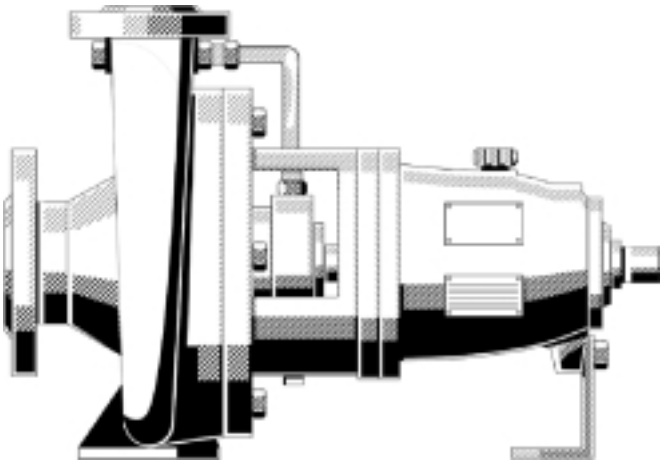
CPK

Standardized chemical pumps
to EN 22858/ISO 2858/ISO 5199



Fields of Application

For handling aggressive organic and inorganic liquids in the chemical and petrochemical industries.

They are also used in:
refinery off-sites, the paper and cellulose industries, the foodstuffs industry, the sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, etc.

Design

Horizontal, radially split volute casing pump in back pull-out design, with radial impeller, single-entry, single-stage, to EN 22 858/ISO 2858/ISO 5199.
Complemented by pumps of DN 25, DN 200 and above.

Designation

CPK- E 40 - 200

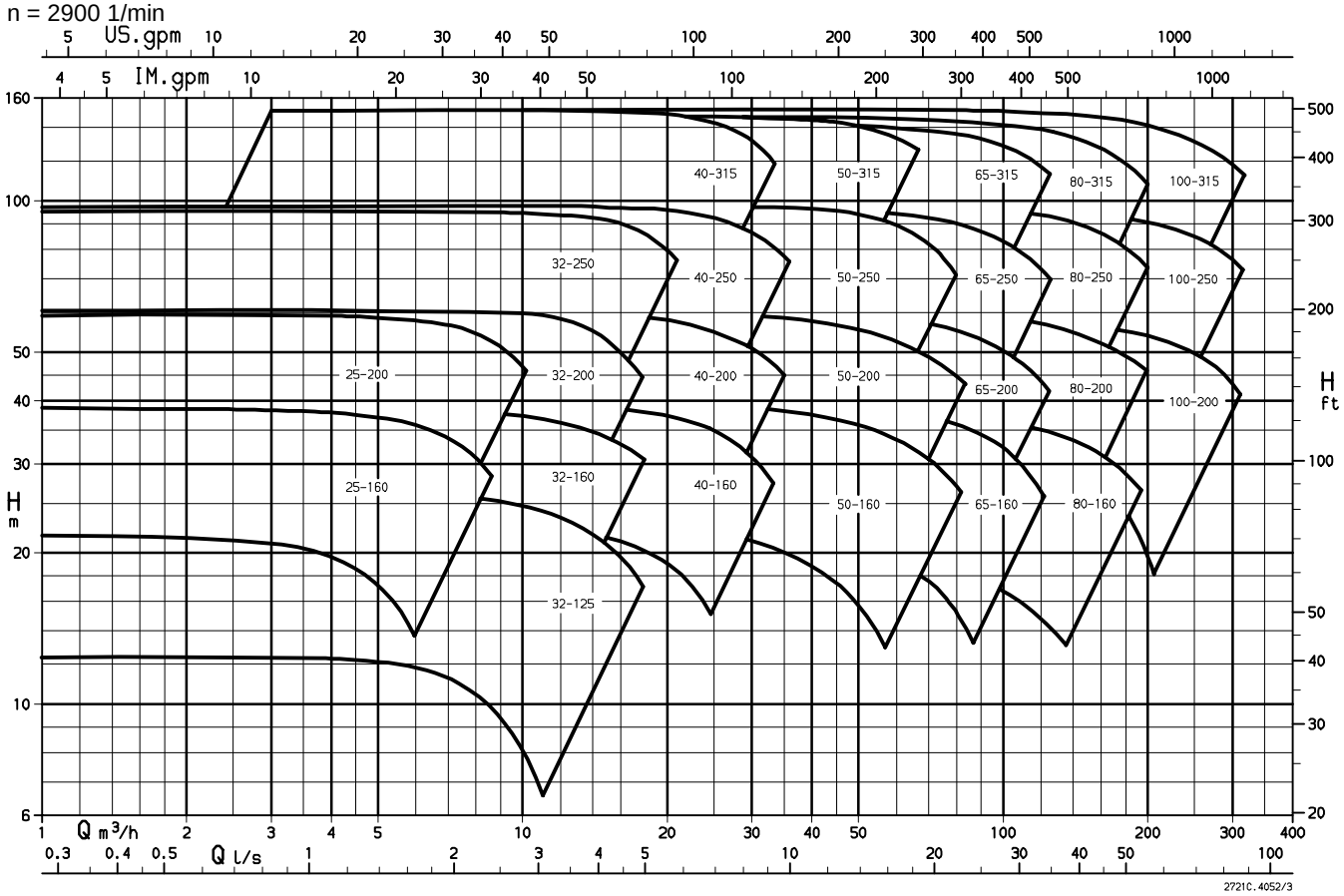
- Type series
- Material of wetted parts
- Discharge nozzle DN
- Nominal impeller diameter in mm

Operating Data

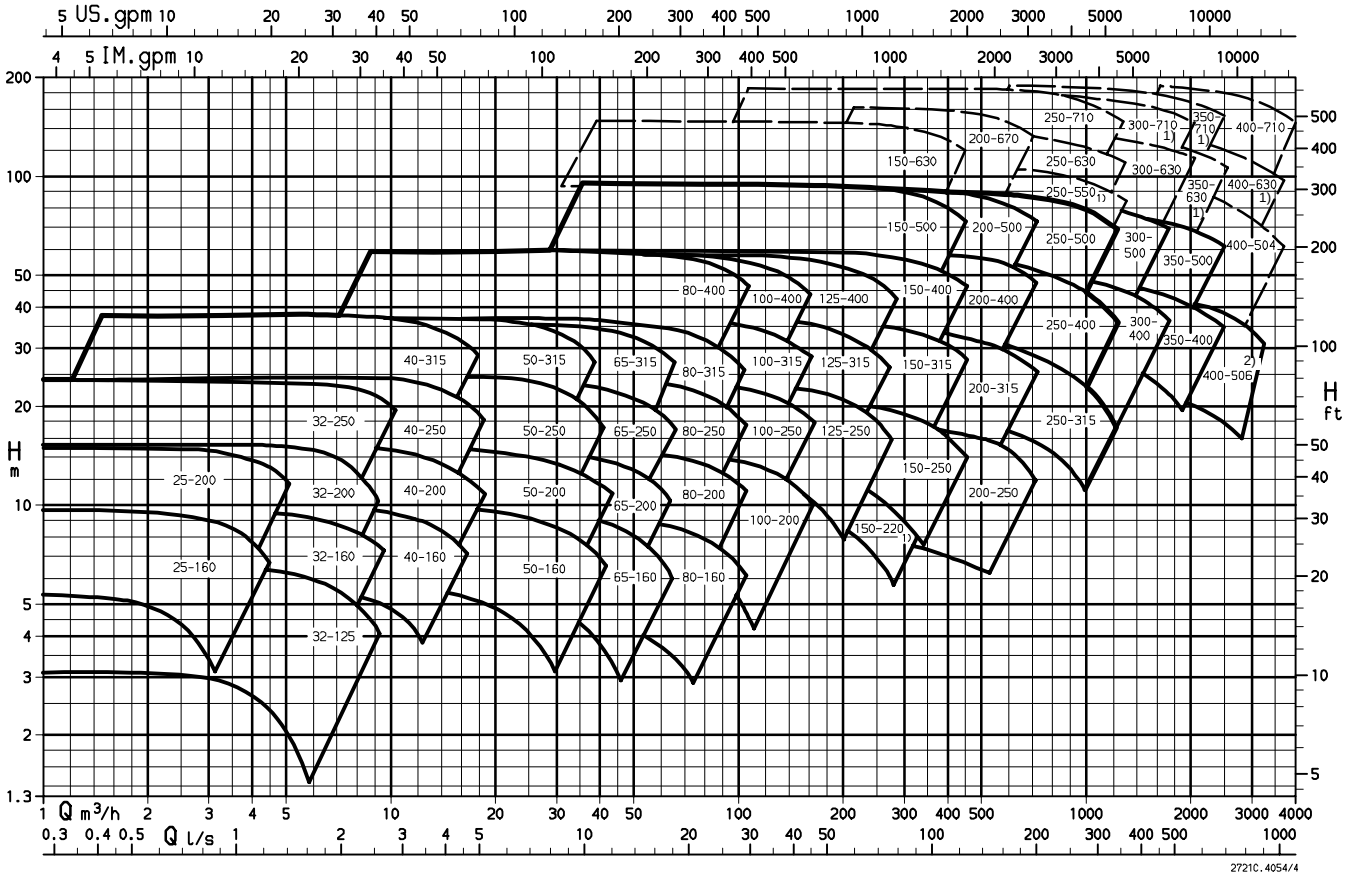
Capacity	Q	up to	4150 m^3/h (1150 l/s)
Heads	H	up to	185 m
Pump sizes	DN		25 to 400
Operating pressures	p	up to	25 bar
Operating temperatures	t		-40 to +400 °C

