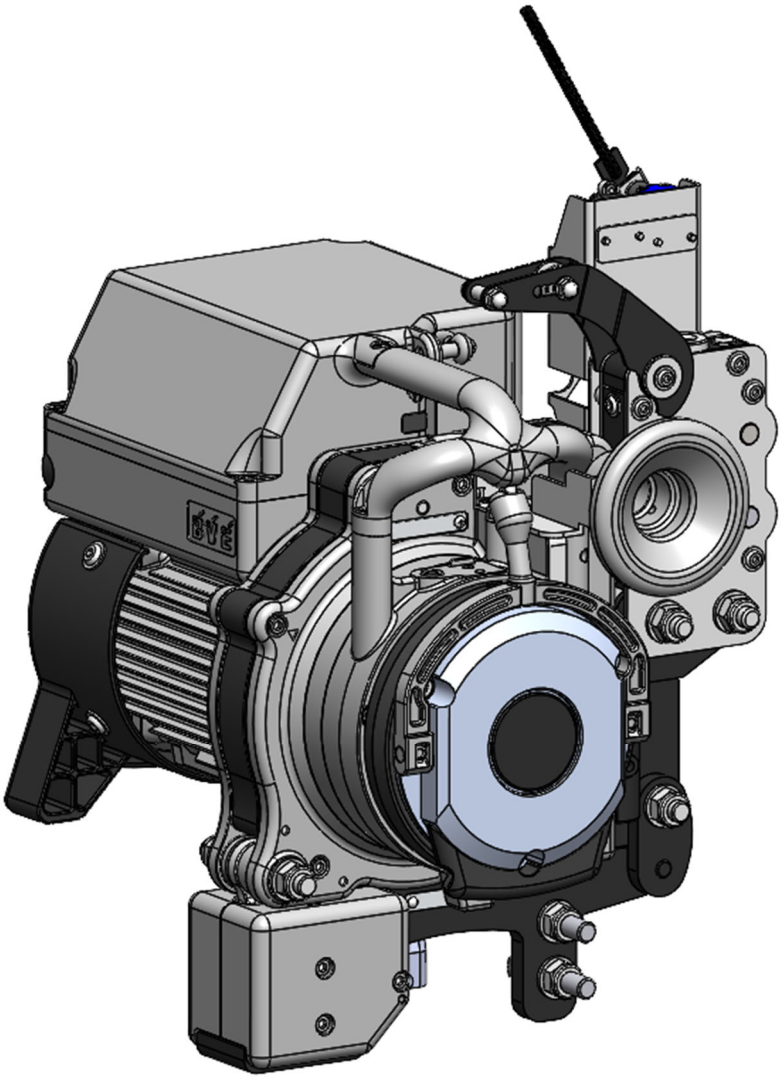
BISOMAC308

Specifications for Europe

Electric Traction Hoist
Operator's Manual



NIHON BISOH CO., LTD.

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THIS EQUIPMENT.

Any operation in violation of these instructions may result in bodily injury or death.

WARNING

+ All operators operating BISOMAC308 Electric Traction Hoist (hereinafter referred to as the hoist) must read and completely understand this manual.
+ All operators must be thoroughly trained and certified in the use of the hoist, its operational and safety features.
+ Only authorized and physically fit operators shall operate the equipment.
+ At the start of each work shift, daily test must be performed to ensure correct operation.
+ Any operations in violation of these instructions is operator's own risk and may result in serious injuries.
+ Keep this manual with the hoist at all times.
+ Use only spare parts and steel wire rope recommended by NIHON BISOH.
+ Use only machinery or incorporated component, which has been declared to be in conformity with BS EN 1808 and national, regional, or local implementing.
  DO NOT operate the hoist until safety is secured.
+ It is the responsibility of the user of this hoist to determine that this hoist is suitable to be used in conjunction with any other equipment. The user must also determine that this hoist and other components used will be in strict conformity with the provisions of federal, state, national and local ordinances and regulations.

Manufacturer: NIHON BISOH CO., LTD.

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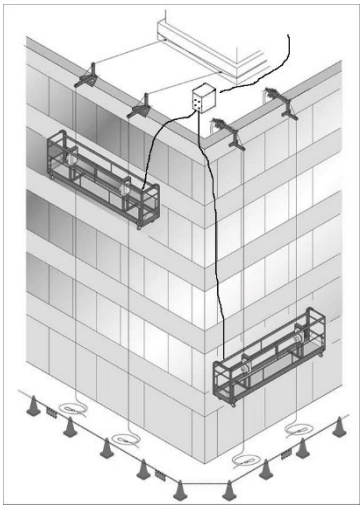
Attachment 1: BISOMAC308 1P-600 Wiring diagram

Attachment 2: BISOMAC308 3P-600 Wiring diagram

0. READ BEFORE USE

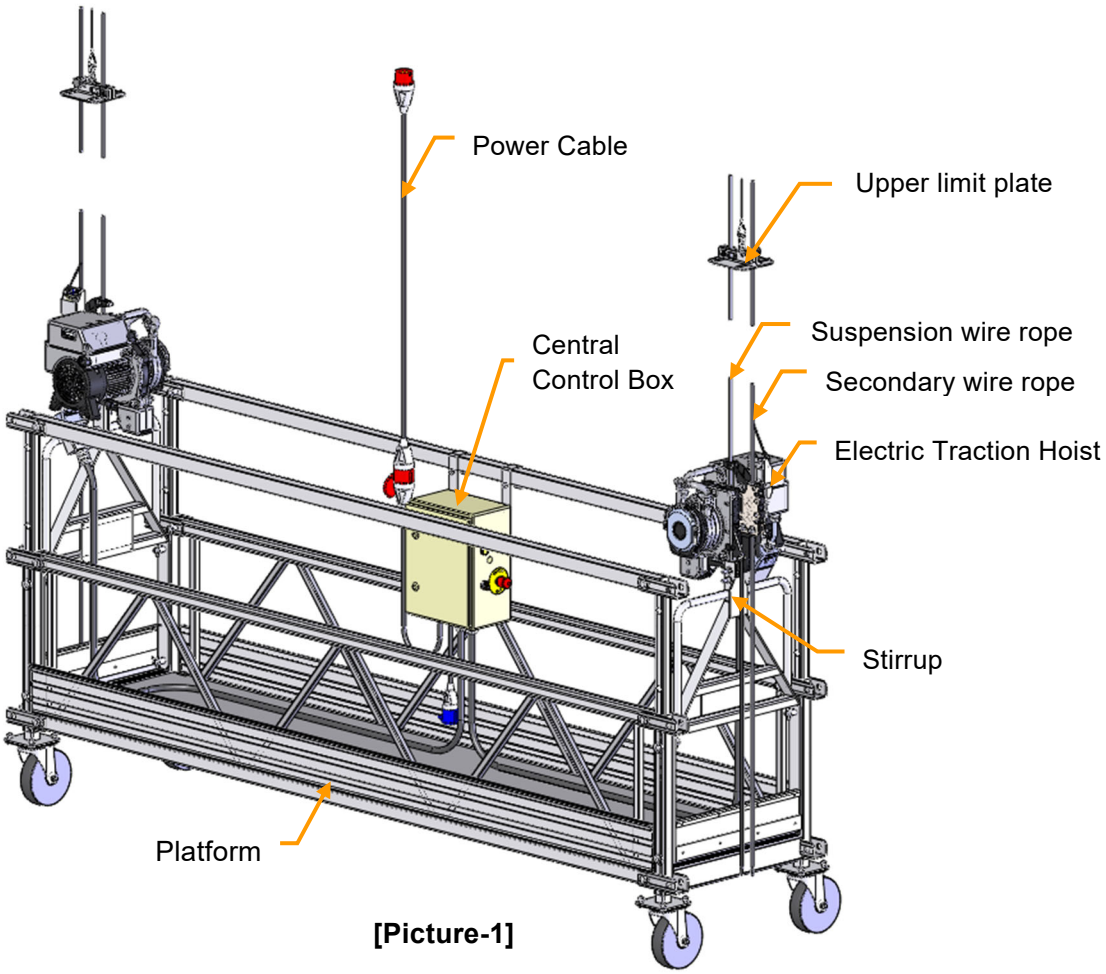


This Operator's Manual is written for operators to use the hoist safely and properly. To fully understand the usage of the hoist, please refer to the following instructions and system compositions. (See picture-1) It is responsibility of the user of this equipment to determine whether the equipment is safe according to this manual. Any operations in violation of the instructions in this manual is operator's own risk.

TSAE= Temporary Suspended Access Equipment

SAE systems that are temporarily installed on a building or structure in order to carry out specific construction tasks on a work site. TSAE may consist of a platform and a suspension rig that are assembled at site prior to carrying out the task. TSAE are then dismantled and removed from the site on completion of the work where they were installed and may be reused elsewhere.

[System Components of the hoist and other applications]



[Picture-1]

PRECAUTION

Any detailed information of applications not described in this manual, refer to BS EN1808.

(1) POWER SUPLLY TO THE EQUIPMENT MUST BE FITTED WITH THE FOLLOWING;

a) Main switch

NOTE: The main switch or junction box shall have a key lock.

b) Residual current device (or ground fault circuit interrupter) of 30 mA.

c) Over current protection device: 20A for single phase, 10A for three phase (circuit breaker type-C)

NOTE: To avoid a voltage drop due to cable length, make sure that the specifications of power cable match the requirement of the platform.

(2) USAGE ENVIRONMENT

Temperature Range: between -10°C and 55°C

Humidity: 75% or less

Protection Grade: IP54

Maximum Wind Speed: In accordance with the specifications of SAE or platform

Altitude: 1,000 meter or lower

(3) CAUTIONS BEFORE USING

a) Before using the hoist, operators must perform the daily test to ensure correct operation.

b) Before using the hoist, operators must confirm that there are no obstacles along the direction of movement of the platform.

c) Before using the hoist, suspension system must be checked to ensure that the platform is stable at all times.

d) In case the area below the platform is open to the public, preventive measures must be implemented to safeguard the people below (e.g.,. barriers and roof protected walk ways).

e) All hazards related to the platform encountering obstruction are not completely covered by the platform's safety devices. The operators shall check for obstructions along the direction of travel of the platform.

f) Overload Detection Device may not cover the platform in all configurations. The operators must check that loading of the platform is in accordance with the rated load displayed on the hoist.

g) An area on the platform must be available to allow operators to operate the hoist safely.

h) Use only a certified safety harness, lanyard, rope grabs, and independent life lines at all times.

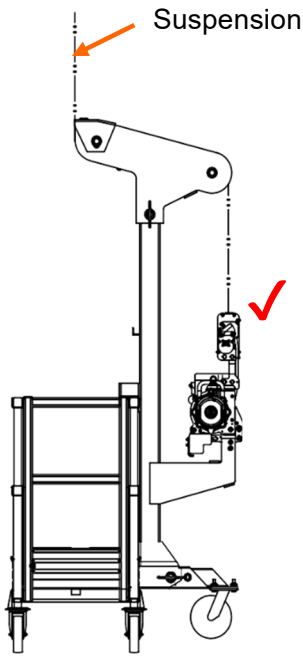
i) In the cold weather, the smooth lifting operation of the hoist may not be available. Also, the hoist may not descend even when the emergency controlled-descent lever is operated. Implement

measures to prevent the hoist from cooling during use.

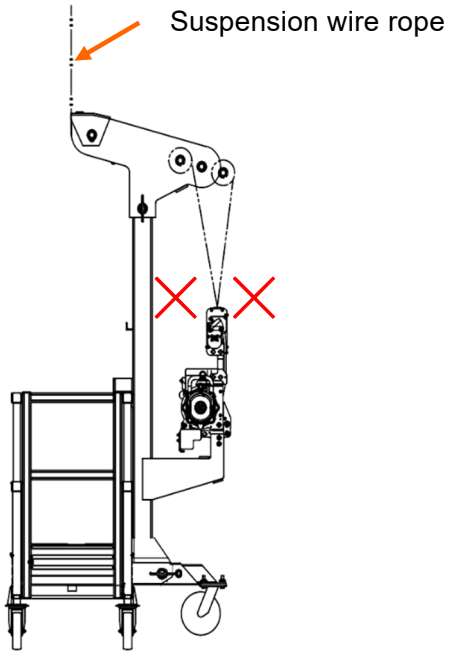
j) If the load on the platform is light, the speed of an emergency controlled-descent may be slower. And if the hoist is used with the minimum load as specified in 2.1 or less, it may not descend even if the emergency controlled-descent lever is operated.

k) The suspension wire rope must be vertically set and installed onto the hoist.

