

ELECTRIC CHAIN HOIST



OPERATION MANUAL & PARTS LIST

SERIES:

- NHD-025-1 & NHD-050-2
- NHD-050-1 & NHD-100-2
- NHD-100-1 & NHD-200-2
- **NT(D)-050-1 & NT(D)-050-2**
- **NT(D)-100-1 & NT(D)-100-2**
- **NT(D)-200-2**

CHENG DAY MACHINERY WORKS CO .,LTD.

SAFETY-IMPORTANT

The use of any hoist and trolley presents some risk of personal injury or property damage.

That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each user should become thoroughly familiar with all warnings, instructions and recommendations herein.



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT BEFORE ATTEMPTING TO OPERATE YOUR "BLACK BEAR" ELECTRIC CHAIN HOIST.



CONTENTS

Sa	fety-Important	1
1.	Foreword	3
2.	Main Specification	4
	2.1 Specification	4
	2.2 Mechanical Classification (Grade) and Life	5
	2.3 Safety Devices	6
	2.4 Specifications and Dimensions	7
3.	Safety Rules	9
4.	Installation	11
	4.1 Unpacking Information	11
	4.2 Voltage	11
	4.3 Installation	11
5.	Operation	14
6.	Maintenance and Inspection	14
	6.1 Maintenance	15
	6.2 Inspection	15
7.	Troubleshooting	18
	7.1 Wiring Diagrams	18
	7.2 Troubleshooting and Remedial Action	22
8.	Drawings and Parts Lists	23

1. FOREWORD

This manual contains important information to help you properly install, operate and maintain the Black Bear electric chain hoist and to maximize performance, economy and safety.

Please study its contents thoroughly before putting the electric chain hoist into operation. By practicing correct operating procedures and by carrying out the preventative maintenance recommendations, you will be assured of dependable service. In order to help us to supply correct spare parts quickly, please always specify -

- (1) Hoist model
- (2) Serial number
- (3) Part number, plus the description.

We trust that this Black Bear electric chain hoist will give you many years of satisfactory service. Should you have any queries, please contact:



(Please ask for a company's stamp from your local agent)

2. MAIN SPECIFICATIONS

2.1 Specifications

Table	2-1	Specifications
i ubic	_	opcomoutions

ltem		Detail				
Working temperatu	ire range (°C)	-5 to +40				
Working humidity r	ange (%)	85 or less				
Drotaction	Hoist	IP 54				
Protection	Push button	IP 65				
Electric power sup	oly	Three Phase, 50 Hz,220V~600V Three Phase, 60 Hz,220V~600V				
Noise Level (dB)	Dual speed hoist	75				
	Туре	Nominal diameter (mm)	Pitch (mm)			
Chain Siza	NHD-025-1/NHD-050-2	4.0	12.0			
Chain Size NHD-050-1/NHD-100-2		6.3	19.1			
	NHD-100-1/NHD-200-2	7.1	20.2			

Remarks:

- (1) Contact an authorized dealer for information on using the hoist over the working temperature or humidity range
- (2) Intended use: This hoist has been designed for vertically lifting and lowering loads under normal atmospheric conditions.
- (3) Noise levels are measured at a distance of 1m horizontally from the hoists during normal operation.

2.2 Mechanical Classification (Grade) and Life

Safety and life of electric chain hoists are guaranteed only when the equipment is operated in accordance with the prescribed grade.

Black Bear electric chain hoists have been designed for grade 2m in the FEM Regulations (FEM 9.5.11). Details are provided in Table 2-2. Average daily operating time and total operating time are determined by load distribution.

Load Spectrum (Load distribution)	Definitions	Cubic mean value	Average daily Operation time (h)	Total operating time (h)
1 (light)	Mechanisms or parts thereof, usually subject to very small loads and in exceptional cases only to maximum loads.	k≦0.50	4 - 8	12500
2 (medium)	Mechanisms or parts thereof, usually subject to small loads but rather often to maximum loads.	0.50 <k ≦0.63</k 	2 - 4	6300
3 (heavy)	Mechanisms or parts thereof, usually subject to medium loads but frequently to maximum loads.	0.63 <k ≦0.80</k 	1 - 2	3200
4 (very heavy)	Mechanisms or parts thereof, usually subject to maximum or almost maximum loads.	0.80 <k ≦1.00</k 	0.5 - 1	1600



2.3 Safety Devices

(1) Motor brake

The "Electro-Magnetic Brake" is of a unique design in its field. It features simultaneous motor braking upon switching off power even under full load condition.

(2) Hook and hook latch

The hook is drop-forged from high tensile steel and heat treated for strength and toughness. The bottom hook is capable of 360° swivel and fitted with a safety latch for added security.

(3) Overload protection device

Overload protection device in the form of a slipping clutch prevents damage due to overloading.

(4) Limit switches

Upper and lower limit switches are fitted for switching off power automatically in case of over lifting or over lowering.

(5) Emergency stop device

This button is used to stop the hoist in an emergency situation. It is a red, mushroom type button, located at the uppermost position of the pendant. When pressed, power to the equipment is switched off and the button locks automatically. Turning it to the right will release the lock and enable re-starting. (Illust. 1)



