LENNTECH
WATER TREATMENT SOLUTIONS

HPH

Hot water circulating pumps

TÜV-approved

Automation products available:

- Hyamaster
- hyatronic

Fields of Application

HPH pumps are suitable for handling hot water in high-pressure hot water generating plants.

They are used as feed and circulating pumps.

HPH has been type-tested to TRD (German Steam Boiler Regulations) by TÜV (Technical Control Board). Type test certificates can be offered and supplied on request.

Design

Horizontal, radially split volute casing pumps in back pull-out design, with radial impeller, single-flow, single-stage.
Centreline pump feet.

Certification

Certified quality management ISO 9001.

Designation

HPH 80 - 200

- Type series
- Discharge nozzle DN
- Nominal impeller diameter in mm

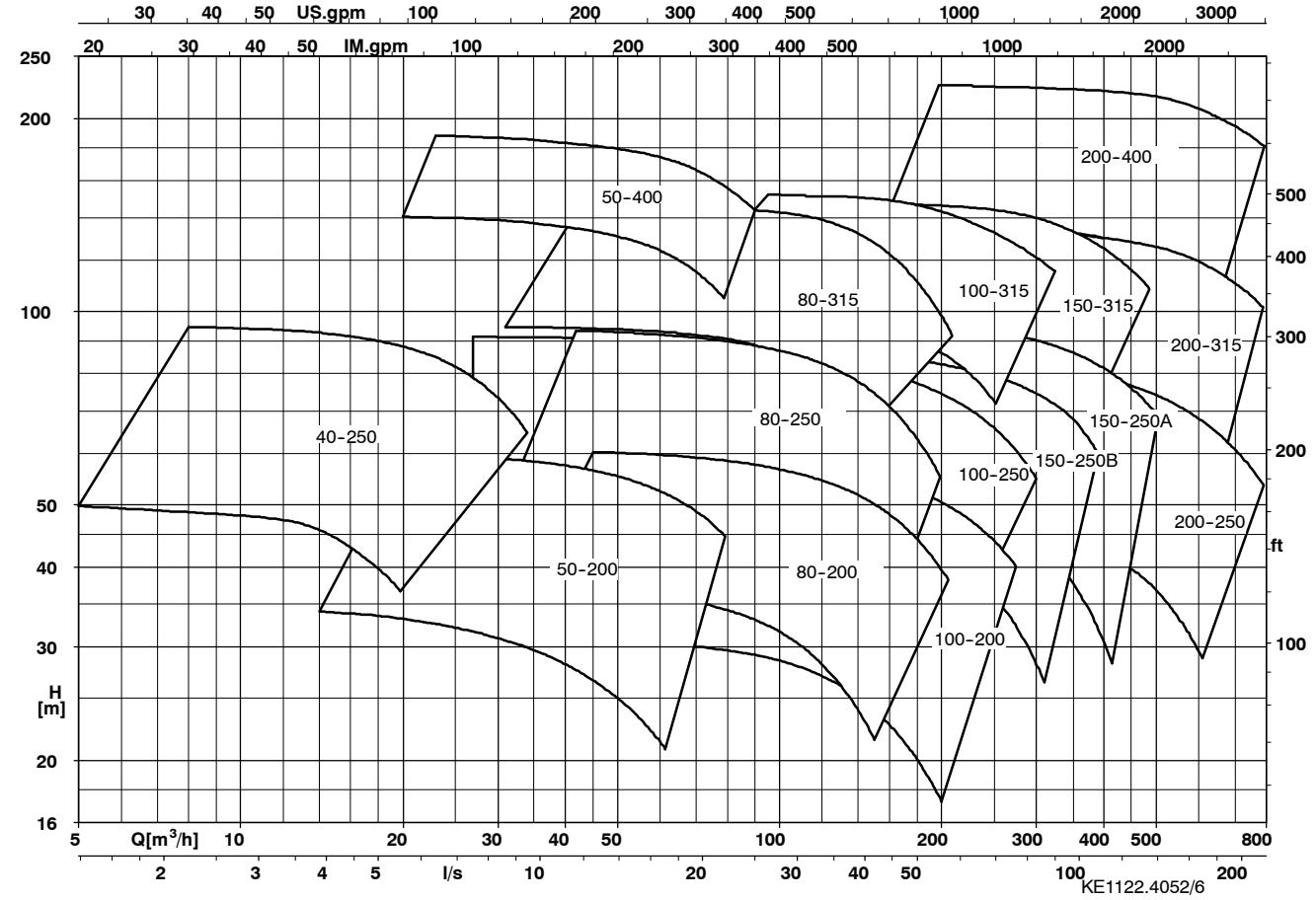
Operating Data

Pump sizes	DN	40 to 300
Capacities	Q	up to 1800 m^3/h
Heads	H	up to 225 m
Operating pressures	p	up to 110 bar
Operating temperatures	t	up to +320 °C