[Installation of the hoist 1]

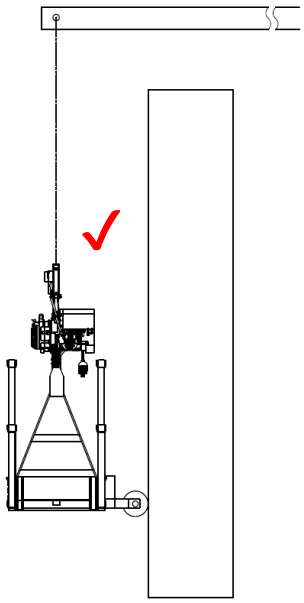


Correct Installation

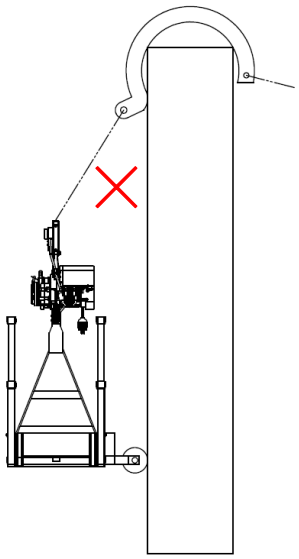


NOT vertically suspended

[Installation of the hoist 2]

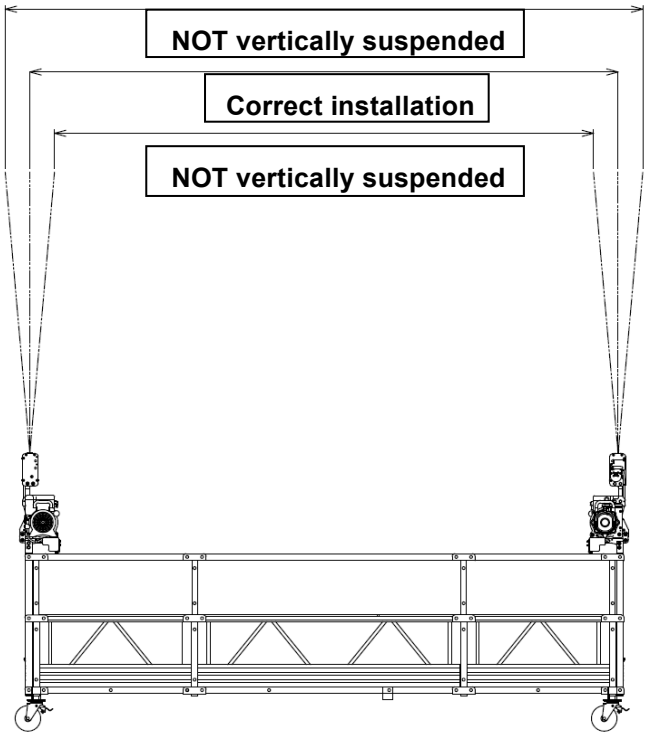


Correct Installation



NOT vertically suspended

[Installation of the hoist 3]



(4) CAUTIONS WHEN USING

a) Stop operating and notify the supervisor if any faults that may damage the safety of the hoist are found.

b) Having a suitable means of communication between the operators and supervisor is recommended.

c) When not in use, unplug the power cable and lock the equipment to protect from unauthorized use.

d) If the hoist is not operated for more than 30 minutes in cold weather, the ascending operation may not be operated smoothly. In that case, idle the hoist 30 seconds or more or operate the descending operation before ascending.

(5) PROHIBITIONS

a) The hoist is used only to raise, support and lower the platform. Do not use for any other purpose.

b) Do not use two or more units of the hoist with one wire rope.

c) Do not insert wire rope from the wire rope outlet of the hoist.

d) Do not tie and secure the discharged suspension wire rope from the wire rope outlet.

e) Do not apply 20 kg or more pulling load to the discharged suspension wire rope from the wire rope outlet.

f) Do not use the hoist as a material lifting equipment.

g) Do not use the hoist in water.

h) Do not use the hoist as a hoisting device for permanently installed elevator.

i) Do not use the hoist as a traction device to pull horizontally.

j) Do not use the hoist as a medical traction device.

k) Do not use the hoist in a potentially explosive atmosphere.

(6) STORAGE PROCEDURE

Products shall be stored in accordance with the following conditions.

a) The products and safety devices shall be stored indoors. In case of necessarily storing the products outdoors, only as a temporary storage measure, cover the products with waterproof sheeting or the like to prevent exposure to direct sunlight and rain. The storage place shall be well ventilated to avoid excess heat and humidity, as well as to avoid product exposure to dust, metal powders, and corrosive gas.

b) Do not place the products directly on the ground but on a shelf or pallets.

c) Place the products so that the wire rope inlet faces upward.

d) If the products have been stored longer than one year, change the oil in the gearbox and perform a pre-shipment inspection according to the Maintenance Procedure Manual.

e) If the products are to be stored longer than three months after use, operate without a load a few minutes once every three months. When starting to use the products again, inspect the products to ensure that the electromagnetic brake works normally and ensure that there is no abnormal noise, vibration, or heat.

(7) WARRANTY EXEMPTION CONDITIONS

The warranty shall be null and void in the following cases even within the warranty period.

a) Any defect caused by the installation of the product or failure of connection with any other equipment.

b) Any defect caused by a storage failure as determined in the Operator’s Manual.

c) Natural wear, tear, deterioration, and corrosion of consumable items in normal use and storage conditions.

d) Any defect caused by the improper condition, environment, or treatment and the abuse or failure to follow the manufacturer’s recommended operation determined in the Maintenance Procedure Manual, Operator’s Manual, and any other documentation issued by the manufacturer.

e) Corrosion of the exterior.

f) Any defect caused by the inclusion of water, oil, metal piece, or any other foreign material.

g) Any defect caused by negligence, accident, modification, misuse, unauthorized repair, and

exploitation.

h) Any defect caused by fall or damage during transportation.

i) Any defect caused by an earthquake, fire, wind, flood, salt damage, smoke damage, gas, lightning, abnormal voltage, or any other natural disaster, hazard or irresistible force.

j) Any defect of the products where the serial number is modified.

k) Any defect of the products or parts supplied by someone other than the authorized dealer of BISOMAC.

l) Any defect caused by the use or installation of parts which supplied by someone other than the authorized dealer of BISOMAC.

1. FOR SAFE USE

1.1 General

This Operator's Manual (referred to as this manual) is written for operators to use the hoist safely and properly. The hoist consists of hoisting device (referred to as BISOMAC), fall arrest device (referred to as BISOLOCK), overload detection device (referred to as BISOLOAD), and upper/ultimate limit detection device (referred to as BISOLIMIT).

Components of BISOMAC308 Electric Traction Hoist

- I. BISOMAC (Hoisting Device)
- II. BISOLOCK (Fall Arrest Device)
- III. BISOLOAD (Overload Detection Device)
- IV. BISOLIMIT (Upper/Ultimate Limit Detection)

NOTE: The phrase "Safety Devices" in this manual includes the BISOLOCK, BISOLOAD, and BISOLIMIT. For the specification of each device, refer to 2. "SPECIFICATIONS".

1. Read and fully understand this manual before using the hoist.
2. The hoist is designed to be used to raise, support and lower the platform.
3. Operation, handling, maintenance, inspection, and repair of the hoist must be performed only by trained and certified operators.
4. Daily test and inspection must be performed at the start of each work shift according to 7. "DAILY TEST AND INSPECTION".
5. Troubleshooting shall be done if any problem possibly caused by the hoist according to 9. "TROUBLESHOOTING" to find the cause of the problem and to take corrective action.
6. The hoist is used to raise, support and lower suspended scaffolds, work cages and bosun chairs on, or in buildings and structures. If used for any other purpose, you must take all necessary precautions to be sure that both the design and operation are hazard free, and such use conforms to the manufacturer's specifications.
7. This manual is not all inclusive. It is impossible to anticipate every possible way this equipment may be used and all possible hazardous situations. It is very important that you determine for yourself whether the equipment is safe. You must understand the operating characteristic of the hoist. You must understand how the hoist will operate in your application. You must be certain not to put yourself or others in danger or cause damage to property or other persons.

1.2 Maintenance

Handling, maintenance, inspection, and repair of the hoist must be performed by trained and certified personnel according to the Maintenance Procedure Manual for each device (separately issued).

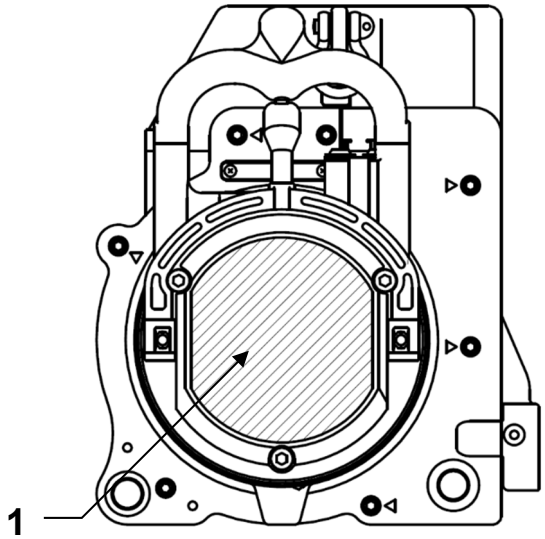
1.3 Hazard Symbols

Safety instructions are classified according to risk levels.

Symbol	Term	Meaning
	WARNING	Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
	CAUTION	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury and in damage to property.
NOTE:	NOTE	Indicates a potentially hazardous situation that, if not avoided, may result in damage to the hoist or the hoist may not operate properly.

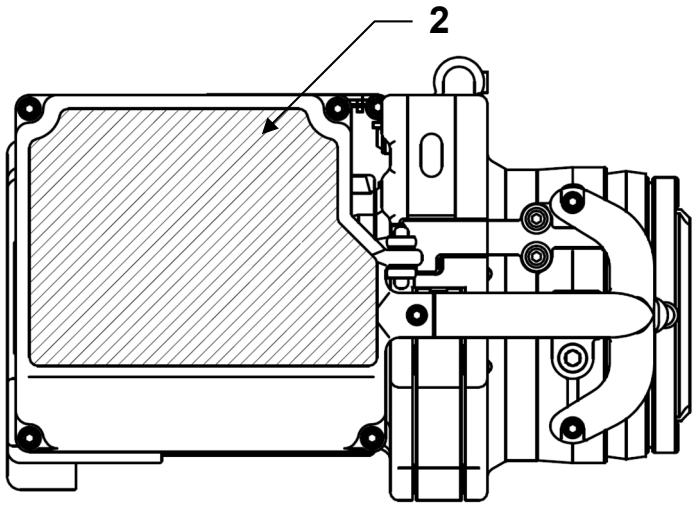
Safety instructions attached to the hoist and safety devices

[BISOMAC Front side]



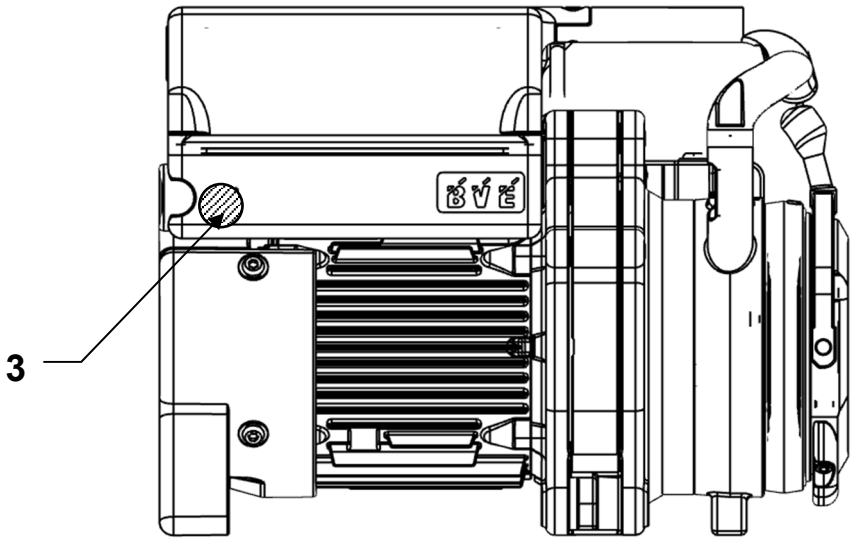
Description	Meaning and Location
1. EMERGENCY DESCENT	●Instruction for an emergency controlled descent ●Instruction for the Electromagnetic Brake ●Warning of skin burns [Electromagnetic Brake]

[BISOMAC Upper side]



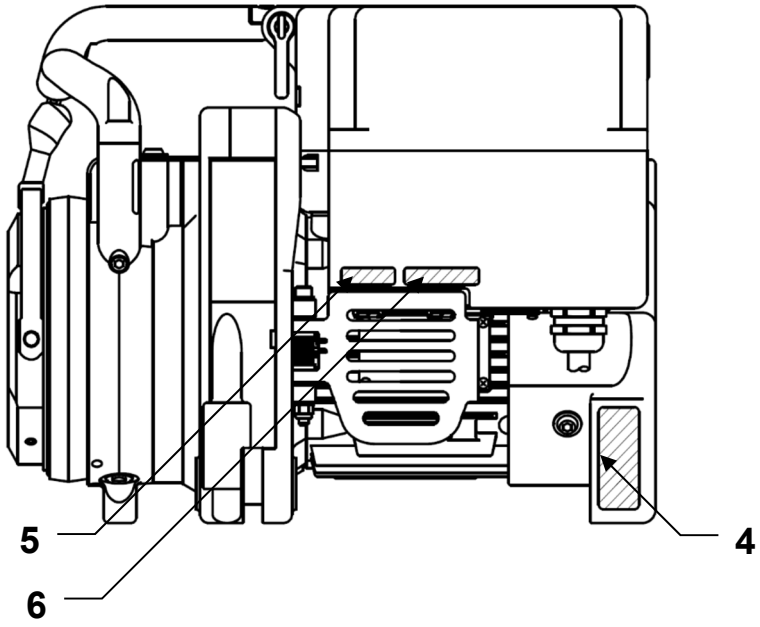
Description	Meaning and Location
2. 1P 600/3P 600	●Instruction for specification and operation ●QR code to access the operator's manual on the website ●Instruction for shackle's load limit [Control Box Cover]

[BISOMAC Left side]



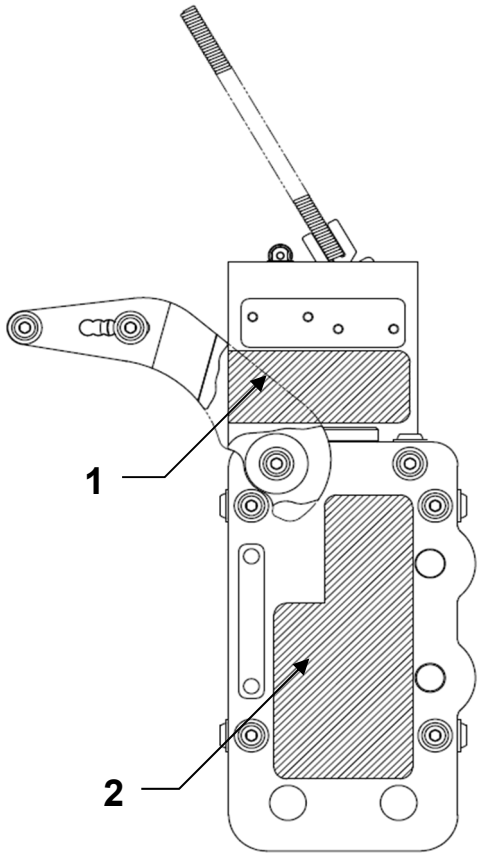
Description	Meaning and Location
3. Manual Mark	●Showing the location of the operator's manual [Control Box]

