

EQ Series Electric Chain Hoist (125kg to 1t)

Owner's Manual

Suspended Type (hoist only): EQ
Motorized Trolley Type : EQM
Manual Trolley Type : EQSP

To Customer

- Thank you for purchasing KITO Electric Hoist (EQ).
- Operators and maintenance engineers are requested to read this manual.

 After reading, please keep this manual at hand for future use.
- This product is designed considering the environment protection. The product contains none of six hazardous substances specified by European RoHS Directives nor asbestos.

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Introduction

This electric hoist EQ is designed and manufactured for the purpose to lift and lower a load within a normal work environment. The motorized trolley MR2Q and the manual trolley are designed and manufactured for the purpose to move the lifted load laterally with the combination with the electric hoist.

Movement of a load in a 3D direction such as up/down, forward/backward and right/left is also enabled by combining with a crane.

This Owner's Manual is intended for those operating the KITO electric hoist EQ and maintenance engineers (* personnel with expertise).

Other than this manual, Disassembly/Reassembly Manual is also available for the maintenance engineers. Assign the maintenance engineers and use these materials for inspection and repair. Please contact the nearest distributor or KITO for these materials.

* A person who has a thorough knowledge of the structure and rolls concerning Electric chain block and is recognized as an expert by an entity.

Disclaimer

- KITO shall not be liable for any damage incurred thereof due to natural disaster such as fire, earth quake
 and thunderbolt, conduct by third party, accident, willful conduct or negligence by customer, erroneous use
 and other use exceeding the operational condition.
- KITO shall not be liable for any incidental damage due to the use or non-use of the product such as the loss
 of business profit, suspension of business and damage of the lifted load.
- KITO shall not be liable for any damage arising from negligence of the contents in the Owner's Manual and the use of the product exceeding the scope of its specification.
- KITO shall not be liable for any damage arising from the malfunction due to the combination of the product with other devices in which KITO is not concerned.
- KITO shall be indemnified from any loss of life, bodily injury and property damage due to the use of our product for which it has passed 10 years since its delivery.
- KITO shall not be liable to supply the spare parts for the product for which it has passed for 15 years since the discontinue of the product.

■ Restriction on Use

- The product described herein is not designed or manufactured for transporting people. Do not use the product for that purpose.
- The product described herein is designed for the materials handling work such as lifting/lowering and traveling the load under ordinary operational condition. Do not use the product for the work other than materials handling work.
- Do not assemble the product into machinery not for materials handling, as a part of it.

Operators

- Read carefully this Owner's Manual and the instruction manuals of related products, fully understand their contents, and the use and operate the product.
- Be sure to ware the proper clothing and protective equipment when using and operating the product.

Laws and Standards

Carry out installation, inspections, operations, maintenance management in accordance with the laws and standards of the country and region where the product is used.

An application before installation or a test before beginning usage may be required. Furthermore, the tester may be required to have specific qualifications. Be sure to check the laws and standards of the corresponding country and region before using the product.

Safety Precautions

Improper use of electric chain hoist causes danger such as drop of lifted load. Read this Owner's Manual carefully before installation, operation and maintenance. Use the product after understanding the product knowledge, safety information and precautions.

This Owner's Manual classifies the safety information and precautions into two categories of "DANGER" "WARNING" and "CAUTION".

Also read the instruction manual of the device associated with electric chain hoist, and follow the described contents.

Description of Signal Words



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Further, the event described in CAUTION may result in serious accident depending on the situation. Both DANGER and CAUTION describe important contents. Please follow the instruction.

After reading, please keep this manual at hand for future use by the user.

Description of Safety Symbols



Means "Prohibited" or "You must not do".

Prohibited action is shown in the circle or described near the circle.

This Owner's Manual uses \bigcirc as the general prohibition.



Means "Mandatory Action" or "You must do".

Required action is shown in the circle or described near the circle.

This Owner's Manual uses

as the general instruction.

General Matters on Handling and Control

↑ DANGER



- This product shall not be disassembled and repaird by personnel other than maintenance engineers.

 Other than this manual, Disassembly/Assembly Manual and Parts List are provided for the maintenance engineers.

 Perform the disassembling and repair by the maintenance engineer in accordance with these materials for maintenance.
- . Do not modify the product and its accessories.

Failure to comply with these instructions may result in death or serious injury.



- Understand the contents of the Owner's Manual sufficiently. Then operate the Electric chain hoist.
- Warning label is affixed to each part of the product. Follow the instruction described in the warning label.

↑ CAUTION



• Do not drag or drop the product when carrying.

Otherwise it causes damage or flaw of the electric chain hoist, bodily injury or loss of property due to the drop of the lifted load.



When discarding the product, disassemble it not to be used and discard in accordance with the ordinances
of local government or the rules specified by the business entity.

Ask the local government or the relevant section for the details.

Refer to "Disassembly/Assembly Manual" for disassembling, or contact KITO.

(This product uses oil. We prepare MSDS (Materials Safety Data Sheet) for the oil. Contact KITO for it.)

- · Carry out daily inspection by user.
- · Carry out inspection (monthly, annual) by maintenance engineer.
- · Keep the record of the inspection.

Failure to comply with these instructions causes bodily injury or loss of property.

General Matters on Handling of EQ Series Electric Chain Hoist

The EQ series electric chain hoist is controlled by VFD for important items related to safety such as operation, braking and emergency stop. Be sure to follow the safety precautions below as well as the above safety precautions.

⚠ DANGER



- . Do not reassemble the EQ series electric chain hoist to contactor type.
- Do not change parameters.

When parameters need to be changed, ask distributor or KITO.

- Do not carry out the work such as maintenance and inspection within 5 minutes after power off.

 Wait for the completion of discharging of the capacitor inside the VFD.
- · Do not change the connection of the VFD.
 - When the wires were removed for any reason, connect them again correctly checking the wiring diagram inside the controller cover.
- Do not carry out withstand voltage test and insulation resistance measurement of a circuit by megger while the VFD is connected.
- Do not turn off the power while operating.
- Never turn off the power when a load is suspended.
 Never, under any circumstances, turn off the power when a load is suspended. Doing so will cause the load to be slightly lowered after the power is turned on again due to control system initial preparation.

Failure to comply with these instructions may result in death or serious injury and the damage of VFD.



• USE KITO genuine VFD.

The VFD requires the special specification for KITO. Be sure to use genuine VFD.

Chapter 1

Handling the Product

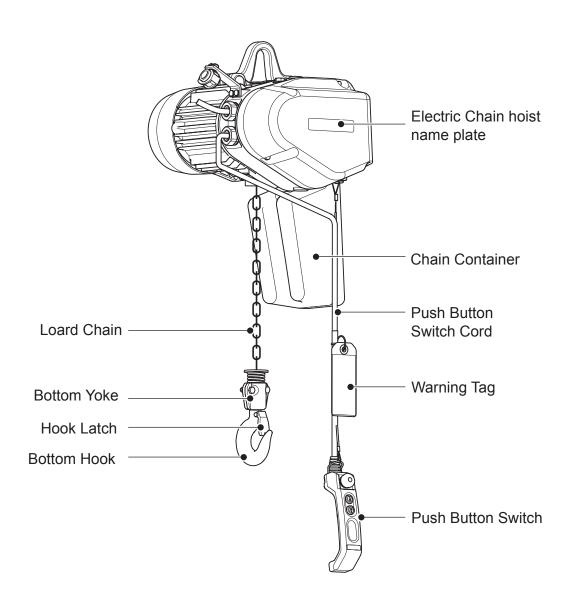
This chapter describes mainly how to use, assemble and install, and the check after installation. It also describes the daily inspection items before use.

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Connecting Power and Power cable	
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Type and Names of Each Part

■Suspended Type (EQ)

• Electric chain hoist dedicated for elevation



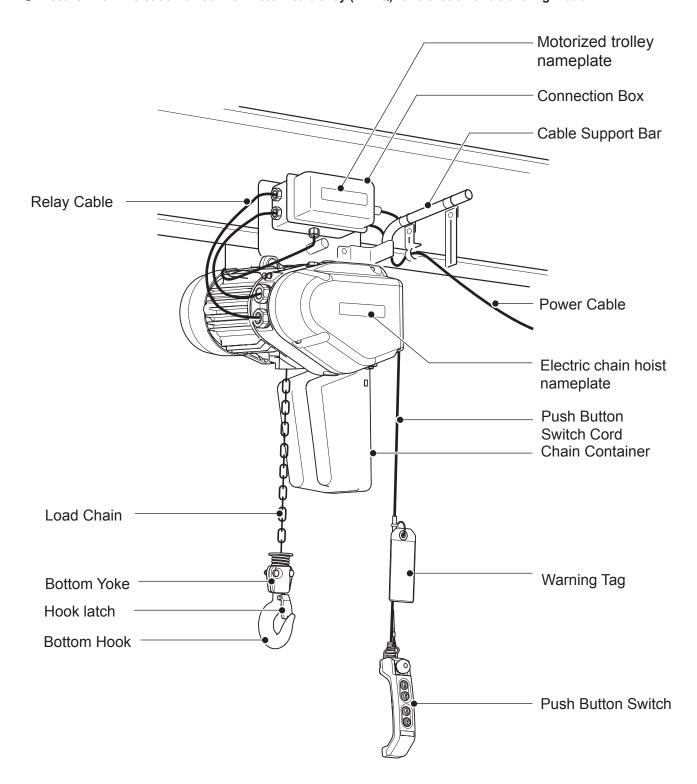
MANGER



Warning labels are affixed to each part other than above. Be sure to follow the instructions in the label. Failure to comply with the contents of the label may result in death or serious injury.

■ Motorized Trolley Type (EQM)

• Electric Chain Hoist combined with motorized trolley (MR2Q) for elevation and traveling motion



↑ DANGER

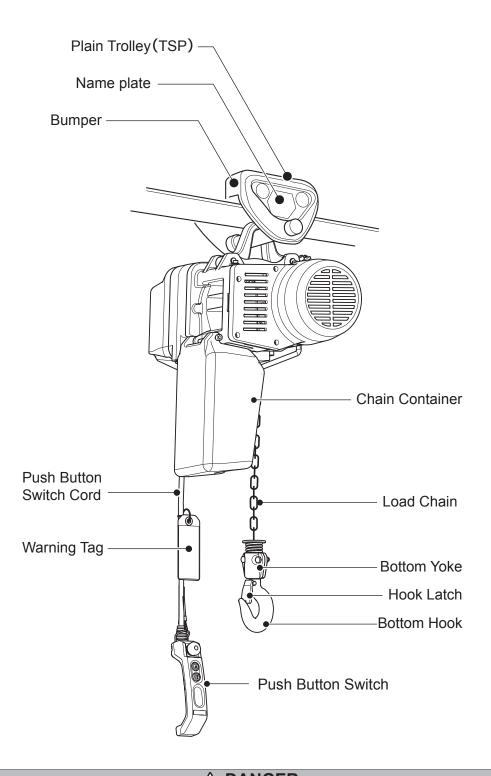


• Warning labels are affixed to each part other than above. Be sure to follow the instructions in the label. Failure to comply with the contents of the label can result in serious bodily injury or death.

Type and Names of Each Part (continued)

■ Manual Trolley Type (EQSP)

 The electric chain hoist equipped with the plain trolley (TSP) enabling lateral motion by moving the load manually. For light work.



DANGER



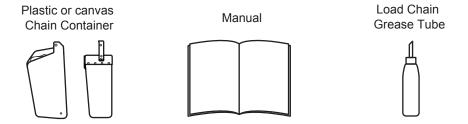
Warning labels are affixed to each part other than above. Be sure to follow the instructions in the label. Failure to comply with the contents of the label can result in serious bodily injury or death.

Opening the Package

■Checking the Product

- Make sure that the indication on the package and the product coincide with your order.
- Make sure that the product is not deformed and damaged due to the accident during transportation.

■ Parts packaged with the Electric Chain Hoist



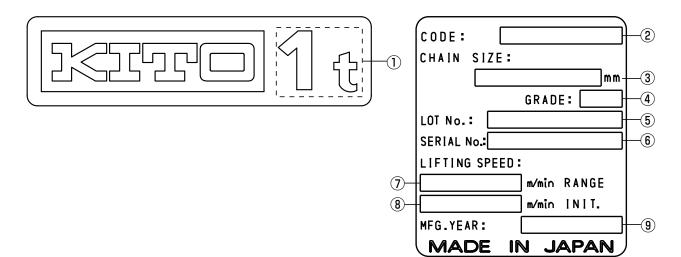
Thick Spacer L (for manual trolley) 2 pieces





■Nameplate and Product Model

■ Nameplate Indication of Electric Chain Hoist



1 Capacity Ex. 1 t

The maximum mass of the load that can be imposed on the product. The mass of the hook is excluded.

- 2 CODE...Product model Ex. EQ010IS A code to indicate the model No. of the product, capacity and lifting speed.
- 3 CHAIN SIZE...Load Chain size Ex. DAT-7.1×19.9mm The alphabet and the figures indicate the JIS grade, wire diameter and chain pitch respectively.
- 4 GRADE(FEM)...Ex. M5
 The grade of an electric chain hoist specified by ISO standard. A guidepost of durability.

5 LOT No.

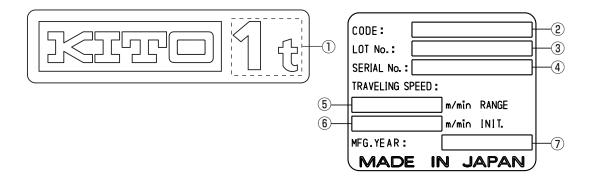
Manufacture No. to identify the time of manufacture and the quantity of a production unit.

- 6 SERIAL No. Serial No. to indicate the manufacturing sequence of the product.
- 7 Changeable range of the lifting speed
- 8 Initial setting value of the lifting speed
- 9 MFG. YEAR...Manufacture year

■ Code of EQ

Capacity	Body Size	CODE
125kg	EQ-C	EQ001IS
250kg		EQ003IS
490kg		EQ004IS
500kg		EQ005IS
1t	EQ-D	EQ010IS

■ Nameplate Indication of Motorized Trolley



- 1 Capacity Ex. 1 t
 - The maximum mass of the load that can be imposed on the product. The mass of the hook is excluded.
- 2 CODE · · · Product model Ex. MR2Q010IS Indicates the model No. of the product, capacity and lifting speed of the product.
- 3 LOT No.
 - Manufacture No. to identify the time of manufacture and the quantity of a production unit.
- 4 SERIAL No. Serial No. to indicate the manufacturing sequence of the product.
- 5 Changeable range the traveling speed.

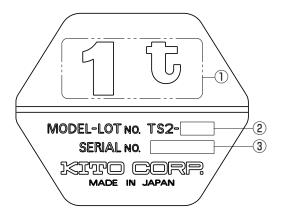
- 6 Initial setting value of the traveling speed.
- 7 MFG. YEAR...Manufacture year

■ Code of MR2Q

	CODE
Capacity	Model MR2Q dual speed VFD model
	Standard speed
125kg	
250kg	
490kg	MR2Q010IS
500kg	
1t	

Opening the Package (continued)

■ Nameplate Indication of Manual Trolley



1 Capacity Ex. 1 t

The maximum mass of the load that can be imposed on the product. The mass of the hook is excluded.

- 2 LOT No. Manufacture No. to identify the time of manufacture and the production lot.
- 3 SERIAL No.
 Serial number to indicate the manufacturing sequence of the product.

■Checking the Marks

↑ DANGER

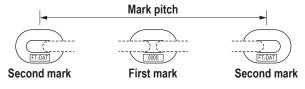


Be sure to check that the Load Chain has "FT-DAT" mark on it and the chain size is appropriate for the EQ
model you are using. (See the following table.) The Load Chain of other models (such as model ES or ER) or
different rating cannot be used.

Use of the Load Chain of other model or other rating may result in death or serious injury due to the drop of the lifted load.

Code of EQ	Load Chain size : diameter (mm)	Mark pitch
EQ001IS		
EQ003IS	5.6	20 Links
EQ005IS		
EQ010IS	7.1	20 Links

The mark (FT-DAT) to indicate the model of the Load Chain is indicated on it at an equal spacing. Make sure that the Load Chain is of a chain size (wire diameter) appropriate for EQ referring to the table in the left.



Front side: FT-DAT Back side: H-23

Front side : Original Lot No. of the

Load Chain (4 digits)

Back side: KITO

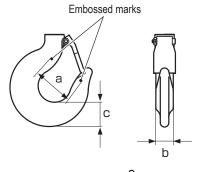
■ Recording the Product No.

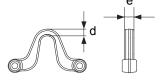
- Fill in the table in the right with product's Lot No., Serial No. (described in the product nameplate), date of purchase and the name of the sales shop where you purchased the product.
 - * When requesting repair or ordering a chain hoist part, please inform us of these pieces of information together.

Item	Electric chain hoist	Motorized trolley	Manual trolley
Lot No.	EQ-	MR2Q-	TS2-
Serial No.			
Date of purchase			
Name of the sales shop			

■ Recording the Initial Value

 When opening the package, fill in the table in the right with the opening dimension "a" between embossed marks on the Bottom Hook, the width of the hook "b", the thickness of the hook "c", the thickness of the Suspension Eye "d", and the width "e". (These values are used for checking. See P64 for the inspection criteria.)





Dimensions when the package was opened

	Dimension a	mm
Bottom Hook	Dimension b	mm
	Dimension c	mm
Sugnancian Eva	Dimension d	mm
Suspension Eye	Dimension e	mm

Chapter 1 Handling the Product

Product Specification and Operational Environment

The operational environment of the electric chain hoist and motorized trolley is as follows:

Standard Specification

Intermittent ratings EQ series (100 % of the capacity): Dual speed VFD model (high speed/low speed) — 40/20 % ED

(120/240 rev/h)

:MR2Q series (100 % of the capacity): Dual speed VFD model (high speed/low speed) — 27/13 % ED

(78/162 rev/h)

Grade * 1 :ÌSO-M5 or M4, FEM-2 or ASME-H4 Hoist IP55, Push button IP65 Protection

Operation. Push button switch operation / 3-Push Button Switch set for hoist only and Manual trolley type / 5- or 7-Push

Button Switch set for motorized trolley combined model

Power supply method Power supply through cabtyre cable

Body: KITO Metalic gray, Controller Cover and Fan Cover: KITO Yellow (Equivalent to Munsell 7.2 YR 6.5/14.5): EQ, dual speed VFD model 80dB or less (A scale: measured at 1 m away from the Electric chain hoist)

Noise level

:MR2Q 85dB or less (A scale: measured at 1 m away from the Electric chain hoist)

:150% of the capacity or more Braking capacity

Power Cable length 5 m/10 m (Standard)

Sound power level :MR2Q 96db or less (A scale)

Product cotogony	Motor Insulation	Voltage range		Operating	
Product category	Class	50Hz	60Hz	Voltage	
230V Class		220V	220V		
230V Class		230V	230V		
	В	380V	380V	DC24V	
400V Class		400V	440V		
		415V	_		

NOTE

- · Operate the electric chain hoist with the rated voltage.
- · Do not use the electric chain hoist exceeding the intermittent ratings.

* Grade 1

Code			GRADE	
Capacity	Dualanced	ISO	ASME	FEM
	Dual speed	Dual speed	Dual speed	Dual speed
125kg	EQ001IS			
250kg	EQ003IS		H4	3m
490kg	EQ004IS	IVIO 114		3111
500kg	EQ005IS			
1t	EQ010IS	M5	H4	2m

ISO

_									
I	Loading	Total operating hour h							
l	status	800	1600	3200	6300	12500	25000		
ĺ	Light	_	_	_	_	M5	M6		
ſ	Medium	_	_	_	M5	M6	_		
ſ	Heavy	_	_	M5	M6	_	_		
ľ	Ultra heavy	_	M5	M6	_	_	_		

* Rate of loading

A case where the capacity is rarely applied. Usually the Light:

hoist is used with a light load.

Medium: A case where the capacity is applied considerably frequently. Usually the hoist is used with a medium load

Heavy: A case where the capacity is applied considerably

frequently. Usually the hoist is used with a heavy load.

Ultra heavy: A case where the capacity is applied constantly.

ASME HST

		Operation time ratings at K=0.65			
Hoist duty class	Typical areas of application		Unlformly distributed work periods		quent periods
		Max. on Max. No. Max. on time from time, min / hr starts / hr cold start, min		Max. No. of starts	
H2	Light machine shop fabricating, service, and maintenance; loads and utilization randomly distributed; capacitys infrequently handled.	7.6 (12.5%)	75	15	100
НЗ	General machine shop fabricating, assembly, storage, and warehousing; loads and utilization randomly distributed.	15 (25%)	150	30	200
H4	High volume handing in steel warehouses, machine shops, fabricationg plants and mills, and foundries; manual or automatic cycling operations in heat treating and plating; loads at or near capacity frequently handled.	30 (50%)	300	30	300

FEMComparison of ISO rating and FEM rating

1 Dm	1 Cm	1 Bm	1 Am	2 m	3 m	4 m	5 m
M1	M2	M3	M4	M5	M6	M7	M8

C		Rating of the operating hours								
Condition Rate of	Pato of	V0.06	V0.02	V0.25	V0.5	V1	V2	V3	V4	V5
	T0	T1	T2	T3	T4	T5	T6	T7	T8	
ା ଜୁ loading			Average operating hours per day (hour)							
Пе		≤0.12	≤0.25	≤0.5	≤1	≤2	≤4	≤8	≤16	>16
1 L1	K≤0.50	-	-	1Dm	1Cm	1Bm	1Am	2m	3m	4m
2 L2	0.50 <k≤0.50< td=""><td>-</td><td>1Dm</td><td>1Cm</td><td>1Bm</td><td>1Am</td><td>2m</td><td>3m</td><td>4m</td><td>5m</td></k≤0.50<>	-	1Dm	1Cm	1Bm	1Am	2m	3m	4m	5m
3 L3	0.63 <k≤0.80< td=""><td>1Dm</td><td>1Cm</td><td>1Bm</td><td>1Am</td><td>2m</td><td>3m</td><td>4m</td><td>5m</td><td>-</td></k≤0.80<>	1Dm	1Cm	1Bm	1Am	2m	3m	4m	5m	-
4 L4	0.80 <k≤1.00< td=""><td>1Cm</td><td>1Bm</td><td>1Am</td><td>2m</td><td>3m</td><td>4m</td><td>5m</td><td>-</td><td>-</td></k≤1.00<>	1Cm	1Bm	1Am	2m	3m	4m	5m	-	-

Rating code is FEM9.551

(Design rules of hoisting equipment for every series: classification rating of internal structure)

Rating opera	iting	Average operating hours per day (hour)	Total operating hours
V0.06	TO	≤0.12	200
V0.12	T1	≤0.25	400
V0.25	T2	≤0.5	800
V0.5	T3	≤1	1,600
V1	T4	≤2	3,200
V2	T5	≤4	6,300
V3	T6	≤8	12,500
V4	T7	≤16	25,000
V5	T8	>16	50,000

■Operational Environment

Ambient temperature : -20°C — +40°C

Gradient of rail : No gradient in travel rail (for the hoist with trolley)

Ambient humidity : 85 % or less (no condensation)

Explosion-proof construction: Not applicable to the work environment with explosive gases or explosive vapor Non-conforming environment: A place with organic solvent or volatile powder, and a place with a plenty of powder

and dust of general substances

: A place with considerable amount of acids and salts

NOTE

As a general rule, use the product indoors. When installing the electric chain hoist outdoors or to the place where the hoist is exposed to direct rain, wind and snow, shade the hoist with roof to protect it from rain, wind and snow.

How to Use

KITO Model EQ Electric Chain Hoist is a dual speed VFD model. Other than them, such products are provided that can travel/traverse when combined with a trolley or a crane. Their push button switches for operation differ in the size and the operating method. Check the product model of the hoist and use it properly.

M DANGER



- Do not use the Hook without a Hook Latch or damaged Hook.
- Do not use the Load Chain with heavy elongation, abrasion or deformation.
- · Do not cut, extend, or weld the Load Chain.
- Do not use the Load Chain with the Bottom Hook without smooth motion.
- Do not use the Load Chain when its brake does not function securely even without load, or when the stopping distance is too long.
- Do not use the product if it moves oppositely to the direction indicated on the push button switch.

Failure to comply with these instructions may result in death or serious injury.



- Carry out daily inspection before operation.
 - (When any abnormality was found during inspection, turn off the power, indicate "FAILURE" and ask the maintenance engineer for repair.)
- Check the slinging devices for no abnormality.
- The diameter of the Suspension Shaft hooked by Suspension Eye should be thinner than 31mm or less. Failure to comply with these instructions may result in death or serious injury.

⚠ CAUTION



Do not use the product with an illegible nameplate or warning label affixed to the body size.

Failure to this instruction may result in the injury or the property damage.



