ELECTRIC CHAIN HOIST INSTRUCTION MANUAL

I for Installation / Operation / Maintenance / Parts I

SAMSUNG HOIST CO..LTD.
주식회사 삼성호이스트

⚠WARNING

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

There are no other warranties which extend beyond the description on the Order Acknowledgement and as it may apply to the spcifications provided in this publication. The IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SAMSUNG shall in no even be liable for any special, direct, indirect, incidental or consequential damages to anyone beyond the cost of replacement of the goods sold hereby.

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Article no. description

NOTICE

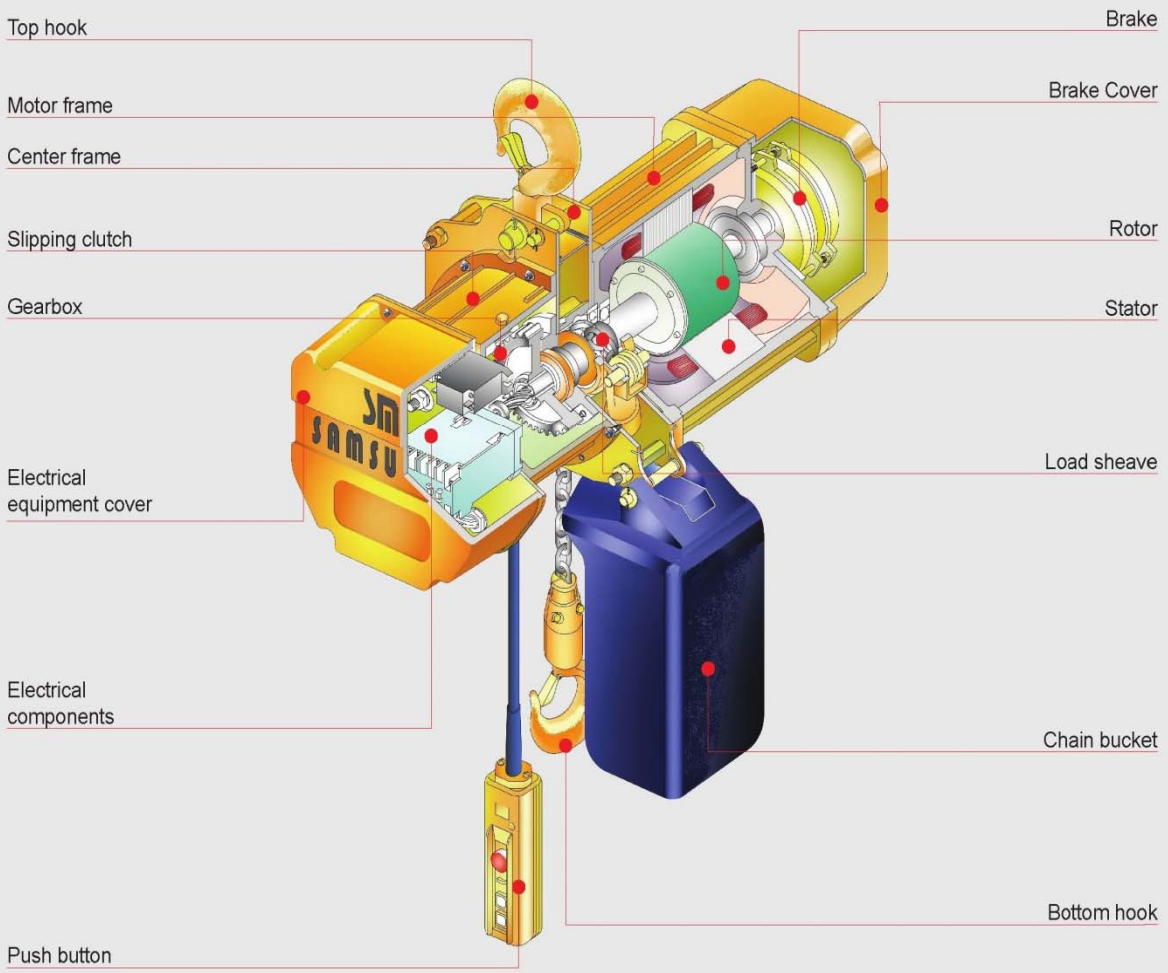
TO ORDER PARTS : Provide part number, part description, quantity required, and Product Number or Serial Number of Hoist.

AIMING TO BETTER TECHNOLOGY & CUSTOMER SAFETY

Domestic & Foreign periods based on accumulated technology and heavy industry and construction, committed to playing a leading role in the material handling field

Explanation of Hoist Designation

SC	T	-	S	1000	D	-	SP
Samsung Chain hoist	Travesing method		Hoisting speed	Hoist capacity (kg)	Num of Chain		Other
	O Ordinary type **T** Motor driven trolley **L** Low head type		**S** Single Speed **D** Dual speed	**1000**kg **2000**kg...	**No Mark** 1fall **D** Several falls		**SP** Single Phase **IV** Inverter **EV** Event



SAFETY ALERT SYMBOL ⚠

The Safety Alert Symbol is used in this manual to indicate hzards and to alert the reader to information that should known, understood, and followed in order to avoid DEATH or SERIOUS INJURY.

Read and understand this manual before using the hoist

Important issues to remember during operation are provided at the hoist control stations, at various locations on the hoist and in this manual by DANGER, WARNING, or CAUTION instructions or placards, that alert personnel to potential hazards, proper operation, load limitations, and more.

⚠DANGER	Indicates an imminently hazardous sityation which, if not avoided, will result in death or serious injury.
⚠WARNING	Indicates a potentially hazardous sityation which, if not avoided, could result in death or serious injury.
⚠CAUTION	Indicates a potentially hazardous sityation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠CAUTION

These general instructions deal with the normal installation, operation, and maintenance situations encountered with the equipment described herein. The instructions should not be interpreted to anticipate every possible contingency or to anticipate the final system, crane, or configuration that uses this equipment.

This manual includes instructions and parts information for a variety of hoist types. Therefore, all instructions and parts information may not apply to any one type or size of specific hoist. Disregard those portions of the instructions that do not apply.

Record hoist serial number on the front cover of this manual for identification and future reference to avoid referring to the wrong manual for information or instructions on installation, operation, maintenance, or parts.

Use only the authorized replacement parts in the service and maintenance of this hoist.

⚠WARNING

Equipment described herein is designed for and should not be used for lifting, supporting, or transporting humans.

Equipment described herein should not be used in conjunction with other euipment unless necessary and/or required safety devices applicable to the system or application are installed by the system designer, system manufacturer, crane manufacturer, installer, or user.

Modifications to upgrade, rerate, or otherwise alter this equiment shall be authorized only by the original equipment manufacturer or qualified professional engineer.

Equipment described herein may be used in the design and manufacture of cranes or monorails. Additional equipment or devices may be required for the crane or monorail to comply with applicable crane design and safety standards.

The system designer, system manufacturer, crane designer, crane manufacturer, installer, or user is responsible to assure that the installation and associated wiring of these electrical components is in compliance with the electric standards of the applied country.

Failure to read and comply with any one of the limitations noted herein can result in serious bodily injury or death, and/or property damage.

⚠DANGER

HAZARDOUS VOLTAGES ARE PRESENT IN THE CONTROL BOX, OTHER ELECTRICAL COMPONENTS, AND CONNECTIONS BETWEEN THESE COMPONENTS

Before performing ANY mechanical or electrical maintenance on the equiment, de-energize (disconnect) the main switch supplying power to the equipment, and lock and tag the main switch in the de-energized position.

⚠DANGER

Do not operate the equipment without control enclosure cover or covers in place.

Only trained and competent personnel should inspect and repair this equipment

NOTICE

This manual contains information for safe operation of an overhead hoist. Taking precedence over and specific rule, however, is the most inportant rule of all - "USE COMMON SENSE." Operation of an overhead hoist involves more than operating the controls. The operator must consider and anticipate the motions and actions that will occur as a result of operating the controls.

If the hoist owner/user requires additional information, or if any information in the manual is not clear, contact the manufacturer or the distributor of the hoist. Do not install, inspect, test, maintain, or operate this hoist unless this information is fully undderstood.

When contacting the manufacturer or the distributor of the hoist, always make reference to the serial number of the hoist.

A regular schedule of inspection of the hoist should be established and records maintained.

⚠WARNING

Before installing, removing, inspecting, or performing any maintenance on a hoist, the main switch shall be de-energized. Lock and tag the main switch in the de-energized position. Follow other maintenance procedures outlined in this manual.

Additional WARNINGS are listed in various portions of this manual. Personnel shall read and follow these WARNINGS. Failure to read and comply with these WARNINGS as well as other instructions or any limitations noted in this manual could result in serious bodily injury or death, and/or property damage.

1. Features

Samsung heavy-duty hoists feature faster speeds and higher capacities than conventional hoists. Workers in automotive plants, heavy equipment manufacturing, paper mills, and related rugged working environments will experience dependability and versatility.
Careful consideration has been given to optimize performance.

All hoists are equipped with quality parts and mechanisms to provide proper lifting and traversing of the load. Components undergo numerous and inspections, while our production processes meet stringent quality requirements.

Slip Clutch System	By Mechanical overload Limiter
Overload Alert Sound Limiter	With "beep" sound when overloaded.
Double Action Over-winding Limiter	Preventing over-lifting or lowering of chain
Push Button Pendant Control Switch	With emergency stop button
Preventive Incorrect Phase Limiter	Automatically checking a possible wrong power supply (Option)

1.1. Mechanism group

Samsung Electric Chain Hoists are allocated to mechanism groups in accordance with the following regulations. Under the allowance of the following mechanism groups, the hoist should be operated and should not exceed the nominal values. On each identification plate, the following is indicated.

Hook suspension chain hoist : FEM9.511 (Hoist = FEM 3m 40% ED)
Motor trolley mounted series : FEM9.511 (Hoist/Trolley = FEM 3m/ 1Bm 40 / 25% ED)

■ **FEM Mechanism Group 9.511**
(Rules for Design of Serial Lifting Equipment : Classification of Mechanism)

Mechanism group	1Bm	1Am	2m	3m	4m	5m
Load group	Average operating period per day (h)					
Light k < 0.50	<2	2-4	4-8	8-16	>16	-
Medium 0.50 < k < 0.63	<1	1-2	2-4	4-8	8-16	>16
Heavy 0.30 < k < 0.80	<0.5	0.5-1	1-2	2-4	4-8	8-16
Very Heavy 0.80 < k < 1.00	<0.25	<0.5	0.5-1	1-2	2-4	4-8

NOTICE

Under the allowance of the above FEM determination, **Samsung** electric chain hoist should be operated. After checking the operating conditions, the operator shall operate the products. The above mechanism gorup is valid for the entire period of operation and for reasons of operational safety shall not Remove This Word be modified or altered.

1.2. Working environment data

Ambient temperature : from -20℃ to +40℃
Protection class : IP 44 as standard
Side pulling angle : max. 3 degrees
Sound level : 85dB (A) below

⚠WARNING

Samsung electric chain hoists are designed for indoor use. For outdoor use, the hoist shall be located under roof to assure rainproof operation. The operator SHALL

▶ NOT exposse the hoist to rain or condensation.
▶ NOT store the hoist in a humid place.
▶ COVER the hoist or MOVE it back under roof after use, when it is used outdoors.
▶ HANG the hoist on a suitable beam or crane or from the ceiling.

⚠CAUTION

If the above operation conditions are exceeded, or the electric hoist is operated often under adverse conditions, the information in the operating instructions must be adapted accordingly. In this case the manufacturer is to be consulted.

1.3. Hook Suspension Series

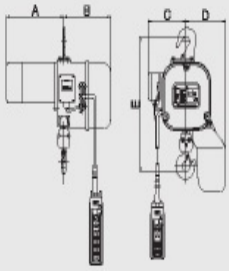
Fig-A 250/490/500KG	Fig-B 1,000~3,000(2Falls)KG	Fig-C 2,800(1Falls)KG~10,000KG

■ Specifications

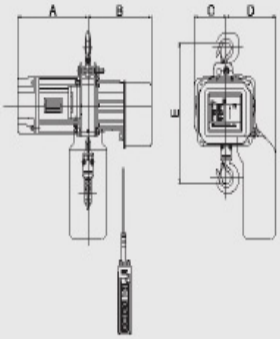
Standard

Frame	Model	Capacity (kg)	Hoisting Motor [Single]				Hoisting Motor [Dual]				Load Chain (mm×Falls)	Net Weight (kg)
			Power(kw)		Speed(m/min)		Power(kw)		Speed(m/min)			
			50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz		
A	SCO-S(D)250	250	0.42×4P	0.5×4P	4.6	5.6	0.42/0.21×4/8P	0.5/0.25×4/8P	4.7/2.4	5.6/2.8	Ø5.0×1	36
			0.42×4P	0.5×4P	7.0	8.4	0.42/0.21×4/8P	0.5/0.25×4/8P	7.0/3.5	8.4/4.2	Ø5.0×1	36
	SCO-S(D)500	500	0.54×4P	0.65×4P	4.6	5.6	0.58/0.19×4/12P	0.7/0.23×4/12P	4.7/1.6	5.6/1.9	Ø5.0×1	38
			0.92×4P	1.1×4P	7.0	8.4	-	-	-	-	Ø5.0×1	38
B	SCO-S(D)1000	1000	1.25×4P	1.5×4P	5.8	7.0	1.25/0.63×4/8P	1.5/0.75×4/8P	5.8/2.9	7.0/3.5	Ø7.1×1	60
	SCO-S(D)1250	1250	1.7×4P	2.0×4P	5.8	7.0	1.25/0.63×4/8P	1.5/0.75×4/8P	5.8/2.9	7.0/3.5	Ø7.1×1	60
	SCO-S(D)1500	1500	2.1×4P	2.5×4P	6.7	8.0	2.1/1.05×4/8P	2.5/1.25×4/8P	6.7/3.4	8.0/4.0	Ø8.0×1	65
	SCO-S(D)1800D	1800	1.25×4P	1.5×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8	Ø7.1×2	68
	SCO-S(D)2000D	2000	1.25×4P	1.5×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8	Ø7.1×2	68
	SCO-S(D)2500D	2500	1.7×4P	2.0×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8	Ø7.1×2	68
	SCO-S(D)3000D	3000	2.1×4P	2.5×4P	3.4	4.0	2.1/1.05×4/8P	2.5/1.25×4/8P	3.4/1.7	4.0/2.0	Ø8.0×2	72
C	SCO-S(D)2000	2000	2.9×4P	3.5×4P	6.8	8.2	2.9/1.5×4/8P	3.5/1.75×4/8P	6.8/3.4	8.2/4.1	Ø11.2×1	110
	SCO-S(D)3000	3000	2.9×4P	3.5×4P	5.0	6.0	2.9/1.5×4/8P	3.5/1.75×4/8P	5.0/2.5	6.0/3.0	Ø11.2×1	110
	SCO-S(D)5000D	5000	2.9×4P	3.5×4P	2.5	3.0	2.9/1.5×4/8P	3.5/1.75×4/8P	2.5/1.3	3.0/1.5	Ø11.2×2	126
	SCO-S(D)7500D	7500	2.9×4P	3.5×4P	1.7	2.0	2.9/1.5×4/8P	3.5/1.75×4/8P	1.7/0.8	2.0/1.0	Ø11.2×3	318
	SCO-S(D)10000D	10000	2.9×4P	3.5×4P	2.5	3.0	2.9/1.5×4/8P	3.5/1.75×4/8P	2.5/1.3	3.0/1.5	Ø11.2×4	424

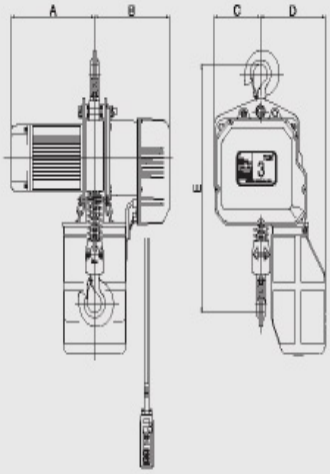
A-Frame 250~500kg



B-Frame 1000~3000kg(2falls)



C-Frame 3000kg



■ **Demension (mm)**

Frame	Model	Capacity (kg)	Dimension					
			Single					Dual
			A	B	C	D	E	A
A	SCO-S(D)250	250	240	196	157	165	410	257
			240	196	157	165	410	257
	SCO-S(D)500	500	240	196	157	165	410	265
			257	196	157	165	410	-
B	SCO-S(D)1000	1000	295	245	139	210	440	335
	SCO-S(D)1250	1250	295	245	139	210	440	335
	SCO-S(D)1500	1500	295	245	141	216	490	335
	SCO-S(D)1800D	1800	295	245	106	245	552	335
	SCO-S(D)2000D	2000	295	245	106	245	552	335
	SCO-S(D)2500D	2500	295	245	106	245	552	335
	SCO-S(D)3000D	3000	295	245	100	261	660	335
C	SCO-S(D)2000	2000	348	313	189	271	770	388
	SCO-S(D)3000	3000	348	313	189	271	690	388
	SCO-S(D)5000D	5000	348	313	115	346	980	388
	SCO-S(D)7500D	7500	385	325	190	430	1440	390
	SCO-S(D)10000D	10000	385	385	465	465	1440	390

1.4. Motor Trolley Mounted Series

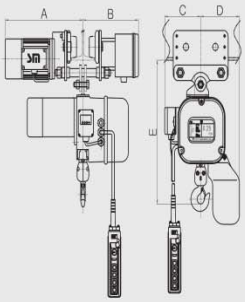
Fig-A 250/490/500KG	Fig-B 1,000~3,000(2Falls)KG	Fig-C 2,800(1Falls)KG~10,000KG

