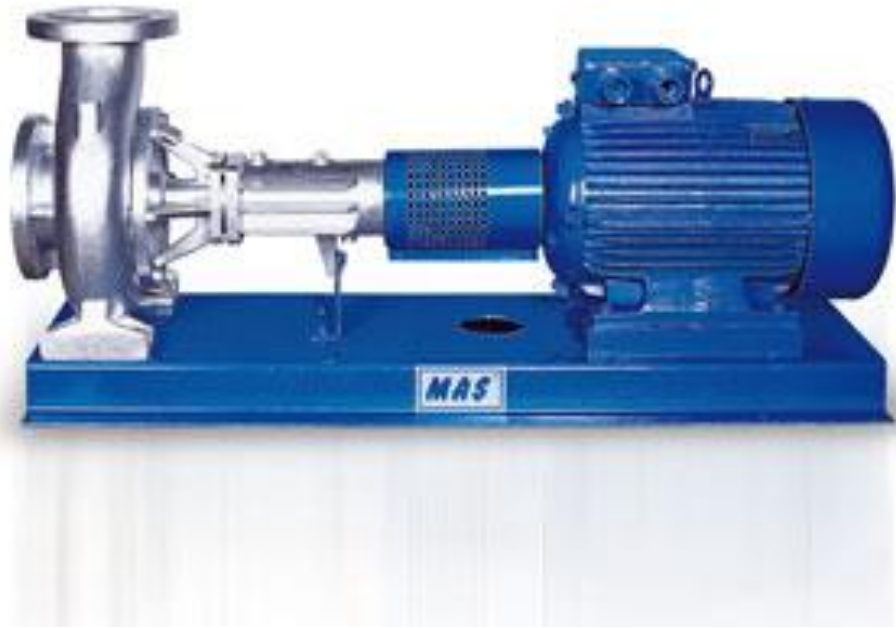


Thermal Oil Centrifugal Pumps

KYP SERIES



TECHNICAL MANUAL



KYP Series

Thermal Oil Centrifugal Pumps

General Information



Mas Grup

Fields of Application

- Chemical and refinery plants.
- Paper and sugar industry.
- Food and drug industry.
- Leather industry.
- Plastic and synthetic fibre industry.
- Rubber industry.
- Baking and heating applications
- Textile industry.
- Laundries.
- Heat transfer applications with a medium over 100 °C temperature.

Pumped Liquids

All organic and synthetic oils used for transferring heat.

Design

- Single-stage, end suction, centrifugal volute pump.
- Main dimensions according to DIN 24256 (ISO 2858).
- Single entry, closed impeller is hydraulically thrust compensated and dynamically balanced.
- To drop the pressure on the sealing and to balance axial thrust, the impellers have back radial blades.
- Pump and motor are separate components, connected to each other via a flexible coupling and mounted on a common base plate.
- Maintenance is very much easier, the impeller shaft and other rotating parts being removable with no need to disconnect the suction and delivery pipes.
- Maximum interchangeability of components, identical parts can be used with various sizes of a pump, which greatly simplifies and reduces stock of spare parts.
- No need to cool the pump externally. Thanks to mechanical design, the temperature drops from casing to the bearing rapidly with the help of natural convection

Shaft and Bearings

- The shaft is designed according to the minimum heat transfer criteria.
- Bearing housing is made of spherical cast iron and mounted to the casing keeping minimum heat transfer from the casing to the bearing housing.
- On the bearing housing, there are fins for natural convection. There are two roller bearings and mechanical seal in the bearing housing.

Shaft Seal

- The mechanical seal stands between two roller bearings and close to the roller bearing on the coupling side. This gives the mechanical seal longer working life since it is on a lower temperature region.
- First bearing is on the impeller side and lubricated with working medium.
- There is a thermal resistant soft packing seal behind the impeller. It slows down the leakage and prevents the pumping to be stopped if there is mechanical seal damage.
- Second bearing is on the coupling side and lubricated with grease.

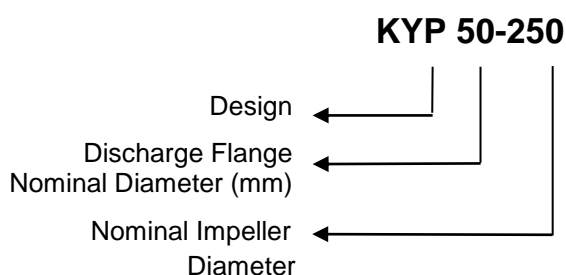
Technical Data

Suction Nozzle	: DN 32...DN 100
Discharge Nozzle	: DN 32...DN 100
Operating Pressure	: 16 Bar
Speed Range	: 1500 – 3000 RPM
Capacity Range	: 10 – 400 m ³ /h
Head Range	: 5 – 90 m

Pump Flanges

Discharge Flanges	: DIN 2533 – PN 16
Suction Flanges	: DIN 2533 – PN 16

Identification Code



KYP Series

Thermal Oil Centrifugal Pumps

Interchangeability for Pumps



Mas Grup

GROUP	PUMP TYPE	CASING	IMPELLER	ADAPTER	SHAFT	BEARING HOUSING	MECH. SEAL	ROLLER BEARING			
A	A1	KYP 32-160									
		KYP 40-160									
		KYP 50-160									
	A2	KYP 32-200									
		KYP 40-200									
		KYP 50-200									
B	B1	KYP 65-160									
		KYP 80-160									
	B2	KYP 65-200									
		KYP 80-200									
		KYP 100-200									
	B3	B3	KYP 32-250								
			KYP 40-250								
			KYP 50-250								
		B3	KYP 65-250								
			KYP 80-250								
			B3	KYP 100-250							

