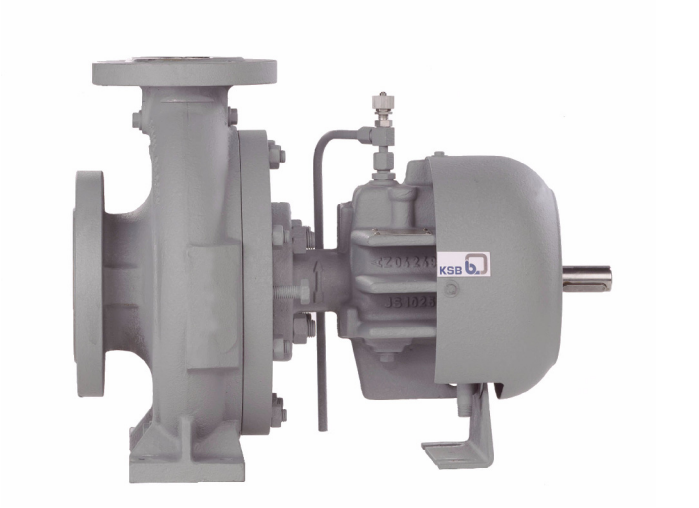
HPK-L



Hot Water Circulating Pumps without External Cooling Standard Programme

Automation products available:

- Hyamaster
- hyatronic

Fields of Application

HPK-L pumps in standard design are suitable for plants where hot water is to be pumped through piping or tank systems, particularly for medium- and large-scale heating systems, forced circulation boilers, district heating systems or similar [1]. 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 of nominal size DN 25.

Designation

HPK- L S 4 80- 200

Type series
Air-cooled
Material of wetted components
Pressure class
Discharge nozzle DN
Nom. impeller diameter in mm

Materials see materials table

Pressure class:

(blank)	=	PN25
4	=	PN40

Operating Data

Pump sizes	DN		25 to 150
Capacities	Q	up to	460 m^3/h
Heads	H	up to	153 m
Operating pressures	p	up to	40 bar
Operating temperatures	t	up to	240 °C

