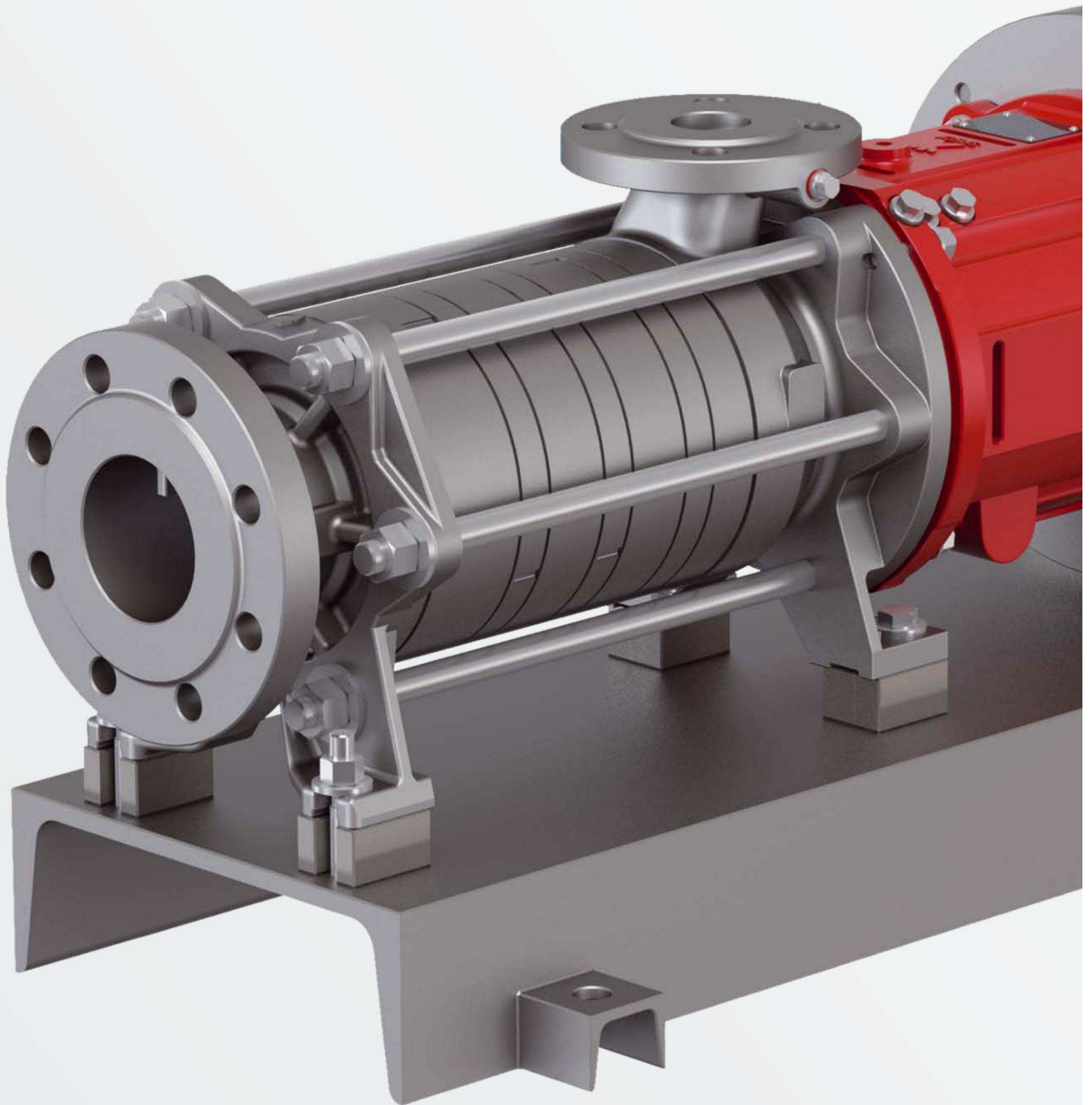


Side channel pumps

SK and ASK series
with mechanical seal or magnetic coupling
PN 40



Applications



Heating & Cooling technology

- » Delivering cooling brine
- » Filling and emptying thermal oil systems



Energy technology

- » Delivery and circulation in closed circuits
- » Feeding boilers in boiler systems and steam generators
- » Tank systems, including delivering liquid gas
- » Delivery of diesel in backup generators in power stations



Chemical & Pharmaceutical industry

- » Delivering aggressive, highly flammable and toxic media
- » Recovery of condensates, e.g. solvents

Further applications

- » Delivery of salt water and fresh water in ships

Contacts

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Regensburger Ring 6-8
91154 Roth / Germany
T: +49 9171 809 0
F: +49 9171 809 10
info@speck.de
www.speck.de

Your contact **international** **Matthias Rasp**

T: +49 9171 809-246
matthias.rasp@speck.de

International representations

See page 28

Side channel pumps made by Speck

Design

- » Horizontal multistage modular pumps
- » Designed for feeding, filling and emptying operations under difficult physical conditions
- » Suitable for the delivery of gas / self-priming
- » Suitable for liquids without abrasive contaminants and without solid particles
- » Available in a wide range of materials with components from stainless steel, bronze and spheroidal graphite cast iron
- » ATEX certified

With mechanical seal	from	0 to + 180 °C
With magnetic coupling	from	-100 to + 350 °C
Nominal pressure	PN 40	
H _{max}	400 m	
Q _{max}	42 m³/h	

Temperature ranges depend on materials, seals and pumped media

SK series

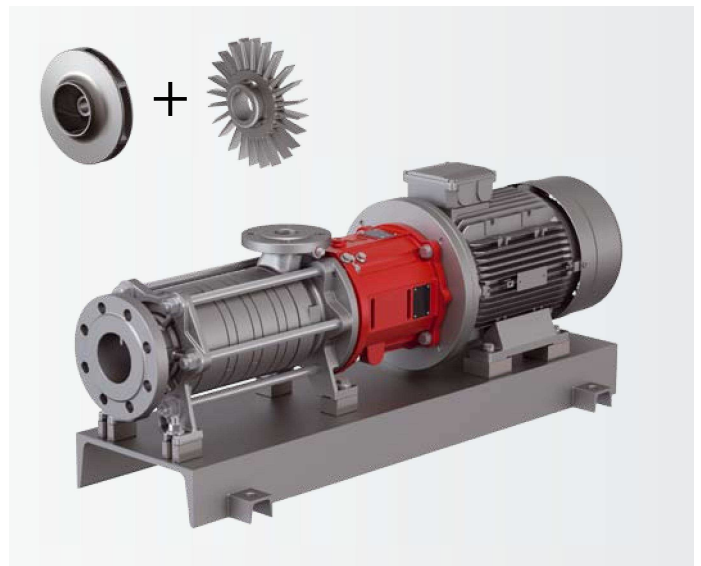
Side channel pumps in acc. with EN 734



Proven side channel pumps for universal applications

ASK series

Side channel pumps with NPSH stage



Combi-pumps for delivering liquids in physically difficult conditions on the suction side

Their very good NPSH values make them particularly suitable for pumped media near the boiling-point

The right pump for your system

Choose from six ranges

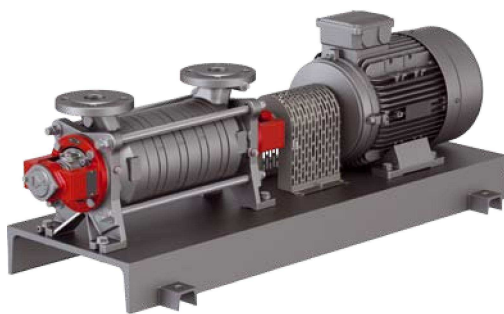
Each system is unique in its own way - on some, the sealing principle is key, on others the installation frame or perhaps the special properties of the medium. You can choose from six ranges and find the best solution for your system.

Pumps with mechanical seal

Pumped media temperatures from 0 to + 180 °C depending on the materials used

Wide range of seals

Available in clockwise and anticlockwise rotation



SKG-LL

- » 1 – 8 stages
- » 2 external rolling bearings



SKG-LO

- » 1 – 8 stages
- » 1 internal casing sleeve bearing
- » 1 external rolling bearing



SKG-LA

- » 1 – 3 stages
- » 1 internal casing sleeve bearing
- » 1 external rolling bearing



ASKG

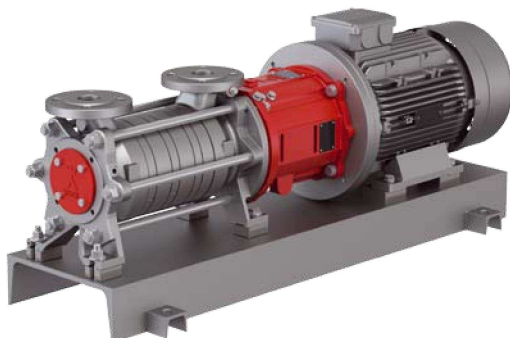
- » With NPSH-stage
- » 1 – 8 stages
- » 1 internal casing sleeve bearing
- » 1 external rolling bearing

Pumps with magnetic coupling

Pumped media temperatures from - 100 to + 350 °C depending on the materials used

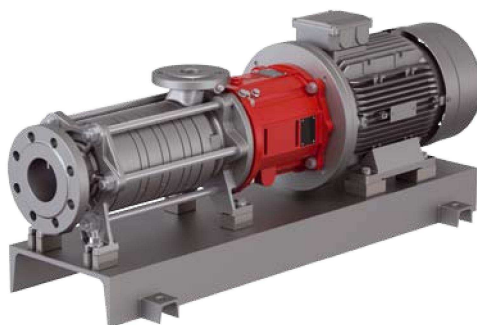
Wide range of magnetic coupling sizes

Hastelloy® or ceramic separating cans



SKM

- » 1 – 8 stage
- » 2 internal casing sleeve bearings



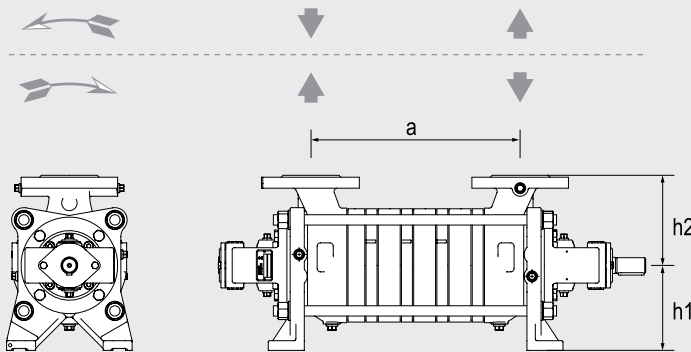
ASKM

- » With NPSH-stage
- » 1 – 8 stages
- » 2 internal casing sleeve bearings

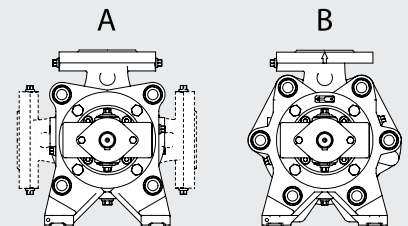
Main dimensions

SK series

Connecting dimensions for SKG-LL, SKG-LO, SKG-LA and SKM



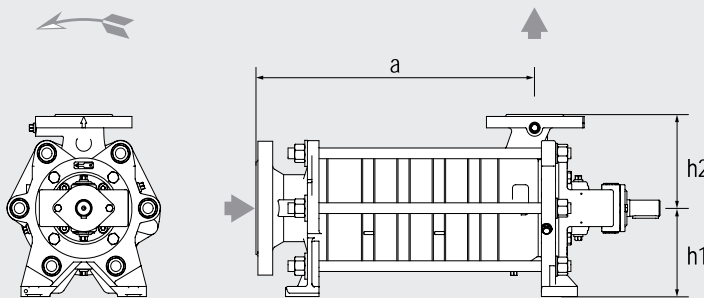
Position of inlet and outlet nozzle



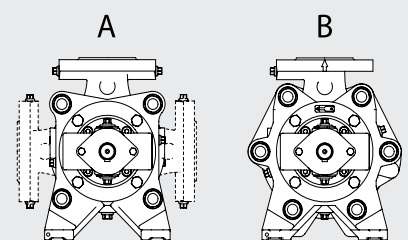
Stage no. →	Dimensions										Flanges		Position of inlet and outlet nozzle		
	a								h1	h2	Suction + Discharge		SKG		SKM
	1	2	3	4	5	6	7	8	-	-	-		1, 2, 3, 4	5, 6, 7, 8	1 - 8
SK...20	120	120	154	188	222	256	290	324	100	100	DN 20		A	A	A
SK...32 / 33	146	146	186	226	266	306	346	386	112	132	DN 32		A	B	B
SK...40	160	215	270	325	380	435	490	545	132	140	DN 40		A	B	B
SK...50	175	250	325	400	475	550	625	700	160	165	DN 50		A	B	B
SK...65	195	285	375	465	555	645	735	825	180	180	DN 65		A	B	B

ASK series

Connecting dimensions for ASKG and ASKM



Position of outlet nozzle



Stage no. →	Dimensions										Flanges		Position of outlet nozzle	
	a								h1	h2	Suction	Discharge	ASKG and ASKM	
	1	2	3	4	5	6	7	8	-	-	-	-	1 - 8	
ASK...20	195	229	263	297	331	365	399	433	100	100	DN 40	DN 20	A	
ASK...32 / 33	213	253	293	333	373	413	453	493	112	132	DN 65	DN 32	B	
ASK...40	268	323	378	433	488	543	598	653	132	140	DN 80	DN 40	B	
ASK...50	305	380	455	530	605	680	755	830	160	165	DN 100	DN 50	B	
ASK...65	338	428	518	608	698	788	878	968	180	180	DN 100	DN 65	B	

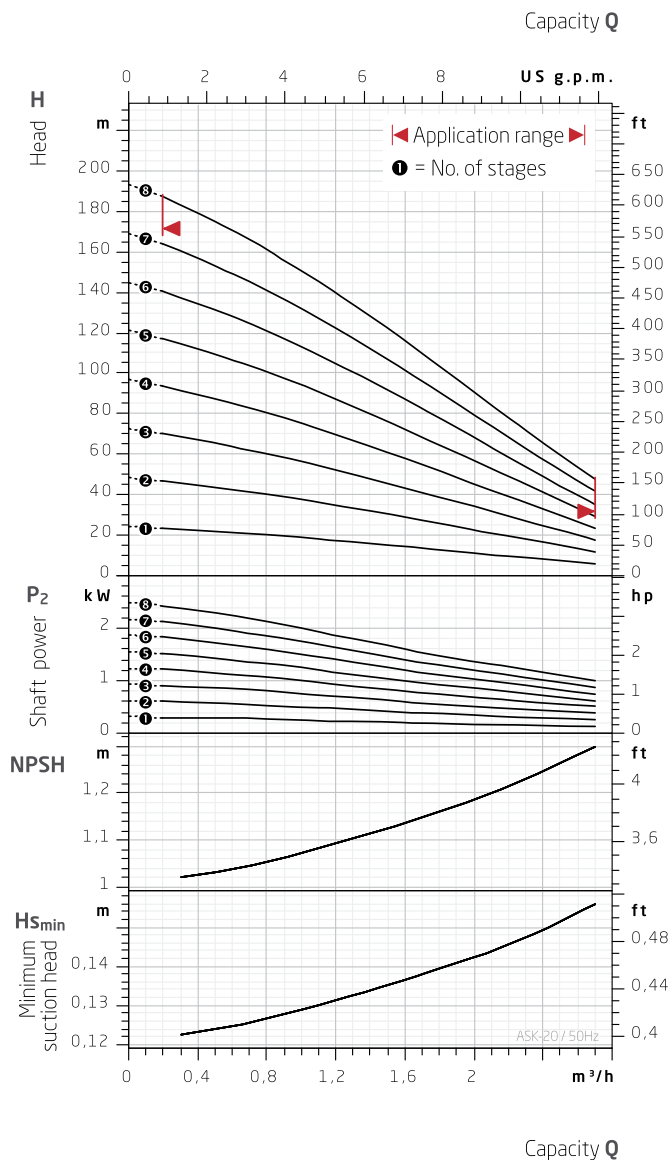
Flanges

Flanges in acc. with EN 1092 PN 40.

