EFFECTIVE: June 26, 2025

OWNER'S MANUAL

ELECTRIC CHAIN HOIST RNER2B & RNER2D SERIES

1 - 5 Ton Capacity

Code, Lot and Serial Number

⚠ WARNING

This equipment should not be installed, operated, or maintained by any person who has not read and understood all the contents of this manual. Failure to read and comply with the contents of this manual can result in serious bodily injury or death, and/or property damage.

HARRINGTON®
HOISTS AND CRANES

Table of Contents

Introduction

This RNER2 Hazardous Locations (Haz Loc) electric hoist is designed and manufactured for the purpose of lifting and lowering a load within hazardous work environments that include explosive gas and/or dust equipped with pressure resistant containers and other hazardous locations. The RMR2 hazardous locations motorized trolley is designed and manufactured for the purpose to move the lifted load laterally in combination with the electric hoist equipped with the same hazardous location construction.

This Owner's Manual is intended for those operating the HARRINGTON RNER2 hazardous locations electric hoist and qualified personnel (* personnel with expertise).

Other than this manual, a Parts List is also available for the qualified persons. Assign the qualified persons and use these materials for inspection and repair. Please contact the nearest distributor or HARRINGTON for these materials

⚠ WARNING

Mandatory

Servicing and/or repair of the RNER2/RMR2 hoist and trolley shall be performed by a Qualified Person ONLY. Incorrect servicing or repair practices could result in death or serious injury, and property damage.

Disclaimer

- HARRINGTON shall not be liable for any damage incurred thereof due to natural disaster such as fire, earthquake and lightning, conduct by third party, accident, willful conduct or negligence by customer, erroneous use and other use exceeding the operational condition.
- HARRINGTON 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.
- HARRINGTON 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.
- HARRINGTON shall not be liable for any damage arising from the malfunction due to the combination of the product with other devices in which HARRINGTON is not concerned.
- HARRINGTON shall not be liable to supply the spare parts for the product for which it has passed for 15 years since the discontinuation of the product.

Restriction on Use

- Equipment described herein is not designed for and **MUST NOT** be used for lifting, supporting, or transporting people, or lifting or supporting loads over people.
- The product described herein is designed for materials handling work such as lifting/lowering and traveling a load in environments with explosive gas and dust.
- 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 wear the proper clothing and protective equipment when using and operating the product.

Operating Conditions and Environment – Hazardous Locations

RNER2B –

Gas**:** Class I Division 1
Group C (example: Ethylene) and Group D (example: Propane)
Gas: Class I Division 2
Group B (example: Hydrogen), Group C (example: Ethylene) and Group D (example: Propane)

Dust**:** Class II Division 1
Group F (example: Coal dust), Group G (example: Grain dust)
Dust: Class II Division 1
Group F (example: Coal dust), Group G (example: Grain dust)

⚠ WARNING RNER2B not to be used in a hazardous location where GAS Class I Division 2 Group B (ex: Hydrogen) is combined with DUST Class II Division 1 or Dust Class II Division 2.

RNER2D –

Gas: Class I Division 2
Group B (example: Hydrogen), Group C (example: Ethylene)

Safety Precautions

Improper use of electric chain hoists 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 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***, and property damage.
⚠WARNING	Indicates an imminently hazardous situation which, if not avoided, ***could*** result in ***death or serious injury***, and property damage.
⚠CAUTION	Indicates an imminently hazardous situation which, if not avoided, ***may*** result in ***minor or moderate injury***, and property damage.

Further, the event described in CAUTION may result in serious accidents depending on the situation. The DANGER, WARNING and CAUTION describe important contents. Please follow the instructions carefully.
After reading, please keep this manual at hand for future use by the user.

Description of Safety Symbols	
 Prohibited	Means "Prohibited" or "You must not do". Prohibited action is shown in the circle or described near the circle. This Owner's Manual uses ⃠ as the general prohibition.
 Mandatory	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

⚠WARNING	
 Prohibited	• **This product shall not be disassembled and/or repaired by** a **person that is not qualified.** Other than this manual, Disassembly/Assembly Manual and Parts are provided for the qualified personnel. Perform the disassembling and repair by the qualified person 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.
 Mandatory	• **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.** Failure to comply with these instructions may result in death or serious injury.

⚠CAUTION	
 Prohibited	• **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.
 Mandatory	• **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 Harrington Hoists directly. (This product uses oil. MSDS (Materials Safety Data Sheet) sheets are available. Contact Harrington.) • **Carry out daily inspection by user.** • **Carry out inspections (monthly, annual) by qualified personnel.** • **Keep a record of the inspection.** Failure to comply with these instructions may result in death or serious injury.

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.

● For Operators and Qualified Personnel

Type and Names of Each Parts
Opening the Package
Product Specification and Operational Environment
How to Use

- **Daily Inspection of Electric Chain Hoist (Hook Suspended Type)**
- **Daily Inspection of Motorized Trolley (RMR2)**
- **Daily Inspection of Manual Trolley (RTSG)**
- **How to Operate the Push Button Switches**
- **Operation**
- **How to Sling the Load Properly**
- **How to Suppress the Swinging of a Load**
- **Precautions After Work**

● For Qualified Personnel and Installers

Workflow of Assembling and Installation
Assembling

- **Checking Power and Power Cable**

Installation

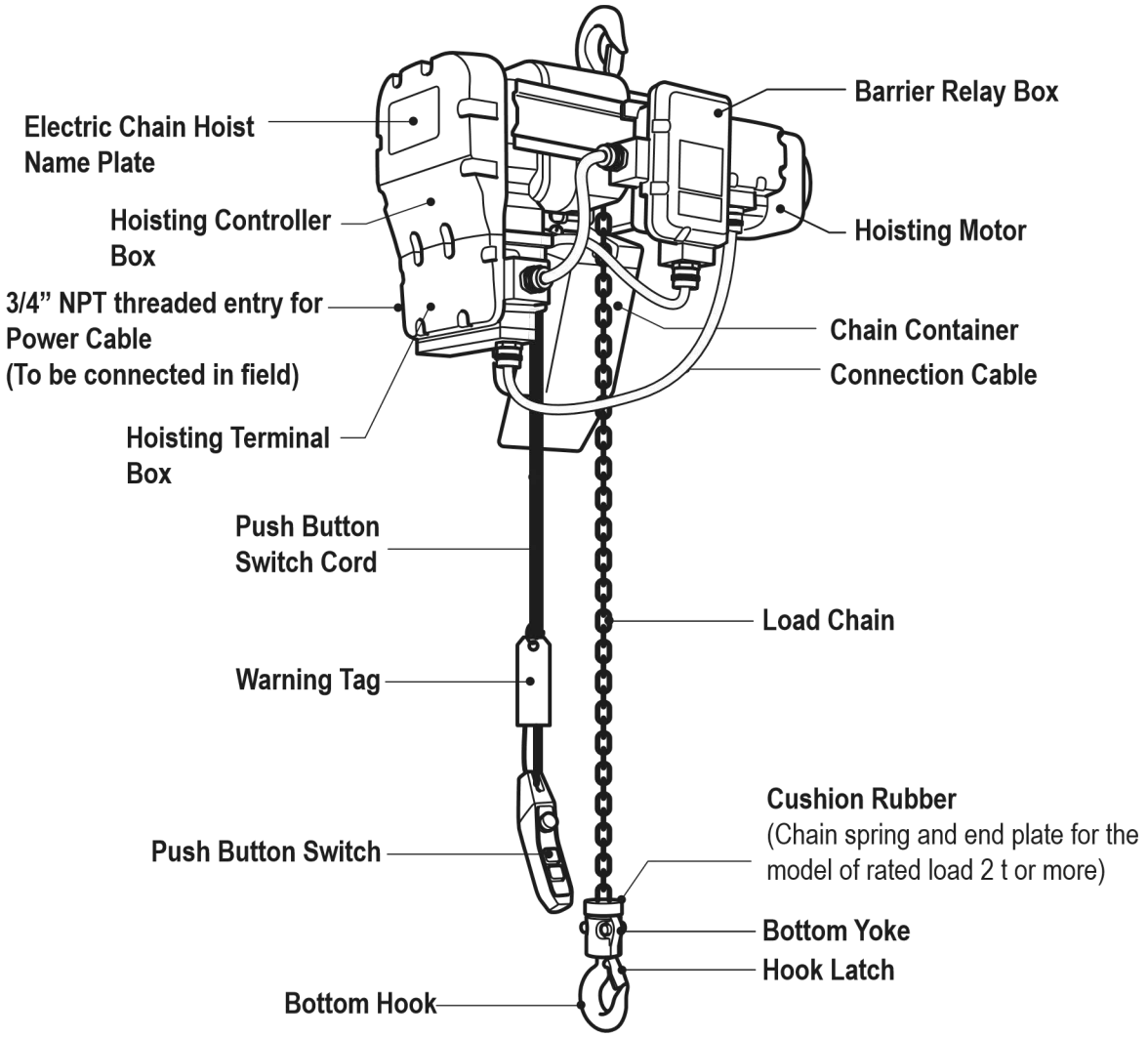
- **Connecting Power and Power cable**
- **Installing the Hook suspended Type (hoist only)**
- **Installing the Trolley Combined Model**

Check after Installation

Type and Names of Each Part

Hook Suspended Type (RNER2)

- **Electric chain hoist dedicated for elevation**



⚠ WARNING

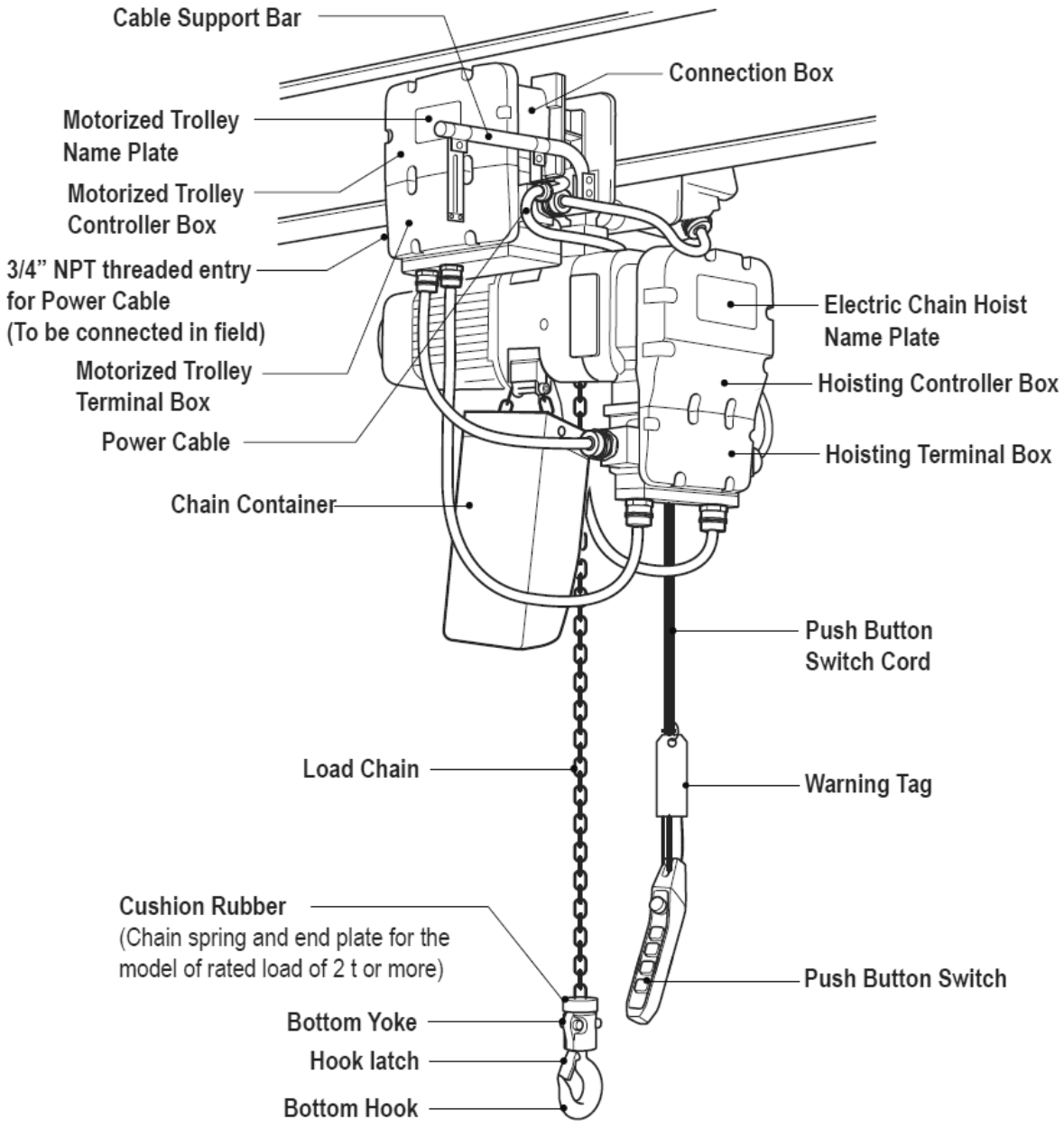
Mandatory

- **Warning labels are affixed to each part other than those listed above. Be sure to follow the instructions on the label.**

Failure to comply with the contents of the label may result in death or serious injury.

Motorized Trolley Type (RNER2M)

- **Electric Chain Hoist combined with motorized trolley (RMR2) for elevation and traveling motion**



⚠ WARNING

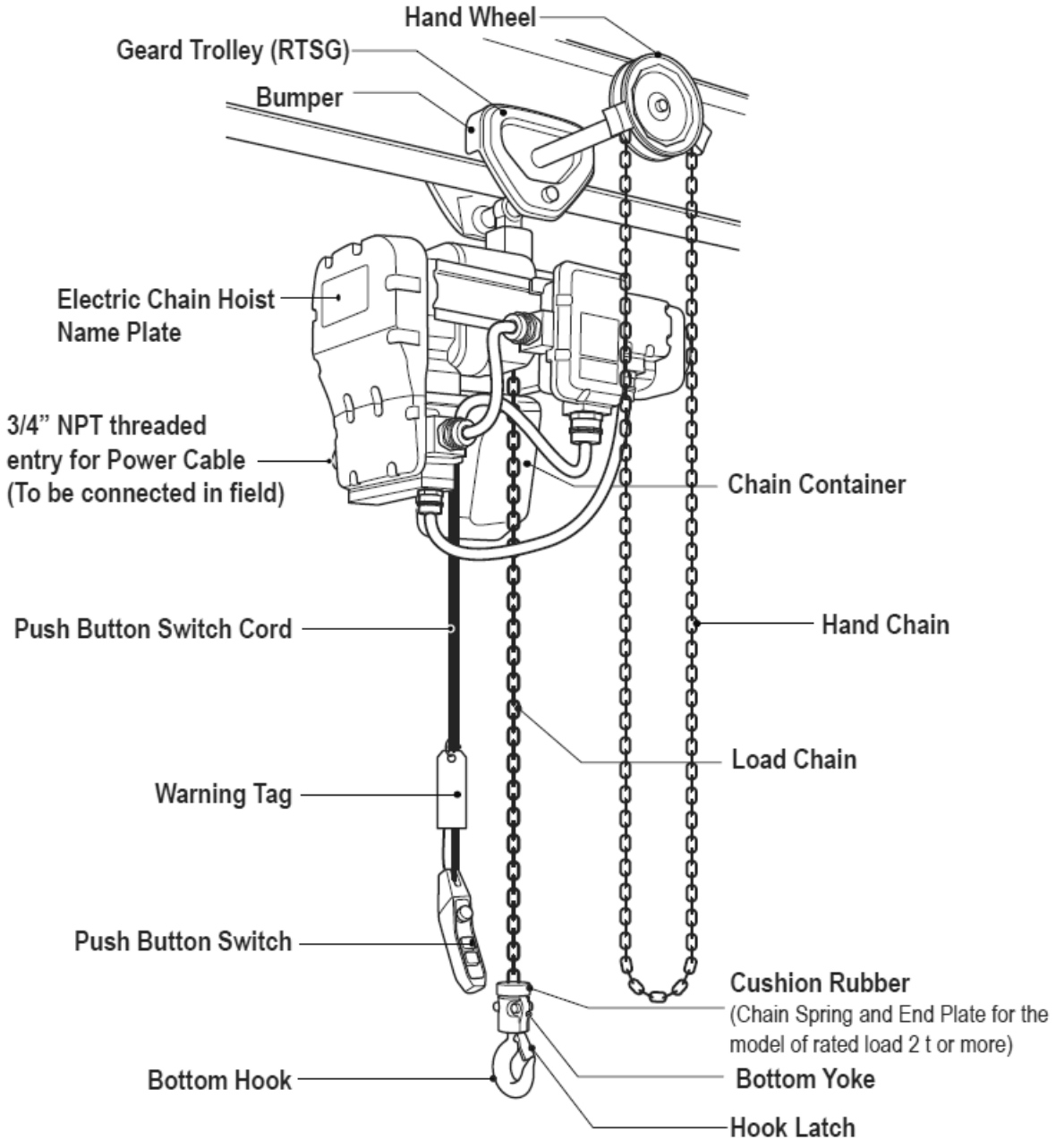
Mandatory

- **Warning labels are affixed to each part other than those listed 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.

Manual Trolley Type (RNER2G)

- **RNER2G : The electric chain hoist equipped with the geared trolley (RTSG) enabling fine adjustable lateral motion of the load by pulling the hand chain.**



⚠ WARNING	
Mandatory	• **Warning labels are affixed to each part other than those listed 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.

Opening the Package

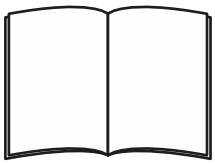
Checking the Product

- **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.**

Packaging

Parts packaged with the Electric Chain Hoist

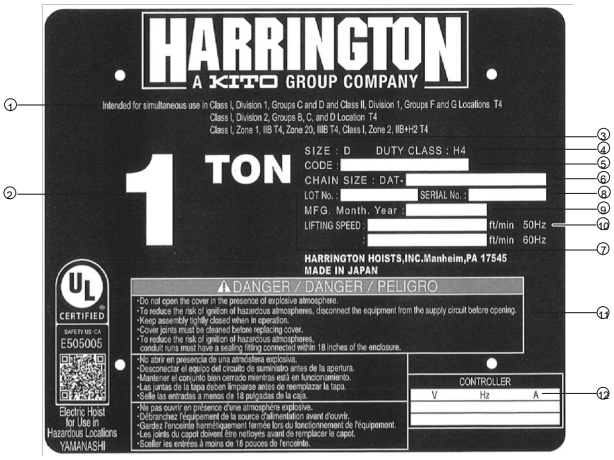
Load Chain
Owner's Manual



Grease Tube

Nameplate Indication

Nameplate Indication of Electric Chain Hoist



① Operational Environment
Indicates the operational environment where this product can be used. Use the product within this scope.
For details, refer to "■Operational Environment". (P17) ② ⬚...

Capacity Ex. 1t
The maximum mass of the load that can be imposed on the product. The mass of the hook is excluded. ③
Size...Body size Ex. Body size D, RNER2-D
The size of the electric chain hoist body to support the load. Three models of D, E and F are provided.

④ Duty Class, H4
The grade of an electric chain hoist specified by ASME.
A guidepost of durability. ⑤
CODE...Product model Ex. RNER2-010SD
A code to indicate the model No. of the product, capacity and lifting speed.

⑥ CHAIN SIZE...Load Chain size
Ex. DAT-7.7×21.4mm
The alphabet and the figures indicate the JIS grade, wire diameter and chain pitch respectively.

⑦ LOT No.
Manufacture No. to identify the time of Manufacture and the production lot.

⑧ SERIAL No.
Serial number to indicate the manufacturing sequence of the product.

⑨ MFG. Month.YEAR...Manufacture month and year

⑩ LIFTING SPEED

⑪ Warnings
This section indicates warnings with regard to handling of the product in a Hazardous Locations environment. Refer to P17 for details.

⑫ V, Hz, A...Frequency, voltage, current Indicates the measurements for these values when certification testing was performed.

Code of RNER2

Capacity	Body Size	CODE			
		RNER2B		RNER2D	
		Dual speed model		Dual speed model	
		Standard speed	Low speed	Standard speed	Low speed
1t	RNER2-D	RNER2B-010SD	RNER2B-010LD	RNER2D-010SD	RNER2D-010LD
1.5t	RNER2-E	RNER2B-015SD	—	RNER2D-015SD	—
2t	RNER2-D	—	RNER2B-020CD	—	RNER2D-020CD
	RNER2-E	RNER2B-020SD	RNER2B-020LD	RNER2D-020SD	RNER2D-020LD
2.5t	RNER2-F	RNER2B-025SD	—	RNER2D-025SD	—
3t	RNER2-E	RNER2B-030CD	—	RNER2D-030CD	—
5t	RNER2-F	RNER2B-050LD	—	RNER2D-050LD	—

Nameplate Indication
Motorized Trolley

① ⬚...Capacity Ex. 1t
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. RNER2-010S
A code to indicate the model No. of the product, capacity and lifting speed.

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

④ SERIAL No.

⑤ MFG. Month.YEAR...Manufacture month and year

⑥ TRAVELING SPEED

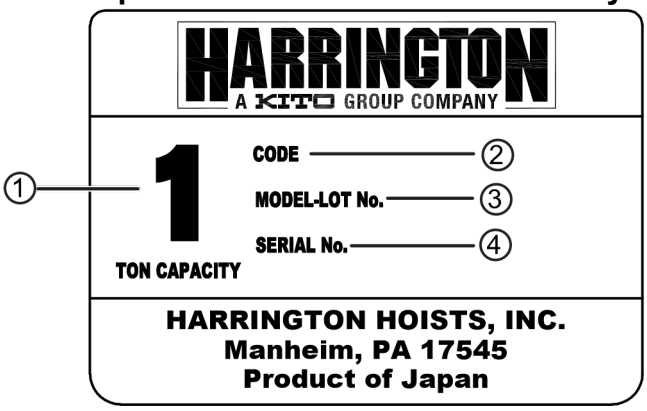
⑦ V, Hz, A…Frequency, voltage, current Indicates the measurements for these values when certification testing was performed.

⑧ Warnings
This section indicates warnings with regard to handling of the product in hazardous locations environment. Refer to P17 for details.

Code of RMR2

Capacity	CODE	
	RMR2B	RMR2D
	Dual speed model	Dual speed model
	Standard speed	Standard speed
1t	RMR2B-010SD	RMR2D-010SD
1.5t	RMR2B-020SD	RMR2D-020SD
2t		
2.5t	RMR2B-030SD	RMR2D-030SD
3t		
5t	RMR2B-050SD	RMR2D-050SD

Nameplate Indication of Manual Trolley



① Capacity Ex. 1t, 2t
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. RTSG010
A code to indicate the model No. of the product, capacity and lifting speed.

③ MODEL-LOT No.
Manufacture No. to identify the time of manufacture and the production lot. ④ SERIAL No.
Serial number to indicate the manufacturing sequence of the product.

Checking the Marks

⚠ WARNING

Mandatory

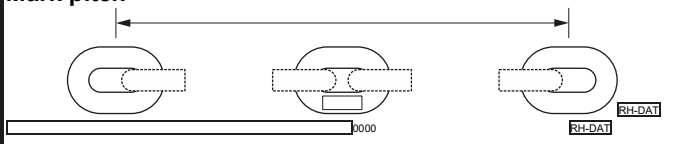
• Be sure to check that the Load Chain has "RH-DAT" or "FT-DAT" mark on it and the chain size is appropriate for the RNER2B/D model you are using. (See the following table.). The Load Chain of other models (such as model RES or etc.) or different rating cannot be used.

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	Load Chain size : diameter (mm)	Mark pitch
RNER2B-010LD/RNER2D-010LD	7.7	20 Links
RNER2B-010SD/RNER2D-010SD		
RNER2B-020CD/RNER2D-020CD		
RNER2B-015SD/RNER2D-015SD	10.2	16 Links
RNER2B-020LD/RNER2D-020LD		
RNER2B-020SD/RNER2D-020SD		
RNER2B-025SD/RNER2D-025SD	11.2	12 Links
RNER2B-030CD/RNER2D-030CD	10.2	16 Links
RNER2B-050LD/RNER2D-050LD	11.2	12 Links

The mark (RH-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 RNER2 referring to the table in the left.

Mark pitch



Second mark **First mark** **Second mark**

Front side : RH-DAT Front side : Original Lot No. of the Load Chain (4 digits)

Back side : H-23 Back side : HARRINGTON

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.

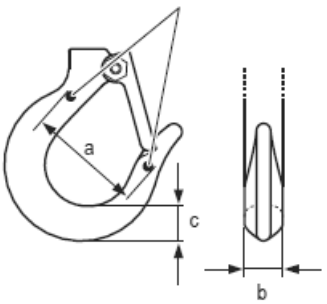
* When requesting repair or ordering a chain hoist part, please inform us of these pieces of information together.

Item	Electric chain hoist	Motorized trolley	Manual trolley
Lot No.			
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" and the thickness of the hook "c". (These values are used for checking. Record the value for the top hook of RNER2 when it is used individually.)

Embossed marks



Dimensions when the package was opened

Top Hook (For RNER2 only)	Dimension a	mm
	Dimension b	mm
	Dimension c	mm
Bottom Hook	Dimension a	mm
	Dimension b	mm
	Dimension c	mm

Product Specification and Operational Environment

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

Standard Specification

Usage location : Class I Division 1, Class I Division 2, Class II Division 1 For Indoor Use Only
Operating Voltage : DC12V
Intermittent ratings : RNER2 series (Capacity): 40/20%ED (at 120/240 rev/h)
: RMR2 series (Capacity): 27/13%ED (at 80/160 rev/h)
Grade * 1 : ISO-M5 or M4, FEM-2m or 1Am, ASME-H4
Operation : Push button switch operation / 3-Push Button Switch set for hoist only and manual trolley type / 5- Push Button Switch set for motorized trolley combined model
Power supply method....Power supply through cable
Color.....HARRINGTON Yellow (Equivalent to Munsell 7.2YR6.5/14.5)
Noise level :RNER2 85dB or less (A scale: measured at 1 m away from the Electric chain hoist)
:RMR2 85dB or less (A scale: measured at 1 m away from the Electric chain hoist)
Braking capacity : 150% of the capacity or more
Protection :Hoist IP54, Push button IP65

Product category	Motor Insulation Class	Voltage range	
		50Hz	60Hz
200V Class	F	—	208V
		—	230V
400V Class	F	380V	—
		—	460V
500V Class	F	—	575V

NOTE

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

* Grade

Capacity (t)	Code		GRADE		
	RNER2B	RNER2D			
	Dual speed	Dual speed	ISO	ASME	FEM
1	RNER2B-010SD	RNER2D-010SD	M5	H4	2m
	RNER2B-010LD	RNER2D-010LD			
1.5	RNER2B-015SD	RNER2D-015SD			
2	RNER2B-020CD	RNER2D-020CD			
	RNER2B-020SD	RNER2D-020SD	M4	H4	1Am
	RNER2B-020LD	RNER2D-020LD			
2.5	RNER2B-025SD	RNER2D-025SD			
3	RNER2B-030CD	RNER2D-030CD			
5	RNER2B-050LD	RNER2D-050LD			

Product Specification and Operational Environment (continued)

- **ISO**

ISO 4301 specifies the total operating hour (service life) of gears and bearings according to the loading status. For example, the total operating hour (service life) of the mechanism when it is constantly applied with the capacity is 1,600 hours for M5. The total operating hour is 6,300 hours when operated with a medium load.

Loading status*	Total operating hour h				
	800	1600	3200	6300	12500
Light				M4	M5
Medium			M4	M5	
Heavy		M4	M5		
Ultra heavy	M4	M5			

* **Rate of loading**

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

Hoist duty class	Typical areas of application	Operation time ratings at K=0.65			
		Uniformly distributed work periods		Infrequent work periods	
		Max. on time, min / hr	Max. No. starts / hr	Max. on time from 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
H3	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, fabricating 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

• The grade symbols are identical to those of ASME HST-1M. (Performance standard for Electric Chain Hoist)

- **FEM**

Relation between ISO-and FEM-Denominations

1 Dm	1 Cm	1 Bm	1 Am	2 m	3 m	4 m	5 m
M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8

Load spectrum	Cubic mean value	Class of operation time								
		V0.06	V0.02	V0.25	V0.5	V1	V2	V3	V4	V5
		T0	T1	T2	T3	T4	T5	T6	T7	T8
		Average operation time per day in hours								
		≤0.12	<0.25	<0.5	<1	<2	<4	<8	<16	>16
1 L1	K<0.50	–	–	1 Dm	1 Cm	1 Bm	1 Am	2 m	3 m	4 m
2 L2	0.50<K<0.63	–	1 Dm	1 Cm	1 Bm	1 Am	2 m	3 m	4 m	5 m
3 L3	0.63<K<0.80	1 Dm	1 Cm	1 Bm	1 Am	2 m	3 m	4 m	5 m	–
4 L4	0.80<K<1.00	1 Cm	1 Bm	1 Am	2 m	3 m	4 m	5 m	–	–

Class of operating time	Average operating time per day (in hours)		Calculated total operating time (in hours)
V0.06	T0	<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

* The grade symbols are identical to those of FEM 9.511.

- The grade symbols are identical to those of FEM 9.511.
  (Rules for Design of Serial Lifting Equipment: Classification of Mechanisms)

- **NEMA**

Component	Hoist Model		Remarks for C1D2 Hoist
	C1D1	C1D2	
Control Box	Pressure Explosion-Proof (NEMA7/NEMA9)	Pressure Explosion-Proof (NEMA7/NEMA9)	Complies with NEMA7/NEMA9 due to the same pressure and explosion resistance as the C1D1 hoist.
Terminal Box Set	Pressure Explosion-Proof (NEMA7/NEMA9)	Non-ignition explosion-proof (NEMA grade not evaluated)	Due to difference in cable ground, it is treated as a non-explosion-proof container without a NEMA grade.
Barrier Relay Box	Pressure Explosion-Proof (NEMA7/NEMA9)	Pressure Explosion-Proof (NEMA7/NEMA9)	Compatible with NEMA7/NEMA9 because it is equivalent to the C1D1 hoist.
Motor	Pressure Explosion-Proof (NEMA7/NEMA9)	Non-ignition explosion-proof (NEMA grade not evaluated)	Pressure explosion-proof for gases C and D, non-ignition explosion-proof for gases B.
Motor Terminal Box Set	Pressure Explosion-Proof (NEMA7/NEMA9)	Non-ignition explosion-proof (NEMA grade not evaluated)	Due to the difference in cable ground, it is treated as a non-explosion-proof container without a NEMA grade.

Operational Environment

Model	RNER2B	RNER2D
Ambient temperature	-20°C — +40°C	
Gradient of beam	No gradient in travel beam (for the hoist with trolley)	
Ambient humidity	85 % or less (no condensation)	
Elevation	1000 m or less	
Oxygen concentration	21 vol% or less	
Gas Temperature rating	T4 *	T4 *
Dust Temperature rating	T4 *	-
Non-conforming environment	A place with considerable amount of acid, alkali and salt A place with metal dust	A place with a plenty of powder and dust of general substances A place with considerable amount of acid, alkali and salt

* Surface temperature of 135 degrees centigrade or less

Note：The product described herein is not intended for installation or use in applications where ignitable concentrations of flammable gases, vapors, combustible dusts, or ignitable fibers are present continuously or for long periods of time.

