

## Water jet vacuum pump type P 20



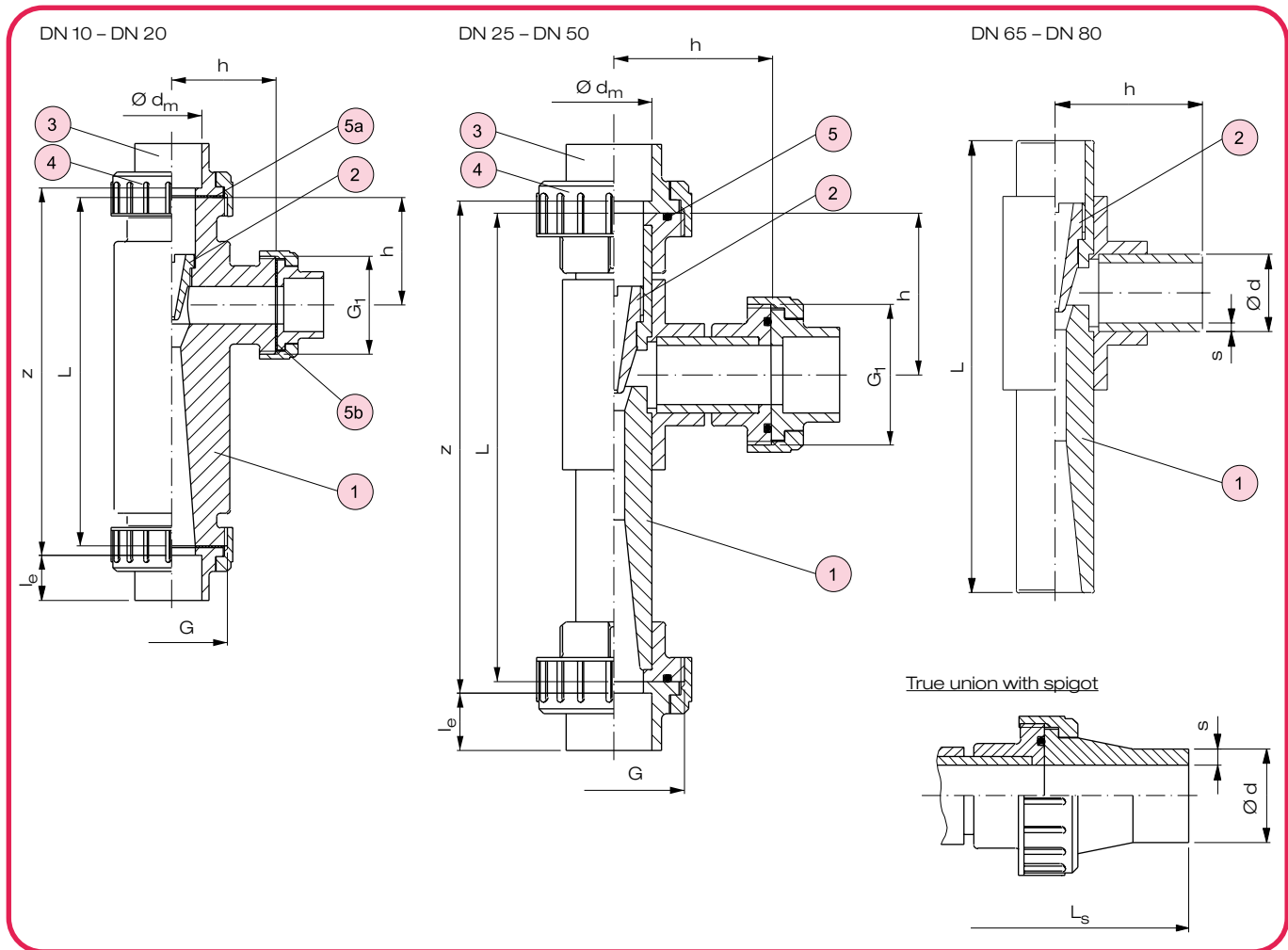
Body material	PVC-U	PP	PVDF
Sealing material		• EPDM • FKM	
Working temperature	0 °C up to 60 °C	- 10 °C up to 80 °C	- 20 °C up to 100 °C
Nominale size / pressure class	DN 10 up to DN 80 / PN 10		
Connection with pipe	<ul style="list-style-type: none"> <li>• True union with cement- / welding socket (DN 10 – DN 50)</li> <li>• True union with spigot (DN 10 – DN 50)</li> <li>• Cement- / Welding spigot (DN 65 – DN 80)</li> </ul>		
Length	Company standard		

### Example for an invitation to tender text:

Water jet vacuum pump type P 20, DN 25, PN 10, PVC-U / EPDM, with nozzle bore hole 4,0 mm, true union cement socket d 32

**Document:** FRANK\_DB\_L7\_Wasserstrahlpumpe Typ P 20\_01-2021\_EN

# Water jet vacuum pump type P 20



No.	Description	Number	Material
1	Body	1	PVC-U, PP, PVDF
2	Nozzle	1	PVC-U, PP, PVDF
3	Insert <sup>1,2)</sup>	1	PVC-U, PE, PP, PVDF
4	Union nut <sup>1,2)</sup>	3	PVC-U, PP, PVDF

<sup>1)</sup> DN 10 - DN 20    <sup>2)</sup> DN 25 - DN 50

No.	Description	Number	Material
5	O-ring <sup>2)</sup>	3	EPDM, FKM
5a	Sheet gasket <sup>1)</sup>	2	EPDM, FKM
5b	Sheet gasket <sup>1)</sup>	1	EPDM, FKM

## Description

- Water jet vacuum pumps are mainly used for pumping and mixing chemical media, for adding acids and alkalis in water treatment or for lifting liquids.
- The propellant is accelerated so strongly in the nozzle of the water jet vacuum pump that liquid or gaseous medium is entrained or aspirated in from the suction line. The principle of operation leads to a good mixing of the propelling and aspirated medium.
- The suction quantity of a water jet vacuum pump is mainly influenced by the propulsion water volume and the back pressure (see characteristic diagrams from page L7 - 33 to 43).
- To ensure proper functioning a straight and unobstructed inlet and outlet length of at least 5 x DN is recommended.

## Special features

- All wetted parts made of plastic
- No mechanically moving parts
- Largely maintenance-free
- Any installation position
- Flow direction marked on housing

## Working pressure $p_B$ in bar

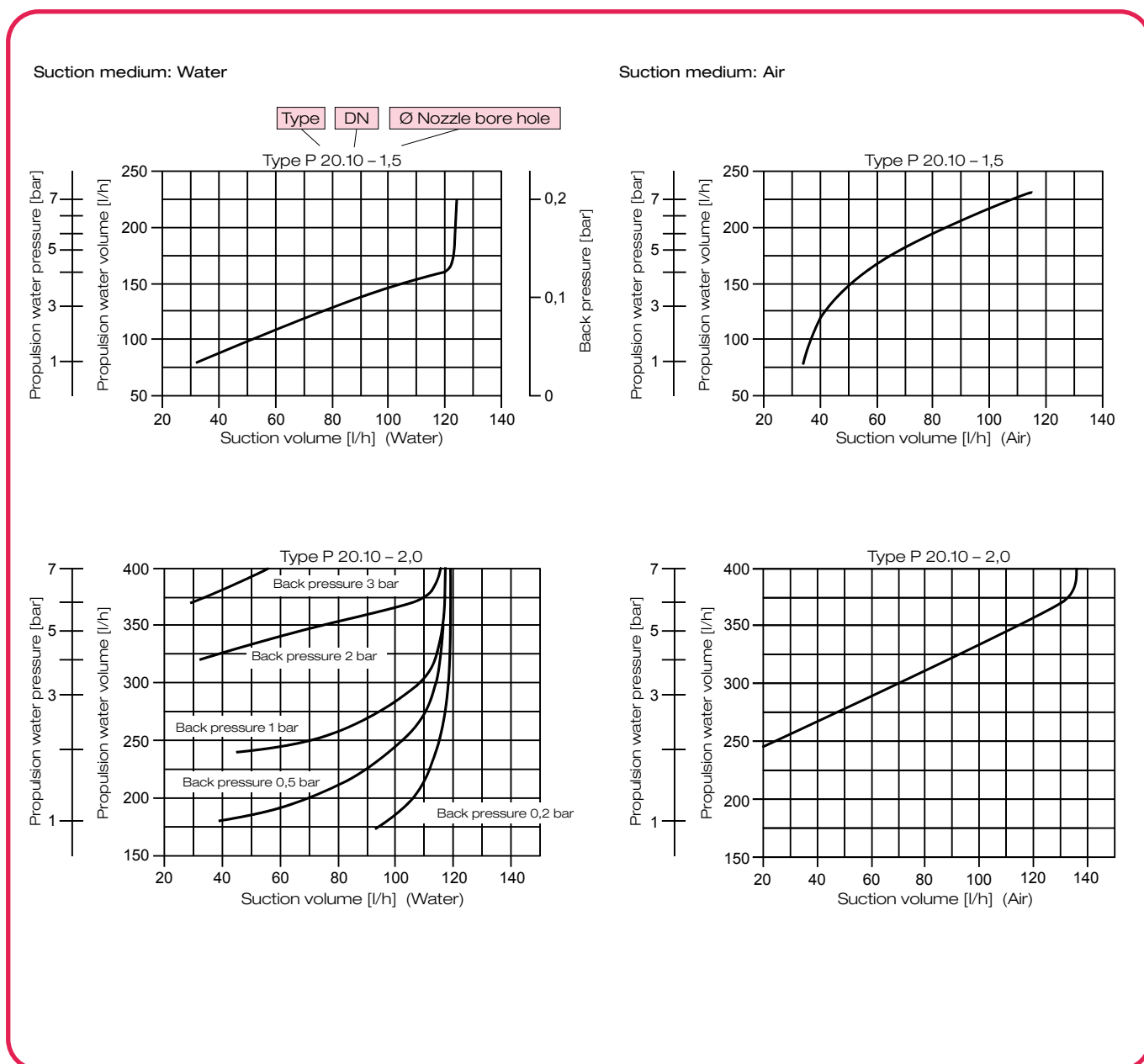
Body material	$T_B$ [°C]	$p_B$ [bar]
PVC-U	0 up to 25	10
	40	6
	60	1
PP	- 10 up to 30	10
	40	7
	60	4,3
	80	1,7
PVDF	- 20 up to 40	10
	60	7,5
	80	5,3
	100	2

