



# Instruction manual for IH



四川中瑛工业泵有限公司  
Sichuan Zhongying Industrial Pump Co., Ltd

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## 1. Overview

The IH type chemical pump is a single-stage single-suction cantilever centrifugal pump. Its marked rated performance points and dimensions are equivalent to the international standard ISO2858-1975 (E). It is an energy-saving and updated product determined by the Ministry of Mechanical and Electrical Engineering to replace the F-type corrosion-resistant centrifugal pump. , which can meet the requirements of transporting corrosive liquids with viscosity similar to water in chemical processes.

The temperature of the medium transported by the pump is generally  $-20^{\circ}\text{C}$  to  $105^{\circ}\text{C}$ . If necessary, appropriate cooling measures can be taken to transport higher temperature media. The maximum working pressure of the pump is designed to be 16bar.

The performance range of this series of pumps:

flow Q:  $6.3\sim 400\text{m}^3/\text{h}$

head H:  $5\sim 125\text{m}$

According to the corrosion of the pump by the transported medium, the user can choose the appropriate material for the liquid-contacting part. The materials of the main parts of the pump in contact with the medium are as shown in the following table:

material	ZG1Cr18Ni9	ZG1Cr18Ni9Ti	ZG0Cr18Ni12Mo2Ti
code	303	305	306
material	HT200	ZGCr28	ZG1Cr18Ni12Mo2Ti
code		203	307

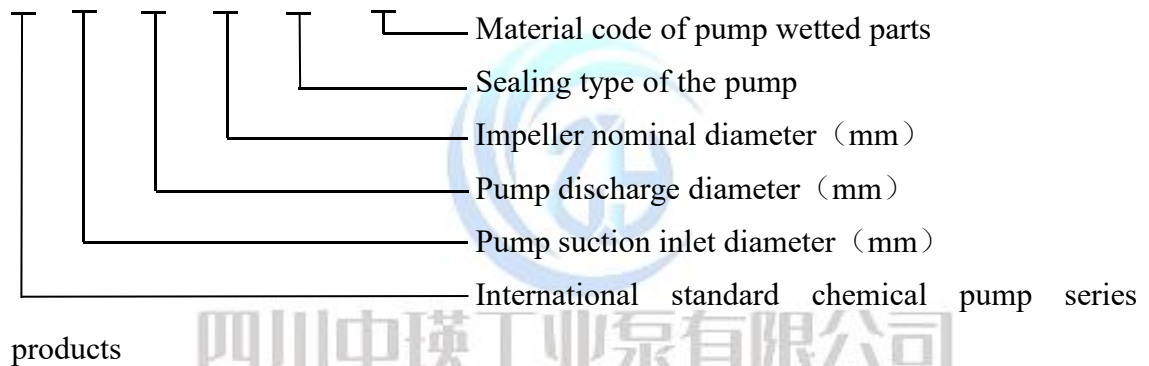
In addition to the materials listed in the above table, users are allowed to choose other materials that are suitable for the production of this series of pumps. In principle, materials and their codes should comply with the provisions of the GB2100-80

standard. For materials that do not have a code specified by the country, the internationally accepted material code or the domestically recognized material code (such as the regulations of the industry or the company) can be used.

IH type chemical pumps are suitable for a wide range of applications, such as chemical, petroleum, metallurgy, electric power, papermaking, food, pharmaceuticals, synthetic fibers and other industrial sectors for transporting corrosive or non-contaminated media.

#### Pump model meaning

IH 50—32—160 S1—303



## 2. Structure

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- 1、Pump body    2、Impeller    3、Sealing ring    4、Impeller nut    5、Pump cover  
6、Sealing parts    7、Middle bracket    8、Shaft    9、Suspension parts

### Structure description

1. Pump rotation direction: clockwise when viewed from the drive end.
2. Characteristics: The pump cover is fixed on the middle bracket through the stop, and then the pump cover is clamped in the middle through the connection between the pump body and the middle bracket. The pump body is axially suctioned and radially discharged. It is foot-supported and can be directly fixed on the base. superior. The suspension components are fixed on the middle bracket through the joints and supported on the base with the suspension frame. For the convenience of disassembly,

an extended coupling is designed. During maintenance, the outlet connecting pipeline, pump body and motor can be removed without disassembling the outlet connecting pipe, pump body and motor. Only the intermediate connecting piece of the extended coupling can be removed, and the rotor component can be withdrawn for maintenance. It is a common structural type in the world.