KYP Series

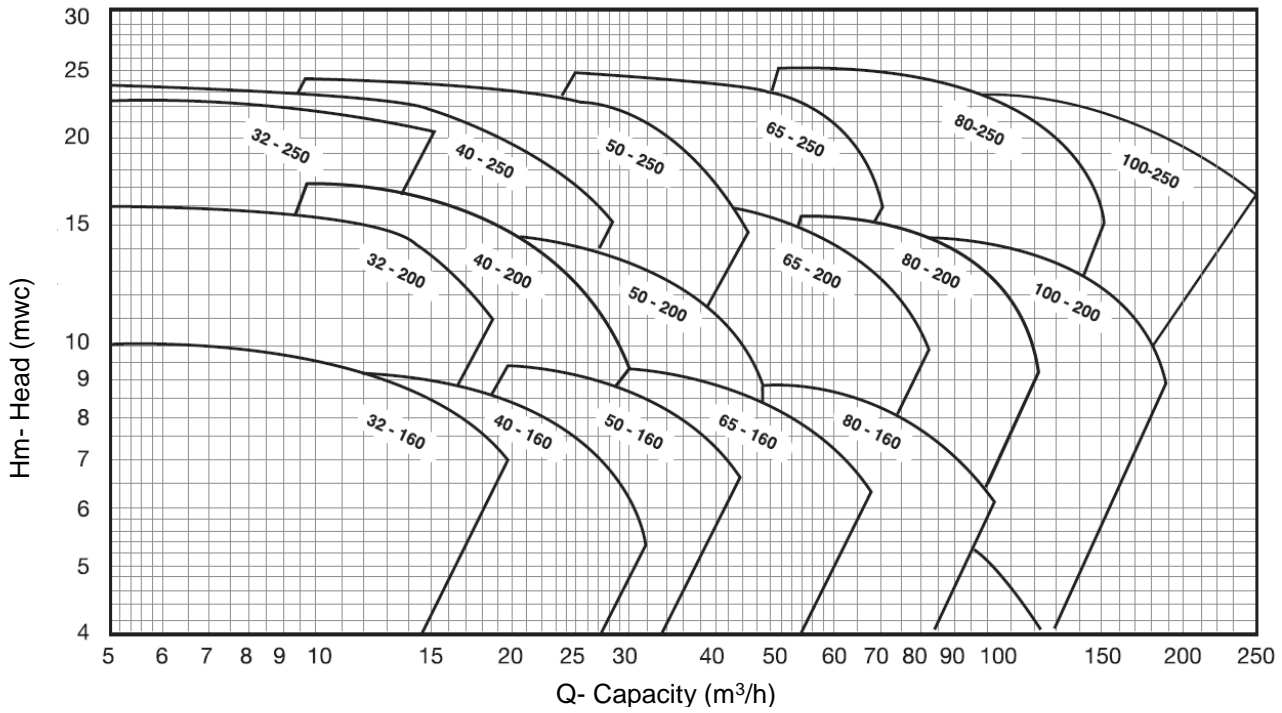
Thermal Oil Centrifugal Pumps

General Performance Curves 1450 RPM – 2900 RPM

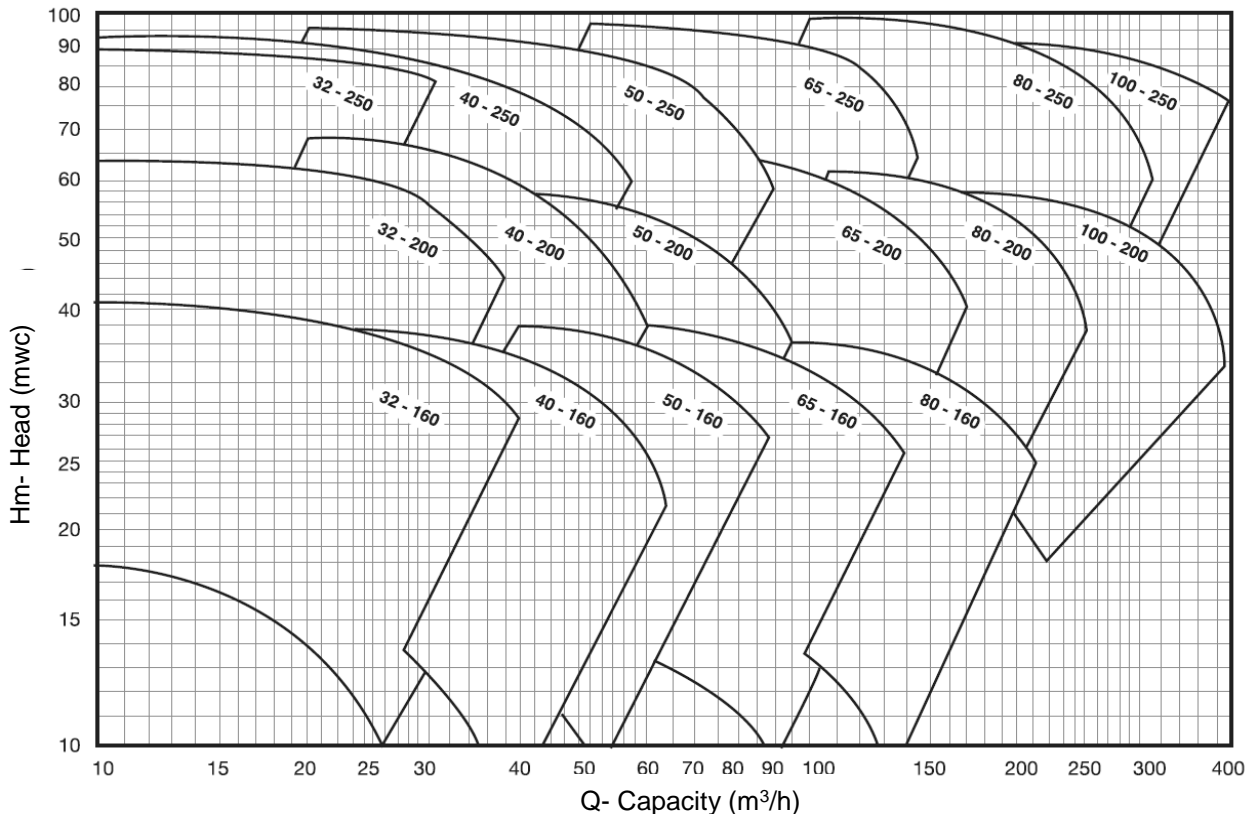


Mas Grup

1450 RPM



2900 RPM



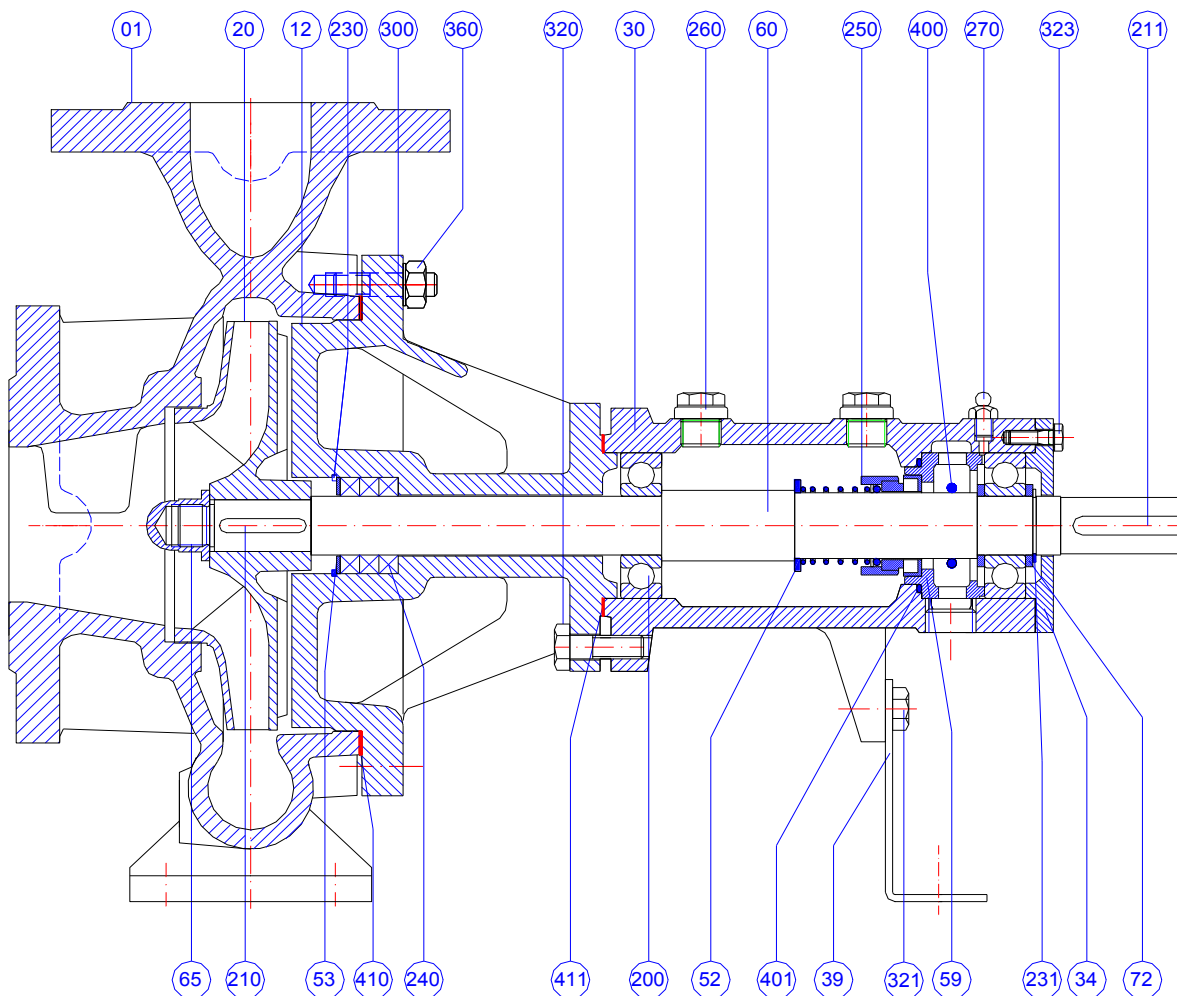
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Thermal Oil Centrifugal Pumps

