



BB4 Series

Technical Catalogue

2015



Our Vision

ASK's vision is to be a recognized leader in innovative, sustainable, engineered, and customer-focused solutions for performance critical applications in the oil and gas, hydrocarbon processing, power generation, pulp and paper, and other selected industries.

Our Mission

ASK aims to be a multi-industry company with a strong brand, which provides solutions that combine products, services, engineering, and customer-application expertise.

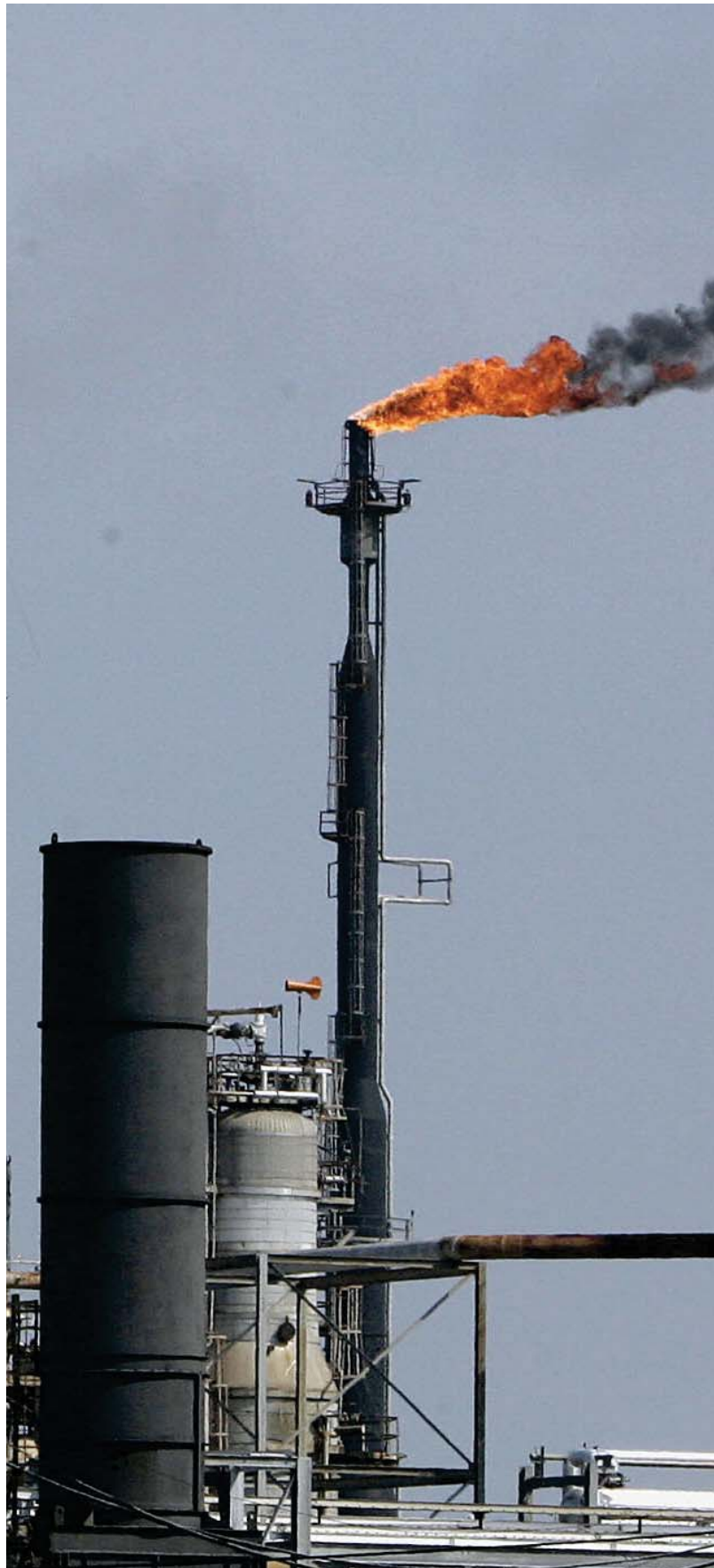
The corporation is close to the customer by being direct –sales driven.