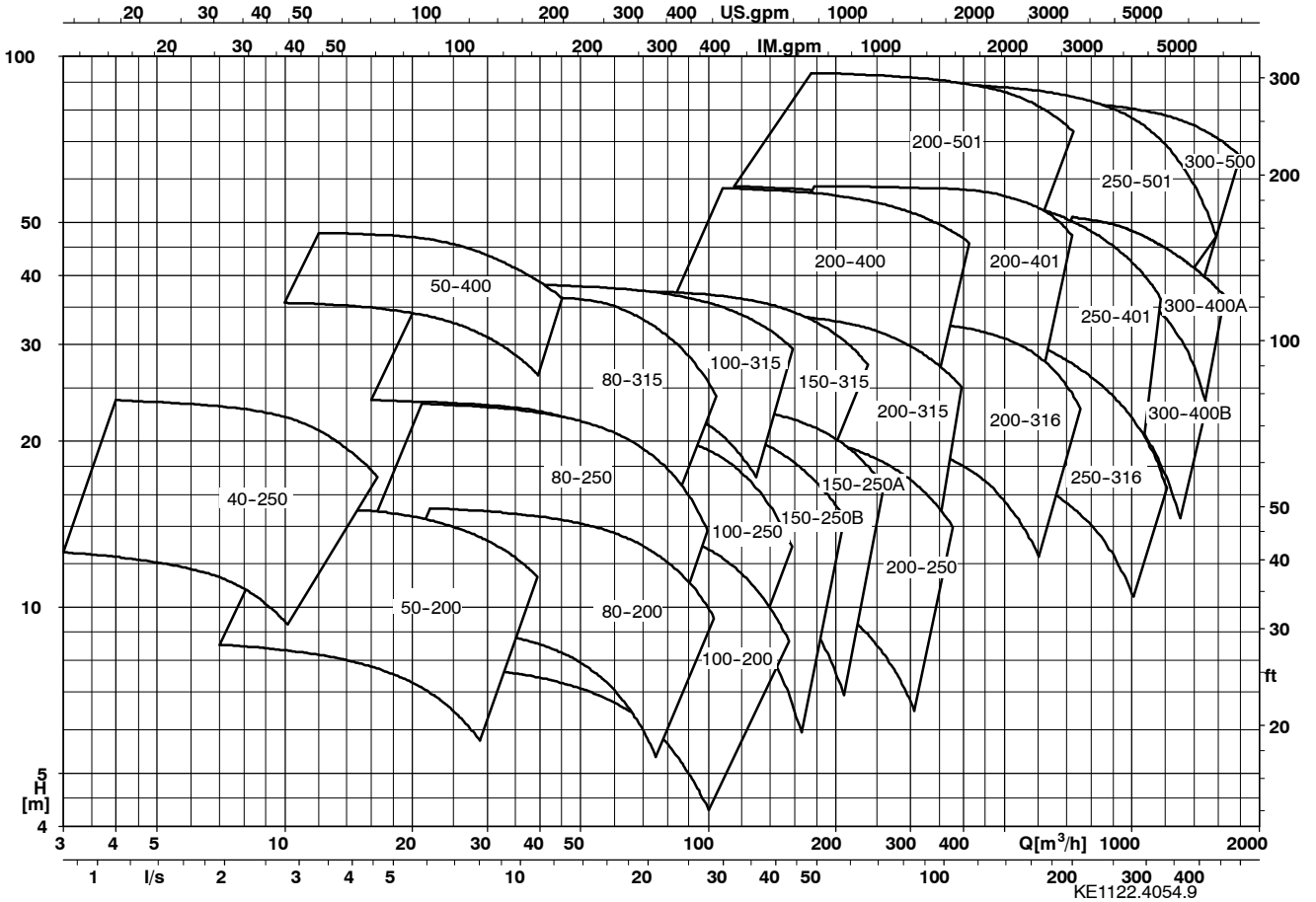
KSB

Selection Charts

n = 2900 1/min

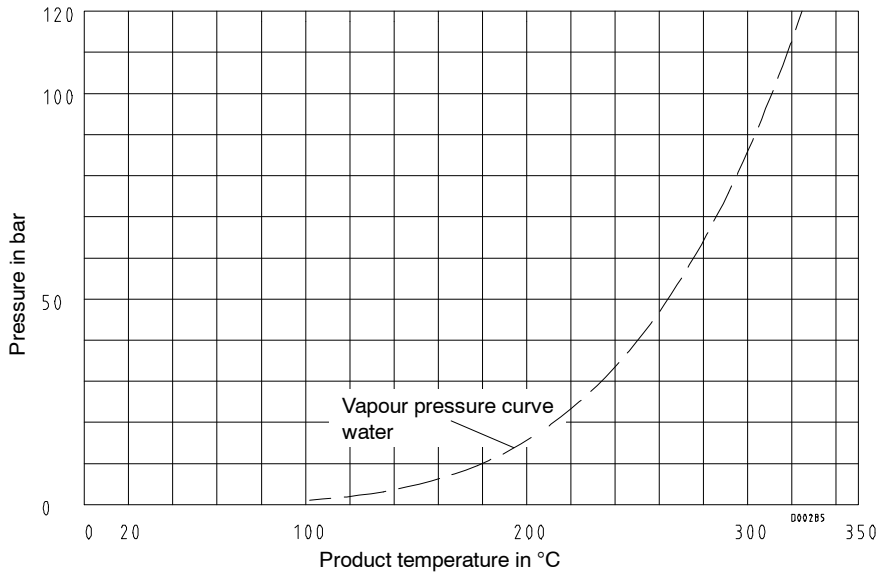


n = 1450 1/min



Pressure and Temperature Limits

Vapour pressure curve of water



Max. permissible operating pressures in bar, max. 110 bar (Observe vapour pressure curve of water!)