- When using the product for the first time, affix the labels indicating East, West, North and South on the push button switches.
- Check the contents of the work and make sure that the electric chain hoist has proper performance for the load and lift.
- Check the contents of the work and operate the electric chain hoist at a place enabling to look out the operating area without hindrance.
- · When looking out the operating area is difficult, arrange the monitor near the place for safety.
- Operate the electric chain hoist at a place with firm foothold without danger of falling, stumbling, slipping or over turning.
- · Before moving the load, warn all the surrounding people.
- Even if the crane or the electric chain hoist is permanently installed and used for the same purpose repeatedly, check the contents of the work and make sure that the work does not exceed the capacity on each occasion.
- Appoint the maintenance engineer or competent personnel among the qualified personnel for operation of cranes and electric chain hoists. Indicate the name of the personnel on a place with legibility.
- · The maintenance engineers shall check the result of daily inspection.
- When informed of abnormality of the electric chain hoist, the maintenance engineers shall take immediately any necessary measures such as prohibition of use and repair.
- When carrying out inspection and repair, secure the environment for safe work without electric shock and falling.

Failure to comply with these instructions may result in bodily injury or property damage.

■ Daily Inspection of Electric Chain Hoist (EQ)

M DANGER



Carry out daily inspection before use.

(When any abnormality was found during inspection, turn off the power, indicate "FAILURE" and ask the maintenance engineer for repair.)

Neglecting to carry out daily inspection may result in death or serious injury.

■ Appearance

Item	Check method	Criteria	When failed
Indication of Nameplates and Labels	Check visually.	No peel off. Indication can be seen clearly.	Carry out cleaning, repair or replace with new nameplate or label. When replacing with a new nameplate or label is required, please inform KITO of the description in "Recording of the Product No." (P15) such as Lot No. and Serial No.
Deformation and damage of main unit and each part	• Check visually.	No apparent deformation, damage, flaw and crack	Replace the parts with deformation, damage, flaw or crack.
Loosened or fallen off bolts, nuts and split pins	Check visually or using tools.	Bolts, nuts and split pins are fastened securely. DANGER Even fallen off of a bolt causes for the body size to drop. Be sure to check. Fallen off of a bolt may result in death or serious injury.	Fasten bolts, nuts and split pins securely.

How to use (continued)

■ Load Chain

Item	Check method	Criteria	When failed
Elongation of Pitch	Check visually	No apparent elongation	Refer to Load Chain (P65) of Chapter 2, Frequent inspection.
Abrasion of Wire Diameter	Check visually	No apparent abrasion	Refer to Load Chain (P65) of Chapter 2, Frequent inspection.
Deformation, Flaw, Entanglement	Check visually Flaw Crack Check visually for no foreign matter such as attached sputter.	 No deep notch No deformation such as twist No attached sputter No entanglement No crack 	Replace the Load Chain.
Rust, Corrosion	Check visually	No apparent rust and corrosion	Replace the Load Chain.
Lubrication	Check visually	To be oiled adequately	Apply oil.
Mark	Check visually	Check the mark pitch and the indication. (Refer to "Checking the Marks" (P15).)	Replace the Load Chain.

■ Suspension Eye, Bottom Hook

Item	Check method	Criteria	When failed
Opening of the Hook	Check visually	No apparent opening of the Hook	Carry out the inspection item of Suspension Eye and Bottom Hook (P66) of Frequent inspection.
Abrasion	Check visually	No apparent abrasion	Carry out the inspection item of Suspension Eye and Bottom Hook (P66) of Frequent inspection.
Deformation, Flaw, Corrosion	Check visually	No apparent deformation, flaw and corrosion	Carry out the inspection item of Suspension Eye and Bottom Hook (P66) of Frequent inspection.
Hook Latch	Check visually and check the movement of the Hook Latch.	The Hook Latch is mounted securely inside the Hook opening. No deformation. The Hook Latch moves smoothly. DANGER Do not use the Hook without the Hook Latch. Use of the Hook without the Hook Latch may result in death or serious injury.	Replace the Hook Latch.
Hook movement (Rotation)	Check visually and rotate the Hook by hand. Neck	 No apparent gap between the Bottom Yoke and the shank (at the neck). The Bottom Yoke rotates in both directions equally. The Bottom Yoke rotates smoothly. 	Replace the Hook.
Bottom Yoke	Check visually	No loosened bolt or nut	Attach the Bottom Hook to the Load Chain securely.

■ Peripheral parts of the main unit

Item	Check method	Criteria	When failed
Chain Spring	Check visually	No apparent shrinkage or compression	Carry out the inspection item of Chain Spring (P73) of Periodic inspection.
Cushion Rubber	• Check visually Cushion Rubber Stopper	No apparent shrinkage or compression No peal off, crack of deformation of rubber Rubber Steel plate	Replace the Cusion Rubber.

■ Push Button Switch

Item	Check method	Criteria	When failed
Switch set	Check visually	No deformation, damage and no loosened screw Label indication of the push button switch can be seen clearly.	Clean and repair the label or replace with a new label. Affix the label securely.

■ Function and Performance

• Check the following item with no load.

Item	Check method	Criteria	When failed
Operational Check	Press the push button and check each operation.	 The Load Chain can be wound smoothly. The Electric chain hoist moves in the same direction as that of the push button operation. When the operation is stopped, the motor stops immediately. When the Emergency Stop Button is pressed, all hoist motions stop. When operating other push button while the Emergency Stop Button is pressed, the hoist does not start operation. When canceling the Emergency Stop Button, the hoist operates normally. 	Refer to Chapter 3 "Guidance on Troubleshooting" (P92 to 93).
Brake	Press the push button and check the operation of the Brake.	When stopping the operation, the Brake is applied immediately and the Bottom Hook shall stop immediately. (Guideline: The travel of the Load Chain is within 2 to 3 links.)	Carry out the inspection in accordance with the items in Chapter 2 "Periodic inspection" Electromagnetic Brake (P75).
Limit Switch	Press the push button and check the operation of the Limit Switch.	When the hoist is operated to the upper or lower limit, the motor automatically stops.	Replace the Limit Switch. Disassemble the actuator of the Limit Switch to clean.
Check for no Abnormal Sound	Press the push button and check the operation. NOTE Sound is also an important	No abnormal sounds and vibrations	Replace the abnormal part. Apply oil on the Load Chain.
	check point. Always be careful for the noise of the electric chain hoist.	No popping sound from the Load Chain.	Check the Load Chain. (Refer to P20.)

■ Daily Inspection of Motorized Trolley (EQM)

■ Appearance

Item	Check method	Criteria	When failed
Indication of Nameplates and Labels	Check visually	No peel off. Indication can be seen clearly.	Clean and repair the label or replace with a new label.
Deformation and damage of each part Mot	• Check visually Connection Box tor cover Motor frame Frame	No apparent deformation, damage and corrosion	Replace the deformed or damaged part.
Loosened or fallen off bolts, nuts and split pins	Check visually or using tools.	Bolts, nuts and split pins are fastened securely. DANGER Even a drop off of a split pin may cause of drop of the main unit. Be sure to check it. Drop off of split pin may result in death or serious injury.	Fasten bolts, nuts and split pins securely.

■ Function and Performance

• Check the following item with no load.

Item	Check method	Criteria	When failed
Operational Check	Press the push button to check the operation.	 To travel smoothly. No meandering and vibration. The electric chain hoist moves in the same direction as that of the push button operation. When the operation is stopped, the motor stops immediately. When the Emergency Stop Button is pressed, all hoist motions stop. When operating other push button while the Emergency Stop Button is pressed, the hoist does not start operation. When canceling the Emergency Stop Button, the hoist operates normally. 	Refer to Chapter 3 "Guidance on Troubleshooting" (P92 to 93).
Brake	Press the push button to check the operation of the Brake.	When the operation is stopped, the Brake is applied and the motor stops immediately.	Contact KITO.

■ Daily Inspection of Manual Trolley (EQSP)

■ Appearance

Item	Check method	Criteria	When failed
Indication of Nameplates and Labels	Check visually	No peel off. Indication can be seen clearly.	Clean and repair the label or replace with a new label.
Deformation and damage of each part	Check visually	No apparent deformation and corrosion No apparent deformation on the Frame	Replace the deformed or damaged part.
Loosened or fallen off bolts, nuts and split pins	Check visually or using tools.	Bolts, nuts and split pins are fastened securely. DANGER Even a drop off of a split pin may cause of drop of the main unit. Be sure to check it. Drop off of split pin may result in death or serious injury.	Fasten bolts, nuts and split pins securely.

■ Function and Performance

• Check the following item with no load.

Item	Check method	Criteria	When failed
Operational Check	Check the traveling motion of the electric chain hoist by moving it manually.	To travel smoothly. No meandering and vibration.	Carry out Chapter 2 "Periodic inspection".

■How to Operate the Push Button Switches

CAUTION



- Do not hang the Push Button Switch Cord on other object, or pull the cord strongly.
- . Do not use the Push Button Switch if its button does not operate smoothly.
- Do not bundle or tie the cord for the adjustment of its length.

Failure to comply with this instruction causes bodily injury or loss of property.



- When taking hand off the Push Button Switch after operation, do not throw it. Be careful not to hit other worker with the Push Button Switch.
- When starting operation of the hoist after stopping the hoist by pushing the Emergency Stop Button, be sure to confirm there are no hazards around the workplace before releasing the lock of the Emergency Stop Button and starting operation.

Failure to comply with this instruction causes bodily injury or loss of property.

NOTE

If the Electric chain hoist is tripped due to overheat of the VFD, the VFD cannot be reset soon after the trip. Reset the VFD after a while.

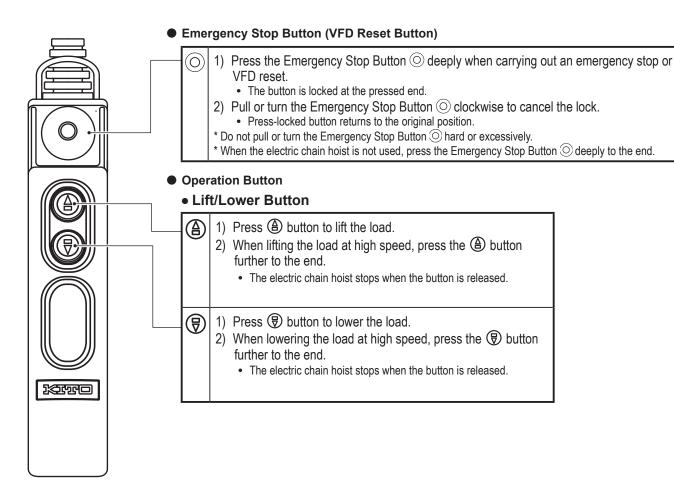
Decompression protection circuit operates when the power is shut down due to power outage, etc.

In this case, Electric Chain Hoist does not operate even when the Push Button Switch is pressed after the power supply is recovered.

To release the halt condition, press the emergency button and reset it.

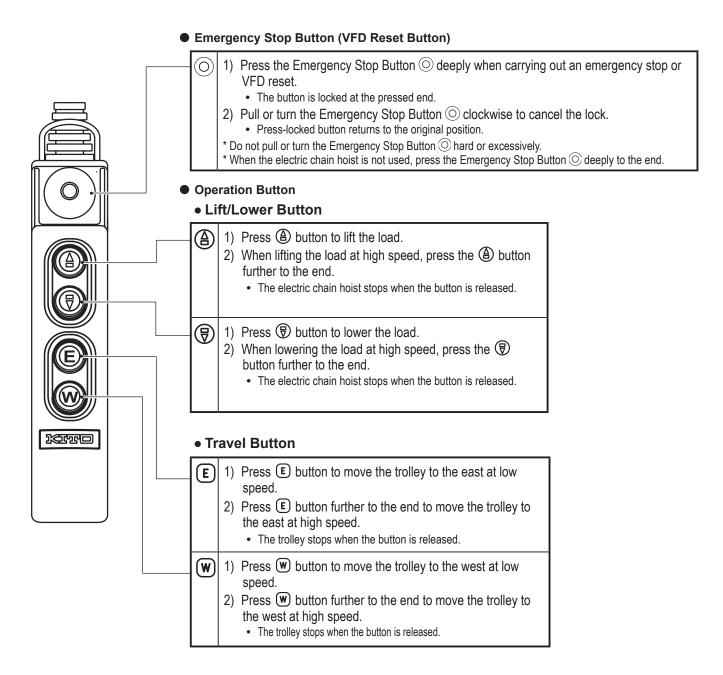
■ 3-Push Button Switch Set

3-Push Button Switch Set is equipped with a lock type emergency stop button (VFD reset button) and lift/lower push buttons. Two-step push button switch is mounted as Lift/lower push button switches in accordance with the specification of dual speed VFD specification. Refer to the operation method of the corresponding specification.



■ 5-Push Button Switch Set

5-Push Button Switch Set is equipped with a lock type emergency stop button (VFD reset button) and lift/lower push buttons. Two-step push button switch is mounted as Lift/lower push button switches in accordance with the specification of dual speed VFD specification. Refer to the operation method of the corresponding specification. Moving direction of the trolley is expressed as East/West for traveling motion in the operational instruction of the Push Button Switch Set.

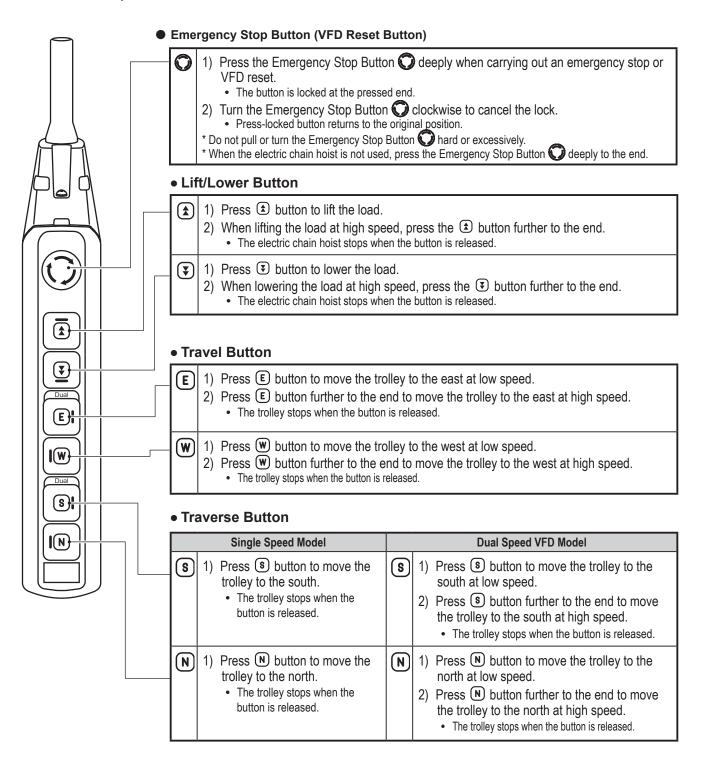


How to use (continued)

■ 7-Push Button Switch Set

7-Push Button Switch Set is equipped with a lock type emergency stop button (VFD reset button) and lift/lower push buttons. One-step push button switch or two-step push button switch is mounted as Lift/lower push button switches in accordance with the specification of single speed or dual speed VFD specification. Refer to the operation method of the corresponding specification.

Moving directions of the trolley are expressed as East/West for traveling motion, and North/South for traversal motion in the operational instruction of the Push Button Switch Set.



Operation

■ General

DANGER



- Do not operate the electric chain hoist in an environment with flammable or explosive gas.

 The electric chain hoist is not designed as explosion proof specification.
- Do not use the electric chain hoist exceeding the ratings (intermittent rating) of the lifting motor and the maximum start-up frequency.
- Do not use the electric chain hoist by the voltage other than the rated voltage.
- Do not use the Emergency Stop Button for ordinary stop operation.
- . Do not expose the Load Chain to sparks from welding.
- Do not contact welding rods or electrodes with the Load Chain.
- . Do not use the Load Chain as the earth for welding work. (Fig. A)

Failure to comply with these instructions may result in death or serious injury.





• Follow the operating environment and conditions for the electric chain hoist.

Failure to comply with this instruction may result in death or serious injury.

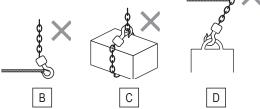
■ Slinging

MANGER



- Do not apply a load to the tip of the Bottom Hook or the Hook Latch. (Fig. B)
- Do not bind a load with the Load Chain directly. (Fig. C)
- Do not operate the Load Chain while it is in contact with any sharp edges. (Fig. D)

Failure to comply with these instructions may result in death or serious injury.





- Use the sling appropriate for the weight and shape of a load.
 Inappropriate slinging may result in danger such as drop of a lifted load.
- Carry out the slinging with equal load on slinging devices for stable lifting of a load.
- Attach the slinging devices securely to a load.
- . Attach the slinging devices to the Bottom Hook correctly.

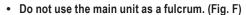
■ Lifting/Lowering

⚠ DANGER



Do not lift more than the capacity. (Fig. E)
 The capacity is indicated in the nameplate.

- . Do not operate the electric chain hoist exceeding the lifting height.
- Do not dare to lift the structure or any other object supposed to be difficult to lift.
- Do not lift a load at no-load side of the Load Chain.
- Do not stop the electric chain hoist with the limit switch (over winding prevention device).
- Do not use the electric chain hoist when the Friction Clutch (overload prevention device) is operated to stop winding.
- · Do not lift or lower excessively.
 - Do not remove the Chain Spring to operate the limit switch by hitting the body size with the Bottom Hook. If such stop operation is repeated, it may result in breaking of the Load Chain
 - Do not hit the body size with the End Stopper of the Load Chain to cause the operation
 of the Friction Clutch. If such operation is repeated, it may result in breaking of the Load
 Chain.



- · Do not swing the lifted load.
- Do not wind the slack Load Chain with a load in one action to avoid exposing the Load Chain to shock.

Stop lifting when the Load Chain is stretched tight. Then lift slowly.

- Do not carry out reverse operation while lifting/lowering a load.
 When reversing the motion, stop the electric chain hoist and then reverse the motion.
- Do not carry out excessively frequent inching.
- Do not carry out plugging.

When reversing the motion, stop the electric chain hoist and then reverse the motion.

- When lifting off a load from a pallet, lift the load to avoid exposing to shock, such as the load falling. (Fig. G)
- Do not cause the load to come into contact with the Load Chain.
- Do not rotate a lifted load. Use the device for rotation.
- Do not carry out the welding or cutting work on a lifted load.
- Do not repair or disassemble a lifted load.

When repairing or disassembling an electric chain hoist, ensure that the product is placed down on the floor and that only maintenance engineers maintain the electric chain hoist.

- · Do not enter beneath a lifted load.
- Do not hit the Chain Container with a load or slinging devices.

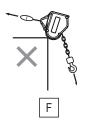
 Otherwise the Load Chain in the Chain Container falls out of the bucket to cause injury.
- Do not leave from the operating position while a load is lifted. Watch the lifted load.

Failure to comply with these instructions may result in death or serious injury.



- When the limit switch (over winding prevention device) is operated, stop the lifting work immediately and lower the load.
- Move the electric chain hoist right above the load and then lift the load. (Do not lift the load in an inclined direction.) (Fig. H)









CAUTION



• Do not use the Friction Clutch to measure the weight of a load.

The use of the Friction Clutch other than intended purpose may result in injury or property damage.



- When carrying a lifted load using a lifting magnet or a vacuum chuck, lower the height of the lifted load as low as possible.
- When lifting a load with two electric chain hoists, use the electric chain hoist with the rated lifting capacity
 of a single hoist exceeding the load.
- When lifting a load with two electric chain hoists, use the electric chain hoists of the same model and capacity and operate the respective electric chain hoist to keep the load lifted or lowered horizontal.

Failure to comply with this instruction causes bodily injury or loss of property.

■ Traverse / Travel

↑ DANGER



- Do not operate the electric chain hoist underneath the load or transport a load over people. (Fig. I)
- Do not operate the electric chain hoist when any person is in the area where the lifted load moves.
- Do not allow people to enter into the area where a lifted load moves.
- Do not ride on a lifted load and do not use the electric chain hoist to support, lift, or transport people. (Fig. J)
- Do not strike the stopper or the structure by the main unit or the trolley.
- Do not operate or move the electric chain hoist while going backward with a load kept lifted.
 Operate the electric chain hoist while looking forward from the back of a load and going ahead.

Failure to comply with these instructions may result in death or serious injury.

A CAUTION



Do not impede the lifted load with other structure or wiring.

Failure to comply with this instruction causes bodily injury or loss of property.

■ In Abnormality or Failure

⚠ DANGER



- If the electric chain hoist is damaged or abnormal noise or vibration occurs, stop the operation immediately.
- If the electric chain hoist moves in the direction opposite to the indication on the Push Button Switch, stop the operation immediately.
- When the twist, entanglement, crack, deformation, attachment of foreign matters or abnormal engagement of the Load Chain and the Gear is observed, stop the operation immediately.
- When any abnormality is observed during the operation, indicate "FAILURE" and contact with the maintenance engineers.
- . When the power is interrupted, secure safety and contact with the maintenance engineers.

■ Speed Change of Dual Speed for EQ Model

You can change the high/low speed of the dual speed for EQ model by changing the VFD parameter.

DANGER



- Do not disassemble the Model EQ Electric Chain Hoist in the same way as the contactor system.
- Only maintenance engineers or the personnel with expertise are allow to set or change the parameters.

 Wrong parameter settings may result in danger such as defective operation and drop of lifted load. Please contact your nearest service shop or KITO for consultation.

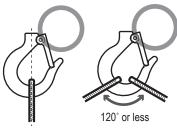
Failure to comply with these instructions may result in death or serious injury.



- When changing the parameter, set it correctly referring to the VFD Manual.
- · Parameter change requires energizing. Do not touch the energized part.

Failure to comply with these instructions may result in death or serious injury.

■How to Sling the Load Properly



Sling the load at the extended line of the hook shaft.



Improper hooking position of the lifted load or the sling



Do not carry out dangerous hooking as shown below.

Angle exceeding 120 Angle too wide



Unable closing of the Hook Latch



Hooking of the load at the tip of the Hook

■How to Suppress the Swinging of a Load

↑ DANGER



• Do not move the electric chain hoist with a load hung at one side of the Crane Saddle.

Otherwise the load swings and hits a person or object or drops to result in death or serious injury.

Swinging of a load makes it difficult and dangerous to move the trolley. The basics of operation are not to make a load swing. To do that keep the following instructions.

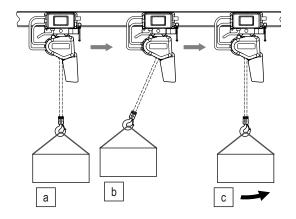
- Do not lift a load in an inclined direction.
- Start slowly when traveling the load.
- Do not lift suddenly.

Even if you keep the above instructions, the lifted load may swing at the start and the stop of the electric chain hoist.

Following operation can reduce the swing of the lifted load.

■ Operation

- 1) Press the Travel Button. (Fig. a)
- 2) When the trolley starts to move, the lifted load delays a bit. (Fig. b)
- 3) Release the button a bit before the time when the lifted load swings to the center position.
- 4) When the lifted load comes to the position just beneath the electric chain hoist, press the button again and continue to travel the load. (Fig. c)



■ Precautions After Work

↑ CAUTION



• Do not store the electric chain hoist at a state of over lifting or over lowering.

Failure to comply with these instructions causes bodily injury or loss of property.

Mandatory

- · Store the electric chain hoist with power off.
- Indicate "FAILURE" on the electric chain hoist that needs repair not to be used.
- Wipe off dust and waterdrop, apply oil at the neck of the Hook and the Load Chain and store the hoist.
- Remove the stain, attached foreign matter and waterdrop from the parts such as the Limit Switch and the Chain Container that is scratched by the Load Chain and stored it.
- When the electric chain hoist is installed outdoor, cover it with rain cover or roof after application of rust proof process.

Failure to comply with these instructions causes bodily injury or loss of property.

NOTE

- Clean the push button switches always not to allow the dust, sands and oil attach.
- When storing the electric chain hoist for a long period, it is effective to prevent rusting to operate it at a certain period without load.
- When putting the electric chain hoist on a floor, remove the Chain Container.
 Otherwise the Chain Container may deform or be damaged.
- · When not using the electric chain hoist, wind up the Bottom Hook to the height not to hinder persons passing by or other work.
- . Decide the place to store the electric chain hoist in advance. It is recommended to hang the push button cable on the pillar.

■Setting Up the No-Load High-Speed Function

The EQ Series Electric Chain Hoist provides the no-load high-speed function. When you enable this function, operation is automatically switched to 1.3 times faster than high-speed during high-speed operation if a load is between no-load and 30% of rated load.

This function is set to enable in the factory-preset mode.

■ Enabling/Disabling the No-Load High-Speed Function

To enable or disable the no-load high-speed function setting, use push button switches.

- To enable the no-load high-speed function
 - 1. Perform lowering operation to activate the lower limit switch.
 - 2. Press the emergency stop button.
 - 3. Press and hold the first row of the lowering button (low-speed) for 5 seconds or more.
 - 4. Release the emergency stop button.

- To disable the no-load high-speed function
 - 1. Perform lowering operation to activate the lower limit switch.
 - 2. Press the emergency stop button.
 - 3. Press and hold the second row of the lowering button (high-speed) for 5 seconds or more.
 - 4. Release the emergency stop button.

DANGER



Do not wind the slack Load Chain with a load in one action to avoid exposing the Load Chain to shock.

Stop lifting when the Load Chain is stretched tight. Then lift slowly.

CAUTION



When you use the no-load high-speed function for the first time and when you set it to enabled, confirm that operation is automatically switched to 1.3 times speed during high-speed operation.

Mandatory

Failure to comply with these instructions may result in bodily injury or property damage.

