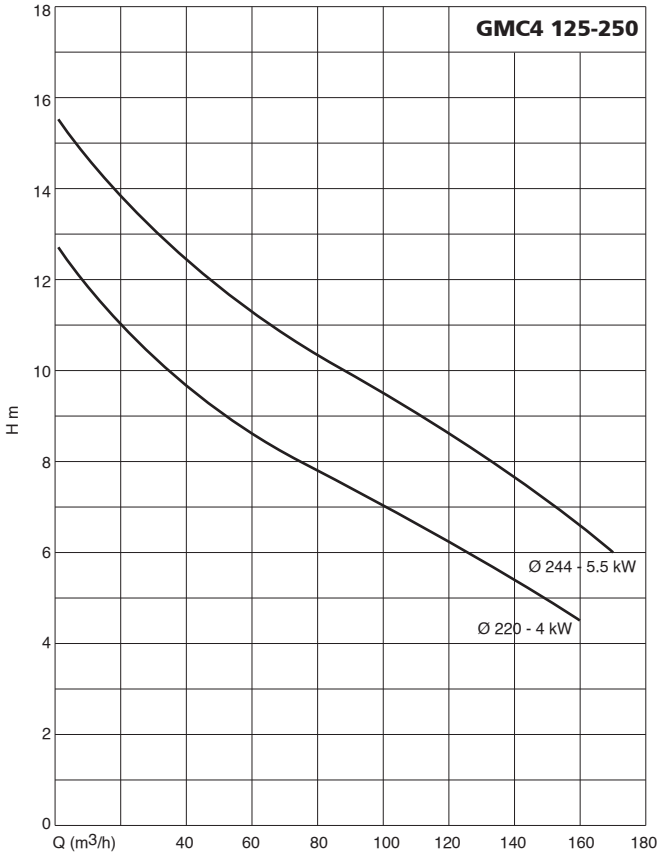
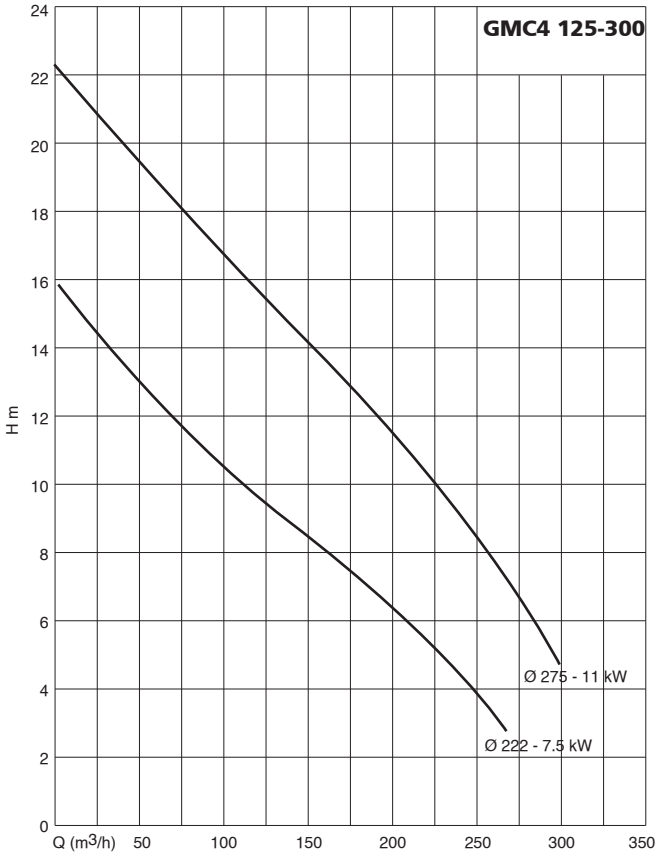
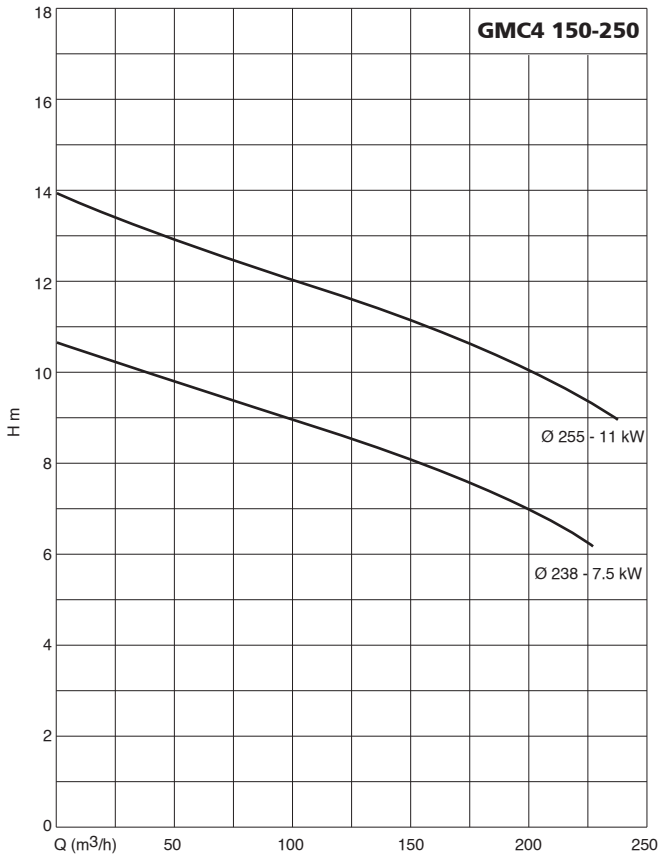
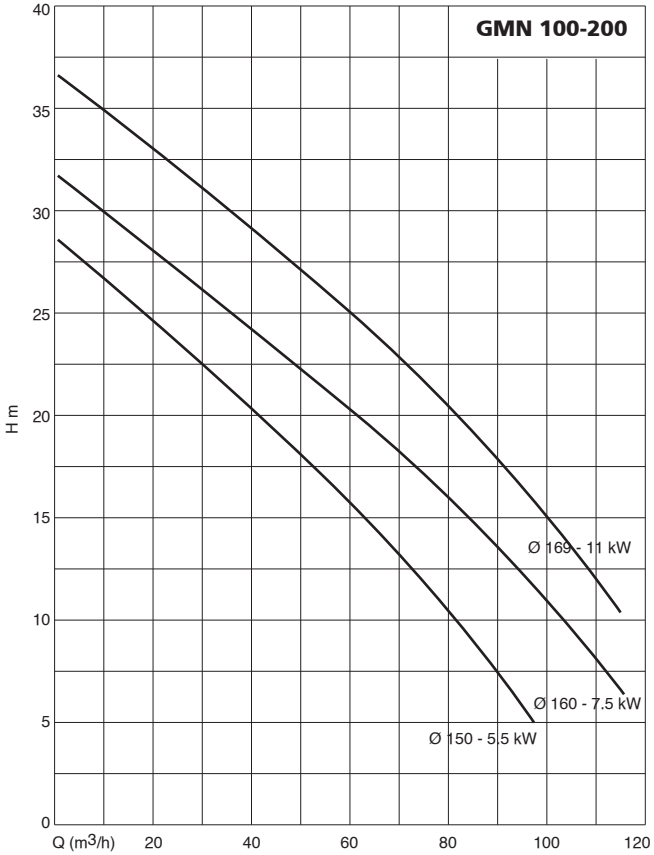
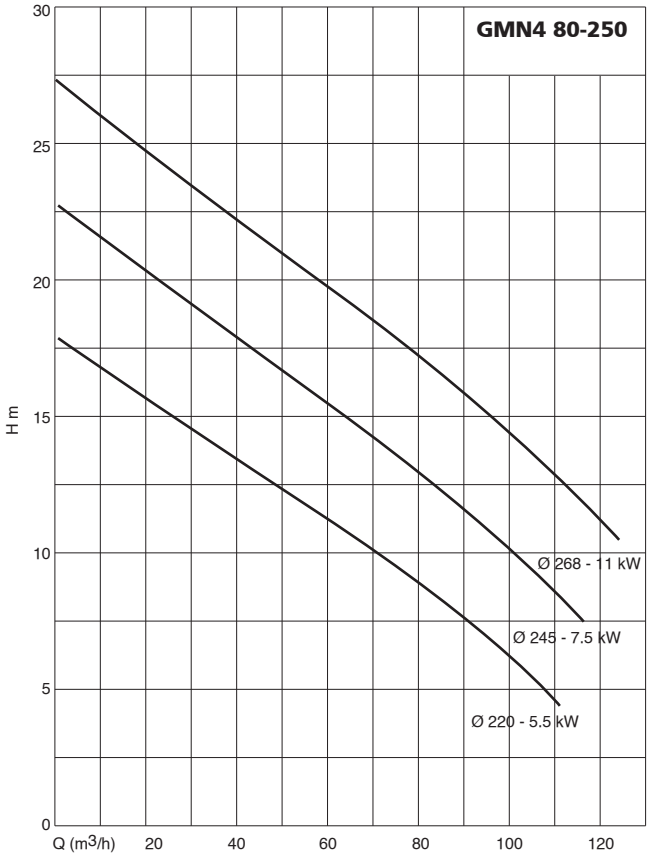


