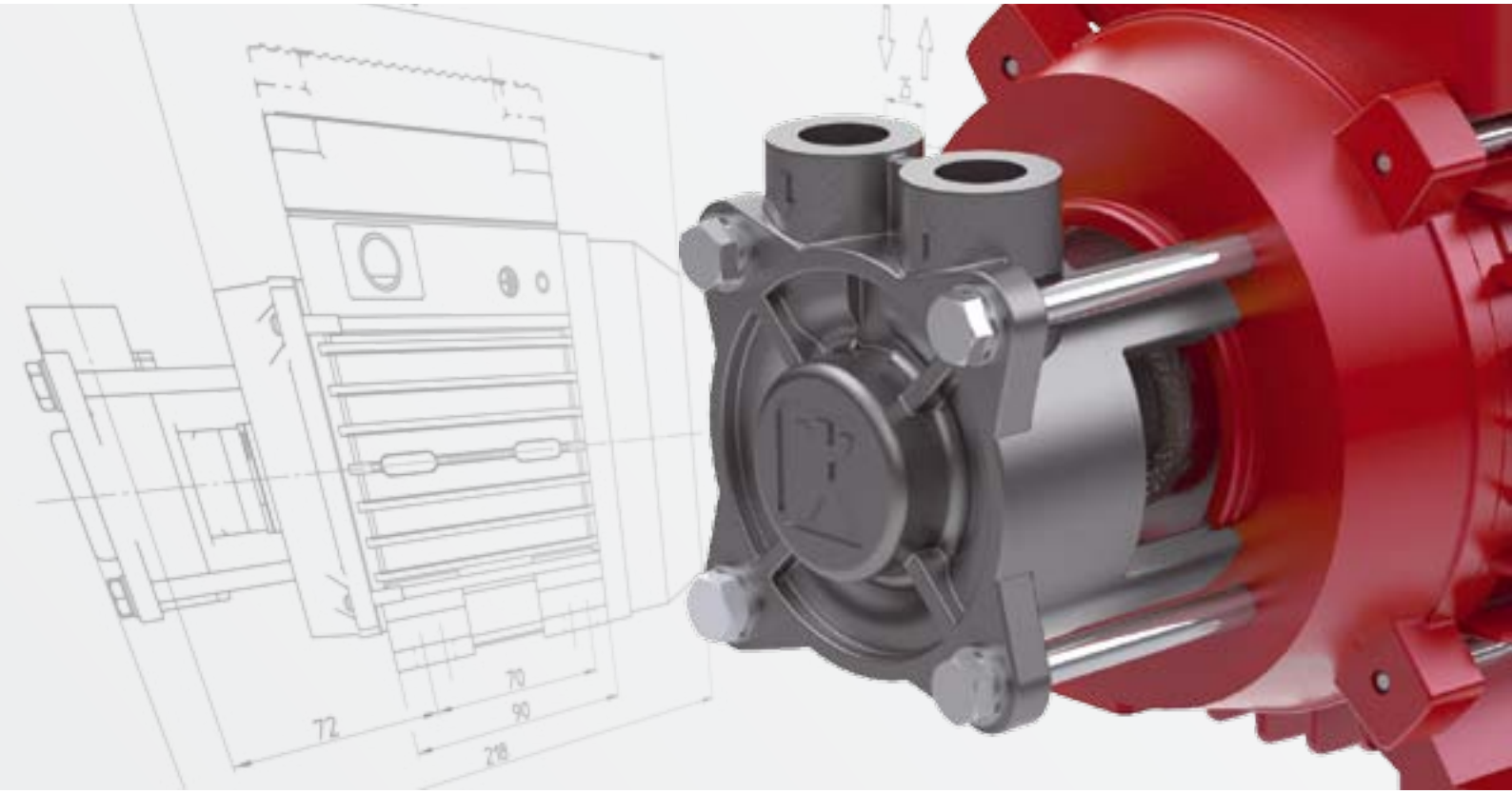


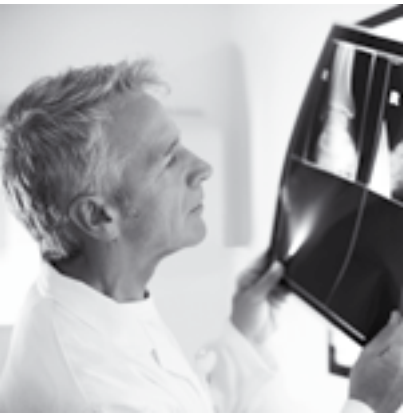

# Kleinpumpen

*Mit Wellendichtung*

# Small pumps

*with shaft sealing*

## Speck Pumpen
Lösungen für die Zukunft



**Medizintechnik**
- Nachspeisung
- Desinfektion
- Laserkühlung

**Schweißmaschinen**
- Brennerkühlung

**Temperiergeräte**
- Prozesstemperierung
- Prozesskühlung

**Schienenfahrzeuge**
- Transformatorenkühlung
- Trinkwasserförderung
- Grauwasserförderung
- Kraftstoffförderung
- Elektronikkühlung

**Luft- und Raumfahrt**
- Kraftstoffförderung
- Brauchwasserförderung

**Industrie- und Apparatebau**
- Laserkühlung
- Prozesskühlung
- Schaltschrankkühlung
- Wasseraufbereitung
- Kesselspeisung
- Waschen und Reinigen
- Serverkühlung
- Extrusionstechnik

**Automobilindustrie**
- Heiz- und Klimasysteme
- Batteriekühlung
- Getriebekühlung
- Kraftstoffförderung

**Getränkeautomaten**
- Getränkekühlung
- Getränkeabfüllung
- Getränkeumwälzung

## Speck Pumpen
Solutions for the future

**Medical appliances**
- Water feeding
- Disinfection
- Laser cooling

**Welding machinery**
- Cooling of welding pistols

**Temperature controllers**
- Process tempering
- Process cooling

**Railcars**
- Transformer cooling
- Drinking water supply
- Waste water supply
- Fuel supply
- Electronic cooling

**Aerospace equipment**
- Fuel supply
- Industrial water supply

**Industrial and mechanical engineering**
- Laser cooling
- Process cooling
- Switchboard cooling
- Water treatment
- Boiler feeding
- Washing and cleaning
- Server cooling
- Extrusion technology

**Automobile industry**
- Heating and air conditioning systems
- Battery cooling
- Gear cooling
- Fuel supply

**Drink dispensers**
- Drink cooling
- Bottle filling
- Recirculation of drinks

**www.speck.de**



Technische Änderungen und Irrtum vorbehalten.

Subject to technical modifications and error.

10/2015 | 1096.1091

# Inhalt / Contents

**Kleinpumpen**
mit Wellendichtung

**Small pumps**
with shaft sealing

## Peripheralradpumpen / Regenerative turbine pumps

| | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | |
| LNY / LSY-2841 | 0,12 | 14 | 38 | 0.16 | 3.7 | 125 | 0,12 | 14 | 38 | 0.16 | 3.7 | 125 | 4, 5 |
| Y / YS-2951 | 0,12 / 0,25 | 12 | 38 | 0.16 / 0.34 | 3.2 | 125 | 0,12 / 0,25 | 13 | 52 | 0.16 / 0.34 | 3.4 | 171 | 6, 7 |
| QY-1042 | 0,35 / 0,50 | 12 | 70 | 0.47 / 0.67 | 3.2 | 230 | 0,35 / 0,50 | 12 | 90 | 0.47 / 0.67 | 3.2 | 295 | 8, 9 |
| Y / YS-2051 | 0,35 / 0,50 | 27 | 45 | 0.47 / 0.67 | 7.1 | 148 | 0,35 / 0,50 | 30 | 60 | 0.47 / 0.67 | 7.9 | 197 | 10, 11 |
| NPY-2051 selbstans.* | 0,25 – 0,50 | 18 | 47 | 0.34 – 0.67 | 4.8 | 154 | 0,25 – 0,50 | 20 | 58 | 0.34 – 0.67 | 5.3 | 190 | 12, 13 |
| NPY-2051 | 0,25 – 0,50 | 30 | 52 | 0.34 – 0.67 | 7.9 | 171 | 0,25 – 0,50 | 35 | 68 | 0.34 – 0.67 | 9.3 | 223 | 14, 15 |
| QY-2052 | 0,75 | 27 | 90 | 1.00 | 7.1 | 295 | 0,75 | 27 | 90 | 1.00 | 7.1 | 295 | 16, 17 |
| PY-2071 | 0,25 – 0,50 | 17 | 35 | 0.34 – 0.67 | 4.5 | 115 | 0,25 – 0,50 | 17 | 35 | 0.34 – 0.67 | 4.5 | 115 | 18, 19 |
| Y-4081 | 0,75 – 1,50 | 28-85 | 55-70 | 1.01 – 2.01 | 7.4-22.5 | 180-230 | 0,75 – 1,50 | 28-85 | 55-70 | 1.01 – 2.01 | 7.4-22.5 | 180-230 | 20, 21 |
| CY-4081 | 0,55 – 1,00 | 55-58 | 42-55 | 0.74 – 1.34 | 14.5-15.3 | 138-180 | 0,55 – 1,00 | 55-58 | 42-55 | 0.74 – 1.34 | 14.5-15.3 | 138-180 | 22, 23 |
| CSY-4081 | 0,75 / 1,00 | 35 | 65 | 1.01 / 1.34 | 9.2 | 213 | 0,75 / 1,00 | 35 | 65 | 1.01 / 1.34 | 9.2 | 213 | 24, 25 |
| Y-6091 | 2,80 – 4,00 | 125-180 | 80 | 3.75 – 5.36 | 33.0-47.6 | 262 | 2,80 – 4,00 | 125-180 | 80 | 3.75 – 5.36 | 33.0-47.6 | 262 | 26, 27 |
| PY-2271 / 2 / 3 | 0,25 – 1,10 | 16 | 38-115 | 0.34 – 1.48 | 4.2 | 125-377 | 0,25 – 1,10 | 16 | 38-115 | 0.34 – 1.48 | 4.2 | 125-377 | 28, 29 |

## Eintauchpumpen / Vertical pumps

| | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | |
| T-401 | 0,50 | 40 | 35 | 0.67 | 10.6 | 115 | 0,50 | 40 | 35 | 0.67 | 10.6 | 115 | 30, 31 |
| T-601 | 0,50 | 60 | 35 | 0.67 | 15.9 | 115 | 0,50 | 60 | 35 | 0.67 | 15.9 | 115 | |
| TM-201 | 0,50 | 25 | 32 | 0.67 | 6.6 | 105 | 0,50 | 25 | 32 | 0.67 | 6.6 | 105 | 32, 33 |
| TM-401 | 0,50 | 40 | 35 | 0.67 | 10.6 | 115 | 0,50 | 40 | 35 | 0.67 | 10.6 | 115 | |
| TM-601 | 0,50 | 60 | 35 | 0.67 | 15.9 | 115 | 0,50 | 60 | 35 | 0.67 | 15.9 | 115 | |
| TM-701 | 1,00 | 70 | 60 | 1.34 | 18.5 | 197 | 1,10 | 70 | 60 | 1.47 | 18.5 | 197 | |
| TM-402 | 0,75 | 40 | 50 | 1.01 | 10.6 | 164 | 0,75 | 40 | 50 | 1.01 | 10.6 | 164 | 34, 35 |
| TM-403 | 1,00 | 45 | 80 | 1.34 | 11.9 | 262 | 1,00 | 45 | 80 | 1.34 | 11.9 | 262 | |
| TM-602 | 1,00 | 60 | 52 | 1.34 | 15.9 | 171 | 1,10 | 60 | 52 | 1.47 | 15.9 | 171 | |
| T-1001 | 2,20 | 100 | 50 | 2.95 | 26.4 | 164 | 2,20 | 100 | 50 | 2.95 | 26.4 | 164 | 36, 37 |
| T-1501 | 2,20 | 150 | 50 | 2.95 | 39.6 | 164 | 2,20 | 150 | 50 | 2.95 | 39.6 | 164 | |
| T-2001 | 2,80 | 200 | 50 | 3.75 | 52.8 | 164 | 2,80 | 200 | 50 | 3.75 | 52.8 | 164 | |

## Radialradpumpen / Centrifugal pumps

| | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [$m^3$/h] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | [kW] | Qmax [$m^3$/h] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | |
| ME-303-1 | 0,37 | 11 | 10 | 0.50 | 48.4 | 33 | 0,37 | 11 | 10 | 0.50 | 48.4 | 33 | 38, 39 |
| MZ-35-2 | 2,00 | 13 | 50 | 2.68 | 57.2 | 164 | 2,00 | 13 | 50 | 2.68 | 57.2 | 164 | 40, 41 |
| MZ-40-2 | 3,00 | 14 | 55 | 4.02 | 61.6 | 180 | 3,00 | 14 | 55 | 4.02 | 61.6 | 180 | |

## Seitenkanalpumpen / Side channel pumps

| | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Hmax [ft] | [kW] | Qmax [l/min] | Hmax [m] | [HP] | Qmax [GPM] | Pmax [ft] | |
| GY-028-1 | 0,55 | 35 | 58 | 0,74 | 9,2 | 190 | 0,55 | 37 | 80 | 0,74 | 9,8 | 262 | 42, 43 |
| GY-028-2 | 1,10 | 38 | 115 | 1,48 | 10,0 | 377 | 1,10 | 40 | 162 | 1,48 | 10,6 | 531 | |
| GY-028-3 | 1,50 | 40 | 162 | 2,01 | 10,6 | 531 | 1,50 | 43 | 230 | 2,01 | 11,4 | 755 | |

## Drehschieberpumpen / Roller vane pumps

| | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [l/min] | Pmax [bar] | [HP] | Qmax [GPM] | Pmax [psi] | [kW] | Qmax [l/min] | Pmax [bar] | [HP] | Qmax [GPM] | Pmax [psi] | |
| DS-60 / … / DS-450 | 0,18 – 0,37 | 7,5 | 14,0 | 0.24 – 0.50 | 2.0 | 203 | 0,18 – 0,37 | 9,2 | 14 | 0.24 – 0.50 | 2.4 | 203 | 44, 45 |
| DS-540 / … / DS-960 | 0,55 / 0,75 | 15,6 | 14,0 | 0.74 / 1.01 | 4.1 | 203 | 0,55 / 0,75 | 18,8 | 14,0 | 0.74 / 1.01 | 5.0 | 203 | |

## Schwingkolbenpumpen / Oscillating piston pumps

| | 50 Hz – Spulenantrieb / Coil drive | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|
| Type | [kW] | Qmax [l/h] | Pmax [bar] | [HP] | Qmax [GPM] | Pmax [psi] | |
| SAP-4, SAP-7 | 0,055 – 0,070 | 38 | 14 | 0.07 – 0.09 | 0.16 | 200 | 46, 47 |

Qmax = Max. Förderstrom
Hmax = Max. Förderhöhe
Pmax = Max. Druck
* selbstansaugend

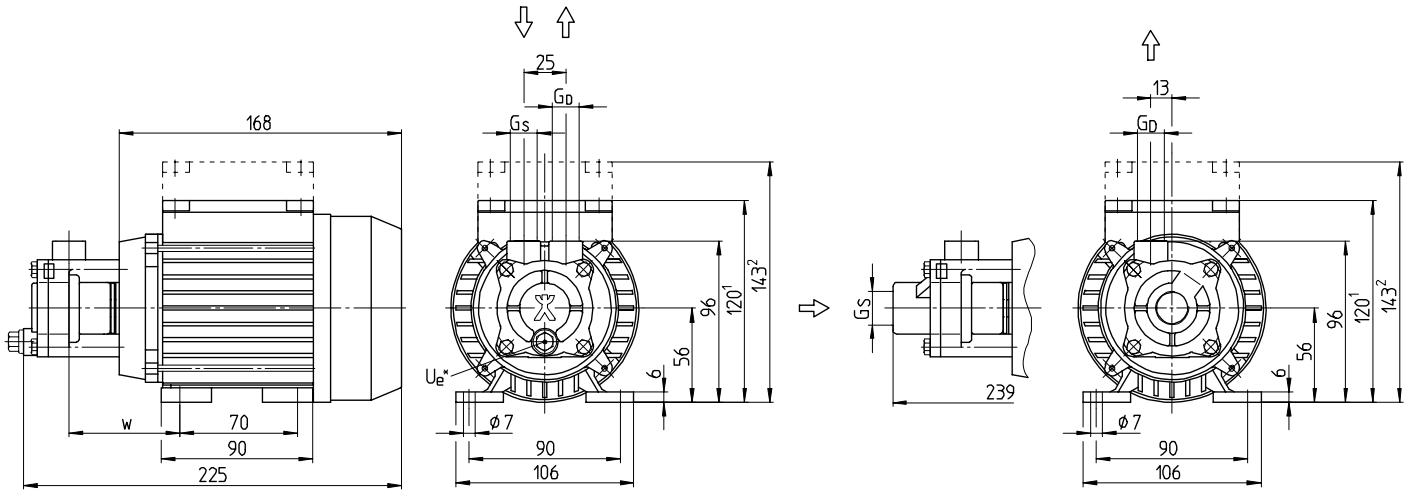
Qmax = Max. capacity
Hmax = Max. total head
Pmax = Max. pressure
* self-priming

# LNY- / LSY-2841

**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

## Maßzeichnung / Dimensional drawing

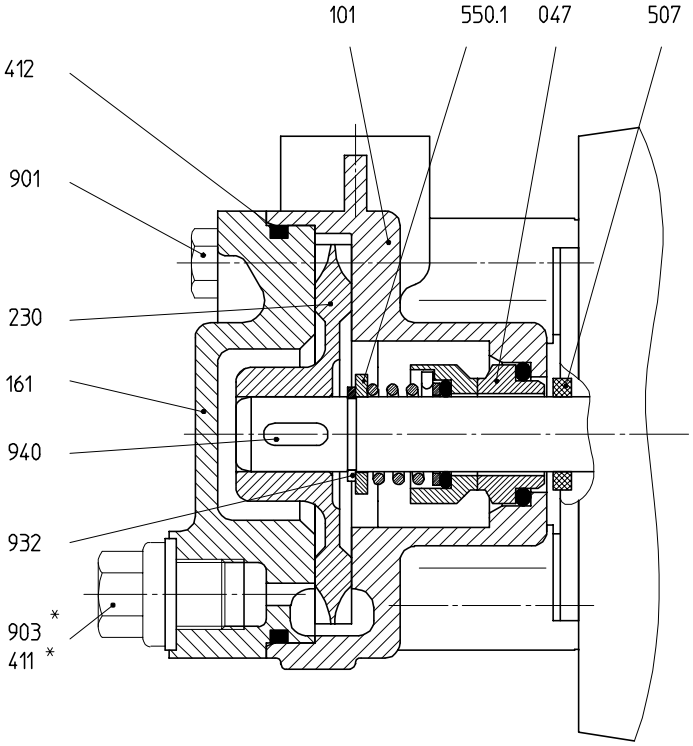



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ |
| LNY-2841 - top / top | 56 | 1 / 3~ | 2800 | 0,12 | 0.16 | 3400 | 0,12 | 0.16 | G 1/4 | G 1/4 | G 1/8 | 4,1 | 9.0 | 120 °C |
| LSY-2841 - top / top | | | | | | | | | | | | | | |
| LNY-2841 - ax / top | | | | | | | | | | | - | | | |

| Type | Baugröße | w |
|---|---|---|
| LNY-2841 - top / top | 56 | 66 |
| LSY-2841 - top / top | | 60 |
| LNY-2841 - ax / top | | 66 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

LNY = nicht selbstansaugend
LSY = selbstansaugend

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

LNY = non self-priming
LSY = self-priming

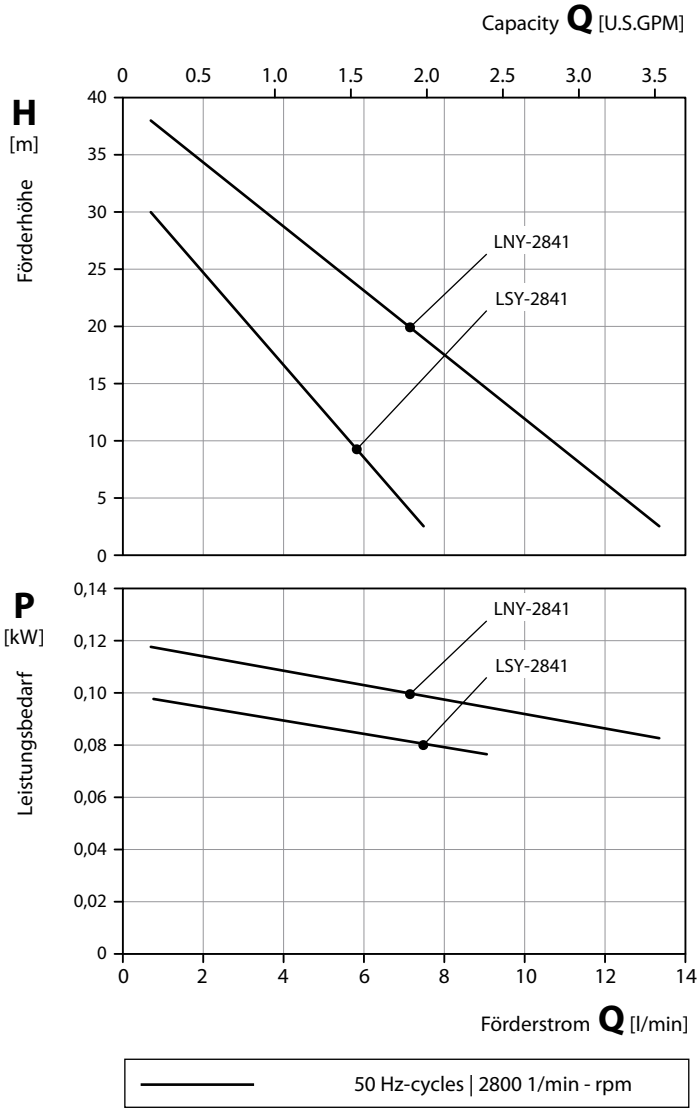
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

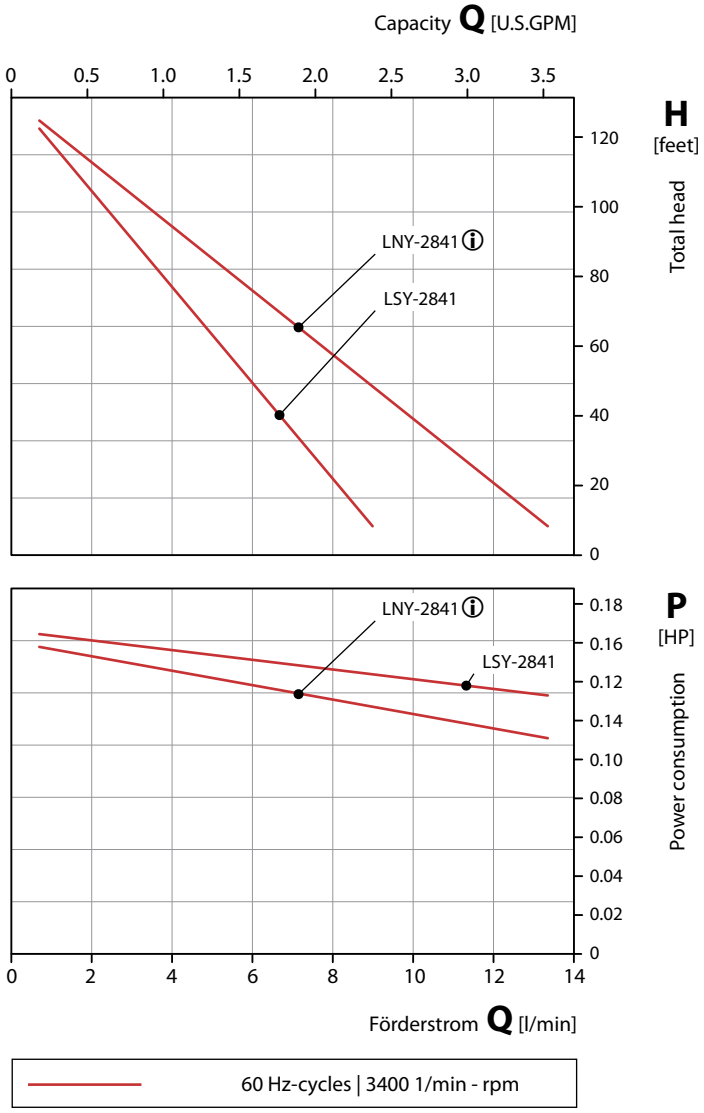
**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | |
| Gehäusedeckel<br>Casing cover | CuZn<br>Brass | |
| Laufrad<br>Impeller | CuZn<br>Brass | PEEK |
| Welle<br>Shaft | 1.4122<br>CrNo-steel | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

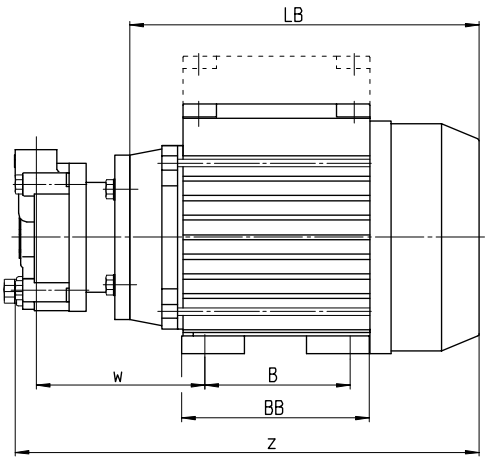
If the property of the pump media differs the characteristic curves change.

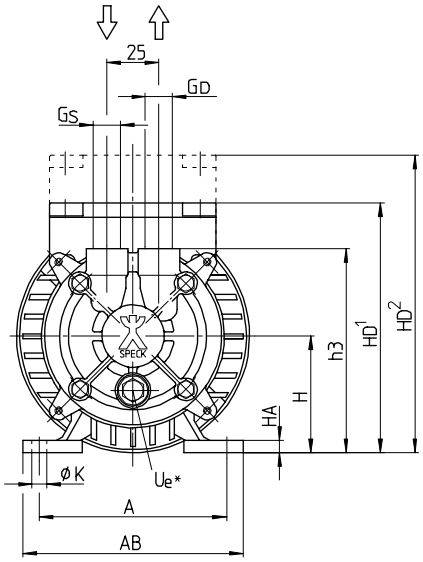
# Y / YS-2951

**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

## Maßzeichnung / Dimensional drawing



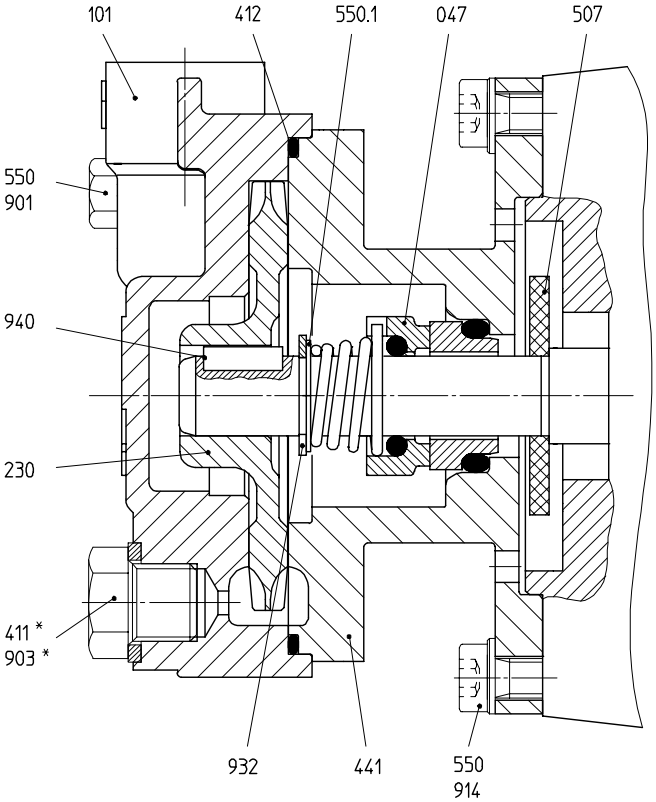




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ |
| **Y-2951 / YS-2951** | 56<br>63 | 1 / 3~ | 2800 | 0,12<br>0,25 | 0.16<br>0.34 | 3400 | 0,12<br>0,25 | 0.16<br>0.34 | G 1/4 | G 1/4 | G 1/8 | 4,2 | 9.3 | 120 °C |

| Type | Baugröße | A | AB | B | BB | H | HA | HD[1)] | HD[2)] | K | LB | h3 | w | z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Y-2951 / YS-2951** | 56 | 90 | 106 | 70 | 90 | 56 | 6 | 120 | 145 | 7 | 168 | 98 | 81 | 225 |
| | 63 | 100 | 120 | 80 | 100 | 63 | 7 | 140 | 158 | 7 | 184 | 105 | 92 | 248 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 441 | Gehäuse für Wellendichtung | Shaft seal casing |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Y = nicht selbstansaugend
YS = selbstansaugend

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

Y = non self-priming
YS = self-priming

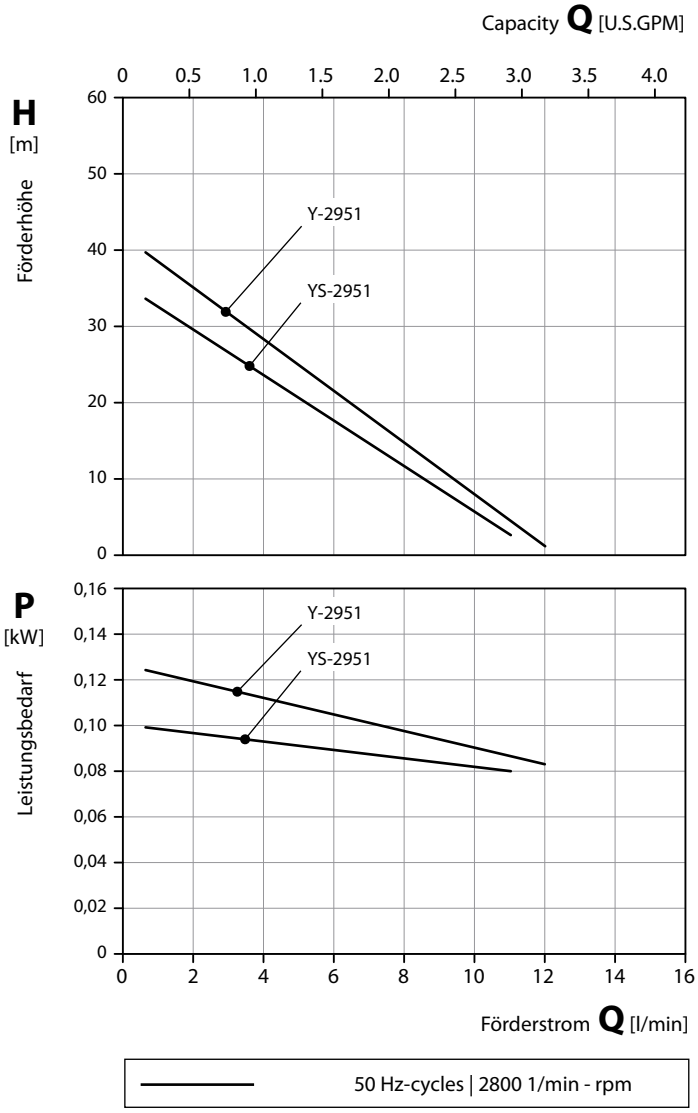
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

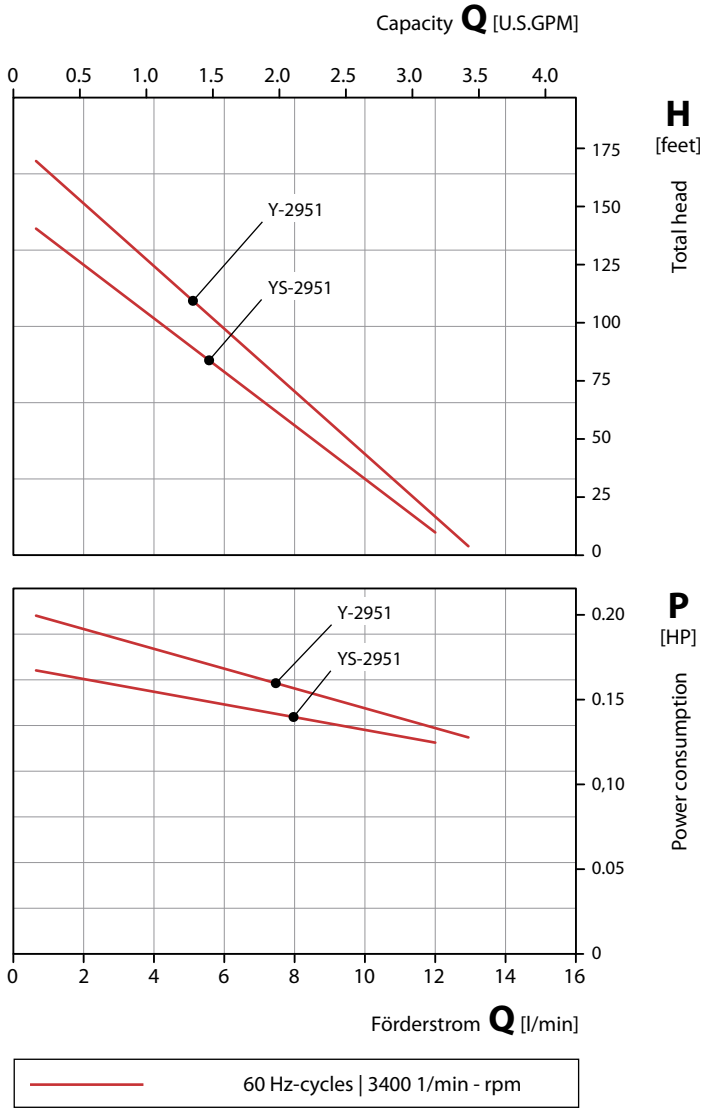
**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel | PPS |
| Gehäuse für Wellen-dichtung<br>Shaft seal casing | 1.4581<br>CrNiMo-cast steel | | PPS |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

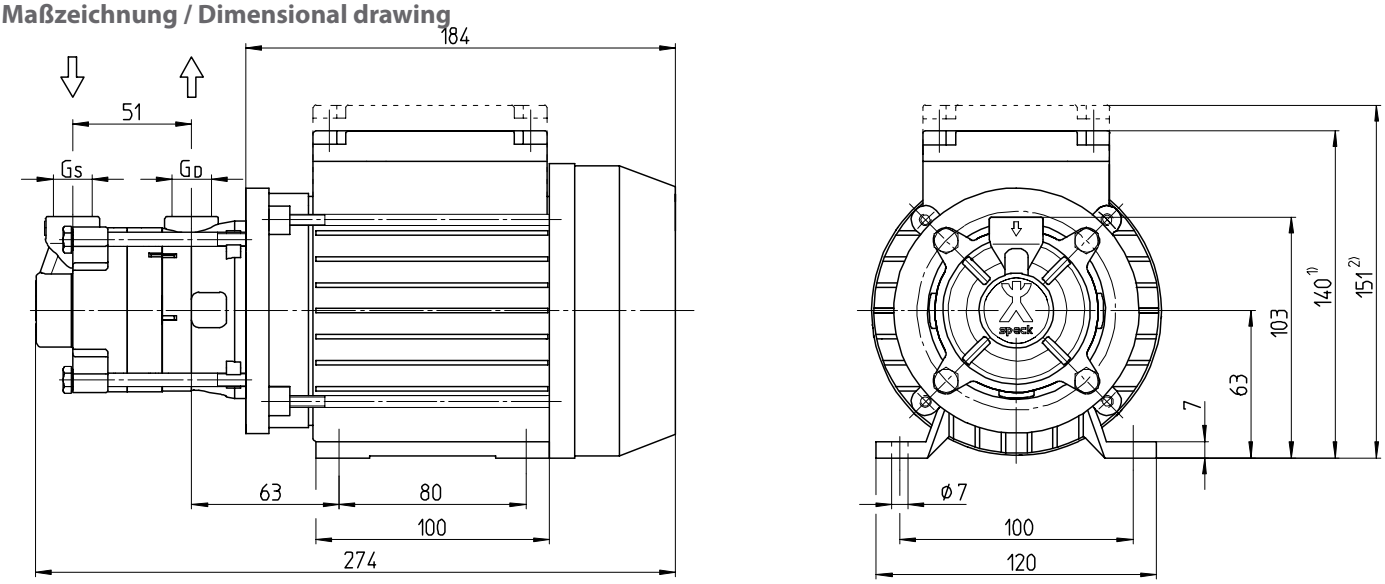
If the property of the pump media differs the characteristic curves change.

# QY-1042

**Peripheralradpumpen**
mit Gleitringdichtung, zweistufig

**Regenerative turbine pumps**
with mechanical seal, two-stage

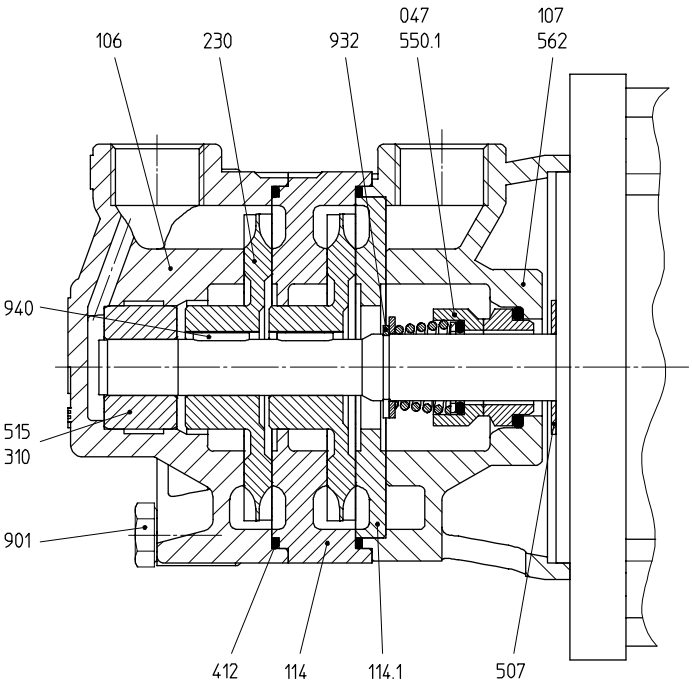
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ | $t_{max}$ |
| QY-1042 | 63 | 1~<br>3~ | 2800 | 0,35<br>0,50 | 0.47<br>0.67 | 3400 | 0,35<br>0,50 | 0.47<br>0.67 | G 3/8 | G 3/8 | 5,7 | 12.6 | 140 °C | 160 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 114/.1 | Stufe | Stage |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 550.1 | Scheibe | Washer |
| 562 | Zylinderstift | Cylindrical pin |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Flat terminal box
[2] High terminal box

Weight depending on motor frame size, performance, materials and execution

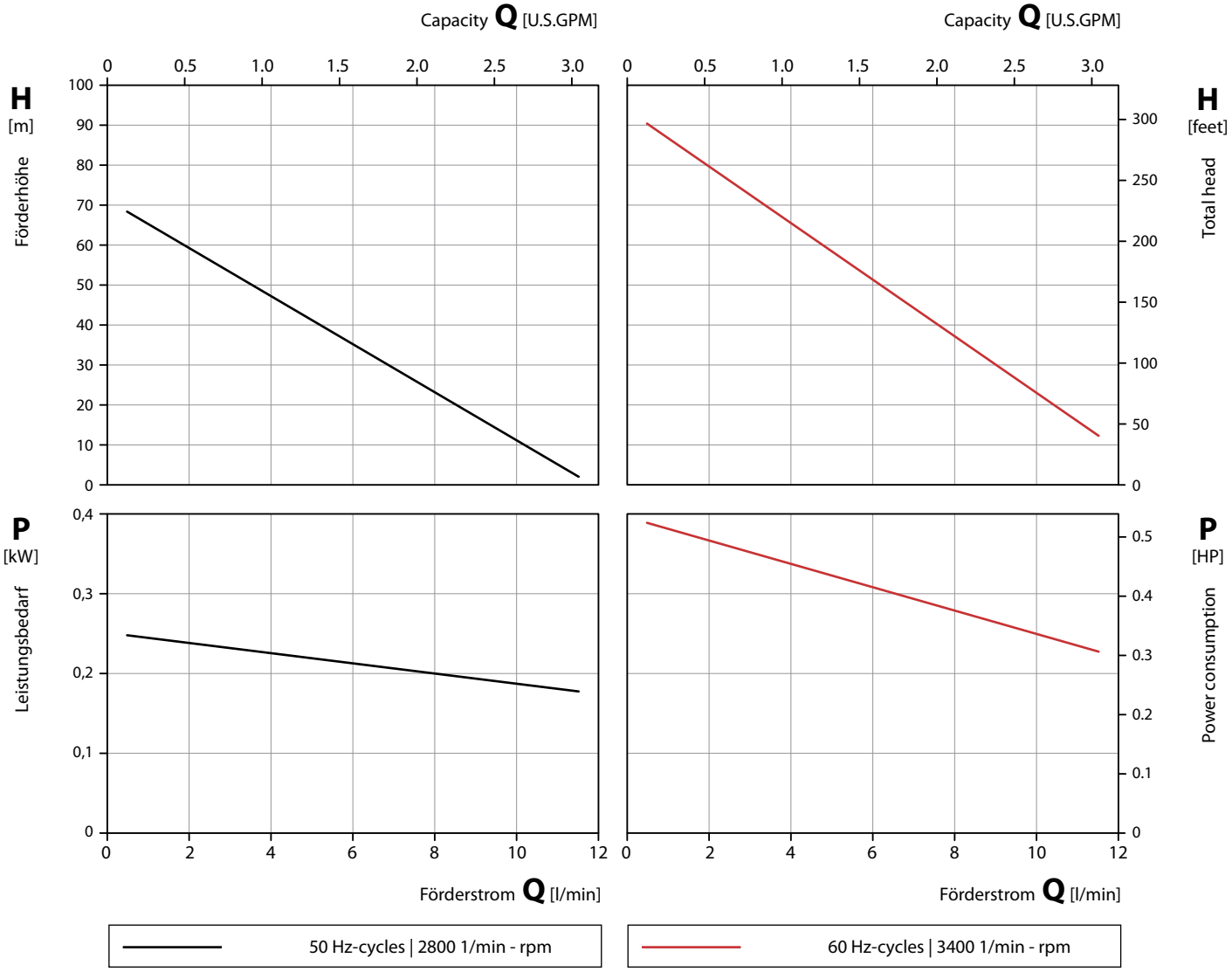

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung, zweistufig

**Regenerative turbine pumps**
with mechanical seal, two-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Stufe<br>Stage | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

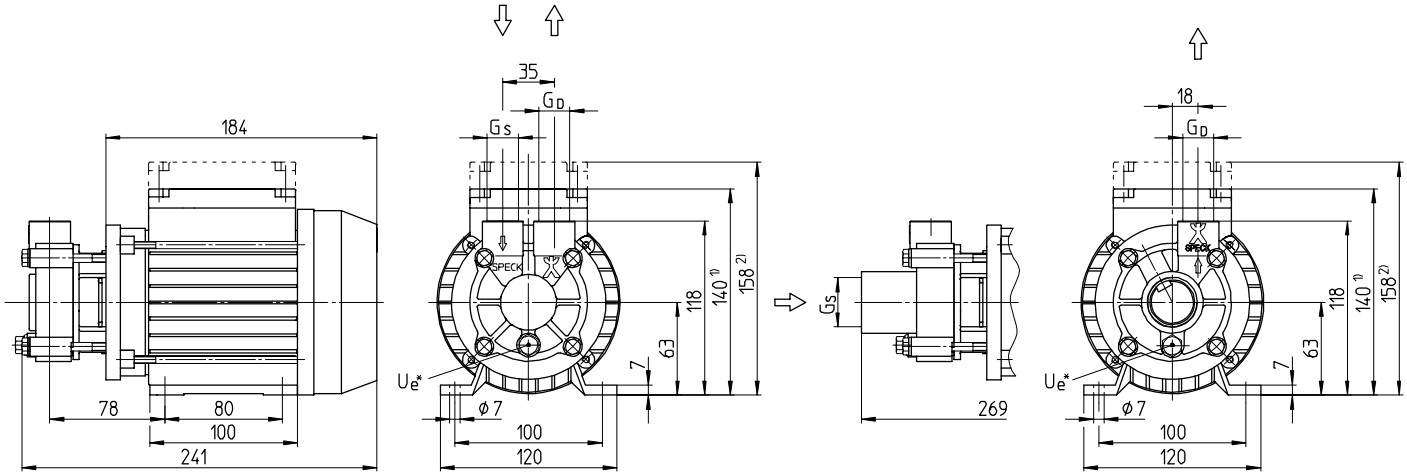
If the property of the pump media differs the characteristic curves change.

# Y / YS-2051

**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

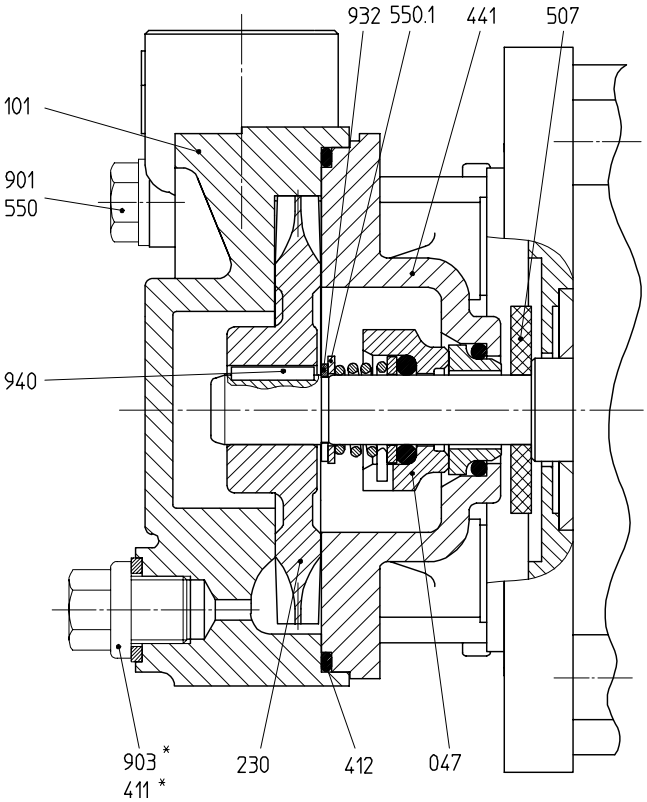
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| Y-2051 top / top<br>YS-2051 top / top | 63 | 1~<br>3~ | 2800 | 0,35<br>0,50 | 0.47<br>0.67 | 3400 | 0,35<br>0,50 | 0.47<br>0.67 | G 1/2 | G 1/2 | G 1/8 | 6,2 | 13.7 | 140 °C | 140 °C |
| Y-2051 ax / top | 63 | 1 ~<br>3~ | 2800 | 0,35<br>0,50 | 0.47<br>0.67 | 3400 | 0,35<br>0,50 | 0.47<br>0.67 | G 1 | G 1/2 | G 1/8 | 6,2 | 13.7 | | |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 441 | Gehäuse für Wellendichtung | Shaft seal casing |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Y = nicht selbstansaugend
YS = selbstansaugend

Gewicht abhängig von
Baugröße, Leistung,
Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

Y = non self-priming
YS = self-priming

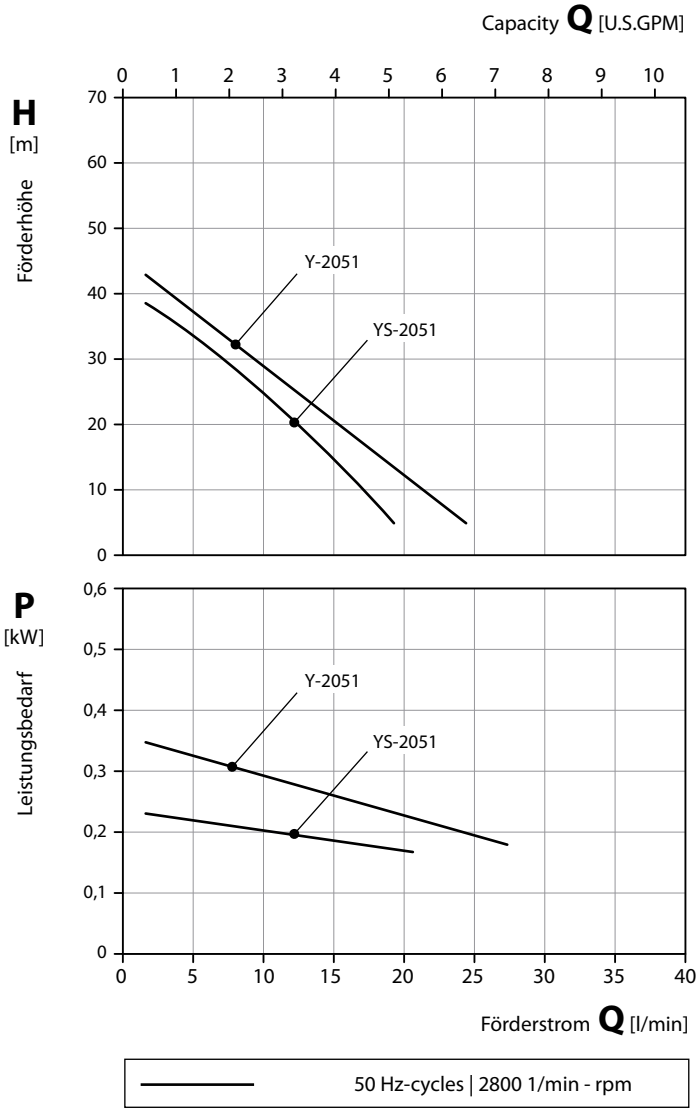
Weight depending on
motor frame size,
performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

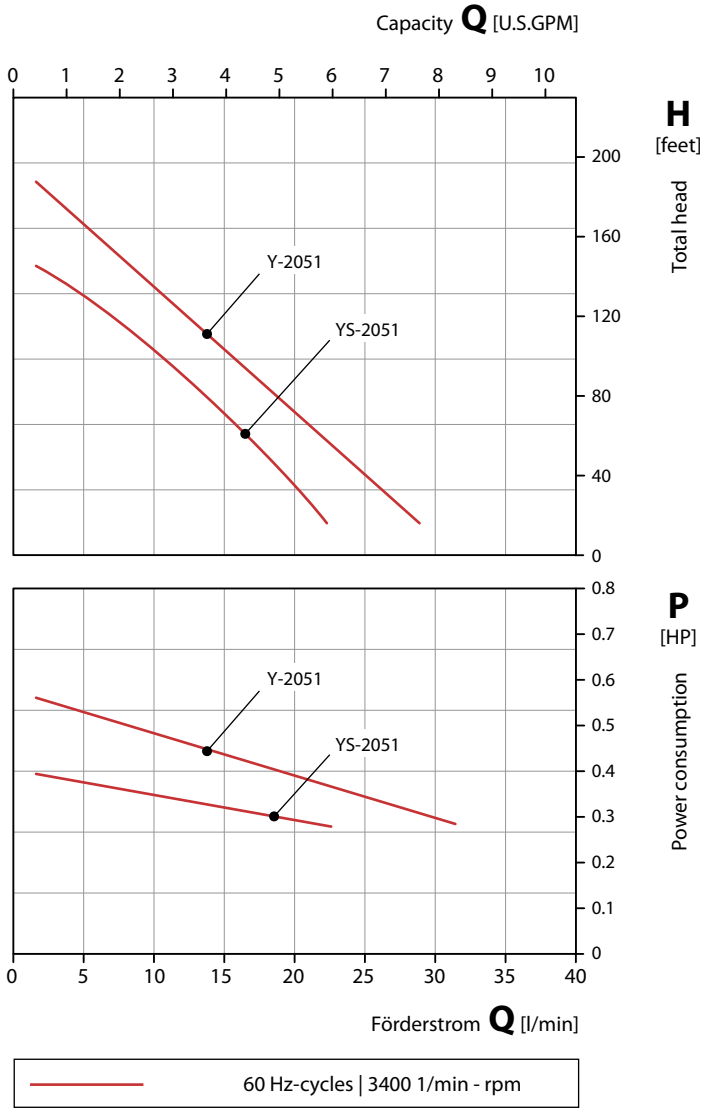
**Peripheralradpumpen**
mit Gleitringdichtung, nicht selbstansaugend / selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, non self-priming / self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel | PPS |
| Gehäuse für Wellen-dichtung<br>Shaft seal casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel | PPS |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.

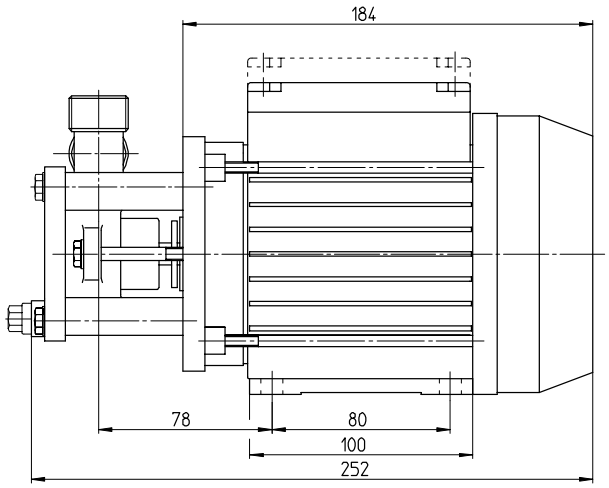
# NPY-2051 Selbstansaugend

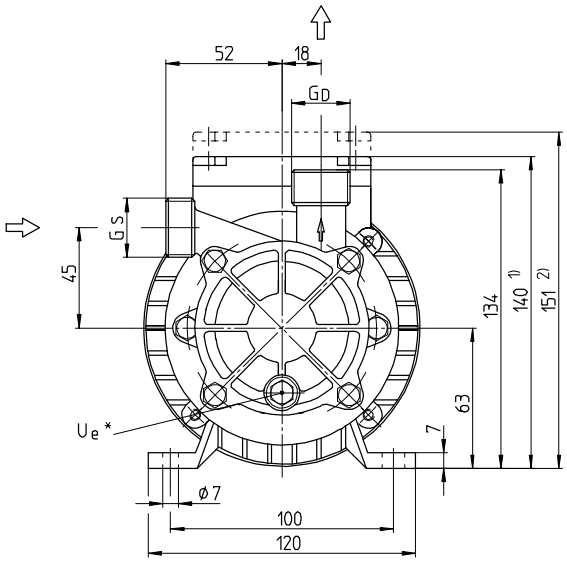
# Self-priming

**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

## Maßzeichnung / Dimensional drawing

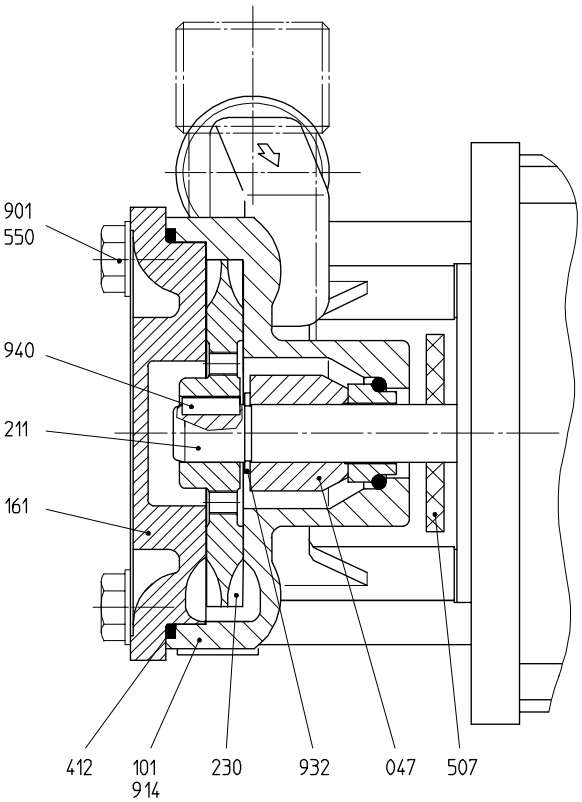



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| NPY-2051 | 63 | 1 / 3~ | 2800 | 0,25 | 0.34 | 3400 | 0,25 | 0.34 | G 3/4 A | G 3/4 A | G 1/8 | 6,0 | 13.2 | 140 °C | 160 °C |
| | | 1~ | | 0,35 | 0.47 | | 0,35 | 0.47 | | | | | | | |
| | | 3~ | | 0,50 | 0.67 | | 0,50 | 0.67 | | | | | | | |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 412 | O-Ring | O-ring |
| 411* | Dichtring | Sealing ring |
| 507 | Spritzring | Splash ring |
| 550 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

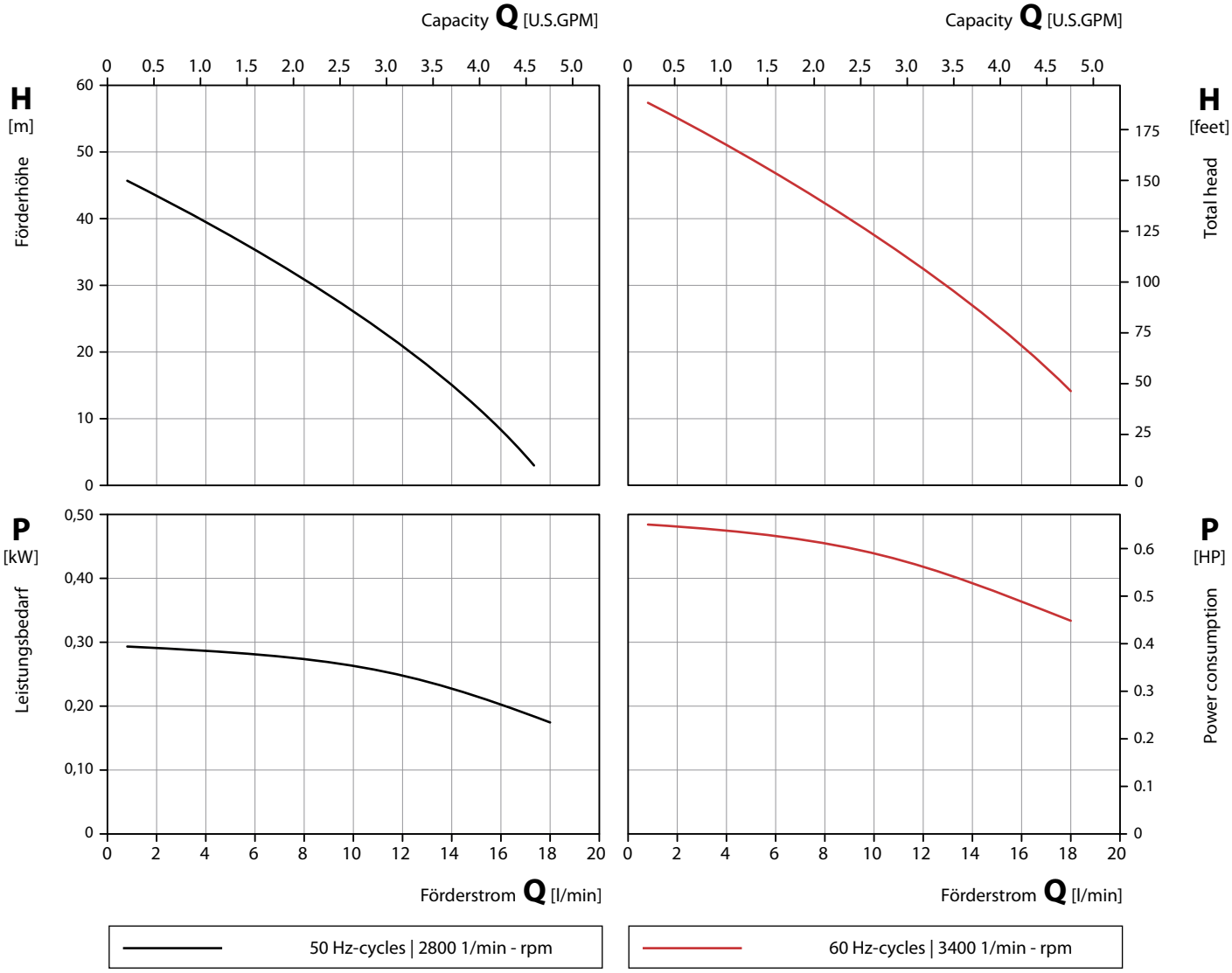

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | | 1.4581<br>CrNiMo-cast steel |
| Gehäusedeckel<br>Casing cover | CuZn<br>Brass | | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

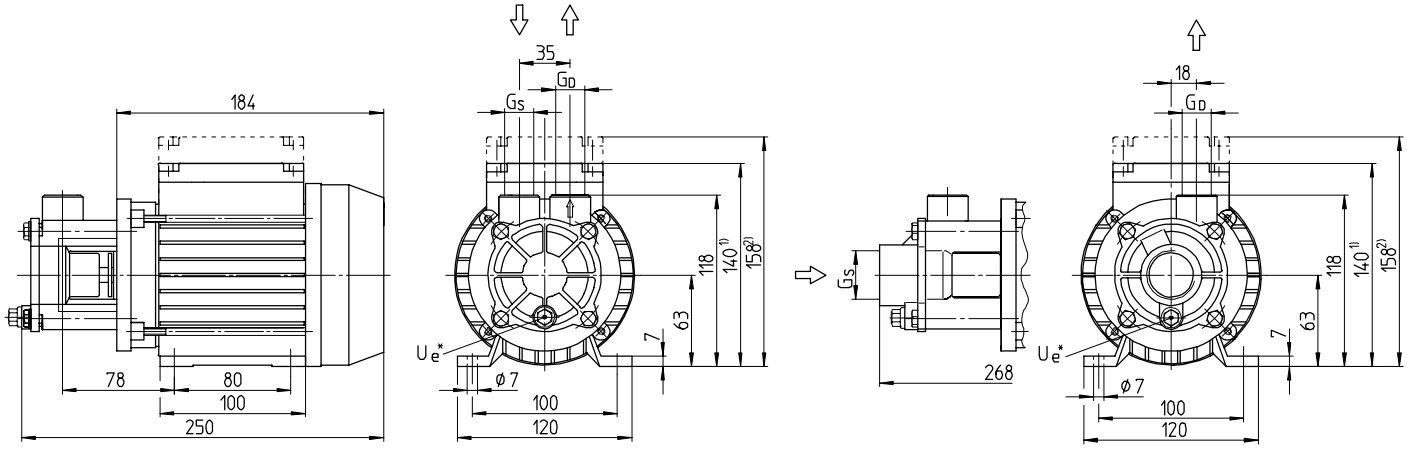
If the property of the pump media differs the characteristic curves change.

# NPY-2051

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

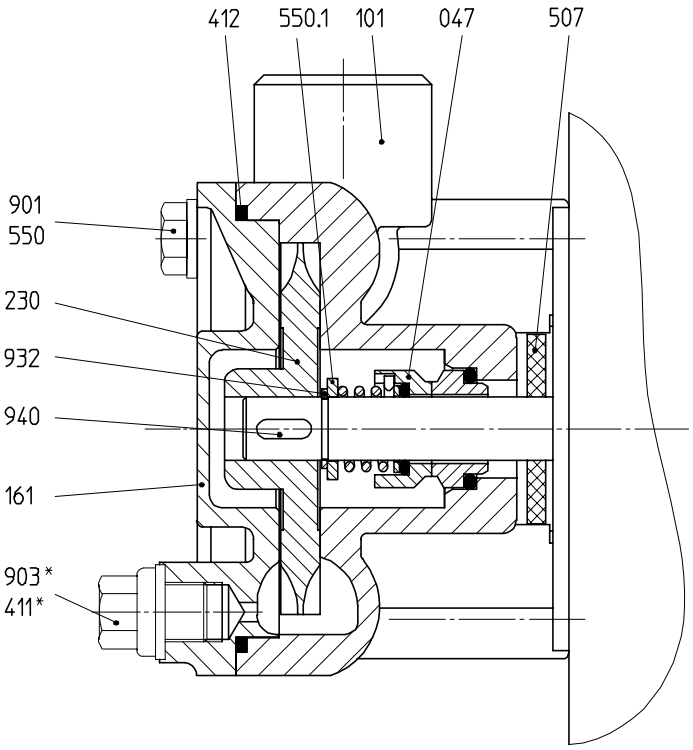
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| NPY-2051 top / top | 63 | 1 / 3~<br>1~<br>3~ | 2800 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | 3400 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | G 3/8 oder / or G 1/2 | G 3/8 oder / or G 1/2 | G 1/8 | 5,6 | 12.3 | 140 °C | 160 °C |
| NPY-2051 ax / top | 63 | 1 / 3~<br>1~<br>3~ | 2800 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | 3400 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | G 1 | G 3/8 oder / or G 1/2 | G 1/8 | 5,6 | 12.3 | | |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

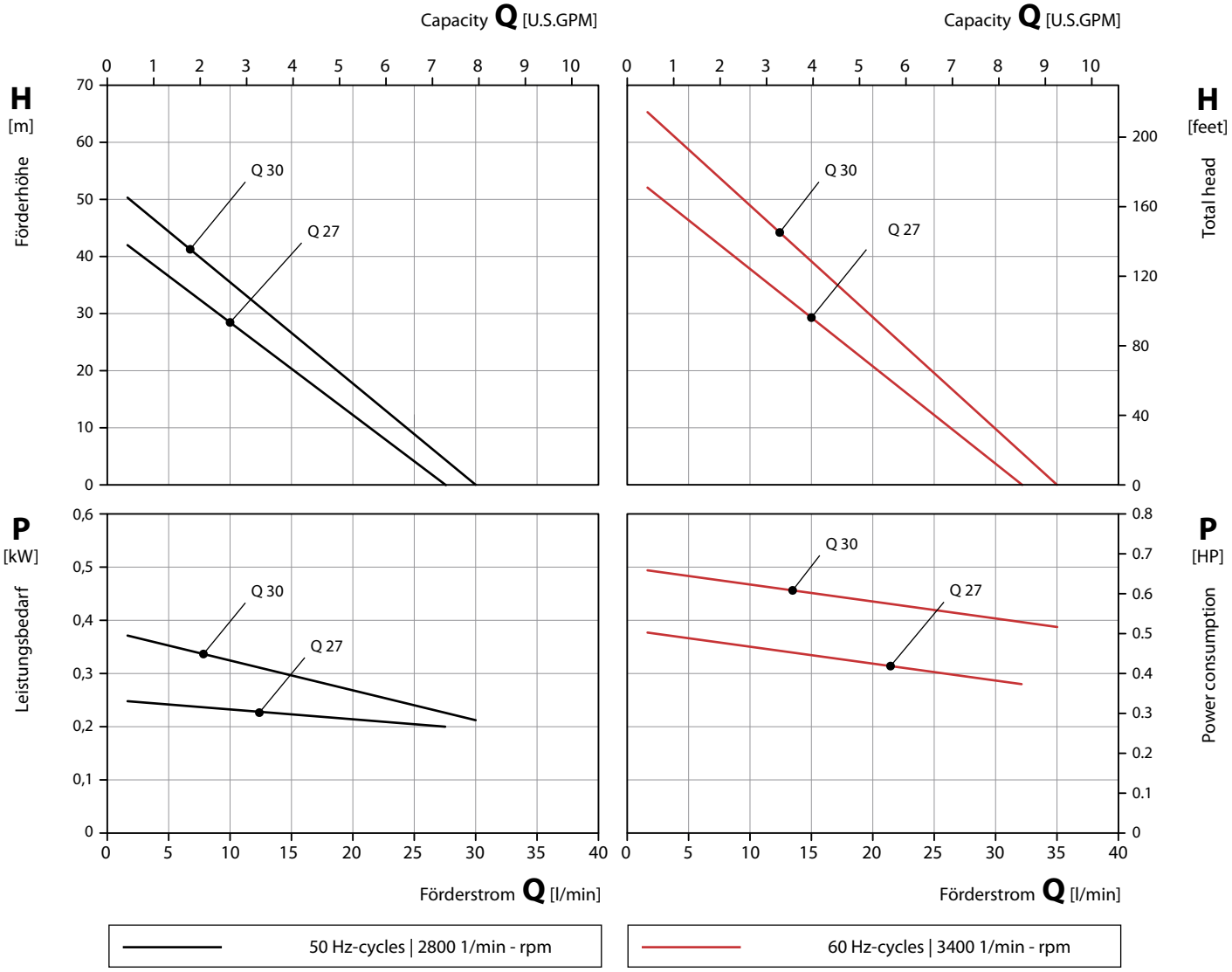

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | PPS | 1.4581<br>CrNiMo-cast steel |
| Gehäusedeckel<br>Casing cover | CuZn<br>Brass | PPS | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |
| Radialwellendichtring<br>Radial seal ring | Auf Anfrage<br>On request | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

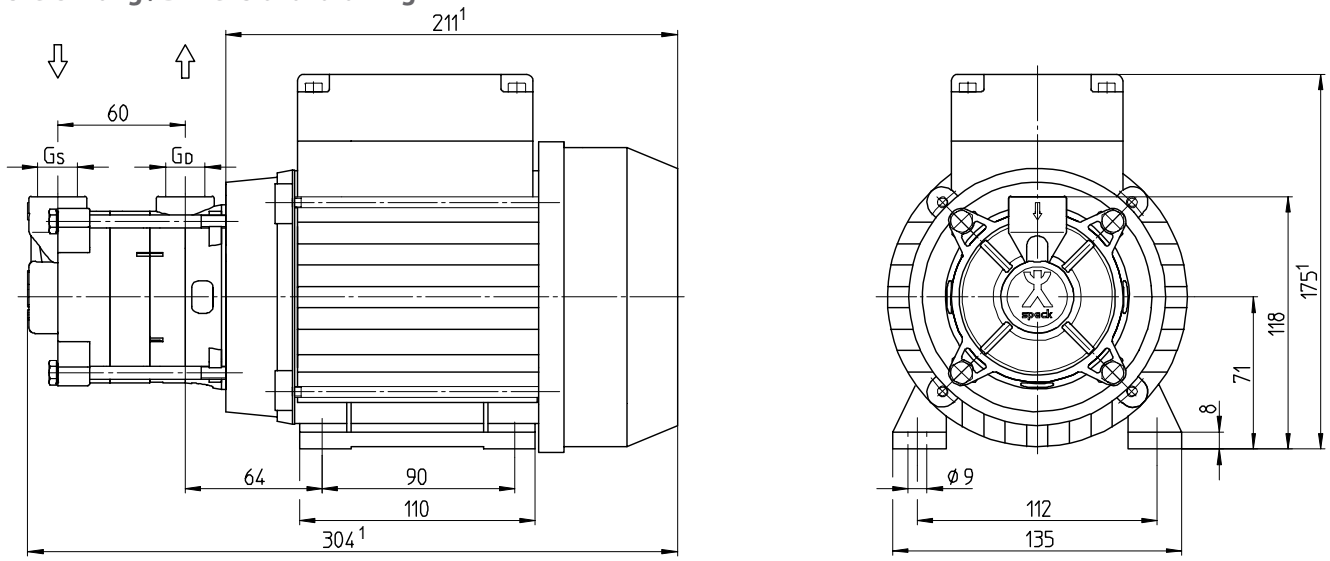
If the property of the pump media differs the characteristic curves change.

# QY-2052

**Peripheralradpumpen**
mit Gleitringdichtung, zweistufig

**Regenerative turbine pumps**
with mechanical seal, two-stage

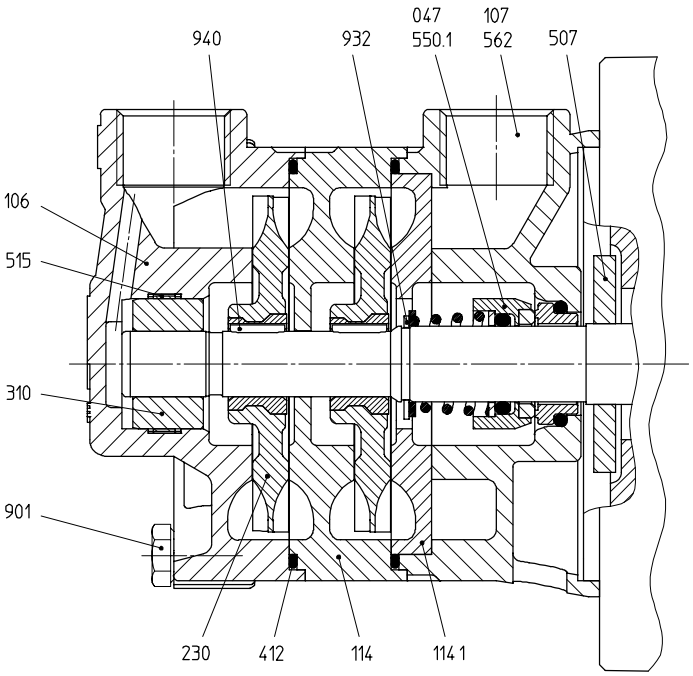
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ | $t_{max}$ |
| QY-2052 | 71 | 3~ | 2800 | 0,75<br>1,10 | 1.0<br>1.5 | 3400 | 0,75<br>1,10 | 1.0<br>1.5 | G 1/2 | G 1/2 | 9,3 | 20.5 | 140 °C | 160 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 114/.1 | Stufe | Stage |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 550.1 | Scheibe | Washer |
| 562 | Zylinderstift | Cylindrical pin |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

Weight depending on motor frame size, performance, materials and execution

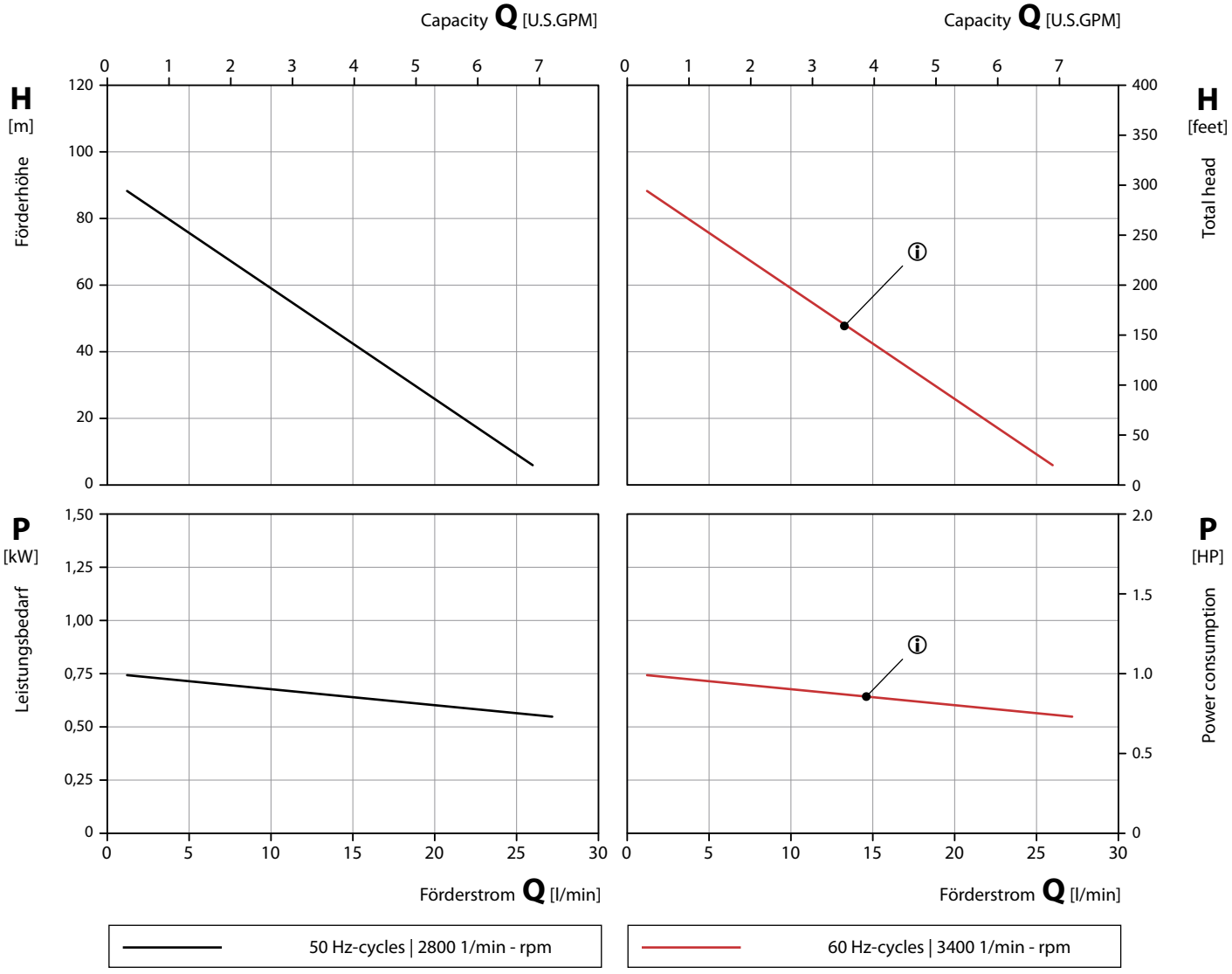

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung, zweistufig

**Regenerative turbine pumps**
with mechanical seal, two-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | |
| Stufe<br>Stage | 1.4581<br>CrNiMo-cast steel | |
| Laufrad<br>Impeller | PEEK | 1.4408,<br>SiC-beschichtet<br>CrNiMo-cast steel,<br>SiC coated |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | 1.4571<br>CrNiMo-steel |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

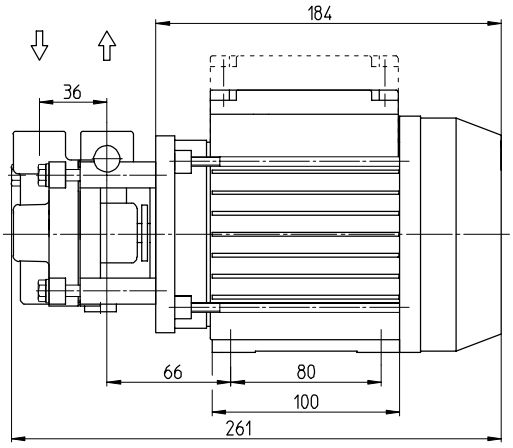
If the property of the pump media differs the characteristic curves change.

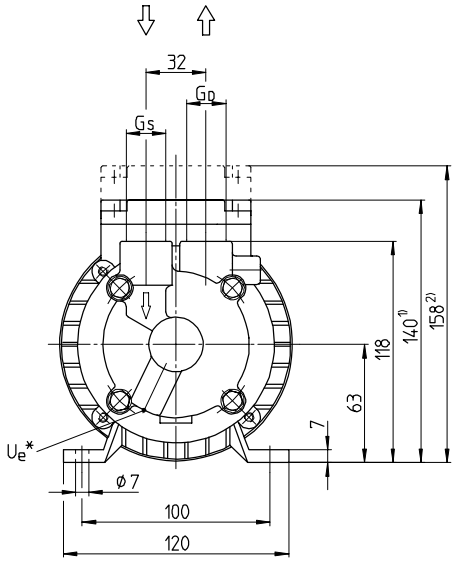
# PY-2071

**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

## Maßzeichnung / Dimensional drawing

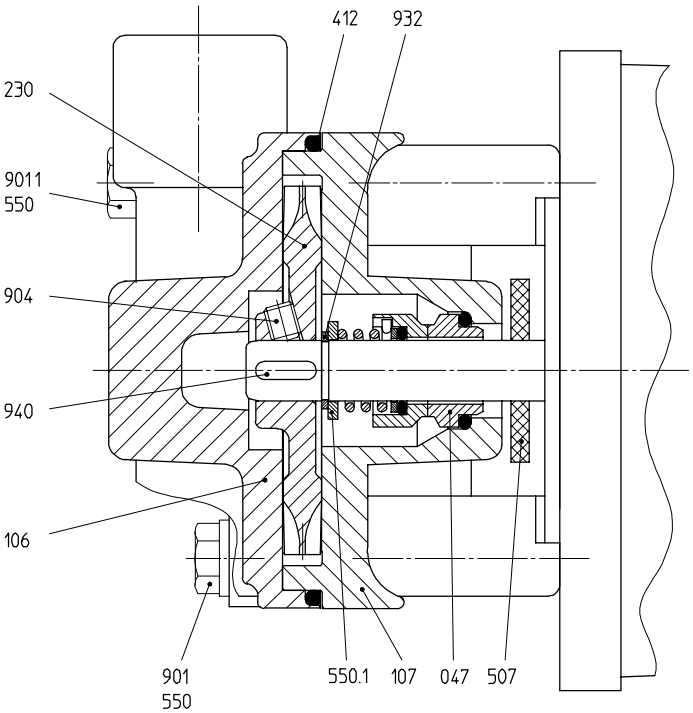



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| PY-2071 | 63 | 1 / 3~<br>1~<br>3~ | 2800 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | 3400 | 0,25<br>0,35<br>0,50 | 0.34<br>0.47<br>0.67 | G 3/8<br>oder / or<br>G 1/2 | G 3/8<br>oder / or<br>G 1/2 | G 1/4 | 5,5 | 12.1 | 140 °C | 160 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

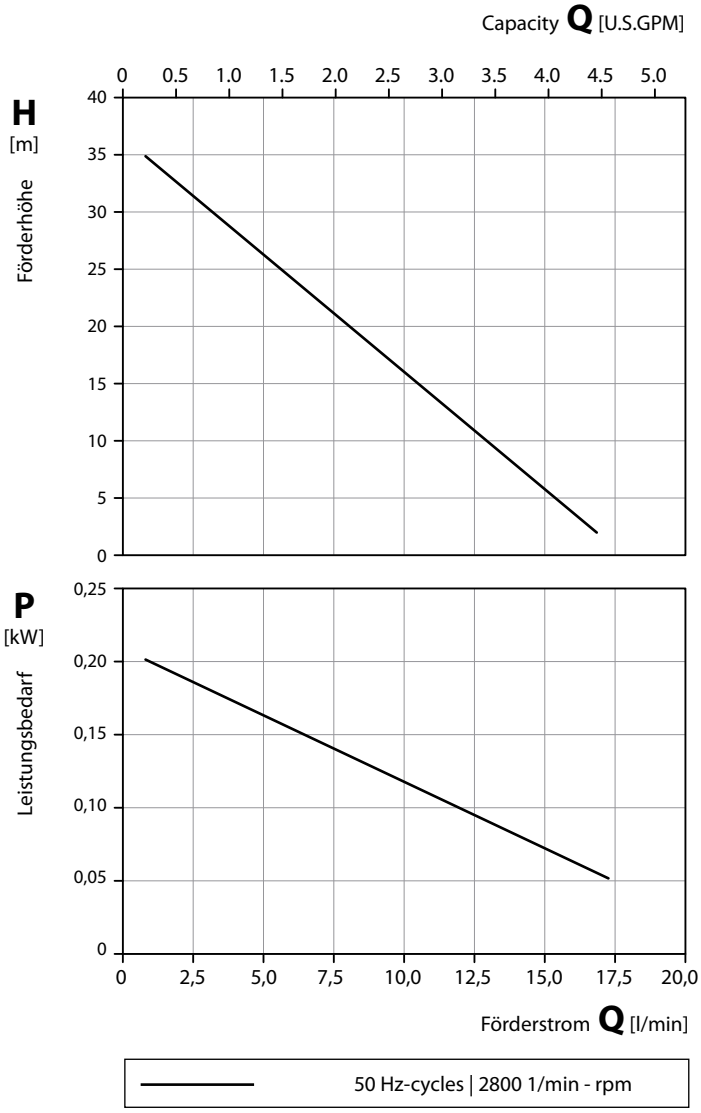
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

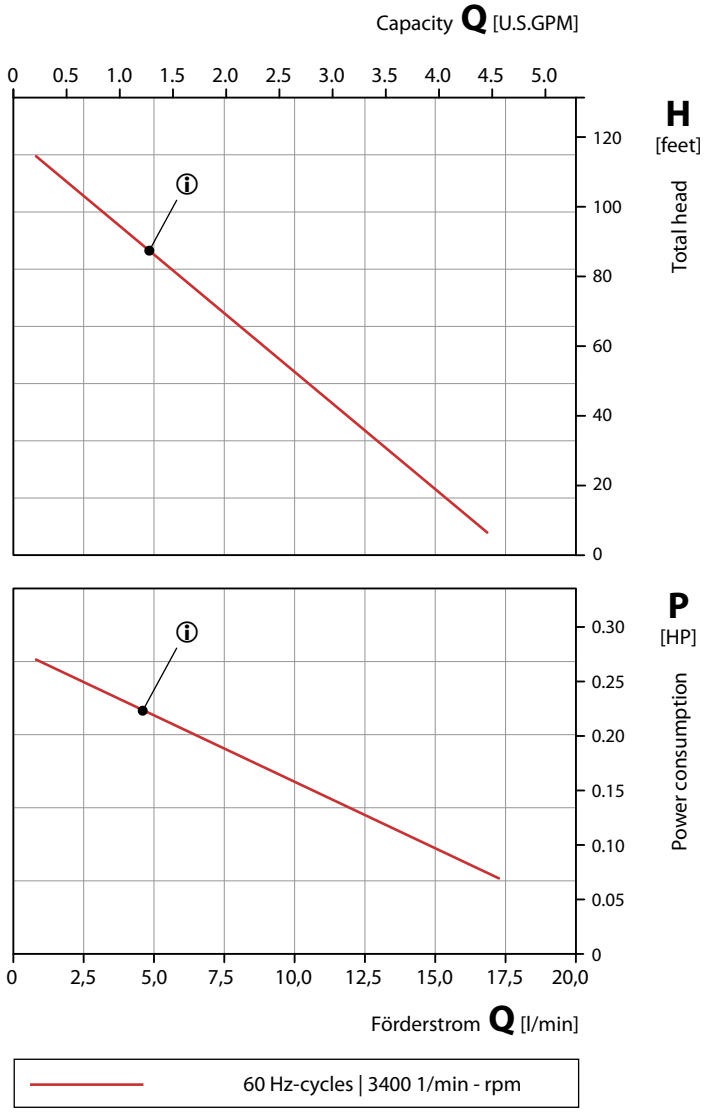
**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Sauggehäuse<br>Suction casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel | PPS |
| Druckgehäuse<br>Discharge casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel | PPS |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | 1.4571<br>CrNiMo-steel | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |
| Radialwellendichtring<br>Radial seal ring | Auf Anfrage<br>On request | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

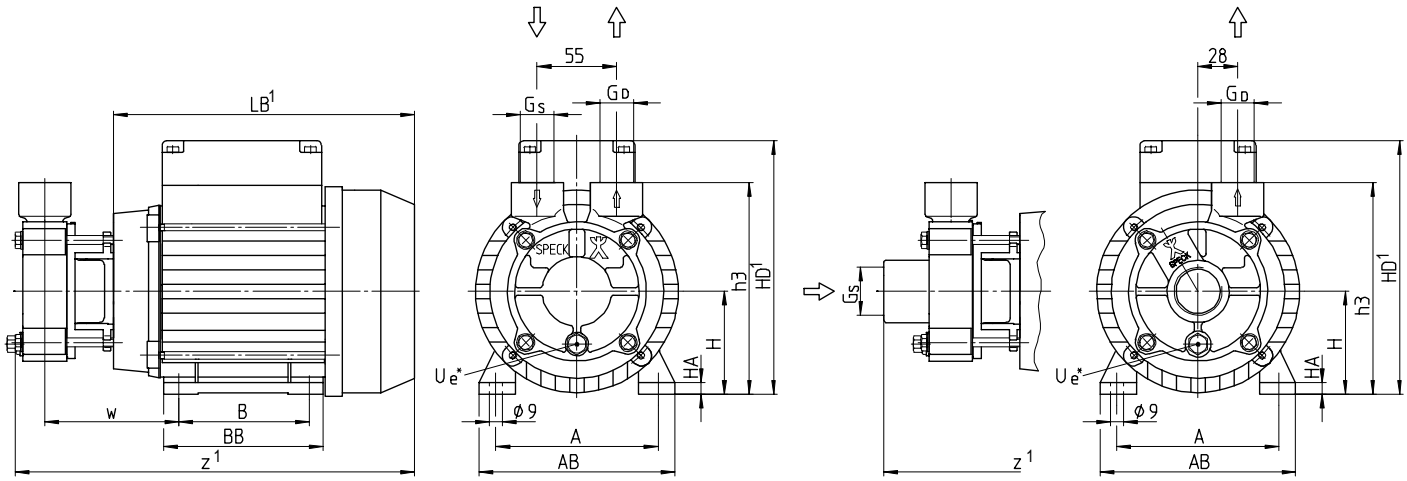
If the property of the pump media differs the characteristic curves change.

# Y-4081

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## Maßzeichnung / Dimensional drawing

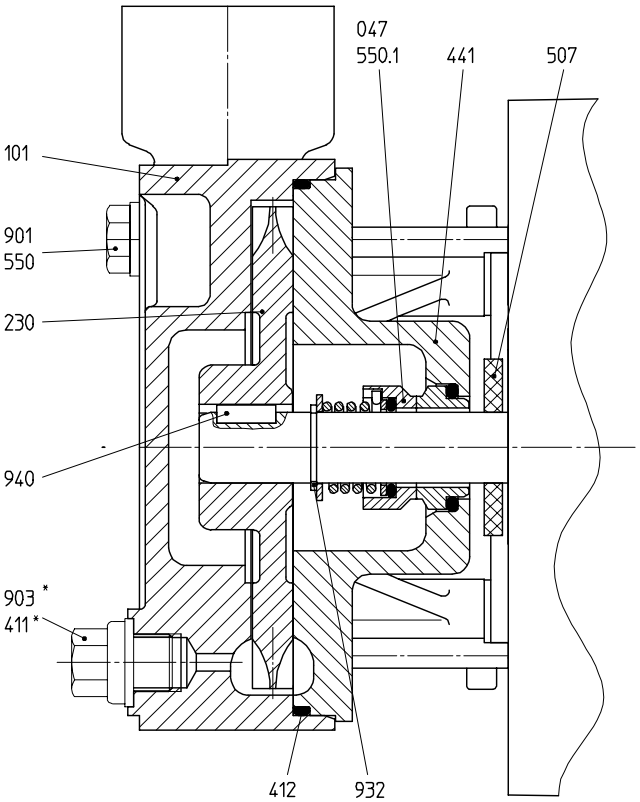



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| **Y-4081 top / top** | 71 | 3~ | 2800 | 0,75<br>1,00 | 1.00<br>1.34 | 3400 | 0,75<br>1,00 | 1.00<br>1.34 | G 3/4 | G 3/4 | G 1/8 | 9,5 | 20.9 | 140 °C | 160 °C |
| | 80 | | | 1,50 | 2.00 | | 1,50 | 2.00 | | | | | | | |
| **Y-4081 ax / top** | 71 | 3~ | 2800 | 0,75<br>1,00 | 1.00<br>1.34 | 3400 | 0,75<br>1,00 | 1.00<br>1.34 | G 1 | G 3/4 | G 1/8 | 9,5 | 20.9 | | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD1 | LB1 | h3 | w | z (top/top)1 | z (ax/top)1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Y-4081** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 208 | 146 | 93 | 276 | 302 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 190 | 232 | 155 | 98 | 300 | 326 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 441 | Gehäuse für Wellendichtung | Shaft seal casing |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

* On request

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

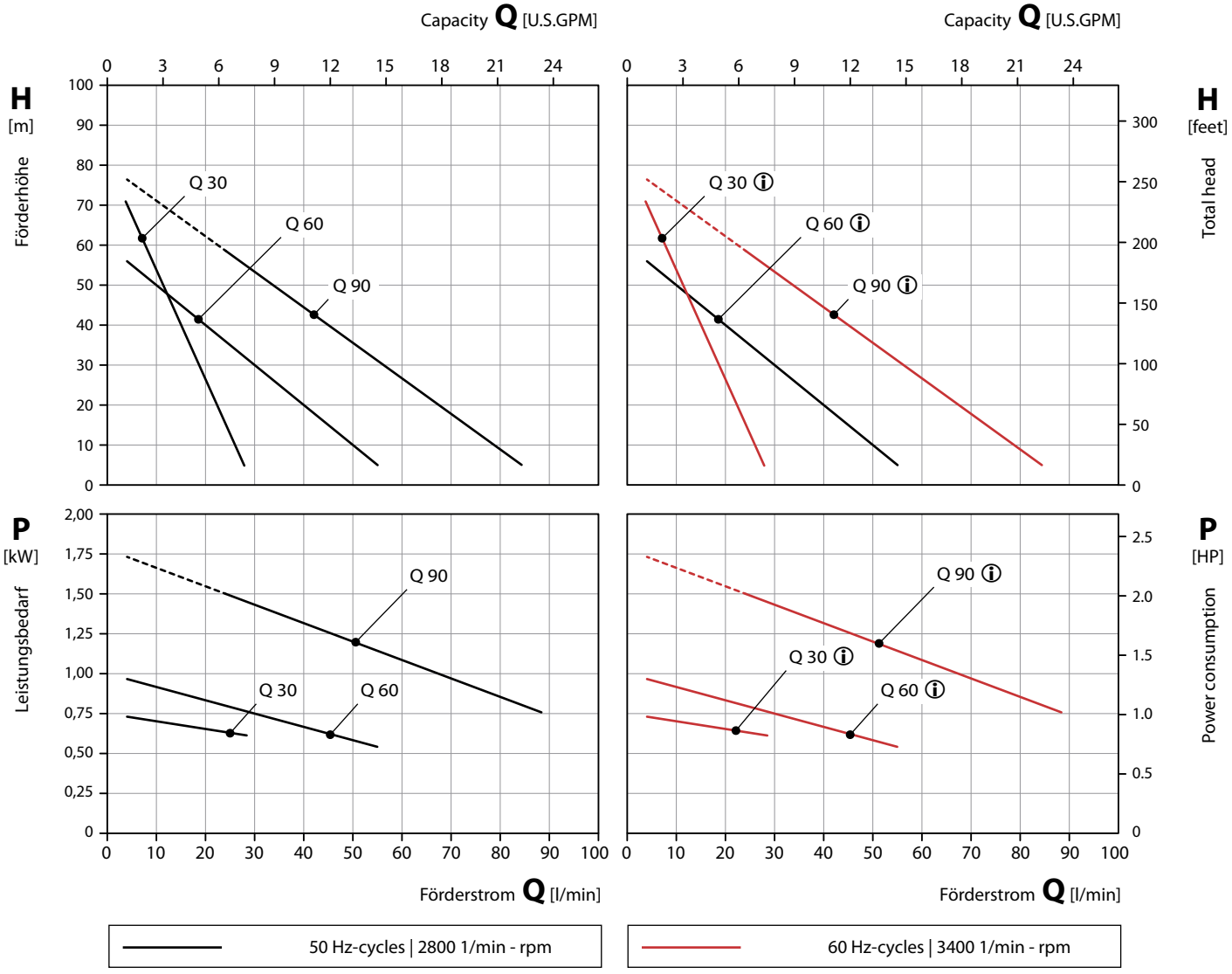

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | | 1.4581<br>CrNiMo-cast steel |
| Gehäuse für Wellen-dichtung<br>Shaft seal casing | CuZn<br>Brass | PPS | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

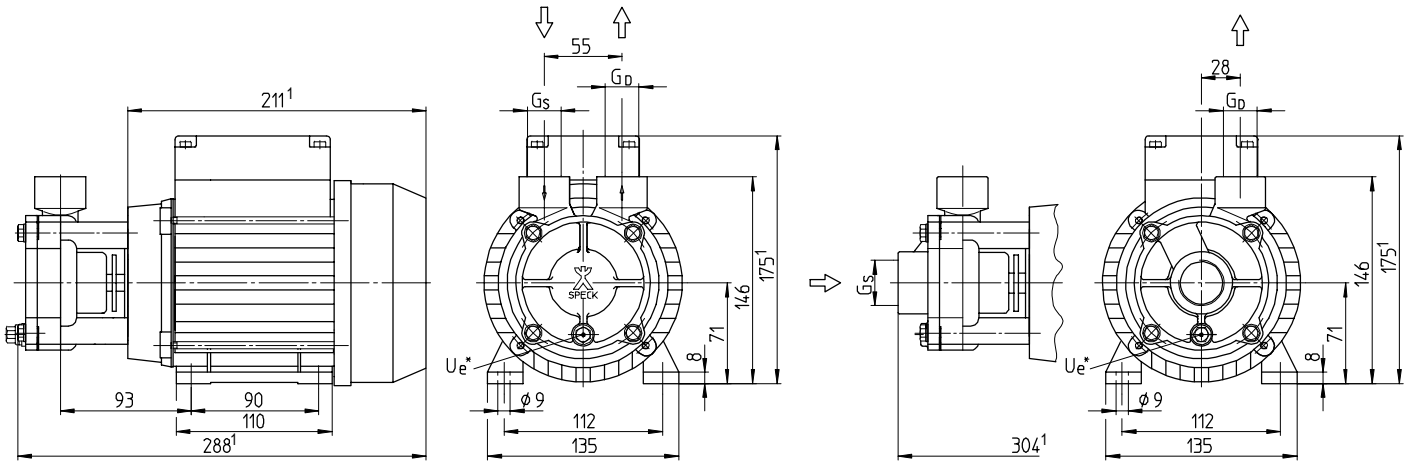
If the property of the pump media differs the characteristic curves change.

