

Interference suppression class B

Pressure booster systems with continuously variable speed adjustment to DIN 1988



Hyamat V with Movitec

DIN EN ISO 9001



Applications

- Residential buildings
- Hospitals
- Office buildings
- Hotels
- Department stores
- Industry
- and other applications

Fluid handled

Drinking water, service water, fire-fighting water, cooling water, where there is no chemical and mechanical corrosive action on the system materials.

Operating Data (Standard Design)

Flow rate Q	Up to 660 m ³ /h, 183 l/s with 6 pumps max. *)
Head H	Up to 160 m
Fluid temperature	Up to 70 °C
	Up to 25 °C in accordance with DIN 1988 (DVGW)
Ambient temperature	Up to 40 °C
System discharge pressure p _d	Up to 16 bar
Inlet pressure p _{in}	Up to 10 bar
Permissible inlet pressure fluctuation depends on the pump, see page 6. For higher pressure fluctuations, a pressure reducer or controller is required.	
Supply voltage	3/PE, AC 400 V, 50 Hz

*) With stand-by pump as peak load pump

Materials

Pumps

Suction/discharge casing	Stainless steel
Hydraulic system	Stainless steel
Mechanical seal	To EN 12756
Primary ring	Silicon carbide
Mating ring	Hard carbon
Elastomer	EPDM

Hydraulic system:

Distributor pipe	Stainless steel
Valves	Copper base alloys/ brass, DVGW-approved
Accumulator	Connection made of stainless steel
Membrane	Approved for drinking water to DIN 4807-5

Drive

Electric motor 50 Hz, 2-pole, special KSB model, for three-phase mains. Standard IEC motors can only be used after consultation with KSB. Movitec 2B, 4B, 6B, 10B, 15B, 90B from 0,75 kW, electric motor IE2.

Design

Fully automatic pressure booster package system, with 2 to 6 vertical high-pressure pumps and continuously variable speed adjustment of one pump for fully electronic control of the required supply pressure with two standard volt-free contacts for fault indication.

Design and function as per DIN 1988, Part 5.

Hyamat V System Equipment (Standard)

- 2-6 vertical high-pressure centrifugal pumps (standard pumps) Movitec 2B, 4B, 6B, 10B und 15B with oval flange/round flange Movitec 32, 45, 65 and 90B with round flange
- Hydraulic components made of stainless steel
- 1 check valve and shut-off elements for each pump to DIN / DVGW
- Membrane-type accumulator on the discharge side as control tank (direct flow) to DIN 4807-5, approved for drinking water
- Pressure transmitter on the discharge pressure side
- Pressure indication via pressure gauge
- Steel baseplate powder-coated/epoxy resin-coated
- Pumps are fixed to the baseplate on anti-vibration mounts for sizes 2B, 4B, 6B, 10B and 15B
- Pump sizes 32, 45, 65 and 90B are supplied with level-adjustable feet and anti-vibration pads (supplied, but not fitted)
- Control cabinet IP 54
- CE certificate

Control Cabinet Equipment (Standard)

- Pump control and monitoring equipment
- Graphical display with operating panel
- LEDs indicating operational availability and system faults
- Service interface for connection to a PC
- Frequency inverter
- Transformer for control voltage
- Motor protection switch per pump
- Master switch, lockable (repair switch)
- Terminals with identification for all connections
- Circuit diagram acc. to VDE, settings for FI and parts list for electrical parts
- Terminals for connecting analog or digital dry running protection equipment
- External connection ON
- External connection OFF

For supplementary equipment and special design see pages 25 to 27.

Features

- LEDs
- Function keys
- Navigation keys
- Service interface

Setting Options via Display

- Basic settings (language, physical units)
- Configuration (number of pumps, inlet pressure monitoring)
- Main parameters (setpoint, settings for frequency inverter operation, sensor settings, auto-reset, limitation of pump numbers, timer functions, e.g. alternative setpoint, operation check run)

Information Displayed

- System pressure
- Number of pumps
- Inlet pressure
- Operating hours

Indication via LEDs

- Green: no fault, system operational or running
- Amber: warning
- Red: alert

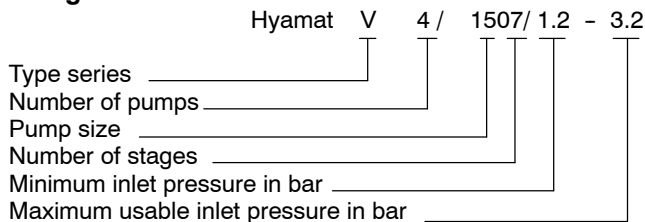
Reporting via volt-free contacts on isolating terminals

Two change-over contacts (capacity 230 V~, 2 A) are provided for reporting warnings and alerts.

Remote control from a control station

- Remote ON
NC contact, all pumps available are started up with a set start delay. Dry running protection and Remote OFF are disabled.
- Remote OFF
NC contact, all pumps are stopped with a set stop delay.

Designation



Function

Two to six pumps are controlled and monitored by a micro-processor control unit.

Each pump is connected to a frequency inverter and controlled by the control unit in order to ensure a constant system discharge pressure of ± 0.4 bar.

As the demand increases or decreases, the peak load pumps will be switched on and off automatically.

As soon as the demand increases after one pump has been switched off, another pump which has not been in operation before is switched on.

After the last (FI-controlled) pump has been switched off and the demand increases again, the next pump in line is switched on and connected to the frequency inverter.

The stand-by pump is also included in the alternating cycle.

As a standard, the system is switched on automatically depending on the pressure; the actual pressure is measured by an analog pressure measuring device (pressure transmitter).

The function of this pressure transmitter is monitored (live-zero).

As long as the system is in operation, the pumps are switched on and off depending on the demand (standard setting).

In this way it is ensured that the individual pumps operate only in line with the actual demand. The use of a speed-controlled pump reduces wear as well as the pumps' switching frequency in parallel operation. If a duty pump fails, the next pump will be switched on immediately. A fault indication can be reported via volt-free contacts (e. g. to the control station).

If the demand drops towards 0, the system slowly approaches the switch-off point.

The operating status is displayed via LEDs.

Manual mode

Standard: Each pump can be started up in manual mode for 10 seconds via the display.

Option: Manual mode via manual-0-automatic selector switch.

Please note:

For this mode of operation no pressure control and no lack-of-water monitoring will be effected.

If the consumer installations are closed, the pumps produce the maximum pressure in accordance with the characteristic curve.

Dry running protection (supplementary equipment)

We offer various lack-of-water monitoring systems

(see supplementary equipment/accessories)

Inlet pressure

>0.5 bar

with pressure switch or pressure transmitter and pressure gauge (supplementary equipment)

Adjustable from 0.5 to 10 bar.

Inlet pressure

<0.5 bar

various solutions matched to the system requirements (float switch, set of electrodes, flow sensor, etc.).

On Hyamat V, analog or digital lack-of-water monitoring equipment can be connected to the corresponding terminals.

To protect the system from dry running, different protective equipment (see Accessories/Supplementary equipment) is available matching the system connections (indirect, direct).

For a summary of connection type and dry running protection options see page 5.

Commissioning

Commissioning by specialist KSB staff is effected **against extra charge**.

Features of systems with Movitec 2B, 4B, 6B, 10B and 15B

Acoustic cladding

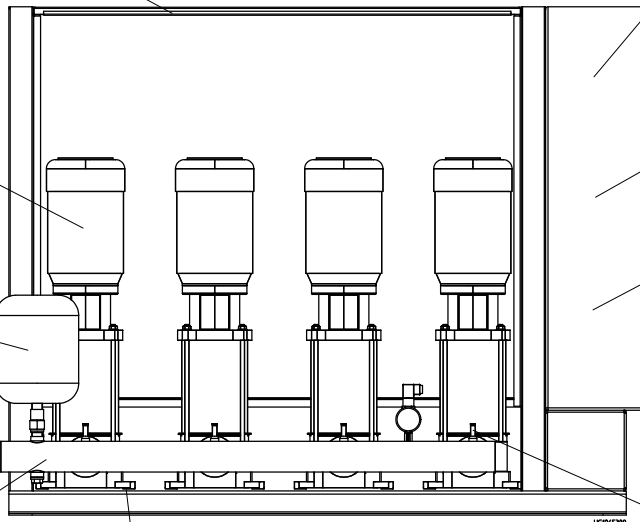
(supplementary equipment)

- Retrofittable and easy to service
- Protects against contamination
- Appealing design
- Low-noise operation, approx. 51 - 61 dB(A)

Output automatically matched to demand thanks to variable speed base load pump

Accumulator, direct flow to DIN 4807-5, DVGW-approved

Corrosion protection by **stainless steel piping**



Equal distribution of pump load thanks to automatic pump changeover

General fault message via volt-free contact

High operating reliability thanks to continuous functional monitoring of connected sensors

DVGW-tested valves

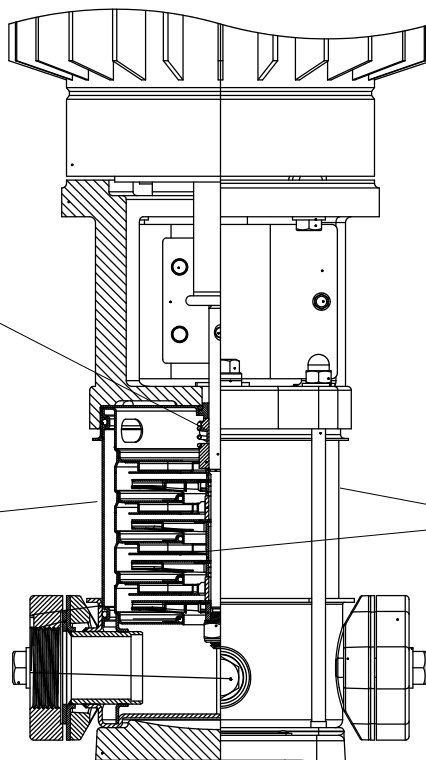
Installation free from solid-borne sound transmission due to anti-vibration mounts

Movitec Features

Reliable, service-friendly shaft seal

- Standardised mechanical seal to EN 12756
- High-alloy steel shaft

Low noise since the flow noise is damped by the water-filled shroud



Corrosion resistant
All wetted components, hydraulic components and pump shroud are made of high-alloy stainless steel

Features of systems with Movitec 32, 45, 65 and 90B

Acoustic cladding

(supplementary equipment)

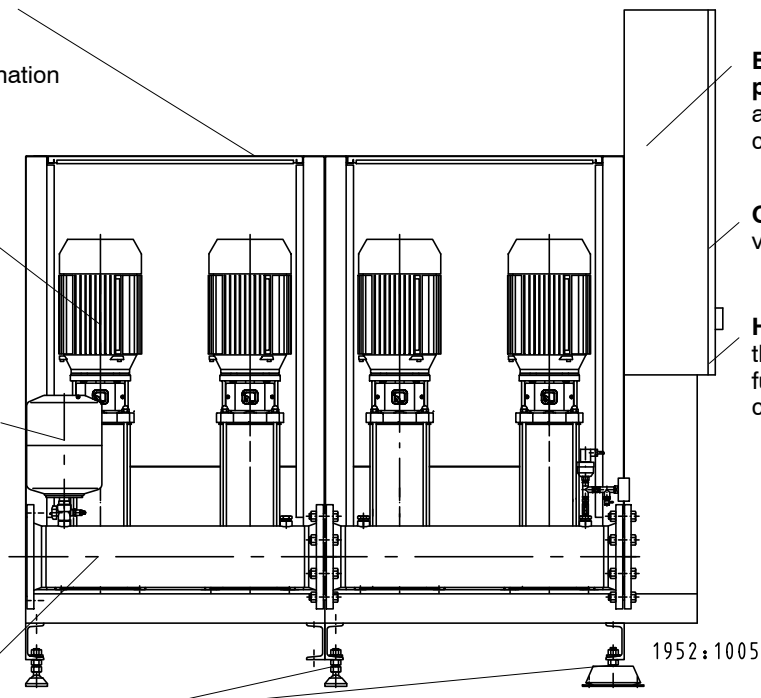
- Retrofittable and easy to service
- Protects against contamination
- Appealing design
- Low-noise operation

Output automatically matched to demand

thanks to variable speed base load pump

Accumulator, direct flow
to DIN 4807-5,
DVGW-approved

Corrosion protection by
stainless steel piping



Equal distribution of pump load thanks to automatic pump changeover

General fault message via volt-free contact

High operating reliability thanks to continuous functional monitoring of connected sensors

Installation free from solid-borne sound transmission due to anti-vibration mounts

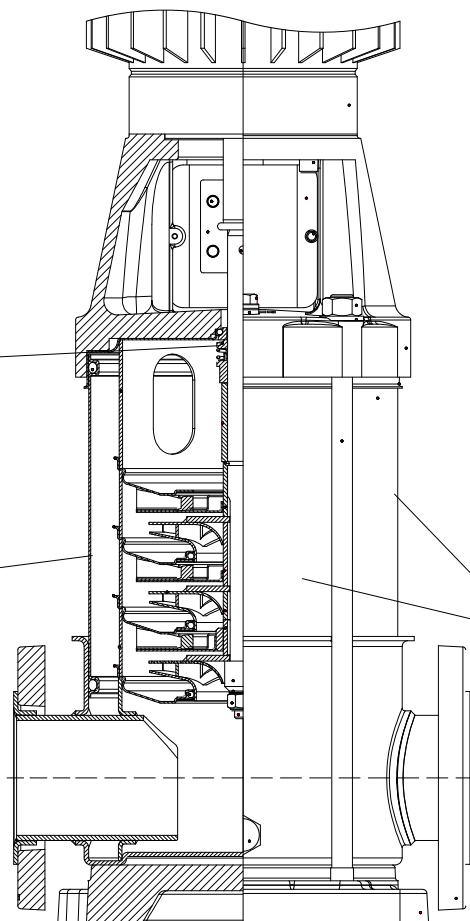
Movitec Features

Reliable, service-friendly shaft seal

- Standardised mechanical seal to EN 12756
- High-alloy steel shaft

Low noise

since the flow noise is damped by the water-filled shroud

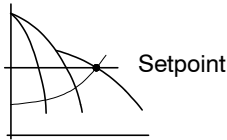
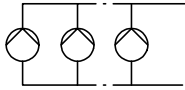


Corrosion resistant

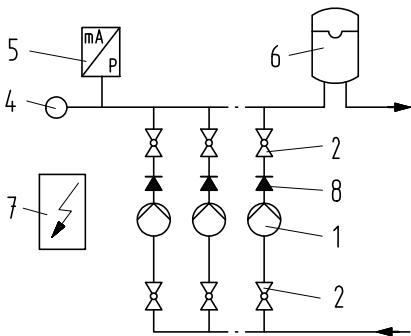
All wetted components, hydraulic components and pump shroud are made of high-alloy stainless steel

Modes of Operation
Variable: Hyamat V

A base load pump is continuously controlled, with the peak load pumps being started up and switched off in line with the demand.