	with acceptance test to TRD											without acceptance test to TRD										
Pump size	GP240GH+N			1.7706				1.4931				GP240GH+N			1.7706				1.4931			
HPH	20°C	200°C	300°C	20°C	200°C	300°C	350°C	20°C	200°C	300°C	350°C	20°C	200°C	300°C	20°C	200°C	300°C	350°C	20°C	200°C	300°C	350°C
40-250	59.2	51.8	42.9	108.5	102.6	97.2	93.2	110.0	110.0	110.0	109.2	72.6	51.9	43.0	110.0	110.0	108.1	103.6	110.0	110.0	110.0	110.0
50-200	70.2	61.4	50.9	97.7	97.7	97.7	97.7	110.0	110.0	110.0	110.0	86.1	61.5	51.0	108.6	108.6	108.6	108.6	110.0	110.0	110.0	110.0
50-400	53.9	47.2	39.1	98.9	93.5	88.6	85.0	110.0	109.3	104.4	99.6	66.1	47.2	39.1	110.0	104.0	98.6	94.5	110.0	110.0	110.0	110.0
80-200	48.9	42.7	35.4	89.6	84.6	80.2	76.9	110.0	98.9	95.5	90.1	59.9	42.8	35.5	107.6	94.2	89.3	85.6	110.0	110.0	105.1	100.2
80-250	47.8	39.8	33.0	87.6	78.9	74.8	71.7	107.5	92.2	88.1	84.0	55.8	39.9	33.0	100.2	87.7	83.1	79.7	110.0	102.5	97.9	93.4
80-315	45.2	32.9	27.3	74.6	65.3	61.9	59.3	91.5	76.3	72.9	69.5	46.2	33.0	27.3	82.9	72.5	68.8	65.9	101.8	84.8	81.1	77.3
100-200	46.9	41.0	34.0	86.0	81.2	77.0	73.8	105.5	94.9	90.7	86.5	57.5	41.1	34.0	103.2	90.3	85.6	82.1	110.0	105.6	100.9	96.2
100-250	69.0	50.3	41.7	110.0	99.7	94.5	90.6	110.0	110.0	110.0	106.1	70.5	50.4	41.7	110.0	110.0	105.0	100.7	110.0	110.0	110.0	110.0
100-315	45.2	33.0	27.3	74.7	65.3	61.9	59.4	91.7	76.4	73.0	69.6	46.2	33.0	27.3	83.0	72.6	68.9	66.0	101.9	84.9	81.1	77.4
150-250	59.6	52.1	43.2	109.3	103.2	97.3	93.9	110.0	110.0	110.0	110.0	73.0	52.1	43.2	110.0	110.0	108.8	104.4	110.0	110.0	110.0	110.0
150-315	54.4	40.1	33.2	90.7	79.4	75.3	72.2	110.0	92.8	88.7	84.6	56.2	40.1	33.3	100.9	88.3	83.7	80.3	110.0	103.2	98.6	94.0
200-250	61.5	52.5	43.5	110.0	104.0	98.6	94.6	110.0	110.0	110.0	110.0	73.6	52.6	43.6	110.0	110.0	109.7	105.2	110.0	110.0	110.0	110.0
200-315	58.4	51.1	42.3	107.1	101.2	96.0	92.0	110.0	110.0	110.0	107.8	71.6	51.1	42.4	110.0	110.0	106.7	102.3	110.0	110.0	110.0	110.0
200-316	68.1	49.7	41.2	110.0	98.4	93.3	89.5	110.0	110.0	109.9	104.8	69.6	49.7	41.2	110.0	109.4	103.7	99.4	110.0	110.0	110.0	110.0
200-400	45.5	39.8	33.0	83.5	78.9	74.8	71.8	102.5	92.3	88.2	84.1	55.8	39.9	33.0	100.3	87.8	83.2	79.8	110.0	102.6	98.0	93.5
200-401	47.0	34.2	28.4	77.5	67.8	64.3	61.7	95.1	79.3	75.8	72.2	48.0	34.3	28.4	86.2	75.4	71.5	68.6	105.8	88.2	84.2	80.3
200-501	62.3	45.9	38.0	103.8	90.9	86.1	82.6	110.0	106.2	101.5	96.8	64.3	45.9	38.1	110.0	101.0	95.7	91.8	110.0	110.0	110.0	107.5
250-316	79.9	61.5	51.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	86.2	61.6	51.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0
250-401	64.0	46.7	38.7	105.7	92.5	87.7	84.1	110.0	108.1	103.8	98.5	65.4	46.7	38.7	110.0	102.8	97.5	93.5	110.0	110.0	110.0	109.5
250-501	47.0	41.1	34.1	86.2	81.5	77.2	74.0	105.8	95.2	91.0	86.7	57.6	41.1	34.1	103.5	90.6	85.9	82.3	110.0	105.8	101.1	96.4
300-400	62.4	54.6	45.2	110.0	108.1	102.5	98.3	110.0	110.0	110.0	110.0	76.5	54.6	45.3	110.0	110.0	110.0	109.3	110.0	110.0	110.0	110.0
300-500												46.8	33.5	27.7	84.1	73.6	69.8	66.9	103.2	86.0	82.2	78.4

Material variants

Description	Material		
Volute casing	GP240GH+N	1.7706	1.4931
Support foot	JS1025 [6]	JS1025 [6]	JS1025 [6]
Shaft	1.7709+QT+RS	1.7709+QT+RS	1.7709+QT+RS
Impeller	JL1040 [1] [5]/ 1.4408	JL1040 [1] [5] / 1.4408	JL1040 [1] [5] / 1.4408
Bearing bracket	JL1040 [5]	JL1040 [5]	JL1040 [5]
Bearing bracket lantern	1.7706	1.7706	1.7706 [2]
Casing bolts 3)	1.6772	1.6772	1.6772
Casing wear ring	JL1040 [4] [5]	JL1040 [4] [5]	JL1040 [4] [5]
Impeller wear ring	1.4027	1.4027	1.4027
Shaft protecting sleeve	1.4122	1.4122	1.4122
Impeller nut	1.4571	1.4571	1.4571

1) JS1025 for impeller diam. 315 and above or u > 40 m/s or t > 250 °C
2) 1.4931 required for size 50-400
3) > 80 bar: reduced shank bolts to DIN 2510
4) optionally VG 434
5) to EN 1561 = GJL-250
6) to EN 1563 = GJS-400-18-LT

Design Features

Flanges
up to PN 160 to DIN, other flange designs possible

Shaft seal
balanced, single-acting mechanical seal with pumping device

Forcing screws
facilitate dismantling

Rotor and bearings
dimensioned to ensure a shaft deflection below 0.05 mm at the mechanical seal and a bearing life of more than 17,500 operating hours

Fixed bearing
angular contact ball bearing in "O"-arrangement, generously dimensioned, little axial movement of the rotor. Reinforced bearing assembly available for high inlet pressures

Hydraulic system
nominal data and dimensions to ISO 2858 / DIN 24 256

Pressure-retaining parts
safe design due to computerized strength analysis and quality casting

Impeller
closed radial impeller with multiply curved vanes, hydraulically balanced

Casing and impeller wear rings
replaceable

Shaft
not in contact with the fluid handled (dry shaft, therefore no special materials required)

Modular design
ensures small stock of spare parts and fast delivery

Back pull-out design
when the pump is dismantled, the casing may remain in the piping

