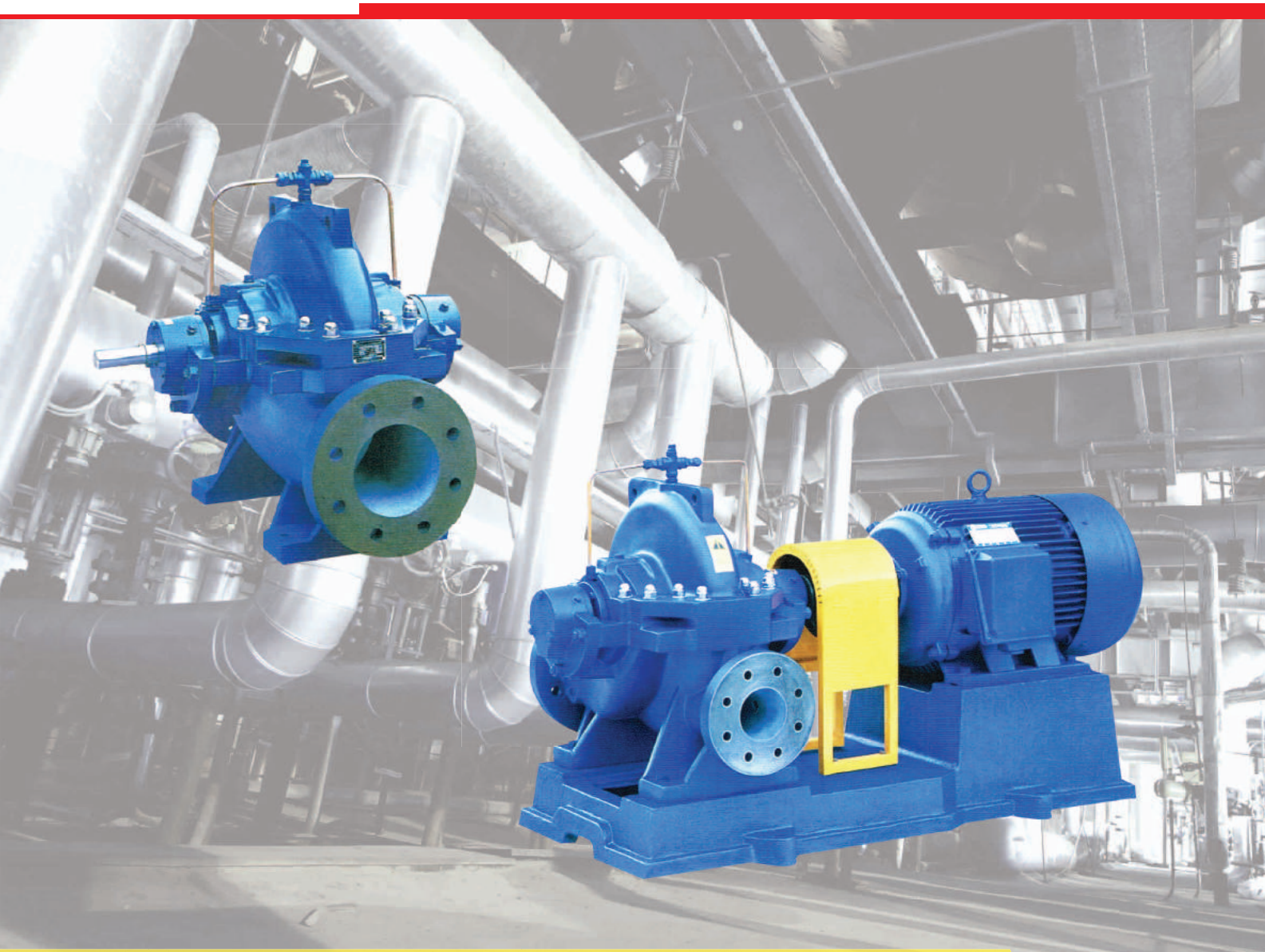
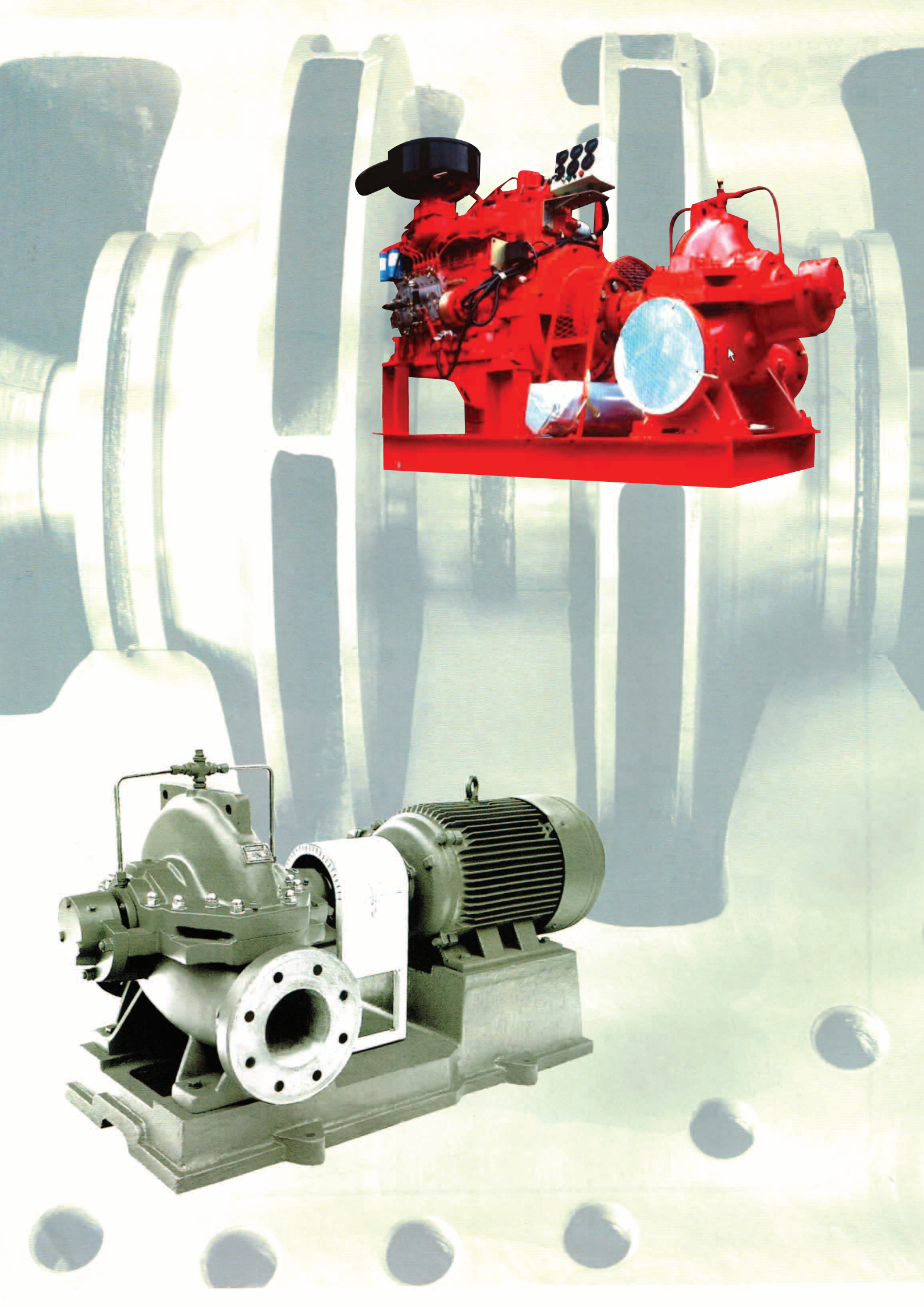
TROSX INTERNATIONAL™

Provide The World

Water Pump and Booster System



Single Stage Double Suction Split Case Centrifugal Pump



General and Construction

1. Applications

Waterworks, irrigation and drainage pumping stations. Power stations, industrial water supply systems, fire fighting applications in refineries

2. Operating data

Pump sizes	DN	80	up	to	900mm
Capacities	Q	up	to		5000l/s
Total heads	H	up	to		200m
Operating pressure	P	up	to		30bar
Operating temperature	t	up	to		+105°C

3. Model code

THSC 200 - 125 - 290 V

- Series
- Suction (mm)
- Discharge (mm)
- Nominal Impeller diameter (mm)
- Vertical type

4. Pump casing

The casing is axially split, which permits removal of the complete rotor without moving either piping or motor. Pumps generating high heads have double volutes to reduce radial forces, ensuring minimal shaft deflection and low bearing loads.
Replaceable wear rings protect the casing at the impeller running clearances. High head pumps are also fitted with replaceable impeller wear rings. Flanges drilled to ISO. DIN. BS or ANSI.

5. Impeller

The closed impellers have double curved vanes. The double suction design gives practically zero axial forces. Each impeller is statically and dynamically balanced according to ISO 1940.

6. Bearings

On both sides grease lubricated deep groove ball bearings, sealed for life, optionally oil lubrication.

7. Shaft seal

Uncooled soft-packed stuffing box or uncooled single acting. Unbalanced mechanical seal. Accordingly to DIN24960, independent of direction of rotation. For Operation pressure > 16 bar: Balanced mechanical seal.

8. Materials

	DIN
Volute casing	
Cast iron	GG-25
Ductile cast iron	GGG-40
Cast steel	GS-C25
Impeller	
Cast iron	GG-25
Bronze	G-CuSn10Zn
Stainless steel	1.4581 or 1.4028
Shaft	
C-steel	C45N
Cr-steel	1.4021
Casing wear rings	
Cast iron	GG-25
Bronze	G-CuSn5ZnPb
Brass	G-CuZn15Si4

Whether your application requires electric motor or diesel engine driven system. Vertical or horizontal. THSC can fit your requirements.