1952,109

Standard pressure booster systems


1952,127

- 1 Pump
- 2 Ball valve
for Movitec 2B, 4B, 6B, 10B and 15B
Shut-off butterfly valve
for Movitec 32, 45, 65 and 90B
- 4 Pressure gauge
- 5 Pressure transmitter
- 6 Accumulator
- 7 Control cabinet/switchgear
- 8 Swing check valve

Modes of Connection

Direct	Indirect	Indirect
	Unpressurised inlet tank at the same or at a higher level 	Unpressurised inlet tank at a lower level (suction-lift operation) ¹⁾
1952,106	1952,107	1952,108

Dry running protection (see Supplementary Equipment or Accessories)

- At $p_{in} > 0.5$ bar (min. 1 bar; DIN 1988)
- Pressure switch
 - Pressure sensor
- At $p_{in} < 0.5$ bar
- Pressure sensor
 - Flow monitoring

- Float switch
- Set of electrodes and relay
- Dry running protection set for PE-inlet tank
- Flow monitoring ²⁾
- Pressure sensor

- Float switch
- Set of electrodes and relay
- Dry running protection set for PE-inlet tank
- Flow monitoring ²⁾

¹⁾ Non-priming pumps, suitable for suction-lift operation (for selection, please consult KSB)

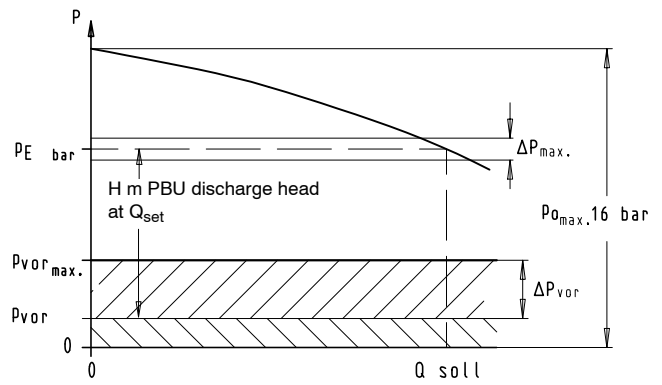
²⁾ **Important:** automatic reset is not possible for this type of dry running protection!

Work Sheet for Selection

Basic data:

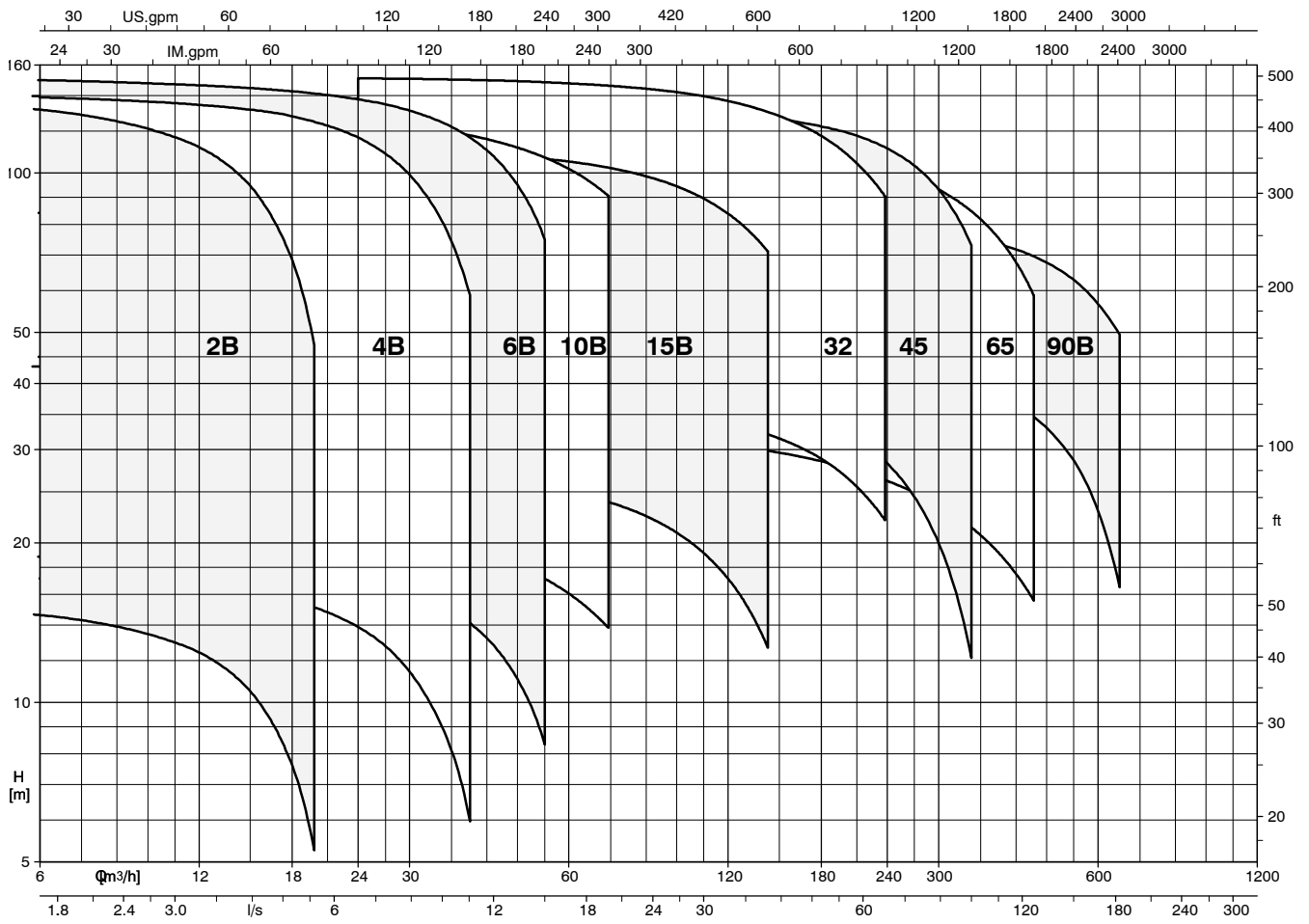
- H = $(p_E - p_{in}) \cdot 10$ m
- p_E = $p_{in} + (H : 10)$ bar
- Δp_{max} = $p_E \pm 0,4$ bar
- Q_{set} = PBU capacity at p_E m³/h
- H = PBU discharge head at Q_{set} m
- p_E = Start-up pressure for PBU at Q_{set} including inlet pressure p_{in}
- p_{in} = Inlet pressure upstream of PBU
- H_0 = PBU discharge head at $Q = 0$
- p_{0max} = PBU discharge pressure at $Q = 0$ ($=H_0 + p_{in}$)

Catalogue data always refer to inlet pressure = 0.



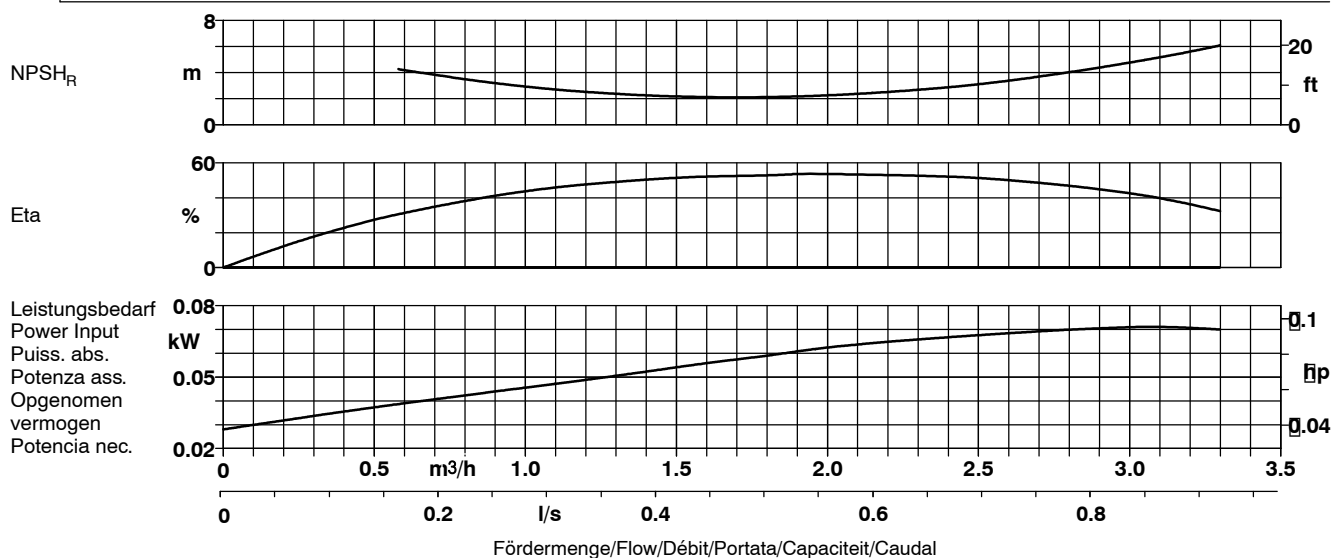
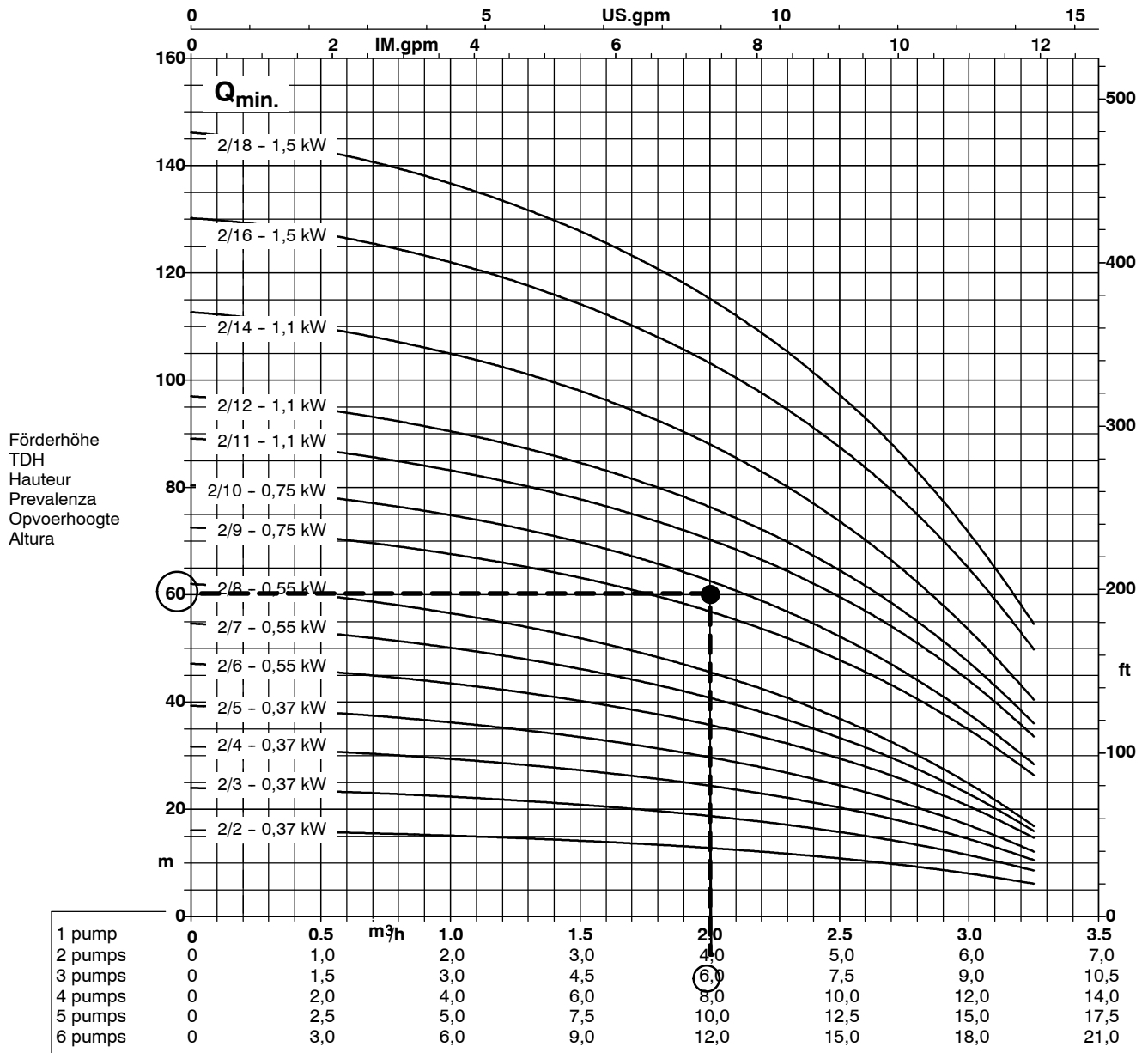
1948.510

Hyamat V Performance Chart (Complete Overview)

