FLOWSERVE

TECHNICAL BULLETIN

Durco® Mark 3™ ISO
Mechanically Sealed Chemical Process Pumps

ISO 2858/5199

Experience In Motion

The premier name in ISO chemical process pumps

The Durco Mark 3 ISO chemical process pump provides outstanding hydraulic performance, unrivaled reliability and low total cost of ownership. Conforming to ISO 2858 and ISO 5199 design criteria, the Durco Mark 3 ISO pump incorporates many proven reliability and performance-enhancing features.

- Renewable, high-efficiency performance over the life of the pump with the reverse vane impeller
- Optimal, predictable seal chamber pressure that is re-established after every impeller setting
- Maximal mechanical seal life due to an ideal seal environment created by the SealSentry™ seal chamber
- Two-piece bearing bracket reduces inventory cost and facilitates retrofit for ISO 2858 compliant pumps
- Robust shaft and bearing designs that minimize shaft deflection and extend mechanical seal and bearing lives
- Fast and accurate impeller setting with the industry's most innovative external impeller adjustment mechanism
- In-shop reverse vane impeller adjustment with the only pump that takes full advantage of the back pullout design

Global design, unmatched performance

Durco Mark 3 ISO chemical process pumps are available in many designs that can be configured to meet precise application requirements.

- Long coupled
- Close coupled
- Unitized self-priming
- Recessed impeller
- Centerline mounted
- Vertical sump

Operating parameters

- Flows to 1,400 m^3/h (6,160 US gpm)
- Heads to 220 m (720 ft)
- Pressures to 25 bar (365 psi)
- Temperatures from -80°C to 400°C (-110°F to 752°F)
- Discharge sizes from 20 to 200 mm (0.75 to 8 in.)

Three hydraulics

- A hydraulics: extended flow
- B hydraulics: ISO 2858 for reverse vane and open impeller
- C hydraulics: ISO 2858 for closed impeller

Available materials of construction

- Cast iron
- Ductile Iron
- Carbon steel
- 304 and 316 stainless steels
- Duplex and super duplex stainless steels
- Alloy 20
- Nickel and nickle-based alloys such as Alloy C-276 and Alloy B-2
- Reactive alloys such as titanium, palladium stabilized titanium and zirconium

Standards compliance

Durco Mark 3 ISO pumps conform to ISO 2858 and ISO 5199 design criteria and are CE marked. Compliance with the following directives is also available:

- ATEX II 2G T1 –T5 (2014/34/EU)
- Food grade (1935/2004/EC)
- Drinking water (98/83/EC)
- CUTR

Typical applications

- Acid transfer
- Brine
- Chemical processing
- Corrosive services
- Food and beverage processing
- Hydrocarbon processing
- Petrochemical processing
- Pharmaceuticals
- Polymers
- Pulp and paper
- Seawater
- Slurries
- Solvents
- Steel and primary metals
- Water and wastewater treatment

Designed for demanding applications

High-pressure components, a generous corrosion allowance, and a wide range of materials of construction are just some of the features and options that ensure Durco Mark 3 ISO pumps perform reliably under demanding conditions.

- ISO 2858 and extended flow hydraulics
- Standard (16 bar; 232 psi) or high-pressure (25 bar; 363 psi) casing
- Advanced SealSentry seal chambers
  - Self-flushing, -venting and -draining designs with flow modifiers extend mechanical seal life
  - Accommodate a wide variety of seal types
  - Standard high-pressure (25 bar; 363 psi)
- 3 mm (0.12 in.) corrosion allowance
- Corrosion- and erosion-resistant wet end materials
- Available centerline mounted casing
- Available drain, gauge and recirculation connections

Configurations

We know you have many different types of applications in your plant. That's why we offer the Durco Mark 3 ISO pump in four mechanically sealed configurations. All use the same energy-efficient hydraulics that deliver high performance and reliability with low energy costs. Available in a variety of materials of construction and with single, double or cartridge seals to suit application requirements.

Long coupled

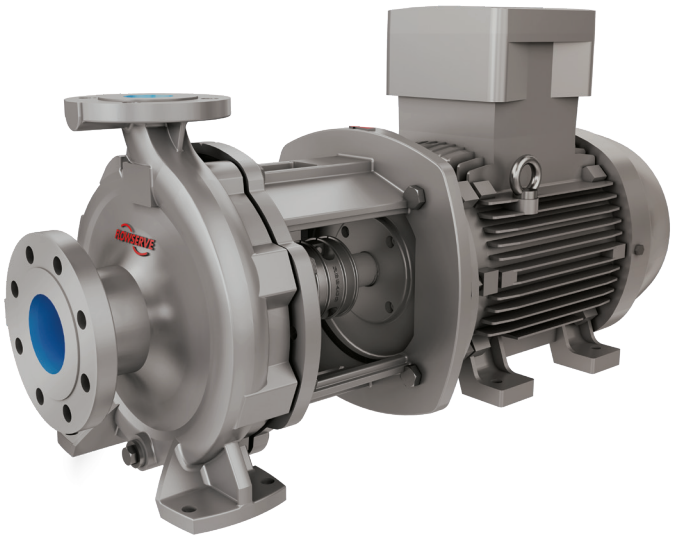
The workhorse of chemical plants and other industries around the world, this proven model is ideal for handling aggressive liquids. Its back pullout design minimizes downtime by enabling removal of the rotating element without disturbing the casing, piping or motor. 45 sizes available.

Operating parameters

Flows to:	1,400 m^3/h (6,160 gpm)
Heads to:	220 m (720 ft)
Pressure to:	25 bar (365 psi)
Temperature:	-80°C to 400°C (110°F to 752°F)

Close coupled

Durco Mark 3 ISO close coupled pumps provide a compact arrangement ideal for installations where space is at a premium. They are fitted with readily available standard electric motors, so you can choose an enclosure to suit the application. 37 sizes available.

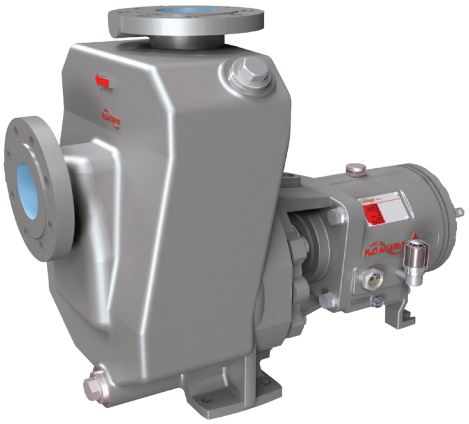


Operating parameters

Flows to:	570 m^3/h (2,500 gpm)
Heads to:	100 m (330 ft)
Pressure to:	25 bar (365 psi)
Temperature:	-20°C to 160°C (-5°F to 320°F)

Self-primer

Costing less to buy, install and maintain than submersible pumps, Durco Mark 3 ISO unitzed self-priming pumps are designed to draw liquid from sources below ground level or with no positive pressure to naturally prime the pump.
7 sizes available.

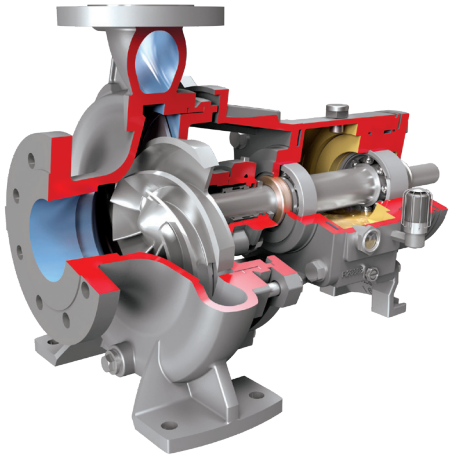


Operating parameters

Flows to:	100 m^3/h (440 gpm)
Heads to:	100 m (330 ft)
Pressure to:	25 bar (365 psi)
Temperature:	-80°C to 400°C (110°F to 752°F)

Recessed impeller

Combining a wide clearance casing with a vortex action that ensures less than 20% of the process fluid contacts the impeller, the recessed impeller pump is well-suited for applications with larger particles, stringy or fibrous slurries, or friable solids that require low shear pumping. 10 sizes available.



Operating parameters

Flows to: 750 m^3/h (3,300 US gpm)

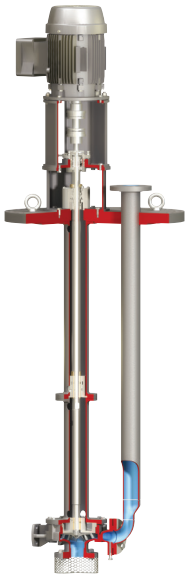
Heads to: 100 m (330 ft)

Pressure to: 25 bar (365 psi)

Temperature: -80°C to 400°C (110°F to 752°F)

Vertical sump

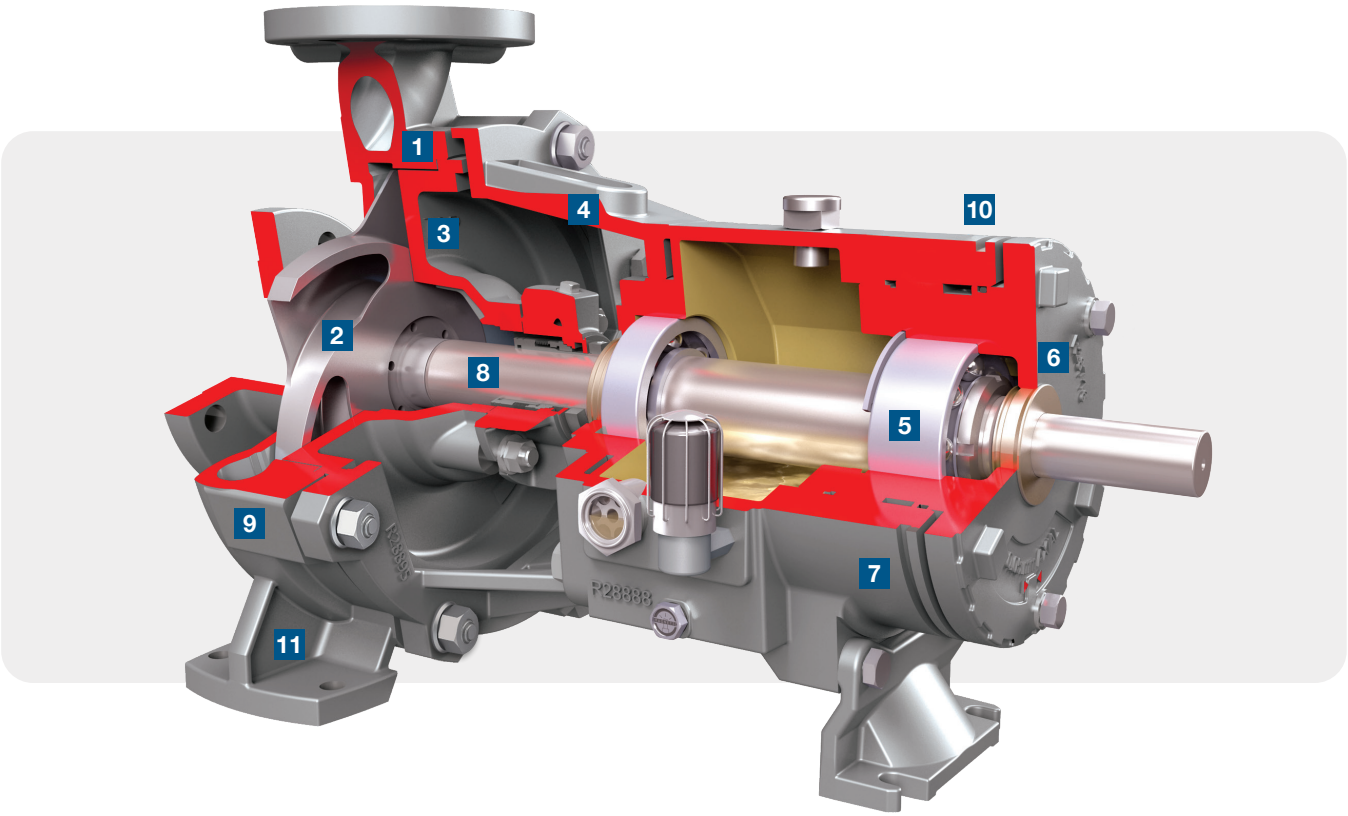
With column lengths up to 10 m (32 ft), Durco Mark 3 ISO vertical sump pumps can be customized to meet a wide range of needs. For oil and gas installations, they are offered with many ISO 13709/API 610 compliant features.
40 sizes available.



Operating parameters

Flows to:	1,400 m^3/h (6,160 gpm)
Heads to:	250 m (820 ft)
Pressure to:	25 bar (365 psi)
Temperature:	-40°C to 400°C (-40°F to 752°F)

Long coupled design



1 — Volute casing

- Standard PN 16 and PN 25 flanges per ISO 1092
- Drilling per ASME 150 and 300 flanges per ISO 1759 (ASME B16.5)
- Drain and recirculation connections
- Optional casing designs
  - Jacketed — for applications in which the pumped fluid must be heated or cooled to maintain optimal fluid viscosity.
  - Centerline mounted — for applications in which loads caused by thermal expansion need to be reduced. A and B hydraulics only.
  - Recessed impeller — for low-shear pumping of friable solids and trouble-free pumping of stringy or fibrous slurries. A hydraulics only.
  - High-pressure — A and B hydraulics only.

2 — Impeller

- Available hydraulics to ISO 2858 and extended flows
- Available impeller types
  - Reverse vane
  - Open
  - Closed with balancing holes
- Impeller locking
  - Standard screw of open, reverse vane and recessed impeller
  - Key drive for open and closed impeller
  - Alternate anti-rotating locking
- External micrometer adjustment of open and reverse vane impellers with calibrated bearing carrier

3 — SealSentry seal chambers

- SealSentry seal chambers with flow modifiers extend seal life by expelling solids and preventing gas accumulation at the seal faces.
- Conical and cylindrical bore seal chamber designs accommodate a wide variety of seal types.

4 — Adapter

- Robust and structurally optimized design
- Ensures maximum compatibility and interchangeability with power end

5 — Ball bearing

Available with oil, greased and life-greased lubrication. Heavy-duty bearing with increased oil change rate as an option. Large oil sump.

Grease lubricated:

- Standard lifetime L10h > 17,500 h
- Temperature from -40°C to 180°C (-40°F to 356°F)
- Mineral, synthetic or food grade

Oil lubricated:

- Lifetime to L10h > 50,000 h
- Different oil seal options
- Oil splash bath, mineral or synthetic

6 — Bearing Gard™

- Standard equipment on all long coupled Mark 3 ISO pumps
- Static sealing technology prevents contamination during shutdown
- Transitions to non-contacting operation at startup
- Alternative bearing isolators available

7 — Power ends and interchangeability

- Two-piece design with metal-to-metal fit for maximum interchangeabilty and low maintenance cost
- Non-conduction bearing isolator for efficient operation and optimum bearing environment
- Ductile cast iron construciton
- Stainless steel power end as an option for low ambient conditions

8 — Shaft

- Stiff solid shaft ensures less than 0.05 mm (0.002 in.) shaft deflection at the seal face.
- Provides a low L^3/D^4 shaft stiffness ratio to maximize mechanical seal life.
- Available in a wide range of corrosion-resistant materials, including:
  - 316 stainless steel
  - Duplex stainless steel
  - Alloy 20
  - Alloy C-276
  - Alloy B-2

9 — Heating and cooling options

- Water: 20°C (68°F); 16 bar (232 psi)
- Steam: 200°C (392°F); 13.3 bar (192 psi)
- Heating oil: 350°C (662°F); 6 bar (87 psi)

**The above figures may be subject to derating, dependent upon the material used for the jacket fabrication.*

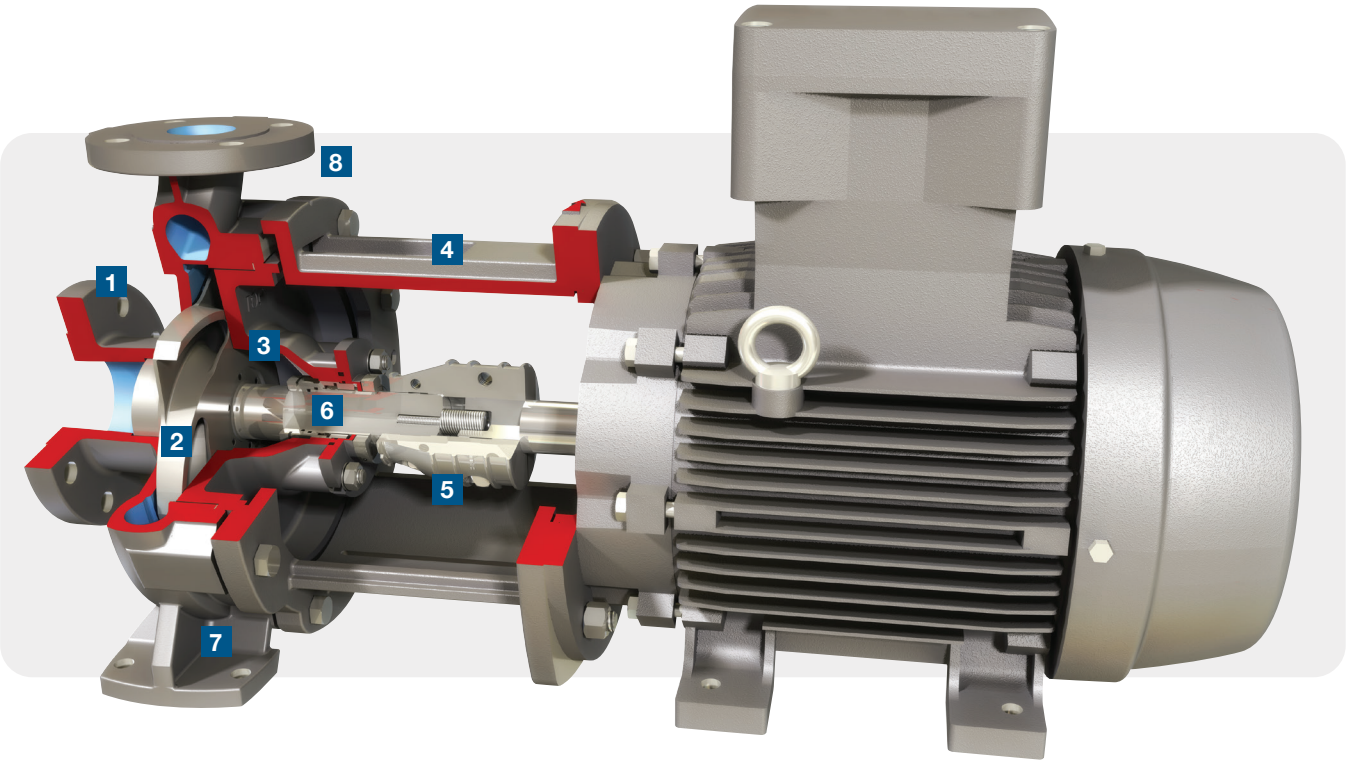
10 — Condition monitoring system

- Compatible with advanced internet of things (IoT) solutions such as RedRaven condition monitoring from Flowserve. Visit flowserve.com/iot to learn more.
- Cast bosses make installing additional performance monitoring products quick and easy.

11 — Painting

Offered with a range of paint systems, including those compliant with the ISO 12944 requirement of “long-term protection — up to 15 years to first maintenance”

Close coupled design



1 — Volute casing

- Standard PN 16 and PN 25 flanges per ISO 1092
- Drilling per ASME 150 and 300 flanges per ISO 1759 (ASME B16.5)
- Jackets for heating and cooling
- Drain and recirculation connections
- A and B hydraulics only

2 — Impeller

- Available hydraulics to ISO 2858 and extended flows
- Available impeller types
  - Reverse vane
  - Open
- Screwed impeller standard

3 — SealSentry seal chamber

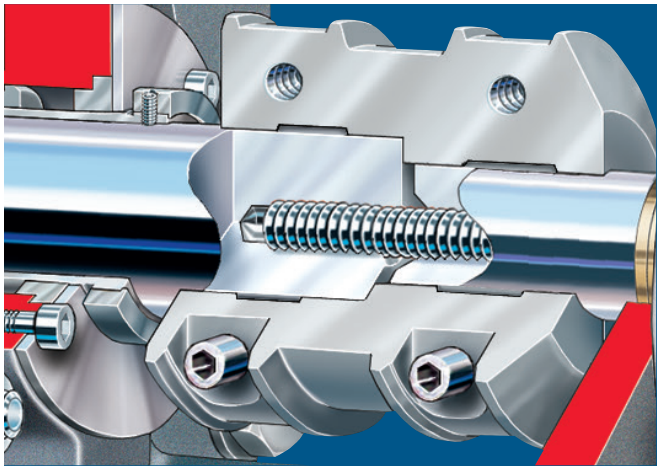
- SealSentry seal chambers with flow modifiers extend seal life by expelling solids and preventing gas accumulation at the seal faces.
- Conical and cylindrical bore seal chamber designs accommodate a wide variety of seal types.

4 — Adapter

- Adapters designed to interface directly with standard motors
- No bearing housing for minimized maintenance
- Permits use of readily available standard electric motors
- Provides a thermal barrier between the pump and motor
- Reduces installation cost by eliminating pump to motor alignment
- Incorporates a muff coupling, which serves as an additional deflector between the mechanical seal and motor

5 — Closed couple

- Close coupling eliminates influence of the baseplate and foundation on alignment.
- Muff coupling helps in setting the impeller face clearance; notches at 30-degree increments around the circumference
- Radiating surfaces dissipate heat and extend motor bearing and mechanical seal lives.