Engineering, innovation, and technology are cornerstones.

ASK strives to be an attractive employer and to create an environment where employees can excel. The company focuses on creating value for its customers.

ASK Innotec

The research and development unit of ASK supports the other divisions of the company and industrial companies in their development projects by providing a contract including research and special technical services like diagnostics and certified testing as well as one-off production and engineering. ASK innotec has expertise in materials and surface engineering, fluid technology, as well as in mechanics. Its core competencies in research contract also lie in these classical disciplines.



Product Description

Using modern computer aided design methods, the pumps are specially designed as heavy duty, minimal wear, long life pumps which have been designed in a modular way, with a number of options available, to ensure full compliance to the customers' exact requirements and specifications. A fully compliant API 610 heavy duty baseplate helps achieve low vibration and noise levels which in turn extends the pump's life and ensures maximum running time. A 'space saving' reduced footprint is also available for use where space is at a premium.

The pumps can be fitted with a variety of proprietary components (i.e. seals, motors & couplings) from all the major manufacturers to cater for customers site preferences. Double mechanical seal arrangements can be fitted with an attached seal support system. This can be supplied by Seal Support System which is designed and manufactured by ASK, or another manufacturer's seal support system can be fitted.

To complete the package a full range of standard material options from SG iron and stainless steel, to duplex are available to match your process fluid. NACE compliant materials are also available. Standard documentation packs including manufacturing data books, material certification, and installation & operating manuals are available to suit the application. Performance testing to API610 / ISO 13709 and various NDE (nondestructive examination) & NDT (nondestructive testing) options are offered to ensure full compliance to our customers' applications. Alternative bespoke package can be tailored to fit your exact requirements.

Design

Single or multistage, ring section, radially split (suction, discharge and stage) casings, between-bearings, foot mounted, horizontal high centrifugal pumps according to EN25199/ISO5199

Certification

Certified quality management ISO 9001 with scope of "Design and manufacturing of process centrifugal pumps according to API standard 610".

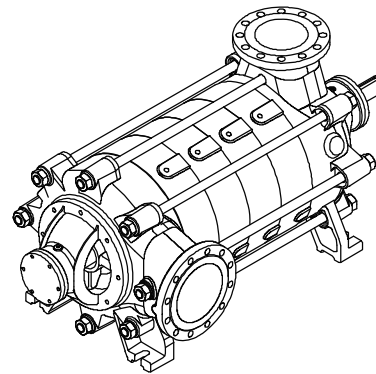
Field of Application

ASK pumps, BB4 series pumps are used for:

- Municipal and industrial water supply
- Pressure boosting applications
- Irrigation and sprinkler plants
- Cooling & hot circulation water
- Boiler feed water
- Reverse osmosis plants
- High pressure water in hydraulic presses
- Condensate handling
- Firefighting

Product Overview

General description	A range of BB4 between bearings multistage radially split horizontal centrifugal pumps manufactured in a variety of alloys
Construction	Modular design for optimum adaptation to customer needs and low operating costs
Design methodology	Advanced computer techniques including 3D modeling, FEA & CFD
Design standards	EN25199/ISO5199
Max. suction pressure	10 bar g
Max total discharge pressure at shut-off	30 bar g (BB4 32 ~65) 28 bar g (BB4 80 ~200)
Suction casing test pressure	16 bar g
Discharge/stage casing test pressure	45 bar g (BB4 32 ~65) 37.5 bar g (BB4 80 ~200)
Operating temperature	-15°C to 140°C
Flow rate	Up to 900 m ³ /h
Max. head at shut-off	300 m
Speed	Up to 3000 rpm
Configuration	Long coupled pump Bare shaft pump Rotating assembly
Discharge Sizes	Up to DN 200
Flanges pressure class	DIN 2533, PN16 (suction) DIN 2535, PN40 (Discharge)
Design life	10 years (2 years uninterrupted operation)