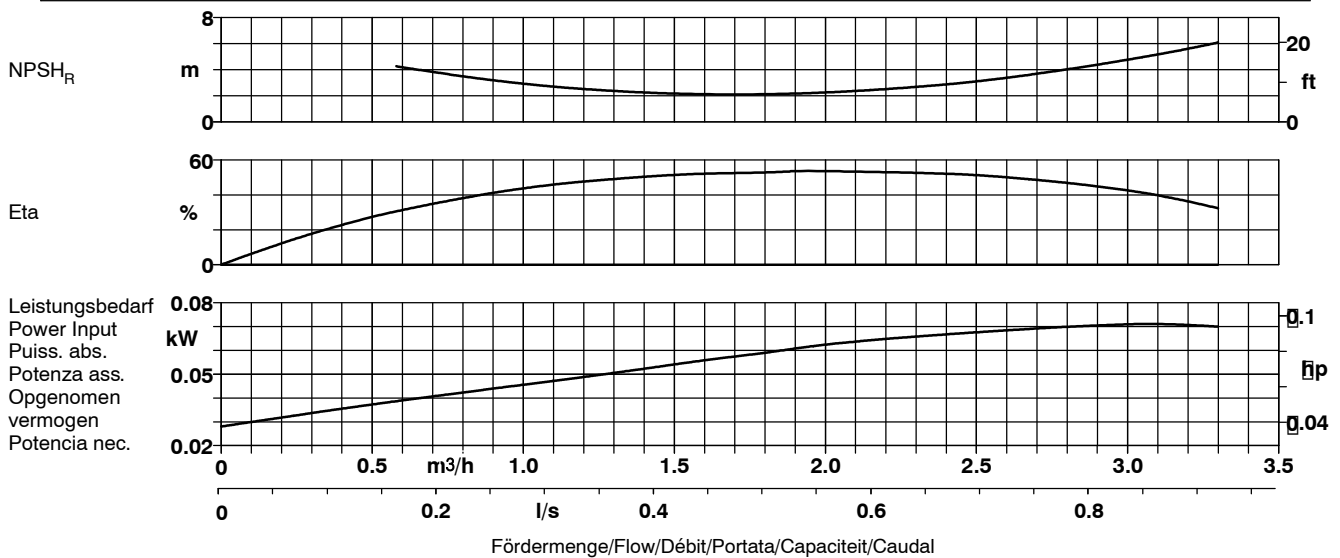
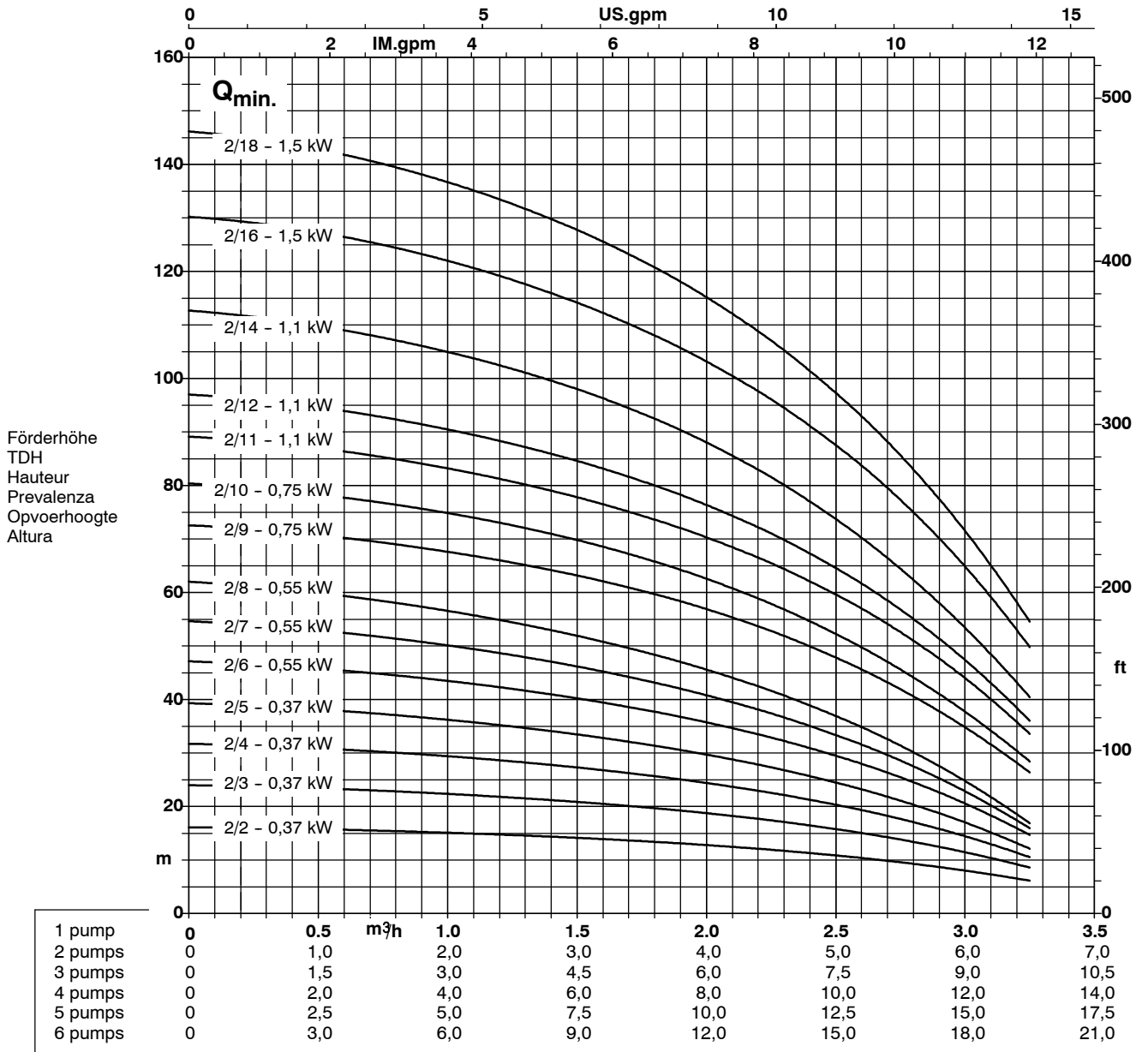


Selection example with characteristic curves of Movitec 2B

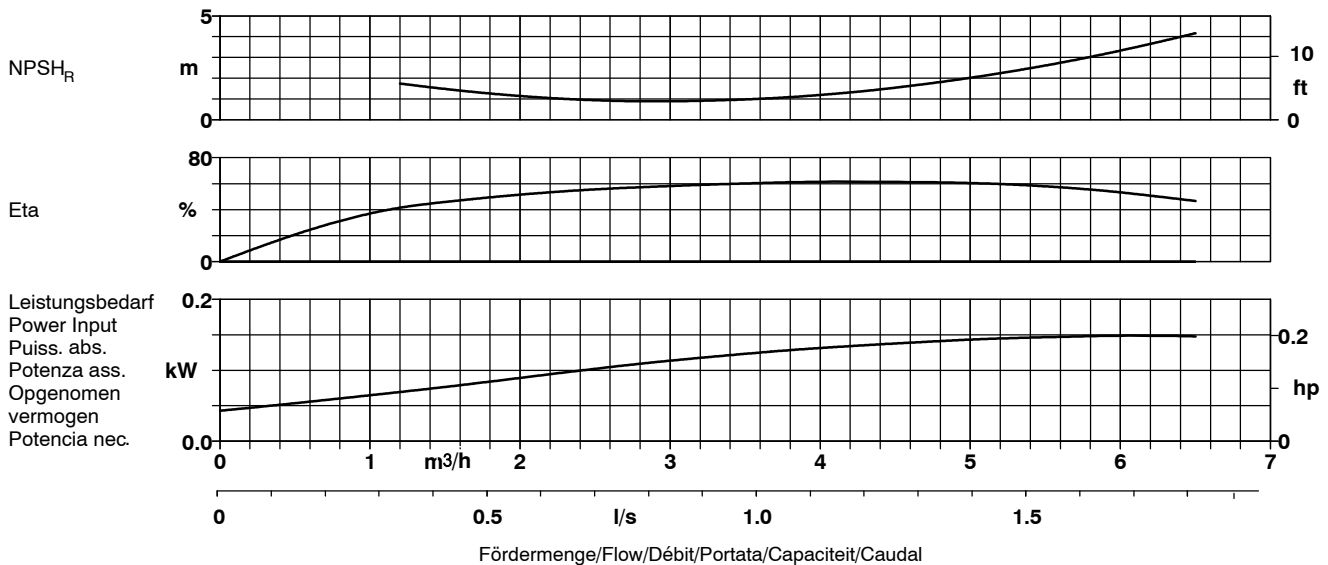
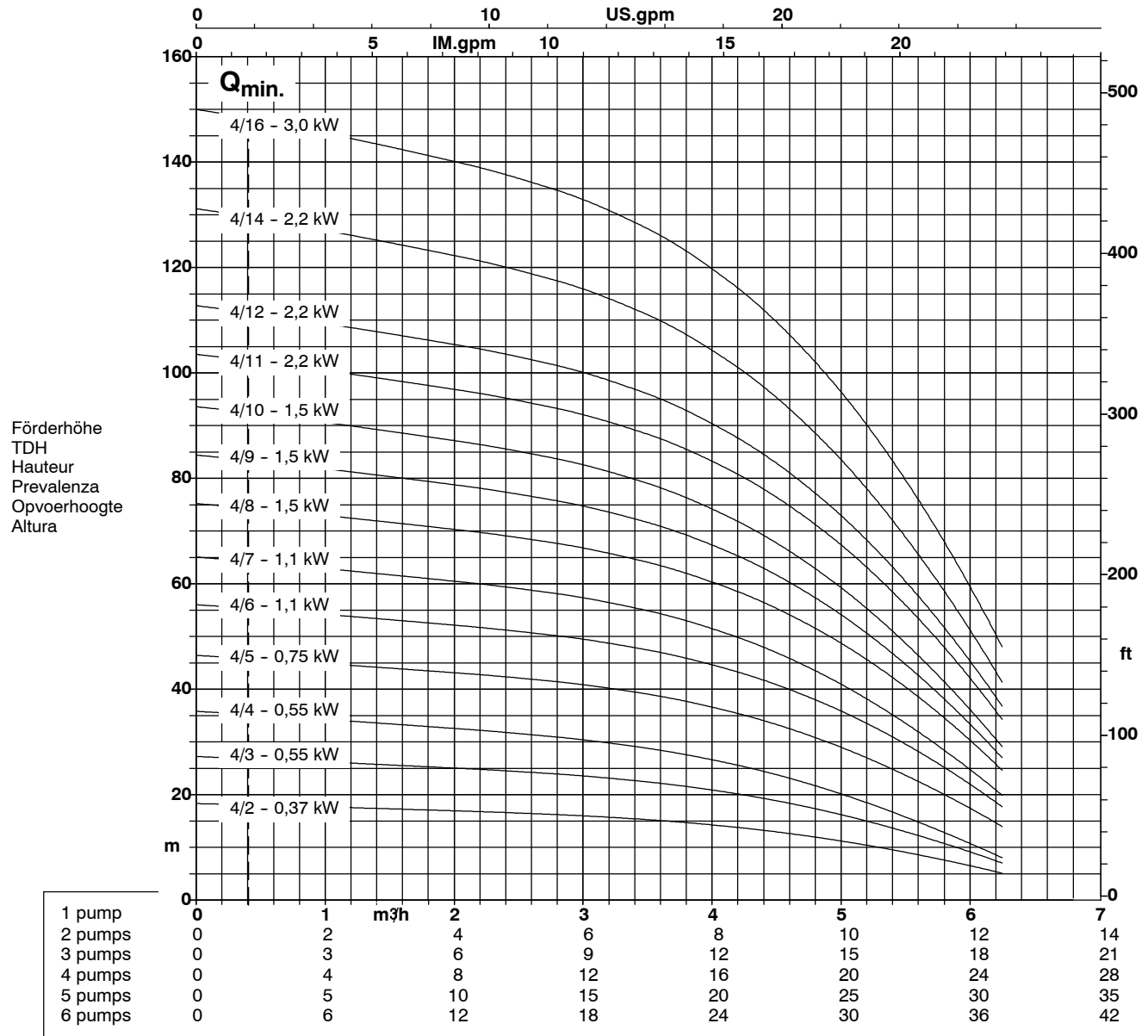
Example for: $Q = 6 \text{ m}^3/\text{h}$, $H = 60 \text{ m}$ - 3 pumps without stand-by pump, or 4 pumps of which one serves as stand-by pump



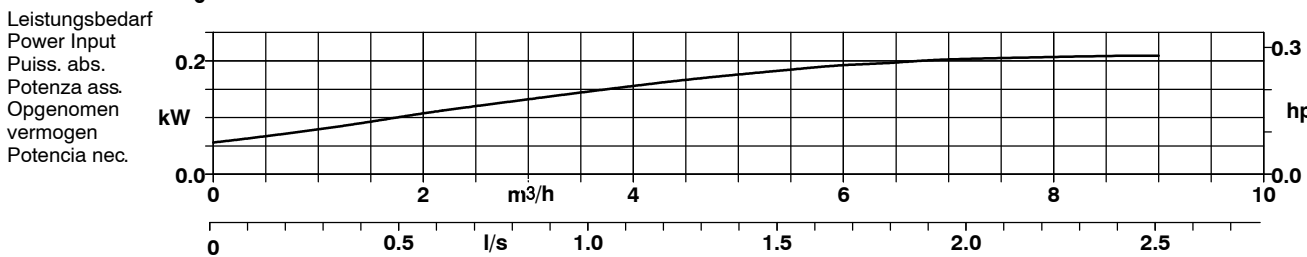
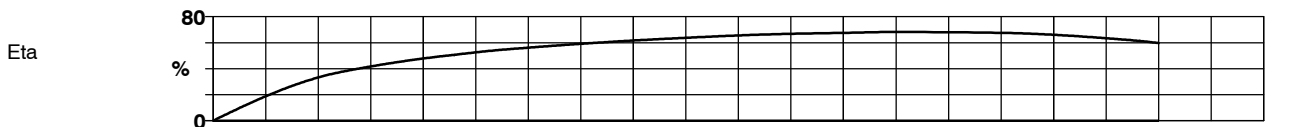
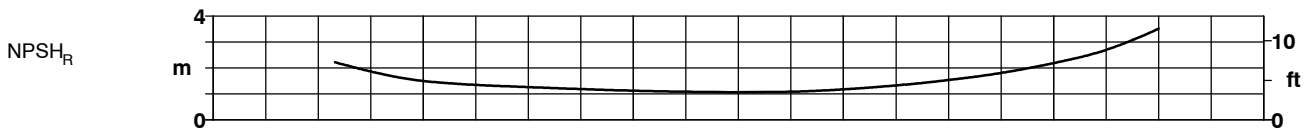
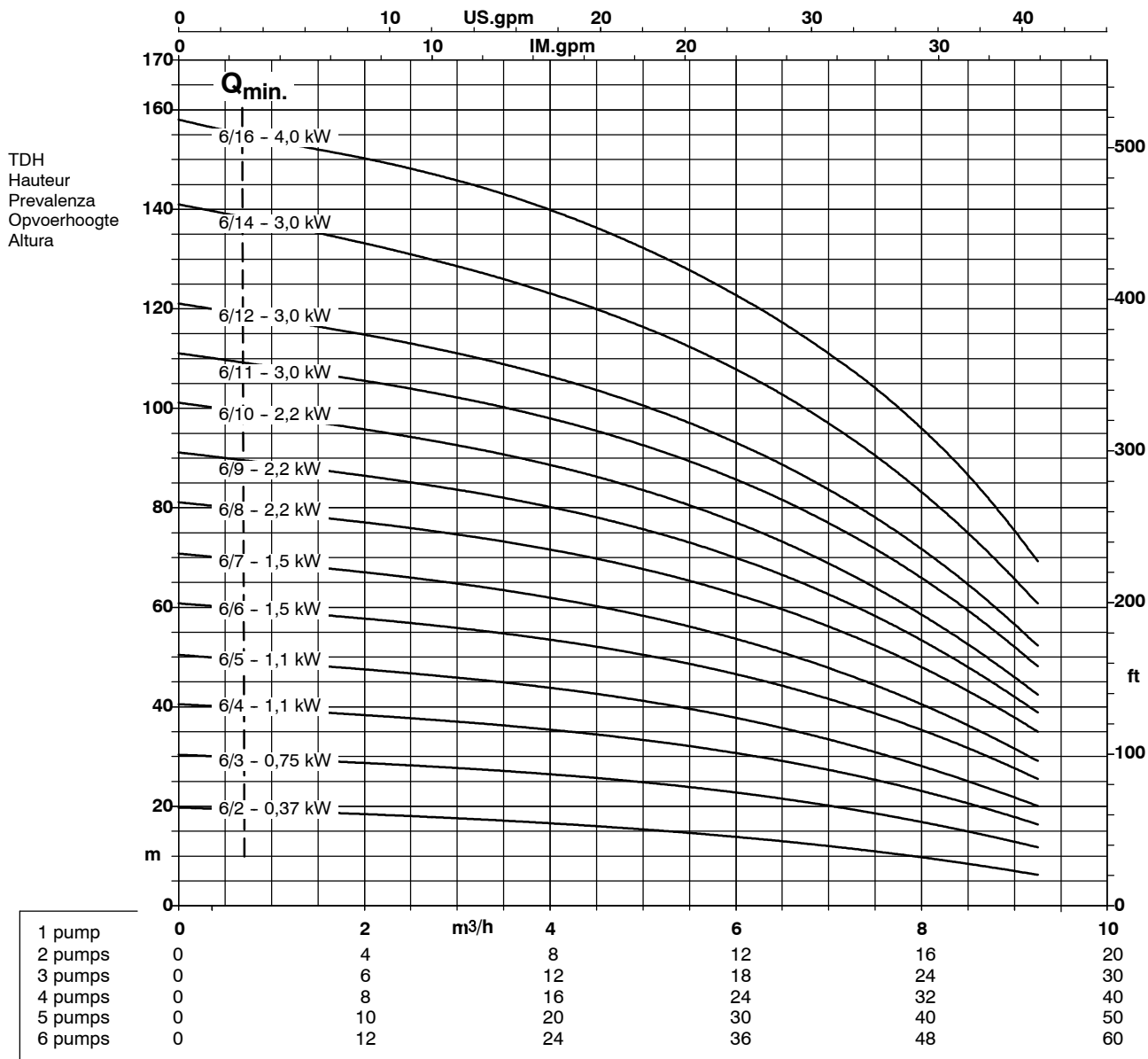
Hyamat V with Movitec 2B



