FLOWSERVE

SIHI® Z-LINE
Modular Industrial Pumps

Experience In Motion

SIHI® Z-Line– Robust, Reliable, Efficient ...

Broad application suitability underpins the SIHI Z-line range of end-suction centrifugal pumps. Demanding temperature profile, hydraulic efficiency, low NPSH make this range a perfect choice for those making an ecologically balanced decision. Designed according to EN733 and ISO9908, assures long-term reliability, process consistency, and simple maintenance.

Three configurations of the SIHI Z-Line range combine modularity with application fit. The general purpose end- suction design is complemented by two additional models for hot water and hot oil. All three designs are fundamentally different in which to match the different demands of each application.

Developed in accordance with some strict ISO, DIN, and EN standards guarantees the quality and market inter- changeability of the SIHI Z-Line. Highly effective seal chamber design is at the heart of this range, where seal face lubrication is of paramount importance for reliability. Overhung single-stage impeller permits only one set of bearings, one seal configuration, and back pull-out together with the other benefits of end-suction.

Over 38 hydraulic sizes are available long or close-coupled, horizontal or vertical in-line, in various materials, and with multiple sealing options.

- Water supply
- Irrigation
- Food and beverage
- Potable water
- Light Chemical
- Pharmaceutical
- Metal manufacture
- Rubber & Plastic
- Marine
- Paper & Pulp
- Tank Farm Storage
- Building and construction services
- Textile

Performance Range

- Capacity: max. 740 m^3/h (3258 Us gpm)[1])
- Head: max. 140 m (459 ft)[2])
- Speed: max. 3600 rpm
- Casing pressures: max. 40 bar (580 psi)
- Temperatures: max. + 350 °C (662 °F)[3])

1) For higher capacities up to 2200 m^3/h (9687 Us gpm) we recommend the CBT range

2) For higher heads up to 1600 m (5249 ft) we recommend the Multi range

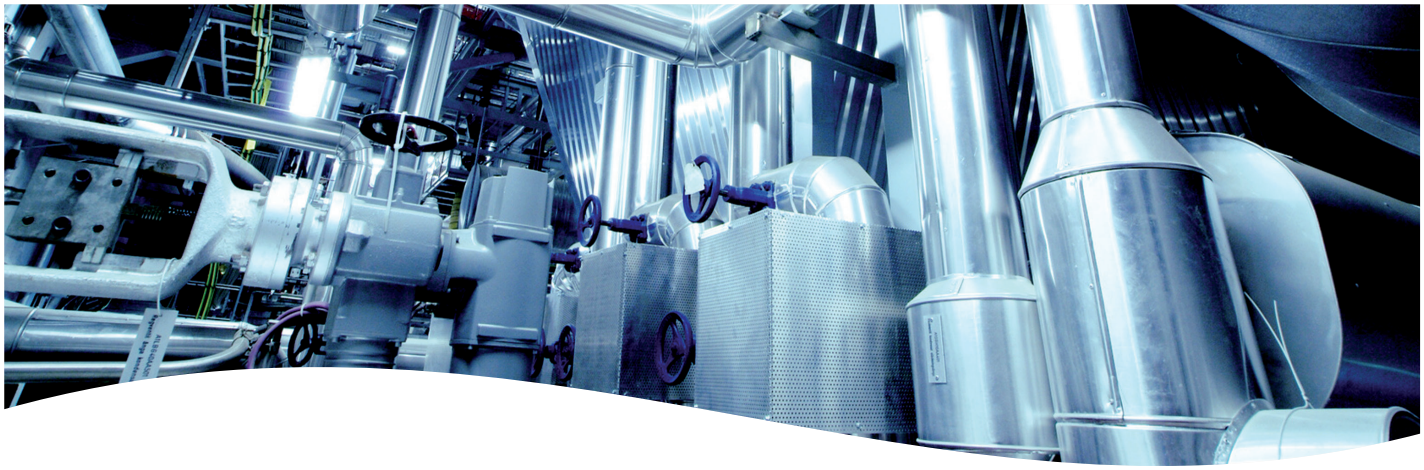
3) For higher temperatures up to 400 °C (752 °F) we recommend the ISOchem range

