Vertical centrifugal immersible pumps

Technical specification booklet
series: DPVCI 2 - 4 - 6 - 10 - 15

50Hz / 60Hz (DIN/IEC)

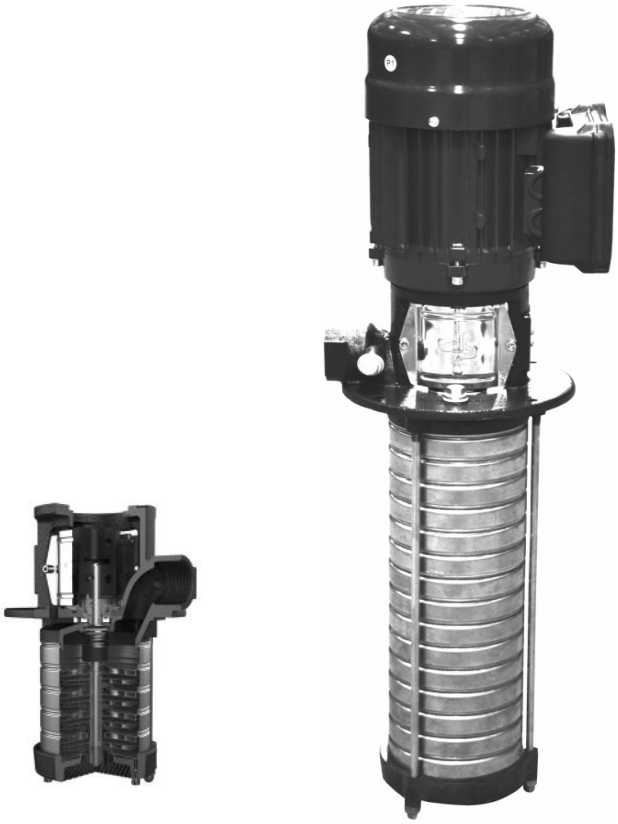


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1 Pump introduction

1.1 General

The vertical, single or multi-stage centrifugal immersible pump series is designed for pumping water, filtered cooling fluids or lightly aggressive, watery mediums from a storage tank.
The suction side at the bottom of the pump is equipped with a stainless steel strainer. The discharge side is located at the motor stool.

Where the required duty point corresponds with the amount of stages, in some applications the immersible length has to diver from this. Therefore it is possible for the DPVCI range to use empty stages to create the required length. In that case the impellers are mounted in the casings closest to the suction casing.

The hydraulic assembly is driven by an electric motor. All hydraulic parts of the pump are made of stainless steel.



DPVCI

1.2 Model key

Table 1: Model key Example DPVCI 10/8(18) B

	DP	VCI	10	/8	(18)	B	
Label	DP						Product Label
Material		VCI					Cast Iron suction casing and motor stool, 1.4301 / AISI 304 hydraulics
			10				Appr. capacity in m3/h at Qopt
				/8			Number of impellers
					(18)		Total number of stages
						B/C	Design version

1.3 Operation

During centrifugal operation of the pump an negative pressure is created at the inlet of the first impeller. This negative pressure enables the medium to enter the pump at the suction connection at the bottom of the pump. Every impeller is placed in a stage casing. The passage of this stage determines the capacity of the pump. The diameter of the stages is related to the centrifugal forces and its “stage pressure”: the more stages, the more pressure.
This total capacity and raised pressure will be guided to the outside of the pump at the motor stool.

1.4 Measuring, draining and venting

The pump is provided with plugs for measuring and venting, both located at the pump outlet connection. These connections are meant to vent the pump system when the pump is not in operation or to measure the discharge pressure of the pump using a G 1/4 connection. Also on the motor stool two connections are available to vent the storage tank.

1.5 Working range

The working range is depending on the application and the combination of pressure and temperature. For specific and detailed limits please consult the working ranges as described in the paragraph 1.8. The overall working range of the pumps can be summarised as follows:

Table 2: Specification of the working range

Pump type	DPV	note
Ambient temperature [°C]	-20 up to 40	1
Minimum inlet pressure	$NPSH_{req.}$ + 1m	
Viscosity [cSt]	1-100	2
Density [kg/m^3]	1000-2500	2
Cooling	forced motor cooling	3
Minimum frequency [Hz]	30	
Maximum frequency [Hz]	60	4
Allowable size of solids pumped	5µm to 1mm	

1. If the ambient temperature exceeds the above value or the motor is located more than 1000 m above sea level, please see 1.5.3
2. Deviation in viscosity and/or density could require an adapted motor power. Please contact your supplier for more detailed advice.
3. The free space above the motor cooling fan must be at least 1/4 of the diameter of the inlet of the cooling fan in order to have a sufficient flow of (cooling) air.
4. Pumps that are intended for 50 Hz operation, may not be connected to 60 Hz power supply.

1.5.1 Minimum capacity

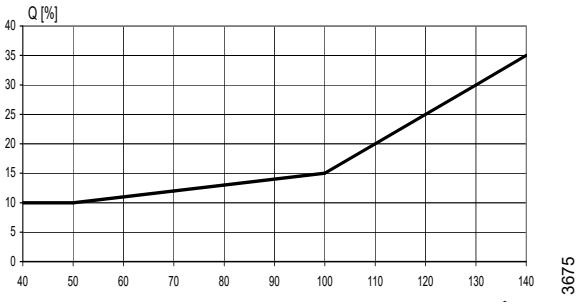
For minimum capacity at medium temperature of 20°C, see table 3: for higher temperatures, see table 4.

A minimum capacity has to be secured to prevent the pump from overheating, gathering gas, cavitation etc. The minimum capacity corresponds to all percentage of the optimum flow Q_{opt} in relation to the temperature of the liquid pumped. Also a minimum medium level needs to be taken into consideration.

Table 3: Minimum capacity (Q_{min})

size	Q_{min} [m^3/h]	
	50 Hz	60 Hz
	2 pole	2 pole
2	0,2	0,2
4	0,4	0,5
6	0,6	0,8
10	1,1	1,3
15	1,9	2.3

Table 4: Minimum capacity vs.temperature (in % of Q optimum)



1.5.2 Minimum fluid level

For ambient fluid conditions the minimum fluid level for the pumps in the storage tank is mentioned at the dimensions pages. In case of an increased required vapour pressure for fluids at higher operation temperatures, a system analyses is recommended to determine the required NPSH to avoid cavitation and air enclosure inside the pump.

1.5.3 Ambient temperature and higher altitude

If the ambient temperature exceeds the maximum allowed value, or if the motor is located more than 1000 m above sea level, the motor cooling is less effective and could require an adapted motor power. See below table for the change in power output or contact your supplier for more detailed advice.

Table 5: Increase of required motor power

Ambient temperature [°C]	Above sea level [m]	Increase of required power
40	1000	0%
45	1625	2%
50	2250	5%
55	2875	11%
60	3500	18%
65	4125	25%
70	4750	33%

1.6 Basic material variants

Table 6: Basic material variants

Model	Hydraulic	Casing	Sealing
VC	1.4301	JL1040	[1]EPDM

1. see medium handled list for correct seal material

1.7 Pump bearing

Medium lubricated stage bearing
Tungsten Carbide against Ceramic

1.8 Modular selection

To suit almost every application the pump is assembled out of modules which can be selected depending on the required working range.

Basic modules are:

- Basic pump model, which defines the capacity, pressure and basic material.
  Temperature range -20 up to 120°C
- Total stages, which defines the length of the pump suitable for the storage tank.
- Sealing, which define the elastomers and the mechanical seal. A cartridge seal construction is equipped as default. Temperature and pressure range, see chapter 4.1
- Electric motor, which defines all requirements of the motor such as motor size, power, voltage, frequency and all possible motor accessories.

  For assembling the total amount of stages to the motor stool an additional upper stage casing is required. therefore when all visible stage stages are counted from the hydraulics, the sum will be the total amount of stages added by 1.

1.9 Approval

CE Conformity with European Safety Directive

2 Performance characteristics

2.1 Performance range 50Hz

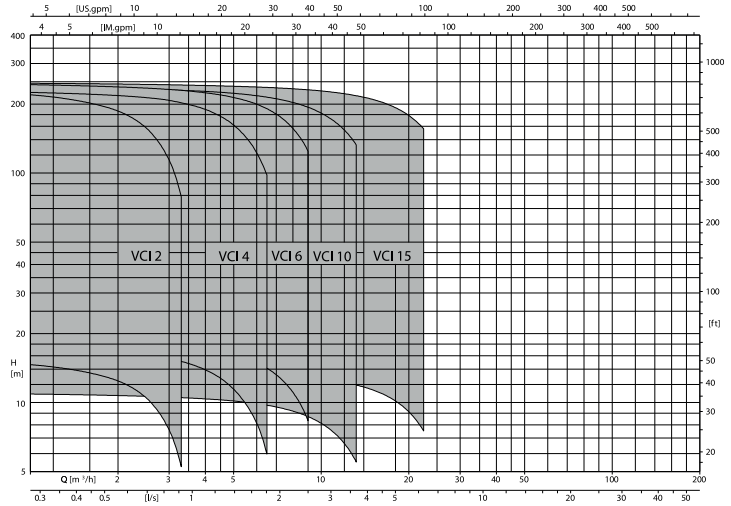


Figure 1: Performance range DPVCI 2, 4, 6, 10B, 15C 50Hz

2.2 Performance range 60Hz

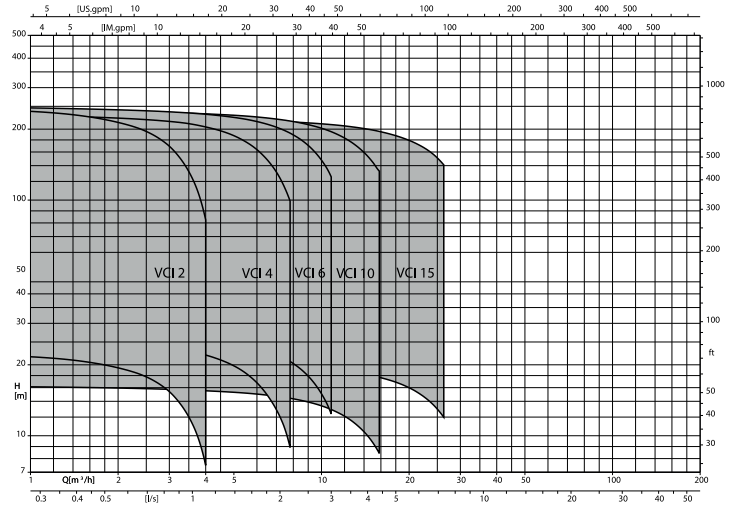


Figure 2: Performance range DPVCI 2, 4, 6, 10B, 15C 60Hz

2.3 Performance curve details

The performance diagrams give a global overview of all the pump models the shaded models are mentioned in this documentation. Detailed characteristics are given for each model showing the hydraulic efficiency, $NPSH_{req}$, and shaft power as well.

The performance of the pump depends on the number of stages. As per example:

DPVCI 4/20(18) B:	series 4	20 stages with 18 full head impellers

The detailed performance curves are in accordance with ISO 9906:2012 (Grade 3B).

The pumps van be configured with multiple types of motors. Therefore the performance data, like Q/H, efficiency and shaft power used for published curves are converted to the average speed per motor power. To refine this data the published data has to be corrected accordingly.

The characteristics given are based on:

- De-aerated water at a temperature of 20 °C
- Density of 1,0 kg/dm^3
- Kinematical viscosity of 1 mm^2/s (1 cst)

2.4 Minimum efficiency index

Per January 1st 2015 for multistage pumps (reference 50Hz and 2 poles) a new Commission Regulation (EU) No 547/2012 as part of the Directive 2009/125/EC is mandatory.
According to this the pumps need to apply to a new Minimum Efficiency Index (MEI). This value is set to be >= 0.40

For the design version 2 - 10B, 15C immersible pump range the following values are applicable:

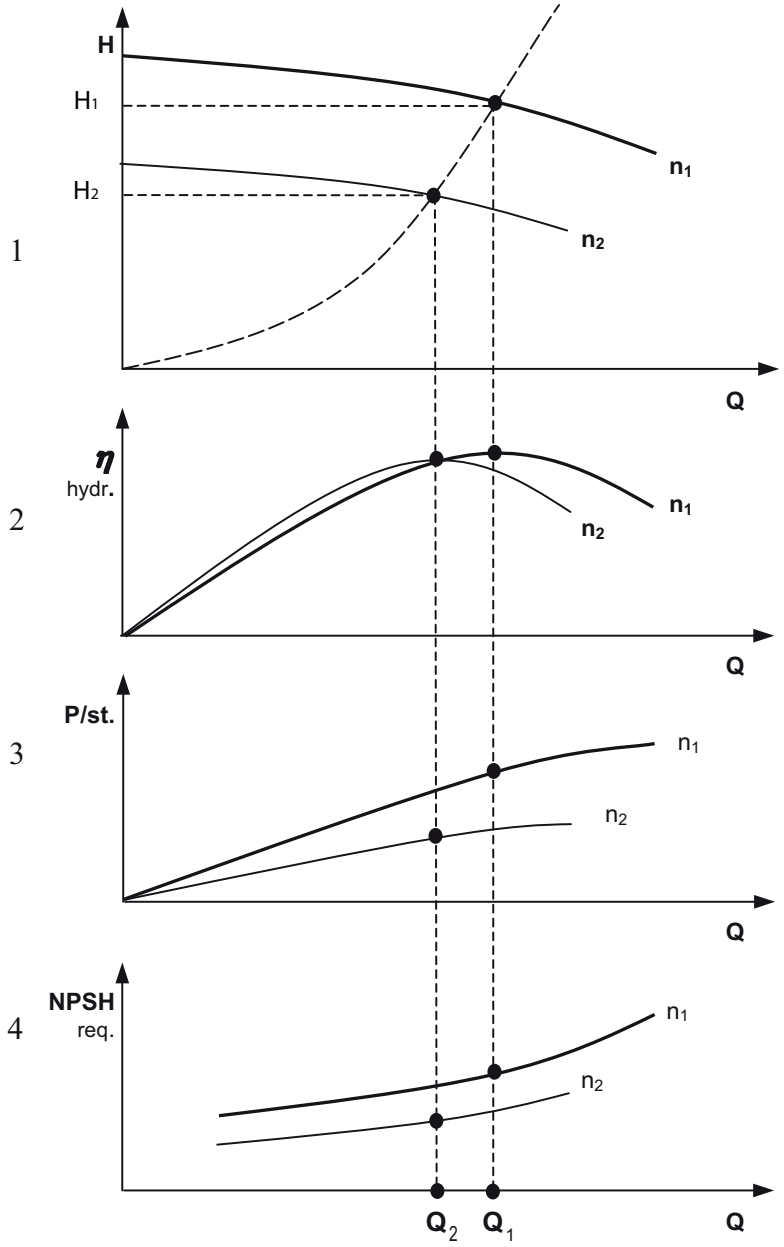
Table 7: Minimum efficiency index

Pump range	Minimum Efficiency index
DPV 2	MEI ≥ 0.70
DPV 4	MEI ≥ 0.70
DPV 6	MEI ≥ 0.70
DPV 10	MEI ≥ 0.70
DPV 15	MEI ≥ 0.70

2.5 Performance with variable frequency drive

The minimum frequency of the DP motor should be limited to 30 Hz to ensure sufficient cooling. When the rotational speed exceeds the nominal speed of the motor, make sure that the power output of the motor is suitable to drive the corresponding pump model.

