



PDH Electric Chain Hoist Instruction Book



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1. Mark definition

PDH series electric chain hoist was designed to apply in normal work condition, lifting load in vertical direction, it can not lift mankind.

The manual use the below mark to authenticate the lever and grade of danger.



Very dangerous status, if it is inevitable, it will lead to human being injury or series human wounded and property loss.



Potential dangerous status, if it is inevitable, it may lead to human being injury or serious human being wounded and property loss.



Potential dangerous status, if it is inevitable, it may lead to human being injury or serious human being wounded and property loss.

According to the operating situation, Caution Mark would lead to series human being injury also, hence, whatever mark you meet, the safe operation is the most important, and you should put the manual in the place where the operator could use conveniently as reference.

2. FORBIDDEN PRINCIPLE

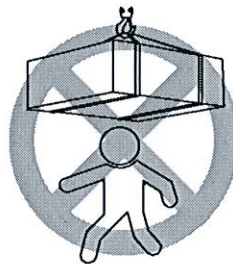
2.1 GENERAL RULES

Wrong use or forget to maintain the hoist, it may lead to dangerous situation. For example, the dangerous situation as lifting load can not land on the earth. Before install operate or maintain, please read all the text of the manual and conform the principal of safety and operating instructions.

We will not be responsible for the problem which was due to wrong use. If the product is use in non standard application, please negotiate with the local distributor in advance.



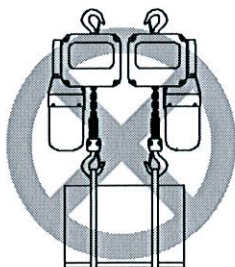
Hoist can not transfer Human being or use as Supporting mechanism



Don't pass through the beneath side of lifting weight, Also, don't move the lifting weight to the up side of human being



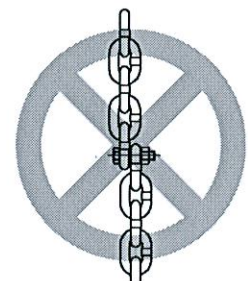
Lifting weight can not over the rated lifting capacity.



Forbidden to use multi pieces of hoists to lift weight which is over the rated capacity of the single hoist.



Forbidden to weld the hook and the lifting chain



Do not use bolt, screw driver etc to knot or shorten the lifting chain

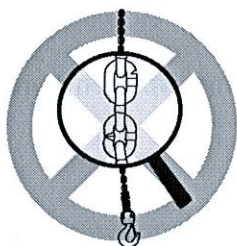
Caution: Before you move the weight, please warn all the human being to be careful in the nearby zone, if it is necessary, please set lifting special operating area, only operator could enter in this zone. The person, who has not known all the text of the manual and the warning mark, can not operate the hoist.

2.2 Preoperational Check

- ⚠ CAUTION** This manual was formulated for hoist operator. Before operator start to work, he should know all the contents of safety and operation instruction.
- ⚠ WARNING** If the products has deformation of crack problem on the hook, hoop, please do not use, you should contact the seller or our company, change the new parts, please do not change the new parts which were not supplied by our seller or us.
- ⚠ WARNING** Forbidden to repair the lifting chain which was installed in the hoist
- ⚠ CAUTION** before load, please fill 0.7 Kg L-CKD-100 close type gear oil into the reducer, L-CKD-100
- ⚠ CAUTION** Gear oil or Calcium base grease in chain surface.
- ⚠ CAUTION** the electric hoist must use when it is earth well
- ⚠ CAUTION** When the lifting chains twist, knot; please do not start the machine to lift goods.
- ⚠ CAUTION** Preoperational procedure; please assure carry out all the contents of project inspecting classification.
- ⚠ CAUTION** Asses the weight of the lifting goods; select the hoist which is suitable for your application and capacity.
- ⚠ CAUTION** Check the upper hook shaft and down hook shaft to assure that they have no deformation or loose
- ⚠ CAUTION** Check the position limit work situation manually, to confirm that it is normal.
- ⚠ CAUTION** Load chain was made of special alloy steel can not be welded or refited.
- ⚠ CAUTION** When the temperate is below 0°C, check the brake whether it has ice or not.

2.3 CAUTIONS IN OPERATION

⚠ WARNING



Forbidden to use the hoist which has deformation or crack in lifting chain



Do not use lifting chain as have duty rigging



Do not lift the goods slant the angle can not over 12 than vertical direction



Can't hang the weight directly on the hook tip



Do not let the lifting chain pass through the obstacle surface such as steel plate



Forbidden to do welding or cutting operation when the weight was lifted in the air.

⚠ WARNING

Don't wave the lifting goods.

⚠ WARNING

Don't use hoist which was broken or with abnormal sound.

⚠ WARNING

Don't do repeat quick up and down operation when lifting the goods.

⚠ CAUTION

Forbidden to put the weight in the air without supervisor in long time.

Please assure the load was in hook cavity correctly.

Before lifting the weight, must assure eliminate the lifting chain clearance, in order to avoid the occurrence of impacting load.

2.4 Finished operation

⚠ CAUTION

After operation, please make sure the weight was land on the earth safely to avoid the goods drop.

⚠ WARNING

When the operation finished, cut off the control pendant in order to avoid wrong operations by others.

2.5 Project inspection and maintain

⚠ CAUTION

Assure special inspector inspect and maintain the hoist regularly according to the rules in chapter 4 and chapter 5, otherwise, please contact our seller or us to make sure the inspect and maintain item.

⚠ WARNING

The load chain was made of special alloy steel, do not weld or refit.