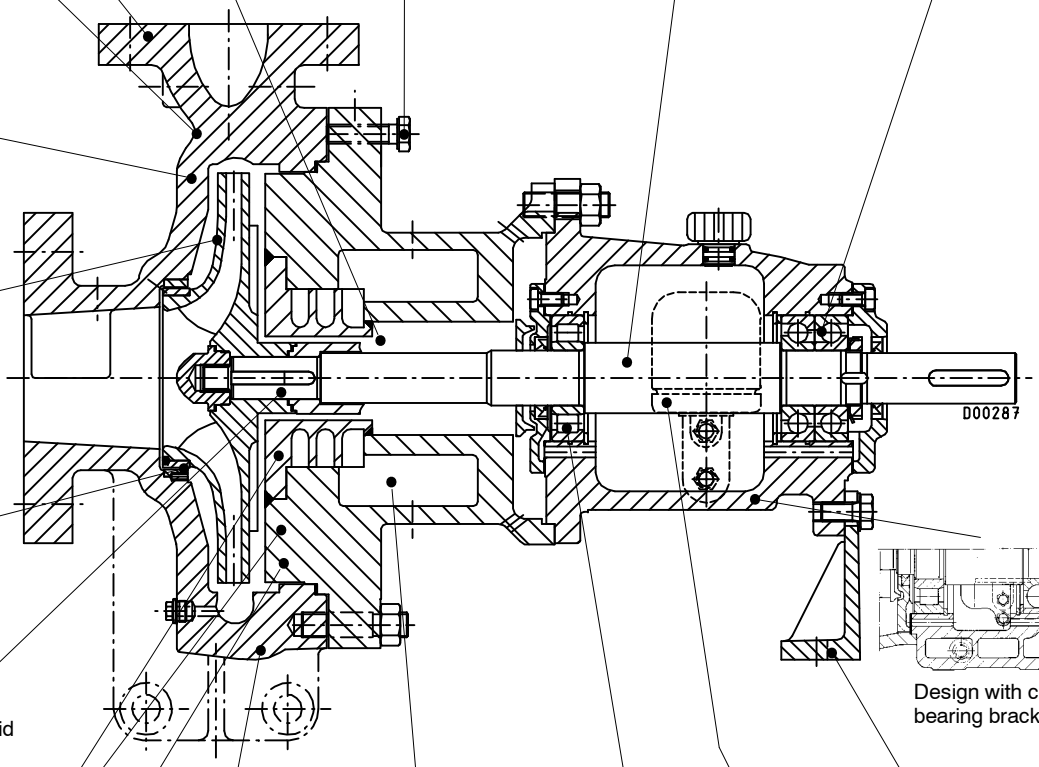
Volute
with low radial forces (double volute depending on pump size)

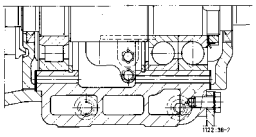
Cooling chamber

Radial bearing
permits easy assembly and compensates possible thermal expansion of the shaft

Constant-level oiler
ensures constant lubrication of the bearings and oil level monitoring

Support foot
rigid and firm, even in the case of high external forces, the shaft is only slightly displaced in the coupling area





Design with coolable bearing bracket

Technical Data

				Pump sizes																					
			Unit	50-200	40-250	80-200	80-250	100-200	50-400	80-315	100-250	100-315	150-250	150-315	200-250	200-316	250-316	200-315	200-400	200-401	200-501	250-401	250-501	300-400	300-500
Bearing bracket				P02as	P03s/P03as				P04s/P04as					P06as/P06at (hub 05)				P06s/P06as/P06at							
Impeller	outlet width		mm	12	14	22	18	30	8	14	28	19.5	32	26	46	50	73	34	26	40	32	63	43	68/59	58
	inlet diam.		mm	82	57.5	114	118	146	100	129	135	135	154	165	192	222	270	200	200	222	222	294	280	294/272	320
	max. impeller diam.		mm	209	260	209	260	209	360	320	260	324	260	324	260	320	324	324	408	408	504	404	504	404	504
	min. impeller diam.		mm	165	200	170	200	170	320	260	200	260	200	260	200	260	260	260	320	320	400	320	400	320/340	400
Shaft diameter	in the mech. seal chamber		mm	25	32				42					63				65							
at the bearings	standard	pump side	mm	--	35				55					--				65							--
		motor side	mm	--	35				55					--				75							--
	rein-forced	pump side	mm	35	55				65					80											
		motor side	mm	35	55				65					95											
	at the coupling		mm	24	32				42					60											
Shaft prot. sleeve	mechanical seal		mm	depending on seal make																					
Bear-ings	standard	pump side	No.	--	NU307				NU 311					--				NU 413							--
		motor side	No.	--	2 x 7307 BG				2 x 7311 BG					--				2 x 7315 BG							--
	rein-forced	pump side	No.	NU307	NU 311				NU 313					NU 416											
		motor side	No.	2x7307BG	2 x 7311 BG				2 x 7313 BG					2 x 7319 BG											
	tandem	pump side	No.	--	--				--					NU 416											
		motor side	No.	--	--				--					3 x 7319 B-MUA											
Pres-sure limit	max. operating pressure		bar	see ”pressure and temperature limits”																					
	max. test pressure		bar	for TRD acceptance test: 2 x max. perm. pump discharge pressure; otherwise: 1.5 x max. perm. pump discharge pressure																					
Temp. limit	max. temp. of fluid handled		°C	see ”pressure and temperature limits”																					
Drive	max. P/n values			0.009	0.021				0.05					0.11				0.2							

Pump Size / Bearing Bracket Combinations

DN Discharge nozzle	Nom. impeller diameter 200	250	315	316	400	401	500	501	Bearing bracket
									P02as
40		x							P03s/03as
50	x				x 2)				
80	x 1)	x 1)	x 1)						
100	x 1)	x 1)	x 1)						P04s/04as
150		x 1)	x 1)						P06s/06as/ P06at
200		x 1)	x 1)	x 1)	x 1)	x 1)		x 1)	
250				x 1)		x 1)		x 1)	
300					x 1)		x 1)		

1) Casing with double volute
2) Casing with inducer

Casing

Radially split volute casing with replaceable casing wear ring and integrally cast centreline pump feet.
The pressure-retaining pump chamber is closed off towards the motor side by means of a bearing bracket lantern with integrated cooling chamber.

Balancing

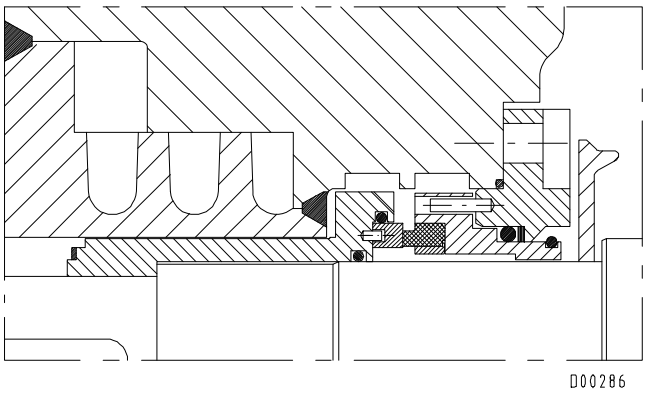
If required, hydraulic balancing is effected by back vanes.