RNER2B/D Division-Zone Comparison Chart

Gas	**Division System**	**Division 1**								**Division 2**			
		Explosive atmosphere exists continuously or for a long time.				Explosive atmosphere may be generated when equipment and facilities are in good condition.				Explosive atmosphere may be generated when equipment and facilities are in abnormal condition.			
		Gr. D	Gr. C	Gr. B	Gr. A	Gr. D	Gr. C	Gr. B	Gr. A	Gr. D	Gr. C	Gr. B	Gr. A
		Propane	Ethylene	Hydrogen	Acetylene	Propane	Ethylene	Hydrogen	Acetylene	Propane	Ethylene	Hydrogen	Acetylene
		-	-	-	-	✓	✓	-	-	✓	✓	✓	-
	Zone System	Zone 0				Zone 1				Zone 2			
		Gr. II A	Gr. II B	Gr. II C		Gr. II A	Gr. II B	Gr. II C		Gr. II A	Gr. II B	Gr. II C	
		Propane	Ethylene	Hydrogen	Acetylene	Propane	Ethylene	Hydrogen	Acetylene	Propane	Ethylene	Hydrogen	Acetylene
		-	-	-	-	✓	✓	-	-	✓	✓	✓	-

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Dust	**Division System**	**Division 1**								**Division 2**			
		Explosive atmosphere exists continuously or for a long time.				Explosive atmosphere may be generated when equipment and facilities are in good condition.				Explosive atmosphere may be generated when equipment and facilities are in abnormal condition.			
			Gr. G	Gr. F	Gr. E		Gr. G	Gr. F	Gr. E		Gr. G	Gr. F	Gr. E
			Grain Flour	Carbon Powder	Metal Powder		Grain Flour	Carbon Powder	Metal Powder		Grain Flour	Carbon Powder	Metal Powder
			-	-	-		✓	✓	-		✓	✓	-
	Zone System	**Zone 20**				**Zone 21**				**Zone 22**			
		Gr. III A	Gr. III B		Gr. III C	Gr. III A	Gr. III B		Gr. III C	Gr. III A	Gr. III B		Gr. III C
		Combustible Flyings	Non-conductive		Conductive	Combustible Flyings	Non-conductive		Conductive	Combustible Flyings	Non-conductive		Conductive
			Grain Flour	Carbon Powder	Metal Powder		Grain Flour	Carbon Powder	Metal Powder		Grain Flour	Carbon Powder	Metal Powder
		-	-	-	-	✓	✓	✓	-	✓	✓	✓	-

Gas and Dust	**Division System**	Division1 can be used in environments where both gas and dust are present Division2 can be used in the presence of both gas and dust, except for hydrogen
	Zone System	No Mixing

✓= hoist complies

How to Use

RNER2 Series Electric Chain Hoist has products that can travel/traverse when combined with a trolley. 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.

⚠ DANGER

Prohibit

- **Do not open the cover in the presence of explosive atmosphere.**

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

- **To reduce the risk of ignition of hazardous atmospheres, disconnect the equipment from the supply**
- **Keep assembly tightly closed when in**
- **Cover joints must be cleaned before**
- **To reduce the risk of ignition of hazardous atmospheres, conduit runs must have a sealing fitting connected within 18 inches of the enclosure.**

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

⚠ WARNING

Prohibited

- **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.**
- **Do not use this equipment in environments that fall outside of the applicable scope.**

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

Mandatory

- **Carry out daily inspection before**
  (When any abnormality was found during inspection, turn off the power, indicate “FAILURE" and ask the engineer for repair.)
- **Check the slinging devices for no abnormality.**

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

⚠ CAUTION

Prohibite

- **Do not use the product with an illegible nameplate or warning label affixed**

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

Mandator

- **When using the product for the first time, affix the labels indicating East, West, North and South on the switches.**
- **Check the contents of the work and make sure that the electric chain hoist has proper performance for**
- **Check the contents of the work and operate the electric chain hoist at a place enabling to look out the 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 overturning.**
- **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 qualified person 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 qualified personnel shall check the result of daily inspection.**
- **When informed of an abnormality of the electric chain hoist, the qualified person 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 (Hook Mounted)

⚠ WARNING

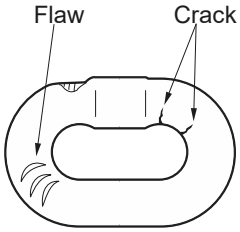
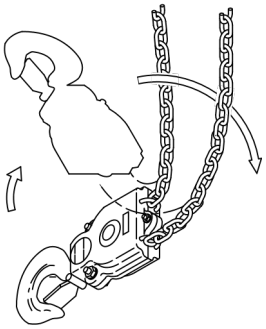
• **Carry out daily inspection before use.**
(When any abnormality is found during inspection, turn off the power, indicate “FAILURE" and ask a qualified person for repair.)

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

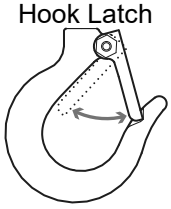
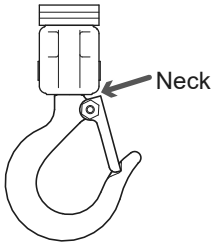
Appearance

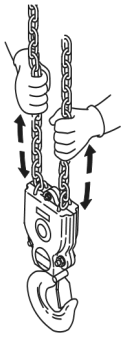
Item	Check method	Criteria	Action
Unauthorized modification	• Check visually.	• Confirm no unauthorized modifications have been made to the hoist and trolley.	Restore to original conditions.
Appearance of Nameplates and Warning labels	• Check visually.	• The nameplates that indicate the hoist model, speed and motor data should be legible and securely attached to the hoist. • Warning labels should be legible and securely affixed to their respective locations.	Perform cleaning and/or repair. If required replace it with a new nameplate or label. When replacement of a new nameplate or label is required, please contact HARRINGTON and provide the information from “Recording the Product serial Number." (P13) such as Lot No. and Serial No.
Housing and Mechanical Components	• Check visually.	• Hoist components including load blocks, suspension housing, chain attachments, clevises, yokes, suspension bolts, shafts, gears, bearings, pins and rollers should be free of cracks, distortion, significant wear and corrosion. Evidence of same can be detected visually or via detection of unusual sounds or vibration during operation.	Replace the parts with deformation, damage, flaw, cracks, rust or corrosion.
Cable damage	• Check visually.	• No deterioration or damage on exterior covering	Replace the cable.
Bolts, Nuts, Split pins, and Rivets	• Check visually and or using proper tools.	• Confirm all bolts, nuts and split pins are present and fastened securely. **⚠ WARNING** • **Ensure that all nuts, bolts, and split pins are sufficiently fastened,** Missing Hardware of any kind could result in death or serous injury, and property damage.	Tighten or replace bolts, nuts, split pins, and rivets as required.
Cleanliness	• Check visually.	• No excessive buildup of dirt, dust or debris	Remove any dirt, dust and debris by cleaning.

Load Chain

Item	Check method	Criteria	Action
Elongation of Pitch	• Check visually	• No apparent elongation	Refer to Load Chain (P55) of Chapter 2, Frequent inspection.
Abrasion of Wire Diameter	• Check visually	• No apparent abrasion	Refer to Load Chain (P55) of Chapter 2, Frequent inspection
Deformation, Flaw, Entanglement	• Check visually  • Check visually for no foreign matter such as attached weld splatter.	• No deep notch • No deformation such as twist • No attached weld splatter • No entanglement • No crack	Replace the Load Chain.
Rust, Corrosion	• Check visually	• No apparent rust and corrosion	Replace the Load Chain.
Twist	• Check visually	• No capsized link at Bottom Hook of double type Load Chain 	Untwist 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" (P13)	Replace the Load Chain.

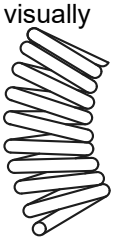
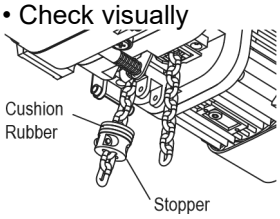
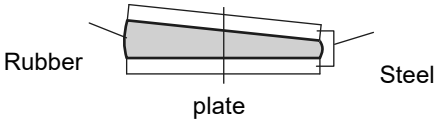
Top Hook/Bottom Hook

Item	Check method	Criteria	Action
Opening of the Hook	• Check visually	• No apparent opening of the Hook	Carry out the inspection item of Top and Bottom Hook (P56) of Frequent inspection.
Abrasion	• Check visually	• No apparent abrasion	Carry out the inspection item of Top and Bottom Hook (P56) of Frequent inspection.
Deformation, Flaw, Corrosion, Rust	• Check visually	• No apparent deformation, flaw, corrosion, and rust	Carry out the inspection item of Top and Bottom Hook (P56) 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. • Latch should not be deformed. **⚠WARNING** **• Do not use the Hook without the Hook Latch.** Use of the Hook without the Hook latch may result in death or serious injury. Prohibited	Replace the Hook Latch.
Hook movement (Rotation) 	• Check visually and rotate the Hook by hand. 	• 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.

Item	Check method	Criteria	Action
Movement of the Idle Sheave	• Check the Idle Sheave by moving	**⚠ CAUTION** **• When checking, wear gloves and be careful for your finger not to be caught.** Mandatory Otherwise it may result in injury. • The Idle Sheave rotates smoothly. * The Idle Sheave does not rotate smoothly when bearing is damaged or sheave shaft is deformed. • The Load Chain moves smoothly.  Move the Load Chain by hand	Replace the bearing of the Idle Sheave.
Bottom Yoke	• Check visually.	• No loosened bolt or nut	Attach the Bottom Hook to the Load Chain securely.

1

Peripheral parts of the body

Item	Check method	Criteria	Action
Chain Spring	• Check visually 	• No apparent shrinkage or compression	Carry out the inspection item of Chain Spring (P62) of Periodic inspection.
Cushion Rubber	• Check visually 	• No apparent shrinkage or compression • No peel off, crack of deformation of rubber 	Replace the Cushion Rubber.

Pressure Resistant Containers within Hazardous Locations (Controllers, Barrier Relay Boxes, Motors)

Be careful of the following as it may cause serious accident igniting outer gas and/or dust with passage of inner flame due to damage of joint surface of pressure resistant containers.

Item	Check method	Criteria	Action
Condition around joint surfaces	• Check visually	• No rust and corrosion • Clean • No damage • No damage on paint • No grease leakage **⚠WARNING** **• Apply grease on joint surfaces after opening covers or disassembling motors according to the procedure described in Technical Material of** Mandatory **Appendix.** Failure to comply with this instruction may result in death or serious injury.	• Remove rust • Remove by cleaning • Replace the container • Repaint • Reapply the appropriate grease Refer to the technical material in the Appendix for how to apply to grease on joint surfaces of Pressure resistant containers.

1

Push Button Switch

Item	Check method	Criteria	Action
Switch body	• 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.

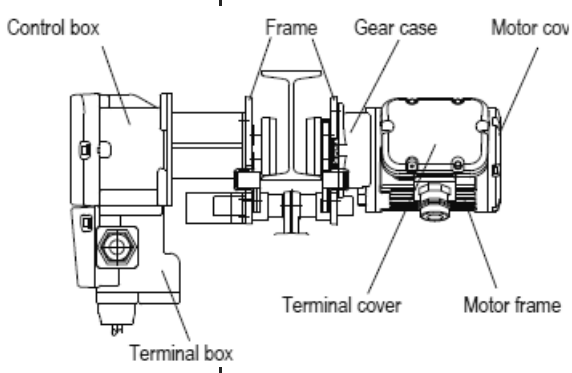
Function and Performance

● Check the following item with no load.

Item	Check method	Criteria	Action
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" (P80 to P81)
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 (P67).
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 check point. Always be careful for the noise of the electric chain hoist.**	• No abnormal sounds or vibrations during operation.	Replace the abnormal part. Apply oil on the Load Chain.
		• No unusual sound from the Load Chain when hoisting a load.	Check the Load Chain. (Refer to P20)

Daily Inspection of Motorized Trolley (RMR2)

Item	Method	Criteria	Action
Unauthorized modification	• Check Visually	• No authorized modification visible to the naked eye.	Restore to original conditions.
Nameplates and Labels	• Check Visually	• Securely affixed to the hoist and can be seen clearly.	Clean and repair the label or replace with a new label.
Deformation and damage, flaw, crack, rust and corrosion of each part	• Check Visually  	• No apparent deformation, damage, flaw, crack, rust and corrosion	Replace the parts with deformation, damage, flaw, crack, rust and corrosion
Cable damage	• Check Visually	• No deterioration or damage on exterior covering.	Replace the cable
Deformation and damage of the cable entry	• Check Visually	• No deterioration or damage	Replace
Loose or missing bolts, nuts and split pins	• Check Visually	• Bolts, nuts and split pins are fastened securely. **⚠ WARNING** **• Confirm all split pins are present and securely fastened.** Mandatory Missing split pin may result in death or serious injury.	Fasten bolts, buts and split pins securely.
Cleanliness	• Check Visually	• No excessive buildup of dust or dirt.	Remove dust and dirt by cleaning.

Pressure Resistant Containers with Hazardous Location Construction (Controllers, Barrier Relay Boxes, Motors)

⚠ **WARNING** Be cautious, as damage to the joint surface of pressure-resistant containers may ignite outer gas or dust, causing a serious accident and injury or death.

Item	Check method	Criteria	Action
Condition around joint surfaces	• Check visually	• No rust and corrosion • Clean • No damage • No damage on paint • No grease leakage **⚠WARNING** **• Apply grease on joint surfaces after opening covers or disassembling motors according to the procedure described in Technical Material of** Mandatory **Appendix.** Failure to comply with this instruction may result in death or serious injury.	• Remove rust • Remove by cleaning • Replace the container • Repaint • Reapply the appropriate grease Refer to the technical material in the Appendix for how to apply to grease on joint surfaces of Pressure resistant containers.

1

Function and Performance

● Check the following item with no load.

Item	Check method	Criteria	Action
Indication of Nameplates and Labels	• Check visually	• No peel off. Indication can be seen clearly.	Clean and repair 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.

Item	Check method	Criteria	Action
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" (P80 to P81)
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.	Carry out the inspection in accordance with the items in Chapter 2 “Periodic inspection" Electromagnetic Brake (P67).

Daily Inspection of Manual Trolley (RTSG)

Appearance

Item	Check method	Criteria	Action
Loosened or fallen off bolts, nuts and split pins	.	• Bolts, nuts and split pins are fastened securely **⚠WARNING** **• Even a drop off of a split pin may cause of drop of the body. Be sure to check it.** Mandatory 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	Action
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

Prohibited

- **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.

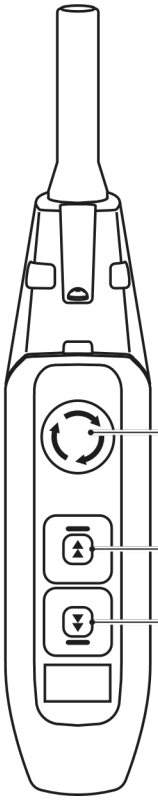
Mandatory

- **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.**

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

3-Push Button Switch Set

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



● Emergency Stop Button

1) Press the Emergency Stop Button deeply when carrying out an emergency stop.
   - The button is locked at the pressed end.
2) Turn the Emergency Stop Button clockwise to cancel the lock.
   - Press-locked button returns to the original position.

● Operation Button

• Lift/Lower Button

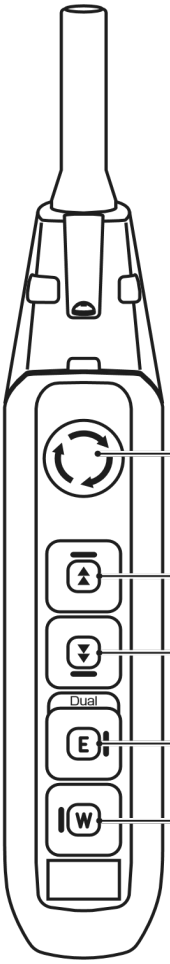
Dual Speed Model
1) Press button to lift the load. 2) When lifting the load at high speed, press the button further to the end. • The electric chain hoist stops when the button is released.
1) Press button to lower the load. 2) When lowering the load at high speed, press the button further to the end. • The electric chain hoist stops when the button is released.

5-Push Button Switch Set

5-Push Button Switch Set is equipped with a lock type emergency stop button and lift/lower push buttons. Two-step push button switch is mounted as Lift/lower push button switches. Refer to the operation method of the corresponding specification.

Moving direction of the trolley is expressed as East/West for traversing motion in the operational instruction of the Push Button Switch Set.

Push Button Switch Set.



● Emergency Stop Button

1) Press the Emergency Stop Button deeply when carrying out an emergency stop.
   - The button is locked at the pressed end.
2) Turn the Emergency Stop Button clockwise to cancel the lock.
   - Press-locked button returns to the original position.

● Operation Button

● Lift/Lower Button

Dual Speed Model
1) Press button to lift the load. 2) When lifting the load at high speed, press the button further to the end. • The electric chain hoist stops when the button is released.
1) Press button to lower the load. 2) When lowering the load at high speed, press the button further to the end. • The electric chain hoist stops when the button is released.

● Traverse Button

Dual Speed Model
1) Press E button to move the trolley to the east at low speed. 2) Press E button further to the end to move the trolley to the east at high speed. • The trolley stops when the button is released.
1) Press W button to move the trolley to the west at low speed. 2) Press W button further to the end to move the trolley to the west at high speed. • The trolley stops when the button is released.

Operation

General

⚠ WARNING

Prohibited

- **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.**
- **If you notice any abnormal noises, sparks, or unusual odors while this equipment is operational, immediately stop the work and turn the equipment off.**
- **Do not open the access panels to electrical instruments while this equipment is operational.**
- **Do not allow the hook to strike against other objects.**

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

Mandatory

- **Follow the operating environment and conditions for the electric chain hoist.**

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

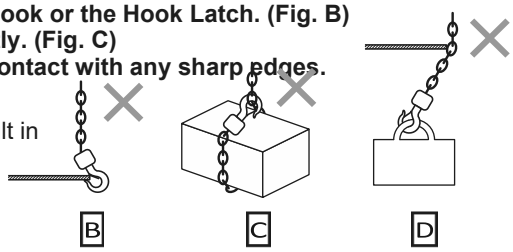
Slinging

⚠ WARNING

Prohibited

- **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.



Mandatory

- **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.**

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

1

Lifting/Lowering

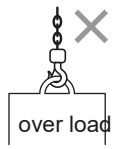
⚠ WARNING

Prohibited

- **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).



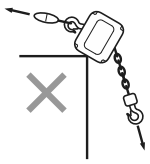
E

• 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 or the Cushion Rubber to operate the limit switch by hitting the body with the Bottom Hook. If such stop operation is repeated, it may result in breaking of the Load Chain.

• Do not hit the body with the End Stopper of the Load Chain to cause the operation of the Friction Clutch. If such an operation is repeated, it may result in breaking of the Load Chain. **• Do not use the body as a fulcrum. (Fig. F)**



F

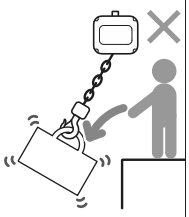
• Do not swing the lifted load.

• 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 allow the load to contact the Load Chain.

• Do not rotate a lifted load. Use the device for rotation.

• Do not perform any 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 qualified personnel maintain the electric chain hoist. G

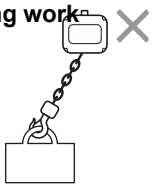
• Do not enter beneath a lifted load.

• Do not hit the Chain Container with a load or slinging devices.
Otherwise, the Load Chain in the Chain Container may fall out and cause damage or injury.

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

Mandatory

• When the limit switch (over winding prevention device) is operated, stop the lifting work immediately and lower the load.



• Center the electric chain hoist directly above the load and then lift the load. (Do not lift the load in an inclined direction.) (Fig.H)

• Do not leave the load supported by the hoist unattended unless specific precautions have been made.

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

H

⚠ CAUTION

Prohibited

• 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.

Mandatory

• When carrying a lifted load using a lifting magnet or a vacuum chuck, lower the height of the lifted load a possible.

• When lifting a load with two electric chain hoists, use the electric chain hoist with the rated lifting capacit

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

⚠ WARNING

Prohibited

• 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.

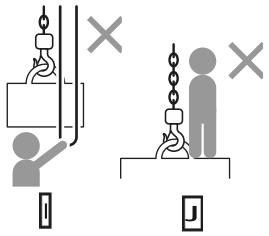
• Do not allow people to enter into the area where a lifted load moves.

• 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 body 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.

⚠ CAUTION

Prohibited

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

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

Mandatory

• If the Load Chain and the hand chain of the geared trolley are entangled, stop the operation imm entangled chains.

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

In Abnormality or Failure

⚠DANGER

Mandatory

• 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.

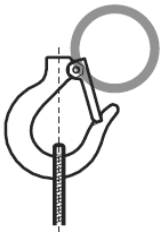
• When any abnormality is observed during the operation, indicate “FAILURE" and contact qualified personnel.

• When the power is interrupted, secure safety and contact qualified personnel.

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

How to Sling the Load Properly

Do not carry out the dangerous techniques shown below.



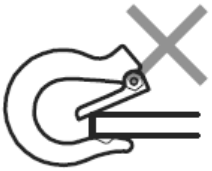
Sling the load at the center line of the hook shaft.

120° or less

Improper hook position of the lifted load or the sling

Angle exceeding 120°
Angle Too side

Hook latch unable to close



Point loading the tip of the hook

How to Suppress the Swinging of a Load 1

⚠ WARNING

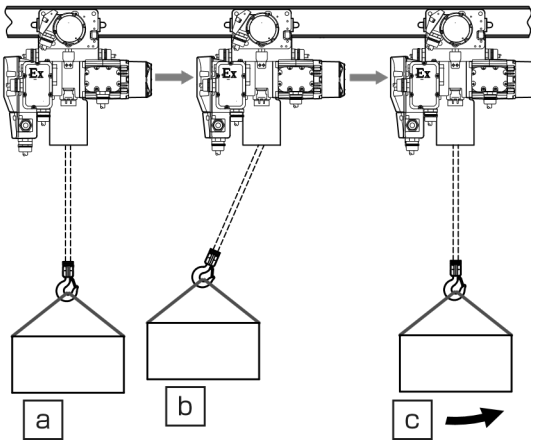
• Do not move the electric chain hoist with a load hung at one side of the Crane Saddle.
Otherwise the load swings and hits a person or object or drops to result in death or serious injury.

Prohibited

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 Traverse 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 traverse the load. (Fig. c)

(to be continued)

Precautions After Work

⚠ CAUTION

Prohibited

- **Do not store the electric chain hoist in an overloaded state.**

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

- **Store the electric chain hoist with the power off.**
- **Indicate "FAILURE" on the electric chain hoist when it requires repair and do not use it.**
- **Wipe off dust and water, apply oil at the neck of the Hook and the Load Chain and store the hoist.**
- **Confirm there is no dirt, debris or moisture on the load chain, limit switch and chain container before placing in storage.**
- **The storage location should be clean and dry.**
- **The hoist/trolley should be covered when not in use.**

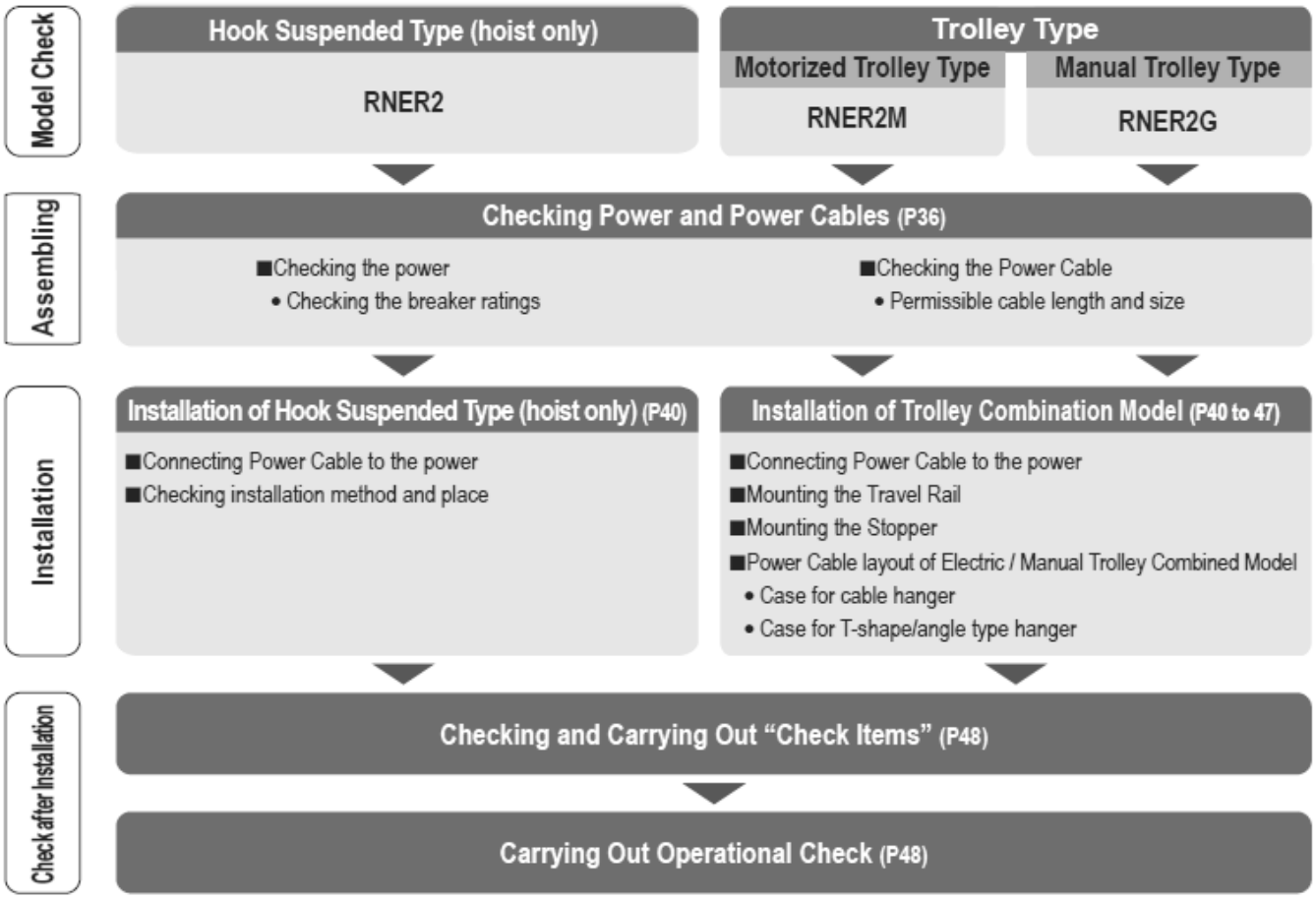
Failure to comply with these instructions can cause bodily injury or loss of property.

NOTE

- **Keep the pendant push buttons clean and free from dirt, dust, debris and oil.**
- **When storing the electric chain hoist for an extended time, it is recommended to operate the hoist without load intermittently to maintain lubrication and effective brake operation.**
- **When putting the electric chain hoist on the floor, first remove the Chain Container. Otherwise, the Chain Container may be damaged.**
- **When not using the electric chain hoist, raise the Bottom Hook to a height not to hinder people passing by.**
- **Determine the place to store the electric chain hoist in advance.**

Workflow of Assembling and Installation

The steps required for assembling and installing the product by qualified personnel are outlined below. To avoid rework and ensure a smooth and efficient process, please review the workflow carefully before beginning the assembly and installation process.



Assembling

Checking Power and Power Cable

Checking the Power

⚠ WARNING

Mandatory

- **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.

1

200V Class

Code		RNER2 only		RNER2M combination	
RNER2B	**RNER2D**	**Wire size (mm^2/AWG)**	**Capacity of fuse and circuit breaker (A)**	**Wire size (mm^2/AWG)**	**Capacity of fuse and circuit breaker (A)**
RNER2B-010LD	RNER2D-010LD	2/14	15	2/14	20
RNER2B-010SD	RNER2D-010SD				
RNER2B-015SD	RNER2D-015SD				
RNER2B-020CD	RNER2D-020CD				
RNER2B-020LD	RNER2D-020LD				
RNER2B-020SD	RNER2D-020SD		30		30
RNER2B-025SD	RNER2D-025SD				
RNER2B-030CD	RNER2D-030CD				
RNER2B-050LD	RNER2D-050LD				

400V Class

Code		RNER2 only		RNER2M combination	
RNER2B	**RNER2D**	**Wire size (mm^2/AWG)**	**Capacity of fuse and circuit breaker (A)**	**Wire size (mm^2/AWG)**	**Capacity of fuse and circuit breaker (A)**
RNER2B-010LD	RNER2D-010LD	2/14	10	2/14	10
RNER2B-010SD	RNER2D-010SD				
RNER2B-015SD	RNER2D-015SD				
RNER2B-020CD	RNER2D-020CD				
RNER2B-020LD	RNER2D-020LD				
RNER2B-020SD	RNER2D-020SD		15		15
RNER2B-025SD	RNER2D-025SD				
RNER2B-030CD	RNER2D-030CD				
RNER2B-050LD	RNER2D-050LD				

500V Class

Code		RNER2 only		RNER2M combination	
RNER2B	RNER2D	Wire size (mm^2/AWG)	Capacity of fuse and circuit breaker (A)	Wire size (mm^2/AWG)	Capacity of fuse and circuit breaker (A)
RNER2B-010LD	RNER2D-010LD	2/14	5	2/14	10
RNER2B-010SD	RNER2D-010SD				
RNER2B-015SD	RNER2D-015SD				
RNER2B-020CD	RNER2D-020CD				
RNER2B-020LD	RNER2D-020LD				
RNER2B-020SD	RNER2D-020SD		10		10
RNER2B-025SD	RNER2D-025SD				
RNER2B-030CD	RNER2D-030CD				
RNER2B-050LD	RNER2D-050LD				

Checking the Power Cable

⚠ CAUTION

Prohibited

• Do not use the cable other than the cable attached to the Body 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 cable of a size other than those described in the table, determine acceptable cable length using the following formula.

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

200V Class

Code		RNER2 only		RNER2M Combination	
RNER2B	RNER2D	Wire size (mm^2/AWG)	Permissible length(m) 60Hz 208-230V	Wire size (mm^2/AWG)	Permissible length(m) 60Hz 208-230V
RNER2B-010LD	RNER2D-010LD	2 /14 (3.5/12)	28 (49)	2/14 (3.5/12)	21 (37)
RNER2B-010SD	RNER2D-010SD				
RNER2B-015SD	RNER2D-015SD				
RNER2B-020CD	RNER2D-020CD				
RNER2B-020LD	RNER2D-020LD				
RNER2B-020SD	RNER2D-020SD		15 (26)		13 (23)
RNER2B-025SD	RNER2D-025SD				
RNER2B-030CD	RNER2D-030CD				
RNER2B-050LD	RNER2D-050LD				

Note) The figures in parenthesis ( ) indicate the cable one size larger than the standard size.

400V Class

Code		RNER2 only			RNER2M Combination		
RNER2B	RNER2D	Wire size (mm²/AWG)	Permissible length(m)		Wire size (mm²/AWG)	Permissible length(m)	
			50Hz	60Hz		50Hz	60Hz
			380V	440-460V		380V	440-460V
RNER2B-010LD	RNER2D-010LD	2/14 (3.5/12)	93 (162)	96 (168)	2/14 (3.5/12)	64 (112)	71 (124)
RNER2B-010SD	RNER2D-010SD						
RNER2B-015SD	RNER2D-015SD						
RNER2B-020CD	RNER2D-020CD						
RNER2B-020LD	RNER2D-020LD						
RNER2B-020SD	RNER2D-020SD		59 (104)	62 (109)		46 (80)	50 (89)
RNER2B-025SD	RNER2D-025SD						
RNER2B-030CD	RNER2D-030CD						
RNER2B-050LD	RNER2D-050LD						

Note) The figures in parenthesis ( ) indicate the cable one size larger than the standard size.

1

500V Class

Code		RNER2 only		RNER2M Combination	
RNER2D	RNER2D	Wire size (mm²/AWG)	Permissible length(m)	Wire size (mm²/AWG)	Permissible length(m)
			60Hz		60Hz
			575V		575V
RNER2B-010LD	RNER2D-010LD	2/14 (3.5/12)	73 (128)	2/14 (3.5/12)	54 (96)
RNER2B-010SD	RNER2D-010SD				
RNER2B-015SD	RNER2D-015SD				
RNER2B-020CD	RNER2D-020CD				
RNER2B-020LD	RNER2D-020LD				
RNER2B-020SD	RNER2D-020SD		44 (78)		37 (64)
RNER2B-025SD	RNER2D-025SD				
RNER2B-030CD	RNER2D-030CD				
RNER2B-050LD	RNER2D-050LD				

Note) The figures in parenthesis ( ) indicate the cable one size larger than the standard size.