2.6 Other items

⚠ CAUTION

If you want to use the hoist in special condition (such as salt water, sea water, acid material, basic material, explosive environment), please contact our seller or us to confirm.

⚠ WARNING

Forbidden to use the hoist which has problem or need to be maintained.

3. TECHNICAL DATA

3.1 OPERATION CONDITION AND ENVIRONMENT

TEMPERATURE RANGE: $-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$, if you need hoist work in extreme work environment, please consult on our seller or us.

Relative humidity $\leq 85\%$, this product was not under-water operating product.

Altitude height: $\leq 1000\text{m}$

It was not suitable to use in condition where has fire disaster, explosion risk or corrosive gas, also It can not lifting melted steel and poisonous, inflammable, explosive goods.

3.2 TECHNICAL PARAMETER

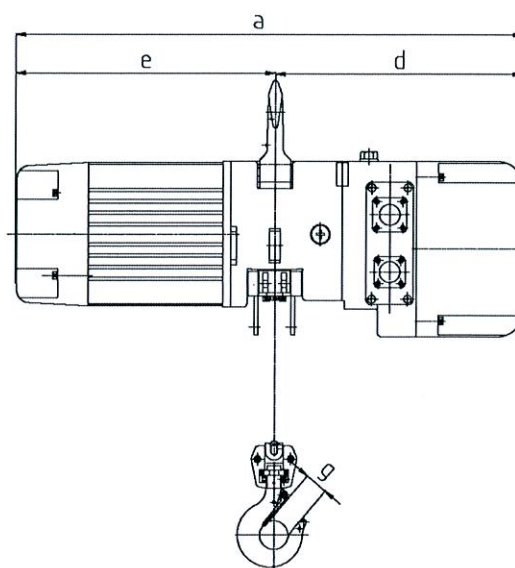
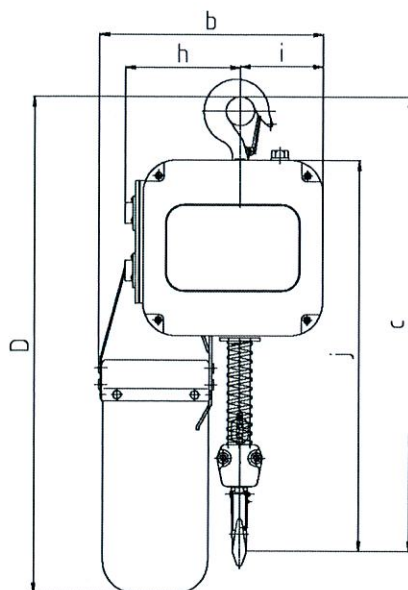


Table: PDH Series Technical Parameters

Type		PDH-A-0.5	PDH-A-1	PDH-A-2	PDH-A-3	PDH-A-5
Capacity (t)		0.5	1	2	3	5
Lifting Speed (m/min)		7.2/2.5	5/5.8	2.5/0.85	6/2	3.6/0.85
Classification		M5	M5	M4	M4	M4
Lifting Motor power(kw)		0.9/0.3	1.1/0.37	1.1/0.37	3/1	3/1
Duty Rating (jc%)		60	60	60	60	60
Standard Lifting height (m)		3	3	3	3	3
Load Chain		φ6.3x19	φ8x24	φ8x24	φ11.2x34	φ11.2x34
Chain Fall		1	1	2	1	2
Tested Load (Kg)		625	1250	2500	3750	6250
Main Dimen- sion	C	495	530	590	595	860
	D	610	630	780	780	870
	a	Single-speed	592	592	592	694
		Dual-speed	632	652	652	720
		Inverter	622	622	622	694
	b	276	276	276	430	430
	d	Single-speed	273	273	273	336
		Dual-speed	303	303	303	336
		Inverter	303	303	303	336
	e	Single-speed	319	319	319	358
		Dual-speed	329	349	349	384
		Inverter	319	319	319	358
	g	31	38	45	45	61
	h	142	142	185	185	240
	i	102	102	165	165	110
	j	420	430	482	487	665

List 2 PDH electrical parameter list

STYLE	Power plant voltage (V)	Control Pendant Voltage (V)	Frequen- cy (Hz)	Ampere without load (A)	Ampere with load (A)	Electric motor with load uration rate (%)	Electrical machinery connected No Each hour (n)
PDH-A-0.5	220v-440v/3p	24	50/60	2.25	3	60	240
PDH-A-1	220v-440v/3p	24	50/60	4.5	5	60	240
PDH-A-2	220v-440v/3p	24	50/60	5	6.5	60	240
PDH-A-3	220v-440v/3p	24	50/60	5	6.5	60	240
PDH-A-5	220v-440v/3p	24	50/60	5	6.5	60	240

3.3 Main characteristic

This hoist has overload limited mechanism, could avoid the bad effect due to overload.

Lifting hook has self lock mechanism; it could prevent the rigging sliding

The electric motor has thermal protector, when the electric motor temperature rise too high by over use, this mechanism would cut down the motor in order to protect the motor from burning out.

The hoist has hooked upper and down position limit mechanism.

The hoist has emergency stop button, could let the operation cut down the power when he is in extremely dangerous situation.

3.4 MACHINE CLASSIFICATION AND USE PERIOD

You could protect the safety and use period of hoist only if you operate the equipment as demand grade. PDH series electric chain hoist is suitable for the grade as list 3, from list 4 to list 7, we know how to determine the grade, it is determined by average operation time and whole operation time and load situation.

