

Series Z22

Split-casing, Double-suction Centrifugal Pumps

- High Reliability
- High Efficiency
- Robust Pump Design
- Low NPSH Requirement
- Many Versions Mean Flexibility



Series Z22 - Dependable and Efficient



There are many versions of the basic design: Most sizes are available as horizontal or vertical units and some can be supplied with connections at right angles.

Wide Range of Application

These pumps are installed in pulp and paper mills, in water and sewage works, district heating systems and power plants.

High Reliability

The Z22-pumps have proven to be extremely reliable. Many units have been in operation for several decades with only routine maintenance of bearings and shaft seals.

High Efficiency

Many of the pumps have a peak efficiency over 90%. Each pump is tested to ISO 9906, Grade 2, or other agreed standard, and the high efficiencies are thus guaranteed. Thanks to the replaceable wear rings, the high efficiency can be maintained through a pump's life.

This series comprises 24 sizes and for several sizes more than one impeller design exists. Operating economics are thus enhanced by minimising energy consumption for duties throughout the complete operating range of the pump.

Robust Pump Design

Sturdy shaft/bearing construction ensures smooth running free from vibration.

Low NPSH Requirement

At the same capacity and speed, double-suction impellers have significantly lower NPSH requirement than single-suction impellers. The Z22-pumps are therefore suitable for difficult suction conditions and may offer reduced installation costs.

Many Versions Mean Flexibility

The Z22 series is unique owing to the many versions of the basic design. Most sizes have horizontal and vertical alternatives and some can be supplied with connections at right angles. Various materials, different pressure ratings and alternative shaft seal designs are available. For every application there is a suitable version.

The Perfect Fan Pumps

For the sizes used as fan pumps for paper machines, special impellers have been designed and other features incorporated to meet the stringent performance characteristics. See our booklet "Fan Pumps".

Simplicity of Service

By lifting up the top casing half, the rotor can be removed without disturbing pipework or motor.

Design

Pump Casing

The casing is axially split, which permits removal of the complete rotor without moving either piping or motor.

Pumps generating high heads have double volutes to reduce radial forces, ensuring minimal shaft deflection and low bearing loads.

Replaceable wear rings protect the casing at the impeller running clearances. High head pumps are also fitted with replaceable impeller wear rings.

Impeller

The closed impellers have double curved vanes. The double suction design gives practically zero axial forces. Each impeller is statically and dynamically balanced according to ISO 1940, Grade 6.3. (For Fan pumps Grade 2.5).