[BISOMAC Right side]



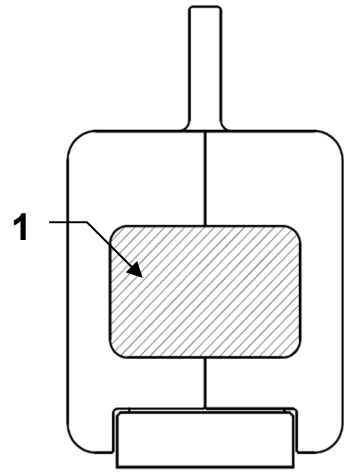
Description	Meaning and Location
4. POWER 230V/POWER 400V	●Instruction for voltage [Fan Cover]
5. Overload	●Instruction for connecting plug of BISOLOAD [Control Box]
6. Upper/Ultimate	●Instruction for connecting plug of BISOLIMIT [Control Box]

[BISOLOCK / BISOLIMIT Front side]



Description	Meaning and Location
1. WIRE ROPE CAUTION	●Instruction for the wire rope [Limit Switch Cover]
2. SLACK-600	●Specification of the device [Side Plate]

[BISOLOAD Left side]



Description	Meaning and Location
1. Rated Load 600kg	●Instruction for the rated load [Limit Switch Cover]

2. SPECIFICATIONS

2.1 BISOMAC308

Model	Rated Load	Voltage	Rated Current	Wire Rope dia.		Applicable Standard
				Nominal Diameter	Usable Range	
BISOMAC308 1P-600	600 kg	1Phase 230 V	8.0 A	9.0 mm	9.0-9.5 mm	+BS EN 1808
BISOMAC308 3P-600	600 kg	3Phase 380-415 V	4.5 A			
BISOMAC308 1P-608	600 kg	1Phase 230 V	8.0 A	8.0 mm	8.0-8.4 mm	
BISOMAC308 3P-608	600 kg	3Phase 380-415 V	4.5 A			

Power	Single Phase (1P): 230V ±10% (50 Hz)	Three Phase (3P): 380–415V ±10% (50 Hz)
Motor Power	1.1 kW (4P)	
Maximum Speed	1P: 8.0 m/min	3P: 10.5 m/min
Controlled Descent	18.0 m/min or slower	
Minimum Load	150 kg	
Rated Operating TIme	60 minutes	
Noise Level	73 dB *Measured by noise meter setting at 1 m away from the hoist. Noise level may vary depending on the voltage or environment.	
IP Rate	IP54	
Dimension (H×W×D) *Incl. safety device	561 mm × 355 mm × 396 mm	
BISOMAC Self-Weight	38 kg	
Weight *Incl. safety device	45.5 kg [BISOLOCK: 3.0 kg, BISOLOAD: 4.0 kg BISOLIMIT 0.5 kg]	
Control System	Central Control	
Safety Features	1. Electromagnetic Brake 2. Controlled descent equipment 3. Motor built-in thermal protector (temperature sensing) 4. Fall arrest device (BISOLOCK) 5. Overload detection device (BISOLOAD) 6. Upper/Ultimate Limit detection device (BISOLIMIT)	
Use Environment	Temperature	Between -10 ℃ and +55 ℃
	Pressure	Standard atmospheric pressure
Maintenance Cycle	1 year or 100 operating hours since the last maintenance. **NOTE**: It depends on the actual condition of use at the worksites. (Refer to 4.” WORK ENVIRONMENTS”.	

2.2 BISOLOCK

Model	BISOLOCK308-AT609EU BISOLOCK308-AT608EU
Rated Load	600 kg
Activation Angle	When the platform tilts 14 degrees (adjustable) or the device detects suspension wire rope slack.
Dimension (H × W × D)	230 mm × 185 mm × 56 mm
Self-Weight	3.0 kg
Control Feature	Unable to ascend if Upper Limit Detection is activated. Unable to lift if Ultimate Limit Detection is activated.

2.3 BISOLOAD

Model	BISOLOAD308-600EU
Rated Load	600 kg
Dimension (H × W × D)	236 mm × 343 mm × 78 mm
Self-Weight	4.0 kg
Activating Load	750 kg (600 kg × 125 %)
Control Feature	Unable to ascend when BISOLOAD is activated.
Voltage	230 V

2.4 BISOLIMIT

Model	BISOLIMIT308
Dimension (H × W × D)	257 mm × 92 mm × 47 mm
Self-Weight	0.5 kg
Control Feature	Unable to ascend if Upper Limit Detection is activated. Unable to lift if Ultimate Limit Detection is activated.
Voltage	230 V

2.5 Wire Rope (Designated by NIHON BISOH)

No.	1	2	3	4	5
Nominal Diameter	9.0 mm	9.4 mm	9.0 mm	9.2 mm	8.3 mm
Construction	4 × 36WS	4 × 36WS	4 × 26WS	5 × 26	5 x 26WS
Min. Breaking Load	67.2 kN (6,857 kg)	64.9 kN (6,622 kg)	66.4 kN (6,775 kg)	66.8 kN (6,816 kg)	47.1 kN (4,803 kg)
Finish	Galvanized	Galvanized	Galvanized	Galvanized	Galvanized
Applicable Model	・BISOMAC308 1P-600 ・BISOMAC308 3P-600				・ BISOMAC308 1P-600 ・ BISOMAC308 3P-600
NOTE	Designated wire ropes by NIHON BISOH				

⚠ WARNING

1. Use only the wire rope designated by the manufacturer
Using any other wire rope may cause the BISOMAC and BISOLOCK to malfunction. It could result in serious injury or death due to falling or tilting of the platform.

2. Use the same wire rope for suspension wire rope and secondary wire rope.
BISOLOCK may not work properly. This may cause the platform to fall or tilt, consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

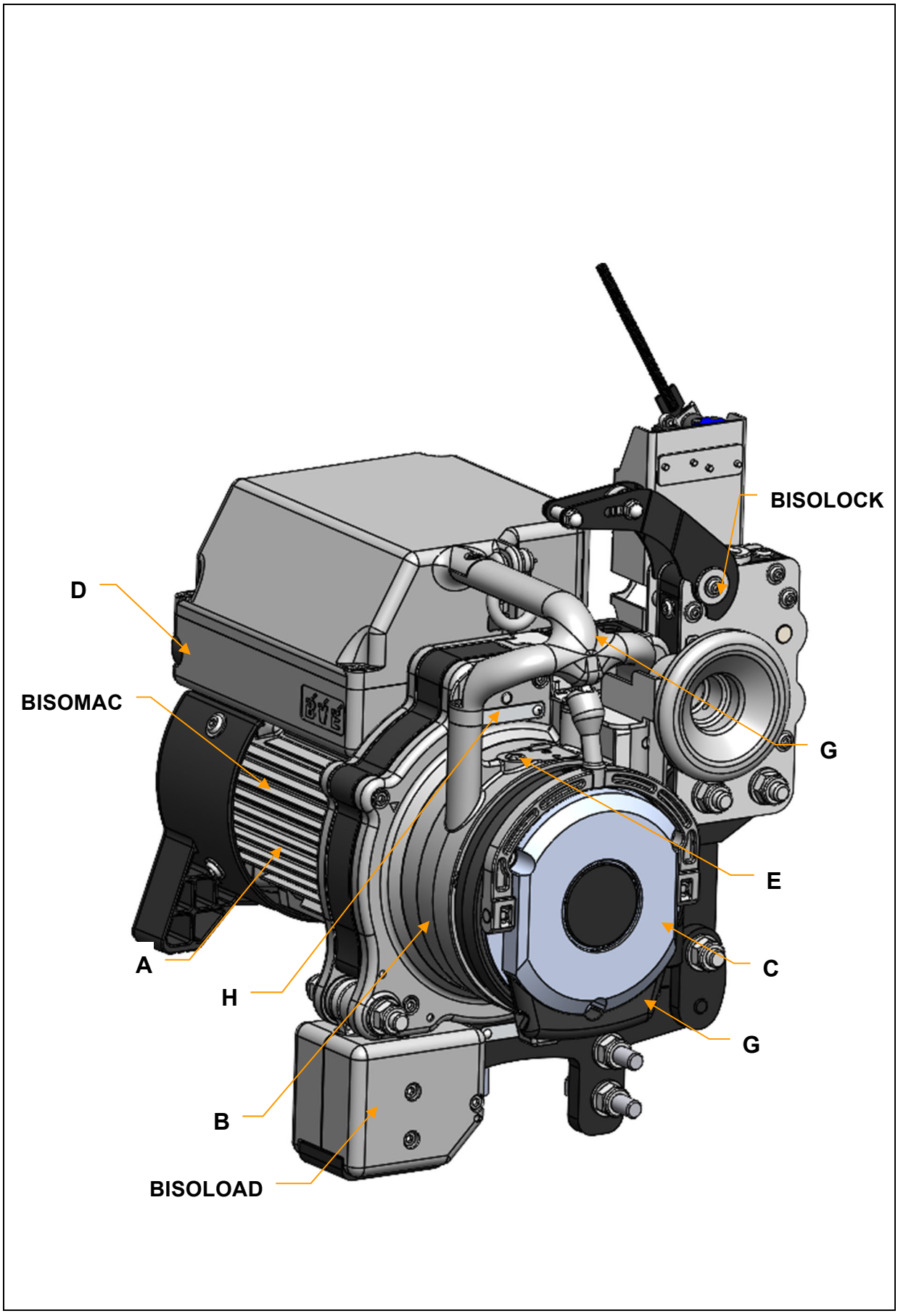
2.6 Power Cable

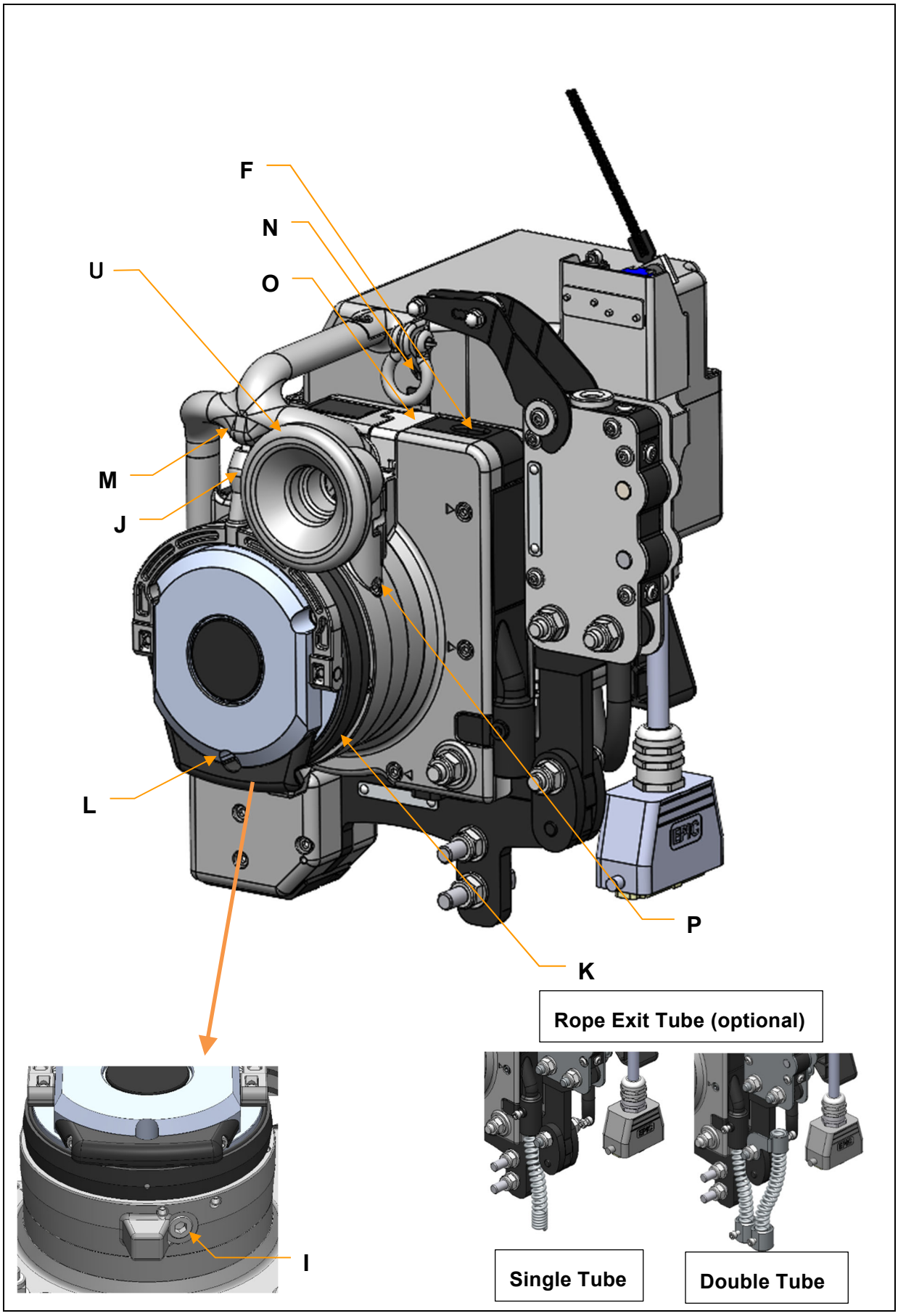
NOTE: Because of the various possible suspended platform loading situations and power sources, it is impossible to specify the maximum length of the power cable exactly. When the hoist is difficult to start up, implement measures against voltage drops, such as boosting voltage and/or using thicker sizes of cable.