Illust. 1

2.4 Specifications and Dimensions





Model	s w i	STD.	STD. Lift	STD. Lift				Dim	ensi	ons(mm)			Load Chain		Ноі	sting			Trave	ersing	E.D.	Load	NAC
Model	(kg)	Height (m)	DWG.	Δ	в	c	D	E	F	c.	н	Dia X pitch	Speed (m/min)	Motor (kW)	Motor Power (kW) (Pole)		eed min)	Motor Power	(%)	Fall	(kg)			
			30.5.		~~	0	~	0	-	- 100	0		(mm)	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	(kW) (Pole)		INO.		
NHD-025-1	250		1	180	175	205	125	200	147	156	376	Φ4.0	12/3	12/3	0. 6/0.15	0. 6/0.15	20/5	24/6	0.12/0.03	10/20	1	30/32		
NHD-050-2	ID-050-2 500	3	П	300	1/5	205	25	299	143	150	453	×12.0	6/1.5	6/1.5	6/1.5 2/8P	2/8P	20/5	24/0	2/8P	40/20	2	32/34		
NHD-050-1	500	1	00	469	221	247	156	266	196	180	485	Φ6.3	10/2.5	10/2.5	1.1/0.28	1.1/0.28			0.19/0.04		1	42/44		
NHD-100-2	1000	3	Ш	400	221	247	150	300	100	100	531	×19.1	5/1.25	5/1.25	2/8P	2/8P	20/5	24/0	2/8P	40/20	2	45/47		
NHD-100-1	1000		T	488	240	248	170	208	188	210	520	Φ7.1	8/2	8/2	1.5/0.37	1.5/0.37	20/2		0.27/0.00		1	57/60		
NHD-200-2 200	2000	5	П	+50	~40	240	.70	590	.50	210	592	×20.2	4/1	4/1	2/8P	2/8P	20/5	24/0	2/8P	40/20	2	62/65		





Hoist Model	DVVG.	А	В	C	D	E	н
NHD-025-1+NTD-050-2	Ţ.	282	125 5	374	180	75~125	385
NHD-050-2+NTD-050-2	П	302	123.5	524	100	75 125	462
NHD-050-1+NTD-050-1	1	382	125.5	324	180	75~125	483
NHD-100-2+NTD-100-2	П	2		2-1		,,,,,,,,	542
NHD-100-1+NTD-100-1	1	382	125.5	324	180	75~125	510
NHD-200-2+NTD-200-2	П	392	159	357	183	100~150	582



C E D F											
			D	Dime	ensio	ns(mm)					
Hoist Model	DWG.	А	В	С	D	E	н				
NHD-025-1+NTD-050-2	T	282	125.5	224	180	75~125	385				
NHD-050-2+NTD-050-2	П	302	125.5	324	180	/5~125	462				
NHD-050-1+NTD-050-1	1	382	125.5	324	180	75~125	483				
NHD-100-2+NTD-100-2	Ц						542				
NHD-100-1+NTD-100-1	I	382	125.5	324	180	75~125	510				
NHD-200-2+NTD-200-2	П	392	159	357	183	100~150	582				

3.SAFETY RULES

This hoist is not designed for, and should not be used for, lifting, supporting, or transporting personnel. Any modifications to upgrade, re-rate, or otherwise alter the hoist equipment must be authorized by either the original manufacturer or a qualified professional engineer.

Only trained personnel are allowed to operate the hoist.

Do not use the hoist in explosive atmosphere.

Prior to each lifting operation, it is essential to make sure that:

- (a) the correct lifting sling is being used.
- (b) the lifting sling is located in the hook as shown below (Illust. 2) and that a safety latch has been fitted.



(Illust. 2)

Firm and steady button operation is required. Never push the button switch intermittently.

Always avoid excessive inching operation.

Always make sure the hoist motor completely stops before reversing.

Always leave the push button switch cable and bottom hook vertically static after completion of operation, never leave them at any position which may cause swing or slip.

Slings must be applied to load evenly and centrally to ensure correct balance. Never lift any

object which is insecure or out of balance.

Never use hoist to end or side pull a load. (Illust. 3)

Never wrap around and hook back the load chain as a sling to lift a load. (Illust. 4)











Do not use the hoist chain as a welding electrode.

DANGER

Never stand under a raised load (Illust. 5)



(Illust. 5)

Lifting must always be personally attended. Never leave a raised load unattended.

Over-capacity-load lifting is hazardous and should not be undertaken.

Never lift a load when the load chain is twisted.

Regularly inspect and check the condition of load chain. Do not operate with damaged chain.

4. INSTALLATION

4.1 Unpacking Information

After removing the hoist from its packing box, carefully inspect the external condition of the electrical cables, contactor, gearbox and motor casing for damage.

Check and ensure that these items are present.

Each hoist is supplied as standard with the following accessories.

1. Chain bucket	1 set
2. Power cable	0.5 meter
3. Push button control switch	1 piece

Table. 4-1

4.2 Voltage

CAUTION

If power supply deviates from standard by more than \pm 10% abnormal operation or damage to the motor may result. It is imperative to ensure correct voltage supply before commencing operation.

4.3 Installation



Connection to power supply before installation procedures having been completed is strictly prohibited.

Prior to installation check and ensure that the top hook assembly is securely attached to the hoist by means of the lock bolt.

NOTE: If the hoist is to be suspended from an electric trolley, assembly may be eased by firstly removing the top hook, attaching it to the trolley load plate, them refitting the top hook to the hoist.

Assemble chain bucket -



Connect power supply to hoist and operate the push button switch. This operation must be carried out by a trained person.



Illust. 7

Operation Test

- (a) Please reverse any two connections while the direction is incorrect.
- (b) Firmly push switch button to lower load chain until the limit spring touches the limit switch. Power should be cut off automatically.
- (c) Firmly push (f) switch button to check the collection of load chain into chain bucket.
- (d) Check the emergency stop device function :

While holding down either or button on the push button switch, push the emergency stop button. Check that the hook stops when the emergency stop button is pushed. Also, check the hoist does not move in response to the push button switch.

Finally, check that the emergency stop device pops out when turned to the right and that operation can be resumed thereafter. If the equipment fails to pass any of the above checks, check the wiring and automatic locking function of the emergency stop device.

- (e) Check load chain lubrication (It has been lubricated at our works, but the lubricant may dry out during transportation). It is also advisable to keep a small amount of lubricant in the chain bucket to keep the chain in an oil bath.
- (f) Check chain position. Weld joints on links must face the same direction (Illust. 8).Correct chain operation can only be achieved when all joints are vertically in line.