Installation

⚠ WARNING

Prohibited

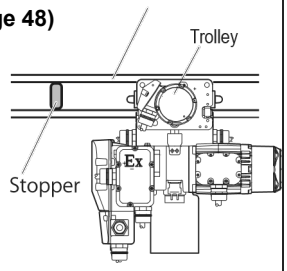
- **Installation and removal of the electric chain hoist must be carried out by qualified personnel only.**
- **Consult the distributor or Harrington for installation or consign the installation work to a special installer or personnel with expertise.**
- **Do not install the electric chain hoist in a location that is exposed to rain or water. See Operational Environment (Page 16)**
- **Do not install the electric chain hoist within the travel path of other trolleys or any other moving equipment.**
- **Do not use the electric chain hoist where contact may occur with other fixed or moving objects.**

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

Mandatory

- **When installing or removing the electric chain hoist, follow the instructions in the Owner's Manual.**
- **Carry out the work for 10-ohm (or less) grounding and installation of an ground leakage breaker.**
- **When the installation is completed, carry out "Check after Installation". (See Page 48)**
- **Connect the power after all installation work has been completed and just before the operation check.**
- **Mount the stopper at both ends of the travel beam for trolley. <Fig. A>.**
- **Make sure that the strength of the structure is sufficient to install the electric chain hoist and its rated capacity.**
- **Perform installation work in an area that provides stable footing.**

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



[A]

⚠ CAUTION

Mandatory

- **Connect the Power Cable to a properly sized power supply.**

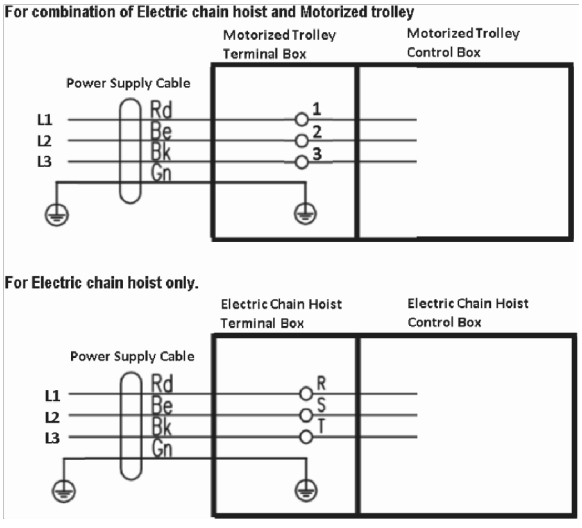
Failure to comply with this instruction causes bodily injury or loss of property.

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. (When "Check after Installation (P48)" is completed, carry out the operation check for the correct phase.)
- Ground wire is a green colored covered cable. Carry out 10-ohm (or less) grounding work.
- Use correct breaker and Power Cable referring to Checking the Power and the Power Cable (P36) for the breaker capacity, Power Cable length and its size.

  The applicable fittings are as follows:



Installing the Hook Suspended Type (hoist only)

Checking Installation Method and Place

⚠ DANGER

Mandatory

- **When using an electric chain hoist suspended (as a single unit) without combination with a trolley, make sure that the Hook Latch of the Top Hook closes securely.**
- **Install the electric chain hoist so that the Top Hook can swing freely.**

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

Installing the Trolley Combined Model

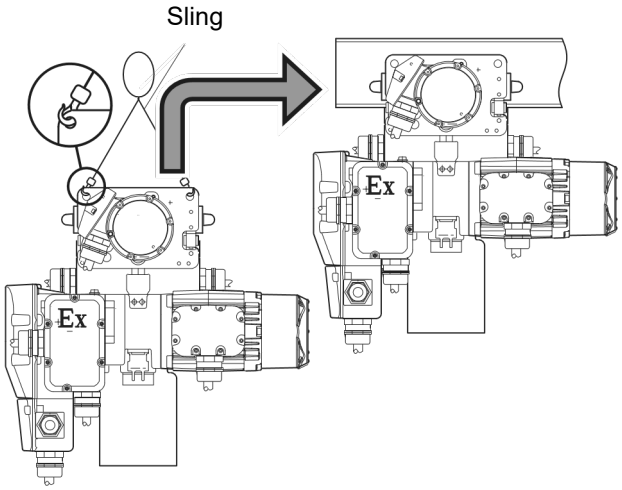
Mounting the Hoist to the Travel Beam

1

1) **Make sure that the dimensions of the Trolley Flange matches the size of the beam to which the trolley is installed.**

2) **Make sure that the beam is level and secure.**

3) **Install the electric chain hoist combined with the trolley from the end of the beam. Securely re-install the trolley end stop on the beam.**



Checking the Number and Positions of the Assembled Adjusting Collars

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

Number of Adjusting Spacers

Rail flange width		(in)	2 5/16	2 1/2 2 5/8	2 7/8 2 15/16	3	3 1/4	3 9/16	3 7/8	3 15/16	4	4 3/16	4 5/16	4 7/16	4 11/16 4 3/4	4 15/16	5	5 3/16	5 5/16	5 3/8	5 5/8	5 11/16 5 3/4	6	6 1/8	6 5/16	6 7/16	6 11/16
Capacity (t)	Parts Name	(mm)	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127	131	135	137	143	149 150	153	155	160	163	170
1	Thin spacer	Inner	1+2	2+3	4+4	1+0	1+2	2+3	0	1+0		1+2	2+2	2+3	3+4	4+4	4+1	5+1	2+2		3+3	4+4	4+1	1+1	2+2	2+3	3+0
		Outer	5	3	0	7	5	3	8	7		5	4	3	1	0	3	2	4		2	0	3	6	4	3	5
	Thick spacer	Inner	0						1+1								1+2		2+2				2+3	3+3			3+4
		Outer	5						3								0	2	1				0	3			2
	Fixing spacer	Inner																						0			
		Outer																						2			
	Thick spacer L	Inner	0			1+1																					
		Outer	2			0																					
2	Thin spacer	Inner					1+2	2+3	3+4	0	1+0	1+1	1+2	2+2	3+3	4+4	1+0	1+1	1+2	2+2	3+3	4+0	4+1	1+1	1+2	2+2	3+3
		Outer					5	3	1	8	7	6	5	4	2	0	7	6	5	4	2	4	3	6	5	4	2
	Thick spacer	Inner					0										1+1					1+2		2+2			
		Outer					5										3					2		1			
	Fixing spacer	Inner																									
	Thick spacer L	Inner					0			1+1																	
		Outer					2			0																	
3	Thin spacer	Inner					1+2	2+3	3+4	0	1+0	1+1	1+2	2+2	3+3	4+4	1+0	1+1	1+2	2+2	3+3	4+0	4+1	1+1	1+2	2+2	3+3
		Outer					5	3	1	8	7	6	5	4	2	0	7	6	5	4	2	4	3	6	5	4	2
	Thick spacer	Inner					0										1+1					1+2		2+2			
		Outer					5										3					2		1			
	Fixing spacer	Inner																									
	Thick spacer L	Inner					0			1+1																	
		Outer					2			0																	
5	Thin spacer	Inner								0	1+0	1+1	1+2	2+2	3+3	0	1+0	1+1	2+2		3+3	4+0	4+1	1+1	2+2	2+3	3+0
		Outer								8	7	6	5	4	2	8	7	6	4		2	4	3	6	4	3	5
	Thick spacer	Inner								0												0+1		1+1			1+2
		Outer								3												2		1			0
	Thick spacer L	Inner								0						1+1											
		Outer								2						0											

NOTE: 1) Description for inner spacers

Adjusting spacer arrangement for Low Head Suspension (Beam flange width 58-170mm)

For example :0+1

0 : The number of spacers on the left side of the shaft

1 : The number of spacers on the right side of the shaft

2) Adjustment of trolley width

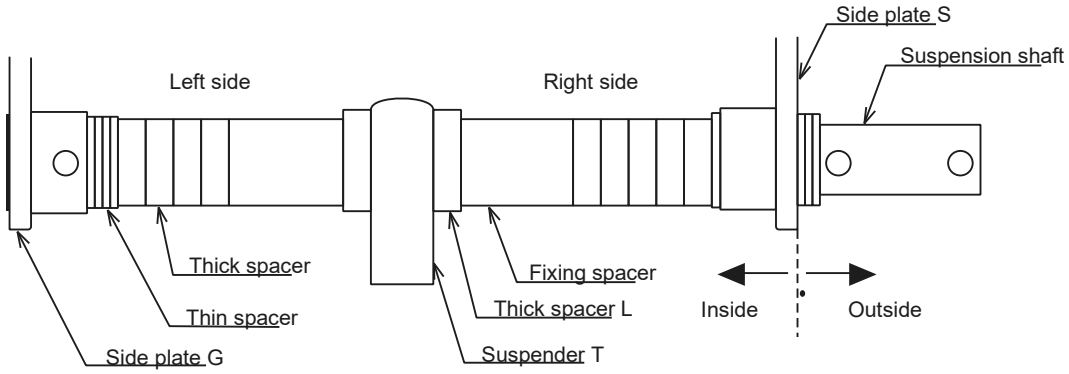
Refer to Page 41.

Adjust the dimensions of trolley by appropriately increasing or decreasing the number of inner or outer adjusting spacers shown in the above table.

Adjusting spacer arrangement for Low Head Suspension (Beam flange width 175-305mm)

Number of Adjusting Spacers																														
Rail flange width		(in)	6 7/8	7	7 1/16 7 1/8	7 1/4 7 5/16	7 7/8	8	8 7/16	8 11/16	9	9 1/8	9 7/8	10	10 1/8	10 1/4	10 3/8	10 1/2	11	11 1/8	11 1/4	11 3/8	11 5/8	11 3/4	11 13/16	11 7/8	12
Capacity (t)	Parts Name	(mm)	175	178	180 181	184 185	200	203	215	220	229	232	250	254	257	260	264	267	279	283	286	289	295	298	300	302	305
1	Thin spacer	Inner	4+4	4+1	1+1	1+2	4+4	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	3+0	4+0	4+1		4+2
		Outer	0	3	6	5	0	3	3	1	6	5	4	6	5	4	3	2	6	5	4	3	5	4	3		2
	Thick spacer	Inner	3+3	3+4	0			0+1	1+1		2+2		2+3	3+3					4+4				4+5				
		Outer	3	2	9			8	7		5		4	3					1				0				
	Fixing spacer	Inner	0		1+1																						
		Outer	2		0																						
	Thick spacer L	Inner	1+1																								
		Outer	0																								
2	Thin spacer	Inner	4+4	1+4	1+1	1+2	4+4	1+0	2+3	3+3	4+1	1+1	4+4	4+1	5+1	4+3	2+3	3+3	4+1	1+2	2+2	2+3	3+3	3+4	4+4	4+1	5+1
		Outer	0	3	6	5	0	7	3	2	3	6	0	3	2	1	3	2	3	5	4	3	2	1	0	3	2
	Thick spacer	Inner	2+2	3+2	0			1+1			1+2	2+2		2+3			3+3		3+4	4+4						4+5	
		Outer	1	0	9			7			6	5		4			3		2	1						0	
	Fixing spacer	Inner						1+1																			
	Thick spacer L	Inner	1+1																								
		Outer	0																								
3	Thin spacer	Inner	4+4	1+4	1+1	1+2	4+4	1+0	2+3	3+3	4+1	1+1	4+4	4+1	5+1	4+3	2+3	3+3	4+1	1+2	2+2	2+3	3+3	3+4	4+4	4+1	5+1
		Outer	0	3	6	5	0	7	3	2	3	6	0	3	2	1	3	2	3	5	4	3	2	1	0	3	2
	Thick spacer	Inner	2+2	3+2	0			1+1			1+2	2+2		2+3			3+3		3+4	4+4						4+5	
		Outer	1	0	9			7			6	5		4			3		2	1						0	
	Fixing spacer	Inner						1+1																			
	Thick spacer L	Inner	1+1																								
		Outer	0																								
5	Thin spacer	Inner	4+4	4+1	5+1	4+3	4+4	1+0	2+3	3+4	1+1	1+2	4+4	1+1	1+2	2+2	2+3	3+3	5+1	1+2	2+2	2+3	4+3	4+4	4+0	4+1	5+1
		Outer	0	3	2	1	0	7	3	1	6	5	0	6	5	4	3	2		5	4	3	1	0	4	3	2
	Thick spacer	Inner	1+1	1+2			2+2	3+3			4+4			5+5					5+6	6+6				6+7		
		Outer	1	0	10		9	7			5			3					2	1				0		
	Thick spacer L	Inner	1+1																								
		Outer	0																								

NOTE : 3) Spacer arrangement example



Adjusting spacer arrangement for Lug Suspension

Number of Adjusting Spacers																														
Rail flange width		(in)	$2^{5}/_{16}$	$2^{1}/_{2}$ $2^{5}/_{8}$	$2^{7}/_{8}$ $2^{15}/_{16}$	3	$3^{1}/_{4}$	$3^{9}/_{16}$	$3^{7}/_{8}$	$3^{15}/_{16}$	4	$4^{3}/_{16}$	$4^{5}/_{16}$	$4^{7}/_{16}$	$4^{11}/_{16}$ $4^{3}/_{4}$	$4^{15}/_{16}$	5	$5^{3}/_{16}$	$5^{5}/_{16}$	$5^{3}/_{8}$	$5^{5}/_{8}$	$5^{11}/_{16}$ $5^{3}/_{4}$	6	$6^{1}/_{8}$	$6^{5}/_{16}$	$6^{7}/_{16}$	$6^{11}/_{16}$
Capacity (t)	Parts Name	(mm)	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127	131	135	137	143	149 150	153	155	160	163	170
5	Thin spacer									0	1+0	1+1	1+2	2+2	3+3	0	1+0	1+1	2+2		3+3	4+0	4+1	1+1	2+2	2+3	3+0
										8	7	6	5	4	2	8	7	6	4		2	4	3	6	4	3	5
	Thick spacer									0						1+1						1+2		2+2		2+3
										5						3						2		1		0

Number of Adjusting Spacers																														
Rail flange width		(in)	$6^{7}/_{8}$	7	$7^{1}/_{16}$ $7^{1}/_{8}$	$7^{1}/_{4}$ $7^{5}/_{16}$	$7^{7}/_{8}$	8	$8^{7}/_{16}$	$8^{11}/_{16}$	9	$9^{1}/_{8}$	$9^{7}/_{8}$	10	$10^{1}/_{8}$	$10^{1}/_{4}$	$10^{3}/_{8}$	$10^{1}/_{2}$	11	$11^{1}/_{8}$	$11^{1}/_{4}$	$11^{3}/_{8}$	$11^{5}/_{8}$	$11^{3}/_{4}$	$11^{13}/_{16}$	$11^{7}/_{8}$	12
Capacity (t)	Parts Name	(mm)	175	178	180 181	184 185	200	203	215	220	229	232	250	254	257	260	264	267	279	283	286	289	295	298	300	302	305
5	Thin spacer		4+4	4+1	5+1	4+3	4+4	1+0	2+3	3+4	1+1	1+2	4+4	1+1	1+2	2+2	2+3	3+3	5+1	1+2	2+2	2+3	4+3	4+4	4+0	4+1	5+1
			0	3	2	1	0	7	3	1	6	5	0	6	5	4	3	2		5	4	3	1	0	4	3	2
	Thick spacer		2+2	2+3			3+3	4+4			5+5			6+6					6+7	7+7				7+8		
			1	0	10		9	7			5			3					2	1				0		

Checking the Number and Positions of the Assembled Adjusting Collars

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

Number of Adjusting Spacers																													
Rail flange width		(in)	2	2 5/16	2 1/2 2 5/8	2 7/8 2 15/16	3	3 1/4	3 9/16	3 7/8	3 15/16	4	4 3/16	4 15/16	4 7/16	4 11/16 4 3/4	4 15/16	5	5 3/16	5 5/16	5 3/8	5 5/8	5 7/8 5 15/16	6	6 1/8	6 5/16	6 7/16
Capacity (t)	Parts Name	(mm)	50	58	64 66	73 74	75 76	82	90 91	98	100	102	106	110	113	119 120	125	127	131	135	137	143	149 150	153	155	160	163
1	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	1+1	1+2	2+2	3+3	0+0	0+1	1+1	1+2	2+2
		Outer		2	8	6	5	3	8	6	5	4	3	2	1	7	5	4	7	6	5	3	9	8	7	6	5
	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	0+0	0+0	0+0	0+0	1+1	1+1	1+1	1+1	1+1
		Outer		6	4	4	4	4	2	2	2	2	2	2	2	0	0	0	5	5	5	5	3	3	3	3	3
	Fixing spacer	Inner		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
2	Thin spacer	Inner						2+2	3+4	0+1	1+1	1+2	2+2	2+3	3+3	0+0	1+1	1+2	2+2	2+3	3+3	0+0	1+1	1+2	1+1	1+2	2+2
		Outer						3	0	6	5	4	3	2	1	7	5	4	3	2	1	7	5	4	7	6	5
	Thick spacer	Inner						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	3+3	3+3	3+3	0+0	0+0	0+0
		Outer						6	6	4	4	4	4	4	4	2	2	2	2	2	2	0	0	0	11	11	11
	Fixing spacer	Inner						–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1+1	1+1	1+1
3	Thin spacer	Inner						1+2	3+3	0+0	0+1	1+1	1+2	2+2	2+3	3+4	0+1	1+1	1+2	2+2	2+3	3+4	1+4	1+5	1+1	1+2	2+2
		Outer						7	4	10	9	8	7	6	5	3	9	8	7	6	5	3	5	4	7	6	5
	Thick spacer	Inner						2+2	2+2	3+3	3+3	3+3	3+3	3+3	3+3	3+3	4+4	4+4	4+4	4+4	4+4	4+4	5+4	5+4	0+0	0+0	0+0
		Outer						5	5	3	3	3	3	3	3	3	1	1	1	1	1	1	0	0	11	11	11
	Fixing spacer	Inner						–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1+1	1+1	1+1
5	Thin spacer	Inner									0+0	0+1	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+2	1+2	2+2
		Outer									8	7	6	5	4	2	8	7	6	5	4	2	8	7	6	5	4
	Thick spacer	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	2+2	2+2	2+2	2+2	2+2
		Outer									5	5	5	5	5	5	3	3	3	3	3	3	1	1	1	1	1
	Fixing spacer	Inner									–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Number of Adjusting Spacers																														
Rail flange width		(in)	$6^{11}/_{16}$	$6^{7}/_{8}$	7	$7^{1}/_{16}$ $7^{1}/_{8}$	$7^{1}/_{4}$ $7^{5}/_{16}$	$7^{7}/_{8}$	8	$8^{7}/_{16}$	$8^{11}/_{16}$	9	$9^{1}/_{8}$	$9^{7}/_{8}$	10	$10^{1}/_{8}$	$10^{1}/_{4}$	$10^{3}/_{8}$	$10^{1}/_{2}$	11	$11^{1}/_{8}$	$11^{1}/_{4}$	$11^{3}/_{8}$	$11^{5}/_{8}$	$11^{3}/_{4}$	$11^{13}/_{16}$	$11^{7}/_{8}$	12
Capacity (t)	Parts Name	(mm)	170	175	178	180 181	184 185	200	203	215	220	229	232	250	254	257	260	264	267	279	283	286	289	295	298	300	302	305
1	Thin spacer	Inner	3+3	0+0	0+1	1+1	1+2	4+4	4+5	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	4+4	4+5	1+5
		Outer	3	9	8	7	6	1	0	4	3	0	7	9	8	7	6	5	4	0	7	6	5	3	2	1	0	3
	Thick spacer	Inner	1+1	2+2	2+2	2+2	2+2	2+2	2+2	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	3+3	3+3	4+3
		Outer	3	1	1	1	1	1	1	7	7	7	5	3	3	3	3	3	3	3	1	1	1	1	1	1	1	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	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
2	Thin spacer	Inner	3+3	0+0	0+1	1+1	1+2	0+0	0+1	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	4+4	4+5	1+5
		Outer	3	9	8	7	6	9	8	4	3	0	7	9	8	7	6	5	4	0	7	6	5	3	2	1	0	3
	Thick spacer	Inner	0+0	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	2+2	3+3	4+4	4+4	4+4	4+4	4+4	4+4	4+4	5+5	5+5	5+5	5+5	5+5	5+5	5+5	6+5
		Outer	11	9	9	9	9	7	7	7	7	7	5	3	3	3	3	3	3	3	1	1	1	1	1	1	1	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	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
3	Thin spacer	Inner	3+3	0+0	0+1	1+1	1+2	0+0	0+1	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	4+4	4+5	1+5
		Outer	3	9	8	7	6	9	8	4	3	0	7	9	8	7	6	5	4	0	7	6	5	3	2	1	0	3
	Thick spacer	Inner	0+0	1+1	1+1	1+1	1+1	2+2	2+2	2+2	2+2	2+2	3+3	4+4	4+4	4+4	4+4	4+4	4+4	4+4	5+5	5+5	5+5	5+5	5+5	5+5	5+5	6+5
		Outer	11	9	9	9	9	7	7	7	7	7	5	3	3	3	3	3	3	3	1	1	1	1	1	1	1	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	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
5	Thin spacer	Inner	3+3	0+4	1+4	1+1	1+2	0+0	0+1	2+3	3+3	0+1	1+1	0+0	0+1	1+1	1+2	2+2	2+3	0+1	1+1	1+2	2+2	3+3	3+4	4+4	1+4	1+5
		Outer	2	4	3	6	5	8	7	3	2	7	6	8	7	6	5	4	3	7	6	5	4	2	1	0	3	2
	Thick spacer	Inner	2+2	3+2	3+2	0+0	0+0	1+1	1+1	1+1	1+1	2+2	2+2	3+3	3+3	3+3	3+3	3+3	3+3	4+4	4+4	4+4	4+4	4+4	4+4	4+4	5+4	5+4
		Outer	1	0	0	9	9	7	7	7	7	5	5	3	3	3	3	3	3	1	1	1	1	1	1	1	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	1+1	1+1	1+1	1+1	1+1	1+1	1+1

NOTE) 1) Take note the numbers on spacers of inner side as follows.

Example of 0 + 1 0 + 1

- Number on side plate G or S
- Number on side plate SN

2) Adjustment of trolley width

See clause 3–3.

Adjust the dimensions by appropriately increasing or decreasing the number of inner or outer adjusting spacers, without strictly adhering to the number in the above table.

3) The spacers are delivered in different colors as follows:

Type A: Thick Spacer and Thin Spacer in yellow, and Fixing Spacer in white

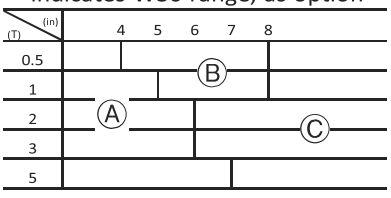
Type B: Thick Spacer and Thin Spacer in white, and Fixing Spacer in black

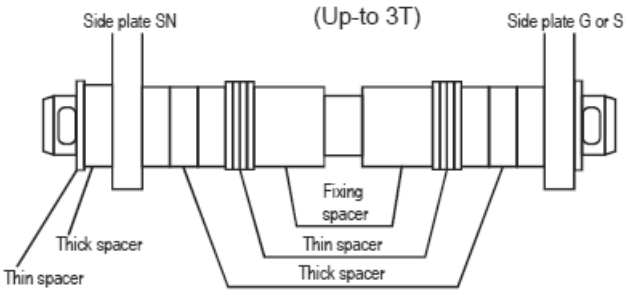
3)

Ⓐ indicates standard range.

Ⓑ indicates W20 range, as option

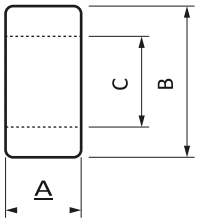
Ⓒ indicates W30 range, as option





Dimensions of Adjusting Collars （Unit：mm）

		1t	1.5t / 2t	2.5t / 3t	5t
Collars	A	12.5	12.5	12.5	12.5
	B	34	39.4	43.4	61.4
	C	27.6	33	37	55
Spacers	A	3.2	3.2	3.2	-
	B	35	43	47	-
	C	25.5	32.5	36.5	-
Fixing collars (*1)	A	18/43/80.5	16.5/41.5	39.5/64.5	7.5/37.5
	B	34	39.4	43.4	-
	C	27.6	33	37	-
Suspension shaft diameter		25	32	36	54



Collars/Spacers/Fixing collars

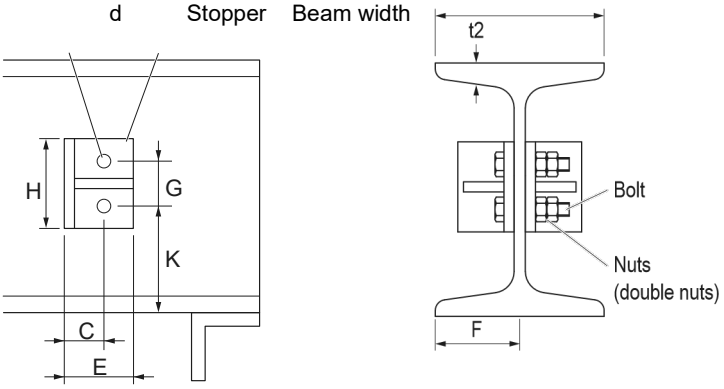
*1) The width of fixing collars (A) may vary depending on different beam width.

Mounting the Stopper

Be sure to mount the stoppers at both ends of the beam to prevent the trolley/hoist from dropping.

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

If the customer wishes to make the stopper themselves, please refer to the following figures.



（Unit：mm）

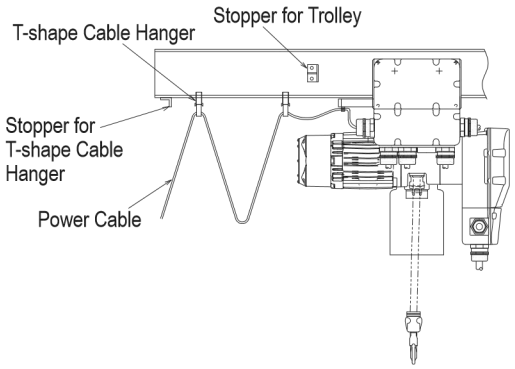
Capacity	~ 2t				2t ~ 5t		
Beam width	100	125	150	175	125	150	175
Material dimensions	L-50x50x6	L-50x50x6	L-65x65x8	L-75x75x9	L-50x50x6	L-65x65x8	L-75x75x9
H	80	80	80	80	100	100	100
E	50	50	65	75	50	65	75
F	40	50	65	75	50	65	75
G	50	50	50	50	60	60	60
C	30	30	35	40	30	35	40
K	65	t2+50	t2+50	t2+50	t2+60	t2+60	t2+60
d	ϕ14	ϕ14	ϕ14	ϕ14	ϕ18	ϕ18	ϕ18
Bolt size	M12x50x50	M12x55x55	M12x55x55	M12x60x60	M16x65x65	M16x65x65	M16x65x65

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 Cable Hanger

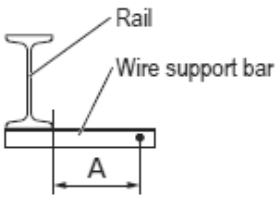
Install the additional stopper for T-shape Cable Hanger at the end of one rail.



Power Cable Layout for Motorized / Manual trolley type

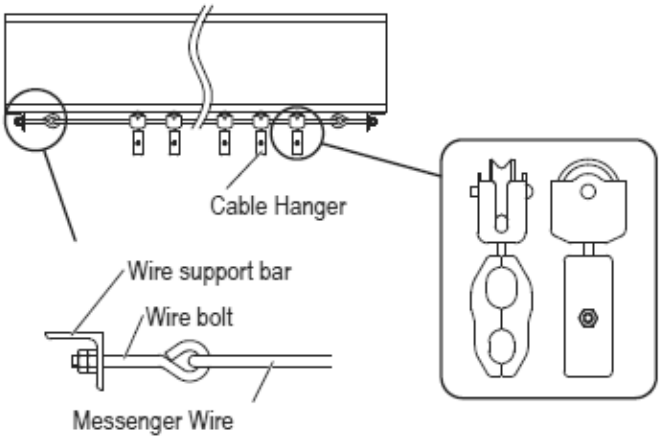
• In the standard specification, the Cable Hanger is provided. T-shape Cable Hanger and angle type Cable Hanger are also available as optional parts. T-shape Cable Hangers can be applicable to curved beam; however, the application method differs depending on the condition such as radius of curvature. In this case, contact Harrington.

1) Mount the wire support bar at both ends of the beam.



2) Attach the Messenger Wire, which is threaded through the Cable Hanger, to the Wire Support Bar using two Wire Bolts.

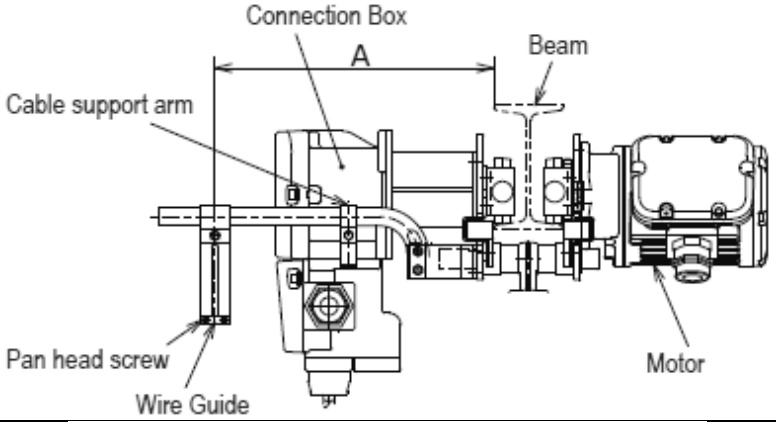
- The recommended mounting/spacing interval of the Cable Hangers is 1.5 m to 2 m.
- Use steel wire for the messenger wire with a diameter ranging from 3mm – 6mm.



3) Loosen two pan head screws and remove the end clip of the wire guide.

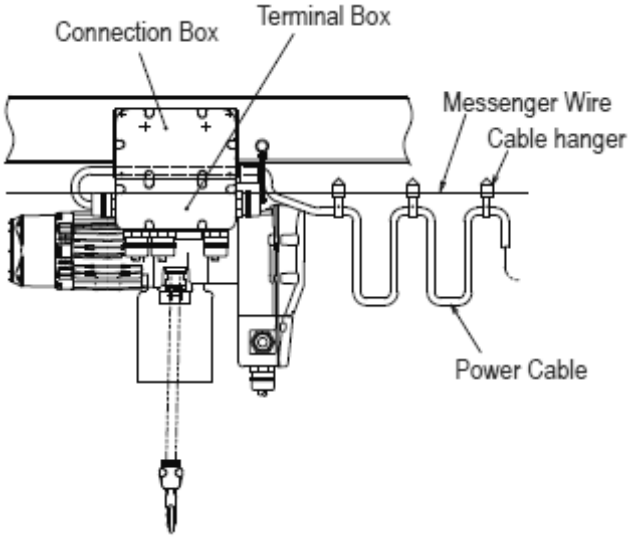
4) Route the Messenger Wire through the groove of the Wire guide. Mount the end clip with two pan head screws.

- The dimension A, measured between the side face of the beam and the groove of the wire guide, must match the distance between the mounting hole of the wire support bar for the Messenger Wire and the side face of the beam.



5) Attach the Power Cable to the Cable Hanger

6) Mount the Cable Support to the Cable Support Arm.



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 completed:

- No bolts, nuts, split pins are missing. Tightening and assembling are completed.
- Strain Relief Cable for Push Button Switch Cord is securely fastened and able to endure pulling forces instead of the Push Button Switch Cord.
- The Power Cable is fixed to the Cable Support.
- Source voltage is the rated voltage. Rated voltages are as follows.
  200V class: 208V (60Hz), 230V(60Hz)
  400V class: 380V (50Hz), 460V(60Hz)
  500V class: 575V (60Hz)
- Grounding Wire is connected securely.