List 3

STYLE	CAPACITY(T)	GRADE	
		FEM	ISO
PDH-A-0.5	1/2	2m	M5
PDH-A-1	1	1Am	M4
PDH-A-2	2	2m	M5
PDH-A-3	3	1Am	M4
PDH-A-5	5	2m	M5

List 4
1Am (FEM)

Load range	Definition	Average value	Daily use time (h)	Total use time (h)
1 Light	Usually in light load	$K \leq 0.50$	2-4	6300
2 Medium	Usually in light load, sometime in heavy load	$0.50 < k \leq 0.63$	1-2	3200
3 Heavy	Usually in medium load, sometime in heavy load	$0.63 < k \leq 0.80$	0.5-1	1600
4 Especially Heavy	Usually in heavy load, sometime in max load	$0.80 < k \leq 1.00$	0.25-0.5	800

List 5
2m (FEM)

Load range	Definition	Average value	Daily use time (h)	Total use time (h)
1 Light	Usually in light load	$K \leq 0.50$	2-4	12500
2 Medium	Usually in light load, sometime in heavy load	$0.50 < k \leq 0.63$	1-2	6300
3 Heavy	Usually in medium load, sometime in heavy load	$0.63 < k \leq 0.80$	0.5-1	3200
4 Especially Heavy	Usually in heavy load, sometime in max load	$0.80 < k \leq 1.00$	0.25-0.5	1600

List 6
M4 (ISO/JIS)

Load status	Definition	Standard load parameter (km)	Daily use time (h)	Total use time (h)
1 Light 2 Medium	ISO: Usually in light load	0.125	——	6300/6400
	JIS: Usually in 1/3 of rated load, seldom in rated load	——	2-4	
3 Heavy	ISO: Usually in light load, sometime in heavy load	0.25	——	3200
	JIS: Usually in 1/3-2/3 of rated load, seldom in rated load.	——	1-2	
1 Light 2 Medium	ISO: Usually in medium load, sometime in heavy load	0.50	——	1600
	JIS: Usually in more than 2/3 of rated load, always in rated load.	——	0.5-1	
3 Heavy	ISO: Usually in rated load	1.00	——	800
	JIS: Nearly in rated load	——	0.25-0.5	

List 7
M5 (ISO/JIS)

Load status	Definition	Standard load parameter (km)	Daily use time (h)	Total use time (h)
1 Light 2 Medium	ISO: Usually in light load	0.125	——	12500
	JIS: Usually in 1/3 of rated load, seldom in rated load	——	4-8	
3 Heavy	ISO: Usually in light load, sometime in heavy load	0.25	——	6300/6400
	JIS: Usually in 1/3-2/3 of rated load, seldom in rated load	——	2-4	
1 Light 2 Medium	ISO: Usually in medium load, sometime in heavy load	0.50	——	3200
	JIS: Usually in more than 2/3 of rated load, always in rated load	——	1-2	
3 Heavy	ISO: Usually in rated load	1.00	——	1600
	JIS: Nearly in rated load	——	0.5-1	

4、SAFE OPERATION

4.1 DECLARATION

Operating the overload weight may lead to dangerous situation. Before operation, please read all the contents of this chapter and forbidden principle of chapter 1.2, then you could operate.

Before operating the hoist, please make sure the work space meet the follow demand

Ensure the work space could let the hoist work stably.

Ensure with good eye sight, and arrange special person to observe.

4.2 Install and test

Put the hoist into a reliable frame, connect correct power plant, then push the up or down button of control pendant, observe the hoist work situation. if the hook move up or down, it means that the connection of electrical wire is correct. if push the control pendant button, the hook did not move, it means the electrical wire phase is connected wrong, then just switch the three phase wires , and the hoist would run correctly.

4.3 Loaded Operation

The hoist which was running first time (or it has been a long time to be used), first run 15 minutes with load, observe the hoist work situation, if it is running normally, then you could use with load.

5. Project Inspection

If you want to operate continually and satisfied, you have to inspect the hoist at fixed period, change the broken parts, so that it will not be the potential danger of safe operation.

The project inspection interval should determine according to the use situation and work classification, also should check according to the use environment and the broken, ageing level of key parts, the inspection type is separated as daily inspection, periodic inspection.

Daily inspection: Before daily use, operator or specialist to visual inspect.

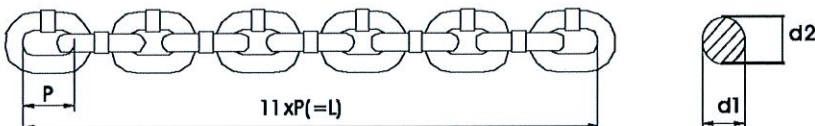
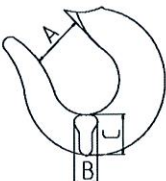
Periodic Inspection: Check by the special engineer or technical staff according to the user work situation.