Selection Charts

n = 2900 1/min



n = 1450 1/min



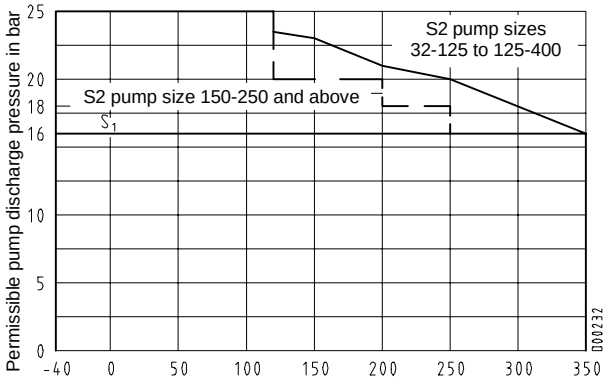
1) on request
3) n = 960 1/min

Pressure and Temperature Limits

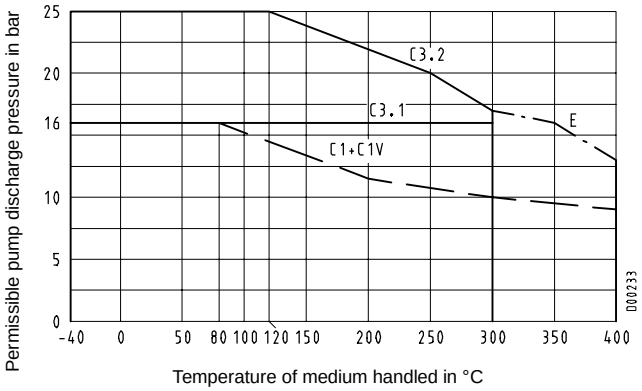
a) Where no special regulations apply (technical codes)

These pumps can be used for all liquids, except hot water and organic heat transfer media.

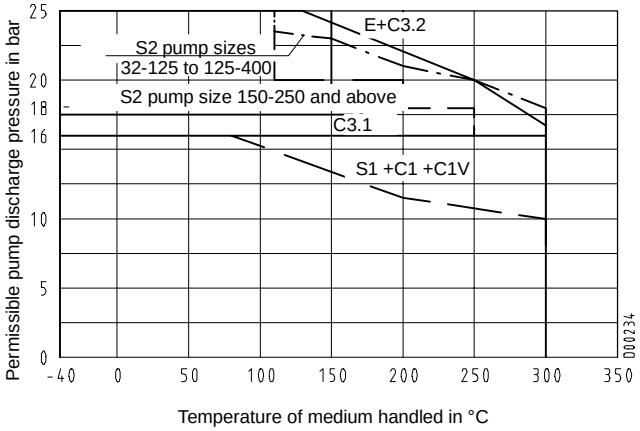
Material variants S1 and S2



Material variants C1, C3 and E

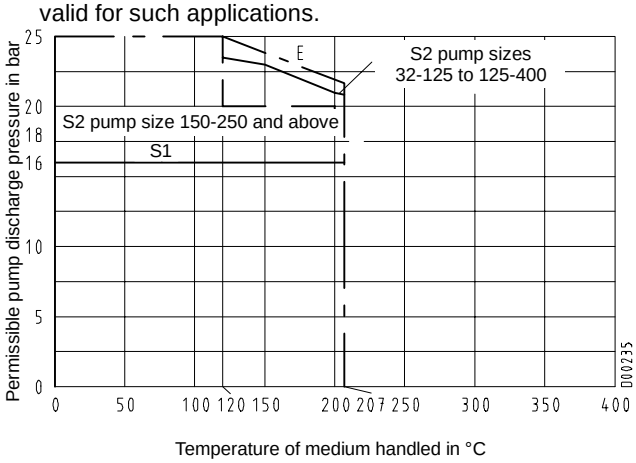


Pump design with conical seal chamber



b) Hot water applications

This applies to pumps not installed in hot water generation plants, i.e. pumps which are not subject to the regulations valid for such applications.



c) Where special regulations apply

In case of special regulations, different safety factors are required, which usually leads to a reduction of the limits stated in a).
Information about the revision of the application limits has to be requested for each individual case, stating the acceptance specifications.

d) Pressure and temperature limits for shaft seals

The application limits of shaft seals depend on the circumferential speed, the material and the medium handled. They have to be checked in each individual case on the basis of the manufacturer's catalogues, taking into account the actual operating conditions.

Materials [1])

Part description	Material variant - standard programme			
	C1/C1V [2]	S1/S2	E	C3.1/C3.2
Volute casing	1.4408	JS1025 [3]	GP240GH+N	Noridur 1.4593
Casing cover	1.4408	C22.8 / JS1025 [4][9]	C22.8 / GP240GH+N[4]	Noridur 1.4593
Support foot	S235JRG2 [5]	S235JRG2 [5]	S235JRG2 [5]	S235JRG2 [5]
Shaft	C 45+N [6]	C 45+N [6]	C 45+N [6]	C 45+N [6]
Impeller	1.4408	JL1040 [7][8]	JL1040 [7][8]	Noridur 1.4593
Bearing bracket	JL1040 [8]	JL1040 [8]	JL1040 [8]	JL1040 [8]
Bearing bracket lantern	JL1040 [8][9]	JL1040 [8][9]	JL1040 [8][9]	JL1040 [8][9]
Seal cover	1.4571	1.4571	1.4571	1.4539
Casing wear ring	-	JL1040	-	-
Shaft protecting sleeve - gland packing	1.4571	1.4122	1.4122	1.4539
Shaft protecting sleeve - mechanical seal	1.4571	1.4571	1.4571	1.4539
Impeller nut	1.4571	1.4571	1.4571	1.4539
Joint rings/gaskets	asbestos-free	asbestos-free	asbestos-free	asbestos-free

1) Special materials available, depending on the medium handled
2) in compliance with VDMA 24276
3) EN 1563: GJS-400-18-LT
4) for pump design with conical seal chamber 1.4593 (S1: 1.4408)
5) from bearing bracket P 05s: JS1030
6) T >250 °C: 1.7709VS
T<-40 °C: 1.5680
7) on bearing bracket P 04: JS1025
for T >350 °C or circumferential speeds >48 m/sec: 1.4408
8) EN 1561: GJL-250
9) for hot water >183 °C, for organic heat transfer media >200 °C, for all T>350 °C and if special regulations apply: JS1025

Benefits at a Glance

Easy to replace
due to standardized pump and flange design

Easy to dismantle
due to forcing screws

Durable
Dimensioned to ensure a bearing life of more than 25,000 operating hours and a shaft deflection of less than 0.05 mm