Flanges in acc. with DIN EN 1092-2, drilled in acc. with ANSI 150 lbs or 300 lbs on request.

Characteristic curves ASK...20

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

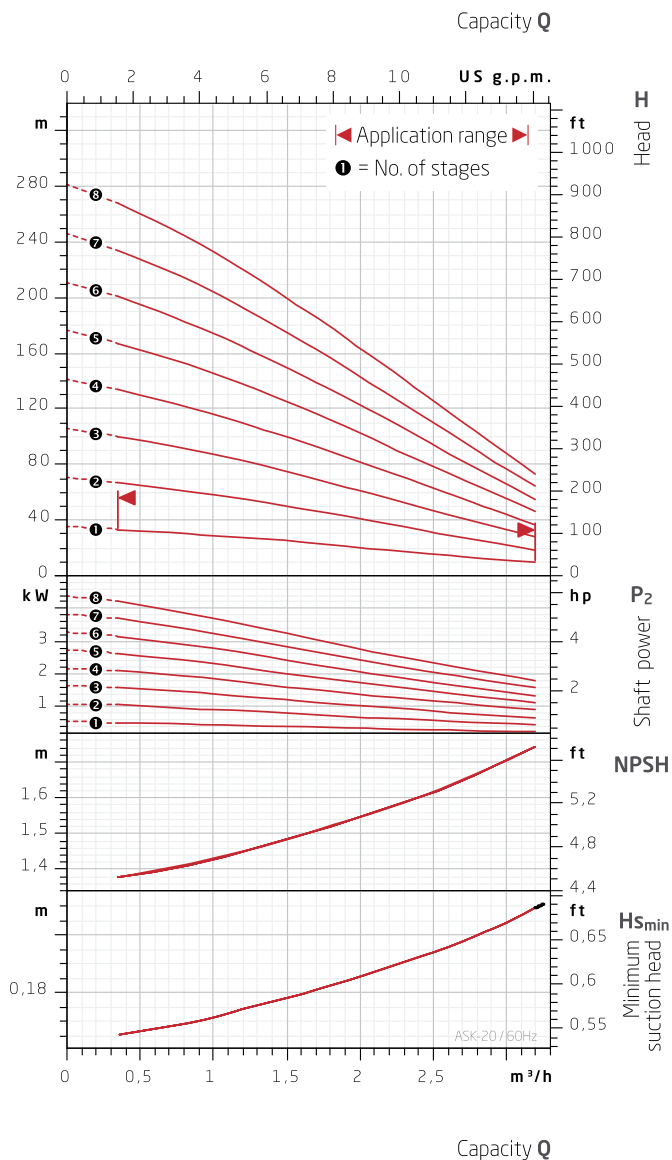
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.
$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

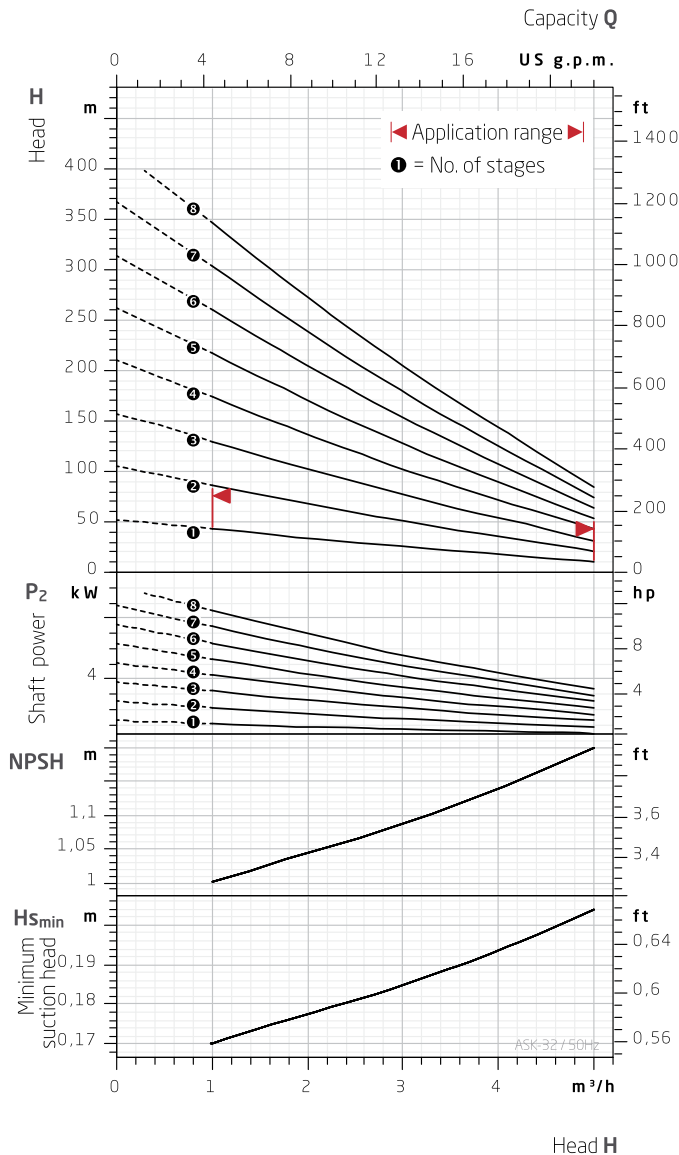
Minimum suction head

The intake pressure ($H_{s_{min}}$) above is valid for closed systems with boiling liquids and short feed lines.
$$NPSH_{required} \geq NPSH_{available} \geq H_{s_{min}}$$
 may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.
$$NPSH_{available} > H_{s_{min}}$$

Characteristic curves ASK...32

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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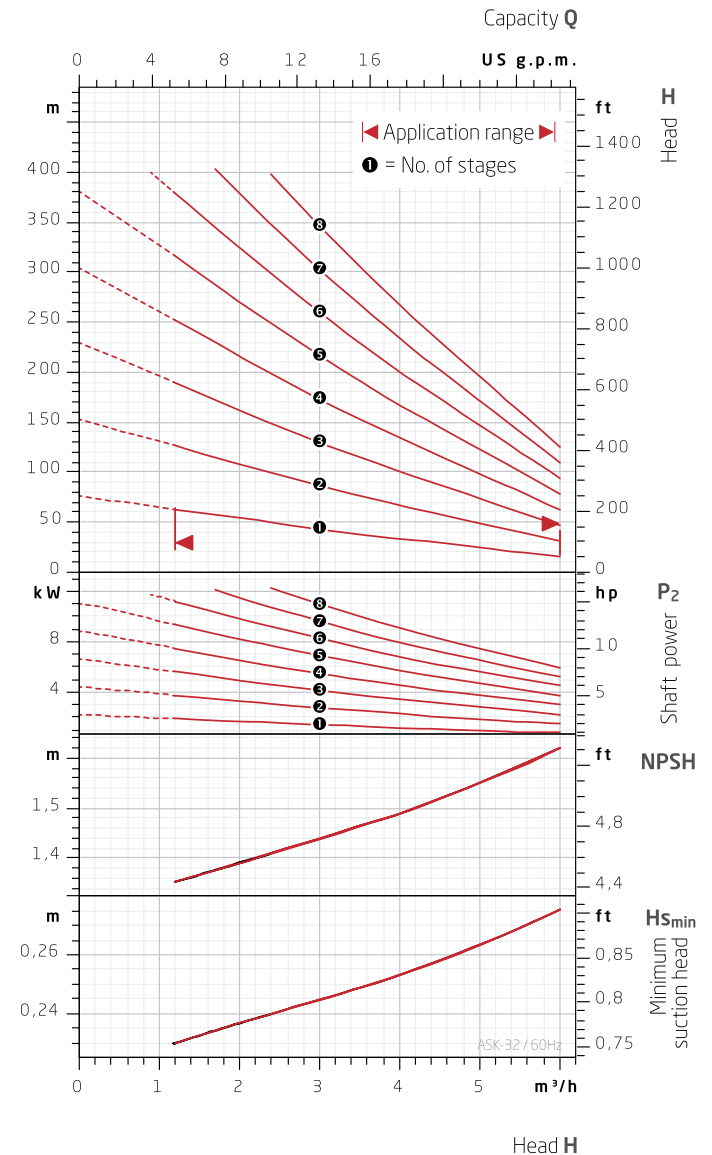
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.
 $NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$

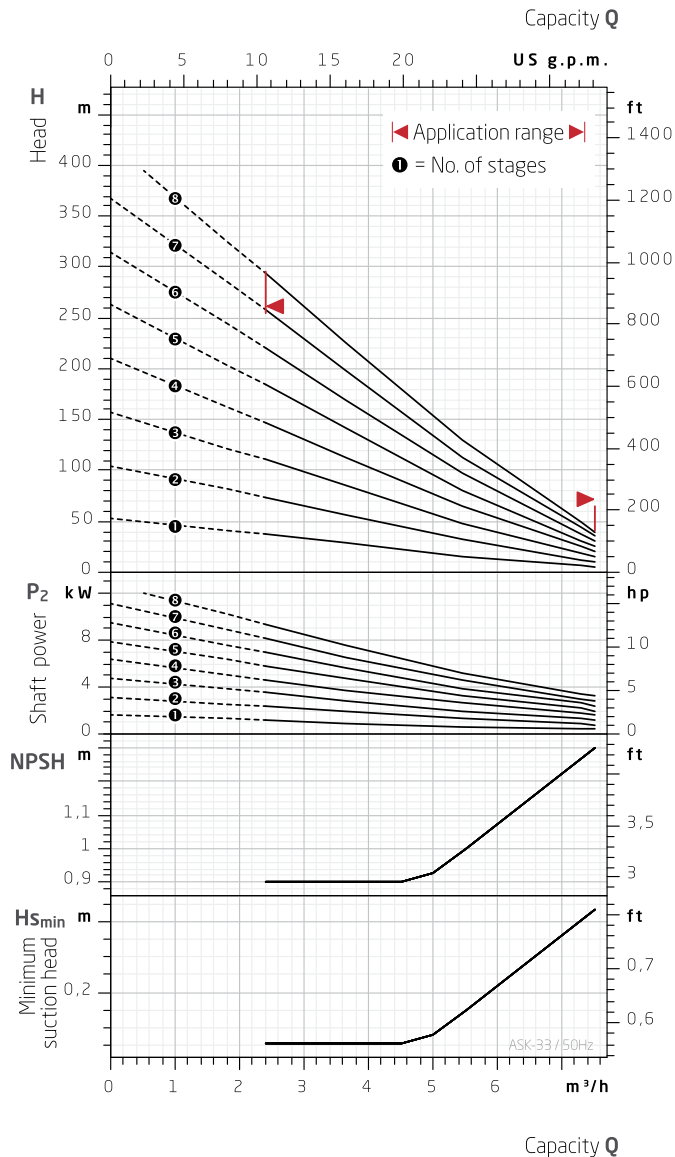
Minimum suction head

The intake pressure (H_{smin}) above is valid for closed systems with boiling liquids and short feed lines.
 $NPSH_{available} \geq NPSH_{required} \geq H_{smin}$ may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.
 $NPSH_{available} > H_{smin}$.

Characteristic curves ASK...33

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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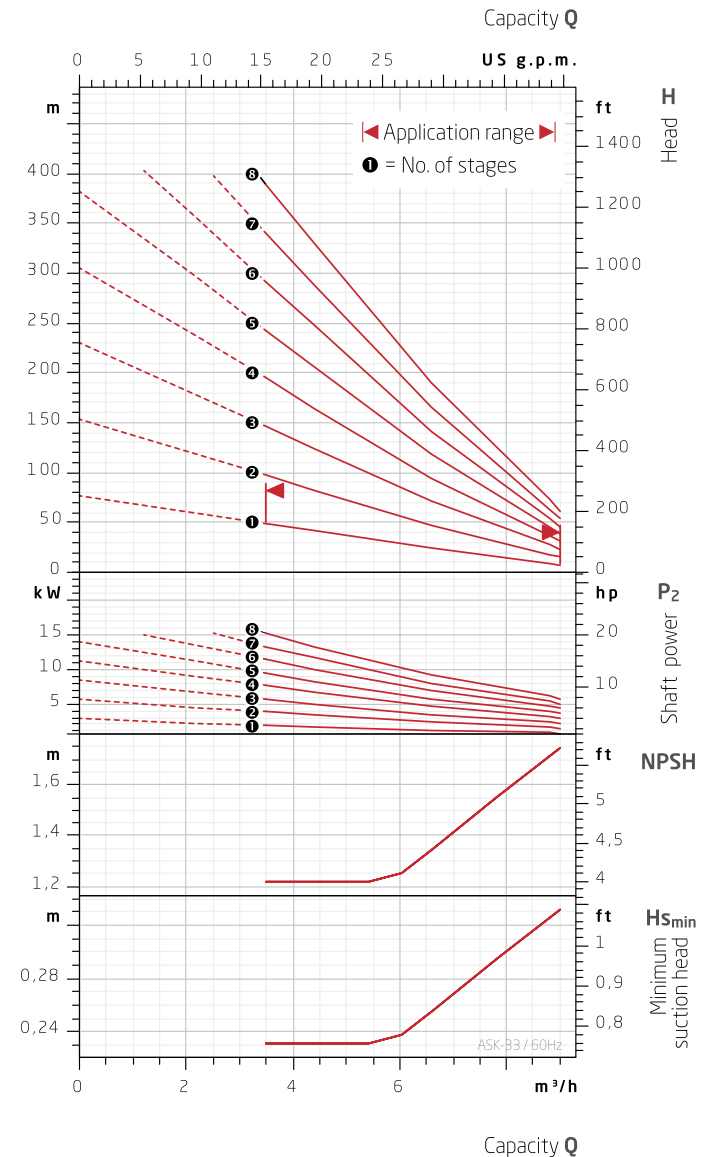
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
 Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