The performance of the pump differs from the fixed speed performance according to the recalculation scheme.



$$Q_2 = \frac{n_2}{n_1} \cdot Q_1$$

$$H_2 = \frac{(n_2)^2}{(n_1)^2} \cdot H_1$$

$$\eta_2 = 1 - \left((1 - \eta_1) \cdot \frac{(}{(} \right.$$

$$P_2 = \frac{(n_2)^3}{(n_1)^3} \cdot P_1$$

$$NPSH_2 = \frac{(n_2)^2}{(n_1)^2} \cdot N$$

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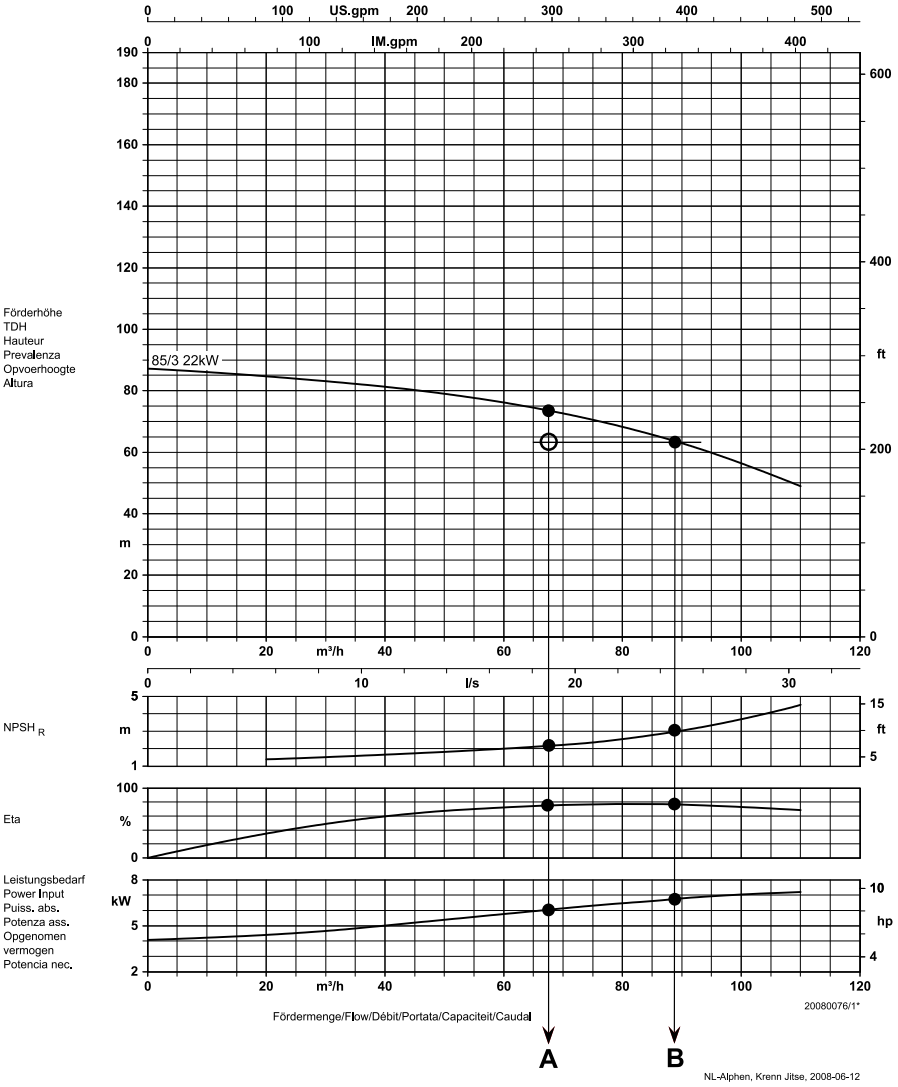
Figure 3: Performance characteristics

2.6 How to read the values from the curves

To find the required hydraulic information from the published curves, it is important to know the application in which the pump has to be installed. There are two main distinction to be made:

A Flow determined (like booster sets and cleaning) → Opening taps

B Pressure determined (like boiler feed and reverse osmosis systems) → Facing counter pressure.



Pump size / no of stages.
Installed motor power

Capacity @ Pressure

NPSH (m)

Hydraulic efficiency (%)

Required power (P2)

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Figure 4: How to read the values from the curves

O Calculated duty point
● Actual hydraulic performance
A Flow determined
B Pressure determined

3 Curves and dimensions

3.1 Hydraulic performance curve DPVCI 2 B - 50Hz -2 pole

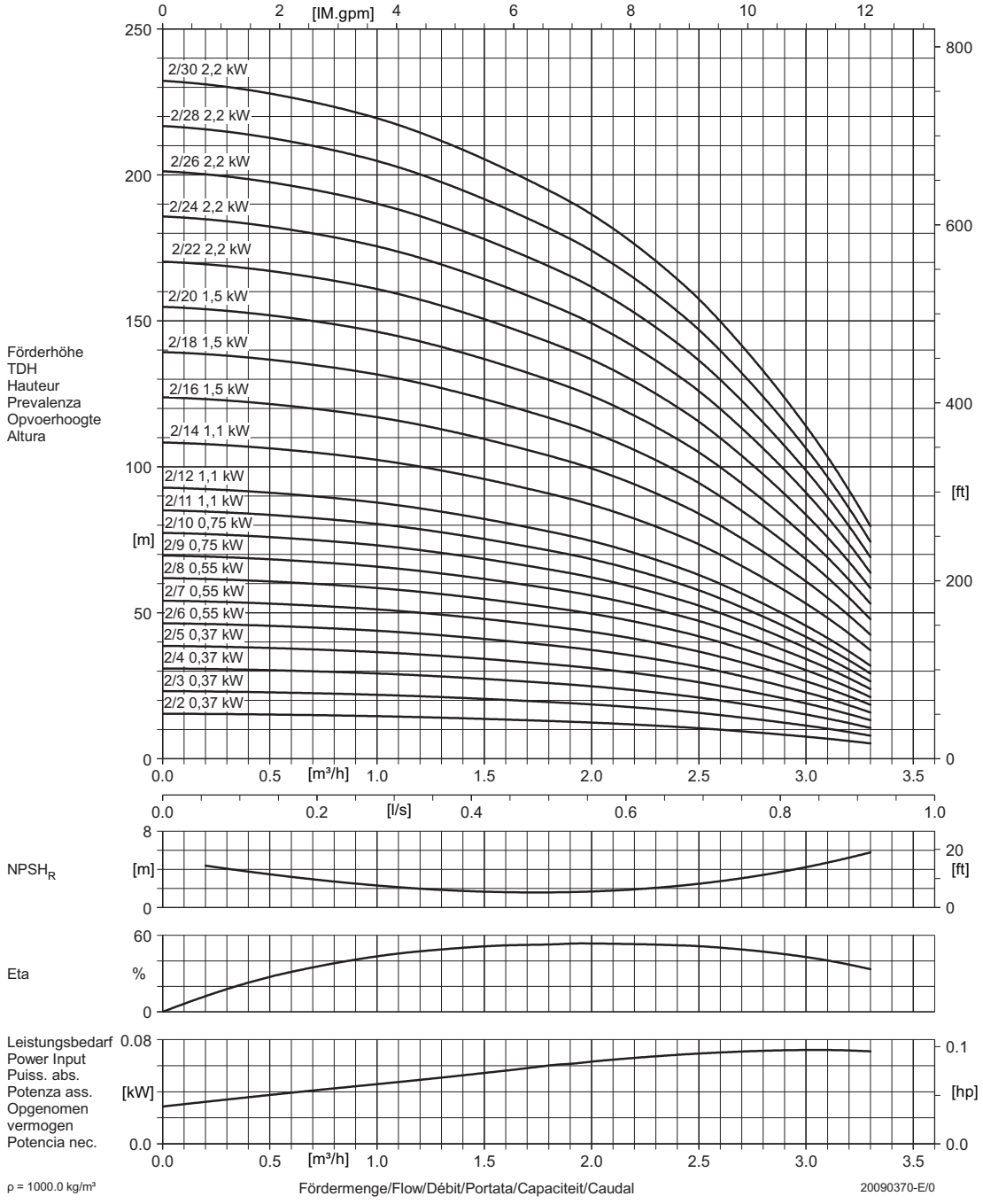


Figure 5: Performance curve DPVCI 2 B - 50Hz - 2 pole

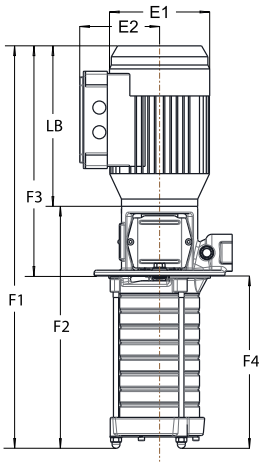
3.2 DPVCI 2 B - 50Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

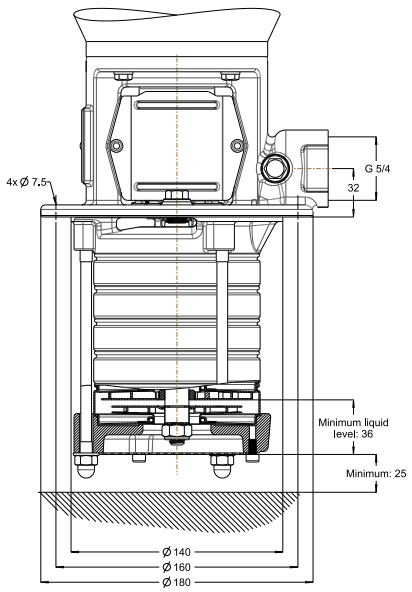
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 2/16(30) F3=396mm, F4=732mm.

Table 8: General dimensions



*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
2/2(2)	PN10	0,37	134	107	219	445	226	315	130	14
2/3(3)		0,37	134	107	219	466	247	315	151	14
2/4(4)		0,37	134	107	219	488	269	315	173	14
2/5(5)		0,37	134	107	219	509	290	315	194	15
2/6(6)		0,55	134	107	243	555	312	339	216	17
2/7(7)		0,55	134	107	243	576	333	339	237	17
2/8(8)		0,55	134	107	243	598	355	339	259	18
2/9(9)		0,75	150	115	234	620	386	340	280	20
2/10(10)		0,75	150	115	234	642	408	340	302	20
2/11(11)		1,1	150	115	264	693	429	370	323	23
2/12(12)		1,1	150	115	264	715	451	370	345	23
2/14(14)	PN25	1,1	150	115	264	758	494	370	388	24
2/16(16)		1,5	176	141	280	827	547	396	431	29
2/18(18)		1,5	176	141	280	870	590	396	474	29
2/20(20)		1,5	176	141	280	913	633	396	517	30
2/22(22)		2,2	176	141	280	956	676	396	560	35
2/24(24)		2,2	176	141	280	999	719	396	603	36
2/26(26)		2,2	176	141	280	1042	762	396	646	36
2/28(28)		2,2	176	141	280	1085	805	396	689	37
2/30(30)		2,2	176	141	280	1128	848	396	732	38