# CY-4081

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

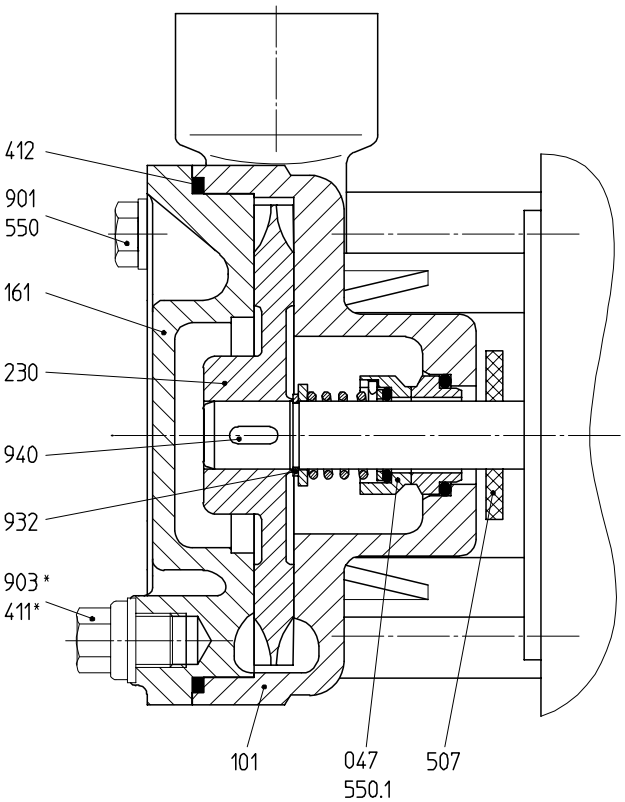
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| CY-4081 top / top | 71 | 3~ | 2800 | 0,55<br>0,75<br>1,00 | 0.74<br>1.00<br>1.34 | 3400 | 0,55<br>0,75<br>1,00 | 0.74<br>1.00<br>1.34 | G 3/4 | G 3/4 | G 1/8 | 9,4 | 20.7 | 140 °C | 160 °C |
| CY-4081 ax / top | 71 | 3~ | 2800 | 0,55<br>0,75<br>1,00 | 0.74<br>1.00<br>1.34 | 3400 | 0,55<br>0,75<br>1,00 | 0.74<br>1.00<br>1.34 | G 1 | G 3/4 | G 1/8 | 9,4 | 20.7 | | |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

* On request

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

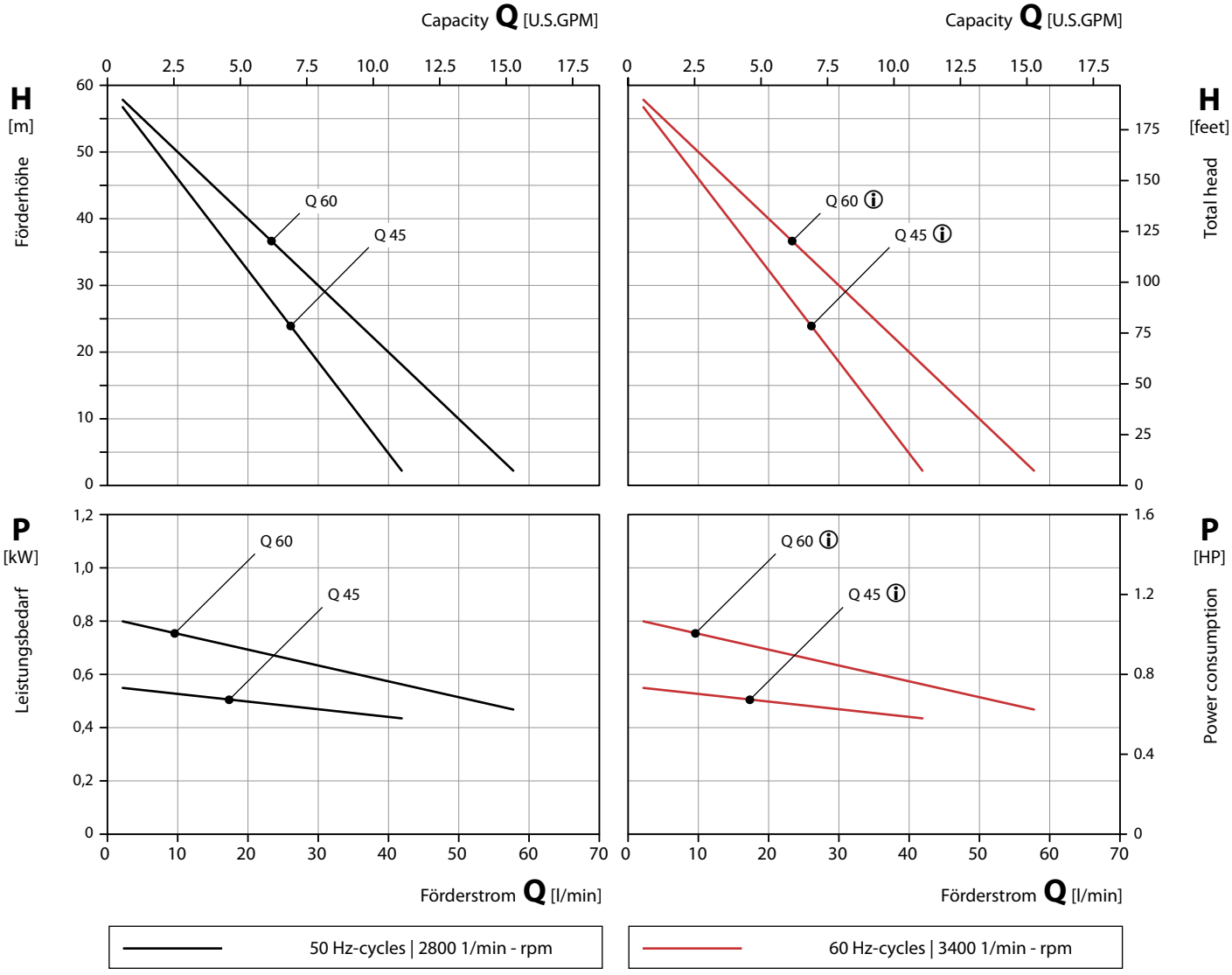

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | | 1.4581<br>CrNiMo-cast steel |
| Gehäusedeckel<br>Casing cover | CuZn<br>Brass | | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

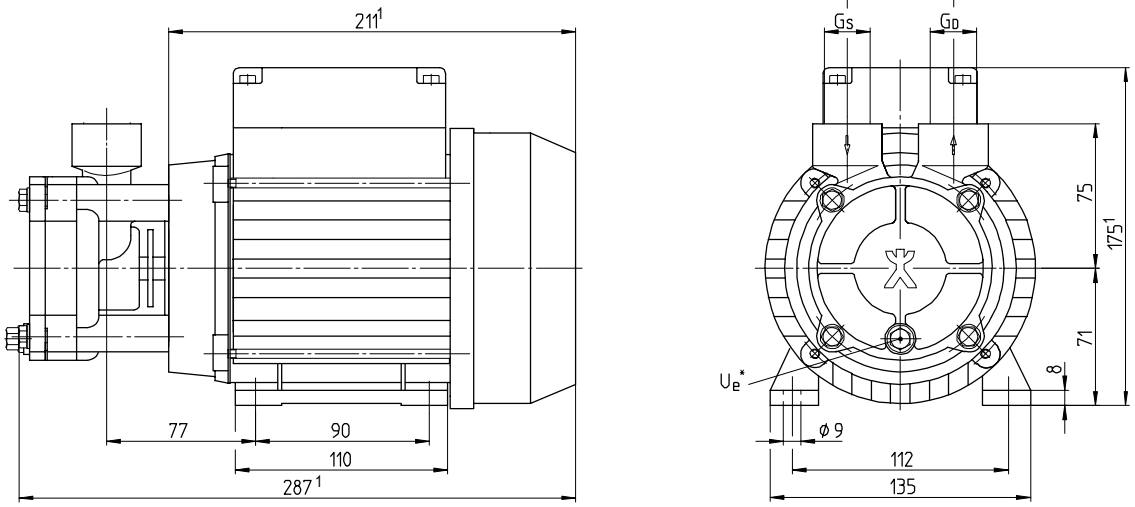
If the property of the pump media differs the characteristic curves change.

# CSY-4081

**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

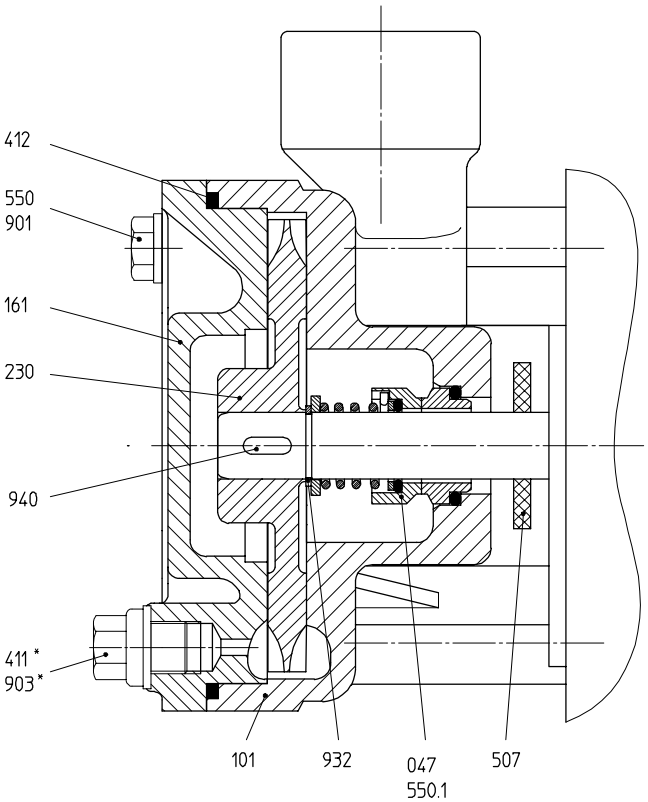
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| CSY-4081 | 71 | 3~ | 2800 | 0,75<br>1,00 | 1.00<br>1.34 | 3400 | 0,75<br>1,00 | 1.00<br>1.34 | G 3/4 | G 3/4 | G 1/8 | 10,5 | 23.2 | 140 °C | 160 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

* On request

$U_e$ = Drainage / Screw plug

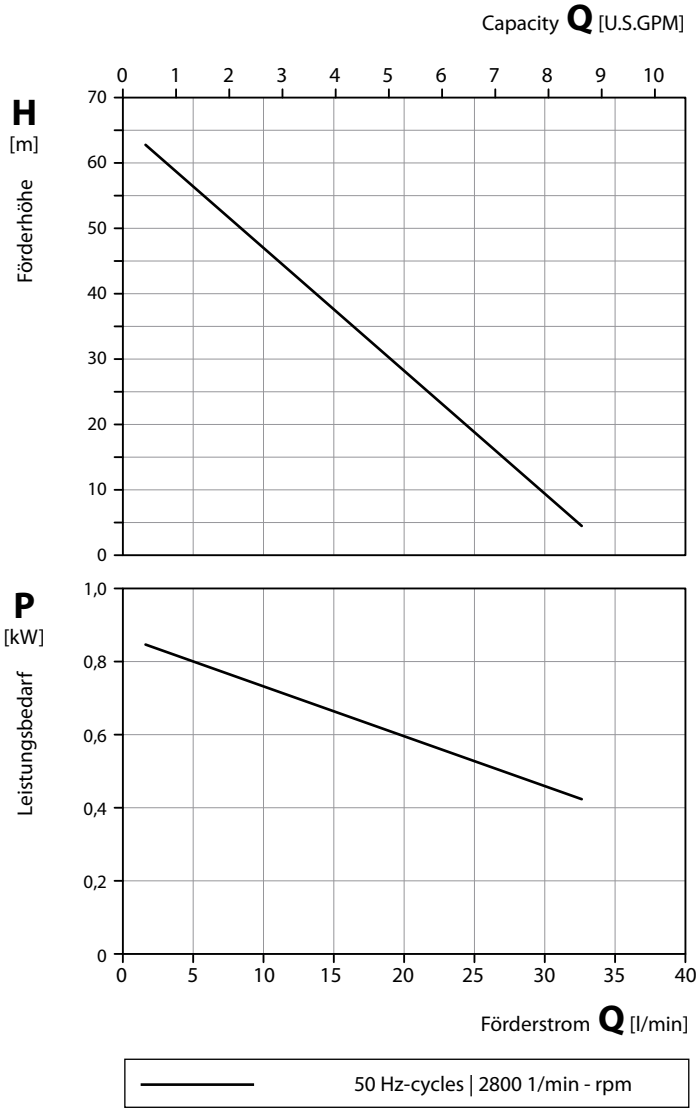
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

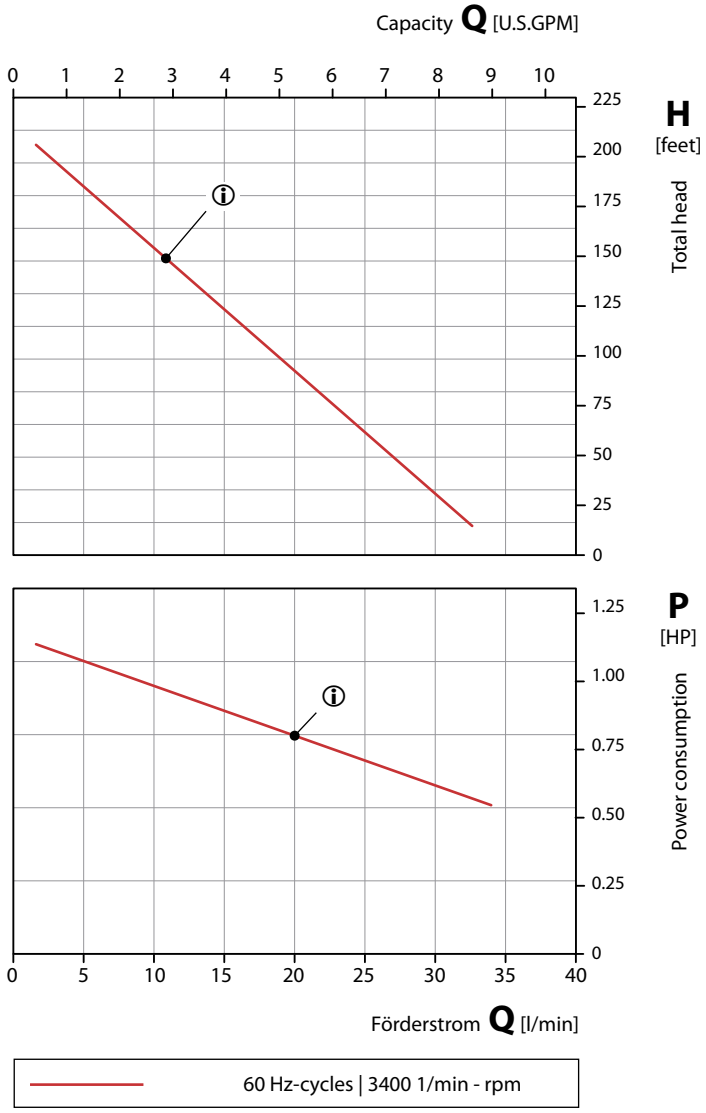
**Peripheralradpumpen**
mit Gleitringdichtung, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | | |
| Gehäusedeckel<br>Casing cover | CuZn,<br>Ni-SiC-beschichtet<br>Brass,<br>Ni-SiC coated | 1.4581<br>CrNiMo-cast steel | |
| Laufrad<br>Impeller | CuZn,<br>Ni-SiC-beschichtet<br>Brass,<br>Ni-SiC coated | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | PEEK |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

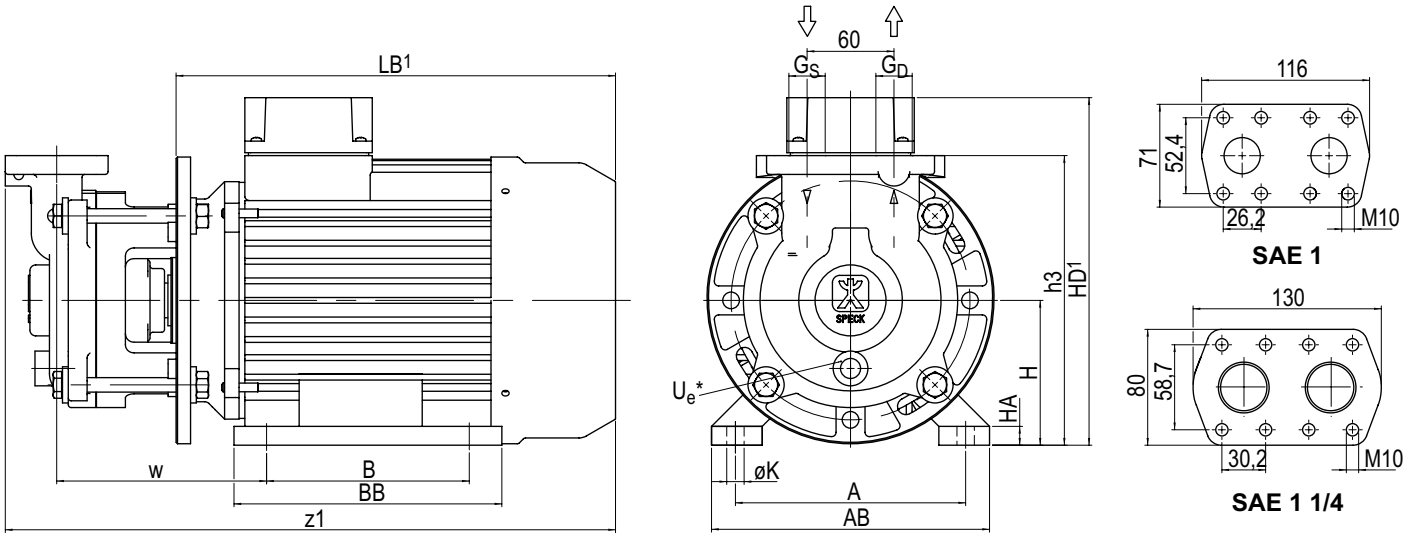
If the property of the pump media differs the characteristic curves change.

# Y-6091

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## Maßzeichnung / Dimensional drawing

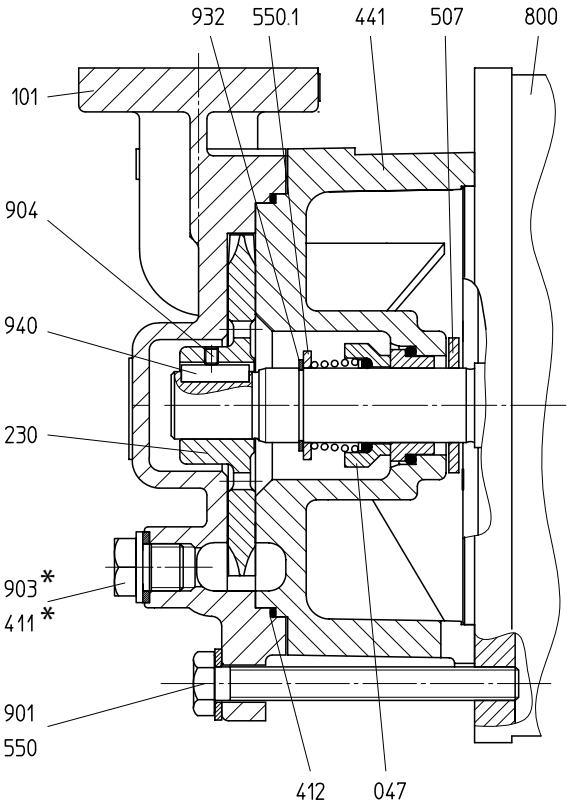



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ | $t_{max}$ |
| **Y-6091** | 90 | | | 2,8 | 3.8 | | 2,8 | 3.8 | | | | | | | |
| | 100 | 3~ | 2800 | 3,0 | 4.0 | 3400 | 3,0 | 4.0 | siehe unten see below | | G 1/4 | 30,6 | 67.5 | 140 °C | 180 °C |
| | 112 | | | 4,0 | 5.4 | | 4,0 | 5.4 | | | | | | | |

| Werkstoffausf./ Material Design | | CuZn / Brass | | | 1.4581 / CrNiMo-cast steel | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Baugröße | $G_S/G_D$ | w | $z^1$ | $G_S/G_D$ | w | $z^1$ | $G_S/G_D$ | w | z | A | AB | B | BB | H | HA | $HD^1$ | K | $LB^1$ | h3 |
| **Y-6091** | 90 | SAE 1 | 138 | 404 | – | – | – | – | – | – | 140 | 176 | 125 | 154 | 90 | 14 | 243 | 9 | 286 | 190 |
| | 100 | SAE 1 | 145 | 421 | SAE 1 1/4 | 138 | 418 | G 1 1/4 | 145 | 413 | 160 | 195 | 140 | 176 | 100 | 13 | 254 | 12 | 303 | 200 |
| | 112 | SAE 1 | 152 | 438 | SAE 1 1/4 | 145 | 435 | G 1 1/4 | 152 | 430 | 190 | 225 | 140 | 176 | 112 | 15 | 280 | 12 | 320 | 212 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 441 | Gehäuse für Wellendichtung | Shaft seal casing |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 904 | Gewindestift | Threaded pin |
| 903* | Verschlussschraube | Screw plug |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |
| 800 | Motor | Motor |

[1] Abhängig von Motorausführung

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

* On request

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

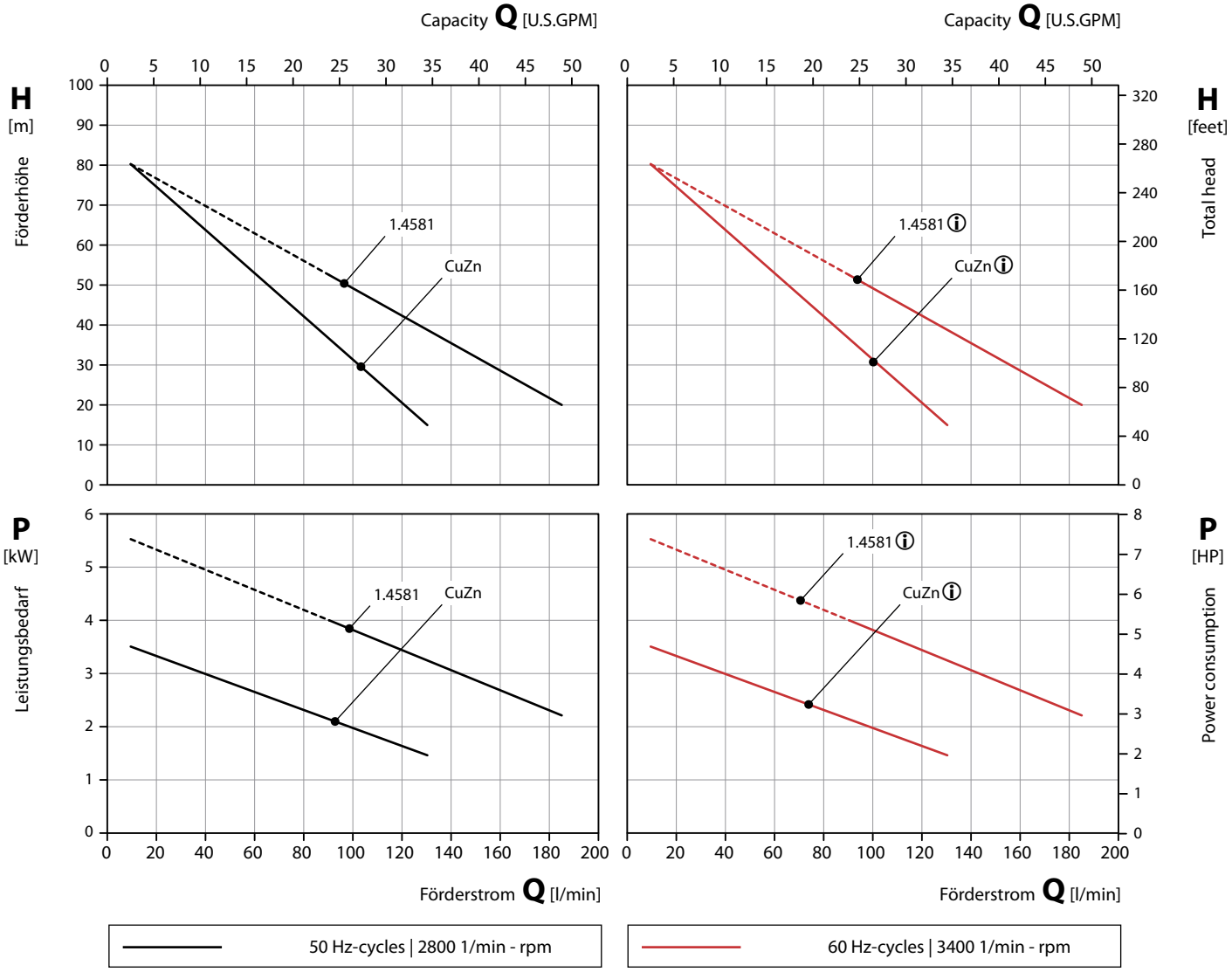

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung

**Regenerative turbine pumps**
with mechanical seal

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel |
| Gehäuse für Wellen-dichtung<br>Shaft seal casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | Kohle, SiC, FKM<br>Carbon, SiC, FKM |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

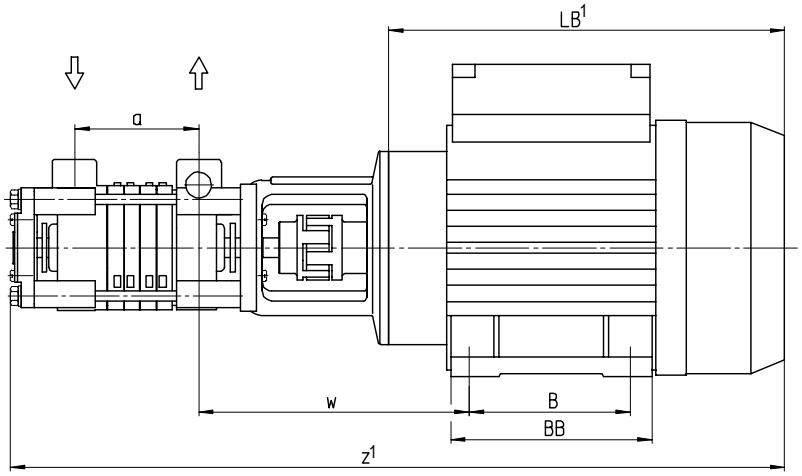
If the property of the pump media differs the characteristic curves change.

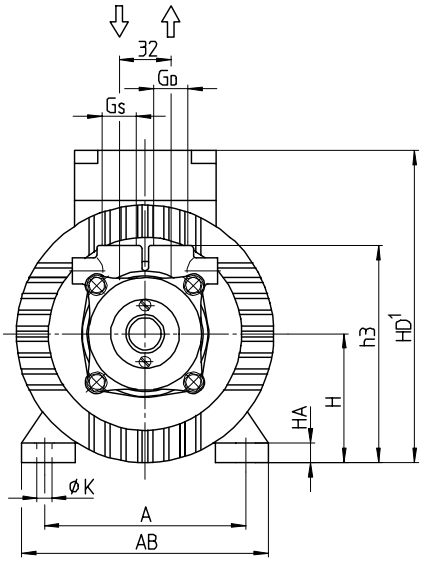
# PY-2271 / 2 / 3

**Peripheralradpumpen**
mit Gleitringdichtung, mehrstufig, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, multi-stage, self-priming

## Maßzeichnung / Dimensional drawing



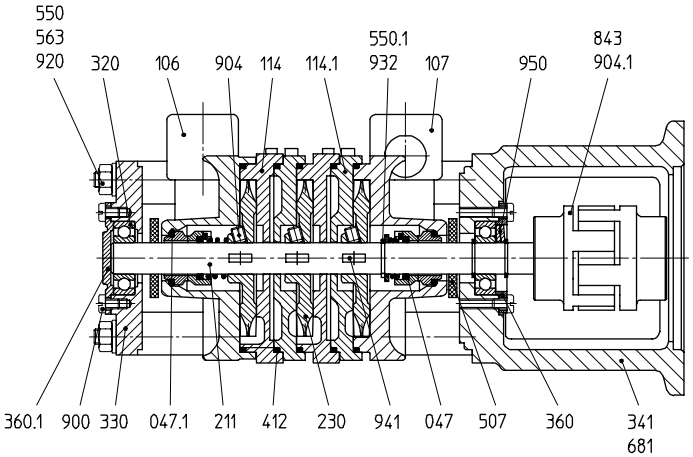




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ | $t_{max}$ |
| **PY-2271** | 63 | 1 / 3~ | | 0,25 | 0.34 | | 0,25 | 0.34 | | | 3,5 | 7.7 | | |
| **PY-2272** | 71 | 3~ | 2800 | 0,55 | 0.74 | 3400 | 0,55 | 0.74 | G 1/2 | G 1/2 | 3,7 | 8.2 | 140 °C | 140 °C |
| **PY-2273** | 80 | 3~ | | 1,10 | 1.48 | | 1,10 | 1.48 | | | 4,4 | 9.7 | | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD1 | K | LB1 | h3 | a | w | z1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PY-2271** | 63 | 100 | 125 | 80 | 100 | 63 | 8 | 184 | 7 | 210 | 118 | 34 | 146 | 374 |
| **PY-2272** | 71 | 112 | 138 | 90 | 115 | 71 | 9 | 202 | 7 | 220 | 126 | 56 | 151 | 414 |
| **PY-2273** | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 231 | 9 | 255 | 135 | 77 | 168 | 465 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047/.1 | Gleitringdichtung | Mechanical seal |
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 114 | Druckstufe | Discharge stage |
| 114.1 | Saugstufe | Suction stage |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 320 | Wälzlager | Rolling bearing |
| 330 | Lagerkörper | Bearing casing |
| 341 | Laterne | Bracket |
| 360/.1 | Lagerdeckel | Bearing cover |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550/.1 | Scheibe | Washer |
| 563 | Bolzen | Bolt |
| 681 | Kupplungsschutz | Coupling guard |
| 843 | Kupplung | Coupling |
| 900 | Schraube | Screw |
| 904/.1 | Gewindestift | Threaded pin |
| 920 | 6-kt. Mutter | Hexagon nut |
| 932 | Sicherungsring | Locking ring |
| 941 | Scheibenfeder | Woodruff key |
| 950 | Tellerfeder | Disk spring |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

Weight depending on motor frame size, performance, materials and execution

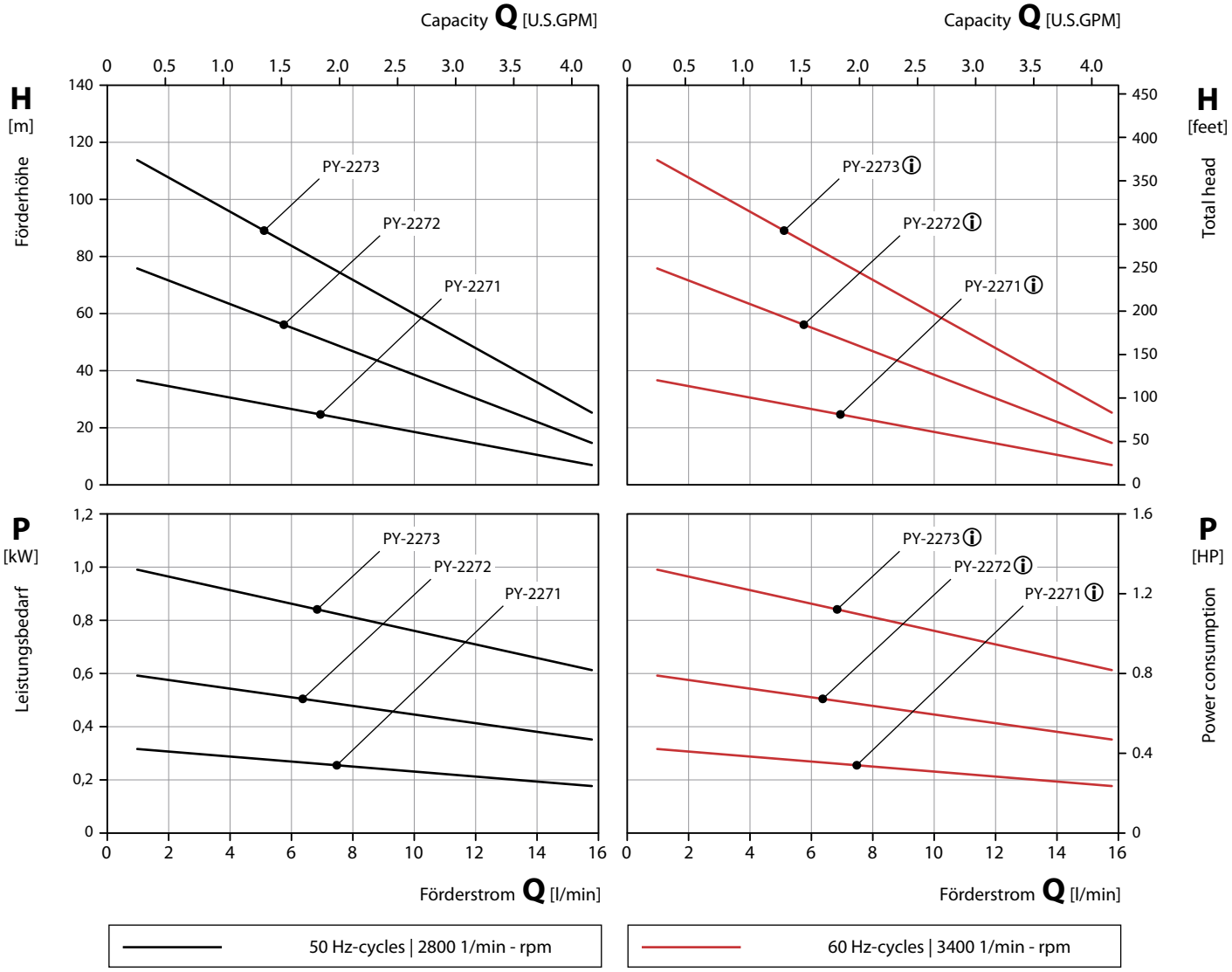

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Gleitringdichtung, mehrstufig, selbstansaugend

**Regenerative turbine pumps**
with mechanical seal, multi-stage, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Saug- / Druckgehäuse<br>Suction casing / Discharge casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel |
| Stufe<br>Stage | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408, keramikbeschichtet<br>CrNiMo-cast steel, coated with ceramics |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | 1.4571<br>CrNiMo-steel |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | |
| Radialwellendichtring<br>Radial seal ring | Auf Anfrage<br>On request | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.



Technische Änderungen und Irrtum vorbehalten.

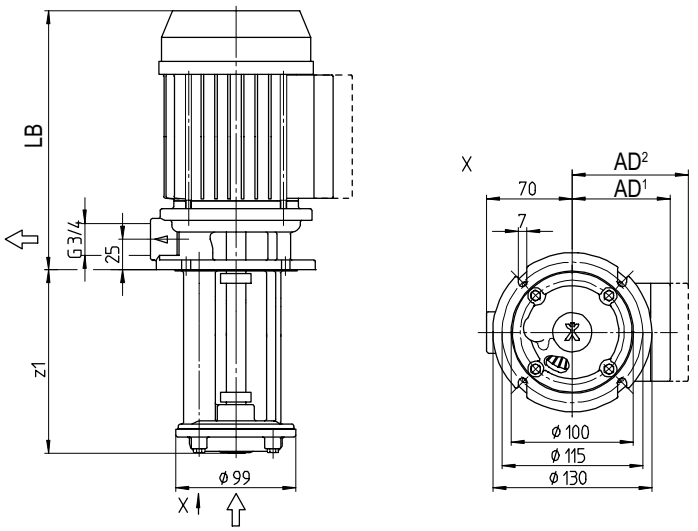
Subject to technical modifications and error.

# T-401 / 601

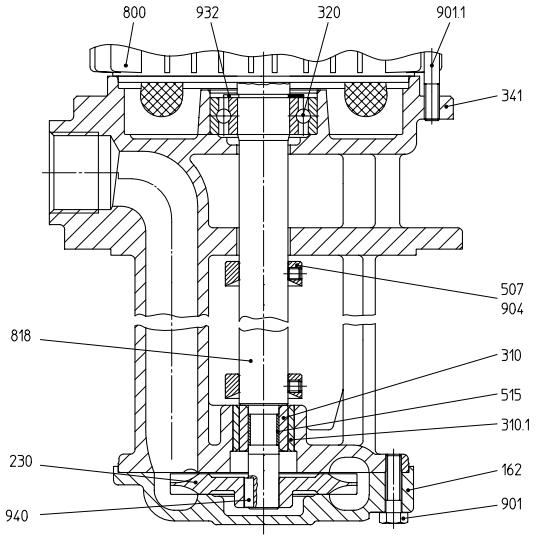
**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## Maßzeichnung / Dimensional drawing




## Schnittzeichnung / Cross-sectional drawing




## Motor / Motor

| Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Maße<br>Dimensions | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | ~ | 1/min | kW | HP | 1/min | kW | HP | AD[1] | AD[2] | LB |
| 63 | 1 / 3~ | 2800 | 0,5 | 0.67 | 3400 | 0,6 | 0.80 | 78 | 96 | 214 |
| 71 | 3~ | 2800 | 1,0 | 1.34 | 3400 | 1,1 | 1.47 | 88 | 106 | 235 |

## Ausführungen / Versions

| | Typ<br>Types | T-401 | T-601 |
|---|---|---|---|
| Motor<br>Motor | Baugröße / kW<br>Frame size / kW | 63 / 0,5 kW | 63 / 0,5 kW |
| Laterne<br>Bracket | z1 = 110 mm | 1.4581<br>CrNiMo-cast steel | 1.4581<br>CrNiMo-cast steel |
| | z1 = 150 mm | 1.4581<br>CrNiMo-cast steel | 1.4581<br>CrNiMo-cast steel |
| | z1 = 200 mm | – | – |
| Saugdeckel<br>Suction cover | | 1.4581<br>CrNiMo-cast steel | 1.4581<br>CrNiMo-cast steel |
| | | PPS | PPS |
| Laufrad<br>Impeller | | 1.4408<br>CrNiMo-cast steel | 1.4408<br>CrNiMo-cast steel |
| | | PEEK | PEEK |
| Welle<br>Shaft | | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel |

## Teileliste / Parts list

| | | |
|---|---|---|
| 162 | Saugdeckel | Suction cover |
| 230 | Laufrad | Impeller |
| 310/.1 | Gleitlager | Sleeve bearing |
| 320 | Wälzlager | Rolling bearing |
| 341 | Laterne | Bracket |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 800 | Motor | Motor |
| 818 | Rotor | Rotor |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 901.1 | Zuganker | Tie rod |
| 904 | Gewindestift | Threaded pin |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

## Medien
Wasser max. 90 °C
Öl max. 150 °C
Öl max. 200 °C auf Anfrage

## Media
Water max. 90 °C
Oil max. 150 °C
Oil max. 200 °C on request

## Gewicht
Auf Anfrage

## Weight
On request

## Klemmkastenlage
Wahlweise gegenüber, oberhalb, links oder rechts vom Druckanschluss

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

## Position of terminal box
Alternatively opposite, above, left or right to discharge connection

[1] Flat terminal box
[2] High terminal box

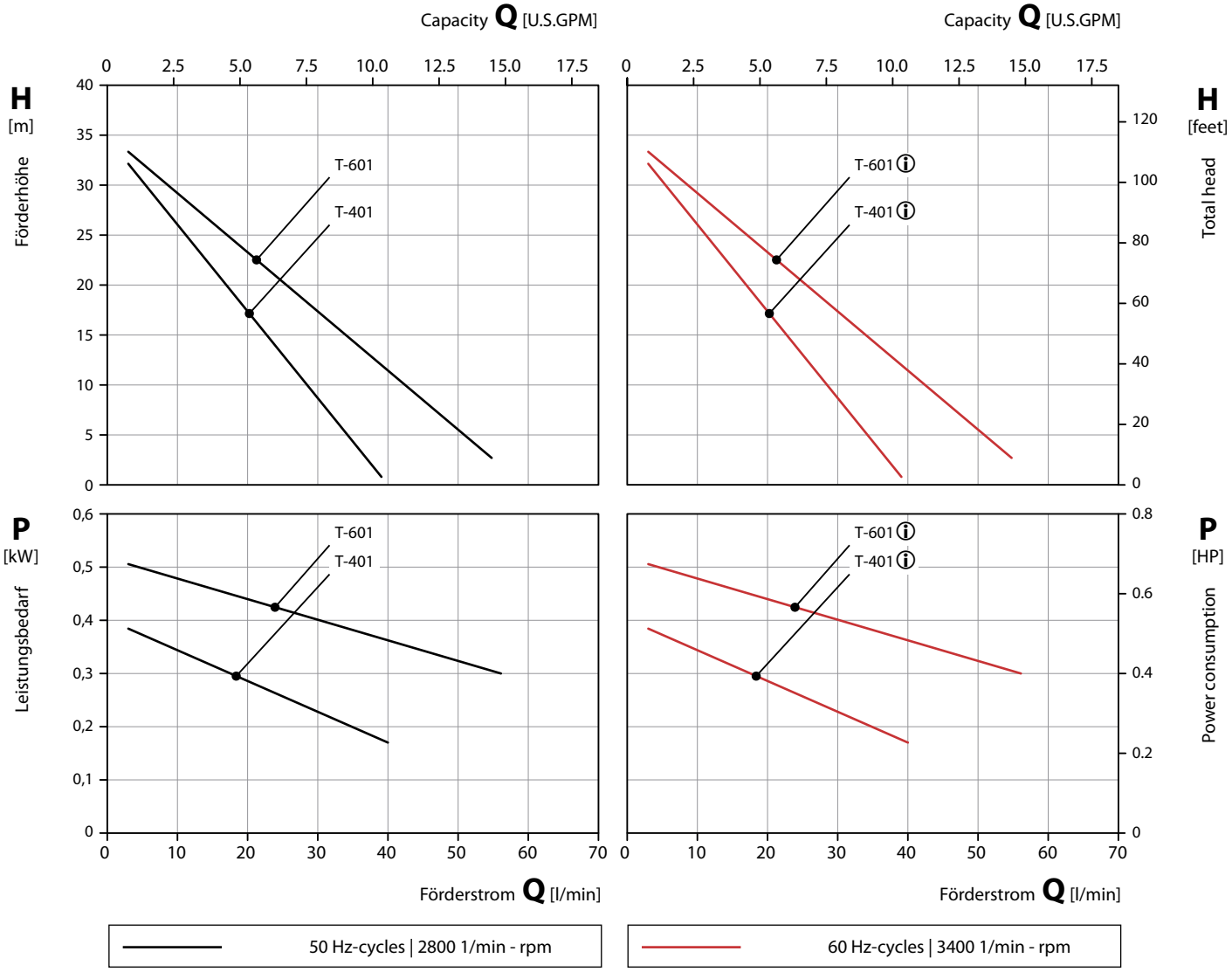

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

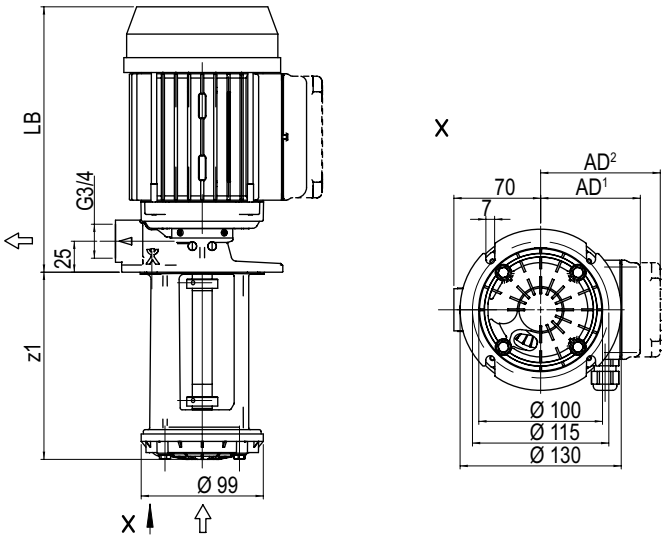
If the property of the pump media differs the characteristic curves change.

# TM-201 / 401 / 601 / 701

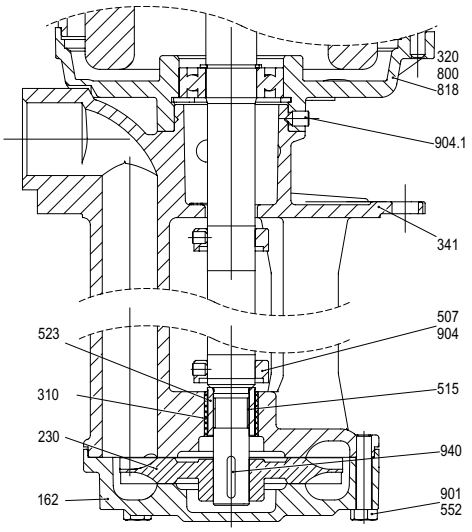
**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## Maßzeichnung / Dimensional drawing




## Schnittzeichnung / Cross-sectional drawing




## Motor / Motor

| Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Maße<br>Dimensions | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | ~ | 1/min | kW | HP | 1/min | kW | HP | AD[1] | AD[2] | LB |
| 63 | 1 / 3~ | 2800 | 0,5 | 0.67 | 3400 | 0,6 | 0.80 | 78 | 96 | 214 |
| 71 | 3~ | 2800 | 1,0 | 1.34 | 3400 | 1,1 | 1.47 | 88 | 106 | 240 |

## Ausführungen / Versions

| | Typ<br>Types | TM-201 | TM-401 | TM-601 | TM-701 |
|---|---|---|---|---|---|
| Motor<br>Motor | Baugröße / kW<br>Frame size / kW | 63 / 0,5 kW | 63 / 0,5 kW | 63 / 0,5 kW | 71 / 1,0 kW |
| Laterne<br>Bracket | z1 = 110 mm | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass | GBz<br>Bronze |
| | z1 = 130 mm | – | CuZn<br>Brass | CuZn<br>Brass | – |
| | z1 = 150 mm | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass | GBz<br>Bronze |
| | z1 = 180 mm | – | CuZn<br>Brass | CuZn<br>Brass | – |
| | z1 = 200 mm | – | CuZn<br>Brass | CuZn<br>Brass | GBz<br>Bronze |
| Saugdeckel<br>Suction cover | | Gbz<br>Bronze | GBz<br>Bronze | GBz<br>Bronze | GBz<br>Bronze |
| | | PPS | PPS | PPS | – |
| Laufrad<br>Impeller | | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel |
| | | PEEK | PEEK | PEEK | – |
| Welle<br>Shaft | | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel |

## Teileliste / Parts list

| | | |
|---|---|---|
| 162 | Saugdeckel | Suction cover |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 320 | Wälzlager | Rolling bearing |
| 341 | Laterne | Bracket |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 523 | Wellenhülse | Shaft sleeve |
| 552 | Spannscheibe | Locking disc |
| 800 | Motor | Motor |
| 818 | Rotor | Rotor |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 904.1 | Gewindestift | Threaded pin |
| 940 | Passfeder | Fitting key |

## Medien
Wasser max. 90 °C
Öl max. 150 °C
Öl max. 200 °C auf Anfrage

## Media
Water max. 90 °C
Oil max. 150 °C
Oil max. 200 °C on request

## Gewicht
Auf Anfrage

## Weight
On request

## Klemmkastenlage
Wahlweise gegenüber, oberhalb, links oder rechts vom Druckanschluss

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

## Position of terminal box
Alternatively opposite, above, left or right to discharge connection

[1] Flat terminal box
[2] High terminal box

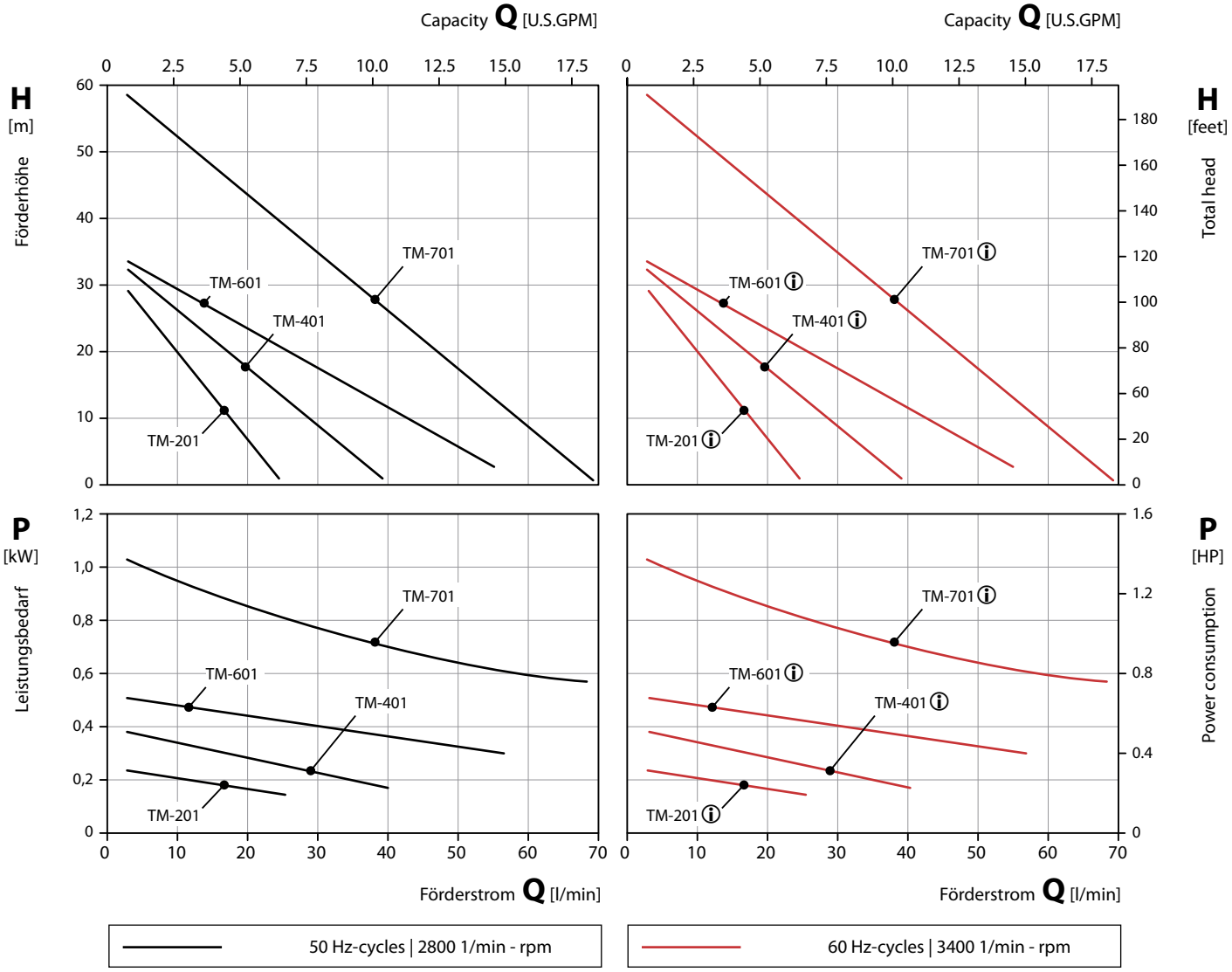

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

### Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

### Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

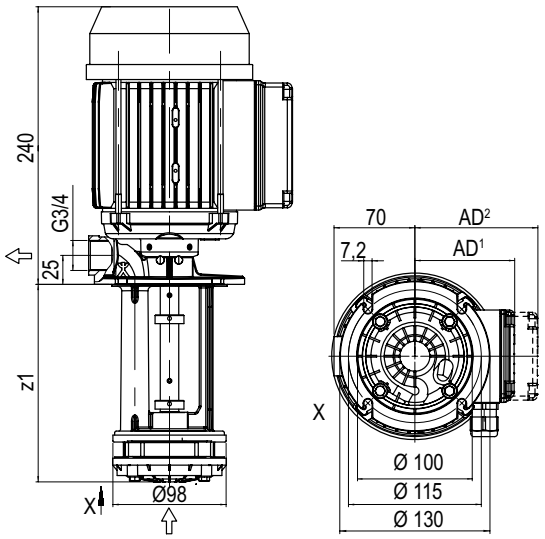
If the property of the pump media differs the characteristic curves change.

# TM-402 / 403 / 602

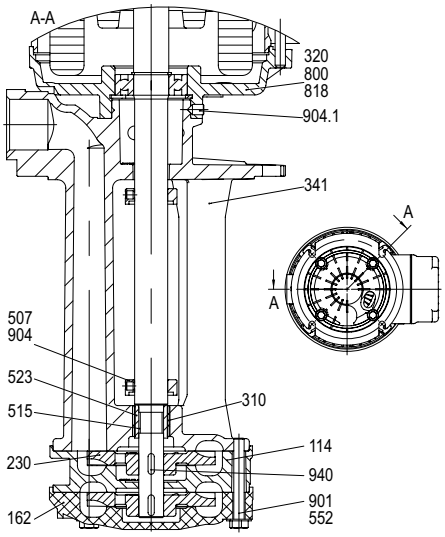
**Peripheralradpumpen**
Eintauchpumpen, mehrstufig

**Regenerative turbine pumps**
vertical pumps, multi-stage

## Maßzeichnung / Dimensional drawing




## Schnittzeichnung / Cross-sectional drawing




## Motor / Motor

| Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Maße<br>Dimensions | |
|---|---|---|---|---|---|---|---|---|---|
| mm | ~ | 1/min | kW | HP | 1/min | kW | HP | AD[1] | AD[2] |
| 71 | 3~ | 2800 | 0,75 | 1.0 | 3400 | 0,75 | 1.0 | 88 | 106 |
| 71 | 3~ | 2800 | 1,0 | 1.34 | 3400 | 1.1 | 1.47 | 88 | 106 |

## Ausführungen / Versions

| | | TM-402 | | TM-403 | | TM-602 | |
|---|---|---|---|---|---|---|---|
| Motor<br>Motor | Baugröße / kW<br>Frame size / kW | 71 / 0,75 kW | | 71 / 1,0 kW | | 71 / 1,0 kW | |
| Laterne<br>Bracket | | CuZn<br>Brass | z1 = 130 mm | – | – | CuZn<br>Brass | z1 = 130 mm |
| | | CuZn<br>Brass | z1 = 150 mm | CuZn<br>Brass | z1 = 170 mm | CuZn<br>Brass | z1 = 150 mm |
| | | CuZn<br>Brass | z1 = 170 mm | CuZn<br>Brass | z1 = 190 mm | CuZn<br>Brass | z1 = 170 mm |
| | | CuZn<br>Brass | z1 = 200 mm | – | – | CuZn<br>Brass | z1 = 200 mm |
| | | CuZn<br>Brass | z1 = 220 mm | CuZn<br>Brass | z1 = 240 mm | CuZn<br>Brass | z1 = 220 mm |
| Saugdeckel<br>Suction cover | | GBz<br>Bronze | | GBz<br>Bronze | | GBz<br>Bronze | |
| | | PPS | | PPS | | PPS | |
| Stufe<br>Stage | | CuZn<br>Brass | | CuZn<br>Brass | | CuZn<br>Brass | |
| Laufrad<br>Impeller | | CuZn<br>Brass | | CuZn<br>Brass | | CuZn<br>Brass | |
| | | PEEK | | PEEK | | PEEK | |
| Welle<br>Shaft | | 1.4122<br>CrMo-steel | | 1.4122<br>CrMo-steel | | 1.4122<br>CrMo-steel | |

## Teileliste / Parts list

| | | |
|---|---|---|
| 114 | Stufe | Stage |
| 162 | Saugdeckel | Suction cover |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 320 | Wälzlager | Rolling bearing |
| 341 | Laterne | Bracket |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 523 | Wellenhülse | Shaft sleeve |
| 552 | Spannscheibe | Locking disc |
| 800 | Motor | Motor |
| 818 | Rotor | Rotor |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 904.1 | Gewindestift | Threaded pin |
| 940 | Passfeder | Fitting key |

## Medien
Wasser max. 90 °C
Öl max. 150 °C
Öl max. 200 °C auf Anfrage

## Media
Water max. 90 °C
Oil max. 150 °C
Oil max. 200 °C on request

## Gewicht
Auf Anfrage

## Weight
On request

## Klemmkastenlage
Wahlweise gegenüber, oberhalb, links oder rechts vom Druckanschluss

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

## Position of terminal box
Alternatively opposite, above, left or right to discharge connection

[1] Flat terminal box
[2] High terminal box

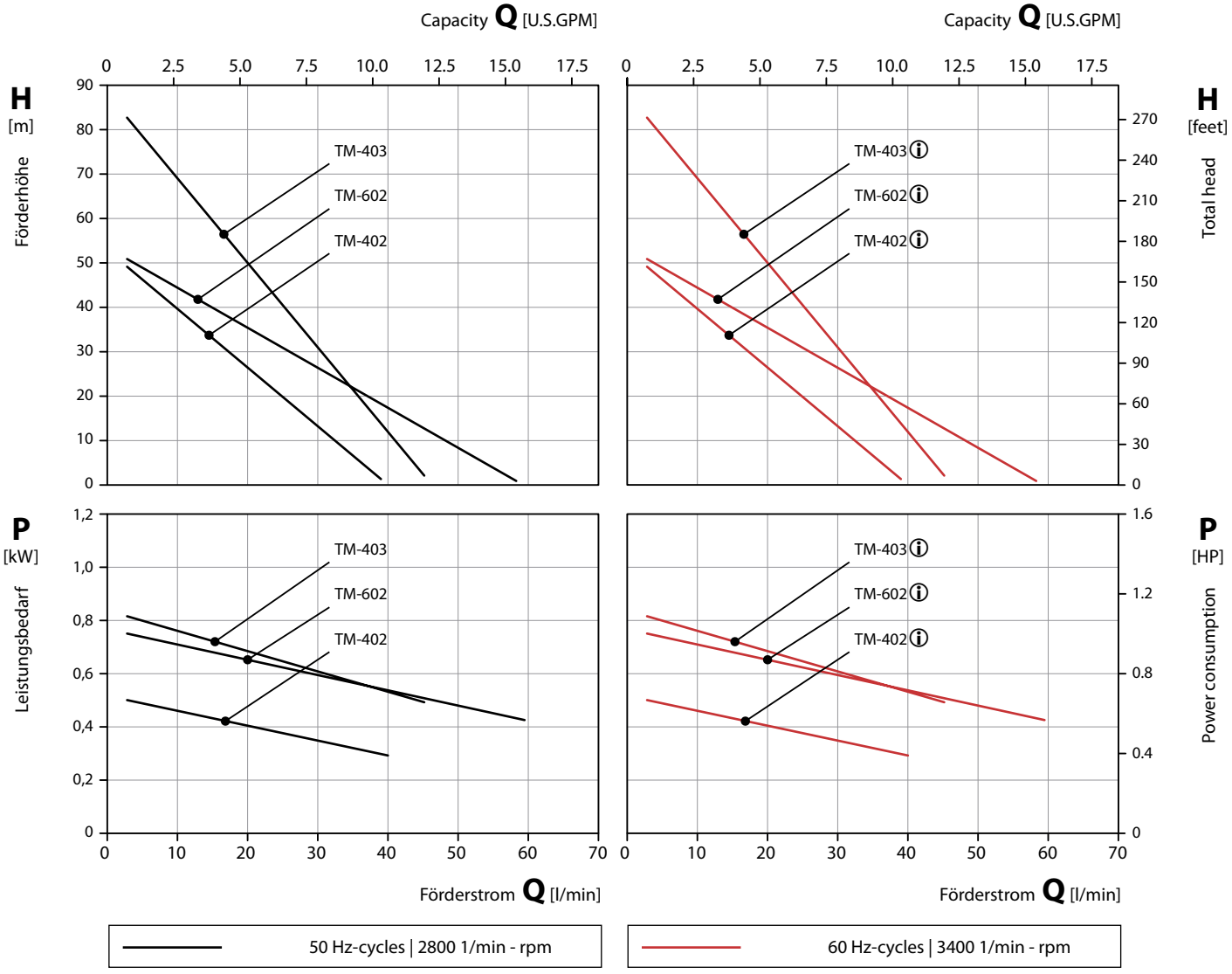

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
Eintauchpumpen, mehrstufig

**Regenerative turbine pumps**
vertical pumps, multi-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

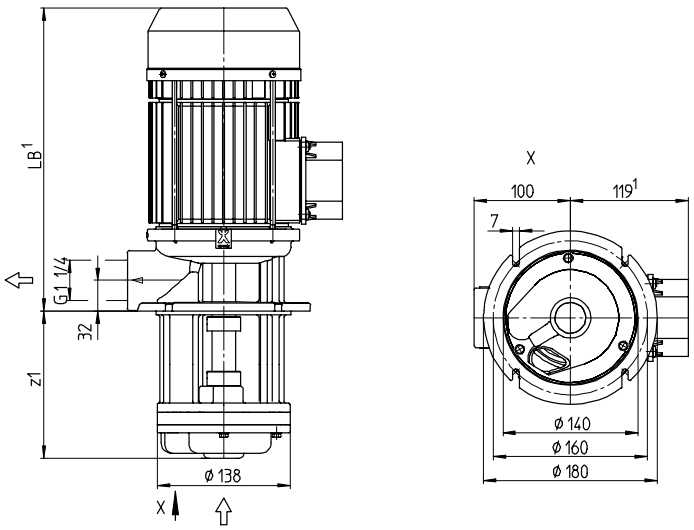
If the property of the pump media differs the characteristic curves change.

# T-1001 / 1501 / 2001

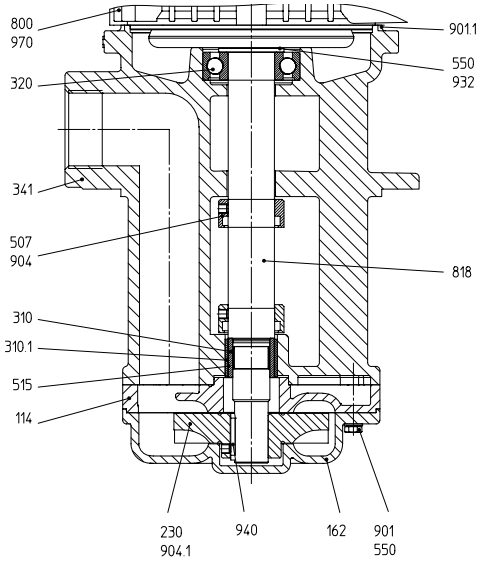
**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## Maßzeichnung / Dimensional drawing




## Schnittzeichnung / Cross-sectional drawing




## Motor / Motor

| Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Maße<br>Dimensions |
|---|---|---|---|---|---|---|---|---|
| mm | ~ | 1/min | kW | HP | 1/min | kW | HP | LB |
| 80 | 3~ | 2800 | 2,2 | 3.0 | 3400 | 2,2 | 3.0 | 315 |
| 90 | 3~ | 2800 | 2,8 | 3.8 | 3400 | 2,8 | 3.8 | 330 |

## Ausführungen / Versions

| | Typ<br>Types | T-1001 | T-1501 | T-2001 |
|---|---|---|---|---|
| Motor<br>Motor | Baugröße / kW<br>Frame size / kW | 80 / 2,2 kW | 80 / 2,2 kw | 90 / 2,8 kW |
| Laterne<br>Bracket | z1 = 150 mm | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass |
| | z1 = 200 mm | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass |
| Saugdeckel<br>Suction cover | | Gbz<br>Bronze | GBz<br>Bronze | GBz<br>Bronze |
| Laufrad<br>Impeller | | CuZn<br>Brass | CuZn<br>Brass | CuZn<br>Brass |
| Stufe<br>Stage | | GBz<br>Bronze | GBz<br>Bronze | GBz<br>Bronze |
| Welle<br>Shaft | | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel |

## Teileliste / Parts list

| | | |
|---|---|---|
| 114 | Stufe | Stage |
| 162 | Saugdeckel | Suction cover |
| 230 | Laufrad | Impeller |
| 310/.1 | Gleitlager | Sleeve bearing |
| 320 | Wälzlager | Rolling bearing |
| 341 | Laterne | Bracket |
| 507 | Spritzring | Splash ring |
| 515 | Toleranzring | Tolerance ring |
| 550 | Scheibe | Washer |
| 800 | Motor | Motor |
| 901./.1 | 6-kt. Schraube | Hexagon head screw |
| 904/.1 | Gewindestift | Threaded pin |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |
| 970 | Typenschild | Name plate |

## Medien
Wasser max. 90 °C
Öl max. 150 °C
Öl max. 200 °C auf Anfrage

## Media
Water max. 90 °C
Oil max. 150 °C
Oil max. 200 °C on request

## Gewicht
Auf Anfrage

## Weight
On request

## Klemmkastenlage
Wahlweise gegenüber, oberhalb, links oder rechts vom Druckanschluss

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

## Position of terminal box
Alternatively opposite, above, left or right to discharge connection

[1] Flat terminal box
[2] High terminal box

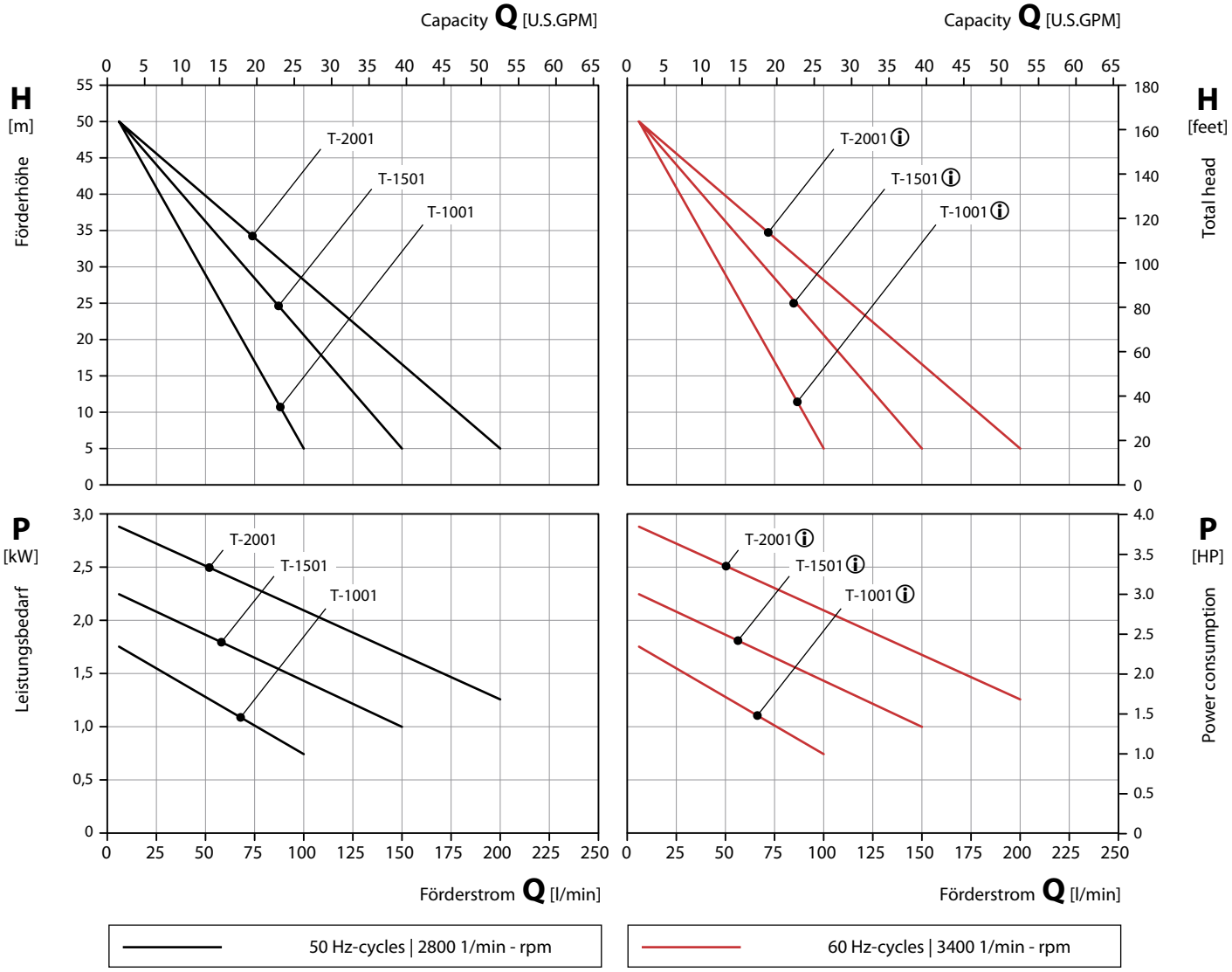

Technische Änderungen und Irrtum vorbehalten.
Subject to technical modifications and error.

**Peripheralradpumpen**
Eintauchpumpen, einstufig

**Regenerative turbine pumps**
vertical pumps, single-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

### Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

### Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

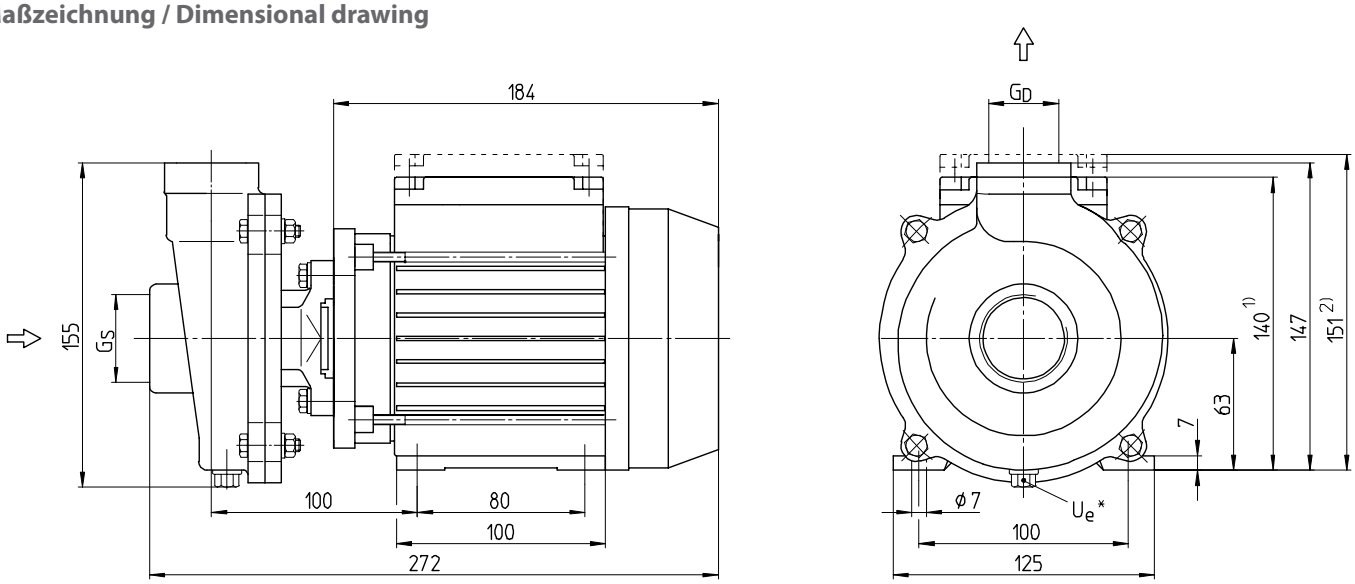
If the property of the pump media differs the characteristic curves change.

# ME-303-1

**Radialradpumpen**
mit Gleitringdichtung

**Centrifugal pumps**
with mechanical seal

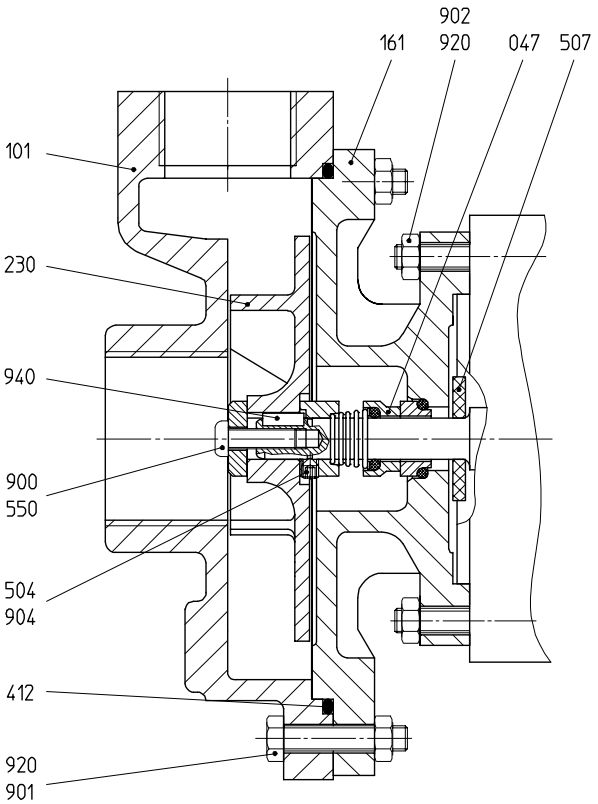
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | kg | lbs | $t_{max}$ |
| ME-303-1 | 63 | 3~ | 2800 | 0,37 | 0.50 | 3400 | 0,37 | 0.50 | G 1 1/4 | G1 | G 1/8 | 8,1 | 17.9 | 90 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 411* | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 504 | Abstandsring | Distance ring |
| 507 | Spritzring | Splash ring |
| 550 | Scheibe | Washer |
| 900 | Schraube | Screw |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 902 | Stiftschraube | Stud |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 920 | 6-kt. Mutter | Hexagon nut |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

$U_e$ = Drainage / Screw plug

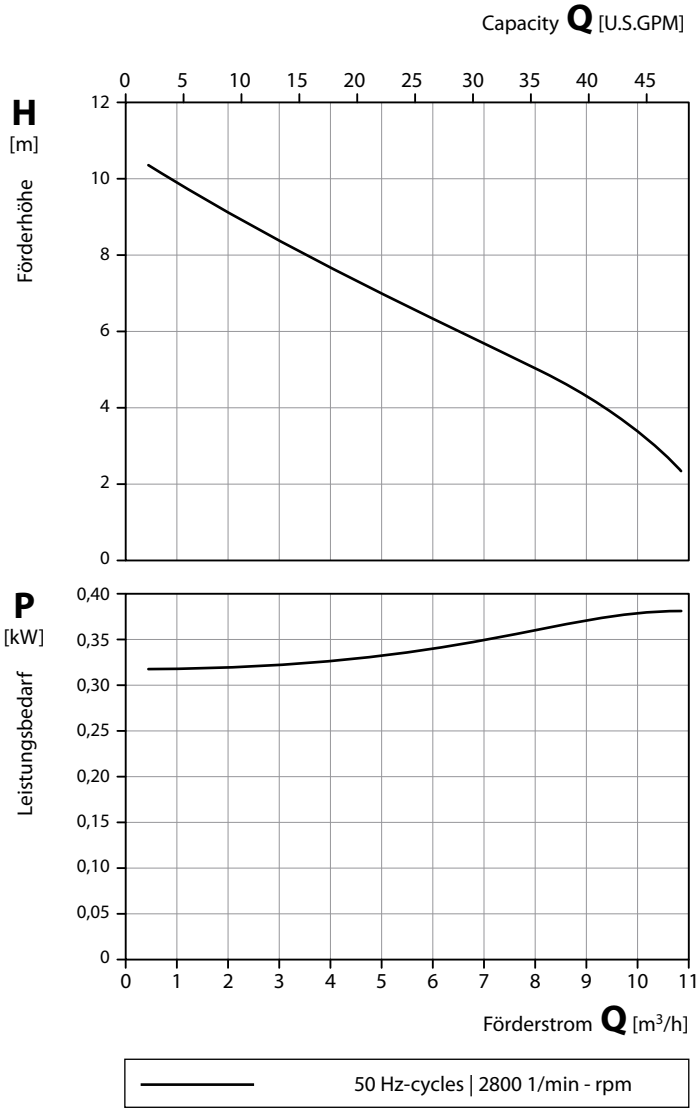
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

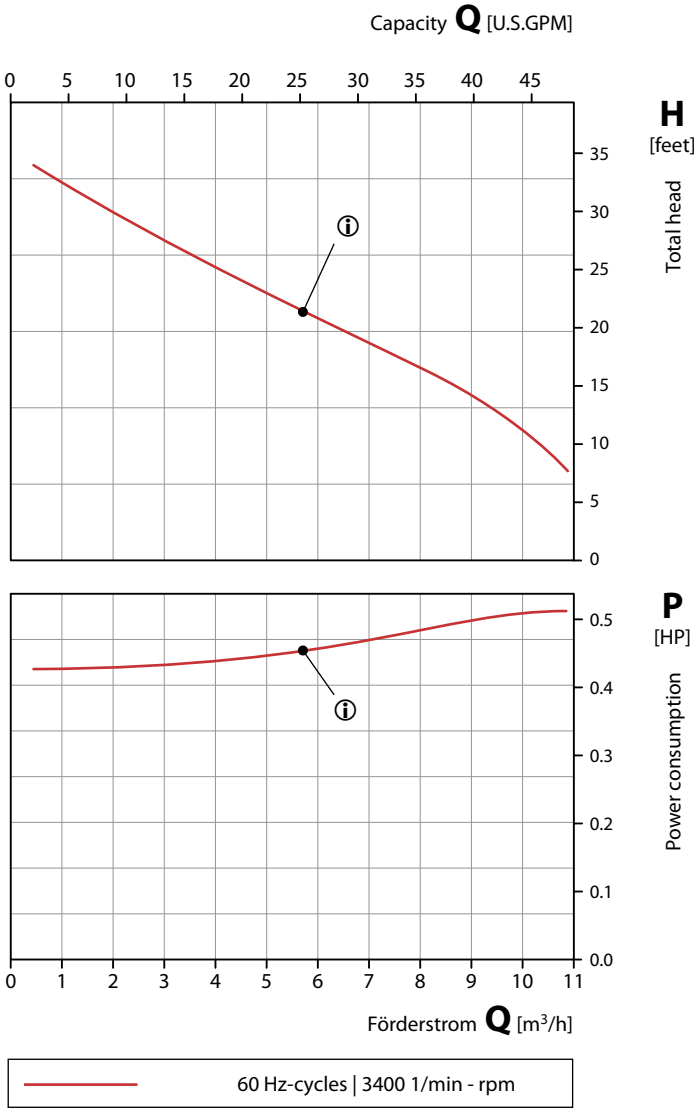
**Radialradpumpen**
mit Gleitringdichtung

**Centrifugal pumps**
with mechanical seal

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | EN-GJL-250<br>Cast iron | 1.4439<br>CrNiMo-steel |
| Gehäusedeckel<br>Casing cover | EN-GJL-250<br>Cast iron | 1.4439<br>CrNiMo-steel |
| Laufrad<br>Impeller | EN-GJL-250<br>Cast iron | 1.4439<br>CrNiMo-steel |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | |

EN-GJL-**250** = EN-JL1040 = GG-25

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

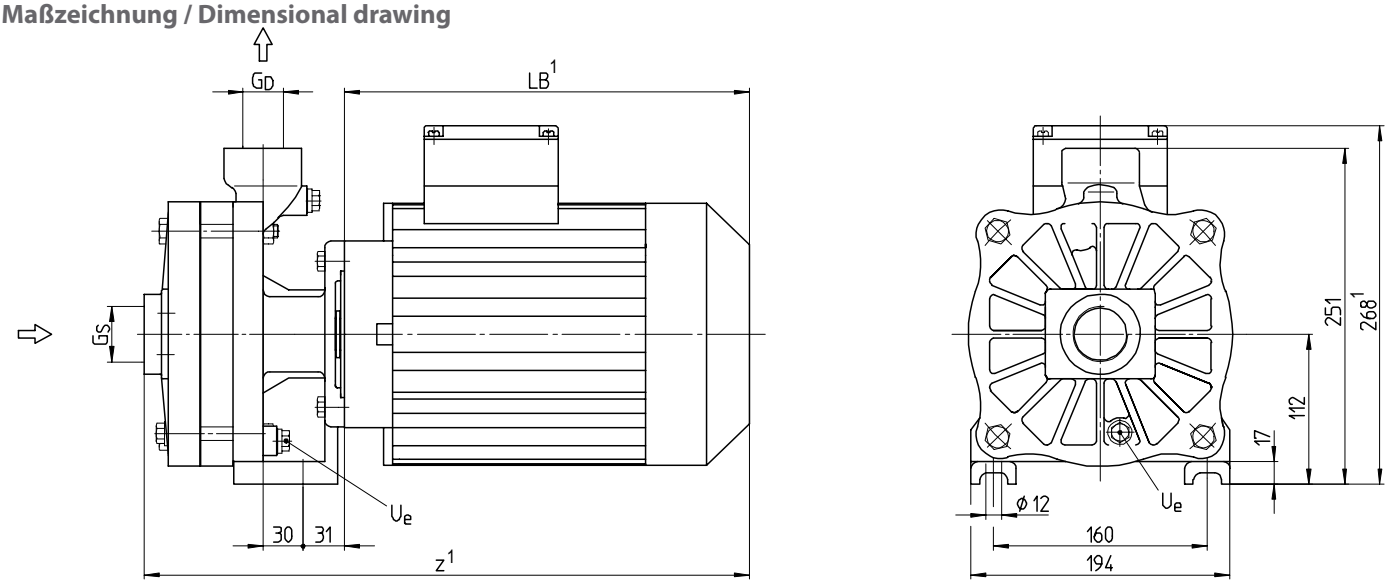
If the property of the pump media differs the characteristic curves change.

# MZ-35 / 40-2

**Radialradpumpen**
mit Gleitringdichtung, zweistufig

**Centrifugal pumps**
with mechanical seal, double-stage

## Maßzeichnung / Dimensional drawing

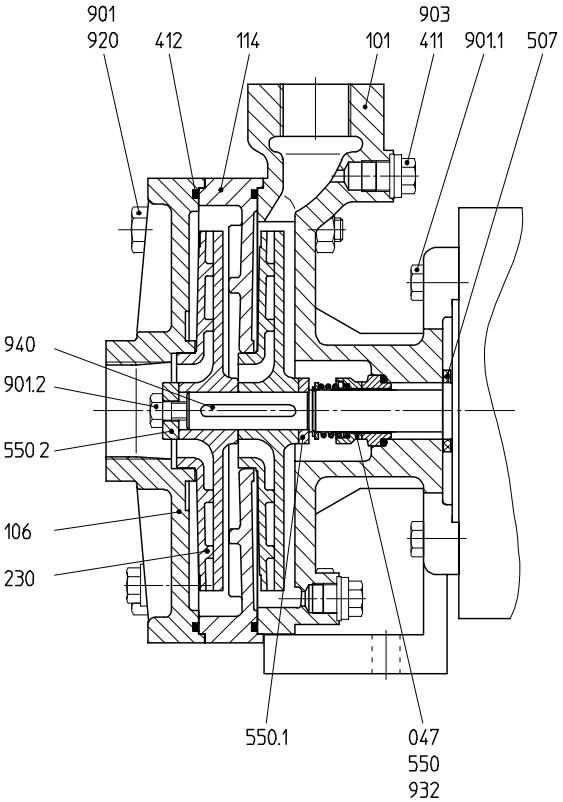



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$ | kg | lbs | $t_{max}$ | $t_{max}$ |
| **MZ-35-2** | 90S | 3~ | 2800 | 2,0 | 2.7 | 3400 | 2,0 | 2.7 | G 1 1/4 | G 1 | G 1/4 | 29,5 | 65.0 | 140 °C | 140 °C |
| **MZ-40-2** | 90L | | | 3,0 | 4.0 | | 3,0 | 4.0 | G 1 1/2 | G 1 1/4 | | 32,1 | 70.8 | | |

| Type | Baugröße | $z^1$ | $LB^1$ |
|---|---|---|---|
| **MZ-35-2** | 90S | 395 | 245 |
| **MZ-40-2** | 90L | 420 | 270 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 106 | Sauggehäuse | Suction casing |
| 114 | Stufe | Stage |
| 230 | Laufrad | Impeller |
| 411 | Dichtring | Sealing ring |
| 412 | O-Ring | O-ring |
| 507 | Spritzring | Splash ring |
| 550-.2 | Scheibe | Washer |
| 901-.2 | 6-kt. Schraube | Hexagon head screw |
| 903 | Verschlussschraube | Screw plug |
| 920 | 6-kt. Mutter | Hexagon nut |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

$U_e$ = Drainage / Screw plug

Weight depending on motor frame size, performance, materials and execution

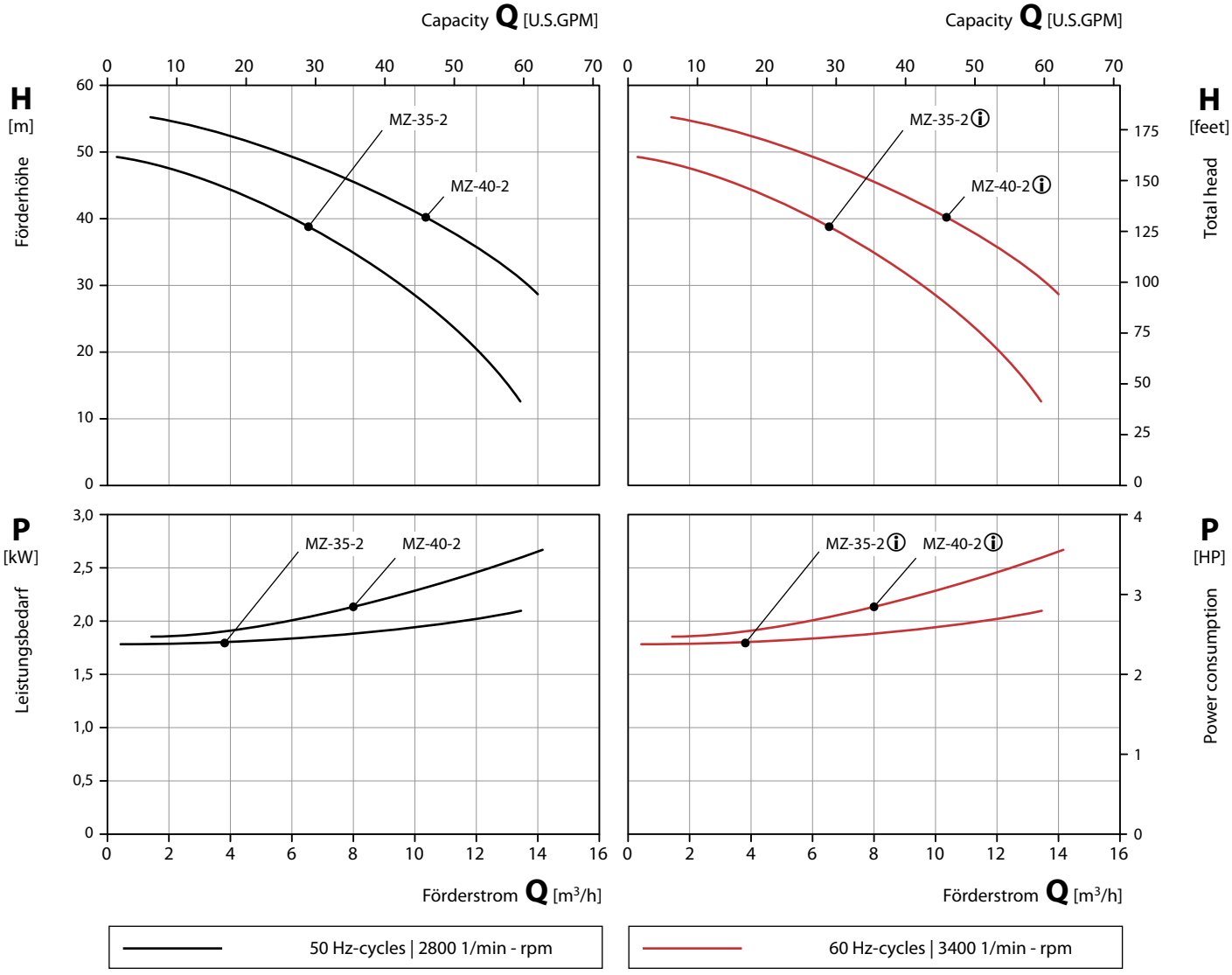

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Radialradpumpen**
mit Gleitringdichtung, zweistufig

**Centrifugal pumps**
with mechanical seal, double-stage

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | EN-GJL-250<br>Cast iron | |
| Sauggehäuse<br>Suction casing | EN-GJL-250<br>Cast iron | |
| Laufrad<br>Impeller | CuZn<br>Brass | |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, FKM<br>Carbon, SiC, FKM | Kohle, SiC, EP<br>Carbon, SiC, EP |

EN-GJL-**250** = EN-JL1040 = GG-25

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

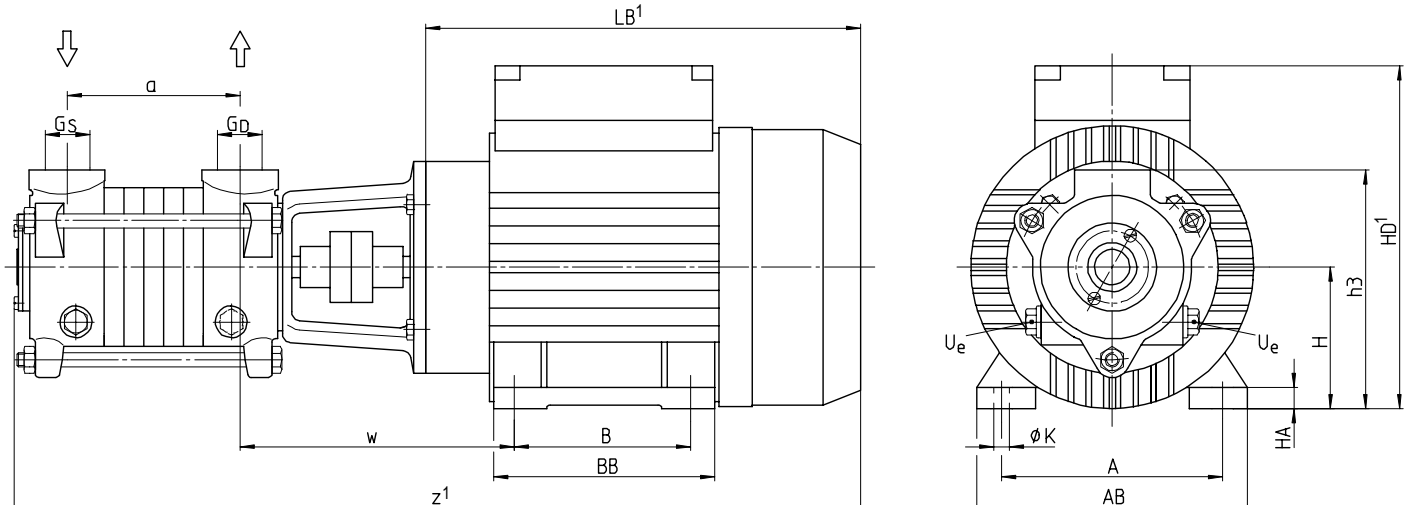
If the property of the pump media differs the characteristic curves change.

# GY-028-1 / 2 / 3

**Seitenkanalpumpen**
mit Gleitringdichtung, mehrstufig, selbstansaugend

**Side channel pumps**
with mechanical seal, multi-stage, self-priming

## Maßzeichnung / Dimensional drawing

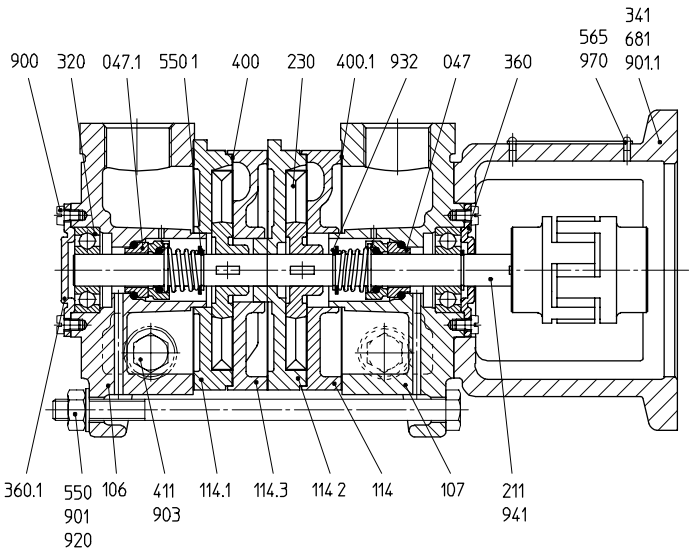



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$ | kg | lbs | $t_{max}$ |
| **GY-028-1** | 71 | | | 0,55 | 0.74 | | 0,55 | 0.74 | | | | 4,0 | 8.8 | |
| **GY-028-2** | 80 | 3~ | 2800 | 1,10 | 1.48 | 3400 | 1,10 | 1.48 | G 3/4 | G 3/4 | G 1/4 | 5,4 | 11.9 | 120 °C |
| **GY-028-3** | 90 | | | 1,50 | 2.00 | | 1,50 | 2.00 | | | | 8,1 | 17.9 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD1 | K | LB1 | a | h3 | w | z1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GY-028-1** | 71 | 112 | 138 | 90 | 115 | 71 | 9 | 190 | 7 | 220 | 70 | 126 | 139 | 395 |
| **GY-028-2** | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 209 | 9 | 225 | 98 | 135 | 176 | 467 |
| **GY-028-3** | 90 | 140 | 170 | 100 | 130 | 90 | 11 | 238 | 9 | 254 | 126 | 145 | 182 | 508 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047/.1 | Gleitringdichtung | Mechanical seal |
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 114-.3 | Stufe | Stage |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 320 | Wälzlager | Rolling bearing |
| 341 | Laterne | Bracket |
| 360/.1 | Lagerdeckel | Bearing cover |
| 400/.1 | Flachdichtung | Flat gasket |
| 411 | Dichtring | Sealing ring |
| 550/.1 | Scheibe | Washer |
| 565 | Niet | Rivet |
| 681 | Kupplungsschutz | Coupling guard |
| 900 | Schraube | Screw |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 903 | Verschlussschraube | Screw plug |
| 920 | 6-kt. Mutter | Hexagon nut |
| 932 | Sicherungsring | Locking ring |
| 941 | Scheibenfeder | Woodruff key |
| 970 | Typenschild | Name plate |

[1] Abhängig von Motorausführung

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

$U_e$ = Drainage / Screw plug

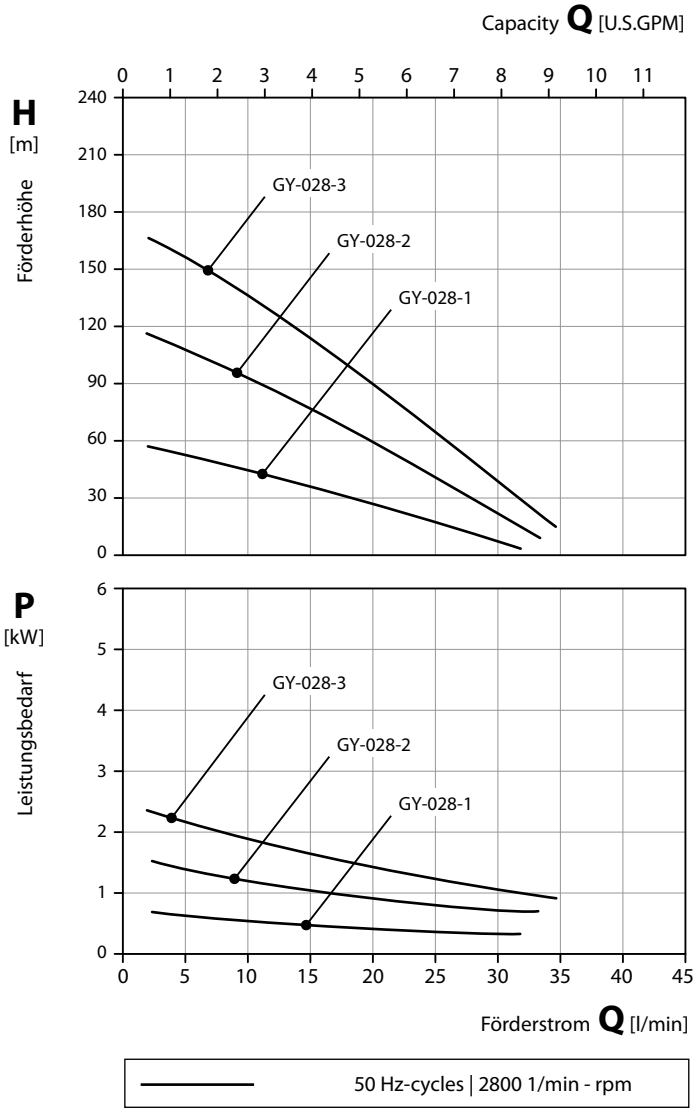
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

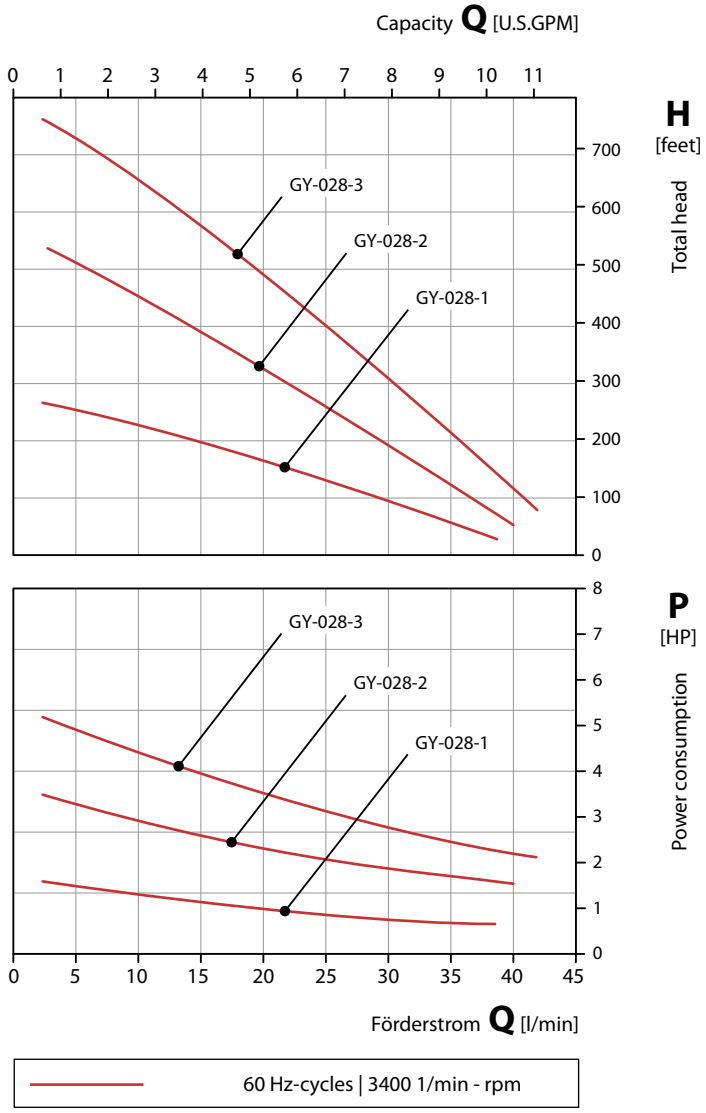
**Seitenkanalpumpen**
mit Gleitringdichtung, mehrstufig, selbstansaugend

**Side channel pumps**
with mechanical seal, multi-stage, self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Saug- / Druckgehäuse<br>Suction casing /<br>Discharge casing | EN-GJL-250<br>Cast iron | 1.4581<br>CrNiMo-cast steel |
| Stufe<br>Stage | EN-GJL-250<br>Cast iron | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | CuZn<br>Brass | 1.4408<br>CrNiMo-cast steel |
| Welle<br>Shaft | 1.4122<br>CrMo-steel | 1.4571<br>CrNiMo-steel |
| Gleitringdichtung<br>Mechanical seal | Kohle, SiC, NBR<br>Carbon, SiC, NBR | |
| Radialwellendichtring<br>Radial seal ring | Auf Anfrage<br>On request | |

EN-GJL-**250** = EN-JL1040 = GG-25

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

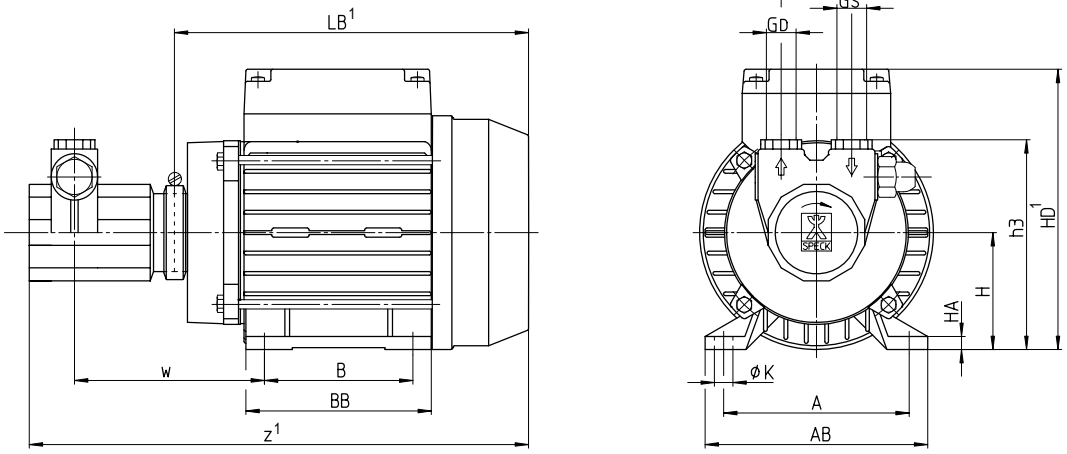
If the property of the pump media differs the characteristic curves change.