Type	H07RN-F
Core and Size	1P: 3 cores, 4.0 mm^2 minimum 3P: 5 cores, 2.5 mm^2 minimum
Rated Voltage	450/750 V
Length	100 m or shorter per a platform

3. FUNCTION AND DESCRIPTION OF EACH COMPONENT

3.1 BISOMAC308 TRACTION HOIST

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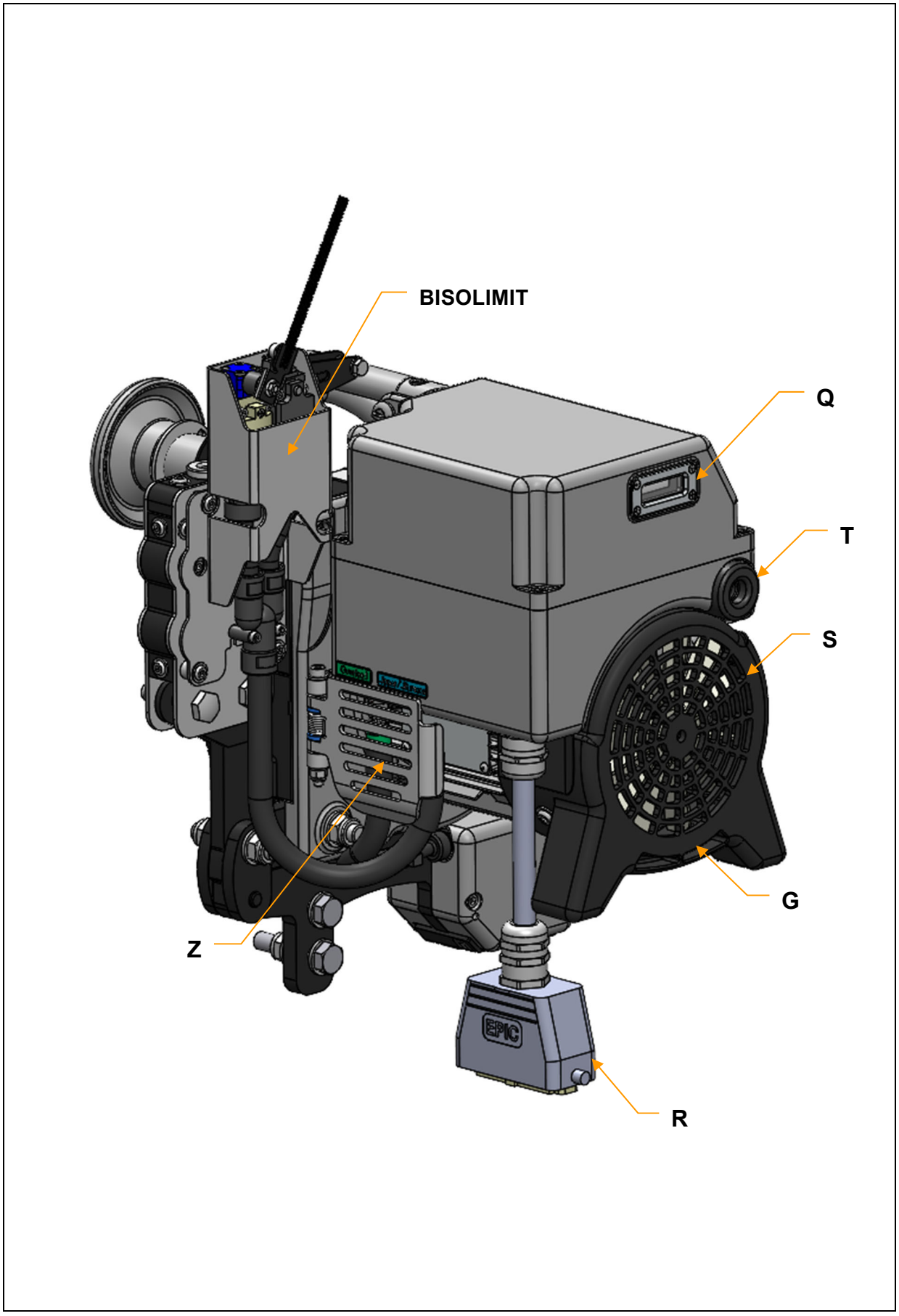
BISOLIMIT
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T
S
G
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R
EPIC

	DESCRIPTION	FUNCTION
A	Electric motor	Power source to drive the hoist.
B	Gearbox	Decelerate rotation speed of the motor to lift the rated load at the rated speed.
C	Electromagnetic brake	Released when the operation button is pressed. When the operation button is released or power is cut off, the brake is activated, and the BISOMAC stops lifting.
D	Control box	Electric components to control the BISOMAC inside.
E	Oil inlet	Open when replacing oil.
F	Suspension wire rope inlet	Insert suspension wire rope here.
G	Handle	Use when carrying the BISOMAC.
H	Serial number	Serial Number of the BISOMAC.
I	Oil outlet	Open when discharging oil.
J	Emergency controlled-descent lever	It allows downward travel at a controlled speed without power.
K	Dust cover	Protection cover prevents water and dirt from getting into the electromagnetic brake.
L	Waterproof cap bolt	Cap the bolt with a seal to prevent water from getting into the electromagnetic brake.
M	Lever stopper	Lock the lever automatically to prevent misoperation and malfunction of the emergency controlled-descent lever.
N	Shackle	Use it when carrying the BISOMAC by hanging. **NOTE:** Maximum lifting load is 50 kg.
O	Guard plate for brake cable	Protect the brake cable from damage.
P	Oil level gauge plug	Open it to check the oil level.
Q	Hour meter	Displays the accumulated operating hours.
R	AC power plug	Connect it to power source to supply power to the BISOMAC.
S	Fan cover	Protects operator from being struck by the fan and prevents damage to the fan.
T	Cap	Operator’s manual is stored inside.
U	Manual handle	If the BISOLOCK AT is activated during a power failure, use the Manual handle to raise it and release the BISOLOCK AT.
Z	Cable guard	Protection plate for the cables and connectors.
OP	Rope exit tube (Single/Double) (Optional)	Guiding discharged suspension and secondary wire rope.

3.2 BISOLOCK

BISOLOCK is a fall arrest device that holds the secondary wire rope when the platform angle exceeds a predetermined angle.

When the upper limit switch is activated, the ascending operation cannot be performed because of the electrical interlock. Also, once the ultimate limit is activated, the hoist completely stops operating.

⚠ WARNING

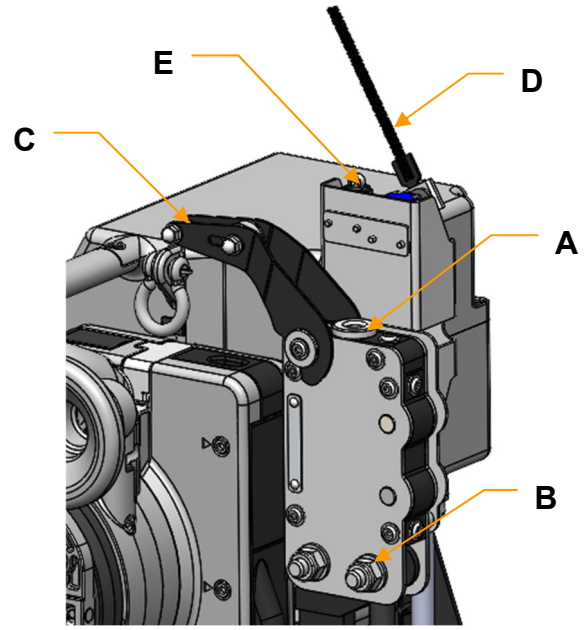
If the platform suddenly inclines and BISOLOCK is activated, only trained and authorized personnel are allowed to release the BISOLOCK.

Contact the local authorized distributor for rescue. An improper reset may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠ WARNING

If the ultimate limit switch is activated, only trained and authorized personnel are allowed to release.

Contact the local authorized distributor for rescue. An improper reset may cause damage to the suspension rig or the platform to fall; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.



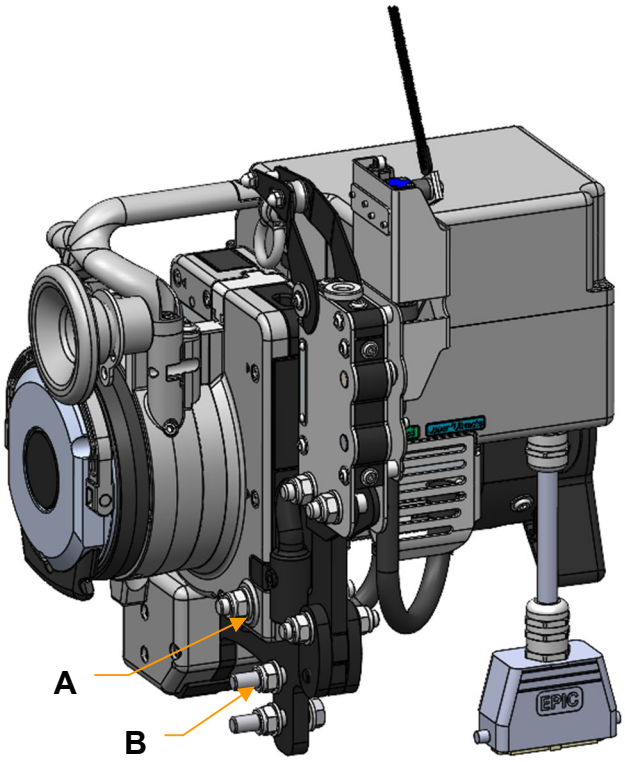
	DESCRIPTION	FUNCTION
A	Secondary wire rope inlet	Inserting secondary wire rope.
B	BISOLOCK mounting bolt	Bolts for affixing BISOLOCK to BISOLOAD. (2 pcs)
C	Tilt detecting lever	Detecting tilt and a slack rope.
D	Upper limit switch	The ascend operation is disabled when the Upper Limit is detected.
E	Ultimate limit switch	If the upper limit is not detected properly and continues ascending, the ultimate limit switch will be activated. When the ultimate limit is detected, the hoist completely stops operating. Contact the local authorized distributor for rescue.

3.3 BISOLOAD

BISOLOAD is an overload detection device. When BISOLOAD senses an excessive load (125% of rated load), BISOLOAD is activated and disables ascend operation.

⚠WARNING

If the hoist does not ascend or bounces while ascending, reduce the load on the platform.
Suspension rig may drop or the platform may tilt because of overloading. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.



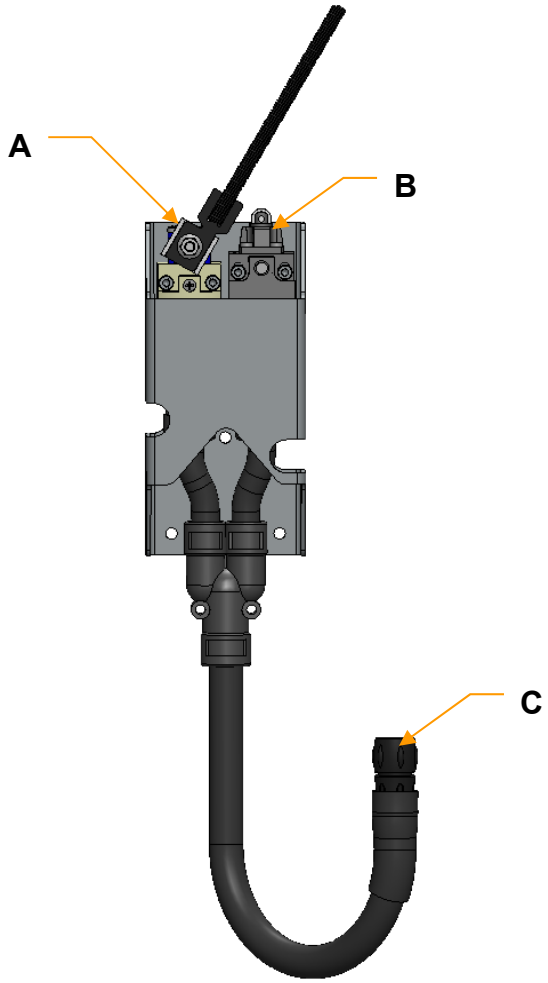
	DESCRIPTION	FUNCTION
A	BISOLOAD mounting bolt B	Bolts for affixing BISOLOAD to BISOMAC. (2 pcs)
B	Stirrup fixing bolt	Bolts for affixing the hoist to the platform. (2 pcs)

3.4 BISOLIMIT

BISOLIMIT is an Upper/Ultimate limit detection device. When the upper limit switch is activated, the ascending operation cannot be performed because of the electrical interlock. Also, once the ultimate limit switch is activated, the hoist completely stops operating.

⚠ WARNING

If the ultimate limit switch is activated, only trained and authorized personnel are allowed to release. Contact the local authorized distributor for rescue.
An improper reset may cause damage to the suspension rig or the platform to fall; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.



	Description	Function
A	Upper limit switch	The ascending operation is disabled when the Upper Limit is detected.
B	Ultimate limit switch	If the upper limit is not detected properly and continues ascending, the ultimate limit switch will be activated. When the ultimate limit is detected, the hoist completely stops operating. Contact the local authorized distributor and wait for rescue.
C	Connector	For connecting with BISOMAC.

4. WORK ENVIRONMENT

Many work environments where the hoist is used contains contamination that may affect the performance and operation of the hoist. Inspect the operation of the hoist frequently according to section 7.

When using the hoist in a dirty environment that contains epoxy, paint, cement, sand blast residue, or corrosive material, protective covers are recommended.

The protective covers may hide the safety instructions and warning labels. Before operating the hoist, take off the covers and be sure to read all the labels and fully understand the instructions and warnings on the labels.

⚠ WARNING

1. When using the hoist in a dirty environment, inspect the operation of the hoist frequently. Perform disassembly maintenance after completing tasks at each worksite to remove contamination from the hoist and inspect the operation of the hoist.

Contamination in the hoist may cause a malfunction. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Never operate the hoist in an explosive atmosphere, in the water, or on the sea. The hoist is not designed to be used in such environment.

If the hoist is used in an explosive atmosphere, an explosion or fire may occur. This might also result in serious accidents, such as an electric shock.