# Water jet vacuum pump type P 20

## Dimensions and weights

Dimensions in mm														Weight in kg / pc.					
DN	G	G <sub>1</sub>	h	L	Cement socket			Welding socket			Spigot PP			Spigot PVDF			PCV-U	PP	PVDF
					d <sub>m</sub>	z	l <sub>e</sub>	d <sub>m</sub>	z	l <sub>e</sub>	d	L <sub>S</sub>	s SDR 11	d	L <sub>S</sub>	s SDR 21			
10	3/4"	3/4"	35	110	16	116	14	15,5	120	13	-	-	-	-	-	-	0,14	0,10	0,17
15	1"	3/4"	39	125	20	135	16	19,5	120	14	20	218	1,9	20	218	1,9	0,22	0,17	0,26
20	1 1/4"	3/4"	45	145	25	151	19	24,5	155	16	25	259	2,3	25	255	1,9	0,39	0,26	0,49
25	1 1/2"	1 1/2"	71	195	32	201	22	31,5	205	18	32	315	2,9	32	315	2,4	0,49	0,40	0,69
32	2"	2"	87	239	40	245	26	39,5	249	20	40	365	3,7	40	365	2,4	0,88	0,69	1,24
40	2 1/4"	2 1/4"	105	301	50	307	31	49,5	311	23	50	435	4,6	50	433	3,0	1,38	1,09	1,88
50	2 3/4"	2 3/4"	128	351	63	357	38	62,5	361	27	63	489	5,8	63	489	3,0	2,45	1,93	3,34
65	-	-	115	388	-	-	-	-	-	-	75	-	6,9	75	-	3,6	2,35	1,51	2,92
80	-	-	149	465	-	-	-	-	-	-	90	-	8,2	90	-	4,3	4,09	2,57	4,91

## Characteristics for water jet vacuum pump P 20.10

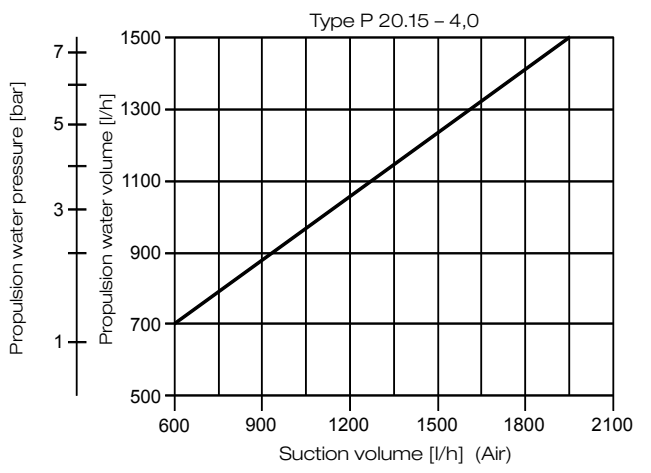
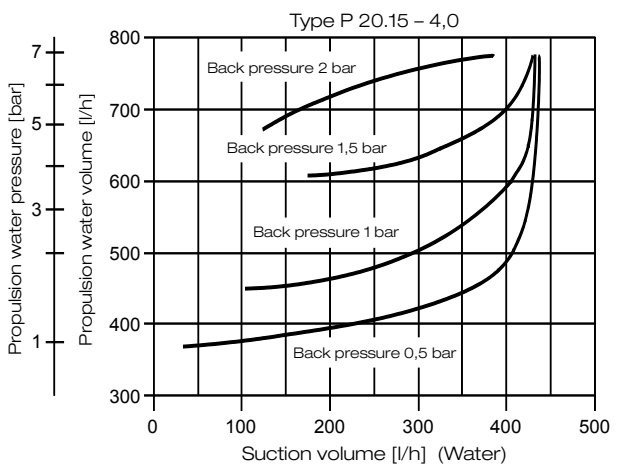
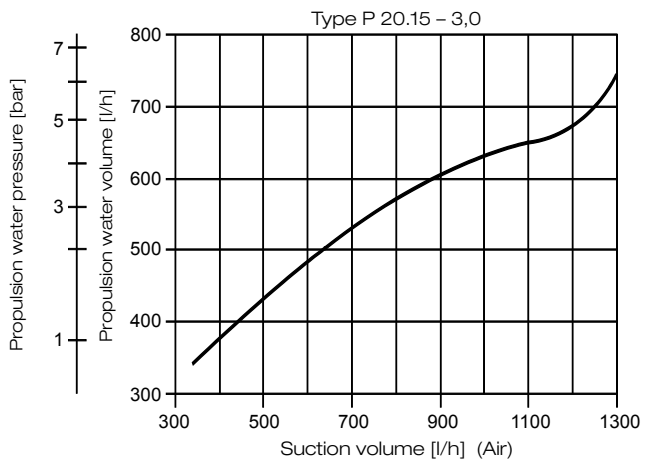
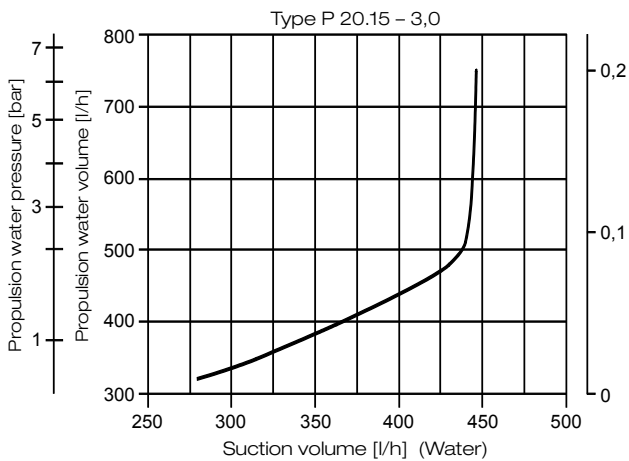
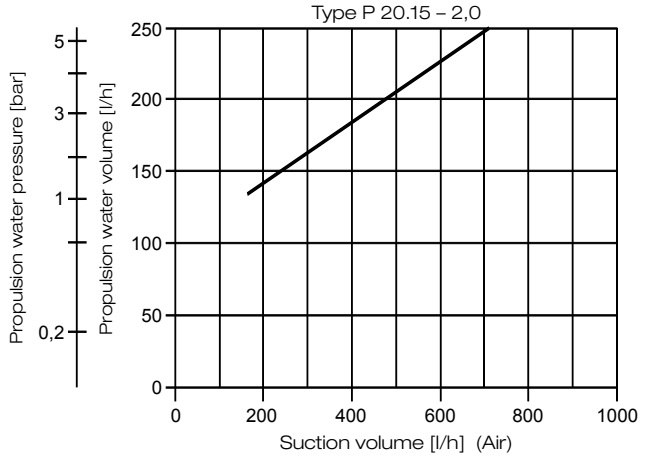
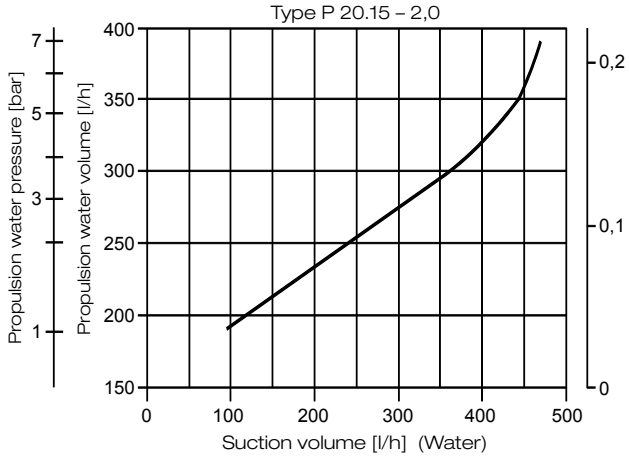


