

SPCO
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VM, VMC, VMN
Vertical Multistage
Centrifugal Pump, 60Hz

Approvals

electrosuisse

Expert's report

Certification on preparation of an expert's report

CERTIFED Expert no. CH-1836/172-Exp.8
page 1 of 1

Product	Horizontal and vertical pumps
Applicant	Swiss Pump Company Muesweg 36, CH-3645 Gwatt
Manufacturer	Swiss Pump Company Muesweg 36, CH-3645 Gwatt
Manufactured at/Factory	Swiss Pump Company Muesweg 36, CH-3645 Gwatt
Trade-mark	SPCO, SWP
Type/Model	HD, CC, MB, GS, SAPH, VAE, VMC, VBR, CSL, OHF, CH, CDLF, CSLFT, COLFT, SCF, PS, VMC, HM, HBR
Rating, characteristic	220-240V; 3x230V; 3x400V; 3x480V; 50/60Hz Power range: $0.38 - 1800kW$, IPE
Standards safety	EN 60334-1:2011 + A1:2011 IEC 60334-Type Icert1
Standards EMC	---
Other standards	---

For this product an expert's report with regard to the aforementioned normative documents, respectively technical features has been issued.
The results are given in the report no. no. 18-36/172-81

**Electrosuisse
National Certification Body**

Markus Pflaiz
Product Certification

SCES EUS
(EN 45011)
Forschstr. 2015-68-12

SW: Hersteller CE, Marken, Energie, etc. Informationen
EN: Manufacturer, Brand, Voltage, etc. Information
DE: Hersteller CE, Marken, Energie, etc. Informationen
EN: Manufacturer, Brand, Voltage, etc. Information
EN: Hersteller CE, Marken, Energie, etc. Informationen
EN: Manufacturer, Brand, Voltage, etc. Information

Net [®]

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and SQS
hereby certify that the organisation

Swiss Pump Company AG
3645 Thun-Gwatt
Switzerland

Certified area
Whole Company

Field of activity
**Design, development, manufacture and sale of products
for the transportation of liquids**

has implemented and maintains a
Management System
which fulfills the requirements of the following standard(s)

ISO 9001:2008

Scope No(s): 17, 18, 19
Issued on: 2012-02-20
Validity date: 2015-02-19
Registration Number: **CH-32160**

Michael Drechsel
President of IQNet

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Managing Director SQS

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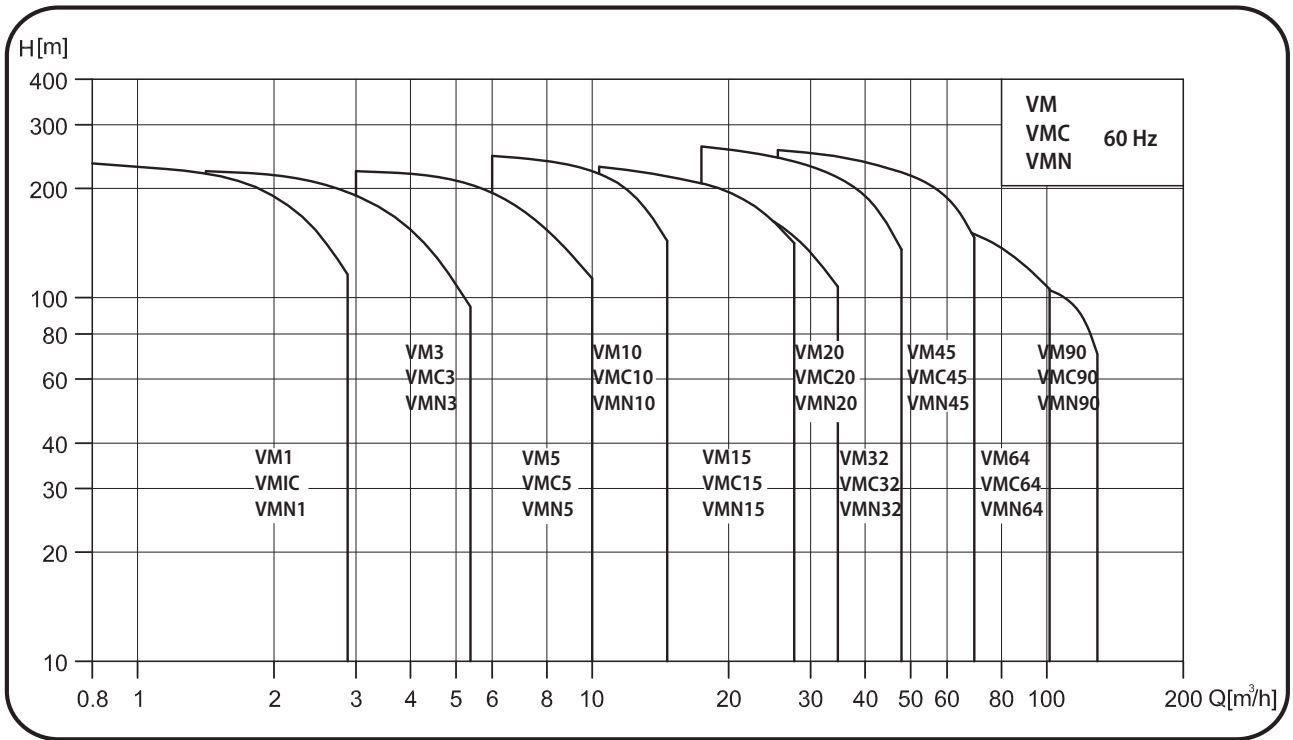
General Data

Performance scope	page	4
Product data		5
Application		6
Pump		6
Electrical Motor		6
Definition of Model		6
Motor		7
Mechanical seal		7
Section drawing		8
Maximum operating and inlet pressure		10
Performance curve		11
Min. inlet pressure NPSH		12
Operation in parallel		12
Pump liquid		13

Technical Data

VM 1	page	14
VMC, VMN 1		16
VM 3		18
VMC, VMN 3		20
VM 5		22
VMC, VMN 5		24
VM 10		26
VMC, VMN 10		28
VM 15		30
VMC, VMN 15		32
VM 20		34
VMC, VMN 20		36
VM 32		38
VMC, VMN 32		40
VM 45		42
VMC, VMN 45		44
VM 64		46
VMC, VMN 64		48
VM 90		50
VMC, VMN 90		52

Performance Scope



Product range

Range	VM, VMC, VMN									
	1	3	5	10	15	20	32	45	64	90
60Hz										
Nominal flow (m3/h)	1.2	3.6	6	12	18	24	38	54	77	108
Flow range(m3/h)	0.8-2.9	1.5-5.4	3-10	6-15.5	10.5-28	12.5-35	18-48	26-70	36-102	54-146
Max. pressure (bar)	23.5	23.3	23	24.5	23.5	20.5	27	26	17.8	15.9
Fluid temperature (°C)	-15 to +120									
Motor power (kW)	0.37-3.0	0.37-4.0	0.55-7.5	0.75-11	1.5-18.5	2.2-18.5	2.2-30	5.5-45	7.5-45	11-45
Version										
VM : Cast iron and stainless steel EN 1.4301/AISI 304	•	•	•	•	•	•	•	•	•	•
VMC : Stainless steel EN 1.4301/AISI 304	•	•	•	•	•	•	•	•	•	•
VMN : Stainless steel EN 1.4401/AISI 316	•	•	•	•	•	•	•	•	•	•
Motor										
Mains connection 3 ~ (V/Hz) (Permissible voltage tolerance ± 10%)	0.37-1.1 kW 220-255/380-440 V 60 Hz 1.5-7.5 kW 220-277/380-480 V 60 Hz From 11 kW 220/380/440 V 60 Hz									
Insulation class	F									
Protection class	IP 55									
Ambient temperature	50°C									
VM Pipe Connection										
Flange	DN 25/	DN 25/	DN 25/	DN 40	DN 40	DN 50	DN 65	DN 80	DN 100	DN 100
	DN 32	DN 32	DN 32							
Victaulic-connections	Rp 1¼	Rp 1¼	Rp 1¼	R 2	R 2	R 2	N/A	N/A	N/A	N/A
	DN 32	DN 32	DN 32	DN 50	DN 50	DN 50				
Mechanical Seals										
SiC/SiC	Standard									
Seals										
EPDM	Standard									
Viton										

Applications

- Water supply and pressure boosting: Pressure boosting in buildings, hotels, residential complexes Pressure booster stations, supply of water networks Pressure boosting for industrial water supply.
- Light industry: Washing and cleaning systems, Car washing facilities, Fire fighting systems, Process water systems, Machine tools (cooling lubricants).
- Heating, Ventilation and Air-Conditioning: Boilers, Induction heating, Heat exchangers, Refrigerators, Cooling towers and systems, Temperature control systems.
- Irrigation and Agriculture: Greenhouses, Sprinkler irrigation, Field irrigation (flooding).
- Water Treatment: Water softeners and de-mineralization, Reverse Osmosis systems, Distillation systems, Filtration, Ultra-filtration systems.

Pump

The VM, VMC and VMN pumps are non-self priming vertical multistage pump of in line design, flange or with Victaulic coupling with equally sized suction and discharge ports. Stage construction with stainless steel impellers, chambers and pressure casing. Pump stub shaft and motor shaft of the IEC- standards motor are directly close coupled. All pumps are equipped with a catridge type mechanical seal for easy maintenance.

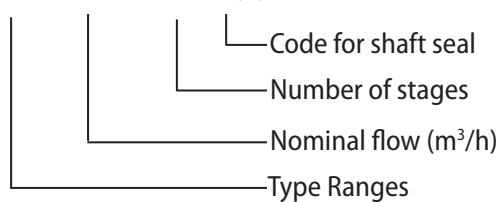
VM, VMC and VMN pumps have different pump sizes and various numbers of stages to provide the flow and the pressure required.

Electrical motor

- Squirrel cage in short circuit, aluminum casing up to 22 kW, totally enclosed, fan-cooled, 2-pole standard motor.
- Standard supply SPCO motors.
- Enclosure class: IP55
- Insulation class: F
- Standard voltages: P2: 0.37 - 1.1kW : 3 x 220 - 255/380 - 440 V
P2: 1.5 - 7.5kW : 3 x 220 - 277/380 - 480 V
P2: From 11 kW 3 x 220 / 380 / 440 V
- The motors have efficiency values that fall within the range normally referred to as EFF.1
- Ambient temperature : Max. + 50 ° C

Definition of Model

VM - 10 - 5 - SQQE



Motor Data

Motor Type					Nominal current in [A]			
HP	KW	Pole	Flange	Frame	3~220 V	3~255V	3~380 V	3~440 V
0.5	0.37	2	B14	71	1.8	1.7	1	1.1
0.75	0.55			71	2.5	2.4	1.5	1.6
1.0	0.75			80	2.9	2.8	1.7	1.8
1.5	1.1			90S	4.1	4	2.4	2.5
2.0	1.5				3~220 V	3~277V	3~380 V	3~480 V
3.0	2.2			90S	5.7	5	3.3	2.9
4.0	3.0			90L	8.3	6.9	4.8	4
5.5	4.0			100L	11.4	9.9	6.6	5.7
7.5	5.5			112M	14	14.2	8.1	8.2
10.0	7.5				132S	20.3	18.2	11.7
15	11			132M	26.8	22.9	15.5	13.2
20.0	15.0					3~220V	3~380 V	3~440 V
25	18.5			160M		36.5	21.2	18.3
30	22			160M		47.5	27.5	23.8
40	30			160L		58.5	33.9	29.3
50	37			180M		73.3	42.4	36.7
60	45			180L		97.8	56.6	48.9
				200L		122	70.6	61
			200L		143	82.8	71.5	

Mechanical Seals

Standard Cartridge type Mechanical seal made of Silicon Carbide/Silicon Carbide/EPDM or Viton. Based on the type of application, alternative materials are available for the seal and the elastomers. The cartridge type mechanical seal can be replaced in minutes without special tools and without dismantling the pump.



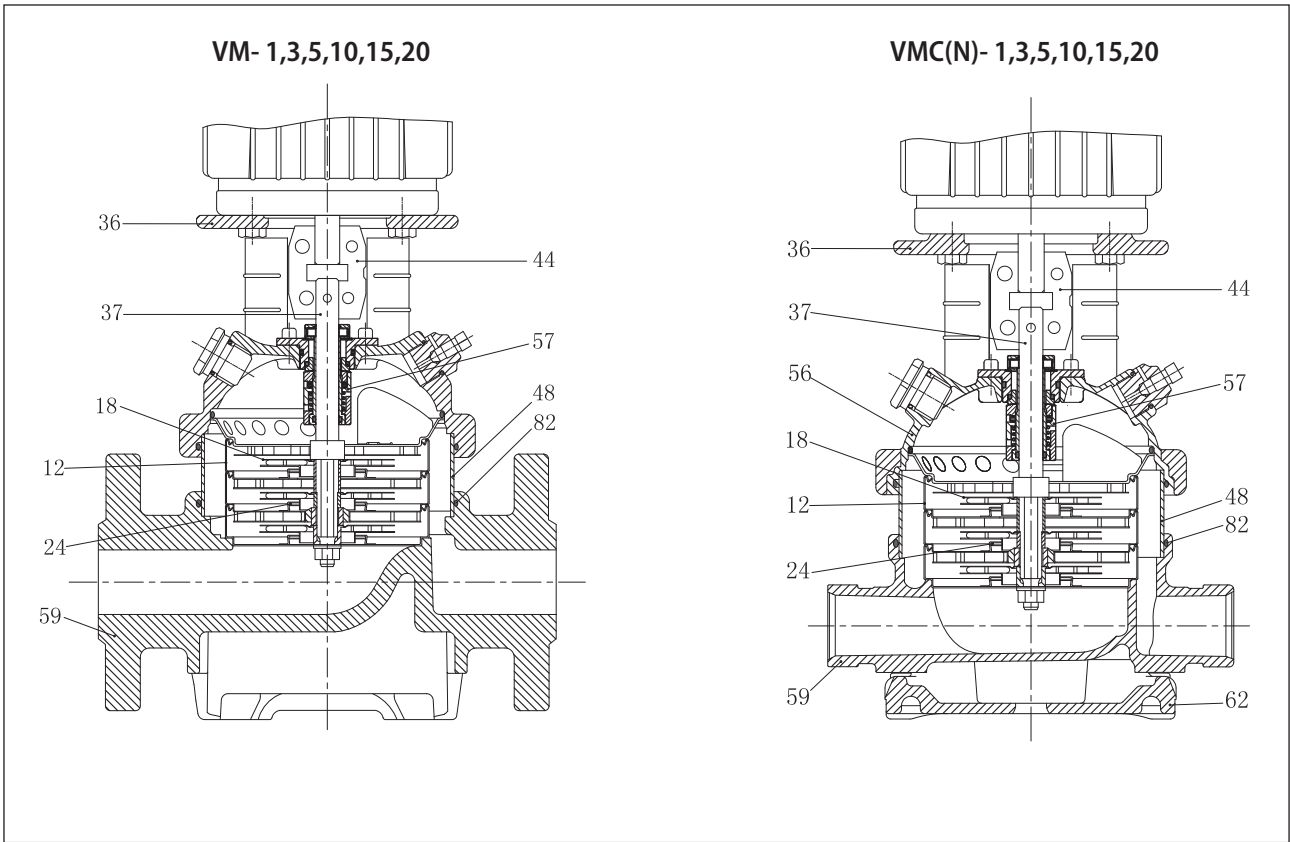
List of Materials

Q : Silicon carbide	E : EPDM
U : Tungsten carbide	V : Viton
B : Carbon	

Type of Seal

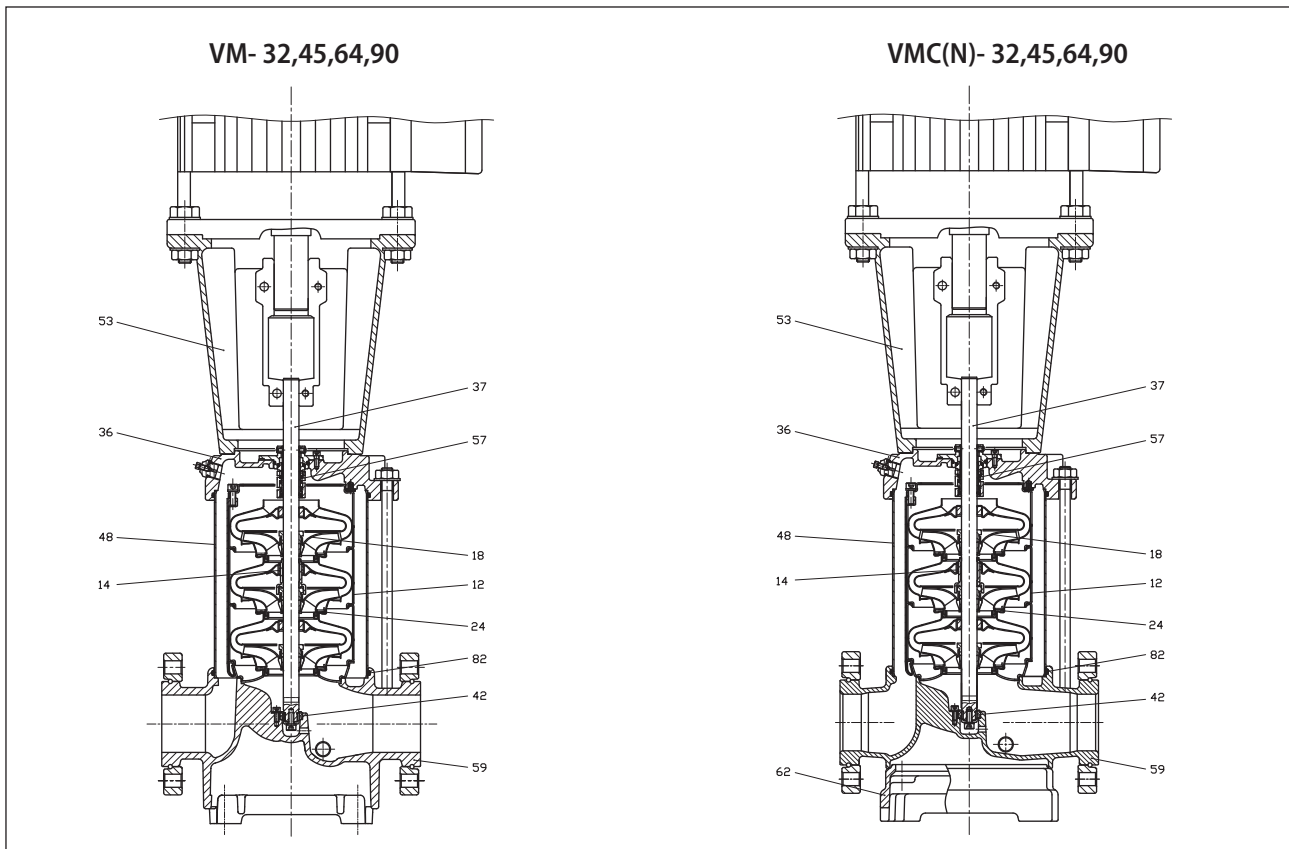
Seal Type	VM	VMC	VMN
Mechanical Seals			
S : Cartridge seal	•	•	•
Q Q	•	•	•
UU	Optional	Optional	Optional
UB	Optional	Optional	Optional
Seals			
E	•	•	•
V	•	•	•

Section drawing



Pos.	Name	Material	VM 1, 3, 5, 10, 15, 20		VMC 1, 3, 5, 10, 15, 20		VMN 1, 3, 5, 10, 15, 20	
			Standard EN/DIN	AISI/ASTM	Standard EN/DIN	AISI/ASTM	Standard EN/DIN	AISI/ASTM
36	Pump head	Cast Iron	EN-GJL-200	ASTM 25B	EN-GJS-450-10	ASTM 70-50-05	EN-GJS-450-10	ASTM 70-50-05
56	Pump head cover	Stainless steel	N/A		1.4301	AISI 304	1.4401	AISI 316
18	Impeller	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
37	Shaft	Stainless steel	1.4057	AISI 431	1.4057	AISI 431	1.4401	AISI 316
48	Outer Sleeve	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
82	O-ring for outer sleeve	EPDM						
12	Chamber	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
24	Neck ring	PTFE						
59	Base	Cast Iron	EN-GJL-200	ASTM 25B	N/A			
	Base	Stainless steel	N/A		1.4301	AISI 304	1.4401	AISI 316
62	Base plate	Cast Iron	N/A		EN-GJL-200	ASTM 25B	EN-GJL-200	ASTM 25B
44	Coupling	Fe-Cu-C	SINT C11	MPIF FC0525	SINT C11	MPIF FC0525	SINT C11	MPIF FC0525
57	Mechanical seal	Cartridge type						

