

FPS



50 Hz VR SERIES Vertical Multi-Stage Pumps

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VR SERIES Vertical Multi-Stage Pumps

FEATURES

- All stainless steel hydraulics for superior durability, efficiency, and performance over a wide variety of applications.
- Rugged motor mounting with oversized ball bearings ensure long operating life in the toughest jobs. Heavy-duty motor bearing not required.
- Standard balanced mechanical seal provides superior sealing between water end and motor.
- Removal of the mechanical seal without dismounting the motor (for motors $\geq 4\text{kW}$).
- In-line suction and discharge with round flanges fit widest range of applications and provide convenient, compact installation.
- Rugged IEC mount electric motors produced to European and AU/NZ market standards.
- Replaceable stainless steel wear ring in the neck of the impeller.
- Premium efficiency three-phase motors conforming to the higher efficiency standards for Europe, North America, and Australia. IE3 code Premium Efficiency.
- Made in Italy.

AVAILABLE UPON REQUEST*

- AISI 304 versions (H type) (30-45-65-95 VR)
- AISI 316 versions (N type) (15-20-30-45-65-95)
- Special materials for seals, gaskets, and elastomers
- Oval flange (T), Vitaulic (V) and Clamp (C) available on 15-20VR
- IE2 code High Efficiency (comparable to EFF1) available

* May require special order; consult Franklin for details.

APPLICATIONS

- Pressure boosting
- Boiler feed
- Water supply and treatment
- Reverse osmosis
- Wash down units
- Hot/cold water circulation for HVAC systems
- Irrigation



PUMP SPECIFICATIONS

- Standard AISI 304SS hydraulics
- Capacities up to 120 m³/h
- Heads up to 30 Bar
- Maximum working pressure: See Table on Page 6
- Liquid temperature range: -15 °C to +120 °C
- Standard round flanges on body type PN25 (30-45-65-95VR)
 - Counter flanges and fastener kits available upon request
- Materials suitable for handling drinking water (WRAS Certified, ASNZ 4020)
- Hydraulic characteristics are according to ISO Standard 9906, grade 3
- PTFE WRAS certified replacement floating neck ring for cost effective maintenance and long-lasting performance
- Tungsten carbide intermediate bearing to control and eliminate vibration and stabilize the rotor with a large number of stages
- Diffuser bushing made of carbon for durability against dry running (30-45-65-95 VR)
- Shaft bearing and journal sleeve made of tungsten carbide
- Replaceable stainless steel wear ring in the neck of the impeller (30-45-65-95 VR)
- 15-20-30-45-65-95 VR conform to pump curve standards MEI \geq 0.70, under Minimum Efficiency Index EU 547/2012

VR SERIES Vertical Multi-Stage Pumps

MOTOR SPECIFICATIONS

- Squirrel cage, TEFC, induction motors
- Rotation: clockwise looking at pump from above
- Three-phase: 71 frame aluminum alloy and the larger sizes are cast iron
- Performance in compliance with:
 - Three-phase: MEPS AS/NZS1359.5-2004 to Table B2 where applicable
- Ambient temperature: -20 °C to + 40 °C
- Overload Protection:
 - External thermal overload must be provided for motors up to 7.5 kW. 11 kW and above have thermistors fitted.
- IP55 protection
- Class F Insulation
- Class B temperature rise
- Voltage:
 - Single-phase: 230 V 50 Hz
 - Three-phase: 230/400 V Up to 3kW, 400/690 V from 4kW and above
- Conforming to the latest higher efficiency standards for Europe, North America, and Australia.
 - IE3 code = Premium Efficiency (standard)
 - IE2 code = High Efficiency (comparable to EFF1) available

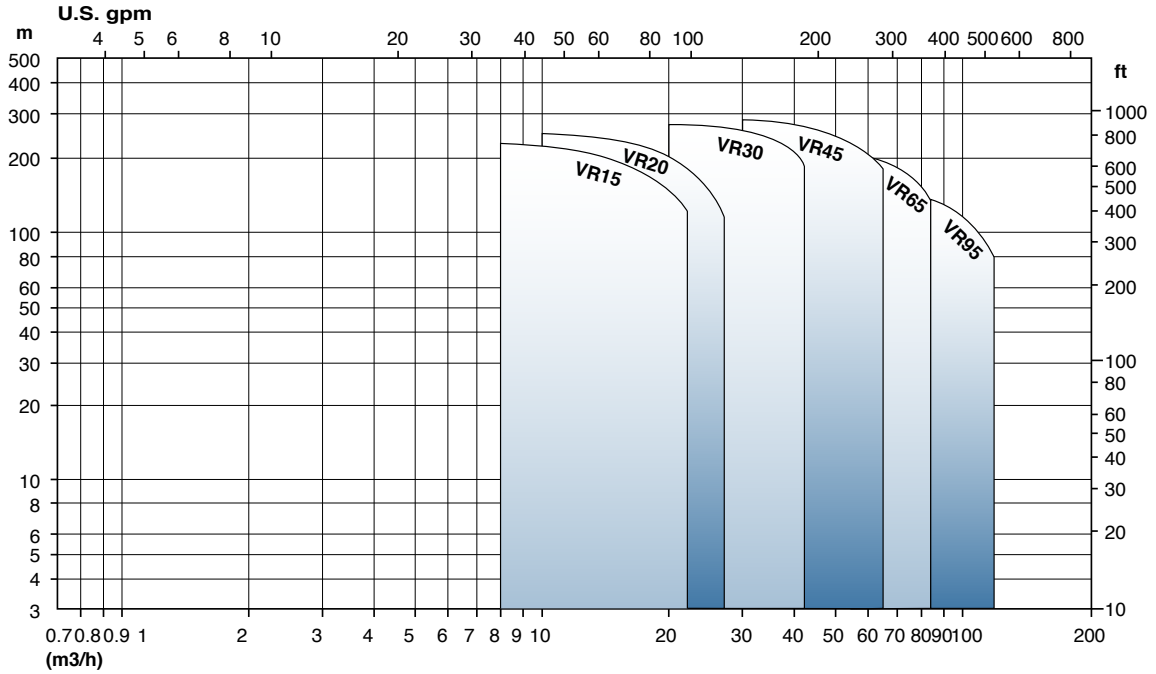
Note: Specifications subject to change without prior notice.

MAXIMUM WORKING PRESSURE

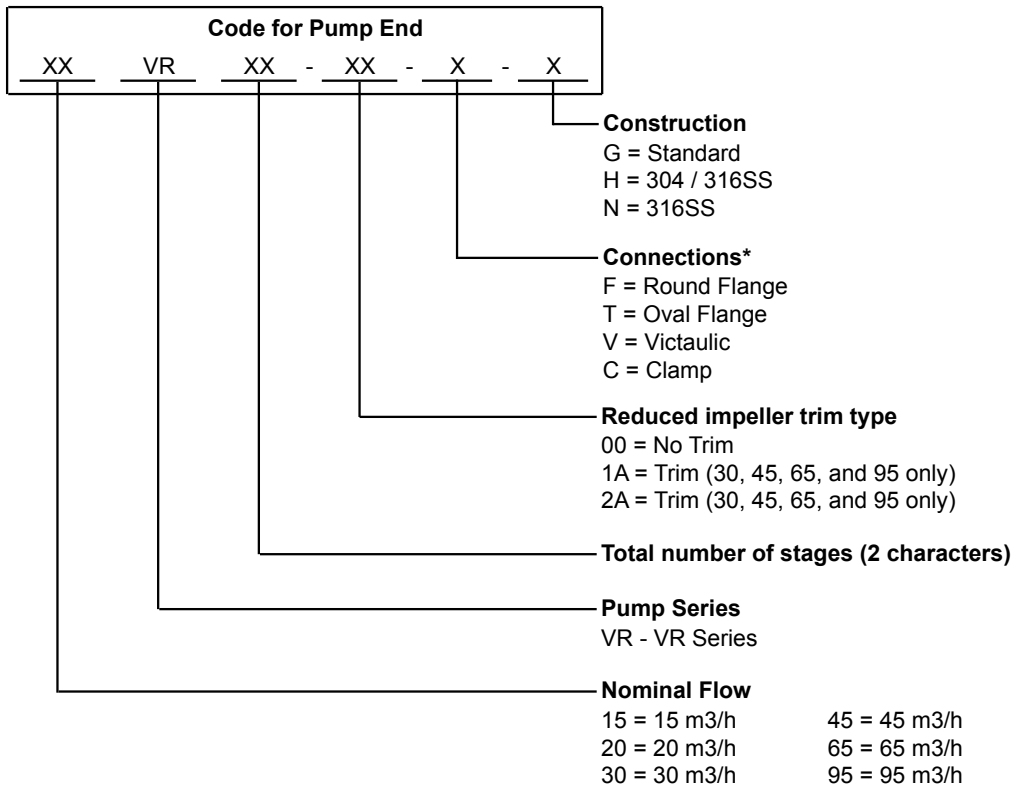
Models	Maximum Working Pressure					
	15 VR bar	20 VR bar	30 VR bar	45 VR bar	65 VR bar	95 VR bar
T version (oval)	16	16				
F, V, and C version	26	26				
F version (PN16)			16	16	16	16
F version (PN25/40)			32	32	25	25

Note: The inlet pressure of the pump plus the pressure of the water inside the pump cannot exceed the maximum working pressure.

50 HZ FAMILY CURVE



VR MODEL NOMENCLATURE



* T, V, C Connections only on 15-20VR

VR SERIES Vertical Multi-Stage Pumps

VR MOTOR ORDERING INFORMATION

Order Number	Description	kW	HP	PH	50 Hz Volts*	60 Hz Volts*	Wiring Standard 380-415	Wiring Optional 220-240	Size	Mounting
106618104	VR Motor-1.1/50/1	1.1	1.5	1	240	-	-	-	80	B14
106618105	VR Motor-1.5/50/1	1.5	2	1	240	-	-	-	90	B14
106618106	VR Motor-2.2/50/1	2.2	3	1	240	-	-	-	90	B14
106618304	VR Motor-1.1/50/3	1.1	1.5	3	230/400	440/460	Star	Delta	80	B14
106618305	VR Motor-1.5/50/3	1.5	2	3	230/400	440/460	Star	Delta	90	B14
106618306	VR Motor-2.2/50/3	2.2	3	3	230/400	440/460	Star	Delta	90	B14
106618307	VR Motor-3.0/50/3	3	4	3	230/400	440/460	Star	Delta	100	B14
106618308	VR Motor-4.0/50/3	4	5.5	3	400/690	440/460	Delta		112	B14
106618309	VR Motor-5.5/50/3	5.5	7.5	3	400/690	440/460	Delta		132	B5
106618310	VR Motor-7.5/50/3	7.5	10	3	400/690	440/460	Delta		132	B5
106618311	VR Motor-9.2/50/3	9.2	12.5	3	400/690	440/460	Delta		132	B5
106618312	VR Motor-11.0/50/3	11	15	3	400/690	440/460	Delta		160	B5
106618313	VR Motor-15.0/50/3	15	20	3	400/690	440/460	Delta		160	B5
106618314	VR Motor-18.5/50/3	18.5	25	3	400/690	440/460	Delta		160	B5
106618315	VR Motor-22.0/50/3	22	30	3	400/690	440/460	Delta		180	B5
106618316	VR Motor-30.0/50/3	30	40	3	400/690	440/460	Delta		200	B5
106618317	VR Motor-37.0/50/3	37	50	3	400/690	440/460	Delta		200	B5
106618318	VR Motor-45.0/50/3	45	60	3	400/690	440/460	Delta		225	B5

*Three-phase motors are dual voltage/dual frequency, 50/60 Hz.

*SWER (Single Wire Earth Return) motors available to order

COUNTER-FLANGE KITS

Item	Description	PN Rating	For Use With
14261004	Kit counter-flanges F DN50 Zinc Plated	PN 25	15-20VR
14262004	Kit counter-flanges F DN50 AISI 304	PN 25	15-20VR
14262014	Kit counter-flanges F DN50 AISI 316	PN 25	15-20VR
14262050	Kit counter-flanges T DN16 AISI 304*	PN 16	15-20VR
14262051	Kit counter-flanges T DN16 AISI 304**	PN 16	15-20VR
14261007	Kit counter-flanges F DN 65 Zinc Plated	PN 16	30VR
14262017	Kit counter-flanges F DN 65 AISI 316	PN 16	30VR
14261010	Kit counter-flanges F DN 65 AISI 316 to be welded	PN 25/40	30VR
14261008	Kit counter-flanges F DN 80 Zinc Plated	PN 16	45VR
14262018	Kit counter-flanges F DN 80 AISI 316	PN 16	45VR
14261011	Kit counter-flanges F DN 80 AISI 316 to be welded	PN 25/40	45VR
14261009	Kit counter-flanges F DN 100 Zinc Plated	PN 16	65-95VR
14262019	Kit counter-flanges F DN 100 AISI 316	PN 16	65-95VR
14261012	Kit counter-flanges F DN 100 AISI 316 to be welded	PN 25/40	65-95VR

Note: Counter-flange kits include: flanges (2), gaskets (2), bolts/nuts (16)

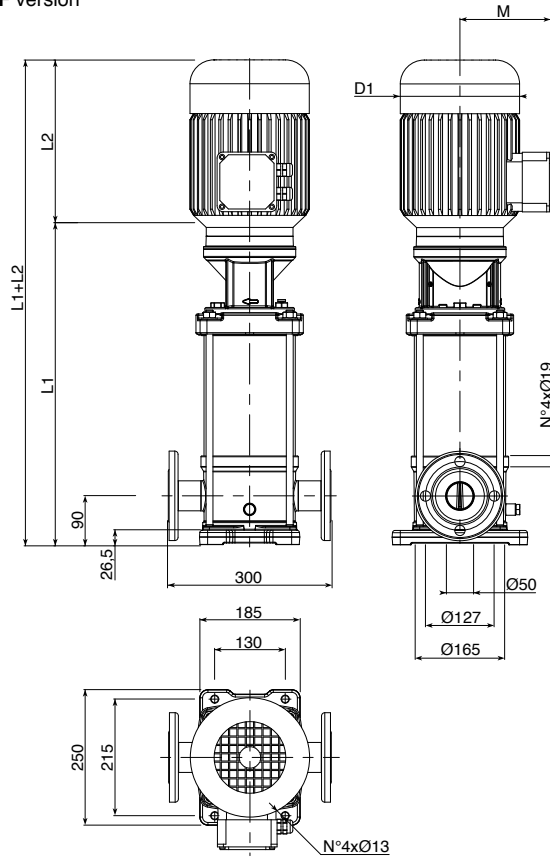
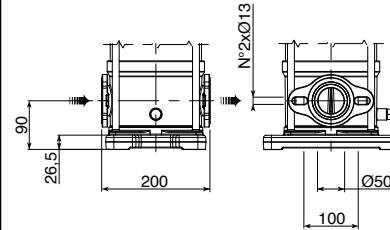
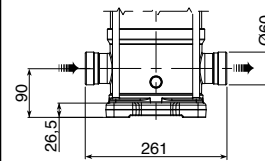
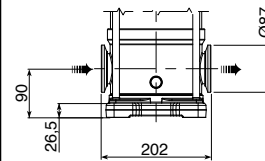
* = thread GAS male

** = thread female

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 15 VR 50 HZ

Pump Type	Rated Power		Stages	DELIVERY									
	kW	HP		l/min 0	133	167	200	233	266	300	333	367	400
				m ³ /h 0	8	10	12	14	16	18	20	22	24
H = Total Head Meters Column of Water													
15VR01	1.1	1.5	1	14.5	13	12.5	12	11.5	10.5	9.5	8.5	7	5.5
15VR02	2.2	3	2	29	26	25	24	23	21.5	19.5	17	14	11
15VR03	3	4	3	43.5	39	38	36.5	34.5	32.5	29.5	26	21.5	17
15VR04	4	5.5	4	58	52.5	51	49	46.5	44	40.5	35.5	29.5	23.5
15VR05	4	5.5	5	72.5	65.5	63.5	60.5	57.5	54.5	49.5	43	36	28.5
15VR06	5.5	7.5	6	87.5	79.5	77	74	71	67	61.5	54	46	36.5
15VR07	5.5	7.5	7	102	92	89	86	82	77.5	70.5	62	52.5	41.5
15VR08	7.5	10	8	117	106.5	103	99.5	95	90	82.5	72.5	62	49
15VR09	7.5	10	9	131.5	119	115.5	111	106	100.5	92	81	69	54.5
15VR10	11	15	10	147.5	134.5	131	126.5	121	115	106	94	80.5	65
15VR11	11	15	11	162	148	143.5	139	133	126.5	116.5	103	88.5	71
15VR12	11	15	12	176.5	161	156.5	151	144.5	137.5	126.5	112	96	77
15VR13	11	15	13	191	174.5	169	163.5	156.5	148.5	136.5	120.5	103	82.5
15VR14	11	15	14	205.5	187.5	182	175.5	168	159	146	129	110.5	88
15VR15	15	20	15	221	201	195.5	188.5	180.5	171.5	157.5	139.5	119.5	95.5
15VR16	15	20	16	235.5	214	208	200.5	192	182.5	167.5	148	126.5	101.5
15VR17	15	20	17	249.5	227.5	220.5	213	203.5	193	177.5	156.5	134	107

DIMENSIONS - 15 VR 50 HZ
F version

T version

V version

C version


F version Round flanges on body type PN25: the pump is supplied without counter-flanges (Optional accessories, including bolts and joints).