Designation

Example: BB4 150-4stg / 90 4 S6 S 1161 A / EXT4

BB4	150	4stg	90	4 ⁽¹⁾	S6	S	1161 ⁽²⁾	A	EXT4 ⁽³⁾
Pump type	Discharge nominal diameter in millimeters	No. of stages	Nominal power of installed driver in kW	No. of poles	Material class acc. to table H1 of API610	Seal type	Seal plane code acc. to API682	Options	Area Classification
BB4: Multistage, Between bearings, radially split centrifugal pumps	Up to 200mm	(Refer to Technical tables)	up to 1100kW	2:3000rpm 4:1500rpm	I-1 I-2 S-1 S-3 S-4 S-5 S-6 C-6 A-8 D-1	P: Single mechanical seal S: Single mechanical seal	Each two digits stands for a plan: For example "1161" means plans 11 and 61 have been utilized together.	A: No option B: Oil mist lubrication C: Vibration sensors D: Temp. Sensors E: Heating jacket F: Special bearing arrangement	SA: Safe area EX: Explosion proof T1~T6: Temperature class

1) For diesel engine refers to the driver speed only.

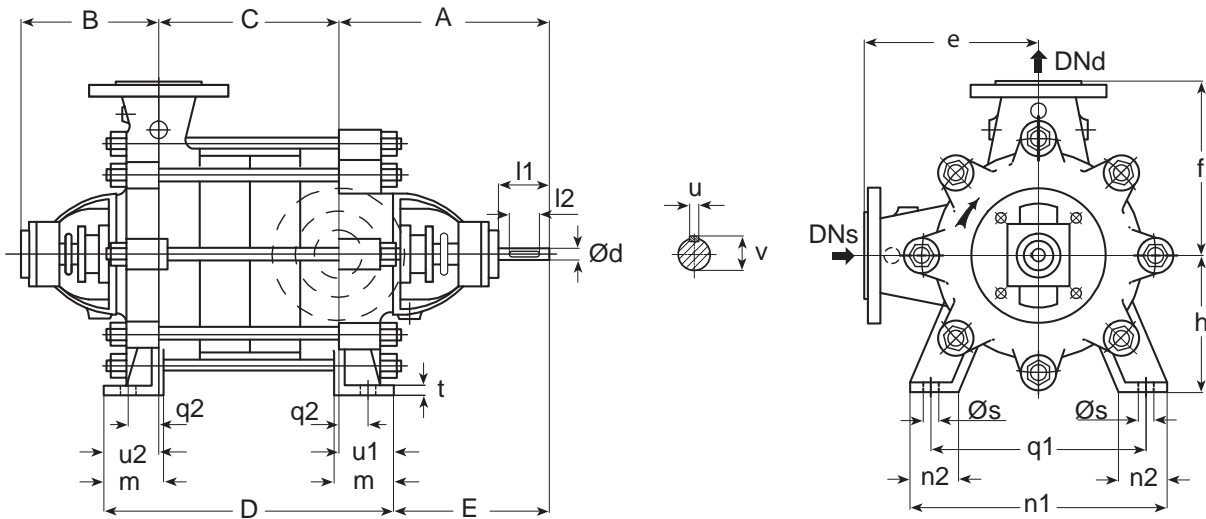
2) Other seal arrangements are available on request.

3) For other types of driver (nonelectric drivers) abbreviation of the used type will be interpolated, examples: (ST → Steam Turbine)/(DE→Diesel Engine)/etc.

Material Options

Materials	Casing	Impeller
I1 - Cast Iron / Cast Iron	ASTM A 48 Class 40B	ASTM A 48 Class 40B
I2 - Cast Iron / Bronze	ASTM A 48 Class 40B	C92200
S1 - Carbon Steel / Cast Iron	ASTM A 216 WCB	ASTM A 48 Class 40B
S3 - Carbon Steel / Ni-resist	ASTM A 216 WCB	ASTM A 435 Type 1,2,3
S4 - Carbon Steel / Cast Iron	ASTM A 216 WCB	ASTM A 48 Class 40B
S5 - Carbon Steel / Carbon Steel	ASTM A 216 WCB	ASTM A744 CF-3M
S6 - Carbon Steel / 12% Cr SS	ASTM A 216 WCB	ASTM A743 CA6NM
S8 - Carbon Steel / SS 316	ASTM A 216 WCB	ASTM A 216 WCB
C6 - SS 304 / SS 304	304 Stainless steel	304 Stainless steel
A8 - SS 316 / SS 316	ASTM A744 CF-8M	ASTM A744 CF-8M
D1 - Duplex SS / Duplex SS	EN10213-4 / 1.4517	EN10213-4 / 1.4517