NOTE: An explosive atmosphere is defined as a mixture of dangerous substances with the air under atmospheric conditions and in the form of gases, vapors, mist or dust in which, after ignition has occurred, combustion spreads to the entire unburned mixture.

⚠ CAUTION

Prolonged use of the hoist with the protective covers may cause the overheating of the motor.

When using protective covers, frequently check whether the air supply to the motor is sufficient, and if it has overheated, stop operating and wait for the motor to cool down.

NOTE: When using the hoist in a dirty environment that contains epoxy, paint, cement, sand blast residue, or corrosive material, performance and operation of the hoist may be affected. Using the protective covers is recommended.

NOTE: When using the hoist in freezing temperatures, freezing of the liquid in the hoist may affect the operation of the components of the hoist. Also the oil in the gear box may be cured. This may cause BISOMAC to start hardly. After work, the necessary preventive measures to prevent freezing of the liquid in the hoist must be taken.

5. SET UP INSTRUCTIONS

This section describes the necessary procedures for safe use of the hoist.

Read and fully understand the procedures described in steps 1-7 before setting up.

[WARNING: INSTALLATION]

⚠ WARNING

1. Do not allow anyone under the suspended equipment.
Objects might fall, resulting in serious injury or death to passers-by.

2. Do not use a different type of hoist with one platform.
Otherwise, operation errors may occur from the difference in the performance (lifting speed, etc.) and the difference in the method of operation of the hoists and safety devices. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

3. When attaching the hoist to the platform, be sure how to affix safety devices in advance.
Otherwise, the safety feature may not work properly. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

4. Attach a ground fault circuit interrupter to the power source and ensure that it is properly grounded.
Failure to do so increases the risk of electric shock or electrocution.

5. Do not use the power cable and control cable if damaged or cracked.
Doing so could result in electrocution or death.

6. Operators are not allowed to open the central control box.
Doing so could result in electrocution or death.

7. When connecting safety devices to the BISOMAC, be sure that the plug is completely dry and that there is no moisture inside.
Otherwise, a malfunction may occur. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠ CAUTION

Using protective cover is recommended for dirt prevention.
Adhesion of foreign substances may make the hoist inoperable.

[CAUTION: CONNECTING POWER]

⚠ CAUTION

Voltage supplied to the hoist should not exceed the rated voltage range of +/-10% of the rated voltage instructed in Section 2.1.
Otherwise, the motor may get overheat, resulting in a malfunction or injury to the operator. The rated voltage range (+/-10%) is only temporarily acceptable. It does not mean a continuously acceptable voltage range.

[WARNING: SUSPENSION WIRE ROPE AND SECONDARY WIRE ROPE]

⚠ WARNING

1. Use only the authorized wire rope. Strictly follow the method of use and instructions from the manufacturer.
Otherwise, the BISOMAC and BISOLOCK cannot achieve proper supporting strength, or the rope may become bird-caged or broken. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Do not expose the wire rope to fire, temperatures above 93°C, the passage of electrical current, or corrosive atmospheres and chemicals.
This exposure will make the rope unsafe and may cause the platform to fall or tilt: consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

- If there is any fault with the wire rope after operation, dispose of it.
- When in doubt, replace the wire rope.
- If wire rope is exposed to corrosive chemicals, do not save but dispose of it.

3. Be sure that the wire rope has a sufficient length of at least 2 m to cover the distance for the platform to reach the ground or the designated location.
The wire rope may run off the platform. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

4. Do not operate the hoist with a faulty wire rope that is kinked, deformed, or tied.
Faulty wire rope may damage the inside of the hoist or the wire rope may break. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

5. When affixing the wire rope to a building, be sure that the wire rope does not contact any sharp edges.
Otherwise, the wire rope may break. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by. Also broken wire rope may fall.

6. Make sure that wire rope runs freely through the hoist.
Inconsistent reeving speeds suggest that the wire rope or the hoist may be damaged. Stop operation immediately and replace the wire rope or the hoist. Otherwise, the wire rope may break, or the hoist may stop. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

7. Do not secure or apply a load to the end of the suspension wire rope which exited from wire rope outlet.
Parts inside the hoist may be worn down excessively, and the wire rope may be damaged or broken. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

8. Suspension wire ropes and secondary wire ropes shall be installed with a distance of 100 +/- 10 mm.
Otherwise, the BISOLOCK will not work properly. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠ CAUTION

Do not touch the wire rope while the hoist is operating.
There is a risk of the fingers or the entire hand being pulled in with the wire rope. This may result in serious injury.

[CAUTION: INSTALLATION]

⚠CAUTION

1. **Do not throw or drop the BISOMAC and safety devices.**
   The hoist may be damaged and cannot be operated. Also, this may cause the person to be injured or damage to property.
2. **Do not pull or step cables.**
   Cables or connectors may be damaged and the hoist cannot be operated.

STEP 1 **Installation of safety devices to BISOMAC**

Install the BISOLOAD and BISOLOCK (include BISOLIMIT) to the BISOMAC. See the instructions below.

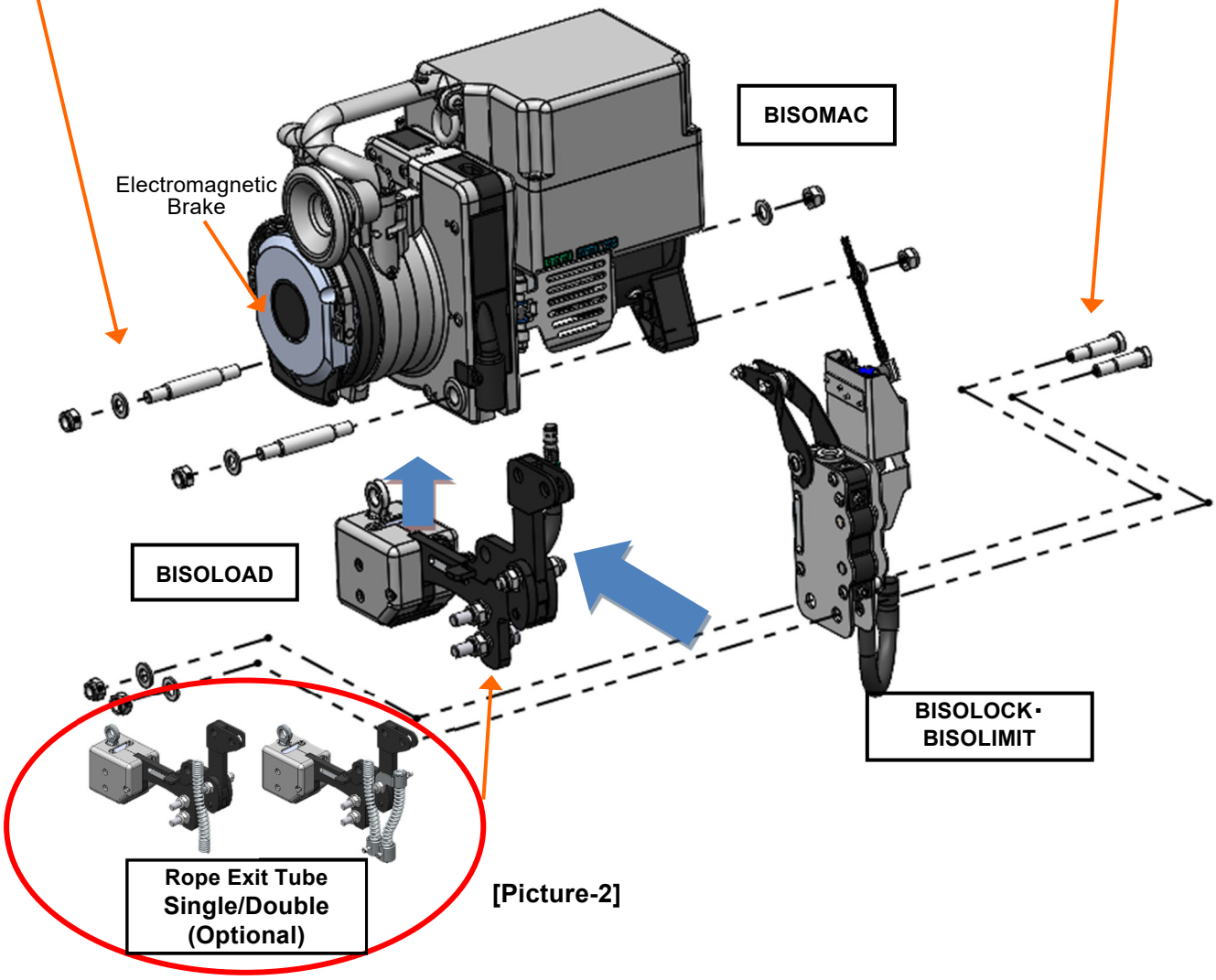
[Components]

[Provided by NIHON BISOH]

- ●BISOLOAD mounting bolt B (2 pcs)
- ●M12 Plain washer (4 pcs)
- ●M12 Nylon nut (4 pcs)

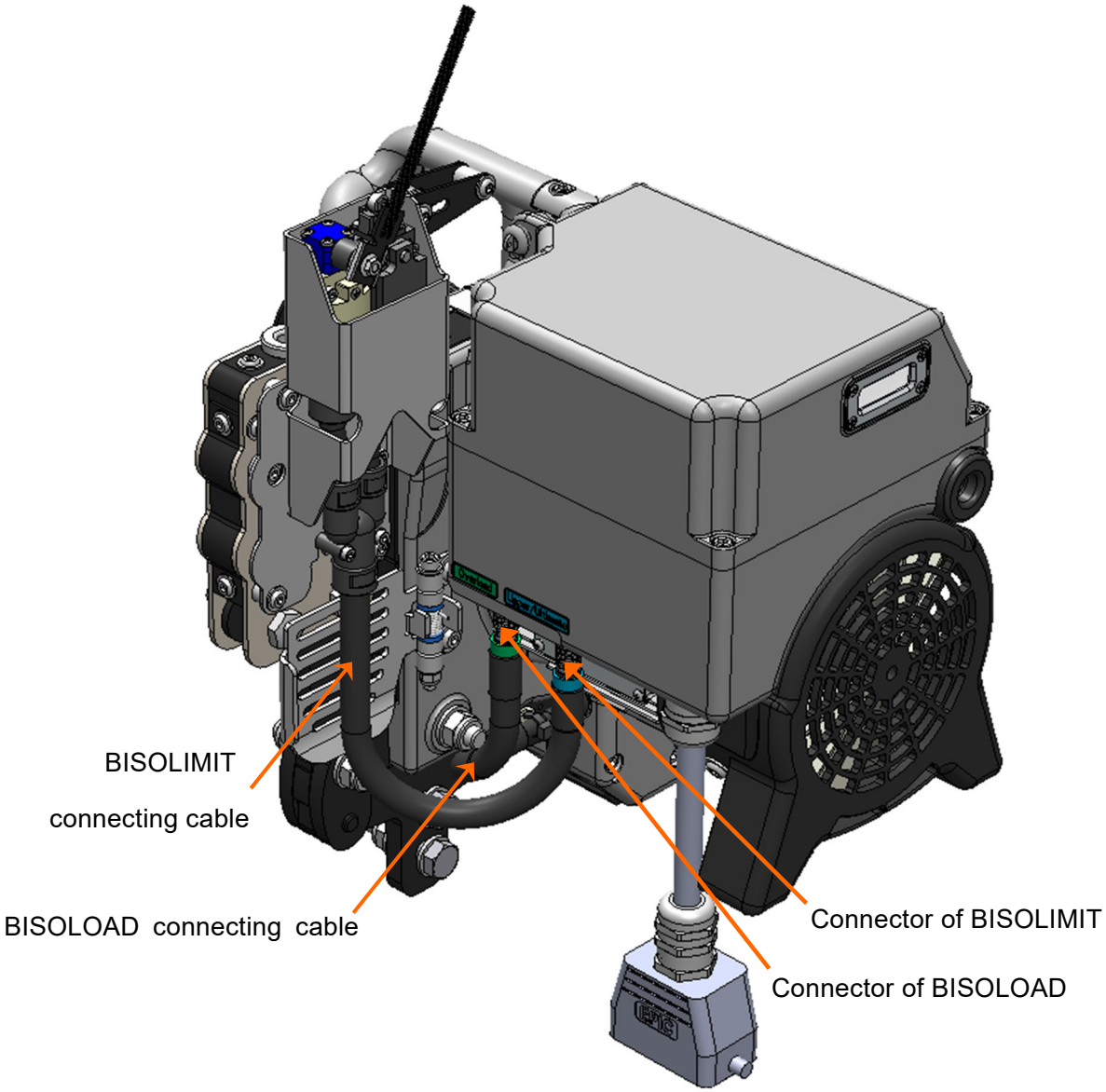
[Provided by NIHON BISOH]

- ●BISOLOCK mounting bolt (2 pcs)
- ●M12 Plain washer (2 pcs)
- ●M12 Nylon nut (2 pcs)



[Picture-2]

1. Set the BISOLOAD under the BISOMAC and affix with two BISOLOAD mounting bolt B, four M12 plain washers, and four M12 nylon nuts. (See Picture-2) Tighten the bolts to the specified torque using the torque wrench. Tightening torque: 76 N・m (770 kgf・cm)
2. Set the BISOLOCK on the BISOLOAD and affix with two BISOLOCK mounting bolts, two M12 plain washers, and two M12 nylon nuts. The tilt detection lever shall face the BISOMAC side. (See Picture-2) Tighten the bolts to the specified torque using the torque wrench. Tightening torque: 76 N・m (770 kgf・cm)
3. Connect the plugs of the BISOLIMIT and BISOLOAD to the BISOMAC. (See Picture-3)

