

Fields of Application

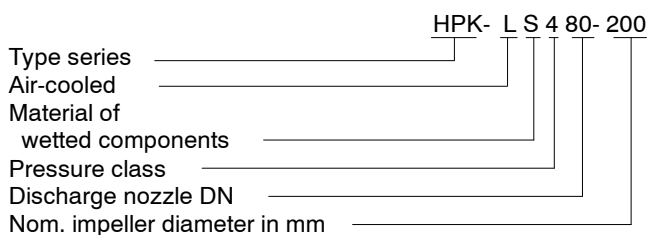
HPK-L pumps in standard design are suitable for plants where hot water and thermal oil is to be pumped through piping or tank systems, particularly for medium- and large-scale heating systems, forced circulation boilers, district heating systems and similar, unless inspection in acc. with German Pressure Vessel Regulations ("Technische Regeln für Druckbehälter") or EN 12953-6 is required. The seal chamber is cooled by cooling fins and ambient cooling air without special external cooling devices.

Design

Horizontal, radially split, single-stage, single-entry volute casing pump in back pull-out design, with radial impeller, to EN 22 858/ ISO 2858/ISO 5199.

Complemented by pumps with nominal diameters DN 25, DN 200, DN 250, and impeller diameter 500 mm.

Designation



Materials see materials table

Pressure class:

(blank)	=	PN25
4	=	PN40

Operating Data

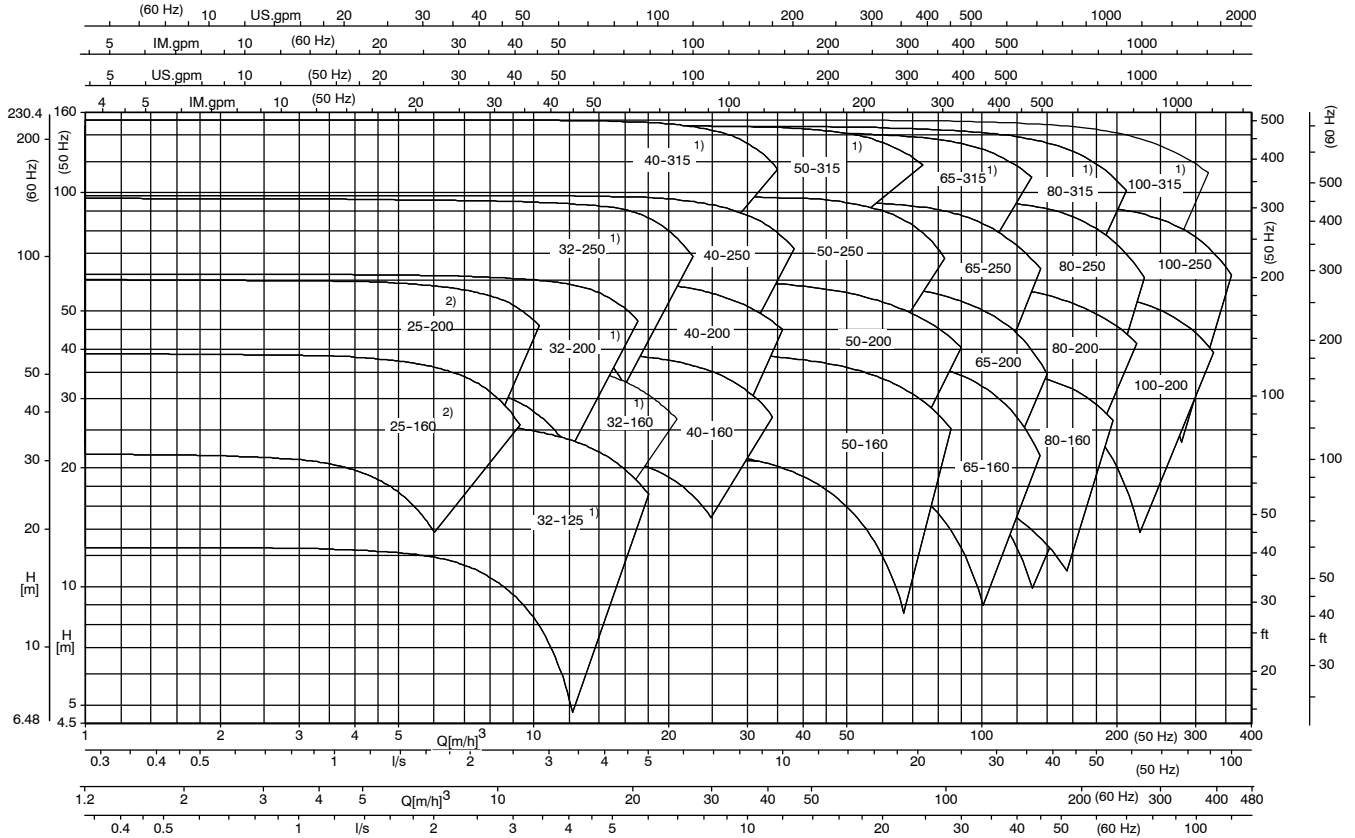
Pump sizes	DN	25 to 250
Capacities	Q	up to 1600 m ³ /h (444 l/s)
Heads	H	up to 222 m
Operating pressures	p	up to 40 bar
Operating temperatures	t	up to +240 °C (hot water) +350 °C (thermal oil)

