

GMZ 型离心式渣浆泵

TYPE GMZ CENTRIFUGAL SLURRY PUMP

使 用 说 明 书

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一、概述

高效耐磨渣浆泵是单级单吸、轴向吸入悬臂卧式离心泵，可广泛用于冶金、矿山、电力、煤矿、水利、化工、轻工、石油等部门输送含有大量固体物料的磨蚀性或腐蚀性浆体。

1、GMZ 型泵，过流部件采用高强度耐磨材质，适用于输送强磨蚀、高浓度、大颗粒的渣浆，在泵的最大工作压力范围之内，可以多级串联使用。

2、GMZ 型泵根据抽吸的介质不同，具有可互换的各种材质的过流部件，适用于输送磨蚀性或腐蚀性、大颗粒或细颗粒浆体。

3、泵型号意义：例 GMZ200-65-800

GMZ —— 高效耐磨渣浆泵

200 —— 出口直径 (mm)

65 —— 扬程值 (m)

800 —— 流量值 (m³/h)

SUMMARY

The high efficiency slurry pump is single-stage, singlesuction, axis-suction, horizontal centrifugal pump. It can be used to metallurgy, mine, power, coal mine, water conservancy, petrochemical, and so on, It is suitable for pumping liquid of corrosive, wear and tear, and have a lot of sands in medium.

1. Type GMZ, The material of flow parts is high-strength, high antiwear, suitable pumping slurry. It is having a lot of sand in, with high-corrosion, high-concentration. We can be string the pumps to gether under high working pressure condition.

2. The material of pump wetted parts can be varied depend on difference medium to be pumped.

3. Meaning of pump type e. g. GMZ200-65-800

GMZ —— high efficiency antiwear slurry pump

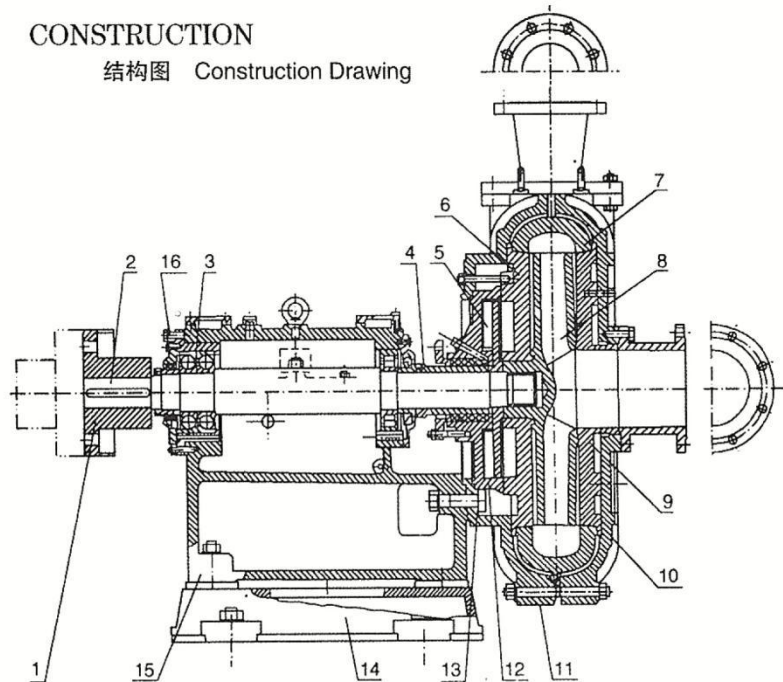
200 —— outlet diameter(mm)

65 —— head(m)

800 —— capacity(m³/h)

二、结构 CONSTRUCTION

结构图 Construction Drawing



GMZ 型渣浆泵结构图

Structural Drawing of GMZ Slurry Pumps

- | | | |
|------------------------|-------------------------|-------------------------|
| 1、联轴器 Coupling | 7、蜗壳 Volute casing | 12、填料箱 Stuffing box |
| 2、轴 Shaft | 8、叶轮 Impeller | 13、水封环 Water seal |
| 3、轴承箱 Bearing housing | 9、前护板 Front liner plate | 14、底座 Base |
| 4、拆卸环 Disassembly ring | 10、前泵壳 Front casing | 15、托架 Support |
| 5、副叶轮 Expeller | 11、后泵壳 Rear casing | 16、调节螺钉 Adjusting bolts |
| 6、后护板 Rear liner plate | | |

二、结构说明

GMZ 型系列泵,除泵头部分(包括前后泵壳、蜗壳、前后护板、叶轮等)结构不同外,其余部分结构相似,采用同一系列的传动部分,下面按泵头部分,轴封部分及传动部分,分别叙述其结构特点。

1、泵头部分:GMZ 型系列泵为双泵壳结构,即前泵壳、后泵壳和带有可更换的过流部分(包括叶轮、蜗壳、前护板、后护板)。前后泵壳根据工作压力,采用灰铸铁或球墨铸铁制造,垂直中开,用螺栓连接,后泵壳有止口与托架用螺栓连接,泵的吐出口可按八个角度旋转安装,叶轮前后盖板带有背叶片以减少泄露,提高泵的寿命及效率。各型泵进口均为水平方向,从传动方向看泵为顺时针旋转。

2、轴封部分:轴封有三种型式,副叶轮轴封及填料轴封,机械密封。

(1)副叶轮轴封:在泵进口正压力值不大于泵出口压力值的10%时的单级泵或多级串联第一级泵,可以采用副叶轮轴封,副叶轮轴封具有不稀释矿浆,密封效果好等优点。

(2)填料轴封:填料轴封结构简单,维修方便,需使用轴封水,对于不适用于副叶轮轴封的工况及泵吸上使用工况可采用填料轴封。

(3)机械密封:对于不适用于以上两种轴封的工况下,采用机械密封,减少轴封部分的维修次数。

3、传动部分:本系列泵均采用同一系列的传动,包括托架和轴承组件,泵轴直径大,刚性好,悬臂短,在恶劣的工况下不会弯曲和震动,轴承选用单列圆锥滚子轴承及深沟球轴承,组合使用能够承受泵的最大轴向及径向载荷,轴承采用稀油润滑,轴承体两端有密封端盖,能有效防止矿浆等污物进入轴承,该泵在轴承体上设有两个胶管接头,可与水源接通,对轴承室进行冷却,因此可在较高的环境温度下工作,保证轴承安全运行,具有较高的寿命。

CONSTRUCTION EXPLAIN

Series GMZ type pump apart from pump body (as front and back casing, pump body, front and back guard plate, impeller and so on), another part are same kind construction.

