

Flameproof Immersion Pumps PAB and PNB

1-6036-US

**Centrifugal pumps
for the printing industry –
ATEX certified**



- Delivery rate
 $Q_{\max} = 830 \text{ l/min}$
- Delivery head
 $H_{\max} = 20 \text{ m}$
- Temperature range
 $0 \text{ }^{\circ}\text{C}$ to $+60 \text{ }^{\circ}\text{C}$

Quality Management
DIN EN ISO 9001:2000
Environmental Management
DIN EN ISO 14001

www.vogelag.com

VOGEL[®]
**Spandau
pumps**

Main applications

- Printing machines
- Packaging machines
- Surface coating
- Wasch-/Entfettungsanlagen
- Impregnation
- Electroplating baths

Thanks to their even and pulsation-free flow, Spandau centrifugal pumps are, in particular, predestined for the delivery of ink as well.

Their open impeller configuration allows for small particles in the return flow.

They can also be used for higher viscosity fluids if their drive power is accordingly adapted

Fluids delivered

- inks containing solvents
- varnishes and lacquers
- water-based paints
- cleaning fluids
- etc.

Viscosities: 1 to 20 mm²/s;
more than 20 mm²/s on request

Temperature range: 0 °C to 60 °C

Models

Model PAB

Version with **detachable motor** in the following types of protection:

- a) EExe – “increased safety”; model **PAB-XE**
- b) EExd – “flameproof protection”; model **PAB-XD**

Performance:

delivery rate $Q_{max} = 300$ l/min;

delivery head $H_{max} = 20$ m.

Model PNB

Version with **non-detachable motor** in the following types of protection:

- a) EExe – “increased safety”; model **PNB-XE**
- b) EExd – “flameproof protection”; model **PNB-XD**

Performance :

delivery rate $Q_{max} = 830$ l/min;

delivery head $H_{max} = 8$ m.

Design features

- Centrifugal pump, pulsationsfrei
- wear-proof design
- 1- to 2-stage models
- Open impellers
- Connecting dimensions DIN EN 12157
- variable immersion depths

Special design features of models PAB

The pump section – consisting of the pump housing and flange-type end shield – is connected to the drive only by quick-release locks. So the drive can be removed from the pump section without having to disconnect the electrical leads.

That simplifies and speeds up cleaning operations.

All parts of the PAB models are washing machine-proof.

Mechanical design

Component	Model		
	PAB	PNB-XE	PNB-XD
Motor housing	aluminum	aluminum	aluminum
Pump port	cast iron	cast iron	cast iron
Flange-type end shield	aluminum	–	–
Pump bottom	cast iron	cast iron	cast iron
Intermediate chamber	cast iron	–	–
Impeller	bronze	bronze	bronze
Shaft	ETG	ETG	ETG
Radial shaft seal	PTFE (Teflon) in the – pump flange – flange-type end shield under the bottom ball bearing – flange-type end shield over the top ball bearing	NBR (Perbunan) under the bottom ball bearing	PTFE (Teflon) in the pump flange

Optional for all models:

pump parts of gray cast iron with **bright chrome plating** or **wet paint coating**.

Installation and operation

The unit is installed upright. The maximum permissible level of fluid amounts to 20 mm below the mounting flange.

The pumps can run dry for brief periods of time.

Operation against dead head is possible.

Direction of rotation: counterclockwise – as viewed looking down on the motor's ventilation side.

Typenschlüssel

PAB 05 01 G AA 170 E 01 XE

Model _____

PAB – motor detachable
PNB – motor detachable

Size _____

PAB **05 / 07 / 08 / 11 / 20**
PNB **05 / 07 / 08 / 34**

Number of stages _____

01 = 1-stage
02 = 2-stage

Material (pump parts) _____

G = cast iron (standard)
T = with wet paint coating (Teflonized)
C = with bright chrome plating

Pump version * _____

AA = standard version

Immersion depth [mm] _____

170 ... 550

Motor index _____

E = 0.37 kW **H** = 1.1 kW
F = 0.55 kW **K** = 2.2 kW
G = 0.75 kW

Power supply * _____

01 = 230/400 V, 50 Hz / 265/460 V, 60 Hz
05 = 230/400 V, 50 Hz

Motor type _____

XE = motor with "increased safety" type of enclosure, EExe
XD = motor with "flameproof type of enclosure", EExd

* Further versions on request

When ordering spare parts, always indicate the 10-place serial number (see motor rating plate).

