

Serie
Series

V-W

BOMBAS DE HUSILLOS

TWIN SCREW PUMPS



pumps

pumpen

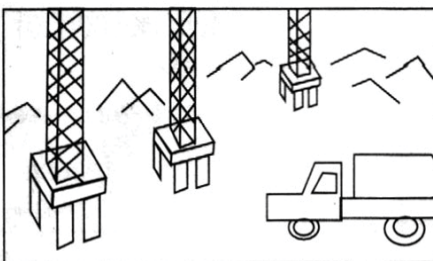
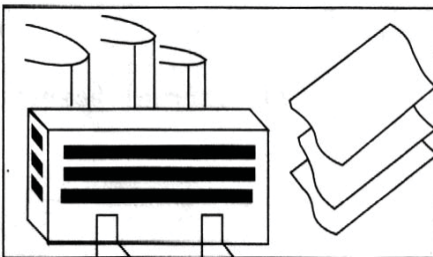
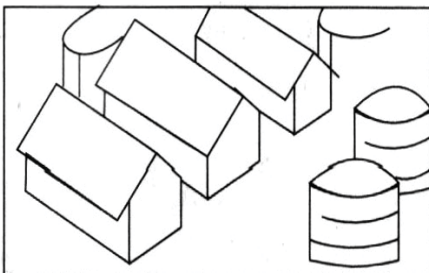
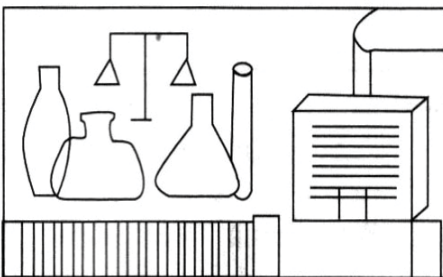
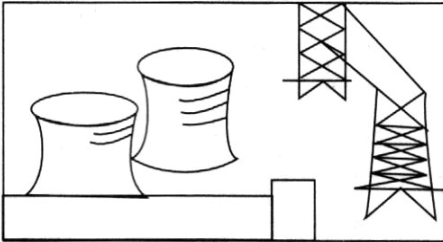
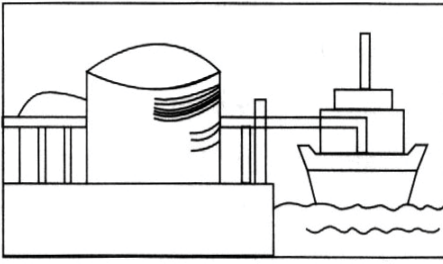
azcue

bombas

pompes



V-W-0215



The leading features of twin screw pump:

*Delivery various medium smoothly without any disturbing and pulsation. Three are medium to be pumped throughout in the working elements as sealing liquid which guaranteed by the construction of pump casing. All of the pump possess high self priming ability and can deliver the liquid mixed with gas or air.

*The high suction performance, i.g very low NPSHr was guaranteed by the special design of pump.

*Adopted the external bearing which lubricated individually, so can deliver various non-lubrication medium.

*Adopted synchronous gear, there is no metallic contact between rotating parts, there is no dangerous even dry running in a short time.

*Various construction completely such as horizontal, vertical and casing with liner, and son on. The pump can handle various clean liquid without solid grain, low or high viscosity medium, even can deliver some corrosive medium with a correct material selection.

Performance range:

*Handling various medium without solid.

*Viscosity:

*1-1500mm^{2/s}, the viscosity can reach up to $3 \times 10^6 \text{mm}^2/\text{s}$

When reduced the speed.

*Pressure range: 4.0MPa

*Capacity range: 1-2000m³/h

*Temperature range: -15°C - 280°C

Application

*Ship building: Used for marine as cargo and stripping pump, ballast pump, lubricating oil pump for main machine, fuel oil transfer and spray pump, load or unload oil pump.

*Power plant: Heavy and crude oil transfer pump, Heavy oil burning pump.

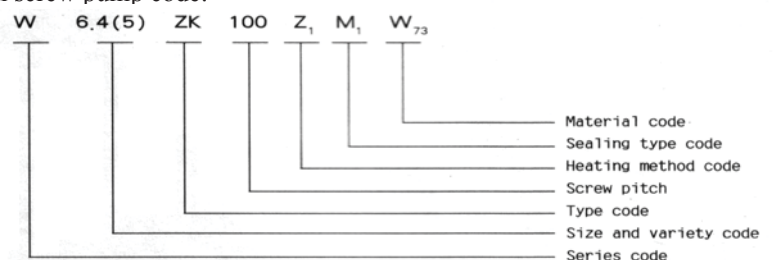
*Chemical industry: Transfer for various acid, alkali solution, resin, color, printing ink, paint glycerine and paraffin wax.