■ Specifications

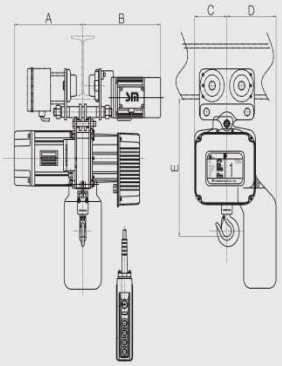
Standard

Frame	Model	Capacity (kg)	Hoisting Motor [Single]				Hoisting Motor [Dual]				Traversing Motor				Load Chain (mm×Falls)	Net. Weight (kg)
			Power(kw)×Pole		Speed(m/min)		Power(kw) × Pole		Speed(m/min)		Power(kw)×Pole		Speed(m/min)			
			50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz		
A	SCT-S(D)250	250	0.42×4P	0.5×4P	4.7	5.6	0.42/0.21×4/8P	0.5/0.25×4/8P	4.7/2.4	5.6/2.8	0.33×4P (0.22×6P) [0.17×8P]	0.4×4P (0.27×6P) [0.2×8P]	16.7 (11.1) [8.3]	20.0 (13.3) [10.0]	Ø5.0×1	62
			0.42×4P	0.5×4P	7.0	8.4	0.42/0.21×4/8P	0.5/0.25×4/8P	7.0/3.5	8.4/4.2					Ø5.0×1	62
	SCT-S(D)490	490	0.54×4P	0.65×4P	4.7	5.6	0.42/0.21×4/8P	0.5/0.17×4/8P	4.7/2.4	5.6/2.8					Ø5.0×1	64
	SCT-S(D)500	500	0.54×4P	0.65×4P	4.7	5.6	0.63/0.21×4/12P	0.75/0.23×4/12P	4.7/1.6	5.6/1.9					Ø5.0×1	64
			0.92×4P	1.1×4P	7.0	8.4	-	-	-	-					Ø5.0×1	64
B	SCT-S(D)1000	1000	1.25×4P	1.5×4P	5.8	7.0	1.25/0.63×4/8P	1.5/0.75×4/8P	5.8/2.9	7.0/3.5					Ø7.1×1	82
	SCT-S(D)1250	1250	1.7×4P	2.0×4P	5.8	7.0	1.25/0.63×4/8P	1.5/0.75×4/8P	5.8/2.9	7.0/3.5					Ø7.1×1	82
	SCT-S(D)1500	1500	2.1×4P	2.5×4P	6.7	8.0	2.1/1.25×4/8P	2.5/1.25×4/8P	6.7/3.4	8.0/4.0	0.33×4P (0.22×6P) [0.17×8P]	0.4×4P (0.27×6P) [0.2×8P]	15.8 (10.0) [7.9]	19.0 (12.0) [9.5]	Ø8.0×1	90
	SCT-S(D)1800D	1800	1.25×4P	1.5×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8					Ø7.1×2	102
	SCT-S(D)2000D	2000	1.25×4P	1.5×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8					Ø7.1×2	102
	SCT-S(D)2500D	2500	1.7×4P	2.0×4P	2.9	3.5	1.25/0.63×4/8P	1.5/0.75×4/8P	2.9/1.5	3.5/1.8					Ø7.1×2	102
	SCT-S(D)3000D	3000	2.1×4P	2.5×4P	3.4	4.0	2.1/1.25×4/8P	2.5/1.25×4/8P	3.4/1.7	4.0/2.0					Ø8.0×2	115
C	SCT-S(D)2000	2000	2.9×4P	3.5×4P	6.8	8.2	2.9/1.5×4/8P	3.5/1.75×4/8P	6.8/3.4	8.2/4.1					Ø11.2×1	135
	SCT-S(D)3000	3000	2.9×4P	3.5×4P	5.0	6.0	2.9/1.5×4/8P	3.5/1.75×4/8P	5.0/2.5	6.0/3.0					Ø11.2×1	135
	SCT-S(D)5000D	5000	2.9×4P	3.5×4P	2.5	3.0	2.9/1.5×4/8P	3.5/1.75×4/8P	2.5/1.3	3.0/1.5	0.33×4P (0.22×6P) [0.17×8P]	0.4×4P (0.27×6P) [0.2×8P]	13.3 (8.3) [6.7]	16.0 (10.0) [8.0]	Ø11.2×2	194
	SCT-S(D)7500D	7500	2.9×4P	3.5×4P	1.7	2.0	2.9/1.5×4/8P	3.5/1.75×4/8P	1.7/0.8	2.0/1.0	0.63×4P	0.75×4P	12.5	15	Ø11.2×3	384
	SCT-S(D)10000D	10000	2.9×4P	3.5×4P	2.5	3.0	2.9/1.5×4/8P	3.5/1.75×4/8P	2.5/1.3	3.0/1.5	1.25×4P	1.5×4P	12.5	15	Ø11.2×4	524

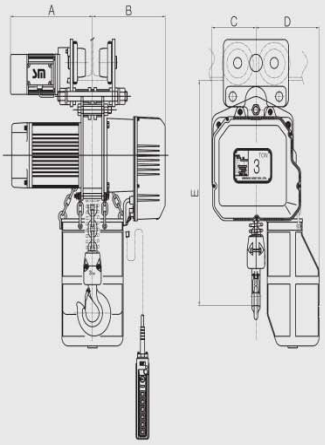
A-Frame 250~500kg



B-Frame 1000~3000kg(2falls)



C-Frame 3000kg



■ Demension (mm)

Frame	Model	Capacity (kg)	I-Beam Width (mm)	Min.Radius For Curve (mm)	Dimension					
					Single					Dual
					A	B	C	D	E	A
A	SCT-S(D)250	250	75~125	1200	335	238	130	193	444	355
			75~125	1200	335	238	130	193	444	355
	SCT-S(D)490	490	75~125	1200	335	238	130	193	444	355
	SCT-S(D)500	500	75~125	1200	335	238	130	193	444	355
			75~125	1200	335	238	130	193	452	355
B	SCT-S(D)1000	1000	75~125	1200	295	335	139	212	440	335
	SCT-S(D)1250	1250	75~125	1200	295	335	139	212	440	335
	SCT-S(D)1500	1500	100~150	1500	295	365	140	213	460	335
	SCT-S(D)1800D	1800	100~150	1500	295	365	140	245	530	335
	SCT-S(D)2000D	2000	100~150	1500	295	365	140	245	530	335
	SCT-S(D)2500D	2500	100~150	1500	295	365	140	245	530	335
	SCT-S(D)3000D	3000	100~150	1500	295	365	140	308	610	335
C	SCT-S(D)2000	2000	100~150	1500	353	313	190	271	650	386
	SCT-S(D)3000	3000	100~150	1500	353	313	190	271	650	386
	SCT-S(D)5000D	5000	125~175	2000	370	313	200	337	880	405
	SCT-S(D)7500D	7500	125~175	2000	465	330	260	430	1150	-
	SCT-S(D)10000D	10000	125~175	2000	465	390	465	465	1120	-

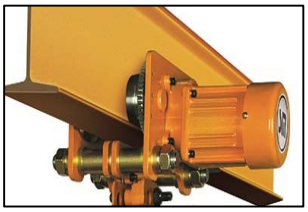
2. General description of manual

The product is supplied together with the manual that is important to keep readily accessible :

- During installation or set-up
- For training operators & the maintenance of the equipment
- For "Safety Precautions" & Operation instructions

2.1. Trolley series and Classification of electric wiring

Samsung trolleys are designed to form an integral hoist/trolley combination, keeping the load equally distributed for easy traversing and long life, Motor-driven trolleys are ideal for heavier capacities and longer lift applications. Hook suspension trolleys are availble in plain and hand-geraed versions that enable close control of horizontal movement.



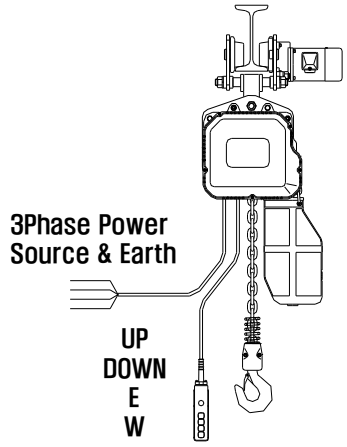
▲ Motor Trolley

▲ Hook Suspension

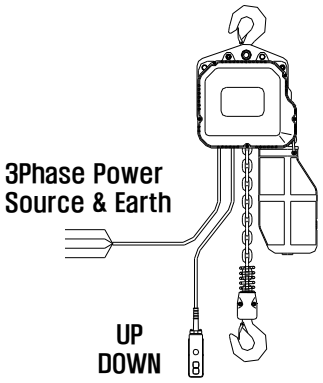
▲ Plain Trolley

▲ Geared Trolley

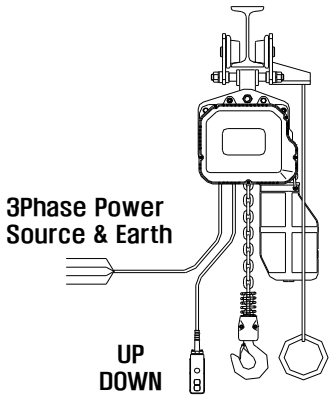
Motor Trolley Type



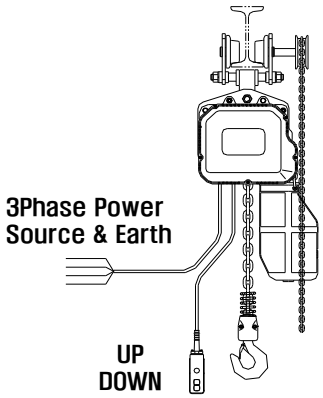
Hook Suspension Type



Plain Trolley Type



Gear Trolley Type



3. Safety precautions

3.1. Warning and Caution

The safety Alert Symbol is used in this manual to indicate hazards and to the reader to information that should be known, understood, and followed in order to avoid SERIOUS BODILY INJURY or DEATH and/or PROPERTY DAMAGE.

⚠WARNING

WARINING symbol indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL

- ▶ NOT operate a damaged, malfunctioning or unusually performing hoist.
- ▶ NOT operate the hoist until you have thoroughly read and understand the manual.
- ▶ NOT operate a hoist which has been modified without the manufacturer's approval.
- ▶ NOT lift more than rated load for the hoist.
- ▶ NOT use hoist with twisted, kinked, damaged, or worn load cahin.
- ▶ NOT use the hoist to lift, support, or transport people, nor lift or transport loads over or near people.
- ▶ NOT operate unless load is centered under hoist.
- ▶ NOT attempt to lengthen the load chain or repair damaged load chain.
- ▶ Protect the hoist's load chain from weld splatter or other damging contaminants.
- ▶ NOT operate hoist when it is difficult to form a straight line from hook to hook in the direction of loading.
- ▶ NOT use load chain as a sling, or wrap chain around the load.
- ▶ NOT apply the load to the tip of the hook or to the hook latch.
- ▶ NOT apply load unless load chain is properly seated in the chain sheave pockets.
- ▶ NOT apply load if bearing prevents equal loading on all load supporting chains.
- ▶ NOT operate beyond the limits of the load chain travel.
- ▶ NOT leave load supported by the hoist unattended unless specific precautions have been taken.
- ▶ NOT allow the load chain or hook to be used as an electrical or welding ground.
- ▶ NOT allow the load chain or hook to be touched by a live welding electrode.
- ▶ NOT remove or obscure the warnings on the hoist.
- ▶ NOT operate a hoist on which the safety placards or decals are missing or illegible.
- ▶ NOT operate a hoist unless it has been securely attached to a suitable support.
- ▶ NOT operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
- ▶ Take up slack carefully-make sure load is balanced and load holding action is secure before continuing.

▶ Shut down a hoist that malfunctions or performs unusually and report such malfunction.
▶ Make sure hoist limit switches function properly.
▶ Warn personnel of an approaching load

⚠CAUTION

Read and understand this manual before using the hoist. Taking precedence over any specific rule, however, is the most important rule of all : "USE COMMON SENSE "

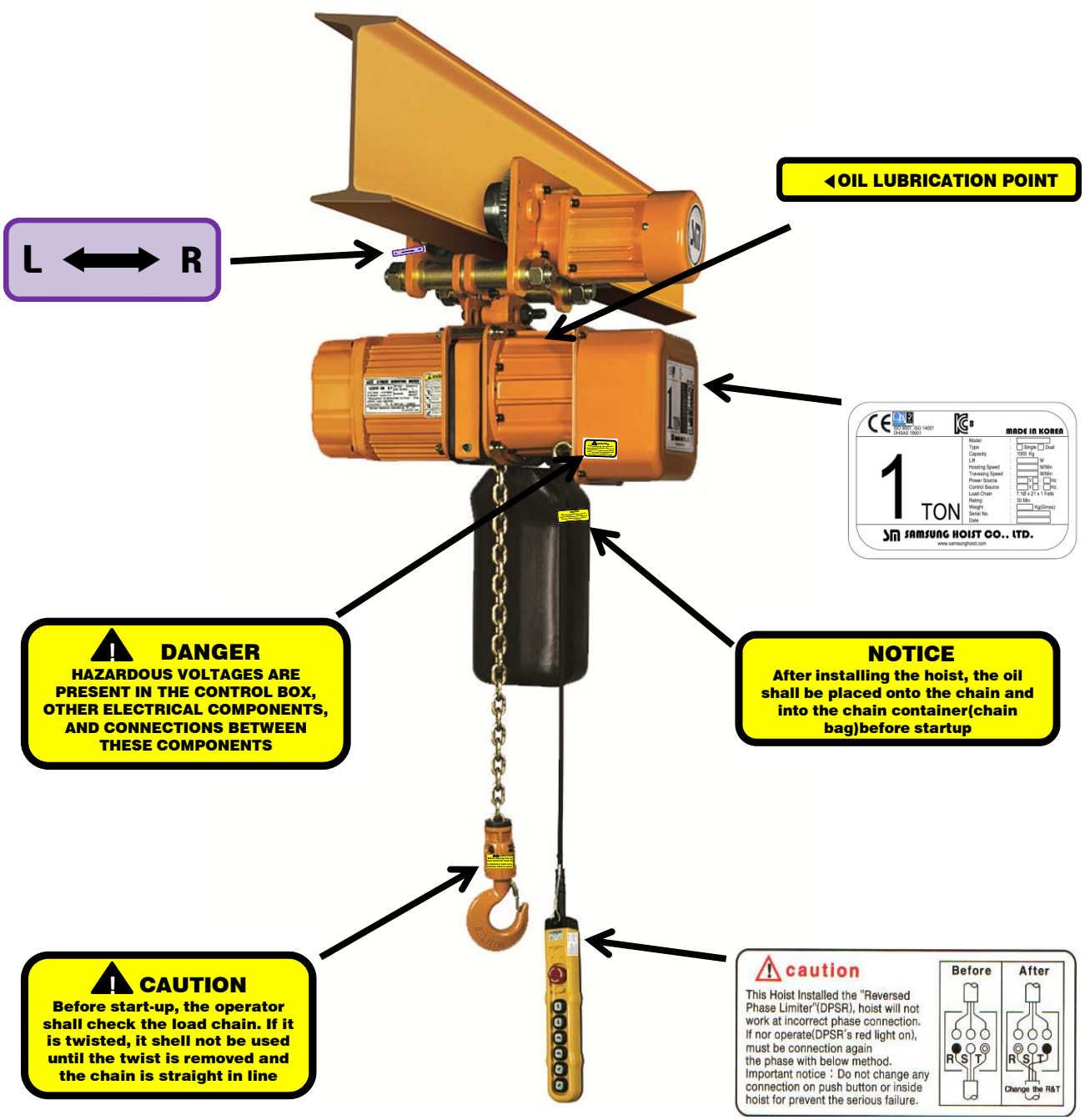
It is responsibility of the owner / user to

1. Install, inspect, test, maintain, and operate the hoist in accordance with the instruction manual furnished by the manufacturer of the hoist....
2. Train and designate hoist operators, and
3. Train and designate hoist inspectors / maintenance personnel

3.2. Name plate and labels on products.

All labels and name plate shall be attached on the products at the same position where they were or originally attached. Do not allow the labels and name plate to become obstructed or defaced.

<Example of MODEL NO. SMT-S1000>



4. Installation

Each complete electric chain hoist is load tested at the factory at 125% of the nameplate-rated capacity. The service life of the hoist depends on the way it is installed.
Always keep this manual near the hoist, available to the operator and the person in charge of mainten--ance Make sure that all safety rules are followed.

4.1. Checking of product

1. Check the product if there is any damage or deformation during the transportation.
2. Check the specification of the hoist you purchase as listed below.
    a. Model no.
    b. Rated capacity (ton)
    c. Lifting length of load chain (meter)
    d. Power supply
    e. Push button pendant assembly (2button, 4button or 6 button)
    f. Specially ordered optional items
    g. Beam width for trolley installation

Store the hoist in its normal operating position without load, away from aggressive atmospheres such as dust or humidity. Make sure that the hoist always clean and protected from corrosion and is lubricated.

4.2. Installation process

Follow other maintenance procedures outlined in this manual.

1. Handle the hoist by its structure, or by the devices provided for this purpose, or in its original packing.
2. Review the nameplate and warning tags attached to the unit before the installation is started.
3. The hoist should be installed by the technician with the necessary competence.
4. Check that the voltage is in accordance with both the hoist and the voltage at the jobsite (220V, 380V, 440V, 480V, 575V).
5. Make sure that the hoist attaching structure is rigid.
6. Make sure that the safety rules are followed for harness, clearance of work areas, posting of instructions to be followed in the area.

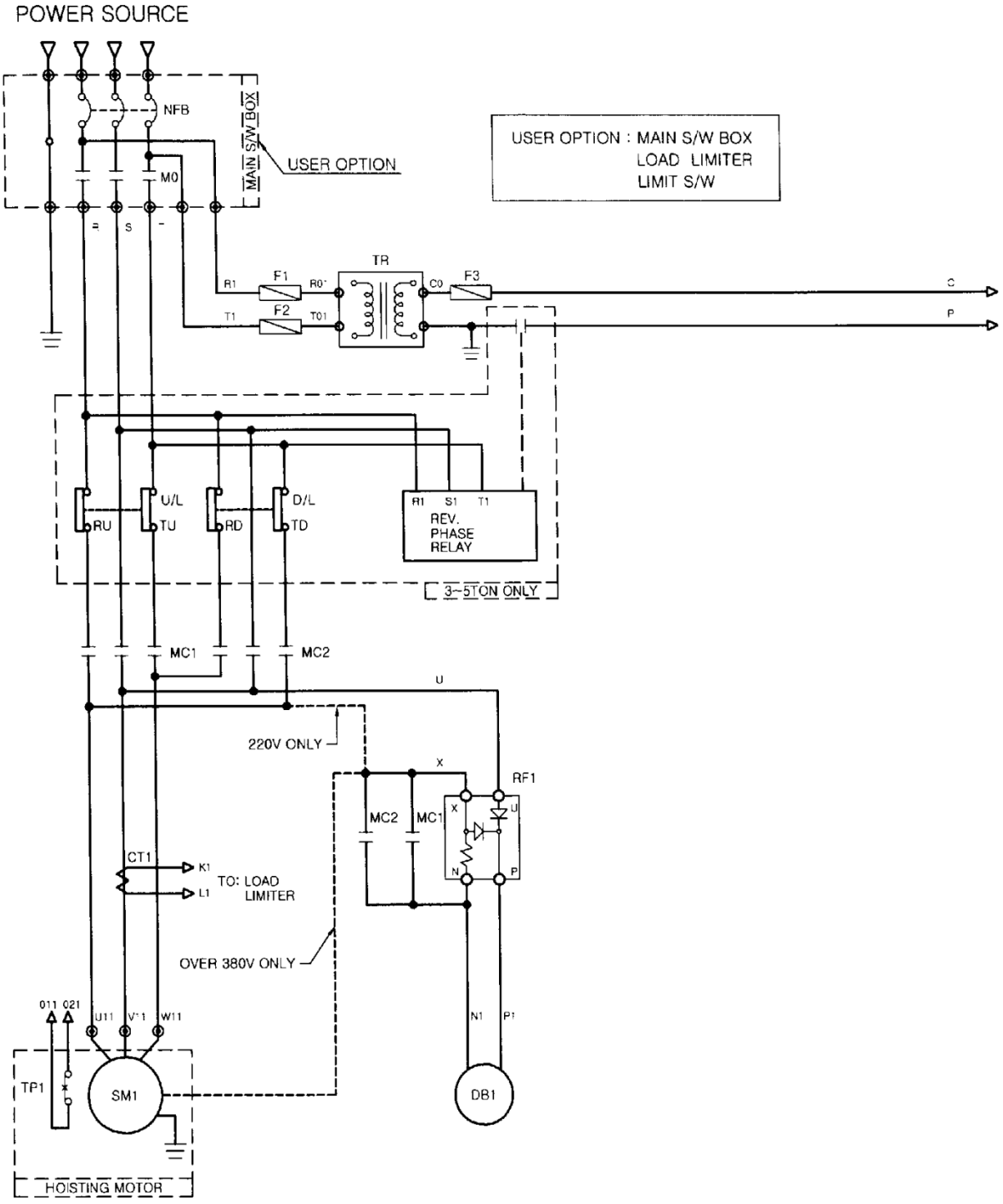
4.2.1. Checking of electricity

⚠WARNING

Before installing, removing, inspection, or performing any maintenance on the hoist, the main switch shall be de-energized and locked out and tagged out. Do not use this equipment in hazardous locations.