3.3 Hydraulic performance curve DPVCI 4 B - 50Hz - 2 pole

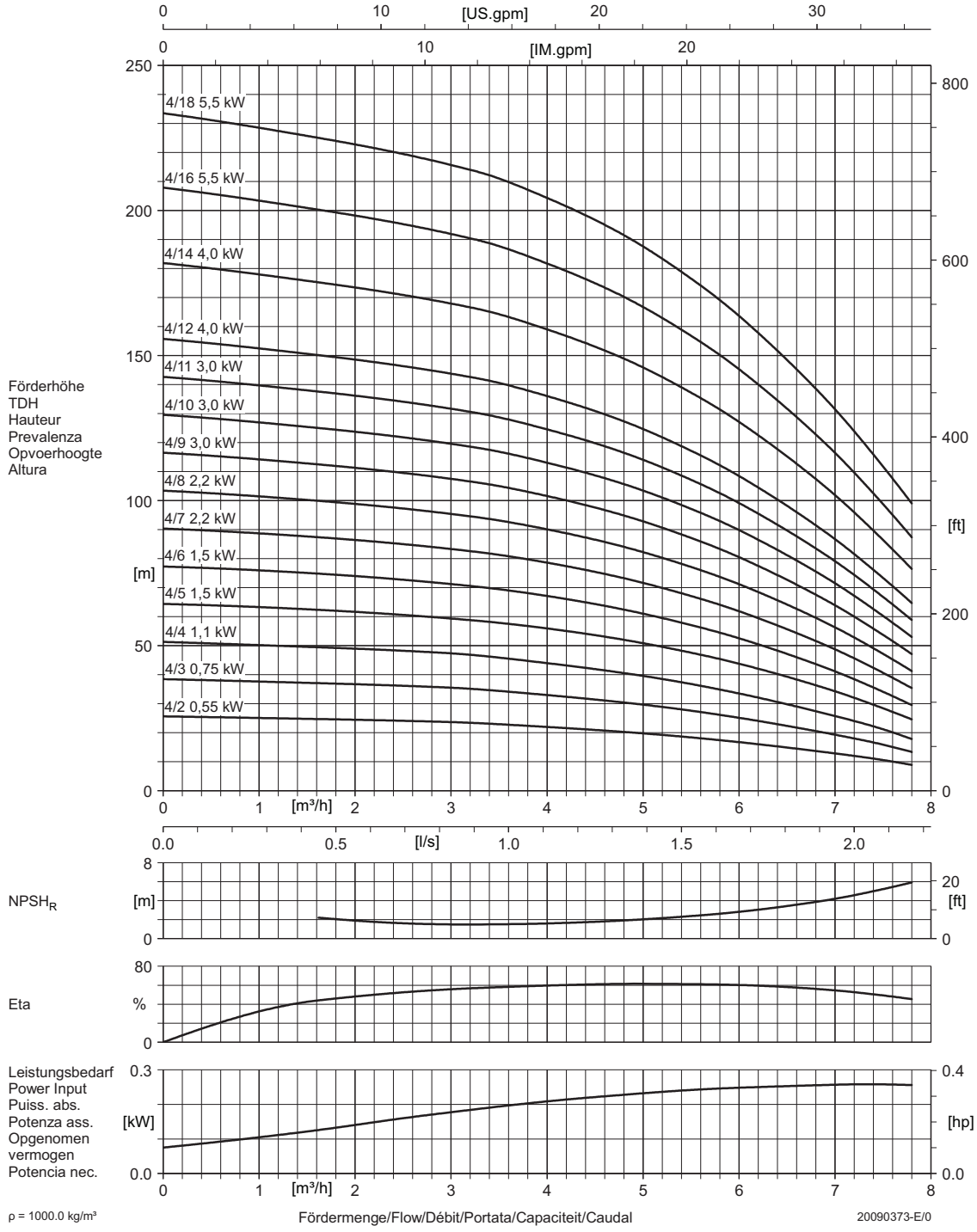


Figure 6: Performance curve DPVCI 4 B - 50Hz - 2 pole

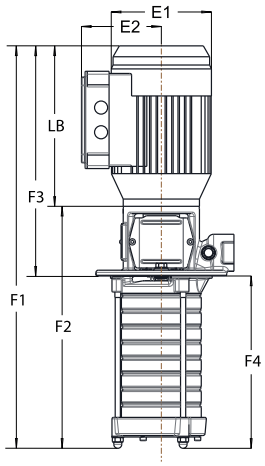
3.4 DPVCI 4 B - 50Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

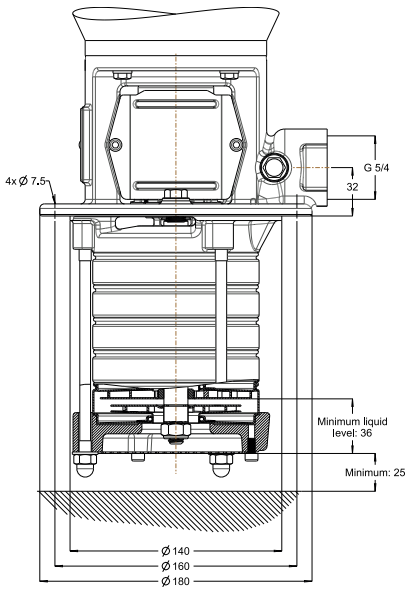
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 4/16(22) F3=442mm, F4=560mm.

Table 9: General dimensions



*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
4/2(2)	PN10	0,37	134	107	219	445	226	316	130	14
4/3(3)		0,55	134	107	243	490	247	339	151	16
4/4(4)		0,55	134	107	243	512	269	339	173	16
4/5(5)		0,75	150	115	234	534	300	340	194	19
4/6(6)		1,1	150	115	264	586	322	370	216	21
4/7(7)		1,1	150	115	264	607	343	370	237	22
4/8(8)		1,5	176	141	280	655	375	396	259	26
4/9(9)		1,5	176	141	280	676	396	396	280	26
4/10(10)		1,5	176	141	280	698	418	396	302	26
4/11(11)		2,2	176	141	280	719	439	396	323	30
4/12(12)	PN25	2,2	176	141	280	741	461	396	345	30
4/14(14)		2,2	176	141	280	784	504	396	388	31
4/16(16)		3	195	145	316	873	557	442	431	43
4/18(18)		3	195	145	316	916	600	442	474	43
4/20(20)		3	195	145	316	959	643	442	517	44
4/22(22)		4	223	167	324	1010	686	450	560	54
4/24(24)		4	223	167	324	1053	729	450	603	55
4/26(26)		4	223	167	324	1096	772	450	646	72
4/26(28)		4	223	167	324	1139	815	450	689	74
4/26(30)		4	223	167	324	1182	858	450	732	74



3.5 Hydraulic performance curve DPVCI 6 B - 50Hz - 2 pole

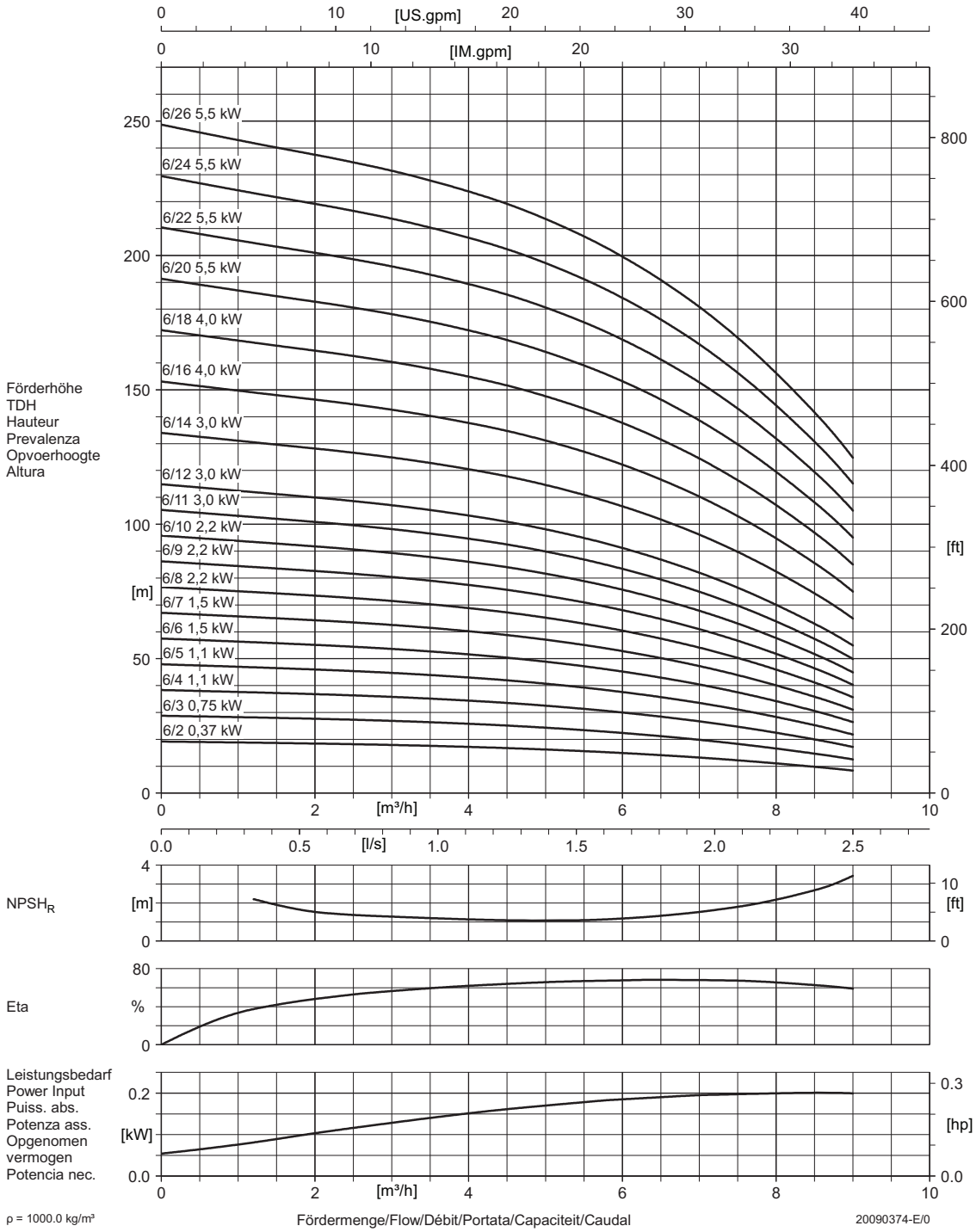


Figure 7: Performance curve DPVCI 6 B - 50Hz - 2 pole

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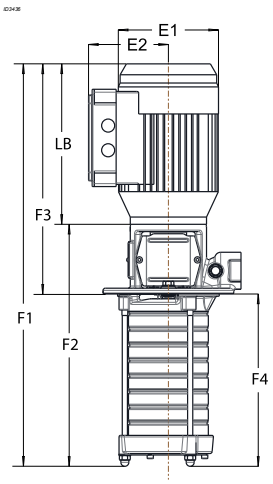
3.6 DPVCI 6 B - 50Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

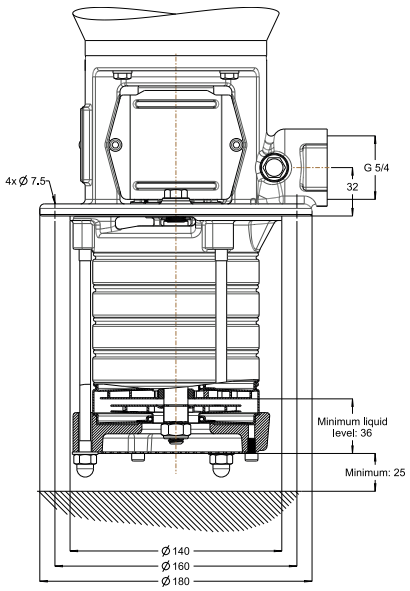
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 6/12(26) F3=442mm, F4=740mm.

Table 10: General dimensions

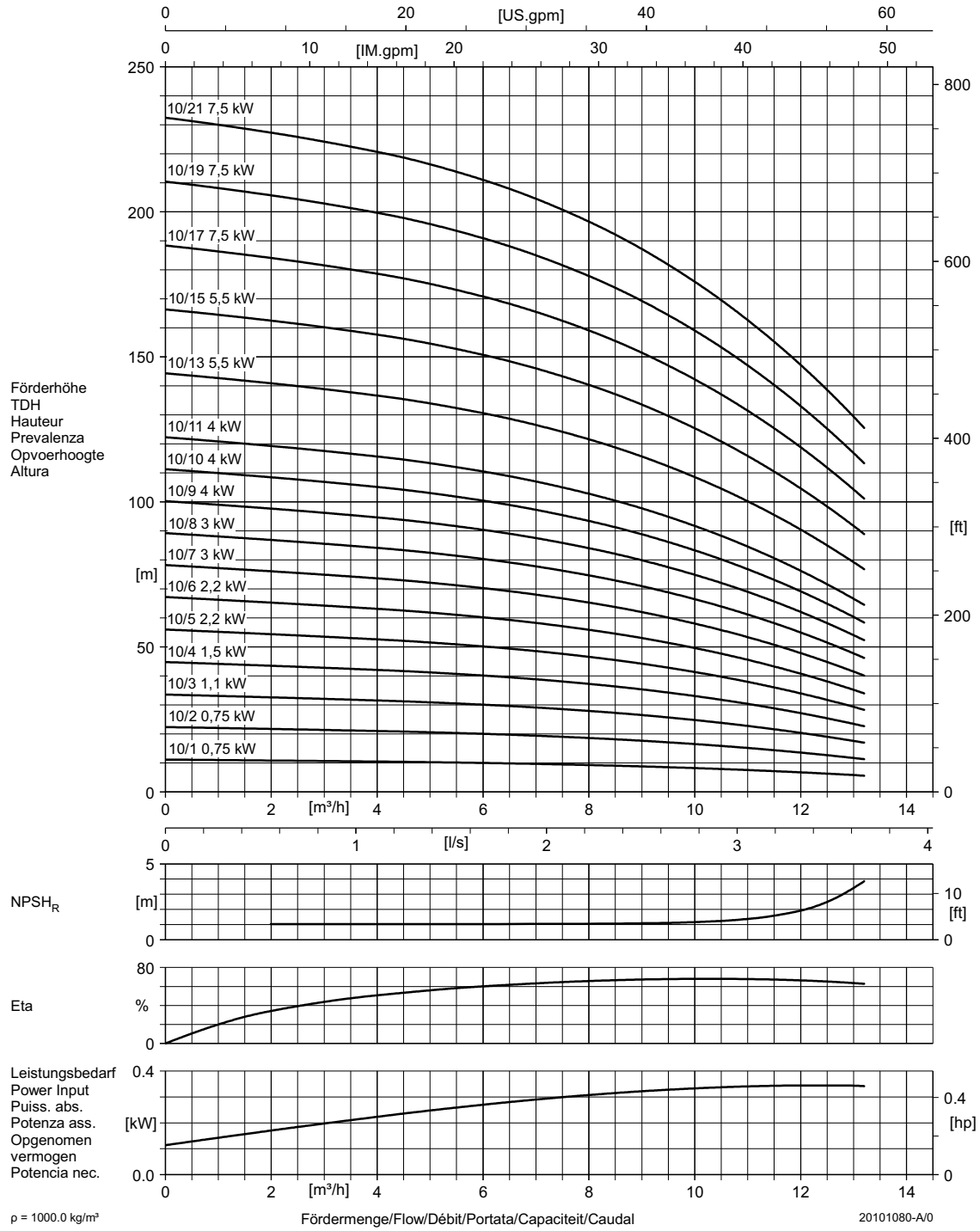


*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
6/2(2)	PN10	0,37	134	107	219	455	236	316	140	14
6/3(3)		0,75	150	115	234	505	271	340	165	18
6/4(4)		1,1	150	115	264	560	296	370	190	21
6/5(5)		1,1	150	115	264	585	321	370	215	21
6/6(6)		1,5	176	141	280	636	356	396	240	25
6/7(7)		1,5	176	141	280	661	381	396	265	26
6/8(8)		2,2	176	141	280	686	406	396	290	29
6/9(9)		2,2	176	141	280	711	431	396	315	29
6/10(10)		2,2	176	141	280	736	456	396	340	30
6/11(11)	PN25	3	195	145	316	807	491	442	365	41
6/12(12)		3	195	145	316	832	516	442	390	42
6/14(14)		3	195	145	316	882	566	442	440	42
6/16(16)		4	223	167	324	940	616	450	490	52
6/18(18)		4	223	167	324	990	666	450	540	53
6/20(20)		5.5	266	178	329	1121	792	531	590	88
6/22(22)		5.5	266	178	329	1171	842	531	640	89
6/24(24)		5.5	266	178	329	1221	892	531	690	90
6/26(26)		5.5	266	178	329	1271	942	531	740	91
6/26(28)		5.5	266	178	329	1321	992	531	790	91
6/26(30)		5.5	266	178	329	1371	1042	531	840	92