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### 3. Standard performance sheet

Pump model type	Head Q		Total H (m)	Speed (r/min)	Efficiency $\eta$ (%)	NPSH <sub>r</sub> (m)	Impeller diamater D2 (mm)	W (kg)
	(m <sup>3</sup> /h)	(L/s)						
IH50—32—125	6.3	1.75	5	1450	51	1.0	125	44
	12.5	3.47	20	2900	56	1.8		
IH50—32—160	6.3	1.75	8	1450	43	1.0	160	48
	12.5	3.47	32	2900	48	1.8		
IH50—32—200	6.3	1.75	12.5	1450	34	1.0	200	58
	12.5	3.47	50	2900	39	1.8		
IH50—32—250	6.3	1.75	20	1450	26	1.0	250	90
	12.5	3.47	80	2900	30	1.8		
IH65—50—125	12.5	3.47	5	1450	60	1.2	125	50
	25	6.94	20	2900	65	2.0		
IH65—50—160	12.5	3.47	8	1450	56	1.2	160	55
	25	6.94	32	2900	52	2.0		
IH65—40—200	12.5	3.47	12.5	1450	48	1.2	200	60
	25	6.94	50	2900	53	2.0		
IH65—40—250	12.5	3.47	20	1450	39	1.2	250	103
	25	6.94	80	2900	43	2.0		
IH65—40—315	12.5	3.47	32	1450	30	1.2	315	110
	25	6.94	125	2900	34	2.0		
IH80—65—125	25	6.94	5	1450	68	1.4	125	56
	50	13.89	20	2900	72	2.4		
IH80—65—160	25	6.94	8	1450	65	1.4	160	60
	50	13.89	32	2900	69	2.4		
IH80—50—200	25	6.94	12.5	1450	61	1.4	200	66
	50	13.89	50	2900	65	2.4		

Pump model type	Head Q		Total H (m)	Speed (r/min)	Efficiency $\eta$ (%)	NPSH <sub>r</sub> (m)	Impeller diamater D2 (mm)	W (kg)
	(m <sup>3</sup> /h)	(L/s)						
IH80—50—250	25	6.94	20	1450	53	1.4	250	113
	50	13.89	80	2900	57	2.4		
IH80—50—315	25	6.94	32	1450	43	1.4	315	115
	50	13.89	125	2900	47	2.4		
IH100—80—125	50	13.89	5	1450	74	1.8	125	90
	100	27.8	20	2900	77	3.2		
IH100—80—160	50	13.89	8	1450	72	1.8	160	95
	100	27.8	32	2900	75	3.2		
IH100—65—200	50	13.89	12.5	1450	69	1.8	200	97
	100	27.8	50	2900	72	3.2		
IH100—65—250	50	13.89	20	1450	65	1.8	250	111
	100	27.8	80	2900	68	3.2		
IH100—65—315	50	13.89	32	1450	57	1.8	315	160
	100	27.8	125	2900	60	3.2		
IH125—100—200	100	27.8	12.5	1450	75	2.2	200	110
	200	55.6	50	2900	77	4.5		
IH125—100—250	100	27.8	20	1450	72	2.2	250	170
	200	55.6	80	2900	74	4.5		
IH125—100—315	100	27.8	32	1450	68	2.2	315	190
	200	55.6	125	2900	70	4.5		
IH125—100—400	100	27.8	50	1450	60	2.2	400	210
IH150—125—250	200	55.6	20	1450	77	3.2	250	200
IH150—125—315	200	55.6	32	1450	74	3.2	315	225
IH150—125—400	200	55.6	50	1450	70	3.2	400	237
IH200—150—250	400	111	20	1450	81	4.5	250	255
IH200—150—315	400	111	32	1450	79	4.5	315	268
IH200—150—400	400	111	50	1450	76	4.5	400	278



## 4. Assembly and Disassembly

### 1. Pump disassembly sequence:

- (1) Unscrew the drain pipe plug on the pump body and the oil drain pipe plug on the suspension body. Drain the liquid in the pump and the oil in the oil storage room in the suspension body. If there is an external liquid sealing pipeline, it should also be removed.
- (2) Disassemble the connecting bolts of the middle frame of the pump body, and take out all the rotor components such as the middle frame, suspension parts, and sealing parts from the pump body (before this, remove the middle connecting piece of the extended coupling).
- (3) Loosen the impeller nut and remove the impeller and key.
- (4) Remove the pump cover from the shaft together with the shaft sleeve, mechanical seal cover and mechanical seal assembly. At this time, care should be taken not to allow the shaft sleeve and pump cover to slide relative to each other. Then disassemble the mechanical seal cover, take out the mechanical seal together with the shaft sleeve, and then disassemble the shaft sleeve and mechanical seal. If it is a soft packing seal, you can first remove the shaft sleeve from the pump cover, and then remove the packing gland, packing and packing ring in sequence. For mechanical seals with special structures, pay attention to their different disassembly and assembly methods.
- (5) Remove the center bracket and suspension bracket.
- (6) Remove the pump coupling and key.
- (7) Remove the dust disks at both ends of the suspension and the front and rear covers of the bearings, and then take out the shaft and bearings from the suspension body.
- (8) Disassemble bearings and shafts.