Certification

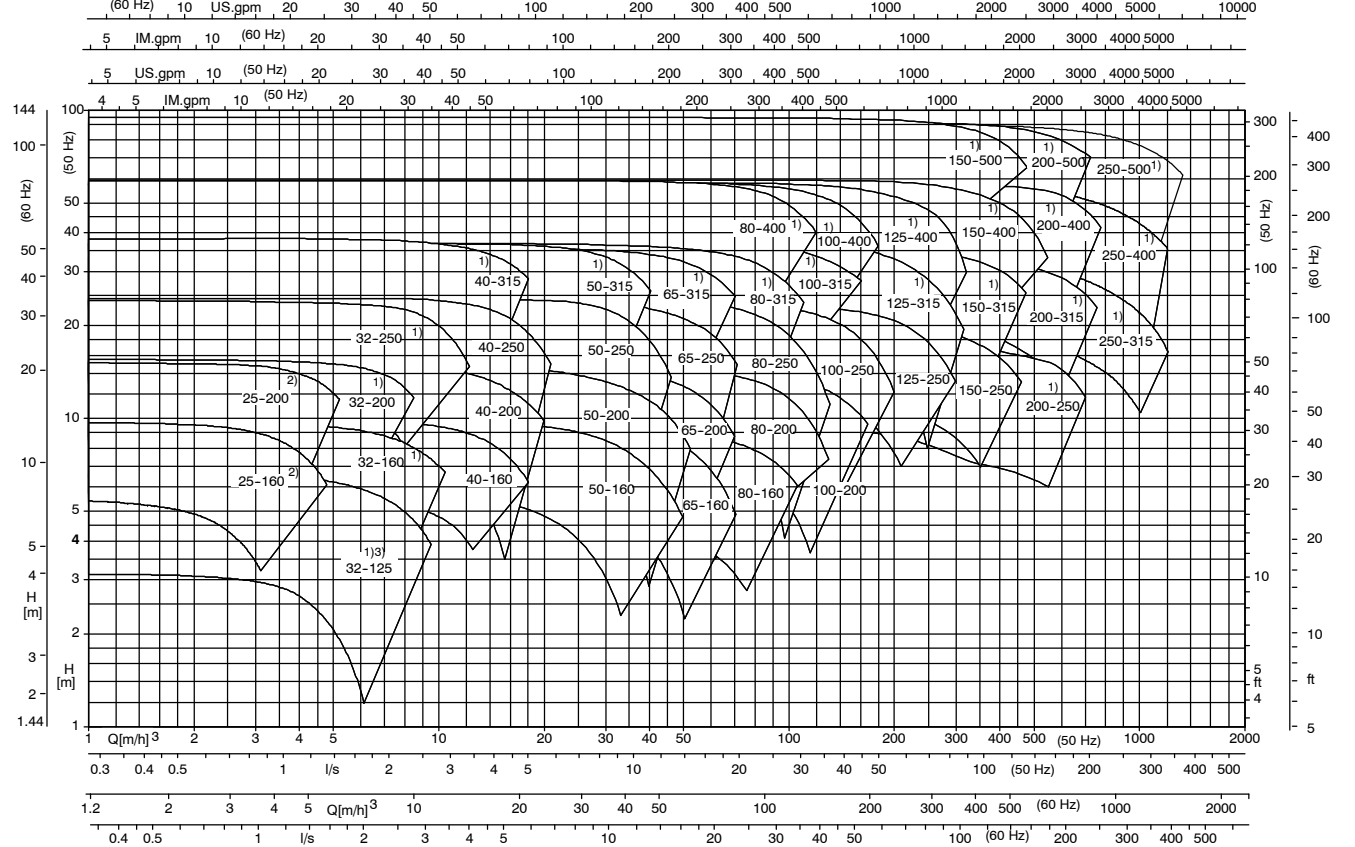
Certified quality management ISO 9001.

