HITACHI
Inspire the Next

- Be sure to give this Operation Manual to the user.
- We ask the user to please be sure to read it.

HITACHI Electric Chain Hoist

Owner's Manual

Original version

Thank you for purchasing a Hitachi electric chain hoist.

- Please carefully read this Owner's Manual and then use this product correctly.
- This Owner's Manual is required when maintaining and inspecting this product, so after reading it, keep it in a convenient location.

When checking the product name plate, make a note of the manufacturing number (MFG.No.).

TYPE	MFG.No.	Installation Date

SAFETY PRECAUTIONS

Improper use of the Electric Chain Hoist may result in generation of a falling load, electric shock, or other dangerous state.
Before installation, mounting, running, operation, and maintenance and inspection, always thoroughly read this instruction manual and use the equipment correctly.
Use the equipment after gaining knowledge of the equipment, safety information, and precautions.
This Operation Manual uses the designations “DANGER”, “WARNING”, and “CAUTION” to classify safety precautions.

[Explanation of Warning Display Ranks]

⚠ DANGER	This is a dangerous situation that if not avoided, poses immanent death or serious injury.
⚠WARNING	This is a dangerous situation that if not avoided, could lead to death or serious injury.
⚠CAUTION	This is a dangerous situation that if not avoided, could lead to minor as semi-serious injury or that could cause property damage.

In addition, even items designated ⚠CAUTION may be linked to serious results depending on the conditions. In any case, since the contents are important, always observe them.

[Explanation of Prohibited and Instruction Symbols]

: This shows something that is prohibited (something that must not be done).
For example,when a flame is prohibited, the symbol is shown.

: This shows an instruction (something that must be done).
For example, when the device must be grounded, the symbol is shown.

*After reading, always store this manual where it can be read by those who use it.

1. General handling

⚠ DANGER

- Manage the product’s useful life and have it completely overhauled or the equipment updated before the end of the useful life is reached.

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

⚠ WARNING

- Do not allow personnel without knowledge of the contents of the instruction manual and caution plates to operate the equipment.
- Never allow unauthorized personnel to perform crane operation or rigging work. Moreover, do not order them to do such work.

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

- Always conduct pre-operation inspection and periodic independent inspection.

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

⚠ CAUTION

- Keep the Operation Manual until the product is disposed of, and keep it in a location where it can be easily accessed.

2. Installation and mounting

⚠ DANGER

- Always install a stopper at the end of the traverse and travel rails.
- Verify that the place where the Electric Chain Hoist is to be installed is sufficiently strong.

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

⚠ WARNING

- Never have installation performed by other than a professional or someone with a special knowledge.
- Do not install the Electric Chain Hoist where it will be exposed to rain and water and other environments outside the specifications.

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

- Always install a stopper at the end of the traverse and travel rails.
- Verify that the place where the Electric Chain Hoist is to be installed is sufficiently strong.
- Hook the upper hook to the place where the Electric Chain Hoist is to be installed and hang it so the body swings freely. Never use the equipment when it is installed in reverse.
- Always install the chain container before installing the Electric Chain Hoist.

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

- Always perform grounding work. Also, install a leakage circuit breaker in the electric path, in addition to ground.

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

3. Running and operation

⚠ DANGER

- Before use, check brake operation. Do not operate the equipment if the brake does not operate positively.
- Do not operate the product if it has been damaged or if it is generating abnormal sounds or vibrations.
- Never operate the equipment when there are the following abnormalities at the link chain.
  - Link chain that is twisted, tangled, cracked, or abnormally meshed.
  - Link chain whose stretch and wear are greater than specified.

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

⚠ WARNING

- Never hoist a load exceeding the rated load.
  * The rated load is given on the load block nameplate.
- Never allow anyone to ride on a hoisted load.
  Also, never use the equipment in riding applications.
- Never walk under a hoisted load.

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

SAFETY PRECAUTIONS (CONTINUED)

⚠ WARNING

- Do not operate the equipment when there is someone within the range of movement of the load.
- Do not drive across or in front or behind the path of a hoisted load.
- Do not transport a load over a person's head.
- Do not leave the operation position with a load hoisted.
  Also, do not keep a load hoisted all the time.
- Do not be distracted from the load during operation.
- Do not operate in such a manner that the load and load block swing.
- Do not use the over wind limit switch to stop the hoist during normal operation.
- Do not drag a load from the side.
  * Hoist the load after moving the Electric Chain Hoist directly above the load.
- Do not hoist a load caught on building structures, etc.
- Do not reverse a hoisted load.
  * Use special reversal equipment to reverse the load.
- Before use, check pushbutton operation. Do not operate the equipment if the pushbuttons do not operate smoothly.
- If the hoist moves in the direction different from the pushbutton switch command, immediately stop operation.
  * There is a danger of injury from incorrect operation or abnormal action.
  When it must be pushed with a larger force than normal, the push button switch could be damaged, so stop using it and immediately disassemble and inspect it.
- Do not electrically weld a load hanging in midair.
- Do not ground the welder to the link chain.
- Never touch the link chain with a welding rod.
- Never use equipment with a damaged hook safety latch.
- Do not allow the body and trolley to collide with the stopper or structures.
- Do not wrap the link chain directly around the load.
- Do not touch the sharp edge with the link chain.
- Never push up the chain container with the load, lifting component, etc.
- If an earthquake is felt during operation, quickly lower the hoisted load to the ground, and turn off the power.
- Do not touch the moving parts (chain retrieving area, etc.) during operation.

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

⚠ CAUTION

- Do not use the equipment at other than the rated voltage.
- Do not apply a plugging brake (reversal braking) or perform excessive inching (jogging).
- Do not get the load caught on another structure, wiring, etc.
- Do not get the pushbutton cable caught on another object and do not pull on the cable forcefully.
- Never exceed the duty rating and number of stars per hour.
- Do not use the equipment when the warning and caution plates and labels installed to the body were removed or are unreadable.

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

⚠ CAUTION

- Before use, verify that the lower hook rotates smoothly.
- Hook the lifting component to the hook correctly.
- When hoisting, pause at the point at which tension is first applied to the link chain.
- Always clean the equipment so that dust, sand, etc. do not collect around the pushbuttons.
- When the push button switch is released after operation, naturally return it to the lowered position and make sure it does not strike any people or objects.
- Check if the height is sufficient relative to the work.
- Always turn off the power when leaving the operation position.
- Wear protection equipment such as protection goggles, safety shoes, helmet and gloves during operation.

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

4. Maintenance, inspection and modification

⚠ DANGER

- Do not use the product when the usage limit of a part will be exceeded.
- Never cut off or add links to the link chain.

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

⚠ WARNING

- Never modify the product and accessories.
- Never use parts other than Hitachi Genuine Parts.
- Do not use the product when the brake lining has exceeded its wear limit.

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

- Always perform maintenance, inspection and repair in the no-load state.
- When an abnormality was found during maintenance and inspection, do not use the equipment. Immediately repair the trouble.
- Always turn off the power before performing maintenance and inspection or repair.
- Have maintenance, inspection and repair performed by someone with special knowledge designated by the employer.

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

⚠ CAUTION

- When performing maintenance, inspection and repair, always tag the equipment (“Inspecting”, “Energizing prohibited”, etc.).

When a Electric Chain Hoist is operated erroneously during the inspection, it may result in the accident such as fall-off of parts and tool and downfall.

- Wear protection equipment such as protection goggles, safety shoes and gloves depending on the work contents.

Otherwise it may result in the injury due to scattered oil or sharp edge of a part.

⚠ CAUTION

- Pay attention to work method, work, procedure and work posture.

If the product or the part is heavy, your hand is caught or your waist is hurt. Especially be careful for the work on an unstable scaffold such as the work at high lifted place using stepladder.

- Wear helmet and safety belt when carrying the high lift work.

Otherwise it may result in injury or downfall accident.

- Remove the oil attached to the product or spilt on the floor.

Otherwise it may result in injury due to drop of the product or overturnning.

- Keep the work area clean when disassembling the product.

Assembling or mixing the part other than genuine part may result in the damage of the product or the accident due to defective operation.

- The motor, brake unit, and control unit can become very hot, so allow sufficient time for them to cool before conducting maintenance, inspections, or repairs.
- Adjust the brake gap to a suitable value.

NOTE

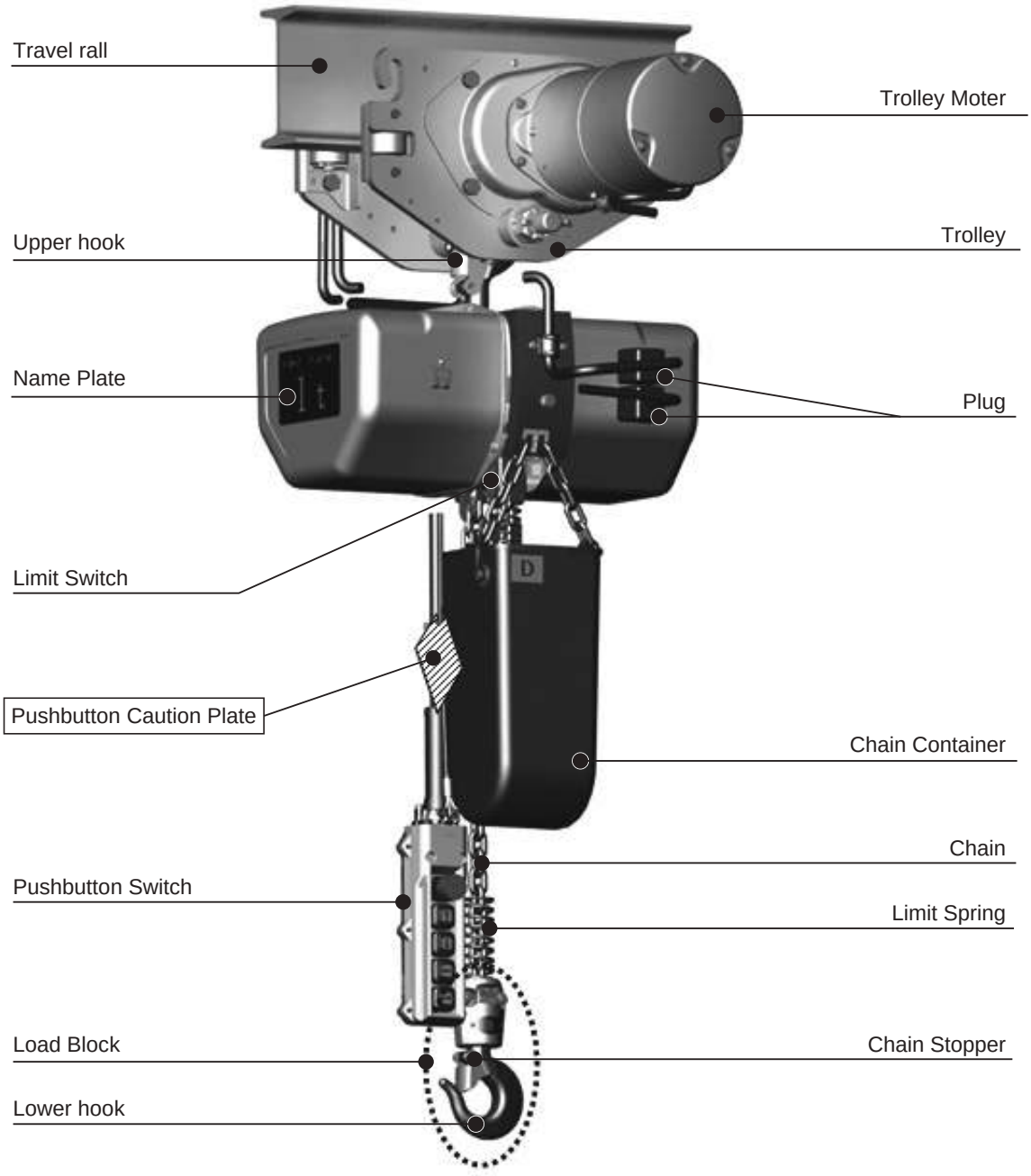
- Always request that inspection items accompanied by disassembly and reassembly be inspected by a Hitachi distributor.

CONTENTS

Introduction

This electric chain hoist is designed and manufactured for the purpose to lift and lower a load within a normal work environment.
The motor driven trolley and the manual trolley are designed and manufactured for the purpose to move the lifted load laterally with the combination with the electric chain hoist.
This Owner's Manual is intended for those operating the HITACHI electric chain hoist and maintenance engineers (personnel with expertise).
Assign the maintenance engineers and use these materials for inspection and repair.
Please contact the nearest dealer or HITACHI for these materials.

Component Names



Component Names of Electric Chain Hoist (Example of Automatic Trolly)

Standard Specifications

Specifications			Standard model	CE Marking model
Power Source*		50Hz	3 phase : 220/380-415V 3 phase : 346-380V 1 phase : 200-220V	1 phase : 220-240V
		60Hz	3 phase : 220V, 220-230/440-460V 1 phase : 110V, 220V	-
Operation Method			Operating pushbutton	
Control Voltage			24V	
Power Method			Suspension with manual driven trolly or chain driven trolly : with 5m cable With motorized trolly : cable and catch are not included with standard shipment.	
Pushbutton Switch	2(3)	single speed	↑ ↓	STOP ↑ ↓
		dual speed	↑↑ ↓↓	STOP ↑↑ ↓↓
	4(5)	single speed	↑ ↓ ← →	STOP ↑ ↓ ← →
		dual speed	↑↑ ↓↓ ← →	STOP ↑↑ ↓↓ ← →
	6(7)	single speed	↑ ↓ ← → ↖ ↘	STOP ↑ ↓ ← → ↖ ↘
		dual speed	↑↑ ↓↓ ← → ↖ ↘	STOP ↑↑ ↓↓ ← → ↖ ↘
Color(Munsell)			Orange (2.5YR 6/12)	
Electrical Protection			IP54 (S-series (1t and above), Trolly : IP44) (Equivalent when stuffing drain hole)	
Insulation Class of Motor			E	
Rating**			30%ED, 180 starts/h (1 to 5S : 25%ED, 150starts/h)	
Classification			ISO M4, FEM 1Am	
Noise level			S series : 75dB or less (A scale : measured at 1m away from the Electric chain hoist) F, Trolly series : 85dB or less (A scale : measured at 1m away from the Electric chain hoist)	

* For power sources other than those listed, see the dedicated electric chain hoist.

** This shows the value at a load of 63% of the rated load.

** Make sure the average value per hour is not exceeded even during concentrated use in a short time.

**Dual speed models have an added low speed to allow fine movement operation and improve workability by reducing inching. The rating shows the value when the high speed and the low speed, the operation tome of which is 1/10 of the high speed are combined.

Product Checks and Installation Precautions

Product checks

Before using this product, check the following:

①**Was the product you ordered delivered?**
Check the product nameplate. In addition, at that time, make a memo of the MFG. No. and use it when making future inquires, etc.
■Use the front page.

②**Was the body deformed or damaged by an accident, etc. during shipment?**

③**Are the accessories supplied?**
(Check against the table at the right.)

Accessories table

• Owner's manual		1 copy
• Accessory parts	Chain gauge	1 pc
	Cable stopper (when equipped with trolley)	1 pc

Usage Environment Precautions

⚠ WARNING

- Do not install and use this equipment under the following conditions because it is very dangerous.

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

- Where the temperature is -10℃ or lower, 40℃ or higher, or the humidity is 90% or higher.
- Where there is a lot of acid and salt.

**** Damage of each part is severe and dangerous.***

- Where there is organic solvent and explosive dust, etc.

***** There is the danger of ignition, explosion, etc.***

- Where the equipment will be exposed to the weather and directly to wind, rain, and snow.

**** There is the danger of rusting and electric leakage.***

- Where there is a lot of ordinary dust

**** Causes malfunctions.***

⚠ WARNING

- When the pushbutton switch was replaced with the metal pushbutton switch, ground the metal pushbutton switch.
  **** There is the danger of electric shock.***
  Failure to comply with these instructions may result in death or serious injury.

- When installing this equipment outdoors, always build a shelter with a roof and protect the equipment against wind, rain, and snow.

About operating time

⚠ CAUTION

- Never exceed the duty factor and starting frequency.
  **** There is the danger of dropping of the load due to a lowering of the strength of the parts.***
  Failure to comply with these instructions may result in death or serious injury.

The life of the product is governed by the size of the load and the load time. To use this product confidently for a long time, use it within the range of the hatched lines.

Load classification	Average operating time/day (h)					
	～0.25	～0.5	～1	～2	～4	～8
Light	▨	▨	▨	▨	▨	
Medium	▨	▨	▨	▨		
Heavy	▨	▨	▨			
Extra heavy	▨	▨				

▨ : S, F Series

Load classification

Light : Normally used with a load of about 1/3 the rated load and on rare occasions used at the rated load.
Medium : Normally used with a load of about 1/3 to 2/3 the rated load and from time to time used at the rated load.
Heavy : Normally used with a load of 2/3 or more of the rated load and often used at the rated load.
Extra heavy : Mostly used at the rated load or near the rated load.

Installation

⚠ DANGER

- Verify that the place where the Electric Chain Hoist is to be installed is sufficiently strong.
  **** There is the danger of injury by dropping off of the Electric Chain Hoist.***
- Always install a stopper at the end of the traverse and travel rails.
  **** There is the danger of injury by dropping off of the Electric Chain Hoist.***
- Suspend so that the Electric Chain Hoist is not fixed, but swings freely.
  **** There is the danger of the body dropping off due to machine damage by the application of unreasonable force to the fixed part.***

⚠ WARNING

- Never have installation performed by other than a professional or by personnel with special knowledge.
  **** There is the danger of injury by electric shock and dropping off of the Electric Chain Hoist.***

- Always perform grounding work. Also, install a leakage circuit breaker in the electric path in addition to ground.
  **** To prevent electric shock accidents if by chance there should be electric leakage.***

Electric wiring

Before connecting the power source to the Electric Chain Hoist, verify that the power source voltage matches the power requirement of the product.

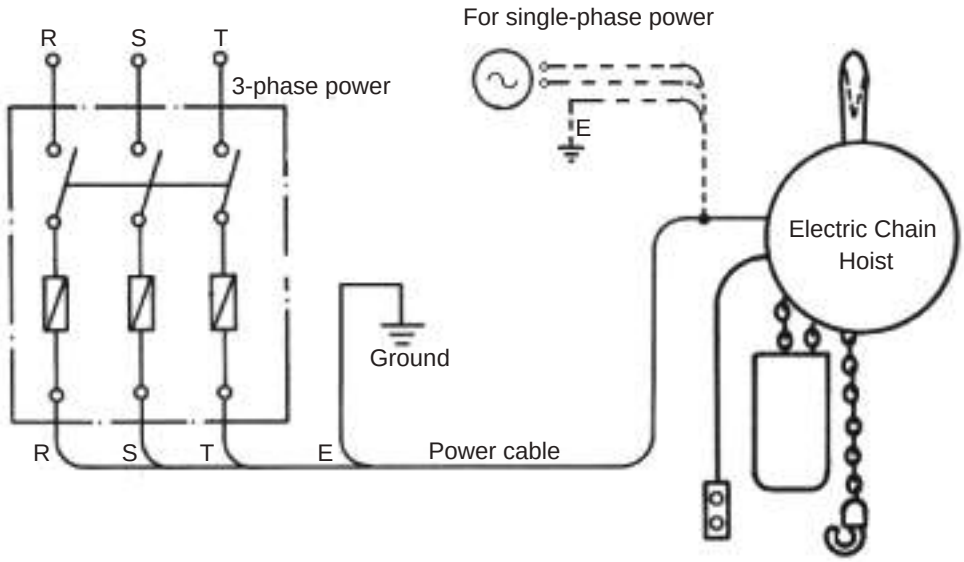
1. Power source connection

①Always connect the power source through a distribution panel (main power switch).

⚠ CAUTION

- When the Electric Chain Hoist is not in use, turn off the distribution panel.
  **** There is the danger of electric shock and fire by electric leakage.***

- Please provide the distribution panel to be used.
  ②Perform the electric wiring shown in the figure.
  ③Connect the ground wire (green/yellow) of the power cable to ground.



When hoisting operation with no load was checked, in the following cases, the power connection is probably reversed (reversed phase):
S, F Series : Reverse phase prevention relay built into the body activates and the hoist cannot be operated.
S(1/4-1/2t) Series : Movement are performed opposite the pushbutton signal.

* In this case, turn off the power and then switch the connection of the power cable T and R terminals.

⚠ CAUTION

- When correcting reverse phase, do not change the connections at the pushbutton switch part.
  **** There is the danger that the limit switches will not activate, result in injury by dropping of the load by breaking of the link chain.***

2. Power cable setting

The power feeding system of the Electric Chain Hoist is a cable power feeding system. Always use the specified cabtyre cable.

- The length of the cable used depends on the thickness of the cable and whether or not a motor trolley is used simultaneously.
- The allowable length of the cable when used with the standard specifications conforms to the table below.

*** Use of a cable thinner than that given in the table may cause the Electric Chain Hoist to fail to start due to the voltage drop or overheating, burning, etc. of the motor.**

When extending power cord, cord length should be less than the value in this Table.

(m)

	Rated load (kg)	Cable Size															
		0.75mm^2		AWG #18		1.25mm^2		AWG #16		2.0mm^2		AWG #14		AWG #12		3.5mm^2	
		Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly	Hoist only	With Motor Trolly
S	250	31	27	34	29	52	45	54	47	74	52	76	54	-	-	-	-
	500	27	20	29	21	46	33	48	34	74	52	76	54	-	-	-	-
	1,000-5,000	27	20	29	21	46	33	23	18	74	52	76	54	118	86	125	92
F	1,000	13	10	14	11	22	18	11	8	35	29	36	30	57	48	61	51
	2,000-5,000	-	-	-	-	-	-	-	-	17	13	17	13	28	21	30	23

3. Precautions when equipped with a trolley

For the trolley and Electric Chain Hoist wiring, refer to the “Model Edition” manual.

- Always ground the travel rail.
- To improve electrical conductivity, always remove paint, grease, etc. from the traveling surface and wheel contact surface of the travel rail.

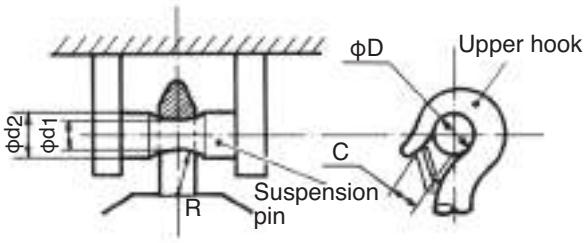
Installation of Electric Chain Hoist

1. About the installation site

Install the Electric Chain Hoist firmly at a place having sufficient strength so there is no danger of it dropping off, etc.

- Hook the upper hook where the Electric Chain Hoist is to be installed and suspend it so that the body rocks freely. Never use the hoist with the upper hook installed in reverse.

**** If the hoist is operated when the upper hook is installed in reverse, the chain may become tangled inside the body and break.***



2. Hook mounting suspension pin material and dimensions

①Suspension pin material

Select a suspension pin which provides a safety factor of 5 times or more when the rated load was hoisted.

②Suspension pin dimensions

Decide the dimensions by referring to the table shown at the right.

- Always make the diameter (d1) of the suspension pin smaller than the hook opening dimension (C).

Units (mm)

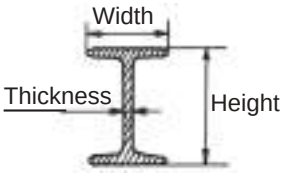
Capacity / Dimension	250kg	500kg	1t	2t	3t	5t
ϕd1	25		27	32	37	46
ϕd2	38		42	44	60	60
ϕD	35		40	45	55	65
R	30		35	45	45	55
C	27		29	34	40	48

When using with a trolley

1. Travel rail setting

When using an I-beam, set it by referring to the table shown below.

- The maximum I-beam span corresponding to the type of I-beam and rated load is shown.
  * "Span" indicates the spacing of the I-beam installation points.
- When using an I-beam other than those shown in the table below, consult your dealer, distributor.



Units (m)

Rated load / I-beam dimensionsl(mm)	～500kg	1t	2t	3t	5t
150× 75×5.5	3.5	2.4	–	–	–
200×100×7	5.6	3.8	2.6	2	–
250×125×7.5	8.2	5.9	4.1	3.4	2.1
250×125×10	9.1	7	4.9	4	3
300×150×11.5	–	–	7	5.7	4.4
350×150×12	–	–	8.2	7	5.3
400×150×12.5	–	–	9.2	8	6.1
450×175×11	–	–	–	–	7

* The I-beam dimensions denote (Height) × (Width) × (Thickness).

2. MOUNTING TROLLEY ON TRAVEL RAIL

This trolley is available for the travel rail listed below.
When changing the travel rail size, change the location of the distant washer accordingly.
Should this not be effected, the trolley cannot be mounted or it will oscillate a great deal, creating unsteady travel.

(a) Measure the width of the travel rail which is used for this trolley.
(b) When the dimension X (in Fig. 1) is Zero the dimensions W for each capacity of the trolley are listed below.
(c) The dimensions W must be larger 3~8rnm than the width of the travel rail which is used
(d) Set the distant washers to satisfy the paragraph (c).
(The thickness of washer is 2mm)

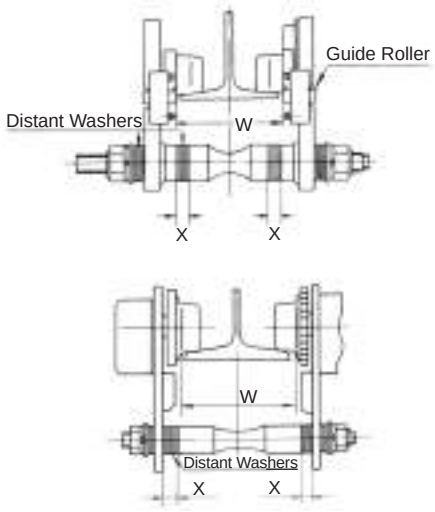


Fig.1 Trolley width adjustment

TYPE	1ET,1ST	2ET-3ET, 2ST-3ST	5ET
Travel Rail Flange Width(mm)	75~125	100~150	125~150
W (mm)	80	104	129

NOTE

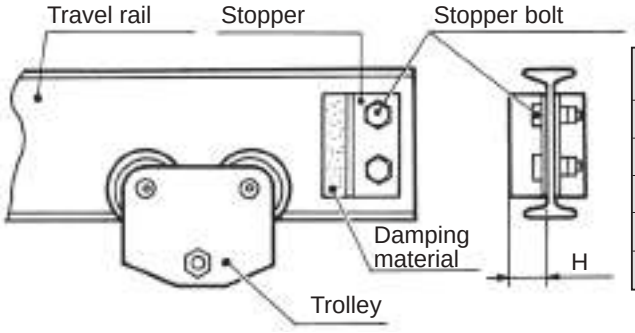
Set all distant washers as Fig. 1 shows.
a. Be careful to set them equally on the both sides of the suspension pin and the frame.
b. Two washers are different color and thickness from the others. Set them the outermost side.

3. Installation of stopper and cushioning material

①Stopper

After installing the trolley to the travel rail, always install a stopper to the end of the travel rail to prevent the trolley from dropping off the rail.

- Avoid use such that the trolley is stopped by collides with the stopper.
- If the stopper is colored in a different color from the travel rail, it will stand out and serve to prevent collisions.



Travel rail width	Material dimensions(mm)	H(mm)	Bolts & nuts used
75	Angle iron 50×50×6	30	M10
100		40	M12 or M16
125		50	
150	Angle iron 65×65×6	60	M16 or M20
175		65	

②Damping material

To cushion the shock when the trolley strikes the stopper, install rubber or other damping material to the stopper.

4. Electric Chain Hoist Assembly

- **Assembly Method**

To assemble the machine and electric trolley, refer to Fig. 1 and hang the machine hook from the dip in the center of the trolley suspension pin. When doing this, make sure the trolley and machine are oriented correctly.

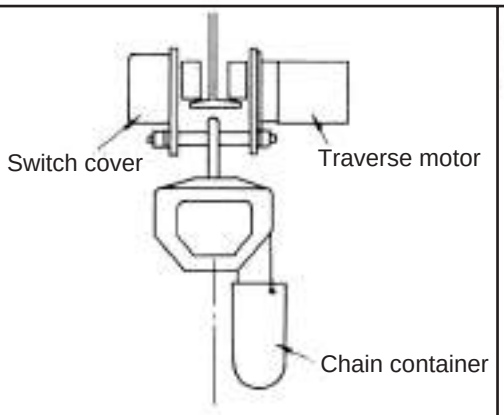
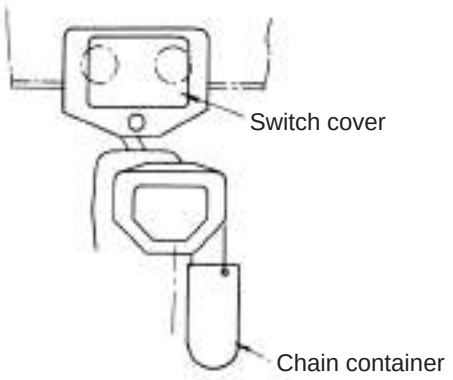
Hoist and trolley orientation		
S Series	1t, 2t	3t, 5t
F Series	1t, 2t, 3t	5t

Fig. 1 Electric Chain Hoist and electric trolley assembly

- **Trolley and Electric Chain Hoist wiring**

To connect the trolley and machine wiring, take the two cords with plugs coming out of the trolley switch cover and insert them into the square holes in the hoist body cover.

Connect the separately sold 4-point or 6-point push-button cable plug assembly by inserting the plug into the square hole on the bottom of the switch cover. The power cable is not attached, so remove the switch cover and use the terminal block to connect a cable of the specified length. After connecting the cable, install the included cable holder to prevent the cable from being pulled out.

Refer to the connection diagram and connect the cable as shown. After making the connection, insert the nut on the end of the PB wire into the cable holder square hole and tighten the screw from above to prevent it from coming loose.

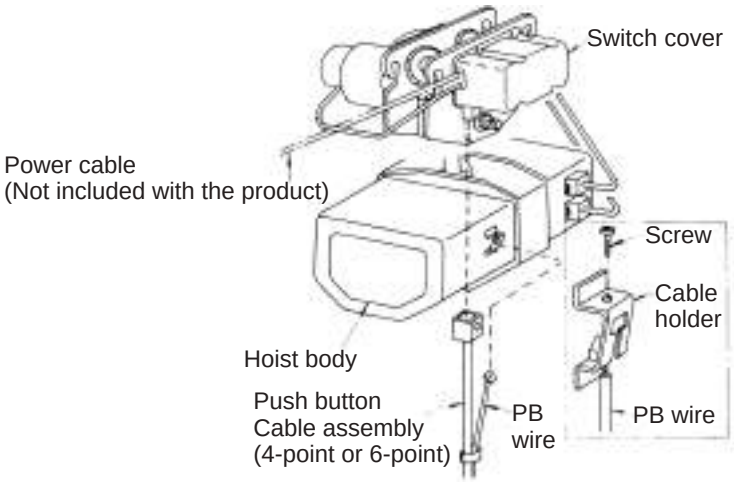


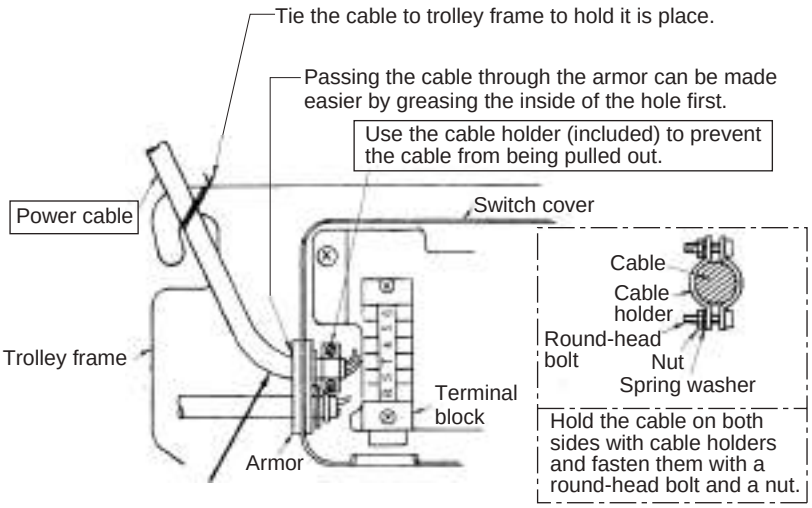
Fig. 2 Trolley and machine wiring

Note: To make the instructions easier to understand, the hoist body has been rotated 180º. The orientation relationship is shown in Fig. 1.

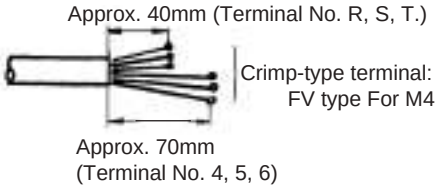
● **Cable Installation Instructions**

①Power cable

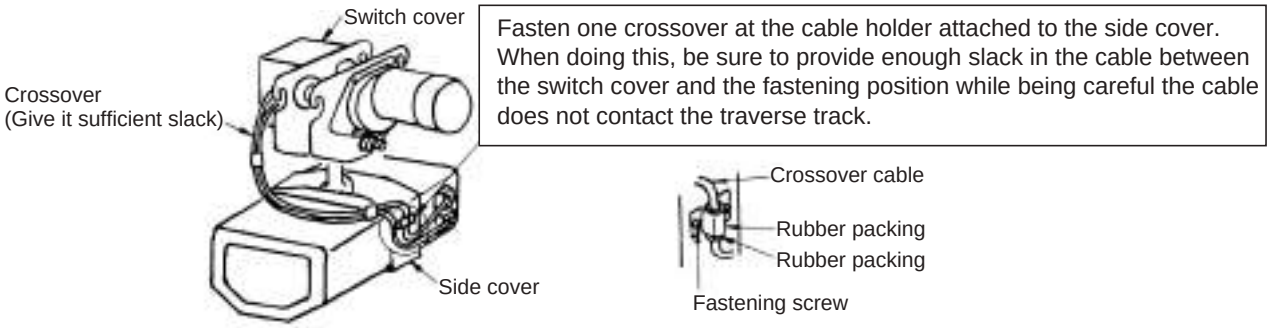
A power cable is not attached, so follow the instructions below to attach one.
(Refer to the connection diagram for details.)



Insulation cover removal length on the side connected to the terminal block and the crimp-type terminal are as shown in the figure at right.

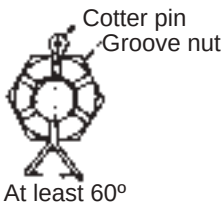


②Crossover



⚠ DANGER

- Make sure the position and number of I-beams and jist-collars to be installed are correct.
  **** A mistake could cause the trolley not to be installed or large swaying that prevents smooth operation.***
  **** Make sure that all wheels uniformly contact the I-beam and that the groove nut is securely tightened until the spring washer of the hoist pin is flat. Then insert the cotter pin and spread the ends open at least 60º as shown in the figure blow. In addition, check during installation and inspection to make sure there is no damage.***
  ****A loose groove nut could cause the trolley to fall off.***



Precautions for when installing the trolley on the I-beam

To hoist the trolley, sling it from all 4 corners of the frame as shown in Fig. 4.

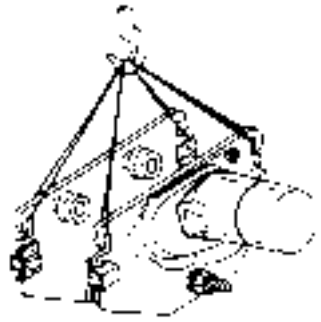


Fig. 4 Trolley hoisting method

⚠ DANGER

- Slinging the trolley by opposing corners on just one location on each side as shown in the following figure could cause the trolley to twist, which is dangerous, so do not use this slinging method.

Bad example

Installation of chain container and cable connection instructions

1. Installation of chain container

⚠ DANGER

- Always install the chain container before installing the Electric Chain Hoist.
  **** If the chain container is not installed, the no-load side chain may get caught on the load and the load may fall and cause an injury.***

⚠ CAUTION

- When the chain was replaced with a longer chain, the chain container must also be replaced.
  **** If a small chain container is used, the chain may hang out from the container, which may cause an injury and operation will not be smooth.***
- In dusty places and in workplaces where foreign matter may enter the container, periodically clean the inside of the container.
  **** Dust and foreign matter on the chain may enter the Electric Chain Hoist body and the chain may break and the hoisted load may fall.***

For the detailed installation methods of the chain container, read the P14. The general installation method is described here.

1-1 Chain Container Installation Method (General)

①Loading the chain

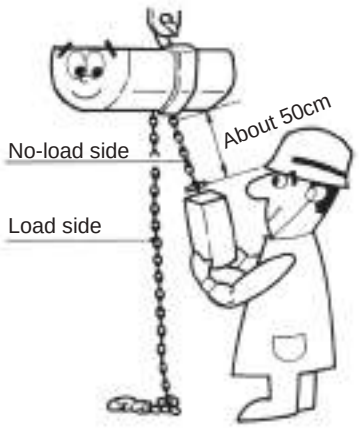
Sequentially insert the chain into the container, beginning from the no-load end.

- At this time, do not insert all the chain at once.
  * The chain may become tangled inside the container and the limit switch may activate, etc. and operation will not be smooth.

②Installation of chain container

Install the chain container in the state in which about 50cm of the no-load side chain is hanging from the body.

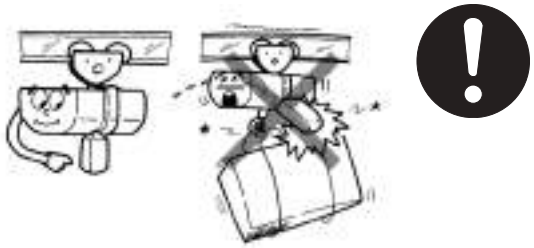
- Installation is not only easy, but the chain is also housed in good form.



③Natural suspension

Install the chain container so that it keeps hanging naturally from the Electric Chain Hoist body.

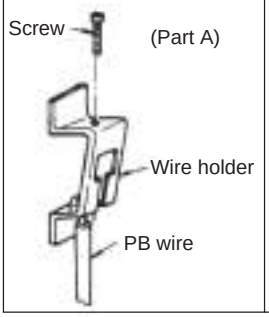
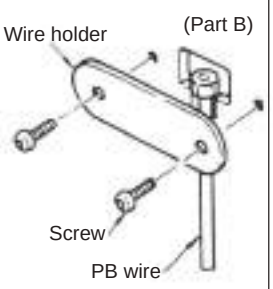
- Set the rigging gear to a suitable length so that the chain container is not struck by the load, etc.
  * If the rigging gear is not suitable, the container may be damaged and the chain may overflow and cause the limit switch to operate.



1-2 Chain Container and Push button cord Installation Method

- S Series (1/4 to 1/2t)

As shown in the illustration below, insert the push button cable' s PB wire end nut into the wire holder square hole or the winch unit square hole, tighten the screw, and fasten it down.

S_2/SS_2 Type	SN_2 Type
	

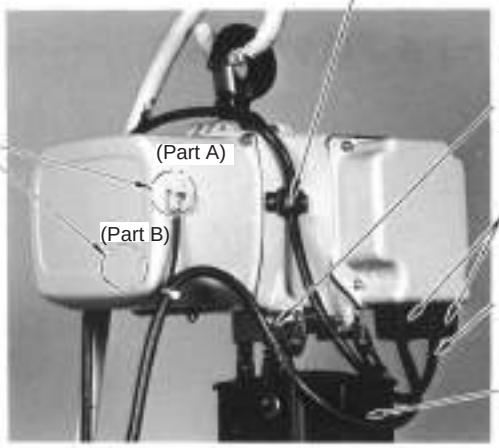
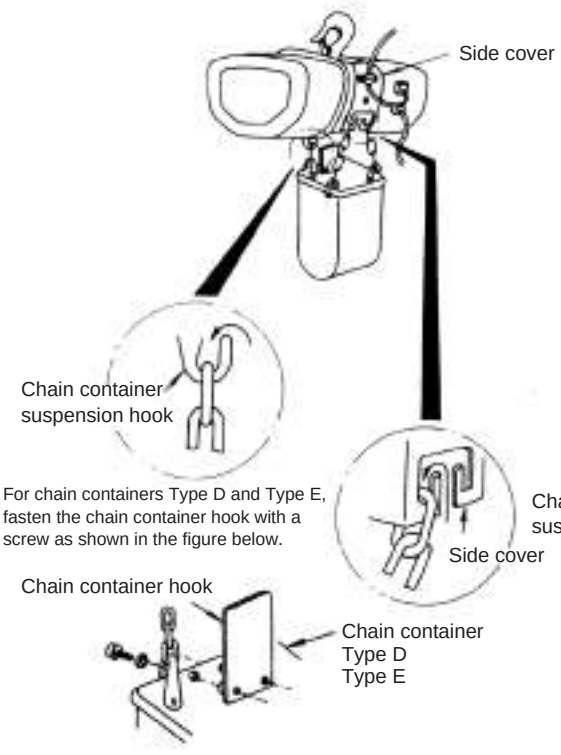
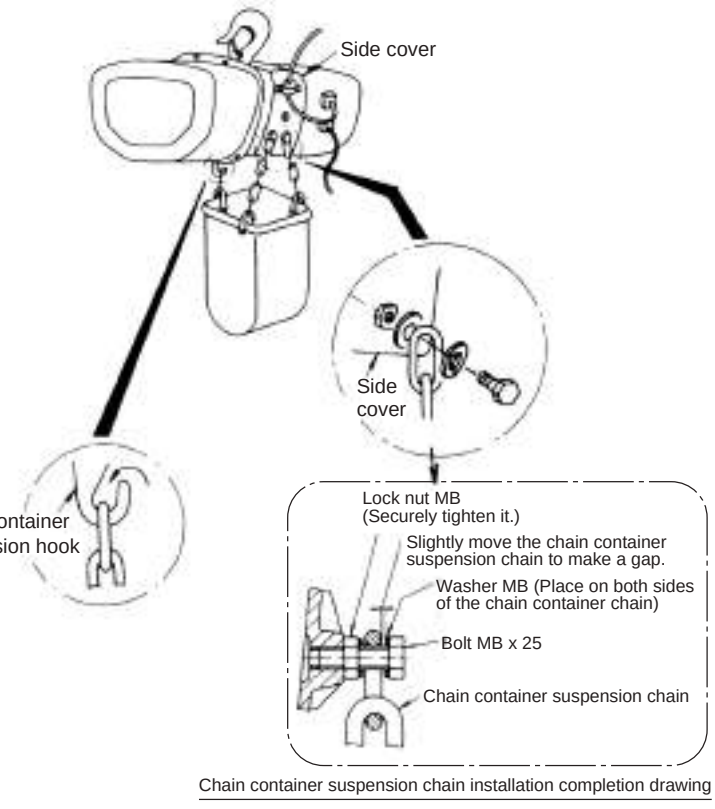


Fig. 1 Chain container and cable installation

- S Series (1 to 5t), F Series (1t)



- F Series (2 to 5t)



Chain container suspension chain installation completion drawing

Fig. 2 Chain container installation

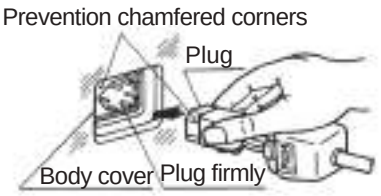
2. Cable connection instructions

Connect the power cable and pushbutton cable to the Electric Chain Hoist and trolley as follows:

①Plug check and insertion

(1) Check if the plug is 6-pin or 9-pin.

(2) Align the erroneous connection prevention chamfered corners and insert the plug firmly into the receptacle.



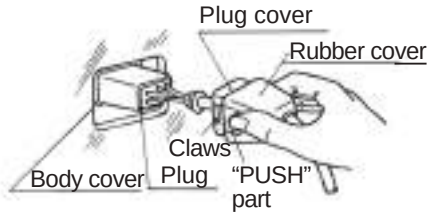
②Installation of plug cover

(1) Grasp the “PUSH” part of the side of the rubber cover between your fingers and insert the plug cover while making the claws of the plug cover narrower and hook the claws to the holes in the body cover.

- Hooking will be easier if performed one side at a time.

(2) After installing the plug cover, push part A of the rubber cover and hook the claws fully.

- When the claws are hooked to the body cover, a “click” will be heard.



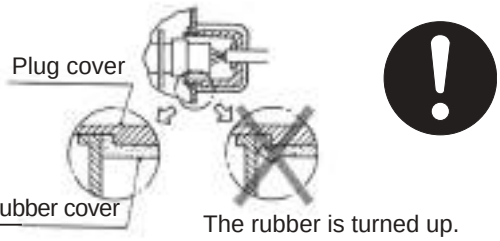
③Installation check

(1) Plug cover check

Pull the plug cover gently and check if the claws are hooked securely.