1. pump body

Series GMZ type pump are set up by front casing and back casing, and flow parts can be changed (like as impeller, pump body, front and back guard plate). The material of front casing and back casing can be changed according to different working pressure. Vertical split, used bolts connect together. The back pump casing have a notch, Joint with foot support. The outlet of pump can be turn direction of eight angle before connect it well. The front cover plate and the back cover plate of the impeller have a back leaf, to reducing leak out, take up the efficiency and long life. All kind of pump inlet is horizontal, The rotating direction of pump is clockwise reviewing from the side of the driver(motor).

2. Seal parts

There are three model of seal: Shaft seal with vice impeller; stuffing seal; Mechanical seal.

(1) Vice impeller seal: When the pressure of inlet is not more than 10% of outlet pressure, or first-stage of the multistage pump, the vice impeller seal can be used. They have not diluted slurry, and seal in good condition.

(2) Stuffing seal: It is compact structure and easy repair. The sealing water is used for it. We can be used it when working condition is not suit for the vice impeller seal.

(3) Mechanical seal: We can be used mechanical seal when working condition is not suit-for above two model seal, The repair is a little.

3. Transmission parts

The transmission part include foot support and bearing unit. The major diameter of pump shaft have a first-class quality, when running, there is no shaft bowed or vibration, even under the bad working condition. The bearings are the single row cone ball bearing, the deep trenches ball bearing. They joint together that can be stand any piper from axis or diameral. lubrication is thin oil, Two top of bearing body have a seal cover. There are two joint pipes on the bearing body. Cooling water flow into joint pipes. So, the pump can be running under the high temperature, with longer working life.

三、GMZ 型泵性能表 (TYPE GMZ PERFORMANCE TABLE)