Investment cast (WEB) muff coupling

6 — Shaft

- Stiff solid shaft ensures less than 0.05 mm (0.002 in.) shaft deflection at the seal face.
- Provides a low L^3/D^4 shaft stiffness ratio to maximize mechanical seal life.
- Available in a wide range of corrosion-resistant materials, including:
  - 316 stainless steel
  - Duplex stainless steel
  - Alloy 20
  - Alloy C-276
  - Alloy B-2

7 — Painting

Offered with a range of paint systems, including those compliant with the ISO 12944 requirement of “long-term protection—up to 15 years to first maintenance”

8 — Condition monitoring system

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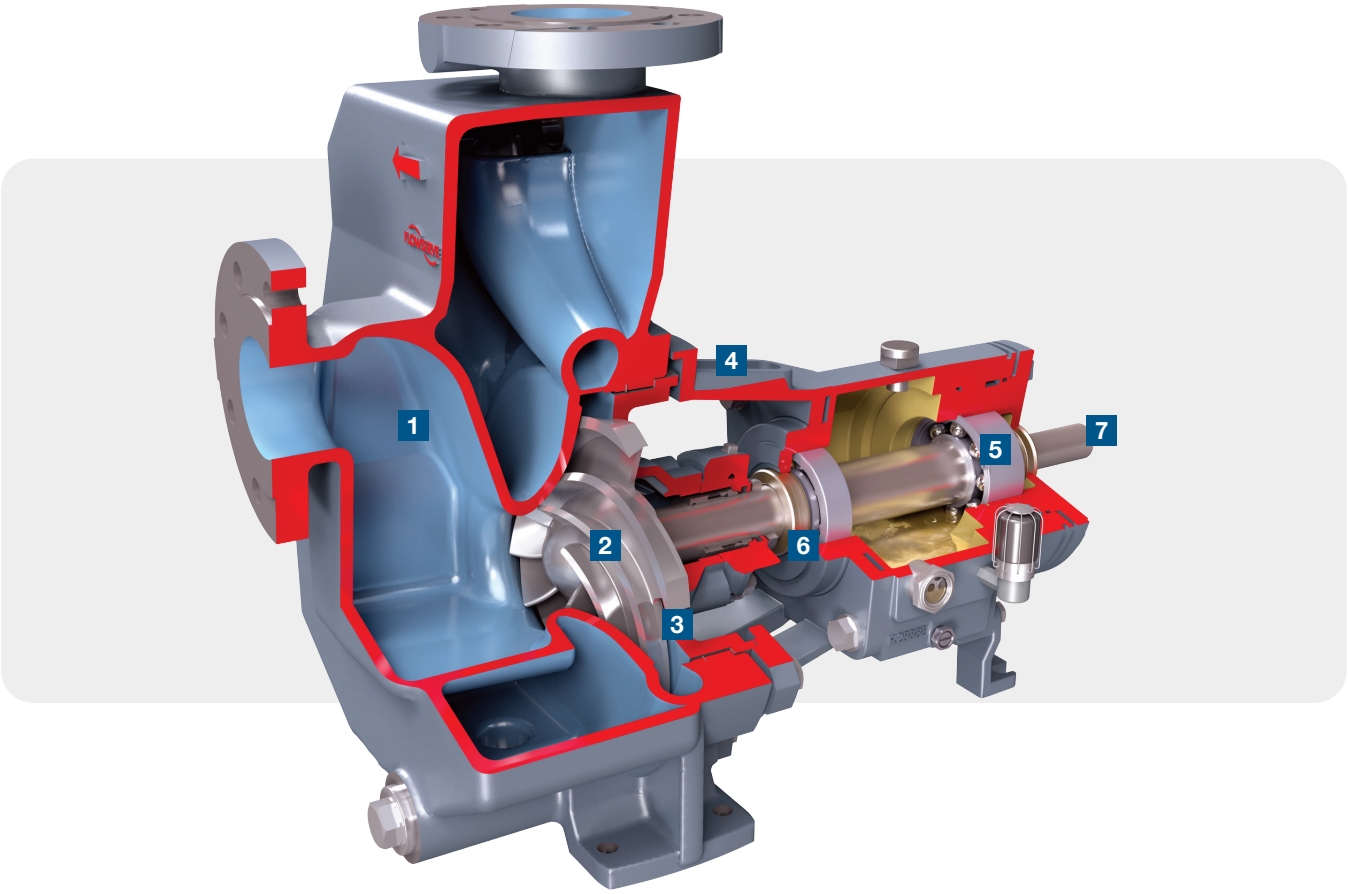
Self-primer



1 — Unitized, self-priming volute

- Unitized casing has priming chamber, air separator and volute in one integral unit; eliminates the need for internal valves and external priming devices
- Standard PN 16 and PN 25 flanges per ISO 1092
- Drilling per ASME 150 and 300 flanges per ISO 1759 (ASME B16.5)
- Drain and recirculation connections

2 — Impeller

- A hydraulics (extended flow) only
- Open impeller
- Impeller locking
  - Screwed impeller standard
  - Keyed impeller optional
- External micrometer adjustment of open impellers with calibrated bearing carrier

3 — SealSentry seal chamber

- SealSentry seal chambers with flow modifiers extend seal life by expelling solids and preventing gas accumulation at the seal faces.
- Conical and cylindrical bore seal chamber designs accommodate a wide variety of seal types.

4 — Adapter

- Robust and structurally optimized design
- Ensures maximum compatibility and interchangeability with power end

5 — Ball bearing

Available with oil, greased and life-greased lubrication. Heavy-duty bearing with increased oil change rate as an option. Large oil sump.

Grease lubricated:

- Standard lifetime L10h > 17,500 h
- Temperature from -40°C to 180°C (-40°F to 356°F)
- Mineral, synthetic or food grade

Oil lubricated:

- Standard lifetime L10h > 50,000 h
- Different oil seal options
- Oil splash bath, mineral or synthetic

6 — Bearing Gard

- Standard equipment on all long coupled Mark 3 ISO pumps
- Static sealing technology prevents contamination during shutdown
- Transitions to non-contacting operation at startup
- Alternative bearing isolators available

7 — Power ends and interchangeabilty

Long coupled power end:

- Two-piece design with metal-to-metal fit for maximum interchangeabilty and low maintenance cost
- Non-conduction bearing isolator for efficient operation and optimum bearing environment
- Ductile cast iron construction
- Stainless steel power end as an option for low ambient conditions

Close coupled power end:

- Minimum footprint for application with limited space
- Adapters design to interface directly with standard motors
- No bearing housing for minimized maintenance

8 — Shaft

- Stiff solid shaft ensures less than 0.05 mm (0.002 in.) shaft deflection at the seal face.
- Provides a low L^3/D^4 shaft stiffness ratio to maximize mechanical seal life
- Available in a wide range of corrosion-resistant materials, including:
  - 316 stainless steel
  - Duplex stainless steel
  - Alloy 20
  - Alloy C-276
  - Alloy B-2

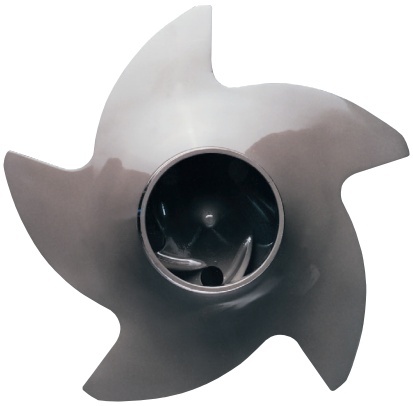
9 — Heating and cooling options

- Water: 20°C (68°F); 16 bar (232 psi)
- Steam: 200°C (392°F); 13.3 bar (192 psi)
- Heating oil: 350°C (662°F); 6 bar (87 psi)

10 — Painting

Offered with a range of paint systems, including those compliant with the ISO 12944 requirement of “long-term protection — up to 15 years to first maintenance”

Impellers



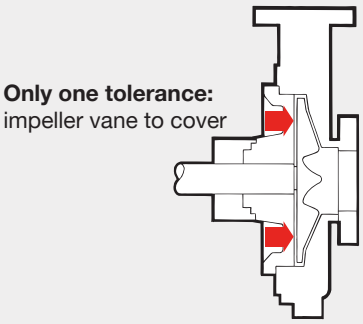
Reverse vane impeller

- Low NPSHR
- Low, unidirectional thrust loads
- Hydraulic balance holes
- Will pass large solids
- Low, predictable seal chamber pressure
- One setting to control performance, efficiency, thrust and seal chamber pressure
- Optional locked impeller

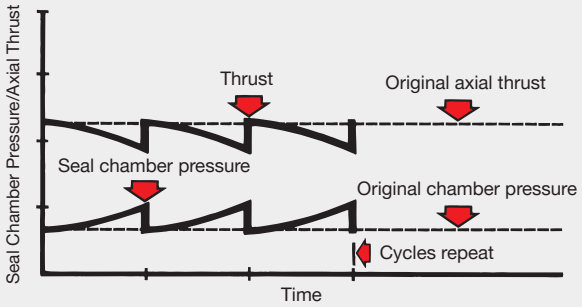
Operating performance

- ISO 2858 and extended flow
- Solid handling capability
  - Max solid size 28 mm (1.1 in.)
  - Max soft solid 35%
  - Max hard solid 10%

Reverse vane impeller adjustment



Reverse vane: repeatable performance

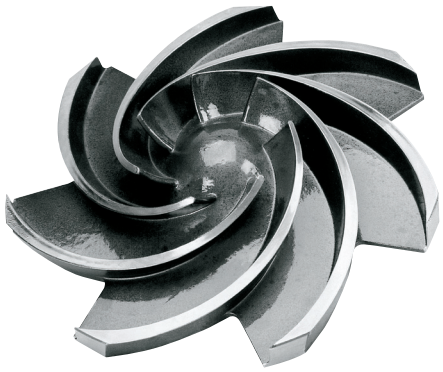


Closed impeller

- Low NPSHR
- Low, unidirectional thrust loads
- Hydraulic balance holes
- One setting to control performance, efficiency, thrust and seal chamber pressure
- Locked impeller as a standard

Operating performance

- ISO 2858
- Solid handling capability
  - Max solid size 0.3 mm (0.01 in.)
  - Max soft solid 2%
  - Max hard solid 2%
  - Max paper stock 1%



Front vane open impeller

- Optional
- Recommended where there are fibrous, stringy materials in the liquid
- Back vanes control axial thrust and seal chamber pressure
- Clearance adjusted between impeller and case
- Optional locked impeller

Operating performance

- ISO 2858 and extended flow
- Solid handling capability
  - Max solid size 25 mm (1.0 in.)
  - Max soft solid 35%
  - Max hard solid 10%
  - Max paper stock 10%

Recessed impeller pump

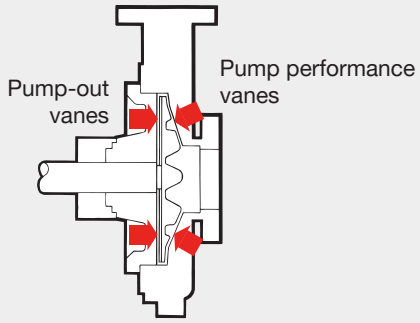
When used in the recessed impeller pump configuration, which has a wide clearance casing, the open impeller is able to handle solids up to 46 mm (1.8 in.).

- Vortex pumping action:
  - Minmizes shear, abrasion and clogging
  - Maintains integrity of solids
- Applications: solids, slurries, corrosive/erosive liquids, waste streams, shear-sensitive liquids

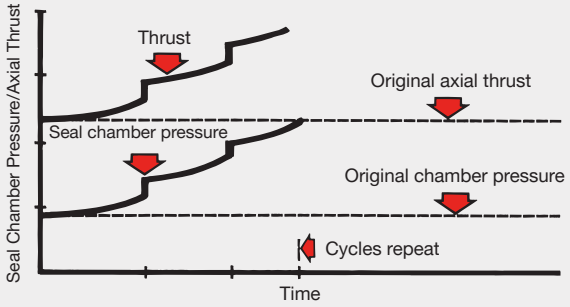
Operating performance

- Solid handling capability
  - Max solid size 46 mm (1.81 in.)
  - Max soft solid 35%
  - Max hard solid 10%
  - Max paper stock 3%

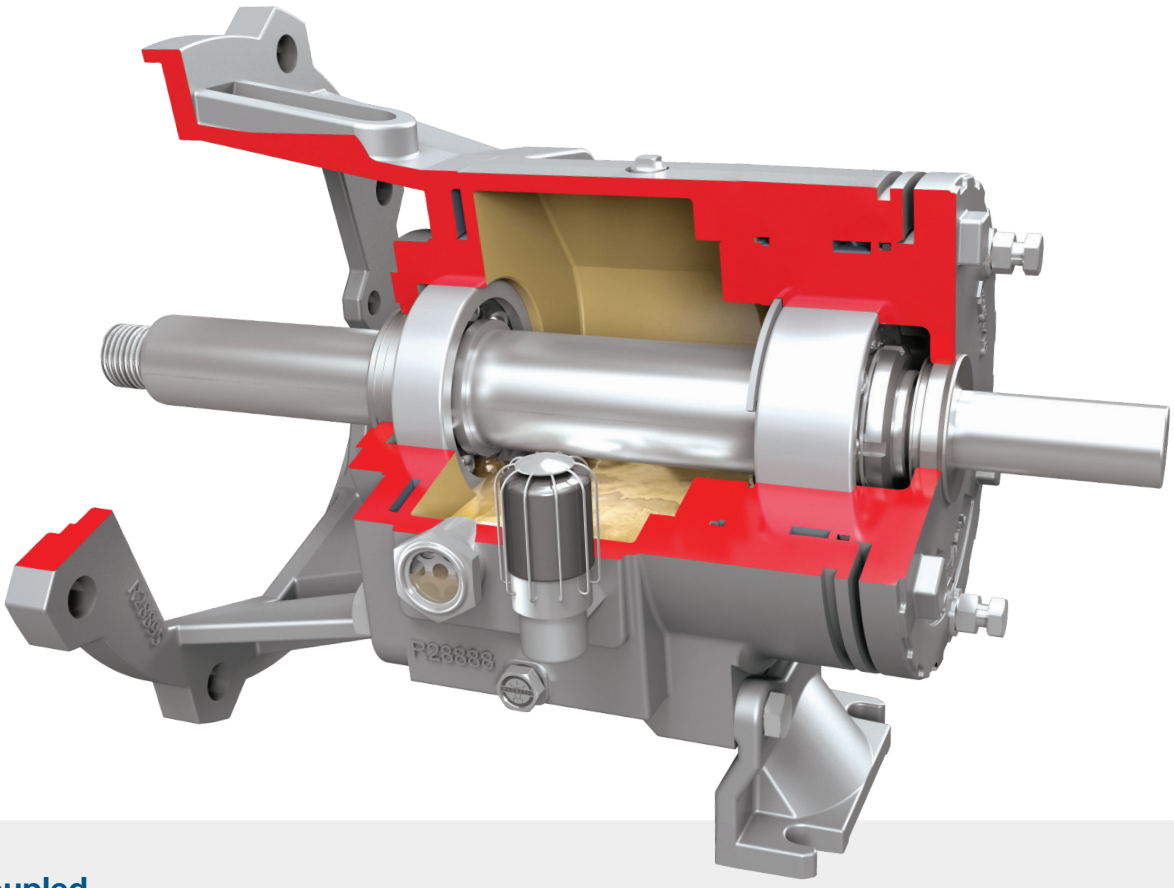
Front vane impeller adjustment



Open style: diminished performance

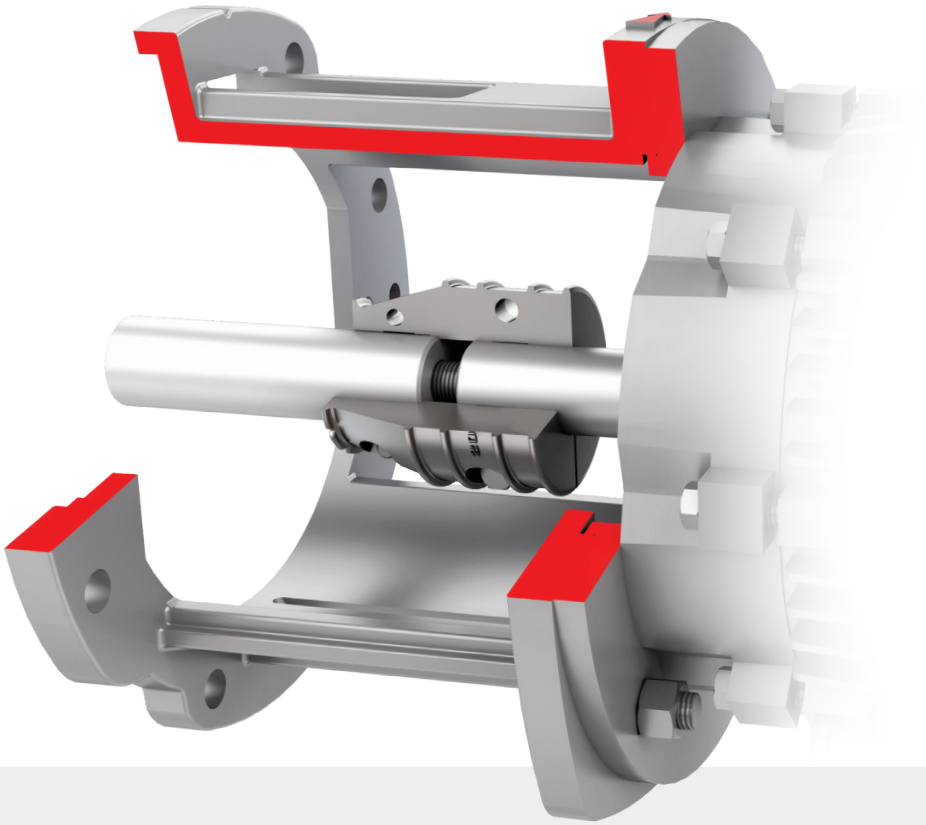


Power ends



Long coupled

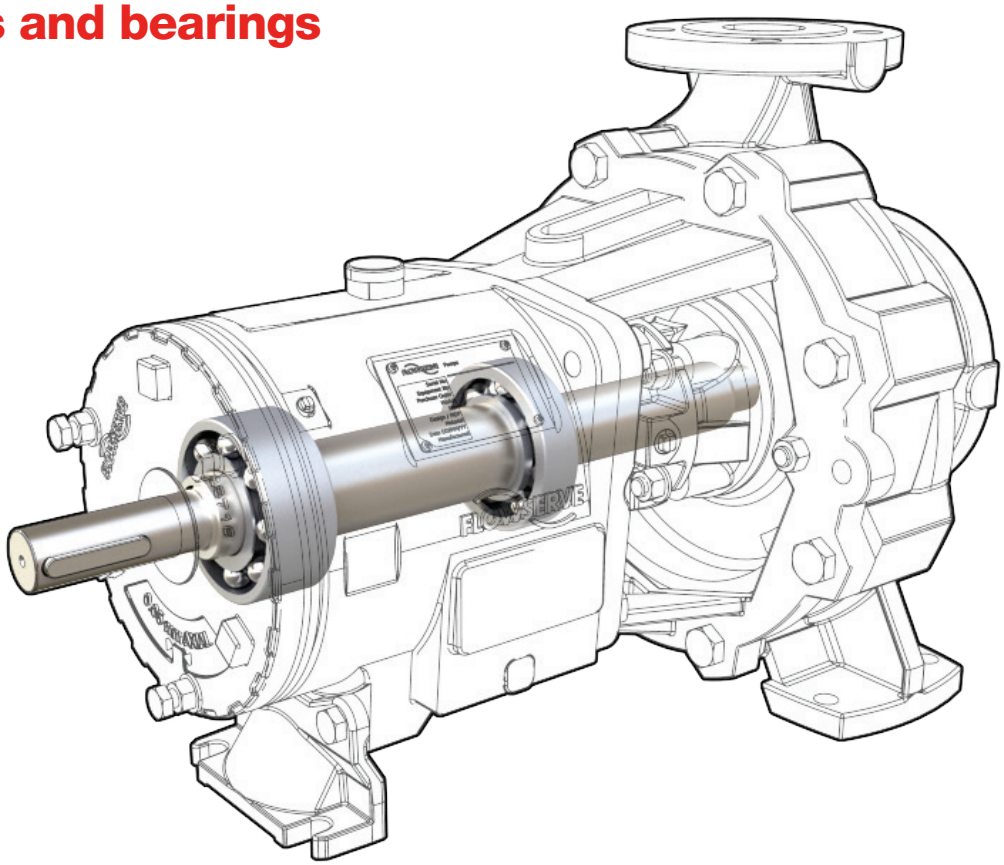
- Conforms with ISO 2858 and ISO 5199
- Clean environment assembly available as optional 3A design
- Two-piece bearing housing and adapter design with metal-to-metal fit
  - Ductile cast iron standard
  - Stainless steel available
- Standard double-row, angular contact ball bearings outboard; single-row ball bearings inboard
  - Available duplex, single-row angular contact ball bearings outboard; roller bearings inboard
  - Guaranteed L10h bearing life of 17,500 hours; optional L10h bearing life of 50,000+ hours
- External micrometer impeller adjustment mechanism
- Compatible with RedRaven equipment monitoring and IoT solutions
- Large oil sump with multiple oil or grease lubrication options
- Flowserve Bearing Gard bearing isolators; Inpro/Seal® VBXX isolators optional
- Magnetic drain plug
- Large 25 mm (1 in.) sight glass
- Top-mounted vent and oil filler
- Rigid foot design



Close coupled

- Conforms with ISO 5199
- Compact footprint
- Sturdy design does not require a baseplate
- Adapters interface directly with standard electric motors
- Ductile cast iron construction
- No bearing housing

Shafts and bearings



Solid shaft design

- Less than 0.05 mm (0.002 in.) shaft deflection at the seal face
- Low L^3/D^4 shaft stiffness ratios
- Sleeved shaft available

Durco Mark 3 ISO shaft stiffness ratio (L^3/D^4)

Frame Size	L^3/D^4 (Solid Shaft)		
	Open Impeller	Reverse Vane Impeller	Closed Impeller
1	3.5	3.06	4.74
2	1.8	1.64	2.40
3	0.94	0.85	1.07
4	1.07	0.92	-

Shaft materials

- 316 stainless steel
- Duplex stainless steel
- Super duplex stainless steel
- Alloy 20
- Alloy C-276
- Alloy B-2

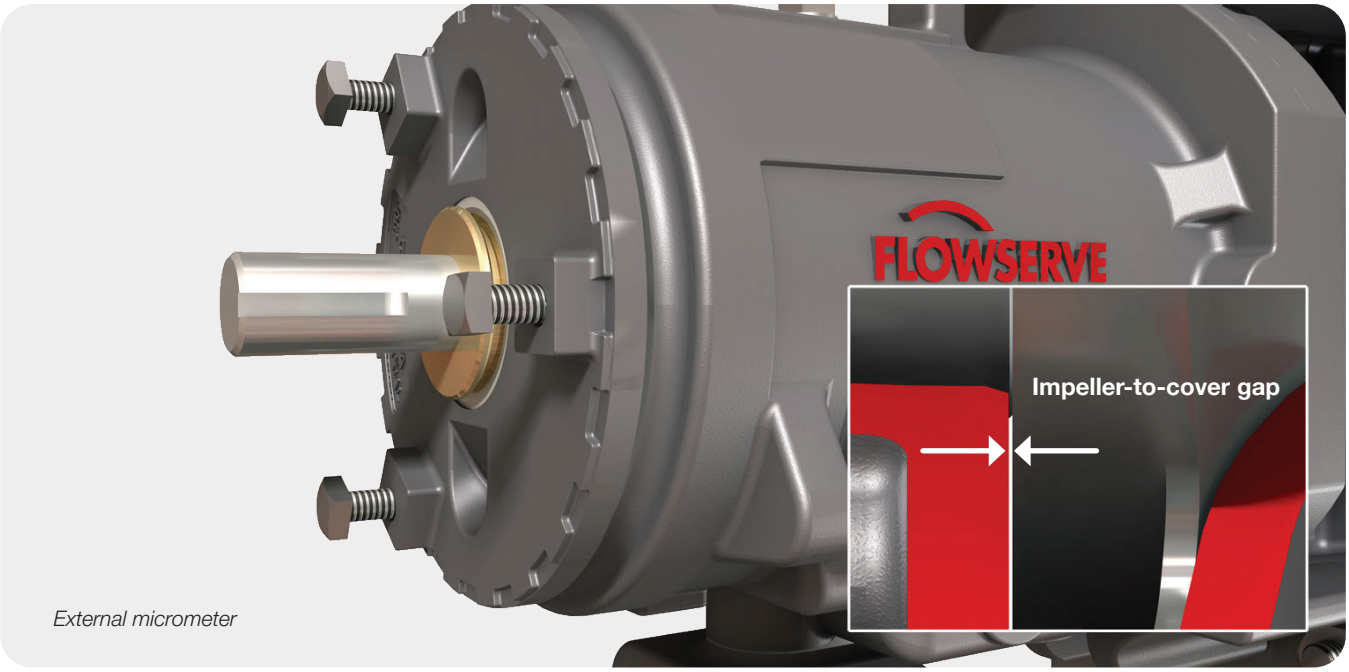
Robust bearing system

- Standard double-row, angular contact ball outboard and single-row ball inboard bearings
  - Guaranteed L10h bearing life of 17,500 hours
- Optional duplex, double-row angular contact ball outboard and roller inboard
  - Optional L10h bearing life of 50,000+ hours

Lubrication options

- Oil splash bath—mineral or synthetic
- Grease—mineral, synthetic or food grade
- Oil mist (pure or purge)
- Nitrogen purge over oil sump

Micrometer impeller adjustment



External micrometer

External micrometer reduces maintenance time and costs*

- Available on Mark 3 ISO A and B hydraulics only
- Superior to jackscrews, it accurately sets reverse vane impeller clearance in 20 seconds, in the shop or the field.