Advantages

1. Your technical advantages
Innovative casing

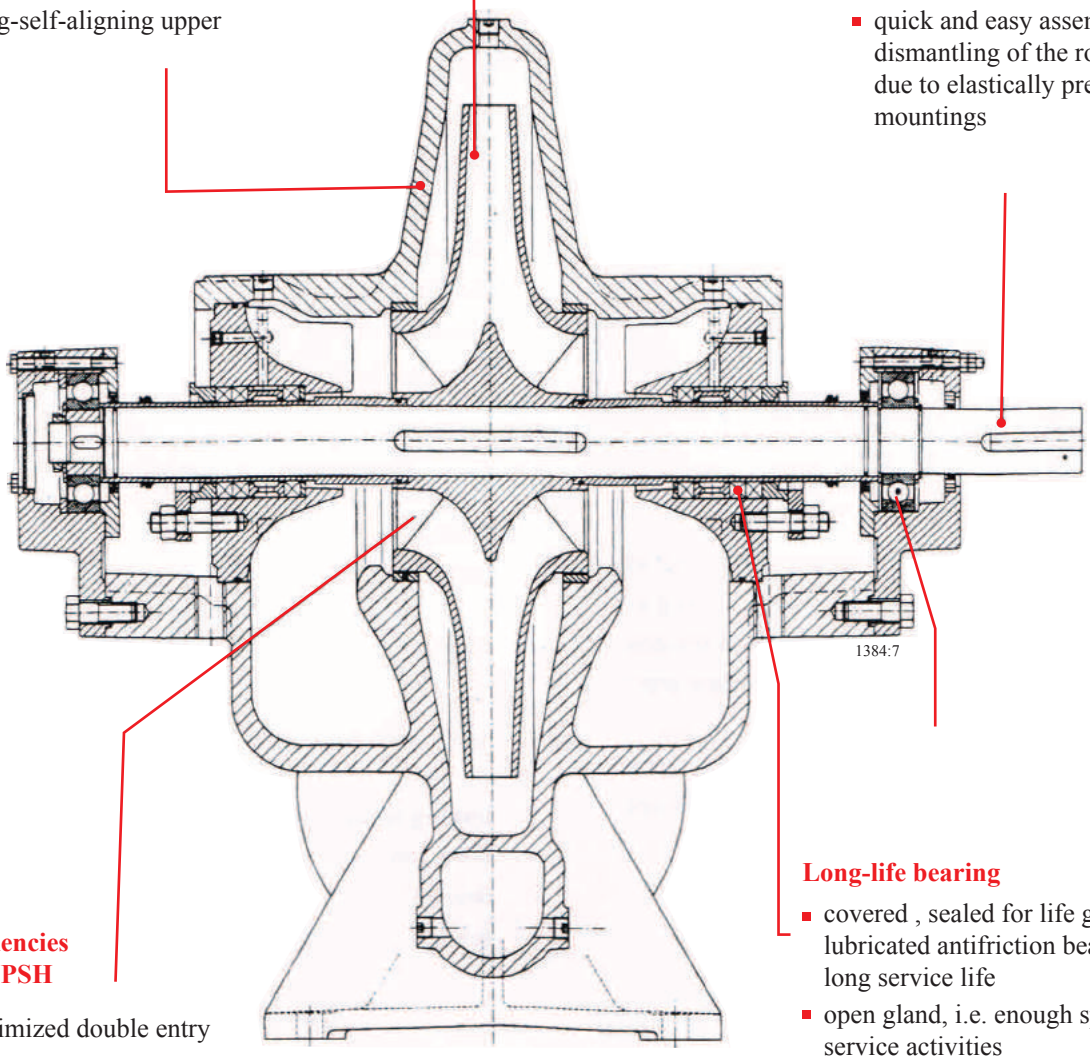
- in-line design
- short distance between bearings and correspondingly short shaft
- leak-tight due to compact joint flange with long, prestressed bolts
- counter-rotation possible with similar parts
- double voluts version for appropriate total heads
- easy mounting-self-aligning upper casing

High-performance impeller

- minimal axial thrust due to double-entry impeller
- optional-entry impeller
- optional impeller wear rings
- new vane passage with excellent hydraulic characteristics

2. Your service advantage
Service-friendly shaft

- completely sealed and dry for zero corrosion
- short and rigid with negligible vibrations
- replaceable shaft protecting sleeves
- no threads exposed to pumped medium, long operating life and no corrosion
- adjustment-free assembly
- quick and easy assembly / dismantling of the rotor components due to elastically prestressed mountings



Excellent efficiencies
Outstanding NPSH

- computer-optimized double entry impellers
- smooth surfaces inside the casing and on the impeller
- smooth, quiet running also guaranteed by a large impeller eye area
- no drop in efficiency due to cost effective replaceable casing wear rings and impeller wear rings
- smooth, low loss running due to a swirl-free inlet

Long-life bearing

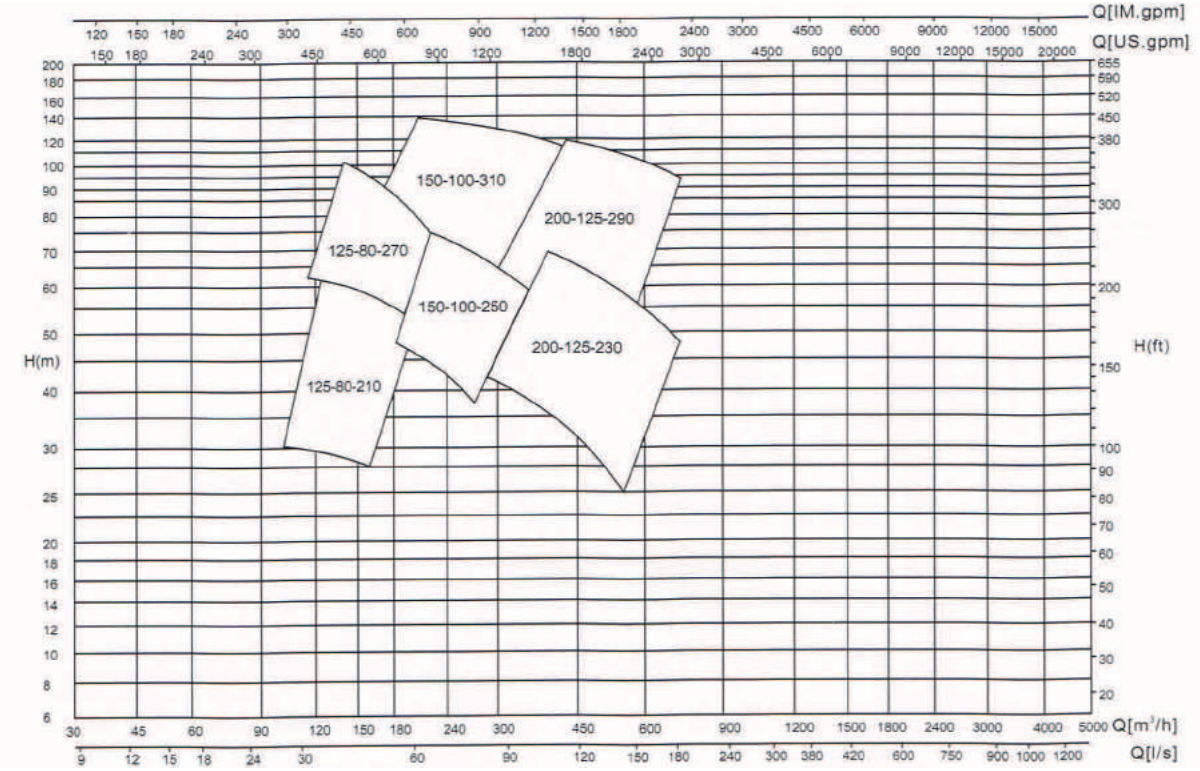
- covered , sealed for life grease lubricated antifriction bearings for a long service life
- open gland, i.e. enough space for service activities
- optional: oil lubrication with constant level oiler

Application-orientated seals

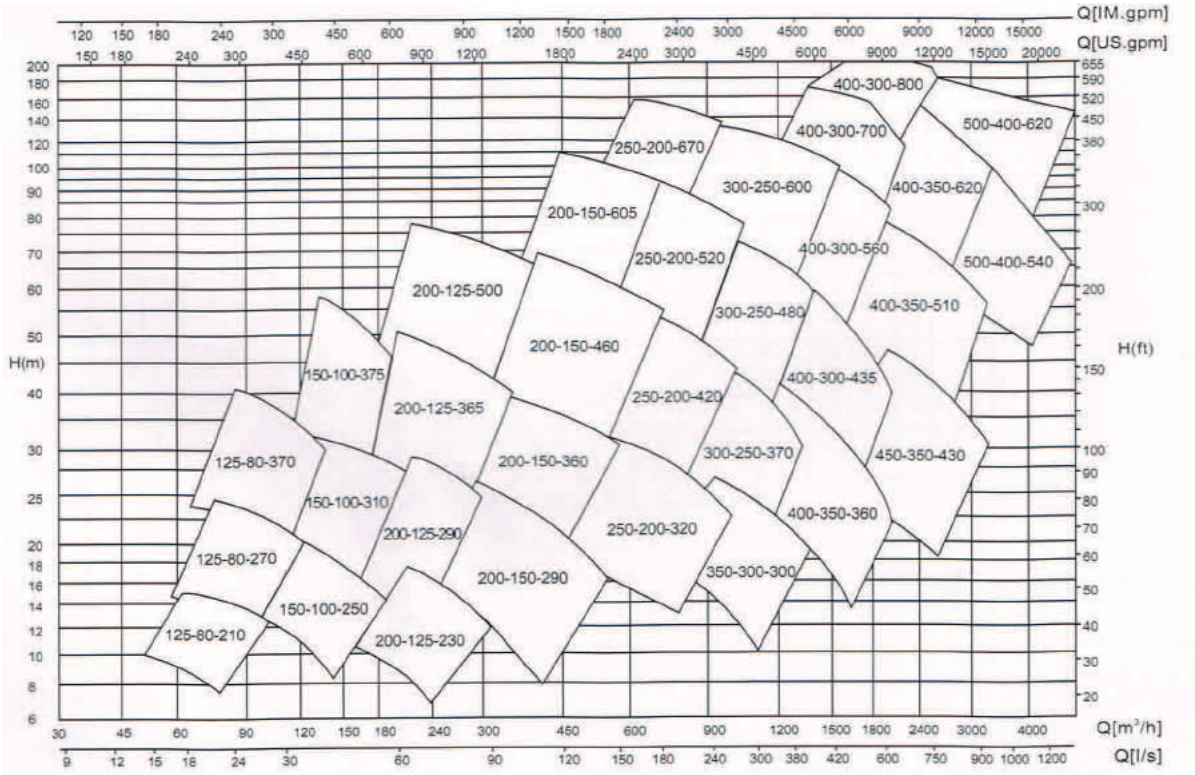
- asbestos-free, potable water quality soft-packed stuffing boxes
- optional: mechanical seals