● **When using with a Trolley** Check the following:

- The electric chain hoist and the trolley are connected correctly.
- The stoppers for trolley are securely mounted to Travel Beam where the Trolley travels.
- The surface of Travel Beam shall be free of dirt, debris, paint, and oil. The surface of the Travel Beam must be bare metal. Do not paint. There is no obstacle for the trolley to travel. The Travel Beam is set to a level.

Operational Check

Carry out the operational check in accordance with Daily inspection (~~P23, 25, 26~~).

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.

Outline of Contents

Reference

Daily inspection is described in Chapter 1 "How to Use the Product". Refer to the following daily inspection items and their relevant pages.

Safety Precautions

General Matters related to Inspection

⚠ DANGER

Prohibited

- **Do not open the cover in the presence of explosive atmosphere.**

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

Mandatory

- **To reduce the risk of ignition of hazardous atmospheres, disconnect the equipment from the su opening.**
- **Keep assembly tightly closed when in operation.**
- **Cover joints must be cleaned before replacing cover.**
- **To reduce the risk of ignition of hazardous atmospheres, conduit runs must have a sealing fitting connected within 18 inches of the enclosure.**

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

⚠WARNING

Prohibited

- **Disassembly and assembly of the electric chain block must be performed by a qualified person with training and experience including knowledge of Hazardous Location construction, work on electrical facilities, related regulations, and the general principles for the classification of hazardous locations.**
- **Do not use the part exceeding the service limit or criteria and the parts other than genuine part for HARRINGTON electric chain hoist.**

  Even if the part is genuine HARRINGTON part, it cannot be used for other model. Refer to Disassembly/Assembly Manual (Annex) for the correct use of the part.
- **Do not brush against the chain container, to prevent static electricity.**
- **Do not allow the hook to strike against other objects.**
- **Do not adjust or disassemble the Electromagnetic Brake and the Friction Clutch.**
- **Do not adjust the set nut.**
- **When lubricating the Friction Clutch, use HARRINGTON genuine oil (manufacturer specified oil).**
- **Do not carry out the inspection of electric chain hoist with a lifted load.**
- **Do not use the electric chain hoist removing the cushion rubber, the chain spring and the stopper.**
- **Turn off the main power when carrying out the inspection.**
- **When using oils such as gear oil and grease, avoid places with fire or sparks.**

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

Mandatory

- **Confirm that there is no explosive gas present before opening the lid.**
- **Do not open the covers while the power supply is turned on.**
- **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 is observed during the inspection. Indicate "FAILURE" on the hoist and contact qualified personnel and or Harrington 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.

⚠ CAUTION

Mandatory

• Before performing any maintenance on the hoist/trolley, de-energize the supply of electricity to the equipment, and lock and tag the supply device in the de-energized position 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 appropriate personal protection equipment (PPE) such as safety goggles and gloves depending on the work contents.**
  Otherwise, it may result in injury due to spraying oil or sharp edges of a part.
- **Pay attention to work method, work procedure and work area.**
  If the product or part is heavy, it may cause hand injury or back strain. Use extra caution when working on unstable scaffolding or elevated heights.
- **Wear a helmet and safety harness when carrying out high lift work.** Otherwise, it may result in injury or accident.
- **Keep the hoist/trolley surface and work surface free of oil.**
  Otherwise, it may result in injury due to dropping of the product or overturning.
- **Keep the work area clean when disassembling the product.**
  Assembling or combining parts other than genuine Harrington parts may result in damage to the product or possible 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 at the same time.

• When any abnormality is detected during inspection due to erroneous use, instruct the operator on the correct use of the electric chain hoist.

Ex. (1) Damage to chain guide A from excessive chain contact (Cause: excessive side pull during lifting)

(2) The deformation of the Cushion Rubber and the Chain Spring (Cause: excessive use of the limit switch)

Frequent Inspection

General Matters on Frequent Inspection

- Check the electric chain hoist as installed, either standing on the floor or positioned close to the hoist, as needed.

⚠ WARNING

Mandatory

• 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.

NOTE

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

- Refer to Appendix “Technical Material” (P104) for the structure of the product and the name of each part.
- Refer to the technical material in the Appendix for how to apply grease on joint surfaces of Pressure resistant containers.

⚠WARNING

Mandatory

Apply grease on joint surfaces after opening covers or disassembling motors according to the procedure described in Technical Material of Appendix.

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

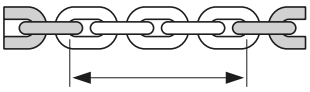
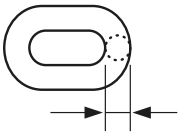
Electric Chain Hoist (RNER2) Frequent Inspection

Appearance

Item	Check method	Criteria	Action
Bolts, nuts, and split pins	• Check visually	• No rust, corrosion on bolts, nuts, and split pins.	Replace any rusty or corroded hardware.

Load Chain

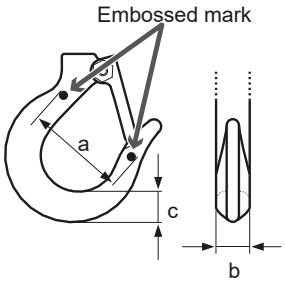
- Check the Load Chain after removing the oil on the chain.
- Use the needle head caliper (point caliper) to measure the sum of pitches and wire diameter.
- Apply oil on the Load Chain after inspection.
- Application of lubricant influences the life of the Load Chain considerably. Use HARRINGTON genuine 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 Idle 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	Action
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** Pay special attention when checking the engaging point of the Load Sheave and the Idle Sheave. • 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 and the Idle Sheave also. (Refer to “Periodic Inspection”, “Load Sheave” (P69)	Replace the Load Chain.

Load Chain Pitch and Wire Diameter for Each Capacity

Code		Capacity (Ton)	Load Chain diameter (mm)	Sum of 5 Links (inch (mm))		Load Chain diameter (inch (mm))	
				Do not exceed the limit		Do not exceed the limit	
RNER2B	RNER2D			Standard	Limit	Standard	Limit
RNER2B-010LD	RNER2D-010LD	1	Φ7.7×1	4.25 (108.0)	4.38 (111.2)	0.30 (7.7)	0.27 (6.9)
RNER2B-010SD	RNER2D-010SD						
RNER2B-015SD	RNER2D-015SD	1 1/2	Φ10.2×1	5.63 (143.0)	5.80 (147.2)	0.40 (10.2)	0.36 (9.2)
RNER2B-020CD	RNER2D-020CD	2	Φ7.7×1	4.25 (108.0)	4.38 (111.2)	0.30 (7.7)	0.27 (6.9)
RNER2B-020LD	RNER2D-020LD		Φ10.2×1	5.63 (143.0)	5.80 (147.2)	0.40 (10.2)	0.36 (9.2)
RNER2B-020SD	RNER2D-020SD						
RNER2B-025SD	RNER2D-025SD	2 1/2	Φ11.2×1	6.18 (157.0)	6.37 (161.7)	0.44 (11.2)	0.40 (10.1)
RNER2B-030CD	RNER2D-030CD	3	Φ10.2×1	5.63 (143.0)	5.80 (147.2)	0.40 (10.2)	0.36 (9.2)
RNER2B-050LD	RNER2D-050LD	5	Φ11.2×1	6.18 (157.0)	6.37 (161.7)	0.44 (11.2)	0.40 (10.1)

Top Hook, Bottom Hook

<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr>
<td>Deformation and Wear of the Hook</td>
<td>• Check visually and measure with vernier caliper.
 
</td>
<td>
⚠ CAUTION
Mandatory
• Compare the dimensions of a, b, and c with those when new. 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.
<table>
<tr><th>Measured value (mm)</th><th>Limit value</th></tr>
<tr><td>Dimension a</td><td>Not to exceed the dimension at purchasing</td></tr>
<tr><td>Dimension b</td><td rowspan="2">Wear not to exceed 5%</td></tr>
<tr><td>Dimension c</td></tr>
</table>
• Following tables shows the nominal standard values. Please be aware that these values include tolerance because of forging.
RNER2 Hook Service Limit or Criteria (not to fall short of the limit value)
<table>
<tr><th colspan="2">Code</th><th rowspan="2">Capacity (Ton)</th><th rowspan="2">Dimension a (inch (mm))</th><th colspan="2">Dimension b (inch (mm))</th><th colspan="2">Dimension c (inch (mm))</th></tr>
<tr><th>RNER2B</th><th>RNER2D</th><th>Standard</th><th>Standard</th><th>Limit value</th><th>Standard</th><th>Limit value</th></tr>
<tr><td>RNER2B-010LD</td><td>RNER2D-010LD</td><td rowspan="2">1</td><td rowspan="2">1.97 (50.0)</td><td rowspan="2">0.89 (22.5)</td><td rowspan="2">0.84 (21.4)</td><td rowspan="2">1.22 (31.0)</td><td rowspan="2">1.16 (29.5)</td></tr>
<tr><td>RNER2B-010SD</td><td>RNER2D-010SD</td></tr>
<tr><td>RNER2B-015SD</td><td>RNER2D-015SD</td><td>1 1/2</td><td>2.36 (60.0)</td><td>1.04 (26.5)</td><td>0.99 (25.2)</td><td>1.44 (36.5)</td><td>1.37 (34.7)</td></tr>
<tr><td>RNER2B-020CD</td><td>RNER2D-020CD</td><td rowspan="3">2</td><td rowspan="4">2.72 (69.0)</td><td rowspan="4">1.24 (31.5)</td><td rowspan="4">1.18 (29.9)</td><td rowspan="4">1.71 (43.5)</td><td rowspan="4">1.63 (41.3)</td></tr>
<tr><td>RNER2B-020LD</td><td>RNER2D-020LD</td></tr>
<tr><td>RNER2B-020SD</td><td>RNER2D-020SD</td></tr>
<tr><td>RNER2B-025SD</td><td>RNER2D-025SD</td><td>2 1/2</td></tr>
<tr><td>RNER2B-030CD</td><td>RNER2D-030CD</td><td>3</td><td>2.87 (73.0)</td><td>1.36 (34.5)</td><td>1.29 (32.8)</td><td>1.87 (47.5)</td><td>1.78 (45.1)</td></tr>
<tr><td>RNER2B-050LD</td><td>RNER2D-050LD</td><td>5</td><td>3.27 (83.0)</td><td>1.67 (42.5)</td><td>1.59 (40.4)</td><td>2.20 (56.0)</td><td>2.09 (53.2)</td></tr>
</table>
</td>
<td>Replace the Hook</td>
</tr>
<tr>
<td>Deformation, Flaw, Corrosion
  </td>
<td>• Check visually.</td>
<td>• No deformation such as bend or twist
• No deep gouges or large nicks
• No damaged or loose bolts, nuts, and split pins.
• No substantial corrosion
• No attachment of foreign matter such as weld splatter or other damaging contaminants</td>
<td>Replace the Hook.</td>
</tr>
</table>

Peripheral parts of the Body

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

Item	Check method	Criteria	Action
Chain Container	• Check visually.	• To be mounted to the body securely • No damage, tears, abrasions, or deformation • Ensure no foreign matter is inside the Chain Container. • Make sure that the lift of the Load Chain is shorter than the capacity of the Chain Container. **⚠ WARNING**  Mandatory • **Do not use damaged Chain Container.** • **Use the Chain Container with the capacity larger than the lift of the Load Chain.** Use of a damaged or undersized chain container may result in death or serious injury due to drop of the Load Chain.	Replace the Chain Container. Discard the foreign matter in the Chain Container.

Pressure Resistant Containers with Hazardous Location Construction (Controllers, Barrier Relay Boxes, Motors)

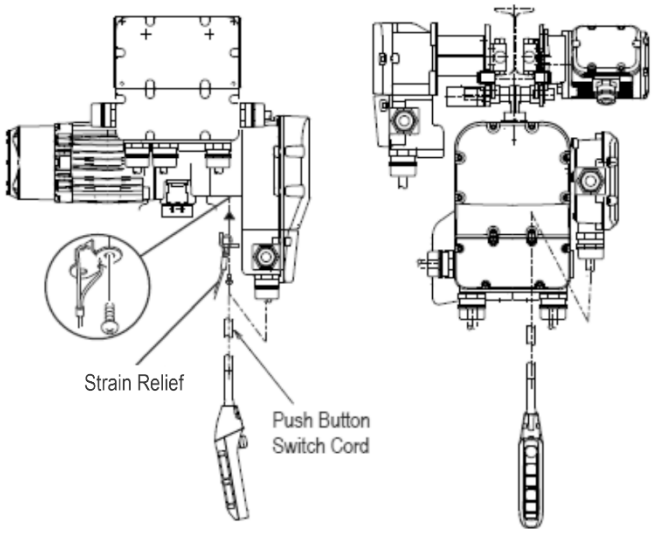
⚠ WARNING Be cautious of the following, as it may cause a serious accident: damage to the joint surface of pressure-resistant containers can allow the inner flame to pass through, potentially igniting outer gas and/or dust.

Item	Check method	Criteria	Action
Gaps in joint areas on surfaces	• Check visually.	• No expanding gaps.	Replace the lid.
Installation bolts	• Check visually.	• Correct factory installed hardware. • No rust, corrosion	Replace the bolts.
Cable retraction opening and closing parts	• Check visually.	• No damage to the cable retraction opening. • Appropriate type	Replace the part.
	• Check with tools.	• No looseness in the cable holder installation area.	Tighten the cable holder.

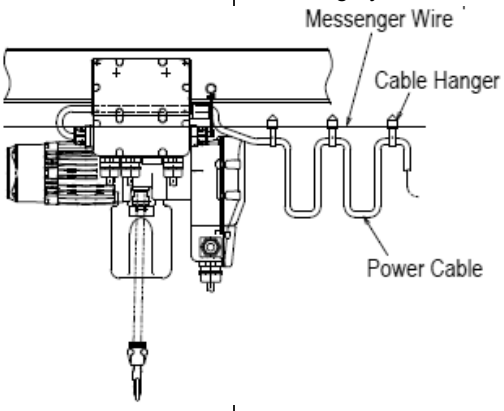
Oil

Item	Check method	Criteria	Action
Oil Leakage	• Check visually.	• To have no leakage of gear oil from packings, oil seals or oil plugs.	Replace Packing, Oil Seal, or Oil Plug.
Oil Plug	• Check visually.	• To have no deterioration of damages.	Replace Oil Plug.

Push Button Switch

Item	Method	Criteria	Action
Push Button Switch Body	• Check visually and by operating	• No damage, deformation or loose bolts. • Push Button Pendant operates smoothly. • Emergency Stop Button operates properly.	Replace the Push Button Switch.
Push Button Pendant Cord	Check Visually	• Push Button Pendant Cord is securely connected • The Strain relief cable is tied with the body so that the Push Button Pendant Cord is not strained directly even if the Push Button Pendant is pulled.	Connect the Push Button Pendant Cord and the Strain Relief to the body properly.
		• To have no damage.  	Replace the Push Button Pendant Cord.

Power Supply

Item	Method	Criteria	Action
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. 	• To have no damage • To move smoothly • To be mounted at equal intervals ⋯ Appropriate interval 5 ft. (1.5 m)	Re-mount the Cable Hangers so there is no hinderance to move
Messenger Wire	• Check Visually	• To have no sag • No interference or abrasion to adjacent components.	Remove the sag.

Function and Performance

Item	Check method	Criteria	Action
Abnormal Noise	• Check the noise of gear, motor and the Load Chain during operation without load. **NOTE** **Sound is also an important check point. Always listen for suspicious noises not normal to the operation of the electric chain hoist.**	• Mechanisms should be properly adjusted and should not produce unusual sounds when operated. • Hoist components including the Motor and Brake should not emit noise during operation.	Replace the abnormal part.
		• Load Chain should not emit cracking noise when hoisting a load.	Check the Load Chain. (Refer to P55.)

Motorized Trolley (RMR2) Frequent Inspection

Appearance

Item	Check method	Criteria	Action
Bolts, nuts and split pins	• Check visually.	• No rust, corrosion on bolts, nuts and splits pins	Replace rusted and corroded hardware.
Travel Beam	• Check visually.	• To have no considerable deformation and damage	Check items in accordance with “Travel Beam” described in Chapter 2 “Periodic Inspection”.
Lubrication (to the gears of wheel)	• Check visually.	• To be lubricated adequately	Apply lubrication to gears.

Oil

Item	Check method	Criteria	Action
Oil Leakage	• Check visually.	• To have no leakage of gear oil from packings, oil seals or oil plugs.	Replace Packing and Oil Seal.

Pressure Resistant Containers with Hazardous Location Construction (Controllers, Motors)

Carry out the inspection referring to "Frequent Inspection Items" of the electric chain hoist (RNER2).

Push Button Switch, Power Supply

Carry out the inspection referring to “Frequent Inspection Items” of the electric chain hoist (RNER2).

Manual Trolley (RTSG) Frequent Inspection

Appearance

Item	Check method	Criteria	Action
Combination	• Shake the manual trolley to check	• The manual trolley shakes lightly to right and left.	Combine the electric chain hoist and the manual trolley securely.
Travel Beam	• Check visually.	• To have no considerable deformation and damage.	Check items in accordance with “Travel Beam” described in Chapter 2 “Periodic Inspection”. (P77)
Oiling (to the gears of wheel)	• Check visually.	• To be oiled adequately.	Apply oil to gears.

Periodic Inspection

General Topics for Periodic Inspection

⚠ WARNING

Mandatory

- **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.

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.
- Refer to Appendix “Technical Material” for the structure of the product and the name of each part.
- Refer to the technical material in the Appendix also for how to apply grease on joint surfaces of Pressure resistant containers (controllers, barrier relay boxes, and motors).

⚠WARNING

Apply grease on joint surfaces after opening covers or disassembling motors according to the procedure described in Technical Material of Appendix.

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

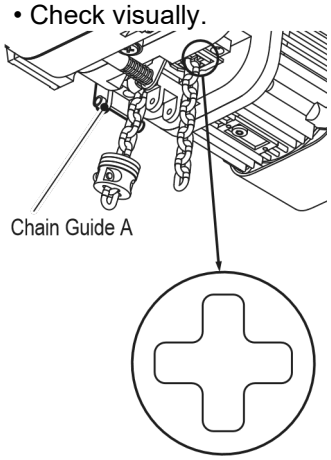
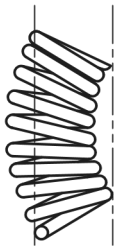
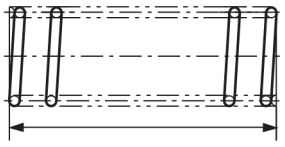
⚠WARNING

Be sure to adhere to all torque guidelines for Pressure resistant containers (controllers, barrier relay boxes, and motors).
Confirm gap is correct with feeler gauge for Pressure resistant containers including (controllers, barrier relay boxes, and motors).

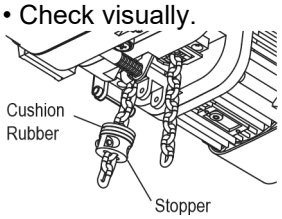
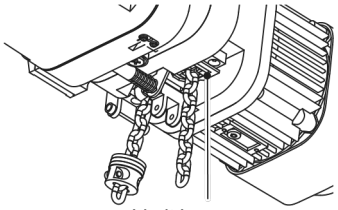
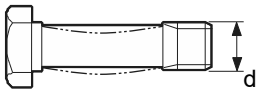
Failure to comply with this instruction may result in death or serious injury.

Electric Chain Hoist (RNER2) Periodic Inspection

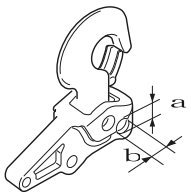
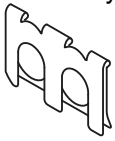
Peripheral parts of the Body

<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr><td>Chain Guide A</td><td>• Check visually.
 
</td><td>• To have no apparent abrasion, deformation and damage
• To have no flaw due to hitting by the Load Chain
⚠ CAUTION
Mandatory • 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.</td><td>Replace the Chain Guide A.</td></tr>
<tr><td>Cable Classification</td><td>• Check visually.</td><td>The cable classification must be correct.</td><td>Replace the cable.</td></tr>
<tr><td>Chain Spring</td><td>• Check visually and measure the dimensions.
 
 
Dimensional standard</td><td>• Check visually to have no apparent setting (deformation).
⚠CAUTION
Mandatory • The deformation of the Cushion Rubber and 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.
• Service Limit of Chain Spring for Capacity (Do not fall short of the limit value.)</td><td>Replace the Chain Spring.</td></tr>
</table>

Code		Capacity (Ton)	Length of Chain Spring	
RNER2B	RNER2D		Standard (inch (mm))	Limit value (inch (mm))
RNER2B-020CD	RNER2D-020CD	2	3.94 (100)	3.73 (95)
RNER2B-020LD	RNER2D-020LD		2.76 (70)	2.64 (67)
RNER2B-020SD	RNER2D-020SD		3.35 (85)	3.19 (81)
RNER2B-025SD	RNER2D-025SD	2 1/2	2.95 (75)	2.83 (72)
RNER2B-030CD	RNER2D-030CD	3	3.35 (85)	3.19 (81)
RNER2B-050LD	RNER2D-050LD	5	2.95 (75)	2.83 (72)

<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr><td>Stopper</td><td>• Check visually.
 
</td><td>• The stopper must be attached securely at the third link from the no load end of the Load Chain.</td><td>Attach the Stopper at the third link.</td></tr>
<tr><td>Limit Lever</td><td>• Check visually and by moving by hand.</td><td>• To have no deformation, damage and abrasion
• To move freely without any dirt or debris present
• Actuation of limit lever should stop hoist
 
Limit Lever.</td><td>Replace the Limit Lever.
Disassemble the Limit Lever and clean.</td></tr>
<tr><td>Chain Pin (double fall hoist only)</td><td>• Check visually and measure with vernier caliper.
 

Chain Pin</td><td>• To have no apparent deformation and flaw.
Service Limit of Chain Pin
(Do not fall short of the limit value.)
<table><tr><th colspan="2">Code</th><th colspan="2">Diameter d (inch (mm))</th></tr><tr><th>RNER2B</th><th>RNER2D</th><th>Standard</th><th>Limit value</th></tr><tr><td>RNER2B-030CD</td><td>RNER2D-030CD</td><td>0.43 (10.8)</td><td>0.41 (10.3)</td></tr><tr><td>RNER2B-050LD</td><td>RNER2D-050LD</td><td>0.51 (12.9)</td><td>0.48 (12.3)</td></tr></table></td><td>Replace the Chain Pin.</td></tr>
<tr><td>Connection Yoke D (double fall hoist only)

Deformation of mounting hole for the Chain Pin</td><td>• Measure the dimensions a and b with vernier caliper.
 
</td><td>• The difference between dimensions a (vertical) and b (lateral) must be within 0.5 mm.
• To have no apparent deformation and abrasion</td><td>Replace the Connection Yoke D.</td></tr>
<tr><td>Shaft Retainer Clip</td><td>• Check visually.
 
Shaft Retainer Clip</td><td>• To have no deformation, abrasion and damage
• To be attached securely without loosening</td><td>Replace the Shaft Retainer Clip.</td></tr>
</table>

Pressure Resistant Containers with Hazardous Location Construction (Controllers, Barrier Relay Boxes, Motors)

⚠ WARNING Be careful of the following as it may cause serious accident igniting outer gas and/or dust with passage of inner flame due to damage of joint surface of pressure resistant containers.

⚠WARNING

Mandatory

Prohibited

- **Do not disassemble or assemble this equipment in an environment with a volatile atmosphere.**
- **Do not damage the joint surfaces.**
- **Do not tighten bolts or screws more than necessary.**

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

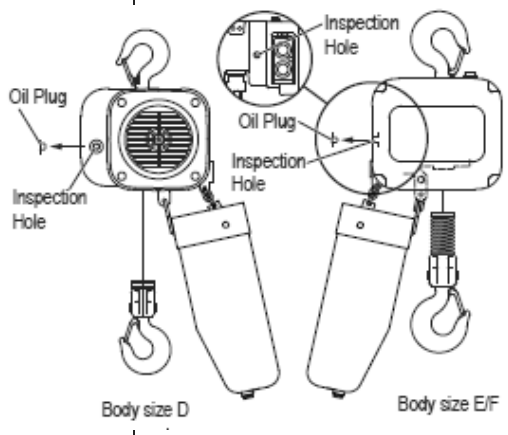
- **When re-assembling the cable retraction area, use packing, washers, and cable clamps that are appropriate for for the cable.**

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

Item	Check method	Criteria	Action
Consistency between nameplate indication and operational environment	• Check the operational environment against the nameplate indication. (Refer to “Operational Environment”)	The operational environment must conform with the nameplate indication as to hazardous location, temperature rating, gas type, dust type, etc.	Use the product in the correct environment.
Condition of joint area surfaces	• Remove the lid and check visually.	• No rust. • Clean. • No damage. • Joint area surfaces in good condition.	• Remove rust. • Remove by cleaning. • Replace the Pressure Resistant Container • Re-apply liquid packing.
Cable Retraction opening	• Disassemble and check.	• No deterioration in packing. • The cable gland sealing compound must be securely filled.	Replace cable gland parts.
Unused lead wire	• Check visually.	• Insulated.	Insulate the lead wire.
Gasket (Motor)	• Check visually.	• No damage. • Gasket in good condition.	Replace the gasket.
Grounding	• Check with tools.	• The connection must be robust. • The conductor cross-sectional area is sufficient.	
Wiring	• Check visually.	• Must be surely connected.	
Electrical insulators	• Check visually.	• Clean and dry.	

Item	Check method	Criteria	Action
Fuse	• Check the fuse rating on the secondary side of the transformer in the control box.	• Must be 1A and 250V.	Replace with a proper fuse.
Moving parts on the limit shaft	• Disassemble and checks.	• Diameter of limit lever pin not less than 15.95mm. • Inner diameter of sleeve not greater than 16.07mm.	Replace the limit lever pin and sleeve. (Replace both even if only one fails the check.)
Between the fan and the fan cover	• Perform hoisting and lowering operations.	• No rubbing noise between the fan and fan cover.	Replace the fan cover.
Certificate of conformity for barrier relay	• Check visually.	• The barrier relay has a certificate of acceptance.	Replace with an accepted product.
Wiring inside the barrier relay box	• Check if the wiring is correct.	• Wiring must be the same as shown in the wiring diagrams.	Connect the wiring correctly.

Oil

Item	Check method	Criteria	Action
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. 	•Oil is filled enough close to the oil check hole. • Check the oil level through the oil cap at the top (shown by an arrow) for electric chain hoist equipped with the friction clutch with mechanical brake. (Do not open the oil check hole at the side. Or, oil leaks out.) When checking the oil level, insert the check bar into the oil check hole, tilting the bar slightly, to see the oil level. • The distance between the hole and the oil level is 100mm for body size D, 120mm for body size E, and 130mm for body size F. • Gear oil has viscosity and is not contaminated. • Refer to "Guidelines and Precautions on Gear Oil Change Cycle" for the replacement of oil. (P97)	Replace the Oil.

Item	Check method	Criteria	Action
		•Type of gear oil and its amount for one body size	

Specification	Code	Gear Oil Amount (ml)	Oil Manufacturer	Oil Type
Friction Clutch	RNER2-010LD, 020CD	620	HARRINGTON genuine oil	HARRINGTON genuine oil
	RNER2-010SD	680		
	RNER2-015SD, 020LD	1300		
	RNER2-020SD, 030CD	1900		
	RNER2-025SD, 050LD	1900		

⚠ WARNING

- **Ensure the hoist body is level before checking the level of gear oil.**

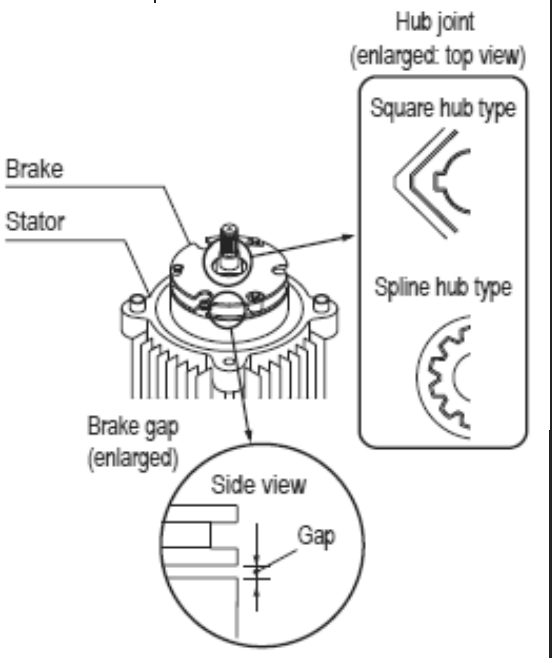
When removing the oil plug without leveling the electric chain hoist, the gear oil flows out. The oil leak could result in a potential slippery floor condition increasing the risk of fall resulting in serious injury or possibly death.

- **Use genuine gear oil only.**

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

Electromagnetic Brake

<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr><td>Appearance</td><td>• Remove the Brake Cover and check visually.</td><td>• To have no loosened bolt and screw.
• To have no flaw and damage.</td><td>Tighten bolts and screws</td></tr>
<tr><td>Oil amount and stain</td><td>• Check the oil level from the oil check hole.</td><td>• Electromagnetic Brake Gap Limit (not to exceed the limit)</td><td>Replace the electromagnetic Brake.</td></tr>
</table>



Code		Dual speed model
RNER2B	**RNER2D**	**Gap limit (inch (mm))**
RNER2B-010LD	RNER2D-010LD	0.035(0.90)
RNER2B-010SD	RNER2D-010SD	
RNER2B-015SD	RNER2D-015SD	
RNER2B-020CD	RNER2D-020CD	
RNER2B-020LD	RNER2D-020LD	
RNER2B-020SD	RNER2D-020SD	
RNER2B-025SD	RNER2D-025SD	
RNER2B-030CD	RNER2D-030CD	
RNER2B-050LD	RNER2D-050LD	

⚠ WARNING

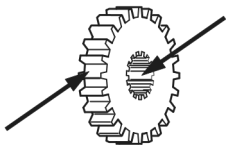
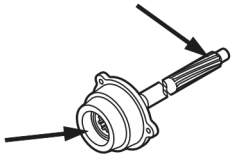
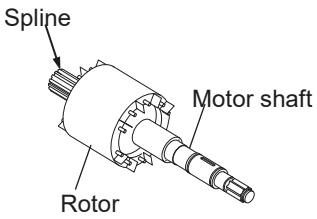
Prohibited

- Do not adjust or disassemble the Electromagnetic Brake

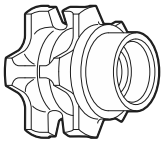
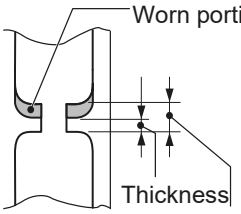
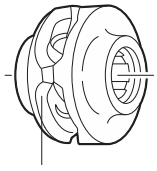
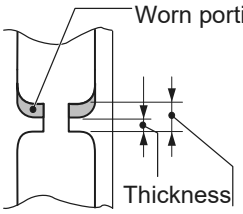
Adjusting or disassembling the Electromagnetic Brake may result in death or serious injury.

2

Driving Mechanism

Item	Check method	Criteria	Action
Hub Joint	• Check visually.	• To have no apparent deformation and abrasion • Hub spring must be seated.	Replace the Hub and the Electromagnetic Brake.
Bearing	• Check visually and rotate the Bearing by hand.	• To have no harmful deficiency such as apparent abrasion, flaw and damage. To rotate smoothly.	Replace the Bearing.
Load Gear, Gear B, Pinion	• Disassemble the electric chain hoist and check the splined portions of pinion and gear.   	• To have no apparent abrasion • To have no damage	• Replace the Gear. • Replace the Pinion. • Replace the oil at the same time.
Friction Clutch / Pawl	• Check visually	• Friction Clutch must not have any apparent abrasion, deformation, flaw or damage. • Pawl must have no apparent deformation or abrasion. **⚠ WARNING** **• Do not adjust or disassemble the Friction Clutch.** Adjusting and disassembling the Friction Clutch may result in death or serious injury. Prohibited	Replace the Friction Clutch. Replace the Pawl.

