

SIHI^{prime} - Side Channel Pumps

Self-priming, segmental type

AEH-X 1201 ... 3608



TECHICAL DATA

Capacity:	from 0.4 up to 7.5 m³/h
Delivery head:	from 10 up to 312 m
Speed:	1450 rpm (max. 1800 rpm)
Temperature:	max. 120 °C max. 180 °C for high temperature design (higher temperatures on request)
Casing pressure:	PN 40
Shaft sealing:	mechanical seal
Flange connections:	DIN 2501 / PN 40
Direction of rotation:	clockwise (when seen from the drive end)
Protection classification:	Ex II2 Gc T1-T5

APPLICATION

The Sterling SIHI AEH-X pump is a self-priming side channel pump capable of handling gas along with the medium and operates at a low noise level.

The AEH-X pumps, as per DIN EN 734, are used for problem-free pumping of clean liquids at unfavourable suction side conditions. (condensates, corrosive liquids, ...).

Different material possibilities with uniform dimensions and performance characteristics as well as the standard exchangeable components are used for the construction. The AEH-X pumps are particularly recommendable in a wide application range in many sectors such as:

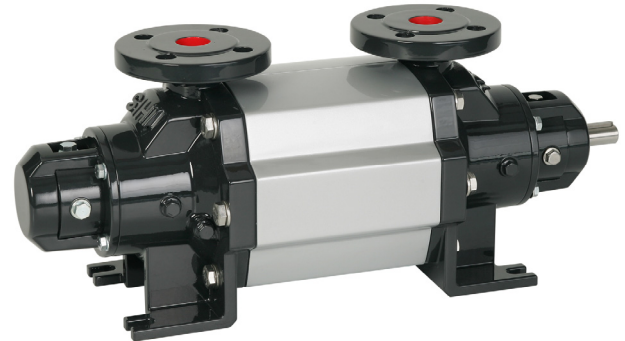
- Chemical industry,
- Petro-Chemical industry,
- Pharmaceutical industry,
- Oil industry,
- Food industry,
- OEM.

DESIGN

The pumps of the SIHI^{prime} range are side channel pumps having segmental type construction.

The program comprises, currently, 3 sizes each with 1-8 stages. The existing material design allows an optimum rating for the respectively desired performance range and the pumping medium.

The applied hydraulic components are from our modular side channel system (interchangeability of parts).



CONSTRUCTION

Casing pressure

Maximum 40 bar from - 40 °C up to +120 °C.
Maximum 32 bar from +120 °C up to +180 °C.
Pressure stages for temperature as per DIN EN 1333.

Please observe

Technical rules and safety regulations:

Casing pressure = inlet pressure + delivery head at minimum pump capacity.

Position of branches

Suction and discharge branch point radially upwards.

Flanges

Flanges in accordance with DIN EN 1092-2 / PN 40.

Flange design as per DIN 2512 with groove or drilled according to ANSI 150 or 300 lbs is basically possible.

Bearing

Either by a ball bearing and a liquid surrounded sleeve bearing (design A) or by two ball bearings (design B). The ball bearings are according to DIN 625 and greased for life.

Rotation direction

Clockwise, when looking at the pump from the drive end.
Anti-clockwise is possible.

Shaft sealing

The shaft is sealed by a mechanical seal according to DIN EN 12756, with quench connection.
The shaft sealing is also available in a design suitable for heating or cooling of the mechanical seal and a double mechanical seal (back-to-back as well as tandem) design is possible on request.

AEH-X

Material design

		Material design		
		GS Cast Iron / GL Cast Iron		Stainless steel
		TM	TN	4B
Pos.	Components			
2350	Vane wheel impeller	G-X 3 CrNiMoCuN 26 6 3 3	CuZn40Al2	G-X 3 CrNiMoCuN 26 6 3 3
1060	Suction casing	EN-GJS-400-18-LT		G-X5 CrNiMoNb 18 10
1070	Discharge casing			
1510	Shell casing			
1090	First suction intermediate	EN-GJL-250		
1140	Side channel intermediate			
1141	Last discharge intermediate			
1600	Cover plate (design A)	X 20 Cr 13		X 5 CrNiMo 17 12 2
2100	Shaft			
4410	Mechanical seal casing			
4420	Cooling casing			
3600	Open bearing cover	EN-GJS-400-18-LT		
3610	Closed bearing cover (design B)			
5451	Bearing bush (design A)	CY 10 C / Antimony carbon*		

* Bearing bush in Antimony Carbon is only used in high temperature design.

Casing seal

The casing sealing is done by o-ring gaskets compatible with the handled medium.

Drive

By electric motor, type of construction IM B3. According to the area of usage, we can supply motors of any kind of protection (EExe, EExd).

General comments

Side Channel pumps with the same hydraulic construction are manufactured in series as:

AOHA Low duty pump with oval flanges, PN 10

AKH-X Medium duty pump, PN 25

CEBA Vertical pump, PN 25 with magnetic coupling

CEH-X High duty pump combined with a low NPSH stage, PN 40

AEH and CEH pumps are available in magnetic coupling design.

Note: For hydraulic sizes from 4101 to 6108 please see catalogue **AEH PII/11** (133.41301.57.01 E).