*Oil refinery: Transfer for various heating oil, asphalt oil, tar, emulsion, asphalt, and also loading and unloading various oil goods for oil Tanker and oil-pool.

*Food industry: Used for brewery, food products factory, sugar-refinery, tin factory to transfer for alcohol, honey, sugar juice, toothpaste, milk, cream, soy sauce, vegetable oil, animal oil and wine.

*Oil field: Transfer for various oil goods and crude oil and etc.

Twin screw pump code:



I . Series code specification:

W - horizontal pump

V - vertical pump

II Size and variety code specification:

The pumps are divided into two construction horizontal and vertical, there are 2, 3, 4, 5, 6, 7, 7T, 8, 9, 10 sizes and altogether 10. The combination of sizes and variety

Type/Size		2	3	4	5	6	7	7	8	9	10
W-horizontal	cast	2.1	3.1	4.1	5.1	6.4	7.2	7T.2	8.4	9.2	
	weld		3.2	4.2	5.2	6.5	7.3	7T.3	8.5	9.3	10.1
V-vertical	cast			4.1	5.1	6.4	7.2	7T.2	8.4		
	weld			4.2	5.2	6.5	7.3	7T.3	8.5	9.3	

III. Type code specification:

Twin screw pump has 3 main constructions: Z, ZK and Zi.

Z-long shaft design: Packing seal, double end seal or metal seal is required in design, when the medium temperature exceed 150-200°C

ZK-short shaft:

Design: adopt mechanical seal, medium temperature < 120°C.

Zi-Internal bearing

Design : Adopt mechanical seal, medium temperature < 80°C, only used for delivery lubricant medium.

IV. Heating method of pump casing specification:

The different pump casing heating methods of twin screw pump depend on whether the pump casing is casted or welded.

Adopt heating to the middle section of the pump casing for all pump casing which is welded. Adopt different heating method with different size, all casted pump casing is showed as following table:

Code	Heating method of pump casting	Pump type
Z0	The middle section of the pump casting for all pump	W3.2Z W3.2ZK W4.2Z W4.2ZK W5.2Z W5.2ZK W6.5Z W6.5ZK W7.3Z W7.3ZK W7T.3Z W7T.3ZK W8.5Z W8.5ZK W8.3ZK W10.1Z
Z1	Low half part of pump casting with heating jacket	W4.1Z W5.1Z W7T.2Z W4.1ZK W5.1ZK W7T.2ZK W7.2Zi
Z2	Low half part of casting with diffuse heating jacket	W2.1 W3.1Z W7.2Z W2.1K W3.1ZK W7.2ZK W7.2Zi
Z3	Insert snakelike heating tube into pump casting	W6.4Z W8.4Z W9.2Z W6.4ZK W8.4ZK W9.2ZK W6.4Zi W8.4Zi W9.2Zi

Note: The code is omitted when the pump casing without heating jacket.
The type vertical pump without heating me

V. Specification of seal code:

The different type of seal is depended on the different pump design.

Design	Seal type	Seal code	Remarks
Z	Packing seal	M0	Temperature < 200°C
	Single end mechanical	M1	Temperature < 180°C
	Double end mechanical	M2	Temperature < 200°C
	Metal seal	Mb	Temperature < 320°C
ZK	Single end mechanical	M1	Temperature < 120°C
Zi	Single end mechanical	M3	Temperature < 80°C

VI. Material code:

There are 12 combination codes of twin screw pump and indicate the material of pump casing, shaft and screws. The material of shaft for Zi type pump is 42CrMo. The table 1 is combination code of casted pump.

Table 1:

Material code	Material of pump casting	Material of shaft	Material of screws
W72	Alloy_Steel	SUS630	SUS630
W73	EN-GJL-250	SUS630	Alloy steel
W74	EN-GJL-250	SUS630	Bronze
W75	EN-GJS-400-15	SUS630	Alloy steel
W76	Bronze	SUS630	SUS630
W77	Aisi 316	SUS630	SUS630
W78	EN-GJL-250	SUS630	EN-GJL-250
W79	EN-GJL-250	SUS630	SUS630

Note: This table are suitable for type Z, ZK.

