

TOEG Series

Heat transfer pumps

for heat transfer oils from - 30 °C up to 350 °C and hot water up to 160 °C

with uncooled mechanical seals

bearing brackets 360 and 470

Pumps for heat transfer technology

Main applications

- » Tempering in plastics and die cast industry
- » Baking ovens, large frying units as well as in the production of edible oils and dry masses for the food and feedstuff industries
- » Heating calenders and melting pots in the leather and rubber industry
- » Heating stirring and mixing vessels in the production of paints and varnishes
- » Heating tank storage facilities on stationary and FPSE platforms as well as in tankers
- » Heating press lines in the wood and pulp industry
- » Flat glass production
- » Solar power stations and ORC processes

Usage

These pumps are designed for circulating organic or synthetic heat transfer oils in heat transfer plants in acc. with DIN 4754, as well as hot water.

Suitable for media to be pumped with little non-abrasive contaminations

	Thermal oil versions	Hot water versions
Media	Heat transfer oil / thermal oil	Water
T_{\min}	- 30 °C	-
T_{\max}	+ 350 °C	+ 160 °C, + 180 °C on request
Casing	Spheroidal graphite cast iron	
Nominal pressure	PN 16	
H_{\max} (2900 min ⁻¹)	100 m	
Q_{\max} (2900 min ⁻¹)	550 m ³ /h	
ATEX	II 2GD IIC cb TX	

Denomination

Type code Example	TOE	G	A	32	160	/150
Denomination of series						
Mechanical seal						
N = Version with bearing bracket, volute casing ax/top A = Close-coupled version with bracket, volute casing ax/top I = Close-coupled version with bracket, inline casing						
Nominal width of outlet nozzle DN						
Nominal impeller diameter in mm						
Actual impeller diameter in mm						

Your contacts


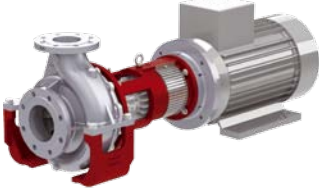

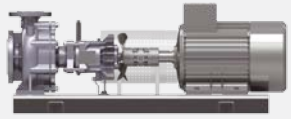
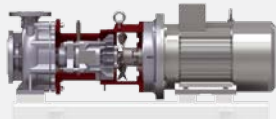
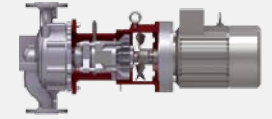
Speck Pumpen Systemtechnik GmbH

Regensburger Ring 6-8
91154 Roth
Phone: +49 9171 809-0
Fax: +49 9171 809-10
info@speck.de
www.speck.de

International representatives

→ page 23

TOEG Series

	TOEGN	TOEGA	TOEGI
	 <p>Example: Casing with feet</p>	 <p>Example: Casing with centreline mounting</p>	 <p>H</p>
			
Features	<ul style="list-style-type: none"> » Bearing bracket / process design » Base plate » Dismantling of the bearing bracket without moving the motor is possible with optional spacer type coupling » Alignment / checking of the coupling required before start-up » Pump and aggregate dimensions in acc. with EN 733 	<ul style="list-style-type: none"> » Bracket version » Base plate optional » No alignment of coupling required before start-up » Space for disassembling the cartridge insert required » Pump dimension in acc. with EN 733 	<ul style="list-style-type: none"> » Bracket version with inline casing » No alignment of coupling required before start-up » Space for disassembling the cartridge insert required
Pump dimensions	→ Pages 16 and 17	→ Pages 16 and 17	→ Page 18
Hydraulics and casing	<ul style="list-style-type: none"> » Identical hydraulics for TOEGN and TOEGA » Characteristic curves → pages 12 and 13 » Identical volute casing for each frame size » Large pumps with centreline mounting and double volute » Description → page 5 		<ul style="list-style-type: none"> » Characteristic curves → pages 14 and 15 » Inline casings with two dimensions H available
Sizes	<ul style="list-style-type: none"> » Only two bearing brackets for all sizes » Bearing bracket 360 for 12 sizes - identical and interchangeable » Bearing brackets 470 for 7 sizes - identical and interchangeable » Only one bracket per size 		
Description	<ul style="list-style-type: none"> » Thermal oil versions → page 6 » Hot water versions → page 7 		
Interchangeability of parts	<ul style="list-style-type: none"> » Within all series including the versions with magnetic coupling (→ see catalogue TOEMN/MA/MI series) there is a high degree of interchangeability. » This means minimum spare parts stock and full flexibility as replacing pumps or components or retrofitting to a different design is very easy. » Table of interchangeable parts → page 19 		

High operational safety, optimal design and service-friendly

Robust design

Torsion-resistant casing cover and ball bearings with lifetime lubrication

Wear-resistant SiC sleeve bearings

Solid, hydrodynamically lubricated sleeve bearings made from SiC as tried-and-tested slide material - extremely wear-resistant and good resistance in corrosive media.

Impellers with back vanes

The back vanes of the impellers significantly reduce the axial thrust and therefore remove strain from the mechanical seal and the ball bearings considerably. They also keep dirt particles away from the sleeve bearings.

Optimised for synthetic heat transfer oils

Dry-run safety function for the mechanical seal

Synthetic heat transfer oils are being used more and more frequently due to the benefits they offer. However, low-boilers develop in the synthetic oils over time in form of gas bubbles, can lead to dry-running on the mechanical seal.

This is ruled out completely in the generously designed mechanical seal casings from Speck. An anti-vortex rib reliably prevents gas bubbles from forming on the mechanical seal.

The vacuum generated by the back vanes also ensures that the low-boilers do not collect in the mechanical seal casing and are returned to the media circuit.

Clever temperature management

Optimised cooling of ball bearings, mechanical seal and sleeve bearings

The air flow generated by the fan blade on the coupling cools the mechanical seal and the ball bearing optimally in combination with coupling protection or bracket and several cooling fins. The additional cooling zone reduces the temperature on the sleeve bearings.

Also suitable for critical applications

Mechanical seal with quench

For media, which are prone to crack product formation on the sealing surfaces of the mechanical seal, versions with quench are available.

ATEX

All pumps of the TOEG and TOEM series are ATEX certified.

Optimal design

Energy efficiency

High energy efficiency secures a lasting competitive edge.

Speck offers the important criteria for energy-optimised design: Seamless range of sizes, highly efficient impellers, switching of impellers for the best design at the operating point and natural motors in accordance with IE2.

Maintenance-friendly and flexible

Simple installation

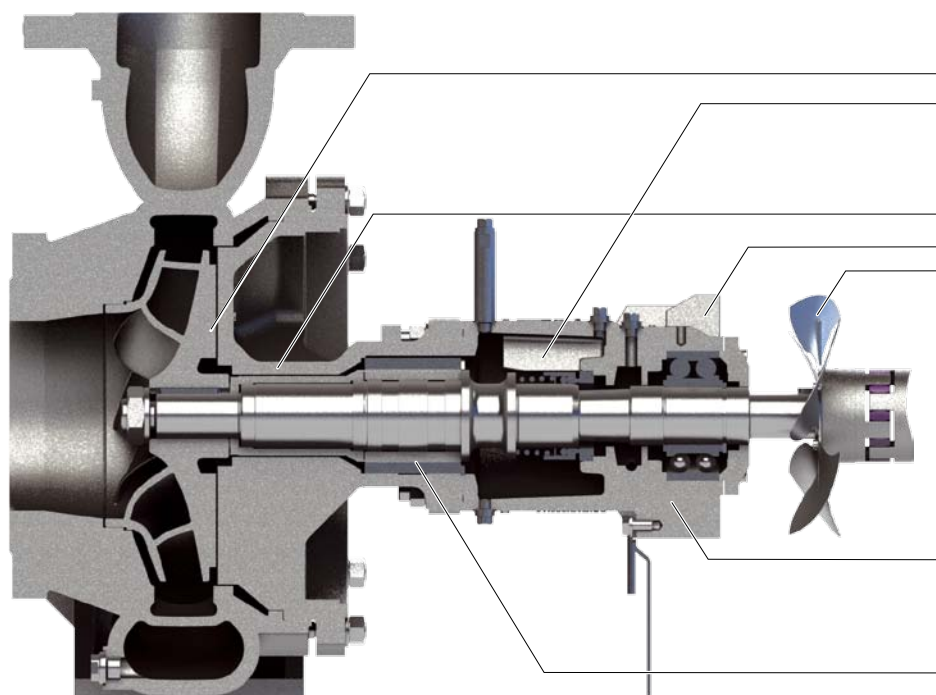
All series are extremely maintenance-friendly thanks to easy-to-remove bearing brackets.

Minimum spare parts stock

The high level of interchangeability of identical parts guarantees minimal spare parts stock requirements and an extremely high level of flexibility.

The bearing bracket 360 alone is used with mechanical seal in all three series in up to twelve sizes.

Retrofitting to a different series is also no problem at all - the volute casing can even be left in the system.



Dry-run safety function

Back vanes
Anti-vortex rib

Temperature management

Cooling zone
Cooling fins
Fan blades

Robust

Double-row angular ball bearings
from bearing bracket 470

Robust

Solid sleeve bearing made from SiC

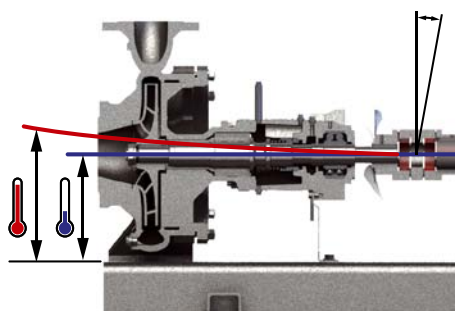
Fig.: TOEGN, bearing bracket 470, casing with centreline mounting

Longer lifetime

There are effects, which have little or no relevant impact on smaller designs, but lead to increased wear in larger pumps.

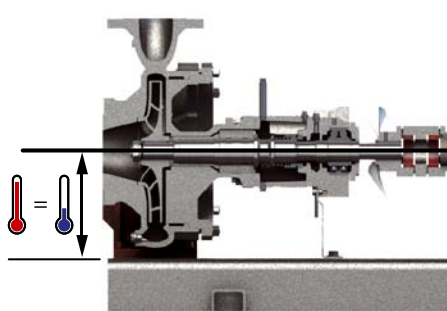
Speck offers larger pumps with special designs to guarantee a longer lifetime: Casing with centreline mounting and double volute.

Centreline mounting relieves strain from the bearings and coupling



Casing with feet: The larger the pump, the more strain placed on the bearings and coupling by heat expansion

Casings with feet can only expand upwards in high temperatures, which causes the shaft to tilt and bend. This has an impact on the sleeve bearings and shaft coupling in particular. As the heat expansion increases with larger casing size, the sleeve bearings and couplings also wear faster on larger pumps.



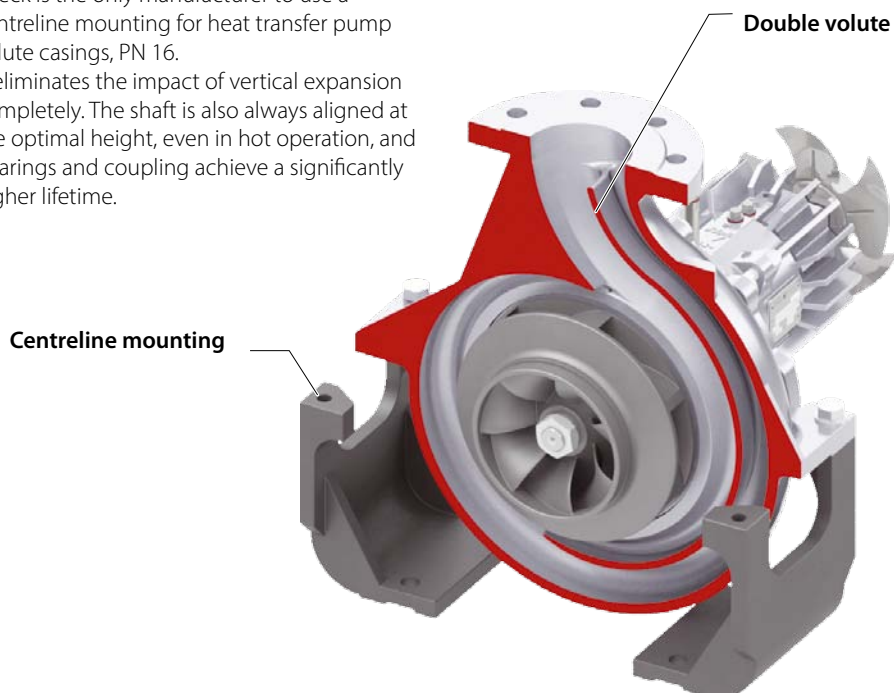
The centreline mounting eliminates the impact of the heat expansion completely

Speck is the only manufacturer to use a centreline mounting for heat transfer pump volute casings, PN 16. It eliminates the impact of vertical expansion completely. The shaft is also always aligned at the optimal height, even in hot operation, and bearings and coupling achieve a significantly higher lifetime.

A double volute remove strain from the sleeve bearings

Radial forces are applied directly on the sleeve bearings. The forces increase with higher impeller diameters and higher speeds. This is why the sleeve bearings on larger pumps with single volute casings wear faster.

Speck therefore uses casings with double volute for larger pumps, which significantly reduce the radial forces. The strain on the radial and axial bearings is considerably reduced, helping them achieve a much longer lifetime.