Dimensional Drawing

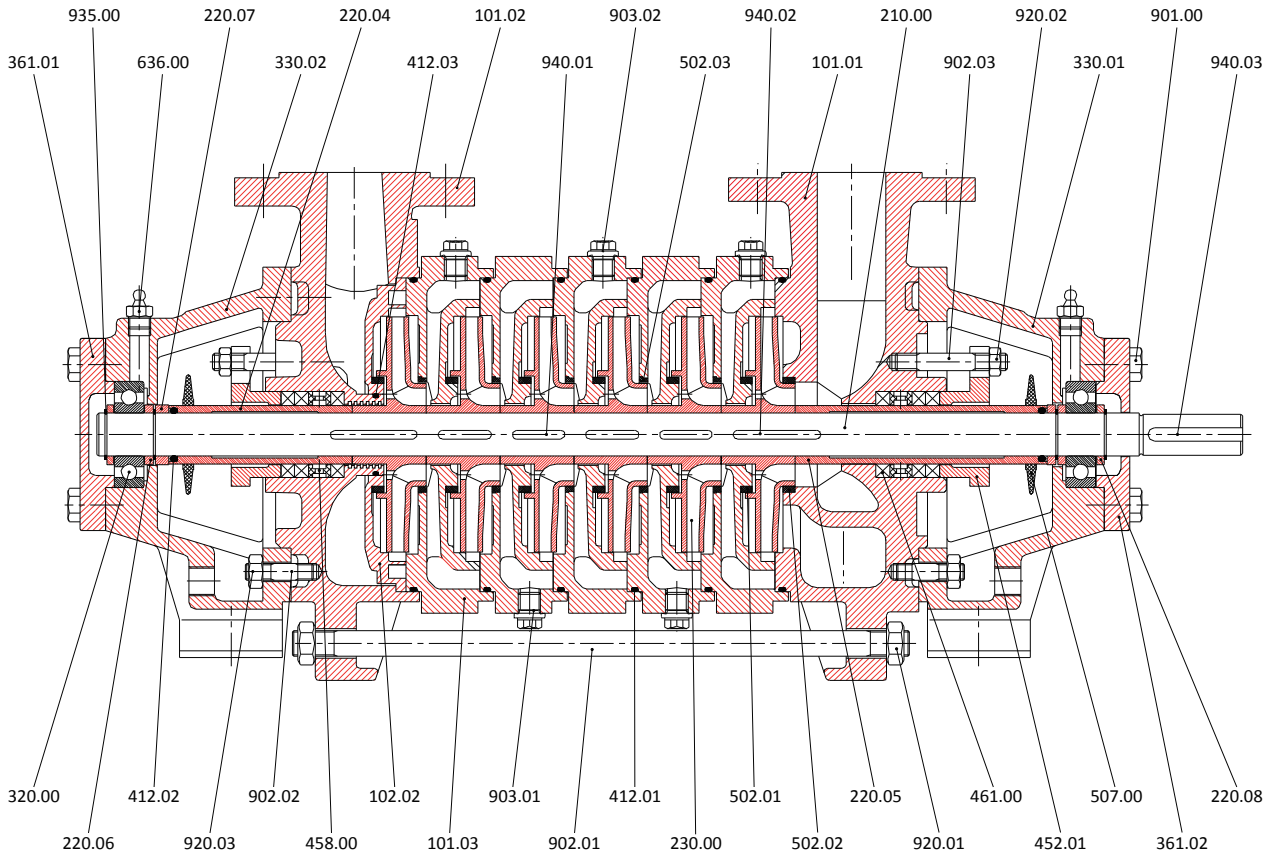


Model	DNs	DNd	Pump Dimensions														Shaft end						
			A	B	D	E	e	f	h	m	n1	n2	q1	q2	Øs	t	u1	u2	Ød	l1	l2	v	u
BB4 32	40	32	250	183	C + 120	190	160	160	132	60	256	60	205	35	14	12	60	60	30	65	45	329	8
BB4 40	50	40	250	183	C + 120	190	180	180	132	60	280	60	240	35	14	12	60	60	30	65	45	329	8
BB4 50	65	50	285	220	C + 92	239	180	180	135	50	280	60	230	30	15	12	46	46	35	60	50	383	10
BB4 65	80	65	290	220	C + 102	239	200	200	155	55	300	70	250	35	15	14	51	51	35	60	50	383	10
BB4 80	100	80	320	250	C + 120	260	265	265	210	60	370	70	310	40	14	14	60	60	40	85	75	431	12
BB4 100	125	100	360	275	C + 140	290	300	300	250	75	440	80	370	45	14	14	70	70	45	95	80	485	14
BB4 125	150	125	420	300	C + 170	335	375	375	300	85	550	95	460	51	18	18	85	85	50	125	90	533	14
BB4 150	200	150	485	355	C + 200	385	425	425	350	100	650	100	550	65	23	18	100	100	60	140	90	642	18
BB4 200	250	200	815	793	C + 271	694	655	655	475	175	1200	175	960	265	32	45	361	312	100	212	200	106	28

Model	Pump dimension C at a number of stages																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
BB4 32	82	130	178	226	274	322	370	418	466	514	562	610	658	706	754	802	850
BB4 40	82	130	178	226	274	322	370	418	466	514	562	610	658	706	754	802	
BB4 50	73	128	183	238	293	348	403	458	513	568	623	678	733	788			
BB4 65	87	147	207	267	327	387	447	507	567	627	687						
BB4 80	110	193	276	359	442	525	608	691	774	857	940	1023	1106				
BB4 100	135	235	335	435	535	635	735	835	935								
BB4 125	165	280	395	510	625	740											
BB4 150	215	360	505	650	795												
BB4 200		170	340	510	680	850											

Dimensions are in mm.

Sectional Drawing (BB4 32~65)



Part Name

Part No.