Selection Charts

n=2900rpm 50HZ

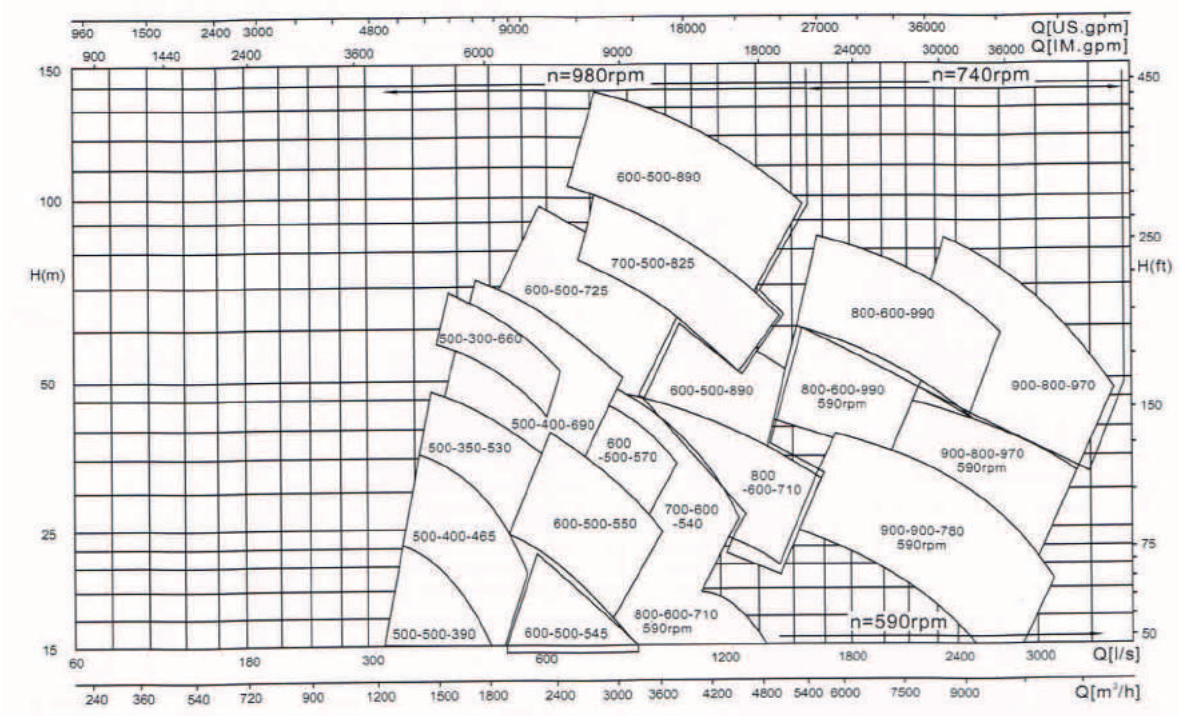


n=1450rpm 50HZ

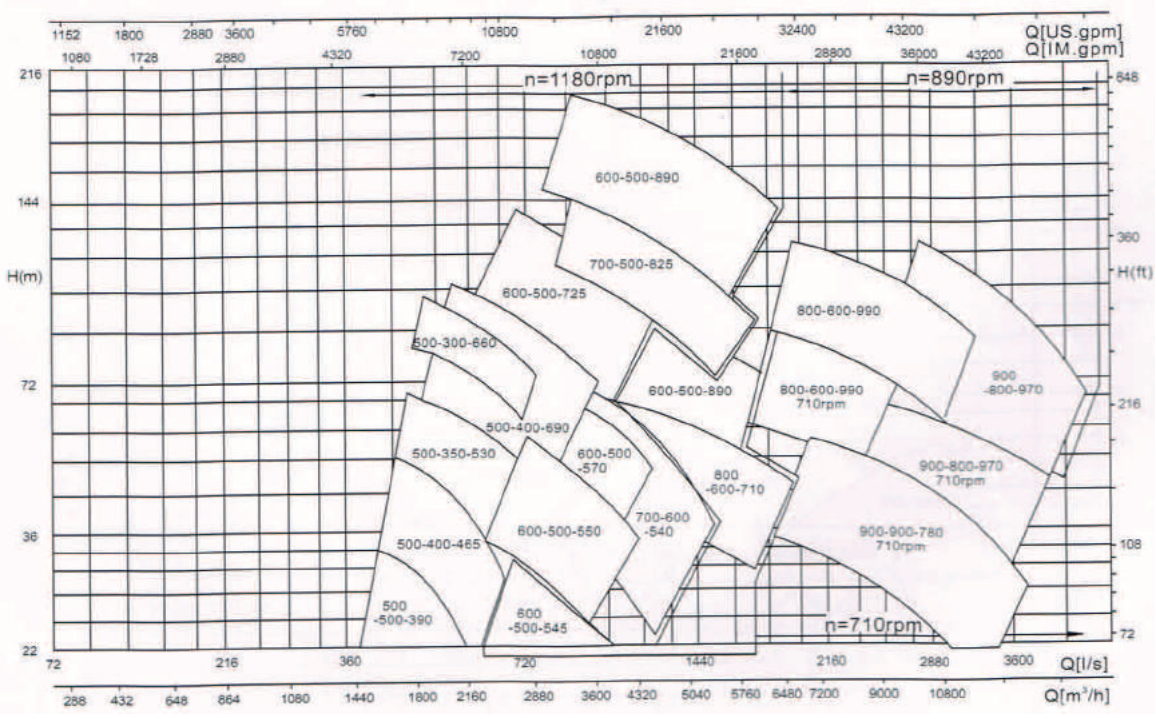


Selection Charts

n=980/740/590rpm 50HZ

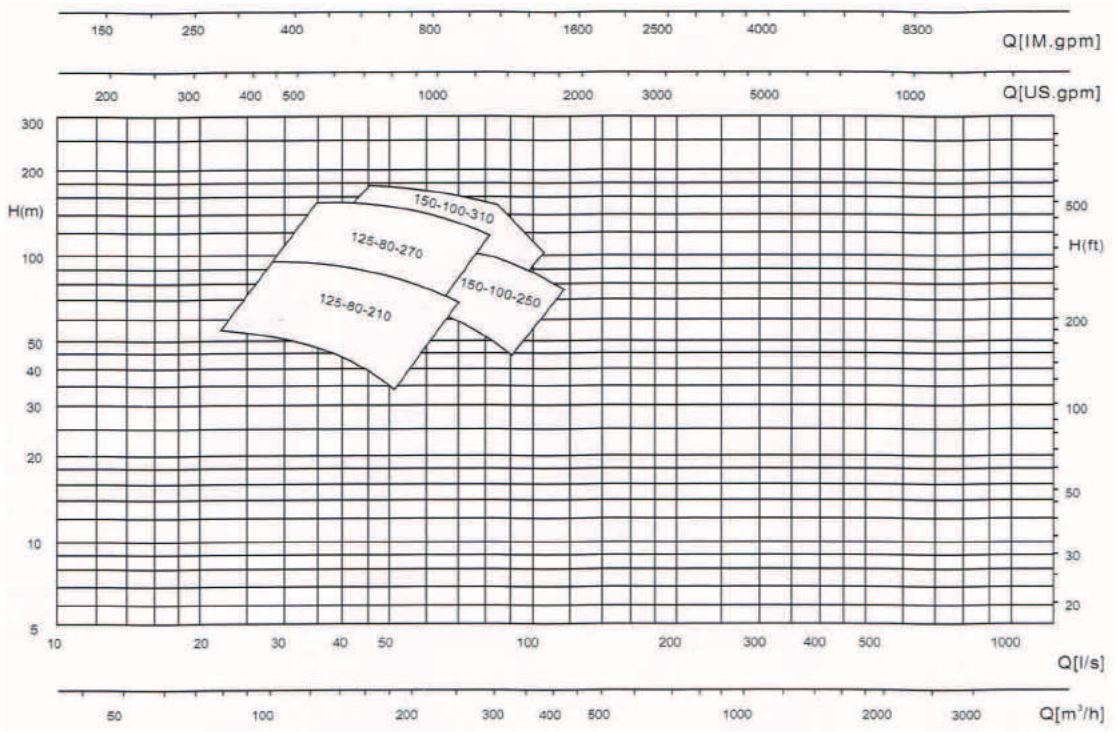


n=1180/890/710rpm 60HZ

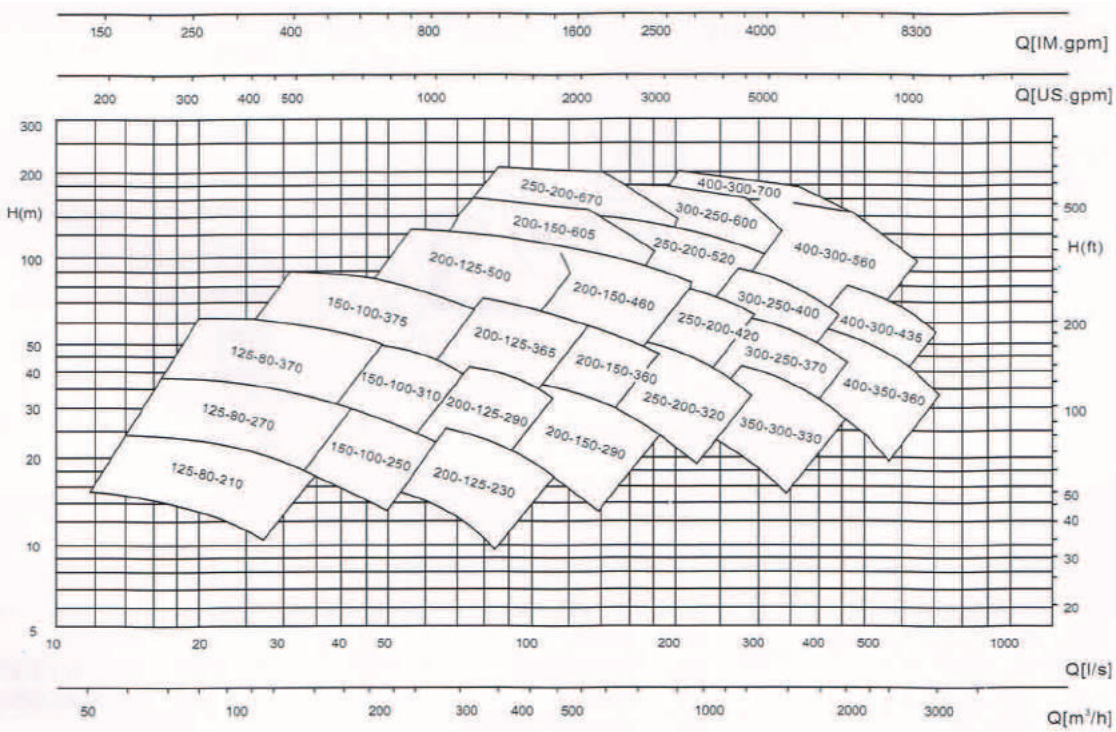


Selection Charts

n=3500rpm 60HZ



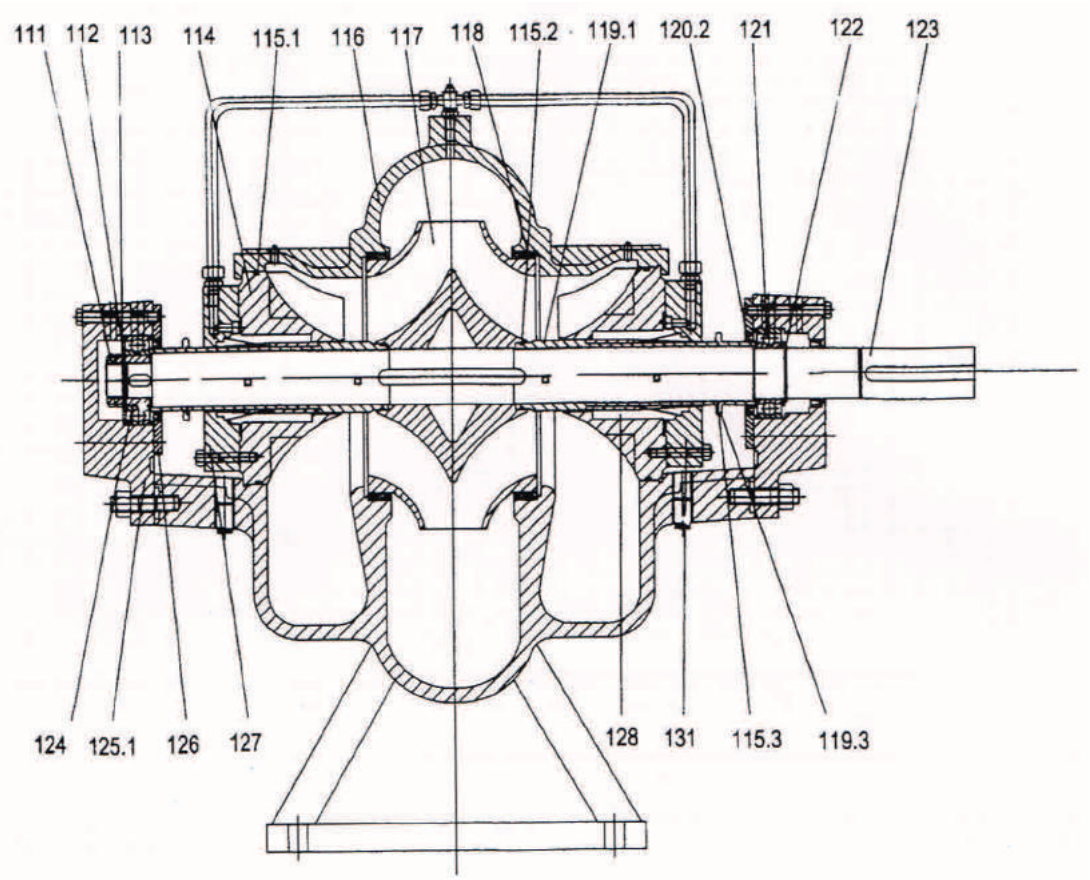
n=1750rpm 60HZ



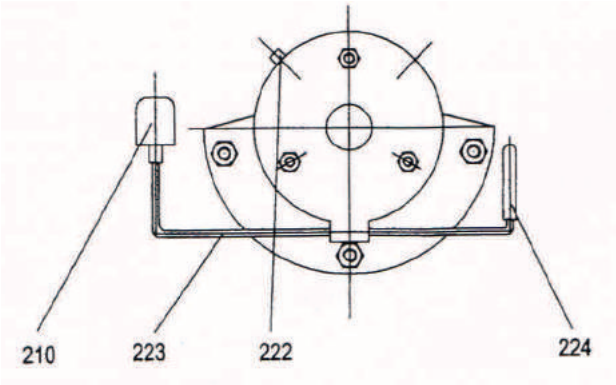
General arrangement drawing