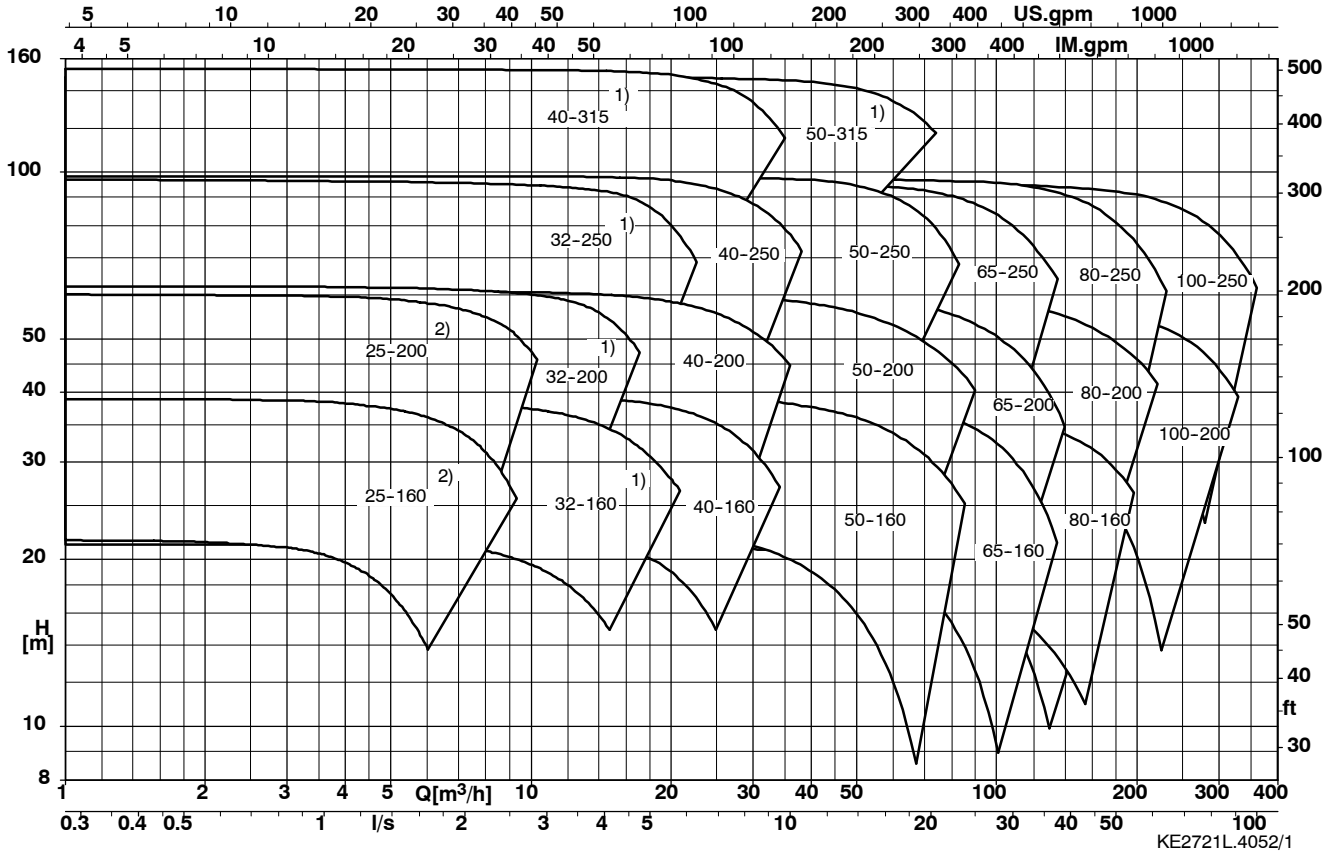
Certification

Certified quality management ISO 9001.

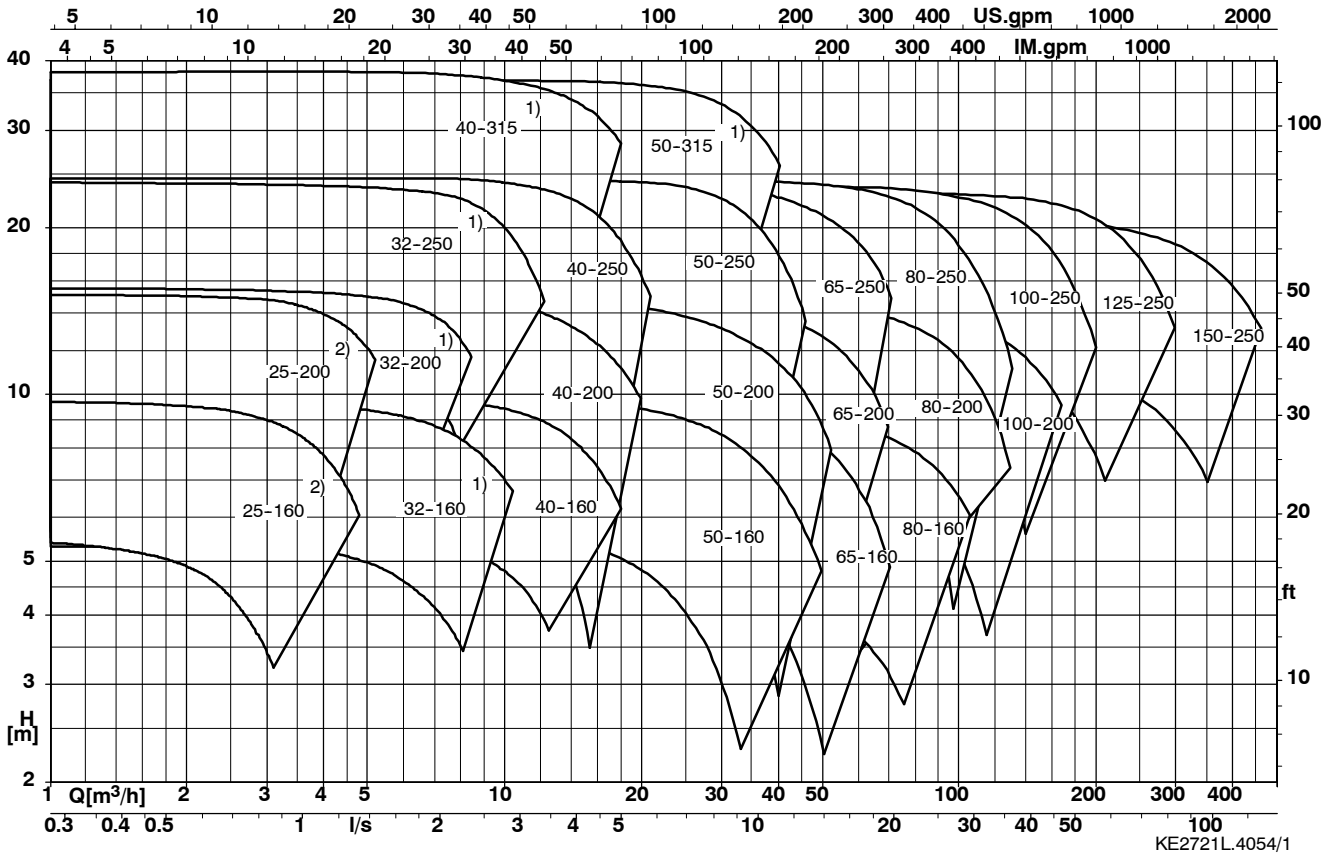
1) Unless inspection in acc. with German Pressure Vessel Regulations (“Technische Regeln für Druckbehälter”) or EN 12953-6 is required.