Section drawing



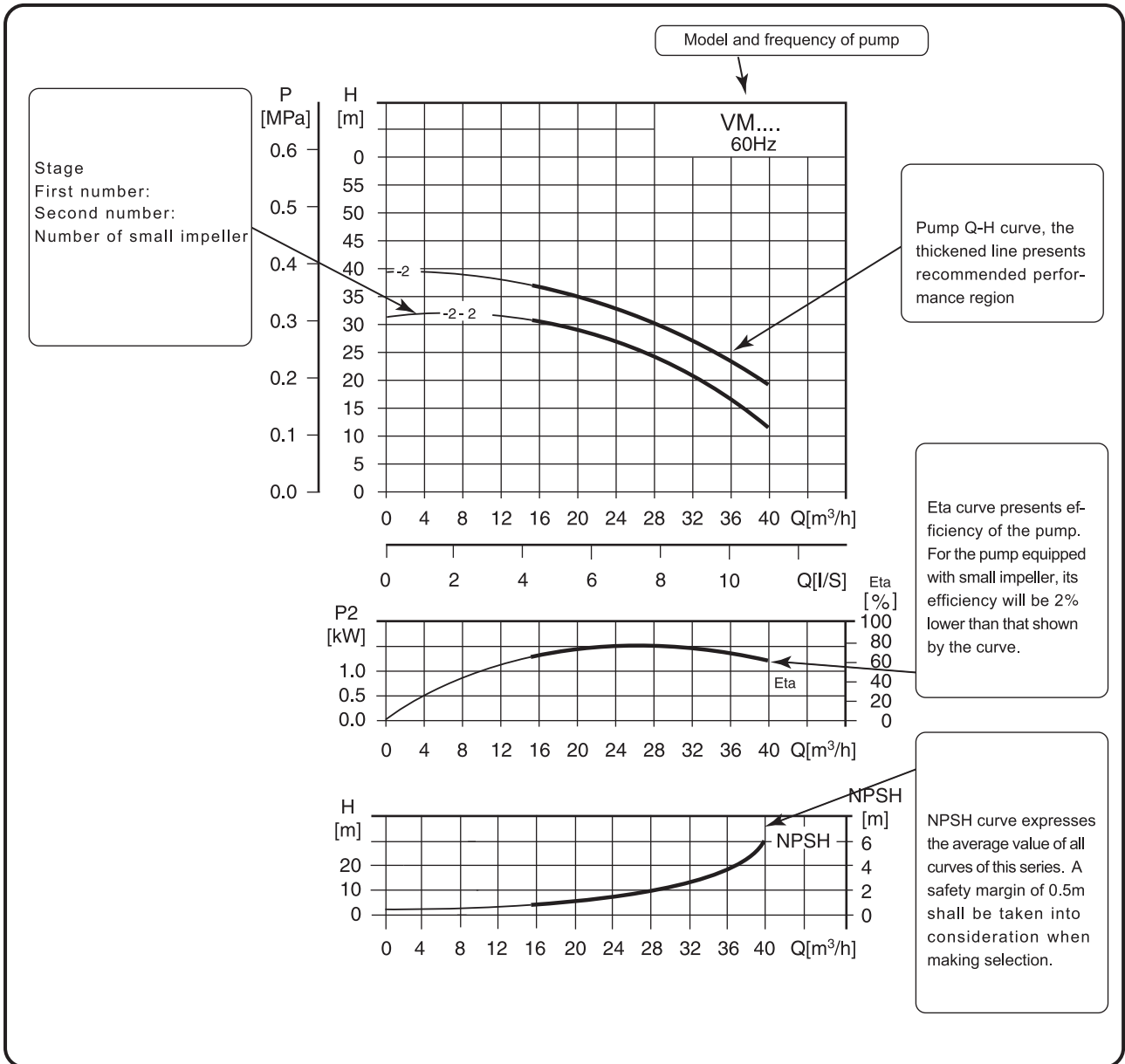
Pos.	Name	Material	VM 32, 45, 64, 90		VMC 32, 45, 64, 90		VMN 32, 45, 64, 90	
			Standard EN/DIN	Standard AISI/ASTM	Standard EN/DIN	Standard AISI/ASTM	Standard EN/DIN	Standard AISI/ASTM
36	Pump head	Cast Iron	EN-GJL-250	ASTM 35B				
		Stainless steel			1.4301	AISI 304	1.4401	AISI 316
53	Motor Bracket	Cast Iron	EN-GJL-250	ASTM 35B	EN-GJL-250	ASTM 35B	EN-GJL-250	ASTM 35B
18	Impeller	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
37	Shaft	Stainless steel	1.4057	AISI 431	1.4057	AISI 431	1.4401	AISI 316
48	Outer Sleeve	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
82	O-ring for outer sleeve	EPDM						
12	Chamber	Stainless steel	1.4301	AISI 304	1.4301	AISI 304	1.4401	AISI 316
24	Neck ring	Carbon Fiber + POB + PTFE						
59	Base	Cast Iron	EN-GJL-250	ASTM 35B	N/A			
	Base	Stainless steel	N/A		1.4301	AISI 304	1.4401	AISI 316
62	Base plate	Cast Iron	N/A		EN-GJL-250	ASTM 35B	EN-GJL-250	ASTM 35B
57	Mechanical seal	Cartridge type						
14	Bearing ring		Bronze				POB+Graphite+PTFE	
42	Bottom bearing ring	Tungsten carbide/ Tungsten carbide						

Maximum Operating and inlet pressure

Stages	Maximum Inlet Pressures	Stages	Maximum Operating Pressure
VM, VMC, VMN 1			
2 - 25	10 bar	2 - 27	25 bar
27	15 bar		
VM, VMC, VMN 3			
2 - 15	10 bar	2 - 25	25 bar
17 - 25	15 bar		
VM, VMC, VMN 5			
2 - 9	10 bar	2 - 24	25 bar
10 - 24	15 bar		
VM, VMC, VMN 10			
1 - 5	8 bar	1 - 10	16 bar
6 - 18	10 bar	12 - 17	25 bar
VM, VMC, VMN 15			
1 - 2	8 bar	1 - 8	16 bar
3 - 12	10 bar	9 - 12	25 bar
VM, VMC, VMN 20			
1	8 bar	1 - 7	16 bar
2 - 10	10 bar	8 - 10	25 bar
VM, VMC, VMN 32			
(1-1) - (2)	4 bar	(1-1) - 5	16 bar
(3-2) - (6)	10 bar	(6-2) - (10-2)	30 bar
(7-2) - (10-2)	15 bar		30 bar
VM, VMC, VMN 45			
(1-1) - 1	4 bar	(1-1) - 4	16 bar
2 - 3	10 bar	(5-2) - 7	30 bar
4 - 7	15 bar		
VM, VMC, VMN 64			
1 - 1	4 bar	(1-1) - 3	16 bar
2 - 3	10 bar	(4-2) - (5-2)	30 bar
4 - 7	15 bar		
VM, VMC, VMN 90			
(1-1) - 3	16 bar	(1-1) - (2-2)	10 bar
(4-2)	30 bar	(2-1) - (4-2)	15 bar

- Rule to follow: the inlet pressure + the pressure against a closed valve < Max. operating pressure.

Performance Curves



Conditions for the performance curves:

- Curve tolerance in conformity with ISO9906, appendix A.
- Measurement is done with 20 °C air-free water, kinematic viscosity of 1mm² /sec.
- The operation of pump shall refer to the performance region indicated by the thickened curve to prevent overheating due to too small flow rate or overload of motor due to too large flow rate.

Minimum inlet pressure NPSH

In case that the pressure in pump is lower than the steam pressure used to convey liquid, the cavitations will occur. To avoid cavitations, a minimum pressure at the inlet side of the pump shall be guaranteed. The maximum suction stroke can be calculated with following formula:

$$H = P_b \times 10.2 - NPSH - H_f - H_v - H_s$$

P_b = atmosphere pressure [bar] (can be set as 1bar)

In a closed system, P_b means system pressure [bar]

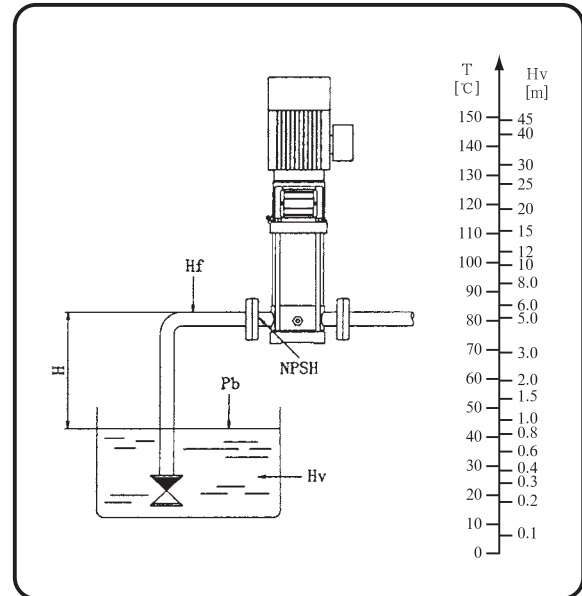
NPSH= Net positive suction head [m], It can be read out from the point of possible max. flow rate shown on NPSH curve

H_f = Pipeline loss at the inlet [m]

H_v = Steam pressure [m]

H_s = Safety margin Minimum 0.5m delivery head

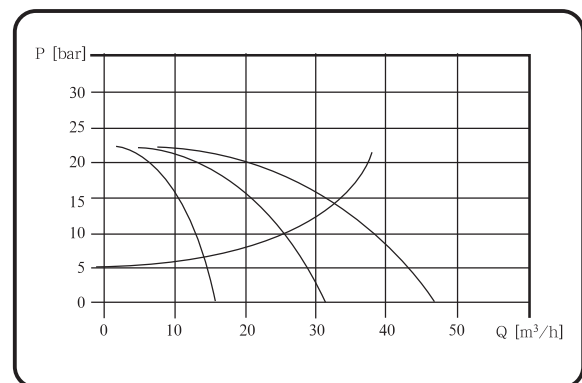
If the calculated result H is positive, the pump may run under the max. suction stroke H . In case the calculated result H is negative, a delivery head of min. inlet pressure is necessary.



Check and ensure that the pump is not at cavitation state.

Operation in parallel

- Connecting several pumps in a parallel running mode will benefit the reliability of the system compared to a single pump system.
- Applicable to different working states required by a variable flow system.
- Increasing the availability of water supply if a pump fails: only a part of the system flow is effected.



Two pumps or more can be connected in parallel running if necessary.

Pumped Liquids

VM, VMC, VMN pumps can handle a wide variety of liquids, each with its own characteristic.

VM, VMC

Non-corrosive liquids

For fluid transfer, circulation and pressure boosting of cold or hot clean water.

VMN

Industrial liquids

Light acids

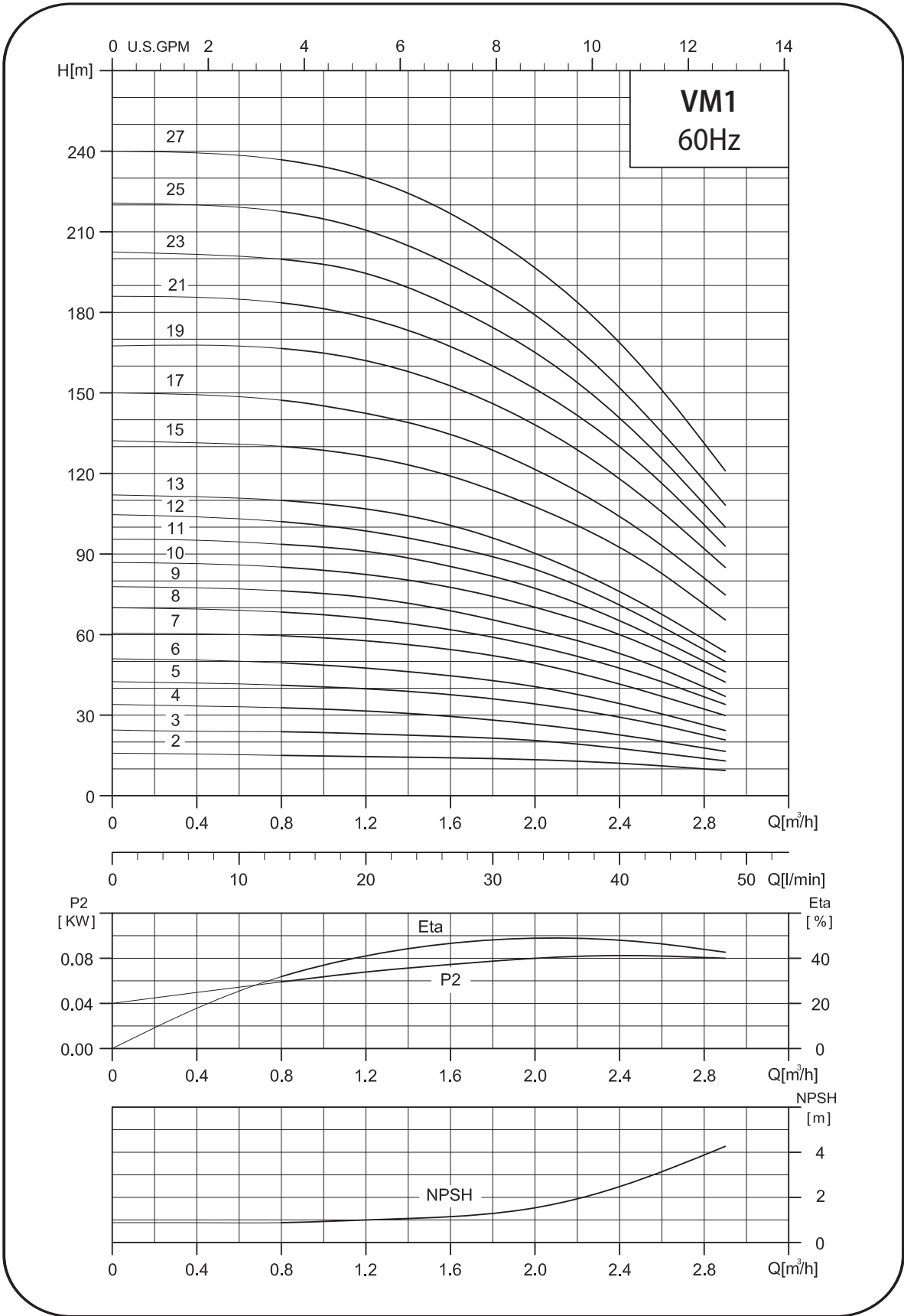
The fluids covered in the list are not complete. Data on the application limits of different pump materials when handling any of the listed fluids are considered to be the best choices. However, the table is intended as a general guide only, and cannot replace actual testing of the pumped fluids and pump materials under specific working conditions.

When choosing the pump version, sufficient attention should be given to the flow medium, such as density, solidification point, viscosity as well as ex-protection requirement. The limits of applicability of the pumps, based on pressure and temperature must also be considered.

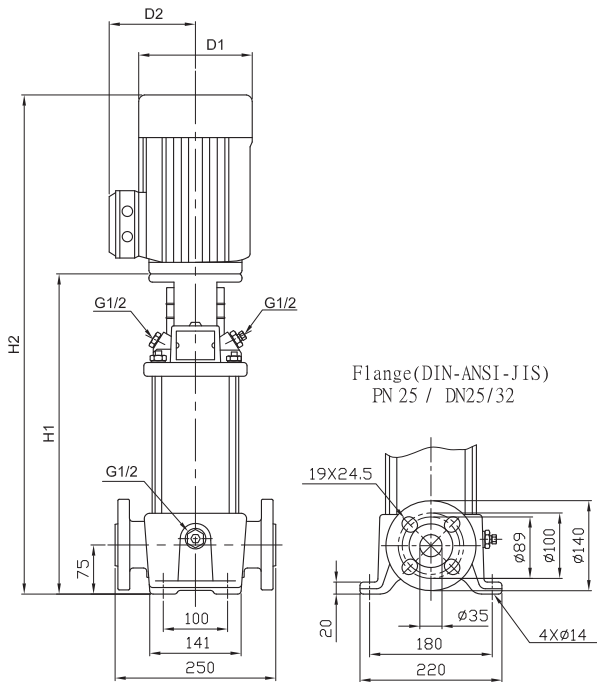
Recommended

Pumped fluid	Fluid Concentration, temperature	VMC		VMN	
		EPDM	Viton	EPDM	Viton
Acetic acid anhydride	25°C			•	
Alkaline cleaner		•			
Aluminium sulphate	10%, 25°C				•
Ammonia water (A. hydroxide)	20%, 40°C	•			
Ammonia hydrogen carbonate	10%, 40°C	•		•	
Benzoic acid	10%, 90°C				•
Boric acid	Unsaturated solution, 60°C				•
Butanol	60°C	•			
Calcium acetate	30%, 50°C	•			
Calcium hydroxide	Saturated solution, 50°C	•			
Chromic acid	1%, 20°C				•
Condensate	90°C	•			
Copper sulphate	Unsaturated solution, 60°C				•
Deionised (fully desalinated water)	50°C			•	
Ethanol	100%, 20°C	•			
Ethylene glycol/Diethylene glycol	40%, 70°C	•	•	•	•
Fixer	25°C				•
Formic acid	5%, 20°C			•	
Fruit juice	50°C				•

Performance Curves

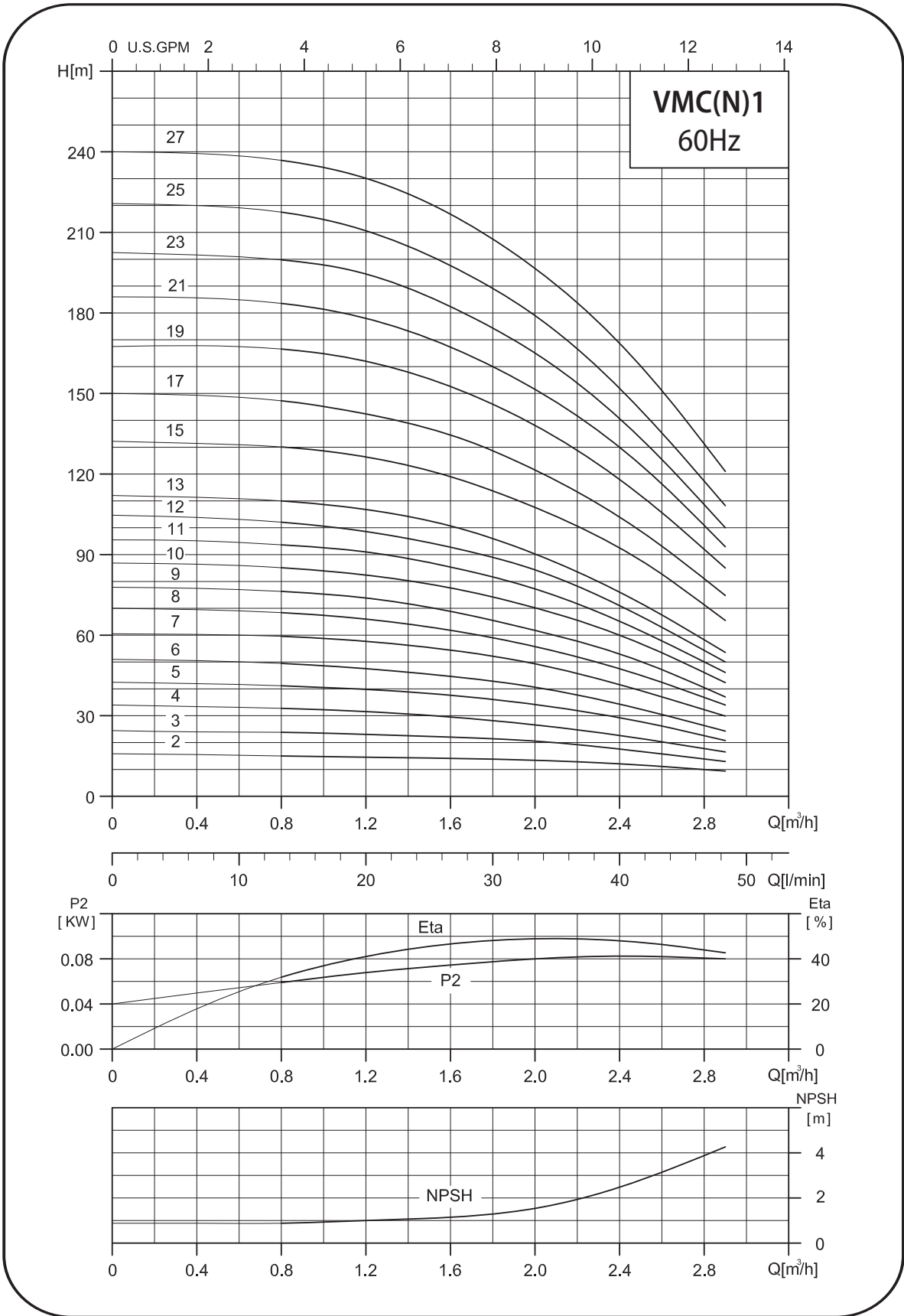


Dimensions and weights VM 1

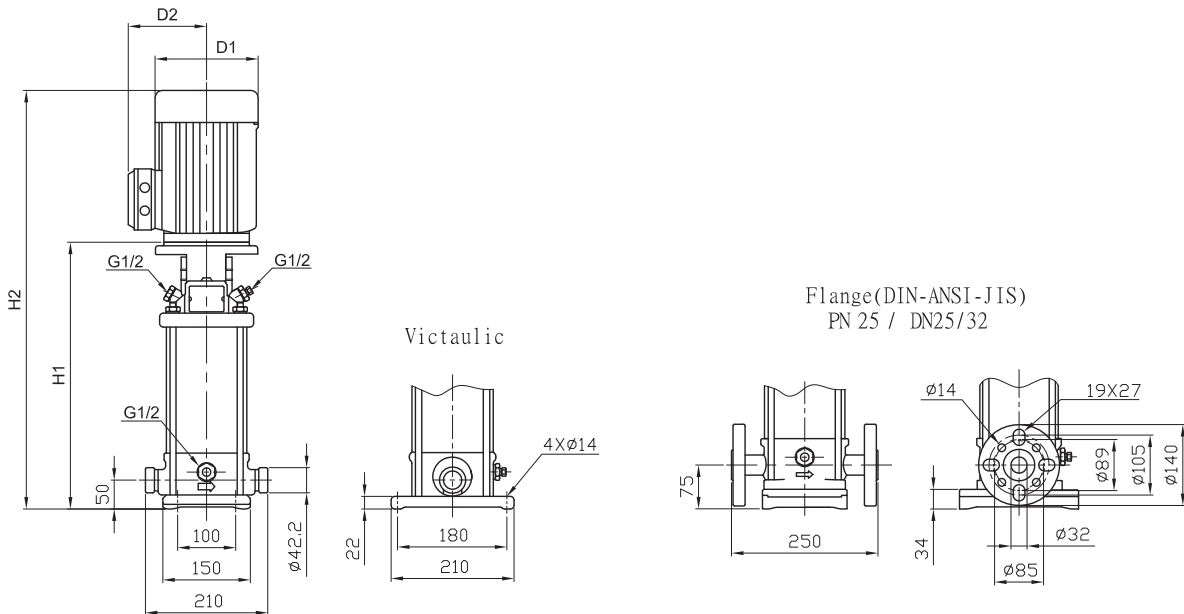


Pump type	Motor P ₂ [kW]	VM					
		Dimension [mm]				Net weight [kg]	
		DIN flange		D1	D2		DIN flange
		H1	H2				
VM 1-2	0.37	279	470	141	109	23	
VM 1-3	0.37	279	470	141	109	23	
VM 1-4	0.37	297	488	141	109	23	
VM 1-5	0.55	315	506	141	109	24	
VM 1-6	0.55	333	524	141	109	25	
VM 1-7	0.75	357	588	141	109	27	
VM 1-8	0.75	375	606	141	109	27	
VM 1-9	0.75	393	624	141	109	28	
VM 1-10	1.1	411	642	141	109	30	
VM 1-11	1.1	429	660	141	109	31	
VM 1-12	1.1	447	678	141	109	31	
VM 1-13	1.1	465	696	141	109	31	
VM 1-15	1.5	517	792	175	140	39.1	
VM 1-17	1.5	553	828	175	140	39.9	
VM 1-19	2.2	589	864	175	140	42.7	
VM 1-21	2.2	625	900	175	140	43.4	
VM 1-23	2.2	661	936	175	140	44.2	
VM 1-25	2.2	697	972	175	140	44.9	
VM 1-27	3	737	1057	196	148	52.4	