5.1 Frequent Inspection

Project	Method	Judge Standard	Solution
Label Warning Mark	Visual inspection	Stick correctly clean and clearly read	Change
Control Pendant	Visual inspection	Without fraction	Change
	Push stop button without load	Hoist stop, right direction rotate, after push stop button, hoist could run	Change
	Push start button without load	Bottom hook could lift and land	Repair or change
Brake	Lift and land 2 or 3 times without load	Brake effect is good or not	Repair or change
Up Down position limiter	Operate the hook into the limit position without load	When touch the down position limit, the electric motor stop, but could work in the reverse direction	Repair or change
Lifting chain	Visual inspection	Surface with lubricate grease Without deformation, without crackle	Clean, lubricate, if necessary, change
Hook	Visual inspection function inspection	Without deformation could move slide and rotate	Change
Position limit spring	Visual inspection	Without deformation	Change

5.2 Periodic Inspection Project

Project	Method	Judge Standard	Solution
Control pendant	Push button in turn stop function	Push button stable, no problem	Repair
Power plant	Measure by voltmeter	$\pm 10\%$ rated voltage	Check the power plant and wire
Earth	Check earth point	Smaller than 0.1 ohm	Adjust change
Insulation	Measure by ohmmeter	Bigger than 1.5 ohm	Change defect parts

Hoist frame	Visual inspection	Without broken and crack	Change																													
Nameplate	Visual inspection	Load capacity could be clearly visible	Change																													
Screw	Visual inspection	Screw should not be loosen or missed	Fasten																													
Abnormal situation on operation	Lifting and landing operation with small capacity load	Hoist machine or lifting motor should not have abnormal sound	Repair																													
Gear oil	Visual inspection	Should be in accordance with use frequency	add gear oil or change new oil																													
Brake	Lifting, landing, stopping operation with rated capacity load	Stop when landing, the down slide speed can not over 1% of lifting speed	repair																													
Load limiter	Lifting earthed load, let the chain slide(less than 5 seconds),then lift with rated capacity load	Can slide Can lift rated capacity load	Adjust and change																													
Position limit switch	Lift to the limit position with rated capacity load	Hoist could stop, could move the reverse direction, the spring has Certain allowance	Repair or change																													
Lifting chain wear	<p>Measure</p>  <table><thead><tr><th rowspan="2">Capacity (t)</th><th colspan="2">D=(d1+d2)/2</th><th colspan="2">L (mm)</th></tr><tr><th>standard</th><th>rejected</th><th>standard</th><th>rejected</th></tr></thead><tbody><tr><td>0.25</td><td>5</td><td>≤4.5</td><td>165.8</td><td>≥170.5</td></tr><tr><td>0.5</td><td>6.3</td><td>≤5.7</td><td>210</td><td>≥217.36</td></tr><tr><td>1</td><td>8</td><td>≤7.2</td><td>265.3</td><td>≥274.56</td></tr><tr><td>2-10</td><td>11.2</td><td>≤10.1</td><td>375.8</td><td>≥388.96</td></tr></tbody></table> <p>caution: if the lifting chain was wear out, ensure check the chain guider</p>		Capacity (t)	D=(d1+d2)/2		L (mm)		standard	rejected	standard	rejected	0.25	5	≤4.5	165.8	≥170.5	0.5	6.3	≤5.7	210	≥217.36	1	8	≤7.2	265.3	≥274.56	2-10	11.2	≤10.1	375.8	≥388.96	change
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2-10	11.2	≤10.1	375.8	≥388.96																												
Lifting chain deformation	Visual inspection	* without deformation(such as distortion). * without deeper scratch and indent	change																													
Lifting chain welding scar	Visual inspection	Warning without welding scar	change																													
Lifting chain rust	Visual inspection	Warning without obviously rust, lubricate the lifting chain with lubricating grease	change																													
hook	<p>Measure record the below size when you buy A、B、C</p>  <table><thead><tr><th colspan="2">First use size</th><th colspan="4">Rejected standard</th></tr><tr><th colspan="2">A、B、C</th><th colspan="4">More than 5% decrease of measured size</th></tr><tr><th rowspan="2">Capacity (t)</th><th>A*(mm)</th><th colspan="2">B(mm)</th><th colspan="2">C(mm)</th></tr><tr><th>Normal</th><th>Standar</th><th>Rejecte</th><th>Standar</th><th>Rejected</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		First use size		Rejected standard				A、B、C		More than 5% decrease of measured size				Capacity (t)	A*(mm)	B(mm)		C(mm)		Normal	Standar	Rejecte	Standar	Rejected							change
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	Normal	Standar	Rejecte	Standar	Rejected																											

			d	d	d		
		0.25-0.5	30	18	≤17.1	21	≤19.95
		1	37	20	≤19	24	≤22.8
		2-3	45	26	≤24.7	42	≤39.9
		5	61	35	≤33.3	50	≤47.5
		10	6	60	≤57	75	≤71.3
	<p>* these values are standard value, because these size can not be controlled in general tolerance range. when you buy you could use the measure value as standard value, you could judge the deformation and extension of the hook by judge the later measuring size with the first size</p>						
Hook deformation	Visual inspection	Without obvious deformation and crack, hook neck wear well mixed. Without deeper crackle, screw and bolt can not be loose, without welding scar					change
Hook rotation	Visual inspection	Hook should rotate normally					change
Hook	Visual inspection function inspection	Hook pin should be in the hook tip					change
Gasal plate	Visual inspection function inspection	Should work normally ⚠ WARNING missing hook safe clip, please do not use					change

⚠ CAUTION

Add No 1 lithium base grease to all bearings annually when maintained

⚠ CAUTION

the assessment of inspection result should made by specialist so that the hoist can reach safe work condition after maintained

⚠ WARNING

Forbidden to use the parts which is not conform to standard or we do not accept.

6. Maintain

6.1 General rules

Wrong maintenance may lead to human being injury or death, only qualified person could maintain the electric chain hoist, if you do not have qualified person, please contact with our seller or us.