# Water jet vacuum pump type P 20

Characteristics for water jet vacuum pump P 20.15

Suction medium: Water

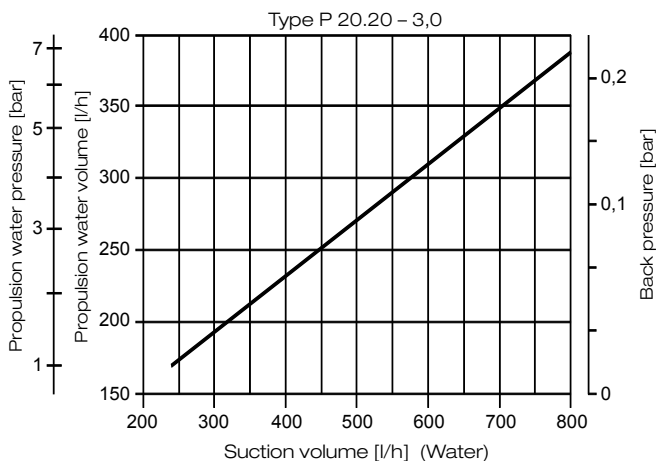
Suction medium: Air



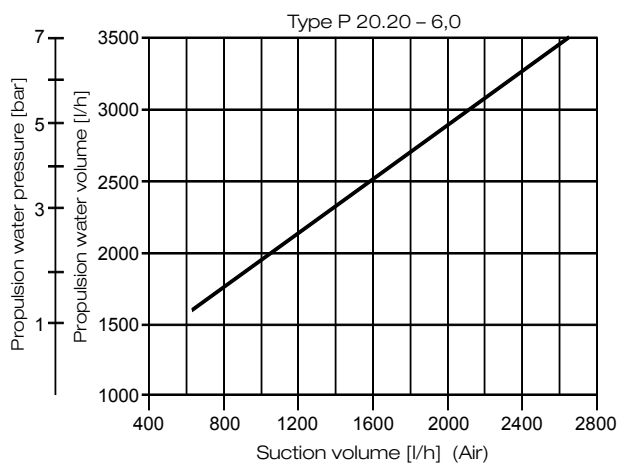
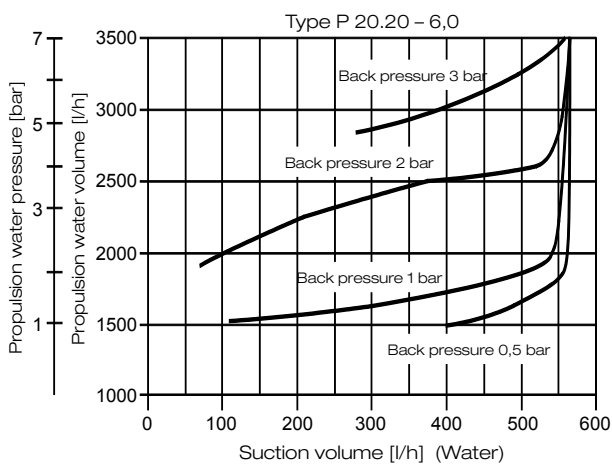
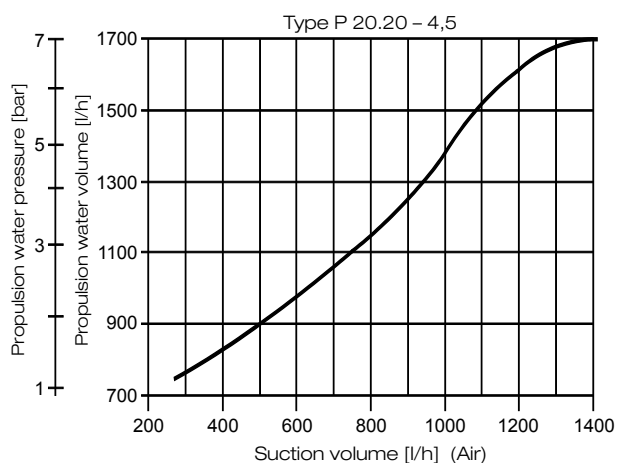
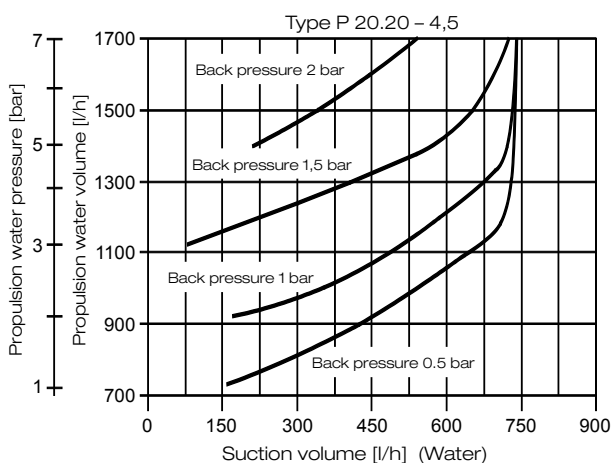
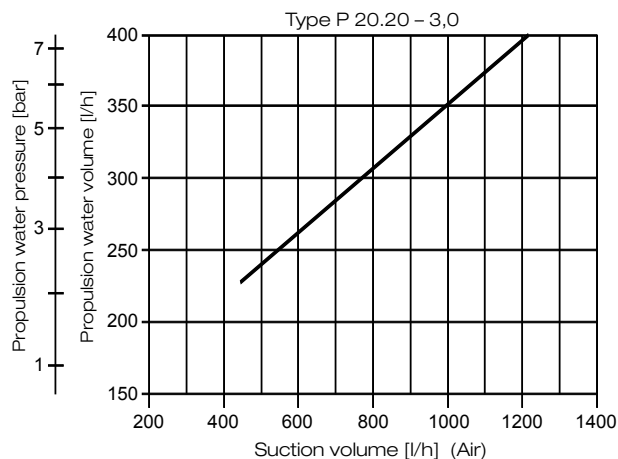
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.20