Selection Charts

n=2900 rpm

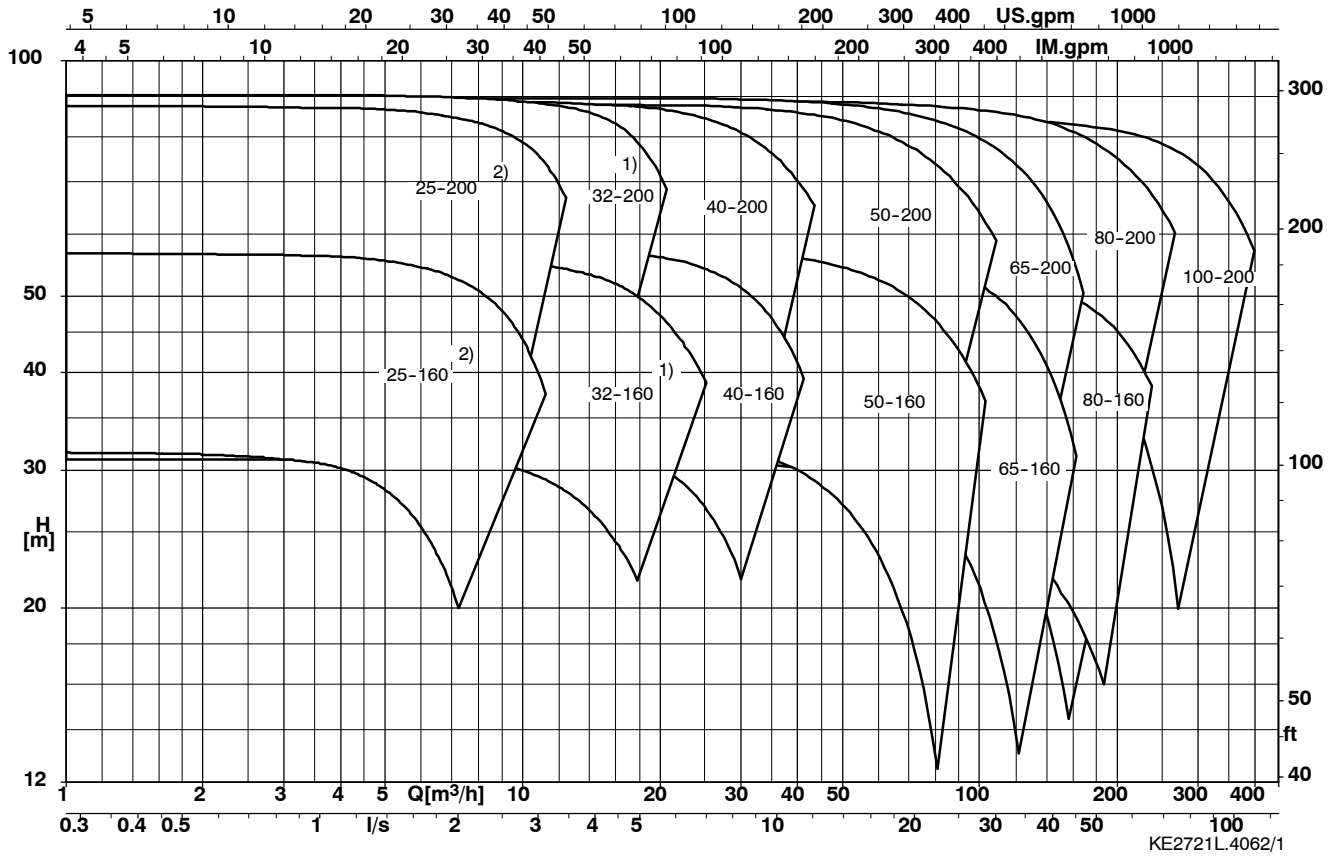


n=1450 rpm

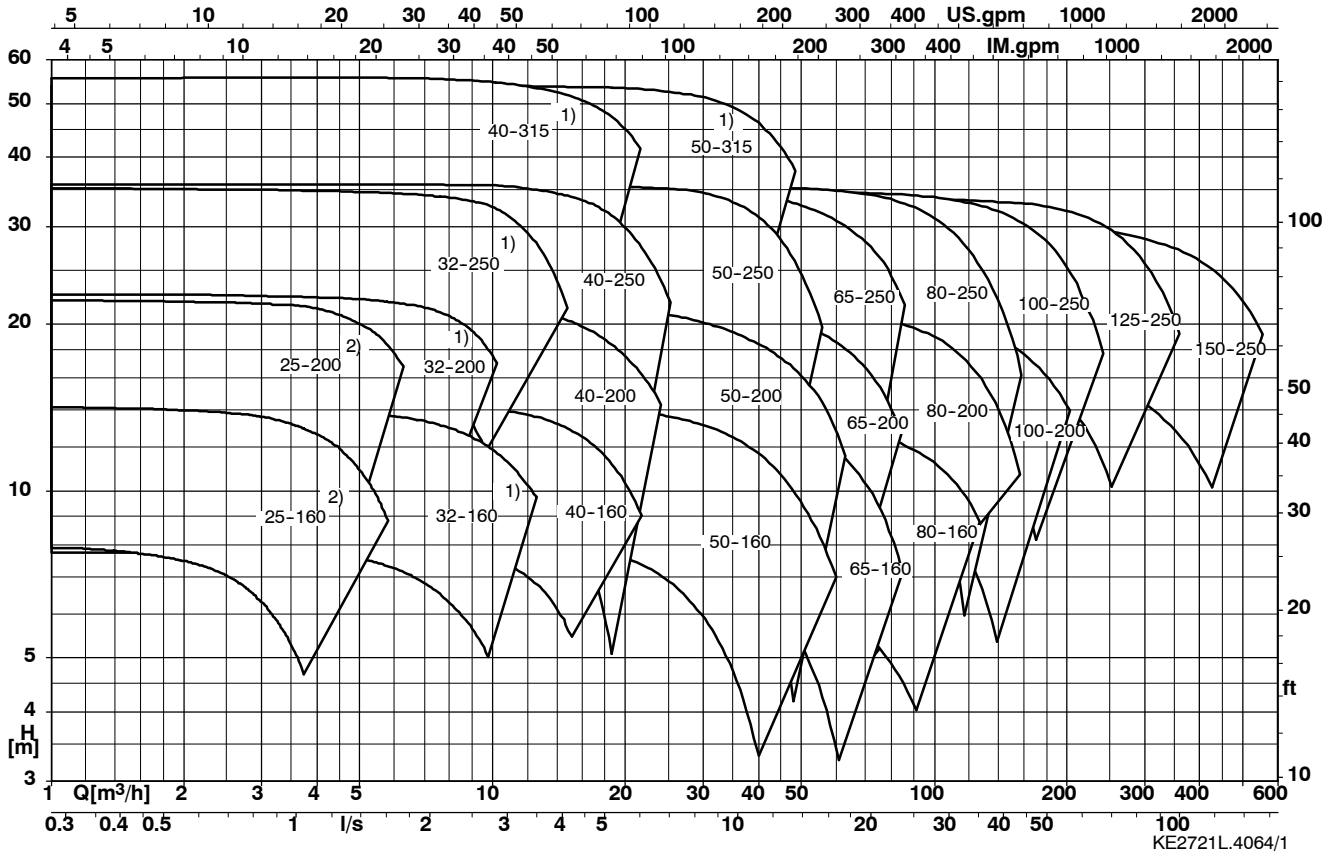


1) not available as HPK-LS4
2) available as HPK-LE only (not as HPK-LS/LS4/LE4)

n=3500 rpm



n=1750 rpm



1) not available as HPK-LS4
2) available as HPK-LE only (not as HPK-LS/LS4/LE4)

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
LP02	25-160 [1]	30.2	24.3	22	20.5
	32-160 [1]	36.6	29.8	27	25.2
	40-160 [1]	35.7	28.7	26.1	24.3
	50-160 [1]	35.6	28.6	25.9	24.2
	25-200 [1]	25	19.9	18.1	16.8
	32-200 [1]	25	23.2	22.5	21.7
	40-200 [1]	25	23.2	22.1	20.6
	50-200 [1]	25	23.2	22.5	21.7
LP03	65-160 [1]	33.7	28.8	26.1	24.3
	80-160 [1]	33.7	27.6	25.1	23.3
	65-200 [1]	22.8	21.4	20.7	20.1
	80-200 [1]	22.8	21.4	20.7	20.1
	100-200 [1]	22.8	21.4	20.7	20.1
	32-250 [1]	28.2	22.7	20.6	19.2
	40-250 [1]	27.6	22.2	20.1	18.7
	50-250 [1]	29.8	24.0	21.8	20.3
	65-250 [1]	28.1	22.6	20.5	19.1
	80-250 [1]	33.6	27	24.5	22.8
	40-315 [1]	25.2	20.3	18.4	17.1
	50-315 [1]	24.6	19.8	17.9	16.7
LP04	100-250 [1]	33.8	27.2	24.6	22.9
	125-250 [1]	28.5	23	20.8	19.4
	150-250	25.0	21.7	19.4	18.1
p_{sat} H_20		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	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	40
	125-250	40	40	40	40
	150-250	40	40	40	40