⚠ CAUTION

Forbidden to use the hoist which is under maintained

⚠ CAUTION

After operation, if find the hoist was abnormal, please check all the items as the inspection demand of chapter 5

⚠ CAUTION

Don't store the hoist with load

⚠ CAUTION

Clean the dirty of hoist store the hoist in place where is clear and dry

⚠ CAUTION

Lifting chain explosion may lead to human being injury or death; please maintain the lifting

⚠ CAUTION

Chain carefully, including correct operation, good maintenance and inspection.

6.2 Lubrication

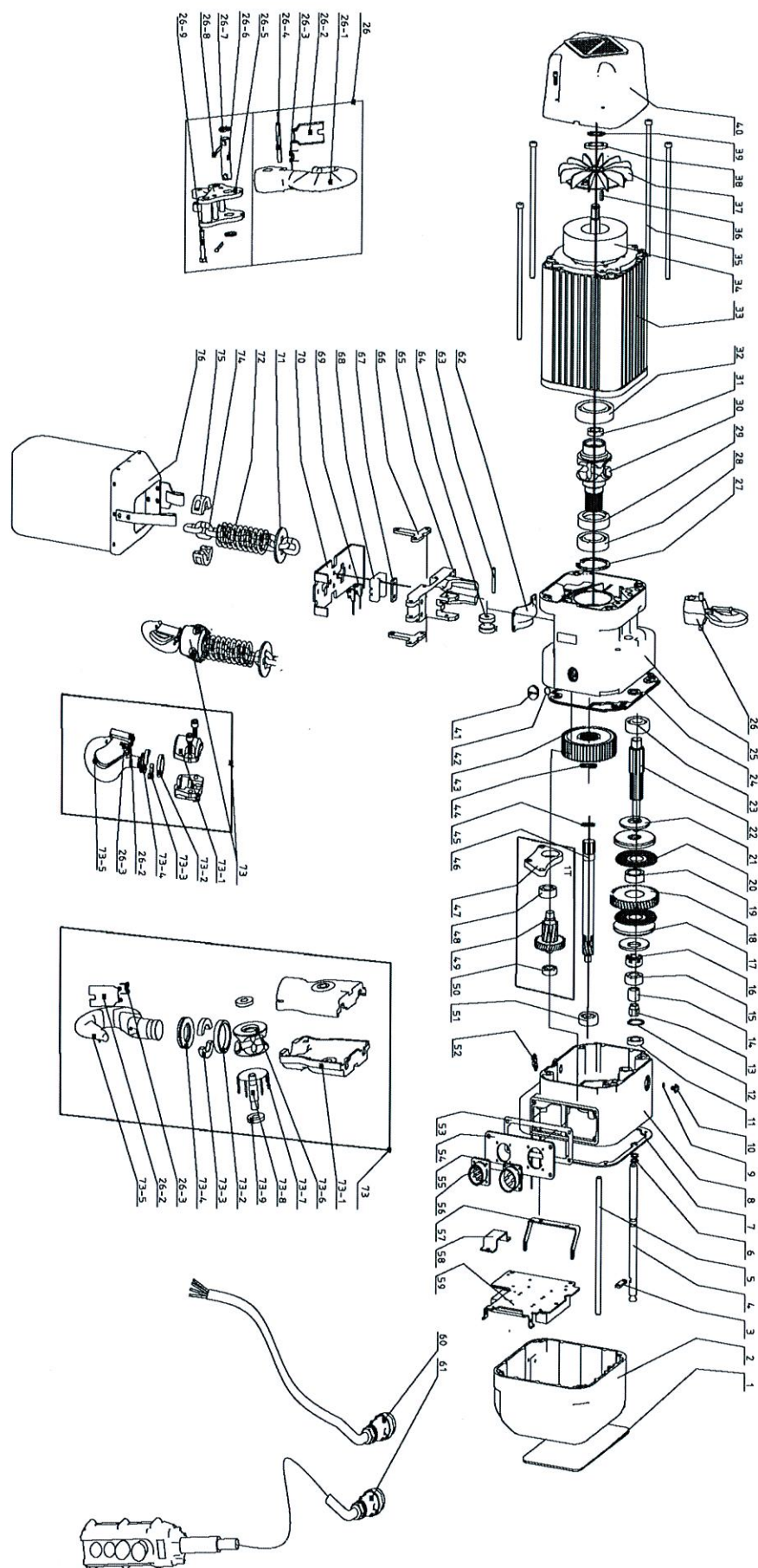
Make sure lubricate the parts as lifting chain, hook neck. Lifting chain was important parts of hoist, should use mechanical oil (effect as butter) to lubricate the lifting chain

6.3 Malfunctions and solutions

Malfunctions	Causes	Solution
The hoist refuse to operate under switch on	Wire unconnected or loose result power off	Check and fasten all the wire connection points
	Electrical parts were damaged	Replace the damaged parts
After switch off, the load drop while braked	Dust or oil in brake disc	Clean the disc
	Severe abrasion of disc	Replace the disc
Chain run with strange noise	The chain is without lubrication	Lubricate chain by oil or grease
	Load guider broken	change load guider
Leakage of electricity	It is not good earth	Ensure good earth connection
	High humidity in the air	Do not work in the high humidity environment
	Too much dust on the electrical parts	Keep electrical parts clean
Skid when lifting the load	Load limiter flexible	Screw down load limiter
Hook extension	Sustain the load with hook tip	Sustain the load in middle of hook
	The chain sling of load is not correct	Select the right chain sling
Inverter alarm	Please read the inverter instruction	