Suction medium: Water



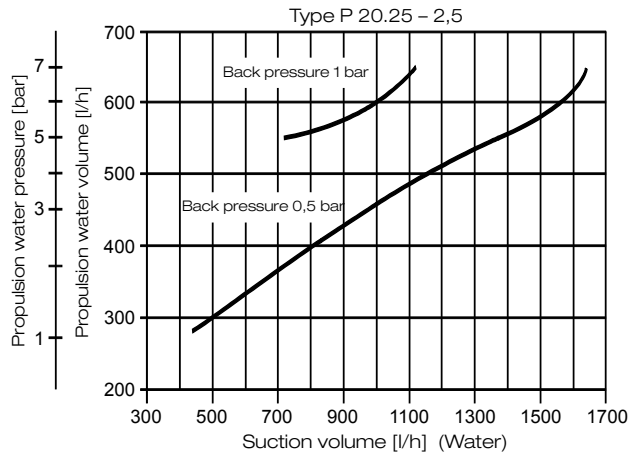
Suction medium: Air



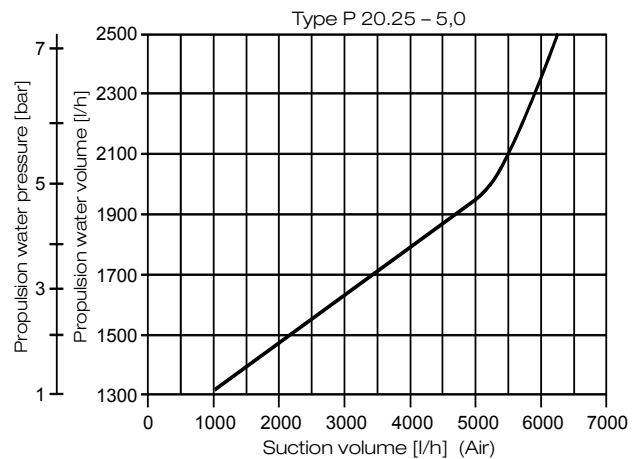
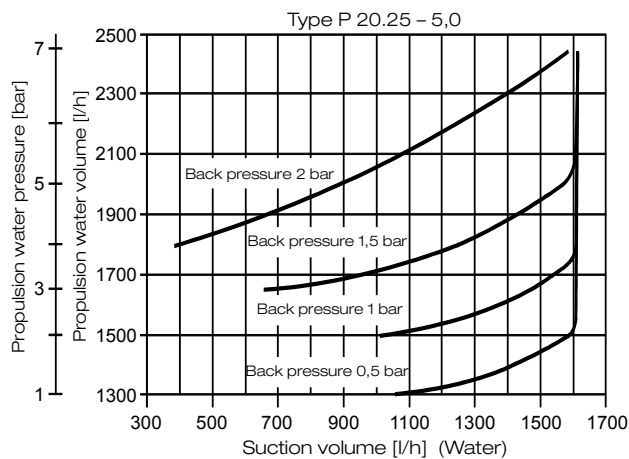
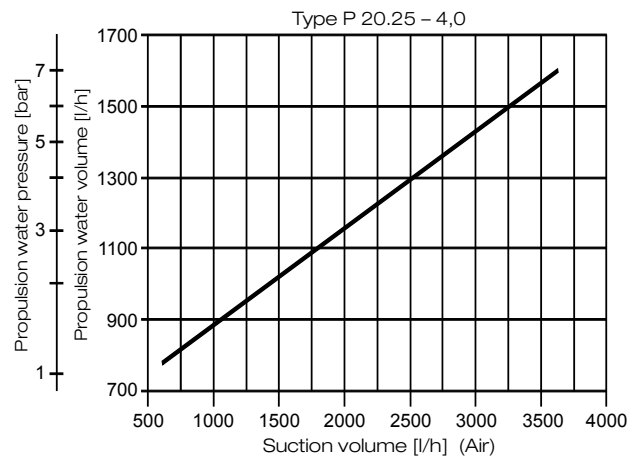
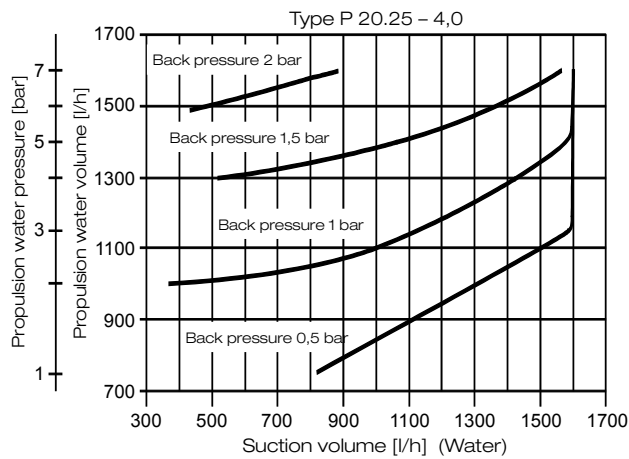
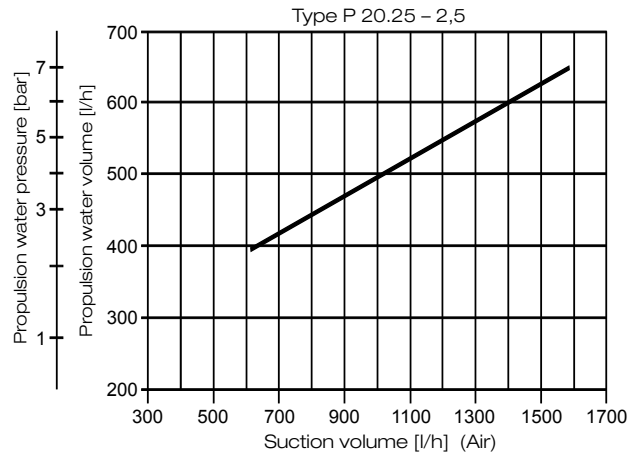
# Water jet vacuum pump type P 20

Characteristics for water jet vacuum pump P 20.25

Suction medium: Water



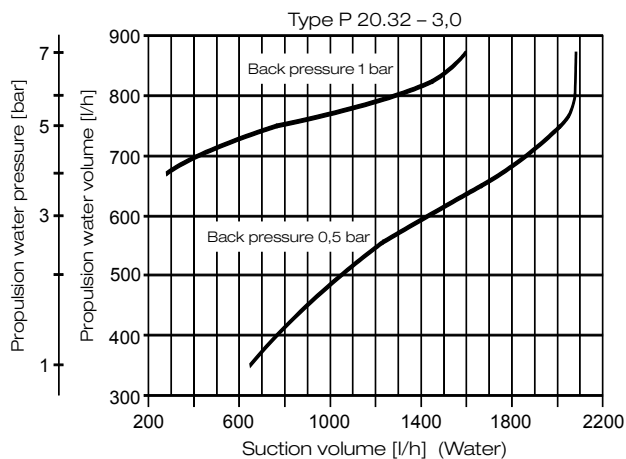
Suction medium: Air



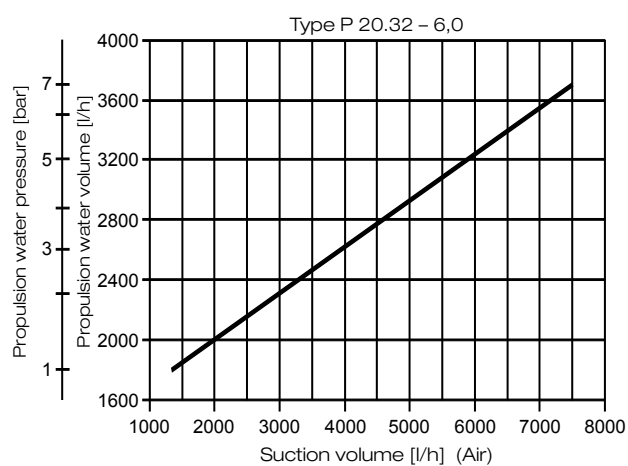
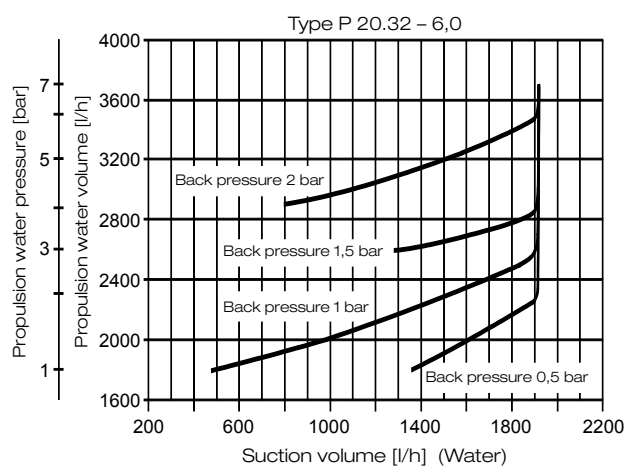
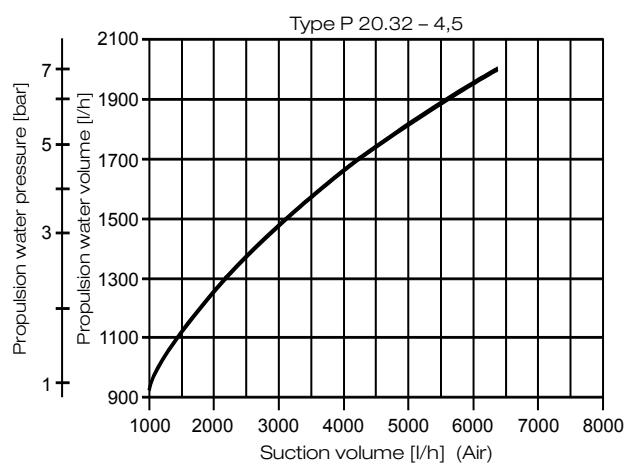
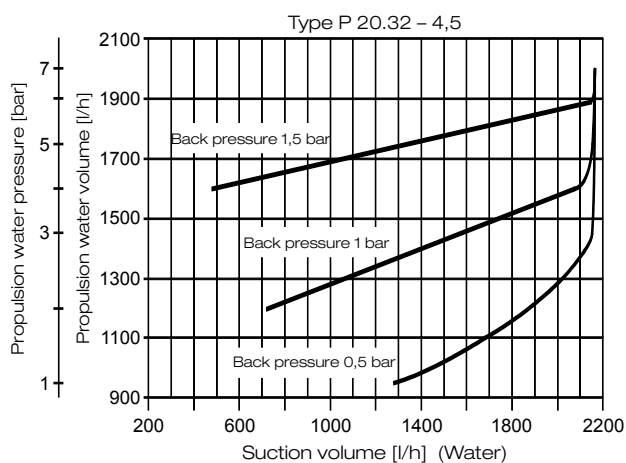
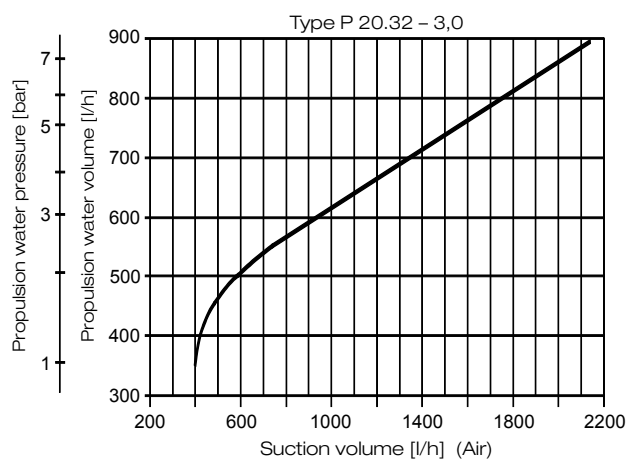
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.32