(2) Rubber cover check

Check if the edge of the rubber cover is completely grasped by the step of the plug cover.



3. Plug removal instructions

Remove the plug from the Electric Chain Hoist and trolley as follows:

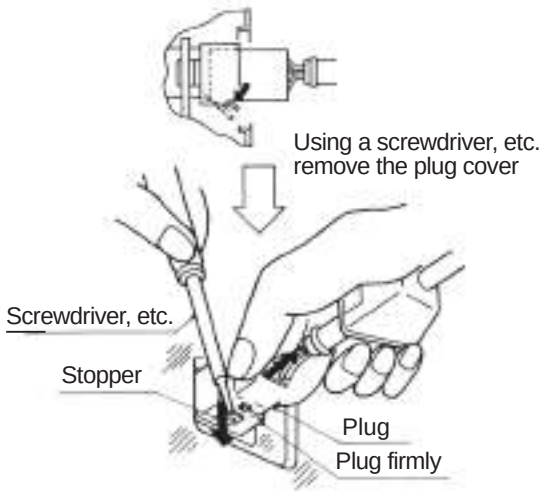
①Plug cover removal

Remove the plug cover in the reverse order of installation.

②Installation of plug cover

Using a screwdriver, etc., spread the plug receptacle disengagement prevention stopper and pull out the plug while disengaging the plug projections.

- Pull out the plug by holding the plug; not by pulling on the cable.



Post-installation checks and test operation

After installing the Electric Chain Hoist, check the following items:

Post-installation check and test operation items

①Pre-operation check ②No-load operation check ③Rated load operation check

- Perform the checks and test operation in accordance with “Daily Inspection” (page 25).
- When hoisting operation with no load was checked, in the following cases, the power connection is probably reversed (reversed phase):

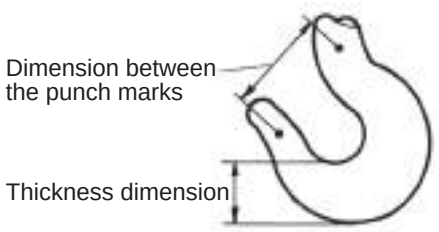
  S, F Series : Reverse phase prevention relay built into the body activates and the hoist cannot be operated.

  S(1/4-1/2t) Series : Movement are performed opposite the pushbutton signal.

  * In this case, turn off the power and then switch the connection of the power cable T and R terminals.

- After installation, measure and record the dimension between the lower hook punch marks and the thickness dimension of the lower hook.

  * Such records will be necessary for hook opening and wear amount comparison when inspecting the lower hook.

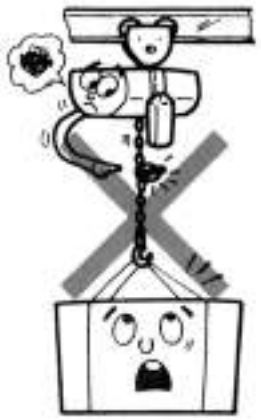


Usage Precautions

⚠ DANGER

- Check the brake operation before use and do not operate the product if the brake does not work properly.
  There is a danger the hoisted load could cause an injury.
- Do not use the Electric Chain Hoist if it is damaged or is making a strange sound.
  Doing so could cause the hoisted load to drop, the product to be uncontrollable, electrical shock, or other trouble, which is very dangerous.

- Do not operate the product if the following trouble occurs with the link chain.
  If the link chain breaks, the hoisted load could fall and injure someone.
  ① The chain is twisted or tangled.
  ② The chain is cracked or stretched.
  ③ The chain is greatly worn.
  ④ The chain joints are not normal.



⚠ WARNING

- Persons who are not thoroughly familiar with the contents of the operation manual and warning plates should not operate this product.
- Persons who do not hold the legally required qualifications should never operate a crane or perform hoist work or be made to perform such work.
  Incorrect operation or hoisting work could cause the hoisted load to fall, strike something, or become uncontrollable, which is very dangerous.
- Never modify the product or its accessories in accordance with the intended purposes.
  There is a danger of electrical shock, the hoisted load falling, malfunction that could cause an injury or a breakdown.
- Do not allow rain or water to get on the product.
  This could cause electrical shock or damage the product through rusting, which could result in falling of a hoisted load that could cause an injury.

- Be sure to conduct daily inspections and regular voluntary inspections.
  Operating the product when it is not functioning normally or using parts in excess of their limitations could cause the hoisted load to drop, the product to be uncontrollable, electrical shock, or other trouble.

① To Ensure Safe Operation

⚠ WARNING

- Never ride or work on a hoisted load.
  **** A hoisted load is unstable, so the person could fall off or the load could fall and injure someone.***

- Never pass the load over the head of a person.
  **** The person could be injured if the load falls.***

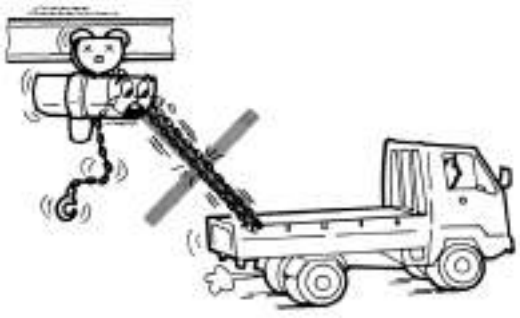
- Do not leave the operation location while a load is hoisted.
  Also, do not use the hoist with a continually hoisted load.

- Keep your attention on the load during operation.
  **** Injury could occur if people get too close to the load, if something collides with the load, or the load falls.***

⚠ WARNING

- When not using the hoist, raise the load block about head height.
  **** If the load block is left in a low position, someone could strike their head against it.***

- Make sure the hand chains of chain trolleys cannot catch on hoisted loads, truck beds, or other objects.
  **** A strong pull on a hand chain could cause the trolley to fall off and injure someone and could also deform or damage the trolley or other equipment.***



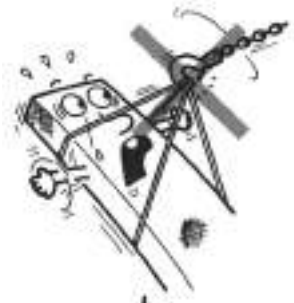
⚠ CAUTION

- Do not transport loads above kerosene heaters or other flame sources.
  **** If the hoisted load falls on or catches on the heat source, it could knock the heat source over and cause a fire.***
- Do not transport flammable substances, such as oil (gasoline, kerosene, etc.) or chemicals.
  **** If the load falls or spills, it could cause a fire or other disaster.***

② Hoisting

⚠ DANGER

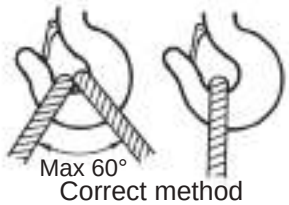
- Never use a sling with a broken hook latch.
  **** If the hook latch is broken, the sling could slip off of the hook causing the load to fall and injure someone.***



- Do not wrap the link chain directly around the load.
  **** Doing so could cause excessive force on the link chain, which could cause the link chain to break and the load to fall and injure someone.***

⚠ CAUTION

- Use the safest sling for the weight and shape of the load.
  (Safety ratio: Hoisting chain 5 or higher, hoisting wire 6 or higher)
  **** Using an unsuitable sling could cause the sling to break and the load to fall and injure someone.***
- Hang the sling from the center of the hook.
  **** Incorrect hoisting could cause the load to fall and injure someone and could cause the following, which is dangerous.***
  ① The shock caused by sling position offset could damage the equipment (the sling could break, etc.).
  ② The hook latch could break.



Correct method


Incorrect method

③ Hoisting and Lowering Loads

⚠ WARNING

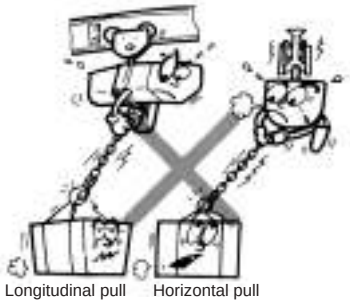
- Do not hoist loads that exceed the product rating.
  In particular, when using multiple units to hoist one load, make sure the rating is not exceeded by the load being off balance.
  **** The load could fall and injure someone or damage the equipment.***

- Make sure the load does not swing during hoisting and lowering.

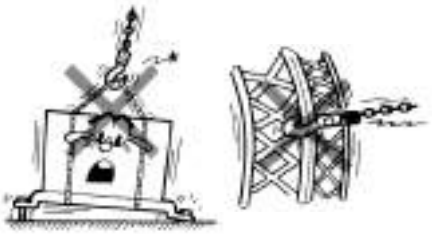
- Also make sure the load block does not swing when not hoisting a load.
  **** The load or the load block could strike someone or the load could fall and injure someone.***

- The limit switch prevents over winding in emergencies. Do not use it normally as it will cause a break down.
  **** If the limit switch breaks, the link chain could break or the load could fall and injure someone.***

- Do not hoist from a slant (longitudinally or horizontally). Always move the Electric Chain Hoist directly above the load before hoisting the load.
  **** The load will drag across the ground and could collide with and injure someone. This also applies excessive force to the product and could break it.***



- Never conduct ground hoisting (operations that catch on building structural elements).
  **** This could apply excessive force that breaks the link chain or equipment, which could cause the load to fall and injure someone.***



- Do not bump the chain storage unit with the load or the sling.
  **** This could cause the link chain to slide out or the storage unit to break, which could cause the link chain to fall and injure someone.***

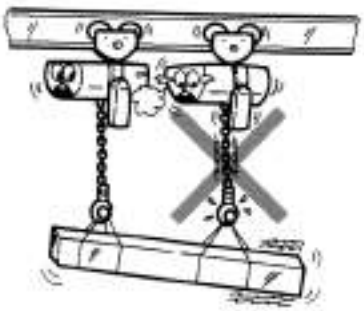
⚠ WARNING

- Do not reverse direction of a hoisted load.
  **** Reversing direction generates a large impact force that could break the link chain or damage the equipment and cause the load to fall and injure someone.***

⚠ CAUTION

- When using multiple hoists to hoist a load, observe the following to ensure the load is not tilted.
  **** Not observing these could cause the load to be unbalanced or the Electric Chain Hoist to collide, which could cause the load to fall and injure someone.***

① Balance the load so that the load is distributed evenly between the two Electric Chain Hoist.
(Attach a scale or overload preventer.)



② Use Electric Chain Hoist with the same hoisting speed.

③ Use interlocked operation for the two Electric Chain Hoists.

④ Attach collision preventers or take other measures to prevent the two Electric Chain Hoist from colliding.

⑤ Devise a sling that will keep the hoisting pitch from changing.

- When hoisting, pause when the link chain become taut and check the slink to make sure it is safe.
  **** This prevents the load from falling, mitigates the shock when raising the load off of the floor, and reduces link chain wear.***

④ Moving the Load (Horizontally)

⚠ DANGER

- Do not strike the Electric Chain Hoist or the trolley against the stopper or the building.
  **** This could cause an excessive impact force that could cause the load to fall and injure someone or that could damage the equipment.***

⚠ WARNING

- Do not go under the load or in front of its travel direction.
- Do not move the load when people are in the load range of movement.
  **** The load could collide with people or fall and injure someone.***

⚠ CAUTION

- Make sure that loads being moved do not catch on the building structure, wires, or other objects.
  **** If it catches on something, the load could fall and injure someone.***

- Do not use the push-button cable to pull the trolley.
  **** If the electric wire breaks it could cause an electric shock, cause the hoist to be uncontrollable, or cause another malfunction, which could injure someone.***

⑤ Push-button Switch Operation

⚠ DANGER

- If the load moves in a different direction than the push-button switch instruction, immediately stop operation.
  **** Incorrect operation or a malfunction could cause an injury.***

⚠ WARNING

- Before use, make sure the push button operates smoothly.
  **** Incorrect operation or a malfunction could cause an injury.***
  If more force than normal is required to push in the button, the push-button switch could be damaged, so stop operation and immediately disassemble and inspect the switch.

⚠ CAUTION

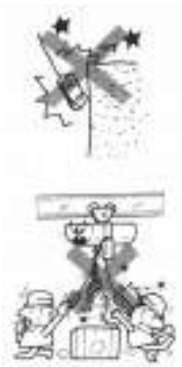
- Check the push-button display (operation, direction) before operating the push-button switch.
  **** Incorrect operation could cause an injury.***
- Make sure to push in the push-button until you can feel it operate.
  **** Not correctly pushing in the push-button could result in incorrect operation that causes an injury.***

- To conduct a reverse operation, stop the load from moving before changing direction. Do not suddenly change direction.
  **** The impact force caused by suddenly changing direction could cause the load to drop and injure someone or greatly shorten the useful life of the Electric Chain Hoist and link chain.***

- Regularly clean around the push-button to prevent dust, sand, and other substances from building up.
  **** If dust, sand, or another substance gets into the gap between the push-button and the case, the button might become stuck, which could cause malfunction that could injure someone, such as incorrect operation or the hoist becoming uncontrollable.***
- Do not conduct inching frequently.
  **** This will cause excessive wearing or melting of the contacts, which could cause the hoist to become uncontrollable and injure someone, and it could also cause accelerated wearing of the brake pad and overheating of the hoist.***
  - For dual speed models, the push-button has a two-stage operation where pushing to the first stage produces slow operation and pushing to the second stages produces fast operation, so do not suddenly go to fast operation or suddenly stop from fast operation.
    Also, do not frequently switch between slow operation and fast operation.

⚠ CAUTION

- After operation, release the push-button switch and allow it to naturally return to the lowered position without striking people or objects.
  **** The push-button switch could be damaged by striking against the load or building, which could cause the Electric Chain Hoist to become uncontrollable.***



⑥ Other Precautions

⚠ DANGER

- Do not perform electric welding on loads suspended by an Electric Chain Hoist.
- Do not connect a welder ground wire to the link chain.
- Never contact a welding electrode to the link chain.
  **** If an electric current flows in the link chain, it could decrease the strength of the Electric Chain Hoist components and cause the load to fall.***

- Observe the related laws when using this product as cranes or easy lifts, or for ships, ore mines, or petrochemical plants, etc.

Daily Inspection

⚠ WARNING

- Always conduct the following pre-operation inspections before use.
- When an abnormality was detected, immediately stop use and take corrective action in accordance with “General Trouble Causes and Their Corrective Action” (pages 43~44) before using the hoist again.

  **** Using the hoist while it is abnormal is linked to accidents and is extremely dangerous. Do not do it.***

Pre-operation checks

Check the following before operation.

1. Conduct the following inspections visually.

Inspection point	Inspection item	Inspection standard
① Chain	1) Pitch elongation	There shall be no abnormal elongation evident.
	2) Wear	The wire diameter shall not be extremely worn.
	3) Deformation	There shall be no deformation.
	4) Cracks or other harmful defects	There shall be no cracks or other harmful defects.
	5) Corrosion	There shall be no noticeable rusting.
② Hook	1) Hook opening	There shall be no noticeable deformation.
	2) Deformation	There shall be no bending or twisting.
	3) Cracks or other harmful defects	There shall be no cracks or other harmful defects.
	4) Operation	The lower hook shall rotate smoothly.
③ Body	1) Nuts, bolts, screws, cotter pins, etc. of each part	No missing or loose nuts, bolts, screws, cotter pins, etc. at places visible from the outside?
	2) Lubrication and greasing	Replenishment of oil, greasing, and lubrication at specified points?
	3) Suspended condition of the main body.	Confirm that the upper hook is located in the center of the suspension pin and it does not slide to the straight part.
④ Trolley	1) Nuts, bolts, screws, cotter pins, etc. of each part	No missing or loose nuts, bolts, screws, cotter pins, etc. at places visible from the outside?
	2) Lubrication and greasing	Replenishment of oil, greasing, and lubrication of specified points?
⑤ Pushbutton switches and cables	1) Appearance	There shall be no deformation, damage, loose screws, etc. Marking shall be clear.
	2) Switch operation	Switches shall operate properly. Interlocks shall operate properly.
⑥ Power connection	1) Reverse connection	There shall be no reversed phase.
⑦ Rigging gear	1) Wear, deformation, etc.	There shall be no abnormalities.
⑧ Caution plate	1) Appearance, chipped markings, etc.	There shall be no damage. There shall be no chipping, or other unclear points at warnings.

* If any warning or caution plate installed to the product is damaged or unreadable, always replace the plate. The part codes when ordering caution plates are shown in the table at the right.

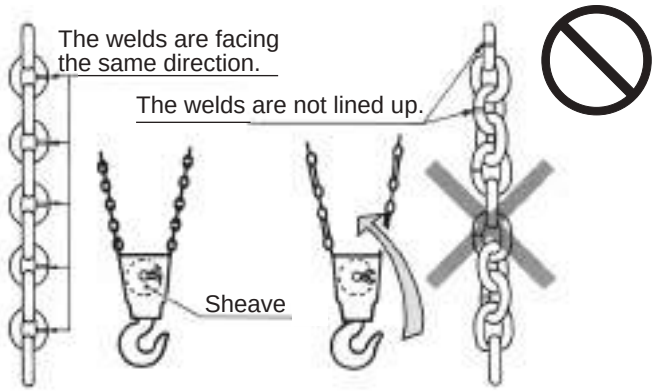
Part name	Product code	Installation site
Pushbutton caution plate	855278	Pushbutton suspension wire section
Body caution plate	855280	Hoisting body cover section

2. The chain shall not be twisted or tangled.

- For pair Electric Chain Hoist, the chain will be twisted if the hook is rolled over and over.
  * If the chain is twisted, return it to the normal state of Fig. (A) before use.

3. The lower hook shall rotate smoothly.

4. There shall be no abnormalities in the rigging gear.



(A) Normal

(B) When the chain is twisted because the hook has been passed through the chain as shown by the arrow.

No-load operation check

1. Pushbutton operation shall be smooth and operation shall be performed correctly in accordance with the up, down, left, and right markings.

- For the dual speed type, the hoist shall operate at low speed the first time the pushbutton is pressed and will switch to high speed operation when the pushbutton is pressed a second time.
- The chain shall be properly clamped by the sheave (hooking of 2 or more chains).
  * If the chain is not clamped properly, correct it.

2. When the pushbutton is released, the hoist shall immediately stop.

3. There shall be no sound (abnormal sound), vibration or smell different from normal.

4. When operated up to full lift, the upper and lower stop devices (limit switches) shall activate positively.

- At this time, verify that the hoisting of the chain is performed normally.

Load operation check

- Check the distance of movement from turning off of the switch and stopping of the load when the lowering of the load was stopped midway in the state in which the rated load was hoisted.
- A stopping distance of about 5 to 15mm is normal.

Others

The chain shall not be rusted. It shall also be coated with lubricating oil well up to the point at which the chains touch each other.

Regular Voluntary Inspections

⚠ DANGER

- If consumable parts that need to be replaced or damaged areas are found during the monthly or annual inspections, or other inspections, do not continue to use the product until these are replaced.
  **** Using the product without replacing such parts could result in electrical shock or the load falling, which is very dangerous. Be sure to take appropriate measures, such as adjusting or replacing the parts.***

⚠ WARNING

- Be sure to conduct regular voluntary inspections to ensure safe operation of the Electric Chain Hoist and that it functions as intended.
  **** Conduct the monthly voluntary inspections at least once a month and the annual voluntary inspections at least once a year.***

- Voluntary inspections should be conducted by a professionally possessing the specialized knowledge specified by the operator.
  **** Inspections conducted by other persons could result in dropped loads, malfunction, or other accidents.***

- Only replace parts with genuine Hitachi parts.
  **** Using other parts could result in electrical shock or part damage that could cause the load to fall, etc., and injure someone.***

- When replacing or adjusting parts as part of voluntary inspections, be sure to check the items in “Post-Installation Checks and Test Operation” on page 16 before using.
- Creating a special stand for inspections is recommended
- Also conduct the same inspections for electric chain hoists not used as cranes, etc.

Monthly Voluntary Inspections

Conduct these voluntary inspections at least once a month.
If any abnormal areas are found, take appropriate measures to resolve them.

- Follow the inspection items and inspection periods given in Appendix Table 1 (pages 45-46). However, the inspection period will vary depending on the electric chain hoist frequency of use.
- For the inspection method and measures, refer to the items in “Maintenance and Inspection Method (pages 28-42).

Annual Voluntary Inspections

Conduct these inspections at least once a year by disassembling and inspecting the internal components.
In addition, if the inspection finds any abnormalities, take appropriate measures to resolve them.

- Follow the inspection items and maintenance and inspection standard given in "Page 47".
- For the inspection method and measures, refer to the items in “Maintenance and Inspection Method (pages 28-42).
- Have a dealer conduct the disassembly and inspection.

Part Usage Limits

If consumable parts that have exceeded the usage limit standard are found during the monthly or annual inspections, or other inspections, be sure to replace them.

- It is very dangerous to use parts that have exceeded the usage limit standard.
- For the inspection method for the usage limit, refer to the items in “Maintenance and Inspection Method (pages 28-42, 47).
- Keeping consumable parts on hand will shorten down time and improve efficiency.

Maintenance and Inspection Method

⚠ WARNING

- When conducting maintenance and inspections, make sure the power to the electric chain hoist is turned off and that the surrounding area is safe.
  **** Not doing so could cause electric shock or unintended operation of the electric chain hoist and injure someone.***
- When conducting maintenance and inspections, do so when there is no load on the hoist.
  **** Not doing so could cause the load to fall and injure someone.***

⚠ CAUTION

- When conducting maintenance and inspections, always posts signs that such work is being performed (“Inspection in Progress” or “Do Not Turn Power On!”).
  **** Not doing so could cause electric shock or unintended operation of the electric chain hoist and injure someone.***
- When disassembling the product, make sure the electric chain hoist is lowered all the way to the ground.
  **** Not doing so could result in injury due to falling parts or people tripping.***

CAUTION

● When replacing the following parts, always order new parts from a distributor.
○ Link chain ○ Gear ○ Sprocket….and other parts which require complete disassembly

The following items are common inspection items.

Hook inspection and usage limit

1. Hook opening, cracks and wear inspection and usage limit

When the following states were verified when upper and lower hook inspection was conducted, replace the hook. Absolutely never use the hoist in that state.

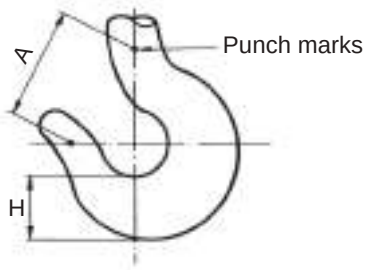
- Hook opening had increased.
- Cracks were found.
- Wear of parts which contact the sling was detected.
- There was play at the hook threaded part and hook nut part. (Models having a rated load of 1t or more)
- The amount of wear of the hook threaded part exceeded the limit value. (Models having a rated load of 1t or more)

2. Hook opening dimension and wear limit

Measure the hook opening dimension (dimension between punch marks) and amount of wear and replace the hook when the following conditions are not satisfied:

①Hook opening dimension

There shall be no deformation when dimension A between the punch marks is measured and compared to the previously measured value.

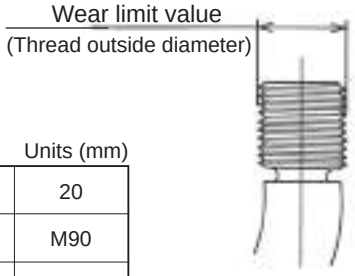


②Hook wear

Hook thickness dimension H shall be measured and compared to the previously measured value and shall be 95% or more.

3. Hook threaded part wear limit

For 1t or greater rated load models with a threaded part, the outside diameter of the threaded part shall be measured and shall be equal to or greater than the dimensions shown in the table.



Threaded part wear limit value

Units (mm)

Rated load (t)	1	2	3	5	7.5, 10	15	20
Thread size	M20	M27	M30	M39	M52	M80	M90
Wear limit (outside diameter)	19.5	26.4	29.3	38.2	51.0	79.0	89.0

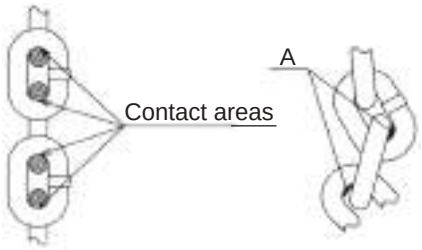
Chain Inspection and Usage Limits

1. Chain lubrication check and application

⚠ CAUTION

- Do not use the link chain when it needs to be lubricated.
  **** Doing so could cause accelerated wearing of the link chain, promote tangling, and cause chain breakage that could cause the load to fall and injure someone. Lubricate the chain before using it.***

- When a load is suspended, it is difficult for the lubrication to get on the surfaces where the links are touching, so lower the chain to create slack in it so that the contact areas shown by (A) in the figure are sufficiently lubricated.



- After lubricating the chain, completely raise and lower the chain 2 or 3 times to make sure the lubricant sufficiently covers the link mutual contact areas.
- If the hoist is used frequently, regularly applying lubrication at least once a week is recommended.
- Lubrication to use: Tonna S3M220 (Hitachi genuine part: Part Code 836492).

2. Stretch and wearing limits

⚠ DANGER

- If the following conditions are found during the link chain inspection, absolutely do not use the chain.
  **** The chain could break and the load could fall and injure someone. Be sure to replace the chain.***

- The chain interior length dimension L is worn or stretched beyond the value shown in the table at right.
  (The interior length wear or stretching is 5% or more of the base dimension.)
- The link diameter d is worn beyond the value shown in the table at right.
  (The wear is 10% or more of the nominal diameter.)
  * If the chain is greatly worn, also check the wearing of the sprocket and the sprocket guide.

Unit (mm)

Chain diameter	Usage Limit Dimensions	
	ϕd	L
ϕ6.3	5.7	20
ϕ7.1	6.4	21
ϕ10	9.0	31.5

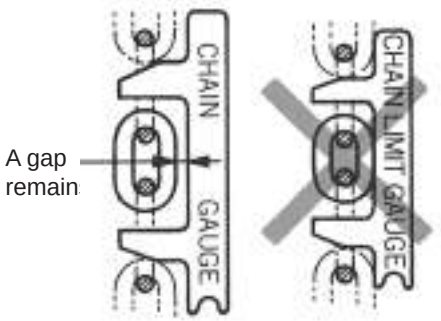
● Using a limit gauge to measure wearing and stretching

▪ It is convenient to use the included limit gauge.
Use the limit gauge as shown in the figure to measure the chain by taking two measurements of the pitch and link diameter.

▪ Measure all of the links and if even one location cannot be used, then replace the entire chain.
* Using a worn or stretched chain is dangerous because the chain could break.

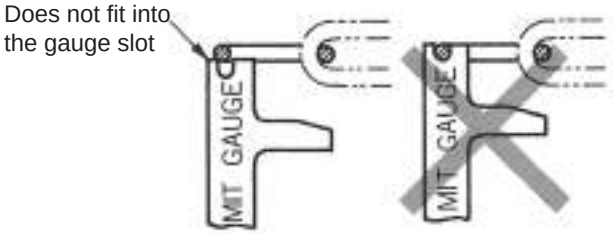
▪ When the chain is feed into automated machinery and hoisted and lowered at a constant speed, increase the inspection frequency focusing on and around the links that engage the sprocket when stopped.

Pitch Measurement



Can use Cannot use

Link Diameter Measurement



Can use Cannot use

3. Other

①There is no marring or other harmful defects.

②There is no debris attached to the chain.

⚠ DANGER

- Only use Hitachi genuine parts to replace the link chain.
- Replacing the entire chain. Do not just remove the damaged portion and reconnect the chain.

NOTE

- Have a dealer replace the chain. The customer should not replace the chain.
- When replacing the chain for the second time, also replace the sprocket and the sprocket guide.

Brake Inspection

Refer to Fig. 2 and check the wearing and operational status of each part. The brake gap is set to an appropriate value at the time of shipment, but it will become larger due to running wear and other factors during use. Operate the hoist and adjust the brake gap to the appropriate value if it exceeds that value.

● S Series (1/4 to 1/2t)

Brake Inspection

(1) The slipping when stopping (coasting distance) becomes large. (Table 1)

(2) There frequently is a straining sound during intake.

Measure the brake gap by visually measuring the “stroke” as shown in Fig. 2 or by inserting the appropriately sized plate. The appropriate values are shown in Table 2.

Table 1 Appropriate Range and Slipping Limit

Appropriate range	Approx. 5 to 15 mm
Slipping limit	20 mm or more

Table 2 Appropriate Stroke

Appropriate stroke	0.3 to 0.5 mm
Limit stroke	1.0 mm

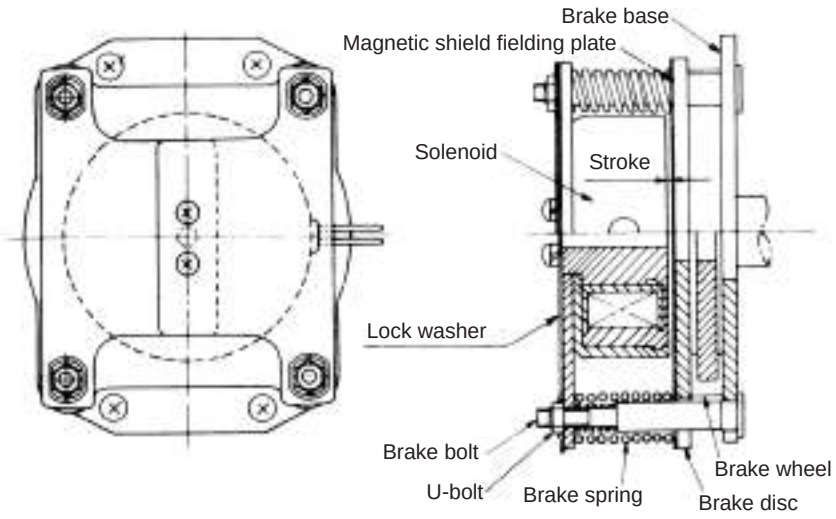


Fig. 2 Brake mechanism

NOTE

A “magnetic field shielding plate” is attached to the surface opposing the brake disc solenoid.

The “magnetic field shielding plate” is an important component that prevents delayed braking action, so it must be checked monthly and annually to be sure it has not come loose, etc.

In addition, when reassembling after disassembly, make sure the “magnetic field shielding plate” is on the solenoid side.

Brake Gap Adjustment Method

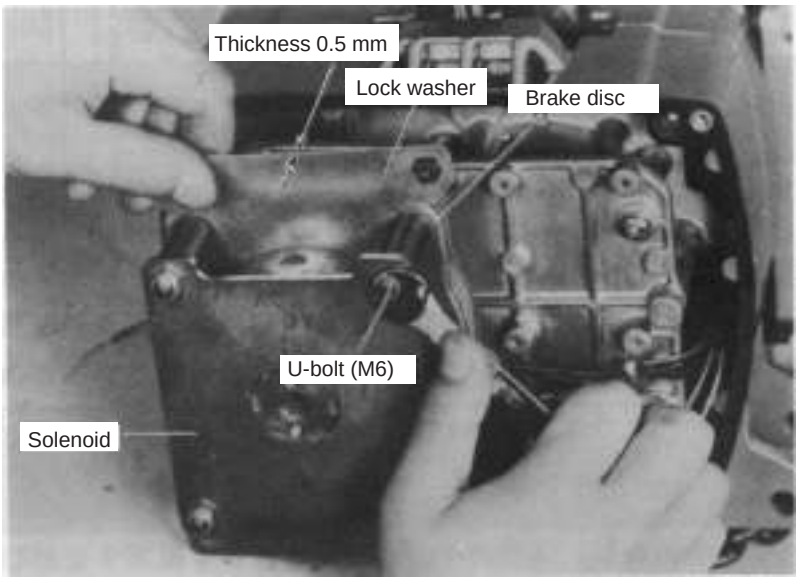


Fig. 3 Brake gap adjustment

Stroke adjustment is not required for regular use, but inspect the stroke, and if it exceeds the limit gap (1.0 mm), adjust it to an appropriate stoke.

Before adjusting the stroke, remove any load from the hoist and turn off the power.

To adjust the stroke, loosen the 4 U-nuts, remove the lock washers, insert them between the solenoid and brake disc as shown in Fig. 3, and uniformly tighten the 4 U-nuts. The lock washer thickness is 0.5 mm, so if there is no play when the lock washers are inserted, it means the brake gap has been set to 0.5 mm.

When the setting is complete, back off the U-nuts a little (about 1/6 turn), pull out the lock washers, reinstall them in their original locations as shown in Fig. 2, and securely fasten the U-nut turn stops.

● S Series (1 to 5t)

Brake Inspection

1. There is much slippage when stopping (coasting distance). (Refer to Table 1)

2. There frequently is a straining sound during intake.

Look at the brake gap from the arrow area shown in Fig. 2, and visually estimate it or insert an appropriate plate to measure it. The appropriate values are shown in Table 2.

Table 1 Appropriate Range and Slipping Limit

Appropriate range	Approx. 5 to 15 mm
Slipping limit	20 mm or more

Table 2 Appropriate Stroke

Appropriate stroke	1 to 2 mm
Limit stroke	2.5 mm or more

The solenoid fastening core is designed to move a set amount, so when measurement the gap, pressed the fastening core against the brake wheel side when measuring the gap.

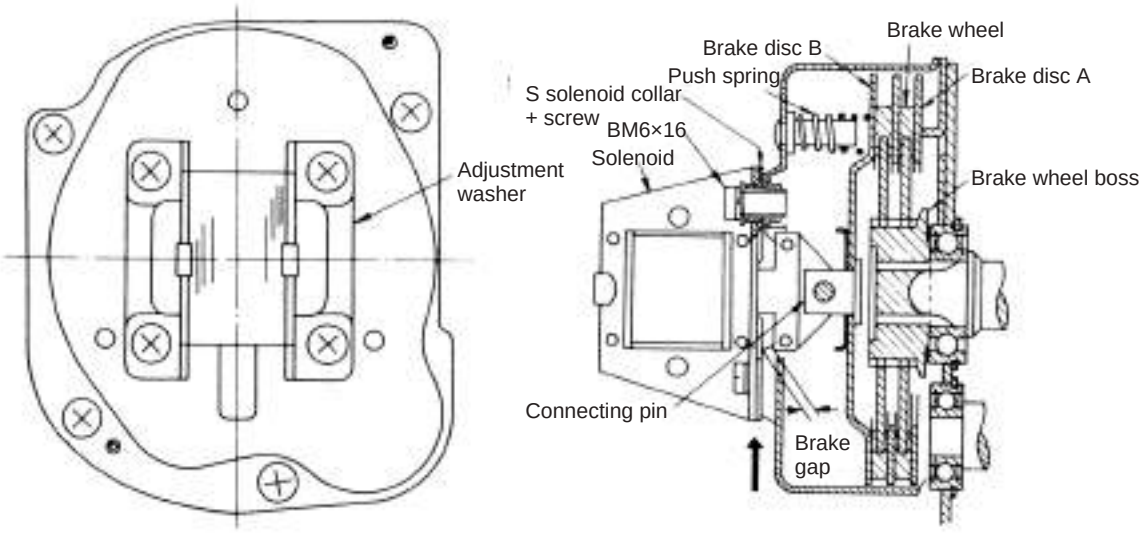


Fig. 2 Brake construction

Brake Gap Adjustment Method

The brake gap does not need to be adjusted during normal use, but inspect it, and if the brake gap exceeds the limit gap (2.5 mm), adjust it to an appropriate brake gap.

When adjusting the brake gap, make sure there is no load and that the power is shut off. To adjust the gap, loosen the solenoid fastening round-head screws (M6×16) and remove the adjustment
washers from under the solenoid as shown in Fig. 3. Removing 1 adjustment washer each from the right and left sides will reduce the brake gap by 0.5 mm.

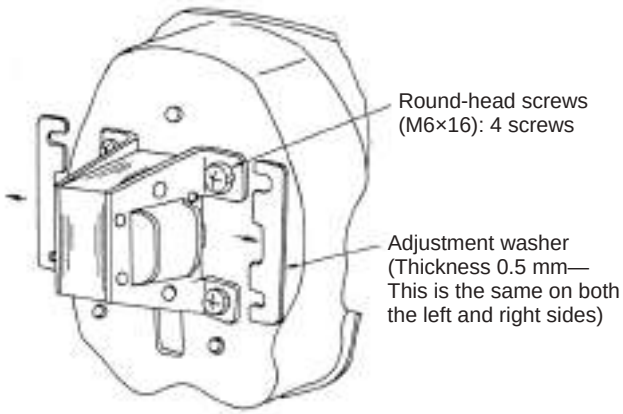
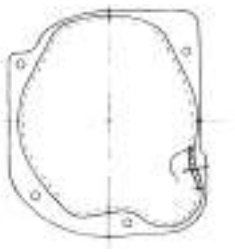


Fig. 3 Brake gap adjustment method

● F Series (1 to 5t), S1 (1 to 5t)

Brake Inspection

The brake for this series does not require adjustment because it automatically adjusts the brake gap according to the amount of wearing of the brake lining. However, when the brake wheel, etc., reaches the wear limit, the braking force will decline and the amount of slippage will increase. In this case, replace the brake wheel and other worn parts.

Part Name	Measurement Area	Original Dimension (mm)	Limit Dimension (mm)
BM Support A	 Plate thickness where contacting the brake disc Note: This should be replaced if swelling is seen around the circumference.	1.6	0.5
Other	Written in the "page 47"		

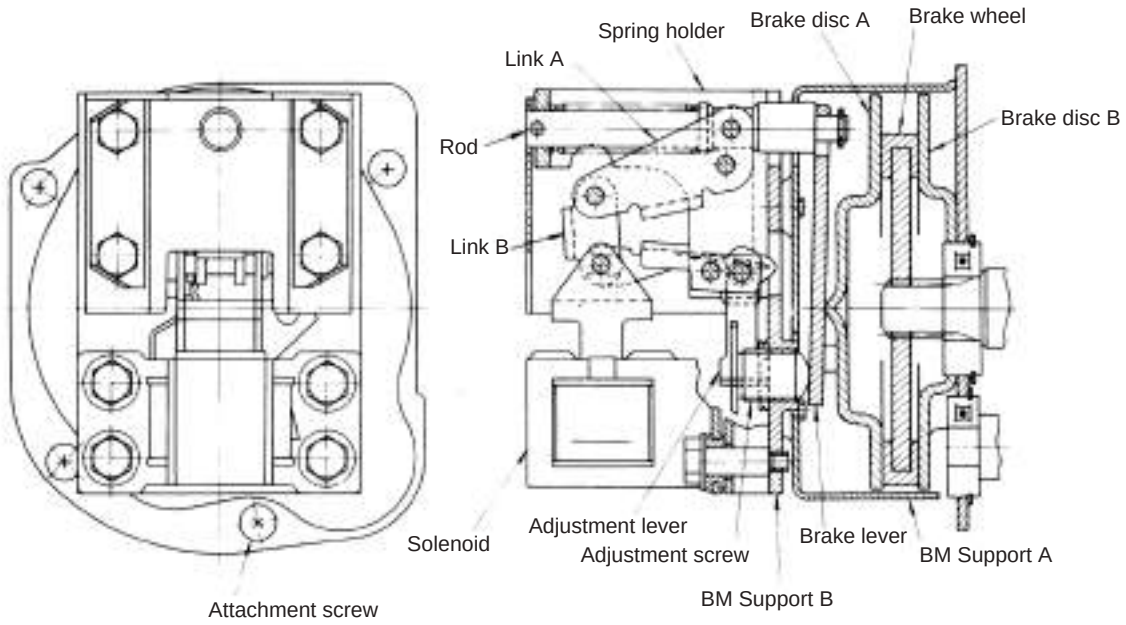


Fig. 1 Brake construction (for 1 ton)

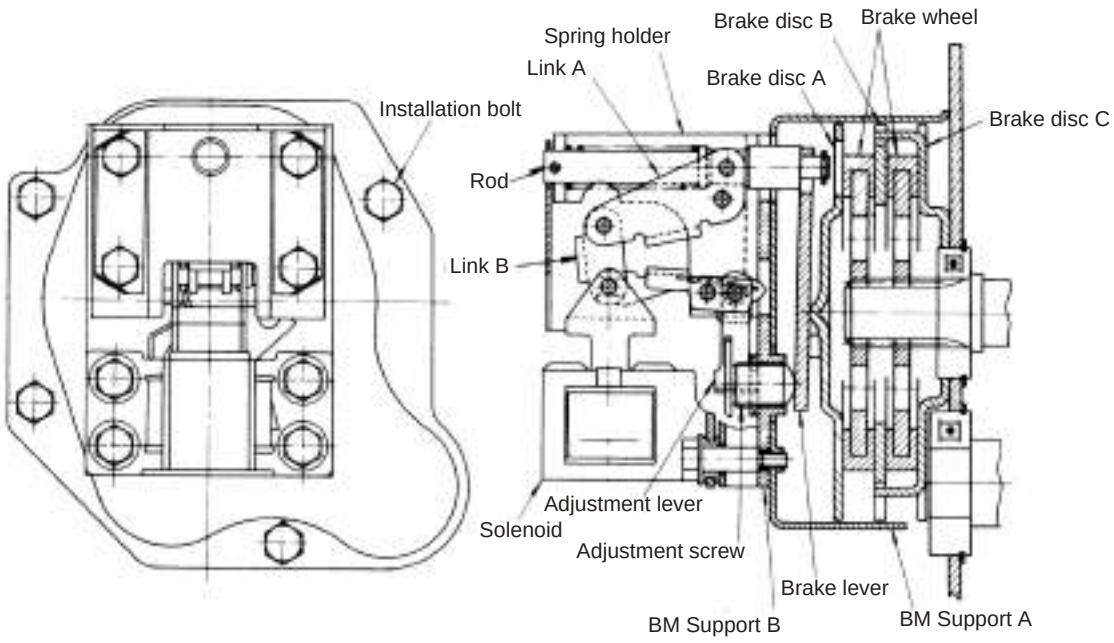


Fig. 2 Brake construction (for 2 to 5 tons)

Brake inspection instructions

To inspect the brake, follow the instructions below after removing the load and turning off the power.
As shown in Fig. 1 and Fig. 2, remove the 4 fastening screws or bolts to remove the assembled solenoid and links from the brake operating unit. Be careful the brake disc and brake wheel do not fall while doing this. Inspect the disassembled parts in accordance with the wear limit table in Table 1 and replace the parts that have reached the wear limit.
The following work is required when assembling the brake after replacing the parts, so be sure to perform it.

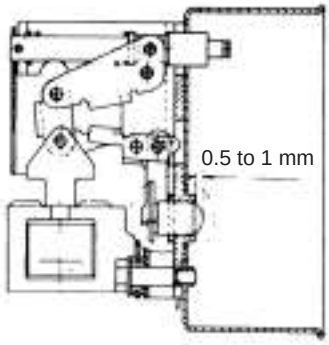
①When the adjustment limit is reached, the adjustment screw will extend past the BM support surface. Mistakenly assembling this as is will cause the brake gap to decrease or cause the brake to remain engaged.
The adjustment screw is designed to prevent the adjustment lever from being backed up, so use a screwdriver to carefully lift up the adjustment lever to remove it from the adjustment screw teeth
In this state the adjustment screw can be backed up. Turning the adjustment screw counterclockwise will return the adjustment screw to the solenoid side.

②Return the adjustment screw end until it extends about 0.5 to 1 mm beyond the surface of BM Support B. When the screwdriver is removed in this state, the spring force causes the adjustment lever to engage with the adjustment screw teeth. (Fig. 3)

Note: When backing up the adjustment screw, confirm that the screw turns smoothly. Special grease is applied to the surface of the screw to prevent rusting, so in the event turning has become difficult due to rusting or another cause, disassemble it and fix it so that it turns smoothly again. At this time, use the special grease “Grease containing molybdenum disulfide, named Mori PS#265.”

③When the above adjustment is completed, reassemble the brake in the opposite order in which it was disassembled.
When doing this, attach the brake lever so that it is positioned between the 2 protrusions provided in the center or brake disc A.

④After connecting the solenoid, conducting an inching operation using the push button will cause the adjustment lever to make the adjustment screw advance 1 tooth at a time so that it no longer advances the appropriate amount. This area is the appropriate gap. (Fig. 4)



BM Support B

Fig. 3 Adjustment screw backup amount

During disassembly and inspection, conduct a check using this gap amount as a reference.
Wearing of the rink or pin areas can reduce the gap by a small amount.