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
	r/min	m³/h	m	kw	%	m	型 号 Type	功率/电压 Power/Voltage
								kw/v
GMZ40-40-20	2900	9	44.6	3.3	33.2	4.5	Y132S1-2	5.5/380
		18	42.7	4.2	49.5		Y132S2-2	7.5/380
		23	39.3	4.7	52.4		Y132S2-2	7.5/380
	1400	4	10.3	0.3	33.2	2.5	Y801-4	0.55/380
		9	9.9	0.5	49.5		Y90S-4	1.1/380
		11	9.1	0.5	52.4		Y90S-4	1.1/380
GMZ50-40-40	1480	26	42.5	9.2	32.8	6.0	Y160L-4	15/380
		40	40.0	10.7	40.6		Y180M-4	18.5/380
		54	34.5	12.3	41.4		Y180M-4	18.5/380
	960	17	17.9	2.5	32.8	2.9	Y132M1-6	4/380
		26	16.8	2.9	40.6		Y132M2-6	5.5/380
		35	14.5	3.3	41.4		Y132M2-6	5.5/380
GMZ50-80-80	1480	48	85.8	34.8	32.2	2.9	Y225M-4	45/380
		77	82.3	41.4	41.7		Y250M-4	55/380
		94	79.9	45.8	44.7		Y250M-4	55/380
	970	31	36.9	9.7	32.2	4.4	Y180L-6	15/380
		50	35.4	11.6	41.7		Y180L-6	15/380
		62	34.3	13.0	44.7		Y200L1-6	18.5/380
GMZ50-105-90	1480	57	110.7	50.7	33.9	3.8	Y280S-4	75/380
		91	105.5	60.8	43.0		Y280S-4	75/380
		11	99.8	66.9	45.1		Y280M-4	90/380
	980	38	8.8	14.8	33.9	3.0	Y200L2-6	22/380
		60	46.3	17.6	43.0		Y250M-6	30/380
		74	43.8	19.6	45.1		Y255M-6	30/380
GMZ65-27-60	1460	42	28.2	6.0	54.2	2.7	Y160M-4	11/380
		56	27.5	7.0	60.0		Y160M-4	11/380
		71	25.9	8.1	61.5		Y160M-4	11/380
	960	28	12.2	1.7	54.2	1.8	Y132S-6	3/380
		37	11.9	2.0	60.0		Y132M1-6	4/380
		47	11.2	2.3	61.5		Y132M1-6	4/380
GMZ65-30-10	1460	5	32	4.4	25	4.0	Y132M-4	7.5/380
		10	30	4.7	30		Y132M-4	7.5/380
		20	28	5.1	40		Y132M-4	7.5/380
	940	3.2	13.3	1.17	15	2.5	Y112M-6	2.2/380
		6.4	12.4	1.25	20		Y112M-6	2.2/380
		12.8	11.6	1.36	30		Y112M-6	2.2/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
	r/min	m³/h	m	kw	%	m	型 号 Type	功率/电压 Power/Voltage
GMZ65-34-60	1460	47	34.8	9.7	56.2	3.0	Y160M-4	11/380
		62	33.9	9.2	62.0		Y160L-4	15/380
		79	32.0	10.8	63.5		Y160L-4	15/380
	960	31	15.0	2.3	56.2	2.0	Y132M1-6	4/380
		41	14.7	2.6	62.0		Y132M2-6	5.5/380
		52	13.8	3.1	63.5		Y132M2-6	5.5/380
GMZ80-40-130	1480	90	43.2	18.8	56.2	3.4	Y200L-4	30/380
		128	40.3	21.9	64.0		Y200L-4	30/380
		174	35.9	25.9	65.7		Y225S-4	37/380
	980	60	18.9	5.5	56.2	2.3	Y160M-6	7.5/380
		85	17.6	6.4	64.0		Y160L-6	11/380
		116	115.7	7.5	65.7		Y160L-6	11/380
GMZ80-45-160	1480	98	51.4	23.6	58.2	3.7	Y200L-4	30/380
		140	48.0	27.7	66.0		Y225S-4	37/380
		190	42.7	32.6	67.7		Y225M-4	45/380
	980	65	22.5	6.8	58.2	2.5	Y160L-6	11/380
		93	21.0	8.1	66.0		Y160L-6	11/380
		126	18.7	9.5	67.7		Y180L-6	15/380
GMZ80-58-160	1480	121	60.7	34.7	57.6	4.0	Y225M-4	45/380
		158	57.9	39.5	63.0		Y250M-4	55/380
		189	55.4	44.1	64.7		Y250M-4	55/380
	980	80	26.6	10.1	57.6	2.4	Y180L-6	15/380
		105	25.4	11.5	63.0		Y200L1-6	18.5/380
		125	24.3	12.8	64.7		Y200L1-6	18.5/380
GMZ80-65-180	1480	130	70.4	41.8	59.6	4.2	Y250M-4	55/380
		170	67.2	47.9	65.0		Y280S-4	75/380
		204	64.2	53.5	66.7		Y280S-4	75/380
	980	86	30.9	12.1	59.6	2.5	Y200L1-6	18.5/380
		113	29.5	14.0	65.0		Y200L2-6	22/380
		135	28.1	15.5	66.7		Y200L2-6	22/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ80-105-200	1480	107 182 242	109.8 105.5 99.0	82.5 100.6 115.9	38.8 52.0 56.3	4.3	Y315S-4 Y315M-4 Y315L1-4	110/380 132/380 160/380
	980	71 121 160	48.1 46.3 43.4	24.0 29.3 33.6	38.8 52.0 56.3	2.1	Y225M-6 Y250M-6 Y280S-6	30/380 37/380 45/380
GMZ80-130-80	1480	50 80 96	131 130 127	59.5 70.8 76.5	35 45 48	4.5	Y280S-4 Y280M-4 Y315S-4	75/380 90/380 110/380
GMZ100-38-200	1480	119 202 225	41.6 37.8 36.5	23.0 30.1 32.1	58.7 69.0 69.6	3.2	Y200L-4 Y225S-4 Y225M-4	30/380 37/380 45/380
	980	79 134 149	18.2 16.6 16.0	6.7 8.8 9.3	58.7 69.0 69.6	1.8	Y160L-6 Y180L-6 Y180L-6	11/380 15/380 15/380
GMZ100-45-220	1480	130 220 245	49.5 45.0 43.4	28.9 38.0 40.4	60.7 71.0 71.6	3.5	Y225S-4 Y250M-4 Y250M-4	37/380 55/380 55/380
	980	86 146 162	21.7 19.7 19.0	8.4 11.0 11.7	60.7 71.0 71.6	2.0	Y180L-6 Y180L-6 Y200L1-6	15/380 15/380 18.5/380
GMZ100-60-300	1480	176 309 365	66.8 60.5 56.9	55.7 73.3 79	57.5 69.5 71.6	5.1	Y280S-4 Y280M-4 Y280M-4	75/380 90/380 90/380
	980	117 205 242	29.3 26.5 24.9	16.2 21.3 22.9	57.5 69.5 71.6	2.5	Y200L2-6 Y225M-6 Y225M-6	22/380 30/380 30/380
GMZ100-55-230	1480	130 228 255	61.0 57.8 56.5	41.8 54.4 57.4	51.7 66.0 68.4	3.8	Y250M-4 Y280S-4 Y280S-4	55/380 75/380 75/380
	980	86 150 169	26.7 25.4 24.7	12.1 15.7 16.6	51.7 66.0 68.4	2.4	Y200L1-6 Y200L2-6 Y225M-6	18.5/380 22/380 30/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
	r/min	m³/h	m	kw	%	m	型 号 Type	功率/电压 Power/Voltage
								kw/v
GMZ100-65-250	1480	140 245 275	70.8 67.0 65.5	50.3 65.7 69.7	53.7 68.0 70.4	4.0	Y280S-4 Y280M-4 Y280M-4	75/380 90/380 90/380
	980	93 162 182	31.0 29.4 28.7	14.6 19.1 20.2	53.7 68.0 70.4	2.5	Y200L2-6 Y225M-6 Y225M-6	22/380 30/380 30/380
GMZ100-80-280	1480	166 276 331	84.8 80.4 77.5	69.3 90.9 105.5	55.3 66.5 66.2	4.2	Y280M-4 Y315S-4 Y315M-4	90/380 110/380 132/380
	980	109 183 219	37.2 35.3 34.0	20.0 26.5 30.6	55.3 66.5 66.2	2.3	Y225M-6 Y250M-6 Y250M-6	30/380 37/380 37/380
GMZ100-95-300	1480	180 300 360	100.0 95.0 91.6	85.7 113.3 131.7	57.3 68.5 68.2	4.5	Y315S-4 Y315M-4 Y315L1-4	110/380 132/380 160/380
	980	119 199 238	43.9 41.7 40.2	24.8 33.0 38.2	57.3 68.5 68.2	2.5	Y225M-6 Y280S-6 Y280M-6	30/380 45/380 55/380
GMZ100-140-250	1480	180 250 280	143.5 140 137	161.4 180.8 193.5	43.6 52.7 54	4.5	Y315L2-4 Y355M1-4 Y355M3-4	200/380 220/380 250/380
	980	120 165 185	63 61 60	46.9 52.5 56.2	43.6 52.7 54	2.9	Y315S-6 Y315S-6 Y315S-6	75/380 75/380 75/380
GMZ150-58-450	1480	300 450 550	62.8 58 54.3	80.2 96.1 106.5	64 74 76.4	4.5	Y315S-4 Y315M-4 Y315M-4	110/350 132/380 132/380
	980	199 298 364	27.5 25.4 23.8	23.3 27.9 30.9	64 74 76.4	2.2	Y225M-6 Y250M-6 Y280S-6	30/380 37/380 45/380
GMZ150-35-360	980	221 365 442	39.7 36.9 34.8	38.4 49.6 55.3	62.3 74.0 75.8	3.0	Y280M-6 Y315S-6 Y315S-6	55/380 75/380 75/380
	730	164 272 329	22.0 20.5 19.4	15.8 20.5 22.9	62.3 74.0 75.8	2.5	Y225M-8 Y250M-8 Y250M-8	22/380 30/380 30/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ150-40-380	980	230	43.1	42.6	63.3	3.0	Y280M-6	55/380
		380	40.0	55.2	75.0		Y315S-6	75/380
		460	37.8	61.7	76.8		Y315S-6	75/380
	730	171	23.9	17.6	63.3	2.5	Y250M-8	30/380
		283	22.2	22.8	75.0		Y250M-8	30/380
		343	21.0	25.5	76.8		Y280S-8	37/380
GMZ150-55-300	980	190	56.3	63.2	46.1	2.9	Y315M-6	90/380
		301	55.4	77.6	58.5		Y315L2-6	110/380
		427	52.9	92.4	66.6		Y315L1-6	110/380
	730	142	31.2	26.2	46.1	1.8	Y280S-8	37/380
		224	30.7	32.0	58.5		Y280M-8	45/380
		318	28.4	38.2	66.6		Y315S-8	55/380
GMZ150-50-430	980	248	53.4	65.3	55.2	3.5	Y315M-6	90/380
		431	50.8	86.4	69.0		Y315L1-6	110/380
		504	49.3	94.5	71.6		Y315L1-6	110/380
	730	184	29.6	26.9	55.2	2.3	Y280S-8	37/380
		321	28.2	35.7	69.0		Y280M-8	45/380
		376	27.4	39.2	71.6		Y315S-8	55/380
GMZ150-55-460	980	261	59.3	73.7	57.2	3.8	Y315M-6	90/380
		454	56.5	98.4	71.0		Y315L2-6	132/380
		532	54.9	108.1	73.6		Y315L2-6	132/380
	730	194	32.9	30.4	57.2	2.5	Y280S-8	37/380
		338	31.4	40.7	71.0		Y315S-8	55/380
		396	30.5	44.7	73.6		Y315S-8	55/380
GMZ150-60-470	980	270	63.5	80.2	58.2	3.8	Y315L1-6	110/380
		470	60.5	107.6	72.0		Y315L2-6	132/380
		550	58.7	117.9	74.6		Y355M1-6	160/380
	730	201	35.2	33.1	58.2	2.5	Y280M-8	45/380
		350	33.6	44.5	72.0		Y315S-8	55/380
		410	32.6	48.8	74.6		Y315M-8	75/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH) _r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m ³ /h	m	kw	%	m		kw/v
GMZ150-65-550	980	291	71.1	104.0	54.2	4.0	Y315L2-6	132/380
		485	68.6	133.2	68.0		Y355M1-6	160/380
		582	65.2	149.3	69.2		Y355M2-6	185/380
	730	216	39.5	42.9	54.2	2.5	Y315S-8	55/380
		361	38.0	54.9	68.0		Y315M-8	75/380
		433	36.2	61.7	69.2		Y315M-8	75/380
GMZ150-70-500	980	300	75.7	112.0	55.2	4.0	Y315L2-6	132/380
		500	73.0	144.1	69.0		Y355M2-6	185/380
		600	69.4	161.5	70.2		Y355M3-6	200/380
	730	223	42.0	46.2	55.2	2.5	Y315M-8	75/380
		372	40.5	59.5	69.0		Y315M-8	75/380
		447	38.5	66.8	70.2		Y315L1-8	90/380
GMZ150-85-300	980	186	91.2	95.4	48.4	3.0	Y315L2-6	132/380
		285	87.1	115.8	58.4		Y355M1-6	160/380
		401	79.8	139.9	62.3		Y355M2-6	185/380
	730	139	50.6	39.6	48.4	2.0	Y315S-8	55/380
		212	48.3	47.7	58.4		Y315M-8	75/380
		299	44.3	57.9	62.3		Y315M-8	75/380
GMZ150-100-300	980	180	105	146	36	4.5	Y315M3-6	200/380
		300	104	171	50		Y355-6	250/380
		360	103	187	54		Y355-6	250/6000
	740	136	60	62.9	36	2.9	Y315L1-8	90/380
		226	59	73.6	50		Y355L1-8	90/380
		270	58.5	80.5	54		Y355L2-8	110/380
GMZ200-55-720	980	421	57.9	104.7	63.4	4.0	Y315L2-6	132/380
		715	54.2	133.6	79.0		Y355M1-6	160/380
		841	51.9	145.5	81.7		Y355M2-6	185/380
	730	313	32.1	43.2	63.4	2.5	Y315S-8	55/380
		533	30.1	55.3	79.0		Y315M-8	75/380
		626	28.8	60.1	81.7		Y315M-8	75/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ200-60-750	980	435	62.0	114.0	64.4	4.0	Y315L2-6	132/380
		740	58.0	146.1	80.0		Y355M2-6	185/380
		870	55.5	159.0	82.7		Y355M-6	185/380
	730	324	34.4	47.1	64.4	2.5	Y315M-8	75/380
		551	32.2	60.4	80.0		Y315L1-8	90/380
		648	30.8	65.7	82.7		Y315L1-8	90/380
GMZ200-65-800	980	456	67.6	135.0	62.2	4.3	Y355M1-6	160/380
		795	64.0	182.3	76.0		Y355-6	220/6000
		921	61.6	196.6	78.6		Y355-6	250/6000
	730	339	37.5	55.7	62.2	2.5	Y315M-8	75/380
		592	35.5	75.3	76.0		Y315L2-8	110/380
		686	34.2	81.3	78.6		Y315L2-8	110/380
GMZ200-65-900	980	470	72.0	145.8	63.2	4.3	Y355M2-6	185/380
		820	68.1	197.5	77.0		Y355-6	250/6000
		950	65.6	213.2	79.0		Y355-6	250/6000
	730	350	40.0	60.3	63.2	2.5	Y315L1-8	75/380
		611	37.8	81.7	77.0		Y315L2-8	110/380
		708	36.4	88.2	79.6		Y355M1-8	110/380
GMZ200-75-700	980	397	81.5	160.8	54.8	3.8	Y355M3-6	200/380
		717	77.7	214.6	70.7		Y355-6	250/6000
		948	73.2	253.3	74.6		Y400-6	315/6000
	730	296	45.2	66.5	54.8	2.8	Y315L1-8	90/380
		534	43.1	88.7	70.7		Y315L2-8	110/380
		706	40.7	104.9	74.6		Y315L2-8	132/380
GMZ200-80-750	980	409	86.4	172.5	55.8	3.8	Y355M3-6	200/380
		738	82.3	230.7	71.7		Y400-6	280/6000
		976	77.6	272.8	75.6		Y400-6	315/6000
	730	305	47.9	71.3	55.8	2.8	Y315L1-8	90/380
		550	45.7	95.5	71.7		Y355M1-8	132/380
		727	43.1	112.9	75.6		Y355M1-8	132/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ200-90-750	980	438	97.5	192.5	60.4	4.5	Y355-6	250/6000
		730	90.7	254.0	71.0		Y400-6	315/6000
		876	86.2	286.4	71.8		Y400-6	355/6000
	730	326	54.1	79.5	60.4	3.0	Y315L2-8	100/380
		544	50.3	105.0	71.0		Y355M1-8	132/380
		652	47.8	118.2	71.8		Y355M2-8	160/380
GMZ200-95-750	980	450	102.9	205.4	61.4	4.5	Y355-6	250/6000
		750	95.7	271.5	72.0		Y400-6	355/6000
		900	91.0	306.4	72.8		Y400-6	355/6000
	730	335	57.1	84.8	61.4	3.0	Y315L2-8	110/380
		559	53.1	112.3	72.0		Y355M1-8	132/380
		670	50.5	126.6	72.8		Y355M2-8	160/380
GMZ200-130-800	980	441	133.7	321.1	50.0	5.5	Y400-6	400/6000
		858	128.2	437.9	68.4		Y400-6	560/6000
		907	127.9	448.1	70.5		Y450-6	560/6000
	730	329	74.2	133.0	50.0	2.8	Y355M2-8	160/380
		639	71.1	180.9	68.4		Y400-8	220/6000
		676	71.0	185.4	70.5		Y400-8	220/6000
GMZ250-55-900	980	551	60.5	146.9	61.8	4.2	Y355M2-6	185/380
		895	56.4	190.9	72.0		Y355L2-6	250/380
		1153	52.3	222.2	73.9		Y400-6	280/6000
	730	411	33.6	60.7	61.8	2.8	Y315M-8	75/380
		667	31.3	79.0	72.0		Y315L2-8	110/380
		858	29.1	92.0	73.9		Y315L2-8	110/380
GMZ250-60-950	980	579	66.7	164.8	63.8	4.5	Y355-6	200/6000
		940	62.2	215.2	74.0		Y355-6	250/6000
		1211	57.7	250.7	75.9		Y400-6	315/6000
	730	431	37.0	68.1	63.8	3.0	Y315L1-8	90/380
		701	34.5	89.0	74.0		Y315L2-8	110/380
		901	32.0	103.4	75.9		Y315M1-8	132/380