2

<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr>
<td>Abrasion and flaw of the Load Sheave
  </td>
<td>• Disassemble the Load Sheave and check it visually.
• Measure the thickness with vernier caliper.
 
</td>
<td>• To have no apparent abrasion, deformation and damage
• To have neither abrasion of the sheave pocket nor the run-on flaw on the crest.
NOTE
If the abrasion is observed on the Load Sheave, the Load Chain may be worn also. Refer to the item of Load Chain Abrasion and check the abrasion.
• Service limit of the Load Sheave and Idle Sheave
(Do not fall under the limit)</td>
<td>Replace the Load Sheave.</td>
</tr>
<tr>
<td>Abrasion and flaw of the Idle Sheave
 
</td>
<td>• Disassemble the Load Sheave and check it visually.
• Measure the thickness with vernier caliper.
 
</td>
<td>
<table>
<tr><th colspan="2">Code</th><th rowspan="2">Capacity (Ton)</th><th colspan="2">Thickness (inch (mm))</th></tr>
<tr><th>RNER2B</th><th>RNER2D</th><th>Standard</th><th>Limit</th></tr>
<tr><td>RNER2B-010LD</td><td>RNER2D-010LD</td><td rowspan="2">1</td><td rowspan="2">0.18 (4.5)</td><td rowspan="2">0.12 (3.0)</td></tr>
<tr><td>RNER2B-010SD</td><td>RNER2D-010SD</td></tr>
<tr><td>RNER2B-015SD</td><td>RNER2D-015SD</td><td>1 1/2</td><td rowspan="5">0.26 (6.5)</td><td rowspan="5">0.17 (4.3)</td></tr>
<tr><td>RNER2B-020CD</td><td>RNER2D-020CD</td><td rowspan="3">2</td></tr>
<tr><td>RNER2B-020LD</td><td>RNER2D-020LD</td></tr>
<tr><td>RNER2B-020SD</td><td>RNER2D-020SD</td></tr>
<tr><td>RNER2B-030CD</td><td>RNER2D-030CD</td><td>3</td></tr>
<tr><td>RNER2B-025SD</td><td>RNER2D-025SD</td><td>2 1/2</td><td rowspan="2">0.29 (7.3)</td><td rowspan="2">0.19 (4.9)</td></tr>
<tr><td>RNER2B-050LD</td><td>RNER2D-050LD</td><td>5</td></tr>
</table>
</td>
<td>Replace the Idle Sheave.</td>
</tr>
</table>

Electrical Equipment

Item	Check method	Criteria	Action
Electrical Parts	• Remove the Controller Cover and check the electrical parts visually.	• 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.
		WARNING **ONLY USE CONTACTORS SPECIFIED BY THE MANUFACTURER**	
		• Even if the above standards are met, replace the oil at least every 5 years.	
Wiring		• Wiring must be fixed to the Electrical Parts securely. • Connectors must be inserted securely. • To have no wire breakage and burning	Connect wirings securely. Replace the wiring with new wiring, referring to Chapter 3 Guidance on Troubleshooting.
Contamination and attachment of foreign matter		• No foreign matter or water droplets/moisture present.	Remove the foreign matter.

Electric Characteristics Measurement

⚠ WARNING


Mandatory

• When performing measurements where gas and/or dust exists, utilize a measuring instrument that is intrinsically safe.

Failure to follow these instructions may result in ignition of a hazardous gas or/and dust atmosphere.

Item	Check method	Criteria	Action
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 **⚠WARNING** **• Be careful of electric shock when measuring the voltage.** Mandatory Electric shock may result in death or serious injury.	Supply proper voltage.
Insulation Resistance	• Measure the insulation resistance with a Megohmmeter. (Resistance between energized and non-energized parts Each phase of R(L1), S(L2) and T(L3) and the ground wire)	• Insulation resistance must be 5 MΩ or higher. **⚠WARNING** **• Turn off the power when measuring the insulation resistance.** Mandatory Measuring the insulation resistance without turning off the power may result in death or serious injury.	Replace the Body.
Grounding Resistance	• Measure the grounding resistance with a ground resistance meter.	• Source voltage of 10 ohms or less. **⚠ WARNING** Mandatory **• 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.	Perform the grounding correctly.

Function and Performance

⚠ DANGER

Mandatory

• 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	Action
Operational Check	• Perform the daily inspection items with capacity. (Refer to Daily inspection Items).	**⚠ WARNING** • **Be sure to perform the capacity test after completion of the no-load test.** Mandatory Performing the capacity test without prior no-load test may result in death or serious injury. Refer to “Daily inspection Items”.	Disassemble the electric chain hoist to check whether it is assembled correctly and confirm it has no abnormal parts.
Brake	• Operate the electric chain hoist while lifting a load and then bring it to a stop.	• 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 confirm it has no abnormal part.

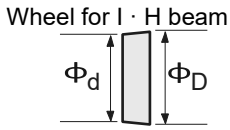
Motorized Trolley (RMR2) Periodic Inspection

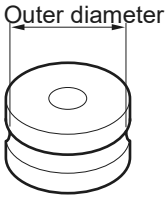
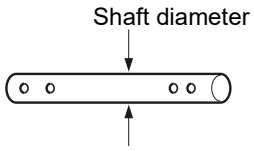
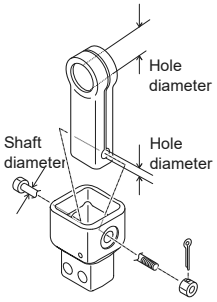
Brake

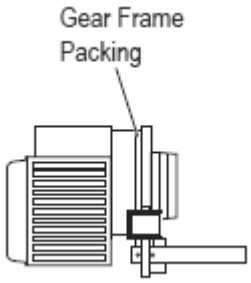
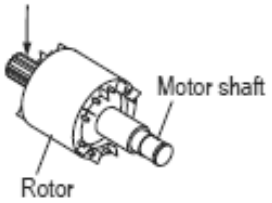
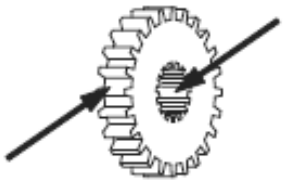
<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr><td rowspan="2">Appearance</td><td rowspan="2">• Disassemble the Brake and check it visually.</td><td>• To have no deformation, flaw and damage on the Brake Drum and the Motor Cover.</td><td>Replace the part</td></tr>
<tr><td>• To have no deformation and damage on the Brake Spring.</td><td>Replace the part</td></tr>
<tr><td>Abrasion of Brake Pad</td><td>• Disassemble the Brake and measure the abrasion.</td><td>• Trolley Brake Service Limit
(Do not fall under the limit.)

<table><tr><th rowspan="2">Capacity (t)</th><th colspan="2">Outer diameter (inch (mm))</th></tr><tr><th>Standard</th><th>Limit</th></tr><tr><td>1</td><td rowspan="4">1.45 (36.8)</td><td rowspan="4">1.43 (36.3)</td></tr><tr><td>1.5, 2</td></tr><tr><td>2.5, 3</td></tr><tr><td>5</td></tr></table></td><td>Replace the Side Roller.</td></tr>
</table>

Body Components

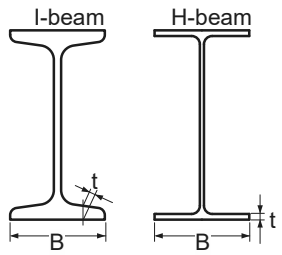
<table>
<tr><th>Item</th><th>Check method</th><th>Criteria</th><th>Action</th></tr>
<tr><td>Wheel</td><td>• Check visually.
• Measure dimensions D and d with vernier caliper.
 

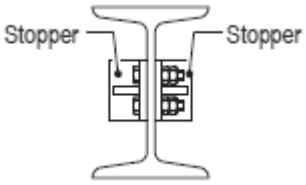
• Measure the outer diameter with vernier caliper</td><td>• To have no considerable deformation and damage
• Abrasion Limit of Wheel
(Do not fall under the limit.)
<table><tr><th rowspan="2">Capacity (Ton)</th><th rowspan="2">Beam type</th><th colspan="2">D (inch (mm))</th><th colspan="2">d (inch (mm))</th></tr><tr><th>Standard</th><th>Limit</th><th>Standard</th><th>Limit</th></tr><tr><td>1</td><td>I · H</td><td>3.74 (95)</td><td>3.58 (91)</td><td>3.60 (91.5)</td><td>3.44 (87.5)</td></tr><tr><td>1 1/2, 2</td><td>I · H</td><td>4.33 (110)</td><td>4.13 (105)</td><td>4.17 (106)</td><td>3.98 (101)</td></tr><tr><td>2 1/2, 3</td><td>I · H</td><td>4.92 (125)</td><td>4.65 (118)</td><td>4.76 (121)</td><td>4.49 (114)</td></tr><tr><td>5</td><td>I · H</td><td>5.51 (140)</td><td>5.20 (132)</td><td>5.31 (135)</td><td>5.00 (127)</td></tr></table></td><td>Replace the Wheel</td></tr>
<tr><td>Side Roller</td><td>• Check visually.
• Measure outer diameter of the worn part with vernier caliper.
 
</td><td>• To have no considerable deformation and damage
• Abrasion Limit of Side Roller
(Do not fall under the limit.)
<table><tr><th rowspan="2">Capacity (Ton)</th><th colspan="2">Outer diameter (inch (mm)</th></tr><tr><th>Standard</th><th>Limit</th></tr><tr><td>1</td><td>1.50 (38)</td><td>1.46 (37)</td></tr><tr><td>1 1/2, 2</td><td>1.69 (43)</td><td>1.65 (42)</td></tr><tr><td>2 1/2, 3</td><td>1.69 (43)</td><td>1.65 (42)</td></tr><tr><td>5</td><td>2.17 (55)</td><td>2.13 (54)</td></tr></table></td><td>Replace the Side Roller.</td></tr>
<tr><td>Lifting Shaft</td><td>• Check visually.
• Measure the shaft diameter with vernier caliper.
 
</td><td>• 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 respectively.</td><td>Replace the Lifting Shaft.</td></tr>
<tr><td>Suspender Connection Yoke</td><td>• Check visually.
• Measure the diameter of the hole with vernier caliper.
 
</td><td>• The Suspender must be combined securely with the top pin and the Yoke bolt.
• Abrasion limit of the hole is 5 % of its diameter.</td><td>Replace the worn part.</td></tr>
</table>

Item	Check method	Criteria	Action
Gear Frame Packing	• Check visually. 	• To have no damage and breakage.	Replace the Gear Frame Packing.
Gears and Motor Shaft	• Check visually.  	• To have no apparent abrasion, deformation and damage.	Replace the Part.
Bearing	• Check visually and rotate the Bearing by hand.	• To have no harmful deficiency such as apparent abrasion, flaw and damage. To rotate smoothly.	Replace the Bearing. To replace, contact Harrington.

2

Travel Beam

Item	Check method	Criteria	Action
Beam Surface	• Check visually.	• To have no paint, oil, or foreign matter. • To have no dust and powder due to abrasion	Clean the Travel Beam.
Deformation and Abrasion	• Check the deformation and abrasion visually and measure them with vernier caliper. 	• To have no deformation of beam flange such as twist and shear drop • To have no exceeding abrasion of beam surface • Service limit of B: up to 95 % of the dimension at purchasing • Service limit of c: up to 90 % of the dimension at purchasing	Replace or repair the Travel Beam.
Beam Mounting Bolt	• Check visually.	• To have no loosened bolt or fall-off.	

Item	Check method	Criteria	Action
	• Check visually. 	• The stoppers must be mounted at the both ends of the Travel Beam securely.	

Relay Cable

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

Pressure Resistant Containers with Hazardous Location Construction (Controllers, Motors)

Refer to Electric Chain Hoist (RNER2) Periodic Inspection

Electrical Equipment and Electric Characteristics

Refer to Electric Chain Hoist (RNER2) Periodic Inspection.

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.

Mandatory

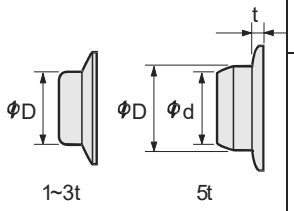
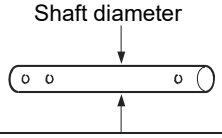
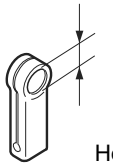
◦ Perform the following inspections with capacity.

Item	Check method	Criteria	Action
Operational Check	• Perform the daily inspection items with capacity. (Refer to “Daily inspection Items”. (P24))	**⚠ WARNING** **• Be sure to perform the capacity test after completion of the no-load test.** Mandatory Performing the capacity test without prior no-load test may result in death or serious injury. • Refer to “Daily inspection Items”.	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.

Manual Trolley (RTSG) Periodic Inspection

Body Components

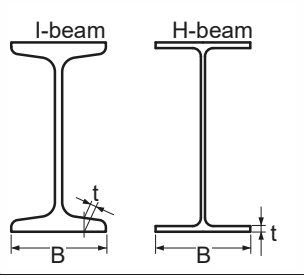
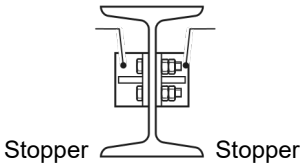
Item	Check method	Criteria	Action
Brake	• Operate the electric chain hoist with a capacity and then stop it.	• When stopping the operation, the Brake must be applied immediately and the motor must stop. Traveling : Stop distance must be 10 % or less of the traveling distance for one minute. (Without swinging of the load. Except the case when the load is swinging.)	Disassemble the Brake to check whether the brake is assembled correctly. Confirm all parts are correct.
Abnormal Noise	• Operate the electric chain hoist while lifting a load and then bring it to a stop.	• To have no abnormal noise • Motor and Brake shall not emit any abnormal noise during operation.	Disassemble the electric chain hoist to check whether it is assembled correctly. Confirm all parts are correct.

Item	Method	Discard Limit/Criteria	Action
Wheel	• Check visually. • Measure dimensions D and t with vernier caliper.  • Measure the outer diameter with vernier caliper.	• To have no apparent deformation and damage the abrasion of the wheel should not be less than the limit value • To have no deformation of contact surface • To have no streaks on flange	Replace the Wheel.
Suspension Shaft	• Check visually. • Measure the shaft diameter with vernier caliper. 	• To have no apparent 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 Suspension Shaft.
Suspender	• Check visually. • Measure the diameter of the with vernier caliper. 	• The Suspender must be combined securely with the top pin and the Yoke bolt. • Abrasion limit of the hole is 5% of its diameter.	Replace the Suspender.

Capacity (Ton)		Beam	D (mm)		d(mm)		Flange thickness (mm)	
TSP	TSG		Standard	Limit	Standard	Limit	Standard	Limit
1		H-steel I-steel	2.80 (71)	2.74 (69.5)			0.137 (4.0)	0.130 (3.3)
2 ½, 1		H-steel I-steel	3.35 (85)	3.29 (83.5)			0.177 (4.5)	0.150 (3.8)
2 ½, 3		H-steel I-steel	3.94 (100)	3.88 (98.5)			0.197 (5.0)	0.169 (4.3)
5		H-steel I-steel	4.65 (118)	4.41 (112)	113	107	0.378 (9.6)	0.264 (6.7)

Periodic Inspection (continued)

Travel Beam

Item	Check method	Criteria	Action
Beam Surface	• Check visually.	• Beam surface shall be free of paint, oil and foreign matter. • To have no dust and powder due to abrasion	Clean the Travel Beam.
Deformation and Abrasion	• Check the deformation and abrasion visually and measure them with vernier caliper. 	• To have no deformation of beam flange such as twisting or shearing. • To have no excessive abrasion of beam surface • Service limit of B: up to 95 % of the dimension at purchasing • Service limit of c: up to 90 % of the dimension at purchasing	Replace or repair the Travel Beam.
Beam Mounting Bolt	• Check visually.	• Confirm Bolt is present, installed correctly and properly torqued.	Tighten the bolts securely.
Stopper	• Check visually. 	• The stoppers must be mounted at both ends of the Travel Beam 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.

Mandatory

● Perform the following inspections with capacity.

Item	Check method	Criteria	Action
Operational Check	• Perform the daily inspection items with capacity. (Refer to Daily inspection Items.)	**⚠ WARNING** **• Be sure to perform the capacity test after completion of the no-load test.** Mandatory Performing the capacity test without prior no-load test may result in death or serious injury. • Refer to “Daily Inspection Items”. (P23)	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 load.	• No abnormal noises emitted during operation.	Disassemble the electric chain hoist to check whether it is assembled correctly and has no abnormal part.

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.

Guidance on Troubleshooting and Safety Precautions

Troubleshooting

- Power
- Circuit breaker (Distribution panel)
- Power Cable
- Motor • Brake
- Internal wiring
- Transformer
- Electromagnetic Contactor, Relay
- Fuse
- Barrier relay
- Upper/Lower Limit Switch
- Push Button Switch
- Electric shock
- Friction Clutch
- Hook
- Load Chain
- Load Sheave, Idle Sheave
- Chain Guide A
- Gears and Joints
- Bearing
- Traveling motion of the Trolley (common for motorized / manual trolley)
- Traveling motion of the Trolley (only for motorized trolley)
- Traveling motion of the Trolley (only for manual trolley)

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.

• Refer to “Technical Materials” for the product structure and the component name of each part.

Conditions			Main fault contents	Check item	Reference page
Electric chain hoist does not operate without load	No brake operating sound	No electromagnetic contactor operating sound	Improper source voltage	Power	83
			Breakage or burning of control circuit Faulty electrical part	Circuit breaker	83
				Power Cable	84
				Internal wiring	88
				Barrier relay	90
				Electromagnetic Contactor, Relay	89
				Transformer	88
				Fuse	89
				Upper/Lower Limit Switch	90
				Push Button Switch	91
		Electromagnetic contactor operating sound	Breakage or burning of power circuit, Faulty motor or brake	Motor	85
				Brake	86
				Internal wiring	88
				Electromagnetic Contactor (melted contact points)	89
	Brake operating sound		Breakage of driving part Sticking of Bearing	Gears and Joints	97
				Bearing	98
Electric chain hoist operates without load	Does not operate with a load (Motor sounds howling)		Open phase (single phase operation)	Power	83
				Power Cable	84
				Motor	85
				Electromagnetic Contactor (melted contact points)	89
			Overload (clutch activated)	Friction Clutch	92
	Operates slowly with a load		Voltage drop	Power Cable	84
Operation does not match Push Button Switch	Operates differently from the indication of the Push Button Switch (operates in the opposite direction)		Negative phase connection	Power Cable	84
			Wrong connection	Internal wiring	88
				Push Button Switch	91
	Does not operate when operating any one of the Push Button Switch		Breakage of control circuit	Internal wiring	88
				Push Button Switch	91
			Faulty electrical part	Electromagnetic Contactor	89
				Upper/Lower Limit Switch	90
Does not stop normally	Does not stop even if the Push Button Switch is released		Melted contact point	Electromagnetic Contactor	89
				Barrier relay	90
	Too long (or short) stopping distance		Abrasion of brake lining	Brake	86
	Does not stop at the upper/lower limit.		Negative phase connection	Power Cable	84
			Wrong connection	Internal wiring	88
				Push Button Switch	91

Conditions			Main fault contents	Check item	Reference page
Abnormal noise	Popping sound		Abrasion of the Load Chain	Load Chain	95
			Abrasion of the Load Sheave	Load Sheave, Idle sheave	97
	Abnormal operating sound		Abrasion or breakage of Gear	Gears and Joints	97
			Deterioration of Bearing	Bearing	98
	Brake noise	Sounds when applied (scraping noise)	Dragging	Brake	86
		Sounds when released	Abrasion of brake lining	Brake	86
	Sounds at curved beam (friction noise)		Mechanical interference of the beam and the wheel	Traveling motion of the Trolley	98
Unable to travel	Motorized Trolley / Manual Trolley		Slipping wheel	Traveling motion of the Trolley	98
			Inclined beam		
			Pulling a load in an inclined direction (floating wheel)		
			Defective gear engagement		
			Locking of brake		
	Motorized Trolley		Electric system failure (refer to the item of electric chain hoist)		
	Manual Trolley		Defective engagement of the Head Wheel and the Hand Chain		
Uneven tracking on beam, abnormal sound	Motorized Trolley / Manual Trolley		Mechanical interference of the beam and the wheel	Traveling motion of the Trolley	98
			Wrong adjustment of collar		
			Uneven abrasion of the wheel		
			Deformation of the wheel		
			Deterioration of Bearing		
			Deformation and abrasion of the beam		
			Deterioration of the Bearing		
			Abrasion of the Brake Pad		
Hook and those related to Hook			Deformation	Hook	93
Load Chain and those related to Load Chain			Abrasion, elongation, twist	Load Chain	95
Electric shock when touching the body and Push Button Switch			Improper grounding, breakage of ground wire	Electric shock	92

Safety Precautions

General Matters on Failure Cause and Countermeasure

⚠ WARNING

Prohibited

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

• When replacing the part, be sure to use the genuine part for HARRINGTON electric chain hoist RNER2, RNER2M and RNER2D.
Even if the part is the HARRINGTON genuine part, the part for different model may not be used. Use the correct part in accordance with separate "Disassembling/Assembling Manual".

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

Mandatory

- **When any abnormality is observed during the maintenance (repair) of the electric chain hoist, survey the cause by the qualified person 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 "INSPECTION".**
  - **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.

Troubleshooting

Power

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate.	Improper source voltage	Measure the voltage of each phase at the power supply connection. If the source voltage is out of range, check the power receiving facility. **⚠WARNING** **• Be careful about electric shock when checking the power.** Carelessly checking the supply power may result in death or serious injury due to electric shock.	Faulty Facility Power	Check the facilities incoming power.

Circuit breaker (Distribution panel)

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate.	Breaker was tripped due to a short circuit.	Replace or repair the short-circuited part.	Cable breakage, burning of electrical parts	Refer to each item of Power Cable, Motor, Brake, Internal Wiring, Transformer and Electromagnetic Contactor.
	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.
	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, Internal Wiring, Transformer and Contactor.)	Over voltage, low voltage, over load	Refer to each item of Power Cable, Motor, Brake, Internal Wiring, Transformer and Electromagnetic Contactor.

Power Cable

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate.	Wire breakage (more than two wires)	Check the conduction, flaws, crimping of terminals and soldering of plug. When any deficiency is observed, repair or replace the cable.	Excessive force applied on the cable	Support the cable with Cable Support Arm securely.
			Not using flexible cable	Flexible cable is used for traversing power.
			Twist of wire	Layout the wires without twisting.
			Cable travel is obstructed.	Fix the cable so it does not interfere.
	Wire burning (more than two wires)	Check the cable. Replace if burnt.	Temperature rise due to insufficient cable capacity	Use the cable with proper capacity. (See Page 36.)
			Cables are bundled.	Do not bundle wires.
	Insufficient insertion of plug	Insert the connector plug to the end of the receptacle. Tighten the coupling ring securely.	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 and avoid large impacts.
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.
Electric chain hoist operates but unable to lift a load. (single phase status)	Breakage or burning of wire	Refer to the breakage and burning of above items.		
For single speed model, the electric chain hoist operates in the direction different to the push button operation (Reverse phase).	Wrong connection of power line when wiring	Change two wires of power line. **⚠WARNING** **• Do not change the connection at the Push Button Pendant circuit.** Changes to the wiring at the Push Button Pendant is very dangerous as the limit switch will not work properly.	Wrong connection when assembling	Refer to the connection diagram and connect wires correctly.

Motor

Symptom	Cause	Action	Main factor	Countermeasure
Motor does not operate.	Motor coil burning (two or more phases)	Measure the coil resistance of each phase. Replace the motor when the resistance of all phases are infinity.	Over current due to over voltage or low voltage	Operate the electric chain hoist at the rated voltage.
			Over current due to overload	Use the electric chain hoist with a load less than the capacity.
			Operation exceeding short time rating or intermittent rating	Check the short time rating and intermittent rating. Use the electric chain hoist within these ratings.
			Excessive inching or jogging operation (consecutive energizing of the contactor)	Do not perform excessive operation.
			Over current due to brake dragging	Refer to the items of Brake.
	Lead wire breakage (more than two lead wires)	Measure the coil resistance of each phase. Replace the motor when the resistance of all phases are infinity.	Lead wire damaged at assembling	Assemble with care.
			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.

3

Brake

⚠ WARNING

Prohibited

• Do not adjust/disassemble the Electromagnetic Brake.

Adjusting or disassembling the Electromagnetic Brake may result in death or serious injury.

Symptom	Cause	Action	Main factor	Countermeasure
Electromagnetic Brake does not operate.	Brake coil burning	Measure the coil resistance of the Brake coil. Replace the Electromagnetic Brake when the resistance is infinity.	Over current due to over voltage or low voltage	Operate the electric chain hoist at the rated voltage.
			Excessive inching or jogging operation (consecutive energizing of the contactor)	Do not perform excessive operation.
			Over current due to overload	Use the electric chain hoist with a load less than the capacity.
			Operation exceeding short time rating or intermittent rating	Check the short time rating and intermittent rating. Use the electric chain hoist within these ratings.
			Over current due to open phase operation	The electric chain hoist cannot lift a load in open phase operation. When any abnormality is observed, stop the operation immediately and check the cause of open phase operation.
	Abrasion of Brake Lining (exceeding the magnetic attraction of the electromagnetic brake)	Measure the brake gap. If the gap exceeds the service limit, replace the electromagnetic brake unit as a whole	Excessive inching operation	Do not perform excessive operation.
	Breakage of Electromagnetic Brake lead wire	Check the conduction of the lead wire. Replace the wire without conduction.	Lead wire damaged at assembling	Be careful not to have the lead wire caught when assembling.
	Insufficient connection of brake lead wire at insertion terminal	Connect the insertion terminal securely. Replace the loose insertion terminal if any.	Insufficient connection at assembling	Connect the insertion terminal securely at assembling.

Symptom	Cause	Action	Main factor	Countermeasure
Electromagnetic Brake does not operate.	Rusting	When the Brake is rusted shut, replace the brake unit as a whole.	Wrong assembling of packings	Assemble the brake cover packings securely. Replace the packing if deteriorated.
			Leaving the electric chain hoist in an environment with rich moisture	Operate the electric chain hoist regularly.
			Dew condensation	Pay attention to the use in an environment where the ambient temperature changes rapidly.
	Breakage of rectifier	Measure the resistance of the rectifier with circuit tester. Anode terminal : Negative probe of the circuit tester Cathode terminal : Positive probe of the circuit tester (measure the resistance in kΩ range) When the resistance is almost zero, the rectifier is normal. In other cases, replace the rectifier.	Over current due to over voltage or low voltage	Operate the electric chain hoist at the rated voltage.
			Excessive inching or jogging operation (consecutive energizing of the contactor)	Do not perform excessive operation.
			Over current due to overload	Use the electric chain hoist with a load less than the capacity.
			Operation exceeding short time rating or intermittent rating	Check the short time rating and intermittent rating. Use the electric chain hoist within these ratings.
			Over current due to open phase operation	The electric chain hoist cannot lift a load in open phase operation. When any abnormality is observed, stop the operation immediately and check the cause of open phase operation.
Too long (or short) stopping distance (stopping distance may change slightly depending on the temperature.)	Abrasion of brake lining	Measure the brake gap. If the gap exceeds the service limit, replace the electromagnetic brake unit as a whole	Excessive inching operation	Do not perform excessive operation.
Louder operating sounds	Abrasion of brake lining	Measure the brake gap. If the gap exceeds the service limit, replace the electromagnetic brake unit as a whole	Excessive inching or jogging operation	Do not perform excessive operation.

Internal wiring

Symptom	Cause	Action	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 without conduction.	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 heat generation to burn)	Tighten the loosened screws.	Insufficient tightening at assembling	Tighten screws securely.
			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.

Transformer

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate. (Electromagnetic Contactor does not operate.)	Burnout or breakage of transformer coil	Measure the resistance of transformer coil. If it is infinity, replace the transformer.	Over voltage	Operate the electric chain hoist with the rated voltage.
			Excessive inching or jogging operation (consecutive energizing of the contactor)	Do not perform excessive operation.
			Over current due to defective operation of Electromagnetic contactor	Refer to the items of Electromagnetic Contactor.
			Vibration, impact	Use the electric chain hoist avoiding the impact.
	Breakage of lead wire	Check the lead wires of the transformer. Repair or replace the transformer if the lead wire has no conduction.	Vibration, impact	Use the electric chain hoist avoiding the impact.

Electromagnetic Contactor, Relay

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not stop	Electromagnetic Contact point welding, or fusing	Operate the contactor manually to check the conduction. When the contact point is welded or fused, replace the contactor. When the device is a miniature relay, check the contact point visually.	Excessive inching or plugging operation (consecutive impression of start rush current)	Do not perform excessive operation.
			Over voltage	Operate the electric chain hoist with the rated voltage.
			Over current due to over load	Use the electric chain hoist with a load less than the capacity.
Electric chain hoist does not operate.	Burnout or breakage of relay coil or contactor coil	Measure the resistance of relay coil or contactor coil. If it is infinity, replace the relay or the contactor.	Excessive inching or plugging operation (consecutive impression of start rush current)	Do not perform excessive operation.
			Over voltage	Operate the electric chain hoist with the rated voltage.
			Chattering due to low voltage (consecutive impression of start rush current)	Operate the electric chain hoist with the rated voltage.
	Damaged moving parts	Operate the Electromagnetic contactor by its manual operation part. Replace the contactor if it does not move smoothly. Check the miniature relay visually if it does not have damaged part.	Vibration, impact	Use the electric chain hoist avoiding the impact.

Fuse

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate. (Electromagnetic Contactor does not operate.)	Blown out	Check the conduction of the fuse. When no conduction, check the cause and then replace the fuse.	Short circuit of the control circuit, burnout of electrical part	Refer to the items related to the electrical part in failure.
			Over current due to defective operation of Electromagnetic contactor	Refer to the items of Electromagnetic Contactor.

3

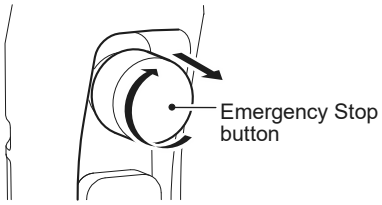
Barrier relay

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not stop.	Contact point welding for the relay output	If there is conduction between the relay contact points, replace the barrier relay.	Excessive inching or plugging operation	Do not perform excessive operation.
Electric chain hoist does not operate. (Electromagnetic contactor does not operate.)	Error in internal barrier relay circuitry	Press the push button and confirm that the appropriate output display illuminates.	Error in internal barrier relay circuitry	Replace the barrier relay.

Upper/Lower Limit Switch

Symptom	Cause	Action	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.
	Moving part rusted shut (defective return action of the moving part)	Check the moving part of the limit switch such as actuator lever is not stiff. If it is stiff, remove the rust or replace the stiff part.	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 such as actuator lever 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.
	Incorrect 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.	Incorrect wiring	Correct the wiring in accordance with the wiring diagram.

Push Button Switch

Symptom	Cause	Action	Main factor	Countermeasure
Electric chain hoist does not operate. (Electromagnetic Contactor does not operate.)	Emergency Stop button is pressed to its end and locked.	When the Emergency Stop button is pressed and locked, turn it clockwise to release the lock. 	Forgot releasing the Emergency Stop button	Read “How to Operate the Push Button Switches” 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 Pendant cord is connected to the switch unit correctly. Repair the cord if it has no conduction.	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Loosened terminal screw inside the switch unit	Tighten the screw if loosened	Vibration, impact	Use the electric chain hoist avoiding the impact.
	Wire breakage of Pendant Cord	Check the conduction of the Pendant Cord. If it has no conduction, replace the cable, or the Pendant 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 attachment of the Strain relief cable	Attach the Strain relief cable securely. (Refer to the figures for Frequent Inspection, Push Button Switch, and Pendant Cord
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.