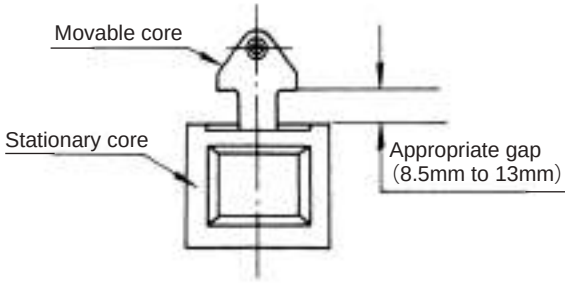
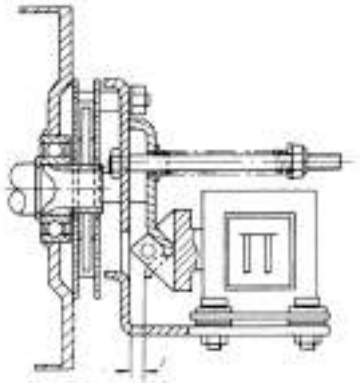
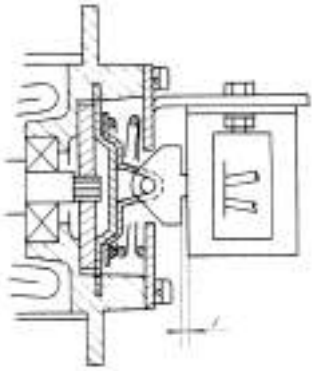


Fig. 4 Solenoid appropriate gap

● ET, ST Series

Brake Inspection

The brake gap does not need to be adjusted. Coasting will increase when the end of the useful life is reached, so check the following.

ET_2 Type	ST_2Type
	
When the ℓ dimension is zero, the brake has reached the end of its useful life. Replace the brake wheel and also inspect the brake disc and other components and replace any worn parts at the same time.	When the ℓ dimension reaches 3 mm, the brake has reached the end of its useful life. Replace the brake wheel and also inspect the brake disc and other components and replace any worn parts at the same time.

History Inspection about ground hoistingments

There is no problem during normal use, but if so-called ground hoisting where the bottom hook catches on the building structure or other object during hoisting occurs during operation, the excessive shock could cause a rapid decline in the strength of the hook, chain, gear, or other component, so continuing use as is could result in a chain break or other accident. In this case, the hanger pin will deform slightly or become indented as shown in Fig. 5, so occasionally remover the hanger pin and check it for deformation and wear. Hanger pins that have sustained an excessive shock will have deformation or dents like those shown in Fig. 5. Inspect the hanger pin and if it shows deformation or denting, it is a sign that excessive shock was sustained, so
immediately replace any damaged components, such as the chain, hanger pin, or gear.

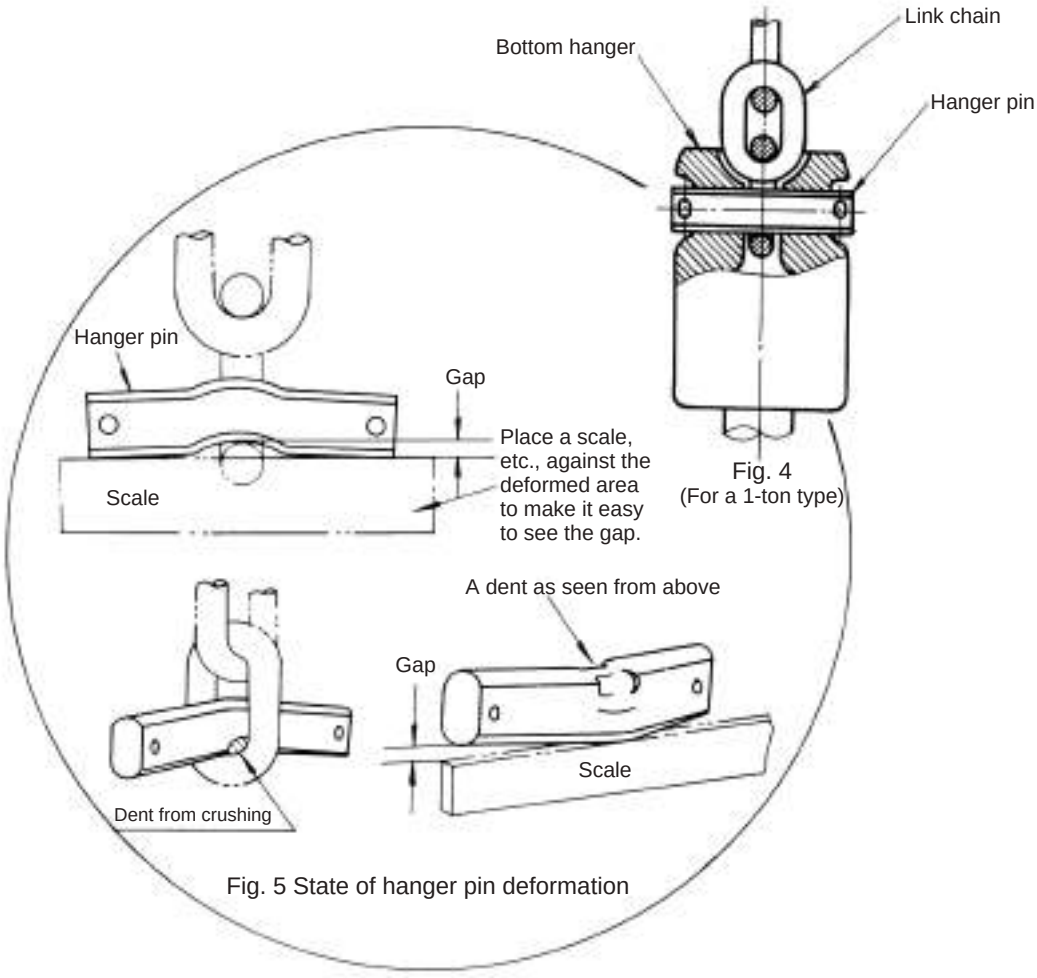
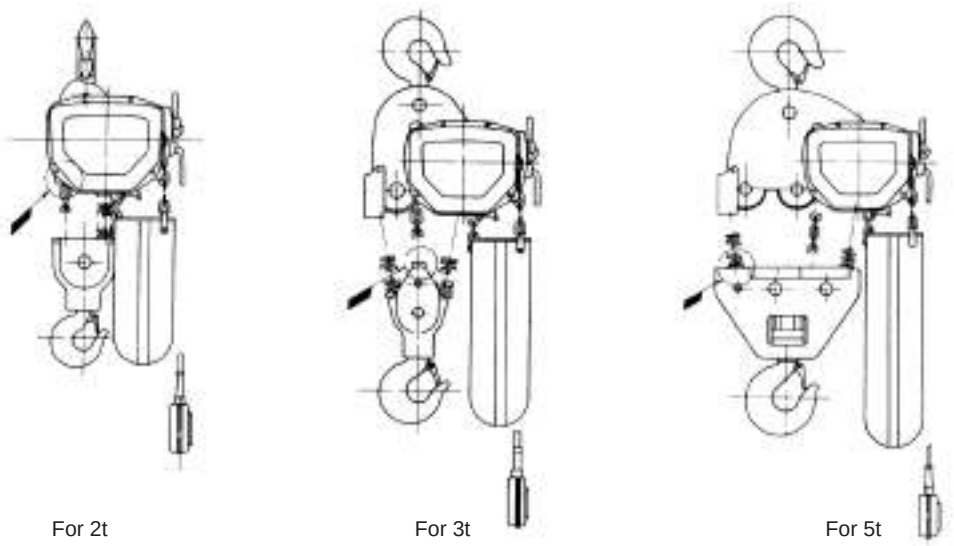


Fig. 4
(For a 1-ton type)

Fig. 5 State of hanger pin deformation

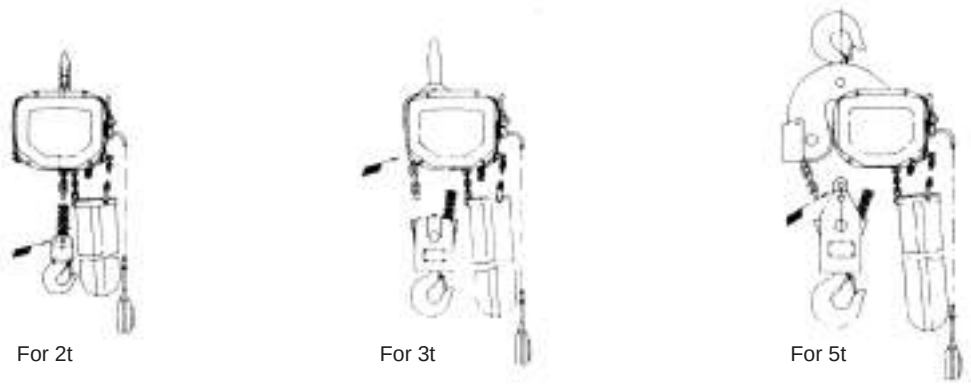
For models with two or more hanging positions, the hanger pin is installed in the location shown in Fig. 6. (Arrow mark at the end of the chain)

- S Series



For 2t For 3t For 5t

- F Series



For 2t For 3t For 5t

Fig. 6 Hanger pin installation position

Pushbutton switch inspection

Turn off the power and then inspect the pushbutton switch as described below.
If an abnormality is detected, replace the switch.

- Pushbutton switch operates normally?
- Case, cover, etc. is not damaged or cracked?
- Try removing the cover. Are there any loose screws or abnormalities in the lead wires?
- Has foreign matter entered the switch and are the contacts abnormally worn?

Limit switch inspection

Perform the following inspections on the limit switches (upper and lower limit stop devices).

1. Limit switch inspection

①The limit switches shall activate positively at the upper and lower limits.
②The limit lever shall not be deformed and shall operate smoothly.
③The limit spring shall not be deformed and shall not have fallen out.

- Pay particular attention to installation and falling out after disassembly and reassembly.

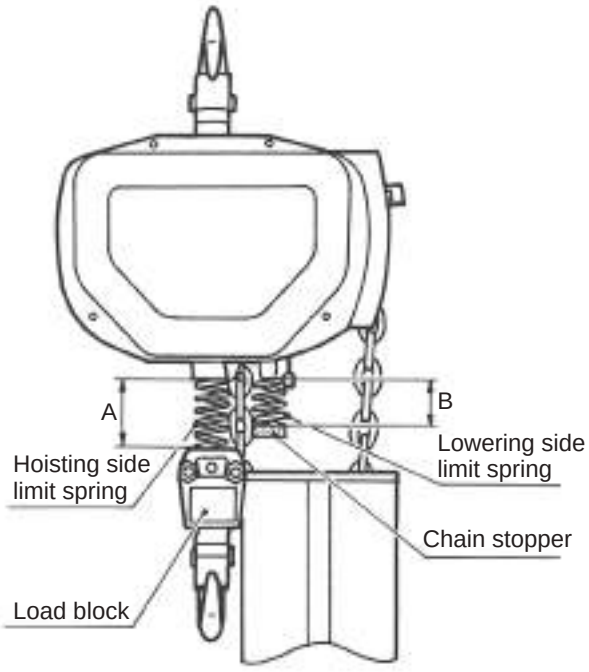
2. Hoisting and lowering allowance check

①Hoisting allowance shall be 50mm or more.
②Lowering allowance shall be 3mm or more.

- **Hoisting allowance:**
  Difference of compressed spring dimension subtracted from the spring dimension when the hoist was stopped by a limit switch when it is assumed that the limit spring was compressed by the load block without the limit switch being activated during hoisting operation.

- **Lowering allowance:**
  Difference in the dimension when the spring was compressed by the chain stopper, the same as the above.

**** When the hoisting and/or lowering allowance is the specified value or less, the brake slippage may be large or the spring may be deformed and an excessive load may be applied to the body and limit lever section and lead to a major accident.***



● Check method

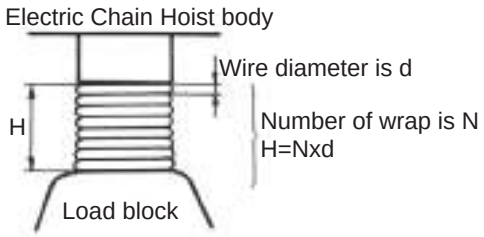
①When operation was stopped by a limit switch, measure the A and B dimensions (figure on page 40).

②Find the limit spring compressed dimension H from the following expression (approximation):

H = N × d (N: Number of wraps, d: wire diameter)

③Hoisting allowance = A - H (Shall be 50mm or more)

Lowering allowance = B - H (Shall be 3mm or more)



Limit spring compressed dimension

<Hoisting allowance calculation example>

①Hoisting limit spring dimension A : 90mm

②Limit spring compressed dimension H : 32mm

(If the number of wrap is 8 and the wire diameter is 4mm, then H = 8 × 4 = 32.)

③Hoisting allowance = A - H = 90 - 32 = 58mm

3. Contact wear check

①Turn off the Electric Chain Hoist power and then remove the motor mounting side cover and remove the limit switch.

②Peek through the limit switch side hole and check the state of wear and discoloration of the contacts.

* If the contacts are abnormal, replace them.

Machine internal wiring and tightening of each part

Check whether or not the machine internal wiring is externally damaged and the terminals, connectors, etc. are loose.

Also check whether or not the bolts fastening each part are loose.

* If loose, retighten.

Lubrication standard

Parts to be lubricated		Standard frequency	Type of oil Hitachi STD	Quantity
Upper and lower hook assemblies	Sheave bearing	Once yearly	Nisseki epinoc grease No.1	3g
	Thrust bearing of hook	Twice yearly	Moly PS grease No.2	3g
	Suspension pin	Once yearly	Moly PS grease No.2	small amount (On the surface)
Reduction gear		Twice yearly	Moly PS grease No.2	150g(1/4to1t) 350g(2t to 5t)
Coupling		Once yearly	Moly PS grease No.2	10g
Electro-magnetic brake	Rod	Once yearly	Moly PS grease No.2	small amount (On the surface)
	Moving core bearing	Once yearly	Moly PS grease No.2	small amount (On the surface)
	Stopper pin	Once yearly	Moly PS grease No.2	small amount (On the surface)
Load chain		Once weekly	Tonna S3M220	30g (Position where chains touch)
Roller pin		Once yearly	Moly PS grease No.2	1g
Gear of wheel		Twice yearly	Moly PS grease No.2	15g

MEMO

General trouble causes and corrective action

Examples of Electric Chain Hoist general abnormalities and trouble are given in the troubleshooting table shown below.
It is not practical to describe all of the troubles that could occur.
- Have corrective action taken by someone with special knowledge specified by the employer.
- If a trouble not shown in these examples occurs, contact your dealer, distributor.

Troubleshooting table

Abnormality or trouble	Main cause	Corrective action	Remarks
1. Motor does not start	(1) Power distribution panel switch not turned on. Fuse blown or circuit breaker tripped	Check the power distribution panel and turn on the power.	
	(2) Power supply dropped phase	Securely connect the power supply R, S, and T terminals.	3-phase models
	(3) Power supply is connected in reversed phase.a	Switch the power supply R and T terminal connections.	3-phase models with reverse phase prevention relay
	(4) Transformer damaged or pushbutton switch, electromagnetic switch, or limit switch contact faulty, machine internal wiring cord or cable broken.	Check conduction and repair the broken wire. Replace the damaged part.	
	(5) Brake is not released.	Check the brake solenoid connection. If the brake circuit board is damaged, replace it.	S_2, SN_2, SS_2 Series
	(6) Wrong power source	Use the correct power source in accordance with the nameplate.	
	(7) Large voltage drop	Secure the specified supply voltage by installing a power supply compensator. Use a suitable power cable.	If the hoist is started when the power supply capacity is low, the voltage may drop suddenly.
	(8) Heavy overload	Make the load the rated load or lower.	
2. Operation is different from pushbutton switch marking	(1) Power supply is connected in reverse phase.	Switch the power supply R and T terminal connections.	3-phase models without reverse phase prevention relay
	(2) Pushbutton switch, electromagnetic switch, or other machine internal wiring incorrect	Connect correctly in accordance with the connection diagram.	
	(3) Direction switch operation faulty	Check the connections.	Single-phase models
	(4) Motor starting coil connection incorrect	Interchange the starting coil terminals.	Single-phase models
3. Does not hoist	(1) Heavy overload	Make the load the rated load or less.	
	(2) Pushbutton switch, electromagnetic switch, or limit switch contact faulty, machine internal wiring loose	Check conduction and replace damaged parts. Connect securely.	
4. Does not lower	(1) Pushbutton switch, electromagnetic switch, or limit switch contact faulty, machine internal wiring loose.	Check conduction and replace damaged parts. Connect securely.	
5. Brake solenoid does not operate	(1) Power supply voltage is extremely low.	Secure the specified voltage.	
	(2) Brake gap exceeds the limit.	Adjust or replace the worn parts based on the “Model Edition” manual.	
	(3) Terminal connection open	Replace the brake solenoid.	
	(4) Solenoid coil is burnt out.	Replace the brake solenoid.	

Abnormality or trouble	Main cause	Corrective action	Remarks
5. Brake solenoid does not operate	(5) Rectifier is damaged.	Replace the circuit board.	S_2, SN_2, SS_2 Series
	(6) Circuit board connections are incorrect.	Connect in accordance with the circuit board symbols.	
6. Reverse operation is impossible	(1) Centrifugal switch is damaged.	Replace the part.	Single-phase models
7. Inertia is large at hoisting and lowering stop	(1) Brake gap has reached its limit.	Adjust or replace the worn out part based on the “Model Edition” manual.	
	(2) Overload	Make the load the rated load or less.	
	(3) Circuit became a delay switching circuit	Connect the brake solenoid in accordance with the connection diagram.	
8. Speed is slow	(1) Overload	Make the load the rated load or less.	
	(2) Power supply voltage has dropped.	Secure the specified voltage	See 1-(7).
9. Motor abnormally overheated	(1) Overload	Make the load the rated load or less.	
	(2) Power supply voltage has dropped.	Secure the specified voltage.	See 1-(7).
	(3) Outside air temperature is extremely high.	Prevent secondary radiation and lower the ambient temperature to 40℃ or less.	
	(4) Brake gap has reached its limit. (Solenoid starting impossible)	Adjust or replace the worn out part based on the “Model Edition” manual.	
10. Motor does not stop at upper and lower limits	(1) Limit switch not activated.	Check the connections. If wrong, reconnect in accordance with the connection diagram. Check movement of the limit switch contacts. If movement is abnormal, replace the contacts.	
	(2) Power supply is connected in reverse phase	Switch the power supply R and T terminal connections.	3-phase models without reverse phase protection relay
11. Noise is louder than normal	(1) Gears are excessively worn.	Request parts replacement.	
	(2) Chain, sprocket or guide is excessively worn.	Request parts replacement.	
	(3) Lubricating oil is insufficient.	Lubricate as specified by the “Model Edition” manual.	
12. Chain wear is faster than that of other Electric Chain Hoist	(1) Lubricating oil is nil or insufficient	Lubricate as specified by the “Model Edition” manual.	
	(2) Sprocket or sprocket guide is worn.	Request replacement by a new part.	
	(3) Overloada	Make the load the rated load or less.	
13. Chain is not properly engaged with the sprocket.	(1) Wrong chain	Request replacement by the correct chain.	
	(2) Chain, sprocket, or guide is excessively worn.	Request replacement by a new part.	When the chain is worn and is replaced with a new part, also check the state of wear of the sprocket and guide.
14. Electric shock is received when the Electric Chain Hoist is touched.	(1) Electric Chain Hoist is not grounded.	Securely connect the ground wire to an earth ground.	
		Securely ground the travel rail. Do not paint, etc. the trolley wheel contact surface of the travel rail.	Product with motor trolley
	(2) Insulation of pushbutton or other electrical parts is faulty.	Repair or replace the abnormal part.	

Electric Chain Hoist Monthly Independent Inspection Items Table

1. Inspection items are items which must always be inspected. The inspection period conforms to the following:
   Class A : Important safety inspection items. They are inspected one or more times a month.
   Class B : Important machine maintenance inspection items. When the machine is frequently used near the upper limit of the specifications, these items are inspected once a month.
   Class C : Inspection items and wearable parts conforming to Class B. They are inspected once every 3 months.
   Class D : Parts at which wear and damage are small. They are inspected once every 6 months.
2. Inspection records shall always be saved (for a minimum of 3 years).

Electric Chain Hoist Monthly Independent Inspection Table

Installation site		Electric Chain Hoist No.		Rated load		Electric Chain Hoist model		Electric Chain Hoist (body and trolley) serial No.	

Inspection item				Class	Date			Date			Date		
					Pass/ fail	Fault contents and corrective action	Date repair completed	Pass/ fail	Fault contents and corrective action	Date repair completed	Pass/ fail	Fault contents and corrective action	Date repair completed
Control related	Push-button switch	1	Contact wear	C									
		2	Wiring tightening screws loose?	B									
		3	Operation	A									
		4	Case and insulation plate damage?	B									
		5	Appearance and case through section abnormal?	A									
	Electro-magnetic switch	6	Contact wear	C									
		7	Wiring tightening screws loose?	B									
		8	Operation	A									
	Limit switch	9	Limit lever operation	A									
		10	Contact wear	D									
		11	Wiring tightening screws loose?	D									
		12	Hoisting allowance after limit switch activation must be 50mm or greater.	A									
Brake related	Brake	13	Brake gap good/bad	A									
		14	Lining wear	C									
		15	Mechanical section wear	B									
		16	Loose screws, etc.?	C									
Chain related	Chain	17	Chain wear (Pitch elongation under 5%, diameter reduction 10% or less of nominal diameter)	A									
		18	Kinks, twisting, or tangling?	A									
		19	Rusting?	A									
		20	Greasing?	B									
		21	Cracks and deformation?	A									
Load block and hook related	Upper and lower rigging gear	22	Thrust bearing rotation	A									
		23	Hook nut clamping	A									
		24	Sheave damaged?	A									
		25	Sheave ball bearing rotation	A									
		26	Upper and lower rigging gear, key plate, cotter pin, etc. damaged, loose?	A									
		27	Chain hanger pin deformation?	A									
		28	Hook mounting bolt loose?	A									
	Upper and lower hooks	29	Wear	A									
		30	Cracks?	A									
		31	Hook opening and deformation?	A									
		32	Lower hook threaded part cracks and wear?	A									
		33	Latch deformation or damage?	A									

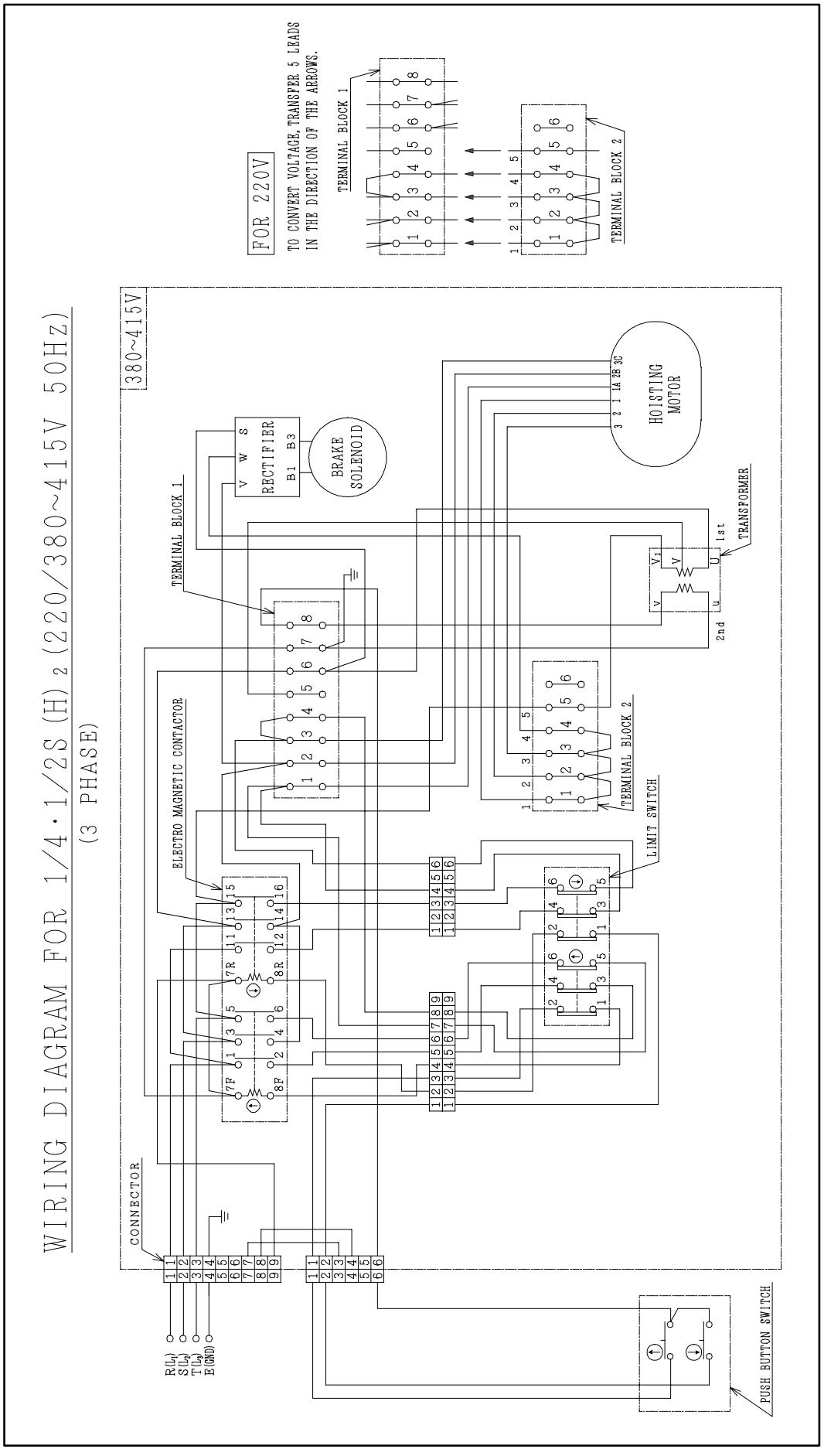
Inspection item				Class	Date			Date			Date		
					Pass/ fail	Fault contents and corrective action	Date repair completed	Pass/ fail	Fault contents and corrective action	Date repair completed	Pass/ fail	Fault contents and corrective action	Date repair completed
Supply power related	Cable	34	Cracks?	D									
		35	Outside damage?	B									
		36	Repeated abnormal bending and twisting at telescoping part of cable?	B									
		37	Cable messenger wire loose?	B									
		38	Cable rigging gear displaced?	B									
		39	Cable junction loose?	B									
	Collector	40	Collector wheel rotation	C									
		41	Collector wheel wear	C									
		42	Collector mount	C									
		43	Spring deformation and rust	D									
	Trolley wire	44	Trolley wire slack, rust, soiling?	B									
		45	Trolley wire mount	B									
Traverse travel part	Trolley	46	Body suspension pin, trolley frame mounting bolt loose?	B									
		47	Wheels and guide rollers wear	B									
		48	Brake operation	B									
Traverse travel rail	I-beam	49	Stopper deformation, dropping off, and mounting bolt looseness?	A									
		50	Travel surface and side wear	D									
Lubrica -tion	Each par	51	Conforms to the lubrication standard of the instruction manual .										
Rigging gear	Wire rope	52	Broken wire, kinking, deformation, wear, outside damage?	A									
	Hoisting chain	53	Pitch elongation, reduction of link cross section, cracks?	A									
	Hook, shackle, ring	54	Deformation, wear, cracks?	A									
Opera-tion	Hoisting, lowering	55	Operation normal? No abnormal sound?	A									
	Traverse travel	56	Operation normal? No abnormal sound?	A									
	Limit switch	57	Activated correctly at upper and lower limits?	A									
	Brake	58	Operates normally?	A									
Remarks													
Person in charge seal				Inspector's seal				Inspection report			Year Month Day		

Electric Chain Hoist Annual Independent Inspection Items Table And Standards

Inspection item				Independent inspection standard	Pass/ fail	Fault contents and corrective action	Date repair completed
Structural part	Traverse travel rail	1	*I-beam inclination	1/300 or less relative to the horizontal			
		2	Joint skew	Travel surface, side surface both 0.5mm or less			
		3	Joint gap	3mm or less at travel surface			
		4	Travel surface thickness wear	10% or less of original dimension			
		5	I-beam width wear	5% or less of original dimension			
		6	Mounting bolt looseness	There shall be no looseness.			
		7	I-beam stopper	There shall be no deformation or damage.			
Mechanical part	Gears	8	Hoisting gear tooth thickness wear	10% or less of original thickness by pitch circle (1st stage 5% or less)			
		9	Trolley gear tooth thickness wear	10% or less of original thickness by pitch circle			
		10	Meshing tooth surface	There shall be no abnormal wear			
	Shaft and bearing	11	State of gear shaft	There shall be no harmful scratches, cracking, or rust.			
		12	Roller bearing wear	There shall be no damage or harmful scratches			
	Brake	13	Body side lining wear	10% or less of original dimension (Shall be within the brake gap adjustment range.)			
		14	Trolley side lining wear	10% or less of original dimension (Shall be within the brake gap adjustment range.)			
		15	Brake wheel wear and deformation	There shall be no cracks and abnormal deformation.			
		16	Brake mechanical part wear	Brake operation shall not be hindered.			
	Traverse travel wheels	17	Traverse travel wheels wear	5% or less of original tread maximum diameter			
		18	Traverse travel wheels circularity	0.8mm or less at tread diameter			
		19	Guide roller wear	Wear allowance shall be 8% or less by diameter			
	Upper and lower hooks	20	Rigging gear hooking part wear	5% or less of original thickness.			
		21	Hook opening	There shall be no deformation.			
		22	Hook outside damage	There shall be no cracks or other harmful damage.			
		23	Hook threaded part wear, cracks, and deformation	Wear allowance shall be 20% or less of thread pitch relative to thread nominal diameter.			
		24	Latch deformation and damage	There shall be no cracks or other harmful damage. There shall be no deformation and damage and the latch shall prevent slipping off.			
	Chain	25	Elongation and wear	longation 5%, diameter 10% or less.			
		26	Deformation, damage, corrosion	There shall be no noticeable damage, deformation, kinking, or rust.			
	Shaft joint	27	State of key and spline parts	There shall be no deformation, looseness, or abnormal wear.			
	Other mechanical parts	28	Damage?	There shall be no deformation, abnormal wear, etc.			
Electrical part	Switches Collector	29	**Contact wear	50% or less of original thickness			
		30	Mechanical part wear	Operation shall not be hindered			
		31	Wheel rolling surface wear	20% or less of original dimension by rolling part diameter			
		32	Gap between wheel inside diameter and shaft	20% or less of original shaft diameter			
	Wiring	33	Cabtyre cable	There shall be no outside damage, ageing, or broken wire catching. Especially, there shall be no abnormalities in the end processing.			
		34	Lead wire				
	Insulation	35	Insulation resistance of all circuits	1MΩ or greater			
	Trolley wire	36	Ground circuit check	Grounded phase shall be correct.			
	Power supply switch	37	Fuse, etc. check	Parts of the specified capacity shall be used.			
Assembly	Overall	38	Lubrication	The specified oil (grease) shall be made a suitable amount			
		39	Assembly adjustment	Adjustments shall be made by the specified method.			
Overall operation	Operation	40	No-load operation check	The hoist shall operate in accordance with the pushbutton switch markings.			
	Limit switch	41	Upper limit and lower limit check	Upper limit hoisting allowance 50mm or greater			
	Body brake	42	Check of braking amount at lowering of the rated load.	1% or less of the hoisting distance/minute.			
	Trolley brake	43	Check of braking amount at traverse travel of rated load.	Shall be a suitable inertial distance			
	Hoisting Lowering	44	function check at rated load	Shall be performed twice at full lift without any abnormalities.			
	Traverse travel	45	Traverse travel function check at rated load	Trolley shall be run in the traverse direction over the entire traverse travel range and there shall be no trolley, rail, or other abnormalities.			

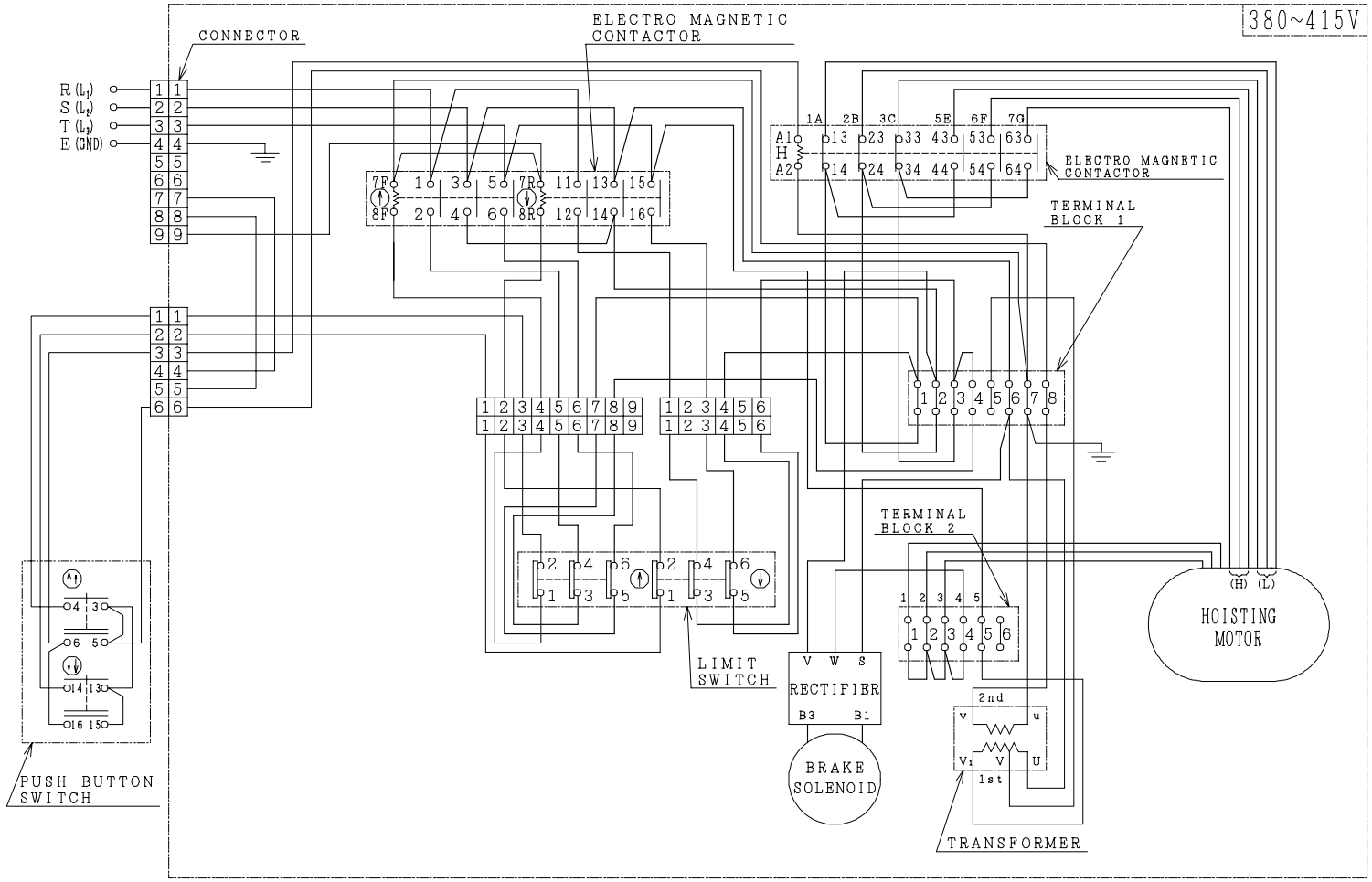
Notes * : For chain driven trolley and manual trolley without traverse travel brake, shall be 1/300 or less relative to the horizontal and free traveling shall be prevented.
** : Contact replacement shall be replacement with contacts for one unit as a set so that the height of each phase is equal.

Wring Diagram



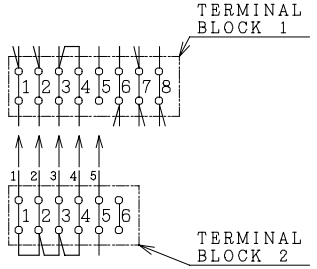
WIRING DIAGRAM FOR 1/4·1/2SN(H)$_2$(220/380~415V 50Hz)

(3 PHASE)



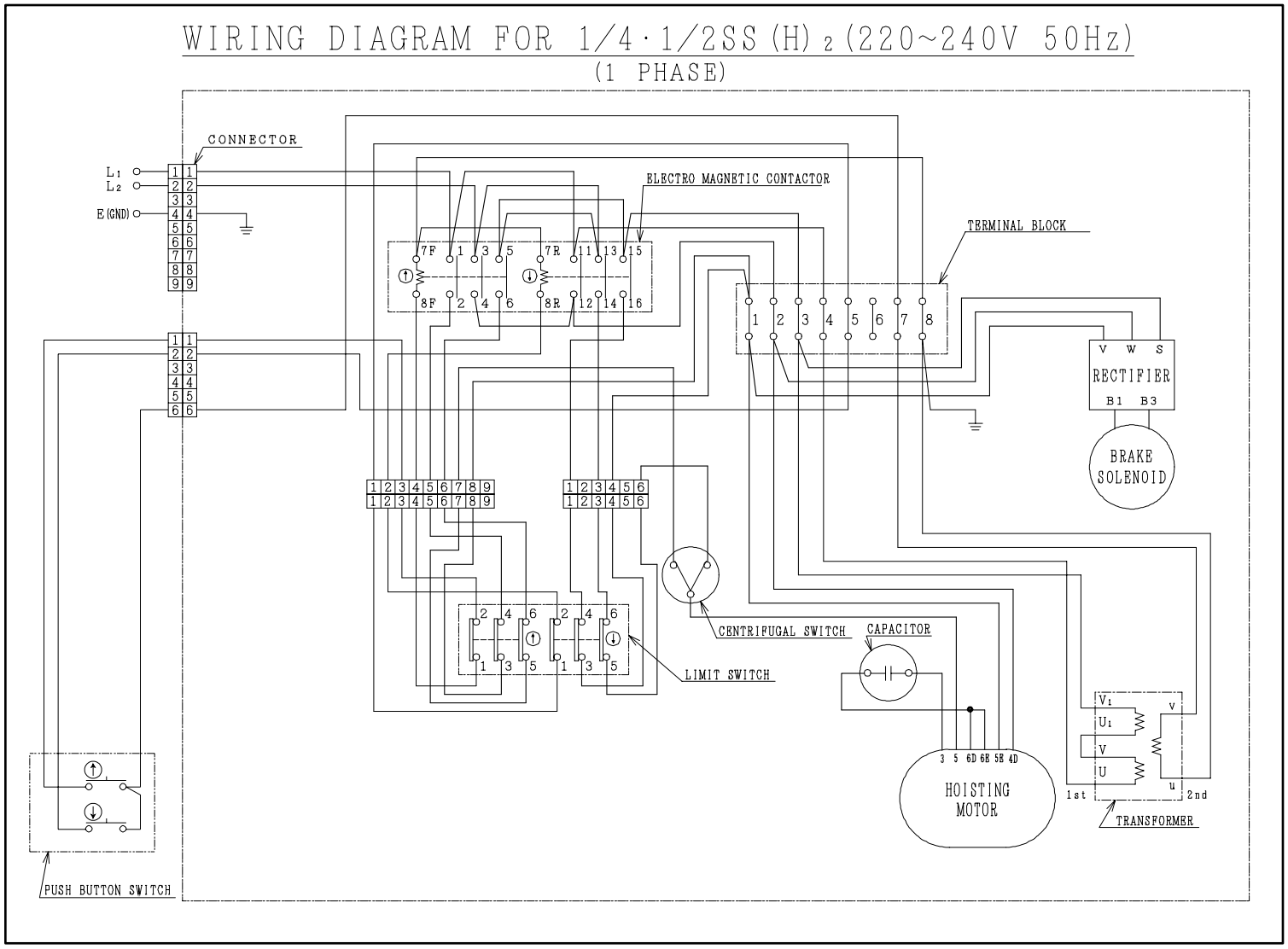
FOR 220V

TO CONVERT VOLTAGE TRANSFER 5 LEADS IN THE DIRECTION OF ARROWS.