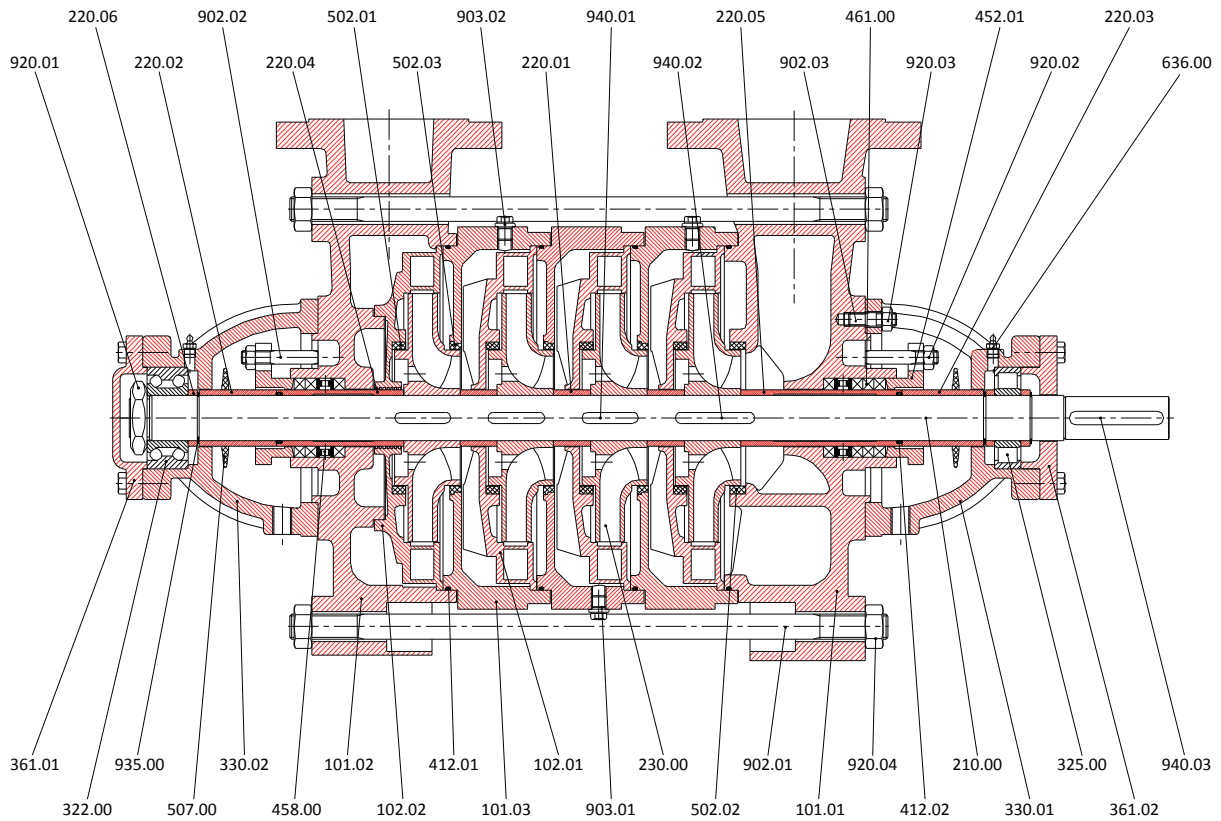
Suction Casing	101.01
Discharge Casing	101.02
Stage Casing	101.03
Final Stage Diffuser	102.02
Shaft	210.00
Shaft Protecting Sleeve	220.04
Shaft Protecting Sleeve	220.05
Spacer Sleeve	220.06
Spacer Sleeve	220.07
Spacer Sleeve	220.08
Impeller	230.00
Ball Bearing	320.00
Bearing Housing (Suction)	330.01
Bearing Housing (Discharge)	330.02
Bearing Cover	361.01
Bearing Cover	361.02
O-Ring	412.01
O-Ring	412.02
O-Ring	412.03
Stuffing box gland	452.01

Part Name

Part No.

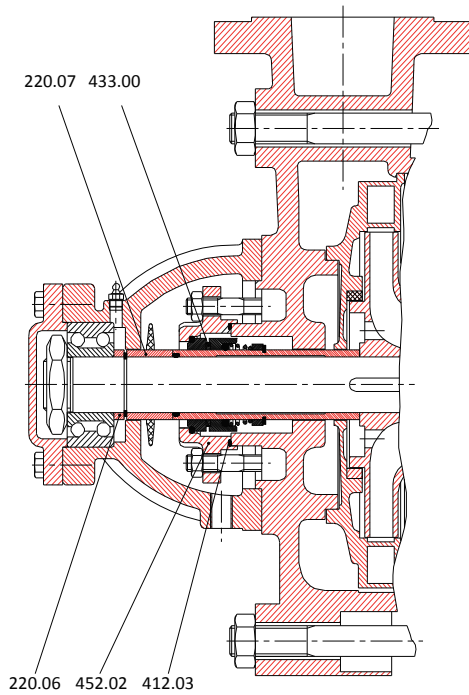
Lantern Ring	458.00
Soft Packing	461.00
Wear Ring	502.01
Wear Ring	502.02
Wear Ring	502.03
Thrower	507.00
Grease Nipple	636.00
Hex. Head Bolt	901.00
Tie Bolt	902.01
Double End Stud	902.02
Double End Stud	902.03
Drain Plug	903.01
Vent Plug	903.02
Parallel Key	940.01
Parallel Key	940.02
Parallel Key	940.03
Hex. Nut	920.01
Hex. Nut	920.02
Hex. Nut	920.03
Circlip	935.00

Sectional Drawing (BB4 80~200)