## 2. Pump assembly

The assembly sequence of the pump can basically be carried out in reverse of the disassembly sequence. However, when assembling, pay attention to check that the gaskets on each sealing surface are intact, and be careful not to miss any gaskets or replace incomplete gaskets.

## 5. Pump installation

- (1) After unpacking, check the pump and motor. If it is confirmed that there is no damage caused by the loading, unloading and transportation process and that the solid connections are loose, the inlet and outlet seals of the pump are intact, and no dust, dirt, etc. have entered the pump, then you can There is no need to disassemble and assemble again, it can be sent directly to the use site for installation.
- (2) The foundation plane on which the pump is installed should be leveled with a level. After the foundation cement has solidified, place the pump on the foundation and use a level to check the level of the pump and motor shaft. If it is not level, adjust it with iron pads until it is level. The base and anchor bolt holes are then cemented through the holes.
- (3) After the cement is dry, check whether the base and anchor bolt holes are loose. If appropriate, tighten the anchor bolts and recheck the level bottom.
- (4) When the motor, pump and base are reinstalled, the concentricity of the pump shaft and motor shaft should be strictly checked. The difference between measuring the upper, lower, left and right outer circles of the coupling shall not exceed 0.1mm, and the maximum and minimum gap difference between the end faces of the two couplings in one circle shall not exceed 0.3mm.
- (5) The suction pipeline and pressure pipeline of the pump should have their own brackets. The weight of the pipeline is not allowed to be directly borne by the pump to avoid crushing the pump.
- (6) When the installation position of the pump is higher than the liquid level (within

the allowable range of the pump's suction lift), a bottom valve should be installed at the end of the suction pipe, and a filling screw hole or valve should be set on the discharge pipe for filling the pump before starting. When the installation position of the pump is lower than the liquid level (filling condition), a control valve and filter device should be installed on the suction pipeline to prevent debris from being sucked into the pump.

## **6. Pump use**

### **6.1 To start**

- (1) Prepare the necessary tools.
- (2) Check the oil level in the suspension body oil reservoir. It should be controlled at a position about 2 mm from the center line of the oil level gauge.
- (3) Check whether the rotation of the motor is correct. Reverse rotation is strictly prohibited.
- (4) Turn the coupling by hand. It should feel easy and even. And pay attention to identify whether there are any noises such as friction and foreign objects rolling in the pump. If so, try to eliminate it. And install the protective cover of the coupling.
- (5) When the installation position of the pump is lower than the liquid level (filling situation), the gate valve of the suction pipe should be opened before starting to fill the pump with liquid. If the installation position of the pump is higher than the liquid level (vacuum situation), the pump should be filled before starting. Or vacuum, fill the pump and the suction chamber with liquid, and drain the air in the pump.
- (6) Close the inlet and outlet pressure (or vacuum) gauge and pressure outlet pipeline gate valves, start the motor (it is best to jog it first, and confirm that the pump rotation is correct before officially running it), and open the inlet and outlet pressure gauges. Then slowly open the outlet pipeline gate valve to the required position.

## 6.2 To run

- (1) Always check the temperature rise of the pump and motor. The temperature rise of the bearings should not be higher than 350°C, and the limit temperature should not be higher than 750°C.
- (2) Pay attention to changes in the oil level in the suspension body oil storage chamber, and always control it within the specified range. In order to keep the oil clean and well lubricated, new oil should be replaced regularly according to the actual conditions of on-site use. Generally speaking, all oil should be replaced with new oil after every 1500 hours of operation.
- (3) During operation, if abnormal sounds or other faults are found, stop the machine immediately for inspection, and continue operation only after queuing up faults.
- (4) Never use the gate valve on the suction pipeline to adjust the flow to avoid cavitation.
- (5) The pump is generally not suitable for long-term operation at less than 30% of the design flow rate. If it must be used under such conditions, a bypass pipe should be installed on the outlet pipeline to ensure that the pump flow rate reaches the specified use range.

## 6.3 To stop

- (1) Slowly close the outlet pipeline gate valve and stop the motor.
- (2) Close the inlet and outlet pressure (vacuum) gauges. In the case of filling, close the suction pipeline gate valve. If external liquid drainage is used for sealing, the external liquid drainage valve must also be closed.
- (3) If the ambient temperature is lower than the freezing point of the liquid, drain the liquid in the pump to prevent freezing and cracking.
- (4) For pumps that have been stopped for a long time, in addition to draining the corrosive liquid in the pump, they must also be rinsed with clean water, especially the sealing chamber must be rinsed carefully. It is best to disassemble the pump, clean it and reinstall it, and seal the inlet and outlet of the pump and keep it in a safe place.

## **7. Precautions when using mechanical seals**

This series of pumps can be equipped with different forms of mechanical seals according to different usage conditions, such as built-in single balanced and unbalanced types, double balanced and unbalanced types, external mechanical seals, etc. Therefore, depending on the type of seal selected, its usage and precautions are also different. For specific situations, follow the regulations in the "Mechanical Seal Installation and Operation Instructions". Here are some things you should pay attention to.