Hyamat V with Movitec 4B

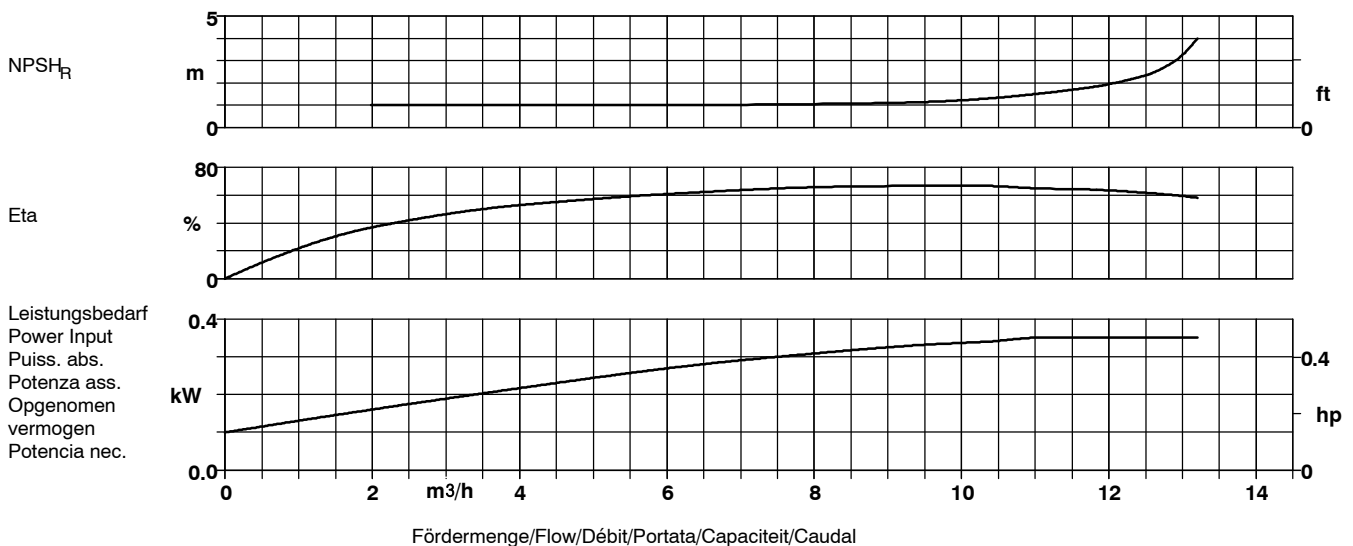
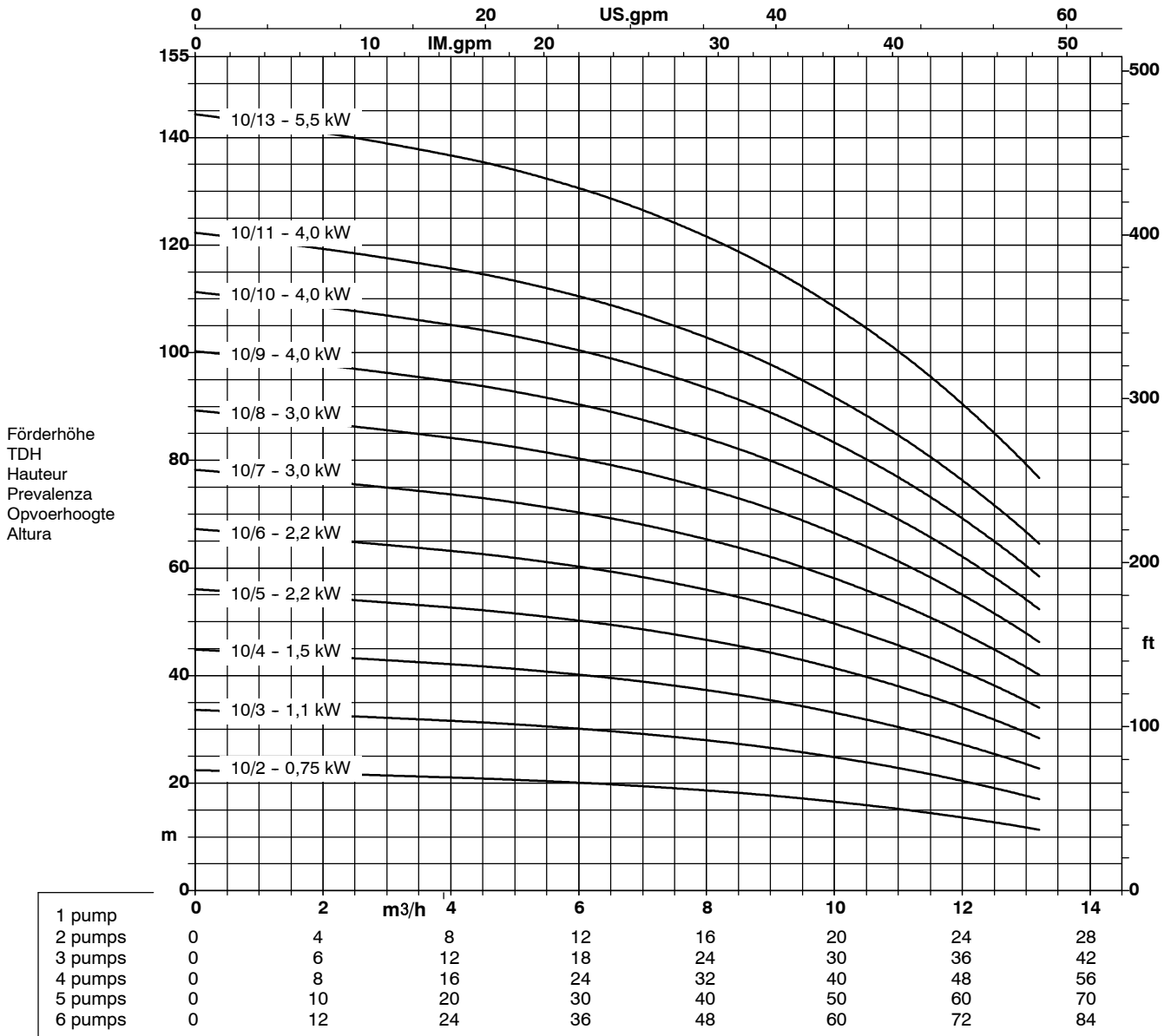


Hyamat V with Movitec 6B

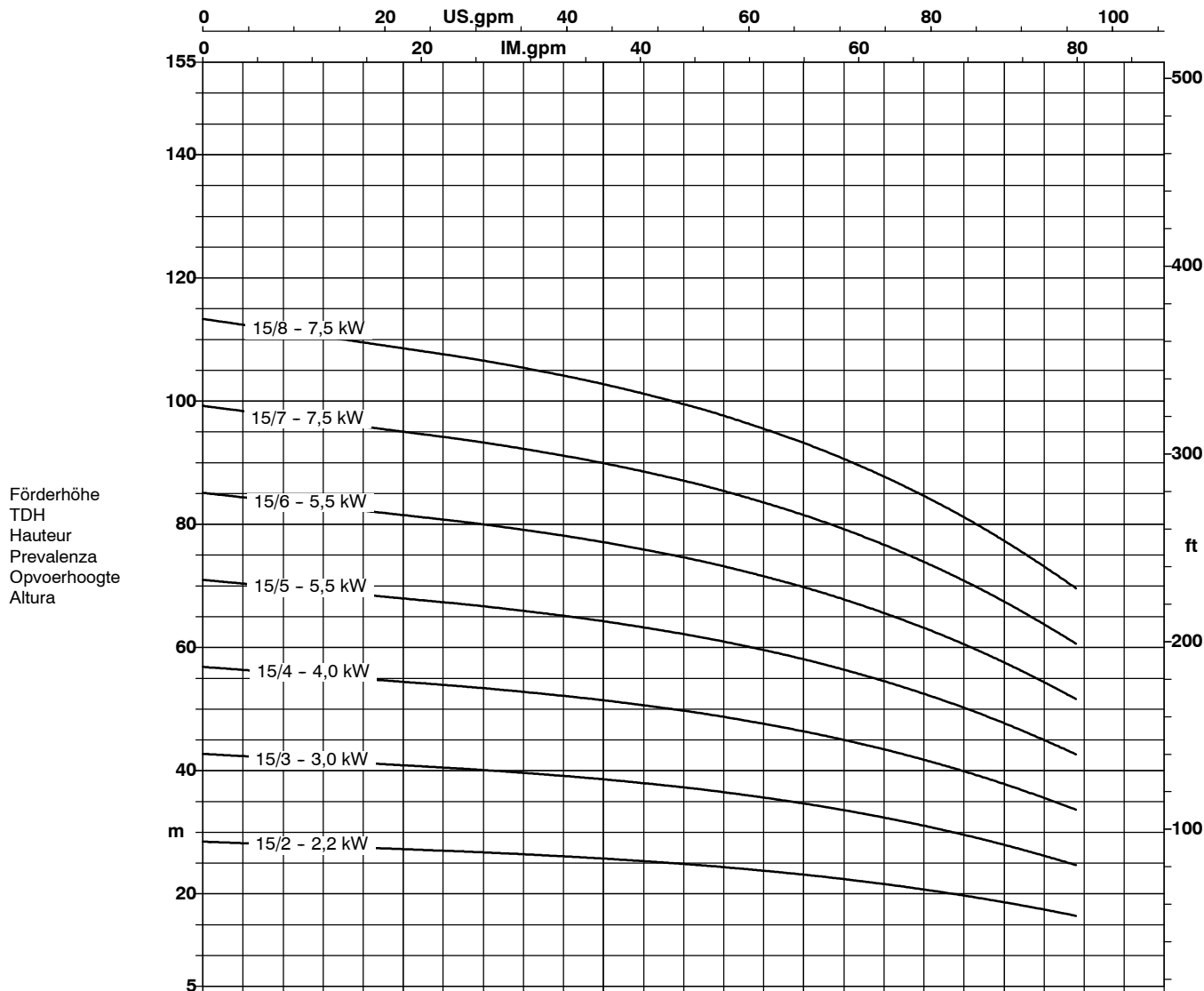


Fördermenge/Flow/Débit/Portata/Capaciteit/Caudal

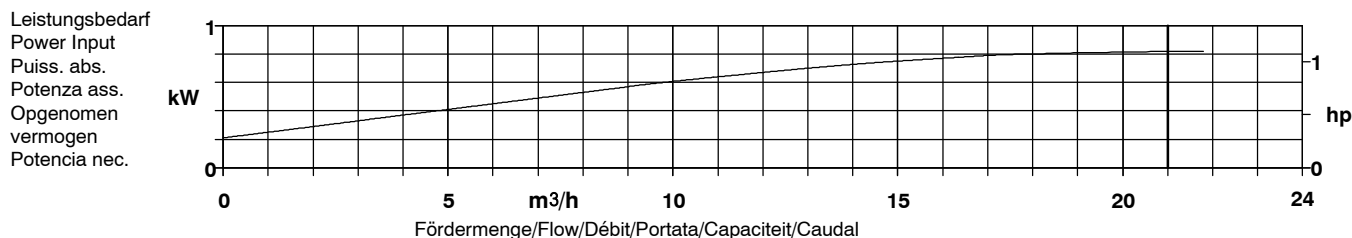
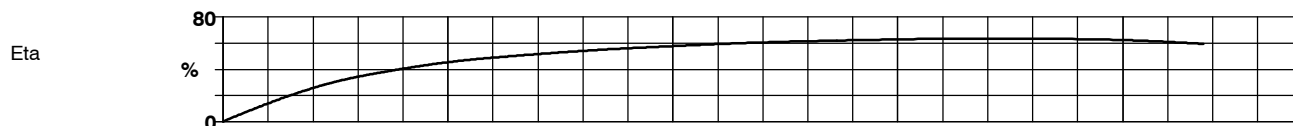
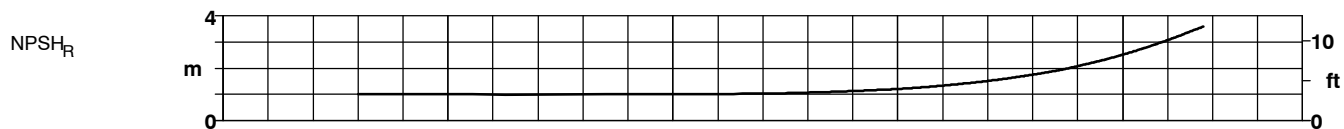
Hyamat V with Movitec 10B