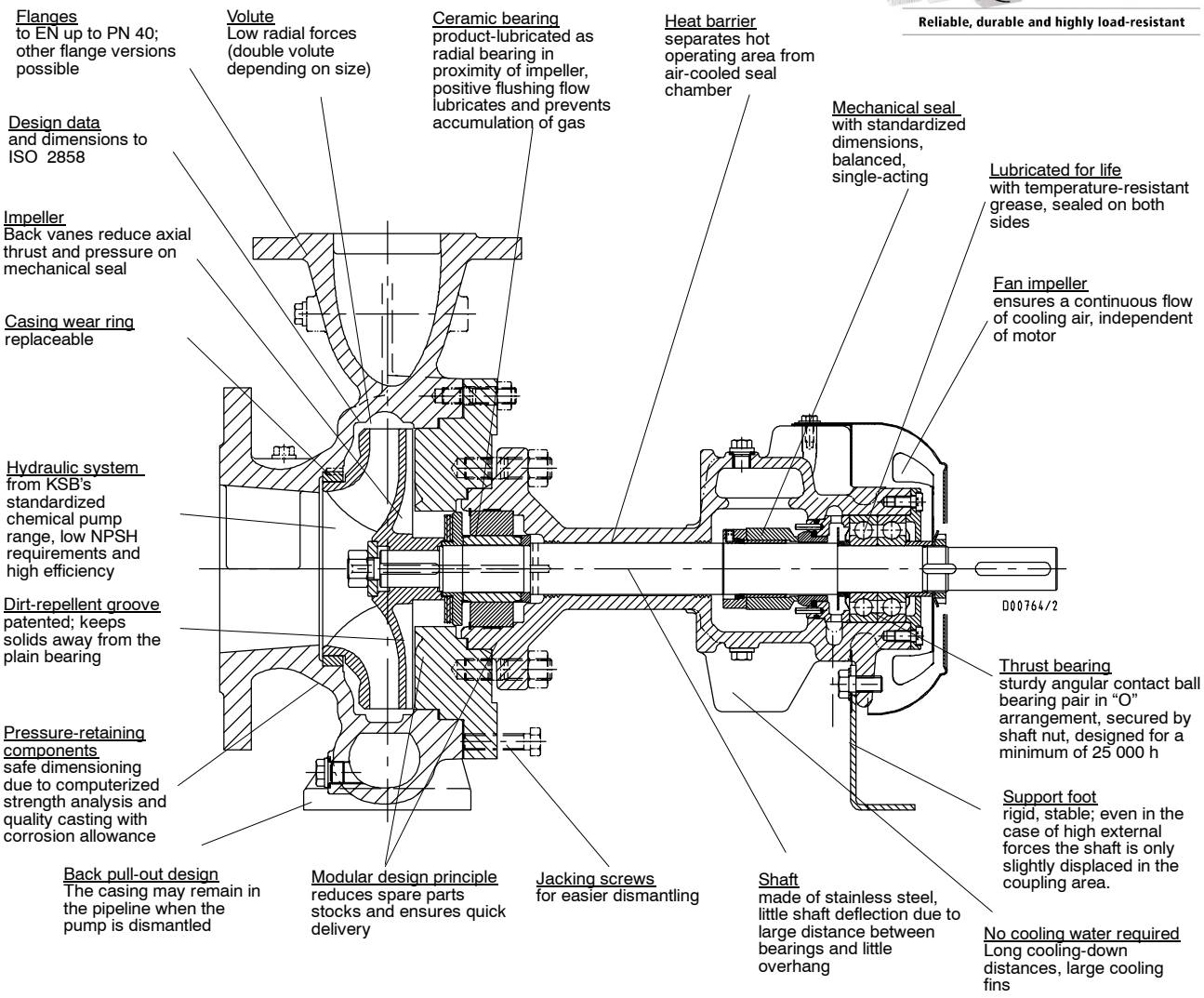
Bear. brack.	Pump size	HPK-LS [4]				
		50 °C	120 °C	150 °C	200 °C	240 °C
LP02	32-160 [1]	32	30.7	29.5	26.9	25.9
	40-160 [1]	30.6	29.4	28.2	25.7	24.7
	50-160 [1]	30.9	29.7	28.4	26	25.0
	32-200 [1]	25	23.6	23.2	22.5	21.9
	40-200 [1]	25	23.6	23.2	21.8	21.0
	50-200 [1]	25	23.6	23.2	22.5	21.9
LP03	65-160 [1]	30.9	29.7	28.4	26	25.0
	80-160 [1]	30.1	28.9	27.7	25.3	24.3
	65-200 [1]	22.8	21.7	21.4	20.7	20.1
	80-200 [1]	22.8	21.7	21.4	20.7	20.1
	100-200	22.8	21.7	21.4	20.7	20.1
	32-250 [1]	25	23.9	22.9	20.9	20.1
	40-250 [1]	24.3	23.3	22.4	20.4	19.6
	50-250 [1]	26.5	25.4	24.4	22.3	21.4
	65-250 [1]	25	23.9	22.9	20.9	20.1
	80-250 [1]	30.5	29.3	28.1	25.6	24.6
	40-315 [1]	26.3	25.2	24.2	22.1	21.3
	50-315 [1]	25.7	24.7	23.6	21.6	20.8
LP04	100-250	30.5	29.3	28.1	25.6	24.6
	125-250	24.3	23.3	22.4	20.4	19.6
	150-250	25	23.9	22.9	20.9	20.1
p_{sat} H_20		0.12	2.0	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
	80-250	40	40	38.8	36.8	35.2
LP04	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	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 casing cover in 1.7335