Selection Charts

n=2900/3500 rpm



n=1450/1750 rpm



- 1) not available as HPK-LS4
 - 2) available as HPK-LE only (not as HPK-LS/LS4/LE4)
 - 3) available as HPK-LS only (not as HPK-LE/LE4)
- Maximum permissible speed see page 6

Pressure and Temperature Limits

Max. product temperature 240 °C. Max. permissible discharge pressure in bar see table below:

Bear. brack.	Pump size	HPK-LE ²⁾					
		20 °C	150 °C	200 °C	240 °C	350 °C	
LP02	25-160 ¹⁾	30.2	24.3	22.0	20.5	17.0	
	32-160 ¹⁾	36.6	29.8	27.0	25.2	20.9	
	40-160 ¹⁾	35.7	28.7	26.1	24.3	20.1	
	50-160 ¹⁾	35.6	28.6	25.9	24.2	20.0	
	25-200 ¹⁾	24.8	19.9	18.1	16.8	13.9	
	32-200 ¹⁾	32.0	25.7	23.3	21.7	18.0	
	40-200 ¹⁾	30.3	24.4	22.1	20.6	17.0	
	50-200 ¹⁾	32.0	25.7	23.3	21.7	18.0	
LP03	65-160 ¹⁾	33.7	28.8	26.1	24.3	20.1	
	80-160 ¹⁾	33.7	27.6	25.1	23.3	19.3	
	65-200 ¹⁾	32.3	26.0	23.5	21.9	18.2	
	80-200 ¹⁾	34.7	28.0	25.3	23.6	19.5	
	100-200 ¹⁾	38.4	30.9	28.0	26.1	21.6	
	32-250 ¹⁾	28.2	22.7	20.6	19.2	15.9	
	40-250 ¹⁾	27.6	22.2	20.1	18.7	15.5	
	50-250 ¹⁾	29.8	24.0	21.8	20.3	16.8	
	65-250 ¹⁾	28.1	22.6	20.5	19.1	15.8	
	80-250 ¹⁾	33.6	27.0	24.5	22.8	18.9	
	40-315 ¹⁾	25.2	20.3	18.4	17.1	14.2	
	50-315 ¹⁾	24.6	19.8	17.9	16.7	13.8	
	LP04	100-250 ¹⁾	33.8	27.2	24.6	22.9	19.0
		125-250 ¹⁾	28.5	23.0	20.8	19.4	16.0
150-250		25.0	21.7	19.4	18.1	15.0	
65-315 ¹⁾		25.8	20.8	18.8	17.5	14.5	
80-315 ¹⁾		26.8	21.6	19.5	18.2	15.1	
100-315 ¹⁾		33.4	26.9	24.4	22.7	18.8	
125-315 ¹⁾		36.8	32.3	29.2	27.2	22.6	
80-400 ¹⁾		22.3	17.9	16.3	15.1	12.5	
100-400 ¹⁾		28.0	22.5	20.4	19.0	15.8	
125-400 ¹⁾		30.9	24.9	22.5	21.0	17.4	
LP05		200-250	20.8	16.7	15.2	14.1	11.7
		150-315	25.0	21.7	19.4	18.1	15.0
	200-315	25.0	21.7	19.4	18.1	15.0	
	250-315	25.0	21.7	19.4	18.1	15.0	
	150-400	25.0	21.7	19.4	18.1	15.0	
	200-400	25.0	21.7	19.4	18.1	15.0	
	150-500	25.0	21.7	19.4	18.1	15.0	
	200-500	25.0	21.7	19.4	18.1	15.0	
LP06	250-400	25.0	21.7	19.4	18.1	15.0	
	250-500	22.9	18.4	16.7	15.6	12.9	
P _{sat} H ₂ O		0.02	4.8	15.5	33.5		

Bear. brack.	Pump size	HPK-LE4 ³⁾			
		20 °C	150 °C	200 °C	240 °C
LP02	32-160	40	40	40	40
	40-160	40	40	40	40
	50-160	40	40	40	40
	32-200	40	38.5	37.5	36.6
	40-200	40	38.5	37.5	36.6
	50-200	40	38.5	37.5	36.6
	LP03	65-160	40	40	40
80-160		40	40	40	40
65-200		39	35.5	34.5	33.7
80-200		39	35.5	34.5	33.7
100-200		39	35.5	34.5	33.7
32-250		40	40	40	40
40-250		40	40	40	40
50-250		40	40	40	40
65-250		40	40	40	40
80-250		40	40	40	40
40-315		40	40	40	39.7
50-315		40	40	39.6	38.7
LP04		100-250	40	40	40
	125-250	40	40	40	40
	150-250	40	40	40	40
	65-315	40	40	40	40
	80-315	40	40	40	40
	100-315	40	40	40	40
	125-315	40	40	40	40
	80-400	40	37.2	35.8	35.0
	100-400	40	40	40	40
	125-400	40	40	40	40
	LP05	200-250	38.1	34.7	33.3
150-315		40	40	40	40
200-315		40	40	40	40
250-315		40	40	40	40
150-400		40	40	40	40
200-400		40	40	40	40
150-500		40	40	40	40
LP06	200-500	40	40	40	40
	250-400	40	40	40	40
LP06	250-400	40	40	40	40
	250-500	40	38.1	36.7	35.9