Suction medium: Water



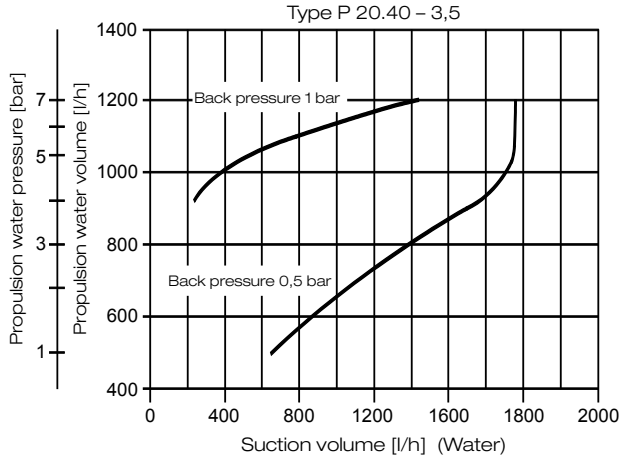
Suction medium: Air



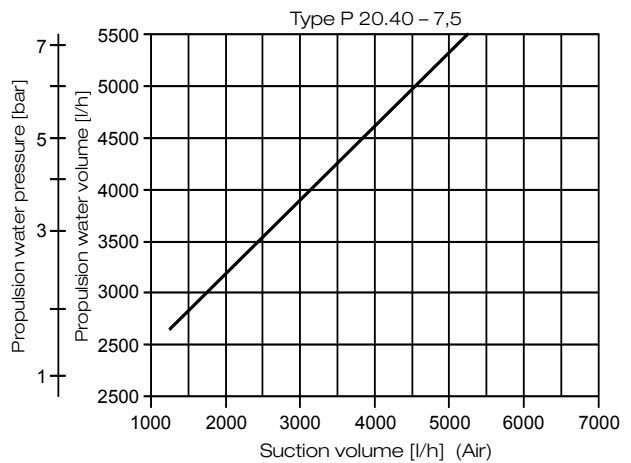
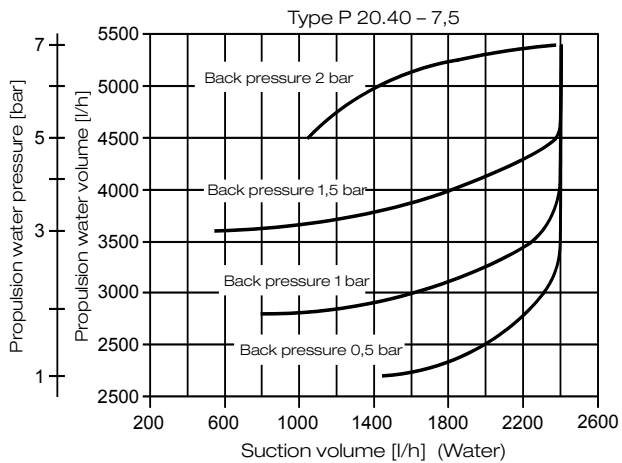
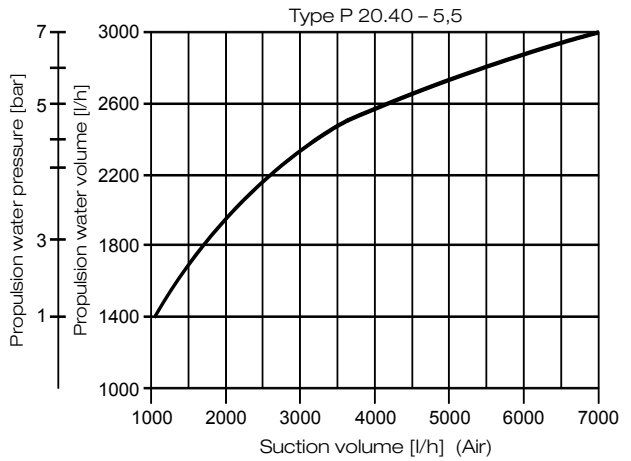
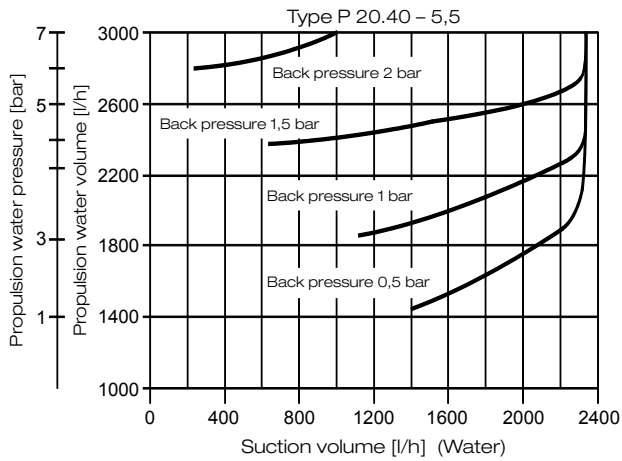
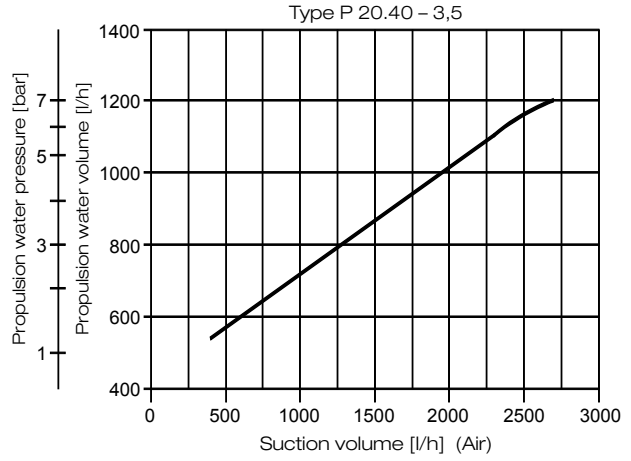
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.40