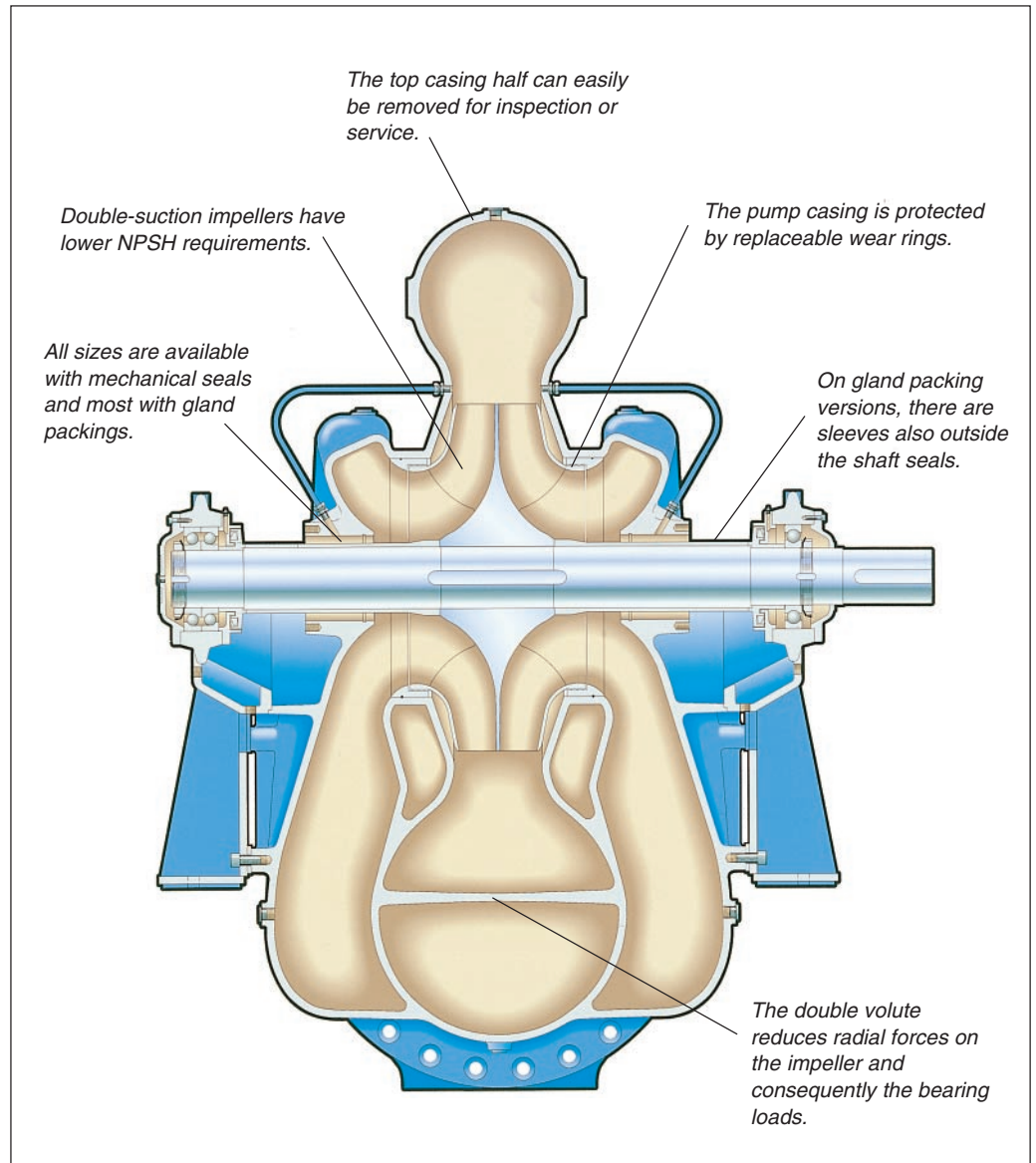
For each pump size there are normally two or more impeller variants available to best suit various applications.

Shaft and Shaft Sleeves

The shaft deflection at the seal positions is less than 0.05 mm. At its entire length the shaft is protected by shaft sleeves, which are O-ring sealed.

Bearings

Grease lubricated bearings are used. They are designed for a calculated bearing life of at least 50 000 hours, which is equivalent to 10 years continuous service.



Depending on pump size, a deep groove single-row or a cylindrical roller bearing is used at the drive end, and a pair of matched angular contact ball bearings or spherical roller at the non-drive end. Throwers and V-ring seals protect against moisture and dirt ingress.

The bearing brackets are drilled as standard for SPM nipples and can also be fitted with temperature sensors.

The rigid axial thrust bearing can take high axial loads, and the pumps can therefore be vertically mounted.

Shaft Seals

All sizes can be supplied with mechanical seals and most sizes with gland packings. See page 4.

Shaft seal arrangements available are described on page 6.