Performance Curves

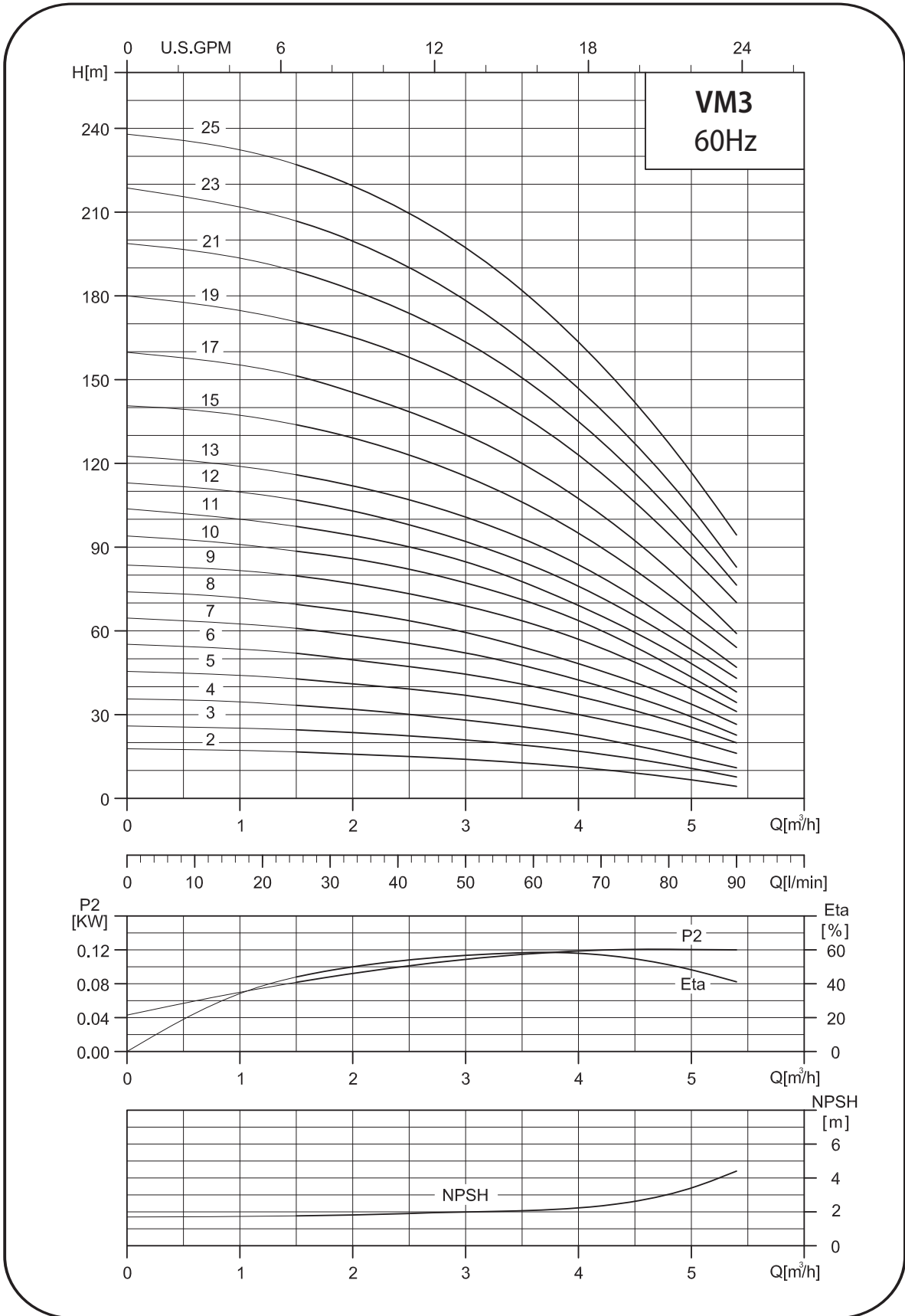


Dimensions and weights VMC, VMN 1

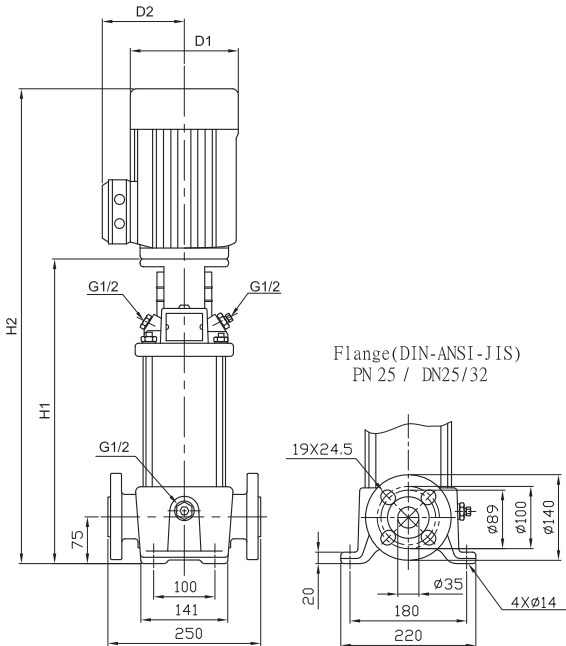


Pump type	Motor P ₂ [kW]	VMC, VMN							
		Dimension [mm]						Net weight [kg]	
		Victaulic		DIN flange		D1	D2	Victaulic	DIN flange
H1	H2	H1	H2						
VMC, VMN 1-2	0.37	257	448	282	473	141	109	16	20
VMC, VMN 1-3	0.37	257	448	282	473	141	109	16	21
VMC, VMN 1-4	0.37	275	466	300	491	141	109	17	21
VMC, VMN 1-5	0.55	293	484	318	509	141	109	18	22
VMC, VMN 1-6	0.55	311	502	336	527	141	109	18	22
VMC, VMN 1-7	0.75	335	566	360	591	141	109	21	25
VMC, VMN 1-8	0.75	353	584	378	609	141	109	21	26
VMC, VMN 1-9	0.75	371	602	396	627	141	109	22	26
VMC, VMN 1-10	1.1	389	620	414	645	141	109	24	28
VMC, VMN 1-11	1.1	407	638	432	663	141	109	25	29
VMC, VMN 1-12	1.1	425	656	450	681	141	109	25	29
VMC, VMN 1-13	1.1	443	674	468	699	141	109	26	30
VMC, VMN 1-15	1.5	495	770	520	795	175	140	33.8	37.3
VMC, VMN 1-17	1.5	531	806	556	831	175	140	34.5	38.1
VMC, VMN 1-19	2.2	567	842	592	867	175	140	37.3	40.8
VMC, VMN 1-21	2.2	603	878	628	903	175	140	38	41.6
VMC, VMN 1-23	2.2	639	914	664	939	175	140	38.8	42.3
VMC, VMN 1-25	2.2	675	950	700	975	175	140	39.5	43.1
VMC, VMN 1-27	3	716	1036	741	1034	196	148	46.7	50.3

Performance Curves

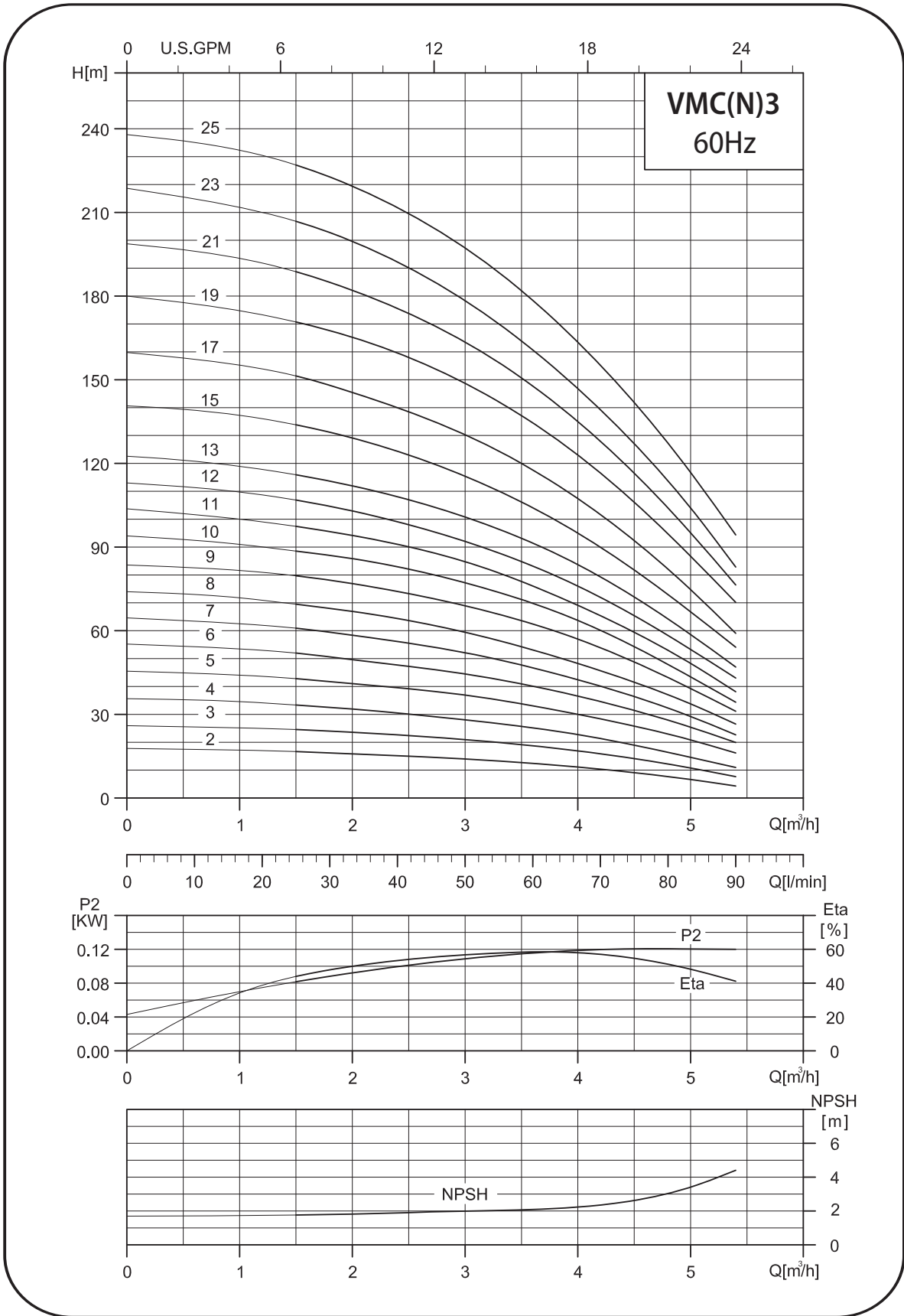


Dimensions and weights VM 3

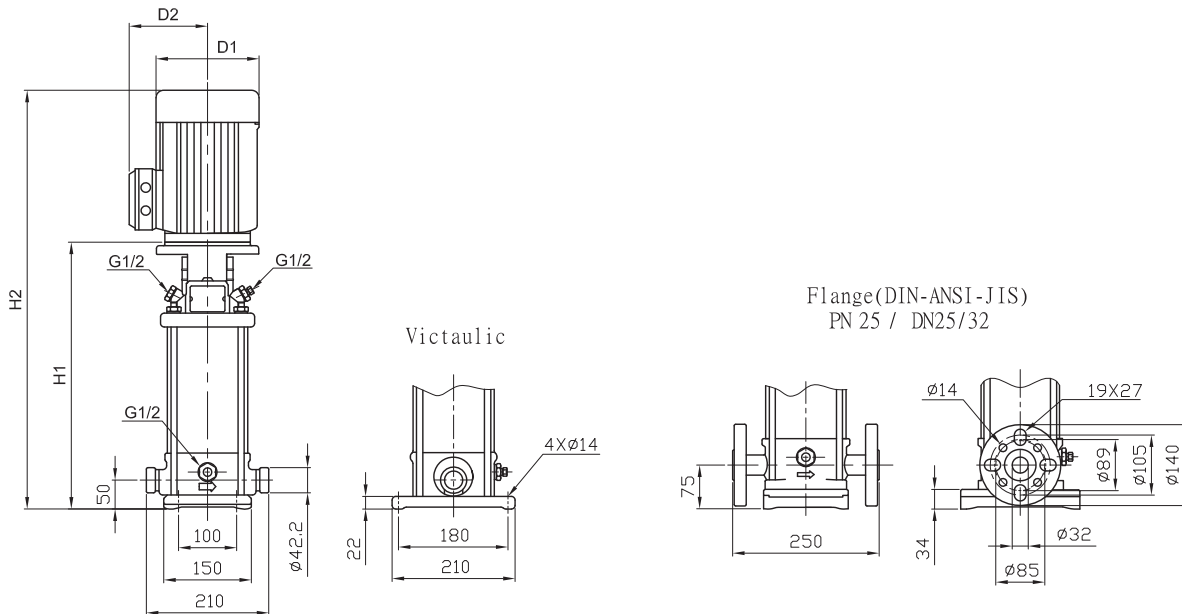


Pump type	Motor	VM				
		Dimension [mm]				Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	DIN flange
		H1	H2			
VM3-2	0.37	279	470	141	109	23
VM3-3	0.55	279	470	141	109	24
VM3-4	0.55	297	488	141	109	24
VM3-5	0.75	321	552	141	109	26
VM3-6	1.1	339	570	141	109	29
VM3-7	1.1	357	588	141	109	29
VM3-8	1.1	375	606	141	109	29
VM3-9	1.5	409	684	175	140	36.9
VM3-10	1.5	427	702	175	140	37.3
VM3-11	1.5	445	720	175	140	37.6
VM3-12	2.2	463	738	175	140	40.0
VM3-13	2.2	517	792	175	140	40.4
VM3-15	2.2	553	828	175	140	41.1
VM3-17	2.2	593	868	175	140	41.9
VM3-19	3	629	949	196	148	49.4
VM3-21	3	665	985	196	148	50.2
VM3-23	3	665	985	196	148	50.9
VM3-25	4	701	1036	219	162	58.7

Performance Curves

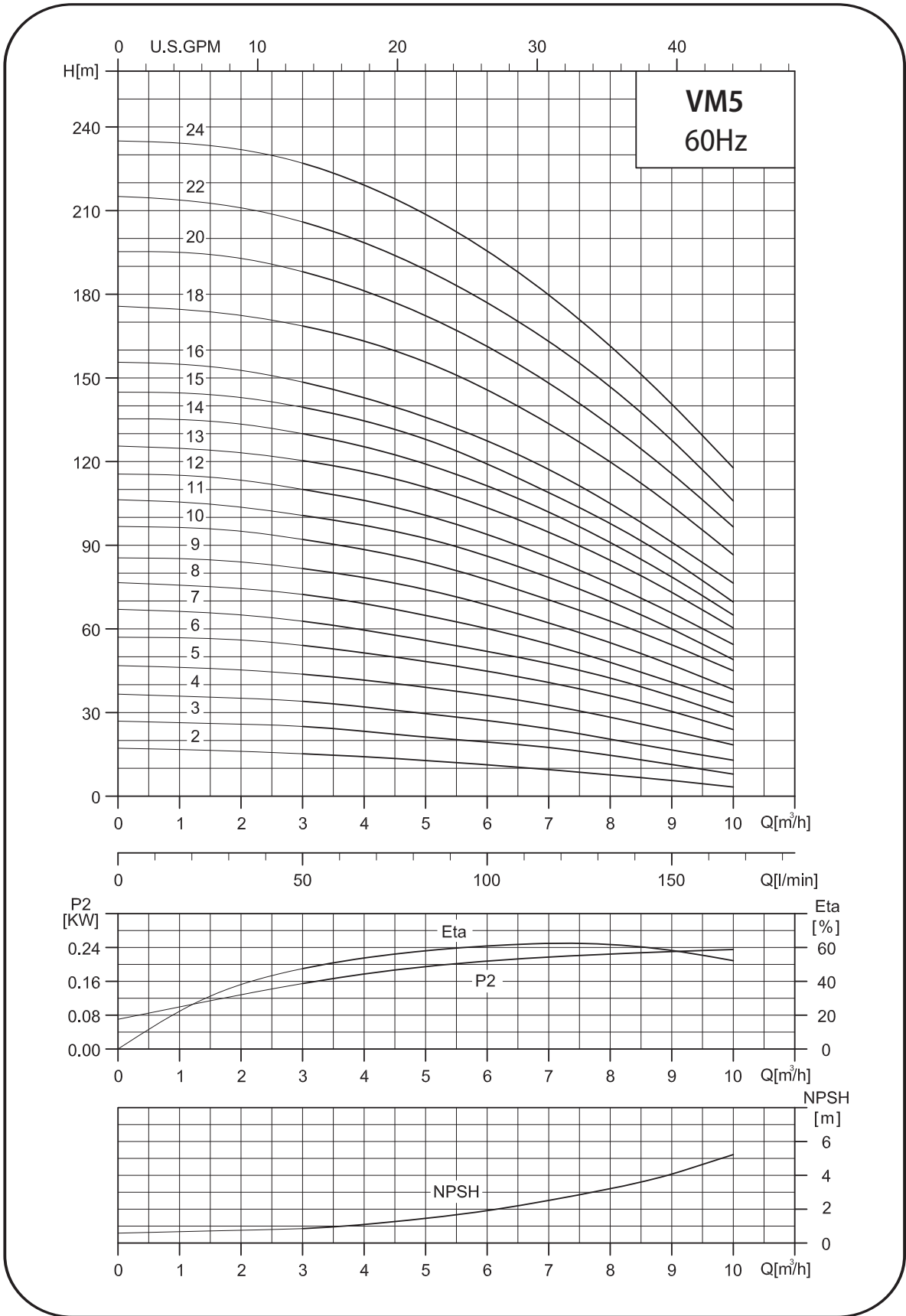


Dimensions and weights VMC, VMN 3

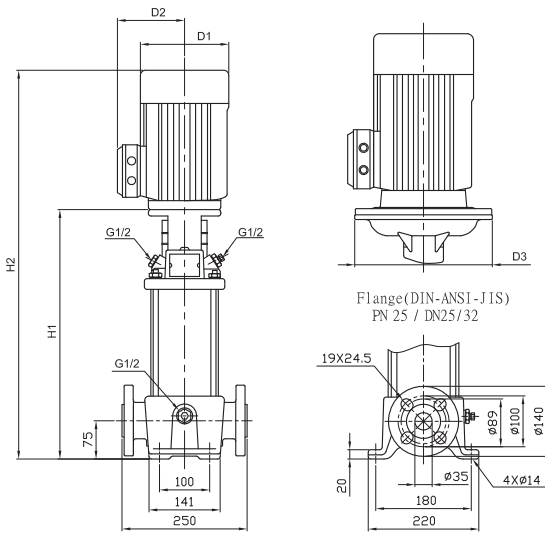


Pump type	Motor	VMC, VMN							
		Dimension [mm]						Net weight [kg]	
	P ₂ [kW]	Victaulic		DIN flange		D1	D2	Victaulic	DIN flange
		H1	H2	H1	H2				
VMC, VMN 3-2	0.37	257	448	282	473	141	109	16	20
VMC, VMN 3-3	0.55	257	448	282	473	141	109	17	21
VMC, VMN 3-4	0.55	275	466	300	491	141	109	17	22
VMC, VMN 3-5	0.75	299	530	324	555	141	109	20	24
VMC, VMN 3-6	1.1	317	548	342	573	141	109	23	27
VMC, VMN 3-7	1.1	335	566	360	591	141	109	23	27
VMC, VMN 3-8	1.1	353	584	378	609	141	109	24	28
VMC, VMN 3-9	1.5	387	662	412	687	175	140	31.2	35.1
VMC, VMN 3-10	1.5	405	680	430	705	175	140	31.6	35.5
VMC, VMN 3-11	1.5	423	698	448	723	175	140	31.9	35.9
VMC, VMN 3-12	2.2	441	716	466	741	175	140	34.3	38.2
VMC, VMN 3-13	2.2	459	734	484	759	175	140	34.7	38.6
VMC, VMN 3-15	2.2	495	770	520	795	175	140	35.5	39.4
VMC, VMN 3-17	2.2	531	806	556	831	175	140	36.5	40.1
VMC, VMN 3-19	3	572	892	597	917	196	148	43.3	46.8
VMC, VMN 3-21	3	608	928	633	953	196	148	44.0	47.5
VMC, VMN 3-23	3	644	964	669	989	196	148	44.8	48.3
VMC, VMN 3-25	4	680	1015	705	1040	219	162	52.5	56.1