# DS-60 / ... / DS-960

**Drehschieberpumpen**
mit Gleitringdichtung, selbstansaugend

**Roller vane pumps**
with mechanical seal, self-priming

## Maßzeichnung / Dimensional drawing

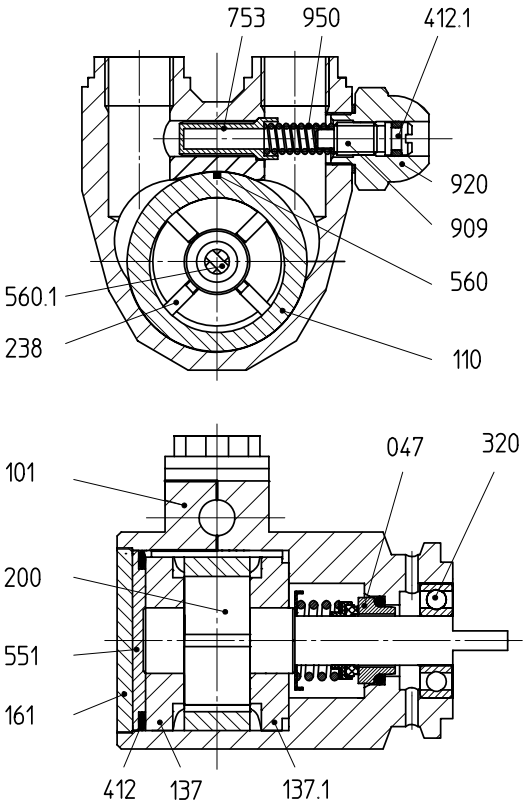



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ |
| DS-60 / ... / DS-450 | 63 | 1 / 3~ | 1450 | 0,30 | 0.40 | 1750 | 0,30 | 0.40 | G 3/8 | G 3/8 | 5,9 | 13.0 | 70 °C |
| DS-540 / ... / DS-960 | 80 | 3~<br>1~ | 1450 | 0,75<br>0,90 | 1.00<br>1.20 | 1750 | 0,75<br>0,90 | 1.00<br>1.20 | G 1/2 | G 1/2 | 11,4 | 25.1 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD1 | K | LB1 | h3 | q | w | z1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DS-60 / ... / DS-450 | 63 | 100 | 120 | 80 | 100 | 63 | 7 | 151 | 7 | 210 | 113 | 38 | 101 | 268 |
| DS-540 / ... / DS-960 | 80 | 125 | 153 | 100 | 125 | 80 | 12 | 197 | 9 | 255 | 143 | 48 | 133 | 354 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 047 | Gleitringdichtung | Mechanical seal |
| 101 | Gehäuse | Casing |
| 110 | Mittelkörper | Stage casing |
| 137/.1 | Steuerscheibe | Inter casing |
| 161 | Gehäusedeckel | Casing cover |
| 200 | Läufer | Rotor |
| 238 | Laufradschieber | Vane |
| 320 | Wälzlager | Rolling bearing |
| 412/.1 | O-Ring | O-ring |
| 551 | Stützscheibe | Supporting disk |
| 560/.1 | Stift | Pin |
| 753 | Ventilkegel | Valve cone |
| 909 | Einstellschraube | Adjusting screw |
| 920 | Hutmutter | Cap nut |
| 950 | Druckfeder | Pressure spring |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

Weight depending on motor frame size, performance, materials and execution

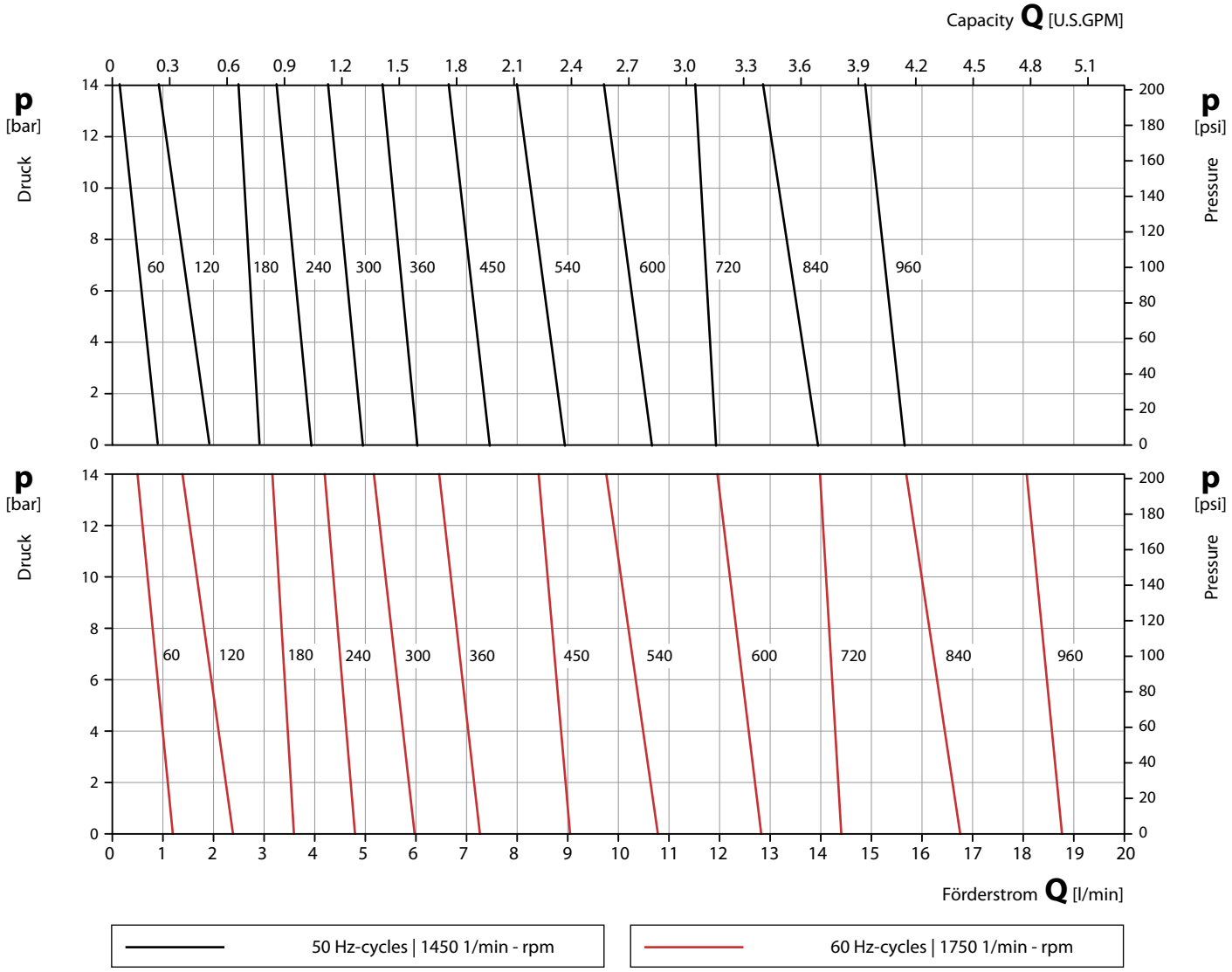

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Drehschieberpumpen**
mit Gleitringdichtung, selbstansaugend

**Roller vane pumps**
with mechanical seal, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | 1.4305<br>CrNi-steel |
| Steuerscheibe<br>Inter casing | Kohle<br>Carbon | |
| Mittelkörper<br>Stage casing | Kohle<br>Carbon | |
| Läufer<br>Rotor | 1.4301<br>CrNi-steel | |
| Welle<br>Shaft | 1.4305<br>CrNi-steel | |
| Gleitringdichtung<br>Mechanical seal | Kohle, Keramik, FKM<br>Carbon, Ceramics, FKM | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

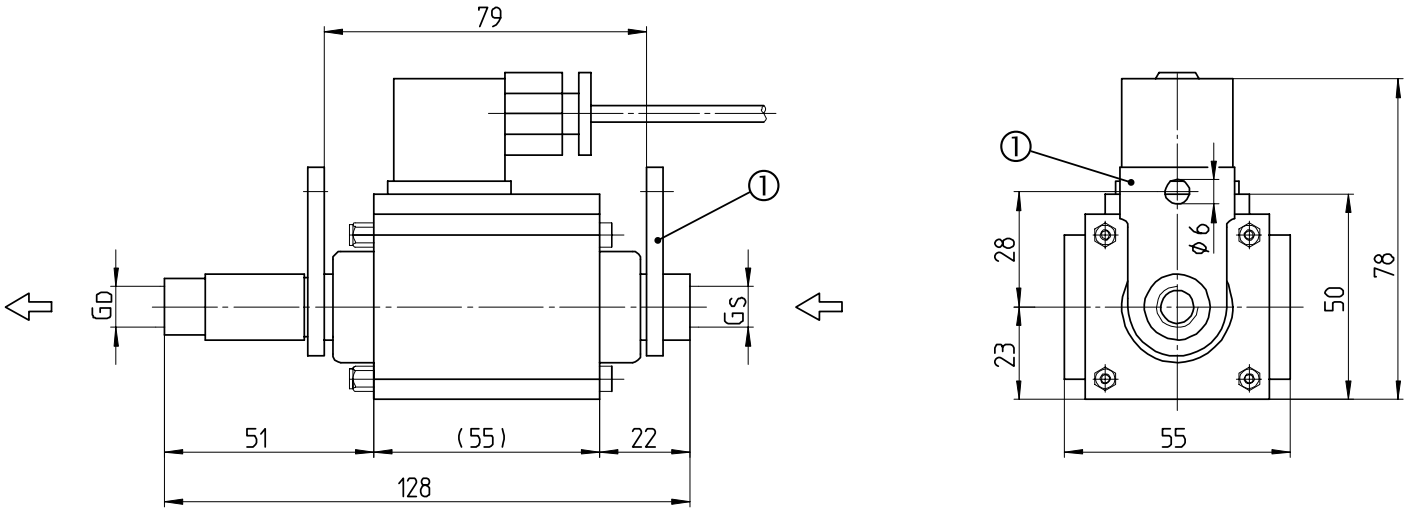
The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.

# SAP-4 / SAP-7

**Schwingankerpumpen** | **Oscillating piston pumps**

## Maßzeichnung / Dimensional drawing




## Daten / Data

| | 50 Hz / Cycles<br>Spule / Coil | | | | Anschlüsse<br>Connections | | Gewicht<br>Weight | | Wasser<br>Water |
|---|---|---|---|---|---|---|---|---|---|
| Type | V | A | W | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ |
| **SAP-4** | 230 | 0,34 | 55 | 0.074 | G 1/8 | G 1/8 | 0,7 | 1.5 | 60 °C |
| **SAP-7** | | 0,65 | 70 | 0.094 | | | | | |

Kupferwicklung in ISO Klasse H

60-Hz-- Spule auf Anfrage

① Gummiaufhängung

Copper coil in ISO class H

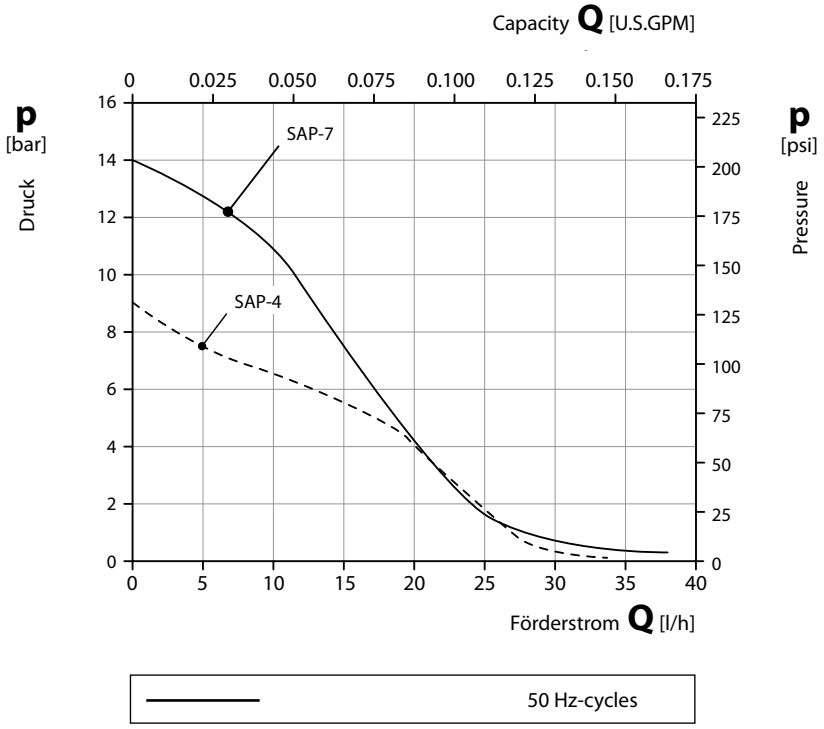
60 cycles coil on request

① Rubber suspension


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Schwingankerpumpen** **Oscillating piston pumps**

## Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Dichtung<br>Seals | NBR |
| Gehäuse<br>Casing | CuZn<br>Brass |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.

## Speck Pumpen
Lösungen für die Zukunft

**Medizintechnik**
- Nachspeisung
- Desinfektion
- Laserkühlung

**Schweißmaschinen**
- Brennerkühlung

**Temperiergeräte**
- Prozesstemperierung
- Prozesskühlung

**Schienenfahrzeuge**
- Transformatorenkühlung
- Trinkwasserförderung
- Grauwasserförderung
- Kraftstoffförderung
- Elektronikkühlung

**Luft- und Raumfahrt**
- Kraftstoffförderung
- Brauchwasserförderung

**Industrie- und Apparatebau**
- Laserkühlung
- Prozesskühlung
- Schaltschrankkühlung
- Wasseraufbereitung
- Kesselspeisung
- Waschen und Reinigen
- Serverkühlung
- Extrusionstechnik

**Automobilindustrie**
- Heiz- und Klimasysteme
- Batteriekühlung
- Getriebekühlung
- Kraftstoffförderung

**Getränkeautomaten**
- Getränkekühlung
- Getränkeabfüllung
- Getränkeumwälzung

## Speck Pumpen
Solutions for the future

**Medical appliances**
- Water feeding
- Disinfection
- Laser cooling

**Welding machinery**
- Cooling of welding pistols

**Temperature controllers**
- Process tempering
- Process cooling

**Railcars**
- Transformer cooling
- Drinking water supply
- Waste water supply
- Fuel supply
- Electronic cooling

**Aerospace equipment**
- Fuel supply
- Industrial water supply

**Industrial and mechanical engineering**
- Laser cooling
- Process cooling
- Switchboard cooling
- Water treatment
- Boiler feeding
- Washing and cleaning
- Server cooling
- Extrusion technology

**Automobile industry**
- Heating and air conditioning systems
- Battery cooling
- Gear cooling
- Fuel supply

**Drink dispensers**
- Drink cooling
- Bottle filling
- Recirculation of drinks

**www.speck.de**

**Kleinpumpen**
mit Magnetkupplung

**Small pumps**
with magnetic coupling

## Peripheralradpumpen / Regenerative turbine pumps

EC-Gleichstrommotor / Brushless DC motor

| Type | EC-Gleichstrommotor / Brushless DC motor | | | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|
| | 1/min - rpm | V | kW | Qmax l/min | Hmax m | HP | Qmax USGPM | Hmax ft | |
| **Y-1638-MM** | 2000 – 6000 | 24 | 0,180 | 0,5 – 9,0 | 7 – 57 | 0.24 | 0.1 – 2.4 | 23 – 187 | 4, 5 |
| **Y-2340-SR** | 1500 – 3800 | 230 | 0,075 | 0,5 – 9,0 | 5 – 20 | 0.10 | 0.1 – 2.4 | 16 – 65 | 6, 7 |
| **Y-2951-W-MM** | 2000 – 5000 | 24 | 0,180 | 0,5 – 12,0 | 18 – 45 | 0.24 | 0.1 – 3.2 | 60 – 148 | 8, 9 |
| **LY-6000-MK** | 6000 | 24 | 0,060 | 4 | 32 | 0.08 | 1.1 | 105 | 10, 11 |
| **LY-8000-MK** | 9000 | 24 | 0,080 | 5 | 38 | 0.11 | 1.3 | 125 | |

Einphasen- und Dreiphasenmotoren / Single phase motor and three phase motor

| Type | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | Qmax l/min | Hmax m | HP | Qmax USGPM | Hmax ft | | kW | Qmax l/min | Hmax m | HP | Qmax USGPM | Hmax ft | |
| **Y/YS-2951-W-MK** | 0,12 / 0,25 | 10-11 | 28 | 0.16 / 0.34 | 2.6-2.9 | 92 | | 0,12 / 0,25 | 10-13 | 28-38 | 0.16 / 0.34 | 2.6-3.4 | 92-125 | 12, 13 |
| **PY-2071-MK** | 0,25 - 0,55 | 17 | 35 | 0.34 - 0.74 | 4.5 | 115 | | 0,25 - 0,55 | 17 | 35 | 0.34 - 0.74 | 4.5 | 115 | 14, 15 |
| **EY-2251-MK** | 0,5 | 37 | 45 | 0.67 | 9.8 | 148 | | 0,55 | 37 | 40 | 0.74 | 9.8 | 131 | 16, 17 |
| **EY-4281-MK** | 1,0 | 55 | 57 | 1.34 | 14.5 | 187 | | 1,1 | 55 | 50 | 1.5 | 14.5 | 164 | 18, 19 |
| **NPY-2251-MK** | 0,5 | 27 | 48 | 0.67 | 7.1 | 157 | | 0,55 | 27 | 48 | 0.74 | 7.1 | 157 | 20, 21 |
| **CY-4281-MK** | 1,0 - 2,2 | 28-85 | 57-78 | 1.34 - 2.95 | 7-23 | 187-256 | | 1,0 - 2,2 | 85 | 78 | 1.34 - 2.95 | 22.5 | 256 | 22, 23 |
| **CY-6091-MK** | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | 24, 25 |
| **Wärmeträgerpumpen - Wasser bis 180 °C / Heat transfer pumps - Water up to 180 °C** | | | | | | | | | | | | | | |
| **NPY-2251-MK-HT** | 0,5 | 27 | 48 | 0.67 | 7.1 | 157 | | 0,55 | 27 | 48 | 0.74 | 7.1 | 157 | 26, 27 |
| **CY-4281-MK-HT** | 1,00 - 2,2 | 28-85 | 57-78 | 1.34 - 2.95 | 7-23 | 187-256 | | 1,0 - 2,2 | 28-85 | 57-78 | 1.34 - 2.95 | 7-23 | 187-256 | 28, 29 |
| **CY-6091-MK-HT** | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | 30, 31 |
| **Wärmeträgerpumpen - Öl bis 350 °C / Heat transfer pumps - Oil up to 350 °C** | | | | | | | | | | | | | | |
| **NPY-2251-MK-TOE** | 0,5 | 27 | 48 | 0.67 | 7.1 | 157 | | 0,55 | 27 | 48 | 0.74 | 7.1 | 157 | 32, 33 |
| **CY-4281-MK-TOE** | 1,0 - 2,2 | 28-85 | 57-78 | 1.34 - 2.95 | 7-23 | 187-256 | | 1,0 - 2,2 | 28-85 | 57-78 | 1.34 - 2.95 | 7-23 | 187-256 | 34, 35 |
| **CY-6091-MK-TOE** | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | | 2,8 - 5,5 | 77-200 | 83-90 | 3.8 - 7.5 | 20-53 | 272-295 | 36, 37 |

## Radialradpumpen / Centrifugal pumps

EC-Gleichstrommotor / Brushless DC motor

| Type | EC-Gleichstrommotor / Brushless DC motor | | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|
| | 1/min - rpm | V | kW | Qmax l/min | Hmax m | HP | Qmax USGPM | Hmax ft | |
| **MY-3-MM** | 2000 – 6500 | 24 | 0,180 | 5 – 100 | 1 –14 | 0.24 | 1.3 – 26.4 | 3.3 – 46 | 38, 39 |
| **MY-2-6000-MK** | 6000 | 24 | 0,023 | 20 | 9 | 0.03 | 5.3 | 30 | 40, 41 |
| **MY-2-8000-MK** | 9000 | 24 | 0,080 | 30 | 15 | 0.11 | 7.9 | 50 | 42, 43 |

## Drehschieberpumpen / Roller vane pumps

| Type | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | Qmax l/min | Pmax bar | HP | Qmax USGPM | Pmax bar | kW | Qmax l/min | Pmax psi | HP | Qmax USGPM | Pmax psi | |
| **DS-120 / ... / 450-MK** | 0,30 | 8,3 | 10,0 | 0.40 | 2.2 | 145 | 0,30 | 9,2 | 10,2 | 0.40 | 2.4 | 148 | 44, 45 |
| **DS-540 / ... / 960-MK** | 0,75 / 0,90 | 15,6 | 14,0 | 1.00 / 1.21 | 4.1 | 203 | 0,75 / 0,90 | 18,8 | 14,0 | 1.00 / 1.21 | 5.0 | 203 | 46, 47 |

## Zahnradpumpen / Gear pumps

EC-Gleichstrommotor / Brushless DC motor

| Type | EC-Gleichstrommotor / Brushless DC motor | | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|
| | 1/min - rpm | V | kW | Qmax l/min | Pmax bar | HP | Qmax USGPM | Pmax psi | |
| **ZY-3-MM** | 3100 | 24 | 0,180 | 0,5 - 4,5 | 1 - 8 | 0.24 | 0.13 - 1.2 | 14 - 116 | 48, 49 |

Einphasen- und Dreiphasenmotoren / Single phase motor and three phase motor

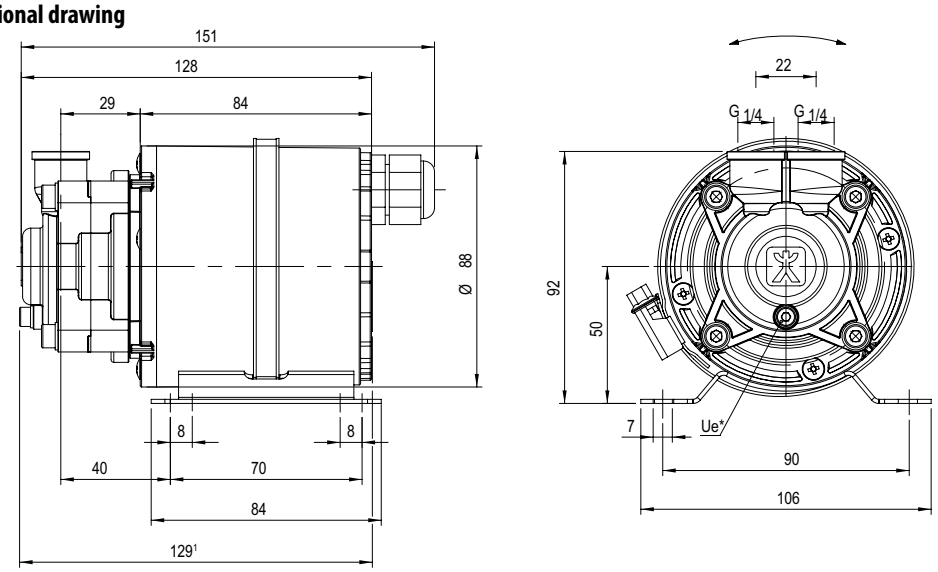
| Type | 50 Hz / Cycles \| 2800 1/min - rpm | | | | | | 60 Hz / Cycles \| 3400 1/min - rpm | | | | | | Seite Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | Qmax l/h | Pmax bar | HP | Qmax USGPM | Pmax psi | kW | Qmax l/h | Pmax bar | HP | Qmax USGPM | Pmax psi | |
| **ZY-1 / 2 / 3-MK** | 0,12 | 20 – 175 | 3 – 9 | 0.16 | 0.09-0,77 | 43-130 | 0,12 | 25 – 205 | 3– 9 | 0.16 | 0.11-0.90 | 43-130 | 50, 51 |

# Y-1638-MM

**Peripheralradpumpen**
mit Spalttopfmotor

**Regenerative turbine pumps**
with canned motor

## Maßzeichnung / Dimensional drawing

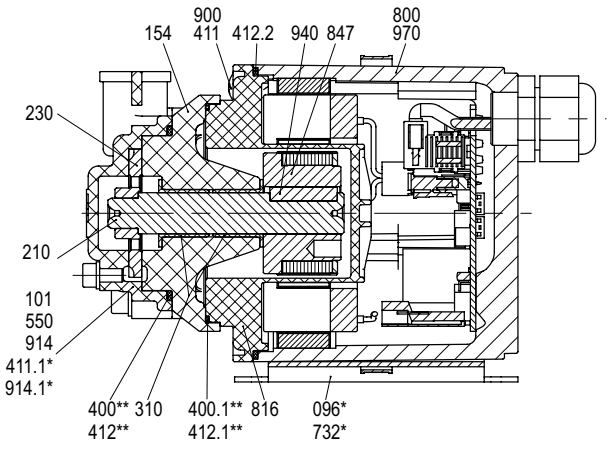



## Daten / Data

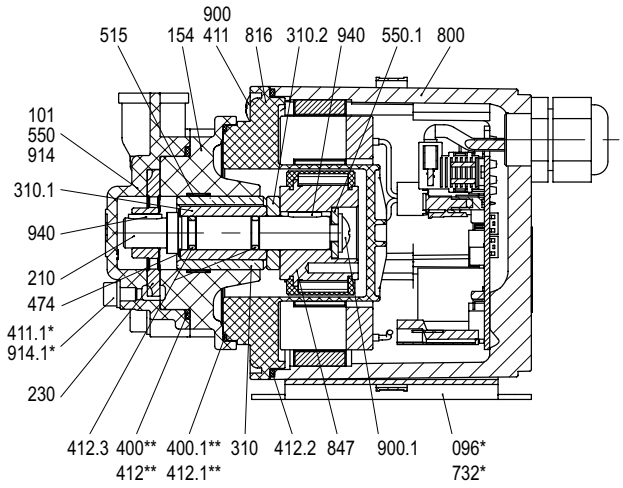
| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Gewicht Weight | | | Wasser Water | Wasser-/Glykol-Gemisch Water/glycol mixture |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | kW | HP | $G_S$ | $G_D$ | Casing | kg | lbs | $t_{max}$ | $t_{max}$ |
| **Y-1638-MM** | 24 | 2000 - 6000 | 0,18 | 0.24 | G 1/4 | G 1/4 | PPS*<br>1.4581 | 1,6<br>1,9 | 3.5<br>4.2 | 80 °C | 80 °C |

## Schnittzeichnung / Cross-sectional drawing

Gleitlager / Sleeve bearing: Iglidur®




Gleitlager / Sleeve bearing: SiC




## Teileliste / Parts list

| Iglidur® / PPS | Iglidur® / 1.4581 | SiC / 1.4581 | Gleitlager / Gehäuse | Sleeve bearing / Casing |
|---|---|---|---|---|
| 96 | 96 | 96 | Schlauchklemme | Hose clamp |
| 101 | 101 | 101 | Gehäuse | Casing |
| 154 | 154 | 154 | Zwischenwand | Intermediate partition |
| 210 | 210 | 210 | Welle | Shaft |
| 230 | 230 | 230 | Laufrad | Impeller |
| 310 | 310 | 310-.2 | Gleitlager | Sleeve bearing |
| – | 400/.1** | 400/.1** | Flachdichtung | Flat gasket |
| 411, 411.1* | 411, 411.1* | 411, 411.1* | Dichtring | Sealing ring |
| 412/.1, 412.2 | 412/.1**, 412.2 | 412/.1**, 412.2/3 | O-Ring | O-ring |
| – | – | 474 | Druckring | Pressure ring |
| – | – | 515 | Toleranzring | Tolerance ring |
| 550 | 550 | 550/.1 | Scheibe | Washer |

| Iglidur® / PPS | Iglidur® / 1.4581 | SiC / 1.4581 | Gleitlager / Gehäuse | Sleeve bearing / Casing |
|---|---|---|---|---|
| 732 | 732 | 732 | Halterung | Mount |
| 800 | 800 | 800 | Motor | Motor |
| 816 | 816 | 816 | Spalttopf | Separating can |
| 847 | 847 | 847 | Rotor | Rotor |
| 900 | 900 | 900/.1 | Schraube | Screw |
| 914, 914.1* | 914, 914.1* | 914, 914.1* | Innen-6-kt. Schraube | Hexagon socket head screw |
| 940 | 940 | 940 | Passfeder | Fitting key |

¹ Länge mit Verschlussschraube
* Auf Anfrage,
** Bei 1.4581: Flachdichtung **oder** O-Ring
$U_e$ = Entleerung / Verschlussschraube
Gewicht abhängig von Ausführung

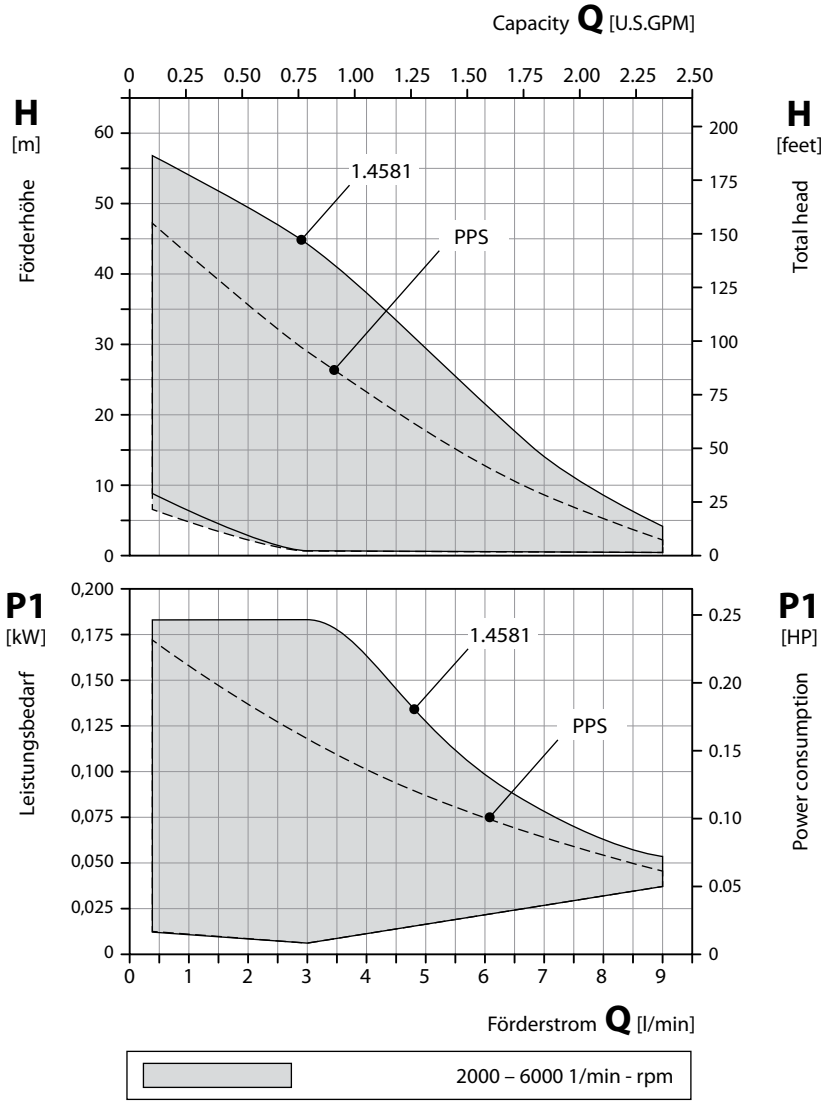
1 Length including screw plug
* On request,
** 1.4581: Flat gasket **or** O-ring
$U_e$ = Drainage / Screw plug
Weight depending on execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.
10/2015 | 1096.1088

**Peripheralradpumpen**
mit Spalttopfmotor

**Regenerative turbine pumps**
with canned motor

## Kennfelder / Characteristic curves




## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | PPS* | 1.4581<br>CrNiMo-cast steel | 1.4581<br>CrNiMo-cast steel |
| Zwischenwand<br>Intermediate partition | PPS* | 1.4581<br>CrNiMo-cast steel | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408*<br>CrNiMo-cast steel* | 1.4408, Ni-SiC-beschichtet<br>CrNiMo-cast steel, Ni-SiC coated | 1.4408, Ni-SiC-beschichtet<br>CrNiMo-cast steel, Ni-SiC coated |
| Welle<br>Shaft | 1.4462*<br>CrNiMo-steel* | 1.4462<br>CrNiMo-steel | 1.4571<br>CrNiMo-steel |
| Gleitlager<br>Sleeve bearing | Iglidur® | Iglidur® | SiC |
| Spalttopf<br>Separating can | PPS | PPS | PPS |

* Auf Anfrage

* On request

### Kennfelder:

Innerhalb der dargestellten Kennfelder ist jeder Betriebspunkt durch entsprechende Parametrierung des Antriebes möglich.

Die Kennfelder gelten für die Förderung von Wasser mit einer Temperatur von 20 °C und einer Umgebungstemperatur von 20 °C.

Die Toleranz von Förderhöhe und Förderstrom beträgt ±10 %, die des Leistungsbedarfs +10 %.

Bei abweichenden Eigenschaften des Fördermediums und anderen Umgebungstemperaturen ändern sich die Kennfelder.

Der Leistungsbedarf P1 bezeichnet die elektrische Leistungsaufnahme.

### Characteristic curves

Every operating point can be reached within these characteristic curves by setting different drive parameters.

The characteristic curves are applicable for the delivery of water of 20 °C temperature and an ambient temperature of 20 °C.

The tolerance of total head and capacity is ±10%, performance tolerance is +10%.

If the property of the pumped media differs, the characteristic curves change.

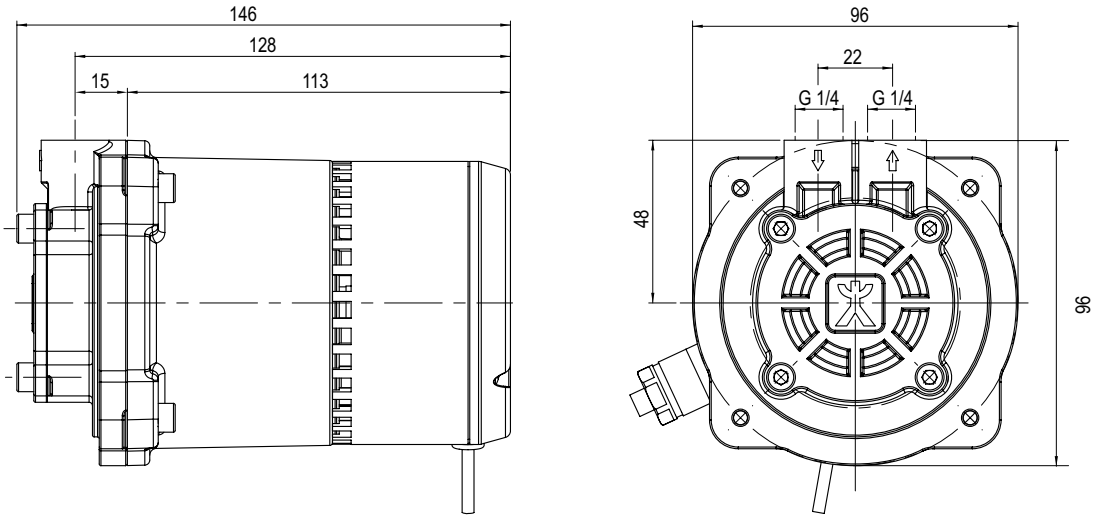
The power consumption P1 specifies the electrical power input.

# Y-2340-SR

**Peripheralradpumpen**
mit Spaltrohrmotor

**Regenerative turbine pumps**
with canned motor

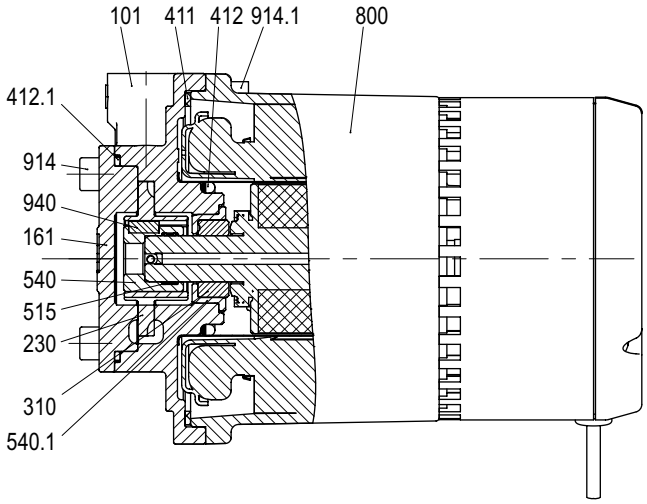
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water | Wasser-/Glykol-Gemisch Water/glycol mixture |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ | $t_{max}$ |
| **Y-2340-SR** | 230 | 1500 - 3800 | 0,075 | 0.10 | G 1/4 | G 1/4 | 2,4 | 5.3 | 95 °C | 95 °C |

## Schnittzeichnung / Cross-sectional drawing



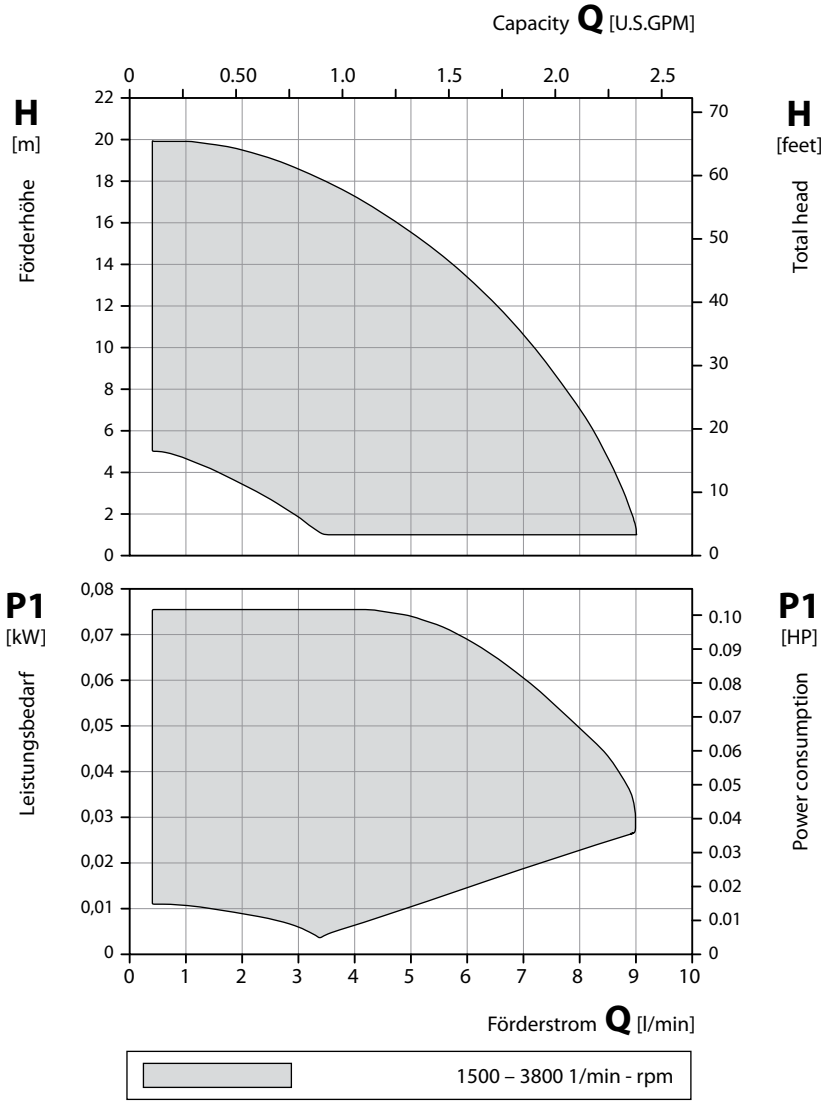

## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Pump casing |
| 161 | Gehäusedeckel | Casing cover |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 411 | Dichtring | Sealing ring |
| 412/.1 | O-Ring | O-ring |
| 515 | Toleranzring | Tolerance ring |
| 540/.1 | Buchse | Bush |
| 800 | Motor | Motor |
| 914/.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 940 | Passfeder | Fitting key |

**Peripheralradpumpen**
mit Spaltrohrmotor

**Regenerative turbine pumps**
with canned motor

## Kennfelder / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass |
| Gehäusedeckel<br>Casing cover | CuZn<br>Brass |
| Laufrad<br>Impeller | CuZn<br>Brass |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spaltrohr<br>Separating can | 1.4301<br>CrNi-steel |

### Kennfelder:

Innerhalb der dargestellten Kennfelder ist jeder Betriebspunkt durch entsprechende Parametrierung des Antriebes möglich.

Die Kennfelder gelten für die Förderung von Wasser mit einer Temperatur von 20 °C und einer Umgebungstemperatur von 20 °C.

Die Toleranz von Förderhöhe und Förderstrom beträgt ±10 %, die des Leistungsbedarfs +10 %.

Bei abweichenden Eigenschaften des Fördermediums und anderen Umgebungstemperaturen ändern sich die Kennfelder.

Der Leistungsbedarf P1 bezeichnet die elektrische Leistungsaufnahme.

### Characteristic curves

Every operating point can be reached within these characteristic curves by setting different drive parameters.

The characteristic curves are applicable for the delivery of water of 20 °C temperature and an ambient temperature of 20 °C.

The tolerance of total head and capacity is ±10%, performance tolerance is +10%.

If the property of the pumped media differs, the characteristic curves change.

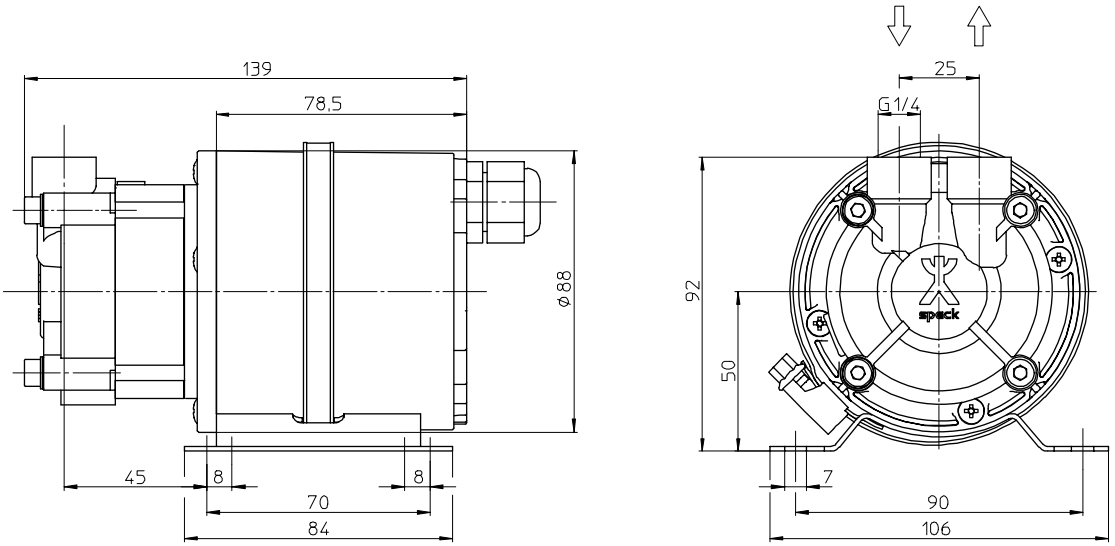
The power consumption P1 specifies the electrical power input.

# Y-2951-W-MM

**Peripheralradpumpen**
mit Spalttopfmotor

**Regenerative turbine pumps**
with canned motor

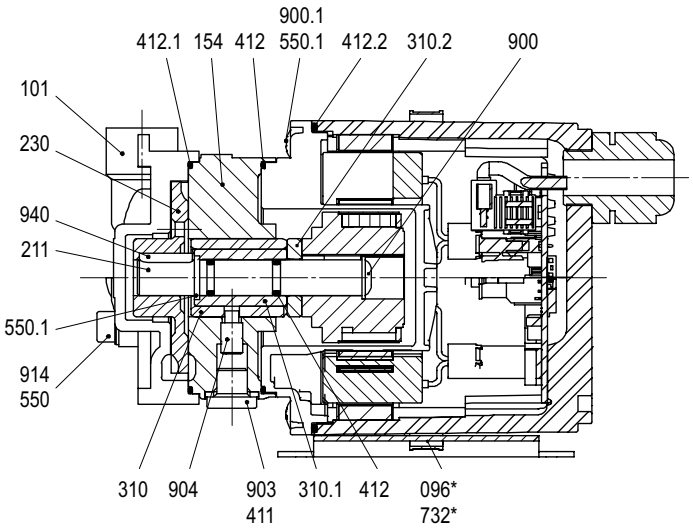
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ |
| **Y-2951-W-MM** | 24 | 2000 - 5000 | 0,18 | 0.24 | G 1/4 | G 1/4 | 2,0 | 4.4 | 80 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 096* | Schlauchklemme | Hose clamp |
| 101 | Gehäuse | Casing |
| 154 | Zwischenwand | Intermediate partition |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310/.1 | Gleitlager | Sleeve bearing |
| 310.2 | Axiallager | Axial bearing |
| 411 | Dichtring | Sealing ring |
| 412/.2 | O-Ring | O-ring |
| 550/.1 | Scheibe | Washer |
| 732* | Halterung | Mount |
| 900/.1 | Schraube | Screw |
| 903 | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

*On request

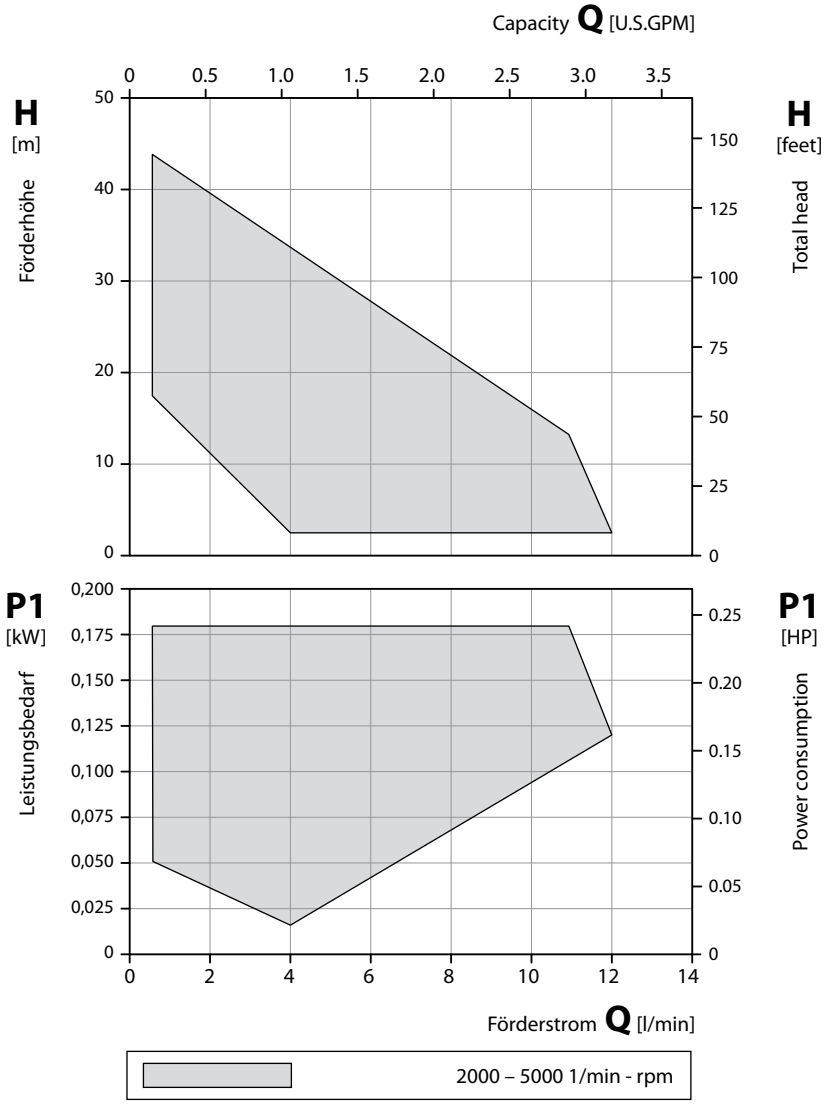
Gewicht abhängig von Ausführung

Weight depending on execution

**Peripheralradpumpen**
mit Spalttopfmotor

**Regenerative turbine pumps**
with canned motor

## Kennfelder / Characteristic curves




## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | CuZn<br>Brass |
| Zwischenwand<br>Intermediate partition | 1.4581<br>CrNiMo-cast steel | CuZn<br>Brass |
| Laufrad<br>Impeller | PEEK | |
| Welle<br>Shaft | 1.4122<br>CrNo-steel | |
| Spalttopf<br>Separating can | PPS | |

### Kennfelder:

Innerhalb der dargestellten Kennfelder ist jeder Betriebspunkt durch entsprechende Parametrierung des Antriebes möglich.

Die Kennfelder gelten für die Förderung von Wasser mit einer Temperatur von 20 °C und einer Umgebungstemperatur von 20 °C.

Die Toleranz von Förderhöhe und Förderstrom beträgt ±10 %, die des Leistungsbedarfs +10 %.

Bei abweichenden Eigenschaften des Fördermediums und anderen Umgebungstemperaturen ändern sich die Kennfelder.

Der Leistungsbedarf P1 bezeichnet die elektrische Leistungsaufnahme.

### Characteristic curves

Every operating point can be reached within these characteristic curves by setting different drive parameters.

The characteristic curves are applicable for the delivery of water of 20 °C temperature and an ambient temperature of 20 °C.

The tolerance of total head and capacity is ±10%, performance tolerance is +10%.

If the property of the pumped media differs, the characteristic curves change.

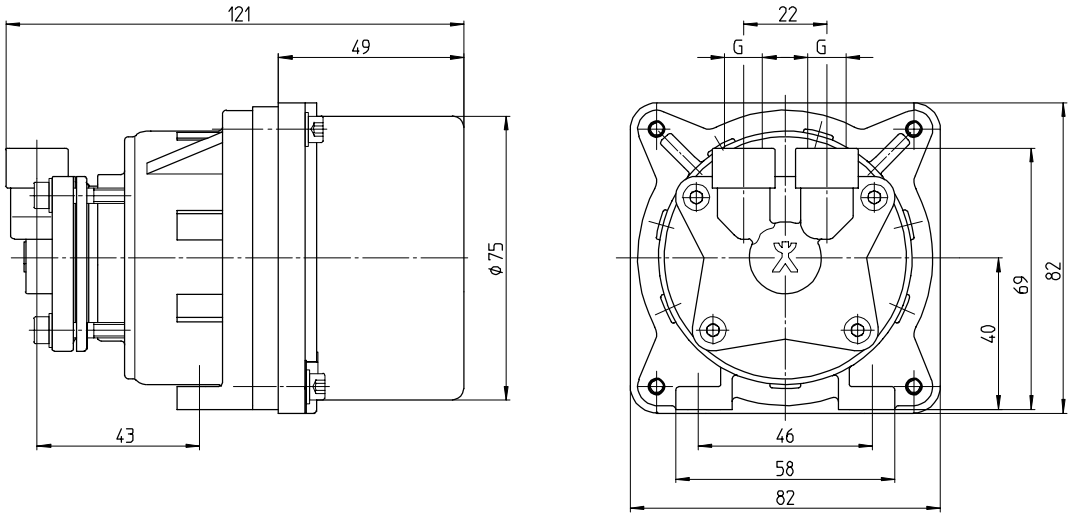
The power consumption P1 specifies the electrical power input.

# LY-6000-MK / LY-8000-MK

**Peripheralradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Regenerative turbine pumps**
with DC motor and magnetic coupling

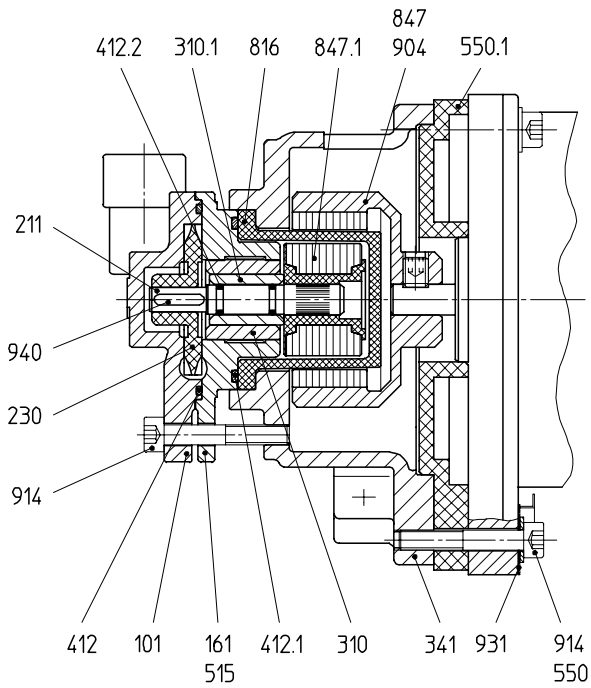
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | W | HP | G | G | Ncm | kg | lbs | $t_{max}$ |
| **LY-6000-MK** | 24 | 6000 | 60 | 0.08 | G 1/8 | G 1/8 | 13 | 1,4 | 3.0 | 60 °C |
| **LY-8000-MK** | 24 | 9000 | 80 | 0.11 | | | | | | |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310/.1 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 412-.2 | O-Ring | O-ring |
| 515 | Toleranzring | Tolerance ring |
| 550/.1 | Scheibe | Washer |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 904 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 931 | Sicherungsblech | Locking washer |
| 940 | Passfeder | Fitting key |

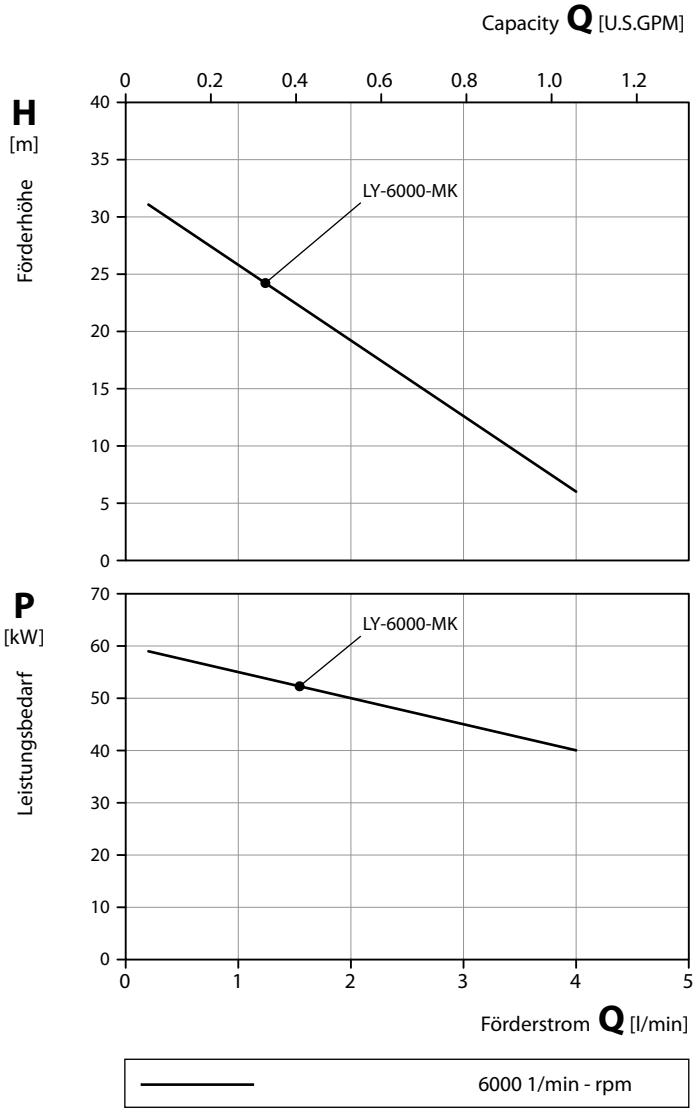
Gewicht abhängig von Ausführung — Weight depending on execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

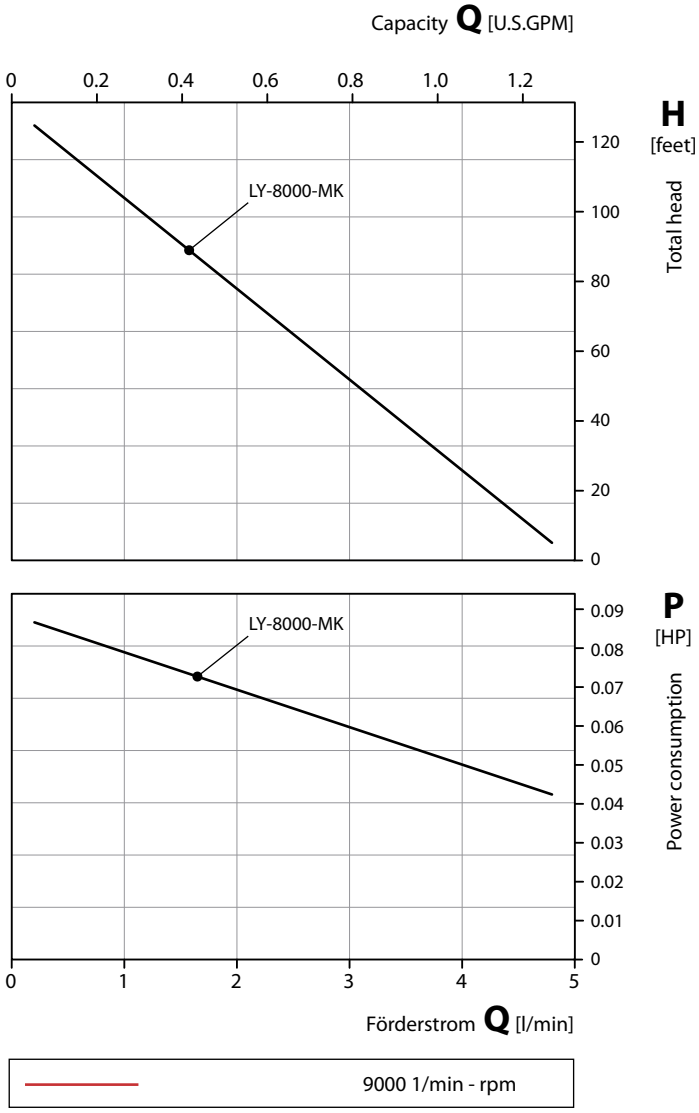
**Peripheralradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Regenerative turbine pumps**
with DC motor and magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | CuZn<br>Brass | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | PEEK | |
| O-Ring<br>O-ring | FKM | |
| Welle<br>Shaft | 1.4122<br>CrNo-steel | |
| Spalttopf<br>Separating can | PA | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

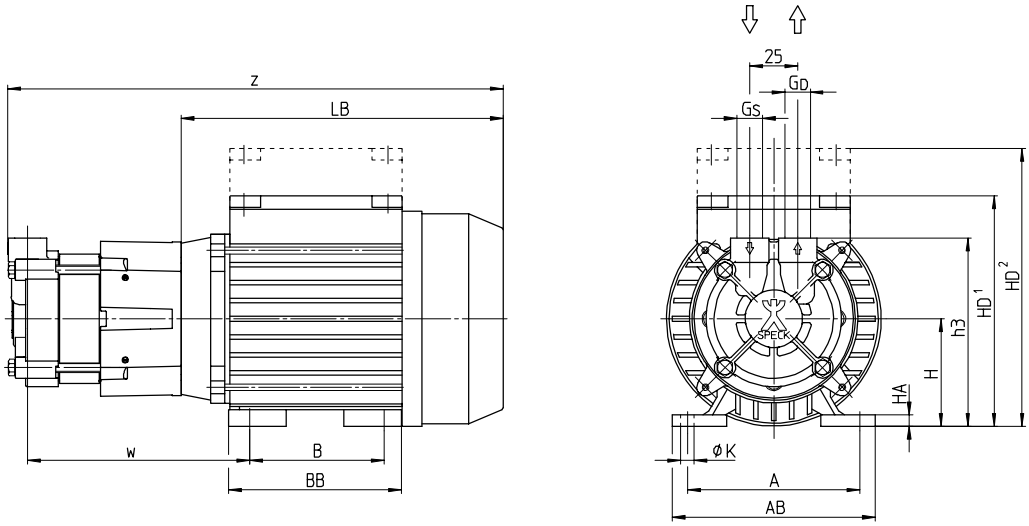
If the property of the pump media differs the characteristic curves change.

# Y-2951-W-MK / YS-2951-W-MK

**Peripheralradpumpen**
mit Magnetkupplung / selbstansaugend

**Regenerative turbine pumps**
with magnetic coupling / self-priming

## Maßzeichnung / Dimensional drawing

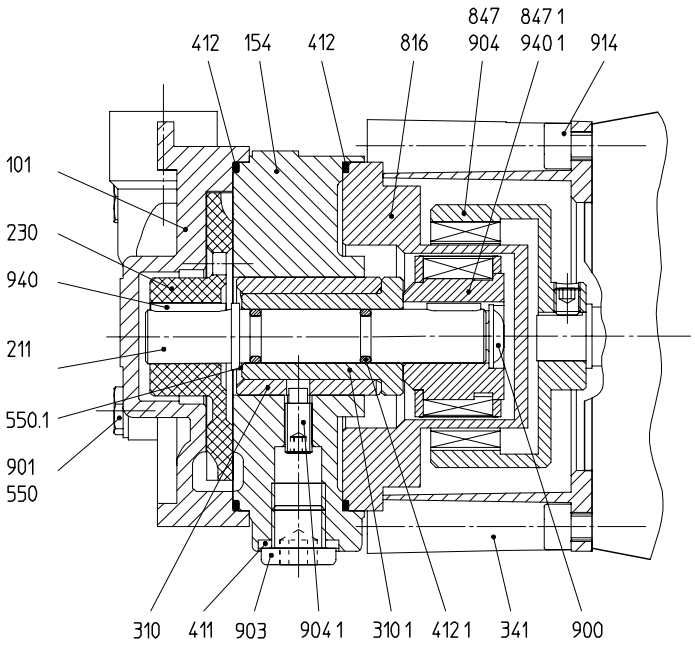



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **Y-2951-W-MK** | 56<br>63 | 1 / 3~ | 2800 | 0,12<br>0,25 | 0.16<br>0.34 | 3400 | 0,12<br>0,25 | 0.16<br>0.34 | G 1/4 | G 1/4 | 0,9 | 5<br>6 | 11<br>13 | 140 °C | 160 °C |
| **YS-2951-W-MK** | 56<br>63 | 1 / 3~ | 2800 | 0,12<br>0,25 | 0.16<br>0.34 | 3400 | 0,12<br>0,25 | 0.16<br>0.34 | G 1/4 | G 1/4 | 0,9 | 5<br>6 | 11<br>13 | | |

| Type | Baugröße | A | AB | B | BB | H | HA | $HD^1$ | $HD^2$ | K | LB | h3 | w | z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Y-2951-W-MK** | 56 | 90 | 106 | 70 | 90 | 56 | 6 | 120 | 145 | 7 | 168 | 98 | 116 | 259 |
| **YS-2951-W-MK** | 63 | 100 | 120 | 80 | 100 | 63 | 7 | 140 | 158 | 7 | 184 | 105 | 132 | 287 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 154 | Zwischenwand | Intermediate partition |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310/.1 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 411 | Dichtring | Sealing ring |
| 412/.1 | O-Ring | O-ring |
| 550/.1 | Scheibe | Washer |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 900 | Schraube | Screw |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903 | Verschlussschraube | Screw plug |
| 904/.1 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 940/.1 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

Y = nicht selbstansaugend
YS = selbstansaugend

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box

Y = non self-priming
YS = self-priming

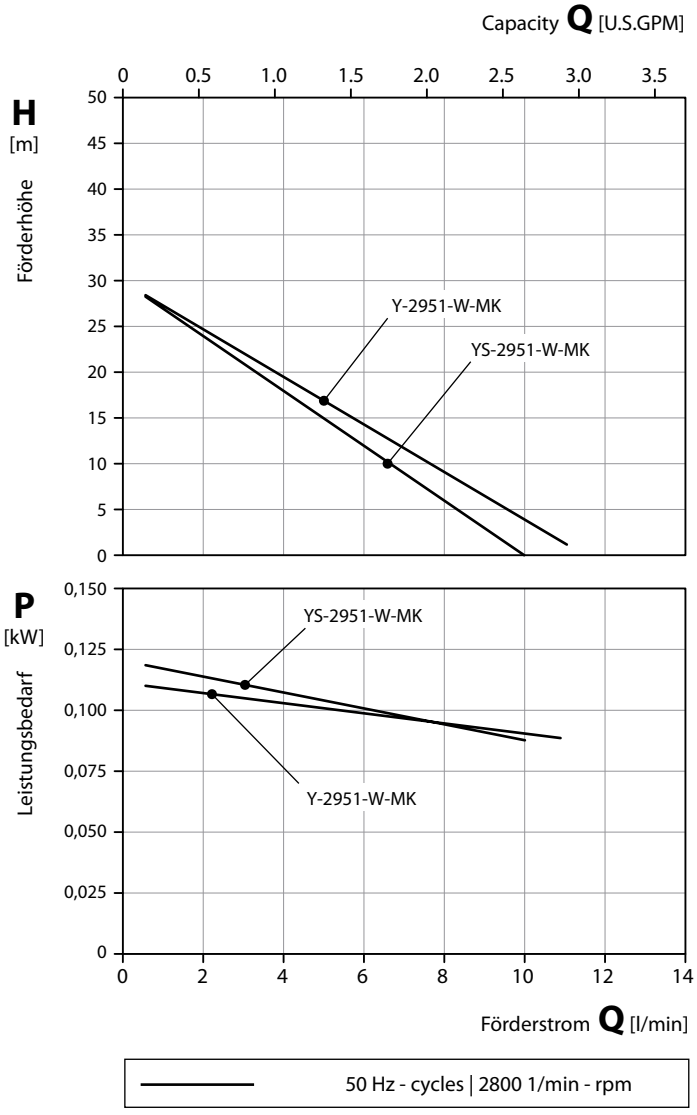
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

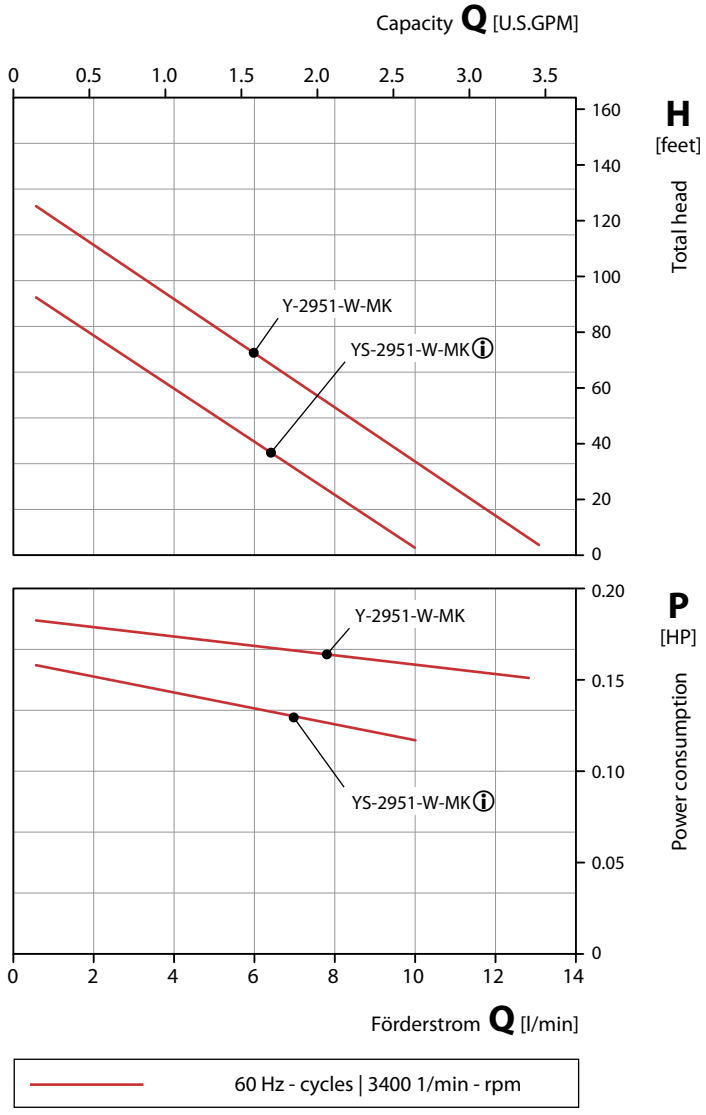
**Peripheralradpumpen**
mit Magnetkupplung / selbstansaugend

**Regenerative turbine pumps**
with magnetic coupling / self-priming

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | PPS | 1.4581<br>CrNiMo-cast steel | CuZn<br>Brass |
| Zwischenwand<br>Intermediate partition | 1.4581<br>CrNiMo-cast steel | CuZn<br>Brass | |
| Laufrad<br>Impeller | PEEK | 1.4408<br>CrNiMo-cast steel | |
| Welle<br>Shaft | 1.4122<br>CrNo-steel | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | CuZn<br>Brass | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

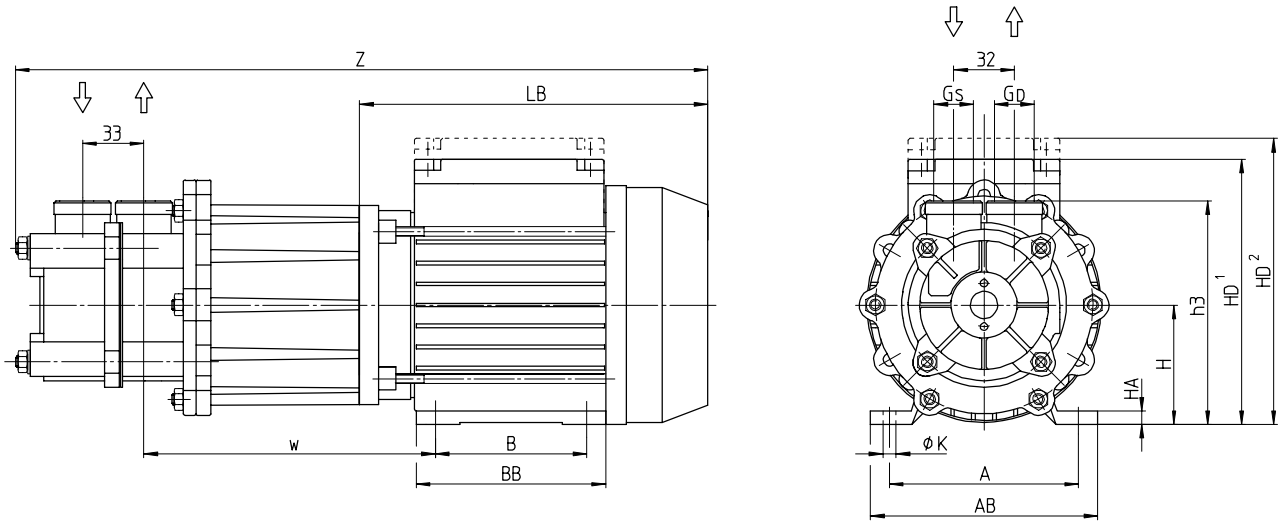
If the property of the pump media differs the characteristic curves change.

# PY-2071-MK

**Peripheralradpumpen**
mit Kunststoffgehäuse und Magnetkupplung, selbstansaugend

**Regenerative turbine pumps**
with plastic pump casing and magnetic coupling, self-priming

## Maßzeichnung / Dimensional drawing

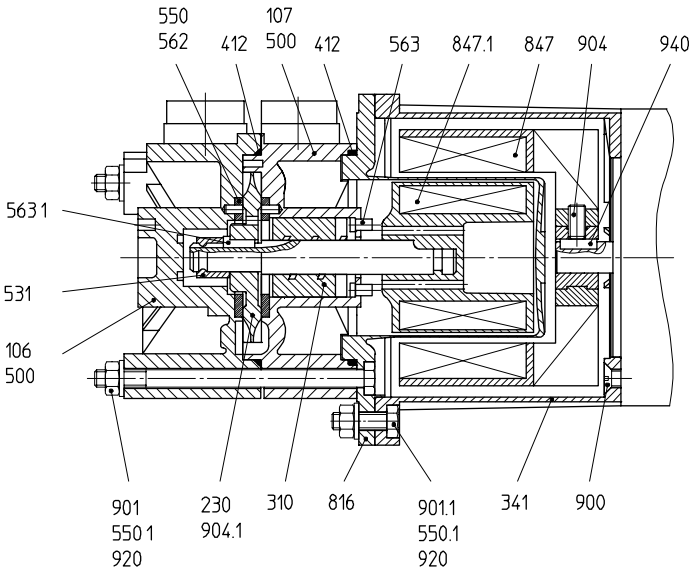



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ |
| **PY-2071-MK** | 63 | 1 / 3~ | 2800 | 0,25 | 0.34 | 3400 | 0,25 | 0.34 | G 1/2 | G 1/2 | 1,6 | 6,5 | 14.3 | 90 °C |
| | | | | 0,37 | 0.50 | | 0,37 | 0.50 | | | | | | |
| | 71 | 3~ | | 0,55 | 0.74 | | 0,55 | 0.74 | | | | 7,9 | 17.4 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD[1] | HD[2] | K | LB | h3 | w | z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PY-2071-MK** | 63 | 100 | 120 | 80 | 100 | 63 | 7 | 140 | 151 | 7 | 184 | 118 | 152 | 366 |
| | 71 | 112 | 138 | 90 | 116 | 71 | 11 | 175 | – | 8 | 176 | 126 | 165 | 358 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 106 | Sauggehäuse | Suction casing |
| 107 | Druckgehäuse | Discharge casing |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 412 | O-Ring | O-ring |
| 500 | Ring | Ring |
| 531 | Spannhülse | Clamping sleeve |
| 550/.1 | Scheibe | Washer |
| 562 | Zylinderstift | Cylindrical pin |
| 563/.1 | Bolzen | Bolt |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 900 | Schraube | Screw |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 904/.1 | Gewindestift | Threaded pin |
| 920 | 6-kt. Mutter | Hexagon nut |
| 940 | Passfeder | Fitting key |

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Flat terminal box
[2] High terminal box

Weight depending on motor frame size, performance, materials and execution

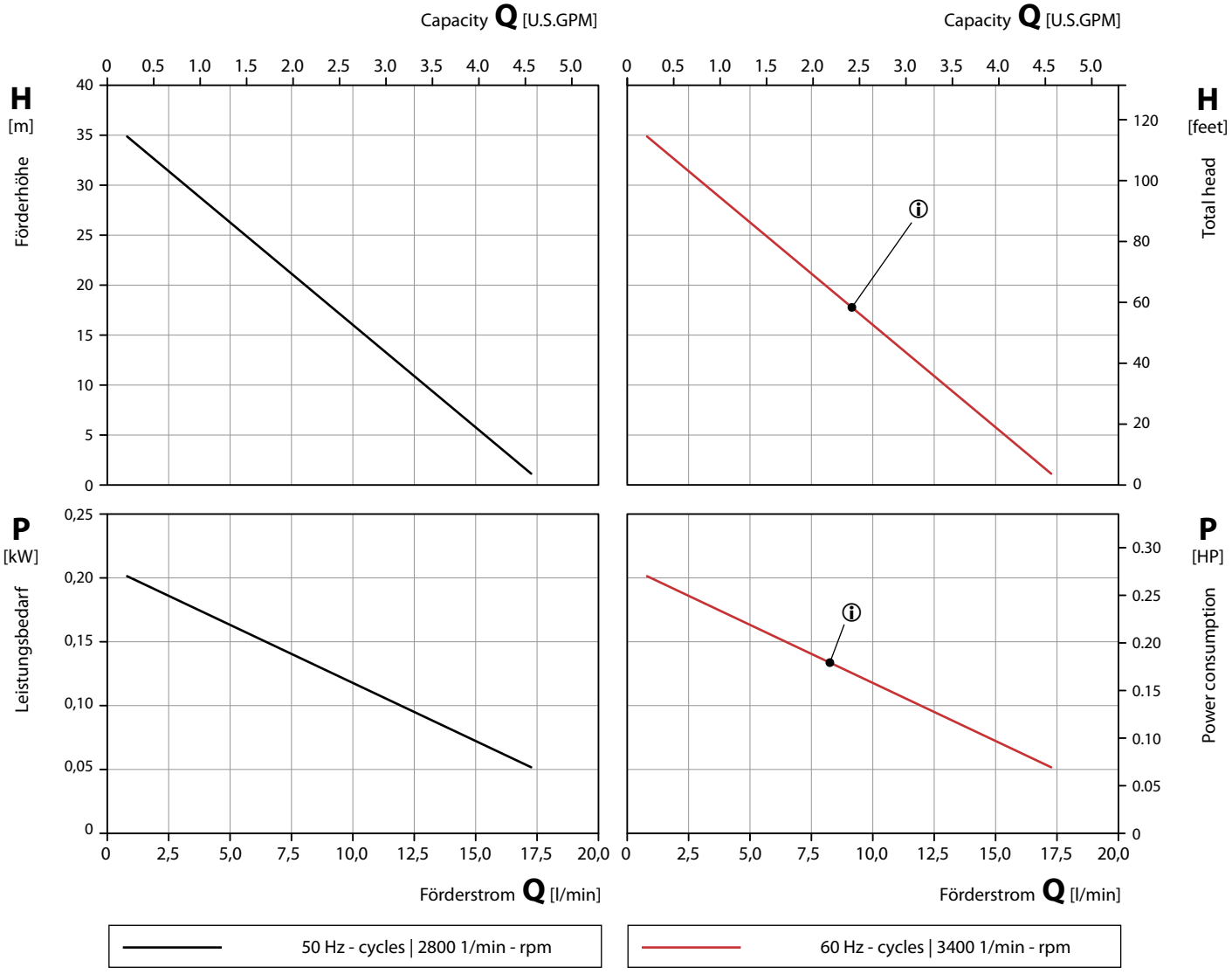

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Peripheralradpumpen**
mit Kunststoffgehäuse und Magnetkupplung, selbstansaugend

**Regenerative turbine pumps**
with plastic pump casing and magnetic coupling, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




ⓘ angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | PPS | |
| Gehäusedeckel<br>Casing cover | PPS | |
| Laufrad<br>Impeller | PEEK | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics |
| Welle<br>Shaft | Keramik<br>Ceramics | |
| Spalttopf<br>Separating can | PPS | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

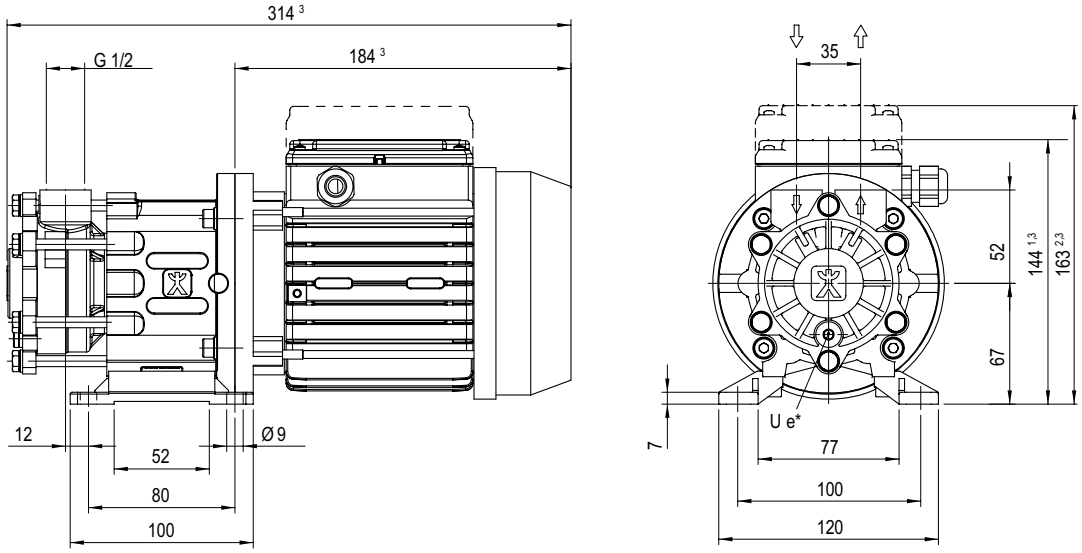
If the property of the pump media differs the characteristic curves change.

# EY-2251-MK

**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

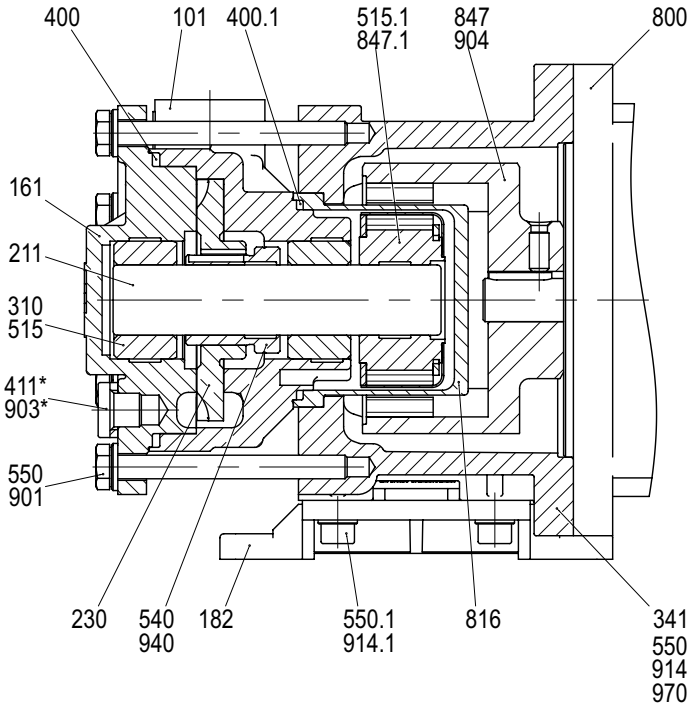
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse<br>Connections | | Drehmoment<br>Torque | Gewicht<br>Weight | | Wasser<br>Water | Öl<br>Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **EY-2251-MK** | 63 | 3~ | 2800 | 0,5 | 0.67 | 3400 | 0,55 | 0.74 | G 1/2 | G 1/2 | 3,0 | 8,1 | 18 | 140 °C | 140 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 182 | Fuß | Foot |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.1 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 550/.1 | Scheibe | Washer |
| 800 | Motor | Motor |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |
| 970 | Typenschild | Nameplate |

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung
* Auf Anfrage

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design
* On request

$U_e$ = Entleerung / Verschlussschraube

$U_e$ = Drainage / Screw plug

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

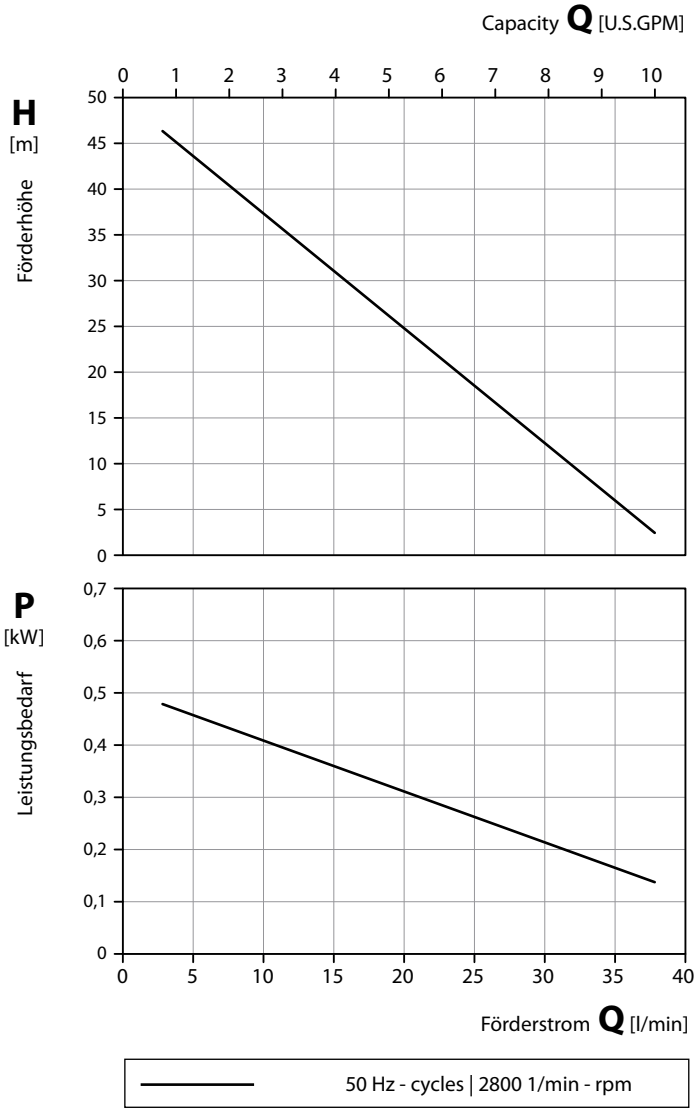
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.
10/2015 | 1096.1088

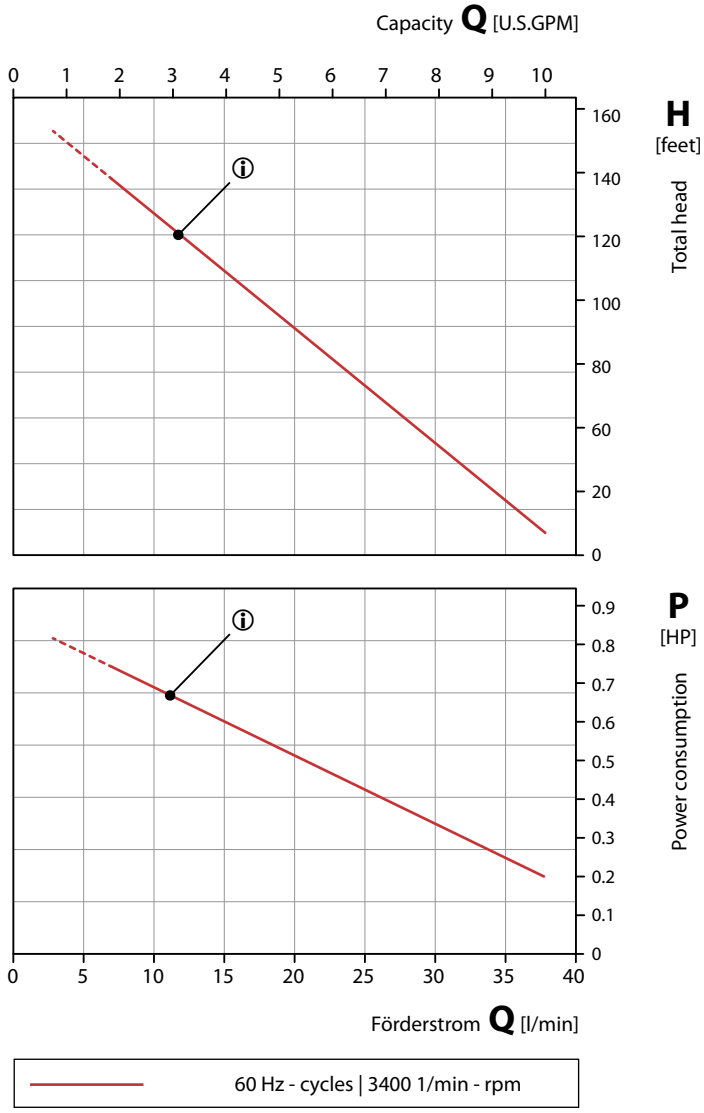
**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Matériaux / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4308<br>Stainless steel | | |
| Gehäusedeckel<br>Casing cover | 1.4308<br>Stainless steel | | |
| Laufrad<br>Impeller | CuZn,<br>Ni-SiC- beschichtet<br>Brass,<br>coated with Ni-SiC | 1.4308<br>Ni-SiC- beschichtet<br>Stainless steel<br>coated with Ni-SiC | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Gleitlager<br>Sleeve bearing | SiC | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

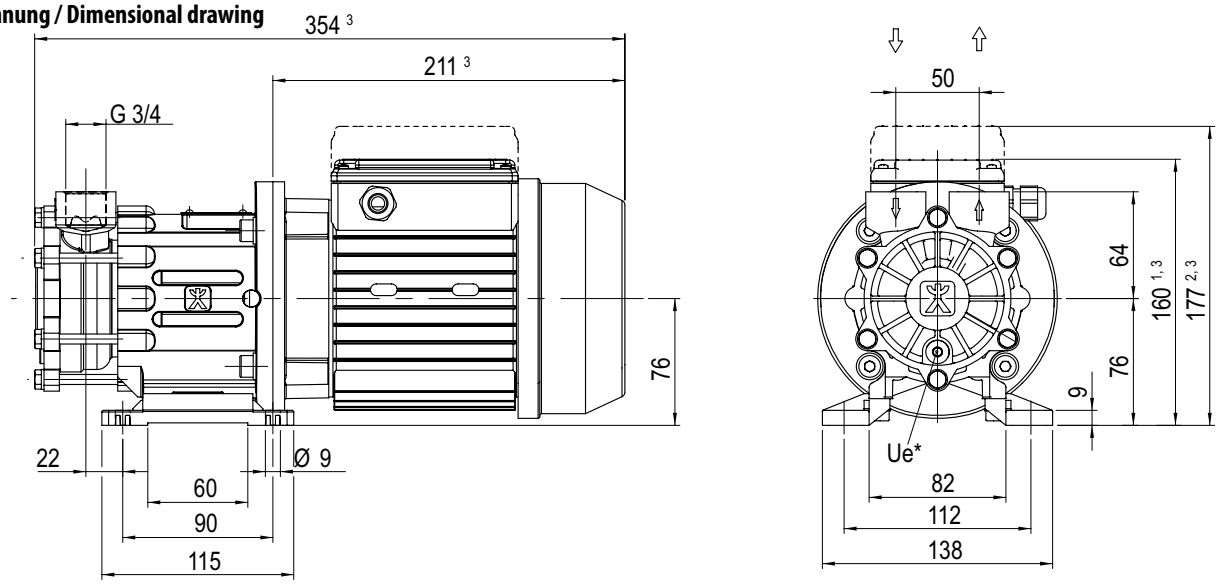
If the property of the pump media differs the characteristic curves change.

# EY-4281-MK

**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

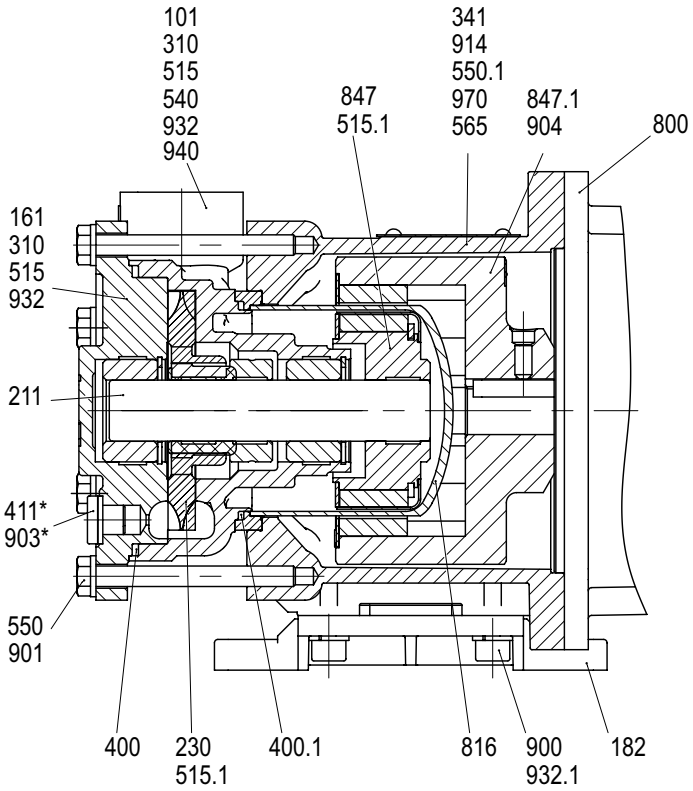
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **EY-4281-MK** | 71 | 3~ | 2800 | 1,0 | 1,34 | 3400 | 1,1 | 1.5 | G 3/4 | G 3/4 | 7,0 | 12,5 | 28 | 140 °C | 140 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Pump casing |
| 161 | Gehäusedeckel | Casing cover |
| 182 | Fuß | Foot |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.1 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 550/.1 | Scheibe | Washer |
| 540 | Buchse | Bush |
| 565 | Niet | Rivet |
| 800 | Motor | Motor |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 900 | Schraube | Screw |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932/.1 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |
| 970 | Typenschild | Nameplate |

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung
* Auf Anfrage
$U_e$ = Entleerung / Verschlussschraube- Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

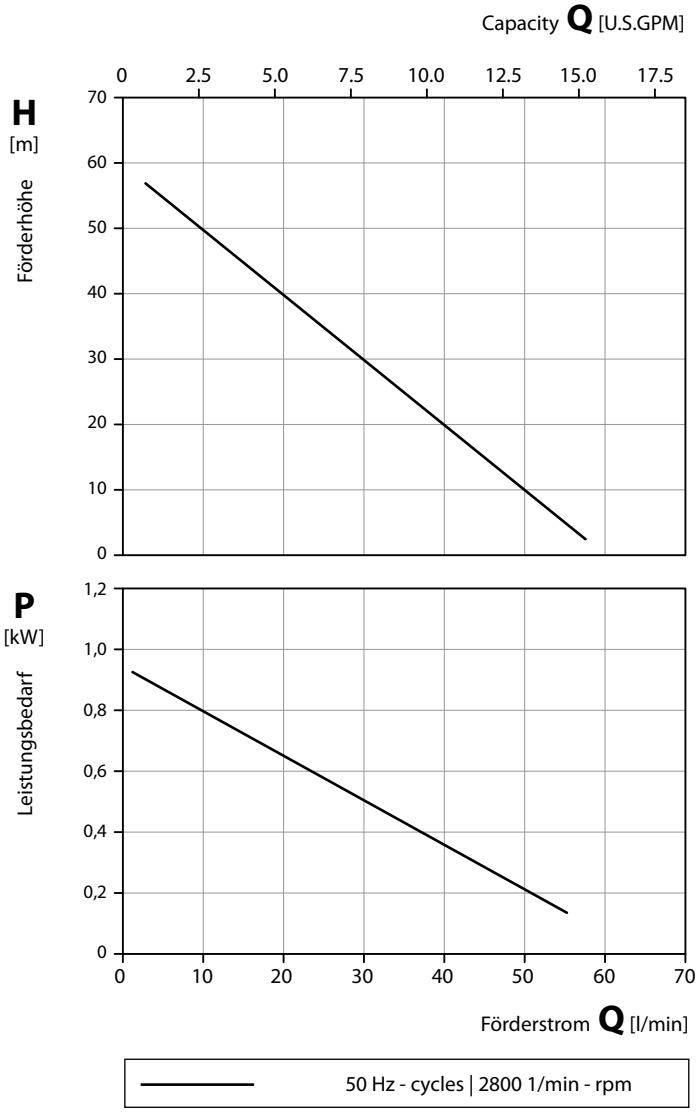
[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design
* On request
$U_e$ = Drainage / Screw plug Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

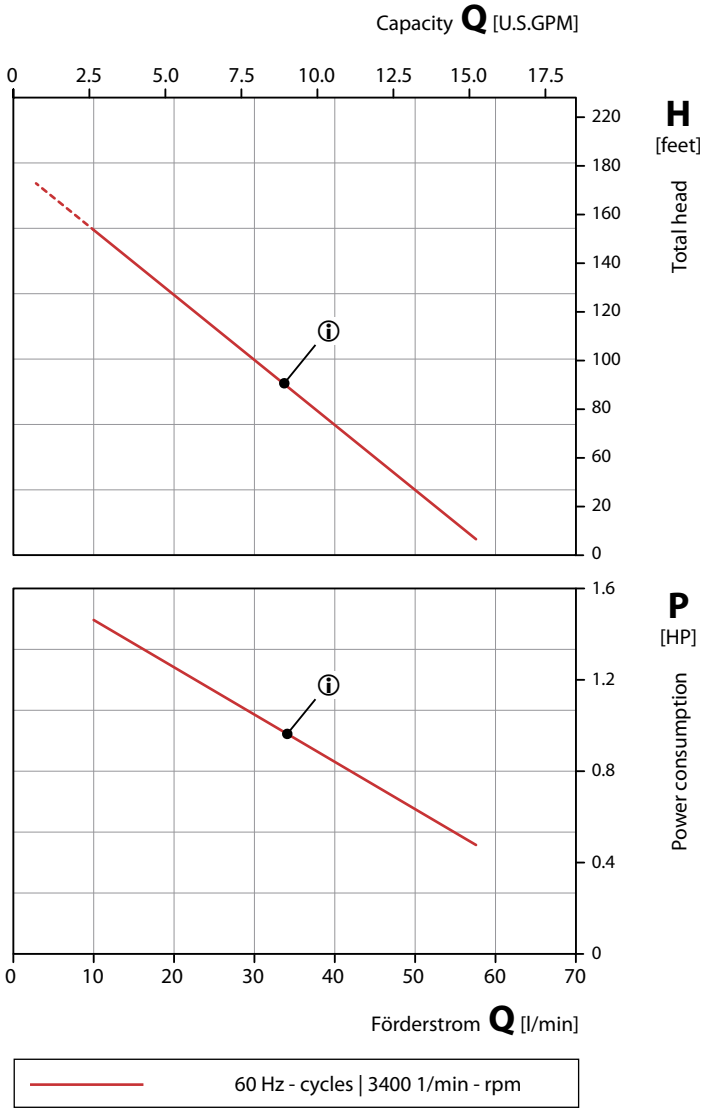
**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Matériaux / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4308<br>Stainless steel | | |
| Gehäusedeckel<br>Casing cover | 1.4308<br>Stainless steel | | |
| Laufrad<br>Impeller | CuZn,<br>Ni-SiC- beschichtet<br>Brass,<br>coated with Ni-SiC | 1.4308<br>Ni-SiC- beschichtet<br>Stainless steel<br>coated with Ni-SiC | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Gleitlager<br>Sleeve bearing | SiC | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

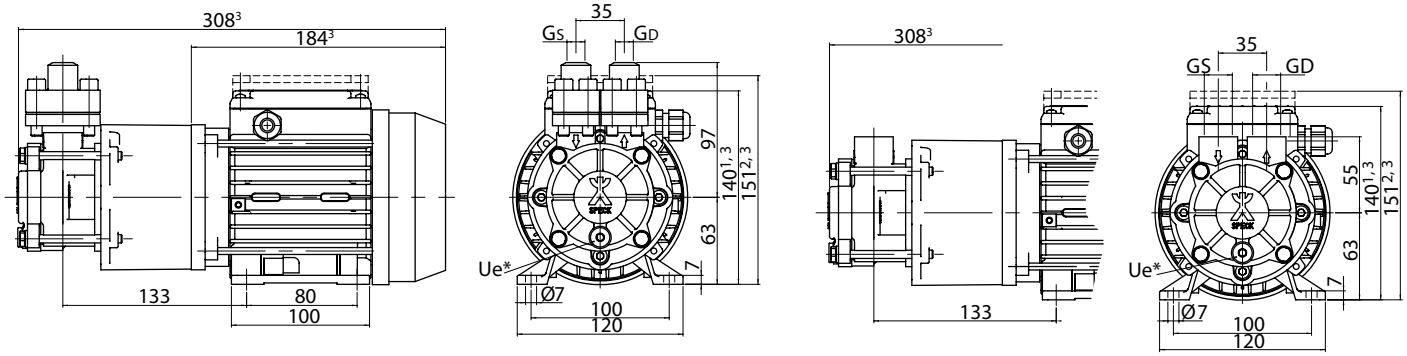
If the property of the pump media differs the characteristic curves change.