T version Oval flanges on body type PN16: the pump is supplied without threaded oval counter flanges (Optional accessories, including bolts and joints).

V version Connections with rapid fittings type "Victaulic": the pump is supplied without the collars (Optional accessories).

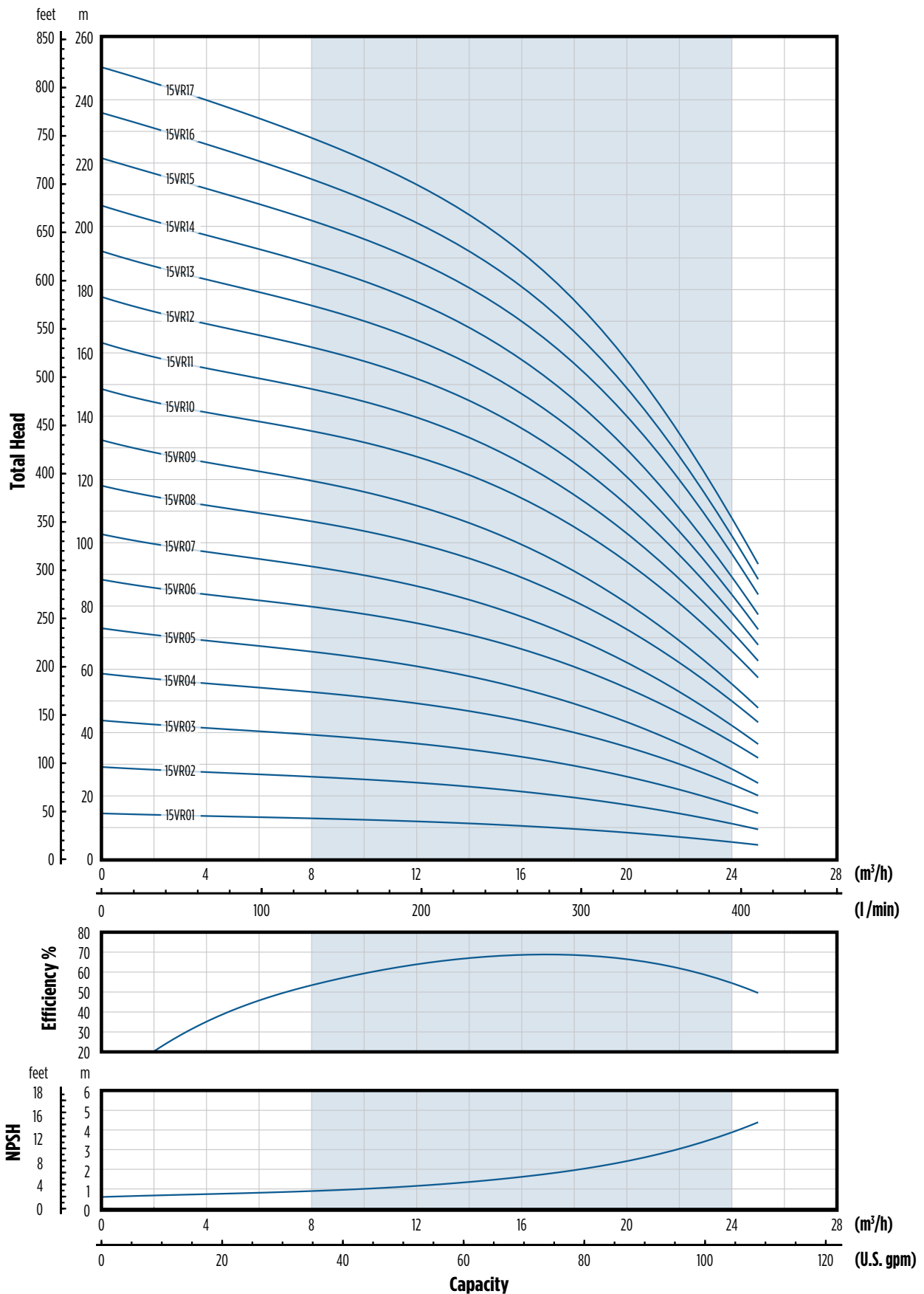
C version Connections with round fittings type Clamp-FlexiClamp: the pump is supplied without collars (Optional accessories).

Note: * All dimensions above are in mm.

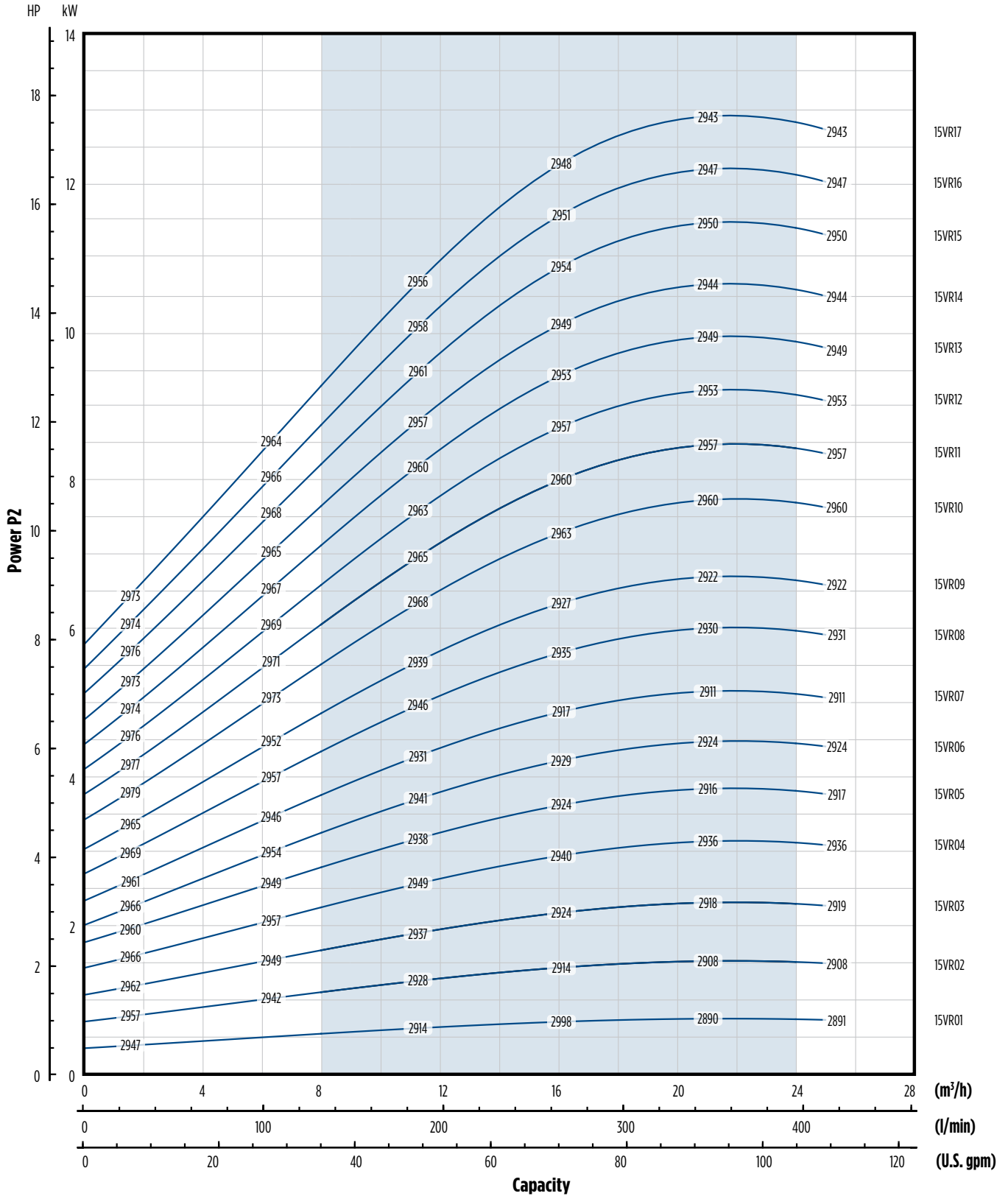
Model	Motor				Dimensions (mm)								Weight (kg)			
	Rated Power		Size	MTG	L1	L2*		L1+L2	M		D1		D2	PE	Motor	PMA
	kW	HP				1-Phase	3-Phase		1-Phase	3-Phase	1-Phase	3-Phase				
15VR01	1.1	1.5	80	B14	405	232	232	637	150	129	160	160	170	23.5	12	35.5
15VR02	2.2	3	90	B14	415	267	267	682	160	138	180	180	170	25	16	41
15VR03	3	4	100	B14	473	-	267	740	-	138	-	180	170	27	18.7	45.7
15VR04	4	5.5	112	B14	521	-	306	827	-	145	-	196	170	28.5	22.8	51.3
15VR05	4	5.5	112	B14	569	-	306	875	-	145	-	196	170	30	22.8	52.8
15VR06	5.5	7.5	132	B5	804	-	328	1132	-	161	-	225	300	52	34	86
15VR07	5.5	7.5	132	B5	852	-	328	1180	-	161	-	225	300	53	34	87
15VR08	7.5	10	132	B5	900	-	350	1250	-	161	-	225	300	54.5	36	90.5
15VR09	7.5	10	132	B5	948	-	350	1298	-	161	-	225	300	56	36	92
15VR10	11	15	160	B5	1016	-	425	1441	-	198	-	248	350	60	58	118
15VR11	11	15	160	B5	1064	-	425	1489	-	198	-	248	350	61.5	58	119.5
15VR12	11	15	160	B5	1112	-	425	1537	-	198	-	248	350	63	58	121
15VR13	11	15	160	B5	1160	-	425	1585	-	198	-	248	350	64.5	58	122.5
15VR14	11	15	160	B5	1208	-	425	1633	-	198	-	248	350	66	58	124
15VR15	15	20	160	B5	1256	-	476	1732	-	198	-	248	350	67	64	131
15VR16	15	20	160	B5	1304	-	476	1780	-	198	-	248	350	68.5	64	132.5
15VR17	15	20	160	B5	1352	-	476	1828	-	198	-	248	350	70	64	134

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 15 VR 50 HZ



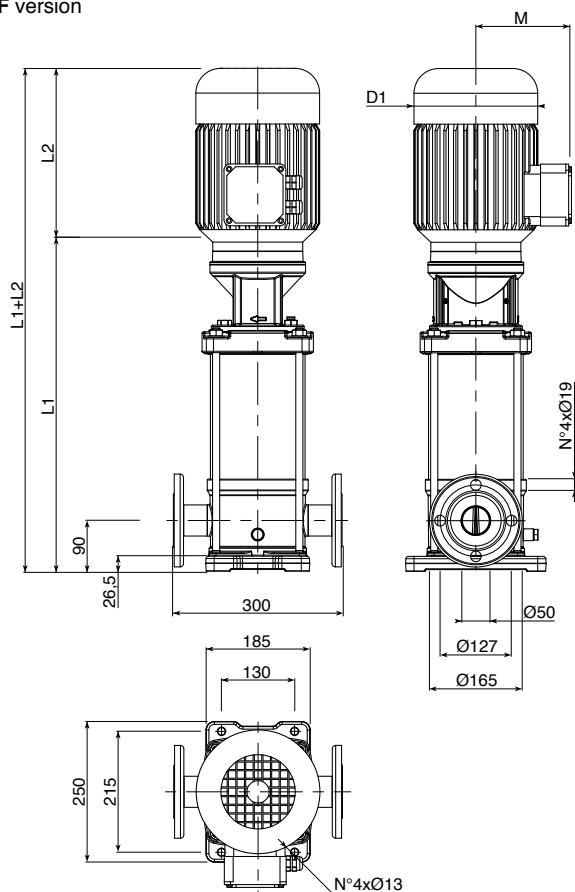
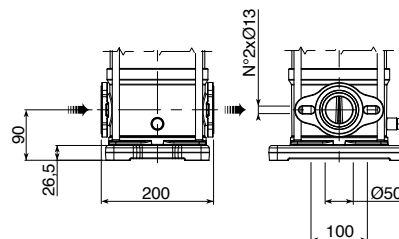
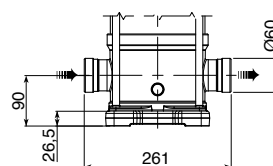
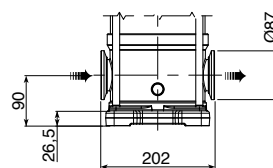
Notes: Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

POWER CURVES - 15 VR 50 HZ


VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 20 VR 50 HZ

Pump Type	Rated Power		Stages	DELIVERY										
	kW	HP		l/min 0	133	167	200	233	266	300	333	367	400	
				m ³ /h 0	8	10	12	14	16	18	20	22	24	
H = Total Head Meters Column of Water														
20VR01	1.1	1.5	1	15.5	13.5	13	13	12.5	12	11	10	8.5	7.5	6
20VR02	2.2	3	2	31	27.5	27	26	25	24	22.5	20.5	18	15	12
20VR03	4	5.5	3	46.5	41.5	40.5	39.5	38	36.5	34.5	31	27.5	23	18.5
20VR04	5.5	7.5	4	62.5	56	55	53.5	51.5	49.5	46.5	42.5	37	31.5	25.5
20VR05	5.5	7.5	5	78	70	68.5	66.5	64.5	62	58	53	47	40	32.5
20VR06	7.5	10	6	94.5	86.5	84.5	82.5	80	77.5	73.5	67.5	60	52	42.5
20VR07	7.5	10	7	110	100.5	98	95.5	93	90	85	77.5	69	59.5	48.5
20VR08	11	15	8	126.5	117	114	112	109	106	100.5	92.5	82.5	72	59.5
20VR09	11	15	9	142.5	131	128	125.5	122	118.5	112.5	103.5	92.5	80.5	66.5
20VR10	11	15	10	158	145.5	142	139	135	131.5	124.5	114	102	88.5	73
20VR11	15	20	11	174	160	156.5	153	149	144.5	137	126	113	98	81
20VR12	15	20	12	189.5	174.5	170.5	167	162	157.5	149	137	122.5	106.5	87.5
20VR13	15	20	13	205	188.5	184	180	175	170	161	147.5	132	114.5	94
20VR14	15	20	14	220.5	202.5	198	193.5	188	182.5	172.5	158	141	122	100.5
20VR15	18.5	25	15	237	217.5	212.5	208	202	196	185.5	170.5	152	132	108.5
20VR16	18.5	25	16	252.5	231.5	226	221	215	208.5	197	181	161.5	140	115
20VR17	18.5	25	17	268	245.5	240	234.5	227.5	221	209	191.5	171	148	121.5

DIMENSIONS - 20 VR 50 HZ
F version

T version

V version

C version


F version Round flanges on body type PN25: the pump is supplied without counter-flanges (Optional accessories, including bolts and joints).

V version Connections with rapid fittings type "Victaulic": the pump is supplied without the collars (Optional accessories).

T version Oval flanges on body type PN16: the pump is supplied without threaded oval counter flanges (Optional accessories, including bolts and joints).