Capacity	500-17000 m ³ /h
Head	10-200 m
Temperature	max.100–140°C depending on size and material.
Pressure Rating	PN 6 to PN 25 owing to pump size and material. See the adjacent table.
Flanges	ISO 7005 PN 10-PN 25 or ANSI 125-150
Lubrication	Grease

Shaft Seals, Pressure Ratings and Fan Pump Versions

Pump size	Gland packing	Mech. seal	Max. pressure PN	Fan Pump
250/200-40	●	●	16	●
350/300-35	●	●	16	●
400/300-55	●	●	18/25*	-
400/300-60	-	●	16	-
350/300-61	-	●	16	●
500/300-75	●	●	25	-
350/350-45	●	●	13	●
400/350-70	-	●	20	-
450/400-40	●	●	10	●
500/400-50	-	●	10	-
500/400-55	●	●	13	●
500/400-60	●	●	20	●
500/400-70	-	●	18	-
500/400-80	●	●	25	-
600/400-85	-	●	16	-
600/400-90	-	●	18	-
500/500-70	●	●	16/25*	●
600/600-65	●	●	16	●
600/600-75	●	●	16	●
800/600-105	●	●	25	-
800/600-120	●	●	25	-
700/700-65	●	●	13	●
800/700-105	●	●	10	●
900/800-90	●	●	10/25*	●
1000/1000-90	●	●	6	●

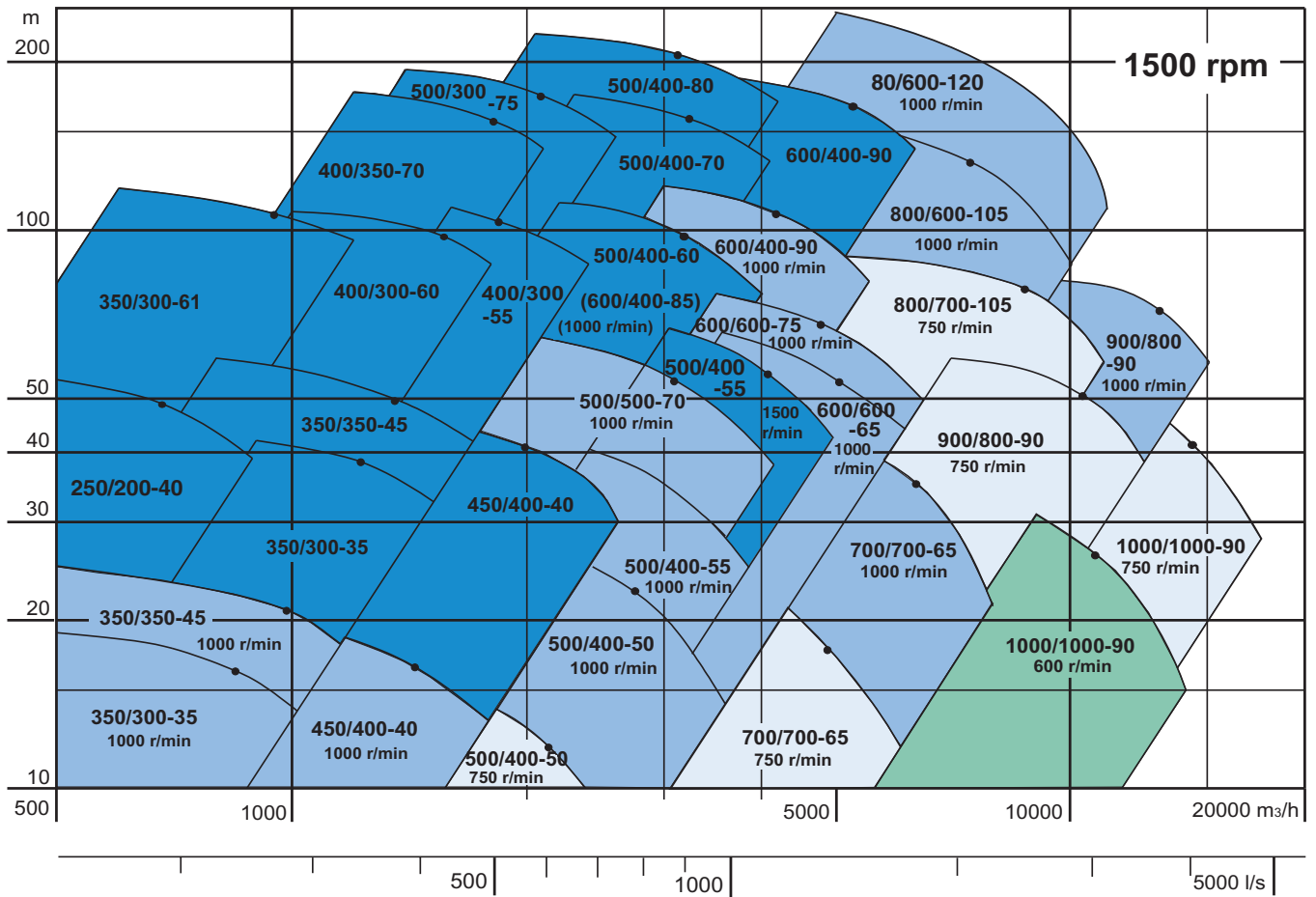
*) Special version for PN25.