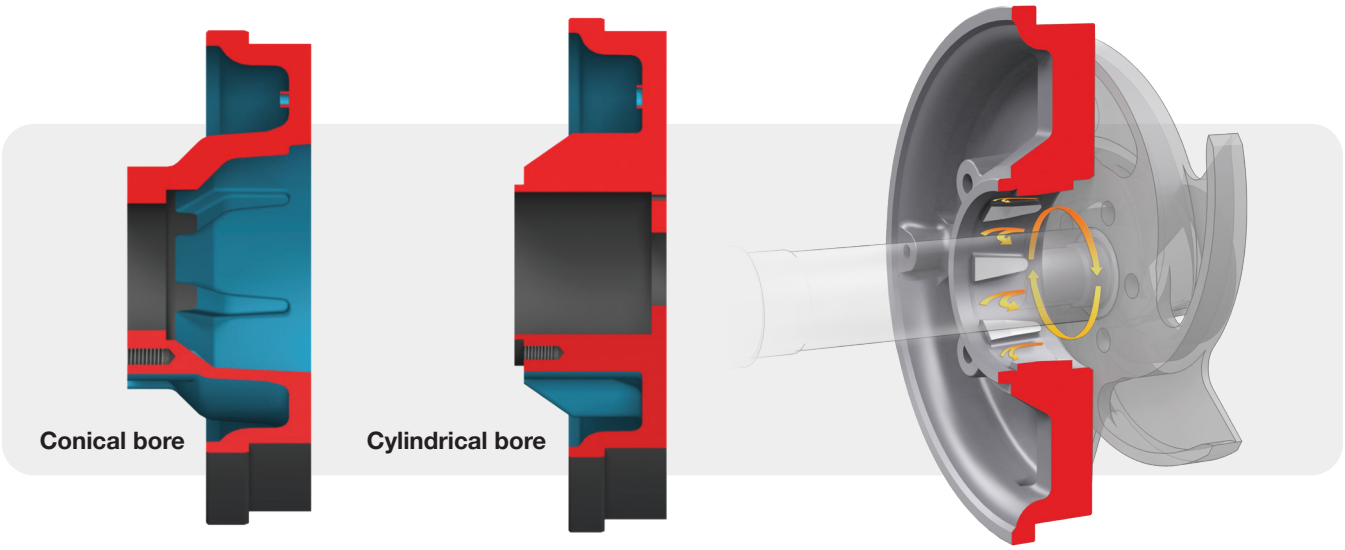
Step 1: Loosen the setscrews. Using a wrench, rotate the bearing carrier counterclockwise until the reverse vane impeller lightly touches the rear cover plate.

Step 2: Select the impeller setting. Each notch on the carrier ring represents exactly 0.10 mm (0.004 in.) of clearance. For an impeller setting of 0.5 mm (0.020 in.), count five notches counterclockwise.

Step 3: Move the carrier clockwise the selected number of notches. Tighten the setscrews and check the impeller clearance with the feeler gauge.

* Applicable for reverse vane impellers. Consult user instructions for pumps fitted with front vane open-style impellers.

SealSentry seal chambers



Advanced seal chamber technology

An intergral part of the rear cover, Durco SealSentry seal chambers extend seal life, improve pump reliability, and reduce the total cost of pump ownership:

- Provide optimal seal chamber environment
- Extend mechanical seal life
  - Self-flushing
  - Self-venting
  - Self-draining
- Reduce maintenance and repair costs
- Permit use of less expensive seals and flush plans; plans 11, 31, 32, 52, 53, etc. can be eliminated
- Provide a safer environment for personnel

Conical bore seal chambers with flow modifiers – A and B hydraulics

Conical bore SealSentry seal chambers are preferred for most applications. These seal chambers feature flow modifiers to redirect flow and solids out of the seal chamber.

Available in several bore sizes and gland bolt circles, conical designs are ideal for:

- Single internal cartridge seals
- Dual internal/external cartridge seals
- Single internal component seals with flexible mounted seats
- Dual internal “true” tandem design cartridge seals
- Single seals with all seat mounting configurations

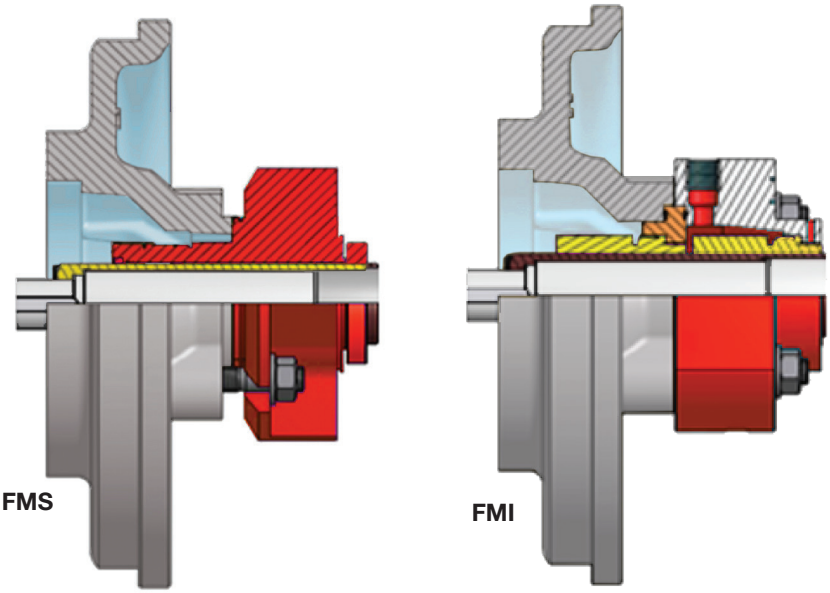
Cylindrical bore seal chambers – A and B hydraulics

With oversized and standard bores available, cylindrical bore seal chambers are ideal for seals with large and small gland bolt and gasket circles. Cylindrical designs may be used with:

- Dual internal component seals that isolate the seal chamber from the process with external barrier fluid
- Single seals with throttle bushing and flush to boost pressure over the flash point
- Packing arrangements and conventional seals with small gland bolt and gasket circles

Flow modifiers extend seal life

- Flow modifiers redirect flow from circumferential to axial.
- Balanced flow with low-pressure drop in the chamber helps keep solids in suspension, minimizing erosion.
- The mechanical seal creates a centrifuging action away from its parts.
- Solids and slurry merge into the returning flow path and are flushed out of the seal chamber.



FMS and FMI covers with flow modifiers – C hydraulics

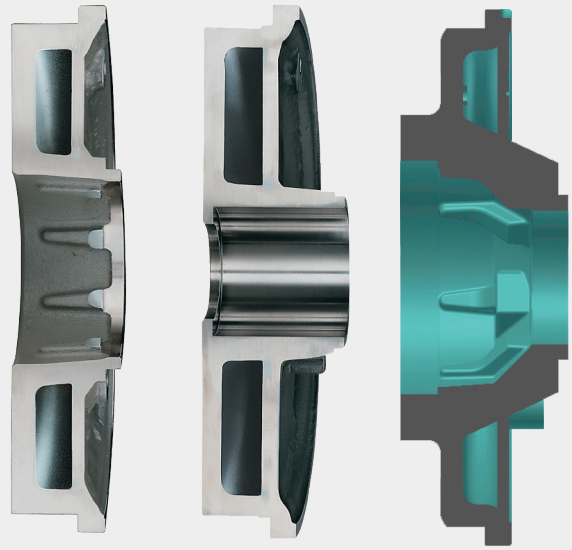
Because pumps with C hydraulics employ closed impellers with wear rings, Flowserve engineers designed covers to address their specific performance requirements. Like standard conical covers, FMS and FMI covers have a conical seal chamber with flow modifiers.

FMS — Ideal for use with single and double cartridge seals, as well as single component seal arrangements.

FMI — The seal mounting face of the FMI cover is designed for use with dual internal component seals in tandem arrangement.

Jacketed rear covers available

Jacketed versions of Durco rear covers with SealSentry seal chambers are available. Flowserve engineers will help you select the right jacketed cover for your application.

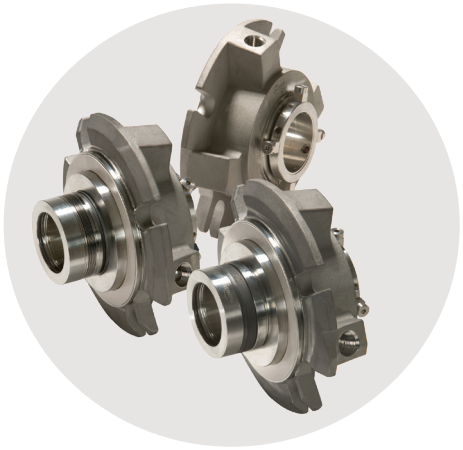


Jacketed conical (A and B hydraulics), cylindrical (A and B hydraulics), and FMS/FMI (C hydraulics) covers

Sealing system

Seal option

- Single internal cartridge seals
- Dual internal/external cartridge seals
- Single internal component seals with flexible mounted seats
- Dual internal “true” tandem design cartridge seal
- Single seals with all seat mounting configuration
- Dual internal component seals using external barrier fluid
- Singel seals with throttle bushing and flushes to boost pressure over the flash point

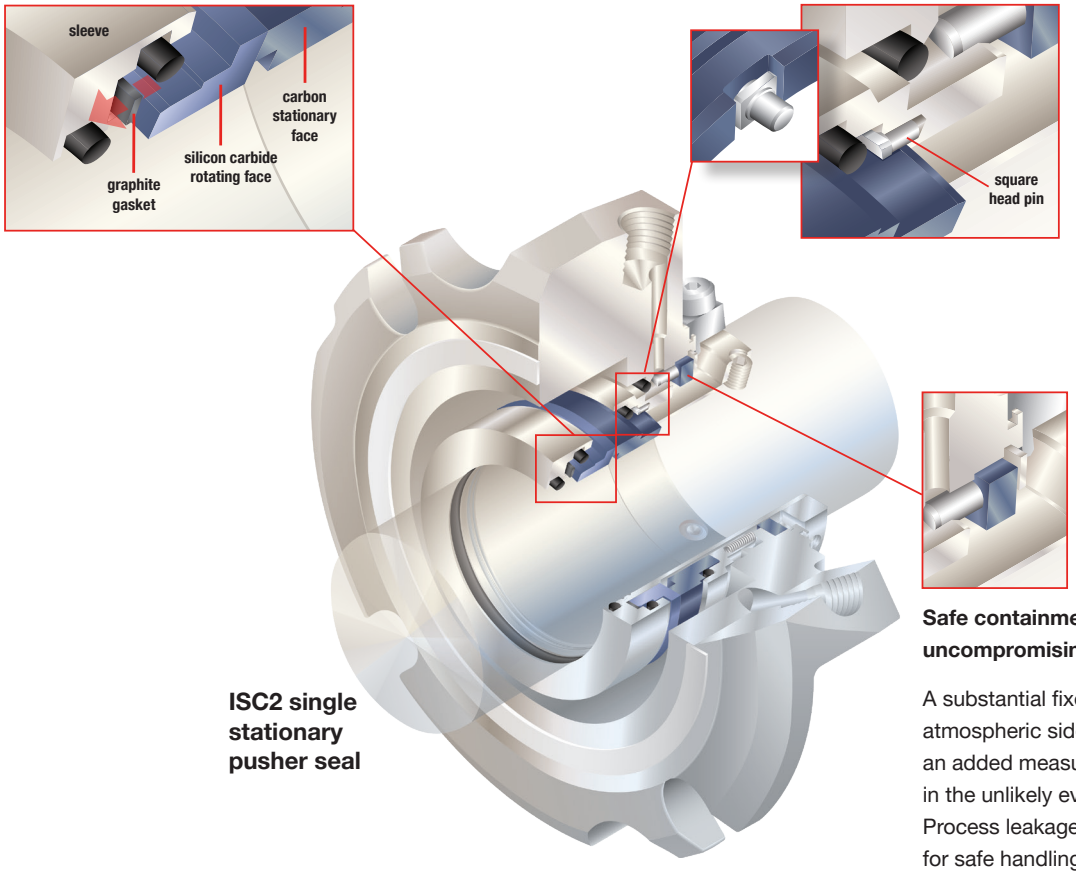


Tolerate dry running events with our exclusive thermal management technology

Thermally conductive and mechanically compliant graphite material dramatically improves heat transfer between the silicon carbide rotating seal face and the sleeve. The sleeve acts as a heat sink, lowering seal face operating temperatures and transforming cavitating and dry running bad actors into highly reliable installations.

Robust drive mechanisms deliver high torque loads with low seal face stress

Square-head drive pins self-align with the seal faces to distribute torque loads evenly over an area instead of a high-stress point load, reducing seal face fractures. The torque-carrying capability of the ISC2 seal is three times that of similar competitor seals.



ISC2 single stationary pusher seal

Safe containment is provided by an uncompromising throttle bushing

A substantial fixed carbon bushing on the atmospheric side of single seals provides an added measure of safety and reliability in the unlikely event of a seal failure. Process leakage is directed to the drain for safe handling and disposal.

Protect your employees, protect your environment

ISC2 seals do more to provide a safe work environment and protect the natural environment than any other standard cartridge seal. Single seals have capable throttle bushings to protect against leaks. Pressurized dual seals provide zero process emissions. The outboard seal of dual seals can handle full operating conditions if the inboard seal were to fail. All seal faces are dual balanced for normal and reverse pressure operation.

ISC2 seals work hard to eliminate the possible causes of leakage. Our thermal management technology for dry running tolerance, robust seal face drive mechanisms, high-efficiency barrier circulation, rigid setting devices and high-quality materials all contribute to improve seal life, even with multiple service conditions, off-design operation, and frequent starts and stops. ISC2 seals are capable of sustaining years of uninterrupted, long-term operation.

Industry's most durable metal bellows are bigger and better

Edge-welded metal bellows of Alloy C-276 metallurgy are well-suited for a wide range of chemical environments in seal sizes to 95 mm (3.750 in.). Rotating bellows have a self-cleaning effect and are the preferred solution for highly corrosive services where avoiding seal face hang-up is especially critical.

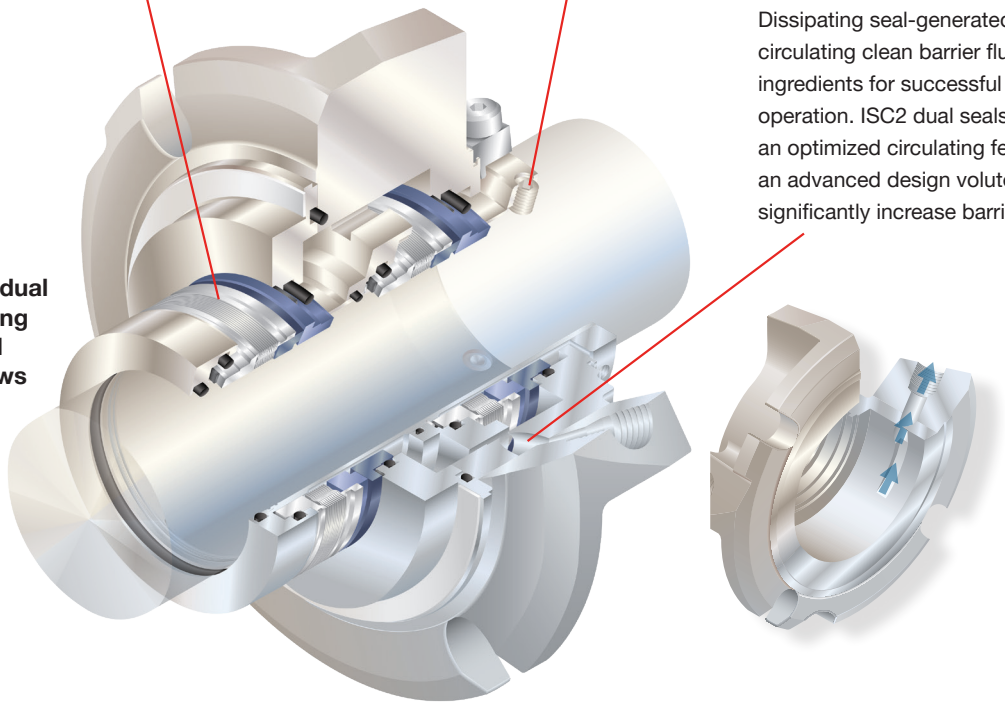
Hard set screws bite harder for better holding power

Drive collar set screws of 17-4 H900 stainless steel securely engage the shaft or pump sleeve and lock the cartridge sleeve in place. Opportunity for galling the shaft or drive collar is greatly reduced in case the seal ever needs to be removed.

Enhanced dual seal barrier circulation promotes cool running

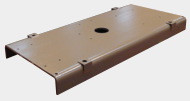
Dissipating seal-generated heat and circulating clean barrier fluid are essential ingredients for successful dual seal operation. ISC2 dual seals incorporate an optimized circulating feature, including an advanced design volute groove, to significantly increase barrier fluid flow.

ISC2 dual rotating metal bellows seal



Baseplates

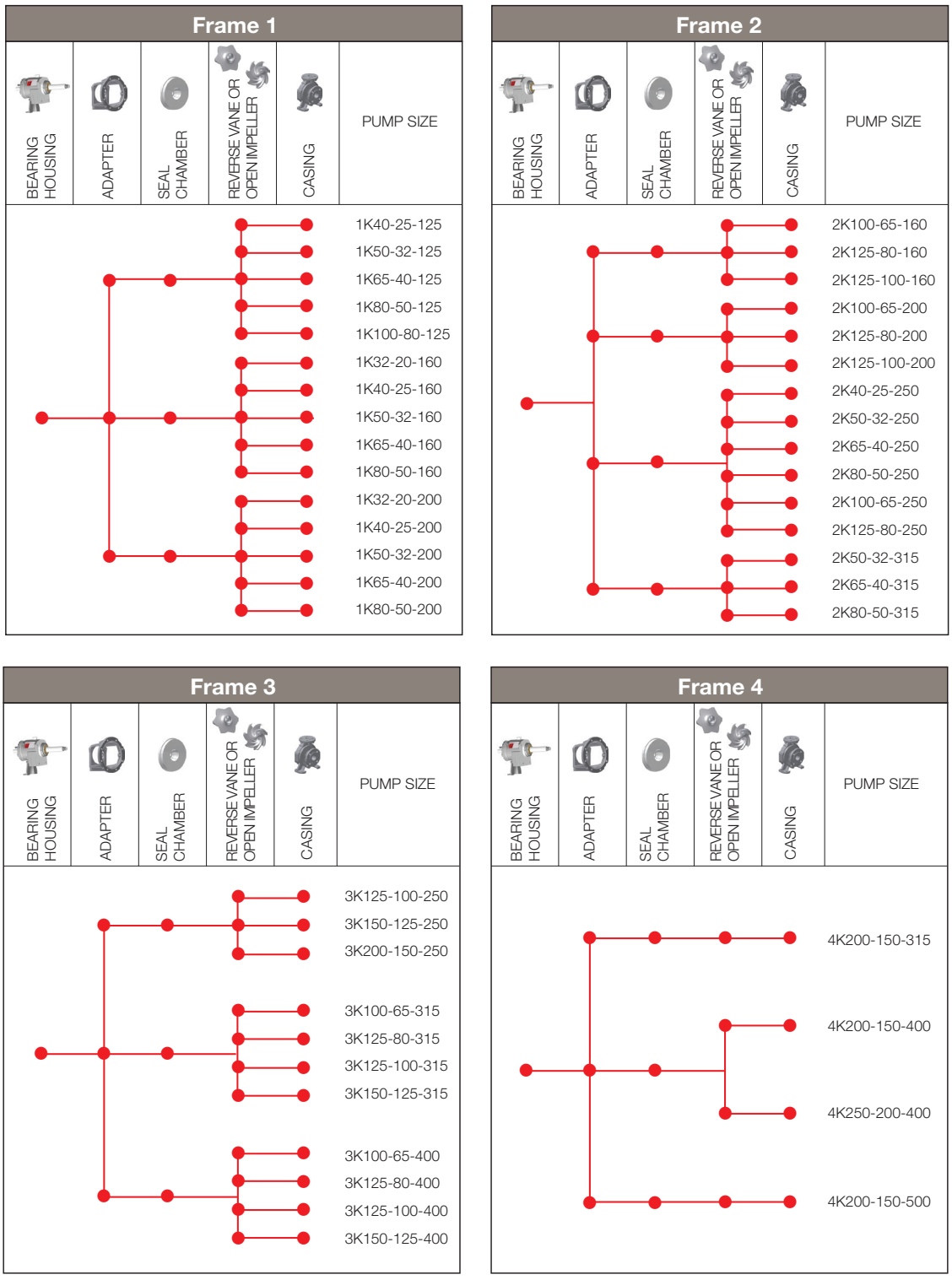
Flowserve offers four pre-engineered baseplate designs to improve pump performance while reducing costs. This provides versatility in choosing the baseplate that best meets a user's application needs and operating budget. Reducing internal stress and vibration extends the life of pump and motor packages.