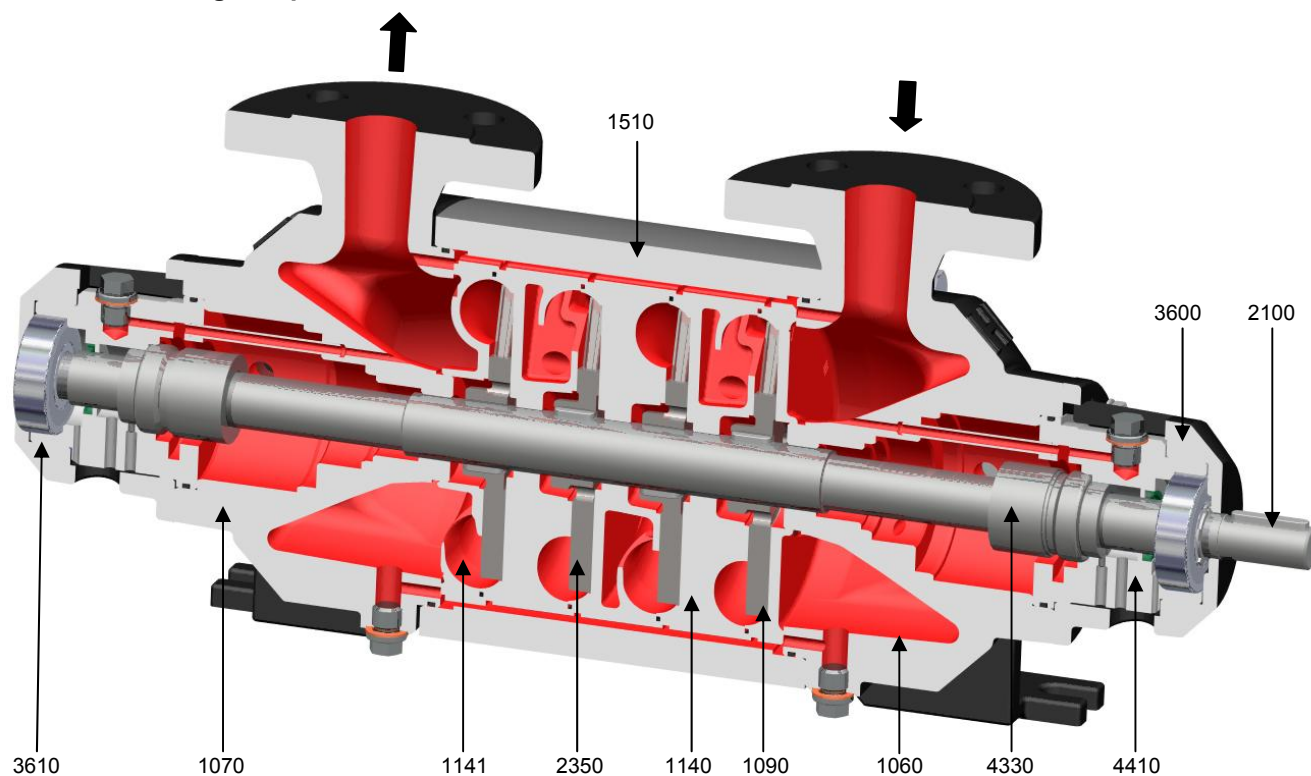
Technical documents about these pumps will be readily supplied on request

Sensor for Condition Monitoring

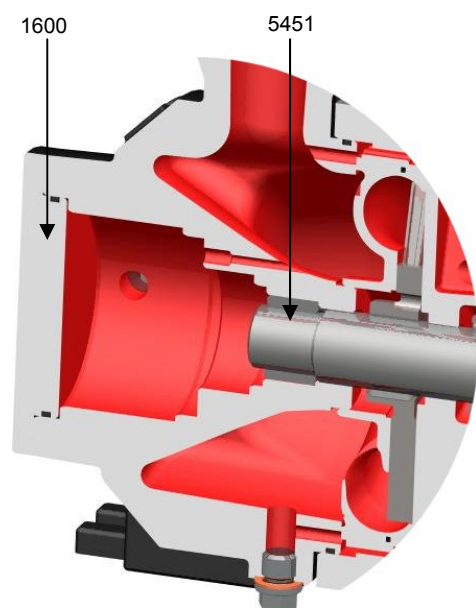
The **SIHI^{detect}** sensor is the ideal solution for **vibration velocity** measuring and for pump **condition monitoring** for example to detect bearing wear, unbalance, misalignment, unacceptable pipeline forces, cavitation, etc. This sensor is suitable for all liquid and vacuum pumps and the main features are:

- Simple to connect
- Universal use
- Visual check via LED display
- Easy Installation
- Also available as non Ex version

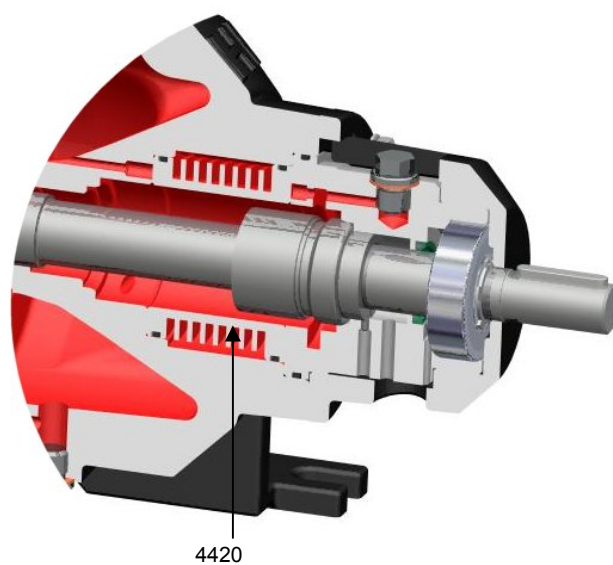
Sectional drawing and parts list



Design B
Mechanical seal



Design A



Cooled mechanical seal

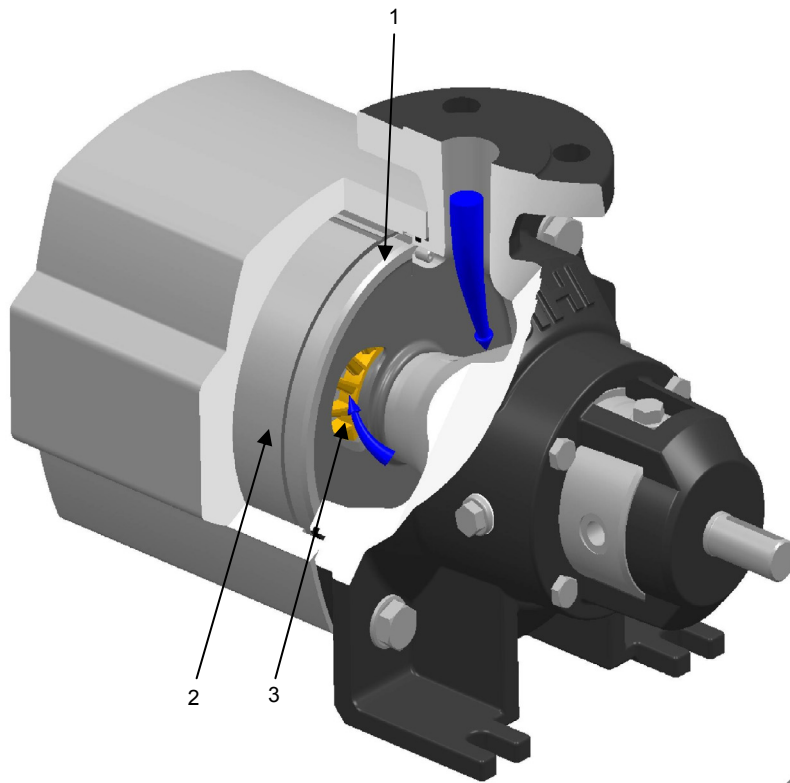
Pos.	Components
1060	Suction casing
1070	Discharge casing
1090	First suction intermediate
1140	Side channel intermediate
1141	Last discharge intermediate
1510	Shell casing
1600	Cover plate (design A)
2100	Shaft