7、Appendix

7.1 Explsive diagram

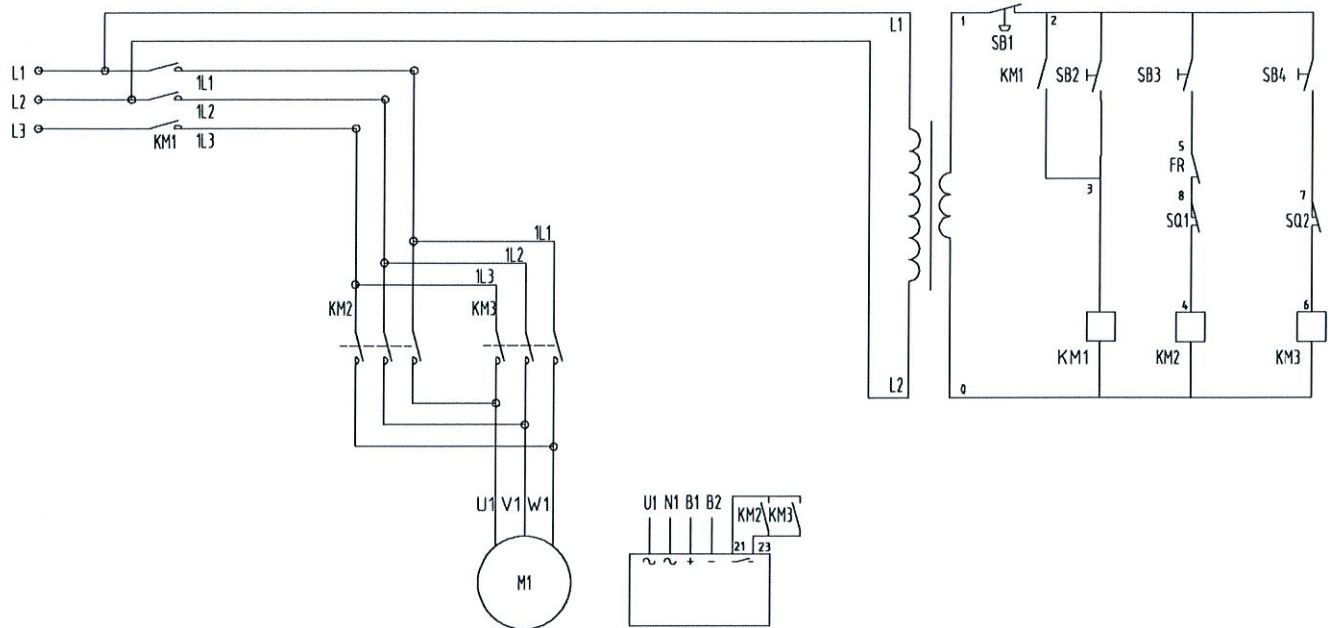


7.3Parts list

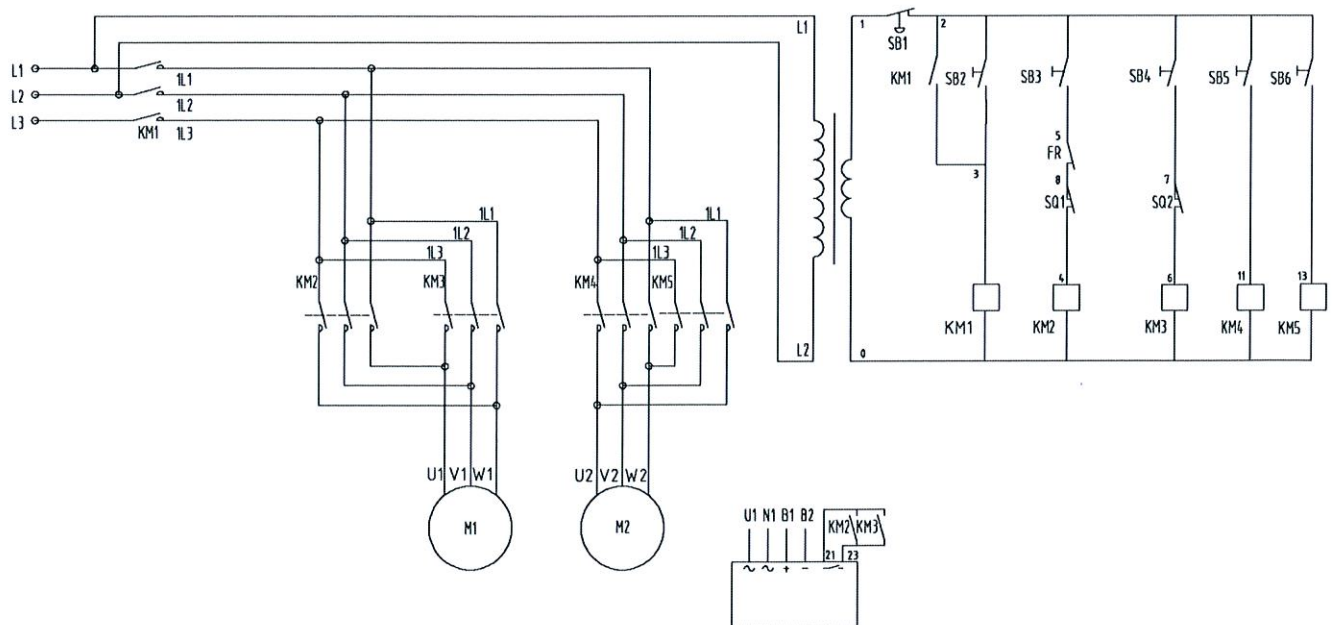
No	Name	No	Name	No	Name
1	Label	26-8	Cotter pin	57	Electric plate connection shelf
2	Electric control box cover	26-9	Hook pin	58	Sealing plate
3	Hook shaft baffle	27	Hole spring	59	Electric parts
4	Hook shaft	28	Bearing	60	Power plant wire assy
5	Hook ring shaft	29	Lip type sealing ring	61	Control pendant assy
6	O type rubber cushion circle	30	Chain wheel	62	Chain stopper plate
7	Electric control box rubber pad	31	Lip type sealing ring	63	Guider roller shaft
8	Reducer cover	32	Bearing	64	Guider roller
9	O type rubber cushion circle	33	Electric motor	65	Chain guide
10	Outer six corner snail (M14)	34	Brake	66	Fasten plate C
11	Lip type sealing ring	35	Motor screw	67	Micro switch seat fasten plate
12	Hole ring	36	Flat key	68	Micro switch seat
13	Self locking nut	37	Fan blade	69	Micro switch
14	Deep channel bearing	38	Flat washer	70	Position limit floor boards
15	Bearing	39	Shaft ring	71	Position limit baffle plate
16	Deep channel bearing	40	Motor cover	72	Limited spring
17	Friction pressing piece	41	Plug screw	73-1	Down hook
18	Big gear2	42	O type sealing ring	73-2	Hook ring sheeve
19	Shaft sleeve	43	Spline gear	73-3	Hook ring
20	Friction disc	44	Shaft ring	73-4	Bearing
21	Dish spring	45	Shaft ring	73-5	Down hook
22	Small gear shaft3	46	Small gear shaft1	73-6	Pulley
23	Bearing	47	Bearing support plate	73-7	Roller needle
24	Gearbox seal	48	Bearing	73-8	Pulley shaft
25	Reducer box	49	Gear shaft2assy	73-9	Pulley shaft ring
26-1	Top hook	50	Bearing	74	Lifting chain
26-2	Safe wedge	51	Bearing	75	Chain stopper stripper
26-3	Double spring	52	Electric wire board2	76	Chain bucket set
26-4	Heavy style elastic pin	53	Rubber cushion for wire box		
26-5	Top hook shelf	54	Aviation plug		
26-6	Hook shaft	55	Aviation plug		
26-7	Hook shaft ring	56	Aviation plug		