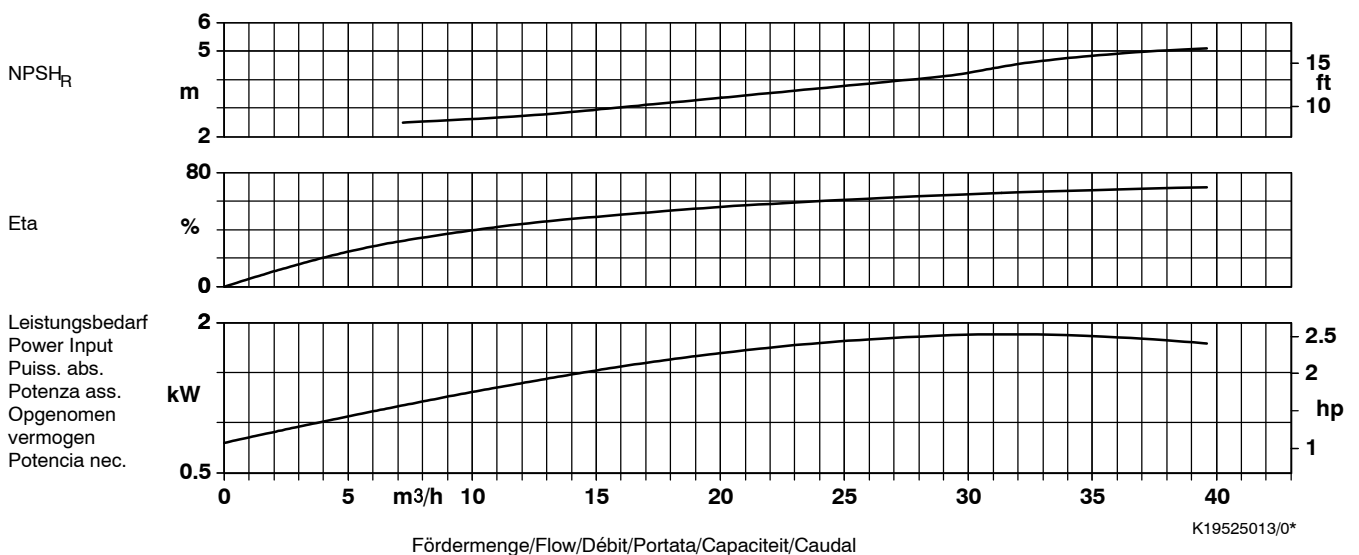
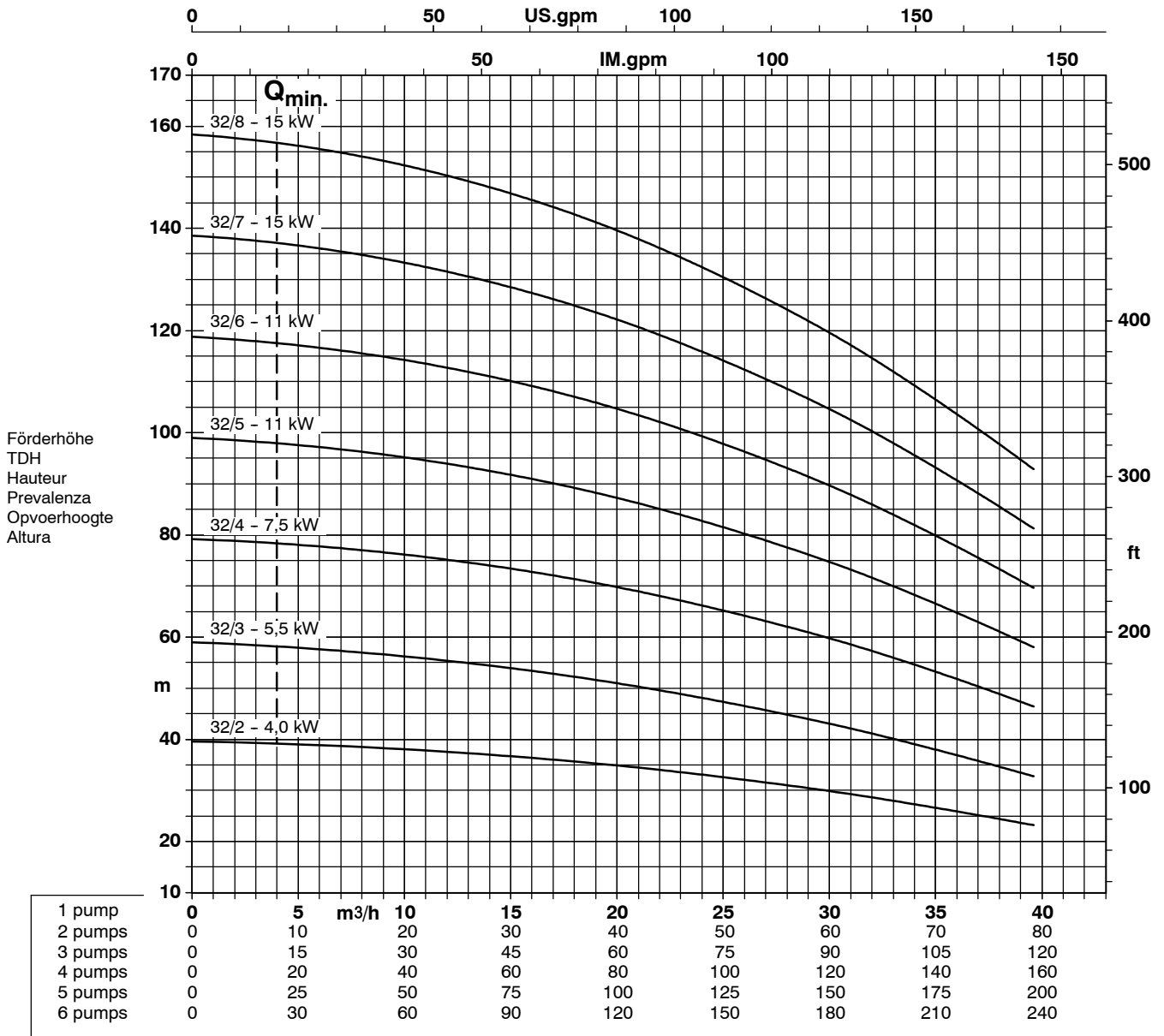
Hyamat V with Movitec 15B



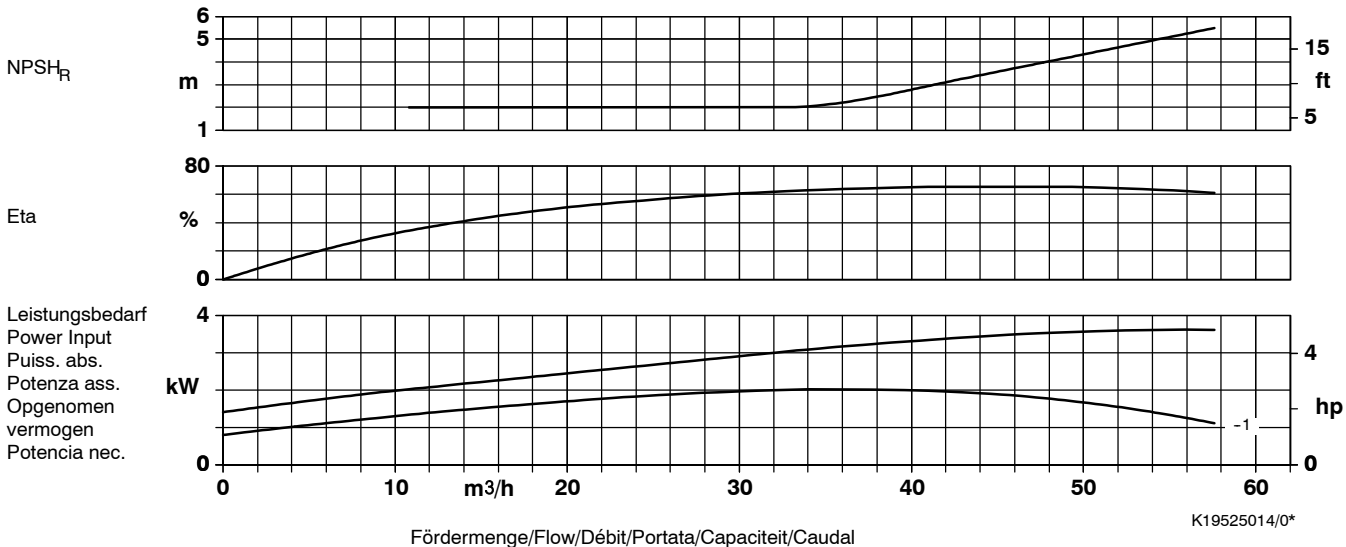
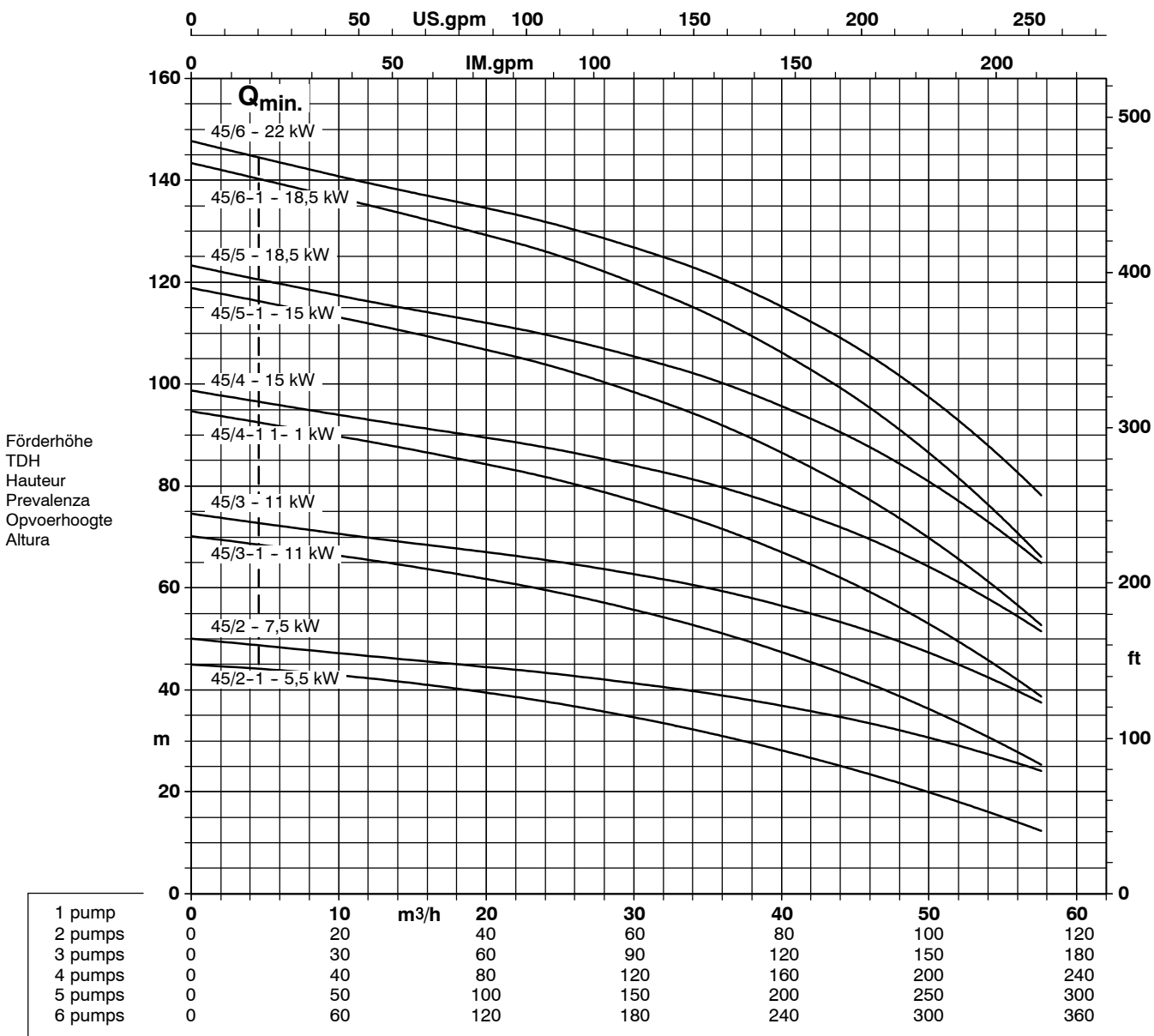
	0	5	10	15	20	24
1 pump	0	5	10	15	20	24
2 pumps	0	10	20	30	40	48
3 pumps	0	15	30	45	60	72
4 pumps	0	20	40	60	80	96
5 pumps	0	25	50	75	100	120
6 pumps	0	30	60	90	120	144



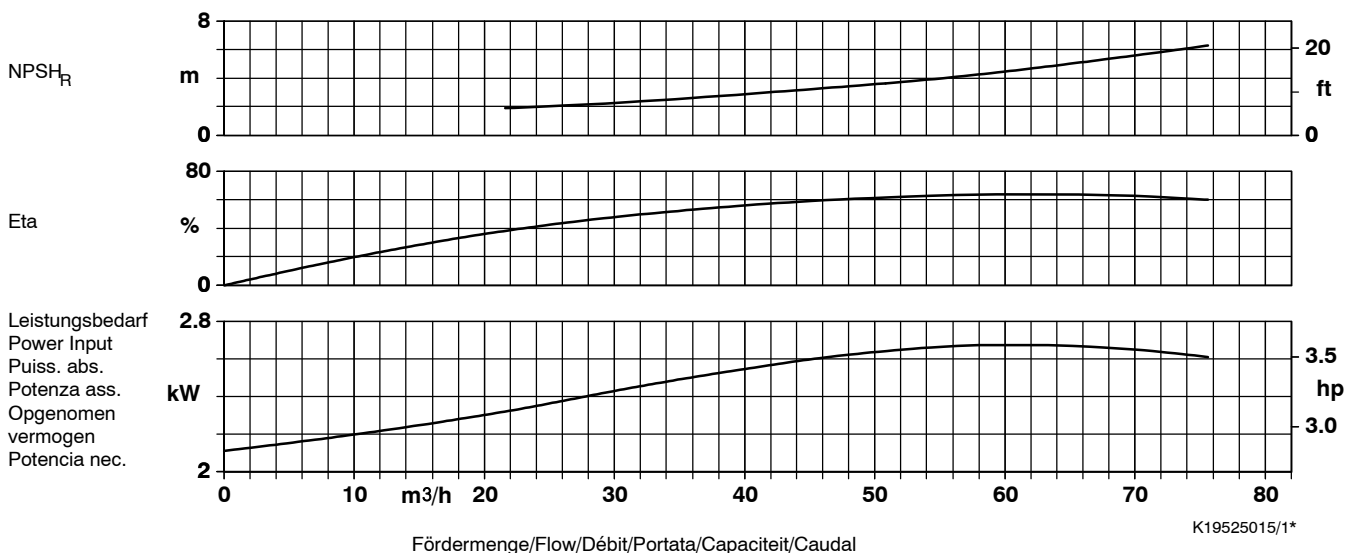
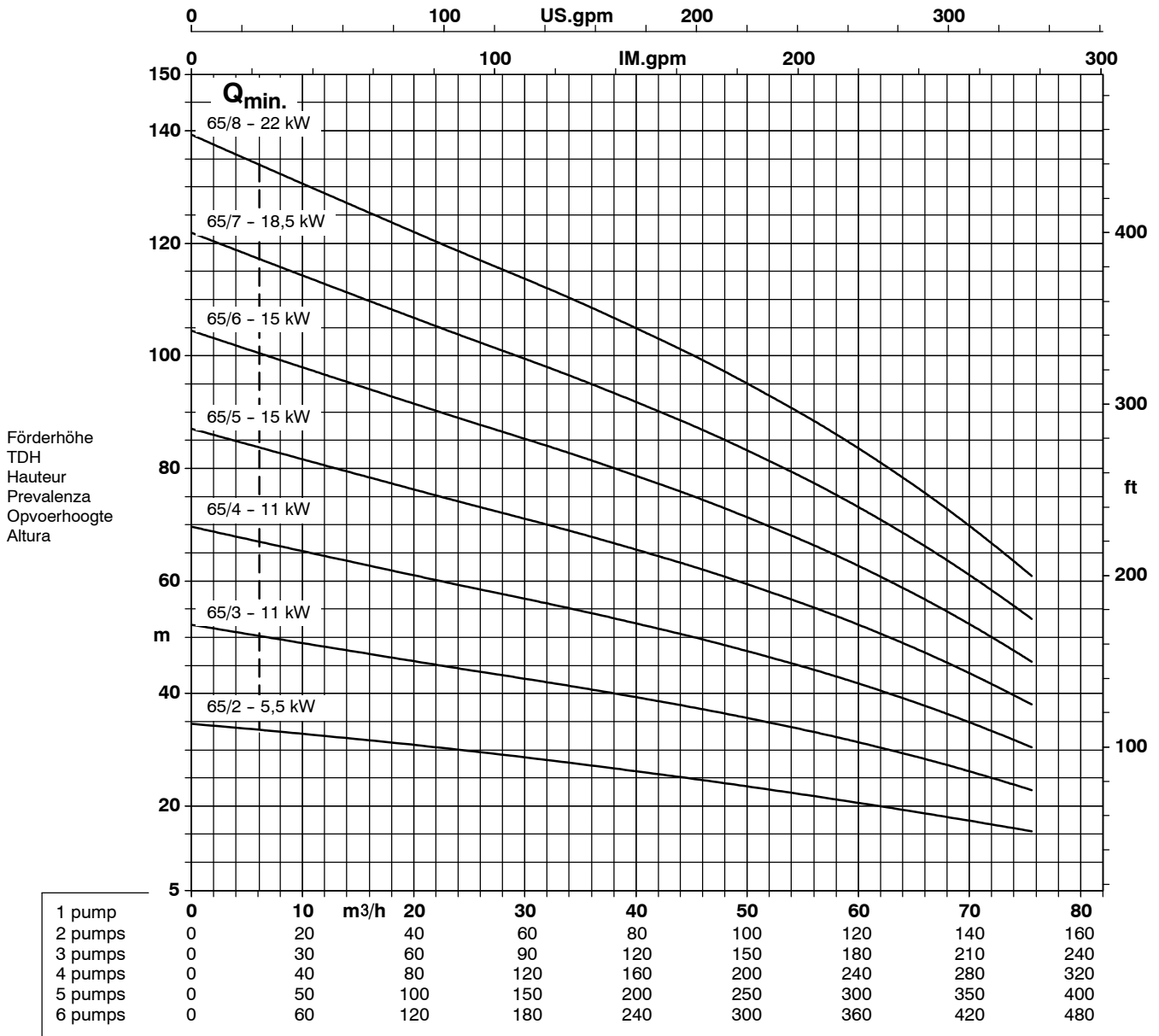
Hyamat V with Movitec 32