- (1) Generally, mechanical seals are suitable for clean media without suspended particles. Therefore, newly installed piping systems and liquid storage tanks should be carefully flushed to prevent solid impurities from entering the mechanical seal surface and causing seal failure.
- (2) In media that is prone to crystallization, when using mechanism seals, pay attention to frequent flushing. Before restarting after stopping, clean the crystals on the mechanical seal.
- (3) Care should be taken when disassembling the seal of the mechanism. Do not use hammers, iron tools, etc. to knock, so as not to damage the sealing surfaces of the dynamic and static rings.
- (4) If there is dirt that cannot be removed, do not force it to be removed. Try to remove the dirt and rinse it before disassembling to avoid damaging the sealing components.
- (5) Before installing the mechanical seal, all sealing components should be checked for failure and damage. If so, they should be repaired or replaced with new ones.
- (6) The grinding sealing end faces of the moving ring and the stationary ring should be strictly inspected, and any minor scratches, bruises and other defects are not allowed. All parts, including the pump body, impeller, sealing chamber, etc., should be rinsed before assembly, especially the end faces of the dynamic and stationary rings. They should be carefully wiped clean with a clean, soft cloth or cotton gauze, and then coated with a layer of clean grease. or engine oil.
- (7) Pay attention to eliminating deviations during assembly. When tightening screws,

tighten them evenly to avoid deflection and seal failure.

- (8) Correctly adjust the compression of the spring so that it is not too tight or too loose. If it is too tight, the sealing end face will soon wear out and become ineffective, and consume a lot of power; if it is too loose, the seal will not work and the leakage will be too large. Therefore, after the pump is installed, when you turn the rotor by hand, you should feel that the sealing spring has a certain amount of compression and can rotate briskly and flexibly without any clenching feeling. If it feels too tight or the disc does not move, then It should be appropriately loosened.
- (9) For mechanical seals with external flushing, the flushing fluid should be opened before starting to fill the sealing cavity with sealing fluid. When stopping, stop the pump first and then turn off the seal flushing fluid.



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## 8. Troubleshooting

Trouble									
Vibration and noise occur									Excessive leakage in the shaft seal cavity
Power consumption is too high									Shaft seal (including stuffing box) heats up
Insufficient flow and lift									The pump is overheated or cannot rotate
Pump cannot pump liquid									Bearings are hot and easily damaged
Possible causes	↓	↓	↓	↓	↓	↓	↓	↓	Solutions
Air remains in the pump or suction pipe	○	○		○					Refill fluid and remove air
Suction lift is too high or insufficient perfusion	○	○		○					Lower pump level, increase inlet and pressure
The suction pipe is too small or blocked by debris	○	○		○					Increase the suction pipe diameter and remove blockages
The suction pipe is not immersed deep enough or is leaking	○	○							Increase the immersion depth or repair the pipeline
Speed is too high or too low	○	○	○						Check the prime mover speed, as required
Wrong direction of rotation	○	○							It should rotate clockwise when viewed from the prime mover end.
The device head does not match the pump head.	○	○	○						Try to reduce the resistance or height of the discharge system
Medium weight and viscosity do not match pump requirements	○	○	○						Recalculate or replace the motor with appropriate power
Vibration occurs when the flow rate is too small				○	○		○	○	Increase flow or set up bypass circulation pipe
The pump and motor axes are inconsistent or the shaft is bent			○	○		○	○	○	realignment

There is friction between the rotating part and the fixed part			0	0			0	0	Repair the pump or improve its operating conditions
Bearings severely worn or damaged				0		0	0	0	Replace with new one
Seal ring worn too much		0	0						Replace with new one
Too much wear on the sleeve, packing or static and dynamic rings			0		0	0	0		Replace with new one
Improper selection or installation of packing or mechanical seal			0		0	0	0		Reconfiguration or installation according to usage requirements
The rotating part loses balance and causes vibration				0	0	0	0	0	Check the cause and try to eliminate it
There is too much oil in the suspension oil chamber or the oil is too dirty.			0	0				0	Add oil according to the oil level gauge or replace it with new oil
There is debris blocking the pipeline or pump	0	0		0					Careful inspection and drainage
Improper double seal hydraulic pressure				0	0				The pressure should be greater than before the shaft seal (0.5-1.5) kg/cm <sup>2</sup>
The packing gland is too tight or too loose			0		0	0			Adjust it appropriately