Electric shock

Symptom	Cause	Action	Main factor	Countermeasure
Electric shock when touching the body and Push Button Switch	Improper grounding	Measure the grounding resistance. If it exceeds 10 Ω, perform grounding work.	Defective grounding work	Perform the grounding work securely.
			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.)
	Moisture in the pendant	Remove the moisture, dry the electric chain hoist and then use it.	Operation in wet environment	Avoid moisture and water contamination

Friction Clutch

⚠ DANGER

Prohibited

• Do not adjust/disassemble the Friction Clutch.

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

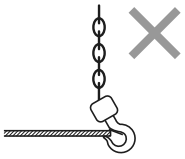
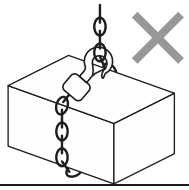
Symptom	Cause	Action	Main factor	Countermeasure
Unable to lift a load, or the load drifts after stopping.	Clutch engaged (normal)	Lighten the load to equal to or less than the capacity.	Over loading of hoist	Use the electric chain hoist at or less than rated capacity.
	Worn or damaged Slip Clutch Disk	Replace the Friction Clutch.	Friction Clutch engaged too often	Avoid overloading or overwinding hoist.
			Approaching service life limit	Service before using.
	Change in mechanical characteristics of the Friction Clutch		Use of oil other than the designated oil	Use standard Harrington Hoists oil.
			Leaving the hoist sit idle for a long periods of time	Do not leave idle for long periods of time
	Temperature too high inside gear box	Resume the operation after a cool down period. If it is still unable to lift a load, replace the Friction Clutch.	Used in a hot environment, or excessively use.	Avoid using in a hot environment or excessive use.

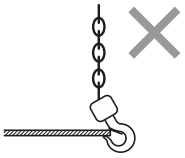
⚠ WARNING

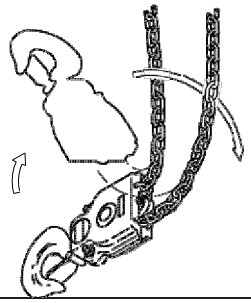
• Use Harrington Hoists standard gear oil.

Use of oil other than Harrington Hoists genuine oil may result in death or serious injury due to the drop of a lifted load.

Hook

Symptom	Cause	Action	Main factor	Countermeasure
Widened Hook opening	Deformation of the Hook	Replace the Hook if the deformation exceeds the criteria.	Overload	Use the electric chain hoist with a load less than the capacity.
			Load attached to floor/ground	Ensure load is not attached to ground or floor. Be careful not to impede 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 a 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.

Symptom	Cause	Action	Main factor	Countermeasure
Hook Latch has come off	Deformation of the Hook	Replace the Hook if the deformation exceeds the criteria.	Overload	Use the electric chain hoist with a load less than the capacity.
			Load attached to floor/ground	Ensure load is not attached to ground or floor. Be careful not to impede Hook with protruding object during lifting.
			Use of a sling with a size improper to the Hook	Use the proper sling.
	Deformation and failure 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 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.

Symptom	Cause	Action	Main factor	Countermeasure
Twisted Load Chain	Bottom Hook Capsized	Return Bottom Hook to the original position to prevent capsizing. 	Bottom Hook was Capsized during operation.	When using multi fall model hoist, check that the Hook is not capsized before use.
	Load Chain is twisted inside the main body of the chain hoist.	Remove Chain Guide A and the Load Chain, and reassemble.	Improper assembly	Assemble the electric chain hoist correctly.
Sudden activation of the Friction Clutch when lowering	Knot in the Load Chain to interference with the chain container	Confirm the chain capacity of the Chain Container. If insufficient, replace the Chain Container with a larger capacity.	Insufficient capacity Chain Container	When installing the chain hoist, confirm the lift and capacity of the Chain Container is acceptable for the application.
Hoist makes popping sound during operations	Worn or deformed Load Chain links	Inspect and measure of wire diameter of chain. Replace the Load Chain if is out of tolerance.	Operating without proper chain grease or inspections for extended amount of time.	Apply lubricant regularly.

⚠ WARNING

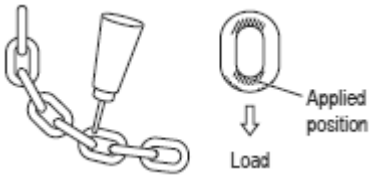
Mandatory

• Be sure to apply lubricant to the Load Chain. Do not carry out oiling work near a fire or arc.

Otherwise it will result in fire.

● Remove dust and moisture from the Load Chain and then apply lubricant. Application of lubricant affects the life of the Load Chain considerably. Apply the lubricant sufficiently. Use the following genuine lubricant.

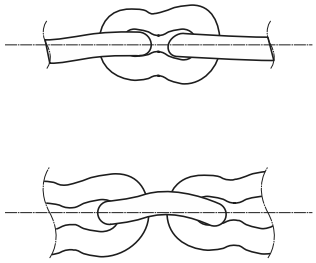
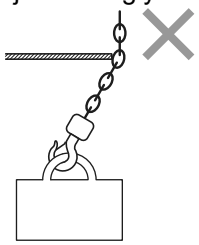
- Epinoc Grease AP (N)0 (Nippon Oil Corporation)
- Consistency No.0 (Industrial general lithium grease)



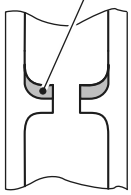
● Lower and remove all loads from the Load Chain. Apply the lubricant to the linking portion of the Load Chain that engages the Load Sheave and the Idle Sheave (hatched area). After application of the lubricant lift/lower the electric chain hoist without load to spread the lubricant on the Load Chain.

Excessive inching operation	Do not perform excessive operation
Overload	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.

3

Symptom	Cause	Action	Main factor	Countermeasure
Popping sound	Abrasion of the Load Chain links	Measure the abrasion of wire diameter. Replace the Load Chain if it reaches at the abrasion limit.	Abrasion of Load Sheave, Idle Sheave	Refer to the item of Load Sheave, Idle Sheave.
	Elongation of pitch	Measure the sum of pitches of 5 links. Replace the Load Chain if this value exceeds the limit value.	Overload	Use the electric chain hoist with a load less than the capacity.
Irregular noise	Flaw and deformation of the Load Chain surface	Replace the Load Chain with apparent flaw or deformation. 	Use of the Load Chain while the hook is capsized	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 finish and discolored	Rusting and corrosion	Remove rust and apply oil. Replace the Load Chain if the rust and corrosion is apparent.	Run-out of oil	Apply lubricant regularly. Regarding the method for applying oil, refer to "A popping sound occurs" in the Symptoms column.
			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 HARRINGTON for use in abnormal environments in advance. Use the electric chain hoist correctly within the scope guaranteed by the manufacturer.
Breakage of the Load Chain	Expiration of the service life	Check the Load Chain and replace it if exceeded the criteria.	Mechanical service life expiration	Handle the Load Chain correctly and perform the appropriate control including daily inspection and inspection.

Load Sheave, Idle Sheave

Symptom	Cause	Action	Main factor	Countermeasure
Popping sound	Abrasion of sheave pocket or flaw by the Load Chain out of mesh with the Sheave Worn part 	Measure the thickness of the crest. Replace the Sheave if the thickness is less than the criteria. The Load Chain may be worn. Check also the Load Chain.	Long hour operation without grease, expiration of service life	Apply lubricant regularly.
			Excessive inching operation	Do not perform excessive operation.
			Overload	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 A

Symptom	Cause	Action	Main factor	Countermeasure
Swinging of a load became larger than when purchasing	Abrasion of cross guide	Measure the standard dimension. Replace the cross guide if the standard dimension exceeds the criteria. The Load Chain may be worn. Check also the Load Chain.	Pulling a load in an inclined direction	Do not pull a load in an inclined direction.

Gears and Joints

Symptom	Cause	Action	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. (At least every 5 years)
			⚠ WARNING Mandatory • **Use HARRINGTON genuine gear oil** Use of oil other than HARRINGTON genuine oil may result in death or serious injury due to the a drop of lifted load.	
			Long hour operation without grease (motor joint)	Apply grease at periodic inspection.
Irregular motion	Partial abrasion or damage		Too many uses of the Friction Clutch	Avoid the overload.
			Habitual use of Upper/ Lower Limit Switch	Do not use Upper/ Lower Limit Switch habitually.

Bearing

Symptom	Cause	Action	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	Action	Main factor	Countermeasure
Unable to travel due to slipping of wheel	Inclination of Travel Beam	Make sure that beam gradient is within 1 degree.	Improper installation of Travel Beam	Install the Travel Beam correctly.
Unable to travel due to slipping of wheel, or unable to travel in uniform motion	Oil attachment on running surface of the beam	Wipe off the attached foreign matter.	Use under the environment likely to attach foreign matter	Clean the Travel Beam regularly.
Sounds abrasion sound when running on a curved beam	Friction resistance between wheel and beam	Apply small amount of oil on the beam surface where noise generates.		
Unable to travel on the curved beam	Interference of the trolley and the curved beam	Make sure that the beam curvature is larger than the minimum turning radius.	Use of the curved beam of curvature less than minimum turning radius	Do not use the curved beam of curvature less than minimum turning radius
Unable to travel due to wheel floating	Pulling a load in an inclined direction (floating wheel)	Verify beam straightness. Inspect trolley wheels for wear.	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.
Meandering Strange noise	Wrong adjustment of collar	Check the number of collars and their assembled positions	Incomplete checking	Assemble correctly.
	Uneven abrasion of the wheel	Check the abrasion of the wheel	Traveling on curved beam 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.	Expiration of service life	Replace the wheel bearing.
	Deformation and abrasion of the beam	Check the abrasion and deformation of the beam.	Overload or expiration of service life	Replace the beam. Use the electric chain hoist correctly.

Traveling motion of the Trolley (only for motorized trolley)

Symptom	Cause	Action	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 beam 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.

Traveling motion of the Trolley (only for manual trolley)

Symptom	Cause	Action	Main factor	Countermeasure
Unable to pull the Hand Chain	Defective engagement of the Hand Wheel and the Hand Chain	Engage the Hand Chain with the Hand Wheel correctly.	Rapid operation	Replace the Hand Chain with abrasion or deformation.

Appendix A

This Appendix summarizes the information helpful for the use of HARRINGTON electric chain hoist, such as optional parts, technical materials and service network.

Optional Parts

Product Structure and Names of Each Part

Technical Material

- Hook Dimensions (for RNER2)
- Table of Lifting Load
- Rated Motor Current
- Conversion Table between Lift/Travel/Speed (m/s"m/min)
- Clearance between Trolley and Applicable Beam
- Wiring Diagram of Dual Speed RNER2/RNER2G
- Wiring Diagram of Dual Speed RNER2M
- Applying Grease on Joint surface, Check Sheet for Daily Inspection, Check Sheet for Frequent Inspection

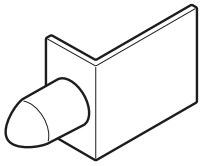
Check Sheet for Periodic Inspection

Optional Parts

Bumper: Stopper for Trolley RMR2

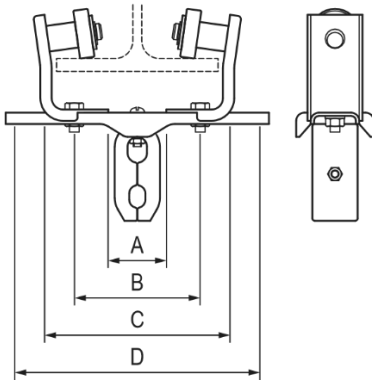
A shock absorber for collision (special for RMR2)

Be sure to use the bumper when the trolley uses urethane wheel.



T-shape Cable Hanger: Attachment for power feeding

Code	Travel Beam width (inch (mm))	Hole pitch (inch (mm))
T-shape Cable Hanger 100	2.95 (75)	A : 2.09 (53)
	3.94 (100)	B : 3.07 (78)
	4.92 (125)	C : 4.05 (103)
	5.9 (150)	D : 5.04 (128)
T-shape Cable Hanger 175	6.9 (175)	A : 6.02 (153)

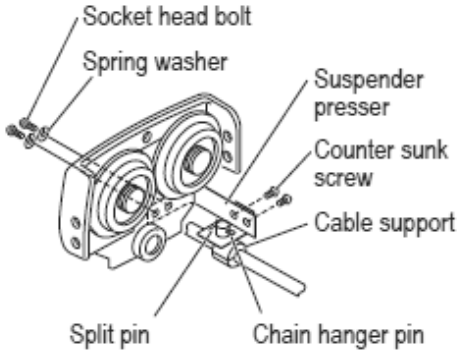


- Contact HARRINGTON when the Travel Beam width exceeds 6.9 inches (175 mm).

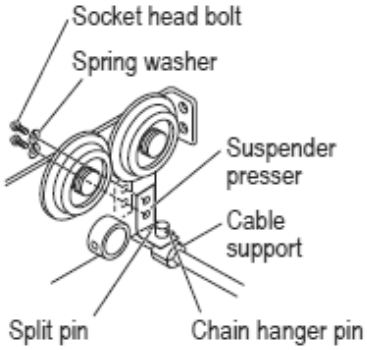
❻ Mounting Suspender Presser

- When using T-shape Cable Hanger, the suspender presser needs to be mounted to the trolley.
- Following holes to mount the suspender presser are worked on the main frame of the trolley. Mount the suspender presser with socket head bolts.
- Fix the cable support to the suspender presser with Chain Pin and split pin and mount the power cable.

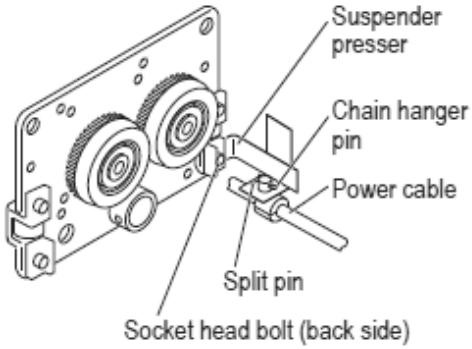
< Manual Trolley 1 t to 3 t >



< Manual Trolley 5 t >

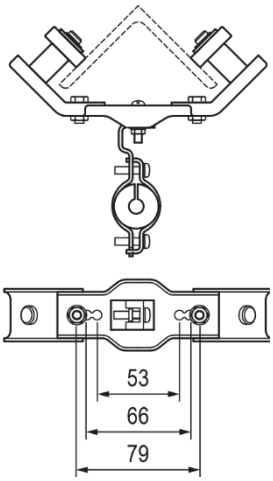


< RMR2 >

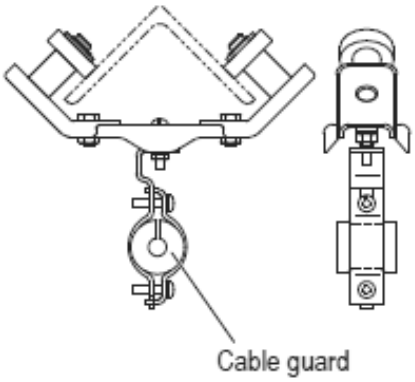


Angle Cable Hanger: Accessory for power feeding

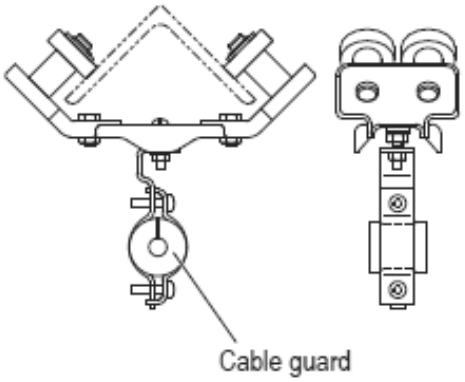
Code	Angle	Hole pitch
THLT and THLP	50×50	53
	65×65	66
	75×75	79



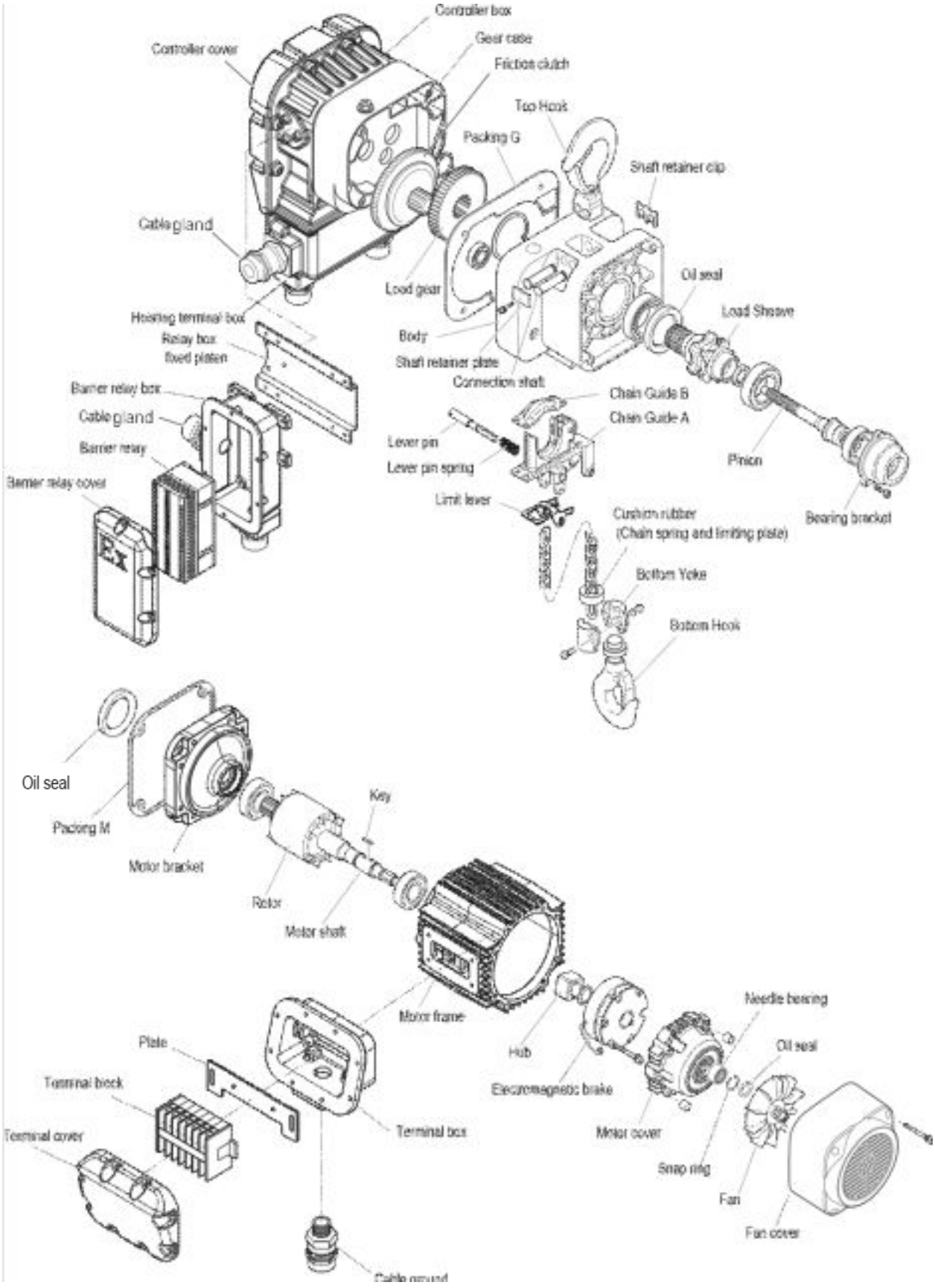
< THLT (for intermediate support >

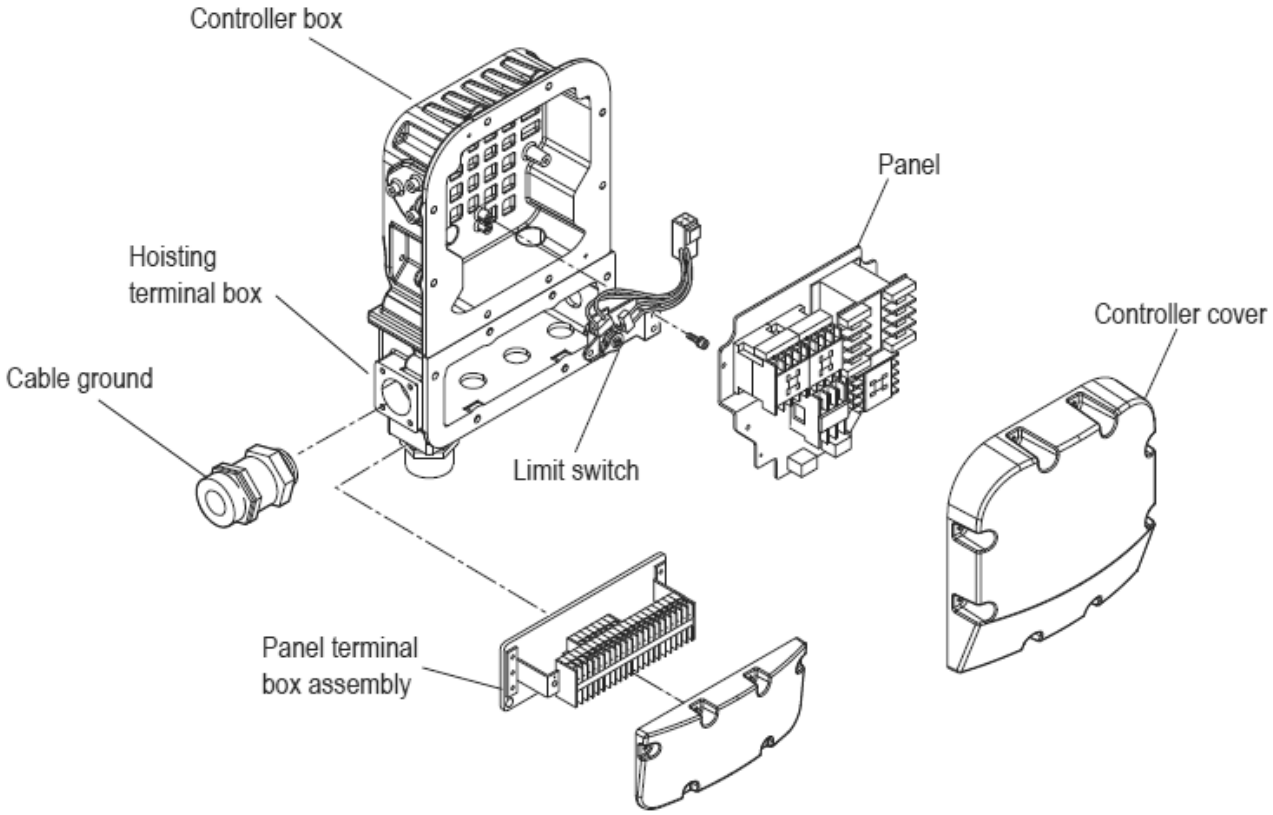


< THLP (for Push Button Switch cord >



Product Structure and Names of Each Part



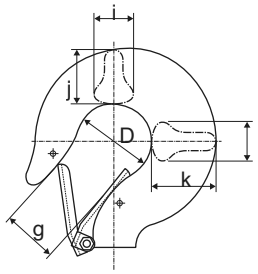


A

Technical Material

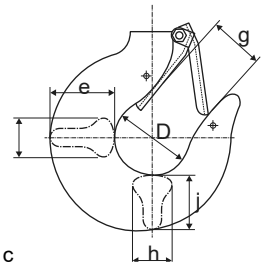
Hook Dimensions (for RNER2)

●Top Hook



l

●Bottom Hook



c

Code		Top Hook inches (mm)						Bottom Hook inches (mm)					
RNER2B	RNER2D	D	g	i	j	k	l	D	g	h	j	e	c
RNER2B-010LD	RNER2D-010LD	1.67 (42.5)	1.22 (31)	0.89 (22.5)	1.22 (31)	1.44 (36.5)	0.89 (22.5)	4.67 (42.5)	1.22 (31)	0.89 (22.5)	1.22 (31)	1.44 (36.5)	0.89 (22.5)
RNER2B-010SD	RNER2D-010SD	4.67 (42.5)	1.22 (31)	0.89 (22.5)	1.22 (31)	1.44 (36.5)	0.89 (22.5)	4.67 (42.5)	1.22 (31)	0.89 (22.5)	1.22 (31)	1.44 (36.5)	0.89 (22.5)
RNER2B-015SD	RNER2D-015SD	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)	1.87 (47.5)	1.34 (34)	1.04 (26.5)	1.44 (36.5)	1.71 (43.5)	1.04 (26.5)
RNER2B-020CD	RNER2D-020CD	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)
RNER2B-020LD	RNER2D-020LD	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)
RNER2B-020SD	RNER2D-020SD	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)
RNER2B-025SD	RNER2D-025SD	2.36 (60)	1.73 (44)	1.28 (32.5)	1.73 (44)	2.05 (52)	1.28 (32.5)	2.09 (53)	1.54 (39)	1.24 (31.5)	1.71 (43.5)	2.03 (51.5)	1.24 (31.5)
RNER2B-030CD	RNER2D-030CD	2.36 (60)	1.73 (44)	1.36 (34.5)	1.87 (47.5)	2.2 (56)	1.36 (34.5)	2.36 (60)	1.73 (44)	1.36 (34.5)	1.87 (47.5)	2.2 (56)	1.36 (34.5)
RNER2B-050LD	RNER2D-050LD	2.48 (63)	1.85 (47)	1.67 (42.5)	2.2 (56)	2.64 (67)	1.67 (42.5)	2.48 (63)	1.85 (47)	1.67 (42.5)	2.2 (56)	2.64 (67)	1.67 (42.5)

Table of Lifting Load

Capacity (t)	1	1.5	2	2.5	3	5
Lifting Load (t)	1.002	1.504	2.004	2.504	3.008	5.014

Note) Above figures are for the standard specification Hook for Electric Chain Hoist RNER2.

Rated Motor Current

Lifting motor

200V Class

Code		Motor output (kW)	Rated Current (A)	
			208-230V	
			60Hz	
RNER2B	RNER2D		High speed	Low speed
RNER2B-010LD/RENR2B-010SD RNER2B-015SD/RNER2B-020CD RNER2B-020LD	RNER2D-010LD/RNER2D-010SD RNER2D-015SD/RNER2D-020CD RNER2D-020LD	1.8/0.45	10.2	5
RNER2B-020SD/RNER2B-025SD RNER2B-030CD/RNER2B-050LD	RNER2D-020SD/RNER2D-025SD RNER2D-030CD/RNER2D-050LD	3.5/0.875	18.7	8.1

400V Class

Code		Motor output (kW)	Rated Current (A)			
			380V		440-460V	
			50Hz		60Hz	
RNER2B	RNER2D		High speed	Low speed	High speed	Low speed
RNER2B-010LD/RENR2B-010SD RNER2B-015SD/RNER2B-020CD RNER2B-020LD	RNER2D-010LD/RNER2D-010SD RNER2D-015SD/RNER2D-020CD RNER2D-020LD	1.8/0.45	5.3	3.1	5.4	3.4
RNER2B-020SD/RNER2B-025SD RNER2B-030CD/RNER2B-050LD	RNER2D-020SD/RNER2D-025SD RNER2D-030CD/RNER2D-050LD	3.5/0.875	8.3	4.8	8.3	4.9

500V Class

Code		Motor output (kW)	Rated Current (A)	
			575V	
			60Hz	
RNER2B	RNER2D		High speed	Low speed
RNER2B-010LD/RENR2B-010SD RNER2B-015SD/RNER2B-020CD RNER2B-020LD	RNER2D-010LD/RNER2D-010SD RNER2D-015SD/RNER2D-020CD RNER2D-020LD	1.8/0.45	3.9	2.4
RNER2B-020SD/RNER2B-025SD RNER2B-030CD/RNER2B-050LD	RNER2D-020SD/RNER2D-025SD RNER2D-030CD/RNER2D-050LD	3.5/0.875	6.4	3.6

Traveling motor

200V Class

Code		Motor output (kW)	Rated Current (A)	
			208-230V	
			60Hz	
RMR2B	RMR2D		High speed	Low speed
RMR2B-010SD/RMR2B-020SD RMR2B-030SD/RMR2B-050SD	RMR2D-010SD/RMR2D-020SD RMR2D-030SD/RMR2D-050SD	0.59/0.15	2.9	3.0

400V Class

Code		Motor output (kW)	Rated Current (A)	
			575V	
			60Hz	
RMR2B	RMR2D		High speed	Low speed
RMR2B-010SD/RMR2B-020SD RMR2B-030SD/RMR2B-050SD	RMR2D-010SD/RMR2D-020SD RMR2D-030SD/RMR2D-050SD	0.59/0.15	1.3	1.1

500V Class

Code		Motor output (kW)	Rated Current (A)			
			380V		440-460V	
			50Hz		60Hz	
RMR2B	RMR2D		High speed	Low speed	High speed	Low speed
RMR2B-010SD/RMR2B-020SD RMR2B-030SD/RMR2B-050SD	RMR2D-010SD/RMR2D-020SD RMR2D-030SD/RMR2D-050SD	0.59/0.15	2.4	2.7	1.9	2.2

Conversion Table between Lift/Travel/Speed (m/s"m/min)

Converted value (m/s)	Conventional value (m/min)	Converted value (m/s)	Conventional value (m/min)	Converted value (m/s)	Conventional value (m/min)	Converted value (m/s)	Conventional value (m/min)	Converted value (m/s)	Conventional value (m/min)	Converted value (m/s)	Conventional value (m/min)
		0.067	4.0	0.133	8.0	0.200	12.0	0.267	16.0	0.333	20.0
0.002	0.1	0.068	4.1	0.135	8.1	0.202	12.1	0.268	16.1	0.335	20.1
0.003	0.2	0.070	4.2	0.137	8.2	0.203	12.2	0.270	16.2	0.337	20.2
0.005	0.3	0.072	4.3	0.138	8.3	0.205	12.3	0.272	16.3	0.338	20.3
0.007	0.4	0.073	4.4	0.140	8.4	0.207	12.4	0.273	16.4	0.340	20.4
0.008	0.5	0.075	4.5	0.142	8.5	0.208	12.5	0.275	16.5	0.342	20.5
0.010	0.6	0.077	4.6	0.143	8.6	0.210	12.6	0.277	16.6	0.343	20.6
0.012	0.7	0.078	4.7	0.145	8.7	0.212	12.7	0.278	16.7	0.345	20.7
0.013	0.8	0.080	4.8	0.147	8.8	0.213	12.8	0.280	16.8	0.347	20.8
0.015	0.9	0.082	4.9	0.148	8.9	0.215	12.9	0.282	16.9	0.348	20.9
0.017	1.0	0.083	5.0	0.150	9.0	0.217	13.0	0.283	17.0	0.350	21.0
0.018	1.1	0.085	5.1	0.152	9.1	0.218	13.1	0.285	17.1	0.352	21.1
0.020	1.2	0.087	5.2	0.153	9.2	0.220	13.2	0.287	17.2	0.353	21.2
0.022	1.3	0.088	5.3	0.155	9.3	0.222	13.3	0.288	17.3	0.355	21.3
0.023	1.4	0.090	5.4	0.157	9.4	0.223	13.4	0.290	17.4	0.357	21.4
0.025	1.5	0.092	5.5	0.158	9.5	0.225	13.5	0.292	17.5	0.358	21.5
0.027	1.6	0.093	5.6	0.160	9.6	0.227	13.6	0.293	17.6	0.360	21.6
0.028	1.7	0.095	5.7	0.162	9.7	0.228	13.7	0.295	17.7	0.362	21.7
0.030	1.8	0.097	5.8	0.163	9.8	0.230	13.8	0.297	17.8	0.363	21.8
0.032	1.9	0.098	5.9	0.165	9.9	0.232	13.9	0.298	17.9	0.365	21.9
0.033	2.0	0.100	6.0	0.167	10.0	0.233	14.0	0.300	18.0	0.367	22.0
0.035	2.1	0.102	6.1	0.168	10.1	0.235	14.1	0.302	18.1	0.368	22.1
0.037	2.2	0.103	6.2	0.170	10.2	0.237	14.2	0.303	18.2	0.370	22.2
0.038	2.3	0.105	6.3	0.172	10.3	0.238	14.3	0.305	18.3	0.372	22.3
0.040	2.4	0.107	6.4	0.173	10.4	0.240	14.4	0.307	18.4	0.373	22.4
0.042	2.5	0.108	6.5	0.175	10.5	0.242	14.5	0.308	18.5	0.375	22.5
0.043	2.6	0.110	6.6	0.177	10.6	0.243	14.6	0.310	18.6	0.377	22.6
0.045	2.7	0.112	6.7	0.178	10.7	0.245	14.7	0.312	18.7	0.378	22.7
0.047	2.8	0.113	6.8	0.180	10.8	0.247	14.8	0.313	18.8	0.380	22.8
0.048	2.9	0.115	6.9	0.182	10.9	0.248	14.9	0.315	18.9	0.382	22.9
0.050	3.0	0.117	7.0	0.183	11.0	0.250	15.0	0.317	19.0	0.383	23.0
0.052	3.1	0.118	7.1	0.185	11.1	0.252	15.1	0.318	19.1	0.385	23.1
0.053	3.2	0.120	7.2	0.187	11.2	0.253	15.2	0.320	19.2	0.387	23.2
0.055	3.3	0.122	7.3	0.188	11.3	0.255	15.3	0.322	19.3	0.388	23.3
0.057	3.4	0.123	7.4	0.190	11.4	0.257	15.4	0.323	19.4	0.390	23.4
0.058	3.5	0.125	7.5	0.192	11.5	0.258	15.5	0.325	19.5	0.392	23.5
0.060	3.6	0.127	7.6	0.193	11.6	0.260	15.6	0.327	19.6	0.393	23.6
0.062	3.7	0.128	7.7	0.195	11.7	0.262	15.7	0.328	19.7	0.395	23.7
0.063	3.8	0.130	7.8	0.197	11.8	0.263	15.8	0.330	19.8	0.397	23.8
0.065	3.9	0.132	7.9	0.198	11.9	0.265	15.9	0.332	19.9	0.398	23.9
										0.400	24.0
										0.500	30.0
										0.600	36.0