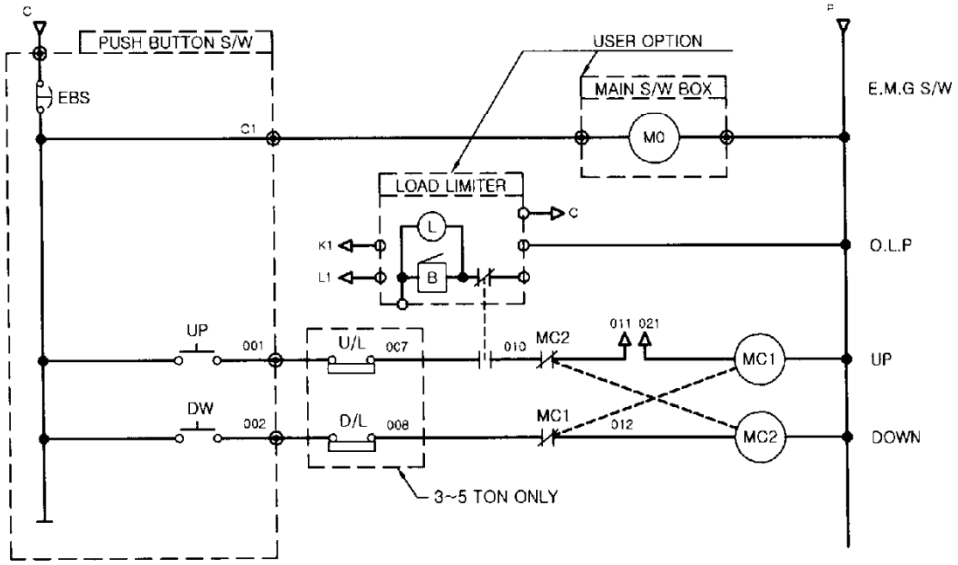
- ▶ the electric chain hoists shall be connected to an earth ground.
- ▶ Lock-out and tag-out the main disconnect switch, in the de-energized position, before performing any service on the hoist.
- ▶ The customer must supply the power supply cable, the fuses and the main disconnect switch.
- ▶ Check that the supply voltage is the same as the nameplat voltage on the hoist.
- ▶ Check that the voltage does not vary by more than ±10% from the nominal value.
- ▶ Do not use conductors smaller than those listed in the manual, to supply power to the hoist.
- ▶ Never bypass limit switches, remove limit switch stops, or otherwise defeat limit switch devices.

■ Electric Wiring Diagram of Hook Suspension Series(Single Speed)



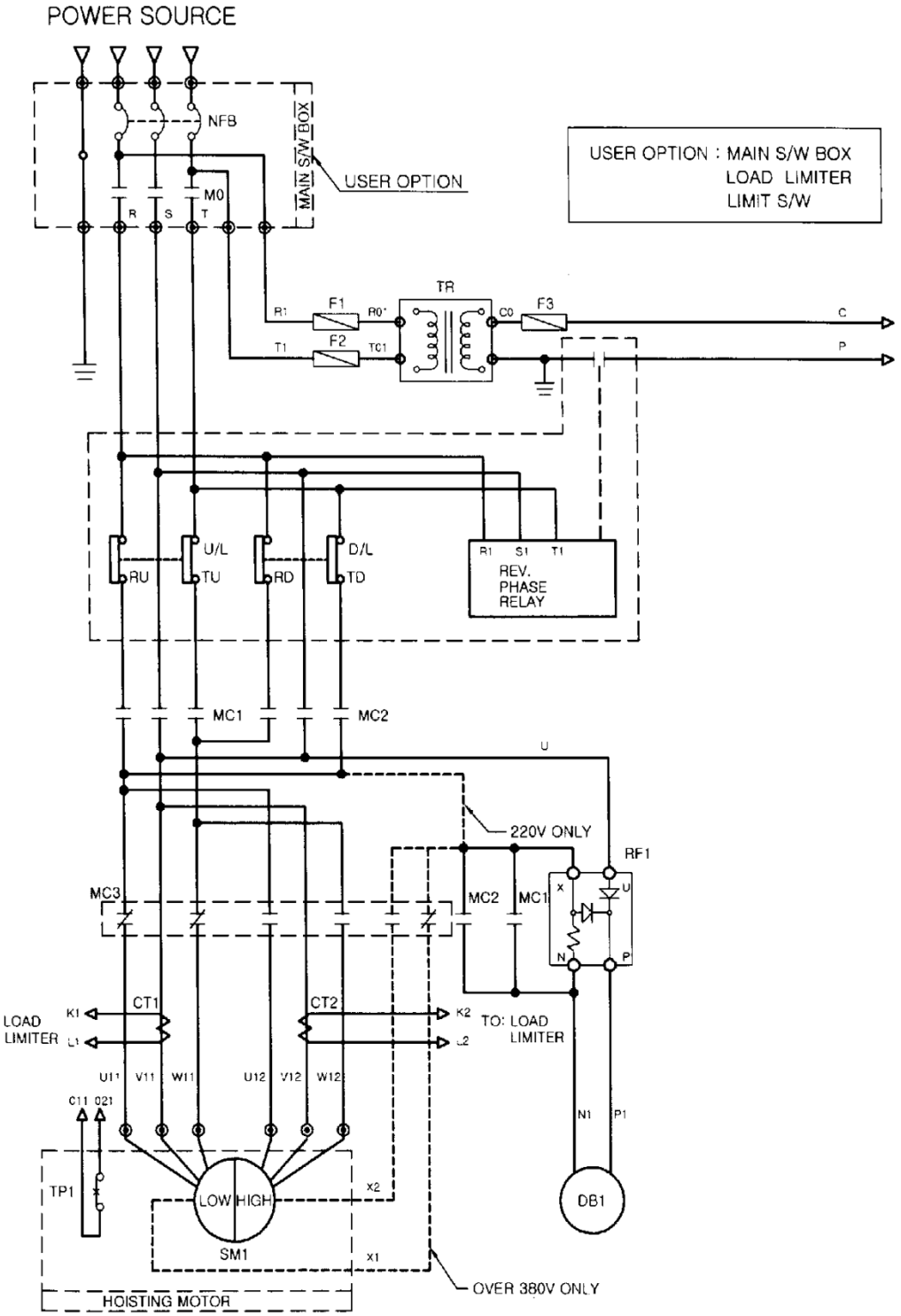
■ Electric Wiring Diagram of Hook Suspension Series(Single Speed)

POWER SOURCE : AC 3PH-220V	CONTROL POWER : AC 1PH-110V-60Hz/50Hz
POWER SOURCE : AC 3PH-380V AC 3PH-440V AC 3PH-460V AC 3PH-480V	CONTROL POWER : AC 1PH-48V-60Hz/50Hz



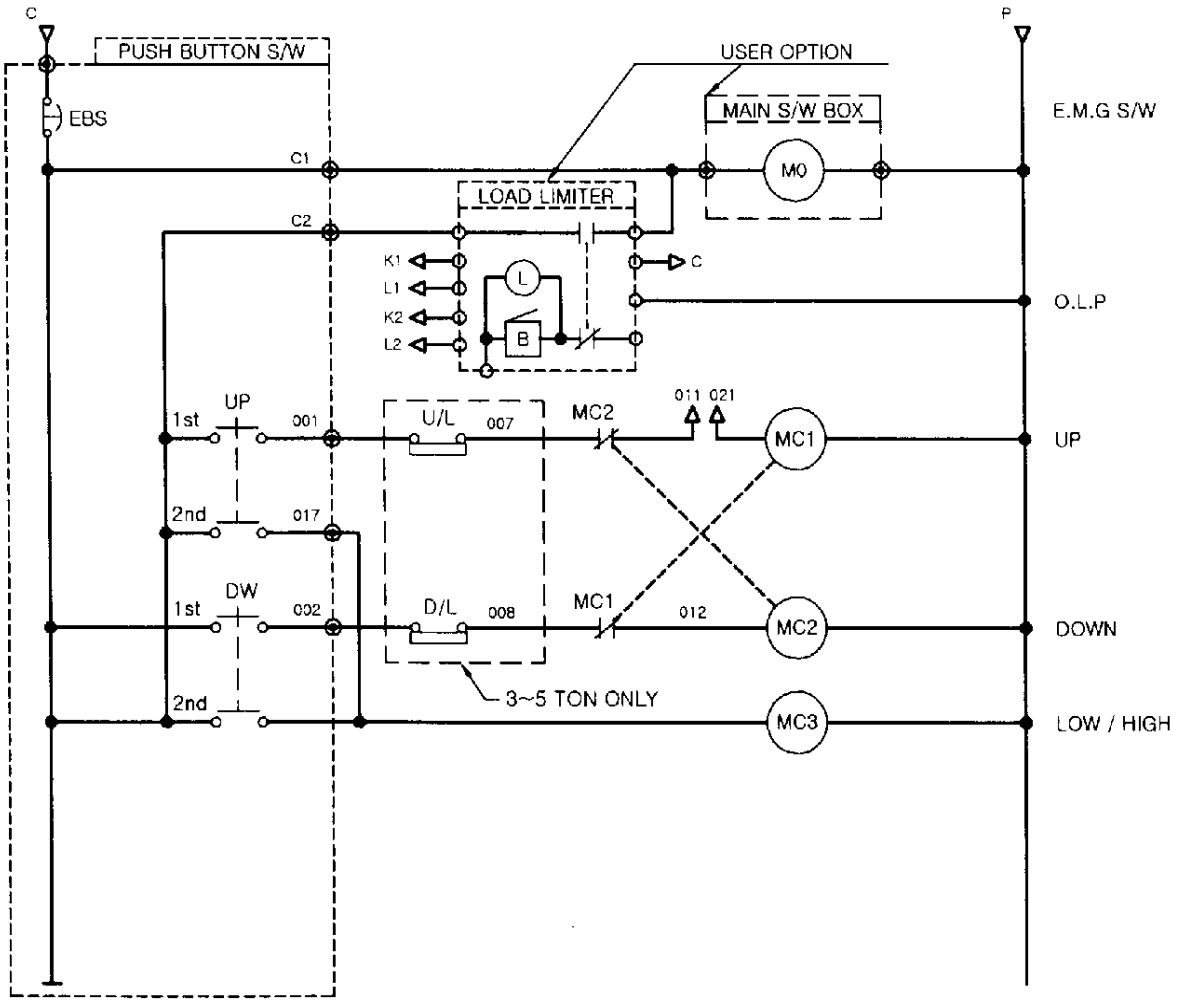
▶ Option
Over Load Alert Limiter Option
Traversing Limiter.
Digital Phase Sequence Relay.

■ Electric Wiring Diagram of Hook Suspension Series(Double Speed)



■ Electric Wiring Diagram of Hook Suspension Series(Double Speed)

POWER SOURCE : AC 3PH-220V	CONTROL POWER : AC 1PH-110V-60Hz/50Hz
POWER SOURCE : AC 3PH-380V AC 3PH-440V AC 3PH-460V AC 3PH-480V	CONTROL POWER : AC 1PH-48V-60Hz/50Hz



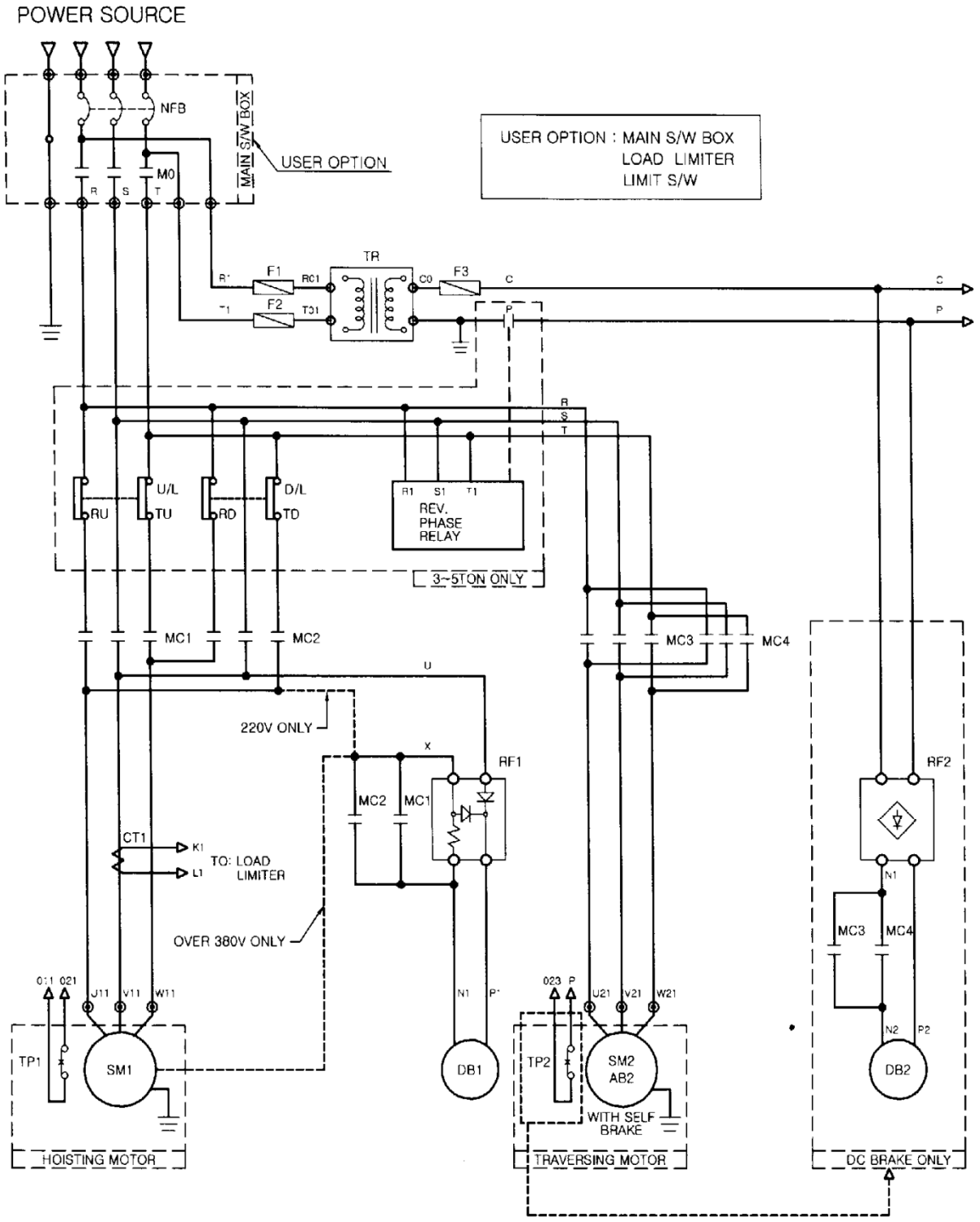
▶ Option

Over Load Alert Limiter Option

Traversing Limiter.

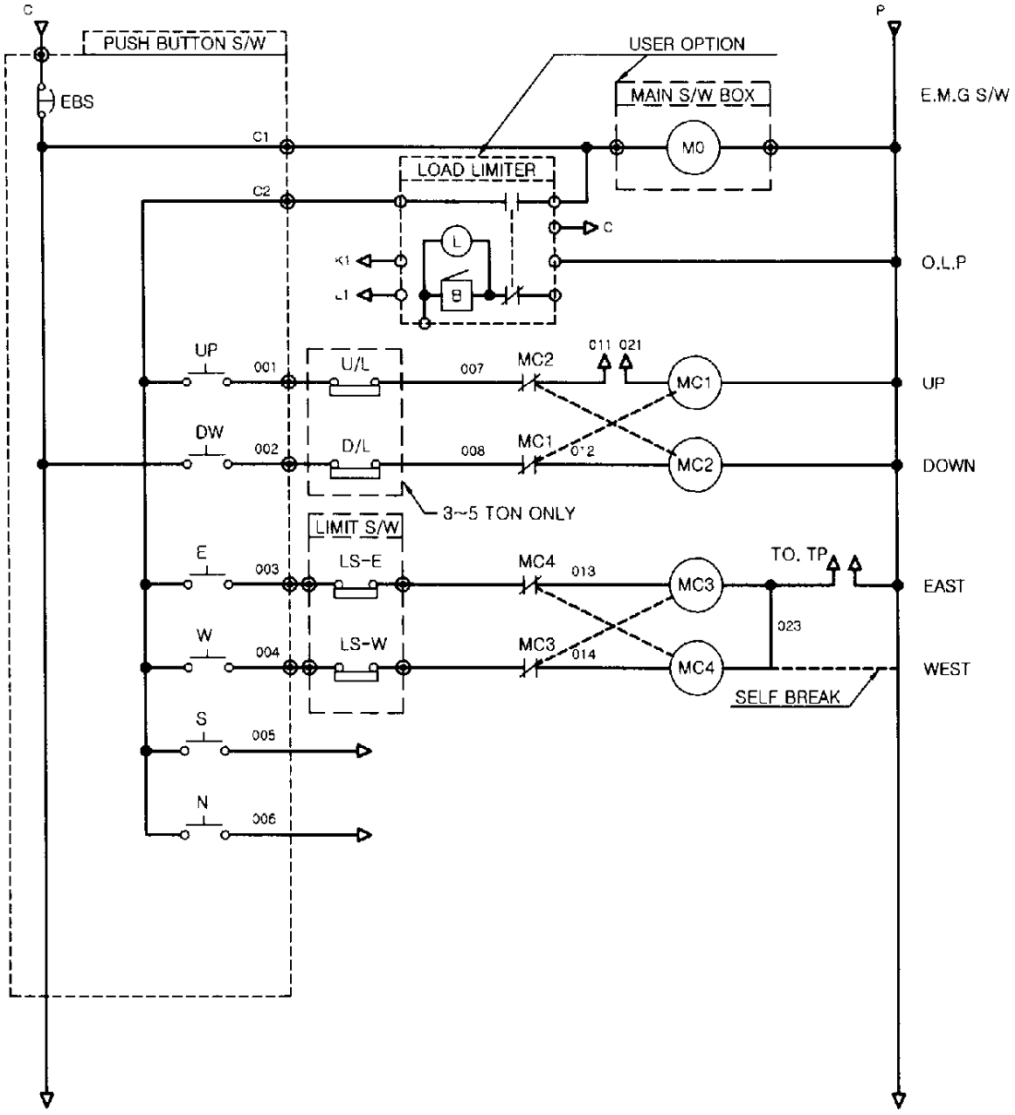
Digital Phase Sequence Relay.