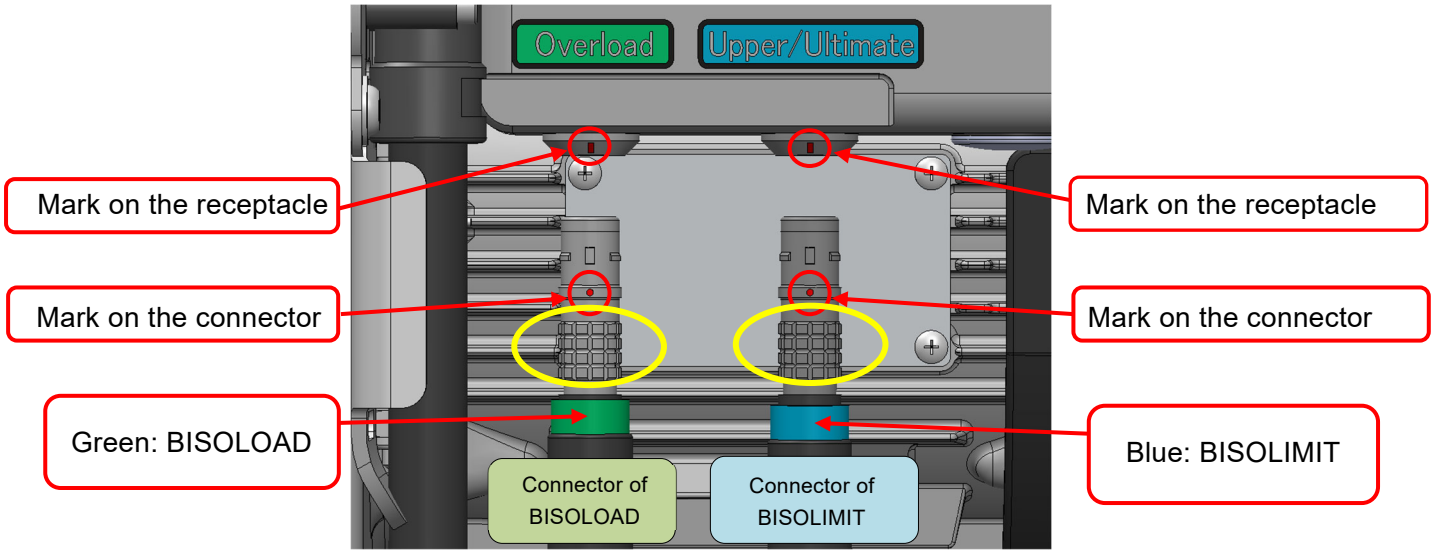


[Picture-3]

4. Insert the connectors as red marks of both connectors and receptacles are aligned.

(See Picture-4)

5. When disconnecting, hold the part where indicated with yellow circle and pull out.



[Picture-4]

STEP 2 **Connecting to power supply**

⚠ WARNING

Do not pull or step on the power cable of the BISOMAC and connection cables of safety devices.
Cables may be damaged and cause electric shock. This may result in serious injury or death.

⚠ CAUTION

Use only a suitable power cable and power source for the BISOMAC.
Using incorrect power may cause overheating and damage to the cable and other components, and the hoist will not work properly.

1. Connect the AC power plug of the BISOMAC to the power supply from the central control box.

Please check the types of connectors.

Phase	Type	Manufacturer
1P	10.193000	CONTACT
3P	10.195000	CONTACT

Cover the socket with the appropriate cover shown below.

Phase	Type	Manufacturer
1P	70.040400	CONTACT
3P	70.090200	CONTACT

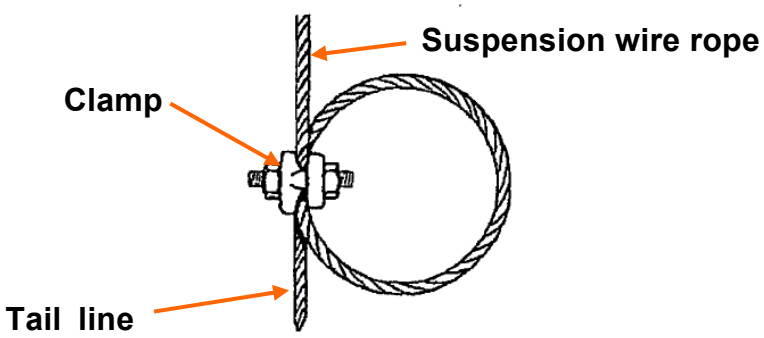
2. Required power per one unit of BISOMAC.

Model	Rated current
BISOMAC308 1P-600	8.0 A
BISOMAC308 3P-600	4.5 A

3. Ensure that the emergency stop switch on the central control box and the interlock of the safety devices are not activated.
4. Ensure that the current capacity and size of the circuit breaker (or fuse) is adequate. (Refer to section 2)
5. Ensure that connectors are not cracked or damaged.

STEP 3 Installation of suspension wire rope

1. Insert the tip of the suspension wire rope to wire rope inlet of the BISOMAC approximately 15 cm.
2. Push the UP button while pushing the wire rope into the BISOMAC gently until the wire rope feeds automatically.
3. Make sure that the suspension wire rope comes out from the outlet without any obstruction and moves freely in both up and down directions.
4. Distances between riggings and the wire rope inlet of the hoist must be equal because the suspension wire ropes are suspended vertically.
5. To prevent the platform from running off the suspension wire ropes, secure the tail line as in the Picture-5.



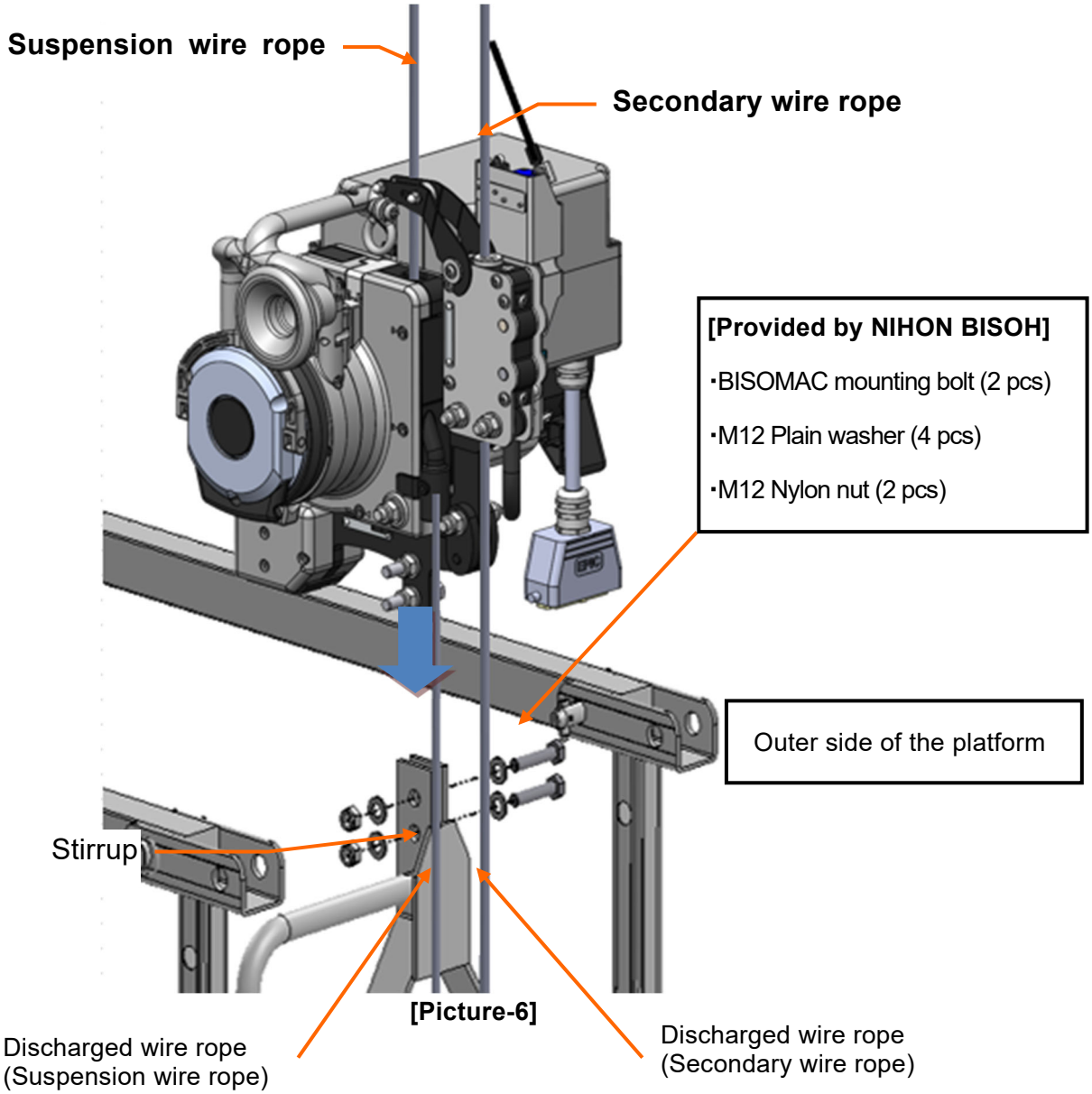
[Picture-5]

STEP 4 **Installation of the hoist**

Press the UP button and lift the platform from the ground. Align the bolt passing holes of the BISOLOAD and the stirrup of the platform, then affix with the two BISOMAC mounting bolts, four M12 plain washers, and two M12 nylon nuts. (See Picture-6) The hoist shall be set since the exited wire ropes are positioned on the outer side of the platform. (See Picture-6)

Tighten the bolts to the specified torque using the torque wrench.

Tightening torque: 76 N・m (770 kgf・cm)

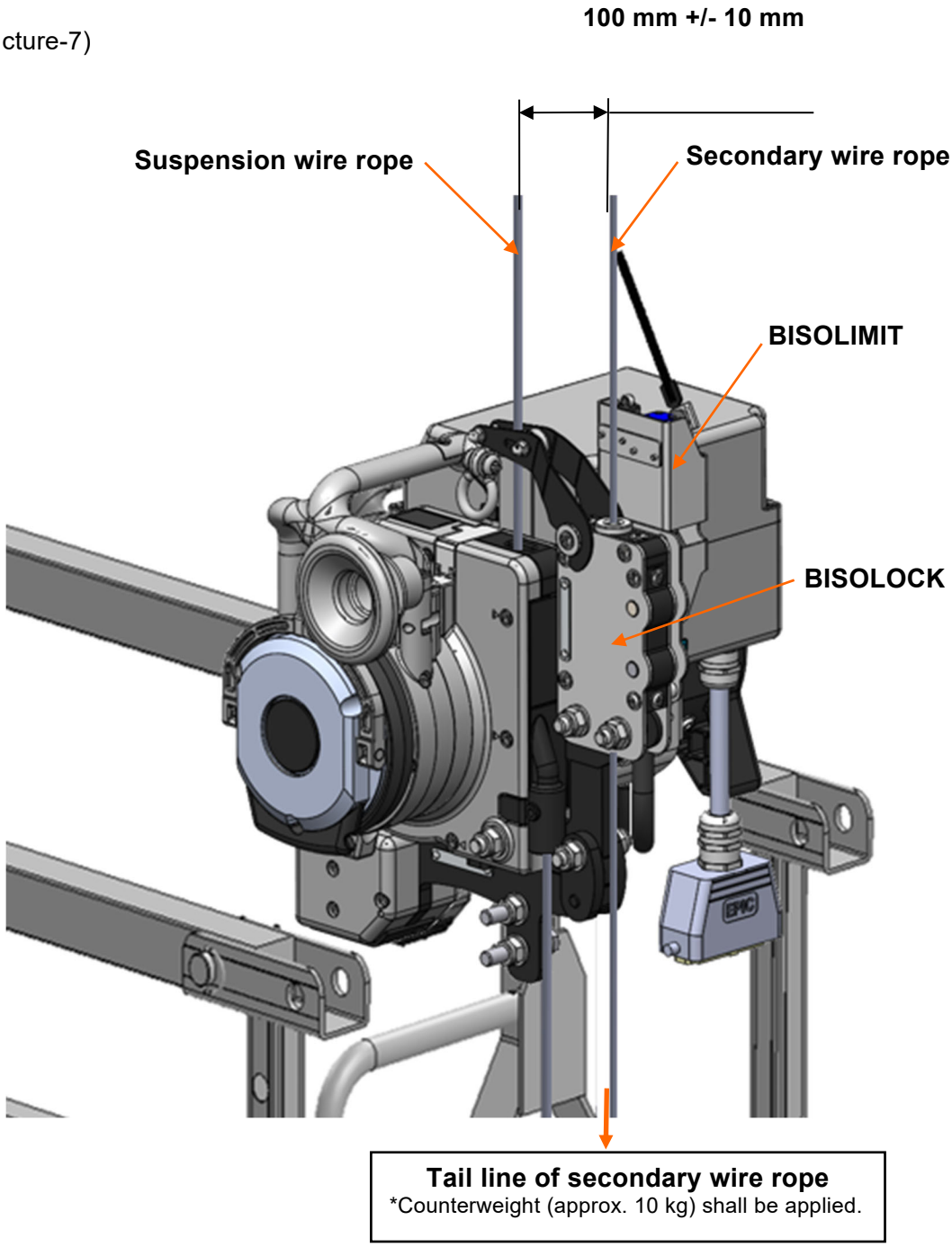


[Picture-6]

STEP 5 **Installation of secondary wire rope**

1. Lift the platform and apply tension to the suspension wire rope.
2. Insert the secondary wire rope into the BISOLOCK and set since there is not enough slack in the rope. Check to make sure the rope moves freely inside the BISOLOCK.
3. Apply a counterweight (more than 10 kg) to the tail line of the secondary wire rope to prevent the secondary wire rope from being lifted up; be sure to keep it vertical.
4. The distance between the suspension wire rope and the secondary wire rope should be 100+/-10mm.