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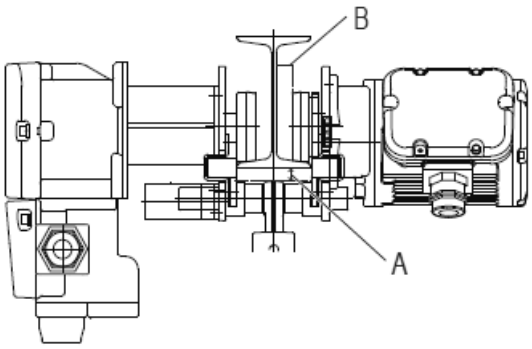
Clearance between Trolley and Applicable Beam

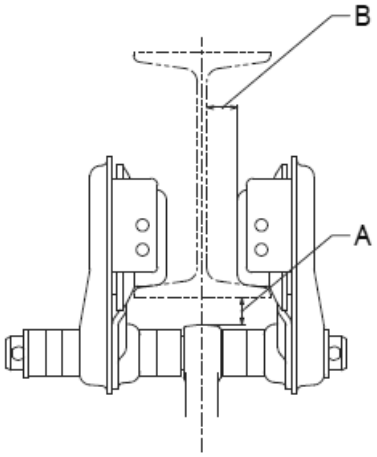
Motorized Trolley

I-beam size (mm)			Clearance between trolley and beam (mm)								
			~1t		~2t		~3t			~5t	
							Single	Double			
H	B	t	A	B	A	B	A	A	B	A	B
100	75	5	×	×	×	×	×	×	×	×	×
125	75	5.5	14	9.75	×	×	×	×	×	×	×
150	75	5.5	14	9.75	×	×	×	×	×	×	×
180	100	6	14	22	19	19.5	×	×	×	×	×
200	100	7	14	21.5	19	19	×	×	×	×	×
150	125	8.5	11	33.3	15	30.8	×	×	×	×	×
250	125	7.5	13	33.8	17	31.3	10.6	11.8	28.8	32	18.3
250	125	10	5.9	32.5	10	30	17.2	18.4	27.5	26	17
200	150	9	9.8	45.5	14	43	14.5	15.7	40.5	30	30
300	150	8	13	46	17	43.5	17.6	18.8	41	33	30.5
300	150	10	7.3	45	12	42.5	12	13.2	40	27	29.5
300	150	12	3.7	44.3	8.2	41.8	8.5	9.7	39.3	24	28.8
350	150	9	11	45.5	15	43	15.5	16.7	40.5	31	30
350	150	12	1.7	44	6.2	41.5	6.4	7.6	39	22	28.5
400	150	10	7.8	45	12	42.5	12.5	13.7	40	28	29.5
400	150	13	0.7	43.8	5.1	41.3	5.4	6.6	38.8	21	28.3
450	175	11	×	×	11	54.5	11.4	12.6	52	20	41.5
450	175	13	×	×	4.5	53.5	4.3	5.5	51	27	40.5
600	190	13	×	×	6.5	61	6.8	8	58.5	22	48
600	190	16	×	×	×	×	×	×	×	12	46.5

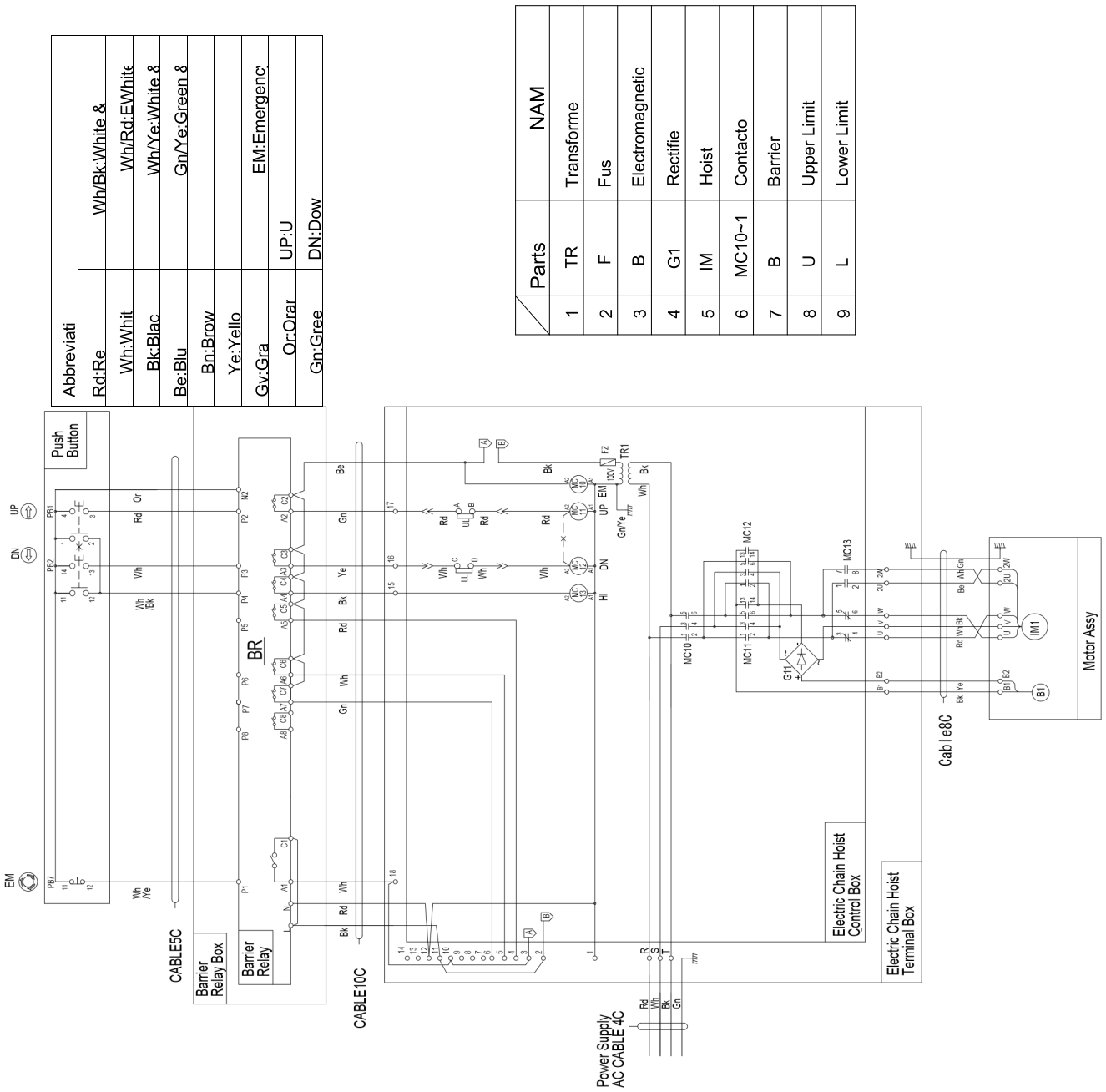


Manual Trolley

I-beam size (mm)			Clearance between trolley and beam (mm)							
			RTSG							
			~1t		~2t		~3t		~5t	
H	B	t	A	B	A	B	A	B	A	B
100	75	5	21.1	11.0	×	×	×	×	×	×
125	75	5.5	19.5	10.75	×	×	×	×	×	×
150	75	5.5	19.5	10.75	×	×	×	×	×	×
180	100	6	19.9	23.0	25.6	18.5	×	×	×	×
200	100	7	19.9	22.5	25.6	18	×	×	×	×
150	125	8.5	16.7	34.25	22.4	29.75	24.1	27.25	×	×
250	125	7.5	18.2	34.75	23.9	30.25	25.6	27.75	35.2	20.25
250	125	10	11.6	33.5	17.3	29	19	26.5	28.6	19
200	150	9	15.6	46.5	21.2	42	22.9	39.5	32.5	32
300	150	8	18.6	47.0	24.3	42.5	26	40	35.6	32.5
300	150	10	13.0	46.0	18.7	41.5	20.4	39	30.5	31.5
300	150	12	9.5	45.25	15.2	40.75	16.9	38.25	26.4	30.75
350	150	9	16.6	46.5	22.2	42	23.9	39.5	33.5	32
350	150	12	7.5	45.0	13.1	40.5	14.8	38	24.4	30.5
400	150	10	13.5	46.0	19.2	41.5	20.9	39	30.5	31.5
400	150	13	6.4	44.75	12.1	40.25	13.8	37.75	23.4	30.25
450	175	11	12.4	58.0	18.1	53.5	19.7	51	29.3	43.5
450	175	13	5.3	57.0	11.0	52.5	12.7	50	22.3	42.5
600	190	13	7.8	64.5	13.5	60	15.2	57.5	24.8	50
600	190	16	×	×	3.4	58.5	5.1	56	14.7	48.5



Wiring Diagram of Dual Speed RNER2/RNER2G



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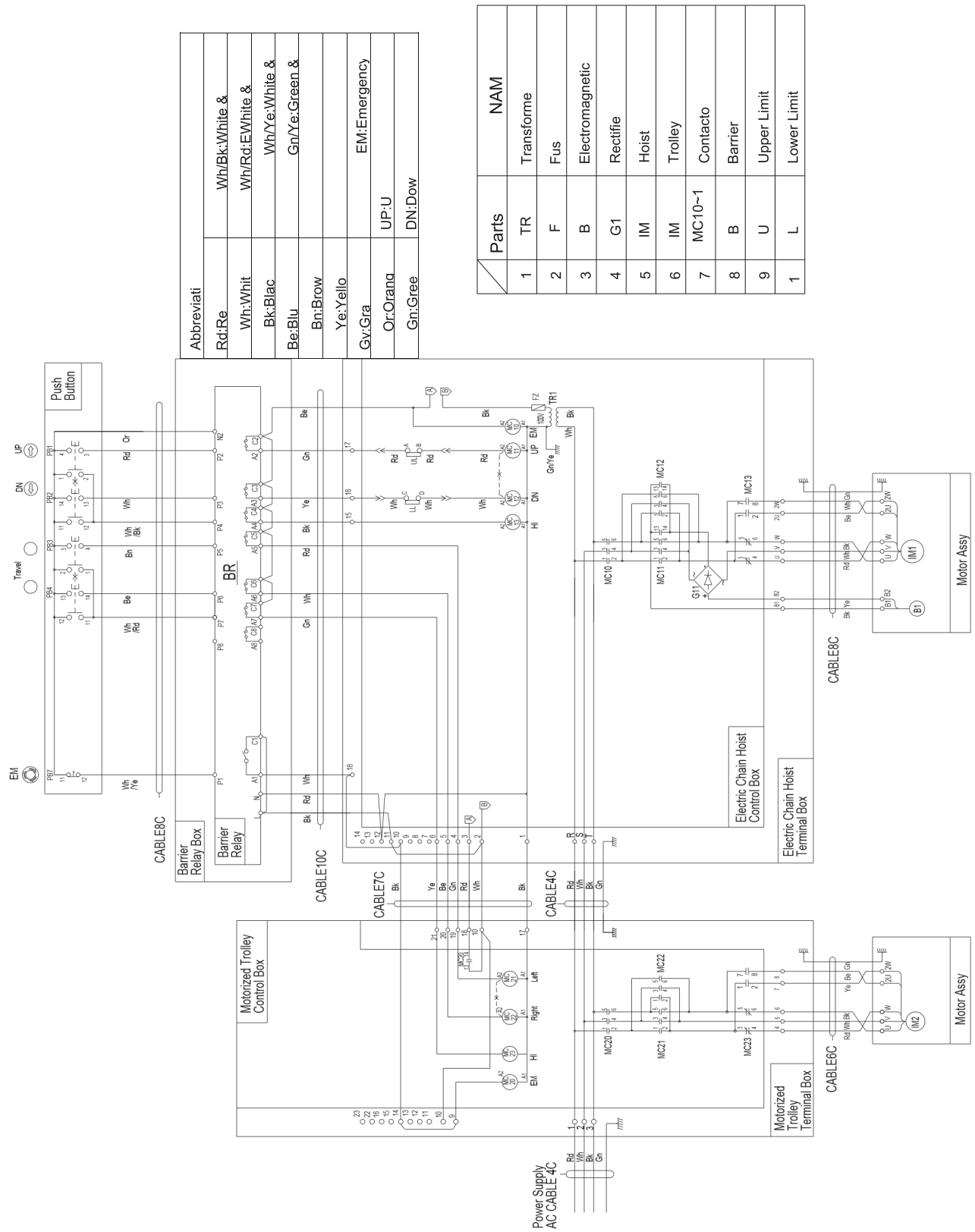
Wiring Diagram of Dual Speed RNER2M



Check Sheet for Daily Inspection

Code		Capacity	Lot No.	Your CTRL No.	Installation date	Location	Inspection Certification valid thru
Electric Chain Hoist	RNER2						
Motorized Trolley	RMR2						

Electric Chain Hoist RNER2 Daily Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Appearance	Unauthorized modification	Visual inspection	No unauthorized modifications visible to the naked eye						
	Indication of nameplates and labels	Visual inspection	To have no peeled off. To be legible clearly.						
	Deformation and damage of each part of body	Visual inspection	To have no apparent deformation, damage, flaw, crack, rust or corrosion						
	Cable damage	Visual inspection	No deterioration or damage on exterior covering						
	Bolts, nut, split pins	Visual inspection	To have no loosened bolts, nuts, and split pins that can be seen from exterior. To have no come-off.						
	Cleanliness	Visual inspection	No excessive buildup of dust or dirt						
Load Chain	Elongation of pitch	Visual inspection	To have no apparent elongation						
	Abrasion of wire diameter	Visual inspection	To have no apparent abrasion						
	Deformation, flaw, entanglement	Visual inspection	To have no apparent deformation, harmful flaw and entanglement						
	Rust, corrosion	Visual inspection	To have no apparent rust and corrosion						
	Twist	Visual inspection	To have no twisting due to capsized Bottom Hook of double type						
	Oiling	Visual inspection	To be oiled adequately						
	Check of mark	Visual inspection	To have no error in indication and marked pitch						
Top Hook, Bottom Hook	Stretched opening	Visual inspection	To have no stretched opening						
	Abrasion	Visual inspection	To have no apparent abrasion						
	Deformation, flaw, corrosion, rust	Visual inspection	To have no apparent deformation, harmful flaw, corrosion and rust						
	Hook Latch motion	Visual inspection/ inspection by operation	To open/close smoothly						
	Hook motion (swivel)	Visual inspection/ inspection by operation	To have no apparent gap between Hook and Bottom Yoke						
	Idle Sheave motion	Visual inspection/ inspection by operation	Load Chain to move smoothly						
	Bottom Yoke	Visual inspection	To have no loosened bolt and nut						
Body Peripheral Part	Chain spring	Visual inspection	To have no apparent permanent set						
	Cushion rubber	Visual inspection	• To have no apparent permanent set •To have no crack and peel off of rubber and steel plate						
Pressure Resistant Containers	Condition around joint surfaces	Visual inspection	• To have no rust, corrosion, and damage • To be clean • To have no damage on paint • To have no grease leakage						
Push Button Switch	Switch body	Visual inspection	• To have no deformation, damage and loosened screw • Indication to be legible clearly						
Function/performance	Operational check	Press the push buttons to check the operation	• Load Chain to be wound smoothly • Electric Chain Hoist operates in the same direction as that of the push button operation • Motor to stop immediately when stopping the operation • All operations to stop when Emergency Stop is pressed • Electric Chain Hoist not to operate when pressing the push button while Emergency Stop is pressed • Electric Chain Hoist to operate normally when canceling Emergency Stop						
	Brake	Lifting/lowering operation with no load	Brake to operate securely and Bottom Hook to stop immediately (Guideline: Travel of the load chain is within 2 to 3 links.)						
	Limit switch	Lifting/lowering operation with no load	Motor to stop automatically when operating the electric chain hoist to upper/lower limit						
	Strange noise	Lifting/lowering operation with no load	To have no strange sound or vibration						

Executed by	Inspector						
Checked by	Qualified person						

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⚠ WARNING

Mandatory

- **When any abnormality is observed during inspection, stop the use of electric chain hoist, indicate "FAILURE", and contact the qualified person or HARRINGTON for repair.**

Use of the product with abnormality may result in death or serious injury.

NOTE

Decide the check items appropriate to the environment and operating conditions of the customer.

Motorized Trolley RMR2 Daily Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Appearance	Unauthorized modification	Visual Inspection	No unauthorized modifications visible to the naked eye						
	Indication of nameplates and labels	Visual inspection	To have no peeled off. To be legible clearly.						
	Deformation and damage of each part	Visual inspection	• To have no apparent deformation and corrosion • Frame to have no apparent deformation						
	Bolts, nut, split pins	Visual inspection	To have no loosened bolts, nuts, and split pins that can be seen from exterior. To have no come-off.						
Pressure Resistant Containers	Condition around joint surface	Visual Inspection	• To have no rust, corrosion, and damage • To be clean • To have no damage on paint To have no grease leakage						
Function/performance	Operational check	Traveling operation with no load	• To travel smoothly. To have no serpentine motion and vibration. • Electronic Chain Hoist operates in the same direction as that of the push button operation • Motor to stop immediately when stopping the operation • All operations to stop when E-stop is pressed • Electric Chain Hoist not to operate when pressing the push button while E-stop is pressed • Electric Chain Hoist to operate normally when canceling E-stop						
	Brake	Traveling operation with no load	When stopping the operation, brake to operate securely and motor to stop immediately						

Executed by	Inspector							
Checked by	Qualified person							

Manual Trolley RTSG Daily Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Appearance	Indication of nameplates and labels	Visual inspection	To have no peeled off. To be legible clearly.						
	Deformation and damage of each part	Visual inspection	• To have no apparent deformation and corrosion • Frame to have no apparent deformation						
	Bolts, nut, split pins	Visual inspection	To have no loosened bolts, nuts, and split pins that can be seen from exterior. To have no come-off.						
Function/ performance	Operational check	Traveling operation with no load	• To travel smoothly. To have no serpentine motion and vibration.						

Executed by	Inspector							
Checked by	Qualified person							

Check Sheet for Frequent Inspection

Code		Capacity	Lot No.	Your CTRL No.	Installation date	Location	Inspection Certification valid thru
Electric Chain Hoist	RNER2						
Motorized Trolley	RMR2						

Electric Chain Hoist RNER2 Frequent Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Preceding Inspection	Daily inspection	Check the execution	When performing frequent inspection, also perform the daily inspection.						
Appearance	Bolts, nuts and splits pins	Visual inspection	To have no rust, corrosion on bolts, nuts and splits pins						
Load Chain	Elongation of pitch	Pitch measurement	Sum of pitches for 5 links must not exceed the limit value.						
	Abrasion of wire diameter	Diameter measurement	Not to exceed the limit value						
Top Hook, Bottom Hook	Stretched opening	Measurement	Interval between embossed marks not to exceed the limit value						
	Abrasion	Measurement	To have no abrasion exceeding the limit value (5 %)						
	Deformation, flaw, corrosion	Visual inspection	• To have no bending and twist • To have no attached foreign matter such as weld splatter						
Body Peripheral Part	Chain container	Visual inspection	• To be mounted securely • To have no breakage, deformation and foreign matter • Lift must be shorter than the length of the permissible capacity of the chain container						
Pressure Resistant Containers with Hazardous Locations Construction (Controllers, Barrier Relay Boxes, Motors)	Gaps in junction areas on surfaces	Visual inspection	No expanding gaps						
	Installation bolts	Visual inspection	Appropriate type, complete and tight To have no rust, corrosion						
	Cable retraction opening	Visual inspection or inspection with tools	• No damage to the cable retraction opening • No looseness in the cable holder installation area						
Oil	OIL Leakage	Visual inspection	To have no leakage of gear oil from packings, oil seals or oil plugs						
	OIL plug	Visual inspection	To have no deterioration or damages.						
Push Button Switch	Switch body	Visual inspection/ inspection by operation	• Operation buttons to move smoothly • Emergency Stop button to be enabled to operate and cancel						
	Push Button Switch cord	Visual inspection	• To be fastened securely • Pull down on the Pendant and ensure that Strain Relief Cable takes the force, not the Pendant cord. • To have no damage						
Power Feeding	Power cable	Visual inspection	• To have slack • To have no damage • To be connected securely						
	Cable hanger	Visual inspection	• To have no damage • To move with a small force • To be mounted at equal spacing						
	Messenger wire	Visual inspection	• To have no slack						
Function/ performance	Strange noise	Lifting/lowering operation with no load	• To have no humming noise from motor and scraping sound of the brake • To have no popping sound of load chain from the chain guide						

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⚠ WARNING	NOTE
 Mandatory • **When any abnormality is observed during inspection, stop the use of electric chain hoist, indicate "FAILURE", and contact the qualified person or HARRINGTON for repair.** Use of the product with abnormality may result in death or serious injury.	**Decide the check items appropriate to the environment and operating conditions of the customer.**

Motorized Trolley RMR2 Frequent Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Preceding Inspection	Daily inspection	Check the execution	When performing frequent inspection, also perform the daily inspection.						
Appearance	Bolts, nuts and splits pins	Visual inspection	To have no rust, corrosion on bolts, nuts and splits pins						
	Travel beam (guider)	Visual inspection	To have apparent deformation and damage						
	Oiling	Visual inspection	To be oiled adequately						
Oil	OIL Leakage	Visual inspection	To have no leakage of gear oil from packings, oil seals or oil plugs						
Refer to check table of electric chain hoist RNER2 for electrical parts, push button switch, power feeding, electrical characteristics and Pressure Resistant Containers with Hazardous Locations Construction.									

Executed by	Inspector						
Checked by	Qualified person						

Manual Trolley RTSG Frequent Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Appearance	Combination	Shake the hoist	Electric chain hoist to swing right and left swiftly						
	Travel beam (guider)	Visual inspection	To have apparent deformation and damage						
	Oiling	Visual inspection	To be oiled adequately						

Executed by	Inspector						
Checked by	Qualified person						

Check Sheet for Periodic Inspection

Code		Capacity	Lot No.	Your CTRL No.	Installation date	Location	Inspection Certification valid thru
Electric Chain Hoist	RNER2						
Motorized Trolley	RMR2						

Electric Chain Hoist RNER2 Periodic Inspection (1/2)

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Preceding Inspection	Daily inspection	Check the execution	When performing periodic inspection, also perform the daily inspection.						
	Frequent inspection	Check the execution	When performing periodic inspection, also perform the frequent inspection.						
Top Hook, Bottom Hook	Bolts, nuts and splits pins	Visual inspection	To have no rust, corrosion on bolts, nuts and splits pins						
Body Peripheral Part	Chain guide A	Visual inspection	• To have no apparent abrasion and damage • To have no flaw due to hitting by Load Chain						
	Chain spring	Visual inspection/ inspection by measurement	• To have no apparent permanent setting (deformation) • Length of the chain spring to be longer than the criteria						
	Stopper	Visual inspection	Stopper must be mounted securely at the third link from the load chain end at no load side						
	Limit lever	Visual inspection/ inspection by operation	• To have no deformation, damage and abrasion • To move smoothly • To be clean						
	Chain pin	Visual inspection/ inspection by measurement	• To have no apparent deformation and flaw • Not to lower the criteria						
	Connection Yoke	Visual inspection/ inspection by measurement	• To have no apparent deformation, abrasion and damage • The difference between the hole diameter in vertical and lateral to be within 0.5 mm						
	Shaft retainer clip	Visual inspection	• To have no deformation, damage and abrasion • To be mounted securely without looseness						
Pressure Resistant Containers with Hazardous Locations Construction (Controllers, Barrier Relay Boxes, Motors)	Consistency between nameplate indication and operational environment	Check the operational environment against the nameplate indication.	The operational environment must conform with the nameplate indication as to hazardous location, temperature rating, gas type, dust type, etc.						
	Condition of junction areas on surfaces	Remove the lid and check visually.	• No rust • Clean • No damage • Liquid packing in good condition						
	Unused lead wire	Visual inspection	Insulated						
	Gasket (Motor)	Visual inspection	• To have no damage. • Gasket in good condition						
	Grounding	Check with tools.	• The connection must be robust. • The conductor cross-sectional area is sufficient.						
	Wiring	Visual inspection	Must be surely connected						
	Electrical insulators	Visual inspection	Clean and dry.						
	Fuse	Check the fuse rating on the secondary side of the transformer in the control box.	Must be 1A and 250V.						
	Cable retraction opening	Disassemble and check	No deterioration in packing						
	Moving parts on the limit shaft	Disassemble and check	• Diameter of limit lever pin not less than 15.95mm • Inner diameter of sleeve not greater than 16.07mm						
	Between the fan and the fan cover	Perform hoisting and lowering operations.	No rubbing noise between the fan and fan cover.						
	Certificate of conformity for barrier relay	Visual inspection	The barrier relay has a certificate of acceptance.						
	Wiring inside the barrier relay box	Check if the wiring is correct.	Wiring must be the same as shown in the wiring diagrams.						

⚠ WARNING


Mandatory

- **When any abnormality is observed during inspection, stop the use of electric chain hoist, indicate "FAILURE", and contact the qualified person or HARRINGTON for repair.**

Use of the product with abnormality may result in death or serious injury.

NOTE

Decide the check items appropriate to the environment and operating conditions of the customer.

Electric Chain Hoist RNER2 Periodic Inspection (2/2)

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Oil	Oil leakage	Visual inspection	• To have no oil leakage at packing, oil seal and oil plug • To have no damage on the Packings, Oil seals or Oil plugs.						
	Oil amount and stain	Visual inspection	• Oil is filled enough close to the oil check hole. • Gear oil has viscosity but not stained. • Even if the above standards are met, replace the oil at least every 5 years.						
Electromagnetic Brake	Appearance	Visual inspection	• To have no loosened bolts and screws • To have no flaw and damage						
	Gap	Measurement	The gap not to exceed the limit value						
	Hub and joint	Visual inspection	• To have no deformation and abrasion • Hub spring not to come off						
Driving Nut	Bearing	Visual inspection	• To have no apparent abrasion, flaw and damage • To move smoothly						
	Load gear, Gear B, Pinion	Visual inspection	• To have no apparent abrasion, deformation and damage						
	Friction clutch	Visual inspection	• To have no apparent abrasion, deformation and flaw						
	Load sheave	Visual inspection/ inspection by measurement	• To have no apparent abrasion, deformation and damage • To have no flaw on sheave pocket due to defective engagement • The thickness of sheave pocket must not lower the criteria.						
	Idle sheave	Visual inspection/ inspection by measurement	• To have no apparent abrasion, deformation and damage • To have no flaw on sheave pocket due to defective engagement • The thickness of sheave pocket must not lower the criteria.						
Electrical parts	Electrical parts	Visual inspection	• To have no damaged or burnt part To be mounted securely • Even if the above standards are met, replace the oil at least every 5 years.						
	Wiring	Visual inspection	• Wiring to be fixed to electrical parts securely • Connector to be inserted securely • To have no damaged or burnt part						
	Intrusion or attachment of foreign matter	Visual inspection	• To have no water drop or foreign matter such as dust inside						
Electric Characteristic	Source voltage	Measurement	To be supplied power within rated voltage ± 10 %						
	Insulation resistance	Measurement	Insulation resistance to be higher than 5 MΩ						
	Grounding resistance	Measurement	Source voltage of 10 ohms or less						
Function / Performance	Operational check	Lifting/lowering operation with a capacity	Perform inspection of the items on function/ performance of daily inspection and frequent inspection with no load, and then perform the inspection of the same items with a capacity.						
	Brake	Lifting/lowering operation with a capacity Visual inspection/ inspection by measurement	Stopping distance of lifting/lowering to be within 1 % of the lifting distance						

Executed by	Inspector							
Checked by	Qualified person							

Code		Capacity	Lot No.	Your CTRL No.	Installation date	Location	Inspection Certification valid thru
Electric Chain Hoist	RNER2						
Motorized Trolley	RMR2						

Motorized Trolley RMR2 Periodic Inspection

■Check result : ○ Good, △To be replaced (adjusted) next inspection, ×Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Preceding Inspection	Daily inspection	Check the execution	When performing periodic inspection, also perform the daily inspection.						
	Frequent inspection	Check the execution	When performing periodic inspection, also perform the frequent inspection.						
Brake	Appearance	Visual inspection	• To have no deformation, flaw and damage on the brake drum and motor cover • To have no deformation, flaw and damage on brake spring						
	Brake Pad	Measurement	Abrasion to be less than limit value						
Body Component	Wheel	Visual inspection/ inspection by measurement	• To have apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Side roller	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Lifting shaft	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Suspender, Connection Yoke	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Gear frame packing	Visual inspection	• To have no damage, breakage and grease leakage.						
	Gears, motor shaft	Visual inspection	• To have no apparent abrasion, deformation and damage						
Travel Beam	Beam surface	Visual inspection	• To have no attachment of paint, oil and foreign matter • To have no dust and powder due to abrasion						
	Deformation, abrasion	Visual inspection/ inspection by measurement	• To have no deformation of beam flange such as twist and shear drop • To have no exceeding abrasion of beam surface						
	Beam fixing bolt	Visual inspection	To be mounted securely without looseness and come-off						
	Stopper	Visual inspection	To be mounted securely without looseness and come-off at the beam end						
Relay cable	Appearance	Visual inspection	To be connected securely without deformation and damage						
Refer to check table of electric chain hoist RNER2 for electrical parts, switch, power feeding, electrical characteristics and Pressure Resistant Containers with Hazardous Locations Construction.									
Function / Performance	Operational check	Traveling operation with a capacity Visual inspection/ inspection by measurement	Perform inspection of the items on function/performance of daily inspection with no load, and then perform the inspection of the same items with a capacity. • To travel smoothly without serpentine motion and vibration						
	Brake	Traveling operation with a capacity Visual inspection/ inspection by measurement	• Stopping distance of traveling to be within 10 % of the traveling distance, when no swinging of a load						
	Strange noise	Traveling operation with a capacity Visual inspection/ inspection by measurement	• To have no irregular rotating noise • To have no motor hamming or scraping noise of a brake						

Executed by	Inspector						
Checked by	Qualified person						

⚠ WARNING

Mandatory

• When any abnormality is observed during inspection, stop the use of electric chain hoist, indicate "FAILURE", and contact the qualified person or HARRINGTON for repair.

Use of the product with abnormality may result in death or serious injury.