The bottom hook on multi-fall hoist must never be rotated as shown below. (Illust. 9)



Illust. 8





5. OPERATION

After running test and checks have been completed, the hoist will be ready for normal operation.

Since dealing with heavy loads may involve unexpected danger all of the SAFETY RULES" (Ref 3.) must be followed and the operator must be aware of the following points while using the hoist.

- (1) The operator must have a clear and unobstructed view of the entire working area before operating the hoist.
- (2) The operator must check that the entire working area is safe and secure before operating the hoist.
- (3) When using the hoist with a motorized trolley, the operator must take care to prevent excessive load swinging by sympathetic use of the trolley controls.

6. MAINTENANCE AND INSPECTION

Do not perform maintenance on the hoist while it is carrying a load except monthly checking for the brake or limit switch.

DANGER

Before performing maintenance do not forget to affix tags to the power source and the push button switch reading : "DANGER", "EQUIPMENT BEING REPAIRED".

6.1 Maintenance

(1) Check the level of gearbox lubricant after the first 500 hours operation, thereafter check every 3 months and lubricate accordingly.

NOTE: We recommend using lubricant oil equivalent to ISO VG460.

- (2) Always keep the hoist unit dry and never misuse it in a manner likely to reduce its durability.
- (3) When it is necessary to keep the unit outdoors, a protective covering should be fitted.

6.2 Inspection

- **1. Daily inspection**: Before starting daily operation, check the followings:
 - (a) Correct power supply.
 - (b) "Up", "Down" and "Emergency Stop" test runs under no load.
 - (c) Correct motor performance.
 - (d) No abnormal or excessive noise.
 - (e) No malfunction of the bottom hook safety latch.
 - (f) Proper function of moving/turning parts and brake.
 - (g) Well-lubricated load chain.

2. Monthly inspection

(a) Load chain.

Distorted, elongated or worn chain link will not sit properly on the load sprocket wheel and may cause chain breakage and/or damage to hoist unit. To ensure safe and efficient operation, the chain links must be checked for their pitch (inside length), inside width and outside width monthly according to following table.



Dia- Meter (mm) (d)	Load (t)	Inside Length (mm) (p)	Inside Width (mm) (a)	Outside Width (mm) (b)
4.0	0.25, 0.5	12.0	14.0	5.0
6.3	0.5, 1	19.1	7.6	21.4
7.1	1, 2	20.2	8.9	23.6

Table 6-2-a

WARNING

Always use the hoist manufacture's recommended parts when repairing a hoist.

Measuring

- (1) The chain gauge is useful and convenience for measuring.
- (2) Please use a chain gauge to measure the chain pitch and diameter, per illustrations (1) and (2).
- (3) Every chain ring must be measured, and the chain must be replaced when one of chain ring is wear or stretch.
- (4) It will be a cutting-out possibility if you use a chain fall either wear or stretch during operation.
- (5) Do not replace a chain fall by yourself and do please contact specific either service centers or contractors to help you out.
- (6) The chain fall must be replaced whole instead of in part.
- (7) The load sheave, regulator, and regulator plate wheel must be replaced the same time as you do a chain replacement.
- Note : Chain must be in perfect condition without any defects.



Illustration (1) Chain pitch measure



Illustration (2) Diameter measure

(b) Check hook with care. If hook shows cracks, deformation or excessive wear, it should be replaced.





Top Hook



Model	Capacity	Hook	Approximate Dimensions (mm)abcdef26.717.022.017.035.08.02020.012.020.012.036.02226.717.022.017.035.08.02026.717.022.017.035.08.02028.018.023.018.035.02533.022.029.022.025.212.02633.022.029.022.032.0252533.022.029.022.032.02633.02633.022.029.022.032.02633.02633.022.029.022.032.02633.02733.022.029.022.032.02633.02733.028.033.028.046.012.03633.022.029.022.032.02632.033.028.033.028.046.012.03633.028.033.028.046.012.03638.028.033.028.046.012.03638.028.033.028.046.012.03638.028.033.028.046.012.03638.028.033.028.046.012.036						
Model NHD-025-1 NHD-050-2 NHD-050-1 NHD-100-2 NHD-100-1	Capacity	HUUK	а	b	С	d	е	f	g
	250ka	Т	26.7	17.0	22.0	17.0	35.0	8.0	20.7
NHD-025-1	250Kg	В	20.0	12.0	20.0	12.0	36.0		27.2
	500ka	Т	26.7	17.0	22.0	17.0	35.0	8.0	20.7
NHD-030-2	SUUKY	В	28.0	18.0	23.0	18.0	35.0		25.6
	500ka	Т	33.0	22.0	29.0	22.0	25.2	12.0	28.8
NHD-050-1	SUUKY	В	33.0	22.0	29.0	22.0	32.0		29.5
	1 top	Т	33.0	22.0	29.0	22.0	32.0	12.0	28.0
NHD-100-2	I LON	В	33.0	22.0	29.0	22.0	32.0		28.0
	1 top	Т	38.0	28.0	33.0	28.0	46.0	12.0	35.8
	I ton	В	33.0	22.0	29.0	22.0	32.0		28.0
	2 top	Т	38.0	28.0	33.0	28.0	46.0	12.0	35.8
INFID-200-2	∠ เบก	В	40.0	26.5	39.0	26.5	40.0		36.0

Top Hook=T Bottom Hook=B

3. Annual inspection

WARNING

Your dealer should be asked to perform this inspection.

- (a) Check gearing for any excessive wears or damage.
- (b) Replace gearbox lubricant completely (NHD-025-1 & NHD-050-2 / 400C.C., NHD-050-1 & NHD-100-2 / 800C.C., NHD-100-1 & NHD-200-2 / 1400C.C.) as following table for your reference.