1) The flange dimensions for these pump sizes correspond to both PN25 and PN40. The maximum pump pressure given and the pressure limit of the connected pipeline must be observed.

2) Flange to EN1092-1 (PN25)

3) Flange to EN1092-1 (PN40)

4) Flange to EN1092-2 (PN25)

5) Flange to EN1092-2 (PN40)

Other temperatures may be determined by interpolation between the values given in the table.

Bear. brack.	Pump size	HPK-LS 4)					
		50 °C	120 °C	150 °C	200 °C	240 °C	350 °C
LP02	32-125 ¹⁾	23.9	22.7	22.4	21.7	21.0	19.2
	32-160 ¹⁾	32.0	30.7	29.5	26.9	25.9	20.5
	40-160 ¹⁾	30.6	29.4	28.2	25.7	24.7	19.6
	50-160 ¹⁾	30.9	29.7	28.4	26.0	25.0	19.8
	32-200 ¹⁾	27.6	26.5	25.4	23.2	22.3	17.7
	40-200 ¹⁾	26.0	25.0	23.9	21.8	21.0	16.6
	50-200 ¹⁾	27.8	26.7	25.6	23.4	22.5	17.8
LP03	65-160 ¹⁾	30.9	29.7	28.4	26.0	25.0	19.8
	80-160	25.0	25.0	24.3	23.0	22.0	17.5
	65-200 ¹⁾	38.6	36.3	35.4	32.5	25.0	24.7
	80-200	25.0	25.0	24.3	23.0	22.0	17.5
	100-200	25.0	25.0	24.3	23.0	22.0	17.5
	32-250 ¹⁾	24.9	23.9	22.9	20.9	20.1	15.9
	40-250 ¹⁾	24.3	23.3	22.4	20.4	19.6	15.6
	50-250 ¹⁾	26.5	25.4	24.4	22.3	21.4	17.0
	65-250 ¹⁾	24.9	23.9	22.9	20.9	20.1	15.9
	80-250	25.0	25.0	24.3	23.0	22.0	17.5
	40-315 ¹⁾	26.3	25.2	24.2	22.1	21.3	16.8
	50-315 ¹⁾	25.7	24.7	23.6	21.6	20.8	16.4
	LP04	100-250	25.0	25.0	24.3	23.0	22.0
125-250		24.3	23.3	22.4	20.4	19.6	15.6
150-250		24.9	23.9	22.9	20.9	20.1	15.9
65-315		26.9	25.8	24.7	22.6	21.7	17.2
80-315		25.0	25.0	24.3	23.0	22.0	17.5
100-315		25.0	25.0	24.3	22.8	22.0	17.4
125-315		25.0	25.0	24.3	22.6	21.7	17.2
80-400		25.0	25.0	24.3	23.0	22.0	17.5
100-400		25.0	25.0	24.3	23.0	22.0	17.5
125-400		25.0	25.0	24.3	23.0	22.0	17.5
LP05	200-250	22.2	21.3	20.4	18.6	17.9	14.2
	150-315	25.0	25.0	24.3	23.0	22.0	17.5
	200-315	25.0	24.0	23.0	21.0	20.2	16.0
	250-315	25.0	25.0	24.3	23.0	22.0	17.5
	150-400	25.0	25.0	24.3	23.0	22.0	17.5
	200-400	25.0	25.0	24.3	23.0	22.0	17.5
	150-500	24.9	23.9	22.9	20.9	20.1	15.9
	200-500	25.0	25.0	23.8	21.9	21.1	16.7
LP06	250-400	25.0	25.0	24.3	22.8	21.9	17.3
	250-500	23.8	22.8	21.9	20.0	19.2	15.2
psat H20		0.12	2	4.8	15.5	33.5	