Explosion-proofing as per ATEX 95

Since 01 July 2003 EC Directive 94/9/EC (ATEX) has applied to equipment and protective systems for normal use in potentially explosive areas.

The **ATEX (ATmosphère EXplosible – explosive atmosphere)** applies to all "equipment" (e.g. machines, apparatus, ...) which, "separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition".

The PAB and PNB pump series are ATEX-approved – they are certified and marked accordingly. The corresponding certificates of conformity as well as prototype test certificates and/or certificates of deposit are available for both series of pumps and can be obtained on request.

Technical explanation of electrical versions of drive motors

a) Type of protection "increased safety" EExe

The performance ratings of our pump motors apply to the version of motors for explosion group II. The indicated performance ratings and operating values apply to the ignition classes listed. All lower explosion groups and temperature classes are included therein.

In compliance with EN 50014 / 50019 the motors are marked as follows:

for type EX63: **II 2 G EExe II T3**

for type EX71: **II 2 G EExe II T4**

The indicated performance ratings and operating values apply to mode S1, the rated frequency and voltage, a maximum coolant temperature (ambient temperature) of 40 °C and a site altitude of up to 1000 m above sea level.

The pumps normally come with a 6-pole terminal board for 230/400 V, delta/star.

After delivery we switch the motors to the higher star-connected voltage of 400 V.

The voltage tolerance permissible in operation amounts, in compliance with EN 60034, to ± 5% at the rated power and frequency.

b) Type of protection "flameproof enclosure" EExd

The performance ratings of our pump motors apply to the version of motors for explosion group II C. The indicated performance ratings and operating values apply to ignition class T4. All lower explosion groups and temperature classes are included therein.

The motors are marked as follows in conformity with EN 50014 / 50019.

II 2 G EExd II C T4

The indicated performance ratings and operating values apply to mode S1, the rated frequency and voltage, a maximum coolant temperature (ambient temperature) of 40 °C and a site altitude of up to 1000 m above sea level.

The pumps normally come with a 6-pole terminal board for 230/400 V, delta/star. After delivery we switch the motors to the higher star-connected voltage of 400 V.

The voltage tolerance permissible in operation amounts, in compliance with EN 60034, to ± 5% at the rated power and frequency.