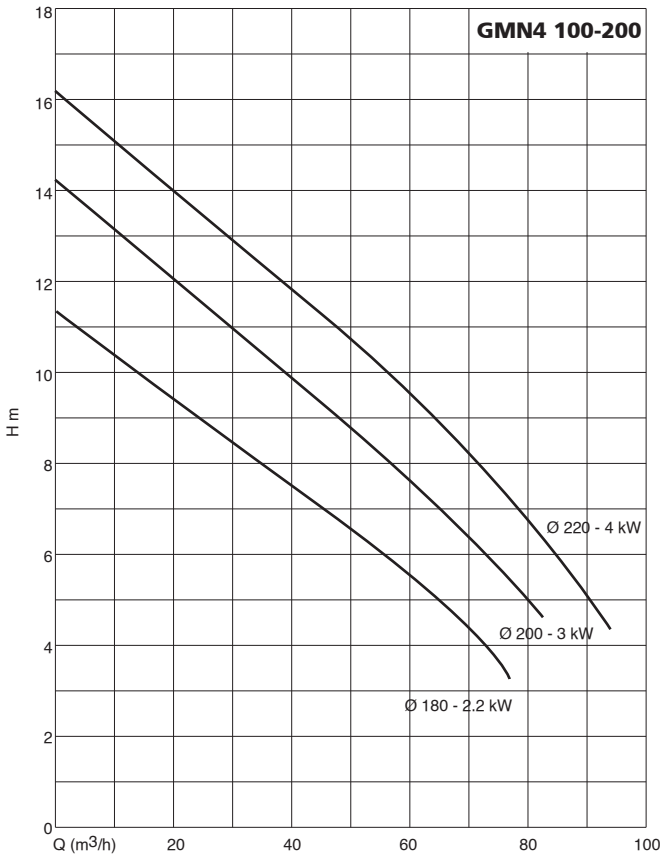


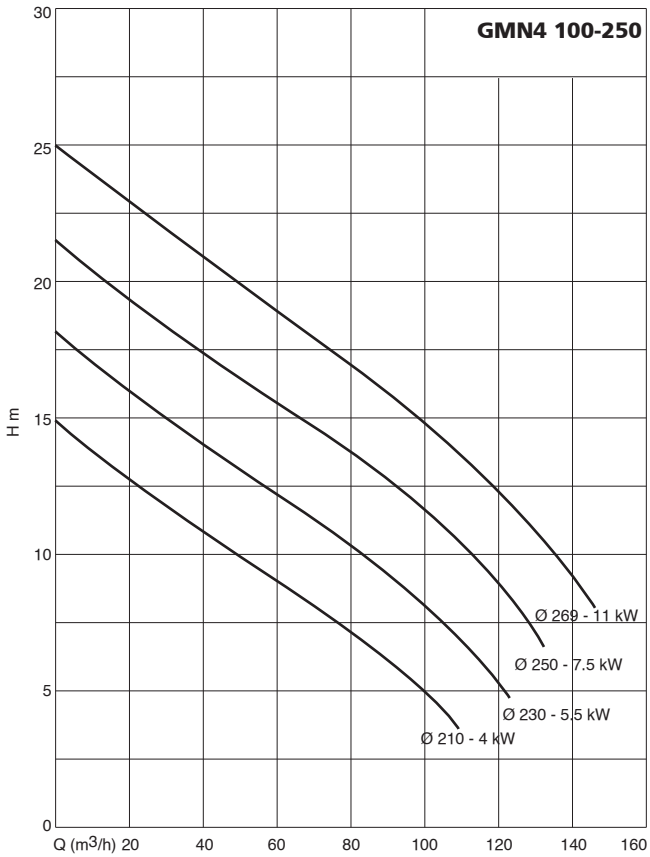


Characteristic curves of GMN pumps with multi channel impeller









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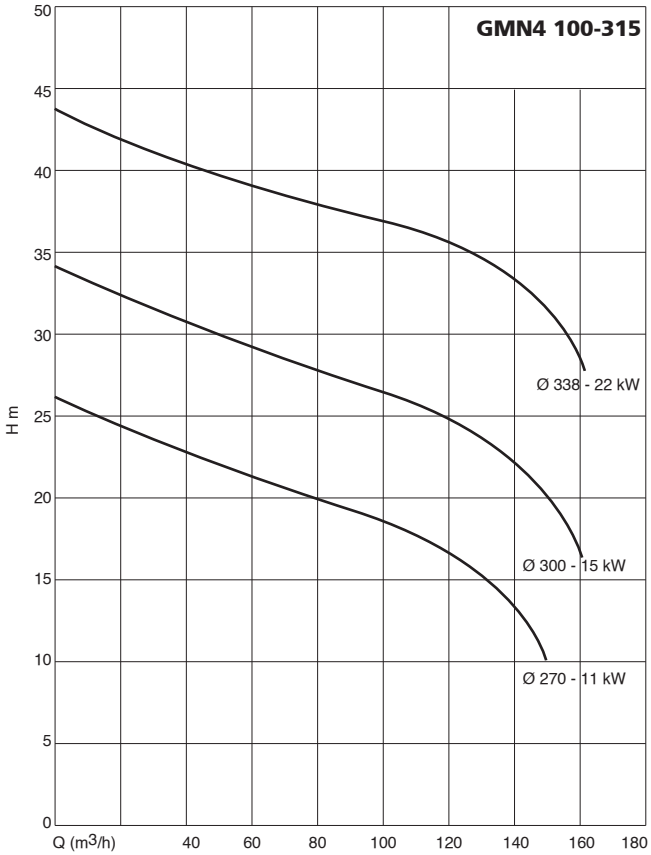

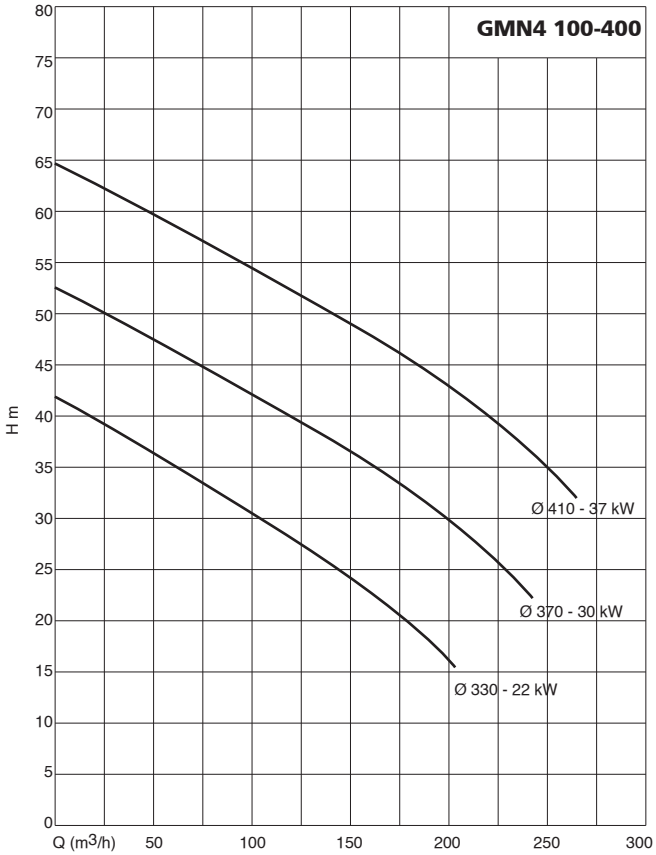

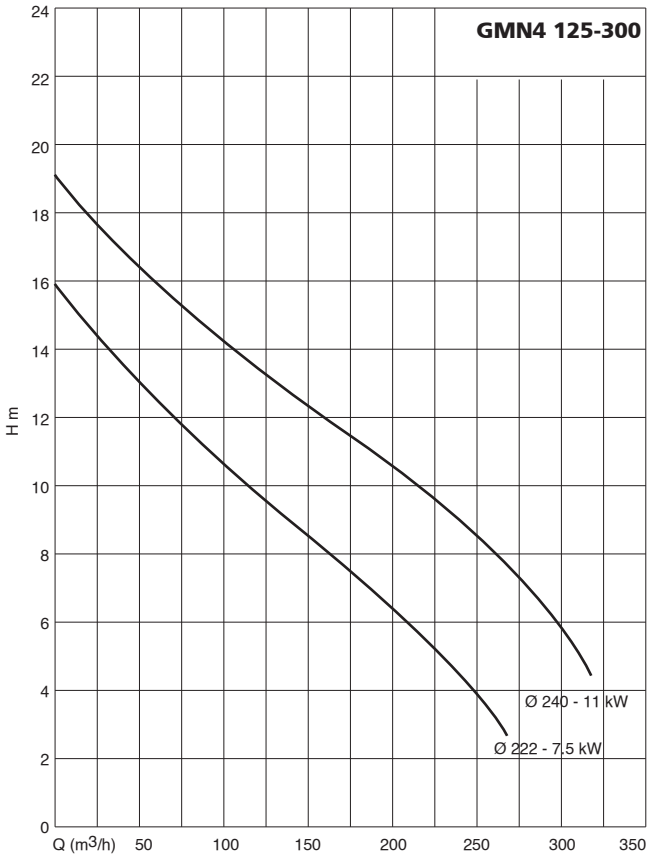

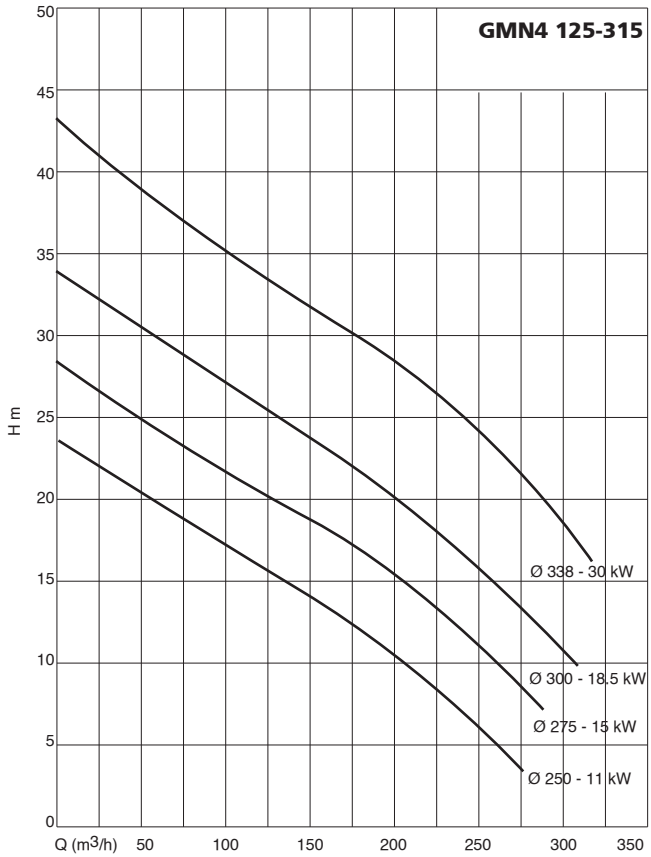

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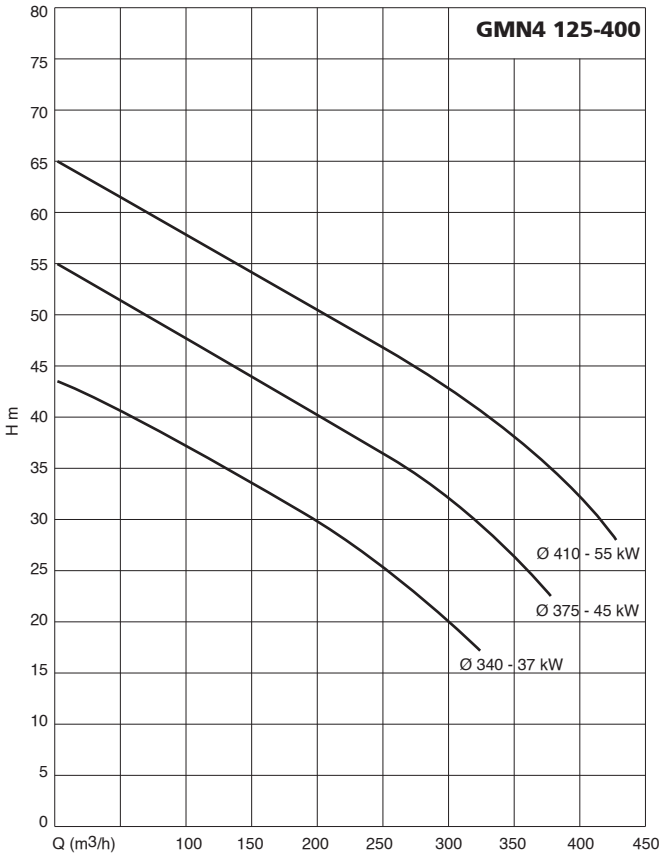