Bear. brack.	Pump size	HPK-LS4 ⁵⁾				
		50 °C	120 °C	150 °C	200 °C	240 °C
LP02	40-160	40	40	38.8	36.6	35.2
	50-160	40	40	38.8	36.8	35.2
	40-200	40	39.5	38.5	36.8	35.2
	50-200	40	39.5	38.5	36.8	35.2
LP03	65-160	40	40	38.8	36.5	35.1
	80-160	40	40	38.8	36.8	35.2
	65-200	39	36.3	35.5	34.5	33.7
	80-200	39	36.3	35.5	34.5	33.7
	100-200	39	36.3	35.5	34.5	33.7
	40-250	40	40	38.8	36.8	35.2
	50-250	40	40	38.8	36.8	35.2
	65-250	40	40	38.8	36.7	35.2
LP04	80-250	40	40	38.8	36.8	35.2
	100-250	40	40	38.8	36.8	35.2
	125-250	40	40	38.8	36.8	35.2
	150-250	40	40	38.8	36.8	35.2

1) The flange dimensions for these pump sizes correspond to both PN25 and PN40. The maximum pump pressure given and the pressure limit of the connected pipeline must be observed.

2) Flange to EN1092-1 (PN25)

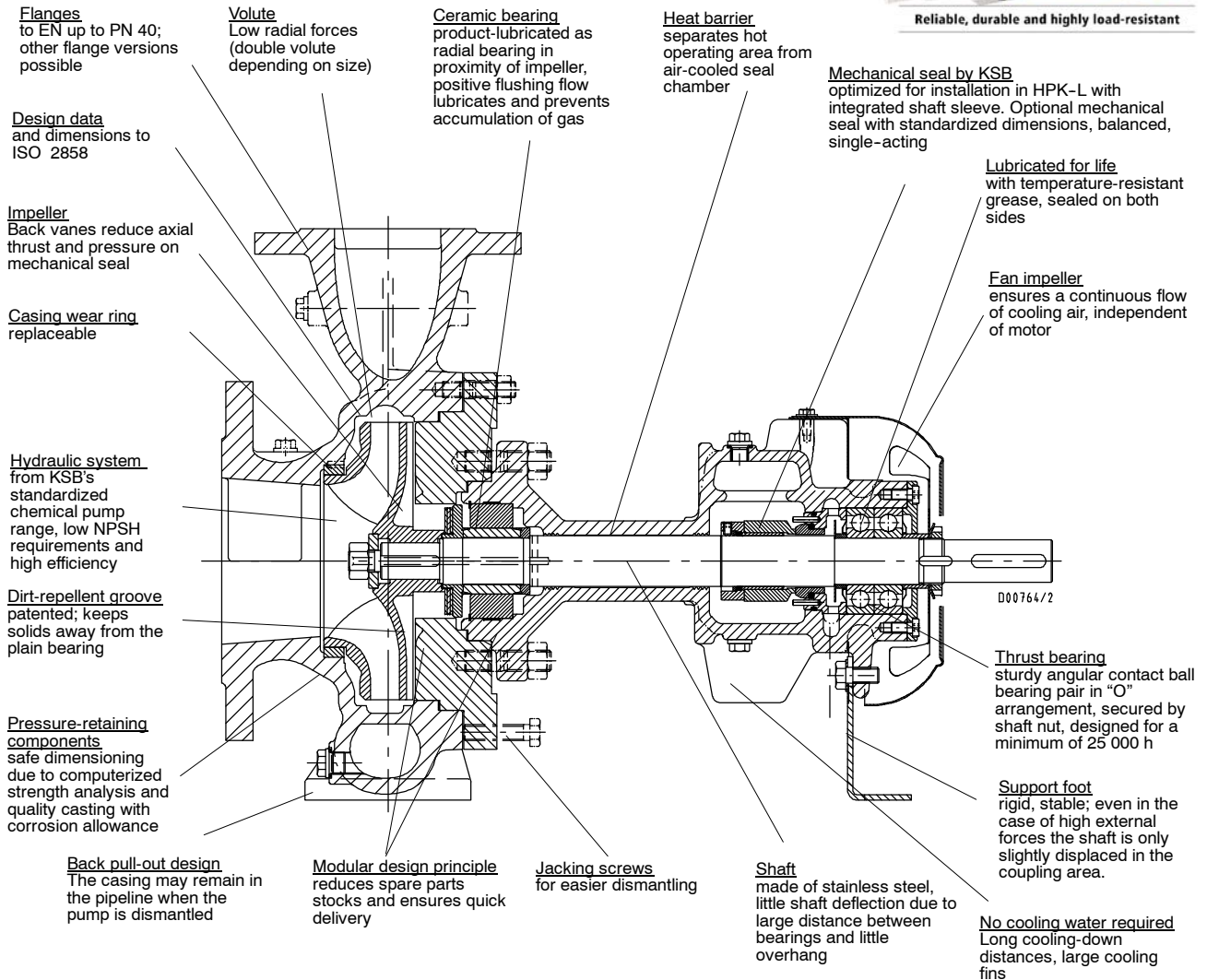
3) Flange to EN1092-1 (PN40)

4) Flange to EN1092-2 (PN25)

5) Flange to EN1092-2 (PN40)

Other temperatures may be determined by interpolation between the values given in the table.