Baseplate	Folded Steel	Polybase	Reinforced	Cast Iron
				
Number of sizes—The right size baseplate for the pump/motor combination eliminates overhand and trip hazards.	9	6	16	8
ISO3661 compliance—Standards compliance for easy installation	Yes	Yes	No	Yes
Grouting required—Improved vibration response and stiffness for minimized MTBF	Yes	No	Optional	Yes
Rigidity—Torsional stress handling from high nozzle load applications	Medium	Very high	Very high	High
Chemical resistance—Minimizing MTBF	No	Yes	No	No
Integrated drain pan/port—Employee safety	Optional	Yes	Optional	No
Integrated lifting eye—Minimizing downtime and employee safety	No	No	Yes	No
Stilt mounting—Easy site modification with low installation costs	Optional	Optional	No	No

Nomenclature

Example:	Frame size	Series	Suction size in mm	Discharge size in mm	Special configuation	Impeller nominal diameter in mm	Hydraulic	Impeller type
1K100-65-N160A-OP	**1**	**K**	**100**	**65**	**N**	**160**	**A**	**OP**
	1 = Frame 1 2 = Frame 2 3 = Frame 3 4 = Frame 4 C = Close coupled							
		Durco Mark 3 family						
			32, 40, 50, 65, 80, 100, 125, 150, 200, 250					
				20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200				
					Blank or no letter = 16 bar casing P = Self-priming casing R = Recessed impeller, low-shear design N = Centerline mounted 25 bar high-pressure casing H = 25 bar high-pressure, foot mounted			
						125, 160, 200, 250, 315, 400		
							A = Exended flow hydraulic B = Standard ISO 2858 A and B hydraulic C = Standard ISO 2858 C hydraulic	
								RV = Reverse vane impeller OP = Open impeller CL = Closed impeller

Parts interchangeability — A and B hydraulics

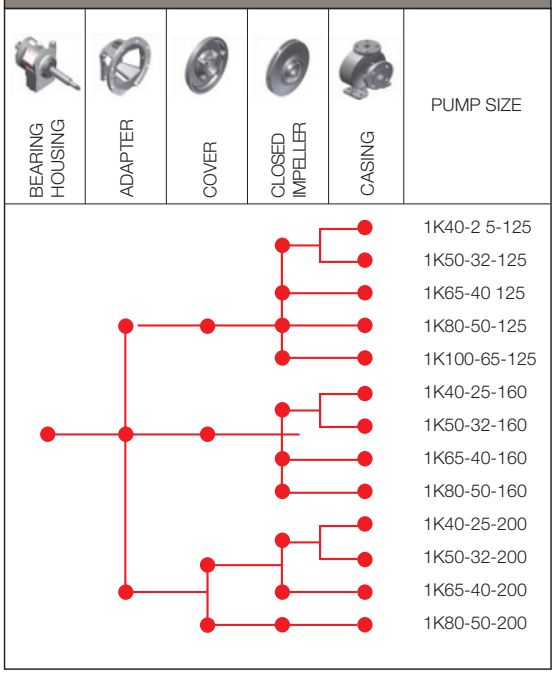


Notes:

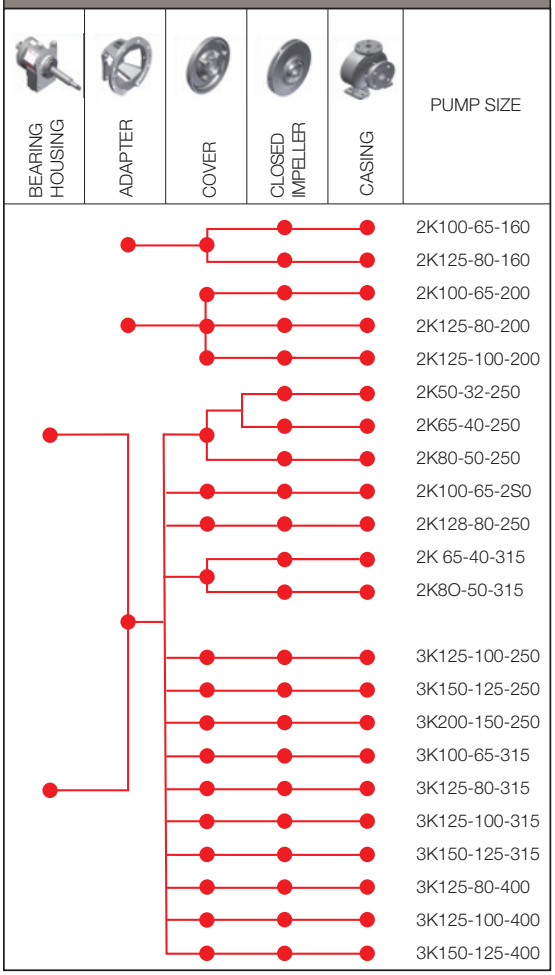
1. Standard and high-output hydraulics available.
2. Reverse vane impellers are not available on all sizes.
3. Please request more detailed information if required.

Parts interchangeability — C hydraulics

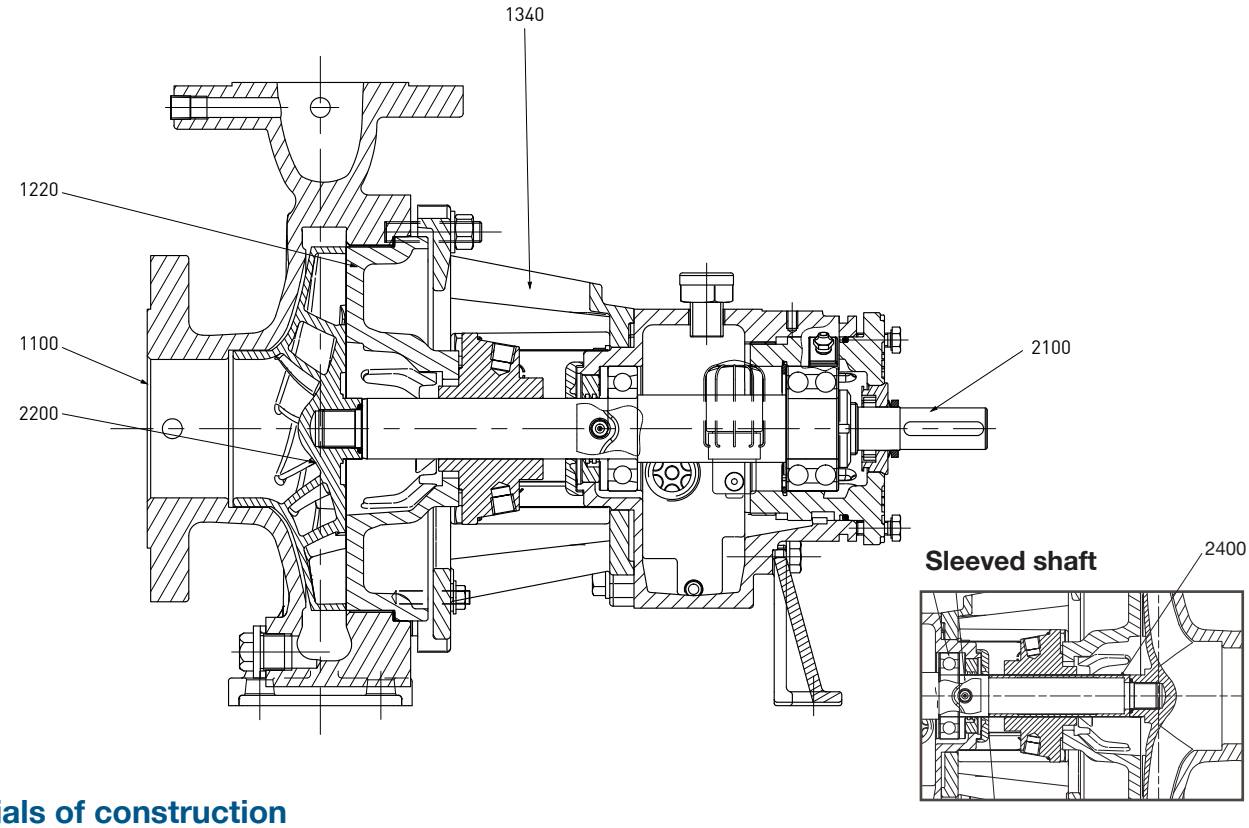
Frame 1



Frames 2 and 3



Materials of construction



Materials of construction

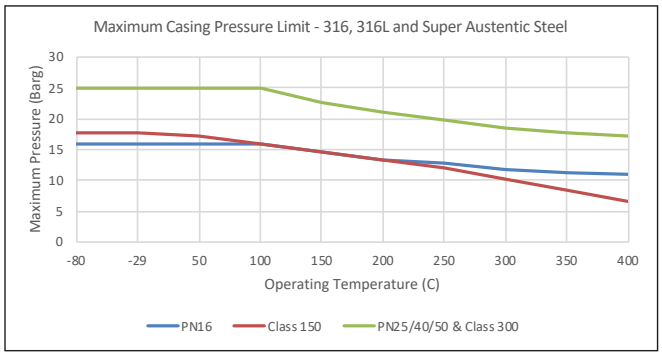
Item	Part	Build										
		Ductile Iron	Ductile NiResist	WCB Carbon Steel	316L Stainless Steel	316 Stainless Steel	304L Stainless Steel	304 Stainless Steel	Austenitic Stainless Steel	CD4MCuN Duplex	Super Duplex	Alloy 20
1100	Casing	Ductile iron	Ductile NiResist	WCB carbon steel	316L stainless steel	316 stainless steel	304L stainless steel	304 stainless steel	Austenitic stainless steel	CD4MCuN duplex	Super duplex	Alloy 20
1220	Cover											
1340	Adapter	Ductile Iron										
2100	Shaft (Solid)	316 stainless steel								CD4MCuN duplex	Super duplex	Alloy 20
	Shaft (Sleeved)	WCB carbon steel										
2400	Shaft Sleeve	316 stainless steel			CD4MCuN duplex		316 stainless steel			CD4MCuN duplex	Super duplex	Alloy 20
2200	Impeller (Open)	CD4MCuN duplex										
	Impeller (Reverse Vane)	316 stainless steel								CD4MCuN duplex		
	Impeller (Closed)	Cast iron	N/A		316 stainless steel		N/A			CD4MCuN duplex	N/A	

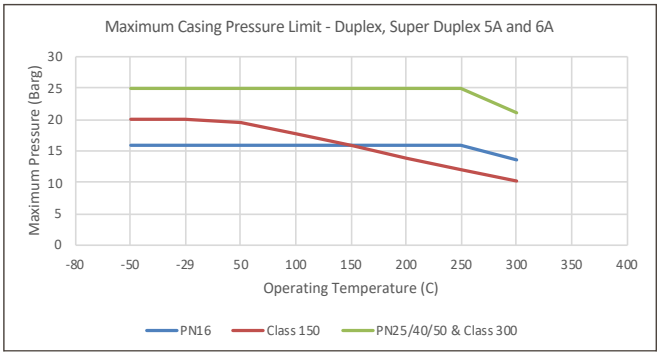
Note: These special materials also available:
Chlorimet 2 (Alloy B-2), Chlorimet 3 (Alloy C-276), Alloy C22, Nickel, Titanium, Titanium-Pb, Zirconium

Operating limits

Limit	Configuration		Frame Size			
			1	2	3	4
Maximum speed (rpm)	"A" hydraulic - extended		4,700	3,600	3,600	1,800
	"B" hydraulic - ISO 2858		3,600	3,600	3,600	1,800
	"C" hydraulic - closed impeller		3,600	3,600	3,000	N/A
Maximum power (kW per 1000 rpm)	Steel shaft	Screw drive	11	27	55	88
		Key drive	6.3	22.5	38	100
	Carbon steel shaft	Screw drive	14.6	35.9	73.2	117
		Key drive	8.4	29.9	50.5	133
	Duplex shaft	Screw drive	16.2	39.7	80.9	129.4
		Key drive	9.3	33.1	55.9	147

Casing pressure

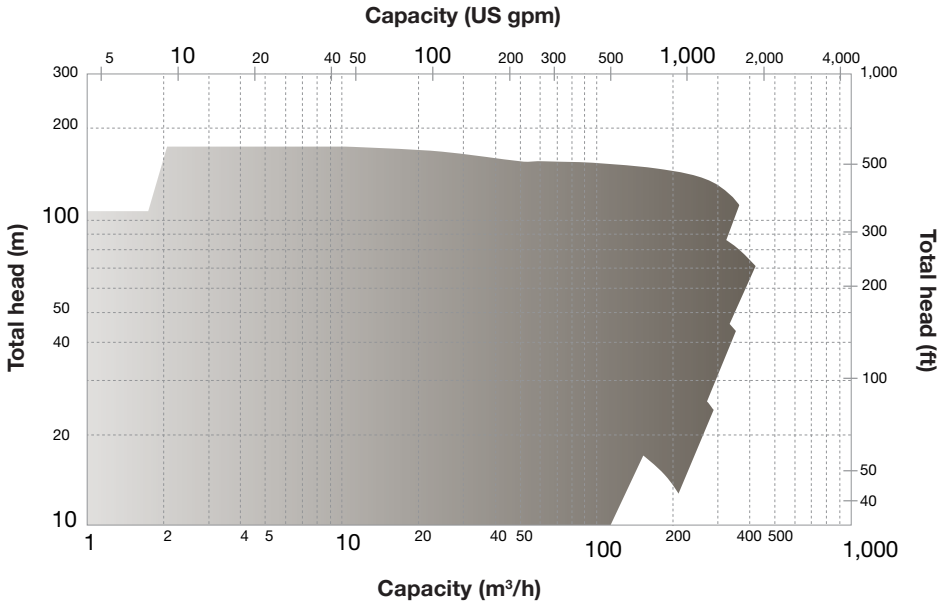




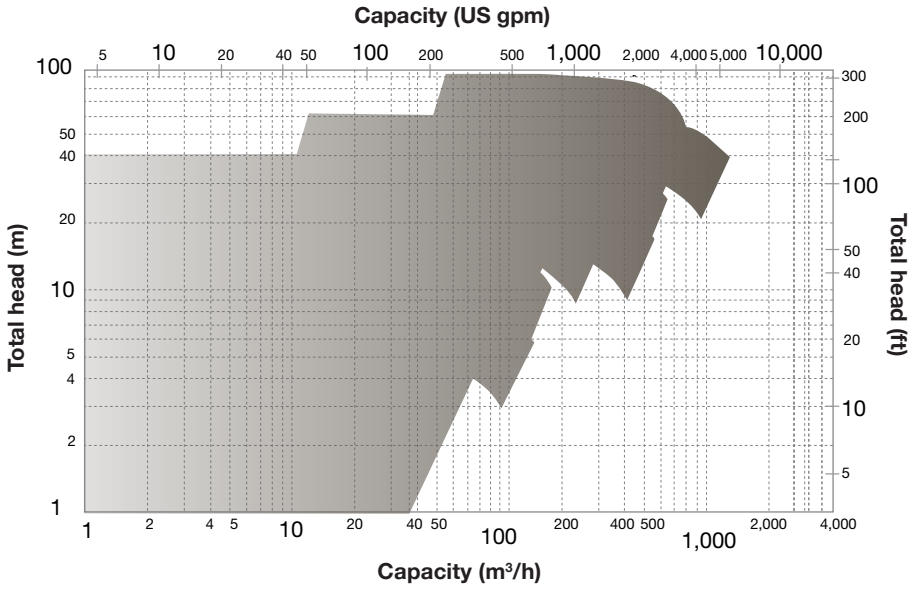
Note: This is an example for two material options. For more information, ask your local sales representative.

Coverage charts — A hydraulics 50 Hz (extended flow)

n = 2,900 rpm

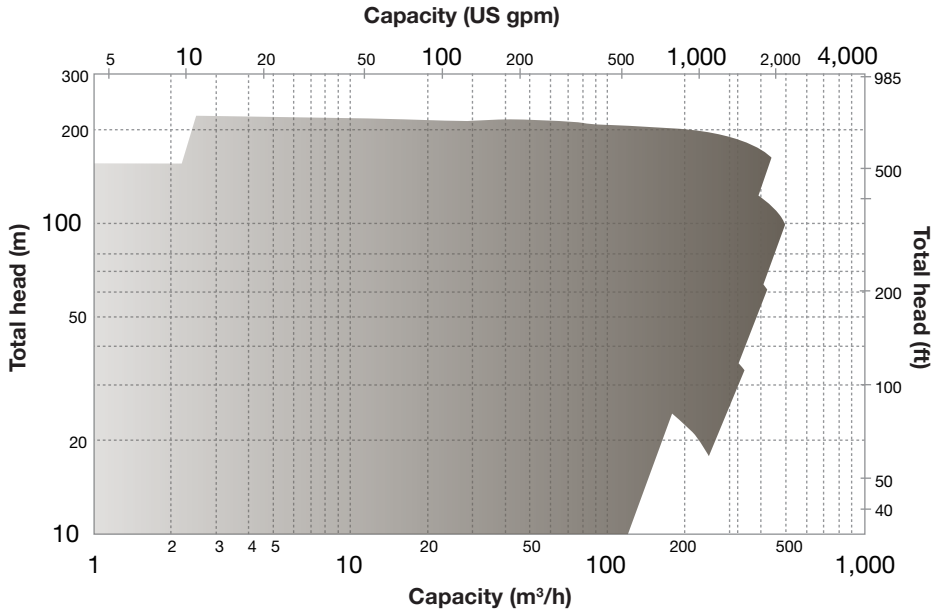


n = 1,450 rpm

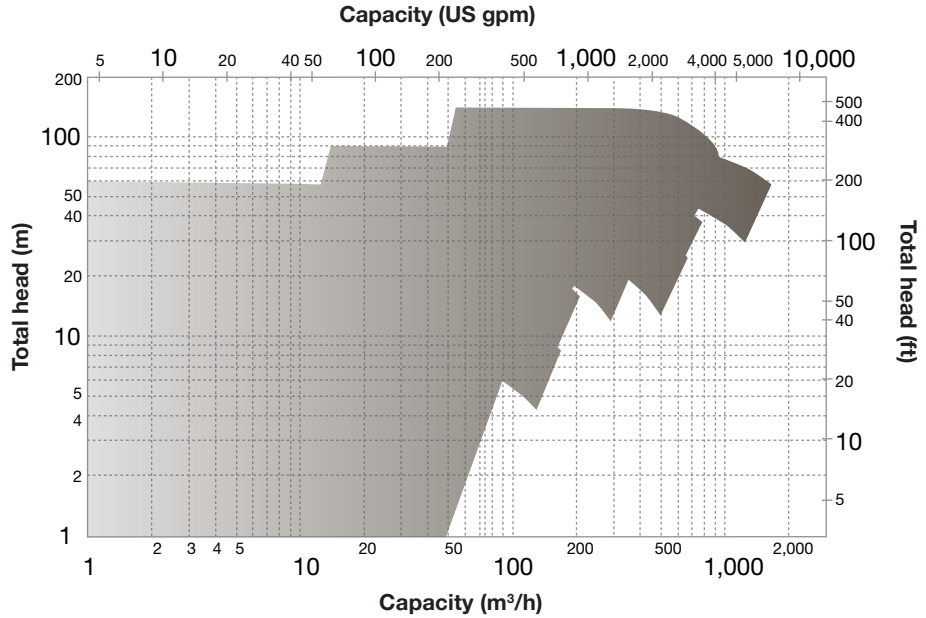


Coverage charts — A hydraulics 60 Hz (extended flow)