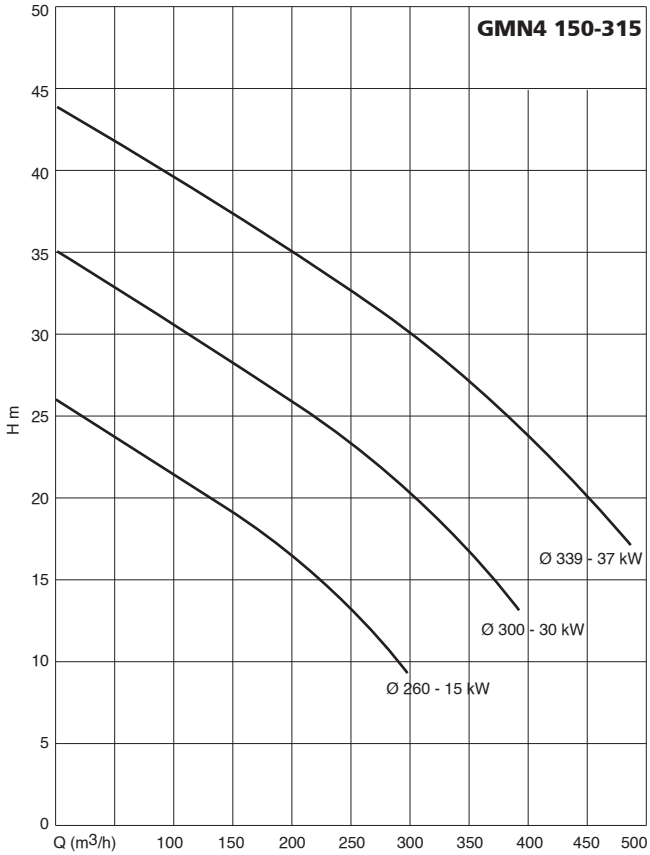

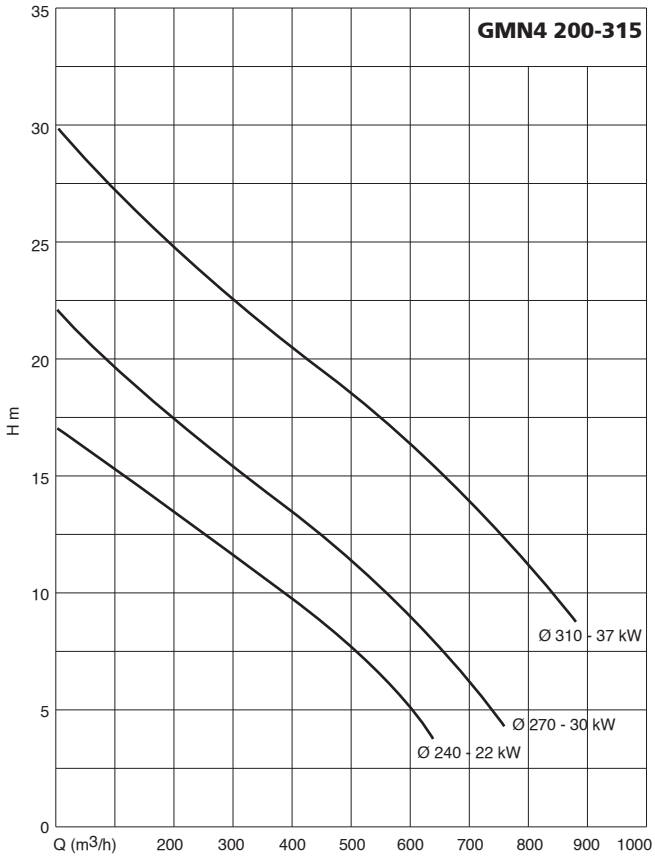

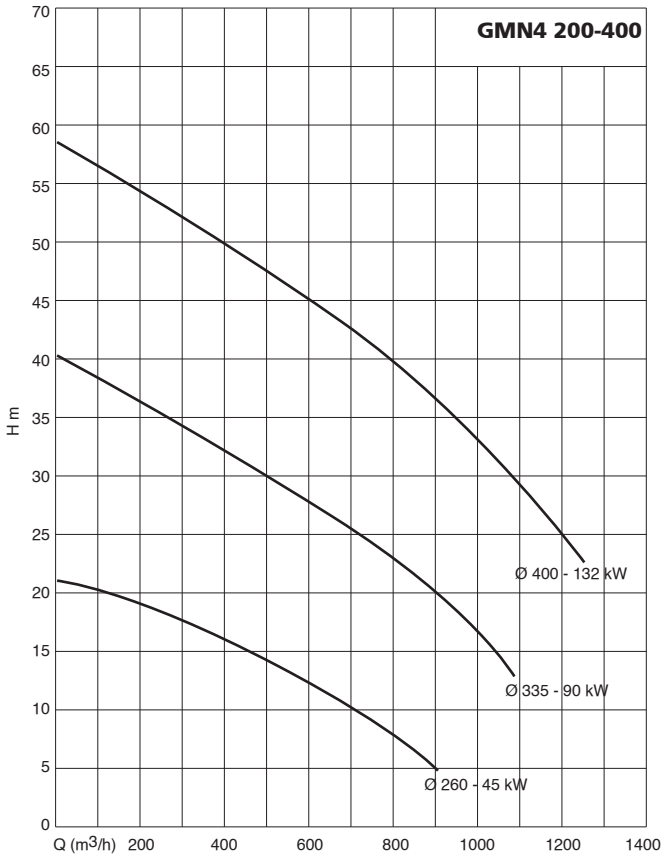

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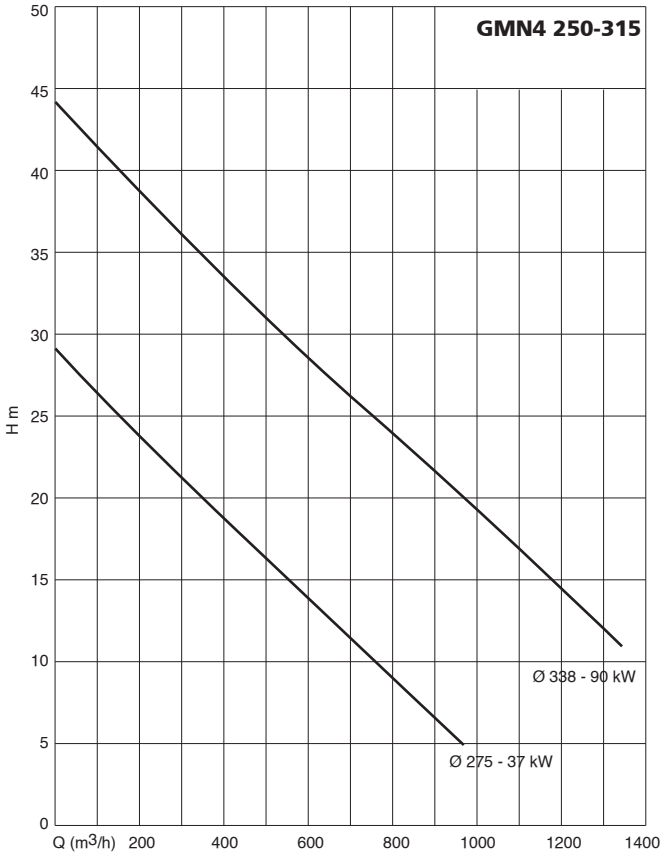