Suction medium: Water



Suction medium: Air

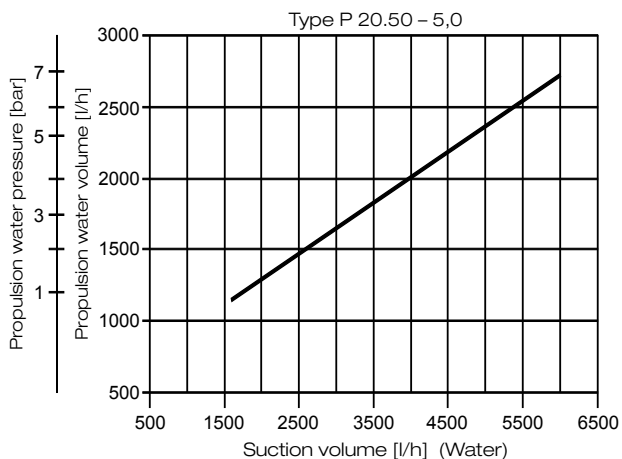




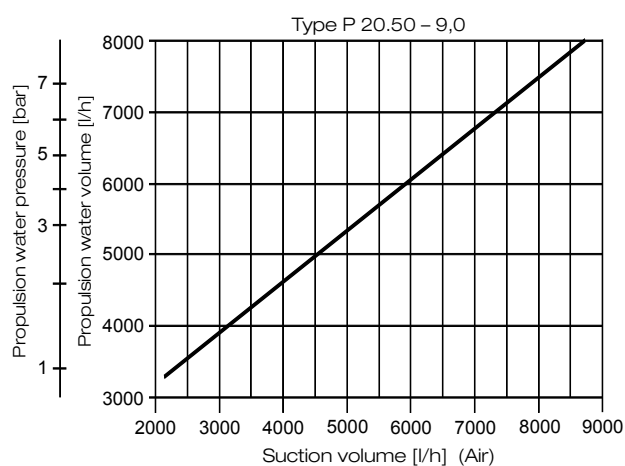
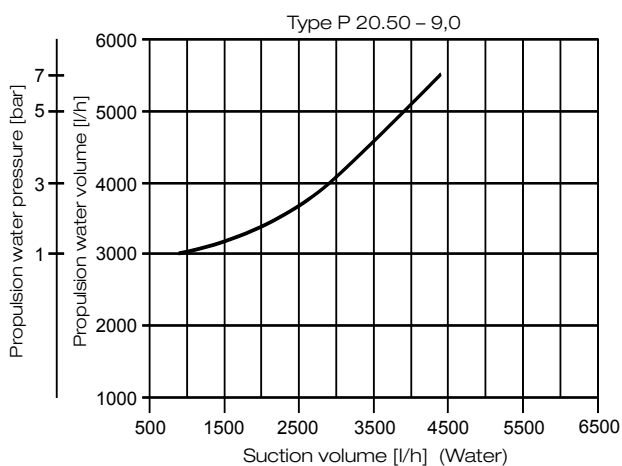
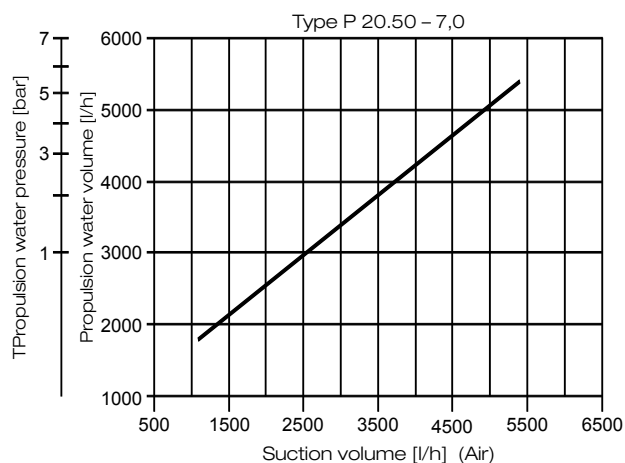
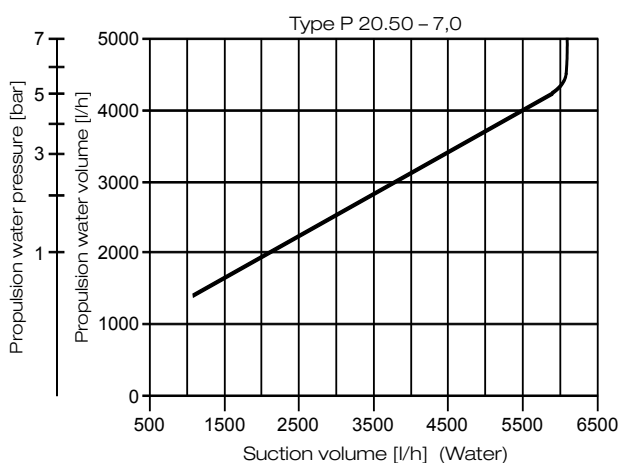
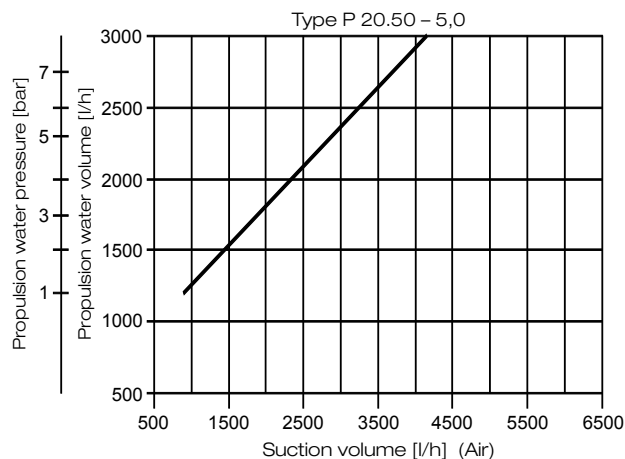
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.50

Suction medium: Water



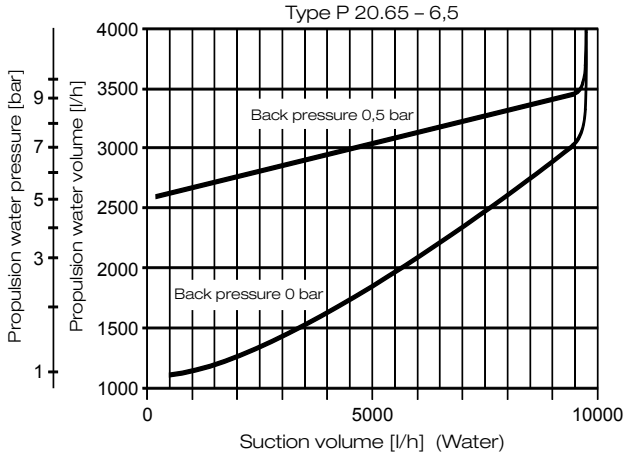
Suction medium: Air



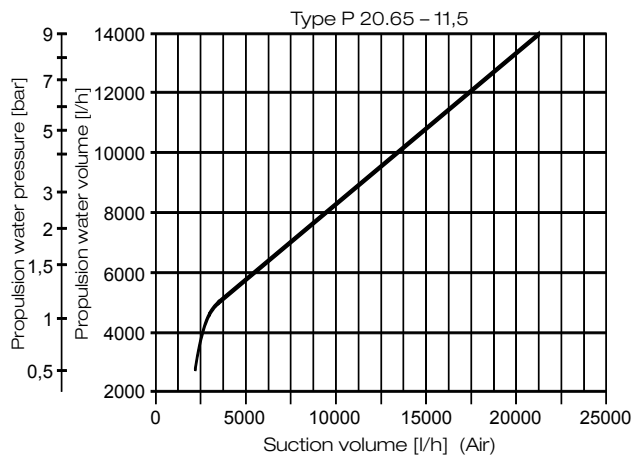
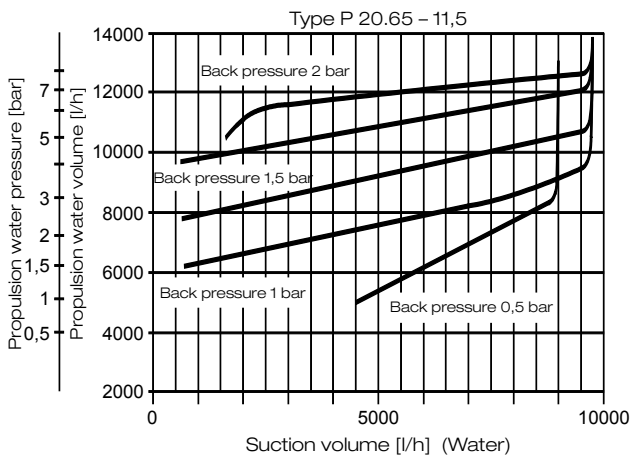
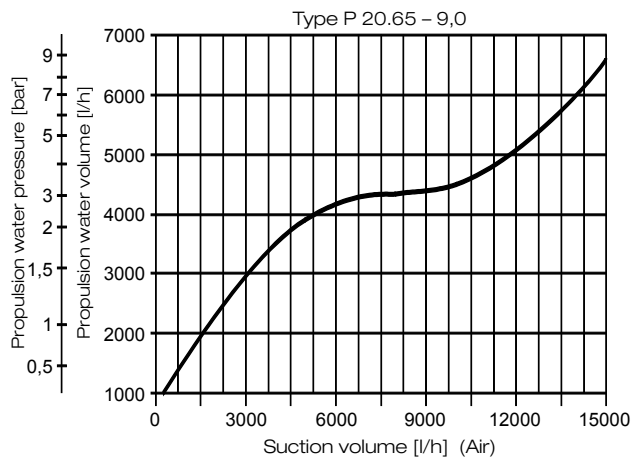
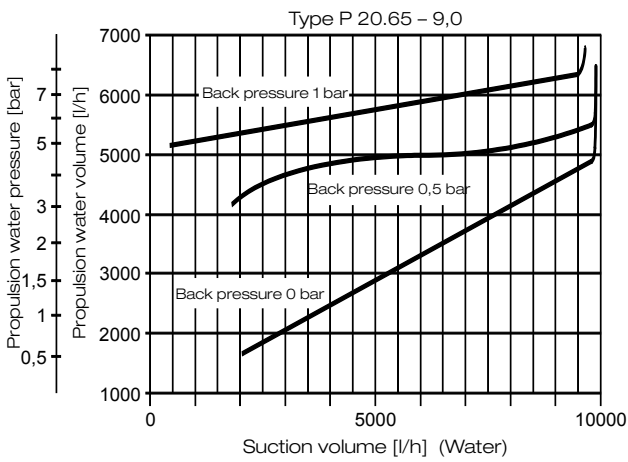
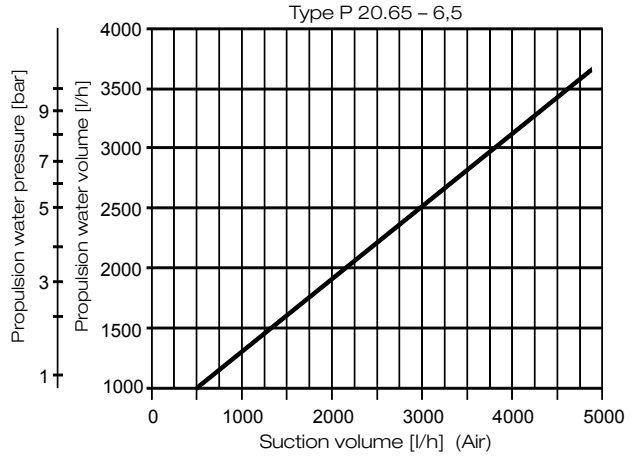
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.65