Cross – Sectional View and Part Lists



Mas Grup



PART NO	PART NAME	PART NO	PART NAME
01	Pump Casing	230	Ring
20	Impeller	231	Ring
12	Adapter	240	Gland Packing
34	Bearing Housing Cover	260	Plug
30	Bearing Housing	270	Greaser
39	Support Foot	300	Stud
52	Mech. Seal Front Ring	320	Hexagonal Bolt
53	Packing Retaining Ring	321	Hexagonal Bolt
59	Mechanical Seal Housing	323	Hexagonal Bolt
60	Pump Shaft	250	Mechanical Seal
65	Impeller Nut	360	Hexagonal Nut
72	Retaining Ring	400	O-Ring
200	Ball Bearing	401	O-Ring
210	Key, Impeller	410	Gasket
211	Key, Coupling	411	Gasket

KYP Series

Thermal Oil Centrifugal Pumps

Technical Specifications



Mas Grup

Material Options

Parts	Material No						
		0.6025	0.7040	2.1050.01	1.4021	1.4301	1.4401
Pump Casing			●	○		○	○
Adapter			●	○		○	○
Impeller		●	○	○		○	○
Bearing Housing			●	○		○	○
Pump Shaft					●	○	○

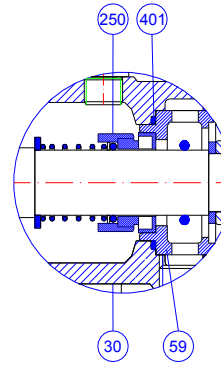
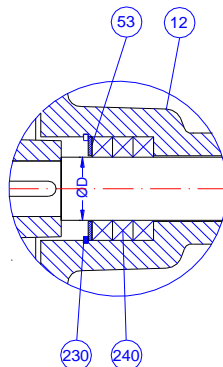
● – Standard Manufacturing
○ – Options

Material Equivalent

Description	DIN 17007	EN-DIN	ASTM
Cast Iron	0.6025	GJL-250 (GG25)	A 48 Class 40-B
Nodular Cast Iron	0.7040	GJS-400-15 (GGG40)	A 536 Gr.60-40-18
Cast Bronze	2.1050.01	G-Cu Sn 10	B 584 C 90700
Chrome Steel	1.4021	X20 Cr 13	A 276 Type 420
Chrome Nickel Steel	1.4301	X5 Cr Ni 18.9	A 276 Type 304
Chrome Nickel Molybdenum Steel	1.4401	X5 Cr Ni Mo 18.10	A 276 Type 316

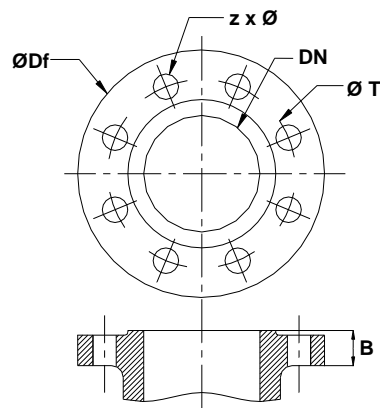
Bearings, Soft Packing, Mechanical Seal

Group	Bearing System	Soft Packing (Rotatherm)		Mechanical Seal	Pump Size
	Type of Bearing	Packing Ring Size ØD	Qty.		
A	2 x 6305 C4 / F	Ø25	3 x Soft Packing 8x8	Ø28 M32N69	32–160, 40–160, 50–160, 32–200, 40–200, 50–200
B	2 x 6307 C4 / F	Ø35	3 x Soft Packing 10x10	Ø38 M32N69	65–160, 80–160, 65–200, 80–200, 100–200, 32–250, 40–250, 50–250, 65–250, 80–250, 100–250



Gland Packing Detail	
Part No	Part Name
12	Adapter
53	Packing Retaining Ring
230	Ring
240	Rotatherm Soft Packing

Mechanical Seal Detail	
Part No	Part Name
30	Bearing Housing
59	Mech. Seal Housing
250	Mechanical Seal
401	O-Ring



Pump Suction and Discharge Flange Dimensions								
DNs	PN	ØD	Øk	Ød4	Ød2	b	f	Hole
DNd								Number
32	16	140	100	78	18	18	2	4
40		150	110	88	18	18	3	4
50		165	125	102	18	20	3	4
65		185	145	122	18	20	3	4
80		200	160	138	18	22	3	8
100		220	180	158	18	24	3	8
125		250	210	188	18	26	3	8

No	Pump Type	Flanges			
		DNs (mm) Suction		DNd (mm) Discharge	
1	32-160	50	PN 16	32	PN 16
2	32-200				
3	32-250				
4	40-160	65		40	
5	40-200				
6	40-250				
7	50-160	65		50	
8	50-200				
9	50-250				
10	50-315				
11	65-160	80	65		
12	65-200				
13	65-250				
14	65-315				
15	65-400				
16	80-160	100	80		
17	80-200				
18	80-250				
19	80-315				
20	80-400				
21	100-200	125	100		
22	100-250				

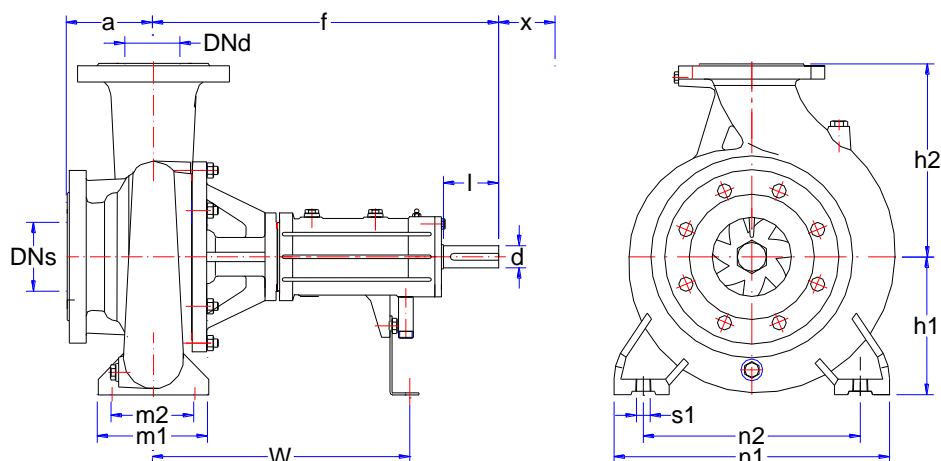
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions



Mas Grup



No	Pump Size	Flanges (PN16)		Length		Height		Pump Feet		Fixing Details					Shaft End (*)		
		DN Suc.	DN Del.	a	f	h1	h2	b	m1	m2	n1	n2	s1	W	d	l	X
1	32-160	50	32	80	385	132	160	50	100	70	240	190	M12	285	24	50	65
2	32-200	50	32	80	385	160	180	50	100	70	240	190	M12	285	24	50	65
3	32-250	50	32	100	500	180	225	65	125	95	320	250	M12	370	32	80	80
4	40-160	65	40	80	385	132	160	50	100	70	240	190	M12	285	24	50	75
5	40-200	65	40	100	385	160	180	50	100	70	265	212	M12	285	24	50	75
6	40-250	65	40	100	500	180	225	65	125	95	320	250	M12	370	32	80	75
7	50-160	65	50	100	385	160	180	50	100	70	265	212	M12	285	24	50	80
8	50-200	65	50	100	385	160	200	50	100	70	265	212	M12	285	24	50	85
9	50-250	65	50	100	500	180	225	65	125	95	320	250	M12	370	32	80	85
10	65-160	80	65	100	500	160	200	65	125	95	280	212	M12	370	32	80	100
11	65-200	80	65	100	500	180	225	65	125	95	320	250	M12	370	32	80	100
12	65-250	80	65	100	500	200	250	80	160	120	360	280	M16	370	32	80	100
13	80-160	100	80	125	500	180	225	65	125	95	320	250	M12	370	32	80	110
14	80-200	100	80	125	500	180	250	65	125	95	345	280	M12	370	32	80	110
15	80-250	100	80	125	500	200	280	80	160	120	400	315	M16	370	32	80	115
16	100-200	125	100	125	500	200	280	80	160	120	360	280	M16	370	32	80	120
17	100-250	125	100	140	500	225	280	80	160	120	400	315	M18	370	32	80	120

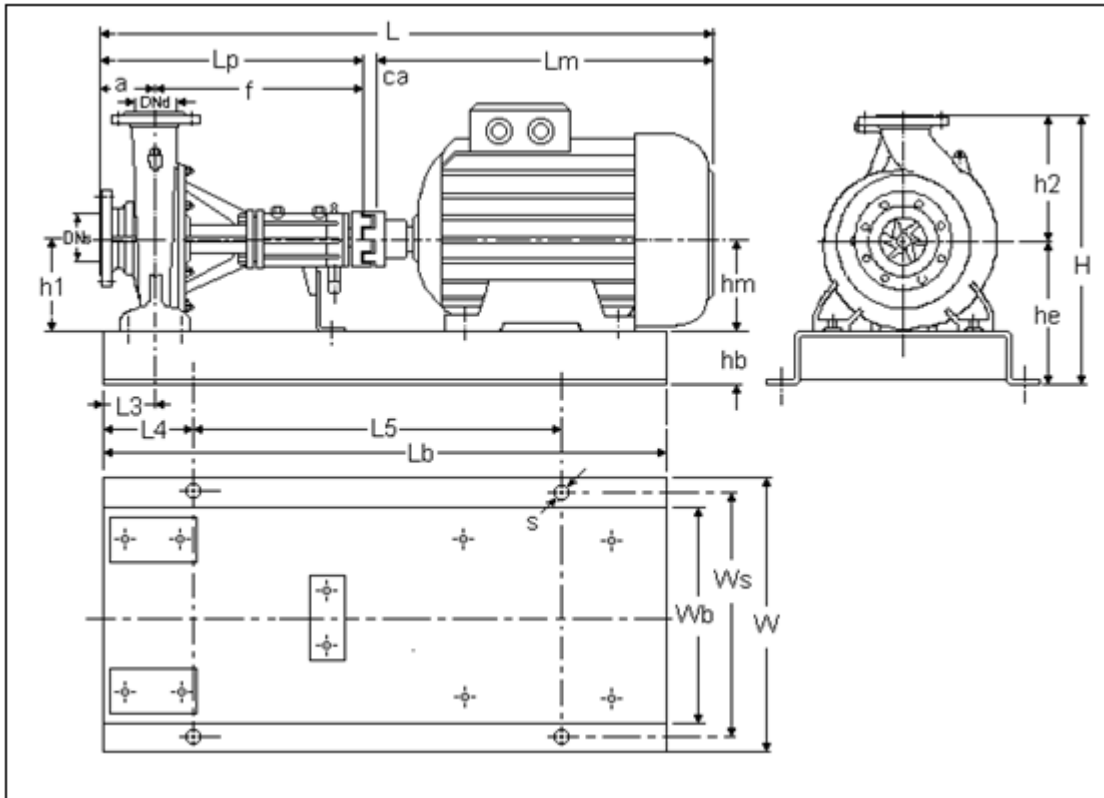
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 1450 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate											
		DNs	DNd	a	f	L	W	H	Lm	hm	Lb	Wb	hb	he	L3	L4	L5	Ws	s3			
KYP 32-160	0.25	50	32	80	385	723	330	357	242	71	710	240	65	197	60	115	480	290	19			
	0.37					300			80													
	0.55									90												
	0.75																			800		
1.1	225																				130	540
KYP 32-200	0.55			100	500	893	450	485	273	80	800	340	80	260	72	150	540	320				
	0.75					300			90													
	1.1									900												
	1.5																		900			
KYP 32-250	1.1			65	40	100	385	754	330	357	273	80	710	270	65	225	60	115		480	320	19
	0.55							300			80											
	0.75	90																				
	1.1		800																			
KYP 40-160	0.55	100		500	920	450	485	300	90	900	340	80	260	72	150	600	400					
	0.75		300		90																	
	1.1							900														
	1.5								900													
KYP 40-200	0.55	65	40	100	385	774	360	405		273	80	710	270	65	225	60	115	480	320	19		
	0.75					300			90													
	1.1									900												
	1.5										225										130	540
1.1																						
	KYP 40-250										1.1										100	500
1.5				300	90																	
2.2						900																
3							900															