# NPY-2251-MK

**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

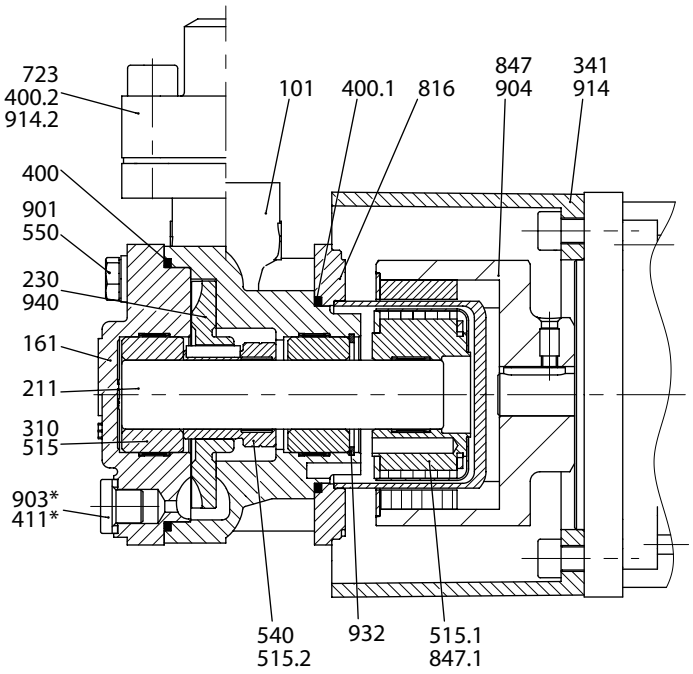
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ue* | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **NPY-2251-MK** | 63 | 3~ | 2800 | 0,50 | 0.67 | 3400 | 0,55 | 0.74 | G 1/2<br>SAE 1/2 | G 1/2<br>SAE 1/2 | G 1/8 | 3,0 | 9,6 | 21 | 140 °C | 180 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515-.2 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 550 | Scheibe | Washer |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.3 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung
* Auf Anfrage

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design
* On request

$U_e$ = Entleerung / Verschlussschraube

$U_e$ = Drainage / Screw plug

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

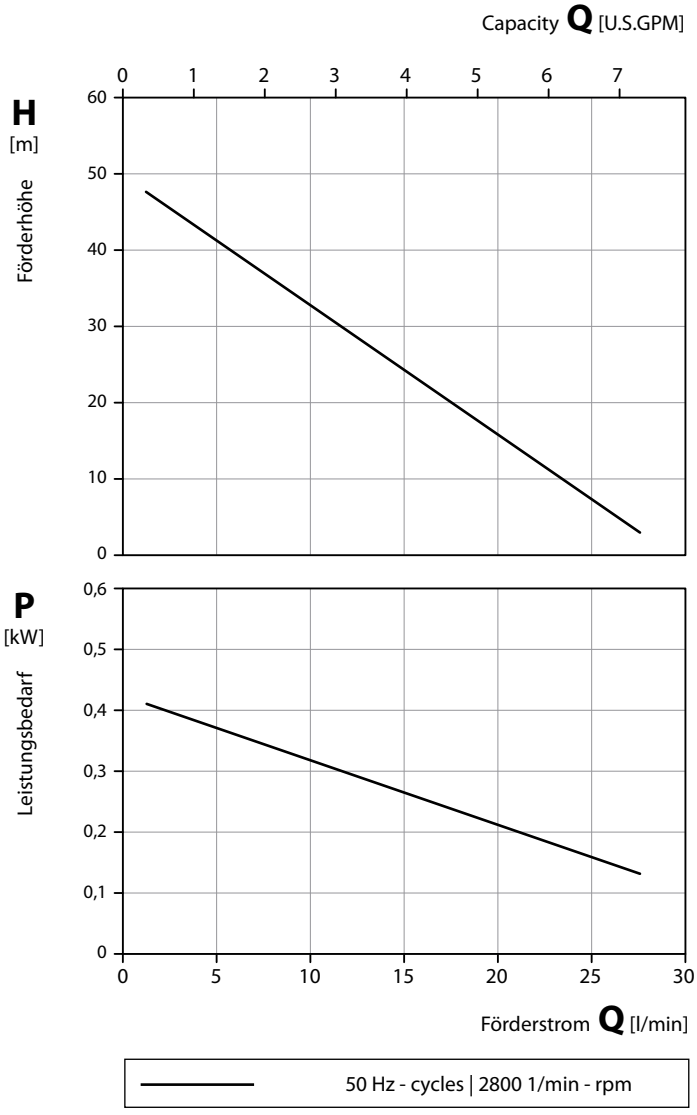
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

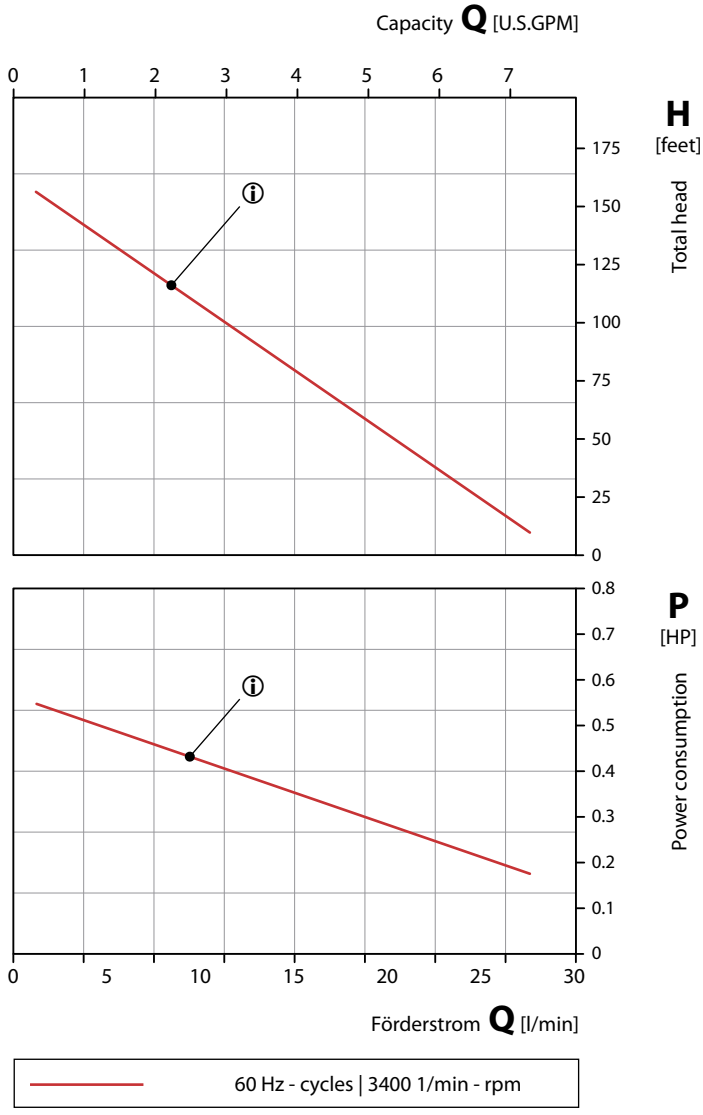
**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

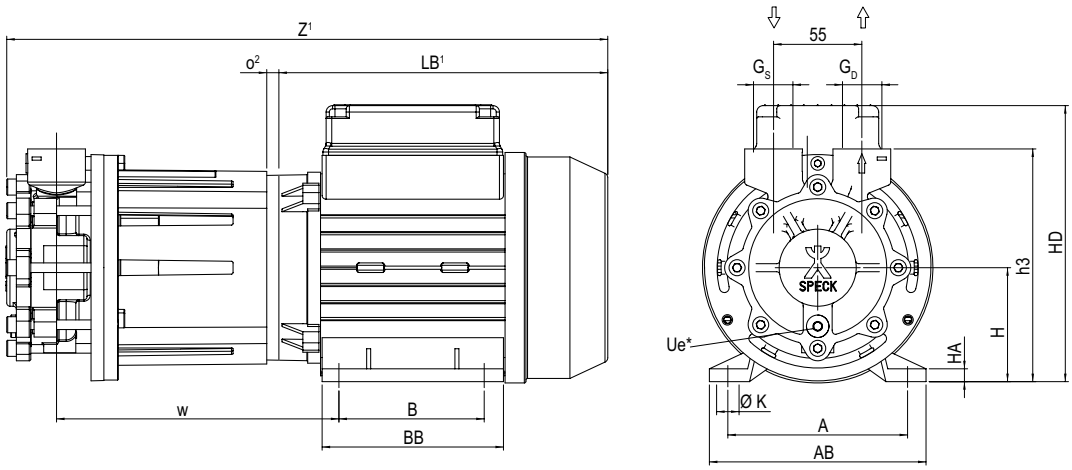
If the property of the pump media differs the characteristic curves change.

# CY-4281-MK

**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

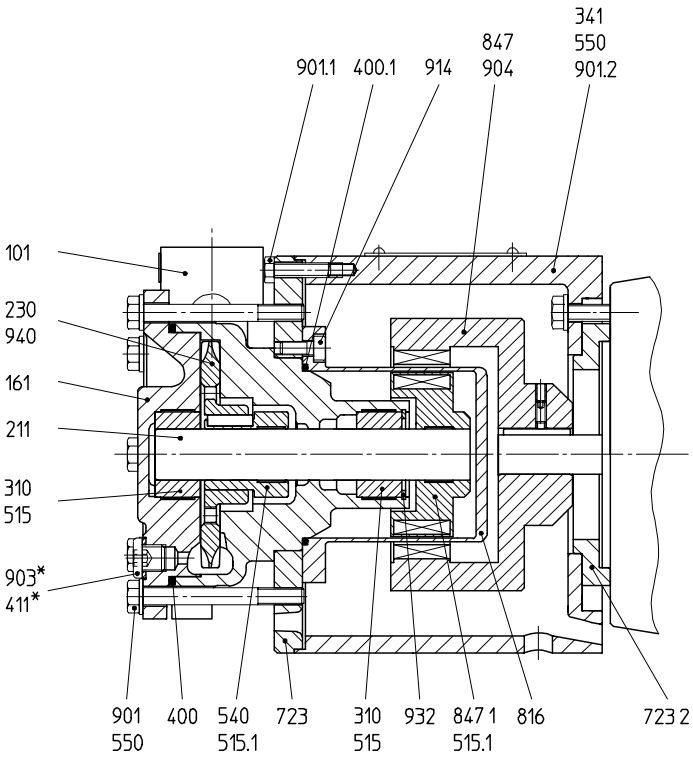



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | Nm | kg | lbs | $t_{max}$ | |
| **CY-4281-MK** | 71 | | | 1,0 | 1.34 | | 1,0 | 1.34 | | | | 7 | 15,0 | 33 | | |
| | 80 | 3~ | 2800 | 1,5 | 2.00 | 3400 | 1,5 | 2.00 | G 3/4 | G 3/4 | G 1/8 | 7 | 18,5 | 41 | 140 °C | 180 °C |
| | 90 | | | 2,2 | 2.95 | | 2,2 | 2.95 | | | | 10 | 19,5 | 43 | | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD | K | LB¹ | h3 | o² | w | z¹ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-4281-MK** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 9 | 211 | 145 | – | 178 | 367 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 194 | 9 | 240 | 154 | 10 | 191 | 414 |
| | 90 | 140 | 170 | 125 | 155 | 90 | 13 | 209 | 10 | 281 | 164 | 14 | 206 | 444 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.1 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 550 | Scheibe | Washer |
| 723.2[1] | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901-.2 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung
[2] Motorflansch Ø 120

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design
[2] Motor flange Ø 120

* On request

$U_e$ = Drainage / Screw plug

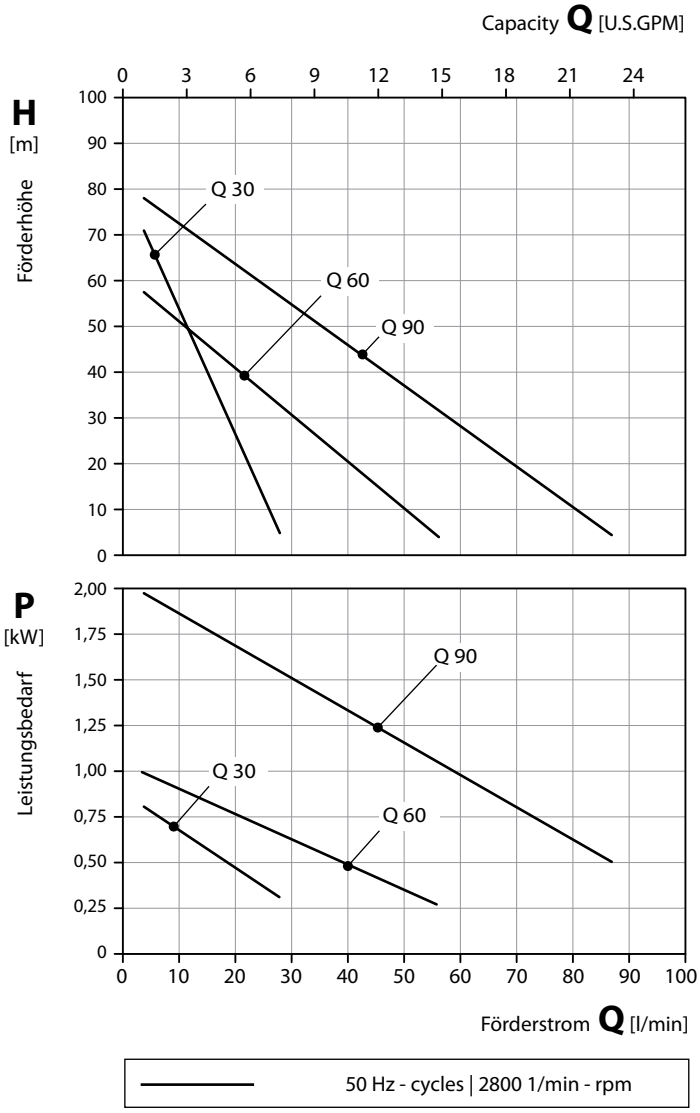
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.
10/2015 | 1096.1088

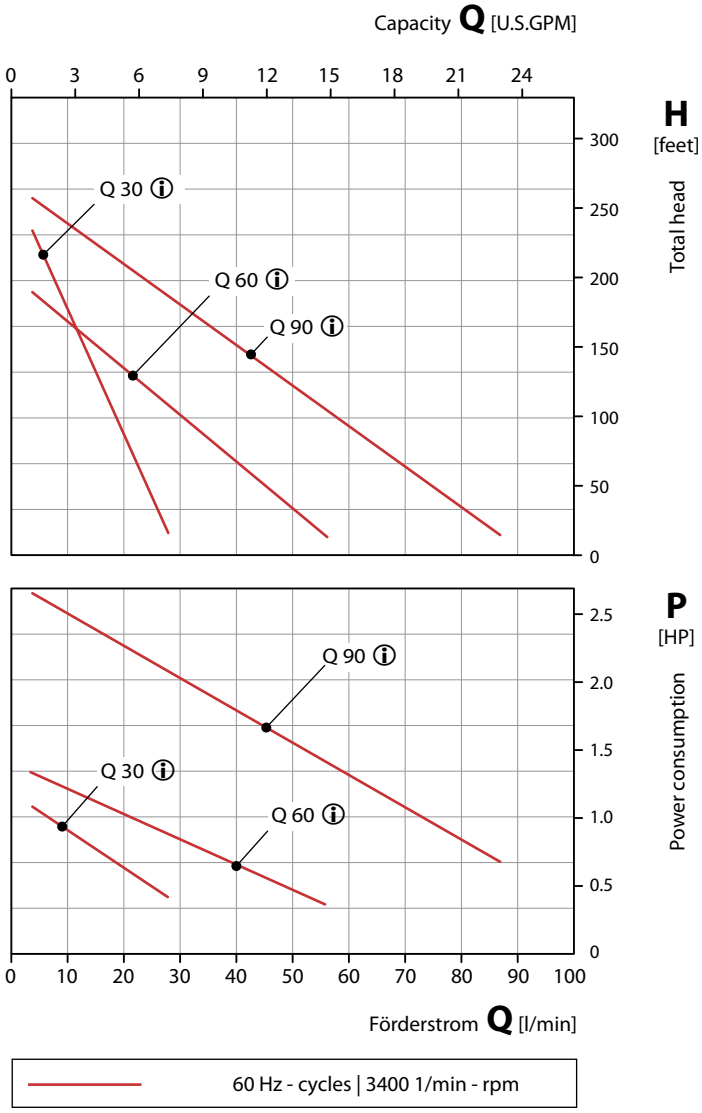
**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

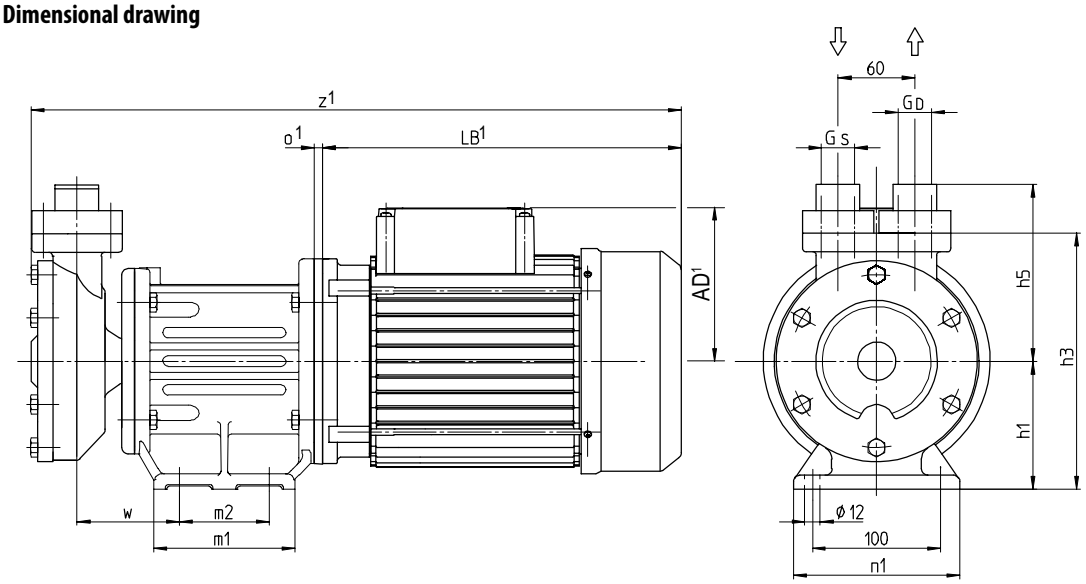
If the property of the pump media differs the characteristic curves change.

# CY-6091-MK

**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

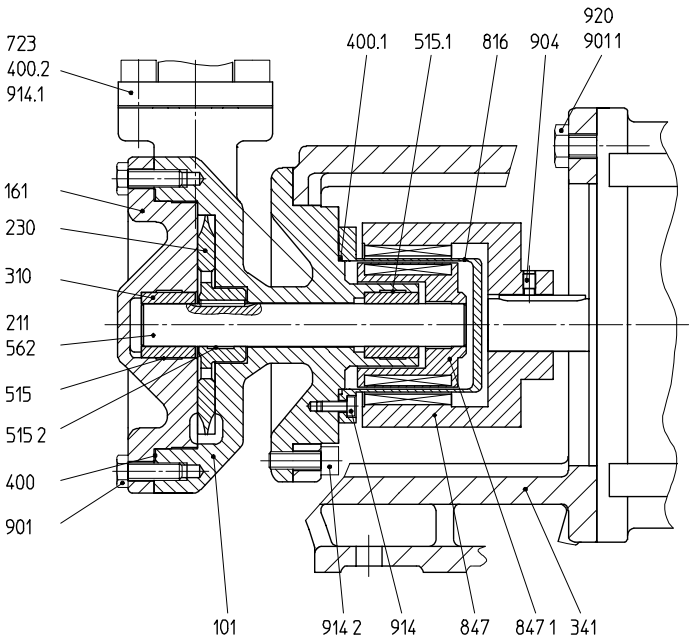



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Gewicht Weight | | Wasser Water | Öl Oil | Fluorinert™ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | kg | lbs | $t_{max}$ | $t_{max}$ | $t_{max}$ |
| **CY-6091-MK** | 90L | 3~ | 2800 | 2,80 | 3.75 | 3400 | 2,80 | 3.75 | 33 | 73 | 140 °C | 180 °C | - 60 °C ... 200 °C |
| | 100L | | | 3,00 | 4.02 | | 3,00 | 4.02 | 36 | 79 | | | |
| | 112M | | | 4,00 | 5.36 | | 4,00 | 5.36 | 46 | 101 | | | |
| | 132S | | | 5,50 | 7.38 | | 5,50 | 7.38 | 70 | 155 | | | |

| Type | Baugröße | Q | l/min | USGPM | $G_S$ | $G_D$ | Nm | AD1 | LB1 | h1 | h3 | h5 | m1 | m2 | n1 | o1 | w | z1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-6091-MK** | 90L | **Q 80** | 80 | 21 | SAE 1 | SAE 1 | 14 | 147 | 280 | 100 | 200 | 138 | 110 | 70 | 130 | – | 80 | 501 |
| | 100L | **Q 150** | 150 | 37 | | | | 154 | 306 | | | | | | | 10 | | 537 |
| | 112M | | | | | | 22 | 167 | 296 | 114 | 214 | 138 | 145 | 80 | 140 | 32 | 90 | 559 |
| | 132S | **Q 200** | 200 | 53 | SAE 1 1/4 | SAE 1 1/4 | | 221 | 457 | | | 143 | | | | – | | 578 |
| | | | | | | | | | | | | | | | | 20 | | 582 |
| | | | | | | | | | | | | | | | | | | 739 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 515-.2 | Toleranzring | Tolerance ring |
| 562 | Stift | Pin |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 904 | Gewindestift | Threaded pin |
| 914-.2 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 920 | 6-kt. Mutter | Hexagon nut |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

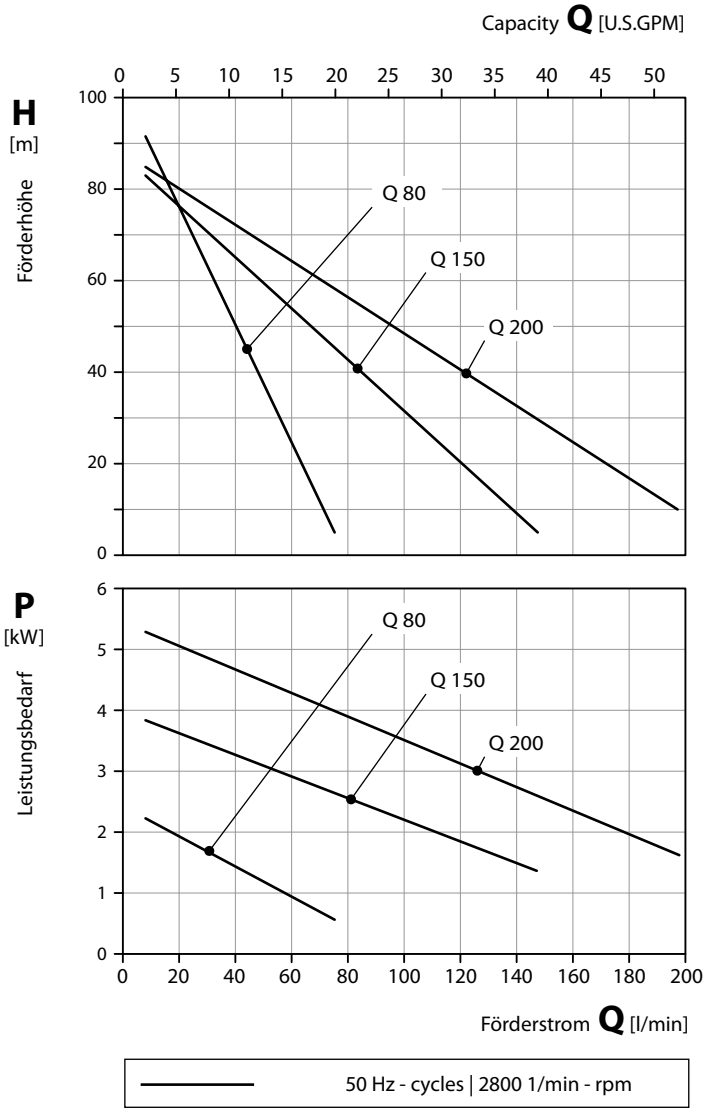
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

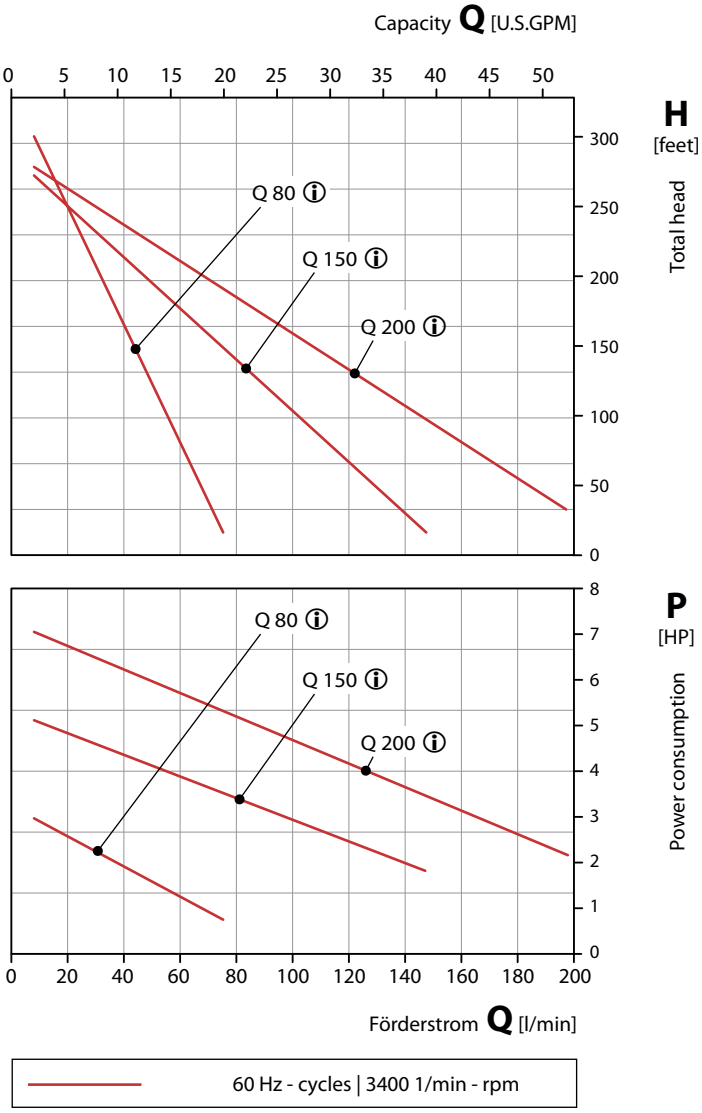
**Peripheralradpumpen**
mit Magnetkupplung

**Regenerative turbine pumps**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

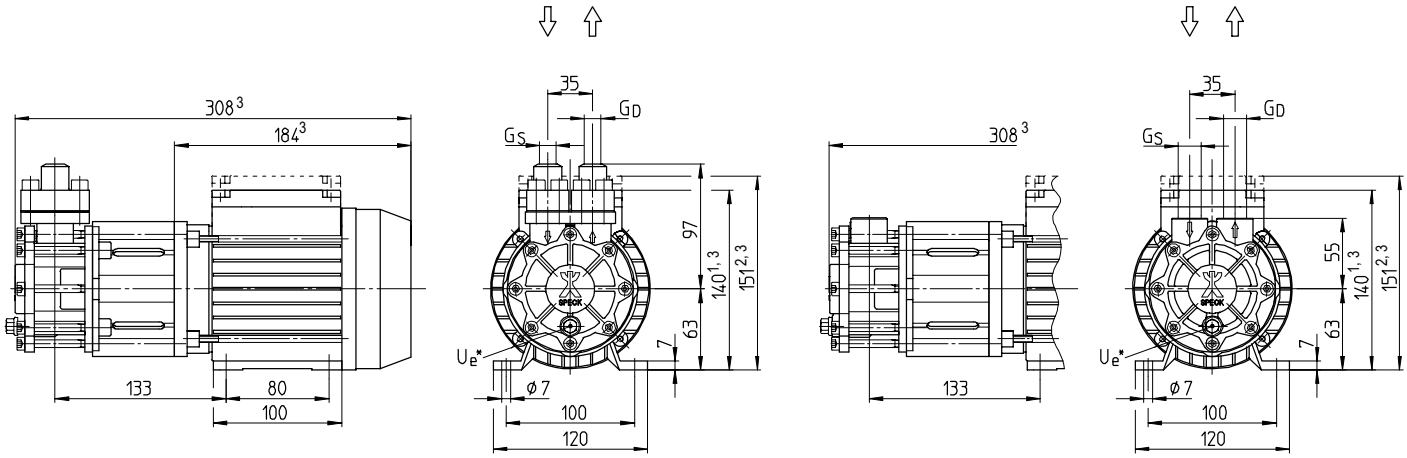
If the property of the pump media differs the characteristic curves change.

# NPY-2251-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

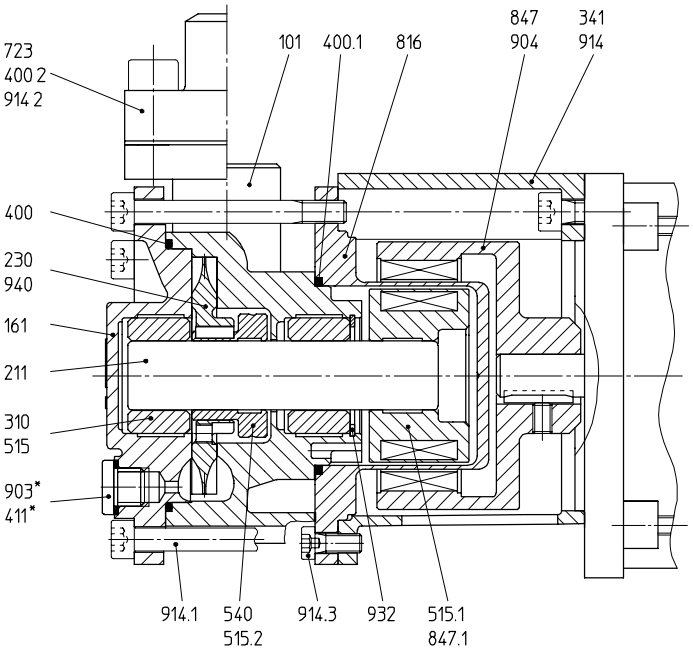
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ue* | Nm | kg | lbs | $t_{max}$ |
| **NPY-2251-MK-HT** | 63 | 3~ | 2800 | 0,50 | 0.67 | 3400 | 0,55 | 0.74 | G 1/2<br>SAE 1/2 | G 1/2<br>SAE 1/2 | G 1/8 | 3,0 | 9,6 | 21 | 180 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515-.2 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.3 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung

$U^e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design

$U_e$ = Drainage / Screw plug

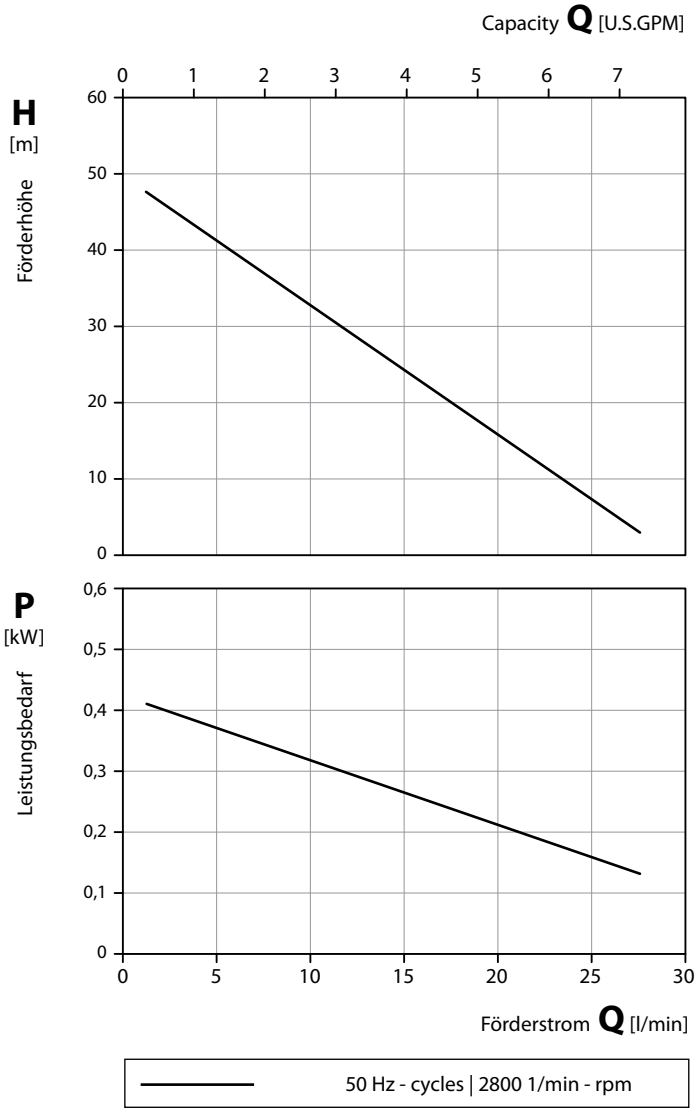
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

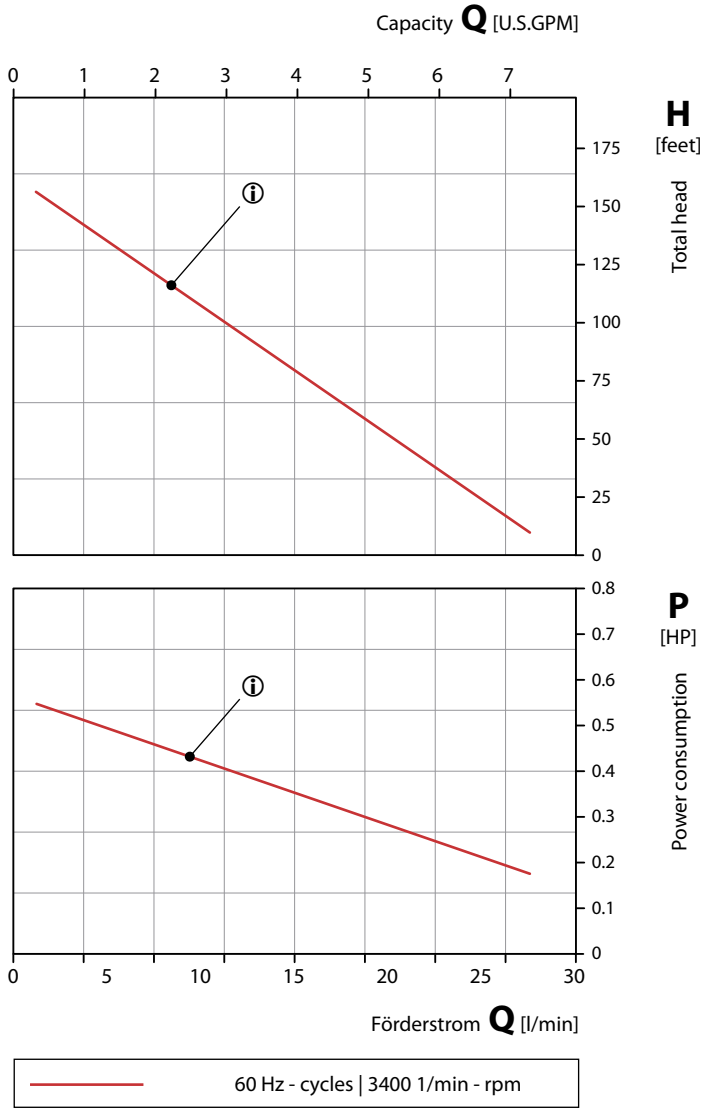
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

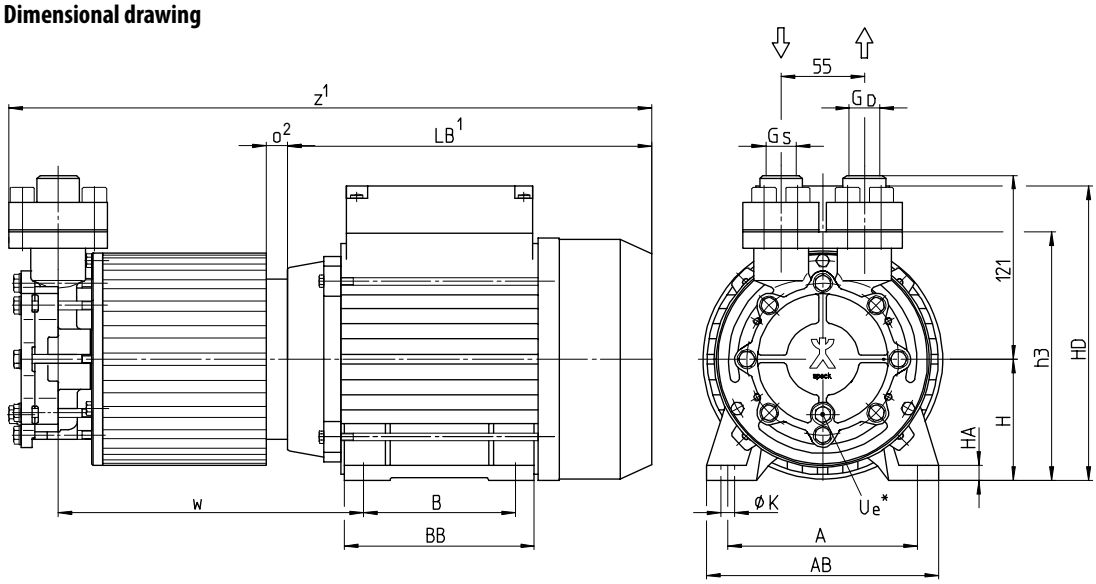
If the property of the pump media differs the characteristic curves change.

# CY-4281-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

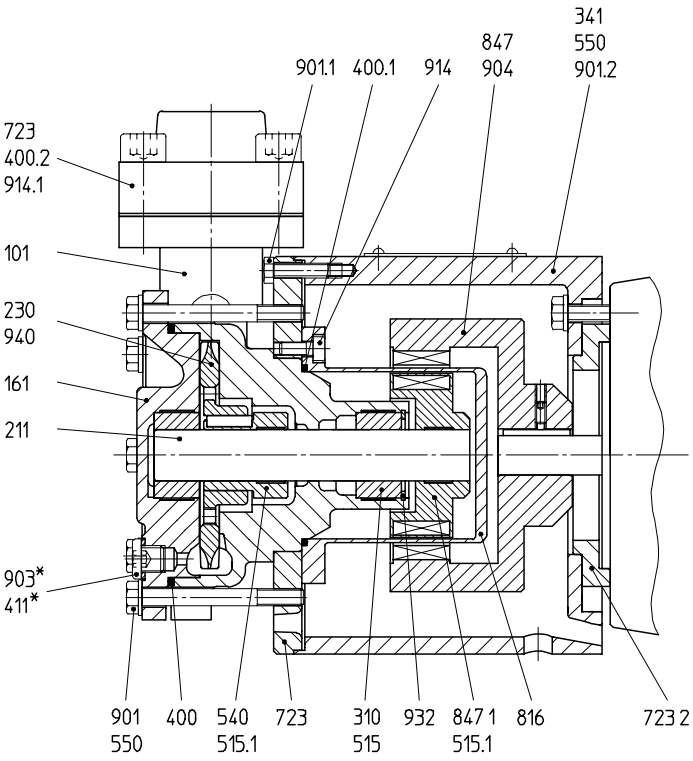



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | Nm | kg | lbs | $t_{max}$ |
| **CY-4281-MK-HT** | 71 | | | 1,0 | 1.34 | | 1,0 | 1.34 | | | | 7 | 15,0 | 33 | |
| | 80 | 3~ | 2800 | 1,5 | 2.00 | 3400 | 1,5 | 2.00 | SAE 3/4 | SAE 3/4 | G 1/8 | 7 | 18,5 | 41 | 180 °C |
| | 90 | | | 2,2 | 2.95 | | 2,2 | 2.95 | | | | 10 | 19,5 | 43 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD | K | $LB^1$ | h3 | $o^2$ | w | $z^1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-4281-MK-HT** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 9 | 211 | 155 | – | 178 | 367 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 194 | 9 | 240 | 164 | 10 | 191 | 414 |
| | 90 | 140 | 170 | 125 | 155 | 90 | 13 | 209 | 10 | 281 | 174 | 14 | 206 | 444 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 550 | Scheibe | Washer |
| 723/.2 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901-.2 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung
[2] Motorflansch Ø 120

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design
[2] Motor flange Ø 120

* On request

$U_e$ = Drainage / Screw plug

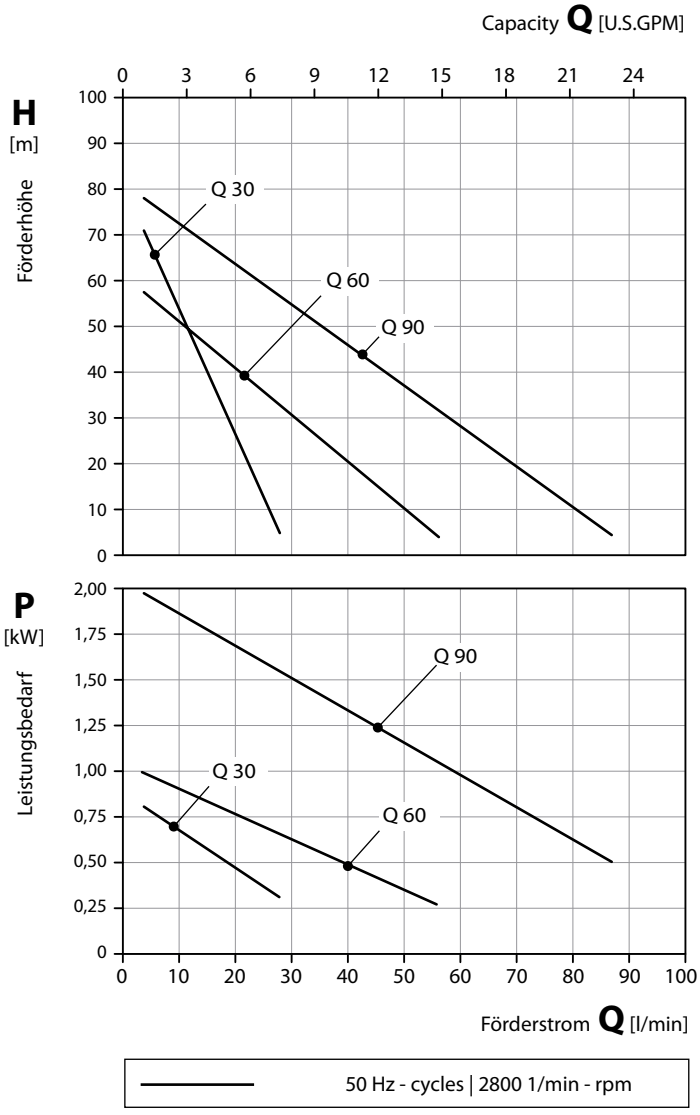
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

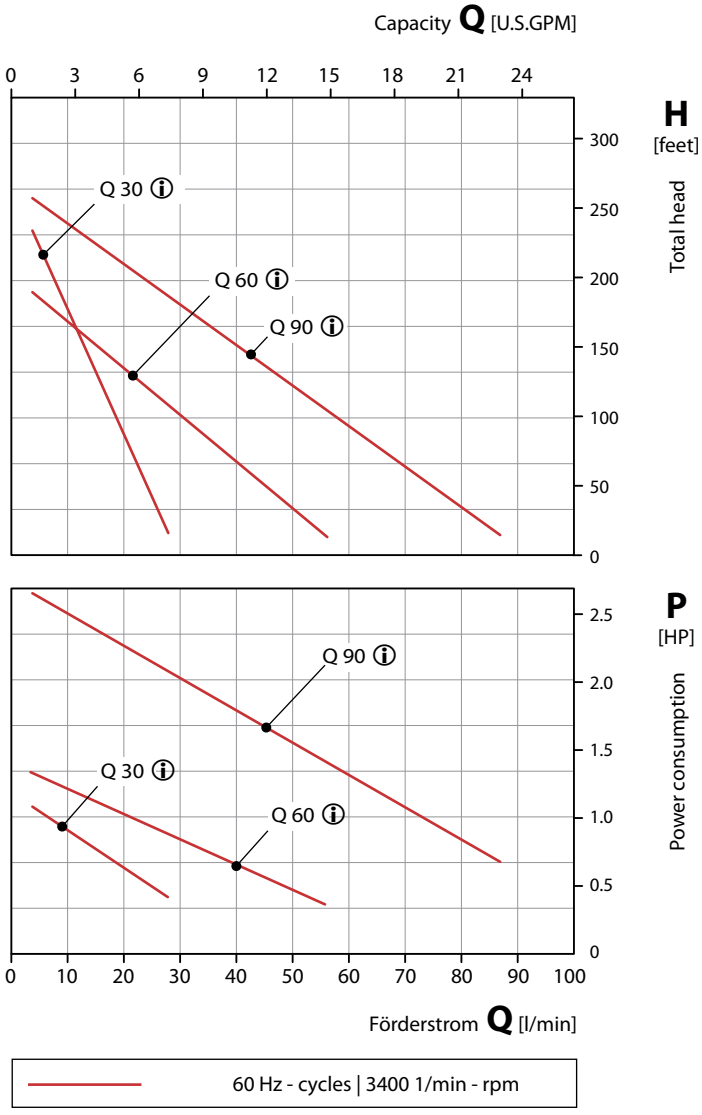
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated |
| Welle<br>Shaft | Keramik<br>Ceramics | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

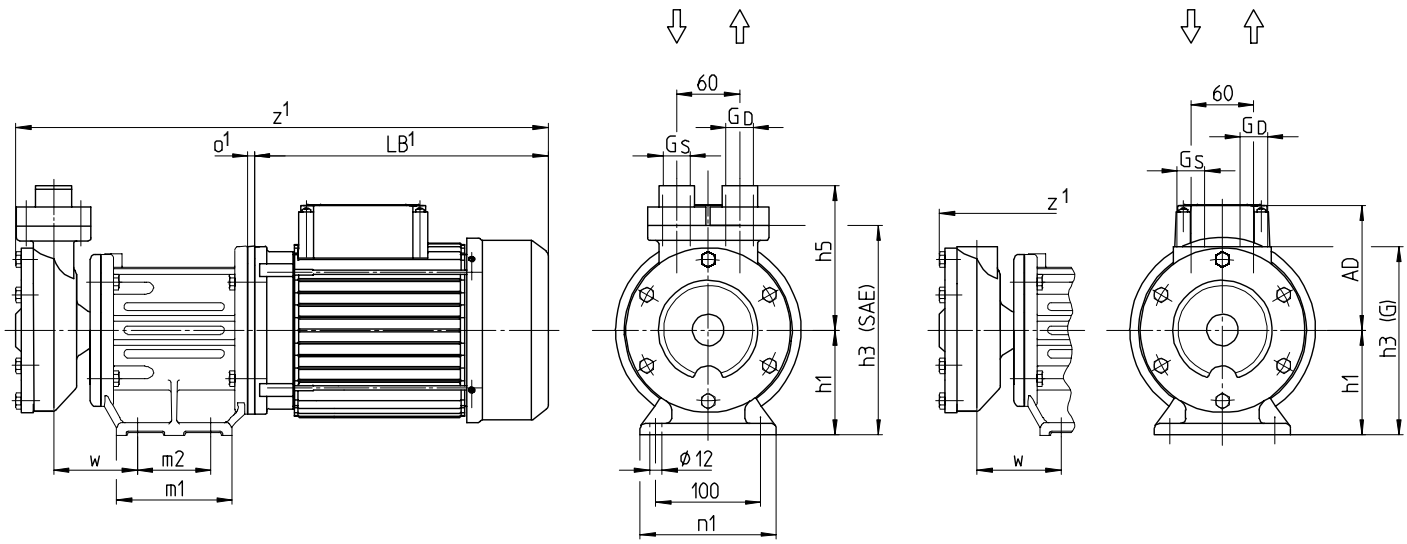
If the property of the pump media differs the characteristic curves change.

# CY-6091-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

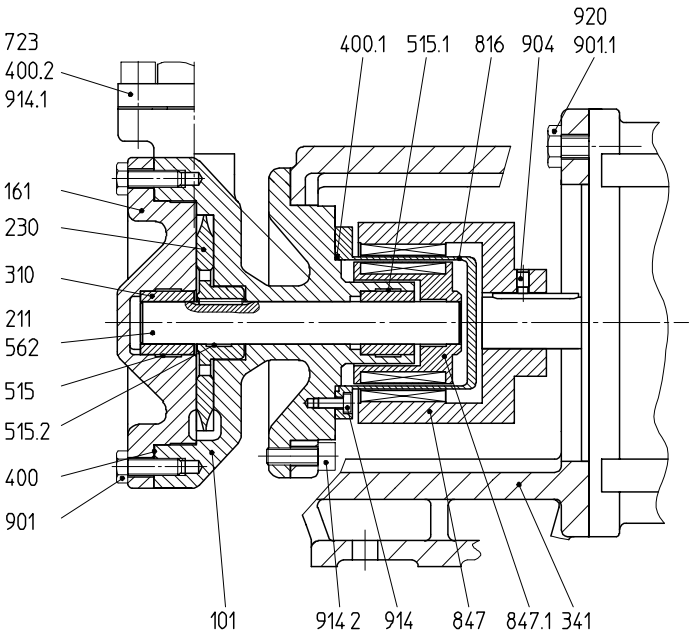



## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Gewicht<br>Weight | | Wasser<br>Water | Wasser<br>Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | kg | lbs | $t_{max}$ | $t_{max}$ |
| **CY-6091-MK** | 90L | 3~ | 2800 | 2,80 | 3.75 | 3400 | 2,80 | 3.75 | 33 | 73 | 180 °C (G) | 180 °C (SAE) |
| | 100L | | | 3,00 | 4.02 | | 3,00 | 4.02 | 36 | 79 | | |
| | 112M | | | 4,00 | 5.36 | | 4,00 | 5.36 | 46 | 101 | | |
| | 132S | | | 5,50 | 7.38 | | 5,50 | 7.38 | 70 | 155 | | |

| Type | Baugröße | Q | l/min | USGPM | $G_S$ | $G_D$ | Nm | AD[1] | LB[1] | h1 | h3 | h5 | m1 | m2 | n1 | o[1] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-6091-MK** | 90L | **Q 80** | 80 | 21 | G 3/4 oder / or SAE 1 | G 3/4 oder / or SAE 1 | 14 | 147 | 280 | 100 | 200 | 138 | 110 | 70 | 130 | – | 80 | 501 |
| | 100L | **Q 150** | 150 | 37 | | | | 154 | 306 | | | | | | | 10 | | 537 |
| | | | | | | | | | | | | | | | | 32 | | 559 |
| | 112M | **Q 200** | 200 | 53 | SAE 1 1/4 | SAE 1 1/4 | 22 | 167 | 296 | 114 | 214 | 138 | 145 | 80 | 140 | – | 90 | 578 |
| | 132S | | | | | | | 221 | 457 | | | 143 | | | | 20 | | 739 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 515-.2 | Toleranzring | Tolerance ring |
| 562 | Stift | Pin |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 904 | Gewindestift | Threaded pin |
| 914-.2 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 920 | 6-kt. Mutter | Hexagon nut |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

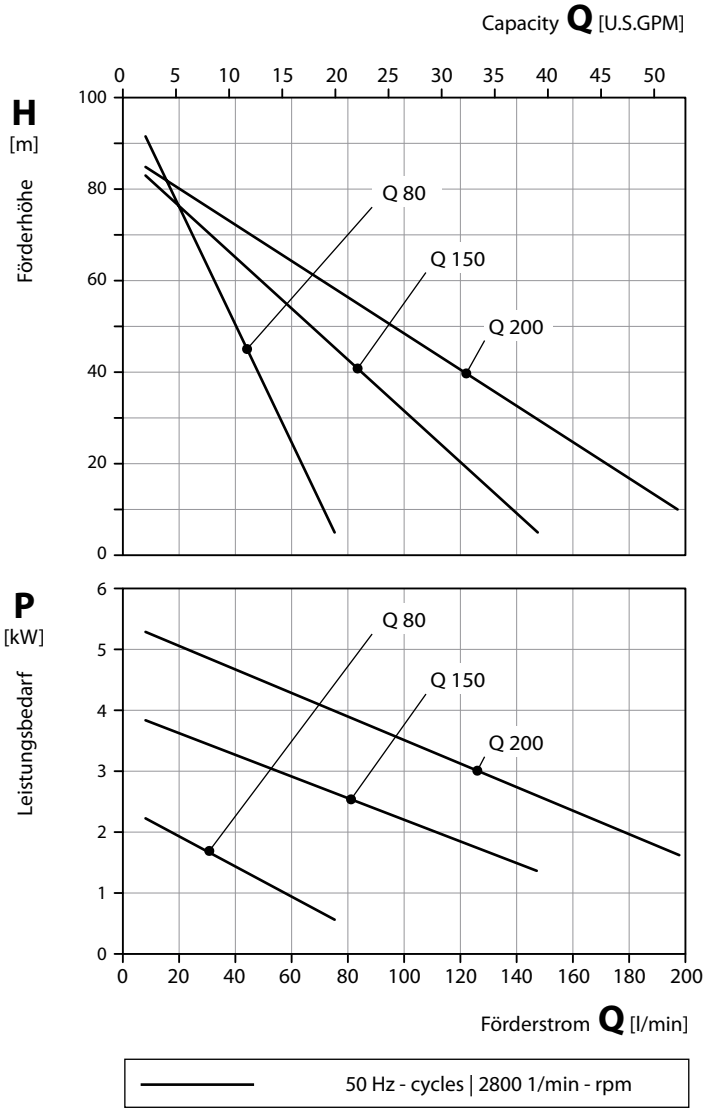
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

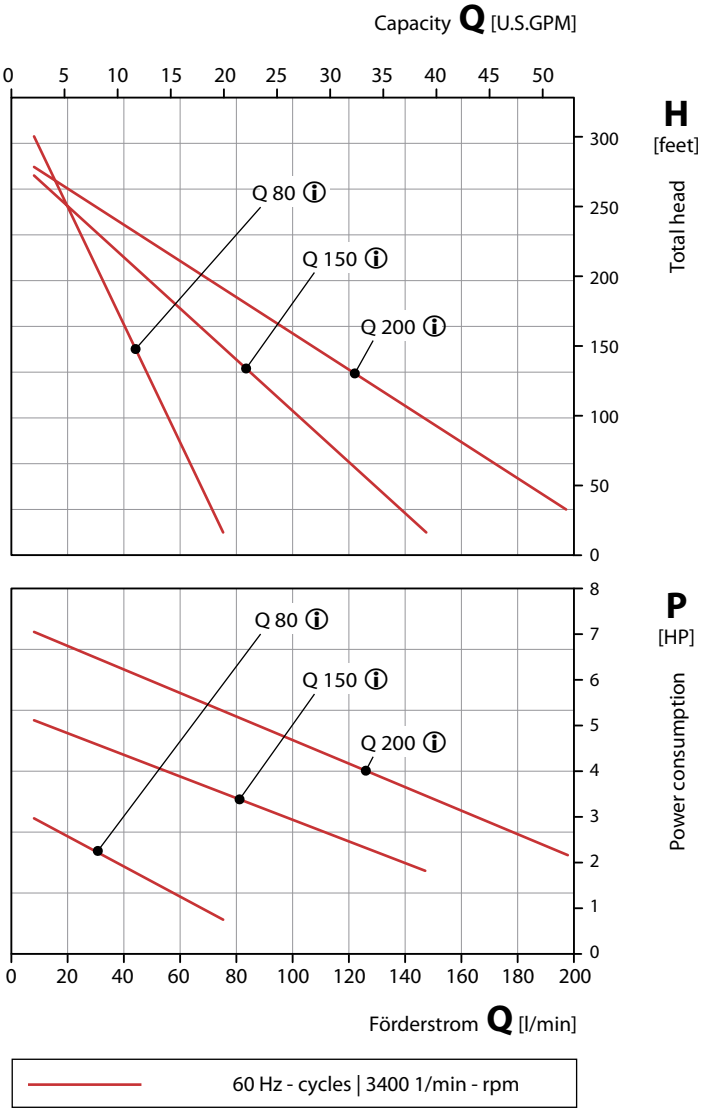
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | EN-GJS-500-7<br>Spheroidal graphite cast iron |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

EN-GJS-500-7 = EN-JS 1050 = GGG-50

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

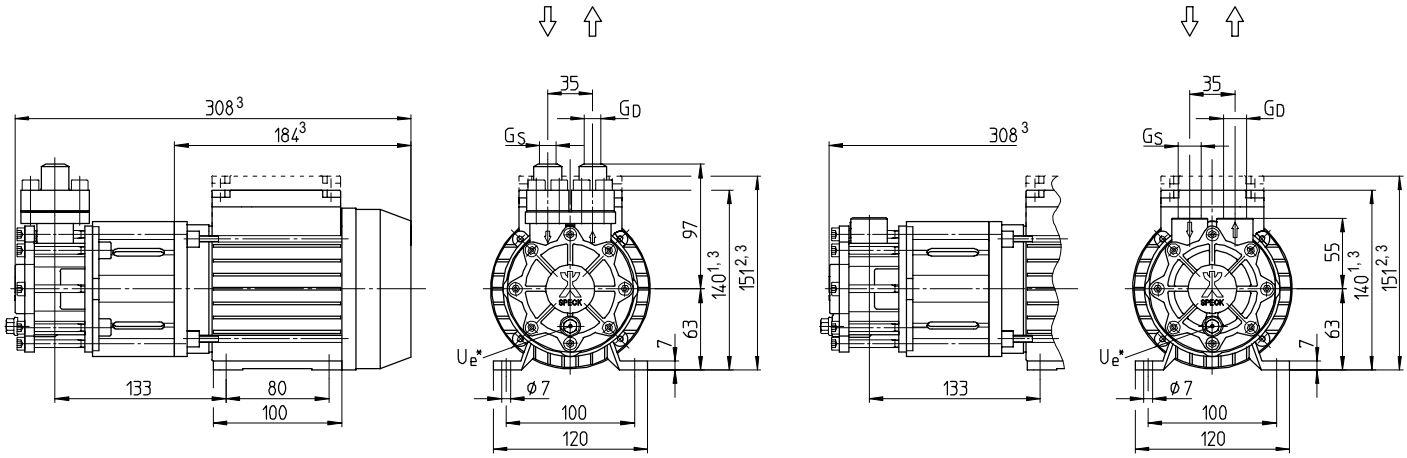
If the property of the pump media differs the characteristic curves change.

# NPY-2251-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

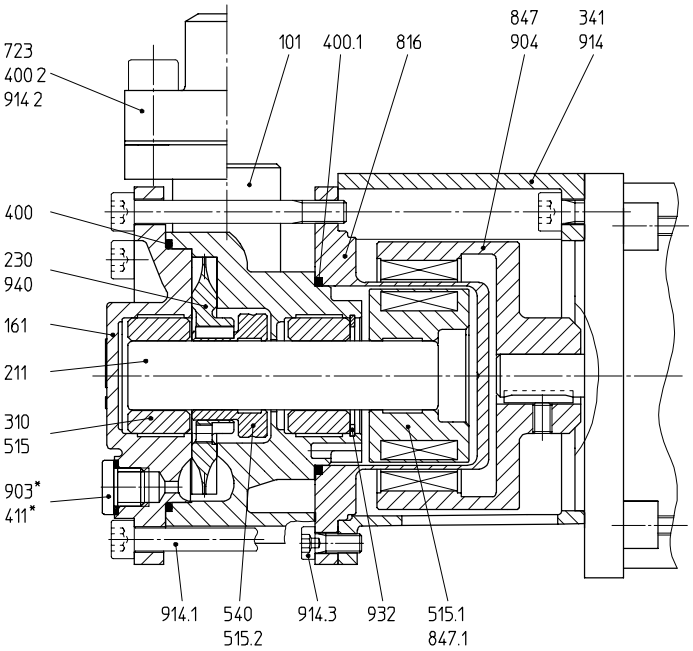
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Öl Oil | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ue* | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **NPY-2251-MK-TOE** | 63 | 3~ | 2800 | 0,50 | 0.67 | 3400 | 0,55 | 0.74 | G 1/2<br>SAE 1/2 | G 1/2<br>SAE 1/2 | G 1/8 | 3,0 | 9,6 | 21 | 180 °C<br>(G 1/2) | 350 °C<br>(SAE 1/2) |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515-.2 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.3 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung

$U^e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design

$U_e$ = Drainage / Screw plug

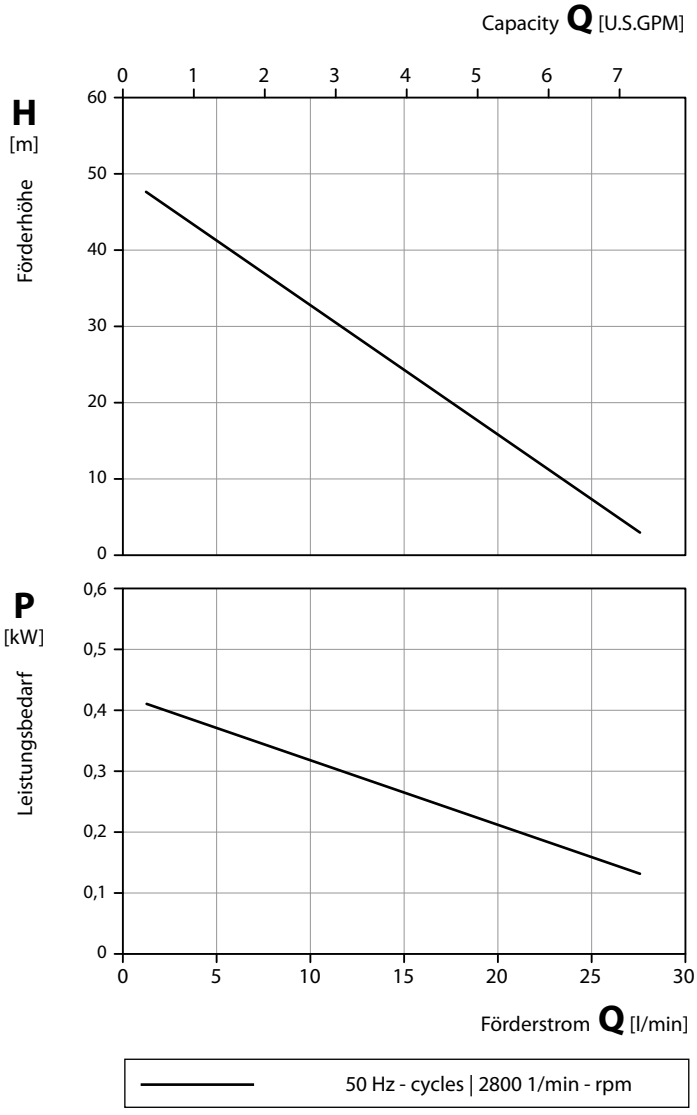
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

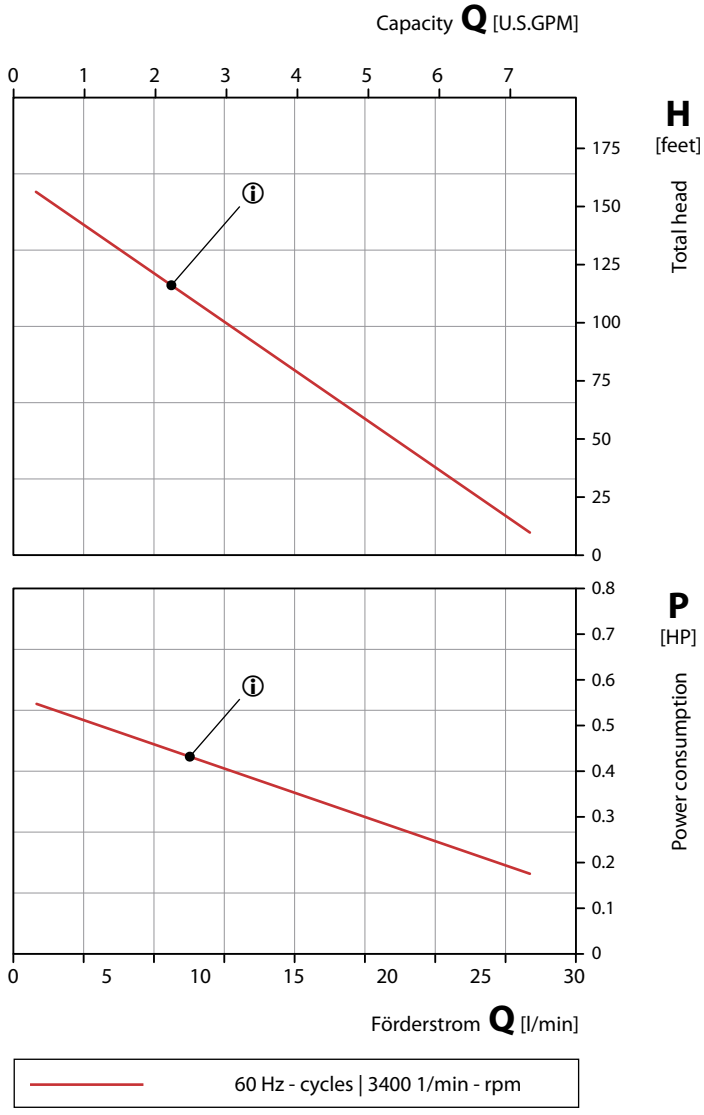
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

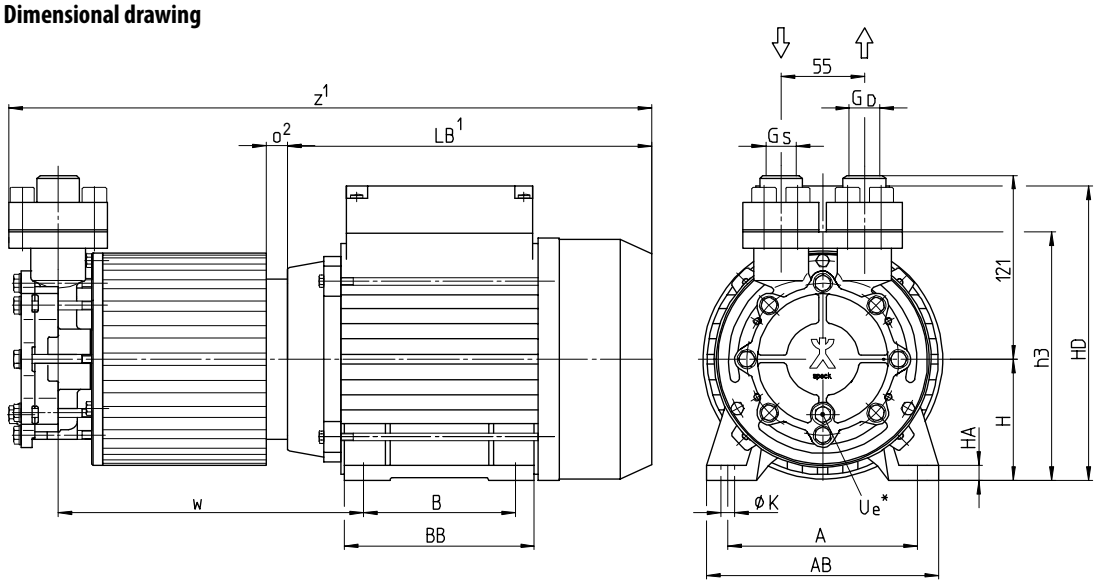
If the property of the pump media differs the characteristic curves change.

# CY-4281-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

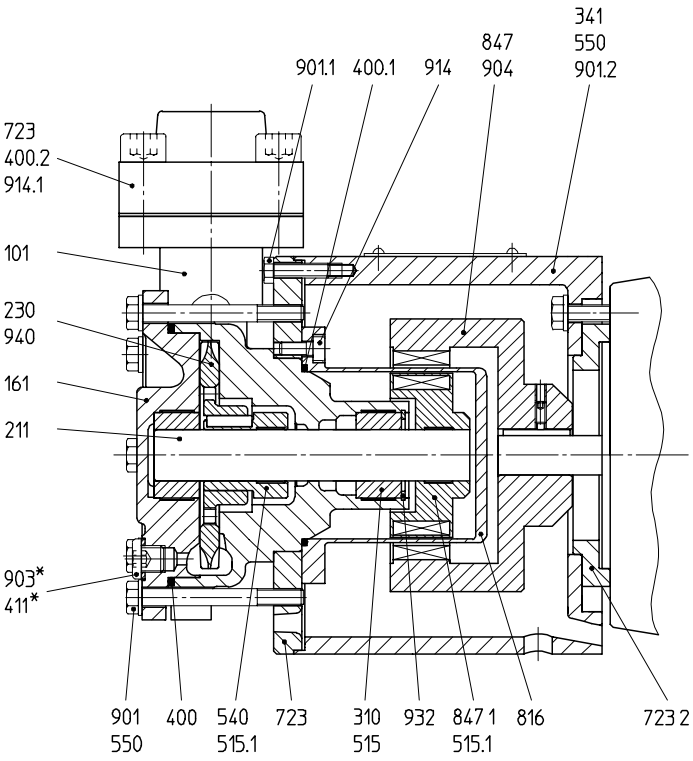



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | Nm | kg | lbs | $t_{max}$ |
| **CY-4281-MK-TOE** | 71 | | | 1,0 | 1.34 | | 1,0 | 1.34 | | | | 7 | 15,0 | 33 | |
| | 80 | 3~ | 2800 | 1,5 | 2.00 | 3400 | 1,5 | 2.00 | SAE 3/4 | SAE 3/4 | G 1/8 | 7 | 18,5 | 41 | 350 °C |
| | 90 | | | 2,2 | 2.95 | | 2,2 | 2.95 | | | | 10 | 19,5 | 43 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD | K | LB[1] | h3 | o[2] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-4281-MK-TOE** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 9 | 211 | 155 | – | 178 | 367 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 194 | 9 | 240 | 164 | 10 | 191 | 414 |
| | 90 | 140 | 170 | 125 | 155 | 90 | 13 | 209 | 10 | 281 | 174 | 14 | 206 | 444 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 550 | Scheibe | Washer |
| 723/.2 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901-.2 | 6-kt. Schraube | Hexagon head screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Threaded pin |
| 914-.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |

[1] Abhängig von Motorausführung
[2] Motorflansch Ø 120

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design
[2] Motor flange Ø 120

* On request

$U_e$ = Drainage / Screw plug

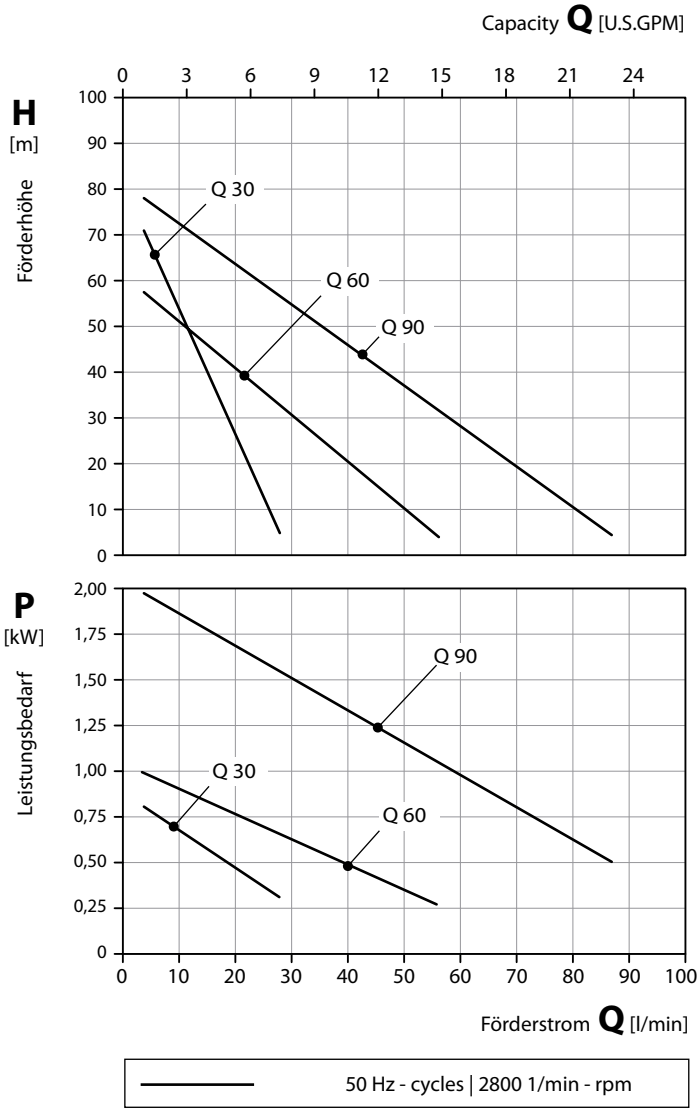
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

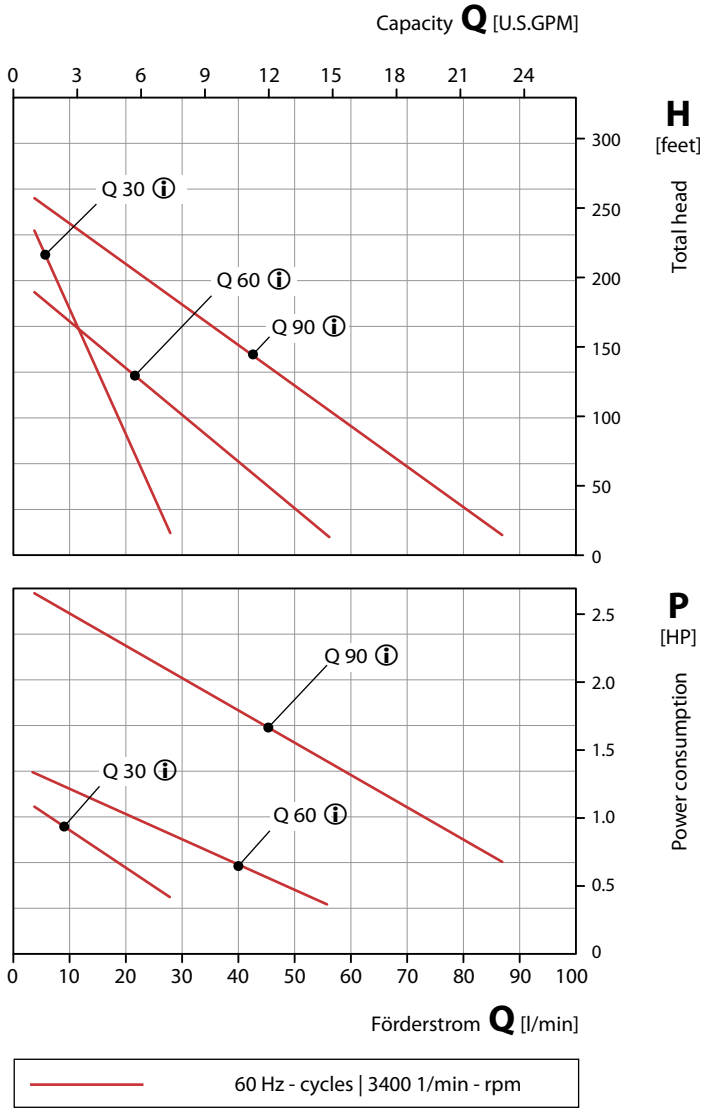
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408,<br>plasmanitriert<br>CrNiMo-cast steel,<br>plasma nitrated |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

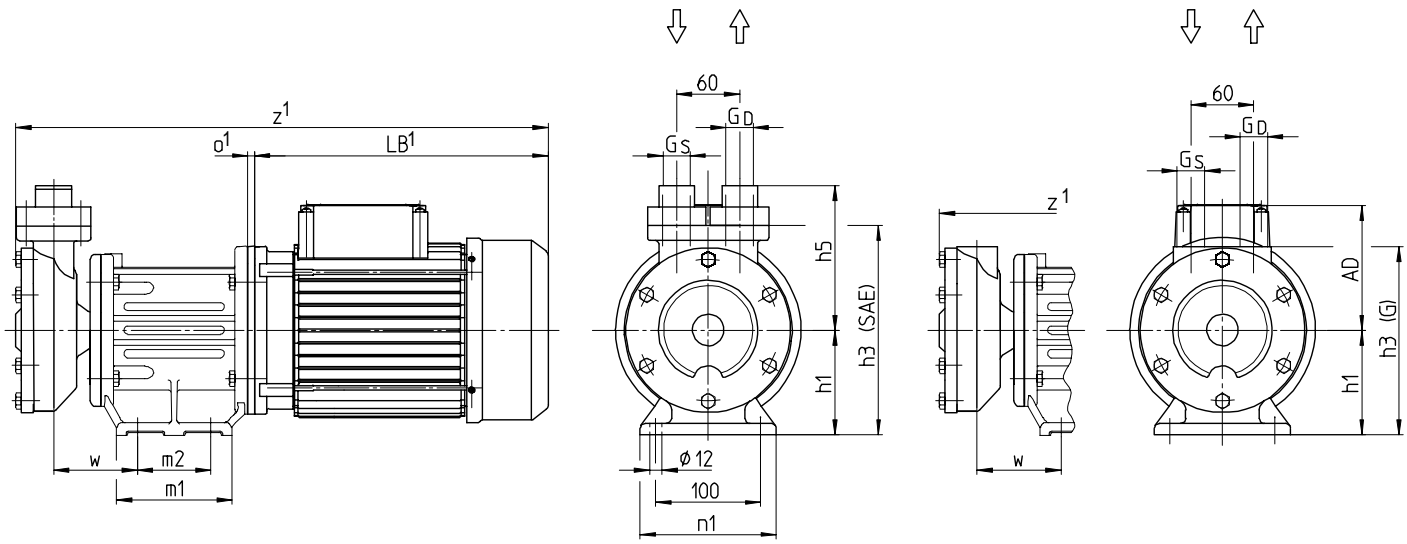
If the property of the pump media differs the characteristic curves change.

# CY-6091-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

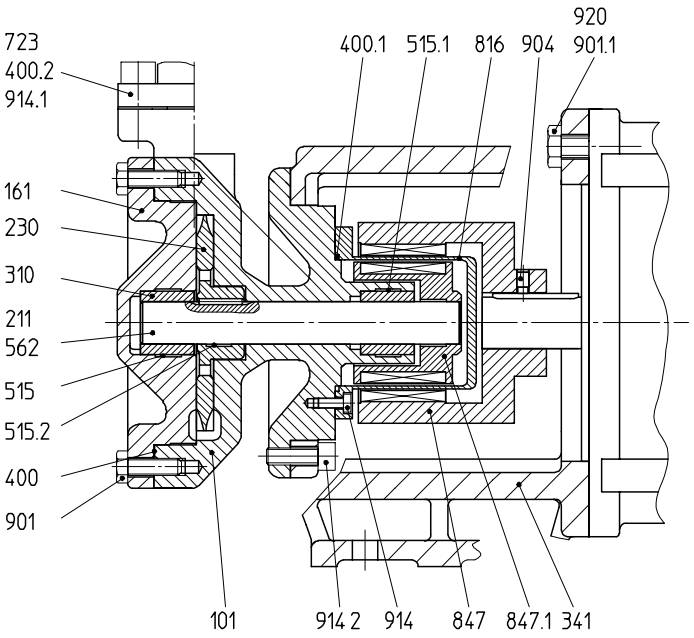



## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Gewicht<br>Weight | | Öl<br>Oil | Öl<br>Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | kg | lbs | $t_{max}$ | $t_{max}$ |
| **CY-6091-MK** | 90L | 3~ | 2800 | 2,80 | 3.75 | 3400 | 2,80 | 3.75 | 33 | 73 | 180 °C (G) | 350 °C (SAE) |
| | 100L | | | 3,00 | 4.02 | | 3,00 | 4.02 | 36 | 79 | | |
| | 112M | | | 4,00 | 5.36 | | 4,00 | 5.36 | 46 | 101 | | |
| | 132S | | | 5,50 | 7.38 | | 5,50 | 7.38 | 70 | 155 | | |

| Type | Baugröße | Q | l/min | USGPM | $G_S$ | $G_D$ | Nm | AD[1] | LB[1] | h1 | h3 | h5 | m1 | m2 | n1 | o[1] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-6091-MK** | 90L | **Q 80** | 80 | 21 | G 3/4 oder / or SAE 1 | G 3/4 oder / or SAE 1 | 14 | 147 | 280 | 100 | 200 | 138 | 110 | 70 | 130 | – | 80 | 501 |
| | 100L | **Q 150** | 150 | 37 | | | | 154 | 306 | | | | | | | 10 | | 537 |
| | | | | | | | | | | | | | | | | 32 | | 559 |
| | 112M | **Q 200** | 200 | 53 | SAE 1 1/4 | SAE 1 1/4 | 22 | 167 | 296 | 114 | 214 | 138 | 145 | 80 | 140 | – | 90 | 578 |
| | 132S | | | | | | | 221 | 457 | | | 143 | | | | 20 | | 739 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 515-.2 | Toleranzring | Tolerance ring |
| 562 | Stift | Pin |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901/.1 | 6-kt. Schraube | Hexagon head screw |
| 904 | Gewindestift | Threaded pin |
| 914-.2 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 920 | 6-kt. Mutter | Hexagon nut |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

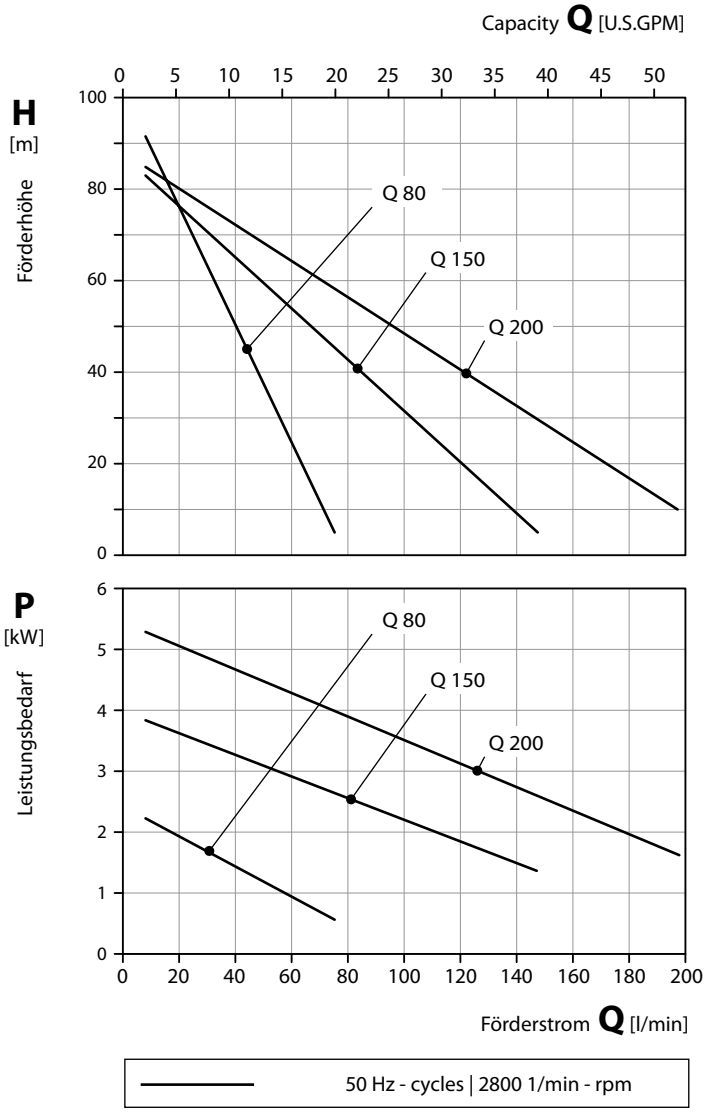
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

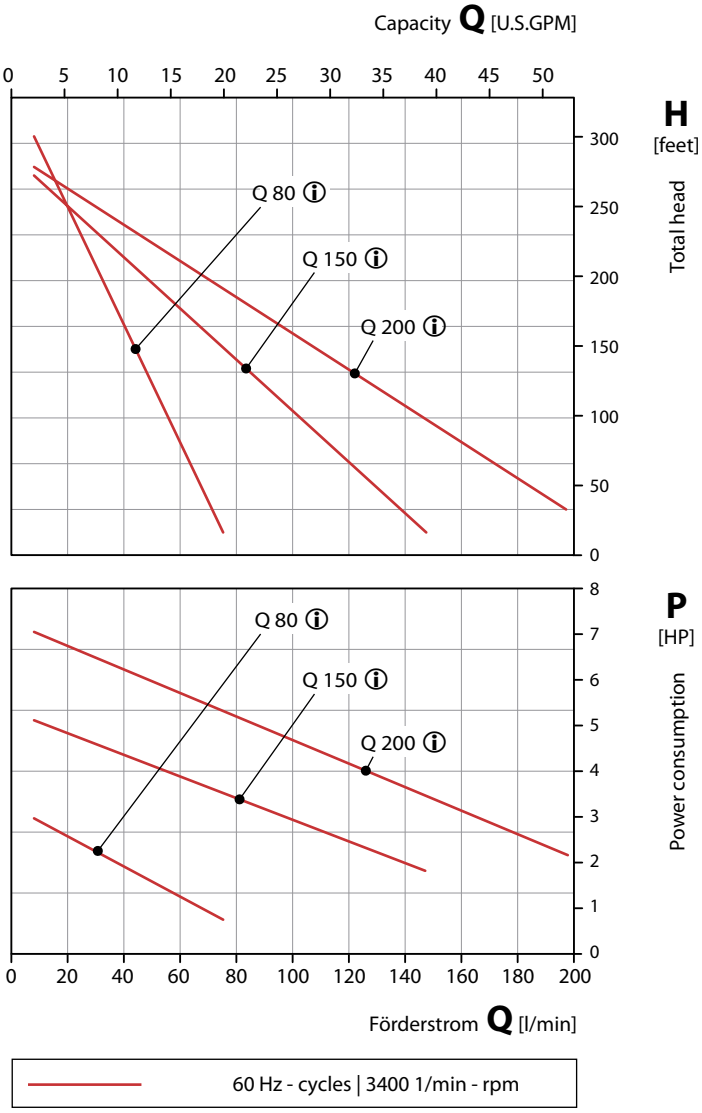
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | EN-GJS-500-7<br>Spheroidal graphite cast iron |
| Laufrad<br>Impeller | 1.4408<br>CrNiMo-cast steel |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

EN-GJS-500-7 = EN-JS 1050 = GGG-50

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

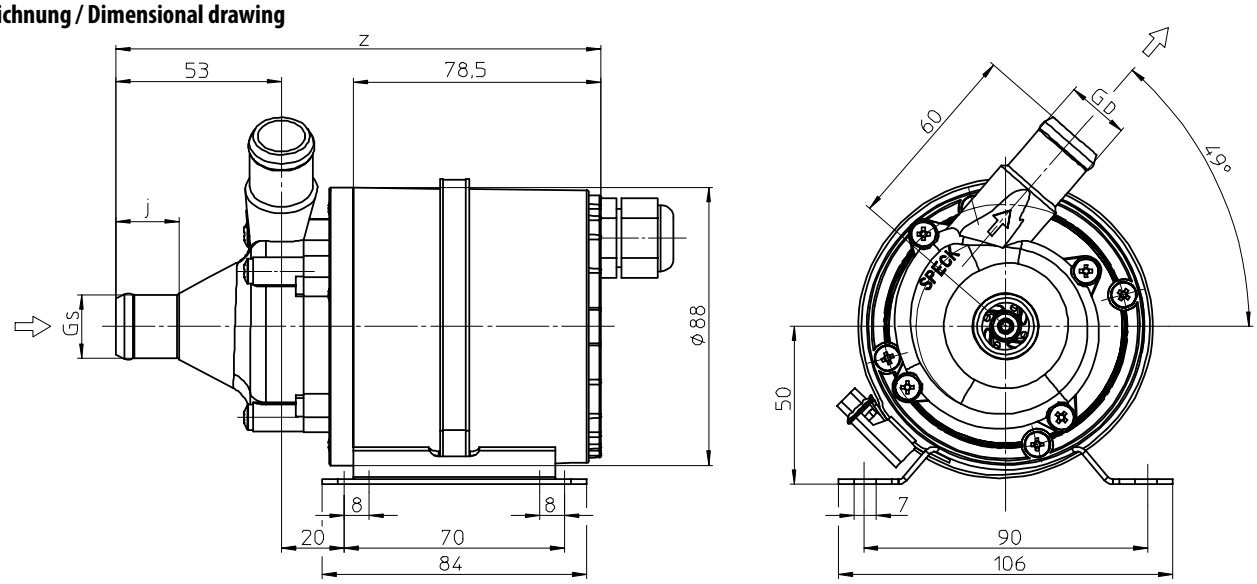
If the property of the pump media differs the characteristic curves change.

# MY-3-MM

**Radialradpumpen**
mit Spalttopfmotor

**Centrifugal pumps**
with canned motor

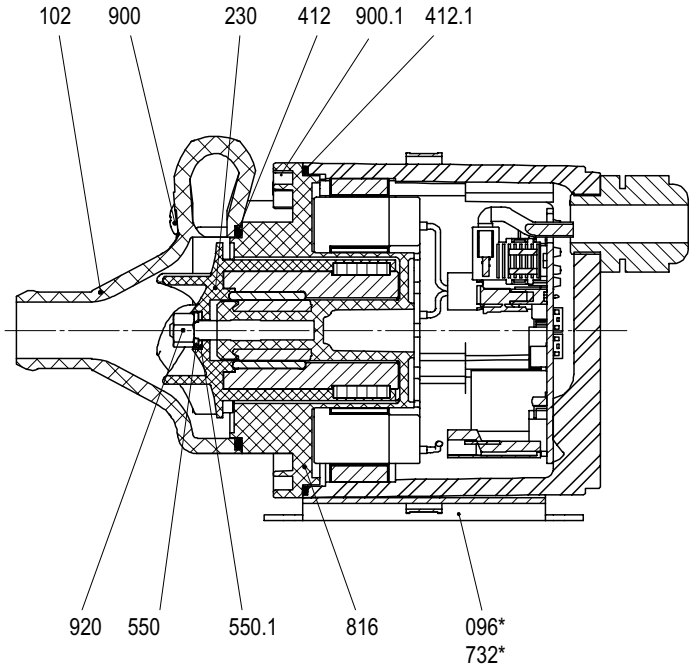
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Gewicht Weight | | Wasser Water | Maße Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | kW | HP | $G_S$ / $G_D$ [mm] | $G_S$ / $G_D$ [inch] | kg | lbs | $t_{max}$ | j | z |
| **MY-3-MM** | 24 | 2000 - 6500 | 0,18 | 0.24 | 20 | 0.8 | 1,6 | 3.5 | 80 °C | 20 | 154 |
| | | 2000 - 6000 | | | 28 | 1.1 | | | | 27 | 159 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 096* | Schlauchklemme | Hose clamp |
| 102 | Spiralgehäuse | Volute casing |
| 230 | Laufrad | Impeller |
| 412./1 | O-Ring | O-ring |
| 550./1 | Scheibe | Washer |
| 732* | Halterung | Mount |
| 816 | Spalttopf | Separating can |
| 900.1 | Schraube | Screw |
| 920 | 6-kt. Mutter | Hexagon nut |

* Auf Anfrage

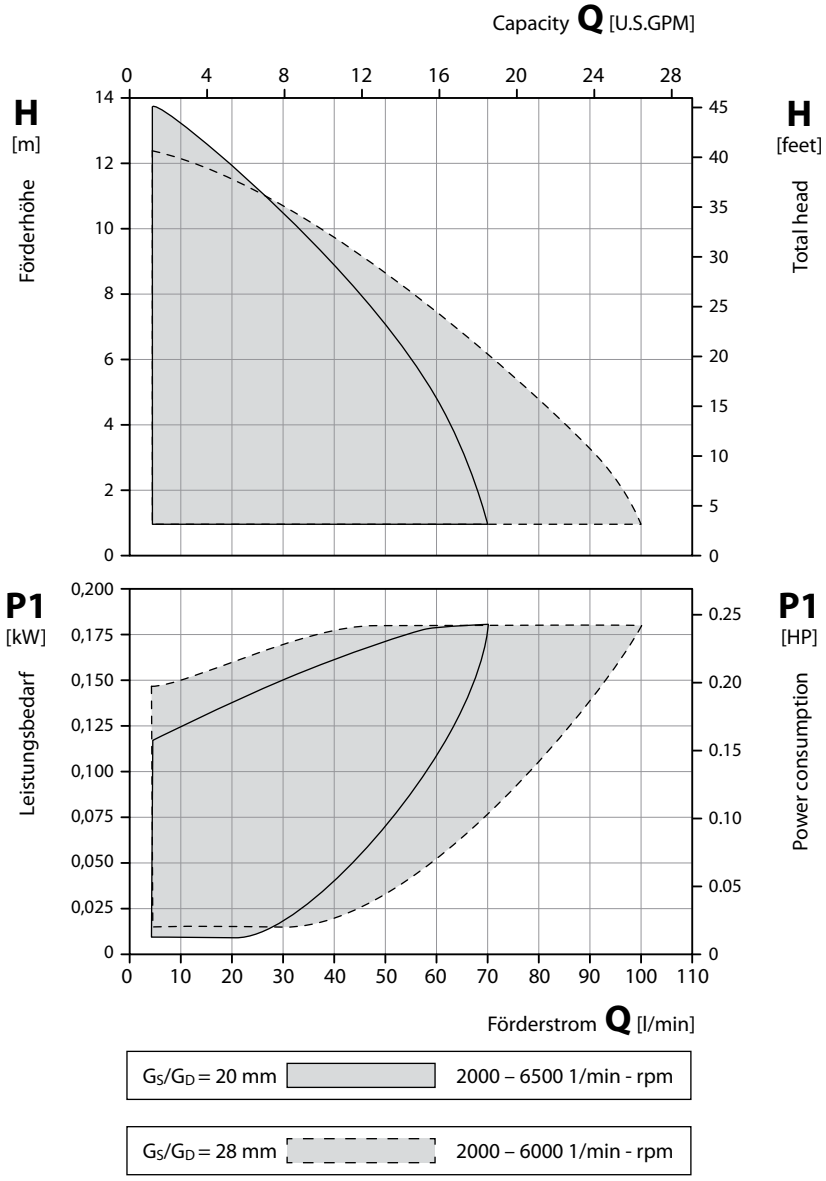
* On request


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Radialradpumpen**
mit Spalttopfmotor

**Centrifugal pumps**
with canned motor

## Kennfelder / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Spiralgehäuse<br>Volute casing | PA |
| Laufrad<br>Impeller | PPS |
| O-Ring<br>O-ring | FKM |
| Spalttopf<br>Separating can | PPS |

### Kennfelder:

Innerhalb der dargestellten Kennfelder ist jeder Betriebspunkt durch entsprechende Parametrierung des Antriebes möglich.

Die Kennfelder gelten für die Förderung von Wasser mit einer Temperatur von 20 °C und einer Umgebungstemperatur von 20 °C.

Die Toleranz von Förderhöhe und Förderstrom beträgt ±10 %, die des Leistungsbedarfs +10 %.

Bei abweichenden Eigenschaften des Fördermediums und anderen Umgebungstemperaturen ändern sich die Kennfelder.

Der Leistungsbedarf P1 bezeichnet die elektrische Leistungsaufnahme.

### Characteristic curves

Every operating point can be reached within these characteristic curves by setting different drive parameters.

The characteristic curves are applicable for the delivery of water of 20 °C temperature and an ambient temperature of 20 °C.

The tolerance of total head and capacity is ±10%, performance tolerance is +10%.

If the property of the pumped media differs, the characteristic curves change.

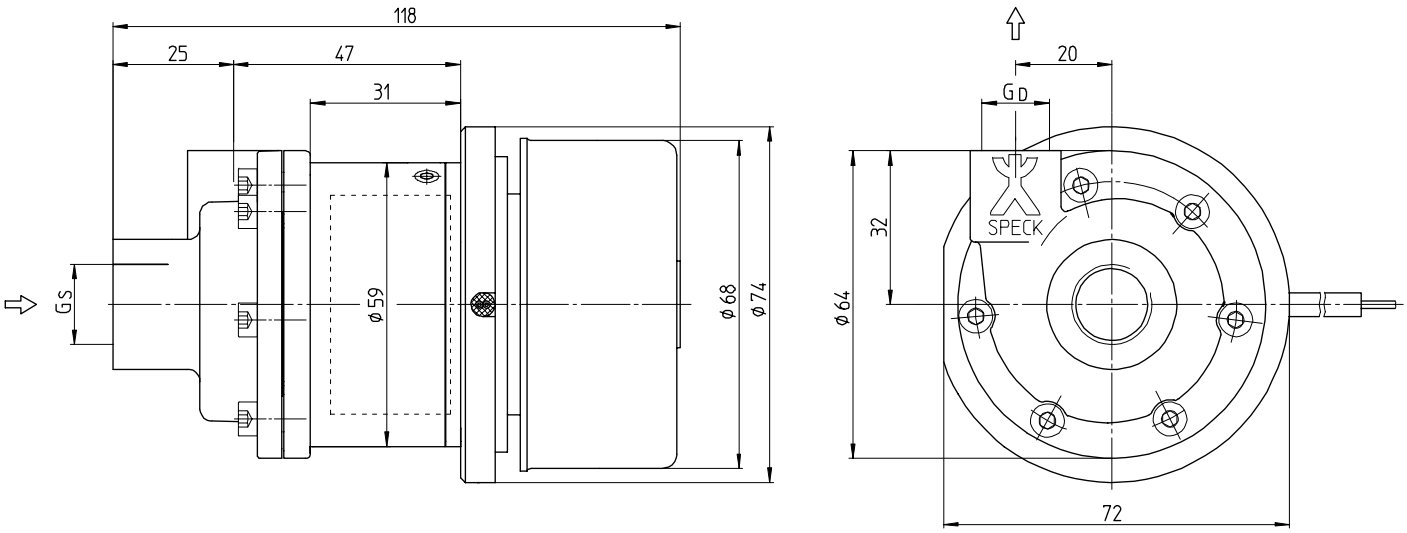
The power consumption P1 specifies the electrical power input.

# MY-2-6000-MK

**Radialradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Centrifugal pumps**
with DC motor and magnetic coupling

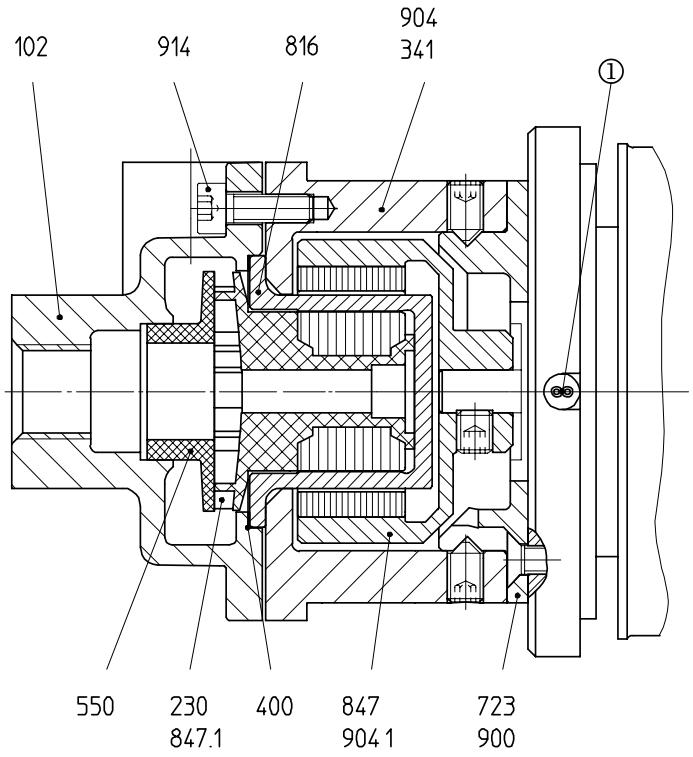
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | W | HP | $G_S$ | $G_D$ | Ncm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **MY-2-6000-MK** | 24 | 6000 | 23 | 0.03 | G 3/8 | G 1/4 | 10 | 1,6 | 3.5 | 80 °C | 80 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 102 | Spiralgehäuse | Volute casing |
| 230 | Laufrad | Impeller |
| 341 | Laterne | Bracket |
| 400 | Flachdichtung | Flat gasket |
| 550 | Scheibe | Washer |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 900 | Schraube | Screw |
| 904/.1 | Gewindestift | Threaded pin |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |

① Anschlusskabel

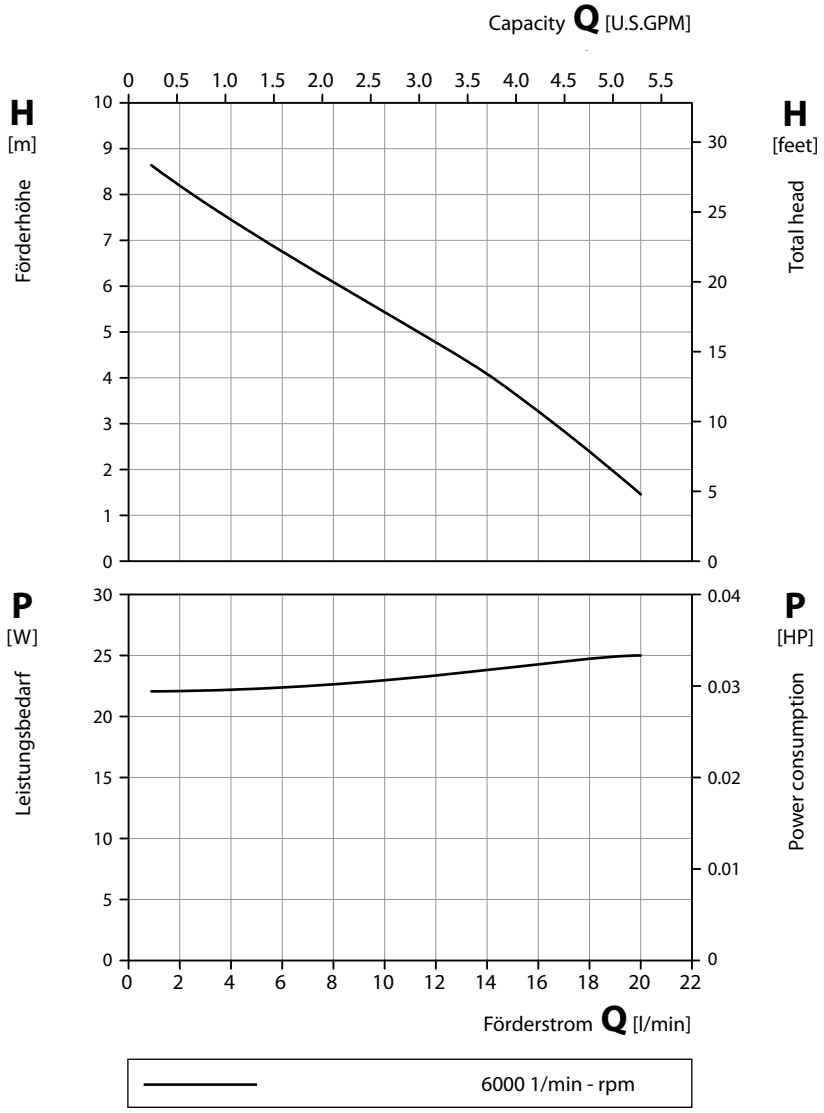
① Connection cable


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Radialradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Centrifugal pumps**
with DC motor and magnetic coupling

## Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Spiralgehäuse<br>Volute casing | 1.4851<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | PPS |
| Flachdichtung<br>Flat gasket | Centellen® |
| Spalttopf<br>Separating can | SiC |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

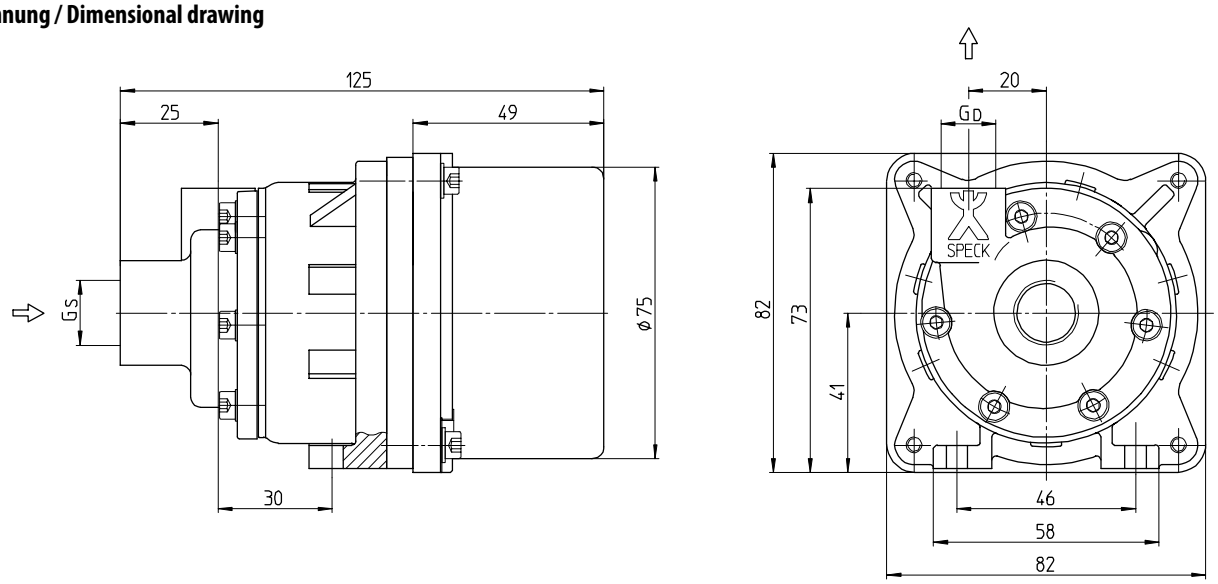
If the property of the pump media differs the characteristic curves change.