Shaft seal

Standard version with balanced, single-acting mechanical seals of various makes.

All mechanical seals are supplied with cooled lubricating liquid by means of product circulation (from the seal chamber via the heat exchanger and back into the seal chamber). Circulation is supported by a pumping device (pumping ring).

The pump design allows to use a so-called cartridge-type mechanical seal in the shaft seal chamber, which facilitates quick and careful removal of the seal unit for overhauls and repairs.



Single-acting mechanical seal, balanced

Mechanical Seals Used

Design	Make	Type
single-acting	Crane	... 8 BVS
	Burgmann	SH 10 PV 10/...

Acceptance Tests / Guarantees

Each pump is subjected to a performance test run, and its duty point is guaranteed according to ISO 9906/2A.
The following acceptance tests may be performed and certified **at extra charge**:

Test run ISO 9906/2A	1 measuring point / 5 measuring points
Test run ISO 9906/1	5 measuring points (observe individual curve)
NPSH test	1 measuring point / 5 measuring points

Hot water circulating pumps are subjected to a type test and a hydrostatic pressure test in accordance with TRD 501 by the German TÜV.
Pumps which - as an integral component of the boiler - have to meet the acceptance test requirements of VdTÜV (Union of German Associations of Technical Supervision) are, in addition, subjected to a material and product test in accordance with TRD 401 and 402.
Warranties are given within the scope of the valid delivery conditions.

Coating and Preservation

(acc. to 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 = synthetic enamel RAL 5002, ultramarine blue
7 = heat-resistant enamel RAL 9007 - aluminium grey
W = rinsed with water repellent agent; blank parts liable to rust with protective coating

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

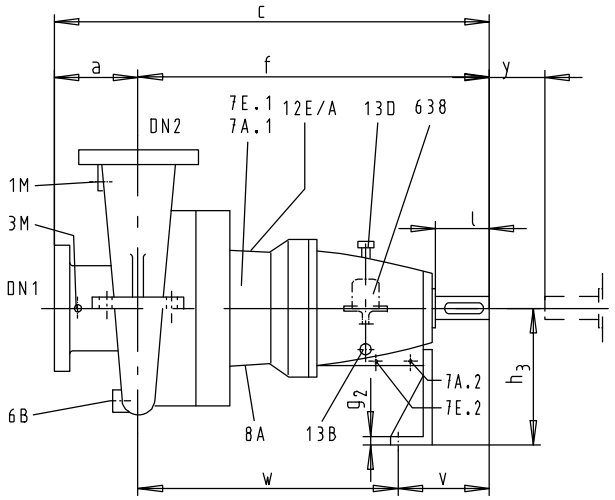
Part No.	Description	Number of pumps (incl. standby pumps)						
		2	3	4	5	6+7	8+9	10 and more
		Quantity of spare parts						
210	Shaft	1	1	1	2	2	2	20 %
230	Impeller	1	1	1	2	2	2	20 %
320.02	Angular contact ball bearing (set)	1	1	2	2	2	3	25 %
322.01	Cylindrical roller bearing	1	1	2	2	2	3	25 %
433	Mechanical 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 %
502.01	Casing wear ring	2	2	2	3	3	4	50 %
503.01	Impeller wear ring	1	1	1	2	2	3	30 %
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 %

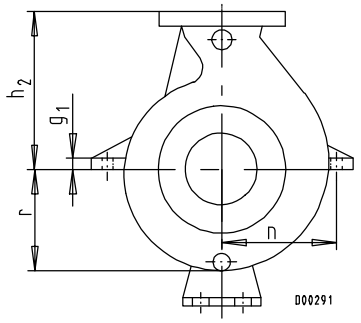
Dimensions

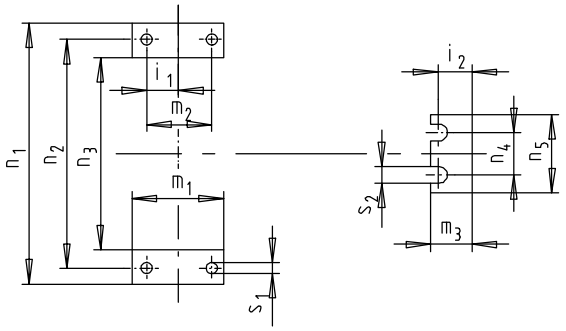
Flange version PN 63, EN 1092-1
PN 100, EN 1092-1 2)