Chapter 1 Handling the Product

Work Flow of Assembling and Installation

The contents of the work to assemble and install the product by the maintenance engineers and installer are described from this page and after. To eliminate the redo work and for effective assembling and installation, please check the following work flow first and then start assembling and installation work.

following work flow first and then start assembling and installation work. Model Check Suspended Type (hoist only) **Trolley Type Motorized Trolley Type Manual Trolley Type** EQ **EQM EQSP** Assembling Parts to Electric Chain Hoist (P35) ■Preparation ■Mounting the Chain Container ■Lubrication on the Load Chain ■Checking gear oil Combination with the Motorized Trolley (P38) Combination with the Manual Trolley (P43) ■Part replacement of the electric chain hoist ■Part replacement of the electric chain hoist ■Checking the rail width of the motorized ■Checking the rail width of the manual trolley trolley ■Checking the number and position of ■Checking the number and position of adjusting spacers adjusting spacers ■Combination of the electric chain hoist and Assembling ■Combination of the electric chain hoist and the manual trolley the motorized trolley ■Mounting the balance weight Checking Power and Power Cables (P48) ■Checking the power ■Checking the Power Cable Checking the breaker ratings · Permissible cable length and size **Connecting Cables Connecting Cables Connecting Cables** Suspended Model (hoist only) (P50) **Motorized Trolley Type (P51)** Manual Trolley Type (P52) ■125kg to 1t ■125kg to 1t ■125kg to 1t • Connecting the Relay Cable • Connecting the Power Cable • Connecting the Power Cable · Connecting Push Button Switch Set Cord • Connecting the Trolley Power Cable • Connecting the Push Button Switch Cord • Connecting the Trolley Push Button Cord Installation of Suspended Type (hoist only) (P53) Installation of Trolley Combined Model (P54 to 56) ■Connecting Power Cable ■Connecting Power Cable to the power nstallation ■Mounting the Hoist to the Travel Rail to the power ■Checking installation method ■Mounting the Stopper and place ■Power Cable Layout for Motorized/Manual trolley type · Case for cable hanger · Case for T-shape/angle type hanger Check after Installation Checking and Carrying Out "Check Items" (P57) Carrying Out Operational Check (P57)

Assembling

⚠ DANGER



• Only maintenance engineers or the personnel with expertise are allowed to assemble and disassemble the electric chain hoist.

Assembling or disassembling of the electric chain hoist may result in death or serious injury.

■ Assembling Parts to Electric Chain Hoist

■ Preparation for Assembling

- Hang the electric chain hoist body size to facilitate the mounting of the Chain Container.
- Check that the stopper and the cushion rubber are mounted at the link third from the no load side of the Load Chain (the end without the Bottom Hook).

■ Mounting the Chain Container

The Chain Container is made of plastic. (Canvas container is available as an option.)

A DANGER



 The each type of Chain Container has the capacity to store the specific amount of the Load Chain. Use correct capacity of the Chain Container.

When storing the Load Chain of which amount exceeds the capacity of the Chain Container, it may result in death or serious injury due to the flow over of the Load Chain from the Chain Container or defective operation of the electric chain hoist.

Improper combination of the Chain Container and the electric chain hoist is very dangerous because of the possibility of drop of the Chain Container.

The seal to indicate the capacity and lifting height is attached on the Chain Container. Check it before use.

• If the Chain Container is not assembled correctly, it may result in death or serious injury due to a drop of the Chain Container or Load Chain, and malfunction of the Electric Chain Hoist.

Refer to the assembling instruction on the page 38 and assemble the Chain Container correctly.

Failure to comply with these instructions causes bodily injury or loss of property.

A CAUTION

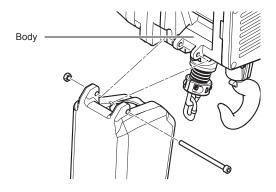


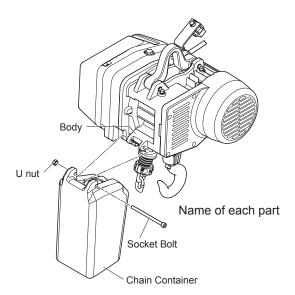
• When storing the Load Chain into the Chain Container, put the chain end with no-load side first and then store the rest of the Load Chain.

Failure to comply with these instructions causes bodily injury or loss of property.

Assembling (continued)

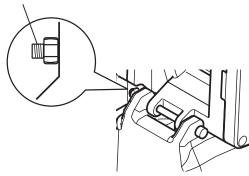
- Assembling the Chain Container
 - 1) Pass a Socket Bolt through all holes of the Chain Container, the Body and the Chain Container, in this order to mount the Chain Container.

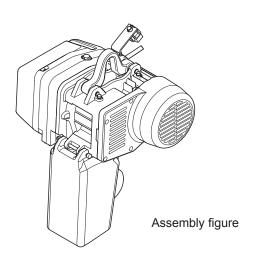




- 2) Screw the U nut into the Scoket bolt and tighten it securely.
 - The Socket Bolt must protrude from the end face of the nut by three threads or more.







■ Oiling the Load Chain

↑ DANGER

· Be sure to apply lubricant on the Load Chain. Do not carry out oiling work in the place near the fire or arc.

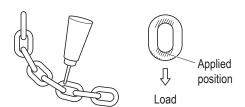


Otherwise it will result in fire.

Mandatory

- Remove dust and waterdrops attached on the Load Chain and then apply lubricant. Application of lubricant influences on the life of the Load Chain considerably. Apply the lubricant sufficiently. Use the following genuine lubricant.
 - Epinoc Grease AP (N)0 (Nippon Oil Corporation)
 - · Consistency No.0 (Industrial general lithium grease)
- Release all loads from the Load Chain and apply the lubricant all over the Load Chain.

After application of the lubricant lift/lower the electric chain hoist without load to spread the lubricant on the Load Chain.



■ Gear Oil

Inside of the Gear Case is filled with gear oil at the shipping. The level of the oil filled with specified amount comes to the height of the inspection hole. Check the oil level visually.

MANGER

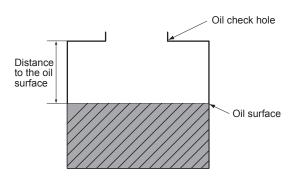


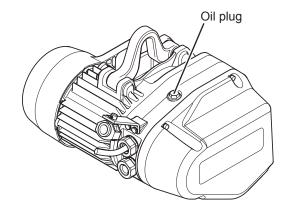
Use genuine gear oil.

Use of the gear oil other than the genuine oil (including mixed use) will result in death or serious injury due to the drop of the lifted load.

Cheking the Gear Oil Amount

- 1) Remove the Oil Plug on the upper Main Body
- Insert the check bar from the Oil check hole to check the oil level.
 (The normal distance between the hole and the oil level is between 107 to 111 mm for the body size D, and 101 to 105 mm for the body size C.)





■Combination with the Trolley

* You do not have to read the contents below if you use the hoist as Hook Suspension Model. Go to "Checking Power and Power Cable" (P48).

DANGER

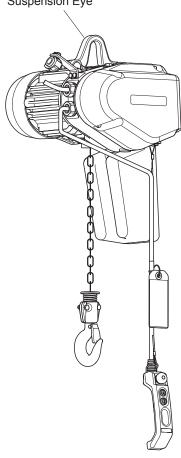


- · Adjust the rail width during assembling and install.
- Be careful for the Power Cable and Push Button Switch Set Cord are not pulled off or entangled within the area of traveling area.

Failure to comply with these instructions may result in death or serious injury.

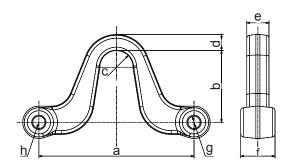
Hoist itself, or combination with KITO EQ trolley or a trolley for some light cranes.





Part name	Usage	Part code 125kg to 500kg	Part code 1t
Suspension Eye	Hoist itself, or combination with KITO EQ trolley or a trolley for some light cranes.	EQ1Cl9001	EQ1DI9001

■ Dimensions of Suspension Eye



Code	Part code	а	b	С	d	е	f	g	h
001IS, 003IS, 004IS, 005IS	EQ1Cl9001	139.6	67.5	16.5	8	16	33	Ø12.2	16
010IS	EQ1DI9001	153.6	71	16.5	12.3	22	34		

■ Combining with the Motorized Trolley

CAUTION



• You cannot combine other KITO product (old model) with the Model EQ Electric Chain Hoist.

■ Checking the Number of the Assembled Adjusting Spacers and Their Positions (for Motorized Trolley)

When installing a trolley to the beam, the length of the Suspension Shaft (width between frames) must be adjusted in accordance with the rail width.

Wrong number of wrong position of Spacers may result in the drop of the electric chain hoist.

Insert the correct number of Spacers with correct ratings and for rail width at the correct position, referring to the following table.

(Unit: piece)

Canacity	Parts	Rail width (in)	25/16	21/2 25/8	27/8 215/16	3	31/4	39/16	37/8	315/16	4	43/16	45/16	47/16	411/16 43/4	415/16	5
Capacity	name	Rail width (mm)	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127
	Thin	Inner	1+2	2+3	4+4	1+0	1+2	2+3	0+0	1+0	1+0	1+2	2+2	2+3	3+4	4+4	1+0
	spacer	Outer	5	3	0	7	5	3	8	7	7	5	4	3	1	0	3
125kg	Thick	Inner	0+0	0+0	0+0	0+0	0+0	0+0	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
1 1	spacer	Outer	5	5	5	5	5	5	3	3	3	3	3	3	3	3	2
250kg	Fixing	Inner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
490kg	(300)	Outer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500kg)kg Thick	Inner	0	0	0	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
	spacer L	Outer	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
		Inner	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
	Thin	Inner	0+1	1+2	3+3	4+3	5+4	6+5	3+3	4+3	4+3	5+4	5+5	6+5	7+6	7+7	7+4
	spacer	Outer	13	11	8	7	5	3	8	7	7	5	4	3	1	0	3
	Thick	Inner	0+0	0+0	0+0	0+0	0+0	0+0	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+2
1t	spacer	Outer	5	5	5	5	5	5	3	3	3	3	3	3	3	3	2
	snacer	Inner	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	(300)	Outer	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Thin spacer L	Inner	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

(Unit: piece)

Canacity	Parts	Rail width (in)	53/16	55/16	53/8	55/8	57/8 515/16	6	61/8	65/16	67/16	611/16	67/8	7	71/16 71/8	71/4 75/16	77/8
Capacity	name	Rail width (mm)	131	135	137	143	149 150	153	155	160	163	170	175	178	180 181	184 185	200
	Thin	Inner	5+1	2+2	2+2	3+3	4+4	4+1	1+1	2+2	2+3	3+0	4+4	4+1	1+1	1+2	4+4
	spacer	Outer	2	4	4	2	0	3	6	4	3	5	0	3	6	5	0
125kg	Thick	Inner	1+2	2+2	2+2	2+2	2+2	2+3	3+3	3+3	3+3	3+4	3+3	3+4	0+0	0+0	0+0
	spacer	Outer	2	1	1	1	1	0	3	3	3	2	3	2	9	9	9
250kg	Fixing	Inner	-	-	-	-	-	-	0+0	0+0	0+0	0+0	0+0	0+0	1+1	1+1	1+1
490kg	spacer (300)	Outer	-	-	-	-	-	-	2	2	2	2	2	2	0	0	0
500kg	Thick	Inner	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
	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	spacer L Thin spacer L	Inner	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
	Thin	Inner	8+4	5+5	5+5	6+6	7+7	7+4	4+4	5+5	6+5	6+3	7+7	7+4	4+4	5+4	7+7
	spacer	Outer	2	4	4	2	0	3	6	4	3	5	0	3	6	5	0
	Thick	Inner	1+2	2+2	2+2	2+2	2+2	2+3	3+3	3+3	3+3	3+4	3+3	3+4	0+0	0+0	0+0
1t	spacer	Outer	2	1	1	1	1	0	3	3	3	2	3	2	9	9	9
	Fixing	Inner	-	-	-	-	-	-	0+0	0+0	0+0	0+0	0+0	0+0	1+1	1+1	1+1
	Fixing spacer (300)	Outer	-	-	-	-	-	-	2	2	2	2	2	2	0	0	0
Fix sp: (3	Thin spacer L	Inner	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

Assembling (continued)

(Unit: piece)

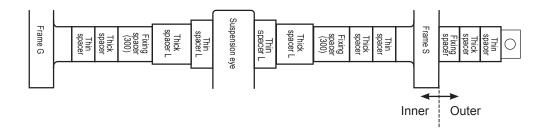
Canacity	Parts	Rail width (in)	8	87/16	811/16	9	91/8	97/8	10	101/8	101/4	103/8	101/2	11	111/8	111/4	113/8
Capacity	name	Rail width (mm)	203	215	220	229	232	250	254	257	260	264	267	279	283	286	289
	Thin	Inner	5+0	2+3	3+4	1+1	1+2	4+0	1+1	1+2	2+2	2+3	3+3	1+1	1+2	2+2	2+3
	spacer	Outer	3	3	1	6	5	4	6	5	4	3	2	6	5	4	3
125kg	Thick	Inner	0+1	1+1	1+1	2+2	2+2	2+3	3+3	3+3	3+3	3+3	3+3	4+4	4+4	4+4	4+4
	spacer	Outer	8	7	7	5	5	4	3	3	3	3	3	1	1	1	1
250kg	Fixing	Inner	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
490kg	(300)	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500kg	_ , ,	Inner	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
	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Inner	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
	Thin	Inner	7+4	6+5	7+6	4+4	5+4	7+3	4+4	5+4	5+5	6+5	6+6	4+4	5+4	5+5	6+5
	spacer	Outer	3	3	1	6	5	4	6	5	4	3	2	6	5	4	3
	Thick	Inner	0+1	0+0	1+1	2+2	2+2	2+3	3+3	3+3	3+3	3+3	3+3	4+4	4+4	4+4	4+4
1t	enacor	Outer	8	7	7	5	5	4	3	3	3	3	3	1	1	1	1
	1t spacer Fixing spacer	Inner	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
	(300)	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Thin spacer L	Inner	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

(Unit: piece)

Canacity	Parts	Rail width (in)	115/8	113/4	1113/16	117/8	12
Capacity	name	Rail width (mm)	295	298	300	302	305
	Thin	Inner	3+0	4+0	4+1	4+1	4+2
	spacer	Outer	5	4	3	3	2
125kg	Thick	Inner	4+5	4+5	4+5	4+5	4+5
	spacer	Outer	0	0	0	0	0
250kg	Fixing	Inner	1+1	1+1	1+1	1+1	1+1
490kg	spacer (300)	Outer	0	0	0	0	0
500kg	Thick	Inner	1+1	1+1	1+1	1+1	1+1
	spacer L	Outer	0	0	0	0	0
	Thin spacer L	Inner	1+1	1+1	1+1	1+1	1+1
	Thin	Inner	6+3	7+3	7+4	7+4	7+5
	spacer	Outer	5	4	3	3	2
	Thick	Inner	4+5	4+5	4+5	4+5	4+5
1t	spacer	Outer	0	0	0	0	0
	Fixing	Inner	1+1	1+1	1+1	1+1	1+1
	spacer (300)	Outer	0	0	0	0	0
	Thin spacer L	Inner	1+1	1+1	1+1	1+1	1+1

Rail width of 58-153 (mm): Normal suspension shaft; Rail width of 155-305 (mm): Wide-frange suspension shaft

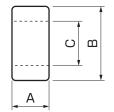
0+1
0: the number of spacers on the Frame G side of the shaft



■ Length of Adjusting Spacer

(Unit: mm)

		125kg, 250kg, 490kg, 500kg, 1t*
	А	12.5
Thick spacer	В	38.4
	С	32
	Α	50
Fixing spacer (300)	В	38.4
	С	32
	Α	12.5
Thick spacer L*	В	45
	С	32
	Α	5.5
Thin spacer L	В	50.8
	С	32.8
	Α	3.2
Thin spacer	В	43
	С	32.5
Suspension s	haft diameter	31



Thick spacer/Fixing spacer (300)/Thick spacer L/Thin spacer L/Thin spacer

^{*} Thick spacer L is not necessary for 1t type. Please remove it if it is in.

■ Combination of the Electric Chain Hoist and the Motorized Trolley

⚠ DANGER



• Use new split pins. After insertion, bend the pin securely at its both ends.

Use of old split pins may result in death or serious injury due to drop.

• 125kg to 1t

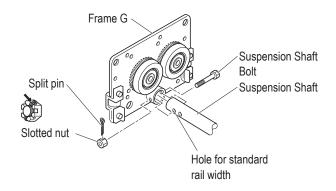
- 1) Fix the Suspension Shaft to the Frame G with a Suspension Shaft Bolt, a slotted nut and a split pin.
 - When fixing the Frame S and the Suspension Shaft, use the hole A. If the gap between the rail end and the wall of the housing is scarce to install the electric chain hoist to the travel rail, use the hole B. (Refer to "Mounting the Hoist to the Travel Rail" (P54).)

↑ DANGER

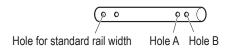


 The hole B on the Suspension Shaft is the hole for mounting work (temporary assembly). Do not use the hole for the adjustment of rail width.

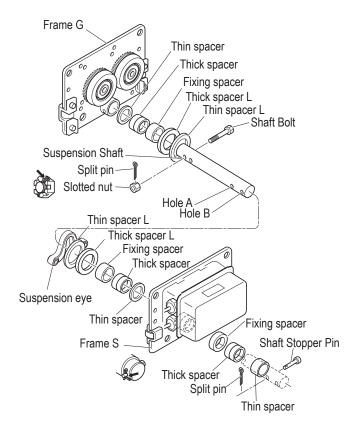
Failure to comply with this instruction may result in death or serious injury.



<Suspension Shaft>



- Set the Suspension Shaft with a Thin Spacer, Thick Spacer, Fixing Spacers, Thick Spacer L and a Thin Spacer L.
- 3) Hook the Suspension eye on the Suspension Shaft.
- 4) Set the Suspension Shaft with another Thin Spacer, Thick Spacer, Fixing Spacers, Thick Spacer L and Thin Spacer L. Then insert the Suspension Shaft into the Frame S.
 - Adjust the Spacers in accordance with the rail width. (Refer to "Checking the Number of the Assembled Adjusting Spacers and Their Positions" (P39, 40) for the number of Spacers.)
- 5) Set the Suspension Shaft with a Thick Spacer. Insert the Shaft Stopper Pin into the Hole A and fix it with a split pin.
 - Insert the Shaft Stopper Pin in the direction that the split pin comes to the left when viewed from the front side of the MR2Q Connection Box.



■ Combination with the Manual Trolley

■ Checking the Number of the Assembled Adjusting Spacers and Their Positions (for Manual Trolley)

When installing a trolley to the beam, the length of the Suspension Shaft (width between frames) must be adjusted in accordance with the rail width. Wrong number of wrong position of Spacers may result in the drop of the electric chain hoist. Insert the correct number of Spacers with correct ratings and for rail width at the correct position, referring to the following table.

125kg - 500kg (Unit: piece)

Capacity (Plain	Parts	Rail width (in)	2	25/16	21/2 25/8	27/8 215/16	3	31/4	39/16	37/8	315/16	4	43/16	45/16	47/16	411/16 43/4	415/16	5
trolley)	name	Rail width (mm)	50	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127
	Thin	Inner	2+3	3+4	0+1	1+2	2+2	3+3	0+1	1+2	2+2	2+3	1+1	1+2	2+2	3+3	0+0	0+1
	spacer	Outer	4	2	8	6	5	3	8	6	5	4	7	6	5	3	9	8
125kg	Thick	Inner	0+0	0+0	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	0+0	0+0	0+0	0+0	1+1	1+1
250kg	spacer	Outer	4	4	2	2	2	2	0	0	0	0	7	7	7	7	5	5
490kg 500kg	Thick	Inner	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
Jooky	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fixing spacer	Inner	-	-	-	-	-	-	-	-	-	-	1+1	1+1	1+1	1+1	1+1	1+1

1t (Unit: piece)

Capacity (Plain	Parts	Rail width (in)	2	25/16	21/2 25/8	27/8 215/16	3	31/4	39/16	37/8	315/16	4	43/16	45/16	47/16	411/16 43/4	415/16	5
trolley)	name	Rail width (mm)	50	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127
	Thin spacer	Inner	-	3+3	0+0	1+1	1+2	2+3	0+0	1+1	1+2	2+2	2+3	3+3	3+4	0+1	1+2	2+2
	spacer	Outer	-	2	8	6	5	3	8	6	5	4	3	2	1	7	5	4
	Thick spacer	Inner	-	0+0	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	2+2	2+2	2+2	3+3	3+3	3+3
1t		Outer	-	6	4	4	4	4	2	2	2	2	2	2	2	0	0	0
	Thick	Inner	-	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
	spacer L	Outer	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
spa Fi	Fixing spacer	Inner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assembling (continued)

125kg - 500kg (Unit: piece)

Capacity (Plain	Parts	Rail width (in)	53/16	55/16	53/8	55/8	57/8 515/16	6	61/8	65/16	67/16	611/16	67/8	7	71/16 71/8	71/4 75/16	77/8	8
trolley)	name	Rail width (mm)	131	135	137	143	149 150	153	155	160	163	170	175	178	180 181	184 185	200	203
	Thin	Inner	1+1	1+2	2+2	3+3	0+0	0+1	1+1	1+2	2+2	3+3	0+0	0+1	1+1	1+2	4+4	4+5
	spacer	Outer	7	6	5	3	9	8	7	6	5	3	9	8	7	6	1	0
125kg	Thick	Inner	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	2+2	2+2	3+3	3+3	3+3	3+3	3+3	3+3
250kg	spacer	Outer	5	5	5	5	3	3	3	3	3	3	1	1	1	1	1	1
490kg 500kg	Thick	Inner	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
J	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fixing spacer	Inner	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

1t																(l	Jnit: p	iece)
Capacity (Plain	Parts	Rail width (in)	53/16	55/16	53/8	55/8	57/8 515/16	6	61/8	65/16	67/16	611/16	67/8	7	71/16 71/8	71/4 75/16	77/8	8
trolley)	name	Rail width (mm)	131	135	137	143	149 150	153	155	160	163	170	175	178	180 181	184 185	200	203
	Thin	Inner	1+1	1+2	2+2	3+3	0+0	0+1	1+1	1+2	2+2	3+3	0+0	0+1	1+1	1+2	4+4	4+5
	spacer	Outer	7	6	5	3	9	8	7	6	5	3	9	8	7	6	1	0
	Thick	Inner	0+0	0+0	0+0	0+0	1+1	1+1	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	2+2	2+2
1t	spacer	Outer	5	5	5	5	3	3	3	3	3	3	1	1	1	1	1	1
	I	Inner	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
	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fixing	Inner	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

125kg - 500kg (Unit: piece)

Capacity (Plain	Parts	Rail width (in)	87/16	811/16	9	91/8	97/8	10	101/8	101/4	103/8	101/2	11	111/8	11 1/4	113/8	115/8	113/4
trolley)	name	Rail width (mm)	215	220	229	232	250	254	257	260	264	267	279	283	286	289	295	298
	Thin	Inner	2+3	3+3	4+5	1+1	0+0	0+1	1+1	1+2	2+2	2+3	4+5	1+1	1+2	2+2	3+3	3+4
	spacer	Outer	4	3	0	7	9	8	7	6	5	4	0	7	6	5	3	2
125kg	Thick	Inner	0+0	0+0	0+0	1+1	2+2	2+2	2+2	2+2	2+2	2+2	2+2	3+3	3+3	3+3	3+3	3+3
250kg	spacer	Outer	7	7	7	5	3	3	3	3	3	3	3	1	1	1	1	1
	Thick	Inner	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
Journal	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
spa F	Fixing spacer	Inner	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

1t (Unit: piece)

Capacity	Parts	Rail width (in)	87/16	811/16	9	91/8	97/8	10	101/8	101/4	103/8	101/2	11	111/8	111/4	113/8	115/8	113/4
(Plain trolley)	name	Rail width (mm)	215	220	229	232	250	254	257	260	264	267	279	283	286	289	295	298
	Thin	Inner	2+3	3+3	4+5	1+1	0+0	0+1	1+1	1+2	2+2	2+3	4+5	1+1	1+2	2+2	3+3	3+4
	spacer	Outer	4	3	0	7	9	8	7	6	5	4	0	7	6	5	3	2
	Thick	Inner	0+0	0+0	0+0	1+1	2+2	2+2	2+2	2+2	2+2	2+2	2+2	3+3	3+3	3+3	3+3	3+3
1t	spacer	Outer	7	7	7	5	3	3	3	3	3	3	3	1	1	1	1	1
	Thick	Inner	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
	spacer L	Outer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fixing spacer	Inner	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

125kg - 500kg (Unit: piece)

Capacity (Plain	Parts	Rail width (In)	1113/16	117/8	12
trolley)	name	Rail width (mm)	300	302	305
	Thin	Inner	4+4	4+5	1+5
	spacer	Outer	1	0	3
125kg	Thick	Inner	3+3	3+3	4+3
250kg	spacer	Outer	1	1	0
490kg 500kg	Thick	Inner	1+1	1+1	1+1
	spacer L	Outer	0	0	0
	Fixing spacer	Inner	1+1	1+1	1+1

1t (Unit: piece)

Capacity	Parts	Rail width (in)	1113/16	117/8	12
(Plain trolley)	name	Rail width (mm)	300	302	305
	Thin	Inner	4+4	4+5	1+5
	spacer	Outer	1	0	3
	Thick	Inner	3+3	3+3	4+3
1t	spacer	Outer	1	1	0
	Thick	Inner	1+1	1+1	1+1
	spacer L	Outer	0	0	0
	Fixing spacer	Inner	1+1	1+1	1+1

* Description for spacers; For example, "0+1"

0: the number of spacers on the frame G side.
1: the number of spacers on the frame S side.