Materials

Code	01	02	05	06	07	24	41
Pump casing	Cast iron 0120	Cast iron 0120	Cast iron 0120	Nodular iron 0717	Nodular iron 0717	Stainless steel 2324	Bronze 5444
Wear rings	Cast iron 0120	Bronze 5204-15	Stainless steel 2324	Cast iron 0120	Bronze 5204-15	Stainless steel 2324	Bronze 5204-15
Impeller	Cast iron 0120	Bronze 5444	Stainless steel 2324	Cast iron 0120	Bronze 5444	Stainless steel 2324	Bronze 5444
Shaft	Steel 1650/1672	Steel 1650/1672	Stainless steel 2324	Steel 1650/1672	Steel 1650/1672	Stainless steel 2324	Stainless steel 2324
Shaft sleeve	Bronze 5204-15	Bronze 5204-15	Stainless steel 2324	Bronze 5204-15	Bronze 5204-15	Stainless steel 2324	Bronze 5204-15

ABS material	Equivalent grades Germany	USA	UK	France	Chemical composition
0120	GG20	A48-30 B	1452/Gr.220	Ft 20D	Cast iron
0717	GGG40	A536 60/40/18	2789 Gr.420/12	FGS 400-12	Nodular iron
1650	1.0542	AISI C1045	970 080 M46	CC 45	Steel
2324	1.4460	AISI 329	–	–	25Cr 5Ni 1.5Mo 0.10C
2343	1.4408	A743-CF-8M	3100 316C16	Z6 CND 18-12-M	17.5Cr 12Ni 2.8Mo 0.06C
5204-15	CuSn5ZnPb	B584-836	1400/LG2-C	CuPb5Sn5Zn5	85Cu 5Sn 5Zn 5Pb
5444	–	B584-923	1400/LG4-C	–	86Cu 9Sn 2Zn 3Pb

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Vertical Versions

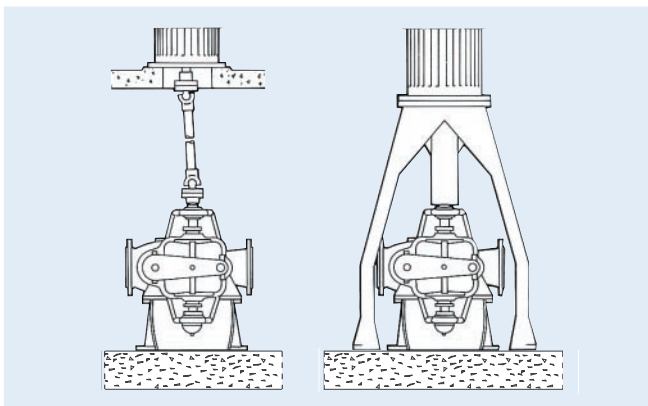
Many sizes can be supplied as vertical shaft pumps. See the dimension prints on page 7. There are two standard versions:

Motor on a tripod

The motor is mounted on a tripod, and drive is via a cardan shaft to the stool-mounted pump.