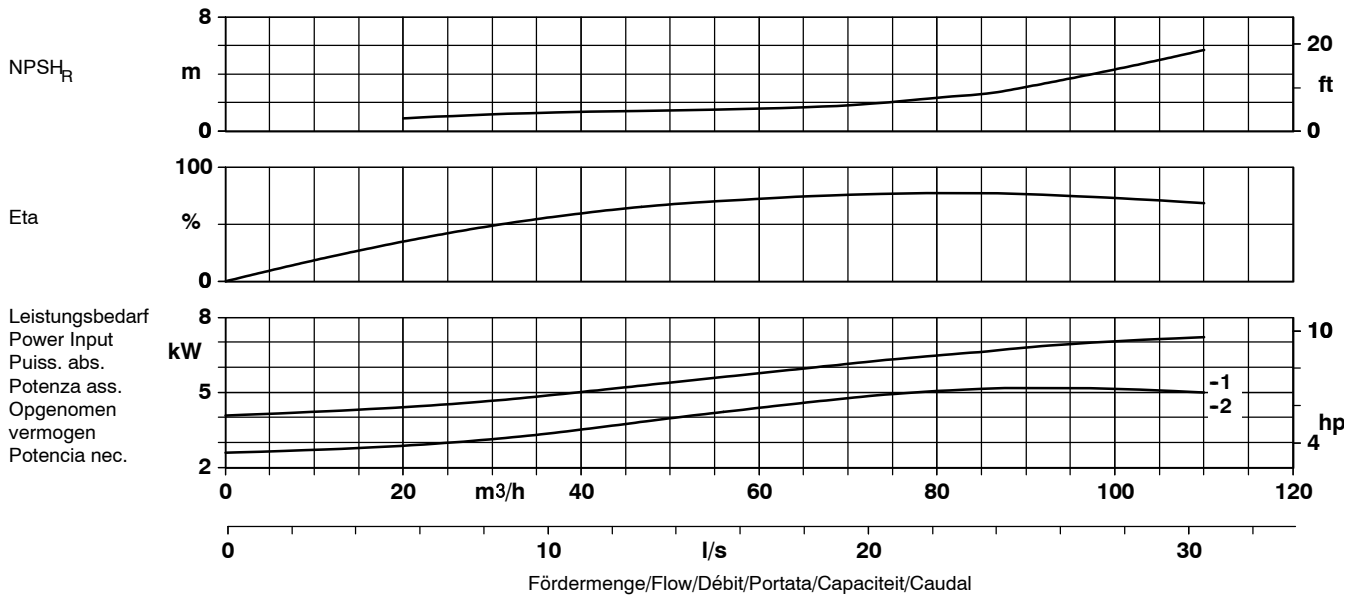
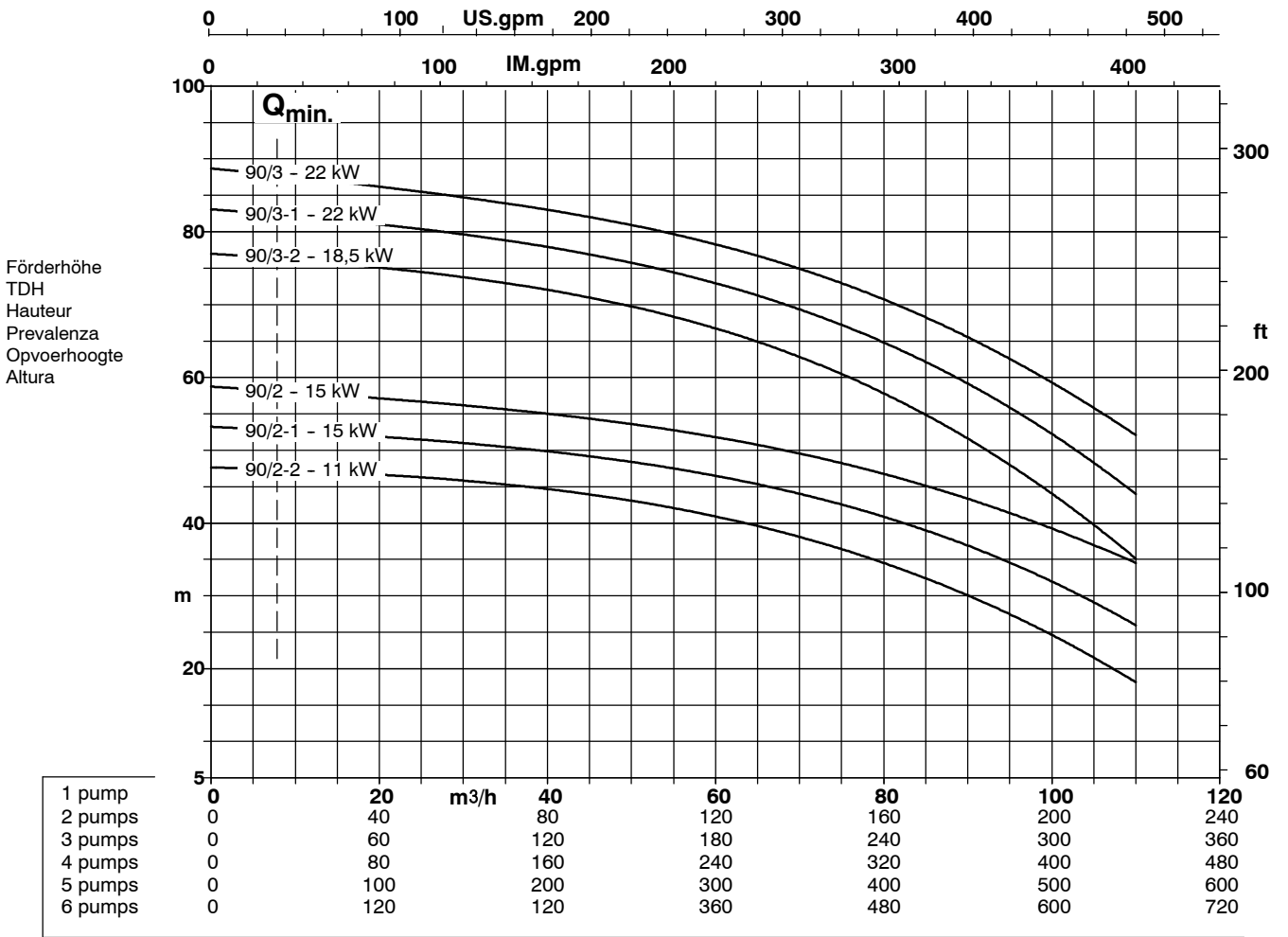
Hyamat V with Movitec 45



Hyamat V with Movitec 65



Hyamat V with Movitec 90B



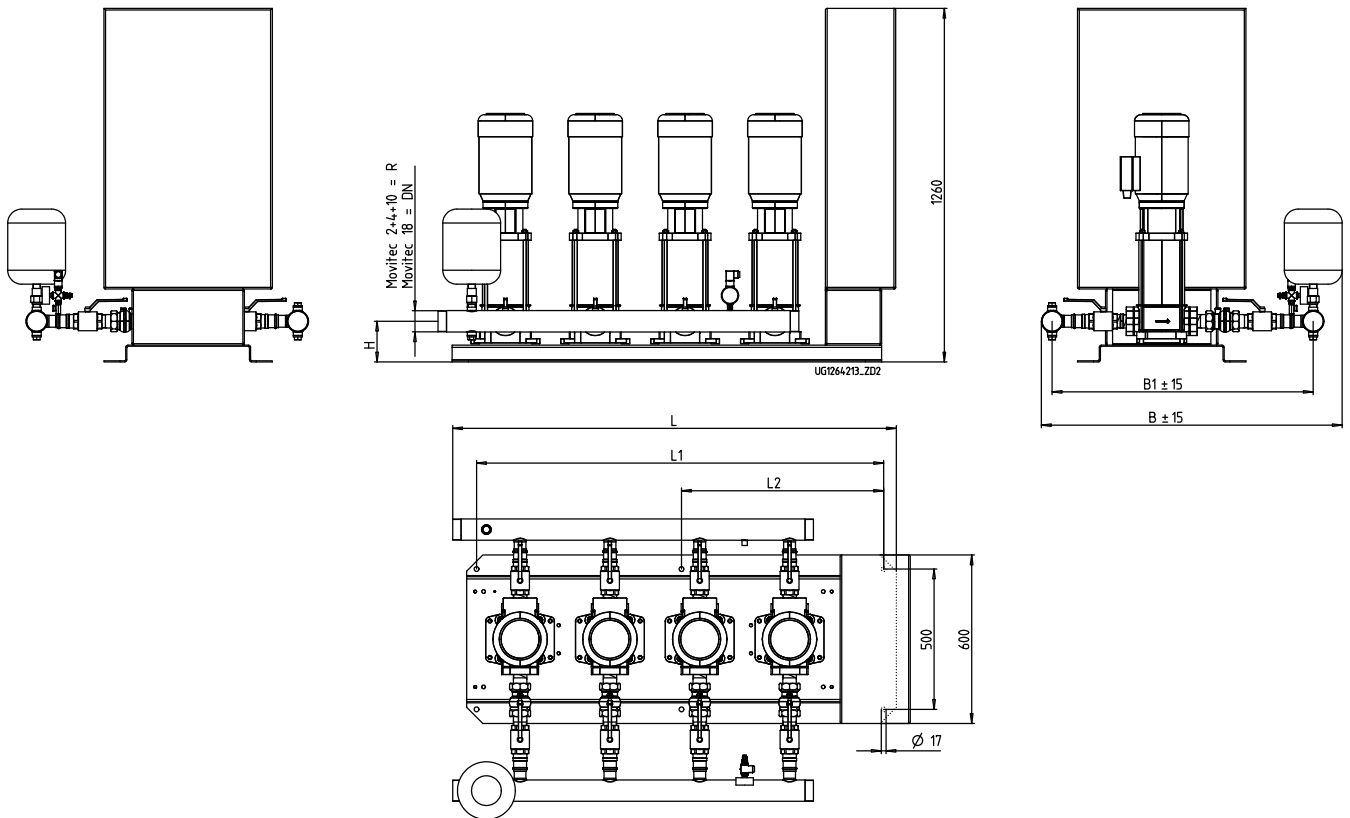
Electrical Performance Data

Hyamat V with pumps Movitec	Rated power per motor (P ₂) kW	Rated current per motor at 3~400 V A	Total rated power requirement in kVA Hyamat V				
			Number of pumps (motors)				
			2	3	4	5	6
0202B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0203B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0204B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0205B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0206B	0.55	1.31	1.86	2.77	3.68	4.58	5.49
0207B	0.55	1.31	1.86	2.77	3.68	4.58	5.49
0208B	0.55	1.31	1.86	2.77	3.68	4.58	5.49
0209B	0.75	1.75	2.49	3.70	4.91	6.12	7.34
0210B	0.75	1.75	2.49	3.70	4.91	6.12	7.34
0211B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0212B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0214B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0216B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0218B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0402B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0403B	0.55	1.31	1.86	2.77	3.68	4.58	5.49
0404B	0.55	1.31	1.86	2.77	3.68	4.58	5.49
0405B	0.75	1.75	2.49	3.70	4.91	6.12	7.34
0406B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0407B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0408B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0409B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0410B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0411B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0412B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0414B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0416B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
0602B	0.37	0.95	1.35	2.01	2.67	3.32	3.98
0603B	0.75	1.75	2.49	3.70	4.91	6.12	7.34
0604B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0605B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
0606B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0607B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
0608B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0609B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0610B	2.2	4.01	5.70	8.47	11.25	14.03	16.81
0611B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
0612B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
0614B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
0616B	4.0	7.3	10.37	15.43	20.48	25.54	30.60
1002B	0.75	1.75	2.49	3.7	4.91	6.12	7.34
1003B	1.1	2.39	3.39	5.05	6.71	8.36	10.02
1004B	1.5	2.85	4.05	6.02	8.00	9.97	11.95
1005B	2.2	4.01	5.7	8.47	11.25	14.03	16.81
1006B	2.2	4.01	5.7	8.47	11.25	14.03	16.81
1007B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
1008B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
1009B	4.0	7.3	10.37	15.43	20.48	25.54	30.6
1010B	4.0	7.3	10.37	15.43	20.48	25.4	30.6
1011B	4.0	7.3	10.37	15.43	20.48	25.54	30.6
1013B	5.5	10.5	14.91	22.19	29.46	36.74	44.01
1502B	2.2	4.01	5.7	8.47	11.25	14.03	16.81
1503B	3.0	5.47	7.77	11.56	15.35	19.14	22.93
1504B	4.0	7.3	10.37	15.43	20.48	25.54	30.6
1505B	5.5	10.5	14.91	22.19	29.46	36.74	44.01
1506B	5.5	10.5	14.91	22.19	29.46	36.74	44.01
1507B	7.5	13.5	19.17	28.53	37.88	47.23	56.59
1508B	7.5	13.5	19.17	28.53	37.88	47.23	56.59