7.3 Electric schematic diagram

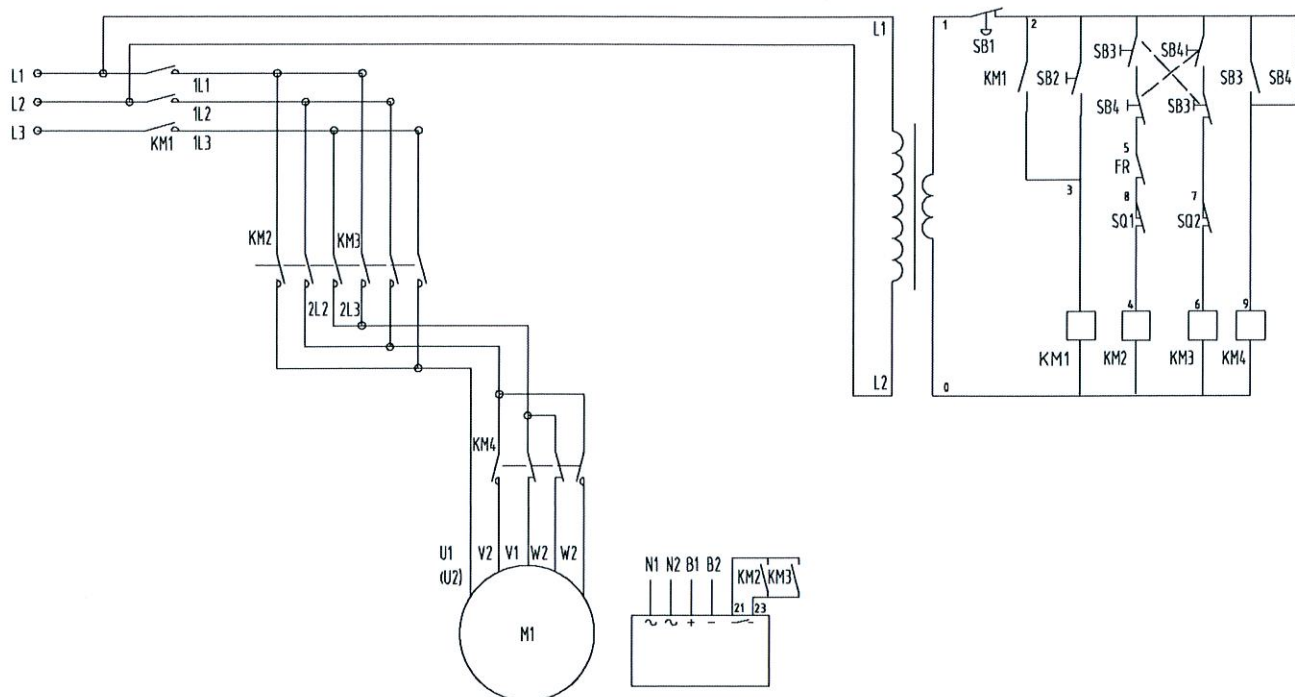
1、single lifting speed foot mounted type electric schematic diagram