Performance Curves

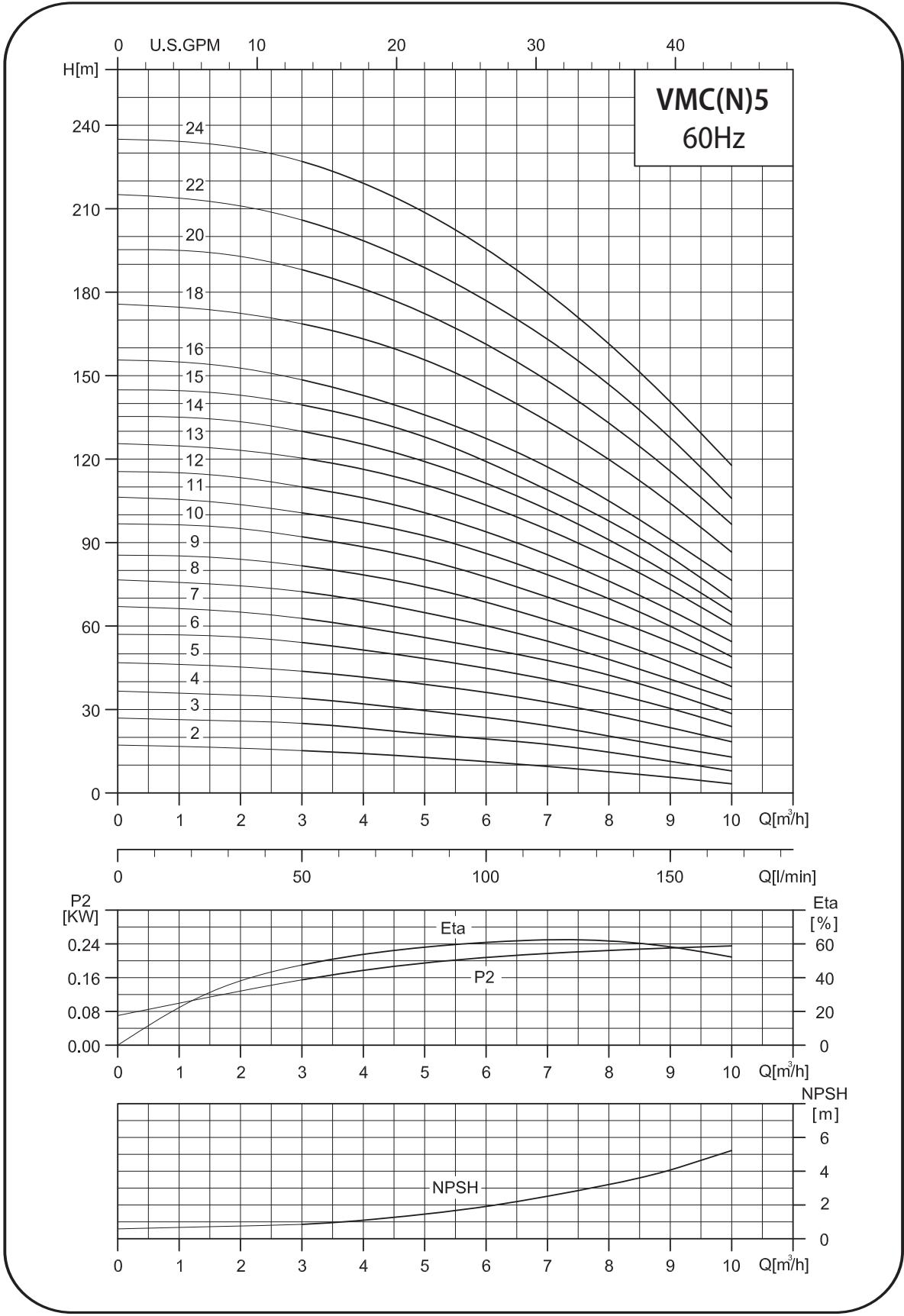


Dimensions and weights VM 5

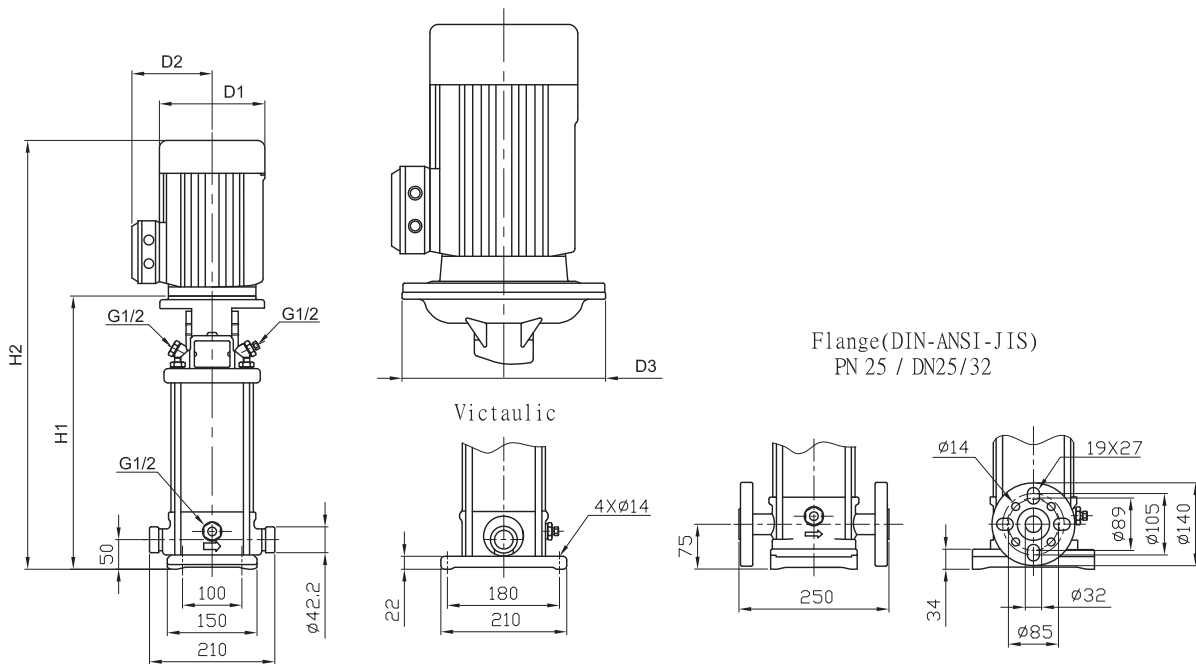


Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VM 5-2	0.55	279	470	141	109	—	23
VM 5-3	1.1	312	543	141	109	—	28
VM 5-4	1.1	339	570	141	109	—	28
VM 5-5	1.5	382	657	175	140	—	36.1
VM 5-6	2.2	409	684	175	140	—	38.7
VM 5-7	2.2	436	711	175	140	—	39.2
VM 5-8	2.2	463	738	175	140	—	39.8
VM 5-9	2.2	490	765	175	140	—	40.3
VM 5-10	3	521	841	196	148	—	47.6
VM 5-11	3	548	868	196	148	—	48.2
VM 5-12	3	575	895	196	148	—	48.8
VM 5-13	4	602	937	219	162	—	56.4
VM 5-14	4	629	964	219	162	—	56.9
VM 5-15	4	656	991	219	162	—	57.5
VM 5-16	4	683	1018	219	162	—	58.1
VM 5-18	5.5	767	1127	234	199	300	77.9
VM 5-20	5.5	821	1181	234	199	300	79.1
VM 5-22	5.5	875	1235	234	199	300	80.2
VM 5-24	7.5	929	1329	234	199	300	90.2

Performance Curves

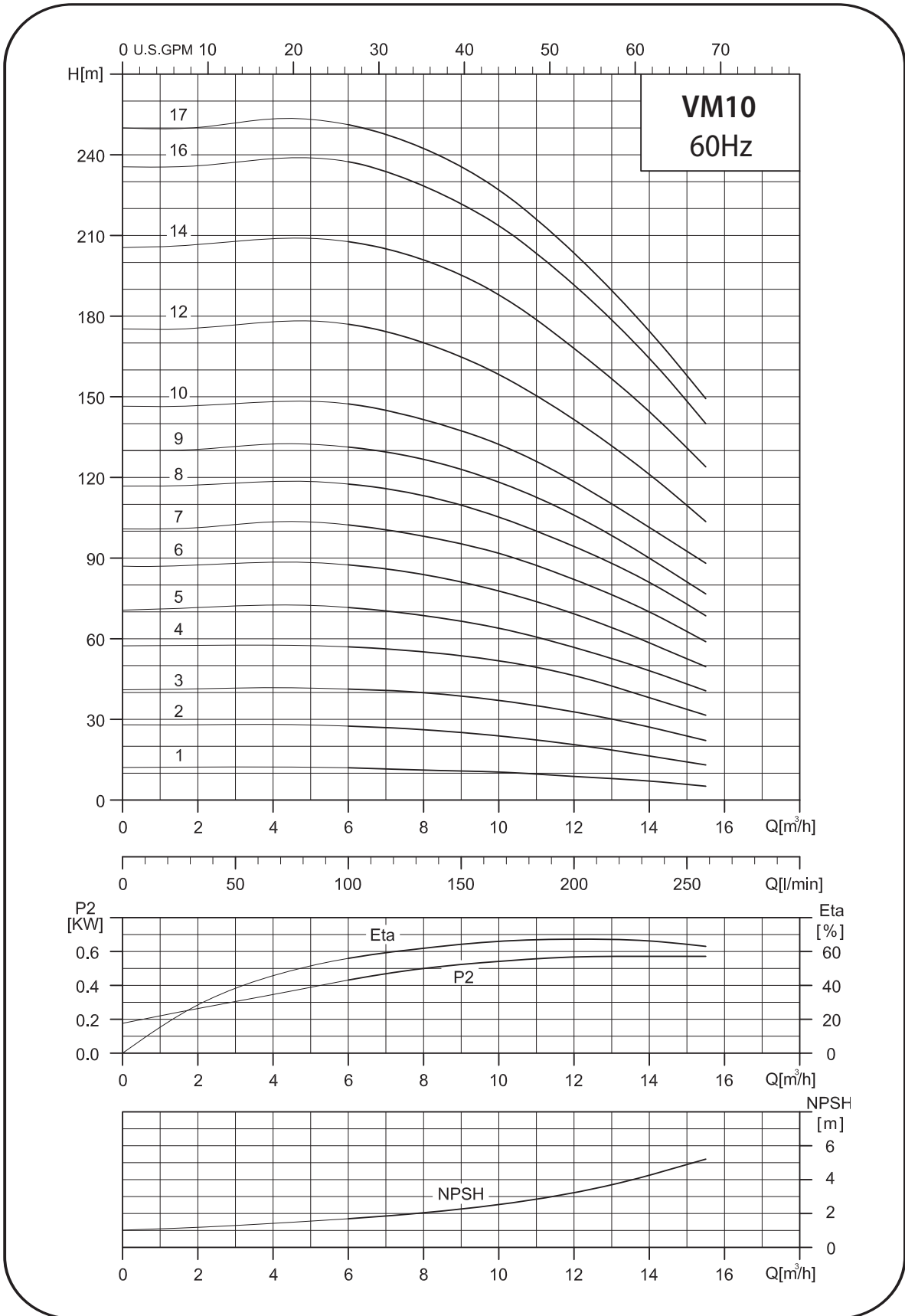


Dimensions and weights VMC, VMN 5

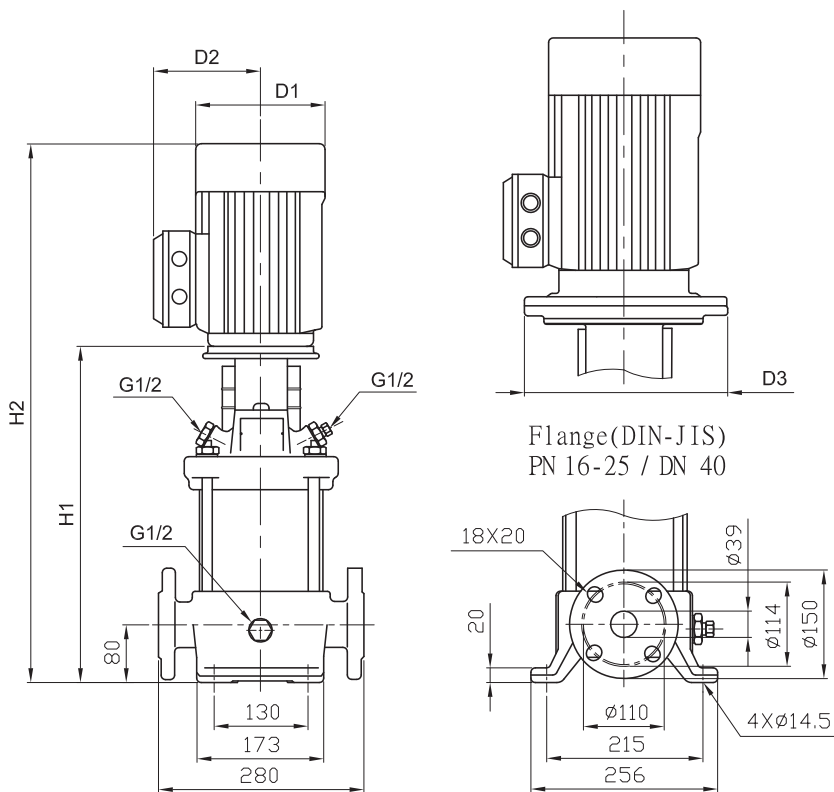


Pump type	Motor P ₂ [kW]	VMC, VMN									
		Dimension [mm]								Net weight [kg]	
		Victaulic		DIN flange		D1	D2	D3	Victaulic	DIN flange	
		H1	H2	H1	H2						
VMC, VMN 5 2	0.5	27	48	282	473	141	109	—	17	21	
VMC, VMN 5 3	1.1	290	521	315	56	141	109	—	22	26	
VMC, VMN 5 4	1.1	317	58	342	53	141	109	—	23	27	
VMC, VMN 5 5	1.5	360	635	385	660	175	140	—	30.8	34.3	
VMC, VMN 5 6	2.2	387	662	412	687	175	140	—	33.3	36.8	
VMC, VMN 5 7	2.2	414	689	439	714	175	140	—	33.8	37.3	
VMC, VMN 5 8	2.2	441	716	466	741	175	140	—	34.4	37.9	
VMC, VMN 5 9	2.2	468	743	493	768	175	140	—	34.9	38.5	
VMC, VMN 5 10	3	500	870	525	845	196	148	—	42.0	45.5	
VMC, VMN 5 11	3	527	847	552	872	196	148	—	42.5	46.1	
VMC, VMN 5 12	3	554	874	579	899	196	148	—	43.1	46.6	
VMC, VMN 5 13	4	581	916	606	941	219	162	—	50.7	54.2	
VMC, VMN 5 14	4	608	943	633	968	219	162	—	51.2	54.8	
VMC, VMN 5 15	4	635	970	660	995	219	162	—	51.8	55.4	
VMC, VMN 5 16	4	662	997	687	1022	219	162	—	52.4	55.9	
VMC, VMN 5 18	5.5	745	1105	770	1130	234	199	300	72.2	75.7	
VMC, VMN 5 20	5.5	799	1159	824	1184	234	199	300	73.3	76.9	
VMC, VMN 5 22	5.5	853	1213	878	1238	234	199	300	74.5	78.0	
VMC, VMN 5 24	7.5	907	1307	932	1332	234	199	300	84.6	88.2	

Performance Curves

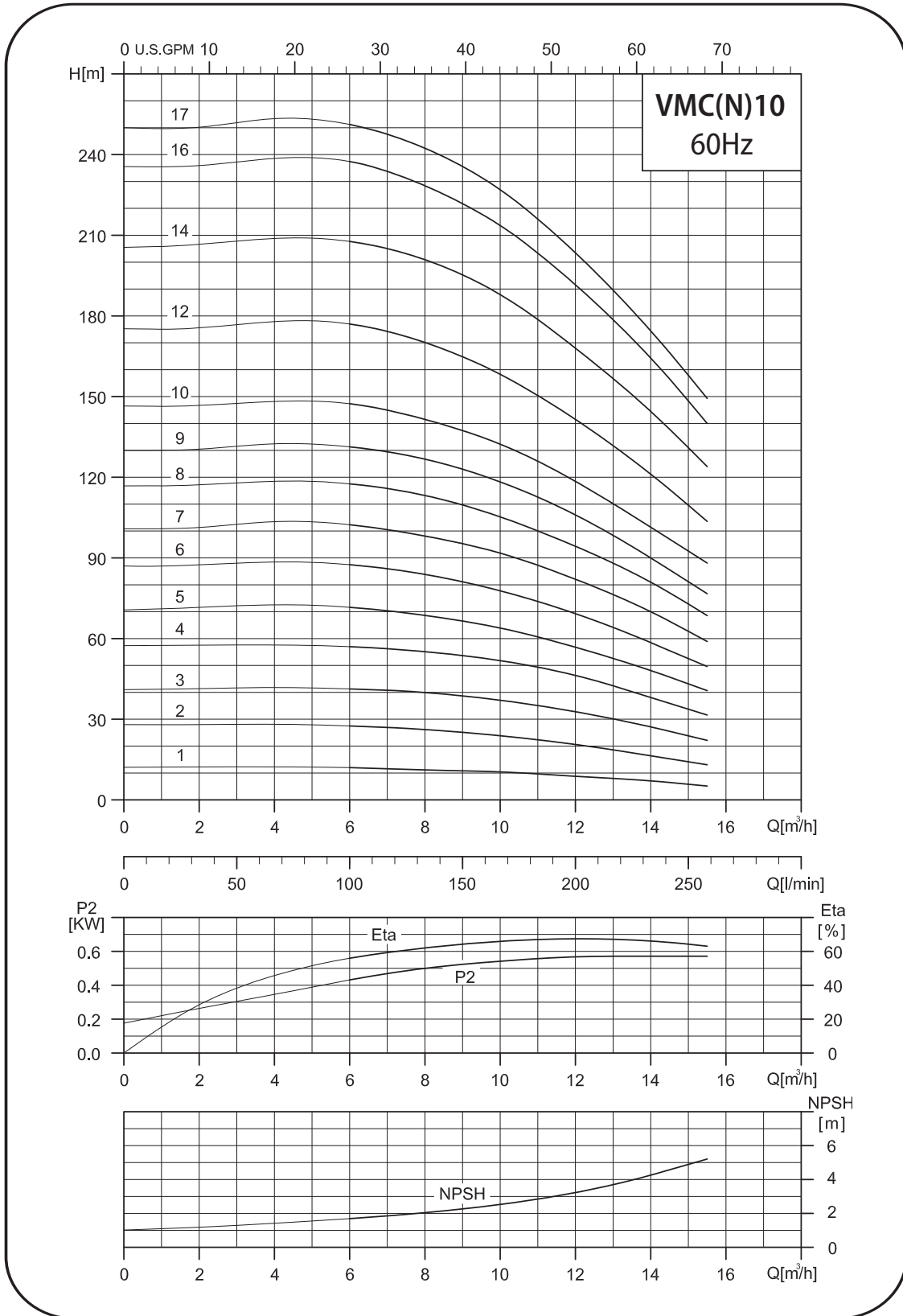


Dimensions and weights VM 10

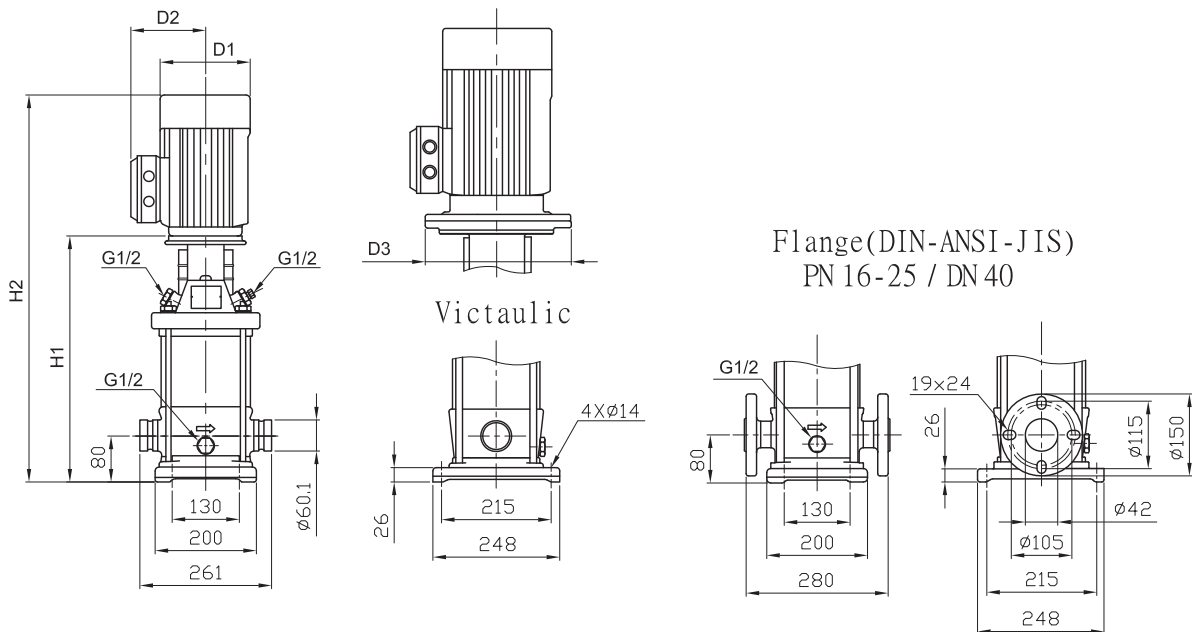


Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VM10-1	0.75	347	578	141	109	—	36
VM10-2	1.5	363	638	175	140	—	46.2
VM10-3	2.2	393	668	175	140	—	49.2
VM10-4	3	428	748	196	148	—	57.5
VM10-5	3	458	778	196	148	—	58.6
VM10-6	4	488	823	219	162	—	66.6
VM10-7	5.5	550	910	234	199	300	91.6
VM10-8	5.5	580	940	234	199	300	92.6
VM10-9	5.5	610	970	234	199	300	93.6
VM10-10	7.5	640	1040	234	199	300	103.6
VM10-12	7.5	700	1100	234	199	300	105.6
VM10-14	11	837	1282	268	215	350	137.3
VM10-16	11	897	1342	268	215	350	139.3
VM10-17	11	957	1402	268	215	350	140.3