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ250-65-970	980	597	71.0	178.1	64.8	4.5	Y355-6	220/6000
		970	66.2	233.2	75.0		Y400-6	280/6000
		1249	61.4	271.6	76.9		Y400-6	315/6000
	730	445	39.4	73.7	64.8	3.0	Y315L1-8	90/380
		723	36.7	96.3	75.0		Y355M1-8	132/380
		930	34.1	112.3	76.9		Y355M1-8	132/380
GMZ250-75-1000	980	544	80.1	203.5	58.3	3.7	Y355-6	250/6000
		997	75.6	285.1	72.0		Y400-6	355/6000
		1342	68.4	349.1	71.6		Y450-6	450/6000
	730	405	44.5	84.2	58.3	2.7	Y315L2-8	110/380
		743	41.9	117.8	72.0		Y355M2-8	160/380
		999	38.0	144.4	71.6		Y355L1-8	185/380
GMZ250-80-1000	980	560	84.9	218.3	59.3	3.9	Y400-6	280/6000
		1027	80.1	306.9	73.0		Y400-6	400/6000
		1381	72.5	375.6	72.6		Y450-6	450/6000
	730	417	47.1	90.2	59.3	2.9	Y315L2-8	110/380
		764	44.4	126.5	73.0		Y355M2-8	160/380
		1029	40.2	155.2	72.6		Y355L1-8	185/380
GMZ250-85-1100	980	584	92.4	239.7	61.3	4.1	Y400-6	280/6000
		1071	87.2	399.1	75.0		Y400-6	400/6000
		1441	78.8	414.5	74.6		Y450-6	500/6000
	730	435	51.3	99.1	61.3	3.0	Y355M1-8	132/380
		797	48.3	139.8	75.0		Y355L1-8	185/380
		1073	43.8	171.6	74.6		Y355L2-8	200/380
GMZ250-95-1000	980	600	97.5	255.7	62.3	4.1	Y400-6	315/6000
		1100	92.0	362.6	76.0		Y450-6	450/6000
		1480	83.2	443.6	75.6		Y450-6	560/6000
	730	447	54.1	105.7	62.3	3.0	Y355M1-8	132/380
		819	51.0	149.7	76.0		Y355L1-8	185/380
		1102	46.2	183.4	75.6		Y400-6	220/6000