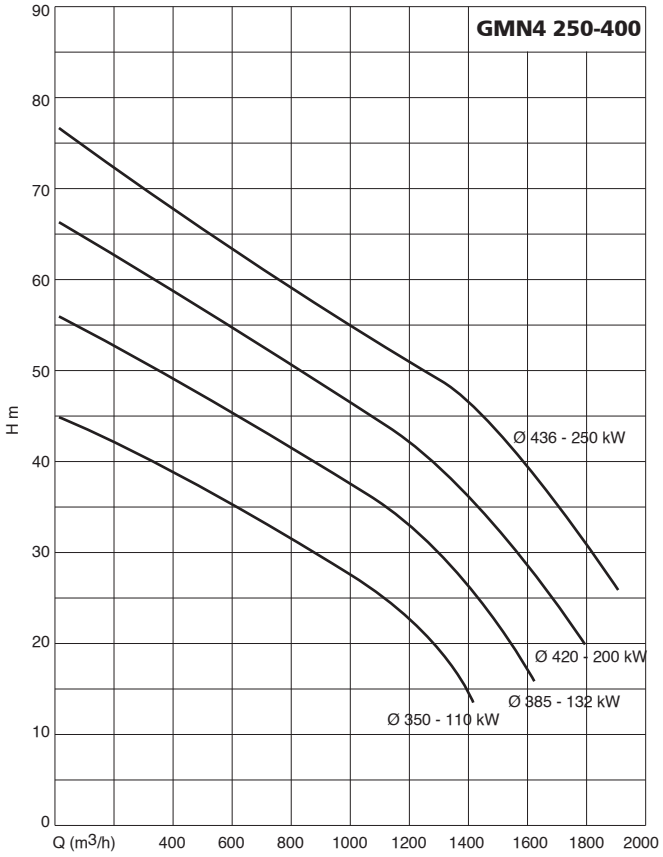

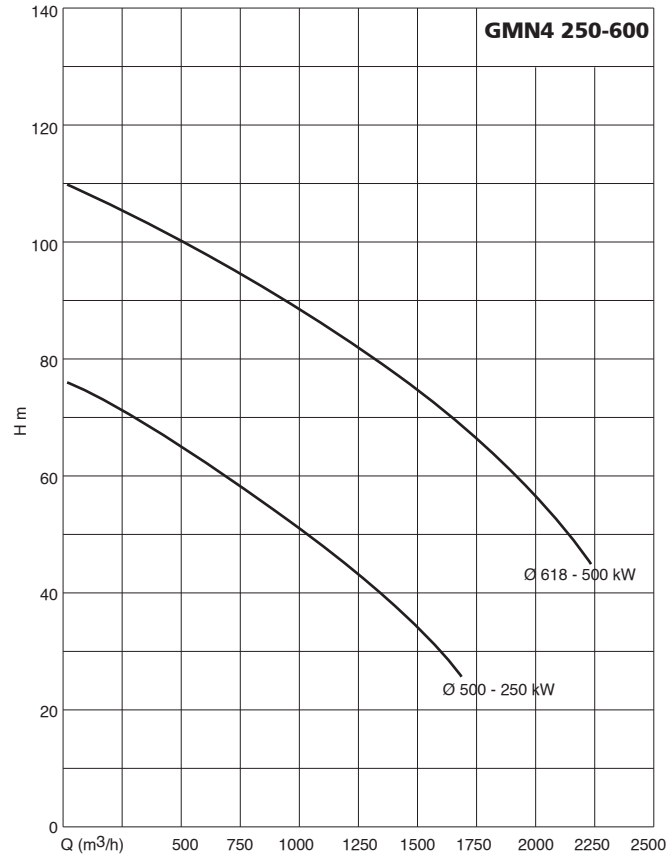

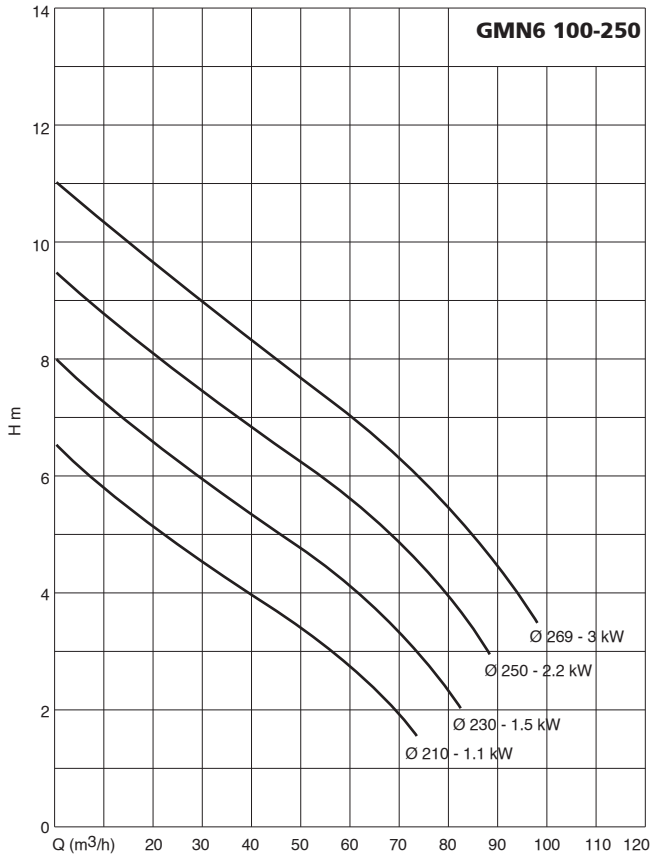

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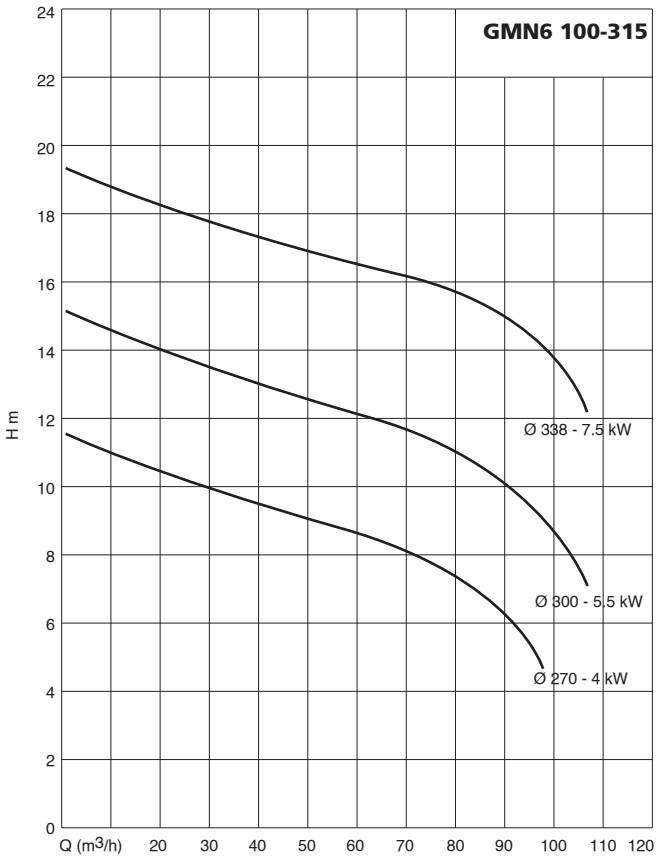

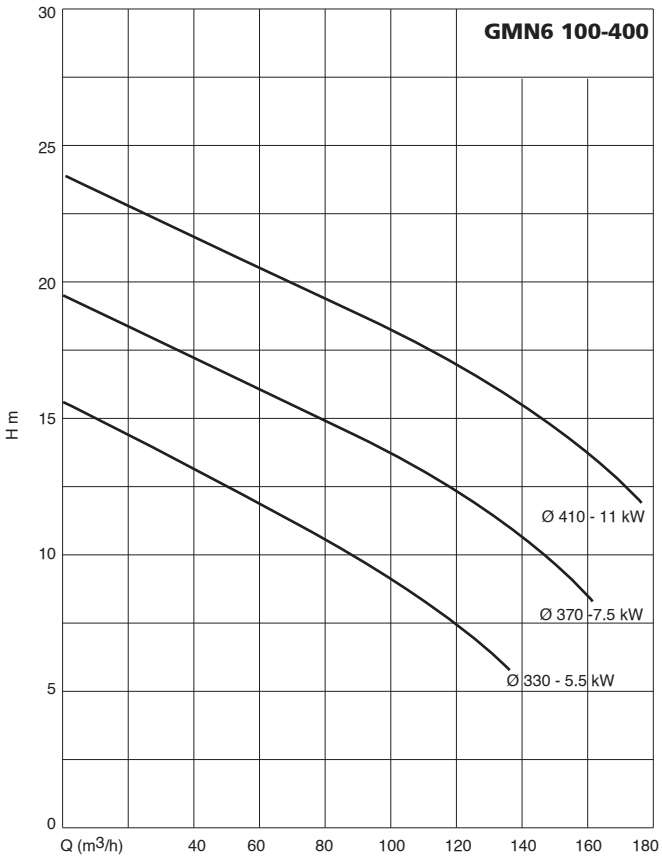

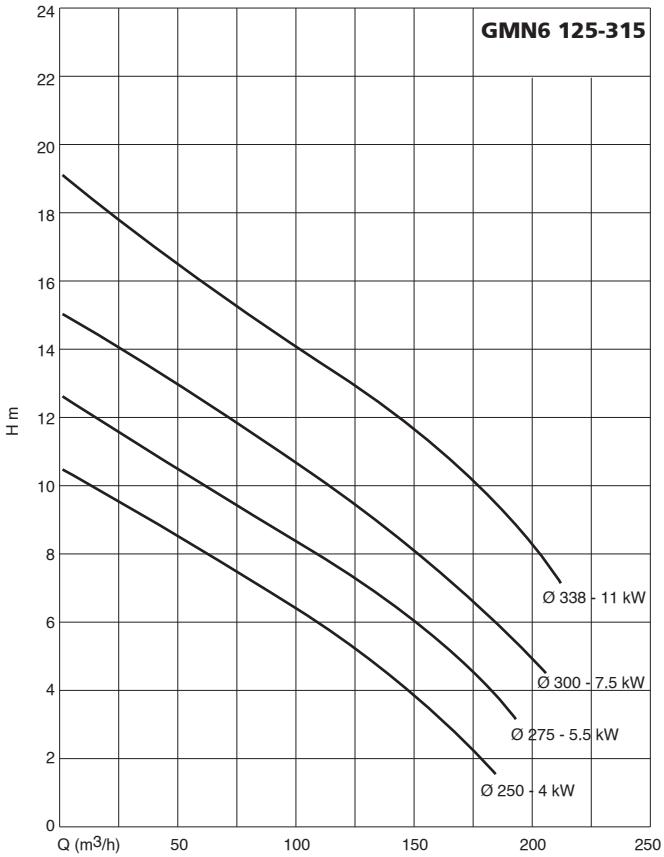

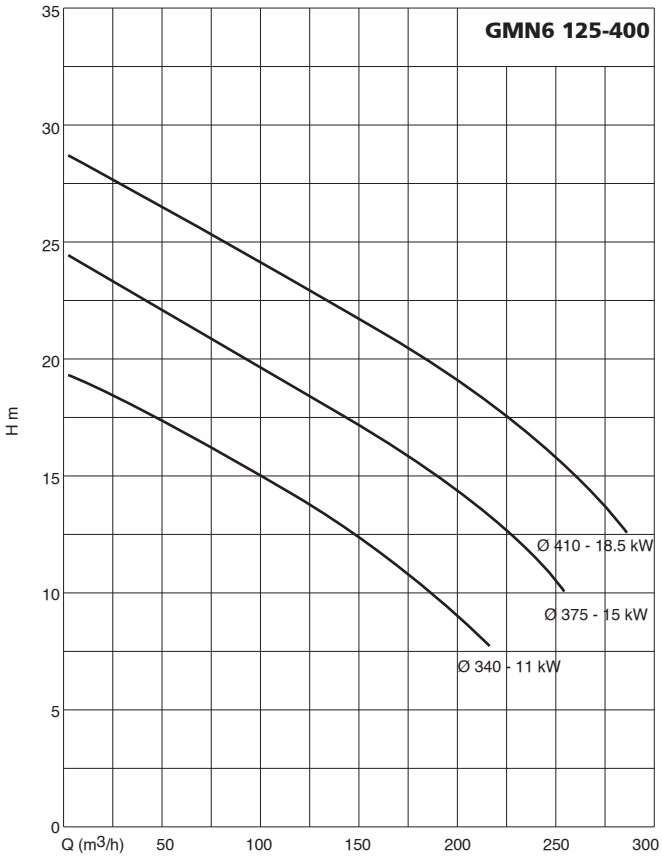

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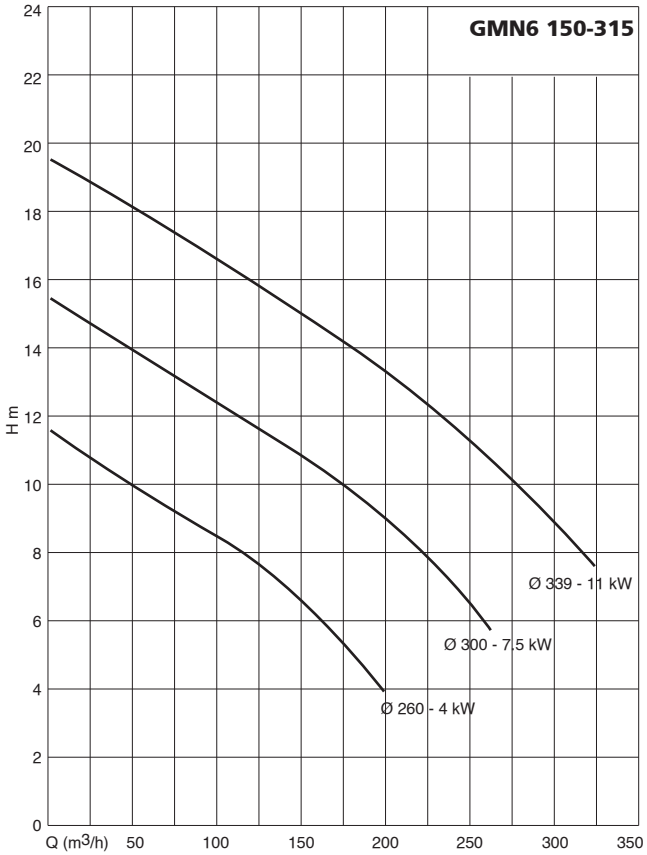