3.7 Hydraulic performance curve DPVCI 10 B - 50Hz - 2 pole



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Figure 8: Performance curve DPVCI 10 B - 50Hz- 2 pole

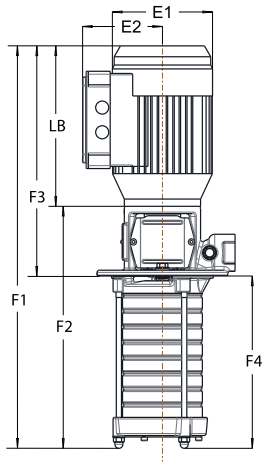
3.8 DPVCI 10 B - 50Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

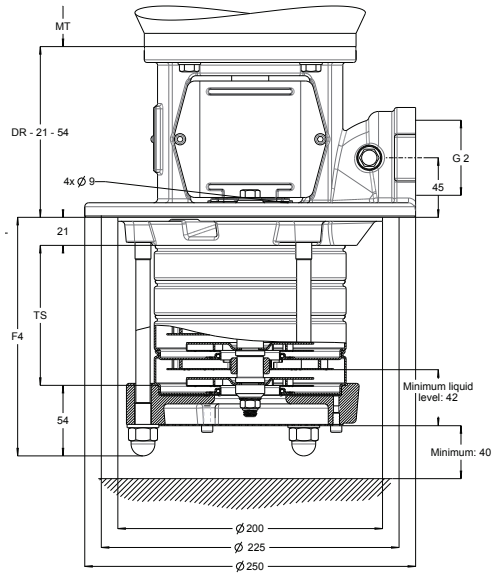
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 10/8(13) F3=455mm, F4=445mm.

Table 11: General dimensions

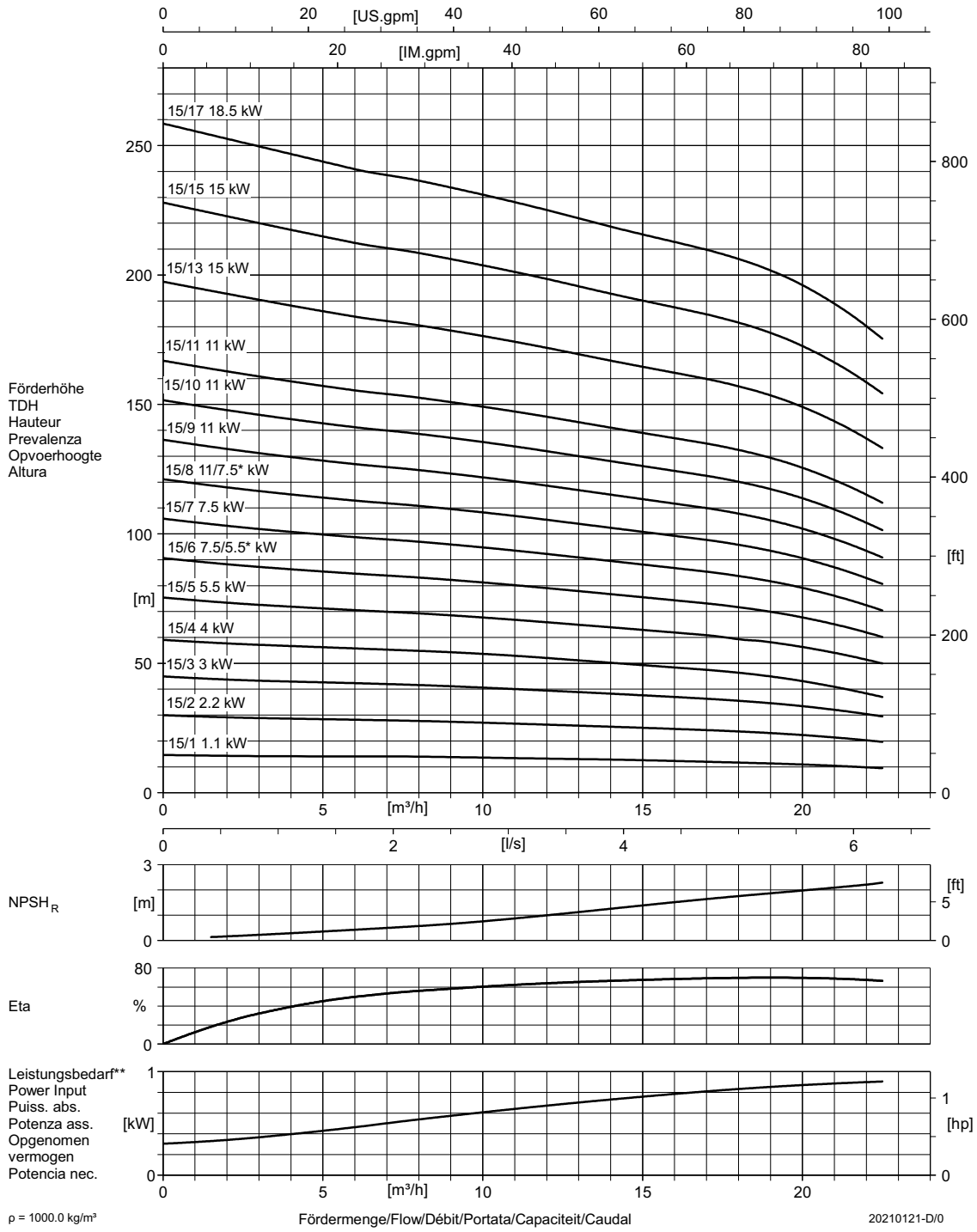


*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
10/1(2)	PN10	0,75	150	115	234	497	263	343	154	17
10/2(2)		0,75	150	115	234	497	263	343	154	17
10/3(3)		1,1	150	115	264	554	290	373	181	20
10/4(4)		1,5	176	141	280	606	326	399	207	32
10/5(5)		2,2	176	141	280	633	353	399	236	36
10/6(6)		2,2	176	141	280	686	406	399	287	37
10/7(7)		3	195	145	316	732	416	455	313	47
10/8(8)		3	195	145	316	758	442	445	313	48
10/9(9)	PN25	4	223	167	324	792	468	453	339	58
10/10(10)		4	223	167	324	819	495	453	366	58
10/11(11)		4	223	167	324	845	521	453	392	59
10/13(13)		5,5	266	178	329	984	655	539	445	93
10/15(15)		5,5	266	178	329	1037	708	539	498	94
10/17(17)		7,5	266	178	377	1138	761	587	551	127
10/19(19)		7,5	266	178	377	1191	814	587	604	129
10/21(21)		7,5	266	178	377	1244	867	587	657	130



3.9 Hydraulic performance curve DPVCI 15 C - 50Hz - 2 pole



**Decreased motor power: Qmax = 19 m³/h*

***Power input based on a V 15/3 C of this hydraulic speed design*

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Figure 9: Performance curve DPVCI 15 C - 50Hz - 2 pole

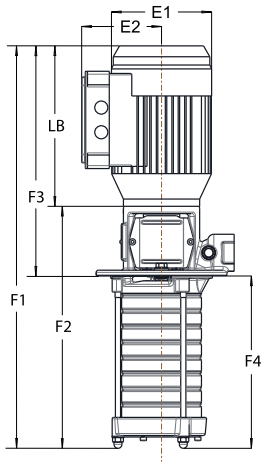
3.10 DPVCI 15 C - 50Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 15/3(15) F3=445mm, F4=498mm.

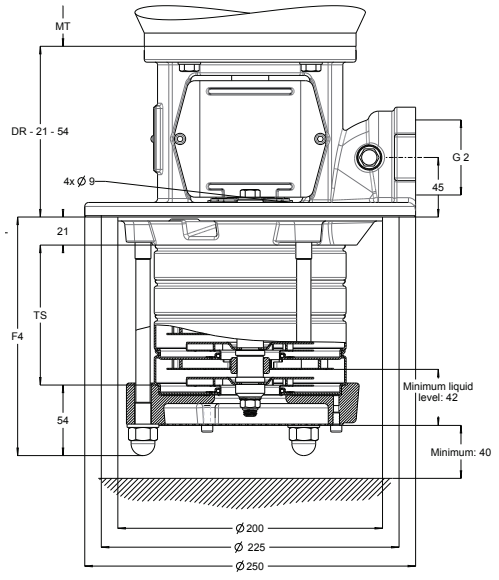
Table 12: General dimensions



*including packing

Model	Seal pres-sure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
15/1(2)	PN10	1,1	150	115	264	578	314	394	184	27
15/2(2)		2,2	200	248	281	605	324	421	184	38
15/3(3)		3	215	157	317	692	375	467	225	47
15/4(4)		4	248	168	356	772	416	506	266	57
15/5(5)		5,5	288	197	432	970	538	663	307	98
15/6(6)		5,5 [1]	288	197	432	1011	579	663	307	100
15/6(6)		7,5	288	197	432	1011	579	663	348	100
15/7(7)	PN16	7,5	288	197	432	1052	620	663	389	101
15/8(8)		7,5 [1]	288	197	432	1193	661	663	430	163
15/8(8)		11	340	223	533	1194	661	764	430	163
15/9(9)		11	340	223	533	1235	702	764	471	185
15/10(10)		11	340	223	533	1276	743	764	512	187
15/11(11)		11	340	223	533	1317	784	764	553	188
15/13(13)		15	340	223	533	1399	866	764	635	201
15/15(15)	PN25	15	340	223	533	1481	948	764	717	204
15/17(17)		18,5	340	223	533	1563	1030	764	799	217

1. Decreased power



3.11 Hydraulic performance curve DPVCI 2 B - 60Hz -2 pole

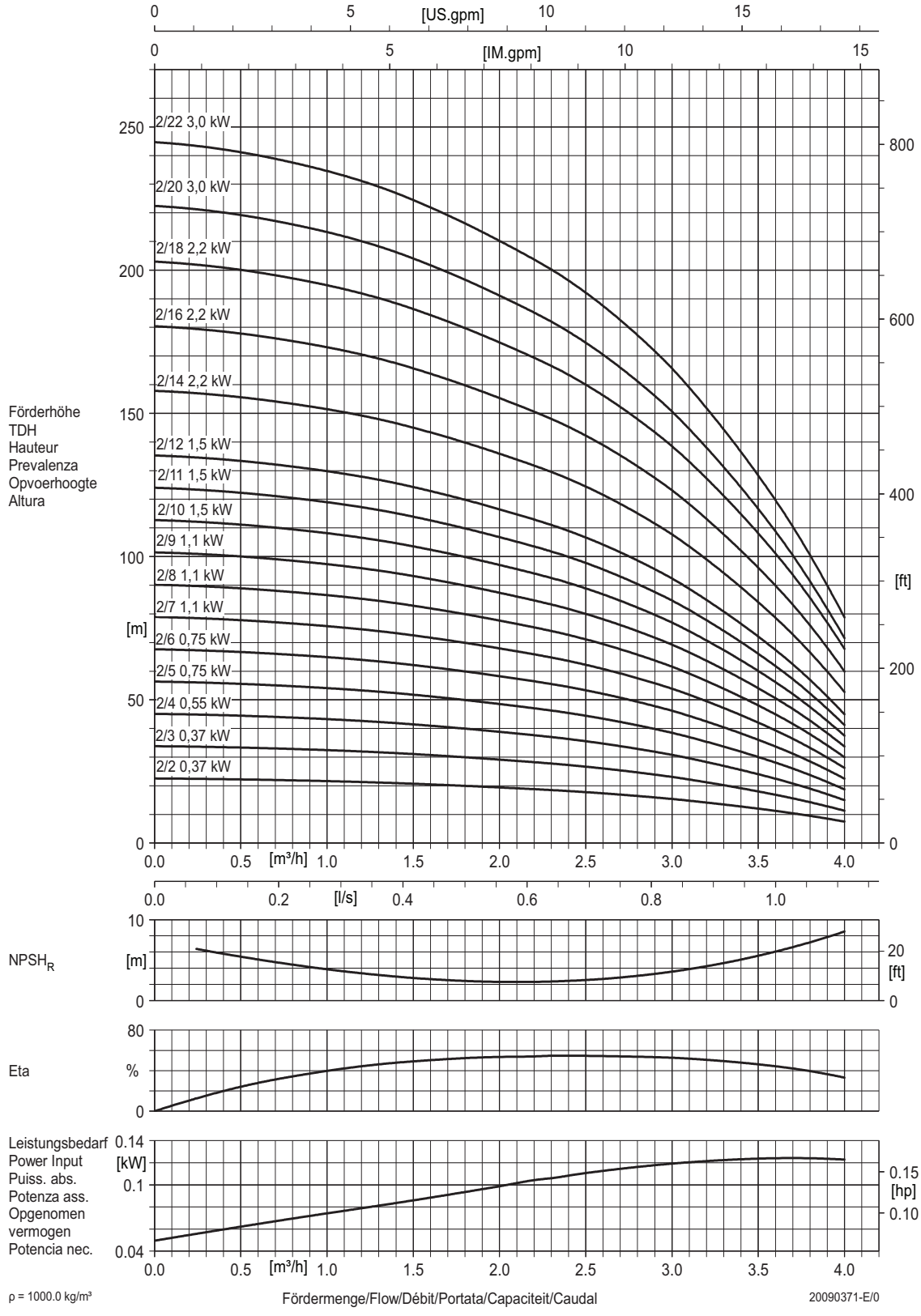


Figure 10: Performance curve DPVCI 2 B - 60Hz - 2 pole

20090371 E

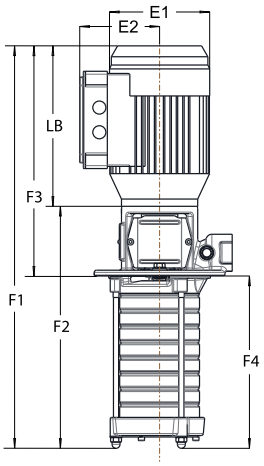
3.12 DPVCI 2 B - 60Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

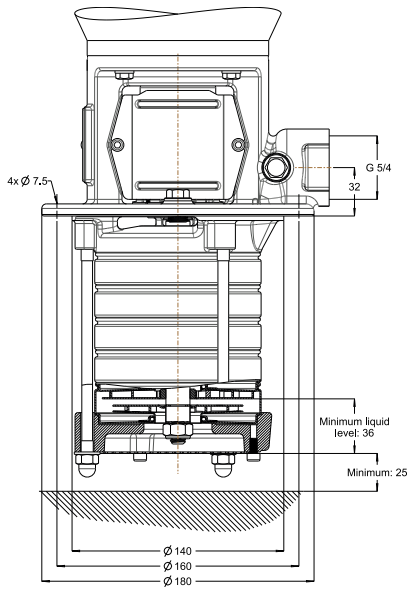
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 2/3(22) F3=315mm, F4=560mm.