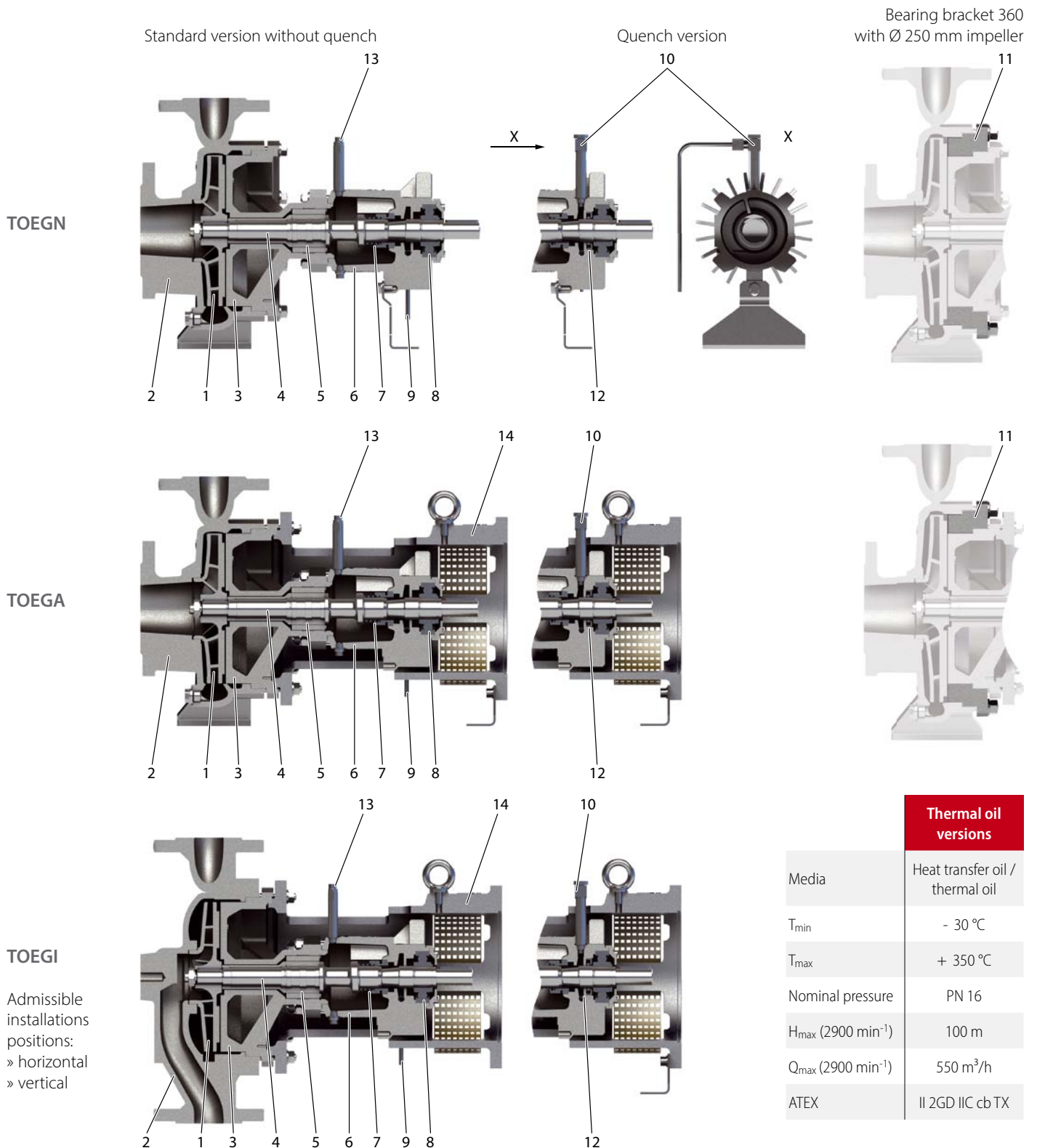


TOEGN / TOEGA – Sizes and casing designs

32-160	40-160	50-160	65-160	80-160	100-160	–
32-200	40-200	50-200	65-200	80-200	100-200	125-200
32-250	40-250	50-250	65-250	80-250	100-250	–
Bearing bracket 360			Bearing bracket 470			

All casings with dimensions in accordance with EN 733 Casing with double volute Casing with centreline mounting

Thermal oil versions



No.	Description	Material / Remarks
1	Impeller	EN-GJL-250
2	Casing	EN-GJS-400-15
3	Casing cover	EN-GJS-400-15
4	Shaft	1.4122
5	Sleeve bearing	SiC
6	Mechanical seal casing	EN-GJS-400-15
7	Mechanical seal	AQ1VGG, unbalanced
8	Rolling bearing	High-quality brand

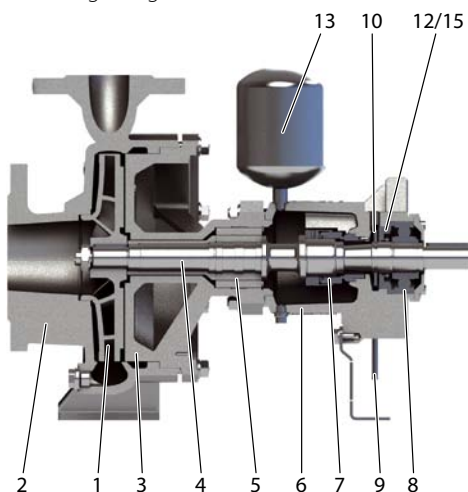
No.	Description	Material / Remarks
9	Leakage pipe	not applicable to quench version
10	Quench reservoir	optional
11	Counter flange	EN-GJS-400-15
12	Radial shaft sealing ring	only available with quench version
13	Ventilation	
14	Bracket	EN-GJS-400-15

EN-GJL-250 = GG-25
 EN-GJS-400-15 = GGG-40

Hot water versions

With degassing tank

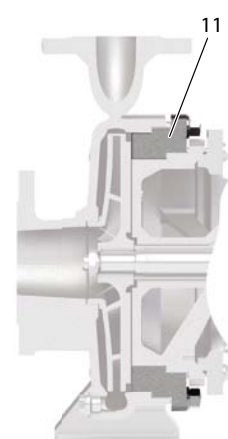
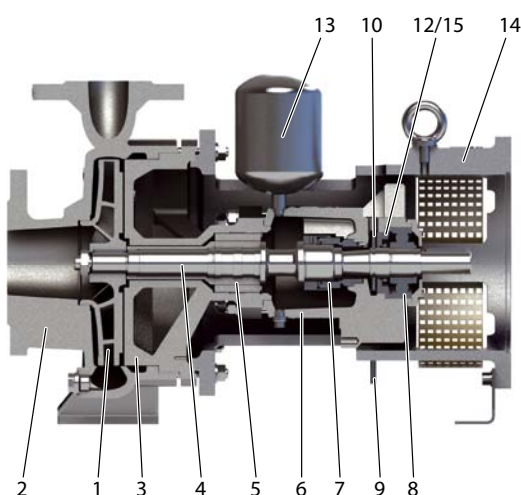
TOEGN



Bearing bracket 360
with Ø 250 mm impeller

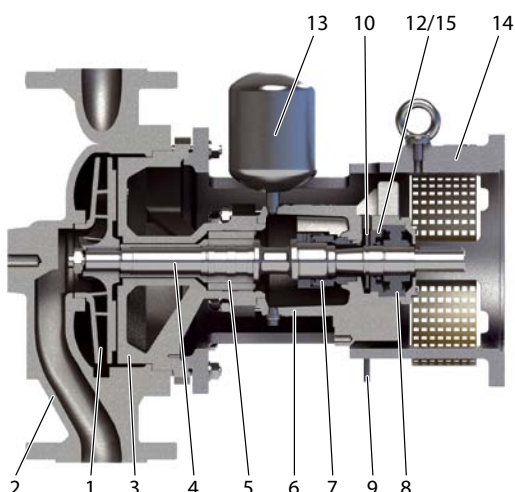


TOEGA



TOEGI

Admissible
installations
positions:
» horizontal



Hot water versions

Media	Water
T_{min}	-
T_{max}	+ 160 °C, + 180 °C on request
Nominal pressure	PN 16
H_{max} (2900 min ⁻¹)	100 m
Q_{max} (2900 min ⁻¹)	550 m ³ /h
ATEX	II 2GD IIC cb TX

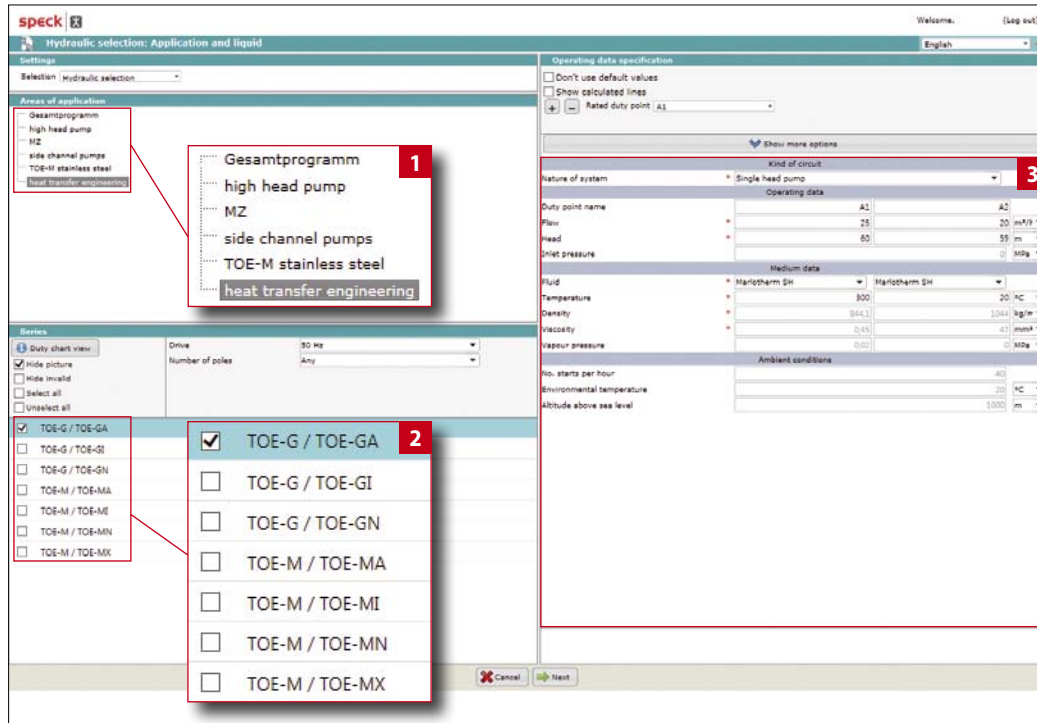
No.	Description	Material / Remarks
1	Impeller	EN-GJL-250
2	Casing	EN-GJS-400-15
3	Casing cover	EN-GJS-400-15
4	Shaft	1.4122
5	Sleeve bearing	SiC
6	Mechanical seal casing	EN-GJS-400-15
7	Mechanical seal	AQ;KGG, balanced
8	Rolling bearing	High-quality brand

No.	Description	Material / Remarks
9	Leakage pipe	
10	Splash ring	
11	Counter flange	EN-GJS-400-15
12	Radial shaft sealing ring	
13	Degassing tank	
14	Bracket	EN-GJS-400-15
15	Bush	