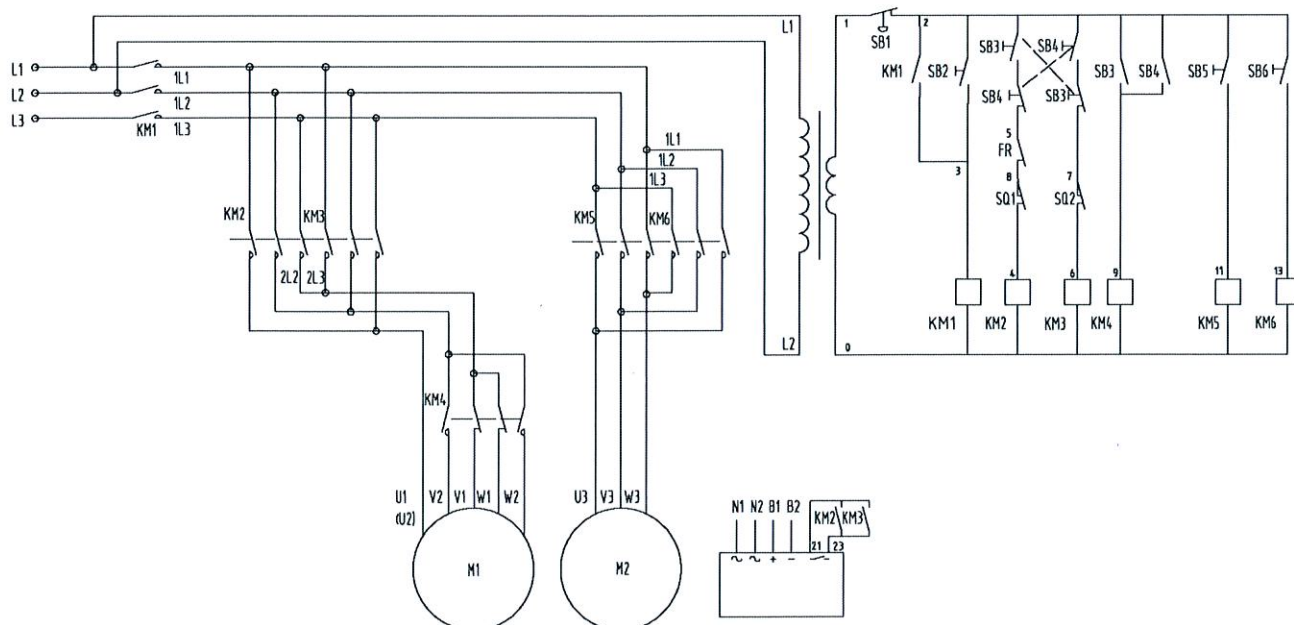
2、single lifting speed single traveling speed type electric schematic diagram



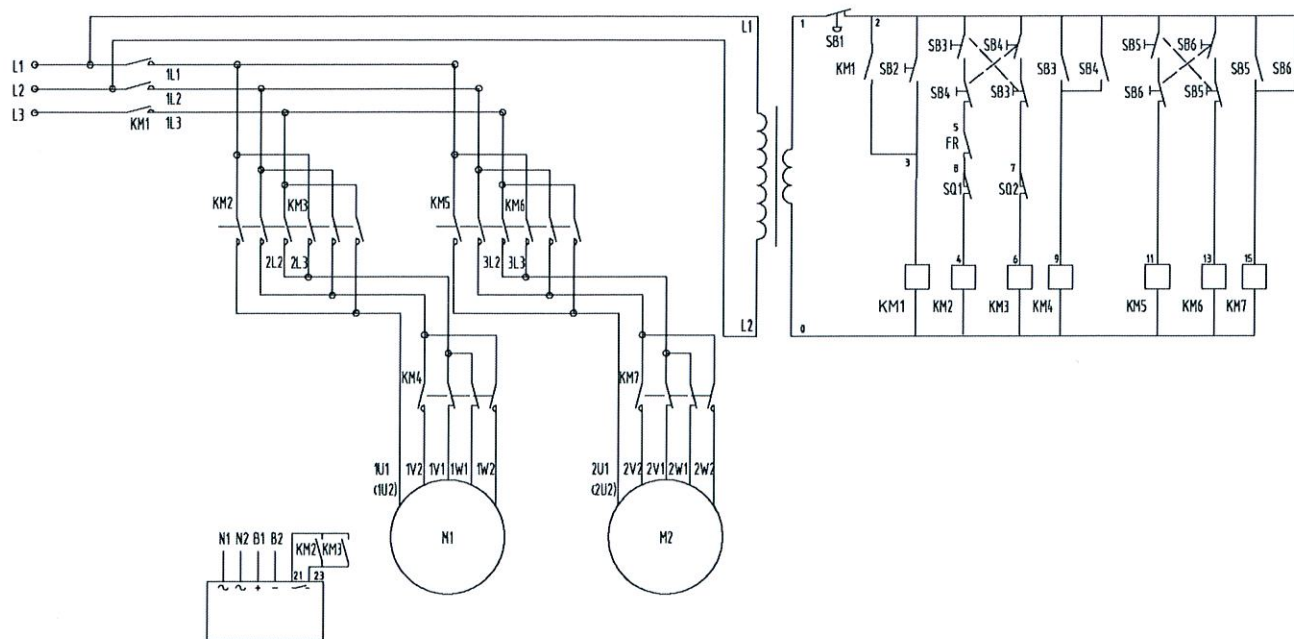
3、two lifting speeds foot mounted type electric schematic diagram



4、two lifting speeds single traveling speed type electric schematic diagram



5、two lifting speeds two traveling speeds type electric schematic diagram



6、the electric schematic diagram of inverting lifting speed