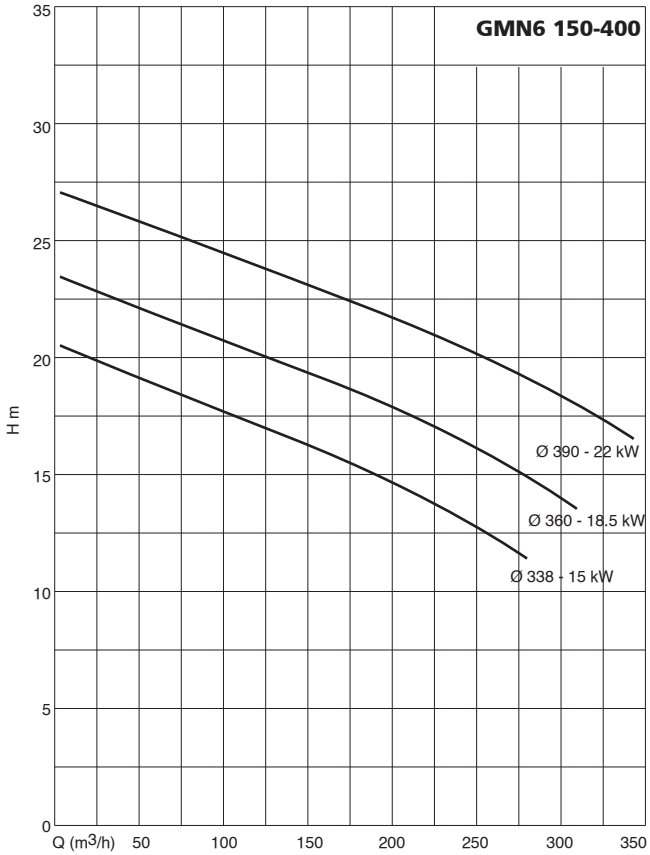

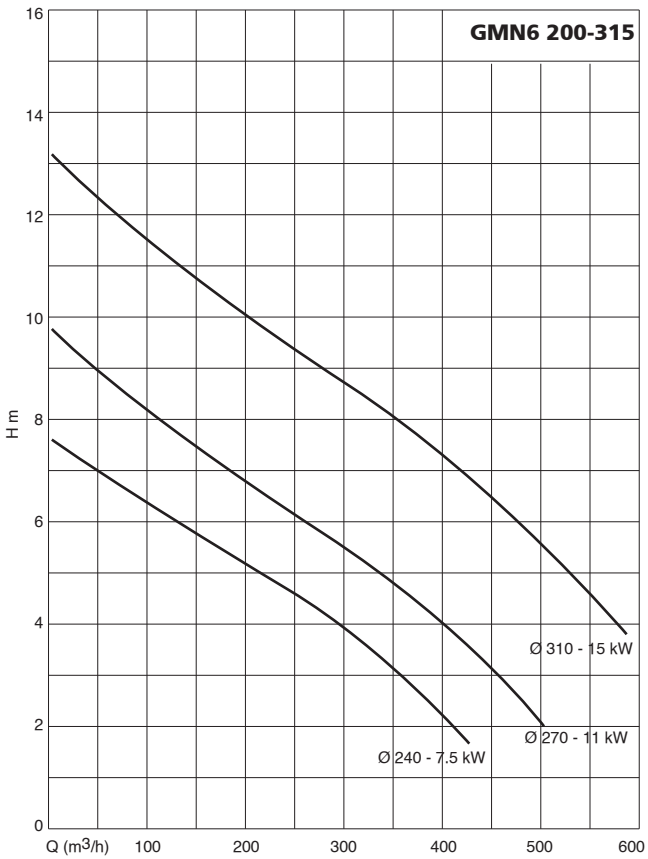

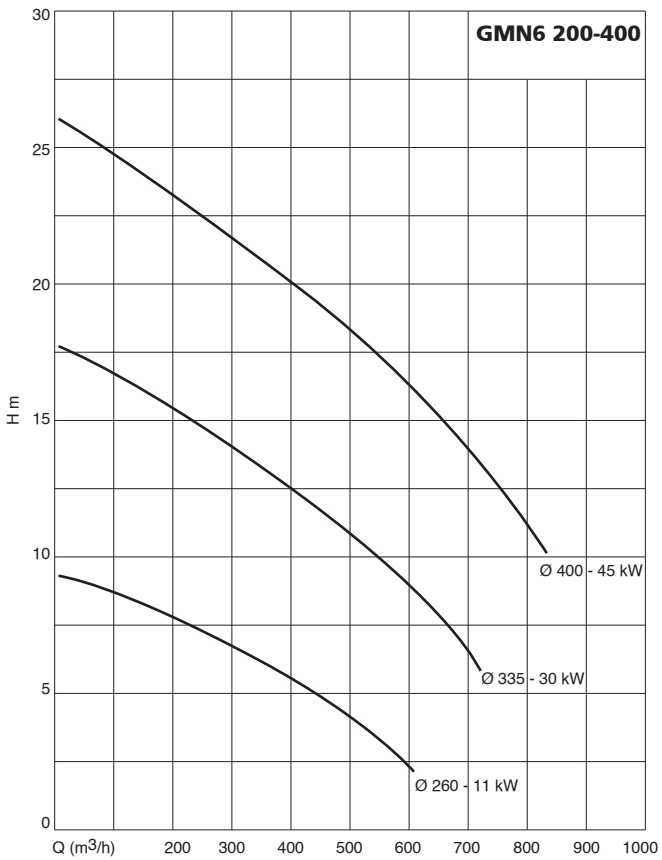

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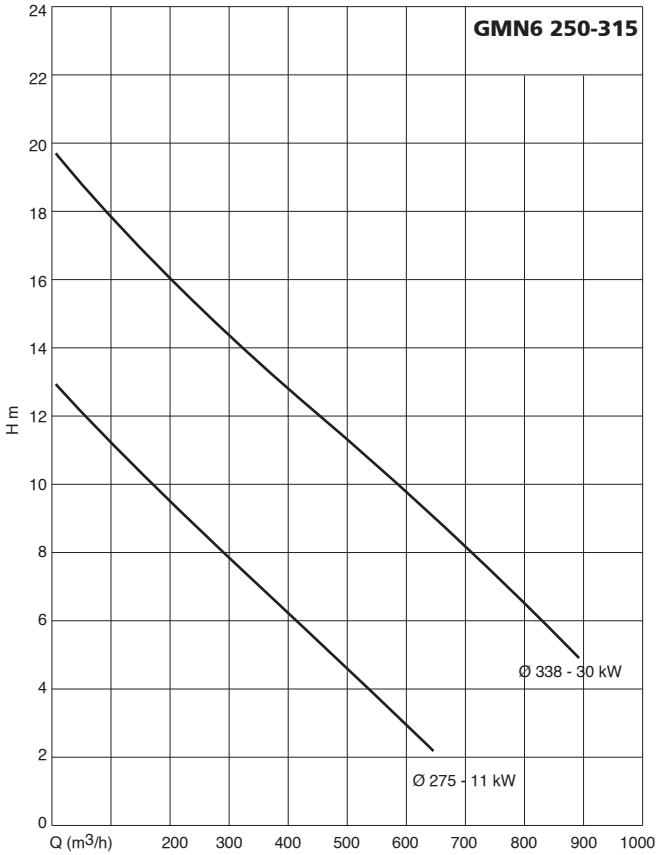