EN-GJL-250 = GG-25 | EN-GJS-400-15 = GGG-40

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

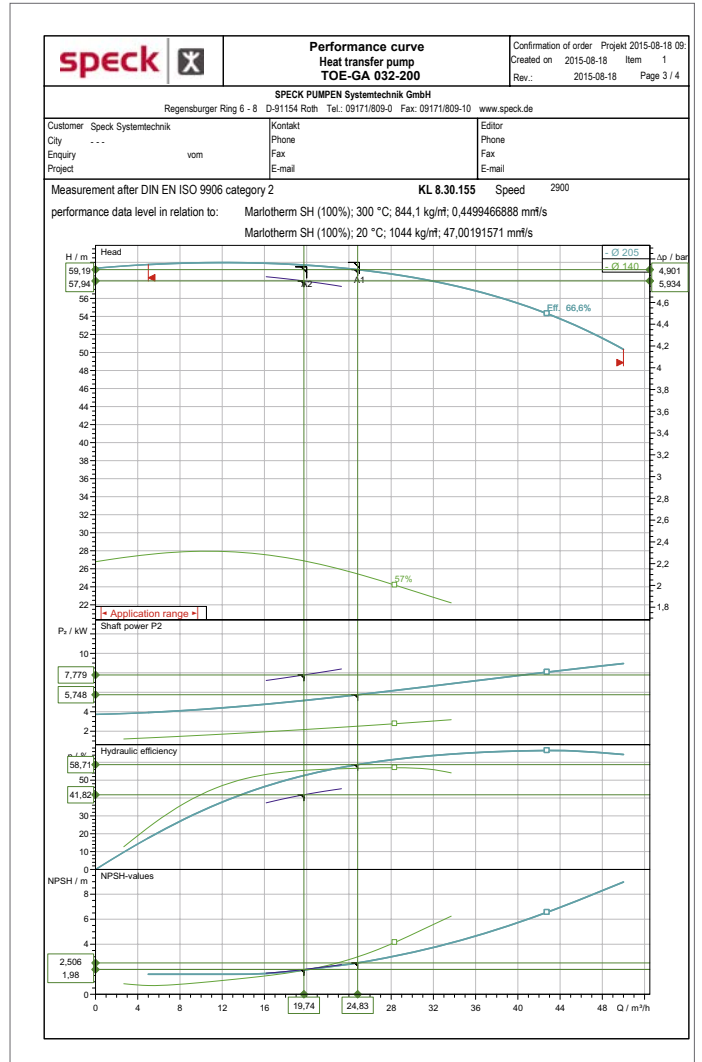
Key

- 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 Heat transfer pump TOE-GA 032-200		Confirmation of order Projekt 2015-08-18 09 Created on 2015-08-18 Item 1 Rev.: 2015-08-18 Page 2 / 4	
SPECK PUMPEN Systemtechnik GmbH Regensburger Ring 6-8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck-pumps.de					
Customer Speck Systemtechnik City ... Enquiry vom Project		Kontakt Phone Fax E-mail		Editor Phone Fax E-mail	
Operating Data					
1 Fluid	Marlotherm SH	Flow rate	rated 24.83 m ³ /h min / max 5 / 50 m ³ /h	Speed	2900 1/min
2 Corrosive matters	keine/none	Wght.-%		Hydr. efficiency	58.71 %
3 Abrasive matters	keine/none	Wght.-%		Hydr. power const.	5.75 kW
4 Solids	0	Wght.-%		Max. operating pressure	4.91 bar (ü)
5 Oper. Temp. / W / IS	300 / 20 °C	Head	59.19 m	Flow rate at cold start	20 m ³ /h
6 Density at tw	844.1 / 1044 kg/m ³	Pressure different	4.90 bar (ü)	Start-up temp.	20 °C
7 Kin. viscosity at W / IS	0.4499 / 47 mm ² /s	NPSH	System required 9.67 m required 3.01 m	Total. abs. power at cold start	7.78 kW
8 Vapor press. at IA	0.2 / 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 Alex	rel. Humidity	<55 %
Pumpe					
12 Impeller-D / RUS	205 / 148 mm	Pressure rating	PN 16	Delivery port	Pressure rating PN 16 nom. diam. DN DN 50
13 Impeller type	Radial impeller	Suction port	Standard	Delivery port	Standard EN 1092-2
14 direction of rotation	right				
15 Single head pump	X 1	Specifying calving suction side = min.	250 mm		
Accessories					
16 Motor		Shaft seal		Base plate	
17 Make	HOYER	Type	HMC2 160M1-2	Description	
18 Specific design	IE 2 / 50 Hz / Pole pairs 1	Number of poles	2	AQ1VGG	
19 Rated power	11 kW	Degree of prot.	IP 55	Length	
20 Rated current	20 A	Frequency	50 ±2% Hz	Width	
21 1-phase / 3-ph	3-	Voltage	400 ±5% V		
22 Rated speed	2930 1/min	Mounting	IM B35	Make	KTR
23 Motor flange	350 mm	Sound pressure level	dB(A)	Series	Standard
24		terminal box, motor	coben	Quench yes/no	Nein / not
25				Frame size	38
				Spacer length	24 mm
Materials					
26 Volute casing	EN-GJS-400-15	Impeller	EN-GJL-250		
27 Casing cover	EN-GJS-400-15	Mechanical seal housing	EN-GJS-400-15		
28 Shaft	1.4122	Bracket	EN-GJS-400-15		
29 Bearing cover	EN-GJS-400-15	Mechanical seal	AQ1VGG		
30 Sleeve bearing	SIC				
31					
32					
Tests and Inspections					
33 Material Tests	Test ¹⁾	Certificate	Other Tests	Tests and Inspections ²⁾	Certificate Qty
34 Volute casing	keine	kein	Hydrost. Pressure Test	Intern	kein alle
35 Impeller	keine	kein	Gas Pressure Test	Intern	kein alle
36 Casing cover	keine	kein	Performance curve	Keine	kein alle
37 Mechanical seal housing	keine	kein	NPSH-Measurement	Keine	kein alle
38 Shaft	keine	kein	Final check	Intern	kein alle
39			vibration	Keine	kein alle
40			temperature	Keine	kein alle
41			Max. operating pressure	16 bar / 20°C [X] Factor 1.5 test time	min
Shipping data					
42 Net weight appr.	kg	Gross weight appr.	kg	motor color	
Documentation					
43 Dimensional dwg.	Cross sect. dwg.	performance curve No.	Oper. & Instruct. Man.	Other (see attached)	Qty
44 RD 8.30. xxx	E 4022. xxx	KL 8.30.155	DE 1096.0966		1
Remarks					
45	motor article				
46	¹⁾ motor supplement corresponds to ISO 9908 ²⁾ according to EN 10204 ³⁾ volute casing & casing cover ⁴⁾ without NPSH test ⁵⁾ scope of deliv. to press sheet				

Technical data sheet (example)



Characteristic curve (example)

speck		Dimension drawing Heat transfer pump TOE-GA 032-200		Confirmation of order Projekt 2015-08-18 09 Created on 2015-08-18 Item 1 Rev.: 2015-08-18 Page 4 / 4																	
SPECK PUMPEN Systemtechnik GmbH Regensburger Ring 6-8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de																					
Customer Speck Systemtechnik City ...		Kontakt Phone Fax E-Mail		Editor Phone Fax E-Mail																	
ohne Grundplatte Motor HOYER - HMC2 160M1-2 - IM B35																					
		<table border="1"> <thead> <tr> <th>Anschlüsse</th> <th>Dimensions in mm</th> </tr> </thead> <tbody> <tr><td>Suction port</td><td>PN 16</td></tr> <tr><td>Delivery port</td><td>PN 16</td></tr> <tr><td>DN 50</td><td>DN 50</td></tr> <tr><td>DN 32</td><td>DN 32</td></tr> <tr><td>Ø D1 125 mm</td><td>Ø D1 100 mm</td></tr> <tr><td>Ø D2 19 mm</td><td>Ø D2 19 mm</td></tr> <tr><td>Ø D2 x 4</td><td>Ø D2 x 4</td></tr> </tbody> </table>				Anschlüsse	Dimensions in mm	Suction port	PN 16	Delivery port	PN 16	DN 50	DN 50	DN 32	DN 32	Ø D1 125 mm	Ø D1 100 mm	Ø D2 19 mm	Ø D2 19 mm	Ø D2 x 4	Ø D2 x 4
Anschlüsse	Dimensions in mm																				
Suction port	PN 16																				
Delivery port	PN 16																				
DN 50	DN 50																				
DN 32	DN 32																				
Ø D1 125 mm	Ø D1 100 mm																				
Ø D2 19 mm	Ø D2 19 mm																				
Ø D2 x 4	Ø D2 x 4																				
<p>* Die angegebenen Motorabmaße sind ca. Maße. Genauere Angaben nehmen sich nach dem im Auftragsfall tatsächlich eingesetzten Fabrikat.</p> <p>* The indicated motor dimensions are approx. dimensions. Exact details correspond to the actual model used in every single order.</p>																					

Dimensional drawing (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.

Order-related tests

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 volute casing, casing cover 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

Measurement according to EN ISO 9906, Class II, Acceptance Class 2B, Edition March 2013

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.



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.

Further data and notes

Standard conditions at site

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

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

Painting

The pumps are coated with highly heat-resistant white aluminium paint, colour code RAL 9006.

Dimensioning

Assessment of the maximum pump outlet pressure

- The pump outlet pressure at the pump nozzle depends on
- » the pump inlet pressure
 - » the maximum total head of the selected impeller diameter
 - » the density of the medium to be pumped

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

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

With:

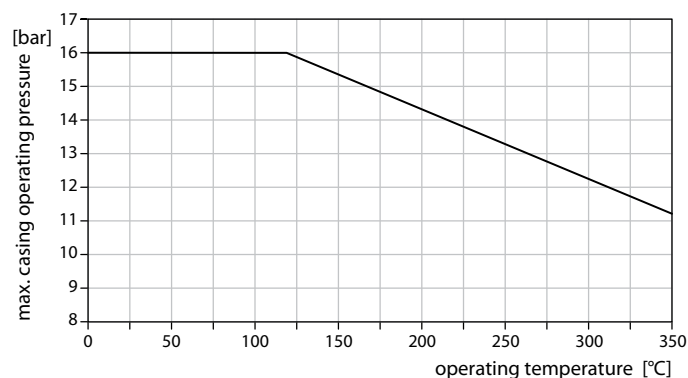
- $p_{2\max\text{ op}}$ = maximum pump outlet pressure [bar]
- $p_{1\max\text{ op}}$ = maximum pump inlet pressure [bar]
- ρ = density of the medium to be pumped [kg/m^3]
- g = gravitation constant [m/s^2]
- H = maximum total head at zero flow or at the peak of the pump's characteristic curve at the selected impeller diameter [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 $p_{\text{all w c}}$ at operating pressure.

This also applies to commissioning while the discharge valve is closed (refer to diagram).

Pressure and temperature limitations

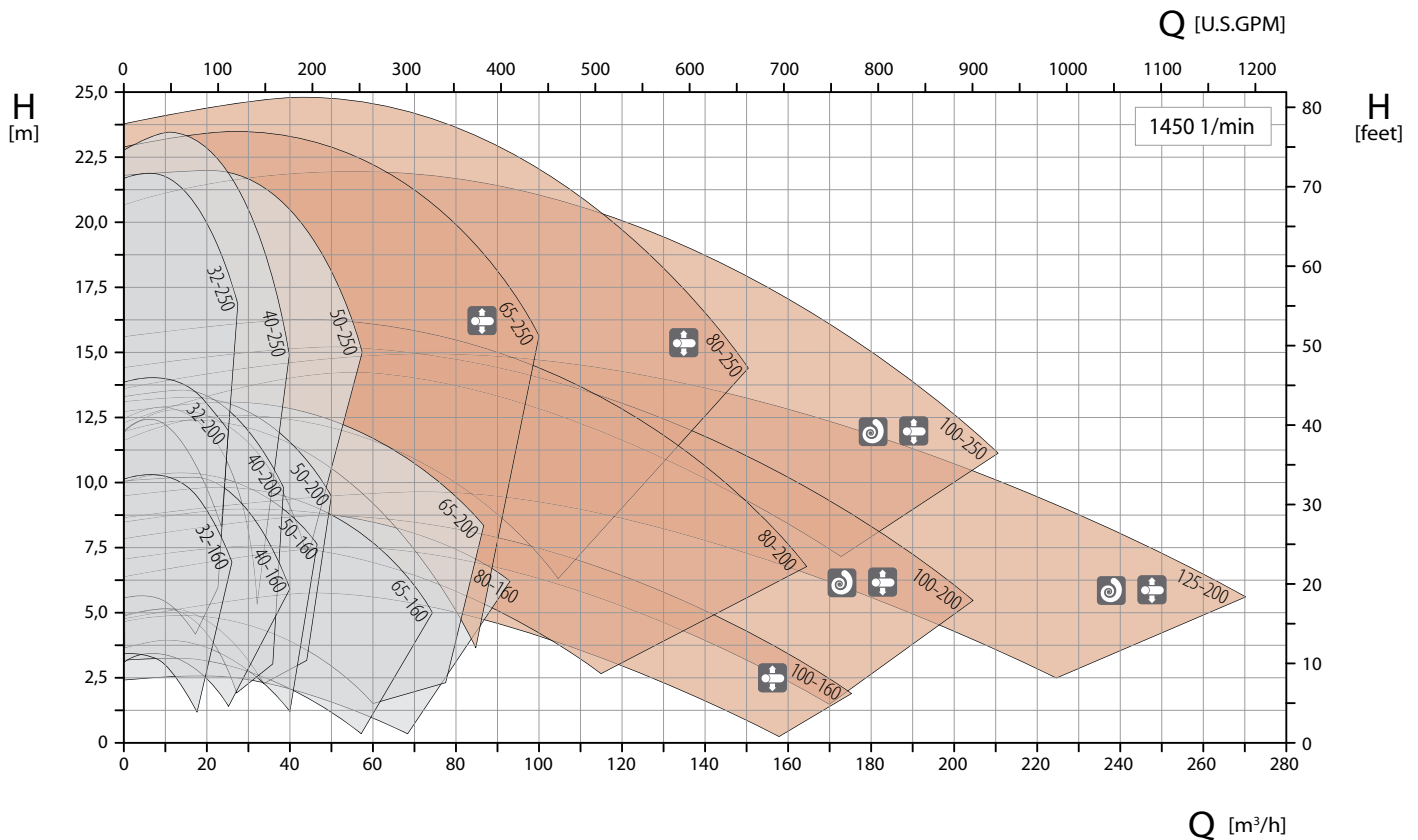
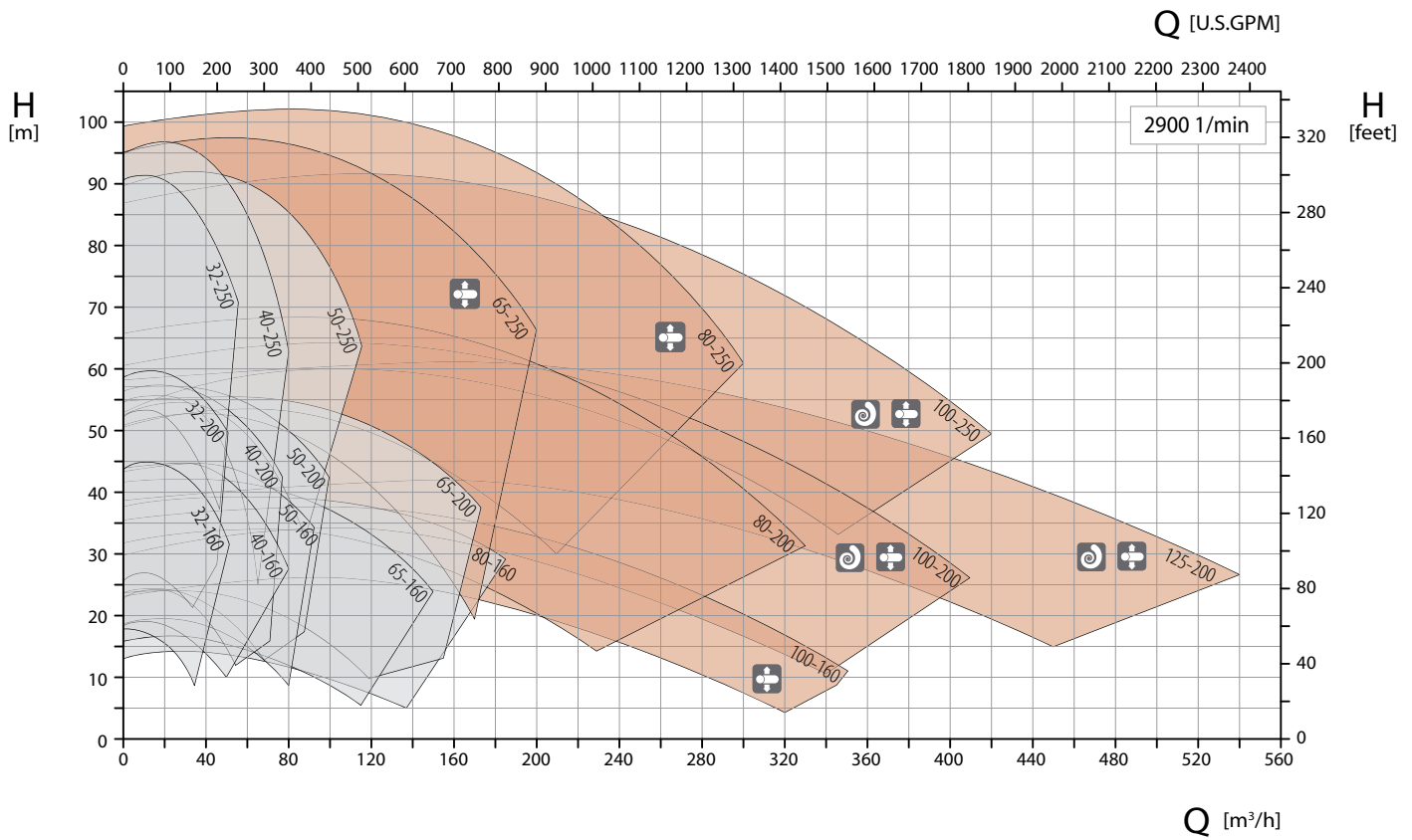
The maximum casing operating pressure $p_{\text{all w c}}$ of the pressure retaining parts depends on the operating temperature:



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

TOEGN / TOEGA – Characteristic curves

50 Hz



Bearing bracket 360

Bearing bracket 470

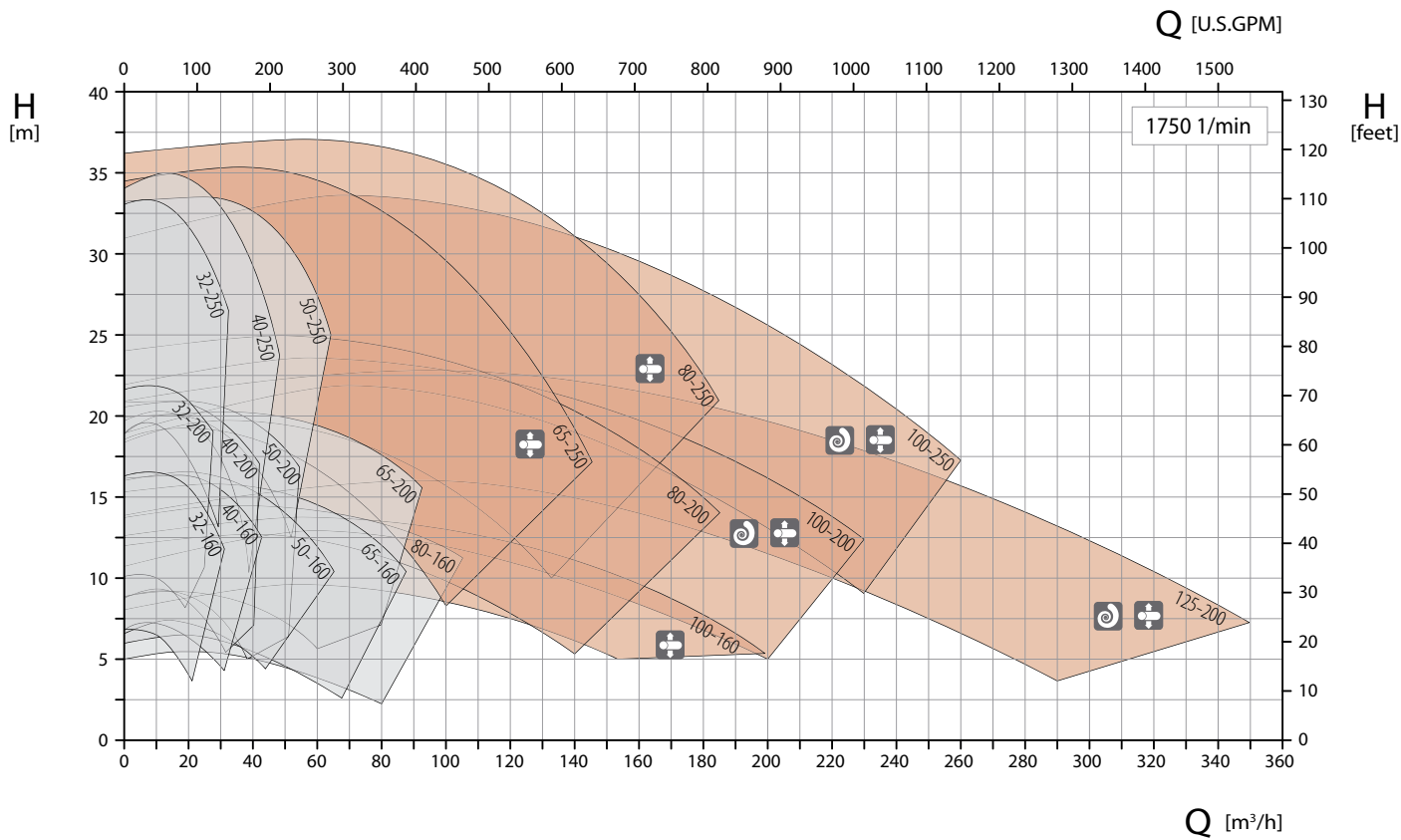
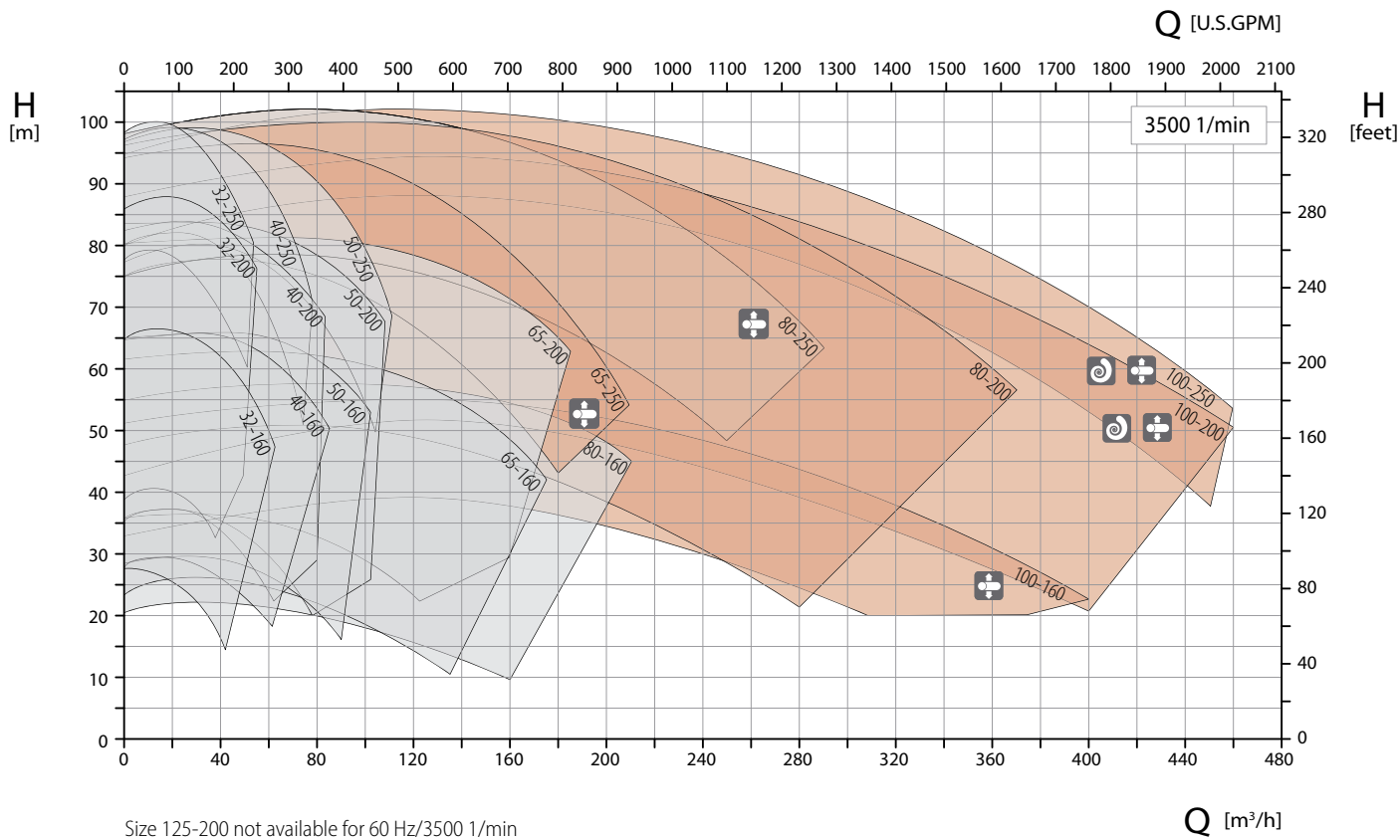