VII. Feature of welded twin screw pump

Welded twin screw pump has feature as follows:

1. Well heated and the pumping temperature: -50°C - 320°C .
2. Of the same pump the materials of different sections can be not the same. So it can pump mix-rotation and corrosive medium, lower the cost greatly.
3. Especially suitable for high-temperature system and some special condition, for example high viscosity, high temperature mediums, such as oil, residue oil, etc. The highest viscosity can reach $10^6\text{mm}^2/\text{s}$.

Notes of selecting pump:

1. First, should make sure the temperature of operating condition, if the temperature is less than 120°C
2. If the pumped medium with good lubrication, such as lub, oil and food oil, select the design Zi
3. Depend on the viscosity of medium under working temperature to choose the rotating speed n : in case $v \leq 1000\text{mm}^2/\text{s}$, it is right to choose $n=1450\text{r/min}$. when $v=1000\text{-}1500\text{mm}^2/\text{s}$, please contact with the manufacturer and the specialist to give you a satisfactory service.
4. Preliminary choose the pump size corresponding with the capacity and pressure which you desired from the performance table of series w.v twin screw pump.
5. Calculate the fluid flowing velocity V_F in axial according to the pitch h from pump performance table (for example the size 2.1-24, the number 24 means pitch h in mm), $V_F = n \times h / 60 (\text{m/s})$. Then calculate the NPSHr value as following: $\text{NPSHr} = (1.5 + 0.253V_F^{1.84345} + 0.0572V \times V)$ where: v : viscosity ($^{\circ}\text{E}$) of medium under working temperature. Take v as value 5°E when $v \leq 40\text{mm}^2/\text{s}$, $1\text{mm}^2/\text{s} = 1/7.6^{\circ}\text{E}$.
6. If NPSHr of pump is less than NPSH_A of suction pipe, the selected pump is correct. If NPSHr is bigger than NPSH_A should choose the pump size bigger with pitch less. Then verificate the NPSHr value again.
7. After selecting the pump size, find out the different pressure P , capacity Q and power N Corresponding to the viscosity v of the pump from the table, then choose the maching motor with sufficient power N_m . $N_m \geq K.N$. The value K is showed in table:

K(KW)	≤ 10	$10 < N \leq 50$	> 50	> 100
K	1.5	1.25	1.15	1.1

8. The working drawing of foundation will be designed after selecting the pump by customer.

Speed n=1450r/min																			
Pump Dim.	Dis. Pre. Mpa	Viscosity																	
		1		10		20		40		75		150		300		750		1500	
		Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW
2.1-11	0.2	2.6	0.9	2.7		2.7	1.2	2.8	1.4	2.9	1.7	3	2.1	3	2.6	3.1	3.4	3.1	3.9
	0.4	2.1	1.1	2.3	1.2	2.4	1.4	2.6	1.6	2.7	1.9	2.8	2.3	2.9	2.7	3	3.6	3	4.1
	0.6	1.7	1.2	2	1.4	2.2	1.5	2.3	1.7	2.5	2	2.7	2.4	2.8	2.9	2.9	3.8	2.9	4.2
	0.8	1.4	1.4	1.7	1.6	1.9	1.7	2.1	1.9	2.4	2.2	2.5	2.6	2.7	3.1	2.8	4	2.9	4.4
	1	1.1	1.6	1.4	1.7	1.7	1.9	1.9	2.1	2.2	2.4	2.4	2.8	2.6	3.3	2.7	4.1	2.8	4.6
	1.2	0.7	1.8	1.2	1.9	1.5	2.1	1.8	2.3	2.1	2.6	2.3	3	2.5	3.5	2.7	4.3	2.8	4.8
	1.4	0.4	1.9	0.9	2.1	1.3	2.2	1.6	2.4	1.9	2.8	2.2	3.1	2.4	3.6	2.6	4.5	2.7	5
	1.6	0.1	2.1	0.7	2.3	1.1	2.4	1.4	2.6	1.8	2.9	2.1	3.3	2.3	3.8	2.5	4.7	20.7	5.1
	1.8							1.2	2.8	1.7	3.1	2	3.5	2.2	4	2.5	4.8	2.6	5.3
	2									1.5	3.3	1.9	3.7	2.1	4.2	2.4	5	2.6	5.5
	2.2											1.8	3.9	2.1	4.3	2.4	5.2	2.5	5.7
3.1/3.2-30	2.5													2	4.6	2.3	5.5	2.5	5.9
	0.2	10.2	1.8	10.5	2.1	10.7	2.3	10.9	2.7	11.1	3.2	11.2	3.9	11.3	4.7	11.5	6.1	11.5	6.9
	0.4	9.1	2.5	9.6	2.8	9.9	3	1.2	3.3	10.5	3.9	10.8	4.5	11	5.3	11.2	6.8	11.3	7.6
	0.6	8.1	3.1	8.8	3.4	9.2	3.6	9.7	4	10.1	4.5	10.5	5.2	10.7	6	11	7.4	11.2	8.2
	0.8	7.3	3.8	8.1	4.1	8.6	4.3	9.1	4.6	9.7	5.2	10.1	5.8	10.5	6.7	10.8	8.1	11	8.9
	1	6.4	4.5	7.4	4.7	8	5	8.7	5	9.3	5.8	9.8	6.5	10.2	7.3	10.6	8.8	10.9	9.5
	1.2			6.8	5.4	7.5	5.6	8.2	5.3	8.9	6.5	9.5	7.1	10	8	10.5	9.4	10.7	10.2
	1.4					6.9	6.3	7.8	6.6	8.6	7.1	9.3	7.8	9.8	8.6	10.3	10.1	10.6	10.8
	1.6							7.3	7.3	8.3	7.8	9	8.4	9.6	9.3	10.2	10.7	10.5	11.5
	1.8									7.9	8.4	8.7	9.1	9.4	9.9	10	11.4	10.4	12.2
	2											8.5	9.8	9.2	10.6	9.9	12	10.3	12.8
	2.2											8.2	10.4	9	11.2	9.7	12.7	10.1	13.5
	2.5													8.7	12.2	9.5	13.7	10	14.4