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ250-105-1100	980	690	108.4	376.5	54.1	5.1	Y450-6	450/6000
		1145	104.8	487.7	67.0		Y450-6	630/6000
		1380	101.4	539.8	70.6		Y450-6	630/6000
	730	514	60.1	155.5	54.1	3.2	Y355L1-8	185/380
		853	58.1	201.4	67.0		Y400-8	250/6000
		1028	56.3	223.3	70.6		Y400-8	280/6000
GMZ250-110-1200	980	708	114.0	391.8	56.1	5.4	Y450-6	500/6000
		1175	110.2	511.1	69.0		Y450-6	630/6000
		1416	106.7	566.7	72.6		Y500-6	710/6000
	730	527	63.2	161.7	56.1	3.4	Y400-8	200/6000
		875	61.1	211.0	69.0		Y400-8	280/6000
		1054	59.2	234.1	72.6		Y400-8	280/6000
GMZ250-120-1100	980	734	122.7	422.1	58.1	5.5	Y450-6	500/6000
		1219	118.6	554.5	71.0		Y500-6	710/6000
		1469	114.8	615.6	74.6		Y500-6	800/6000
	730	547	68.1	174.6	58.1	3.5	Y400-8	220/6000
		908	65.8	229.2	71.0		Y400-8	280/6000
		1094	63.7	254.4	74.6		Y450-8	315/6000
GMZ250-125-1200	980	752	128.7	446.0	59.1	5.5	Y450-6	560/6000
		1248	124.4	587.2	72.0		Y500-6	710/6000
		1504	120.4	652.3	75.6		Y500-6	800/6000
	730	560	71.4	184.2	59.1	3.5	Y400-8	220/6000
		930	69.0	242.7	72.0		Y450-8	315/6000
		1120	66.8	269.5	75.6		Y450-8	315/6000
GMZ250-80-1000	730	690	82.4	225.5	60.6	5.3	Y450-8	315/6000
		1009	79.1	310.5	70.0		Y450-8	400/6000
		1374	74.3	376.7	73.8		Y450-8	450/6000
	590	558	53.8	134.9	60.6	3.4	Y355L2-10	160/380
		816	51.7	146.1	70.0		Y450-10	200/6000
		1111	48.5	198.8	73.8		Y450-10	250/6000