Motor on a higher floor

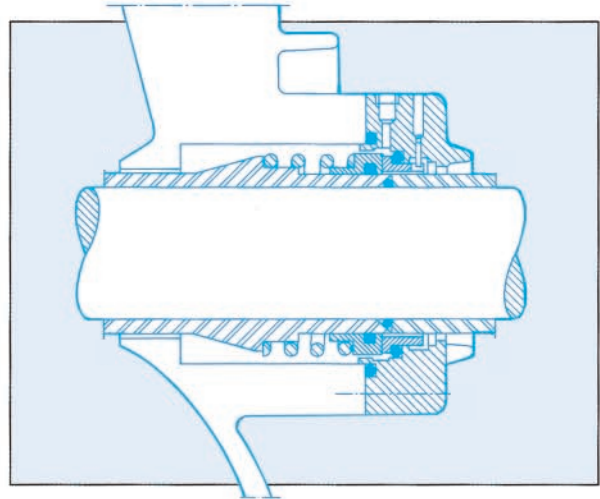
The pump is mounted on a stool and the drive is via a cardan shaft.



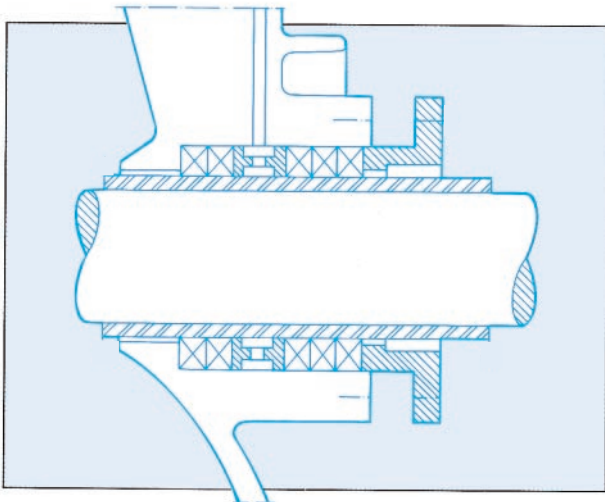
Vertical shaft pumps are often installed in water works.

The Appropriate Seal Arrangement

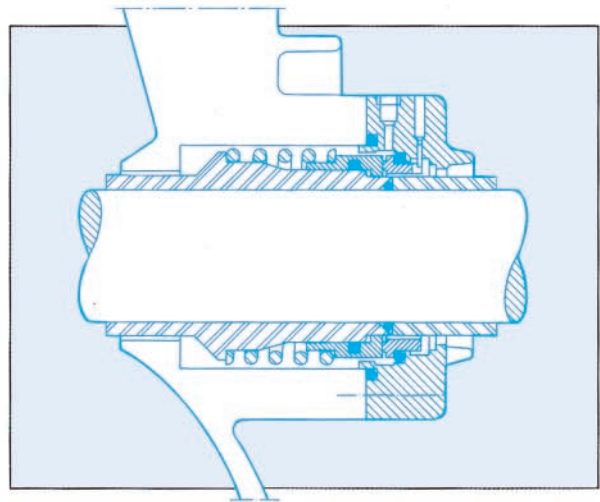
Most pump types are available with gland packings or mechanical seals. However, some high head pumps are supplied with mechanical seals only. See the table on page 4.



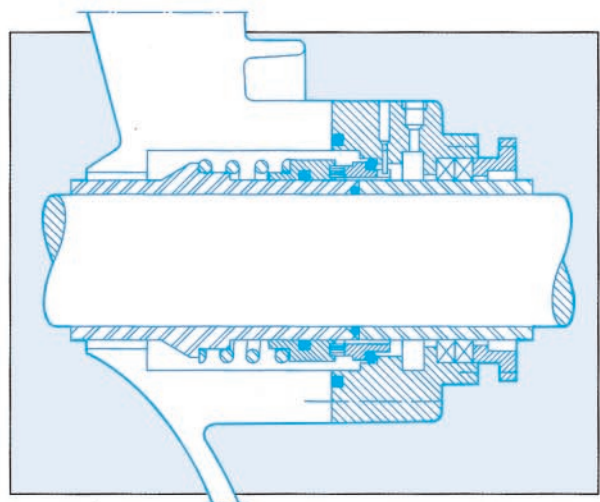
Standard mechanical seal for clean or lightly contaminated liquids at medium inlet pressures.