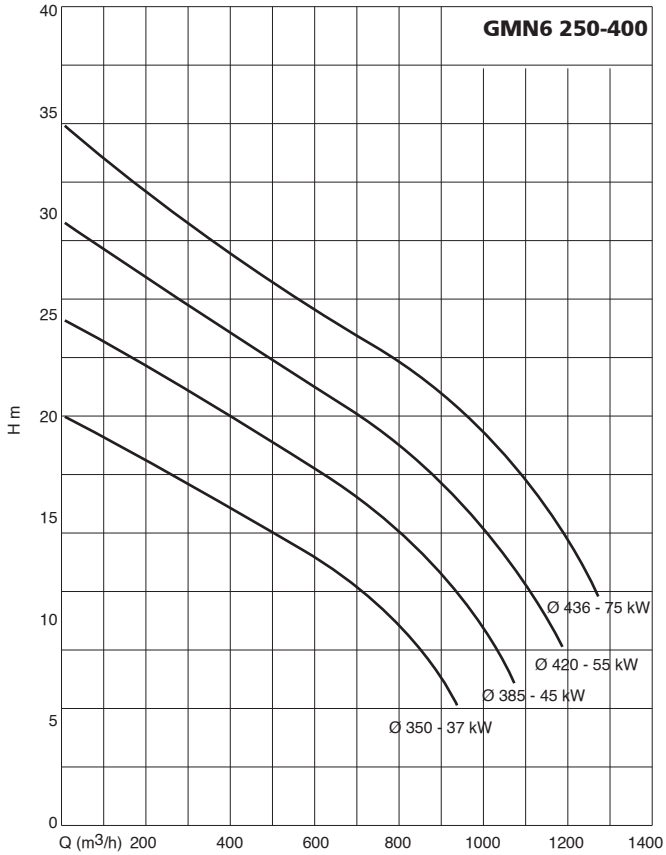

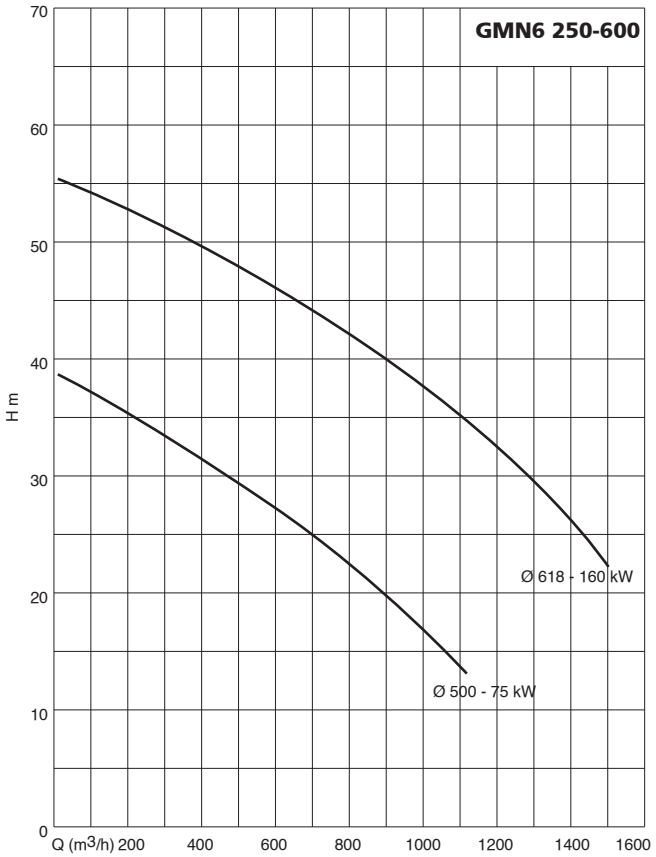

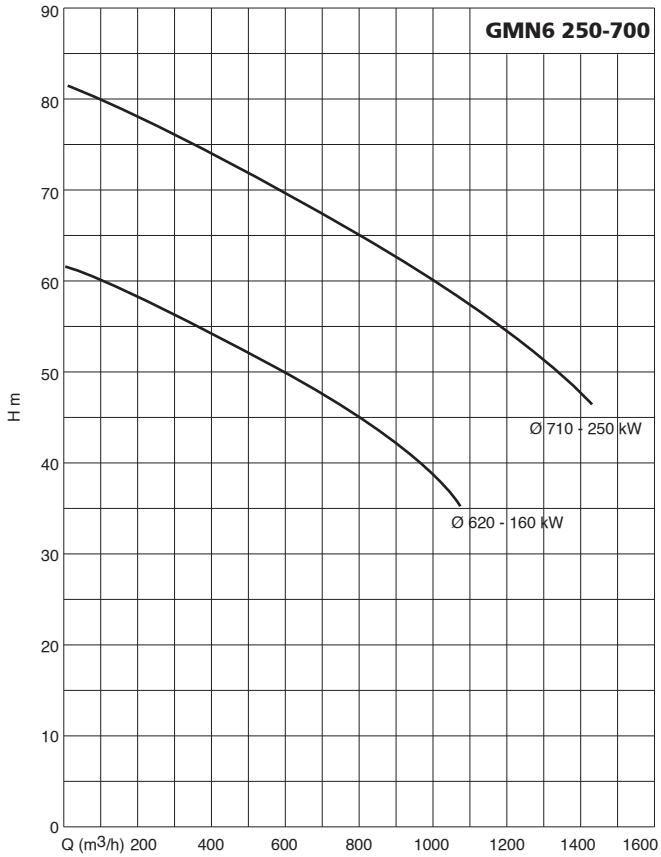

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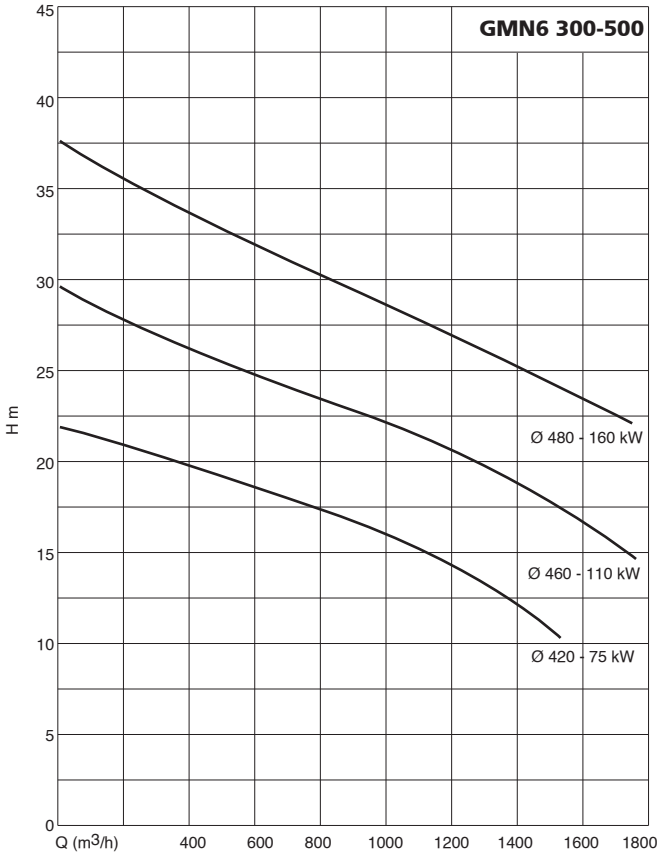
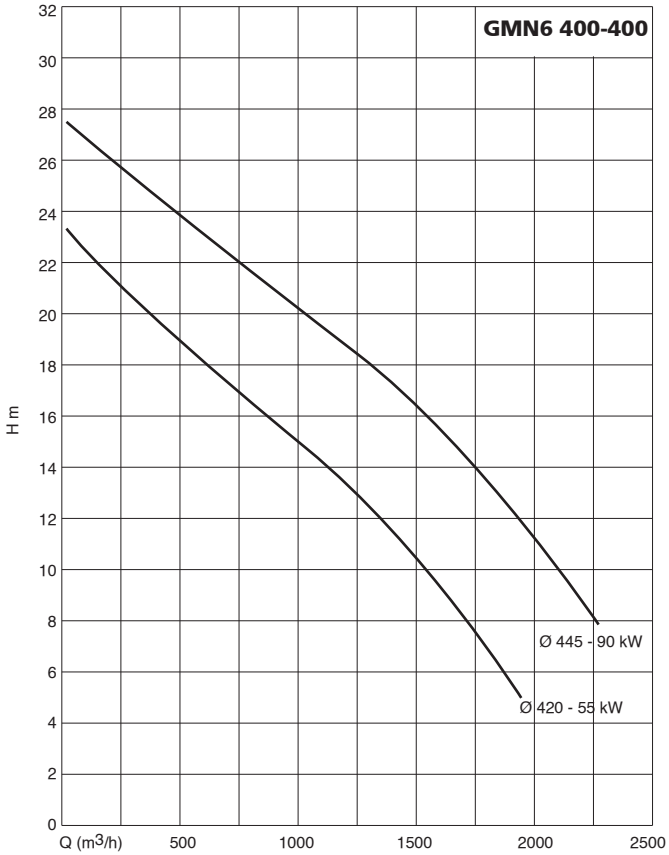
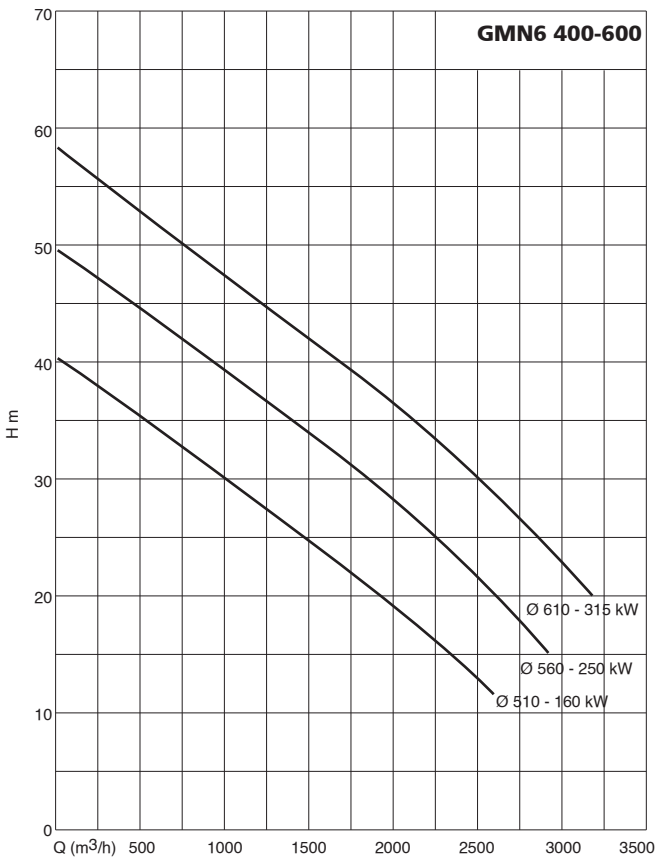
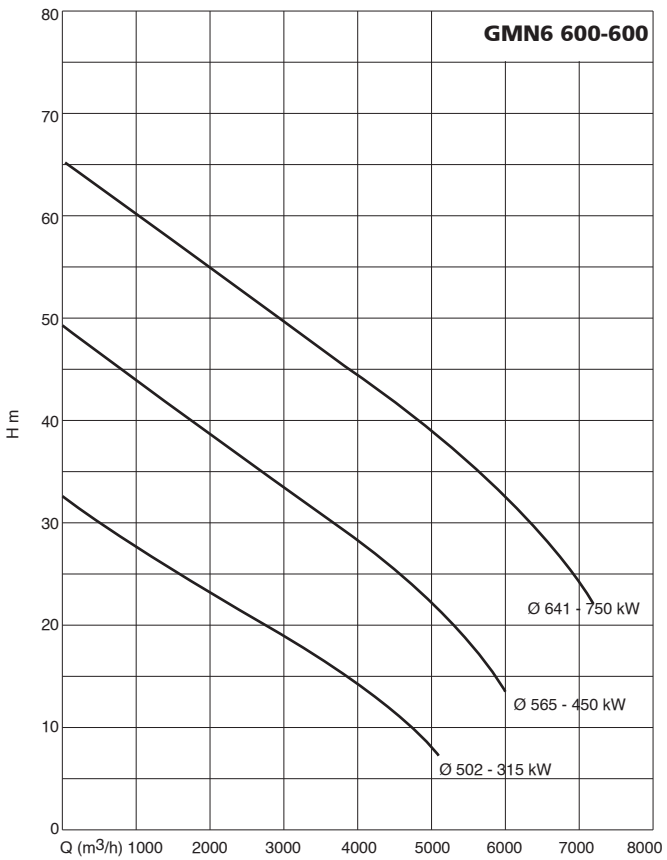
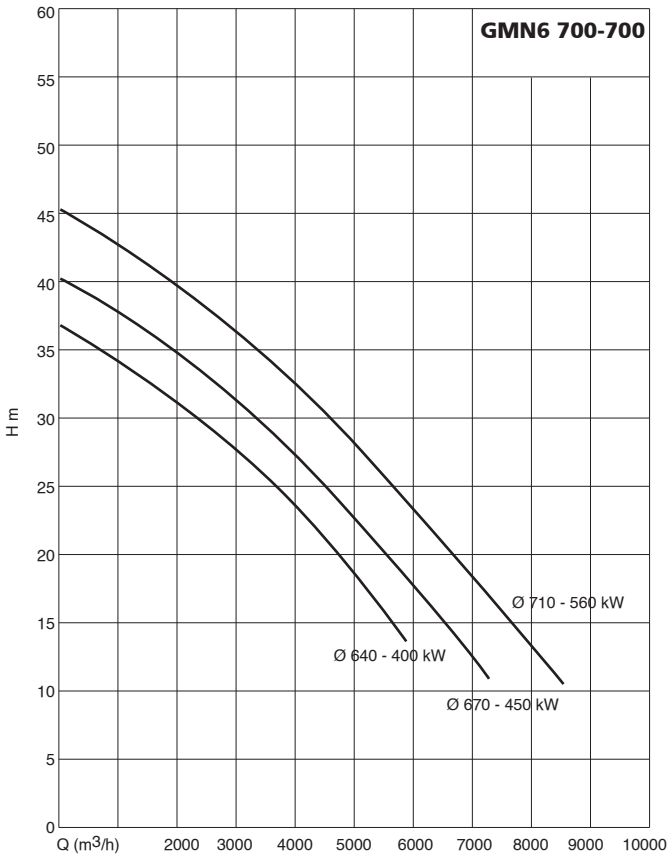