Horizontal installation

125-80-210 up to 400-350-510



Oil supply fixed and radial bearing



Part no.	Part designation
111	Nut
112	Spring
113	Washer
114	Shaft seal housing
115	O-Ring
116	Volute casing
117	Impeller
118	Casing wear ring

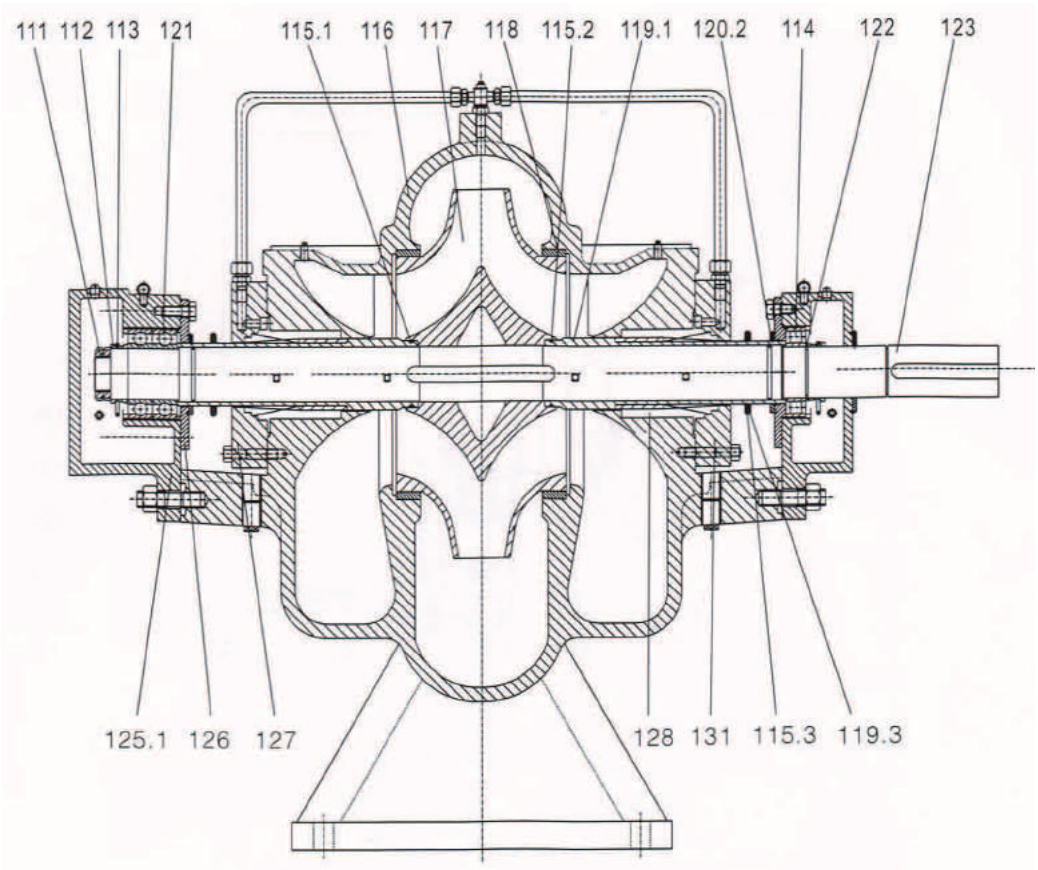
Part no.	Part designation
119	Shaft protecting sleeve
120	Radial shaft seal ring
121	Deep grove ball bearing
122	Circlip
123	Pump shaft
124	Sleeve
125	Bearing housing
126	Bearing cover