Gland packing with or without lantern ring. Product recirculation or external sealing liquid can be used.



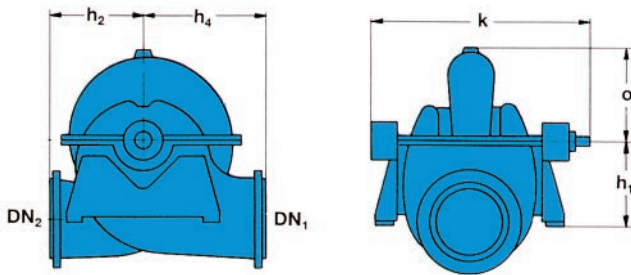
Balanced mechanical seal for clean or lightly contaminated liquids at higher inlet pressures and high temperatures. In district heating systems return water can be used as sealing liquid.



Mechanical seal with quench, suitable for corrosive or highly contaminated liquids and for fibrous slurries, e.g. paper stock. The low pressure quench liquid will not dilute the pumped liquid.

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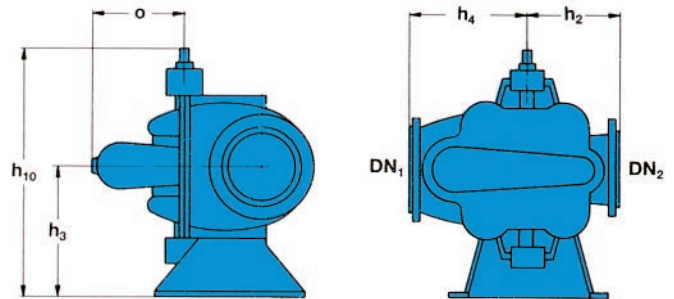
Horizontal; Branches In-line



Pump type	DN ₁	DN ₂	h ₁	h ₂	h ₄	k	o	Weight kg
250/200-40	250	200	425	375	450	940	375	400
350/300-35	350	300	425	400	475	940	365	500
400/300-55	400	300	425	450	600	1345	470	900
350/300-61	350	300	400	600	500	1060	460	800
350/350-45	350	350	340	560	650	1285	420	950
400/350-70	400	350	450	650	650	1265	525	1400
450/400-40	450	400	300	550	600	1280	365	1000
500/400-50	500	400	475	550	700	1400	550	1600
500/400-55	500	400	475	550	700	1465	550	1600
500/400-60	500	400	475	550	750	1450	550	1500
500/400-70	500	400	470	700	700	1300	540	1550
500/400-80	500	400	500	600	750	1535	605	2150
500/500-70	500	500	500	700	900	1640	610	2200
600/600-65	600	600	620	620	880	1770	680	3000
600/600-75	600	600	650	900	1100	1760	785	3800
800/600-105	800	600	700	900	1100	1895	840	3900
800/600-120	800	600	850	1000	1200	2000	1300	6200
700/700-65	700	700	750	750	1100	1770	805	3400
800/700-105	800	700	900	1000	1300	2030	1000	5700
900/800-90	900	800	800	900	1300	2010	9060	4800
1000/1000-90	1000	1000	850	1200	1600	2090	1070	8200

Pumps for anti-clockwise rotation have two shaft ends.
Dimension print on request.