## 9. Pump appearance and installation dimensions chart

1、 Pump outline drawing

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2、Installation size chart

Pump model type	Ratio (≤)	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>
IH50-32-125	2.50	Y801-4	0.55	820	150	540	895	80	80	360	320	25	197	337	165	125	4-17.5	140	100	4-17.5	4-18.5
	0.70	Y802-2	1.1				925														
	1.00	Y90S-2	1.5				950														
	1.50	Y90L-2	2.2	920	170	600	950			390	350	30									
	2.00	Y100L-2	3.0	995																	
IH50-32-160	1.40	Y801-4	0.55	820	150	540	895	80	80	360	320	25	217	377	165	125	4-17.5	140	100	4-17.5	4-18.5
	1.90	Y802-4	0.75				925														
	2.85	Y90S-4	1.1				950														
	0.80	Y90L-2	2.2	920	170	600	995			390	350	30									
	1.10	Y100L-2	3	1025																	
	1.45	Y112M-2	4	1020	190	660	1075			450	400	30									
	2.00	Y132S <sub>1</sub> -2	5.5	4-24																	
IH50-32-200	0.70	Y801-4	0.55	820	150	540	895	80	80	360	320	30	245	425	165	125	4-17.5	140	100	4-17.5	4-18.5
	0.95	Y802-4	0.75				925														
	1.45	Y90S-4	1.1				950														
	1.95	Y90L-4	1.5	920	170	600	1025			390	350	30									
	0.75	Y112M-2	4.0	1020	190	660	1075			450	400	30									
	1.00	Y132S <sub>1</sub> -2	5.5	95	490	440	300			480											
	1.40	Y132S <sub>2</sub> -2	7.5	4-24																	
	2.10	Y160M <sub>1</sub> -2	11	1140	210	740	1220														

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>													
IH50-32-250	0.65	Y90S-4	1.1	1020	190	660	1060	95	100	450	400	30	265	490	165	125	4-17.5	140	100	4-17.5	4-24													
	0.90	Y90L-4	1.5				1085																											
	1.35	Y100L <sub>1</sub> -4	2.2				1130																											
	1.85	Y100L <sub>2</sub> -4	3.0																															
	0.70	Y132S <sub>2</sub> -2	7.5	1140	210	740	1210																											
	1.10	Y160M <sub>1</sub> -1	11	1270	225	840	1335						540	490									300	525										
	1.50	Y160M <sub>2</sub> -2	15				1395																											
	1.80	Y160L-2	18.5				1430																											
	2.20	Y180M-2	22																															
IH65-50-125	1.60	Y801-4	0.55	820	150	540	895	80	80	360	320	25	197	337	185	145	4-17.5	165	125	4-17.5	4-18.5													
	2.20	Y802-4	0.75				950																											
	0.85	Y90L-2	2.2	920	170	600	995			390	350											30												
	1.15	Y100L-2	3				1025																											
	1.55	Y112M-2	4				1075																											
	2.15	Y132S <sub>1</sub> -2	5.5	1020	190	600	1075														450		400										4-24	
IH65-50-160	0.90	Y801-4	0.55	820	150	540	895	80	80	360	320	25	217	377	185	145	4-17.5	165	125	4-17.5	4-18.5													
	1.20	Y802-4	0.75				925																											
	1.85	Y90S-4	1.1				950																											
	2.55	Y90L-4	1.5	920	170	600	955			390	350											30												
	0.65	Y100L-2	3				1025																											
	0.95	Y112M-2	4				1075																											
	1.30	Y132S <sub>1</sub> -2	5.5				1020																190	660	1075	450	400							
	1.90	Y132M <sub>2</sub> -2	7.5																															
	2.70	Y160M <sub>1</sub> -2	11	1140	210	740				1220	490										440								232	392				

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>	
IH65-40-200	0.70	Y802-4	0.75	920	170	660	915	80	100	390	350	30	245	425	185	145	4-17.5	150	110	4-17.5	4-18.5	
	1.00	Y90S-4	1.1				945															
	1.40	Y90L-4	1.5				970															
	2.05	Y100L <sub>1</sub> -4	2.2				1015															
	0.70	Y132S <sub>1</sub> -2	5.5	1020	190	660	1095			450	400		4-24									
	1.00	Y132S <sub>2</sub> -2	7.5	1140	210	740	1240			490	440		300	480								
	1.50	Y160M <sub>1</sub> -2	11																			
	2.10	Y160M <sub>2</sub> -2	15																			
IH65-40-250	0.50	Y90S-4	1.1	1020	190	660	1060	95	100	450	400	30	265	490	185	145	4-17.5	150	110	4-17.5	4-24	
	0.70	Y90L-4	1.5				1085															
	1.05	Y100L <sub>1</sub> -4	2.2				1130															
	1.45	Y100L <sub>2</sub> -4	3.0																			
	1.95	Y112M-4	4.0	1160																		
	0.70	Y160M <sub>1</sub> -2	11	1270	225	840	1355			540	490		40	300							525	
	1.00	Y160M <sub>2</sub> -2	15																			
	1.30	Y160L-2	18.5				1395															
	1.50	Y180M-2	22				1430						30	340							565	4-28
	2.10	Y200L <sub>1</sub> -2	30				1503						40	360							585	