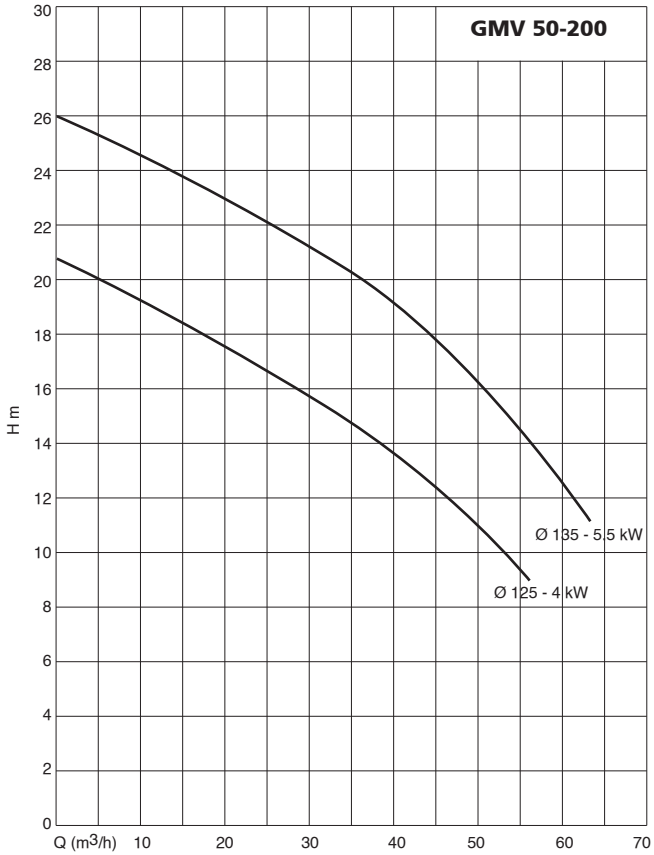


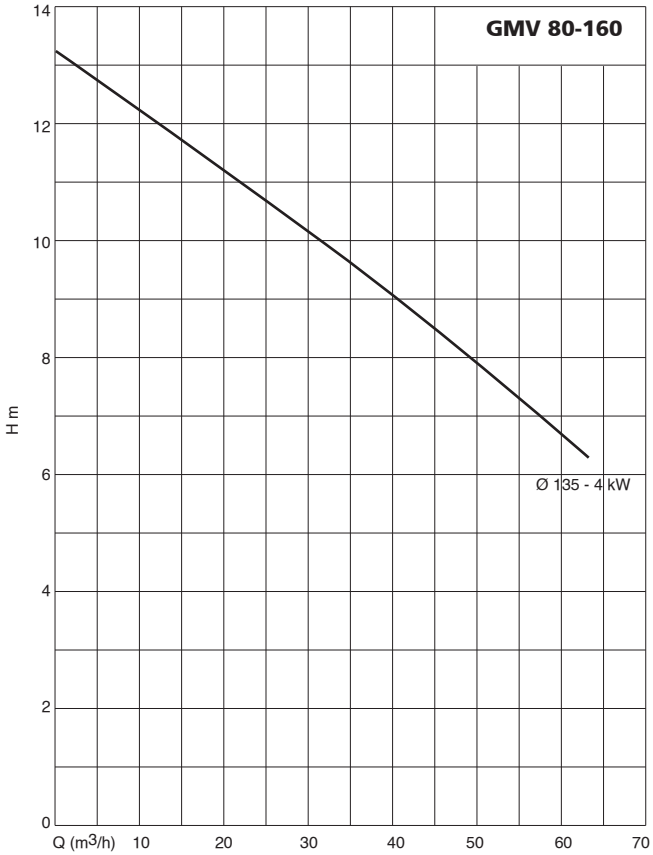


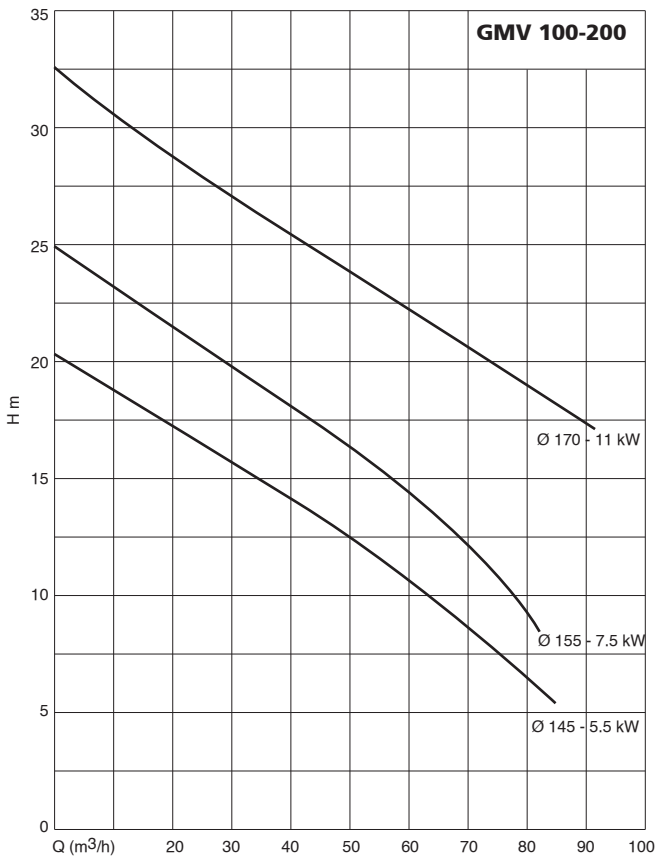
Characteristic curves of GMN pumps with multi channel impeller