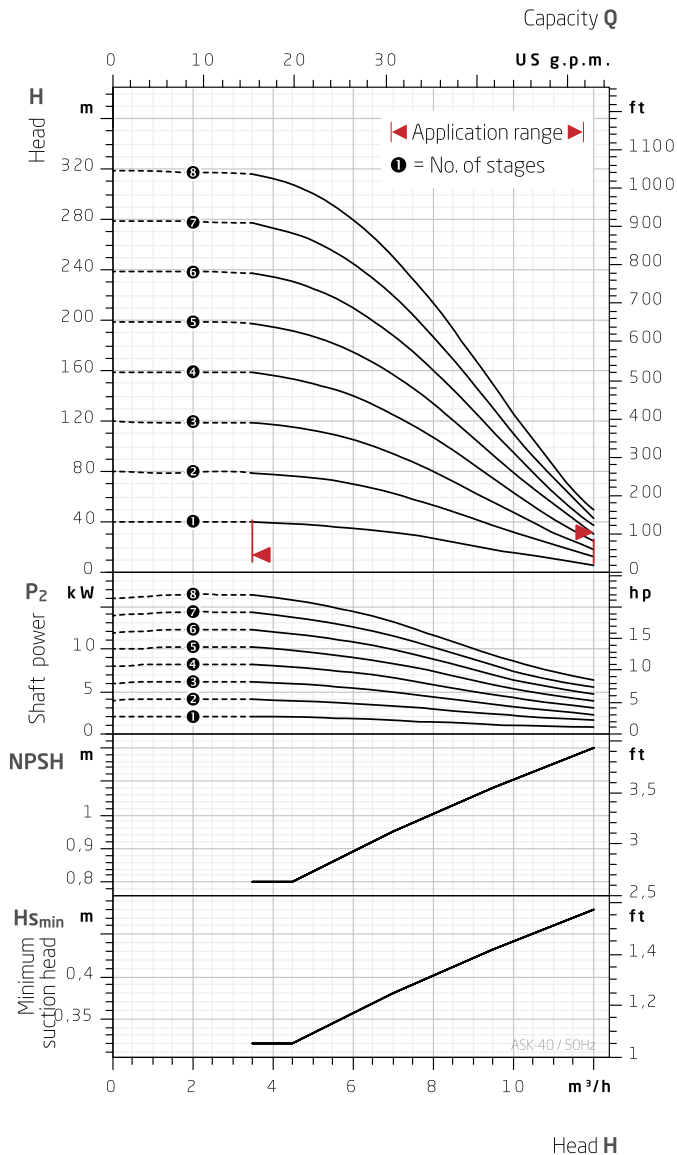
Minimum suction head

The intake pressure ($H_{s_{min}}$) above is valid for closed systems with boiling liquids and short feed lines.
 $NPSH_{required} \geq NPSH_{available} \geq H_{s_{min}}$ may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.
 $NPSH_{available} > H_{s_{min}}$

Characteristic curves ASK...40

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions

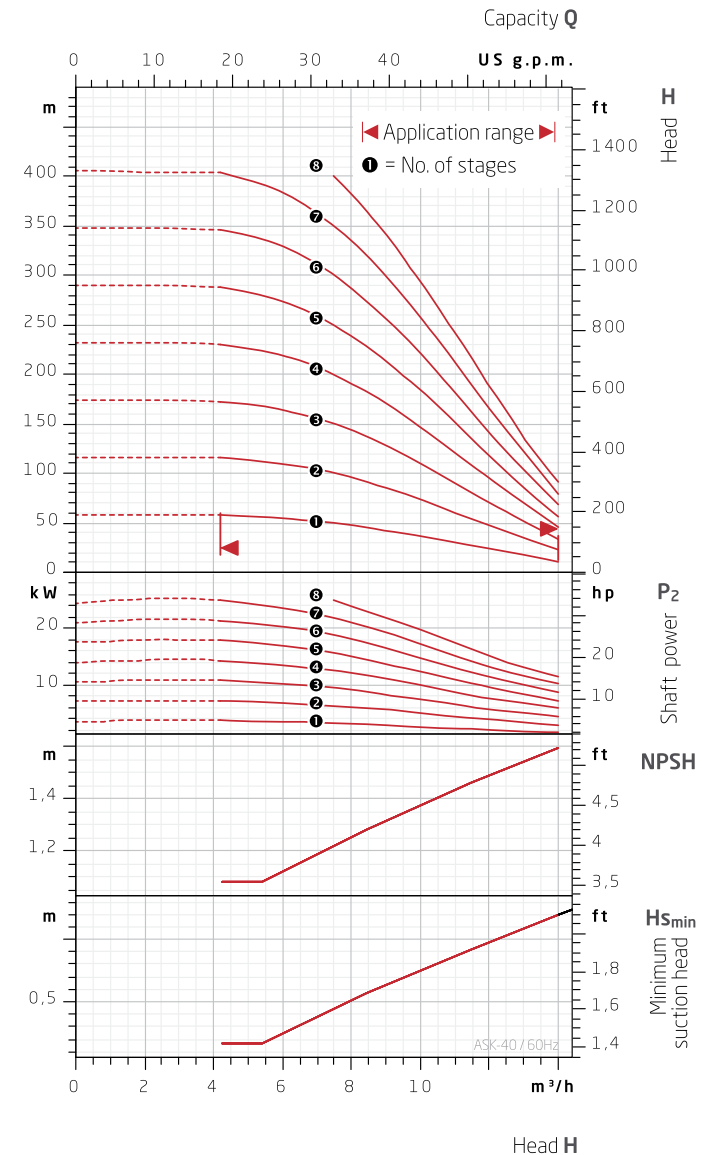
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$

Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Minimum suction head

The intake pressure ($H_{s_{min}}$) above is valid for closed systems with boiling liquids and short feed lines.

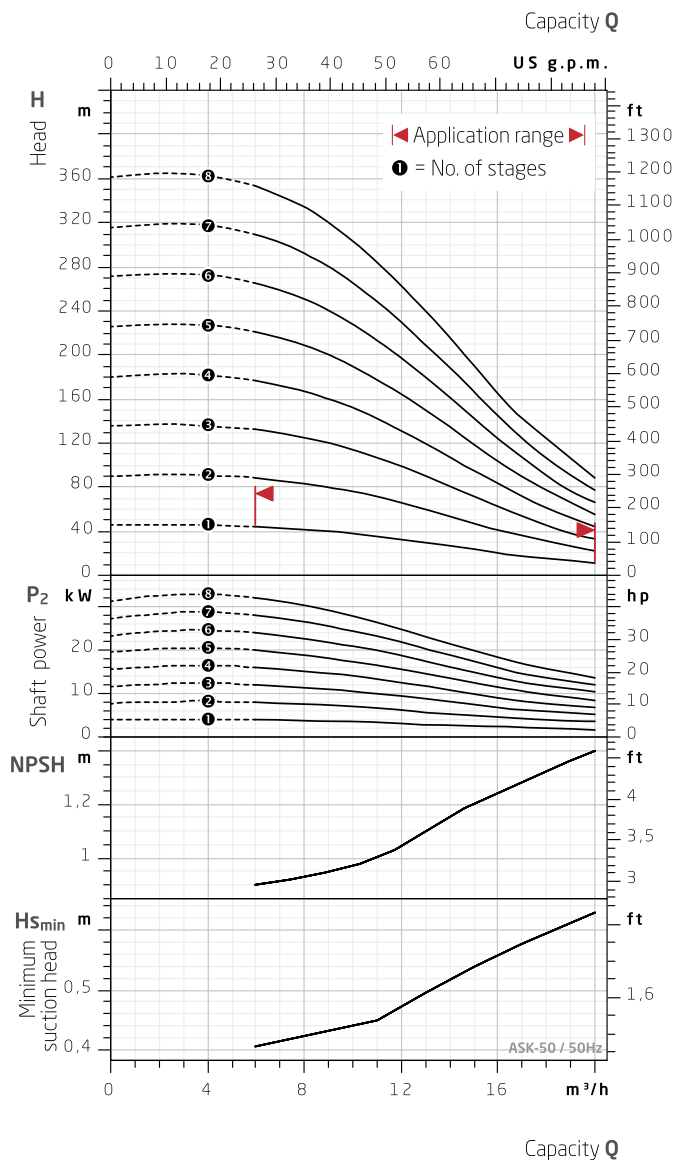
$NPSH_{available} \geq NPSH_{required} \geq H_{s_{min}}$ may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

$$NPSH_{available} > H_{s_{min}}$$

Characteristic curves ASK...50

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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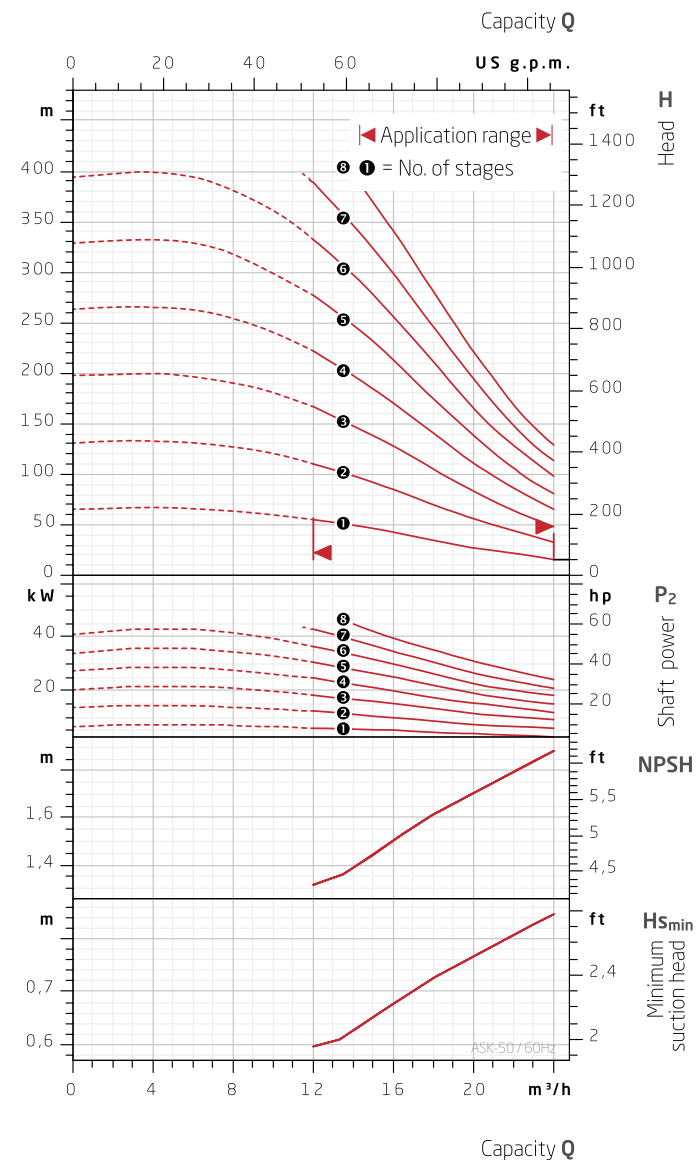
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
 Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Minimum suction head

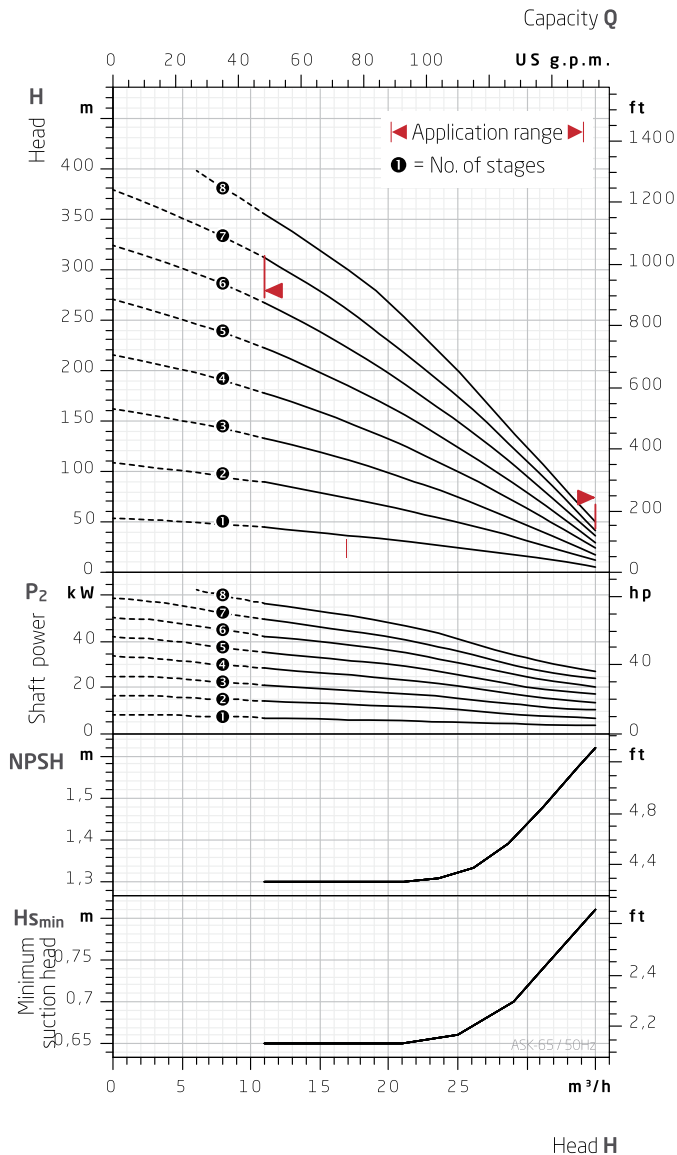
The intake pressure ($H_{s_{min}}$) above is valid for closed systems with boiling liquids and short feed lines.
 $NPSH_{required} \geq NPSH_{available} \geq H_{s_{min}}$ may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

$$NPSH_{available} > H_{s_{min}}$$

Characteristic curves ASK...65

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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Test conditions