郑州市神龙泵业有限公司

Zhengzhou Shenlong Pumping Co. Ltd..

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ250-90-1100	730	736 1076 1466	93.7 90.0 84.5	290.7 356.4 433.6	64.6 74.0 77.8	5.5	Y450-8 Y450-8 Y500-8	355/6000 450/6000 560/6000
	590	595 870 1185	61.2 58.8 55.2	153.6 188.3 229.0	64.6 74.0 77.8	3.5	Y450-10 Y450-10 Y450-10	185/6000 250/6000 280/6000
GMZ250-105-1200	730	734 1067 1573	110.5 106.7 98.97	366.3 455.5 568.7	60.3 69.6 74.5	4.3	Y400-8 Y500-8 Y500-8	450/6000 560/6000 710/6000
	590	593 862 1271	72.2 69.7 64.6	193.4 235.1 300.1	60.3 69.6 74.5	2.8	Y450-10 Y450-10 Y450-10	250/6000 280/6000 355/6000
GMZ300-40-1500	980	789 1415 1568	46.0 40.8 38.8	148.6 195.6 204.8	66.5 80.4 80.9	5.5	Y355M2-6 Y355L2-6 Y355L2-6	185/380 250/380 250/380
	730	588 1054 1168	25.5 22.6 21.5	61.4 60.7 84.5	80.5 80.4 80.9	5.5	Y355M-8 Y315L2-8 Y315L2-8	75/380 110/380 110/380
GMZ300-55-2000	980	1178 1967 2166	66.2 57.5 55.2	307.8 400.0 420.7	69.0 77.0 77.4	6.6	Y450-6 Y450-6 Y450-6	400/6000 500/6000 500/6000
	730	877 1465 1614	36.7 31.9 30.6	127.0 165.3 173.8	69.0 77.0 77.4	3.7	Y355M2-8 Y355L2-8 Y400-8	160/380 200/380 220/6000
GMZ350-65-2000	980	1269 2118 2333	76.8 66.7 64.0	368.6 480.9 505.8	72.0 80.0 80.4	7.0	Y450-6 Y450-6 Y450-6	450/6000 630/6000 630/6000
	730	945 1578 1738	42.6 37.0 35.5	152.3 198.8 209.0	72.0 80.0 80.4	3.9	Y355L1-8 Y400-8 Y400-8	185/380 250/6000 250/6000

型 号 Type	转速 Speed n	流量 Capacity Q	扬程 Hend H	轴功率 Power of shaft P	效率 Eff η	必须汽蚀 余量 (NPSH)r	配套电机 motor	
							型 号 Type	功率/电压 Power/Voltage
	r/min	m³/h	m	kw	%	m		kw/v
GMZ300-65-1600	730	871 1556 1742	71.3 65.6 63.1	255.9 358.7 381.8	66.1 77.5 78.4	5.6	Y450-8 Y450-8 Y450-8	315/6000 450/6000 450/6000
	590	704 1258 1408	46.6 42.9 41.2	135.2 189.6 201.5	66.1 77.5 78.4	3.8	Y355L2-10 Y450-10 Y450-10	160/6000 220/6000 250/6000
GMZ300-75-1600	730	922 1648 1844	79.9 73.6 70.7	290.3 410.3 436.2	69.1 80.5 81.4	5.7	Y450-8 Y450-8 Y500-8	355/6000 500/6000 560/6000
	590	745 1332 1490	52.2 48.1 46.2	153.3 216.7 230.3	69.1 80.5 81.4	3.9	Y450-10 Y450-10 Y450-10	185/6000 280/6000 280/6000
GMZ300-55-1700	590	867 1696 1735	58.8 53.9 53.5	217.9 321.6 325.3	63.7 77.4 77.7	4.1	Y450-10 Y500-10 Y500-10	280/6000 40/6000 400/6000
	490	720 1408 1440	40.6 37.2 36.9	125.0 184.3 186.4	63.7 77.4 77.7	3.0	Y450-12 Y450-12 Y450-12	185/6000 220/6000 220/6000
GMZ300-60-1800	590	919 1785 1826	65.2 59.7 59.3	243.0 361.0 365.4	66.7 80.4 80.7	4.1	Y450-10 Y500-10 Y500-10	315/6000 450/6000 450/6000
	490	758 1482 1517	45.0 41.2 40.9	139.3 206.8 209.4	66.7 80.4 80.7	3.0	Y450-12 Y450-12 Y450-12	185/6000 250/6000 250/6000
GMZ350-60-2000	590	1035 1988 2339	62.8 59.4 55	293.1 417.6 455.6	60.4 77.0 76.9	5.8	Y450-10 Y500-10 Y500-10	355/6000 500/6000 560/6000
	490	860 1651 1943	43.3 41 37.9	167.9 239.4 260.8	60.4 77.0 76.9	4.4	Y450-12 Y500-12 Y500-12	220/6000 315/6000 315/6000

四：装配注意事项

1、轴承组件装配：装配时预热轴承内圈，温度不允许超过120℃，深沟球轴承内圈必须靠紧轴肩。单列圆锥滚子轴承装配时用调整轴承端盖处的垫来保证轴向间隙，调整后应用手转动轴，使得转动均匀。