# MY-2-8000-MK

**Radialradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Centrifugal pumps**
with DC motor and magnetic coupling

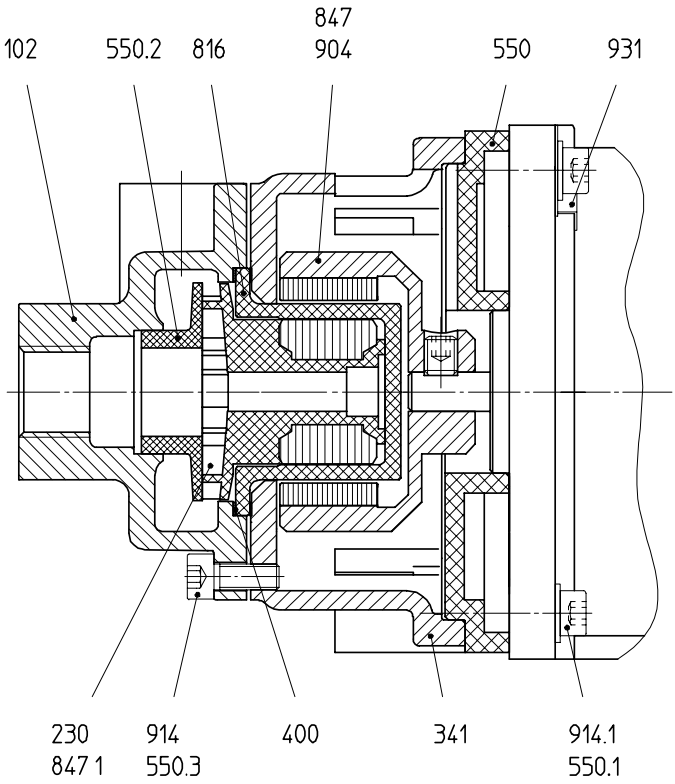
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | W | HP | $G_S$ | $G_D$ | Ncm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **MY-2-6000-MK** | 24 | 9000 | 80 | 0.11 | G 3/8 | G 1/4 | 13 | 1,3 | 2.9 | 80 °C | 80 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

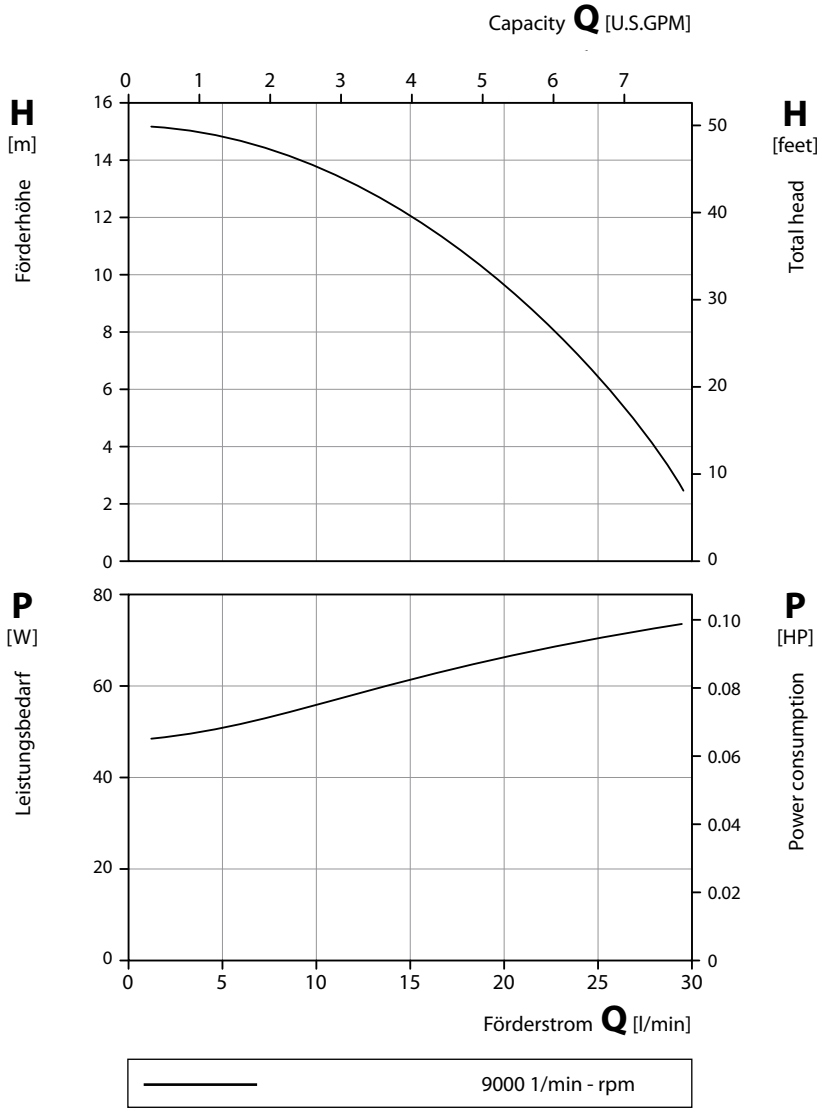
| | | |
|---|---|---|
| 102 | Spiralgehäuse | Volute casing |
| 230 | Laufrad | Impeller |
| 341 | Laterne | Bracket |
| 400 | Flachdichtung | Flat gasket |
| 550-.3 | Scheibe | Washer |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 904 | Gewindestift | Threaded pin |
| 914/.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 931 | Sicherungsblech | Locking washer |


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Radialradpumpen**
mit Gleichstrommotor und Magnetkupplung

**Centrifugal pumps**
with DC motor and magnetic coupling

## Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Spiralgehäuse<br>Volute casing | 1.4851<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | PPS |
| Flachdichtung<br>Flat gasket | Centellen® |
| Spalttopf<br>Separating can | SiC |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

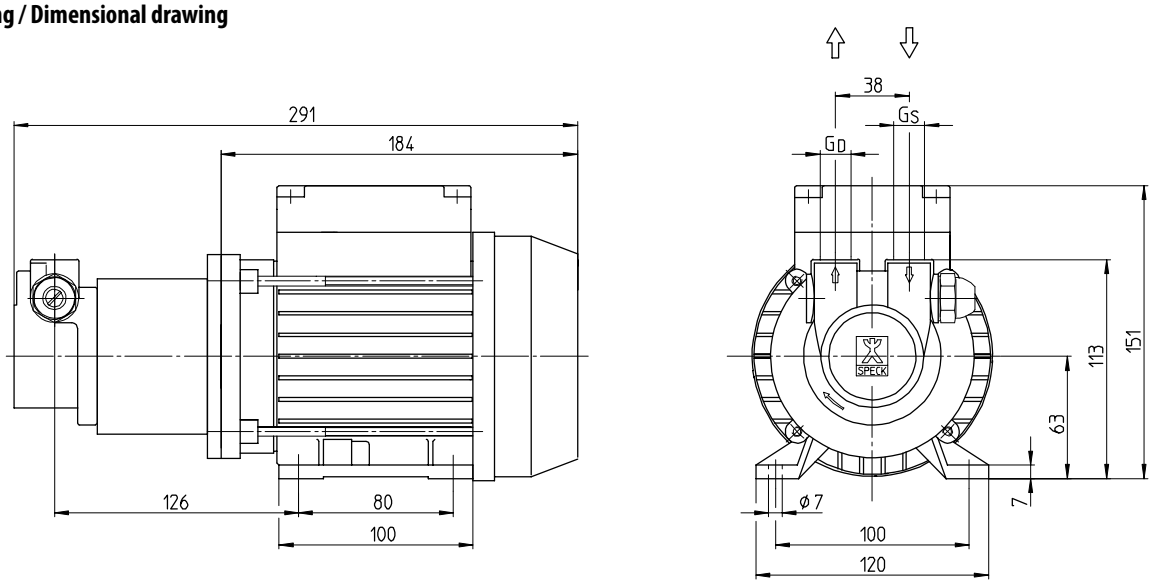
If the property of the pump media differs the characteristic curves change.

# DS-120 / ... / 450-MK

**Drehschieberpumpen**
mit Magnetkupplung, selbstansaugend

**Roller vane pumps**
with magnetic coupling, self-priming

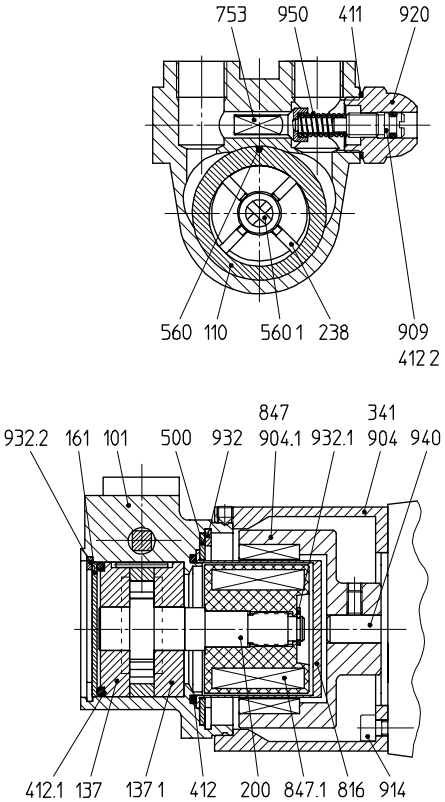
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ |
| **DS-120 / ... / 450-MK** | 63 | 1 / 3~ | 2800 | 0,3 | 0.4 | 3400 | 0,3 | 0.4 | G 3/8 | G 3/8 | 0,7 | 6 | 13.2 | 70 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 110 | Mittelkörper | Stage casing |
| 137/.1 | Steuerscheibe | Inter casing |
| 161 | Gehäusedeckel | Casing cover |
| 200 | Läufer | Rotor |
| 238 | Laufradschieber | Vane |
| 341 | Laterne | Bracket |
| 411 | Dichtring | Sealing ring |
| 412-.2 | O-Ring | O-ring |
| 500 | Ring | Ring |
| 560/.1 | Stift | Pin |
| 753 | Ventilkegel | Valve cone |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 904/.1 | Gewindestift | Threaded pin |
| 909 | Einstellschraube | Adjusting screw |
| 914 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 920 | 6-kt. Mutter | Hexagon nut |
| 932-.2 | Sicherungsring | Locking ring |
| 940 | Passfeder | Fitting key |
| 950 | Druckfeder | Pressure spring |

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

Weight depending on motor frame size, performance, materials and execution

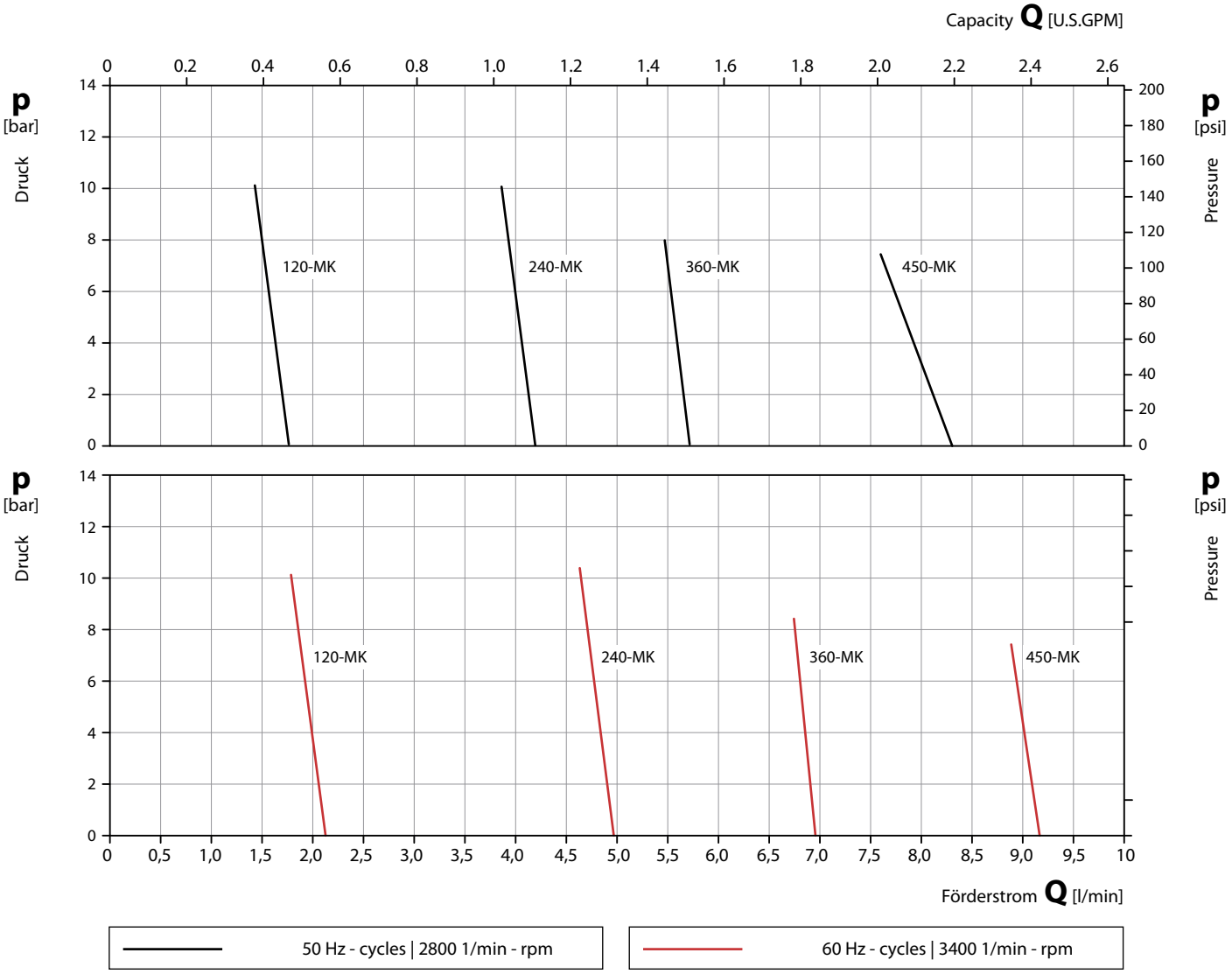

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Drehschieberpumpen**
mit Magnetkupplung, selbstansaugend

**Roller vane pumps**
with magnetic coupling, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | 1.4305<br>CrNi-steel | CuZn<br>Brass |
| Steuerscheibe<br>Inter casing | Kohle<br>Carbon | |
| Mittelkörper<br>Stage casing | Kohle<br>Carbon | |
| Läufer<br>Rotor | 1.4301<br>CrNi-steel | |
| Welle<br>Shaft | 1.4305<br>CrNi-steel | |
| Spalttopf<br>Separating can | 1.4301<br>CrNi-steel | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

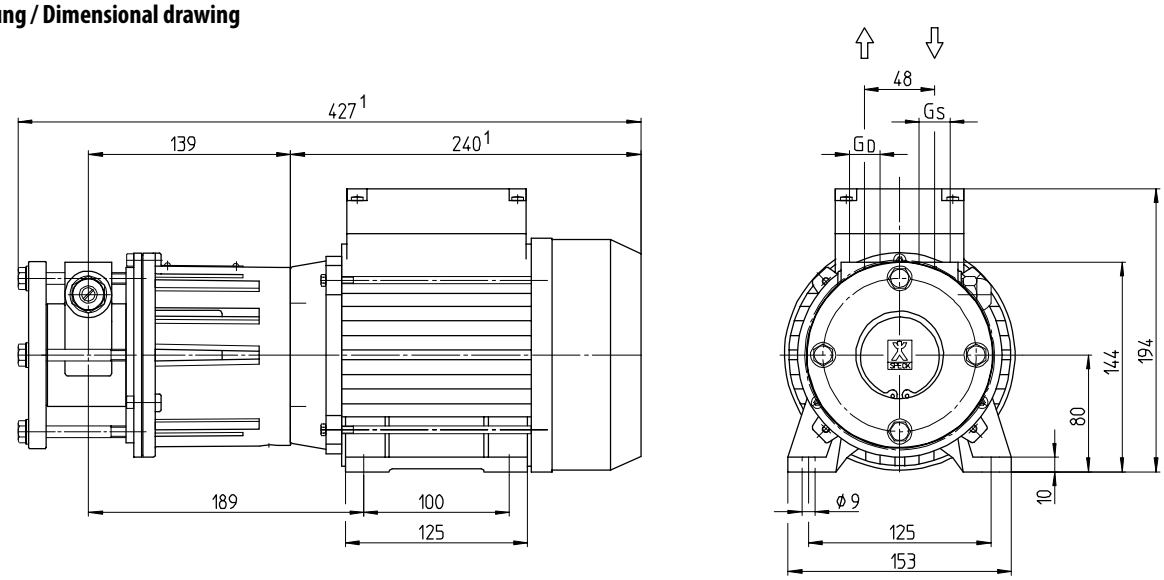
If the property of the pump media differs the characteristic curves change.

# DS-540 / ... / 960-MK

**Drehschieberpumpen**
mit Magnetkupplung, selbstansaugend

**Roller vane pumps**
with magnetic coupling, self-priming

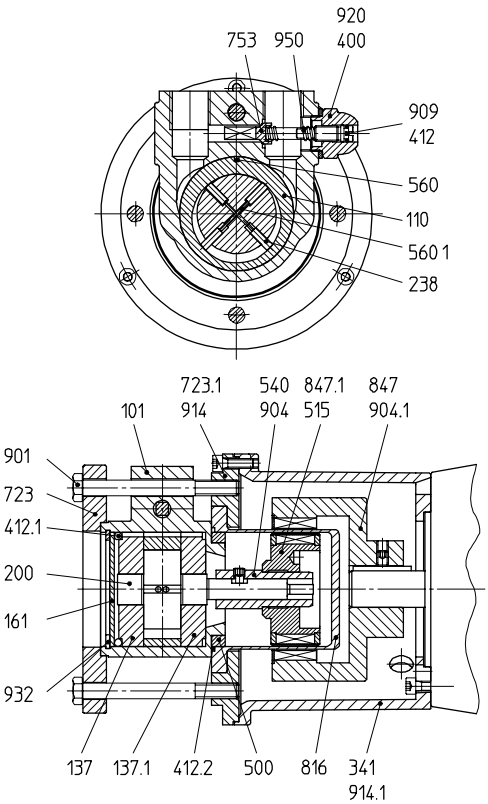
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse<br>Connections | | Drehmoment<br>Torque | Gewicht<br>Weight | | Wasser<br>Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Nm | kg | lbs | $t_{max}$ |
| **DS-540 / ... / 960-MK** | 80 | 3~<br>1~ | 1450 | 0,75<br>0,90 | 1.0<br>1.2 | 1750 | 0,75<br>0,90 | 1.0<br>1.2 | G 1/2 | G 1/2 | 7 | 17 | 38 | 70 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 110 | Mittelkörper | Stage casing |
| 137/.1 | Steuerscheibe | Inter casing |
| 161 | Gehäusedeckel | Casing cover |
| 200 | Läufer | Rotor |
| 238 | Laufradschieber | Vane |
| 341 | Laterne | Bracket |
| 400 | Flachdichtung | Flat gasket |
| 412-.2 | O-Ring | O-ring |
| 500 | Ring | Ring |
| 515 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 560/.1 | Stift | Pin |
| 723/.1 | Flansch | Flange |
| 753 | Ventilkegel | Valve cone |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901 | 6-kt. Schraube | Hexagon head screw |
| 904-.1 | Gewindestift | Threaded pin |
| 909 | Einstellschraube | Adjusting screw |
| 914/.1 | Innen-6-kt. Schraube | Hexagon socket head screw |
| 920 | 6-kt. Mutter | Hexagon nut |
| 932 | Sicherungsring | Locking ring |
| 950 | Druckfeder | Pressure spring |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

Weight depending on motor frame size, performance, materials and execution

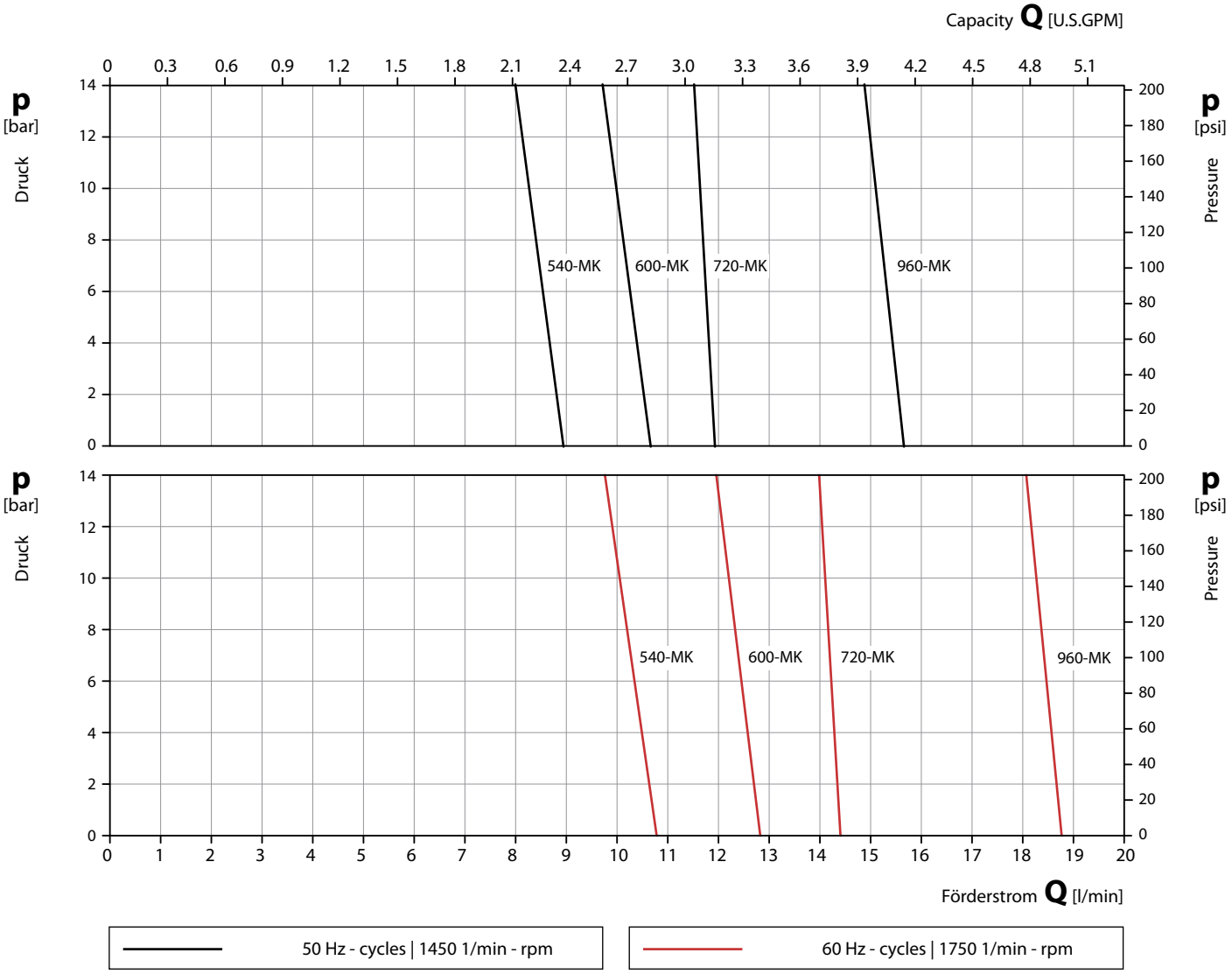

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Drehschieberpumpen**
mit Magnetkupplung, selbstansaugend

**Roller vane pumps**
with magnetic coupling, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4305<br>CrNi-steel |
| Steuerscheibe<br>Inter casing | Kohle<br>Carbon |
| Mittelkörper<br>Stage casing | Kohle<br>Carbon |
| Läufer<br>Rotor | 1.4301<br>CrNi-steel |
| Welle<br>Shaft | 1.4305<br>CrNi-steel |
| Spalttopf<br>Separating can | 1.4301<br>CrNi-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

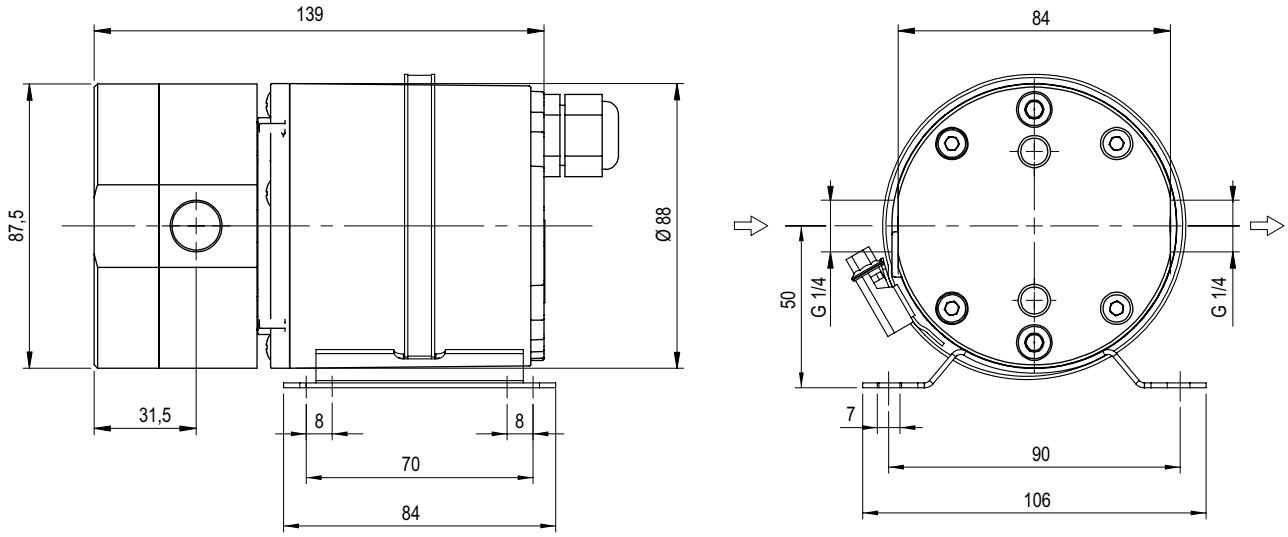
If the property of the pump media differs the characteristic curves change.

# ZY-3-MM

**Zahnradpumpe**
mit Spalttopfmotor

**Gear pumps**
with canned motor

## Maßzeichnung / Dimensional drawing




## Daten / Data

| | EC-Gleichstrommotor Brushless DC motor | | | | Anschlüsse Connections | | Gewicht Weight | | Öl und Kraftstoffe Oil and fuels |
|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1/min | kW | HP | $G_S$ | $G_D$ | kg | lbs | $t_{max}$ |
| **ZY-3-MM** | 24 | 1000 - 4000 | 0,18 | 0.24 | G 1/4 | G 1/4 | 2,8 | 6.2 | -40 °C ... +80 °C |

Gewicht abhängig von Ausführung

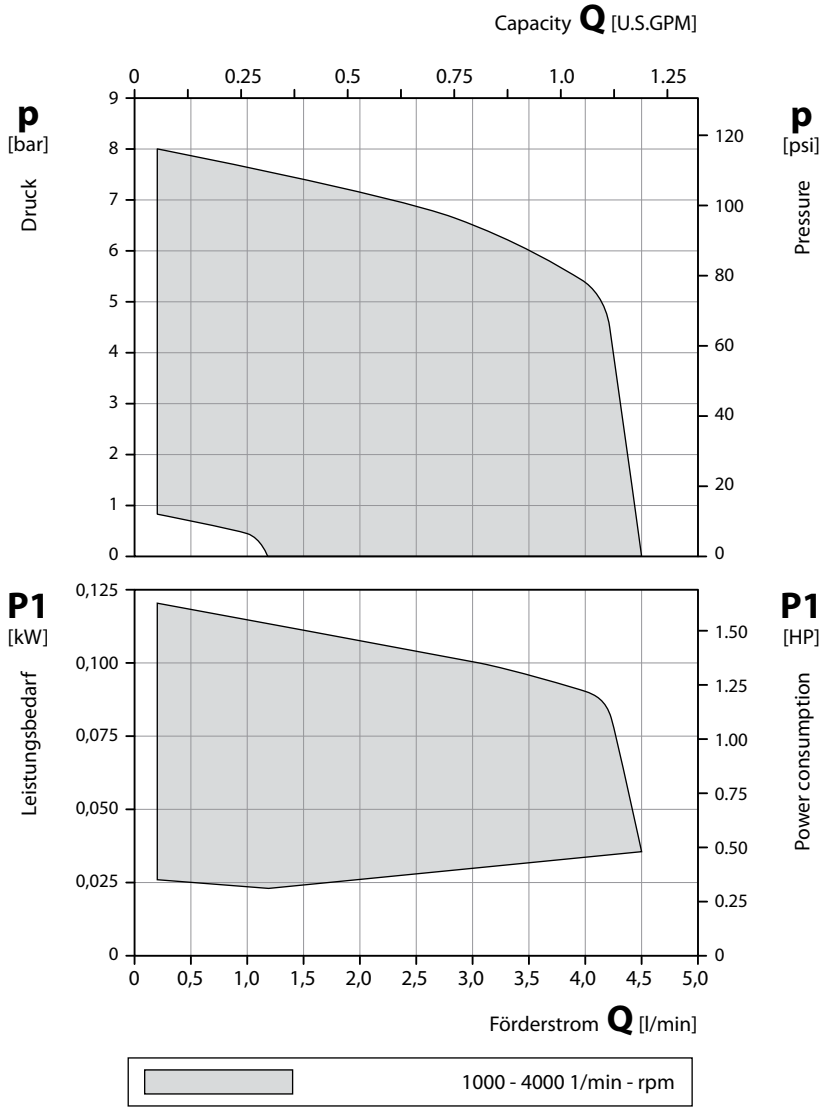
Weight depending on execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Zahnradpumpe**
mit Spalttopfmotor

**Gear pumps**
with canned motor

## Kennfelder / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | EN-GJS-400-15<br>Spheroidal graphite cast iron |
| Zahnrad<br>Gear wheel | Stahl<br>Steel |
| Spalttopf<br>Separating can | PPS |

EN-GJS-400-15 = EN-JS 1030 = GGG-40

### Kennfelder:

Innerhalb des dargestellten Kennfeldes ist jeder Betriebspunkt durch entsprechende Parametrierung des Antriebes und Einstellung des Überdruckventils möglich.

Die Kennfelder gelten für die Förderung von Wasser mit einer Temperatur von 20 °C und einer Umgebungstemperatur von 20 °C.
Die Toleranz von Förderhöhe und Förderstrom beträgt ±10 %, die des Leistungsbedarfs +10 %.

Bei abweichenden Eigenschaften des Fördermediums und anderen Umgebungstemperaturen ändern sich die Kennfelder.

Der Leistungsbedarf P1 bezeichnet die elektrische Leistungsaufnahme.

### Characteristic curves

Within the displayed characteristic curve every operating point can be selected by parameterizing the drive accordingly and by the settings of the pressure control valve.

The characteristic curves are applicable for the delivery of water of 20 °C temperature and an ambient temperature of 20 °C.
The tolerance of total head and capacity is ±10%, performance tolerance is +10%.

If the property of the pumped media differs, the Characteristic curves change.

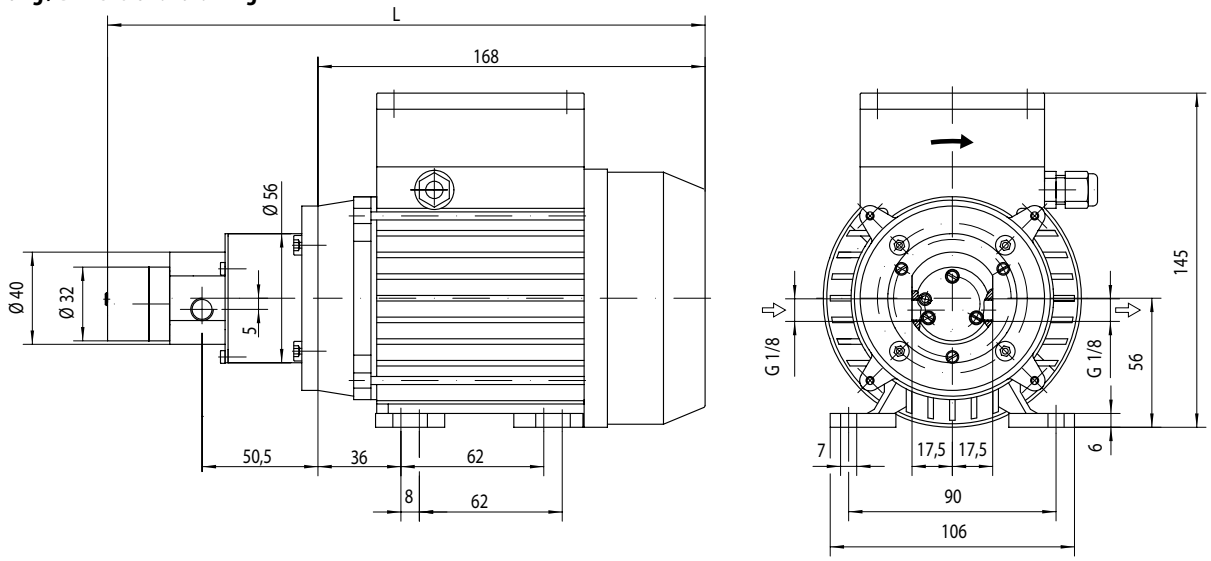
The power consumption P1 specifies the electrical power input.

# ZY-1 / 2 / 3-MK

**Zahnradpumpe**
mit Magnetkupplung, mehrstufig, selbstansaugend

**Gear pumps**
with magnetic coupling, multi-stage, self-priming

## Maßzeichnung / Dimensional drawing

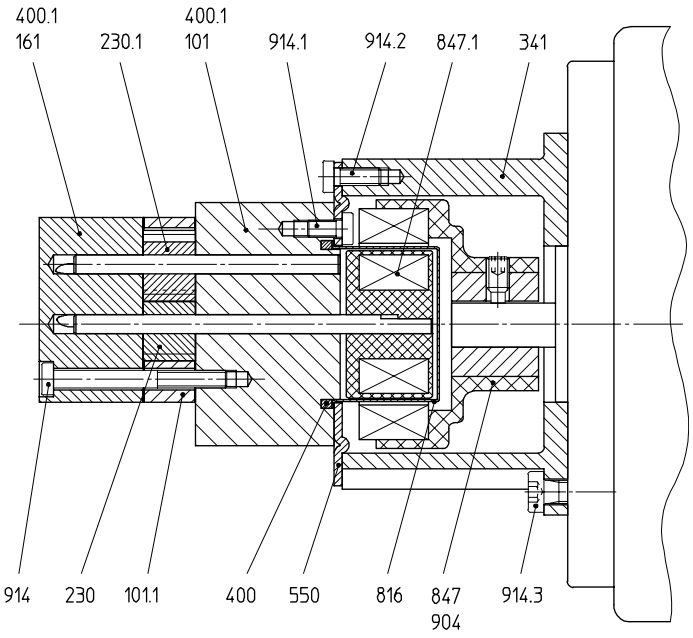



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | Drehmoment Torque | Gewicht Weight | | Öl und Kraftstoffe Oil and fuels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ncm | kg | lbs | $t_{max}$ |
| **ZY-1-MK** | | | | | | | | | | | | 3,50 | 7.7 | |
| **ZY-2-MK** | 56 | 1 / 3~ | 2800 | 0,12 | 0.16 | 3400 | 0,12 | 0.16 | G 1/8 | G 1/8 | 13 | 3,75 | 8.3 | -20 °C ... +80 °C |
| **ZY-3-MK** | | | | | | | | | | | | 4,00 | 8.8 | |

| Type | Baugröße | L |
|---|---|---|
| **ZY-1-MK** | | 255 |
| **ZY-2-MK** | 56 | 260 |
| **ZY-3-MK** | | 264 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101/.1 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 230/.1 | Zahnrad | Gear wheel |
| 341 | Laterne | Bracket |
| 400/.1 | Flachdichtung | Flat gasket |
| 550 | Scheibe | Washer |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 904 | Gewindestift | Threaded pin |
| 914.-3 | Innen-6kt. Schraube | Hexagon socket head screw |

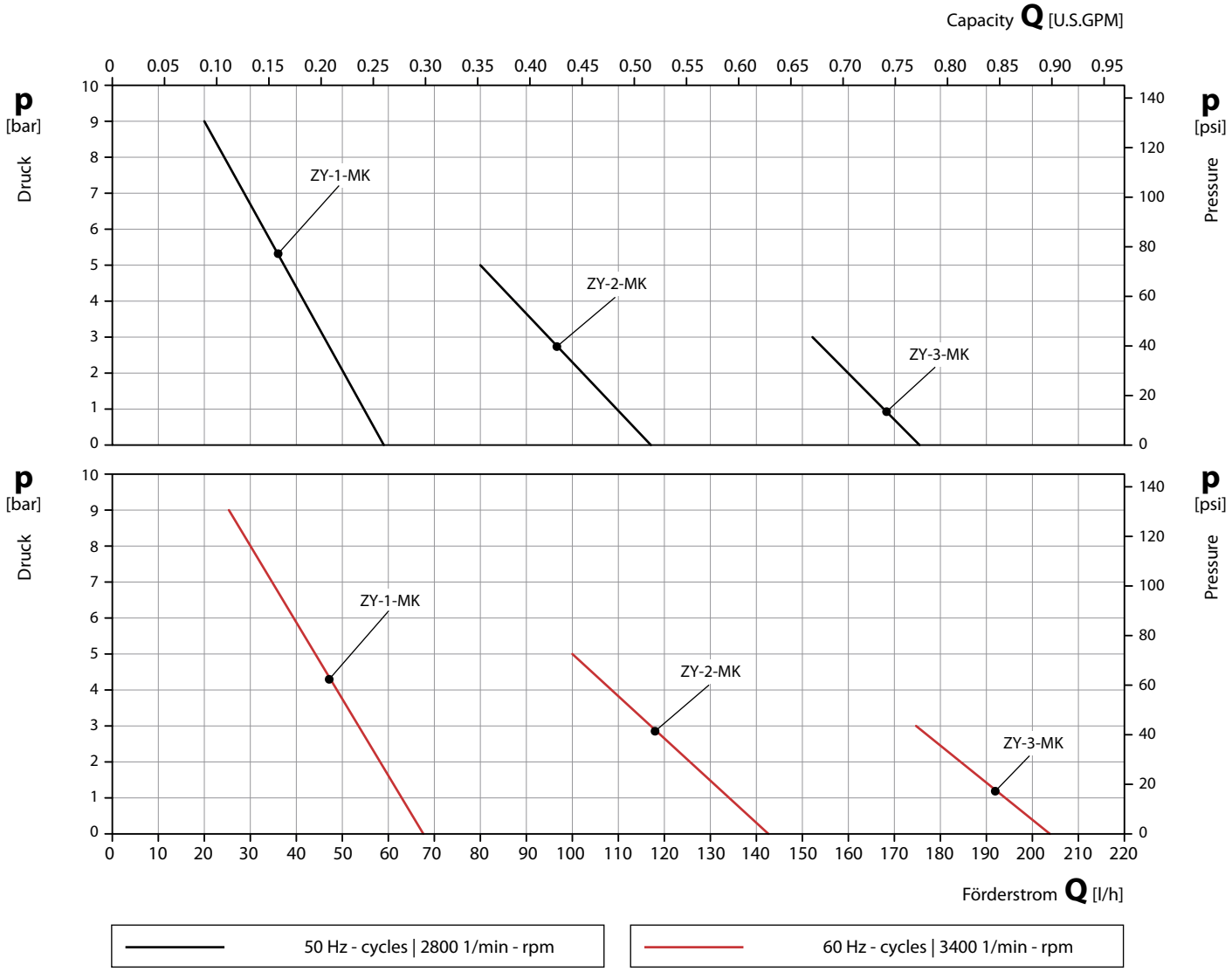

Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

**Zahnradpumpe**
mit Magnetkupplung, mehrstufig, selbstansaugend

**Gear pumps**
with magnetic coupling, multi-stage, self-priming

## 50 Hz | Kennlinien / Characteristic curves

## 60 Hz | Kennlinien / Characteristic curves




## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4305<br>CrNi-steel |
| Zahnrad<br>Gear wheel | PEEK |
| Flachdichtung<br>Flat gasket | Centellen® |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.

# 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 $m^3$/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.

**Your contacts**

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www.speck.de

**International representatives**
→ page 15

# Side channel pumps made by Speck

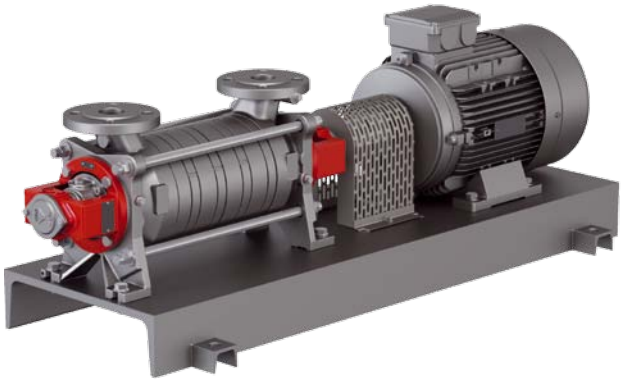
## *Design*

» 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 $m^3/h$ | |

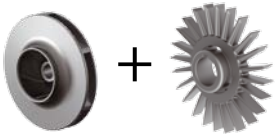
Temperature ranges depend on materials, seals and pumped media

## *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

**Main applications**

» Filling and emptying tanks and tankers
» Delivery of hot water or feedwater in boiler systems
» Delivery of salt water and fresh water in marine applications
» Recovering condensates (water) in the food and chemical industries
» Delivery of liquefied gas and hydrocarbons
» Delivery of coolants
» Extracting palm oil
» Filling and emptying thermal oil systems

# Find the right pump for your system

## *Choose the best solution 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-L0**
» 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

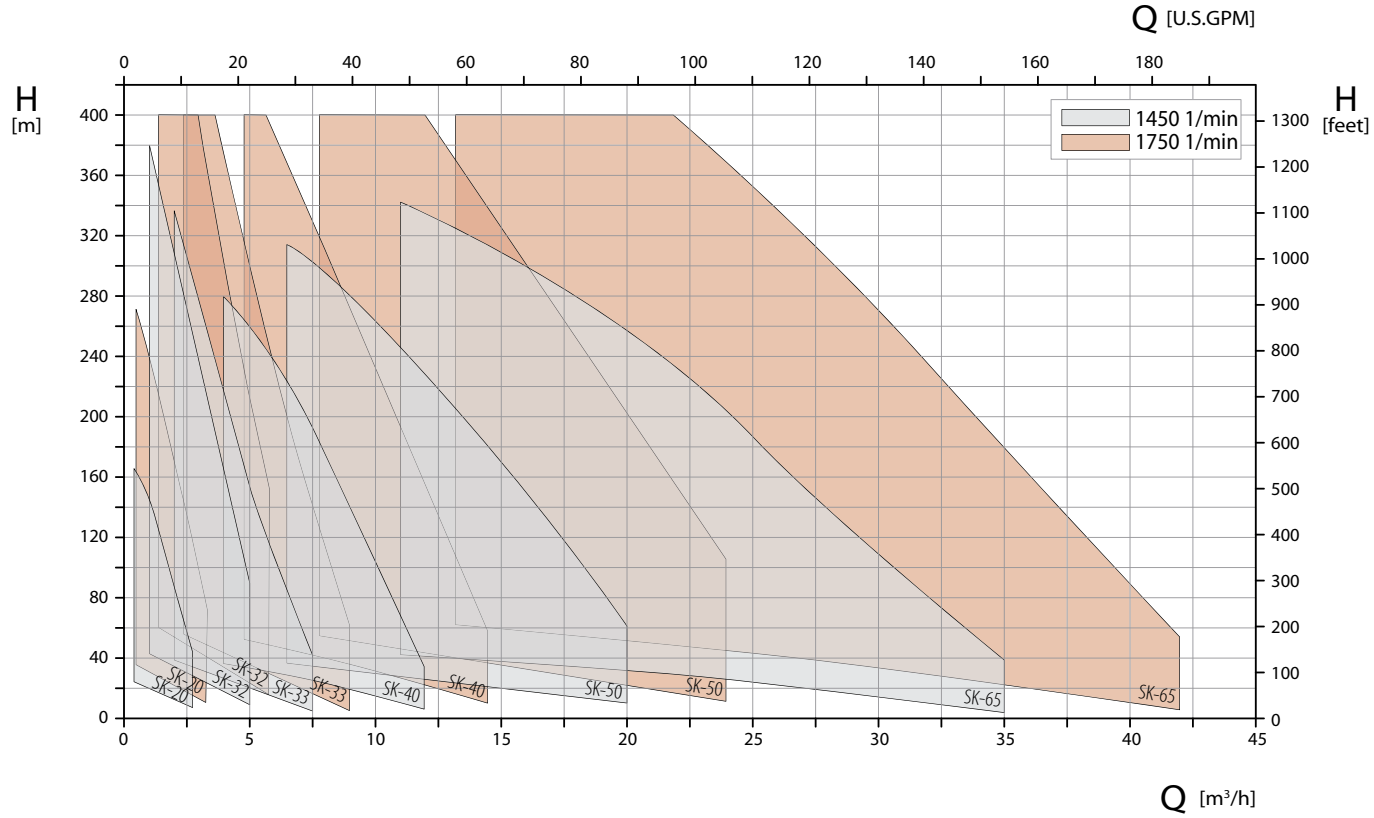
Hastelloy® or ceramic separating cans

**SKM**
» 1 – 8 stage
» 2 internal casing sleeve bearings

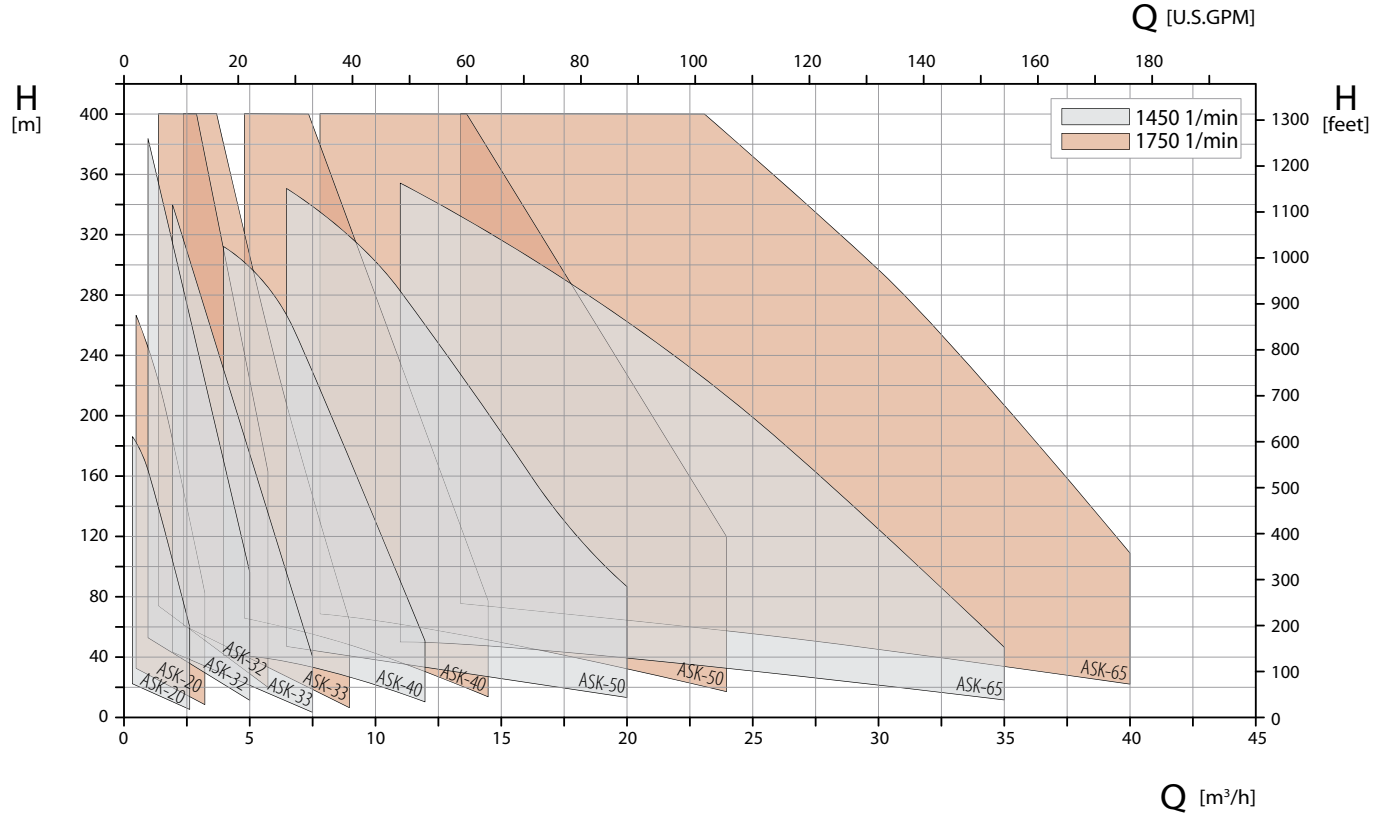
**ASKM**
» With NPSH-stage
» 1 – 8 stages
» 2 internal casing sleeve bearings

# Performance range

## *Characteristic diagram SK series*

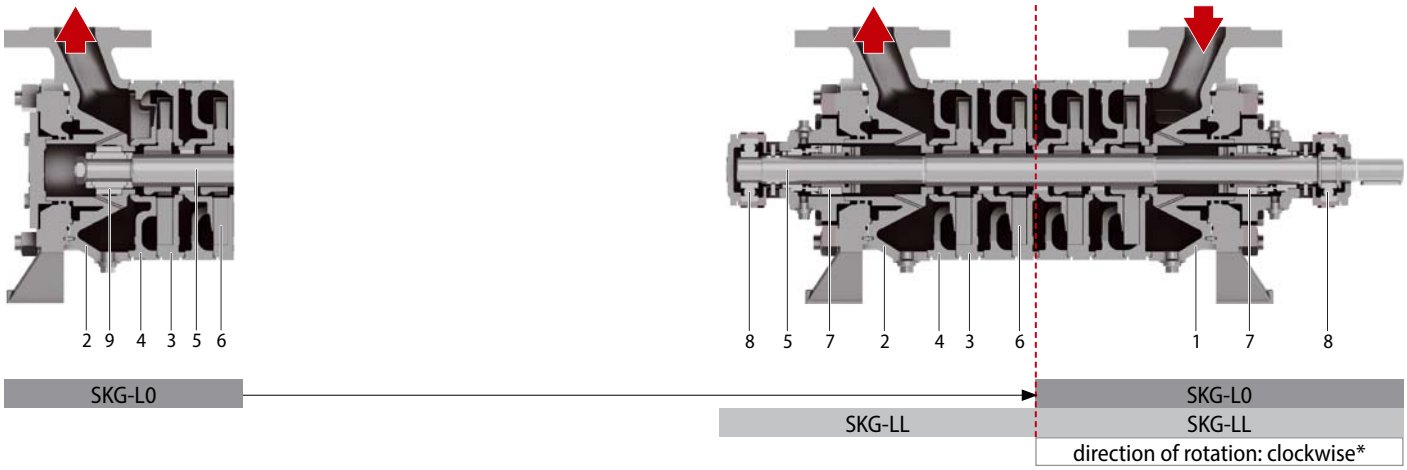


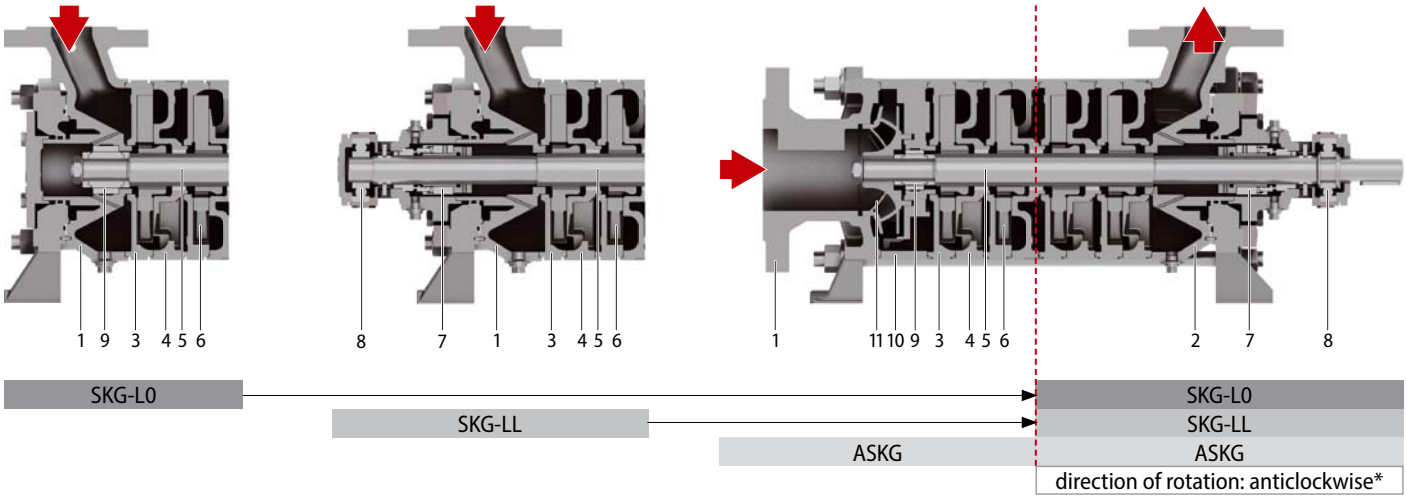

## *Characteristic diagram ASK series with NPSH-stage*



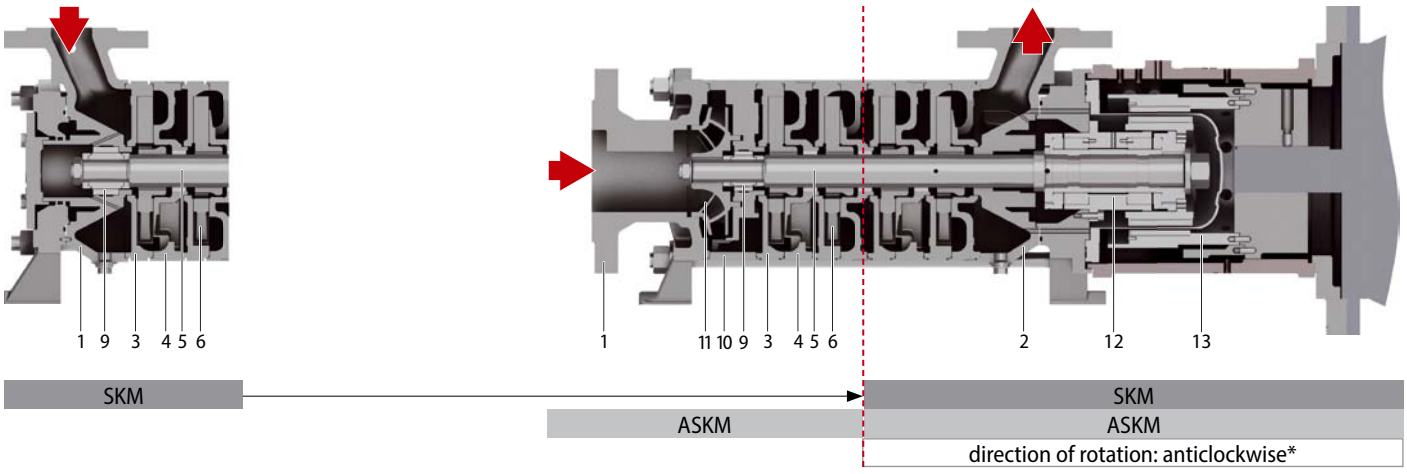
# Smart modular system

## *Pumps with mechanical seal*




## *Pumps with magnetic coupling*




| No. | Designation |
|---|---|
| 1 | Suction casing |
| 2 | Discharge casing |
| 3 | Suction stage |
| 4 | Discharge stage |
| 5 | Shaft |
| 6 | Star impeller |
| 7 | Mechanical seal |

| No. | Designation |
|---|---|
| 8 | Rolling bearing |
| 9 | Sleeve bearing made of SiC (or carbon bearing, not illustrated) |
| 10 | N-stage |
| 11 | Radial impeller |
| 12 | Bearing cartridge made of SiC |
| 13 | Magnetic coupling |

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 on pump shaft end

# 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*

**Mechanical seals**
We offer a wide range of mechanical seals for a variety of applications.

- Nominal pressure up to PN 40
- Balanced and unbalanced mechanical seals
- Double-acting mechanical seals
- Non-cooled mechanical seals
- Cooled mechanical seals available for media temperature exceeding 140 °C
- Diverse combinations of materials available depending on the pumped medium:
  Sealing rings in A-carbon, B-carbon or SiC
  O-rings in FKM, EPDM or FFKM

**Magnetic couplings**
You will find a great variety of magnetic couplings at Speck. The magnetic couplinges are optimally designed for your operating point.
See page 8 for further details.

**Stuffing box packing**
- Available on request

## *Wide temperature range*

Depending on the material, the seals and the pumped medium, these side channel pumps can be used across a wide range of temperature.

| Material | with mechanical seal | with magnetic coupling |
|---|---|---|
| Spheroidal graphite cast iron | 0 – 180 °C | - 20 – 350 °C |
| Bronze | 0 – 180 °C | 0 – 180 °C |
| Stainless steel | 0 – 180 °C | - 100 – 250 °C |

## *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 you require a minimum stock of spare parts.
It guarantees complete flexibility as replacing pumps and components or changing the pump execution is easy.

## *Efficient motors*

4-pole motors meeting current energy efficiency standards

## *Even for 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 Epple® .

## *ATEX*

All series are ATEX certified

- Mechanical seal version: II 2G / 2D c TX
- Magnetic coupling version: II 2G / 2D cb 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**

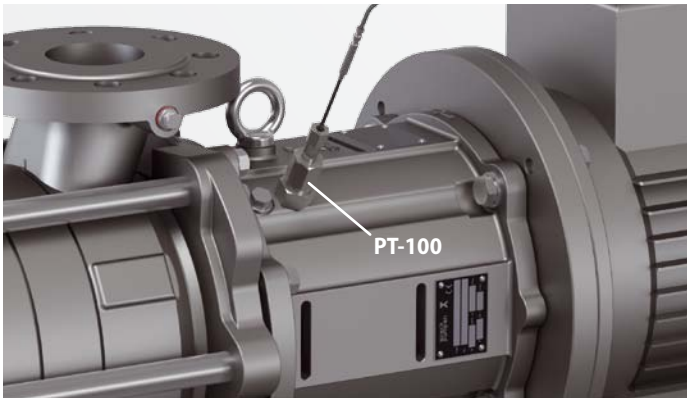
| | | Magnet diameter | | | | |
|---|---|---|---|---|---|---|
| | | DN 60 | DN 75 | DN 110 | DN 135 | DN 165 |
| Magnet length in mm | 40 | x | x | x | | |
| | 50 | | x | x | | |
| | 60 | x | x | x | x | |
| | 70 | | | x | x | |
| | 80 | | | x | x | x |
| | 90 | | | | x | x |
| | 100 | | | | x | x |
| | 110 | | | | | x |
| | 120 | | | | | x |
| Separating can made of Hastelloy® | | PN 40 | | PN 25 / PN 40 | | |
| Separating can made of ceramic $ZrO_2Mg$ | | 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.



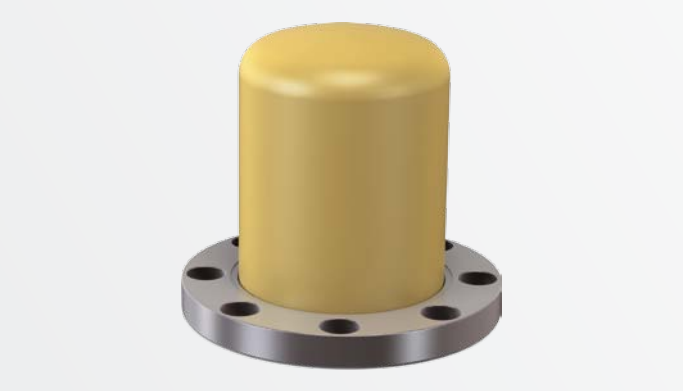

PT-100 temperature sensor (standard design)

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.

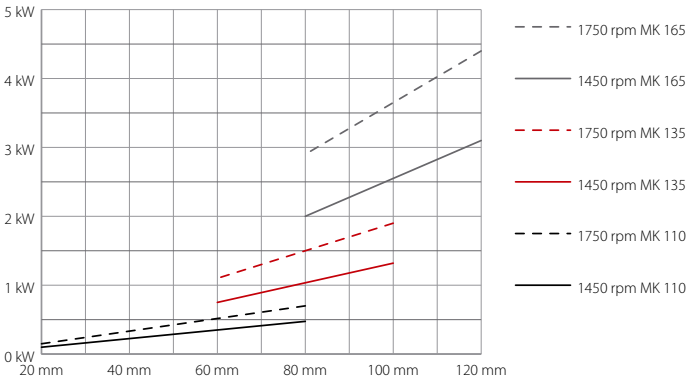
## Ceramic $ZrO_2Mg$ separating cans



**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 in kW 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 in kW 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.

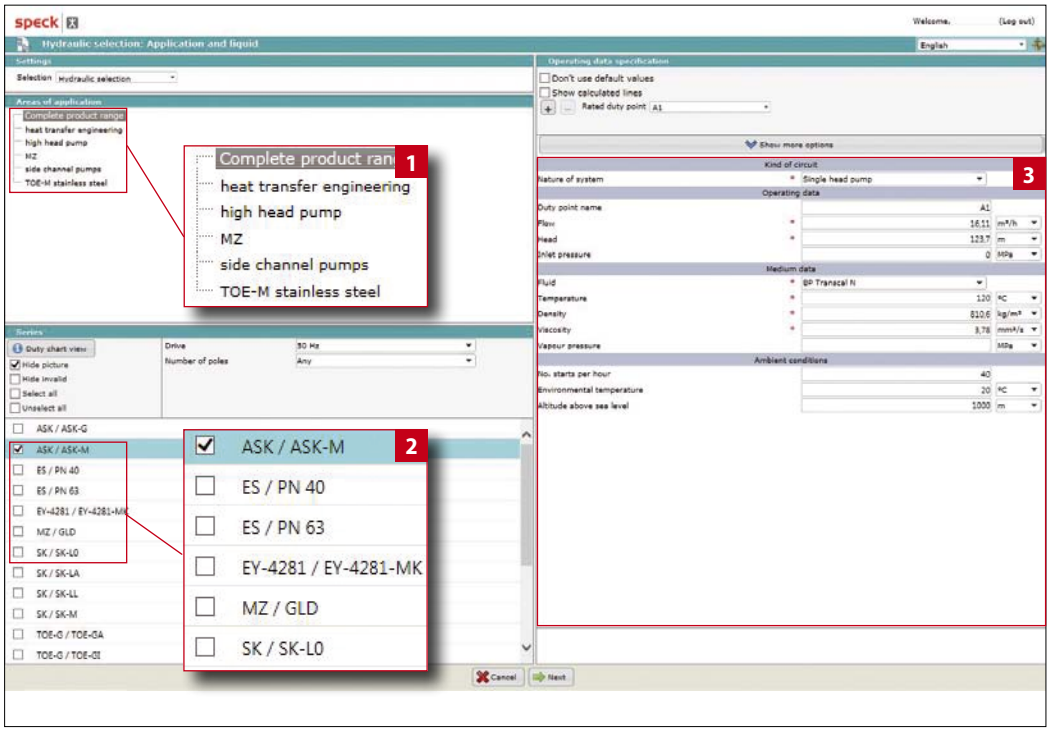
For your safety we can offer a leak monitoring sensor which detects any medium emerging after a rupture of the separating can and immediately switches off the pump or the system.
In addition, the sealed slots on the bracket temporarily prevent the medium from entering the environment.

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.

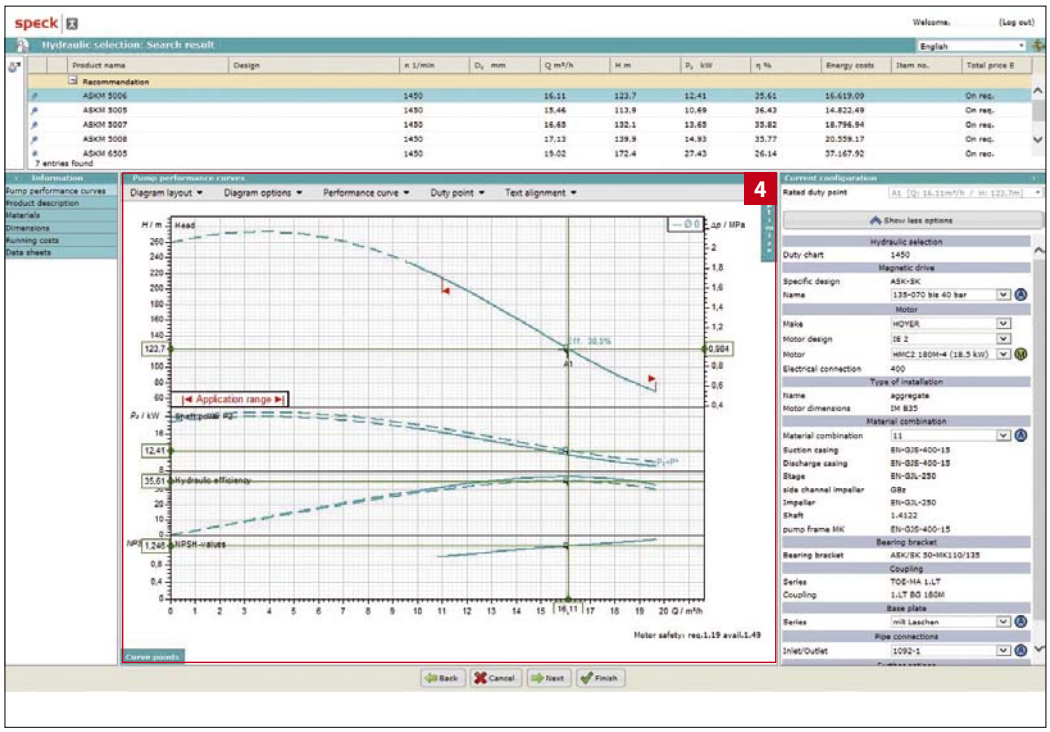

1 Leak sensor
2 Externally sealed slots
covered: the connector for the media removal pipe on the back of the bracket opposite the sensor

# 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.




Characteristic curve depending on hydraulic selection

**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.

**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*

**Data Sheet**
**side channel pumps**
**ASKM 5006**

Enquiry
Created on Item
Rev.: Page 1 / 3

**SPECK PUMPEN Systemtechnik GmbH**
Regensburger Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de

| | | | | | |
|---|---|---|---|---|---|
| Customer | Speck Pumpen Systemtechnik GmbH | Kontakt | | Editor | |
| City | Deutschland 91154 Roth | Phone | | Phone | |
| Enquiry | vom | Fax | | Fax | |
| Project | | E-mail | | E-mail | |

**Operating Data**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fluid | BP Transcal N | | | Flow rate | rated | 16,11 | m³/h | Speed | 1450 | 1/min |
| 2 | corrosive matters | keine/not | Wght.-% | | | min / max | 10 / 19,5 | m³/h | Efficiency | 35,24 | % |
| 3 | abrasive matters | keine/not | Wght.-% | | Pressure | Inlet | 0 | bar (ü) | Total abs. power | 12,74 | kW |
| 4 | Solids | 0 | Wght.-% | | | Disch. | 9,996 | bar (ü) | Dissipation | 0,835 | kW |
| 5 | Oper. Temp. tW / tS | 100 / | °C | | Head | | 123,7 | m | | | |
| 6 | Density at tW / tS | 823,8 / | kg/m³ | | Pressure differential | | 10,00 | bar (ü) | | | |
| 7 | Kin. viscosity at tW / tS | 5,2 / | mm²/s | | | | | | Flow rate at cold start | | m³/h |
| 8 | Vapor press. at tW / tS | / | bar | | NPSH | System | 12,38 | m | Total. abs. power at cold start | | kW |
| 9 | PH value | 7 | | | | required | 1,75 | m | Dissipation cold | | kW |

**Installation / Environment**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | Building / Outside | Gebäude | Altitude | < 1000 | m | Amb. Temp. min | 20 / 40 °C |
| 11 | under roof yes/no | Ja / Yes | ATEX aggrgate category | not Atex | | rel. Humidity | <55 % |

**Pumpe**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 | Impeller type | side channel impeller | | Pressure rating | PN 40 | | Pressure rating | PN 40 |
| 13 | direction of rotation | left | Suction port | nom. diam. DN | DN 100 | Delivery port | nom. diam. DN | DN 50 |
| 14 | | | | Standard | EN 1092-1 | | Standard | EN 1092-1 |
| 15 | Single head pump | X 1 | Specifying calming suction side = min. | 1000 mm | | Material combination | 11 | |

**Accessories**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | **Motor** | | | | | **Magnetic drive** | | | **Base plate** | | |
| 17 | Make | HOYER | Type | HMC2 180M-4 | | Description | 135-060 bis 40 bar | | Description | U 400.1500.L | |
| 18 | Specific design | IE 2 / 50 Hz / Pole pairs 2 | | Number of poles | 4 | rated load torque | 155 | Nm | Specific design | with lug | |
| 19 | Rated power | 18,5 1) | kW | Degree of p | IP 55 | Magnetic drive pow | 22,1 | kW | Length | 1500 | mm |
| 20 | Rated current | 34 | A | Frequency | 50 ± 2% Hz | Length of magnet | 60 | mm | Width | 400 | mm |
| 21 | 1-phase / 3-pha | 3~ | | Voltage | 400 ± 5% V | Diameter | 135 | mm | | | |
| 22 | Rated speed | 1470 | 1/min | Mounting | IM B35 | | | | **name plate** | | |
| 23 | Motor flange ø | 350 | mm | Sound pressure level | dB(A) | | | | links | | |
| 24 | | | | | | | | | **freezing guard** | | |
| 25 | terminal box, motor | oben | | | | | | | nein | | |

**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 | | | | |
| 32 | seal stage Teflon | | O-ring pump frame FKM | seal separating can Graphit |

**Tests and Inspections**

| | Material Tests | Test 2) | Certificate | Other Tests | Tests and Inspections 2) | Certificate | Qty |
|---|---|---|---|---|---|---|---|
| 33 | Suction casing | keine | kein | Hydrost. Pressure Test | Intern | kein | alle |
| 34 | Discharge casing | keine | kein | Gas Pressure Test 3) | Intern | kein | alle |
| 35 | Stage | keine | kein | Performance curve 4) | Keine | kein | alle |
| 36 | side channel impeller | keine | kein | NPSH-Measurement | Keine | kein | alle |
| 37 | Impeller | keine | kein | Final check | Intern | kein | alle |
| 38 | | | | vibration | Keine | kein | alle |
| 39 | | | | temperature | Keine | kein | alle |
| 40 | | | | Max. operating pressure | 40 bar / 20°C X Factor 1,5 test time 30 min | | |

**Shipping data** 5)

| | | | | | |
|---|---|---|---|---|---|
| 41 | Net weight appr. | kg | Gross weight appr. | kg | pump color | motor color |

**Documentation**

| | Dimensional drwg. | Cross sect. drwg | performance curve No. | Oper.& Instruct. Man. | Other (see attached) | Qty |
|---|---|---|---|---|---|---|
| 42 | RD 14. xxx | E 1420. xxx | KL 14.50.047 | DE 1096.0851 | | 1 |

**Remarks**

| | |
|---|---|
| 43 | motor article |

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 price sheet

Technical data sheet (example)

**Performance curve**
**side channel pumps**
**ASKM 5006**

Enquiry
Created on Item
Rev.: Page 2 / 3

**SPECK PUMPEN Systemtechnik GmbH**
Regensburger Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de

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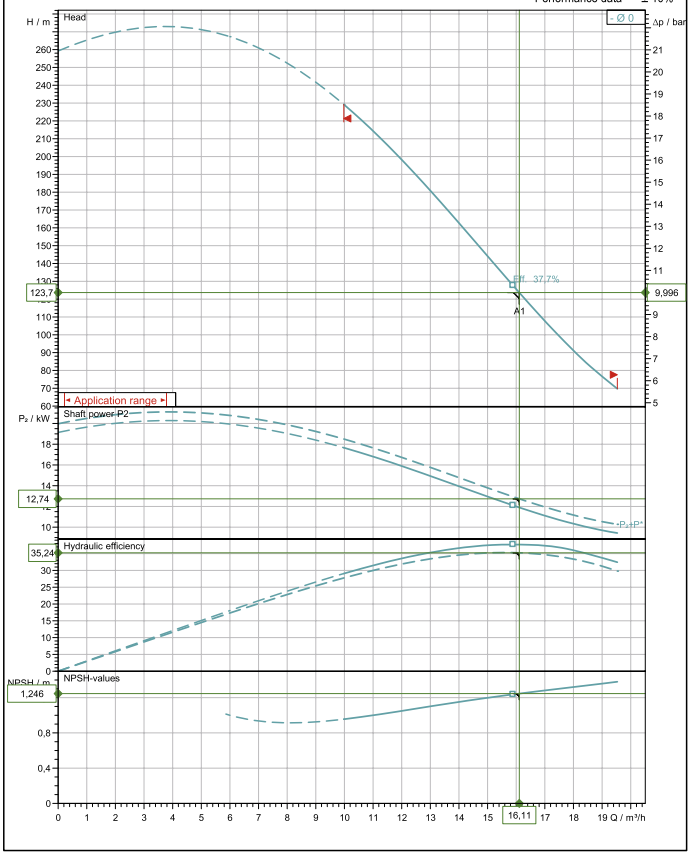
| Project | | E-mail | E-mail |

**KL 14.50.047** Speed 1450
performance data level in relation to: BP Transcal N (100%); 100 °C; 823,8 kg/m³; 5,200291333 mm²/s

Flow ± 10%
Head ± 10%
Performance data ± 10%




Characteristic curve (example)

**Dimension drawing**
**side channel pumps**
**ASKM 5006**

| | | | |
|---|---|---|---|
| Customer | Speck Pumpen Systemtechnik GmbH | Kontakt | Editor |
| City | Deutschland 91154 Roth | Phone | Phone |
| | | Fax | Fax |
| | | E-Mail | E-Mail |

Enquiry

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Created on Item
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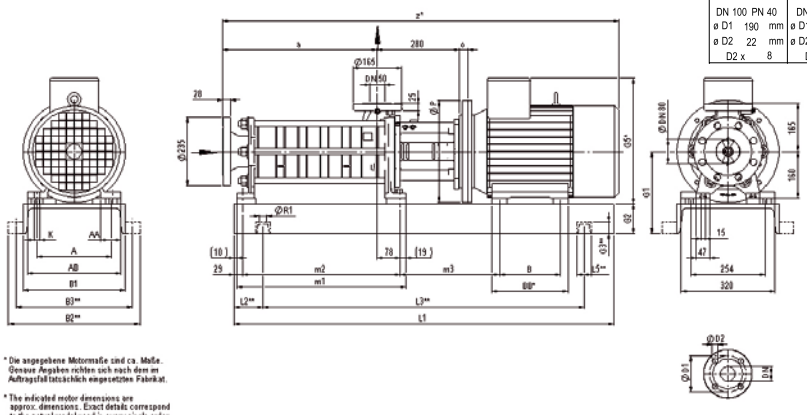
Aggregat **Motor** HOYER - HMC2 180M-4 - IM B35

| Anschluesse | |
|---|---|
| **Suction port** | **Delivery port** |
| EN 1092-1 | EN 1092-1 |
| DN 100 PN 40 | DN 50 PN 40 |
| ø D1 190 mm | ø D1 125 mm |
| ø D2 22 mm | ø D2 18 mm |
| D2 x 8 | D2 x 4 |

| Dimensions in | mm |
|---|---|
| a | 680 |
| m1 | 728 |
| m2 | 690 |
| m3 | 353 |
| B1 | 400 |
| B2 | 500400 |
| B3 | 500 |
| G1 | 290 |
| G2 | 110 |
| G3 | 38 |
| G5 | 477 |
| R1 | 18,5 |
| 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)

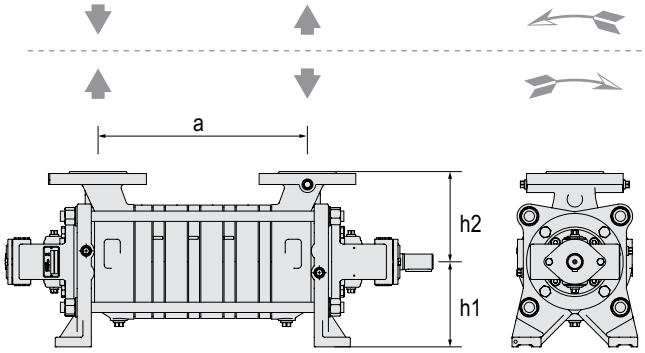
## Save projects

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.

# Main dimensions

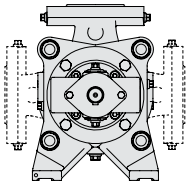
## *SK series*

**Connecting dimensions for SKG-LL, SKG-L0, SKG-LA and SKM**




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

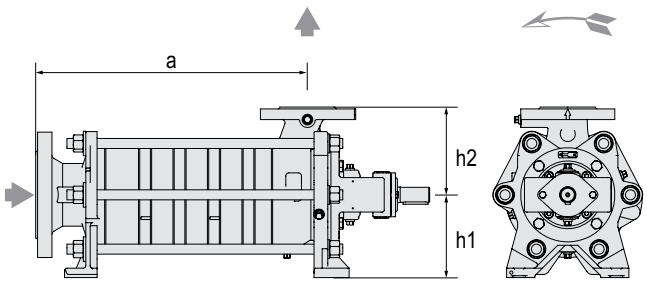
**Position of inlet and outlet nozzle**
With almost all sizes, the nozzles can be rotated 90°



| Size | Stage no. | |
|---|---|---|
| | 1, 2, 3, 4, 5 | 6, 7, 8 |
| SK…20 | Nozzles at the side / on top | Nozzles at the side / on top |
| SK…32 / 33 / 40 / 50 / 65 | Nozzles ar the side / on top | Nozzles on top |

## *ASK series*

**Connecting dimensions for ASKG and ASKM**




| | Dimensions → | a | | | | | | | | h1 | h2 | Flanges | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stage no. → | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | – | – | Suction | Discharge |
| | ASK…20 | 195 | 229 | 263 | 297 | 331 | 365 | 399 | 433 | 100 | 100 | DN 40 | DN 20 |
| | ASK…32 / 33 | 213 | 253 | 293 | 333 | 373 | 413 | 453 | 493 | 112 | 132 | DN 65 | DN 32 |
| Size → | ASK…40 | 268 | 323 | 378 | 433 | 488 | 543 | 598 | 653 | 132 | 140 | DN 80 | DN 40 |
| | ASK…50 | 305 | 380 | 455 | 530 | 605 | 680 | 755 | 830 | 160 | 165 | DN 100 | DN 50 |
| | ASK…65 | 337,5 | 427,5 | 517,5 | 607,5 | 697,5 | 787,5 | 877,5 | 967,5 | 180 | 180 | DN 100 | DN 65 |

## *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.

# 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.

f 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 characteroistic curves apply to the delivery of water with a temperature of 20 °C at nominal speed Tolerances: flow rate ± 10 %, total head ± 10 % power requirement + 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 mesurement**
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 $p_{2max\ op}$ is calculated using the formula:

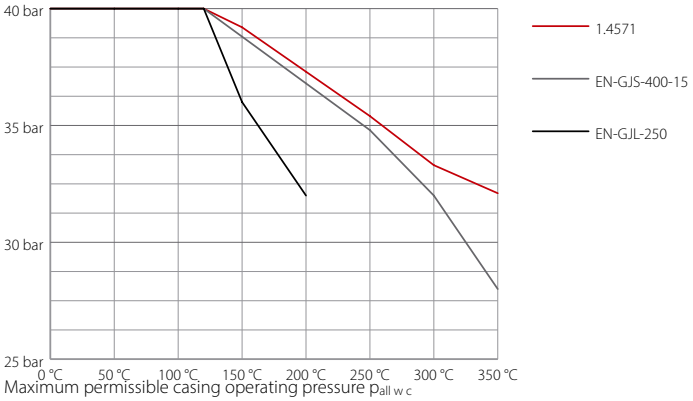
$$\mathbf{p_{2max\ op} = p_{1max\ op} + \rho \cdot g \cdot H \cdot 10^{-5}}$$

With:

| | | |
|---|---|---|
| $p_{2max\ op}$ | = | maximum pump outlet pressure [bar] |
| $p_{1max\ op}$ | = | maximum pump inlet pressure [bar] |
| $\rho$ | = | 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 [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 $p_{all\ w\ c}$

1.4571: stainless steel
EN-GJS-400-15: spheroidal graphite cast iron
EN-GJL-250: cast iron

# 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 $m^3/h$ 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.

## Your contacts

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**International representatives**

→ page 12

# Pumps for heat transfer technology

## *Centrifugal pumps*

### Series TOE-G and TOE-M

Consistent design modular system with volute casings

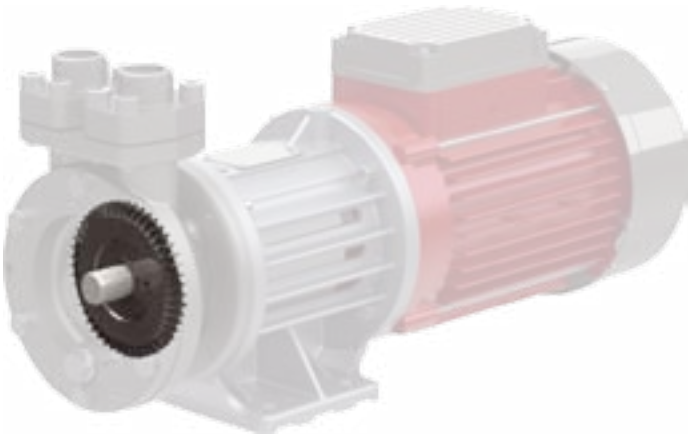
Choose from six different designs with mechanical seal or magnetic coupling.

Developed for circulating organic or synthetic heat transfer oils in heat transfer systems in accordance with DIN 4754, as well as hot water.

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

| | |
|---|---|
| Heat transfer media | -100 °C to 350 °C, up to 400 °C on request |
| Hot water | up to 160 °C, up to 180 °C on request |
| Nominal pressure | PN 16 |
| $H_{max.}$ (2900 $min^{-1}$) | 100 m |
| $Q_{max.}$ (2900 $min^{-1}$) | 550 $m^3/h$ |
| Casing | Spheroidal graphite iron/ stainless steel |

## *Regenerative turbine pumps*



### Series NPY-MK and CY-MK

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 quantities of non-abrasive impurities.

| | |
|---|---|
| Heat transfer media | up to 350 °C |
| Hot water | up to 220 °C |
| Nominal pressure | up to PN 24 |
| $H_{max.}$ (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 |
| Casing | Stainless steel / spheroidal graphite iron |

### Main applications

- Tempering in plastics and die casting industry
- Baking ovens, large frying units as well as in the production of edible oil and dry masses for the food and feedstuff industries
- Heating calenders and melting containers 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 plants and ORC processes


Subject to technical modifications and errors.

# Find the right pump for your system

## *Choose the best solution from six ranges*

Each heat transfer system is unique in its own way - on some, the sealing principle is key, on others the vertical installation frame or perhaps the special properties of the medium.

With the heat transfer pumps from Speck you can choose from six ranges with different characteristics and find the best solution for your system.

### Series TOE-G with mechanical sealing

**Hot water versions**
» Water up to 160 °C
» Water up to 180 °C on request

**Thermal oil versions**
» Heat transfer media: -40 °C up to 350 °C

In comparison to pumps with magnetic coupling:
» More favourable in purchase and repair
» Less energy consumption with the same operating point

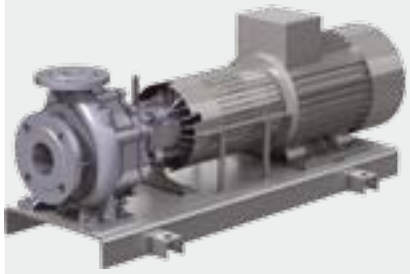
### Different characteristics

### Series TOE-M with magnetic coupling

**Spheroidal graphite cast iron versions**
» Heat transfer media: -40 °C up to +350 °C, up to 400 °C on request

**Stainless steel versions**
» TOE-MN/MA in sizes 32-160, 32-200, 40-200, 50-200 and 65-200 only
Heat transfer media: -100 °C up to +250 °C

In comparison to pumps with mechanical sealing:
» Longer lifetime
» No leakage and odour nuisance
» ATEX



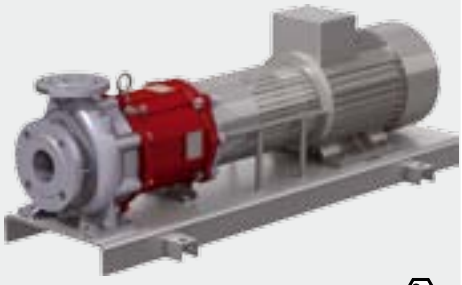
**← TOE-GN | TOE-MN →**

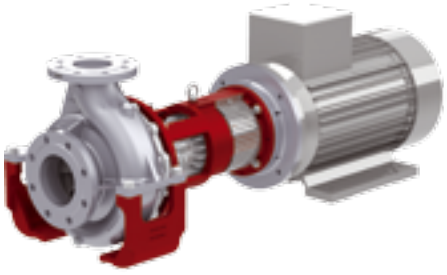
Bearing bracket / process design

Base plate

Dismantling of the bearing bracket possible without moving the motor

Alignment / checking of the coupling required before start-up





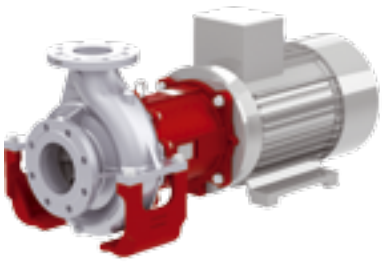
**← TOE-GA | TOE-MA →**

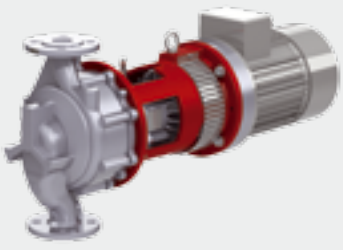
Bracket version

No alignment of the coupling required before start-up

Space for disassembling the cartridge insert required

Base plate optional



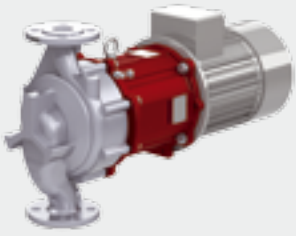


**← TOE-GI | TOE-MI →**

Bracket version

No alignment of the coupling required before start-up

Space for disassembling the cartridge insert required



# *Minimal spare parts stock and flexibility thanks to the modular system*

Thanks to the modular system with consistent design, many components are identical and interchangeable across the six ranges. This means minimal spare parts stock.

And it also guarantees complete flexibility, as replacing pumps and components or retrofitting to a different design is easy.

## Series TOE-G with mechanical sealing

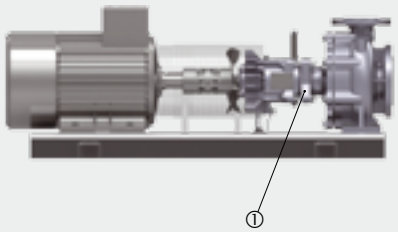
① Only two bearing brackets for all frame sizes
» Bearing bracket 360 for 12 frame sizes identical and interchangeable
» Bearing bracket 470 for 7 frame sizes identical and interchangeable

② Only one bracket per bearing bracket

## Interchangeable casings

## Series TOE-M with magnetic coupling

③ Only two bearing brackets and two brackets for all frame sizes
» Bearing bracket 360 identical for 12 frame sizes
» Bearing bracket 470 identical for 7 frame sizes
» Interchangeability of the whole bearing bracket is given if the magnetic coupling is the same

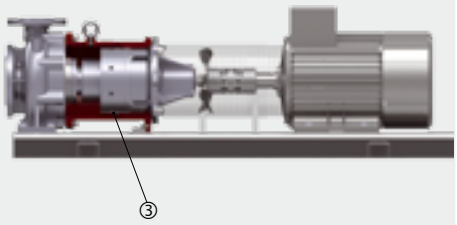


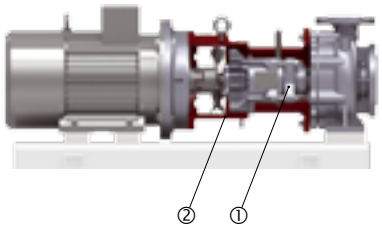

**← TOE-GN | TOE-MN →**

Bearing bracket / process design

Base plate

Identical casing for each frame size (EN 733)

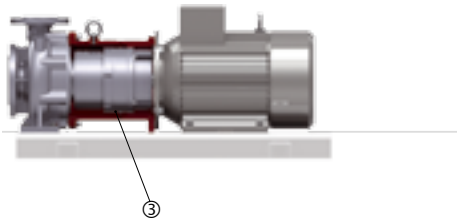


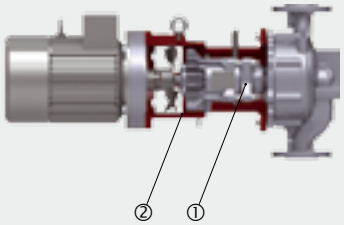




**← TOE-GA | TOE-MA →**

Bracket version

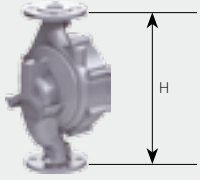
Base plate optional



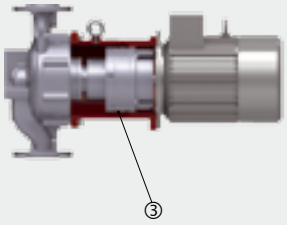




**← TOE-GI | TOE-MI →**

Bracket version




Identical inline-casing for each frame size
Casings with two dimensions H available






Subject to technical modifications and errors.

speck

# High operational safety, optimal design and service-friendly

## *Robust design*

**Torsion-resistant casing cover**

**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.

**Magnetic couplings**
Supplied with radial start-up safety device as standard at Speck.

## *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.

**Optimised cooling of the ball bearings and magnetic coupling**
A fan blade is also used for cooling in the TOE-MN series. Here, the generated air flow, in combination with coupling protection, ventilation slots and cooling zone, reduces the temperature on the magnetic coupling and ball bearings extremely effectively.

On close-coupled pumps, the air flow from the motor fan also cools the bearing shield and therefore also the ball bearings inside it.

## *Pumps with mechanical seal*

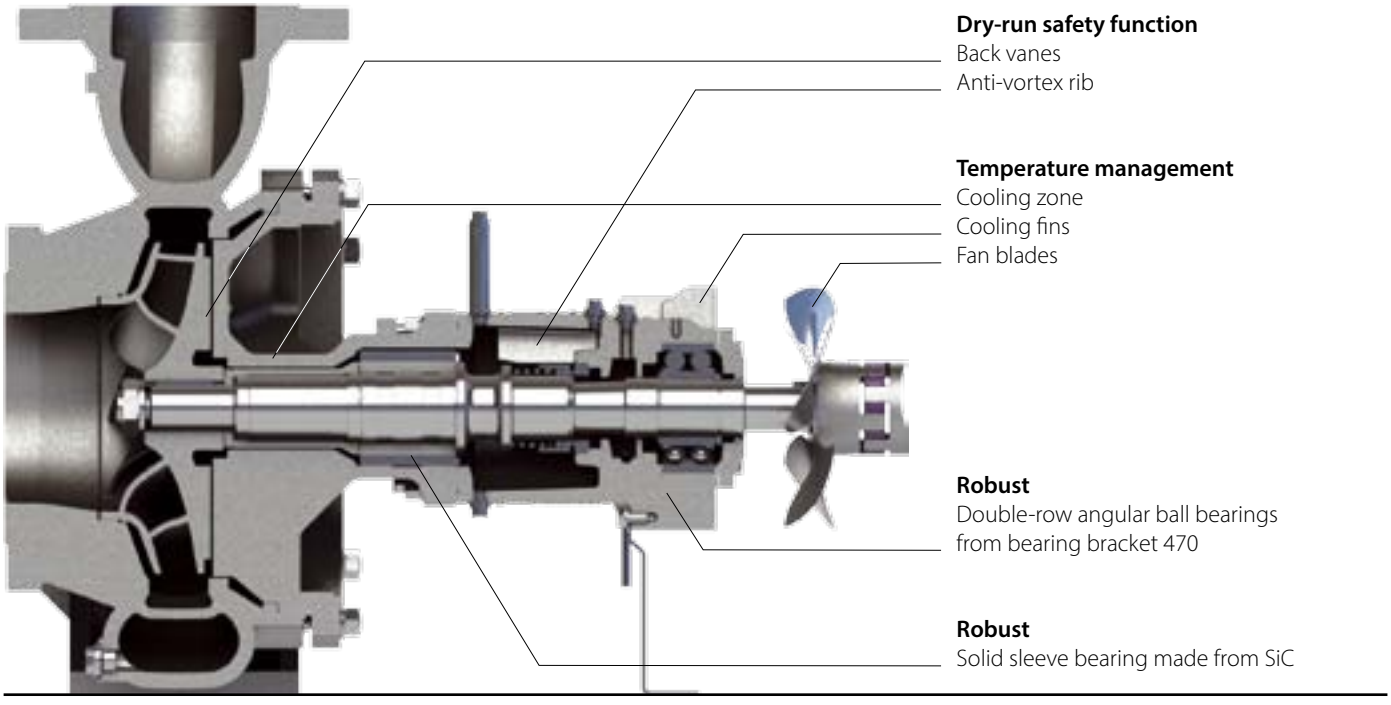



Fig.: TOE-GN, bearing bracket 470, casing with centreline mounting

## *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.

**Pumps with magnetic couplings**
100% free of leakage and with lower maintenance requirements than pumps with mechanical seal.

**ATEX**
All magnetically-coupled pumps 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, naturally, motors in accordance with IE3.

**Optimal sizes of the magnetic couplings**
Magnetic couplings in staged sizes guarantee optimal design at the operating point with minimal viscosity and eddy current losses.

## *Maintenance-friendly and flexible*

**Simple installation**
All six series are extremely maintenance-friendly thanks to easy-to-remove bearing brackets.

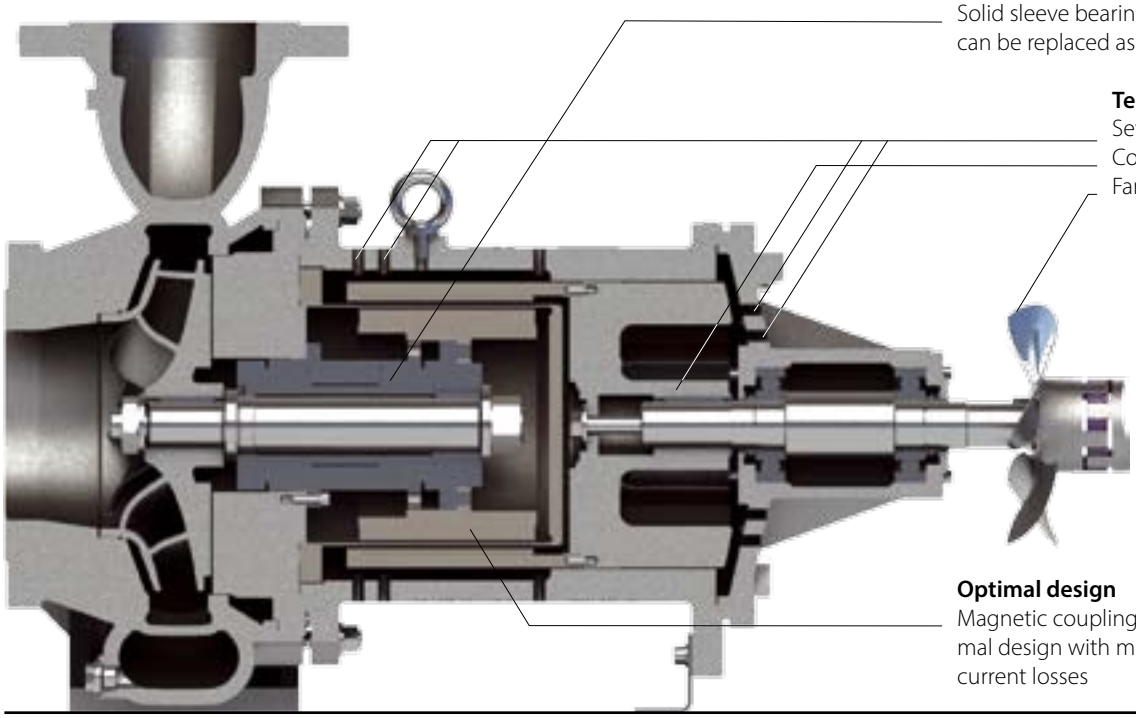
For pumps with magnetic coupling, you can also replace the sleeve bearing cartridge easily as a complete spare part. It is quick and ensures correct installation every time.

**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.

## *Pumps with magnetic coupling*



**Robust and maintenance-friendly**
Solid sleeve bearing cartridge with SiC - can be replaced as a complete spare part

**Temperature management**
Several ventilation slots
Cooling zone
Fan blades (TOE-MN only)

**Optimal design**
Magnetic couplings in staged sizes for optimal design with minimal viscosity and eddy current losses

Fig.: TOE-MN, bearing bracket 470, casing with centreline mounting

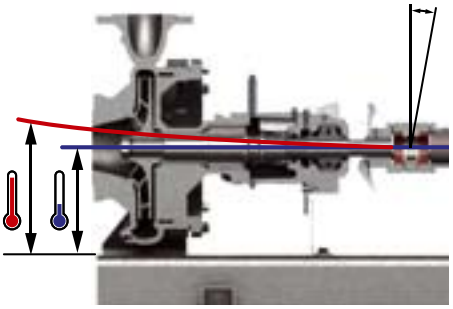

Subject to technical modifications and errors.

# Longer lifetime

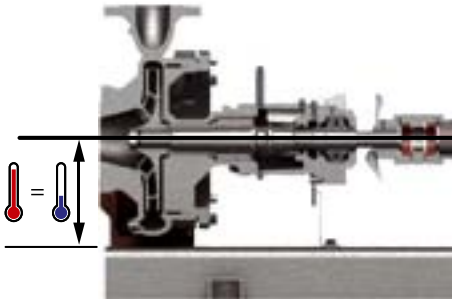
There are effects, which have little or no relevant impact on smaller designs, but lead to increased wear in larger pumps.

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



The centreline mounting eliminates the impact of the heat expansion completely.

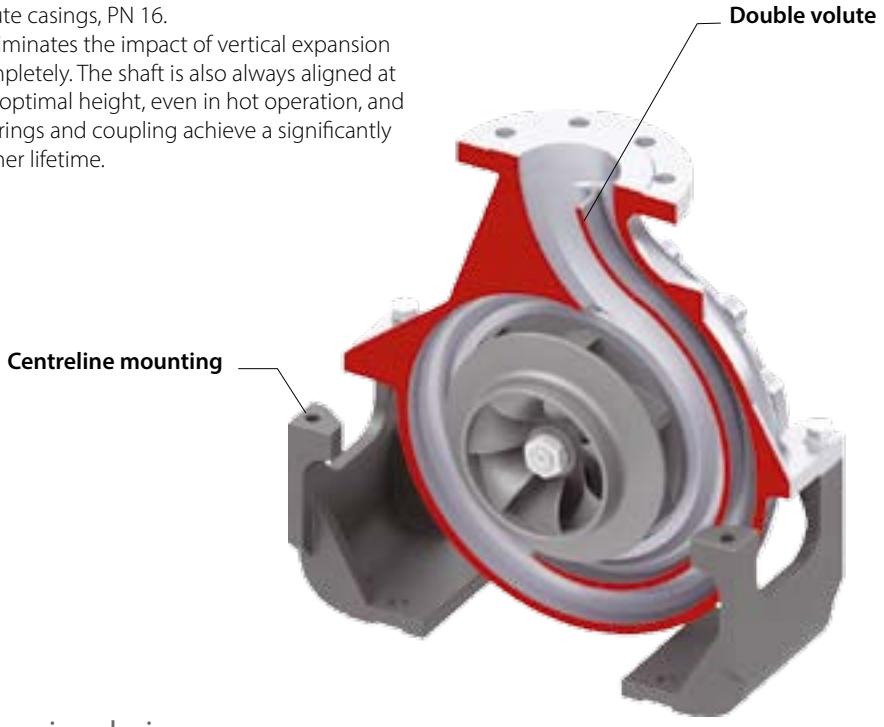
Casings with feet can only expand upwards in high temperatures, which causes the shaft to tilt and bend. This has an impact on the sleeve bearings and shaft coupling in particular.
As the heat expansion increases with larger casing size, the sleeve bearings and couplings also wear faster on larger pumps.