Table 13: General dimensions



*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
2/2(2)	PN10	0,37	134	107	219	445	226	315	130	14
2/3(3)		0,37	134	107	219	466	247	315	151	14
2/4(4)		0,55	134	107	243	512	269	339	173	16
2/5(5)		0,75	150	115	234	534	300	340	194	18
2/6(6)		0,75	150	115	234	556	322	340	216	19
2/7(7)		1,1	150	115	264	607	343	370	237	22
2/8(8)		1,1	150	115	264	629	365	370	259	22
2/9(9)		1,1	150	115	264	650	386	370	280	22
2/10(10)	PN25	1,5	176	141	280	698	418	396	302	26
2/11(11)		1,5	176	141	280	719	439	396	323	27
2/12(12)		1,5	176	141	280	741	461	396	345	27
2/14(14)		2,2	176	141	280	784	504	396	388	31
2/16(16)		2,2	176	141	280	827	547	396	431	32
2/18(18)		2,2	176	141	280	870	590	396	474	32
2/20(20)		3	195	145	316	959	643	442	517	44
2/22(22)		3	195	145	316	1002	686	442	560	45
2/22(24)		3	195	145	316	1045	729	442	603	45
2/22(26)		3	195	145	316	1088	772	442	646	45
2/22(28)		3	195	145	316	1131	815	442	689	46
2/22(30)		3	195	145	316	1174	856	442	732	64



3.13 Hydraulic performance curve DPVCI 4 B - 60Hz - 2 pole

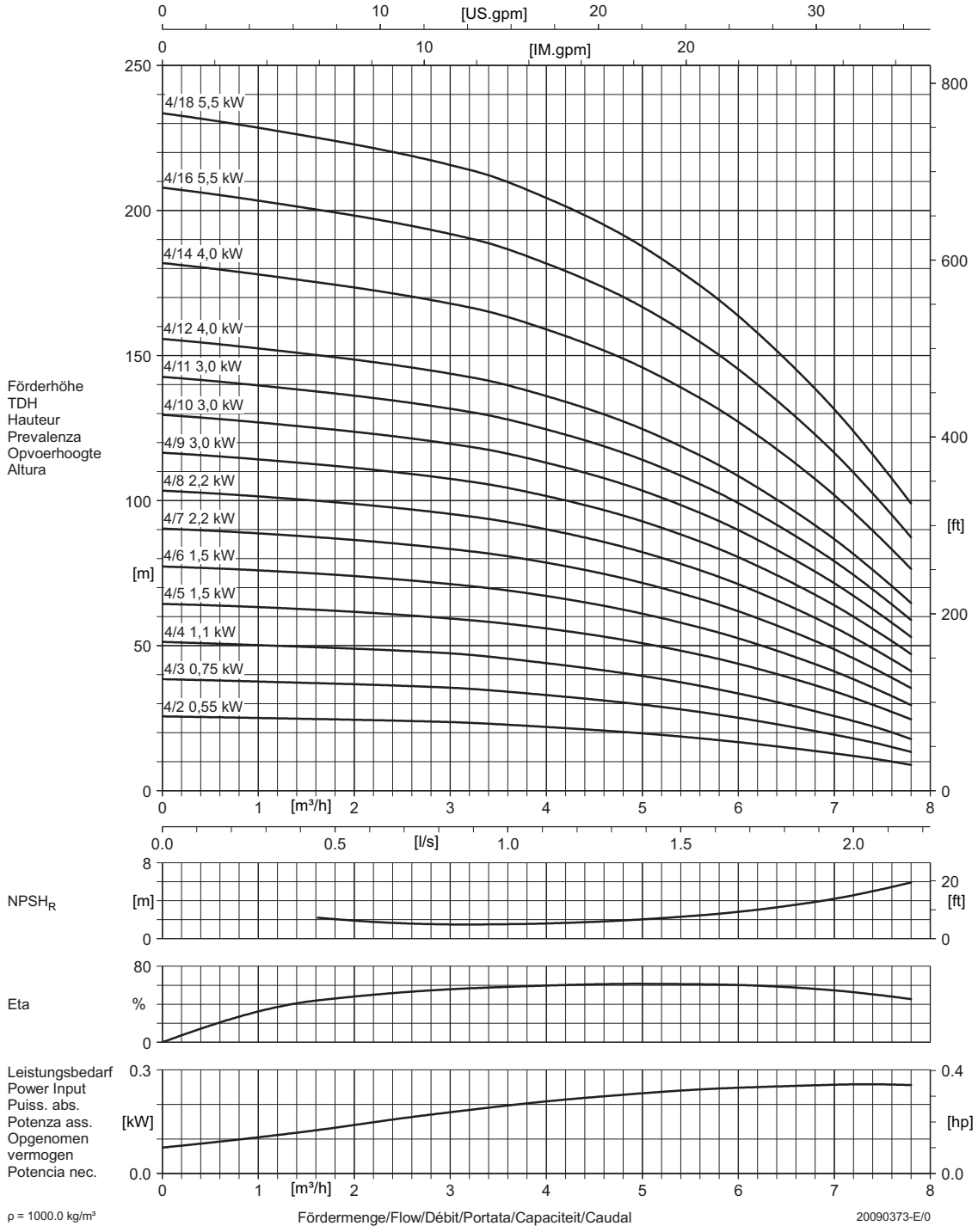


Figure 11: Performance curve DPVCI 4 B - 60Hz - 2 pole

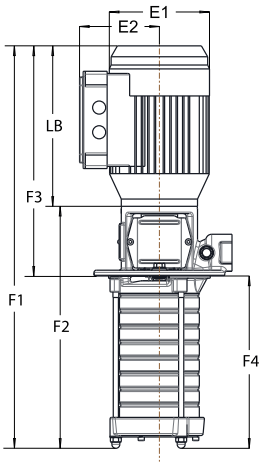
3.14 DPVCI 4 B - 60Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

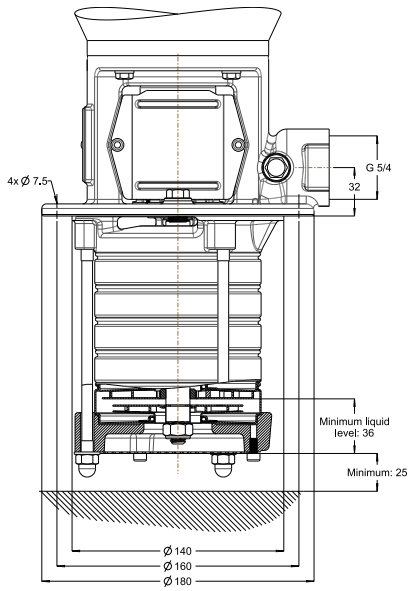
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 4/7(16) F3=396mm, F4=431mm.

Table 14: General dimensions

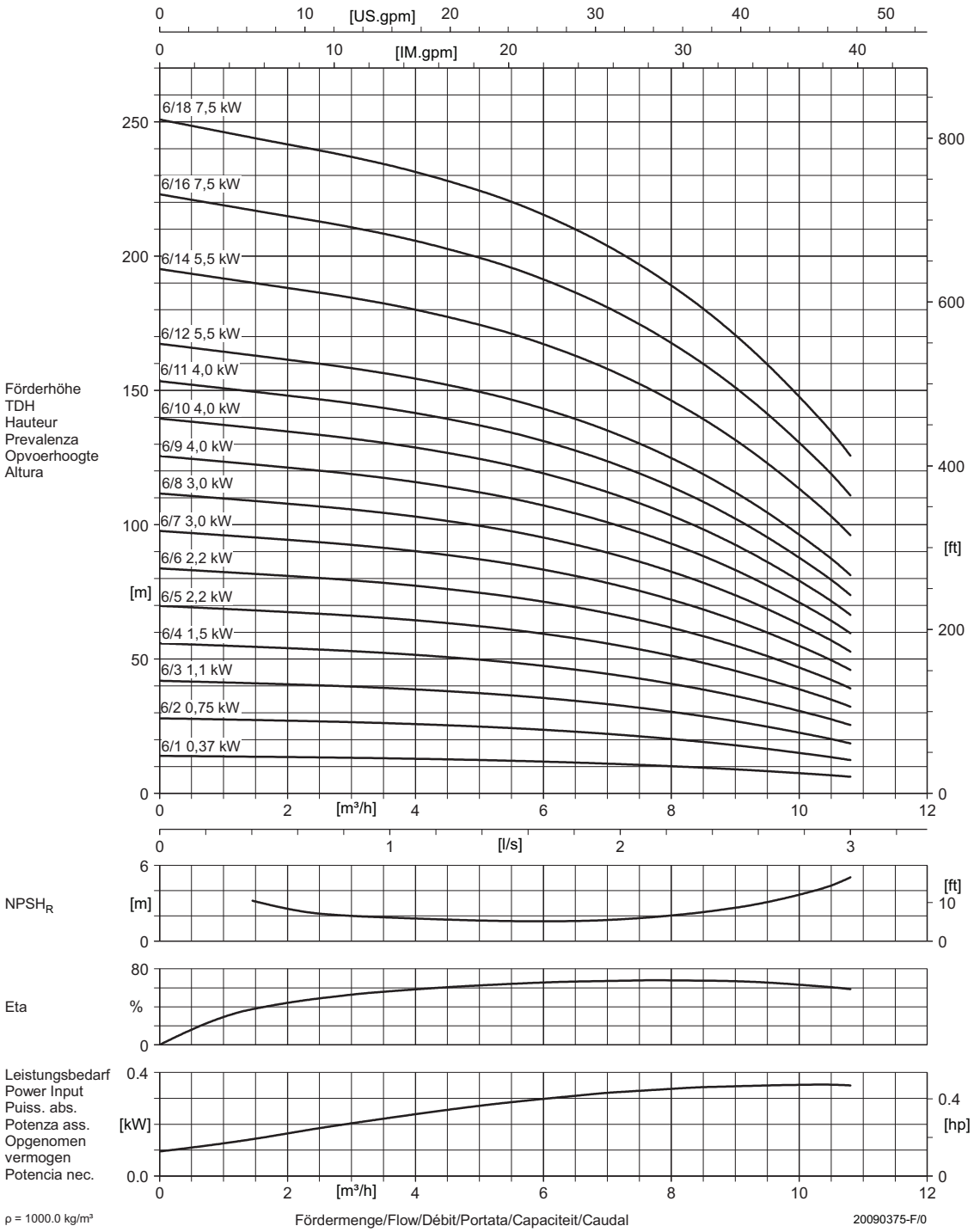


*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
4/2(2)	PN10	0,55	134	107	243	469	226	339	130	16
4/3(3)		0,75	150	115	234	491	257	340	151	18
4/4(4)		1,1	150	115	243	543	279	370	173	21
4/5(5)		1,5	176	141	264	590	310	396	194	25
4/6(6)		1,5	176	141	280	612	332	396	216	25
4/7(7)		2,2	176	141	280	633	353	396	237	28
4/8(8)		2,2	176	141	280	655	375	396	259	29
4/9(9)	PN25	3	195	145	316	722	406	442	280	40
4/10(10)		3	195	145	316	744	428	442	302	41
4/11(11)		3	195	145	316	765	449	442	323	41
4/12(12)		4	223	167	324	795	471	450	345	50
4/14(14)		4	223	167	324	838	514	450	388	51
4/16(16)		5,5	266	178	329	962	633	531	431	84
4/18(18)		5,5	266	178	329	1005	676	531	474	85
4/18(20)		5,5	266	178	329	1048	719	531	517	85
4/18(22)		5,5	266	178	329	1091	762	531	560	88
4/18(24)		5,5	266	178	329	1134	805	531	603	88
4/18(26)		5,5	266	178	329	1177	848	531	646	89
4/18(28)		5,5	266	178	329	1220	891	531	689	89
4/18(30)		5,5	266	178	329	1263	934	531	732	89



3.15 Hydraulic performance curve DPVCI 6 B - 60Hz - 2 pole



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Figure 12: Performance curve DPVCI 6 B - 60Hz - 2 pole

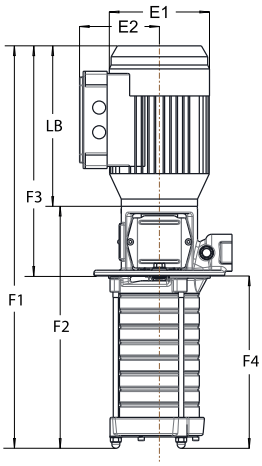
3.16 DPVCI 6 B - 60Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

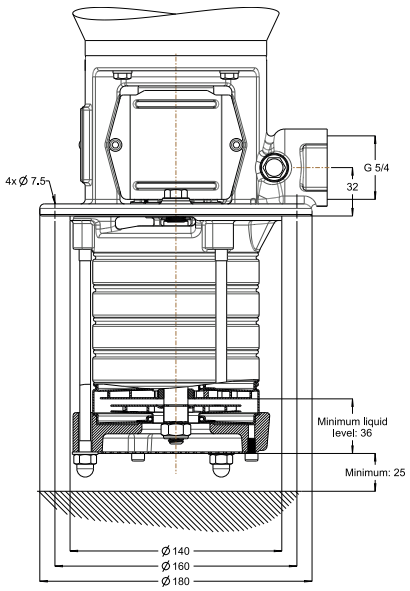
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 6/2(18) F3=340mm, F4=540mm.