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>		
IH65-40-315	0.65	Y100L <sub>2</sub> -4	3.0	1140	210	740	1155	95		490	440	30	300	550								4-24	
	0.95	Y112M-4	4.0				1185																
	1.25	Y132S-4	5.5				1235																
	1.80	Y132M-4	7.5				1275																
	2.70	Y160M-4	11	1270	225	840	1380	95	125	540	490	40	320	570	185	145	4-17.5	150	110	4-17.5			
	0.50	Y160M <sub>2</sub> -2	15				1420																
	0.60	Y160L-2	18.5				1455																
	0.70	Y180M-2	22				1530																
	1.00	Y200L <sub>1</sub> -2	30	1420	250	940	1530	110		610	550	40	380	630									4-28
	1.30	Y200L <sub>2</sub> -2	37				1565																
	1.60	Y225M-2	45				1565																
IH80-65-125	0.90	Y801-4	0.55	820	150	540	915	80	100	360	320	25	217	377	200	160	8-17.5	185	145	4-17.5			4-18.5
	1.20	Y802-4	0.75				945																
	1.80	Y90S-4	1.1				970																
	2.40	Y90L-4	1.5	920	170	600	1015	80	100	390	350	30	217	377	200	160	8-17.5	185	145	4-17.5			4-24
	0.65	Y100L-2	3.0				1045																
	0.85	Y112M-2	4.0				1095																
	1.30	Y132S <sub>1</sub> -2	5.5				1240																
	1.70	Y132S <sub>2</sub> -2	7.5	1020	190	660	1095	80	100	450	400	30	257	417									
	2.60	Y160M <sub>1</sub> -2	11				1110																

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>				
IH80-65-160	0.70	Y802-4	0.75	920	170	600	915	80	100	390	350	25	245	425	200	160	8-17.5	185	145	4-17.5	4-18.5				
	1.05	Y90S-4	1.1				945																		
	1.45	Y90L-4	1.5				970																		
	2.15	Y100L <sub>1</sub> -4	2.2				1015																		
	0.70	Y132S <sub>1</sub> -4	5.5	1020	190	660	1095	80	100	450	400	30	260	440	200	160	8-17.5	185	145	4-17.5	4-24				
	1.00	Y132S <sub>2</sub> -4	7.5																						
	1.50	Y160M <sub>1</sub> -4	11	1140	210	740	1240																		
	2.10	Y160M <sub>2</sub> -4	15																						
IH80-50-200	0.65	Y90S-4	1.1	920	170	600	945	80	100	390	350	30	245	445	200	160	8-17.5	165	125	4-17.5	4-18.5				
	0.95	Y90L-4	1.5				970																		
	1.30	Y100L <sub>1</sub> -4	2.2				1015																		
	1.80	Y100L <sub>2</sub> -4	3.0				1045																		
	2.50	Y112M-4	4.0	1020	190	660	1095	80	100	450	400	30	300	500	200	160	8-17.5	165	125	4-17.5	4-24				
	0.60	Y132S <sub>2</sub> -4	7.5																						
	0.90	Y160M <sub>1</sub> -2	11																			1240			
	1.30	Y160M <sub>2</sub> -2	15																			1140	210	740	1280
	1.60	Y160L-2	18.5																			1315			
	1.90	Y180M-2	22																						

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>										
IH80-50-250	1.25	Y112M-4	4.0	1020	190	600	1185	95	125	450	440	30	265	490	200	160	8-17.5	165	125	4-17.5	4-24										
	1.80	Y132S-4	5.5	1140	210	740	1235			490	440		280	505																	
	2.50	Y132M-4	7.5				1275			540	490		300	525																	
	1.00	Y180M-2	22	1270	225	840	1455			610	550		320	545																	
	1.40	Y200L <sub>1</sub> -2	30	1420	250	940	1528			95	125		490	440								30	325	605	200	160	8-17.5	165	125	4-17.5	4-24
	2.10	Y225M-2	45				1565																								
IH80-50-315	1.30	Y132M-4	7.5	1140	210	740	1275	95	125	490	440	30	325	605	200	160	8-17.5	165	125	4-17.5	4-28										
	1.90	Y160M-4	11	1270	225	840	1380			540	490		345	625																	
	2.60	Y160L-4	15				1420			610	550		365	645																	
	1.10	Y225M-2	45	1420	250	940	1565			660	600		40	385								665									
	1.35	Y250M-2	55	1620	290	1060	1660			730	670		95	100								30	245	425	200	180	8-17.5	200	160	8-17.5	4-18.5
	1.85	Y280S-2	75	1820	320	1200	1735			390	350																				
IH100-85-125	1.35	Y90L-4	1.5	920	170	600	970	95	100	390	350	30	245	425	200	180	8-17.5	200	160	8-17.5	4-24										
	1.95	Y100L <sub>1</sub> -2	2.2				1015															490	440	260	440						
	1.40	Y160M <sub>1</sub> -2	11	1140	210	740	1240			95	100		490	440								30	260	440	200	180	8-17.5	200	160	8-17.5	4-24
	1.90	Y160M <sub>2</sub> -2	15																												