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.



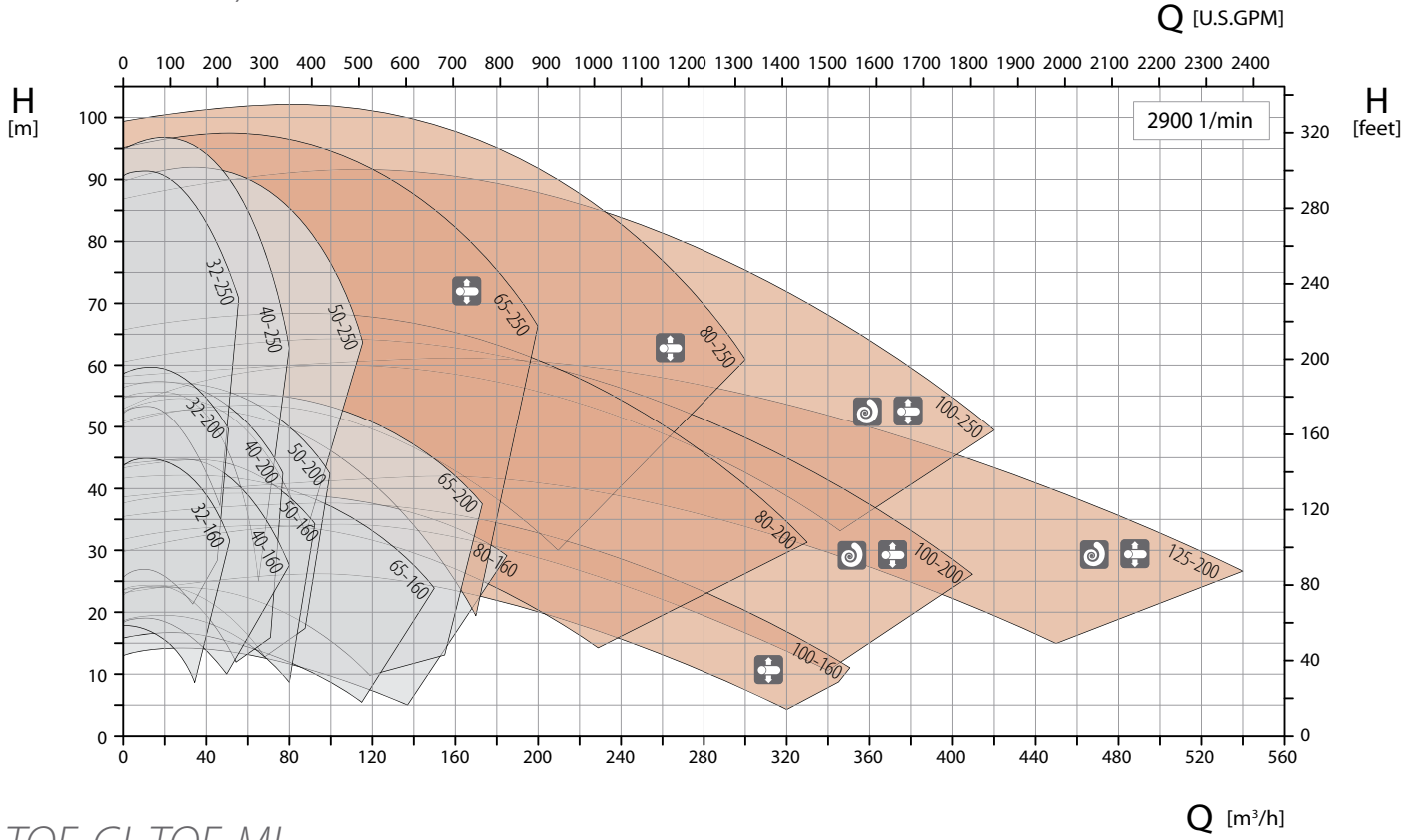

## TOE-GN / GA, TOE-MN / MA – Sizes and casing designs

| | | | | | | |
|---|---|---|---|---|---|---|
| 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** | | | |

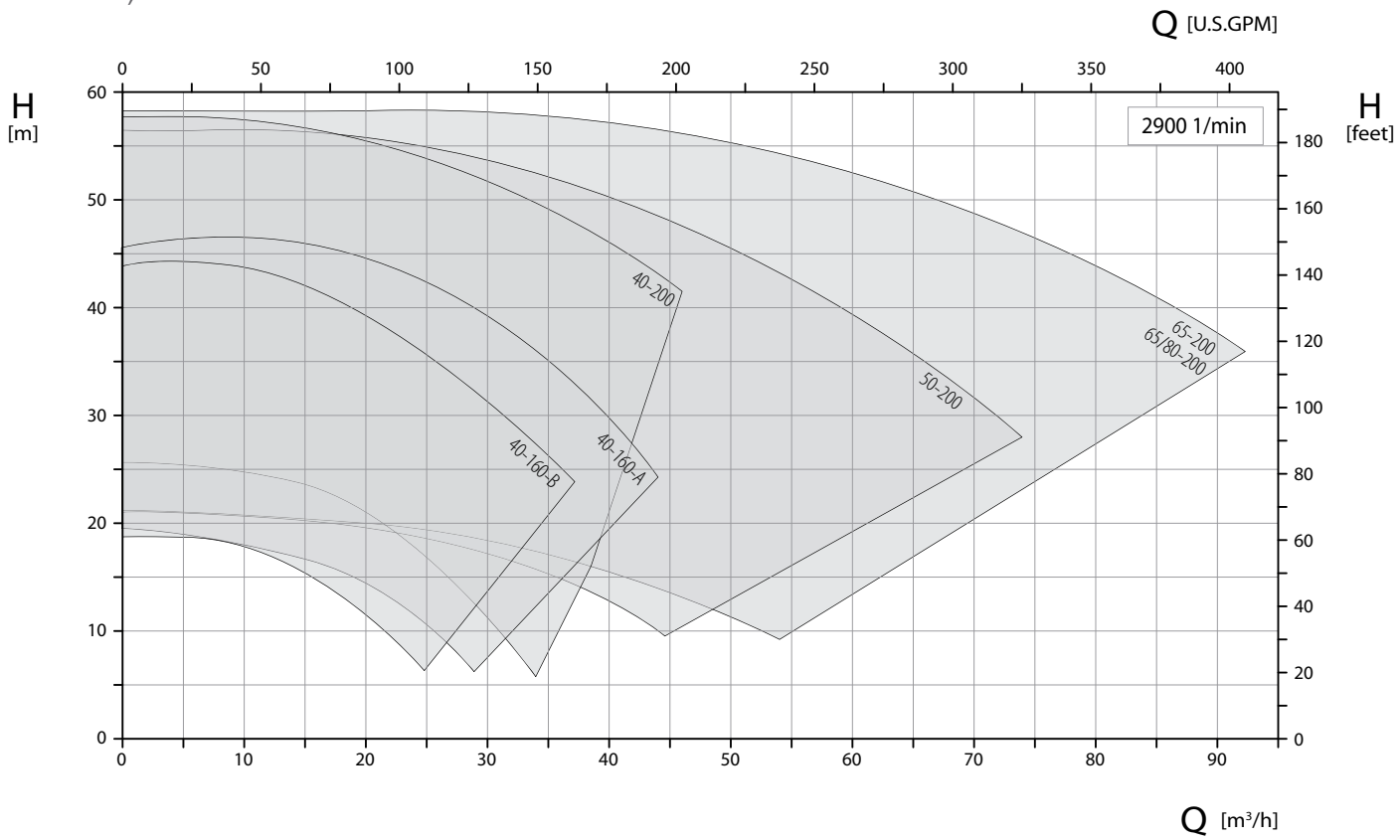
All casings with dimensions in accordance with EN 733 Casing with double volute Casing with centreline mounting

# Characteristic diagrams and casing designs

## *TOE-GN / GA, TOE-MN / MA*




## *TOE-GI, TOE-MI*




**Bearing bracket 360** **Bearing bracket 470** Casing with double volute Casing with centreline mounting



Subject to technical modifications and errors.

speck

# Regenerative turbine pumps with magnetic coupling

## *Extremely compact, robust, durable and safe*

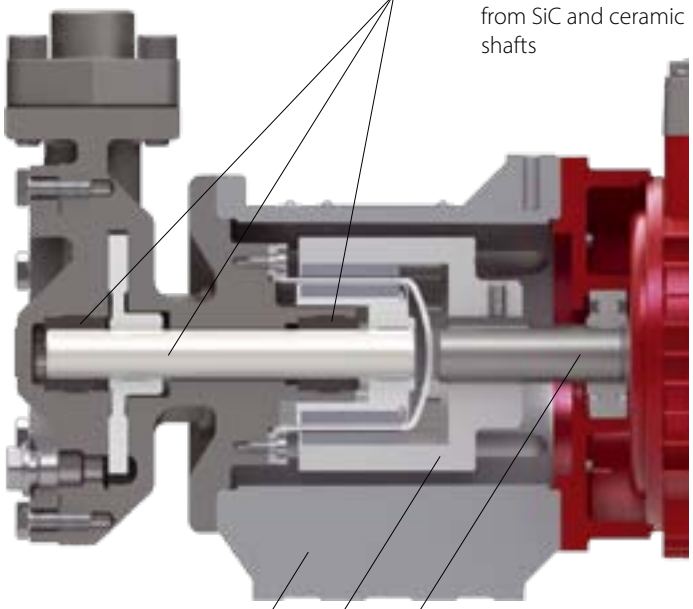
The peripheral impeller transfers the hydraulic output through momentum exchange.

**Type-related properties**
Due to their design, regenerative turbine pumps have different properties than centrifugal pumps and are the better choice for certain applications.

They achieve relatively high pressures with smaller volume flows, which means that the characteristic curve also runs relatively steep. They belong to the pump types which offer the option of changing the conveying direction through right-left run. They can also pump media containing gas with no problems.

**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.

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



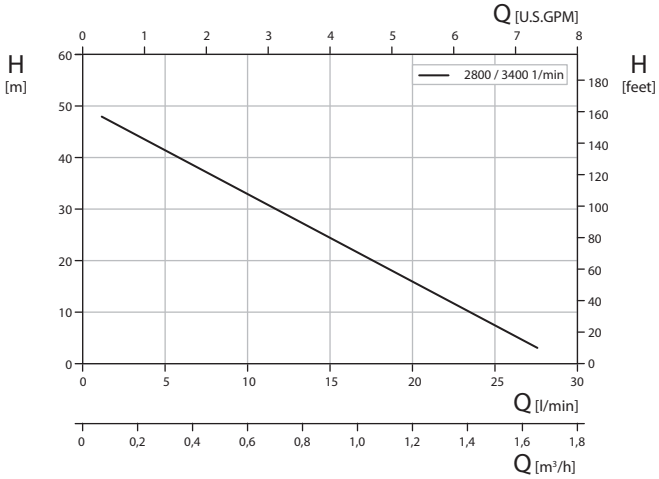

Example: CY-6091-MK-TOE

## *NPY-2251-MK-HT, NPY-2251-MK-TOE*

Illustration not obligatory

| | Media | Connections |
|---|---|---|
| **NPY-2251-MK-HT** | Water max. 220 °C | SAE 1/2 |
| **NPY-2251-MK-TOE** | Oil max. 350 °C | G 1/2, SAE 1/2 |

| | |
|---|---|
| Casing | Stainless steel |
| Bracket | With or without feet |
| Drive 50 Hz | 0.50 kW, 3~<br>1.00 kW, 3~ on request |
| Drive 60 Hz | 0.55 kW, 3~<br>1.00 kW, 3~ on request |

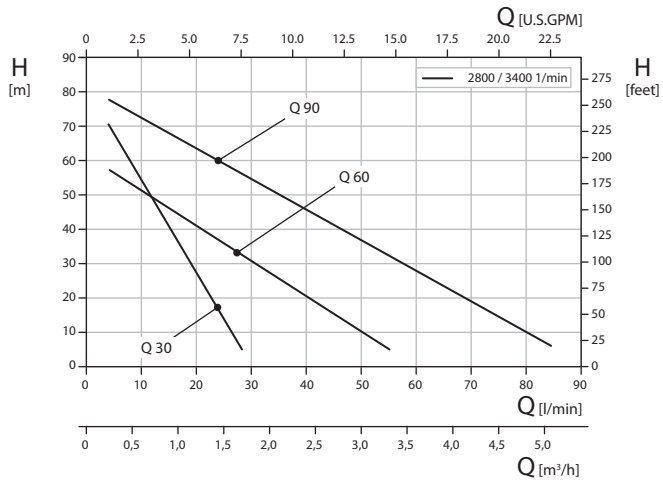


## *CY-4281-MK-HT, CY-4281-MK-TOE*

Illustration not obligatory

| | Media | Connections |
|---|---|---|
| **CY-4281-MK-HT** | Water max. 220 °C | SAE 3/4 |
| **CY-4281-MK-TOE** | Oil max. 350 °C | SAE 3/4 |

| | |
|---|---|
| Casing | Stainless steel |
| Bracket | With or without feet |
| Drive 50 Hz | 1.00 – 2.20 kW, 3~ |
| Drive 60 Hz | 1.00 – 2.20 kW, 3~ |




## *CY-6091-MK-HT, CY-6091-MK-TOE*

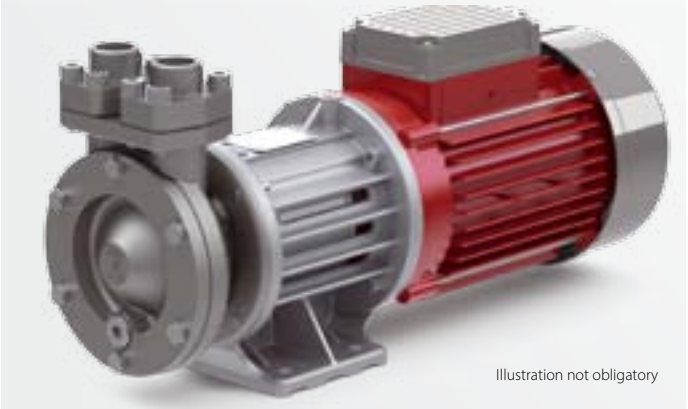
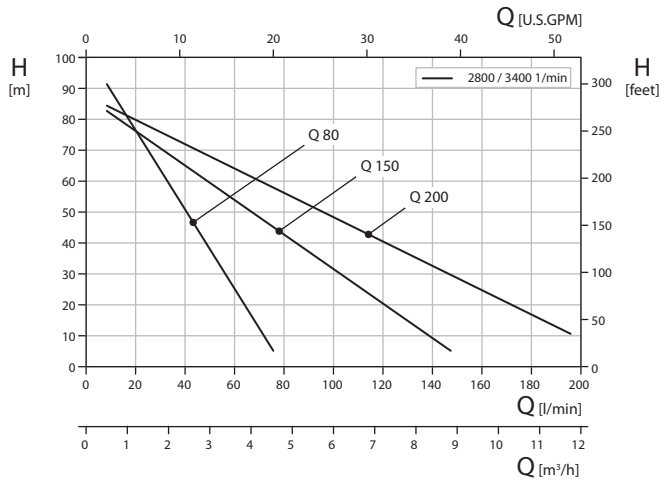


Illustration not obligatory

| | Media | Hydraulics | Connections |
|---|---|---|---|
| **CY-6091-MK-HT** | Water max. 220 °C | Q 80, Q 150 | G 3/4, SAE 1 |
| | | Q 200 | SAE 1 1/4 |
| **CY-6091-MK-TOE** | Oil max. 180 °C | Q 80, Q 150 | G 3/4 |
| | Oil max. 350 °C | Q 80, Q 150 | SAE 1 |
| | | Q 200 | SAE 1 1/4 |

| | |
|---|---|
| Casing | Spheroidal graphite iron |
| Bracket | With or without feet |
| Drive 50 Hz | 2.80 – 5.50 kW, 3~ |
| Drive 60 Hz | 2.80 – 5.50 kW, 3~ |






Subject to technical modifications and errors.

# 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.

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

| | **Spheroidal graphite cast iron version** | **Stainless steel version** |
|---|---|---|
| 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 EN-GJS-400-15 (GGG-40) | Stainless steel 1.4581 |
| 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 2G c b TX | |

## *Denomination*

| Type code \| Example | **TOE-** | **M** | **A-** | **32-** | **160** | **/150** |
|---|---|---|---|---|---|---|
| Denomination of series | | | | | | |
| Magnetic coupling | | | | | | |
| N = Version with bearing bracket, volute casing ax/top<br>A = Close-coupled version with bracket, volute casing ax/top<br>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

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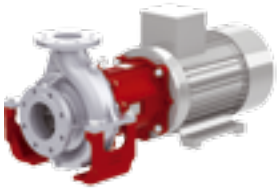
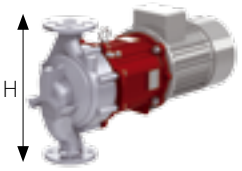
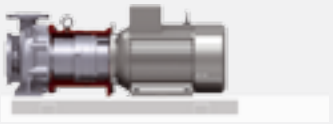
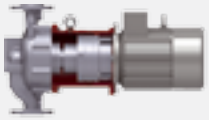
Regensburger Ring 6 -8
91154 Roth
Tel: +49 9171 809-0
Fax: +49 9171 809-10
info@speck.de
www.speck.de

**International representatives**
→ page 51

# TOE-MN / MA / MI Series

| | TOE-MN | TOE-MA | TOE-MI |
|---|---|---|---|
| |  Example: Casing with feet |  Example: Casing with centreline mounting |   |
| |  |  |  |
| **Features** | » Bearing bracket / process design<br>» Base plate<br>» Dismantling of the bearing bracket possible without moving the motor<br>» Alignment / checking of the coupling required before start-up<br>» Pump and aggregate dimensions in acc. with EN 733 | » Bracket version<br>» Base plate optional<br>» No alignment of coupling required before start-up<br>» Space for disassembling the cartridge insert required<br>» Pump dimension in acc. with EN 733 | » Bracket version with inline casing<br>» No alignment of coupling required before start-up<br>» Space for disassembling the cartridge insert required |
| **Pump dimensions** | → Pages 16 and 17 | → Pages 16 and 17 | → Page 18 |
| **Hydraulics and casing** | » Identlical hydraulics fo TOE-MN and TOE-MA Characteristic curves → pages 12 and 13<br>» Identical volute casing for each frame size<br>» Large pumps with centreline mounting and double volute Description → page 5 | | » Characteristic curves → pages 12 and 13<br>» Inline casings with two dimensions H available |
| **Sizes** | Only two bearing brackets for all sizes<br>» Bearing bracket 360 for 12 sizes - identical and interchangeable<br>» Bearing brackets 470 for 7 sizes - identical and interchangeable<br>» Only one bracket per size | | |
| **Description** | Material versions and design → pages 6 and 7 | | |
| **Interchangeability of parts** | » Within all series including the versions with magnetic coupling (→ see catalogue TOE-GN/GA/GI) there is a high degree of interchangeability.<br>» This means minimum spare parts stock and full flexibliliy as replacing pumps or components or retrofitting to a different design is very easy.<br>» 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**

**Wearing-resistant SiC sleeve bearing**
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 axial bearings considerably. They also keep dirt particles away from the sleeve bearings.

## *Clever temperature management*

**Optimised cooling of ball bearings and magnetic coupling**
A fan blade on the coupling is also used for cooling in the TOE-MN series. Here, the generated air flow, in combination with coupling protection, ventilation slots and cooling zone, reduces the temperature on the magnetic coupling and ball bearings extremely effectively.
On close-coupled pumps of the TOE-MA and TOE-MI series, the motor fan also cools the bearing shield and therefore also the ball bearings inside it.

## *Also suitable for critical applications*

**Pumps with magnetic couplings**
100% free of leakage and lower maintenance requirements than pumps with mechanical seals.

**Start-up safety device**
Two start-up safety devices on the inner and outer rotor avoid the destruction of the separating can if a sleeve or rolling bearing fails and they ensure that the pump remains hermetically sealed.

**ATEX**
All magnetically-coupled pumps 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, naturally, motors in accordance with IE2.

**Optimal sizes of magnetic couplings**
Magnetic couplings in staged sizes guarantee optimal design at the operating point with minimal viscosity and eddy current losses.

## *Maintenance-friendly and flexible*

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

You can replace the sleeve bearing cartridge easily as a complete spare part. It is quick and ensures correct installation every time.

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

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

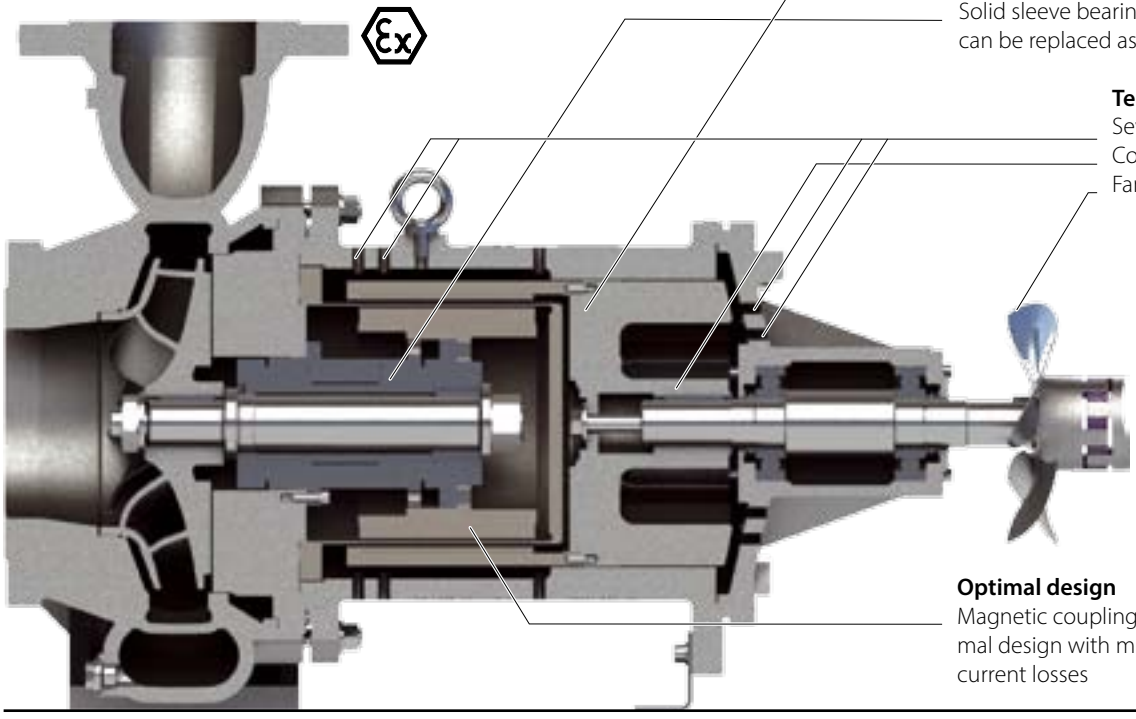


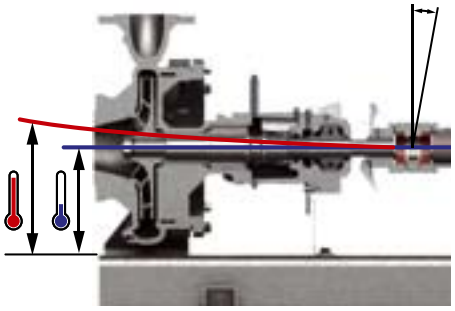

Figure: TOE-MN, bearing bracket 470, casing with centreline mounting

# Longer lifetime

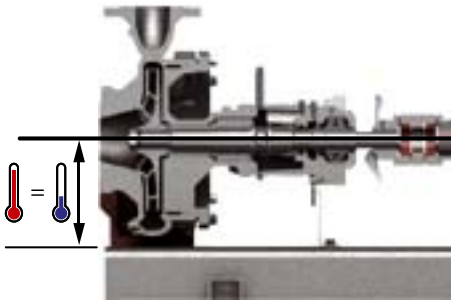
There are effects, which have little or no relevant impact on smaller designs, but lead to increased wear in larger pumps.

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*



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



The centreline mounting eliminates the impact of the heat expansion completely.

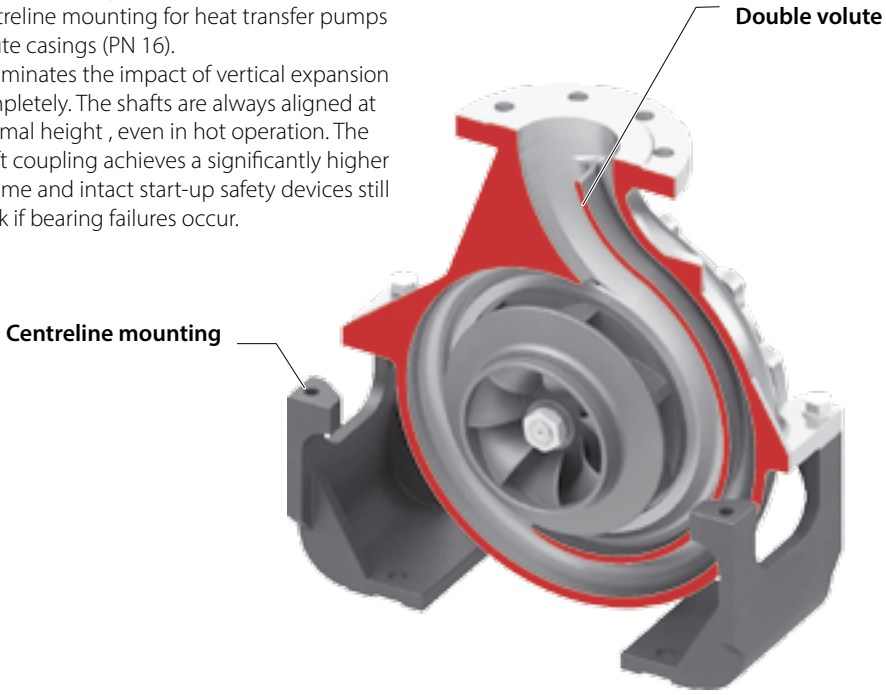
Casings with feet can only expand upwards in high temperatures, which causes the pump to tilt and bend. This has an impact on the magnetic coupling and the shaft coupling in particular. As the heat expansion increases with larger casing sizes, the shaft couplings and, eventually the safety start-up devices, wear faster on larger pumps.

Speck is the only manufacturer to use a centreline mounting for heat transfer pumps volute casings (PN 16).
It eliminates the impact of vertical expansion completely. The shafts are always aligned at optimal height , even in hot operation. The shaft coupling achieves a significantly higher lifetime and intact start-up safety devices still work if bearing failures occur.

## *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.




### TOE-MN / MA – Sizes and casing designs

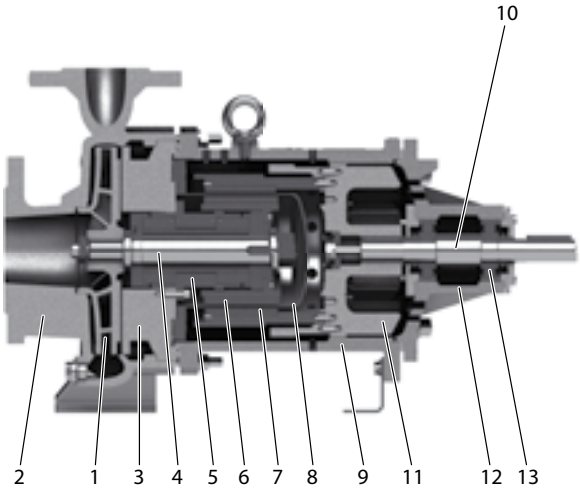
| | | | | | | |
|---|---|---|---|---|---|---|
| 32-160* | 40-160 | 50-160 | 65-160 | 80-160 | 100-160 | – |
| 32-200* | 40-200* | 50-200* | 65-200* | 80-200 | 100-200 | 125-200 |
| 32-250 | 40-250 | 50-250 | 65-250 | 80-250 | 100-250 | – |
| **Bearing bracket 360** | | | **Bearing bracket 470** | | |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

* also available in stainless steel version

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

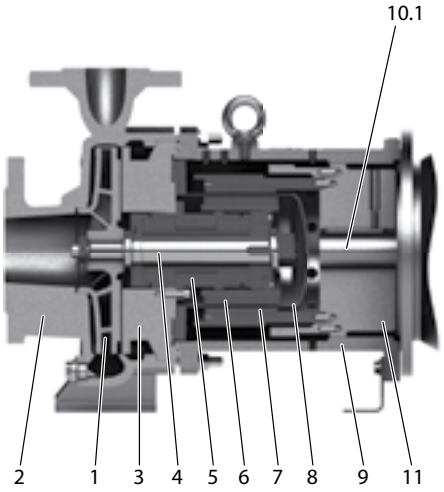
# Material designs

**TOE-MN**

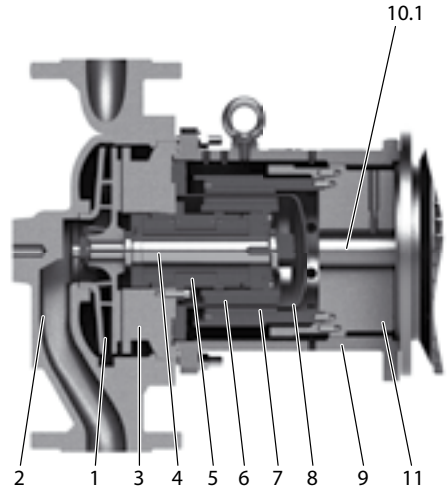



Bearing bracket 360
with Ø 250 mm impeller


**TOE-MA**




**TOE-MI**




| | Spheroidal graphite cast iron version | Stainless steel version |
|---|---|---|
| Media | Heat transfer oil / thermal oil | Heat transfer oil / thermal oil |
| $T_{min}$ | - 40 °C | - 100 °C |
| $T_{max}$ | + 350 °C | + 250 °C |
| Nominal pressure | PN 16 | |
| ATEX | II 2G c b TX | |
| Series | All series | TOE-MN, MA series |
| Sizes | All sizes | 32-160<br>32-200<br>40-200<br>50-200<br>65-200 |
| $H_{max}$ (2900 $min^{-1}$) | 100 m | 60 m |
| $Q_{max}$ (2900 $min^{-1}$) | 550 $m^3/h$ | 170 $m^3/h$ |

| No. | Designation | Spheroidal graphite cast iron version | Stainless steel version |
|---|---|---|---|
| 1 | Impeller | EN-GJL-250 | 1.4581 |
| 2 | Casing | EN-GJS-400-15 | 1.4581 |
| 3 | Casing cover | EN-GJS-400-15 | 1.4581 |
| 4 | Shaft | 1.4122 | 1.4571 |
| 5 | Sleeve bearing | SiC | SiC |
| 6 | Inner magnet | $Sm_2Co_{17}$ | $Sm_2Co_{17}$ |
| 7 | Outer magnet | $Sm_2Co_{17}$ | $Sm_2Co_{17}$ |
| 8 | Separating can | 2.4610 | 2.4610 |

| No. | Designation | Spheroidal graphite cast iron version | Stainless steel version |
|---|---|---|---|
| 9 | Bracket | EN-GJS-400-15 | EN-GJS-400-15 |
| 10/.1 | Drive shaft / motor shaft | 1.4122 | 1.4122 |
| 11 | Coupling insert | EN-GJL-250 | EN-GJL-250 |
| 12 | Bearing casing | EN-GJL-250 | EN-GJL-250 |
| 13 | Rolling bearing | High-quality brand | High-quality brand |
| 14 | Counter flange | EN-GJS-400-15 | EN-GJS-400-15 |

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

# Design

## *Magnetic couplings*

The magnetic coupling consist of inner magnetic rotor, separating can and outer magnetic rotor.
The large numer of staged sizes and a modern design software guarantee the best design at the operating point. The transmissible torques of the magnetic couplings range between 10 and 500 Nm.

### Type code

| Type code \| Example | **135-** | **70** |
|---|---|---|
| Nominal diameter DN | | |
| Magnetic length [mm] | | |

### Magnetic coupling sizes

| | | Magnetic coupling diameter | | | | |
|---|---|---|---|---|---|---|
| | | DN 60 | DN 75 | DN 110 | DN 135 | DN 165 |
| Magnetic length [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 |
| | | 360 | 360 | 360, 470 | 360, 470 | 470 |
| | | Bearing bracket | | | | |

## *Maintenance-friendly and safe design*

### Assemblies are easy-to-replace spare parts

The cartridge insert (TOE-MN) or assembly unit (TOE-MA, TOE-MI) are the parts of the pump getting in touch with the medium to be pumped. They can be removed easily from the volute casing without dismantling the pipes. Both are available as a single spare part and the best choice for quick and falseless repair. We recommend to put at least one cartridge insert/assembly unit into stock.

Further subassemblies are designed in the same way. In the event of servicing, they can be ordered and replaced as a single spare part.

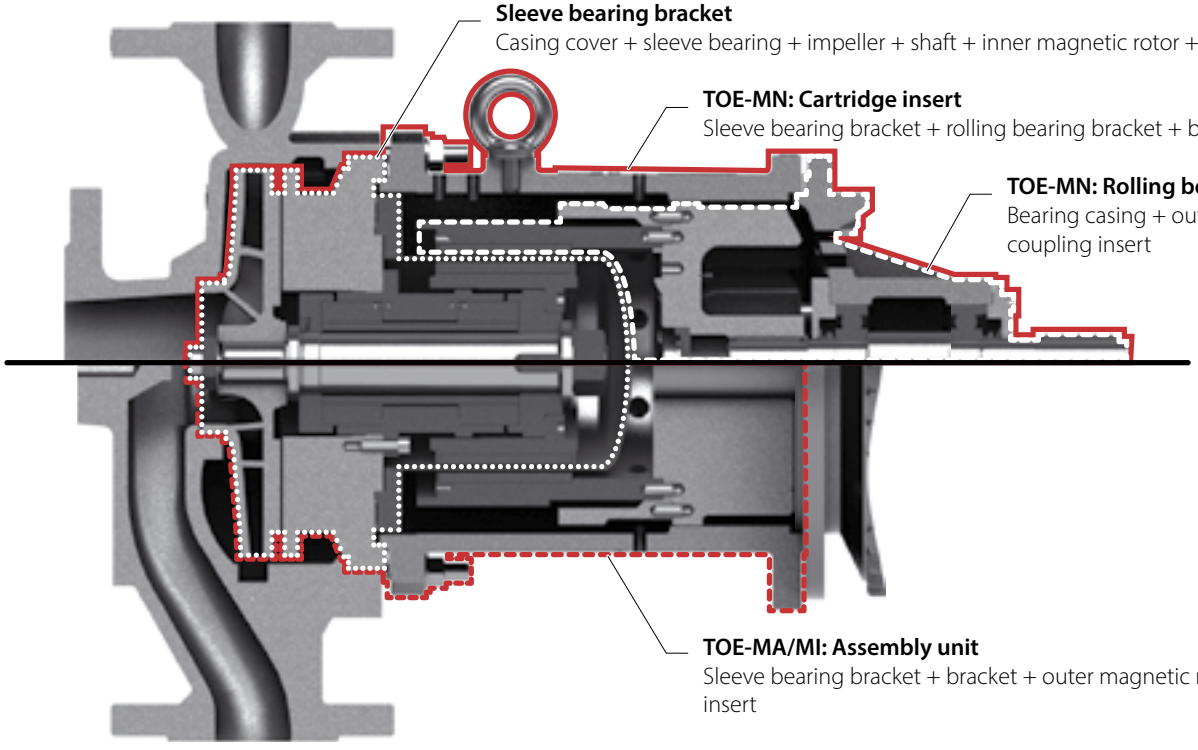
### Flushing bore holes

Current eddy, viscosity and bearing friction losses lead to higher temperatures within the pump and have to be added to the media temperature. Flushing bore holes in the inner rotor and the casing ensure that these critical places are cooled by the medium to be pumped.
In addition, light ends are discharged from the inner rotor.

### Temperature control

If required (e.g. in potentially explosive areas), temperature sensors can be installed in the bracket to control the surface temperature of the separating can.

## *Assemblies*



**Sleeve bearing bracket**
Casing cover + sleeve bearing + impeller + shaft + inner magnetic rotor + separating can

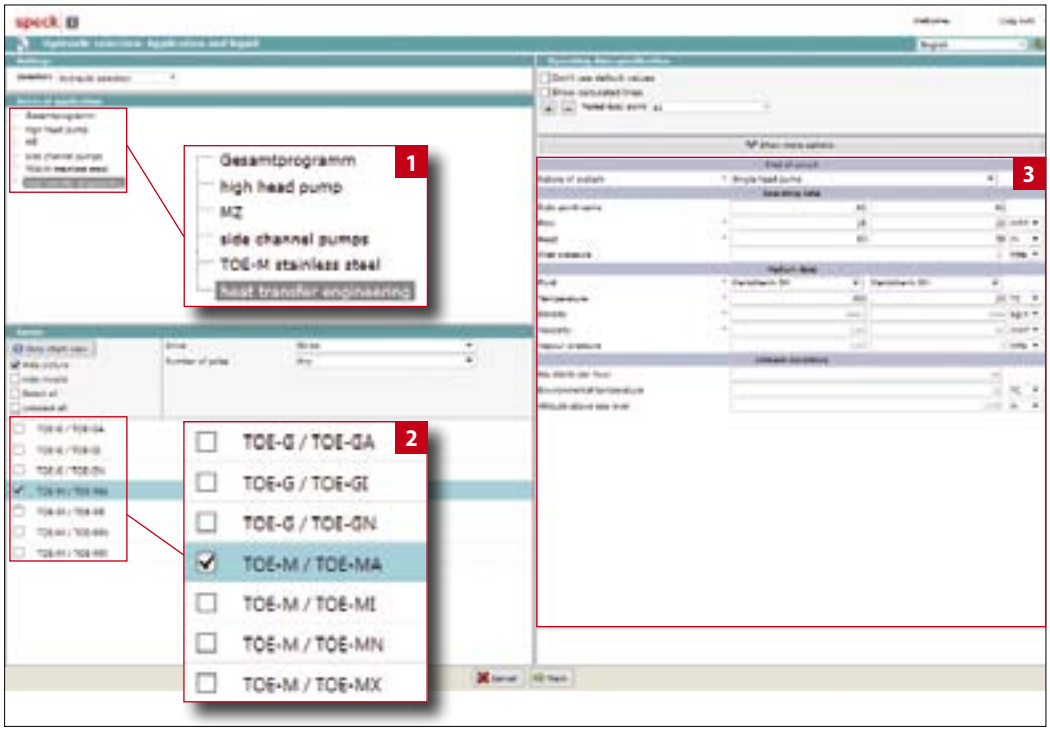
**TOE-MN: Cartridge insert**
Sleeve bearing bracket + rolling bearing bracket + bracket

**TOE-MN: Rolling bearing bracket**
Bearing casing + outer magnetic rotor + coupling insert

**TOE-MA/MI: Assembly unit**
Sleeve bearing bracket + bracket + outer magnetic rotor + coupling insert

# 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.


Characteristic curve depending on hydraulic selection

### 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.

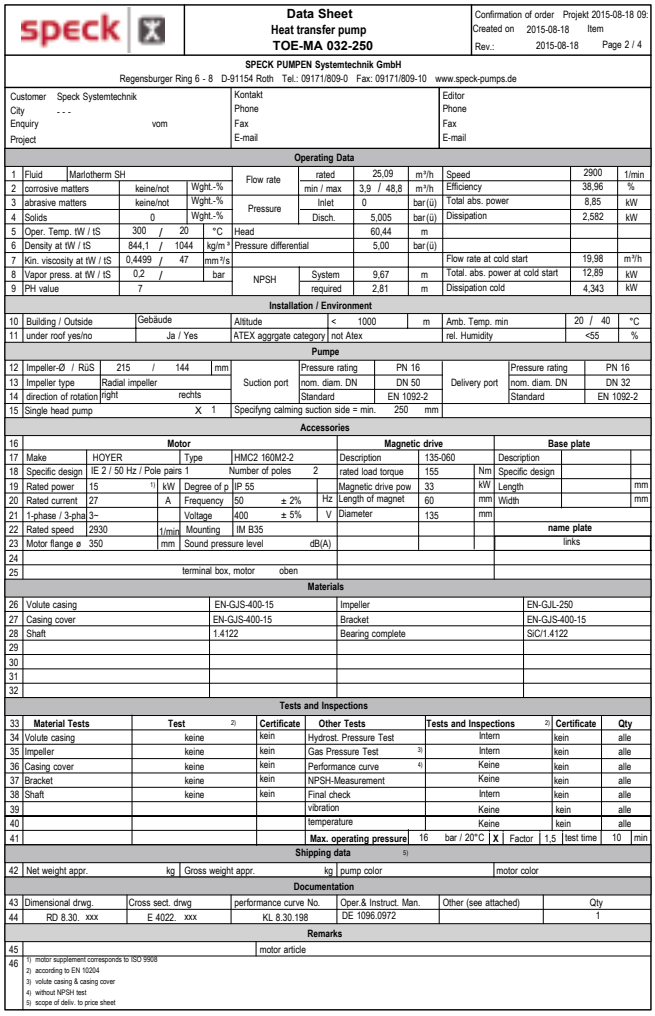
### Checking the pre-selection

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

### 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*



**Data Sheet**
**Heat transfer pump**
**TOE-MA 032-250**

Confirmation of order Projekt 2015-08-18 09:
Created on 2015-08-18 Item
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 | Kontakt | Editor |
| City - - - | Phone | Phone |
| Enquiry vom | Fax | Fax |
| Project | E-mail | E-mail |

**Operating Data**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fluid | Marlotherm SH | | Flow rate | rated | 25,09 | m³/h | Speed | 2900 | 1/min |
| 2 | corrosive matters | keine/not | Wght.-% | | min / max | 3,9 / 48,8 | m³/h | Efficiency | 38,96 | % |
| 3 | abrasive matters | keine/not | Wght.-% | Pressure | Inlet | 0 | bar (ü) | Total abs. power | 8,85 | kW |
| 4 | Solids | 0 | Wght.-% | | Disch. | 5,005 | bar (ü) | Dissipation | 2,582 | kW |
| 5 | Oper. Temp. tW / tS | 300 / 20 | °C | Head | | 60,44 | m | | | |
| 6 | Density at tW / tS | 844,1 / 1044 | kg/m³ | Pressure differential | | 5,00 | bar (ü) | | | |
| 7 | Kin. viscosity at tW / tS | 0,4499 / 47 | mm²/s | | | | | Flow rate at cold start | 19,98 | m³/h |
| 8 | Vapor press. at tW / tS | 0,2 / | bar | NPSH | System | 9,67 | m | Total. abs. power at cold start | 12,89 | kW |
| 9 | PH value | 7 | | | required | 2,81 | m | Dissipation cold | 4,343 | kW |

**Installation / Environment**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | Building / Outside | Gebäude | Altitude | < 1000 | m | Amb. Temp. min | 20 / 40 °C |
| 11 | under roof yes/no | Ja / Yes | ATEX aggrgate category | not Atex | | rel. Humidity | <55 % |

**Pumpe**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 | Impeller-Ø / RüS | 215 / 144 mm | Suction port | Pressure rating | PN 16 | Delivery port | Pressure rating | PN 16 |
| 13 | Impeller type | Radial impeller | | nom. diam. DN | DN 50 | | nom. diam. DN | DN 32 |
| 14 | direction of rotation | right rechts | | Standard | EN 1092-2 | | Standard | EN 1092-2 |
| 15 | Single head pump | X 1 | Specifyng calming suction side = min. | 250 mm | | | | |

**Accessories**

| | Motor | | | | Magnetic drive | | | Base plate | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | | | | | | | | | | |
| 17 | Make | HOYER | Type | HMC2 160M2-2 | Description | 135-060 | | Description | | |
| 18 | Specific design | IE 2 / 50 Hz / Pole pairs 1 | | Number of poles 2 | rated load torque | 155 | Nm | Specific design | | |
| 19 | Rated power | 15 [1] kW | Degree of p | IP 55 | Magnetic drive pow | 33 | kW | Length | | mm |
| 20 | Rated current | 27 A | Frequency | 50 ± 2% Hz | Length of magnet | 60 | mm | Width | | mm |
| 21 | 1-phase / 3-phase | 3~ | Voltage | 400 ± 5% V | Diameter | 135 | mm | | | |
| 22 | Rated speed | 2930 1/min | Mounting | IM B35 | | | | name plate | | |
| 23 | Motor flange ø | 350 mm | Sound pressure level | dB(A) | | | | links | | |
| 24 | | | | | | | | | | |
| 25 | terminal box, motor oben | | | | | | | | | |

**Materials**

| | | | | |
|---|---|---|---|---|
| 26 | Volute casing | EN-GJS-400-15 | Impeller | EN-GJL-250 |
| 27 | Casing cover | EN-GJS-400-15 | Bracket | EN-GJS-400-15 |
| 28 | Shaft | 1.4122 | Bearing complete | SiC/1.4122 |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |

**Tests and Inspections**

| | Material Tests | Test [2] | Certificate | Other Tests | Tests and Inspections [2] | Certificate | Qty |
|---|---|---|---|---|---|---|---|
| 33 | | | | | | | |
| 34 | Volute casing | keine | kein | Hydrost. Pressure Test | Intern | kein | alle |
| 35 | Impeller | keine | kein | Gas Pressure Test [3] | Intern | kein | alle |
| 36 | Casing cover | keine | kein | Performance curve [4] | Keine | kein | alle |
| 37 | Bracket | 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 10 min | | | |

**Shipping data** [5]

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 | Net weight appr. | kg | Gross weight appr. | kg | pump color | | motor color |

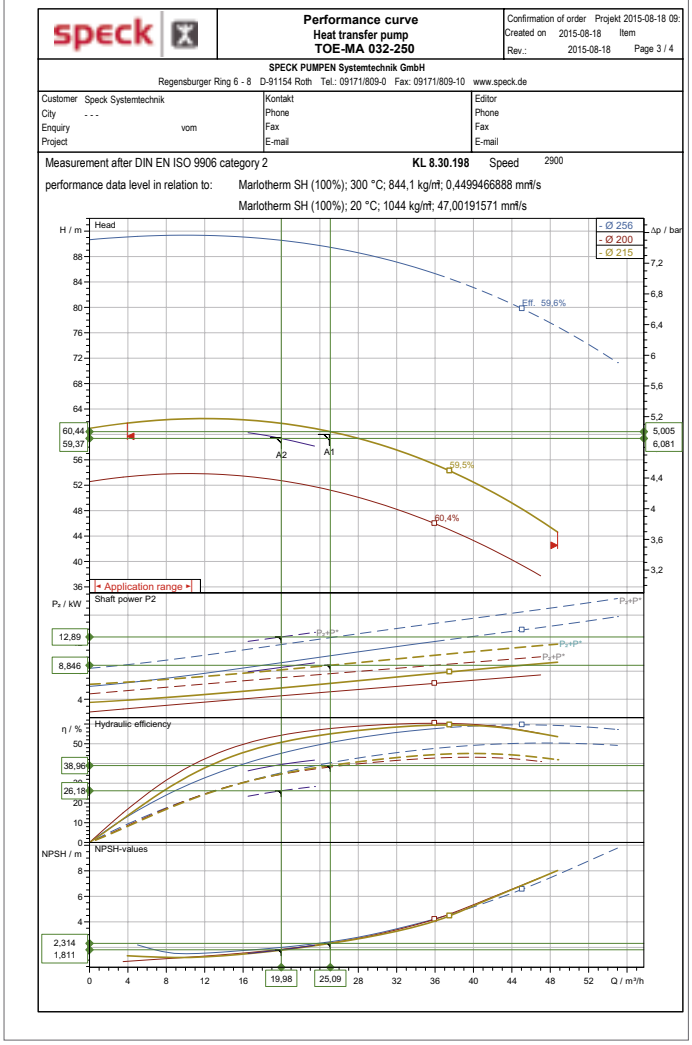
**Documentation**

| | | | | | | |
|---|---|---|---|---|---|---|
| 43 | Dimensional drwg. | Cross sect. drwg | performance curve No. | Oper.& Instruct. Man. | Other (see attached) | Qty |
| 44 | RD 8.30. xxx | E 4022. xxx | KL 8.30.198 | DE 1096.0972 | | 1 |

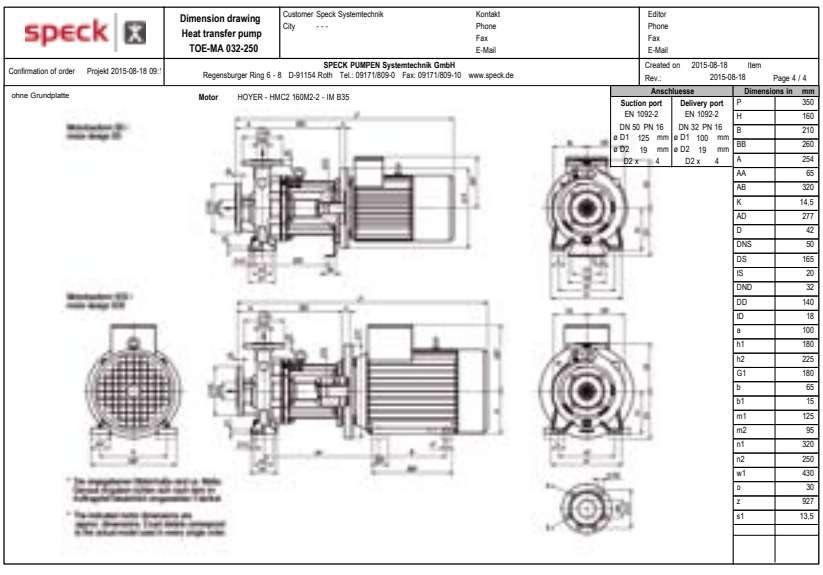
**Remarks**

| | |
|---|---|
| 45 | motor article |
| 46 | 1) motor supplement corresponds to ISO 9908<br>2) according to EN 10204<br>3) volute casing & casing cover<br>4) without NPSH test<br>5) scope of deliv. to price sheet |

Technical data sheet (example)




Characteristic curve (example)




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 DIN 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 mesurement

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 $m^3/h$ 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 out let pressure $p_{2max\ op}$ is calculated using the formula:

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

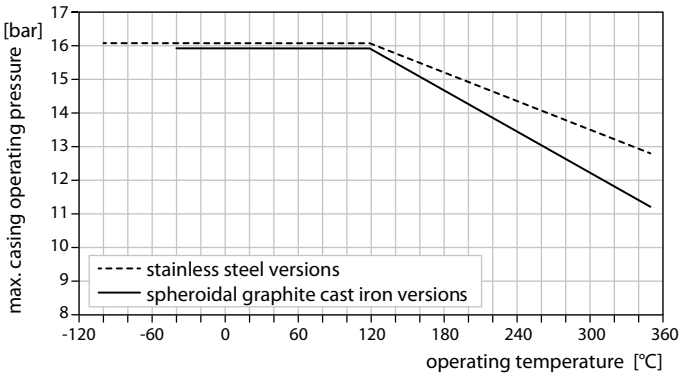
With:

| | | |
|---|---|---|
| $p_{2max\ op}$ | = | maximum pump outlet pressure [bar] |
| $p_{1max\ op}$ | = | maximum pump inlet pressure [bar] |
| $\rho$ | = | 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 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 $p_{all\ w\ c}$ at operating pressure.
This also applies to commissioning while the discharge valve is closed (refer to diagram).

### Pressure and temperature limitations

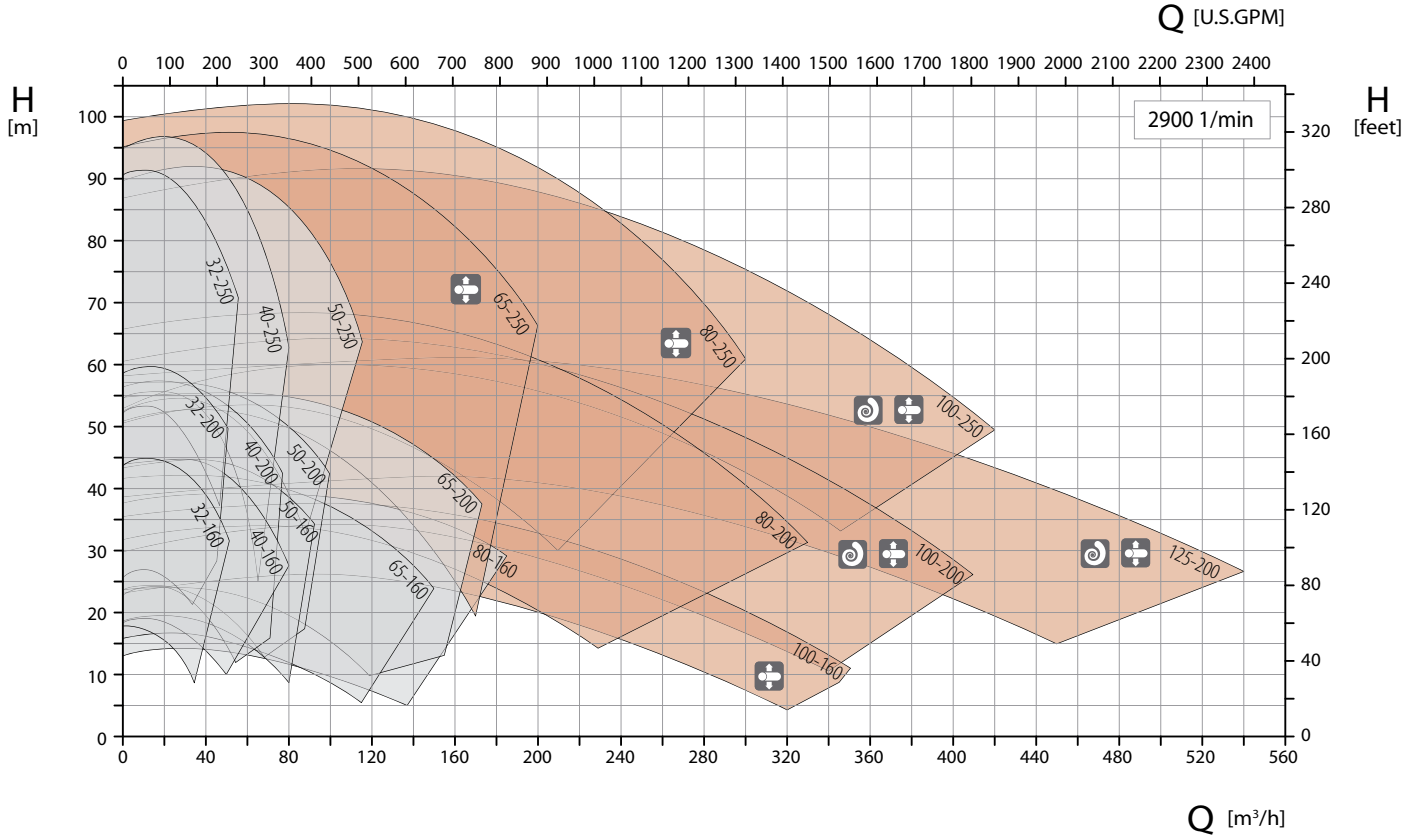
The maximum casing operating pressure $p_{all\ w\ c}$ of the pressure retaining parts depends on the operating temperature:

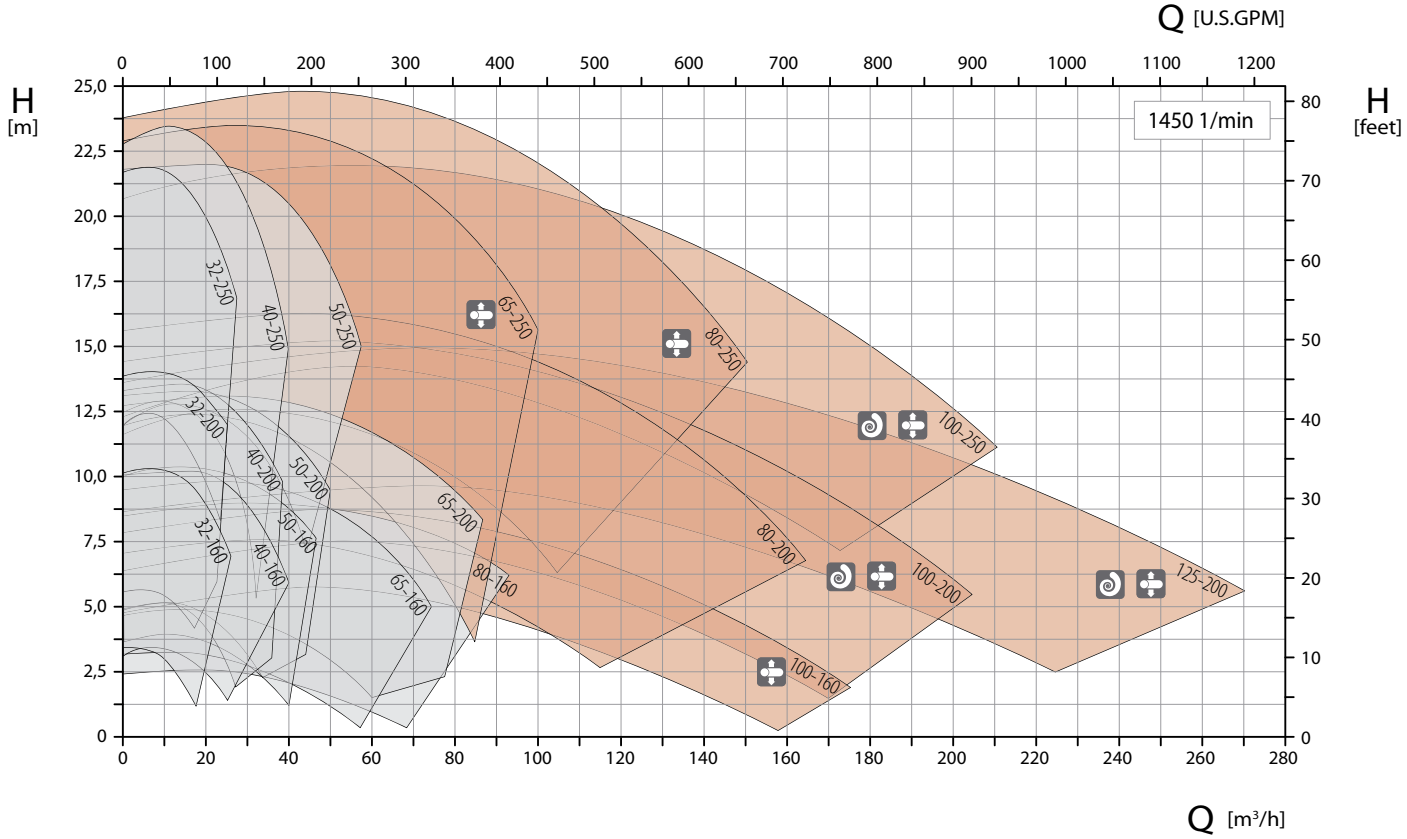



Maximum permissible casing operating pressure $p_{all\ w\ c}$

# TOE-MN / MA – Characteristic curves

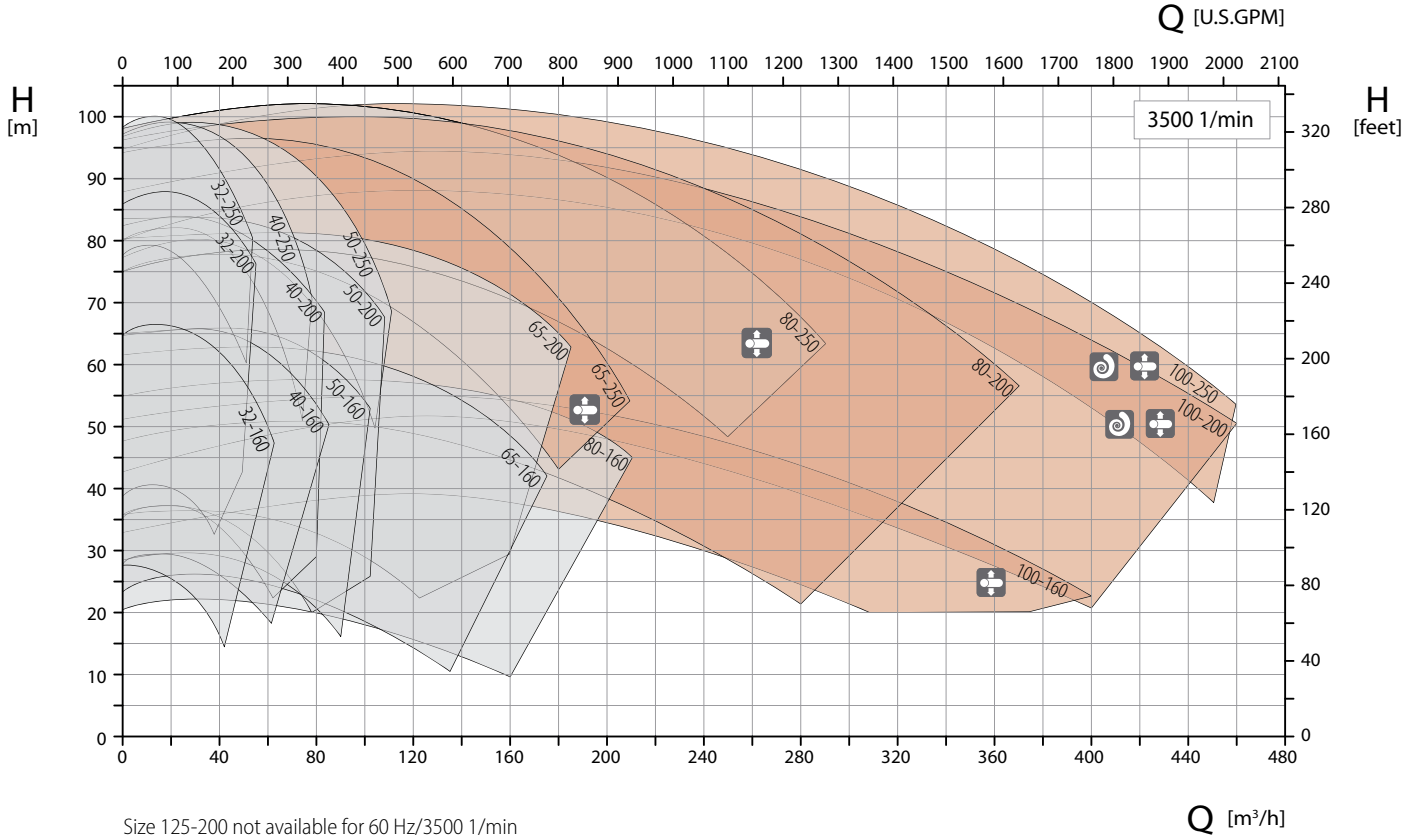
*50 Hz*



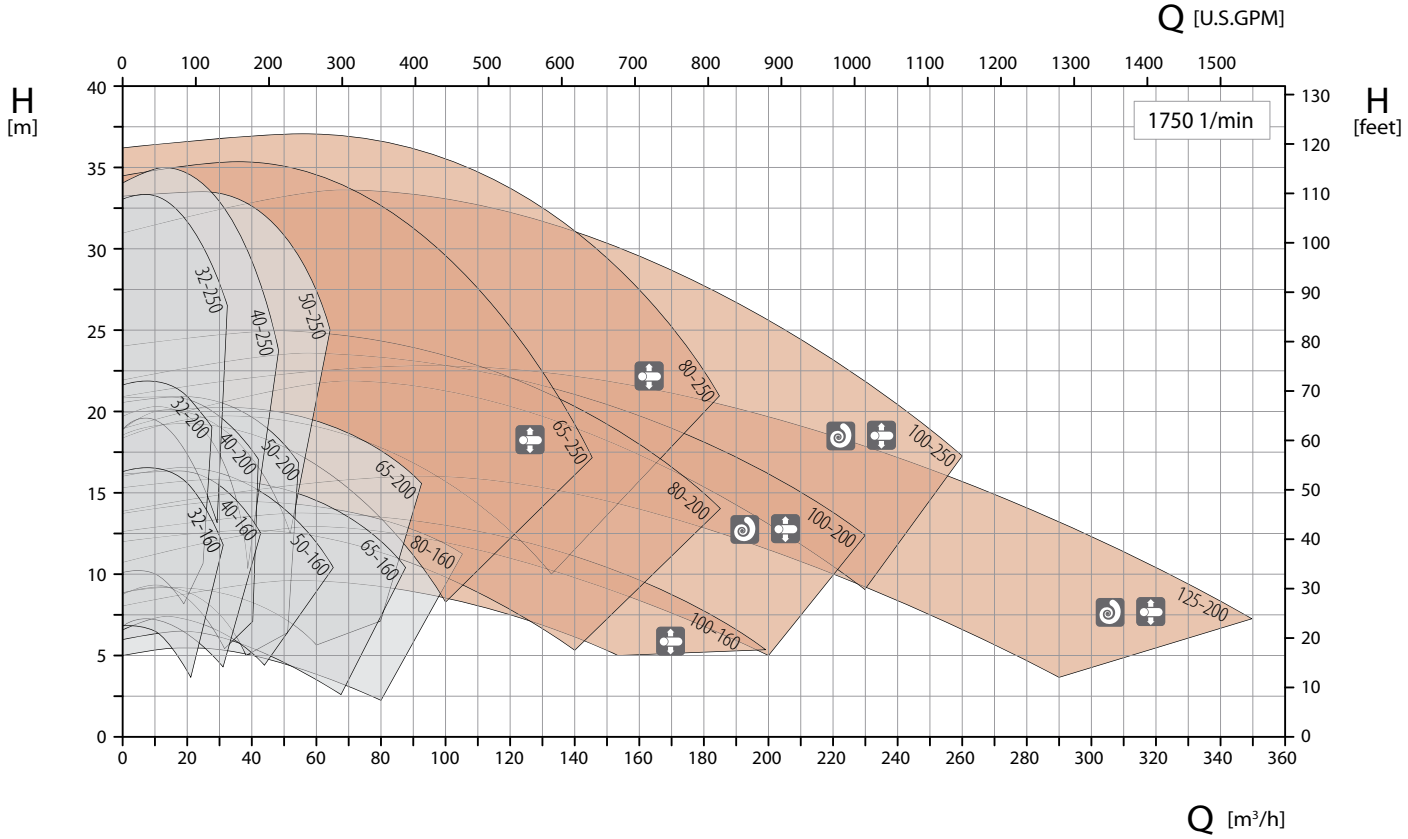




**Bearing bracket 360** **Bearing bracket 470** Casing with double volute Casing with centreline mounting

## 60 Hz



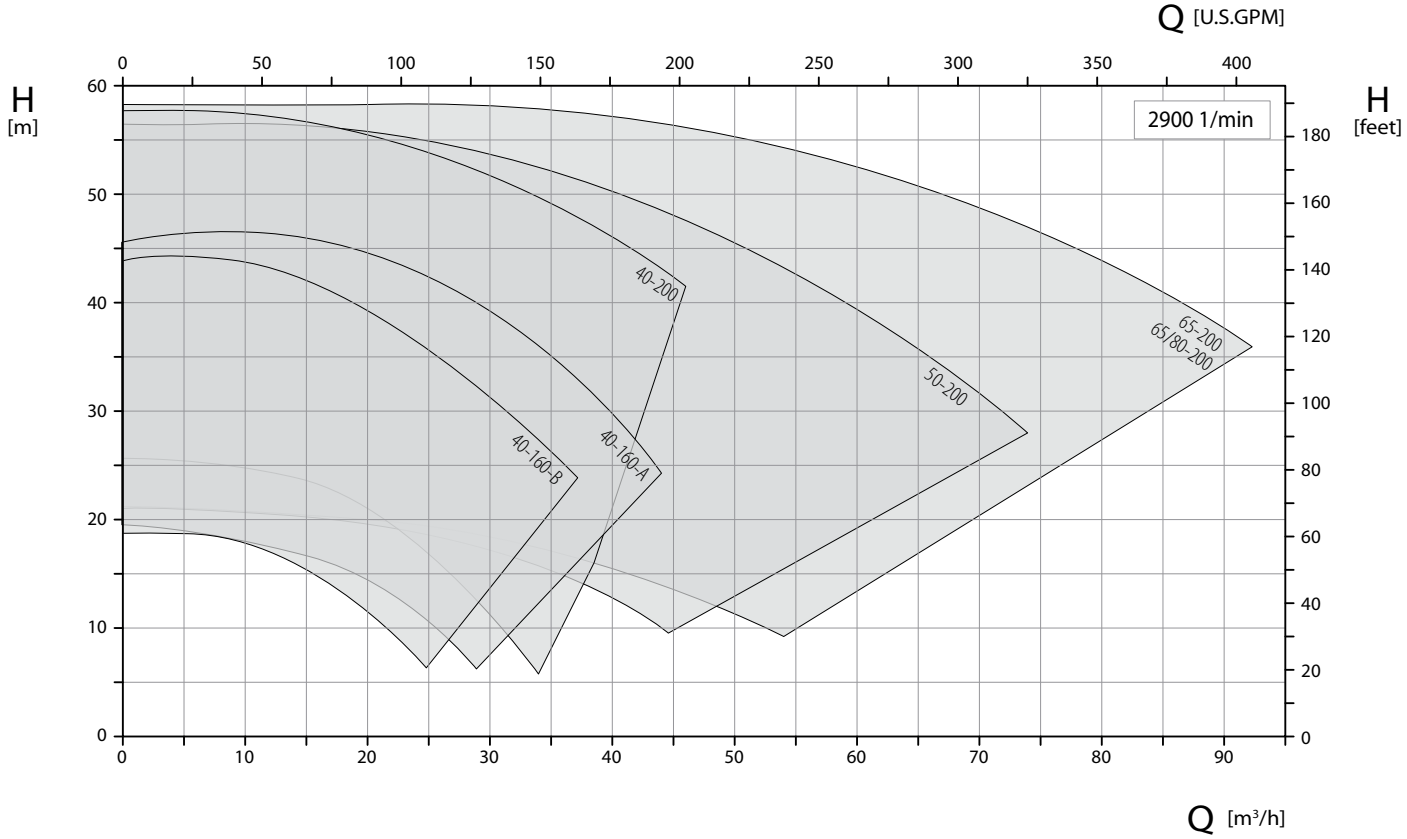

Size 125-200 not available for 60 Hz/3500 1/min

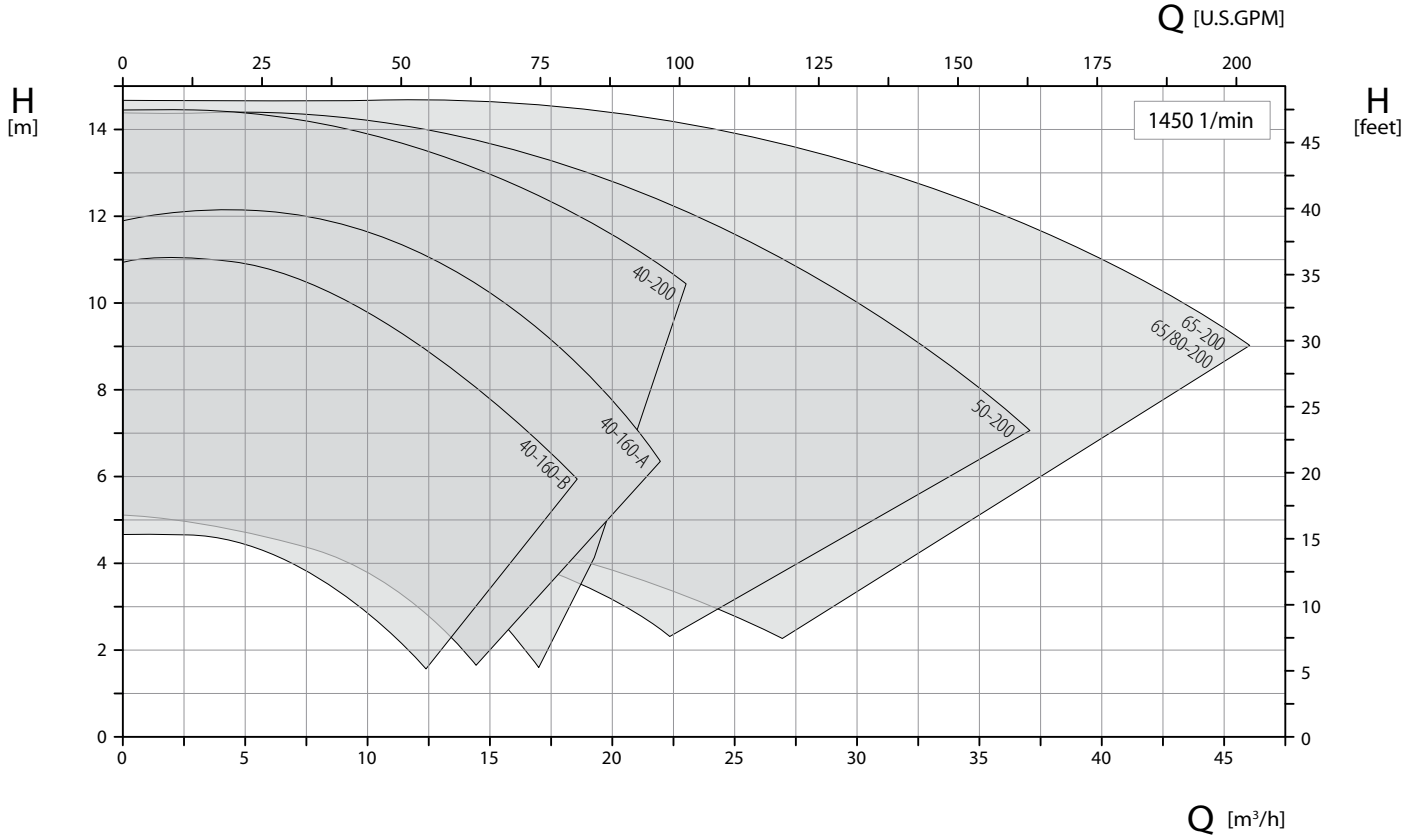



**Bearing bracket 360** **Bearing bracket 470** Casing with double volute Casing with centreline mounting

# TOE-MI – Characteristic curves

*50 Hz*

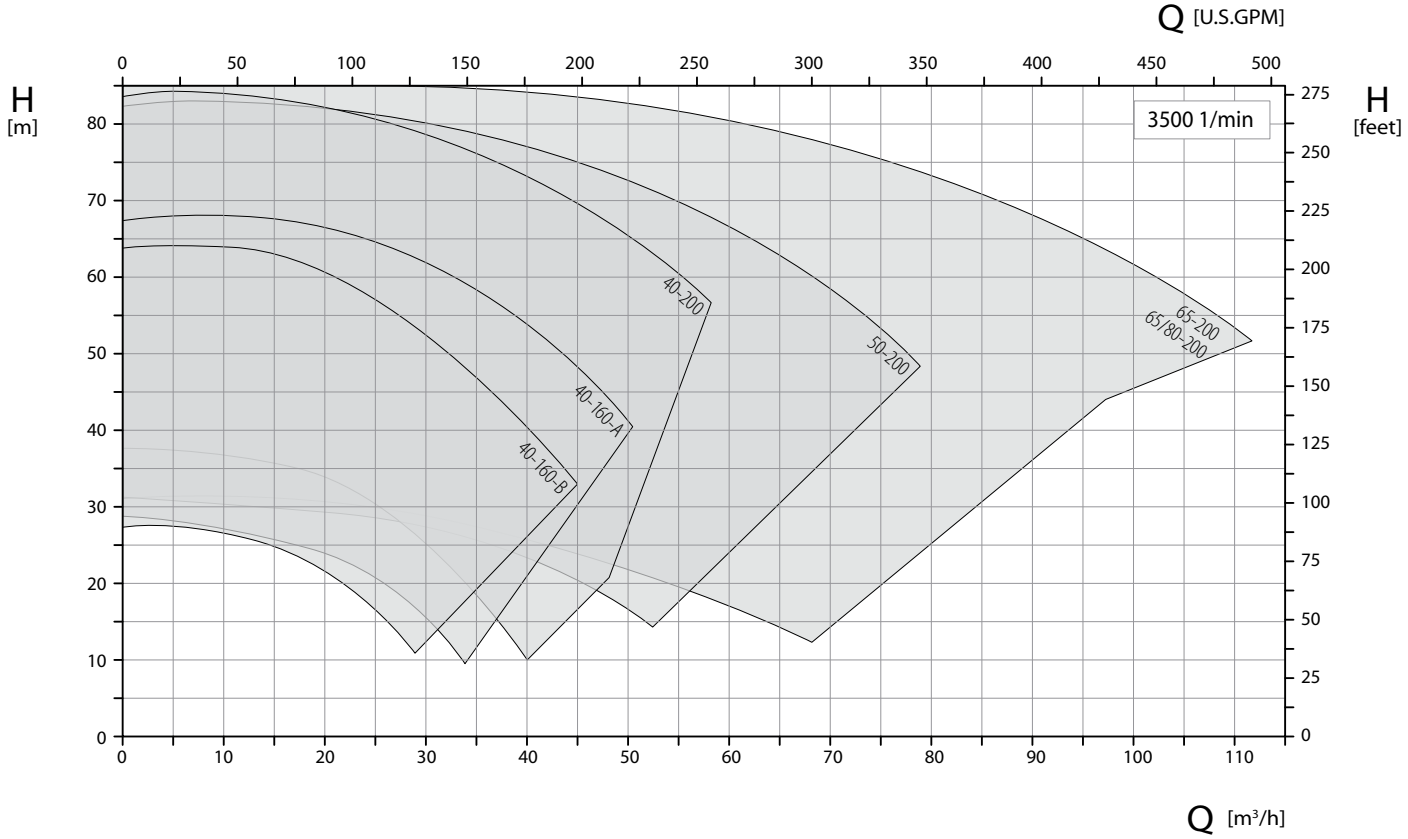


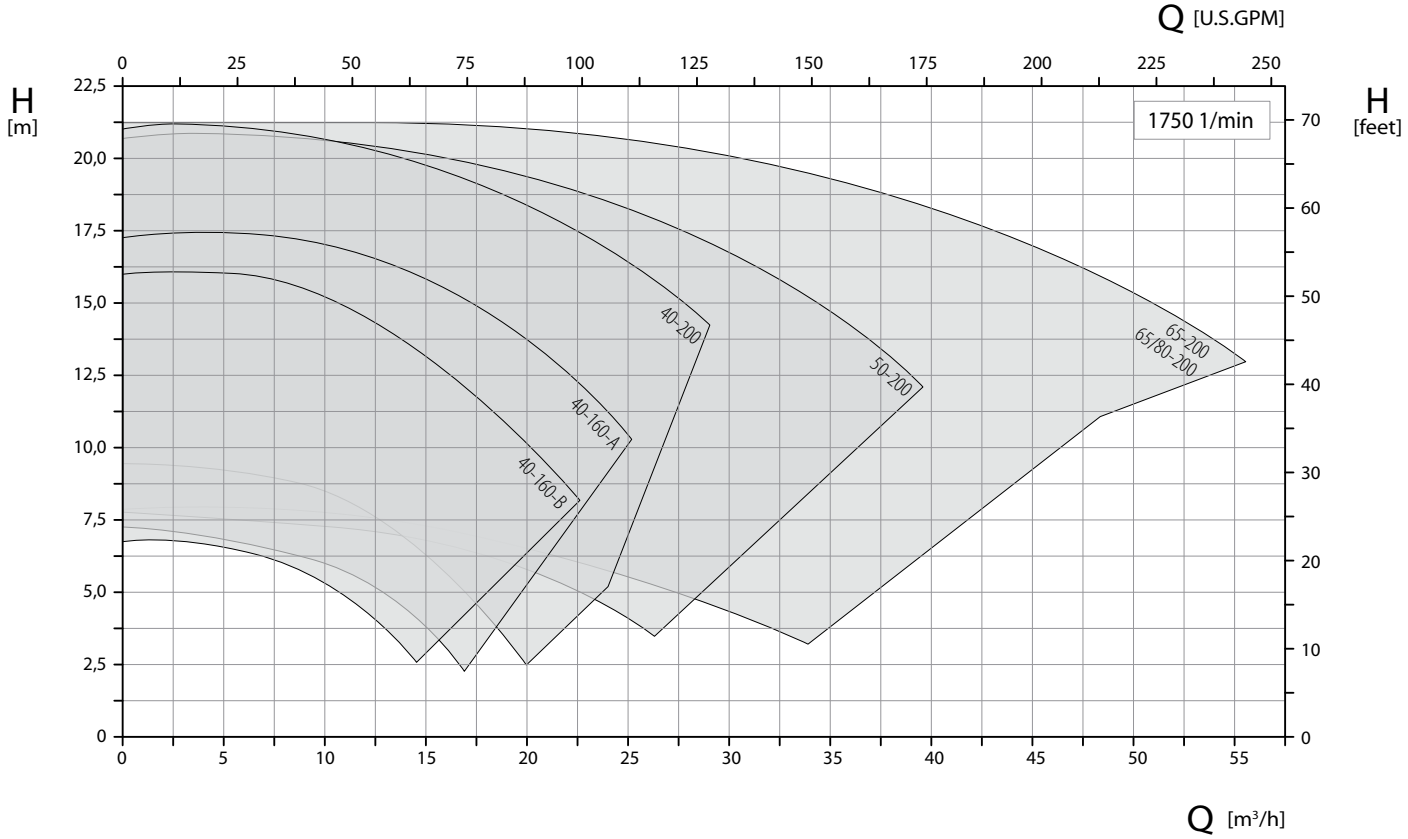




**Bearing bracket 360**

Size 40-160 with hydraulics A or B available

## 60 Hz



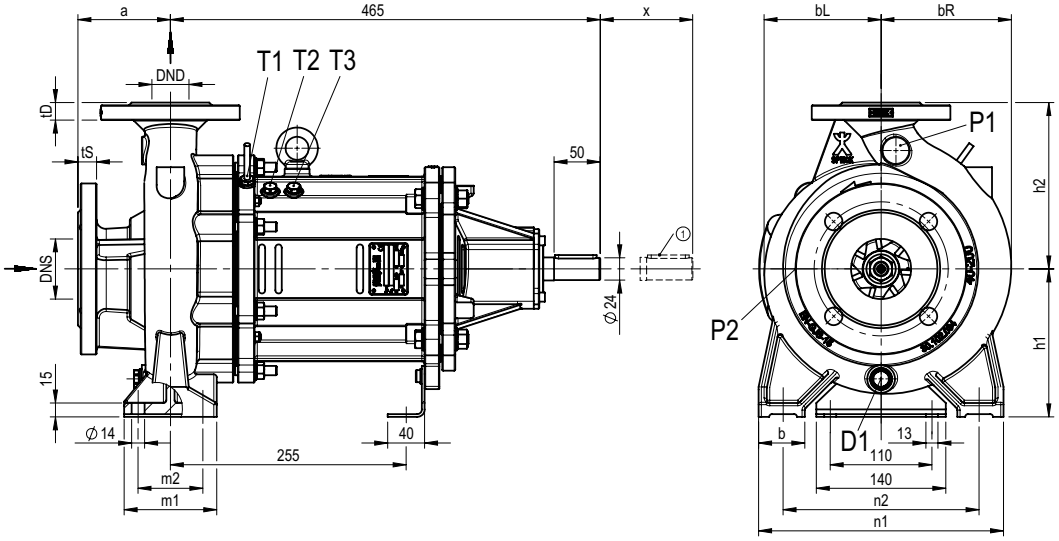

**Bearing bracket 360**

Size 40-160 with hydraulics A or B available

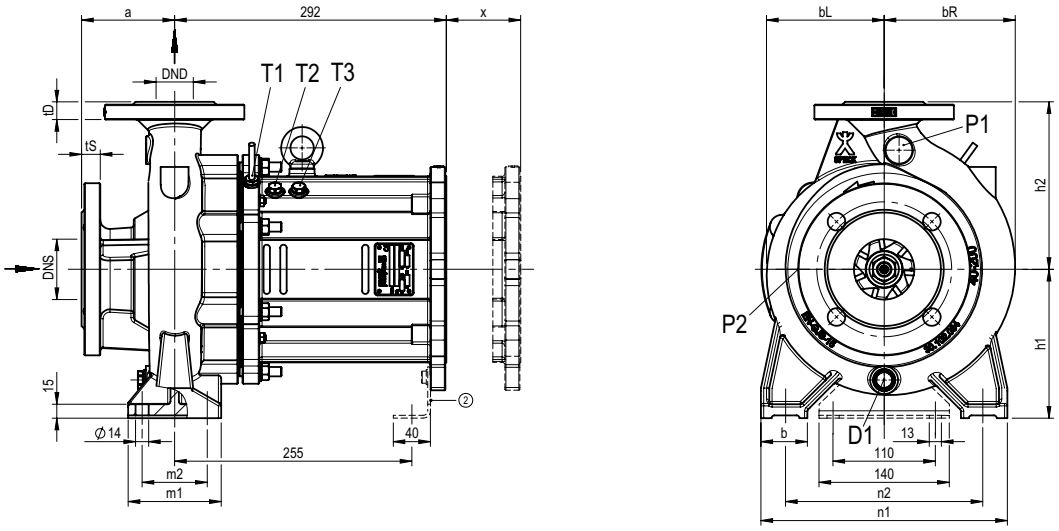
# TOE-MN / MA – Dimensions and connections

*Bearing bracket 360*

**TOE-MN**




**TOE-MA**




| 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) |
| D1 | G 3/8 | Drainage volute casing |
| T1 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 110 / 135 / 165) |
| T2 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 75) |
| T3 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 60) |

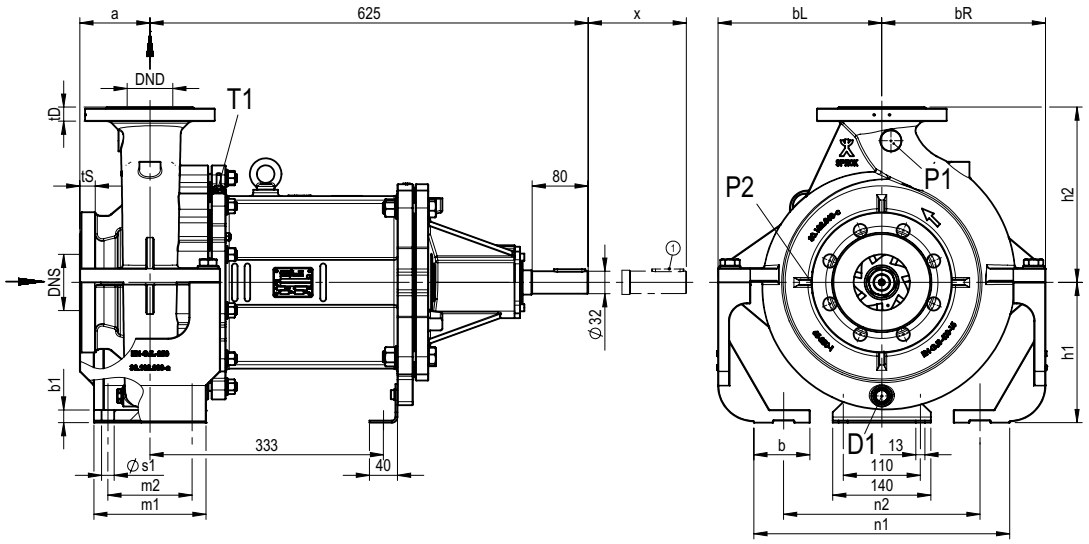
① Fiitting key DIN 6885
② Feet applicable for motor design B5 only

Flange dimensions → page 16

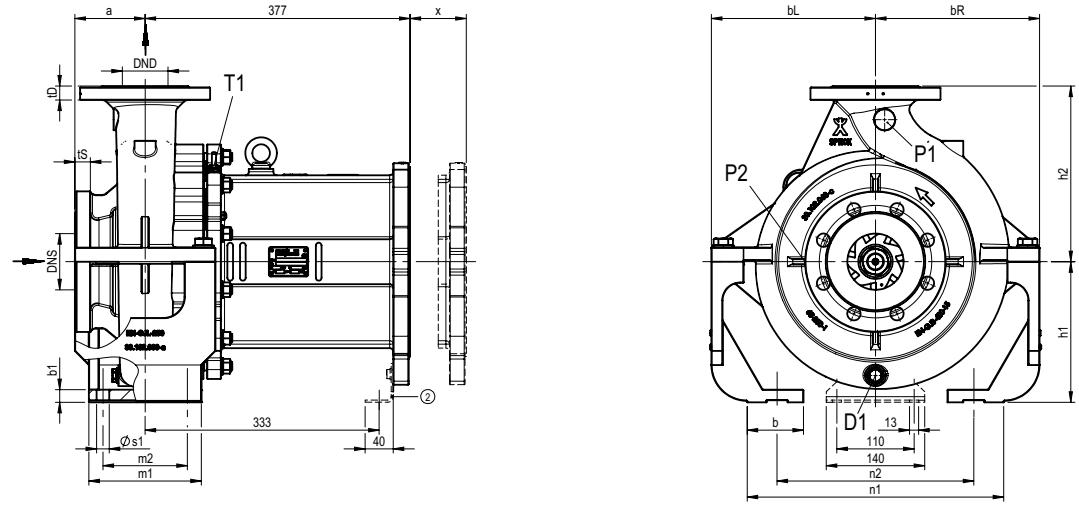
# TOE-MN / MA – Dimensions and connections

*Bearing bracket 470*

**TOE-MN**




**TOE-MA**




| 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 casing 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) |
| D1 | G 3/8 | Drainage volute casing |
| T1 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 110 / 135 / 165) |

① Fitting key DIN 6885

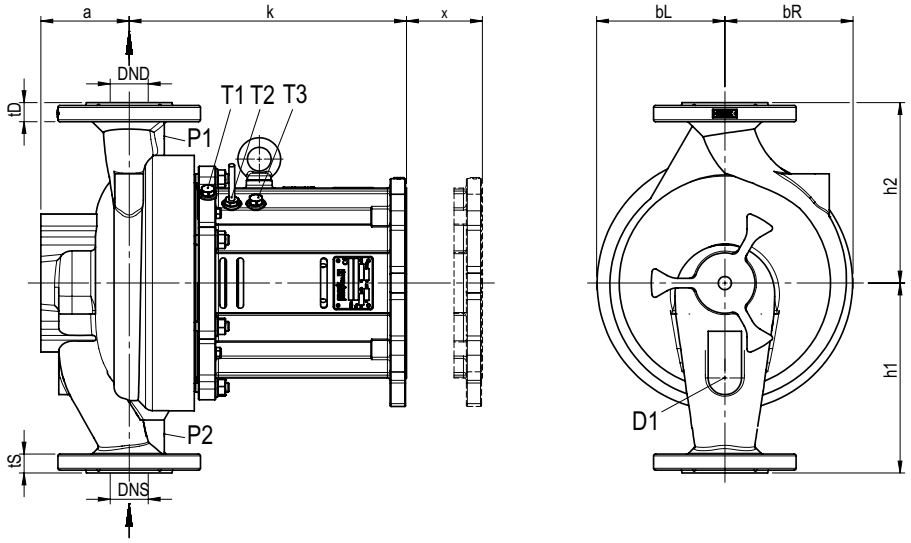
② Feet applicable for motor design B5 only

Flange dimensions → page 16

# TOE-MI – Dimensions and connections

*Bearing bracket 360*

**TOE-MI**



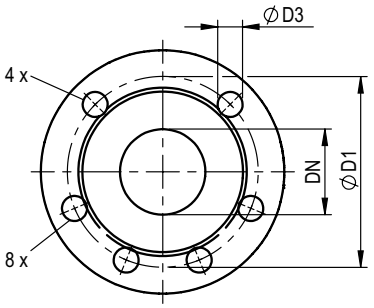

| Size | Casing | DNS | DND | a | DD | DS | tD | tS | bL | bR | h1 | h2 | k | x |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40-160 | INA | 40 | 40 | 97 | 150 | 150 | 20 | 20 | 116 | 116 | 200 | 190 | 395,5 | 110 |
| 40-160 | INB | 40 | 40 | 97 | 150 | 150 | 20 | 20 | 116 | 116 | 180 | 160 | 395,5 | 110 |
| 40-200 | INA | 40 | 40 | 93 | 150 | 150 | 20 | 20 | 135 | 135 | 200 | 190 | 399,5 | 110 |
| 50-200 | INA | 50 | 50 | 102 | 165 | 165 | 21 | 21 | 126 | 139 | 220 | 205 | 399,5 | 110 |
| 50-200 | INB | 50 | 50 | 92 | 165 | 165 | 21 | 21 | 126 | 139 | 200 | 180 | 409,5 | 110 |
| 65-200 | INA | 65 | 65 | 112 | 185 | 185 | 23 | 23 | 131 | 151 | 240 | 225 | 400,5 | 110 |
| 65/80-200 | INB | 80 | 80 | 112 | 200 | 200 | 23 | 23 | 131 | 151 | 255 | 225 | 400,5 | 110 |

| Utility connections | | |
|---|---|---|
| P1 | G 1/4 | Manometer connection pressure-side (without bore) |
| P2 | G 1/8 | Manometer connection suction-side (without bore) |
| D1 | G 3/8 | Drainage volute casing |
| T1 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 110 / 135 / 165) |
| T2 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 75) |
| T3 | G 1/4 | Temperature sensor PT 100 (magnetic coupling 60) |

# Flange dimensions

| Flanges in acc. with DIN EN 1092-2 | | | |
|---|---|---|---|
| DN | øD1 | øD3 | Holes |
| 32 | 100 | 19 | 4 |
| 40 | 110 | 19 | 4 |
| 50 | 125 | 19 | 4 |
| 65 | 145 | 19 | 4 |
| 80 | 160 | 19 | 8 |
| 100 | 180 | 19 | 8 |
| 125 | 210 | 19 | 8 |
| 150 | 240 | 23 | 8 |

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



# Interchangeability of parts

All series including the versions with mechanical seal (→ brochure TOE-GN/GA/GI series) offer a high degree of interchangeability.

## *Same components within TOE-MN/MA/MI series*

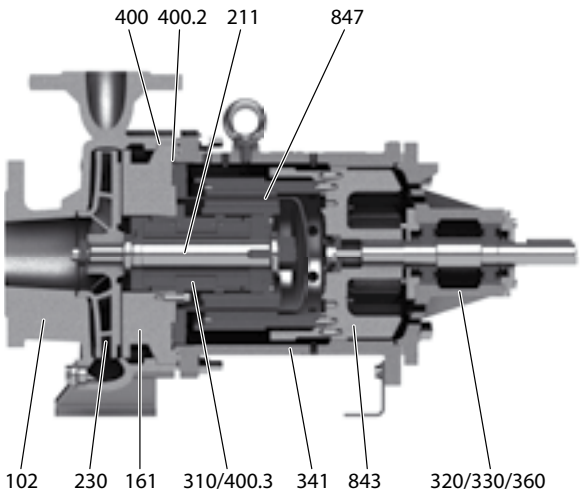
Compare only numbers within one **row**:

1 and 1 = same number means same component

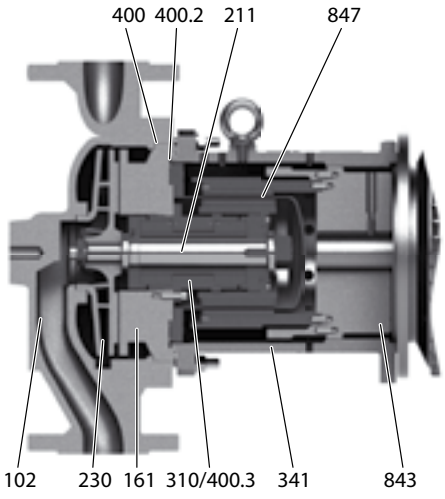
1 and 2 and ... = different numbers mean different components

| 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[1] | – | MN | MA | MI | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 | 3 | 4 | 3 | 5 | 4 | 3 | 4 |
| Volute casing | 102 | MN | MA | – | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| | | – | – | MI | | | | 20 | 21 | | | 22 | | | 23 | | | | | | | | |
| Casing cover | 161 | MN | MA | MI | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 | 3 | 4 | 3 | 5 | 4 | 3 | 4 |
| Shaft | 211 | MN | MA | MI | 1 | | | | | | | | | | | | 2 | | | | | | |
| Impeller | 230 | MN | MA | – | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| | | – | – | MI | | | | 1 | 20 | | | 5 | | | 8 | | | | | | | | |
| Sleeve bearing[1] | 310 | MN | MA | MI | 1[1] | | | | | | | | | | | | 2[1] | | | | | | |
| Bearing casing / rolling bearing / bearing cover | 330 / 320 / 360 | MN | – | – | 1 | | | | | | | | | | | | 2 | | | | | | |
| Bracket | 341 | MN | MA | MI | 1 | | | | | | | | | | | | 2 | | | | | | |
| Flat gasket | 400 | MN | MA | MI | 1 | | | | | | | | | | | | 2 | | | | | | |
| Flat gasket | 400.1 | MN | MA | – | | | 1 | | | 1 | | | 1 | | | | | | | | | | |
| Flat gasket | 400.2 / 400.3 | MN | MA | MI | 1[1] | | | | | | | | | | | | 2[1] | | | | | | |
| Counter flange | 720 | MN | MA | – | | | 1 | | | 1 | | | 1 | | | | | | | | | | |
| Coupling insert[1] | 843 | MN | MA | MI | 1[1] | | | | | | | | | | | | 2[1] | | | | | | |
| Magnetic coupling complete[1] | 847 | MN | MA | MI | 1[1] | | | | | | | | | | | | 2[1] | | | | | | |
| further parts | – | MN | MA | MI | 1 | | | | | | | | | | | | 2 | | | | | | |

[1] Interchangeable with identical sizes of magnetic coupling only.

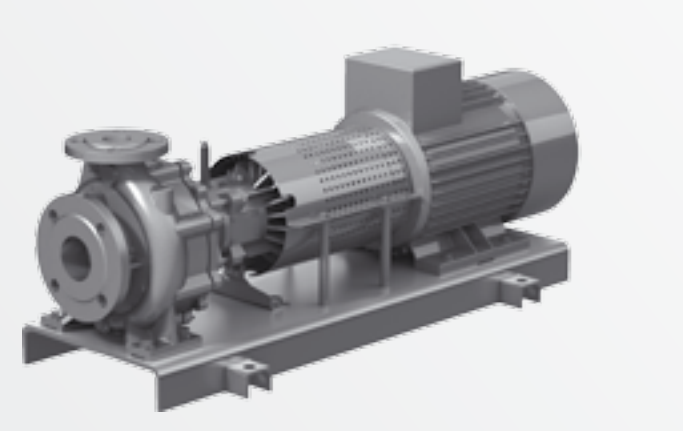






# Pumps for heat transfer technology

## *Centrifugal pumps with mechanical seal*



### Modular system

TOE-TOE-GN/GA/GI and TOE-MN/MA/MI series mean a consistent designed modular system. Hydraulics and the main part of the used components are identical and interchangeable.

### TOE-GN/GA/GI Series

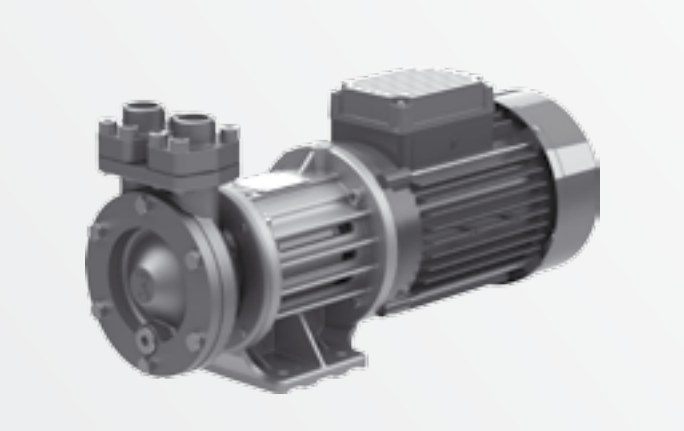
These pumps are designed for circulating organic or synthetic heat transfer oils in heat transfer plants in acc. with DIN 4754, as well as hot water.

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

| | Thermal oil versions | Hot water versions |
|---|---|---|
| Media | Heat transfer oil / thermal oil | Water |
| $T_{min}$ | - 40 °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 3G c TX | |

Description in full length → see brochure TOE-GN/GA/GI 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 | + 200 °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 2G c b 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.