■ Electric Wiring Diagram of Motor Trolley Mounted Series(Single Speed)



■ Electric Wiring Diagram of Motor Trolley Mounted Series(Single Speed)

POWER SOURCE : AC 3PH-220V	CONTROL POWER : AC 1PH-110V-60Hz/50Hz
POWER SOURCE : AC 3PH-380V AC 3PH-440V AC 3PH-460V AC 3PH-480V	CONTROL POWER : AC 1PH-48V-60Hz/50Hz



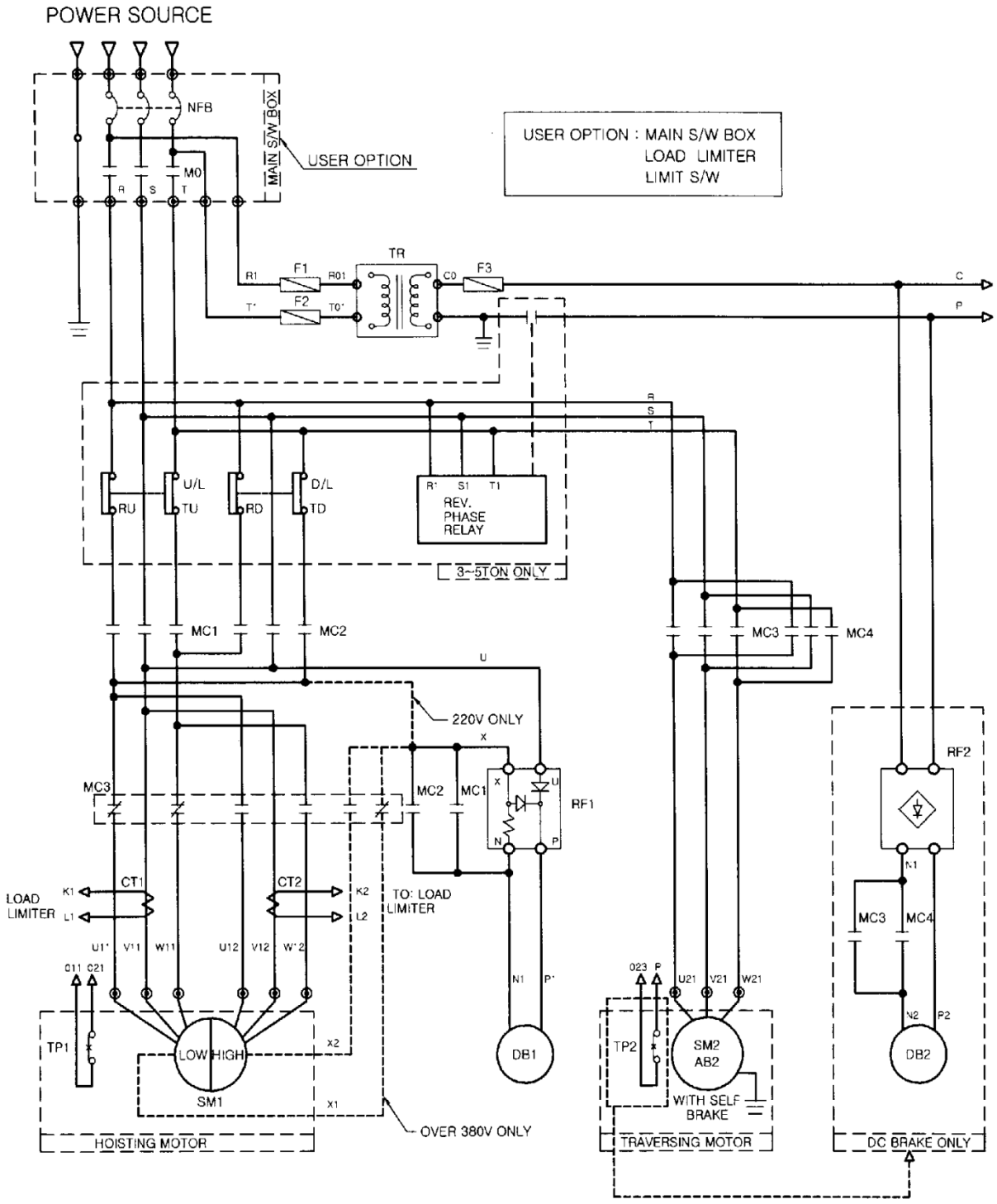
▶ Option

Over Load Alert Limiter Option

Traversing Limiter.

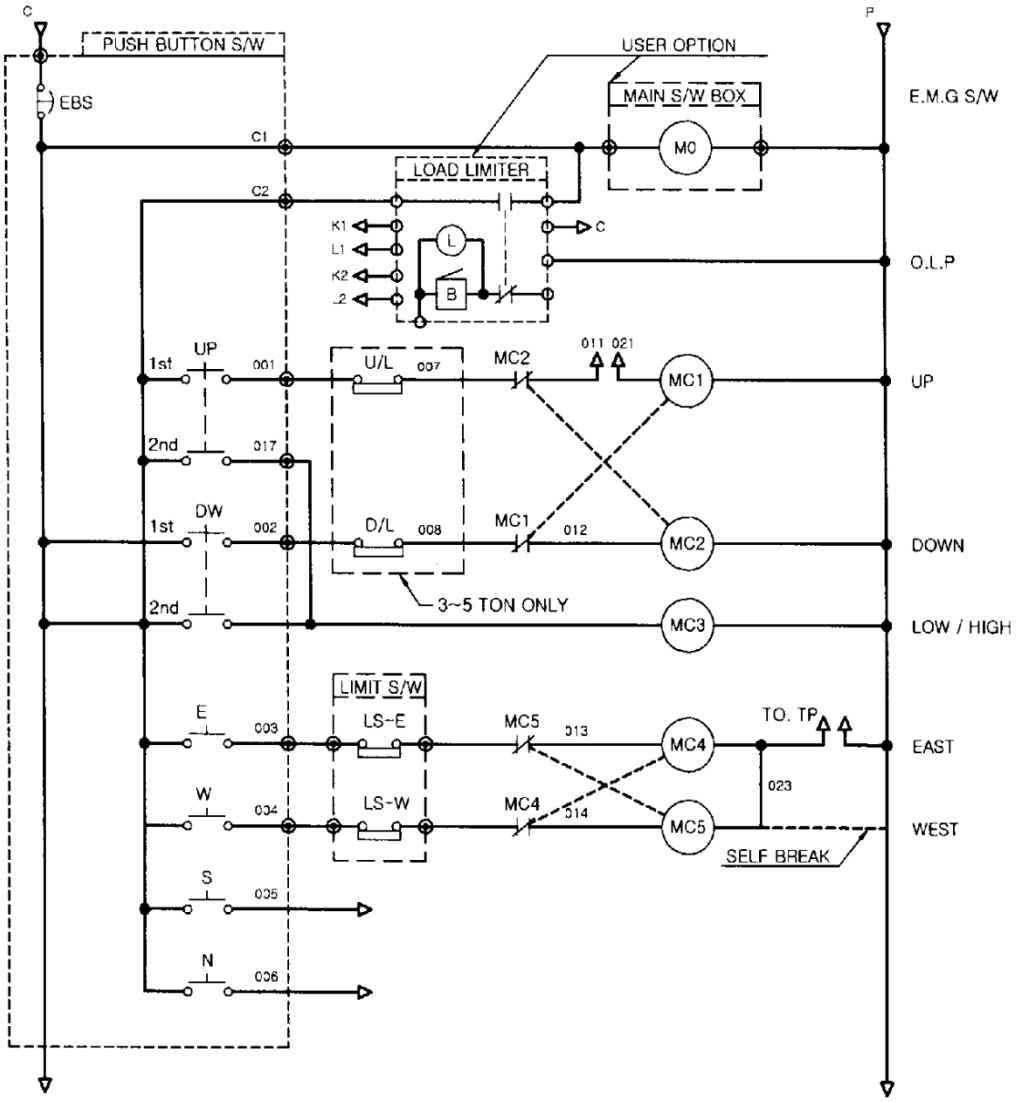
Digital Phase Sequence Relay.

■ Electric Wiring Diagram of Motor Trolley Mounted Series(Double Speed)



■ Electric Wiring Diagram of Motor Trolley Mounted Series(Double Speed)

POWER SOURCE : AC 3PH-220V	CONTROL POWER : AC 1PH-110V-60Hz/50Hz
POWER SOURCE : AC 3PH-380V AC 3PH-440V AC 3PH-460V AC 3PH-480V	CONTROL POWER : AC 1PH-48V-60Hz/50Hz



▶ Option

Over Load Alert Limiter Option

Traversing Limiter.

Digital Phase Sequence Relay.

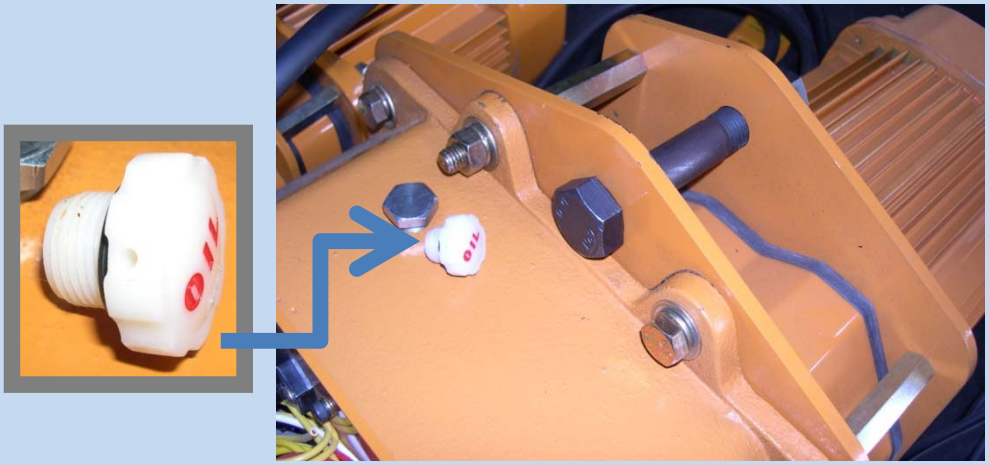
4.2.2. Installation of "BOLT with vent hole"(Vent Bolt)

Electric Chain Hoists are shipped with a "Bolt without Hole" (Solid Bolt) to prevent the possibility of oil leaking during the transportation of the product.

When the temperature of the gear assembly goes up with continued operation, the "BOLT with Vent Hole" (Vent Bolt) relieves the pressure in the gear assembly caused by the increase in temperature.

⚠WARNING

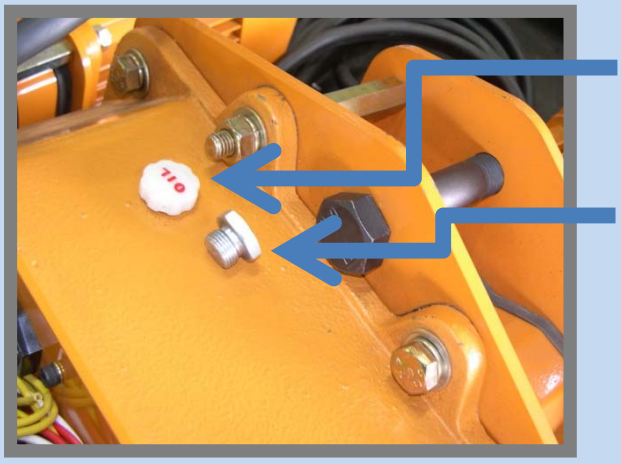
Replacement of Solid Bolt with Vent Bolt



On the hoist, the Solid Bolt is located at the lubrication point. Before the installation of the hoist, the customer shall change the bolt from "BEFORE installation" to "AFTER installation" as shown below.

The Vent Bolt functions as the air ventilation device to relieve pressure created by the increase in temperature from operation of the gearing. It helps prevent damage to the seal packing from high pressure.

If NOT changed to "Vent Bolt", a possible hazardous condition can result due to the high pressure in the gear assembly.

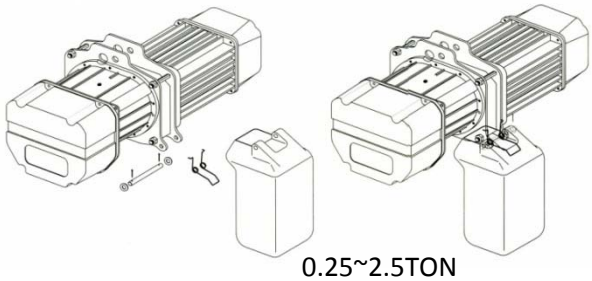


"AFTER installation"
With Vent Bolt

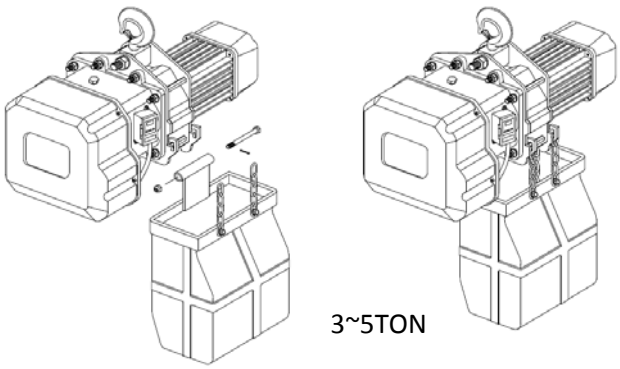
"BEFORE installation"
As shipped, the hoist has a Sold Bolt at the lubrication point to prevent the possibility of oil leaking due to movement in transportation.

4.2.3. Installation of Chain Container to hoist body

*Plase do it like picture and fig.1 & fig.2



0.25~2.5TON



3~5TON

*When you put the chain into chain bucket, Plase put first End-Stopper into chain bucket for preventing chain twist.

4.2.4. Oil Lubrication on load chain and into chain container

Please lubricate the load chain, using the plastic oil bottle which is included with the hoist.

NOTICE

Oil Lubrication into Chain Container

After installing the hoist, the oil shall be placed onto the chain and into the chain container (chain bag) before startup.

- ▶ If the load chain is used when it's dry, abrasion and noise will result.
- ▶ Depending on the oil lubrication, the life of the load chain can vary up to 10 times compared to non-oiled load chain.
- ▶ If the load chain is used without oil lubrication before startup, the manu--facturer Will not be held responsible for possible damage to the load chain.

⚠WARNING

DO NOT attempt to store a greater quantity of chain in the chain container than is specified in the table above. When containing more than the specified quantity, it may result in serious damage to the hoist and a hazard to the operator and nearby or goods.

4.2.5. Checking Load Chain after installation

⚠CAUTION

- Before start-up, the operator shall check the load chain. If it is twisted, it shall not be used until the twist is removed and the chain is straight in line.
- For double chain-falls, a capsized load chain shall not be used. When capsized, the operator shall turn over the bottom hook assembly as shown in the figure. If not, it will cause serious damage to the product.
- On lod chain, oil lubrication shall be made with the oil bottle which is included with the hoist. When dry chain with no lubrication is used, it will cause shortened life of the load chain and a possible breakage of the load chain during operation, resulting in damage to the product and / or a hazardous condition to the operator and nearby people or goods.

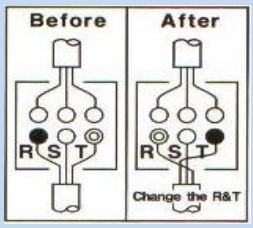
4.2.6. Automatic Incorrect Phase Checking (by exchanging One of Three Black lines)

After installation, the operator shall check UP/DOWN motions by pressing the Push Button Pendant Switch. If it does not operate in the UP/DOWN direction, it may indicate the autonatic P.I.P.L (Preventive Incorrect Phase Limiter) built inside the hoist body, is activated due to incorret phasing of the input power supply lines.

NOTICE

If it does not operate with the Push button control, it indictes that the electric incorrect phase limiter (protector) is operating.

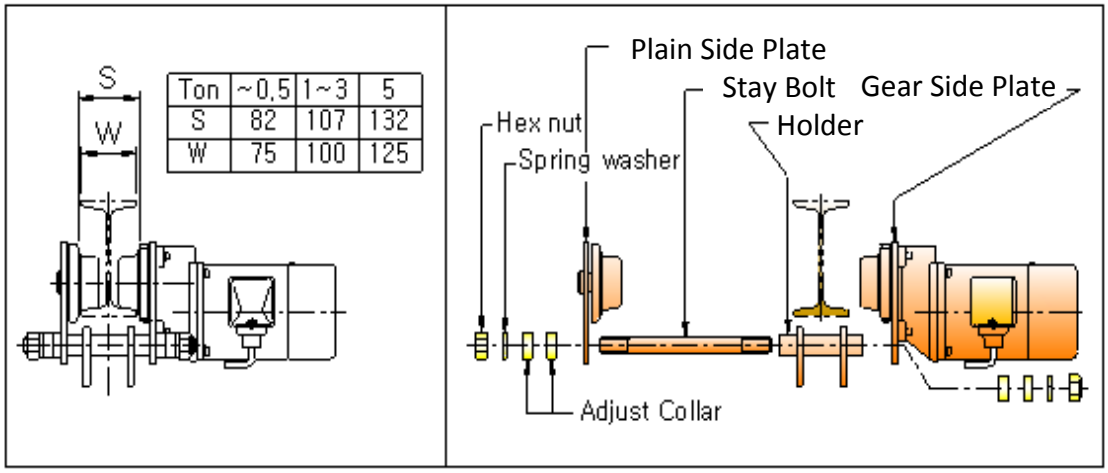
In this case, reverse TWO of the THREE power supply phase lines as illustrated.



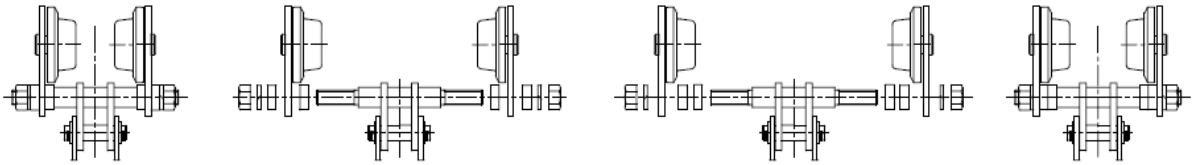
4.3. Installation of the Motor Trolley Mounted Series

4.3.1. How to install Trolley on the runway I-beam
For Trolley, there are THREE types : Motor trolley, Plain trolley, Geared trolley
First, check the difference between beam flange width and guide roller spacing.

■ Parts to adjust I-Beam Width



■ How to set up the I-Beam Width of Motor Trolley



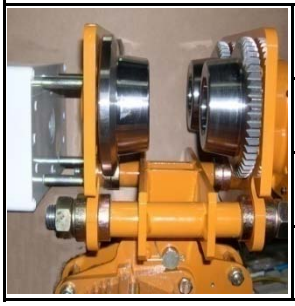
Process ① ② ③ ④

Motor trolley can be used on I-beams different in width only by inserting adjusting collars (0 pcs to 2 pcs)

① Pull out both"TUS013.Hex Nut" and "TUS015.Adj. Collar"
② Widen TROLLEY up to the maximum width by pulling out "TUS012.Stay Bolt"
③ In accordance with the following I-Beam width instruction, please insert the applied number of collars at the right end and push the trolley to the direction.
④ Instet TROLLEY on I-Beam.
⑤ Locate "TUS016 Holder" on the center and line up "TUS015.Adj. Collar" by setting the same number of collars at both ends.