Casing with double volute



Casing with centreline mounting

60 Hz



Bearing bracket 360

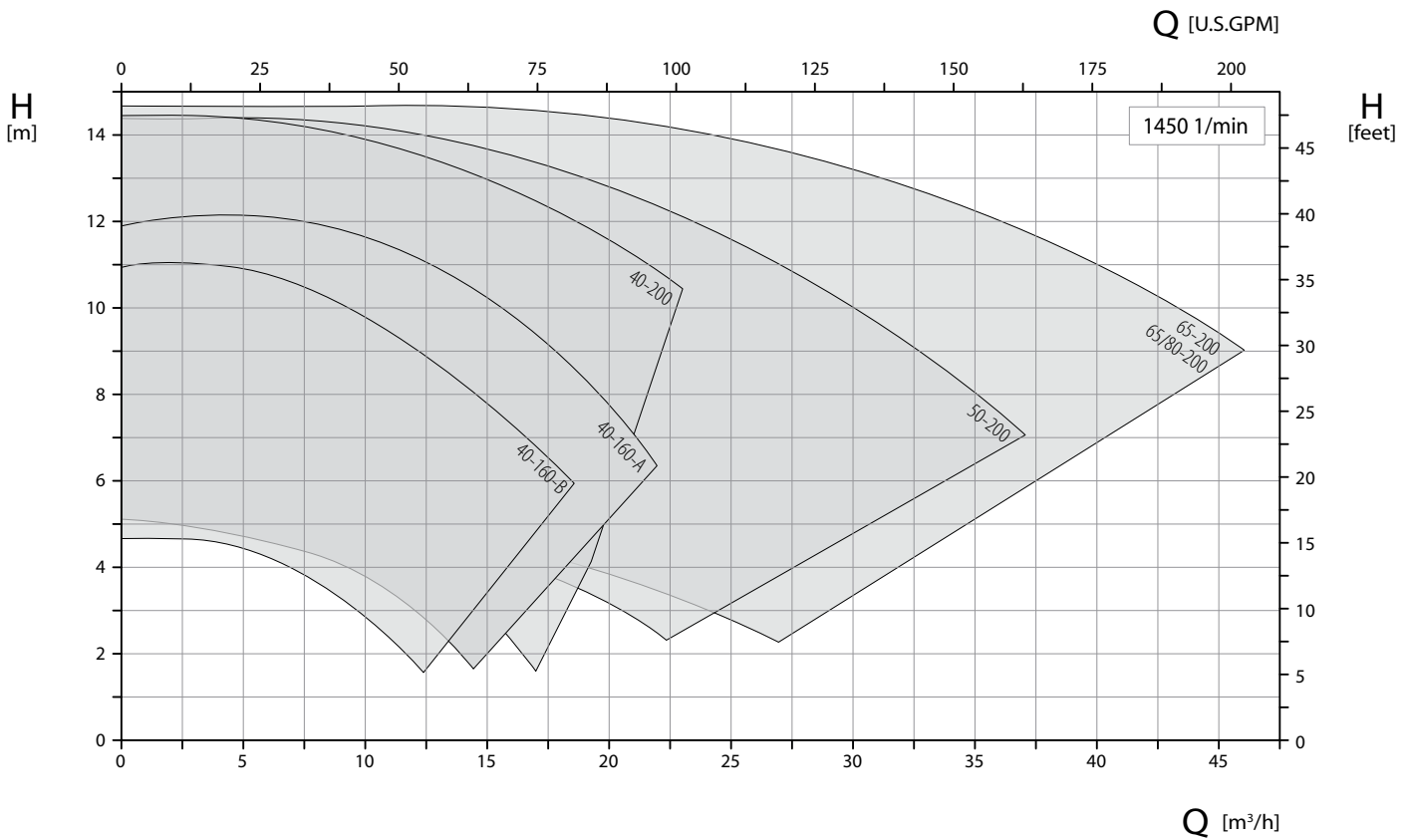
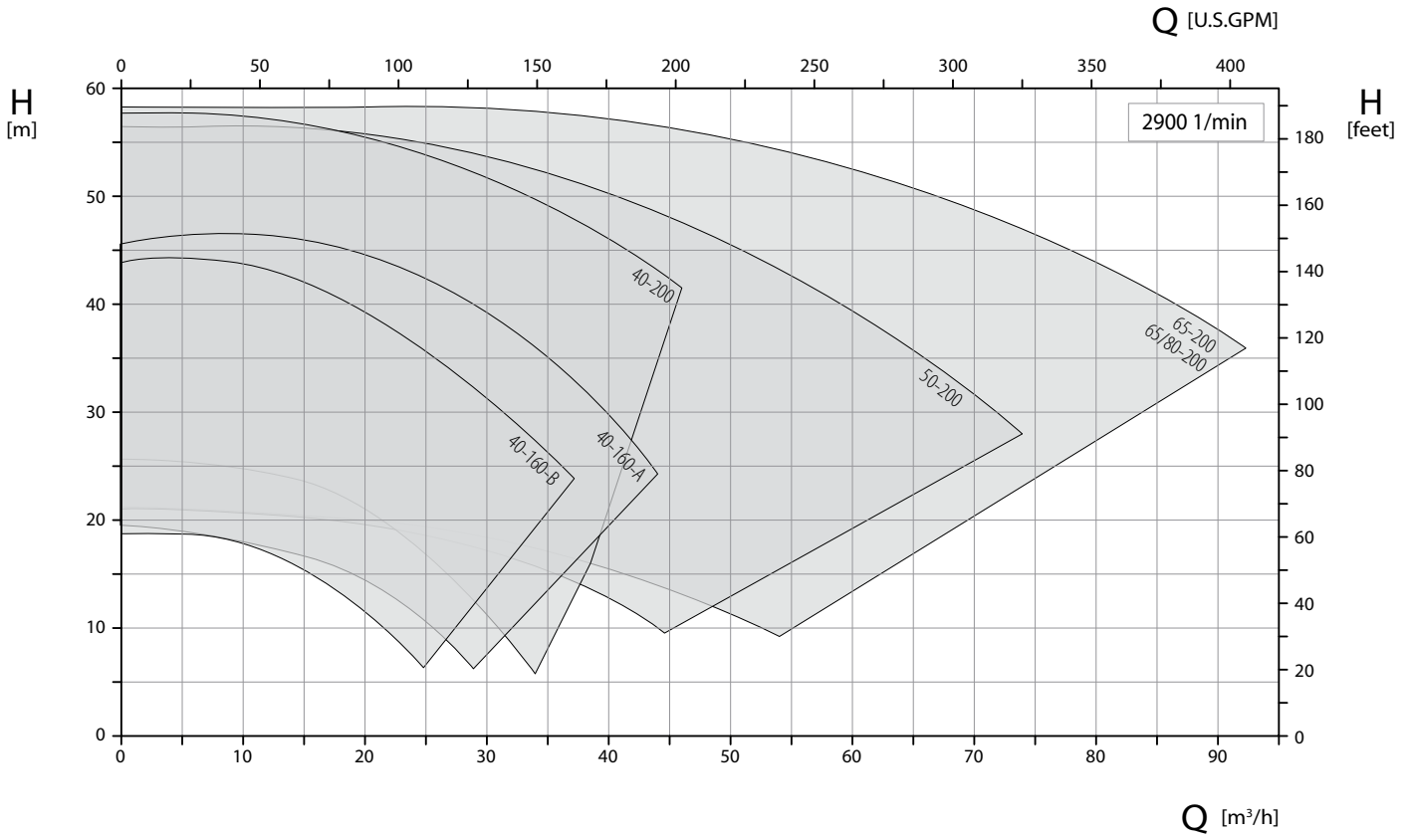
Bearing bracket 470

Casing with double volute

Casing with centreline mounting

TOEGI – Characteristic curves

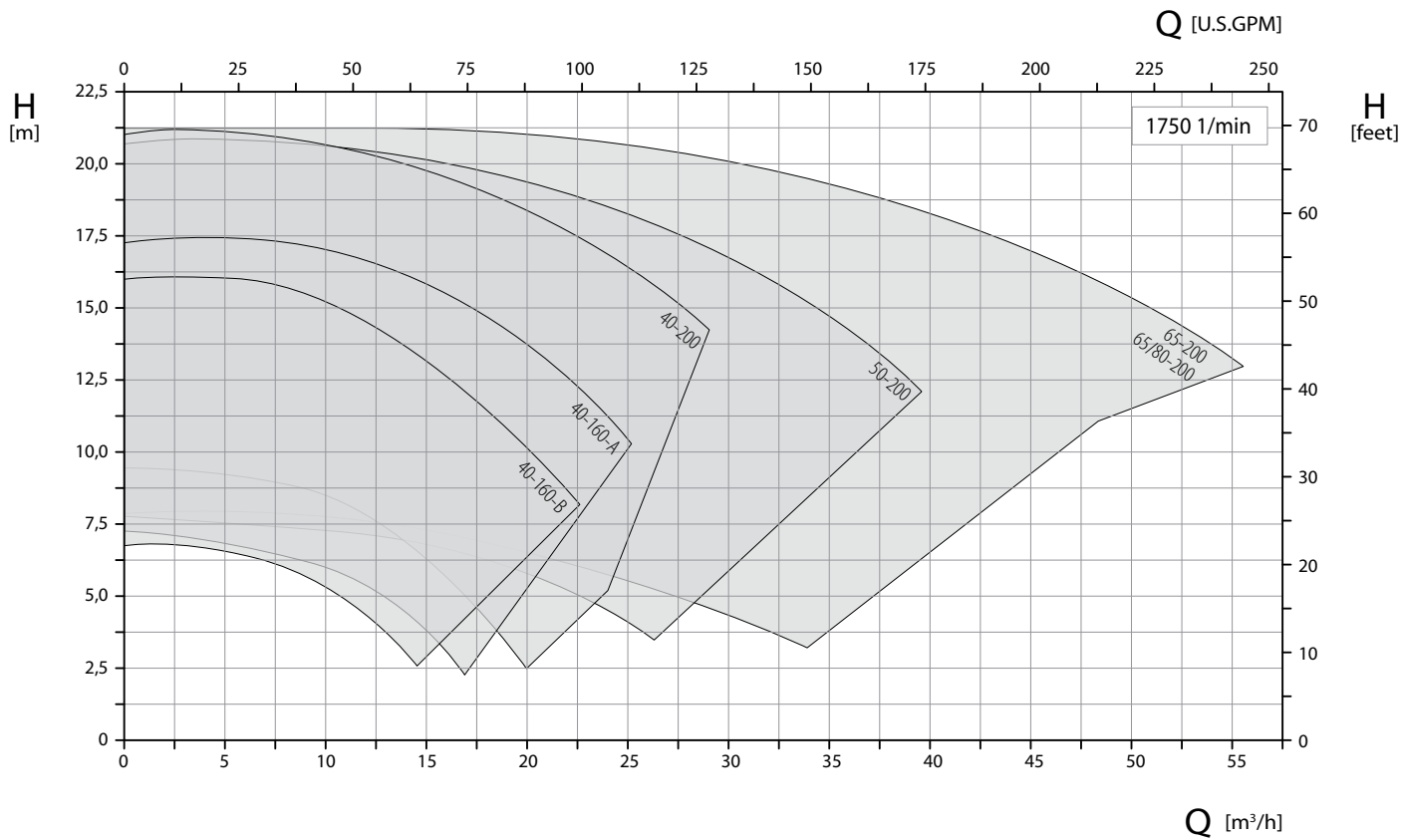
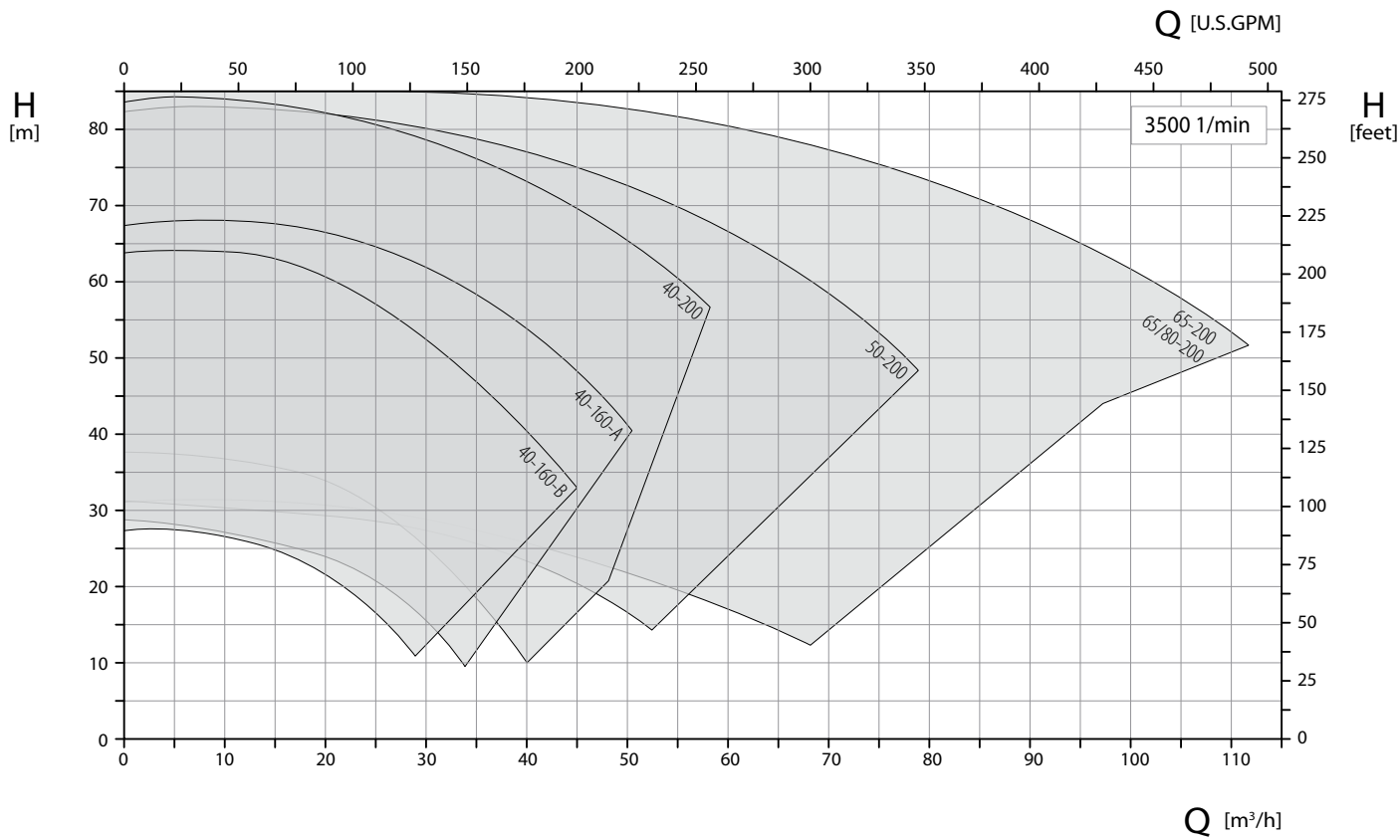
50 Hz



Bearing bracket 360

Size 40-160 with hydraulics A or B available

60 Hz



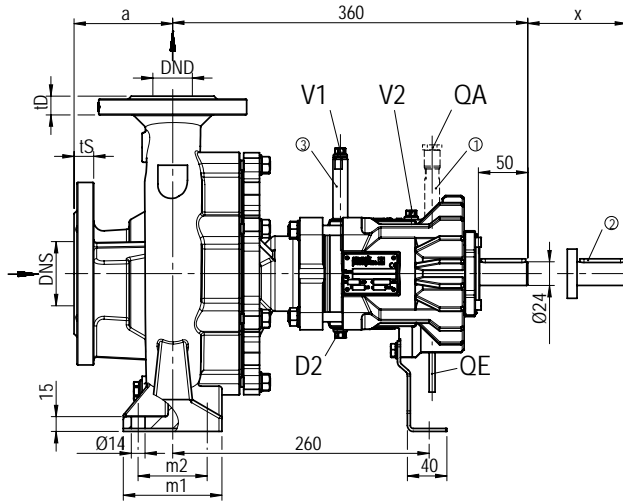
Bearing bracket 360

Size 40-160 with hydraulics A or B available

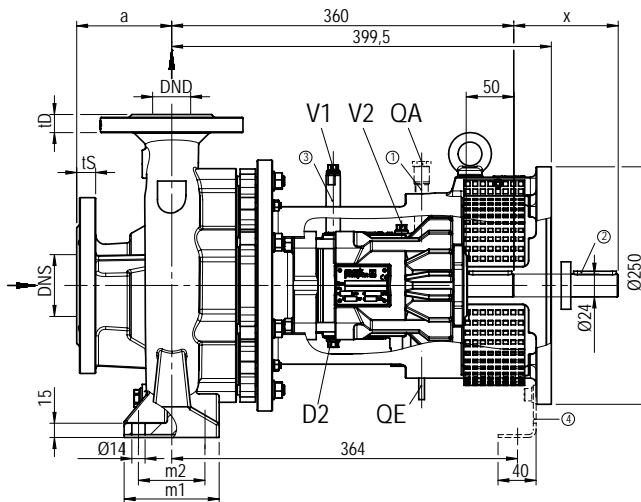
TOEGN / TOEGA – Dimensions and connections