%Table of recommended oils according to DIN 51354

ISO-VGDIN 51519 viscosity At 40°C mm ² /s (cST)	Approximate viscosity of the VG Categories 50°C mm ² /s (cST)	ARAL	BP	ESSO	MOBIL OIL
VG460	251	Aral Degol	BP Energol	Spartan	Mobilgear
	Tat	B @_ <u>\$</u>60-BMB 460	GR-XP 460	EP-460	634

ISO-VGDIN 51519 Viscosity at 40°C mm ² /s (cST)	Approximate viscosity of the VG Categories 50°C mm ² /s (cST)	SHELL	TEXACO	IP.	AGIP
VG460	251	Omala oil 460	Meropa 460	Mellana 460	Blasia 460

The permissible tolerance for each VG category is $\pm 10\%$ of the tabulated values.

- (a) Check brake lining for any wear or damage.
- (b) On completion of above checks, lift a load several times to ensure good performance of the hoist before starting duty operation.

7.TROUBLESHOOTING

7.1 Wiring Diagrams

(1) 29&30 for connection of motor leads	19
(2) 31&32 for trolley	20

The above listed wiring diagram for reference only.

The end user should refer to the wiring diagram stuck to the inside cover of the electric housing.

Our electric specifications apply to the following -

- (a) 3-Phase
- (b) 50Hz&60HZ

Voltage Hertz	Voltage
50Hz	220V~600V
60HZ	220V~600V

Table 7-1

Warranty Details

- 1. Warranty Period : One year for Mechanical Spare Parts after purchase the product.
- 2. Non-Warranty Scope:
 - (a) Electrical Spare Parts (ex. Contactor, Pendant, Phase Error Relay, etc.)
 - (b) Expense Spare Parts (ex. Chain Bucket, Brake Lining, etc.)
 - (c) Damage caused by unsuitable operation.

(ex. Galvanize plant, Chemical Plant, Dye-work, etc.)

- (d) Damage caused by operating on the wrong electric voltage.
- (e) Damage caused by user amend the product.
- (f) Damage caused by natural disaster.
- 3. Warranty Scope shall be permitted by Cheng Day Machinery and Within One Year of damaged Mechanical Spare Parts Repair and Replacement. (circumstance stated in detail No. 2 are not included.)





7.2 Troubleshooting and Remedial Action

SITUATION	CAUSE	REMEDY
Hoist will not operate	 Broken/disconnected power or control circuit wire. 	Locate and repair/reconnect
	(2) Low supply voltage	Check if 10% reduction in voltage, have main supply checked
	(3) Motor hums but does not rotate	Check phases to motor-insulate and repair
	(4) Emergency stop button release pushed	Check the cause as necessary
	(5) Faulty contactor	Operate manually if hoist runs then control
		circuit/coil is faulty-locate fault and repair. If
		hoist does not run then check main supply. If
		input supply is correct but there is a faulty output supply then replace the contactor
Hoist will not stop	Welded contacts in contactor	Replace contactor
Brake slips	Abrasion of motor brake	Replace
Hoist runs but does not lift	(1) Clutch slipping	Contact your authorized BLACK BEAR dealer – this adjustment needs to be carried out on a test rig
Abnormal sound on	(1) Chain dry	Lubricate
load chain/chain	(2) Worn chain sprocket (2 falls)	Replace load chain and chain sprocket (2 falls)
Sprocket (2 rails)	(1) Door corth connection	/
Electric Shock	 (2) Accumulated foreign matter/ moisture on electrical parts 	Remove foreign matter/dry electrical parts
Oil leak	(1) No oil plug	Attach the normal oil plug
	(2) Loose fitting of oil plug	Fasten the plug tightly
	(3) No plug packing	Attach normal packing
	(4) Worn or deteriorated oil	Attach the new packing
	packing	

8. DRAWINGS AND PARTS LISTS

(1)	MOTOR ASSEMBLY & HOUSING B.O.M	.23
(2)	HOOK ASSEMBLY B.O.M	.26
(3)	LOAD CHAIN ASSEMBLY B.O.M	.29
(4)	GEARBOX ASSEMBLY B.O.M	.31
(5)	ELECTRIC ASSEMBLY B.O.M	34
(6)	TROLLEY ASSEMBLY B.O.M	37
(7)	TROLLEY MOTOR ASSEMBLY B.O.M	.39