Materials

- Cast iron
- Ductile iron
- Stainless steel

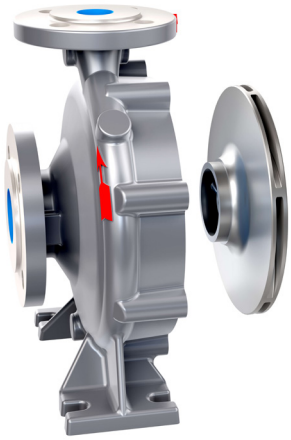
Sealing options

- Mechanical seal
- Gland packing



General Purpose Pumps

Horizontal End Suction Volute Casing Pumps *according to EN 733*



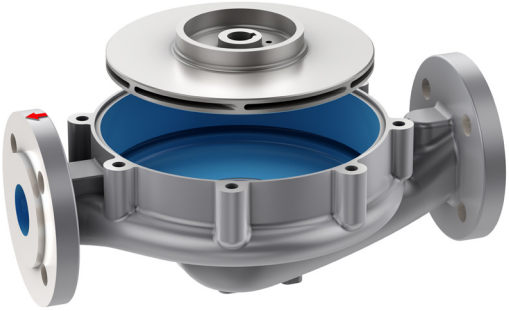
170°C
338 °F

ZLN long-coupled design with single or double mechanical seal, or packed gland. Optional possibilities include seal quench, cooling, heating, flushing, and throttling.

120°C
248 °F

ZLK close-coupled design with single mechanical seal.

In-Line Volute Casing Pumps *according to EN 733*



120°C
248 °F

ZLI close-coupled design with single mechanical seal.

General Purpose Pumps	Capacity (maximum)	Head (maximum)	Speed (maximum)	Temperature (maximum)	Casing Pressure	Sealing	Materials
ZLN	740 m³/h (3258 US gpm)	140 m (459 ft)	3600 rpm	170 °C (338 °F)	16 bar (232 psi)	Mechanical seal, gland packing	Cast iron, Ductile Iron stainless steel
ZLK	740 m³/h (3258 US gpm)	90 m (295 ft)	3600 rpm	120 °C (248 °F)	16 bar (232 psi)	Mechanical seal	Cast iron, stainless steel
ZLI	330 m³/h (1453 US gpm)	60 m (197 ft)	3600 rpm	120 °C (248 °F)	16 bar (232 psi)	Mechanical seal	Cast iron, stainless steel

ZLN Design Features

Suitable for temperatures up to 170 °C (338 °F), this diverse range of general purpose pumps offers the user a low life-cycle cost solution. Capital cost, power consumption, maintenance, reliability, and waste, have all been considered during the extensive development phase.

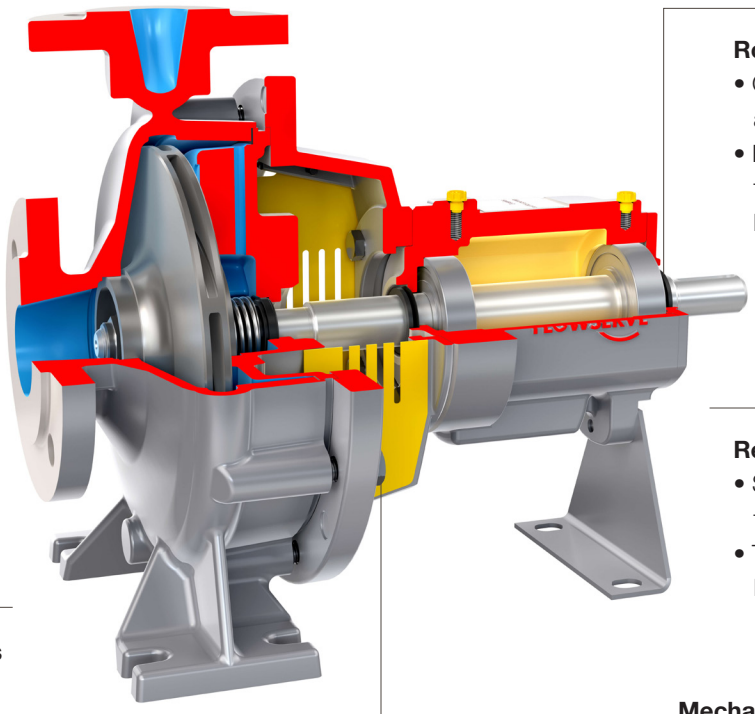
Long lasting efficiency
- Closed impeller permitting 'neck' wear-rings to be retrofitted

High efficiency & low power
- Advanced fluid dynamic design

Low NPSH
- High quality impeller and suction profile

Extended seal life
- Vortex breakers and modern seal chamber
- Low shaft deflection