Technical Data

		Impeller				Shaft diameter						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	Mechanical seal	Pump end	Motor end	Max. speed	Max. operating pressure	Max. test pressure	Max. operating temperature	Max. P/n values for the drive
Pump size	BB	mm	mm	mm	mm	mm	mm	mm	mm	mm	-	mm	-	1/min	bar	bar	°C	-
25-160	LP 02	6	45	169	130	28	24	35	24	33	KB028	SSiC, diam. 37	2 x 7307 BG	3600	see table, page 4	1.5 x max. permissible pump discharge pressure	240 °C	0.009
25-200		6	45	209	160													
32-160		7	52	169	130													
32-200		7	52	209	160													
40-160		9	65	169	130													
40-200		7	65	209	160													
50-160		15	82	169	130													
50-200		12	82	209	160													
32-250	LP 03	6	52	260	200	38	35	35	32	43	KB038	SSiC, diam. 50	2 x 7307 BG	3000				0.021
40-250		7	65	260	200									3000				
40-315		8	65	320	260									3000				
50-250		10	84	260	200									3000				
50-315		8	85	320	260									3000				
65-160		20	89	169	130									3600				
65-200		16	96	209	160									3600				
65-250		13	96	260	200									3000				
80-160		27	100	169	130									3600				
80-200		22	114	209	160									3600				
80-250		17	114	260	200									3000				
100-200		29	122	209	160									3600				
100-250	LP 04	23	129	260	200	48	35	45	42	53	KB048		2 x 7309 BG8	3000				0.05
125-250		32	154	260	200									1800				
150-250		46	180	260	200									1800				

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

by single-acting, balanced, standardized mechanical seal. 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 9906/2A, 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:

< 150 °C	N	1	1	1	W
≥ 150 °C	N	7	7	7	W

Treatment of unmachined parts
Coating, pump
Coating, baseplate and bearing bracket
Coating, motor
Preservation

N	=	Treatment of unmachined parts
1	=	RAL 5002, blue
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

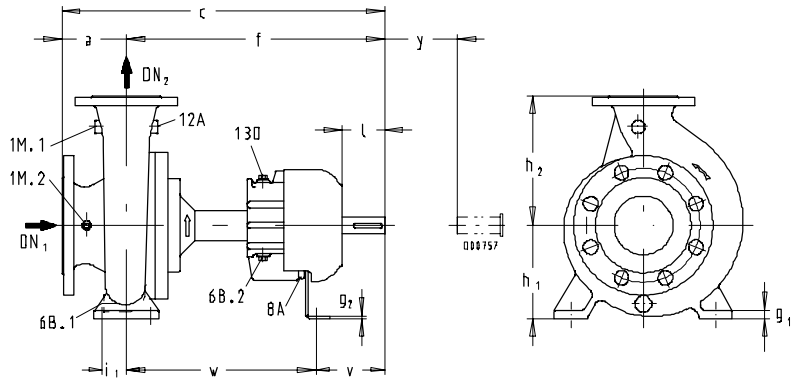
HPK-L pumps are designed for handling forces and moments in accordance with ISO 5199.