Reliable
due to sturdy bearings and oil lubrication

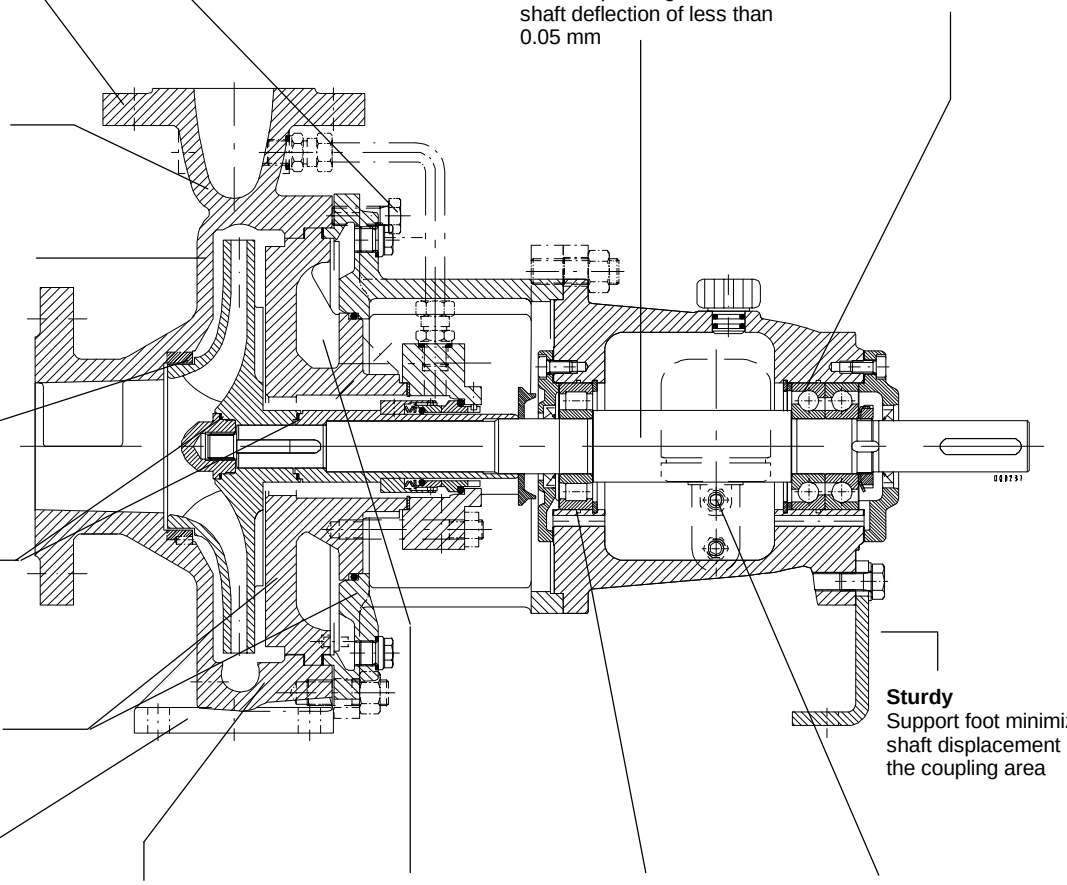
Reliable
due to well-proven hydraulic system

Safety
ensured by strength analysis and quality casting with corrosion allowance

Low operating costs
due to replaceable casing wear rings and impeller wear rings

Cost-effective maintenance
due to dry shaft (no special materials required) and shaft protecting sleeve

Small spare parts stock
due to modular design system



Sturdy
Support foot minimizes shaft displacement in the coupling area

Easy to dismantle
due to back pull-out design: the casing may remain in the pipeline when the pump is dismantled

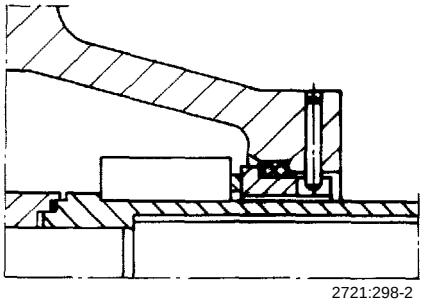
Long service life
of bearings and mechanical seals due to low radial forces

Versatile
due to wide range of materials and many design variants, e.g. cooling or heating

Maintenance-friendly
Radial bearing ensures easy assembly and permits thermal expansion of the shaft

Easy to service
due to constant-level oiler: constant lubrication, easy to check

Design variant:



Casing cover with conical seal chamber

Technical Data

Pumps on bearing brackets P 02as to P 04s

			Pump sizes																																
		Units	25-160	25-200	32-125	32-160	32-200	40-160	40-200	50-160	50-200	32-250	40-250	40-315	50-250	50-315	65-160	65-200	65-250	80-160	80-200	80-250	100-200	65-315	80-315	80-400	100-250	100-315	100-400	125-250	125-315	125-400	150-250		
Bearing bracket			P 02as									P 03s												P 04s											
General	corrosion allowance	mm	3									3												3											
	impeller outlet width	mm	6	6	8	7	7	9	7	15	12	6	7	8	10	8	20	16	13	27	22	17	29	10	14	11	23	19,5	15	32	26	20	46		
	impeller inlet Ø	mm	45	45	52	52	52	65	65	82	82	52	65	65	84	84	89	96	96	100	114	114	122	96	129	118	129	135	129	154	154	154	180		
	max. impeller Ø	mm	see individual curve																																
	min. impeller Ø	mm	see individual curve																																
Shaft diam.	in stuffing box housing	mm	25									32												42											
	at bearings	mm																																	
	pump side	mm	35									35												55											
	motor side	mm	35									35												55											
	at coupling	mm	24									32												42											
Shaft prot. sleeve	gland packing	mm	35									45												55											
	mech. seal (standard)	mm	KU 33 / KB 28									KU 43 / KB 38												KU 53 / KB 48											
Bearings	pump side	No.	NU 307									NU 307												NU 311											
	motor side	No.	2 x 7307 BUA									2 x 7307 BUA												2 x 7311 BUA											
Gland packing	bore Ø	mm	51									65												75											
	length	mm	53									64												64											
	pack. ring dim.	mm	8 x 8									10 x 10												10 x 10											
	no. of pack. rings	pcs.	4 (6)									4 (6)												4 (6)											
	width of lantern ring	mm	16									20												20											
	clearance for removal	mm	67									79												77											
Shaft deflection			Max. shaft deflection at shaft seal in accordance with ISO 5199 (max. 0.05 mm) is observed.																																
Pressure limit	max. operating pressure	bar	see diagram page 3																																
	max. test pressure	bar	1.5 x max. permissible pump discharge pressure																																
Temp. limit	max. temp. of medium handled	°C	see diagram page 3																																
Drive	P/n value		0.009									0.021												0.05											
	max. rating at n = 1450 1/min	KW	13									30												72											
	= 1750 1/min	KW	16									37												87											
	= 2900 1/min	KW	26									60												144											
	= 3500 1/min	KW	31									74												175											

Pumps on bearing brackets P 05s to P 12s

			Pump sizes																																
		Units	150-315	150-400	150-500	200-250	200-315	200-400	200-500	250-315	250-400	250-500	150-630	200-670	300-400	300-500	350-400	350-500	250-630	250-710	300-630	300-710	400-504	400-506	350-630	350-710	400-630	400-710							
Bearing bracket			P 05s								P 06s		P 08s						P 10as						P 12s										
General	corrosion allowance	mm	3								3		3						3						3										
	impeller outlet width	mm	38	29	23	62	50	40	32	73	63	43	21	25	68	58	115	72	40	38	46	46	81	106	58	53	76	68							
	impeller inlet Ø	mm	190	190	190	190	222	222	222	270	294	280	202	250	294	320	337	340	290	275	326	326	373	400	360	360	400	400							
	max. impeller Ø	mm	see individual curve																																
	min. impeller Ø	mm	see individual curve																																
Shaft diam.	in stuffing box housing	mm	54								65		80						100						120										
	at bearings	mm																																	
	pump side	mm	65								65		80						120						120										
	motor side	mm	65								75		95						120						120										
	at coupling	mm	40								60		75						90						110										
Shaft prot. sleeve	gland packing	mm	70								80		100						120						140										
	mech. seal (standard)	mm	KU 65/KB 60								KU75/KB 70		KU 95/KB 90						KU 110/KB 110						KU 130/KB 130										
Bearings	pump side	No.	NU 313								NU 413		NU 416						NU 324						NU 324										
	motor side	No.	2 x 7313 BUA								2x7315B UA		2 x 7319 BUA						2 x 7324 BUA						2 x 7324 BUA										
Gland packing	bore Ø	mm	95								105		132						152						172										
	length	mm	79								79		102						130						130										
	pack. ring dim.	mm	12,5 x 12,5								12,5x12, 5		16 x 16						16 x 16						16 x 16										
	no. of pack. rings	pcs.	4 (6)								4 (6)		4 (6)						6						6										
	width of lantern ring	mm	25								25		32						25						25										
	clearance for removal	mm	88								88		108						100						100										
Shaft deflection			Max. shaft deflection at shaft seal in accordance with ISO 5199 (max. 0.05 mm) is observed.																																
Pressure limit	max. operating pressure	bar	see diagram page 3																																
	max. test pressure	bar	1.5 x max. permissible pump discharge pressure																																
Temp. limit	max. temp. of medium handled	°C	see diagram page 3																																
Drive	P/n value		0.11								0.2		0.42						0.79						1.15										
	max. rating at n = 1450 1/min	KW	160								290		610						1150						1670										
	= 1750 1/min	KW	192								350		735						1382						2012										
	= 2900 1/min	KW	-								-		-						-						-										
	= 3500 1/min	KW	-								-		-						-						-										