MOTOR ASSEMBLY & HOUSING

	PARTS	DECODIDITION	Q'TY REQ'D EACH UNIT			
NO.	CODE	DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2	
	408330	Hex. Recess Bolt <m5x0.8x45l></m5x0.8x45l>	6			
1	408331	Hex. Recess Bolt <m5x0.8x50l></m5x0.8x50l>		6		
	408337	Hex. Recess Bolt <m6x1.0x60l></m6x1.0x60l>			6	
	400854	Spring Washer <m5></m5>	6	6	•	
2	400855	Spring Washer <m6></m6>	0	0	6	
	3014101		1		<u> </u>	
3	208809	End Cover		1		
-	301419	1			1	
	100448		1			
4	100449	Brake Ass'v		1		
	100504				1	
	400932	Oil Seal <ø15xø30x7t>	1			
5	404413	Oil Seal <ø17xø35x8t>		1		
	400186	Oil Seal <ø20xø35x8t>			1	
	400111	Bearing <6202 77>	1		-	
6	400732	Bearing <6203 ZZ>	•	1		
, i i i i i i i i i i i i i i i i i i i	400130	Bearing <6204 ZZ>			1	
	400947	Key <t5x5x25l></t5x5x25l>	1	1		
7	400960	Kev <t5x5x30l></t5x5x30l>	-		1	
	100315		1			
8	100316	Motor Rotor	· ·	1		
0	100311			•	1	
	400732	Bearing <6203 ZZ>	1			
9	400130	Bearing <6204 ZZ>		1		
	400143	Bearing <6205 ZZ>			1	
10	400577	Wave Washer <6204>		1		
10	407553	Wave Washer <6205>			1	
	400181	Oil Seal <ø17xø28x6t>	1			
11	400186	Oil Seal <ø20xø35x8t>		1		
	400891	Oil Seal <ø25xø45x8t>			1	
	402562		1			
12	402563	End Cover Gasket		1		
	402564	7			1	
	A		1			
13	В	Motor Stator Ass'y		1		
	C				1	
	408342	Hex. Recess Bolt <m8×1.25×20l></m8×1.25×20l>	6			
14	408346	Hex. Recess Bolt <m8x1.25x35l></m8x1.25x35l>		6		
	408339	Hex. Recess Bolt <m8x1.25x25l></m8x1.25x25l>			6	
15	400856	Spring Washer <m8></m8>	6	6	6	
	400417	Hex. Recess Bolt <m5x0.8x20l></m5x0.8x20l>	4			
16	405020	Hex. Recess Bolt <m5x0.8x25l></m5x0.8x25l>		4		
	400008	Hex. Recess Bolt <m6x1.0x25l></m6x1.0x25l>			4	
4-	400093	Spring Washer <m5></m5>	4	4		
17	400094	Spring Washer <m6></m6>			4	
	402565		1			
18	402566	Brake Gasket		1		
	402567				1	
19	400615	Pin	4	4	4	
20	400094	Spring Washer <m6></m6>	6	6	6	
	405022	Hex. Recess Bolt <m6×1.0×40l></m6×1.0×40l>	6			
21	405023	Hex. Recess Bolt <m6×1.0×45l></m6×1.0×45l>		6		
	400010	Hex. Recess Bolt <m6×1.0×55l></m6×1.0×55l>			6	
22	402558	Motor Gasket		1		

MOTOR ASSEMBLY & HOUSING

NO	PARTS	DECODIDITION	Q'TY REQ'D EACH UNIT			
NO.	CODE	DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2	
	200960I		1			
23	208810	Gearbox		1		
	200976		_		1	
	402597		1			
24	402557	Gearbox Gasket		1		
	402603		_		1	
	200959I		1			
25	208811	Gearbox Cover	_	1		
	200977		-		1	
	402568		1			
26	402569	Electric Cover Gasket	-	1		
	402570		-		1	
	300834I		1			
27	300384	Electric Cover	-	1		
	300839		-		1	
	400854	Spring Washer <m5></m5>	4	6		
28	400855	Spring Washer <m6></m6>			6	
	408330	Hex. Recess Bolt <m5x0.8x45l></m5x0.8x45l>	4	6		
29	408333	Hex. Recess Bolt <m6x1.0x25l></m6x1.0x25l>	-	-	6	
	207266		1	1	•	
30	207267	Adjust Screw			1	
	207263		1			
31	207264	Brake Plate	· ·	1		
0.	207265			•	1	
	100141		1		•	
32	100142	Brake Rotor	· ·	1	1	
02	100143				•	
	201435	Brake Coil Ass'y SBV-YS063	1			
33	201436	Brake Coil Ass'v SBV-YS071		1		
	201437	Brake Coil Ass'y SBV-YS080			1	
	408505		2	2		
34	408508	Bauer Disc Spring			2	
	207268		1			
35	207269	Spacer		1		
	207270				1	
	207271		1			
36	207272	Bearing Cap		1		
_	207273	1			1	
	408504		6			
37	408505	Brake Spring		5		
	408506	1 ' ĭ		-	5	

NO.	PARTS CODE		DESCRIPTION	φ - H	HZ- V
		106925		3/0 6047	230V
		106926		3Ψ 00ΠΖ	460V
	A	106634			380 V
		132743		3φ 50HZ	400 V
		106453			415 V
	В	106927		20 6047	230V
		106928		5Ψ 001 IZ	460V
13		106635	Motor Stator Ass'y		380 V
		106457		3φ 50HZ	400 V
		106468			415 V
		106951		20 6047	230V
		106952		3Ψ 00ΠΖ	460V
	С	106439			380 V
		132744		3φ 50HZ	400 V
		106455			415 V



HOOK ASSEMBLY

	PARTS	DESCRIPTION	Q'TY REQ'D EACH UNIT					
NO.	CODE	DESCRIPTION	025-1	050-2	050-1	100-2	100-1	200-2
1	201368	Lock Bolt <ø10.5x64L>	2	2				
1	201310	Lock Bolt <ø14x83L>			2	2	2	2
	2000161		1	1				
2	208812	Top Hook Ass'y			1	1		
	200018						1	1
3	400300	Safety Latch Ass'y	1	1	1	1	1	1
4	400096	Spring Washer <m10></m10>	2	2				
4	400097	Spring Washer <m12></m12>			2	2	2	2
4 5 6 7 8 2 2	400082	Nut <m10×1.5></m10×1.5>	2	2				
5	400084	Nut <m12×1.75></m12×1.75>			2	2	2	2
6	400610	Cotter Pin <ø3x30L>	2	2	2	2	2	2
	400646	Nylon Nut <m5></m5>	3	3				
7	400088	Nylon Nut <m8×1.25></m8×1.25>			2	3		3
	400087	Nylon Nut <m6×1.0></m6×1.0>					2	
	200480		1					
8	400300	Safety Latch Ass'y		1	1	1	1	
	400358							1
	2013721		1					
	200367			1				
9	2000151	Bottom Hook Ass'y			1			
	200047					1	1	
	200059							1
	408329	Hex. Recess Bolt <m5x0.8x20l></m5x0.8x20l>	2	3				
40	408339	Hex. Recess Bolt <m8x1.25x25l></m8x1.25x25l>			2		2	
10	408334	Hex. Recess Bolt <m6x1.0x30l></m6x1.0x30l>				3		
	408345	Hex. Recess Bolt <m8x1.25x30l></m8x1.25x30l>						3
	2013711		2					
	2001021	Bottom Block Cover			2			
	207073						2	
	207069			1				
11	200103I	Bottom Block Cover A				1		
	207074	1						1
	207071			1				
	200104I	Bottom Block Cover B				1		
	207075	1						1