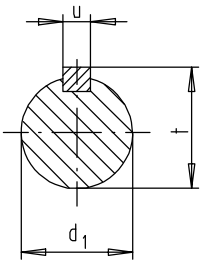
Flanges

GP240GH+N	EN 1092-1, PN 63
1.7706	EN 1092-1, PN 63 EN 1092-1, PN 100
1.4931	EN 1092-1, PN 100









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

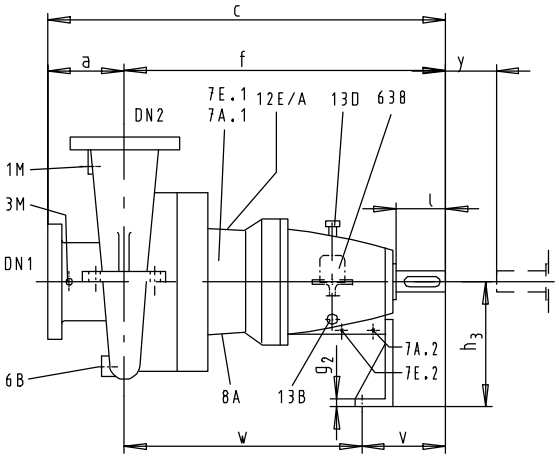
Auxiliary connections see page 9

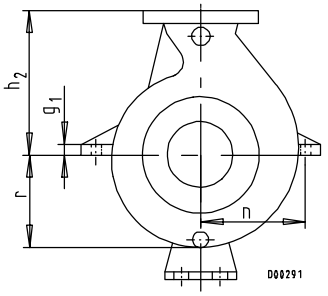
Pump size	Bearing bracket	Pump dimensions 3)																	Shaft end				Foot bolts								
		DN_1	DN_2	a 2)	c 2)	f	g_1	g_2	h_2 2)	h_3	m_1	m_3	n	n_1	n_3	n_5	~ r	y	d_1 Ø k6	l	t	u	i_1	i_2	m_2	n_2	n_4	s_1	s_2	v	w
40-250	P03s/as	50	40	115	615	500	20	8	230	180	130	47	-	460	360	160	175	140	32	80	35,3	10	52,5	30	90	420	110	18	14	130	370
50-200	P02as	80	50	105	490	387	16	8	200	180	90	45	-	425	345	160	160	100	24	50	26,9	8	28,5	28	54	390	110	14	14	100	285
50-400	P04s/as	80	50	190	720	530	25	12	340	360	150	52	-	690	590	160	285	140	42	110	45,1	12	72	33	110	650	110	18	14	160	370
80-200	P03s/as	100	80	135	635	500	20	8	255	225	130	47	-	500	400	160	210	140	32	80	35,3	10	58,5	30	90	460	110	18	14	130	370
80-250	P03s/as	100	80	135	635	500	20	8	285	280	130	47	-	580	480	160	240	140	32	80	35,3	10	52	30	90	540	110	18	14	130	370
80-315	P04s/as	100	80	140	670	530	22	12	320	305	130	52	-	640	540	160	260	140	42	110	45,1	12	51	33	90	600	110	18	14	160	370
100-200 5)	P03s/as	150	100	155	635	500	20	8	290	280	130	47	-	540	440	160	245	140	32	80	35,3	10	58,5	30	90	500	110	18	14	130	370
100-250	P04s/as	150	100	150	680	530	20	12	290	305	130	52	-	580	480	160	270	140	42	110	45,1	12	52,5	33	90	540	110	18	14	160	370
100-315	P04s/as	150	100	150	680	530	22	12	325	360	130	52	-	640	540	160	285	140	42	110	45,1	12	52	33	90	600	110	18	14	160	370
150-250 5)	P04s/as	200	150	170	700	530	20	12	385	360	150	52	-	690	590	160	310	140	42	110	45,1	12	72	33	110	650	110	18	14	160	370
150-315	P06as	200	150	170	877	707	25	12	410	360	150	60	-	690	590	200	305	180	60 1)	140	64,2	18	55	39	110	650	140	18	18	205	502
200-250	P06as	250	200	4)	4)	717	25	12	4)	360	150	60	-	690	590	200	320	180	60 1)	140	64,2	18	55	39	110	650	140	18	18	205	512
200-315	P06s/as	250	200	210	930	720	30	12	460	365	180	60	-	790	650	200	335	180	60 1)	140	64,2	18	65	39	130	740	140	22	18	205	515
200-316	P06as	250	200	4)	4)	710	30	12	4)	335	180	60	-	900	760	200	325	230	60 1)	140	64,2	18	65	39	130	850	140	22	18	205	505
200-400	P06s/as	250	200	190	910	720	30	12	510	365	180	60	-	900	760	200	340	180	60 1)	140	64,2	18	65	39	130	850	140	22	18	205	515
200-401	P06s/as	250	200	190	910	720	30	12	510	425	180	60	-	960	820	200	390	180	60 1)	140	64,2	18	65	39	130	910	140	22	18	205	515
200-501	P06s/as	250	200	200	906	706	30	12	560	425	180	60	-	1060	920	200	420	180	60 1)	140	64,2	18	65	39	130	1010	140	22	18	205	501
250-316	P06as	300	250	4)	4)	707	30	12	4)	425	210	60	505	955	795	200	400	25	60 1)	140	64,2	18	75	39	150	875	140	26	18	205	502
250-401	P06s/as	300	250	240	960	720	30	12	600	425	210	60	-	1160	1000	200	425	18	60 1)	140	64,2	18	75	39	150	1080	140	28	18	205	515
250-501	P06s/as	300	250	200	920	720	30	12	670	475	210	60	-	1200	1040	200	472	180	60 1)	140	64,2	18	75	39	150	1120	140	28	18	205	515
300-400	P06s/as	350	300	4)	4)	710	30	12	4)	500	310	60	-	1200	1020	200	460	250	60 1)	140	64,2	18	130	39	210	1120	140	28	20	205	505
300-500	P06as	350	300	4)	4)	715	30	12	4)	560	310	60	-	1380	1180	200	510	240	60 1)	140	64,2	18	130	39	210	1280	140	26	20	205	510

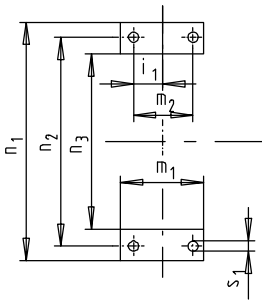
1) Ø $d_{1\ n6}$
2) Flanges to PN 100/ANSI 400: dimension given + 10 mm (not applicable to size 150-250)
3) Pumps with bearing brackets P06s/P06as are fitted with special bearing bracket P06at ifi nlet pressure > 50 bar; dimensions on request
4) Dimensions on request
5) Dimensions for PN 100 see table for PN 160 (page 9)