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	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

Dimensions

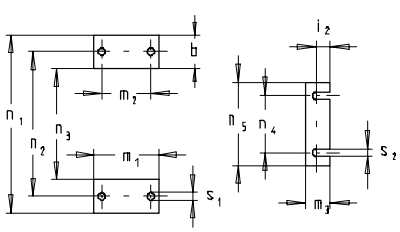


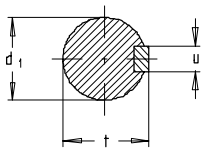
y = dismantling clearance
(without removing the motor)

Flange design

HPK-LS	EN1092-2, PN25
HPK-LS4	EN1092-2, PN40
HPK-LE	EN1092-1, PN25
HPK-LE4	EN1092-1, PN40

Other flange designs on request





Key to DIN 6885-1

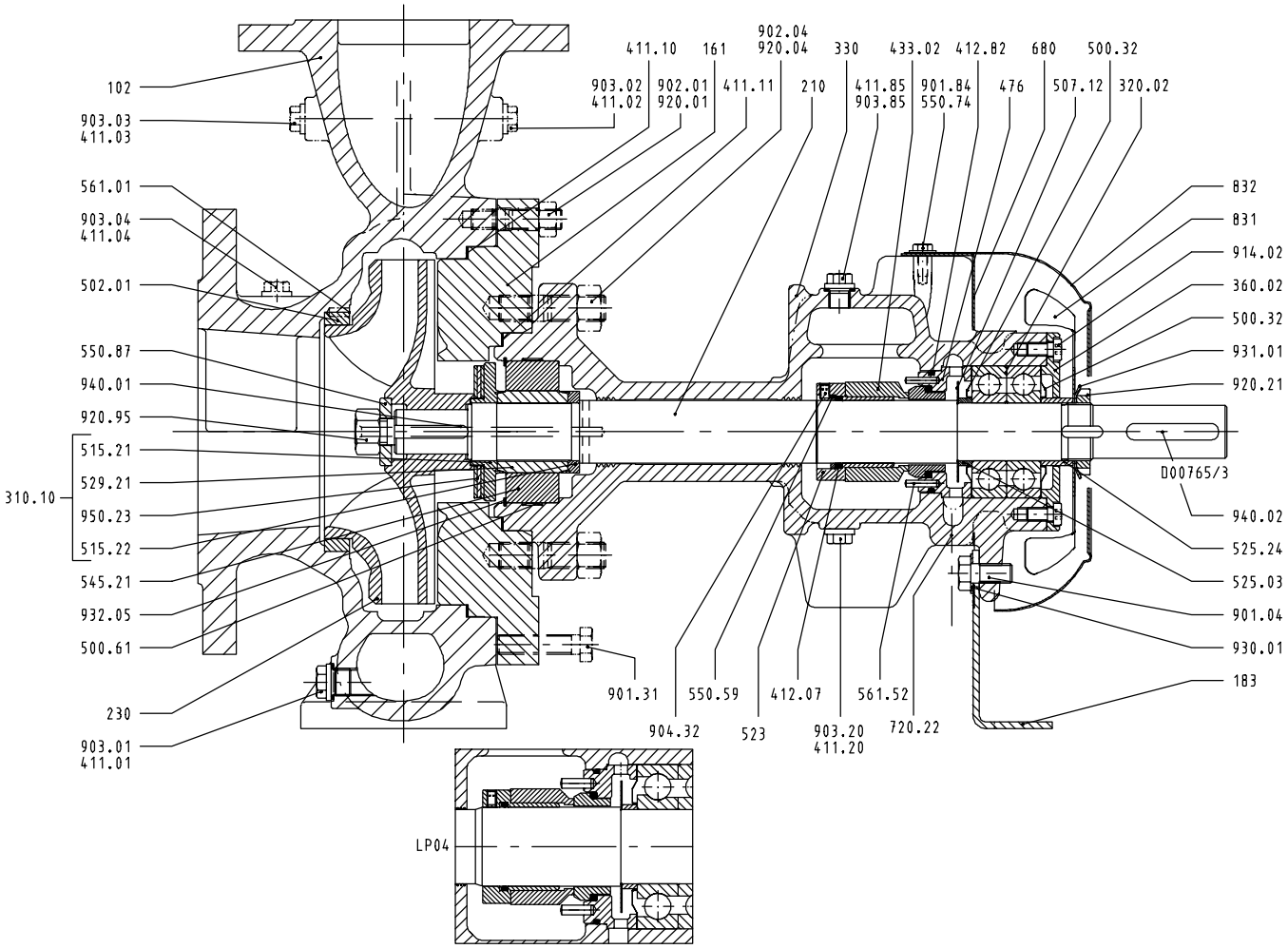
Baugröße Pump size Tailles de pompe	Lager-träger Bea-ring bracket Sup-port de palier	Pumpenmaße Pump dimensions Cotes de pompe															Wellenende Shaft end Bout d'arbre					Fußschrauben Foot bolts Boulons d'ancrage								
		DN_1	DN_2	a)	b)	c	f)	g_1	g_2	h_1	h_2	m_1	m_3	n_1	n_3	n_5	d_{1k6}	l	t	u	y	i_1	i_2	m_2	n_2	n_4	s_1	s_2	v	w
25-160 2)	LP02	40	25	80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285
25-200 2)	LP02	40	25	80	50	465	385	14	4	160	180	100	48	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285
32-160 1)	LP02	50	32	80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285
32-200 1)	LP02	50	32	80	50	465	385	14	4	160	180	100	48	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285
32-250 1)	LP03	50	32	100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47.5	28	95	250	110	14	14	130	370
40-160	LP02	65	40	80	50	465	385	14	4	132	160	100	48	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285
40-200	LP02	65	40	100	50	485	385	14	4	160	180	100	48	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285
40-250	LP03	65	40	100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47.5	28	95	250	110	14	14	130	370
40-315 1)	LP03	65	40	125	65	625	500	18	6	200	250	125	48	345	215	160	32	80	35	10	100	47.5	28	95	280	110	14	14	130	370
50-160	LP02	80	50	100	50	485	385	14	4	160	180	100	48	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285
50-200	LP02	80	50	100	50	485	385	14	4	160	200	100	48	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285