Speed n=1450r/min																				
Pump Dimension	Dis. Pre. Mpa	Viscosity																		
		1		10		20		40		75		150		300		750		1500		
		Cap. m³/h	P/ KW	Cap. m³/h	P/KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	Cap. m³/h	P/KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	
4.1/4.2-48	0.2	28.5	3.6	29.1	4	29.5	4.4	29.9	4.9	30.3	5.7	30.6	6.7	30.8	8	31.1	10.3	31.2	11.5	
	0.4	26.2	5.4	27.2	5.8	27.9	6.1	28.5	6.7	29.2	7.5	29.7	8.5	30.2	9.8	30.6	12	30.8	13.2	
	0.6	24.2	7.1	25.6	7.5	26.5	7.9	27.4	8.4	28.3	9.2	29	10.3	29.6	11.6	30.2	13.8	30.5	15	
	0.8	22.4	8.9	24.1	9.3	25.2	9.7	26.3	10.2	27.4	11	28.3	12	29	13.3	29.8	15.6	30.2	16.8	
	1	20.7	10.7	22.7	11.1	24	11.4	25.3	12	26.6	12.8	27.7	13.8	28.5	15.1	29.4	17.3	29.9	18.5	
	1.2			21.4	12.8	22.8	13.2	24.3	13.7	25.9	14.5	27.1	15.6	28.1	16.9	29	17.1	29.6	20.3	
	1.4					21.7	15	23.4	15.5	25.1	16.3	26.5	17.3	27.6	18.6	28.7	20.9	29.3	22.1	
	1.6									24.4	18.1	26.0	19.1	27.2	20.4	28.4	22.6	29.1	23.8	
	1.8											25.4	20.9	26.7	22.2	28.1	24.4	28.8	25.6	
	2											24.9	22.6	26.3	23.9	27.8	26.2	28.6	27.4	
	2.2											24.4	24.4	25.9	25.7	27.5	27.9	28.4	29.1	
	2.5													25.3	28.3	27	30.6	28	31.8	
6.4/6.5-62	0.2	86.8	9.3	87.9	10.2	88.6	11	89.3	12.2	90.1	14	90.7	16.3	91.2	19.2	91.7	24.2	91.9	26.9	
	0.4	82.5	14.4	84.4	15.3	85.6	16.2	86.9	17.3	88.1	19.2	89.1	21.5	89.9	24.4	90.7	29.4	91.2	32.1	
	0.6	78.8	19.6	81.4	20.7	83	21.3	84.7	22.5	86.4	24.3	87.6	26.6	88.8	29.5	89.9	34.5	90.6	37.2	
	0.8	75.3	24.8	78.6	25.7	80.6	26.5	82.7	27.7	84.8	29.5	86.5	31.8	87.8	34.7	89.2	39.7	90	42.4	
	1			75.9	30.8	78.3	31.7	80.8	32.8	83.3	34.7	85.3	37	86.9	39.9	88.5	44.9	89.4	47.6	
	1.2			73.4	36	76.2	36.8	79	38	81.9	39.8	84.2	42.1	86	45	87.8	50	88.9	52.7	
	1.4					74.1	42	77.3	43.2	80.5	45	83.1	47.3	85.1	50.2	87.2	55.2	88.4	57.9	
	1.6							75.6	48.3	79.2	50.2	82.1	52.5	84.3	55.4	86.6	60.4	87.9	63.1	
	1.8									77.9	55.3	81	57.6	83.5	60.5	86	65.5	87.5	68.2	
	2											80.1	62.8	82.7	65.7	85.4	70.7	87	73.4	
	2.2											79.1	68	82	70.9	84.9	75.9	86.6	78.6	
	2.5													80.9	78.6	84.1	83.6	85.9	86.3	