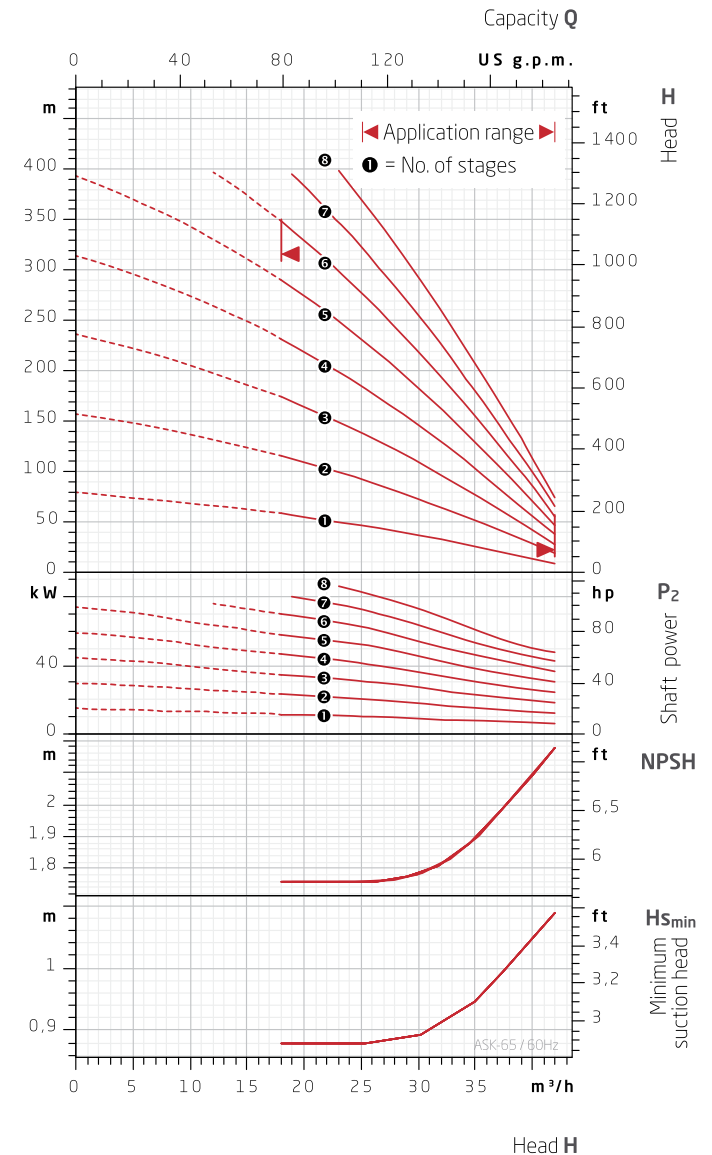
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$

Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



NPSH value

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Minimum suction head

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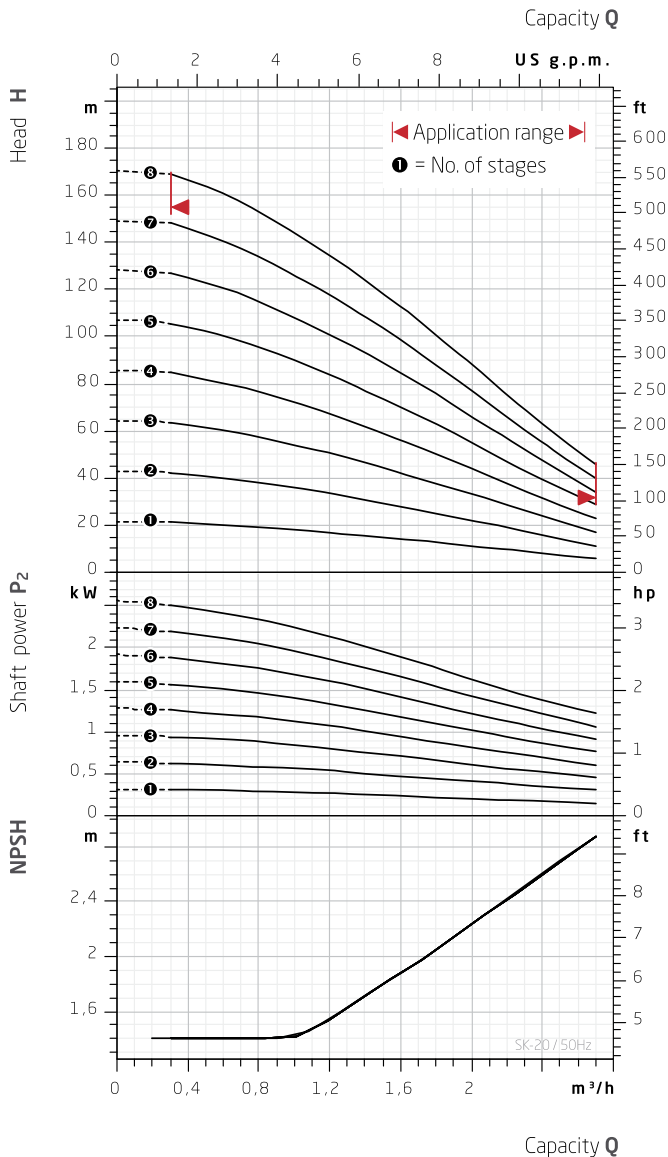
$NPSH_{available} \geq NPSH_{required} \geq H_{s_{min}}$ may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

$$NPSH_{available} > H_{s_{min}}$$

Characteristic curves SK...20

50 Hz – 1450 min⁻¹



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Test conditions

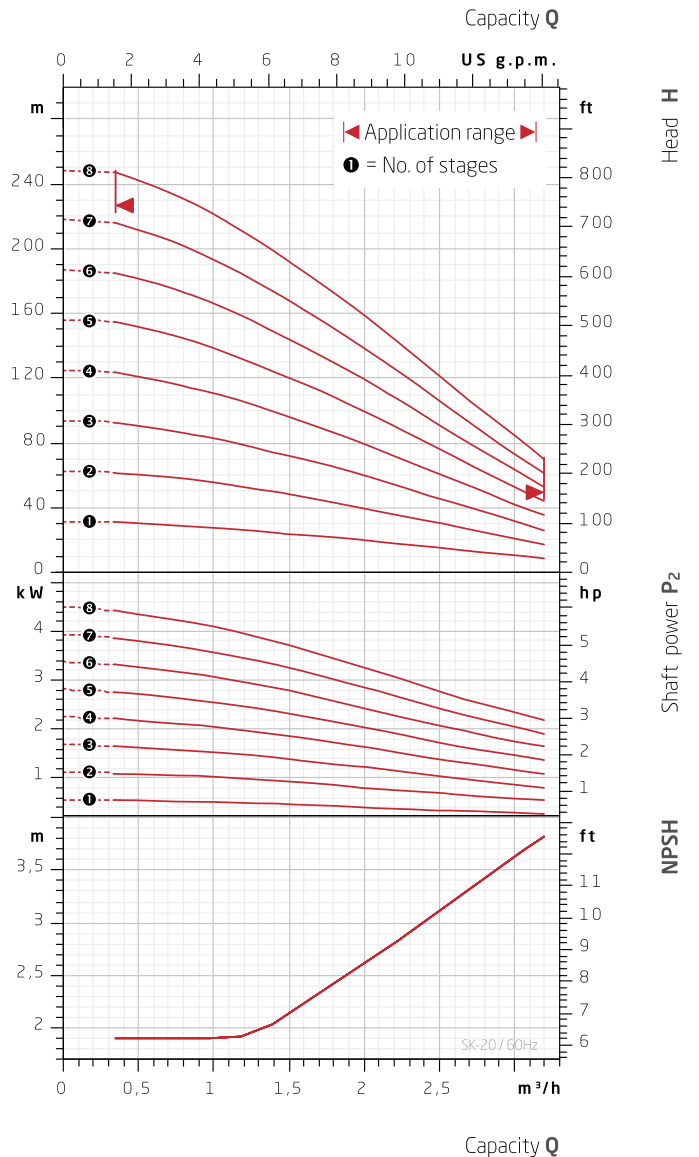
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$

Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



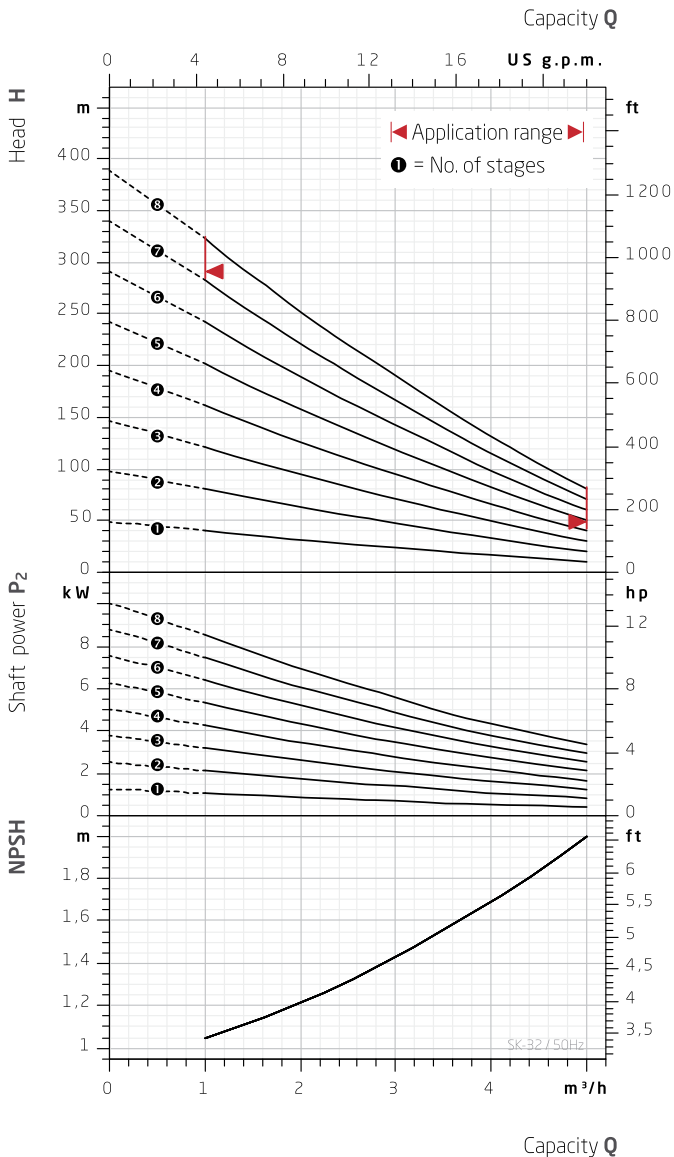
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$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Characteristic curves SK...32

50 Hz – 1450 min⁻¹



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Test conditions

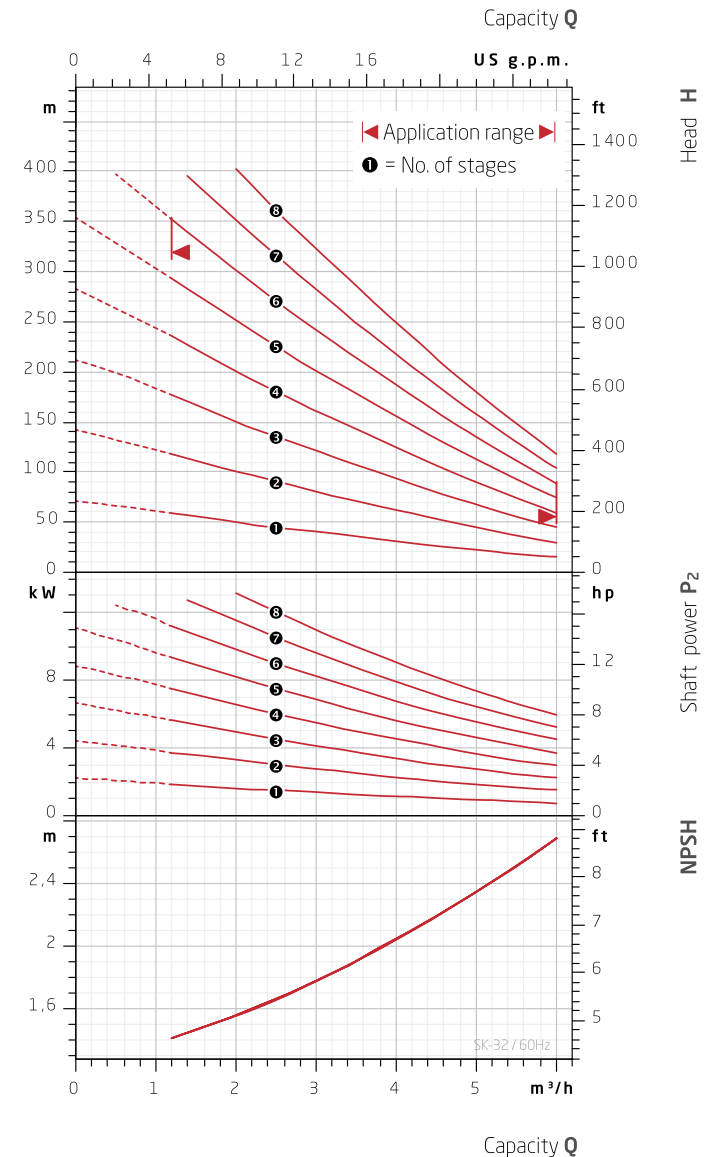
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$

Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



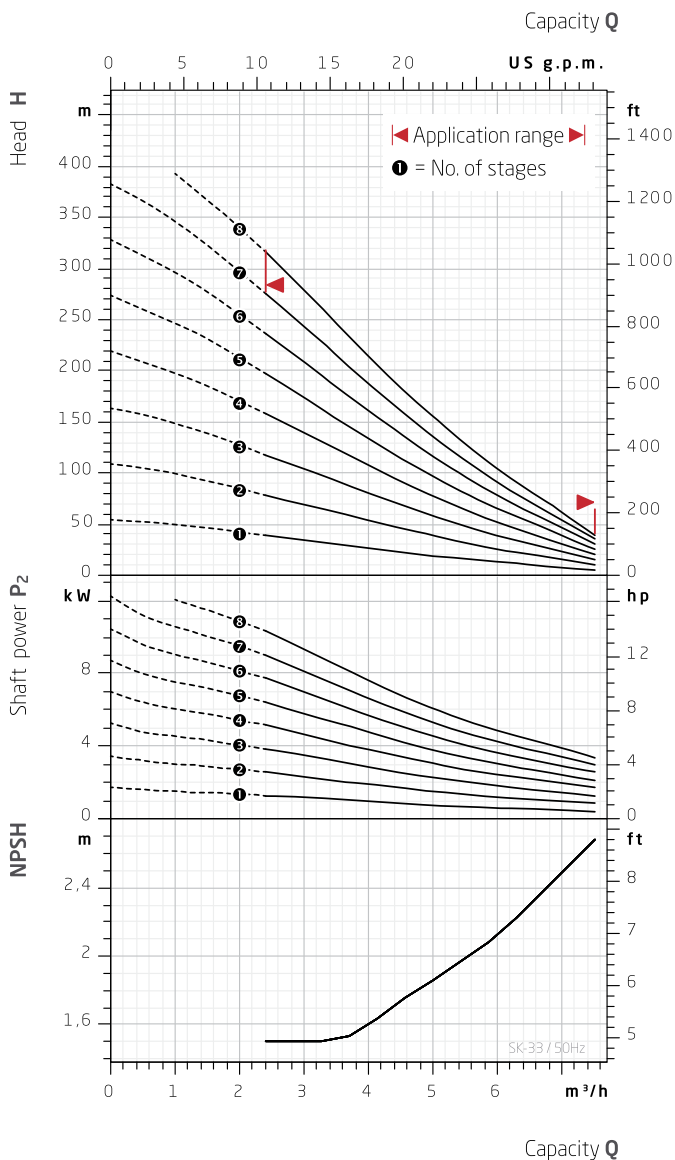
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Characteristic curves SK...33