续 6



Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>							
IH100-80-160	0.80	Y90L-4	1.5	1020	190	660	1085	95	100	450	400	30	245	445	220	180	8-17.5	200	160	8-17.5	4-24							
	1.20	Y100L <sub>1</sub> -4	2.2	1030			1130						260	460														
	1.65	Y100L <sub>2</sub> -4	3.0				1160						320	520														
	2.20	Y112M-4	4.0	1230	225	800	1885			540	490	40	300	500														
	0.55	Y132S <sub>2</sub> -2	7.5				1080															200	700	1590	490	440	260	460
	0.85	Y160M <sub>1</sub> -2	11				1020															840	2010	1925	610	550	320	520
	1.10	Y160M <sub>2</sub> -2	15																					1885				
	1.40	Y160L-2	18.5	1420	250	940	1503			95	100	540	490	40								300	500					
	1.70	Y180M-2	22				2010																					
	2.30	Y200L <sub>1</sub> -2	30	1420	250	940	1503			610	550	40	300	500														
IH100-65-200	0.70	Y100L <sub>1</sub> -4	2.2	1140	210	740	1170	95	100	490	440	30	320	545	220	180	8-17.5	185	145	4-17.5	4-24							
	0.95	Y100L <sub>2</sub> -4	3.0				1200						280	505														
	1.35	Y112M-4	4.0				1250						320	545														
	2.00	Y132S <sub>2</sub> -4	5.5				1290						40	300								525						
	2.70	Y132M-4	7.5				1395																30	340	565			
	0.70	Y160M <sub>2</sub> -2	15	1270	225	840	1435			540	490	40	300	525														
	0.85	Y160L-2	18.5				1470																					
	1.00	Y180M-2	22				1470																					
	1.40	Y200L <sub>1</sub> -2	30	1420	250	940	1545			95	100	610	550	40							360	585						
	1.75	Y200L <sub>2</sub> -2	37				1580																					
2.15	Y225M-2	45	1580																									

续 7

Pump model type	Ratio (≤)	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>															
IH100-65-250	0.60	Y100L <sub>2</sub> -4	3.0	1140	210	740	1195	102	125	490	440	30	340	590	220	180	8-17.5	200	145	4-17.5	4-24															
	0.80	Y112M-4	4.0				1225	110					300	550																						
	1.15	Y132S-4	5.5				1275	102					340	590																						
	1.60	Y132M-4	7.5				1315	110					320	570																						
	2.35	Y160M-4	11	1285	225	840	1420	110		540	490	380	630	40								400	650	4-28												
	3.25	Y160L-4	15	1420	250	940	1460	110		610	550																									
	0.60	Y180M-2	22	1270			1495	95		380	630																									
	0.85	Y200L <sub>1</sub> -2	30	1420			1570	110		400	650																									
	1.00	Y200L <sub>2</sub> -2	37	1430			1635	116		660	600																									
	1.25	Y225M-2	45	1430	1620	290	1060	1700		110	730	670	425												705	220	180	8-17.5	185	145	4-17.5	4-28				
	1.55	Y250M-2	55	1620	290	1060	1700	110		660	600																									
	2.10	Y280S-2	75	1820	320	1200	1775	110		730	670																									
0.65	Y132S-4	5.5	1270	225	840	1305	110	125	540	490	40	365	645		220	180	8-17.5	185	145	4-17.5	4-24															
0.85	Y132M-4	7.5				1345																			610								550			
1.30	Y160M-4	11				1450																			500								660	600		
1.75	Y160L-4	15				1490																			730								670			
2.20	Y180M-4	18.5	1420	250	940	1525			110	125	610	550	40	365								645	220	180	8-17.5								185	145	4-17.5	4-28
0.55	Y200L <sub>2</sub> -2	37	1600	660	600																															
0.70	Y225M-2	45	1620	290	1060	1635			110	125	660	600	40	425								705														
0.85	Y250M-2	55	1620	290	1060	1730			110	125	730	670	40	425								705														
1.20	Y280S-2	75	1820	320	1200	1850			110	125	730	670	40	425								705														
1.40	Y280M-2	90	1820	320	1200	1855			110	125	730	670	40	425								705														