Pos.	Components
2350	Vane wheel impeller
3600	Open bearing cover
3610	Closed bearing cover (design B)
4330	Mechanical seal
4410	Mechanical seal casing
4420	Cooling casing
5451	Bearing bush (design A)

AEH-X

Operating principle

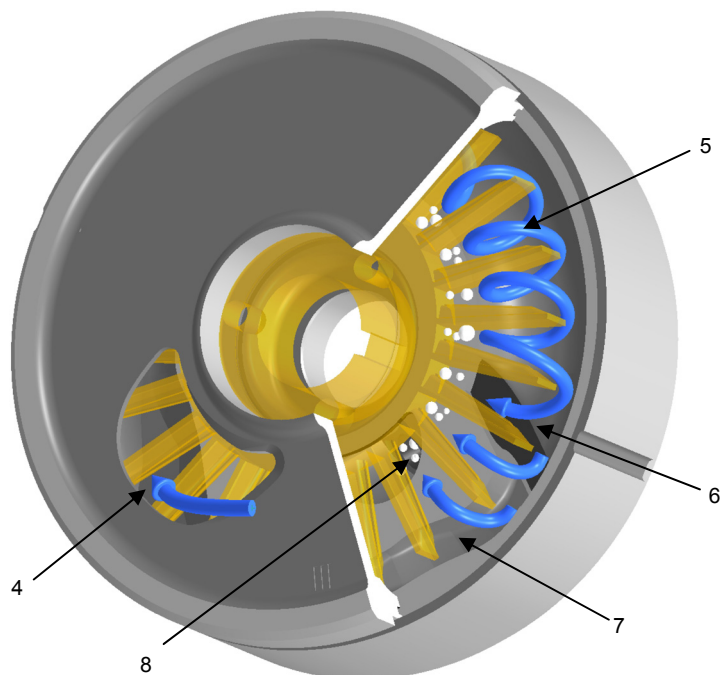
The AEH-X pump is a side channel system, self priming, and segmental type.



A side channel stage consists of:

- A suction intermediate part (1),
- A discharge intermediate part including the side channel (2),
- A vane wheel impeller located between the 2 intermediate parts (3).

The fluid entrance goes through the suction hole (4). The turning of the vane wheel impeller creates an under pressure at the beginning of the side channel and the liquid (with or without gas) is drawn in. The pressure generating is obtained by the repetitive re-entering of the liquid in the side channel (5). The liquid goes then to the next stage through the discharge hole (6). The air displacement channel (7) provokes a positive displacement effect so the gas remaining at the root of the vane wheel impeller is forced out through the gas slot (8).



A side channel pump can de-aerate and degas the suction line by itself and is thus very suitable for suction lift operation. A side channel pump can handle large quantities of (entrained) gas. Mixtures up to a gas share of 50% are possible. The ability for self-priming and the handling of large amounts of (entrained) gas will guarantee continuous operation even in case of evaporation and therefore contribute to a higher level of safety in industrial processes.

To avoid cavitation the distance between the liquid level and the entrance at the suction side of the pump is restricted. This distance is related to the NPSH or Net Positive Suction Head. This makes the AEH-X very suitable for pumping liquids near their boiling point at reasonable economic expenses.

Performance range

General conditions

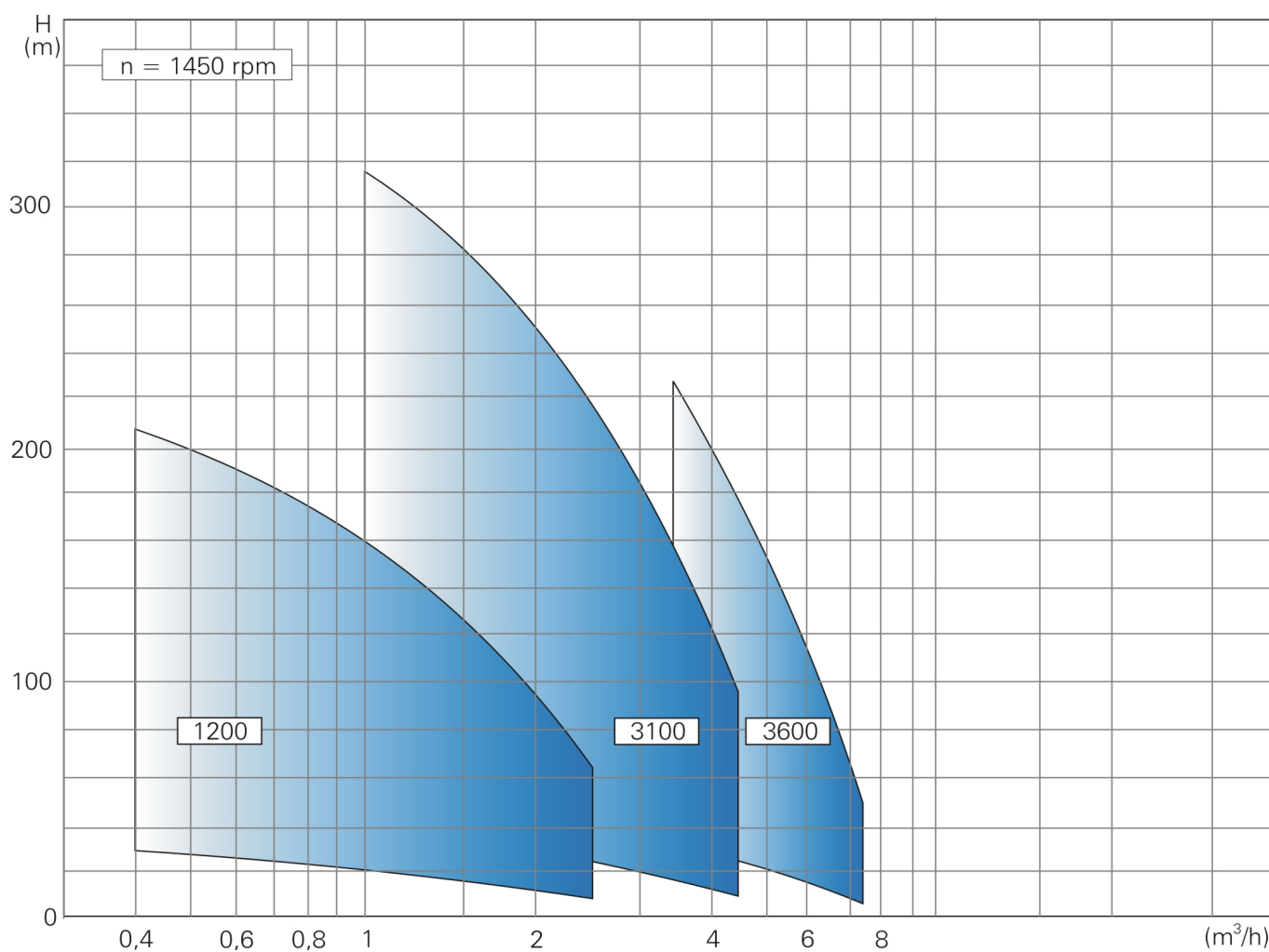
Liquid: Water
 Density: 1 kg/dm³
 Viscosity: 1 cSt
 Temperature: 20 °C
 Atmospheric pressure: 1013 mbar