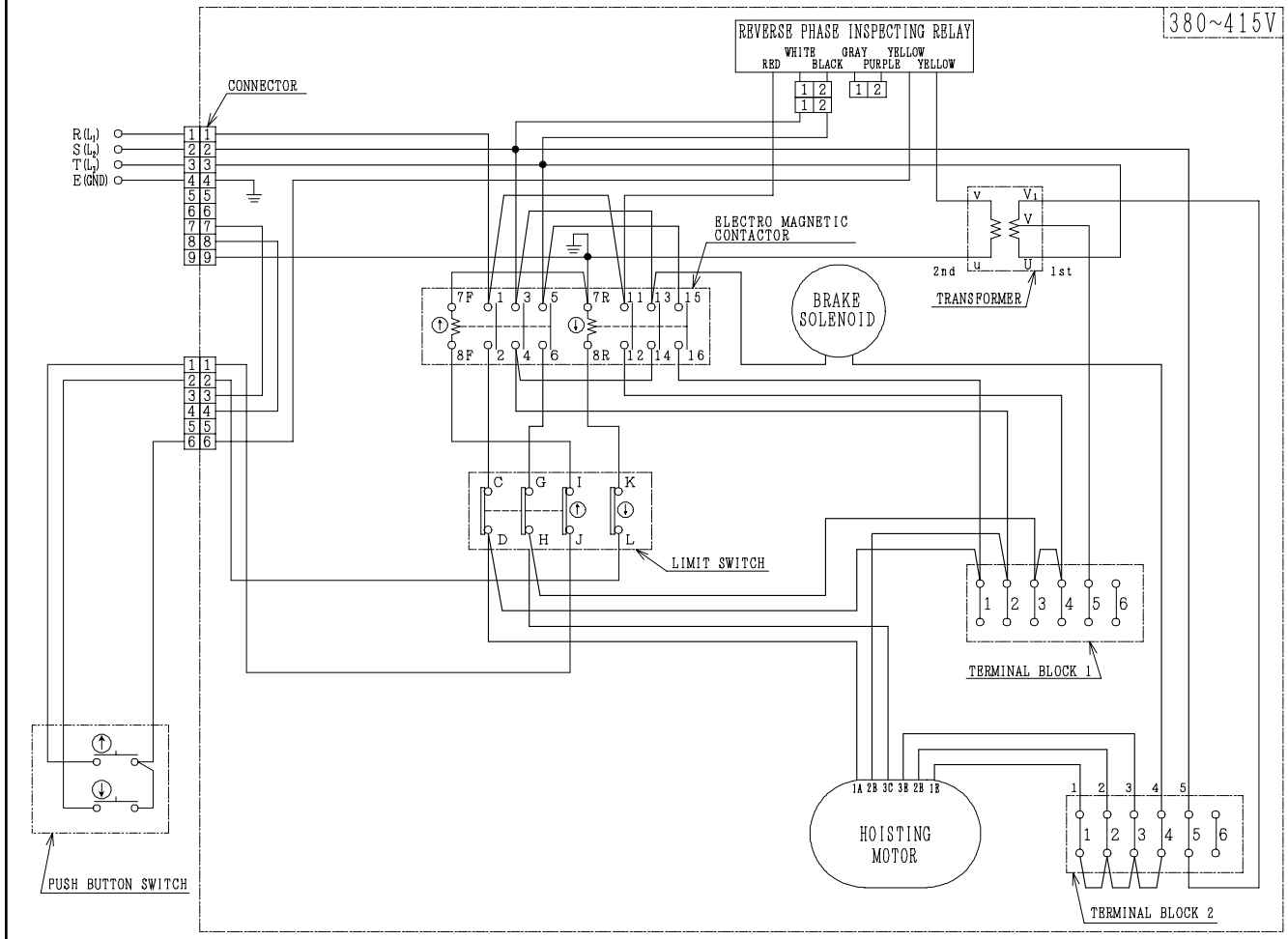
WIRING DIAGRAM FOR 1/4·1/2SS(H)$_2$(220~240V 50Hz)

(1 PHASE)



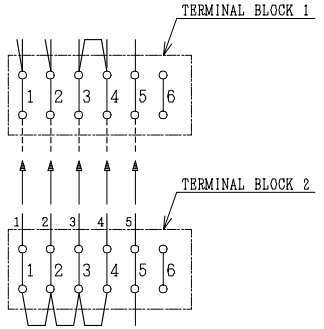
WIRING DIAGRAM FOR 1~5S(H) (220/380~415V 50Hz)

(3 PHASE)

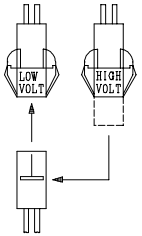


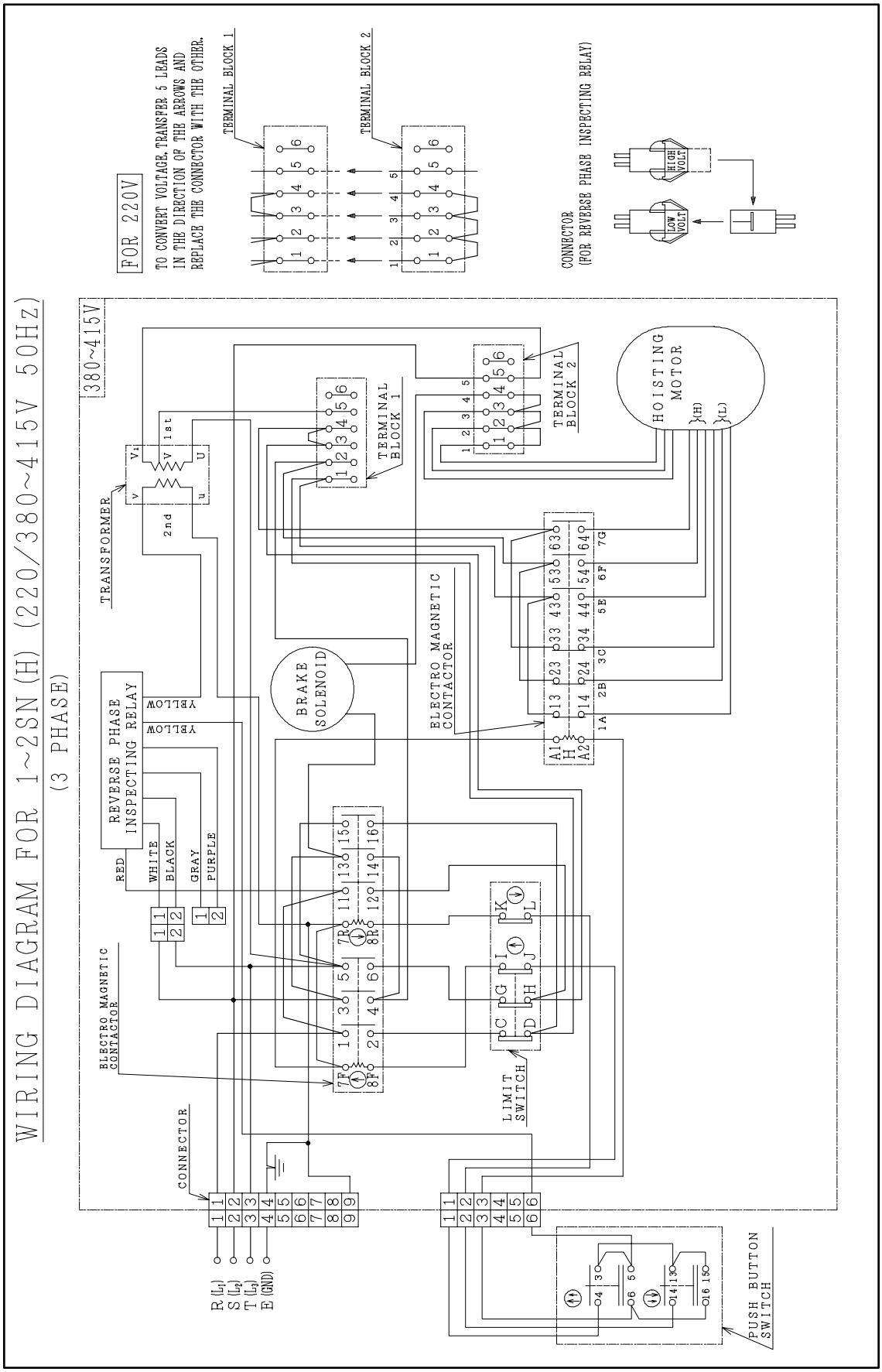
FOR 220V

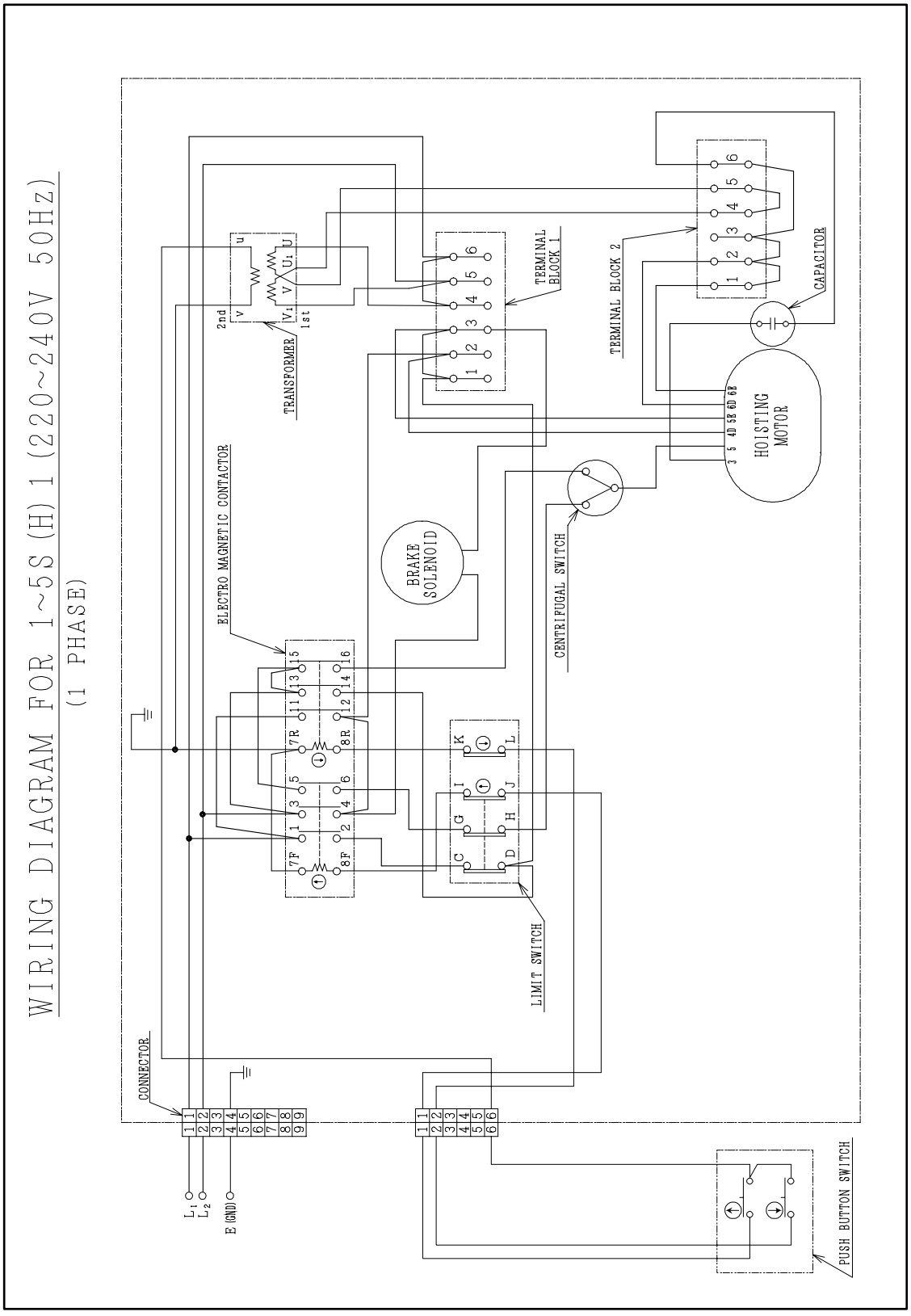
TO CONVERT VOLTAGE, TRANSFER 5 LEADS IN THE DIRECTION OF THE ARROWS AND REPLACE THE CONNECTOR WITH THE OTHER.



CONNECTOR
(FOR REVERSE PHASE INSPECTING RELAY)

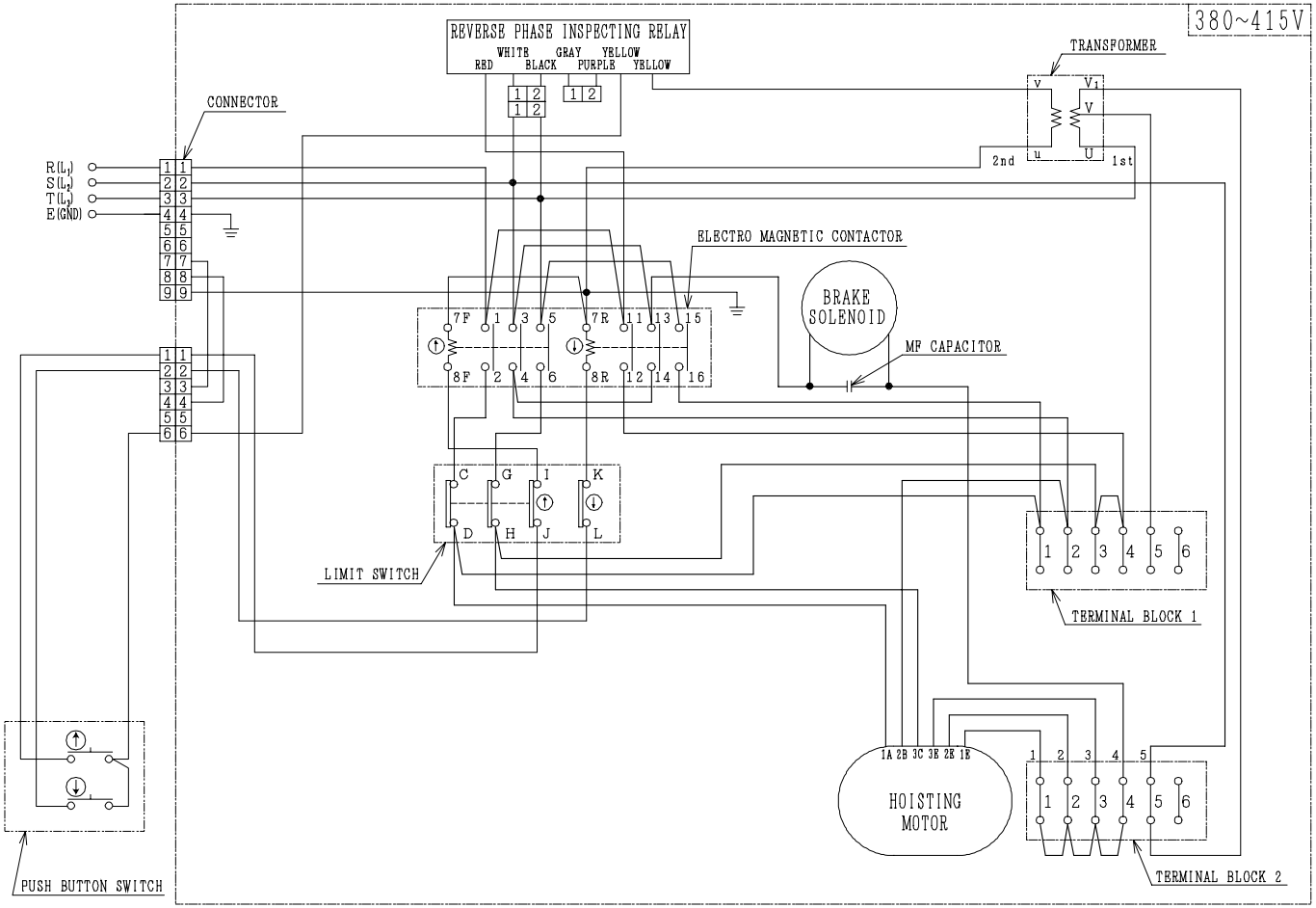





WIRING DIAGRAM FOR 1~5S(H) 1 (220~240V 50Hz)
(1 PHASE)
CONNECTOR
L1
L2
E (GND)
ELECTRO MAGNETIC CONTACTOR
TRANSFORMER
2nd
1st
TERMINAL BLOCK 1
TERMINAL BLOCK 2
CAPACITOR
HOISTING MOTOR
BRAKE SOLENOID
CENTRIFUGAL SWITCH
LIMIT SWITCH
PUSH BUTTON SWITCH

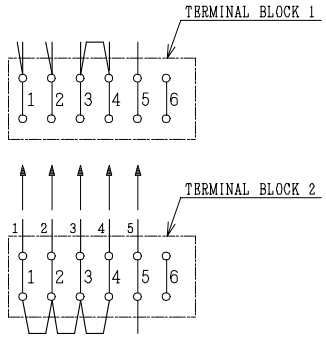
WIRING DIAGRAM FOR 1F(H) (220/380~415V 50Hz)

(3 PHASE)

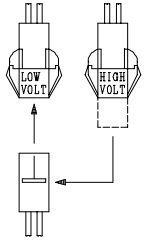


FOR 220V

TO CONVERT VOLTAGE, TRANSFER 5 LEADS IN THE DIRECTION OF THE ARROWS AND REPLACE THE CONNECTOR WITH THE OTHER.

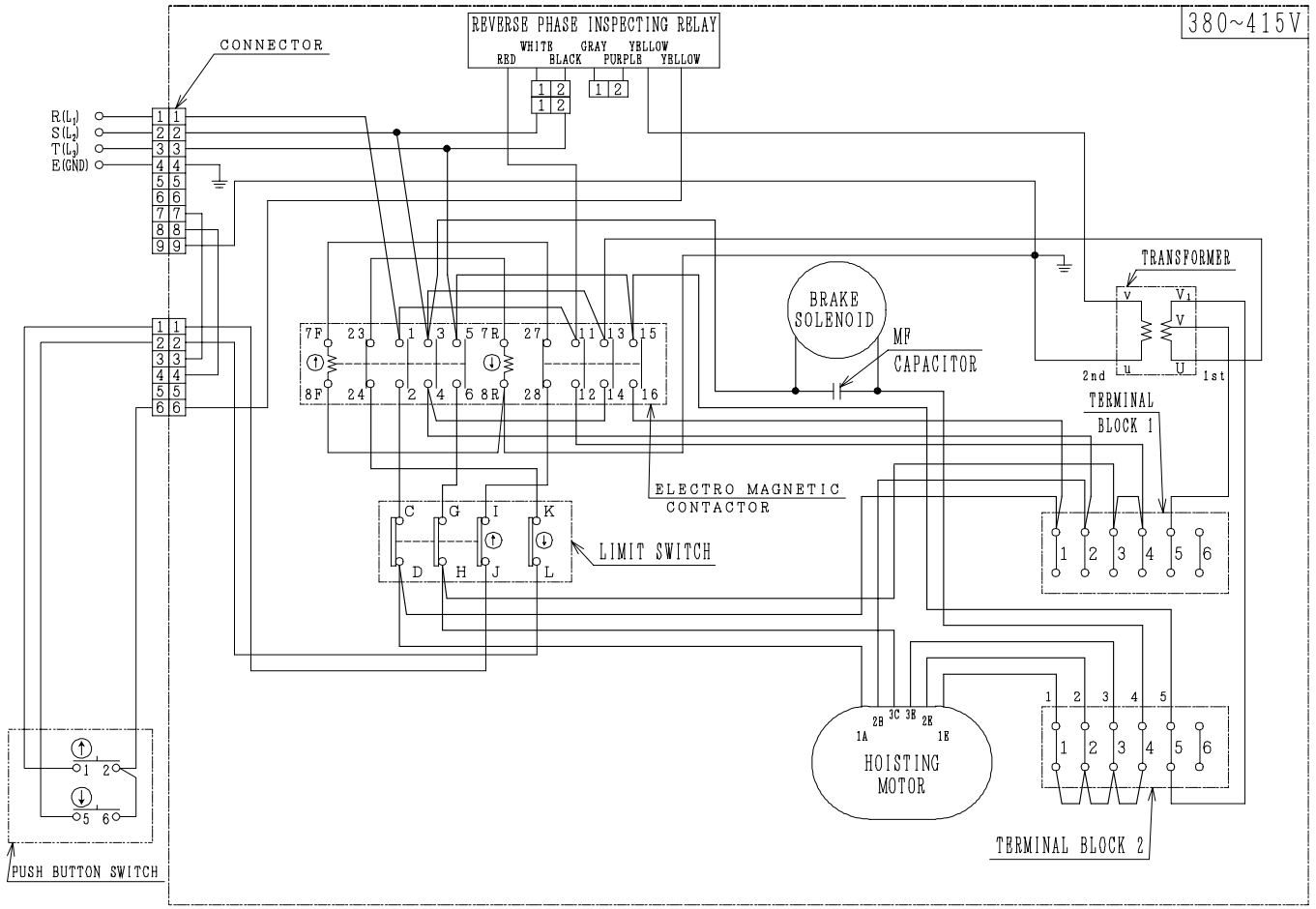


CONNECTOR
(FOR REVERSE PHASE INSPECTING RELAY)



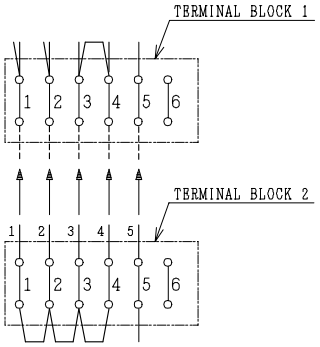
WIRING DIAGRAM FOR 2~5F (H) (220/380~415V 50Hz)

(3 PHASE)

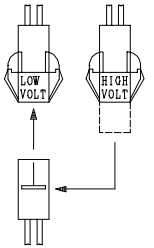


FOR 220V

TO CONVERT VOLTAGE, TRANSFER 5 LEADS IN THE DIRECTION OF THE ARROWS AND REPLACE THE CONNECTOR WITH THE OTHER.

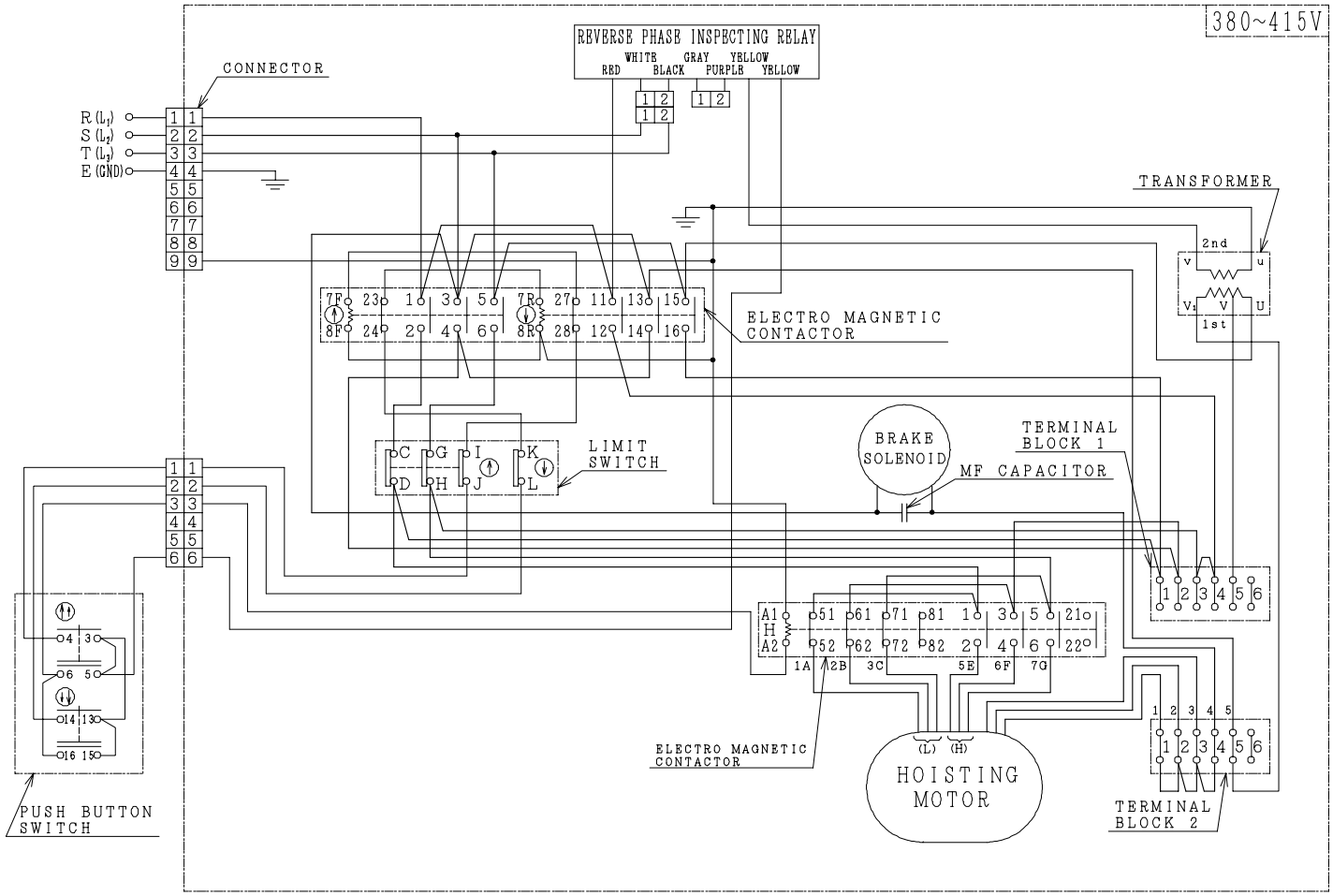


CONNECTOR
(FOR REVERSE PHASE INSPECTING RELAY)



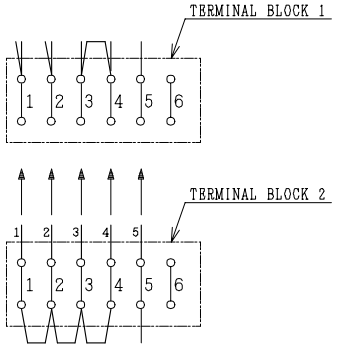
WIRING DIAGRAM FOR 2~5FN(H) (220/380~415V 50Hz)

(3 PHASE)

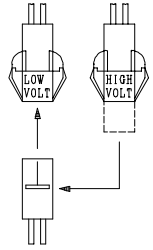


FOR 220V

TO CONVERT VOLTAGE, TRANSFER 5 LEADS IN THE DIRECTION OF THE ARROWS AND REPLACE THE CONNECTOR WITH THE OTHER.

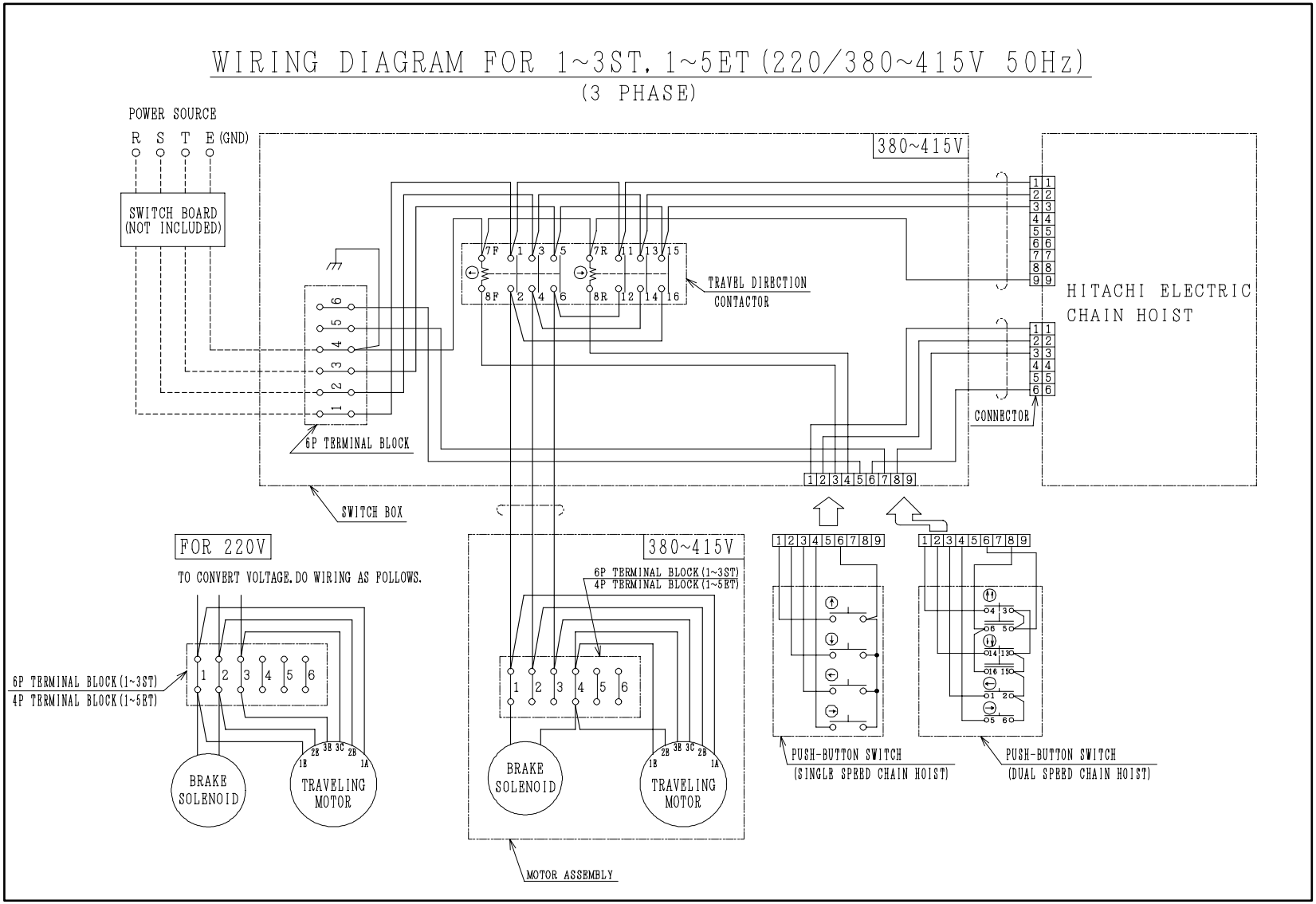


CONNECTOR
(FOR REVERSE PHASE INSPECTING RELAY)



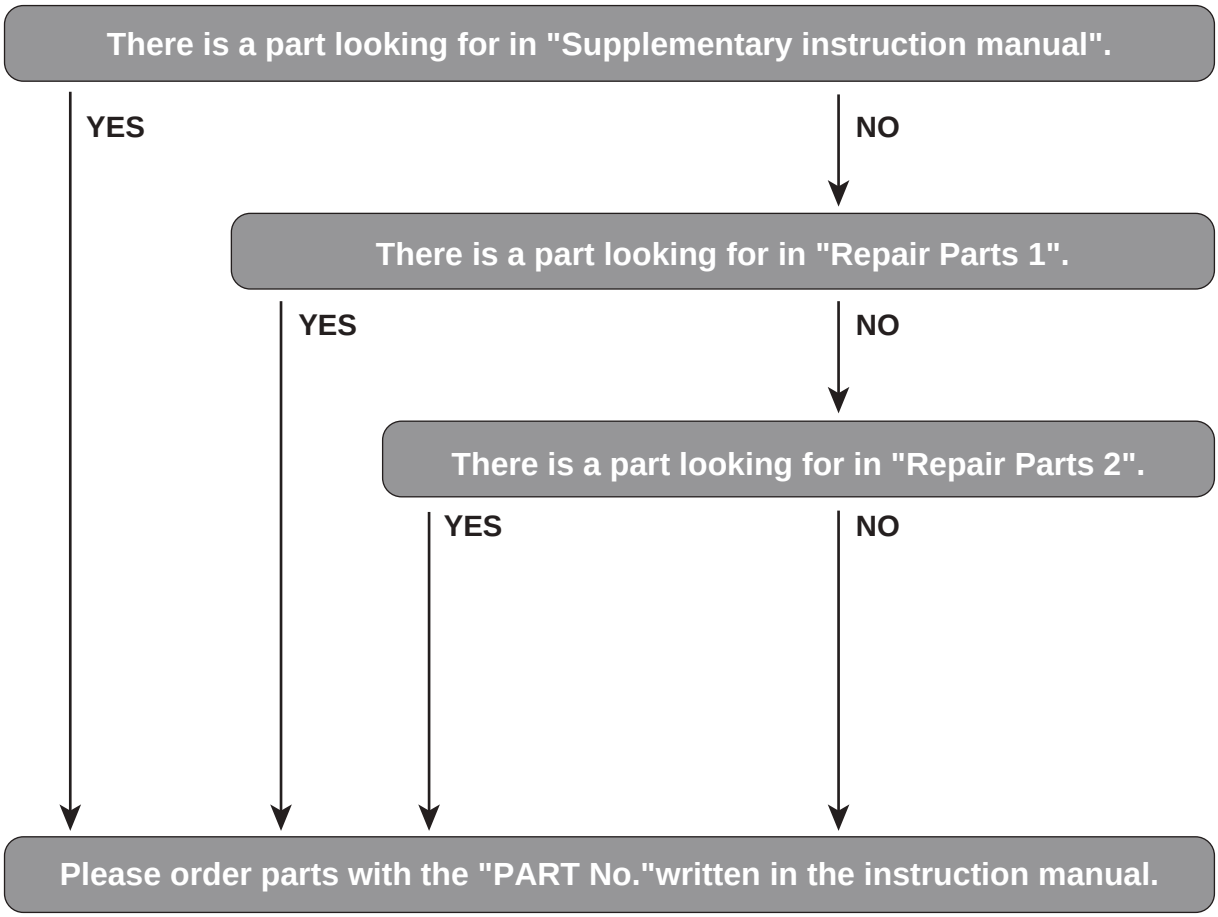
WIRING DIAGRAM FOR 1~3ST, 1~5ET (220/380~415V 50Hz)

(3 PHASE)

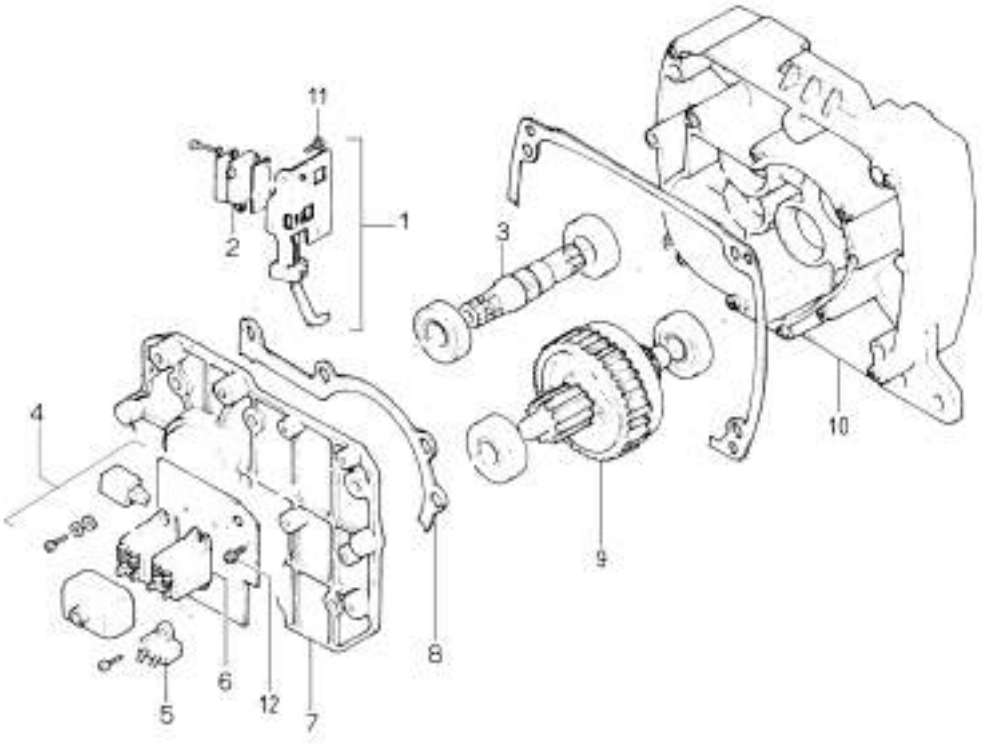


Repair Parts

Please search Repair Parts as follows.



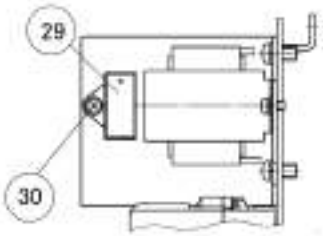
Repair Parts 1



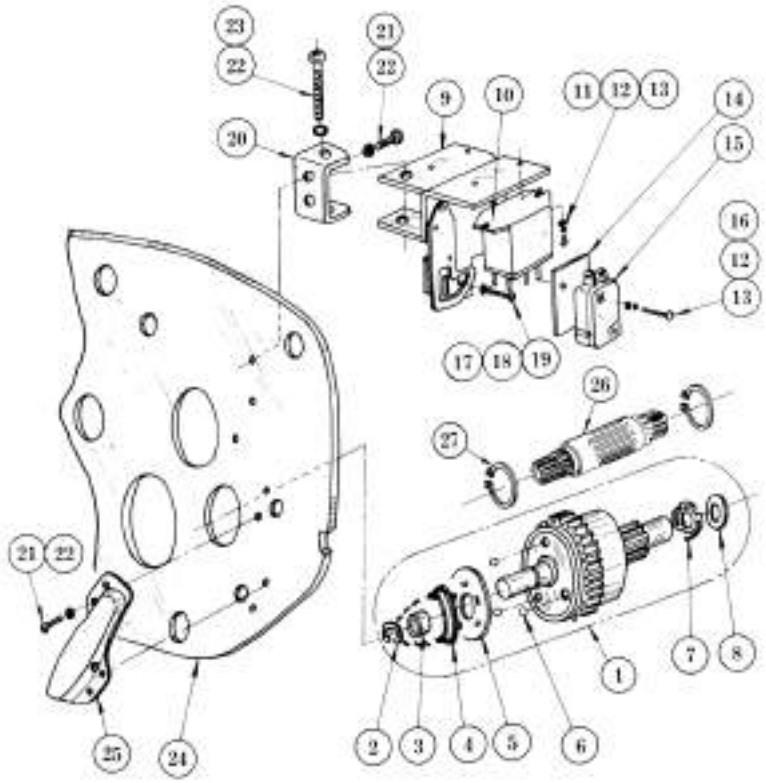
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			1/2S(H)$_2$ 1/2SN(H$_2$ 1/2SS(H)$_2$	1/4S(H)$_2$ 1/4SN(H)$_2$ 1/4SS(H)$_2$	
1	812940	OL STAND ASS'Y	1	1	
2	870503	MICRO SWITCH	1	1	
3	812943	OL 1ST PINION	1		S,SS MODEL
	812944	OL 1ST PINION		1	S,SS MODEL
	812943	OL 1ST PINION	1	1	SN MODEL
4	812942	RELAY ASS'Y	1	1	
5	812077	ME CAPACITOR	1	1	
6	871287	RELAY	2	2	
7	812939	GEAR CASE COVER	1	1	
8	812934	G PACKING (OL)	1	1	
9	812946	OL 2P ASS'Y	1		S,SS MODEL
	812945	OL 2P ASS'Y		1	S,SS MODEL
	812948	OL 2P ASS'Y	1		SN MODEL
	812936	OL 2P ASS'Y		1	SN MODEL
10	813364	GEAR CASE (OL)	1	1	
11	–	PAN HEAD SCREW M5 x 8	2	2	
12	–	PAN HEAD SCREW M4 x 6	2	2	

STRUCTURE OF OVERLOAD LIMITER DEVICE (S2 SERIES)

BRAKE SIDE

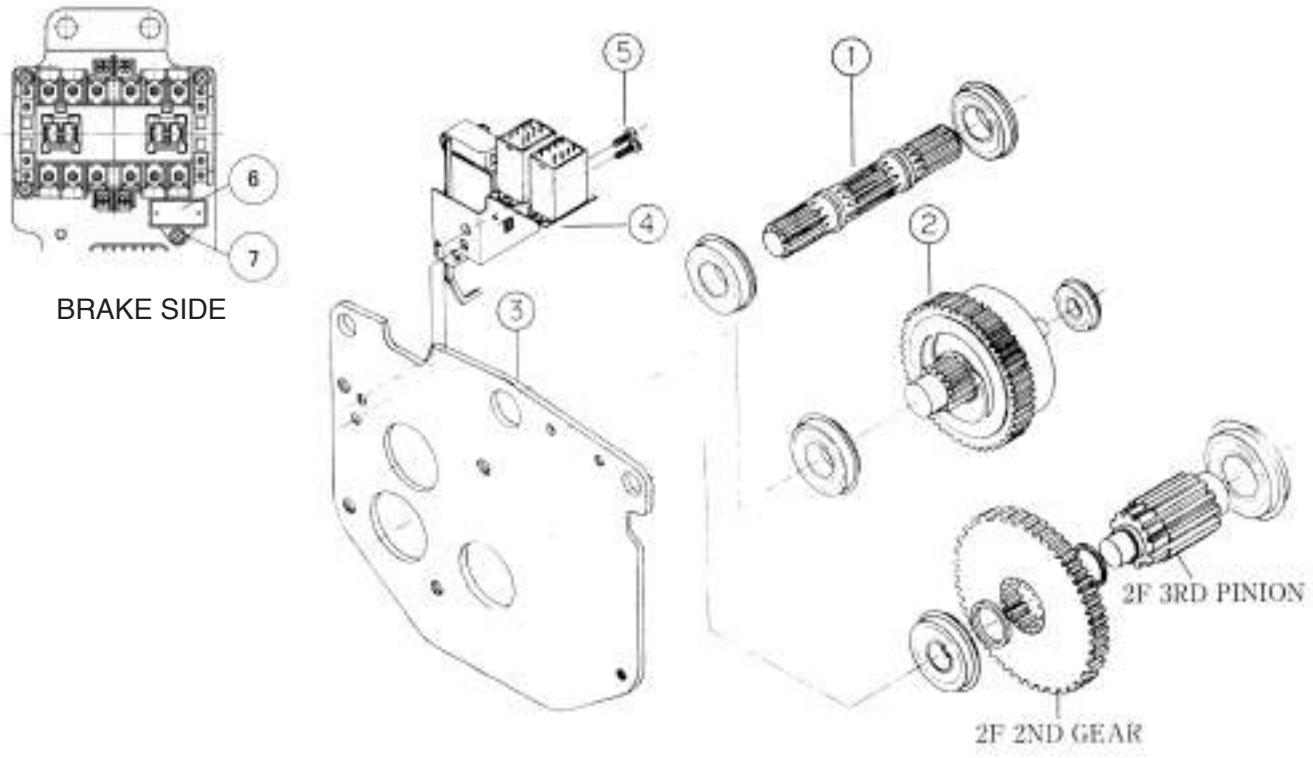


BRAKE SIDE



STRUCTURE OF OVERLOAD LIMITER DEVICE (S SERIES AND 1F(H))

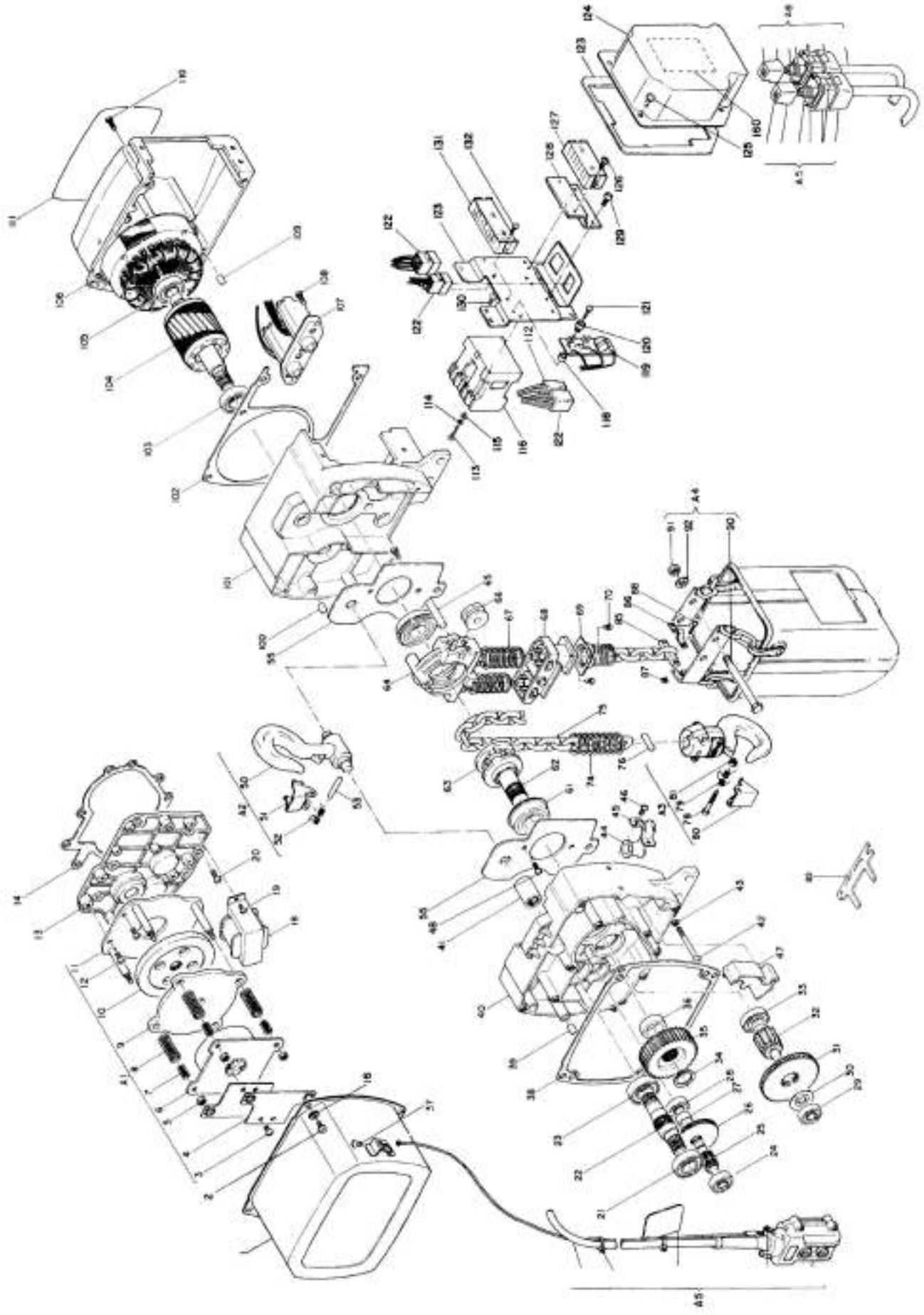
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	
			1 to 5 S(H) 1 to 2 SN(H) 1 to 5S1(H)	1F(H)
1	871281	second pinion ass'y	1	
	812594	second pinion ass'y		1
2	–	E-ring 10	1	1
3	871282	pinion collar	1	1
4	871283	cone spring C	1	1
5	871284	striker	1	1
6	–	steel ball 1/4	3	3
7	813033	thrust spring	1	1
8	871285	thrust spring washer	1	1
9	871286	relay support ass'y	1	1
10	871287	relay	2	2
11	–	pan head screw M3 × 6	4	4
12	–	spring washer M3	6	6
13	–	washer M3	6	6
14	871288	micro switch packing	1	1
15	870503	micro switch	1	1
16	–	pan head screw M3 × 16	2	2
17	–	pan head screw M4 × 8	1	1
18	–	spring washer M4	1	1
19	839762	guide washer	1	1
20	871289	switch support	1	1
21	–	pan head screw M5×8	4	4
22	–	spring washer M5	5	5
23	–	pan head screw M5×40	1	1
24	812191	frame A (2)	1	1
25	871291	pick up lever ass'y	1	1
26	811077	S-OL 1ST pinion	1	
	812593	F-OL 1ST pinion		1
27	838108	C RING 20 (shaft)	2	2
28	812539	S COVER A (2)	1	
	812595	F COVER A (2)		1
29	812077	CAPACITOR	1	1
30		SCREW M4X10	1	1