HOOK ASSEMBLY

	PARTS	DESCRIPTION	Q'TY REQ'D EACH UNIT					
NO.	CODE		025-1	050-2	050-1	100-2	100-1	200-2
	200221			1				
12 13 14 15	200131	End Spacer			1	1	1	
	200132							1
	200212			2				
13	200127	Half Spacer			2	2	2	
	NO.PARTS CODEIndependent CODE12200221 200132A End12200131End200132200132A End13200127 200128Hall13200127Thr4008057Thr4008057Thr400158Thr400158Thr400295Spr400212Spr400213Spr400214Spr400215Spr400212Spr400213Spr400214Spr40055Nei1020036117408058400171Nei1020032218200953200114Spr19200445201370A 20032020200465201370A 201377							2
	400830	Thrust Bearing <51102>	025-1 050-2 050-1 100-2 1 1 1 2 2 2 1 2 2 1 1 1 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <td></td> <td></td>					
14	408057	Thrust Bearing <51103>		1				
14	400157	Thrust Bearing <2904>			1	1	1	
12 13 14 15 16 17 18 19	400158	Thrust Bearing <2905>						1
	407463	Spring Pin <ø8x25L>	1					
15	400295	Spring Pin <ø3x10L>		1				
15	400211	Spring Pin <ø3x14L>				1		
	400212	Spring Pin <ø5x16L>						1
	200361			1				
16	200954	Sprocket				1		
16	200108							1
14 15 16 17 18 19 20	408058	Needle Bearing <hk1412></hk1412>		2				
	408055	Needle Bearing <hk1612></hk1612>				2		
	400171	Needle Bearing <hk 25="" 26=""></hk>						1
	200322			1				
18	200953	Sprocket Axle				1		
	200114							1
19	200445	Bottom Hook Pin <ø10x25.5L>	1					
	201370		1					
	201380			1				
00	200020				1			
20	200465					1		
	201377]					1	
	200464							1



LOAD CHAIN ASSEMBLY

NO	PARTS	DESCRIPTION	Q'TY REQ'D EACH UNIT				
NO.	CODE	DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2		
1	400646	Nylon Nut <m5></m5>	2	2			
	400087	Nylon Nut <m6></m6>			2		
	208813	Chain Bucket <ø4.0-1#>	1				
2	201386	Chain Bucket <ø6.3-2#>		1			
	208807	Chain Bucket <ø7.1-3#>			1		
2	408343	Hex. Recess Bolt <m5x0.8x60l></m5x0.8x60l>	2	2			
3	408338	Hex. Recess Bolt <m6x1.0x65l></m6x1.0x65l>			2		
	200958		1				
4	200979	Chain Regulator		1			
	200955				1		
_	400093	Spring Washer <m5></m5>	5				
5	400094	Spring Washer <m6></m6>		6	6		
_	400003	Hex. Recess Bolt <m5x0.8x16l></m5x0.8x16l>	4				
6	400006	Hex. Recess Bolt <m6x1.0x16l></m6x1.0x16l>		4	4		
	400732	Bearing <6203 ZZ>	1				
7	400108	Bearing <6006 ZZ>		1			
	400134	Bearing <6008 ZZ>			1		
	201351		1				
8	201384	Collision Block		1			
	201375				1		
9	201388	Spacer <ø15*ø10.5*12L>		1			
	400512	Substitute Chain <ø4.0×12>	1				
10	400513	Substitute Chain <ø6.3×19.1>		1			
	400511	Substitute Chain <ø7.1×20.2>			1		
	400417	Hex. Recess Bolt <m5×0.8×20l></m5×0.8×20l>	1				
11	400007	Hex. Recess Bolt <m6×1.0×20l></m6×1.0×20l>		2	2		
10	200442		4 6				
12	200310	Limit Stopper Ass′y		2 3	2 3		
	408485		2 3				
13	408502	Spring		2 3	2 3		
	200441		1				
14	200200	Chain Stopper		2	2		
15	400646	Nylon Nut <m5></m5>	1				



GEAR BOX ASSEMBLY

	PARTS	DECODIDITION	Q'TY REQ'D EACH UNIT				
NO.	CODE	DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2		
	407869	Bearing <6002 ZZ>	1				
1	407839	Bearing <6000 ZZ>		1			
	400694	Bearing <6203 Z>			1		
	201360	5th Gear <m1.25×16t×91.5l>(60Hz)</m1.25×16t×91.5l>	1				
2	201301	5th Gear <m1.25x18tx91.5l>(50Hz)</m1.25x18tx91.5l>	1				
	200942	3rd Gear <m2x10tx90.5l></m2x10tx90.5l>		1			
	201347	3rd Gear <m2×10t×119.5l></m2×10t×119.5l>			1		
3	405933	Key <t5x5x15l></t5x5x15l>	1				
	400960	Key <t5x5x30l></t5x5x30l>			1		
	201362		2				
4	200948	Brake Disc		2			
	201345				2		
	201359	4th Gear <m1x55tx9l></m1x55tx9l>	1				
5	200940	2nd Gear Copper Bushing Ass'y		1			
	201348	2nd Gear <m1.5x46tx15l></m1.5x46tx15l>			1		
	407324	Disc Spring <ø34xø16.3x2.0t>	3				
6	400579	Disc Spring <ø50xø22.4x2.0t>		2			
	408403	Disc Spring <ø40xø16.3x2.0t>			4		
7	407868	Bearing <6904 ZZ>	1				
	407858	Bearing <6905 ZZ>		1	1		
Q	400943	Oil Seal <ø25xø35x5t>	1				
8	404411	Oil Seal <ø30xø40x6t>		1	1		
	201363	Oil Seal Bushing <ø25x21L>	1				
9	200937	Oil Seal Bushing <ø30xø15x18L>		1			
	201343	Oil Seal Bushing <ø30x23L>			1		
10	404343	O-Ring <ø9xø15x3>	1	1	1		
44	404552	Nylon Nut <m12×1.25></m12×1.25>	1				
11	400090	Nylon Nut <m12×1.25></m12×1.25>		1	1		
	201364		1				
12	201383	Load Sheave		1			
	201376				1		
	400893	Oil Seal <ø30xø42x8t>	1				
13	400938	Oil Seal <ø40xø62x12t>		1			
	404401	Oil Seal <ø40xø72x12t>			1		
	201302	6th Gear <m1.25x53tx16l>(50Hz)</m1.25x53tx16l>	1				
	201361	6th Gear <m1.25x56tx16l>(60Hz)</m1.25x56tx16l>	1				
4.4	200945	6th Gear <m2.25x36tx32l>(50Hz)</m2.25x36tx32l>		1			
14	201304	6th Gear <m2x43tx32l>(60Hz)</m2x43tx32l>		1			
	201349	6th Gear <m2.5x45tx30l>(50Hz)</m2.5x45tx30l>			1		
	201306	6th Gear <m2.25x54tx35l>(60Hz)</m2.25x54tx35l>			1		