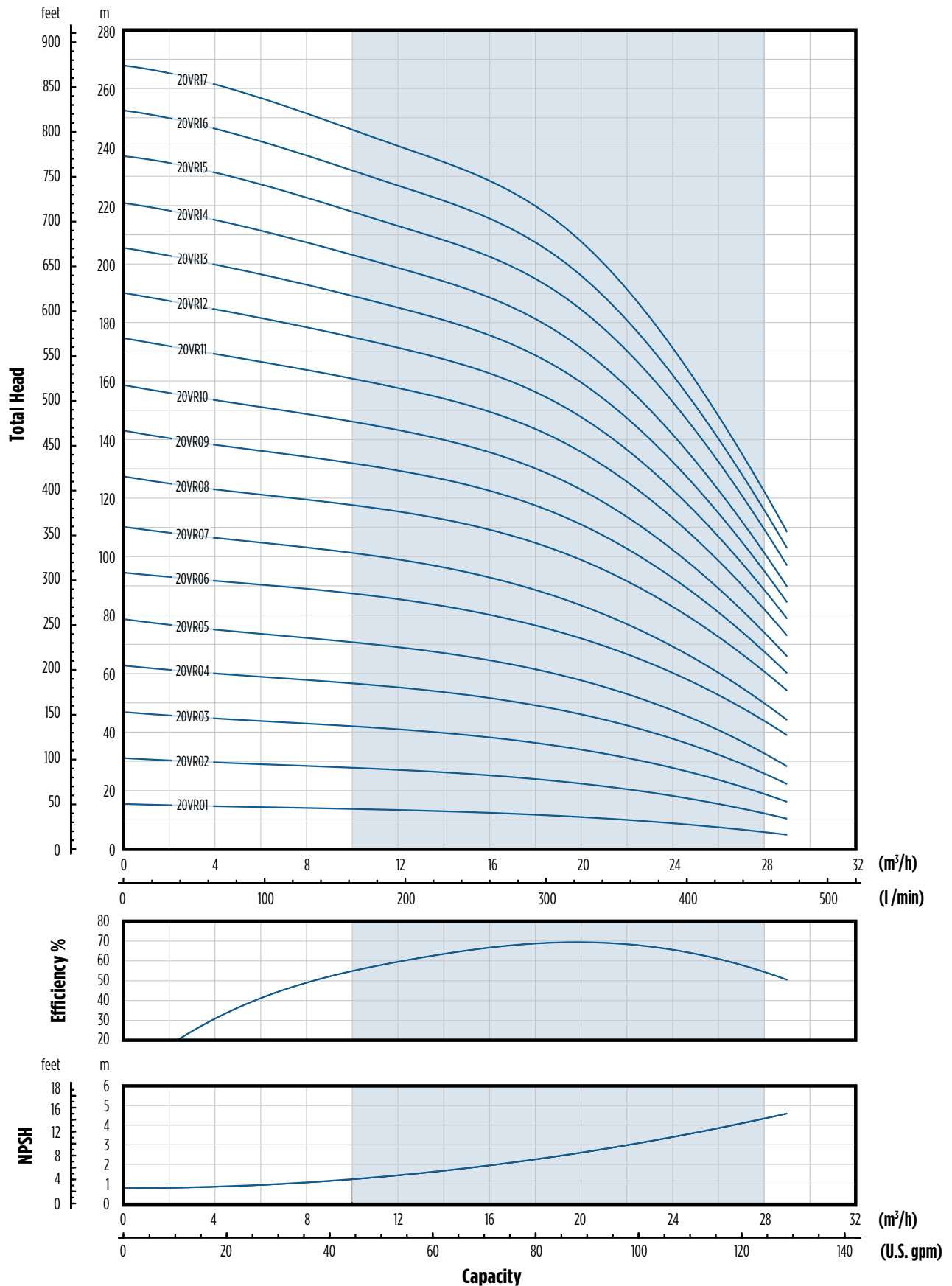
C version Connections with round fittings type Clamp-FlexiClamp: the pump is supplied without collars (Optional accessories).

Note: * All dimensions above are in mm.

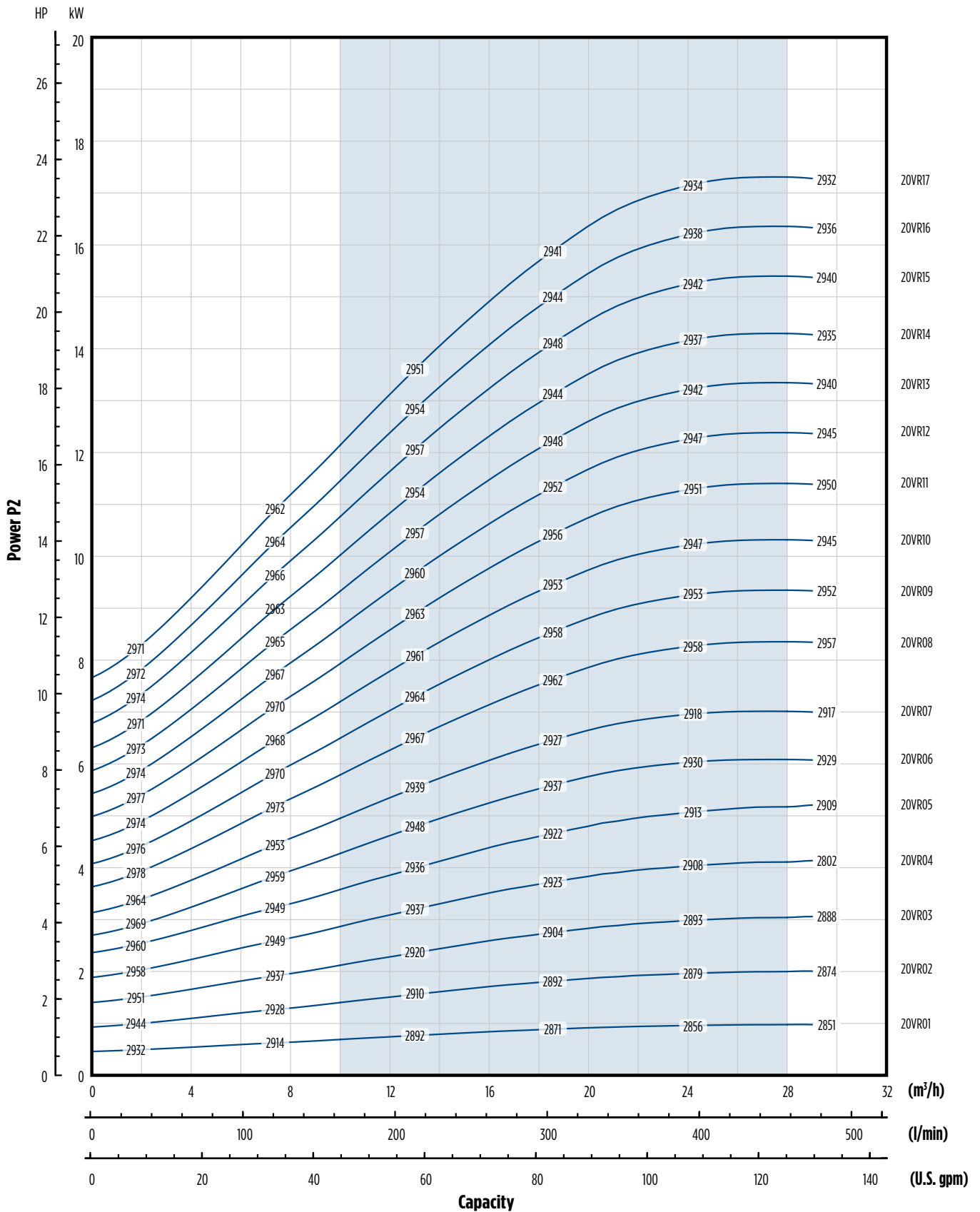
Model	Motor				Dimensions (mm)								Weight (kg)			
	Rated Power		Size	MTG	L1	L2*		L1+L2	M		D1		D2	PE	Motor	PMA
	kW	HP				1-Phase	3-Phase		1-Phase	3-Phase	1-Phase	3-Phase				
20VR01	1.1	1.5	80	B14	405	232	232	637	150	129	160	160	170	23.5	12	35.5
20VR02	2.2	3	90	B14	415	267	267	682	160	138	180	180	170	25.5	16	41.5
20VR03	4	5.5	100	B14	473	-	306	779	-	145	-	196	170	27	22.8	49.8
20VR04	5.5	7.5	132	B14	708	-	328	1036	-	161	-	225	300	49	34	83
20VR05	5.5	7.5	132	B5	756	-	328	1084	-	161	-	225	300	50.5	34	84.5
20VR06	7.5	10	132	B5	804	-	350	1154	-	161	-	225	300	52	36	88
20VR07	7.5	10	132	B5	852	-	350	1202	-	161	-	225	300	53	36	89
20VR08	11	15	160	B5	900	-	425	1345	-	198	-	248	350	57.5	58	115.5
20VR09	11	15	160	B5	948	-	425	1393	-	198	-	248	350	59	58	117
20VR10	11	15	160	B5	1016	-	425	1441	-	198	-	248	350	60.5	58	118.5
20VR11	15	20	160	B5	1064	-	476	1540	-	198	-	248	350	61.5	64	125.5
20VR12	15	20	160	B5	1112	-	476	1588	-	198	-	248	350	63	64	127
20VR13	15	20	160	B5	1160	-	476	1636	-	198	-	248	350	64.5	64	128.5
20VR14	15	20	160	B5	1208	-	476	1684	-	198	-	248	350	66	64	130
20VR15	18.5	25	160	B5	1256	-	542	1798	-	235	-	317	350	67.5	88.9	156.4
20VR16	18.5	25	160	B5	1304	-	542	1846	-	235	-	317	350	68.5	88.9	157.4
20VR17	18.5	25	160	B5	1352	-	542	1894	-	235	-	317	350	70	88.9	158.9

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 20 VR 50 HZ



Notes: Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

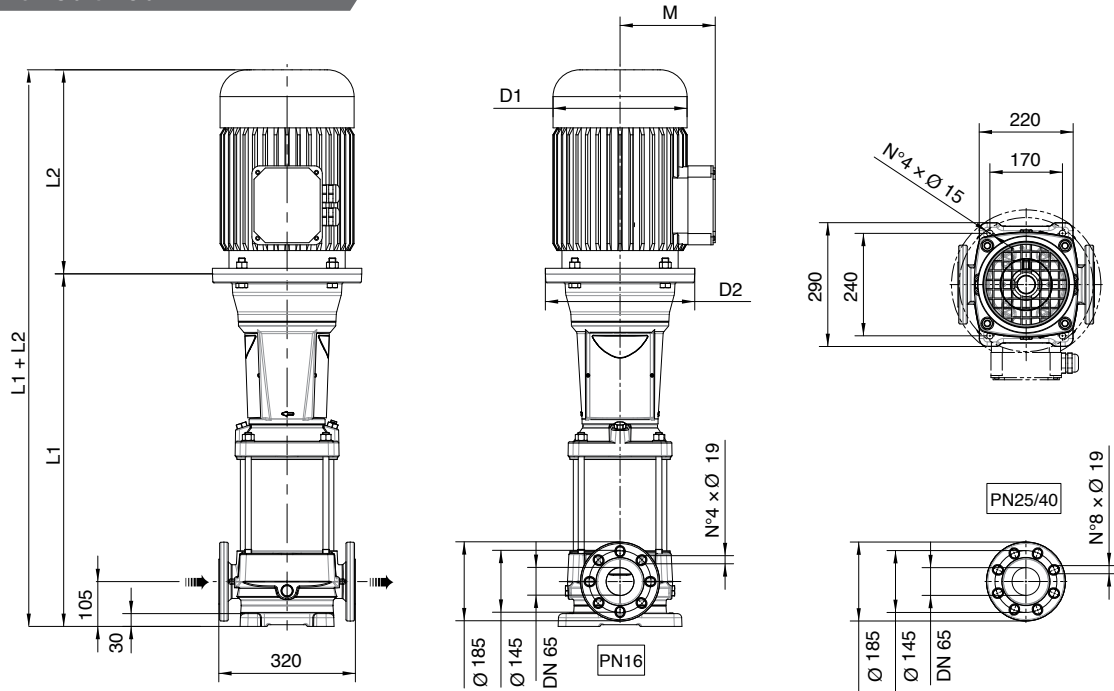
POWER CURVES - 20 VR 50 HZ


Notes: Specifications subject to change without prior notice.

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 30 VR 50 HZ

Pump Type	Rated Power		Stages	Trim	DELIVERY								
	kW	HP			l/min 0	250	300	367	417	500	583	667	750
					m ³ /h 0	15	18	22	25	30	35	40	45
H = Total Head Meters Column of Water													
30VR01-00	2.2	3	1		24	21	20.5	19.5	19	17.5	16	13.5	11
30VR02-2A	4	5.5	2	2A	36	33.5	32.5	30.5	29.5	26.5	22.5	18	12.5
30VR02-1A	4	5.5	2	1A	42	38.5	37	35.5	34	31.5	27.5	23	18
30VR02-00	5.5	7.5	2		48.5	43.5	42.5	41	39.5	36.5	33.5	29	23.5
30VR03-2A	5.5	7.5	3	2A	60	54.5	53	50.5	48	44	38	31.5	23.5
30VR03-1A	7.5	10	3	1A	66.5	60	58.5	56	54	50	45	38	30
30VR03-00	7.5	10	3		73	65	63.5	61	59	55	50	43.5	35.5
30VR04-2A	7.5	10	4	2A	84.5	76.5	74	70.5	68	62	55	46	35
30VR04-1A	11	15	4	1A	91.5	83	81	78	75.5	70	63	54.5	43.5
30VR04-00	11	15	4		98	88	86	83	80.5	75	69	60	49.5
30VR05-2A	11	15	5	2A	109.5	99.5	97	93	89.5	83	74	63	49.5
30VR05-1A	11	15	5	1A	115.5	104.5	102	98	94.5	88	79.5	68.5	55
30VR05-00	15	20	5		122.5	109.5	107	103.5	100	93.5	85.5	75	61.5
30VR06-2A	15	20	6	2A	134	121.5	118.5	113.5	109.5	101.5	91	78	61.5
30VR06-1A	15	20	6	1A	140	126	123	118.5	114.5	106.5	96.5	83.5	67
30VR06-00	15	20	6		146.5	131	128	123.5	119.5	111.5	102	89	73
30VR07-2A	15	20	7	2A	158	142.5	139	133.5	128.5	119	107	91.5	72.5
30VR07-1A	15	20	7	1A	164	147.5	144	138.5	133.5	124	112.5	97	78
30VR07-00	18.5	25	7		171	152.5	149	144	139.5	130	119	103.5	85
30VR08-2A	18.5	25	8	2A	182.5	164.5	160	154	148.5	137.5	124	106	84.5
30VR08-1A	18.5	25	8	1A	188.5	169	165	159	153.5	142.5	129.5	111.5	90
30VR08-00	18.5	25	8		194.5	174	169.5	164	158.5	147.5	134.5	117	95.5
30VR09-2A	22	30	9	2A	208.5	188.5	184	177	171	159	144	124.5	100.5
30VR09-1A	22	30	9	1A	214.5	193.5	189	182.5	176.5	164.5	150	130	106
30VR09-00	22	30	9		221	198	194	187.5	181.5	169.5	155.5	136	112
30VR10-2A	22	30	10	2A	233	210	205	197.5	191	177.5	161	139	112
30VR10-1A	22	30	10	1A	239	215	210	202.5	196	182.5	166.5	144.5	117.5
30VR10-00	30	40	10		246.5	221.5	217	210	203.5	190.5	175	153.5	126.5
30VR11-2A	30	40	11	2A	258	233.5	228.5	220.5	213	198.5	180.5	156.5	127
30VR11-1A	30	40	11	1A	264.5	238.5	233.5	225.5	218	204	186	162	133
30VR11-00	30	40	11		271	243.5	238	230.5	223.5	209	192	168	138.5
30VR12-2A	30	40	12	2A	282.5	255.5	249.5	241	233	217	197.5	171	139
30VR12-1A	30	40	12	1A	289	260.5	254.5	246	238	222.5	203	177	145
30VR12-00	30	40	12		295	265.5	259.5	251	243	227.5	208.5	182.5	150.5
30VR13-2A	30	40	13	2A	307	277.5	271	261.5	252.5	235.5	214	185.5	151
30VR13-1A	30	40	13	1A	313	282	276	266.5	258	240.5	220	191.5	156.5
30VR13-00	30	40	13		319.5	287	280.5	271.5	263	246	225.5	197	162.5