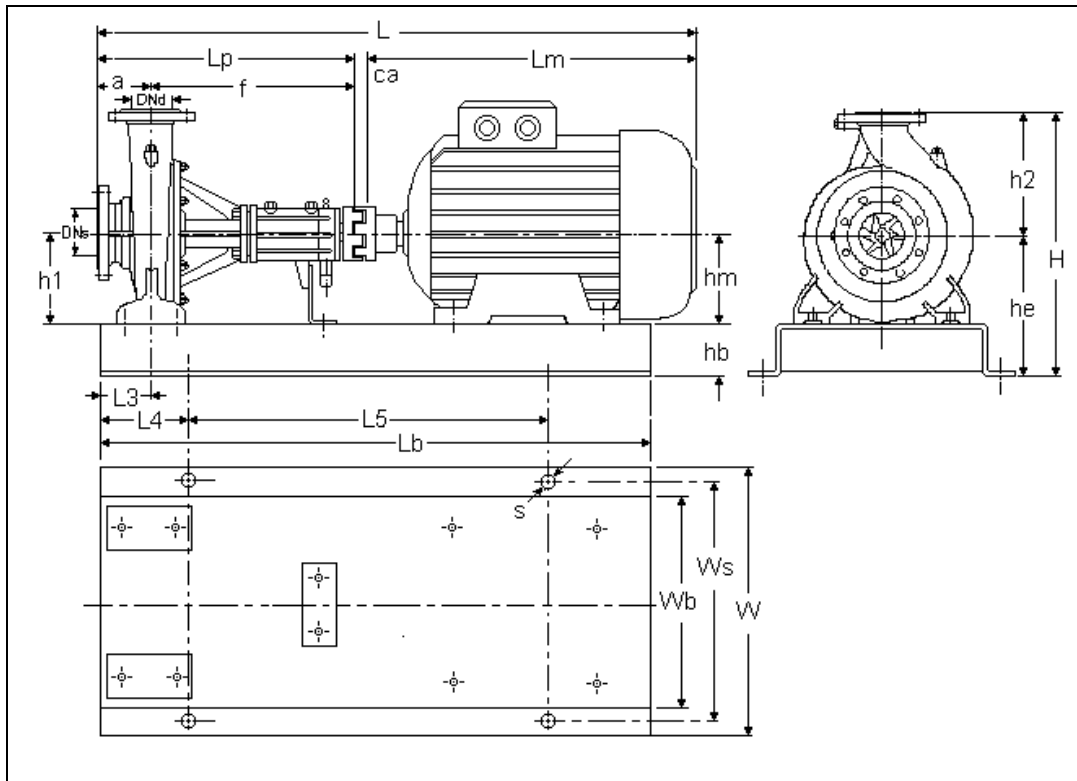
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 1450 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate										
		DNs	DNd	a	f	L	W	H	Lm	hm	Lb	Wb	hb	he	L3	L4	L5	Ws	s3		
KYP 50-160	0.55	65	50	100	385	774	360	405	273	80	710	270	65	225	60	115	480	320	19		
	0.75					300			90												
	1.1					805			325	800											
	1.5					830			325	800											
KYP 50-200	1.1					805			300	90										710	
	1.5					830			325	100										800	
KYP 50-250	2.2			100	500	450	485	985	450	485	365	100	900	340	80	260	72	150	600	400	24
	3							384			112										
	4							455			132	1000									
KYP 65-160	0.75			80	65	100	500	889	390	425	273	80	800	300	65	225	72	130	540	350	19
	1.1							300			90										
	1.5							945			365	100									
	2.2	985	365					100			900										
KYP 65-200	1.5	945	325					90			900										
	2.2	985	365					100			900										
	3	1005	384			112	1000														
KYP 65-250	3	490	530			365	100	985	490	530	365	100	900	380	80	280	90	150	600	440	24
	4							384			112										
	5.5							455			132	1000									
	7.5							1119			493	132									

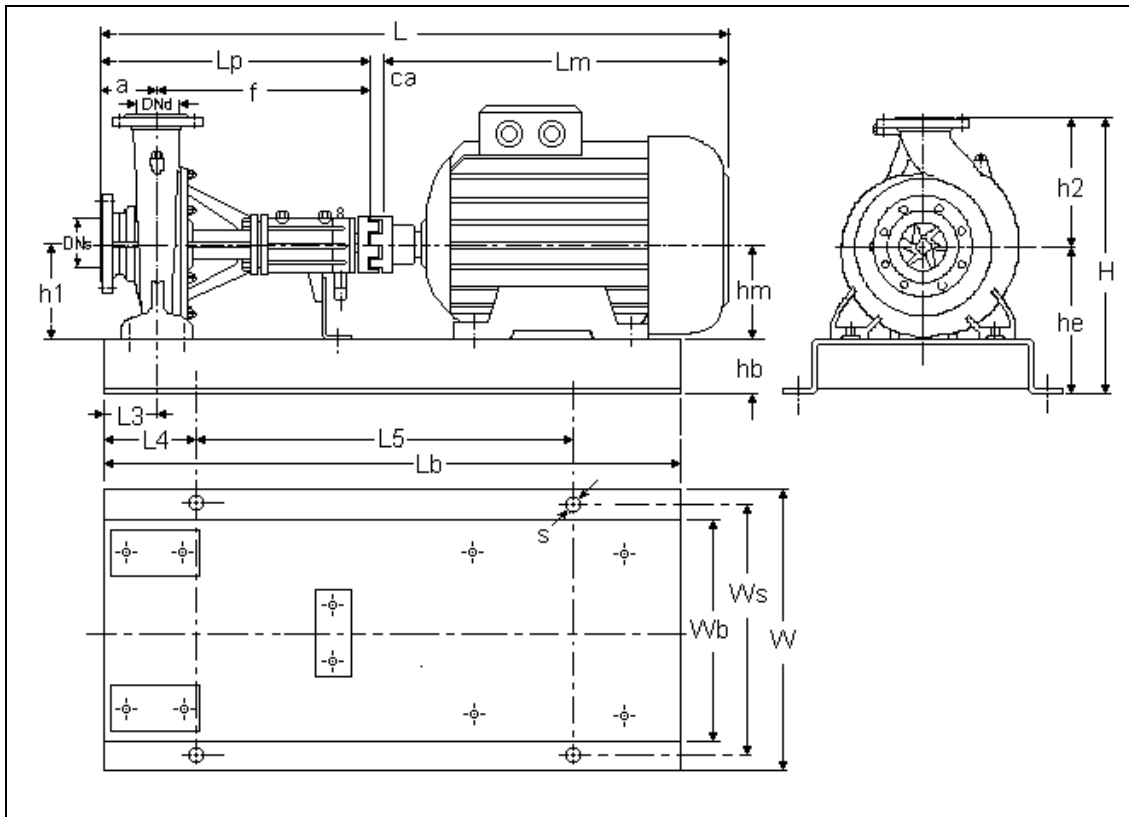
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 1450 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate								
		DNs	DNd	a	f	L	W	H	Lm	hm	Lb	Wb	hb	he	L3	L4	L5	Ws	s3
KYP 80-160	1.5					970	450	485	325	90	900	340	80	260	72	150	600	400	24
	2.2					1010			365	100									
	3					1010			365	100									
KYP 80-200	3	100	80	125	500	1010	490	510	365	100	900	380	80	260	72	150	600	440	24
	4					1106			455	132									
	5.5					1106			455	132									
	7.5					1144			493	160									
						1144			493	160									
KYP 80-250	5.5					1106	540	560	455	132	1000	430	80	280	90	170	660	490	24
	7.5					1144			493	160									
	11					1249			594	160									
						1249			594	160									
	15					1293			638	1250									
KYP 100-200	3	125	100	125	500	1010	490	560	365	100	900	380	80	280	90	150	600	440	24
	4					1030			384	112									
	5.5					1106			455	132									
	7.5					1144			493	160									
KYP 100-250	11					1308	540	585	638	160	1120	430	80	305	90	190	740	490	24
	15					1308			638	160									
	18.5					1327			654	160									