GEAR BOX ASSEMBLY

NO	PARTS		Q'TY REQ'D EACH UNIT			
NO.	CODE	DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2	
45	400192	Retaining Ring <s-25></s-25>	1			
15	404161	Retaining Ring <s-38></s-38>			1	
	407840	Bearing <6004 ZZ>	1			
16	400130	Bearing <6204 ZZ>		1		
	400803	Bearing <6205 Z>			1	
	407867	Bearing <6001 ZZ>	1			
17	400111	Bearing <6202 ZZ>		1		
	400695	Bearing<6204 Z>			1	
10	400191	Retaining Ring <s-20></s-20>	1			
18	400192	Retaining Ring <s-25></s-25>			1	
	201357	2nd Gear <m0.8x60tx12l></m0.8x60tx12l>	1			
19	200943	4th Gear <m2x38tx17l></m2x38tx17l>		1		
	201344	4th Gear <m2x46tx22l></m2x46tx22l>			1	
	201358	3rd Gear <m1x26tx56.1l></m1x26tx56.1l>	1			
	200944	5th Gear <m2.25×12t×73.5l>(50Hz)</m2.25×12t×73.5l>		1		
20	201303	5th Gear <m2x12tx73.5l>(60Hz)</m2x12tx73.5l>		1		
	201342	5th Gear <m2.5×12t×95l>(50Hz)</m2.5×12t×95l>			1	
	201305	5th Gear <m2.25x12tx95l>(60Hz)</m2.25x12tx95l>			1	
	400961	Key <t6x6x10l></t6x6x10l>	1			
21	400963	Key <t6x6x15l></t6x6x15l>		1		
	400974	Key <t8x8x20l></t8x8x20l>			1	
	407867	Bearing <6001 ZZ>	1			
22	400111	Bearing <6202 ZZ>		1		
	400787	Bearing <6005 Z>			1	
23	200926	Hex. Oil Plug	1	1	1	
24	200927	Air Plug	1	1	1	
25	400225	O-Ring <ø8xø12x2>	1	1	1	
26	400600	Lubricant Drain Bolt	1	1	1	
27	200938	Disc Spring Bushing		1		



ELECTRIC ASSEMBLY

NO	PARTS CODE	DECODIDITION	Q'TY REQ'D EACH UNIT			
NO.		DESCRIPTION	025-1/050-2	050-1/100-2	100-1/200-2	
1	400048	Cross Headed Screw <m4x0.7x6l></m4x0.7x6l>	11	18	18	
2	400092	Spring Washer <m4></m4>	17	24	24	
3	400661	Flat Washer <m4></m4>	8	10	10	
	303757	Transformer PS-102 <110,400,415V/0,25,50V>	1	1	1	
4	300436	Transformer PS-116 <110,220,380V/0,25,50V>	1	1	1	
	300438	Transformer PS-117 <110,230,460V/0,50,110V>	1	1	1	
5	408361	Cross Headed Screw <m5×0.8×8l> 2 2</m5×0.8×8l>		2		
6	300628	Transformer Bracket	1	1	1	
7	400222	Cable Gland <m20></m20>	1	2	2	
8	408436	Rotation Plug	1	1	1	
9	408360	Cross Headed Screw <m5x0.8x10l></m5x0.8x10l>	4	4	4	
10	201391	Terminal Plate A	1			
11	400051	Cross Headed Screw <m4x0.7x12l></m4x0.7x12l>	2	2	2	
40	300646		1			
12	300228	Terminal Block		1	1	
13	201392	Bracket Ass'y	1			
14	300079	Contactor Rail	2	2	2	
15	300065	Magnetic Contactor <24V>	1	1	1	
	300045	Magnetic Contactor <48V>	1	1	1	
	301173	Magnetic Contactor <110V>	1	1	1	
10	201394		1			
16	300382	Electric Bracket Ass y		1	1	
47	201393		1			
17	300383	Bracket Located Seat		1	1	
18	300261	Bracket Located Seat B		1	1	
19	300143	Rectifier	1	1	1	
20	404252	E-Retaining Ring<ø5>	1	2	2	
	300066	Magnetic Contactor <24V>	1	1	1	
21	300046	Magnetic Contactor <48V>	1	1	1	
	301172	Magnetic Contactor <110V>	1	1	1	
	300064	Magnetic Contactor <24V>	1	1	1	
22	300044	Magnetic Contactor <48V>	1	1	1	
	301171	Magnetic Contactor <110V>	1	1	1	