Speed n=1450r/min																				
Pump Dimension	Dis. Pre. Mpa	Viscosity																		
		1		10		20		40		75		150		300		750		1500		
		Cap. m³/h	P/KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	
6.4/6.5-50	0.2	65.3	7.5	66.1	8.3	66.6	9	67.1	10	67.6	11.6	68	13.6	68.3	16.2	68.6	20.6	68.8	22.9	
	0.4	62.5	11.3	63.8	12.1	64.6	12.8	65.4	13.9	66.3	15.5	66.9	17.5	67.5	20	68	24.4	68.3	26.8	
	0.6	60	15.2	61.7	16	64.8	16.7	64	17.7	65.1	19.3	66	21.4	66.7	23.9	67.5	28.3	67.9	30.	
	0.8	57.7	19	59.5	19.8	61.2	20.6	62.6	21.6	64	23.2	65.2	25.2	66.1	27.8	67	32.2	67.5	34.5	
	1	55.6	22.9	58.1	23.7	59.7	24.4	61.4	25.5	63	27.1	64.4	29.1	65.4	31.6	66.5	36	67.1	38.4	
	1.2			56.5	27.6	58.3	28.3	60.2	29.3	62.1	30.9	63.6	32.9	64.8	35.5	66.1	39.9	66.8	42.2	
	1.4			54.9	31.4	56.9	32.1	59	33.2	61.2	34.8	62.9	36.8	64.32	39.3	65.6	43.7	66.4	46.1	
	1.6					55.6	36	57.9	37	60.3	38.6	62.2	40.7	63.7	43.2	65.2	47.6	66.1	50	
	1.8							56.9	40.9	59.5	42.5	61.5	44.5	63.2	47.1	64.8	51.5	65.8	53.8	
	2									58.5	46.4	60.9	48.4	62.7	50.9	64.5	55.3	65.5	57.7	
	2.2									57.8	50.2	60.2	52.2	62.1	54.8	64.1	59.2	65.2	61.5	
	2.4											59.6	56.1	61.7	58.6	63.7	63	64.9	65.4	
	2.6											59	60	61.2	62.5	63.4	66.9	64.6	69.3	
	2.8													60.7	66.4	63	70.8	64.3	73.1	
	3													60.2	70.2	62.7	74.6	64.1	77	
7.2/7.3-57	0.2	128	14.1	130	15.5	131	16.8	131	18.7	132	21.6	133	25.2	134	29.8	134	37.7	135	42	
	0.4	123	21.6	125	23.1	127	24.3	128	26.2	130	29.1	131	32.8	132	37.3	133	45.3	134	49.6	
	0.6	118	29.2	122	30.6	124	31.9	126	33.8	128	36.7	130	40.3	131	44.9	132	52.8	133	57.1	
	0.8	114	36.7	118	38.2	121	39.5	123	41.3	126	44.2	128	47.9	130	52.5	131	60.4	132	64.7	
	1	110	44.3	115	45.7	118	47	121	48.9	124	51.8	126	55.4	128	60	130	67.9	132	72.2	
	1.2			112	53.3	115	54.6	119	56.4	122	59.3	125	63	127	67.6	130	75.5	131	79.8	
	1.4					113	62.1	117	64	121	66.9	124	70.5	126	75.1	129	83.1	130	87.3	
	1.6							114	71.6	119	74.4	122	78.1	125	82.7	128	98.6	130	94.9	
	1.8									117	82	121	85.6	124	90.2	127	98.2	129	102	
	2									116	89.6	120	93.2	123	97.5	127	106	129	110	
	2.2											119	101	122	105	126	113	128	118	
	2.4											118	108	121	113	125	121	127	125	
	2.6											117	116	121	120	125	128	127	133	
	2.8													120	128	114	136	126	140	
	3													119	136	123	144	126	148	