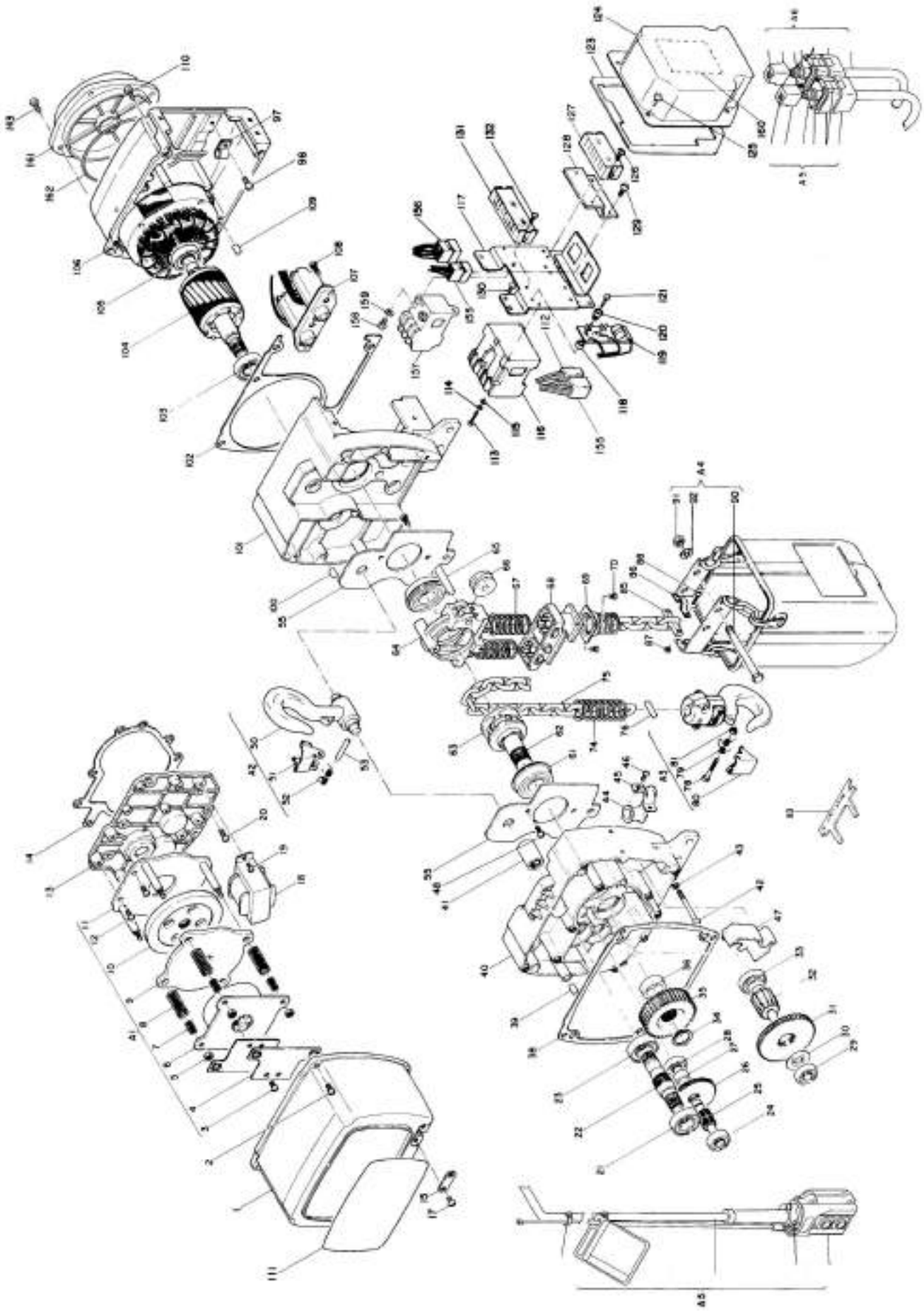
STRUCTURE OF OVERLOAD LIMITER (F SERIES)

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY						
			2F	3F	5F	2FN	2.5FN	3FN	5FN
1	3H5L70275-1	2F-OL 1ST PINION	1						
	3H5L70275-2	3F-OL 1ST PINION		1	1				
	3H5L70275-1	2F-OL 1ST PINION				1			
	812645	2.5F 1ST PINION					1		
	3H5L70275-2	3F-OL 1ST PINION						1	1
2	3H5Z70314-A	2F-OL 2ND PINION ASS'Y	1						
	3H5Z70314-B	3F-OL 2ND PINION ASS'Y		1					
	3H5Z70314-C	5F-OL 2ND PINION ASS'Y			1				
	3H5Z70314-A	2F-OL 2ND PINION ASS'Y				1			
	3H5Z70314-E	2.5FN-OL 2ND PINION ASS'Y					1		
	3H5Z70314-B	3F-OL 2ND PINION ASS'Y						1	
	3H5Z70314-C	5F-OL 2ND PINION ASS'Y							1
3	812647	F FRAME C	1	1	1				
	812657	F FRAME C				1	1	1	1
4	2H1Z26869-A	F-OL RELAY ASSEMBLY	1	1	1	1	1	1	1
5	–	PAN-HEAD SCREW M6x10	2	2	2	2	2	2	2
6	812077	CAPACITOR	1	1	1	1	1	1	1
7		SCREW AM4X10	1	1	1	1	1	1	1

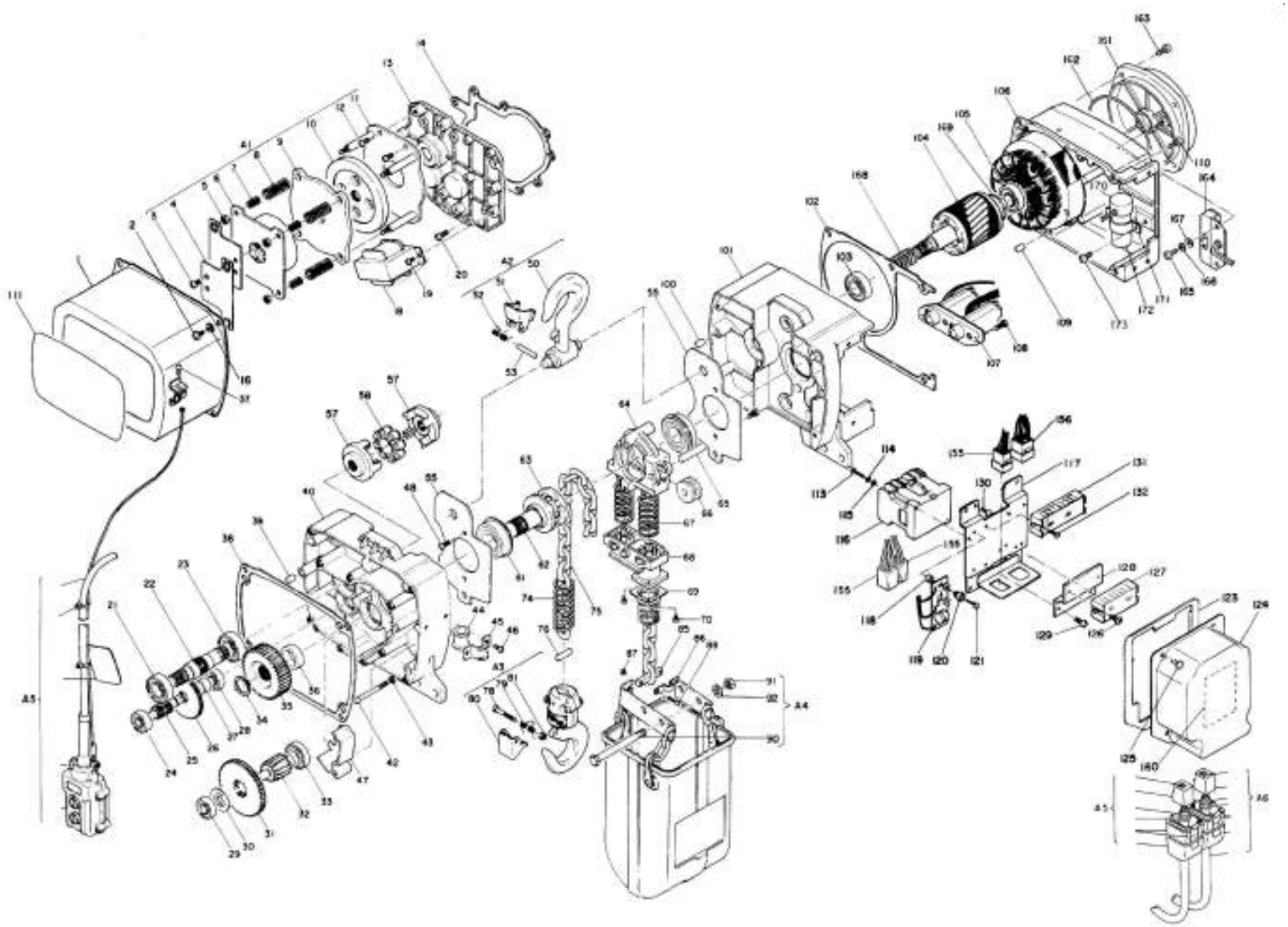
Repair Parts 2



STRUCTURE of S_2 ELECTRIC CHAIN HOIST



STRUCTURE of SN_2 ELECTRIC CHAIN HOIST



STRUCTURE of SS_2 ELECTRIC CHAIN HOIST

LIST OF REPAIR PARTS FOR S_2, SN_2, SS_2

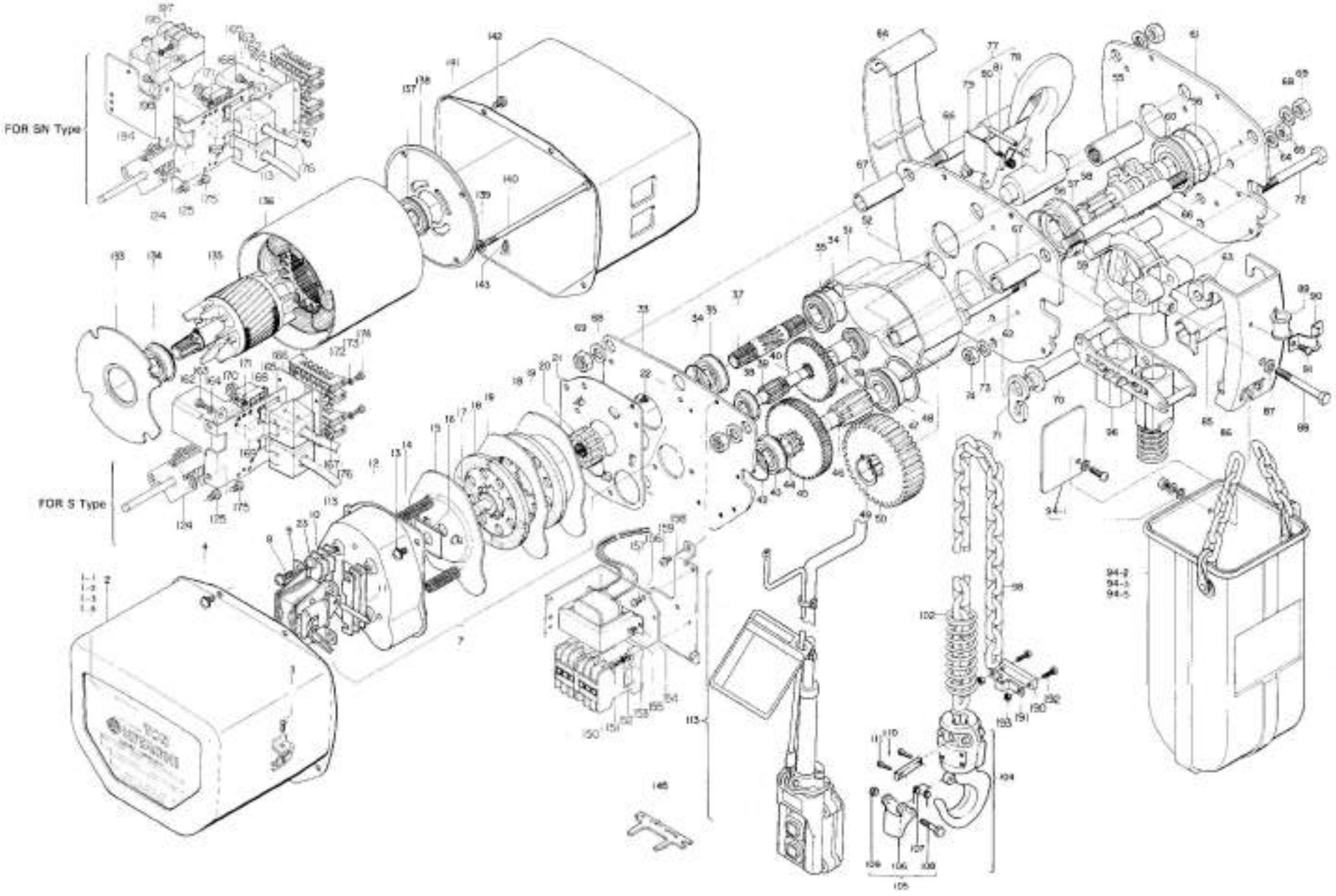
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			500kg	250kg	
1	812866	COVER B	1	1	FOR S_2 Type, SS_2 Type
	812901	COVER B	1	1	FOR SN_2 Type
2		SCREW AM6×12	4	4	FOR S2 Type, SS_2 Type
		SCREW AM6×16	4	4	FOR SN_2 Type
A1	812803	BRAKE ASS'Y	1	1	200-240V 50/60Hz 346V 50Hz 220/380V-415V 50Hz
	2H5Z33101-E	BRAKE ASS'Y	1	1	100-120/200-240V 60Hz
	2H5Z33101-C	BRAKE ASS'Y	1	1	220-230/440-460V 60Hz
3		SCREW AM5×8	2	2	
4	812809	LOCK WASHER	2	2	
5	851008	U NUT M6	4	4	
6	812808	F3 SOLENOID	1	1	200-240V 50/60HZ 346V 50Hz 220/380-415V 50Hz
	2H5H32899-1	F3 SOLENOID	1	1	100-120/200-240V 60Hz
	2H5H32899-6	F3 SOLENOID	1	1	220-230/440-460V 60Hz
7	812807	SPRING4	4	4	
8	812806	BRAKE SPRING	4	4	
9	812805	BRAKE DISK	1	1	
10	837457	BHPS BRAKE WHEEL	1	1	
11	812804	BRAKE BASE ASS'Y	1	1	
12		SCREW AM6×16	4	4	
13	812802	GEAR CASE COVER	1	1	
14	812801	GEAR CASE PACKING	1	1	
15	812831	CABLE STOPPER	1	1	FOR SN_2 Type
16	812877	WASHER	4	4	FOR S_2 Type, SS_2 2 Type
17		SCREW AM6×12	2	2	FOR SN_2 Type
18	839582	TRANSFORMER	1	1	200V 50/60HZ
	871133	TRANSFORMER	1	1	220/380-415V 50/60Hz
	871251	TRANSFORMER	1	1	110-120/220-240V 60Hz
	871162	TRANSFORMER	1	1	200/346V 50Hz
	871261	TRANSFORMER	1	1	220-230/440-460V 60Hz
19		SCREW WM4×8	2	2	
20		SCREW AM6×16	7	7	
21		BALL BEARING 6004ZZ	1	1	
22	812881	1ST PINION	1		FOR S_2 Type, SS_2 Type
	812881	1ST PINION	1	1	FOR SN_2 Type
	812796	1ST PINION		1	FOR S_2 Type, SS_2 Type
23		BALL BEARING 6004ZZ	1	1	
24		BALL BEARING 6201DDU	1	1	
25	812799	2ND PINION	1	1	
26	812882	1ST GEAR	1		FOR S_2 Type, SS_2 Type
	812882	1ST GEAR	1	1	FOR SN_2 Type
	812798	1ST GEAR		1	FOR S_2 Type, SS_2 Type
27	812797	COLLAR	1	1	
28		BALL BEARING 6201DDU	1	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			500kg	250kg	
29		BALL BEARING 6201DDU	1	1	
30	871285	THRUST WASHER	1	1	
31	812834	2ND GEAR	1		FOR S_2 Type, SS_2 Type
	812834	2ND GEAR	1	1	FOR SN_2 Type
	812778	2ND GEAR		1	FOR S_2 Type, SS_2 Type
32	812835	3RD PINION	1		FOR S_2 Type, SS_2 Type
	812835	3RD PINION	1	1	FOR SN_2 Type
	812776	3RD PINION		1	FOR S_2 Type, SS_2 Type
33		BALL BEARING 6203ZZ	1	1	
34		C RING 25	1	1	
35	812836	3RD GEAR	1		FOR S_2 Type, SS_2 Type
	812836	3RD GEAR	1	1	FOR SN_2 Type
	812777	3RD GEAR		1	FOR S_2 Type, SS_2 Type
36	812800	COLLAR	1	1	
37	4M5434520-3	TAPPING SCREW M4×12	1	1	FOR S_2 Type, SS_2 Type
38	812810	COVER B PACKING	1	1	
39	812843	KNOCK PIN	2	2	
40	812862	GEAR CASE	1	1	
41	812007	COUPLING	1	1	FOR S_2 Type, SS_2 Type
42		SCREW M6×60	4	4	
43		SPRING WASHER M6	4	4	
44	811062	PACKING	1	1	
45	811063	BS CABLE STOPPER	1	1	
46		SCREW M5×12	2	2	
47	812845	LEAD WIRE PACKING	1	1	
48		SCREW AM6×12	4	4	
49					
A2	812879	UPPER HOOK ASS'Y	1	1	
50	812880	UPPER HOOK	1	1	
51	811140	LATCH A	1	1	
52	812830	HOOK SPRING A	1	1	
53	811141	SPRING PIN5X36AW	1	1	
54					
55	812966	CENTER FRAME (2)	2	2	
56					
57	812916	S1 COUPLING	2	2	FOR SS_2 Type
58	871249	BS1 COUPLING RUBBER	1	1	FOR SS_2 Type
59					
60					
61		BALL BEARING 6205DDUNR	2	2	
62	812789	SPROCKET SHAFT	1	1	
63	812787	SPROCKET (Φ6.3)	2	2	
64	812967	SPROCKET GUIDE (2)	1	1	
65	812790	ROLLER SHAFT	1	1	
66	839773	1/2BF ROLLER	1	1	

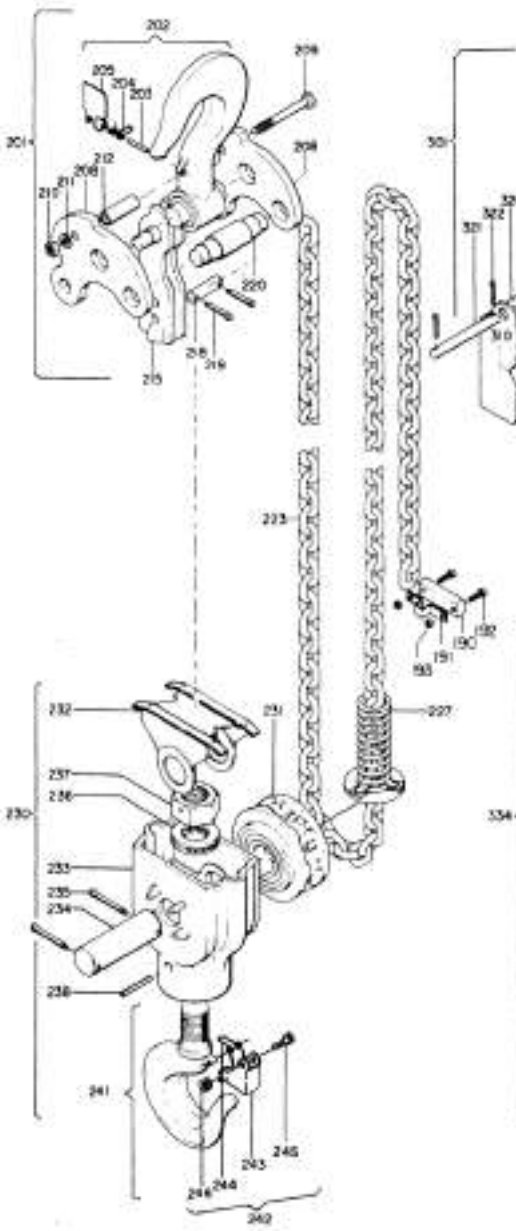
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			500kg	250kg	
67	812968	LS SPRING	2	2	
68	812969	LIMIT LEVER ASS'Y	1	1	
69	812970	LIMIT SPRING ASS'Y (2)	1	1	
70		SCREW AM4×8	2	2	
71					
72					
73					
74	812825	LIMIT SPRING	1	1	
75	Listed in page 113	LINK CHAIN Φ6.3	1	1	3mLift: 179LINK 6mLift: 337LINK
76	812826	HANGER PIN (Φ6.3)	1	1	
A3	812926	LOWER HOOK ASS'Y	1		
	812971	LOWER HOOK ASS'Y		1	
77					
78	4M32C5948-1	LATCH BOLT	1	1	
79	811142	HOOK SPRING	1	1	
80	812829	LATCH	1	1	
81	812460	U NUT M5	1	1	
82					
83	813027	CHAIN GUIDE Φ6.3	1	1	
84					
85	839710	CHAIN STOPPER (Φ6.3)	1	1	
86	812533	RETAINER	1	1	
87	812409	U NUT M4	2	2	
88		SCREW M4×16	2	2	
89					
A4	812837	CHAIN CONTAINER Ax ASS'Y	1	1	LIFT:~6m
	812846	CHAIN CONTAINER Bx ASS'Y	1	1	LIFT:~15m
90	812838	SUSPENSION PIN	2	2	
91		NUT M8	2	2	
92		SPRING WASHER M8	2	2	
96					
97	812903	NYRON CLIP	1	1	FOR SN_2 Type
98		SCREW AM5×8			FOR SN_2 Type
99					
100	812843	KNOCK PIN	2	2	
101	812861	HOUSING	1	1	
102	812784	MOTOR COVER PACKING	1	1	
103	129126	BALL BEARING 6004ZZ	1	1	
104	812878	ROTOR ASS'Y	1		FOR $S2_2$ Type
	129302	ROTOR ASS'Y		1	FOR S_2 Type
	812911	ROTOR ASS'Y	1		FOR SN_2 Type
	812905	ROTOR ASS'Y		1	FOR SN_2 Type
	812923	ROTOR ASS'Y	1	1	FOR SN_2 Type
105		BALL BEARING 6203ZZ	1	1	FOR S_2 Type, SN_2 Type
		BALL BEARING 6202VV	1	1	FOR SS_2 Type

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			500kg	250kg	
106	812860	HOUSING ASS'Y	1		200V 50/60Hz 346V 50Hz, FOR S_2 Type
	812930	HOUSING ASS'Y	1		220/380-415V 50Hz, FOR S_2 Type
	812858	HOUSING ASS'Y		1	200V 50/60Hz 346V 50Hz, FOR S_2 Type
	812931	HOUSING ASS'Y		1	200/380-415V 50Hz, FOR S_2 Type
	812912	HOUSING ASS'Y	1		200V 50/60Hz 346V 50Hz, FOR SN_2 Type
	812933	HOUSING ASS'Y	1		220/380-415V 50Hz, FOR SN_2 Type
	812906	HOUSING ASS'Y		1	200V 50/60Hz 346V 50Hz, FOR SN_2 Type
	812935	HOUSING ASS'Y		1	220/380-415V 50Hz, FOR SN_2 Type
	812918	HOUSING ASS'Y	1	1	200V 50Hz 110-115V 60Hz, FOR SS_2 Type
	812937	HOUSING ASS'Y	1	1	220-240V 50Hz, FOR SS_2 Type
107	812973	LIMIT SWITCH ASS'Y (2)	1	1	
108		SCREW AM6×16	2	2	
109	812843	KNOCK PIN	2	2	
110		SCREW AM6×16	4	4	
111		NAMEPLATE	1	1	
112	3B1ZB6160-A	CONNECTOR ASS'Y (6P)	1	1	FOR S_2 Type, SN_2 Type
113		SCREW M4×20	2	2	
114		SPRING WASHER M4	2	2	
115		WASHER M4	2	2	
116	813515	CONTACTOR	1	1	HMU12(24V)
117	813237	SWITCH STAND	1	1	
118	812873	COLLAR	2	2	
119	812871	RECTIFIER ASS'Y	1	1	
120	812872	BUSH	1	1	
121		SCREW WM4×16	2	2	
122	3B1Z92518-C	CONNECTOR ASS'Y(6P,9P,9P)	1	1	FOR S_2 Type
123	812876	PACKING	1	1	
124	812875	SIDE COVER	1	1	FOR S_2 Type, SS_2 Type
124	813236	SN SIDE COVER	1		FOR SN_2 Type
125		SCREW AM6×12	4	4	
126		SCREW WM5×12	2	2	
127	812071	15A6P TERMINAL BLOCK	1	1	
128	812999	TERMINAL BASE	1	1	
129		SCREW WM4×12	2	2	
130		SCREW A M5×12	1	1	

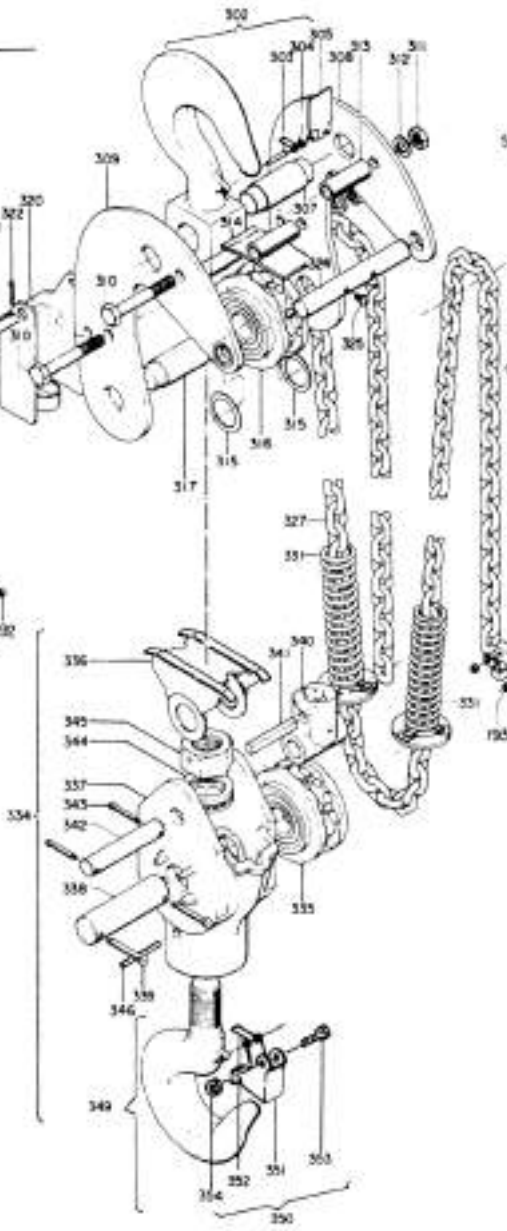
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY		REMARKS
			500kg	250kg	
131	854709	15A8P TERMINAL BLOCK	1	1	
132		SCREW WM4×10	2	2	
A5 Detailed part is listed in page 112	812193	PB CABLE ASS'Y	1	1	3m LIFT, FOR S_2 Type, SS_2 Type
	812194	PB CABLE ASS'Y	1	1	6m LIFT, FOR S_2 Type, SS_2 Type
	812534	2PBN_2 CABLE ASS'Y	1	1	3m LIFT, FOR SN_2 Type
	812535	2PBN_2 CABLE ASS'Y	1	1	6m LIFT, FOR SN_2 Type
A6 Detailed part is listed in page 112	812192	POWER CABLE ASS'Y	1	1	FOR S_2 Type, SN_2 Type
	812559	F POWER SOURCE CABLE ASS'Y	1	1	FOR SS_2 Type
155	3B1ZB6161-B	CONNECTOR ASS'Y (6P,9P,9P)	1	1	FOR SN_2 Type
	3B1ZB6162-A	CONNECTOR ASS'Y (6P,6P,9P)	1	1	FOR SS_2 Type
156	3B1Z95958-B	CONNECTOR ASS'Y (9P)	1	1	FOR SS_2 Type
157	3K21G1787-3	SN2 MG. SWITCH	1	1	FOR SN_2 Type
158		SCREW AM4×16	2	2	FOR SN_2 Type
159		WASHER M4	2	2	FOR SN_2 Type
160		S2 WIRING DIAGRAM	1	1	FOR S_2 Type
		SN2 WIRING DIAGRAM	1	1	FOR SN_2 Type
		SS2 WIRING DIAGRAM	1	1	FOR SS_2 Type
161	812909	END BRAKET	1	1	FOR SN_2 Type
	812920	END BRAKET	1	1	FOR SS_2 Type
162	812947	PACKING	1	1	FOR SS_2 Type, SN_2 Type
163		SCREW AM6×16	4	4	FOR SS_2 Type, SN_2 Type
164	811328	DIRECTION SWITCH	1	1	FOR SS_2 Type
165		SCREW M4×8	2	2	FOR SS_2 Type
166		SPRING WASHER M4	2	2	FOR SS_2 Type
167		WASHER M4	2	2	FOR SS_2 Type
168	812094	THRUST SPRING	1	1	FOR SS_2 Type
169	871253	CENTRIFUGAL SWITCH	1	1	FOR SS_2 Type
170	812090	CAPACITOR CAP	1	1	FOR SS_2 Type
171	812921	CAPACITOR BAND	1	1	FOR SS_2 Type
172	834188	CAPACITOR	1	1	FOR SS_2 Type
173		SCREW AM5×8	2	2	FOR SS_2 Type



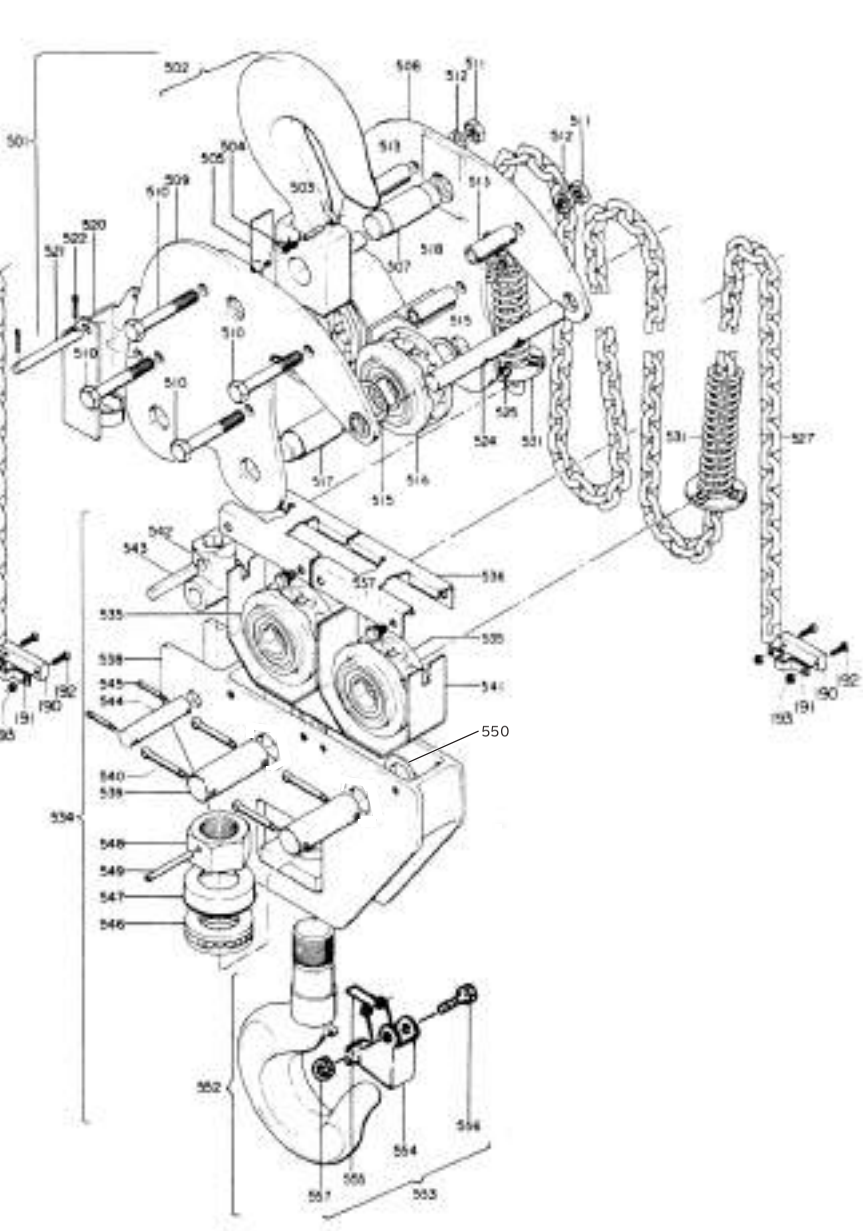
1S・SN and Common Body for 2-5S・SN (1S1 model : Page 93)



Hooks for 2S・SN・S1



Hooks for 3S・SN・S1



Hooks for 5S・SN・S1

LIST OF REPAIR PARTS FOR 1S/SN, 2-5S/SN

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
1		1S(H) NAME PLATE	1	
		1SN(H) NAME PLATE	1	
		2S(H) NAME PLATE	1	
		2SN(H) NAME PLATE	1	
		3S(H) NAME PLATE	1	
		3SN(H) NAME PLATE	1	
		5S(H) NAME PLATE	1	
		5SN(H) NAME PLATE	1	
2	812131	S COVER A	1	
3	4M5434520-3	TAPPING SCREW M4×12	1	
4		SCREW AM6×8	4	
5				
6				
7	812179	S BRAKE ASS'Y	1	200V 50/60Hz, 346-380V 50Hz
	812197	S BRAKE ASS'Y	1	220/380-415V 50Hz
	812198	S BRAKE ASS'Y	1	110-120/220-240V 50/60Hz
	812199	S BRAKE ASS'Y	1	220-230/440-460V 60Hz
8	M7900000	SCREW WM6×16	4	
9	812128	S SOLENOID	1	200V 50/60Hz, 346-380V 50Hz
	812184	S SOLENOID	1	220/380-415V 50Hz
	812097	S SOLENOID	1	110-120/220-240V 50/60Hz
	812185	S SOLENOID	1	220-230/440-460V 60Hz
10	812129	S ADJUSTING WASHER	4	
11	851225	1M 6φ LINK PIN	1	
12	4H3Y62876-B	S BM SUPPORT	1	
13		SCREW M6×10	4	
14	812124	S BRAKE SPRING	3	
15	812123	S BRAKE DISK B	1	
16	812125	S PLATE SPRING	1	
17	812130	S BRAKE PIN	1	
18	813355	S BRAKE WHEEL	2	
19	812121	S BRAKE DISK A	2	
20	812126	S BRAKE WHEEL HUB	1	
21	812200	S DISK PLATE	1	
22		SCREW AM4×8	2	
23	812550	S SOLENOID COLLAR	4	
33	812098	S FRAME C	1	
34	836027	1BHBB RING A	2	
35	871105	BB6004ZZNR	2	
37	812119	S 1ST PINION	1	
38	871107	BB6201ZZNR	2	
39	812116	S 2ND PINION	1	
40	812118	S 1ST GEAR	1	
41	812117	2P DIST COLLAR	1	
42	836027	1BH BB RING A	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
43	851625	BB6203DDUNR	1	
44	812115	S 3P WASHER	1	
45	811031	BHPS 2ND GEAR	1	
46	812134	BS 3RD PINION	1	
47	871110	BB6204ZZNR	1	
48	812112	3G WASHER	1	
49	840513	C RING 28	1	FOR SHAFT
50	811068	BS 3RD GEAR	1	
51	812111	S GEAR COVER	1	
52	812110	S FRAME A	1	
55	811005	BS COUPLING	1	
56	811073	1BH BB RING C	2	
57	851242	BB6206DDUNR	1	
58	812114	S SPROCKET	1	
59	812137	S SPROCKET GUIDE	1	
60	871158	BB6305ZZNR	1	
61	812102	S FRAME	1	
62	812139	S ROLLER BOLT	1	
63	812138	S GUIDE ROLLER	1	
64		SPRING WASHER M10	1	
65		LOCK NUT M10	1	
66	811043	BS STUD	3	
67	811011	BS COLLAR	3	
68		SPRING WASHER M12	6	
69		NUT M12	6	
70	811072	2BHPF DIST COLLAR B	1	
71	811071	CHAIN CONTAINER HANGER	1	
72		BOLT M10×90	1	
73		SPRING WASHER M10	1	
74		LOCK NUT M10	1	
77	812397	1S UPPER HOOK ASS'Y	1	78 ～ 81
78	3H5D65034-1	1S UPPER HOOK	1	
79	812325	LATCH B	1	
80	4M8402540-2	SPRING PIN 5×40AW	1	
81	812830	HOOK SPRING A	1	
84	812135	1S SIDE COVER	1	1 ton ONLY
85	812133	SWIRE COVER	1	
86	811061	BS SIDE COVER A	1	
87		SPRING WASHER M8	1	
88		BOLT M8×70	1	
89	811062	BHPS PACKING	1	
90	811063	BS CABLE STOPPER	1	
91		SCREW AM5×16	2	
94-1	812463	S CHAIN CONTAINER D	1	
94-2	812099	S CHAIN CONTAINER E	1	

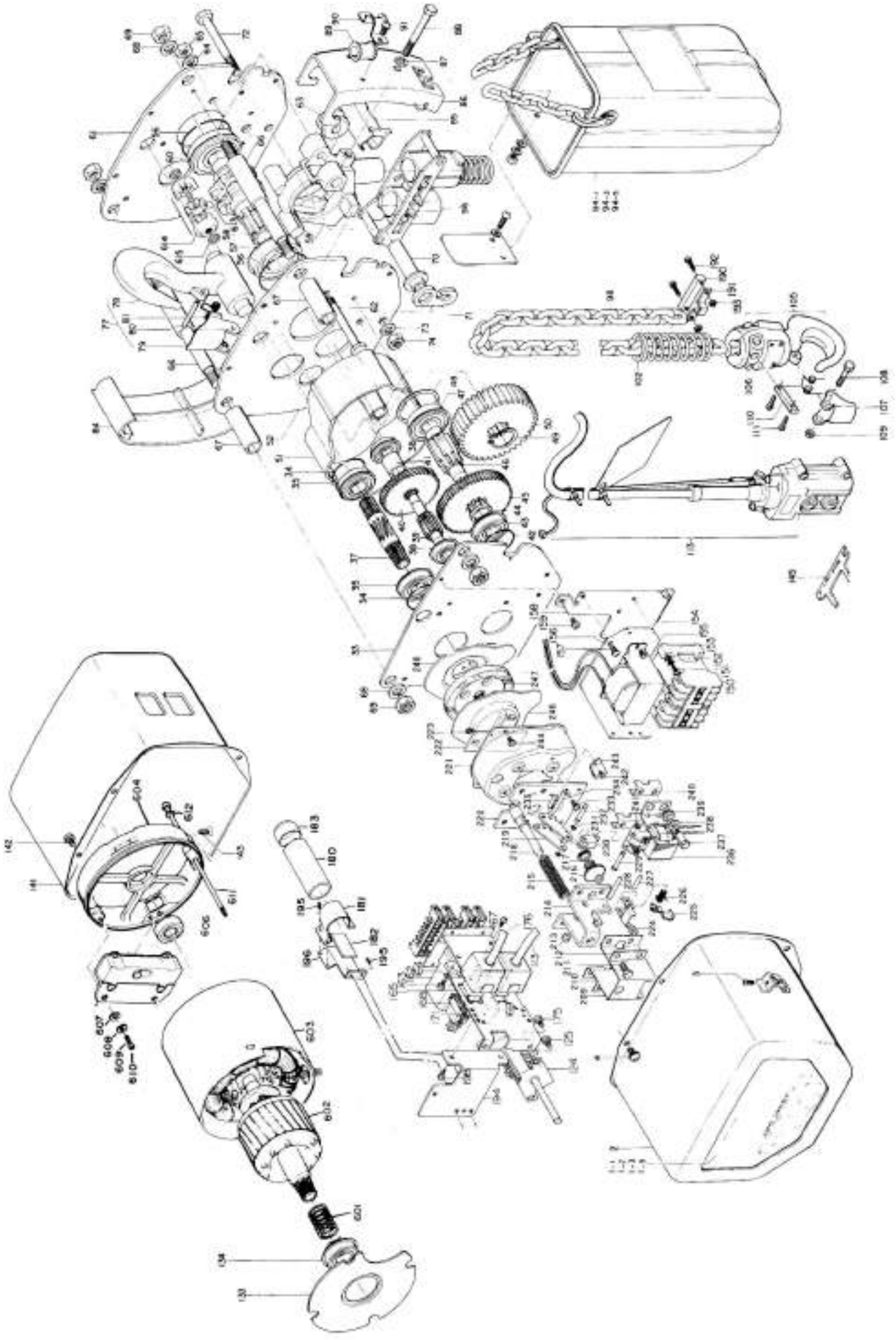
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
94-3	811801	BS CHAIN CONTAINER F	1	
94-5	811815	BS CHAIN CONTAINER G	1	
96	812140	S LIMIT LEVER ASS'Y	1	
98	Listed in page 113	LINK CHAIN Φ7.1	1	3m LIFT: 173LINK 6m LIFT: 322LINK
102	811054	BS LIMIT SPRING (U)	1	
103				
104	812399	S LOWER HOOK ASS'Y	1	106 ～ 111
105	813011	LATCH B ASS'Y	1	106 ～ 109
106	81142	HOOK SPRING	1	
107	81140	LATCH B	1	
108	4M32C5948-2	LATCH BOLT(2)	1	
109	812460	U NUT M5	1	
110	811055	BS CHAIN HANGER PIN	1	
111	4M8478380-1	SPLIT PIN 4×15	2	
113 Detailed part is listed in page 112	812193	PB CABLE ASS'Y	1	3m LIFT FOR S Type
	812534	2PBN2 CABLE ASS'Y	1	3m LIFT FOR SN Type
	812194	PB CABLE ASS'Y	1	6m LIFT FOR S Type
	812535	2PBN2 CABLE ASS'Y	1	6m LIFT FOR SN Type
124	812109	LIMIT SWITCH	1	
125		SCREW M5×12	8	
133	812106	S HOUSING PLATE	1	
134	871105	BB6004ZZNR	1	
135	813298	SM ROTOR ASS'Y	1	FOR S Type
135	812543	SNM ROTOR ASS'Y	1	FOR SN Type
136	813299	SM HOUSING ASS'Y	1	200-230V, 346-460V, FOR S Type
	2C3ZE1499-C	SM HOUSING ASS'Y	1	500V50Hz, FOR S Type
	812544	SNM HOUSING ASS'Y	1	220/346-415V 50Hz, FOR SN Type
	812095	SNM HOUSING ASS'Y	1	220-230V 60Hz, FOR SN Type
137	851625	BB6203DDUNR	1	
138	812001	FM END BRACKET	1	
139		SPRING WASHER M6	4	
140	811001	THROUGH BOLT	4	FOR S Type
	871201	THROUGH BOLT	4	FOR SN Type
141	812103	S COVER B	1	FOR S Type
	812402	SN COVER B	1	FOR SN Type
142		SCREW M6×8	4	
143	839185	CANOE CRIP 5	1	
145	812141	CHAIN GUIDE Φ7.1	1	
150	813515	CONTACTOR	1	HMU12(24V)
151		PAN HEAD SCREW M4×20	2	
152		SPRING WASHER M4	2	
153		PLAIN WASHER M4	2	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
154	811144	TRANSFORMER 20VA	1	200-220/24
	871133	TRANSFORMER 20VA	1	220/380-415V/24V
	871261	TRANSFORMER 20VA	1	220-230/440-460V/24V
	871251	TRANSFORMER 20VA	1	110-120/220-240V/24V
	871162	TRANSFORMER 20VA	1	200/346-380/24
155		SCREW M4×8	2	
156	812883	TRANS BASE	1	
157		SCREW M5×8	2	
158	812100	S MG SW BASE	1	
159		SCREW M6×10	3	
162	812189	REVERSE PHASE INSPECTING RELAY	1	220-230/380-460V
163		SCREW M5×16	2	
164		WASHER M5	2	
165	812186	BASE	1	
166	812187	TERMINAL BASE	1	FOR S Type
	813238	SN TERMINAL BASE	1	FOR SN Type
167		SCREW M4×10	2	
168	812056	9P CONNECTOR	1	
	812061	CONTACTOR	7	MALE
169	812058	6P CONNECTOR	1	
	812061	CONTACTOR	5	MALE
170		SCREW M4×10	1	BRUS
171		SPRING WASHER M4	1	
172	812071	TERMINAL BOAD	2	6P
173		WASHER M4	4	
174		SCREW WM4×10	4	
175		SCREW M6×10	2	
176 Detailed part is listed in page 112	812912	POWER CABLE ASS'Y	1	
190	811055	CHAIN HANGER PIN	1	
191	812408	RETAINER	1	
192		SCREW M4×16	2	
193	812409	U NUT M4	2	
194	812546	SW BASE	1	
195		SCREW AM4×12	2	
196		PLAIN WASHER M4	2	
197	813234	SN MG SWITCH	1	
198		SCREW AM5×8	1	
201	812180	2S UPPER HOOK ASS'Y	1	202 ~ 215
202	811418	2S UPPER HOOK	1	203 ~ 205
203	839093	SPRING PIN 4×25AW	1	
204	839091	BHPS HOOK SPRING	1	
205	812175	BH LATCH	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
208	812142	2S UPPER HANGER	2	
209		BOLT M8×80	1	
210		NUT M8	1	
211		SPRING WASHER M8	1	
212	812143	2S DIST COLLAR	1	
215	812145	2S CHAIN HANGER	1	
218	812146	2S CHAIN HANGER PIN	1	
219		SPLIT PIN 4×25	2	
220	812144	2S UPPER HANGER PIN A	1	
223	Listed in page 113	LINK CHAIN Φ7.1	1	3m LIFT: 353LINK 6m LIFT: 650LINK
227	811407	BS LIMIT SPRING	1	
230	811416	2BHPS LOWER HOOK ASS'Y	1	231 ～ 245
231	811412	BS SHEAVE	1	WITH BALL BEARING
232	811413	SHEAVE COVER	1	
233	811411	LOWER HANGER	1	
234	811410	SHEAVE PIN	1	
235		SPLIT PIN 6×45	2	
236		SB51106	1	
237	811409	NUT M27	1	
238		SPRING PIN 4×45AW	1	
241	812456	2S LOWER HOOK	1	243 ～ 246
242	813012	LATCH C ASS'Y	1	243 ～ 246
243	812450	LATCH C	1	
244	812451	HOOK SPRING	1	
245	4M32C5948-3	LATCH BOLT(3)	1	
246	812460	U NUT M5	1	
301	812181	3S UPPER HOOK ASS'Y	1	302 ～ 322
302	812152	3S UPPER HOOK	1	303 ～ 305
303	839093	SPRING PIN 4×25AW	1	
304	839091	BHPS HOOK SPRING	1	
305	870732	BH LATCH (7)	1	
307	812147	3S SHEAVE PIN	1	
308	813167	3S UPPER HANGER A	1	
309	813168	3S UPPER HANGER B	1	
310		BOLT M12×80	2	
311		LOCK NUT M12	2	
312		SPRING WASHER M12	2	
313	812153	S DIST COLLAR D	2	
314	812639	2.8S SHEAVE COVER	2	
315	840148	1NSM WASHER	2	
316	811412	BS SHEAVE (2)	1	WITH BALL BEARING
317	812147	3S SHEAVE PIN	1	
320	812150	3S CHAIN GUIDE	1	
321	812149	3S CHAIN GUIDE PIN	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
322		SPLIT PIN 3×20	2	
324	812165	5S UPPER HANGER PIN	1	
325		SCREW AM5×12	2	
327	Listed in page 113	LINK CHAIN Φ7.1	1	3m LIFT: 514LINK 6m LIFT: 959LINK
331	811608	BS LIMIT SPRING (U)	2	
334	871180	3BS LOWER HOOK ASS'Y	1	335 ～ 352
335	811412	BS SHEAVE (2)	1	WITH BALL BEARING
336	811413	SHEAVE COVER	1	
337	837830	3BS LOWER HANGER	1	
338	811615	SHEAVE PIN	1	
339		SPLIT PIN 6×40	2	
340	811613	CHAIN HANGER	1	
341	811055	BS UPPER HANGER PIN	1	
342	811612	CHAIN HANGER PIN	1	
343		SPLIT PIN 4×25	2	
344		SB51107	1	
345	811617	NUT M30	1	
346	4M8402540-1	SPRING PIN 6×50AW	1	
349	871177	3S LOWER HOOK	1	351 ～ 354
350	813030	LATCH D ASS'Y	1	351 ～ 354
351	4A3PA2753-1	LATCH D	1	
352	4A4V73724-1	HOOK SPRING	1	
353	4M32A2757-1	HOOK BOLT	1	
354	851008	U NUT M6	1	
501	812182	5S UPPER HOOK ASS'Y	1	502 ～ 522
502	812158	5S UPPER HOOK	2	503 ～ 505
503	839093	PRING PIN 4×25AW	1	
504	839091	BHPS HOOK SPRING	1	
505	870737	BH LATCH	1	
507	812147	3S SHEAVE PIN	1	
508	812160	5S UPPER HANGER A	1	
509	812162	5S UPPER HANGER B	1	
510		BOLT M12X80	4	
511		LOCK NUT M12	4	
512		SPRING WASHER M12	4	
513	GA443238-3	S DIST COLLAR	2	
515	840148	1NSM WASHER	4	
516	811412	BS SHEAVE (2)	2	WITH BALL BEARING
517	812147	3S SHEAVE PIN	2	
518	812154	5S SHEAVE GUIDE	1	
520	812150	3S CHAIN GUIDE	1	
521	812149	3S CHAIN GUIDE PIN	1	
522		SPLIT PIN 3×20	2	
524	812165	5S UPPER SUSPENSION PIN	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
525		SCREW AM5×12	2	
527	Listed in page 113	LINK CHAIN Φ7.1	1	3m LIFT: 886LINK 6m LIFT: 1628LINK
531	811608	BS LIMIT SPRING (U)	2	
534	812183	5S LOWER HOOK ASS'Y	1	535 ～ 555
535	811412	BS SHEAVE (2)	2	WITH BALL BEARING
536	812163	5S SHEAVE COVER	2	
537		BOLT AM8×12	8	
538	812159	5S LOWER HANGER	1	
539	812164	5S SHEAVE PIN	2	
540		SPLIT PIN 6×40	4	
541	812155	5S SHEAVE GUIDE	1	
542	812156	CHAIN HANGER	1	
544	812157	5S HANGER PIN	1	
545		SPLIT PIN 4×25	2	
546		SB51208	1	
547	812161	5S SB COVER	1	
548	4M4104775-7	NUT M39	1	
549	4M8402540-7	SPRING PIN 6×60AW	1	
550	840148	WASHER	4	
552	812151	5S LOWER HOOK	1	554 ～ 557
553	813029	LATCH E ASS'Y	1	554 ～ 557
554	4A3PA2754-1	LATCH E	1	
555	4A4V73724-1	HOOK SPRING	1	
556	4M32A2757-1	HOOK BOLT	1	
557	4M4903366-6	U NUT M6	1	