ELECTRIC ASSEMBLY

	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT			
NO.			025-1/050-2	050-1/100-2	100-1/200-2	
23	400941	Cable Gland <m25></m25>	1	1	1	
24	400087	Nylon Nut <m6></m6>	1	1	1	
25	404803	Eye Bolt <m6×1.0></m6×1.0>	1	1	1	
26	400595	Shackle <3/16">	1	1	1	
27	303901	Push Button Switch	1	1	1	
20	307043	Electric Acc'y	1			
20	307044			1	1	
20	208836	Cover	1			
29	208838			1	1	
30	300589	Fuse Ass'y	1	1	1	
31	208837	Cover Plate		1	1	
	302603		1			
32	302635	Upper & Lower Limit Switch		1		
	302604				1	



TROLLEY ASSEMBLY

	PARTS	DESCRIPION	Q'TY REQ'D EACH UNIT					
NO.	CODE		NT(D)-050-2	NT(D)-050-1	NT(D)-100-2	NT(D)-100-1	NT(D)-200-2	
1	400006	Hex. Recess Bolt <m6x1.0x16l></m6x1.0x16l>	6					
2	400094	Spring Washer <m6></m6>			6			
3	300394J	Electric Housing Cover			1			
4	402515	Gasket #15			1			
5	400266	Rubber Band		1				
6	301102	Magnetic Contactor <3Alalb>			1			
7	400211	Spring Pin <ø3×14L>		1				
8	400222	Cable Gland <m20></m20>			3			
9	300786	Electric Housing			1			
10	300036	Magnetic Contactor <2A2B>			1			
11	400052	Cross Headed Screw M4×0.7×15L>			8			
12	400092	Spring Washer <m4></m4>			8			
13	300078	Contactor Rail <1PC>			1			
14	300079	Contactor Rail <2PC>			1			
15	402516	Gasket #16			1			
	400070	Hex. Nut <7/8"×9UNC>	4	4	4	4		
16	400071	Hex. Nut <1"x8UNC>					4	
	400102	Spring Washer <7/8">	4	4	4	4		
17	400103	Spring Washer <1">					4	
	203221	Spacer Washer <ø40xø24x1/8">	32	32	32	32		
18	203222	Spacer Washer <ø46×ø27×1/8">					32	
	210311		1	1	1	1		
19	210318	Electric Frame Ass'y					1	
20	400922	Retaining Ring <r-40></r-40>	4	4	4	4		
_	203128	Plain Wheel <ø88x28L>	2	2	2	2		
21	203132	Plain Wheel <ø119x49L>					2	
	407850	Bearing <6203 ZZ>	4	4	4	4		
22	407715	Bearing <6205 ZZ>		-	-	· ·	8	
	404184	Retaining Ring <s-17></s-17>	4	4	4	4		
23	400102	Retaining Ring <s-25< td=""><td></td><td></td><td></td><td></td><td>1</td></s-25<>					1	
	400192		2	2	2	2	4	
24	203110		2	2	2	2		
	210323	Gear wheel < Ø130x54L>					2	
25	210312	Motor Frame Ass'y	1	1	1	1		
	210317	-					1	
26	408364	Hex. Head Bolt <m10x1.5x20l></m10x1.5x20l>	4	4	4	4		
20	408358	Hex. Head Bolt <m10x1.5x25l></m10x1.5x25l>					4	
27	400857	Spring Washer <m10></m10>			4			
28	408366	Stay Bolt <7/8"×9UNC×265L>	2	2	2	2		
	408369	Stay Bolt <1"x8UNCx300L>					2	
29	203151	Position Tube <ø34xø24x56L>	4	4	4	4		
	203152	Position Tube <ø38xø28x69L>					4	
	210324		1				•	
	21024	4		1	1			
30	210314	Load Bracket		I	I	4		
	203439	4				1		
l I	210321						1	



TROLLEY MOTOR ASSEMBLY

	PARTS	DECODIDION	Q'TY REQ'D EACH UNIT					
NO.	CODE	DESCRIPION	NT(D)-050-2 NT(D)-050-1 NT(D)-100-2 NT(D)-100-1 NT(D)-200-2					
1	400182	Oil Seal <ø25xø40x6t>	1					
2	400695	Bearing <6204 Z>			2			
3	400198	Retaining Ring <r-47></r-47>			1			
4	400191	Retaining Ring <s-20></s-20>			1			
5	200347	Axle Sleeve			1			
6	200328	Reducing Gear Frame			1			
7	200344	Planetary Gear Shaft			3			
8	400669	Flat Washer <ø21xø11x2t>			3			
9	200337	Planetary Gear			3			
10	200391	Reducing Gear Frame Ass'y			1			
11	405017	Hex. Head Bolt <m6×1×60l></m6×1×60l>			4			
12	400855	Spring Washer <m6></m6>			8			
	106447	Motor Ass'y <0.12/0.03kW>	1	1				
	106448	Motor Ass'y <0.18/0.04kW>			1	1		
10	106469	Motor Ass'y <0.37/0.09kW>					1	
13	106452	Motor Ass'y <0.12kW>	1(NT-050-2)	1(NT-050-1)				
	106432	Motor Ass'y <0.18kW>			1(NT-100-2)	1(NT-100-1)		
	106435	Motor Ass'y <0.37kW>					1(NT-200-2)	
14	300142	Rectifier			1			
15	408357	Hex. Head Bolt <m6×1.0×20l></m6×1.0×20l>			4			
16	400084	Nut <m12×1.75></m12×1.75>			1			
17	400030	Hex. Head Bolt <m12×1.75×30l></m12×1.75×30l>			1			
10	201772	Transmission Choff With Dinian	1	1	1	1		
10	210329	Transmission Shart with Pinion					1	
19	2003201	Gear Box	1					
20	402513	Gear Box Gasket	2					
21	200334I	Internal Ring Gear	1					
22	100805	Brake Lining Ass'y	1					
23	100807	Brake Disc	1					
24	400239	Brake Spring	1					
25	400258	Brake Coil	1					
26	100396I	Brake Drum	1					