# 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 |
| $T_{min}$ | - 40 °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 3G c 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<br>A = Close-coupled version with bracket, volute casing ax/top<br>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

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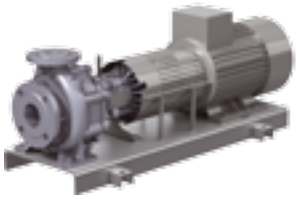
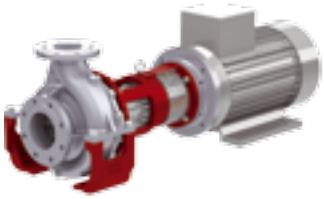
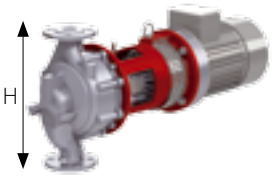
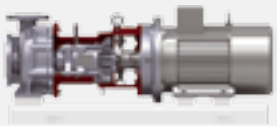
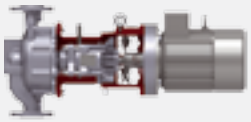
Fax: +49 9171 809-10
info@speck.de
www.speck.de

**International representatives**
→ page 23

# TOE-GN / GA / GI Series

| | TOE-GN | TOE-GA | TOE-GI |
|---|---|---|---|
| |  <br>Example: Casing with feet |  <br>Example: Casing with centreline mounting |  |
| |  |  |  |
| **Features** | » Bearing bracket / process design<br>» Base plate<br>» Dismantling of the bearing bracket possible without moving the motor<br>» Alignment / checking of the coupling required before start-up<br>» Pump and aggregate dimensions in acc. with EN 733 | » Bracket version<br>» Base plate optional<br>» No alignment of coupling required before start-up<br>» Space for disassembling the cartridge insert required<br>» Pump dimension in acc. with EN 733 | » Bracket version with inline casing<br>» No alignment of coupling required before start-up<br>» Space for disassembling the cartridge insert required |
| **Pump dimensions** | → Pages 16 and 17 | → Pages 16 and 17 | → Page 18 |
| **Hydraulics and casing** | » Identlical hydraulics for TOE-GN and TOE-GA<br>Characteristic curves → pages 12 and 13<br>» Identical volute casing for each frame size<br>» Large pumps with centreline mounting and double volute<br>Description → page 5 | | » Characteristic curves<br>→ pages 14 and 15<br>» Inline casings with two dimensions H available |
| **Sizes** | Only two bearing brackets for all sizes<br>» Bearing bracket 360 for 12 sizes - identical and interchangeable<br>» Bearing brackets 470 for 7 sizes - identical and interchangeable<br>» Only one bracket per size | | |
| **Description** | » Thermal oil versions → page 6<br>» Hot water versions → page 7 | | |
| **Interchangeability of parts** | » Within all series including the versions with magnetic coupling (→ see catalogue TOE-MN/MA/MI series) there is a high degree of interchangeability.<br>» This means minimum spare parts stock and full flexibliliy as replacing pumps or components or retrofitting to a different design is very easy.<br>» 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.

## *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.

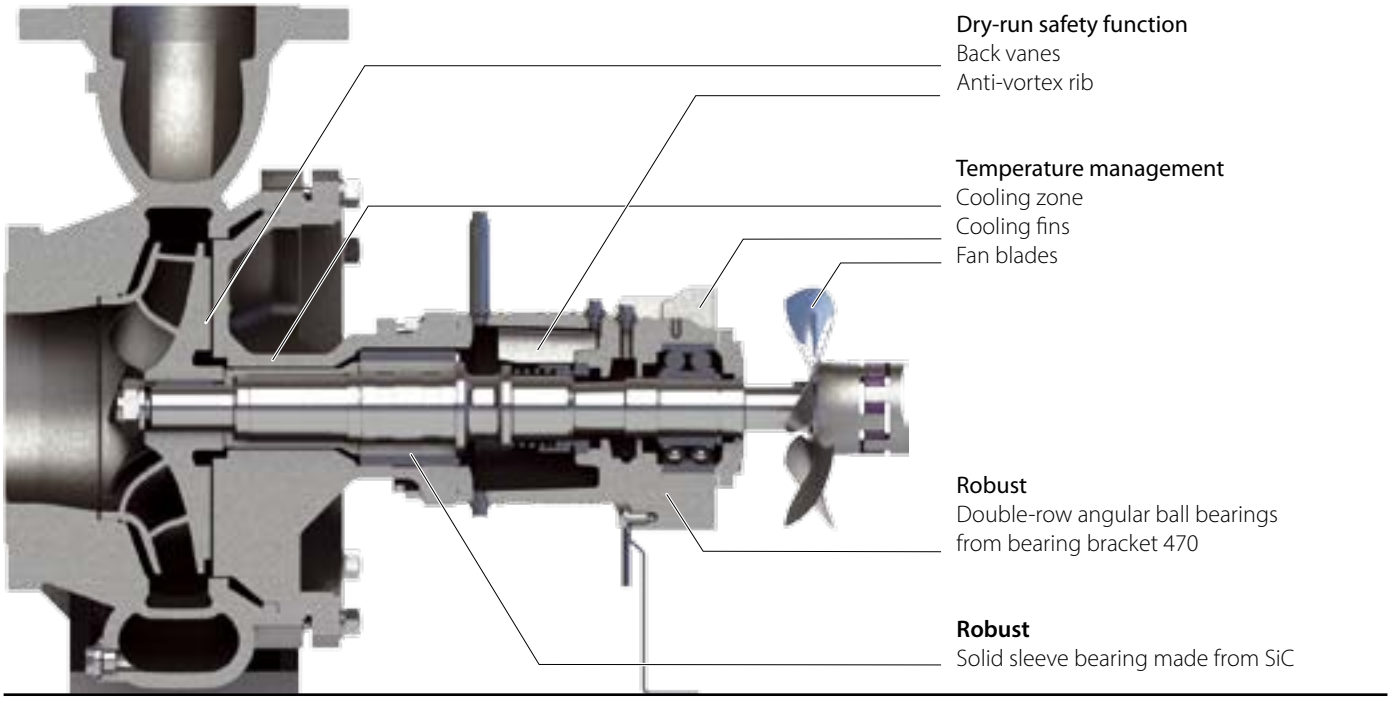


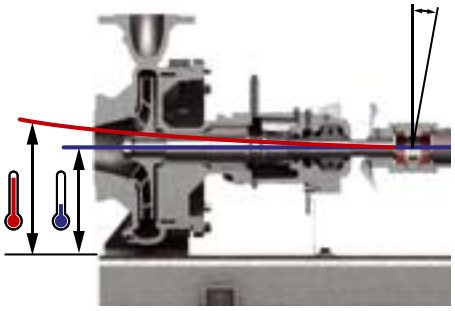

Fig.: TOE-GN, bearing bracket 470, casing with centreline mounting

# Longer lifetime

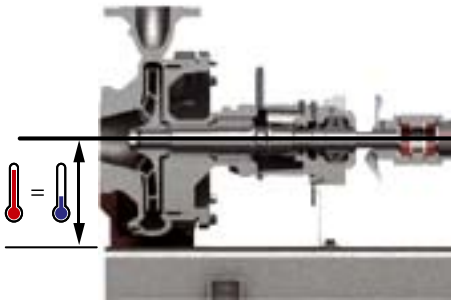
There are effects, which have little or no relevant impact on smaller designs, but lead to increased wear in larger pumps.

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



The centreline mounting eliminates the impact of the heat expansion completely

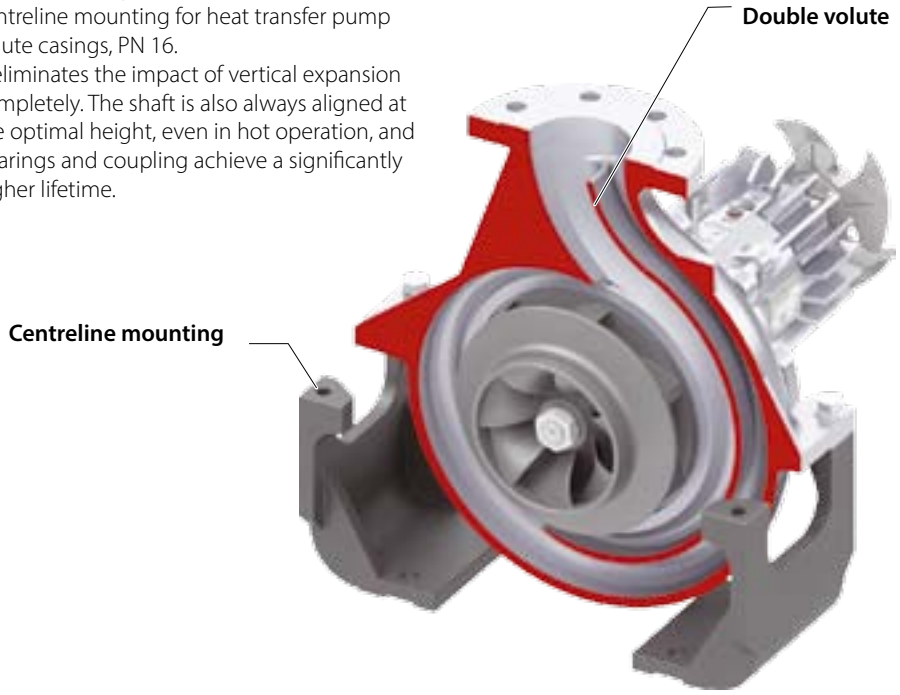
Casings with feet can only expand upwards in high temperatures, which causes the shaft to tilt and bend. This has an impact on the sleeve bearings and shaft coupling in particular.
As the heat expansion increases with larger casing size, the sleeve bearings and couplings also wear faster on larger pumps.

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.




### TOE-GN / GA – 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

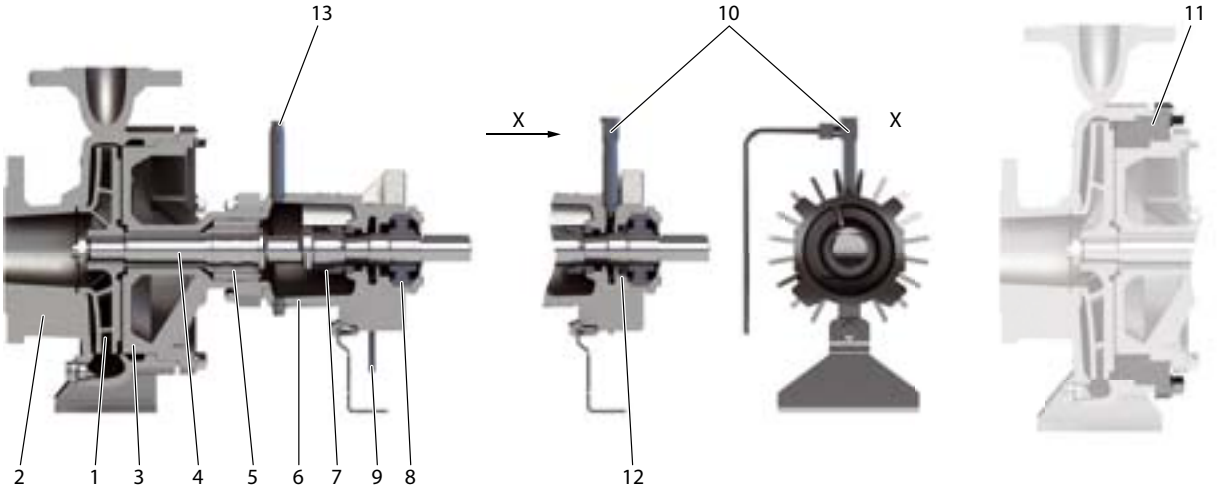
# Thermal oil versions

Standard version without quench

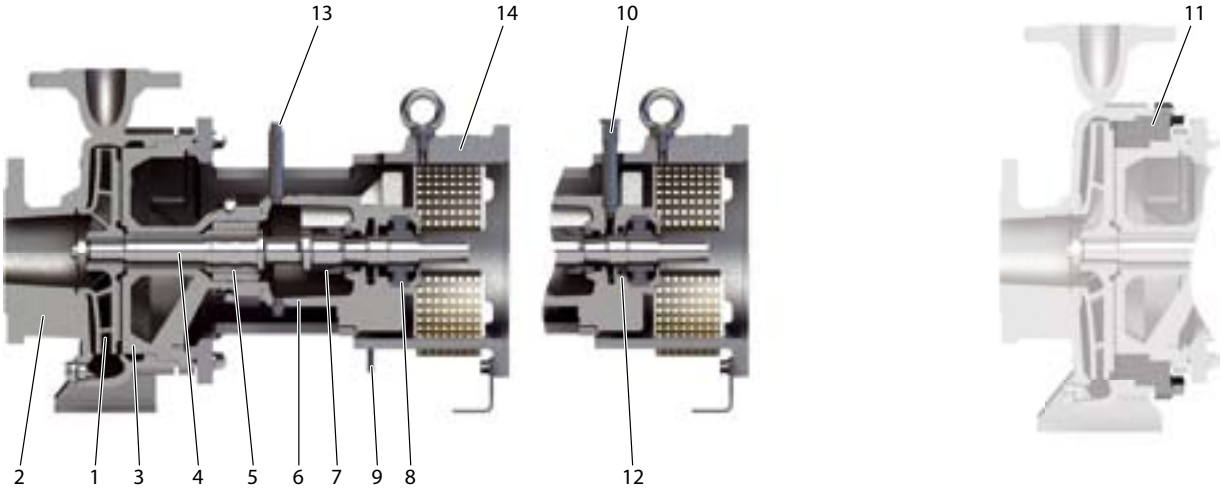
Quench version

Bearing bracket 360
with Ø 250 mm impeller

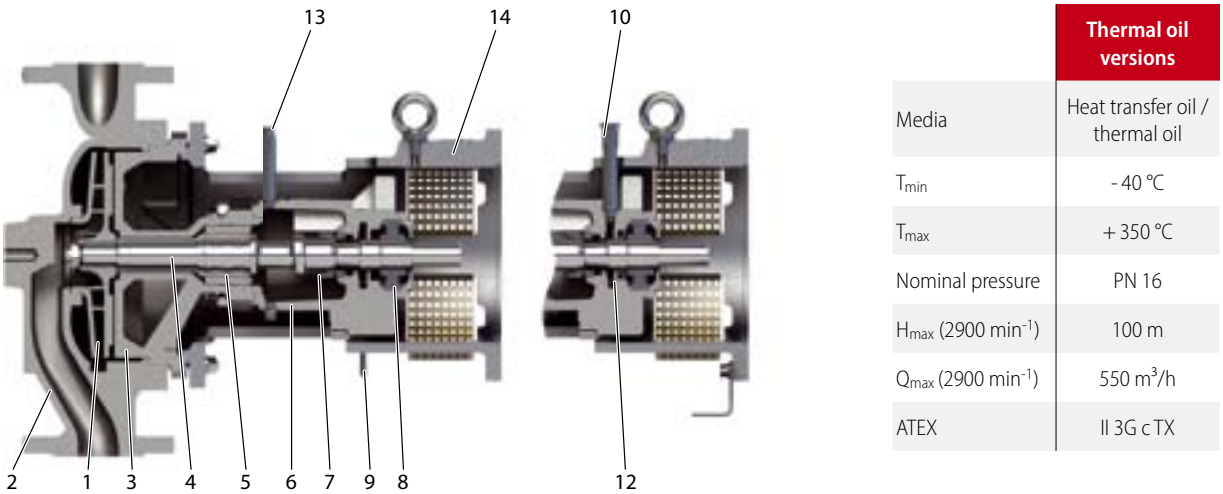
**TOE-GN**




**TOE-GA**




**TOE-GI**




| | Thermal oil versions |
|---|---|
| Media | Heat transfer oil / thermal oil |
| $T_{min}$ | - 40 °C |
| $T_{max}$ | + 350 °C |
| Nominal pressure | PN 16 |
| $H_{max}$ (2900 $min^{-1}$) | 100 m |
| $Q_{max}$ (2900 $min^{-1}$) | 550 $m^3/h$ |
| ATEX | II 3G c 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 | $AQ_1VGG$, 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 |

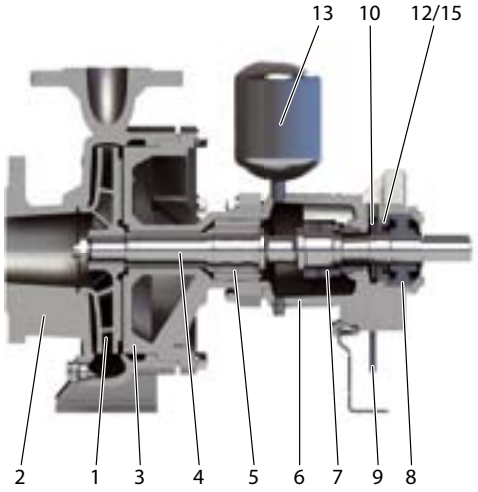
EN-GJL-250 = GG-25

EN-GJS-400-15 = GGG-40

# Hot water versions

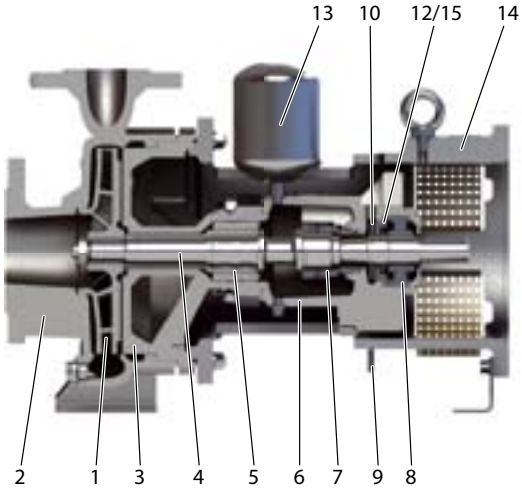
With degassing tank

**TOE-GN**



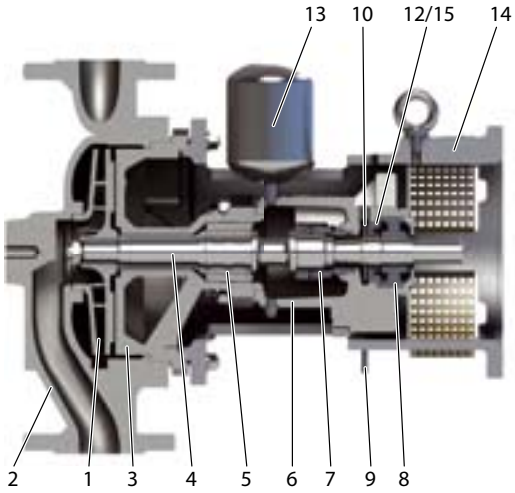

Bearing bracket 360
with Ø 250 mm impeller


**TOE-GA**





**TOE-GI**




| | 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 3G c TX |

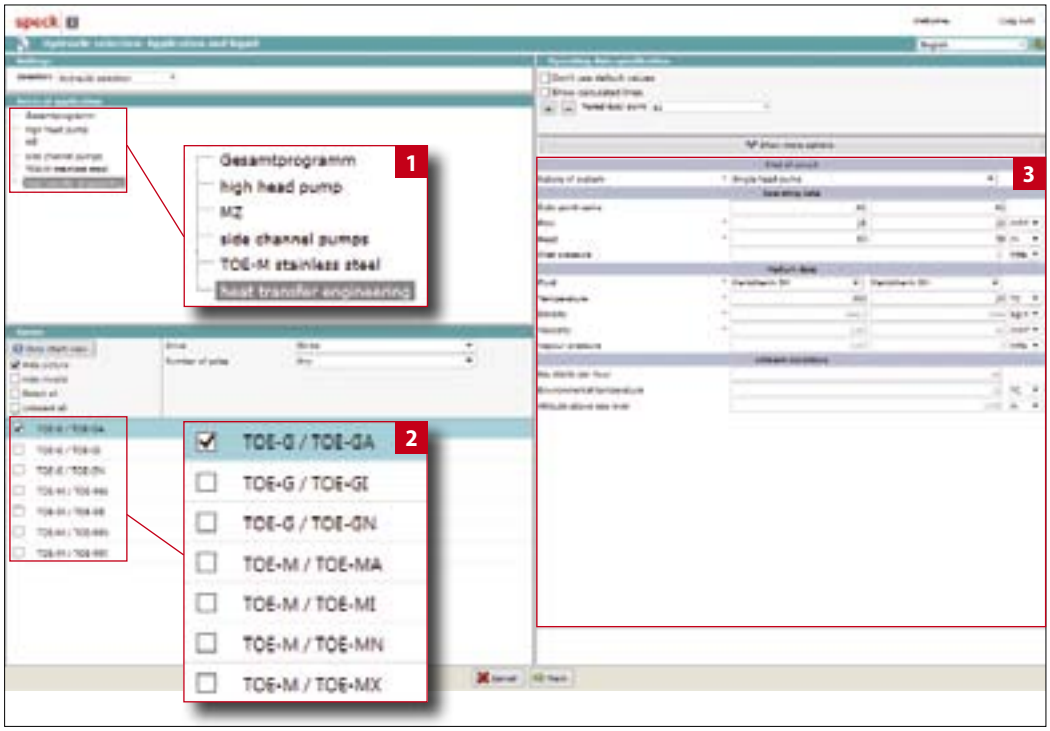
| No. | Description | Material / Remarks |
|---|---|---|
| 1 | Impeller | EN-GJL-250 |
| 2 | Casing | EN-GJS-400-15 |
| 3 | Casing cover | EN-GJS-400-15 |
| 4 | Shaft | 1.4122 |
| 5 | Sleeve bearing | SiC |
| 6 | Mechanical seal casing | EN-GJS-400-15 |
| 7 | Mechanical seal | $AQ_1KGG$, balanced |
| 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.


Characteristic curve depending on hydraulic selection

### 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.

### Key

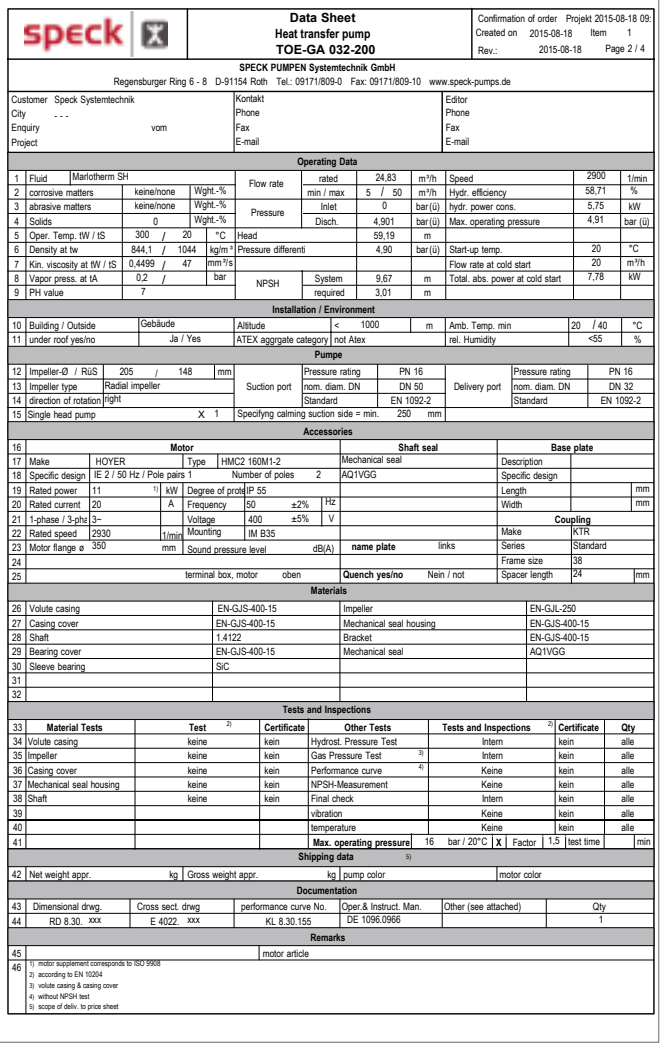
**1** List of all pump designs that can be configured in the software

**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*



**Data Sheet**
**Heat transfer pump**
**TOE-GA 032-200**

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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 | Kontakt | Editor |
| City - - - | Phone | Phone |
| Enquiry vom | Fax | Fax |
| Project | E-mail | E-mail |

**Operating Data**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fluid | Marlotherm SH | | Flow rate | rated | 24,83 | m³/h | Speed | 2900 | 1/min |
| 2 | corrosive matters | keine/none | Wght.-% | | min / max | 5 / 50 | m³/h | Hydr. efficiency | 58,71 | % |
| 3 | abrasive matters | keine/none | Wght.-% | Pressure | Inlet | 0 | bar (ü) | hydr. power cons. | 5,75 | kW |
| 4 | Solids | 0 | Wght.-% | | Disch. | 4,901 | bar (ü) | Max. operating pressure | 4,91 | bar (ü) |
| 5 | Oper. Temp. tW / tS | 300 / 20 | °C | Head | | 59,19 | m | | | |
| 6 | Density at tw | 844,1 / 1044 | kg/m³ | Pressure differenti | | 4,90 | bar (ü) | Start-up temp. | 20 | °C |
| 7 | Kin. viscosity at tW / tS | 0,4499 / 47 | mm²/s | | | | | Flow rate at cold start | 20 | m³/h |
| 8 | Vapor press. at tA | 0,2 / | bar | NPSH | System | 9,67 | m | Total. abs. power at cold start | 7,78 | kW |
| 9 | PH value | 7 | | | required | 3,01 | m | | | |

**Installation / Environment**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | Building / Outside | Gebäude | Altitude | < 1000 | m | Amb. Temp. min | 20 / 40 | °C |
| 11 | under roof yes/no | Ja / Yes | ATEX aggrgate category | not Atex | | rel. Humidity | <55 | % |

**Pumpe**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | Impeller-Ø / RüS | 205 / 148 | mm | Suction port | Pressure rating | PN 16 | Delivery port | Pressure rating | PN 16 |
| 13 | Impeller type | Radial impeller | | | nom. diam. DN | DN 50 | | nom. diam. DN | DN 32 |
| 14 | direction of rotation | right | | | Standard | EN 1092-2 | | Standard | EN 1092-2 |
| 15 | Single head pump | X 1 | | Specifyng calming suction side = min. | 250 | mm | | | |

**Accessories**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | **Motor** | | | | | **Shaft seal** | | **Base plate** | | | |
| 17 | Make | HOYER | Type | HMC2 160M1-2 | | Mechanical seal | | Description | | | |
| 18 | Specific design | IE 2 / 50 Hz / Pole pairs 1 | | Number of poles | 2 | AQ1VGG | | Specific design | | | |
| 19 | Rated power | 11 [1] | kW | Degree of prot. | IP 55 | | | Length | | mm | |
| 20 | Rated current | 20 | A | Frequency | 50 ±2% | Hz | | Width | | mm | |
| 21 | 1-phase / 3-phe | 3~ | | Voltage | 400 ±5% | V | | **Coupling** | | | |
| 22 | Rated speed | 2930 | 1/min | Mounting | IM B35 | | | Make | KTR | | |
| 23 | Motor flange ø | 350 | mm | Sound pressure level | | dB(A) | **name plate** | links | Series | Standard | |
| 24 | | | | | | | | | Frame size | 38 | |
| 25 | | terminal box, motor oben | | | | | **Quench yes/no** | Nein / not | 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**

| | Material Tests | Test [2] | Certificate | Other Tests | Tests and Inspections [2] | Certificate | Qty |
|---|---|---|---|---|---|---|---|
| 33 | | | | | | | |
| 34 | Volute casing | keine | kein | Hydrost. Pressure Test | Intern | kein | alle |
| 35 | Impeller | keine | kein | Gas Pressure Test [3] | Intern | kein | alle |
| 36 | Casing cover | keine | kein | Performance curve [4] | 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** [5]

| | | | | | |
|---|---|---|---|---|---|
| 42 | Net weight appr. | kg | Gross weight appr. | kg | pump color | motor color |

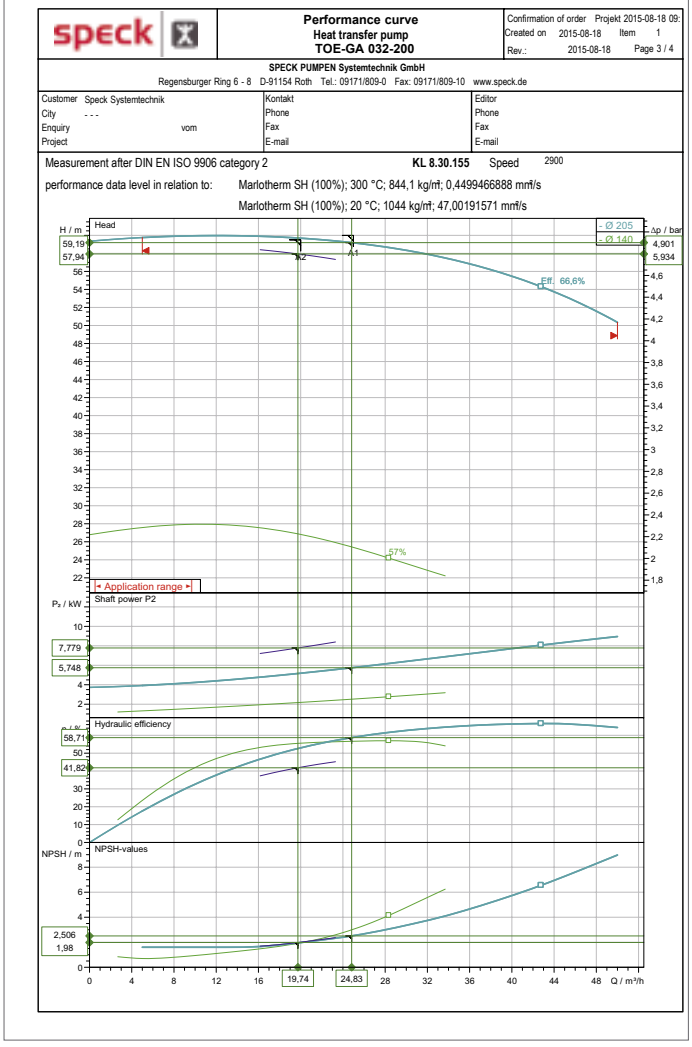
**Documentation**

| | | | | | | |
|---|---|---|---|---|---|---|
| 43 | Dimensional drwg. | Cross sect. drwg | 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<br>2) according to EN 10204<br>3) volute casing & casing cover<br>4) without NPSH test<br>5) scope of deliv. to price sheet |

Technical data sheet (example)



**Performance curve**
**Heat transfer pump**
**TOE-GA 032-200**

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**SPECK PUMPEN Systemtechnik GmbH**
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| | | |
|---|---|---|
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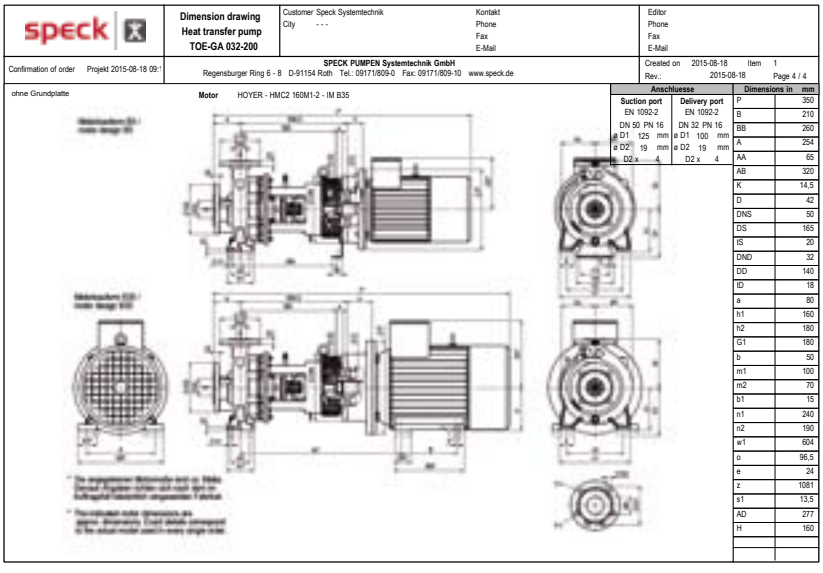
| Project | E-mail | E-mail |

Measurement after DIN EN ISO 9906 category 2 **KL 8.30.155** Speed 2900

performance data level in relation to: Marlotherm SH (100%); 300 °C; 844,1 kg/m³; 0,4499466888 mm²/s
Marlotherm SH (100%); 20 °C; 1044 kg/m³; 47,00191571 mm²/s



Characteristic curve (example)



**Dimension drawing**
**Heat transfer pump**
**TOE-GA 032-200**

Customer Speck Systemtechnik
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ohne Grundplatte

**Motor** HOYER - HMC2 160M1-2 - IM B35

| Anschluesse | | Dimensions in mm | |
|---|---|---|---|
| Suction port EN 1092-2 | Delivery port EN 1092-2 | P | 350 |
| DN 50 PN 16 | DN 32 PN 16 | B | 210 |
| ø D1 125 mm | ø D1 100 mm | BB | 260 |
| ø D2 19 mm | ø D2 19 mm | A | 254 |
| D2 x 4 | D2 x 4 | AA | 65 |
| | | AB | 320 |
| | | K | 14,5 |
| | | D | 42 |
| | | DNS | 50 |
| | | DS | 165 |
| | | IS | 20 |
| | | DND | 32 |
| | | DD | 140 |
| | | ID | 18 |
| | | a | 80 |
| | | h1 | 160 |
| | | h2 | 180 |
| | | G1 | 180 |
| | | b | 50 |
| | | m1 | 100 |
| | | m2 | 70 |
| | | b1 | 15 |
| | | n1 | 240 |
| | | n2 | 190 |
| | | w1 | 604 |
| | | o | 96,5 |
| | | e | 24 |
| | | z | 1081 |
| | | s1 | 13,5 |
| | | AD | 277 |
| | | H | 160 |

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 DIN 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 mesurement

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 $m^3/h$ 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 out let pressure $p_{2max\ op}$ is calculated using the formula:

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

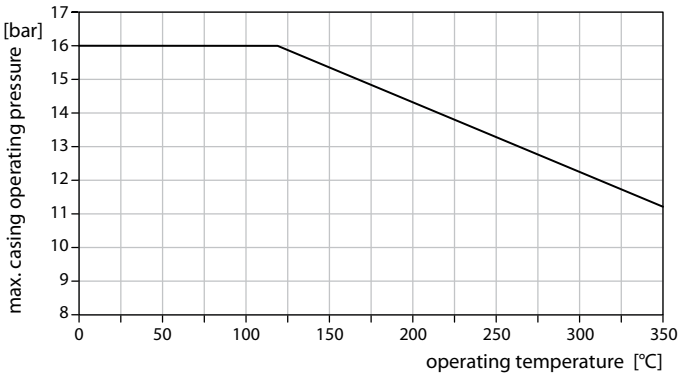
With:

| | | |
|---|---|---|
| $p_{2max\ op}$ | = | maximum pump outlet pressure [bar] |
| $p_{1max\ op}$ | = | maximum pump inlet pressure [bar] |
| $\rho$ | = | 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 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 $p_{all\ w\ c}$ at operating pressure.
This also applies to commissioning while the discharge valve is closed (refer to diagram).

### Pressure and temperature limitations

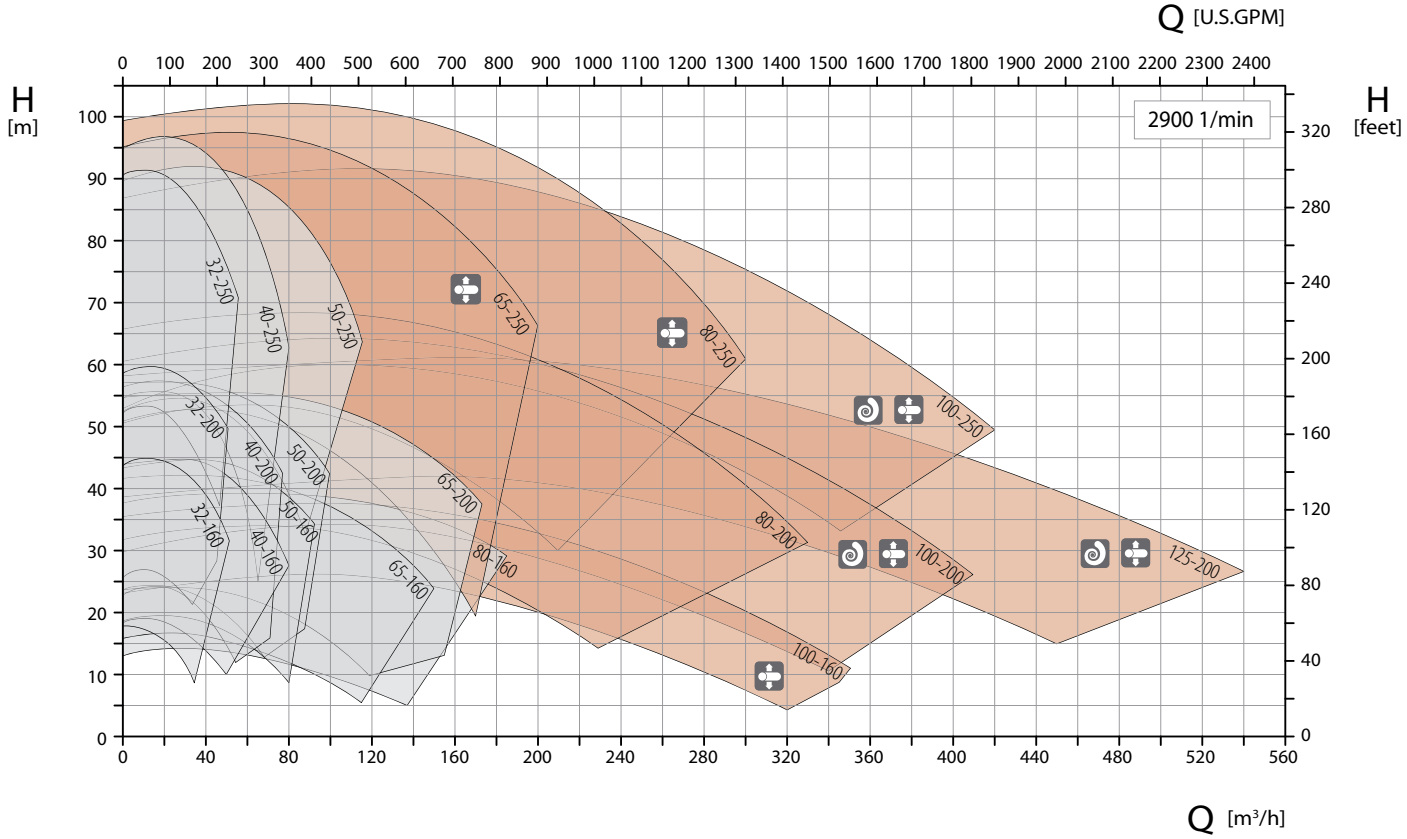
The maximum casing operating pressure $p_{all\ w\ c}$ of the pressure retainig parts depends on the operating temperature:

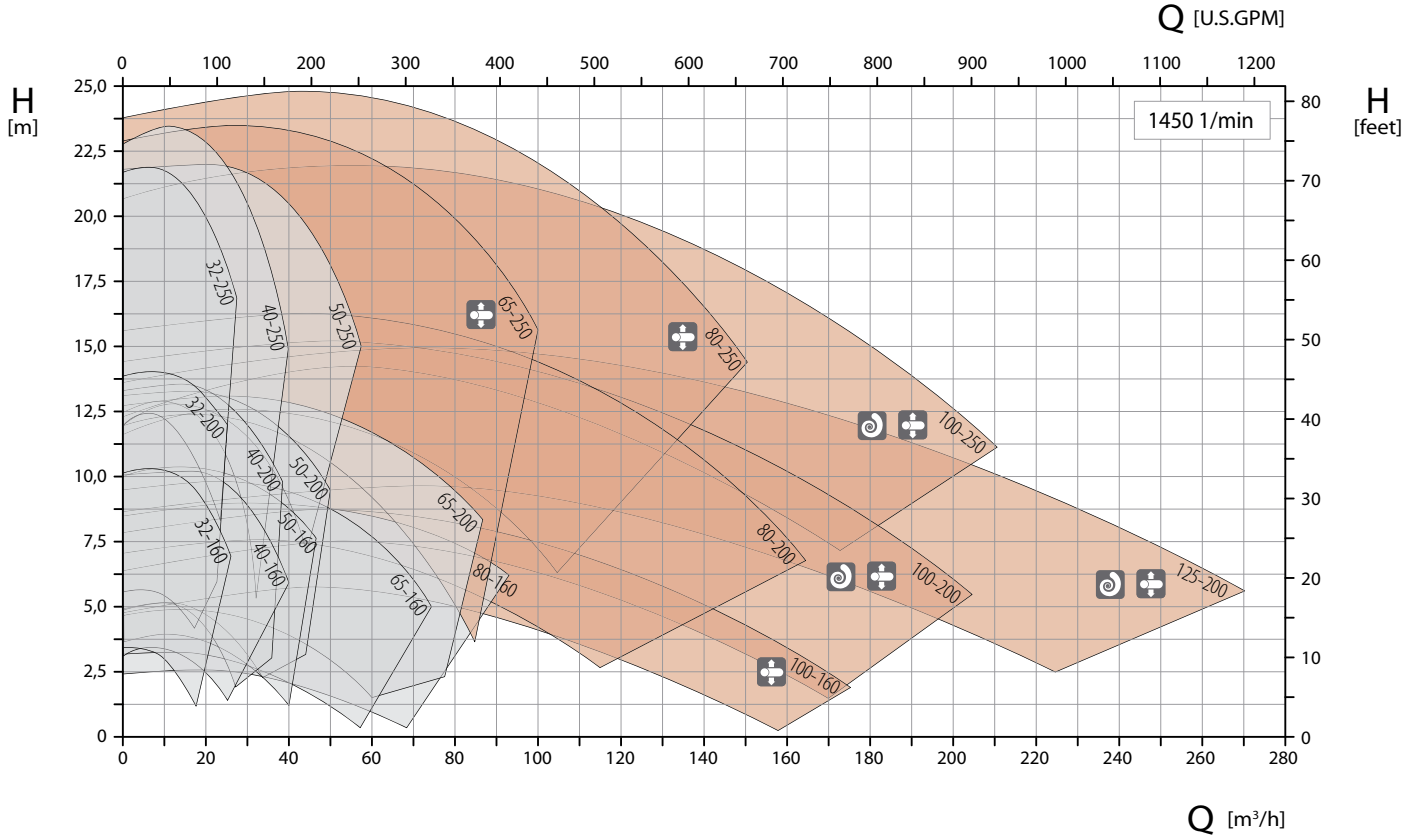



Maximum permissible casing operating pressure $p_{all\ w\ c}$

# TOE-GN / GA – Characteristic curves

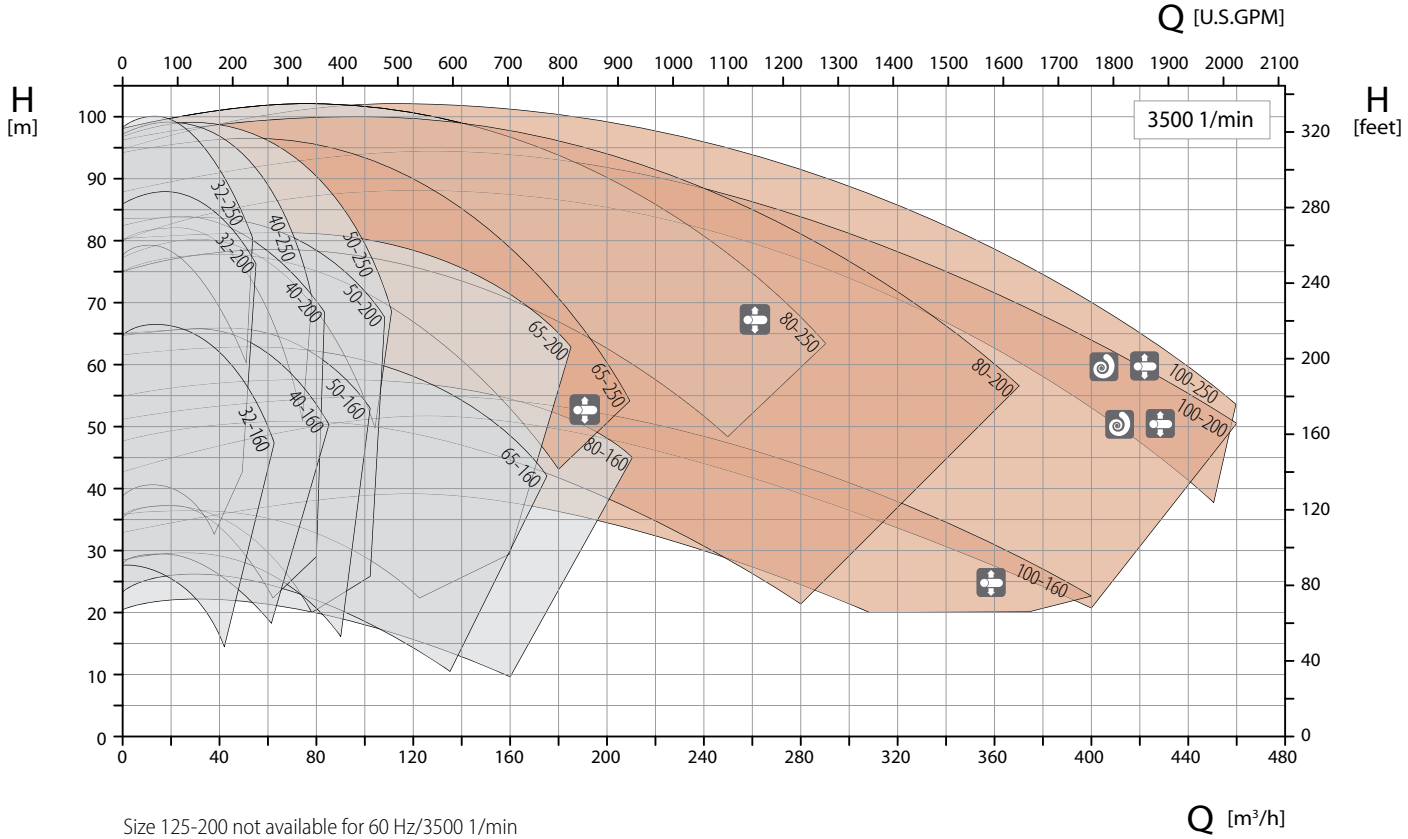
*50 Hz*



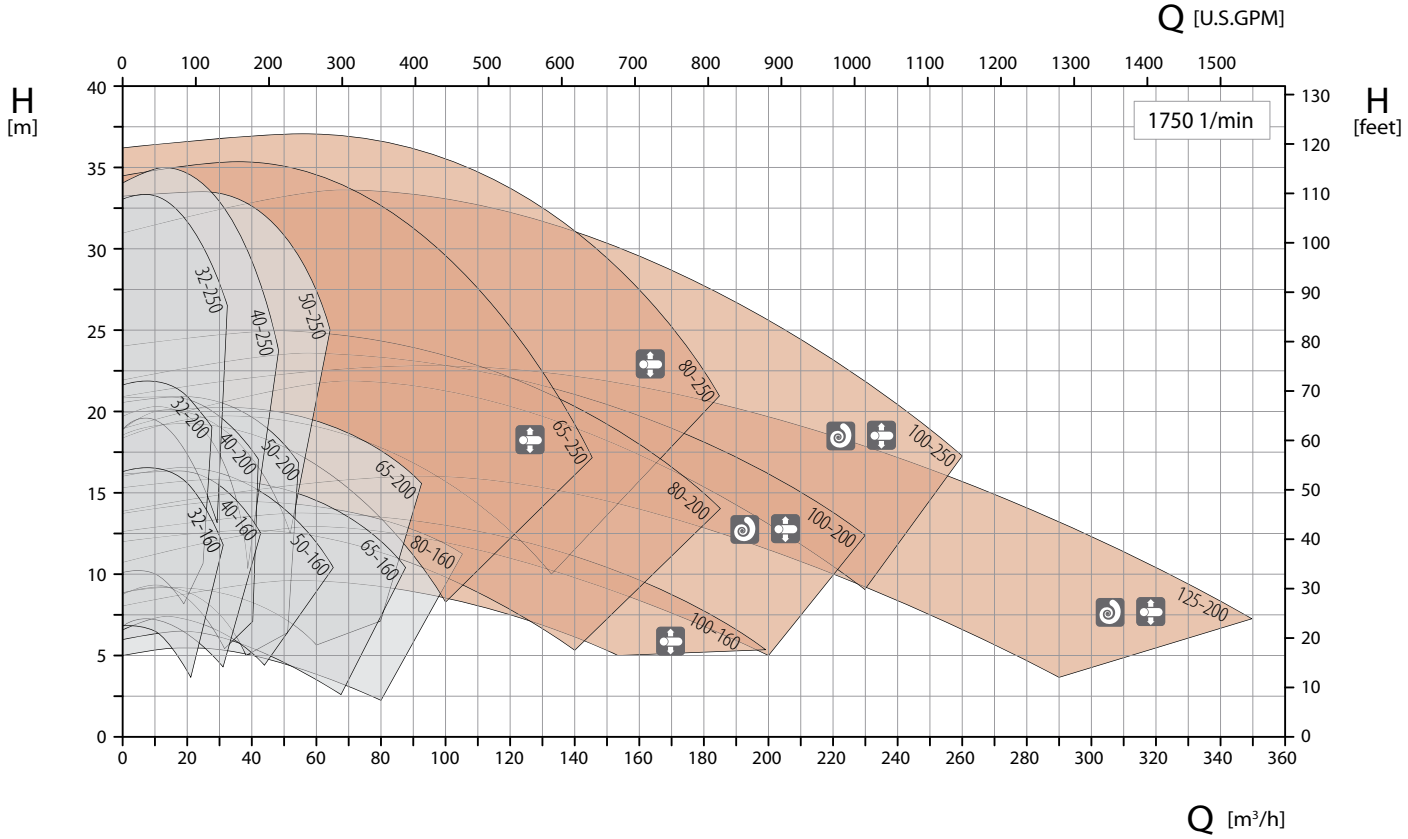




**Bearing bracket 360** **Bearing bracket 470** Casing with double volute Casing with centreline mounting

## 60 Hz



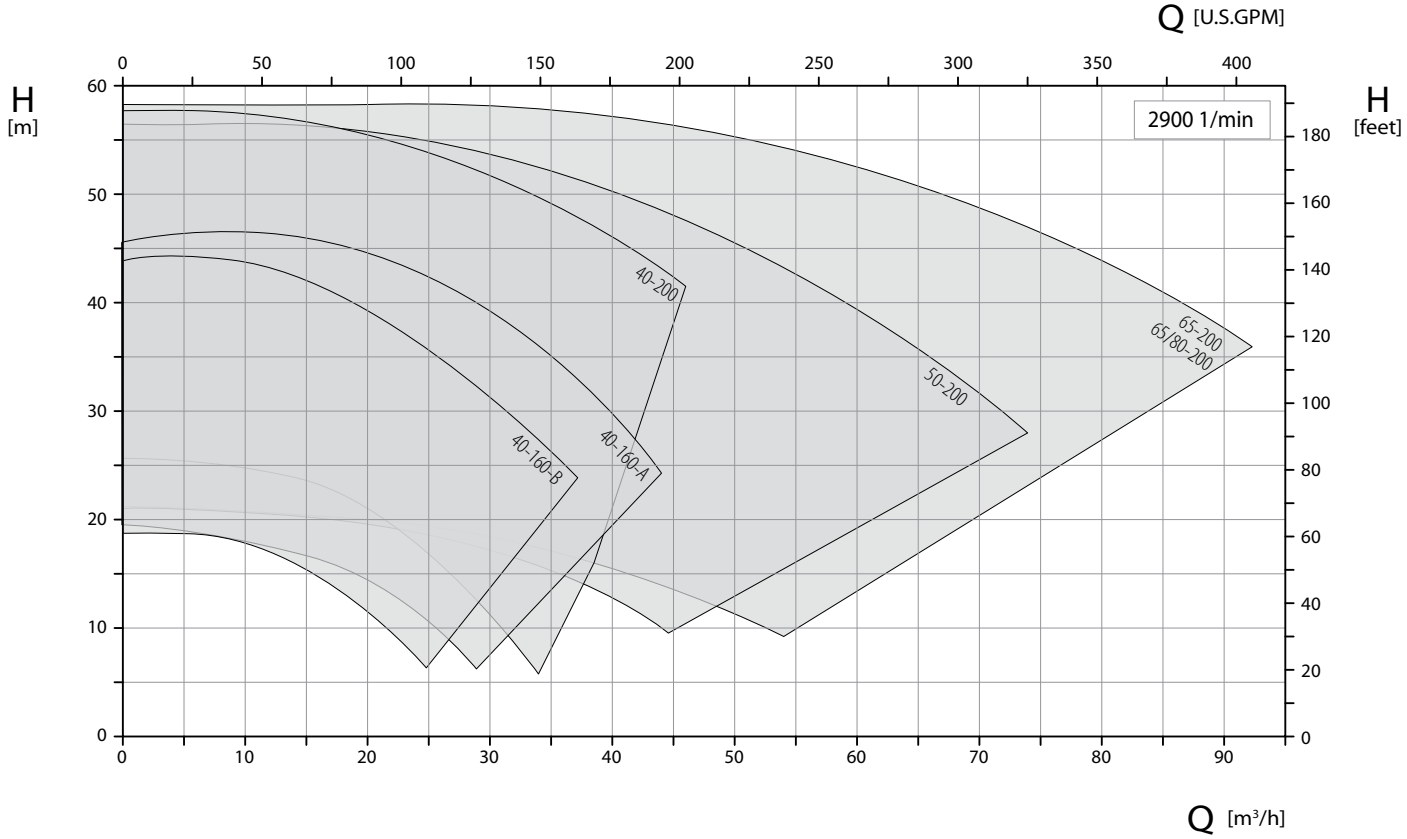

Size 125-200 not available for 60 Hz/3500 1/min

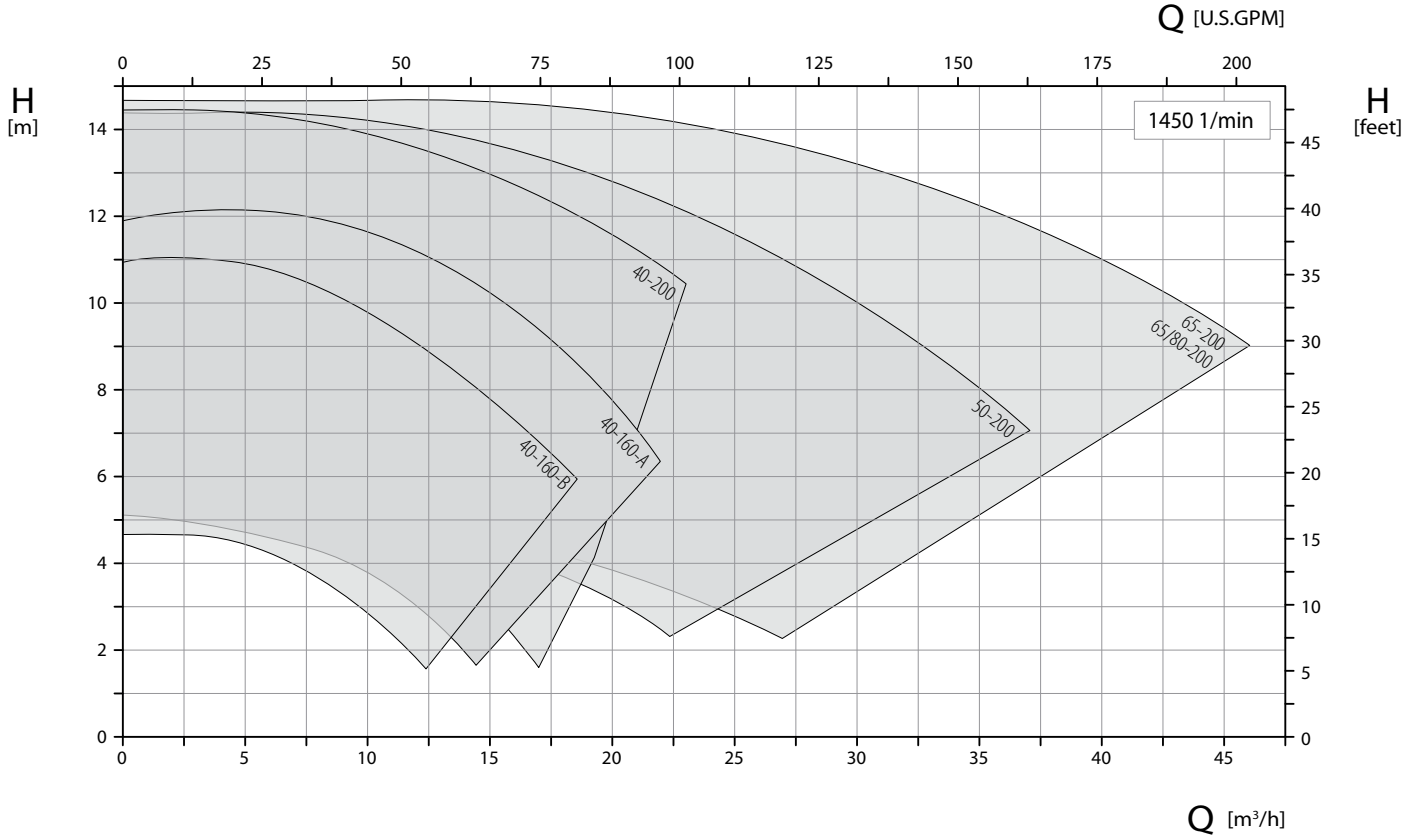



**Bearing bracket 360** **Bearing bracket 470** Casing with double volute Casing with centreline mounting

# TOE-GI – Characteristic curves

*50 Hz*

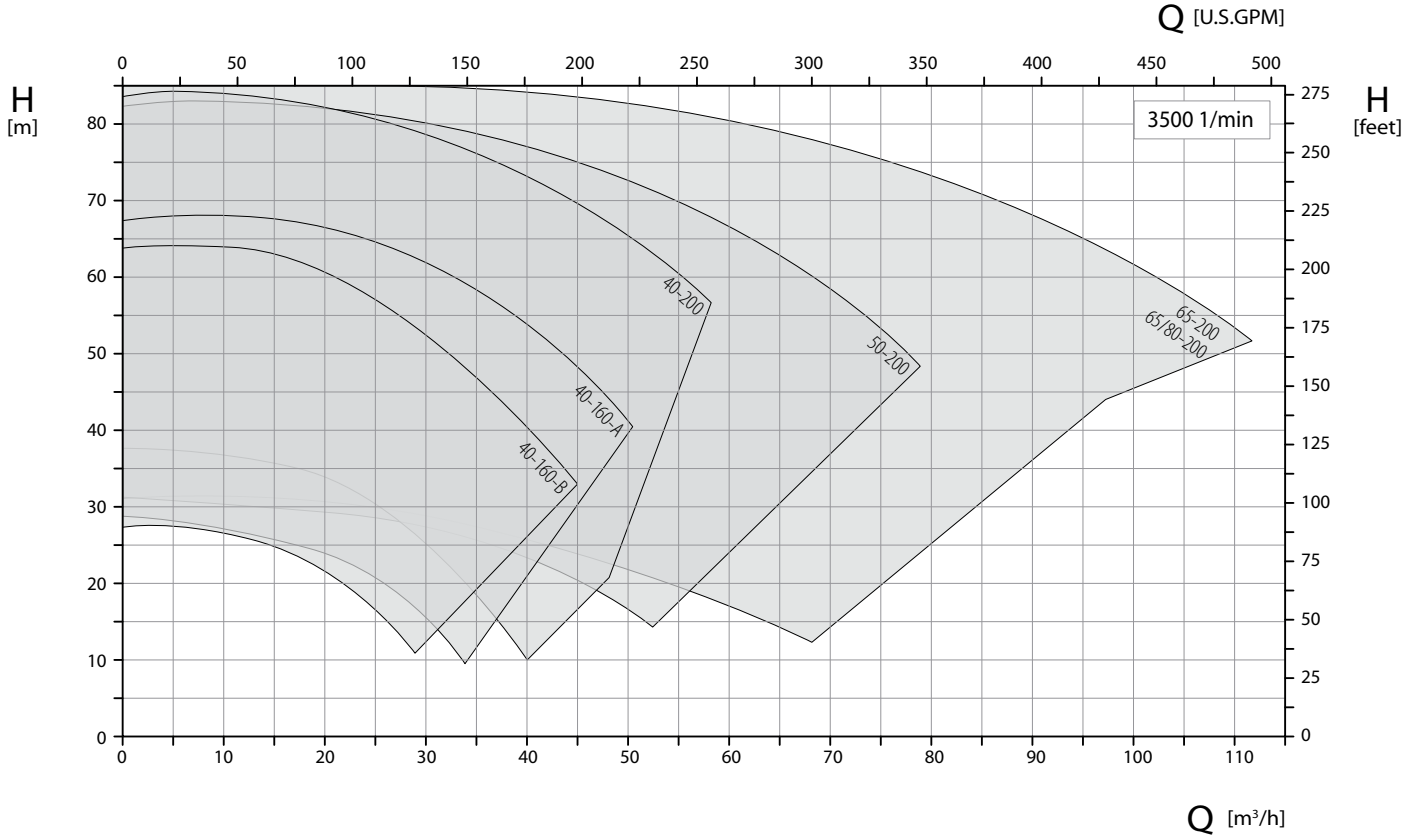


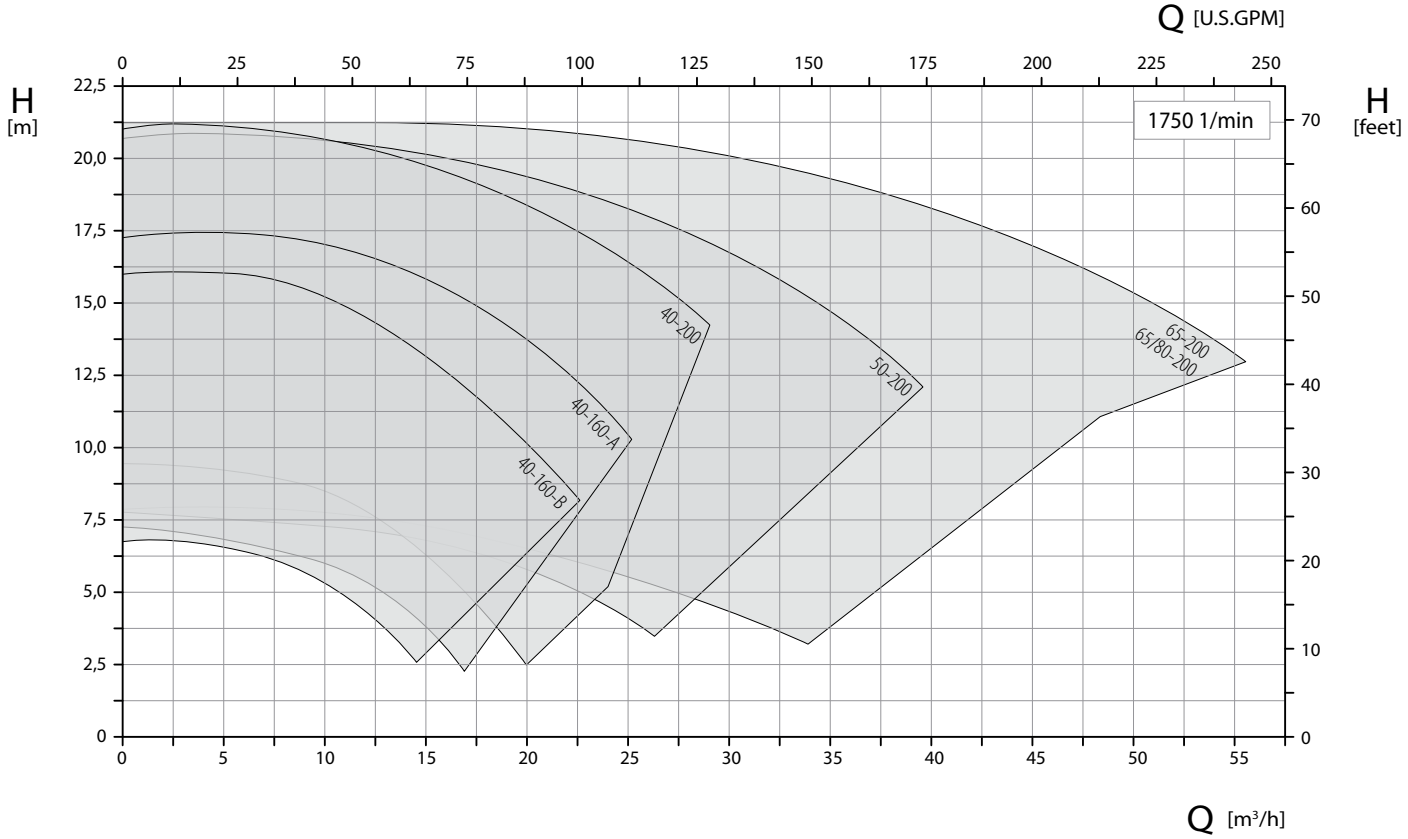




**Bearing bracket 360**

Size 40-160 with hydraulics A or B available

## 60 Hz



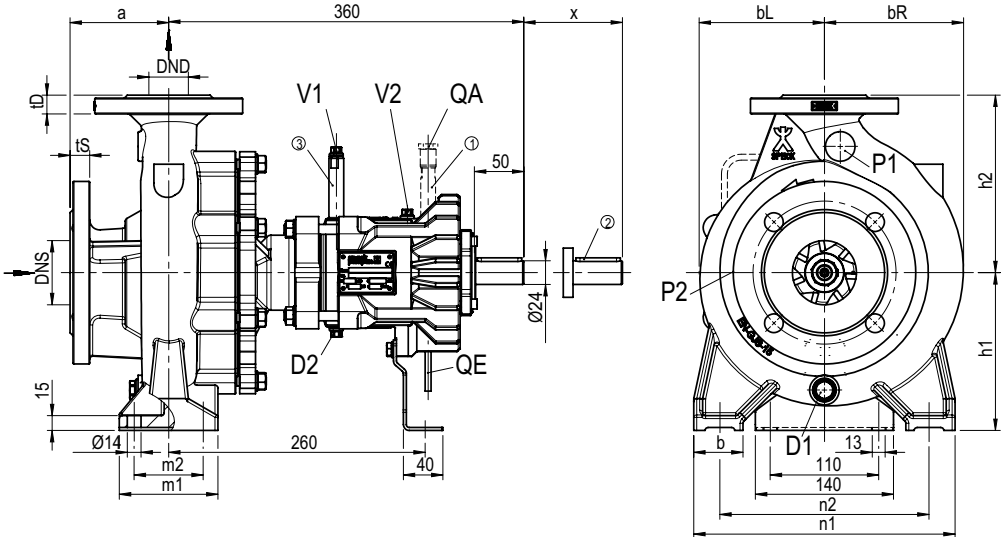

**Bearing bracket 360**

Size 40-160 with hydraulics A or B available

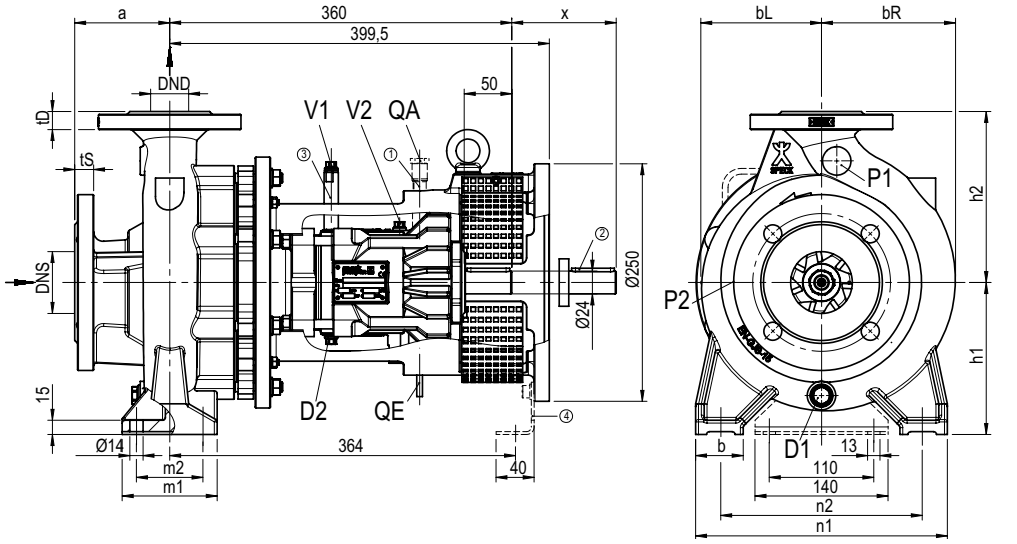
# TOE-GN / GA – Dimensions and connections

*Bearing bracket 360*

**TOE-GN**




**TOE-GA**




| 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) |

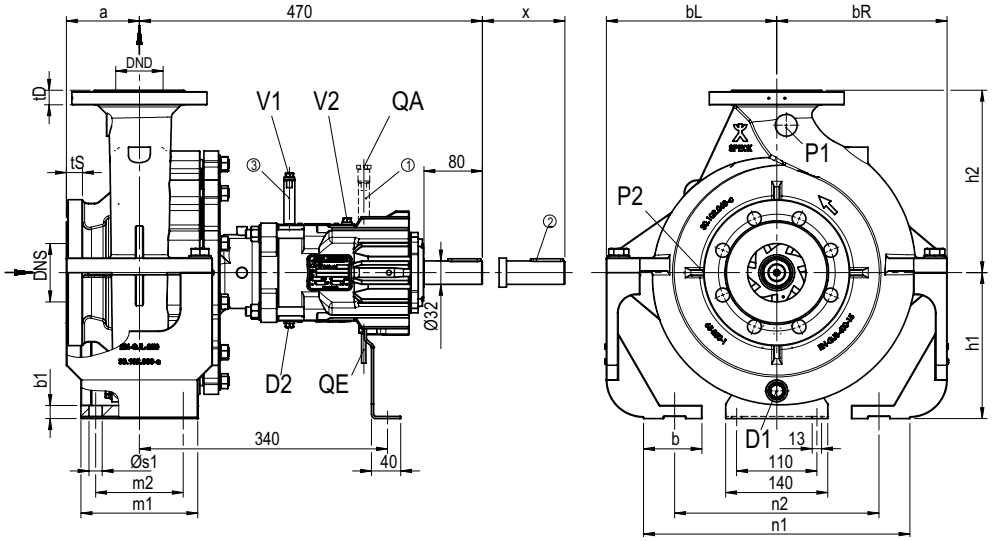
① Quench optionally
② Fitting key DIN 6885
③ Venting pipe
④ Feet applicable for motor design B5 only

Flange dimensions → page 16

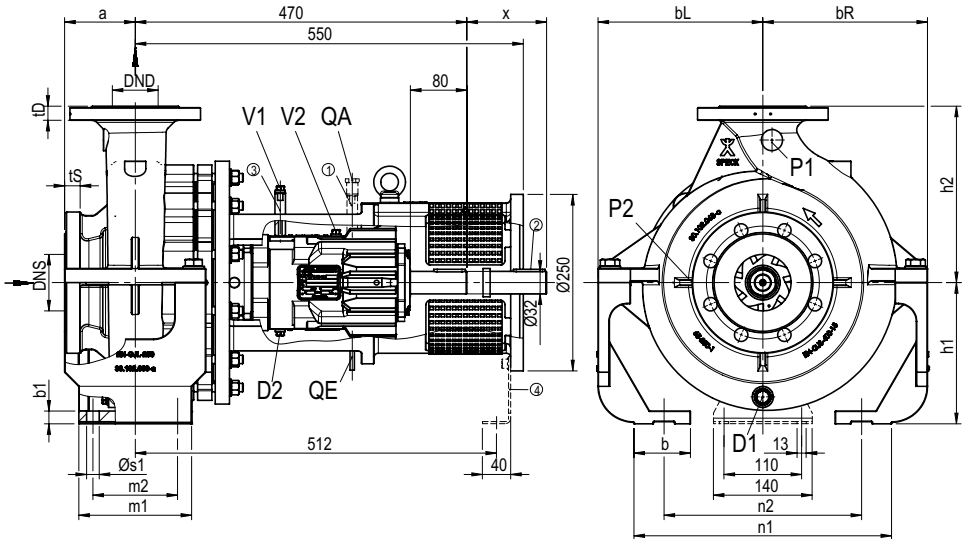
# TOE-GN / GA – Dimensions and connections

## *Bearing bracket 470*

**TOE-GN**




**TOE-GA**




| 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

[2] 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) |

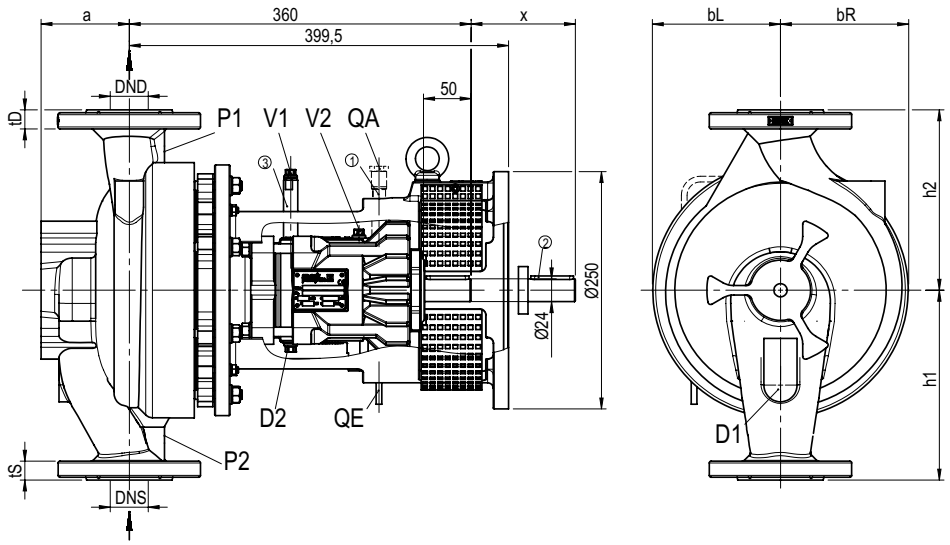
① Quench optionally
② Fitting key DIN 6885
③ Venting pipe
④ Feet applicable for motor design B5 only

Flange dimensions → page 16

# TOE-GI – Dimensions and connections

*Bearing bracket 360*

**TOE-GI**




| 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 |

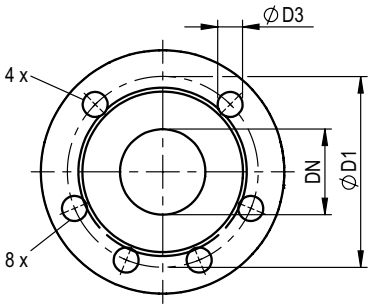
| Anschlüsse | | |
|---|---|---|
| P1 | G 1/4 | Manometer connection pressure-side (without bore) |
| P2 | G 1/8 | Manometer connection suction-side (without bore) |
| V1 | G 1/8 | Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version |
| V2 | G 1/8 | Ventilation 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

# Flange dimensions

| Flanges in acc. with DIN EN 1092-2 | | | |
|---|---|---|---|
| DN | øD1 | øD3 | Holes |
| 32 | 100 | 19 | 4 |
| 40 | 110 | 19 | 4 |
| 50 | 125 | 19 | 4 |
| 65 | 145 | 19 | 4 |
| 80 | 160 | 19 | 8 |
| 100 | 180 | 19 | 8 |
| 125 | 210 | 19 | 8 |
| 150 | 240 | 23 | 8 |

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



# Interchangeability of parts

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

## *Same components within TOE-GN/GA/GI series*

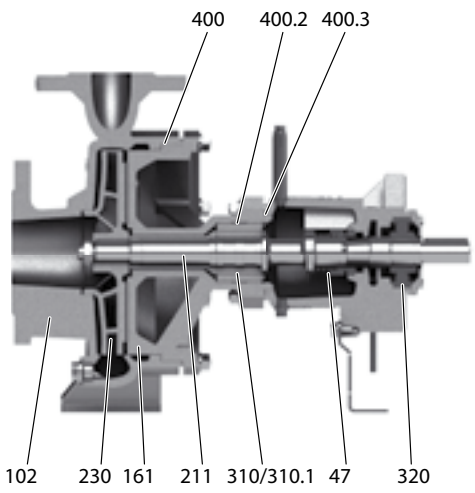
Compare only numbers within one **row**:

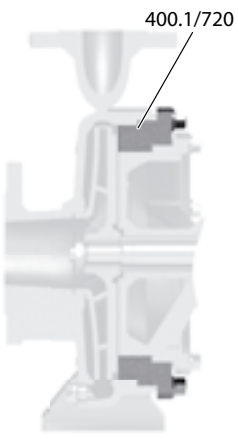
1 and 1 = same number means same component

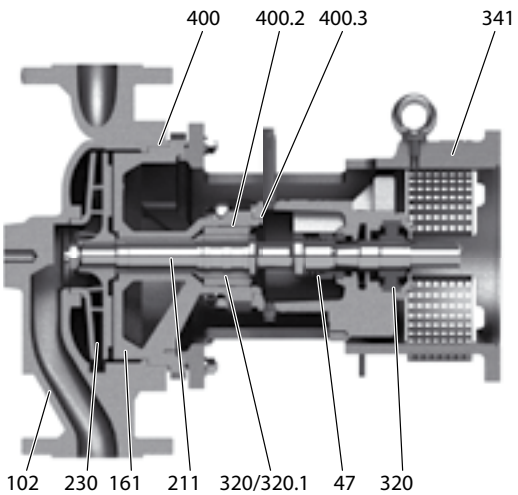
1 and 2 and ... = different numbers mean different components

| 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 | 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 | 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

TOE-MN/MA/MI and TOE-GN/GA/GI series mean a consistent designed modular system. Hydraulics and the main part of the used components are identical and interchangeable.

### TOE-MN/MA/MI 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 2G c b TX | |

Description in full length → see brochure TOE-MN/MA/MI 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<br>+ 400 °C on request | + 220 °C<br>higher temp. on request |
| Casing | Spheroidal graphite cast iron or stainless steel | |
| Nominal pressure | PN 25<br>higher pressures on request | |
| $H_{max}$ (2900 $min^{-1}$) | 90 m | |
| $Q_{max}$ (2900 $min^{-1}$) | 12 $m^3/h$ (200 l/min)<br>24 $m^3/h$ (400 l/min) on request | |
| ATEX | II 2G c b TX | |

### Compact, robust, durable and safe

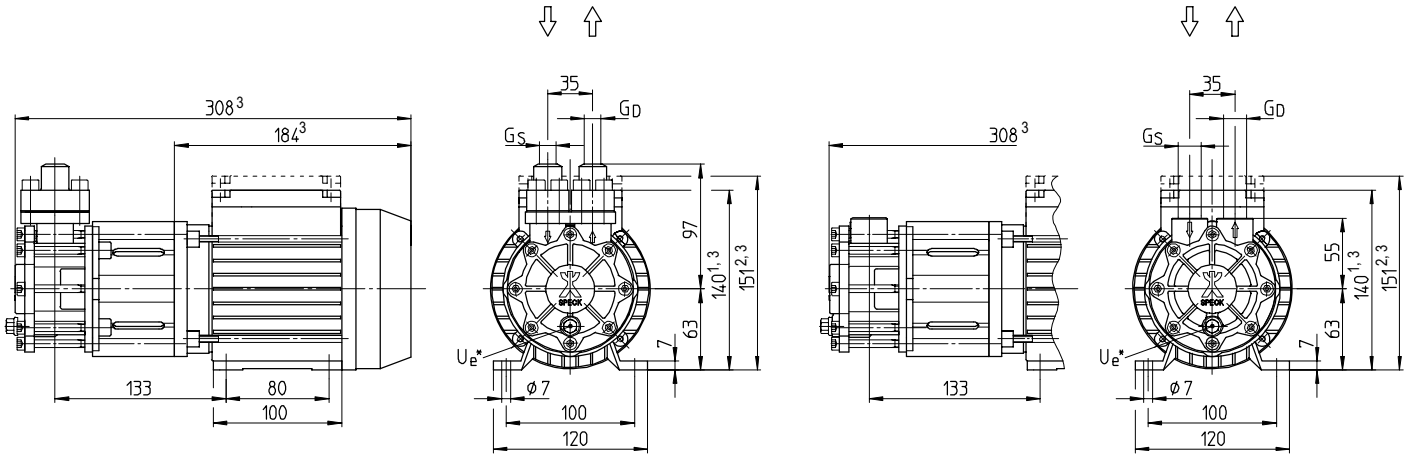
Regenerative turbine pumps with magnetic coupling from Speck have been used in a wide range of systems and assemblies successfully for many years. The compact design requires minimal installation space and reduces the weight. The perfected pumps also impress with the small number of extremely high-quality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

# NPY-2251-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

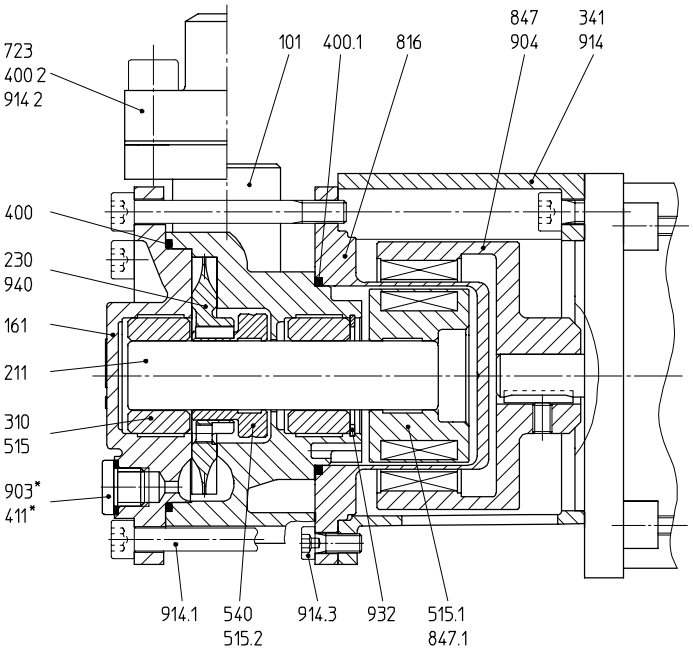
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ue* | Nm | kg | lbs | $t_{max}$ |
| **NPY-2251-MK-HT** | 63 | 3~ | 2800 | 0,50 | 0.67 | 3400 | 0,55 | 0.94 | G 1/2<br>SAE 1/2 | G 1/2<br>SAE 1/2 | G 1/8 | 3,0 | 9,6 | 21 | 180 °C |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515-.2 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Set screw |
| 914-.3 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Feather key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung

$U^e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design

$U_e$ = Drainage / Screw plug

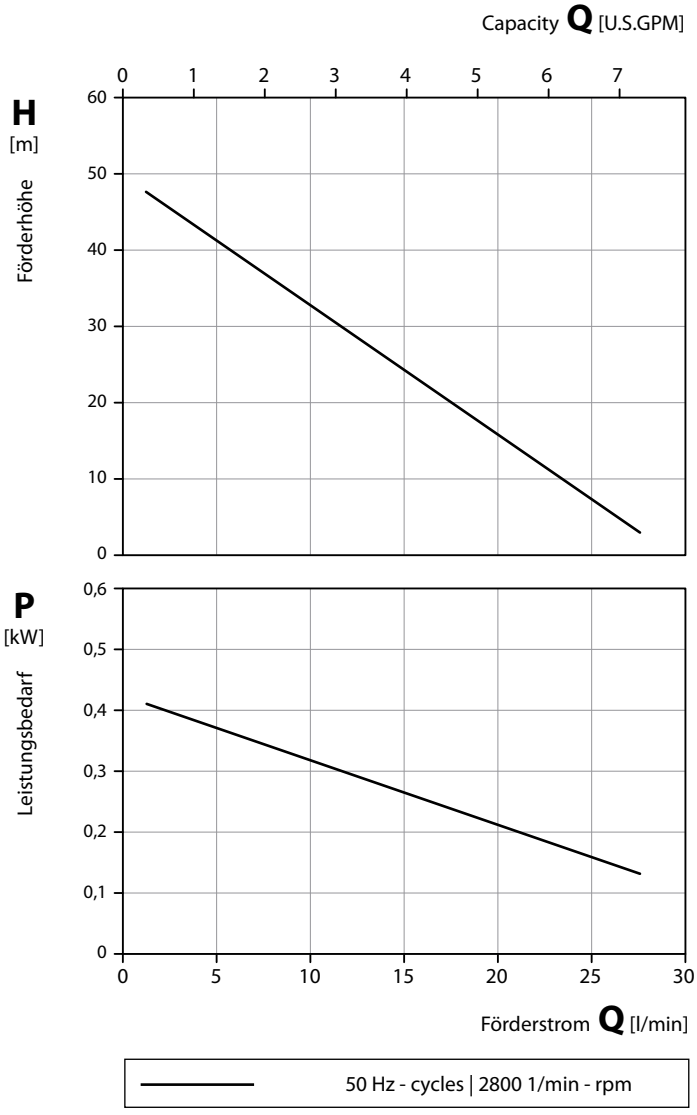
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

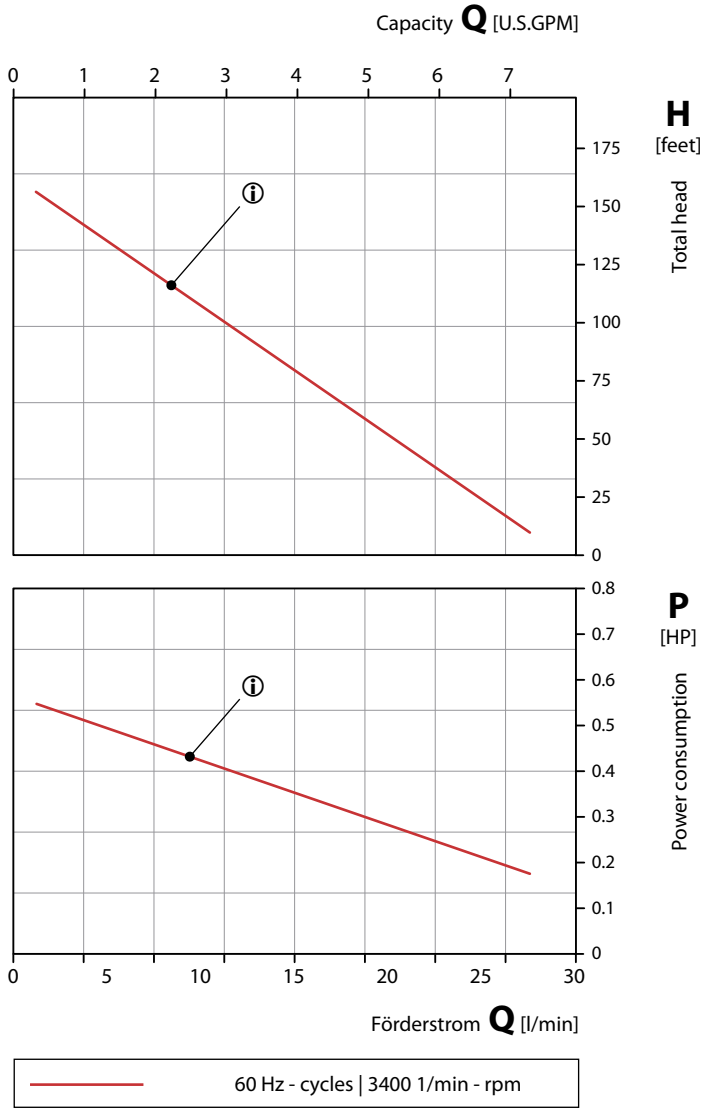
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | | |
|---|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated | PEEK |
| Welle<br>Shaft | Keramik<br>Ceramics | | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

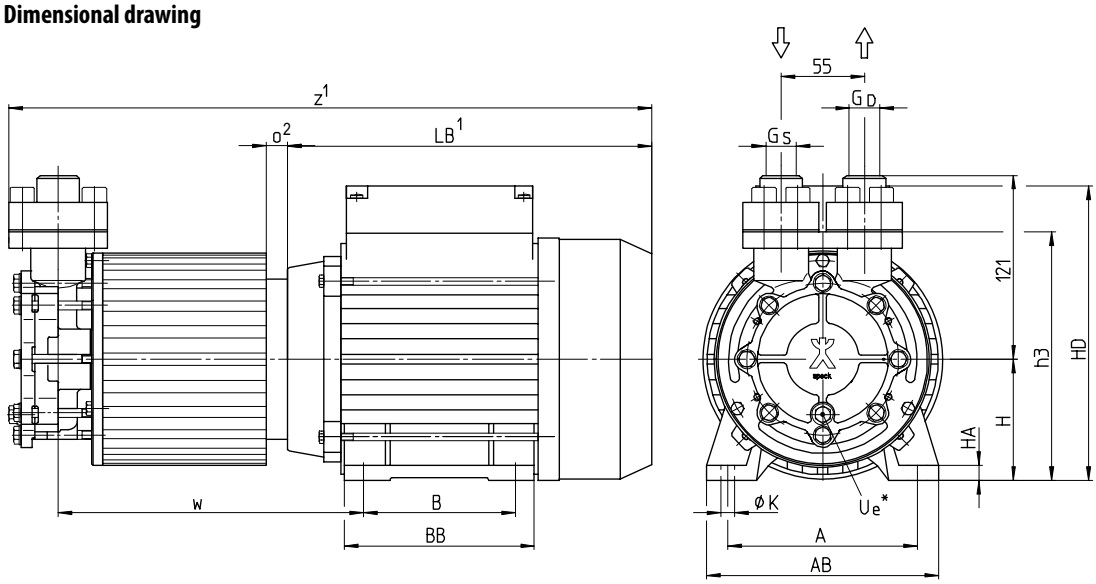
If the property of the pump media differs the characteristic curves change.

# CY-4281-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

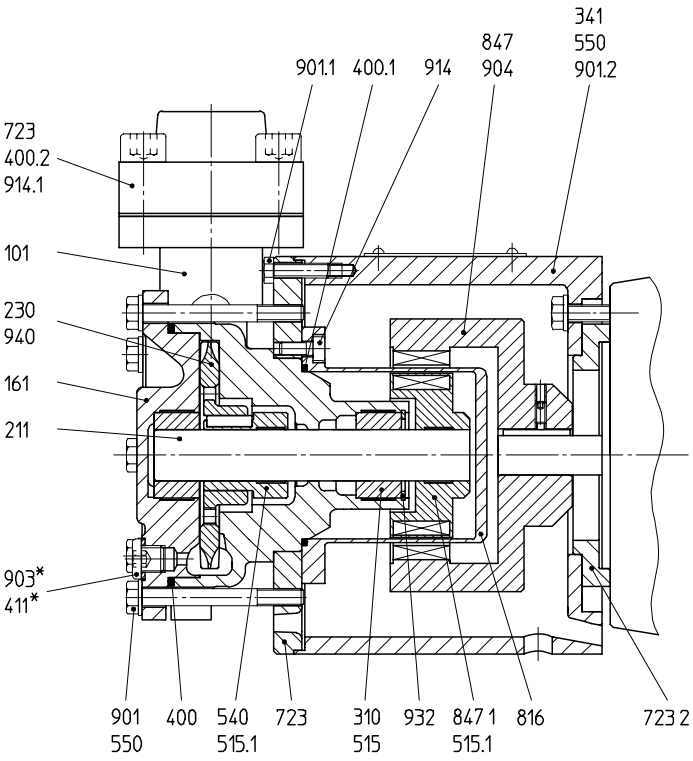



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Wasser Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | Nm | kg | lbs | $t_{max}$ |
| **CY-4281-MK-HT** | 71 | | | 1,0 | 1.34 | | 1,0 | 1.34 | | | | 7 | 15,0 | 33 | |
| | 80 | 3~ | 2800 | 1,5 | 2.00 | 3400 | 1,5 | 2.00 | SAE 3/4 | SAE 3/4 | G 1/8 | 7 | 18,5 | 41 | 180 °C |
| | 90 | | | 2,2 | 2.95 | | 2,2 | 2.95 | | | | 10 | 19,5 | 43 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD | K | $LB^1$ | h3 | $o^2$ | w | $z^1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-4281-MK-HT** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 9 | 211 | 155 | – | 178 | 367 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 194 | 9 | 240 | 164 | 10 | 191 | 414 |
| | 90 | 140 | 170 | 125 | 155 | 90 | 13 | 209 | 10 | 281 | 174 | 14 | 206 | 444 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 550 | Scheibe | Disk |
| 723/.2 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901-.2 | 6-kt. Schraube | Hexagon head cap screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Set screw |
| 914-.1 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Feather key |

[1] Abhängig von Motorausführung
[2] Motorflansch Ø 120

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design
[2] Motor flange Ø 120

* On request

$U_e$ = Drainage / Screw plug

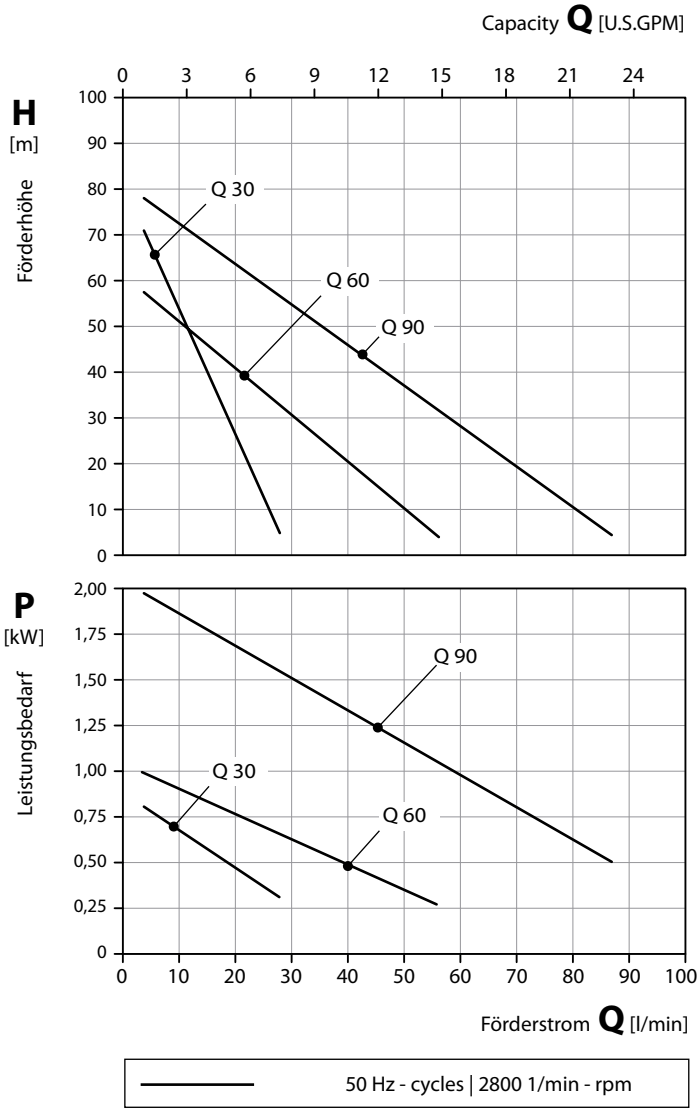
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.
04/2014 | 1096.1088

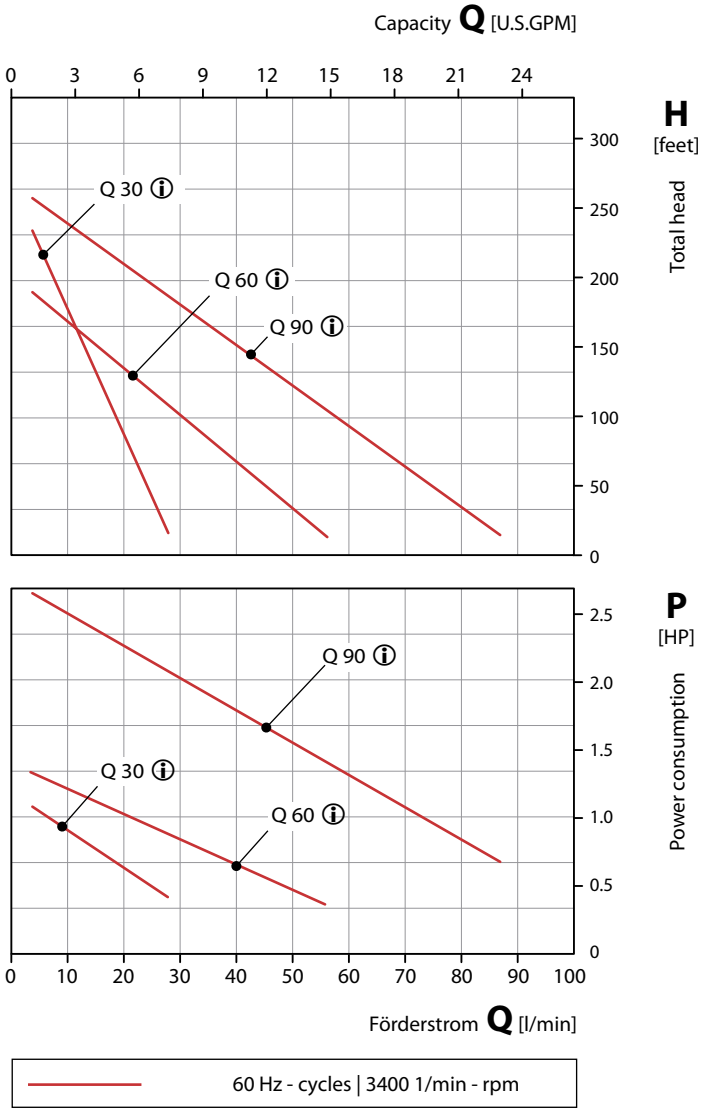
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | | |
|---|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel | |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated |
| Welle<br>Shaft | Keramik<br>Ceramics | |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel | |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

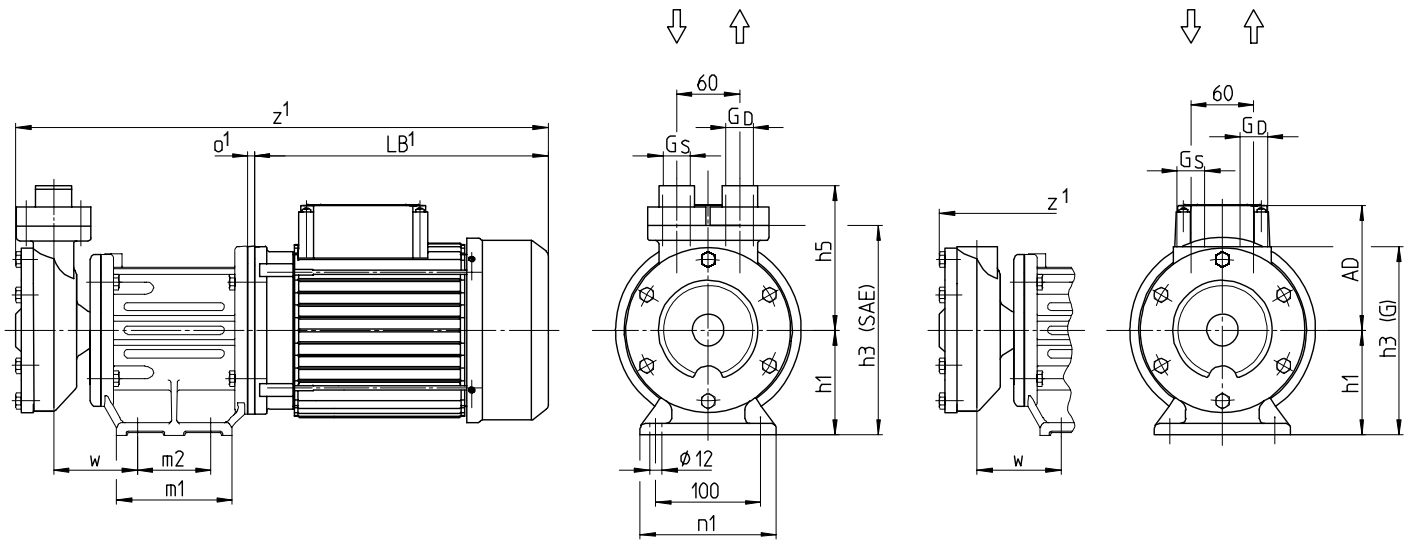
If the property of the pump media differs the characteristic curves change.