1S1 and Common Body for 2 ~ 5t Model

LIST OF REPAIR PARTS FOR 1S1

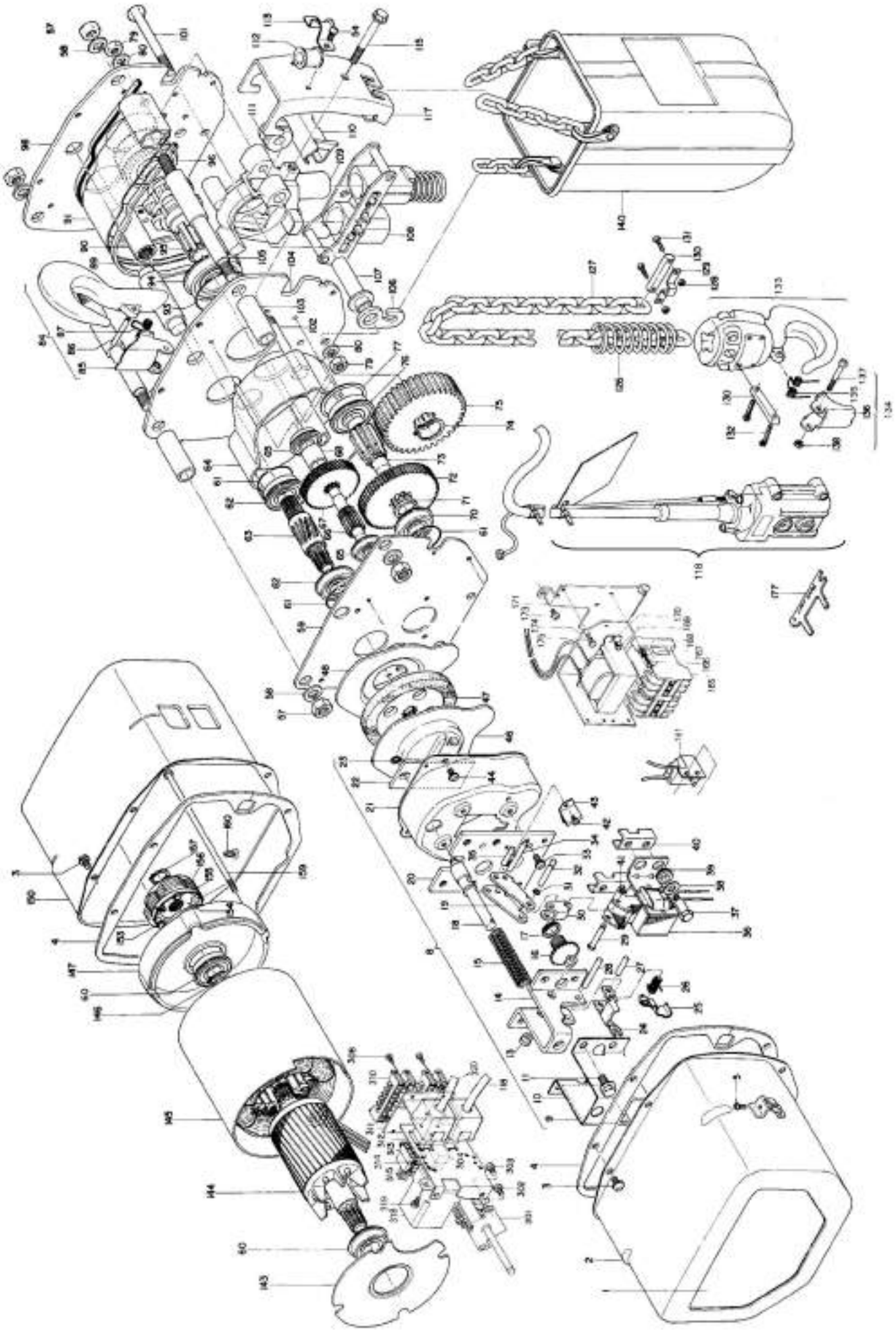
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
1		NAME PLATE	1	
2	812401	S COVER A	1	THREE PHASE MODEL
3		TAPPING SCREW M4 x 12	1	
4		SCREW AM6 x 8	4	
33	812098	S FRAME C	1	
34	836027	1BHBB RING A	2	
35	871105	BB6004ZZNR	2	
37	812565	S1 1ST PINION	1	
38	871107	BB6201ZZNR	2	
39	812116	S 2ND PINION	1	
40	812118	S 1ST GEAR	1	
41	812117	2P DIST COLLAR	1	
42	836027	1BH BB RING A	1	
43	851625	BB6203DDUNR	1	
44	812115	S 3P WASHER	1	
45	811031	BHPS 2ND GEAR	1	
46	812134	BS 3RD PINION	1	
47	871110	BB6204ZZNR	1	
48	812112	3G WASHER	1	
49		C RING 28	1	FOR SHAFT
50	811068	BS 3RD GEAR	1	
51	812111	S GEAR COVER	1	
52	812110	S FRAME A	1	
55	811005	BS COUPLING	1	
56	811073	1BH BB RING C	2	
57	851242	BB6206DDUNR	1	
58	812114	S SPROCKET	1	
59	812137	S SPROCKET GUIDE	1	
60	871158	BB6305ZZNR	1	
61	812102	S FRAME	1	
62	812139	S ROLLER BOLT	1	
63	812138	S GUIDE ROLLER	1	
64		SPRING WASHER M10	1	
65		LOCK NUT M10	1	
66	811043	BS STUD	3	
67	811011	BS COLLAR	3	
68		SPRING WASHER M12	6	
69		NUT M12	6	
70	811072	2BHPF DIST COLLAR B	1	
71	811071	CHAIN CONTAINER HANGER	1	
72		BOLT M10 × 90	1	
73		SPRING WASHER M10	1	
74		LOCK NUT M10	1	
77	812101	1S UPPER HOOK ASS'Y	1	78~81
78	3H5D57561-2	1S UPPER HOOK	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
79	812325	LATCH B	1	
80	4M8402540-2	SPRING PIN 5 × 40AW	1	
81	812830	HOOK SPRING A	1	
84	812135	1S SIDE COVER	1	1 ton ONLY
85	812133	S WIRE COVER	1	
86	811061	BS SIDE COVER A	1	
87		SPRING WASHER M8	1	
88		BOLT M8 x 70	1	
89	811062	BHPS PACKING	1	
90	811063	BS CABLE STOPPER	1	
94-1	812463	S CHAIN CONTAINER D	1	
94-1	812099	S CHAIN CONTAINER E	1	
94-3	811801	BS CHAIN CONTAINER F	1	
94-5	811815	BS CHAIN CONTAINER G	1	
96	812140	S LIMIT LEVER ASS'Y	1	
98	Listed in page 113	LINK CHAIN Φ7.1	1	3m LIFT: 173LINK 6m LIFT: 322LINK
102	811054	BS LIMIT SPRING (U)	1	
105	812399	SLOWER HOOK ASS'Y	1	106~111
106	811142	HOOK SPRING	1	
107	811140	LATCH	1	
108		SCREW M5 x 40	1	
109	812460	U NUT M5	1	
110	811055	BS CHAIN HANGER PIN	1	
111	4M8478380-1	SPLIT PIN 4 x15	2	
113	812193	PB CABLE ASS'Y	1	3m LIFT
	812194	PB CABLE ASS'Y	1	6m LIFT
	812195	PB CABLE ASS'Y	1	4.5m LIFT
	812059	6P CONNECTOR	1	
	812062	CONTACTOR	5	FEMALE
	812167	PLUG COVER A	1	
	812168	PLUG COVER B	1	
	811136	RING A	1	
	841088	2NS WASHER	1	
114		CABTYRE CABLE	1	3 CORE
115	812259	E CABLE CRIP	2	
116	3L9257316-1	CAUTION PLATE	1	
117 Detailed part is listed in page 112	813325	PB-2 PUSH BUTTON	1	
124	812109	S LIMIT SWITCH	1	
133	812106	S HOUSING PLATE	1	
134	871105	BB6004ZZNR	1	
141	812402	S COVER B	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
142		SCREW M6 x 8	4	
143	839185	CANOE CRIP 5	1	
145	812141	BS GAUGE	1	
150	839783	MG SWITCH	1	
151		PAN HEAD SCREW M4 x 20	2	
152		SPRING WASHER M4	2	
153		PLAIN WASHER M4	2	
154	811144	TRANSFORMER 20VA	1	200V/24V
	871251	TRANSFORMER 20VA	1	110-120/220-240V/24V
156		SCREW M4 x 10	2	
	812188	TRANS BASE	1	
157		SCREW M5 x 8	2	
158	812100	S MG SW BASE	1	
159		SCREW M6 x 10	3	
160	812077	CAPACITOR	1	OLL MODEL ONLY
161		SCREW M4 x 10	1	
163		SCREW M5 x 16	2	
164		WASHER M5	2	
165	812186	BASE	1	
166	812545	TERMINAL BASE	1	
167		SCREW M4 x 10	2	
168	812056	9P CONNECTOR	1	
	812061	CONTACTOR	7	MALE
169	812058	6P CONNECTOR	1	
	812061	CONTACTOR	5	MALE
170		SCREW	1	BRASS
171		SPRING WASHER M4	1	
172	812071	TERMINAL BOARD	2	6P
173		WASHER M4	4	
174		SCREW WM4 x 10	4	
175		SCREW M6 x 10	2	
176	812559	POWER CABLE ASS'Y	1	
180	834181	CAPACITOR	1	
181	839973	CAPACITOR BAND	1	
182	834219	RUBBER SHEET	1	
183	812090	CAPACITOR CAP	1	
190	811055	CHAIN HANGER PIN	1	
191	812408	RETAINER	1	
192		SCREW M4 x 16	2	
193	812409	U NUT M4	2	
194	812546	SW BASE	1	
195		SCREW AM4 x 8	6	
196	871241	CAPACITOR SUPPORT	1	
198		SCREW AM5 x 12	2	
201	2H5Z23867-F	BRAKE ASS'Y 220-240V 50Hz	1	209 ～ 244

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
201	2H5Z23867-G	BRAKE ASS'Y 200V 50Hz	1	209 ～ 244
209	812394	2F LINK COVER	1	
210	4L9222012-1	VM CAUTION PLATE	1	
211	812462	VM BOLT M8x 13	4	
212	851121	VM LOCK WASHER	2	
213	851119	VM PACKING	2	
214	812392	2F SPRING COVER	1	
215	4A4T72570-1	S1 BRAKE SPRING	1	
216	851234	1NM ADJUSTER SCREW	1	
217	851239	FRICTION RING	1	
218	812393	1F BRAKE ROD	1	
219	851079	1VM LINK A	1	
220	812411	2F BM SUPPORT B	1	
221	812410	F BM SUPPORT	1	
222	812509	F BRAKE LEVER	1	
223	4M8810994-2	SNAP RING 8 FOR SHAFT	1	
224	851078	ADJUSTER LINK	1	
225	851233	ADJUSTER LEVER	1	
226	851231	ADJUSTER SPRING	1	
227	851224	NM LINK PIN A	1	
228	851225	NM LINK PIN B	1	
229	871167	BS BM PIN	1	
230	851074	LINK B	1	
231	871172	O RING P4	2	
232	852104	LINK PIN	1	
233		SCREW AM6 x 12	4	
234	851225	NM LINK PIN B	1	
235	851224	NM LINK PIN A	1	
236	871125	BS SOLENOID (220-240V)	1	
237	812395	2F RETAINING BOLT	1	
238	811029	2NSM ADJUSTER WASHER R	4	
239	811028	BS BUSHING	4	
240	812396	SOLENOID BASE	2	
241	871172	O RING P4	1	
242		SCREW AM4 x 8	1	
243	851120	VM ADJUSTER SPRING	1	
244		SCREW AM6 x 10	6	
246	812508	1F BRAKE DISK A	1	
247	837457	BRAKE WHEEL	1	
248	812405	1F BRAKE DISK B	1	
601	812094	THRUST SPRING	1	
602	812560	S1 ROTOR ASS'Y	1	
603	812562	S1 HOUSING ASS'Y	1	220-240V 50Hz
603	812561	S1 HOUSING ASS'Y	1	200V 50Hz
604	812089	F1 END BRACKET	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
606		BB6202 VVCM	1	
607	811328	CENTERIFUGAL SWITCH FIXTURE	1	
608		WASHER M4	2	
609		SPRING WASHER M4	2	
610		SCREW M4 × 8	2	
611	811001	THROUGH BOLT	4	
612		SPRING WASHER M6	4	
613	871249	COUPLING RUBBER	1	
614	871250	COUPLING	2	
615	812564	COUPLING COLLAR	2	



1F

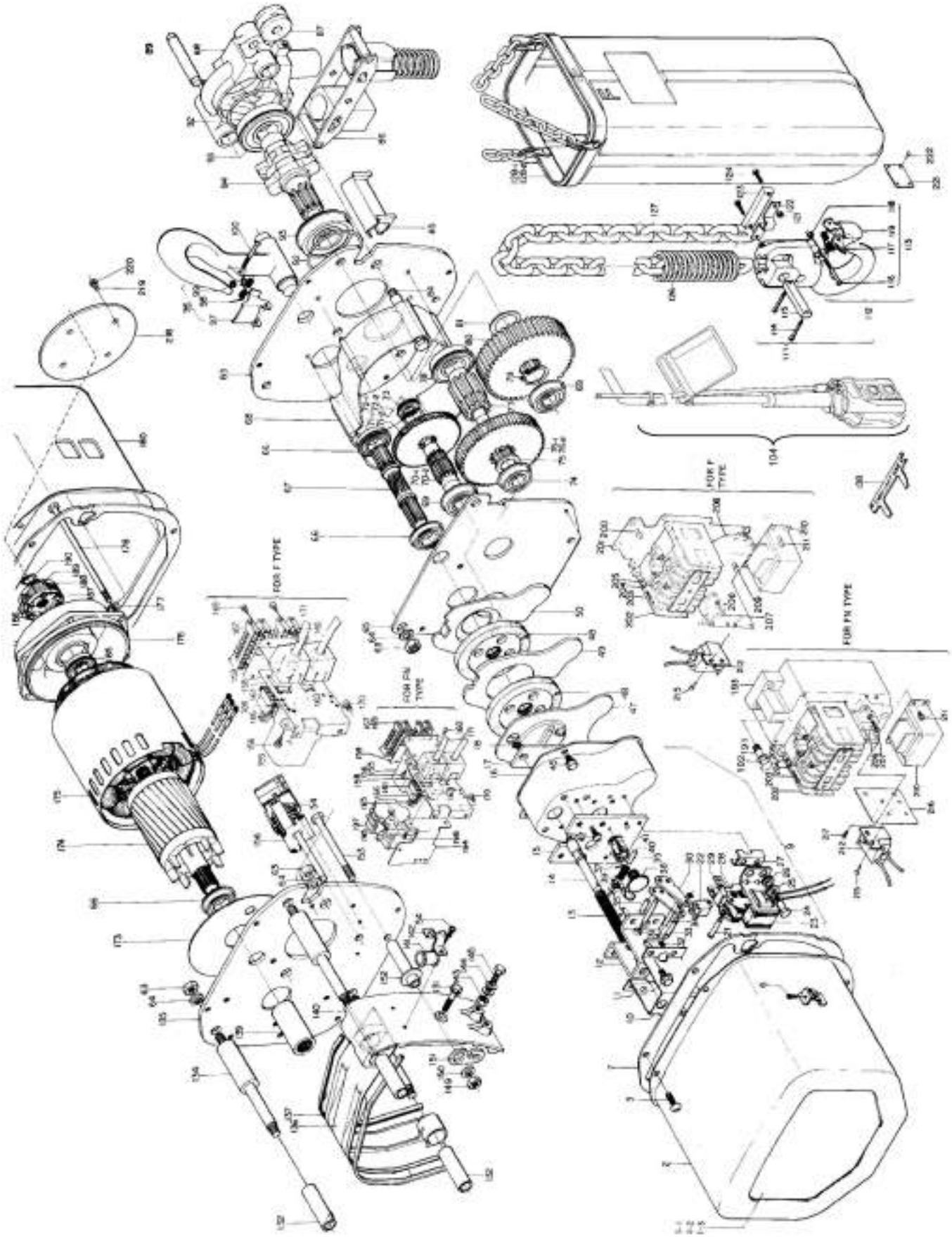
LIST OF REPAIR PARTS FOR 1F

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
1		NAME PLATE	1	
2	812401	1F COVER A	1	
3		SCREW AM6×10	8	
4	812406	1F COVER PACKING	2	
5	4M5434520-3	TAPPING SCREW M4×12	1	
8	812390	1F BRAKE ASS'Y	1	200/346-380V50Hz
	812596	1F BRAKE ASS'Y	1	220/380-415V 50Hz
	812597	1F BRAKE ASS'Y	1	220-230/440-4 60V 60Hz
9	812394	2F LINK COVER	1	
10	4L9222012-1	VM CAUTION PLATE	1	
11		VM BOLT M8×14	4	
13	851119	VM PACKING	2	
14	812392	2F SPRING COVER	1	
15	812391	1F BRAKE SPRING	1	
16	851234	1NM ADJUSTER SCREW	1	
17	851239	FRICTION RING	1	
18	812393	1F BRAKE ROD	1	
19	851079	1VM LINK A	1	
20	812411	2F BM SUPPORT B	1	
21	812410	F BM SUPPORT	1	
22	812509	F BRAKE LEVER	1	
23	4M8810994-2	SNAP RING 8 FOR SHAFT	1	
24	851078	ADJUSTER LINK	1	
25	851233	ADJUSTER LEVER	1	
26	851231	ADJUSTER SPRING	1	
27	851224	NM LINK PIN A	1	
28	851225	NM LINK PIN B	1	
29	871167	BS BM PIN	1	
30	851074	LINK B	1	
31	871172	O RING P4	1	
32	855012	LINK PIN	1	
33		SCREW AM6×12	4	
34	851225	NM LINK PIN B	1	
35	851224	NM LINK PIN A	1	
36	871127	BS SOLENOID	1	200V50/60Hz 346-380V50Hz
	871125	BS SOLENOID	1	220/380-415V 50Hz
	811127	BS SOLENOID	1	220-230/440-460V 60Hz
37	812395	2F RETAINING BOLT	4	
38	850936	2NSM ADJUSTER WASHER B	4	
39	850631	BS BUSHING	4	
40	812396	SOLENOID BASE	2	
41	871172	O RING P4	1	
42		SCREW AM4×6	1	
43	851120	VM ADJUSTER SPRING	1	
44	3H5D57561-2	SCREW AM6×10	6	

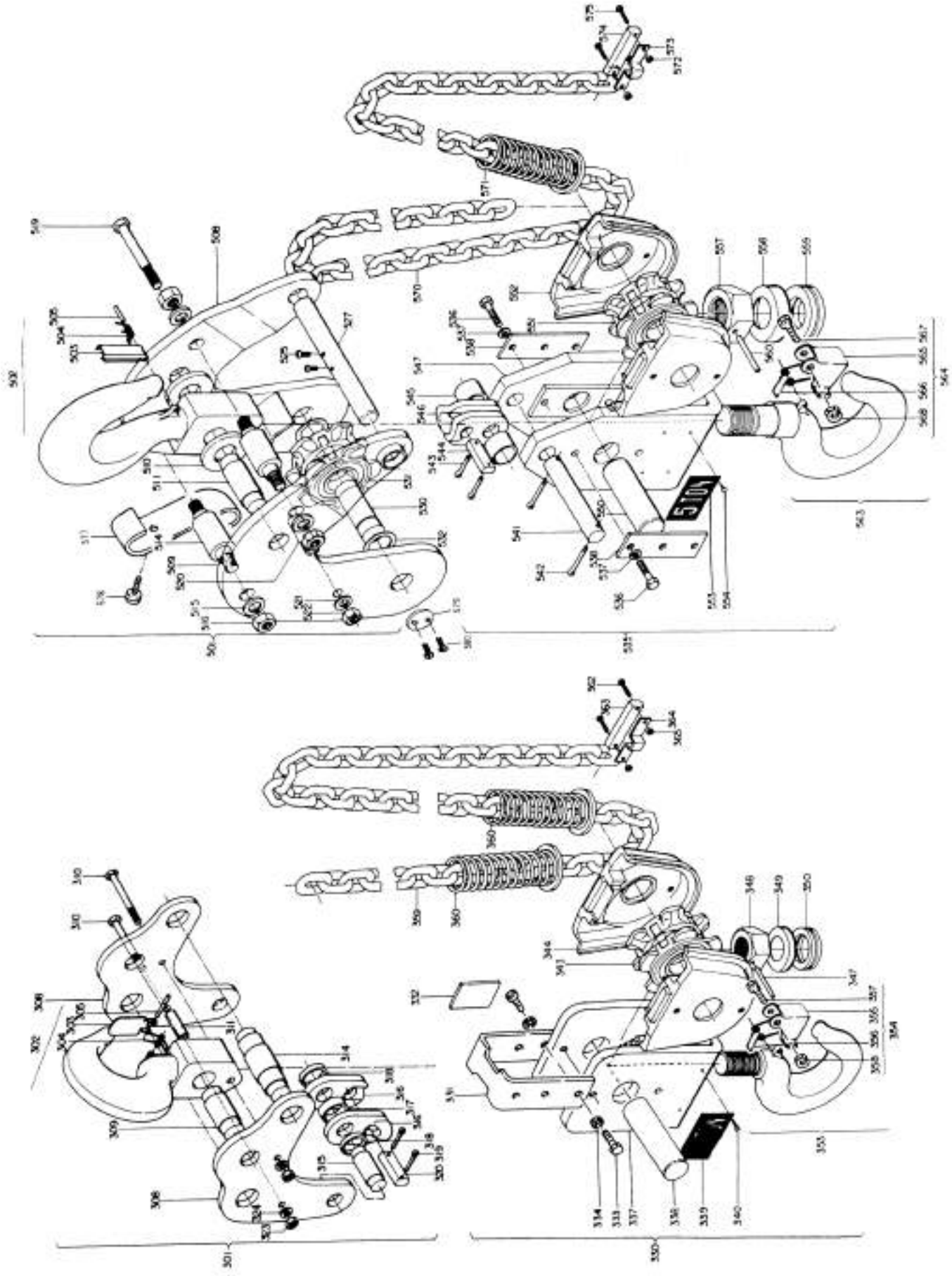
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
46	812508	1F BRAKE DISK A	1	
47	813354	BRAKE WHEEL	1	
48	812405	1F BRAKE DISK B	1	
54		SCREW AM5×16	2	
57		NUT M12	6	
58		SPRING WASHER M12	6	
59	812098	S FRAME C	1	
60	871105	BB 6004DDUNR	1	
61	836027	BH BB RING A	3	
62	871105	BB 6004ZZNR	3	
63	812388	1F 1ST PINION	1	
64	812111	S GEAR COVER	1	
65		BB 6201ZZNR	2	
66	812461	BS 2ND PINION	1	
67	812389	1F 1ST GEAR	1	
68	812117	2P DIST COLLAR	1	
70	851625	BB 6203DDUNR	1	
71	812115	S 3P WASHER	1	
72	811031	BHPS 2ND GEAR	1	
73	812134	BS 3RD PINION	1	
74		SNAP RING 28 FOR SHAFT	1	
75	811068	BS 3RD GEAR	1	
76		BB 6204ZZNR	1	
77	812112	3G WASHER	1	
79		LOCK NUT M10	2	
80		SPRING WASHER M10	2	
84	812397	1F UPPER HOOK	1	
85	812325	LATCH B	1	
86		SPRING PIN 5×40AW	1	
87	811142	HOOK SPRING A	1	
89	812890	1F CENTER COVER PACKING	2	
90	811005	BS COUPLING	1	
91	812403	1F CENTER COVER	1	
93	811073	BH BB RING C	2	
94	851242	BB 6206DDUNR	1	
95	812114	S SPROCKET	1	
96	871158	BB 6305ZZNR	1	
98	812102	S FRAME B	1	
101		BOLT M10×90	1	
102	812139	S ROLLER BOLT	1	
103	811011	BS COLLAR	3	
104	812110	S FRAME A	1	
105	GA457430-2	S STUD BOLT	3	
106	811071	CHAIN CONTAINER HANSER	1	
107	811072	DIST COLLAR	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
108	812140	S LIMIT LEVER ASS'Y	1	
109	812137	S SPROKET GUIDE	1	
110	812133	S WIRE COVER	1	
111	812138	S GUIDE ROLLER	1	
112	811062	BHPS PACKING	1	
113	811063	BS CABLE STOPPER	1	
115	4M11A8191-1	BOLT M8×70	1	
117	811061	BS SIDE COVER A	1	
118	812193	PB CABLE ASS'Y	1	3m LIFT
118 Detailed part is listed in page 112	812194	PB CABLE ASS'Y	1	6m LIFT
126	811054	BS LIMIT SPRING (U)	1	
127	Listed in page 113	LINK CHAIN Φ10	1	3m LIFT: 173LINK 6m LIFT: 322LINK
128	812409	U NUT M4	2	
129	812408	RETAINER	1	
130	811055	CHAIN HANGER PIN	2	
131		SCREW M4×16	2	
132	4M8478380-1	SPLIT PIN 4×15	2	
133	812399	S LOWER HOOK ASS'Y	1	130, 132, 135 ～ 138
134	813011	LATCH B ASSY		135 ～ 138
135	811142	HOOK SPRING	1	
136	811140	LATCH B	1	
137	4M32C5948-2	LATCH BOLT(2)	1	
138	812460	U NUT M5	1	
140	812463	CHAIN CONTAINER D	1	6m LIFT
	812471	CHAIN CONTAINER E	1	12m LIFT
143	812106	S HOUSING PLATE	1	
144	813187	1F ROTOR ASS'Y	1	
145	2C3Z23927-K	1F HOUSING ASS'Y	1	
146		SNAP RING 20 FOR SHAFT	1	
147	812387	1F END BRACKET	1	
150	812402	1F COVER B	1	
153	836039	SNAP RING 5 FOR SHAFT	6	ϕ5
154	812459	1F CENTRIFUGAL BRAKE	1	
155	836106	BH FLAT SPRING	2	
156	836105	BHM MOVABLE PIECE	3	
157		SNAP RING 18 FOR SHAFT	1	
159	4M54A3541-2	THROUGH BOLT	4	
160	839185	CANOE CRIP5	1	
161	855630	CAPACITOR	1	
165	813515	MG SWITCH	1	HMU12(24V)
166		PAN HEAD SCREW M4×20	2	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
167		SPRING WASHER M4	2	
168		PLAIN WASHER M4	2	
169		SCREW M4×8	2	
170	811144	TRANS FORMER 20VA	1	200-220/24V
	871133	TRANS FORMER 20VA	1	220/38 0-415V/24V
	871261	TRANS FORMER 20VA	1	220-230/440-460V/24V
	871162	TRANS FORMER 20VA	1	200/346-380/24V
171	812100	S MG SW BASE	1	
173		SCREW M6×10	3	
174	812188	TRANS BASE	1	
175		SCREW M5×12	2	
177	812141	CHAIN GAUGE Φ7.1	1	
301	812109	S LIMIT SWITCH	1	
302		SCREW AM5×12	2	
303		SCREW AM6×10	2	
304	812058	6P CONNECTOR	1	
	812061	CONTACTOR	3	MALE
308		SCREW M4×10	4	
309		WASHER M4	4	
310	812071	TERMINAL BOAD	2	
311	812187	TERMINAL BASE	1	
312	812186	BASE	1	
313	812056	9P CONNECTOR	1	
	812061	CONTACTOR	9	MALE
314		SPRING WASHER M4	1	
315		SCREW M4×6	1	BRASS
317		SCREW M5×16	2	
318	812189	REVERSE PHASE INSPECTING RELAY	1	220-230/380-460V
320 Detailed part is listed in page 112	812192	POWER CABLE ASS' Y	1	



2, 2.5F • FN AND COMMON BODY OF 3, 5F • FN



LIST OF REPAIR PARTS FOR 2-5 F･FN

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
1		NAME PLATE	1	
2	812441	2F COVER A ASSY	1	
3		SCREW M8×14	8	
6		TAPPING SCREW M4×12	1	
7	812457	2F COVER PACKING	2	
9		2F BRAKE ASS'Y	1	
10	812394	2F LINK COVER	1	
11	4L9222012-1	CAUTION PLATE	1	
12	812392	2F SPRING COVER	1	
13	812391	1F BRAKE SPRING	1	
14	812393	1F BRAKE ROD	1	
15	812411	2F BM SUPPORT B	1	
16	812430	2F BM SUPPORT A	1	
17	812509	F BRAKE LEVER	1	
18		C RING (SHAFT) ϕ8	1	
19		BOLT M8×14	4	
21	871167	BS BM PIN	1	
22	851074	1AM LINK B	1	
23	871125	BS SOLENOID	1	220/380-415V 50Hz
	871127	BS SOLENOID	1	220-230/440-460V 60Hz
	811027	BS SOLENOID	1	200V 50/60VHz, 346~380V50Hz
24	812395	2F BOLT	4	
25	850936	2NSM BALANCING WASHER	4	
26	850631	BUSH	4	
27	812396	2F SOLENOID BASE	2	
28		O RING P4	1	
29	851078	1AM ADJUSTER LINK	1	
30	851079	1VM LINK A	1	
31	851119	1VM BUSH	2	
32	871172	O RING P4	1	
33	855012	2AM LINK PIN	1	
34	851225	1NM 6ϕ LINK PIN B	2	
35	851224	1NM 6ϕ LINK PIN A	2	
36	851233	1NM ADJUSTER LEVER	1	
37	851239	NM FRICTION RING	1	
38	851234	1NM ADJUST SCREW	1	
39	851231	ADJUST SPRING	1	
40		SCREW AM4×6	1	
41	851120	VM ADJUSTER SPRING	1	
42		SCREW AM6×12	4	
45		BOLT AM8×12	4	
47	812510	2F BRAKE DISKA(2)	1	
48	813356	2F BRAKE WHEEL	2	
49	812433	2F BRAKE DISK	1	
50	812434	2F BRAKE DISK	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
54		SCREW M5×16	2	
63		NUT M12	7	
64		SPRING WASHER M12	7	
65	812647	2F FRAME C	1	FOR F TYPE
	812657	2F FRAME C	1	FOR FN TYPE
66	870311	BB6005ZZNR	3	
67	812421	2F 1ST PINION	1	FOR FN TYPE
68	812428	2F GEAR COVER	1	
69	870318	BB6205ZZNR	2	
70	812423	2F 2ND PINION	1	FOR 2 ton Model
	812501	3BHPF 2ND PINION	1	FOR 3,5ton Model
71	812422	2F 1ST GEAR	1	FOR 2 ton Model
	812502	3F 1ST GEAR	1	FOR 3,5ton Model
72		C RING(SHAFT) ϕ28	1	FOR 2 ton Model
		C RING(SHAFT) ϕ32	1	FOR 3,5ton Model
73		BB6201ZZNR	1	
74		BB6204ZZNR	1	
75	812467	2RHPF 3P WASHER	1	
76	812640	2BHPF 2ND GEAR	1	FOR 2 ton Model
	812641	3BHPF 2ND GEAR	1	FOR 3,5ton Model
77	812642	2F 3RD PINION(2)	1	
78	851242	BB6206DDUNR	1	
79		C RING(SHAFT) ϕ34	1	
80	812644	2F 3RD GEAR	1	
81	842124	NSM WASHER	1	
83	812412	2F FRAME A	1	
84	812436	2F ROLLER BOLT	1	
85	812444	2F WIRE COVER	1	
86	812438	2F LIMIT LEVER ASS'Y	1	
87	839514	2BHPF ROLLER	1	
88	812435	2F SPROCKET GUIDE	1	
89	812437	2F ROLLER PIN	1	
92	870726	2BHPF BB RING D	2	
93	870317	BB6307ZZNR	2	
94	812643	2F SPROCKET (2)	1	
96	812448	2F UPPER HOOK ASS'Y	1	
	3H5Z92986-A	2.5F UPPER HOOK ASS'Y	1	FOR 2.5ton MODEL ONLY
97	812450	LATCH C	1	
	870732	LATCH (7)	1	FOR 2.5ton MODEL ONLY
98	812451	HOOK SPRING	1	
	839091	HOOK SPRING	1	FOR 2.5ton MODEL ONLY
99	812460	U-NUT	1	
100	4M32C5948-3	LATCH BOLT(3)	1	
		SPRING PIN 4AW×25	1	FOR 2.5ton MODEL ONLY