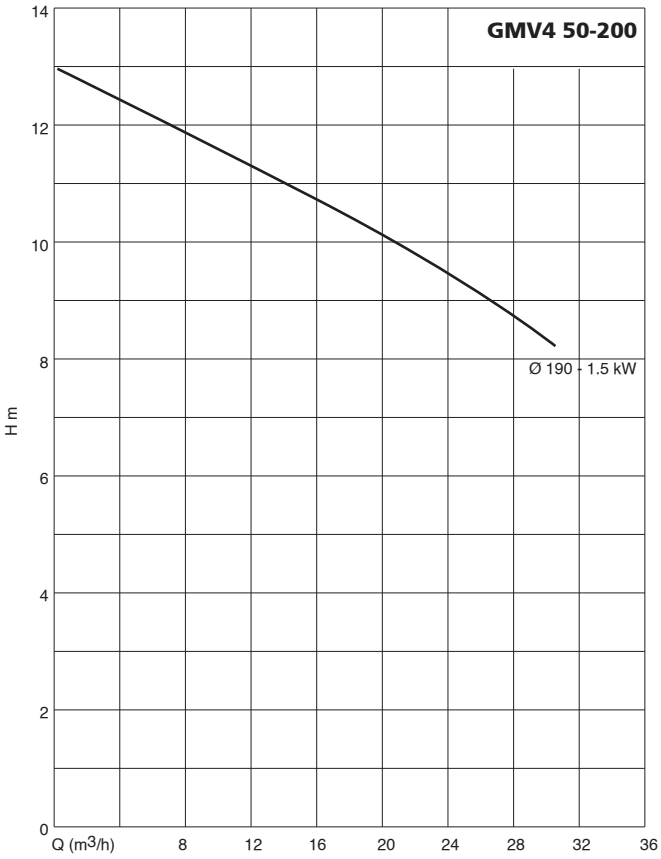


Characteristic curves of GMV pumps with vortex impeller

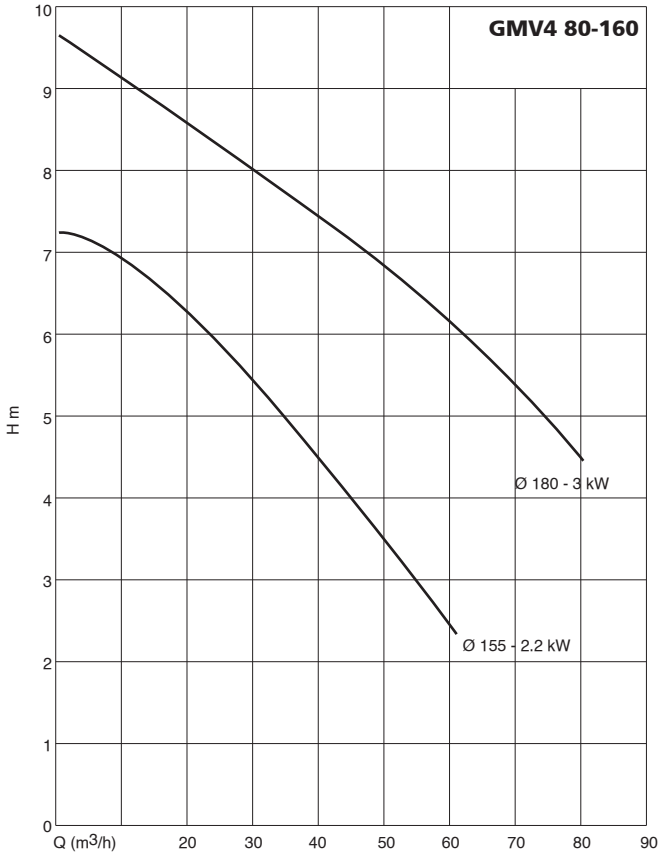


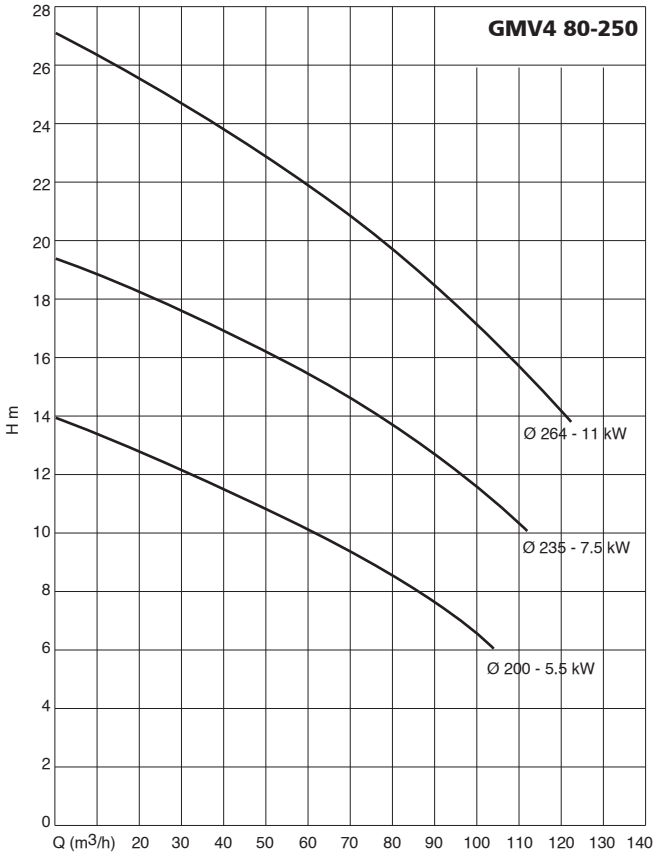


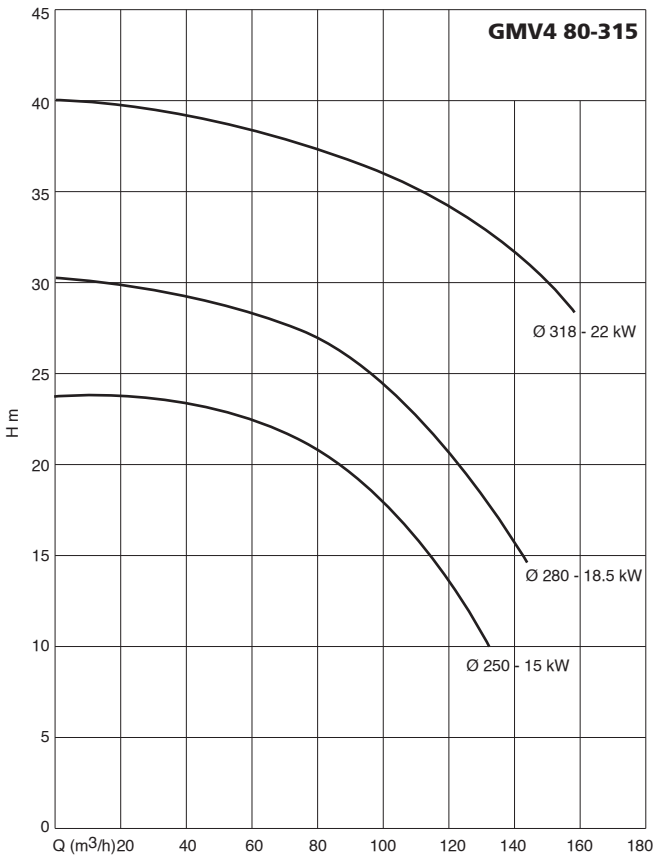


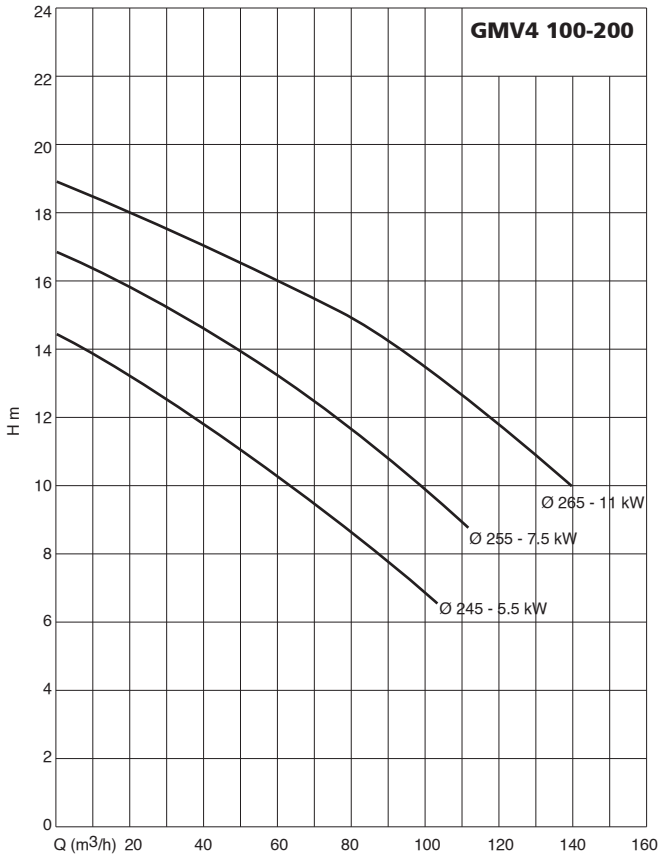


Characteristic curves of GMV pumps with vortex impeller

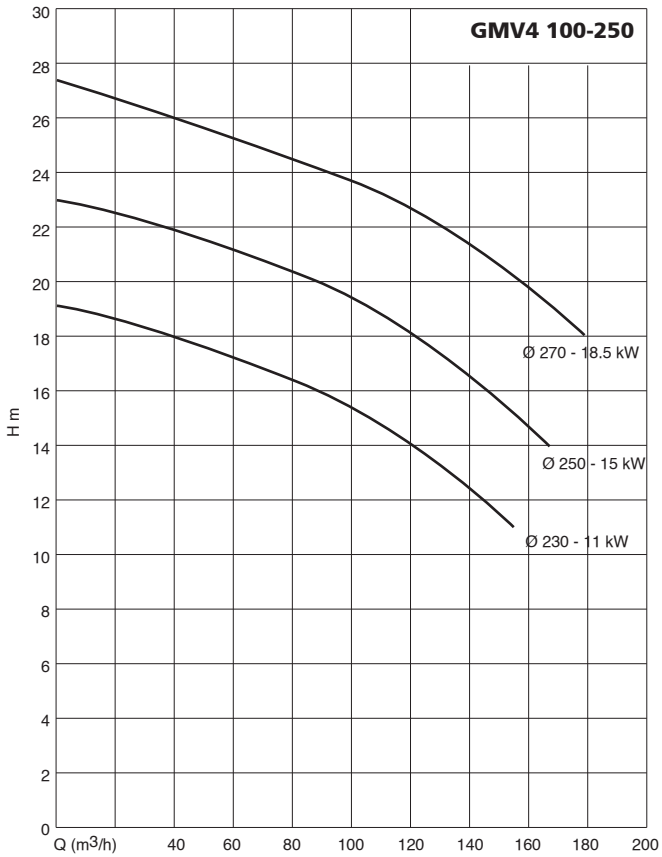


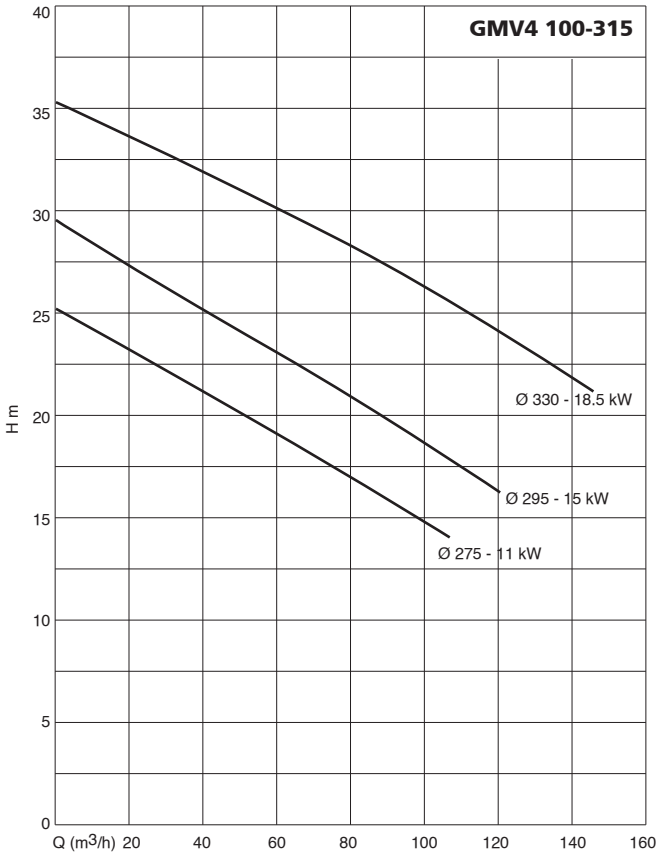


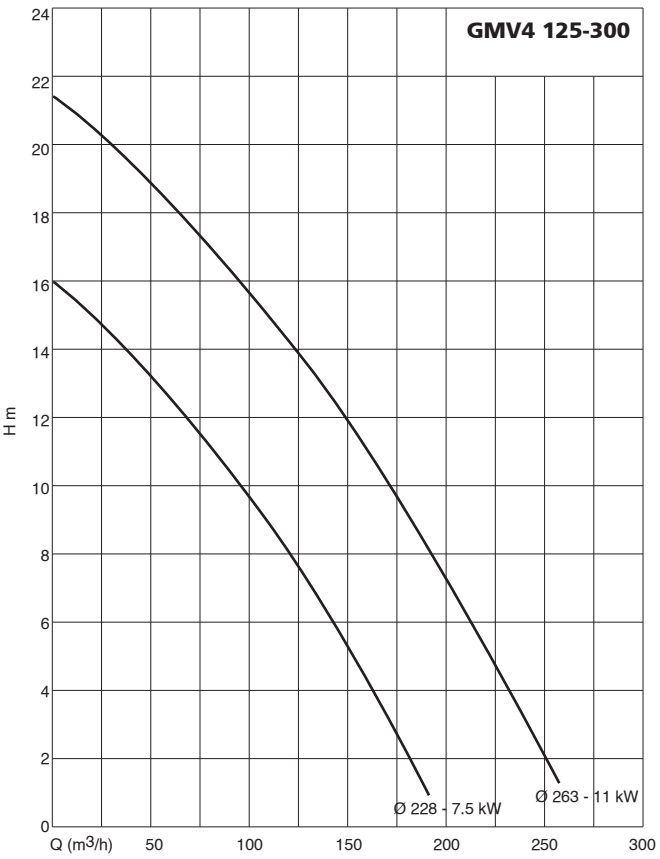


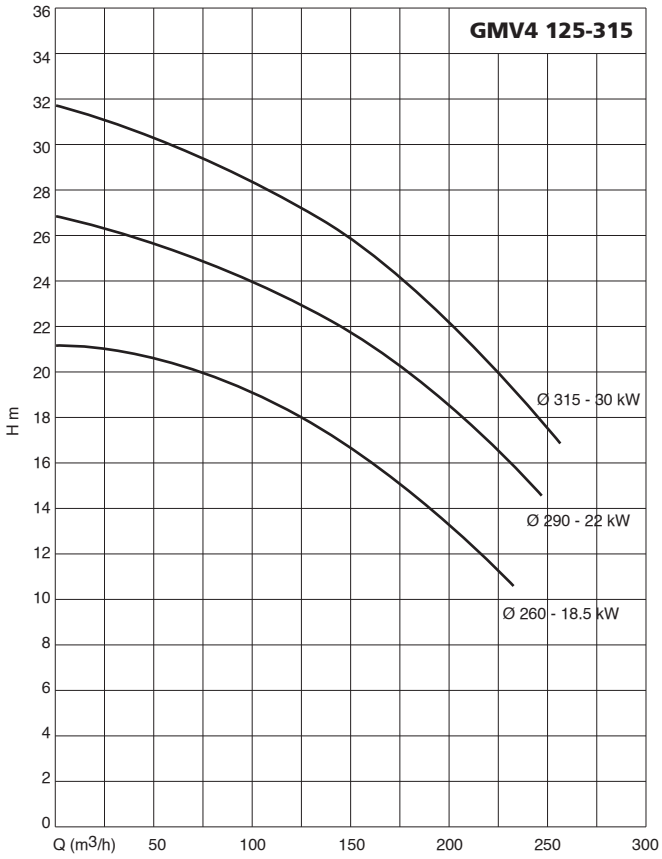


Characteristic curves of GMV pumps with vortex impeller









Installation Dimensions of GM pumps

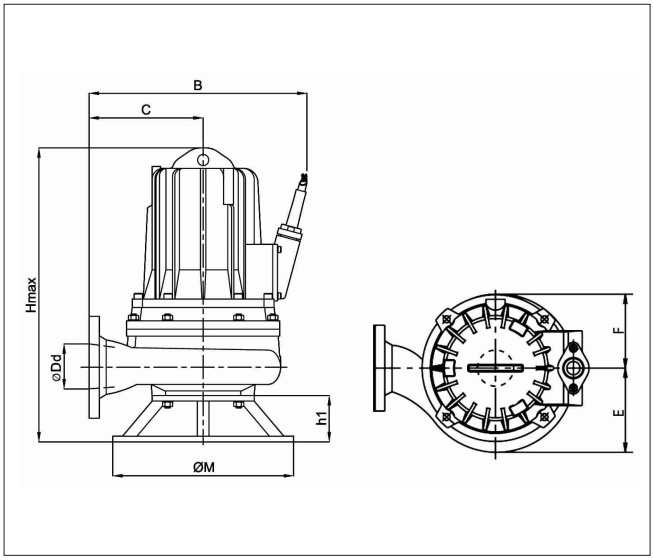


Fig. 1

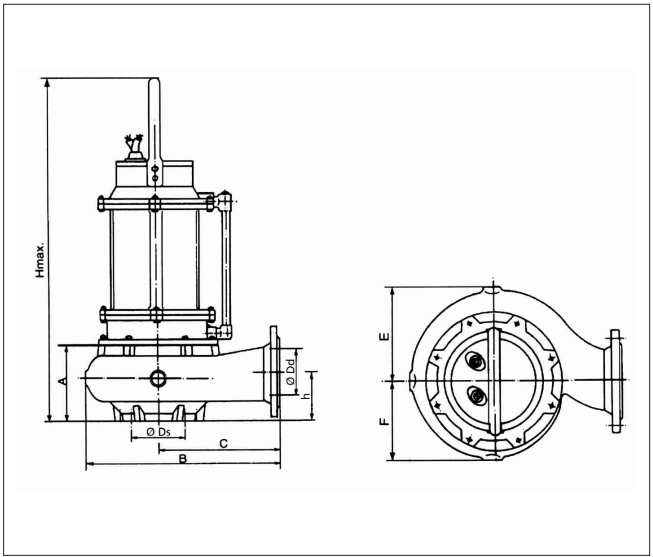


Fig. 2

Pump Type	Ds	Dd	B	C	E	F	h/h1	Hmax	A	M	Fig.
GMx 50/200	60	50	345	200	155	130	50	435	-	220	1
GMx 80/160	80	80	340	200	152	130	100	619	-	390	1
GMx 80/250	80	80	475	280	205	195	60	845	105	-	2
GMx 80/315	80	80	585	340	255	235	70	900	127	-	2
GMx 100/200	100	100	470	246	173	158	100	689	-	390	1
GMx 100/250	100	100	500	300	220	183	80	1060	145	-	2
GMx 100/315	100	100	575	340	248	220	82	1090	147	-	2
GMx 100/400	100	100	655	350	300	270	104	1300	169	-	2
GMx 125/250	125	125	540	315	222	185	100	723	-	390	1
GMx 125/300	150	125	607	355	265	220	100	798	-	390	1
GMx 125/315	125	125	570	315	267	235	160	1300	175	-	2
GMx 125/400	125	125	670	370	315	280	160	1492	179	-	2
GMx 150/250	200	150	590	355	255	205	150	875	-	420	1
GMx 150/315	150	150	635	380	280	240	206	1276	198	-	2
GMx 150/400	150	150	700	400	325	300	206	1311	210	-	2
GMx 200/315	200	200	670	370	335	275	233	1332	236	-	2
GMx 200/400	200	200	895	530	375	355	233	1712	250	-	2
GMx 250/315	250	250	760	440	355	290	260	1750	270	-	2
GMx 250/400	250	250	836	480	387	336	260	2077	308	-	2
GMx 250/600	300	250	1176	650	555	485	260	2207	302	-	2
GMx 250/700	300	250	1185	670	565	510	275	2270	340	-	2
GMx 300/500	300	300	1060	585	525	430	290	2167	398	-	2
GMx 400/400	400	400	1090	800	620	476	400	2350	423	-	2
GMx 400/600	500	400	1215	700	570	471	400	2950	607	-	2
GMx 600/600	600	600	1415	700	800	615	420	2535	630	-	2
GMx 700/700	700	700	1795	1000	900	685	500	2590	790	-	2