# CY-6091-MK-HT

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

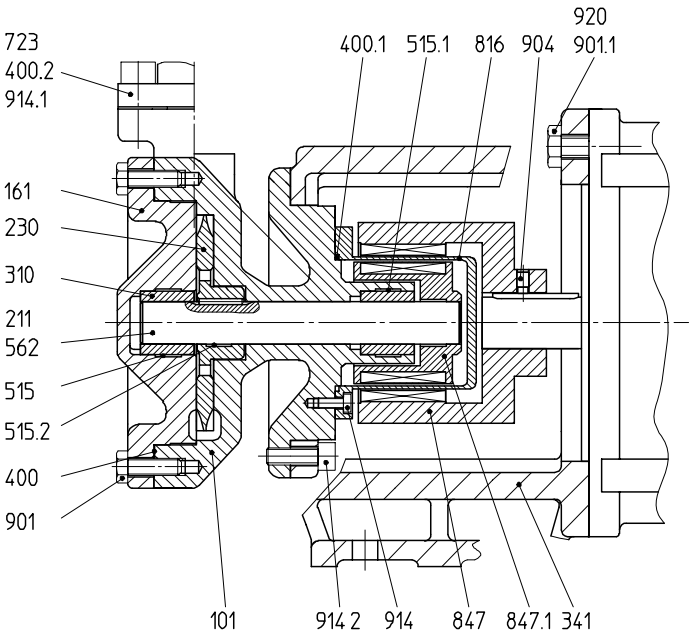



## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Gewicht<br>Weight | | Wasser<br>Water | Wasser<br>Water |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | kg | lbs | $t_{max}$ | $t_{max}$ |
| **CY-6091-MK** | 90L | 3~ | 2800 | 2,80 | 3.75 | 3400 | 2,80 | 3.75 | 33 | 73 | 180 °C (G) | 180 °C (SAE) |
| | 100L | | | 3,00 | 4.02 | | 3,00 | 4.02 | 36 | 79 | | |
| | 112M | | | 4,00 | 5.36 | | 4,00 | 5.36 | 46 | 101 | | |
| | 132S | | | 5,50 | 7.38 | | 5,50 | 7.38 | 70 | 155 | | |

| Type | Baugröße | Q | l/min | USGPM | $G_S$ | $G_D$ | Nm | AD[1] | LB[1] | h1 | h3 | h5 | m1 | m2 | n1 | o[1] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-6091-MK** | 90L | **Q 80** | 80 | 21 | G 3/4 oder / or SAE 1 | G 3/4 oder / or SAE 1 | 14 | 147 | 280 | 100 | 200 | 138 | 110 | 70 | 130 | – | 80 | 501 |
| | 100L | **Q 150** | 150 | 37 | | | | 154 | 306 | | | | | | | 10 | | 537 |
| | | | | | | | | | | | | | | | | 32 | | 559 |
| | 112M | **Q 200** | 200 | 53 | SAE 1 1/4 | SAE 1 1/4 | 22 | 167 | 296 | 114 | 214 | 138 | 145 | 80 | 140 | – | 90 | 578 |
| | | | | | | | | | | | | 143 | | | | | | 582 |
| | 132S | | | | | | | 221 | 457 | | | | | | | 20 | | 739 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 515-.2 | Toleranzring | Tolerance ring |
| 562 | Stift | Pin |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901/.1 | 6-kt. Schraube | Hexagon head cap screw |
| 904 | Gewindestift | Set screw |
| 914-.2 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 920 | 6-kt. Mutter | Hexagon nut |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

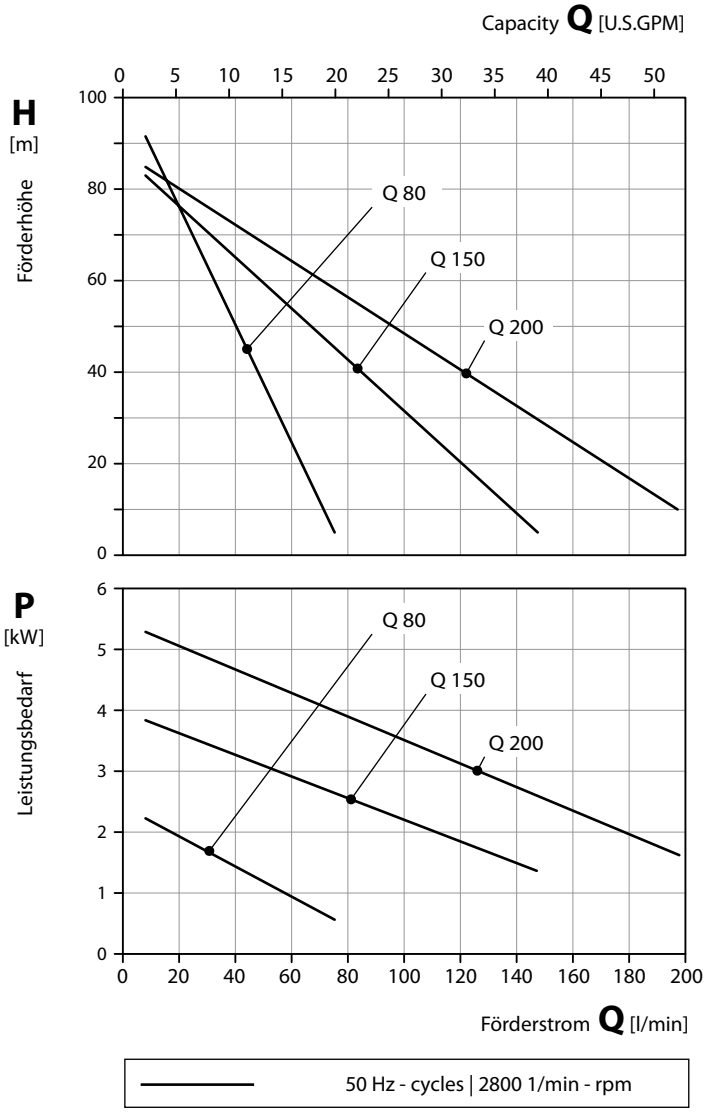
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

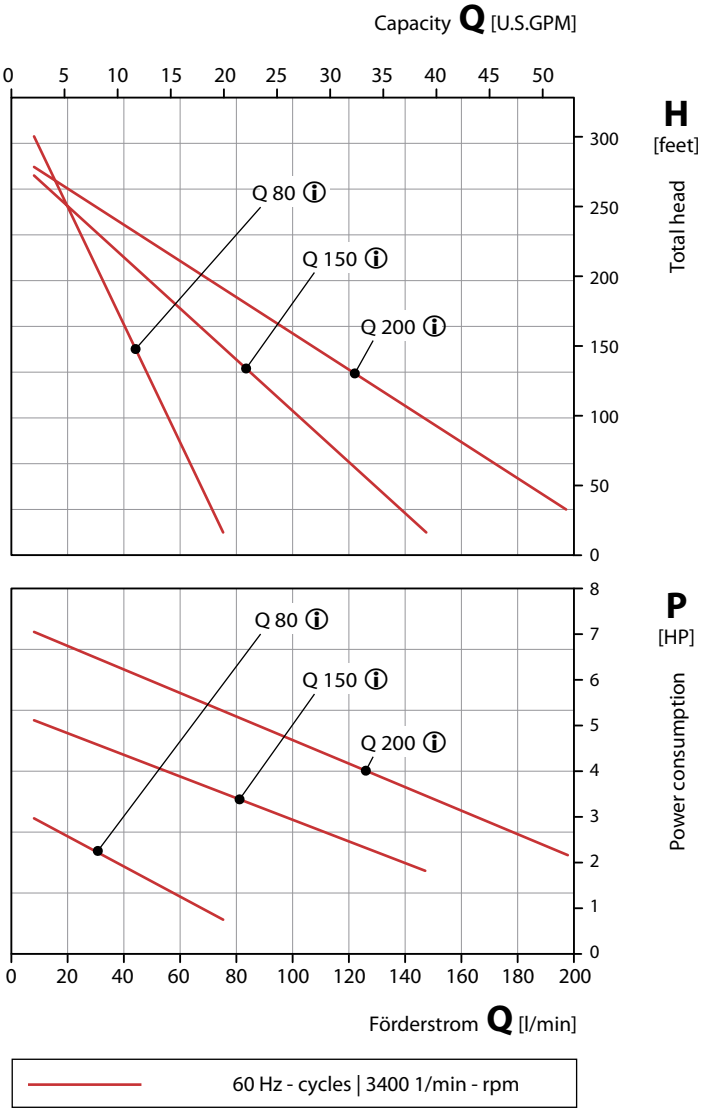
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | EN-GJS-500-7<br>Spheroidal graphite cast iron |
| Laufrad<br>Impeller | 1.4408,<br>keramikbeschichtet<br>CrNiMo-cast steel,<br>coated with ceramics |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

EN-GJS-500-7 = EN-JS 1050 = GGG-50

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

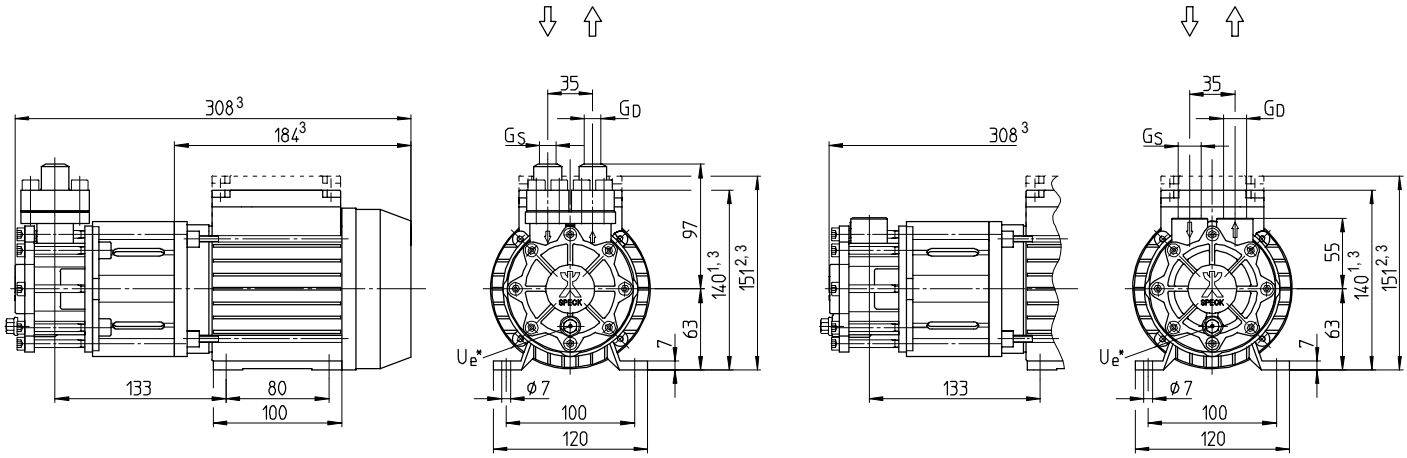
If the property of the pump media differs the characteristic curves change.

# NPY-2251-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

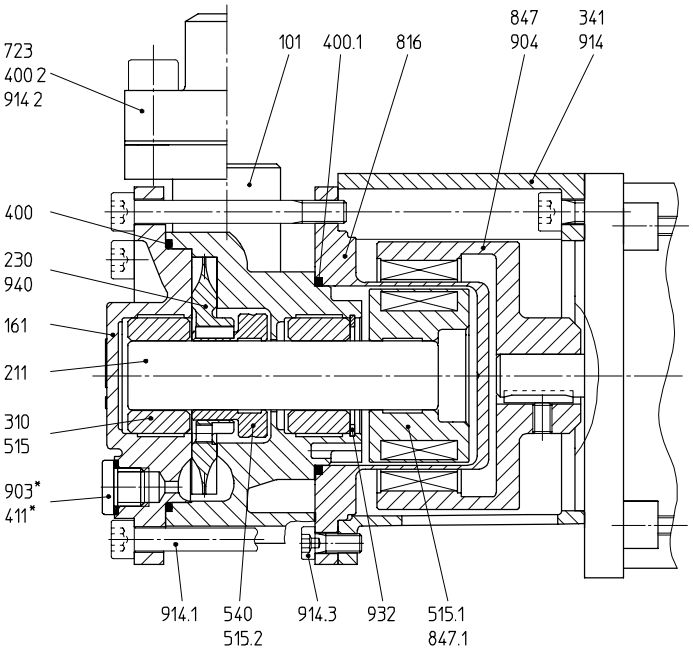
## Maßzeichnung / Dimensional drawing




## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Öl Oil | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | Ue* | Nm | kg | lbs | $t_{max}$ | $t_{max}$ |
| **NPY-2251-MK-TOE** | 63 | 3~ | 2800 | 0,50 | 0.67 | 3400 | 0,55 | 0.94 | G 1/2<br>SAE 1/2 | G 1/2<br>SAE 1/2 | G 1/8 | 3,0 | 9,6 | 21 | 180 °C<br>(G 1/2) | 350 °C<br>(SAE 1/2) |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400/.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515-.2 | Toleranzring | Tolerance ring |
| 540 | Buchse | Bush |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Set screw |
| 914-.3 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Feather key |

* Auf Anfrage

[1] Flacher Klemmenkasten
[2] Hoher Klemmenkasten
[3] Abhängig von Motorausführung

$U^e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

* On request

[1] Flat terminal box
[2] High terminal box
[3] Depending on the motor design

$U_e$ = Drainage / Screw plug

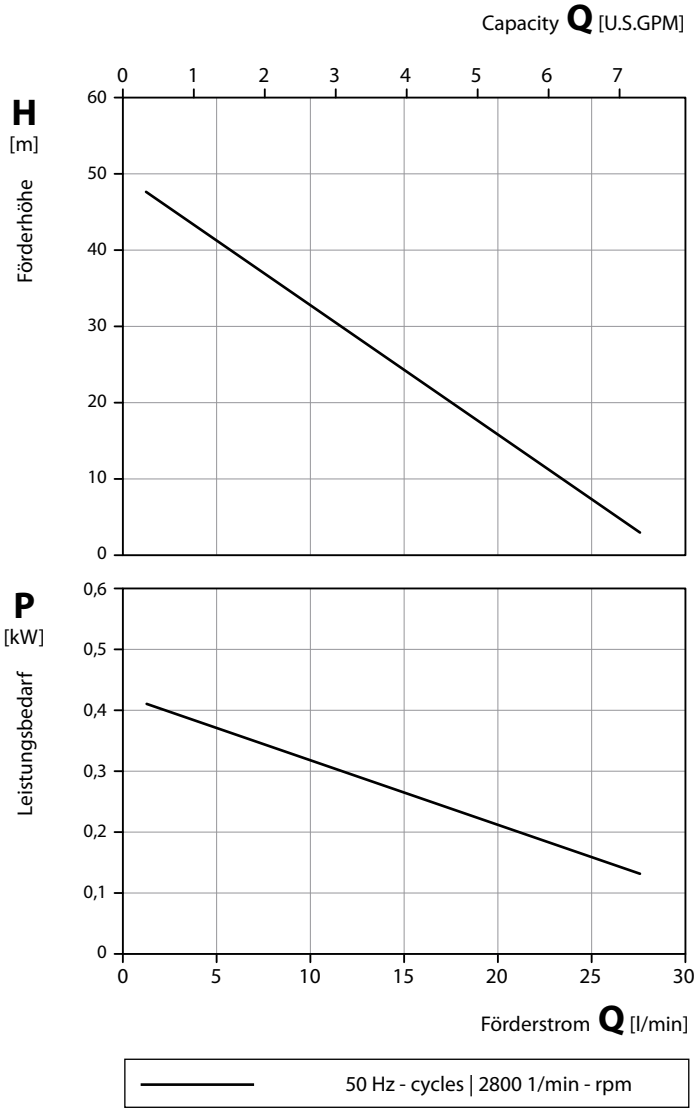
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

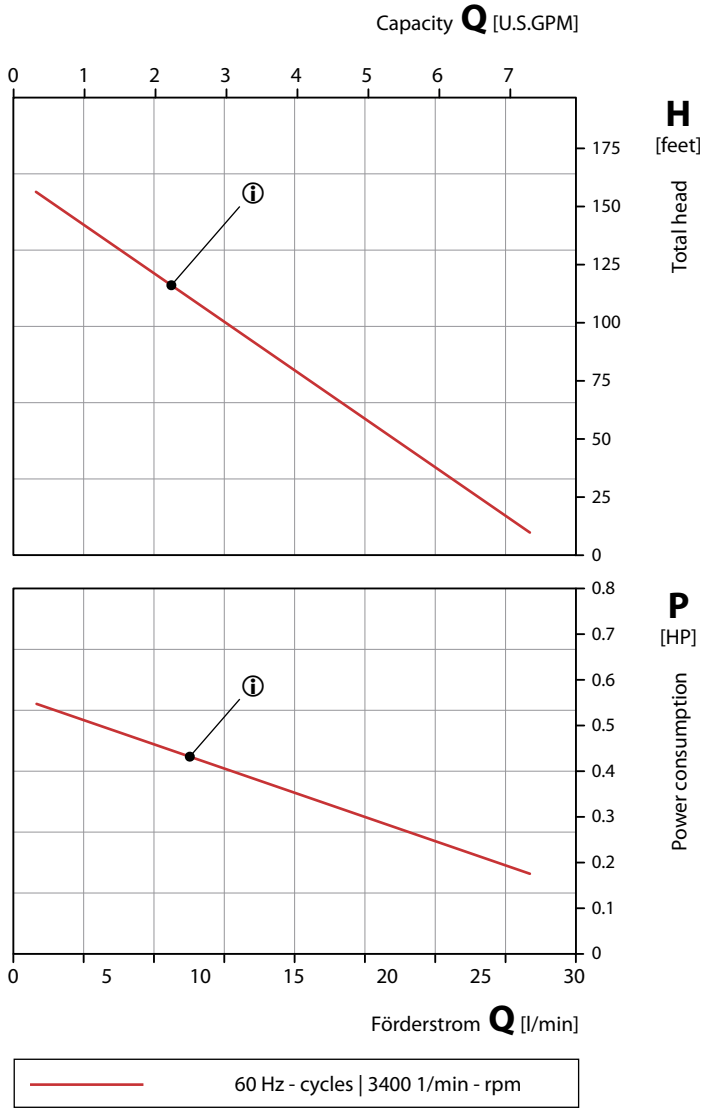
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408,<br>Ni-SiC-beschichtet<br>CrNiMo-cast steel,<br>Ni-SiC coated |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

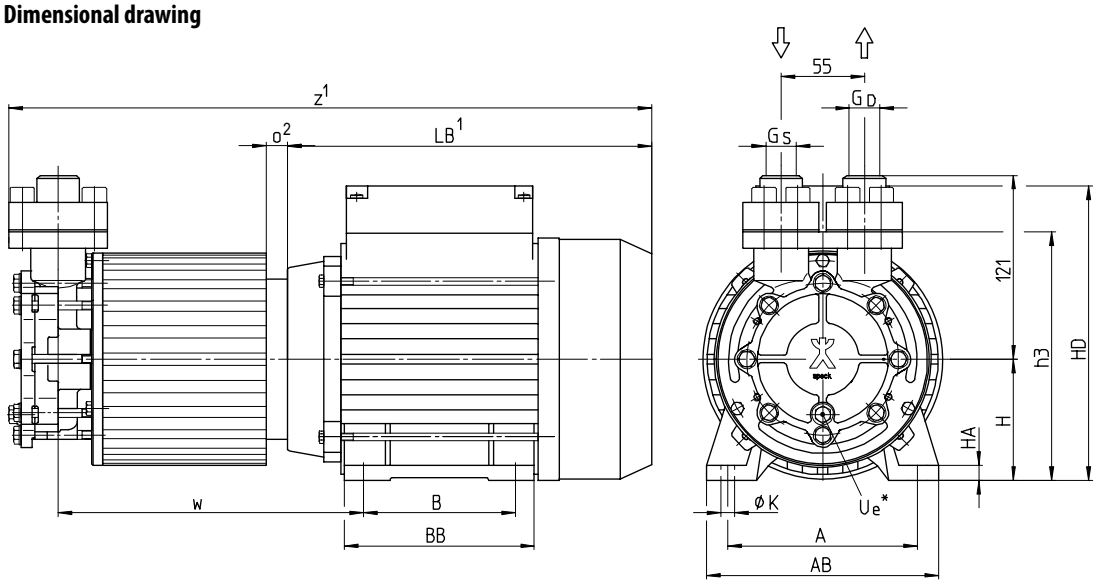
If the property of the pump media differs the characteristic curves change.

# CY-4281-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

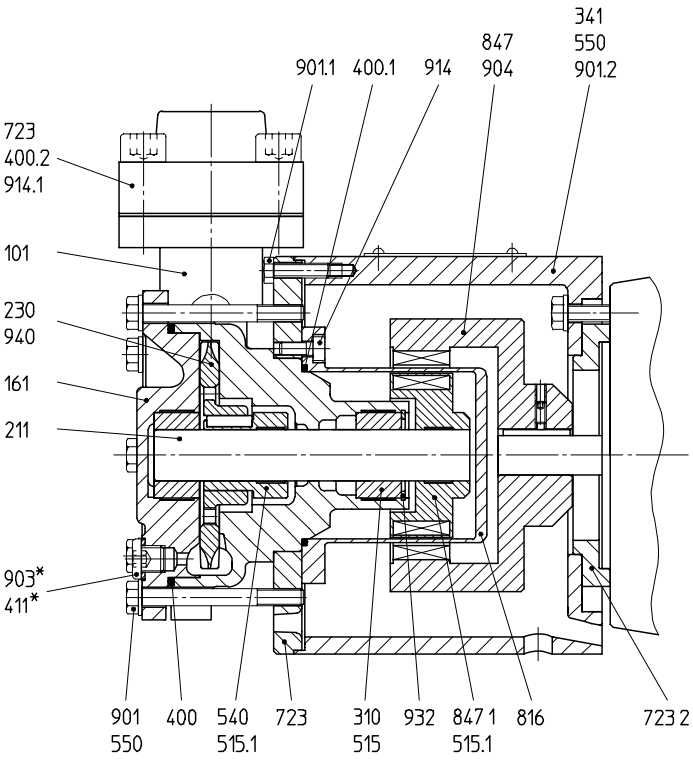



## Daten / Data

| | Baugröße Frame size | Phasen Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Anschlüsse Connections | | | Drehmoment Torque | Gewicht Weight | | Öl Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | $G_S$ | $G_D$ | $U_e$* | Nm | kg | lbs | $t_{max}$ |
| **CY-4281-MK-TOE** | 71 | | | 1,0 | 1.34 | | 1,0 | 1.34 | | | | 7 | 15,0 | 33 | |
| | 80 | 3~ | 2800 | 1,5 | 2.00 | 3400 | 1,5 | 2.00 | SAE 3/4 | SAE 3/4 | G 1/8 | 7 | 18,5 | 41 | 350 °C |
| | 90 | | | 2,2 | 2.95 | | 2,2 | 2.95 | | | | 10 | 19,5 | 43 | |

| Type | Baugröße | A | AB | B | BB | H | HA | HD | K | LB[1] | h3 | o[2] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-4281-MK-TOE** | 71 | 112 | 135 | 90 | 110 | 71 | 8 | 175 | 9 | 211 | 155 | – | 178 | 367 |
| | 80 | 125 | 153 | 100 | 125 | 80 | 10 | 194 | 9 | 240 | 164 | 10 | 191 | 414 |
| | 90 | 140 | 170 | 125 | 155 | 90 | 13 | 209 | 10 | 281 | 174 | 14 | 206 | 444 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 411* | Dichtring | Sealing ring |
| 515/.1 | Toleranzring | Tolerance ring |
| 540 | Wellenbuchse | Shaft bush |
| 550 | Scheibe | Disk |
| 723/.2 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901-.2 | 6-kt. Schraube | Hexagon head cap screw |
| 903* | Verschlussschraube | Screw plug |
| 904 | Gewindestift | Set screw |
| 914-.1 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 932 | Sicherungsring | Locking ring |
| 940 | Passfeder | Feather key |

[1] Abhängig von Motorausführung
[2] Motorflansch Ø 120

* Auf Anfrage

$U_e$ = Entleerung / Verschlussschraube

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design
[2] Motor flange Ø 120

* On request

$U_e$ = Drainage / Screw plug

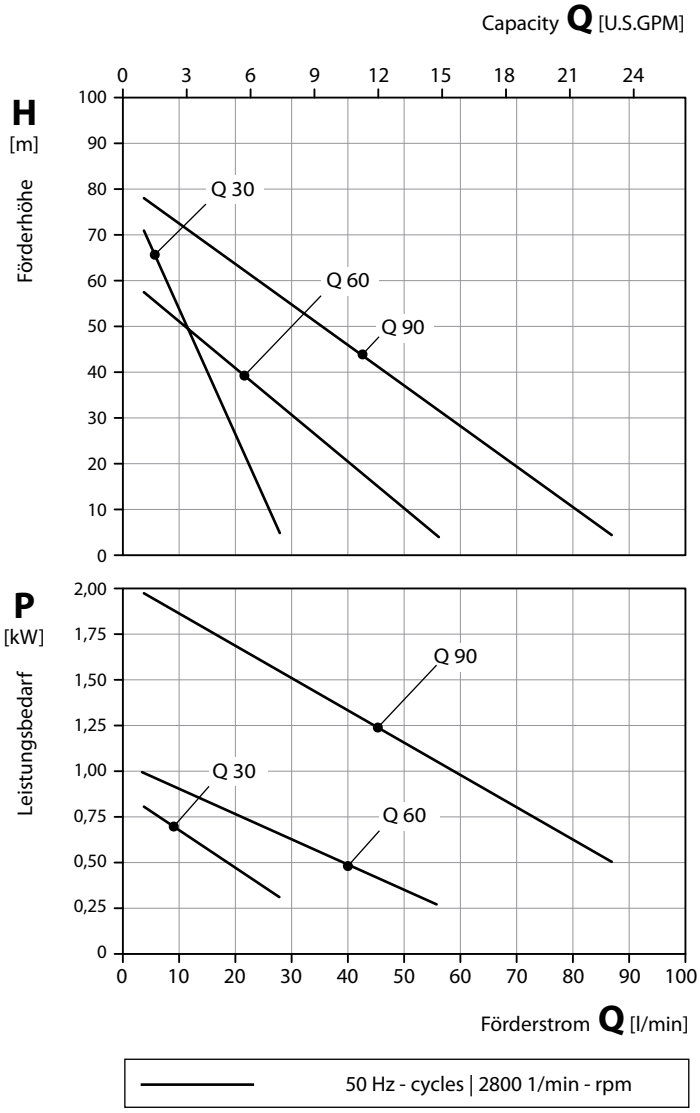
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.
04/2014 | 1096.1088

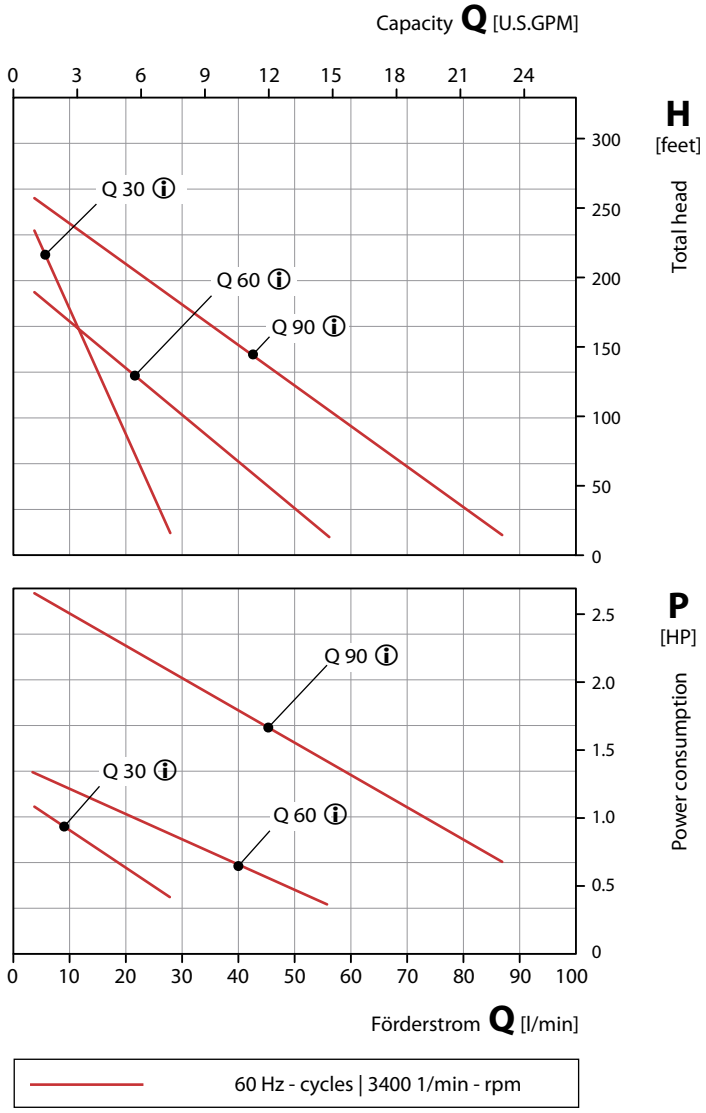
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | 1.4581<br>CrNiMo-cast steel |
| Laufrad<br>Impeller | 1.4408,<br>plasmanitriert<br>CrNiMo-cast steel,<br>plasma nitrated |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

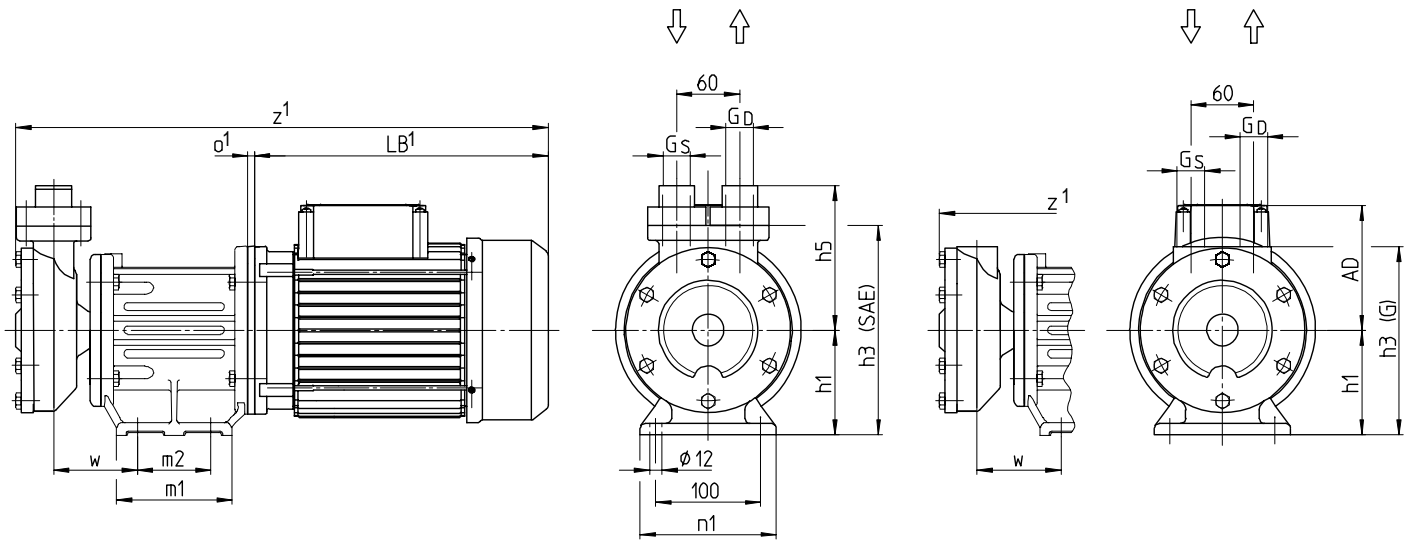
If the property of the pump media differs the characteristic curves change.

# CY-6091-MK-TOE

**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## Maßzeichnung / Dimensional drawing

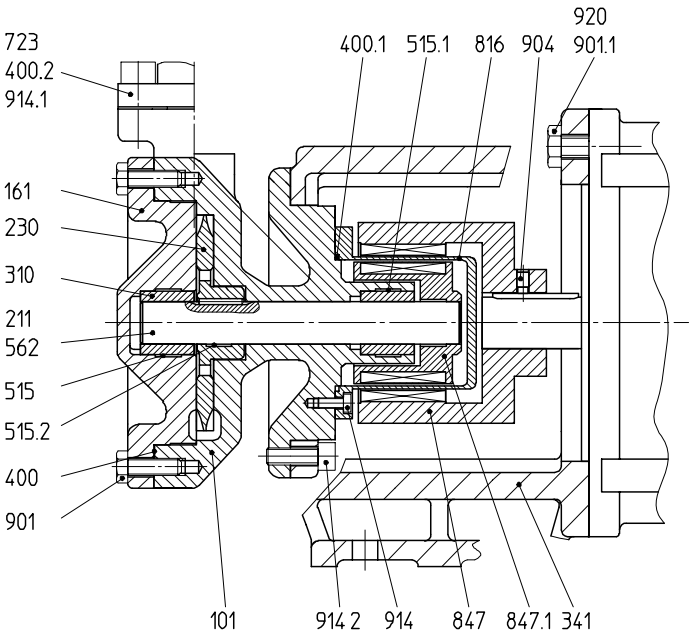



## Daten / Data

| | Baugröße<br>Frame size | Phasen<br>Phases | 50 Hz / Cycles | | | 60 Hz / Cycles | | | Gewicht<br>Weight | | Öl<br>Oil | Öl<br>Oil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | mm | ~ | 1/min | kW | HP | 1/min | kW | HP | kg | lbs | $t_{max}$ | $t_{max}$ |
| **CY-6091-MK** | 90L | 3~ | 2800 | 2,80 | 3.75 | 3400 | 2,80 | 3.75 | 33 | 73 | 180 °C (G) | 350 °C (SAE) |
| | 100L | | | 3,00 | 4.02 | | 3,00 | 4.02 | 36 | 79 | | |
| | 112M | | | 4,00 | 5.36 | | 4,00 | 5.36 | 46 | 101 | | |
| | 132S | | | 5,50 | 7.38 | | 5,50 | 7.38 | 70 | 155 | | |

| Type | Baugröße | Q | l/min | USGPM | $G_S$ | $G_D$ | Nm | AD[1] | LB[1] | h1 | h3 | h5 | m1 | m2 | n1 | o[1] | w | z[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CY-6091-MK** | 90L | **Q 80** | 80 | 21 | G 3/4 oder / or SAE 1 | G 3/4 oder / or SAE 1 | 14 | 147 | 280 | 100 | 200 | 138 | 110 | 70 | 130 | – | 80 | 501 |
| | 100L | **Q 150** | 150 | 37 | | | | 154 | 306 | | | | | | | 10 | | 537 |
| | | | | | | | | | | | | | | | | 32 | | 559 |
| | 112M | **Q 200** | 200 | 53 | SAE 1 1/4 | SAE 1 1/4 | 22 | 167 | 296 | 114 | 214 | 138 | 145 | 80 | 140 | – | 90 | 578 |
| | 132S | | | | | | | 221 | 457 | | | 143 | | | | 20 | | 739 |

## Schnittzeichnung / Cross-sectional drawing




## Teileliste / Parts list

| | | |
|---|---|---|
| 101 | Gehäuse | Casing |
| 161 | Gehäusedeckel | Casing cover |
| 211 | Welle | Shaft |
| 230 | Laufrad | Impeller |
| 310 | Gleitlager | Sleeve bearing |
| 341 | Laterne | Bracket |
| 400-.2 | Dichtung | Gasket |
| 515-.2 | Toleranzring | Tolerance ring |
| 562 | Stift | Pin |
| 723 | Flansch | Flange |
| 816 | Spalttopf | Separating can |
| 847 | Magnetkupplung (außen) | Magnetic coupling (outer part) |
| 847.1 | Magnetkupplung (innen) | Magnetic coupling (inner part) |
| 901/.1 | 6-kt. Schraube | Hexagon head cap screw |
| 904 | Gewindestift | Set screw |
| 914-.2 | Innen-6-kt. Schraube | Hexagon socket head cap screw |
| 920 | 6-kt. Mutter | Hexagon nut |

[1] Abhängig von Motorausführung

Gewicht abhängig von Baugröße, Leistung, Werkstoffen und Ausführung

[1] Depending on the motor design

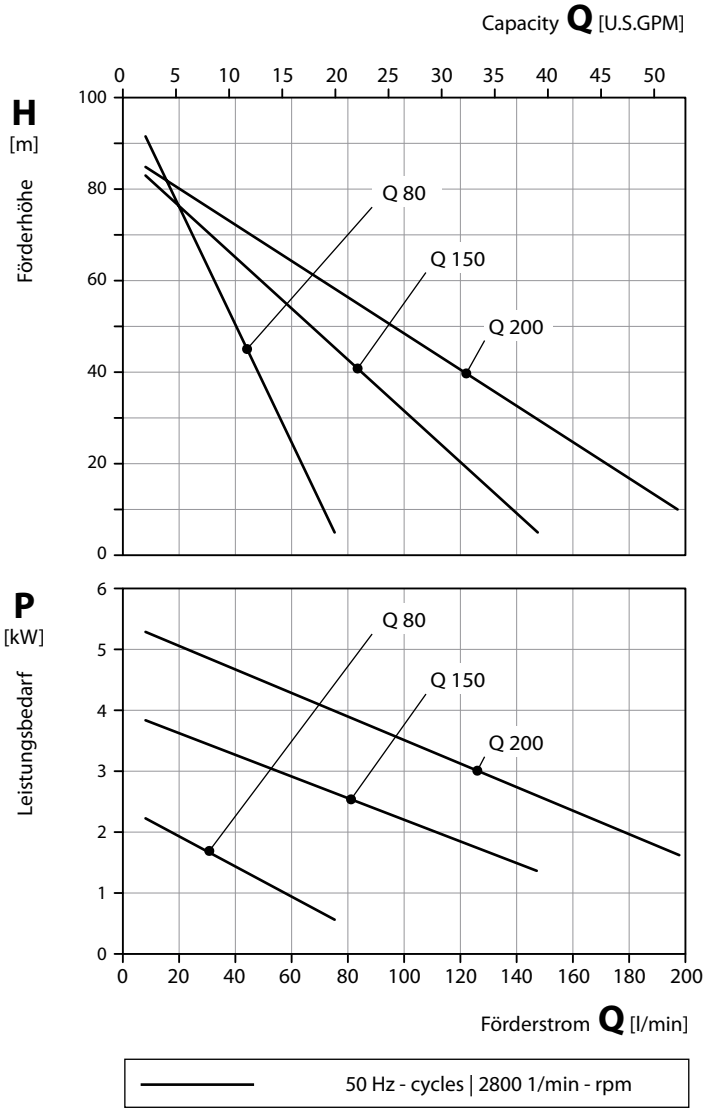
Weight depending on motor frame size, performance, materials and execution


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

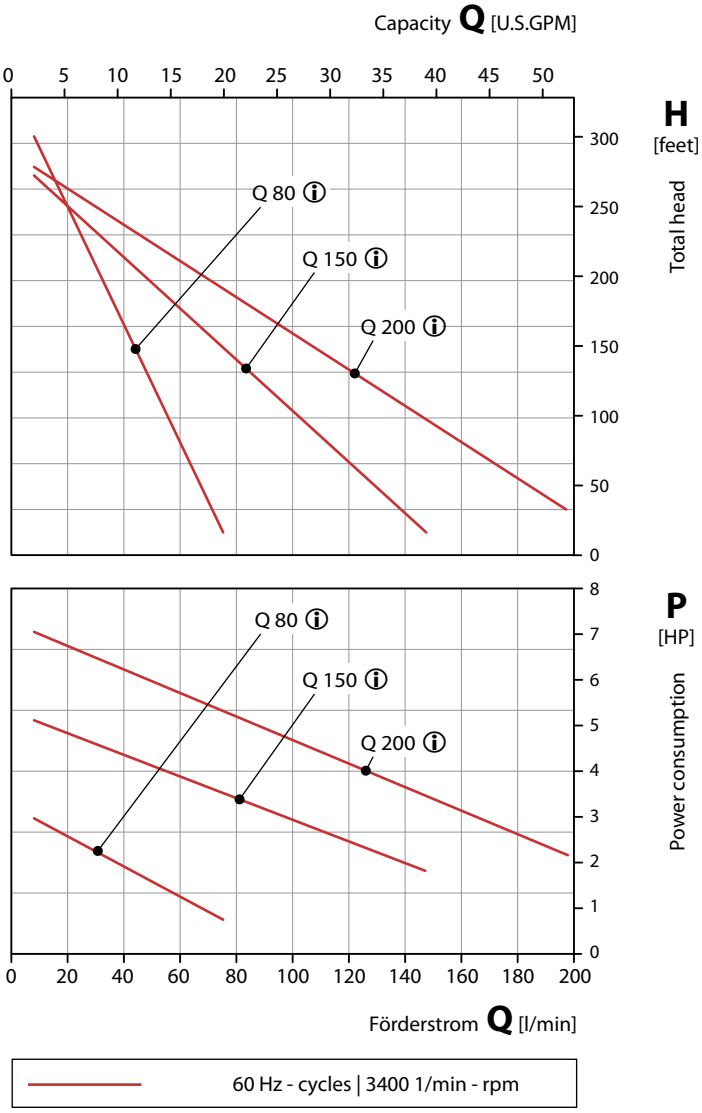
**Wärmeträgerpumpen mit Peripheralrad**
mit Magnetkupplung

**Heat transfer pumps with peripheral impeller**
with magnetic coupling

## 50 Hz | Kennlinien / Characteristic curves




## 60 Hz | Kennlinien / Characteristic curves




ⓘ 60 Hz angepasste Hydraulik

ⓘ 60 Hz adapted characteristic

## Werkstoffausführungen / Material Design

| | |
|---|---|
| Gehäuse<br>Casing | EN-GJS-500-7<br>Spheroidal graphite cast iron |
| Laufrad<br>Impeller | 1.4408<br>CrNiMo-cast steel |
| Welle<br>Shaft | Keramik<br>Ceramics |
| Spalttopf<br>Separating can | 1.4571<br>CrNiMo-steel |

EN-GJS-500-7 = EN-JS 1050 = GGG-50

## Prüfbedingungen

Die Kennlinien gelten für die Förderung von Wasser mit einer Temperatur von 20 °C bei Nenndrehzahl.

Die Toleranz von Förderhöhe und Förderstrom beträgt ± 10 %, die des Leistungsbedarfs + 10 %.

Bei abweichenden Eigenschaften des Fördermediums ändern sich die Kennlinien.

## Test conditions

The characteristic curves are applicable for the delivery of water of 20 °C temperature at nominal speed.

The tolerance of total head and capacity is ± 10 %, performance tolerance is + 10 %.

If the property of the pump media differs the characteristic curves change.

# 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 $m^3$/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.

**Your contacts**

**Speck Pumpen Walter Speck GmbH & Co. KG**

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

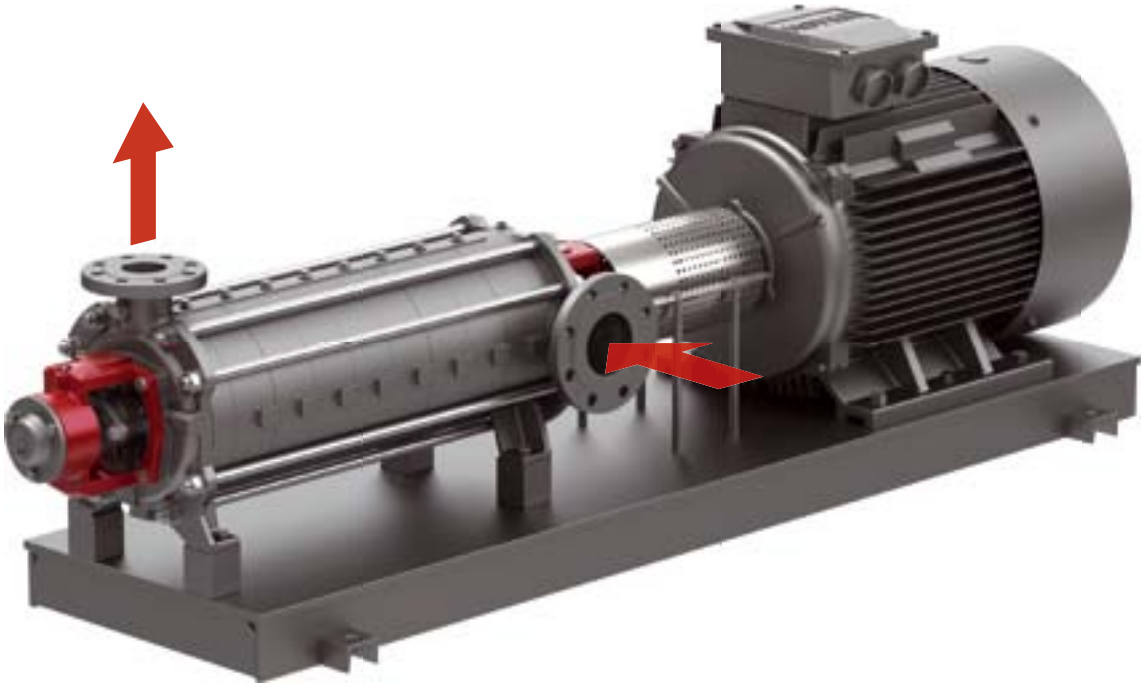
**International representatives**
→ page 15

# Boiler feed pumps made by Speck

## *ES series*

» Horizontal multistage modular pumps
» Designed for the delivery and circulation of clear or slightly contaminated liquids
» Suitable for liquids without abrasive contaminants and without solid particles
» Shaft bearing with two external rolling bearings
» Hydraulically balanced impellers
» Cast iron version and spheroidal graphite cast iron version

| | |
|---|---|
| With mechanical seal | |
| With stuffing box packing | |
| Nominal pressure | PN 40 or PN 63 |
| 50 Hz | $H_{max.}$ 630 m / $Q_{max.}$ 110 $m^3/h$ |
| 60 Hz | $H_{max.}$ 400 m / $Q_{max.}$ 125 $m^3/h$ |



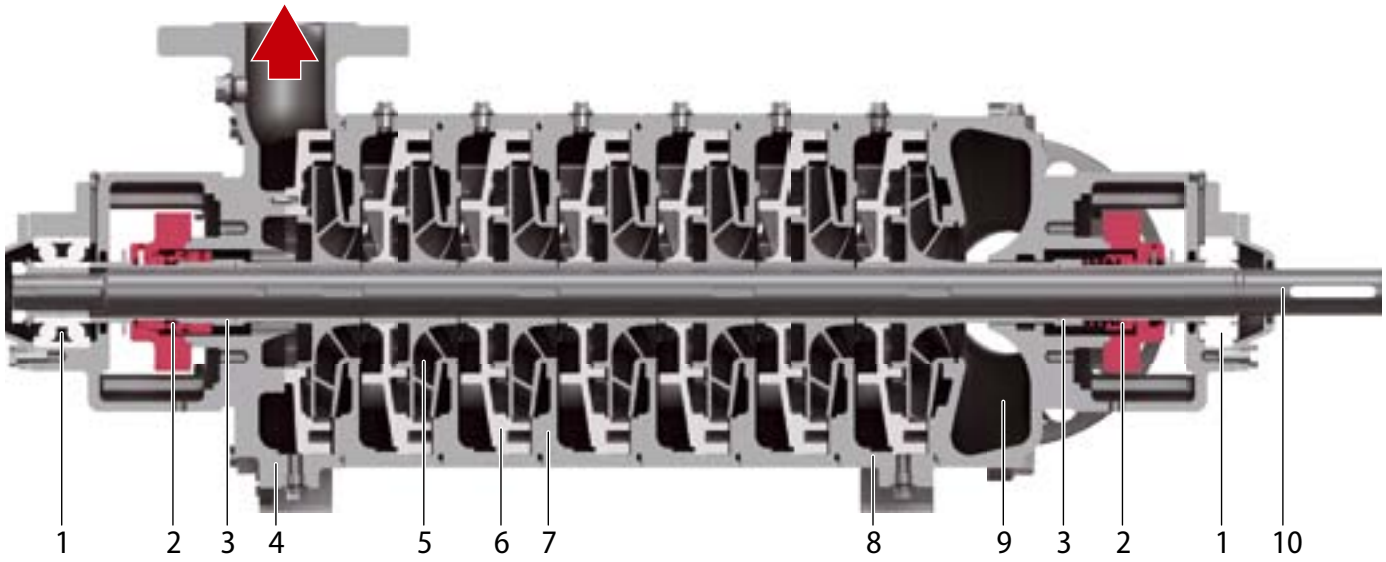
Proven boiler feed pumps for universal applications

**Main applications**

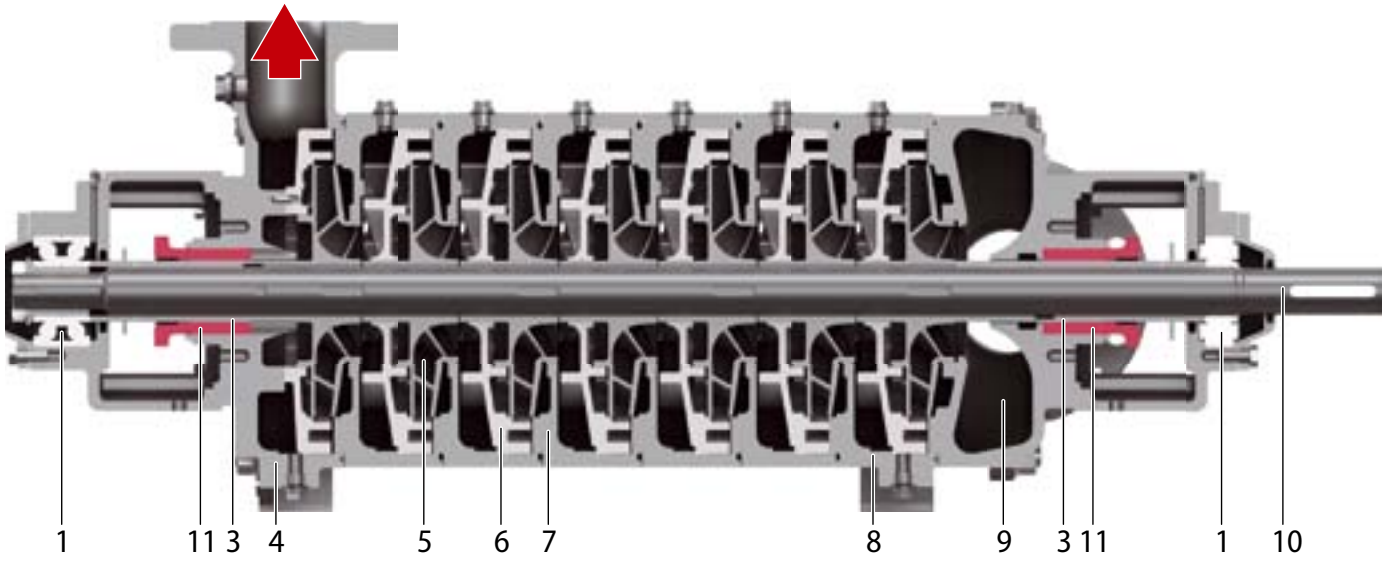
» Delivery of hot water in boiler systems
» Booster stations
» Water supply units
» Sprinkler units
» Cleaning stations
» Recovering of condensates (water)
» Extracting palm oil

# Modular system

## *Pumps with mechanical seal*




## *Pumps with stuffing box packing*




| No. | Designation |
|---|---|
| 1 | Rolling bearing |
| 2 | Mechanical seal |
| 3 | Shaft protection sleeve |
| 4 | Discharge casing |
| 5 | Impeller |
| 6 | Diffuser insert |

| No. | Designation |
|---|---|
| 7 | Stage casing |
| 8 | Stage casing with foot |
| 9 | Suction casing, from stage number 3: rotatable in steps of 90° |
| 10 | Shaft |
| 11 | Stuffing box packing |

# Type code

## *Denomination*

| Type code \| Example | ES- | 40 | 07 | LL | G2- | 30 | 001 |
|---|---|---|---|---|---|---|---|
| Denomination of series | | | | | | | |
| Pump size | | | | | | | |
| Number of stages | | | | | | | |
| Shaft bearing (table 1) | | | | | | | |
| Shaft sealing (table 2) | | | | | | | |
| Material design (table 3) | | | | | | | |
| Counting number | | | | | | | |

**Table 1 - Shaft bearing**

| Code<br>Types / Sizes | LL<br>ES-32 | LL<br>ES-40 / ES-50 | LL<br>ES-65 (PN 40) / ES-65 (PN 63) |
|---|---|---|---|
| Design | 1 roller bearing, 1 ball bearing | 2 ball bearings | 1 rolling bearing, 1 ball bearing |

**Table 2 - Shaft sealing**

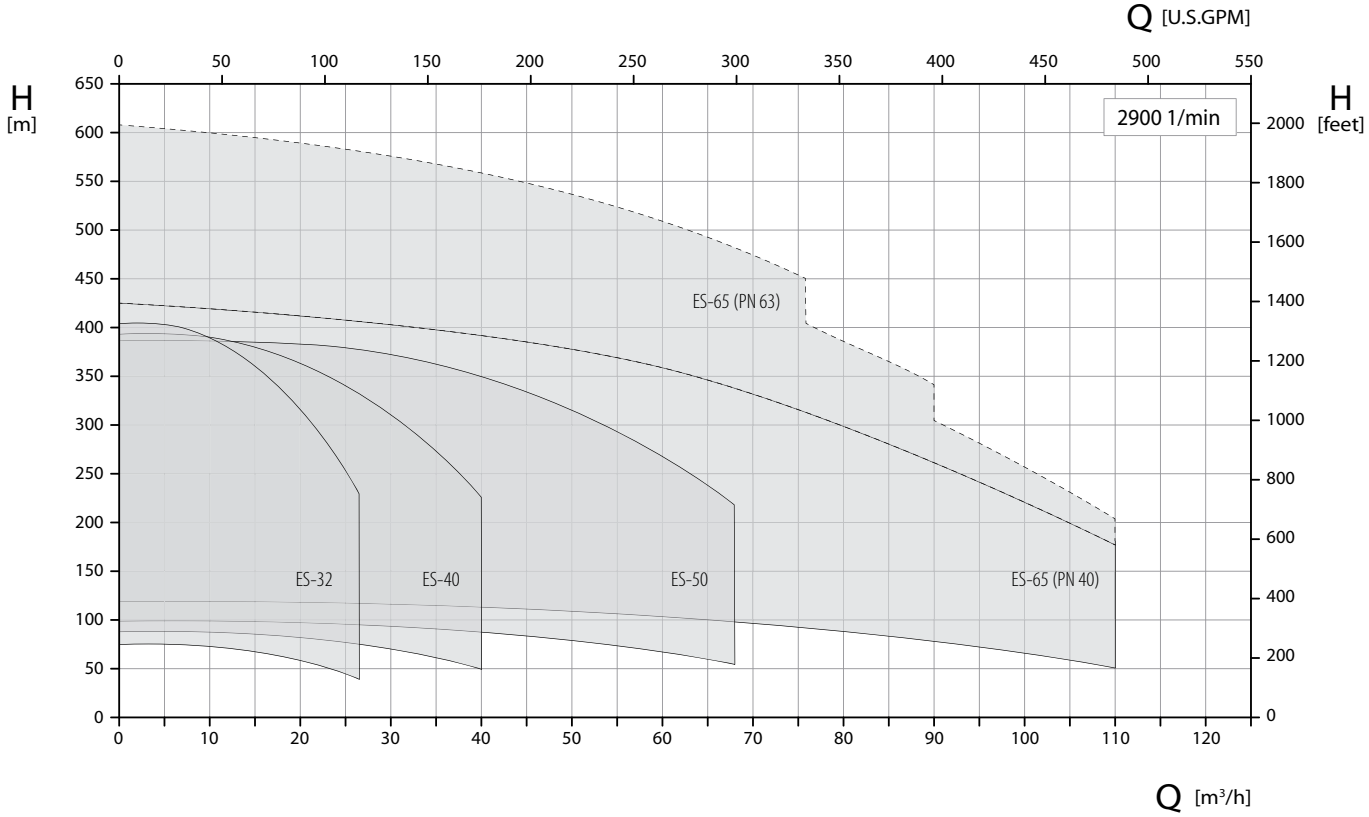
| Code | | G1 | G2 | G4 | X | SB | G6 |
|---|---|---|---|---|---|---|---|
| Types / Sizes | | ES-32 / ES-40 / ES-50 / ES-65 (PN 40) | | | | | ES-65 (PN 63) |
| Shaft sealing | | Mechanical seal | | | | Stuffing box packing | Mechanical seal |
| Material | | SiC, carbon, FKM | | | Special version | PTFE, graphite | SiC, carbon, FKM |
| Max. operating pressure | suction side | 12 bar<br>174 psi | | | | – | 16 bar<br>232 psi |
| | discharge side | 12 bar<br>174 psi | 25 bar<br>362 psi | 40 bar<br>580 psi | | 40 bar<br>580 psi | 63 bar<br>910 psi |

**Table 3 - Material design**

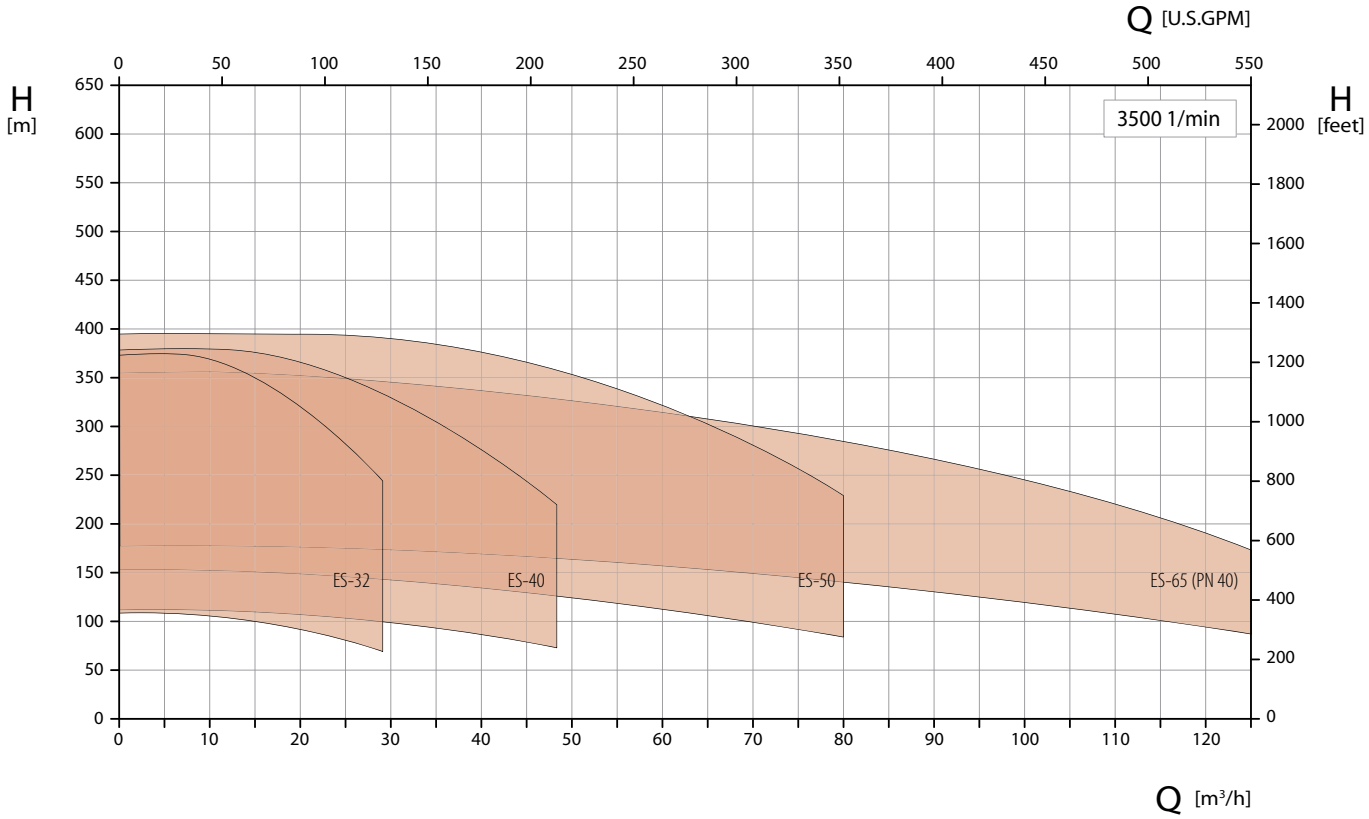
| Code<br>Types / Sizes | 30<br>ES-32 / ES-40 / ES-50 | 30<br>ES-65 |
|---|---|---|
| Suction casing<br>Discharge casing<br>Stage casing<br>Satge casing with foot | EN-GJL-200<br>Cast iron | EN-GJS-400-15<br>Spheroidal graphite cast iron |
| Diffuser insert<br>Impeller | | EN-GJL-250<br>Cast iron |
| Shaft | 1.4021<br>Cr-steel | 1.4021<br>Cr-steel |
| Shaft protection sleeve | 1.4122<br>CrMo-steel | 1.4122<br>CrMo-steel |

# Performance range

## *50 Hz*




## *60 Hz*



# 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**
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.

## *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 outlet nozzle depends on
» the pump inlet pressure
» the density of the medium to be pumped

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

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

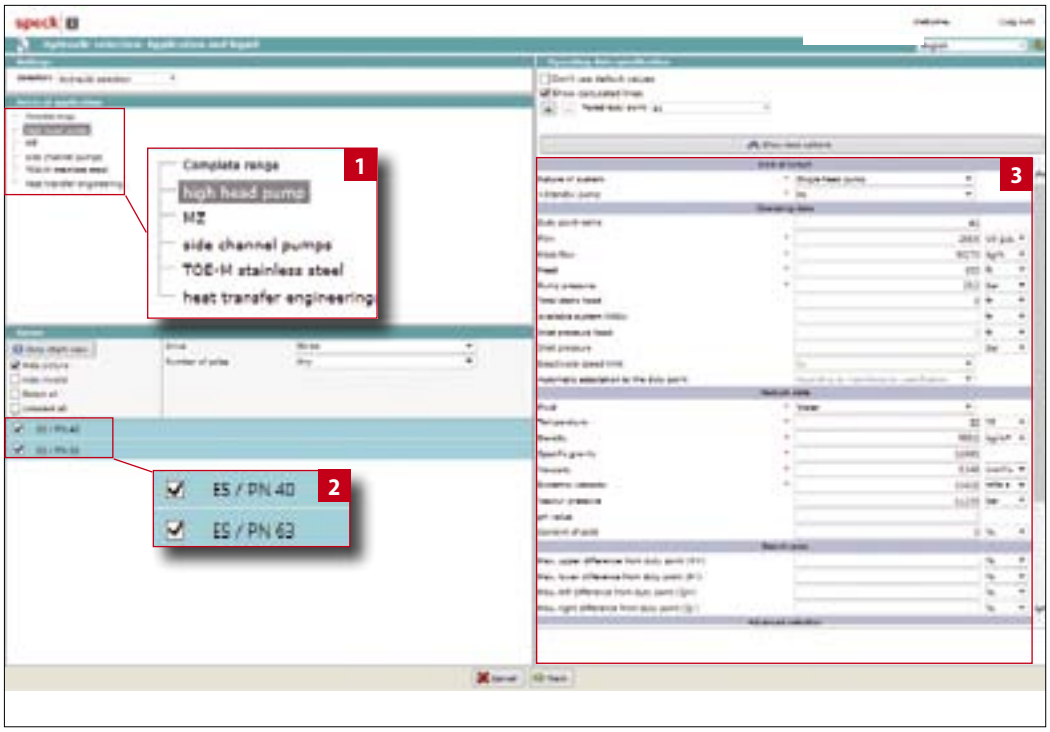
With:

| | | |
|---|---|---|
| $p_{2max\ op}$ | = | maximum pump outlet pressure [bar] |
| $p_{1max\ op}$ | = | maximum pump inlet pressure [bar] |
| $\rho$ | = | 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 [m] |

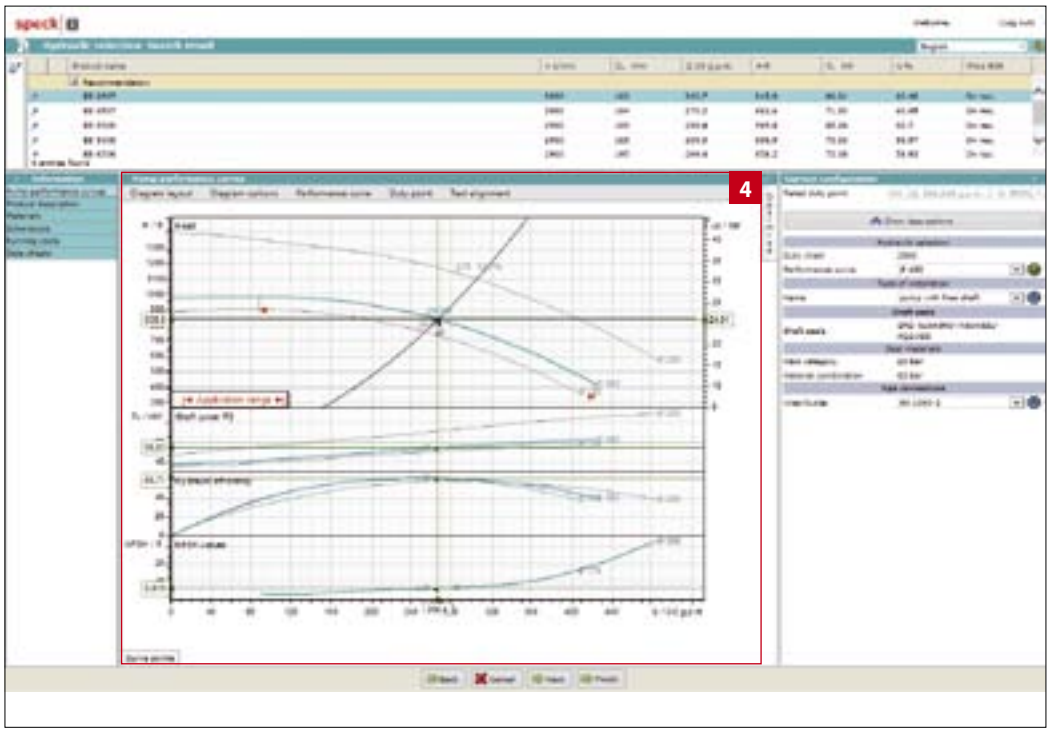
Pumps must be selected and operated in a way which ensures that the maximum pump outlet pressure does by no means exceed the maximum permissible operating pressure of the casing $p_{all\ w\ c}$ at operating pressure.
This also applies to commissioning while the discharge valve is closed.

# 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.




Characteristic curve depending on hydraulic selection

**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.

**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*

**Data Sheet**
**Boiler feed pumps**
**ES 6507**

Quotation
Created on — Item
Rev.: — Page 1 / 4

**SPECK PUMPEN Systemtechnik GmbH**
Regensburger Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de

| | | |
|---|---|---|
| Customer | Kontakt | Editor |
| City | Phone | Phone |
| Enquiry vom | Fax | Fax |
| Project | E-mail | E-mail |

**Operating Data**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fluid | Water | | Flow rate | rated | 269 | US g.p.m. | Speed | 2900 | 1/min |
| 2 | corrosive matters | keine/not | Wght.-% | | min / max | 80,7 / 426,2 | US g.p.m. | Hydr. efficiency | 60,82 | % |
| 3 | abrasive matters | keine/not | Wght.-% | Pressure | Inlet | 0 | bar(ü) | hydr. power cons. | 70,05 | kW |
| 4 | Solids | 0 | Wght.-% | | Disch. | 25,12 | bar(ü) | Max. operating pressure | 29,4 | bar (ü) |
| 5 | Oper. Temp. tW / tS | 50 | °C | Head | | 850,3 | ft | | | |
| 6 | Density at tw | 988,1 | kg/m³ | Pressure differential | | 25,12 | bar(ü) | Start-up temp. | | °C |
| 7 | Kin. viscosity at tW / tS | 0,548 | mm²/s | | | | | Flow rate at cold start | | US g.p.m |
| 8 | Vapor press. at tA | 0,1233 | bar | NPSH | System | 9,08 | ft | Total. abs. power at cold start | | kW |
| 9 | PH value | 7 | | | required | 6,68 | ft | | | |

**Installation / Environment**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | Building / Outside | Gebäude | Altitude | < 3281 | ft | Amb. Temp. min | 20 / 40 °C |
| 11 | under roof yes/no | Ja / Yes | Hazardous area | | | rel. Humidity | <55 % |

**Pumpe**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | No of stages Impeller-Ø mm | 6 175 | Impeller type | | Pressure rating | PN 16 |
| 13 | 1 205 | 7 175 | direction of rotation | right | Suction port | nom. diam. DN | DN 100 |
| 14 | 2 195 | 8 | | | | Standard | EN 1092-2 |
| 15 | 3 175 | 9 | | | | Pressure rating | PN 40 |
| 16 | 4 175 | 10 | | | Delivery port | nom. diam. DN | DN 65 |
| 17 | 5 175 | 11 | | | | Standard | EN 1092-2 |

**Accessories**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | **Motor** | | | | | **Shaft seal** | | **Base plate** | | | |
| 19 | Make | | 1) | Type | | GRD NU045R0-/NB045S1-AQ1VGG | | Description | | | |
| 20 | Specific design | | | Number of poles | | Max. 120 °C / 63 bar | | Specific design | | | |
| 21 | Rated power | | kW | Degree of prot | ±5% | **Coupling** | | Length | | mm | |
| 22 | Rated current | | A | Frequency | ±2% Hz | Make | | Width | | mm | |
| 23 | 1-phase / 3-phz | | | Voltage | V | Series | | | | | |
| 24 | Sound pressure level | | dB(A) | Mounting | | Frame size | | **Coupling protection** | | | |
| 25 | Explosion protection | | | | | Spacer length | mm | | | | |

**Materials**

| | | | | |
|---|---|---|---|---|
| 26 | Suction casing | EN-GJS-400-15 | Discharge casing | EN-GJS-400-15 |
| 27 | Stage casing | EN-GJS-400-15 | Suction stage with foot | EN-GJS-400-15 |
| 28 | Diffuser insert | EN-GJL-250 | Impeller | EN-GJL-250 |
| 29 | Bearing support | EN-GJL-250 | Bearing cover | EN-GJL-250 |
| 30 | Shaft | 1.4122 | O-ring | Viton |
| 31 | | | | |
| 32 | | | | |

**Tests and Inspections**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | **Material Tests** | **Test** 2) | **Certificate** | **Other Tests** | **Tests and Inspections** 2) | **Certificate** | **Qty** |
| 34 | Suction casing | keine | kein | Hydrost. Pressure Test | Intern | kein | alle |
| 35 | Discharge casing | keine | kein | Gas Pressure Test 3) | Intern | kein | alle |
| 36 | Stage casing | keine | kein | Performance curve 4) | Keine | kein | alle |
| 37 | Suction stage with foot | keine | kein | NPSH-Measurement | Keine | kein | alle |
| 38 | Diffuser insert | keine | kein | Final check | Intern | kein | alle |
| 39 | | | | Vibration | Keine | kein | alle |
| 40 | | | | Temperature | Keine | kein | alle |
| 41 | | | | **Max. operating pressure** | 63 bar / 20°C X Factor 1,3 | test time 30 | min |

**Shipping data** 5)

| | | | | | |
|---|---|---|---|---|---|
| 42 | Net weight appr. | kg | Gross weight appr. | kg | Pump color | Motor color |

**Documentation**

| | | | | | |
|---|---|---|---|---|---|
| 43 | Dimensional drwg. | Cross sect. drwg | performance curve No. | Oper.& Instruct. Man. | Other (see attached) | Qty |
| 44 | RD 8.30. xxx | E 4022. xxx | KL 10.90.130 | DE 1096.0902 | | 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 price sheet

Technical data sheet (example)

**Performance curve**
**Boiler feed pumps**
**ES 6507**

Quotation
Created on — Item
Rev.: — Page 2 / 4

**SPECK PUMPEN Systemtechnik GmbH**
Regensburger Ring 6 - 8 D-91154 Roth Tel.: 09171/809-0 Fax: 09171/809-10 www.speck.de

| | | |
|---|---|---|
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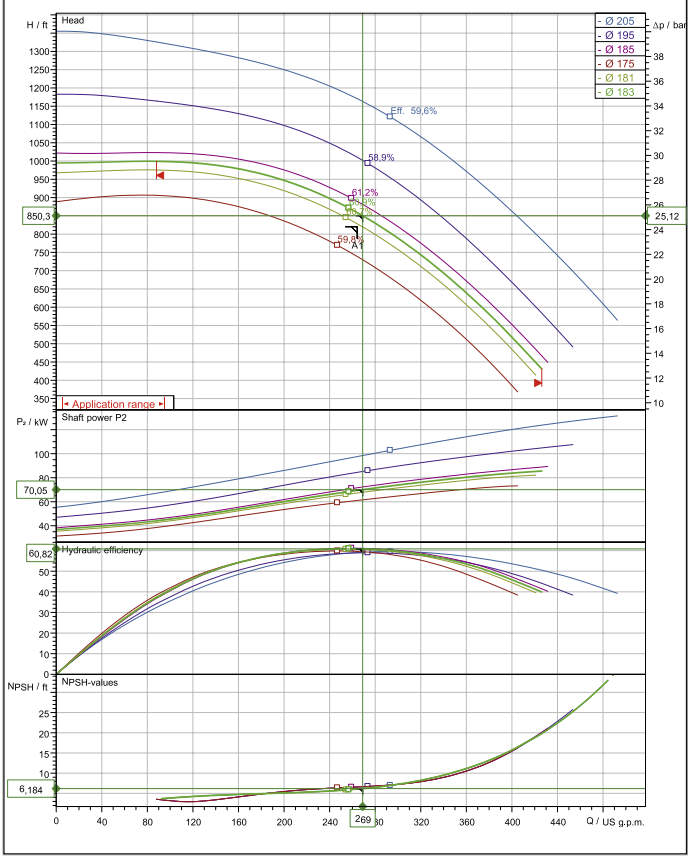
| Enquiry vom | Fax | Fax |
| Project | E-mail | E-mail |

Measurement after DIN EN ISO 9906 category 2 **KL 10.90.130** Speed 2900
performance data level in relation to: Water (100%); 50 °C; 988,1 kg/m³; 0,5480214553 mm²/s




Characteristic curve (example)

**Dimension drawing**
**Boiler feed pumps**
**ES 6507**

Customer — Kontakt
City — Phone
Fax
E-Mail

Editor
Phone
Fax
E-Mail

Quotation

**SPECK PUMPEN Systemtechnik GmbH**
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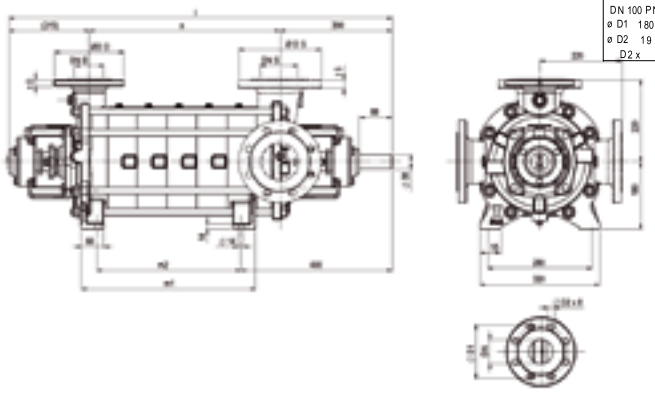
Pumpe freie Welle — Motor - -



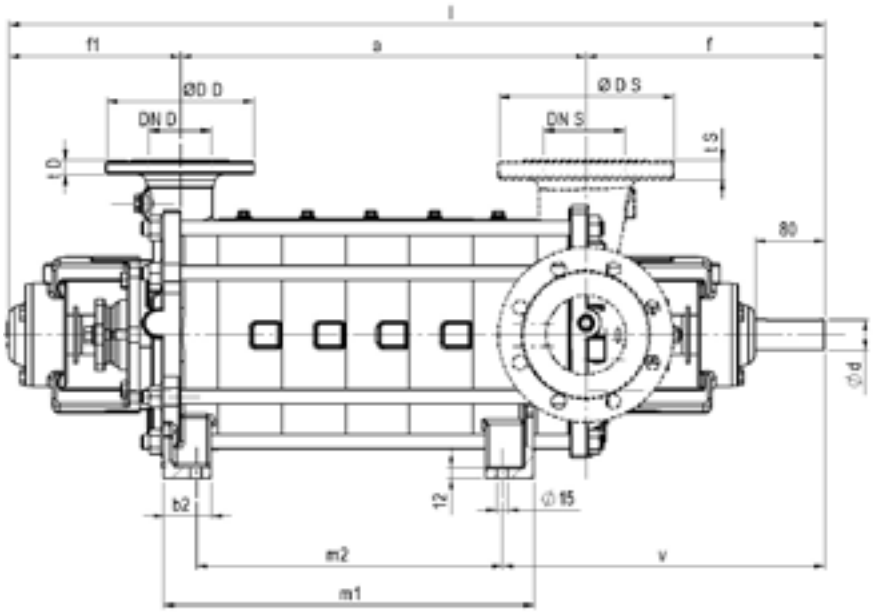
| Anschluesse | | Dimensions in mm | |
|---|---|---|---|
| Suction port | Delivery port | DNS | 100 |
| EN 1092-2 | EN 1092-2 | DS | 220 |
| DN 100 PN 16 | DN 65 PN 40 | tS | 24 |
| ø D1 180 mm | ø D1 145 mm | DND | 65 |
| ø D2 19 mm | ø D2 19 mm | DD | 185 |
| D2 x 8 | D2 x 8 | tD | 24 |
| | | a | 510 |
| | | m1 | 466 |
| | | m2 | 385 |
| | | l | 1025 |

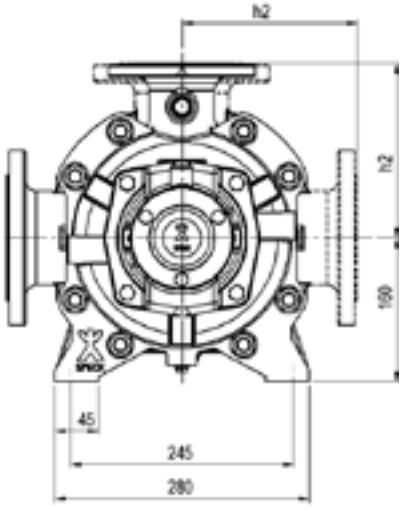
Dimensional drawing (example)

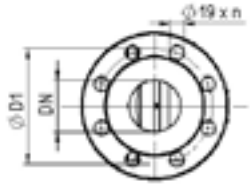
## Save projects

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.

# ES-32 / 40 / 50 – Dimensions




**ES-32 | PN 40 | Cast iron**

| Size | a | m1 | m2 | (l) | b2 | Ød | f1 | f | h2 |
|---|---|---|---|---|---|---|---|---|---|
| ES-3202 | 118 | 103 | 53 | 522 | 45 | 28 | 174 | 230 | 180 |
| ES-3203 | 173 | 158 | 108 | 577 | | | | | |
| ES-3204 | 228 | 213 | 163 | 632 | | | | | |
| ES-3205 | 283 | 268 | 218 | 687 | | | | | |
| ES-3206 | 338 | 323 | 273 | 742 | | | | | |
| ES-3207 | 393 | 378 | 328 | 797 | | | | | |
| ES-3208 | 448 | 433 | 383 | 852 | | | | | |
| ES-3209 | 503 | 488 | 438 | 907 | | | | | |
| ES-3210 | 558 | 543 | 492 | 962 | | | | | |
| ES-3211 | 613 | 598 | 548 | 1017 | | | | | |

| Discharge flange PN 40 | | | | |
|---|---|---|---|---|
| DND | DD | D1 | n | tD |
| DN 32 | 140 | 100 | 4 | 22 |

| Suction flange PN 16 | | | | |
|---|---|---|---|---|
| DNS | DS | D1 | n | tS |
| DN 50 | 165 | 125 | 4 | 21 |

**ES-40 | PN 40 | Cast iron**

| Size | a | m1 | m2 | (l) | b2 | Ød | f1 | f | h2 |
|---|---|---|---|---|---|---|---|---|---|
| ES-4002 | 135 | 115 | 55 | 597 | 50 | 32 | 197 | 265 | 180 |
| ES-4003 | 195 | 175 | 115 | 657 | | | | | |
| ES-4004 | 255 | 235 | 175 | 717 | | | | | |
| ES-4005 | 315 | 295 | 235 | 777 | | | | | |
| ES-4006 | 375 | 355 | 295 | 837 | | | | | |
| ES-4007 | 435 | 415 | 355 | 897 | | | | | |
| ES-4008 | 495 | 475 | 415 | 957 | | | | | |
| ES-4009 | 555 | 535 | 475 | 1017 | | | | | |

| Discharge flange PN 40 | | | | |
|---|---|---|---|---|
| DND | DD | D1 | n | tD |
| DN 40 | 150 | 110 | 4 | 19 |

| Suction flange PN 16 | | | | |
|---|---|---|---|---|
| DNS | DS | D1 | n | tS |
| DN 65 | 185 | 145 | 4 | 21 |

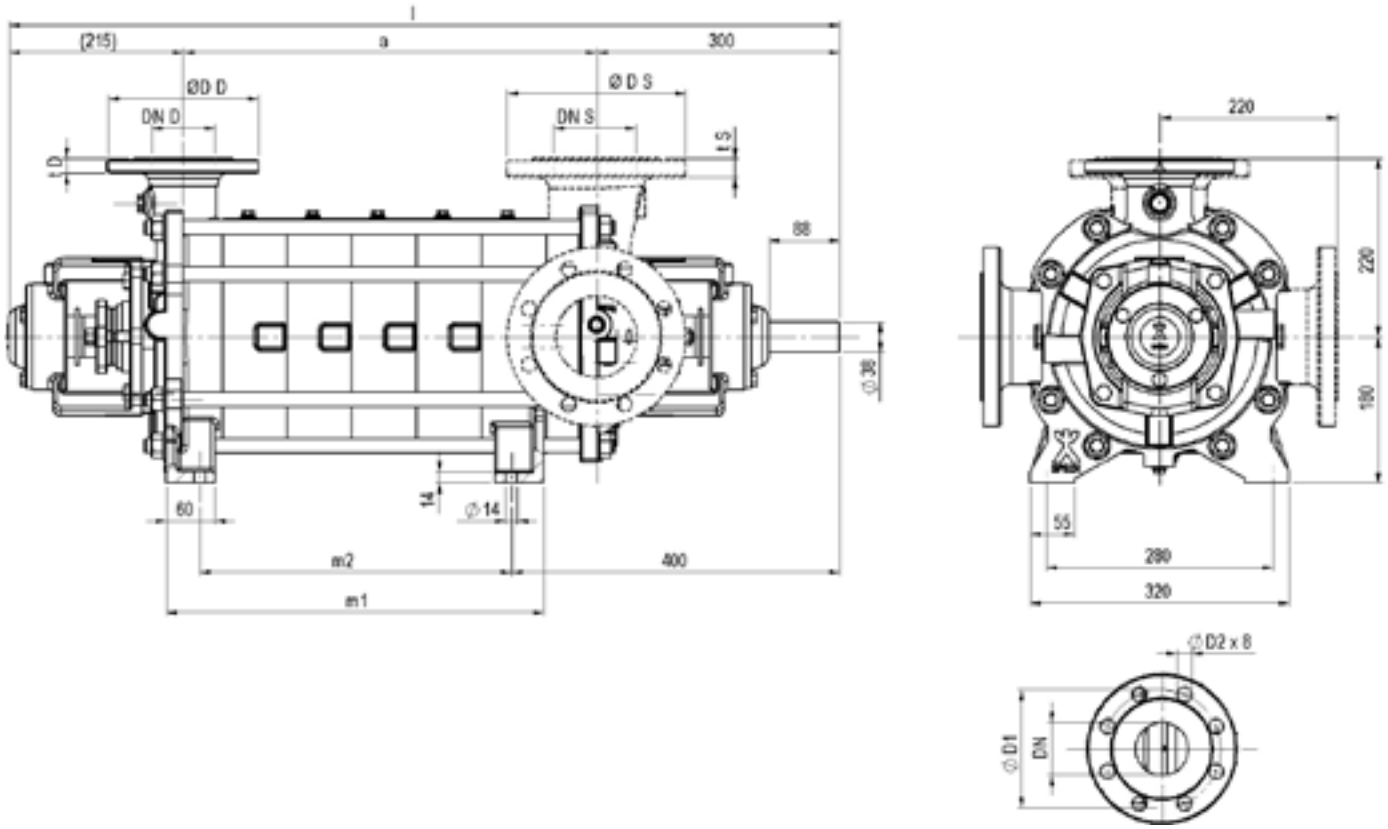
**ES-50 | PN 40 | Cast iron**

| Size | a | m1 | m2 | (l) | b2 | Ød | f1 | f | h2 |
|---|---|---|---|---|---|---|---|---|---|
| ES-5002 | 153 | 133 | 63 | 625 | 55 | 32 | 197 | 275 | 200 |
| ES-5003 | 218 | 198 | 128 | 690 | | | | | |
| ES-5004 | 283 | 263 | 193 | 755 | | | | | |
| ES-5005 | 348 | 328 | 258 | 820 | | | | | |
| ES-5006 | 413 | 393 | 323 | 885 | | | | | |
| ES-5007 | 478 | 458 | 388 | 950 | | | | | |
| ES-5008 | 543 | 523 | 453 | 1015 | | | | | |

| Discharge flange PN 40 | | | | |
|---|---|---|---|---|
| DND | DD | D1 | n | tD |
| DN 50 | 165 | 125 | 4 | 25 |

| Suction flange PN 16 | | | | |
|---|---|---|---|---|
| DNS | DS | D1 | n | tS |
| DN 80 | 200 | 160 | 8 | 25 |

# ES-65 – Dimensions




**ES-65 | PN 40 | Spheroidal graphite cast iron**

| Size | a | m1 | m2 | (l) | Ød | f1 | f | h2 |
|---|---|---|---|---|---|---|---|---|
| ES-6502 | 190 | 146 | 65 | 705 | 38 | 215 | 300 | 220 |
| ES-6503 | 270 | 226 | 145 | 785 | | | | |
| ES-6504 | 350 | 306 | 225 | 865 | | | | |
| ES-6505 | 430 | 386 | 305 | 945 | | | | |
| ES-6506 | 510 | 466 | 385 | 1025 | | | | |
| ES-6507 | 590 | 546 | 465 | 1105 | | | | |

| Discharge flange PN 40 | | | | |
|---|---|---|---|---|
| DND | DD | D1 | n | tD |
| DN 65 | 185 | 145 | 8 | 24 |

| Suction flange PN 16 | | | | |
|---|---|---|---|---|
| DNS | DS | D1 | n | tS |
| DN 100 | 220 | 180 | 8 | 24 |

**ES-65 | PN 63 | Spheroidal graphite cast iron**

| Size | a | m1 | m2 | (l) | Ød | f1 | f | h2 |
|---|---|---|---|---|---|---|---|---|
| ES-6507 | 590 | 546 | 465 | 1105 | 38 | 215 | 300 | 220 |
| ES-6508 | 670 | 626 | 545 | 1185 | | | | |
| ES-6509 | 750 | 706 | 625 | 1265 | | | | |
| ES-6510 | 830 | 786 | 705 | 1345 | | | | |

| Discharge flange PN 63 | | | | |
|---|---|---|---|---|
| DND | DD | D1 | n | tD |
| DN 65 | 205 | 160 | 8 | 28 |

| Suction flange PN 63 | | | | |
|---|---|---|---|---|
| DNS | DS | D1 | n | tS |
| DN 100 | 253 | 200 | 8 | 33 |

**Flanges**
Flanges in acc. with EN 1092 PN 40.
Flanges in acc. with EN 1092-2, drilled in acc. with ANSI 150 lbs or 300 lbs on request.

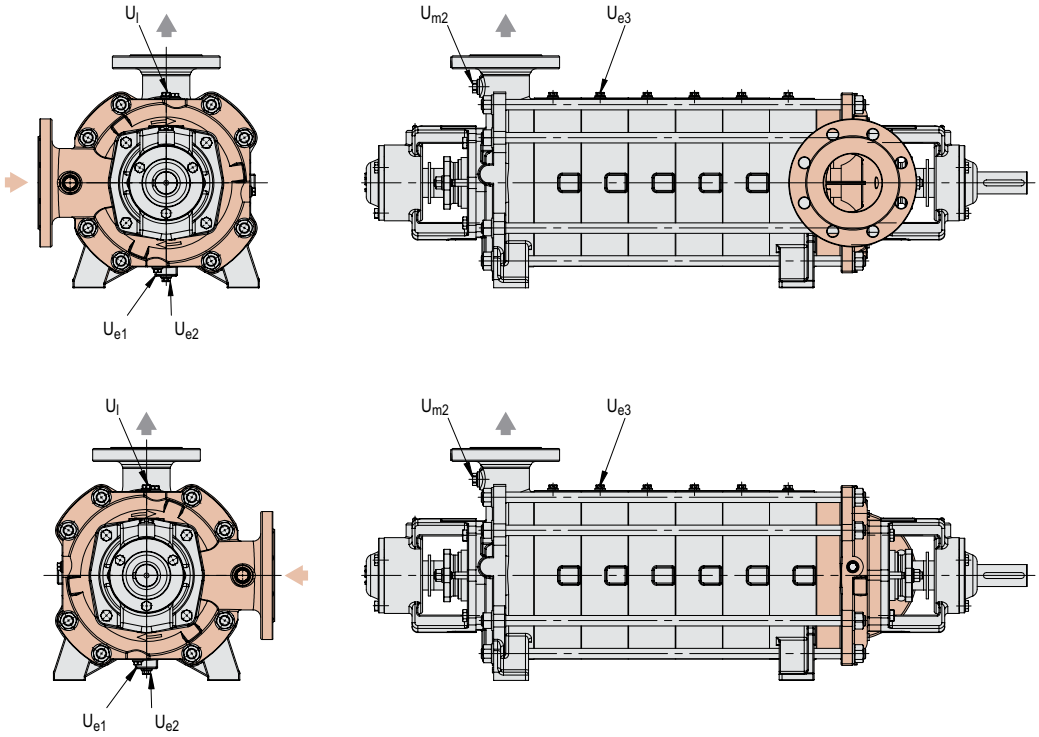
**Direction of rotation**
Direction of rotation is clockwise with view towards pump shaft

# Connections

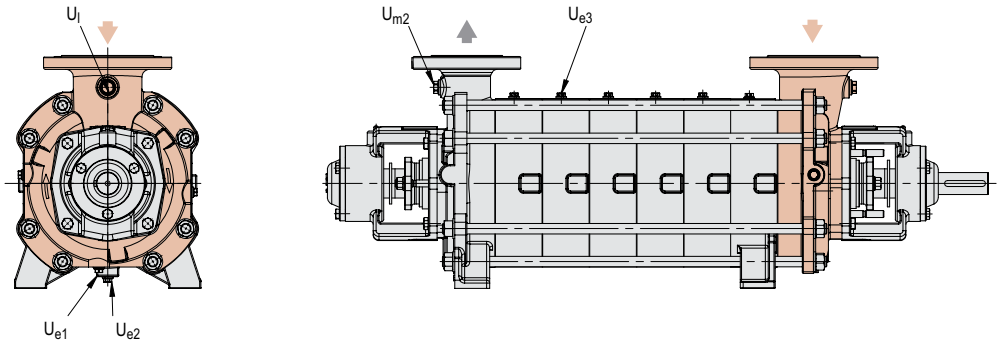
**Position of inlet and outlet nozzle**
The outlet nozzle is always on the top. The inlet nozzle can be rotated 90°.

| | Number of stages | |
|---|---|---|
| | 2 | ≥ 3 |
| Position of inlet nozzle | Nozzle at the side | Nozzle at the side / on top |
| Postion of outlet nozzle | on top | on top |

**Inlet nozzle at the side**




**Inlet nozzle on top**




| Designation | Connection | Sizes | | |
|---|---|---|---|---|
| | | ES-32 | ES-40/ ES-50 | ES-65 |
| $U_{e1}$ | Drainage (screw plug) | G 1/4 | G 1/4 | G 1/4 |
| $U_{e2}$ | Drainage (screw plug) | - | G 1/4 | G 1/4 |
| $U_{e3}$ | Drainage (screw plug) | G 1/4 | G 1/4 | G 1/4 |
| $U_l$ | Vent (screw plug) | G 1/4 | G 1/4 | G 1/4 |
| $U_{m1}$ | Pressure gauge connection | G 3/8 | G 3/8 | G 1/2 |
| $U_{m2}$ | Pressure gauge connection | G 1/2 | G 1/2 | G 1/2 |

# Produktprogramm

### Peripheralradpumpen
- Kleinpumpen
- Wärmeträgerpumpen
- Eintauchpumpen

### Radialradpumpen
- Kleinpumpen
- Wärmeträgerpumpen
- Kesselspeisepumpen

### Seitenkanalpumpen
- Pumpen nach Norm EN 734
- Mit NPSH-Vorstufe
- Kleinpumpen

### Verdrängerpumpen
- Drehschieberpumpen
- Zahnradpumpen
- Schwingankerpumpen

### Flüssigkeitsring-Vakuum-pumpen
- Blockbauweise
- Grundplattenbauweise
- Vakuumanlagen

# Production Range

### Regenerative Turbine Pumps
- Small Pumps
- Heat Transfer Pumps
- Vertical Pumps

### Centrifugal Pumps
- Small Pumps
- Heat Transfer Pumps
- Boiler Feed Pumps

### Side Channel Pumps
- Pumps - Standard EN 734
- With NPSH-suction stage
- Small Pumps

### Displacement Pumps
- Roller Vane Pumps
- Gear Pumps
- Oscillating Piston Pumps

### Liquid Ring Vacuum Pumps
- Closed Coupled Version
- Base Plate Version
- Vacuum units

# Physikalisch-technische Einheiten

### Flüssigkeitspumpen

| | | | | | | |
|---|---|---|---|---|---|---|
| **Q** | Förderstrom | $m^3/h$ | → | U.S.GPM | x | 4,4029 |
| | | l/min | → | U.S.GPM | x | 0,2642 |
| | | l/h | → | U.S.GPM | x | 0,0044 |
| | | U.S.GPM | → | $m^3/h$ | x | 0,2271 |
| | | U.S.GPM | → | l/min | x | 3,7854 |
| | | U.S.GPM | → | l/h | x | 227,13 |
| **p** | Druck | bar | → | psi | x | 14,504 |
| | | psi | → | bar | x | 0,0690 |

### Vakuumpumpen

| | | | | | | |
|---|---|---|---|---|---|---|
| **Q** | Saugvermögen | $m^3/h$ | → | CFM | x | 0,5886 |
| | | CFM | → | $m^3/h$ | x | 1,6990 |
| **p** | Ansaugdruck | mbar | → | inch Hg a | x | 0,0295 |
| | | inch Hg a | → | mbar | x | 33,863 |

### Alle Pumpen

| | | | | | | |
|---|---|---|---|---|---|---|
| **H** | Förderhöhe | m | → | feet | x | 3,2808 |
| | | feet | → | m | x | 0,3048 |
| **P** | Leistung | kW | → | HP | x | 1,3410 |
| | | W | → | HP | x | 0,0013 |
| | | HP | → | kW | x | 0,7457 |
| | | HP | → | W | x | 745,70 |
| | Gewicht | kg | → | lbs | x | 2,2046 |
| | | lbs | → | kg | x | 0,4536 |
| | Länge | mm | → | inch | x | 0,0393 |
| | | inch | → | mm | x | 25,400 |

# Physical-technical units

### Liquid pumps

| | | | | | | |
|---|---|---|---|---|---|---|
| **Q** | Capacity | $m^3/h$ | → | U.S.GPM | x | 4,4029 |
| | | l/min | → | U.S.GPM | x | 0,2642 |
| | | l/h | → | U.S.GPM | x | 0,0044 |
| | | U.S.GPM | → | $m^3/h$ | x | 0,2271 |
| | | U.S.GPM | → | l/min | x | 3,7854 |
| | | U.S.GPM | → | l/h | x | 227,13 |
| **p** | Pressure | bar | → | psi | x | 14,504 |
| | | psi | → | bar | x | 0,0690 |

### Vacuum pumps

| | | | | | | |
|---|---|---|---|---|---|---|
| **Q** | Suction capacity | $m^3/h$ | → | CFM | x | 0,5886 |
| | | CFM | → | $m^3/h$ | x | 1,6990 |
| **p** | Inlet pressure | mbar | → | inch Hg a | x | 0,0295 |
| | | inch Hg a | → | mbar | x | 33,863 |

### All Pumps

| | | | | | | |
|---|---|---|---|---|---|---|
| **H** | Total Head | m | → | feet | x | 3,2808 |
| | | feet | → | m | x | 0,3048 |
| **P** | Power | kW | → | HP | x | 1,3410 |
| | | W | → | HP | x | 0,0013 |
| | | HP | → | kW | x | 0,7457 |
| | | HP | → | W | x | 745,70 |
| | Weight | kg | → | lbs | x | 2,2046 |
| | | lbs | → | kg | x | 0,4536 |
| | Length | mm | → | inch | x | 0,0393 |
| | | inch | → | mm | x | 25,400 |


Technische Änderungen und Irrtum vorbehalten. Subject to technical modifications and error.

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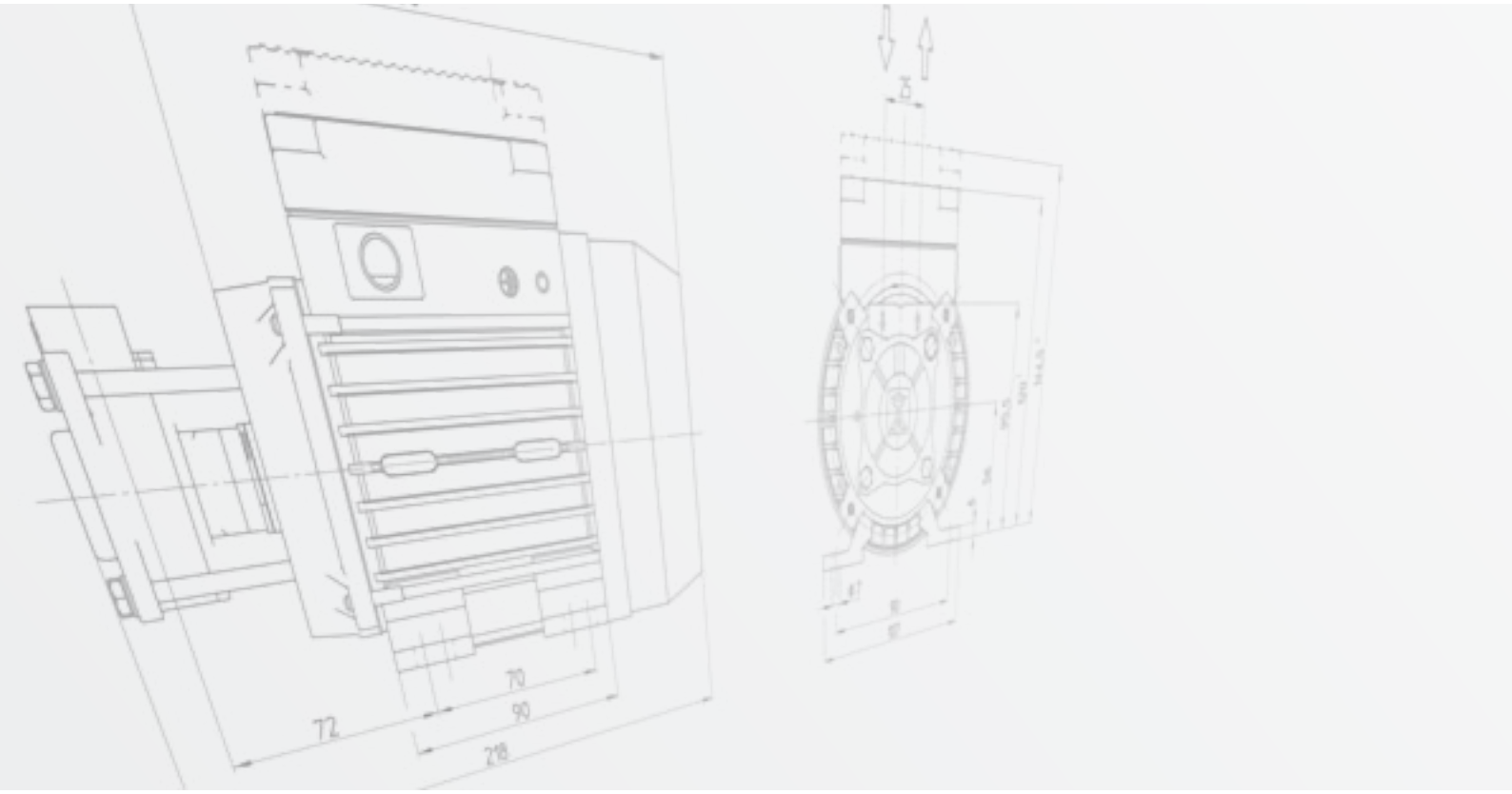
Ausgabe
Edition
10/2015
Ersatz für Ausgabe
replaces edition
02/2015




10/2015 – 1096.1091

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