Characteristic tolerances

The Side Channel pumps are not submitted to any normalized test tolerances. Here under are our acceptance values:
 Capacity ± 9% - Delivery head ± 7% - Power + 10%.

Measuring standard

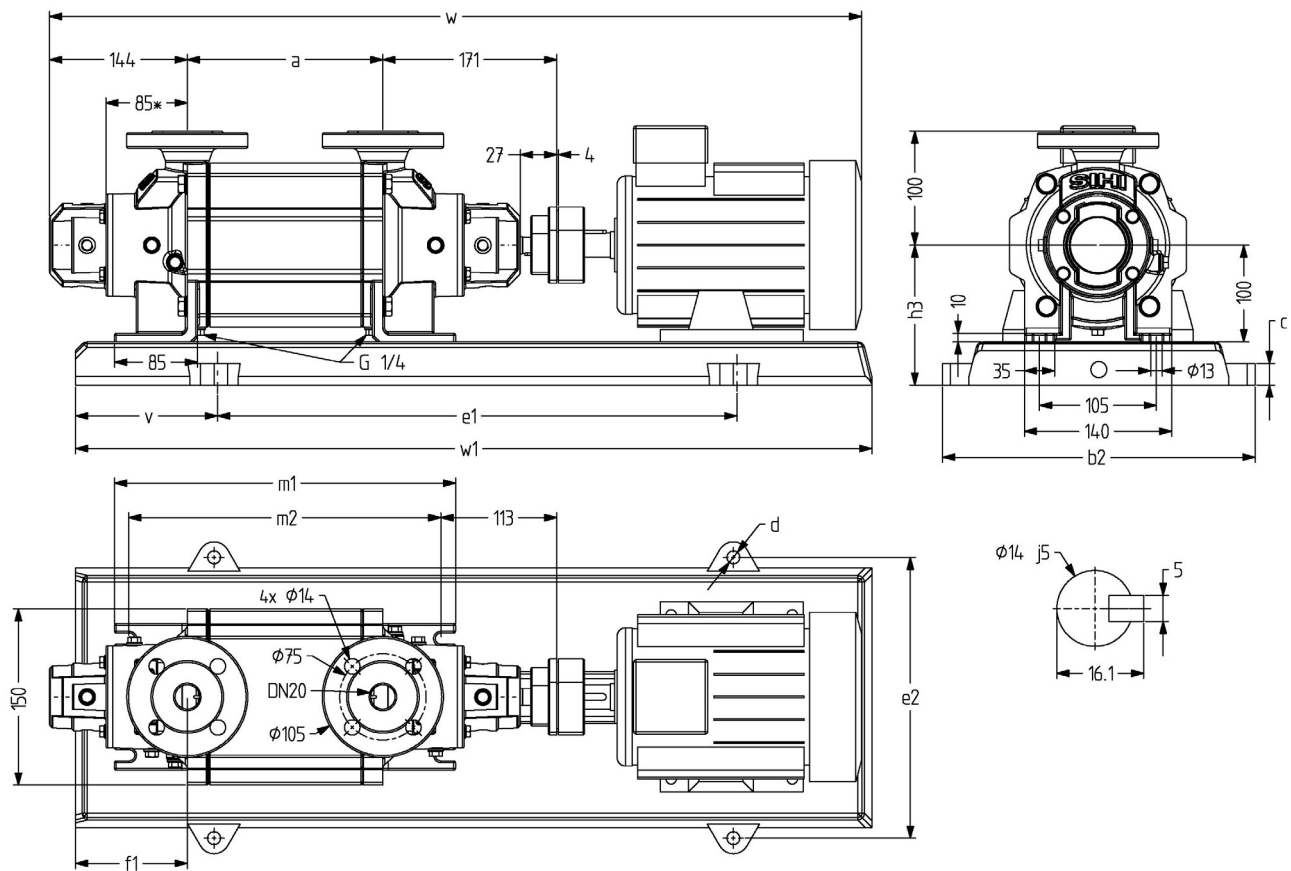
According to ISO 5198.



AEH-X

Dimension chart and pump set drawing

AEH-X 1201 ... 1208



* Design A (1 ball bearing, 1 sleeve bearing)

Pump size	kW	Motor kW ¹⁾	size	Base plate	Coupling B	BDS ²⁾	Weight Pump	set	a	b2	c	d	e1	e2	v	f1	h3	m1	m2	w ³⁾	w1
1201	0,37	0,37	71	P008	68	76	19	44	120	297	20	15	400	265	120	98	140	270	236	677	640
	0,55	0,55	80					47												711	
1202	0,55	0,55	80	P008	68	76	20	48	120	297	20	15	400	265	120	98	140	270	236	711	640
	0,75	0,75	80					49												769	730
	1,1	1	90S	P241				57		330	25	19	480	290	125		165			745	650
1203	0,75	0,75	80	P210				52		300			420	260	115					745	650
	1,1	1	90S		68	76	21	59	154		25	19	480	290	125	98	165	304	270	803	730
	1,5	1,35	90L	P241				63		330			480	290	125					803	730
1204	1,1	1	90S	P241	68	76	23	61	188	330	25	19	480	290	125	98	165	338	304	837	730
	1,5	1,35	90L					65					540	320	140					878	820
	2,2	2	100L	P272	80	88		76		360			540	320	140					878	820
1205	1,1	1	90S		68	76	25	66	222	360	25	19	540	320	140	98	165	372	338	871	820
	1,5	1,35	90L	P272				70					540	320	140					912	
	2,2	2	100L		80	88		77					540	320	140					912	
1206	1,5	1,35	90L	P272	68	76	27	72		360		19	540	320	140		165	406	372	905	820
	2,2	2	100L					84	256	361	25	15	600	325	160	98	150	406	372	946	920
	3	2,5	100L	P015	80	88		85					600	325	160					946	920
1207	1,5	1,35	90L		68	76	29	79					600	325	160	98	150	440	406	939	
	2,2	2	100L	P015				86	290	361	25	15	600	325	160	98	150	440	406	980	920
	3	2,5	100L		80	88		87					600	325	160					980	
1208	2,2	2	100L				31	89	324	361	25	15	600	325	160	98	150	474	440	1014	920
	3	2,5	100L	P015	80	88		90					600	325	160					1014	920