Pump Size / Bearing Bracket Combinations

Discharge nozzle DN	Nominal impeller diameter 125	160	200	250	315	400	500	504	506	630	670	710	Bearing bracket
25		x[1)5)]	x[1)5)]										P 02as
32	x	x[1)]	x[1)]	x[1)]									
40		x[1)]	x[1)]	x[1)]	x[1)]								P 03s
50		x[1)]	x[1)]	x[1)]	x[1)]								
65		x[1)]	x[1)]	x[1)]	x[1)3)]								
80		x[1)]	x[1)2)]	x[1)2)]	x[1)2)]	x[1)3)]							P 04s
100			x[1)2)]	x[1)2)]	x[12))]	x[1)2)]							P 05s
125				x[1)]	x[1)]	x[1)2)]							P 06s
150				x[1)]	x[1)]	x[1)]	x[1)]			x			P 08s
200				x[1)]	x[1)4)]	x[1)]	x[1)]				x		
250					x[1)]	x[1)6)]	x[1)6)]			x		x	P10as
300						x[1)6)]	x[1)6)]			x		x	
350						x[1)6)]	x[1)6)]			x		x	P 12s
400								x	x	x		x	

- Double volute casing
1) Casing cover with conical seal chamber possible
2) CPK-C standard design without double volute
3) CPK-E/S with double volute
4) CPK-E with double volute
5) not as CPK-S
6) design with conical seal chamber not possible on CPK-S

Casing

Radially split, consisting of volute casing (on CPK-S with casing wear ring) and casing cover.

Double volute depending on pump size.

The casing cover and the bearing bracket lantern form a chamber which can be used for heating or cooling with superheated steam or water, respectively (except for pump design with conical seal chamber).

Balancing

Axial thrust is balanced by back vanes on DN > 400 and sealing gap on both sides if impeller diameter > 500.

Shaft Seal

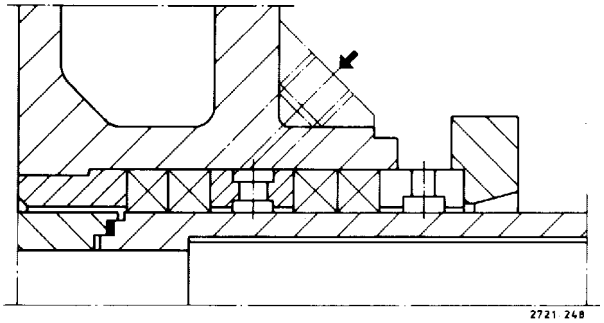
The shaft seal can be designed as a gland packing or as a mechanical seal.

Conversion from gland packing to single-acting mechanical seal and vice versa is possible without any rework on the casing cover by using the relevant replacement parts.

Commercially available mechanical seals in single- and double-acting design will be fitted. We use standardized mechanical seals of various makes in accordance with DIN 24 960 (design L_1K).

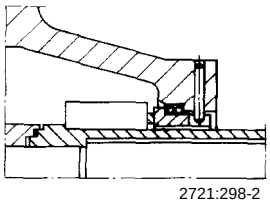
Single-acting mechanical seals may be fed with a quenching medium. Sealing against atmospheric influences is effected by means of a throttling bush, a shaft seal ring or a secondary mechanical seal.

Gland packing

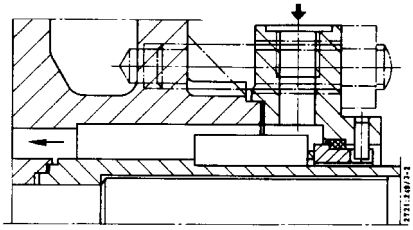


Gland packing design

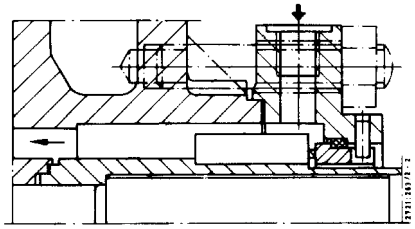
Examples of Mechanical Seal Arrangements



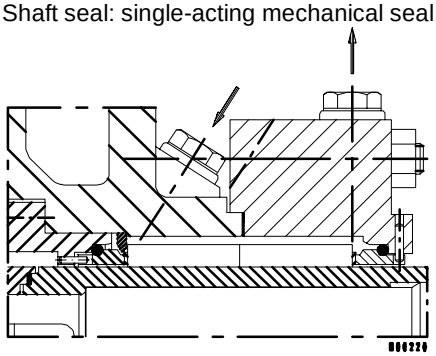
Shaft seal: standardized mechanical seal in short design, single-acting, unbalanced, without circulation (version with conical seal chamber).



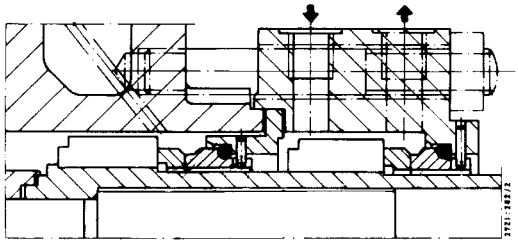
Shaft seal: single-acting mechanical seal, unbalanced.



Shaft seal: single-acting mechanical seal, balanced.



Shaft seal: double-acting mechanical seal (back to back), both sides unbalanced.



Shaft seal: double-acting mechanical seal (tandem), both sides balanced.

Mechanical Seals Installed in CPK Pumps

Design	Make	Type unbalanced	Type balanced
single-acting	KSB choice	A. 3)	- - -
	Burgmann	M7N 3)	H75N
		MG1-G6 1)	
	Pacific	600 3)	610
	Crane	59U 3)	59B
		502 3)	
double-acting back-to-back	KSB choice	A. / A. 2)	- - -
	Burgmann	M7N / M7N 2)	H75N / H75F1
	Pacific	600 / 600 2)	610 / 660
	Crane	59U / 59U 2)	59B/59B-RF
double-acting tandem	Burgmann	M7N / M7F1	H75N / H75F1
	Pacific	600/650	610 / 660
	Crane	59U/59U-RF	59B/59B-RF

Standard seals

1) only for pump design with conical sealing chamber
2) pumping screw possible
3) also possible in conical sealing chamber

Coating and Preservation

(acc. to works standard AN 1865)

CPK-S, -E	< 150 °C	N	1	1	1	W
	≥ 150 °C	N	7	7	7	W
CPK-C	< 150 °C	N	0	1	1	U
	≥ 150 °C	N	0	7	7	U

Key:
Treatment of unmachined parts
Coating - pressure-retaining parts
Coating - bearing bracket, baseplate
Coating - motor
Preservation

N = reaction primer, parts in contact with the medium handled without last paint coat.
0 = without top coat
1 = synthetic enamel RAL 5002, ultramarine blue
7 = heat-resistant enamel RAL 9007, aluminium-grey
U = untreated
W = rinsed with water repellent agent; blank parts liable to rust with protective coating

Acceptance Tests / Guarantees

- **Materials tests**
  Test report 2.2 on request
- **Product tests**
  Inspection certificate 3.1, on request, for:
  pressure test of complete pump as per EN 10204
- **Hydraulic tests**

Each pump is subjected to a performance test run, and its duty point is guaranteed according to DIN 1944/III.

The following acceptance tests may be performed and certified at extra charge:

Performance test DIN 1944/III	5 measuring points
Performance test DIN 1944/II	5 measuring points (see individual curve)
NPSH test	1 measuring point

Warranties are given within the scope of the valid delivery conditions.

Forces and Moments

CPK pumps are designed for handling forces and moments in accordance with ISO 5199.