Speed n=1450r/min

Pump Dimension	Dis. Pre. Mpa	Viscosity																	
		1		10		20		40		75		150		300		750		1500	
		Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW	Cap. m ³ /h	P/ KW
7T.2/7T.3- 67	0.2	220	25.6	222	28.4	223	31	224	34.7	226	40.4	226	47.5	227	56.6	228	72.2	228	80.6
	0.4	214	38.5	217	41.2	219	43.7	221	47.4	223	53.1	224	60.3	225	69.3	227	85	227	93.4
	0.6	208	51.1	212	54	215	56.3	217	60.2	220	65.9	222	73.1	224	82.1	225	97.7	226	106
	0.8	203	63.9	208	66.8	211	69.3	214	73	218	78.7	220	85.9	222	94.9	224	111	225	119
	1	198	76.5	204	79.5	208	82.1	211	85.8	215	91.5	218	98.6	221	108	223	123	225	132
	1.2	194	89.5	200	92.3	204	94.9	209	98.6	213	104	217	111	219	120	222	136	224	144
	1.4	189	102	197	105	201	108	206	111	211	117	217	124	218	133	221	149	223	157
	1.6	185	115	193	118	198	120	204	124	209	130	213	137	217	146	220	162	222	170
	1.8	181	128	190	131	195	133	201	137	207	143	212	150	216	159	219	174	222	183
	2			186	143	192	146	199	150	205	155	210	163	214	172	218	187	221	196
	2.2					190	159	196	162	203	168	209	175	213	184	218	200	220	208
	2.4							194	175	202	181	207	188	212	197	217	213	220	221
	2.6											206	201	211	210	216	226	219	234
	2.8											205	214	210	223	215	238	218	247
	3													209	235	214	251	218	259

Speed n=1450r/min																			
Pump Dimension	Dis. Pre. Mpa	Viscosity																	
		1		10		20		40		75		150		300		750		1500	
		Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/ KW	Cap. m³/h	P/KW
8.4/8.5-67	0.2	399	44.3	402	49	405	53.2	407	59.2	410	68.6	412	80.3	414	95.2	415	121	416	135
	0.4	384	67.7	391	72.4	395	76.5	399	82.6	403	91.9	407	104	409	118	412	144	414	158
	0.6	371	91	380	95.7	386	99.8	391	106	397	115	402	127	406	142	409	167	412	181
	0.8	359	114	371	119	377	123	385	129	392	139	398	150	402	165	407	191	410	205
	1	348	138	361	142	370	147	378	153	387	162	394	174	399	188	405	214	408	228
	1.2	338	161	353	166	362	170	372	176	382	185	390	197	396	212	402	237	406	251
	1.4	328	184	345	189	355	193	366	199	377	209	386	220	393	235	400	261	404	275
	1.6	318	208	337	212	348	217	360	223	373	232	382	244	390	258	398	284	403	298
	1.8	309	231	329	236	342	240	355	246	368	255	379	267	387	282	396	307	401	321
	2	300	254	322	259	335	263	350	269	364	279	376	290	385	305	394	331	399	345
	2.2	291	278	314	282	329	287	344	293	360	302	372	314	382	328	392	354	398	368
	2.4	282	301	307	306	323	310	339	316	356	325	369	337	380	352	390	377	396	391
	2.6					317	333	334	339	352	349	366	360	377	375				
	2.8									348	372	363	384	375	398				
	3											360	407						