50 Hz – 1450 min⁻¹



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Test conditions

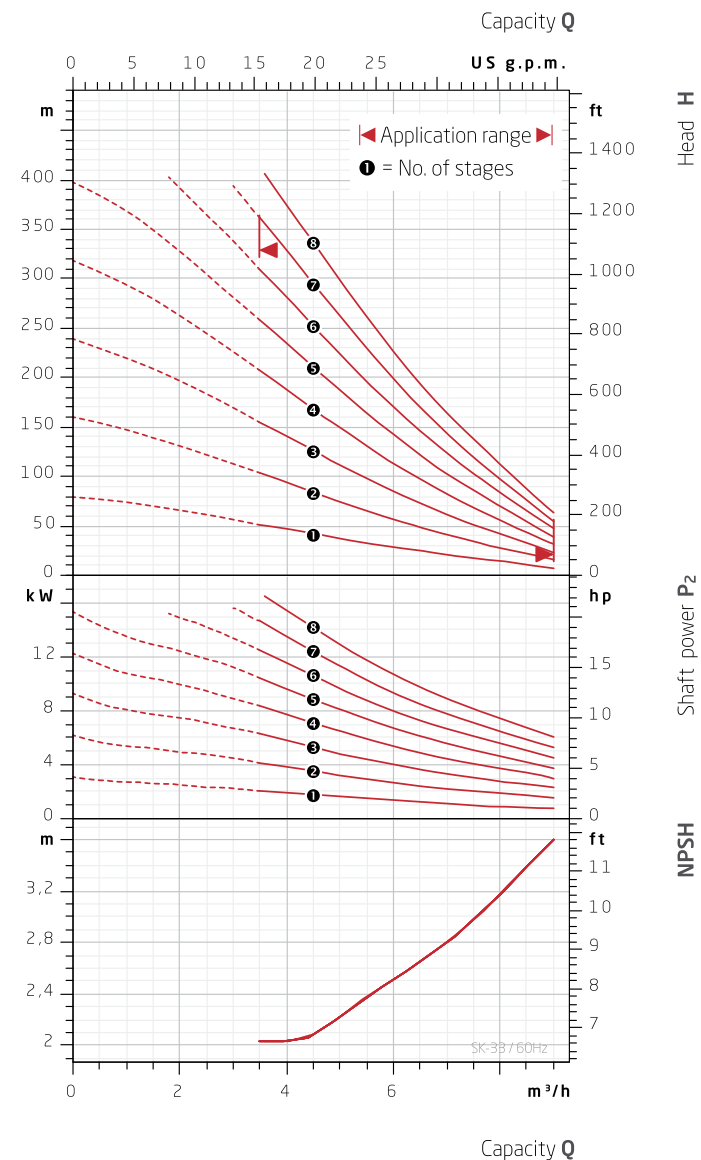
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$

Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



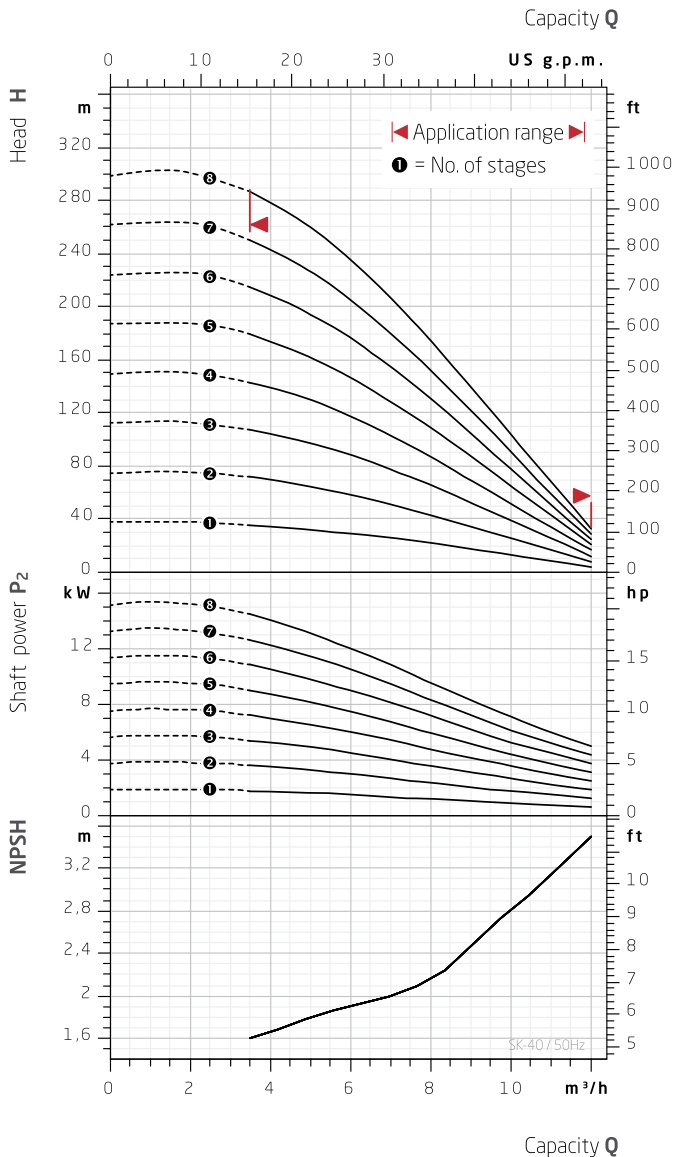
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The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Characteristic curves SK...40

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

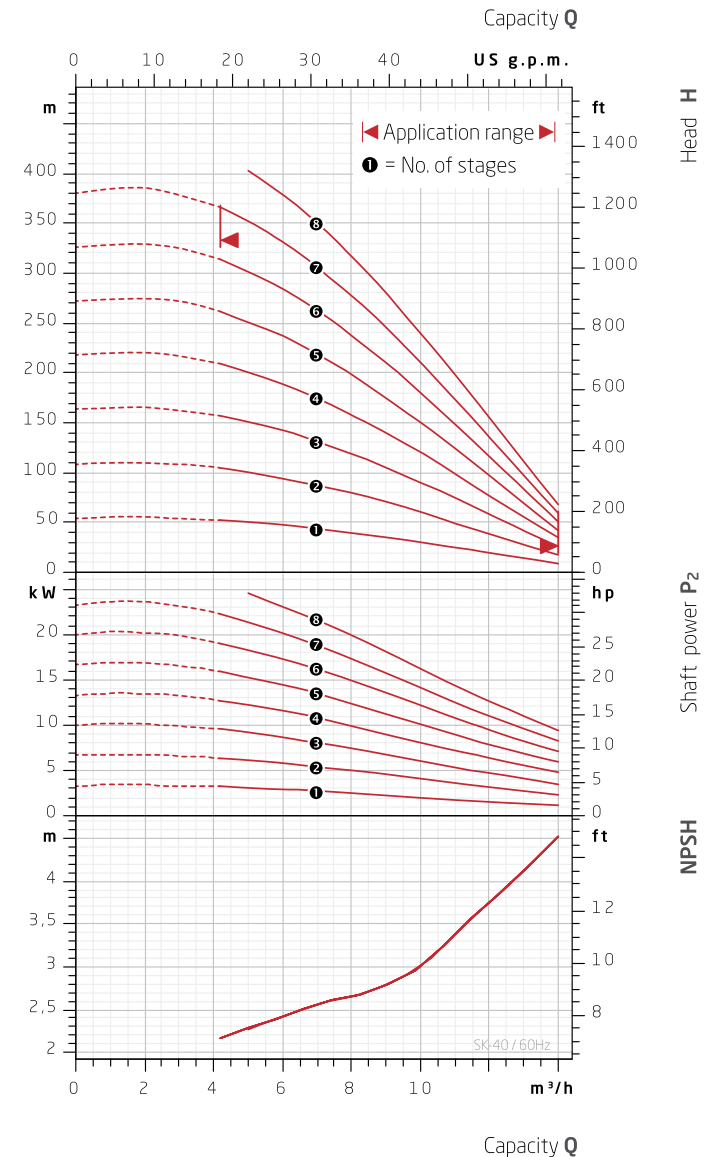
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
 Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



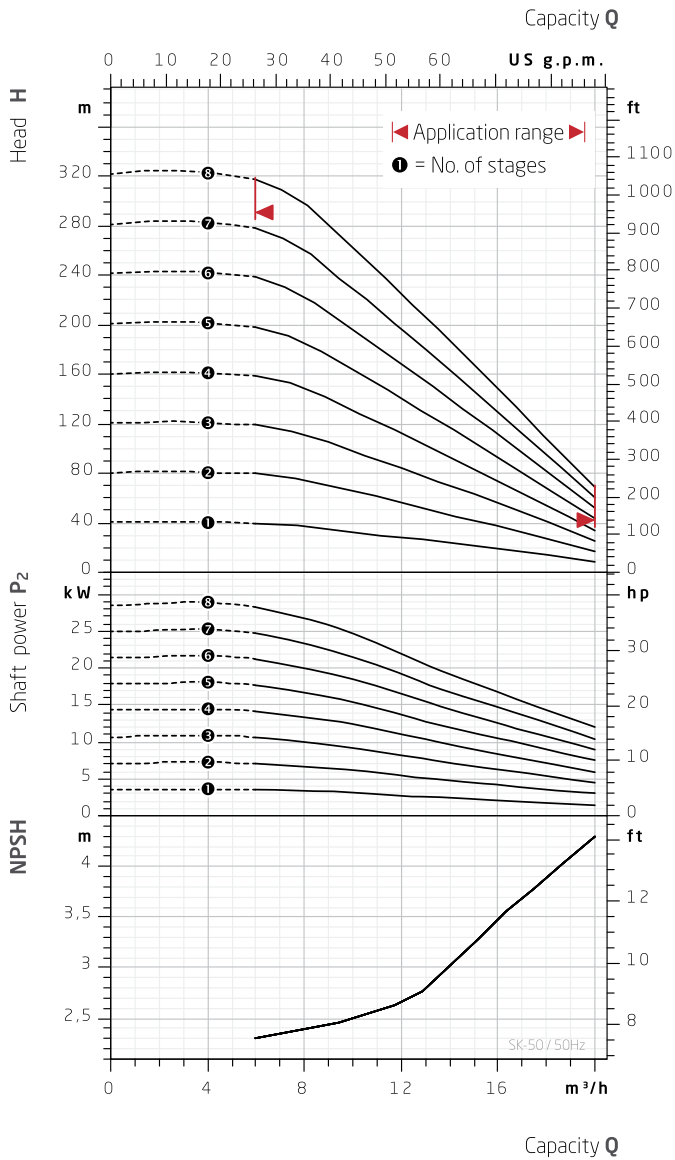
NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Characteristic curves SK...50

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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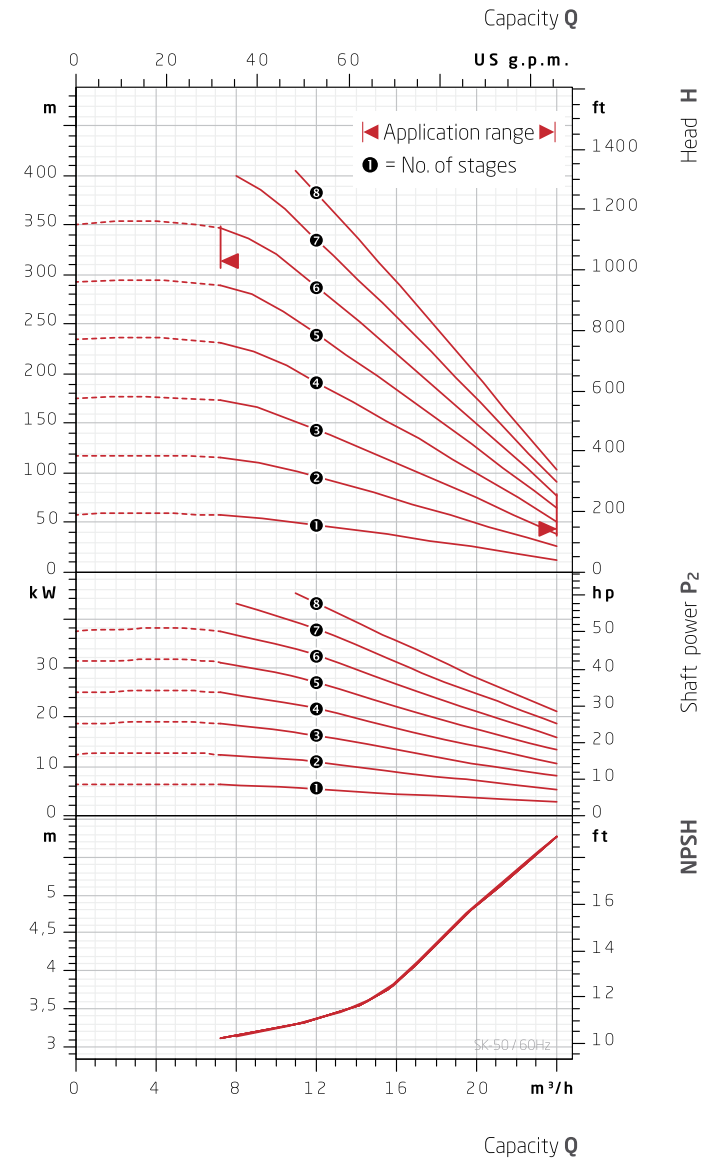
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
 Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



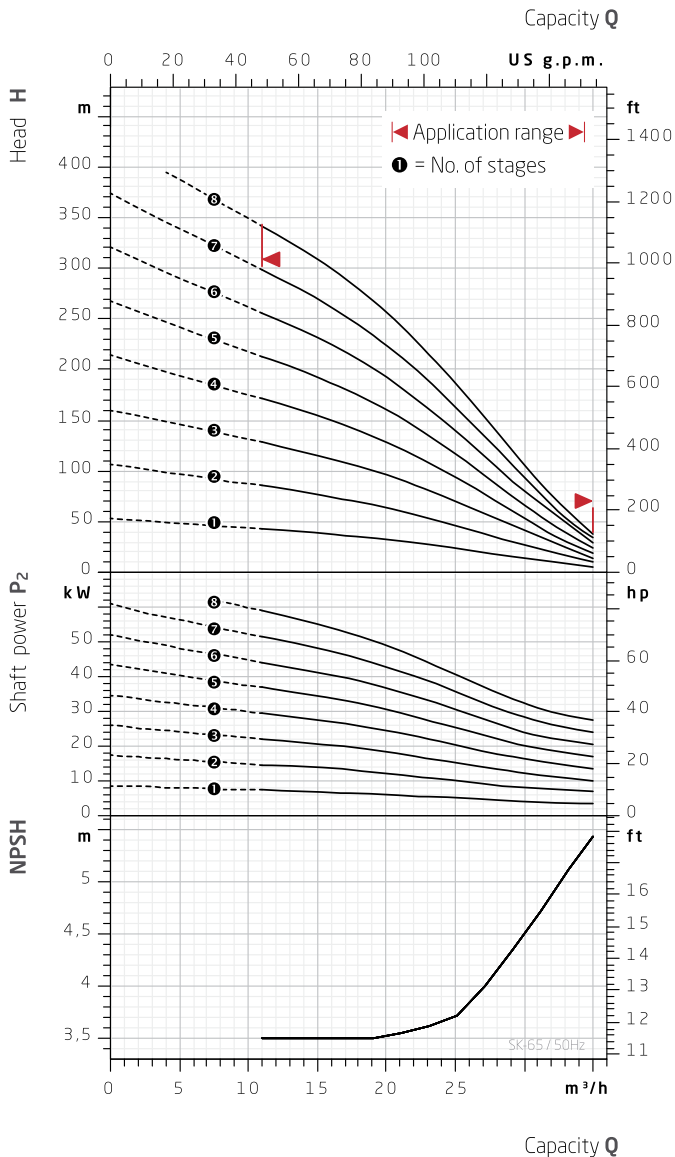
NPSH value

The NPSH value above shows the required NPSH value of the pump $NPSH_{required}$. This value has to exceed the NPSH value of the system $NPSH_{available}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Characteristic curves SK...65