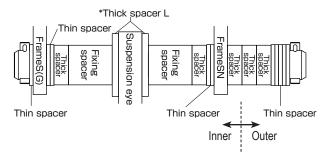
Rail width of 50-102 (mm) [125kg -500kg]: Normal suspension shaft 58-127 (mm) [1t] Rail width of 103-305 (mm) [125kg -500kg]: Wide-frange suspension 128-305 (mm) [1t] shaft (optional)

- (A) indicates standard range.
- ® indicates W20 range, as option.
- © indicates W30 range, as option.

(t) (in)	4	1	5	6	7	8	
0.5				Ô	\		<u></u>
1				D			U

Assembling (continued)

For I beam

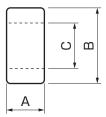


^{*} When connecting with manual trolley, use the Thick spacer L provided in the package.

■ Length of Adjusting Spacer

(Unit: mm)

F	т	125kg, 250kg, 490kg, 500kg	1t
	A	3.2	3.2
Thin spacer	В	31	35
	С	22.5	25.5
	A	12.5	12.5
Thick spacer	В	29.4	34
	С	23	27.6
	A	5.5	3.2
Thick spacer L	В	42.7	54
	С	22.7	26
Fissian anasas	A	31.5	43
Fixing spacer	В	29.4	34
(200)	С	23	27.6
Fiving on som	A	81.5	80.5
Fixing spacer	В	29.4	34
(300)	С	23	27.6
Suspension s	shaft diameter	22	25



Thin spacer/Thick spacer/Thick spacer L/

Fixing spacer

■ Combination of the Electric Chain Hoist and the Manual Trolley

⚠ DANGER

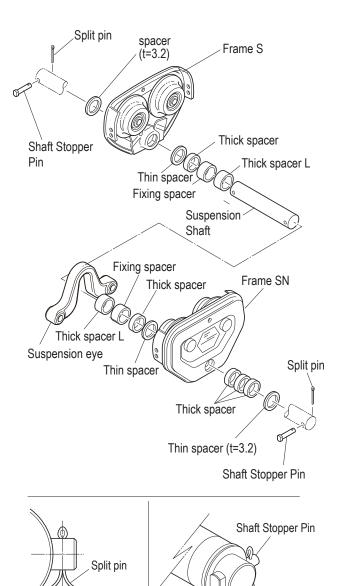


• Use new split pins. After insertion, bend the pin securely at its both ends.

Use of old split pins may result in death or serious injury due to drop.

• 125kg to 1t

- 1) After setting the Suspension Shaft with Spacers, insert it into Frame G or Frame S and fix it with a Shaft Stopper Pin and a Split Pin.
 - Insert the Shaft Stopper Pin in the direction that the split pin comes to the right when viewed from the side of the Frame G or Frame S.
 - Open the both ends of the Split Pin by 70° or more.
- 2) Set the Suspension Shaft with a Thick Spacer, Fixing Spacer, etc.
- 3) Passes it through the string the Suspension Eye.
- Set the Suspension Shaft with another Thick Spacer and Fixing Spacer. Then insert the Suspension Shaft into the Frame SN.
 - Adjust the Spacers in accordance with the rail width. (Refer to "Checking the Number of the Assembled Adjusting Spacers and Their Positions" (P43 to 45) for the number of Spacers.)
- 5) Set the Suspension Shaft with a Thick Spacer. Fix it with a Shaft Stopper Pin and a split pin.
 - Insert the Shaft Stopper Pin in the direction that the split pin comes to the right when viewed from the front side of the Frame SN.
 - Open the both ends of the Split Pin by 70° or more.



70° or more
Bending the split pin

Orientation of Shaft Stopper Pin

■Checking Power and Power Cable

■ Checking the Power

DANGER



- · Check that the rating of the breaker satisfies the specification required by the electric chain hoist.
- · Check that the source voltage satisfies the rated voltage of the electric chain hoist.

Failure to comply with this instruction may result in death or serious injury.

Hook Suspended Type: EQ Manual trolley type: EQSP

	Minimum	Capacitiy of fuse and circuit breaker (A)			
Code	Wire size	230V Class	400V Class		
	(mm²)	Dual speed	Dual speed		
EQ001IS					
EQ003IS	4.05	10	5		
EQ005IS	1.25				
EQ010IS	-	15	10		

Motorized trolley type: EQM

	Minimum	Capacitiy of fuse and circuit breaker (A)			
Code	Wire size	230V Class	400V Class		
Code	(mm²)	EQ Dual	EQ Dual		
	(111111)	MR Dual	MR Dual		
EQ001IS					
EQ003IS	2	15	10		
EQ005IS	2		10		
EQ010IS		20			

■ Checking the Power Cable

CAUTION



. Do not use the cable other than the cable attached to the main unit or optional Power Cable.

Failure to comply with this instruction causes bodily injury or loss of property.

Mandatory

Satisfy the maximum permissible length and core cross section of the Power Cable.

Failure to comply with this instruction causes bodily injury or loss of property.

Refer to the following table for the permissible length and the size of the standard Power Cable.

When using the cable of the size other than those described in the table, decide the cable length using the following formula.

Permissible length (m) =
$$\frac{1000}{30.8}$$
 × $\frac{\text{Cross section of one core (mm}^2) \times \text{Rated voltage (V)} \times 0.02}{\text{Rated current (A)}}$

Suspended Type: EQ Manual Trolley Type: EQSP

		Permissible length (m)					
		230V	Class	400V	Class		
EQ	Minimum wire size (mm²)	Dual speed		Dual s	speed		
	()	50Hz	60Hz	50Hz	60Hz		
		220-230V		380-415V	380-440V		
EQ001IS		35		110			
EQ003IS	1 25	(56)		(17	' 6)		
EQ005IS	1.25 (2)	28 (45)		93 (149)			
EQ010IS		17 (27)		56 (89)			

Motorized trolley type: EQM

		Permissible length (m)					
		230V	Class	400V	Class		
EQ	Minimum wire size	EQ	Dual	EQ [Dual		
EQ	(mm²)	MR	Dual	MR [Dual		
		50Hz	60Hz	50Hz	60Hz		
		220-230V		380-415V	380-440V		
EQ001IS							
LQUUTIS]	3	3	93			
EQ003IS]	(58)		(162)			
EQ00313	2						
EQ005IS	(3.5)	2	9	85			
EQ00515		(51)		(148)			
5004010]	20		61			
EQ010IS		(3	5)	(107)			

Note: Values in parenthesis shows the one size longer cable than normal. $\label{eq:cable_parenthesis}$

■Connecting Cables

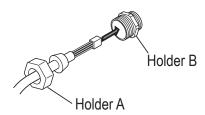
NOTE

- When clamping a connector, do not use tools. Be sure to clamp it by hand.
 Excessive tightening of a connector may result in the damage or breakage f plastic thread part.
- To prevent wire breakage and unintentional removal of a connector, tie the protection wire attached to the Push Button Switch Cord to the main unit of the electric chain hoist or the trolley.
 - Be sure to tie the cord with the body size or the trolley to prevent the wire breakage and removal of connector when the cord is pulled strongly.
- · Be sure to turn off the power when carrying out the repair work of wire breakage or removal of the connector.

■ Suspended model (hoist only)

■125kg to 1t

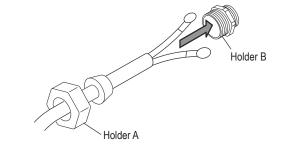
- Connecting the Power Cable
 - 1) Insert the Power Cable Holder A to the Holder B and tighten it securely.
 - 2) Fix the Power Cable using cable holder with a slack.
 - 3) Connect the Power Cable to the VFD terminals.
 - Refer to the connection diagram on the Controller cover and connect wires correctly
- Connecting the Push Button Switch Cord
 - 1) Insert the Push Button Cord Holder A to the Holder B and tighten it securely

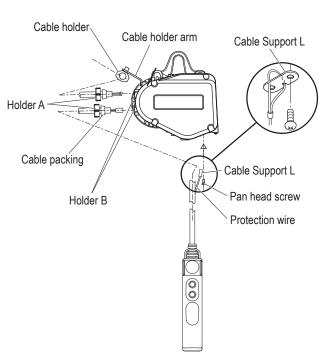


2) Pass the Cable Support L into the ring at the end of the Protection Wire. Put the Protection Wire in the notch of the Cable Support L.

Then fix the Cable Support L to the body size (at the bottom face of the Gear Case).

- 3) Insert the Push Button Connector (white) to the connector (white) on the right of HBB board inside the VFD.
 - Refer to the connection diagram on the Controller cover and connect wires correctly



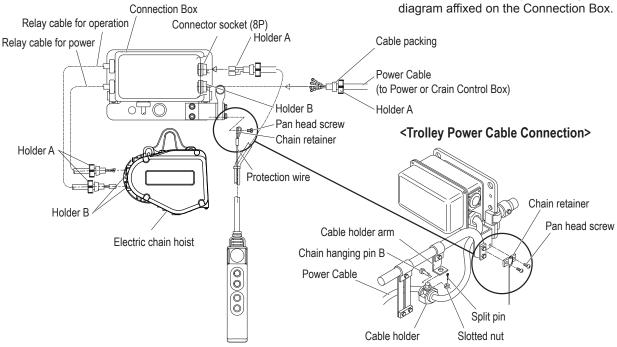


■ Motorized Trolley Type

■125kg to 1t

- Connecting the Relay Cable for Power
 - 1) Insert the Power Cable Holder A to the Holder B and tighten it securely.
 - 2) Connect the Power Cable to the VFD terminals.
 - Refer to the connection diagram on the Controller cover and connect wires correctly
- Connecting the relay cable for operation
 - 1) Insert the Push Button Cord Holder A to the Holder B and tighten it securely
 - 2) Insert the Push Button Connector (white) to the connector (white) on the right of HBB board inside the VFD.
 - Refer to the connection diagram on the Controller cover and connect wires correctly

- Connecting the Trolley Power Cable
 - 1) Remove the Holder A mounted to the Connection Box.
 - Pass the Power Cable through the Holder A supported by the cable holder and the cable packing.
 - Insert the Power Cable to the Holder B of the Connection Box and tighten the Holder A securely.
 - Trolley Type
 - Mount the cable holder, which the Power Cable is passed, to the cable holder arm using a chain hanging pin B, a slotted nut and a split pin.
 - 4) Connect the Power Cable to the terminal panel of the Connection Box.
 - Connect wires correctly according to the wiring diagram affixed on the Connection Box.



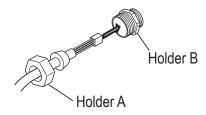
- Connecting the Trolley Push Button Cord
 - 1) Insert the Holder A of the Relay cable for power to the Holder B and tighten it securely.
 - 2) Refer to the connection diagram and connect wires correctly.

Assembling (continued)

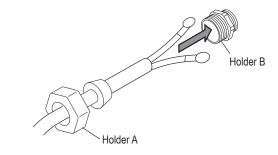
■ Manual Trolley Type

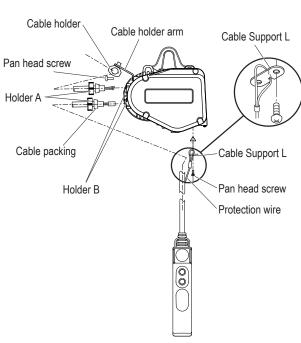
■ 125kg to 1t

- Connecting the Power Cable
 - 1) Insert the Power Cable Holder A to the Holder B and tighten it securely.
 - 2) Fix the Power Cable using cable holder with a slack.
 - 3) Connect the Power Cable to the VFD terminals.
 - Refer to the connection diagram on the Controller cover and connect wires correctly
- Connecting the Push Button Switch Cord
 - 1) Insert the Push Button Cord Holder A to the Holder B and tighten it securely



- 2) Pass the Cable Support L into the ring at the end of the Protection Wire. Put the Protection Wire in the notch of the Cable Support L.
 - Then fix the Cable Support L to the body size (at the bottom face of the Gear Case).
- 3) Insert the Push Button Connector (white) to the connector (white) on the right of HBB board inside the VFD.





Installation

↑ DANGER



- Do not install the electric chain hoist at a place exposed to rain or water always or the place different from the Operational Environment (P17).
- . Do not install the electric chain hoist in the motion space of other trolley or any other moving equipment (facility).
- · Do not use the electric chain hoist contacting with other object, or being fixed.

Failure to comply with these instructions may result in death or serious injury.

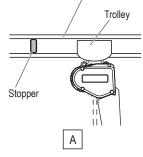


- Installation (removal) of the electric chain hoist must be carried out by special installer or by personnel with expertise.
 - Consult with the sales shop or KITO for installation, or consign the installation work to special installer or personnel with expertise.
- When installing or removing the electric chain hoist, follow the instructions in Owner's Manual.
- Carry out the work for grounding (earthing) and installation of earth leakage breaker.

These work must be carried out by an electric work specialist.

- When the installation is completed, carry out "Check after Installation". (See P54)
- Connect the power after all installation works have been completed and just before the oparation check.
- Mount the stopper at the both ends of the travel rail for trolley. <Fig. A>
- . Make sure that the strength of the structure is sufficient to install the electric chain hoist.
- · Carry out the installation work after securing the stable hoothold.
- Before building the electric chain host into part of your own travel device without using the standard trolley, contact us for information on precautions.

Failure to comply with these instructions may result in death or serious injury.



Travel rail

CAUTION



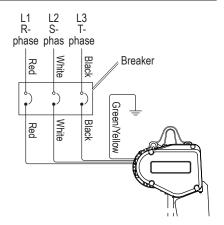
• Connect the Power Cable to the power of rated voltage.

Failure to comply with this instruction causes bodily injury or loss of property.

■Connecting Power and Power Cable

When connecting the Power Cable to the power, connect the cable in accordance with the following instructions.

- Connect the electric chain hoist to the power through a breaker.
- Connect the electric chain hoist in the correct phase.
- Earth wire is a green colored covered cable with yellow line. Carry out Class D earthing work.
- Use correct breaker and Power Cable referring to Checking Power and Power Cable (P48, 49) for the breaker capacity, Power Cable length and its size.



■Installing the Suspended Type (hoist only)

■ Checking Installation Method and Place

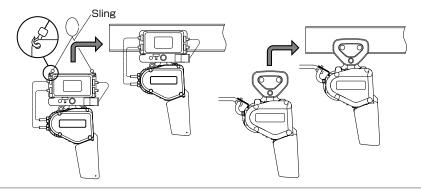


- When using an electric chain hoist suspended (as a single unit), make sure that the Suspension Eye is installed and hooked securely.
- Install the electric chain hoist so that the Suspension Eye itself can swing freely. (Make sure not to restrain the Suspension Eye when in use.)
- · Do not install and use the electric chain hoist upside down.
- The diameter of the Suspension Shaft hooked by Suspension Eye should be thinner than 31mm or less. Refer to the Suspension dimension (P38).

Failure to comply with these instructions may result in death or serious injury.

■Installing the Trolley Combined Model

- Mounting the Hoist to the Travel Rail
 - 1) Make sure that the dimensions of the Trolley Frame satisfy the size of the rail to which the trolley is installed.
 - 2) Make sure that the rail is set to a level.
 - 3) Install the electric chain hoist combined with the trolley to the rail from its one end



When the gap between the rail end and the wall of the housing is scarce

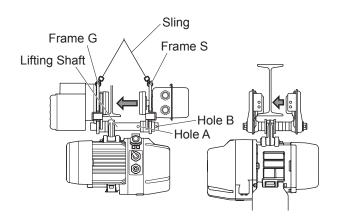
A CAUTION



· Securely support the electric chain hoist Mode EQ not to tilt.

Failure to comply with this instruction causes bodily injury or loss of property.

- 1) Assemble the Trolley temporarily using the hole B of the Lifting Shaft and install the electric chain hoist from the bottom side of the Travel Rail.
- 2) Set the wheel at Frame G side of the Trolley Frame on the running face of the Travel Rail. Then push the Frame S into the Frame G.
- 3) Insert the Shaft Stopper Pin into the Hole A of the Suspension Shaft. Then mount a split pin securely.

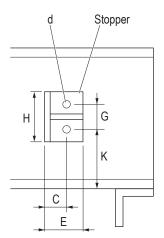


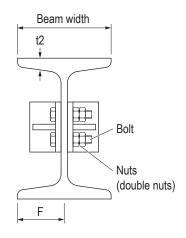
■ Mounting the Stopper

Be sure to mount the stoppers at the both ends of the rail to prevent drop.

Decide the mounting position in accordance to the size of the wheel.

When the customer wants to make the stopper by oneself, refer to the following figures.





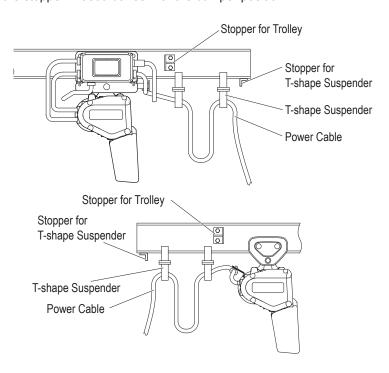
(Unit: mm)

Capacity		~	1t	
Beam width	100	125	150	175
Material dimensions	L-50x50x6	L-50x50x6	L-65x65x8	L-75x75x9
Н	80	80	80	80
E	50	50	65	75
F	40	50	65	75
G	50	50	50	50
С	30	30	35	40
K	65	t2+50	t2+50	t2+50
d	φ14	φ14	φ14	φ14
Bolt size	M12x50x50	M12x55x55	M12x55x55	M12x60x60

NOTE) Dimension K is for the case to use combining the hoist with the motorized trolley. When using the hoist combined with a manual trolley, mount the stopper in accordance with the bumper position.

When using T-shape Suspender

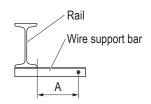
Install the additional stopper for T-shape Suspender at the end of one rail.



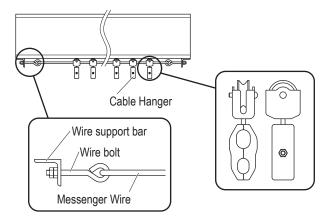
Assembling (continued)

■ Power Cable Layout for Motorized/Manual trolley type

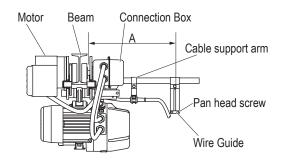
- In the standard specification the Suspender is provided. T-shape Suspender and angle type Suspender are also available as optional parts. T-shape Suspender can be applicable to curved rail, however, the application method differs depending on the condition such as radius of curvature. In such case, contact KITO.
- 1) Mount the wire support bar at the both ends of the rail.



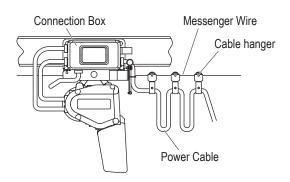
- Tie the Messenger Wire passed through the Cable Hanger to the Wire Support Bar with two Wire Bolts.
 - The recommended mounting interval of the Cable Hangers is 1.5 m to 2 m.
 - Use steel wire of 3 to 6 mm in diameter for the Messenger Wire.



- 3) Loosen two pan head screws and remove the end clip of the wire guide.
- 4) Pass the Messenger Wire through the groove of the messenger guide. Mount the end clip with two pan head screws.
 - The dimension A between the side face of the rail and the groove of the wire guide must be same as that of mounting hole of the Wire support bar for the Messenger Wire and the side face of the rail.



- 5) Fix the Power Cable to the Cable Hanger.
- 6) Mount the Cable Support to the Cable Support Arm.
- 7) Insert the Power Cable into the Connection Box of MR2Q and connect it to the terminal panel.
 - Connect wires correctly according to the wiring diagram affixed on the Connection Box.



Check after Installation

Wrong assembling or installation causes death or serious injury. To prevent such danger check the following.

■ Check items

Make sure that the following are satisfied:

- No bolt, nut nor split pin is lost. Tightening and assembling are completed.
- Protection Wire for Push Button Switch Cord is securely tied to accept and endure the force instead of Push Button Switch Cord when the Push Button Switch Set is drawn.
- · The Power Cable is fixed to the Cable Support.
- · Source voltage is the rated voltage
- Grounding Wire (earth wire) is connected securely.

• When using with a Trolley

Check the following:

- · The electric chain hoist and the trolley are combined correctly.
- The stoppers for trolley are securely mounted to Travel Rail where the Trolley travels.
- The surface of Travel Rail is not attached with paint or oil. (The surface of the Travel Rail must be basis metal. Do not paint.) There is no obstacle for the trolley to travel. The Travel Rail is set to a level.

■ Operational Check

Carry out the operational check in accordance with Daily inspection (P19).

Chapter 2

Inspection

This chapter describes frequent inspection items and periodic inspection items. Refer to Chapter 1 for the "Handling the Product". Inspection is the first step of safety. Carry out daily inspection, frequent inspection and periodic check.

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■ Periodic Inspection

(Carry out the periodic inspection after check of no abnormality in daily inspection and frequent inspection items.)

■ Electric Chain Hoist (EQ) Periodic Inspection

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Safety Precautions

General Matters related to Inspection

⚠ DANGER



 Do not use the part exceeding the service limit or criteria and the parts other than genuine part for KITO electric chain hoist.

Even if the part is genuine KITO part, it cannot be used for other model. Refer to Disassembly/Assembly Manual (Annex) for the correct use of the part.

- Do not adjust or disassemble the Brake or Friction Clutch.
- . Do not adjust the set nut.
- Do not carry out the inspection of electric chain hoist with a lifted load.
- · Do not use the electric chain hoist removing the chain spring and the stopper.
- Turn off the main power when carrying out the inspection.

Failure to comply with these instructions may result in death or serious injury.



- Be sure to carry out the frequent and periodic inspection.
- Periodic inspaction of the electric chain block must be performed by maintenance engineer.
- . When oiling the Friction Clutch, use KITO genuine oil (manufacturer specified oil).
- · When using oils such as gear oil and grease, avoid places with fire or sparks.
- Put the electric chain hoist on the floor or work bench when performing the repair and disassembling of the
 electric chain hoist.
- Even if each component of the electric chain hoist does not exceed the service limit, replace the part
 exceeding the total operating hours derived from the grade indicated on the electric chain hoist and the load
 factor.
- Do not use the electric chain hoist when any abnormality was observed during the inspection. Indicate "FAILURE" on the hoist and contact with maintenance engineer or KITO for repair.
- After completion of the inspection (frequent, periodic), perform the functional check and make sure that the electric chain hoist operates correctly.
- When performing the functional check, be sure to perform the capacity test after no load test.

Failure to comply with these instructions may result in death or serious injury.

A CAUTION



Indicate "CHECKING" when performing the inspection.
 When a crane is operated erroneously during the inspection, it may result in the accident such as fall-off of parts and tools and downfall.

- Wear protection equipment such as protection goggles and gloves depending on the work contents. Otherwise it may result in the injury due to scattered oil or sharp edge of a part.
- Pay attention to work method, work procedure and work posture.
 If the product or the part is heavy, your hand is caught or your waist is hurt.

 Especially be careful for the work on an unstable scaffold such as the work at high lifted place using stepladder.
- Wear helmet and safety belt when carrying the high lift work.
 Otherwise it may result in injury or downfall accident.
- Remove the oil attached to the product or spilt on the floor.
 Otherwise it may result in injury due to drop of the product or overturning.
- Keep the work area clean when disassembling the product.
 Assembling or mixing the part other than genuine part may result in the damage of the product or the accident due to defective operation.

NOTE

- When performing the frequent inspection, carry out the daily inspection at the same time.
- When performing the periodic inspection, carry out the frequent inspection and the daily inspection at the same time.
- When detecting any abnormality during inspection due to erroneous use, instruct the operator and user for correct use of the electric chain hoist.
 - Ex. (1) The flaw on the Chain Guide hit with the Chain (Cause: lifting incline)
 - (2) The deformation of the Chain Spring (Cause: excessive use of the limit switch)

Frequent Inspection

General Matters on Frequent Inspection

⚠ DANGER



After completion of the frequent inspection, perform the functional check and make sure that the electric chain hoist operates correctly.

Neglecting to perform the functional check may result in death or serious injury.

General Matters on Handling the Model EQ Electric Chain Hoist

The Model EQ Electric Chain Hoist is controlled by the VFD for important items related to safety such as operation, braking and emergency stop. Be sure to follow the safety precautions below as well as the above safety precautions.

♠ DANGER



- Do not disassemble the Model EQ Electric Chain Hoist in the same way as the contactor system.
- Do not change the VFD parameter. When parameters need to be changed, ask our distributors nearest to the customer or KITO.
- Do not carry out the work such as maintenance and inspection within 5 minutes after power off. Wait for the completion of discharging of the capacitor inside the VFD.
- USE KITO genuine VFD. The VFD requires the special specification for KITO. Be sure to use genuine VFD.
- Do not change the connection of the VFD. When the wires were removed for any reason, connect them again correctly checking the wiring diagram inside the controller cover.
- Do not carry out withstand voltage test of a circuit while the VFD is connected.
- · Do not turn off the power while operating.