The weight of the pump will be approximately 6% higher when using stainless steel.

General: Values are valid for water $\rho = 1 \text{ kg/dm}^3$ and $\nu = 1 \text{ cSt}$.

Design tolerances: Capacity $\pm 9\%$ - Delivery head $\pm 7\%$ - Power $+ 10\%$.

Notes:

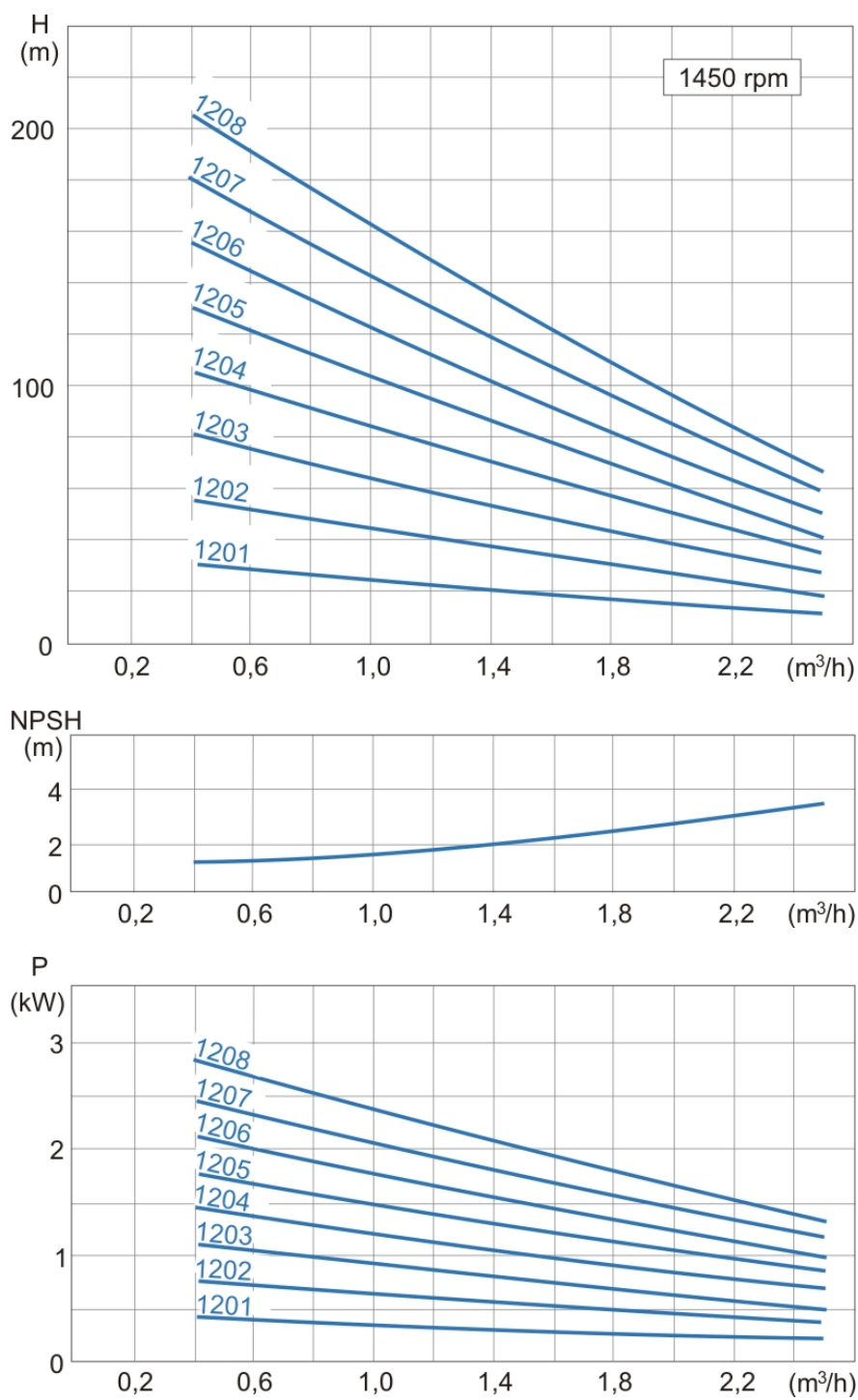
¹⁾ For EEEx II T3 motors.

²⁾ For every pump set in ATEX area.

³⁾ Dimensions are depending on the used motor trade mark (indicated values correspond to design B).