Flexible sealing options
- Single or double mechanical seals
- component seals
- Packed gland



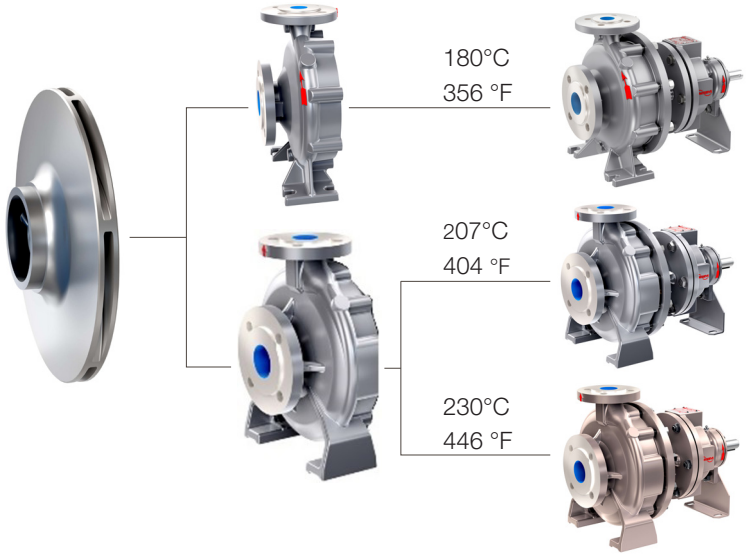
Robust rotating assembly
- Oversized ball bearings and shaft diameter
- Bearing bracket rigidly fixed to the casing cover for stable back pull-out transportation

Reliability
- Seal area shaft deflection to ISO 5199
- Totally agree with EN733 / DIN24255 and ISO9908

Mechanical seal protection
- Improved security thanks to use a polypropylene seal guard

Hot Water Pumps up to 230ºC (446ºF)

Horizontal End Suction Volute Casing Pumps *according to EN 733 or EN 22858*

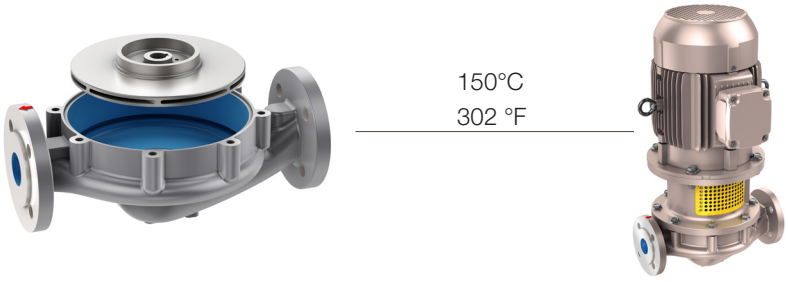


ZHN long-coupled. Designed specifically for use with pressurized high-temperature water without the need to cool the single mechanical seal. Main dimensions in accordance with EN 733.

ZDN long-coupled. Designed specifically for use with pressurized high-temperature water without the need to cool the single mechanical seal. Main dimensions in accordance with EN 22858.

ZEN long-coupled. Designed specifically for use with pressurized high-temperature water without the need to cool the single mechanical seal. Main dimensions in accordance with EN 22858.

In-Line Volute Casing Pumps *according to EN 733*



ZDI close-coupled design with single mechanical seal that does not need to be cooled.

Hot Water Pumps	Capacity (maximum)	Head (maximum)	Speed (maximum)	Temperature (maximum)	Casing Pressure	Sealing	Materials
ZHN	600 m³/h (2642 US gpm)	95 m (311 ft)	3600 rpm	180 °C (356 °F) un-cooled	16 bar (232 psi)	Mechanical seal	Ductile iron
ZDN	600 m³/h (2642 US gpm)	90 m (295 ft)	3600 rpm	207 °C (404 °F) un-cooled	25 bar (362 psi)	Mechanical seal	Ductile iron
ZEN	600 m³/h (2642 US gpm)	90 m (295 ft)	3600 rpm	230 °C (446 °F) un-cooled	40 bar (580 psi)	Mechanical seal	Ductile iron
ZDI	140 m³/h (616 US gpm)	60 m (196 ft)	3600 rpm	150 °C (302 °F) un-cooled	25 bar (362 psi)	Mechanical seal	Ductile iron