Part no.	Part designation
128	Seal
131	Cover
210	Constant level oiler
222	Vent plug
223	Special pipe part
224	Oil sight gauge

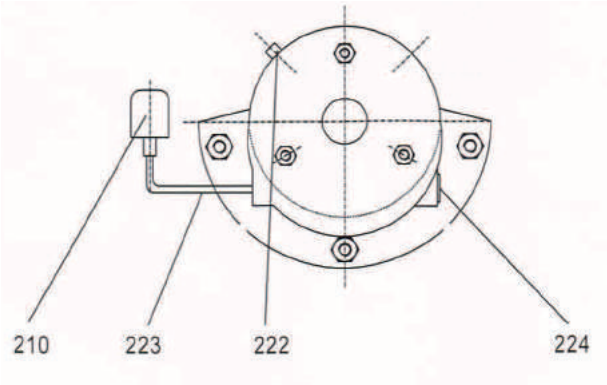
General arrangement drawing

Horizontal installation

500-300-660 to 900-900-780



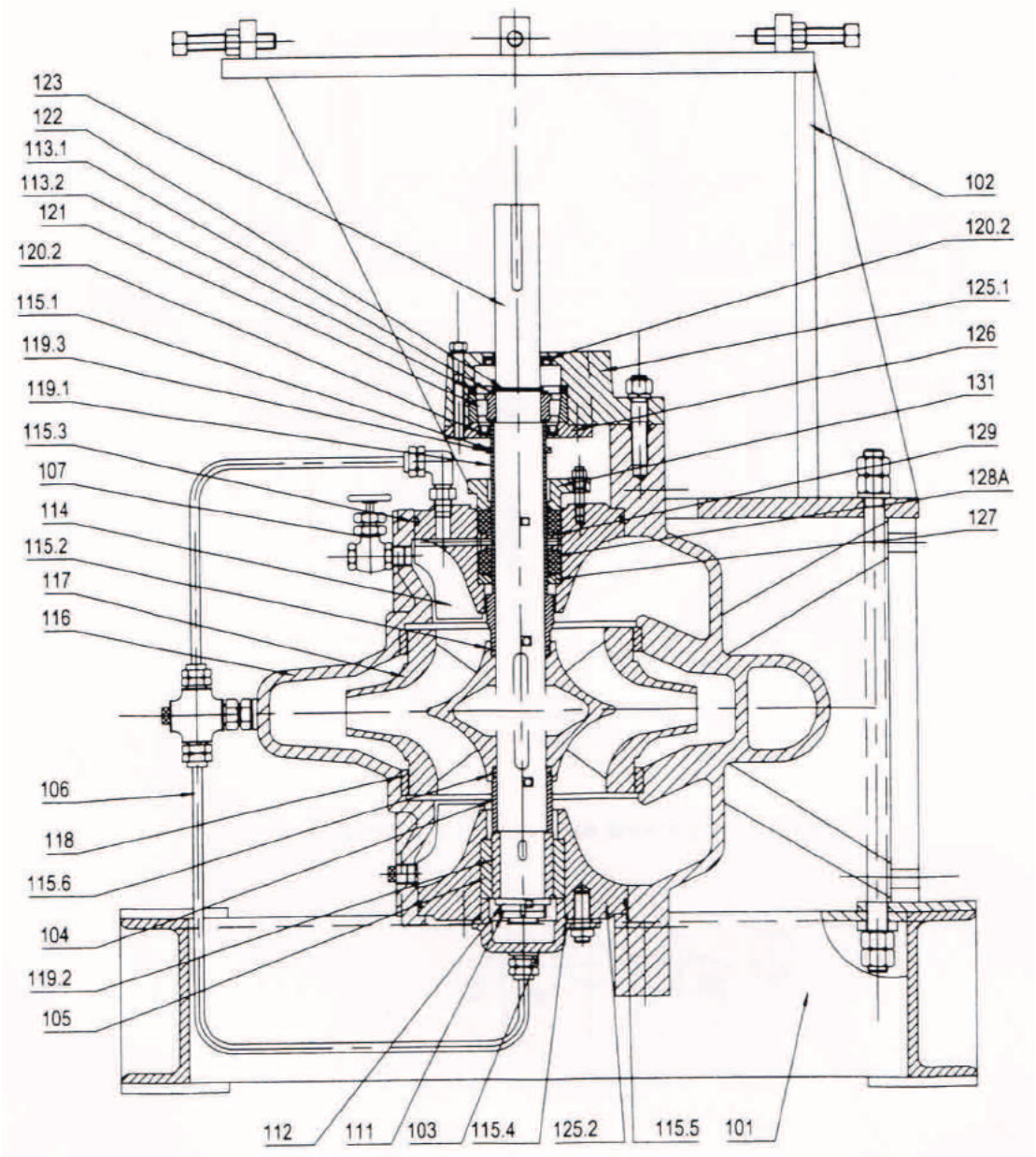
Oil supply fixed and radial bearing



Part no.	Part designation	Part no.	Part designation	Part no.	Part designation
111	Nut	119	Shaft protecting sleeve	128	Seal
112	Oil thrower sleeve	120	Labyrinth sleeve	131	Cover
113	Oil thrower ring	121	Deep grove ball bearing	210	Constant level oiler
114	Radia roller bearing	122	Circlip	222	Vent plug
115	O-Ring	123	Pump shaft	223	Special pipe part
116	Volute casing	124	Sleeve	224	Oil sight gauge
117	Impeller	125	Bearing housing		
118	Casing wear ring	126	Bearing cover		

General arrangement drawing

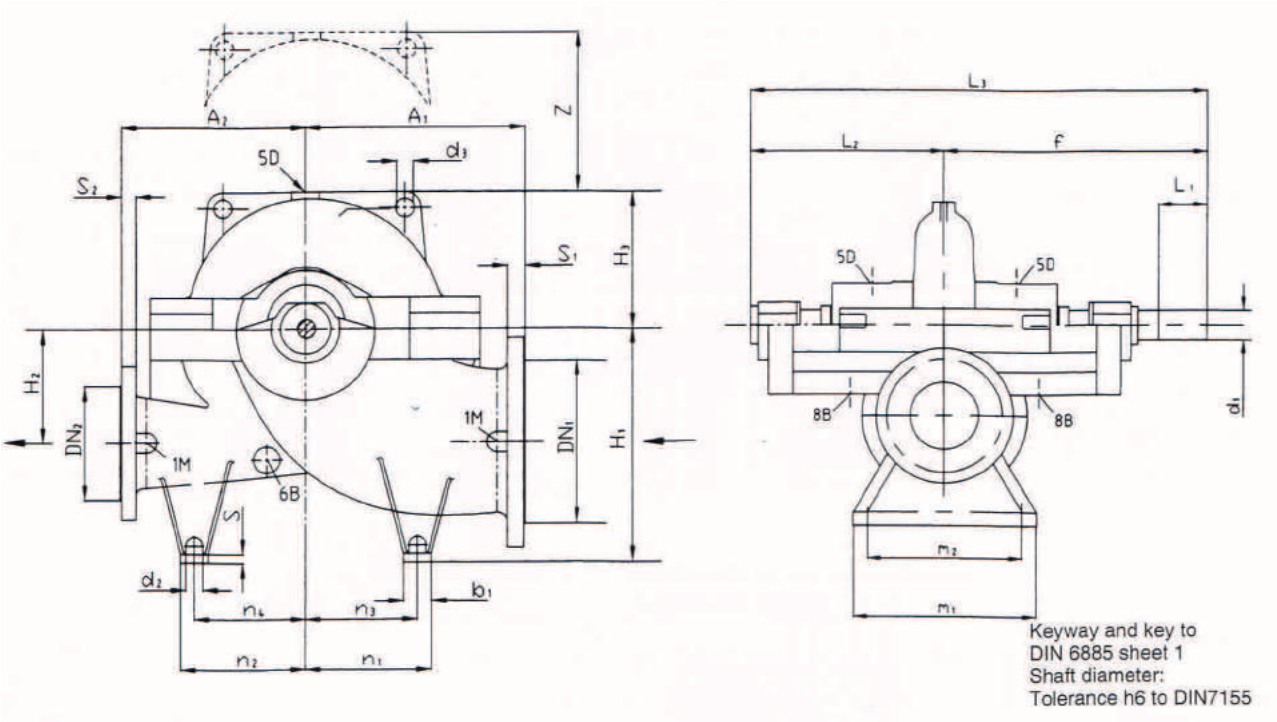
Vertical installation **125-80-210V up to 900-900-780V**



Part no.	Part designation	Part no.	Part designation	Part no.	Part designation
116	Volute casing	112	Spring	118	Casing wear ring
103	Cover	115	O-Ring	119	Shaft protecting sleeve
101	Foot	120	Radial shaft seal ring	104	Spacer sleeve
123	Pump shaft	114	Shaft seal housing	105	Bearing bush
117	Impeller	107	Valve	113	Washer
121	Bearing	128A	Gland packing	106	Flexible tube
102	Motor stool	131	Stuffing box insert	111	Nut
125	Bearing housing	127	Neck ring	122	Circlip
126	Bearing cover	129	Lantern ring		