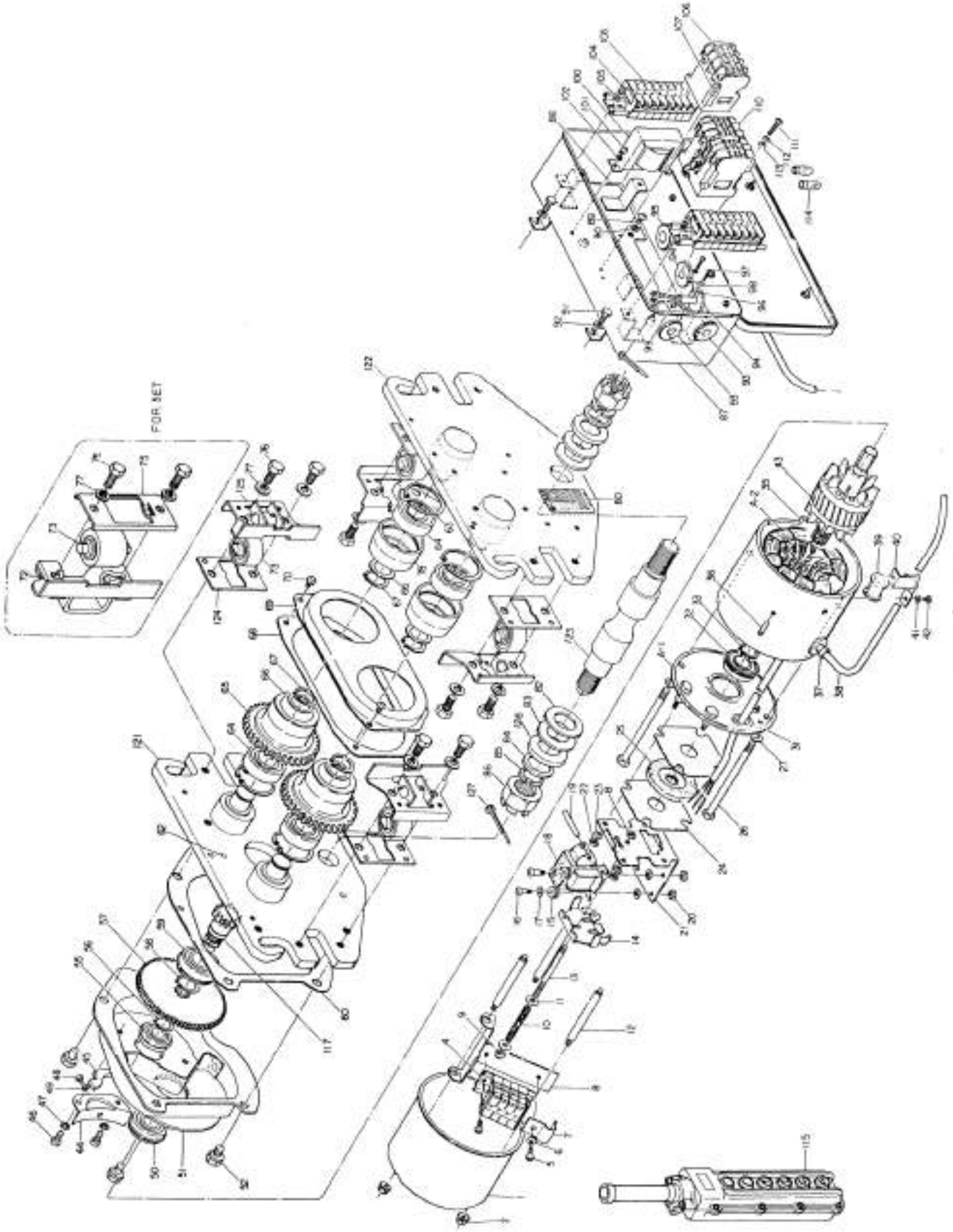
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
104 Detailed part is listed in page 112	812193	PB CABLE ASS'Y	1	3m LIFT, FOR F TYPE
	812534	2PBN2 CABLE ASS'Y	1	3m LIFT, FOR FN TYPE
	812194	PB CABLE ASS'Y	1	6m LIFT, FOR F TYPE
	812535	2PBN2 CABLE ASS'Y	1	6m LIFT, FOR FN TYPE
111	812455	2F LCWERHOOK ASS'Y	1	
112	813195	2F LOWER HOOK	1	116~119
113	813012	LATCH C ASS'Y	1	116~119
114		SPLIT PIN 4×25	2	
115		2BHPF LOWER SUSPENSION PIN	1	
116		LATCH BOLT (3)	1	
117	812451	HOOK SPRING B	1	
118	812460	U-NUT M5	1	
119	812450	LATCH	1	
121	812409	U-NUT M4	2	
122	812468	F RETAINER	1	
123		2BHPF LOWER SUSPENSION PIN	1	
124		SCREW M4×20	2	
126	812454	2F LIMIT SPRING	1	
127	Listed in page 113	LINK CHAIN Φ10	1	3m LIFT: 123LINK 6m LIFT: 222LINK
128	811801	CHAIN CONTAINER (F)	1	
	811815	CHAIN CONTAINER (G)	1	
131		BOLT A M8×40	1	WITH SPRING WASHER
132	812416	2F COLLAR	3	
134	812415	2F STUD BOLT	3	
135	812413	2F FRAME B	1	
136	812443	2F CENTER COVER	1	
137	812890	2F CENTER COVER PACKING	2	
138	812486	CHAIN GAUGE Φ10	1	
139	870727	2BHPF COUPLING	1	
140	812445	2F SIDE COVER	1	
141	811062	BHPS PACKING	1	
142	811063	BS CABLE STOPPER	1	
143		NUT M8	2	
144		PLAIN WASHER M8	4	
145		BOLT M8×25	2	
149		NUT M10	1	
150		SPRING WASHER M10	1	
151	811071	BH CONTAINER RING	1	
152	839610	2BHPF DIST-COLLAR	1	
153		BOLT M10X120	1	
155	812189	REVRSE PHASE INSPECTING RELAY	1	220-230/380-460V
156	812440	2F LIMIT SWITCH	1	
158	812186	BASE	1	
159	812646	TERMINAL BASE	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
160		SCREW M4×8	2	
161	3B2H45494-1	9P CONNECTOR	1	
	812061	CONTACTOR	7	MALE
163	812058	6P CONNECTOR	1	
	812061	CONTACTOR	5	MALE
165		SCREW	1	BRUS
166		SPRING WASHER M4	1	
167	812649	TERMINAL BOAD	2	6P
169		SCREW WM4×12	4	
170		SCREW M6×10	2	
171	3H4Z58917-E	2F POWER CABLE ASS'Y		
173	812420	2F HOUSING PLATE	1	
174	812418	2FM ROTOR ASS'Y	1	FOR F TYPE
	812672	2FNM ROTOR ASS'Y	1	FOR FN TYPE
175	812678	2FM HOUSING ASS'Y	1	200-230V, 346-460V, FOR F TYPE
	812673	2FNM HOUSING ASS'Y	1	220/380-415V50Hz,FOR FN TYPE
176	812419	2FM END BRACKET	1	FOR F TYPE
177	812674	2FNM END BRACKET	1	FOR FN TYPE
		SPRING WASHER M8	6	FOR FN MODEL ONLY
178	4M11A3542-1	2F THROUGH BOLT	6	FOR F TYPE
	812650	2FNM THROUGH BOLT	6	FOR FN TYPE
180	812442	2F COVER B	1	FOR F TYPE
	812730	2FN COVER B	1	FOR FN MODEL ONLY
185	871105	BB6004DDUNR	1	FOR F TYPE
		BB6204DDUNR	1	FOR FN MODEL ONLY
186	836039	E RING 5	6	
187	812459	CENTRIFUGAL BRAKE (FIXTURE)	1	
188	836106	FLAT SPRING	2	
189	836105	MOVABLE PIECE	3	
190		C RING(SHAFT) 18	1	
191		BOLT M10×30	3	
192		SPRING WASHER M10	3	
193	2H4DA0917-1	2FN SW BASE	1	
194	813001	2FN SWITCH BASE	1	
195		SCREW AM4×16	2	
196		PLAIN WASHER	2	
197	812886	CONTACTOR (MA415N)	1	
198		SCREW AM5×8	2	
200		SCREW AM5×12	3	
201	812659	F MG SW BASE	1	
202	813385	CONTACTOR	1	HMUF20(24V)
203		SCREW M4×20	3	
204		SPRING WASHER M4	3	
205		PLAIN WASHER M4	3	
208	812648	TRANS BASE	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
209		SCREW AM5×8	2	
210	871099	TRANSFORMER 30VA	1	220/380-415V 50Hz
	871144	TRANSFORMER 30VA	1	220-230/440-460V 60Hz
	870719	TRANSFORMER 30VA	1	200/346-380V50Hz
211		SCREW WM5×8	4	
212	851042	MF CAPACITOR(1μF)	1	
215		SCREW AM4×8	2	
216	812652	CAPACITOR BASE	1	
217		SCREW AM5×8	2	
218	812733	BRAKE COVER	1	FOR FN MODEL ONLY
219		SCREW M6×8	4	FOR FN MODEL ONLY
220		SPRING WASHER M6	4	FOR FN MODEL ONLY
221	4H1Q74056-1	2.5t CAP. PLATE	1	FOR 2.5ton MODEL ONLY
222		RIVET 2.49×4.8	4	FOR 2.5ton MODEL ONLY
301	812504	3F UPPER HOOK ASS'Y	1	302~305
302	812472	3F UPPER HOOK	1	302~305
303	870732	BH LATCH	1	
304	839091	BHPS HOOK SPRING	1	
305		SPRING PIN 4×25AW	1	
308	812473	3F UPPER HANGER	2	
309	812476	2.8F HOOK PIN	1	
310		BOLT M8×70	2	
311	812143	2S DIST.COLLAR	1	
314	812477	3F SUSPENSION PIN	1	
315	812474	3F CHAIN HANGER PIN	1	
316	GA443230-2	5BHPF CHAIN HANGER	2	
317	839671	2BHPF COLLAR	1	
318	839587	2BHPF COLLAR	2	
319		SPLIT PIN 4×25	2	
320	812475	5BHPF HANGER PIN	1	
323		NUT M8	2	
324		SPRING WASHER M8	2	
330	812511	3F LOWER HOOK ASS'Y	1	
331	812484	2.8F SHEAVE COVER(2)	1	
332		2BHPF C, NP	1	
333		BOLT M8×25	4	
334		SPRING WASHER M8	4	
337	812585	3F LOWER HANGER	1	
338	812588	3F SHEAVE SHAFT	1	
339	GA411292-2	3t CAP.PLATE	1	
340		RIVET 2.49×4.8	4	
343	812587	3F SHEAVE	1	WITH BALL BEARING
344	812482	3F SHEAVE COVER	2	
347	4M8402540-1	SPRING PIN 6×50AW	1	
348	811617	NUT M30	1	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
349	812481	3F SB COVER	1	
350	837833	THRUST BEARING 51107	1	
353	812479	3F LOWER HOOK	1	355~358
354	813030	LATCH D ASS'Y	1	355~358
355	4A3PA2753-1	LATCH D	1	
356	4A4V73724-1	HOOK SPRING	1	
357	4M32A2757-1	HOOK BOLT	1	
358	851008	U NUT M6	1	
359	Listed in page 113	LINK CHAIN 10ϕ	1	3m LIFT: 248LINK 6m LIFT: 447LINK
360	812505	5F LIMIT SPRING	2	
362		SCREW M4×20	2	
363	839536	2BHPF HANGER PIN	1	
364	812468	F REAINER	1	
365	812409	U-NUT M4	2	
501	812507	5F UPPER HOOK ASS'Y	1	502~532
502	812487	5F UPPER HOOK	1	503~505
503	870737	BH LATCH	1	
504	839091	BHPS HOOK SPRING	1	
505		SPRING PIN 4×25AW	1	
508	812488	5F UPPER HANGER A	1	
509	812506	5F UPPER HANGER B	1	
510	839661	COLLAR	2	
511	812490	5F HOOK PIN	1	
514	839666	STUD BOLT	2	
515		SPRING WASHER M16	4	
516		NUT M16	4	
519		BOLT M12×100	1	
520	812491	COLLAR 12.7×54	1	
521		SPRING WASHER	1	
522		NUT M12	1	
525		SCREW M5×12	2	
527	812489	5F SUSPENSION PIN	1	
530	812592	5F SHEAVE PIN B	1	WITH STOPPERS AND SCREWS
531	812587	3F SHEAVE	1	WITH BALL BEARING
532	840148	WASHER	2	
535	812494	5F LOWER HOOK ASS"Y	1	
536		BOLT M8×35	4	
537		SPRING WASHER M8	4	
538	812496	5F SHAFT STOPPER	2	
541	GA443231-2	5BHPF SUSPENSION PIN	1	
542		SPLIT PIN 5×35	2	
543		SPLIT PIN 4×25	2	
544	812475	5BH HANGER PIN	1	
545	GA443232-4	2BHPF COLLAR A	2	

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
546	GA443230-2	5BH HANGER	2	
547	812589	5F LOWER HANGER	1	
550	812591	5F SHEAVE SHAFT	1	
551	812587	3F SHEAVE	1	WITH BALL BEARING
552	812482	3F SHEAVE COVER	2	
553	GA411292-6	CAP.PLATE	1	
554		RIVET 2.49×4.8	4	
557	4M4104775-7	NUT M39	1	
558	812161	5SSB COVER	1	
559		THRUST BEARING 51208	1	
560	4M8402540-7	PRING PIN 6×60AW	1	
563	812151	5S LOWER HOOK	1	565~568
564	813029	LATCH E ASSY	1	565~568
565	4A3PA2754-1	LATCH E	1	
566	4A4V73724-1	HOOK SPRING	1	
567	4M32A2757-1	HOOK BOLT	1	
568	851008	U NUT M6	1	
570	Listed in page 113	LINK CHAIN ϕ10	1	3m LIFT: 356LINK 6m LIFT: 655LINK
571	812505	5F LIMIT SPRING	1	
572	812409	U-NUT M4	2	
573	812468	F RETAINER	1	
574	GA443225-4	2BHPF HANGER PIN	1	
575		SCREW M4×20	2	
577	812499	5F HANGER	1	
578		BOLT AM8×20	2	
579	4A5J02664-2	5F SHEAVE PIN STOPPER	2	
580		SCREW M6×12	4	



1~5ET TROLLEY

LIST OF REPAIR PARTS FOR 1~5ET Trolley

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
1	811216	1ETM COVER	1	1	1	1	
2	812024	NUT M6	3	3	3	3	
4	4B2J52708-4	TERMINAL BOARD (4P)	1	1	1	1	
5	–	PAN HEAD SCREW M5×8	1	1	1	1	
6	–	SPRING WASHER M5	1	1	1	1	
7	811218	TERMINAL STOPPER	1	1	1	1	
8	811217	TERMINAL BASE	1	1	1	1	
9	851008	U NUT M6	1	1	1	1	
10	811212	1ETM BRAKE SPRING	1	1	1	1	
11	811211	WASHER	2	2	2	2	
12	GA449377-1	BHPS SWITCH COVER STUD	3	3	3	3	
13	811210	ET SPRING GUIDE	1	1	1	1	
14	811209	ET LINK PLATE	1	1	1	1	
15	839701	1/4BF BUFFER RUBBER	4	4	4	4	
16	839717	1/4BF MG STOP SCREW	4	4	4	4	
17	–	WASHER M6	8	8	8	8	
18	871114	BRAKE SOLENOID	1	1	1	1	
	839719	BRAKE SOLENOID 200/346V 50Hz	1	1	1	1	
	870805	BRAKE SOLENOID 575V 50Hz	1	1	1	1	
19	811020	BM PIN	1	1	1	1	
20	–	NUT M5	4	4	4	4	
21	811208	ET MAGNET SUPPORT	1	1	1	1	
22	–	NUT M6	4	4	4	4	
23	–	SPRING WASHER M6	4	4	4	4	
24	811206	ET BRAKE DISK	2	2	2	2	
25	813357	BRAKE WHEEL	1	1	1	1	
26	811215	INLC AXLE BOLT	4	4	4	4	
27	–	SPRING WASHER M8	4	4	4	4	
A-1	811204	ETM END BRACKET ASS'Y	1	1	1	1	
31	GA410489-1	RUBBER BUSH	1	1	1	1	
32	871105	BALL BEARING 6004ZZNR	1	1	1	1	
33	838108	C RING FOR SHAFT 20ϕ	1	1	1	1	
A-2	811202	1ETM HOUSING ASS'Y TS 21m/min	1	1			220/380-415V 50Hz 220-230/440-460V 60Hz
	811702	3ETM HOUSING ASS'Y TS 21m/min (220/380-415V 50Hz 220-230/440-460V 60Hz)			1	1	220/380-415V 50Hz 220-230/440-460V 60Hz
	871356	1ETM HOUSING ASS'Y TS 10.5m/min (220/380-415V 50Hz 220-230/440-460V 60Hz)	1	1			220/380-415V 50Hz 220-230/440-460V 60Hz
	871357	3ETM HOUSING ASS'Y TS 10.5m/min (220/380-415V 50Hz 220-230/440-460V 60Hz)			1	1	220/380-415V 50Hz 220-230/440-460V 60Hz
35	4C3L23467-1	1ETM HOUSING	1	1	1	1	
36	GA427159-1	NOCK PIN	2	2	2	2	
37	4B5A23468-1	1ETM RUBBER BUSH	1	1	1	1	
38	811203	TM CABLE (3C×0.75)	1	1	1	1	
39	811062	PACKING	1	1	1	1	

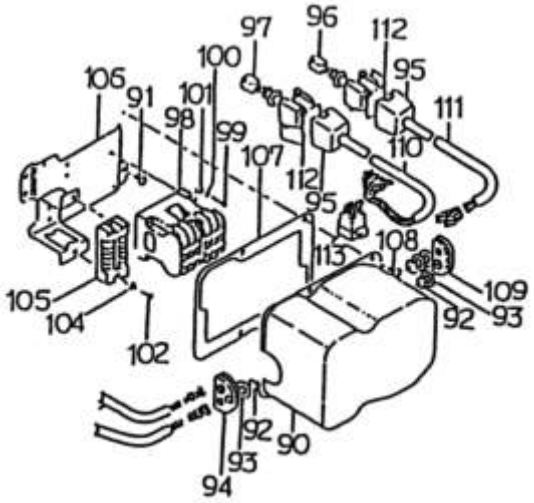
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
40	811063	BS CABLE STOPPER	1	1	1	1	
41		SPRING WASHER M5	2	2	2	2	
42		PAN HEAD SCREW M5×10	2	2	2	2	
43	811201	1ETM ROTOR ASS'Y	1	1			
	811701	3ETM ROTOR ASS'Y			1	1	
44	811234	1ET HOUSING COVER	1	1	1	1	
45	811915	HG COVER PACKING	1	1	1	1	
46		PAN HEAD SCREW M6×10	2	2	2	2	
47		SPRING WASHER M6	2	2	2	2	
48		PAN HEAD SCREW M5×6	1	1	1	1	
49		SPRING WASHER M5	1	1	1	1	
50	871110	BALL BEARING 6204ZZNR	1	1	1	1	
51	811213	ET GEAR CASE	1	1	1	1	
52		BOLT AM10×16	4	4	4	4	
55	871109	BALL BEARING 6203ZZNR	1	1	1	1	
56		C RING FOR SHAFT 22ϕ	1	1	1		
	840513	C RING FOR SHAFT 28ϕ				1	
57	811232	1ET 1ST GEAR	1				
	811511	2ET 1ST GEAR		1			
	811710	3ET 1ST GEAR			1	1	
58	841023	C RING FOR SHAFT 25ϕ	1	1			
	836190	BH SHEAVE WASHER			1	1	
59	870318	BALL BEARING 6205ZZNR	1	1			
	851242	BALL BEARING 6206DDUNR C3			1	1	
60	811214	1ET GEAR CASE PACKING	1	1	1	1	
62	4M84A1024-1	ET2 KNOCK PIN	2	2	2	2	
63	845215	C RING FOR HOLE 52ϕ	4				
	841117	C RING FOR HOLE 62ϕ		4	4		
	841024	C RING FOR HOLE 72ϕ				4	
64	–	BALL BEARING 6205DDUC3	4				
	852239	BALL BEARING 6206ZZC3		4	4		
	–	BALL BEARING 6306ZZ				4	
65	811225	1ET GEARED WHEEL	2				
	811505	2ET GEARED WHEEL		2	2		
	811907	5ET GEARED WHEEL				2	
66	811229	WASHER	4				
	811509	WASHER		4	4	4	
67	841023	C RING FOR SHAFT 25ϕ	4				
	841509	C RING FOR SHAFT 30ϕ		4	4	4	
68	811236	1ET WHEEL COVER PACKING	1				
	811513	2ET WHEEL COVER PACKING		1	1		
	811911	5ET WHEEL COVER PACKING				1	
69	811235	1ET WHEEL COVJER	1				
	811512	2ET WHEEL COVER		1	1		

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
69	811910	5ET WHEEL COVER				1	
70		SCREW AM6×10	3	3	3	3	
72	811919	5ET GR SUPPORT ASS'Y				4	
73	851650	1ET GUIDE ROLLER	4	4	4		
	841238	5ET GUIDE ROLLER				4	
75	811914	5ET GR STOPPER				4	
76		BOLT M10×20	8				
		BOLT AM10×25		8	8		
		BOLT M10×35				8	
77		SPRING WASHER M10	8			8	
78	811224	1ET FLAT WHEEL	2				
	811504	2ET FLAT WHEEL		2	2		
	811906	5ET FLAT WHEEL				2	
80		NAME PLATE	1	1	1	1	
82	811227	DISTANCE WASHER	22				
	811507	DISTANCE WASHER		22			
	811707	DISTANCE WASHER			22		
	811923	DISTANCE WASHER				22	
83	–	DISTANCE WASHER	2				
	–	DISTANCE WASHER		2			
	–	DISTANCE WASHER			2		
	–	DISTANCE WASHER				2	
84	–	WASHER M24	2				
	–	WASHER M30		2	2		
85	811222	PRING WASHER M24	2				
	811706	SPRING WASHER M30		2	2		
	811904	SPRING WASHER M36				2	
86	GA427441-1	GROOVED NUT M24	2				
	4M4586251-1	GROOVED NUT M30		2	2		
	GA419740-1	GROOVED NUT M36				2	
A-3	811247	ET SWITCH CASE ASS'Y 220/380-415V	1	1	1	1	220/380-415V
	1H4Z03564-D	ET SWITCH CASE ASS'Y 230/460V 60Hz	1	1	1	1	230/460V 60Hz
87	3H4Z25067-B	ET SWITCH CASE	1	1	1	1	
88	811228	ET SWITCH BASE	1	1	1	1	
89		PAN HEAD SCREW M5×8	3	3	3	3	
90		SPRING WASHER M5	3	3	3	3	
91		PAN HEAD SCREW M6×16	4	4	4	4	
92		SPRING WASHER M6	4	4	4	4	
93	811249	RUBBER BUSH B	2	2	2	2	
94	850030	RUBBER BUSH A	2	2	2	2	
95	851045	RUBBER BUSH C	1	1	1	1	
96	837478	BHP STOPPER	10	10	10	10	
97		PAN HEAD SCREW M3×16	10	10	10	10	
98		SPRING WASHER M3	10	10	10	10	
99		NUT M3	10	10	10	10	

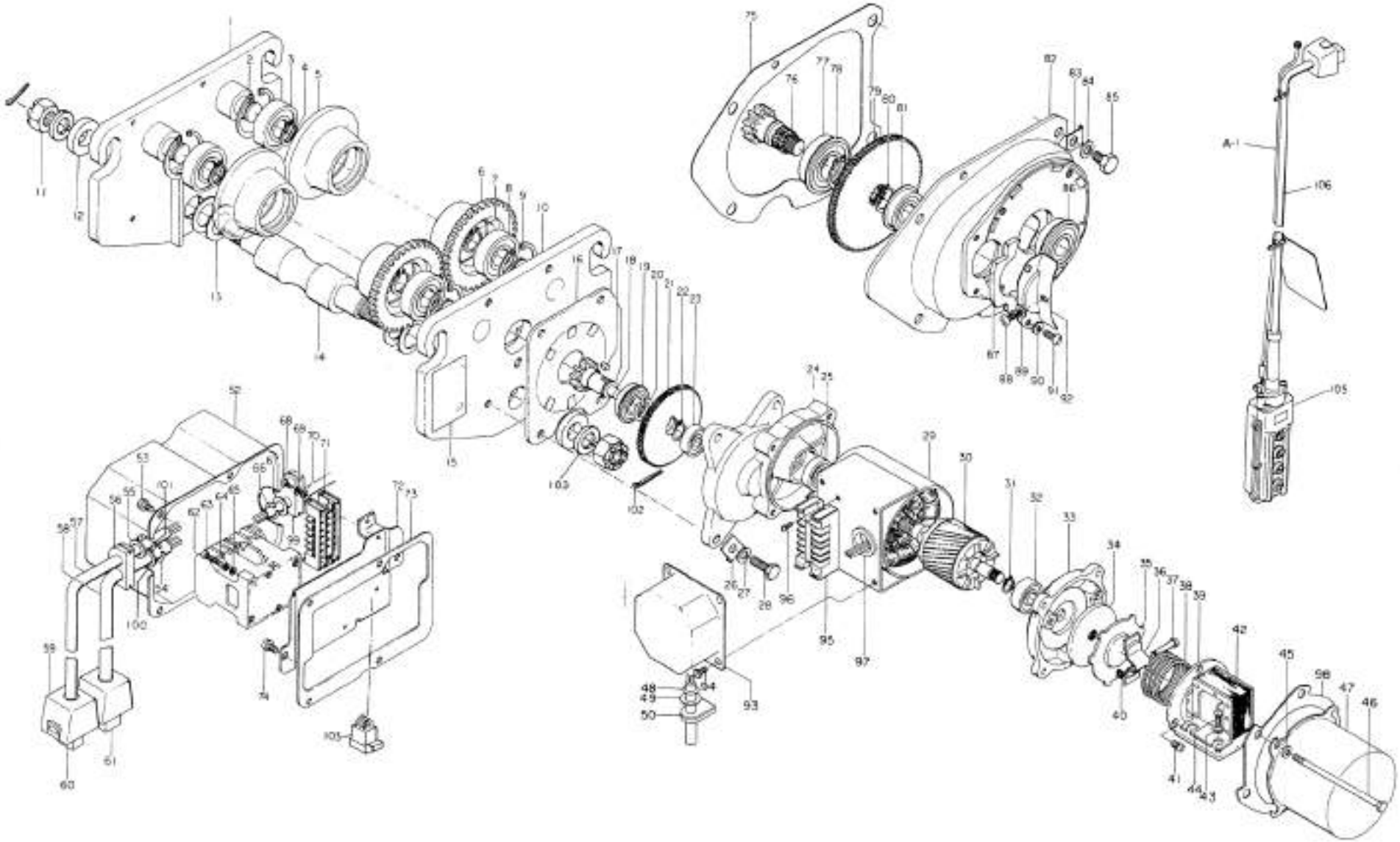
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
100	871133	TRANSFORMER 220/380-415V 50Hz	1	1	1	1	220/380-415V 50Hz
	871162	TRANSFORMER 346V 50Hz	1	1	1	1	346V 50H
	870207	TRANSFORMER 220-230/440-460V 60Hz	1	1	1	1	220-230/440-460V
101		PAN HEAD SCREW M4×6	2	2	2	2	
102		SPRING WASHER M4	2	2	2	2	
103	851146	TERMINAL BOARD (8P)	2	2	2	2	
104		PAN HEAD SCREW M4×10	4	4	4	4	
105		WASHER M4	4	4	4	4	
106	811231	ET MG SWITCH	1	1	1	1	
107		PAN HEAD SCREW M4×16	2	2	2	2	
110	813515	MG SWITCH	1	1	1	1	HMU12(24V)
111	–	PAN HEAD SCREW M4×20	2	2	2	2	
112	–	SPRING WASHER M4	2	2	2	2	
113	–	WASHER M4	2	2	2	2	
114	851217	SPRING CONNECTOR Y	2	2	2	2	
115	811260	PB-6M PUSH BUTTON SWITCH	(1)	(1)	(1)	(1)	
	811243	PB-5E PUSH BUTTON SWITCH	(1)	(1)	(1)	(1)	
117	811230	1ET 2ND PINION	1				
	811510	2ET 2ND PINION		1			
	811709	3ET 2ND PINION			1		
	811909	5ET 2ND PINION				1	
118	–	LOCK NUT M6	1	1	1	1	
121	811261	1ET FRAME A (2)	1				
	811515	2ET FRAME A (2)		1			
	811715	3ET FRAME A (2)			1		
	811917	5ET FRAME A (2)				1	
122	811262	1ET FRAME B(2)	1				
	2H2A20054-B	2ET FRAME B(2)		1			
	2H2A20056-B	3ET FRAME B(2)			1		
	811918	5ET FRAME B(2)				1	
123	811268	1ET SUSPENSION PIN (2)	1				
	811519	2ET SUSPENSION PIN (2)		1			
	811720	3ET SUSPENSION PIN (2)			1		
	811924	5ET SUSPENSION PIN (2)				1	
124	811264	1ET GR SPACER	4	12	12		
125	811265	1ET GR SUPPORT (2)	4	4	4		
126	811922	5ET COLLAR (2)				2	
127	4M8478380-2	SPLIT PIN 5×50	2				
		SPLIT PIN 6×60		2	2		
		SPLIT PIN 6×70				2	
accessory	3H4D57388-A	TROLLEY PLATE A	2	2	2		
	3H4D57389-A	TROLLEY PLATE B	2	2	2	2	
	3H4D57390-A	TROLLEY PLATE A				2	
	3H4D57391-A	TROLLEY PLATE B				2	
		BOLT M10×25	8				
		BOLT M10×30		8	8		

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
accessory		BOLT M10×40				8	
		SPRING WASHER M10		8	8	8	

LIST OF REPAIR PARTS FOR 1~5ET Trolley (PLUG IN TYPE)



ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			1ET	2ET	3ET	5ET	
90	811292	SWITCH COVER	1	1	1	1	
91		SCREW AM6×10	2	2	2	2	
92	812259	E CABLE CRIP	4	4	4	4	
93		WASHER M10	2	2	2	2	
94	811291	RUBBER BUSH	1	1	1	1	
95		S PLUG COVER B	2	2	2	2	
96		6P CONNECTOR	1	1	1	1	
97		9P CONNECTOR	1	1	1	1	
98	839783	CONTACTOR	1	1	1	1	HMU12(24V)
99		SCREW M4×20	2	2	2	2	
100		SPRING WASHER M4	2	2	2	2	
101		WASHER M4	2	2	2	2	
102		SCREW AM4×10	2	2	2	2	
104		WASHER M4	2	2	2	2	
105	811290	6P TERMINAL BLOCK	1	1	1	1	
106	811288	ST SWITCH BASE	1	1	1	1	
107	811286	SWITCH COVER PACKING	1	1	1	1	
108		SCREW AM6×10	4	4	4	4	
109	844129	RUBBER BUSH	1	1	1	1	
110		CABTYPE CABLE VCT 4C×0.75	1	1	1	1	
111		CABTYPE CABLE VCT 4C×2	1	1	1	1	
112		PLUG COVER	2	2	2	2	
113	812056	9P CONNECTOR	1	1	1	1	



ST TROLLEY

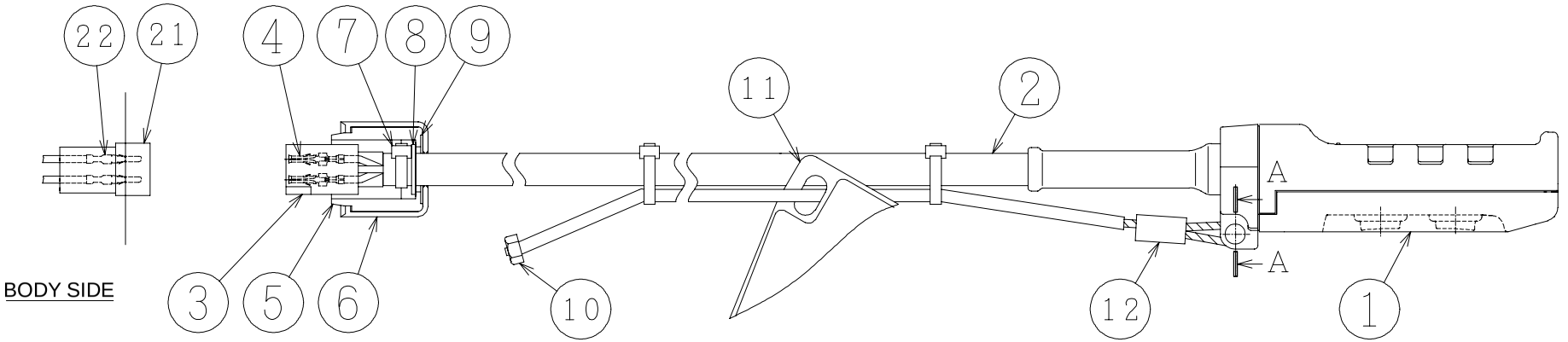
LIST OF REPAIR PARTS FOR ST TROLLEY

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY			REMARKS
			1ST	2ST	3ST	
1		1ST FRAME B	1			
		2ST FRAME B		1		
		3ST FRAME B			1	
2	840117	C RING No. 47 (hall)	2			
		C RING No. 52 (hall)		2		
		C RING No. 62 (hall)			2	
3		BB6204ZZ	2			
		BB6205ZZ		2		
		BB6206ZZ			2	
4	838108	C RING No. 20 (shaft)	2			
		C RING No. 25 (shaft)		2		
		C RING No. 30 (shaft)			2	
5	812580	1ST FLANGE WHEEL	2			
	811491	2ST FLANGE WHEEL		2		
	811694	3ST FLANGE WHEEL			2	
6	812579	1ST GEAR WHEEL	2			
	811492	2ST GEAR WHEEL		2		
	811696	3ST GEAR WHEEL			2	
7	838108	C RING No. 20 (shaft)	2			
		C RING No. 25 (shaft)		2		
		C RING No. 30 (shaft)			2	
8		BB6204ZZ	2			
		BB6205ZZ		2		
		BB6295ZZ			2	
9	840117	C RING No. 47 (hall)	2			
		C RING No. 52 (hall)		2		
		C RING No. 62 (hall)			2	
10		1ST FRAME A	1			
		2ST FRAME A		1		
		3ST FRAME A			1	
11		GROOVED NUT M20	2			
		GROOVED NUT M24		2		
		GROOVED NUT M30			2	
12		BOLT WASHER M20	2			
		BOLT WASHER M24		2		
		BOLT WASHER M30			2	
13	811229	DISTANT WASHER	26			
	811227	DISTANT WASHER		26		
	811507	DISTANT WASHER			26	
14	811295	1ST SUSPENSION PIN ASS'Y	1			WITH 11, 102
	811486	2ST SUSPENSION PIN ASS'Y		1		WITH 11, 102
	811692	3ST SUSPENSION PIN ASS'Y			1	WITH 11, 102
15		NAME PLATE	1	1	1	
16	839857	1ST GEAR COVER	1			
17	839858	KEY 5x5x8	1			

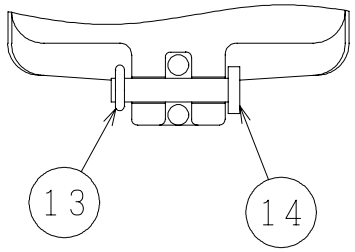
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY			REMARKS
			1ST	2ST	3ST	
18	839860	1ST 2ND GEAR	1			
19		BB6003ZZNR	1			
20	839859	BB RING	1			
21	839861	1/2ET 1ST GEAR	1			
22	843242	C RING No.17(shaft)	1			
23		BB6200CM	1			
24	839856	1/2ET GEAR CASE	1			
25		BB6002ZZ	1			
26	839866	1/2ET LOCK WASHER	4			
27		SPRING WASHER M8	4			
28		BOLT M8×25	4			
29	812569	1ST HG ASS'Y(10.5m/min)	1			220/346-415V50Hz
	812850	1ST HG ASS'Y(10.5m/min)	1			220-230/440-460V 60Hz
	812571	2ST HG ASS'Y(10.5m/min)		1		220/346-415 V 50Hz
	812572	2ST HG ASS'Y(10.5m/min)		1		220-230/440-460V 60Hz
	812573	3ST HG ASS'Y(10.5m/min)			1	220/346-415V 50Hz
	812574	3ST HG ASS'Y(10.5m/min)			1	220-230/440-460V 60Hz
	3C3Z66678-D	1ST HG ASS'Y(21m/min)	1			220/380-415V50Hz
	2C3Z25398-G	2ST HG ASS'Y(21m/min)		1		220/380-415V50Hz
	2C3Z25398-H	3ST HG ASS'Y(2lm/min)			1	220/380-415V50HZ
30	811274	1ST ROTOR ASS'Y	1			
	811496	2ST ROTOR ASS'Y		1		
	811700	3ST ROTOR ASS'Y			1	
31		C RING No.12(shaft)	1			
32		BB6201DDU	1			
		BB6203ZZ		1	1	
33	811281	1ST END BRACKET	1			
	811497	2ST END BRACKET		1	1	
34	811275	1ST BRAKE WHEEL	1			
	811498	2ST BRAKE WHEEL		1	1	
35	811276	ST BRAKE DISK	1	1	1	
36	811277	ST BRAKE ACTUATOR	1	1	1	
37	839759	BF BM PIN	1	1	1	
38	811278	1ST BRAKE SPRING	1			
	811499	2ST BRAKE SPRING		1	1	
39	811279	ST BRAKE STAND	1	1	1	
40	871172	O RING P4	1	1	1	
41		SCREW M6x10	3	3	3	
42	871114	BRAKE SOLENOID	1	1	1	220/380-415V 50Hz
	812575	BRAKE SOLENOID	1	1	1	220-230/440-460V 60Hz
	839719	BRAKE SOLENOID				346V 50Hz
43		WASHER M6	4	4	4	
44		SCREW AM6x10	4	4	4	
45		SPRING WASHER M6	4	4	4	
46	839865	1/2ET THROUGH BOLT	4			

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY			REMARKS
			1ST	2ST	3ST	
46	811215	1ET THROUGH BOLT		4	4	
47	812576	1ST BRAKE COVER	1			
	812577	2ST BRAKE COVER		1	1	
48	835054	CABE STOPPER A	1	1	1	
49	840084	WASHER	1	1	1	
50	811285	BUSHING	1	1	1	
51		CABLE	1	1	1	VCT 3C×0.75mm^2
52	811292	ST SWITCH COVER	1	1	1	
53		SCREW M6X10	4	4	4	
54	811136	CABLE STOPPERA	1	1	1	
55	841088	WASHER	1	1	1	
56	844129	CABLE ARMOR	1	1	1	
57		CABLE	1	1	1	VCT 4C×0.75mm^2
58		CABLE	1	1	1	VCT 4C×2mm^2
59	812168	PLUG COVER B	2	2	2	
60	812059	6P CONNECTOR	1	1	1	
61	812057	9P CONNECTOR	1	1	1	
62	839783	CONTACTOR (HMU-10)	1	1	1	24V CONTROL
63		SCREW M4×20	2	2	2	
64		SPRING WASHER M4	2	2	2	
65		WASHER M4	2	2	2	
66	835054	CABLE STOPPER	1	1	1	
67	841087	3WASHER	2	2	2	
68		SCREW M4×10	2	2	2	
69		SPRING WASHER M4	2	2	2	
70		WASHER M4	2	2	2	
71	812604	TERMINAL BLOCK(6P)	1	1	1	
72	811289	ST SWITCH BASE	1	1	1	
73	811286	ST SW COVER PACKING	1	1	1	
74		SCREW AM6×10	2	2	2	
75	811214	ET GEAR CASE PACKING		1	1	
76	811230	1ET 2ND PINION		1		
	811510	2ET 2ND PINION			1	
77		BB6205ZZNR		1	1	
78		C RING No.25 (shaft)		1	1	
79	811232	1ET 1ST GEAR		1		
	811511	2ET 1ST GEAR			1	
80		C RING No. 22 (shaft)		1	1	
81		BB6203ZZNR		1	1	
82	811213	ET GEAR CASE		1	1	
83	841239	LOCK WASHE		4	4	
84		SPRING WASHER M10		4	4	
85		BOLT M10x16		4	4	
86		BB6204ZZNR		1	1	
87	811915	1ET HG COVER PACKING		1	1	

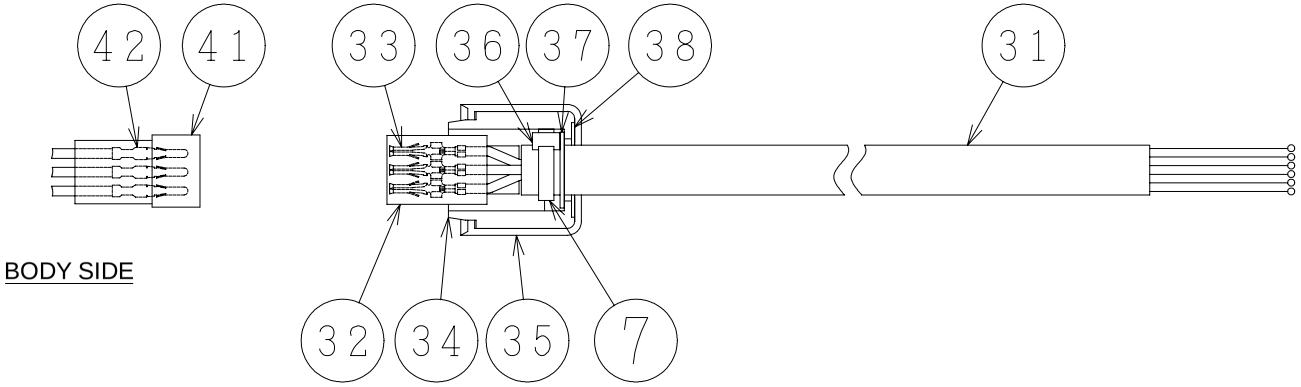
ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY			REMARKS
			1ST	2ST	3ST	
88		SCREW M5×6		1	1	
89		SPRING WASHER M5		1	1	
90		SCREW M6×10		2	2	
91		SPRING WASHER M6		2	2	
92	811234	1ET HG COVER		1	1	
93		TERMINAL COVER	1	1	1	
94		SCREW AM5×8	4	4	4	
95	812071	TERMINAL BLOCK (6P)	1	1	1	
96		SCREW WM4×10	2	2	2	
97	836054	BUSHING	1	1	1	
98	812581	2ST COVER PACKING		1	1	
99	811291	ET CABLE ARMOR	1	1	1	
100	839622	WASHER	1	1	1	
101	835054	CABLE STOPPER B	1	1	1	
102		SPLIT PIN 4×50	2			
		SPLIT PIN 5×60		2		
		SPLIT PIN 6×60			2	
103		SPRING WASHER M20	2			
		SPRING WASHER M24		2		
		SPRING WASHER M30			2	
104	812056	9P CONNECTOR	1	1	1	
A-1 Detailed part is listed in page 112	2H4ZF0688-A	PB ASS'Y WITH CABLE	1	1	1	3m LIFT
	2H4ZF0688-D	PB ASS'Y WITH CABLE	1	1	1	6m LIFT



A－A



PB CABLE ASS'Y



POWER CABLE ASS'Y

LIST OF REPAIR PARTS FOR PB CABLE ASS'Y

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY				REMARKS
			2PB(H)	4PB(H)	2PBN(H)	4PBN(H)	
1	813325	PB-2 PUSH BUTTON	1				
	813329	PB-4 PUSH BUTTON		1			
	813222	PB-2N PUSH BUTTON			1		
	3Z6WF1500-C	PB-4N PUSH BUTTON				1	
2		CABTYPE CABLE T-VCT-SSD 3Cx0.75	1				
		CABTYPE CABLE T-VCT-SSD 5Cx0.75		1	1		
		CABTYPE CABLE T-VCT-SSD 5Cx0.75				1	
3	812059	6P CONNECTOR	1		1		
	812057	9P CONNECTOR		1		1	
4	813024	CONTACTOR (FEMALE)					
5	4B5H84301-1	FX PLUG COVER	1	1	1	1	
6	4B5H62881-2	S PLUG COVER B (2)	1	1	1	1	
7	812259	E CABLE CRIP	1	1	1	1	
8		WASHER M11	1	1	1	1	
9	3A4V949991	STOPPER	1	1	1	1	
10		NUT M6	1	1	1	1	
11	812064	CAUTION PLATE	1	1	1	1	
12	GA438832-2	PB END	1	1	1	1	
13	812055	PB PIN	1	1	1	1	
14		SPLIT PIN 1.6x8	1	1	1	1	
21	812058	6P CONNECTOR	1		1		
	812056	9P CONNECTOR		1		1	
22	812061	CONTACTOR (MALE)					

LIST OF REPAIR PARTS FOR POWER CABLE ASS'Y

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
31		CABTYPE CABLE VCT 4Cx2.0	1	
32	812057	9P CONNECTOR	1	
33	812024	CONTACTOR (FEMALE)		
34	4B5H84301-1	FX PLUG COVER	1	
35	4B5H62881-2	S PLUG COVER B (2)	1	
36	812259	E CABLE CRIP	1	
37		WASHER M12	1	
38	3A4V94999-1	STOPPER	1	
41	812056	9P CONNECTOR	1	
42	812061	CONTACTOR (MALE)		

LIST OF REPAIR PARTS FOR LINK CHAIN

ITEM No.	PART No. DRAWING No.	PART NAME	QUANTITY	REMARKS
1	813520	BK CHAIN ϕ6.3		200M/unit
2	813521	BK CHAIN ϕ7.1		180M/unit
3	813522	BK CHAIN ϕ10		100M/unit
4	813228	HI-PLATED CHAIN ϕ6.3 (Electroless nickel plating)		30M/unit
5	813226	HI-PLATED CHAIN ϕ7.1 (Electroless nickel plating)		35M/unit
6	813227	HI-PLATED CHAIN ϕ10 (Electroless nickel plating)		35M/unit
7	812766	B/GMARK CHAIN ϕ6.3		50M/unit
8	812767	B/GMARK CHAIN ϕ7.1		60M/unit
9	812768	B/GMARK CHAIN ϕ10		50M/unit

Standard Specifications Quick Reference

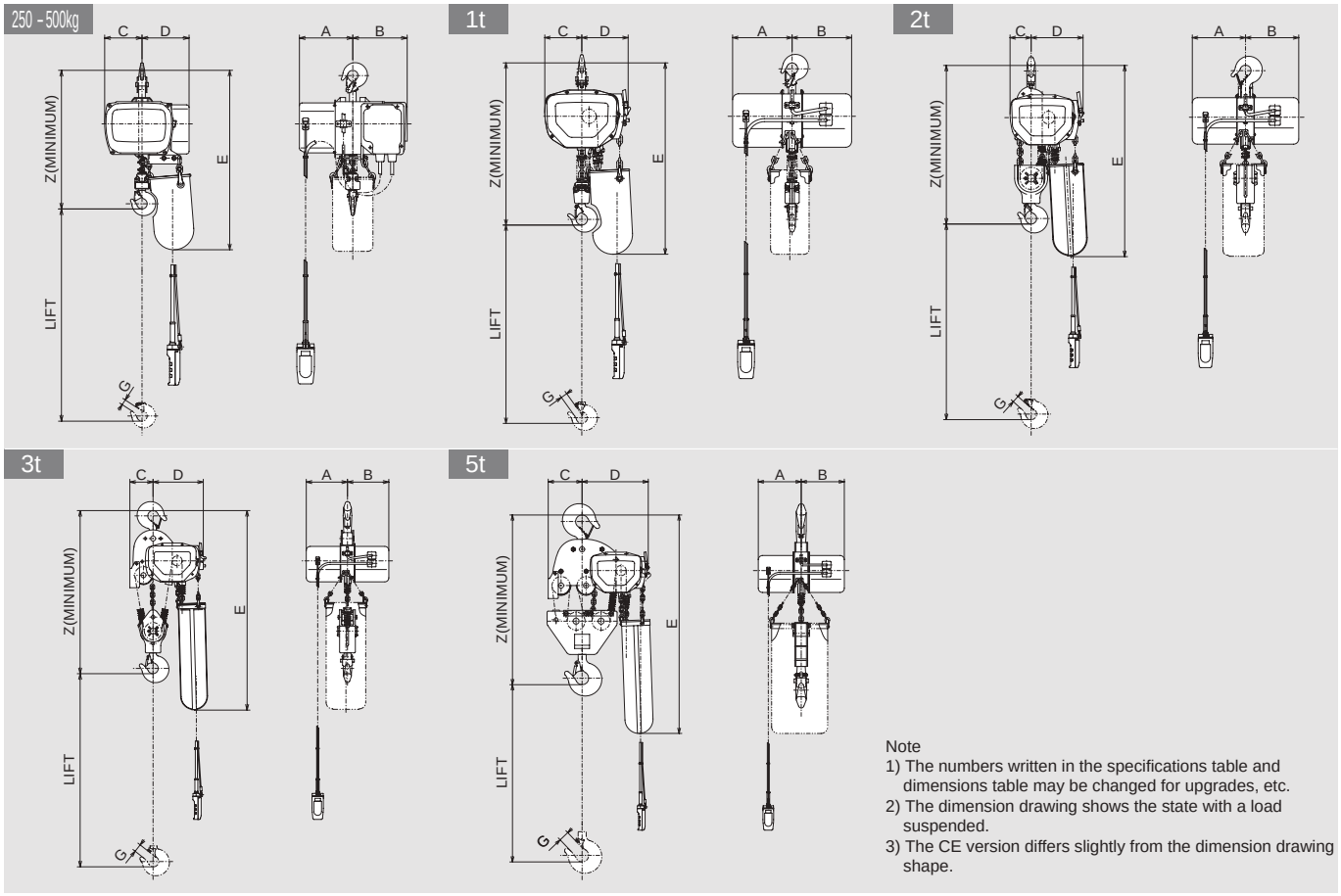
1. Hoist main unit

Type	Capacity (kg)	Lift (m)	Hoisting Speed (m/min)(50/60Hz)			Motor (kW)(50/60Hz)		Power Source (phase)	REMARKS	
			Type	Main	Creep	Main	Creep		Dia. (mm)	No. of falls
1/4S2	250	3	Single	10/12	–	0.45/0.55	–	3	6.3	1
1/4SH2	250	6	Single	10/12	–	0.45/0.55	–	3	6.3	1
1/4SN2	250	3	Dual	7.2/8.5	1.8/2.1	0.32/0.38	0.08/0.1	3	6.3	1
1/4SNH2	250	6	Dual	7.2/8.5	1.8/2.1	0.32/0.38	0.08/0.1	3	6.3	1
1/4SS2	250	3	Single	5/6	–	0.25/0.3	–	1	6.3	1
1/4SSH2	250	6	Single	5/6	–	0.25/0.3	–	1	6.3	1
1/2S2	500	3	Single	7.2/8.5	–	0.63/0.75	–	3	6.3	1
1/2SH2	500	6	Single	7.2/8.5	–	0.63/0.75	–	3	6.3	1
1/2SN2	500	3	Dual	7.2/8.5	1.8/2.1	0.63/0.75	0.16/0.19	3	6.3	1
1/2SNH2	500	6	Dual	7.2/8.5	1.8/2.1	0.63/0.75	0.16/0.19	3	6.3	1
1/2SS2	500	3	Single	3.6/4.3	–	0.32/0.37	–	1	6.3	1
1/2SSH2	500	6	Single	3.6/4.3	–	0.32/0.37	–	1	6.3	1
1S	1,000	3	Single	4.6/5.5	–	0.8/1.0	–	3	7.1	1
1SH	1,000	6	Single	4.6/5.5	–	0.8/1.0	–	3	7.1	1
1F	1,000	3	Single	7.1/8.5	–	1.3/1.6	–	3	7.1	1
1FH	1,000	6	Single	7.1/8.5	–	1.3/1.6	–	3	7.1	1
1SN	1,000	3	Dual	4.6/5.5	1.2/1.4	0.8/1.0	0.2/0.25	3	7.1	1
1SNH	1,000	6	Dual	4.6/5.5	1.2/1.4	0.8/1.0	0.2/0.25	3	7.1	1
1S1	1,000	3	Single	2.3/2.8	–	0.4/0.5	–	1	7.1	1
1SH1	1,000	6	Single	2.3/2.8	–	0.4/0.5	–	1	7.1	1
2S	2,000	3	Single	2.3/2.8	–	0.8/1.0	–	3	7.1	2
2SH	2,000	6	Single	2.3/2.8	–	0.8/1.0	–	3	7.1	2
2F	2,000	3	Single	6.8/8.2	–	2.4/2.9	–	3	10	1
2FH	2,000	6	Single	6.8/8.2	–	2.4/2.9	–	3	10	1
2SN	2,000	3	Dual	2.3/2.8	0.6/0.7	0.8/1.0	0.2/0.25	3	7.1	2
2SNH	2,000	6	Dual	2.3/2.8	0.6/0.7	0.8/1.0	0.2/0.25	3	7.1	2
2FN	2,000	3	Dual	6.8/8.2	1.7/2.1	2.4/2.9	0.6/0.7	3	10	1
2FNH	2,000	6	Dual	6.8/8.2	1.7/2.1	2.4/2.9	0.6/0.7	3	10	1
2S1	2,000	3	Single	1.1/1.4	–	0.4/0.5	–	1	7.1	2
2SH1	2,000	6	Single	1.1/1.4	–	0.4/0.5	–	1	7.1	2
3S	3,000	3	Single	1.5/1.8	–	0.8/1.0	–	3	7.1	3
3SH	3,000	6	Single	1.5/1.8	–	0.8/1.0	–	3	7.1	3
3F	3,000	3	Single	4.1/4.9	–	2.4/2.9	–	3	10	2
3FH	3,000	6	Single	4.1/4.9	–	2.4/2.9	–	3	10	2
3FN	3,000	3	Dual	4.0/4.8	1.0/1.2	2.4/2.9	0.6/0.7	3	10	2
3FNH	3,000	6	Dual	4.0/4.8	1.0/1.2	2.4/2.9	0.6/0.7	3	10	2
3S1	3,000	3	Single	0.8/0.9	–	0.4/0.5	–	1	7.1	3
3SH1	3,000	6	Single	0.8/0.9	–	0.4/0.5	–	1	7.1	3
5S	5,000	3	Single	0.9/1.1	–	0.8/1.0	–	3	7.1	5
5SH	5,000	6	Single	0.9/1.1	–	0.8/1.0	–	3	7.1	5
5F	5,000	3	Single	2.8/3.3	–	2.4/2.9	–	3	10	3
5FH	5,000	6	Single	2.8/3.3	–	2.4/2.9	–	3	10	3
5FN	5,000	3	Dual	2.8/3.3	0.7/0.8	2.4/2.9	0.6/0.7	3	10	3
5FNH	5,000	6	Dual	2.8/3.3	0.7/0.8	2.4/2.9	0.6/0.7	3	10	3
5S1	5,000	3	Single	0.45/0.55	–	0.4/0.5	-	1	7.1	5
5SH1	5,000	6	Single	0.45/0.55	–	0.4/0.5	-	1	7.1	5

2. Motorized trolley

Rated Load	Model Name	Traveling Speed (m/min)		Applicable Beam Width (mm)	Min.Curve Radius (m)
		50Hz	60Hz		
250kg-1t	1ET	21・10.5	25・12.5	75-125	1.5
	1ST				1.8
2t	2ET			100-150	1.8
	2ST				2.5
3t	3ET				2.0
	3ST				3.0
5t	5ET			125-175	3.0

Dimensions



Note
1) The numbers written in the specifications table and dimensions table may be changed for upgrades, etc.
2) The dimension drawing shows the state with a load suspended.
3) The CE version differs slightly from the dimension drawing shape.