Benefits at a Glance



Material Variants

Part No.	Description	HPK-LS/-LS4	HPK-LE	HPK-LE4
102	Volute casing	JS 1025 ¹⁾	GP240GH+N	1.7706
161	Casing cover	P250GH ³⁾	P250GH ³⁾	P250GH ³⁾
210	Shaft	1.4021+QT700	1.4021+QT700	1.4021+QT700
230	Impeller	JL 1040 ²⁾	JL 1040 ²⁾	JL 1040 ²⁾
310.10	Plain bearing	SSiC	SSiC	SSiC
330	Bearing bracket (=seal housing)	JS 1025 ¹⁾	JS 1025 ¹⁾	JS 1025 ¹⁾
476	Seat ring holder	1.4021+QT700	1.4021+QT700	1.4021+QT700
502.01	Casing wear ring	JL 1040 ²⁾	-	-
523 ⁴⁾	Shaft sleeve	1.4021+QT700	1.4021+QT700	1.4021+QT700
545.21	Bearing bush (product-lubricated)	SSiC	SSiC	SSiC
920.95	Impeller nut	A4	A4	A4

¹⁾ GJS-400-18-LT to EN 1563

²⁾ GJL-250 to EN 1561

³⁾ for size -315 and -400 casing cover in 1.7335; for size -500 casing cover in P355NL1

⁴⁾ not necessary at KSB mechanical seal

Technical Data

	BB	Impeller				Shaft diameter					Mechanical seal	Bearings			Limits			
		Outlet width	Inlet diameter	Max. impeller diameter	Min. impeller diameter	under shaft sleeve	at pump-end bearing	at motor-end bearing	at coupling	Shaft sleeve diameter		Pump end	Motor end	Max. speed	Max. operating pressure	Max. test pressure	Max. operating temperature	Max. P/n values for the drive
Pump size		mm	mm	mm	mm	mm	mm	mm	mm	mm	-	mm	-	rpm	bar	bar	°C	-
25-160	LP 02	6	45	169	130	28	24	35	24	33	KB028	SSiC, Ø 37	2 x 7307 BG	3600				
25-200																		
32-125																		
32-160																		
32-200																		
40-160																		
40-200																		
50-160																		
50-200																		
32-250	LP 03	6	52	260	200	38	35	35	32	43	KB038	SSiC, Ø 50	2 x 7307 BG	3600				
40-250																		
40-315																		
50-250																		
50-315																		
65-160																		
65-200																		
65-250																		
80-160																		
80-200																		
80-250																		
100-200																		
100-250																		
125-250																		
150-250	LP 04	46	180	260	200	48	35	45	42	53	KB048	SSiC, Ø 50	2 x 7309 BG8	1800				
65-315																		
80-315																		
100-315																		
125-315																		
80-400																		
100-400																		
125-400																		
200-250																		
150-315																		
200-315	LP 05	50	222	320	260	60	47	65	48	65	KB060	SSiC, Ø 62	2 x 7313 BG8	1800				
250-315																		
150-400																		
200-400																		
150-500																		
200-500																		
250-400																		
250-500																		
250-400	LP 06	63	294	404	320	70	55	75	60	75	KB070	SSiC, Ø 72	2 x 7315 BG8	1800				
250-500																		

see table, page 4

1.5 x max. permissible pump discharge pressure

240 °C water, 350 °C thermal oil

Depends on material and temperature - on request

1) HPK-LE4 125-315 up to 3000 rpm

Speed Limit

Besides the limits given in the performance curve booklet, the max. permissible speeds indicated in the table above shall apply.

Casing

Radially split, consisting of volute casing and discharge cover. HPK-LS/LS4 with casing wear ring; HPK-LE/LE4 without casing wear ring. Double volute depending on pump size.

Shaft Seal

KSB mechanical seal with integrated shaft sleeve. Optional single-acting, balanced standard mechanical seal on shaft sleeve. The seal chamber is located between the product-lubricated pump-end plain bearing and the outboard motor-end pair of rolling element bearings. The seal chamber is cooled by cooling fins and cooling air provided by an integrated fan impeller without external cooling devices.