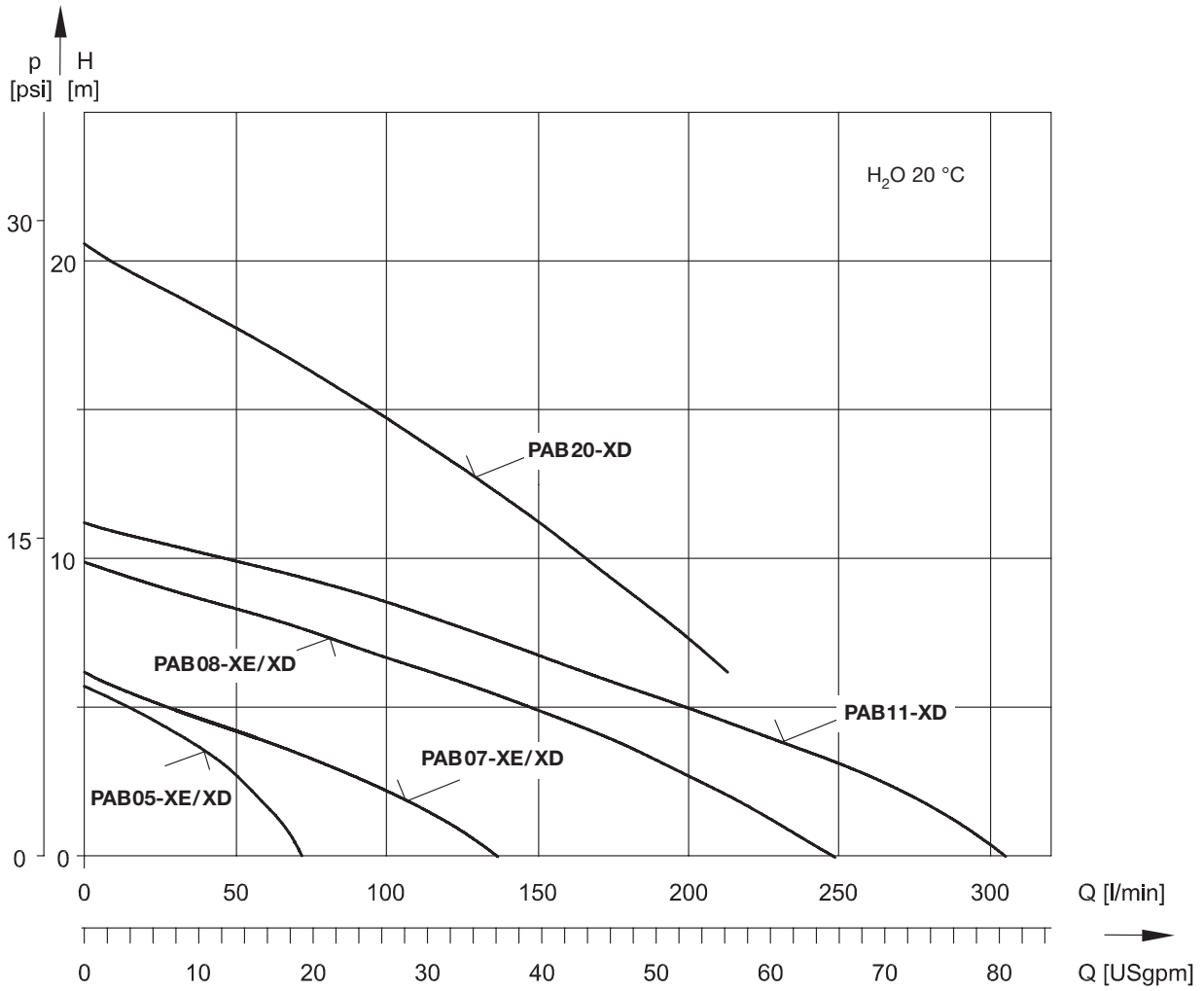
Hazardous areas

The decision about which explosion group will have to be used is exclusively up to the user.

In case of doubt, the responsible supervisory authority that also decides which protective measures are required to prevent damage. According DIN 57165 and VDE 0165 hazardous areas are differentiated on the basis of zones.

Zone	Motor in type of enclosure EExe – "increased safety"	Motor in type of enclosure EExd – "flameproof"
0	impermissible	impermissible
1	impermissible	permissible
2	permissible	permissible