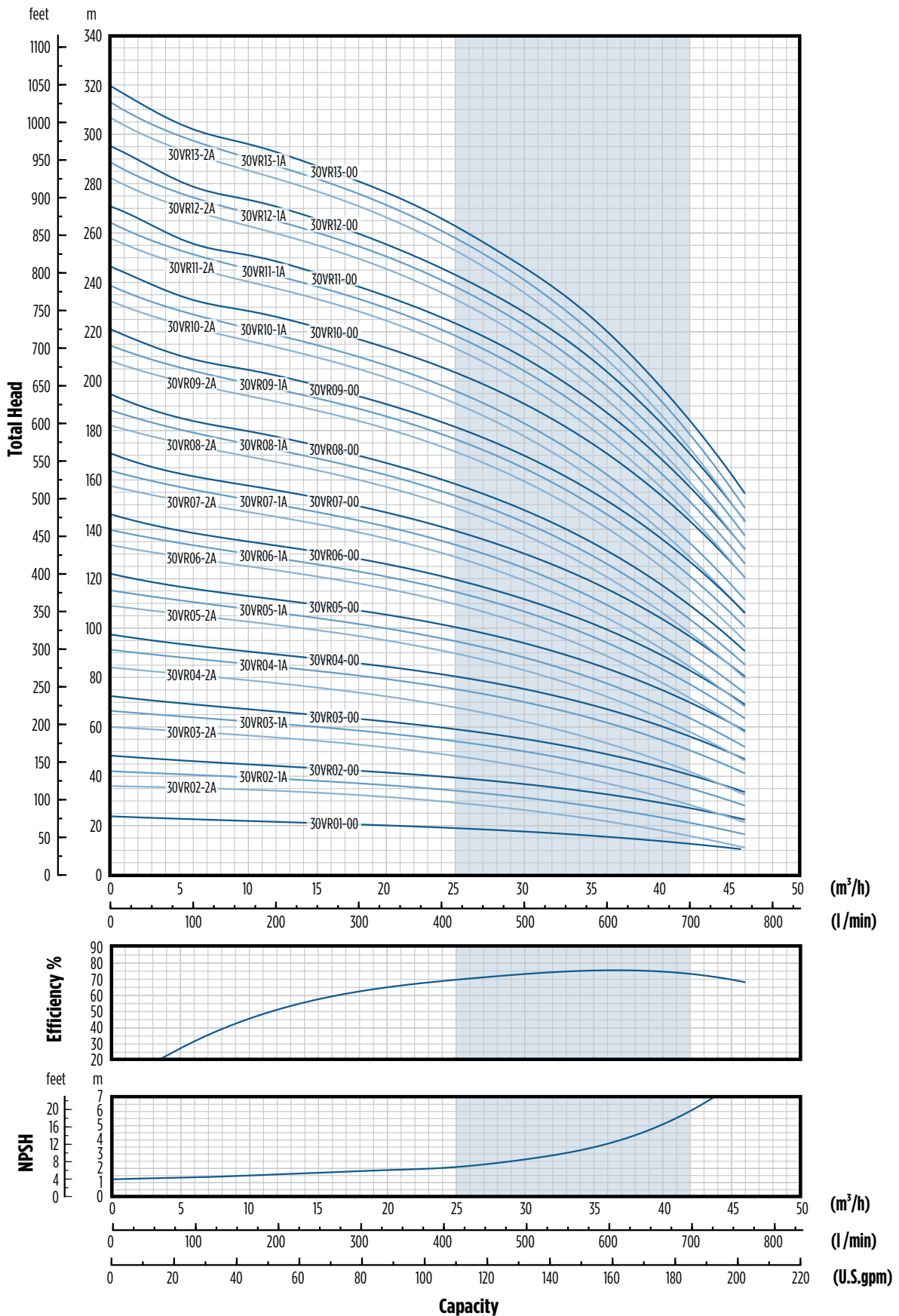
DIMENSIONS - 30 VR 50 HZ


Note: * All dimensions above are in mm.

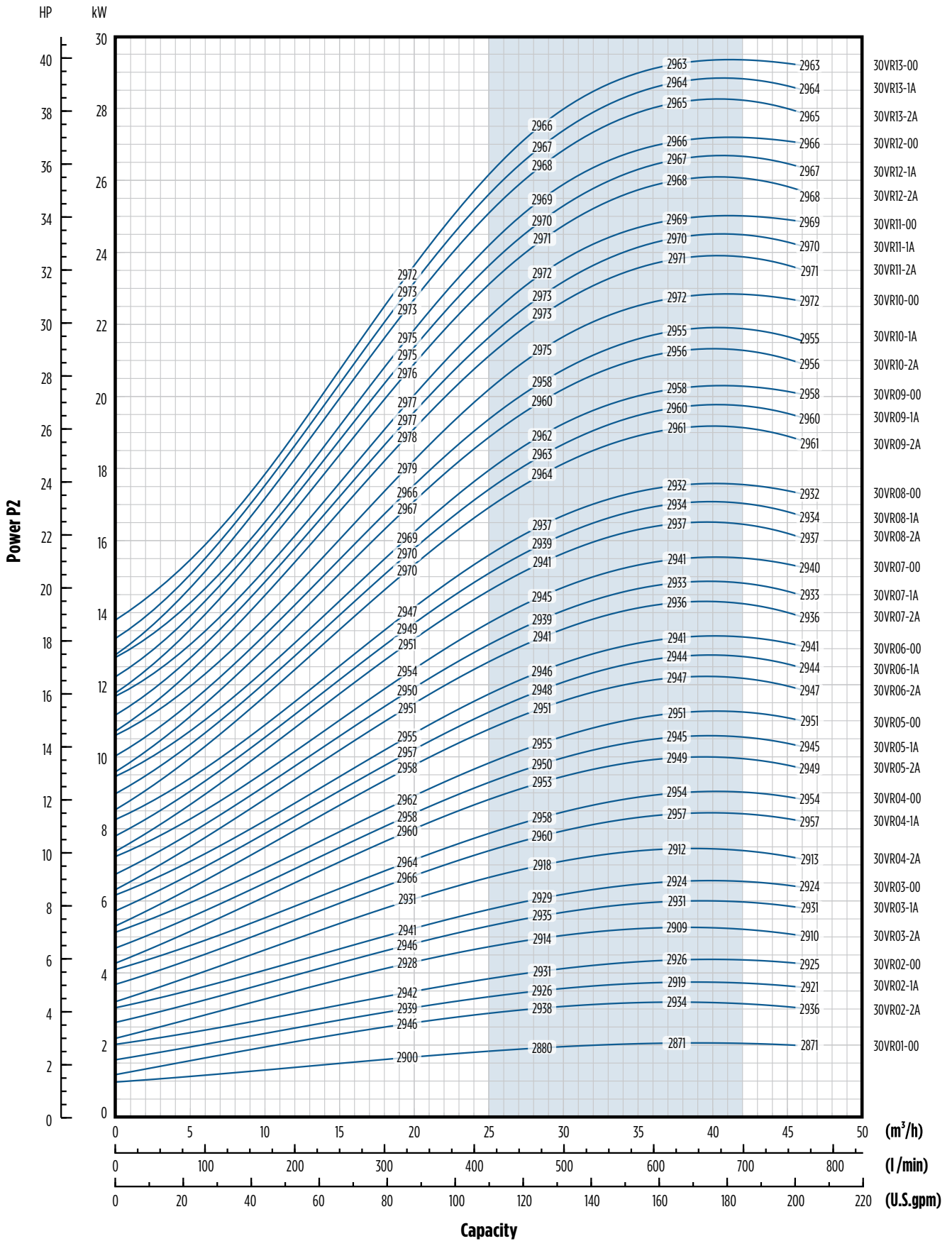
Model	Motor				Dimensions (mm)						Weight (kg)		
	Rated Power		Size	MTG	L1	L2*	L1+L2	M	D1	D2	PE	Motor	PMA
	kW	HP											
30VR01-00	2.2	3	90	B14	445	267	712	138	180	170	53	16	69
30VR02-2A	4	5.5	112	B14	537	306	843	145	196	170	57	22.8	80
30VR02-1A	4	5.5	112	B14	724	306	1030	145	196	170	74.5	22.8	97.5
30VR02-00	5.5	7.5	132	B5	724	328	1052	161	225	300	74.5	34	108.5
30VR03-2A	5.5	7.5	132	B5	806	328	1134	161	225	300	78.5	34	112.5
30VR03-1A	7.5	10	132	B5	806	350	1156	161	225	300	78.5	36	114.5
30VR03-00	7.5	10	132	B5	806	350	1238	161	225	300	78.5	36	114.5
30VR04-2A	7.5	10	132	B5	888	350	1333	161	225	300	85.5	36	121.5
30VR04-1A	11	15	160	B5	908	425	1333	198	248	350	85.5	58	143.5
30VR04-00	11	15	160	B5	908	425	1415	198	248	350	85.5	58	143.5
30VR05-2A	11	15	160	B5	990	425	1415	198	248	350	89.5	58	147.5
30VR05-1A	11	15	160	B5	990	425	1415	198	248	350	89.5	64	147.5
30VR05-00	15	20	160	B5	990	476	1548	198	248	350	89.5	64	153.5
30VR06-2A	15	20	160	B5	1072	476	1548	198	248	350	93.5	64	157.5
30VR06-1A	15	20	160	B5	1072	476	1548	198	248	350	93.5	64	157.5
30VR06-00	15	20	160	B5	1072	476	1630	198	248	350	93.5	64	157.5
30VR07-2A	15	20	160	B5	1154	476	1652	198	248	350	97.5	64	161.5
30VR07-1A	15	20	160	B5	1154	476	1630	198	248	350	97.5	89	161.5
30VR07-00	18.5	25	160	B5	1154	542	1696	238	317	350	97.5	89	186.5
30VR08-2A	18.5	25	160	B5	1236	542	1778	238	317	350	101.5	89	190.5
30VR08-1A	18.5	25	160	B5	1236	542	1778	238	317	350	101.5	89	190.5
30VR08-00	18.5	25	160	B5	1236	542	1778	238	317	350	101.5	108.7	190.5
30VR09-2A	22	30	180	B5	1318	542	1860	238	360	350	105.5	108.7	214
30VR09-1A	22	30	180	B5	1318	542	1860	238	360	350	105.5	108.7	214
30VR09-00	22	30	180	B5	1318	542	1860	238	360	350	105.5	108.7	214
30VR10-2A	22	30	180	B5	1400	542	1942	238	360	350	112.5	228	221
30VR10-1A	22	30	180	B5	1400	542	1942	238	360	350	112.5	228	221
30VR10-00	30	40	200	B5	1405	658	2063	297	399	400	112.5	228	340.5
30VR11-2A	30	40	200	B5	1487	658	2145	297	399	400	116.5	228	344.5
30VR11-1A	30	40	200	B5	1487	658	2145	297	399	400	116.5	228	344.5
30VR11-00	30	40	200	B5	1487	658	2145	297	399	400	116.5	228	344.5
30VR12-2A	30	40	200	B5	1569	658	2227	297	399	400	120.5	228	348.5
30VR12-1A	30	40	200	B5	1569	658	2227	297	399	400	120.5	228	348.5
30VR12-00	30	40	200	B5	1569	658	2227	297	399	400	120.5	228	348.5
30VR13-2A	30	40	200	B5	1651	658	2309	297	399	400	124.5	228	352.5
30VR13-1A	30	40	200	B5	1651	658	2309	297	399	400	124.5	228	352.5
30VR13-00	30	40	200	B5	1651	658	2309	297	399	400	124.5	228	352.5

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 30 VR 50 HZ



Notes: Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

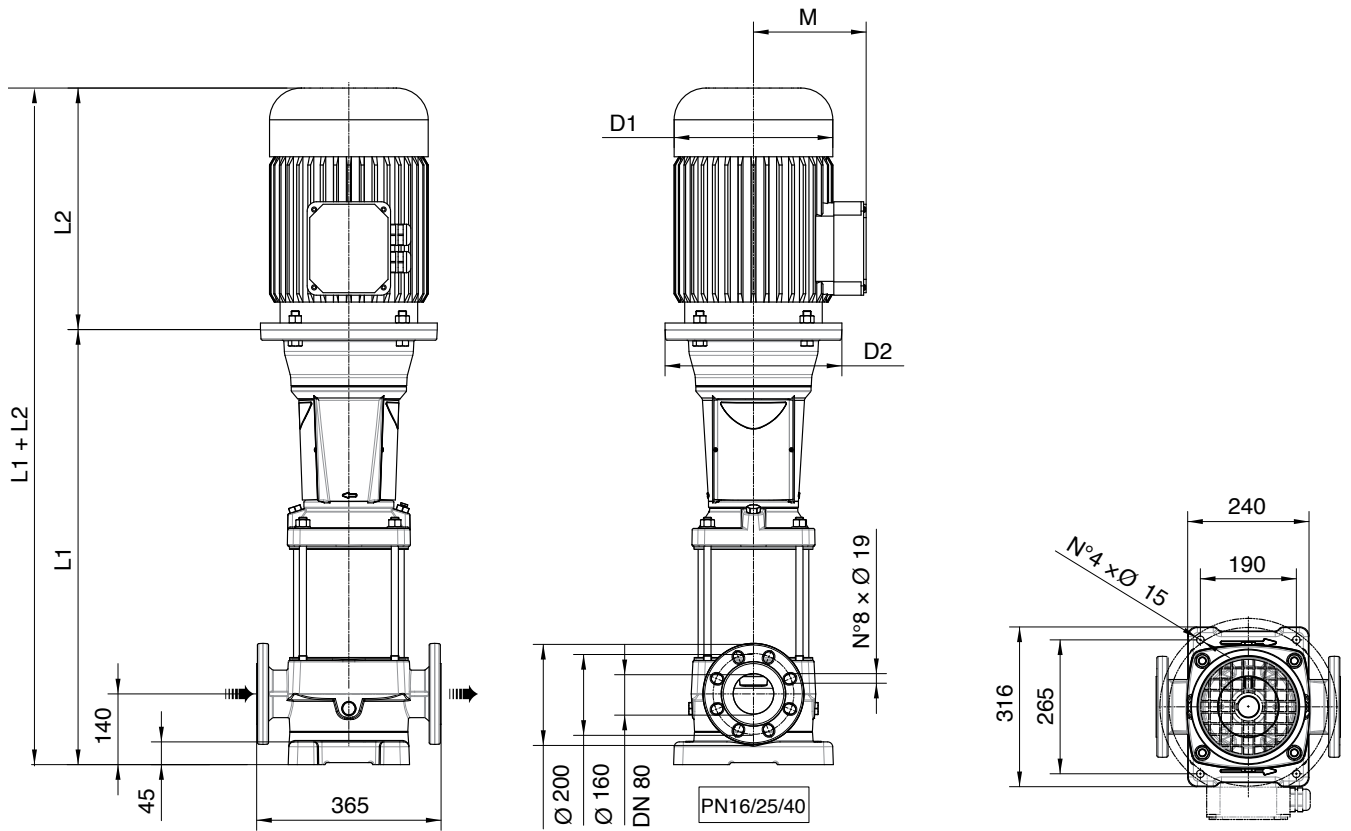
POWER CURVES - 30 VR 50 HZ


Notes: Specifications subject to change without prior notice.