n = 3,500 rpm

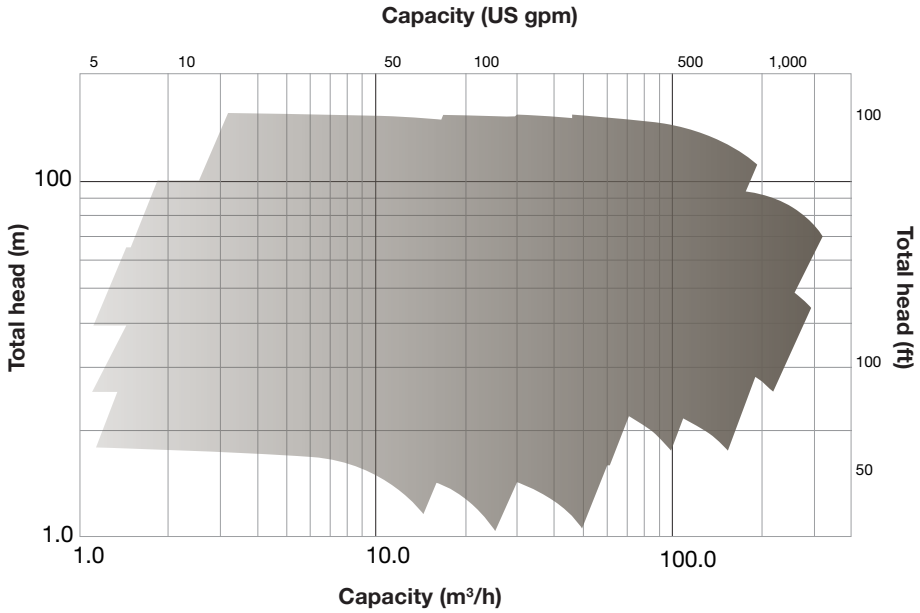


n = 1,750 rpm

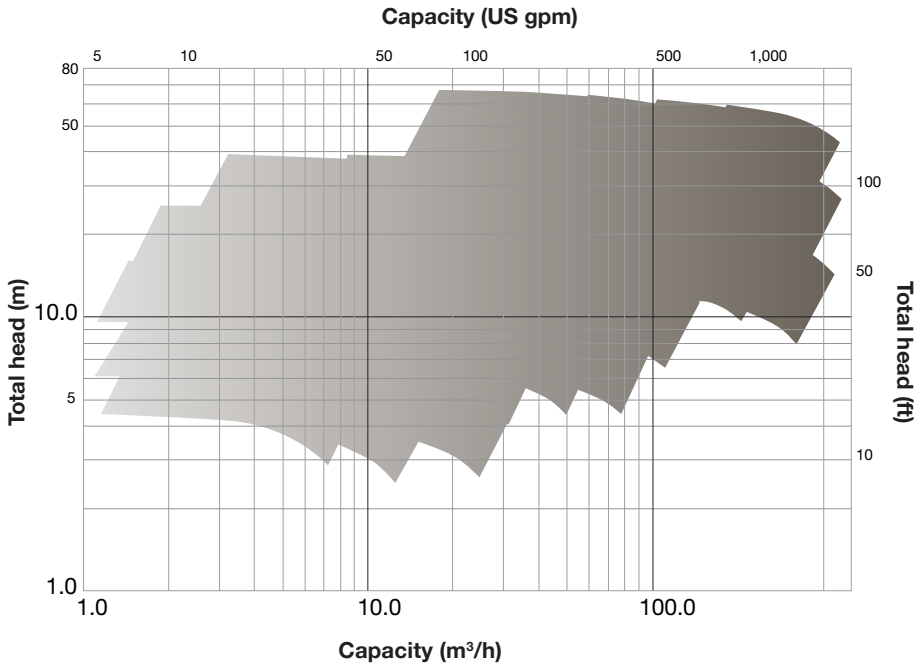


Coverage charts — B hydraulics 50 Hz ISO 2858

n = 2,900 rpm

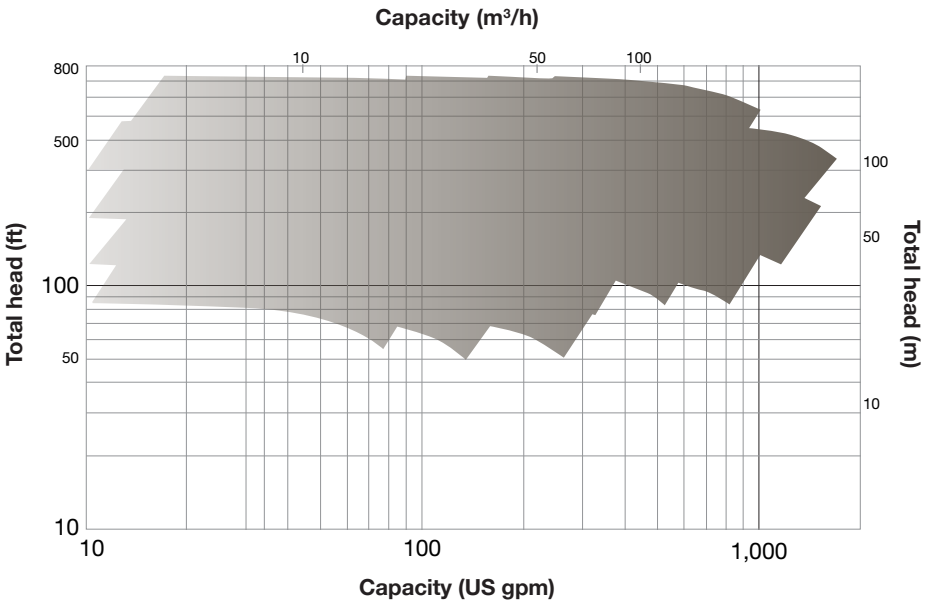


n = 1,450 rpm

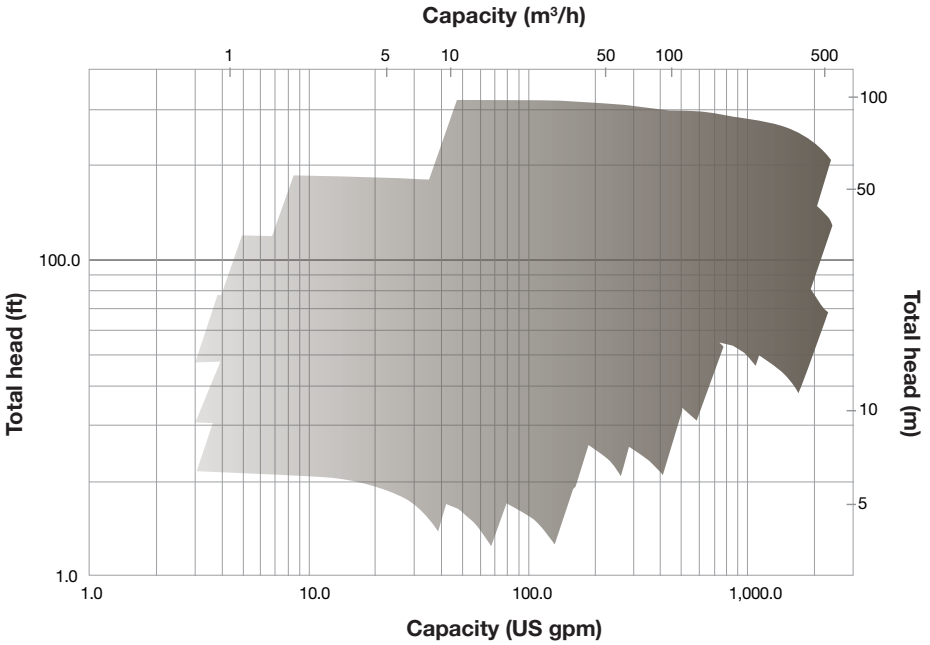


Coverage charts — B hydraulics 60 Hz ISO 2858

n = 3,500 rpm

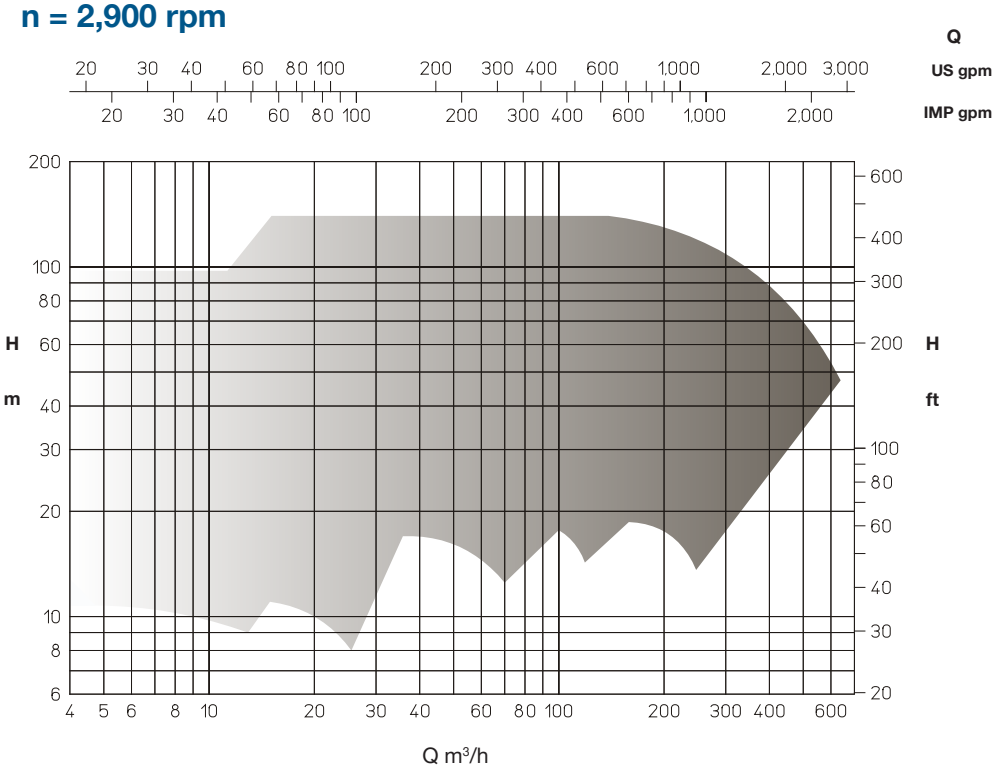


n = 1,750 rpm

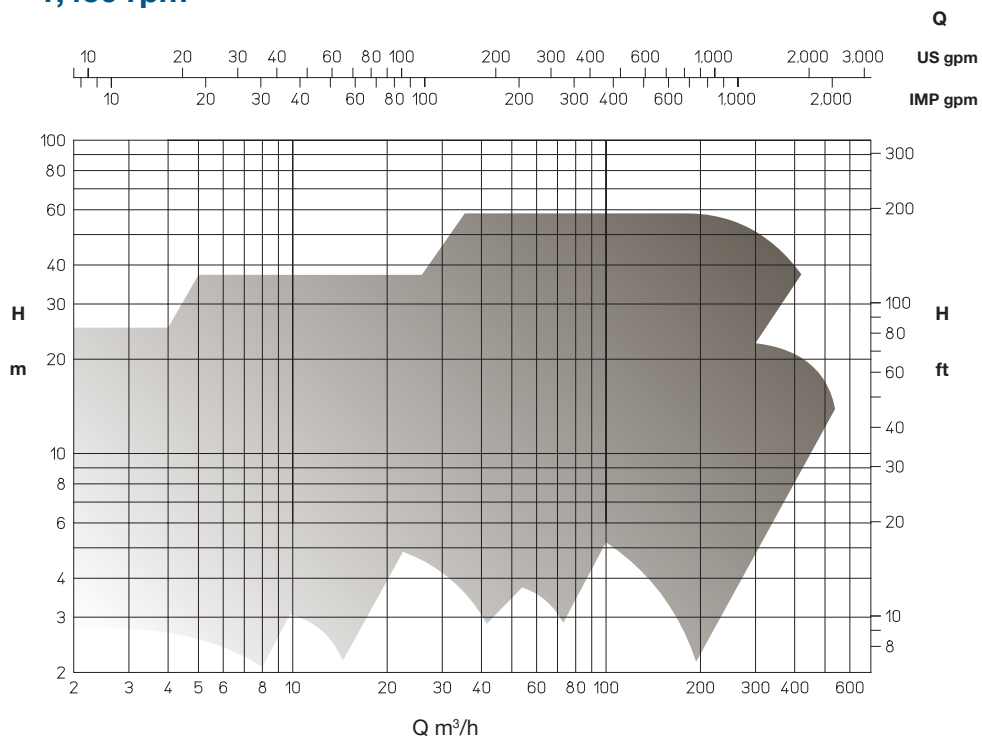


Coverage charts — C-hydraulics 50 Hz ISO 2858

n = 2,900 rpm

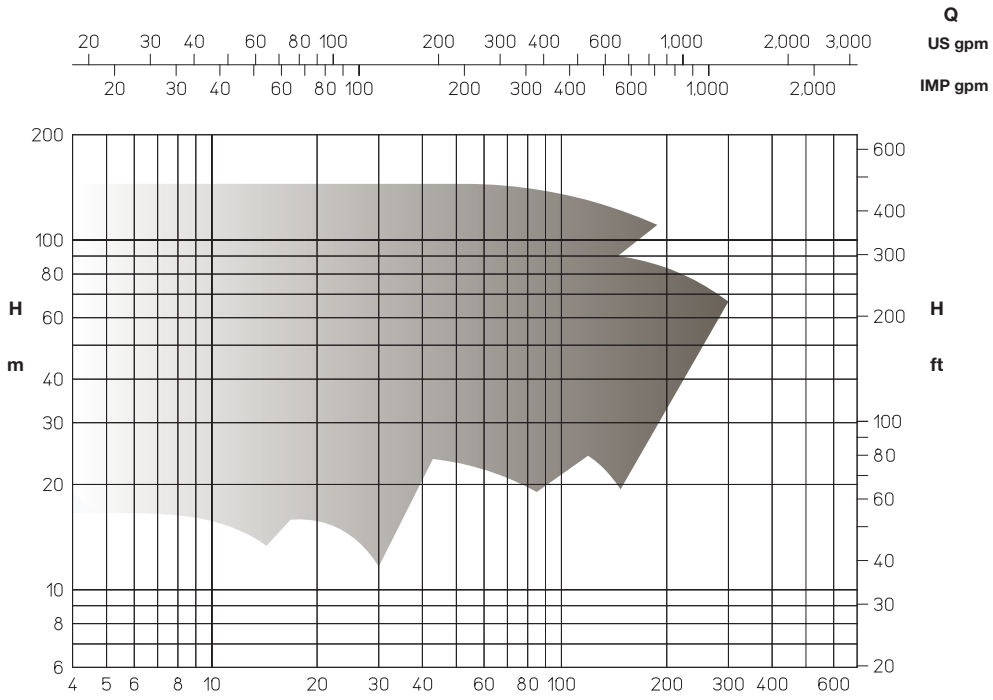


n = 1,450 rpm

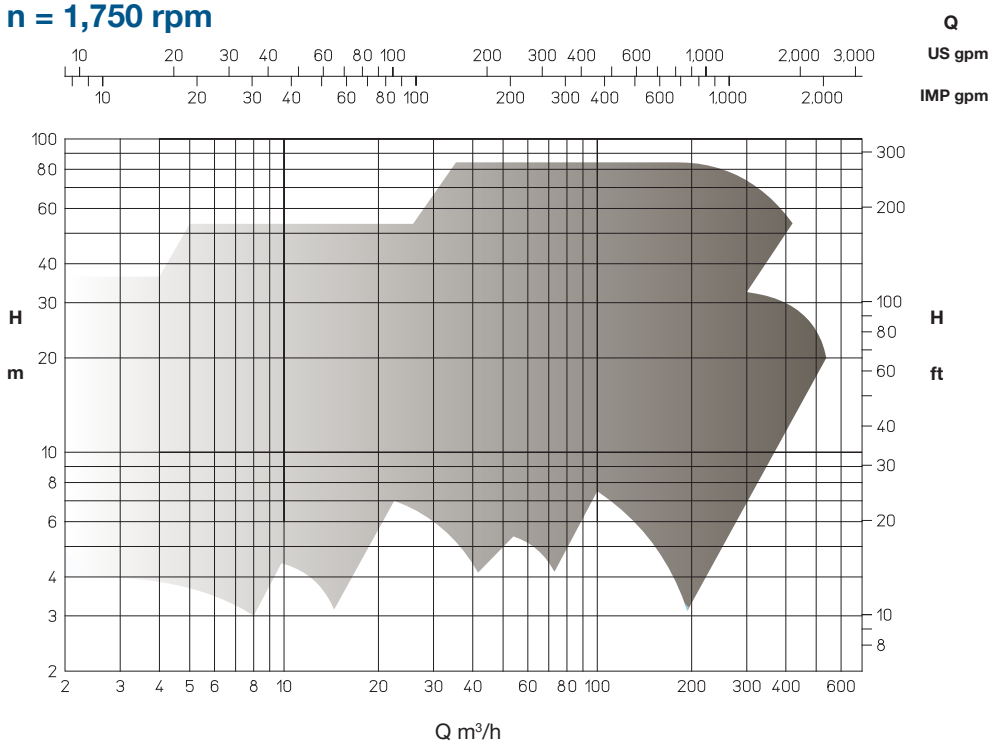


Coverage charts — C hydraulics 60 Hz ISO 2858

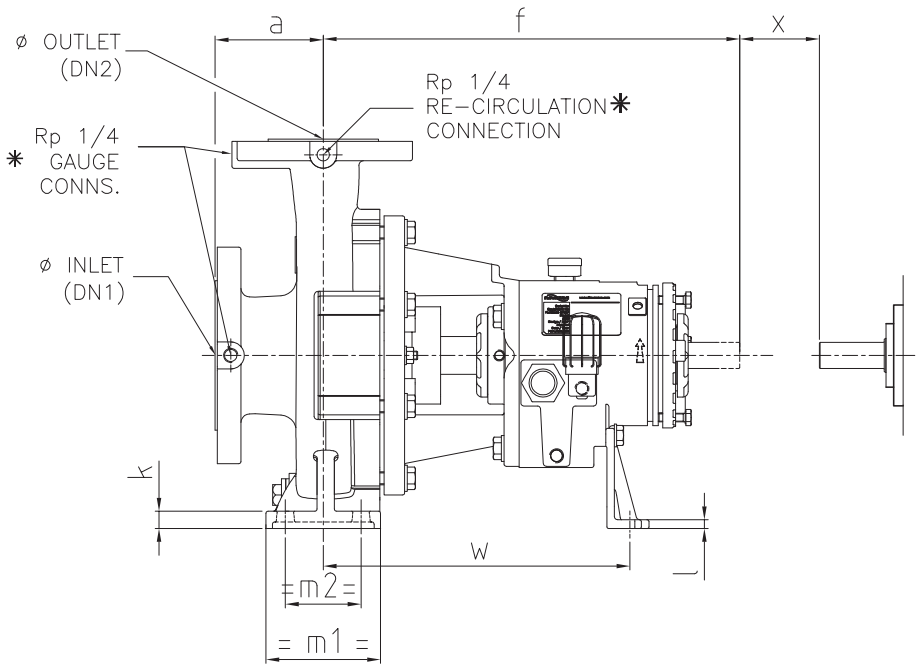
n = 3,500 rpm

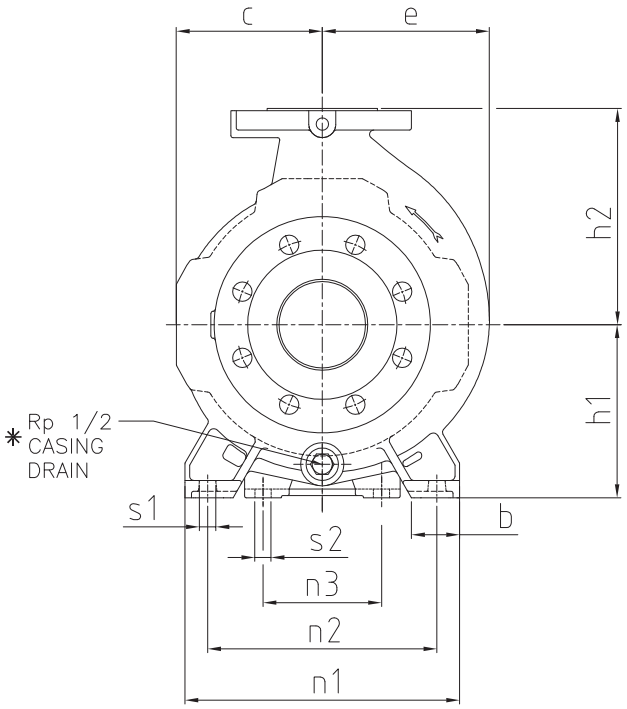


n = 1,750 rpm



Dimensions — long coupled pump





* IF SPECIFIED

FOR DETAILS OF FLANGES AND SHAFT END REFER TO DRG No. B631/072 SHEET 2

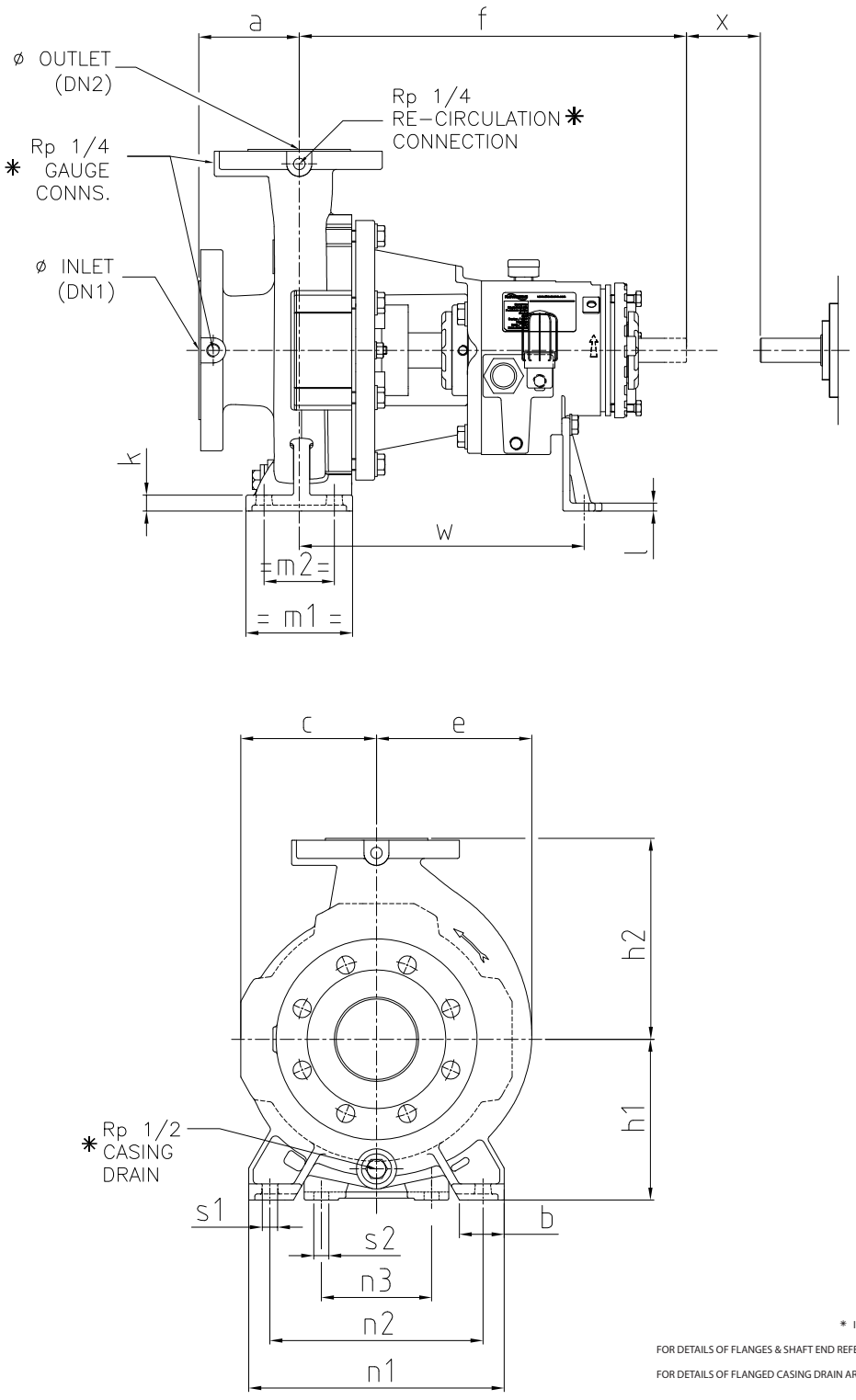
FOR DETAILS OF FLANGED CASING DRAIN ARRGT. REFER TO DRG No. B631/072 SHEET 3

Long coupled pump dimensions (see drawing on page 34)