Performance curves

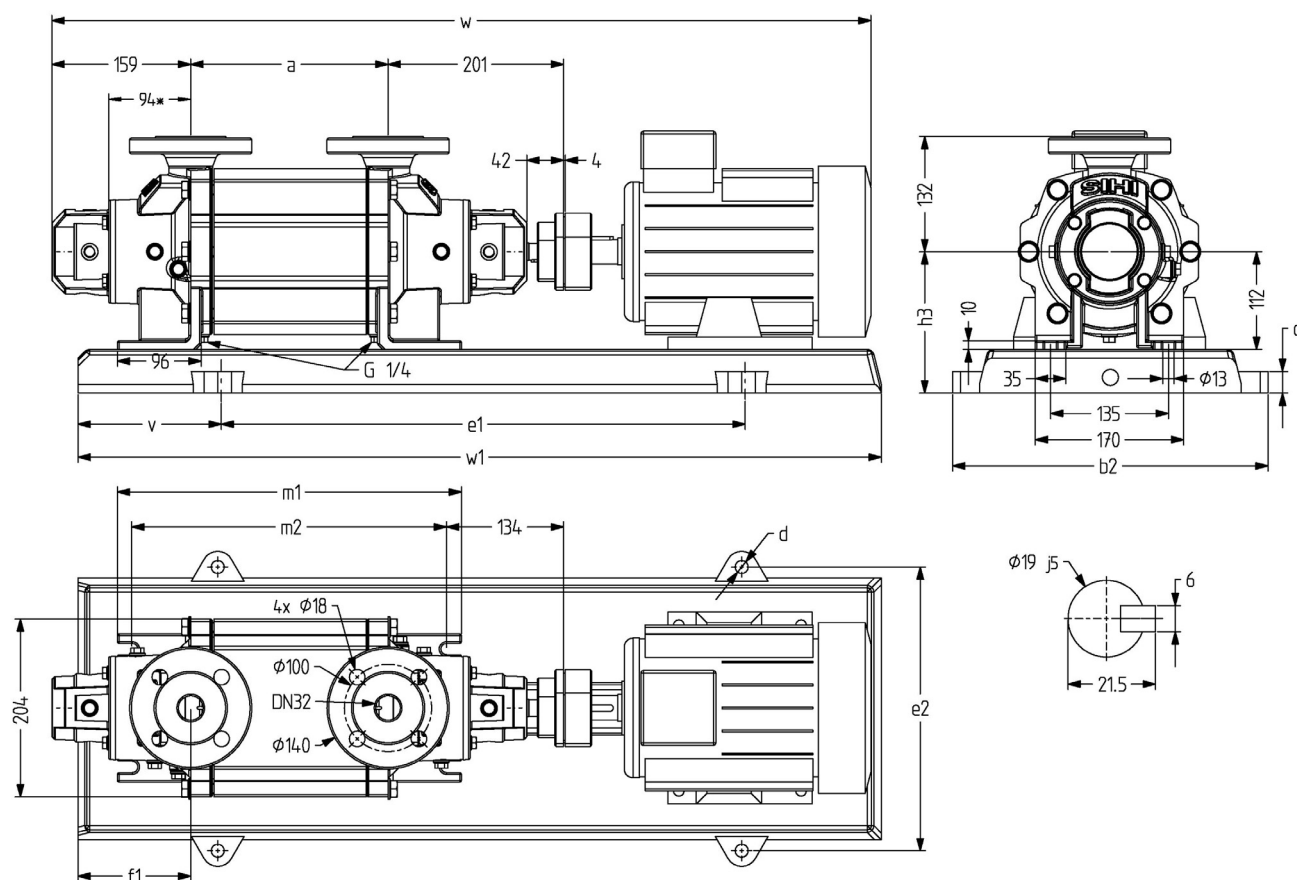
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AEH-X

Dimension chart and pump set drawing

AEH-X 3101 ... 3108



* Design A (1 ball bearing, 1 sleeve bearing)

Pump size	kW	Motor kW ¹⁾	size	Base plate	Coupling B	BDS ²⁾	Weight Pump	set	a	b2	c	d	e1	e2	v	f1	h3	m1	m2	w ³⁾	w1
3101	0,75	0,75	80	P241	68	76	33	64	146	330	25	19	480	290	125	107	177	314	280	781	730
	1,1	1	90S					68												839	
3102	1,1	1	90S	P241	68	76	35	70	146	330	25	19	480	290	125	107	177	314	280	839	730
	1,5	1,35	90L					72												880	
3103	2,2	2	100L	P272	80	88	37	85	186	360	25	19	540	320	140	107	177	354	320	920	820
	2,2	2	100L					89												920	
3104	3	2,5	100L	P272	80	88	37	90	186	360	25	19	540	320	140	107	177	354	320	920	820
	2,2	2	100L					97												960	
3105	3	2,5	100L	P015	80	88	40	98	226	361	25	15	600	325	160	107	162	394	360	981	920
	4	3,6	112M					116												1000	
3106	5,5	5	132S	P017	95	103	44	102	266	361	25	15	600	325	160	107	162	434	400	1021	1100
	4	3,6	112M					120												1061	
3107	5,5	5	132S	P017	95	103	49	137	306	361	25	15	700	325	200	107	192	474	440	1097	1100
	7,5	6,8	132M					139												1137	
3108	4	3,6	112M	P017	80	88	53	144	346	361	25	15	700	325	200	107	172	514	480	1101	1100
	5,5	5	132S					165												1177	
3108	7,5	6,8	132M	P017	95	103	57	205	386	361	25	15	700	325	200	107	192	554	520	1203	1100
	5,5	5	132S					199												1217	
3108	7,5	6,8	132M	P436	95	103	57	209	386	361	25	15	700	325	200	107	192	554	520	1243	1100
	11	10	160M					255												1335	

The weight of the pump will be approximately 6% higher when using stainless steel.

General: Values are valid for water $\rho = 1 \text{ kg/dm}^3$ and $\nu = 1 \text{ cSt}$.

Design tolerances: Capacity $\pm 9\%$ - Delivery head $\pm 7\%$ - Power $+ 10\%$.