NOTE

Decide the check items appropriate to the environment and operating conditions of the customer.

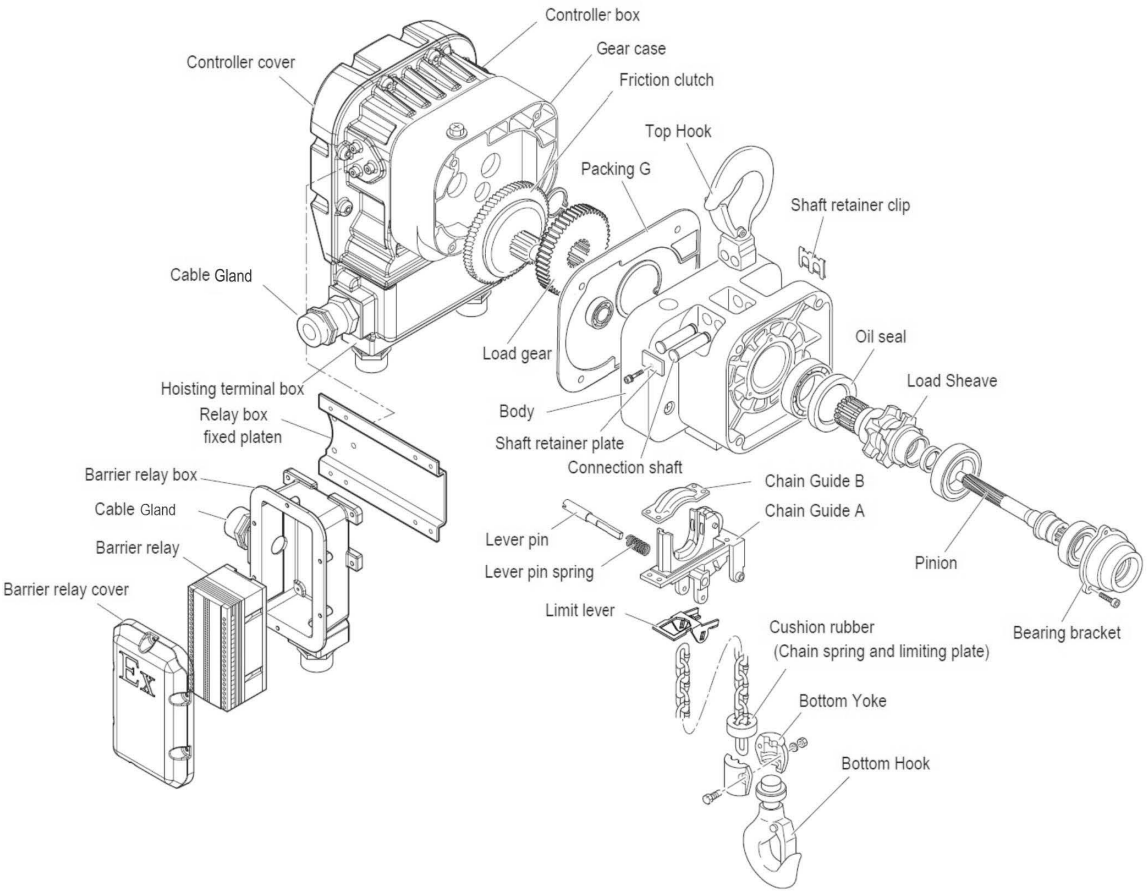
Manual Trolley RTSG Periodic Inspection

■Check result : ○ Good, △ To be replaced (adjusted) next inspection, × Bad, Needs replacement (adjustment)

Category	Check item	Check method	Criteria	Inspection date/result					
				/	/	/	/	/	/
Body Component	Wheel	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Lifting shaft	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
	Suspender	Visual inspection/ inspection by measurement	• To have no apparent deformation and damage • Abrasion of outer diameter to be less than limit value						
Travel Beam	Beam surface	Visual inspection	• To have no attachment of paint, oil and foreign matter • To have no dust and powder due to abrasion						
	Deformation, abrasion	Visual inspection/ inspection by measurement	• To have no deformation of beam flange such as twist and shear drop • To have no exceeding abrasion of beam surface						
	Beam fixing bolt	Visual inspection	To be mounted securely without looseness and come-off						
	Stopper	Visual inspection	To be mounted securely without looseness and come-off at the beam end						
Function / Performance	Operational check	Traveling operation with a capacity Visual inspection/ inspection by measurement	Perform inspection of the items on function/ performance of daily inspection with no load, and then perform the inspection of the same items with a capacity.						
	Strange noise	Traveling operation with a capacity Visual inspection/ inspection by measurement	Perform inspection of the items on function/ performance of daily inspection with no load, and then perform the inspection of the same items with a capacity.						

Executed by	Inspector							
Checked by	Qualified person							

A

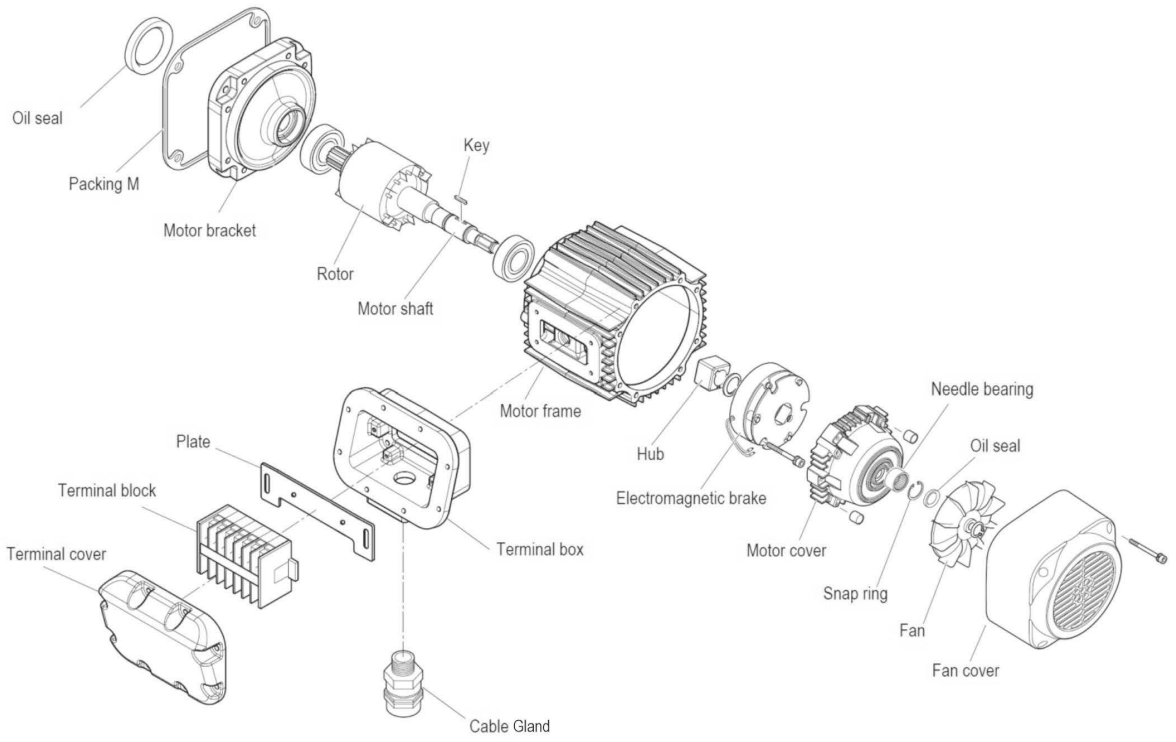


Parts List - Housing and Motor Parts

⚠ NOTICE

- **Contact HARRINGTON for replacement components**

Mandatory Otherwise it may result in injury

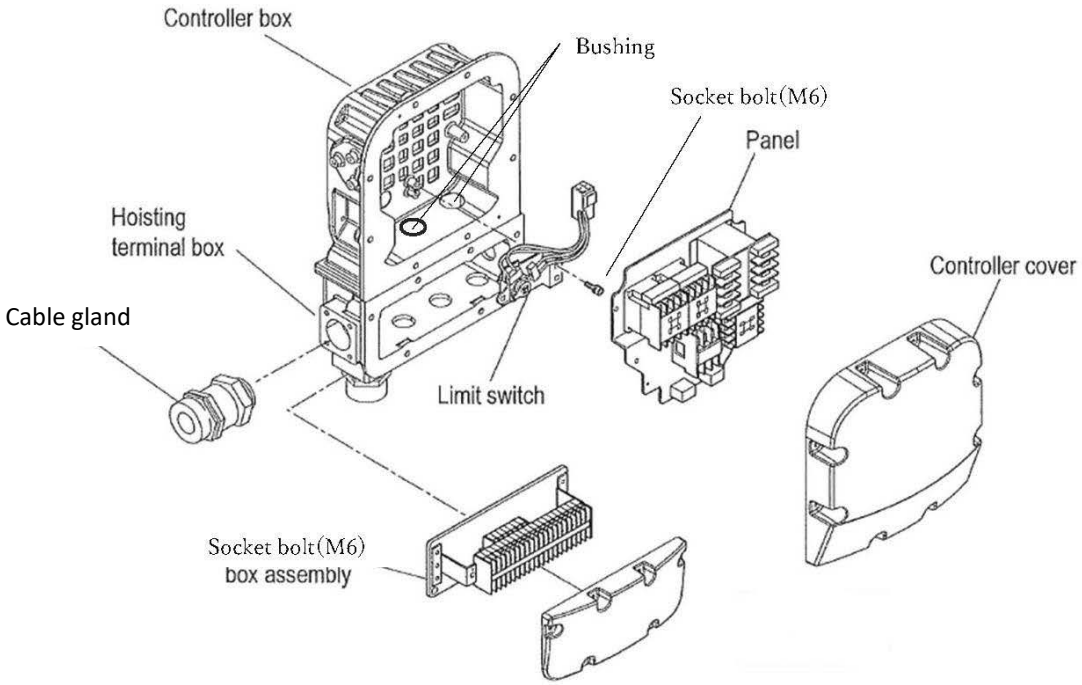


Parts List - Housing and motor parts

⚠ NOTICE

• Contact HARRINGTON for replacement components

Mandatory Otherwise it may result in injury



Parts List - Controller Parts

⚠ NOTICE

• Contact HARRINGTON for replacement components.

Mandatory Otherwise it may result in injury.

Appendix B

This Appendix summarizes special service considerations for the HARRINGTON RNER series electric chain hoists.

B

Disassembly

1. Disassemble electrical components in the control box (common to hoists and trolleys)

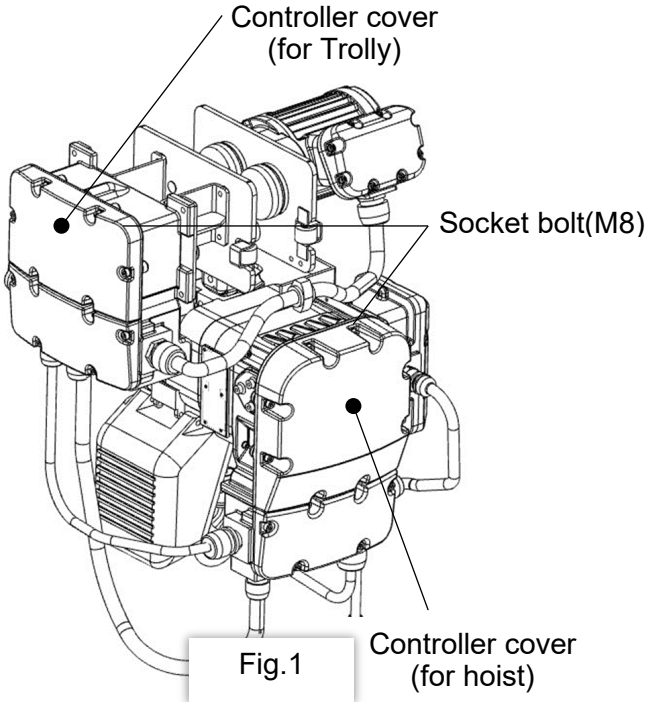


Fig.1

(1) Remove the socket bolts (For Hoist, Trolley 8 Pieces Each) from the controller cover and remove the controller cover.

Note: Handle with care to avoid scratches or dents on the joint surface between the cover and box.

If scratches or dents are caused on the joint surface, the explosion-proof function will be affected, and the product will not be usable.

(2) After removing the lead wire and connector connected to the panel from the bushing attached to the controller box, remove the navel connector(4 pieces) to secure the panel, and then remove the panel.

For the hoist, continue below.

(3) The limit switch lead wire is connected to the panel van, so remove the coupler from this wire.

(4) Remove the socket bolts (3) that secure the limit switch.

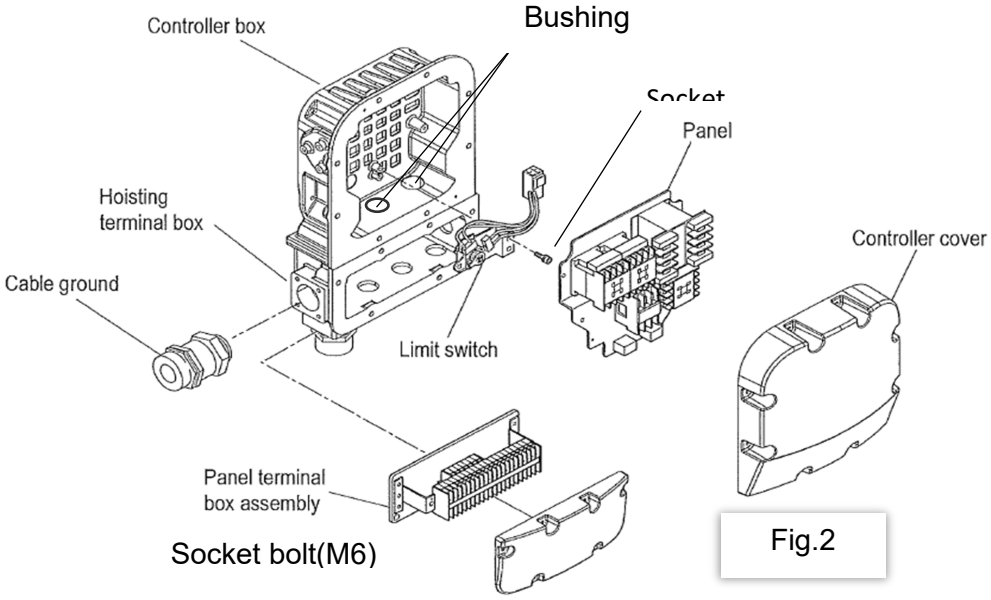


Fig.2

2. Disassembly to replace electrical components and cables in the connection box (common to hoists and trolleys)

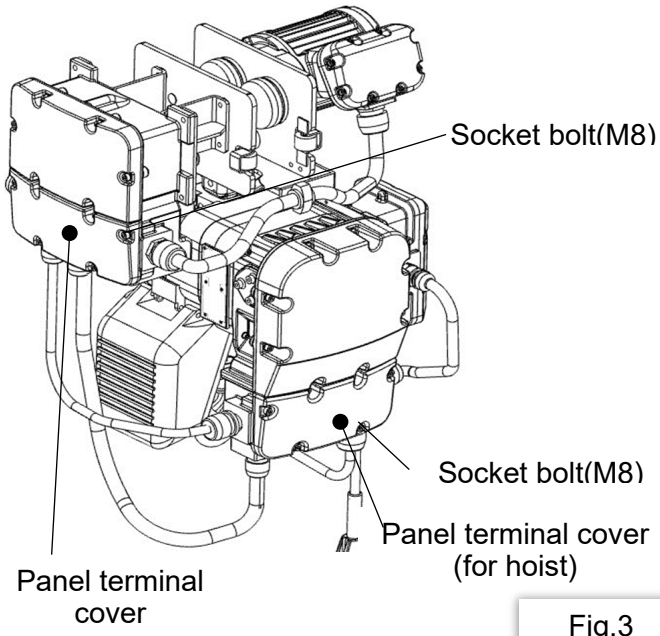


Fig.3

(1) Remove the socket bolt (For Hoist, Trolley 6 Pieces Each) from the panel terminal cover and remove the panel terminal cover.
Note: Handle with care to avoid scratches or dents on the cover and box joints.
If scratches or dents are made on the joints, the explosion-proof function will be affected, and the product will not be usable.

(2) After disconnecting the lead wire connected to the terminal block from the bushing attached to the controller box and the lead wire connected to the terminal block from the cable ground, remove the navel connection (4 pieces) fixing the terminal block and remove the terminal block.

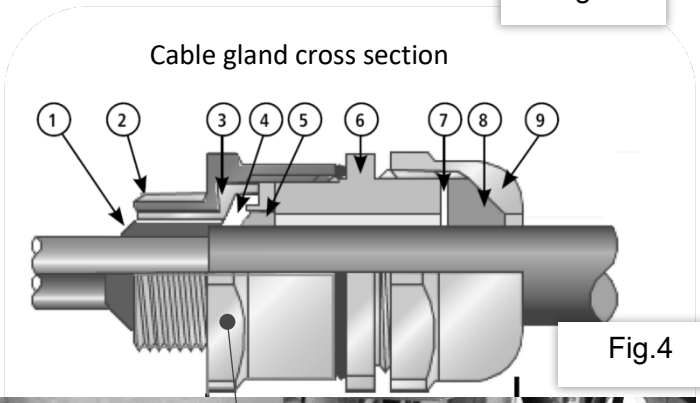


Fig.4

(3) Only the (2) part (Entry item) of the cable gland cross section is left in the panel terminal box, and the other cable gland components are removed in order from the (9) part side.
Note:(2) Never loosen the entry item. The panel terminal box screws are damaged and cannot be used.
② If you remove the parts (6) from the cable, the parts (1) and (3) to (5) will be disconnected along with the cable.

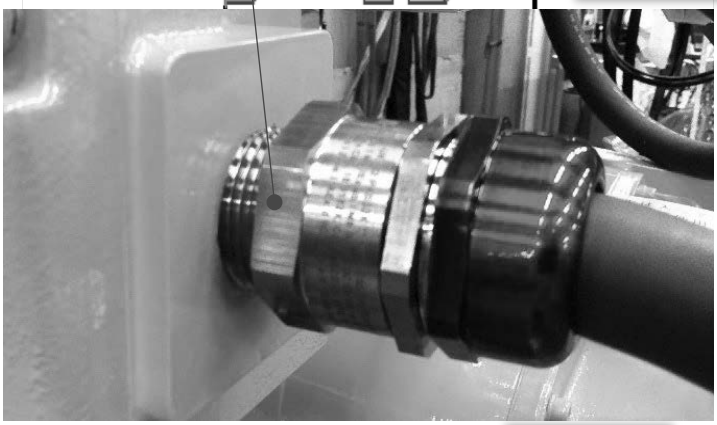


Fig.5

CABLE GLAND COMPONENTS

1. Compound
2. Entry Item
3. Compound Tube
4. Spacer
5. "O" Ring
6. Main Item
7. Skid Washer
8. Outer Seal
9. Outer Seal Nut

3. Disassembly to replace the motor cable (common to hoists and trolleys)

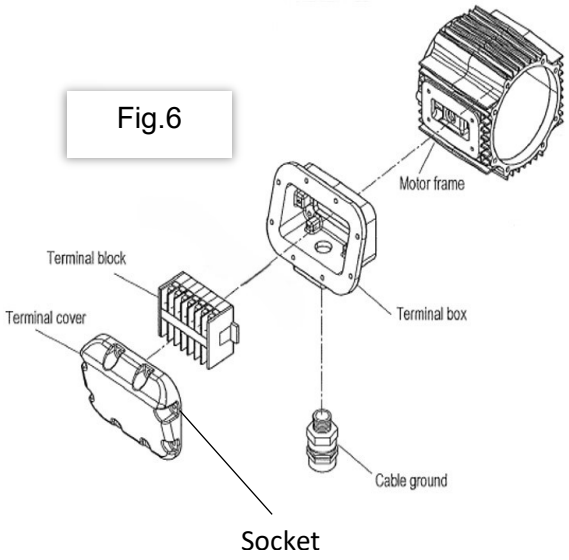


Fig.6

(1) Remove the terminal cover socket bolt (For Hoist, Trolley 8 Pieces Each) and remove the terminal cover.
Note: Handle with care to avoid scratches or dents on the cover and box joints.
If scratches or dents are made on the joints, the explosion-proof function will be affected, and the product will not be usable.

(2) After removing the lead wire connected to the terminal block from the bushing attached to the terminal block and the lead wire connected to the terminal block from the cable ground, remove the navel connegi (2 pieces) that secure the terminal block and remove the terminal block.

After this, remove the cable in the same manner as described in 2 (3).

4. Disassembly to Replace the Barrier Relay/Oscillator Cable

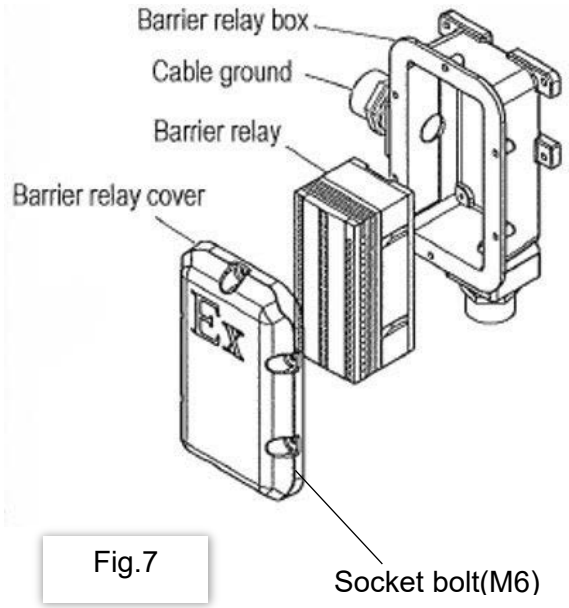


Fig.7

(1) Remove the socket bolts (6) of the Barrier relay cover and remove the Barrier relay cover.
Note: Handle the cover carefully to avoid scratches or dents on the joint surface of the cover and box.
If scratches or dents are caused on the joint surface, the explosion-proof function will be affected, and the product will not be usable.

(2) After removing the lead wire connected to the Barrier relay from the cable ground, remove the three pieces that secure the Barrier relay, and then remove the Barrier relay.

Next, remove the cable in the same manner as described in 2 (3)

Reassembly

5. Check the bonding surface of the pressure vessel and apply grease
*Pressure vessels include: Controller box/cover, Panel terminal box/cover, Terminal box/cover, Barrier relay box/cover

(1) Inspection method and treatment of joint surface of pressure vessel
Table 1: Confirmation and treatment of joint surface of pressure vessel

Items	Check method	Actions	Action to be taken in case of failure
absence of corrosion	Visual observation	・If rust is found, remove it	Replace parts when there is too much rust or dirt to wipe off with a cloth
be spotless	Visual observation	・If there is dirt, remove it	
absence of scratches or dents	Visual observation Dimensional measurement	・If there are scratches, replace the parts. ・If there are dents exceeding 1.6 mm in diameter and 1.6 mm in depth, replace parts.	If it is difficult to determine, a field evaluation by an Authority Having Jurisdiction (AHJ) should be conducted.

(2) Apply grease to the joint surfaces of pressure vessels to prevent corrosion according to the instructions below.

Applying Grease on Joint Surfaces

Joint surfaces must be applied with grease to avoid rusting or corrosion according to the following procedure.

Type of Grease to be applied

Recommended Grease: Shell Gadus S2 V100 3

When using other equivalent grease, it must comply with the following conditions.

- To be Soap-thickened mineral oil based grease
- Not to harden because of aging
- Not to contain an evaporating solvent
- Not to cause corrosion of the aluminum joint surfaces
- Not to contain metal particles
- Consistency to be NLGI 3, or equivalent
- Allowable temperature range to be -20 to +135 °C
- Not to deteriorate non-metal material parts
- Not to contain extreme-pressure additive

Application Process

Apply grease according to the following process.

- Wipe the Joint surfaces with a cloth to remove foreign matters including old grease already applied
- Intersperse small amount of grease as recommended between bolt holes (applying on either surface out of two facing surfaces is acceptable)
- Spread thin layer of grease on the surface except for bolt holes
- Remove grease squeezed out from surface before attaching cover (remove it including inside of bolt holes)
- Wipe grease squeezed out from joint surface after fastening bolts

Portion of Grease to be Applied

A) Following Joint surfaces shall be applied with grease at periodic inspections, or at any chance to separate the joints.

Hoisting part:

1) Hoisting controller box and Hoisting terminal box

- Flat surface between Controller box and Controller cover
- Flat surface between Terminal box and Terminal cover

2) Barrier relay box

- Flat surface between Barrier relay box and Barrier relay cover

3) Hoisting motor

- Flat surface between Terminal box and Terminal cover
- Flat surface and cylindrical surface between Motor frame and Motor bracket
- Flat surface and cylindrical surface between Motor frame and Motor cover Traversing part:

1) Motorized trolley controller box and Motorized trolley terminal box

- Flat surface between Controller box and Controller cover
- Flat surface between Traversing terminal box and Traversing terminal cover

2) Traversing motor

- Flat surface between Terminal box and Terminal cover
- Flat surface between Motor frame and Gear case
- Flat surface between Gear case and Bearing cover
- Flat surface between Motor frame and Motor cover

B) Following Joint surfaces shall be applied with grease at any chance to separate the joints.

Hoisting part:

1) Hoisting controller box and Hoisting terminal box

- Flat surface between Controller box and Terminal box

2) Hoisting motor

- Flat surface between Motor frame and Terminal box

Traversing part:

1) Motorized trolley controller box and Motorized trolley terminal box

- Flat surface between Controller box and Traversing terminal box

2) Traversing motor

6. Assembling Cables and Cable Grounds

(1) Terminal Processing of Cables

The cable to be replaced is peeled, the lead wire terminal is machined, and the lead wire mark band is installed.

7. Assembly procedure

The basic assembly procedure is the reverse of the disassembly procedure.

The basic order is as follows.

1) Installation of electrical components (Limit Switch, Panel, Contactor, Terminal Strip, etc.) in the pressure vessel
2) Installation of cable ground (cable) to each pressure vessel
3) Wiring to electrical components
4) Installing the pressure vessel cover

Table 2: Socket bolts, cable gland tightening torque.

Component	Size	Tightening torque (N · m)
Socket bolt. (for Controller box, Panel terminal box)	M8	28
Socket bolt. (for Barrier relay cover, Terminal box)	M6	12
Cable gland	3/4NPT	30

(1) Installation of electrical components in the pressure vessel

Reinstall limit switches, panels, contactors, terminal strips, and leads.
Note: Be careful of incorrect wiring and pinched leads.

(2) Installing the Cable Ground (Cable)

1) After potting the cable gland according to paragraph 6. (2), only the (2) Entry item is removed from the cable assembly.
2) After inserting the cable lead into the (2) Entry item originally attached to the box, the (6) Main item is tightened to the (2) Entry item. (Tightening torque: 30 Nm)
3) Tighten (9) Outer seal nut to (6) Main item.(tightening torque: 30 Nm)

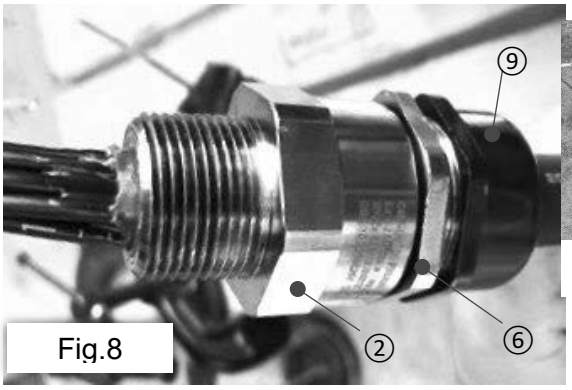


Fig.8

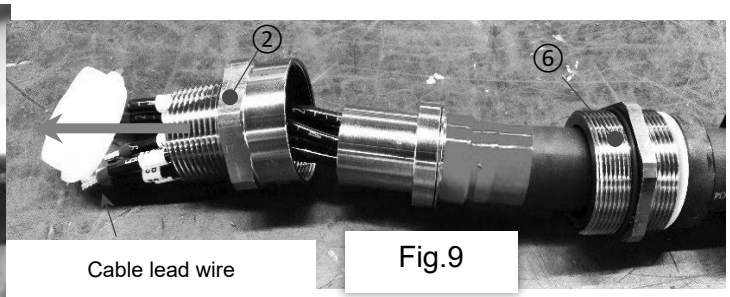


Fig.9

(3) Installing the pressure vessel cover

Combine the pressure vessel cover in a box, taking care not to damage the joints of the oiled pressure vessel cover and not to allow dust, etc., to adhere to it.

(4) Tightening the pressure vessel cover

Tightening the pressure vessel cover with a tightening torque that matches the size of the socket bolt (see Table 2). Tighten the bolts in sequence starting at the middle of the cover in a criss-cross pattern.

Confirmation After Assembly

8. Confirmation of pressure vessel joint surface

Using a 0.04 mm thickness gauge, apply the thickness gauge to the total length of the joint surface of each cover and confirm that the gauge does not enter the joint surface above the reference value in Table 3.

Table 3: Allowable insertion depths for gauges

Joint surface check area	Reference value
Panel terminals cover joint surface	Less than 3.2 mm
Joint surface of Controller box cover and Barrier relay cover	0mm (gauge must not be inserted)

Note: If the thickness gauge enters the joint surface above the above reference value, the pressure vessel cannot be reused, so replace the pressure vessel.

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WARRANTY

Buyer must notify HHI in writing within sixty (60) days of discovery of any alleged defect, if within the applicable warranty period.

All products sold by HHI are warranted to be free from defects in material and workmanship from date of shipment by HHI for the following periods:

1 year – Electric and Air Powered Hoists (excluding (N)ER2 Hoists and EQ/SEQ Hoists), Powered Trolleys, Powered Tiger Track Jibs and Gantries, Crane Components, Below the Hook Devices, Spare / Replacement Parts

2 years – Manual Hoists & Trolleys, Beam Clamps

3 years – (N)ER2 Hoists, EQ/SEQ Hoists, (T)EM/(T)SEM hoists, RNER2 Hoists, and RY Hoists

5 years – Manual Tiger Track Jibs and Gantries, Hoist Motor Brakes for TNER, EQ/SEQ, (T)EM/(T)SEM, and RY

10 years – (N)ER2 Brake, TNER Hoist Motor Brake, Tiger Track Workstation Cranes and Monorails

The product must be used in accordance with manufacturer's recommendations and must not have been subject to abuse, lack of maintenance, misuse, negligence, or unauthorized repairs or alterations.

Should any defect in material or workmanship occur during the above time period in any product, as determined by HHI's inspection of the product, HHI agrees, at its discretion, either to replace (not including installation) or repair the part or product free of charge. For customers in the U.S., delivery shall be made F.O.B. HHI's place of business. For international customers, delivery shall be made FCA HHI place of business, United States of America (Incoterms 2010).

No warranty claim will be honored without a valid proof of purchase. Customer must obtain a Return Goods Authorization as directed by HHI or its published repair center prior to shipping product for warranty evaluation. An explanation of the complaint must accompany the product. Product must be returned freight prepaid. Upon repair, the product will be covered for the remainder of the original warranty period. Replacement parts installed after the original warranty period will only be eligible for replacement (not including installation) for a period of one year from the installation date. If it is determined there is no defect, or that the defect resulted from causes not within the scope of HHI's warranty, the customer will be responsible for the costs of returning the product.

HHI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESSED OR IMPLIED, AS TO THE PRODUCT'S MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HHI WILL NOT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY OR FOR INCIDENTAL, CONTINGENT, SPECIAL OR CONSEQUENTIAL DAMAGES, LOSS OR EXPENSE ARISING IN CONNECTION WITH THE USE OR MISUSE OF THE PRODUCTS, REGARDLESS OF WHETHER THE DAMAGE, LOSS OR EXPENSE RESULTS FROM ANY ACT OR FAILURE TO ACT BY HHI, WHETHER NEGLIGENT OR WILLFUL, OR FROM ANY OTHER CAUSE.

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