■ **Applied Collar Numbers for Each Trollely Capacity on I-Beam.**

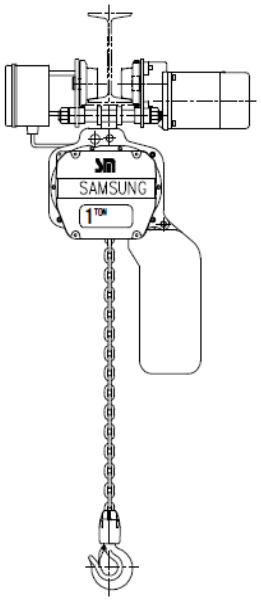
Each collar width per pcs : 12.5mm

I-Beam width(mm)		Adjusting Collar Numbers for Each Trolley Capacity (total no. =1/2right + 1/2left)			
		0.25~0.5ton	1ton	2~3ton	5ton
each collar width x total numbers		4pcs	4pcs	4pcs	4pcs
	75mm	0pcs	0pcs	0pcs	0pcs
	100mm	1pcs	1pcs	1pcs	1pcs
	125mm	2pcs	2pcs	2pcs	2pcs
	150mm	3pcs	3pcs	3pcs	3pcs

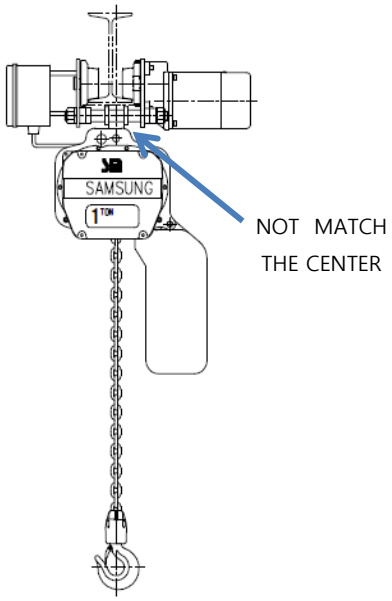
⚠WARNING

RIGHT installation : Fit both sides of the connecter with the same number of adjusting collars.
WRONG installation : It can result in serious accidents.

RIGHT Installation



WRONG Installation



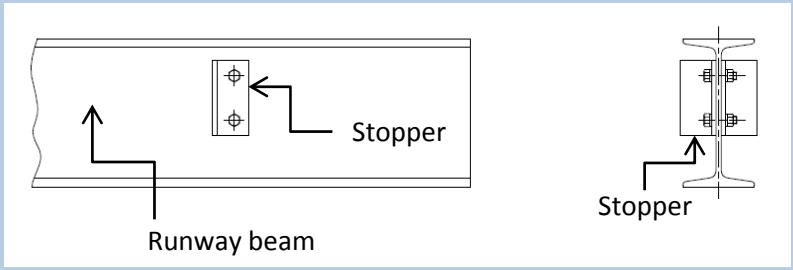
(A) Without collars, the seting of connector become loose and not secure
(B) With One-sided seting of collars, it shall result in the un-balanced trolley installation.

⚠WARNING

(Customer scope for installation)

1. Customer is strongly recommended to install END STOPPER as this is the customer's responsibility

To prevent possible falling of trolley from the runway beam, the customer shall install END STOPPER as follows.



2. For trolley limit switches used as a safety device, they shall be installed in parallel with I-beam at both ends to detect the runway limit of the end of trolley travel. Please refer to the figure for proper installation.

4.3.2. How to connect electric power source ("CIS" : customer installation scope under customer responsibility)

① In parallel with I-beam, install the power cable to optimize the trolley movement.
② With each interval of 1.5 meter, the cable wheel shall be installed.
③ The minimum allowable curve radius of I-beam differs with each rated load of hoist.

Please refer to the specification of hoist in manual article no. 1.4. Motor Trolley Mounted Series, Single Speed

4.4. Initial start-up

Once these checks have been complaetd, proceed as follows (be ready to press the emergency stop button as all times).

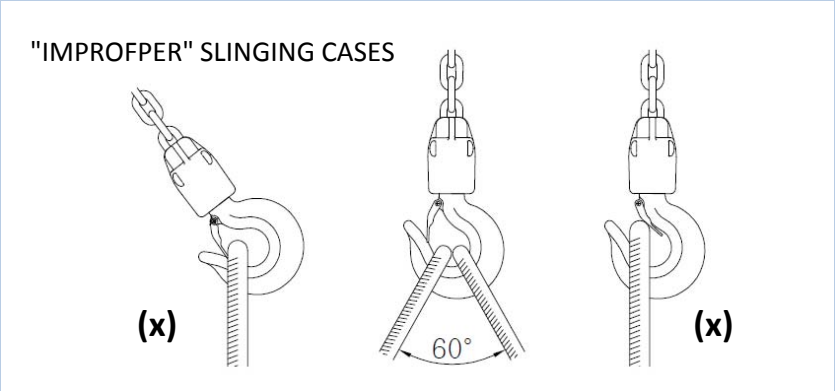
1. Start operating the hoist without a load.
2. Check, when not under load, that the movement of the hook corresponds to the direction of the arrows on the pushbutton station.
3. Check the operation of the hoist limit switch: operate the hoist, without a load, until it reaches the upper and lower hook positions and let the limiter slip briefly.
4. Check the operation of the brake: lift up a nominal load and then lower it.
5. Perform a load test with +10% of the nominal load and static tests with +25% of the nominal load on your installation equipped with our hoist.
6. The hoist which you have just purchased should only be used whith a maximum load equal to the hoist's rated load. The length of its useful service life depends on the demands placed upon it, the average operating time, the number of start-stops and proper maintenance.

5. Precautions during operation

⚠CAUTION

Indicates a potentially hazardous situation, which, if not avoided, MAY result in minor or moderate injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL

1. Perform a daily inspection according to the instruction manual.
2. Inspedt the load chain for any type of deformation or damage and check the load chain lubrication.
3. Visually inspect hooks and hook latches for any type of deformation of throat opening, wear on saddle or load bearing point, and twisting.
4. Report missing or illegible warning labels to the supervisor.
5. Not Operate the hoist if any damage or malfunctions exist.
6. Know hand skgnals used for hoist operations as per instruction manual.
7. Always notify others when a load transport is about to begin.
8. Always make sure that the supporting structures are strong enough to support the weight of the load and hoist.
9. Maintain firm footing or be otherwise secured when operating the hoist.
10. Check brake function by tensioning the hoist prior to each lift operation.
11. Use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.
12. Place slings balanced on the bottom hook. Avoid "Improper" slinging cases shown below.



13. Make sure the hook latches are closed and not supporting any parts of the load.
14. Make sure the load is free to move and will clear all abstructions.
15. Avoid swinging the load or hook.
16. Make sure hook travel is in the same direction as shown on the controls.
17. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
18. Use only manufacturer's recommended parts when repairing the unit.
19. Lubricate load chain per hoist manufacturer's recommendations.
20. NOT use the hoist's overload limiting clutch to measure load.

21. NOT use limit switches as routine operating stops. They are emergency devices only.
22. NOT allow your attention to be diverted from operating the hoist.
23. NOT allow the hoist to subjectd to sharp contact with other hoists, structures, or objects through misuse.
24. NOT adjust or repair the hoist unless qualified to perform such adjustments or repairs.
25. The hoist should be maintained regularly, following the instructions in this manual.
26. Keep the moving components clean and oiled as indicated in this manual.
27. Make sure that the limit switch stops are in place, and that all limit switches are functioning properly...
28. Before operation, check that the load is correctly fastened and installed on the hook.
29. When moving the load, make sure that it is sufficiently raised and distant from the surrounding machines and other objects so as to avoid all obstacles during operation.
31. If manually moving the hoist, push the load.
32. Avoid rocking the load or the hook when using the traveling trolley or crane, by limiting the starting and braking jerks.
33. Use the material under normal working conditions with ambient temperature, atmosphere.
34. Use only for indoor operation of hoist. For outdoor operation, provide adequate protection to ensure a rainproof environment.
35. NOT operate the hoist of any damage or malfunctions exist; and SHALL report any damage or malfunctions to the supervisor.
36. NOT operate the hoist of tagged-out.
37. NOT lift, lower, transport personnel by means of the hoist, hoist trolley, hoist hook, or load.

NOTICE

Always read and follow the INSTRUCTION for OPERATOR, which contains the main CAUTION and WARNING instructions.
It shall be assembled onto the Push Button Switch Control regardless of working conditions.
For safer hoisting operation, please refer to the Hand Signals for OPERATOR on the backdide.

6. Maintenance and servicing

6.1. Electrical connection

⚠CAUTION

(customer responsible scope for installation)

Before removing the control box cover, check that the hoist power supply is disconnected and locked and tagged.

- ▶ The customer must supply the power supply cable, the fuses and the main disconnect switch (refer to the wiring diagram).
- ▶ Check that the power supply voltage is correct for the hoist.
- ▶ Check that th voltage does not vary by more than ±10% from the nominal value.
- ▶ Make sure that the main hoist power disconnect switch is de-energized.
- ▶ Do not use conductors smaller than thosse listed in the manual to supply power to the hoist.
- ▶ Never bypass limit switches, remove limit switch stops, or otherwise defeat limit switches.

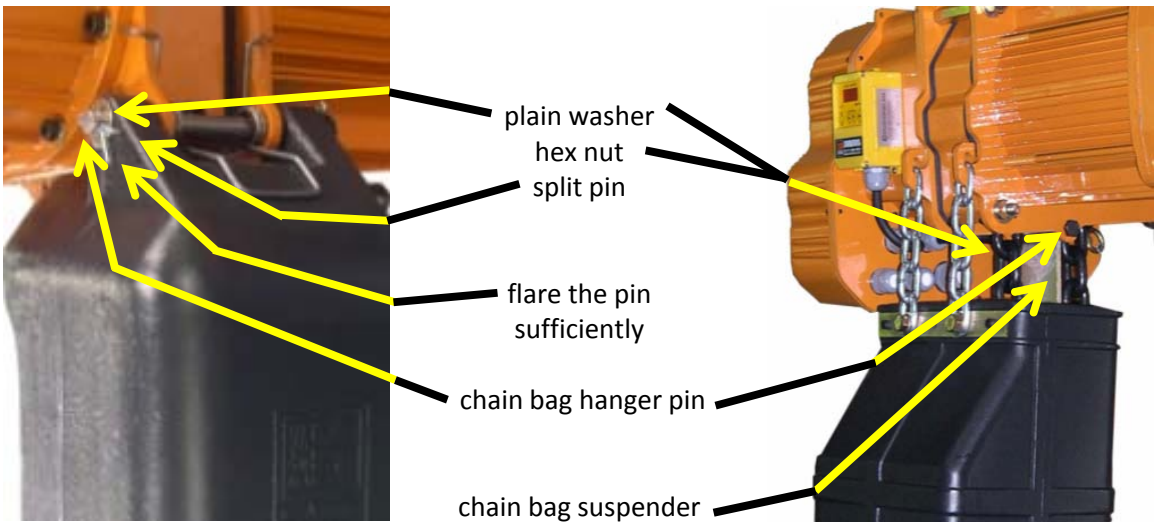
6.2. Chain container (chain bag)

⚠WARNING

Do not attempt to store more quantity of chain in chain container than that specified in the table. When containing more than the maximum specified quantity, it may result in serious damage to hoist and hazardous conditions to the operator and nearby people or goods.
For the hoist with double chain-falls, the chain container should be installed with the unloaded load chain projecting by about 50cm. When the chain container is pushed to the sides by the loads, the load chain may gush out or may not smoothly go through the chain hoist body, posing a danger.

■ **How to install Chain Container**

① Insert the load chain into the chain container.
② Place the container support chain on support metal plate of Chain Container to secure the container.
③ Insert chain bag support pin" and lock both ends with "split pin"



④ Line up chains strait so as not to be twisted.
⑤ Place the remaining container support chain on the Support Metal Plate.

6.3. Chain stopper in the chain container.

The chain stopper for slack fall stop is a safety component, not a functional one. Make sure that the stop is correctly fitted. The chain stopper of non-loaded side must be fixed 6inch (15cm) from the load chain end as shown in the left figure.

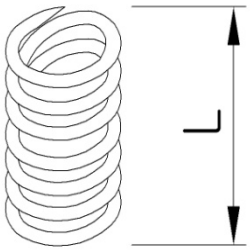
Securely using the wrench.

At the time of product installation, securely fix using the wrench. Check monthly for the looseness of the sockert bolts and tighten.

6.4. Chain stopper spring

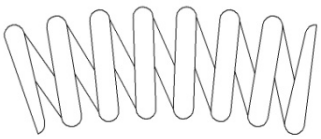
For safe operation, the Chain Stopper Spring must be replaced when the free length "L" is short of the dimension in the following table.

■ **Standard "L" length**



Capacity	Chainfall (reeving)	Standard "L" length	Replacement required
3ton	1chain-fall	130mm	115mm
5ton	2chain-falls	130mm	115mm

■ **Replacement required**



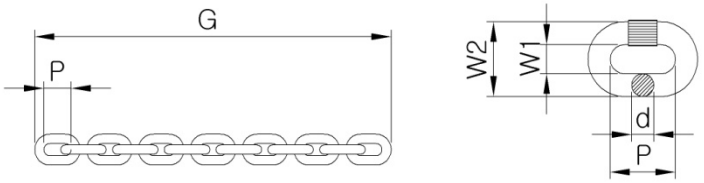
6.5. Load chain

⚠WARNING

Check if the chain is twisted or not.
Never try to use hoist when the load chains are entangled.
Pull the bottom hook to the normal vertical position before use.
Never use the lifting chain as a sling.
Never twist the lifting chain.
Do not bundle the chain into the chain bucket.
Always keep the chain clean and oiled and check that it is in good condition every day.
Only a genuine, manufacturer's chain may be used.

■ Specification of Load Chain

Diameter x pitch (mm)		Ø5.0 x 15	Ø7.1 x 21	Ø8.0 x 24	Ø11.2 x 34
Class, Grade		G80			
Surface hardness		520-620 HV10			
Breaking force min.	KN	31.5	63	80	160
Stress at breaking force	N/mm2	800	800	800	800
Breaking elongation min.	%	10	10	10	10
Marking					
Working load Limit, 1 fall	kg	500	1250	1500	3000
Weight per Meter	kg	0.55	1.1	1.4	2.7
Dimension(mm)	d	5	7.1	8	11.2
	p	15	21	24	34
	W1	6.9	8.4	9.5	13.7
	W2	17	24	26.6	37.2



Dimension of load chain	mm	Ø5.0 x 15	Ø7.1 x 21	Ø8.0 x 24	Ø11.2 x 34
Minimum link thickness allowed(d):	mm	4.7	6.8	7.5	10.9
Maximum pitch allowed(t):	mm	15.1	21.3	24.1	34
Length of 11 links	mm	166.1	231.3	265.1	375.3

☞ For link thickness, when the wear has increased by more than 5%
☞ For pitch, when the wear has increased by more than 3%

■ Manufacturer of Load Chain

☞ FEC CHAIN CORPORATION : 337 KANAORI-CHO, MINAMI-KU, HAMAMTSU-CITY, SHIZUOKA-PRE, JAPAN
☞ PEWAG Austria GmbH : A-8605 Kapfenberg, Mariazeller Strabe 143

Check the load chain for deformation or cracks. In this case, the wear on the chain guide and chain sheave should also be checked and they should be replaced if necessary. If a single link is defective in any way whatever, the chain must be replaced. If these limits are exceeded, the chain must be replaced immediately. The gage dimension to be checked shall be measured over 11 links from inside end of link to inside end of link (as shown in figure on previous page).

To remove the chain for 1-fall chain:

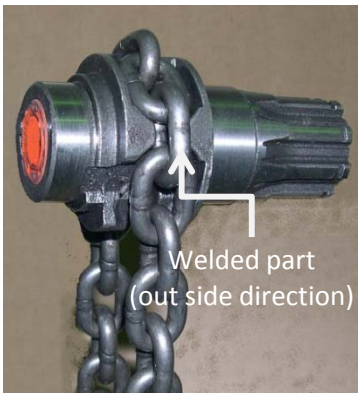
a. Remove the load from the hook.
b. Disassemble the hook block.
c. Lower the chain into the chain container.
d. Remove the chain container and unscrew and remove the lower chain guide.

To remove the chain for 2-fall chain:

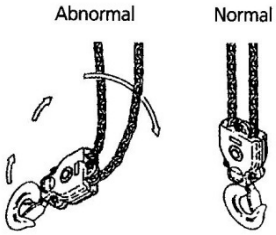
a. Raise the hook block to about 20 inches (50cm) from the hoist body.
b. Remove the chain bucket.
c. Disassemble the fixed point of the chain.
d. Let the rest of the chain slide through the chain sheave.

6.5.2. Checking chain alignment (the welded part outward from the center)

① Before installation, the welded part position should be checked for safe operation. With the welded part of chain links outward from load sheave or hoist center, the load chain should be aligned before installation. If not aligned correctly outward, it can cause a hazardous condition.



② For the safe operation of load chain, make sure that the bottom hook assembly is not upside down or capsized. In this case, the operator shall restore the chain to normal and make sure the welds on the chain links are in alignment. Do NOT us the hoist with twisted chain. For "Abnormal" case, please turn the bottom hook assembly between the chains to aligb the load chain.



③ For the inspection of idler sheave of bottom hook assembly, turn idler sheave by lifting the load chain up and down as per the figure.

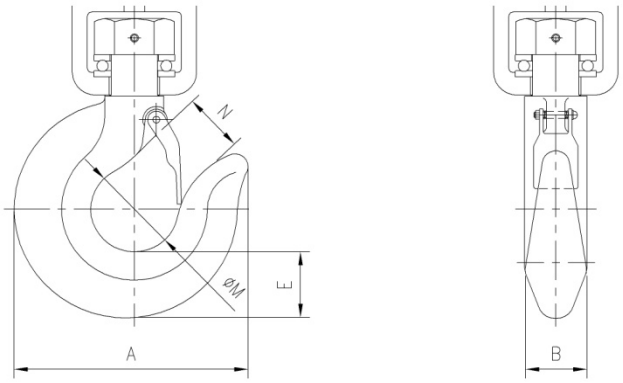
6.6. Hook

6.6.1. Measurement of wear on the hook

DIMENSION

CAPACITY (Ton)	STANDARD HOOK DIMENSION (MM)					FOR MAINTENANCE (REPLACEMENT REQUIRED)
	A	B	E	M	N	MAXIMUM THROAT OPEN =Nx115%
0.25T	75	19.5	22.5	33	30	>34.5
0.5T	75	19.5	22.5	33	30	>34.5
1T	94	24	32	36	25.5	>29.325
1.25T	90	24	27	39.5	30	>34.5
1.5T	116	31.5	39	48	33	>37.95
2T	117	26	39	46	32	>36.8
2.5T	120	31.5	38.5	50	33	>37.95
3T	140	37	45	54	39.5	>45.425
5T	166	47	54	67	47.5	>54.625

"FOR ALL MODELS, IT IS USED WITH SAME SIZE FOR BOTH TOP HOOK AND BOTTOM HOOK.