Tests/Inspections

Material examinations on components:

Test report 2.2, on request, for:

- chemical composition
- heat treatment
- tensile test
- notched bar impact test (ductile materials only)
- hardness test
- non-destructive tests

Product tests on the pump set:

Inspection certificate 3.1, on request, for:

- pressure test of complete pump as per EN 10204
- hydraulic performance test ISO 9906/3B, 5 points
- NPSH test

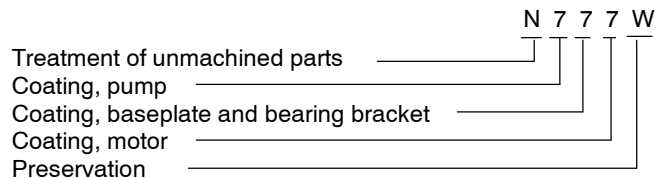
Documentation

Printed documentation adapted to CE requirements

- general drawing with list of components
- mechanical seal drawings
- installation plan / dimensions table
- operating instructions

Coating

Standard coating as per KSB works standard AN 1865:



- N = Treatment of unmachined parts
- 7 = Heat-resistant enamel, aluminium-grey RAL 9007
- W = rinsed with water repellent; blank parts liable to rust with protective coating

Packaging

Standard packaging:

- on boards if pump only
- on skid rails / crossbars if pump set is baseplate-mounted

Forces and Moments

HPK-L pumps are designed for handling forces and moments in accordance with ISO 5199.

Recommended Spare Parts Stock for 2 Years' Operation to DIN 24 296

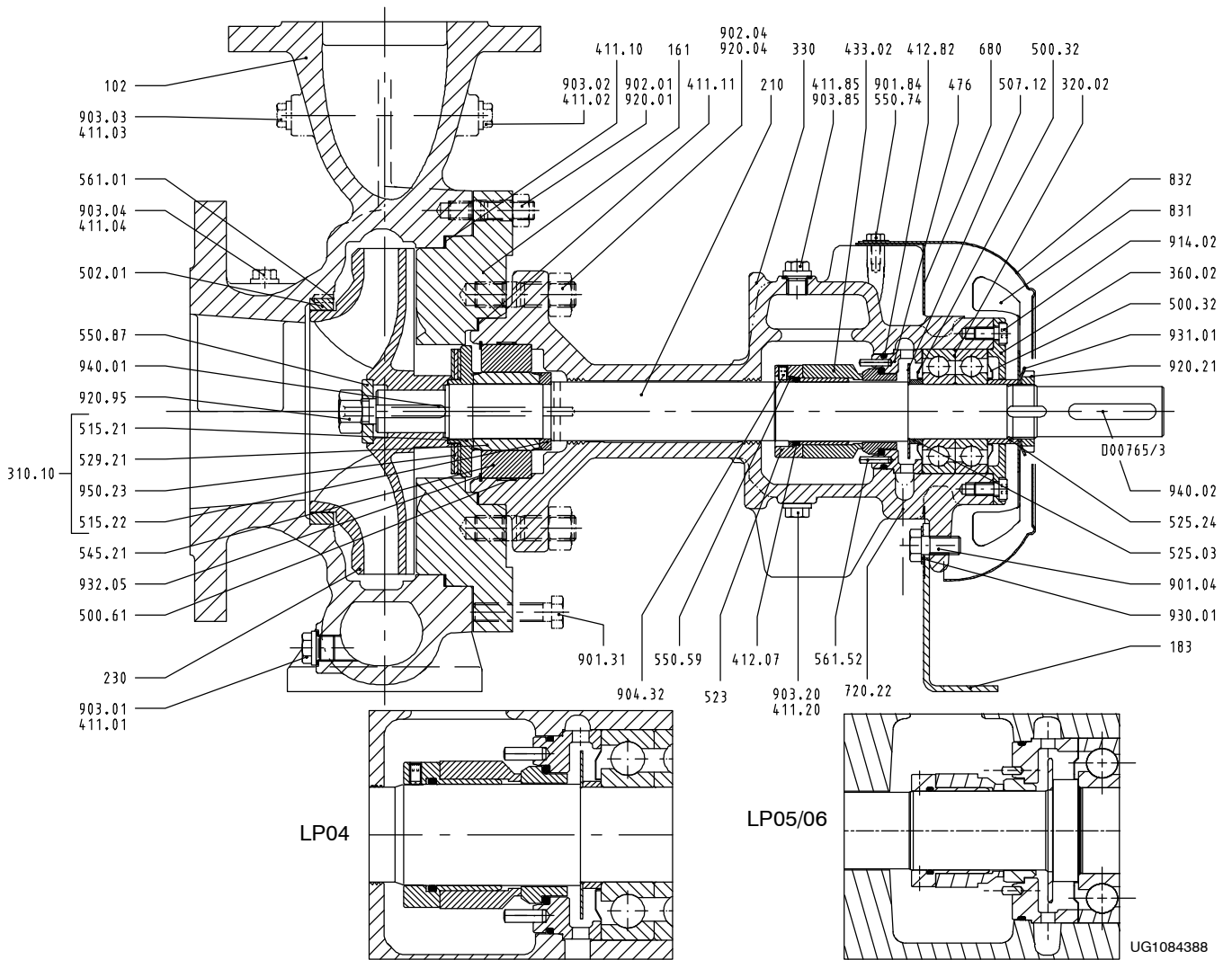
Part No.	Description	Number of pumps (including stand-by pumps)						
		2	3	4	5	6	8	10 and more
		Quantity of spare parts						
210	Shaft	1	1	2	2	2	3	30 %
230	Impeller	1	1	2	2	2	3	30 %
310.10	Plain bearing (product-lubricated)	2	3	4	5	6	8	100 %
320.02	Angular contact ball bearing (set)	1	1	2	2	3	4	50 %
330	Bearing bracket	-	-	-	-	-	1	2 off
433	Mechanical seal	1	1	2	2	2	3	25 %
502.01 ¹⁾	Casing wear ring	2	2	2	3	3	4	50 %
523 ²⁾	Shaft sleeve	1	1	1	2	2	2	20 %
545.21	Bearing bush (product-lubricated)	2	3	4	5	6	8	100 %
---	Set of sealing elements	4	6	8	8	9	12	150 %