Table 15: General dimensions

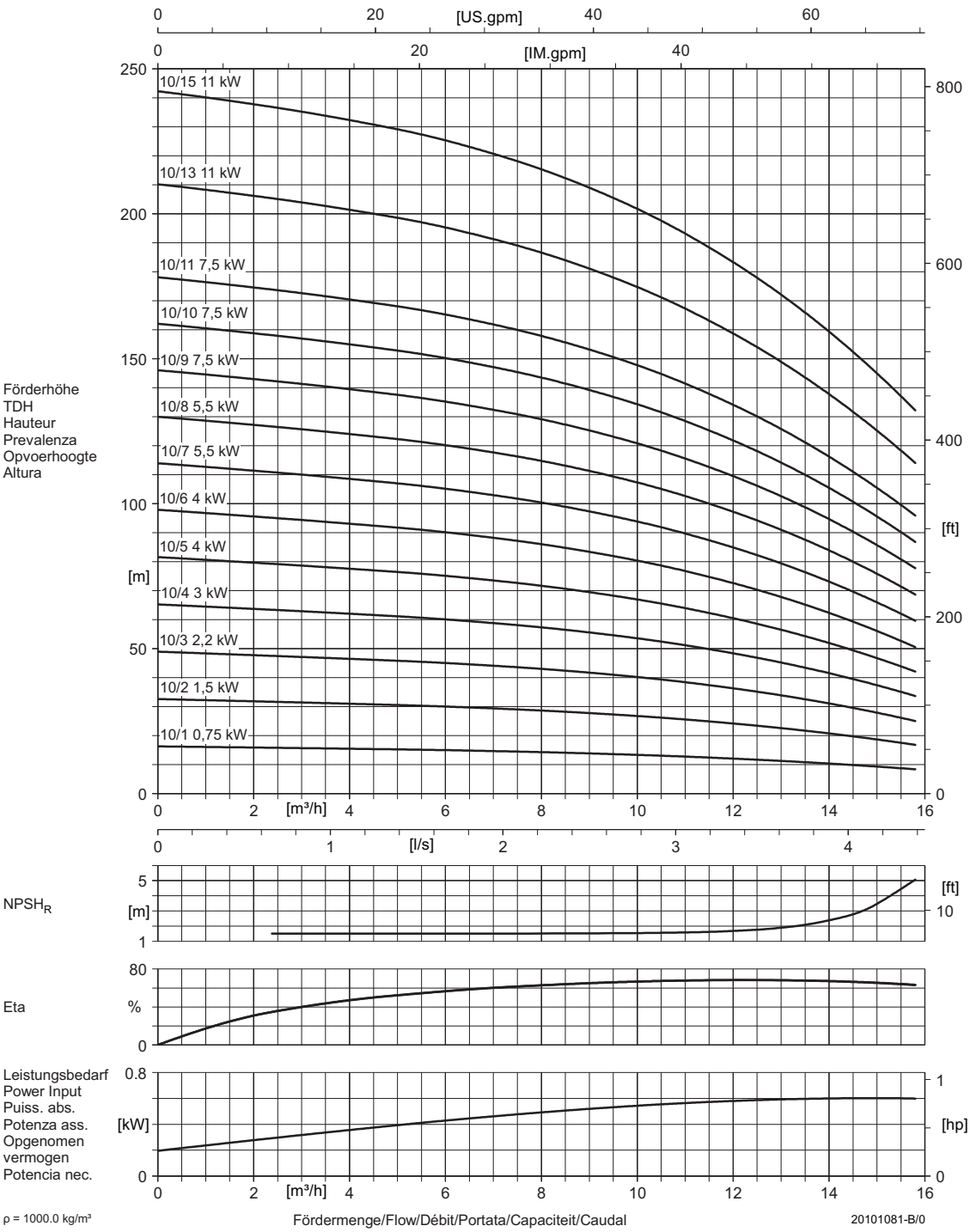


*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
6/2(2)	PN10	0,75	150	115	234	480	246	340	140	17
6/3(3)		1,1	150	115	164	535	271	370	165	20
6/4(4)		1,5	176	141	280	586	306	396	190	24
6/5(5)		2,2	176	141	280	611	331	396	215	28
6/6(6)		2,2	176	141	280	6396	356	396	240	28
6/7(7)		3	195	145	316	707	391	442	265	39
6/8(8)	PN25	3	195	145	316	732	416	442	290	40
6/9(9)		4	223	167	324	765	441	450	315	49
6/10(10)		4	223	167	324	790	466	450	340	50
6/11(11)		4	223	167	324	815	491	450	365	50
6/12(12)		5,5	266	178	329	921	592	531	390	83
6/14(14)		5,5	266	178	329	971	642	531	440	84
6/16(16)		7,5	266	178	377	1069	692	579	490	116
6/18(18)		7,5	266	178	377	1119	742	579	540	117
6/18(20)		7,5	266	178	377	1169	792	579	590	117
6/18(22)		7,5	266	178	377	1219	842	579	640	117
6/18(24)		7,5	266	178	377	1269	892	579	690	118
6/18(26)		7,5	266	178	377	1319	942	579	740	118
6/18(28)		7,5	266	178	377	1369	992	579	790	118
6/18(30)		7,5	266	178	377	1419	1042	579	840	119



3.17 Hydraulic performance curve DPVCI 10 B - 60Hz - 2 pole



20101081 B

Figure 13: Performance curve DPVCI 10 B - 60Hz- 2 pole

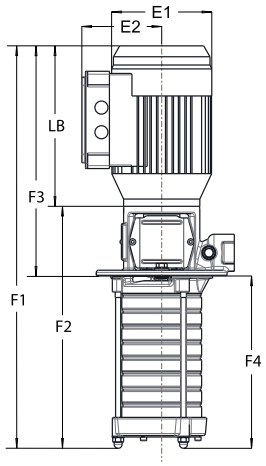
3.18 DPVCI 10 B - 60Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

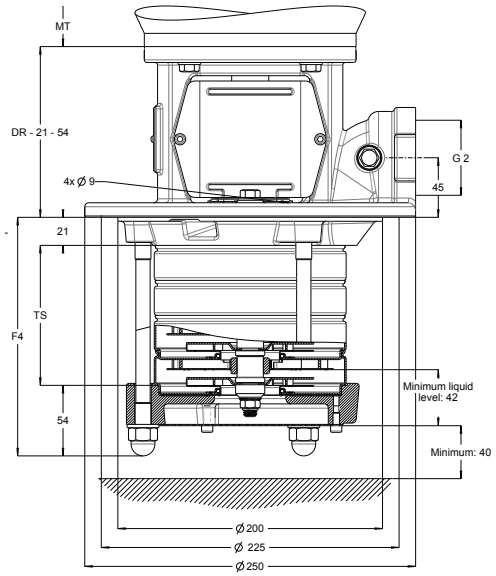
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 10/1(6) F3=343mm, F4=287mm.

Table 16: General dimensions

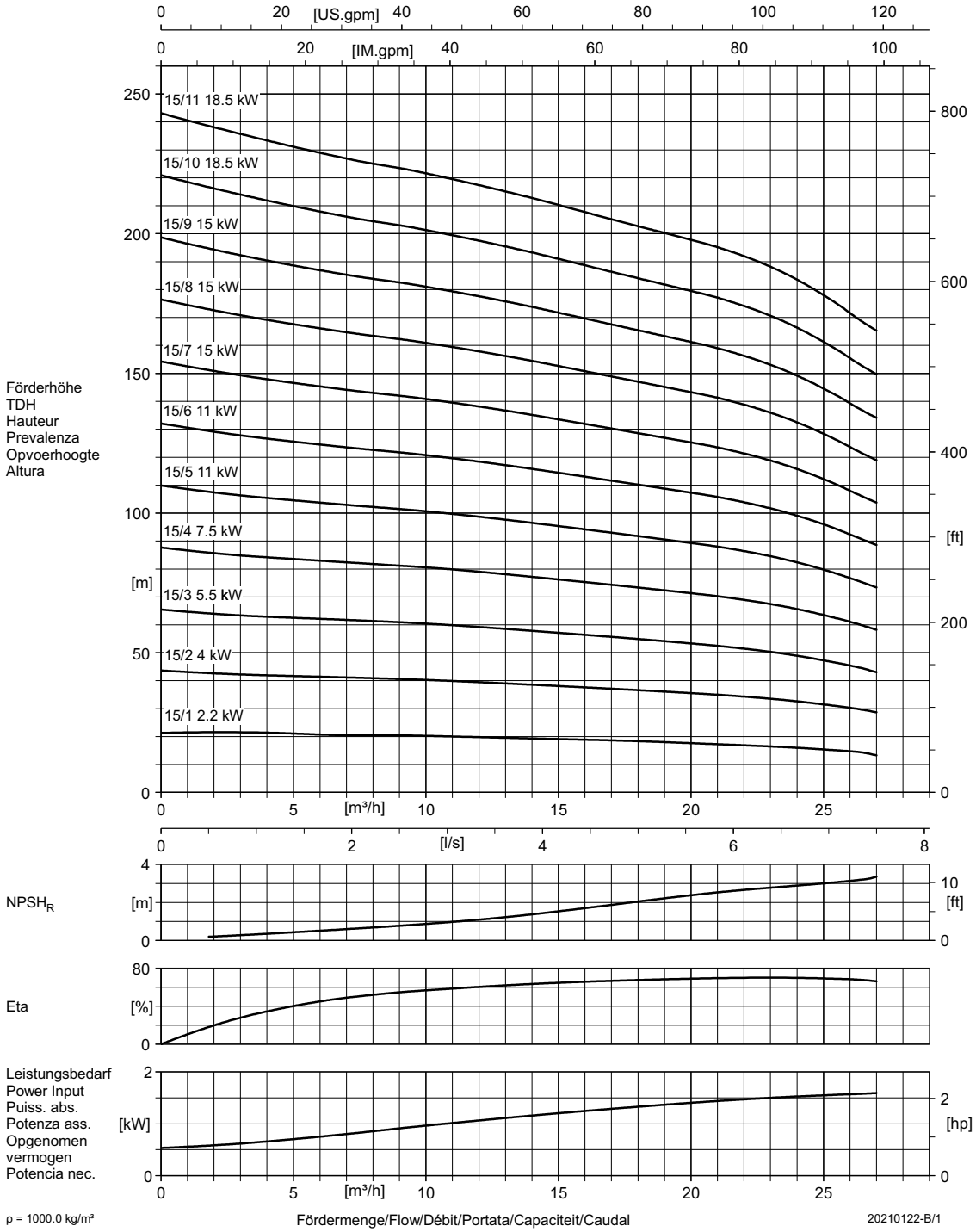


*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
10/1(2)	PN10	0,75	150	115	234	497	263	343	154	17
10/2(2)		1,5	176	115	280	553	273	399	154	30
10/3(3)		2,2	176	115	280	580	300	399	181	34
10/4(4)		3	195	141	316	652	336	445	207	45
10/5(5)		4	223	141	324	687	363	453	234	55
10/6(6)		4	223	141	324	740	416	453	287	56
10/7(7)	PN25	5,5	266	178	329	826	497	539	287	71
10/8(8)		5,5	266	178	329	852	523	539	313	72
10/9(9)		7,5	266	178	377	926	549	587	339	119
10/10(10)		7,5	266	178	377	953	576	587	366	120
10/11(11)		7,5	266	178	377	979	602	587	392	121
10/13(13)		11	315	204	498	1183	685	738	445	178
10/15(15)		11	315	204	498	1236	738	738	498	179
10/15(17)		11	315	204	498	1289	791	738	551	183
10/15(19)		11	315	204	498	1342	844	738	604	184
10/15(21)		11	315	204	498	1395	897	738	657	184



3.19 Hydraulic performance curve DPVCI 15 C - 60Hz - 2 pole



**Power input based on a V 15/3 C of this hydraulic speed design*

20210122 B

Figure 14: Performance curve DPVCI 15 C - 60Hz - 2 pole

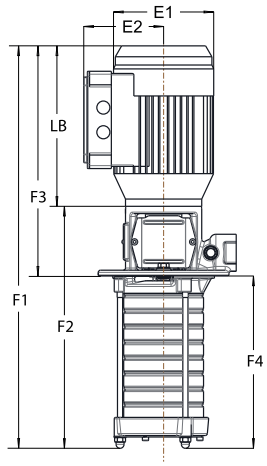
3.20 DPVCI 15 C - 60Hz - 2 pole - DIN

To determine the correct length of the pump see both following explanation and table.

	length incl. motor	length excl. motor
Full stage pump	F1	F2
Pump with empty stages	F3 + F4	F3 + F4 -LB

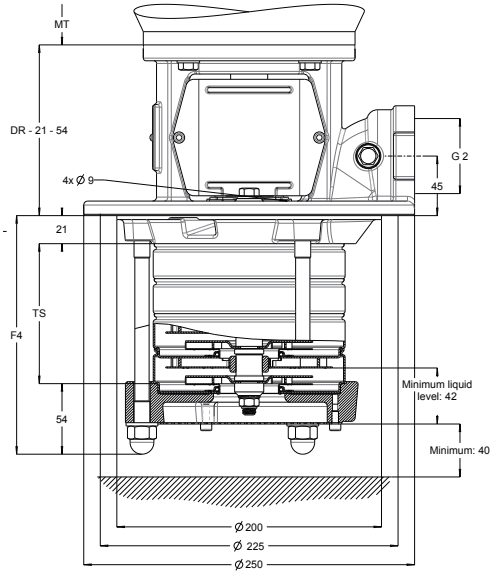
The length F3 corresponds with the length of the applied motor power. F4 corresponds with the total number of stages. Example: 15/4(11) F3=587mm, F4=392mm.