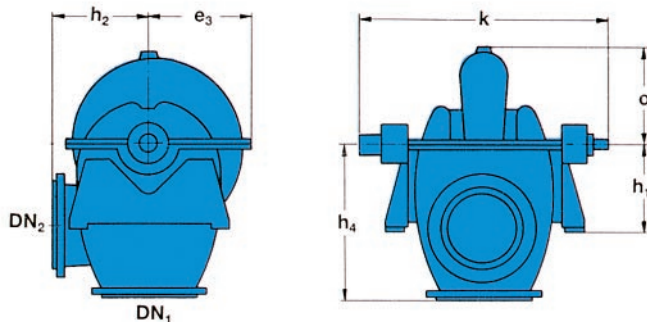
Vertical; Branches In-line



Pump type	DN ₁	DN ₂	h ₂	h ₃	h ₄	h ₁₀	o	Weight kg
400/300-55	400	300	450	700	450	1430	470	900
350/300-61	350	300	600	585	600	1165	460	800
350/350-45	350	350	560	700	560	1400	420	950
400/350-70	400	350	650	700	650	1440	525	1400
450/400-40	450	400	550	700	600	1400	415	1000
500/400-50	500	400	550	780	700	1530	550	1600
500/400-55	500	400	550	780	700	1565	550	1600
500/400-60	500	400	550	790	750	1570	550	1500
500/400-70	500	400	700	785	700	1495	550	1550
500/400-80*	500	400	-	-	-	-	-	-
500/500-70	500	500	700	820	900	1700	610	2200
600/600-65	600	600	620	1000	880	1960	680	3000
600/600-75	600	600	900	900	1100	1850	785	3800
800/600-105*	800	600	-	-	-	-	-	-
800/600-120*	800	600	-	-	-	-	-	-
700/700-65	700	700	750	980	1100	1930	805	3400
800/700-105	800	700	1000	1200	1300	2300	1000	5700
900/800-90	900	800	900	1200	1300	2330	960	4800
1000/1000-90	1000	1000	1200	1300	1600	2460	1070	8600

* Pumps available in vertical version. Dimensions will be stated later.

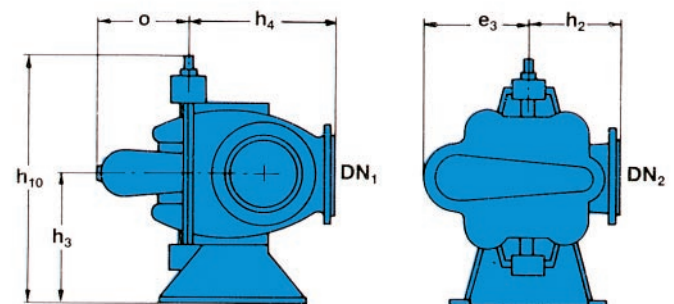
Horizontal; Branches at Right Angles



Pump type	DN ₁	DN ₂	e ₃	h ₁	h ₂	h ₄	k	o	Weight kg
400/300-55*	400	300	585	425	450	680	1475	470	900
400/300-60	400	300	540	400	500	650	1220	440	750
500/300-75	500	300	650	475	550	750	1560	550	1350
500/400-80	500	400	700	500	600	800	1610	595	1650
600/400-85	600	400	770	475	600	950	1780	630	2200
600/400-90	600	400	830	630	700	1000	1755	715	2400