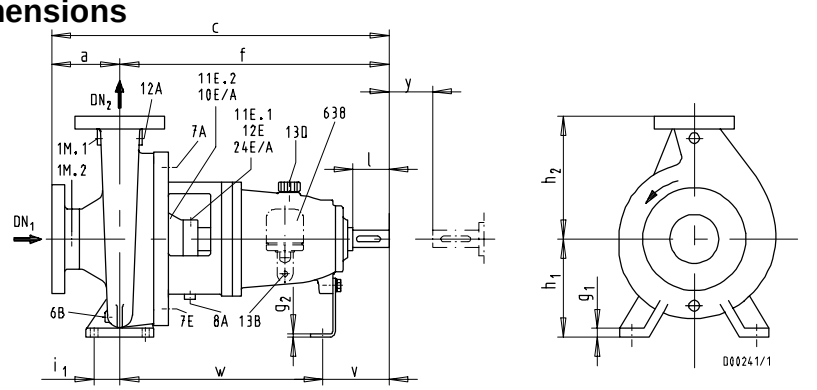
Documentation

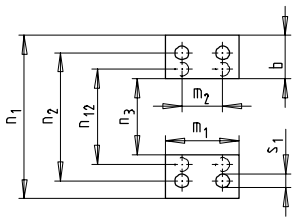
Printed documentation adapted to CE requirements
- sectional drawing with list of components
- drawing of shaft seal
- installation plan / dimensions table
- operating instructions

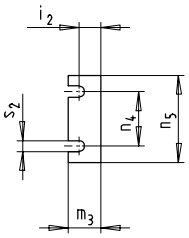
Recommended Spare Parts Stock for Two Years' Operation to DIN 24296

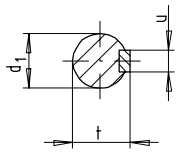
Part No.	Description	Number of pumps (incl. standby pumps)						
		2	3	4	5	6+7	8+9	10 and more
		Quantity of spare parts						
210	Shaft	1	1	1	2	2	2	20 %
230	Impeller	1	1	1	2	2	2	20 %
320.02	Angular contact ball bearing (set)	1	1	2	2	2	3	25 %
322.01	Cylindrical roller bearing	1	1	2	2	2	3	25 %
433	Mechanical seal, complete	1	1	2	2	2	3	25 %
	or							
	Mechanical seal: spring-loaded ring	2	3	4	5	6	7	90 %
	Mechanical seal: seat ring	2	3	4	5	6	7	90 %
	Mechanical seal: secondary seal at spring-loaded ring	2	3	4	5	7	9	100 %
	Mechanical seal: secondary seal at seat ring	2	3	4	5	7	9	100 %
	Mechanical seal: spring (set)	1	1	1	1	2	2	20 %
456.01	Neck bush	1	1	2	2	2	3	30 %
461.01	Gland packing (set)	4	4	6	6	6	8	100 %
502.01	Casing wear ring	2	2	2	3	3	4	50 %
524.01	Shaft protecting sleeve	2	2	2	3	3	4	50 %
---	Gaskets for pump casing (set)	4	6	8	8	9	12	150 %
---	Torque transmission elements (coupling, set)	1	1	2	2	3	4	30 %

Dimensions









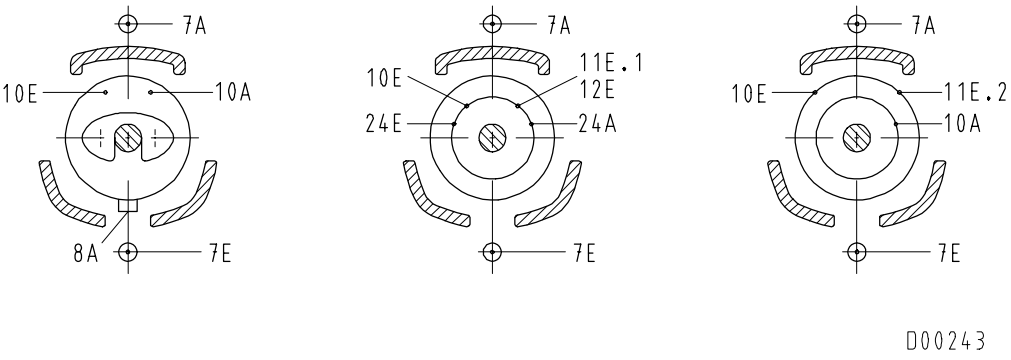
y = clearance for dismantling without removing the motor

shaft end
key in acc. with DIN 6885/Sh. 1

Flange design

CPK-S1	EN1092-2 , PN 16 2)
CPK-C1/C1V	DIN 2543, PN 16
CPK-C3.2	DIN 2544, PN 25
CPK-C3.1	DIN 2543, PN 16
CPK-S2	EN1092-2, PN 25
CPK-E	DIN 2544, PN 25

2) drilled



Gland packing | Single-acting mech. seal | Double-acting mech. seal

Connec-tions	Bearing bracket						Description
	P 02	P 03	P 04	P 05 P 06	P 08	P 10 P 12	
1 M.1	G 1/4	G 1/4	G 1/2	G 1/2	G 1/2	G 1/2	Pressure gauge
1 M.2	G 1/4	G 1/4	G 1/2	G 1/2	G 1/2	G 1/2	Pressure gauge
6 B	G 1/4	G 3/8	G 1/2	G 1/2	G 1	G 1	Casing drain
7 E/A 1)	G 3/8	G 3/8	G 3/8	G 1/2	G 1/2	---	Cooling liquid IN/OUT
8 A	Rp 1/2	Rp 1/2	Rp 1/2	Rp 1/2	Rp 1/2	Rp 1/2	Leakage drain
10 E / A	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	Sealing liquid IN/OUT
11 E.1	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	Flushing liquid IN
11 E.2	G 1/8	G 1/8	G 1/8	G 1/8	G 1/8	G 1/4	Flushing liquid IN
12 E / A	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	Circulation liquid IN/OUT
13 B	G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	G 1/2	Oil drain
13 D	20 Ø	20 Ø	20 Ø	20 Ø	20 Ø	20 Ø	Vent plug
24 E / A	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	Quench liquid IN/OUT
638	Rp 1/4	Rp 1/4	Rp 1/4	Rp 1/4	Rp 1/4	Rp 1/4	Constant-level oiler