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 45 VR 50 HZ

Pump Type	Rated Power		Stages	Trim	DELIVERY										900	1000	1083
	kW	HP			I/min 0	250	300	367	417	500	583	667	750				
					m ³ /h 0	15	18	22	25	30	35	40	45	54			
H = Total Head Meters Column of Water																	
45VR01-1A	3	4	1	1A	19	18.5	18.5	18	18	17.5	16.5	15.5	14.5	11.5	9.5	7.5	
45VR01-00	4	5.5	1		24.5	24	23.5	23	22.5	22	21.5	21	19.5	17	15.5	13.5	
45VR02-2A	5.5	7.5	2	2A	38.5	37.5	37	36.5	35.5	34.5	33	31	28.5	23	18.5	14.5	
45VR02-00	7.5	10	2		48.5	47.5	47	46	45.5	44	43	41.5	39	34	30.5	26.5	
45VR03-2A	11	15	3	2A	63	62	61.5	60.5	59.5	58	56	53.5	50	42	36	30	
45VR03-00	11	15	3		73.5	72	71	70	69	67	65.5	63	60	52.5	47	41	
45VR04-2A	15	20	4	2A	87.5	86	85	83.5	82	80	77.5	74	69.5	59.5	51	43	
45VR04-00	15	20	4		97.5	96	94.5	93	91.5	89	86.5	84	79.5	69.5	62	54.5	
45VR05-2A	18.5	25	5	2A	112	109.5	108.5	106.5	105	102	99	94.5	89	76.5	66	56	
45VR05-00	18.5	25	5		122	119.5	118	115.5	114	111	108	104.5	99	86.5	77	67.5	
45VR06-2A	22	30	6	2A	137.5	135	133.5	131	129	126	122	117.5	110.5	95.5	83.5	72	
45VR06-00	22	30	6		147.5	145	143.5	140.5	138.5	135	131.5	127	121	106	95	83.5	
45VR07-2A	30	40	7	2A	162.5	160	158	155.5	153	149.5	145	139.5	132	115	101	87.5	
45VR07-00	30	40	7		172.5	170	168	165	162.5	158.5	154.5	149.5	142.5	125.5	112	99	
45VR08-2A	30	40	8	2A	187	184	182	178.5	176	171.5	167	160.5	152	132	116.5	101	
45VR08-00	30	40	8		197	194	191.5	188	185.5	181	176.5	170.5	162.5	142.5	127.5	112.5	
45VR09-2A	37	50	9	2A	211.5	208	205.5	202	199	194	188.5	181.5	172	149.5	132	114.5	
45VR09-00	37	50	9		221.5	218	215.5	211.5	208	203	198	191.5	182	160	143	126	
45VR10-2A	37	50	10	2A	235.5	231.5	229	225	221.5	216	210	202	191.5	166.5	147	127.5	
45VR10-00	37	50	10		246	242	239	234	230.5	225	219	212	201.5	177	158	139	
45VR11-2A	45	60	11	2A	261	256.5	254	249	245.5	239.5	233	224.5	213	186	164.5	143.5	
45VR11-00	45	60	11		271	267	263.5	258.5	255	249	242.5	234.5	223.5	196.5	175.5	155	
45VR12-2A	45	60	12	2A	285.5	280.5	277.5	272.5	268.5	261.5	254.5	245.5	232.5	203	179.5	156.5	
45VR12-00	45	60	12		295.5	290.5	287.5	282	277.5	271	264	255.5	243	213.5	191	168.5	
45VR13-2A	45	60	13	2A	305.5	304.5	301	295.5	291	284	276	266	252.5	220.5	195	170	

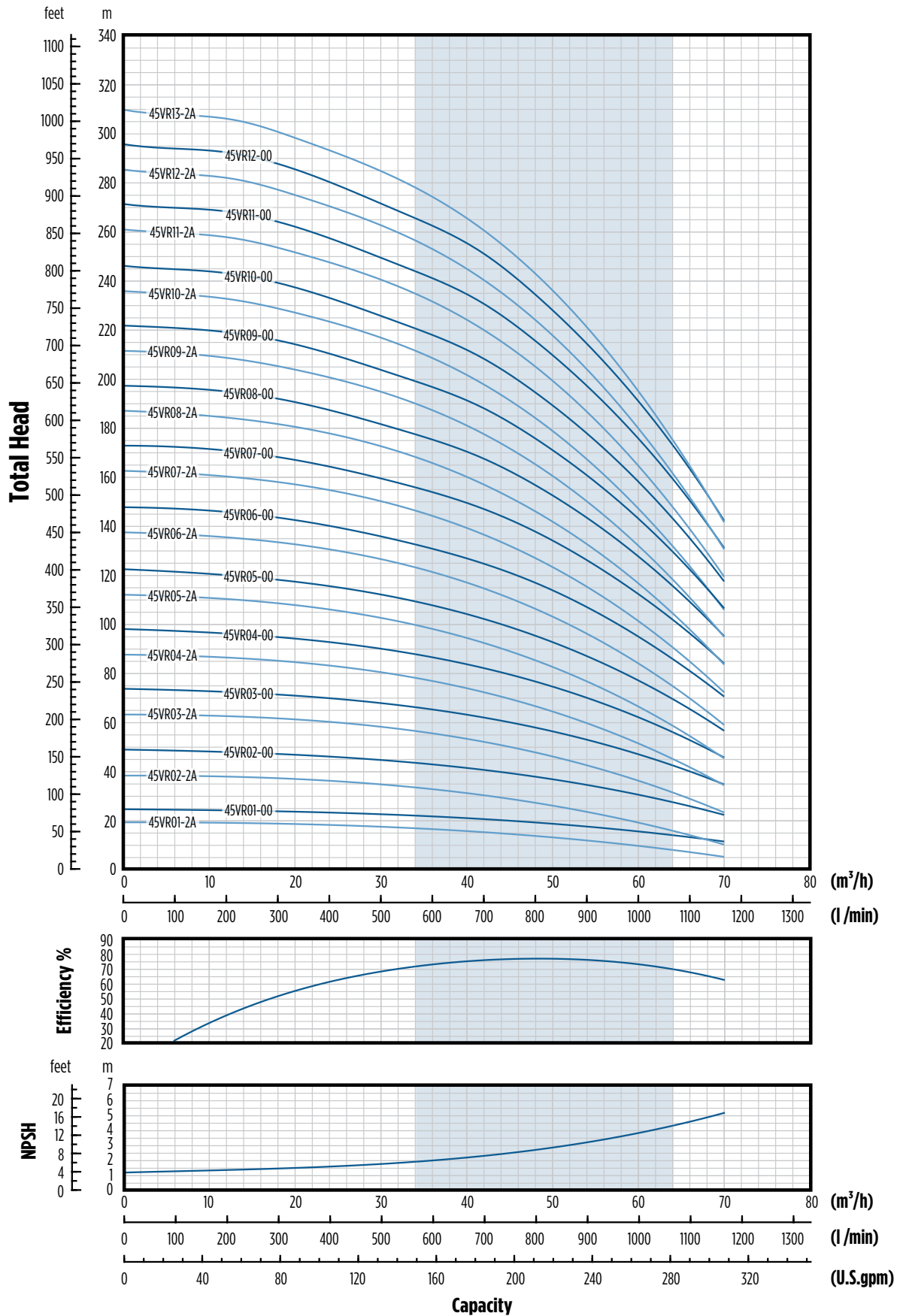
DIMENSIONS - 45 VR 50 HZ


Note: * All dimensions above are in mm.

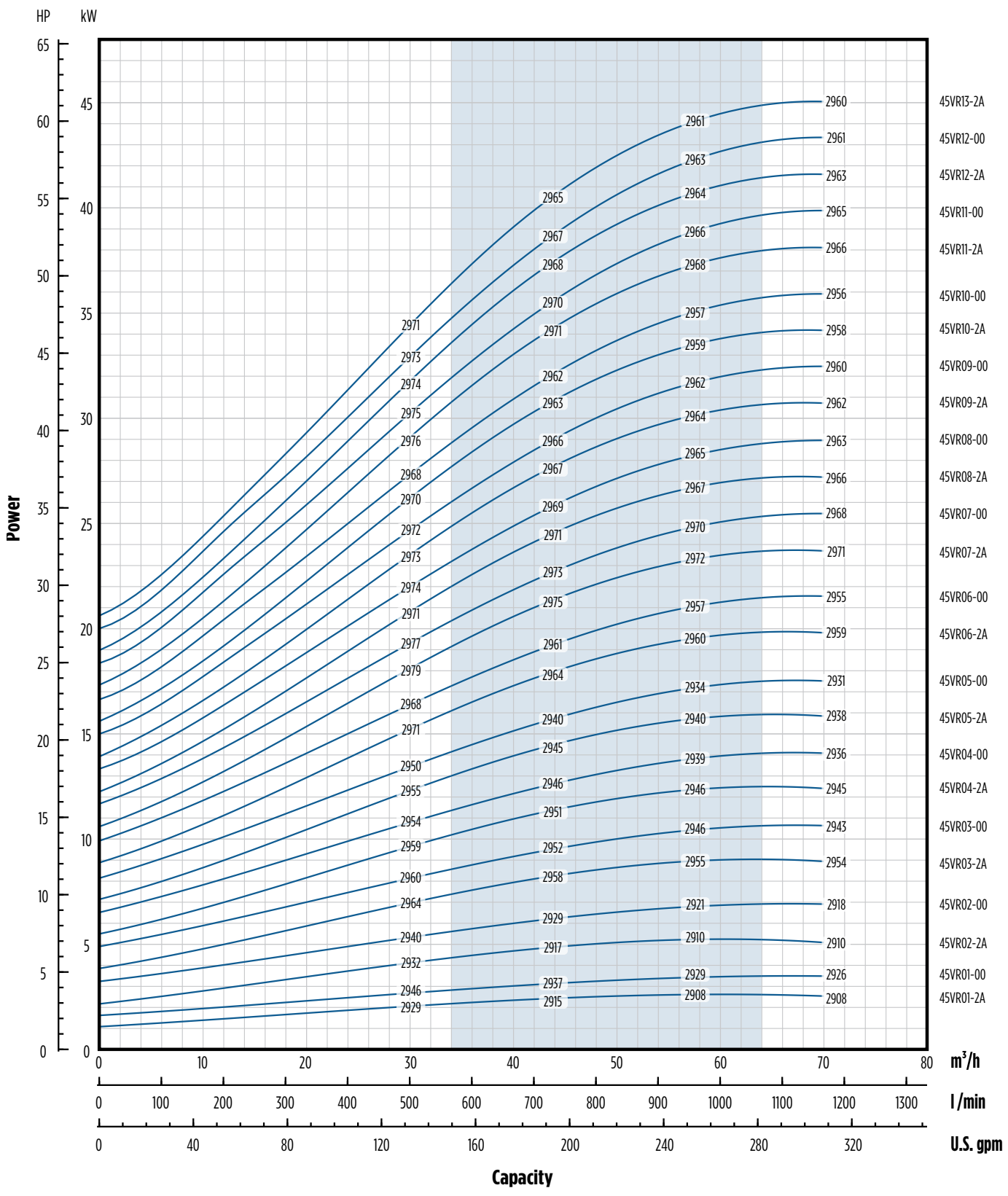
Model	Motor				Dimensions (mm)						Weight (kg)		
	Rated Power		Size	MTG	L1	L2*	L1+L2	M	D1	D2	PE	Motor	PMA
kW	HP												
45VR01-1A	3	4	100	B14	490	267	757	138	180	170	59	18.7	78
45VR01-00	4	5.5	112	B14	490	306	796	145	196	170	59	22.8	82
45VR02-2A	5.5	7.5	132	B5	759	328	1087	161	225	300	80.5	34	97.5
45VR02-00	7.5	10	132	B5	759	350	1109	161	225	300	80.5	36	116.5
45VR03-2A	11	15	160	B5	861	425	1286	198	248	350	87.5	58	145.5
45VR03-00	11	15	160	B5	861	425	1286	198	248	350	87.5	58	145.5
45VR04-2A	15	20	160	B5	943	476	1419	198	248	350	91.5	64	155.5
45VR04-00	15	20	160	B5	943	476	1419	198	248	350	91.5	64	155.5
45VR05-2A	18.5	25	160	B5	1025	542	1567	238	317	350	95.5	89	184.5
45VR05-00	18.5	25	160	B5	1025	542	1567	238	317	350	95.5	89	184.5
45VR06-2A	22	30	180	B5	1107	542	1649	238	317	350	99	108.5	208
45VR06-00	22	30	180	B5	1107	658	1649	238	317	350	99	108.5	208
45VR07-2A	30	40	200	B5	1194	658	1852	297	399	400	106	228	334
45VR07-00	30	40	200	B5	1194	658	1852	297	399	400	106	228	334
45VR08-2A	30	40	200	B5	1276	658	1934	297	399	400	110	228	338
45VR08-00	30	40	200	B5	1276	658	1934	297	399	400	110	228	338
45VR09-2A	37	50	200	B5	1358	658	2016	297	399	400	114	242	356
45VR09-00	37	50	200	B5	1358	658	2016	297	399	400	114	242	356
45VR10-2A	37	50	200	B5	1440	658	2098	297	399	400	118	242	360
45VR10-00	37	50	200	B5	1440	658	2098	297	399	400	118	242	360
45VR11-2A	45	60	225	B5	1522	699	2221	333	465	450	125	308	433
45VR11-00	45	60	225	B5	1522	699	2221	333	465	450	125	308	433
45VR12-2A	45	60	225	B5	1604	699	2303	333	465	450	129	308	437
45VR12-00	45	60	225	B5	1604	699	2303	333	465	450	129	308	437
45VR13-2A	45	60	225	B5	1686	699	2385	333	465	450	133	308	441

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 45 VR 50 HZ



Notes: Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

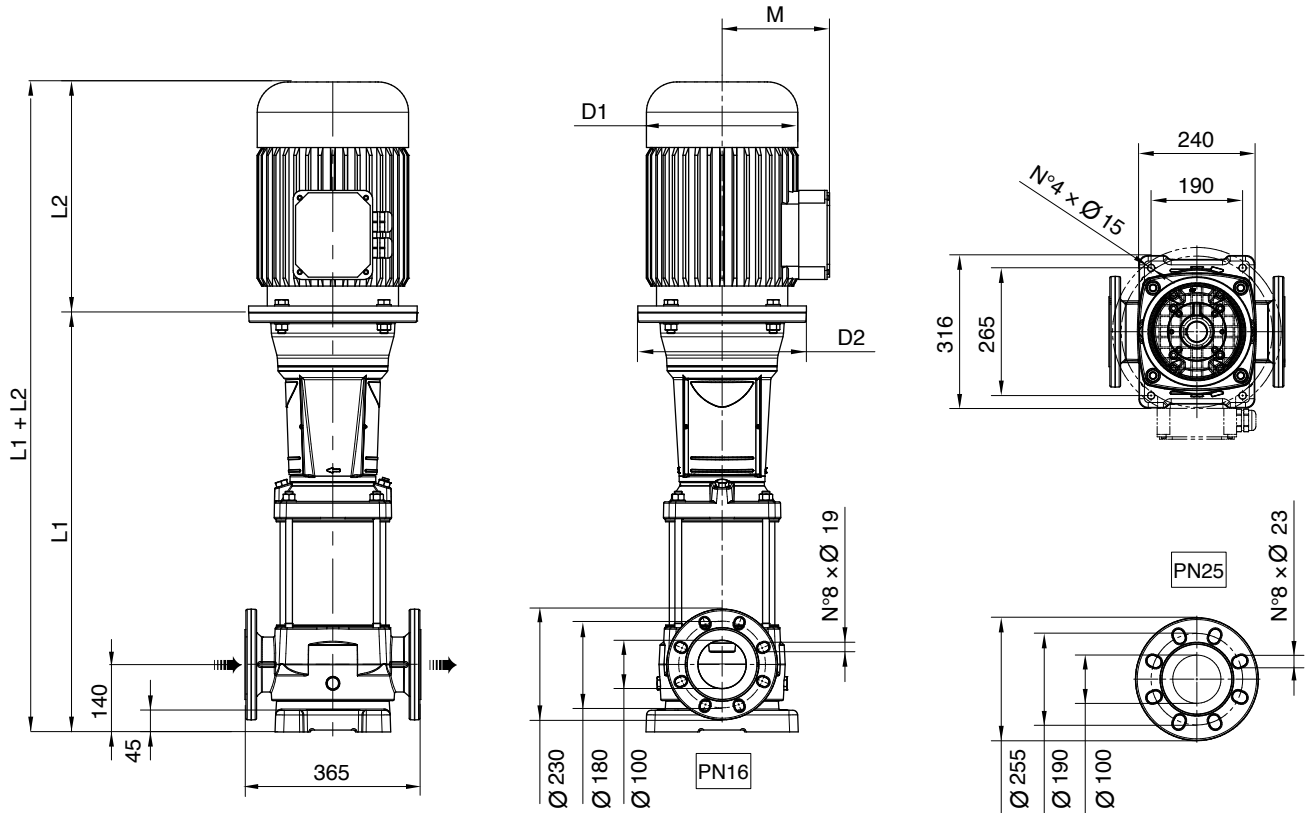
POWER CURVES - 45 VR 50 HZ


Notes: Specifications subject to change without prior notice.