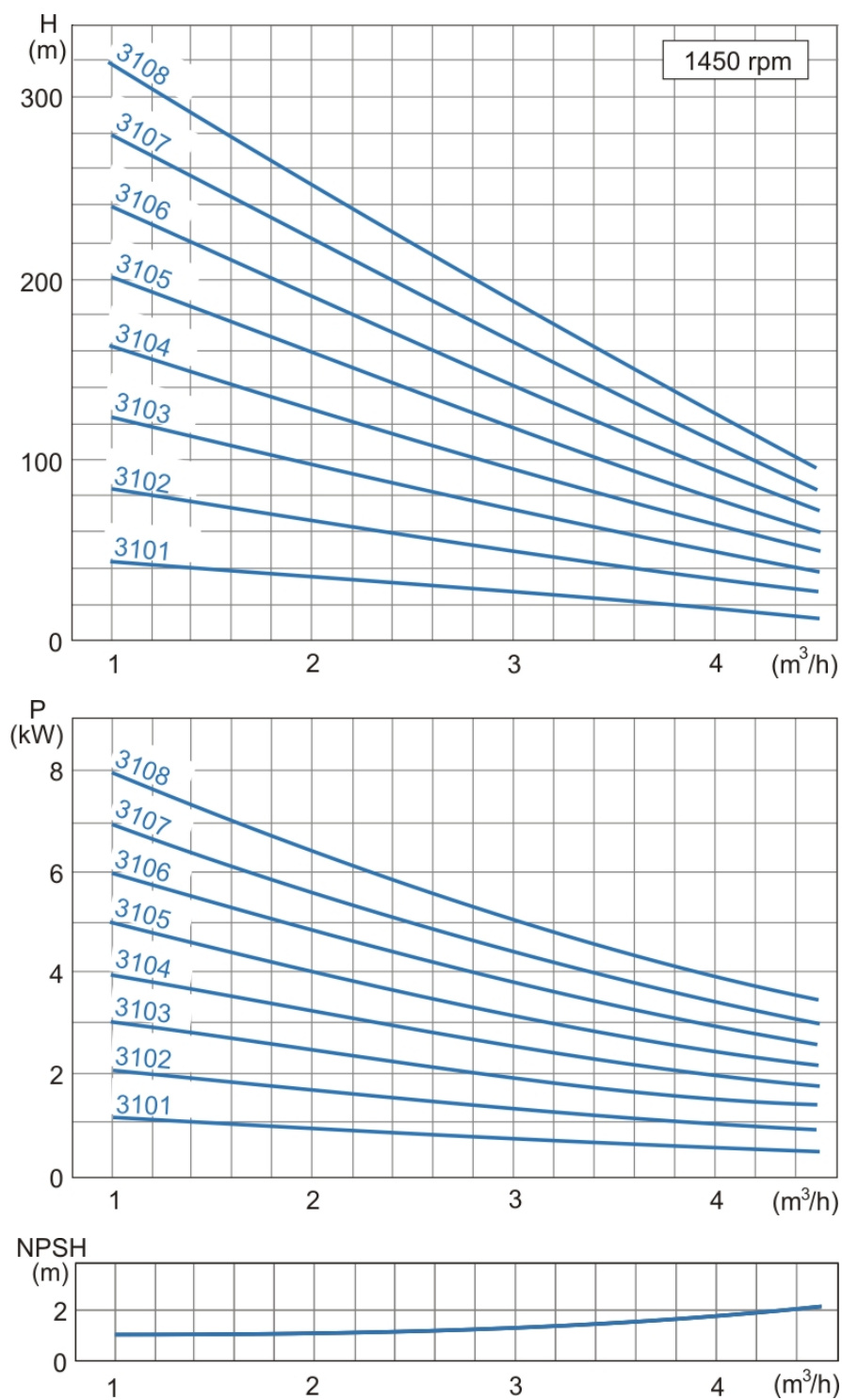
Notes: ¹⁾ For EExe II T3 motors.

²⁾ For every pump set in ATEX area.

³⁾ Dimensions are depending on the used motor trade mark.

Performance curves

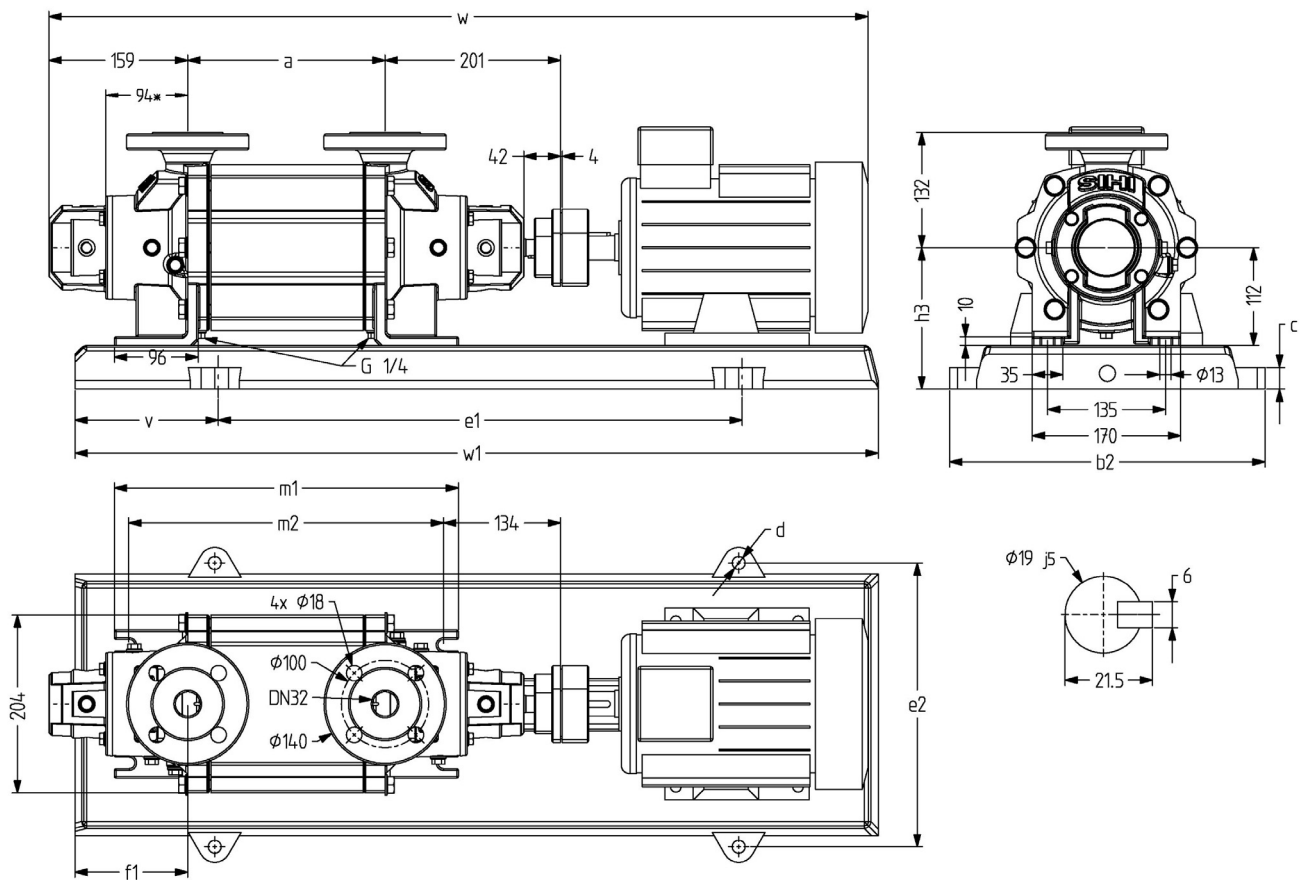
AEH-X 3101 ... 3108



AEH-X

Dimension chart and pump set drawing

AEH-X 3601 ... 3608



* Design A (1 ball bearing, 1 sleeve bearing)