Hyamat V with pumps Movitec	Rated power per motor (P ₂) kW	Rated current per motor at 3-400 V A	Total rated power requirement in kVA Hyamat V Number of pumps (motors)				
			2	3	4	5	6
3202	4.0	9.0	12.78	19.02	25.25	31.49	37.72
3203	5.5	11.8	16.76	24.93	33.11	41.29	49.46
3204	7.5	14.3	20.31	30.22	40.12	50.03	59.94
3205	11.0	26.6	37.78	56.21	74.64	93.07	111.50
3206	11.0	26.6	37.78	56.21	74.64	93.07	111.50
3207	15.0	31.7	45.02	66.99	88.95	110.91	132.87
3208	15.0	31.7	45.02	66.99	88.95	110.91	132.87
4502-1	5.5	11.8	16.76	24.93	33.11	41.29	49.46
4502	7.5	14.3	20.31	30.22	40.12	50.03	59.94
4503-1	11.0	26.6	37.78	56.21	74.64	93.07	111.50
4503	11.0	26.6	37.78	56.21	74.64	93.07	111.50
4504-1	11.0	26.6	37.78	56.21	74.64	93.07	111.50
4504	15.0	31.7	45.02	66.99	88.95	110.91	132.87
4505-1	15.0	31.7	45.02	66.99	88.95	110.91	132.87
4505	18.5	40.5	57.52	85.58	113.64	141.70	169.76
4506-1	18.5	40.5	57.52	85.58	113.64	141.70	169.76
4506	22.0	44.5	63.20	94.03	124.86	155.69	186.52
6502	5.5	11.8	16.76	24.93	33.11	41.29	49.46
6503	7.5	14.3	20.31	30.22	40.12	50.03	59.94
6504	11.0	26.6	37.78	56.21	74.64	93.07	111.50
6505	15.0	31.7	45.02	66.99	88.95	110.91	132.87
6506	15.0	31.7	45.02	66.99	88.95	110.91	132.87
6507	18.5	40.5	57.52	85.58	113.64	141.70	169.76
6508	22.0	44.5	63.20	94.03	124.86	155.69	186.52
6509	22.0	44.5	63.20	94.03	124.86	155.69	186.52
9002-2B	11.0	19.5	27.70	41.21	54.72	68.23	81.74
9002-1B	15.0	26.2	37.21	55.36	73.52	91.67	109.82
9002B	15.0	26.2	37.21	55.36	73.52	91.67	109.82
9003-2B	18.5	32.1	45.59	67.83	90.07	112.31	134.55
9003-1B	22.0	39.0	55.39	82.41	109.43	136.45	163.47
9003B	22.0	39.0	55.39	82.41	109.43	136.45	163.47

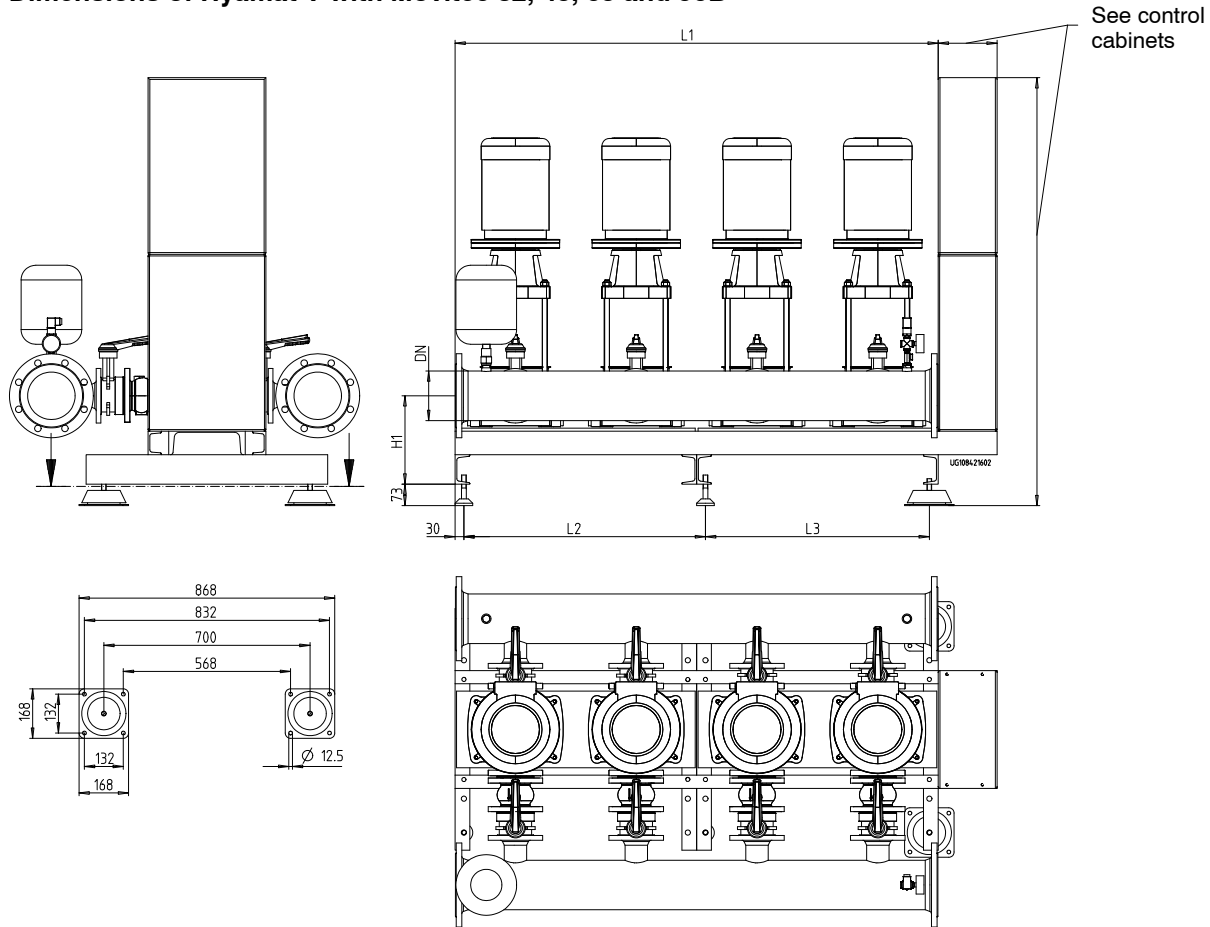
Weight of Hyamat V in kg (approx.)

	Number of stages																					
	2-2	2-1	2	3-2	3-1	3	4-1	4	5-1	5	6-1	6	7	8	9	10	11	12	13	14	16	18
2/B 02../.	-	-	110	-	-	111	-	112	-	113	-	117	118	119	123	124	130	131	-	132	141	143
3/B 02../.	-	-	143	-	-	144	-	146	-	147	-	154	155	156	163	164	173	174	-	177	190	192
4/B 02../.	-	-	173	-	-	175	-	177	-	178	-	187	189	190	199	201	213	215	-	218	235	239
5/B 02../.	-	-	206	-	-	208	-	210	-	212	-	222	224	226	238	240	255	257	-	261	283	288
6/B 02../.	-	-	245	-	-	247	-	249	-	252	-	265	267	270	284	286	304	306	-	311	338	343
2/B 04../.	-	-	110	-	-	115	-	116	-	120	-	126	127	134	136	137	143	144	-	146	174	-
3/B 04../.	-	-	144	-	-	150	-	152	-	158	-	167	168	179	182	183	192	194	-	197	240	-
4/B 04../.	-	-	174	-	-	182	-	185	-	193	-	205	207	221	225	226	238	241	-	245	302	-
5/B 04../.	-	-	206	-	-	216	-	220	-	230	-	245	247	266	270	272	286	290	-	295	366	-
6/B 04../.	-	-	245	-	-	258	-	262	-	274	-	292	294	317	321	324	342	347	-	352	437	-
2/B 06../.	-	-	112	-	-	121	-	126	-	127	-	136	137	144	145	146	165	166	-	167	188	-
3/B 06../.	-	-	146	-	-	158	-	167	-	168	-	180	182	192	194	195	225	226	-	228	259	-
4/B 06../.	-	-	176	-	-	192	-	204	-	206	-	222	224	238	240	242	282	283	-	285	327	-
5/B 06../.	-	-	207	-	-	228	-	242	-	244	-	265	268	285	288	290	340	342	-	344	396	-
6/B 06../.	-	-	245	-	-	270	-	287	-	290	-	315	318	339	342	345	404	407	-	410	473	-
2/B 10../.	-	-	145	-	-	151	-	162	-	169	-	171	189	190	203	205	207	-	339	-	-	-
3/B 10../.	-	-	196	-	-	205	-	221	-	232	-	234	261	264	283	286	289	-	471	-	-	-
4/B 10../.	-	-	243	-	-	256	-	277	-	291	-	295	330	334	360	364	367	-	596	-	-	-
5/B 10../.	-	-	291	-	-	307	-	333	-	351	-	355	399	404	436	441	446	-	590	-	-	-
6/B 10../.	-	-	346	-	-	364	-	396	-	417	-	423	476	481	520	526	532	-	712	-	-	-
2/B 15../.	-	-	186	-	-	205	-	216	-	344	-	346	356	361	554	556	-	-	-	-	-	-
3/B 15../.	-	-	252	-	-	280	-	298	-	474	-	477	492	499	743	746	-	-	-	-	-	-
4/B 15../.	-	-	330	-	-	367	-	391	-	611	-	615	634	644	965	969	-	-	-	-	-	-
5/B 15../.	-	-	397	-	-	461	-	491	-	624	-	629	654	666	1049	1054	-	-	-	-	-	-
6/B 15../.	-	-	527	-	-	604	-	639	-	807	-	812	842	857	1316	1322	-	-	-	-	-	-
2/32../.	-	-	393	-	-	460	-	473	-	655	-	660	562	567	-	-	-	-	-	-	-	-
3/32../.	-	-	495	-	-	580	-	599	-	828	-	835	759	766	-	-	-	-	-	-	-	-
4/32../.	-	-	705	-	-	804	-	829	-	1129	-	1139	1069	1078	-	-	-	-	-	-	-	-
5/32../.	-	-	880	-	-	862	-	894	-	1250	-	1262	1694	1705	-	-	-	-	-	-	-	-
6/32../.	-	-	1012	-	-	997	-	1035	-	1463	-	1476	1999	2013	-	-	-	-	-	-	-	-
2/45../.	-	435	443	-	625	626	630	528	533	563	568	640	-	-	-	-	-	-	-	-	-	-
3/45../.	-	636	648	-	877	877	884	801	808	854	861	968	-	-	-	-	-	-	-	-	-	-
4/45../.	-	818	835	-	1135	1135	1144	1065	1075	1135	1145	1288	-	-	-	-	-	-	-	-	-	-
5/45../.	-	980	1000	-	1356	1357	1368	1788	1800	1526	1538	1717	-	-	-	-	-	-	-	-	-	-
6/45../.	-	1145	1169	-	1597	1598	1612	2121	2135	1800	1814	2030	-	-	-	-	-	-	-	-	-	-
2/65../.	-	-	505	-	-	560	-	699	-	604	-	611	647	726	-	-	-	-	-	-	-	-
3/65../.	-	-	668	-	-	705	-	914	-	841	-	851	906	1024	-	-	-	-	-	-	-	-
4/65../.	-	-	952	-	-	997	-	1275	-	1210	-	1223	1297	1454	-	-	-	-	-	-	-	-
5/65../.	-	-	1044	-	-	1082	-	1430	-	1866	-	1884	1626	1822	-	-	-	-	-	-	-	-
6/65../.	-	-	1220	-	-	1264	-	1682	-	2211	-	2232	1917	2154	-	-	-	-	-	-	-	-
2/B 90../.	820	702	702	756	828	828	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/B 90../.	1143	1036	1036	1117	1225	1225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/B 90../.	1517	1406	1406	1514	1658	1658	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/B 90../.	1884	2264	2264	2049	2229	2229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/B 90../.	2221	2682	2682	2419	2635	2635	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

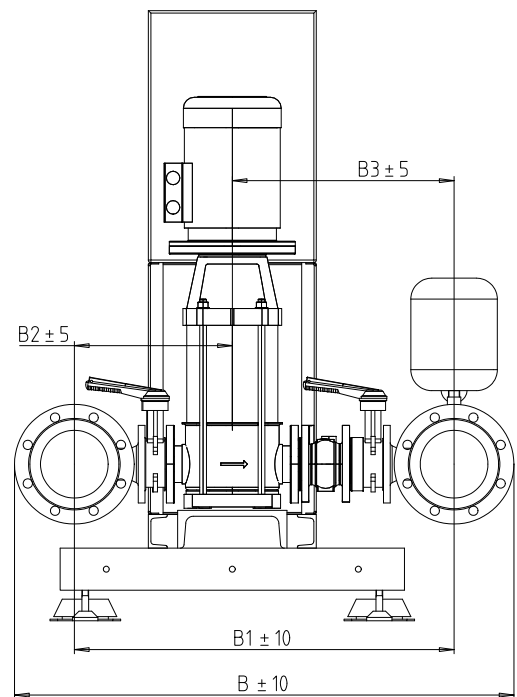
Dimensions of Hyamat V with Movitec 2B, 4B, 6B, 10B and 15B

Dimensions Table (in mm)

Number of pumps	2	3	4	5	6	Pump
B	896	896	896	920	920	2B/.. and 4B/..
	961	961	961	987	987	6B/..
	1050	1073	1073	1073	1090	10B/..
	1097	1097	1272	1221	1352	15B/..
B1	763	763	763	778	778	2B/.. and 4B/..
	828	828	828	846	846	6B/..
	916	932	932	932	943	10B/..
	894	894	1052	1001	1067	15B/..
L	825	1055	1285	1605	1925	2B/.., 4B/.., 6B/..
	985	1260	1580	1900	2220	10B/..
	980	1210	1544	1850	2170	15B/..
L1	670	900	1130	1450	1770	2B/.., 4B/.., 6B/..
	900	1130	1450	1770	2090	10B/..
	900	1130	1450	1770	2090	15B/..
L2	-	-	560	720	880	2B/.., 4B/.., 6B/..
	-	560	720	880	1040	10B/..
	-	560	720	880	1040	15B/..
R	R 2	R 2	R 2	R 2 1/2	R 2 1/2	2B/.., 4B/.., 6B/..
	R 2	R 2 1/2	R 2 1/2	R 2 1/2	R 3	10B/..
DN	DN 80	DN 80	DN 100	DN 100	DN 150	15B/..
H1	115	115	115	115	115	2B/.., 4B/.., 6B/..
	145	145	145	145	145	10B/..
	145	145	145	155	155	15B/..

Coating: baseplate RAL 5002, control cabinet RAL 7035

Dimensions of Hyamat V with Movitec 32, 45, 65 and 90B

Dimensions Table (in mm)

Number of pumps	2	3	4	5	6	Pump
B	1074	1074	1189	1189	1189	32/..
	1094	1203	1203	1304	1304	45/..
	1320	1320	1421	1421	1421	65/..
	1335	1436	1436	1561	1561	90/..
B1	854	854	904	904	904	32/..
	874	918	918	964	964	45/..
	1035	1035	1081	1081	1081	65/..
	1050	1096	1096	1156	1156	90/..
B2	351	351	376	376	376	32/..
	351	373	373	396	396	45/..
	431	431	454	454	454	65/..
	439	462	462	492	492	90/..
B3	503	503	528	528	528	32/..
	523	545	545	568	568	45/..
	604	604	627	627	627	65/..
	611	634	634	664	664	90/..
L1	820	1230	1640	2050	2460	
L2	-	-	820	1230	1230	
L3	760	1170	760	760	1170	
DN	100	100	150	150	150	32/..
	100	150	150	200	200	45/..
	150	150	200	200	200	65/..
	150	200	200	250	250	90/..
H1	302	302	302	302	302	32/..
	302	302	302	302	302	45/..
	337	337	337	337	337	65/..
	337	337	337	337	337	90/..