¹⁾ on HPK-LS/LS4 only

²⁾ not necessary at KSB mechanical seal

Anschlüsse Connections Raccords	Lagerträger Bearing bracket Support de palier			Benennung Description Désignation
	LP02	LP03	LP04/LP05/LP06	
1M.1	G 1/4	G 1/4	G 1/4	Druckmessgerät / Pressure gauge / Manomètre
1M.2	G 1/4	G 1/4	G 1/4	Druckmessgerät / Pressure gauge / Manomètre
6B.1	G 1/4	G 3/8	G 1/4	Förderflüssigkeit Entleerung / Casing Drain / Vidange du liquide véhiculé
6B.2	G 1/4	G 1/4	G 1/4	Dichtungsgehäuse Entleerung / Seal Housing Drain / Vidange de boîte de garniture
12A	G 1/4	G 1/4	G 1/4	Zusatzanschluss / Supplementary connection / Raccord supplémentaire
13D	G 1/4	G 1/4	G 1/4	Entlüftung / Vent / Dégazage

General Drawing with List of Components



Part No.	Description	Scope of supply
102	Volute casing	with joint ring 411.01/.02/.03/.04/.10, casing wear ring 502.01 ¹⁾ , parallel pin 561.01 ¹⁾ , stud 902.01, screwed plug 903.01/.03/.04, hex. nut 920.01
161	Casing cover	with joint ring 411.11, hex. head bolt 901.31, stud 902.04, hex. nut 920.04
183	Support foot	with socket head cap screw 914.04, spring washer 930.01
* 210	Shaft	with disc 550.87, keywayed nut 920.21, hex. nut 920.95, lockwasher 931.01, key 940.01/.02
230	Impeller	
* 310.10	Plain bearing (sleeve)	with taper lock rings 515.21/.22, bearing sleeve 529.21, cup spring 950.23
* 320.02	Angular contact ball bearing	
* 330	Bearing bracket	
330	Bearing bracket (complete)	Comprising all parts marked *.
* 360.02	Bearing cover	
* 411.20	Joint ring	
* 411.85	Joint ring	
* 433.02	Mechanical seal	
* 476	Seat ring holder	
* 500.32	Ring	
* 500.61	Tolerance ring	
* 507.12	Thrower	
* 523	Shaft sleeve ²⁾	with O-ring 412.07, support disc 550.59 (LP02 and LP03 only), grub screws 904.32
* 525.24	Spacer sleeve	
* 525.03	Spacer sleeve	
* 545.21	Bearing bush	
* 550.87	Disc	
* 561.52	Grooved pin	
* 680	Guard	
* 720.22	Nipple joint	
* 831	Fan impeller	
* 832	Fan hood	
* 901.84	Hex. head bolt	
* 903.20	Screwed plug	
* 903.85	Screwed plug	
* 914.02	Socket head cap screw	
* 920.95	Hex. nut	
* 932.05	Circlip	
99-9	Set of sealing elements	with joint ring 411.01/.02/.03/.04/.10/.11/.20/.85, O-ring 412.07/.82

1) for HPK-LS/LS4 only

2) not necessary at KSB mechanical seal



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