Performance Curves

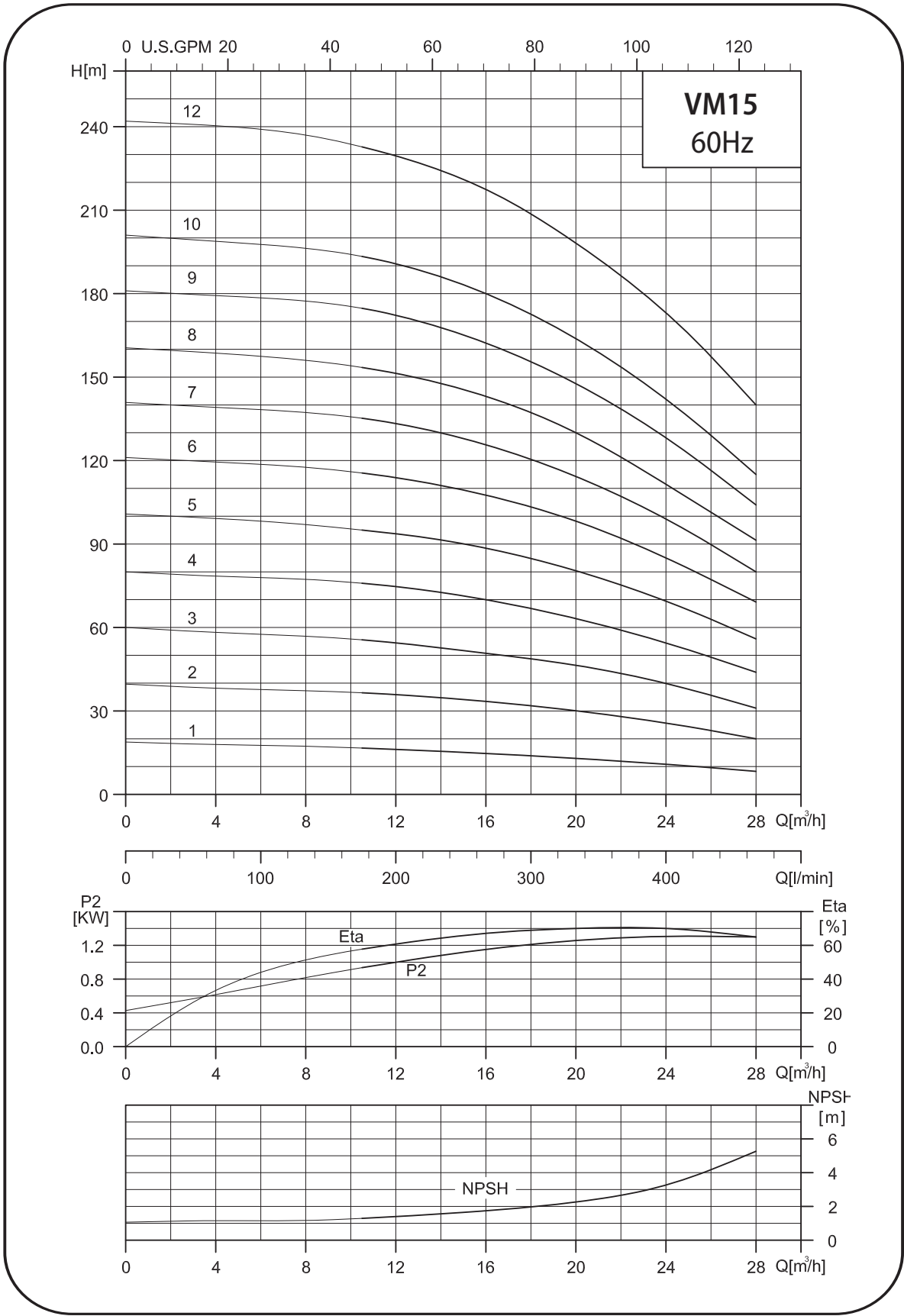


Dimensions and weights VMC, VMN 10

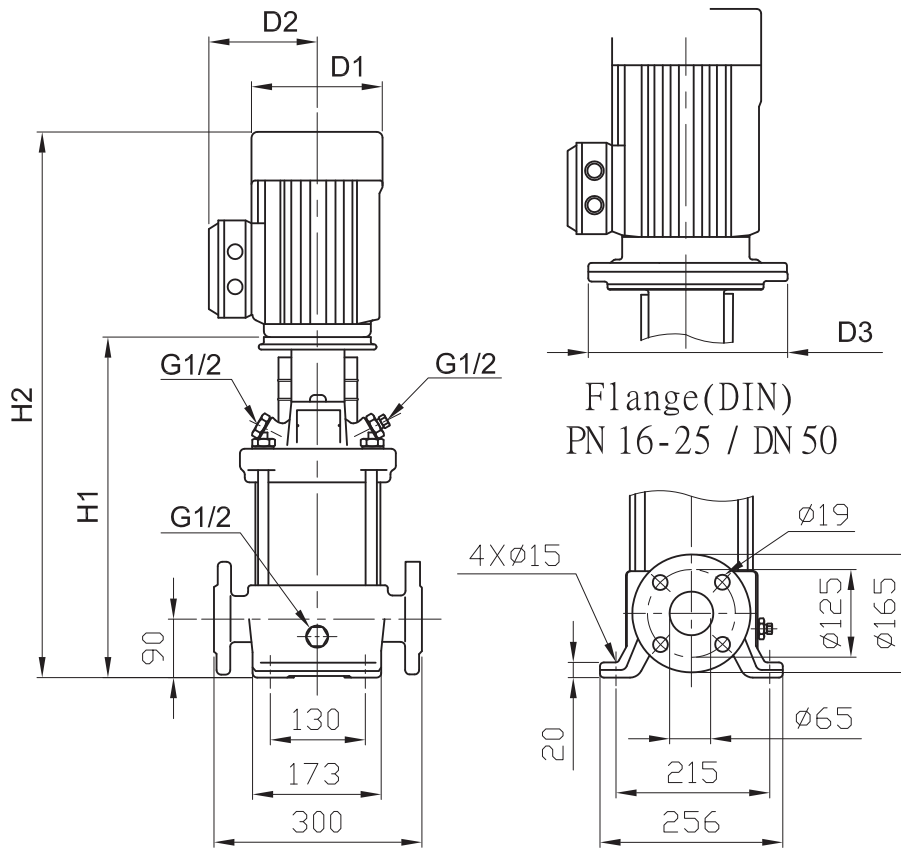


Pump type	Motor	VMC, VMN								
		Dimension [mm]						Net weight [kg]		
	P ₂ [kW]	Victaulic		DIN flange		D1	D2	D3	Victaulic	DIN flange
		H1	H2	H1	H2					
VMC, VMN 10-1	0.75	357	588	357	588	141	109	—	31	34
VMC, VMN 10-2	1.5	373	648	373	648	175	140	—	41.6	45.1
VMC, VMN 10-3	2.2	403	678	403	678	175	140	—	44.6	48.1
VMC, VMN 10-4	3	438	758	438	758	196	148	—	51.4	54.9
VMC, VMN 10-5	3	468	788	468	788	196	148	—	52.4	55.9
VMC, VMN 10-6	4	498	833	498	833	219	162	—	60.4	63.9
VMC, VMN 10-7	5.5	500	920	500	920	234	199	300	86.3	89.8
VMC, VMN 10-8	5.5	590	950	590	950	234	199	300	87.3	90.8
VMC, VMN 10-9	5.5	620	980	620	980	234	199	300	88.3	91.9
VMC, VMN 10-10	7.5	650	1050	650	1050	234	199	300	98.3	101.9
VMC, VMN 10-12	7.5	710	1110	710	1110	234	199	300	100.4	103.9
VMC, VMN 10-14	11	847	1292	847	1292	268	215	350	132.7	136.2
VMC, VMN 10-16	11	907	1352	907	1352	268	215	350	134.7	138.2
VMC, VMN 10-17	11	967	1412	967	1412	268	215	350	135.7	139.2

Performance Curves

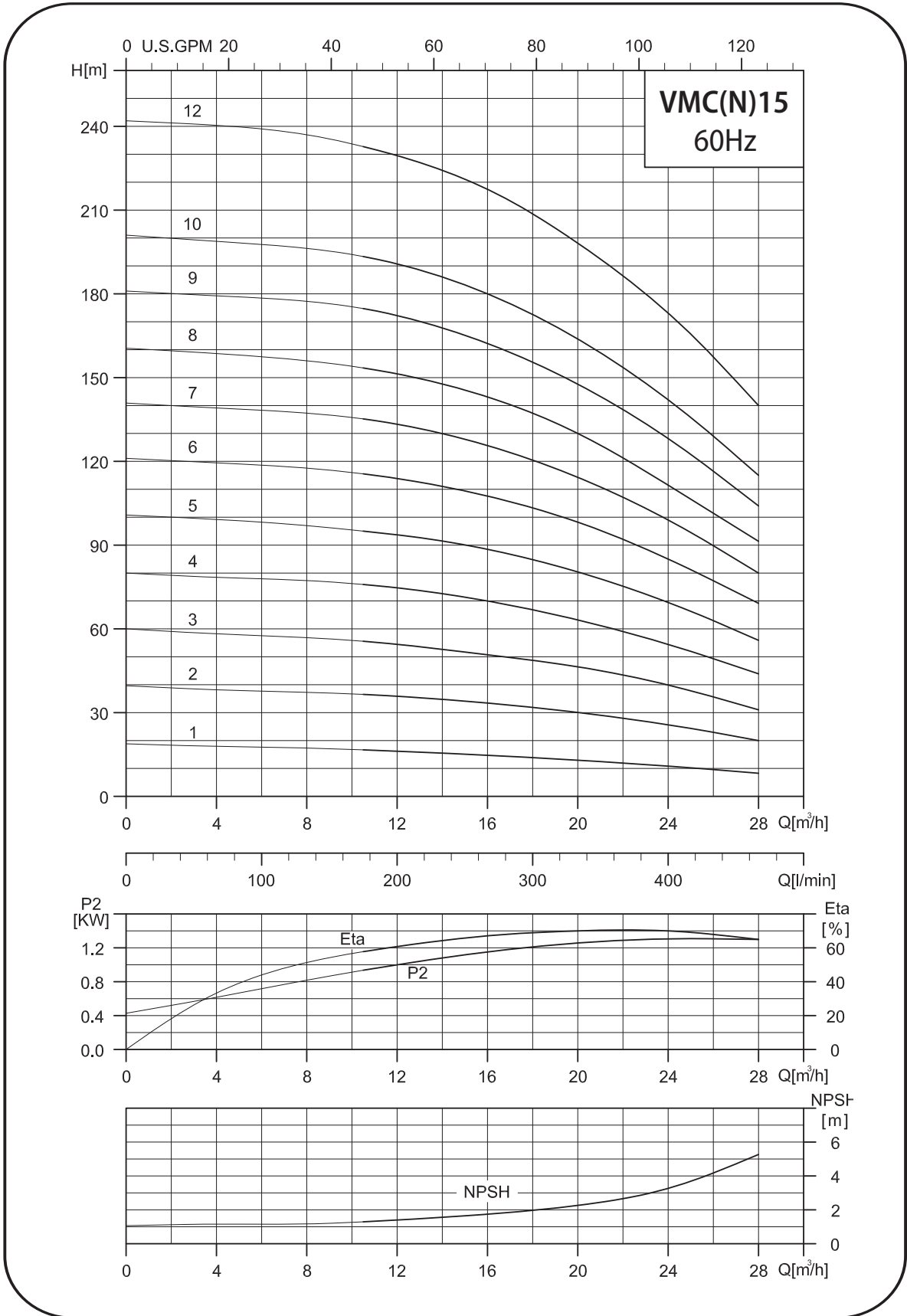


Dimensions and weights VM 15

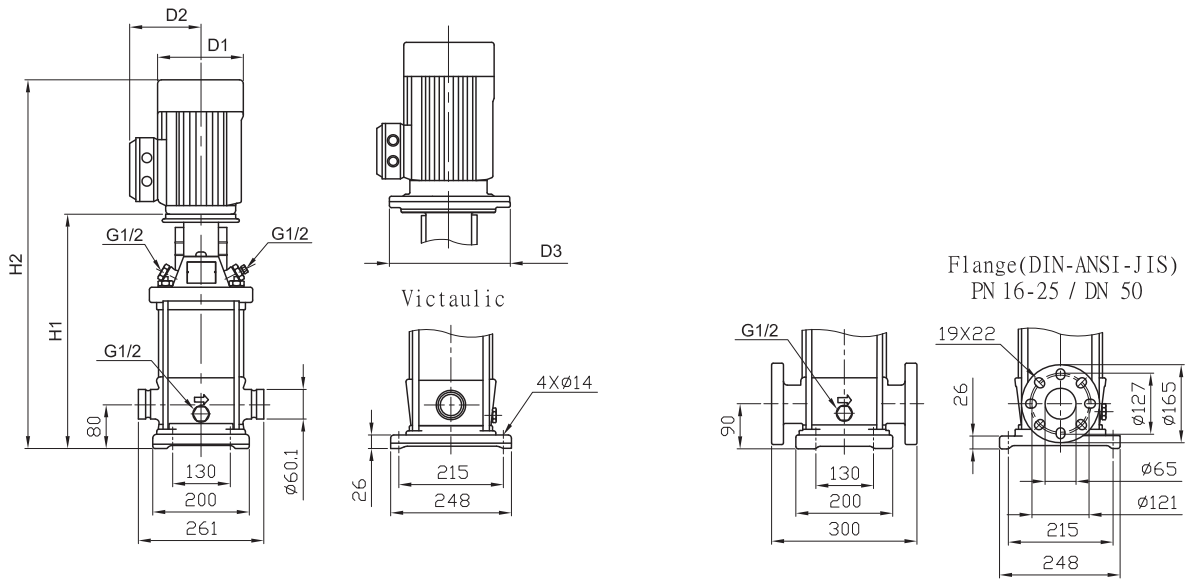


Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VM15-1	1.5	415	Ø 0	175	140	—	49.8
VM15-2	3	450	770	196	148	—	59.9
VM15-3	4	465	800	219	162	—	68.3
VM15-4	5.5	542	9 02	234	199	300	93.7
VM15-5	7.5	587	9 87	234	199	300	104.1
VM15-6	11	709	1154	268	215	350	135.2
VM15-7	11	754	1199	268	215	350	136.5
VM15-8	11	799	1244	268	215	350	137.9
VM15-9	15	844	1333	268	215	350	150.3
VM15-10	15	889	1378	268	215	350	151.7
VM15-12	18.5	9 7 9	1514	317	242	400	189.5

Performance Curves

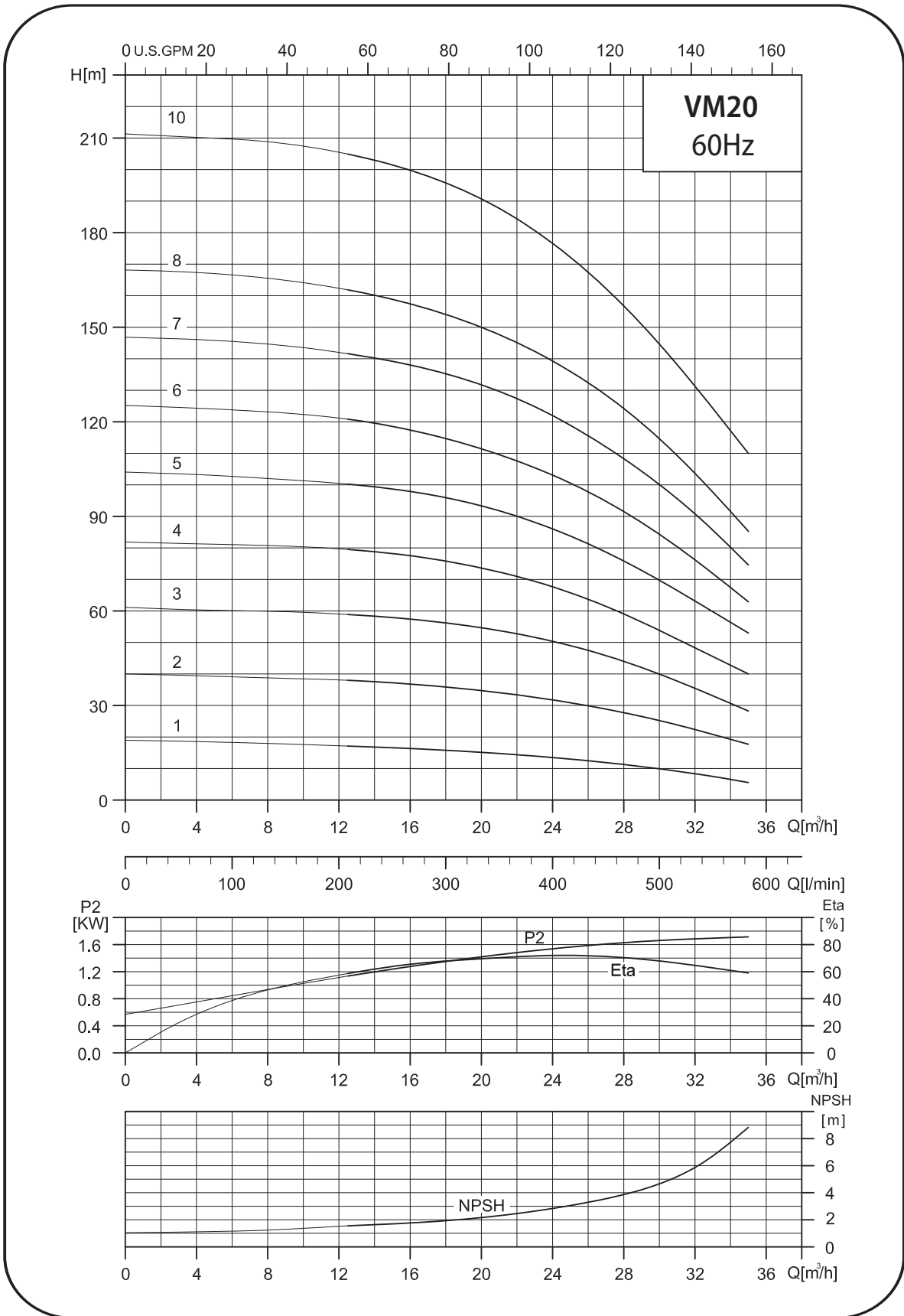


Dimensions and weights VMC, VMN 15

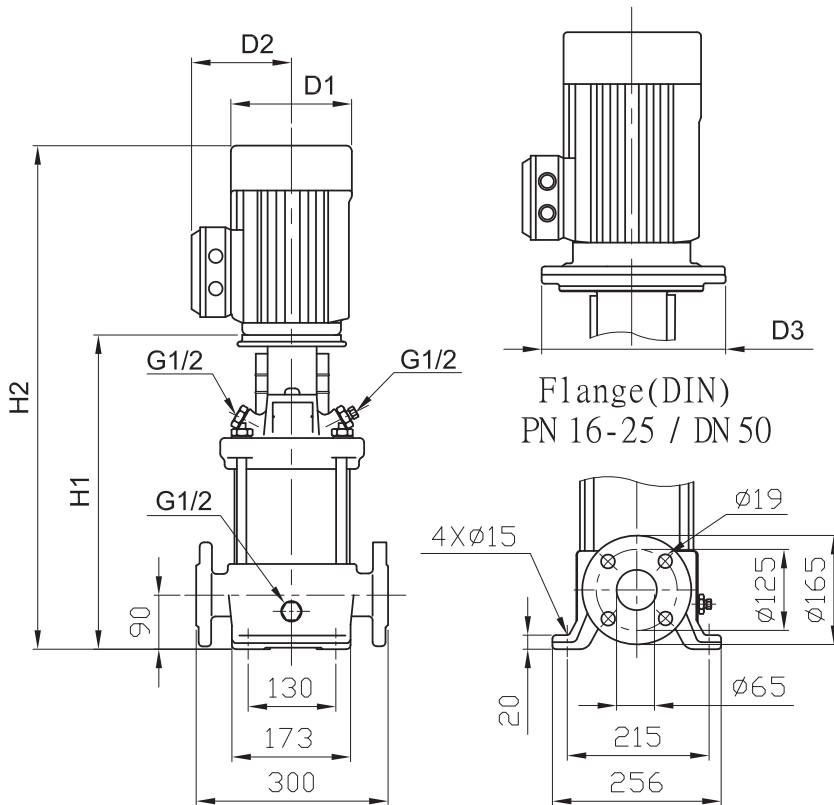


Pump type	Motor	VMC,VMN								
		Dimension [mm]							Net weight [kg]	
	P ₂ [kW]	Victaulic		DIN flange		D1	D2	D3	Victaulic	DIN flange
		H1	H2	H1	H2					
VMC, VMN 15 1	1.5	403	678	413	688	175	140	—	41.5	46.0
VMC, VMN 15 2	3	408	728	418	738	196	148	—	50.1	54.6
VMC, VMN 15 3	4	453	788	463	798	219	162	—	58.5	63.0
VMC, VMN 15 4	5.5	530	890	500	900	234	199	300	84.8	89.3
VMC, VMN 15 5	7.5	575	975	585	985	234	199	300	95.2	99.7
VMC, VMN 15 6	11	697	1142	707	1152	268	215	350	126.8	131.3
VMC, VMN 15 7	11	742	1187	752	1197	268	215	350	128.2	132.7
VMC, VMN 15 8	11	787	1232	797	1242	268	215	350	129.6	134.1
VMC, VMN 15 9	15	832	1321	842	1331	268	215	350	142.0	146.5
VMC, VMN 15 10	15	877	1366	887	1376	268	215	350	143.4	147.9
VMC, VMN 15 12	18.5	967	1502	977	1512	317	242	400	181.2	185.7