(See Picture-7)



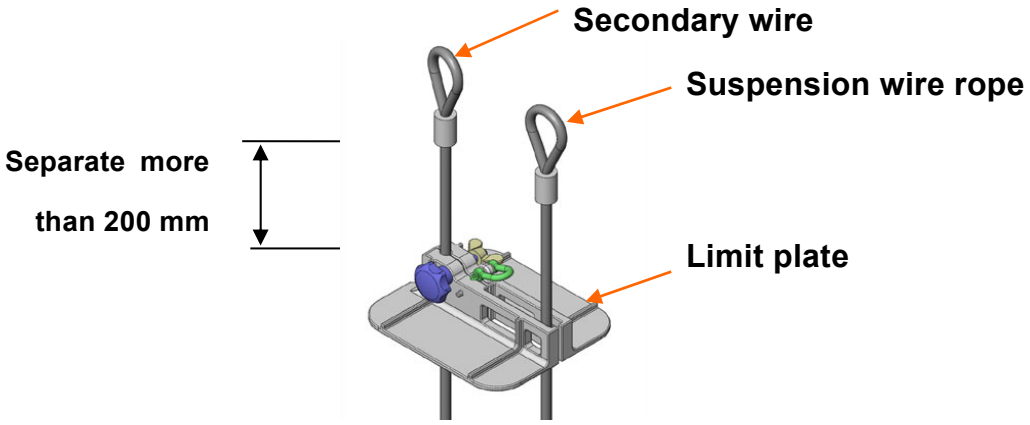
[Picture-7]

STEP 6 **Perform daily inspection**

Perform daily inspections according to section 7 before installing the limit plate of the BISOLIMIT.

STEP 7 **Install limit plate of BISOLIMIT**

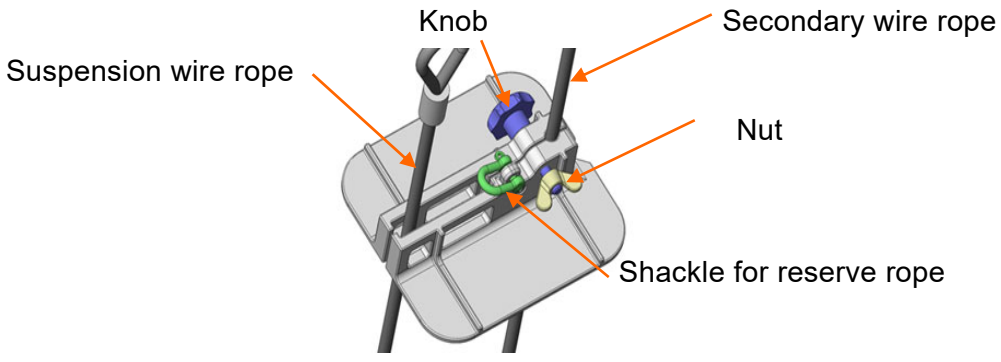
Install the limit plate of the BISOLIMIT with a distance at least about 200 mm from the suspension rig. (See Picture-8)



[Picture-8]

[Installation procedure]

1. Install the limit plate since the two plates pinch the suspension wire rope and secondary wire rope. (See Picture-9) *The suspension wire rope should be installed to the side with the wider space.
2. Tighten the knob (blue knob in the Picture-9) until the limit plate is maintained by the friction force with the wire ropes.
3. Tighten the nut (yellow butterfly nut in the Picture-9) until it hits the limit plate.
   *This nut prevents loosening, but it is not necessary to tighten further after contacting the plate.
4. Do not tear off the adhesives on the female screw.
5. When installing the limit plate, use the reserve rope to prevent falling. Tie the reserve rope to the shackle (green shackle in the Picture-9).



[Picture-9]

6. OPERATING THE HOIST

This section describes the followings to handle and operate the hoist safely.

1. Carrying and storing the hoist.

2. Operation methods of the hoist.

⚠ WARNING

1. Before operating the hoist each operator must understand and follow the instructions in this manual and the labels on the hoist.
Failure to comply with these instructions may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Do not overload the platform.
The suspension rig may fall, resulting in serious injury or death to operators or passers-by.

⚠ CAUTION

Do not apply an excessive load to the shackle.
Applying load that exceeds 50 kg may break the shackle. It may cause the hoist to fall, resulting in injury or damage to property.

[CAUTION: Carrying]

⚠ CAUTION

1. When carrying the hoist by hand, hold the handle to carry it.
Unstable transporting may result in injury or damage to the hoist or property.

2. Do not use the handle for any purpose other than carrying the hoist.
If an excessive load is applied to the handle, the hoist may break. It may cause injury or damage to property.

[CAUTION: Storage]

⚠ CAUTION

When storing the hoist, remove the BISOLOAD from the BISOMAC.
*Refer to section 5 to remove the BISOLOAD.
Storing the hoist in an unstable state may cause the hoist to fall. It may cause injury or damage to the hoist.

NOTE: Do not stack the BISOMAC more than two steps. Otherwise, the BISOMAC may fall and sustain damage.

[WARNING: Lifting operation and Emergency stop]

⚠ WARNING

1. Do not fix the operation switch in the pushed-in state.
The hoist does not stop. It may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Always allow the BISOMAC to come to a full stop before changing the direction of travel.
Otherwise, the hoist may not stop properly due to control circuit failure. It may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

3. Do not use the hoist if the emergency stop switch does not work properly.
In case of control circuit failure, the hoist does not stop operation. It may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

4. Push the operating switch by hand only.
Using foreign objects to operate the hoist may damage to the switch or switch cover and allow water to enter the hoist. It may cause a malfunction of the hoist and the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠ CAUTION

Do not operate the BISOMAC longer than 60 minutes during any two-hour period.
Otherwise, the electromagnetic brake and motor will become very hot and could result in burn injury.

[WARNING: Controlled descent lever]

⚠ WARNING

1. Use the emergency controlled-descent lever only when the power supply is off.
After use, be sure to lock the emergency controlled-descent lever with the lever stopper. Otherwise, the hoist may not stop during operation. It may cause the platform to tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Do not operate the emergency controlled-descent lever when operating the hoist with the operating switch.
The hoist may not stop during operation, and it may cause the platform to tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

3. Before operating the hoist, ensure that the emergency controlled-descent lever is vertical and locked with the lever stopper. (See Picture-10)
The hoist may not stop, or the brake may not work properly. It may cause the platform to tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

4. Operate the emergency controlled-descent lever only by hand.
The hoist may not stop during operation, and it may cause the platform to tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

5. After using the emergency controlled-descent lever, make sure that the lever is locked automatically by the lever stopper. (See Picture-10)
The hoist may not stop, or the brake may not work properly. It may cause the platform to tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠CAUTION

1. **Disconnect the AC power plug from the central control box when using the emergency controlled-descent lever.**
   Otherwise, sudden movement may be induced when the power is regained. This may cause injury or damage to property.
2. **Pull the emergency controlled-descent lever as far as possible.**
   If lowering down without releasing the brake completely, the hoist may overheat, or the brake may wear down and lose braking force. In this case, the brake may not be repairable.

NOTE: Do not use the hoist if the emergency controlled-descent lever does not work properly. Otherwise, in the event of power loss, the platform may not be able to descend, and the operator cannot escape. Such a hoist must be repaired and retested before using.

6.1 Carrying the hoist

In order to safely transport the hoist, detach the BISOLOCK and BISOLOAD from the BISOMAC. (Refer to section 5)

[Weight of each device]

BISOMAC: 38.0 kg

BISOLOCK (includes BISOLIMIT): 3.5 kg

BISOLOAD: 4.0 kg

6.2 Operation methods of the hoist

6.2.1 Lifting and Emergency stop

- Operate the BISOMAC with the operation switch on the central control box.
- Press the UP button to travel UP.
- Press the DOWN button to travel DOWN.
- If the emergency stop button is pressed, power is cut off. The hoist will not run in either direction.

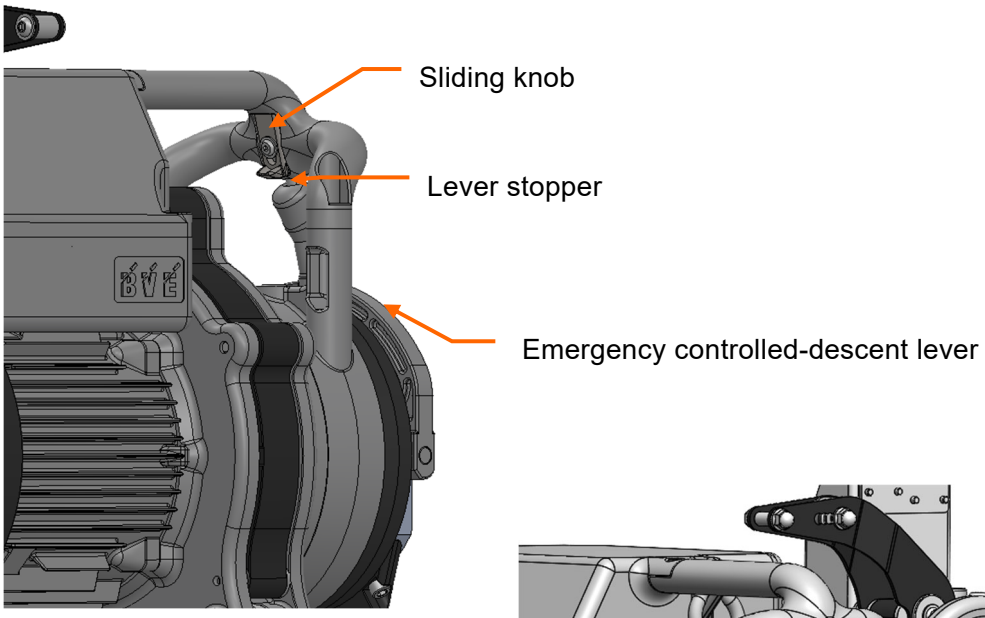
6.2.2 Emergency controlled-descent lever

・Allows downward travel at a controlled rate of speed in the event of power loss.

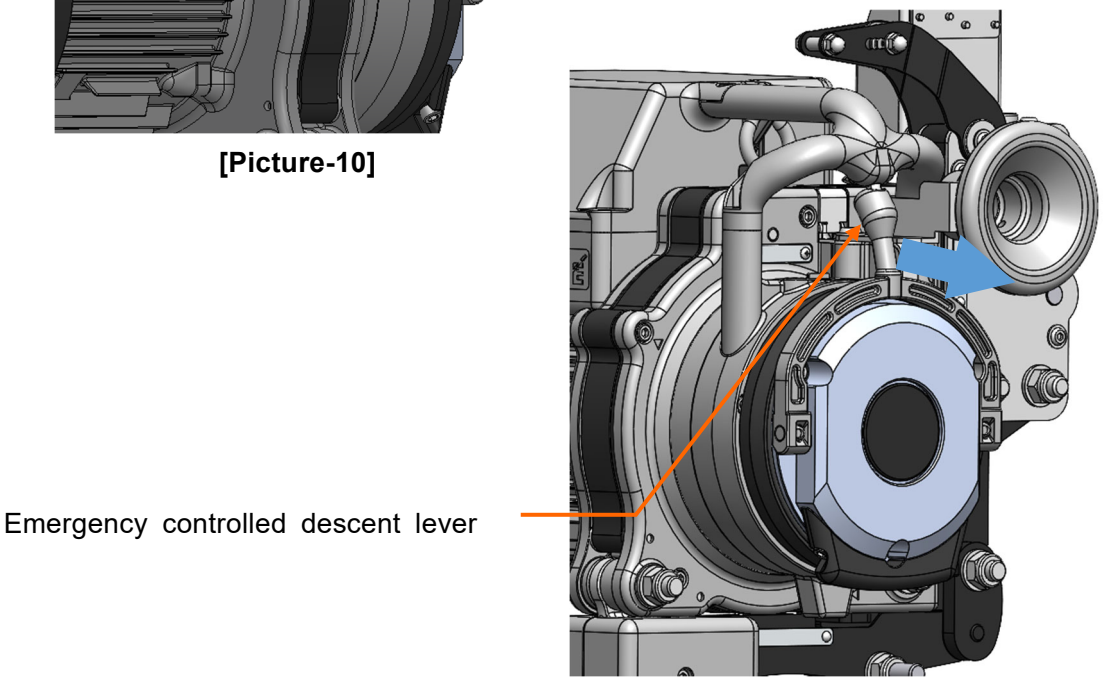
[Procedure for Emergency controlled descent]

1. Disconnect the power plug from the central control box.
2. Slide the sliding knob and unlock the lever stopper. (See Picture-10)
3. Release the electromagnetic brake by gently pulling the emergency controlled-descent lever as far as it goes toward the arrow shown in Picture-11. The hoist will travel downward at a controlled rate of speed.
4. The hoist stops when the emergency controlled-descent lever is released.

NOTE: Do not apply excessive force to the emergency controlled-descent lever. The emergency controlled-descent lever may break, consequently, be unable to descend in the event of emergency. If the emergency controlled-descent lever is broken, refer to the Maintenance Procedure Manual (separately issued) for repair.



[Picture-10]



[Picture-11]

6.2.3 Manual handle

If the BISOLOCK AT is activated during a power outage, this manual handle is used to raise the BISOMAC and release the BISOLOCK AT.

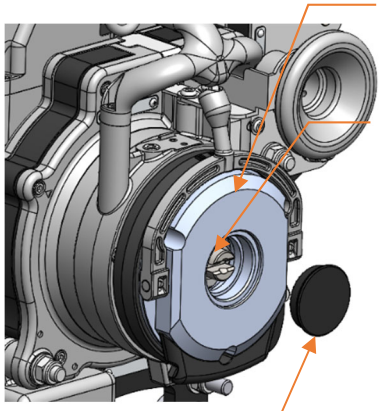
[Operating Procedure]

1. Disconnect the power supply from the central control box.
2. Remove the slide stopper and detach the lever stopper from the emergency descent control lever. (See Picture 10)
3. Peel off the label on the electromagnetic brake and use a flathead screwdriver to remove the plug. (See Picture 12)
4. Turn the manual handle and remove it from the handle saddle. (Refer to Picture 13)
5. Align the shaft of the manual handle with the recessed shaft section and insert it. (See Pictures 12 and 14)
6. Firmly grip the manual handle to prevent it from rotating.
7. While pulling the emergency descent control lever, turn the emergency handle counterclockwise to raise the BISOMAC. (See Picture 14)

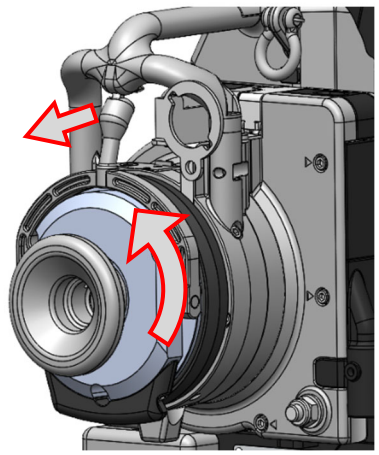
NOTE: If you release the manual handle while the emergency descent control lever is being pulled, the platform will descend.