Part Name	Part No.	Part Name	Part No.
Suction Casing	101.01	Stuffing box gland	452.01
Discharge Casing	101.02	Lantern Ring	458.00
Stage Casing	101.03	Soft Packing	461.00
Diffuser	102.01	Wear Ring	502.01
Final Stage Diffuser	102.02	Wear Ring	502.02
Shaft	210.00	Wear Ring	502.03
Interstage Sleeve	220.01	Thrower	507.00
Spacer Sleeve	220.02	Grease Nipple	636.00
Spacer Sleeve	220.03	Tie Bolt	902.01
Shaft Protecting Sleeve	220.04	Double End Stud	902.02
Shaft Protecting Sleeve	220.05	Double End Stud	902.03
Spacer Sleeve	220.06	Drain Plug	903.01
Impeller	230.00	Vent Plug	903.02
Angular Contact Ball Bearing	322.00	Shaft End Nut	920.01
Cylindrical Roller Bearing	325.00	Hex. Nut	920.02
Bearing Housing (Suction)	330.01	Hex. Nut	920.03
Bearing Housing (Discharge)	330.02	Hex. Nut	920.04
Bearing Cover	361.01	Circlip	935.00
Bearing Cover	361.02	Parallel Key	940.01
O-Ring	412.01	Parallel Key	940.02
Stuffing box gland	452.01	Parallel Key	940.03

Sectional Drawing (Mechanical Seal Application)



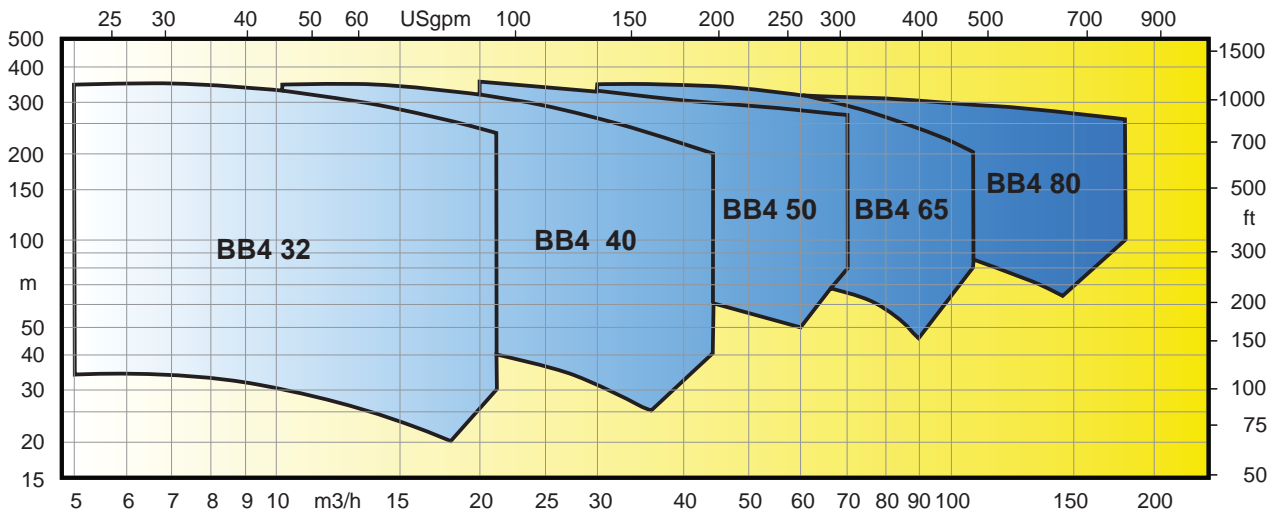
Part name	Part No.
Spacer Sleeve	220.06
Spacer Sleeve	220.07
O-Ring	412.03
Mechanical Seal	433.00
Stuffing box gland	452.02