2、填料轴封组件的装配：填料轴封组件包括填料箱、轴套、填料环、填料及填料压盖等零件组成。填料的选择当泵的工作压力在10公斤力/平方厘米以下时，一般采用石棉纤维浸云母的填料，压力高于10公斤力/平方厘米或泵输送腐蚀性渣浆泵时，采用石棉纤维浸聚氟乙烯的填料。

3、泵头部分组装：将后泵壳紧固在托架上，并在后壳内装入填料箱，再用后护板定位螺母装上后护板，再在轴上套上O型圈装上键、装副叶轮（或叶轮挡圈）、叶轮，再装蜗壳，然后用螺栓固定压板将蜗壳压在后泵壳上，最后装前护板、前泵壳，再将前泵壳与后泵壳合装，拧紧螺栓。注意装配时应将填料箱与护板，前后护板与蜗壳之间密封的O型圈放置正确并压紧。

ATTENTION FOR ASSEMBLE

1. The bearing unit assemble: Before assemble, first heat up inner ring of the bearing not more than 120℃. The inner ring of deep groove ball bearing must be lean the shaft shoulder tightly, When assemble the single row cone ball bearing, adjusting a collar of bearing top cover for the margin tolerance. After assemble, the shaft can be smooth running by hand.

2. Stuffing box unit assemble: The stuffing box unit set up by a stuffing box, a sleeves, a sealing ring, a stuffing, and a stuffing gland. Select the stuffing materials: When pump working pressure is not more than 10kg/cm², selecting the asbestos fibre soaked mica. The pressure is more than 10kg/cm² or pumping corrosion dredge, with the asbestos fibre soaked poly fluorine ethylene.

3. Pump body unit assemble: Fasten the back casing on the foot support, Put the stuffing box into the back casing, then, Make the back guard plate fast with fix position screw nut. Put the O-ring, the key, the vice impeller (or impeller stop ring), the impeller and make the impeller fasted to the shaft with the impeller screw nuts. Assemble pump body on the back casing with a bolts and the fix position press plate. After that, assemble the front guard plate, the front casing, then, make the front casing and the back casing fast with bolts, screw them tightly attention to the O-ring, you may put it on right Position and Pressed it.

五、运转

1、启动：启动前应按下列步骤检查整个机组。

(1) 泵应安放在牢固基础上，以承受泵的全部重量消除振动，拧紧全部地脚螺栓。

(2) 管路阀门应有自己的支撑架，且应支撑牢固。泵法兰处有密封垫，拧紧连接螺栓时应注意有的泵金属内衬高出法兰，此时螺栓应紧度合适，不能过紧，以免损坏密封垫。

(3) 用手按泵转动方向转动轴，轴转动时，不应有摩擦，否则调叶轮间隙。

(4) 检查电机转向，要保证泵按泵体上所标出的箭头方向转动。

(5) 直联传动时，泵轴和电机轴应精确对中，皮带传动时泵轴和电机轴应平行，并调整槽轮位置，使其与槽带垂直；以免引起剧烈的振动和磨损。

(6) 在泵的吸入管处已装配一段可拆的短管，其长度可拆开前泵壳和更换易损件，便于泵的检修。

(7) 轴封检查：填料密封泵应检查轴封水量，水压是否合适，调节填料压盖压紧螺钉，以调节填料的松紧程度，调节轴封水，从填料压盖处的泄露量以一滴一滴渗出为好，填料太紧，轴套易发热，同时耗费功率，填料太松则液体泄露量太大，轴封水压一般高于泵出口压力 0.35kg/cm^2 ，轴封水量一般建议按不同型号在 $0.15\text{升/秒} \sim 2.1\text{升/秒}$ 选择。

2、运转：

(1) 运转中应定期检查轴封水的压力和流量及时调节填料盖或更换填料，以保证始终有少量的清洁水通过轴。

(2) 定期检查轴承组件运转情况，开车前需往轴承体注入20或30号润滑油，轴承润滑油量要适当、清洁，要定期添加或更换润滑油。

(3) 泵性能随着叶轮与护板间隙的增大而变坏，效率降低，故应及时将叶轮向前调整，以保持一定间隙，使泵能保持在高效运行，当泵磨损到不能满足系统需要时，应更换易损件，定时拆检泵，估计易损件寿命，以免磨损件失效时对系统产生严重后果。

3、停泵：

停泵前应尽可能使泵抽送一会清水，以清洗流经泵内的渣浆，然后依次关闭泵、阀门、填料轴封水和轴承体的冷却水。

RUNNING

1. Start: Befor start the pump, check the equipment as below.

(1) The pump is fasted on solid foundation, standing the weight of pump units, and reducing vibration, screw the foot bolts fast.

(2) The valve of pipe have his foot fupport on solid foundation. The gland of pump have a washer. Some type pump's the metals inner line is high than the pump flange, So, you must pay attention to screwing the gland tightly in appropriate measure.

(3) No rub whe running the pump shaft by hand as his rotation direction, otherwise, adjust the impeller clearance.

(4) Check the rotation direction of motor, you are sure it running diretion as the pump.

(5) When with direct driving, the shaft of pump and the shaft of motor are with one shaft line. With delt driving, the shaft of pump and the shaft of motor must be parallel, adjust the pulley position, and keep it is vertical with the belt, avoid vibration, wear and tear.

(6) Assemble a short pipe on inlet of pump, it can be used to unload the front casing and change a repair parts, easy repair pump.

(7) Check shaft seal: The suffing seal used water, So, you must check sealling water pressure, adjust the stuffing gland, keep the sealling water leak out amount as required. The sealling water pressure is 0.35kg/cm^2 , The leakout amount of sealling water are from 0.15L/s to 2.1L/s .

2. Running

(1) When pump working, regular check the seal water pressure and capacity, adjust the stuffing gland and change the stuffing, make the small clean seal water flow throw the the shaft gap,,abd keep the water seal in good condition.

(2) Regular check the bearing unit runing condition, befor start, pull lubrication oil(20#, or 30#) keep the lubrication oil clean, and regular add some in or change it.

(3) When the gap increase between the impeller and the guid plate, the pump performance is in bad condition and efficiency is down. So, adjust the gap in a good position,keep the pump running in a good condition. The gap from the wear and tear is too dig to adjust, you change it.