Performance Curves

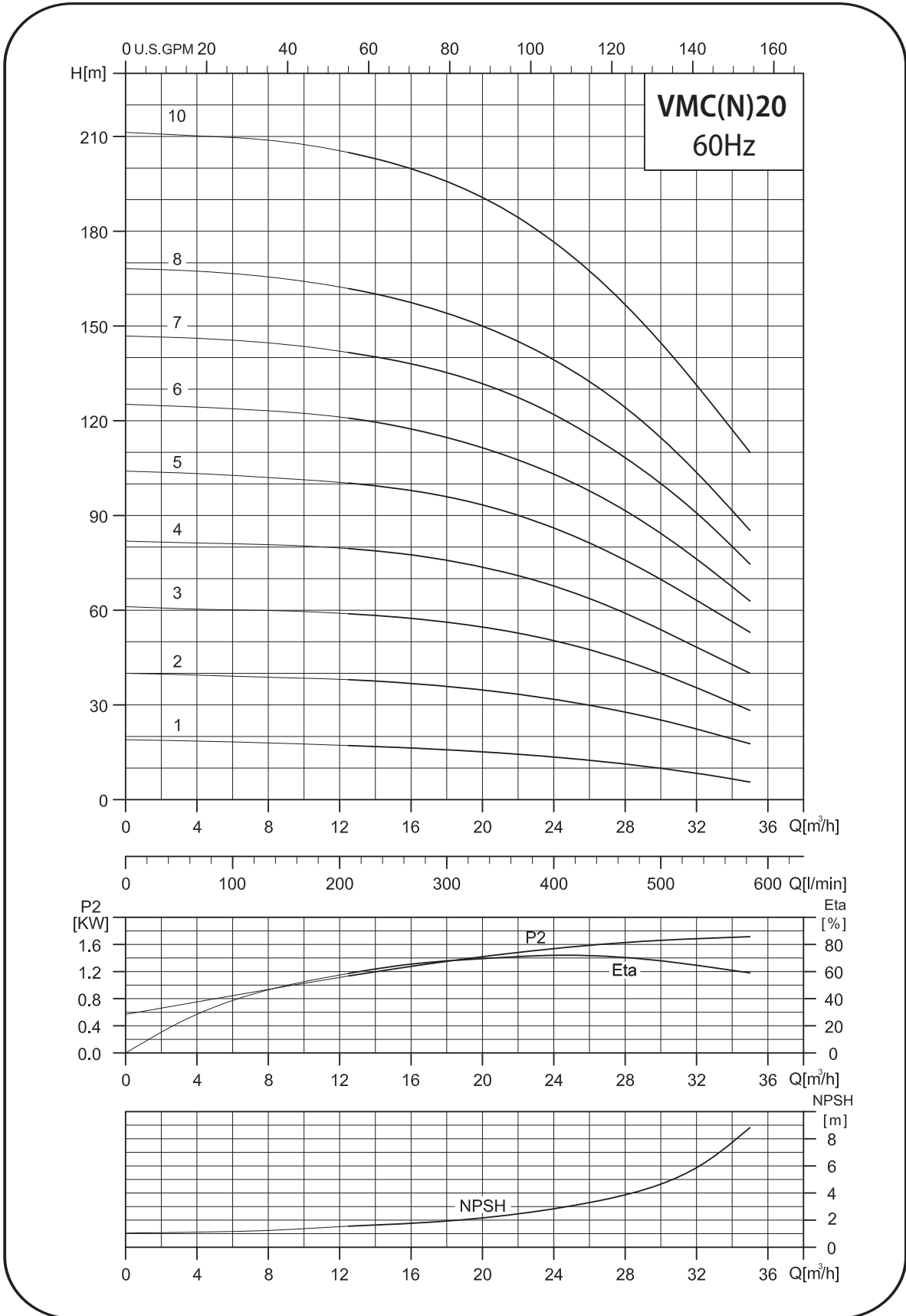


Dimensions and weights VM 20

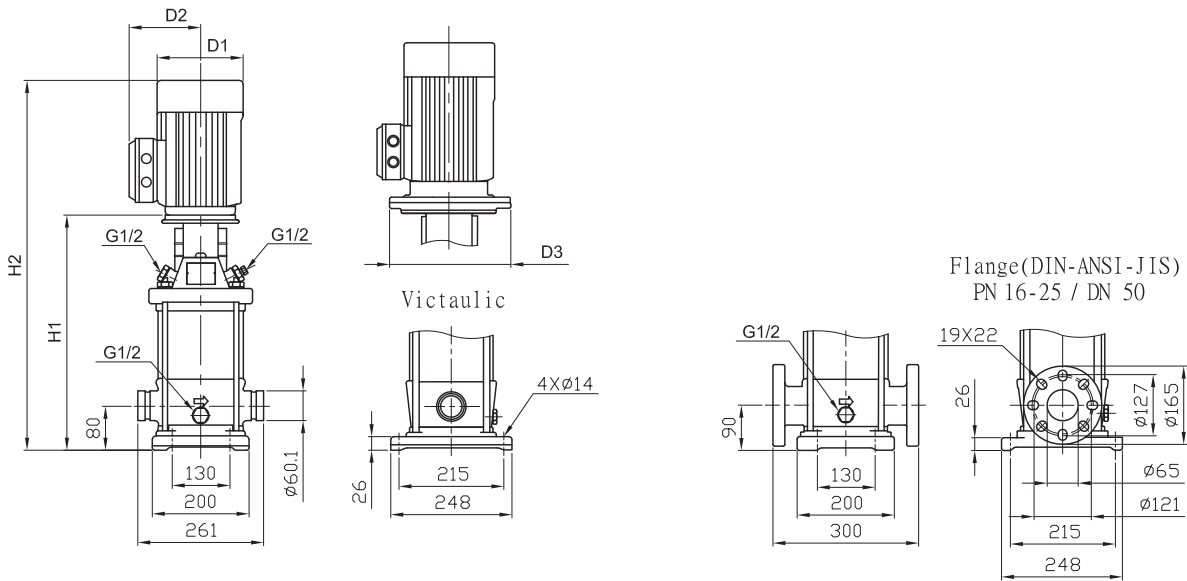


Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
V M20-1	2.2	415	Ø 0	175	140	—	51.9
V M20-2	4	420	755	219	162	—	67.0
V M20-3	5.5	497	857	234	199	300	92.4
V M20-4	7.5	542	942	234	199	300	102.8
V M20-5	11	664	1109	268	215	350	133.3
V M20-6	11	709	1154	268	215	350	134.7
V M20-7	15	754	1243	268	215	350	147.6
V M20-8	15	799	1288	268	215	350	149.0
V M20-10	18.5	889	1424	317	242	400	186.8

Performance Curves

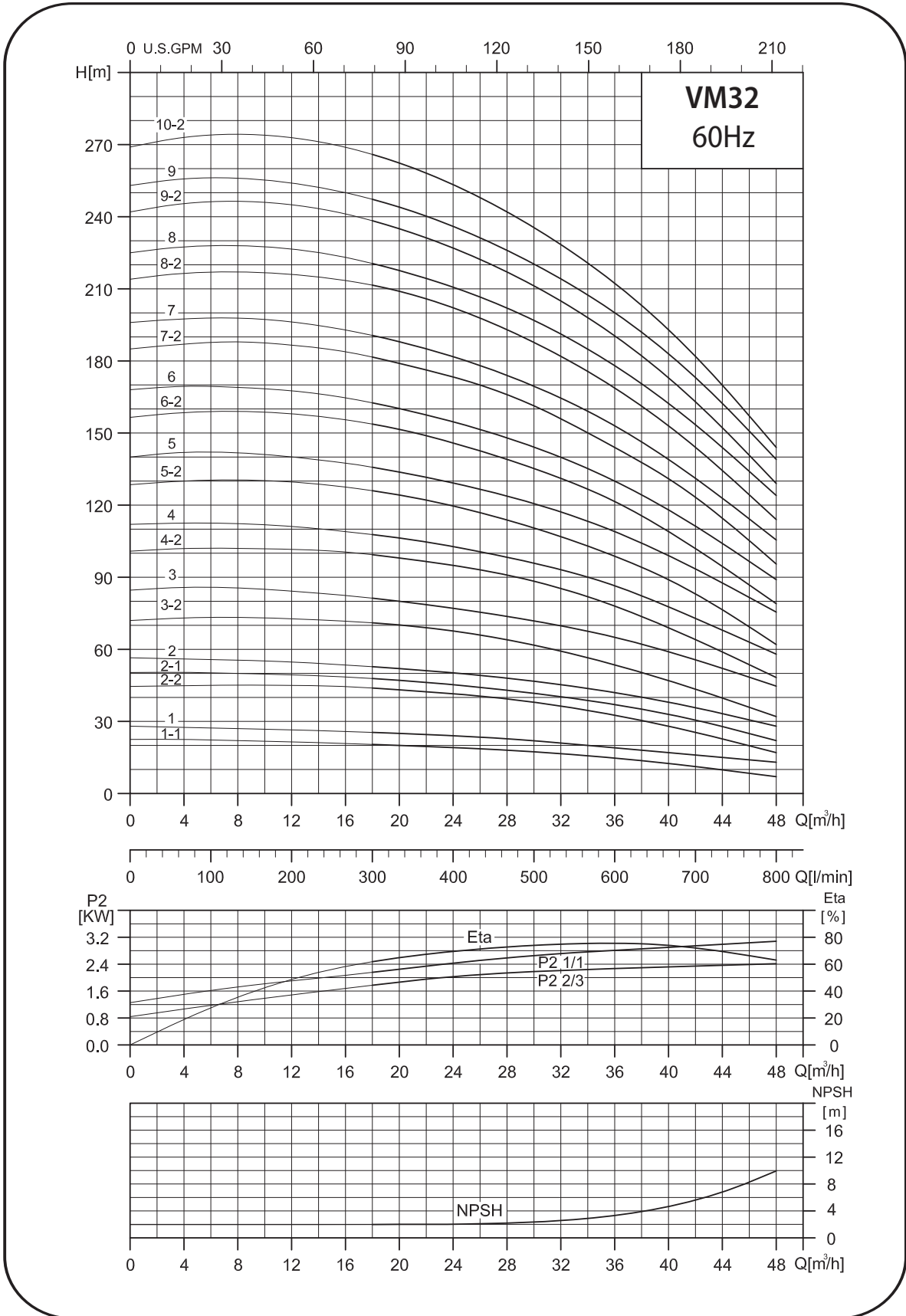


Dimensions and weights VMC, VMN 20

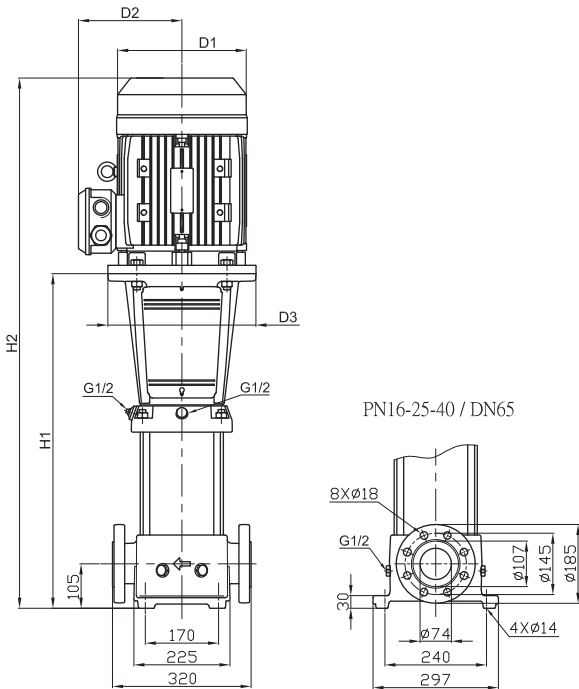


Pump type	Motor	VMC, VMN									
		Dimension [mm]							Net weight [kg]		
	P ₂ [kW]	Victaulic		DIN flange		D1	D2	D3	Victaulic	DIN flange	
		H1	H2	H1	H2						
VMC, VMN 20-1	2.2	405	680	415	690	175	140	—	43.5	48.0	
VMC, VMN 20-2	4	410	745	420	755	219	162	—	57.1	61.6	
VMC, VMN 20-3	5.5	487	847	497	857	234	199	300	83.4	87.9	
VMC, VMN 20-4	7.5	532	932	542	942	234	199	300	93.8	98.3	
VMC, VMN 20-5	11	654	1099	664	1109	268	215	350	125.4	129.9	
VMC, VMN 20-6	11	699	1144	709	1154	268	215	350	126.8	131.3	
VMC, VMN 20-7	15	744	1233	754	1243	268	215	350	139.2	143.7	
VMC, VMN 20-8	15	789	1278	799	1288	268	215	350	140.6	145.1	
VMC, VMN 20-10	18.5	879	1414	889	1424	317	242	400	178.4	182.9	

Performance Curves

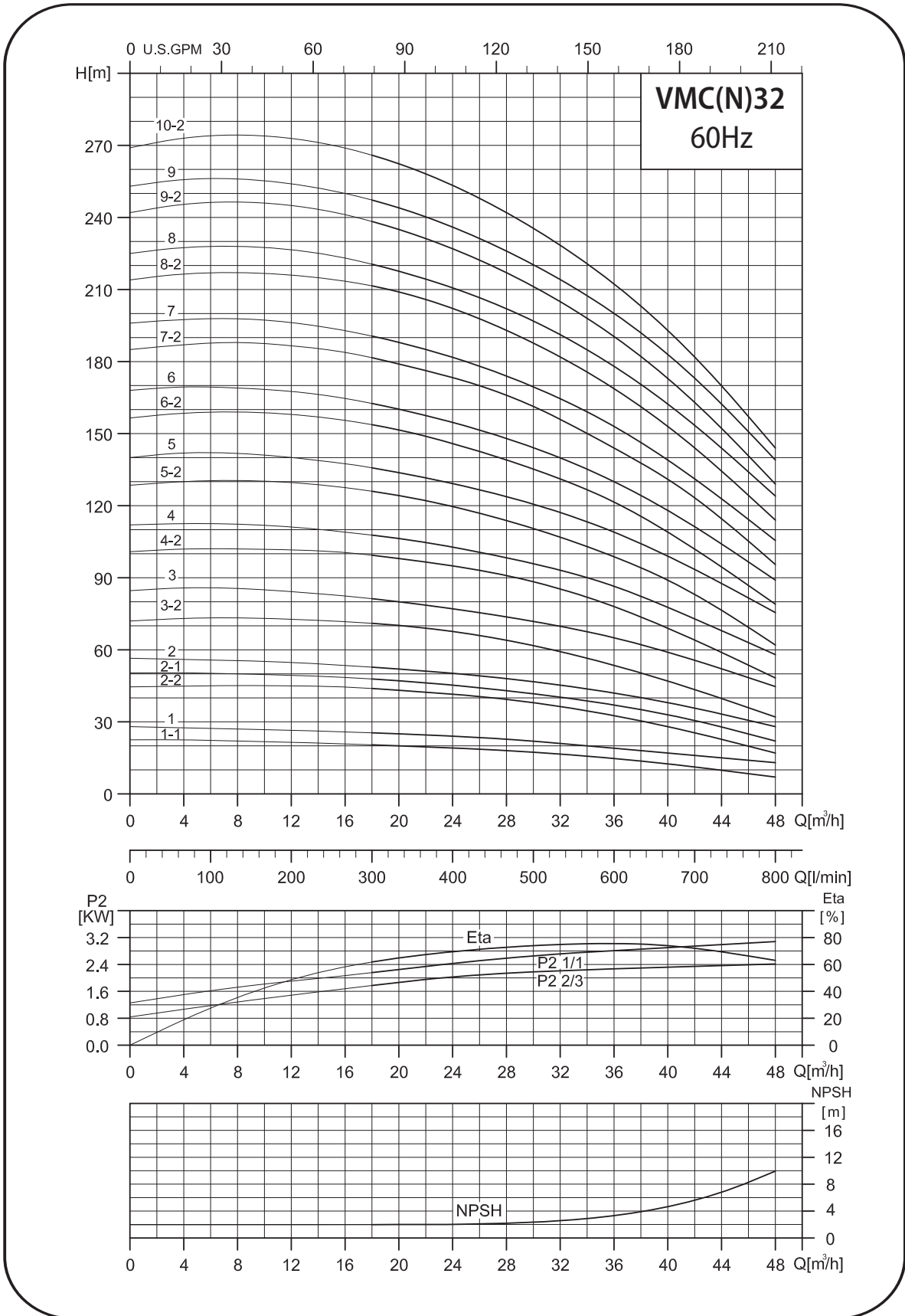


Dimensions and weights VM 32

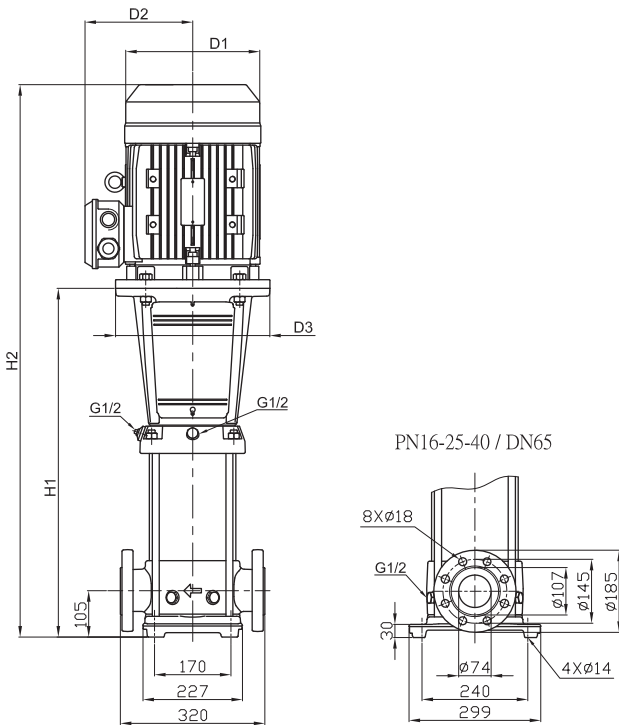


Pump type	Motor P ₂ [kW]	VM						
		Dimension [mm]					Net weight [kg]	
		DIN flange		D1	D2	D3		DIN flange
		H1	H2					
VM 32-1-1	2.2	504	779	175	140	-	71.5	
VM 32-1	3.0	504	824	196	148	-	77.5	
VM 32-2-2	5.5	574	934	234	199	300	101.3	
VM 32-2-1	5.5	574	934	234	199	300	101.4	
VM 32-2	7.5	574	974	234	199	300	110.4	
VM 32-3-2	11.0	754	1199	268	215	350	146.9	
VM 32-3	11.0	754	1199	268	215	350	147.0	
VM 32-4-2	11.0	824	1269	268	215	350	150.0	
VM 32-4	15.0	824	1313	268	215	350	161.0	
VM 32-5-2	15.0	894	1383	268	215	350	164.0	
VM 32-5	18.5	894	1429	317	242	400	199.0	
VM 32-6-2	18.5	964	1499	317	242	400	202.0	
VM 32-6	18.5	964	1499	317	242	400	202.0	
VM 32-7-2	22.0	1034	1613	317	242	400	215.8	
VM 32-7	22.0	1034	1613	317	242	400	215.8	
VM 32-8-2	30.0	1104	1727	317	290	400	304.2	
VM 32-8	30.0	1104	1727	317	290	400	304.2	
VM 32-9-2	30.0	1174	1797	317	290	400	306.9	
VM 32-9	30.0	1174	1797	317	290	400	306.9	
VM 32-10-2	30.0	1244	1867	317	290	400	309.5	