Table 17: General dimensions



*including packing

Model	Seal pressure	Power	Motor dimensions			DPVCI				
Full stage		[kW]	E1 [mm]	E2 [mm]	LB [mm]	F1 [mm]	F2 [mm]	F3 [mm]	F4 [mm]	Mass* [kg]
15/1(2)	PN10	2,2	200	148	281	605	324	421	184	37
15/2(2)		4	248	168	356	690	334	506	184	53
15/3(3)		5,5	288	197	432	888	456	663	225	85
15/4(4)		7,5	288	197	432	929	497	663	266	86
15/5(5)	PN16	11	340	223	533	1071	538	764	307	157
15/6(6)		11	340	223	533	1112	579	764	348	158
15/7(7)		15	340	223	533	1153	620	764	389	170
15/8(8)	PN25	15	340	223	533	1194	661	764	430	170
15/9(9)		15	340	223	533	1235	702	764	471	193
15/10(10)		18,5	340	223	533	1276	743	764	512	204
15/11(11)		18,5	340	223	533	1317	784	764	553	204
15/11(13)		18,5	340	223	533	1399	866	764	635	205
15/11(15)		18,5	340	223	533	1481	948	764	717	206
15/11(17)		18,5	340	223	533	1563	1030	764	799	207



4 Seals

4.1 Mechanical seal option specifications

Seal code	Shaft seal type	Material mechanical seal	Material shaft seal rotor	Material shaft seal stator	Material shaft seal elastomer	Pressure class shaft seal	Temperature range shaft seal	Material pump elastomer	Comments	Fixed	Easy Access	Cartridge
15	RMG12-G606	U3 U3 X4 GG	TuC	TuC	HNBR	PN25(PN16)	-20/+120(140)°C	HNBR		●	●	●
22	H7N	Q1 A X4 GG	SiC	Ca	HNBR	PN40(PN25)	-20/+120(140)°C	HNBR	HP/HT			●
40	4MC	Q1 Q1 E GG	SiC	SiC	EPDM	PN40(PN25)	-20/+120(140)°C	EPDM	HP/HT			●
41	4MC	Q1 A E GG	SiC	Ca	EPDM	PN40(PN25)	-20/+120(140)°C	EPDM	HP/HT			●
42	4MC	Q1 Q1 V GG	SiC	SiC	FPM	PN40(PN25)	-20/+120(140)°C	FPM	HP/HT			●
43	4MC	Q1 A V GG	SiC	Ca	FPM	PN40(PN25)	-20/+120(140)°C	FPM	HP/HT			●
50	RMG12-G6	A Q7 E GG	Ca	eSiC	EPDM	PN25(PN18)	-20/+120(140)°C	EPDM 559236		●	●	
51	eRMG12-G6	A Q7 E GG Y10	Ca	eSiC	EPDM	PN25(PN18)	-20/+120(140)°C	EPDM		●	●	●
52	eRMG12-G6	A Q7 V GG Y10	Ca	eSiC	FPM	PN25(PN16)	-20/+120(140)°C	FPM				●
53	eMG12-G6	B Q7 E GG Y10 WA	Ca	eSiC	EPDM	PN25	-20/+100°C	EPDM		●	●	●
54	MG12-G6	B Q7 E GG WA	Ca	eSiC	EPDM	PN25	-20/+100°C	EPDM		●	●	
55	RMG12-G6	B Q7 V GG	Ca	eSiC	FPM	PN25	-20/+120°C	FPM		●	●	
56	eRMG12-G6	B Q7 V GG Y10	Ca	eSiC	FPM	PN25	-20/+120°C	FPM		●	●	●
57	MG1-G6	B Q7 E GG WA	Ca	eSiC	EPDM	PN25	-20/+100°C			●		
58	eMG12-G6	Q7 Q7 E GG Y10 WA	eSiC	eSiC	EPDM	PN18	-20/+100°C	EPDM		●	●	●
59	MG12-G6	Q7 Q7 E GG WA	eSiC	eSiC	EPDM	PN18	-20/+100°C	EPDM		●	●	
60	RMG12-G6	Q7 Q7 V GG	eSiC	eSiC	FPM	PN18	-20/+120°C	FPM		●	●	
61	eRMG12-G6	Q7 Q7 V GG Y10	eSiC	eSiC	FPM	PN18	-20/+120°C	FPM		●	●	●
65	eRMG12-G6	U3 U3 V GG Y10	TuC	TuC	FPM	PN18	-20/+120°C	FPM		●	●	●
66	eMG12-G6	Q7 Q7 V GG Y10	eSiC	eSiC	FPM	PN20	-20/+60°C	FPM				●

*default seal type, code depends on max pump pressure

5 Motors and motor options

5.1 General

The standard DP motors are produced conform the latest technical design, and comply with the international standards and EU directives regarding safety measures.

The motors can be specified as:

- Standard IE3 >= 0,75kW
- T.E.F.C. (totally enclosed fan cooled) Squirrel cage.
- AC induction motor.
- Protection IP55.
- Insulation class F.
- Temperature rise class B.
- Duty class S3 (50% or S4 (40%), maximum starts per hour, see motor tables).
- Noise levels conform IEC 60034-9.
- >= 3,0 kW default 3 x PTC.

The motors come in 2 different configurations depending on power rate. Up to 4kW a V18 mounting type is used. For power 5,5kW and up a flanged motor type V1 is default. Mounting in acc. with IEC60034-7 and dimensions in acc. with IEC 60072-1

5.2 Options

- Standard motors as per above, in single phase (1x230V)upto and including 2,2kW.
- Provided with 10 pole industrial connector “Harting stecker” HAN 10, mounted in stead of the motor connection box, <= 7,5kW.
- Provided with Rain cover on top of the fan hood.
- For motors < 3kW provided with 3 x PTC and/or anti condensation heater (1x230V).
- Motors from other manufacturers like Siemens and VEM.

5.3 Standard motor data 2P 50Hz

Table 18: Motor data 1 and 3 phase, 2p 50Hz

Article number	Rated power output [kW]	Rated Voltage [V]	Rated current [A]	Starting current Ia/In	Cos Phi	Tolerance rated voltage	Rated speed [rpm]	Motor efficiency [%]	Sound pressure [dB(A)]	Cable gland	Max. starts per hour (S3 50% or S4 40%)
3700000003	0.37	1x230	2.6	3.7	0.92	10%	2750	67	58	1xM18x1.5	20
3700000005	0.55	1x230	3,69	3.9	0.92	10%	2760	70	56	1xM18x1.5	20
3700000007	0.75	1x230	5	3.9	0.95	10%	2780	70	56	1xM20x1.5	20
3700000011	1.1	1x230	6.68	4.3	0.95	10%	2790	75	58	1xM20x1.5	20
3700000015	1.5	1x230	8.99	4.8	0.95	10%	2800	76	58	1xM20x1.5	20
3700000022	2.2	1x230	13.04	4.8	0.76	10%	2800	77	58	1xM20x1.5	20
3727011003	0.37	230/400	1.6/0.95	4.5	0.76	10%	2865	76	60	1xM20x1.5	300
3727011005	0.55	230/400	2.1/1.2	5.3	0.80	10%	2880	82	60	1xM20x1.5	300
3710051007	0.75	230/400	3.1/1.8	6.6	0.82	10%	2880	80.7	55	1xM20x1.5	300
3710051011	1.1	230/400	4.0/2.3	6.9	0.81	10%	2880	84	55	1xM20x1.5	300
3716051015	1.5	230/400	5.3/3.0	7.3	0.86	10%	2925	84.2	55	1xM20x1.5	300
3716051022	2.2	230/400	7.5/4.3	8	0.85	10%	2910	85.9	55	1xM20x1.5	300
3716151030	3	230/400	10.2/5.8	9.3	0.85	10%	2920	87.1	57	2xM20x1.5	300
3716152030	3	400/690	5.8/3.3	9.3	0.89	10%	2920	87.1	57	2xM20x1.5	300
3716151040	4	230/400	12.8/7.4	8.4	0.89	10%	2930	88.1	58	2xM20x1.5	300
3716152040	4	400/690	7.4/4.3	8.4	0.89	10%	2930	88.1	58	2xM20x1.5	300
3716151055	5.5	230/400	17.3/10	8.8	0.89	10%	2940	89.2	63	2xM25x1.5	300
3716152055	5.5	400/690	10/5.8	8.8	0.89	10%	2940	89.2	63	2xM25x1.5	300
3716151075	7.5	230/400	23/13.3	9.2	0.89	10%	2940	90.1	63	2xM25x1.5	300
3716152075	7.5	400/690	13.3/7.7	9.2	0.9	10%	2940	90.1	63	2xM25x1.5	300
3714151110	11	230/400	33.4/19.3	7.3	0.9	10%	2945	91.2	69	2xM32x1.5	300
3714152110	11	400/690	19.3/11.2	7.3	0.85	10%	2945	91.2	69	2xM32x1.5	300
3714151150	15	230/400	49.0/28.2	7.6	0.85	10%	2945	90.3	70	2xM32x1.5	200
3714152150	15	400/690	28.2/16.3	7.6	0.9	10%	2945	90.3	70	2xM32x1.5	200
3714151185	18.5	230/400	55.6/32.1	7.7	0.9	10%	2940	92.4	69	2xM32x1.5	200
3714152185	18.5	400/690	32.1/18.6	7.7	0.88	10%	2940	92.4	69	2xM32x1.5	200
3710151220	22	230/400	68.7/39.5	7.5	0.88	10%	2945	91.3	75	2xM32x1.5	200
3710152220	22	400/690	39.5/22.9	7.5	0.9	10%	2945	91.3	75	2xM32x1.5	200

5.4 Standard motor data 2P 60Hz

Table 19: Motor data 3 phase, 2p 60Hz

Article number	Rated power output [kW]	Rated Voltage [V]	Rated current [A]	Starting current Ia/In	Cos Phi	Tolerance rated voltage	Rated speed [rpm]	Motor efficiency [%]	Sound pressure [dB(A)]	Cable gland	Max. starts per hour (S3 50% or S4 40%)
3727011003	0.37	230/400	1.6/0.95	4.5	0.76	+20%.-10%	3430	76,0	60	1xM20x1.5	300
3727011005	0.55	230/400	2.1/1.2	5.3	0.80	+20%.-10%	3460	82,0	60	1xM20x1.5	300
3710051007	0.75	230/400	2.8/1.6	6.2	0.88	+25%/-10%	3460	80.7	58	1xM20x1.5	300
3710051011	1.1	230/400	4.2/2.4	6.8	0.9	+25%/-10%	3440	82.5	60	1xM20x1.5	300
3716051015	1.5	230/400	5.0/2.9	6.9	0.9	+25%.-10%	3510	85.5	58	1xM20x1.5	300
3716051022	2.2	230/400	7.1/4.1	7.7	0.9	+25%/-10%	3490	86.5	58	1xM20x1.5	300
3716151030	3	230/400	9.6/5.5	7.6	0.91	+25%/-10%	3495	87.5	61	2xM20x1.5	300
3716152030	3	400/690	5.6/3.2	7.6	0.91	+25%.-10%	3495	87.5	61	2xM20x1.5	300
3716151040	4	230/400	12.5/7.2	8	0.92	+25%/-10%	3515	88.5	62	2xM20x1.5	300
3716152040	4	400/690	7.2/4.2	8	0.92	+25%/-10%	3515	88.5	62	2xM20x1.5	300
3716151055	5.5	230/400	17/9.8	7.8	0.93	+25%.-10%	3525	88.5	67	2xM25x1.5	300
3716152055	5.5	400/690	9.8/5.6	7.8	0.93	+25%/-10%	3525	88.5	67	2xM25x1.5	300
3716151075	7.5	230/400	22.5/13.0	8	0.92	+25%/-10%	3525	89.5	67	2xM25x1.5	300
3716152075	7.5	400/690	13.0/7.5	8	0.92	+25%/-10%	3525	89.5	67	2xM25x1.5	300
3714151110	11	230/400	32.9/19.0	6.3	0.92	+25%/-10%	3530	91.0	73	2xM32x1.5	300
3714152110	11	400/690	19.0/11.0	6.3	0.92	+25%.-10%	3530	91.0	73	2xM32x1.5	300
3714151150	15	230/400	44.3/25.6	6.5	0.92	+25%/-10%	3530	92.2	73	2xM32x1.5	200
3714152150	15	400/690	25.6/14.8	6.5	0.92	+25%/-10%	3530	92.2	73	2xM32x1.5	200
3714151185	18.5	230/400	54.6/31.5	6.7	0.91	+25%.-10%	3525	92.2	73	2xM32x1.5	200
3714152185	18.5	400/690	31.5/18.3	6.7	0.91	+25%/-10%	3525	92.2	73	2xM32x1.5	200
3710151220	22	230/400	65.5/37.8	7.8	0.91	+25%/-10%	3550	92.2	79	2xM32x1.5	200
3710152220	22	400/690	37.8/21.9	7.8	0.91	+25%/-10%	3550	92.2	79	2xM32x1.5	200