1) Connection 7 E/A is not provided on pumps with conical seal chamber

Dimensions

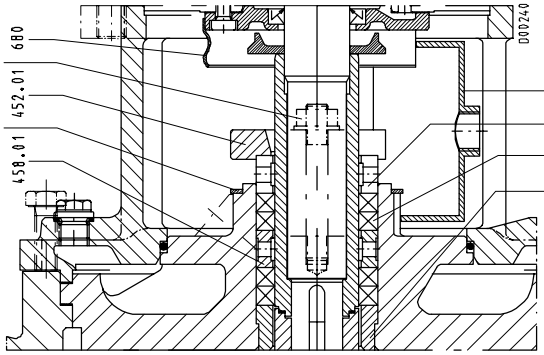
Dimensions in mm

Pump size	Bearing bracket	Pump dimensions															Shaft end					Foot bolts									
		DN 1	DN 2	a	b	c	f	g_1	g_2	h_1	h_2	m_1	m_3	n_1	n_3	n_5	d_1 ø k_6	l	t	u	y	i_1	i_2	m_2	n_2	n_4	s_1	s_2	v	w	n_{12}
25-160	P 02	40	25	80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	20	70	190	110	14	14	100	285	-
25-200	P 02			80	50	465	385	14	4	160	180	100	48	240	140	160	24	50	27	8	100	35	20	70	190	110	14	14	100	285	-
32-125	P 02			80	50	465	385	12	4	112	140	100	48	190	90	160	24	50	27	8	100	35	20	70	140	110	14	14	100	285	-
32-160	P 02	50	32	80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	20	70	190	110	14	14	100	285	-
32-200	P 02			80	50	465	385	14	4	160	180	100	48	240	140	160	24	50	27	8	100	35	20	70	190	110	14	14	100	285	-
32-250	P 03			100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370	-
40-160	P 02			80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	20	70	190	110	14	14	100	285	-
40-200	P 02	65	40	100	50	485	385	14	4	160	180	100	48	265	165	160	24	50	27	8	100	35	20	70	212	110	14	14	100	285	-
40-250	P 03			100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370	-
40-315	P 03			125	65	625	500	18	6	200	250	125	48	345	215	160	32	80	35	10	100	47,5	20	95	280	110	14	14	130	370	-
50-160	P 02			100	50	485	385	14	4	160	180	100	48	265	165	160	24	50	27	8	100	35	20	70	212	110	14	14	100	285	-
50-200	P 02	80	50	100	50	485	385	14	4	160	200	100	48	265	165	160	24	50	27	8	100	35	20	70	212	110	14	14	100	285	-
50-250	P 03			125	65	625	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370	-
50-315	P 03			125	65	625	500	18	6	225	280	125	48	345	215	160	32	80	37	10	100	47,5	20	95	280	110	14	14	130	370	-
65-160	P 03			100	65	600	500	15	4	160	200	125	48	280	150	160	32	80	35	10	100	47,5	20	95	212	110	14	14	130	370	-
65-200	P 03	100	65	100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	140	47,5	20	95	250	110	14	14	130	370	-
65-250	P 03			125	80	625	500	18	6	200	250	160	48	360	200	160	32	80	35	10	140	60	20	120	280	110	18	14	130	370	-
65-315	P 04			125	80	655	530	18	6	225	280	160	48	400	240	160	42	110	45	12	140	60	20	120	315	110	18	14	160	370	-
80-160	P 03			125	65	625	500	15	4	180	225	125	48	320	190	160	32	80	35	10	140	47,5	20	95	250	110	14	14	130	370	-
80-200	P 03			125	65	625	500	16	4	180	250	125	48	345	215	160	32	80	35	10	140	47,5	20	95	280	110	14	14	130	370	-
80-250	P 03	125	80	125	80	625	500	18	6	225	280	160	48	400	240	160	32	80	35	10	140	60	20	120	315	110	18	14	130	370	-
80-315	P 04			125	80	655	530	18	6	250	315	160	48	400	240	160	42	110	45	12	140	60	20	120	315	110	18	14	160	370	-
80-400	P 04			125	80	655	530	20	6	280	355	160	48	435	275	160	42	110	45	12	140	60	20	120	355	110	18	14	160	370	-
100-200	P 03			125	80	625	500	16	6	200	280	160	48	360	200	160	32	80	35	10	140	60	20	120	280	110	18	14	130	370	-
100-250	P 04	125	100	140	80	670	530	18	6	225	280	160	48	400	240	160	42	110	45	12	140	60	20	120	315	110	18	14	160	370	-
100-315	P 04			140	80	670	530	18	6	250	315	160	48	400	240	160	42	110	45	12	140	60	20	120	315	110	18	14	160	370	-
100-400	P 04			140	100	670	530	20	6	280	355	200	48	500	300	160	42	110	45	12	140	75	20	150	400	110	23	14	160	370	-
125-250	P 04			140	80	670	530	18	6	250	355	160	48	400	240	160	42	110	45	12	140	60	20	120	315	110	18	14	160	370	-
125-315	P 04	150	125	140	100	670	530	20	6	280	355	200	48	500	300	160	42	110	45	12	140	75	20	150	400	110	23	14	160	370	-
125-400	P 04			140	100	670	530	20	6	315	400	200	48	500	300	160	42	110	45	12	140	75	20	150	400	110	23	14	160	370	-
150-250	P 04			160	100	690	530	20	6	280	375	200	48	500	300	160	42	110	45	12	180	75	20	150	400	110	23	14	160	370	-
150-315	P 05	200	150	160	100	830	670	22	12	315	400	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
150-400	P 05			160	100	830	670	22	12	315	450	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
150-500	P 05	200	150	180	100	850	670	22	12	375	500	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
150-630	P 08s			250	180	1145	895	32	28	500	670	360	70	900	540	200	75[1)]	150	79,5	20	250	125	46	250	750	140	28	18	220	675	-
200-250	P 05	200		180	100	850	670	22	12	355	425	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
200-315	P 05	250		200	110	870	670	22	12	355	450	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
200-400	P 05	250	200	180	100	850	670	22	12	355	500	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	-
200-500	P 05	250		200	100	870	670	22	12	425	560	200	60	660	460	200	48	110	51	14	180	75	39	150	560	140	23	18	170	500	-
200-670	P 08s	250		250	225	1150	900	40	28	500	670	400	70	1080	630	200	75[1)]	150	79,5	20	250	150	46	300	1000	140	28	18	220	680	800
250-315	P 05			250	130	920	670	26	12	400	560	260	60	690	430	200	48	110	51	14	180	95	39	190	560	140	28	18	170	500	-
250-400	P 06s			200	130	920	720	26	12	425	600	260	60	800	540	200	60[1)]	140	64	18	180	95	39	190	670	140	28	18	205	515	-
250-500	P 06s	300	250	200	130	920	720	26	12	475	670	260	60	800	540	200	60[1)]	140	64	18	180	95	39	190	670	140	28	18	205	515	-
250-630	P10as			300	225	1390	1090	40	14	500	750	400	70	1080	630	200	95[1)]	170	100	25	250	150	44	300	1000	140	28	19	360	730	800
250-710	P10as			300	225	1380	1080	40	14	600	800	400	70	1250	800	200	95[1)]	170	100	25	250	150	44	300	1170	140	28	19	360	720	970
300-400	P 08s			300	180	1200	900	32	12	500	630	360	60	900	540	200	75[1)]	150	79,5	20	250	125	39	250	750	140	28	18	220	680	-
300-500	P 08s	350	300	300	225	1200	900	32	12	560	750	400	60	1080	630	200	75[1)]	150	79,5	20	250	150	39	300	1000	140	28	18	220	680	750
300-630	P10as			300	225	1390	1090	40	14	600	800	400	70	1250	800	200	95[1)]	170	100	25	250	150	44	300	1170	140	28	19	360	730	970
300-710	P10as			300	225	1390	1090	40	14	600	850	400	70	1250	800	200	95[1)]	170	100	25	250	150	44	300	1170	140	28	19	360	720	970
350-400	P 08s	350		350	225	1280	930	40	12	600	750	400	60	1250	800	200	75[1)]	150	79,5	20	315	150	39	300	1170	140	28	18	220	710	970
350-500	P 08s	350	350	300	225	1200	900	40	12	670	850	400	70	1250	800	240	75[1)]	150	79,5	20	250	150	48	300	1170	184	28	18	270	630	970
350-630	P 12s	400		300	225	1450	1150	40	14	630	850	400	70	1250	800	200	110[1)]	210	116	28	250	150	44	300	1170	140	28	19	410	740	970
350-710	P 12s	400		300	225	1450	1150	40	14	630	900	400	70	1250	800	200	110[1)]	210	116	28	250	150	44	300	1170	140	28	19	410	740	970
400-504	P10as			350	225	1460	1110	40	14	670	900	400	70	1250	800	200	95[1)]	170	100	25	250	150	44	300	1170	140	28	19	360	750	970
400-506	P10as	400	400	350	225	1460	1110	40	14	670	900	400	70	1250	800	200	95[1)]	170	100	25	300	150	44	300	1170	140	28	19	360	750	970
400-630	P 12s			350	225	1490	1140	40	14	630	900	400	70	1250	800	200	110[1)]	210	116	28	250	150	44	300	1170	140	28	19	410	740	970
400-710	P 12s			350	225	1490	1140	40	14	670	1000	400	70	1250	800	200	110[1)]	210	116	28	250	150	44	300	1170	140	28	19	410	740	970