Suction medium: Water



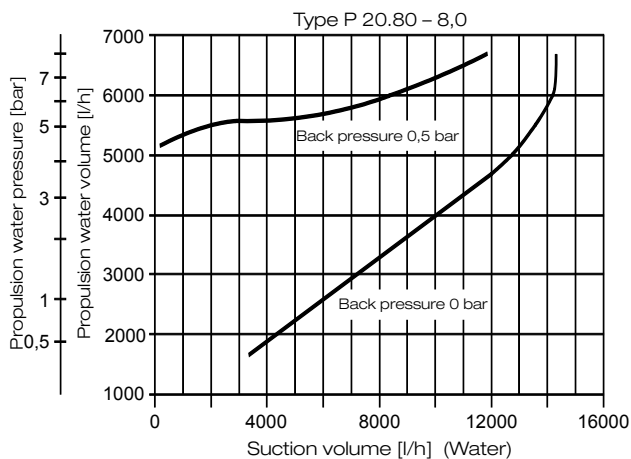
Suction medium: Air



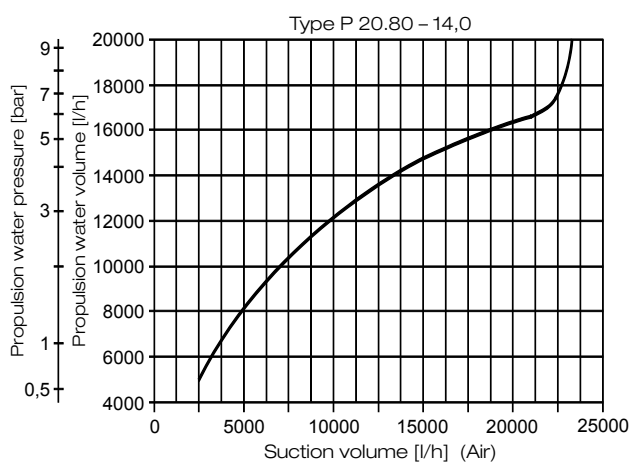
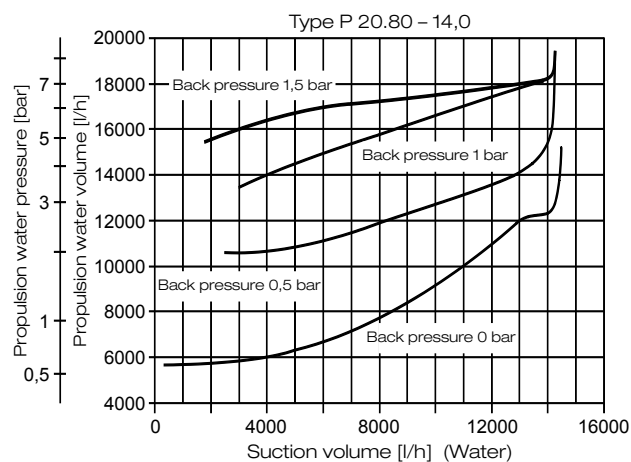
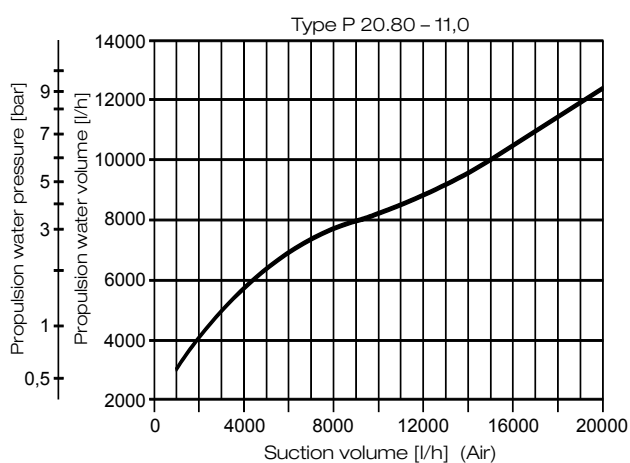
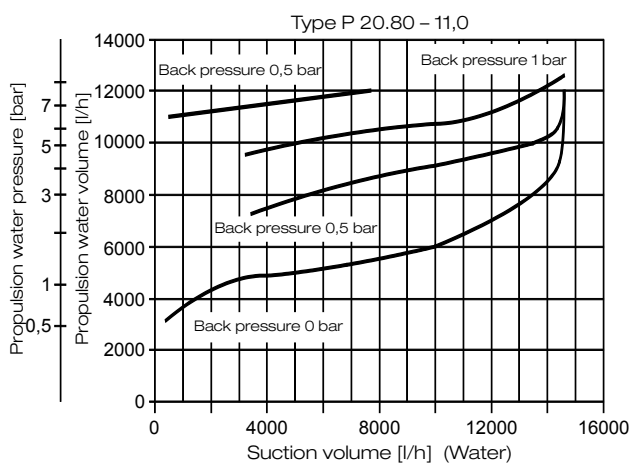
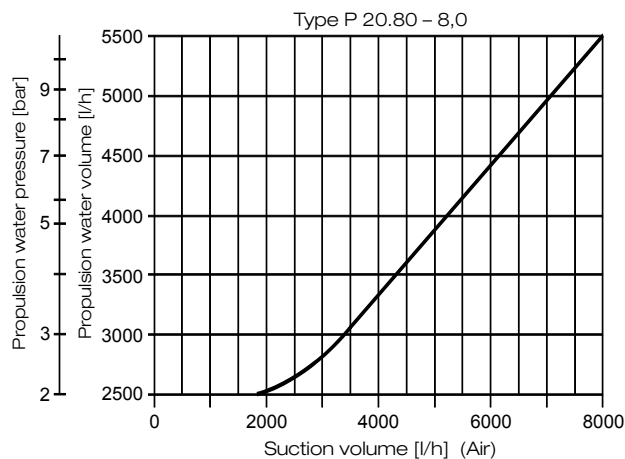
# Water jet vacuum pump type P 20

## Characteristics for water jet vacuum pump P 20.80

Suction medium: Water



Suction medium: Air



# Water jet vacuum pump type P 20

## Installation instructions

- We recommend installing the water jet vacuum pump between two detachable pipe connections. It is advantageous to provide shut-off devices to facilitate any later removal.
- A pipe length of at least 5 x DN must be provided upstream and downstream of the pump.
- It is recommended to install a flow meter in the suction line to obtain reference values for the suction capacity of the water jet vacuum pump.
- It is advantageous to install pressure gauges upstream and downstream of the water jet vacuum pump to read off the line pressure and back pressure.
- The suction time is significantly reduced by installing a non-

return valve in the suction line.