ZHN Design Features

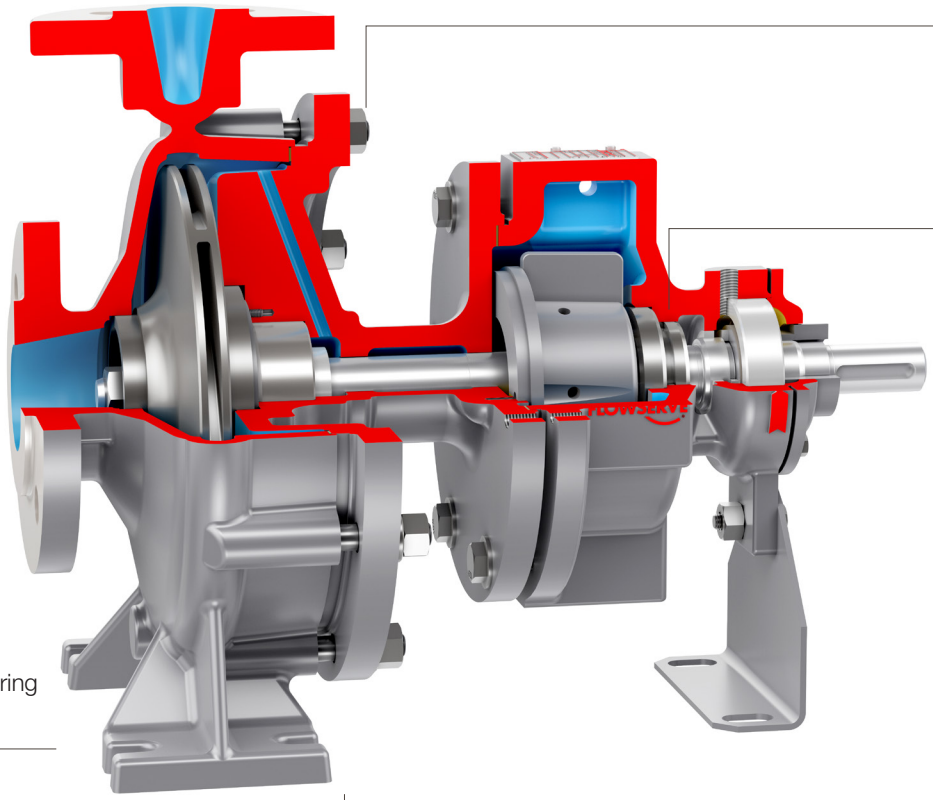
Superior hot water circulation, up to 230°C (446 °F) with a standard un-cooled mechanical seal, gives the unique ability to minimize life-cycle cost. Internal separation and removal of undesirable vapour (steam) enhances mechanical seal face lubrication and improves reliability. High-level hydraulic efficiency ensures that running costs are predictably low.

Long lasting efficiency
- Closed impeller permitting 'neck' wear-rings to be retrofitted

High efficiency & low power
- Advanced fluid dynamic design

Low NPSH
- High quality impeller and suction profile

Robust rotating assembly
- Long-life ball bearing
- Sleeve bearing



Simple removal
- Back pull-out design

Un-cooled seal
- Vapour separation and removal in this unique seal chamber
- Large volume seal chamber located at cool drive-end
- Low shaft deflection

Long life
- Anti-friction bearing

Reduced spare parts cost
- Standard mechanical seal to DIN 24960

Stable with temperature fluctuations
- Provision for thermal expansion

Thermal oil Pumps up to 350ºC (662ºF)

Horizontal End Suction Volute Casing Pumps *according to EN 733*

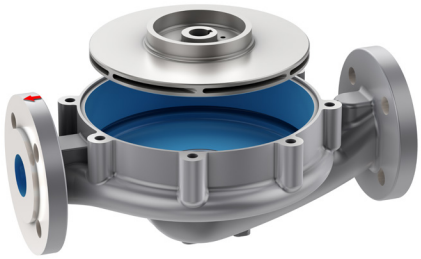
350°C
662 °F

ZTN long-coupled. With auxiliary seal security, these units are designed specifically for use with high-temperature thermal oils. Main dimensions in accordance with EN 733.

350°C
662 °F

ZTK close-coupled. The addition of a shaft mounted air-cooling fan, together with the auxiliary seal security, makes the ZTK a perfect solution for high-temperature thermal oils. Main dimensions in accordance with EN 733.

In-Line Volute Casing Pumps *according to EN 733*



350°C
662 °F

ZTI close-coupled in-line. The addition of a shaft- mounted air-cooling fan, together with the auxiliary sealing options, makes the ZTI an ideal selection for high-temperature thermal oils where space is at a premium.