Bearing bracket 360

TOEGN



TOEGA



Size	DNS	DS	tS	DND	DD	tD	a	bL	bR	h1	h2	b	m1	m2	n1	n2	x
32-160	50	165	20	32	140	15	80	116	121	132	160	50	100	70	240	190	110
32-200	50	165	20	32	140	18	80	123	135	160	180	50	100	70	240	190	110
32-250	50	165	20	32	140	18	100	152	163	180	225	65	125	95	320	250	110
40-160	65	185	20	40	150	18	80	123	129	132	160	50	100	70	240	190	110
40-200	65	185	20	40	150	18	100	127	141	160	180	50	100	70	265	212	110
40-250	65	185	20	40	150	18	100	151	160	180	225	65	125	95	320	250	110
50-160	65	185	20	50	165	20	100	123	136	160	180	50	100	70	265	212	110
50-200	65	185	20	50	165	20	100	130	148	160	200	50	100	70	265	212	110
50-250	65	185	20	50	165	20	100	157	170	180	225	65	125	95	320	250	110
65-160	80	200	22	65	185	20	100	124	151	160	200	65	125	95	280	212	110
65-200	80	200	22	65	185	20	100	136	164	180	225	65	125	95	320	250	110
80-160	100	220	24	80	200	22	125	139	174	180	225	65	125	95	320	250	110

Utility connections

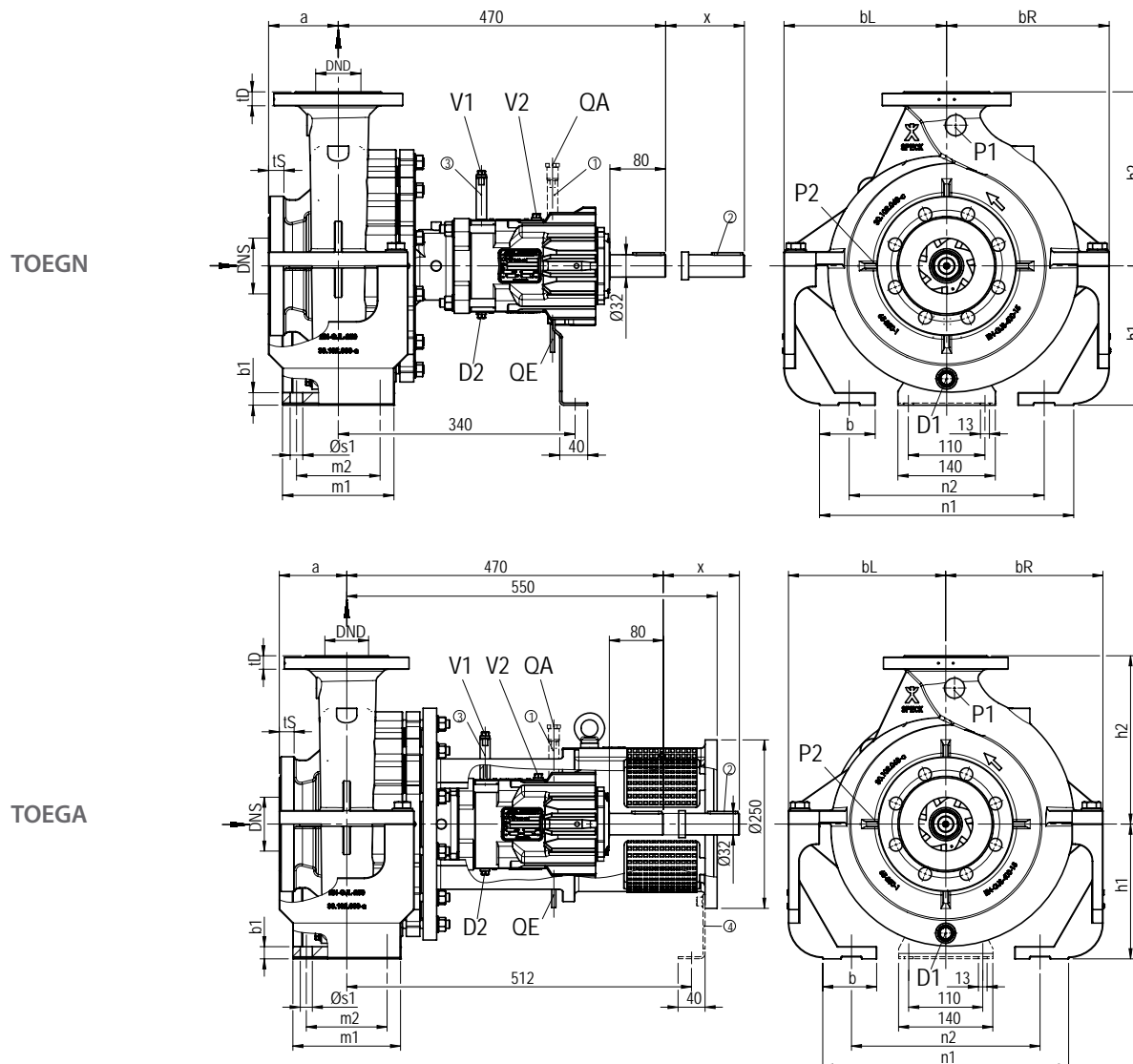
P1	G 1/4	Manometer connection pressure-side (without bore)
P2	G 1/8	Manometer connection suction-side (without bore)
V1	G 1/8	Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version
V2	G 1/8	Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version
D1	G 3/8	Drainage volute casing
D2	G 1/8	Drainage mechanical seal casing
QE	G 1/8	Leakage evacuation mechanical seal
QA	G 1/8	Quench (optional)

- ① Quench optionally
 - ② Fitting key DIN 6885
 - ③ Venting pipe
 - ④ Feet applicable for motor design B5 only
- x = Dismantling dimension

Flange dimensions → page 16

TOEGN / TOEGA – Dimensions and connections

Bearing bracket 470



Size	DNS	DS	tS	DND	DD	tD	a	bL	bR	h1	h2	b	b1	m1	m2	n1	n2	øS1	x
65-250	80	200	22	65	185	20	100	233,5	233,5	200	250	80	18	160	120	360	280	18	140
80-200 ¹	100	220	24	80	200	22	125	162,5	191	180	250	65	15	125	95	345	280	14	140
80-250 ²	100	220	24	80	200	22	125	181	206,5	200	280	80	18	160	120	400	315	18	140
100-160	125	254	26	100	230	25	125	233,5	233,5	200	280	80	18	160	120	360	280	18	140
100-200 ³	125	254	26	100	230	25	125	233,5	233,5	200	280	80	18	160	120	360	280	18	140
100-250 ³	125	254	26	100	230	25	140	230	230	225	280	80	18	160	120	400	315	18	140
125-200 ³	150	285	26	125	254	26	140	262	262	250	315	80	18	160	120	400	315	18	140

¹ Casing with feet resp. without centreline mounting

² Casing with feet – as of 2015 with centreline mounting

³ Casing with double volute

Utility connections

P1 G 1/4 Manometer connection pressure-side (without bore)

P2 G 1/8 Manometer connection suction-side (without bore)

V1 G 1/8 Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version

V2 G 1/8 Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version

D1 G 3/8 Drainage volute casing

D2 G 1/8 Drainage mechanical seal casing

QE G 1/8 Leakage evacuation mechanical seal

QA G 1/8 Quench (optionally)

① Quench optionally

② Fitting key DIN 6885

③ Venting pipe

④ Feet applicable for motor design B5 only

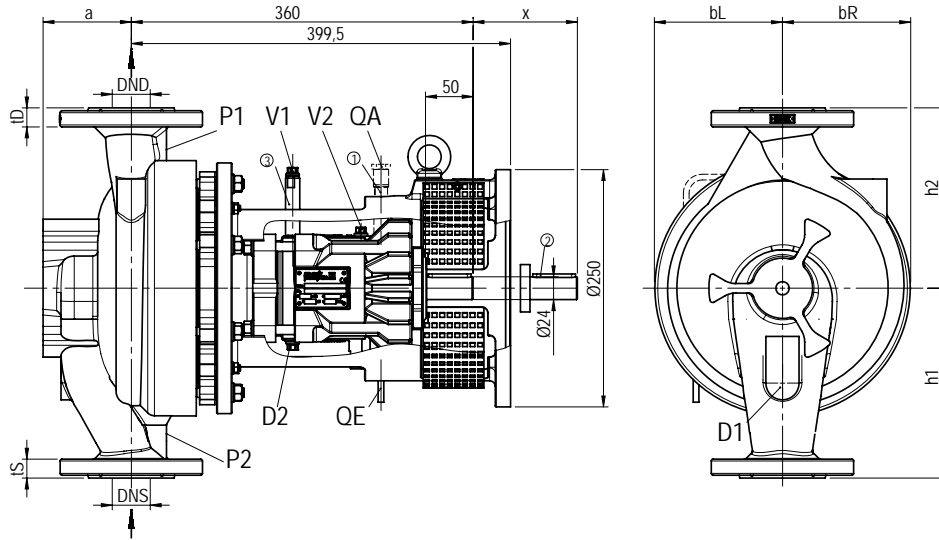
x = Dismantling dimension

Flange dimensions → page 16

TOEGI – Dimensions and connections

Bearing bracket 360

TOEGI



Size	Casing	DNS	DND	a	DD	DS	tD	tS	bL	bR	h1	h2	x
40-160	INA	40	40	97	150	150	20	20	116	116	200	190	110
40-160	INB	40	40	97	150	150	20	20	116	116	180	160	110
40-200	INA	40	40	93	150	150	20	20	135	135	200	190	110
50-200	INA	50	50	102	165	165	21	21	126	139	220	205	110
50-200	INB	50	50	92	165	165	21	21	126	139	200	180	110
65-200	INA	65	65	112	185	185	23	23	131	151	240	225	110
65/80-200	INB	80	80	112	200	200	23	23	131	151	255	225	110

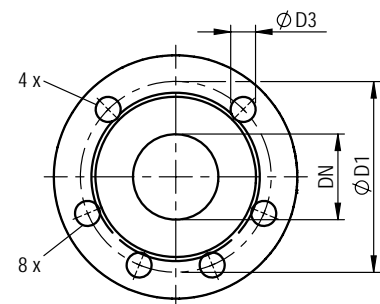
Anschlüsse

P1	G 1/4	Manometer connection pressure-side (without bore)
P2	G 1/8	Manometer connection suction-side (without bore)
V1	G 1/8	Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version
V2	G 1/8	Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version
D1	G 3/8	Drainage volute casing
D2	G 1/8	Drainage mechanical seal casing
QE	G 1/8	Leakage evacuation mechanical seal
QA	G 1/8	Quench (optionally)

- ① Quench optionally
- ② Fitting key DIN 6885
- ③ Venting pipe
- x = Dismantling dimension

Flange dimensions

Flanges in acc. with DIN EN 1092-2				Flanges in acc. with DIN EN 1092-2, drilled in acc. with ANSI 150 lbs			
DN	øD1	øD3	Holes	DN	øD1	øD3	Holes
32	100	19	4	32	88,9	16	4
40	110	19	4	40	98,6	16	4
50	125	19	4	50	120,7	19	4
65	145	19	4	65	139,7	19	4
80	160	19	8	80	152,4	19	4
100	180	19	8	100	190,5	19	8
125	210	19	8	125	215,9	22	8
150	240	23	8	150	241,3	22	8



Interchangeability of parts

All series including the versions with magnetic coupling (→ brochure TOEMN/MA/MI series) offer a high degree of interchangeability.