Speed n=950r/min											
Pump Dimension	Discharge Pressure MPa	Viscosity mm ² /s									
		150		300		750		1500		2000	
		Capacity	Shaft Power	Capacity	Shaft Power	Capacity	Shaft Power	Capacity	Shaft Power	Capacity	Shaft Power
		(m ³ /h)	(KW)	(m ³ /h)	(KW)	(m ³ /h)	(KW)	(m ³ /h)	(KW)	(m ³ /h)	(KW)
9.2/3-67	0.2	369	120.7	371	146.6	372	191.4	373	214.8	374	257.4
	0.4	364	141.6	367	167.5	369	212.4	371	235.7	371	278.3
	0.6	359	162.6	363	188.4	367	233.3	369	256.7	369	299.2
	0.8	355	183.5	360	209.4	364	254.2	367	277.6	368	320.1
	1	351	204.4	357	230.3	362	275.1	365	298.5	366	341.1
	1.2	348	225.3	354	251.2	360	296.1	363	319.5	364	362
	1.4	344	246.3	351	272.1	358	317	362	340.4	363	382.9
	1.6	342	267.2	349	293.1	356	337.9	361	361.3	362	403.9
	1.8	339	288.1	347	314	355	358.9	359	382.3	361	424.8
	2	336	309.1	344	334.9	353	379.8	358	403.2	360	445.7
	2.2	333	330	342	355.9	351	400.7	356	424.1	358	466.6
	2.4	330	350.9	340	376.8	350	421.6	355	445	357	487.6
	2.6	328	371.9	338	397.7	348	442.6	354	466	356	508.5
	2.8	325	392.8	336	418.6	346	463.5	353	486.9	355	529.4
	3	322	413.7	333	439.6	345	484.5	351	507.8	354	550.4
	3.2	320	434.6	331	460.5	343	505.4	350	528.8	353	571.3
	3.4	317	455.6	329	481.4	342	526.3	349	549.7	352	592.2
	3.6	315	476.5	327	502.4	340	547.2	348	570.6	350	613.1
9.2/3-90	0.2	475	136.1	477	164.4	479	213.4	480	239	481	285.5
	0.4	468	163	471	191.3	475	240.3	477	265.9	478	312.5
	0.6	462	189.9	466	218.2	471	267.3	474	292.9	475	339.4
	0.8	456	216.9	462	245.2	468	294.2	471	319.8	473	366.3
	1	451	243.8	458	272.1	465	321.2	469	347.7	470	393.3
	1.2	446	270.7	454	299	462	348.1	467	373.7	468	420.2
	1.4	441	297.7	450	326	459	375	464	400.6	466	447.1
	1.6	438	324.6	448	352.9	458	402	463	427.5	465	474.1
	1.8	434	351.5	445	379.8	455	428.9	461	454.5	463	501
	2	430	378.5	441	406.8	453	455.8	459	481.4	462	527.9
	2.2	426	405.4	438	433.7	451	482.8	458	508.4	460	554.9
	2.4	423	432.3	435	460.6	448	509.7	456	535.3	459	581.8
	2.6	419	459.3	432	487.6	446	536.6	454	562.2	457	608.7
	2.8			430	514.5	444	563.6	452	589.2	455	635.7
	3			427	541.4	442	590.5	451	616.1	454	662.6
9.2/3-112	0.2	590	151.9	592	182.6	594	235.8	596	263.6	596	314.1
	0.4	582	185.2	586	216	590	269.2	592	297	593	347.5
	0.6	575	218.6	580	249.3	586	302.6	589	330.4	590	380.9
	0.8	569	252	575	282.7	582	336	586	363.8	587	414.3
	1	563	285.4	571	316.1	579	369.4	583	397.1	585	447.6
	1.2	558	318.7	566	349.5	575	402.7	581	430.5	586	481
	1.4	552	352.1	562	382.8	572	436.1	578	463.9	580	514.4
	1.6	549	385.5	560	416.2	571	469.5	577	497.3	579	547.8
	1.8	545	418.9	556	449.6	568	502.9	575	530.6	577	581.2
	2	540	452.3	553	483	565	536.2	573	564	575	614.5
9.2/3-135	0.2	717	165.4	720	197.8	724	253.8	726	283.1	726	336.3
	0.4	706	206.2	712	238.5	717	294.6	721	323.8	722	377
	0.6	697	246.9	704	279.2	712	335.3	716	364.6	718	417.7
	0.8	688	287.6	697	320	707	376	712	405.3	714	458.5
	1	679	328.4	690	360.7	702	416.8	708	446	710	499.2
	1.2	672	369.1	684	401.4	697	457.5	705	486.7	707	539.9
	1.4	664	409.8	678	442.2	693	498.2	701	527.5	704	580.6
	1.6	660	450.6	675	482.9	690	539	699	568.2	702	621.4