3. Stopping

Befor stop pump, first pumping clean water for a while, So, wash slurry out from pump body, the stop order is surn off pump, close valve, close sealling water unit and coolling water system.

六、维护保养

要使泵能安全运行，寿命长，必须注意日常的维护，维护保养应注意以下几个方面：

1、轴封的维护：

填料轴封泵要定期检查密封水压和水量，要始终保持少量清洁水沿轴流过，定期调填料压盖，检查填料并定期更换填料，轴封水压，轴封水量应符合上述(轴封检查)要求。

2、叶轮的调节：

为了保证泵高效运转，就必须及时调整叶轮于前护板的间隙，调节叶轮间隙时首选停泵，松开压紧轴承组件的螺栓，拧调整螺栓上的螺母，使轴承组件向前移动，同时用手转动轴按泵的转动方向旋转，直到叶轮与前护板摩擦为止，将前面刚拧紧的螺母放松半圈，再将调整螺栓上前面的螺母拧紧，使轴承组件后移，此时叶轮与前护板间隙在0.5-1mm之间。调整后，在再次启动前须重新检查叶轮转动是否正常，轴承组件压紧螺栓是否拧紧，然后再启动泵。

3、轴承润滑：

轴承组件在装配时，若装配正确，润滑油适量，维修及时，运转寿命会较长，维修人员应定期检修轴承组件，检查轴承及润滑油的情况，在运转中须定期添加或更换润滑油，间隔时间及注入的量与泵的转速、轴承规格、连续工作时间、泵的停开次数、周围环境和运转温度等许多因素有关，因此须逐渐积累经验，合理及时的加润滑油。

4、备用泵应每周将轴转动1/4圈，以使轴承均匀的承受静载荷和外部震动。

MAINTAINCE

Keep the pump is running in good condition and used for long time, you may pay attention to maintaince as below:

1. Shaft seal

Check the sealling water pressure and capacity when pump seal is stuffing seal model, keep small clean water flow throw the interval of shaft. Check the stuffing gland regularly. Check the packing and changed it. Keep the pressure of sealling water as order.

2. The impeller adjust

In order to keep the pump working in higt efficiency condition. It is necessary to adjust the gap between the impeller and the front guid plate. The adjust order as:

stop pump, loosen the bolts of the press gland of the bearing unit, and loosen the nut of bolts a little, let the bearing body to move forward, at same time, running the pump as his rotation direction, until the impeller have wear with the front guid plate. Screw the nut of bolt that it is screw tightly befor for half round, then, loosen the nut of the adjusting bolt, let the bearing body to move back, nutil the clearance between the impeller and the front guid plate are from 0.5mm to 1mm, running the impeller and check it is if run at good conditing, after that, make the press blot of the bearing body tightly, the start the pump and check it again.

3. The bearing ubricate

When assembling the bearing unit, if the way lf set up is rugt, and the lubricating oil os just the right amount, and care of operation repairs in time, the pump woriing life may be longer. so, We are must check the bearing unit in time and checking and changing the ludrication oil in right amount. The time of change oil have something to do with the speed、oil pull in amount、the mokel of bearing、how long time of the working、the times of start and stop、the working condition、environment temperature and so on. The bearing lubrication are that it is necessary to accumulate experience, So. the lubrication oil pulling in as rational and in time.

4. When the pump is not used for long time, (or spare pump), The shaft of pump is run a quarter round every week. Let the bearing even stand static loading and outside vibration.

七、可能发生的故障及解决方法

TROUBLE AND REMEDIES

故障 Trouble	发生原因 Causes	解决办法 Remedies
泵不吸水 No suction	吸入管道或填料处漏气 转向不对或叶轮损坏 吸入管堵塞 Air leakage of pipe or packing. Wrong rotating direction impeller damaged. Suction pipe clogged	堵塞漏气部分 检查转向, 更换新叶轮 排除堵塞 Stop a leakage, check the rotating dorection, replace a impeller, clean the suction pipe.
轴功率过大 Excessive power of shaft	填料压盖太紧, 填料发热 泵内产生摩擦 轴承损坏 驱动装置皮带过紧 泵流量偏大 转速偏高, 比重大 电机轴与泵轴不对中或不平行 Packing pressured too tight and hotk, friction, damdged bearing. Driving belt too tighe, revolution too high, pump shaft and motor shaft are not in alighment	松填料压盖螺栓 消除摩擦 更换轴承 调整皮带 调节泵的运行工程 调节转速 调整电机轴和泵轴 Adjust the packing gland, remove a friction, adjust belt, replace bearing, adjust a revolution speed, aligr the shaft of a pump and a motor
轴承过热 Bearing too hot	轴承润滑油过多或过少 润滑油中有杂物 轴承损坏 More or little of the bearing lubricating grease. Impurity in grease. Damaged bearing.	加润滑油要适当 换新润滑油 换新轴承 Adjust or lubricating grease, replace, bearing.
轴承寿命短 Bearing life short	电机轴和泵轴不对中或不平行 轴弯曲 泵内有摩擦或叶轮失去平衡 轴承内进入异物或润滑油量不当 轴承装配不合理 Pump shaft and motor shaft are not in alignment. Shaft crooked, friction, impeller is not balanced, impurity in bearing. Lubricating grease is more or little. Bearing set up is not correct.	调整电机轴和泵轴 换轴 消除摩擦, 换新叶轮 清洗轴承 换轴承或重新装配轴承 Adjust the shaft of a pump and a motor, replace the shaft, remove a friction, clean a bearing, replace the bearing and set up it again.
填料处泄漏严重 Leaking out more than order from a packing	填料磨损严重 轴套磨损严重 密封水不清洁 Packing and sleeve wear and tear. Sealling water is not clean.	换新填料 换轴套 换清洁密封水 Replace new packing, replace sleeve, replace sealling water.
泵振动, 噪音大 Pump vibration, abnormal noise.	轴承损坏 叶轮不平衡 吸入管进气, 堵塞 流量不均匀, 泵抽空 Bearing damaged, impeller is not balanced. Suction pipe is clogged or air in. Capacity is not uniform.	换新轴承 换新叶轮 消除进气, 清理堵塞处 改善泵进料情况 Replace a bearing or impeller with new one, adjust or clean suction pipe, adjust capacity.



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