All dimensions in mm, according to ISO 2858. A and B hydraulics to 16 bar (232 psi); C hydraulics to 25 bar (363 psi)

Pump Designation				Casing and Impeller Availability					Pump Dimensions										Support Dimensions										Clearence Holes for Bolts		DBSE to ISO 2858 X
Inlet (DN)	Outlet (DN2)	Impeller	Frame Size	A HYD		B HYD		C HYD	a	f	h_1	h_2	A HYD	B HYD	C HYD	A HYD	B HYD	C HYD	b	m_1	m_2	n_1	n_2	n_3	w	A & B HYD	C HYD	t	s_1	s_2	
				OP	RV	OP	RV	CL					c	c	c	e	e	e								k	k				
40	25	125	1	Yes	No	No	No	Yes	80	385	112	140	88	-	103	93	-	103	45	106	70	180	140	110	285	12	14	8	M12	M12	100
50	32	125		Yes	No	Yes	No	Yes					90	86	103	103	93	103													
65	40	125		Yes	No	Yes	Yes	Yes					96	96	103	110	103	103				200	160								
80	50	125		Yes	No	Yes	Yes	Yes	100		132	160	103	103	114	119	114	140				230	190				15				
100	65	125		No	No	No	No	Yes			160	180	-	-	110	-	-	142	65	125	95	280	212			-					
100	80	125		Yes	No	No	No	No					121	-	-	140	-	-	60			270				16	-				
32	20	160		Yes	No	No	No	No	80		132	160	104	-	-	104	-	-	45	106	70	230	190								
40	25	160		Yes	Yes	No	No	Yes					104	-	118	106	-	118									14				
50	32	160		Yes	Yes	Yes	No	Yes					104	108	118	112	108	118													
65	40	160		Yes	Yes	Yes	Yes	Yes					104	104	118	120	113	125													
80	50	160		Yes	Yes	Yes	Yes	Yes	100		160	180	107	108	120	133	129	139				255	212								
100	65	160	2	Yes	No	No	Yes	Yes		500		200	133	121	130	147	140	159	60	125	95	270			370						
125	80	160		No	No	No	Yes	Yes	125		180	225	-	138	142	-	158	177	65			320	250			19	-	10			140
125	100	160		Yes	No	No	No	No			200	280	139	-	-	188	-	-	75	160	120	350	280			16			M16		
32	20	200	1	Yes	No	No	No	No	80	385	160	180	133	-	-	133	-	-	45	106	70	230	190		285			8	M12		100
40	25	200		Yes	No	No	No	Yes					133	-	138	133	-	138									14				
50	32	200		Yes	Yes	Yes	No	Yes					133	128	138	133	128	138													
65	40	200		Yes	Yes	Yes	Yes	Yes	100				133	130	138	140	130	142				255	212								
80	50	200		Yes	Yes	Yes	Yes	Yes				200	140	135	139	156	155	156													
100	65	200	2	Yes	Yes	No	Yes	Yes		500	180	225	136	137	46	166	165	172	60	125	95	310	250		370			10			140
125	80	200		No	No	Yes	Yes	Yes	125			250	-	138	155	-	171	186	75			350	280								
125	100	200		Yes	No	Yes	Yes	Yes			200	280	151	143	166	194	185	207	75	160	120	350	280				16		M16		
40	25	250		Yes	No	Yes	No	Yes	100		180	225	166	-	-	166	-	-	60	125	95	310	250				-		M12		100
50	32	250		Yes	No	Yes	No	Yes					166	161	165	166	161	165									14				
65	40	250		Yes	Yes	Yes	Yes	Yes					166	161	165	166	161	165													
80	50	250		Yes	Yes	Yes	Yes	Yes	125				166	165	165	172	165	178													
100	65	250		Yes	Yes	Yes	Yes	Yes			200	250	167	161	171	195	175	192	75	160	120	350	280				16		M16		140
125	80	250		No	No	Yes	Yes	Yes			225	280	-	170	182	-	199	208				390	315								
125	100	250	3	Yes	Yes	Yes	Yes	Yes	140	530			167	175	188	223	209	221				390	315			19					
150	125	250		Yes	No	Yes	Yes	Yes			250	355	179	178	205	235	230	255													
200	150	250		Yes	No	Yes	Yes	Yes	160		280	375	192	188	215	272	262	272	95	200	150	490	400			20	20		M20		180
50	32	315	2	Yes	No	No	No	No	125	500	200	250	198	-	-	196	-	-	60	125	95	335	280			16	-		M12		100
65	40	315		Yes	No	Yes	Yes	Yes					198	197	200	202	197	200									14				
80	50	315		Yes	Yes	Yes	Yes	Yes			225	280	198	200	200	207	200	211													
100	65	315	3	Yes	Yes	Yes	Yes	Yes		530			198	200	204	213	212	219	75	160	120	390	315			19	19		M16		140
125	80	315		Yes	Yes	Yes	Yes	Yes			250	315	207	201	209	245	224	233	79			398				24					
125	100	315		No	No	Yes	Yes	Yes	140				-		218	-	230	241	80			400				24					
150	125	315		Yes	Yes	Yes	Yes	Yes			280	355	212	208	227	262	249	262	95	200	150	490	400			20	18		M20		
200	150	315	4	Yes	No	Yes	Yes	No	160	670	315	400	220	216	-	288	275	-				540	450	140	500		-	12		M16	180
100	65	400	3	Yes	Yes	No	No	No	125	530	280	355	260	-	-	263	-	-	75	160	120		355	110	370	19	-	10	M16	M12	140
125	80	400		Yes	Yes	Yes	Yes	Yes					260	264	248	283	264	266									16				
125	100	400		No	No	Yes	Yes	Yes	140				-	260	261	-	272	282	94	200	150	500	400				18		M20		
15	125	400		Yes	Yes	Yes	Yes	Yes			315	400	262	260	265	305	295	294	95	200	150	490				24			M20		
200	150	400	4	Yes	Yes	Yes	Yes	No	160	670		450	277	264	-	356	303	-				540	450	140	500		-	12		M16	180
250	200	400		Yes	No	No	No	No	180		355	500	290	-	-	385	-	-													
200	150	500		Yes	No	No	No	No			400		380	-	-	445	-	-													

Dimensions — long coupled, high-pressure pump



✳ IF SPECIFIED

FOR DETAILS OF FLANGES & SHAFT END REFER TO DRGNo. B631/073 SHEET 2

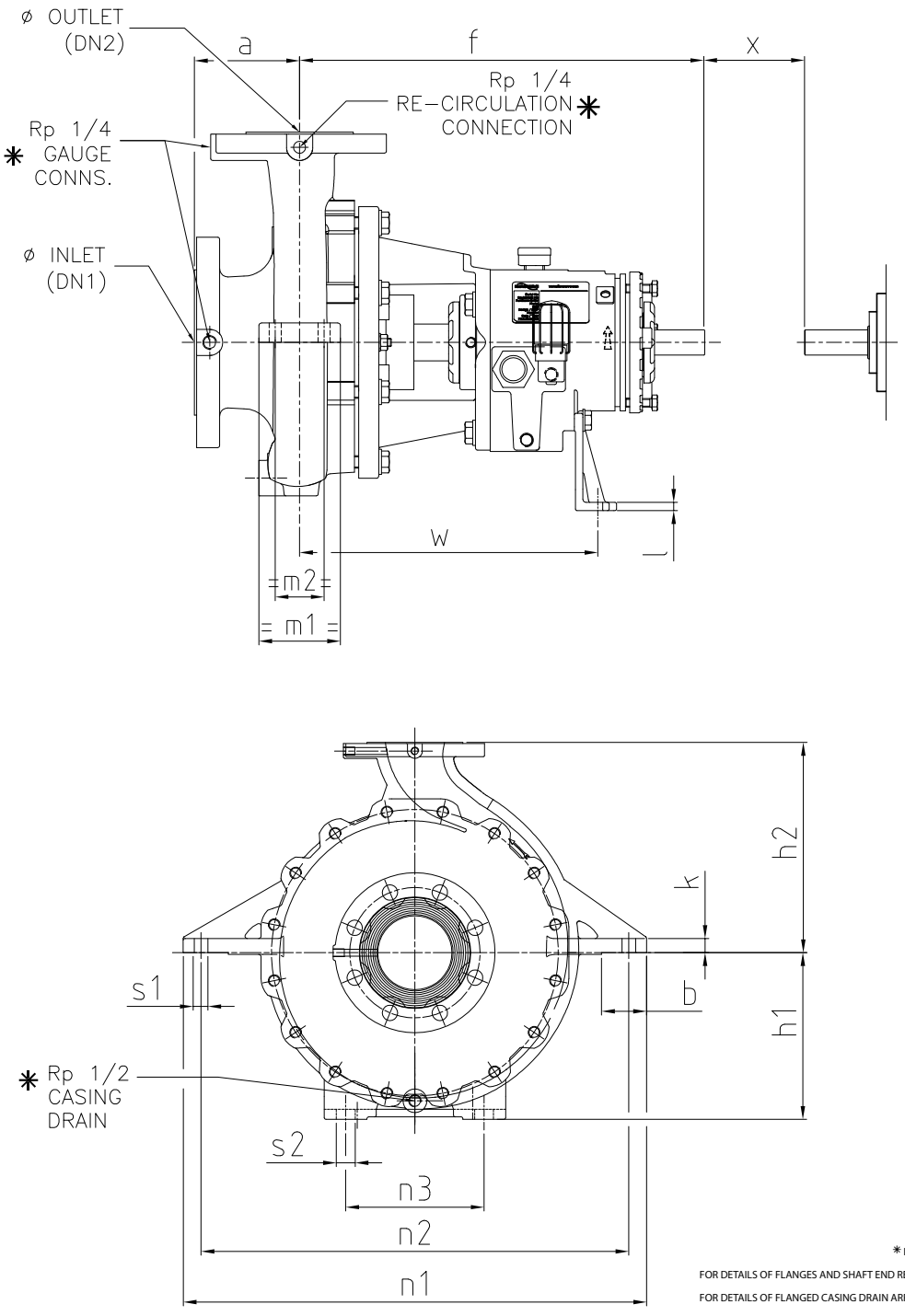
FOR DETAILS OF FLANGED CASING DRAIN ARRGT. REFER TO DRGNo. B631/073 SHEET 3

Long coupled, high-pressure pump dimensions (see drawing on page 36)

All dimensions in mm, according to ISO 2858. A and B hydraulics to 25 bar (363 psi)

Pump Designation				Casing and Impeller Availability				Pump Dimensions												Support Dimensions										Clearence Holes for Bolts		DBSE to ISO 2858 X
Inlet (DN)	Outlet (DN2)	Impeller	Frame Size	A HYD		B HYD		A HYD	B HYD	f	h_1	A HYD	B HYD	A HYD	B HYD	A HYD	B HYD	A HYD	B HYD	A HYD	B HYD	m_1	m_2	n_1	n_2	n_3	w	A & B HYD	t			
				OP	RV	OP	RV	a	a			h_2	h_2	c	c	e	e	b	b									k		s_1	s_2	
40	25	125		Yes	No	No	No		-				-	98	-	98	-	45	-									12				
50	32	125		Yes	No	Yes	No	80	80			140	140	90	86	101	94	45	45					180	140			12				
65	40	125		Yes	No	Yes	Yes		80	385	112		155	140	99	96	111	104	45	45	106	70			110	285	12	8	M12	M12	100
80	50	125		Yes	No	Yes	Yes	100	100		132	165	160	108	103	120	115	45	45					230	190			12				
32	20	160	1	No	No	No	No		-				-	104	-	104	-	45	-									16				
40	25	160		Yes	No	No	No	80	-			160		104	-	106	-	45	-					230	190			16				
50	32	160		Yes	No	Yes	No		80	385	132		160	104	108	113	108	45	45	106	70					285	16	8	M12	M12	100
65	40	160		Yes	No	Yes	Yes		80					104	104	122	114	45	45							110		16				
80	50	160		Yes	No	Yes	Yes	100	100		160	180	180	108	108	133	130	45	45					255	212			16				
100	65	160	2	Yes	No	No	Yes	115		500		210	200	133	121	148	142	60	60	125	95			270			370	16	10			
125	80	160		Yes	No	No	Yes	-	125		180	-	225	-	138	-	160	-	75					320	250			-				140
32	20	200		Yes	No	No	No		-				-	133	-	133	-	45	-									16				
40	25	200		Yes	No	Yes	No	80	-			180	-	133	-	133	-	45	-					230	190			16				
50	32	200	1	Yes	No	Yes	No		80	385	160		180	133	128	133	128	45	45	106	70					285	16	8			100
65	40	200		Yes	No	Yes	Yes	100	100				180	133	132	142	132	45	45					255	212			16		M12		
80	50	200		Yes	No	Yes	Yes					210	200	136	135	158	156	44.5	44.5					254	212			16				
100	65	200		Yes	No	No	Yes				180	235	225	138	139	169	167	60	60					310	250			16				
125	80	200		No	No	Yes	Yes	-	125		180	-	250	-	139	-	174	-	75	125	95			350	280	110		-			M12	140
125	100	200		Yes	No	Yes	Yes	125			200	280	280	152	145	195	187	75	75	160	120			350	280			16		M16		
40	25	250		Yes	No	No	No							166	-	166	-	60										16				
50	32	250		Yes	No	No	No	100	-					166	-	166	-	60										16				
65	40	250	2	Yes	No	No	No			500		180	225	166	-	166	-	60	-	125	95			310	350		370	16	10	M12		100
80	50	250		Yes	No	No	No							166	-	174	-	60										16				
100	65	250		Yes	No	No	No	125	-			200	250	-	169	-	196	-	75	-	160	120			350	280			16		M16		140
125	100	250	3	Yes	No	No	No	140	-	530	225	290	-	183	-	226	-	75	-	160	120			390	315	110	370	19	10	M16	M12	140
150	125	250		Yes	No	No	No	140		530	250	355	-	182	-	237	-	75	-	160	120							19		M16		
50	32	315		As Std. 16 bar	No	No	No								-	198	-	60										16				
65	40	315	2	As Std. 16 bar	No	No	No	125	-	500	200	250	-	198	-	202	-	60	-	125	95			335	280	110	370	16	10	M12	M12	100
80	50	315		Yes	No	No	No								-	209	-	60										16				
100	65	315	3	Yes	No	No	No			530	225	290	-	200	-	215	-	75	-	160	120			390	315			19		M16		140
125	80	315		Yes	No	No	No			530	250	315	-	209	-	247	-	79	-					398	315			24				
200	150	315	4	Yes India	No	No	No	160	-	670	315	415	-	223	-	289	-	95	-	200	150			540	450	140	500	20	12	M20	M16	180
150	125	400		Yes India	No	No	No	140	-	530	315	415	-	265	-	308	-	95	-	200	150			490	400	110	370	24	10	20	M12	140
200	150	400	4	Yes	No	No	No	160	-	670		465	-	276	-	255	-	95						540	450	140	500	24	12		M16	180

Dimensions — long coupled, centerline mounted, high-pressure pump



* IF SPECIFIED

FOR DETAILS OF FLANGES AND SHAFT END REFER TO DRGNo. C107/015 SHEET 2

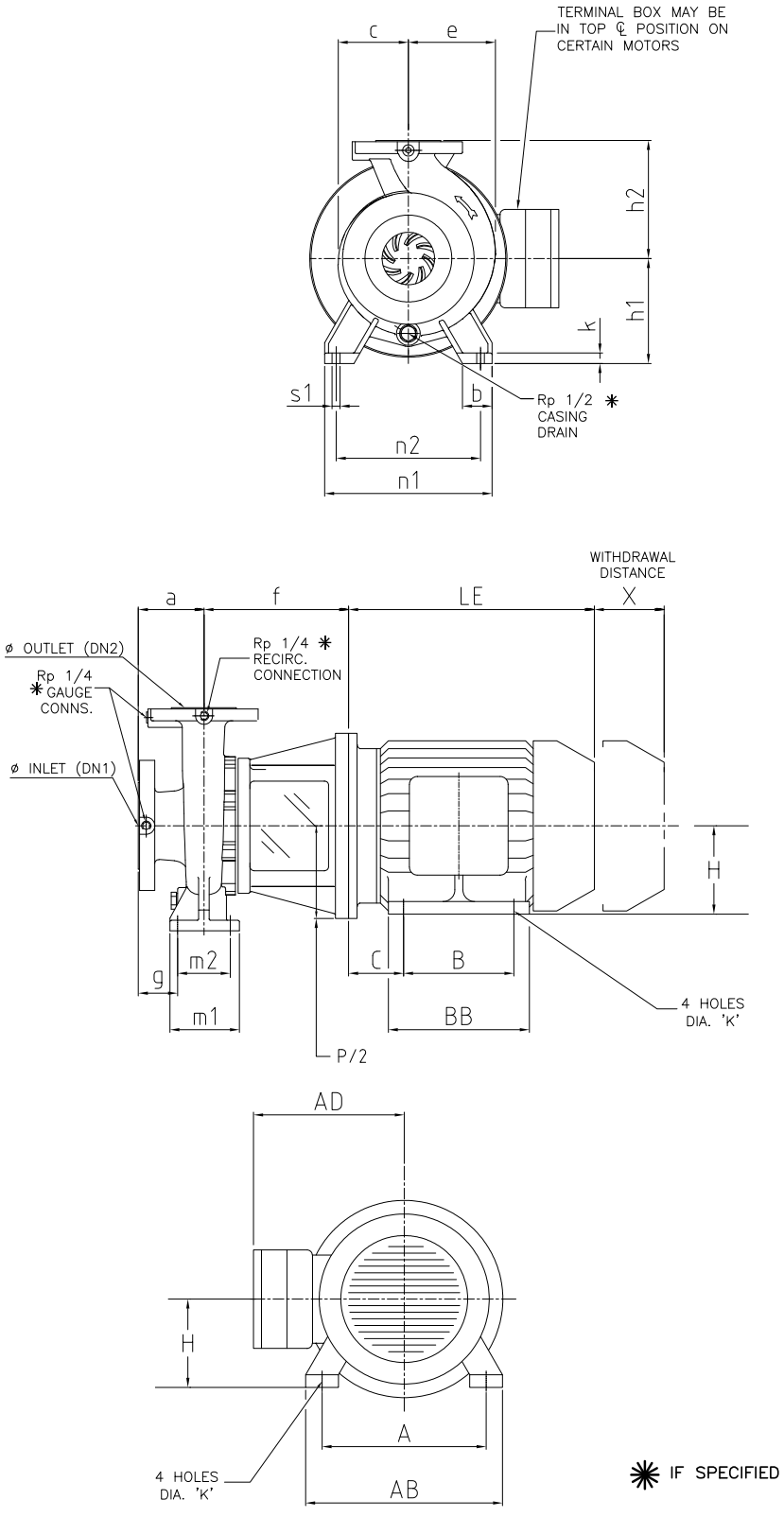
FOR DETAILS OF FLANGED CASING DRAIN ARRGT. REFER TO DRGNo. C107/015 SHEET 3

Long coupled, centerline-mounted, high-pressure pump dimensions (see drawing on page 38)