Speed n=950r/min									
Pump Dimension	Discharge Pressure Mpa	Viscosity							
		300		750		1500		2000	
		Capacity	Shaft Power	Capacity	Shaft Power	Capacity	Shaft Power	Capacity	Shaft Power
		(m ³ /h)	(kw)	(m ³ /h)	(kw)	(m ³ /h)	(kw)	(m ³ /h)	(kw)
10.1ZK75	0.2	626	346.2	628	475.1	269	534.5	630	560.4
	0.4	621	417.9	624	528.5	626	5889.9	627	615.8
	0.6	617	471.7	621	582.5	624	645.3	625	671.2
	0.8	613	525.4	618	636.2	621	700.7	622	726.6
	1	609	579.1	615	690	619	756.1	620	782
	1.2	605	632.8	613	743.7	617	811.5	618	837.4
	1.4	602	686.5	610	797.4	615	811.5	617	892.7
	1.6	600	740.3	609	851.1	614	866.8	616	948.1
	1.8	597	794	606	904.8	612	922.2	614	1003.5
	2	594	847.7	604	958.6	610	977.6	612	1058.9
	2.2	591	901.4	602	1012.3	609	1033	611	1114.3
	2.4	588	955.2	600	1066	607	1088.4	609	1169.7
	2.6	586	1008.9	598	1119.7	605	1143.8	608	1225
	2.8	583	1062.6	596	1173.5	604	1199.1	607	1280.4
	3	580	1116.3	594	1227.2	602	1254.5	605	1335.8
	3.2	578	1170	593	1280.9	601	1365.3	604	1391.2
	3.4	575	1223.8	591	1334.6	600	1420.7	603	1446.6
	3.6	573	1277.5	589	1388.3	598	1476.1	601	1502
10.1ZK94	0.2	787	429.9	790	559.2	792	628.8	792	659
	0.4	780	497.6	785	626.9	787	698.5	788	728.7
	0.6	774	565.2	780	694.6	784	768.3	785	798.5
	0.8	768	632.9	776	762.2	780	838.1	782	868.3
	1	762	700.6	772	829.9	777	907.8	779	938
	1.2	757	768.2	768	897.6	774	977.6	776	1007.8
	1.4	752	835.9	764	965.2	771	1047.3	774	1077.5
	1.6	749	903.6	762	1032.9	769	1117.1	772	1147.3
	1.8	745	971.2	759	1100.6	767	1186.9	770	1217.1
	2	741	1038.9	756	1168.2	765	1256.6	768	1286.8
	2.2	737	1106.6	753	1235.9	762	1326.4	765	1356.6
	2.4	733	1174.2	750	1303.6	760	1396.1	763	1426.3
	2.6	729	1241.9	747	1371.2	758	1465.9	761	1496.1
	2.8	725	1309.6	744	1438.9	755	1535.7	759	1565.9
	3	721	1377.2	742	1506.6	753	1605.4	757	1635.6
10.1ZK112	0.2	939	494.5	942	642.3	943	721.9	944	756.4
	0.4	931	575.1	936	922.9	939	805	940	839.5
	0.6	924	655.7	931	803.5	935	888	936	922.5
	0.8	918	736.2	927	884	931	971.1	933	1005.6
	1	913	816.8	922	964.6	928	1054.1	930	1088.6
	1.2	907	897.3	918	1045.1	925	1137.2	927	1171.7
	1.4	902	977.9	914	1125.7	922	1220.2	924	1254.7
	1.6	899	1058.4	912	1206.2	920	1303.3	923	1337.8
	1.8	894	1139	909	1286.8	917	1386.3	920	1420.8
	2	890	1219.5	906	1367.3	915	1469.3	918	1503.9
10.1ZK135	0.2	1134	563	1137	729.2	1139	819	1140	857.8
	0.4	1125	660.2	1131	826.5	1134	919.2	1135	958
	0.6	1117	757.4	1125	923.7	1129	1019.4	1131	1058.5
	0.8	1110	854.6	1120	1020.9	1125	1119.7	1127	1158.5
	1	1103	951.9	1115	1118.1	1121	1219.9	1124	1258.7
	1.2	1097	1049.1	1110	1215.3	1118	1320.1	1120	1358.9
	1.4	1091	1146.3	1106	1312.6	1114	1420.3	1117	1459.2
10.1ZK150	1.6	1088	1243.5	1103	1409.3	1112	1520.6	1115	1559.4
	0.2	1271	626.7	1276	811.4	1278	911.1	1279	954.3
	0.4	1261	735.8	1268	920.6	1272	1023.7	1273	1066.8
	0.6	1252	845	1261	1029.7	1267	1136.2	1269	1179.4
	0.8	1244	954.2	1255	1138.9	1262	1248.8	1264	1291.9
	1	1236	1063.3	1250	1248.1	1258	1361.3	1260	1404.5
10.1ZK150	1.2	1229	1172.5	1245	1357.2	1253	1473.9	1256	1517