- The upstream and downstream pipe must have at least the same nominal diameter as the pump.
- Precise regulation of the propulsion and suction flow is possible by installing throttle valves. The use of a V 251 throttle valve is particularly recommended for regulating the suction volume.

## Fault information

- Faults can occur if the operating water pressure fluctuates or is too low, if the back pressure is too high or if the nozzle is dirty and clogged.

## Dimensioning of a water jet vacuum pump

### Information required:

Propulsion water pressure: bar  
 Propulsion water volume: l/h  
 Suction volume: l/h  
 Suction medium:  
 Back pressure: bar

### Example:

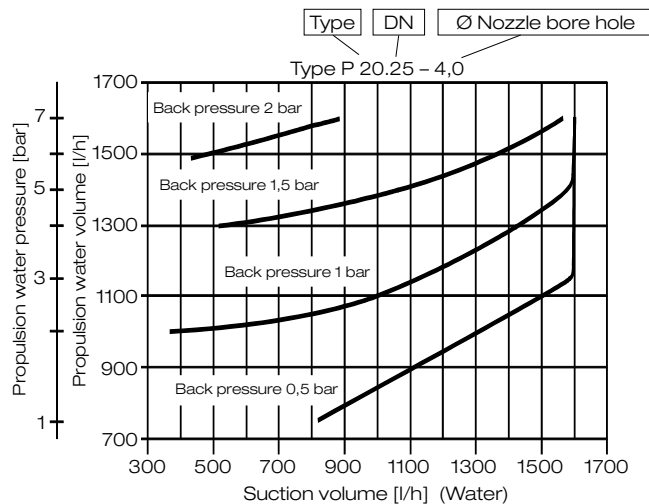
3 bar  
 1200 l/h  
 550 l/h  
 HCl 30%  
 1 bar

### Data according to diagram:

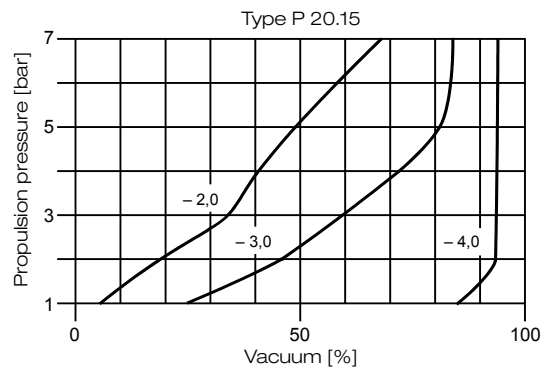
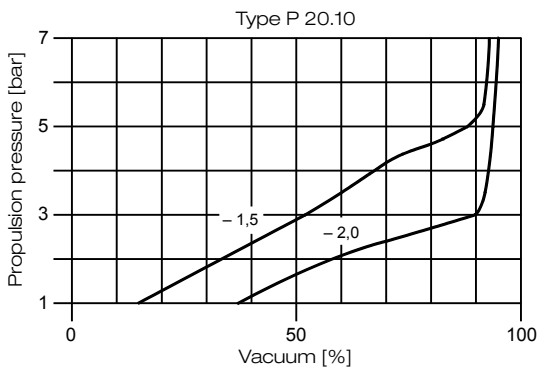
3 bar  
 1180 l/h  
 1150 l/h  
 H<sub>2</sub>O  
 1 bar

The suction volume must be adjusted to the desired value.

selected type

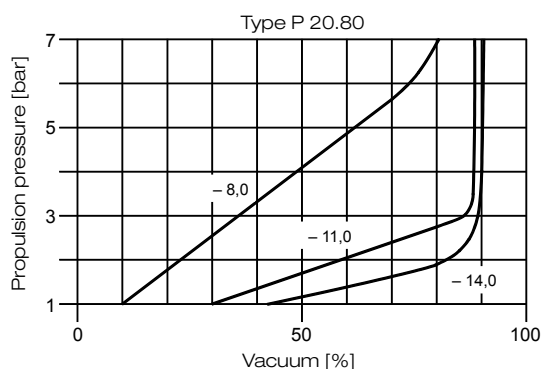
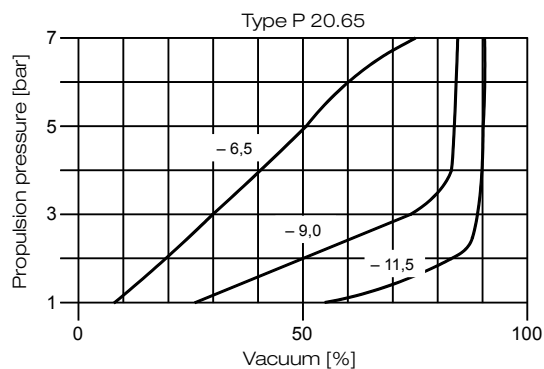
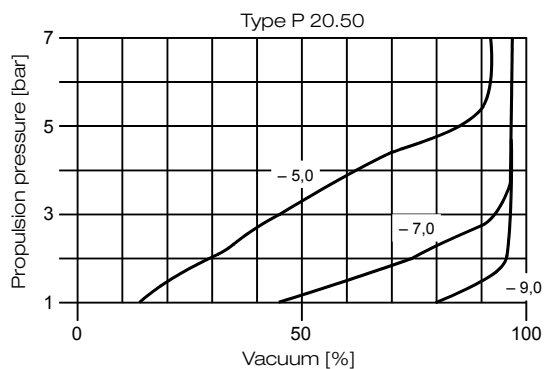
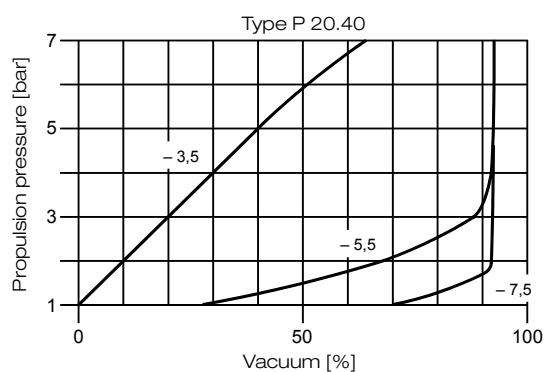
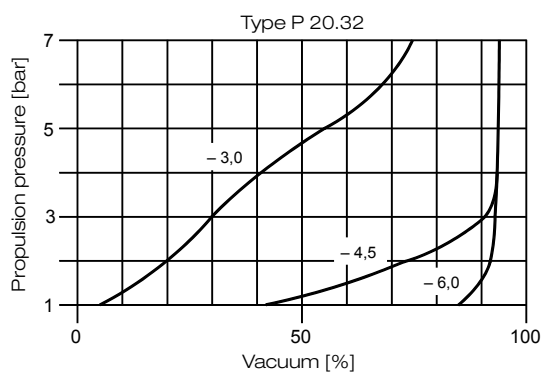
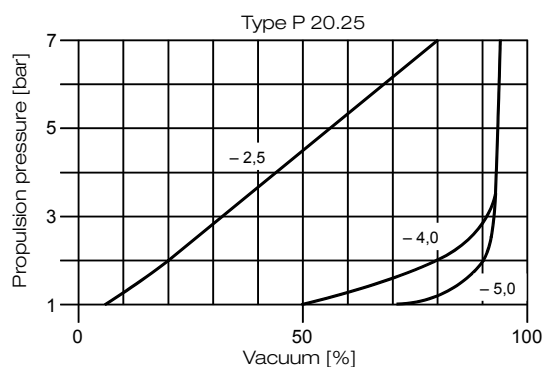
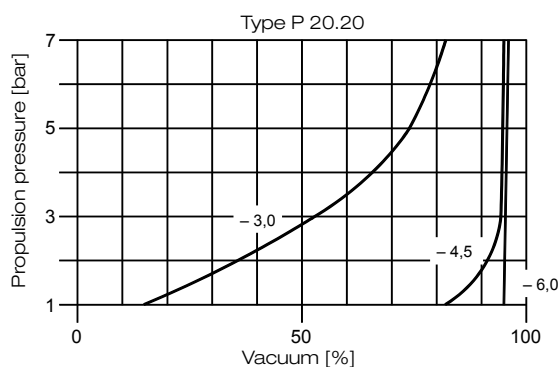


## Max. attainable vacuum for water jet pump P 20, DN 10 – DN 15



# Water jet vacuum pump type P 20

Max. attainable vacuum for water jet pump P 20, DN 20 – DN 80



**Note:**  
The indications on the characteristic (e.g. 3.0) are the respective diameter of the nozzle bore hole.