Failure to comply with these instructions may result in death or serious injury and the damage of VFD.



The VFD requires the special specification for KITO. Be sure to use genuine VFD.

Mandatory

Failure to comply with this instruction may result in death or serious injury.

NOTE

When performing the frequent inspection, carry out the daily inspection at the same time.

• Check the electric chain hoist as installed, standing on the floor.

■Electric Chain Hoist (EQ) Frequent Inspection

■ Load Chain

- Check the Load Chain after removing the stain on the chain.
- Use the needle head caliper (point caliper) to measure the sum of pitches and wire diameter.
- Apply oil on the Load Chain after inspection.
- Application of lubricant influences on the life of the Load Chain considerably. Use the KITO genuine lubricant or equivalent (industrial lithium grease: consistency No.0)
- Release all loads from the Load Chain. Apply the lubricant to the linking portion of the Load Chain that engages the Load Sheave and the linking portion of the Load Chain.
- After application of the lubricant, lift/lower the electric chain hoist without load to spread the lubricant on the Load Chain.

Item	Check method	Criteria	When failed
Elongation of Pitch	Measure the elongation of pitch with point caliper. (Measure the sum of pitches of 5 links) Sum of pitches of 5 links	NOTE Check the engaging point of the Load Sheave especially carefully. • The limit value of the following "Sum of pitches of five links" must not be exceeded.	Replace the Load Chain.
Abrasion of wire diameter	Measure the wire diameter (d) with point caliper. d	The limit value of the following "Wire diameter of the Load Chain" must not be exceeded. NOTE When the abrasion of the Load Chain is observed, be sure to check the abrasion of the Load Sheave also. (Refer to "Periodic Inspection", "Load Sheave" (P77).)	Replace the Load Chain.

Load Chain Pitch and Wire Diameter for Each Capacity

		Load Chain	Sum of 5 L	inks (mm)	Load Chain diameter (mm)		
Code	Capacity	diameter (mm)	Do not exce	eed the limit	Do not fall u	nder the limit	
		diameter (mm)	Standard	Limit	Standard	Limit	
EQ001IS	125kg	φ5.6		81.5	5.0	5.4	
EQ003IS	250kg		φ5.6 79				
EQ004IS	490kg		φ5.0	79	01.5	5.6	5.1
EQ005IS	500kg						
EQ010IS	1t	φ7.1	100	103	7.1	6.4	

the Hook

Abrasion

Suspension

of the

eye

Item Check method Criteria When failed Opening and Abrasion of • Check visually and measure with vernier caliper. ♠ CAUTION Replace the Hook and Suspension eye.

Mandatory

Embossed mark

e

e

e

 Compare the dimensions of a, b and c with those at purchasing.
 Check that they are within the criteria.

The use of the Hooks with these dimensions exceeding the criteria may result in bodily injury or property damage.

with these ne criteria or property

Measured value (mm)

Dimension a Not to exceed the dimension at purchasing

Bottom Hook

Dimension b

Dimension c

Suspension Eye

Dimension d

Dimension e

 Following tables shows the nominal standard values. Please be aware that these values include tolerance because of forging.
 Guidelines on the Hook and Suspension Eye

			Bottom Hook				Suspension Eye			
Code	Capacity	Dimension a (mm)	ion a (mm) Dimension b (mm) Dimension c (mm)		ion c (mm)	Dimension d (mm)		Dimension e (mm)		
		Standard	Standard	Limit value	Standard	Limit value	Standard	Limit value	Standard	Limit value
EQ001IS	125kg									
EQ003IS	250kg	45.0	17.5	16.6	23.5	22.3	8.0	7.6	16.0	15.2
EQ004IS	490kg	45.0	17.5	10.0	23.3	22.3	0.0	7.0	10.0	10.2
EQ005IS	500kg									
EQ0101S	1t	50.0	22.5	21.4	31.0	29.5	12.3	11.7	22.0	20.9

Deformation,
Flaw,
Corrosion

- · Check visually.
- · No deformation such as bend or twist
- No deep cut
- · No loosened bolt or not, or their fall off
- · No considerable corrosion

(refer to P87) or its criteria

 No attachment of foreign matter such as sputter Replace the Hook.

■ Peripheral parts of the Body size

• Use check stand to check the electric chain hoist from the close point.

Item	Check method	Criteria	When failed
Chain Container	Check visually.	To be mounted to the body size securely No damage, tear, abrasion or deformation Check no foreign matter inside the Chain Container. * Especially be careful when the electric chain hoist is used outdoor. Make sure that the lift of the Load Chain is smaller than the capacity of the Chain Container. Do not use the torn Chain Container. Prohibited Otherwise it may result in death or serious injury due to drop of the Load Chain. Use the Chain Container with the capacity larger than the lift of the Load Chain. Otherwise it may result in death or serious injury due to drop of the Load	Replace the Chain Container. Discard the foreign matter in the Chain Container. Replace the Chain Container with the adequate Chain Container referring to "Mounting the Chain Container"(P35).
		Chain.	

■ Electromagnetic Brake

Item	Check method	Criteria	When failed
Number of start	Check the number of start with the CH Meter.	The number of start must be less than one million times. * Estimate the time to reach at one million times.	Perform the inspection in accordance with "Displaying the numbers of start and the operating hours" (P88).

■ Push Button Switch

Item	Check method	Criteria	When failed
Push Button Switch Body size	Check visually and by operation.	No damage, deformation and loosened bolt. Push Button Switches can be operated smoothly. Emergency Stop Button can be operated and cancelled.	Replace the Push Button Switch.
Push Button Switch Cord	Check visually. Body Protection Wire	 Push Button Switch Cord is securely connected. The Protection Wire is tied with the body size so that Push Button Switch Cord is not strained directly even if the Push Button Switch is pulled. 	Tie the Push Button Switch Cord and the Protection Wire to the body size properly.
Push Butto Switch Cor		To have no damage	Replace the Push Button Switch Cord.

■ Power Supply

Item	Check method	Criteria	When failed
Power Cable	Check visually.	 Power Cable to have enough length. To have no damage To be connected securely 	Replace the Power Cable.
Cable Hanger	Check visually and by moving by hand. Messenger Wire Cable Hanger Power Cable	To have no damage To move smoothly To be mounted at equal interval Appropriate interval 1.5 m	Re-mount the Cable Hangers for no hindrance to cable motion.
Messenger Wire	Check visually.	To have no sag	Remove the sag.

■ Function and Performance

• Check the following item with no load.

Item	Check method	Criteria	When failed
Noise	Check the noise of gear, motor and the Load Chain during operation with no load.	 To sound no irregular rotating noise To sound no howling of motor and scraping sound of the Brake To sound no abnormal noise 	Replace the abnormal part.
	NOTE Sound is also an important check point. Always be careful for the noise of the electric chain hoist.	To sound no popping sound from the Load Chain	Check the Load Chain. (Refer to P65.)

■ Motorized Trolley (MR2Q) Frequent Inspection

Appearance

Item	Check method	Criteria	When failed
Travel Rail	Check visually.	To have no considerable deformation and damage	Check items in accordance with "Travel Rail" described in Chapter 2 "Periodic Inspection". (P82)
Oiling (to the gears of wheel)	Check visually.	To be oiled adequately	Apply oil to gears.

■ Push Button Switch, Power Supply

Carry out the inspection referring to "Frequent Inspection Items" of the electric chain hoist (EQ). (P68, 69)

■Manual Trolley (TS2) Frequent Inspection

■ Appearance

Item	Check method	Criteria	When failed
Combination	Shake the manual trolley to check.	The motorized trolley shakes lightly to right and left.	Combine the electric chain hoist and the manual trolley securely.
Travel Rail	Check visually.	To have no considerable deformation and damage	Check items in accordance with "Travel Rail" described in Chapter 2 "Periodic Inspection". (P82)
Oiling (to the gears of wheel)	Check visually.	To be oiled adequately	Apply oil to gears.

Periodic Inspection

General Matters on Periodic Inspection

⚠ DANGER



- Put the electric chain hoist on the floor or work bench when inspecting the electric chain hoist.
- After completion of the periodic inspection, perform the functional check and make sure that the electric chain hoist operates correctly.

Wear insulating gloves when measuring voltage.

· When measuring the electric characteristics (insulation resistance, but except voltage measurement), turn off the power.

Failure to comply above instructions may result in death or serious injury.

General Matters on Handling the Model EQ Electric Chain Hoist

The Model EQ Electric Chain Hoist is controlled by the VFD for important items related to safety such as operation, braking and emergency stop. Be sure to follow the safety precautions below as well as the above safety precautions.

⚠ DANGER



- Do not disassemble the Model EQ Electric Chain Hoist in the same way as the contactor system.
- Do not change the VFD parameter. When parameters need to be changed, ask our distributors nearest to the customer or KITO.
- Do not carry out the work such as maintenance and inspection within 5 minutes after power off. Wait for the completion of discharging of the capacitor inside the VFD.
- USE KITO genuine VFD. The VFD requires the special specification for KITO. Be sure to use genuine VFD.
- Do not change the connection of the VFD. When the wires were removed for any reason, connect them again correctly checking the wiring diagram inside the controller cover.
- Do not carry out withstand voltage test of a circuit while the VFD is connected.
- · Do not turn off the power while operating.

Failure to comply with these instructions may result in death or serious injury and the damage of VFD.



Mandatory

Failure to comply with this instruction may result in death or serious injury.

NOTE

When performing the periodic inspection, carry out the daily inspection at the same time.

Disassemble the electric chain hoist and check that it is assembled correctly without abnormal parts.

Electric Chain Hoist (EQ) Periodic Inspection

■Electric Chain Hoist (EQ) Periodic Inspection

■ Suspension Eye, Bottom Hook

Item	Check method	Criteria	When failed
Number of start	Check the number of start with the CH Meter.	Number of start must not exceed the guidelines for replacement.	Replace the Suspension Eye and Bottom Hook.

■ Peripheral parts of the Body size

Item	Check method	Criteria	When failed
Chain Guide	• Check visually. Chain Guide	To have no apparent abrasion, deformation and damage To have no flaw due to hitting by the Load Chain CAUTION The flaw due to hitting is caused by wrong use such as lifting a load in an inclined direction. If the abrasion is observed on the Chain Guide, the Load Chain may be worn also. Refer to the item of Load Chain Abrasion and check the abrasion. Neglecting the check of the Load Chain abrasion may result in bodily injury or property damage.	Replace the Chain Guide.

Item	Check method		Criteri	a		When failed
Chain Spring	Check visually and measure the dimensions.	Check visi (deformati	ually to have no	Replace the Chain Spring.		
			⚠ CAU1	TION		
	Dimensional standard	• The deformation of the Chain Spring is caused by excessive use of the Friction Clutch and the Limit Switch. Operate the electric chain hoist properly. Otherwise it may result in bodily injury or property damage.				
			of Chain Sprin		ity (Do	
		Code	Capacity		Chain Spring nm)	
		EQ004IS	490kg	Standard	Littiit value	
		EQ005IS	500kg	- 29	26.5	
		EQ010IS	1t	26.5	24	
Stopper	• Check visually. Stopper	The stopper must be attached securely at the third link from the no load end of the Load Chain.				Attach the Stopper at the third link.
Limit Switch Cover	Check visually.	To have no deformation, damage and abrasion To have no stain Limit Switch Cover			Replace the Limit Switch Cover. Disassemble the Limit Switch Cover and clean it.	

Periodic Inspection (continued)

Oil

Item	Check method	Criteria	When failed
Oil Leakage	Check visually.	To have no leakage of gear oil from packings, oil seals or oil plugs.	Replace the Packing and the Oil Seal.
Oil amount and stain	Check the oil level from the oil check hole. (The position of the oil check hole depends on the model. See P37.) Oil plugs Check the VFD for the operating hours	Gear oil is filled sufficiently (The distance between the hole and the oil level is between 107 to 111mm for the body size D, and 101 to 105 mm for the body size C.) Distance to the oil surface • Gear oil has viscosity but not stained. • Refer to "Guidelines and Precautions on Gear Oil Change Cycle" for the replacement of oil. (P86)	Replace the Oil.

■ Electromagnetic Brake

Item	Check method	Criteria	When failed
Brake	Lift and lower the electric chain hoist for 20 to 30 cm with a capacity and then stop it. Within 1% of Lifting distance 2~3 Link	When stopping the operation, the Brake must be applied immediately and the motor must stop. Elevating: Stop distance must be 1 % or less of the lifting distance.	Disassemble the Brake to check whether the brake is assembled correctly without abnormal part.

■ Driving Mechanism

Item	Check method	Criteria	When failed
Bearing	Check for any strange noises. Check the operating hours with the CH Meter. (Refer to P88.)	Sounds no strange noise during lifting/ lowering operation with no load. The operating hours must not exceed the guidelines for replacement. (Refer to Guidelines on Bearing Replacement (P87).)	Replace the Bearing.
Load Gear, Gear 2, Gear 3, Motor Shaft	Check for any strange noises. Check the operating hours using the CH Meter. (Refer to P88.)	 To have no apparent abrasion To have no damage Operating hours not to exceed the guidelines for replacement (Refer to "Guidelines on Gear Parts Replacement" (P87).) 	 Replace the Gear. Replace the Motor Shaft. Replace the oil at the same time.
Friction Clutch	Check for any strange noises. Check the operating hours using the CH Meter. (Refer to P88.)	Sounds no strange noise during lifting/ lowering operation with no load. DANGER Do not adjust or disassemble the Friction Clutch. Adjusting and disassembling the Friction Clutch may result in death or serious injury. Operating hours not to exceed the guidelines for replacement (Refer to "Guidelines on Gear Parts Replacement" (P87).)	Replace the Friction Clutch.

Item	Check method		Crit	eria		When failed
Abrasion and flaw of the Load Sheave	Check for any popping sounds.Check the operating hours using the CH Meter.	 To have no apparent abrasion, deformation and damage To have neither abrasion of the sheave pocket nor the run-on flaw on the crest. 				Replace the Load Sheave.
			NO	TE		
		If the abras Sheave, the Refer to the and check th	Load Cha item of ne abrasio			
		Service limit (Do not fall t				
		Model	Capacity	Thickne Standard	ss(mm) Limit	
		EQ001IS EQ003IS EQ004IS	125kg 250kg 490kg	3.4	2.3	
		EQ005IS EQ010IS	500kg 1t	5	3.3	
		• Check the th	hickness ι	using a slied	gauge.	

■ Electrical Equipment

Item	Check method	Criteria	When failed
Electrical Parts	 Remove the Controller Cover and check the electrical parts visually. Check the number of start with the CH Meter. (Refer to P88.) 	To have no damaged or burnt part. To have no loosened bolt. Electrical parts must be mounted securely.	Replace the damaged or burnt electrical part. Mount the electrical part securely.
Wiring		Wiring must be fixed to the Electrical Parts securely. Connectors must be inserted securely.	Connect wirings securely.
		To have no wire breakage and burning	Replace the wiring with new wiring, referring to Chapter 3 Guidance on Troubleshooting. (P92 to 93)
Contamination and attachment of foreign matter		To have not waterdrop or foreign matter.	Remove the foreign matter.
VFD	Check the parts with service life (see VFD Manual.) * Contact KITO for the manual	Electrolytic capacitor: 3000 hours (depending on the use)	Replace the VFD.

■ Electric Characteristics Measurement

Item	Check method	Criteria	When failed
Source Voltage	Measure the voltage with a circuit tester.	The source voltage of the rated voltage ± 10 % at the receiving terminal must be supplied when operating with the capacity. ADANGER	Supply proper voltage.
		Be careful of electric shock when measuring the voltage. Electric shock may result in death or serious injury.	
Insulation Resistance	Measure the insulation resistance with megger. (Resistance between energized and nonenergized parts ··· Each phase of R(L1), S(L2) and T(L3) and the earth wire)	 Insulation resistance must be 5 MΩ or higher. DANGER Turn off the power when measuring the insulation resistance. Measuring the insulation resistance without turning off the power may result in death or serious injury. 	Replace the Body size.

Item	Check method	Criteria	When failed
Grounding Resistance	Measure the grounding resistance with earth-	 Grounding resistance 100Ω or less DANGER 	Make a grounding correctly.
	resistance meter.	Turn off the power when measuring the grounding resistance. Measuring the grounding resistance without turning off the power may result in death or serious injury due to electric shock.	

■ Function and Performance

⚠ DANGER



• After completion of the inspection of each part, perform the operational check for correct operation.

Neglecting to perform the operational check may result in death or serious injury.

• Perform the following inspections with capacity.

Item	Check method	Criteria	When failed
Operational Check	Perform the daily inspection items with capacity. (Refer to Daily inspection Items. (P19))	Be sure to perform the capacity test after completion of the no-load test. Performing the capacity test without prior no-load test may result in death or serious injury. Refer to "Daily inspection Items". (P19)	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.
Brake	Operate the electric chain hoist with a capacity and then stop it.	When stopping the operation, the Brake must be applied immediately and the motor must stop. Up/Down: Stop distance must be 1 % or less of the traveling distance for one minute.	Disassemble the Brake to check whether it is assembled correctly and has no abnormal part.

Motorized Trolley (MR2Q) Periodic Inspection

■ Motorized Trolley (MR2Q) Periodic Inspection

■ Brake

Item	Check method	Criteria				When failed
Appearance	Disassemble the Brake and check it visually.	To have no deformation, flaw and damage on the Brake Drum and the Motor Cover.				Replace the Part.
	To have no deformation and damage on the Brake Spring.			Replace the Brake Spring.		
Abrasion of Brake Pad	Disassemble the Brake and measure the abrasion.	Trolley Brake Service Limit (Do not fall under the limit.)			Replace the Motor Cover.	
<u>Motor</u>	Brake Pad Cover	Capacity 125kg 250kg 490kg 500kg 1t	Speed	Sise E Standard	S(mm) Limit 31.0	
Brake	Drum B					

■ Body size Components

Item	Check method	Criteria				Wh	When failed	
Wheel	 Check visually. Measure dimensions D and d with vernier caliper. Wheel for I · H beam (125kg to 1t) 	Abrasion Limit of Wheel (Do not fall under the limit.)					the Wheel	I.
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Capacity	Beam type	D (r	nm)	d (n	nm)	
	ϕ d ϕ D		Beam type	Standard	Limit	Standard	Limit	
	Measure the outer diameter with vernier caliper.	125kg 250kg 490kg 500kg 1t	I · H	95	91	91.5	87.5	
Side Roller	Check visually. Measure outer diameter of the worn part with vernier caliper.	To have no considerable deformation and damage Abrasion Limit of Side Roller (Do not fall under the limit.)				Replace the Side Roller.		
	Outer diameter	Capacity	Sise B(n	nm) Limit				
		125kg 250kg 490kg 500kg 1t	38	37				
		1t						

Item	Check method	Criteria	When failed
Lifting Shaft	Check visually. Measure the shaft diameter with vernier caliper. Shaft diameter O O O O O	To have no considerable deformation and abrasion The shaft with obvious deformation reaches at the service limit. Abrasion limit of the shaft is 5 % of its diameter.	Replace the Lifting shaft.
Gear Frame Packing	Check visually. Gear Frame Packing	To have no damage and breakage.	Replace the Gear Frame Packing.
Gears and Motor Shaft	Check for any strange noises.	Sounds no strange noise during lifting/ lowering operation with no load.	Replace the Part.
Suspension Eye	Check visually and measure with vernier caliper. e d d	Measured value (mm) Suspension Eye Dimension d Dimension e • Following tables shows the nominal standard values. Please be aware that these values include tolerance because of forging. Guidelines on the Suspension Eye (refer to P87) or its criteria Code Capacity Dimension d (mm) Dimension Eye EQ001IS 125kg EQ003IS 250kg EQ004IS 490kg EQ005IS 500kg EQ0101S 11 12.3 11.7 22.0	on e (mm)

Periodic Inspection (continued)

■ Travel Rail

Item	Check method	Criteria	When failed
Rail Surface	Check visually.	To have no attachment of paint, oil and foreign matter. To have no dust and powder due to abrasion	Clean the Travel Rail.
Deformation and Abrasion	Check the deformation and abrasion visually and measure them with vernier caliper. H-beam H-beam H-beam	To have no deformation of beam flange such as twist and shear drop To have no exceeding abrasion of rail surface Service limit of B: up to 95 % of the dimension at purchasing Service limit of t: up to 90 % of the dimension at purchasing	Replace or repair the Travel Rail.
Rail Mounting Bolt	Check visually.	To have no loosened bolt or fall-off	Tighten the bolts securely.
Stopper	• Check visually. Stopper Stopper	The stoppers must be mounted at the both ends of the Travel Rail securely.	Tighten the Stoppers.

■ Relay Cable

Item	Check method	Criteria	When failed
Appearance	Check the cable surface visually.	The Relay Cable has no deformation or damage. To be mounted securely.	Replace the Relay Cable.

■ Electrical Equipment and Electric Characteristics

Refer to Electric Chain Hoist (EQ) Periodic Inspection (P78 to 79).

■ Function and Performance

⚠ DANGER



• After completion of the inspection of each part, perform the operational check for correct operation.

Neglecting to perform the operational check may result in death or serious injury.

• Perform the following inspections with capacity.

Item	Check method	Criteria	When failed
Operational Check	Perform the daily inspection items with capacity. (Refer to "Daily inspection Items". (P24))	• Be sure to perform the capacity test after completion of the no-load test. Performing the capacity test without prior no-load test may result in death or serious injury. • Refer to "Daily inspection Items". (P24)	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.
Brake	Operate the electric chain hoist with a capacity and then stop it.	When stopping the operation, the Brake must be applied immediately and the motor must stop. Traveling: Stop distance must be 10 % or less of the traveling distance for one minute. (Without swinging of the load. Except the case when the load is swinging.)	Disassemble the Brake to check whether the brake is assembled correctly without abnormal part.
Abnormal Noise	Operate the electric chain hoist with a capacity and then stop it.	To have no irrotating noise To sound no howling of motor and scraping sound of the Brake.	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.

■ Manual Trolley (TSP) Periodic Inspection

■ Body size Components

Item	Check method	Criteria	When failed
Wheel	Check visually. Measure dimension D with vernier caliper.	To have no considerable deformation and damage Abrasion Limit of Wheel (Do not fall under the limit.)	Replace the Wheel.
	 Φ D D D D D D D D D D D D D D D D D D D	Capacity Beam D (mm) TSP Standard Limit 125kg, 250kg, 490kg, 500kg I-beam 58.5 I-beam To have no considerable damage or crack on the contact suraface. H-beam 69.5 To have no considerable damage or crack on the contact suraface. 1t I-beam To have no considerable damage or crack on the contact suraface.	To have no considerable damage or crack at the flange.
Lifting Shaft	Check visually. Measure the shaft diameter with vernier caliper. Shaft diameter O O O O	 To have no considerable deformation and abrasion The shaft with obvious deformation reaches at the service limit. Abrasion limit of the shaft and the hole is 5 % of its diameter respectively. 	Replace the Lifting Shaft.
Suspension Eye	Check visually and measure with vernier caliper. e d d	Measured value (mm) Limit value	n e (mm)

■ Travel Rail

Item	Check method	Criteria	When failed
Rail Surface	Check visually.	To have no attachment of paint, oil and foreign matter. To have no dust and powder due to abrasion	Clean the Travel Rail.

Item	Check method	Criteria	When failed
Deformation and Abrasion	Check the deformation and abrasion visually and measure them with vernier caliper. H-beam H-beam H-beam	 To have no deformation of beam flange such as twist and shear drop To have no exceeding abrasion of rail surface Service limit of B: up to 95 % of the dimension at purchasing Service limit of t up to 90 % of the dimension at purchasing 	Replace or repair the Travel Rail.
Rail Mounting Bolt	Check visually.	To have no loosened bolt or fall-off	Tighten the bolts securely.
Stopper	Check visually. Stopper Stopper	The stoppers must be mounted at the both ends of the Travel Rail securely.	Tighten the Stoppers.

■ Function and Performance

⚠ DANGER



• After completion of the inspection of each part, perform the operational check for correct operation.

Neglecting to perform the operational check may result in death or serious injury.

• Perform the following inspections with capacity.

Item	Check method	Criteria	When failed
Operational Check	Perform the daily inspection items with capacity. (Refer to Daily inspection Items. (P25))	• Refer to "Daily Inspection Items". (P25)	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.
Abnormal Noise	To make the electric chain hoist travel with a capacity	To have no irregular rotating sound	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.

Chapter 2 Inspection

Guidelines for Parts Replacement based on Indication of CH Meter

When performing the inspection, check the number of start and operating hours and utilize them for operation status control and maintenance control.

Check the number of start and operating hours with the indicator of the VFD by the maintenance engineer in accordance with the separate "VFD Manual" and P84 of this manual.

■Guidelines and Precautions on Gear Oil Change Cycle

Change the gear oil in accordance with the rate of loading and the operating hours.

• Change the oil at every five years even if the operating hours do not reach at the following hours.