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>				
IH125-100-200	0.75	Y112M-4	4.0	1140	210	740	1225	110	125	490	440	30	300	580	250	210	8-17.5	220	180	8-17.5	4-24				
	1.05	Y132S-4	5.5				1275	102					340	620											
	1.50	Y132M-4	7.5				1315	320					600												
	2.20	Y160M-4	11	1285	225	840	1420			540	490		320	600											
	0.75	Y200L <sub>1</sub> -2	30	1420	250	940	1570	110	125	610	550	40	380	660	250	210	8-17.5	220	180	8-17.5	4-28				
	0.95	Y200L <sub>2</sub> -2	37																			1605	400	680	
	1.15	Y225M-2	45	1430			1605			660	600		400	680											
	1.40	Y250M-2	55	1620	290	1060	1700			730	670														
	1.90	Y280S-2	75	1820	320	1200	1775																		
IH125-100-250	0.60	Y132S-4	5.5	1270	225	840	1320	110	140	540	490	30	345	625	250	210	8-17.5	220	180	8-17.5	4-24				
	0.90	Y132M-4	7.5				1360															610	550	365	645
	1.30	Y160M-4	11				1465															660	600	40	425
	1.80	Y160L-4	15	1420	250	940	1505	110	140	610	550	40	365	645	250	210	8-17.5	220	180	8-17.5	4-28				
	2.20	Y180M-4	18.5				1540															660	600	425	705
	0.65	Y225M-2	45	1620	290	1060	1650	110	140	660	600	40	425	705	250	210	8-17.5	220	180	8-17.5	4-28				
	0.80	Y250M-2	55				1745															730	670		
	1.15	Y280S-2	75	1820	320	1200	1820	110	140	730	670	40	425	705	250	210	8-17.5	220	180	8-17.5	4-28				
	1.35	Y280M-2	90				1870																		

Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>
IH125-100-315	1.05	Y112M-4	15	1420	250	940	1505	110	140	615	550	40	390	705	250	210	8-17.5	220	180	8-17.5	4-28
	1.55	Y132S-4	22				1560														
	2.10	Y132M-4	30				1613														
	0.70	Y160M-4	75	1820	320	1200	1820			730	670		410	725							
	0.80	Y200L <sub>1</sub> -2	90				1870														
IH125-100-400	0.95	Y200L <sub>2</sub> -2	22	1620	290	1060	1560	130	140	660	600	40	440	795	250	210	8-17.5	220	180	8-17.5	4-28
	1.20	Y225M-2	30				1613														
	1.45	Y250M-2	37				1655														
IH150-125-250	0.70	Y280S-2	11	1270	225	840	1465	110	140	540	490	40	394	745	285	240	8-22	250	210	8-17.5	4-28
	1.15	Y132S-4	18.5	1420	250	940	1540			610	550										
	1.40	Y132M-4	22				1560														
	1.90	Y160M-4	30				1613														
IH150-125-315	0.70	Y160L-4	18.5	1620	290	1060	1540	130	140	660	600	40	440	795	285	240	8-22	250	210	8-17.5	4-28
	0.80	Y180M-4	22				1560														
	1.15	Y280S-2	30				1613														
	1.40	Y132S-4	37				1650														
	1.90	Y132M-4	45				1680														
	2.10	Y160M-4	55				1745														



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Pump model type	Ratio ( $\leq$ )	Motor type	Power (KW)	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	h	H	H <sub>1</sub>	a <sub>1</sub>	b <sub>1</sub>	n <sub>1</sub> -d <sub>1</sub>	a <sub>2</sub>	b <sub>2</sub>	n <sub>2</sub> -d <sub>2</sub>	n <sub>3</sub> -d <sub>3</sub>
IH150-125-400	0.70	Y200L-4	30	1620	290	1060	1613	110	140	660	600	40	475	875	285	240	8-22	250	210	8-17.5	4-28
	0.85	Y225S-4	37				1665														
	1.05	Y225M-4	45				1680														
	1.25	Y250M-4	55				1745														
	1.75	Y280S-4	75	1820	320	1200	1820	130	730	670	515	915									
	2.10	Y280M-4	90				1870														
IH200-150-250	1.00	Y200L-4	30	1620	290	1060	1673	130	160	660	600	40	440	815	340	295	12-22	285	240	8-22	4-22
	1.25	Y225S-4	37				1710														
	1.50	Y225M-4	45				1740														
	1.85	Y250M-4	55				1805														
IH200-150-315	0.60	Y200L-4	30	1820	320	1200	1815	130	160	730	670	40	515	915	340	295	12-22	285	240	8-22	4-28
	0.75	Y255S-4	37				1855														
	0.90	Y225M-4	45				1880														
	1.10	Y250M-4	55				1945														
	1.50	Y280S-4	75				2020														
	1.85	Y280M-4	90				2070														
IH200-150-400	0.65	Y250M-4	55	1820	320	1200	1945	130	160	730	670	40	515	965	340	295	12-22	285	240	8-22	4-28
	0.95	Y280S-4	75				2020														
	1.10	Y280M-2	90				2070														



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