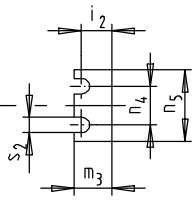
Dimensions

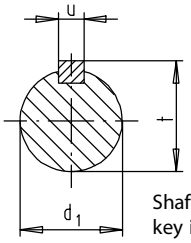
Flange version PN 160, DIN 2548











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

Pump size	Bearing bracket*		Pump dimensions DN1	DN2	a	c	f	g1	g2	h2	h3	m1	m3	n	n1	n3	n5	r	y	Shaft end d_1 Ø k6	l	t	u	Foot bolts i1	i2	m2	n2	n4	s1	s2	v	w
40–250	P03s/as	2)	50	40	123	623	500	30	8	237	180	130	47	210	460	360	160	190	140	32	80	35.3	10	52.5	30	90	420	110	18	14	130	370
50–200	P02as	2)	80	50	115	502	387	16	8	210	180	90	45	195	425	345	160	160	100	24	50	26.9	8	28.5	28	54	390	110	14	14	100	287
50–200	P02as	1) 6)	80	50	115	504	389	16	8	230	180	90	45	207.5	450	370	160	175	100	24	50	26.9	8	28.5	28	54	415	110	14	14	100	289
50–400	P04s/as	1) 7)	80	50	200	730	530	25	12	350	360	150	52	325	690	590	160	285	140	42	110	45.1	12	72	33	110	650	110	18	14	160	370
80–200	P03s/as	2)	100	80	145	645	500	20	8	265	225	130	47	230	500	400	160	210	140	32	80	35.3	10	58.5	30	90	460	110	18	14	130	370
80–200	P03s/as	3)	100	80	165	665	500	20	8	280	225	130	47	230	500	400	160	210	140	32	80	35.3	10	58.5	30	90	460	110	18	14	130	370
80–250	P03s/as	2)	100	80	145	645	500	20	8	295	280	130	47	270	580	480	160	240	140	32	80	35.3	10	52.0	30	90	540	110	18	14	130	370
80–315	P04s/as	2)	100	80	150	680	530	22	12	330	305	130	52	300	640	540	160	260	140	42	110	45.1	12	51	33	90	600	110	18	14	160	370
100–200	P03s/as	2)	150	100	170	655	500	20	8	300	280	130	47	250	540	440	160	245	140	32	80	35.3	10	58.5	30	90	300	110	18	14	130	370
100–250	P04s/as	2)	150	100	170	705	535	35	12	330	305	146	52	300	640	540	160	270	140	42	110	45.1	12	52.5	33	90	600	110	18	14	160	375
100–250	P04s/as	3)	150	100	190	725	535	35	12	340	305	146	52	300	640	540	160	270	140	42	110	45.1	12	52.5	33	90	600	110	18	14	160	375
100–315	P04s/as	2)	150	100	165	695	530	22	12	335	360	130	52	300	640	540	160	285	140	42	110	45.1	12	52	33	90	600	110	18	14	160	370
150–250	P04s/as	2)	200	150	196	727	531	20	12	400	360	150	52	325	690	590	160	310	140	42	110	45.1	12	72	33	110	650	110	18	14	160	371
150–315	P06at	2)	200	150	190	967	777	25	12	425	360	160	60	325	700	590	200	305	180	60 8)	140	64.2	18	55	39	110	650	140	18	18	205	572
200–250	P06at	2)	250	200	270	1062	792	25	12	450	360	150	60	325	690	590	200	320	180	60 8)	140	64.2	18	55	39	110	650	140	18	18	205	587
200–315	P06at	2)	250	200	235	1028	793	30	12	480	365	180	60	370	790	650	200	335	180	60 8)	140	64.2	18	65	39	130	740	140	22	18	205	588
200–316	P06at	2) 3)	250	200	280	1060	780	30	12	500	335	180	60	425	900	760	200	325	230	60 8)	140	64.2	18	65	39	130	850	140	22	18	205	575
200–400	P06at	2) 3)	250	200	220	1011	791	30	12	530	365	180	60	425	900	760	200	340	180	60 8)	140	64.2	18	65	39	130	850	140	22	18	205	586
200–401	P06at	2)	250	200	215	1006	791	30	12	530	425	180	60	455	960	820	200	390	180	60 8)	140	64.2	18	65	39	130	910	140	22	18	205	586
200–501	P06at	2)	250	200	230	1007	777	30	12	595	425	180	60	505	1060	920	200	420	180	60 8)	140	64.2	18	65	39	130	1010	140	22	18	205	572
250–316	P06at	2)	300	250	295	1079	784	30	12	600	425	210	60	505	955	795	200	400	250	60 8)	140	64.2	18	75	39	150	875	140	26	18	205	579
250–401	P06at	2)	300	250	261	1051	790	30	12	620	425	210	60	540	1160	1000	200	425	180	60 8)	140	64.2	18	75	39	150	1080	140	28	18	205	585
250–501	P06at	2)	300	250	221	1013	792	30	12	690	475	210	60	560	1200	1040	200	475	180	60 8)	140	64.2	18	75	39	150	1120	140	28	20	205	587
250–501	P06at	3)	300	250	230	1022	792	30	12	700	475	210	60	560	1200	1040	200	475	180	60 8)	140	64.2	18	75	39	150	1120	140	28	20	205	587
300–400	P06at	2) 3)	350	300	355	1135	780	30	12	680	500	310	60	560	1200	1020	200	460	250	60 8)	140	64.2	18	130	39	210	1120	140	28	20	205	575
300–400	P06at	5)	350	300	415	1195	780	30	12	735	500	310	60	560	1200	1020	200	460	250	60 8)	140	64.2	18	130	39	210	1120	140	28	20	205	575
300–500	P06at	3) 4)	350	300	350	1135	785	30	12	785	560	310	60	640	1360	1180	200	510	240	60 8)	140	64.2	18	130	39	210	1280	140	26	20	205	580