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 65 VR 50 HZ

Pump Type	Rated Power		Stages	Trim	DELIVERY										1417	1600
	kW	HP			I/min 0	500	600	700	750	900	1000	1200	1300			
					m ³ /h 0	30	36	42	45	54	60	72	78	85		
H = Total Head Meters Column of Water																
65VR01-1A	4	5.5	1	1A	19.5	19	18.5	18	17.5	16.5	15.5	12.5	11	9		
65VR01-00	5.5	7.5	1		28	25	24.5	24	23.5	22.5	22	20	18.5	16.5		
65VR02-2A	7.5	10	2	2A	39	37.5	36.5	35.5	35	33	31	25	22	17.5		
65VR02-1A	11	15	2	1A	48	44.5	43.5	42.5	42	40	38.5	34	31	26.5		
65VR02-00	11	15	2		56.5	51	49.5	48.5	48	46	45	41	38.5	34.5		
65VR03-2A	15	20	3	2A	67.5	63.5	62	60.5	59.5	56.5	54	46.5	42	35.5		
65VR03-1A	15	20	3	1A	76	69.5	68	66.5	65.5	62.5	60.5	53.5	49.5	43		
65VR03-00	18.5	25	3		84.5	76	74	72.5	71.5	69	67	61.5	57.5	51.5		
65VR04-2A	18.5	25	4	2A	95.5	88.5	86	84	83	79	75.5	66	60.5	52		
65VR04-1A	22	30	4	1A	105	96	93.5	91.5	90.5	87	84	75.5	70	62		
65VR04-00	22	30	4		113.5	102.5	100	97.5	96.5	92.5	90.5	83	78	70		
65VR05-2A	30	40	5	2A	125	116	113	110.5	109	104.5	101	90	83	72.5		
65VR05-1A	30	40	5	1A	133.5	122.5	119	116.5	115	110.5	107.5	97.5	90.5	80.5		
65VR05-00	30	40	5		142	129	125.5	122.5	121	116.5	114	105	98.5	88.5		
65VR06-2A	30	40	6	2A	153	141.5	137.5	134.5	133	127.5	123	110	102	89.5		
65VR06-1A	37	50	6	1A	162	148	144	141	139	133.5	129.5	117.5	109.5	97.5		
65VR06-00	37	50	6		170	154	150	147	145	139.5	136	125	117.5	105.5		
65VR07-2A	37	50	7	2A	181.5	166.5	162.5	158.5	156.5	150	145	130.5	120.5	106.5		
65VR07-1A	37	50	7	1A	189.5	173	168.5	164.5	162.5	156	151.5	138	128.5	114.5		
65VR07-00	45	60	7		199	180.5	175.5	172	169.5	163.5	159.5	147	138	124		
65VR08-2A	45	60	8	2A	210	193	188	184	181.5	174	168.5	152	141.5	125		
65VR08-1A	45	60	8	1A	218.5	199.5	194	190	187.5	180	175	159.5	149	133		
65VR08-00	45	60	8		227	206	200	196	193.5	186	181.5	167	157	141		

DIMENSIONS - 65 VR 50 HZ


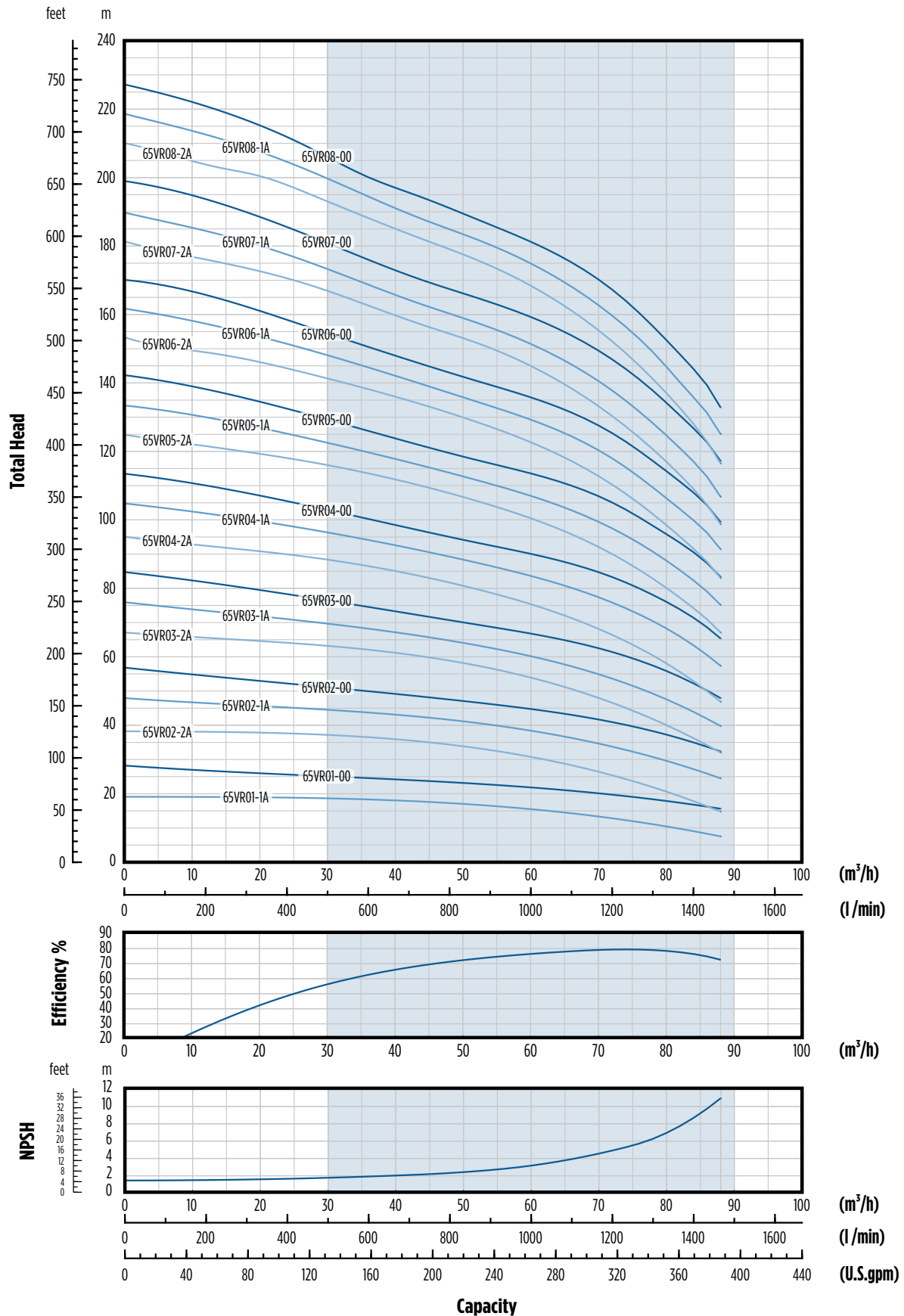
F version The pump is supplied without counter-flanges (Optional accessories, including bolts and joints).

Note: * All dimensions above are in mm.

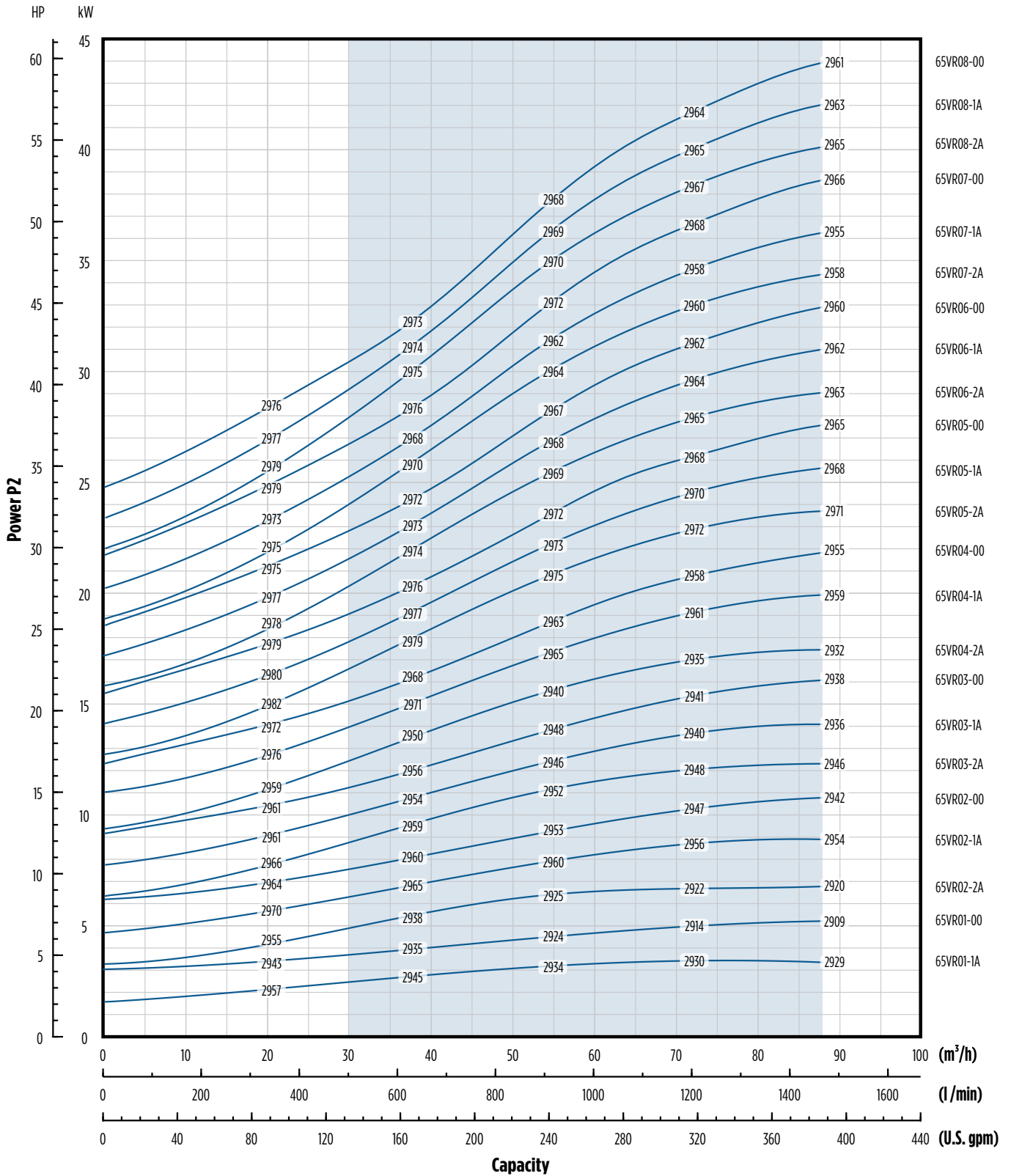
Model	Motor				Dimensions (mm)						Weight (kg)		
	Rated Power		Size	MTG	L1	L2*	L1+L2	M	D1	D2	PE	Motor	PMA
	kW	HP											
65VR01-1A	4	5.5	112	B14	550.1	306	856.1	145	196	170	61	22.8	83.8
65VR01-00	5.5	7.5	132	B5	737.1	328	1065.1	161	225	300	81	34	115
65VR02-2A	7.5	10	132	B5	829.2	350	1179.2	161	225	300	85.5	36	121.5
65VR02-1A	11	15	160	B5	849.2	425	1274.2	198	248	350	88.5	58	146.5
65VR02-00	11	15	160	B5	849.2	425	1274.2	198	248	350	88.5	58	146.5
65VR03-2A	15	20	160	B5	941.3	476	1417.3	198	248	350	93	64	157
65VR03-1A	15	20	160	B5	941.3	476	1417.3	198	248	350	93	64	157
65VR03-00	18.5	25	160	B5	941.3	542	1483.3	235	317	350	93	88.9	181.9
65VR04-2A	18.5	25	160	B5	1033.4	542	1575.4	235	317	350	97.5	88.9	186.4
65VR04-1A	22	30	180	B5	1033.4	542	1575.4	238	317	350	98	108.7	206.7
65VR04-00	22	30	180	B5	1033.4	542	1575.4	238	317	350	98	108.7	206.7
65VR05-2A	30	40	200	B5	1130.5	658	1788.5	300	399	400	105.5	228	333.5
65VR05-1A	30	40	200	B5	1130.5	658	1788.5	300	399	400	105.5	228	333.5
65VR05-00	30	40	200	B5	1130.5	658	1788.5	300	399	400	105.5	228	333.5
65VR06-2A	30	40	200	B5	1222.6	658	1880.6	300	399	400	110	228	338
65VR06-1A	37	50	200	B5	1222.6	658	1880.6	300	399	400	110	242	352
65VR06-00	37	50	200	B5	1222.6	658	1880.6	300	399	400	110	242	352
65VR07-2A	37	50	200	B5	1314.7	658	1972.7	300	399	400	114.5	242	356.5
65VR07-1A	37	50	200	B5	1314.7	658	1972.7	300	399	400	114.5	242	356.5
65VR07-00	45	60	225	B5	1314.7	699	2013.7	335	465	450	117.5	308	425.5
65VR08-2A	45	60	225	B5	1406.8	699	2105.8	335	465	450	122	308	430
65VR08-1A	45	60	225	B5	1406.8	699	2105.8	335	465	450	122	308	430
65VR08-00	45	60	225	B5	1406.8	699	2105.8	335	465	450	122	308	430

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 65 VR 50 HZ



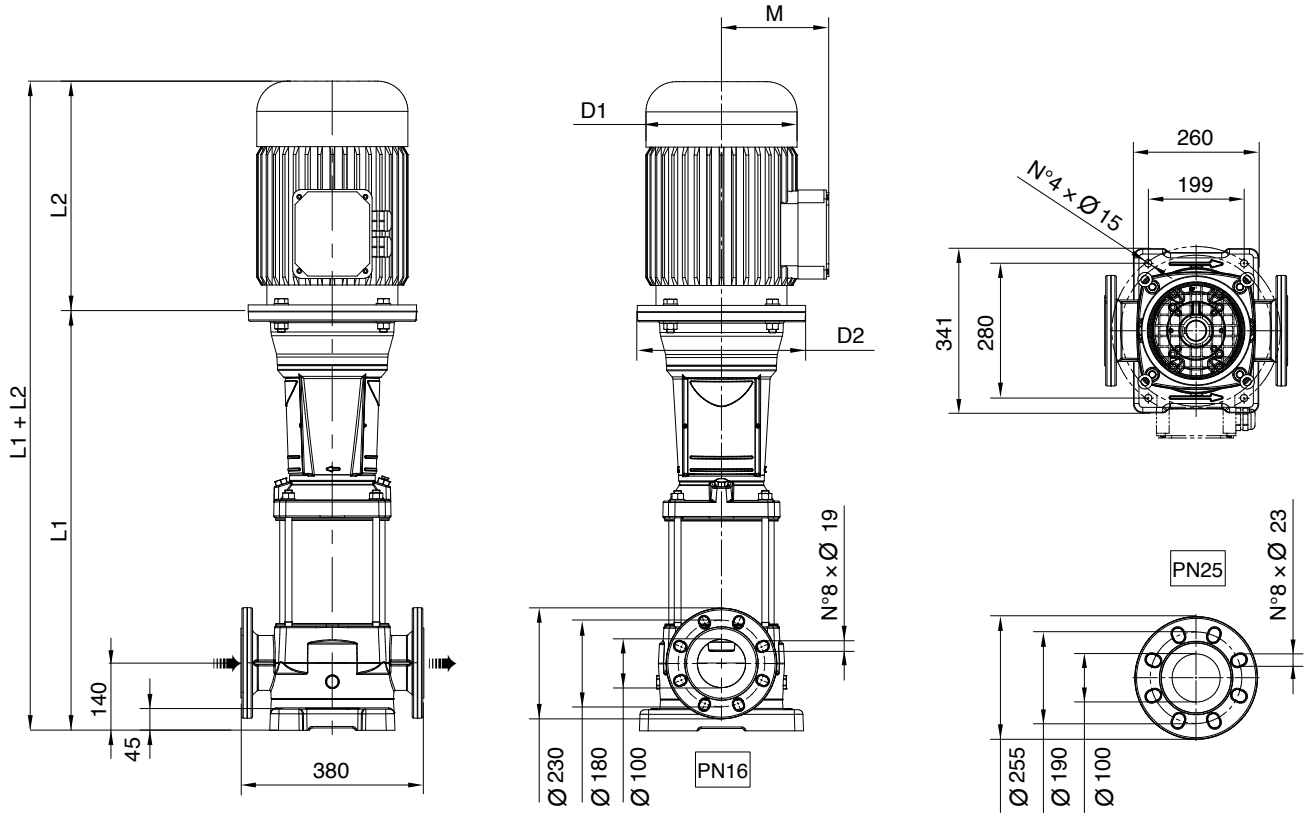
Notes: Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