50 Hz – 1450 min⁻¹



Binding characteristic curves only by SPAIX

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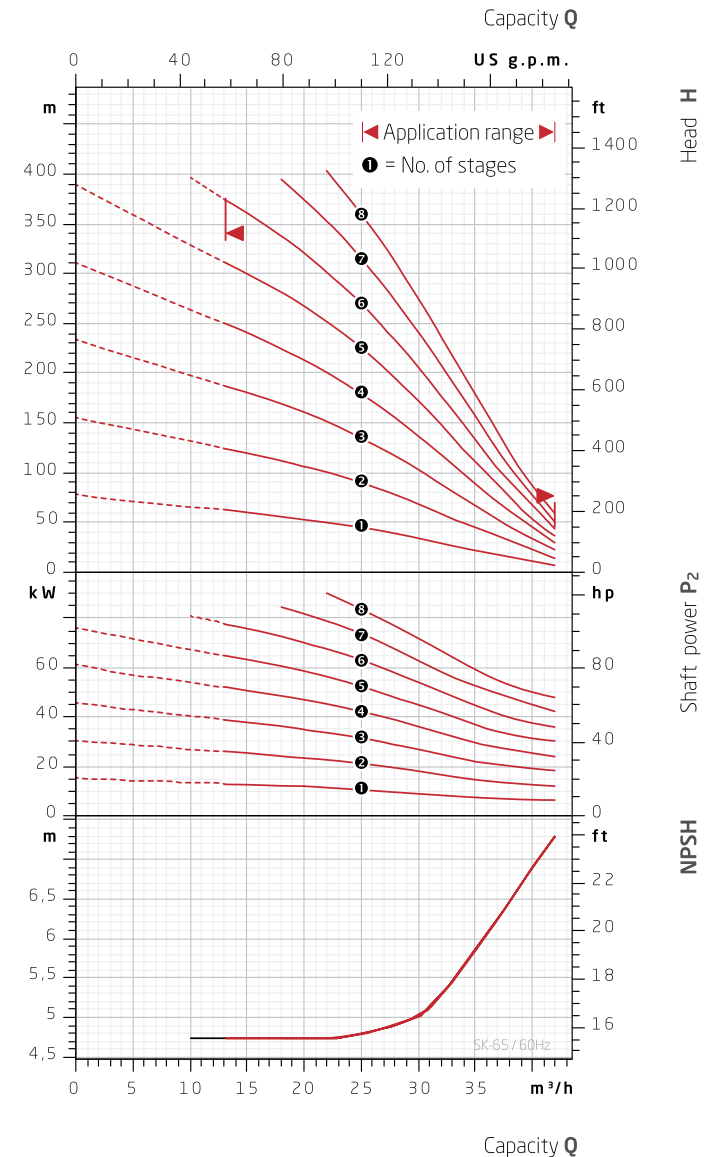
Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate $\pm 10\%$, total head $\pm 10\%$, power requirement $+ 10\%$
Deviating properties of the media to be pumped affect the characteristic curves.

60 Hz – 1750 min⁻¹



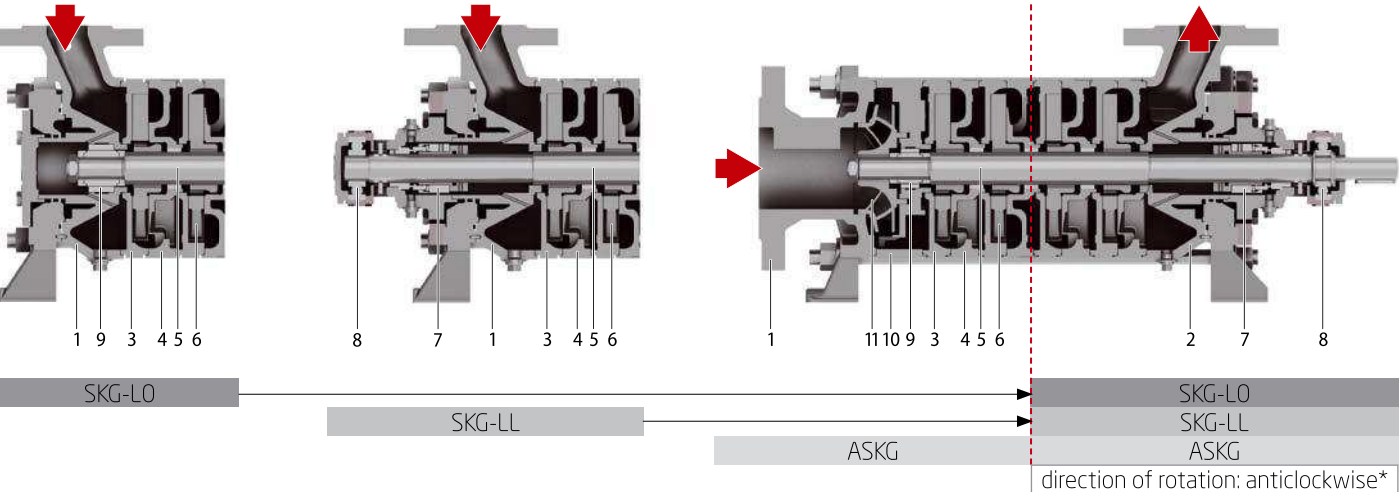
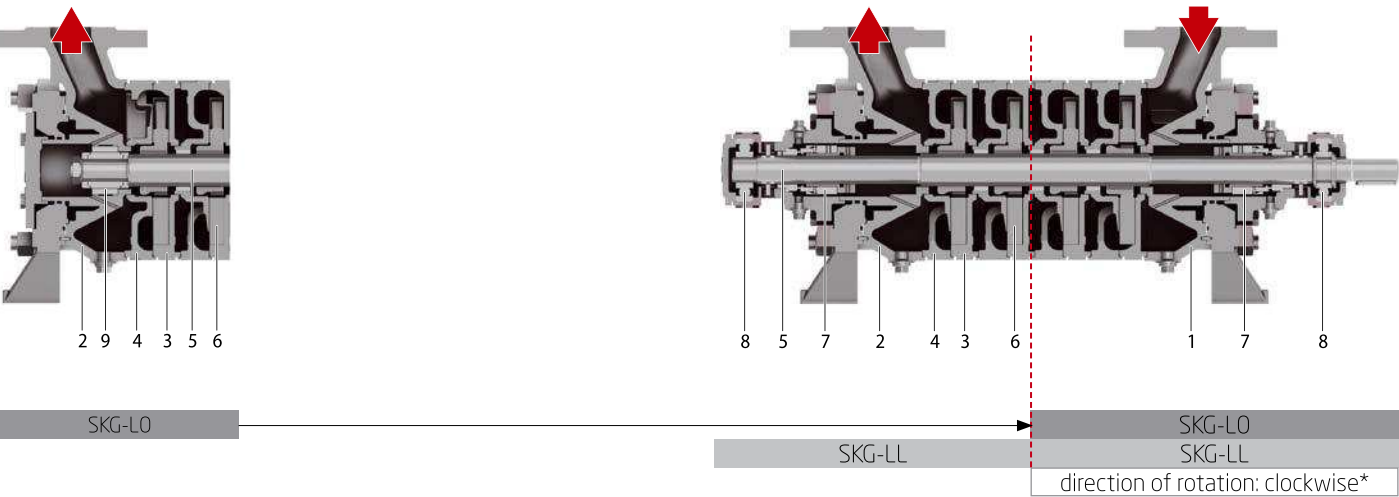
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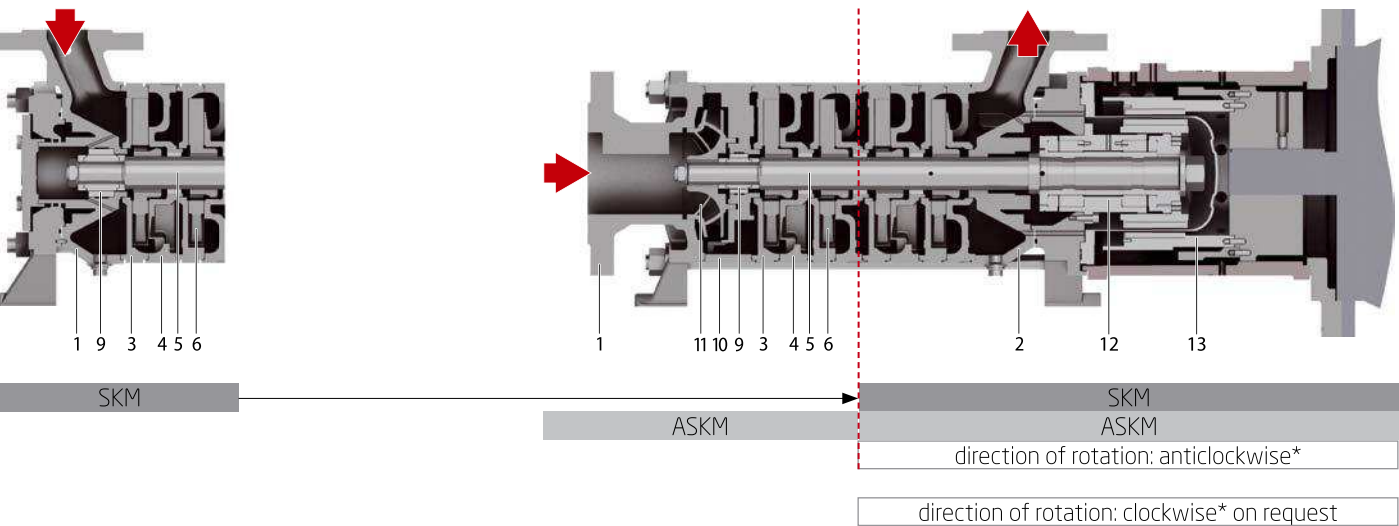
$$NPSH_{available} \geq NPSH_{required} + 0.5 \text{ m}$$

Smart modular system

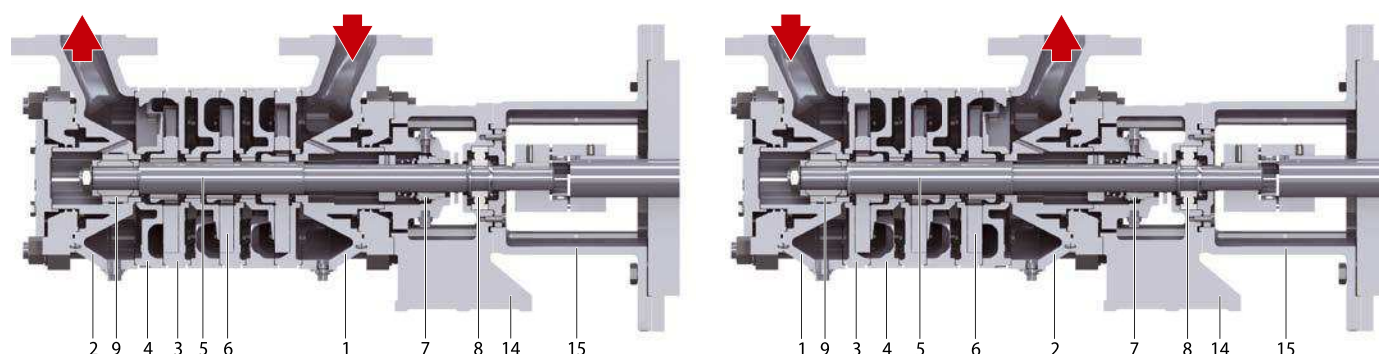
Pumps with mechanical seal – SKG-LO / SKG-LL / ASKG



Pumps with magnetic coupling – SKM / ASKM



Pumps with mechanical seal – SKG-LA



SKG-LA
direction of rotation: clockwise*

SKG-LA
direction of rotation: anticlockwise*

No.	Designation
1	Suction casing
2	Discharge casing
3	Suction stage
4	Discharge stage
5	Shaft

No.	Designation
6	Star impeller
7	Mechanical seal
8	Rolling bearing
9	Sleeve bearing made of SiC (or carbon bearing, not illustrated)

No.	Designation
10	N-stage
11	Radial impeller
12	Bearing cartridge made of SiC
13	Magnetic coupling
14	Bearing bracket
15	Bracket

With Speck you get a smart modular system with many identical parts. In addition, the SK series allows two directions of rotation, providing full flexibility when replacing or converting a system.

* View from drive-side

High operational safety, optimal design and service-friendly

Robust and durable

Rolling bearing

Robust lifetime lubricated rolling bearings suitable for a long service life

Wear resistant sleeve bearings

Solid, hydrodynamically lubricated sleeve bearings made from carbon, a proven slide material – extremely hard wearing and highly resistant to corrosive media. Alternatively, SiC sleeve bearings are also available.

A perfect seal

Speck offers a wide range of mechanical seals: Designed for your operating point and for a variety of applications.

Mechanical seals & Stuffing box packings

Versions and materials: See type code page 22 for further details.

Magnetic couplings

See page 20 for further details and see page 22 for type code.

Wide temperature range

- 100 °C up to + 350 °C, depending on the material, the seals and the pumped medium. See type code page 22 for further details.

Flexible and simple to service

Minimum stock of spares required

Thanks to the consistently developed modular system, many components are completely identical and interchangeable across six ranges. This means a minimum stock of spare parts is required.

This guarantees complete flexibility as replacing pumps and components or changing the pump execution is easy.

Critical media

We offer a range of medium-specific designs suitable for the delivery of acids, lyes, fuel, glycol, glycerine, hot water, oil, etc.

Casing seals with graphite, FKM, FFKM or EPDM O-rings are available.

You can choose for stage sealing among graphite, Teflon® or various liquid seals by Eppler®.

ATEX

All series are ATEX certified

» Mechanical seal version: II 2G c TX

» Magnetic coupling version: II 2G c b TX

Magnetic couplings

Optimal design

The wide range of magnetic couplings offers an optimum configuration for your operating conditions and cuts energy consumption.

Wide range

Magnetic couplings consist of an inner rotor, a separating can and an outer rotor. The separating can hermetically seals the pumped media from the atmosphere.

A great variety of sizes and configuration using the latest software guarantee the best design for your operating point.

The transmissible torques of the magnetic couplings range between 10 and 500 Nm.