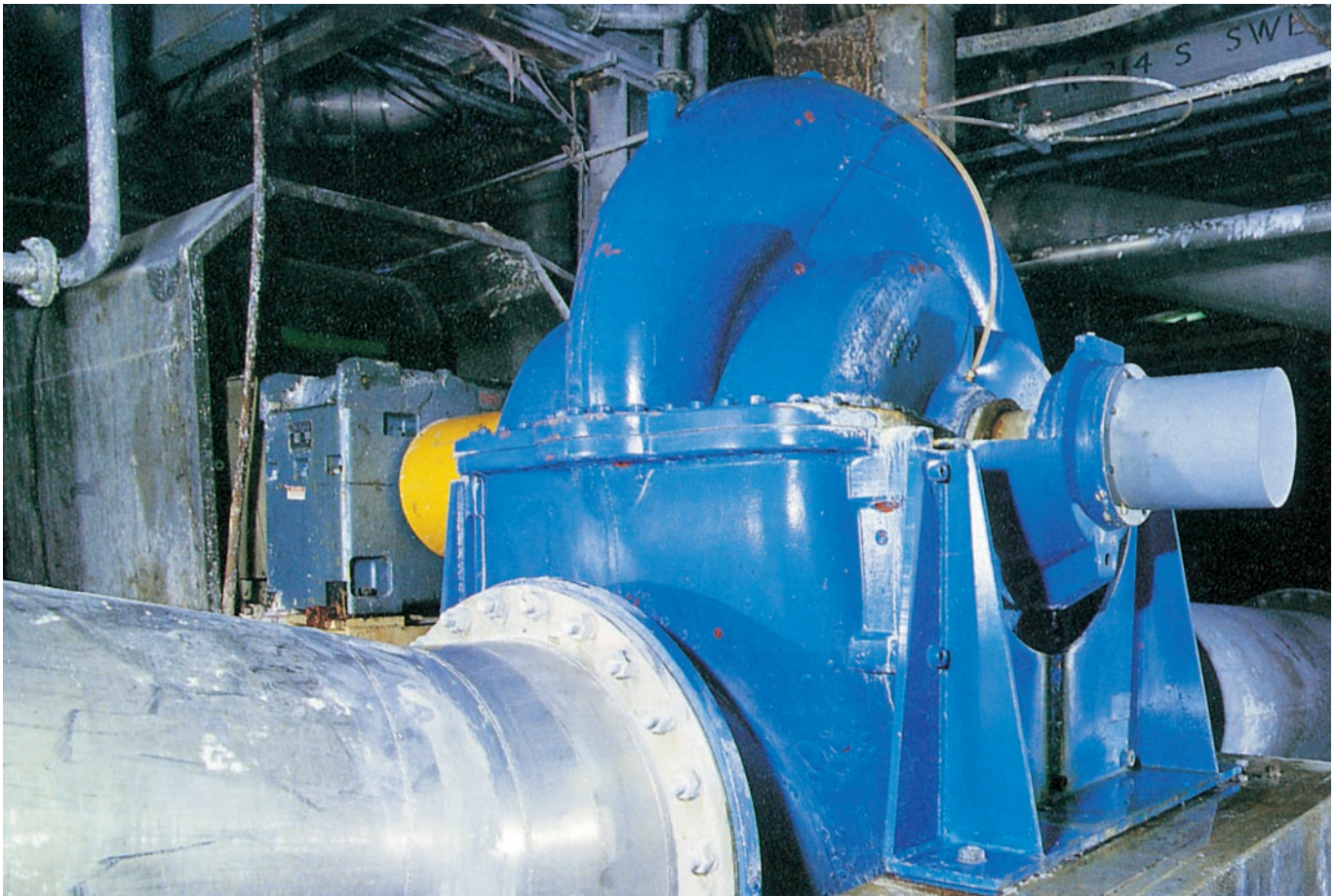
* High pressure version

Vertical; Branches at Right Angles



Pump type	DN ₁	DN ₂	e ₃	h ₂	h ₃	h ₄	h ₁₀	o	Weight kg
400/300-55*	400	300	585	450	700	680	1430	470	900
400/300-60	400	300	540	500	585	650	1165	440	750
500/300-75	500	300	650	550	700	750	1445	550	1350
500/400-80	500	400	700	600	700	800	1475	595	1650
600/400-85	600	400	770	600	800	950	1665	630	2200
600/400-90	600	400	830	700	840	1000	1690	715	2400

DN₁ = Suction DN₂ = Discharge



Fan pumps must meet high demands for smooth flows with low pressure pulsations to make the paper perfect.

This Z22 900/800-90 feeds a paper machine in the Kemsley Mill of New Thames Paper Co in the south of England. The capacity is 7400 m³/h and the drive power 630 kW.

ABS reserves the right to alter specifications due to technical developments.

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