Thermal Oil Pumps	Capacity (maximum)	Head (maximum)	Speed (maximum)	Temperature (maximum)	Casing (maximum)	Sealing Pressure	Materials
ZTN	740 m³/h (3258 US gpm)	90 m (295 ft)	3600 rpm	350 °C (662 °F) un-cooled	16 bar (232 psi)	Mechanical seal, Seal ring	Ductile iron
ZTK	200 m³/h (880 US gpm)	60 m (196 ft)	3600 rpm	350 °C (662 °F) un-cooled	16 bar (232 psi)	Mechanical seal	Ductile iron
ZTI	200 m³/h (880 US gpm)	60 m (196 ft)	3600 rpm	350 °C (662 °F) un-cooled	16 bar (232 psi)	Mechanical seal	Ductile iron

ZTN Design Features

Operational safety, environmental concern, and long-term reliability, are the three aspects which make this pump an ideal choice for thermal oils up to 350 °C (662 °F). High-end hydraulic efficiency is complimented by almost maintenance-free operation, in which to give a low Life-Cycle cost solution. Shaft sealing is a combination of mechanical and secondary lip seals,

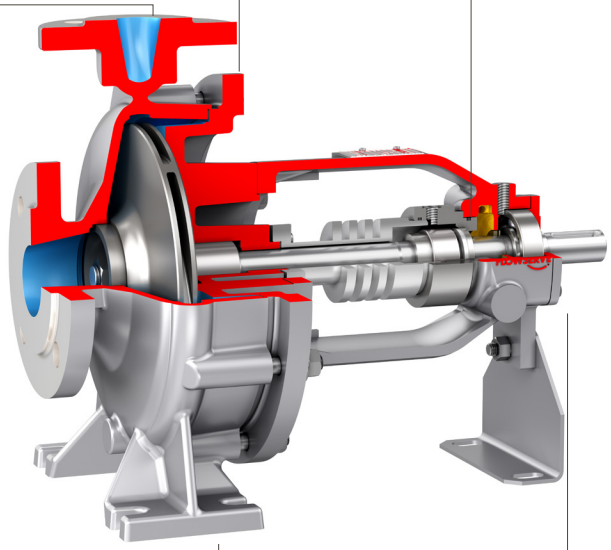
Long lasting efficiency
- Closed impeller permitting 'neck' wear-rings to be retrofitted

Simple removal
- Back pull-out design

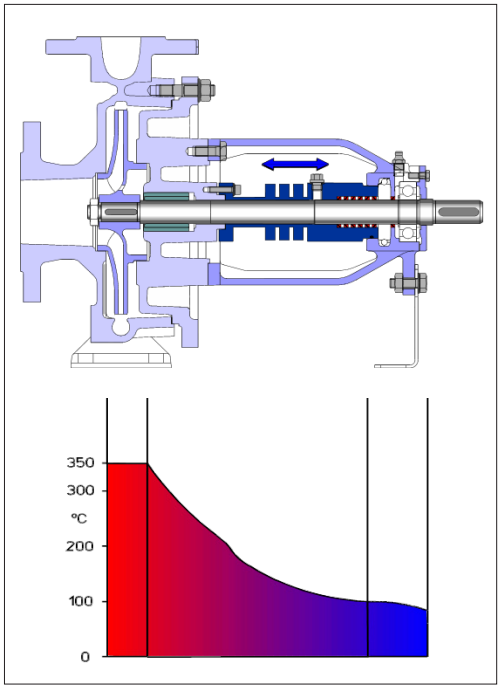
Triple protection
- Mechanical seal backed by lip seals and bearing assembly