Flanges drilled to EN 1092-1 PN 16

Dimensions of Hyamat V Control Cabinets
Hyamat V with Movitec 2B, 4B, 6B, 10B and 15B

kW per pump	Number of pumps				
	2	3	4	5	6
4	Fig. 2				
5,5 and 7,5	Fig. 3			Fig. 10	

kW per pump	Number of pumps				
	2	3	4	5	6
4	Fig. 7				
5,5 and 7,5	Fig. 9			Fig. 10	
11	Fig. 9			Fig. 11	
15	Fig. 10			Fig. 11	
18,5	Fig. 10		Fig. 11		
22	Fig. 10		Fig. 11		

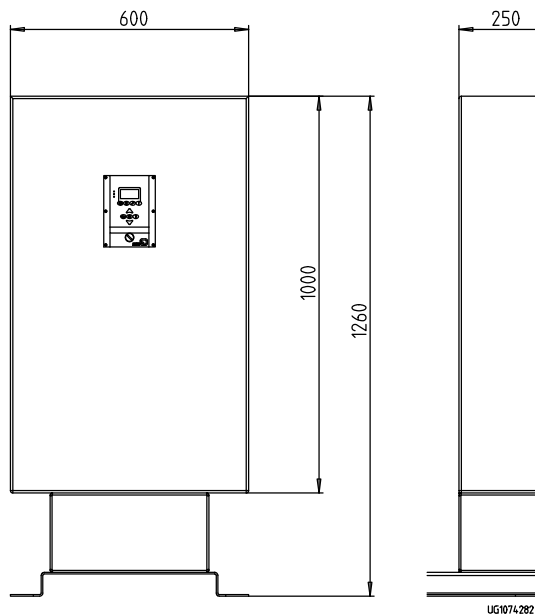
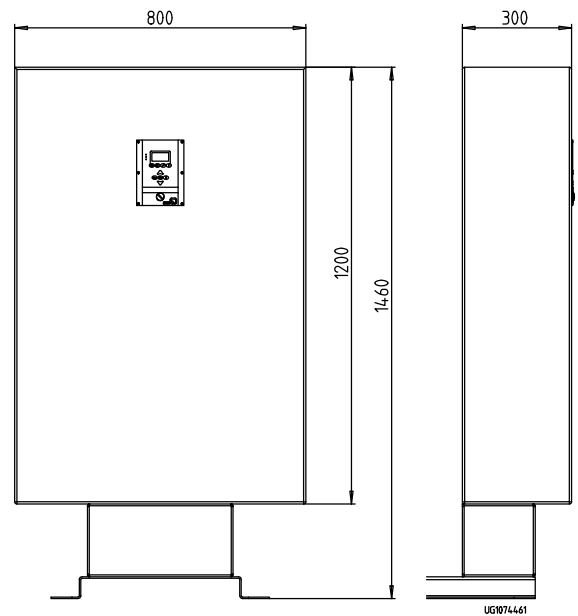
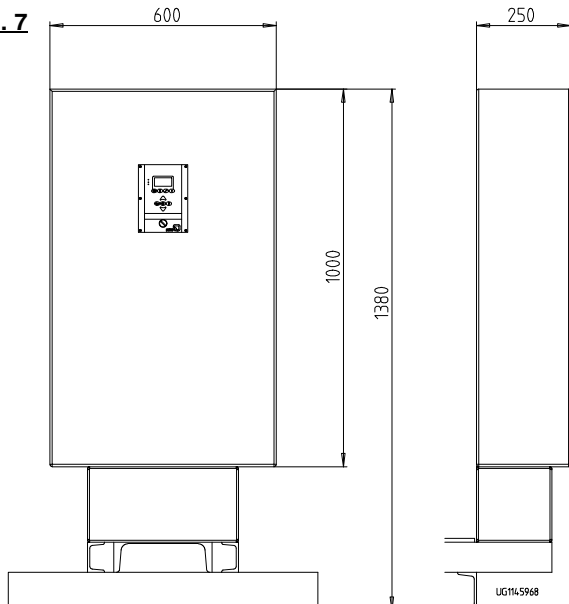
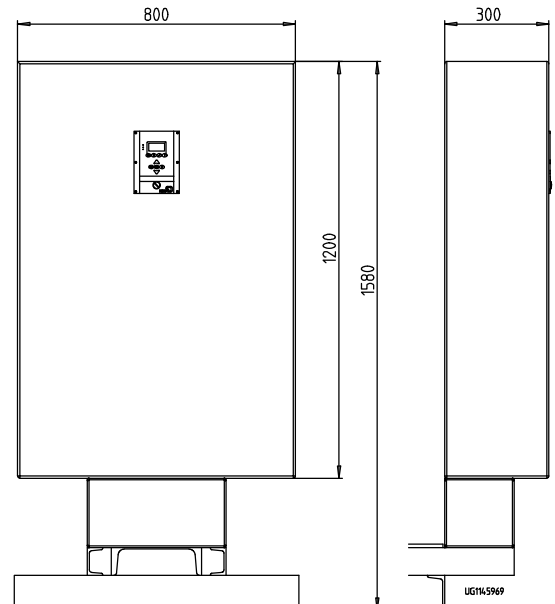
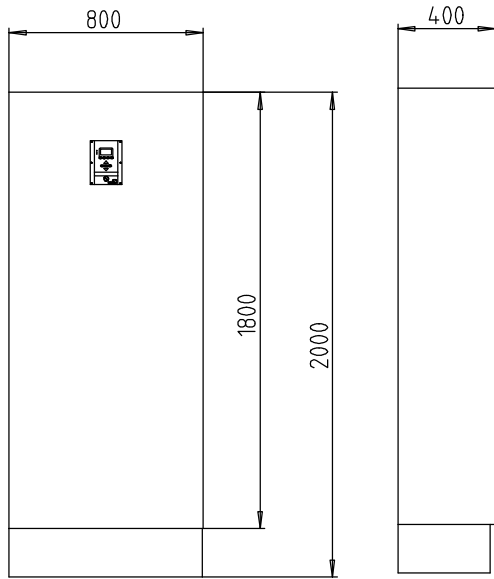
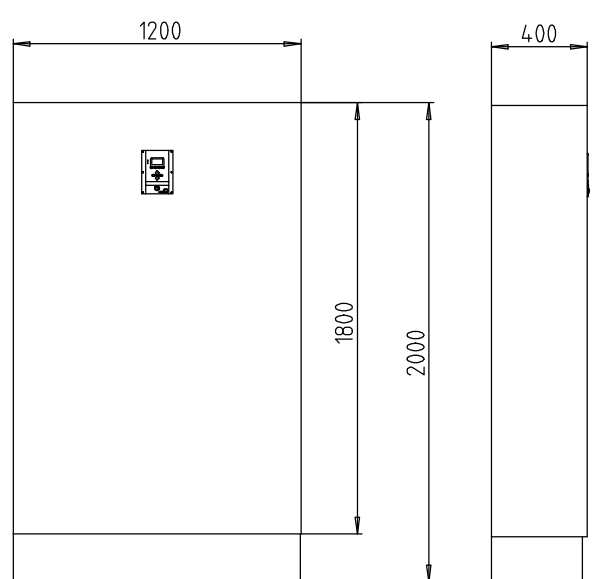
Fig. 2

Fig. 3

Fig. 7

Fig. 9


Fig. 10



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Fig. 11

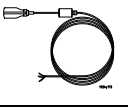
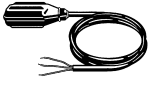
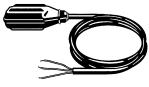

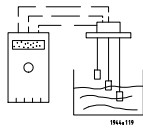
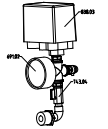
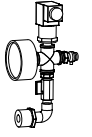
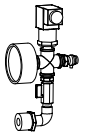


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Please note:

The control cabinet dimensions refer to systems in standard design.
For installation of other optional equipment, larger control cabinets may be required.

**Accessories / Supplementary Equipment *)
Dry running protection**

Part No.		Supplementary equipment/option	Accessories	Approx. kg	
		Dry running protection, float switch with weight, PG cable gland and KTW approval 5 m 10 m 20 m <i>Special lengths on request.</i>	19 071 650 19 070 395 19 071 651	1,7 1,9 2,4	
81-45		Dry-running protection, float switch ¹⁾ with H 07 RN-F power supply cable 3x1 mm ² for lack-of-water monitoring in combination with a reservoir provided by the customer, KTW-approved Cable length 5 m 10 m 20 m Scope of supply: - Float switch with connection cable	11 037 630 11 037 631 11 037 632	0,8 1,0 1,5	
81-45		Dry-running protection, float switch ¹⁾ with H 07 RN-F power supply cable 3x1 mm ² for lack-of-water monitoring in combination with a reservoir provided by the customer Cable length 5 m 10 m 20 m Scope of supply: - Float switch with connection cable	11 037 743 11 037 744 11 037 746	0,8 1,0 1,5	
59-11		Weight for adjusting the float switch level Weight with fastening elements	18 040 615	0,9	
		Set of electrodes and relay Relay fitted in the control cabinet Electrodes with 1.5 m cable and fastening element	E 420	01 069 615 00 533 947	0,3 0,9
693		Dry running protection ¹⁾ (inlet pressure >0.5 bar) via pressure switch Wetted membrane made of neoprene for systems with Movitec 2B, 4B, 6B, 10B, 15B Movitec 32, 45, 65, 90B Scope of supply: - Pressure switch 0 - 10 bar - Pressure gauge 0 -10 bar - Tee, nipple joint - Circuit diagram	E 400 E 401	18 041 026 18 040 613	1,2 1,2
693		Dry running protection ¹⁾ (inlet pressure 0 to 0.5 bar) Via pressure transmitter, wetted parts made of 1.4301 For systems with Movitec 2B, 4B, 6B, 10B, 15B Movitec 32, 45, 65, 90B Scope of supply: - Pressure transmitter 0 - 1 bar / 4 - 20 mA - Pressure gauge -1 - 1,5 bar - Tee, nipple joint - Wiring diagram	E 461 E 460	18 041 182 18 041 183	1,2 1,2
693		Dry running protection ¹⁾ (inlet pressure >0.5 bar) via pressure transmitter Wetted parts made of 1.4301 for systems with Movitec 2B, 4B, 6B, 10B, 15B Movitec 32, 45, 65, 90B Scope of supply: - Pressure transmitter 0 - 10 bar / 4 - 20 mA - Pressure gauge 0 -10 bar - Tee, nipple joint - Circuit diagram	E 410 E 411	18 041 027 18 040 614	1,2 1,2
82-16		Dry running protection for suction-lift operation, flow monitoring) The system switches off when no flow is detected on the suction side and discharge-side pressure drops below an adjustable value. Important: automatic reset is not possible for this type of dry running protection!	E 201		

Accessories / Supplementary Equipment *) Hyamat V

		E-No.	Ident-No.
	Manual-0-automatic selector switch	E 350	
	Ammeter per pump	E 340	
	Voltmeter per system	E 341	
	<i>Always combined</i>		
	Operating hours counter per pump	E 330	
	Individual operation/fault indication via volt-free contacts on isolating terminals Operation per pump Fault per pump	E 066 E 067	
	Temperature monitoring of fluid pumped at hydraulic section for each pump	E 360	19 071 510
	Acoustic cladding Hyamat 2B, 4B, 6B, 10B and 15B - Protects against contamination - Appealing design - Low-noise operation, approx. 51 – 61 dB(A) 2 pumps Movitec 2 / 4 / 6 3 pumps Movitec 2 / 4 / 6 or 2 pumps Movitec 10B / 15B 4 pumps Movitec 2 / 4 / 6 or 3 pumps Movitec 10B / 15B 5 pumps Movitec 2 / 4 / 6 or 4 pumps Movitec 10B / 15B 6 pumps Movitec 2 / 4 / 6 or 5 pumps Movitec 10B / 15B 6 pumps Movitec 10B / 15B	E 113 E 114 E 115 E 116 E 117 E 118	01 117 787 01 117 788 01 117 789 01 117 790 01 117 791 01 117 792
	Acoustic cladding Hyamat 32, 45, 65 und 90B Number of pumps up to 7.5 kW 2 3 4 5 6 up to 15.0 kW 2 3 4 5 6 - Protects against contamination - Appealing design - Noise-reduced operation	E 123 E 124 E 125 E 126 E 127 E 128 E 129 E 130 E 131 E 132	19 071 633 19 071 634 19 071 635 19 071 636 19 071 637 19 071 663 19 071 664 19 071 665 19 071 666 19 071 667
	Telecommunications module , incl. software for fault signalling via telephone lines, with battery buffer	E 043	19 072 308
	Connection to emergency back-up power supply on second terminal strip External activation	E 058	
	Control cabinet lighting with 230 V socket for cabinets sized 1000 x 600 x 250 and larger	E 059	
	Control cabinet heating for special climatic conditions (high air humidity)	E 039	
	Phase monitoring relay incl. direction of rotation monitoring and phase failure safety device	E 320	
	Over-voltage protection	E 060	
	Thermistor connection for PTC thermistors in motor winding, if any.		
	Separate control cabinet installation (wall mounting) with 5 m cable for pumps and sensors	E 061	

*) Accessories (Ident. No.) are included in the scope of supply but not fitted.
Supplementary equipment / options (E No.) is supplied fitted to the pump set.

Special Equipment (upon request)
Control Cabinet Equipment

Individual operation/fault indication via volt-free contacts on **blade** terminals
 Automatic switchover to emergency back-up power supply.
 Motor with PTC thermistors and PTC thermistor trip device in the control cabinet
 Switch position indication (master switch or manual-0-automatic selector switch)
 Control cabinet with cylinder lock
 Special coating
 Extra space in control cabinet
 Air conditioning of control cabinet
 Communication via an RS 232C interface
 Profibus/LON bus interface

Reporting to Control Station (on Isolating Terminals)

Operating pressure, analog 4 - 20 mA
 Operating pressure, digital, volt-free
 Inlet pressure, analog 4 - 20 mA
 Power input for each pump, analog (for example, signal 0/4 - 20 mA / 0 - 10 V)
 Position of manual-0-automatic selector switch per pump, volt-free

Special Designs

Other special designs not documented are available upon request, for example:

- 1) Different operating voltage
- 2) Different frequency
- 3) Different connection diameters
- 4) System discharge pressure p_d up to 40 bar
- 5) Systems for industry (for example, also for other fluids)
- 6) Systems for suction-lift operation
- 7) System combination with central control system, etc.
- 8) Electro-mechanical control units
- 9) Jockey pumps: low-flow operations (on weekends, in case of extremely fluctuating demand etc.)
- 10) Combined systems (drinking water and fire-fighting systems), booster systems
- 11) Special, customer-specific circuit diagrams