Pump dimensions

Direction of rotation: CLOCKWISE



Flanges:

- Flat surface flanges
- Flange thickness to ANSI
- Connect pipes without stress

Permissible deviations for:

- Center line heights DIN747
- Dimensions without indication of tolerances DIN 7168, MEDIUM
- Cast iron parts DIN 1686 GTB 18

Connections:

• 1M pressure gauge	G1/2
• 5D Vent	G1/2
• 6B Drainage	G1/2
• 8B Leakage liquid drain	G3/4

Major external pump dimensions and weights

All dimensions in mm

Pump size	Flange dimensions				Pump dimensions									
	DN 1	DN 2	S1	S2	A1	A2	d3	f	H1	H2	H3	L2	L3	Z[1)]
125-80-210	125	80	34.1	28.6	300	300	20	415.5	315	140	170	300	715.5	340
125-80-270			35	28							200			380
125-80-370			34.1	28.6	330	330					225			450
150-100-250	150	100	36.5	31.8	330	330	20	415.5	355	170	225	300	715.5	390
150-100-310											225			450
150-100-375			35	28	370	370					260			520
200-125-230	200	125	41.3	34.9	370	370	20	515	400	200	230	365	880	420
200-125-290											230			460
200-125-365			40	35	395						270			520
200-125-500			41.3	34.9	450	450					310			610
200-150-290	200	150	41.3	36.5	400	400	20	515	400	200	245	365	880	490
200-150-360											275			530
200-150-460					450	450		590			300	421	1011	610
200-150-605					600	500			500	300	370			740

Pump size	Flange dimensions				Pump dimensions									
	DN 1	DN 2	S1	S2	A1	A2	d3	f	H1	H2	H3	L2	L3	Z[1]
250-200-320	250	200	47.6	41.3	450	450	20	590	500	240	285	421	1011	570
250-200-420					500	500					310			620
250-200-520					600	500	25	655	560	300	370	474	1129	740
250-200-670					650	550	20	655	600	350	435	472	1127	860
300-250-370	300	250	50.8	47.6	500	500	20	655	600	300	330	474	1129	640
300-250-480			50	48	550	550		730	600	300	355	526	1256	710
300-250-600			51	48	650			730	630	350	415	526	1256	830
300-250-700			50.8	47.6	700	600		730	680	400	465	515	1245	880
350-300-300	350	300	54	50.8	550	500	20	655	630	300	360	474	1129	720
400-300-435	400		57.5		650	550		728.5	670	350	370	526.4	1255	730
400-300-560			48	40	700	650	25	808	710	350	430	595	1403	860
400-300-700			57.5	50.8	750	650	20	808	750	400	550	595	1403	960
400-300-800	400		57.2	50.8	800	700		810	800	450	530	585	1395	1010
400-350-360	400	350	52.7	54	650	550	25	728.5	670	350	415	515	1244	820
450-350-430	450		60.3		750	650		808	750	400	465	595	1403	930
400-350-510	400		38	36	700	650		810	750	400	435	595	1405	840

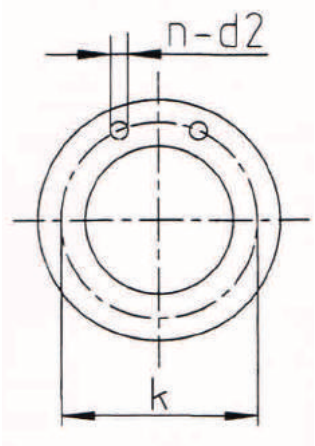
Pump size	Flange dimensions									Shaft		Weight(kg)	
	b1	d2	m1	m2	n1	n2	n3	n4	s	d1	L1	Pump	Water Content
125-80-210	80	17.5	320	270	210	210	170	170	30	35	90	185	10
125-80-270												195	15
125-80-370												205	20
150-100-250	100	17.5	320	270	250	250	200	200	30	35	90	210	20
150-100-310	80				240	240						225	25
150-100-375	90	18		272	245	245						245	30
200-125-230	80	18	390	340	265	265	225	225	30	45	100	250	35
200-125-290									22			275	40
200-125-365		23							30			300	45
200-125-500		18.5			315	315	280	280				335	55
200-150-290	80	18.5	390	340	265	265	225	225	30	45	100	350	50
200-150-360												360	60
200-150-460		23	480	430	320	320	280	280		55	110	440	75
200-150-605	100				400	400	350	350				650	90
250-200-320	100	23	480	430	330	330	280	280	30	55	110	450	80
250-200-420	90				325	325	280	280	30	55	110	520	95
250-200-520	70				400	400	350	350	26	65	140	840	115
250-200-670	100			400	400	400	350	350	26	65	140	990	140
300-250-370	100	23	480	400	400	400	350	350	35	65	140	665	125
300-250-480		22	600	520						75	140	830	145
300-250-600			600	520						75	140	1215	180
300-300-300	120	23	480	400	400	400	350	350	35	65	140	630	100
400-300-435	100	27	600	520	400	400	350	350		75	140	905	190
400-300-560		26			525	525	475	475	26	85	170	1425	225
400-600-700		28			525	525	475	475	35	85	170	1690	275
400-350-360	100	22	600	520	400	400	350	350	35	75	140	865	160
450-350-430					525	525	475	475		85	170	1285	240
400-350-510		28			525	525	475	475		85	170	1395	290

1) Z= The dimensions to be maintained around the casing cover for dismantling of the rotor

Standard Flange Design:

Pump size	GG 25 Nominal pressure acc. to :			GGG 40/GS-C25 Nominal pressure acc. to :		
	DIN 2501 ISO 7005/2	BS 4504	ANSIB16.1	DIN 2501 ISO 7005/2	BS 4504	ANSIB16.1
125-80-210	PN16	Table 16/11	Class 250	PN25	Table 25/11	Class 250
125-80-270						
125-80-370						
150-100-250	PN16	Table 16/11	Class 250	PN25	Table 25/11	Class 250
150-100-310						
150-100-375						
200-125-230	PN16	Table 16/11	Class 250	PN25	Table 25/11	Class 250
200-125-290						
200-125-365						
200-125-500						
200-150-290	PN16	Table 16/11	Class 250	PN25	Table 25/11	Class 250
200-150-360						
200-150-460						
200-150-605	PN25	Table 25/11				
250-200-320	PN16	Table 16/11	Class 250	PN25	Table 25/11	Class 250
250-200-420						
250-200-520						
250-200-670	PN25	Table 25/11				
300-250-370	PN10	Table 10/11	Class 125	PN25	Table 25/11	Class 250
300-250-480	PN16	Table 16/11	Class 250			
300-250-600	PN25	Table 25/11				
300-250-700	PN25	Table 25/11	Class 250			
300-300-300	PN10	Table 10/11	Class 125	PN25	Table 25/11	Class 250
300-300-435						
300-300-560	PN16	Table 16/11	Class 250			
300-300-700	PN25	Table 25/11				
300-300-800	PN25	Table 25/11	Class 250			
400-350-360	PN10	Table 10/11	Class 125	PN25	Table 25/11	Class 250
400-350-430						
400-350-510						

Other flange are available on request



Flange Dimension-Drilling Diagram

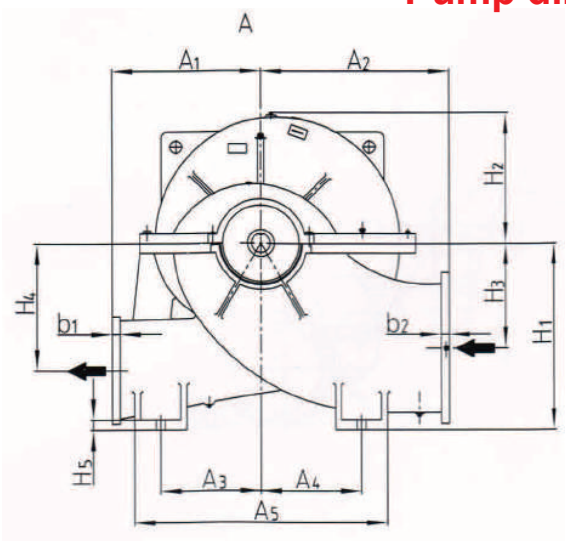
All dimensions in mm

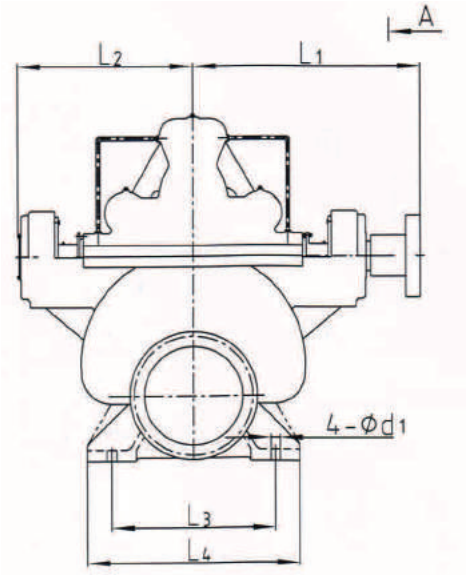
Standard		DN80			DN100			DN125			DN150			DN200		
		d2	k	n	d2	k	n	d2	k	n	d2	k	n	d2	k	n
ISO7005/2 DIN 2501	PN16	19	160	8	19	180	8	19	210	8	23	240	8	23	295	12
ISO7005/2 DIN 2501	PN25	19	160	8	23	190	8	28	220	8	28	250	8	28	310	12
BS 4504	Table 16/11	19	160	8	19	180	8	19	210	8	23	240	8	23	295	12
BS 4504	Table 25/11	19	160	8	23	190	8	28	220	8	28	250	8	28	310	12
ANSIB16.1	Class 250	23	168	8	23	200	8	23	235	8	23	270	8	28	330	12