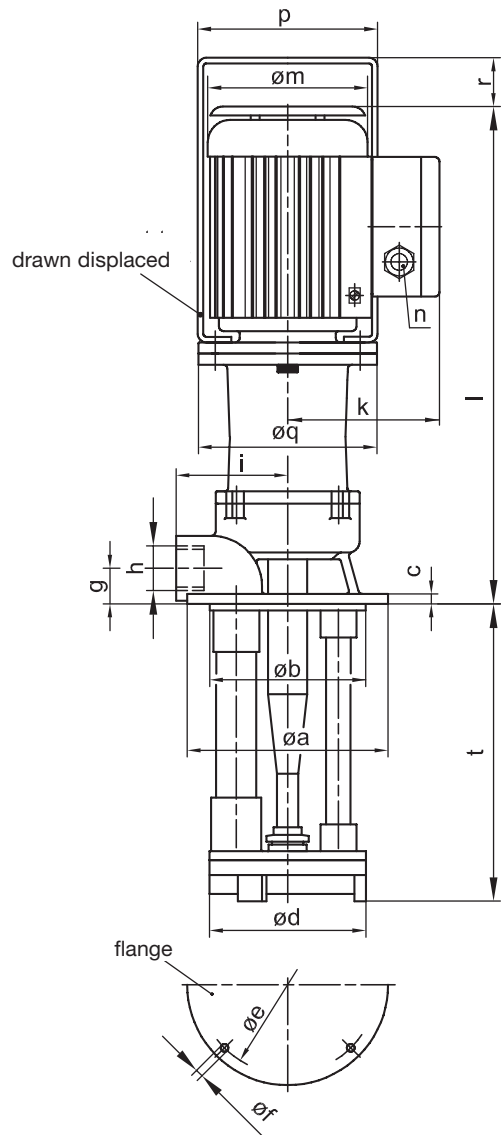
PAB – Performance data for 50 Hz or 60 Hz with impeller change



PAB – Electrical data

Type	Frequency [Hz]	Motor index	P ₂ [kW]	Rated speed [rpm]	Motor type	Rated current [A] at		Starting factor I _A /I _N	Power factor cos φ	Safe locked-rotor time t _E [s]			
						230 V 265 V	400 V 460 V			temperature class			
						T1	T2	T3	T4				
PAB05-XE PAB07-XE	50	E	0.37	2902	EX71L2370	1.6	0.91	7.8	0.72	30	30	27	7
	60			3502		1.33	0.77						
PAB08-XE	50	F	0.55	2820	EX71L2550	2.1	1.21	5.9	0.85	30	30	27	7
	60			3420		1.82	1.05						
PAB05-XD PAB07-XD	50	E	0.37	2830	ADCF71	1.6	0.93	5.3	0.84	-	-	-	-
	60			3380			0.95						
PAB08-XD	50	F	0.55	2830	ADCF71	2.25	1.3	6	0.83	-	-	-	-
	60			3380		2.3		6.5					
PAB11-XD	50	G	0.75	2780	ADCF71	3	1.7	6	0.85	-	-	-	-
	60			3360				6.6					
PAB20-XD *	50	H	1.1	2840	ADCF71	3.95	2.3	6.1	0.85	-	-	-	-
	60			3440				6.9					