POWER CURVES - 65 VR 50 HZ


VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE TABLE - 95 VR 50 HZ

Pump Type	Rated Power		Stages	Trim	DELIVERY										1800	1967
	kW	HP			I/min 0	700	750	900	1000	1200	1300	1417	1600			
					m ³ /h 0	42	45	54	60	72	78	85	96	108		
H = Total Head Meters Column of Water																
95VR01-1A	5.5	7.5	1	1A	22		21	20.5	20	19	17.5	16.5	13.5	10	6.5	
95VR01-00	7.5	10	1		30.5		27.5	26	25.5	24	23.5	22	20	17	13.5	
95VR02-2A	11	15	2	2A	44.5		43	42	41	38.5	36.5	34	28.5	21.5	15	
95VR02-00	15	20	2		62		55.5	53	51.5	49	47.5	45	41	35	28.5	
95VR03-2A	18.5	25	3	2A	75.5		70.5	68	66.5	62.5	59.5	56	48.5	38.5	28.5	
95VR03-00	22	30	3		93.5		84	80.5	78	74	72	69	62.5	53.5	44	
95VR04-2A	30	40	4	2A	108		100	97	94.5	89	85.5	81	71.5	59	46	
95VR04-00	30	40	4		125.5		112.5	108	105	99.5	96.5	92.5	84	72	60	
95VR05-2A	37	50	5	2A	139		127.5	123.5	120	113.5	109	103.5	92	76	60	
95VR05-00	37	50	5		156		140	134.5	130.5	123.5	120	114.5	104.5	89	74	
95VR06-2A	45	60	6	2A	170.5		156	150.5	146.5	138.5	134	127	113.5	94.5	75.5	
95VR06-00	45	60	6		188		169	161.5	157	149	144.5	138.5	126	108	89.5	

DIMENSIONS - 95 VR 50 HZ


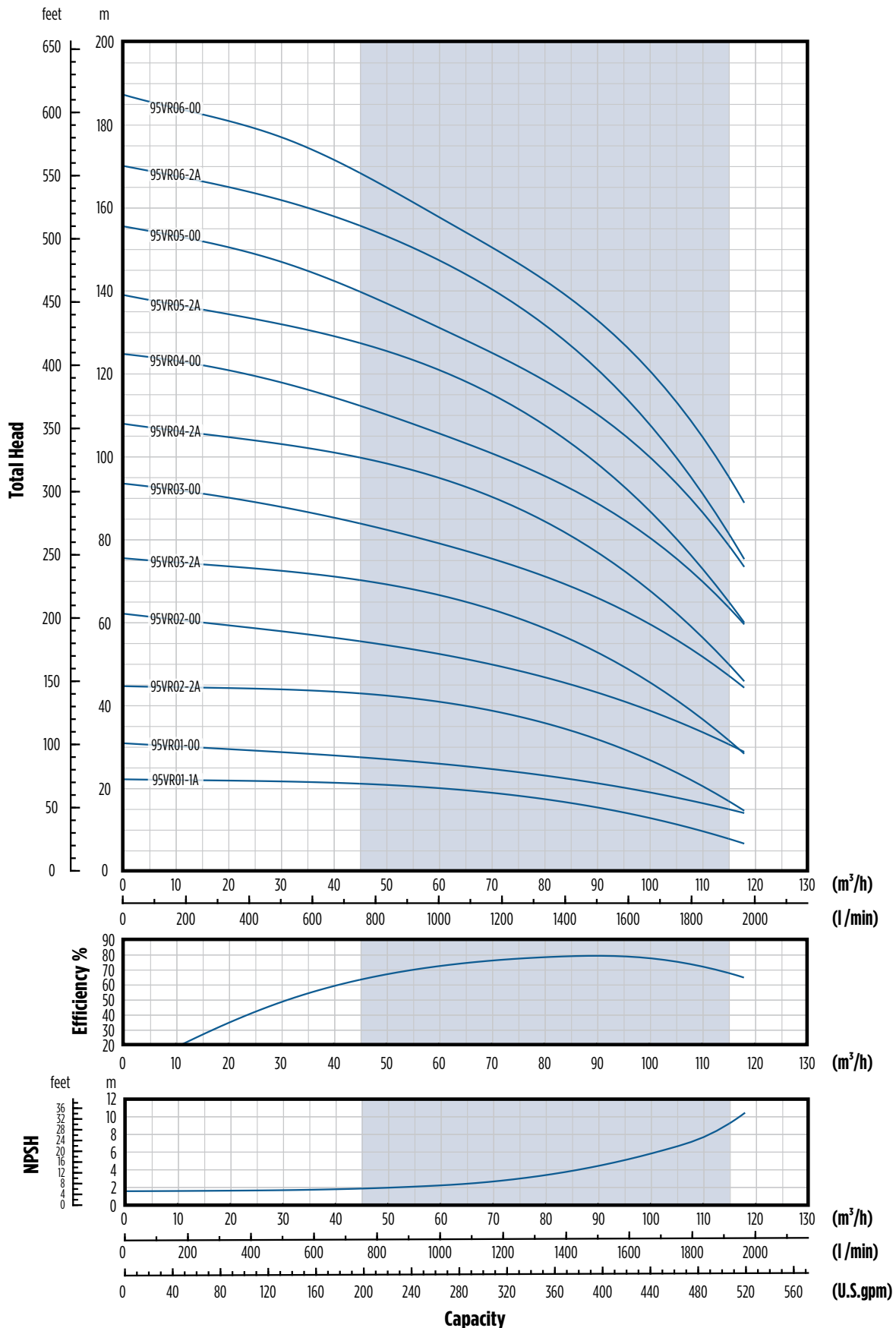
F version The pump is supplied without counter-flanges (Optional accessories, including bolts and joints).

Note: * All dimensions above are in mm.

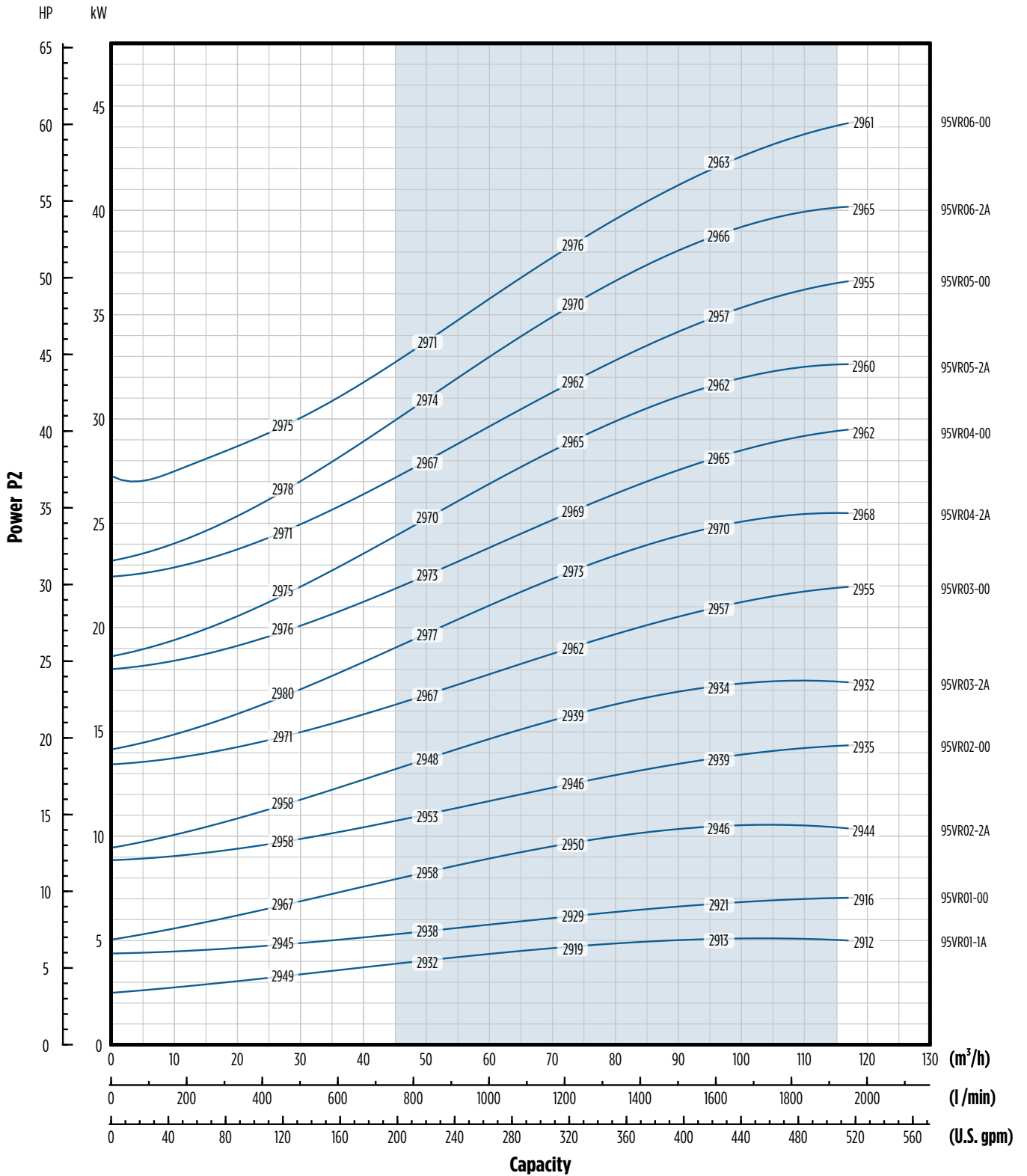
Model	Motor				Dimensions (mm)						Weight (kg)		
	Rated Power		Size	MTG	L1	L2*	L1+L2	M	D1	D2	PE	Motor	PMA
	kW	HP											
95VR01-1A	5.5	7.5	132	B5	737.1	328	1065.1	161	225	300	82.5	34	116.5
95VR01-00	7.5	10	132	B5	737.1	350	1087.1	161	225	300	82.5	36	118.5
95VR02-2A	11	15	160	B5	849.2	425	1274.2	198	248	350	89	58	147
95VR02-00	15	20	160	B5	849.2	476	1325.2	198	248	350	89	64	153
95VR03-2A	18.5	25	160	B5	941.3	542	1483.3	235	317	350	93	88.9	181.9
95VR03-00	22	30	180	B5	941.3	542	1483.3	238	317	350	93	108.7	201.7
95VR04-2A	30	40	200	B5	1038.4	658	1696.4	300	399	400	100	228	328
95VR04-00	30	40	200	B5	1038.4	658	1696.4	300	399	400	100	228	328
95VR05-2A	37	50	200	B5	1130.5	658	1788.5	300	399	400	104	242	346
95VR05-00	37	50	200	B5	1130.5	658	1788.5	300	399	400	104	242	346
95VR06-2A	45	60	225	B5	1222.6	699	1921.6	335	465	450	110.5	308	418.5
95VR06-00	45	60	225	B5	1222.6	699	1921.6	335	465	450	110.5	308	418.5

VR SERIES Vertical Multi-Stage Pumps

PERFORMANCE CURVES - 95 VR 50 HZ



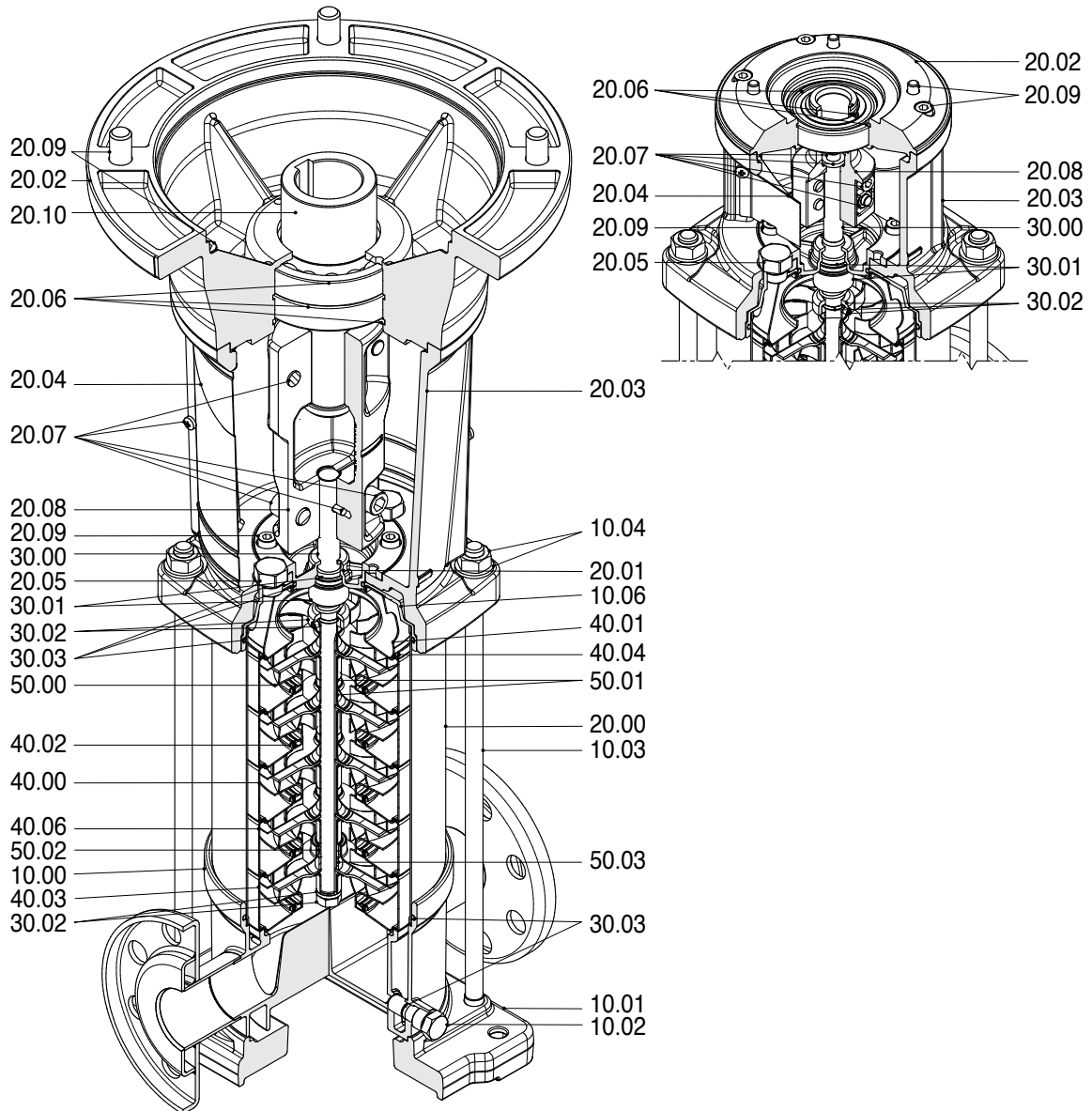
Specifications subject to change without prior notice.
Hydraulic characteristics are according to ISO standard 9906, Annex A.