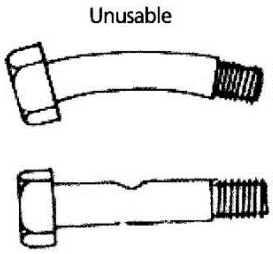


Check hooks for deformation or cracks. Hooks must be replace if throat opening has increased by more than 15%, or if throat opening has more than 10-degree twist from plane of straight hook.
For the wear on the hook and the load bottom hook, it shall be checked regularly. Measure the throat opening. If the throat opening exceeds the maximum opening allowed, replace the hook. Damaged safety latches shall be replaced immediately.

6.6.2. Chain fixing pin on hook

For the double chain-falls, the bottom hook assembly is fastened together with Chain Fixing Pin.

If any deformation is detected, it shall be replaced. Otherwise, the laod chain and the hook assembly can fail.



Pin that is bent or pressed is to be replaced.

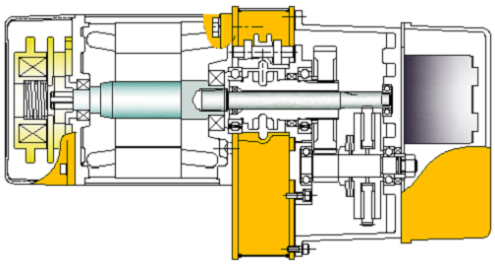
6.7. Load sheave and chain guide

Load sheave ensures perfect positioning of the chain with 5 or 4 pockets for better distribution of the load. Load chain is to be geometrically lined up in accordance with chain guide and load sheave.

Chain guide assures proper engagement of the chain on the load sheave and minimizes load chain wear. The chain guide also serves as the trip mechanism for the upper and lower hook travel limit switch. When contacted by the hook travel spring, the chain guide will actuate either the UP or DOWN travel limit switch and stop hoisting motion.

6.8. Slip clutch type Over-winding Limiter.(0.25~2.5ton)

This is the HOIST over-travel device.
The limit switch works in two steps.
- The 1st step : machinical slip clutch
- The 2nd step : Then interrupts the over load limit circuit



6.8.1. Replacement of brake linings

Before disassembling motor brake, the electric power supply shall be turned off.
When the braking function is detected as "POOR" or "ABNORMAL", the motor brake is be checked. The thickeness of the Brake disc assembly can be measured as per the picture on right. According to the following table of "Replacement Thickness of Brake Disc Assembly", the replacement of disc assembly shall be made when it is worn to the "To be Replaced" figures.

■ **Replacement of Brake Disc Assembly**

Product	Hoist Motor			Traversing Motor		
	Beginning thickness	Exchange thickness	Max.gap	Beginning thickness	Exchange thickness	Max.gap
0.25~0.5 ton	8mm	7.2mm	0.8mm	8mm	7.2mm	0.8mm
1~2.5 ton	12mm	10.8mm	1.2mm	8mm	7.2mm	0.8mm
3~5 ton	12mm	10.8mm	1.2mm	8mm	7.2mm	0.8mm

6.9. Motor

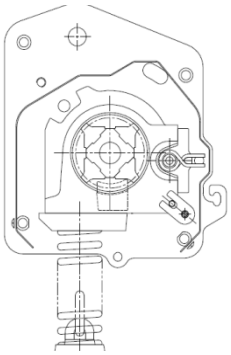
Heavy-duty Motor with Overheat Thermal Sensor
High torque and heavy duty hoist motor with insulation class "F". Frequent operation is efficient with 30 min. rating.
With the built-in thermal sensor, it automatically stops the operation to cool down when the motor internal temperature exceeds 120. C. AD.C. rectifier provides D.C. voltage for the motor brake.

Type of motor enclosure: TEFC

6.9.1. Motor rating of Hoist and Trolley

Motor	Capacity, chainfall (reeving)	Motor (kw)	Rated current(A)		
			220V,60Hz	380V,60Hz	440V,60Hz
Hoist motor	0.25ton-1fall	0.5Kw	2.8	1.6	1.4
	0.5ton-2falls				
	1ton-1fall	1.5Kw	6.4	3.7	3.2
	2ton-2falls				
	1.25ton-1fall	2.0Kw	8.5	4.9	4.3
	2.5ton-2falls				
	1.5ton-1fall	2.5Kw	9.5	5.5	4.8
	3.0ton-2falls				
	3.0ton-1fall	3.5Kw	14.9	8.6	7.5
	5.0ton-2falls				
Trolley motor	0.25ton-1fall	0.2Kw	1.3	1.2	0.7
	0.5ton-2falls				
	1ton-1fall				
	2ton-2falls				
	1.25ton-1fall				
	2.5ton-2falls				
	1.5ton-1fall				
	3.0ton-2falls	0.4Kw	2.2	2.1	1.3
	3.0ton-1fall				
	5.0ton-2falls				

6.10. Double Action Over-winding Limiter (built-in inside)



This is the HOIST over-travel device.
The limit switch works in two steps.
- The 1st step : Interrupts the control circuit
- The 2nd step : Then interrupts the main power circuit

Operation

When both the load chain and chain stopper spring, assembled to chain box, reaches the maximum upper or lower position, it contacts the chain guide.
Rotation of chain guide, rotates the limit assembly that is connected to the chain guide.
This automatically actuates limit and de-energizes either the raising or olwering circuit.

6.11. Preventive Incorrect Phase Limiter and Fuse sets
These components are the safety devices.

■ **Preventive Incorrect Phase Limiter**

At the time of installstion, it automatically checks the connected phase sequence (3ph) If the detected phase sequence will result in reverse operation of the hoist, the P.I.P.L. will prevent hoist operation until this condition is corrected.

■ Control Transformer Fuses
Primary and secondary fusing if the control transformer is provided.

Fuse Set ▶

Preventive Incorrect Phase▲

6.12. Push Button Pendant Switch-installed with Emergency stop button (red color)

Rain-proof, IP64 protection, with 2,4 or 6 buttons. All models are equipped with Emergency Stop function.
Easy to operate and designed with 150VAC control voltage. It is compact to enable easy one-handed sure grip control. The push button cable is provided with built-in strain relief to help prevent cable damage.

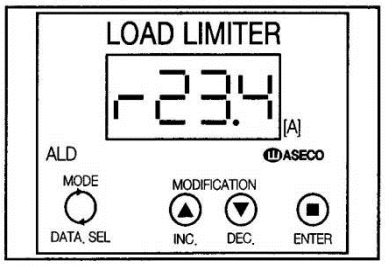
6.13. Overload Alert Sound Limiter (Protector) audible 'beeping' sound

When the hoist is overloaded with more than 110% of the rated load, it signals an audible alert to the operator. When the alert "beeping." sounds, the UP-motion will not operate but the DOWN motion will operate so the overload can be lowered.

LOAD LIMITER USER MANUAL (ALD-XXX)

1. FORMATION OF FRONT PANEL

THERE ARE 4-DIGIT FND, 4ea TACT SWITCH ON THE FRONT PANEL AND 2 LED (1 RED, 1 GREEN), A BUZZER AT THE BOTTOM OF THE HOUSING.



1) DISPLAY PART

①-α : 7-SEGMENT FND
HOIST MOTOR RUNNING CURRENT OR SETTING DATA(CURRENT OR TIME) IS DISPLAYED ON THE FND DEVICE.
-1ST DIGIT : FUNCTION DIGIT
r : MAIN MOTOR RUNNING CURRENT(A)
r. : CREEP MOTOR RUNNING CURRENT(A)
c : MAIN MOTOR O/L SETTING CURRENT(A)
c. : CREEP MOTOR O/L SETTING CURRENT(A)
d : STARTING DELAY TIME (SEC)
o : O/L OPERATING TIME (SEC)
t : MAIN MOTOR TESTING CURRENT(A)
t. : CREEP MOTOR TESTING CURRENT(A)
F : MAIN MOTOR O/L FAULT CURRENT(A)
F. : CREEP MOTOR O/L FAULT CURRENT(A)
-2nd, 3rd, 4th digit :
DISPLAYING CURRENT(A) OR TIME(SEC) CORRESPONDING TO THE FIRST DIGIT FUNCTION.
②-b : LED(RED)
LIGHTING RED COLOR WHEN O/L FAULT HAPPEN.

2) DATA MODIFICATION PART

①-α MODE PB (DATA SEL.)
EACH PRESS OF THE MODE PB CAHNGES DISPLAYING DATA FROM r xx.x TO cxx.x, TO c. xx.x, TO d xx.x, TO o xx.x, TO t xx.x, TO t. xx.x, TO r xx.x AGAIN.
MODE CHANGING IS ALLOWABLE IN CASE OF NO MOTOR CURRENT STATUS.
②-b DATA MODIFICATION PB (INC. DEC.)
DATA INCREASING BY INC. PB, DECREASING BY DEC. PB
③-c ENTER PB
SAVE DATA IN EPROM AS A NEW DATA OR CLEAR O/L FAULT MESSAGE.
NO OPERATION ENTER PB FROM OUTSIDE OF O/L CASE.

2. FUNCTION AND OPERATION

1) OVER LOAD(O/L) SETTING.
-α c : 0.6-75A FOR MAIN MOTOR
c. : 0.5-20A FOR CREEP MOTOR

2) STARTING DELAY TIME SETTING(d)
0.5-5.0 SEC

3) O/L OPERATING TIME SETTING(o)
0.5-5.0 SEC
O/L RELEASING TIME IS SAME AS O/L OP. TIME.
HOIST MUST BE OPERATED LOWERING DIRECTION AS MUCH AS HOISTING UP DIRECTION.

4) TESTING OPERATION
SELECT THE FUNCTION t (main motor test), OR t. (creep motor test) IN NO MOTOR CURRENT STATUS.
PUSH INC. PB ONE TIME, THEN TESTING SIGNAL FLOW INTERNALLY.
AFTER CORRESPONDING TIME(d+o) PASSED, O/L FAULT IS DETECTED AND OUTPUT RALAY CONTACT(NORMALLY ENERGIZED COIL), EMIT RED LED.
TO CLEAR TEST FAULT, PUSH ENTER PB OR DO HOISTING LOWERING DURING d+o TIME.

⚠WARNING

Do NOT open the outer enclosure. The stored value of the overload limiter shall NOT be changed or modified by anyone other than the manufacturer or an authorized agent. The value inscribed on the overload limiter is the optimal number and value for the hoist, changing this setting can cause equipment damage or personal injury. The manufacturer is not responsible for damage, injury, or death resulting from unauthorized tampering with this device.
The outer enclosure of the overload limiter is sealed by the manufacturer to ensure the alert warning enclosure is not opened.

■ Description for the Inside Panel Overload Alert Limiter (How to modify the setting figures)

■ MODE Setting Figures for Overload Alert Limiter(60(50)hz, Single Speed)

Capacity, chainfall (reeving)	Motor (kw)	Rated current(A)			delay/overload/reset time
		220V 60(50)Hz	380V 60(50)Hz	440V 60(50)Hz	
0.25ton-1fall	0.5Kw	2.8(2.3)	1.6(1.3)	1.4(1.2)	1sec/1sec/1.5sec
0.5ton-2falls					
1ton-1fall	1.5Kw	6.4(5.3)	3.7(3.1)	3.2(2.7)	
2ton-2falls					
1.25ton-1fall	2.0Kw	8.5(7.1)	4.9(4.1)	4.3(3.6)	
2.5ton-2falls					
1.5ton-1fall	2.5Kw	9.5(7.9)	5.5(4.6)	4.8(4.0)	
3.0ton-2falls					
3.0ton-1fall	3.5Kw	14.9(12.4)	8.6(7.1)	7.5(6.2)	
5.0ton-2falls					

⚠WARNING

▶ Only authorized person(s) or the person shall service the electric load limiter.
▶ This device is composed of digitally controlled circuits. When programming changes are made by unauthorized personnel, it can allow the equipment to be overloaded and result in equipment damage, personal injury, or death.
▶ Before installing this device, be sure to read the instruction manual carefully.

7. Preventive maintenance

7.1. Recommended Periodic Maintenance and Inspection Table

Check	Interval	Qualification of the customer s personnel
Brake operation	Daily	Operator
Visual inspection of the chain	Daily	Operator
Suspension of the control box by the steel wire	Daily	Operator
Cleanness and lubrication of the chain	Monthly	Operator
Limiter operation	Monthly	Operator
Measuring of the wear on the chain	Every 3 months	Operator
Measuring of the wear on the hooks	Every 3 months	Operator
Tightening of the hook block screws	Every 3 months	Operator
Checking of the locking plate screws	Every 3 months	Operator
Lubrication of the idler sprocket	Annually	Operator
Checking of the screw tightening torques and checking for signs of corrosion	Annually	Qualified mechanic
Adjustment of the limiter and brake	Annually	Qualified mechanic
Lubrication of the gears	Lubricated for life	

7.2. Lubrication

Lubrication point	Possible brands	Quantity & Applied model no.	
Chain	Chain lubricating fluid	As required	
Gears	SHELL OMALA 220 MOBIL MOBIL 632 ESSO EP220 CALTEX MEROPA220	1liter	1ton (chain-fall reeving 1) 2ton (chain-fall reeving 2)
		3liter	2ton (chain-fall reeving 1) 3ton (chain-fall reeving 2) 5ton (chain-fall reeving 2)

7.3. Recommended Technical Support for Various Spare Parts

Spare part	To be replaced by	Qualification of the personnel
Upper chain guide	Authorized manufacturer personnel	Qualified electrician
Output shaft	Authorized manufacturer personnel	Qualified mechanic
Ratchet gear assembly	Authorized manufacturer personnel	Qualified mechanic
Gearing (1st/2nd stage)	Authorized manufacturer personnel	Qualified mechanic
Other sealing and O-rings	Authorized manufacturer personnel	Qualified mechanic
Load limiter	Authorized manufacturer personnel	Qualified electrician
Electric box	Authorized manufacturer personnel	Qualified electrician
PC-board	Authorized manufacturer personnel	Qualified electrician
Overload limiter	Authorized manufacturer personnel	Qualified electrician
Dual brake system	Authorized manufacturer personnel	Qualified electrician
Chain	Customer	Qualified mechanic
Chain container (chain bag)	Customer	Qualified mechanic
Chain stopper	Customer	Qualified mechanic
Suspension hook	Customer	Qualified mechanic
Hook assembly	Customer	Qualified mechanic
Fuses	Customer	Qualified electrician

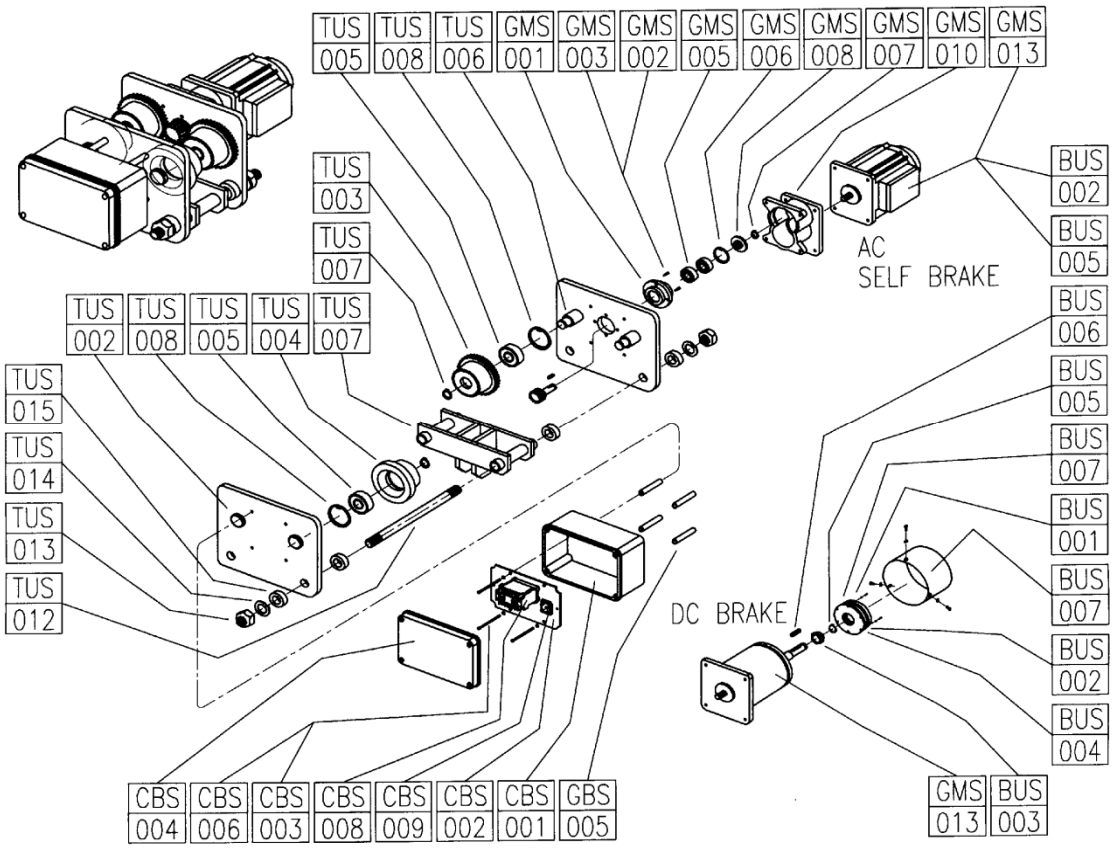
7.4. Troubleshooting

Problem	Cause	Solution
The chain hoist does not work	The emergency stop button is activated	Deactivate it
	Triggered fuse	Replace the fuse
	Temperature control (optional) activated	Allow to cool down
	Contactor terminal screws loose	Tighten them
	Main switch is off	Turn it on
Impossible to lift the load	Overload	Reduce the loa
	Limiter worn or incorrectly adjusted	Adjust or replace it
Braking path of more than 4inch (10 cm)	Braking lining worn	Adjust the brake and replace the brake components if necessary
The travel direction does not correspond to that indicated on the control box	The power supply is incorrectly connected	Change two phases of the power supply
Abnormal noises while the load is being moved	The chain components are not lubricated	Lubricate the components
	Chain is worn	Replace it
	Load sheave or chain guide is worn	Replace the sheave or chain guide
	Idler sheave is worn	Replace it
	A supply phase is missing	Check the connection of the phases

Once the hoist has been used for the FEM class duration, all of the components must be checked by an authorized agent or by the manufacturer. The hoist should no longer be used, unless agreement is obtained from the authorized agent or the manufacturer.
For discarding chain hoist, please remove all greases and oils from the hoist.