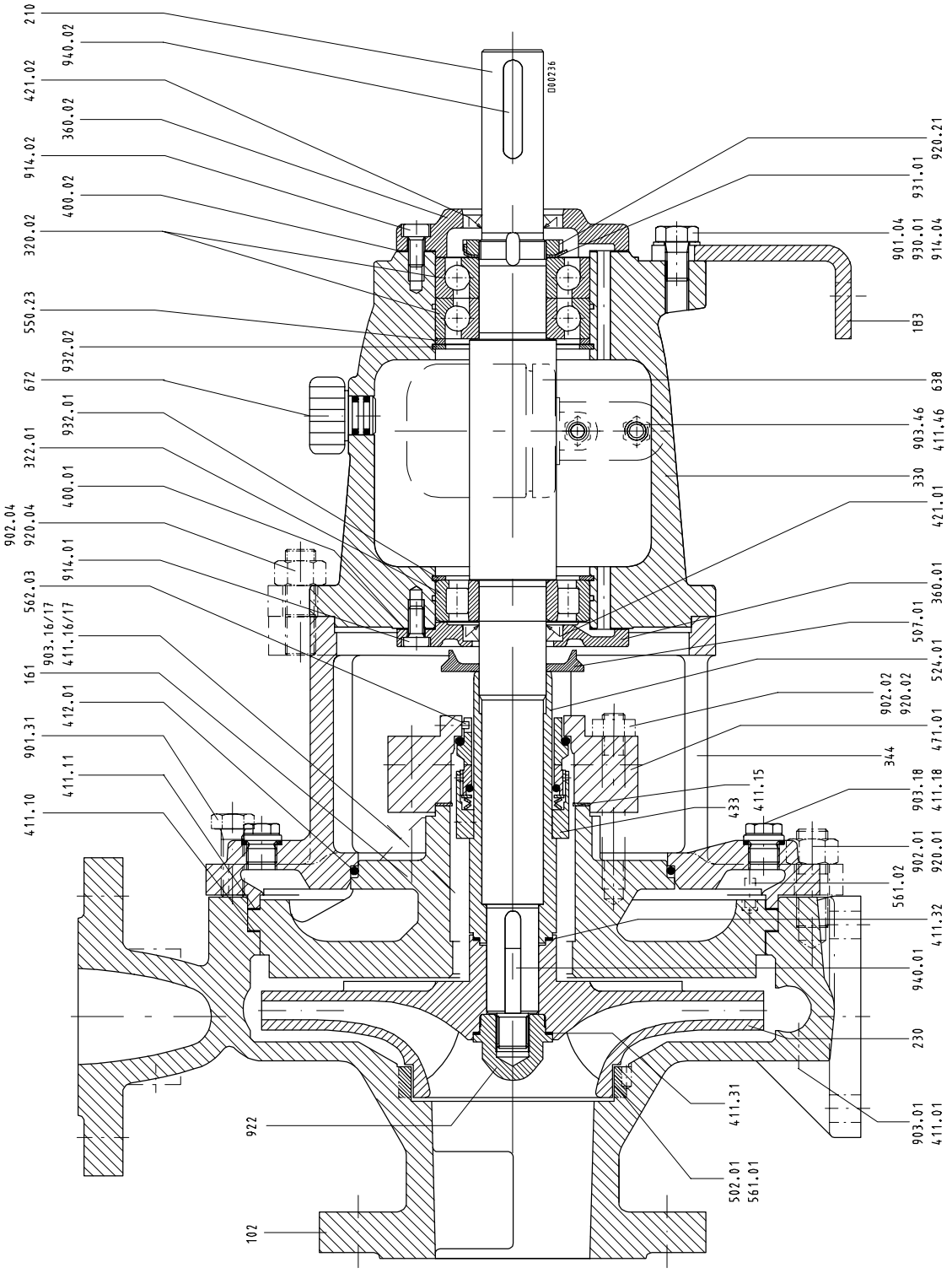
[1)] d_1 Ø n_6

General Drawing with List of Components

up to impeller diameter 500



Gland packing variant



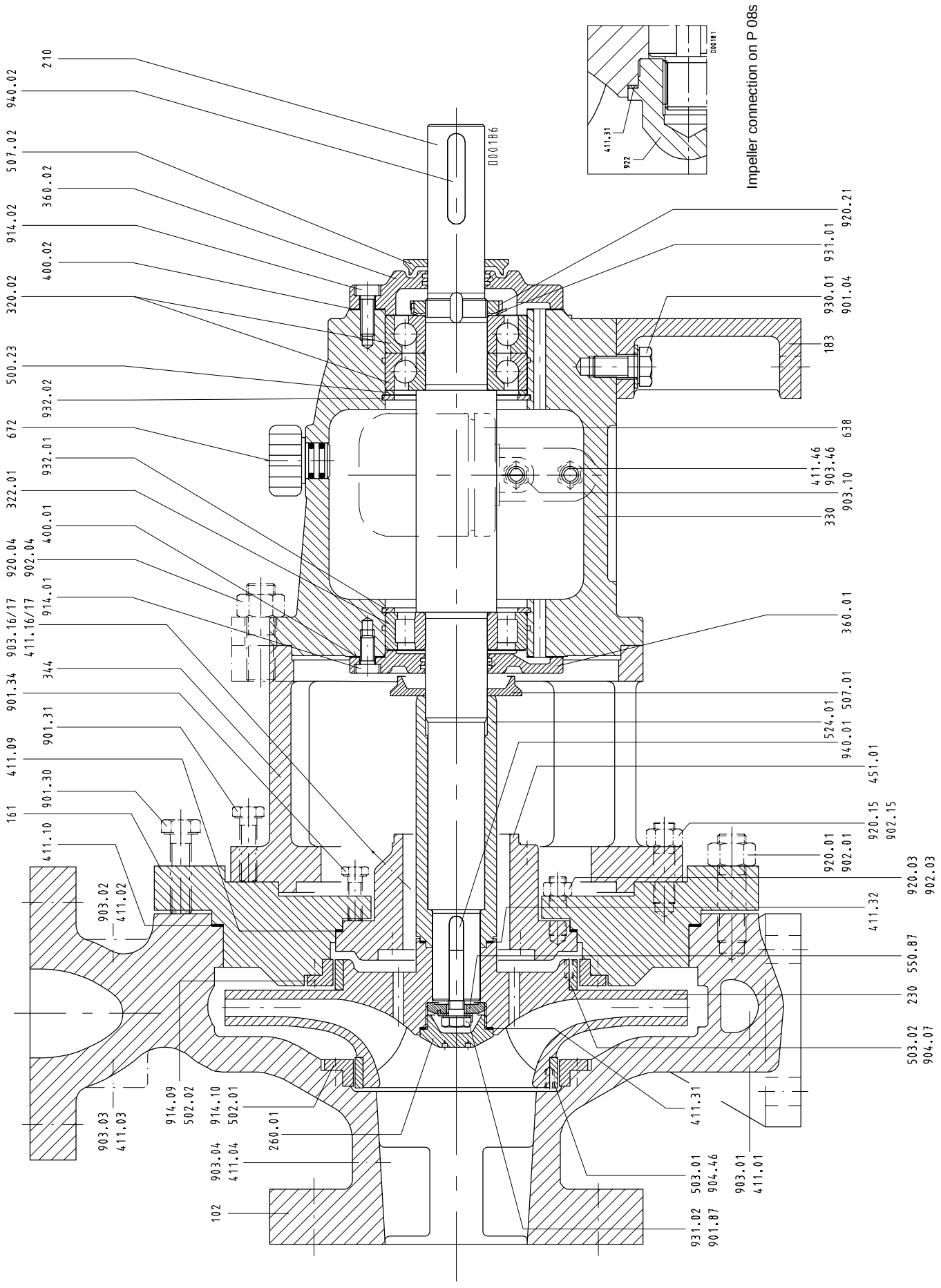
When ordering spare parts please always specify the type series/ pump size, works No. (stamped on the name plate and on the suction nozzle flange), motor No. (serial No.), year of construction, quantity required, part No., descripton, material, medium handled, sectional drawing No. and mode of dispatch.

Part No.	Description	Scope of supply
102	Volute casing	with joint ring 411.01/.10, casing wear ring 502.01 [1], stud 902.01, screwed plug 903.01, hex. nut 920.01
161	Casing cover	with joint ring 411.11/.16/.17, O-ring 412.01, drip plate 463.01, disc 550.01, stud 902.02, screwed plug 903.16/.17, hex. nut 920.02
183	Support foot	with hex. head bolt 901.04 [2], spring washer 930.01
210	Shaft	with keywayed nut 920.21, lockwasher 931.01, key 940.01/.02
230	Impeller	with joint ring 411.32
320.02	Angular contact ball bearing	
322.01	Cylindrical roller bearing	
330	Bearing bracket	
330	Bearing bracket (cpl.)	with bearing cover 360.01/.02, gasket 400.01/.02, joint ring 411.46, radial shaft seal ring 421.01/.02, support disc 550.23, constant-level oiler 638, vent plug 672, screwed plug 903.46, socket head cap screw 914.01/.02, circlip 932.01/.02
344	Bearing bracket lantern	with O-ring 412.01, parallel pin 561.02, screwed plug 903.18, stud 902.04, hex. head bolt 901.31, hex. nut 920.04, joint ring 411.18
360.01/.02	Bearing cover	with gasket 400.01/.02, socket head cap screw 914.01/.02
421.01.02	Radial shaft seal ring	
433	Mechanical seal	
452.01	Gland cover	
454.01	Stuffing box ring	split
456.01	Neck bush	
458.01	Lantern ring	split
461.01	Gland packing	
463.01	Drip plate	
471	Seal cover	with joint ring 411.15, parallel pin 562.03
502.01 [1])	Casing wear ring	with parallel pin 561.01
507.01	Thrower	
524.01	Shaft protecting sleeve	with joint ring 411.32
638	Constant-level oiler	
648	Drip pan	
680	Guard	
922	Impeller nut	with joint ring 411.31