POWER CURVES - 95 VR 50 HZ


VR SERIES Vertical Multi-Stage Pumps

MATERIALS OF CONSTRUCTION - 15-20 VR SERIES

Ref. No.	Parts Description	Type	Material			
			G - Standard Version		N - 316SS Version	
			ASTM/AISI	DIN/EN	ASTM/AISI	DIN/EN
10.00	Pump casing	Stainless Steel	CF8/AISI 304	1.4308	CF 8M / AISI 316	1.4408
10.02	Draining and priming cap	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
10.06	Upper flange	Stainless Steel	CF8/AISI 304	1.4308	CF 8M / AISI 316	1.4408
20.00	Outer case	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
20.01	Mechanical seal housing	Stainless Steel	AISI 304	1.4301	CF 8M / AISI 316	1.4408 / 1.4401
20.05	Filling plugs	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.00	Pump shaft	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.01	Kit mechanical seal	Silicon Carbide SiC, Carbon Graphite, EPDM, Stainless Steel	-	-	-	-
30.02	Kit mechanical seal fastening kit	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.03	Kit O-ring	EPDM	-	-	-	-
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
40.01	Stage centering outlet	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
40.02	Floating neck ring	PTFE/PPS	-	-	-	-
40.03	Initial stage housing	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
40.04	Last stage with diffuser	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
40.06	Stage housing and diffuser w/ bearing	Stainless Steel, Tungsten Carbide WC	AISI 304	1.4301	AISI 316	1.4401
50.00	Impeller	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
50.01	Impeller spacer	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
50.02	Intermediary sleeve	Tungsten Carbide WC	-	-	-	-
50.03	Intermediary sleeve spacer	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401

PUMP SECTION VIEW AND MAIN COMPONENT LIST - 15-20 VR 50 HZ


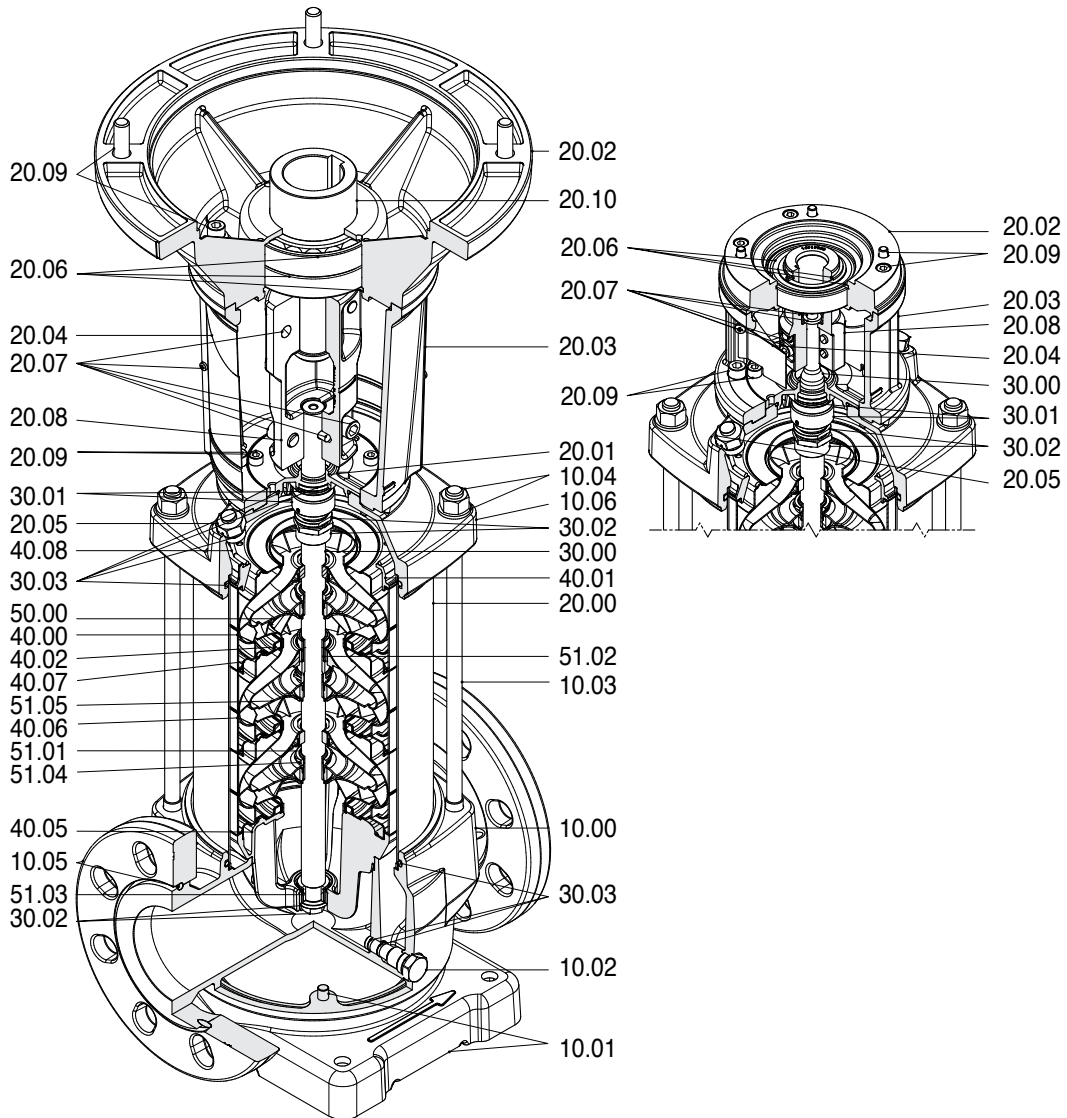
Ref. No.	Description
10.00	Pump casing
10.01	Pump fixing plate
10.02	Draining and priming cap
10.03	Tie bolt
10.04	Kit nuts and washers
10.06	Upper flange
20.00	Outer case
20.01	Mechanical seal housing
20.02	Motor flange
20.03	Motor bracket
20.04	Coupling guard
20.05	Filling plugs
20.06	Circlips and bearings
20.07	Coupling fasteners
20.08	Coupling
20.09	Kit motor screws

Ref. No.	Description
20.10	Motor shaft adapter
30.00	Pump shaft
30.01	Kit mechanical seal
30.02	Mechanical seal fastening kit
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage centering outlet
40.02	Floating neck ring
40.03	Initial stage housing
40.04	Last stage with diffuser
40.06	Stage housing and diffuser with bearing
50.00	Impeller
50.01	Impeller spacer
50.02	Intermediary sleeve
50.03	Intermediary sleeve spacer

VR SERIES Vertical Multi-Stage Pumps

MATERIALS OF CONSTRUCTION - 30-45-65-95 VR SERIES

Ref. No.	Parts Description	Type	Material					
			G - Standard Version		H - 304SS Version		N - 316SS Version	
			ASTM/AISI	DIN/EN	ASTM/AISI	DIN/EN	ASTM/AISI	DIN/EN
10.00	Pump casing	Cast Iron (G version)/ Stainless Steel (H & N version)	A48 Class 35	GJL-250	CR 8M / AISI 316	1.4408	CR 8M / AISI 316	1.4408
10.02	Draining and priming cap	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
10.06	Upper flange	Cast Iron (G version)/ Stainless Steel (H & N version)	A48 Class 35	GJL-250	CR 8M / AISI 316	1.4408	CF 8M / AISI 316	1.4408
20.00	Outer case	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
20.01	Mechanical seal housing	Stainless Steel	CF 8M / AISI 316	1.4308	CR 8M / AISI 316	1.4308	CF 8M / AISI 316	1.4408
20.05	Filling plugs	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
30.00	Pump shaft	Stainless Steel	AISI 431	1.4057	AISI 431	1.4057	AISI 329	1.4460
30.01	Kit mechanical seal	Silicon Carbide SiC, Carbon Graphite, EPDM, Stainless Steel	-	-	-	-	-	-
30.02	Kit mechanical seal fastening kit	Stainless Steel	AISI 316	1.4401	AISI 316	1.4401	AISI 316	1.4401
30.03	Kit O-ring	EPDM	-	-	-	-	-	-
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
40.01	Stage centering outlet	Stainless Steel	CR 8M / AISI 316	1.4308	CR 8M / AISI 316	1.4308	CF 8M / AISI 316	1.4408
40.02	Floating neck ring	PTFE	-	-	-	-	-	-
40.05	Stage centering inlet	Stainless Steel	AISI 316	1.4401	AISI 316	1.4401	AISI 316	1.4401
40.06	Stage housing and diffuser w/ bearing	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
40.07	Flange clamping neck ring	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
40.08	Spring ring	Stainless Steel	AISI 316	1.4401	AISI 316	1.4401	AISI 316	1.4401
50.00	Impeller	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
51.01	Split cone	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
51.02	Intermediary sleeve nut	Stainless Steel, Tungsten Carbide WC	AISI 316	1.4401	AISI 316	1.4401	AISI 316	1.4401
51.03	Journal sleeve	Stainless Steel, Tungsten Carbide WC	AISI 316	1.4401	AISI 316	1.4401	AISI 316	1.4401
51.04	Split cone nut	Stainless Steel	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401
51.05	Intermediary sleeve nut	Stainless Steel, Tungsten Carbide WC	AISI 304	1.4301	AISI 304	1.4301	AISI 316	1.4401

PUMP SECTION VIEW AND MAIN COMPONENT LIST - 30-45-65-95 VR 50 HZ


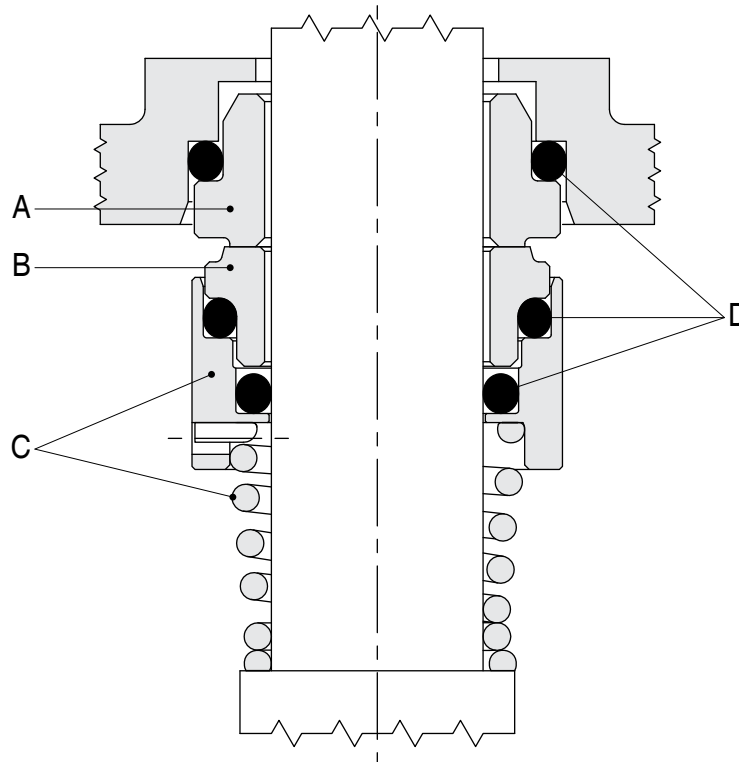
Ref. No.	Description
10.00	Pump casing
10.01	Pump fixing plate
10.02	Draining and priming cap
10.03	Tie bolt
10.04	Kit nuts and washers
10.05	Kit flanges ring
10.06	Upper flange
20.00	Outer case
20.01	Mechanical seal housing
20.02	Motor flange
20.03	Motor bracket
20.04	Coupling guard
20.05	Filling plugs
20.06	Circlips and bearings
20.07	Coupling fasteners
20.08	Coupling
20.09	Kit motor screws
20.10	Motor shaft adapter

Ref. No.	Description
30.00	Pump shaft
30.01	Kit mechanical seal
30.02	Mechanical seal fastening kit
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage centering outlet (ONLY 65/95 vers.)
40.02	Floating neck ring
40.05	Stage centering inlet
40.06	Stage housing and diffuser with bearing
40.07	Flange clamping neck ring
40.08	Spring ring
50.00	Impeller
51.01	Split cone
51.02	Intermediary sleeve nut
51.03	Journal sleeve
51.04	Split cone nut
51.05	Intermediate impeller with screw

VR SERIES Vertical Multi-Stage Pumps

MECHANICAL SEAL SPECIFICATIONS

(in accordance with EN 12756)



0011-4085 09/2012

Standard version

Model	Type					Position				Temperature
						A	B	C	D	
1	B	Q1	G	E	Carbon	Silicon Carbide	AISI 316	EPDM	-30°C +120°C	

Available on request

Model	Type					Position				Temperature (°C)
						A	B	C	D	
2	Q1	Q1	G	E	Silicon Carbide	Silicon Carbide	AISI 316	EPDM	-10°C +120°C	
3	Q1	Q1	G	V	Silicon Carbide	Silicon Carbide	AISI 316	FKM	-10°C +120°C	
4	B	Q1	G	V	Carbon	Silicon Carbide	AISI 316	FKM	-10°C +120°C	

Type	Material
B	Carbon
E	EPDM
G	AISI 316
Q1	Silicon Carbide
V	FKM

COMPATIBILITY FLUID / SEAL MATERIALS

Liquid	Concentration (%)	Temperature Min/Max (°C)	VR models				
			3-5-9-15-20		30-45-65-95		
			STD	N	G	H	N
Acetic acid	80	-10 +70	1	1		1	1
Alkaline degreaser	-	-	3	3	3	3	3
Aluminium sulfate	30	-5 +50		2			2
Ammonia in water	25	-20 +50	1	1		1	1
Ammonium sulfate	10	-10 +60		2			2
Benzoic acid	70	0 +70	4	4		4	4
Caustic soda	25	0 +70	2	2		2	2
Chloroform	100	-10 +30	4	4		4	4
Citric acid	5	-10 +70	1	1		1	1
Cleaning products	10	-5 +100	3	3		3	3
Copper sulfate	20	0 +30		3			3
Cutting fluid	100	-5 +110	4	4		4	4
Deionised, demineralised water	100	-25 +110	1	1		1	1
Diathermic oil	100	-5 +110	4	4	4	4	4
Emulsion oil and water	any	-5 +90	4	4	4	4	4
Ethylene glycol	30	-30 +120	1	1		1	1
Formic acid	5	-15 +25	1	1		1	1
Glycerine	100	+20 +90	1	1	1	1	1
Hydrochloric acid	2	-5 +25		3			3
Hydroxide sodium	25	0 +70	2	2		2	2
Iron sulfate	10	-5 +30		1			1
Mineral oil	100	-5 +110	4	4	4	4	4
Nitric acid	50	-5 +30	3	3		3	3
Perchloroethylene	100	-10 +30	4	4	4	4	4
Phosphates-polyphosphates	10	-5 +90		3			3
Phosphoric acid	10	-5 +30		1			1
Propylene glycol	30	-30 +120	1	1	1	1	1
Sodium bicarbonate (Baking soda)	10	+60		1			1
Sodium hypochlorite	1	-10 +25		3			3
Sodium nitrate	10	+60	1	1	1	1	1
Sodium sulfate	15	-10 +40	2	2	2	2	2
Sulphuric acid	2	-10 +25		4			4
Tannic acid	20	0 +50		1			1
Tartaric acid	50	-10 +25	3	3		3	3
Trichloroethylene	100	-10 +40	4	4	4	4	4
Uric acid	80	-10 +80	1	1		1	1
Vegetable oil	100	-5 +110	1	1	1	1	1
Water	100	-5 +120	1	1	1	1	1
Water condensate	100	-5 +100	1	1		1	1
Water detergents, mineral oils mixture	10	-5 +80	3	3	3	3	3

The table is to be considered as a general guide. It is important to consider the specific working conditions; in particular to consider the concentration of the pumped liquid, the specific weight of the liquid and/or the viscosity, the liquid temperature and pressure. All these conditions are relevant for the motor and pump performance. When pumping dangerous liquids, it is recommended to take safety precautions. For further details, please contact us.

According to COMMISSION REGULATION (EU) No 547/2012

MEI - Minimum Efficiency Index

In order to achieve a comparable efficiency threshold-value across all legally covered water pumps, an index of pump size, specific speed, and rotational speed has been created: the MEI (Minimum Efficiency Index).

MEI covers best point (BEP), part load (PL), and overload (OL) efficiencies as water pumps may be chosen with safety margins and hence do not run at best efficiency point.

This ensures high and flat efficiency curves and consequently an efficient operation in real life. MEI means the dimensionless scale unit for hydraulic pump efficiency at BEP, PL and OL. MEI is a measure for the quality of a pump size in respect to the efficiency.

The higher the value of the MEI is, the better is the pump size in respect to efficiency and the lower is the yearly energy consumption if pumps of this size are installed.

The upper limit of values of the MEI is principally open and depends only on physical and technological constraints. MEI is based on the full impeller diameter.

The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter. For benchmark efficiency graphs, go to:

www.europump.org/efficiencycharts.

Benchmark MEI ≥ 0.70

Notes

Notes

Notes



Franklin Electric

Franklin Electric (Aust) Pty Ltd
106-110 Micro Circuit
Dandenong South, Vic 3175
Tel: +61 3 9799 5000

Toll Free: 1300 FRANKLIN
1300 372 655

franklinwater.com/au

UNITED STATES

Franklin Electric Co., Inc.
9255 Coverdale Road,
Fort Wayne, Indiana 46809 USA
Tel: +1.260.824.2900
Fax: +1.260.824.2909