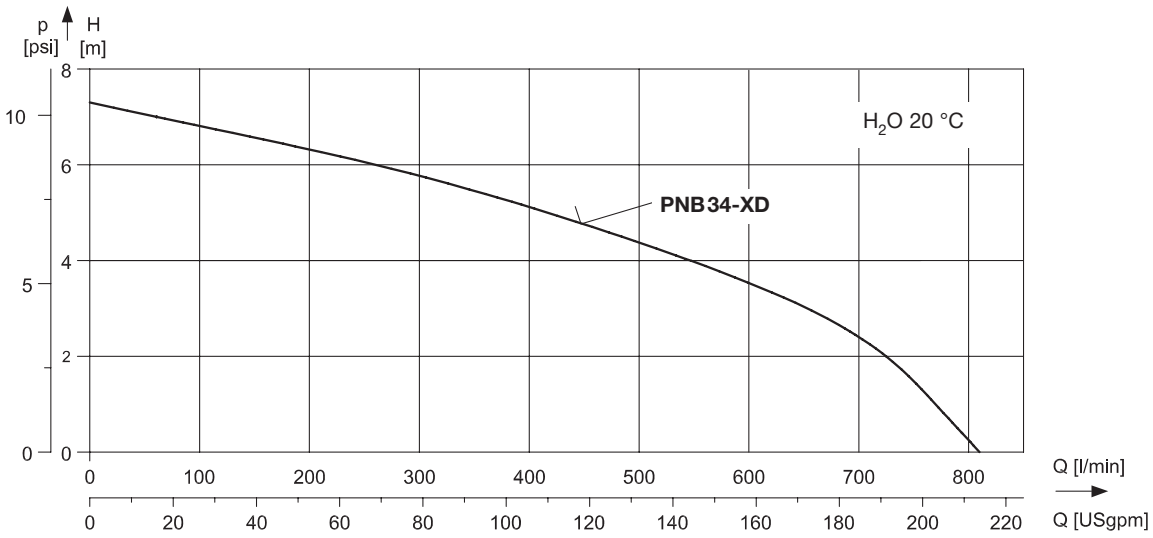
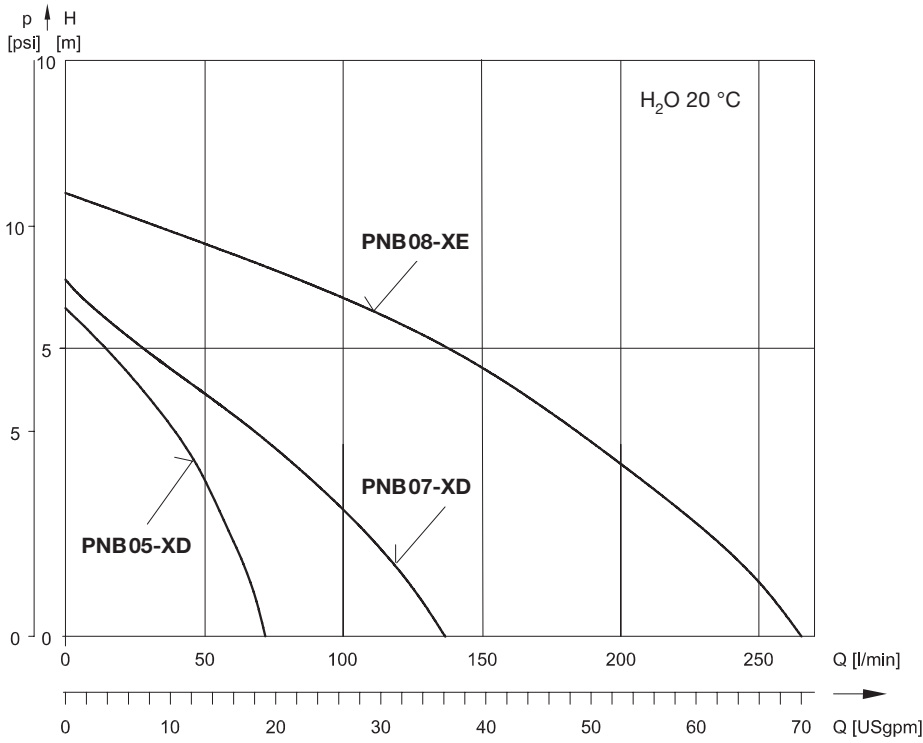
* 2-stage