Specifications table

SINGLE SPEED (3 PHASE)

Model Name		1/4S$_2$	1/4SH$_2$	1/2S$_2$	1/2SH$_2$	1S	1SH	2S	2SH	3S	3SH	5S	5SH
Rated Load	(kg)	250		500		1,000		2,000		3,000		5,000	
Dimensions (mm)	Z	450		450		530		645		800		895	
	A	181		181		216		216		216		216	
	B	184		184		216		216		216		216	
	C	125		125		135		90		125		175	
	D	165		165		170		215		270		340	
	D'(CE)	200		200		170		215		270		340	
	E	620		620		680		705	775	835	1,050	1,065	1,095
	G	19		19		23		26		42		48	
Approx. Weight	(kg)	28	31	31	34	37	42	49	59	61	72	88	105

All dimensions and specifications are subject to change without notice.

DUAL SPEED (3 PHASE)

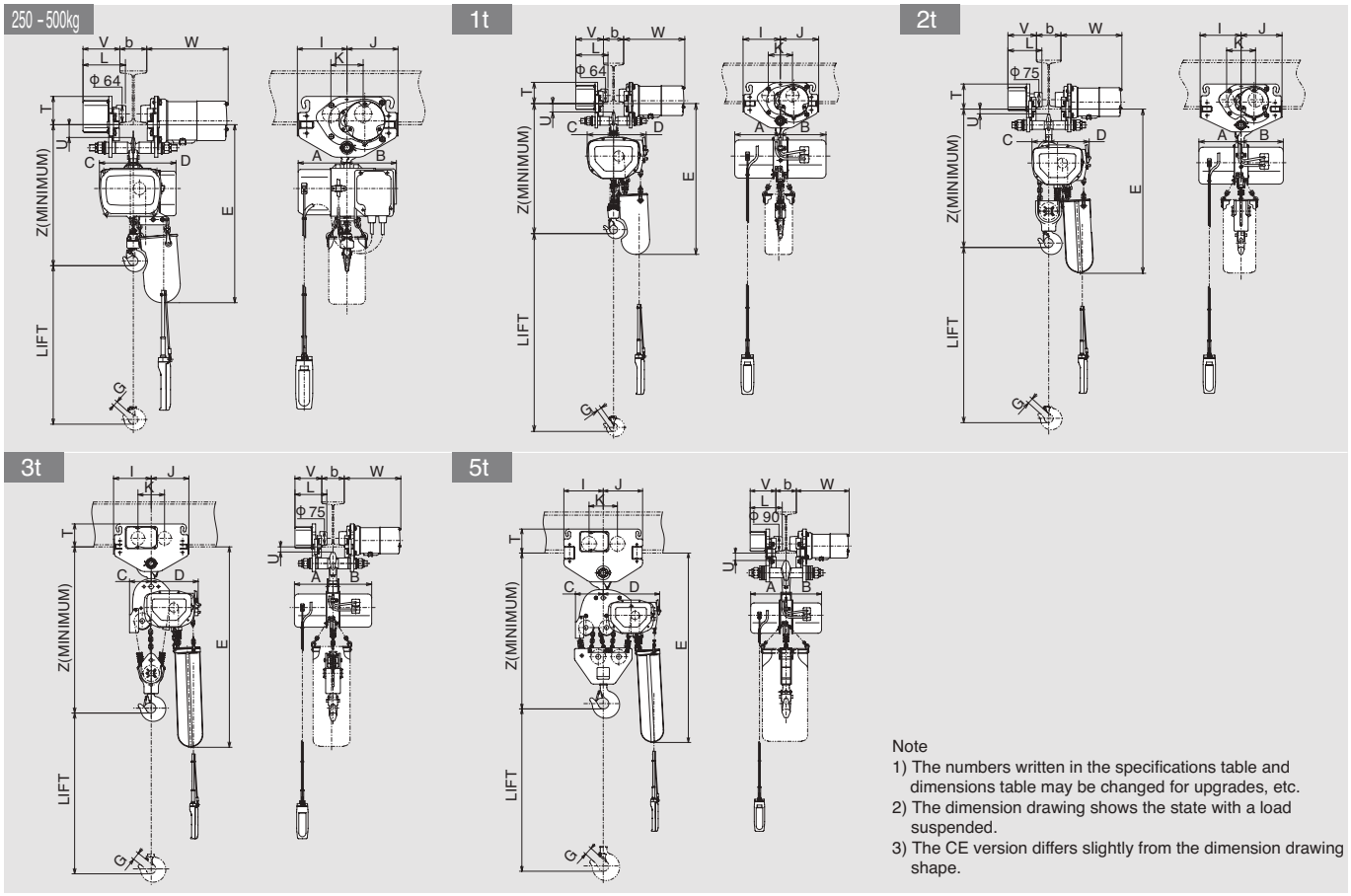
Model Name		1/4SN$_2$	1/4SNH$_2$	1/2SN$_2$	1/2SNH$_2$	1SN	1SNH	2SN	2SNH
Rated Load	(kg)	250		500		1,000		2,000	
Dimensions (mm)	Z	450		450		530		645	
	A	183		183		216		216	
	B	210		210		246		246	
	C	125		125		135		90	
	D	185		185		170		215	
	D'(CE)	200		200		170		215	
	E	620		620		680		705	775
	G	19		19		23		26	
Approx. Weight	(kg)	33	36	36	39	42	47	54	64

SINGLE PHASE

Model Name		1/4SS$_2$	1/4SSH$_2$	1/2SS$_2$	1/2SSH$_2$	1S1	1SH1	2S1	2SH1	3S1	3SH1	5S1	5SH1
Rated Loa	(kg)	250		500		1,000		2,000		3,000		5,000	
Dimensions (mm)	Z	450		450		530		645		800		895	
	A	181		181		246		246		246		246	
	B	210		210		246		246		246		246	
	C	125		125		135		90		125		175	
	D	165		165		170		215		270		340	
	D'(CE)	200		200		170		215		270		340	
	E	620		620		680		705	775	835	1,050	1,065	1,095
	G	19		19		23		26		42		48	
Approx. Weight	(kg)	34	37	34	37	39	44	51	56	63	74	90	107

All dimensions and specifications are subject to change without notice.

Dimensions



Specifications table

Chain Hoist Model Name		1/4S(H)$_2$	1/4SN(H)$_2$	1/2S(H)$_2$	1/2SN(H)$_2$	1S(H)	1SN(H)	2S(H)	2SN(H)	3S(H)	5S(H)
Trolley Type		1ET						2ET		3ET	5ET
Rated Load	(kg)	250		500		1,000		2,000		3,000	5,000
Dimensions (mm)	Z	523	523	523	523	600	600	700	700	865	984
	A	181	183	181	183	216	216	216	216	216	216
	B	184	210	184	210	216	246	216	246	216	216
	C	125	125	125	125	135	135	90	90	125	175
	D	165	185	165	185	170	170	215	215	270	340
	D'(CE)	200	200	200	200	170	170	215	215	270	340
	E	693	693	693	693	750	750	770 (840)		910(1,125)	1,170(1,200)
	G	19	19	19	19	23	23	26	26	42	48
	I	185						210		210	240
	J	190						210		210	240
	K	120						148		148	173
	L	182						200		203	219
	T	110						140		140	156
	U	38						18		16	34
	V	159						172		175	181
	W	303						313		316	323
Min.Curve Radius	(m)	1.5						1.8		2.0	3.0
Applicable Beam Width b	(mm)	75–125						100–150			125–175
Approx.Weight	(kg)	66(69)	71(74)	69(72)	74(77)	75(80)	80(85)	101(111)	106(116)	121(132)	174(191)

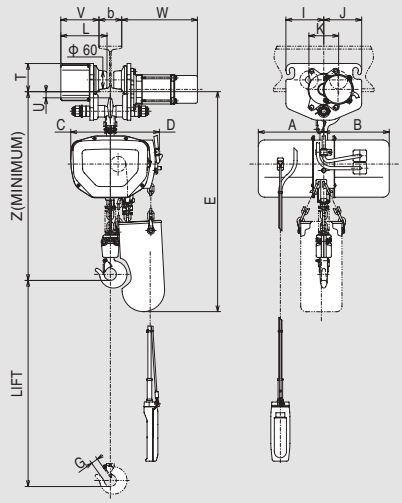
All dimensions and specifications are subject to change without notice.

Motorized trolley specifications table

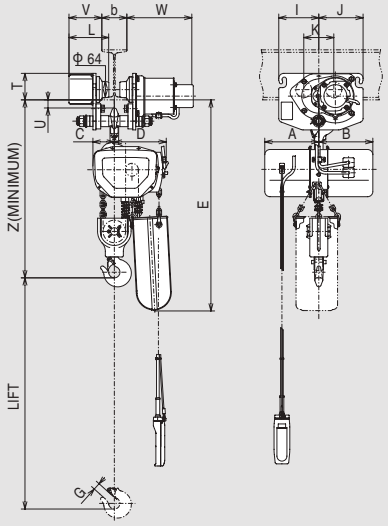
Series Name		ET series				ST series		
Model Name		1ET	2ET	3ET	5ET	1ST	2ST	3ST
Working Load Limit	(kg)	1,000	2,000	3,000	5,000	1,000	2,000	3,000
Traveling Speed (m/min)	50Hz	10.5(21)				10.5		
	60Hz	12.5(25)				12.5		
Motor Output (kW)	50Hz	0.14(0.27)		0.3(0.6)		0.07	0.14	0.2
	60Hz	0.16(0.32)		0.35(0.7)		0.08	0.16	0.24
Applicable Beam Width b	(mm)	75–125	100–150		125–175	75–125	100–150	
Rating		25%ED				25%ED		

Dimensions

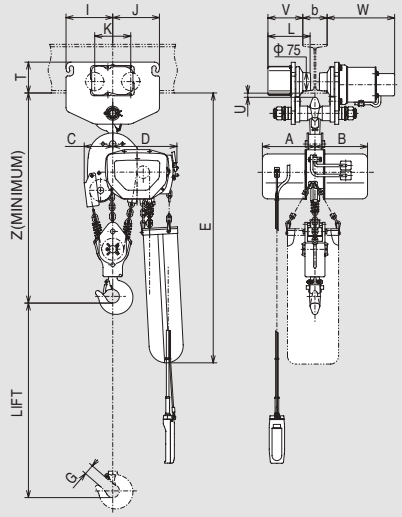
1t



2t



3t

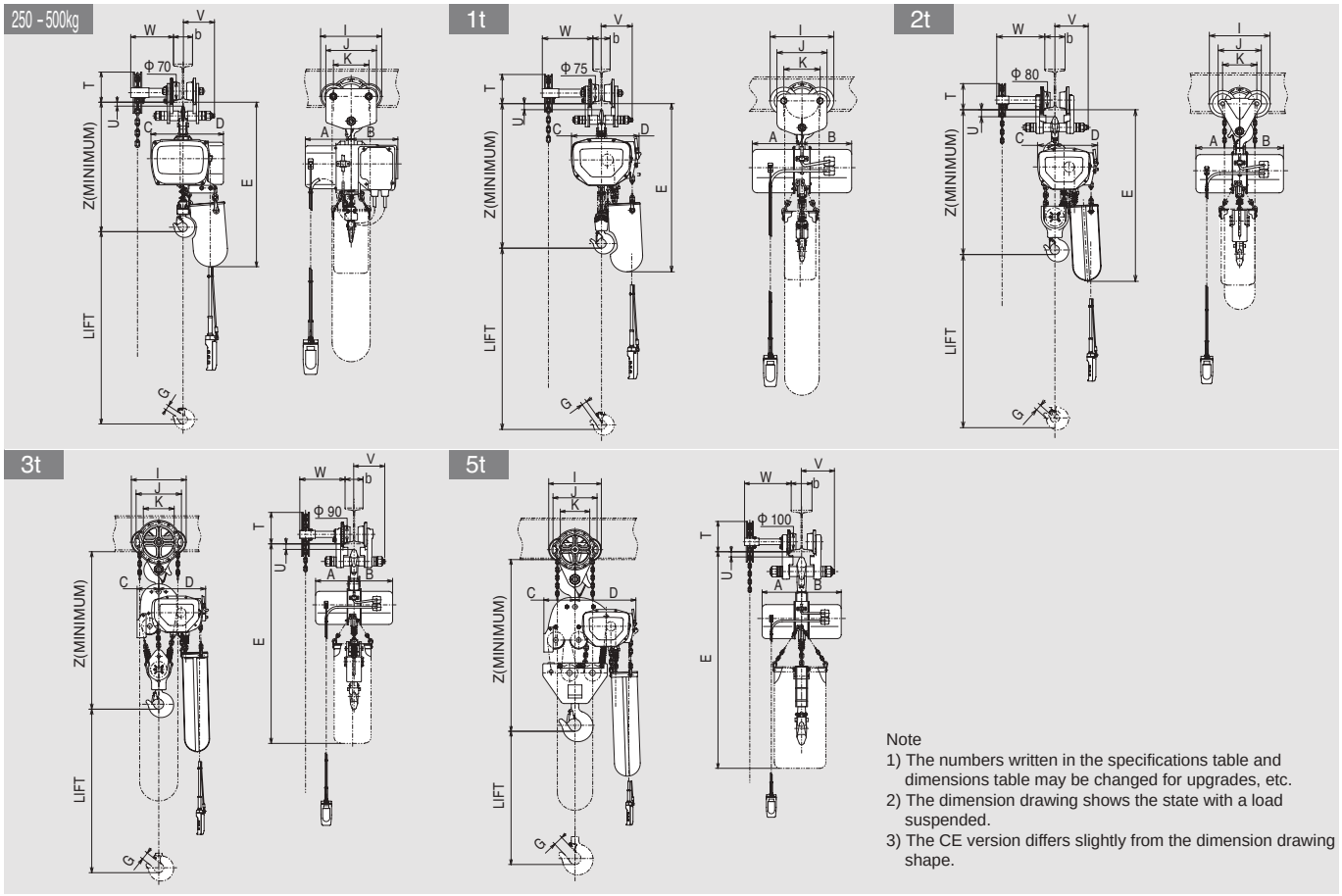


Specifications table

Chain Hoist Model Name		1S(H)	1SN(H)	2S(H)	2SN(H)	3S(H)
Trolley Type		1ST		2ST		3ST
Rated Load	(kg)	1,000		2,000		3,000
Dimensions (mm)	Z	578	578	700	700	852
	A	216	216	216	216	216
	B	216	246	216	246	216
	C	135	135	90	90	125
	D, D(CE)	170	170	215	215	270
	E	730	730	772(842)		900(1,115)
	G	23	23	26	26	42
	I	125		160		192
	J	125		177		192
	K	98		120		148
	L	156		163		180
	T	101		119		140
	U	18		19		5
	V	130		135		145
	W	255		270		280
Min.Curve Radius	(m)	1.8		2.5		3.0
Applicable Beam Width b	(mm)	75–100		100–150		100–150
Approx.Weight	(kg)	60(65)	65(70)	86(96)	91(101)	109(120)

All dimensions and specifications are subject to change without notice.

Dimensions

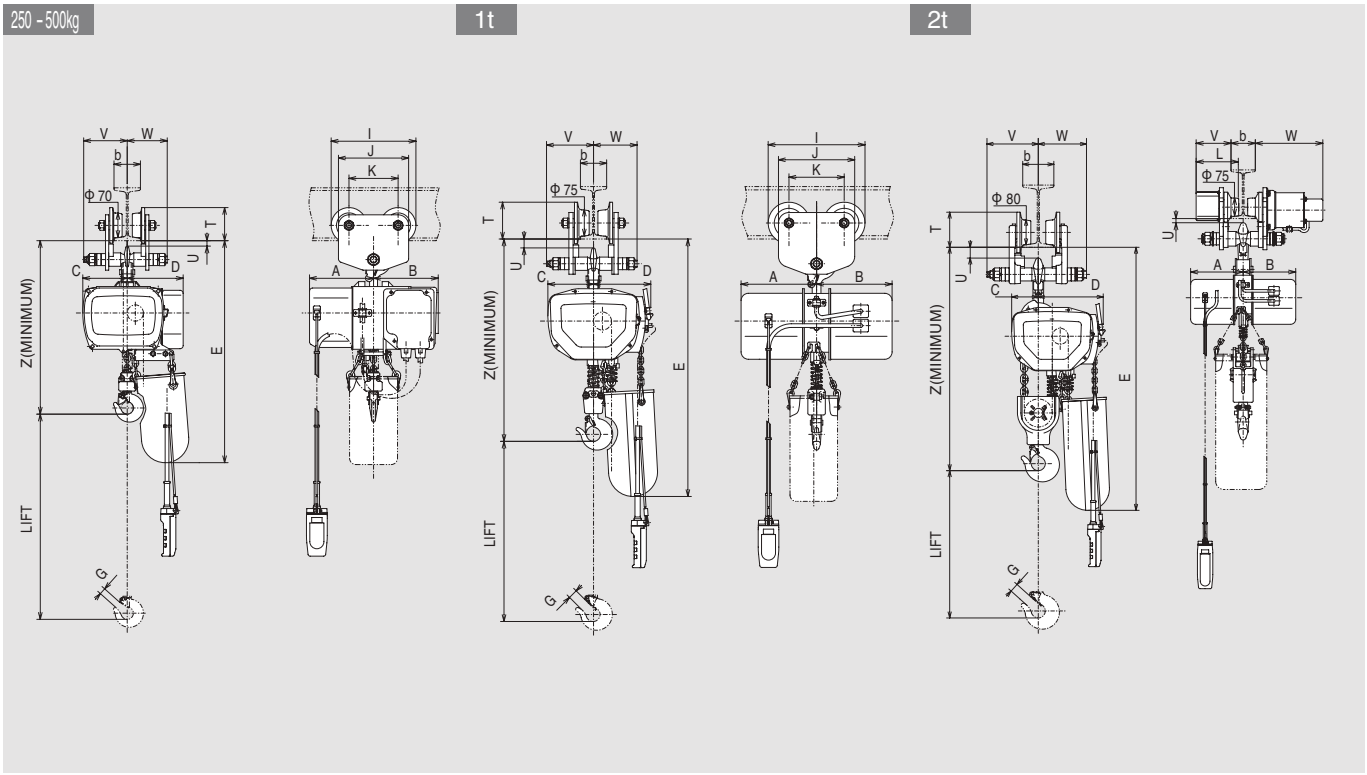


Note
1) The numbers written in the specifications table and dimensions table may be changed for upgrades, etc.
2) The dimension drawing shows the state with a load suspended.
3) The CE version differs slightly from the dimension drawing shape.

Specifications table

Chain Hoist Model Name		1/4S(H)$_2$	1/4SN(H)$_2$	1/2S(H)$_2$	1/2SN(H)$_2$	1S(H)	1SN(H)	2S(H)	2SN(H)	3SH	5SH
Trolley type		1/2BC(H)				1BC(H)		2BC(H)		3BCH	5BCH
Rated Load	(kg)	250		500		1,000		2,000		3,000	5,000
Dimensions (mm)	Z	513	513	513	513	585	585	703	703	866	980
	A	181	183	181	183	216	216	216	216	216	216
	B	184	210	184	210	216	246	216	246	216	216
	C	125	125	125	125	135	135	90	90	125	175
	D	165	185	165	185	170	170	215	215	270	340
	D'(CE)	200	200	200	200	170	170	215	215	270	340
	E	685	685	685	685	740	740	775(845)		1,130	1,190
	G	19	19	19	19	23	23	26	26	42	48
	I	242				277		300		306	319
	J	199				218		213		240	262
	K	139				158		169		172	177.2
	T	129				131		143		191	194
	U	13				23		22		21	30
	V	124				135		165		173	200
	W	188				220		236		252	284
Min. Curve Radius	(m)	1.0				1.2		1.5		1.5	2.4
Applicable Beam Width b	(mm)	75–125				75–125		100–150		100–150	125–175
Approx. Weight	(kg)	44(50)	49(55)	47(53)	52(58)	58(66)	63(71)	73(86)	78(91)	116	161

Dimensions



Specifications table

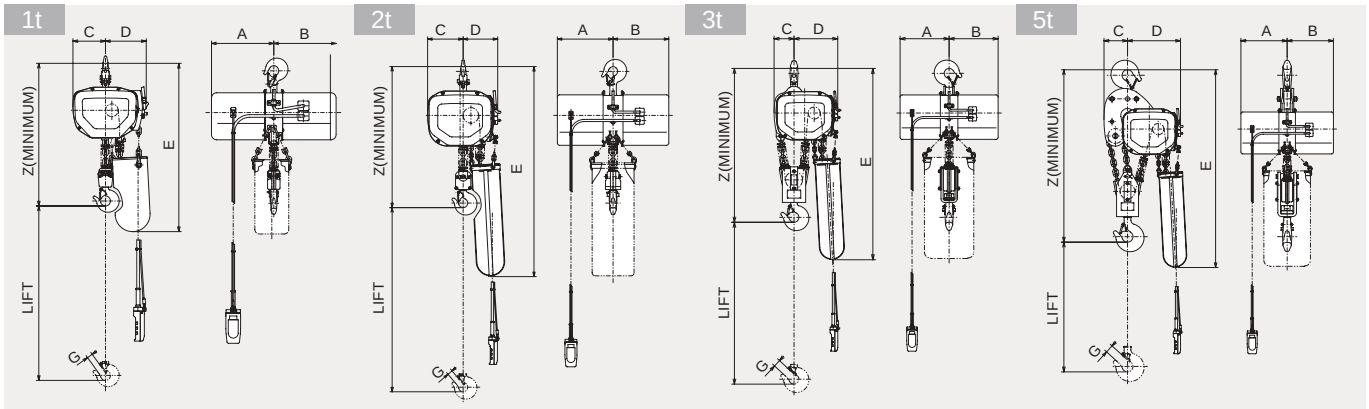
Chain Hoist Model Name		1/4S(H)$_2$	1/4SN(H)$_2$	1/2S(H)$_2$	1/2SN(H)$_2$	1S(H)	1SN(H)	2S(H)	2SN(H)
Trolley type		1/2BP				1BP		2BP	
Rated Load	(kg)	250		500		1,000		2,000	
Dimensions (mm)	Z	513	513	513	513	585	585	703	703
	A	181	183	181	183	216	216	216	216
	B	184	210	184	210	216	246	216	246
	C	125	125	125	125	135	135	90	90
	D	165	185	165	185	170	170	215	215
	D'(CE)	200	200	200	200	170	170	215	215
	E	685	685	685	685	740	740	775(845)	
	G	19	19	19	19	23	23	26	26
	I	242				277		300	
	J	199				199		213	
	K	139				139		169	
	T	98				110		128	
	U	13				23		22	
	V	124				135		165	
	W	114				125		155	
Min.Curve Radius	(m)	1.0				1.2		1.5	
Applicable Beam Width b	(mm)	75–125				75–125		100–150	
Approx.Weight	(kg)	38(41)	43(46)	41(44)	46(49)	52(57)	57(62)	66(76)	71(81)

Chain driven trolley, manual driven trolley specifications table

Classification		Chain driven trolley					Manual driven trolley		
Model Name		1/2BC(H)	1BC(H)	2BC(H)	3BCH	5BCH	1/2BP	1BP	2BP
Working Load Limit	(kg)	500	1,000	2,000	3,000	5,000	500	1,000	2,000
Standard Lift	(m)	3(6)	3(6)	3(6)	6	6	—	—	—
Min. Curve Radius	(m)	1.0	1.2	1.5	1.5	2.4	1.0	1.2	1.5
Applicable Beam Width b	(mm)	75–125		100–150		125–175	75–125		100–150

For a crane that uses a chain or manual driven trolley for transverse movement and an electric motor for travel, please purchas e a 4PB(H)-C, 4PBN(H)-C type wiring unit (See page 23).

Dimensions



Note
1) The numbers written in the specifications table and dimensions table may be changed for upgrades, etc.
2) The dimension drawing shows the state with a load suspended.
3) The CE version differs slightly from the dimension drawing shape.

Specifications table

SINGLE SPEED (3 PHASE)

Model Name		1F	1FH	2F	2FH	3F	3FH	5F	5FH
Rated Load	(kg)	1,000		2,000		3,000		5,000	
Dimensions	Z	535		660		820		1,020	
	A	250		280		280		280	
	B	250		280		280		280	
	C	135		175		120		145	
	D	170		170		245		330	
	E	680		845	1,060	1,090	1,100	1,295	1,305
	G	23		26		42		48	
Approx. Weight	(kg)	42	47	80	87	99	113	121	142

(mm)

All dimensions and specifications are subject to change without notice.

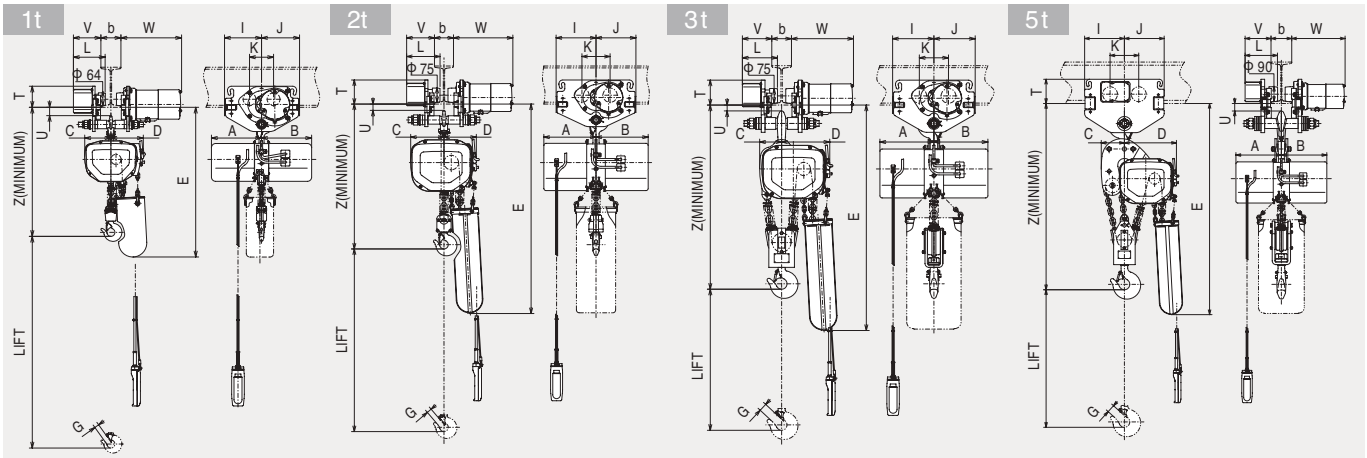
DUAL SPEED (3 PHASE)

Model Name		2FN	2FNH	3FN	3FNH	5FN	5FNH
Rated Loa	(kg)	2,000		3,000		5,000	
Dimensions	Z	660		820		1,020	
	A	280		280		280	
	B	330		330		330	
	C	175		120		145	
	D	170		245		330	
	E	845	1,060	1,090	1,100	1,295	1,305
	G	26		42		48	
Approx. Weight	(kg)	96	102	112	126	146	167

(mm)

All dimensions and specifications are subject to change without notice.

Dimensions



Note
1) The numbers written in the specifications table and dimensions table may be changed for upgrades, etc.
2) The dimension drawing shows the state with a load suspended.
3) The CE version differs slightly from the dimension drawing shape.

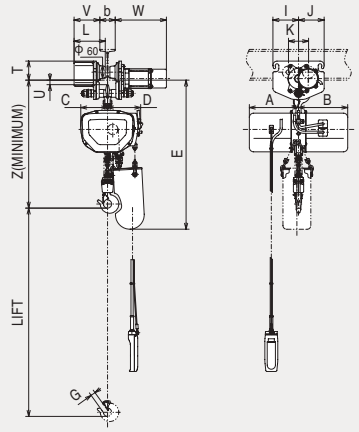
Specifications table

Chain Hoist Model Name		1F(H)	2F(H)	2FN(H)	3F(H)	3FN(H)	5F(H)	5FN(H)
Trolley Type		1ET	2ET		3ET		5ET	
Rated Load	(kg)	1,000	2,000		3,000		5,000	
Dimensions (mm)	Z	604	715	715	882	882	1,112	1,112
	A	250	280	280	280	280	280	280
	B	250	280	330	280	330	280	330
	C	135	185	185	120	120	145	145
	D	170	170	170	245	245	330	330
	E	750	945(1,125)		1,130(1,185)		1,410	
	G	23	26	26	42	42	48	48
	I	185	210		210		240	
	J	190	210		210		240	
	K	120	148		148		173	
	L	182	200		203		219	
	T	110	140		140		156	
	U	38	18		16		34	
	V	159	172		175		181	
	W	303	313		316		323	
Min. Curve Radius	(m)	1.5	1.8		2.0		3.0	
Applicable Beam Width b	(mm)	75-125	100-150		100-150		125-175	
Approx. Weight	(kg)	80(85)	132(139)	147(154)	161(175)	176(190)	217(238)	232(253)

All dimensions and specifications are subject to change without notice.

Dimensions

1t



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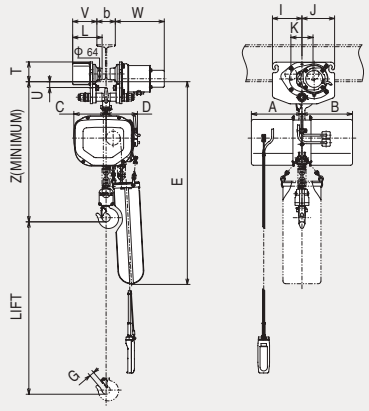

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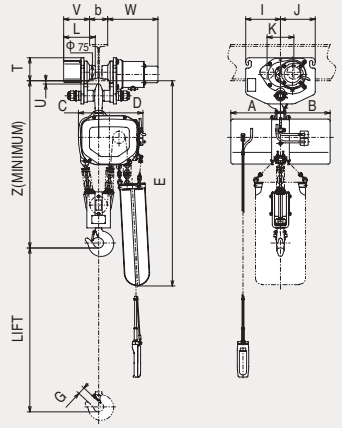


Specifications table

Chain Hoist Model Name		1F(H)	2F(H)	2FN(H)	3F(H)	3FN(H)
Trolley Type		1ST	2ST		3ST	
Rated Load	(kg)	1,000	2,000		3,000	
Dimensions (mm)	Z	582	715	715	872	872
	A	250	280	280	280	280
	B	250	280	330	280	330
	C	135	185	185	120	120
	D	170	170	170	245	245
	E	725	935(1,115)		1,110(1,165)	
	G	23	26	26	42	42
	I	125	160		192	
	J	125	177		192	
	K	98	120		148	
	L	156	163		180	
	T	101	119		140	
	U	18	19		5	
	V	130	135		145	
	W	255	270		280	
Min. Curve Radius	(m)	1.8	2.5		3.0	
Applicable Beam Width b	(mm)	75–125	100–150		100–150	
Approx. Weight	(kg)	66(71)	117(124)	132(139)	140(161)	155(176)

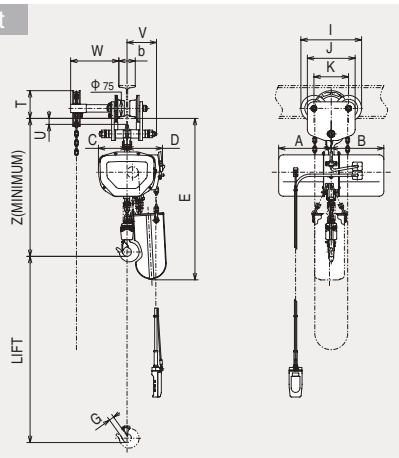
Motorized trolley specifications table

Series Name		ET series							ST series		
Model Name		1ET	2ET	3ET	5ET	5ET×2	7.5ET×2	10ET×2	1ST	2ST	3ST
Working Load Limit	(kg)	1,000	2,000	3,000	5,000	10,000	15,000	20,000	1,000	2,000	3,000
Travelling Spead (m/min)	50Hz	10.5(21)				10.5		14	10.5		
	60Hz	12.5(25)				12.5		17	12.5		
Motor Output (kW)	50Hz	0.14(0.27)		0.3(0.6)		0.3×2	0.35×2	0.7×2	0.07	0.14	0.2
	60Hz	0.16(0.32)		0.35(0.7)		0.35×2	0.42×2	0.84×2	0.08	0.16	0.24
Applicable Beam Width b (mm)		75–125	100–150		125–175	150, 175		175, 190	75–125	100–150	
Rating		25%ED						40%ED	25%ED		

All dimensions and specifications are subject to change without notice.

Dimensions

1t



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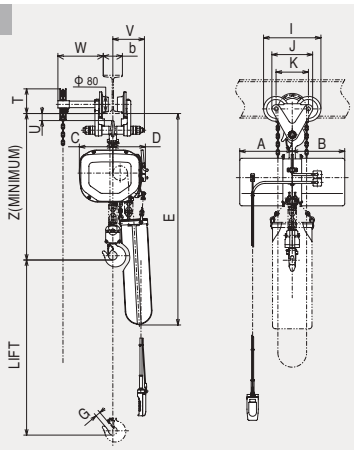

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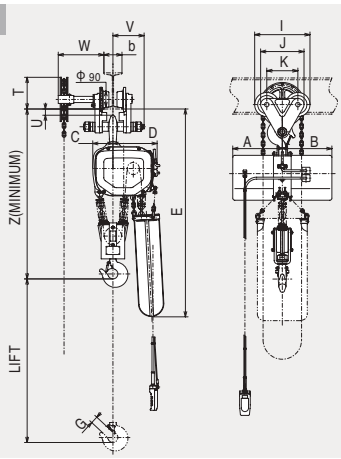

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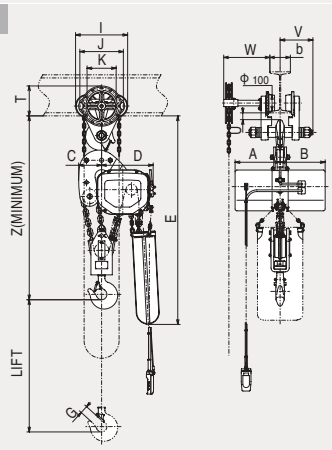


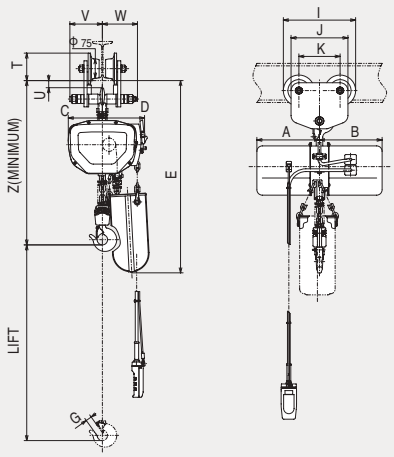
Note
1) The numbers written in the specifications table and dimensions table may be changed for upgrades, etc.
2) The dimension drawing shows the state with a load suspended.
3) The CE version differs slightly from the dimension drawing shape.

Specifications table

Chain Hoist Model Name		1F(H)	2F(H)	2FN(H)	3FH	3FNH	5FH	5FNH
Trolley type		1BC(H)	2BC(H)		3BCH		5BCH	
Rated Load	(kg)	1,000	2,000		3,000		5,000	
Dimensions (mm)	Z	600	717	717	886	886	1,105	1,105
	A	250	280	280	280	280	280	280
	B	250	280	330	280	330	280	330
	C	135	175	175	120	120	145	145
	D	170	170	170	245	245	330	330
	E	740	1,130	1,130	1,180	1,180	1,405	1,405
	G	23	26	26	42	42	48	48
	I	277	300		306		319	
	J	218	213		240		262	
	K	158	169		172		177.2	
	L	—	—		—		—	
	T	131	143		191		194	
	U	23	22		21		30	
	V	135	165		173		200	
	W	220	236		252		284	
Min. Curve Radius	(m)	1.2	1.5		1.5		2.4	
Applicable Beam Width b	(mm)	75–125	100–150		100–150		125–175	
Approx. Weight	(kg)	63(114)	104(114)	120(129)	157	170	198	223

Dimensions

1t



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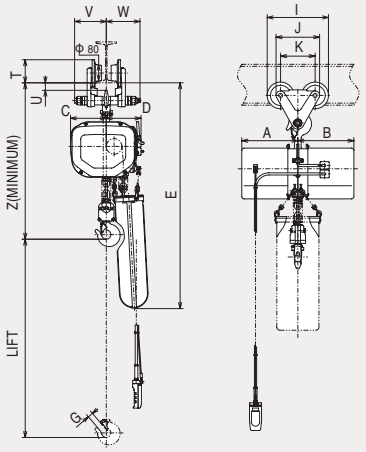

Specifications table

Chain Hoist Model Name		1F(H)	2F(H)	2FN(H)
Trolley type		1BP	2BP	
Rated Load	(kg)	1,000	2,000	
Dimensions (mm)	Z	600	717	717
	A	250	280	280
	B	250	280	330
	C	135	175	175
	D	170	170	170
	E	740	1,130	1,130
	G	23	26	26
	I	277	300	
	J	218	213	
	K	158	169	
	L	—	—	
	T	110	128	
	U	23	22	
	V	125	155	
	W	135	165	
Min. Curve Radius	(m)	1.2	1.5	
Applicable Beam Width b	(mm)	75–125	100–150	
Approx. Weight	(kg)	57(62)	97(104)	113(119)

Chain driven trolley, manual driven trolley specifications table

Classification		Chain driven trolley				Manual driven trolley	
Model Name		1BC(H)	2BC(H)	3BCH	5BCH	1BP	2BP
Working Load Limit	(kg)	1,000	2,000	3,000	5,000	1,000	2,000
Standard Lift	(m)	3(6)	3(6)	6	6	—	—
Min. Curve Radius	(m)	1.2	1.5	1.5	2.4	1.2	1.5
Applicable Beam Width b	(mm)	75–125	100–150		125–175	75–125	100–150

For a crane that uses a chain or manual driven trolley for transverse movement and an electric motor for travel, please purchas e a 4PB(H)-C, 4PBN(H)-C type wiring unit (See page 23).

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TEL: +62 (21) 574-4313
FAX: +62 (21) 574-4312

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FAX: +60 (3) 2031-8758

Singapore

Hitachi Asia Ltd.
24 Jurong Port Road, #03-05 Office Block,
CWT Distripark Singapore 619097
TEL: +65 (6305) 7400
FAX: +65 (6305) 7401

Thailand

Hitachi Asia (Thailand) Co., Ltd.
18th Floor, Ramaland Building, 952
Rama IV Road Bangrak, Bangkok 10500
TEL: +66 (2) 632-9292
FAX: +66 (2) 632-9299

Viet Nam

Hitachi Asia Ltd. (Ho Chi Minh City Office)
7th Floor, The Landmark, 5B Ton Duc
Thang Street District 1, Ho Chi Minh City
TEL: +84 (8) 829-9725
FAX: +84 (8) 829-9729

(Ha Noi Office)
Sun Red River Bldg., 6th Floor,
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Hoan kiem District Hanoi
TEL: +84 (4) 933-3123
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1-1, Higashitaga-cho 1-chome,
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