Performance Curves

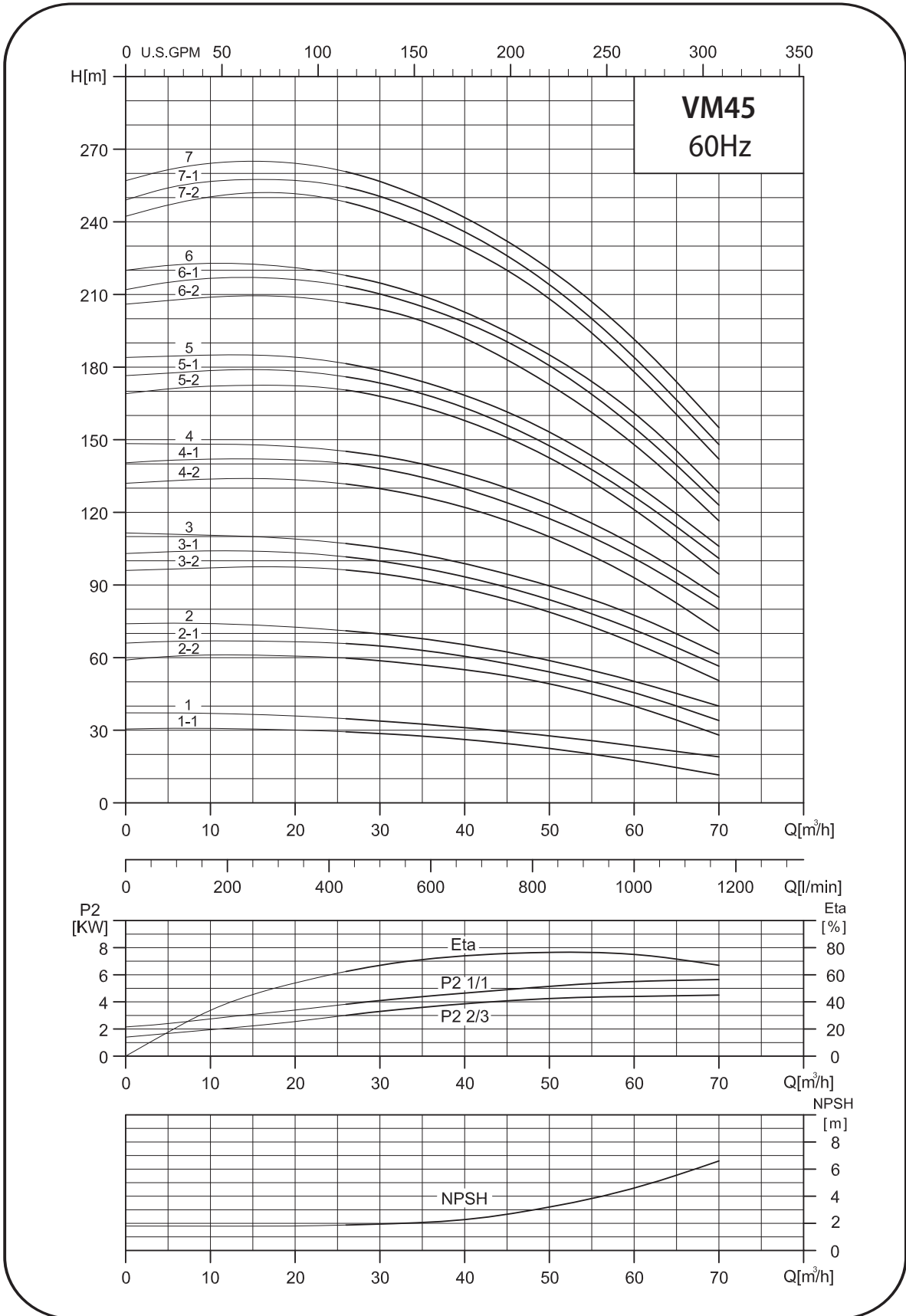


Dimensions and weights VMC, VMN 32

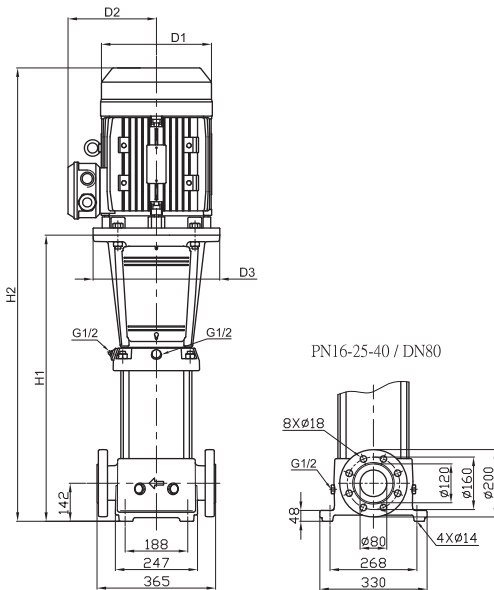


Pump type	Motor	VMC, VMN					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VMC, VMN 32-1-1	2.2	54	79	175	140	-	66.6
VMC, VMN 32-1	3.0	54	84	196	148	-	72.6
VMC, VMN 32-2-2	55	54	934	234	199	300	96.5
VMC, VMN 32-2-1	55	54	934	234	199	300	96.5
VMC, VMN 32-2	7.5	54	974	234	199	300	105.5
VMC, VMN 32-3-2	11.0	74	1199	268	215	350	142.1
VMC, VMN 32-3	11.0	74	1199	268	215	350	142.1
VMC, VMN 32-4-2	11.0	84	1269	268	215	350	145.1
VMC, VMN 32-4	150	84	1313	268	215	350	151.1
VMC, VMN 32-52	150	84	1388	268	215	350	159.1
VMC, VMN 32-5	185	84	1429	317	242	400	194.2
VMC, VMN 32-6-2	185	964	1499	317	242	400	197.1
VMC, VMN 32-6	185	964	1499	317	242	400	197.2
VMC, VMN 32-7-2	22.0	1034	1613	317	242	400	210.9
VMC, VMN 32-7	22.0	1034	1613	317	242	400	211
VMC, VMN 32-82	30.0	1104	1727	317	290	400	299.4
VMC, VMN 32-8	30.0	1104	1727	317	290	400	299.4
VMC, VMN 32-9-2	30.0	1174	1797	317	290	400	302
VMC, VMN 32-9	30.0	1174	1797	317	290	400	302.1
VMC, VMN 32-10-2	30.0	1244	1867	317	290	400	304.6

Performance Curves

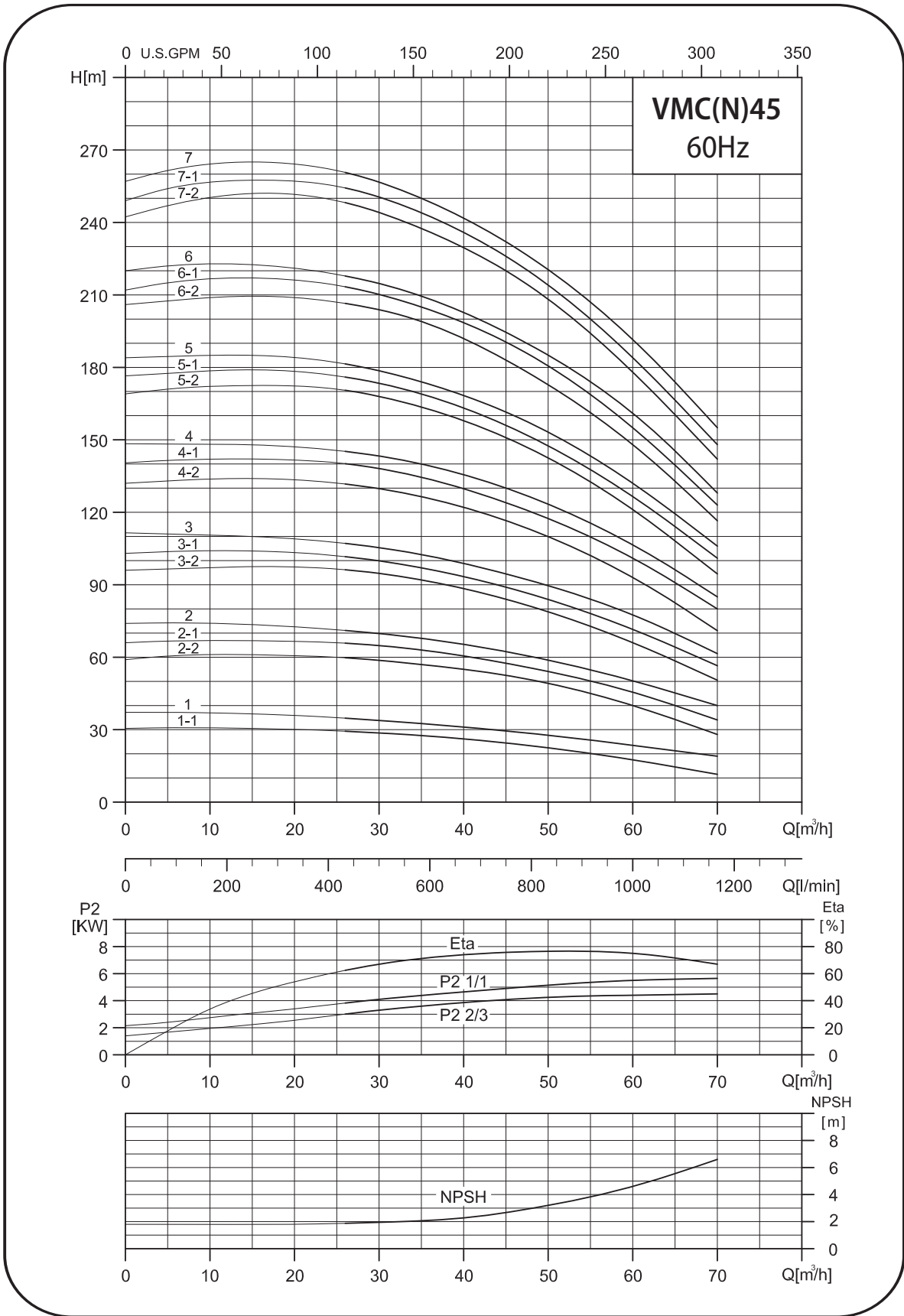


Dimensions and weights VM 45

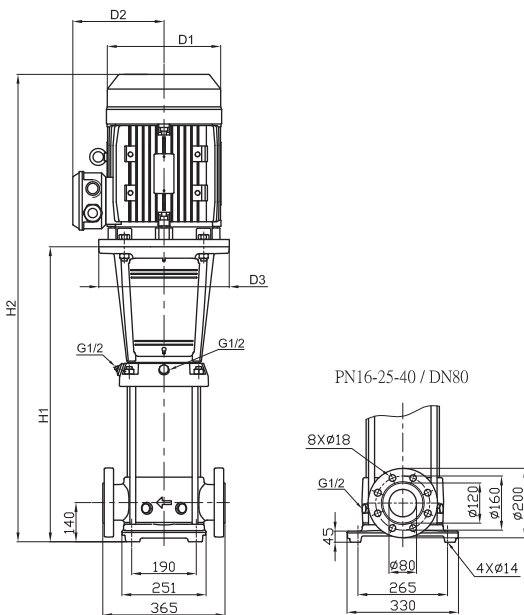


Dimensions and weights							
Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VM 45-1-1	5.5	561	921	234	199	300	108.67
VM 45-1	7.5	561	961	234	199	300	117.68
VM 45-2-2	11	751	1196	268	215	350	154.91
VM 45-2-1	11	751	1196	268	215	350	154.92
VM 45-2	15	751	1240	268	215	350	165.93
VM 45-3-2	18.5	831	1366	317	242	350	204.58
VM 45-3-1	18.5	831	1366	317	242	350	204.59
VM 45-3	18.5	831	1366	317	242	350	204.60
VM 45-4-2	22	911	1490	317	242	350	219.01
VM 45-4-1	30	911	1534	317	290	400	304.26
VM 45-4	30	911	1534	317	290	400	304.27
VM 45-5-2	30	991	1614	317	290	400	307.92
VM 45-5-1	30	991	1614	317	290	400	307.93
VM 45-5	30	991	1614	317	290	400	307.94
VM 45-6-2	37	1071	1796	398	365	400	380.59
VM 45-6-1	37	1071	1796	398	365	400	380.60
VM 45-6	37	1071	1796	398	365	400	380.61
VM 45-7-2	45	1151	1876	398	365	450	412.26
VM 45-7-1	45	1151	1876	398	365	450	412.27
VM 45-7	45	1151	1876	398	365	450	412.28

Performance Curves

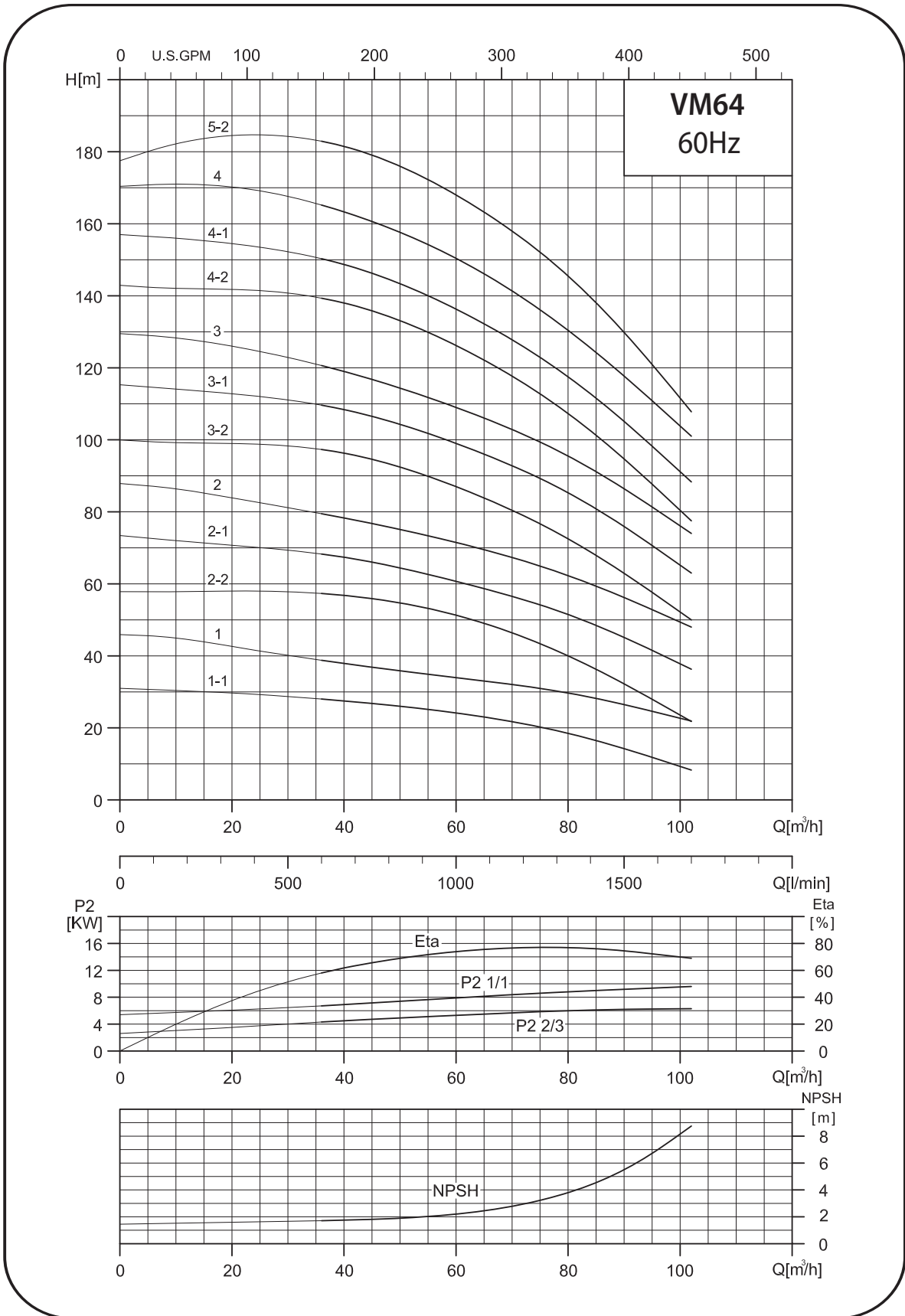


Dimensions and weights VMC, VMN 45

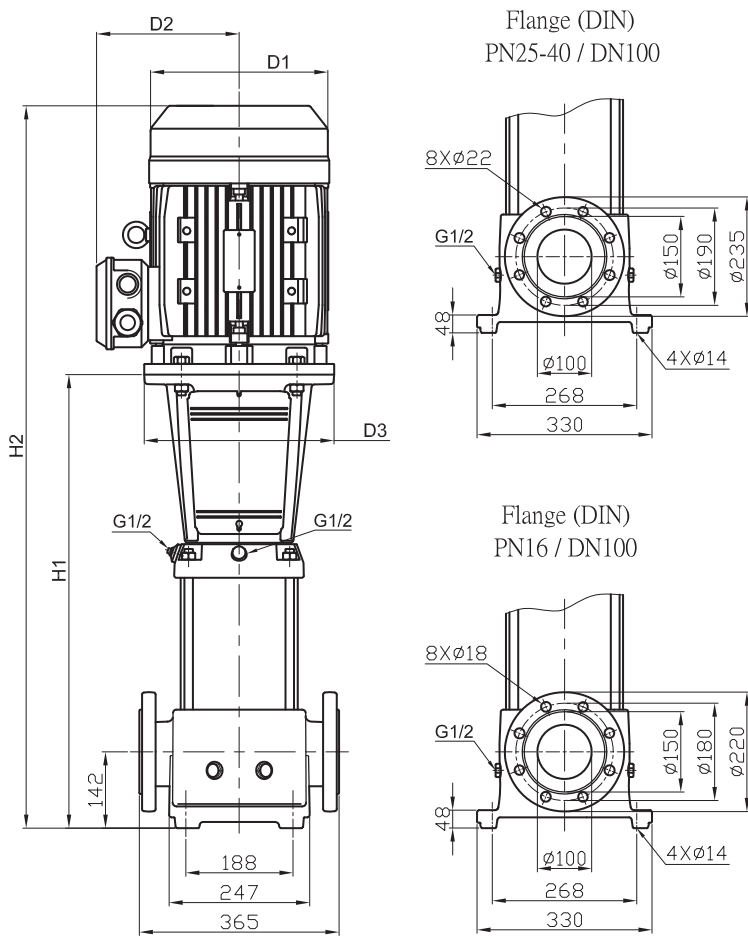


Dimensions and weights							
Pump type	Motor	VMC, VMN					Net weight [kg]
		Dimension [mm]					
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VMC, VMN 45-1-1	5.5	559	919	234	199	300	100.13
VMC, VMN 45-1	7.5	559	959	234	199	300	109.14
VMC, VMN 45-2-2	11	749	1194	268	215	350	146.37
VMC, VMN 45-2-1	11	749	1194	268	215	350	146.38
VMC, VMN 45-2	15	749	1238	268	215	350	157.39
VMC, VMN 45-3-2	18.5	829	1364	317	242	350	196.04
VMC, VMN 45-3-1	18.5	829	1364	317	242	350	196.05
VMC, VMN 45-3	18.5	829	1364	317	242	350	196.06
VMC, VMN 45-4-2	22	909	1488	317	242	350	210.47
VMC, VMN 45-4-1	30	909	1532	317	290	400	295.72
VMC, VMN 45-4	30	909	1532	317	290	400	295.73
VMC, VMN 45-5-2	30	989	1612	317	290	400	299.38
VMC, VMN 45-5-1	30	989	1612	317	290	400	299.39
VMC, VMN 45-5	30	989	1612	317	290	400	299.40
VMC, VMN 45-6-2	37	1069	1794	398	365	400	372.05
VMC, VMN 45-6-1	37	1069	1794	398	365	400	372.06
VMC, VMN 45-6	37	1069	1794	398	365	400	372.07
VMC, VMN 45-7-2	45	1149	1874	398	365	450	403.72
VMC, VMN 45-7-1	45	1149	1874	398	365	450	403.73
VMC, VMN 45-7	45	1149	1874	398	365	450	403.74