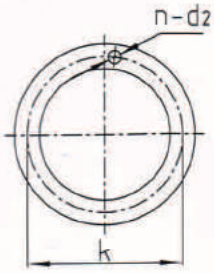
Standard		DN200			DN250			DN300			DN350			DN400			DN450		
		d2	k	n	d2	k	n	d2	k	n	d2	k	n	d2	k	n	d2	k	n
ISO7005/2 DIN 2501	PN10	23	295	8	23	350	12	23	400	12	23	460	16	28	515	16	28	565	20
ISO7005/2 DIN 2501	PN16	23	295	12	28	355	12	28	410	12	28	470	16	31	525	16	31	585	20
ISO7005/2 DIN 2501	PN25	28	310	12	31	370	12	31	430	16	34	490	16	370	550	16			
BS 4504	Table 10/11	23	295	8	23	350	12	23	400	12	23	460	16	28	515	16	28	565	20
BS 4504	Table 16/11	23	295	12	28	355	12	28	410	12	28	470	16	31	525	16	31	585	20
BS 4504	Table 25/11	28	310	12	31	370	12	31	430	16	34	490	16	37	550	16			
ANSIB16.1	Class 125	23	299	8	28	362	12	28	432	12	28	476	12	28	540	16	31	578	16
ANSIB16.1	Class 250	28	330	12	28	387	16	31	451	16	31	514	20	34	572	20	34	629	24

The drawing of pump with motor available on request

Pump dimensions





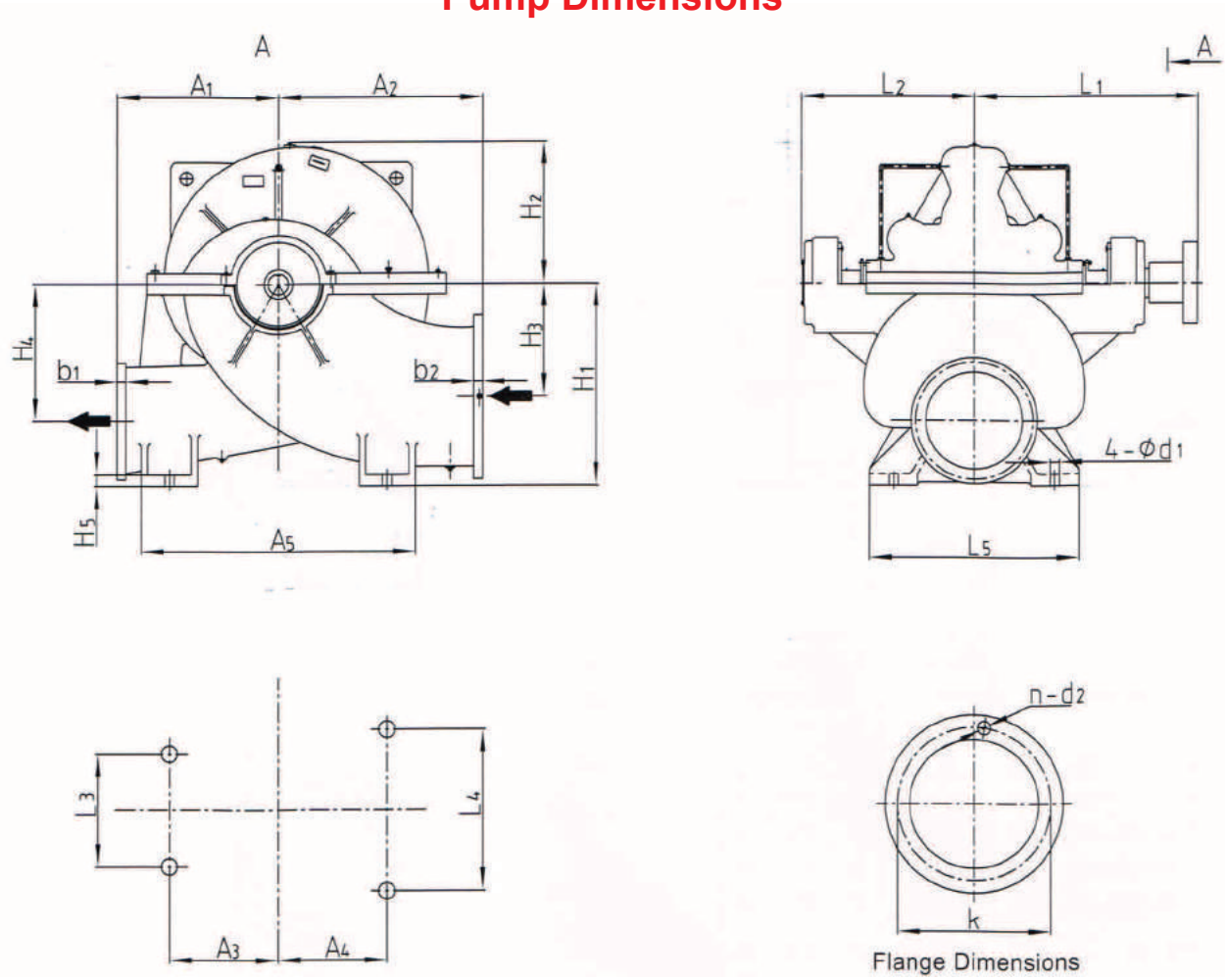


Flange Dimensions

Pump Size	Flange Dimensions		
	Suction		Discharge
	d2	k	n	d2	k	n
500-300-660	26	620	20	26	410	12
500-350-530	25	625	20	23	460	16
500-400-465	26	620	20	26	515	16
500-400-690	22	600	20	26	515	16
500-500-390	26	620	20	26	620	20
600-500-545	30	725	20	25	620	20
600-500-550						
600-500-570						
600-500-725	41	770	20	36	650	20
700-500-825	30	840	24	33	650	20
800-600-710	33	950	24	30	725	20
800-600-990	33	950	24	30	725	20
900-900-780	36	1160	28	39	1050	28

Pump Size	Flange		Pump Dimensions															
	DN1	DN2	A1	A2	A3	A4	A5	B1	B2	H1	H2	H3	H4	H5	L1	L2	L3	L14	4-Φd1
500-300-660	500	300	750	800	400	400	1100	32	34	900	704	425	500	60	1022	878	780	910	4-Φ42
500-350-530	500	350	630	720	400	400	1020	36	40	800	480	415	415	70	779	631	580	760	4-Φ34
500-400-465	500	400	650	730	320	320	920	32	34	800	600	430	455	50	890	740	600	740	4-Φ41
500-400-690	500	400	800	965	345	345	870	40	34	925	565	579	540	70	988.5	795.5	770	870	4-Φ40
500-400-390	500	500	650	730	320	400	920	34	34	800	631	400	400	50	790	670	600	740	4-Φ42
600-500-545	600	500	740	1020	360	360	960	34	36	900	604	550	525	45	983.5	809	780	940	4-Φ35
600-500-550																			
600-500-570																			
600-500-725	600	500	1300	1000	500	500	1300	36	44	950	630	532	692	50	1145	959	900	1100	4-Φ42
700-500-825	700	500	1160	1100	600	600	1500	65	60	1050	762	595	758	50	1265.5	1013.5	1000	1200	4-Φ46
800-600-710	800	600	750	1400	450	450	1200	36	44	1150	745	690	660	60	1092	912	1000	1200	4-Φ42
800-600-990	800	600	1000	1265	675	675	1700	54	54	1250	868	700	850	70	1388	1073	1000	1300	4-Φ58
900-900-780	900	900	1425	1425	620	620	1680	62	62	1455	970	755	755	80	1365	1040	1260	1500	4-Φ65