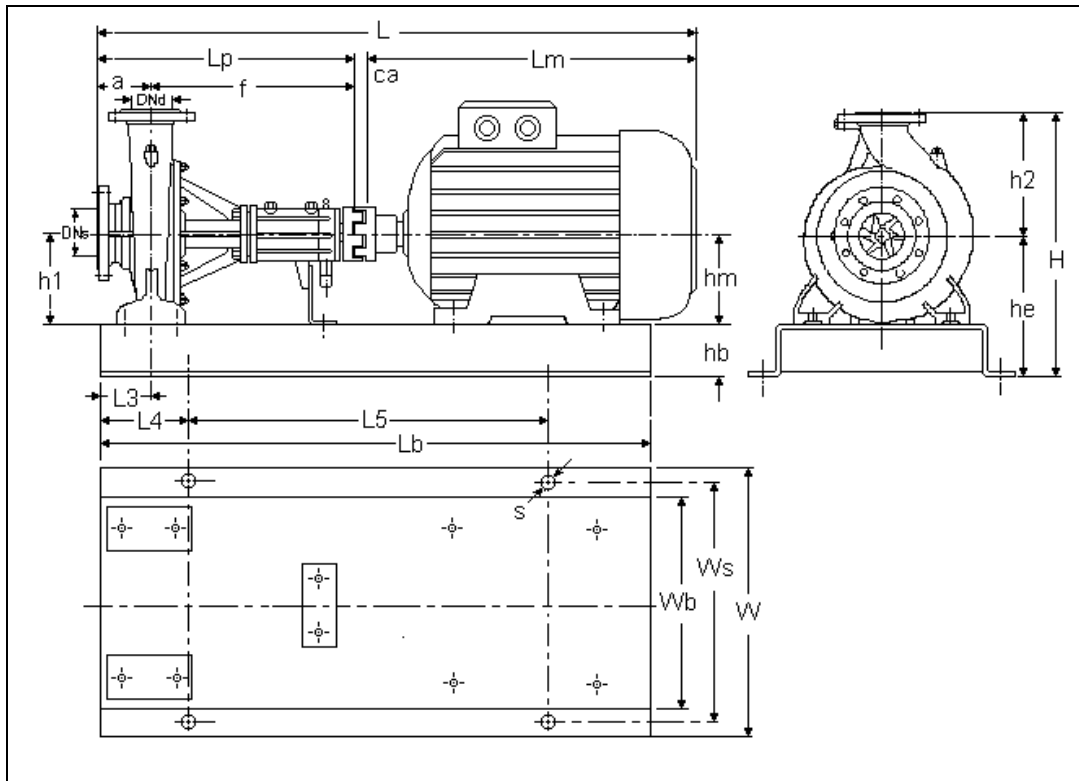
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 2900 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate																		
		DNs	DNd	a	f	L	W	H	L _m	h _m	L _b	W _b	h _b	h _e	L3	L4	L5	W _s	s3										
KYP 32-160	1.5	50	32	80	385	775	330	358	300	90	710	240	65	197	60	115	480	290	19										
	2.2					800			325											365	100								
	3					840			365											100	800								
	4					859			384											112	800								
KYP 32-200	4					859	330	405	384	112	800	240	65	225	60	130	540	290	19										
	5.5					930	360	455	132	270																			
	7.5					930	360	455	132	270																			
	11					1069	450	420	594	160										900	340	80	240	150	600	400	24		
KYP 32-250	7.5			65	40	100	500	1065	450	485	455	132	1000	340	80	260	73	170	660	400	24								
	11							1204			450											594	160	1120					
	15							1204			450											594	160	1120					
	18.5							1248			450											638	160	1120					
KYP 40-160	3	65	40			80	385	840	330	357	365	100	800	240	65	197	60	130	540	290	19								
	4							859			360											455	132	270					
	5.5							930			360											455	132	270					
	7.5							930			360											455	132	270					
KYP 40-200	5.5							950	360	405	455	132	800	270	65	225	60	130	540	320	19								
	7.5							950	360	405	455	132																	
	11							1089	450	420	594	160										900	340	80	240	150	600	400	24
	15							1089	450	420	594	160										900	340	80	240	150	600	400	24
KYP 40-250	15			65	40	100	500	1204	450	485	594	160	1120	340	80	260	73	190	740	400	24								
	18.5							1248			450											638	160	1120					
	22							1264			490											654	180	380					
	30							1357			540											505	747	200	1250	430	280	205	840

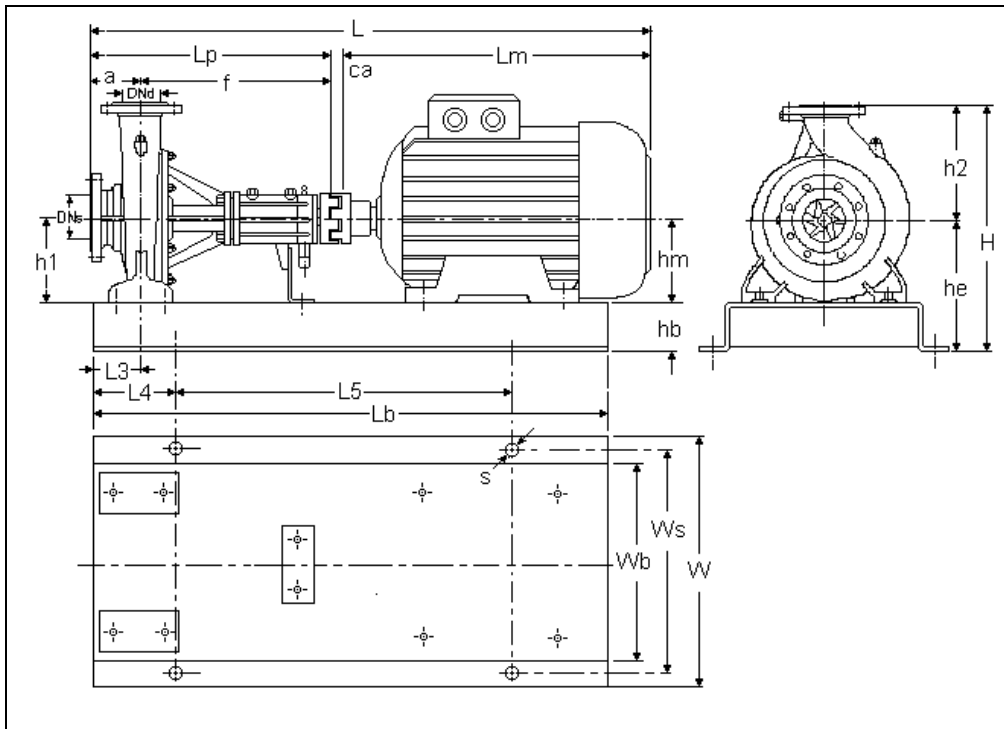
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 2900 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate																	
		DNs	DNd	a	f	L	W	H	L _m	h _m	L _b	W _b	h _b	h _e	L3	L4	L5	W _s	s3									
KYP 50-160	4	65	50	100	385	879	360	405	384	112	800	270	65	225	60	130	540	320	19									
	5.5					950			455	132																		
	7.5					950			594	160										900	340							
	11					1089	450	594	160	900										340	150	600	400	24				
KYP 50-200	7.5					950	360	425	455	132										800	270	65	225	60	130	540	320	19
	11					1089	450	440	594	160										900	340	80	240	60	150	600	400	24
	15			1089	450	440	594	160	900	340	80	240	60	150	600	400	24											
KYP 50-250	18.5			1133	450	440	638	160	1000	340	80	240	60	170	660	400	24											
	22			1264	490	485	654	180	1120	380	80	260	73	190	740	440	24											
	30			1357	540	505	747	200	1250	430	80	280	73	205	840	490	24											
	37			1357	540	505	747	200	1250	430	80	280	73	205	840	490	24											
KYP 50-250	45			1400	610	550	790	225	1400	480	100	325	73	205	840	490	24											
	5.5	1065	390	425	455	132	900	300	65	225	73	150	600	350	19													
	7.5	1065	390	425	455	132	900	300	65	225	73	150	600	350	19													
	11	1204	450	450	594	160	1120	340	80	240	73	190	740	400	24													
KYP 65-160	15	1204	450	450	594	160	1120	340	80	240	73	190	740	400	24													
	18.5	1248	450	485	638	160	1120	340	80	240	73	190	740	400	24													
	18.5	1248	450	485	638	160	1120	340	80	240	73	190	740	400	24													
	22	1264	490	485	654	180	1120	380	80	260	73	190	740	440	24													
KYP 65-200	30	1357	540	505	747	200	1250	430	80	280	73	205	840	490	24													
	37	1357	540	505	747	200	1250	430	80	280	73	205	840	490	24													
	KYP 65-250	22	1264	490	530	654	180	1120	380	80	280	90	190	740	440	24												
		30	1357	540	530	747	200	1250	430	80	280	90	205	840	490	24												
37		1357	540	530	747	200	1250	430	80	280	90	205	840	490	24													
KYP 65-250	45	1400	610	575	790	225	1400	480	100	325	90	205	840	490	24													
	55	1500	660	600	890	250	1400	530	100	350	90	230	940	600	28													