Type code for magnetic couplings

Type code (example)	135-	70
Nominal diameter DN		
Magnet length [mm]		

Magnetic coupling sizes and versions

		Magnet diameter				
		DN 60	DN 75	DN 110	DN 135	DN 165
Magnet length in mm	40	x	x	x		
	50		x	x	x	
	60	x	x	x	x	
	70			x	x	
	80			x	x	x
	90				x	x
	100					x
	110					x
	120					x
Separating can made of Hastelloy®		PN 40	PN 40	PN 25 / 40	PN 40	PN 25 / 40
Separating can made of ceramic ZrO ₂ Mg		not available		PN 40 on request		

Cooling through flushing bores

Eddy current, viscosity and bearing friction losses generate heat inside the pump, adding to the temperature of the medium. Flushing bores in the inner rotor and the casing ensure that critical points are cooled with the medium. At the same time, gases or air are conducted out of the inner rotor.

Robust Hastelloy® separating cans

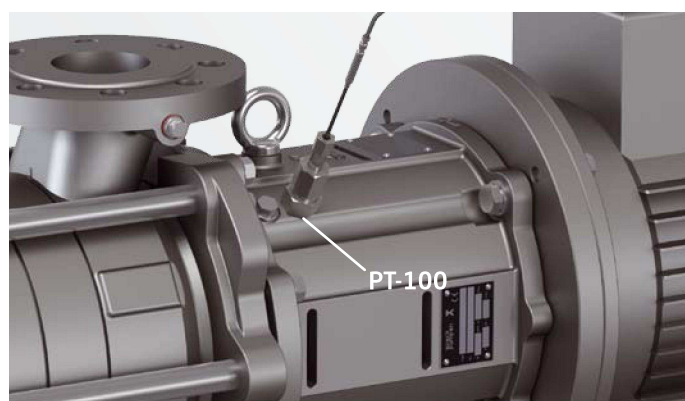


Proven and with low eddy current losses

High-grade Hastelloy® separating cans come as standard with Speck. This robust material has proven its properties in daily use in many industries. The finely graduated coupling and separating can diameters allow optimum design with minimum eddy current losses.

Safety with temperature monitoring

If required (e. g. in areas with potentially explosive atmospheres), with Hastelloy® separating cans, temperature sensors can be mounted into the bracket to monitor the surface temperature of the separating can.



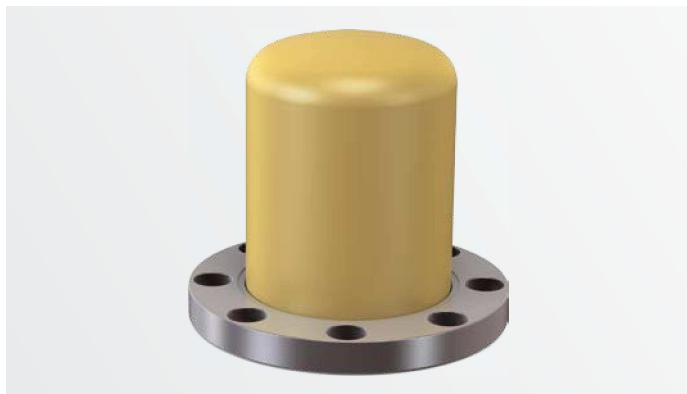
PT-100 temperature sensor (standard design)

The universal linear PT-100 temperature sensor with a detection range from -100 to +400 °C is available in three versions.

- » Standard design
- » ATEX design without SIL/IPL2
- » ATEX design with SIL/IPL2

All three versions can be optimally adjusted for length using a compression fitting. In addition, the sensor tip is held against the separating can using a spring to guarantee secure contact.

Ceramic ZrO₂Mg separating cans



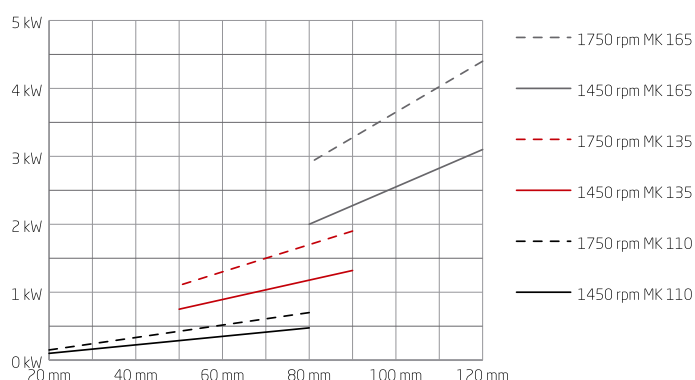
No current eddy losses in the separating can

When non-conductive ceramics are used, no eddy currents occur within the coupling. This has two advantages.

Energy savings

Magnetic fields cause eddy currents within metal separating cans, increasing the overall energy consumption of the pumps. Ceramic separating cans mean there are no eddy currents, leading to significant energy savings.

The graph below shows the additional energy consumption of a metal separating can due to eddy currents. It shows the energy consumption in relation to the length of the magnet (in 10 mm increments) and to the diameters. In the case of the largest separating can diameter, energy consumption rises to the power of three.



The additional energy consumption found in magnetic couplings with metal separating cans due to electrical eddy currents is completely eliminated by using ceramic separating cans.

No entry of heat into the medium

In metal separating cans, the electrical eddy currents described above are converted into thermal energy, thereby increasing the heat of the medium. With ATEX applications and media near vapour pressure, this can become a considerable problem. Ceramic separating cans do not create losses of energy through eddy currents and the medium retains its temperature.

Safety through leak detection

Separating cans often break as a result of vibrations caused, for example, by damaged bearings after they have been running dry, or by vibrations in the system.

In the event of a rupture, there is a danger of the medium getting into the motor through the motor casing, which must be avoided when explosive substances are being pumped.

For your safety we can offer a leak monitoring sensor which detects any medium emerging after a rupture of the separating can and immediately switches off the pump or the system.

In addition, the sealed slots on the bracket temporarily prevent the medium from entering the environment.

On request, we can also fit a pipe to the bracket to safely remove the pumped medium. The connector for the pipe is directly opposite the sensor.



- 1 Leak sensor
- 2 Externally sealed slots covered: the connector for the media removal pipe on the back of the bracket opposite the sensor

Versions

Type code with versions and material designs

	A	S	K	G	3	2	0	4			-	0	1	2			-	1	1	0	0	0		
		S	K	G	3	2	0	4	L	L	-	1	1	3			-	4	0	0	0	0		
		S	K	G	3	2	0	4	L	0	-	0	1	3			-	3	0	0	0	0		
	A	S	K	S	3	2	0	4			-	0	0	0			-	1	1	0	0	0		
		S	K	S	3	2	0	4	L	A	-	0	0	0			-	1	1	0	0	0		
	A	S	K	M	3	2	0	4			-				6	2	4	-	6	0	0	0	0	
		S	K	M	3	2	0	4			-				7	5	2	-	2	0	0	0	0	
Series																								
Sealing (table 1)																								
Size																								
Number of stages																								
Shaft bearing (Table 2)																								
Shaft sealing (Table 3)																								
Magnetic coupling – Size (Table 4)																								
Magnetic coupling – PN (Table 5)																								
Material designs and temperature range (table 6)																								
Counting number																								

Table 1: Sealing

Code	M	G	S
	Magnetic coupling	Mechanical seal	Stuffing box packing

Table 2: Shaft bearing for pumps with shaft sealing

	ASKG / ASKS	LL	LO	LA
Code	-	LL	LO	LA
Stage number	1 - 8	1 - 8	1 - 8	1 - 3
Bearing suction-side	Sleeve bearing	Rolling bearing	Rolling bearing	Rolling bearing
Bearing pressure-side	Rolling bearing	Rolling bearing	Sleeve bearing	Sleeve bearing
Mechanical seal suction-side	-	Yes	Yes	Yes
Mechanical seal pressure-side	Yes	Yes	-	-
Design	Base plate version	Base plate version	Base plate version	Bracket version

Table 3: Shaft sealing

000: Stuffing box packing

XXX: Special version, details in order-related documents

SKG-LL 2 mechanical seals and 2 external rolling bearings					ASKG, SKG-LO, SKG-LA 1 mechanical seal, 1 sleeve bearing and 1 external rolling bearing							
O-ring		Single-acting mechanical seal			O-ring		Single-acting mechanical seal			Double-acting mechanical seal		
Properties	Elasto-mer	SiC / A carbon	SiC / B carbon	SiC / SiC	Properties	Elasto-mer	SiC / A carbon	SiC / B carbon	SiC / SiC	SiC / A carbon	SiC / B carbon	SiC / SiC
Suction-side: unbalanced	FFKM	110	220	330	Unbalanced up to 140 °C	FFKM	010	020	030	110	220	330
Pressure-side: unbalanced	EPDM	112	222	332		EPDM	012	022	032	112	222	332
up to 140 °C	FKM	113	223	333		FKM	013	023	033	113	233	333
Suction-side: unbalanced	FFKM	140	250	360	Balanced up to 140 °C	FFKM	040	050	060	440	550	660
Pressure-side: balanced	EPDM	142	252	362		EPDM	042	052	062	442	552	662
up to 140 °C	FKM	143	253	363		FKM	043	053	063	443	553	663
Suction-side: balanced	FFKM	440	550	660	Balanced cooled up to 180 °C	FFKM	070	080	090	770	880	990
Pressure-side: balanced	EPDM	442	552	662		EPDM	072	082	092	772	882	992
up to 140 °C	FKM	443	553	663		FKM	073	083	093	773	883	993
Suction-side: balanced	FFKM	770	880	990								
Pressure-side: balanced	EPDM	772	882	992								
cooled up to 180 °C	FKM	773	883	993								

Table 4: Size of magnetic coupling

Code no.	51	52	61	62	63	71	72	73	74	75
Size	60-40	60-60	75-40	75-50	75-60	110-40	110-50	110-60	110-70	110-80
p _{max.} bar	40	40	40	40	40	25/40	25/40	25/40	25/40	25/40

Code no.	81	82	83	84	85	91	92	93	94	95
Size	135-50	135-60	135-70	135-80	135-90	165-80	165-90	165-100	165-110	165-120
p _{max.} bar	40	40	40	40	40	25/40	25/40	25/40	25/40	25/40

Table 5: Magnetic coupling - Material design of separating can

Code no.	2	4	6
Max. admissible pressure	PN 25, max. 25 bar,	PN 40, max. 40 bar,	PN 40, max. 40 bar,
Material design of separating can	Hastelloy®	Hastelloy®	Ceramics

Table 6: Material designs and temperature ranges

SK										
Sealing			Code no.	11	20	30	31	40	60	61
G	S	M	Parts							
x	x	x	Suction casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	GBz	1.4581	1.4531
x	x	x	Discharge casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	GBz	1.4581	1.4581
x	x	x	Stage	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	GBz	1.4581	1.4581
x			Shaft seal casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	GBz	1.4581	1.4581
x	x	x	Star impeller	GBz	1.4408	1.4408	-	GBz	1.4408, hardened	1.4408, hardened
x	x	x	Shaft	1.4122	1.4122	1.4122	-	1.4571	1.4571	1.4571
x	x	x	Pump frame ¹	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15
		x	Pump frame ²	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	-	1.4581	1.4581	1.4581
x	x		Temperature limits	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C	-	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C
	x		Temperature limits	-20 up to +200 °C	-40 up to +350 °C	-40 up to +200 °C	-	0 up to +180 °C	-100 up to +250 °C	-40 up to +350 °C

¹ no contact with the medium

² in contact with the medium

ASK

Sealing			Code no.	11	20	30	31	40	60	61
G	S	M	Parts							
x	x	x	Suction casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	1.4581	1.4581	1.4581
x	x	x	Discharge casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	GBz	1.4581	1.4581
x	x	x	Stage	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	GBz	1.4581	1.4581
x	x	x	Stage / NPSH	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	1.4581	1.4581	1.4581
x	x		Shaft seal casing	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	GBz	1.4581	1.4581
x	x	x	Star impeller	GBz	1.4408	1.4408	1.4408	GBz	1.4408, hardened	1.4408, hardened
x	x		Impeller / NPSH	EN-GJL-250	EN-GJL-250	EN-GJL-250	1.4408	1.4408	1.4408	1.4408
x	x	x	Shaft	1.4122	1.4122	1.4122	1.4122	1.4571	1.4571	1.4571
x	x		Pump frame ¹	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15
		x	Pump frame ²	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-15	1.4581	1.4581	1.4581
x	x		Temperature limits	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C	0 up to +180 °C
	x		Temperature limits	-20 up to +200 °C	-40 up to +350 °C	-40 up to +200 °C	-40 up to +200 °C	0 up to +180 °C	-100 up to +250 °C	-40 up to +350 °C

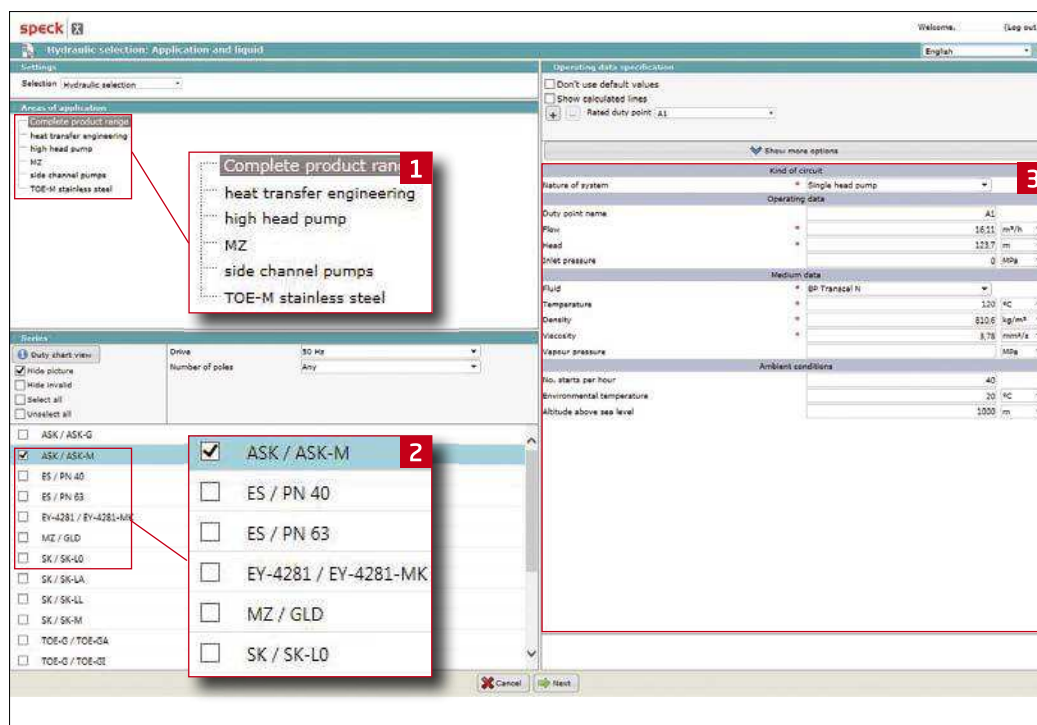
¹ no contact with the medium

² in contact with the medium

The operating limit values result from the max. permissible pressure and the max. permissible temperature as well as the pumped medium with its specific vapour pressure..