High efficiency & low power
- Advanced fluid dynamic design

Low NPSH
- High quality impeller and suction profile



Robust rotating assembly
- Long-life ball bearing
- Sleeve bearing

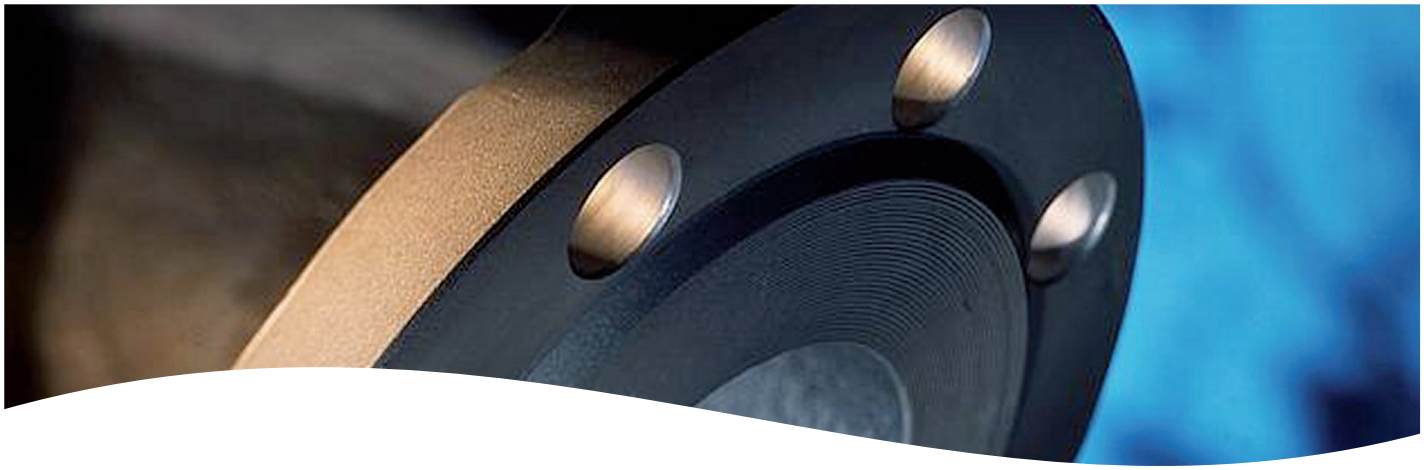


Stable with temperature fluctuations
- Provision for thermal expansion

Reduced spare parts cost
- Standard mechanical seal to DIN 24960 and basic lip seals

* No external cooling

Enhanced seal life
- Heat dissipation with air-fin cooling



Features

- High efficiency
- Seal area deflection to ISO 5199
- Low NPSH
- Modular family
- Back pull-out
- Global service network
- ATEX

Benefits

- Reduced power consumption
- High reliability & extended MTBF
- Reduced installation costs
- Low inventories, short delivery times
- Ease of maintenance
- Local and rapid support
- Suitable for explosive atmospheres

Horizontal End Suction Volute Casing Pumps

according to EN 733

General Purpose Pumps

ZLN long-coupled design up to 170°C (338 °F)

ZLK close-coupled design up to 120°C (248 °F)

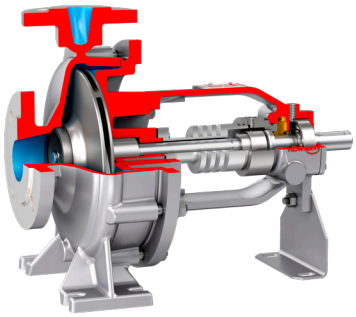
Hot Water Pumps

ZHN long-coupled design up to 180°C (356 °F)

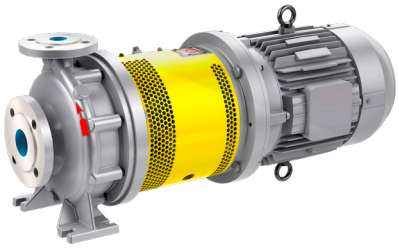
ZDN long-coupled design up to 207°C (404.6 °F)

ZEN long-coupled design up to 230°C (446 °F)

Thermal Oil Pumps



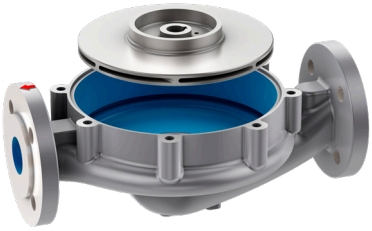
ZTN long-coupled design up to 350°C (662 °F)



ZTK close-coupled design up to 350°C (662 °F)

In-Line Volute Casing Pumps

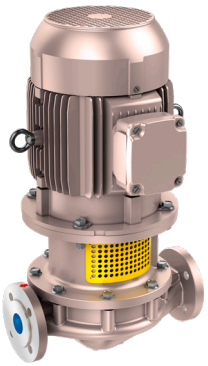
based on EN 733



General Purpose Pumps

ZLI close-coupled design up to 120°C (248 °F)

Hot Water Pumps



ZDI close-coupled design up to 150°C (302 °F)

Thermal Oil Pumps

ZTI close-coupled design up to 350°C (662 °F)

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