Pump Dimensions

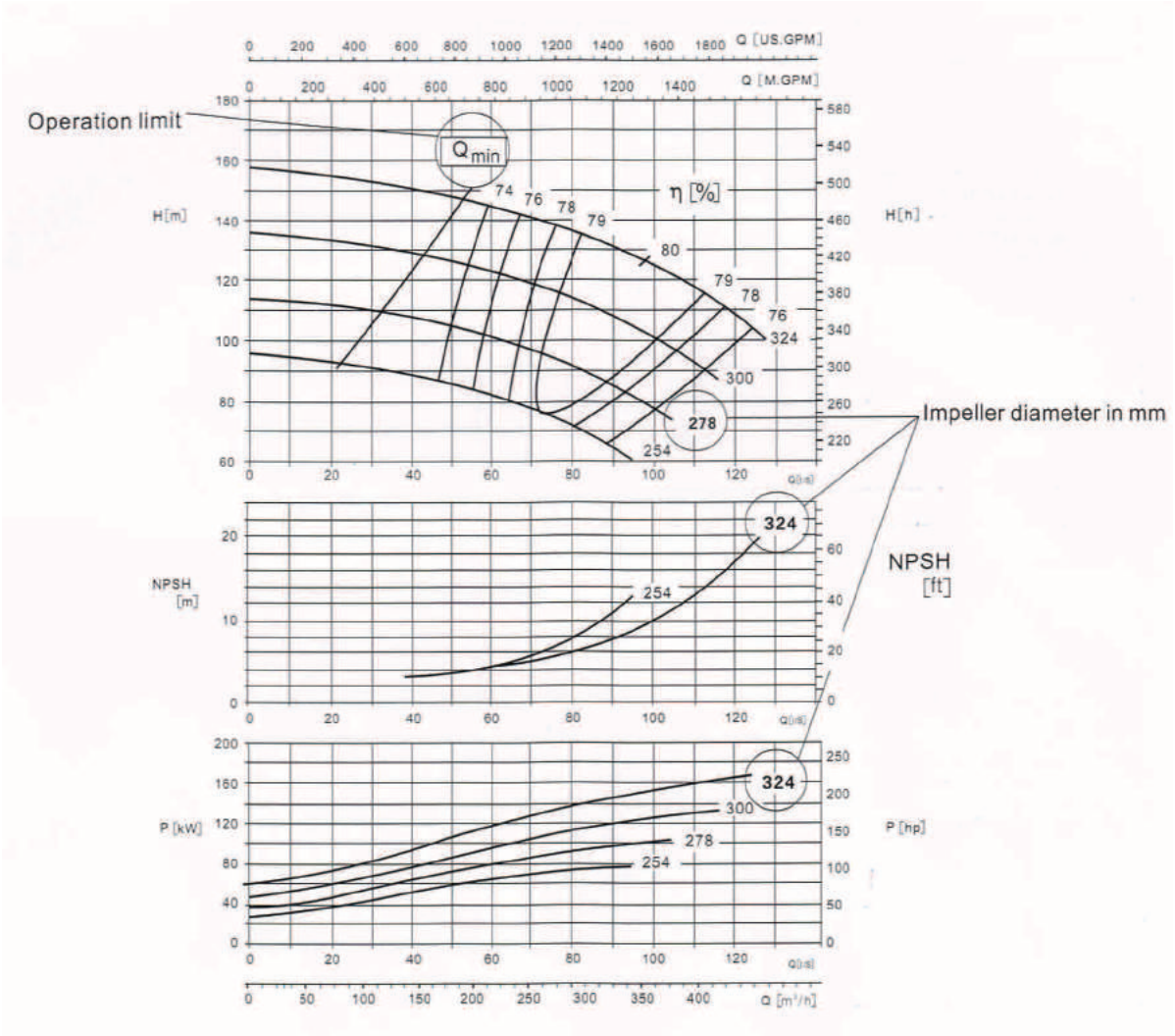


Flange Dimensions

Pump Size	Pump Flange Dimensions											
	Casing Material											
	HT 250 GG-25 A48 Class 35						QT400-18 GGG-40 A536 Class 604018					
	Suction			Discharge			Suction			Discharge		
	d2	k	n	d2	k	n	d2	k	n	d2	k	n
600-500-890	41	770	20	41	660	20	41	770	20	41	660	20
700-600-540	30	840	24	30	725	20	41	840	24	41	770	20
900-800-970	33	1050	28	33	900	24	39	1050	28	39	950	24

Pump Size	Flange		Pump Dimensions																
	DN1	DN2	A1	A2	A3	A4	A5	b1	b2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	4-Φd1
600-500-890	600	500	950	1050	600	700	1520	54	54	1100	793	650	650	40	1260	1042	870	1120	1240	4-Φ46
700-600-540	700	600	900	1100	550	650	1500	54	54	1100	750	610	610	40	885	692	800	1100	1250	4-Φ33
900-800-970	900	800	1300	1400	800	800	2000	54	54	1370	948	760	760	50	1350	1154	890	1190	1340	4-Φ46

Performance Curves



Explanations

The $NPSH_A$ values given in the performance curve sheets are minimum values which correspond to the inception of cavitation, they apply to degassed water.
The $NPSH_A$ values provided by the plant must range above the curve by a certain distance, see fig .A.
In case of large pumps or high speeds the $NPSH_A$ values under part load conditions must be at least as high as that at the optimum point, see fig .B.
The relevant distance value S, which depends on the pump size, the speed and the impeller material, is indicated in form of a table for each characteristic curve.
Operating data guaranteed to ISO2548 C/DIN 1944III.
The total heads and the performance characteristics refer to mediums compressed with p=1.0kg/dm³ and a kinematic viscosity v up to 20mm²/s. If the density is not 1.0kg/dm³, the performance characteristics are to be multiplied by p .

Range of Operations

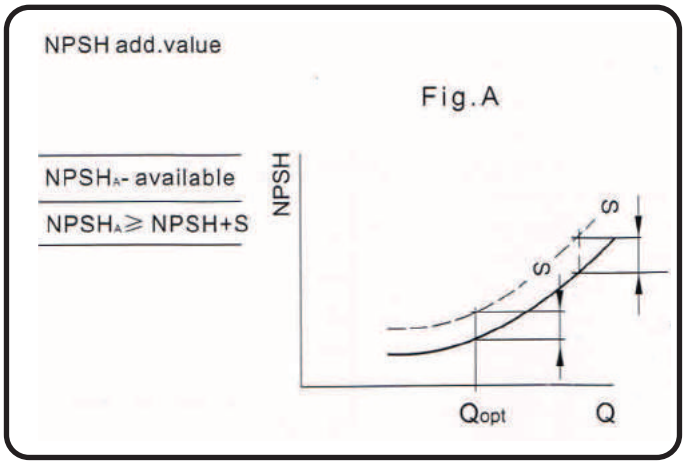
The range of operations is defined by requirements of the pumping system as well as by hydraulic and mechanical limitations of the pumps.

Minimum flow

In normal service the pumps should not be operated to the left of the line indicating Qmin. Lower flows, up to 0.05x Q ptimum, are permissible for short periods of up to 5 minutes. Any longer operation will cause overheating within the pump. However, at these lower flows the influence of the system as well as the pump configuration may cause the pump configuration may cause the pump head to vary. Such head variations are significant if the pump is to operate in a system where the static head is a major portion of the total head or parallel or variable speed operation is to be considered.

Maximum flow

The limit of operation is given by the NPSH characteristics with the indicated margins S, Relative to $NPSH_A$. This is further explained in figures A,B and C.
In some cases there are also an operational limit due to mechanical considerations. In such cases the limit of operation is indicated by the Qmax line.



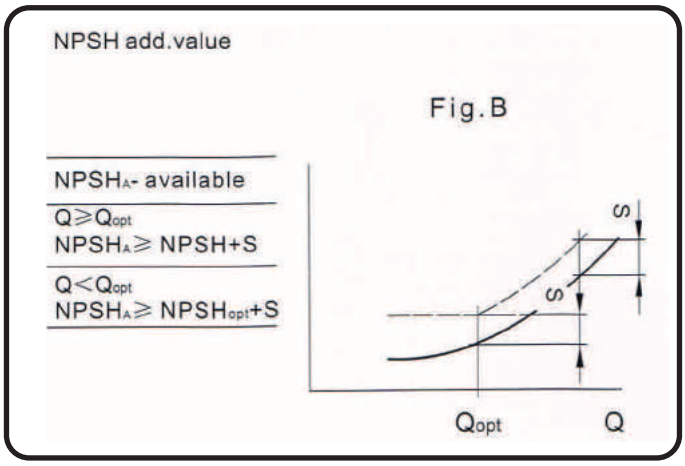
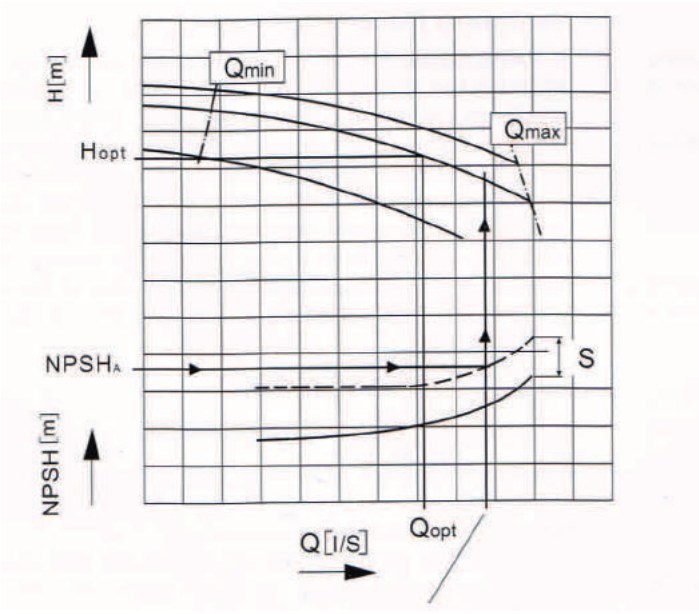


Fig.C



Limit of operation at $NPSH_A$

All the pump's curve are available on request

Scope of supply

Pump with bare shaft end, horizontal or vertical design, with primer coating, soft packed stuffing box or mechanical seal.

Extra charge for:
*Oil lubricated antifriction bearing *Potable water quality coating/top coat *Horiaontal base frame for pump and motor
*Motor stool for vertical arrangements *Motor mounting *Material tests

Available accessories:
*Coupling and coupling guard *Set pressure gauges *Venting valve *Temperature sensor for antifriction bearing (PT 100)
*Set seal pipe

Guarantee, testing and quality control

Every pump undergoes a functional test and the operating data is guaranteed without acceptance test.
Acceptance tests and be performed in accordance with ISO 2548 C, DIN 1944/III, or other comparable international testing standards.
The quality of the THSC series products is ensured by a tested and certified quality assurance system according to DIN ISO 9001/EN 29001

Order data

Pump:
- description of the pump according to “Model code”
- capacity Q
- total head H (H_{geo} and plant losses)
- material combination
- flange design
- shaft seal as soft packed stuffing box or mechanical seal
- grease or oil lubricated bearings
- liquid handled and liquid temperature
- direction of rotation/arrangement of the motor
- accessories required

Motor:
- type of construction
- protection
- voltage, frequency, method of starting
- ambient temperature
- insulation class
- accessories required

Motor:
Motor provide by the client
Binding motor dimension table and data sheet with specification of the effective speed to be given with the order

The drawing of pump with motor are available on request