1) only on CPK-S
2) on bearing assembly P 02as: socket head cap screw 914.04

General Drawing with List of Components

Impeller diameter 504 and above



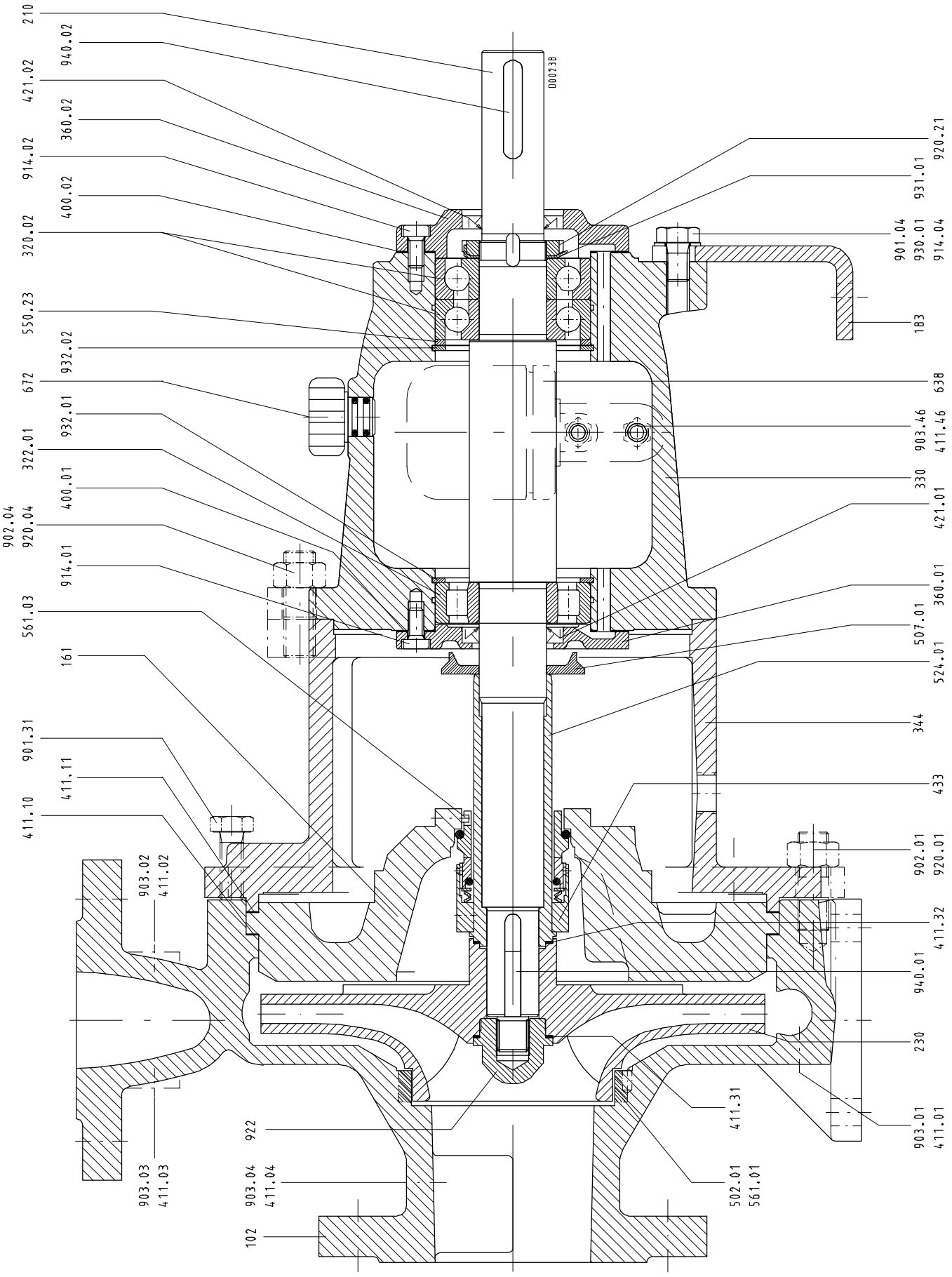
When ordering spare parts please always specify the type series/ pump size, works No. (stamped on the name plate and on the suction nozzle flange), motor No. (serial No.), year of construction, quantity required, part No.,description, material, medium handled, sectional drawing No. and mode of dispatch.

Part No.	Description	Scope of supply
102	Volute casing	with joint ring 411.01/.10, casing wear ring 502.01, stud 902.01, screwed plug 903.01, socket head cap screw 914.10, hex. nut 920.01
161	Casing cover	with joint ring 411.09, casing wear ring 502.02, stud 902.15, socket head cap screw 914.09, hex. nut 920.15
183	Support foot	
210	Shaft	with keywayed nut 920.21, lockwasher 931.01, key 940.01/.02
230	Impeller	with impeller wear ring 503.01/.02 (if fitted)
260.01	Impeller cap	(bearing brackets P 10as, P 12s)
320.02	Angular contact ball bearing	
322.01	Cylindrical roller bearing	
330	Bearing bracket	
344	Bearing bracket lantern	with stud 902.04, hex. nut 920.04
360.01/.02	Bearing cover	
451.01	Stuffing box housing	with stud 902.03, screwed plug 903.16/.17, hex. nut 920.03
502.01/.02	Casing wear ring	
507.01/.02	Thrower	
524.01	Shaft protecting sleeve	
550.23	Support disc	
550.87	Disc	(bearing brackets P 10as, P 12s)
638	Constant-level oiler	
672	Vent plug	
901.04	Hex. head bolt	
901.87	Hex. head bolt	(bearing brackets P 10as, P 12s)
903.46	Screwed plug	
914.01/.02	Socket head cap screw	
914.09/.10	Socket head cap screw	
922	Impeller nut	(bearing bracket P 08s)
930.01	Spring washer	
931.01	Lockwasher	
931.02	Lockwasher	(bearing brackets P 10as, P 12s)
932.01/.02	Circlip	

General Drawing with List of Components

Pump design with conical seal chamber (up to impeller diameter 500)

Shaft seal without circulation



When ordering spare parts please always specify the type series/ pump size, works No. (stamped on the name plate and on the suction nozzle flange), motor No. (serial No.), year of construction, quantity required, part No., description, material, medium handled, sectional drawing No. and mode of dispatch.

Part No.	Description	Scope of supply
102	Volute casing	with joint ring 411.01/.02/.03/.04/.10, casing wear ring 502.01 [1], stud 902.01, screwed plug 903.01/.02/.03/.04, hex. nut 920.01
161	Casing cover	with joint ring 411.10/.11, grooved pin 561.03
183	Support foot	with hex. head bolt 901.04 [2], spring washer 930.01
210	Shaft	with keywayed nut 920.21, lockwasher 931.01, key 940.01/.02
230	Impeller	with joint ring 411.32
320.02	Angular contact ball bearing	
322.01	Cylindrical roller bearing	
330	Bearing bracket	
330	Bearing bracket (cpl.)	with bearing cover 360.01/.02, gasket 400.01/.02, joint ring 411.46, radial shaft seal ring 421.01/.02, support disc 550.23, constant-level oiler 638, vent plug 672, screwed plug 903.46, socket head cap screw 914.01/.02, circlip 932.01/.02
344	Bearing bracket lantern	with joint ring 411.11, stud 902.04, hex. head bolt 901.31, hex. nut 920.04
360.01/.02	Bearing cover	with gasket 400.01/.02, socket head cap screw 914.01/.02
421.01/.02	Radial shaft seal ring	
433	Mechanical seal	
502.01 [1])	Casing wear ring	with parallel pin 561.01
507.01	Thrower	
524.01	Shaft protecting sleeve	with joint ring 411.32
638	Constant-level oiler	
922	Impeller nut	

1) only on CPK-S
2) on bearing assembly P 02as: socket head cap screw 914.04

15.8.2000 XBS d/7

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