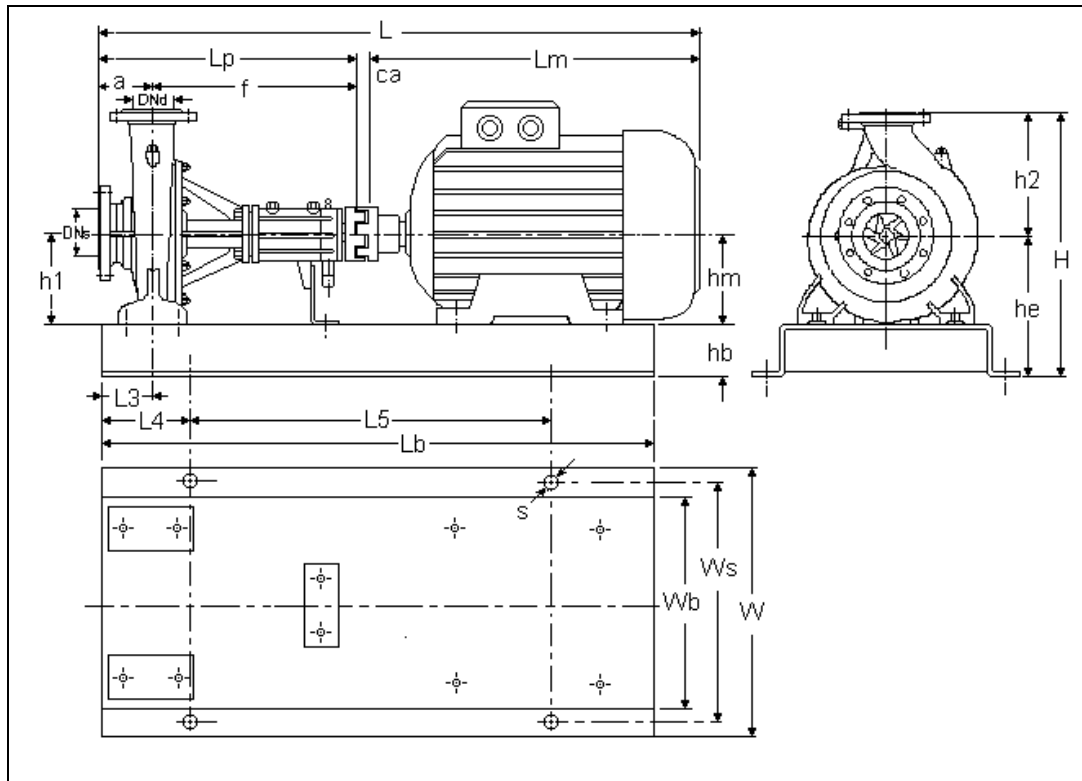
KYP Series

Thermal Oil Centrifugal Pumps

Overall Dimensions with Electric Motor 2900 RPM



Mas Grup



Pump Type	Motor [kW]	Pump				Outer Dimensions			Motor		Baseplate											
		DNs	DNd	a	f	L	W	H	L _m	h _m	L _b	W _b	h _b	h _e	L3	L4	L5	W _s	s3			
KYP 80-160	7.5	100	80	125	500	1090	450	485	455	132	1120	340	80	380	73	150	600	400	24			
	11					594			160	638										180		
	15					638			180	380										440		
	18.5					654			180	380										440		
	22					654			180	380										440		
KYP 80-200	30	100	80	125	500	1382	540	530	747	200	1250	430	80	280	73	205	840	490	24			
	37					747			200	480										100	325	550
	45					790			225	480										100	325	550
	55					890			250	530										100	350	600
KYP 80-250	45	125	100	125	500	1425	610	605	790	225	1250	480	100	325	90	205	840	550	28			
	55					790			225	530										100	350	600
	75					890			250	530										100	350	600
	90					958			280	600										100	380	670
KYP 100-200	30	125	100	125	500	1382	540	540	747	200	1250	430	80	280	90	205	840	490	24			
	37					747			200	480										100	325	550
	45					790			225	480										100	325	550
	55					890			250	530										100	350	600
	75					958			280	600										100	380	670
KYP 100-250	55	125	100	140	500	1570	610	630	890	250	1400	480	100	350	125	230	940	550	28			
	75					890			250	600										100	380	670
	90					958			280	600										100	380	670
	110					1078			315	680										120	415	760

KYP Series

Thermal Oil Centrifugal Pumps

Performance Curves



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KYP Series

Thermal Oil Centrifugal Pumps



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Permissible Loads and Torques on Pump Flanges

Load and torque components on discharge flanges : $F_{xD}, F_{yD}, F_{zD}, M_{xD}, M_{yD}, M_{zD}$
 Load and torque components on suction flanges : $F_{xS}, F_{yS}, F_{zS}, M_{xS}, M_{yS}, M_{zS}$
 Dimension for force and torque : N, Nm