All dimensions in mm

Pump Designation				Casing and Impeller Availability				Pump Dimensions						Support Dimensions												Clearence Holes for Bolts		DBSE to ISO 2858 X
Inlet (DN)	Outlet (DN2)	Impeller	Frame Size	A HYD		B HYD		A HYD	B HYD	f	h_1	A HYD	B HYD	A HYD	B HYD	A HYD	B HYD	A HYD	B HYD	n_1	n_2	n_3	w	A & B HYD	l	s_1	s_2	
				OP	RV	OP	RV	a	a			h_2	h_2	b	b	m_1	m_1	m_2	m_2					k				
40	25	125		Yes	No	No	No		-			140	-	48	-	84	-	48	-	314	278	110	285	12	8	M12	M12	100
50	32	125		Yes	No	No	No	80	-		112	140	-	48	-	84	-	48	-	314	278	110	285	12	8	M12	M12	100
65	40	125		Yes	No	No	No		-			155	-	48	-	84	-	48	-	334	298	110	285	12	8	M12	M12	100
80	50	125		Yes	No	No	No	100	-			165	-	48	-	84	-	48	-	348	312	110	285	12	8	M12	M12	100
32	20	160	1	Yes	No	No	No		-	385			-	48	-	84	-	48	-	314	278	110	285	16	8	M12	M12	100
40	25	160		Yes	No	No	No	80	-		132	160	-	48	-	84	-	48	-	314	278	110	285	16	8	M12	M12	100
50	32	160		Yes	No	No	No		-				-	48	-	84	-	48	-	334	298	110	285	16	8	M12	M12	100
65	40	160		Yes	No	No	No		-				-	48	-	84	-	48	-	348	312	110	285	16	8	M12	M12	100
80	50	160		Yes	No	No	No	100	-		160	180	-	48	-	84	-	48	-	376	340	110	285	16	8	M12	M12	100
100	65	160	2	Yes	No	No	No	115	-	500		210	-	48	-	84	-	48	-	408	372	110	370	16	10	M12	M12	100
125	100	160		Yes India	No	No	No	125	-	500	200	295	-	61	-	98	-	54	-	522	476	110	370	16	10	M16	M12	140
32	20	200		Yes	No	No	No		-	385			-	48	-	84	-	48	-	376	340	110	285	16	8	M12	M12	100
40	25	200		Yes	No	No	No	80	-	385			-	48	-	84	-	48	-	376	340	110	285	16	8	M12	M12	100
50	32	200	1	Yes	No	No	No		-	385	160	180	-	48	-	84	-	48	-	376	340	110	285	16	8	M12	M12	100
65	40	200		Yes	No	No	No		-	385			-	48	-	84	-	48	-	390	354	110	285	16	8	M12	M12	100
80	50	200		Yes	No	No	No	100	-	385		210	-	48	-	84	-	48	-	428	392	110	285	16	10	M12	M12	100
100	65	200		Yes	No	No	No		-	500	180	235	-	48	-	84	-	48	-	444	408	110	370	16	10	M12	M12	140
125	100	200		Yes	No	No	No	125	-	500	200	280	-	61	-	98	-	54	-	522	476	110	370	16	10	M16	M12	140
40	25	250		Yes	No	No	No		-	500			-	48	-	84	-	48	-	444	408	110	370	16	10	M12	M12	100
50	32	250		Yes	No	Yes	No	100	100	500			225	48	48	84	100	48	60	444	408	110	370	16	10	M12	M12	100
65	40	250	2	Yes	No	Yes	Yes		100	500	180	225	225	48	48	84	100	48	60	444	408	110	370	16	10	M12	M12	100
80	50	250		Yes	No	Yes	Yes	125	125	500			225	48	48	84	100	48	60	458	422	110	370	16	10	M12	M12	100
100	65	250		Yes	No	Yes	Yes		125	500	200	250	250	61	61	98	124	54	80	522	476	110	370	16	10	M16	M12	140
125	80	250		Yes	No	Yes	Yes	-	125	500	225	-	280	-	61	-	124	-	80	586	540	110	370	-	10	M16	M12	140
125	100	250		Yes India	No	Yes	Yes	140	140	530	225	290	280	61	61	98	124	54	80	586	540	110	370	19	10	M16	M12	140
150	125	250	3	Yes	No	Yes	Yes		140	530	250	355	355	61	61	98	124	54	80	604	558	110	370	19	10	M16	M12	140
200	150	250		No	No	Yes	Yes	-	160	530	280	-	375	-	76	-	150	-	100	712	652	110	370	-	10	M20	M12	180
50	32	315		Yes	No	No	No		-	500	200	250	-	48	-	84	-	48	-	522	486	110	370	16	10	M12	M12	100
65	40	315	2	No	No	Yes	Yes		125	500	200	-	250	-	48	-	100	-	60	522	486	110	370	-	10	M12	M12	100
80	50	315		Yes	No	Yes	Yes	125	125	500	225	290	280	48	48	84	100	48	60	522	486	110	370	16	10	M12	M12	100
100	65	315		Yes	No	Yes	Yes		125	530	225	290	280	61	61	98	124	54	80	560	514	110	370	19	10	M16	M12	140
125	80	315	3	Yes	No	Yes	Yes		125	530	250	315	315	61	61	98	124	54	80	624	578	110	370	24	10	M16	M12	140
125	100	315		No	No	Yes	Yes	-	140	530	250	-	315	-	61	-	124	-	80	604	558	110	370	-	10	M16	M12	140
150	125	315		No	No	Yes	Yes	-	140	530	280	-	355	-	76	-	150	-	100	982	622	110	370	-	10	M12	M12	140
200	150	315	4	Yes India	No	Yes	Yes	160	160	670	315	415	400	76	76	136	150	76	100	752	692	140	500	20	12	M20	M16	180
125	80	400		No	No	Yes	Yes	-	125	530	280	-	355	-	61	-	124	-	80	704	658	110	370	-	10	M16	M12	140
125	100	400		No	No	Yes	Yes	-	140	530	280	-	355	-	76	-	150	-	100	782	722	110	370	-	10	M20	M12	140
150	125	400		Yes	No	Yes	Yes	140	140	530	315	415	400	76	76	136	150	76	100	782	722	110	370	24	10	M20	M12	140
200	150	400	4	Yes India	No	Yes	Yes	160	160	670	315	465	450	76	76	136	150	76	100	882	822	140	500	24	12	M20	M16	180
200	150	500		Yes India	No	No	No	180	-	670	400	515	-	76	-	136	-	76	-	1000	940	140	500	24	12	M20	M16	180

Dimensions — close coupled pump



Close coupled pump dimensions (see drawing on page 40)

All dimensions in mm; A and B hydraulics

Pump Designation			Motor Frame Size	Pump Dimensions													Motor Dimensions										
Inlet (DN)	Outlet (DN2)	Impeller		a	h_1	h_2	c	e	b	m_1	m_2	n_1	n_2	k	g	s1	f	P/2	LE Max	X	AD max	H	A	B	C	K	AB max	BB max
40	25	125	80	80	112	140	88	93	45	106	70	180	140	12	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	148							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
50	32	125	80	80	112	140	90	103	45	106	70	180	140	12	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	223
			132S														232	150	290	150	218	132	216	140	89	12	261	223
65	40	125	80	80	112	140	96	110	45	106	70	200	160	12	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
80	40	125	80	100	132	160	103	119	45	106	70	230	190	12	65	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
100	80	125	80	100	160	180	121	140	60	125	95	270	212	16	52.5	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
32	20	160	80	80	132	160	104	104	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
40	25	160	80	80	132	160	104	106	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
50	32	160	80	80	132	160	104	112	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	15	320	334

Close coupled pump dimensions, *continued* (see drawing on page 40)

All dimensions in mm; A and B hydraulics

Pump Designation			Motor Frame Size	Pump Dimensions														Motor Dimensions									
Inlet (DN)	Outlet (DN2)	Impeller		a	h_1	h_2	c	e	b	m_1	m_2	n_1	n_2	k	g	s1	f	P/2	LE Max	X	AD max	H	A	B	C	K	AB max	BB max
65	40	160	80	80	132	160	101	120	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			90S														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			132S														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														262	175	505	150	265	180	254	210	108	15	320	334
80	50	160	80	100	160	180	107	133	45	106	70	255	212	16	65	15	201	100	255	150	148	NO FOOT FITTED						
			905														201	100	214	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	180	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			1325														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	150	218	132	218	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	15	320	334
			160L														268	175	550	150	265	160	254	254	108	15	320	334
			180M														268	175	585	150	278	180	279	241	121	15	356	394
			180L														268	175	599	150	288	180	279	279	121	15	356	394
32	20	300	80	80	160	180	133	133	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			905														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	107	112	190	140	70	12	229	190
			1325														232	150	300	150	218	132	216	140	89	12	281	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	15	320	334
40	25	200	80	80	160	180	133	133	45	106	70	230	190	16	45	15		100	255	150	148	NO FOOT FITTED						
			905															100	264	150	157							
			90L															100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			1325														232	150	390	150	218	132	216	140	89	12	281	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	15	320	334
			160L														268	175	550	150	265	160	254	254	108	15	320	334
			180M														258	175	585	150	278	180	270	241	121	15	356	394
50	32	200	80	80	160	180	133	133	45	106	70	230	190	16	45	15	201	100	255	150	148	NO FOOT FITTED						
			905														201	100	264	150	157							
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	180	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			1325														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	15	320	334
65	40	200	905	100	160	180	133	140	45	106	70	255	212	16	65	15	201	100	264	150	157	NO FOOT FITTED						
			90L														201	100	289	150	157							
			100L														212	125	311	150	180	100	160	140	63	12	204	170
			112M														212	125	329	150	107	112	190	140	70	12	229	190
			1325														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	150	218	132	216	178	89	12	261	223
			160M														268	175	505	150	285	160	254	210	108	15	320	334
			160L														268	175	550	150	265	160	241	254	108	15	320	334
			180M														268	175	585	150	278	180	270	241	121	15	356	394
			180L														268	175	599	150	288	180	279	279	121	15	356	394
			200L														268	200	705	150	348	200	318	305	133	19	394	365

Close coupled pump dimensions, *continued* (see drawing on page 40)

All dimensions in mm; A and B hydraulics

Pump Designation			Motor Frame Size	Pump Dimensions													Motor Dimensions										
Inlet (DN)	Outlet (DN2)	Impeller		a	h_1	h_2	c	e	b	m_1	m_2	n_1	n_2	k	g	s1	f	P/2	LE Max	X	AD max	H	A	B	C	K	AB max	BB max
80	50	200	90L	100	160	200	140	156	45	106	70	255	212	16	65	15	201	100	289	150	157	NO FOOT FITTED						
			100L														212	125	311	150	1110	100	160	140	63	12	204	170
			112M														212	125	329	150	197	112	190	140	70	12	229	190
			1325														232	150	390	150	218	132	216	140	89	12	261	223
			132M														232	150	430	200	218	132	216	178	89	12	261	223
			160M														268	175	505	150	265	160	254	210	108	12	320	334
			160L														268	175	550	150	265	160	254	254	108	15	320	334
			180M														268	175	585	150	278	180	279	241	121	15	356	394
			180L														268	175	599	150	268	180	279	279	121	15	356	394
			200L														268	200	705	150	346	200	318	305	133	19	394	365
100	65	160	90S	100	160	200	133	147	60	125	95	270	212	16	52.5	15	232	100	284	200	157	NO FOOT FITTED						
			90L														232	100	289	200	157							
			100L														242	125	311	200	1110	100	160	140	83	12	204	170
			112M														242	125	329	200	1117	112	190	140	70	12	229	190
			1325														262	150	390	200	218	132	216	140	89	12	261	223
			132M														262	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	286	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
125	100	160	100L	125	200	280	139	188	75	160	120	350	280	16	65	19	242	125	311	200	1110	100	160	140	83	12	204	170
			112M														242	125	329	200	197	112	190	140	70	12	229	190
			1325														262	150	390	200	218	132	216	140	89	12	261	223
			132M														262	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	268	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
100	65	200	100L	100	180	225	136	168	60	125	95	310	250	16	52.5	15	232	125	311	200	1110	100	160	140	63	12	204	170
			112M														232	125	329	200	197	112	190	140	70	12	229	190
			1325														232	150	390	200	218	132	216	140	89	12	261	223
			132M														232	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	268	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
125	100	200	112M	125	200	280	151	194	75	160	120	350	280	16	65	19	232	125	329	200	197	112	190	140	70	12	229	190
			1325														232	150	390	200	218	132	216	140	89	12	261	223
			132M														232	150	430	200	216	132	216	176	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	268	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365

Close coupled pump dimensions, *continued* (see drawing on page 40)

All dimensions in mm; A and B hydraulics

Pump Designation			Motor Frame Size	Pump Dimensions													Motor Dimensions										
Inlet (DN)	Outlet (DN2)	Impeller		a	h_1	h_2	c	e	b	m_1	m_2	n_1	n_2	k	g	s1	f	P/2	LE Max	X	AD max	H	A	B	C	K	AB max	BB max
40	25	250	100L	100	180	225	166	166	60	125	95	310	250	16	52.5	15	246	125	311	200	180	100	160	140	63	12	204	170
			112M														246	125	329	200	197	112	190	140	70	12	229	190
			132S														262	150	390	200	218	132	216	140	89	12	261	223
			132M														262	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	286	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
50	32	250	100L	100	180	225	166	166	60	125	95	310	250	16	52.5	15	246	125	311	200	180	100	160	140	63	12	204	170
			112M														246	125	329	200	197	112	190	140	70	12	229	190
			132S														262	150	390	200	218	132	216	140	89	12	261	223
			132M														262	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	286	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
65	40	250	100L	100	180	225	166	166	60	125	95	310	250	16	52.5	15	246	125	311	200	180	100	160	140	63	12	204	170
			112M														246	125	329	200	197	112	190	140	70	12	229	190
			132S														262	150	390	200	218	132	216	140	89	12	261	223
			132M														262	150	430	200	218	132	216	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
80	50	250	100L	125	180	225	166	172	60	125	95	310	250	16	77.5	15	246	125	311	200	180	100	160	140	63	12	204	170
			112M														246	125	329	200	197	112	190	140	70	12	229	190
			132S														262	150	390	200	218	132	218	140	89	12	261	223
			132M														262	150	430	200	218	132	218	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
100	65	250	112M	125	200	250	167	195	75	160	120	350	280	16	65	19	246	125	329	200	197	112	190	140	70	12	229	190
			132S														262	150	390	200	218	132	218	140	89	12	261	223
			132M														262	150	430	200	218	132	218	178	89	12	261	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
125	100	250	160M	140	225	280	167	223	75	160	120	390	315	16	80	19	298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	286	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365

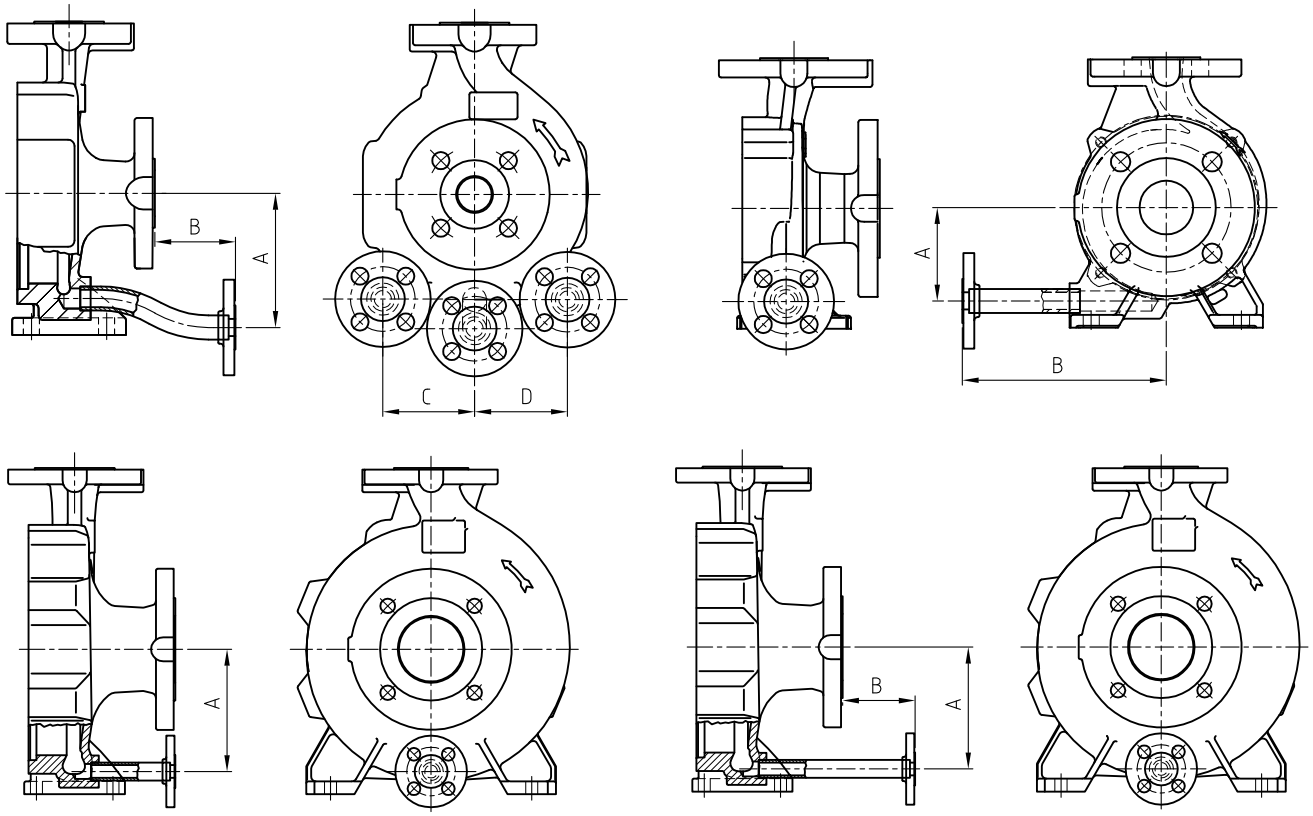
Close coupled pump dimensions, *continued* (see drawing on page 40)

All dimensions in mm; A and B hydraulics

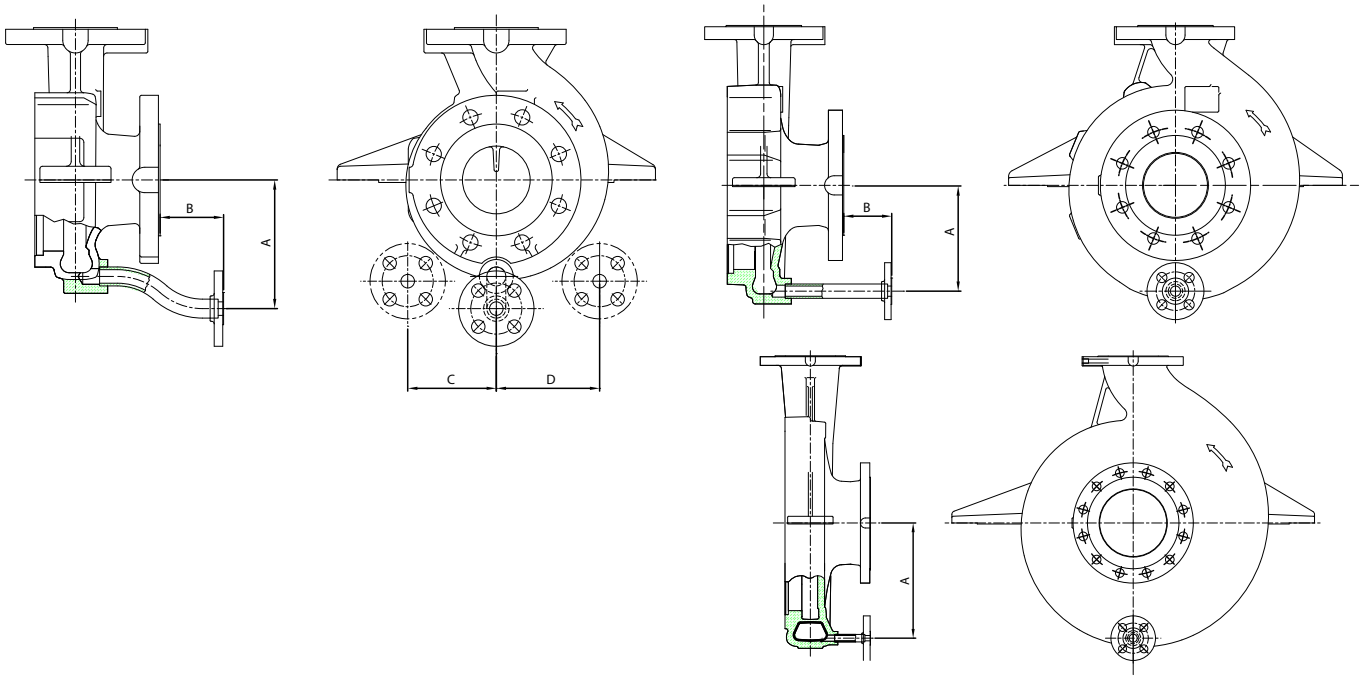
Pump Designation			Motor Frame Size	Pump Dimensions														Motor Dimensions										
Inlet (DN)	Outlet (DN2)	Impeller		a	h_1	h_2	c	e	b	m_1	m_2	n_1	n_2	k	g	s1	f	P/2	LE Max	X	AD max	H	A	B	C	K	AB max	BB max
150	125	250	160M	140	250	355	179	235	75	160	120	390	315	19	80	19	298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	356	394
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
200	150	250	180L	160	280	375	192	272	95	200	150	490	400	20	85	22	298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
50	32	315	1325	125	200	250	198	198	60	125	95	335	280	16	77.5	15	282	150	390	200	218	132	216	140	89	12	281	223
			132M														282	150	430	200	218	132	216	178	89	12	281	223
			160M														298	175	505	200	285	180	254	210	108	15	320	334
			160L														298	175	550	200	285	180	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	286	180	279	279	121	15	356	394
65	40	315	132S	125	200	250	198	202	60	125	95	335	280	16	77.5	15	262	150	390	200	218	132	216	140	89	12	281	223
			132M														262	150	430	200	218	132	216	178	89	12	281	223
			160M														298	175	505	200	265	160	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
80	50	315	132S	125	225	280	198	207	60	125	95	335	280	16	77.5	15	262	150	390	200	218	132	218	140	89	12	281	223
			132M														262	150	390	200	218	132	216	140	89	12	281	223
			160M														298	175	505	200	285	180	254	210	108	15	320	334
			160L														298	175	550	200	285	180	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
100	65	315	160M	125	225	280	198	213	75	160	120	390	315	19	65	19	298	175	505	200	265	180	254	210	108	15	320	334
			160L														298	175	550	200	265	180	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
125	80	315	160M	125	250	315	207	245	79	160	120	398	315	24	65	19	298	175	505	200	265	180	254	210	108	15	320	334
			160L														298	175	550	200	265	160	254	254	108	15	320	334
			180M														298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365
150	125	315	180M	140	280	355	212	262	95	200	150	490	400	20	65	22	298	175	585	200	278	180	279	241	121	15	356	394
			180L														298	175	599	200	288	180	279	279	121	15	356	394
			200L														298	200	705	200	346	200	318	305	133	19	394	365

Drain options

Standard PN 16 and high-pressure designs



Centerline mounted



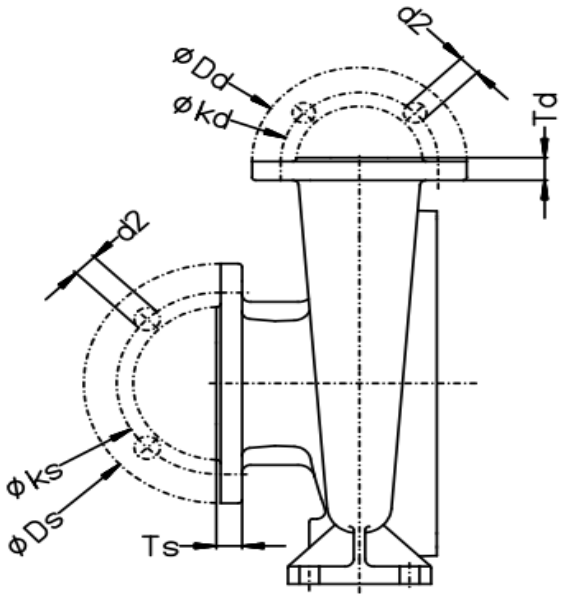
Lubrication options

Durco ISO lubrication options*

Version name	Features
Mark 3 ISO O	Oil, default
Mark 3 ISO OC	Oil, with constant level oiler
Mark 3 ISO OP	Oil, increased housing protection
Mark 3 ISO 3A	Oil, maximized protection, minimized maintenance
Mark 3 ISO OM	Pure oil mist two-point entry
Mark 3 ISO OS	Purge oil mist over oil sump two-point entry
Mark 3 ISO ON	Nitrogen purge over oil sump; single connection in vent tapping with vent on a tee
Mark 3 ISO G	Grease regreasable with grease nipples