Rate of	Operating hour for gear oil change loading	Every 120 hrs	Every 240 hrs	Every 360 hrs
Light	A case where the capacity is rarely applied. Usually the hoist is used with a light load.			0
Medium	A case where the capacity is applied considerably frequently. Usually the hoist is used with a medium load.		0	
Heavy	A case where the capacity is applied considerably frequently. Usually the hoist is used with a heavy load.	0		
Ultra heavy	A case where the capacity is applied constantly.	0		

CAUTION



· Use of wrong gear oil may result in the drop of the lifted load. Be sure to use the designated gear oil.

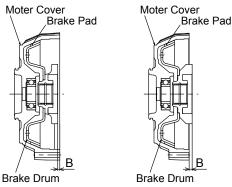
Gear oil kind and amount for main unit

Code	Amount gear oil(ml)	Oil			
EQ001IS, EQ003IS, EQ005IS	510	KITO genuine product			
EQ010IS	840	KITO genuine product			

Guidelines for Checking Brake

- When the number of start reaches 1 million times, check the dimension of B and execute the counteraction in the table below depending on the condition.
- When the number of start reaches 2 million times, replace the brake drum, motor cover, brake spring and pull rotor spring no matter what condition the B dimension is.

Condition of B dimension	Action
When it reaches the critical limit	Replace the brake drum, motor cover, brake spring and pull rotor spring.
	From that time on, check the B condition every hundred thousand times of use till it reaches to the critical limit.
When it reaches near end of the standard rather than the intermediate point between standard and critical limit.	Check the B condition every two hundred thousand times of use.



Abrasion of Brake pad when using Brake (It should not below the limit.)

Cada	Compain	Canad	B dimens	sion (mm)	Criteria
Code	Capaciy	Speed	Standard	Limit	Criteria
EQ001IS EQ003IS EQ004IS EQ005IS	125kg, 250kg, 490kg, 500kg	Dual	3	3.5	Not to exceed
EQ010IS	1t		4	3.5	Not to fall below

■Guidelines on Gear Parts Replacement (Load Gear, Friction clutch with Gear 2, Gear 3)

Operating hours to replace parts Body size grade	Every 800 hours	Every 1600 hours	Every 3200 hours
M5, 2m	_	Parts replacement	-
M6, 3m	-	-	Parts replacement

■Guidelines on Motor Shaft (with Rotor) Replacement

Operating hours to replace Body size grade parts	Every 400 hours	Every 800 hours	Every 1600 hours	Every 3200 hours
M5, 2m	_	Apply grease on spline	Parts replacement	-
M6, 3m	-	Apply grease on spline	-	Parts replacement

^{*} Grease needs to be applied on spline part every 800, 1600 and 2400 hours.

■Guidelines on Bearing Replacement

Operating hours to replace parts Body size grade	Every 800 hours	Every 1600 hours	Every 3200 hours
M5, 2m	_	Parts replacement	-
M6, 3m	_	_	Parts replacement

■Guidelines on Hook, Yoke and Suspension Eye Replacement

Replace the Hook, Yoke and Suspension Eye in accordance with the rate of loading and the number of start in the following table.

Rate of	Number of start to replace parts loading	Every million times	Every 1.5 million times	Every 2 million times
Light	A case where the capacity is rarely applied. Usually the hoist is used with a light load.			0
Medium	A case where the capacity is applied considerably frequently. Usually the hoist is used with a medium load.		\circ	
Heavy	A case where the capacity is applied considerably frequently. Usually the hoist is used with a heavy load.	0		
Ultra heavy	A case where the capacity is applied constantly.	0		

Chapter 2 Inspection

Check of Operating Hours and Number of Start (CH Meter)

↑ CAUTION

This section is extracted from the VFD Manual. For details on operation, etc, refer to the separate VFD Manual.

■Start Times/Operating Hour Display Device

The numbers of start of the upper level and lower level are separately displayed on the LED operator. Calculate the numbers of start from the display.

■ The display contents of the number of start and operating hours

The numbers of start of the upper level and lower level are separately displayed as shown below.

No.	Name	Content
U7-01	Number of start (upper)	The sum of the lifting/lowering of 1,000 times is displayed as 1 unit. The maximum of 10,000 units is displayed. This indicates 10,000 × 1,000=10,000,000 times.
U7-02	Number of start (lower)	The sum of the lifting/lowering is displayed as 1 unit. The maximum of 999 units is displayed. Once it counts 1,000 times, the value of U7-01 (upper) is counted as +1 while U7-02 (lower) goes back to 0.
U7-03	Operating hours	The operating hours are displayed by the hour. The maximum of 65,535 hours is displayed.

Note: The maximum value which is displayable does not indicate the expiry of service life.

■ Displaying of the numbers of start and operating hours

To display the numbers of start and operating hours on the LED operator, follow the procedure below. The following is the example of displaying the operating hours.

Ex.) Refer to the below for the display as taking an example of U7-03 (Operating time).

Operating Procedure

- 1. Turn the power on.
- 2. Press \(\Lambda\) till the monitor screen is displayed.
- 3. Press to display the Parameter setting screen, and press sc.
- 4. Press ∧ or ∨ to display U7-01.
- 5. Press , , , or v and set to U7-03 (operating hours)
- 6. Press to display the current value.
- 7. To finish monitoring and resume operation, hold fsc down till the screen returns to the initial screen.

LED Display



Initial screen





Parameter setting screen





75 hours



■ Calculating the number of start

Calculate the numbers of start of the upper level and lower level from the display.

The following is the calculation example.

Example: When "81" is displayed on U7-01 and "567" is displayed on U7-02

The number of start of lowering = $81 \times 1,000 + 567$ is 81,567 times.

■ Converting the operating hours

When "122" is displayed on U7-03, the operating hours are 122.

Chapter 3

Troubleshooting

This chapter describes the main failure cause and inspection items based on the fault conditions. The repair work (and maintenance work as well) of the electric chain hoist is accompanied with disassembling/assembling work. Refer to the separate "Disassembling/Assembling Manual" for the correct work.

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Guidance on Troubleshooting

■Guidance on Troubleshooting

Following table is the summary of the main failure causes based on the failure conditions and their inspection items. Refer to the page of each item for the check method, treatment and the details of countermeasure.

	Conditions	Main fault contents	Check item	Reference page
	t the VFD by resetting with emergency stop the VFD cannot be reset even after cool down)	Those related to VFD	Check the error code of VFD referring to "VFD Manual".	"VFD Manual" (annex)
Electric chain	Sounds no brake operating sound	Improper source voltage	Power	95
hoist does not		Breakage and burning of	Circuit breaker	95
operate without load		control circuit	Power Cable	96
load		Faulty electrical part	Internal wiring	98
			HBB Board	101
			VFD	101
			Upper/Lower Limit Switch	99
			Push Button Switch	100
		Breakage and burning of	Motor	97
		power circuit Failure of motor or brake	Internal wiring	98
		VFD trip due to motor overheat (electronic thermal relay)	VFD	101
		VFD overheat	VFD	101
	Sounds brake operating sound	Breakage of driving part	Gears	107
		Sticking of Bearing	Bearing	108
Electric chain hoist operates	Does not operate with a load (Motor sounds howling)	Overload (Clutch activated)	Friction Clutch	102
without load	Operates slowly with a load	Voltage drop	Power Cable	96
	Electric chain hoist operates in low speed	Low source voltage	Power	95
	mode, but does not operate in high speed mode or operates slowly.	Voltage drop	Power Cable	96
	Does not operate in lowering or in low speed mode.	Faulty Braking Resistor	Braking Resistor	101
Operates differently from	Operates differently from the indication of the Push Button Switch	Negative phase connection of motor lead wires	Motor	97
the indication	(operates in the opposite direction)	Wrong connection	Internal wiring	98
of the Push Button Switch.			Push Button Switch	100
Dutton Owiton.	Does not operate when operating any one of	Breakage of control	Internal wiring	98
	the Push Button Switch	circuit	Push Button Switch	100
		Faulty electrical part	VFD	101
			HBB Board	101
			Upper/Lower Limit Switch	99

Conditions		Main fault contents	Check item	Reference page	
Does not stop normally	Too long (or short) stop	Too long (or short) stopping distance		Brake	98
	Does not stop at the up	per/lower limit.	Negative phase connection of motor lead wires	Power Cable	96
			Wrong connection	Internal wiring	98
				Push Button Switch	100
Abnormal	Popping sound		Abrasion of the Load Chain	Load Chain	105
noise			Abrasion of the Load Sheave	Load Sheave	107
	Sounds strange operat	ing sound	Abrasion or breakage of Gear	Gears	107
			Deterioration of Bearing	Bearing	108
	Brake noise	Sounds when applied (scraping noise)	Dragging	Brake	98
		Sounds when released	Abrasion of brake lining	Brake	98
	Sounds at curved rail (friction noise)	Mechanical interference of the rail and the wheel	Traveling motion of the Trolley	108 109
Unable to	Motorized Trolley/Manual Trolley Motorized Trolley		Slipping wheel	Traveling motion of the Trolley	108
travel			Inclined rail		109
			Pulling a load in an inclined direction (floating wheel)		
			Defective gear engagement		
			Locking of brake		
			Electric system failure (refer to the item of electric chain hoist)		
Serpentine motion	Motorized Trolley/Manu	ial Trolley	Mechanical interference of the rail and the wheel	Traveling motion of the Trolley	108 109
Sounds					
strange noise			Uneven abrasion of the wheel		
			Deformation of the wheel		
			Deformation and abrasion of the rail		
			Deterioration of the Bearing		
			Abrasion of the Brake Pad		
Hook and those related to Hook		Deformation	Hook	103 104	
Load Chain and	I those related to Load C	hain	Abrasion, elongation, twist	Load Chain	105
Electric shock v Switch	vhen touching the body s	ize and Push Button	Improper grounding, breakage of earth wire	Electric shock	102

Safety Precautions

■General Matters on Failure Cause and Countermeasure

⚠ DANGER



• Do not disassemble or repair the electric chain hoist by the personnel other than maintenance engineer.
"Disassembling/Assembling Manual" and "Parts List" are provided separately for the maintenance. Disassembling and repair must be performed by the maintenance engineer in accordance with these materials for maintenance.

Failure to comply with this content may result in death or serious injury.



- When replacing the part, be sure to use the genuine part for KITO electric chain hoist EQ, EQM and EQSP. Even if the part is the KITO genuine part, the part for different model may not be used. Use the correct part in accordance with separate "Disassembling/Assembling Manual".
- When any abnormality is observed during the repair (maintenance) of the electric chain hoist, survey the cause by the maintenance engineer and carry out the repair.
- · Be sure to keep the following when repairing the electric chain hoist:
 - · Be sure to turn off the power.
 - . Be sure to indicate "CHECKING".
 - Carry out the repair without lifting a load.
- Be sure to pay attention to the change of the operating sound of electric chain hoist and trolley.
 The change of operating sound is an important factor to judge the failure.

Failure to comply with this content may result in death or serious injury.

General Matters on Handling the Model EQ Electric Chain Hoist

The Model EQ Electric Chain Hoist is controlled by the VFD for important items related to safety such as operation, braking and emergency stop. Be sure to follow the safety precautions below as well as the above safety precautions.

M DANGER



- Do not disassemble the Model EQ Electric Chain Hoist in the same way as the contactor system.
- Do not change the VFD parameters.
 When parameters need to be changed, ask our distributors nearest to the customer or KITO.
- Do not carry out the work such as maintenance and inspection within 5 minutes after power off.
 Wait for the completion of discharging of the capacitor inside the VFD.
- · Fan Cover becomes very hot during operation. Do not touch it.
- Do not touch the Fan Cover within 30 minutes after the operation.
- USE KITO genuine VFD.
 The VFD requires the special specification for KITO. Be sure to use genuine VFD.
- Do not change the connection of the VFD.
 When the wires were removed for any reason, connect them again correctly checking the wiring diagram inside the controller cover.
- Do not carry out withstand voltage test of a circuit while the VFD is connected.
- · Do not turn off the power while operating.

Failure to comply with these instructions may result in death or serious injury and the damage of VFD.



USE KITO genuine VFD.

The VFD requires the special specification for KITO. Be sure to use genuine VFD.

Failure to comply with this content may result in death or serious injury.

Troubleshooting

Power

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Improper source voltage	Measure the voltage of each phase at power receiving terminal. If the source voltage is improper, check the power receiving facility.	Faulty power receiving facility	Check the power receiving facility regularly.
		⚠ DANGER		
	• Be careful about electric shock when checking the power. Careless power check may result in death or serious injury due to electric shock.			

Circuit breaker (Distribution panel)

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Breaker was tripped due to short circuit.	Replace or repair the short-circuited part.	Cable breakage, burning of electrical parts	Refer to each item of Power Cable, Motor and Internal Wiring.
	Breaker was tripped due to insufficient breaker capacity.	Check the breaker capacity. Replace it if the capacity is insufficient.	Wrong selection of breaker capacity	Use the breaker with proper capacity. (See P48.)
	Breaker was tripped due to over current.	Check the cause of over current and take the necessary countermeasure. (Refer to each item of Power Cable, Motor, Brake and Internal Wiring.)	Over voltage, low voltage, over load	Refer to each item of Power Cable, Motor, and Internal Wiring.

Troubleshooting (continued)

Power Cable

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Wire breakage (more than two wires)	Check the conduction, flaw, crimping of terminals and soldering of plug. When any deficiency was observed,	Excessive force applied on the cable	Support the cable with Cable Support Arm securely.
		repair or replace the cable.	Non use of shake proof cable	Use shake proof cable to the moving part.
			Twist of wire	Layout the wires without twisting.
			Cable was impeded by other facility.	Fix the cable not to be impeded by other facility.
	Wire burning (more than two wires)	• • • • • • • • • • • • • • • • • • • •	Temperature rise due to insufficient cable capacity	Use the cable with proper capacity. (See P48.)
			Cables are bundled.	Do not bundle wires.
	Insufficient insertion of plug	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Insufficient insertion at the installation	Fix the connector plug to the receptacle securely.
			Loosening of the fixing thread due to impact or vibration	Use the electric chain hoist avoiding the large impact.
Slow start or unable to start	Insufficient cable capacity	Check the cable size for adequacy. Replace with the proper cable if the cable capacity is insufficient.	Voltage drop due to insufficient cable capacity	Use the cable with proper capacity. (See P48.)
Electric chain hoist operates but unable to lift a load. (single phase status)	Breakage or burning of one wire only	Refer to the breakage and burning of above items.		

Motor

Symptom	Cause	Remedy	Main factor	Countermeasure
Motor does not operate.	Motor coil burning (two or more phases)	wo or more phase. Replace the motor when the	Over current due to over voltage or low voltage	Operate the electric chain hoist at the rated voltage.
			Over current due to over load	Operate the electric chain hoist with a load less than the capacity.
			Operation exceeding intermittent rating	Check the intermittent rating. Operate the electric chain hoist within these ratings.
			Excessive inching or plugging operation (consecutive impression of start rush current)	Do not perform excessive operation.
			Over current due to brake dragging	Refer to the items of Brake.
	Lead wire breakage (more than two lead	Measure the coil resistance of each phase. Replace the motor when the	Lead wire damaged at assembling	Assemble with care.
	wires)	resistance of all phases are infinity.	Vibration, impact	Use the electric chain hoist avoiding the impact.
Electric chain hoist operates but unable to lift a load. (single phase status)	Motor coil burning (only one phase)	Measure the coil resistance of each phase. Replace the motor when the resistance of all phases are infinity.	Layer short due to poor insulation of coil (between phases)	Be careful about the intrusion of foreign matter into the motor when assembling.
	Lead wire breakage (only in one lead wire)	Measure the coil resistance of each phase. Replace the motor when the resistance of all phases are infinity.	Lead wire damaged at assembling	Be careful not to have the lead wire caught when assembling.
			Vibration, impact	Use the electric chain hoist avoiding the impact.

Troubleshooting (continued)

Brake

Symptom	Cause	Remedy	Main factor	Countermeasure
Stops after traveling over 4 to 5 links after the operation is stopped. (Guideline: The travel of the Load Chain is within 2 to 3 links.)	Abrasion of brake lining	Check the manner of operation (excessive inching or frequent use). Carry out the inspection and use it correctly.	Excessive inching Frequent use	Check the electric chain hoist regularly. Use it correctly in accordance with the manual.
The load slides down when stopped	Defective function of the Friction	Check the place to use and friction function. Carry out the inspection and use it correctly.	Abrasion from habitual use for a long time Change in mechanical characteristics from leaving it for a long time	Use it correctly in accordance with the manual Pay attention to the place to use and the storage place.

Internal wiring

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Breakage of wire	Check the wire. Repair the wire if broken.	Vibration, impact	Use the electric chain hoist avoiding the impact.
			Lead wire damaged at assembling	Be careful not to have the lead wire caught when assembling.
		Check the terminal. Repair the terminal if it is broken.	Improper crimping	Use the proper crimping tool.
	Wrong wiring	Check the wiring in accordance with the wiring diagram. Correct the wiring if it is wrong.	Wrong wiring at assembling	Correct the wiring in accordance with the wiring diagram.
	Loosened terminal screw (results in	Tighten the loosened screws.	Insufficient tightening at assembling	Tighten screws securely.
	heat generation to burn)		Vibration, impact	Use the electric chain hoist avoiding the impact.
	Incomplete connection of plug, connector and insertion terminal	Connect plug, connector and insertion terminal correctly if they are not connected securely. Tighten the lock ring of the connector plug securely.	Incomplete connection at assembling	Connect plug, connector and insertion terminal securely.

Upper/Lower Limit Switch

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate. (Electromagnetic Contactor or VFD does not operate.)	Contact point fusing	Actuate the limit switch manually to check the conduction of the contact points. Replace the limit switch as a whole when no conduction.	Habitual use of the limit switch	Do not use the limit switch habitually.
	Breakage	Check the wiring. Repair or replace the limit switch as a whole if the limit switch has no conduction.	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Defective return action of the moving part	Check the moving part of the limit switch is not stiff. If it is stiff, replace the limit switch as a whole.	Leaving the electric chain hoist for a long time at the upper/lower limit.	Do not leave the electric chain hoist at the upper/lower limit.
Electric chain hoist does not stop at the upper/lower limit.	Contact point welding	Actuate the limit switch manually to check the conduction of the contact points. Replace the limit switch as a whole when it does not turn off.	Habitual use of the limit switch	Do not use the limit switch habitually.
	Moving part rusted shut	Check the moving part of the limit switch is not stiff. If it is stiff, remove the rust or replace the stiff part.	No use for a long time, use in an environment with rich moisture	Check the electric chain hoist regularly.
	Wrong wiring	Check the wiring in accordance with the wiring diagram. Perform the wiring correctly. If the wiring of the limit switch is correct, the cause is in the negative phase connection. Change two wires of the power line.	Wrong wiring	Correct the wiring in accordance with the wiring diagram.

Troubleshooting (continued)

Push Button Switch

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Emergency Stop button is pressed to its end and locked.	When the Emergency Stop button is pressed and locked, pull the button forward or turn it clockwise to release the lock. Emergency Stop button	Forgot releasing the Emergency Stop button	Read "How to Operate the Push Button Switches" (P26) and use the electric chain hoist.
	Faulty switch unit	Check the conduction of the contact points. Replace the Push Button Switch if it has no conduction.	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Breakage inside the switch	Check that the Push Button Switch cord is connected with the switch unit correctly. Repair the cord if it has no conduction.	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Loosened screw to fix the casing	Tighten the screw if loosened	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Wire breakage of Push Button Switch Cord	Check the conduction of the Push Button Switch Cord. If it has no conduction, replace the cable, or the Push Button Switch Cord as a set.	Damage of cable cover	Operate the electric chain hoist not to impede with other facility.
			External force applied on the cable due to improper tying of the protection wire	Tie the protection wire securely. (See "Connecting Cables" (P50).)
The electric chain hoist does not operate as indicated.	Wrong wiring	Check the wiring in accordance with the wiring diagram. Perform the wiring correctly. If the wiring of the Push Button Switch is correct, the cause is in the negative phase connection. Change two wires of the power line.	Wrong wiring	Correct the wiring in accordance with the wiring diagram.
	Wrong affixing of N-E-S-W label	Affix the label in the correct direction.	Affixing the label in an improper direction	Affix the label correctly.
Electric chain hoist does not stop even if the Push Button is released.	Defective return action of the switch unit	Replace the Push Button Switch if it does not operate smoothly.	Vibration, impact	Use the electric chain hoist avoiding the impact.

VFD

Symptom	C	ause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Overload	d	Inverter stops due to Overload Limiter To resume operation, reset the VFD by pressing Emergency or Lower button.	Overload	Make sure that the load is within the rated load. The ambient temperature is below 0 degree in celsius, operate the chain hoist for a while with no load.
	VFD fail	ure	Reset the VFD by pressing Emergency Stop button. It the VFD still does not operate, check it.	VFD failure	Check the error code indicated by VFD referring to the "VFD Manual".
	Motor ov	verheat	Stop by motor thermal relay function of the VFD. Motor resumes operation when the VFD is reset by pressing the Emergency Stop after cool down.	Operation exceeding intermittent rating	Check the intermittent rating. Use the electric chain hoist within these ratings.
	VFD ove	erheat	Stop by overheat preventive function of the VFD. Motor resumes operation when the VFD is reset by pressing the Emergency Stop after cool down.	Operation exceeding intermittent rating	Check the intermittent rating. Use the electric chain hoist within these ratings.
	Expired life of the (capacito	e VFD	Refer to the "VFD Manual".	Operation exceeding intermittent rating	Check the intermittent rating. Use the electric chain hoist within these ratings.
The electric chain hoist operates in the direction different to the push button operation (negative phase).	of power	onnection line when	Change two wires of the Motor.	Wrong connection at assembling	Connect wires correctly.
	wiring. DANGER				
			Do not change the connection at t	he Push Button Switch c	ircuit.
pridooj.		Prohibited	-	The change of circuit at the Push Button Switch circuit is very dangerous as the limit switch becomes not to function.	

HBB Board

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Damaged circuit component	Press the Push Button to check if the main body operates. If it doesn't operate, replace the HBB Board. * Be careful about electric shock when checking energizing	Service life expiry or damage	Replace the HBB Board.
	Contact failure of connector	Check the conduction of the connector. Replace the connector if it has no conduction.	Defective assembling of the connector	Crimp and insert the connector pins securely.

Braking Resistor

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric chain hoist does not operate.	Resistor breakage		Operation exceeding intermittent rating, over load	Use the electric chain hoist within the ratings.

Electric shock

Symptom	Cause	Remedy	Main factor	Countermeasure
Electric shock when touching the	Improper grounding	Measure the grounding resistance. If it exceeds 100 Ω , perform grounding work	Defective grounding work	Perform the grounding work securely.
body size and Push Button Switch		regulations.	Contact failure of the grounding wire	Connect the grounding wire securely without loosened screw
			Breakage of grounding wire	Layout the grounding wire to avoid the stress applied on it. (See the item of Power Cable and Push Button Switch.)
	Attachment of waterdrop	Remove the waterdrop, dry the electric chain hoist and then use it.	Operation by wet hand	Do not operate the electric chain hoist by wet hand.

Friction Clutch

⚠ DANGER



• Do not adjust/disassemble the Friction Clutch.

Adjusting or disassembling the Friction Clutch may result in death or serious injury.

Symptom	Cause	Remedy	Main factor	Countermeasure
Unable to lift a load, or the load lowers after stop.	Clutch is activated (normal)	Lighten the load less than the rated load and use the electric chain hoist.	Over load	Use the electric chain hoist with a load less than the rated load.
	Abrasion of Clutch Disk	Replace the Friction Clutch.	Too many use of the Friction Clutch	Avoid the over load.
			Approaching service life limit	Do not use the body size exceeding the service limit.
	Change in mechanical		Use of oil other than the designated oil	Use KITO genuine oil.
	characteristics of the Friction Clutch	<u> </u>		
		• Use KITO genuine gear o Use of the oil other than KITO due to the drop of a lifted load		death or serious injury
			Leaving the electric chain hoist for a long time without use	Pay attention to the place to use and the storage place.
	Temperature rise inside the gear box	Resume the operation after cool down. When it is still unable to lift a load, replace the Friction Clutch.	Use in a hot environment, or excessively frequent use	Avoid the use in a hot environment or excessively frequent use.

Hook

Symptom	Cause	Remedy	Main factor	Countermeasure
Widened Hook opening	Deformation of the Hook	Replace the Hook if the deformation exceeds the criteria. (See P64.)	Over load	Use the electric chain hoist with a load less than the capacity.
			Earth lifting	Do not carry out earth lifting. Be careful not to impede the Hook with protruding object during lifting.
			Slinging a load at the tip of the Hook. Lateral pulling of the Hook	Sling a load at the center of the Hook
			Improper slinging	Angle formed by two slings must be 120 degrees or less. 120 degrees or less
			Use of the sling with a size improper to the Hook	Use the proper sling.
Twisted hanging of the Hook			Use of the Hook with the Load Chain wound on a load	Do not wind the Load Chain directly on a load.
Hook unable to swivel smoothly at the neck	Rusting shut or corrosion of Bearing	Swivel the Hook at the neck by hand. If it is difficult to swivel smoothly, overhaul or replace the Bearing.	Insufficient grease application, corrosion due to environment of use	Apply grease regularly. Use the sling to avoid the dipping of the Hook into chemicals.
	Damaged Bearing		Intrusion of dust	Be careful about the intrusion of foreign matter into the neck.