PAB – Dimensions and weights

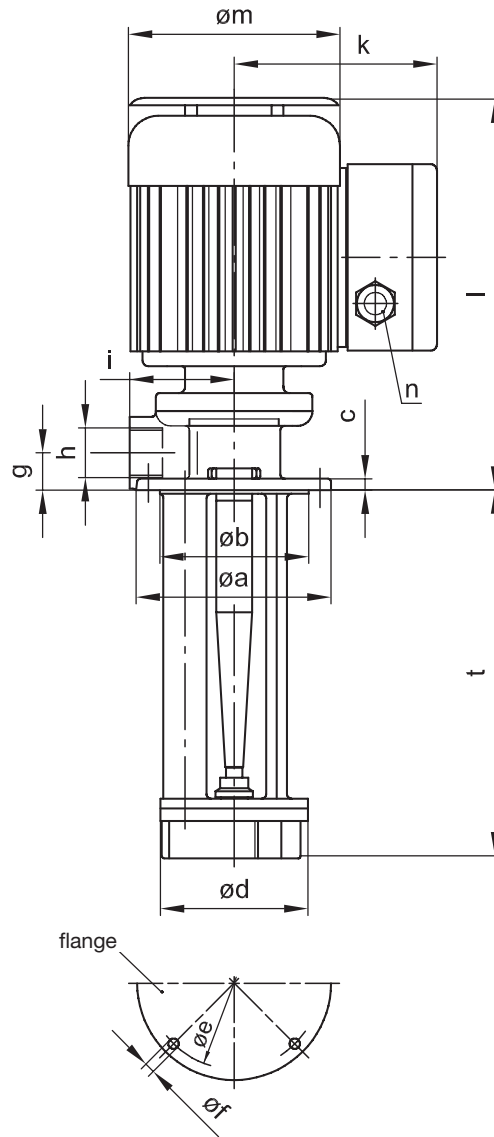
Type	Immersion depth t [mm]	Weight approx. [kg]	Dimensions [mm]															
			l	$\varnothing m$	$\varnothing a$	$\varnothing b_{-0.2}$	c	$\varnothing d$	$\varnothing e$	$\varnothing f$	g	h	i	k	n	p	$\varnothing q$	r ca.
PAB05-XE PAB07-XE	170	13																
	220	—	423	140	130	100	7.5	99	115	7	25	G1	70	132	M20x1.5	164	140	36
	250	—																
	350	15																
PAB08-XE	230	21																
	270	—	464	140	180	140	9	140	160	7	32	G1¼	100	132	M20x1.5	164	160	30
	350	—																
	440	22																
PAB05-XD PAB07-XD	170	13																
	220	—	397	143	130	100	7.5	99	115	7	25	G1	70	136	M25x1.5	164	140	28
	250	—																
	350	14																
PAB08-XD PAB11-XD	230	21																
	270	—	448	143	180	140	9	140	160	7	32	G1¼	100	136	M25x1.5	164	160	48
	350	—																
	440	23																
PAB20-XD	270	28	448	143	180	140	9	140	160	7	32	G1¼	100	136	M25x1.5	164	160	48

PNB – Performance data for 50 Hz or 60 Hz with impeller change



PNB – Electrical data

Type	Frequency [Hz]	Motor index	P ₂ [kW]	Rated speed [rpm]	Motor type	Rated current [A] at		Starting factor I _A /I _N	Power factor cos φ	Safe locked-rotor time t _E [s]			
						230 V 265 V	400 V 460 V			temperature class			
						T1	T2	T3	T4				
PNB08-XE	50	F	0.55	2820	EX712550	2.1	1.21	5.9	0.85	30	30	27	7
	60			3420		1.82	1.05	6.5					
PNB05-XD PNB07-XD	50	E	0.37	2830	ADCF71	1.6	0.93	5.3	0.84	-	-	-	-
	60		0.44	3380			0.95	5.8	0.85				
PNB34-XD	50	K	2.2	1435	FLSD100	8.3	4.8	6.4	0.85	-	-	-	-
	60			1745		7.5	4.3	6.6	0.8				



Dimensions and weights

Typ	Immersion depth t [mm]	Weight approx. [kg]	Dimensions [mm]												
			l	$\varnothing m$	$\varnothing a$	$\varnothing b_{-0.2}$	c	$\varnothing d$	$\varnothing e$	$\varnothing f$	g	h	i	k	n
PNB08-XE	230	17	280	140	180	140	9	140	160	7	30	G1¼	95	132	M20x1.5
	270														
	350														
	440														
	550	21													
PNB05-XD PNB07-XD	220	10	245	142	130	100	7.5	99	115	7	25	G1	70	136	M25x1.5
	250	12													
	350														
PNB34-XD	445	83	446	198	300	240	12	239	270	14	42	G2	152	206	M25x1.5
	620	88													



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