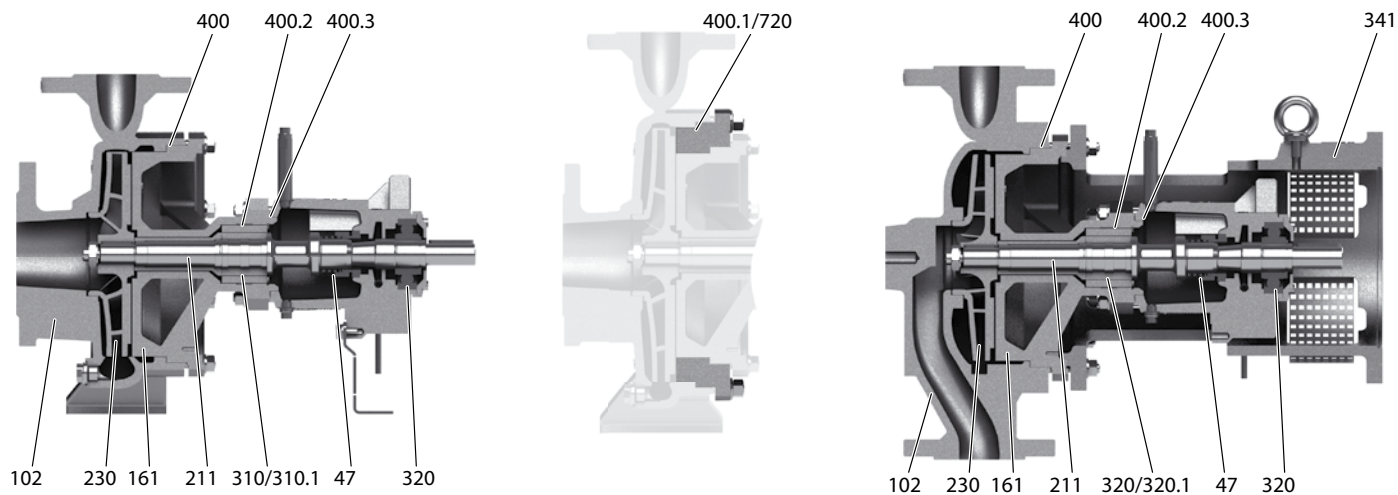
Same components within TOEGN/GA/GI series

Compare only numbers within one **row**:

- 1 and 1 = same number means same component
- 1 and 2 and ... = different numbers mean different components

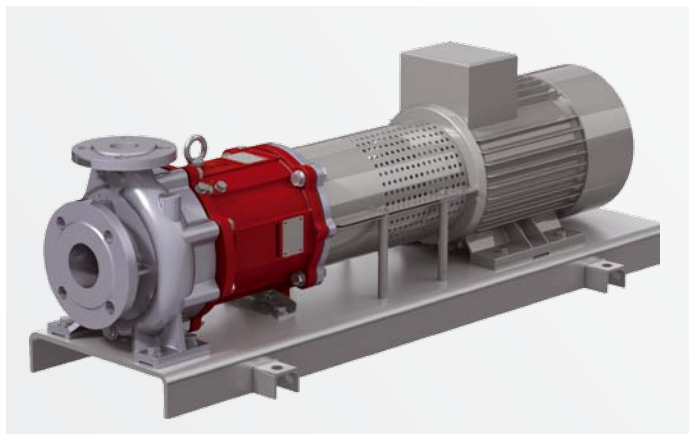
Component	No.	Series	Pump size																		
			32-160	32-200	32-250	40-160	40-200	40-250	50-160	50-200	50-250	65-160	65-200	80-160	65-250	80-200	80-250	100-160	100-200	100-250	125-200
Bearing bracket complete	–	GN GA GI	1	2	1	2	1	2	1	2	1	2	1	3	4	3	5	4	3	4	
Mechanical seal	47	GN GA GI	1												2						
Volute casing	102	GN GA –	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		– – GI					20	21	22			23									
Casing cover	161	GN GA GI	1	2	1	2	1	2	1	2	1	2	1	3	4	3	5	4	3	4	
Shaft	211	GN GA GI	1												2						
Impeller	230	GN GA –	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		– – GI					1	20	5			8									
Sleeve bearing	310 / 310.1	GN GA GI	1												2						
Ball bearing	320	GN GA GI	1												2						
Bracket	341	– GA GI	1												2						
Flat gasket	400	GN GA GI	1												2						
Flat gasket	400.1	GN GA –					1	1			1										
Flat gasket	400.2 / 400.3	GN GA GI	1												2						
Mechanical seal casing ¹	441	GN GA GI	1												2						
Counter flange	720	GN GA –					1	1			1										
further parts	–	GN GA GI	1												2						

¹ Thermal oil version and hot water version deviating



Pumps for heat transfer technology

Centrifugal pumps with magnetic coupling



Modular system

TOEM and TOEG series mean a consistent designed modular system. Hydraulics and the main part of the used components are identical and interchangeable.

TOEM Series

Developed for circulating organic or synthetic heat transfer oils in heat transfer systems in accordance with DIN 4754

Suitable for pumped media with low amounts of non-abrasive impurities

	Spheroidal graphite cast iron versions	Stainless steel versions
Media	Heat transfer oil / thermal oil	Heat transfer oil / thermal oil
T _{min}	- 40 °C	- 100 °C
T _{max}	+ 350 °C	+ 250 °C
Casing	Spheroidal graphite cast iron	Stainless steel
Nominal pressure	PN 16	
H _{max} (2900 min ⁻¹)	100 m	60 m
Q _{max} (2900 min ⁻¹)	550 m ³ /h	170 m ³ /h
ATEX	II 2GD IIC cb TX	

Pumps for fluids up to + 400 °C on request

Description in full length → see brochure TOEM series

Regenerative turbine pumps with magnetic coupling



NPY-MK and CY-MK Series

Tried and tested and compact close-coupled pumps with top/top casings and magnetic coupling. Developed for transporting and circulating organic or synthetic heat transfer oils and hot water. Suitable for pumped media with low amounts of non-abrasive impurities. Suitable for the delivery of gas shares due to the principle of delivery.

	Thermal oil versions	Hot water versions
Media	Heat transfer oil / thermal oil	Water
T _{min}	- 100 °C	-
T _{max}	+ 350 °C + 400 °C on request	+ 220 °C higher temp. on request
Casing	Spheroidal graphite cast iron or stainless steel	
Nominal pressure	PN 25 higher pressures on request	
H _{max} (2900 min ⁻¹)	90 m	
Q _{max} (2900 min ⁻¹)	12 m ³ /h (200 l/min) 24 m ³ /h (400 l/min) on request	
ATEX	II 2GD IIC cb TX	

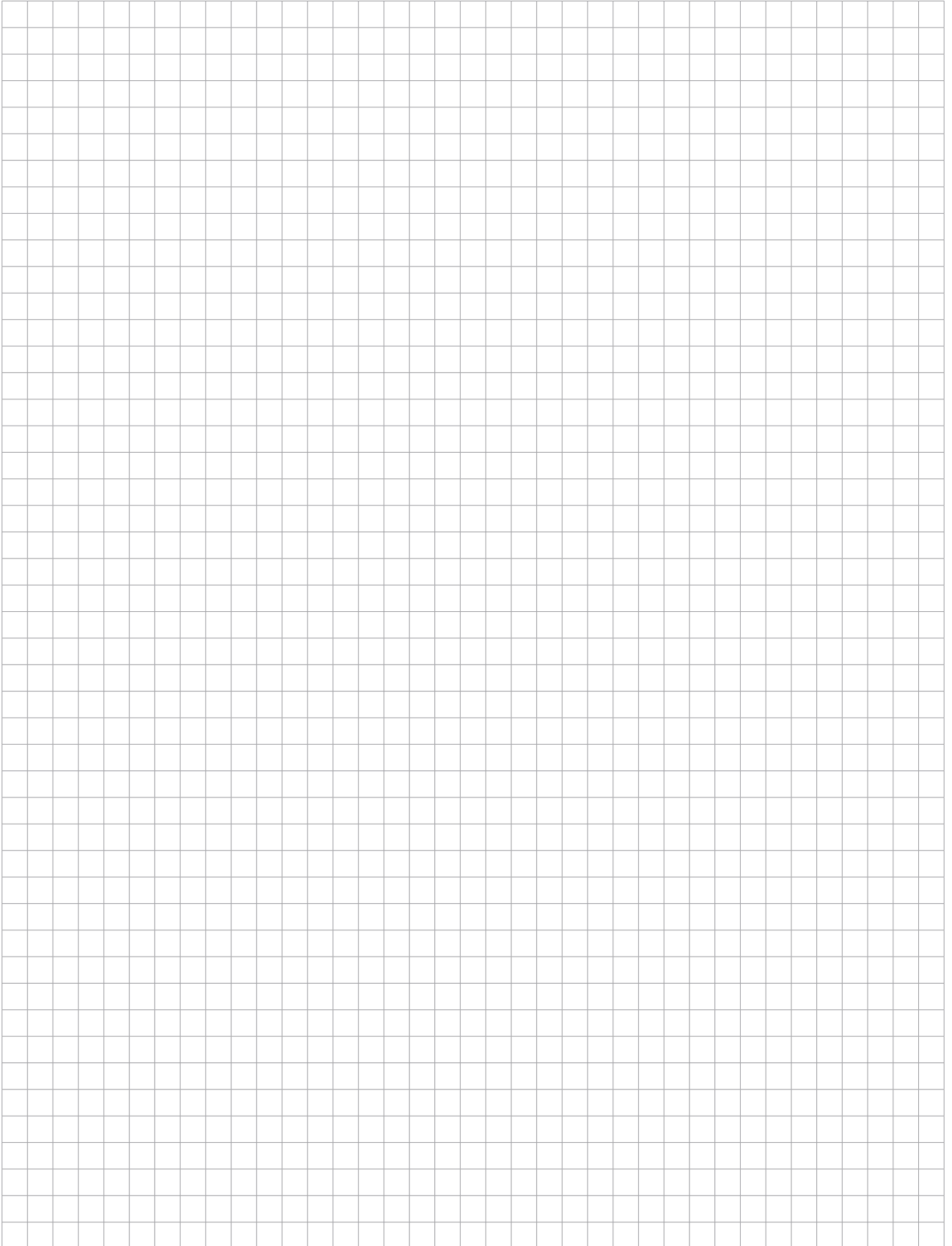
Compact, robust, durable and safe

Regenerative turbine pumps with magnetic coupling from Speck have been used in a wide range of systems and assemblies successfully for many years. The compact design requires minimal installation space and reduces the weight. The perfected pumps also impress with the small number of extremely high-quality parts.

Robust sleeve bearings made from SiC and ceramic shafts guarantee a long lifetime and are free from leakage and maintenance-free thanks to magnetic couplings.

On request, Speck can also develop special designs for special media or with different hydraulics. Please contact us.

Your notes



Representatives

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

Speck Pumpen
Walter Speck GmbH & Co. KG
Speck Pumpen
Systemtechnik GmbH
Speck Pumpen
Vakuumentchnik GmbH
 Regensburg Ring 6 - 8, 91154 Roth
 T: +49 9171 809 0
 F: +49 9171 809 10
 info@speck.de
 www.speck.de

Speck Office Nord
Ingenieure Willy Wandrach GmbH
 Flurstraße 105
 22549 Hamburg
 T: +49 40 398 624 0
 F: +49 40 398 624 28
 info@speck-nord.de
 www.speck-nord.de

Speck Office Mitte
 Grottrian-Steinweg-Str. 1c
 38112 Braunschweig
 T: +49 531 23 000 90
 info@speck-mitte.de
 www.speck-mitte.de

Speck Office West
 Robert-Koch-Straße 22
 40764 Langenfeld
 T: +49 2173 914 560
 info@speck-west.de
 www.speck-west.de

Speck Office Ost
 Dahlener Str. 7a
 04889 Belgern-Schildau
 T: +49 34221-557 812
 info@speck-ost.de
 www.speck-ost.de

Speck Office Südwest
 Frankenstr. 9
 67227 Frankenthal
 T: +49 6233 354 80 57
 info@speck-suedwest.de
 www.speck-suedwest.de

IVT-Pumpen GmbH
 Zum Wischfeld 1 A
 31749 Auetal
 T: +49 5752 929 597
 F: +49 5752 929 599
 info@ivt-pumpen.de
 www.ivt-pumpen.de

FSE Fluid Systems Erfurt
 Poeler Weg 6
 99085 Erfurt
 T: +49 361 550 715 0
 F: +49 361 550 715 19
 info@fluidsystems.org
 www.fluidsystems.org

Vacuum pumps
Arpuma GmbH
 Ottostrasse 10
 50170 Kerpen
 T: +49 2273 953 300 0
 F: +49 2273 953 300 20
 info@arpuma.de
 www.arpuma.de

International

A Austria
 Tuma Pumpensysteme GmbH
 Eitnergasse 12
 1230 Wien
 T: +43 191 493 40
 F: +43 191 414 46
 sales@tumapumpen.at
 www.tumapumpen.at

AUS Australia
Speck Subsidiary
 Speck Industries Pty Ltd.
 Unit 2
 6 Glory Road
 Gnangara WA 6077
 T: 1300 207 380
 T: +61 8 6201 1286
 sales@speckaustralia.com
 www.speckaustralia.com

Speck Subsidiary
 Speck Industries Pty Ltd.
 11 Havelock Road
 Bayswater VIC 3153
 Melbourne
 T: 1300 207 380
 T: +61 8 6201 1286
 sales@speckaustralia.com
 www.speckaustralia.com

B Belgium
 Heat transfer pumps / Pompes pour
 fluid thermique
 FLOWMOTION BVBA
 Mergelweg 3
 1730 Asse
 T: +32 2 309 67 13
 F: +32 2 309 69 13
 info@flowmotion.be
 www.flowmotion.be

Speck - Pompen België N.V.
 Bierweg 24
 9880 Aalter
 T: +32 937 530 39
 F: +32 932 500 17
 info@speckpompen.be
 www.speckpompen.be

BG Bulgaria
 EVROTECH EOOD
 ul. Manastirska 54 A
 1111 Sofia
 T: +359 2 971 32 73
 F: +359 2 971 22 88
 office@evrotech.com
 www.evrotech.com

CH Switzerland
Speck Subsidiary
 Speck Pumpen Industrie GmbH
 Bürglenweg 4
 8854 Galgenen
 T: +41 554 425 094
 F: +41 554 425 094
 info@speckswitzerland.com
 www.speckswitzerland.com

HänyTec AG
 Pumpen-Prozesse-Service
 Lättfeld 2
 6142 Gettnau
 T: +41 62 544 33 00
 F: +41 62 544 33 10
 contact@haenytec.ch
 www.haenytec.ch

MEYER ARMATUREN PUMPEN GMBH
 Rigackerstrasse 19
 5610 Wohlen
 T: +41 56 622 77 33
 F: +41 56 622 77 60
 info@meyer-armaturen.ch
 www.meyer-armaturen.ch

CN China
Speck Subsidiary
 JIASHAN SPECK PUMPS
 Systemtechnik Ltd.
 No. 57, Hong Qiao Rd., Huimin Street
 No. 4 Economical Developing Zone,
 314100 Jiashan Xian,
 Zhejiang Province
 T: +86 573 847 312 98
 F: +86 573 847 312 88
 steveche@speck-pumps.cn
 www.speck-pumps.cn