Troubleshooting (continued)

Hook (continued)

Symptom	Cause	Remedy	Main factor	Countermeasure
Hook Latch has come off	Deformation of the Hook	Replace the Hook if the deformation exceeds the criteria. (See P72.)	Over load	Use the electric chain hoist with a load less than the capacity.
			Earth lifting	Do not carry out earth lifting. Be careful not to impede the Hook with protruding object during lifting.
			Use of the sling with a size improper to the Hook	Use the proper sling.
	Deformation and come-off of the Hook Latch	Replace the Hook Latch if it has come off or is deformed.	Sling put on the Hook Latch	Do not put the sling on the Hook Latch.
Hook bent at the neck (shank)	Deformation or damage of the Hook at its neck	Replace the Hook bent at the neck.	Lifting a load at the tip of the Hook Lateral pulling of the Hook	Sling a load at the center of the Hook
Hook unable to swivel smoothly at the neck	Rusting shut or corrsion of Bearing	Swivel the Hook at the neck by hand. If it is difficult to swivel smoothly, overhaul or replace the Bearing.	Insufficient grease application, corrosion due to environment of use	Apply grease regulary. Use the sling to avoid the dipping of the Hook into chemicals.
	Damaged Bearing		Intrusion of dust	Be careful about the intrusion of foreign matter into the neck.

Load Chain

Symptom	Cause	Remedy	Main factor	Countermeasure
Twisted Load Chain	Load Chain is twisted inside the main body of the electric chain hoist.	Remove the Chain Guide and the Load Chain, and then reassemble them.	Improper assembling	Assemble the electric chain hoist correctly. (See Disassembling/ Assembling Manual)
Sudden activation of the Friction Clutch when lowering	Knot of the Load Chain due to entanglement in the Chain Container	Check the capacity of the Chain Container (with the nameplate on the Chain Container). If insufficient, replace the Chain Container with a larger capacity.	Insufficient capacity of the Chain Container	When installing the electric chain hoist, check the lift and the capacity of the Chain Container, and assemble them correctly.
Sounds the popping sound	Abrasion of the Load Chain links		Long hour operation without grease	Apply lubricant regularly. (See P37) Grease application portion Load
			Excessive inching operation	Do not perform excessive operation.
			Over load	Use the electric chain hoist with a load less than the capacity.
			Pulling a load in an inclined direction	Do not pull a load in an inclined direction.
			Abrasion of Load Sheave	Refer to the item of Load Sheave.
	Elongation of pitch	Measure the sum of pitches of 5 links. Replace the Load Chain if this value exceeds the limit value. (See P65)	Over load	Use the electric chain hoist with a load less than the capacity.

Load Chain (continued)

Troubleshooting (continued)

Symptom	Cause	Remedy	Main factor	Countermeasure
Irregular noise	Flaw and deformation of the Load Chain surface	l l	Use of the Load Chain without canceling capsized state	When using multi fall model hoist, check that the Hook is not capsized before use.
			Use of the Load Chain as twisted	Assemble the electric chain hoist correctly. (See Disassembling/ Assembling Manual)
	Hit flaw on the Load Chain surface		Hit with other object strongly	Use the electric chain hoist carefully paying attention not to impede with other object.
Surface losing lust and discolored	Rusting and corrosion	• • • • • • • • • • • • • • • • • • • •	Run-out of oil	Apply lubricant regularly. (See P37) Grease application portion Load
			Use of electric chain hoist exposed to rain	Store the electric chain hoist indoor or under the roof when not using.
			Influence of sea water and chemicals	Contact KITO for the use in special environment in advance. Use the electric chain hoist correctly within the scope guaranteed by the manufacturer.
Breakage of the Load Chain	Expiry of the service life	Check the Load Chain and replace it if exceeded the criteria. (See P65)	Mechanical service life expiry	Handle the Load Chain correctly and perform the appropriate control including daily inspection and inspection.

Load Sheave

Symptom	Cause	Remedy	Main factor	Countermeasure
Sounds popping sound	Abrasion of sheave pocket or flaw by the Load Chain out	Measure the thickness of the crest. Replace the Sheave if the thickness is less than the criteria. (See P77) The Load Chain may be worn. Check also the Load Chain.	Long hour operation without grease, expiry of service life	Apply lubricant regularly. (See P37)
			Excessive inching operation	Do not perform excessive operation.
			Over load	Use the electric chain hoist with a load less than the capacity.
			Pulling a load in an inclined direction	Do not pull a load in an inclined direction.

Chain Guide

Symptom	Cause	Remedy	Main factor	Countermeasure
Swinging of a load became larger than when purchasing	Abrasion of cross guide	·	Pulling a load in an inclined direction	Do not pull a load in an inclined direction.

Gears

Symptom	Cause	Remedy	Main factor	Countermeasure
Unable to lift a load.	Abrasion, Damage	Replace gear or joint if it is worn apparently or damaged	Long hour operation without oil	Keep the oil change cycle. (See P86)
			• Use KIT Use of the genuine oil	O genuine gear oil. e oil other than KITO may result in death or ury due to the drop of d.
Irregular motion	Partial abrasion or damage		Too many use of the Friction Clutch	Avoid the over load.
			Habitual use of Upper/ Lower Limit Switch	Do not use Upper/ Lower Limit Switch habitually.

Troubleshooting (continued)

Bearing

Symptom	Cause	Remedy	Main factor	Countermeasure
Unable to lift a load.	Sticking, Breakage	Replace the bearing.	Use under hot environment or excessively frequent use	Avoid using under hot environment or excessively frequent use
Strange noise	Deterioration	Replace the bearing.	Use under hot environment or excessively frequent use	Avoid using under hot environment or excessively frequent use

Traveling motion of the Trolley (common for motorized/manual trolley)

Symptom	Cause	Remedy	Main factor	Countermeasure
Unable to travel due to slipping of wheel	Inclination of Travel Rail	Make sure that rail gradient is within 1 degree.	Improper installation of Travel Rail	Install the Travel Rail correctly.
Unable to travel due to slipping of wheel, or unable to travel in uniform motion	Oil attachment on running surface of the rail	Wipe off the attached foreign matter of the rail.	Use under the environment likely to attach foreign matter	Clean the Travel Rail regularly.
Sounds abrasion sound when running on a curved rail	Friction resistance between wheel and rail	Apply small amount of grease on the rail surface where noise generates.		
Unable to travel on the curved rail				
odi vod Tali	Interference of the trolley and the curved rail	Make sure that the rail curvature is larger than the minimum turning radius. (See P39-40, 43-45)	Use of the curved rail of curvature less than minimum turning radius	Do not use the curved rail of curvature less than minimum turning radius
Unable to travel due to wheel floating	Pulling a load in an inclined direction (floating wheel)	_	Operating method	Use the electric chain hoist correctly.
Wheel unable to rotate	Defective gear engagement	Remove the stain and foreign matter on the wheel and the gear.	Ambient conditions, environment	Check regularly.
Serpentine motion Strange noise	Wrong adjustment of spacer	Check the number of spacers and their assembled positions.	Incomplete checking	Assemble correctly.
	Uneven abrasion of the wheel	Check the abrasion of the wheel.	Traveling on curved rail or unevenness of running surface	Check regularly.
	Deformation of wheel	Check the distortion of wheel and damage of running surface.	Excessively frequent collision with stopper or unevenness of running surface	Replace the wheel Use the electric chain hoist correctly.
	Deterioration of wheel bearing	Check if rolling noise sounds when the wheel is rotating.	Expiry of service life	Replace the wheel bearing.
	Deformation and abrasion of the rail	Check the abrasion and deformation of the rail.	Over load or expiry of service life	Replace the rail. Use the electric chain hoist correctly.

Traveling motion of the Trolley (only for motorized trolley)

Symptom	Cause	Remedy	Main factor	Countermeasure			
Wheel unable to rotate	Locking of brake	Disassemble the motor cover. Remove rust and stains. Ambient conditions, environment		Check regularly.			
	Electric system failure (Refer to the items of Electric chain hoist)	(Refer to the items of Electric chain hoist)					
Serpentine motion Strange noise	Abrasion of the side roller	Check the abrasion	Traveling on curved rail or expiry of service life	Check regularly.			
	Abrasion of the Brake Pad	Check the abrasion of the Brake Pad	Expiry of service life	Check regularly.			

Appendix

	wiring Diagram	
E	Q Wiring Diagram (230V Class, 400V Class)	112
M	R2Q Wiring Diagram (230V Class, 400V Class)	113
	Part List	
M	odel EQ	
•	Body, gear case, motor	114
•	Electric, component and chain	116
M	odel MR2Q	
•	Frame and wheel, motor, gear	118
•	Connection box related	120
•	Push button and cable related	122

Wiring Diagram

■EQ Wiring Diagram (230V Class, 400V Class)

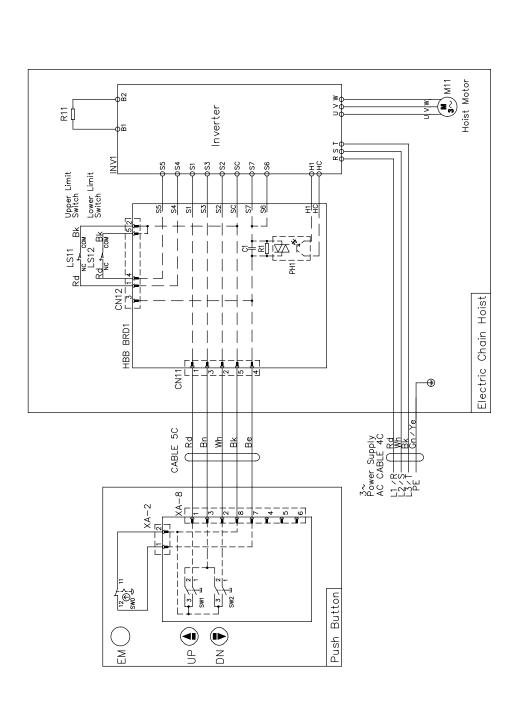
NAME	Motor) t	loard	Photo Coupler	itor	Jpper Limit Switch	ower Limit Switch	or	ctor
	Hoist Motor	Inverter	HBB Board	Photo	Capacitor	Upper	Lower	Resistor	Connector
Parts No	M11	INVI	HBB BRD1	PH1	C1	LS11	LS12	R∼	∼N⊃
\sum	1	2	3	4	2	9	7	∞	6

	Abbreviation
Bk:Black	Gn/Ye:Green & Yellow
Rd:Red	
Wh:White	EM:Emergency Stop
Be:Blue	UP:UP
Bn:Brown	DN:Down

Note 1.0peration Type Hoist: Dual Speed (Inverter)

2.Power Supply
200V class,400V class
50/60Hz,3Phase

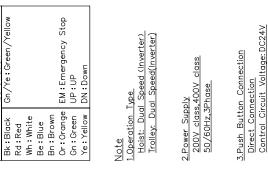
3.Push Button Connection Direct Connection Control Circuit Voltage: DC24V

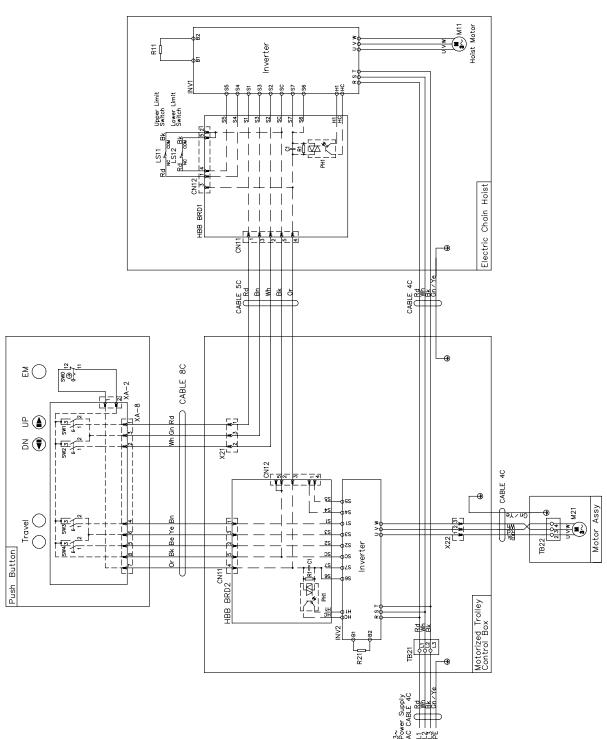


■MR2Q Wiring Diagram (230V Class, 400V Class)

$\overline{}$	Parts No	NAME
-	M11	Hoist Motor
2	M21	Trolley Motor
3	~\NI	Inverter
4	HBB BRD∼	HBB Board
5	PH∼	Photo Coupler
9	~)	Capacitor
7	LS11	Upper Limit Switch
80	LS12	Lower Limit Switch
6	R∼	Resistor
10	×~,CN~	Connector
Ξ	™	Terminal Block

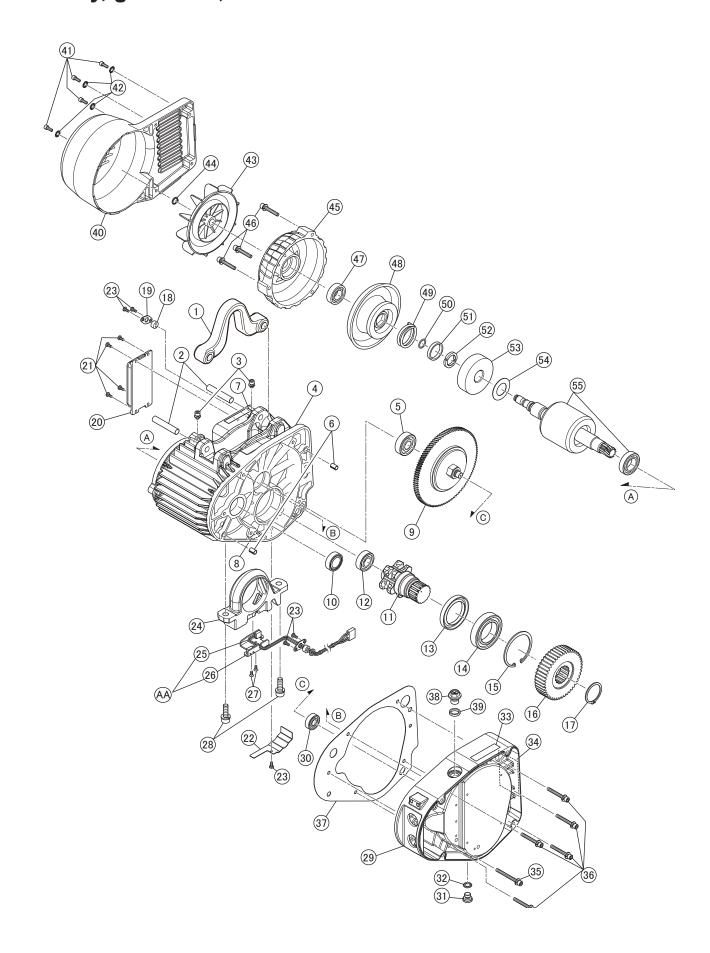
	Abbreviation
Bk:Black	Gn/Ye:Green/Yellow
Rd:Red	
Wh: White	
Be:Blue	
Bn:Brown	
Or:Orange	EM:Emergency Stop
Gn:Green	UP:UP
Ye: Yellow	DN:Down





Parts List

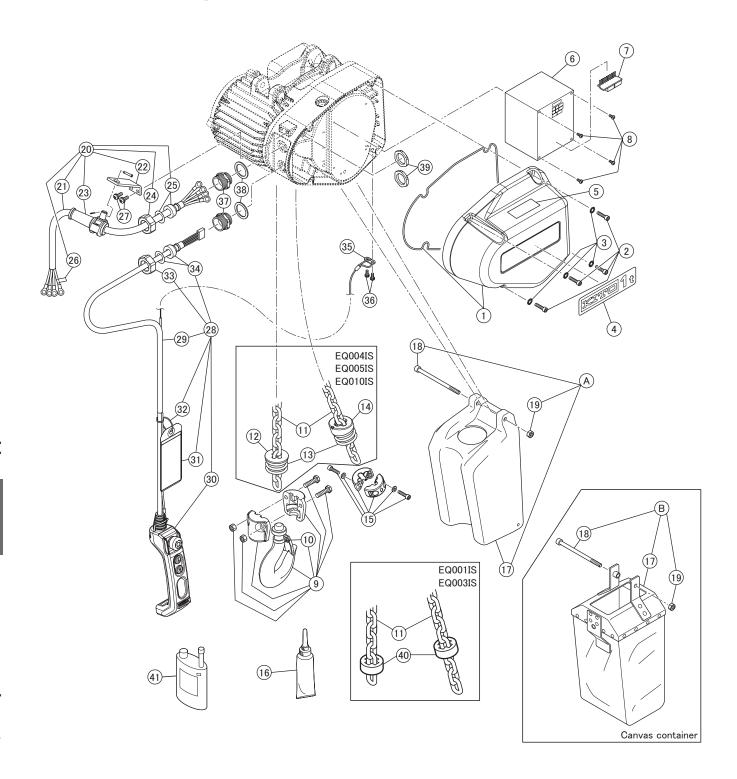
■Body, gear case, motor



Part Name	Figure #	Part		Quantity	Part Code				
Overline	re#	Part Number	Part Name	ntity per unit	EQ001IS	EQ003IS		EQ010IS	Remark
2	1	001	Suspension Eye	1	EQ1Cl9001	←	←	EQ1DI9001	
3 Machine scrow socket bolt 2 JRG-1490100	2	121	Top pin	2	EQ1CI9121	←	←	EQ1DI9121	
Solution			Machine screw socket bolt	2	J1BG1-0601010	←		←	For Top pin
Section Sect	4	5501	Body with stator	1					
6 137	5	238	Ball bearing	1			†		200 / 01033
7 820				2		←	1	ì	
8 960	7	820		1		←	←	1	
10		960	Name plate side E	1	ER1BS9960				
11			Friction clutch complete set	1		EQ1CF1223	EQ1CI1223		
12 242 Ball bearing	10		Oil seal	1		←	←	EQ1DI9244	For Motor shaft
13			Load sheave	1		←	←		
14			<u> </u>	1		←	←		
15 207				1		←	←		
16				-					
17									For Bearing (load side)
18				1		EQ1CF9240	EQ1CI9240		
19				1			+		For Load gear
20 5505 Braking resistor assembly 1 INV705/16			Packing			-		EQ1DI9187	
20 500 Braking resistor assembly 1 INV705E16	19	153	Cable holder	1				← 	
Machine screw with spring 2 JIAP2-4001010	20	5505	Braking resistor assembly	1		←			
194						←	INV705E16 *	INV715E16 *	230V Class
Washer 4	21	194							For Braking resister
23 152 Machine screw with spring washer 5 JIAP2-4001010 ←						X	X		Tor Braking resister
24 331	22	151		1	EQ1CI9151	←	←	EQ1DI9151	<u></u>
€№ 1333 Limit switch assembly 1 EQCI01333 ← ← EQ1DI1333 25 1 1060 Limit switch conver 1 EQ1DI1600 ← ← ← EQ1DI333 27 335 Machine screw 2 J1AL2-4001010 ← ← EQ1DI333 27 335 Machine screw socket bolt 2 J18G1-0802555 ← ← J1BG1-1003030 For Chain guide 28 165 Machine screw socket bolt 2 J18G1-0802555 ← ← J1BG1-1003030 For Chain guide 29 110 Gear case 1 E0108110 ← ← E0109110 30 239 Ball bearing 1 J1GR0A0-06200 ← ← J1GR0A0-06201 31 133 Oil plug 1 ESY80059109 ← ← ← ← ← 33 810 Name plate SP 1 EQ1609109 ← ← ← ← ← ← ←		- 1	washer	5		←	←	1	
25				1		←	←		
26						←	←	EQ1DI1333	
27 335 Machine screw 2 JIAL2-4001010 ←						←	←		
28 165 Machine screw socket bolt 2 J/BG1-0802525 ← ← J/BG1-1003030 For Chain guide 29 110 Gear case 1 EQ109110 ← ← EQ109110 30 239 Ball bearing 1 J/GR0A0-06200 ← ← J/JGR0A0-06201 31 133 Oil plug 1 ESFE003S9911 ← ← ESFE003S9911 32 136 Plug packing 1 E2YS005-9109 ← ← ← ← 33 810 Name plate OF 1 ERZC59845 ← ← ← ← 34 815 Name plate OF 1 EQ16919086 ← ← ← ← ← For Gear case 36 167 Machine screw socket bolt 1 J/JBG1-0603030 ← ← ← For Gear case 37 116 Packing G 1 EQ109116 ← ← EQ109116 ← ← EQ109116<						←	←	EQ1DI9333	
29				+			1	← +	1= 0: : ::
30 239 Ball bearing 1 J1GR0A0-06200 ← ← ← ← ← ← ← ESFE003S9111 133 Oil plug 1 ESFE003S9111 ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←				_					For Chain guide
31 133				. .		-			
32 136				<u>'</u>			+		
33 810 Name plate OF 1 ER2CS9845 ←	-			 			+	ì	
34				+ -				1	
35 167 Machine screw socket bolt 1 J1BG1-0603030 ←				<u> </u>					
36				+					For Gear case
37 116 Packing G 1 EQ1CI9116 ← ← EQ1DI9116 38 135 Oil plug B 1 WR2BS9135 ← ← ← ← 40 107 Fan cover 1 EQ1CI9107 ← ← EQ1DI9107 41 164 Socket bolt 4 J1BE1-0501414 ← ← ← For Fan cover 42 225 Toothed lock washer 4 J1WH012-10050 ← ← ← For Fan cover 43 108 Fan 1 ER2BS9108 ← ← ER2CS9108 44 323 Snap ring 1 J1S800-00013 ← ← ER2CS9108 44 323 Snap ring 1 J1S00-000013 ← ← EQ1DI9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1GR0C-06004 For Motor cover 47 209 Ball bearing 1 J1GR0C-06203 <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>+</td> <td>1</td> <td></td>				-			+	1	
38 135				+			1		
39 173 Eyebolt packing 1 E2YS005-9116 ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←				1			+	1	
40 107 Fan cover 1 EQ1CI9107 ← ← EQ1DI9107 41 164 Socket bolt 4 J18E1-0501414 ← ← ← For Fan cover 42 225 Toothed lock washer 4 J1WH012-10050 ← ← ← For Fan cover 43 108 Fan 1 ER2BS9108 ← ← ER2CS9108 44 323 Snap ring 1 J1SS000-00013 ← ← EQ1DI9106 45 106 Motor cover 1 EQ1CI9106 ← ← EQ1DI9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1GR0C0-06004 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1CI9214 ← EQ1DI9214 49 214 Brake spring 1 EQ1CI9214 ← EQ1DI9214 </td <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td>				1					
41 164 Socket bolt 4 J1BE1-0501414 ← ← ← For Fan cover 42 225 Toothed lock washer 4 J1WH012-10050 ← ← ← For Fan cover 43 108 Fan 1 ER2BS9108 ← ← ER2CS9108 44 323 Snap ring 1 J1SS000-00013 ← ← ← EQ1DI9106 45 106 Motor cover 1 EQ1CI9106 ← ← EQ1DI9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1GR0C0-06004 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1CI9212 ← EQ1DI5212 49 214 Brake spring 1 EQ1CF9214 ← EQ1DI9214 EQ1DI9214 50 324 O ring 1 J1OP011-00125 ←<			, , ,	1			+		
42 225 Toothed lock washer 4 J1WH012-10050 ← ← ← For Fan cover 43 108 Fan 1 ER2BS9108 ← ← ER2CS9108 44 323 Snap ring 1 J1SS000-00013 ← ← ← ← 45 106 Motor cover 1 EQ1CI9106 ← ← EQ1DI9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1BG1-0604040 For Motor cover 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1CI9212 ← EQ1DI5212 49 214 Brake spring 1 EQ1CF9214 ← EQ1DI9214 50 324 O ring 1 J1OP011-00125 ← ← J1OP011-00160 51 318 Collar 1 E5FE003S9505 ← ←	41			4	J1BE1-0501414	←	←	i	For Fan cover
43 108 Fan 1 ER2BS9108 ← ← ER2CS9108 44 323 Snap ring 1 J1SS000-00013 ← ← ← ← 45 106 Motor cover 1 EQ1CI9106 ← ← EQ1DI9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1BG1-0604040 For Motor cover 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1CI9212 ← EQ1DI5212 49 214 Brake spring 1 EQ1CF9214 ← EQ1DI9214 50 324 O ring 1 J1OP011-00125 ← ← J1OP011-00160 51 318 Collar 1 E5FE003S9506 ← ← E5FE00S9505 52 317 Thrust disc 2 E5FE003S9503 ← ← E5FE00S9505	42	225	Toothed lock washer	4		←	←	←	For Fan cover
45 106 Motor cover 1 EQ1Cl9106 ← ← EQ1Dl9106 46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1BG1-0604040 For Motor cover 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1Cl5212 ← EQ1Dl5212 49 214 Brake spring 1 EQ1CF9214 ← EQ1Dl9214 50 324 O ring 1 J10P011-00125 ← ← J10P011-00160 51 318 Collar 1 E5FE003S9506 ← ← E5FE00S9506 52 317 Thrust disc 2 E5FE003S9503 ← ← E5FE00S9505 53 503 Pull rotor 1 E5FE003S9503 ← ← E5FE00SS9504 54 316 Coned disc spring 1 E5FE00SS9504 ← ← E5FE00SS95				1		←	←	ER2CS9108	
46 163 Machine screw socket bolt 3 J1BG1-0605050 ← ← J1BG1-0604040 For Motor cover 47 209 Ball bearing 1 J1GR0C0-06203 ← ← J1GR0C0-06004 48 5212 Brake drum assembly 1 EQ1CI5212 ← ← EQ1DI5212 49 214 Brake spring 1 EQ1CF9214 ← EQ1DI9214 EQ1DI9214 50 324 O ring 1 J1OP011-00125 ← ← J1OP011-00160 51 318 Collar 1 E5FE003S9506 ← ← E5FE005S9506 52 317 Thrust disc 2 E5FE003S9503 ← ← E5FE005S9505 53 503 Pull rotor 1 E5FE003S9504 ← ← E5FE00SS9504 54 316 Coned disc spring 1 E5FE003S9504 ← ← E5FE00SS9504				1		←	←	←	
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49 214 Brake spring 1 EQ1CF9214 ← EQ1DI9214 EQ1DI9214 50 324 O ring 1 J10P011-00125 ← ← J10P011-00160 51 318 Collar 1 E5FE003S9506 ← ← E5FE005S9506 52 317 Thrust disc 2 E5FE003S9505 ← ← E5FE005S9505 53 503 Pull rotor 1 E5FE003S9503 ← ← E5FE005S9503 54 316 Coned disc spring 1 E5FE003S9504 ← ← E5FE005S9504			U	-			1		
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51 318 Collar 1 E5FE003S9506 ← ← E5FE005S9506 52 317 Thrust disc 2 E5FE003S9505 ← ← E5FE005S9505 53 503 Pull rotor 1 E5FE003S9503 ← ← E5FE005S9503 54 316 Coned disc spring 1 E5FE003S9504 ← ← E5FE005S9504				1 1			1		
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54 316 Coned disc spring 1 E5FE003S9504 ← ← E5FE005S9504				2					
				1 1			 		
				1					