Simple and optimal configuration software

SPAIX selection program



The software allows you to configure heat transfer pumps, side channel pumps and boiler feed pumps via your Internet browser. As well as design details, the system will also request operating details and details about the medium to be pumped.

Ideal for system planners

Speck now also offers the latest version 4 of the renowned SPAIX design software.

We make the program available to authorised customers who can pre-select the pumps within their system. The web-based software always accesses an up-to-date database.

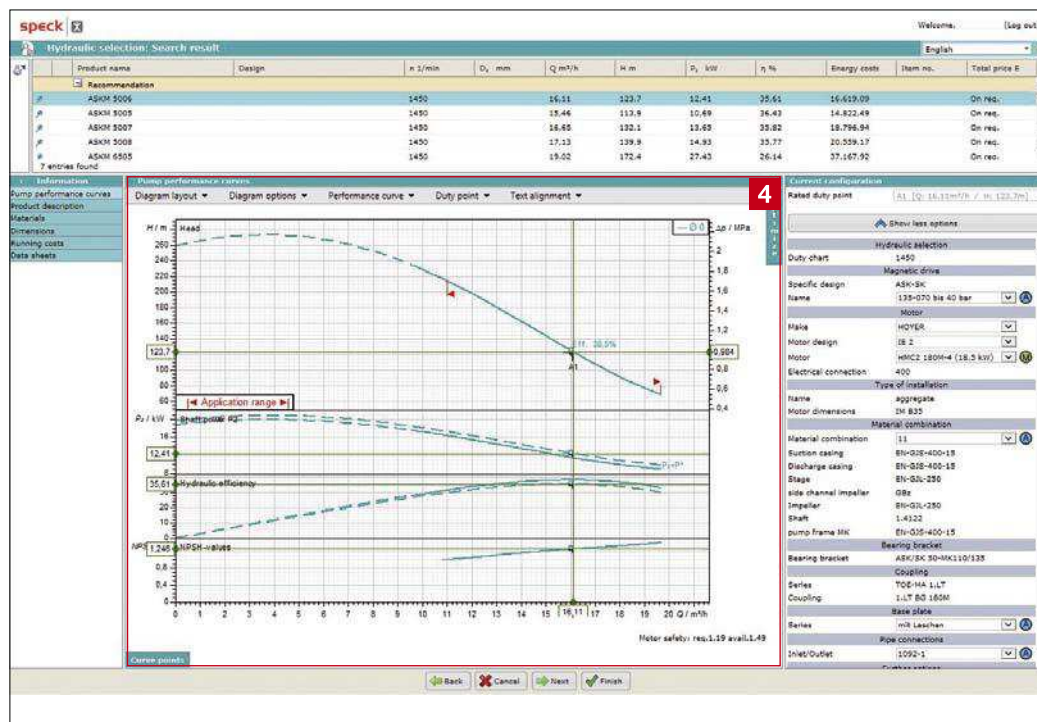
Easy pre-selection

The configuration system avoids a wide range of selection parameters with regard to design, sealing systems, hydraulics, operating conditions and media.

The software has language options for German and English.

Checking the pre-selection

When the order is submitted, the customer's choices are double-checked to ensure that your project requirements are met.



Characteristic curve depending on hydraulic selection

1 List of all pump designs that can be configured in the software

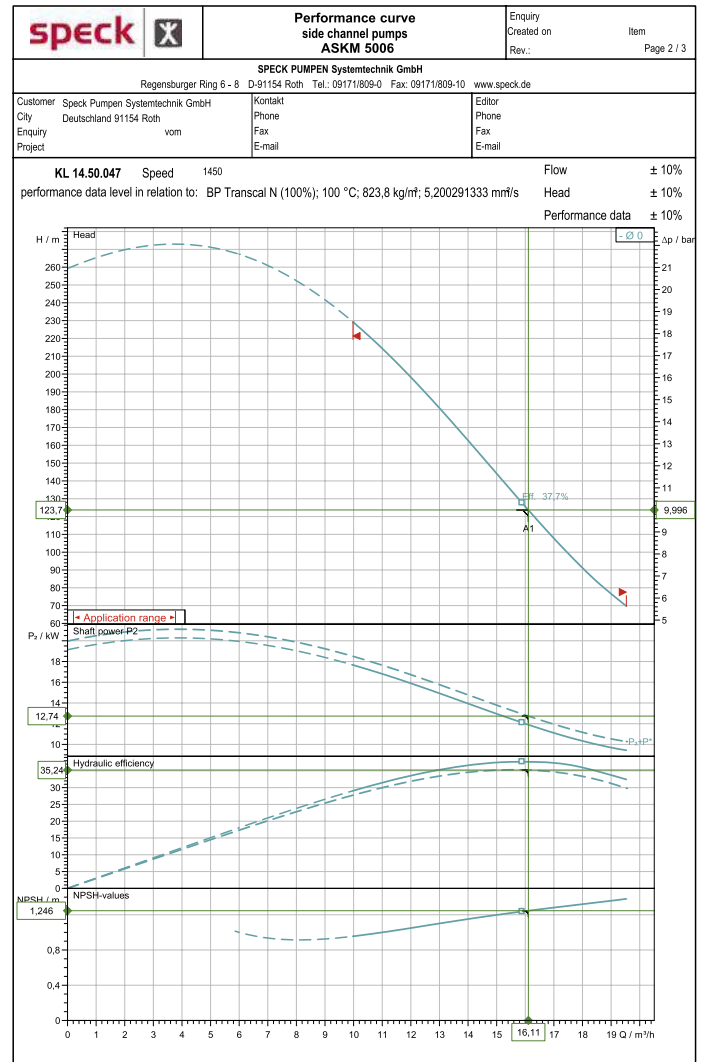
2 List of all series within the pump designs

3 Selection parameters operating parameters and medium data in the first instance

4 Characteristic curve depending on hydraulic selection generated

Documentation based on the selection program

speck 		Data Sheet side channel pumps ASKM 5006		Enquiry Created on Rev.: _____	Item Page 1 / 3
SPECK PUMPEN Systemtechnik GmbH Regensburg Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de					
Customer City Enquiry Project		Speck Pumpen Systemtechnik GmbH Deutschland 91154 Roth vom		Kontakt Phone Fax E-mail	
Operating Data					
1 Fluid	BP Transcal N	Flow rate	rated 16,11 m³/h min / max 10 / 19,5 m³/h	Speed	1450 1/min
2 Corrosive matters	keine/not	Pressure	Inlet 0 bar (ü) Disch. 9,996 bar (ü)	Efficiency	35,24 %
3 Abrasive matters	keine/not	Head	123,7 m	Total abs. power	12,74 kW
4 Solids	0	Pressure differential	10,00 bar (ü)	Dissipation	0,835 kW
5 Oper. Temp. tW / tS	100 / °C	Flow rate at cold start			
6 Density at tW / tS	823,8 / kg/m³	Total abs. power at cold start			
7 Kin. viscosity at tW / tS	5,2 / mm²/s	Dissipation cold			
8 Vapor press. at tW / tS	/ bar				
9 pH value	7				
Installation / Environment					
10 Building / Outside	Gebäude	Altitude	< 1000 m	Amb. Temp. min	20 / 40 °C
11 under roof yes/no	Ja / Yes	ATEX aggregate category	not ATEX	rel. Humidity	<55 %
Pumps					
12 Impeller type	side channel impeller	Pressure rating	PN 40	Pressure rating	PN 40
13 direction of rotation	left	Suction port	nom. diam. DN 100 Standard EN 1092-1	Delivery port	nom. diam. DN 50 Standard EN 1092-1
14					
15 Single head pump	X 1	Specifying calming suction side = min.	1000 mm	Material combination	11
Accessories					
Motor 16 Make HOYER Type HMC2 180M-4 17 Specific design IE 2 / 50 Hz / Pole pairs 2 18 Rated power 18,5 kW Degree of p IP 55 19 Rated current 34 A Frequency 50 ± 2% Hz Length of magnet 60 mm Width 400 mm 20 1-phase / 3-phase 3- Voltage 400 ± 5% V Diameter 135 mm 21 Rated speed 1470 1/min Mounting IM B35 22 Motor flange ø 350 mm Sound pressure level dB(A) 23 24 terminal box, motor oben 25		Magnetic drive Description 135-060 bis 40 bar rated load torque 155 Nm Magnetic drive pow 22,1 kW Length 1500 mm		Base plate Description U 400.1500.L Specific design with lug Length 1500 mm	
Materials					
26 Suction casing	EN-GJS-400-15	Discharge casing	EN-GJS-400-15		
27 Stage	EN-GJL-250	side channel impeller	GBz		
28 Impeller	EN-GJL-250	Shaft	1.4122		
29 pump frame MK	EN-GJS-400-15				
30					
31 seal stage	Teflon	O-ring pump frame	FKM	seal separating can	Graphit
Tests and Inspections					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
Shipping data					
42					
Documentation					
43					
44					
Remarks					
45 motor article 46					

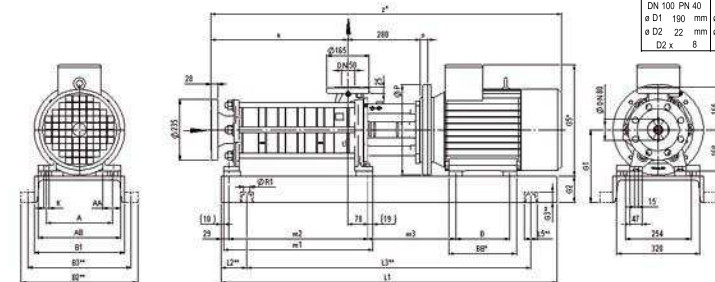


Technical data sheet (example)

Characteristic curve (example)

Save projects

Interim configuration results such as characteristic curves, scale drawings or technical data sheets can be saved as a project and generated as a pdf file.

speck 		Dimension drawing side channel pumps ASKM 5006		Customer Speck Pumpen Systemtechnik GmbH City Deutschland 91154 Roth	Kontakt Phone Fax E-Mail
Enquiry		SPECK PUMPEN Systemtechnik GmbH Regensburg Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de		Created on	Item
Aggregate		Motor HOYER - HMC2 180M-4 - IM B35		Rev.: _____	Page 3 / 3
		Anschlüsse Suction port EN 1092-1 DN 100 PN 40 Delivery port EN 1092-1 DN 50 PN 40 a D1 190 mm a D1 125 mm a D2 22 mm a D2 18 mm B1 400 B2 500400 B3 500 G1 290 G2 110 G3 38 G5 477 R1 16,5 L1 1500 L2 100 L3 1300 L5 50 P 350 B 241 BB 315 A 279 AA 70 K 14,5 o 30 z 1580			

Dimensional drawing (example)

Research and development with recent test stands



Computer-controlled and fully automated test stands on the premises of Speck in Roth.

Measuring of hydraulics, power requirements, axial thrust, vibrations and NPSH values. Heads of up to 400 m and flow rates of up to 750 m³/h are possible.



Thermal oil test stand with pump surveillance system on the premises of Speck in Roth.

Research of impacts of high temperatures up to 350 °C on the lifetime of the pumps.

Order-related tests and dimensioning

Pressure tests

Speck carries out the tests below as standard:

Gas pressure test

The gas pressure test is used to prove that the components are leak-proof. All components that bear pressure are tested, such as the discharge casing and the suction casing, stages and mechanical seal casing. The test is carried out with forming gas at 2 bar. The holding time is 15 minutes.

Hydrostatic pressure test

The hydrostatic pressure test is used to prove strength of the components and that the pump is leak-proof. The fully assembled pump is tested. The test is carried out with a hydrostatic test pressure based on prEN 12162; the hydrostatic test pressure corresponds to 1.5 x the nominal pressure (PN16) at 20 °C. The holding time is 10 minutes.

If you want to use pressure tests according to different criteria, please enter them in the request.

Testing the performance

At the customer's request, Speck offers the following tests:

Hydraulic tests

The measurement of the characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed. Tolerances: flow rate $\pm 10\%$, total head $\pm 10\%$ power requirement $\pm 10\%$. Deviating properties of the media to be pumped affect the characteristic curves.

NPSH test

In this test, the suction-side pressure is gradually reduced until the decrease in the delivered head reaches 3 % at a constant flow rate. At least four flows are evaluated that are spread appropriately over the admissible operating range. The NPSH value is not a guarantee point.

Vibration test

Vibration test according to EN ISO 5199, Edition 2002

The vibration values are measured radially and vertically at every operating point on the bearing casing at the nominal speed and with the corresponding flow rate.

Temperature measurement

The measurement is taken on the motor-side bearing at operating temperature. The operating temperature and the ambient temperature at every operating point measured are documented.

Standard conditions at site

- » Ambient temperature from - 20 °C to + 40 °C
- » Permissible altitude up to 1000 m above sea level

Deviations from the site conditions specified herein must already be disclosed in the inquiry.

Dimensioning

Assessment of the maximum pump outlet pressure

- The pump outlet pressure at the pump nozzle depends on
- » the pump inlet pressure
 - » the density of the medium to be pumped

The maximum pump outlet pressure $p_{2\max op}$ is calculated using the formula:

$$p_{2\max op} = p_{1\max op} + \rho \cdot g \cdot H \cdot 10^{-5}$$

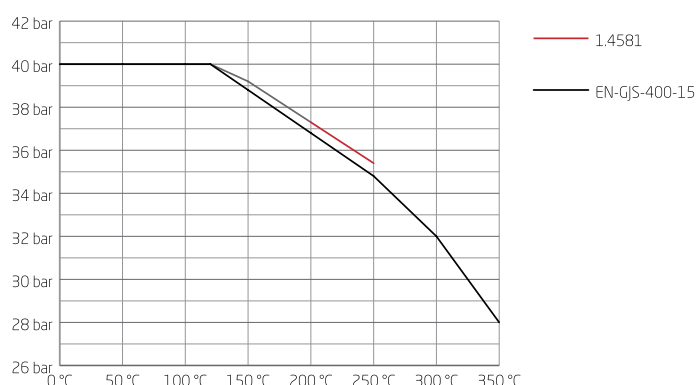
With:

- $p_{2\max op}$ = maximum pump outlet pressure [bar]
- $p_{1\max op}$ = maximum pump inlet pressure [bar]
- ρ = density of the medium to be pumped [kg/m³]
- g = gravitation constant [m/s²]
- H = maximum total head at zero flow or at the peak of the pump's characteristic curve [m]

Pumps must be selected and operated in a way which ensures that the maximum pump outlet pressure does by no means exceed the maximum permissible operating pressure of the casing $p_{all w c}$ at operating pressure. This also applies to commissioning while the discharge valve is closed (refer to diagram).

Pressure and temperature limitations

The maximum casing operating pressure $p_{all w c}$ of the pressure retaining parts depends on the operating temperature:



Maximum permissible casing operating pressure $p_{all w c}$

1.4581: stainless steel

EN-GJS-400-15: spheroidal graphite cast iron

Representations

- Produktion / Production
- Vertrieb / Sales
- Service / Service

D Germany

Produktion / Verwaltung Production / Administration

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■ **Vacuum pumps / Pompe per vuoto**
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IL Israel

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