6 Materials

6.1 Parts overview

6.1.1 Sectional drawing DPVCI 2-10 B

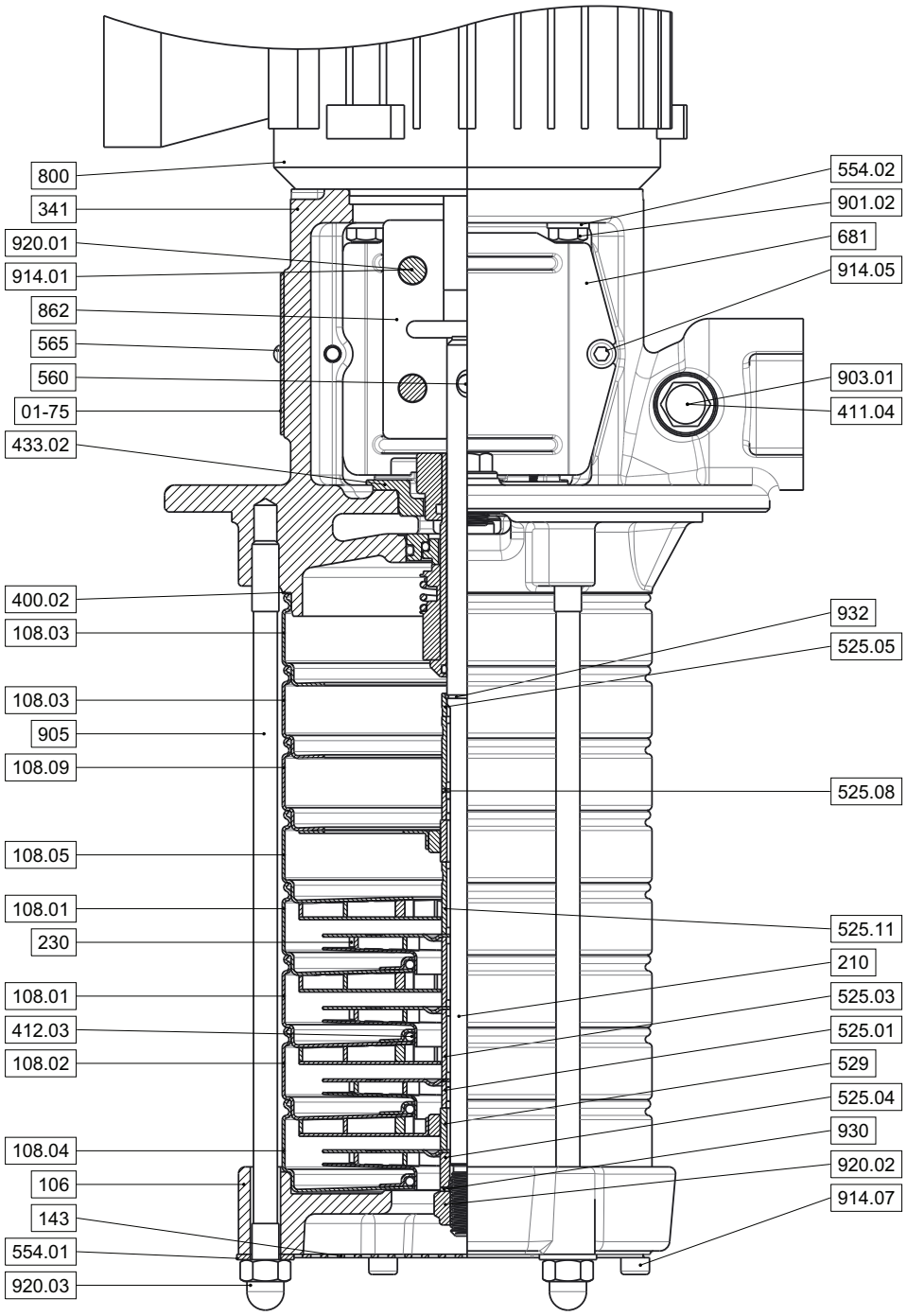


Figure 15: Sectional drawing DPVCI 2-10 B

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6.1.2 Part list

Part. no.	part description	material code	Wetted part
106	Suction casing	JL1040	X
108.01/.02/.03/.04/.05/.09	Stage casing	1.4301	X
143	Suction strainer	1.4301	X
210	Shaft	1.4057	X
230	Impeller	1.4301	X
341	Motor stool	JL1040	X
400.02	Gasket		X
411.04	Joint ring		X
412.03	O-ring	see seal table 18	X
433.02	Shaft seal	see seal table 18	X
525.01/.03/.04/.05/.08	Spacer sleeve	1.4301	X
529	Bearing sleeve	Tungsten Carbide	X
Part of 108	Bearing	Aluminium Oxide	X
554.01/.02	Washer		X
681	Coupling guard	1.4308	X
862	Coupling from 5.5 kW	JS1030	
	Coupling up to 4 kW	Aluminium	
901.02	Hexagon head bolt		
903.01	Screw plug		
905	Tie bolt	1.4057	X
914.01/.05/.07	Hexagon socket head cap screw		
920.01/.03	Nut	1.4301	X
930.02	Safety device	1.4404	X
932	Circlip	1.4571	X

6.1.3 Materials conversion

Material	Description	Code and material nr.	Standard	ASTM / AISI[1]
JL 1040	Cast iron	GJL-250	EN 1561	A48:40B
JS1030	Cast iron	GJS-400	EN 1563	
1.4057	Chromium-nickel steel	X17CrNi16-2--QT800	EN 10088-3	A276:431
1.4301	Chromium-nickel steel	X5CrNi 18-10	EN 10088	A276:304
1.4401	Chromium-nickel-molybdenum steel	X2CrNiMo 17-12-2	EN 10088	A276:316L
1.4571	Chromium-nickel-molybdenum steel	X6CrNiMoTi 17-12-2	EN 10088	A276:316Ti

1. Note: The indication of the material designations to ASTM / AISI is not binding

6.1.4 Sectional drawing DPVCI 15 C

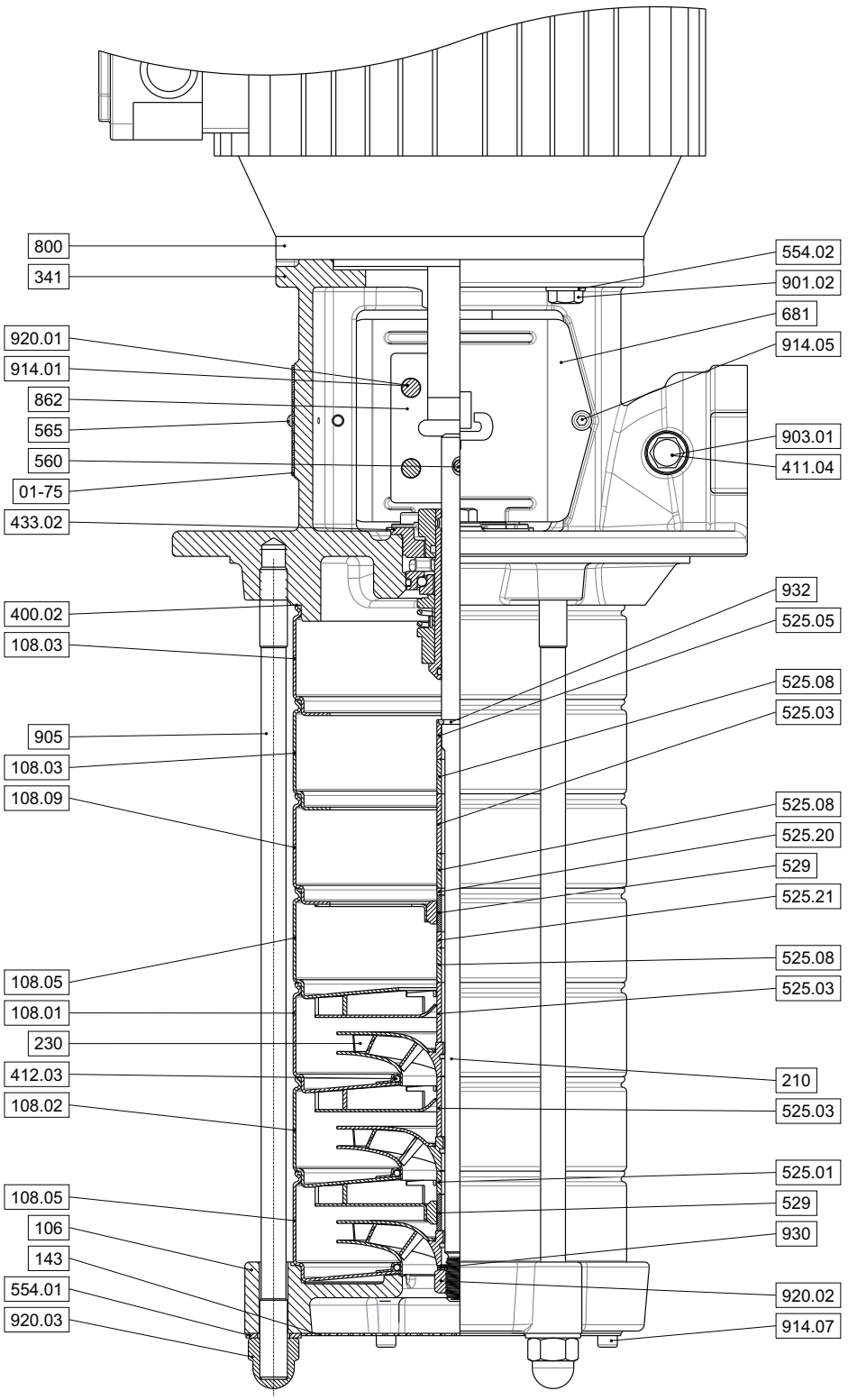


Figure 16: Sectional drawing DPVCI 15 C

20210411

6.1.5 Part list

Part. no.	part description	material code	Wetted part
01-75	Type plate		
106	Suction casing	JL1040	X
108.01/.02/.03/.05/.09	Stage casing	1.4301	X
143	Suction strainer	1.4301	X
210	Shaft	1.4057	X
230	Impeller	1.4301	X
341	Motor stool	JL1040	X
400.02	Gasket		X
411.04	Joint ring		X
412.03	O-ring	see seal table 18	X
433.02	Shaft seal	see seal table 18	X
525.01/.03/.05/.08/.20/.21	Spacer sleeve	1.4301	X
529	Bearing sleeve	Tungsten Carbide	X
Part of 108	Bearing	Aluminium Oxide	X
554.01/.02	Washer		X
560	Pin	1.4305	
565	Rivet	1.4301	
681	Coupling guard	1.4308	
800	Motor		
862	Coupling from 5.5 kW	JS1030	
	Coupling up to 4 kW	Aluminium	
901.02	Hexagon bolt		
903.01	Screw plug		X
905	Tie bolt	1.4057	X
914.01/.05/.07	Hexagon socket head cap screw		
920.01/.02/.03	Nut	1.4301	X
930	Safety device	1.4404	X
932	Circlip	1.4571	X

6.1.6 Materials conversion

Material	Description	Code and material nr.	Standard	ASTM / AISI[1]
JL 1040	Cast iron	GJL-250	EN 1561	A48:40B
JS1030	Cast iron	GJS-400	EN 1563	
1.4057	Chromium-nickel steel	X17CrNi16-2--QT800	EN 10088-3	A276:431
1.4301	Chromium-nickel steel	X5CrNi 18-10	EN 10088	A276:304
1.4401	Chromium-nickel-molybdenum steel	X2CrNiMo 17-12-2	EN 10088	A276:316L
1.4571	Chromium-nickel-molybdenum steel	X6CrNiMoTi 17-12-2	EN 10088	A276:316Ti

1. Note: The indication of the material designations to ASTM / AISI is not binding

7 Medium handled

7.1 Medium handled

Pumped medium			Design									
Contents	Max. Share	Tmax	VCI									
			2-4-6					10-15				
			Seal code									
	[%]	[°C]	50	54	55	60	66	51	53	56	61	66
Alcaline (bottle rinsing)	≤ 100	90	●					●				
Alcohol												
Butyl alcohol (butanol)	≤ 100	60	●					●				
Alcohol (ethanol)	≤ 100	60	●					●				
Spirits (40% ethanol)	≤ 100	40	●					●				
Ferric-II-sulphate	≤ 5	50	●					●				
Oil water mixture, Water/oil (95%/5%), solids max.20 ppm permissible particle size 0,5µm – 1,0mm	≤ 100	80			●		●			●		●
Antifreeze (glykol base) closed system (without silicates)	≤ 20	100	●					●				
	≤ 25	100	●					●				
	≤ 30	100	●					●				
	≤ 35	100	●					●				
	≤ 40	100	●					●				
	≤ 45	100	●					●				
	≤ 50	100	●					●				
Antifreeze (glykol base) open system (without silicates)	≤ 20	100	●					●				
	≤ 25	100	●					●				
	≤ 30	100	●					●				
	≤ 35	100	●					●				
	≤ 40	100	●					●				
	≤ 45	100	●					●				
	≤ 50	100	●					●				
Spirits	≤ 100	v	●					●				
Glycerin	≤ 40	80	●		●	●		●		●	●	
Sodium carbonate	≤ 6	60	○					●				
Sodium hydroxide (soda lye)	≤ 5	60	○					●				
Sodium nitrate (non-acidic)	≤ 10	60	○					●				
Sodium sulphate (non-acidic)	≤ 5	60	○		●			○		●		
Oil												
Cutting oil	≤ 100	90					●					●
Peanut oil	≤ 100	80			●	○				●	○	
Linseed oil + 3 % sulphur acid	≤ 100	60										
Linseed oil	≤ 100	60			●	○				●	○	
Olive oil	≤ 100	80			●	○				●	○	
Rapeseed oil	≤ 100	80			●	○				●	○	
Soybean oil	≤ 100	100			●	○				●	○	
Petroleum	≤ 100	80			●	○				●	○	
Acid												
Tannic acid	≤ 20	80				●					●	
Maleic acid	≤ 10	60			○	●				○	●	
Fuel oil	≤ 100	80			●					●		
Kerosene	≤ 100	80			●					●		
Water												
Clean water (chemically neutral)	≤ 100	100	●	●				●	●			
Clean water (chemically neutral)	≤ 100	140	●					●				
Deionised water (demineralised)	≤ 100	100	●	●				●	●			
Deionised water (demineralised)	≤ 100	140	●					●				
Permeat (osmose)	≤ 100	100	●	●				●	●			
Permeat (osmose)	≤ 100	140	●					●				
Decarbonised water (softened)	≤ 100	100	●	●				●	●			
Decarbonised water (softened)	≤ 100	120	●					●				
Partly desalinated water	≤ 100	100	●	●				●	●			
Partly desalinated water	≤ 100	120	●					●				
Degassed water	≤ 100	100	●	●				●	●			
Degassed water	≤ 100	120	●					●				
Condensate	≤ 100	140	●					●				
Condensate, vapour (brewery)	≤ 100	140	●					●				
Drinking water	≤ 100	100	○	●				○	●			

duijvelaar pompen

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07/2025

Original instructions

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