Pump size	Motor			Base plate	Coupling		Weight		a	b2	c	d	e1	e2	v	f1	h3	m1	m2	w ³⁾	w1
	kW	kW ¹⁾	size		B	BDS ²⁾	Pump	set													
3601	0,75	0,75	80	P241	68	76	30	64	146	330	25	19	480	290	125	107	177	314	280	781	730
	1,1	1	90S					68												839	
3602	1,5	1,35	90L	P241	68	76	34	74	146	330	25	19	480	290	125	107	177	314	280	839	730
	2,2	2	100L	P272	80	88		85												880	
3603	2,2	2	100L	P272	80	88	39	89	186	360	25	19	540	320	140	107	177	354	320	920	820
	3	2,5						90												941	
3604	4	3,6	112M	P015	80	88	43	109	226	361	25	15	600	325	160	107	162	226	394	960	920
	3	2,5	100L					98												981	
3605	4	3,6	112M	P017	95	103	46	116	266	361	25	15	600	325	160	107	162	266	434	1057	1100
	5,5	5	132S					154												1000	
3606	3	2,5	100L	P015	80	88	46	102	266	361	25	15	600	325	160	107	162	266	434	1021	920
	4	3,6	112M					120												1097	
3607	5,5	5	132S	P017	95	103	49	137	306	361	25	15	700	325	200	107	172	306	474	1061	1100
	7,5	6,8	132M					139												1137	
3608	7,5	6,8	132M	P017	95	103	53	161	346	361	25	15	700	325	200	107	192	514	480	1163	1100
	5,5	5	132S					171												1177	
3608	7,5	6,8	132M	P017	95	103	57	165	386	361	25	15	700	325	200	107	192	386	554	1203	1100
	11	10	160M					205												1217	
3608	7,5	6,8	132M	P436	95	103	57	209	386	361	25	15	700	325	200	107	192	386	554	1243	1100
	11	10	160M					219												1335	
3608	7,5	6,8	132M	P436	95	103	57	255	386	361	25	15	700	325	200	107	192	386	554	1270	1100
	11	10	160M					255												1335	

The weight of the pump will be approximately 6% higher when using stainless steel.

General: Values are valid for water $\rho = 1 \text{ kg/dm}^3$ and $\nu = 1 \text{ cSt}$.

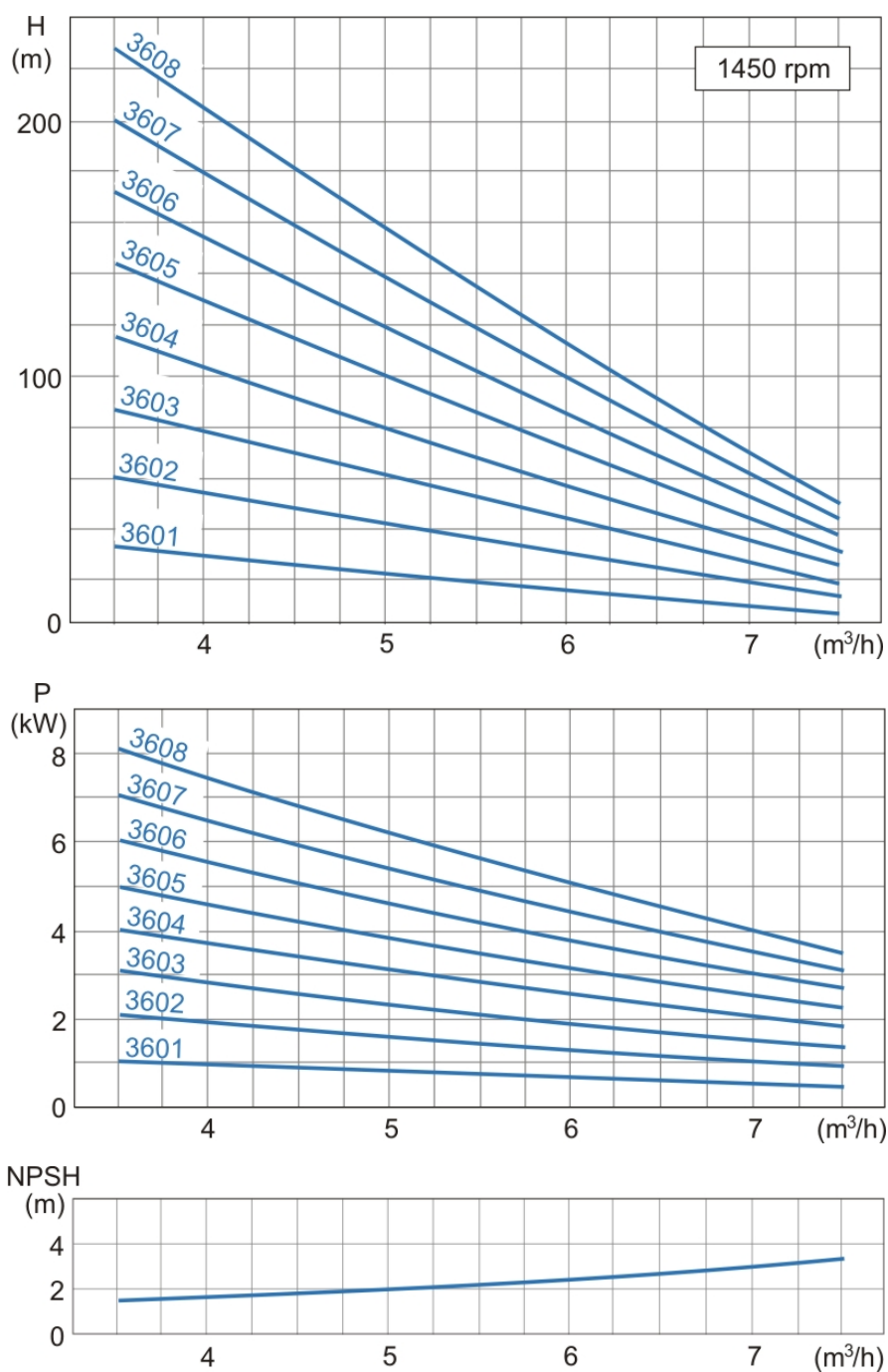
Design tolerances: Capacity $\pm 9\%$ - Delivery head $\pm 7\%$ - Power $+ 10\%$.

Notes:

- ¹⁾ For EExe II T3 motors.
- ²⁾ For every pump set in ATEX area.
- ³⁾ Dimensions are depending on the used motor trade mark.

Performance curves

AEH-X 3601 ... 3608



AEH-X