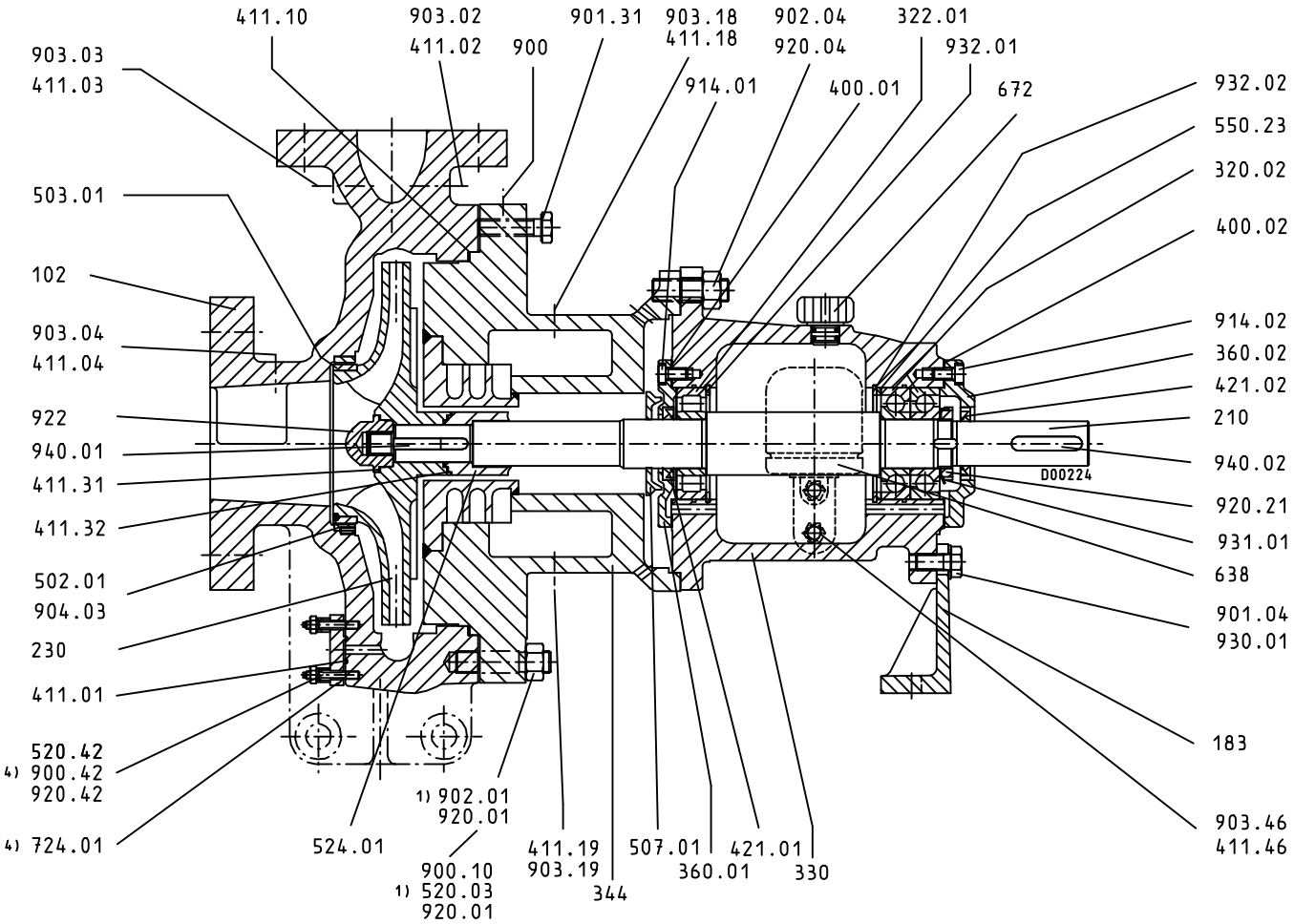
1) PN 160 DIN 2548
2) PN 160 DIN 2548 / ASME 600
3) ASME 900
4) ASME 900 RJ
5) ASME 1500 RJ
6) Reinforced casing
7) PN 250 DIN 2549
8) Ø d_1 n6

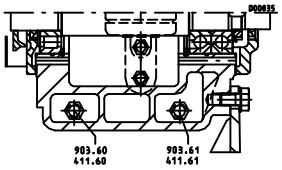
Auxiliary c onnections

Connection		Description
1 M	G 3/8	Pressure gauge
3 M	G 3/8	Pressure vacuum gauge
6 B 1)	G 3/4	Casing drain
7 A.1/E.1	G 1/2	Cooling, bearing bracket lantern IN/OUT
7 A.2/E.2	G 1/2	Cooling liquid IN/OUT
8 A 2)	G 3/4	Cooling liquid drain
12 E/A 3)	G 3/4	Circulation IN/OUT
13 B	G 1/4	Oil drain
13 D	Ø 20	Vent
638	G 1/4	Constant-level oiler

1) For pump size 40-250 and 50-200: G 1/2; if p > 80 bar: flange DN 15/PN 160
2) Bearing bracket P04 and above: G 1
3) On bearing bracket P 02: G 1/2

General Assembly Drawing with List of Components





Coolable bearing bracket

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, fluid handled, general assembly drawing No. and mode of dispatch.

Part No.	Description	Scope of supply
102	Volute casing	with joint rings 411.01/.10, casing wear ring 502.01, studs 902.01[1)] , grub screws 904.03, hex. nuts 920.01 and casing drain [4)]
183	Support foot	with hex. head bolt 901.04, spring washer 930.01
210	Shaft	with keywayed nut 920.21, lockwasher 931.01, keys 940.01/.02
230	Impeller	with joint ring 411.32, impeller wear ring 503.01
320.02	Angular contact ball bearing	
322.01	Cylindrical roller bearing	
330	Bearing bracket	
330	Bearing bracket (complete)	with support foot 183, gaskets 400.01/.02, joint rings 411.46/.60[2)]/.61[2)], bearing covers 360.01/.02, radial shaft seal rings 421.01[3)] /.02[3)] , supporting disc 550.23, constant-level oiler 638, vent plug 672, hex. head bolts 901.04, screwed plugs 903.46/.60[2)]/.61[2)], hex. socket head cap screws 914.01/.02, circlips 932.01/.02, spring washer 930.01
344	Bearing bracket lantern	with joint rings 411.10/.18/.19, studs 902.04, hex. nuts 920.04, hex. head bolts 901.31, screwed plugs 903.18/.19
360.01	Bearing cover (pump side)	with gasket 400.01, hex. socket head cap screws 914.01
360.02	Bearing cover (motor side)	with gasket 400.02, hex. socket head cap screws 914.02
411.77/.78	V-ring	(for pumps with labyrinth seal at the bearing bracket)
421.01/.02	Radial shaft seal rings	(for pumps with radial shaft seal rings at the bearing bracket)
502.01	Casing wear ring	with grub screws 904.03
503.01	Impeller wear ring	
507.01	Thrower	
524.01	Shaft protecting sleeve	(mechanical seal component)
638	Constant-level oiler	
922	Impeller nut	with joint ring 411.31

1) For higher pressures, stud 902.01 is replaced by reduced shank bolt 900.10 and expanding sleeve 520.03.

2) Only for coolable bearing bracket

3) Replaced by throwers 507.11/.12, O-ring 412.36 and V-rings 411.77/.78 if pump is fitted with labyrinth seal

4) For low-pressure design, blind flange 724.01, reduced shank bolt 900.42, expanding sleeve 520.42 and nut 920.42 are replaced by screwed plug 903.01.

Subject to technical modification without prior notice.

07.03.2017

1122.5/09-DE

LENNTECH
WATER TREATMENT SOLUTIONS
info@lenntech.com Tel. +31-152-610-900
www.lenntech.com Fax. +31-152-616-289