Performance Curves

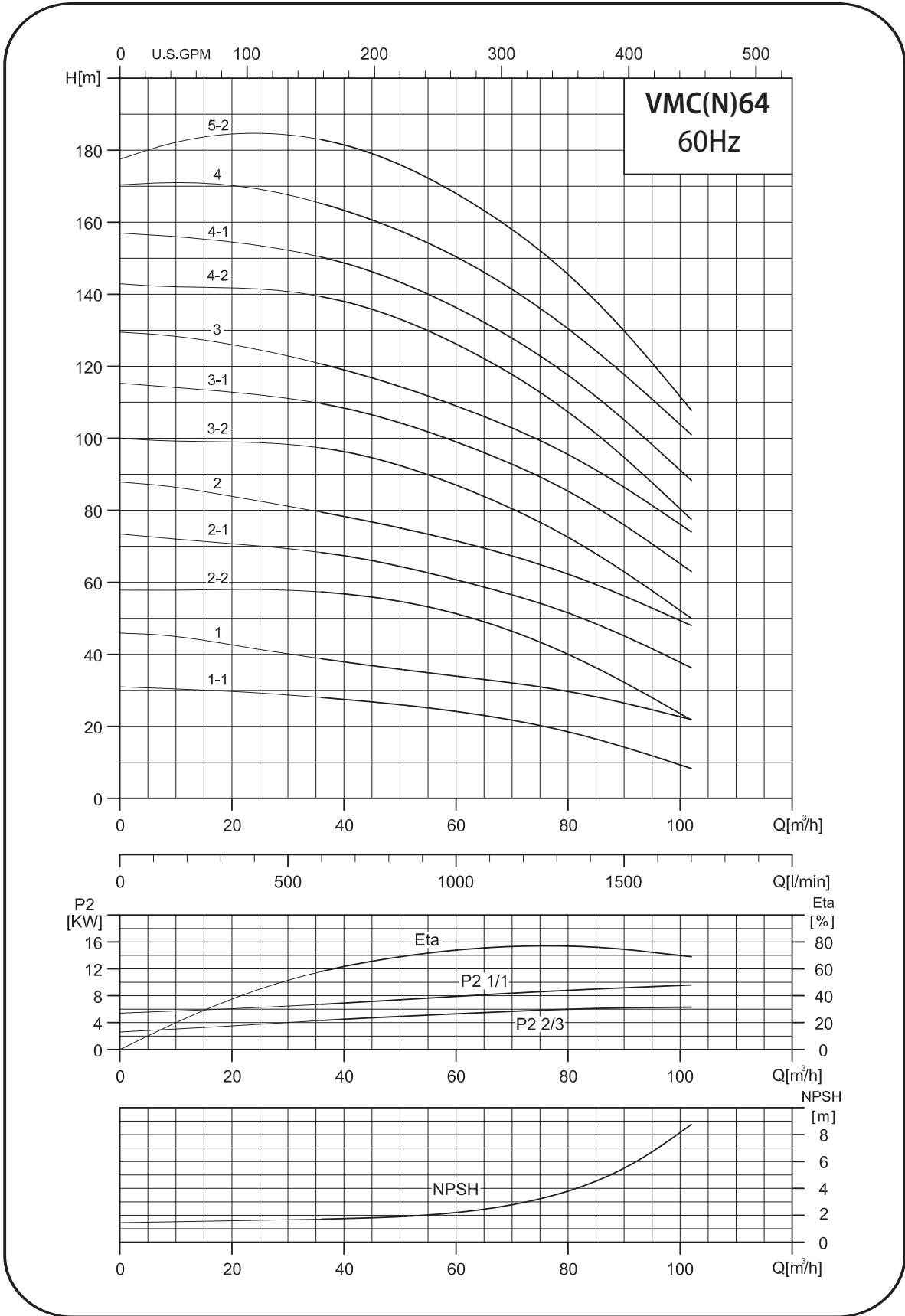


Dimensions and weights VM 64

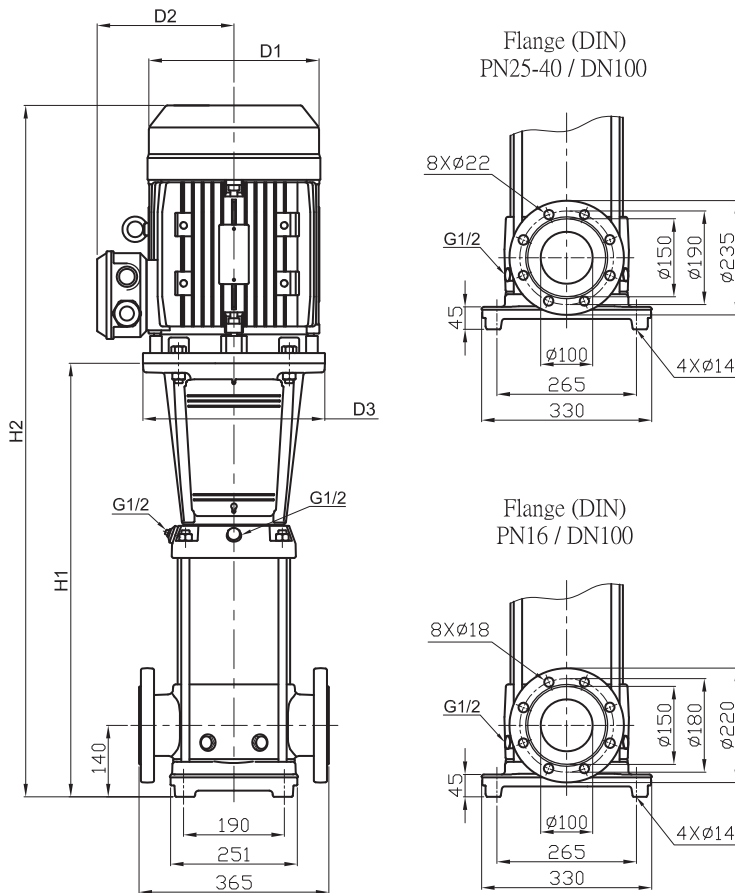


Dimensions and weights							
Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
VM64-1-1	7.5	563	963	234	199	300	111.64
VM64-1	11.0	678	1118	268	215	350	145.22
VM64-2-2	15.0	766	1245	268	215	350	160.16
VM64-2-1	18.5	766	1291	317	242	350	195.16
VM64-2	22.0	766	1335	317	242	350	205.92
VM64-3-2	22.0	838	1417	317	242	350	210.38
VM64-3-1	30.0	838	1461	317	290	400	295.62
VM64-3	30.0	838	1461	317	290	400	295.62
VM64-4-2	37.0	921	1646	398	365	400	368.52
VM64-4-1	37.0	921	1646	398	365	400	368.52
VM64-4	45.0	925	1650	398	365	450	396.52
VM64-5-2	45.0	1007	1782	398	365	450	400.43

Performance Curves

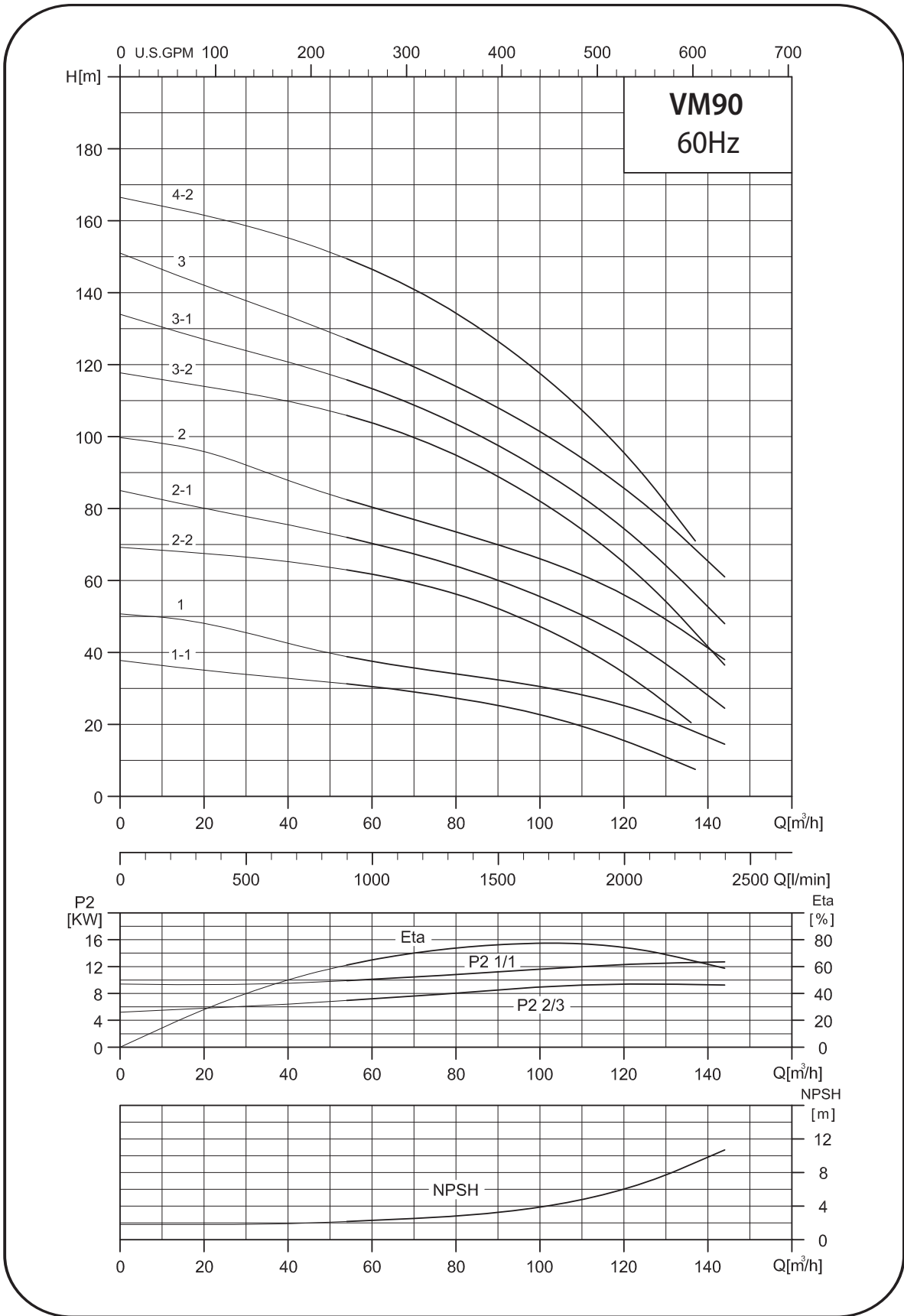


Dimensions and weights VMC, VMN 64

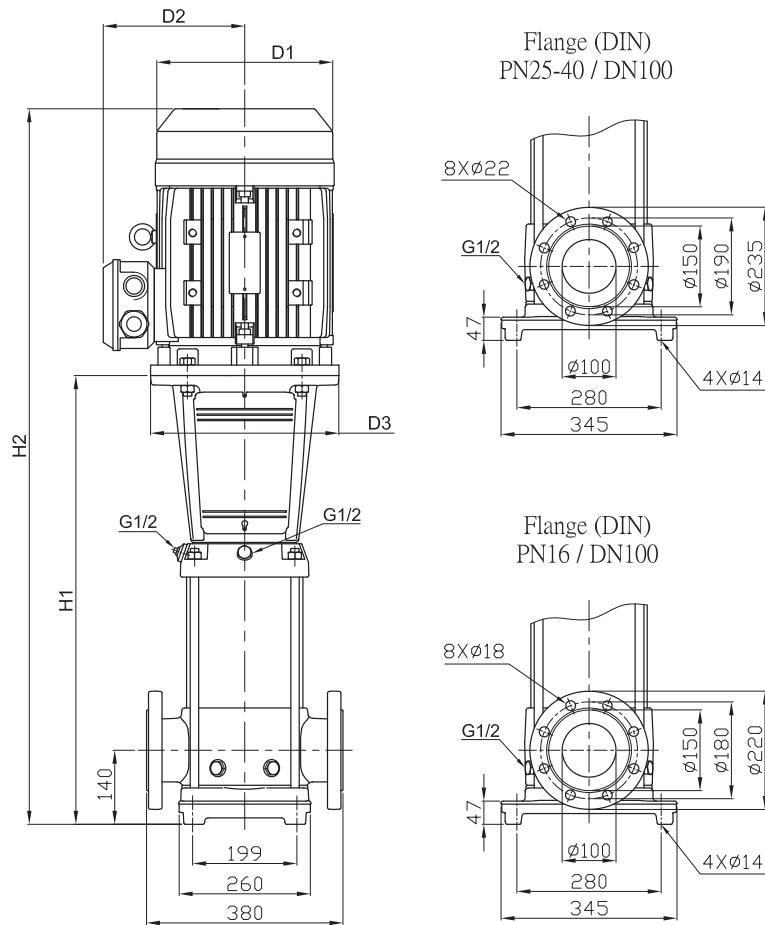


Dimensions and weights								
Pump type	Motor	VMC, VMN						Net weight [kg]
		Dimension [mm]					DIN flange	
	P ₂	DIN flange		D1	D2	D3		DIN flange
	[kW]	H1	H2					
VMC, VMN 64-1-1	7.5	563	963	234	199	300	104.82	
VMC, VMN 64-1	11.0	673	1118	268	215	350	138.40	
VMC, VMN 64-2-2	15.0	756	1245	268	215	350	153.33	
VMC, VMN 64-2-1	18.5	756	1291	317	242	350	188.33	
VMC, VMN 64-2	22.0	756	1335	317	242	350	199.09	
VMC, VMN 64-3-2	22.0	838	1417	317	242	350	203.10	
VMC, VMN 64-3-1	30.0	838	1461	317	290	400	288.34	
VMC, VMN 64-3	30.0	838	1461	317	290	400	288.34	
VMC, VMN 64-4-2	37.0	921	1646	398	365	400	361.21	
VMC, VMN 64-4-1	37.0	921	1646	398	365	400	361.21	
VMC, VMN 64-4	45.0	925	1660	398	365	450	389.21	
VMC, VMN 64-5-2	45.0	1007	1732	398	365	450	393.09	

Performance Curves

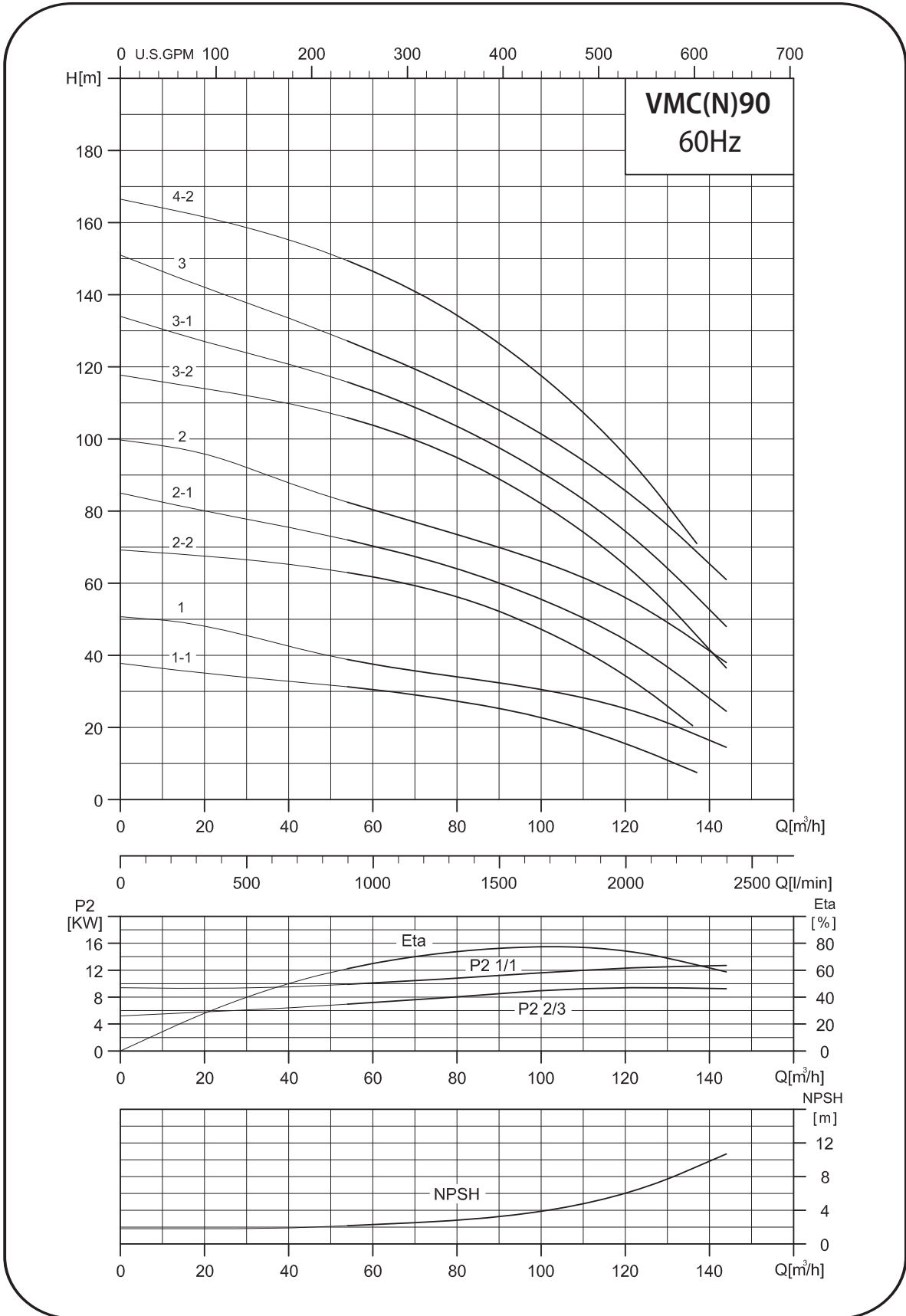


Dimensions and weights VM 90

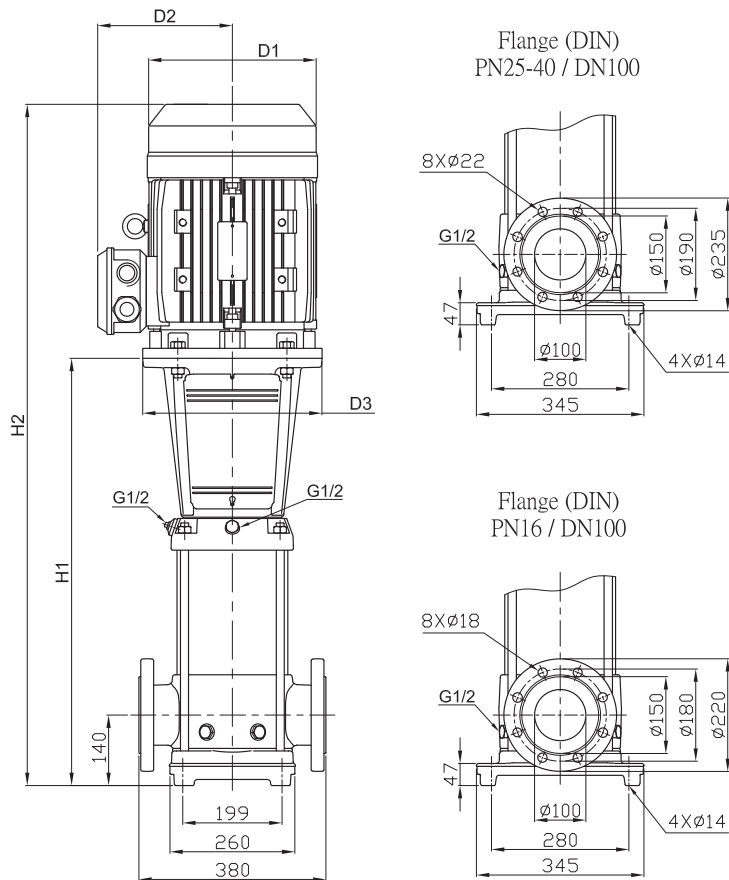


Dimensions and weights							
Pump type	Motor	VM					
		Dimension [mm]					Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange
		H1	H2				
V M90-1-1	11.0	682	1127	268	215	350	158.64
V M90-1	15.0	682	1171	268	215	350	169.66
V M90-2-2	18.5	7A	1309	317	242	350	209.82
V M90-2-1	22.0	7A	1353	317	242	350	220.60
V M90-2	30.0	7A	1397	317	290	400	305.86
V M90-3-2	37.0	866	1591	398	365	400	379.94
V M90-3-1	37.0	866	1591	398	365	400	379.96
V M90-3	45.0	866	1591	398	365	450	407.98
V M90-4-2	45.0	958	1683	398	365	450	414.92

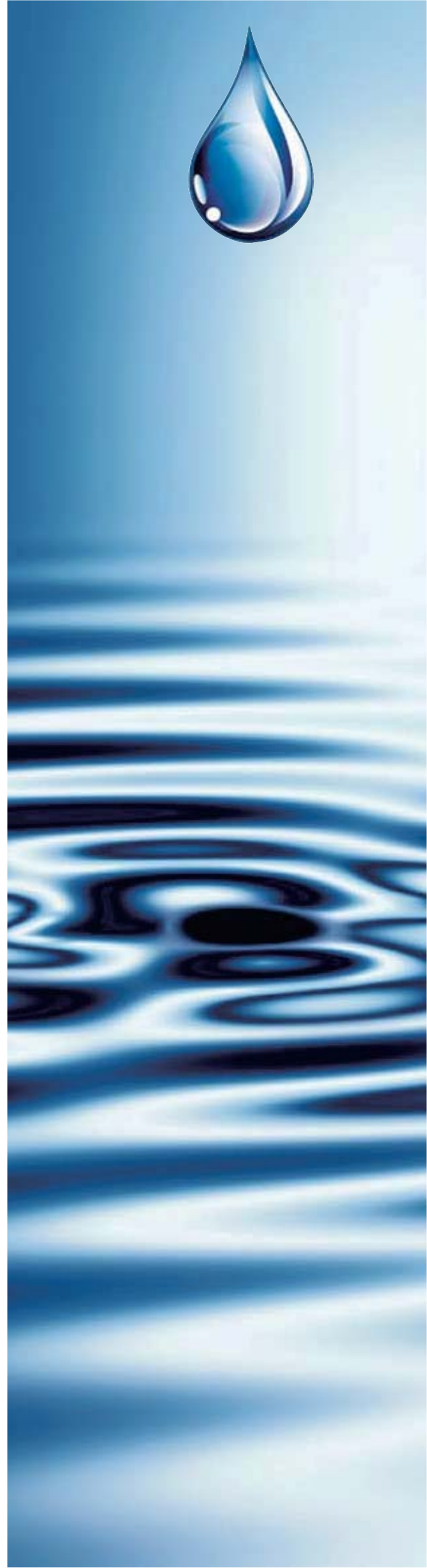
Performance Curves



Dimensions and weights VMC, VMN 90



Dimensions and weights								
Pump type	Motor	VMC, VMN						
		Dimension [mm]						Net weight [kg]
	P ₂ [kW]	DIN flange		D1	D2	D3	DIN flange	
		H1	H2					
VMC, VMN 90-1	1	11.0	Ø 6	1131	2Ø	215	350	148.88
VMC, VMN 90-1		15.0	Ø 6	1175	2Ø	215	350	159.90
VMC, VMN 90-2	2	18.5	778	1313	317	242	350	199.92
VMC, VMN 90-2	1	22.0	778	1357	317	242	350	210.70
VMC, VMN 90-2		30.0	778	1401	317	290	400	295.96
VMC, VMN 90-3	2	37.0	870	1595	398	365	400	370.00
VMC, VMN 90-3	1	37.0	870	1595	398	365	400	370.02
VMC, VMN 90-3		45.0	870	1595	398	365	450	398.04
VMC, VMN 90-4	2	45.0	962	1687	398	365	450	404.82





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