50-250	LP03	80	50	125	65	625	500	16	4	180	225	125	48	320	190	160	32	80	35	10	100	47.5	28	95	250	110	14	14	130	370
50-315 1)	LP03	80	50	125	65	625	500	18	6	225	280	125	48	345	215	160	32	80	37	10	100	47.5	28	95	280	110	14	14	130	370
65-160	LP03	100	65	100	65	600	500	15	4	160	200	125	48	280	150	160	32	80	35	10	100	47.5	28	95	212	110	14	14	130	370
65-200	LP03	100	65	100	65	600	500	16	4	180	225	125	48	320	190	160	32	80	35	10	140	47.5	28	95	250	110	14	14	130	370
65-250	LP03	100	65	125	80	625	500	18	6	200	250	160	48	360	200	160	32	80	35	10	140	60	28	120	280	110	18	14	130	370
80-160	LP03	125	80	125	65	625	500	15	4	180	225	125	48	320	190	160	32	80	35	10	140	47.5	28	95	250	110	14	14	130	370
80-200	LP03	125	80	125	65	625	500	16	4	180	250	125	48	345	215	160	32	80	35	10	140	47.5	28	95	280	110	14	14	130	370
80-250	LP03	125	80	125	80	625	500	18	6	225	280	160	48	400	240	160	32	80	35	10	140	60	28	120	315	110	18	14	130	370
100-200	LP03	125	100	125	80	625	500	16	6	200	280	160	48	360	200	160	32	80	35	10	140	60	28	120	280	110	18	14	130	370
100-250	LP04	125	100	140	80	670	530	18	6	225	280	160	48	400	240	160	42	110	45	12	140	60	28	120	315	110	18	14	160	370
125-250	LP04	150	125	140	80	670	530	18	6	250	355	160	48	400	240	160	42	110	45	12	140	60	28	120	315	110	18	14	160	370
150-250	LP04	200	150	160	100	690	530	20	6	280	375	200	48	500	300	160	42	110	45	12	180	75	28	150	400	110	23	14	160	370

1) Nicht als HPK-LS4 lieferbar
1) Not available as HPK-LS4
1) N'existe pas sur la taille HPK-LS4

2) Nur als HPK-LE (nicht -LS/LS4/LE4) lieferbar
2) Only available as HPK-LE (not as -LS/LS4/LE4)
2) Seulement HPK-LE (n'existe pas sur la taille -LS/LS4/LE4)

Anschlüsse Connections Raccords	Lagerträger Bearing bracket Support de palier			Benennung Description Désignation
	LP02	LP03	LP04	
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	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	
*	562.01	Spring-type straight 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

1.11.2006

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