* Available for all long coupled pumps

Dimensions — flanges



[1] Execution 1¼" for DN32 not possible

[2] Execution 1" on suction side (DN40) with 4 x threads ½" – 13 UNC

Casing outlet and inlet flange dimensions

All dimensions in mm

Bore DN	Outside Diameter		Thickness		Standard	Bolting No. x Hole x PCD	Raised Face Diameter	Raised Face Height
	Standard Casing	HP Casing	Standard Casing	HP Casing				
20	105	120	24	24	PN 16, 25 and 25	4 x 14 x 75	56	2
			24	24	Class 150 (PN20)	4 x 16 x 70	43	2
			N/A	24	Class 300 (PN50)	4 x 18 x 82.5	43	2
25	115	125	21	21	PN 16, 25 and 25	4 x 14 x 85	65	2
			21	21	Class 150 (PN20)	4 x 16 x 79.5	51	2
			N/A	21	Class 300 (PN50)	4 x 18 x 89	51	2
32	140	140	18	19.5	PN 16, 25 and 25	4 x 18 x 100	76	2
			18	19.5	Class 150 (PN20)	4 x 16 x 89	64	2
			• •	19.5	Class 300 (PN50)	4 x 18 x 98.5	64	2
40	150	155	19	21	PN 16, 25 and 25	4 x 18 x 110	84	2
			91	21	Class 150 (PN20)	4 x 16 x 98.5	73	2
			• •	21	Class 300 (PN50)	4 x 22 x 114.5	73	2

Casing outlet and inlet flange dimensions, *continued* (see drawing on page 48)

All dimensions in mm

Bore DN	Outside Diameter		Thickness		Standard	Bolting No. x Hole x PCD	Raised Face Diameter	Raised Face Height
	Standard Casing	HP Casing	Standard Casing	HP Casing				
50	165	165	20	25	PN 16, 25 and 25	4 x 18 x 125	99	2
			20	25	Class 150 (PN20)	4 x 18 x 120.5	92	2
			••	25	Class 300 (PN50)	8 x 18 x 127	92	2
65	185		22	N/A	PN 16 (Iron)	4 x 18 x 145	118	2
		190	22	25.5	PN 16 (Steel), PN 25 & PN 40	8 x 18 x 145	118	2
			22	25.5	Class 150 (PN20)	4 x 18 x 139.5	105	2
			••	25.5	Class 300 (PN50)	8 x 22 x 149.5	105	2
80	200	210	24	29	PN 16, 25 and 25	8 x 18 x 160	132	2
			24	29	Class 150 (PN20)	4 x 18 x 152.5	127	2
			N/A	29	Class 300 (PN50)	8 x 22 x 168.5	127	2
100	235	255	24	32	PN 16	8 x 18 x 180	156	2
			24	32	PN 25 & 40 •	8 x 22 x 190	156	2
			24	32	Class 150 (PN20)	8 x 18 x 190.5	157	2
			N/A	32	Class 300 (PN50)	8 x 22 200	157	2
125	270	280	26	35	PN 16	8 x 18 x 210	184	2
			26	35	PN 25 & 40 •	8 x 26 x 220	184	2
			26	35	Class 150 (PN20)	8 x 22 x 216	186	2
			N/A	35	Class 300 (PN50)	8 x 22 x 235	186	2
150	300	320	28	37	PN 16	8 x 22 x 240	211	2
			28	37	PN 25 & 40 •	8 x 26 x 250	211	2
			28	37	Class 150 (PN20)	8 x 22 x 241.5	216	2
			N/A	37	Class 300 (PN50)	12 x 22 x 270	216	2
200	360	380	30	41.5	PN 16	12 x 22 x 295	266	2
			30	41.5	PN 25	12 x 26 x 310	274	2
			30	41.5	Class 150 (PN20)	8 x 22 x 298.5	270	2
			•••	41.5	Class 300 (PN50)	12 x 26 x 330	270	2
250	425	450	32	48	PN 16	12 x 26 x 355	319	2
			32	48	PN 25	12 x 30 x 370	330	2
			32	48	Class 150 (PN20)	12 x 26 x 362	324	2
			•••	48	Class 300 (PN50)	16 x 30 x 387.5	324	2

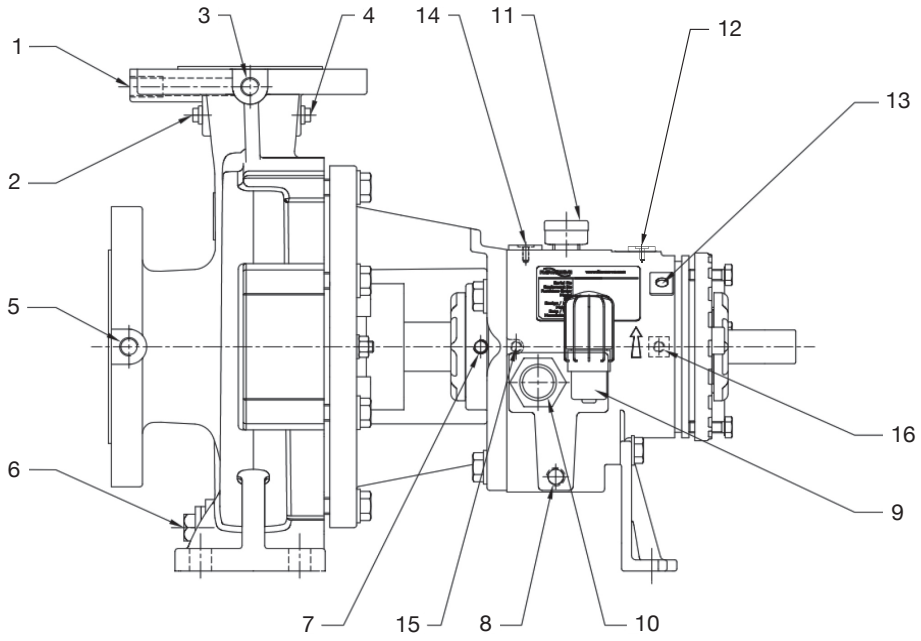
• Not available in ductile iron

•• Class 300 (PN 50) not available except for sizes 2K50-32-315 and 2K65-40-315 in steel or alloys.

••• Class 300 (PN 50) not available except for sizes 4K250-200-400 in steel or alloys.

The flange outside diameters and thicknesses in some cases differ from those of the flange standard.
This is permissible in accordance with VDMA 24297 and API 610.

Dimensions — connections



Dimensions of pump connections

Position No.	Description	Execution	Connection	
			A & B - Hydraulics	C - Hydraulics
1	Pressure gauge	By request	Rp1/4	N/A
2	Pressure gauge	By request	N/A	G1/4, G1/2*
3	Recirculation	By request	Rp1/4	N/A
4	Recirculation	By request	N/A	G1/4
5	Vacuum and pressure gauge	By request	Rp1/4	G1/4, G1/2*
6	Casing drain	By request	1/2 in. NPT	G1/4, G3/8*
7	Grease nipple	Grease nipple or oil mist inlet to pump end bearing	1/8 in. NPT	
8	Magnetic drain	Bearing housing drain	1/4 in. NPT	
9	Constant level oiler	Execution with oil level controller	1/4 in. NPT	
10	Oil level sight glass	For oil level indication	1 in. NPT	
11	Oil filler/vent/breather	For oil lubrication - vent	1/2 in. NPT	
12	Condition monitoring	By request	1/4 in. UNF	
13	Grease nipple	Grease nipple or oil mist inlet to drive end bearing	1/8 in. NPT	
14	Vibration monitoring	By request	1/4 in. UNF	
15	Temperature monitoring	By request (IB - inboard)	1/4 in. NPT	
16	Temperature monitoring	By request (OB - outboard)	1/4 in. NPT	

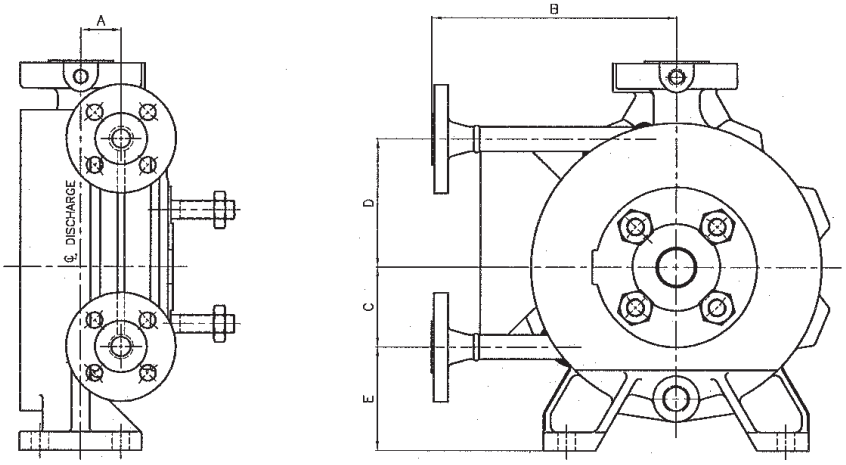
*** Depending on size** **N/A - Not applicable**

Jacketed casings

Flanged connections

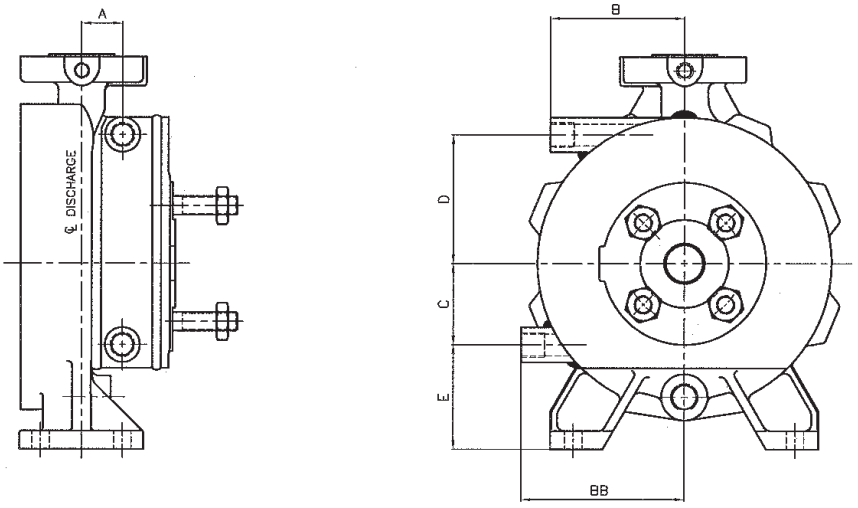
½ in. N.B. schedule 40 pipe with weld neck flanges

- BS EN 1092-1 for PN 16 or PN 25 ratings
- BS EN 1759-1 for PN 20 or PN 50 ratings; flange ratings to be specified on order



Bossed connections

30 mm O/D boss tapped Rp ½

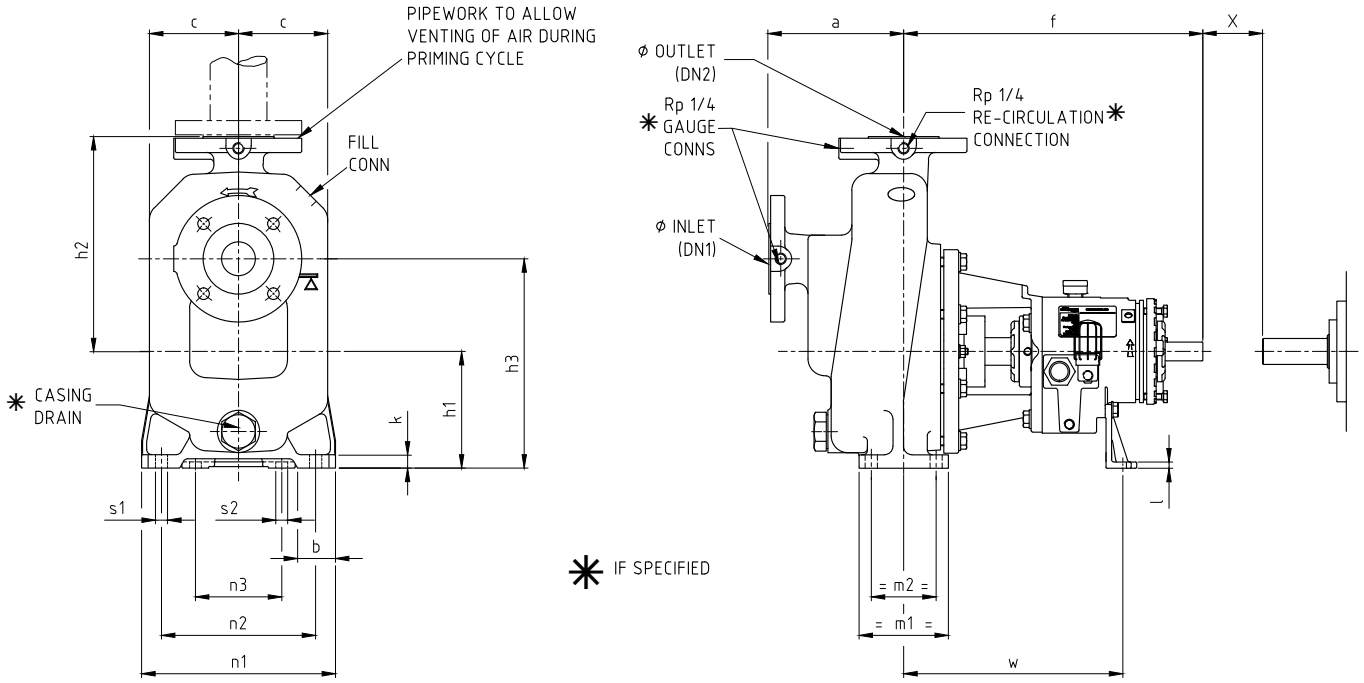


Temperature and pressure ratings*

Heating/Cooling Medium	Operational Temperature	Operational Pressure
Water	20°C (68°F)	16 barg (232 psi)
Steam	200°C (392°F)	13.3 barg (192 psi)
Heating oil	350°C (662°F)	6 barg (87 psi)

*The above figures may be subject to de-rating, dependent upon the material used for the jacket fabrication.

Dimensions — self-priming pump



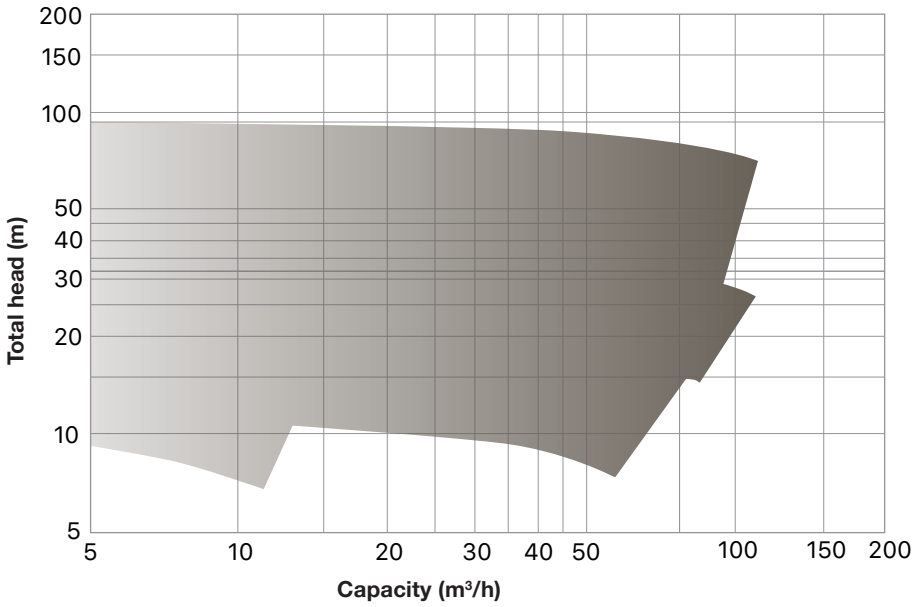
Self-priming pump dimensions

All dimensions in mm

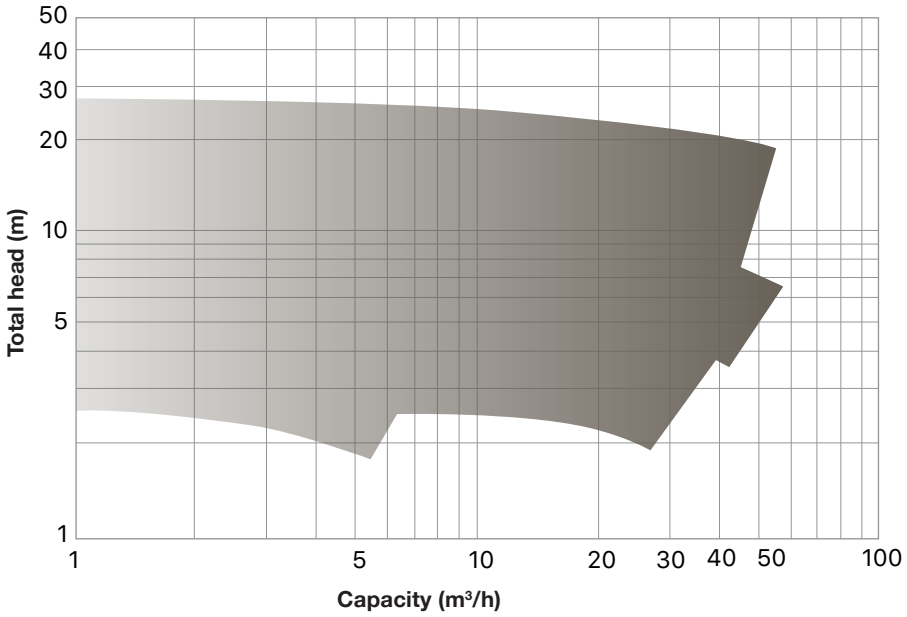
Pump Designation				Pump Dimensions						Support Dimensions									Clearance Holes for Bolts		DBSE to ISO 2858 'X'
Inlet (DN)	Outlet (DN2)	Impeller	Frame Size	a	f	h_1	h_2	h_3	c	b	m_1	m_2	n_1	n_2	n_3	w	k	l	s_1	s_2	
40	40	125	1	150	385	112	240	212	105	45	106	70	186	140	110	285	12	8	M12	M12	100
80	80	125	1	200	385	132	310	252	136	45	106	70	236	190	110	285	12	8	M12	M12	100
40	40	160	1	160	385	132	255	242	112	45	106	70	230	190	110	285	16	8	M12	M12	100
80	80	160	1	210	385	160	310	290	137	45	106	70	265	212	110	285	16	8	M12	M12	100
40	40	200	1	160	385	160	280	290	128	45	106	70	230	190	110	285	16	8	M12	M12	100
65	65	200	1	220	385	160	350	290	160	45	106	70	255	212	110	285	16	8	M12	M12	100
80	80	250	2	230	500	180	390	340	175	60	125	95	310	250	110	370	16	10	M12	M12	100
100	100	250	3	250	660	280	355	460	270	95	200	150	540	450	110	500	24	10	M16	M12	140
100	100	315	3	250	660	280	355	460	270	95	200	150	540	450	110	500	24	10	M16	M12	140
150	150	315	3	345	660	280	360	490	302	95	200	150	540	450	110	500	24	10	M16	M12	140

Coverage charts — self-priming pump

n = 2,900 rpm



n = 1,450 rpm



Self-priming pump — flange dimensions

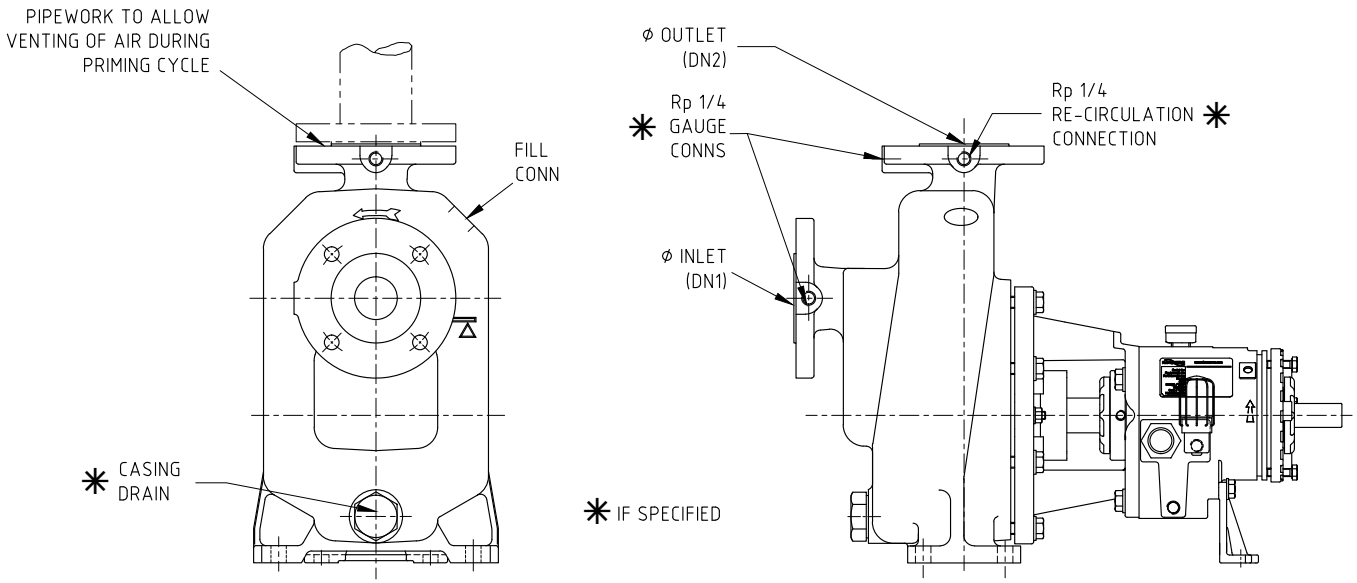
Outlet and inlet flange dimensions-EN1092-1:2007 for PN flanges and ASME 818.5-2009 for NPS flanges

All dimensions in mm

Bore DN	Outside Dia (D)	Thickness	Standard	Bolting No. x Hole X PCD	Raised Face Diameter	Raised Face Height
40	150	19	PN 16, 25 and 40	4 x 18 x 110	88	3
		19	Class 150 (PN20)	4 x 16 x 98.5	73	2
65	185	22	PN 16 (iron)	4 x 18 x 145	122	3
		22	PN 16 (steel), 25 and 40	8 x 18 x 145	122	3
		22	Class 150 (PN20)	4 x 19 x 139.5	105	2
80	200	24	PN 16, 25 and 40	8 x 18 x 160	138	3
		24	Class 150 (PN20)	4 x 19 x 152.5	127	2
100	235	24	PN 16	8 x 18 x 180	158	3
		24	PN 25 and 40 *	8 x 22 x 190	162	3
		24	Class 150 (PN20)	8 x 19 x 190.5	157.5	2
150	300	28	PN 16	8 x 22 x 240	212	3
		28	PN 25 and 40 *	8 x 26 x 250	218	3
		28	Class 150 (PN20)	8 x 22 x 241.5	216	2

* Not available in ductile iron

Self-priming pump — connections



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