Parts illustrations

■ Exploded View of Motor trolley Parts



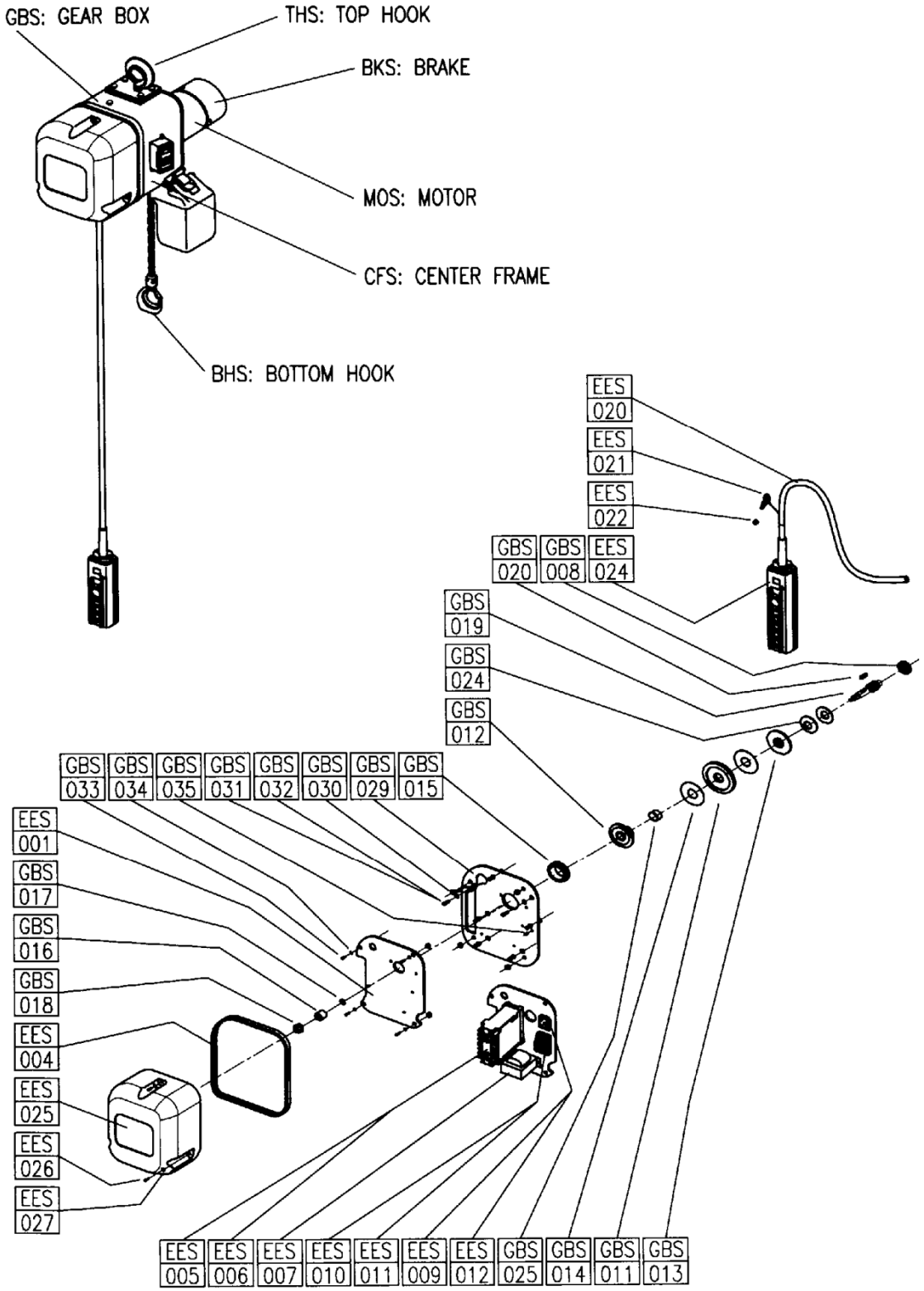
Parts List of Motor trolley

TUS000	TROLLEY UNIT SECTION	CBS003	SET SCREW	GMS012	SPRING WASHER
TUS001	GEAR SIDE PLATE	CBS004	COVER	GMS013	MOTOR ASSEMBLY
TUS002	PLAIN SIDE PLATE	CBS005	STUD PIPE	GMS014	HEX. SOCKETED BOLT
TUS003	GEAR ROLLER	CBS006	HEX. SOCKETED BOLT	GMS015	SPRING WASHER
TUS004	PLAIN ROLLER	CBS007	SPRING WASHER	EPS000	ELECTRICAL PARTS
TUS005	BEARING for ROLLER	CBS008	ELCTRO MAGNETIC CONTACTOR	EPS001	LIMIT SWITCH
TUS006	ROLLER PIN	CBS009	DIODE	EPS002	LIMIT SWITCH MOUNTING PLATE
TUS007	SNAP RING-A	CBS010	CABLE GLAND	EPS003	HEX. SOCKETED BOLT
TUS008	SNAP RING-B	GMS000	GEARED MOTOR	EPS004	SPRING WASHER
TUS009	ANTI DROP BRACKET	GMS001	BEARING HOUSING	EPS005	POWER SOURCE COLLECT BAR
TUS010	HEX. SOCKETED BOLT	GMS002	HEX. SOCKETED BOLT	EPS006	HEX. SOCKETED BOLT
TUS011	SPRING WASHER	GMS003	SPRING WASHER	EPS007	SPRING WASHER
TUS012	STAY BOLT	GMS004	PINION	BUS000	BRAKE ASSEMBLY
TUS013	HEX. NUT	GMS005	BEARING	BUS001	MAGNET CORE
TUS014	SPRING WASHER	GMS006	SNAP RING-C	BUS002	BRAKE LINING
TUS015	ADJUST COLLAR	GMS007	SNAP RING-D	BUS003	BRAKE HUB
TUS016	HOLDER	GMS008	PINION GEAR	BUS004	BRAKE SPRING
CBS000	CONTROL BOX	GMS009	SUNK KEY	BUS005	SNAP RING
CBS001	CONTROL BOX	GMS010	GEAR CASE	BUS006	SUNK KEY
CBS002	BASE PANEL	GMS011	HEX. SOCKETED BOLT	BUS007	MOTOR REAR COVER