Product Design Details & Options

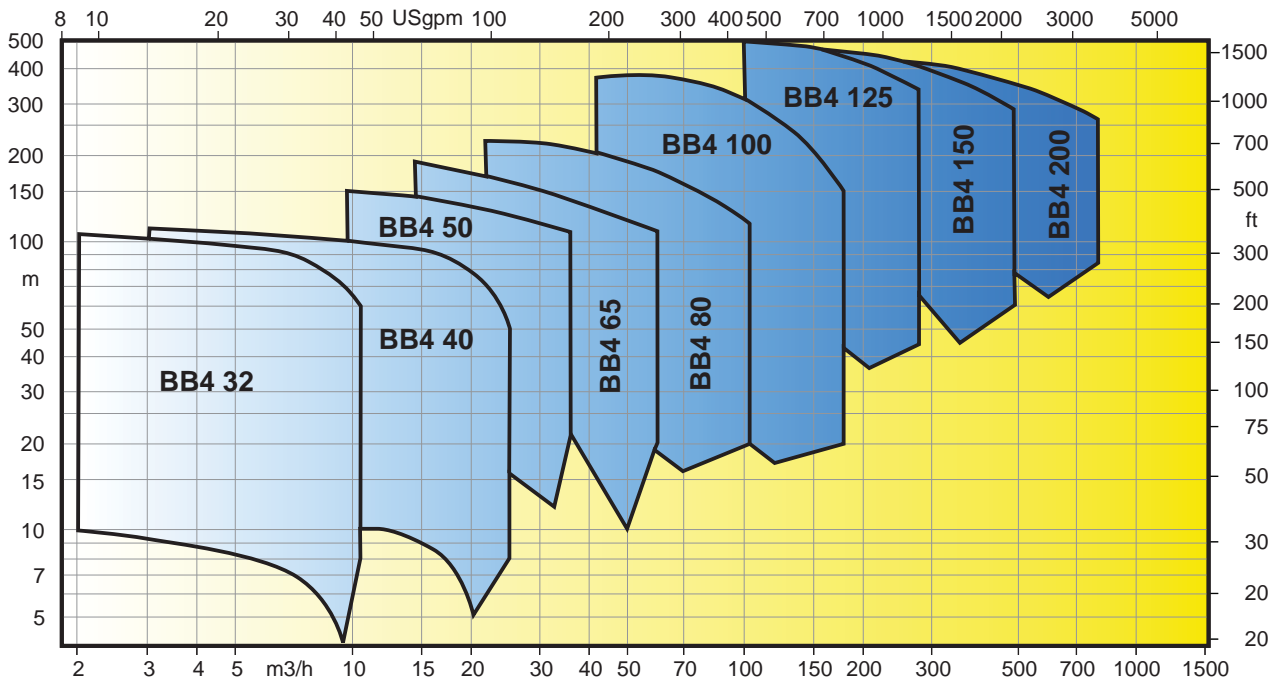
- Each stage contain 5 parts: closed impeller, diffuser, the interstage ring section and the wear rings. The individual casing parts are sealed by O-rings and are clamped together by external tie bolts. The pump feet are cast integrally with the suction and discharge casings, and are arranged beneath the pump.
- The bearings are enclosed in two bearing housings, flanged onto each end of the pump. On the suction end of all pump sizes a cylindrical roller bearing with spacer sleeve is fitted; on the discharge side of sizes 32 and 40 a deep groove ball bearing, sizes 50 and up an angular ball bearing is fitted. The rotating assembly is hydraulically balanced by means of back vanes or balance holes at the rear of the impeller; the residual axial thrust being absorbed by a ball bearing at the discharge side.
- The shaft is fitted with renewable protective sleeves in the region of the stuffing box. Uncooled soft-packed stuffing boxes are used for temperatures up to 110°C (230°F); for temperatures above 110°C (230°F) up to 140°C (285°F) a cooled soft-packed stuffing box is used, where the temperature on the stuffing box is kept within permissible limits with the aid of the cooling liquid. Furthermore, special stuffing boxes for connection of sealing liquid from an outside source are available. Uncooled mechanical seal up to 110°C (230°F) maximum.
- The suction nozzle is horizontal, right-hand side when viewed from driving end, and the discharge nozzle is top, vertical. The suction flange is machined according to DIN 2533, PN 16. The discharge flange is machined according to DIN 2535, PN 40.
- Direct drive by electric motor through a flexible coupling. The suction end of the pump is the driving end, direction of rotation is clockwise; the pump can be driven from the discharge side (direction of rotation is counterclockwise), or two shaft stubs can be provided, one at each end.

Overlapping curves

2900 rpm



1450 rpm





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