CZ Czech Republic
 Sigmét spol s.r.o.
 Kosmonautů c.p. 1103/6a
 77200 Olomouc
 T: +420 585 231 070
 F: +420 585 227 072
 sigmet@sigmet.cz
 www.sigmet.cz

DK Denmark
 Pumpegrupper a/s
 Lundtoftegårdsvej 95
 2800 Lyngby
 T: +45 459 371 00
 F: +45 459 347 55
 info@pumpegrupper.dk
 www.pumpegrupper.dk

E Spain
Speck Subsidiary
 BOMBAS INDUSTRIALES,
 S.L.U.
 Trafalgar, 53 despacho 6
 Centro de Negocios CNAF
 46023 Valencia
 T: +34 963 811 094
 F: +34 963 811 096
 M: +34 618 376 241
 ventas@speckbombas.es
 www.speck.de

F France
Speck Subsidiary
 Speck Pompes Industries S.A.
 Z.I. Parc d'Activités du Ried
 4, rue de l'Énergie
 B.P. 227
 67727 Hoerdt Cedex
 T: +33 3 88 68 26 60
 F: +33 3 88 68 16 86
 info@speckpi.fr

GB Great Britain
 Speck ABC UK Ltd
 AreanA House
 Moston Road,
 Elworth, Sandbach
 Cheshire CW11 3HL
 T: +44 1270 75 36 06
 F: +44 1270 76 44 29
 admin@speck-abc.com
 www.speck-abc.com

GR Greece
 SPECK Hellas
 Salamino St. 54
 17676 Kallithea
 T: +30 210 956 500 6
 F: +30 210 957 747 3
 grecha@speckhellas.gr

I Italy
 Centrifugal pumps / Pompe centrifughe
 Speck Industries S.r.l.
 Via Garibaldi, 53
 20010 Canegrate (MI)
 T: +39 0331 405 805
 M: +39 339 16 59 440
 info@speckindustries.it
 www.speckindustries.it

Vacuum pumps / Pompe per vuoto
 Rio Nanta S.r.l.
 Via Mauro Macchi, 42
 20124 Milano
 T: +39 028 940 642 1
 F: +39 028 323 913
 M: +39 339 658 781 6
 rionanta@rionanta.it
 www.rionanta.it

IL Israel
 Ringel-Tech Ltd.
 134 Hertzal St.
 P.O. Box 5148
 6655530 Tel Aviv
 T: +972 368 255 05
 F: +972 368 220 41
 info@ringel-tech.co.il
 www.ringel-tech.co.il

IND India
 Flux Pumps India Pvt. Ltd.
 427/A-2, Gultekdi Industrial Estate
 Near Prabhat Printing Press
 Pune - 411037, Maharashtra
 T: +91 020 2427 1023
 F: +91 020 2427 0669
 M: +91 98504 03114
 kiran.kadam@flux-pumps.in
 www.flux-pumps.in

J Japan
Speck Subsidiary
 Speck Japan Co. Ltd.
 Daisho Bldg. 3F,
 2-1-16 Kyomachibori, Nishi-ku
 550 - 0003 Osaka
 T: +81 6 6486 9633
 F: +81 6 6486 9643
 info@speckjapan.com
 www.speckjapan.com

Speck Subsidiary
 Speck Japan Co. Ltd.
 Tokyo Branch
 No. 408, 3-22-12
 Higashi-Ikebukuro, Toshima-ku
 170-0013 Tokyo
 T: +81 3 5979 8818
 F: +81 3 5979 8817
 info@speckjapan.com
 www.speckjapan.com

L Luxembourg
 Heat transfer pumps / Pompes pour
 fluid thermique
 FLOWMOTION BVBA
 Mergelweg 3
 1730 Asse
 T: +32 2 309 67 13
 F: +32 2 309 69 13
 info@flowmotion.be
 www.flowmotion.be

MAL Malaysia
 Leesonmech
 Engineering (M) Sdn. Bhd.
 No. 18 Jalan 18, Taman Sri Kluang,
 86000 Kluang, Johor
 T: +607 777 105 5
 F: +607 777 106 6
 sales@leesonmech.com
 www.leesonmech.com

N Norway
 PG Flow Solutions AS
 P.O. Box 154, 1378 Nesbru
 Nye Vakaas Vei 14
 1395 Hvalstad
 T: +47 667 756 00
 F: +47 667 756 01
 post@pg-flowsolutions.com
 www.pg-flowsolutions.com

NL Netherlands
 Centrifugal pumps /
 Centrifugaalpomp
 Speck Pompen Nederland B.V.
 Businesspark 7Poort
 Stationspoort 10
 6902 KG Zevenaar
 T: +31 316 331 757
 F: +31 316 528 618
 info@speck.nl
 www.speck.nl

Vacuum pumps / Vacuümpompen
 INDUVAC B.V.
 Cobaltstraat 16
 2718 RM Zoetermeer
 T: +31 793 633 890
 F: +31 793 633 899
 info@induvac.com
 www.induvac.com

**Heat transfer pumps / Pompes pour
 fluid thermique**
 FLOWMOTION BVBA
 Mergelweg 3
 1730 Asse
 T: +32 2 309 67 13
 F: +32 2 309 69 13
 info@flowmotion.be
 www.flowmotion.be

NZ New Zealand
Speck Subsidiary
 Speck Industries Pty Ltd.
 Unit 2
 6 Glory Road
 Gnangara WA 6077
 T: +61 8 6201 1286
 sales@speckaustralia.com
 www.speckaustralia.com

P Portugal
 Ultra Controlo
 Projectos Industriais, Lda.
 Quinta Lavi - Armazém 8
 Abrunheira
 27 10 - 069 Sintra
 T: +351 219 154 350
 F: +351 219 259 002
 info@ultra-controlo.com
 www.ultra-controlo.com

PL Poland
 Krupinski Pompy Spółka z
 Ograniczoną Odpowiedzialnością Sp.K.
 ul. Przymiarki 4A
 31-764 Krakow
 T: +48 126 455 684
 biuro@krupinski.krakow.pl
 www.krupinski.krakow.pl

RC Taiwan
Speck Subsidiary
 Speck Pumps
 Technology Taiwan Ltd.
 2FL, no. 153, Sec. 2
 Datong Rd., Xizhi District
 New Taipei City
 T: +886 286 926 220
 F: +886 286 926 759
 M: +886 936 120 952
 speck886@ms32.hinet.net
 www.speck-pumps.com.tw

RCH Chile
 W & F Ingeniería Y Maquinas S.A.
 Felix de Amestiz 90, Piso 6
 Las Condes, Santiago
 T: +56 2 220 629 43
 F: +56 2 220 630 39
 M: +56 9 8 289 222 0
 rwendler@wfy.cl
 www.wfy.cl

RI Indonesia
 PT Roda Rollen Indonesia
 Kompleks Pertokoan Glodok
 Jaya No. 30
 Jl. Hayam Wuruk,
 Jakarta - Pusat
 Indonesia, 11180
 T: +6221 360 58 59
 F: +6221 350 89 77
 rudy@rodarollenindonesia.com

ROK Korea
 J.C. International Inc.
 2F, Bikeum Bldg. 108,
 Yanghwa-Ro, Mapo-Gu,
 121-893 Seoul
 T: +82 232 628 00
 F: +82 232 569 09
 jylee@jicint.co.kr
 www.jicint.co.kr

RO Romania
 S.C. Gimsid S.R.L.
 Str. Arcului nr. 9, Arp.2
 021031 Bucuresti
 T: +40 21 2118701
 F: +40 21 2102675
 gimsid@gimsid.ro
 www.gimsid.ro

RUS Russia
 LLC Firm Kreoline
 Yunosti str., 5/3
 Moscow 111395
 T: +7 495 737 321 4
 F: +7 495 769 844 0
 M: +7 495 505 198 8
 info@kreoline.ru
 www.kreoline.ru

S Sweden
 Hugo Tillquist AB
 P.O. Box 1120
 16422 Kista
 T: +46 859 463 200
 F: +46 875 136 95
 info@tillquist.com
 www.tillquist.com

SK Slovakian Republic
 → Czech Republic (CZ)

SLO Slovenia
 Sensor d.o.o.
 Tančeva ulica 16
 2000 Maribor
 Slovenia
 T: +386 2 461 44 60
 M: +386 31 649 269
 info@sensor.si
 www.sensor.si

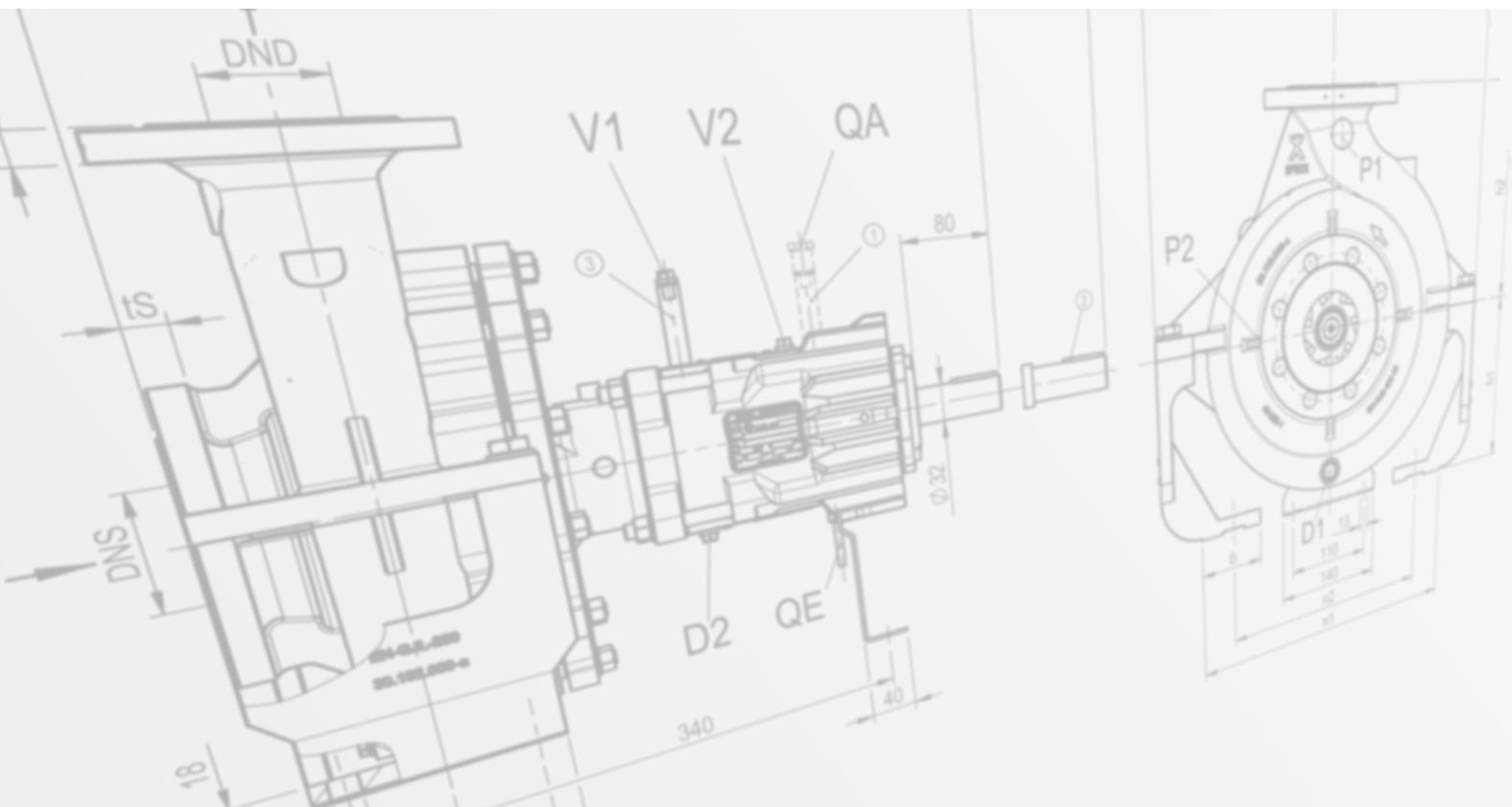
SGP Singapore
 → Malaysia (MAL) Engineering (M)
 Sdn. Bhd.

**LUKES MARINE ENGINEERING &
 CONSULTING SERVICES PTE LTD**
 150 Cecil Street no. 03-00
 Singapore 069543
 T: +65 8379 9051
 M: +65 8437 9846
 tonylukes@speckpumpssing.com.sg

T Thailand
Speck Subsidiary
 FLUX-SPECK Pump Co., Ltd
 181/4 Soi Anamai
 Srinakarin Road
 Suanluang Bangkok 10250
 T: +662 320 256 7
 F: +662 322 248 6
 thienchai@fluxspeck.com
 www.fluxspeck.com

TR Turkey
 Speck Pompa
 San. ve Tic. Ltd. Sti.
 Girne Mah., Kücükyalı Is Merkezi
 B Blok No.12 Maltepe
 34852 Istanbul
 T: +90 216 375 750 5
 F: +90 216 375 753 3
 M: +90 532 293 010 4
 speck@speckpompa.com.tr
 www.speckpompa.com.tr

USA
Speck Subsidiary
 Speck Industries LP
 400 Meadow Lane
 Carlstadt
 NJ 07072
 T: +1 201 569 3114
 F: +1 201 569 9607
 info@speckamerica.com
 www.speckamerica.com



Speck Pumpen Systemtechnik GmbH
Postfach 1453 · 91142 Roth / Germany
Regensburger Ring 6 - 8 · 91154 Roth / Germany
Tel.: +49 (0) 91 71 809 - 0
Fax: +49 (0) 91 71 809 - 10
info@speck.de
www.speck.de