Parts illustrations

■ Exploded View of Chain hoist Parts

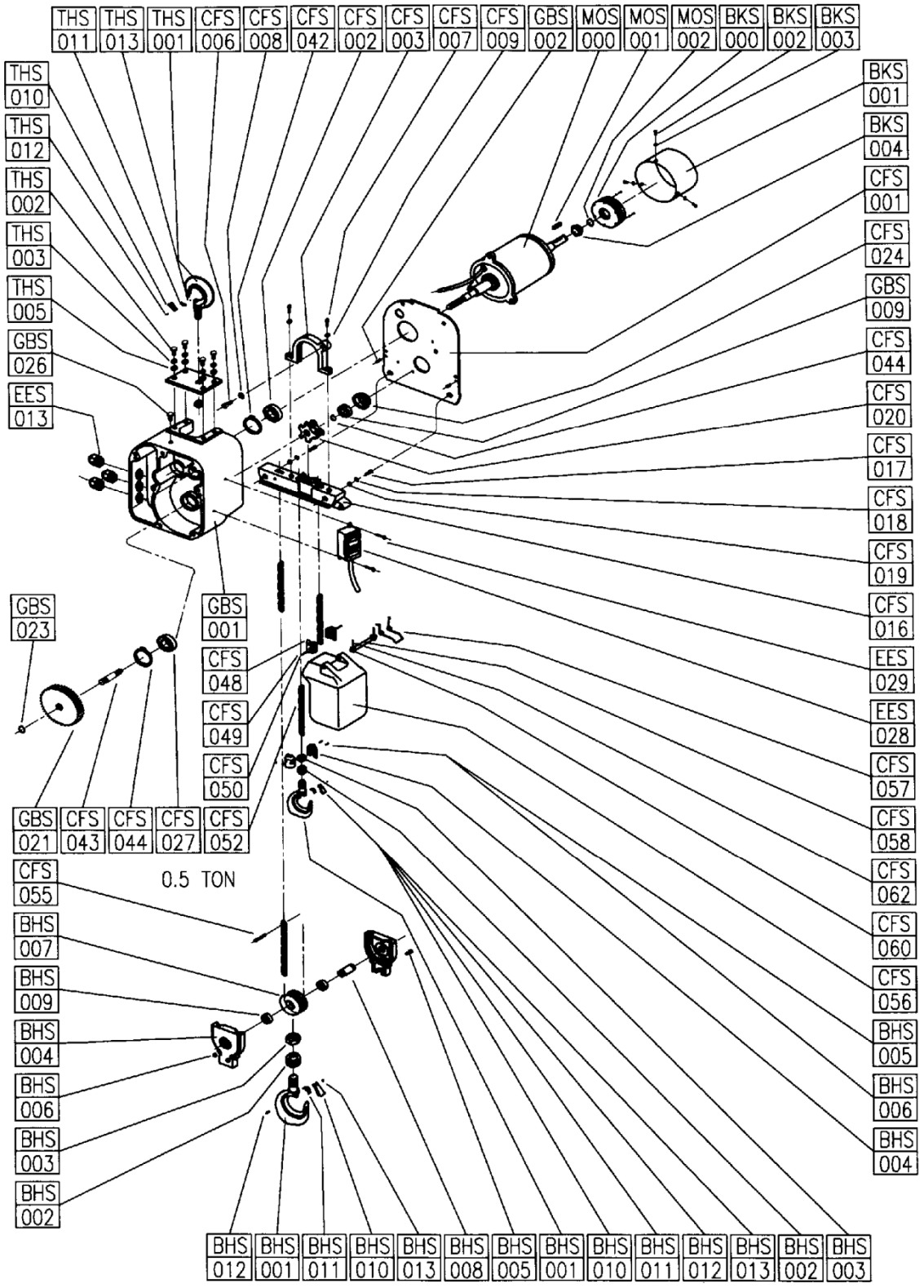
SC-0.25(0.5) Ton Chain hoist



Parts illustrations

■ Exploded View of Chain hoist Parts

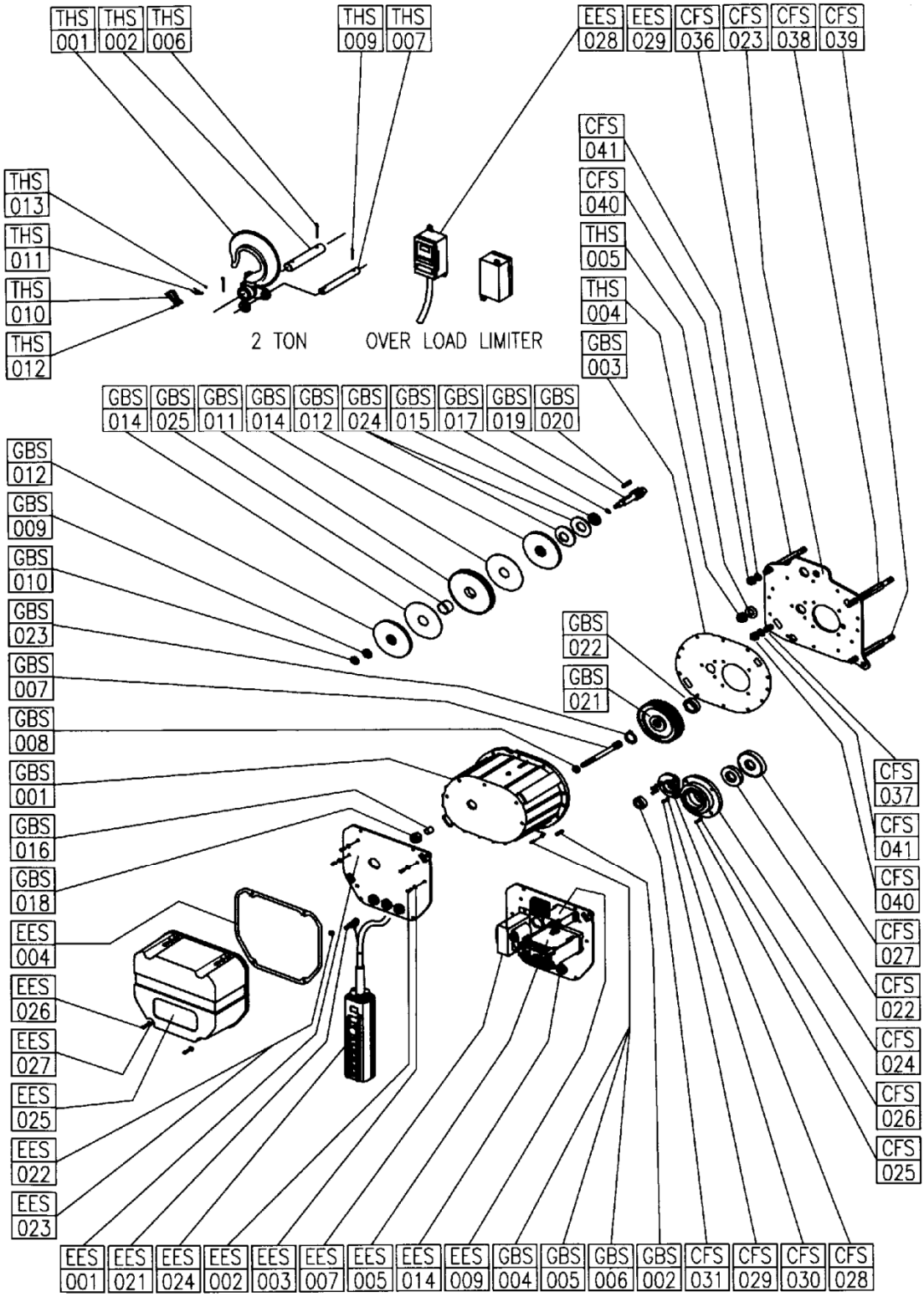
SC-0.25(0.5) Ton Chain hoist



Parts illustrations

■ Exploded View of Chain hoist Parts

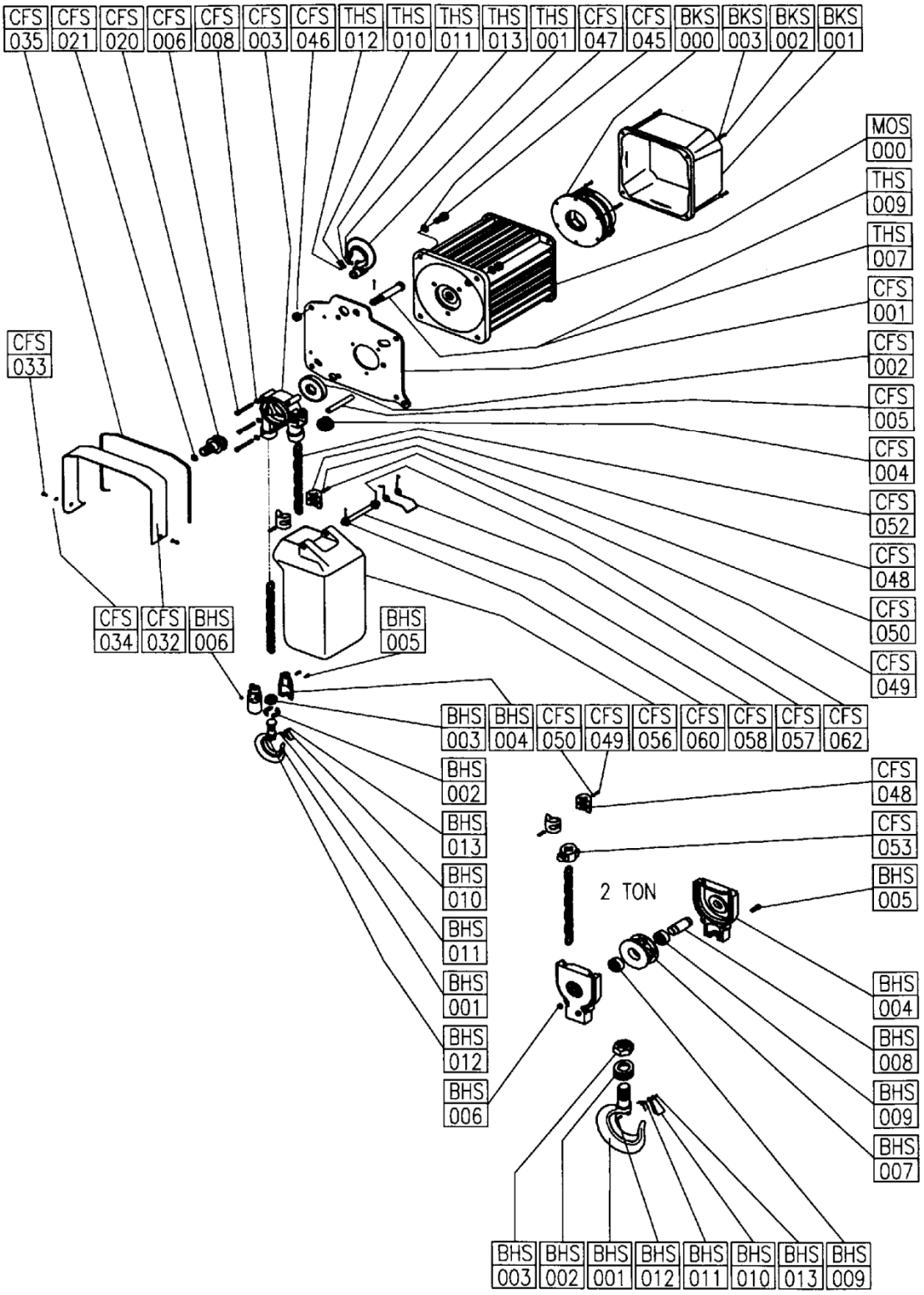
SM-1(2.5) Ton Chain hoist



Parts illustrations

■ Exploded View of Chain hoist Parts

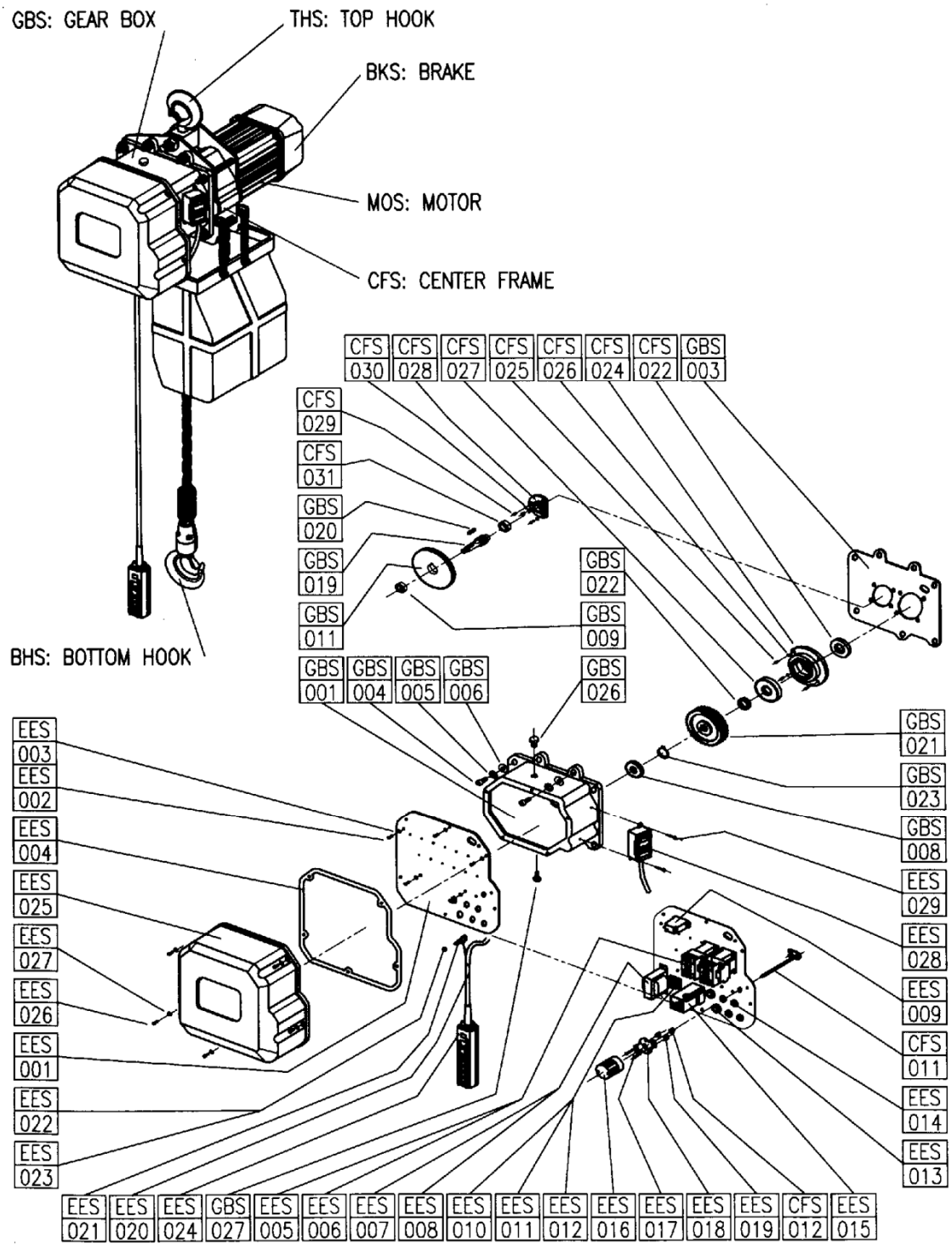
SM-1(2.5) Ton Chain hoist



Parts illustrations

■ Exploded View of Chain hoist Parts

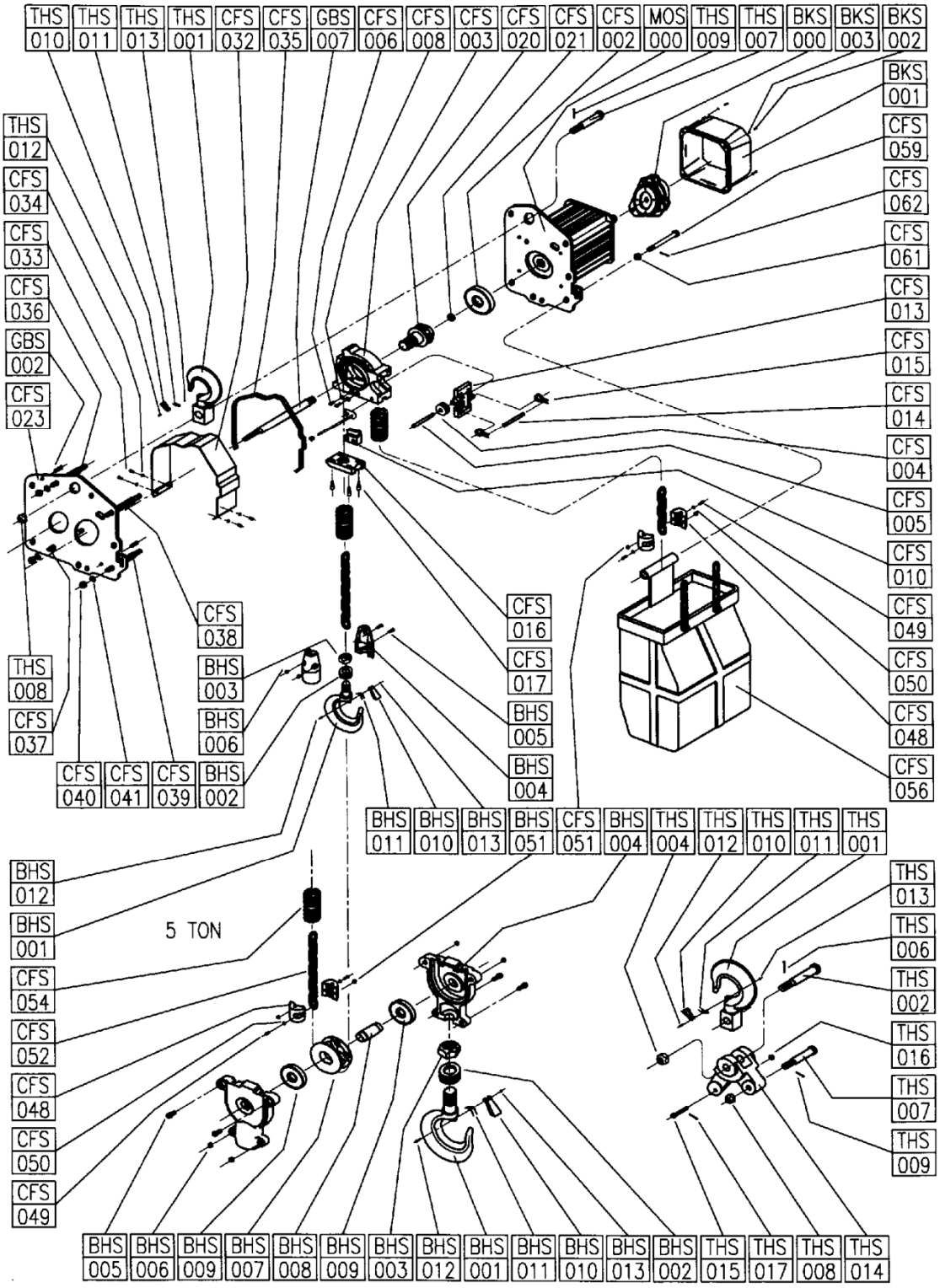
SM-3(5) Ton Chain hoist



Parts illustrations

■ Exploded View of Chain hoist Parts

SM-3(5) Ton Chain hoist



Parts List of Chain Hoist

CFS000	**CENTER FRAME ASSEMBLY**	CFS056	CHAIN BUCKET	GBS017	O-RING
CFS001	MOTOR SIDE PLATE	CFS057	BUCKET SPRING	GBS018	TORQUE ADJUSTING NUT
CFS002	BALL BEARING	CFS058	BUCKET PIN	GBS019	2nd PINION
CFS003	LOAD CHAIN GUIDE	CFS059	HEX, BOLT	GBS020	SUNK KEY
CFS004	GUIDE ROLLER	CFS060	ROUND WASHER	GBS021	LOAD GEAR
CFS005	GUIDE ROLLER PIN	CFS061	HEX, NUT	GBS022	LOAD GEAR COLLAR
CFS006	HEX. SOCKETED BOLT	CFS062	SPLIT PIN	GBS023	SNAP RING
CFS007	HEX. SOCKETED BOLT	**THS000**	TOP HOOK ASSEMBLY	GBS024	DISC SPRING
CFS008	SPRING WASHER	THS001	TOP HOOK	GBS025	DU BUSH
CFS009	HEX NUT	THS002	TOP HOOK PIN-A	GBS026	OIL CAP
CFS010	CHAIN SEPARATER	THS003	SPRING WASHER	GBS027	OIL DRAIN PLUG
CFS011	LEVER SHAFT	THS004	HEX. NUT	GBS028	DU BUSH
CFS012	LIMIT COUPLING	THS005	ROUND WASHER	GBS029	GEAR BOX COVER
CFS013	GUIDE ROLLER BRACKET	THS006	SPLIT PIN	GBS030	HEX. NUT
CFS014	SPRING HOLDER PIN	THS007	TOP HOOK PIN-B	GBS031	HEX. SOCKETED BOLT
CFS015	SPRING	THS008	HEX. NUT	GBS032	SPRING WASHER
CFS016	CHAIN SLIDER	THS009	SPLIT PIN	GBS033	HEX. SOCKETED BOLT
CFS017	CHAIN SLIDER BOLT	THS010	SAFETY LATCH	GBS034	SPRING WASHER
CFS018	SPRING WASHER	THS011	LATCH SPRING	GBS035	SPRING PIN
CFS019	ROUND WASHER	THS012	SET SCREW	EES000	ELEC. EQUIPMENT ASS'Y
CFS020	LOAD SHEAVE	THS013	HEX. NUT	EES001	ELEC. EQUIPMENT PLATE
CFS021	OIL SEAL	THS014	ARM	EES002	HEX. SOCKETED BOLT
CFS022	OIL SEAL	THS015	HEX, SOCKETED BOLT	EES003	SPRING WASHER
CFS023	GEAR SIDE PLATE	THS016	HEX. NUT	EES004	PACKING
CFS024	BEARING HOUSING-A	THS017	SPLIT PIN	EES005	MAGNET CONTACTOR
CFS025	HEX, SOCKETED BOLT	**BHS000**	BOTTOM HOOK ASSEMBLY	EES006	SET SCREW
CFS026	SPRING WASHER	BHS001	BOTTOM HOOK	EES007	TRANSFORMER
CFS027	BEARING	BHS002	THRUST BEARING	EES008	SET SCREW
CFS028	BEARING HOUSING-B	BHS003	HEX. NUT	EES009	RECTIFIER / DIODE
CFS029	HEX, SOCKETED BOLT	BHS004	BOTTOM HOLDER	EES010	FUSE BOX
CFS030	SPRING WASHER	BHS005	HEX. SOCKETED BOLT	EES011	FUSE
CFS031	BEARING	BHS006	HEX. LOCK NUT	EES012	SET SCREW
CFS032	CENTER FRAME COVER	BHS007	IDLE SHEAVE	EES013	CABLE GRAND
CFS033	HEX, SOCKETED BOLT	BHS008	IDLE SHEAVE PIN	EES014	CABLE GRAND
CFS034	ROUND WASHER	BHS009	BEARING	EES015	DPSR
CFS035	COVER SEAL	BHS010	SAFETY LATCH	EES016	CAM SWITCH
CFS036	STUD BOLT-A	BHS011	LATCH SPRING	EES017	HEX. SOCKETED BOLT
CFS037	STUD BOLT-B	BHS012	SET SCREW	EES018	CAM SWITCH BRACKET
CFS038	STUD BOLT-C	BHS013	HEX. NUT	EES019	CAM SWITCH COLLAR
CFS039	STUD BOLT-D	GBS000	GEAR BOX ASSEMBLY	EES020	PUSH BUTTON CABLE
CFS040	HEX. NUT	GBS001	GEAR BOX	EES021	CABLE CLAMP
CFS041	SPRING WASHER	GBS002	SPRING PIN	EES022	HEX NUT
CFS042	SNAP RING	GBS003	GASKET	EES023	SPRING WASHER
CFS043	LOAD SHAFT	GBS004	HEX. SOCKETED BOLT	EES024	PUSH BUTTON SWITCH
CFS044	SNAP RING	GBS004	HEX. BOLT(3~5TON)	EES025	CONTROL BOX COVER
CFS045	HEX, BOLT	GBS005	SPRING WASHER	EES026	HEX. SOCKETED BOLT
CFS046	HEX, NUT	GBS006	ROUND WASHER	EES027	SPRING WASHER
CFS047	SPRING WASHER	GBS007	DRIVING SHAFT	EES028	LOAD LIMITER
CFS048	CHAIN STOPPER SET	GBS008	BEARING	EES029	SET SCREW
CFS049	HEX. SOCKETED BOLT	GBS009	BEARING	MOS000	HOIST MOTOR ASSEMBLY
CFS050	SPRING WASHER	GBS010	OIL SEAL	MOS001	SUNK KEY
CFS051	HEX, NUT	GBS011	1ST GEAR	MOS002	SNAP RING
CFS052	LOAD CHAIN(1FALL)	GBS012	FRITION HUB-A	BKS000	BRAKE ASSEMBLY
CFS052	LOAD CHAIN(2FALLS)	GBS013	FRITION HUB-B	BKS001	BRAKE COVER
CFS053	LOAD CHAIN HANGER	GBS014	FRICTION LINING	BKS002	HEX. SOCKETED BOLT
CFS054	BUFFER SPRING	GBS015	HUB SUPPORTER	BKS003	SPRING WASHER
CFS055	HEX. SOCKETED BOLT	GBS016	PRESSURE COLLAR	BKS004	LINNING HUB

CERTIFICATE

C E R T I F I C A T E

TÜVRheinland®

of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50351354 0001

Report No.: 50048681 001

Holder:
SAMSUNG HOIST
36, Hwanggeum 3-ro, Yangchon-eup,
Gimpo-si, Gyeonggi-do, 10048
Rep. of Korea

Product:
Kettenförderer
Electric Chain Hoist

Identification:
Type Designation(s): SCO-xyyy, SCT-xyyy
x = S, D (S:single speed, D:dual speed)
yyy = 250, 500, 1000, 1250, 2000,
2500, 3000, 5000
Serial No. : n.a. (Prototype)

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

TÜV Rheinland LGA Products GmbH Zertifizierungsstelle TÜVRheinland

Certification Body

Date 18.07.2016

TagSun Park

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

Sam Sung Hoist Co., Ltd.

Registration No.: QAIC / KR / 15413 - A

(hereinafter called the Registered Company) the right to be listed in the Directory of Registered Companies in respect of the services listed below. These services shall be offered by the Registered Company at or from only the address given below in accordance with the quality management system in compliance with ***ISO 9001:2008.***

Address to which this Certificate refers:

36, Hwanggeum 3-ro, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea

Approved Scope to which this Certificate refers:

The Design / Development, Manufacture and Installation of Hoist, Crane

Signed for and on behalf of the Board

CHIEF EXECUTIVE

SCHEME MANAGER

Certificate Issue Date : *24th June 2016* - **Certificate Expiry Date** : *18th June 2017*
Date of Initial Registration : *24th June 2014* - **Re-Certification Before**: *18th June 2017*

This Certificate of Registration is granted subject to the Regulations approved by the Board.

QA INTERNATIONAL
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Dudley Court
Dudley Road
Darlington
United Kingdom
DL1 4GG

Tel: +44 (0)1325 384272
Fax: +44 (0)1325 480980
www.qai.co.uk

QA INTERNATIONAL CERTIFICATION LIMITED

INTERNATIONAL UKAS MANAGEMENT SYSTEMS

The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the accreditation certificate number 046.

Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

Sam Sung Hoist Co., Ltd.

Registration No. : QAIC / KR / 15414 - A

(hereinafter called the Registered Company) the right to be listed in the Directory of Registered Companies in respect of the services listed below. These services shall be offered by the Registered Company at or from only the address given below in accordance with the environmental management system in compliance with ***ISO 14001:2004.***

Address to which this Certificate refers :

36, Hwanggeum 3-ro, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea

Approved Scope to which this Certificate refers.

The Design / Development, Manufacture and Installation of Hoist, Crane

Signed for and on behalf of the Board

CHIEF EXECUTIVE

SCHEME MANAGER

Certificate Issue Date : *4th June 2015* - **Certificate Expiry Date** : *22nd June 2016*
Date of Initial Registration : *27th June 2014* - **Re-Certification Before** : *22nd June 2017*
This Certificate of Registration is granted subject to the Regulations approved by the Board.

QA INTERNATIONAL
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QA INTERNATIONAL UKAS MANAGEMENT SYSTEMS

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Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

Sam Sung Hoist Co., Ltd.

Registration No.: QAIC / KR / 15415 - A

(hereinafter called the Registered Company) the right to be listed in the Directory of Registered Companies in respect of the services listed below. These services shall be offered by the Registered Company at or from only the address given below in accordance with the health & safety management system in compliance with ***OHSAS 18001:2007****.*

Address to which this Certificate refers:

36, Hwanggeum 3-ro, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea

Approved Scope to which this Certificate refers:

The Design / Development, Manufacture and Installation of Hoist, Crane

Signed for and on behalf of the Board

CHIEF EXECUTIVE

SCHEME MANAGER

Certificate Issue Date : *24th June 2016* - **Certificate Expiry Date** : *19th June 2017*
Date of Initial Registration : *27th June 2014* - **Re-Certification Before**: *19th June 2017*

This Certificate of Registration is granted subject to the Regulations approved by the Board.

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REGISTERED QA INTERNATIONAL OHSAS 18001

QA INTERNATIONAL CERTIFICATION LIMITED

QA INTERNATIONAL

GENERAL CONDITIONS OF WARRANTY

WARRANTIES: The seller warrants to the original using Buyer thereof that the goods sold under this Agreement are free from defects in workmanship and materials for a period of one year from the date of shipment to the original using Buyer. No other express warranties are given and no affirmation of Seller or Seller's agents, by word or action, shall constitute a warranty. No warranty is made for components and sccessories made by other when such items are warranted by their respective manufacturers.

Installation or operation of the equipment in any manner other than as recommended by Seller, shall void the warranty.

Any variations in details between the goods furnished herein and those covered in Buyer's specifications are due to standards of manufacture not to be construed as exceptions to the specifications.

DISCLAIMER OF IMPLIED WARRANTIES:

(a) SELLER MAKES NO WARRANTY OF MERCHANTABILITY IN RESPECT TO THE GOODS SOLD UNDER THIS AGREEMENT.

(b) This sale is made WITHOUT ANY WARRANTY BY SELLER THAT THE GOODS ARE SUITABLE FOR ANY PARTICULAR PURPOSE.

(c) Buyer hereby waives all other warranties, guarantees, obligations, liabilities, rights, and remedies arising by law or otherwise including any obligation or liability of the seller arising from tort, and Buyer shall indemnify Seller from any liability, loss, damage, or claim arising from Buyer's tortuous use of the goods sold hereby.

REMEDIES :

(a) Under no conditions shall any goods be returned to Seller without its prior written consent.

(b) The Buyer's sole and exclusive remedy for breach of any warranty is limited to Seller furnishing, at its expense, duplicate or repaired parts F.O.B. Seller's plant with installation at Buyer's expense if discovery of a claimed defect accurs during the allowable warranty period, and if Seller's inspection determines a defect exists.

(c) The quantity of material shown by invoice shall in all cases govern settlement for shortages, unless notice of shortage, appropriately documented, is given to the carrier and the Seller upon delivery by the Carrier.

(d) Claims for errors, deficiencies or imperfections shall be deemed waived by the Buyer unless Seller is notified in writing of the basis of such claims within 10 days after discovery of claimed defect and such discovery occurs within the warranted period.

(e) Neither Buyer nor User shall be entitled under this Agreement to recover from Seller any incidental or consequential damages of any nature including but not limited to the cost of any labor expended by others in connection with the goods sold hereby by reason of anty alleged nonconformity or breach of warranty on the part of the Seller, nor costs of material or account thereof, nor any lost profits whether determinable or speculative.

SAMSUNG HOIST CO., LTD.
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Phone +82-31-989-8561 Fax +82-31-989-8564
www.samsunghoist.com sm@samsunghoist.com

SERIAL NUMBER _____