$F_{VD} = |F_{yD}|$: Amount of vertical load on discharge flange
 $F_{VS} = |F_{yS}|$: Amount of vertical load on suction flange
 $F_{HD} = (F_{xD}^2 + F_{zD}^2)^{1/2}$: Amount of horizontal load on discharge flange
 $F_{HS} = (F_{xS}^2 + F_{zS}^2)^{1/2}$: Amount of horizontal load on suction flange
 $M_D = (M_{xD}^2 + M_{yD}^2 + M_{zD}^2)^{1/2}$: Amount of torque on discharge flange
 $M_S = (M_{xS}^2 + M_{yS}^2 + M_{zS}^2)^{1/2}$: Amount of torque on suction flange

$\Sigma F_V = 2/3 \times F_{VD} + F_{VS}$: Sum of vertical loads
 $\Sigma F_H = F_{HD} + F_{HS}$: Sum of horizontal loads
 $\Sigma M = M_D + M_S$: Sum of torques

The load on the flange is permissible if the following condition is fulfilled.

$$(\Sigma F_V / \Sigma F_{Vmax})^2 + (\Sigma F_H / \Sigma F_{Hmax})^2 + (\Sigma M / \Sigma M_{max})^2 \leq 1$$

PUMP TYPE	t = 20 °C		
	F _{Vmax} [kN]	F _{Hmax} [kN]	M _{max} [kNm]
KYP 32-160	3.56	2.61	0.51
KYP 32-200	3.60	2.43	0.51
KYP 32-250	3.65	2.43	0.51

t = 300 °C		
F _{Vmax} [kN]	F _{Hmax} [kN]	M _{max} [kNm]
3.08	2.17	0.44
3.11	2.10	0.44
3.11	2.10	0.44

KYP 40-160	3.81	2.67	0.81
KYP 40-200	3.81	2.67	0.81
KYP 40-250	4.21	2.92	0.58

3.29	2.31	0.70
3.29	2.31	0.70
3.64	2.52	0.50

KYP 50-160	3.97	2.67	1.11
KYP 50-200	4.21	2.92	1.11
KYP 50-250	4.58	3.32	0.87

3.43	2.31	0.96
3.64	2.52	0.96
3.96	2.87	0.75

KYP 65-160	4.42	3.04	1.16
KYP 65-200	5.27	3.89	1.79
KYP 65-250	5.27	3.89	1.79

3.82	2.63	1.00
4.55	3.36	1.55
4.55	3.36	1.55

KYP 80-160	5.43	4.05	1.91
KYP 80-200	6.08	4.74	2.44
KYP 80-250	6.16	4.78	2.44

4.69	3.50	1.65
5.25	4.10	2.10
5.32	4.13	2.10

KYP 100-200	7.70	6.28	3.60
KYP 100-250	7.86	6.48	3.47

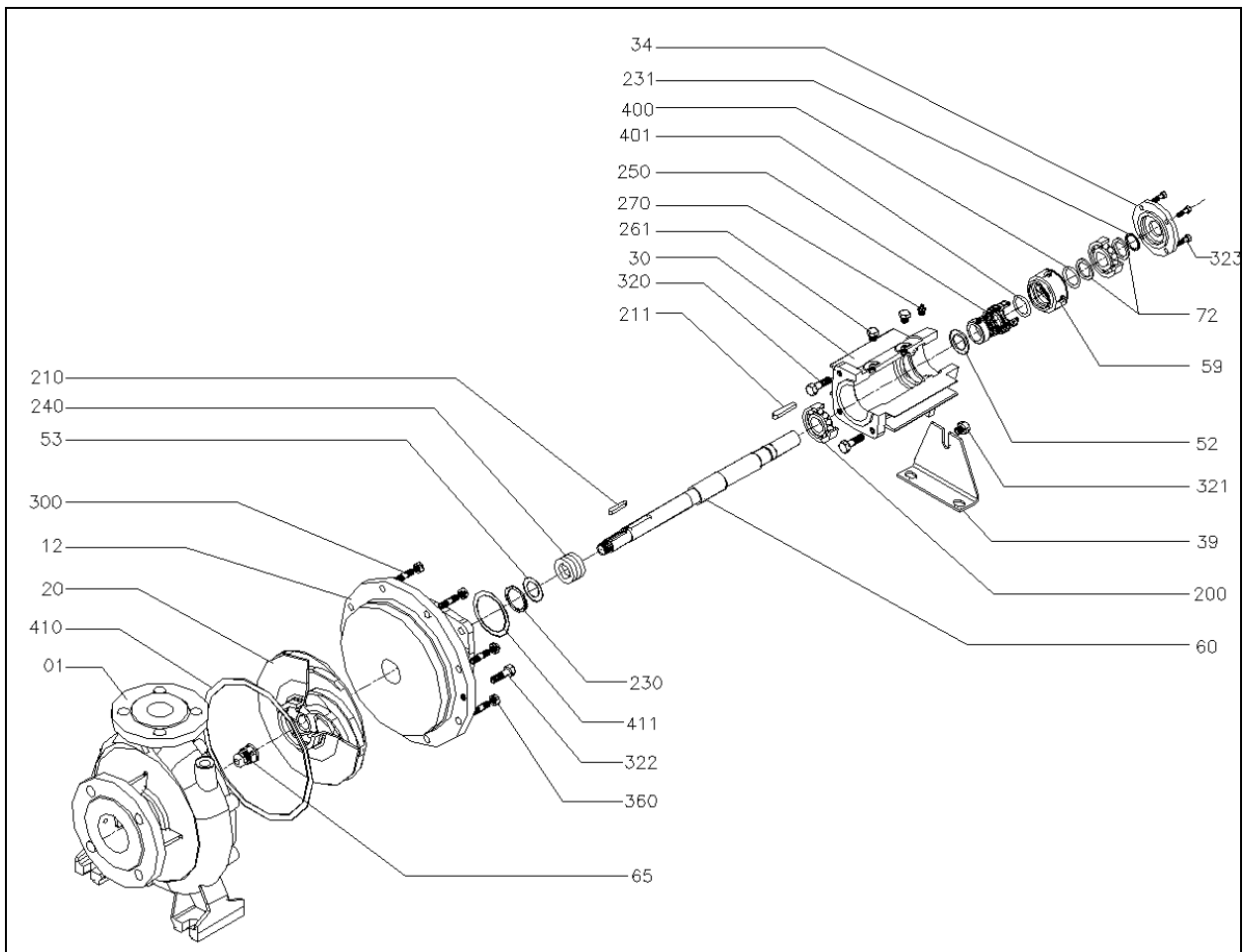
6.65	5.43	3.10
6.79	5.60	3.00

Note: Pump casing material is GGG 40.

KYP Series
Thermal Oil Centrifugal Pumps
Exploded Drawings



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PART NO	PART NAME	PART NO	PART NAME
01	Pump Casing	230	Ring
20	Impeller	231	Ring
12	Adapter	240	Gland Packing
34	Bearing Housing Cover	261	Plug
30	Bearing Housing	270	Greaser
39	Support Foot	300	Stud
52	Mech. Seal Front Ring	320	Hexagonal Bolt
53	Packing Retaining Ring	321	Hexagonal Bolt
59	Mechanical Seal Housing	323	Hexagonal Bolt
60	Pump Shaft	250	Mechanical Seal
65	Impeller Nut	360	Hexagonal Nut
72	Retaining Ring	400	O-Ring
200	Ball Bearing	401	O-Ring
210	Key, Impeller	410	Gasket
211	Key, Coupling	411	Gasket



Mas Grup

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