^{*} Braking resistor assembly of EQ004IS, EQ005IS, EQ010IS, has been changed. This is only for LOT No. EQ1B -. Use Braking resistor assembly in combination with Inverter assembly . see page 117

■Electric, component and chain

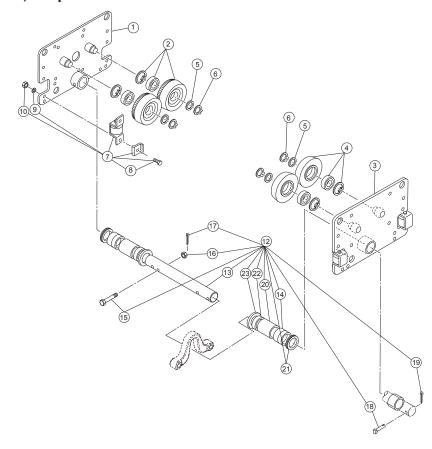


_								T .
Figure #	Part Number		Qua unit	Part Code				
re#	ber	Part Name	Quantity per unit	EQ001IS	EQ003IS	EQ004IS EQ005IS	EQ010IS	Remark
1	2104	Controller cover assembly	1	EQ1CI2104	←	←	EQ1DI2104	
2	161	Socket bolt	4	J1BE1-0602525	←	←	←	For Controller cover
3	224	Toothed lock washer	4	J1WH012-10060	←	←	←	For Controller cover
4	800	Name plate B	1	EQ1BUQ01I9A3	EQ1BUQ03I9A3	EQ1BEE04I9A3 (490kg) EQ1BUQ05I9A3 (500kg)	EQ1BUQ10I9A3	_
5	866	Warning sticker E	1	E2DPX10S9866	←	←	←	
6	1571	Inverter assembly	1	INV60FY44 INV60FC44	INV60FY41 INV60FC41	INV60FY47 * INV60FC47 *	INV615Y44 *	400V Class
7	508	HBB board	1	ECP91KB22	←		— ←	2007 01000
Ė	000	1155 50414		J1AP2-4001010	<u> </u>	←	<u>←</u>	400V Class
8	191	Machine screw with spring washer	4	Х	Х	Х	J1AP2-4001010	230V Class
		, 0	2	J1AP2-4001010	←	←	Х	230V Class
9	1011	Bottom hook complete set	1	Х	Х	EQ1CI1035 (490kg)	Х	
		·		EQ1CG1011	EQ1CF1011	EQ1CI1011 (500kg)	EQ1CI1011	
10	1002	Hook latch assembly	1	ER2CS9002	←	←	ER2DS1002	
11	874	Load chain	1	KAZN056W0000	←	← F04010054	← F04DI0054	
12	054	Limiting plate	1	X	X	EQ1CI9054	EQ1DI9054	
13 14	051	Chain spring	2	X	X	EQ1CI9051 EQ1CI9055	EQ1DI9051 EQ1DI9055	
15	055 1041	Spring guide Stopper assembly	1	ER1CS1041	λ ←	EØ1019055	ER1DS1041	
16	1951	Lubricant tube assembly	1	ER2CS1951	<u>←</u>	← ←	±N1031041	
(A)	1401	Chain container P complete set	1	EQ1CI1401	<u> </u>	<u>`</u>	EQ1DI1401	Plastic container
17	401	Chain container P	1	EQ1CI9401		<u>←</u>	EQ1DI9401	i lastic container
18	166	Socket bolt	1	J1BE1-0809028	<u>`</u>	· ·	J1BE1-0812028	For Chain container
19	226	Lever nut	1	C2BA100-9074	<u></u>	<u>←</u>	<u>←</u>	For Chain container
(B)	1405	Chain container (15) complete set	1	EQ1CI1405	←	←	x	Canvas container
17	5405	Chain container (15) assembly	1	EQ1CI5405	←	←	х	
18	166	Socket bolt	1	J1BE1-0809028	←	←	×	For Chain container
19	226	Lever nut	1	C2BA100-9074	←	←	x	For Chain container
20	1521	Power supply cable assembly	1	ZLZB11CQ1000	←-	←	←-	Cable one size larger
				ZLZB11AQ1000	←	←	<u></u>	than the standard size
21	521	Cable	1	Z2CU401-0000 Z2CU402-0000	<u>←</u>	← ←	<u>←</u>	Cable one size larger
- 00	F 44	Oakla avvarant avva	4					than the standard size
22	541	Cable support arm Cable support 12 assembly	1	ER1BS9541 E7AX003S2822	←	←	<u>←</u>	
23	1542	''	1		←	←	←	Cable one size larger
24	569	Cable support 14 assembly Holder A	1	E4YS005-2822 ECP5924AA	←	←	←	than the standard size
24	309	Holdel A	ı	ECP3924AA ECP6912AA	<u>←</u>	← ←	<u>←</u>	
25	574	Cable packing	1	ECP6914AA	←	←	<u>←</u>	Cable one size larger than the standard size
26	823	Name plate G	1	E6LE010S9806	←	←	←	The standard of Lo
27	542	Machine screw with spring washer	2	J1AP2-6001616	←	←	←	For Cable support arm
28	1557	Push button cord EH complete set	1	ZLD0015W1000	←	←	←	
29	557	Cable	1	Z3CA500-0000	←	←	←	
30	1561	3 push button switch assembly	1	SWJ2200AA	←	←	←	
31	565	Warning tag PB	1	SWD9013AB	←	←	←	
32	566	Tag holder	1	E7SE003S9787	←	←	←	
33	569	Holder A	1	ECP5924AA	←	←	←	
34	574	Cable packing	1	ECP6910AA	←	←	<u></u>	
35	535	Cord support (wire stopper)	1	ER1BS9534	←	←	←	
36	536	Machine screw with spring washer	2	J1AP2-5001212	←	←	←	For Cord support
37	891	Holder B	2	ECP5924AB	←	←	←	
38 39	892 893	Holder packing Holder nut	2	ECP5924AQ ECP5924AD	←	←	<u>←</u>	
40	053	Cushion rubber	2	ECP5924AD ER1CS9053	<u>←</u>	← X	<u>←</u> x	
41	1855	Oil pot F	1	ER1039055 ER1BS1855	<u>←</u>	^	ER1CS1855	
71	1000	Oil pot I		LIKIDO 1000	,	` `	LIX1001000	

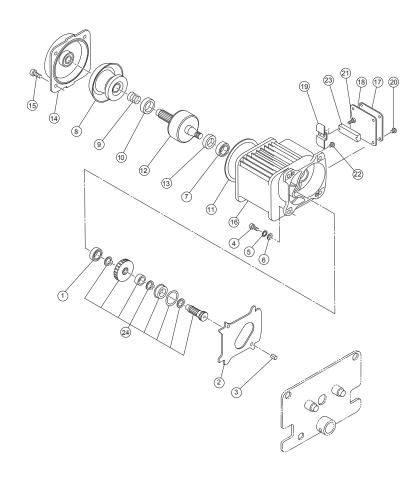
^{*} Inverter assembly of EQ004IS, EQ005IS, EQ010IS, has been changed. This is only for LOT No. EQ1B -. Use Inverter assembly in combination with Braking resistor assembly. see page 115

■ Frame and wheel, motor, gear

<Frame and wheel, suspension shaft>



<Motor, gear>



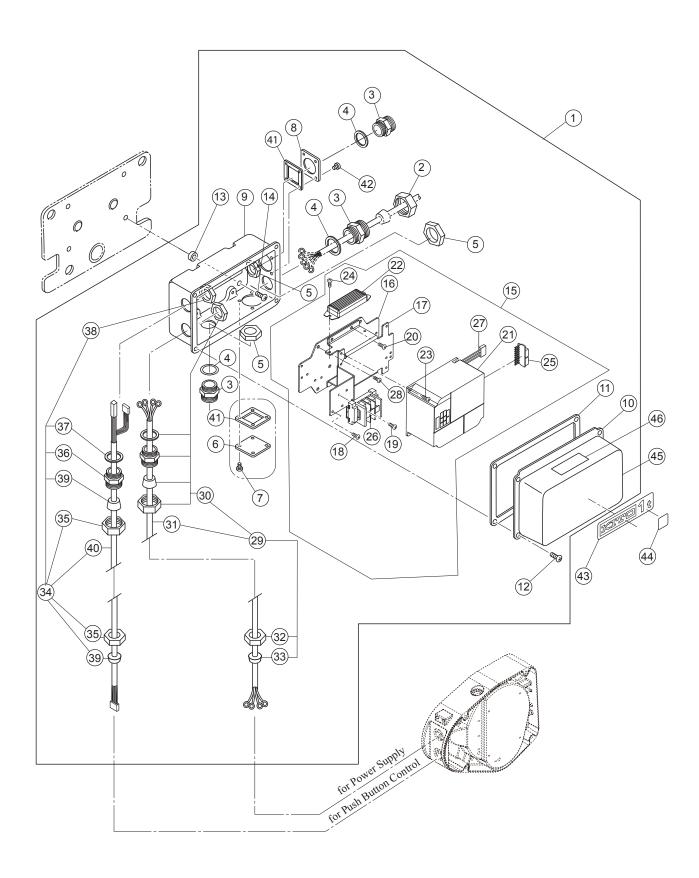
Frame and wheel, suspension shaft

In Dia	Part Number	Dard Name	Qua	Part Code	Pdi
In Diagram	nber	Part Name	Quantity per unit	MR2Q010IS	- Remark
1	5201	Side plate G assembly	1	MR1DS5201	
2	1231	Track wheel G assembly	2	M6SE010S1101	
3	5202	Side Plate S assembly	1	MR1DS5202	
4	1232	Track wheel S assembly	2	M6SE010S1102	
5	235	Washer	4	T6GA010-9104	For track wheel G,S
6	236	Snap ring	4	J1SS000-00015	For track wheel G,S
7	1211	Side roller complete set	4	MR1DS1211SU_01	
8	219	Bolt	8	J1BA1-0803030	
9	220	Spring lock washer	8	J1WS011-20080	
10	221	Nut	8	J1NA001-20080	
12	2135	0'	1	MR2DI2135	125kg-500kg, Beam width: 58-153mm
12	2101	Suspension shaft complete set (150)	1	MR2DI2111	1t, Beam width: 58-153mm
13	101	Suspension shaft (125)	1	M7SE010S9115	
14	102	Thick spacer	5	T4GA010-9116	
15	103	Bolt	1	T1GA010-9153	
16	104	Slotted nut	1	J1NL002-10100	
17	105	Split pin	1	J1PW01-025018	
18	106	Shaft stopper	1	T6GA020-9156	
19	107	Split pin	1	J1PW02-040020	
- A	100	This areas	8	TCO 4 000 0447	125kg-500kg
21	109	Thin spacer	14	T6GA020-9117	1t
22	110	Thick spacer L	2	MR1DS9110	125kg-500kg
23	113	Thin spacer L	2	MR2DI9113	
12	1136	C	4	MR2DI1136	125kg-500kg, Beam width: 154-305mm
12	1121	Suspension shaft complete set (300)	1	MR2DI1112	1t, Beam width: 154-305mm
13	121	Suspension shaft (300)	1	M7SE010S9181	
14	102	Thick spacer	9	T4GA010-9116	
15	103	Bolt	1	T1GA010-9153	
16	104	Slotted nut	1	J1NL002-10100	
17	105	Split pin	1	J1PW01-025018	
18	106	Shaft stopper	1	T6GA020-9156	
19	107	Split pin	1	J1PW02-040020	
20	108	Fixing spacer (300)	2	M7SE010S9182	
21		<u> </u>	8		125kg-500kg
21	109	Thin spacer	14	T6GA020-9117	1t
22	110	Thick spacer L	2	MR1DS9110	125kg-500kg
23	113	Thin spacer L	2	MR2DI9113	

Motor, gear

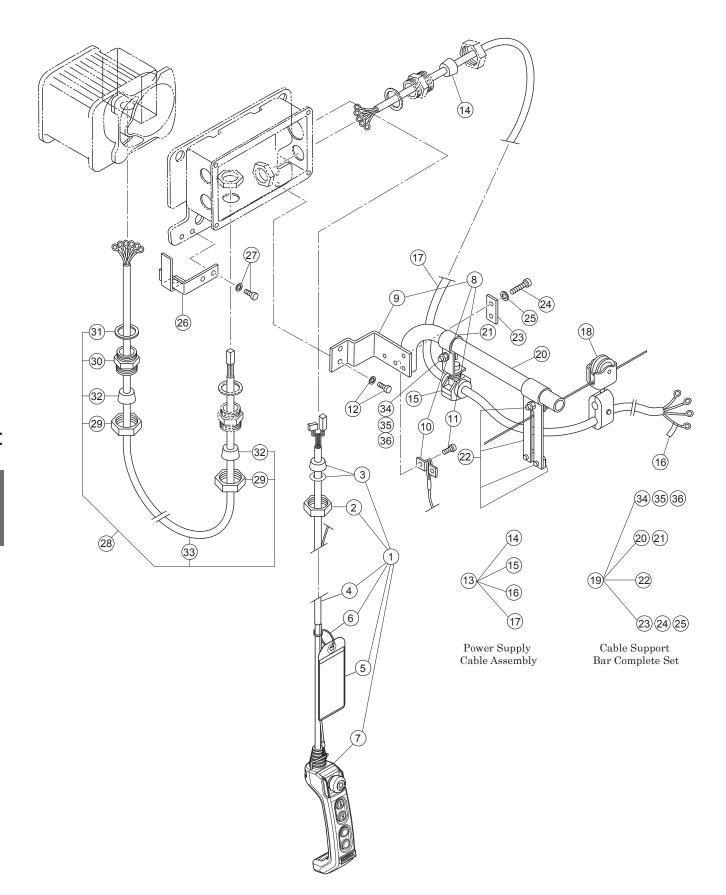
	<u> </u>				
In Diagram	Part Number	Part Name	Quantity per unit	Part Code	- Remark
ıgram	ber	rait Name	ntity	MR2Q010IS	Remark
1	247	Ball bearing	1	J1GR020-06002	For gear #3 on gear frame side
2	248	Gear frame packing	1	MR1DS9248	
3	249	Set pin	2	MR1DS9249	For gear frame and frame G
4	250	Bolt	4	J1BA1-0802525	For gear frame. Integrated type with spring/flat waher is available. (251 and 252 are not necessary.)
5	251	Spring lock washer	4	J1WS011-20080	For gear frame
6	252	Washer	4	J1WA011-00080	For gear frame
7	253	Ball bearing	1	J1GR0C0-06204	For gear frame on motor side
8	5261	Brake drum assembly	1	MR1DS5261	
9	264	Brake spring	1	M3ES010-9304	
10	265	Bumper	1	MR1DS9265	
11	281	Guard	1	MR1DS9281	
12	5291	Motor shaft with rotor	1	MR1DS5291	
13	293	Oil seal	1	MR1DS9293	
14	1301	Motor cover assembly	1	MR1DS1301	
15	304	Socket bolt	4	J1BE1-0802222	For motor cover
16	5321	Motor frame with stator	1	MR2SJY10S5A2	400V Class
10	3321	WOLDI ITAITIE WILLI STATOI	'	MR2SJC10S5A2	230V Class
17	324	Terminal cover	1	M6FE005S9206	
18	325	Terminal cover packing	1	MR1DS9325	
19	326	Coil cover	1	MR1DS9326	
20	331	Machine screw with spring washer	4	J1AP2-5001010	For terminal cover
21	332	Machine screw with spring washer	2	J1AW2-4002020	For terminal plate
22	334	Machine screw with spring washer	1	J1AP2-4000808	For ground
23	851	Terminal 6P	1	M6FE005S9516	
24	1241	Gear complete set	1	MR1DS1241	

■Connection box related



<u> </u>	P _a		pe Q	Part Code	
In Diagram	Part Number	Part Name	Quantity per unit	MR2Q010IS	- Remark
	4404	0 " 1 1 1		MR2IVD10R1A4	400V Class
1	1401	Connection box complete set	1	MR2IVE10R1A4	230V Class
2	341	Holder A	1	ECP5924AA	
3	342	Holder B	3	ECP5924AB	
4	343	Packing	3	ECP5924AC	
5	344	Holder nut	3	ECP5924AD	
6	347	Cord cover	1	E6LE010S9630	
7	348	Machine screw with spring washer	4	J1AP2-5000808	For Cord cover
8	349	Plate D	1	ECP5924AF	
9	401	Connection box	1	MR1DS9401	
10	411	Connection box cover	1	MR1DS9411	
11	421	Connection box packing	1	MR1DS9421	
12	422	Machine screw with spring washer	4	J1AP2-5001010	For Connection box cover
13	423	Spacer	4	M6SE010S9517	
14	424	Machine screw with spring washer	4	J1AP2-8002020	For connecting Connection box and Frame
15	1445	Plate complete set	1	MR2IVD10R1A5	400V Class
		·		MR2IVE10R1A5	230V Class
16	441	Plate	1	MR2DI9441	
17	443	Plate B	1	MR2DI9443	
18	451	Machine screw with spring washer	3	J1AP2-4000808	For grounding
19	452	Machine screw with spring washer	2	J1AW2-4000808	For Terminal 3P
20	467	Machine screw with spring washer	4	J1AP2-4000808	For Plate B
21	1571	Inverter assembly	1	INV602Y31	400V Class
		·		INV604C31	230V Class
22	573	Braking resistor	1	INV904Y34	400V Class
			4	INV904E34	230V Class For inverter, 400V Class
23	580	Machine screw with spring washer	2	J1AP2-4001010	For inverter, 230V Class
24	581	Machine screw with spring washer	2	J1AW2-4000808	For Braking resistor
25	716	HBB board	1	ECP91KB22	
26	853	Terminal 3P	1	ECP1403AA	
27	863	Inverter lead wire	1set	MR2IVA10R9A5	
28	454	Machine screw with spring washer	4	J1AP2-5001010	For Plate complete set
29	1751	Relay cable P assembly	1	MR2DS2760	For power supply
30	1570	Holder assembly	1	ECP5924BA	
31	751	Cable	1	Z2CU401-0000	
32	341	Holder A	1	ECP5924AA	
33	351	Cable packing	1	ECP6912AA	
34	1761	Relay cable S assembly	1	MR2DI2766	For operation
35	341	Holder A	2	ECP5924AA	
36	342	Holder B	1	ECP5924AB	
37	343	Packing	1	ECP5924AC	
38	344	Holder Nut	1	ECP5924AD	
39	351	Cable packing	2	ECP6910AA	
40	761	Cable	1	Z2CA500-0000	
41	818	Cord cover packing	2	M7SE010S9527	For Dieto D
42	820	Machine screw with spring washer	4	J1AP2-5000808	For Plate D
43	701	Name plate B	1	EQ1BEE04I9A3	490kg
				EQ1BUQ10I9A3	
11	700	Nama plata D	1	EQ1BUQ01I9A6	125kg [Affixed on Name plate B (1t)]
44	702	Name plate D	1	EQ1BUQ03I9A6	250kg [Affixed on Name plate B (1t)]
ΛE	834	Nama alata CD	1	EQ1BUQ05I9A6	500kg [Affixed on Name plate B (1t)]
45 46	834 711	Name plate SP Warning seal E	1 1	MR2IVD10R9B7 ER2CS9937	Electric shock
40	/ 11	Walling Sedi E	1	LIV2003331	LIGOTIO SHOOK

■Push button and cable related



In Dia	Part Number	Part Name	Quantity per unit	Part Code	- Remark
ı Diagram	ıber	Part Name	ntity	MR2Q010IS	- Remark
1	1781	Push button cord TR complete set	1	ZLDD01AW1000	
2	341	Holder A	1	ECP5924AA	
3	351	Cable packing	1	ECP6912AA	
4	781	Cable	1	Z3CA800-0000	
5	783	Warning tag PB	1	SWD9013AB	
6	784	Tag holder	1	E7SE003S9787	
7	1801	5 push button switch assembly	1	SWJ2220AC	
8	1481	Bar holder assembly	1	MR1DS1481	
9	481	Bar holder	1	MR1DS9481	
10	816	Cord chain stopper	1	E6LE010S9614	
11	817	Machine screw with spring washer	2	J1AP2-6001212	For cord chain stopper
12	482	Socket bolt with spring washer	2	J1BG1-1002828	For bar holder
13	1771	Power supply cable assembly	1	ZBZC12AJ1000	
14	351	Cable packing	1	ECP6914AA	
15	1724	Cable support 14 assembly	1	E4YS005-2822	230V, 400V Class
16	741	Name plate G	1	E6LE010S9806	
17	771	Cable	1	Z2CU402-0000	
18	1641	Cable hanger 14 assembly	n	E6AX003S1527	
19	1491	Cable support bar complete set	1	MR1DS1491	For power supply cable
20	491	Cable support bar	1	MR1DS9491	
21	492	Cable support arm	1	MR1DS9492	
22	1493	Wire guide assembly	1	MR1DS1493	
23	501	Support bar holder (plate)	1	MR1DS9501	
24	505	Bolt	2	J1BA2-0803030	For support bar holder (plate)
25	506	Spring lock washer	2	J1WS012-20080	For support bar holder (plate)
34	502	Bolt	1	J1BA2-0802525	
35	503	Spring lock washer	1	J1WS012-20080	
36	504	Nut	1	J1NA002-20080	
00	511	Cable hanger pusher	1	MR1DS9511	For T-type hanger (Beam 75mm)
26	512	Cable hanger pusher	1	MR1DS9512	For T-type hanger (Beam 100-150mm)
27	516	Socket bolt	2	J1BG1-1002828	For cable hanger pusher
28	1791	Trolley cable assembly	1	MR2DS1791	
29	341	Holder A	2	ECP5924AA	
30	342	Holder B	1	ECP5924AB	
31	343	Packing	1	ECP5924AC	
32	351	Cable packing	2	ECP6912AA	
33	791	Cable	1	Z2CU401-0000	

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- 1) KITO warrants that KITO's Products, when shipped, shall be free from defects in workmanship and/or materials under normal use and service and KITO shall, at the election of KITO, repair or replace free of charge any parts or items which are proven to have said defects, provided that all claims for defects under this warranty shall be made in writing immediately upon discovery and, if there is anything within a warranty period stated by your dealer from whom you purchased the products from the date of purchase of KITO's Products by Purchaser and provided, further, that defective parts or items shall be kept for examination by KITO or its authorized agents or returned to KITO's factory or authorized service center upon request by KITO.
- 2) KITO does not warrant components of products provided by other manufacturers. However to the extent possible, KITO will assign to Purchaser applicable warranties of such other manufacturers.
- 3) Except for the repair or replacement mentioned in (1) above which is KITO's sole liability and purchaser's exclusive remedy under this warranty, KITO shall not be responsible for any other claims arising out of the purchase and use of KITO's Products, regardless of whether Purchaser's claims are based on breach of contract, tort or other theories, including claims for any damages whether direct, incidental or consequential.
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- 5) KITO shall not be responsible for any loss or damage caused by transportation, prolonged or improper storage or normal wear and tear of KITO's Products for loss of operating time.
- 6) This warranty shall not apply to KITO's Products which have been fitted with or repaired with parts, components or items not supplied or approved by KITO or which have been modified or altered.

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