Be sure to release the emergency descent control lever before letting go of the manual handle.

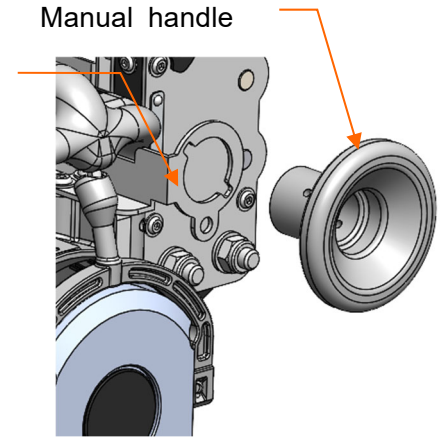
8. Once the BISOLOCK AT is released, secure the manual handle back onto the handle saddle and use the plug to seal the hole in the electromagnetic brake.



[Picture-12]



[Picture-14]



[Picture-13]

6.2.4 Releasing procedure of BISOLOCK

⚠WARNING

If the BISOLOCK is activated, do not release it until safety is confirmed.

It may cause the platform to fall; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

[How to reset the BISOLOCK]

1. Operate UP travel and make the platform horizontal.
2. Push up on the roller lever to release the BISOLOCK.

NOTE: Do not forcibly push up on the roller lever. Parts inside BISOLOCK may be damaged and may prevent the BISOLOCK from releasing. Be sure to keep the platform safe and in a stable state before releasing the BISOLOCK.

[CAUTION: Activation of BISOLOCK]

⚠CAUTION

1. **Before tilting the platform for an operation check on the platform, ensure that nothing will slip or roll.**
   When the platform is tilted, such articles may hit the operator and result in injury.
2. **Ensure that the floor of the platform is not wet or slippery.**
   When the platform is tilted, operator may slip and result in injury.
3. **Adjusting the activation angle of the BISOLOCK shall be performed only by trained and authorized personnel.**
   Improper adjustment may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

[Activation check of the BISOLOCK]

1. Lift the platform up approximately 2 m from the ground.
2. Lower one side of the hoist using the central control box.
3. The BISOLOCK will be activated; hold the secondary wire rope.

The activation angle of the BISOLOCK shall be smaller than 14 degrees. If the angle is greater than 14 degrees, it must be adjusted by trained and authorized personnel.

For instruction on the procedure of the adjustment, refer to Maintenance Procedure Manual (Separately issued).

For instruction on the procedure to reset the BISOLOCK, refer to [How to reset BISOLOCK] on this page.

7. DAILY TESTS AND INSPECTIONS

This section describes procedures for the daily tests and inspections. Do not use the hoist until the following tests and inspections have been completed to ensure correct operation.

- Read sections 7.1-7.3 and fully understand procedures for the tests and inspections.
- For devices and parts not described in this manual, follow the manuals for each of those devices and parts.

⚠ WARNING

1. **Do not allow anyone under suspended platform.**
   Objects might fall, resulting in serious injury or death to passers-by.
2. **Never perform any disassembly, maintenance, repair, or part replacement of the hoist when it is suspended in the air or is under load.**
   Platform may fall or tilt and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.
3. **Perform all tests and inspection at the start of each work shift.**
   The hoist may malfunction. This may cause the platform to fall or tilt and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.
4. **Daily tests and inspections must be performed carefully according to this manual**
   Correct operation of the hoist must be ensured. Otherwise, platform may fall or tilt due to malfunction and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.
5. **Using the hoist in severe environment, perform tests and inspections more frequently. (Refer to section 4)**
   Perform disassemble maintenance after completing work at each project site to remove dusts and contaminations from BISOMAC and BISOLOCK inside and perform inspection. Otherwise, accumulated dusts and contaminations bother proper operation of the hoist. This may cause the platform to fall or tilt and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

7.1 Tests and inspections: Rigging materials

[WARNING: Tests and inspections of rigging materials]

⚠ WARNING

If any abnormalities are found in the rigging materials, do not use the platform with such faulty materials.
Wire ropes may be cut or may run off. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

Inspect all rigging materials that support the load of the equipment (such as nuts, bolts, clamps, wire clips, shackles, and other components of the equipment) and wire ropes. Ensure that they are not damaged or worn down and that they are secured properly.

7.2 Tests and inspections: Wire rope

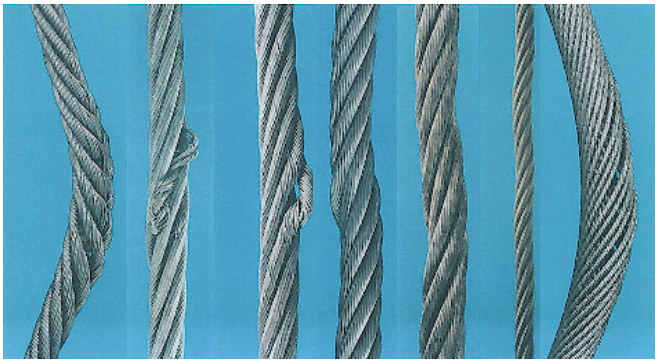
[WARNING: Tests and inspections of wire rope]

⚠WARNING

Inspect wire ropes periodically. If any abnormalities are found, replace with new ones.
Wire rope wears down from repeated use. Damaged or deformed wire rope may be cut due to loss of strength. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

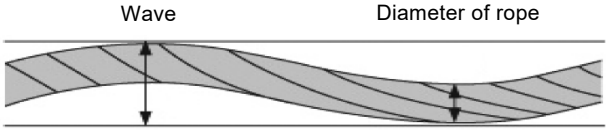
7.2.1 Shape and size of wire rope

●Replace the wire rope if any of the conditions below are found. (See Photo-1 below)



[Photo-1]

1. Waviness (wave greater than the nominal diameter 4/3. (See Picture-15)

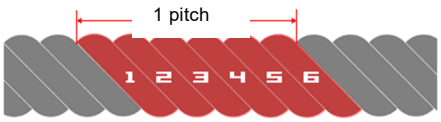


[Picture-15]

2. When loosened wires, deformation, or kinks are found.
3. Broken wires are more than 10% of the total number of wires per one pitch.

   (Picture-16 shows one pitch of six strands wire rope)

   *Ex. Construction of wire rope is 6x19: 6 x 19 x 10% = 114 x 0.1 = 11 wires



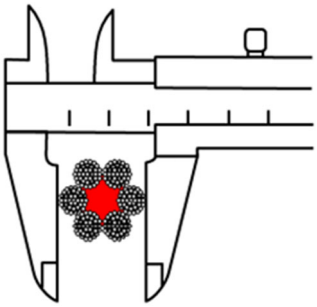
[Picture-16]

4. Average diameter of 8.0 mm wire rope becomes
   - smaller than 7.8 mm.
   - greater than 8.4 mm.
5. Average diameter of 9.0 mm wire rope becomes
   - smaller than 8.8 mm.
   - greater than 9.5 mm.
6. Heavily rusted and pitting found on the surface.
7. Wire rope that has been exposed to temperatures above 93°C.

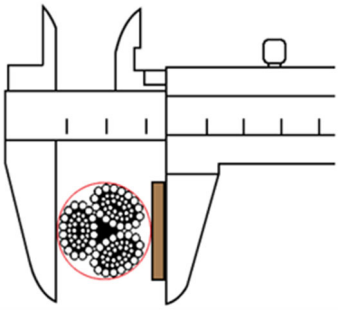
●Measure the diameter of the wire rope as shown in Picture 17 and 18 below.

Measure the diameter of the circumscribed circle of the wire rope with a load applied. Measure two diameters per one circumference in different directions and average the values. The diameter should be measured in several positions in the direction of length. Wire rope with an even number of strands should be measured at its largest cross section as shown in Picture-17.

Wire rope with an uneven number of strands should be measured with a board as shown in Picture-18. The value without thickness of the board is the diameter of the wire rope.



[Picture-17]



[Picture-18]

NOTE: Worn, kinked, or deformed wire rope and wire rope with broken wires or waviness cannot be repaired but must be replaced.

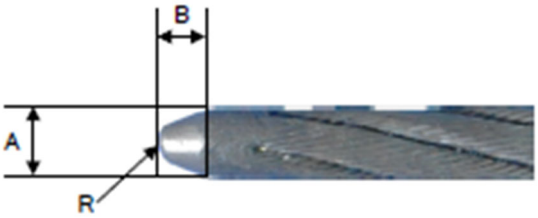
7.2.2 Shape and size of the end of wire rope

●For use with the hoist, the end of the wire rope shall be shaped as shown in the Photo-2.

NOTE: If the shape of the end of the wire rope is improper, the wire rope may not be inserted into the hoist or may be jammed inside the hoist and cannot be discharged.

●The end of the wire rope should be shaped as below.

Nominal Diameter	8.0 mm wire rope	9.0 mm wire rope
Diameter [A]	8.0-8.4 mm	9.0-9.5 mm
Brazed portion [B]	Within 8.0 mm	Within 10.0 mm
Radius of top end [R]	3.0 mm	4.0 mm



[Photo-2]

7.3 Tests and inspections: Hoist

[WARNING: Tests and inspections of the hoist]

⚠WARNING

Do not use the hoist if any defect is found. Authorized personnel must replace with a hoist that has been inspected and has passed all test.
Otherwise, a malfunction may occur. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

⚠CAUTION

If oil is leaking from the BISOMAC, stop using immediately and replace with a hoist that has been inspected and has passed all test.
A lack of oil can cause the gearbox and motor to overheat. This may cause burn injuries to the operator. Also, the overheating may cause serious damage to the gearbox and motor. Smoke may be emitted, and the hoist may not work.

Pre-operation inspection

- Ensure that bolts, nuts, and the cap of the operator's manual storage unit for the hoist are not loosened.
- Visually inspect the appearance of the hoist (including cables and connectors) and ensure that there are no damaged parts.
- Ensure that the hoist is properly installed onto the platform.
- Ensure that the central control box is connected to the power supply.
- Check the circuit breaker and ensure that the power is not cut off.

7.3.1 Tests and inspections: Lifting the platform and emergency stop function

[WARNING: Lifting operation and emergency stop function]

⚠ WARNING

1. Stop operating the hoist immediately if any defect, such as abnormal noise, is found. Replace with a hoist that has been inspected and has passed all tests.
Do not use an abnormal hoist. The parts inside the hoist may be damaged. Continued use may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Stop operating immediately if the wire rope does not travel through the hoist while the platform is suspended even when the motor is working.
The wire rope may be jammed inside the hoist, or the sheave may be slipping. Continued use may result in damage to the equipment or cutting off of the wire rope. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

3. Do not use the hoist if the emergency stop switch does not work.
In the event of a failure in the circuit, the hoist may not be able to stop properly. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

4. Operate the emergency stop switch and operation switch only by hand.
Using foreign objects to operate the hoist may damage the switch or switch cover and allow water to enter the hoist. It may cause a malfunction of the hoist and the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

5. Stop operating immediately if the hoist travels in the wrong direction.
This may cause the platform to fall or tilt; consequently, operators or objects might fall, resulting in serious injury or death to operators or passers-by.

1. Lift the platform up approximately 1 m from the ground and lower it down to the ground again. Repeat this process several times to check that there are no abnormal vibrations, such as the hoist is shaking.
2. Check that the hour meter works properly.
3. Press the emergency stop switch to cut off the power to the hoist.
4. Ensure that the hoist does not operate even when the operation switch is operated.
5. Reset the emergency stop switch. Ensure that the hoist resumes normal operation.

7.3.2 Tests and inspections: Controlled descent function

⚠CAUTION

1. Disconnect the power cable from the central control box when operating the emergency controlled-descent lever.
Otherwise, sudden movement may be induced when the power is regained. This may cause injury or damage to property.

2. Pull the emergency controlled-descent lever as far as possible.
If lowering down without releasing the brake completely, the hoist may overheat to cause burning or wearing of the brake and then to lose braking force. In this case, the brake may not be repairable.

1. Lift the platform up approximately 1 m from the ground.
2. Disconnect the power cable from the central control box to cut off the power.
3. Release the lever stopper.
4. Pull the emergency controlled-descent lever gently and lower the platform.
5. Check that the platform descends at a slow, controlled speed.

NOTE: If the platform descends with increasing speed, release hand from the lever immediately and contact the local distributor.

7.3.3 Tests and inspections: BISOLOCK

[WARNING: Tests and inspections of the BISOLOCK]

⚠WARNING

1. Stop using immediately if the BISOLOCK does not hold the wire rope properly. Replace with a BISOLOCK that has been inspected and has passed all test.
Otherwise, the BISOLOCK is unable to properly prevent tilting or falling of the platform in case the wire rope breaks or slips. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Adjust the BISOLOCK if the activation angle is greater than 14 degrees. Adjustment shall be performed only by authorized personnel.
This may cause the operators or objects to fall, resulting in serious injury or death to operators or passers-by.

[Activation check of BISOLOCK]

1. Lift the platform up approximately 2 m from the ground.
2. Lower one side of the hoist.
3. The BISOLOCK is activated and holds the secondary wire rope to 14 degrees.
4. Lift and make the platform horizontal to release the BISOLOCK.
5. Perform the same inspection to another BISOLOCK.

NOTE: If the BISOLOCK does not properly hold wire rope, contact the local distributor for replacement.

7.3.4 Tests and inspections: BISOLIMIT

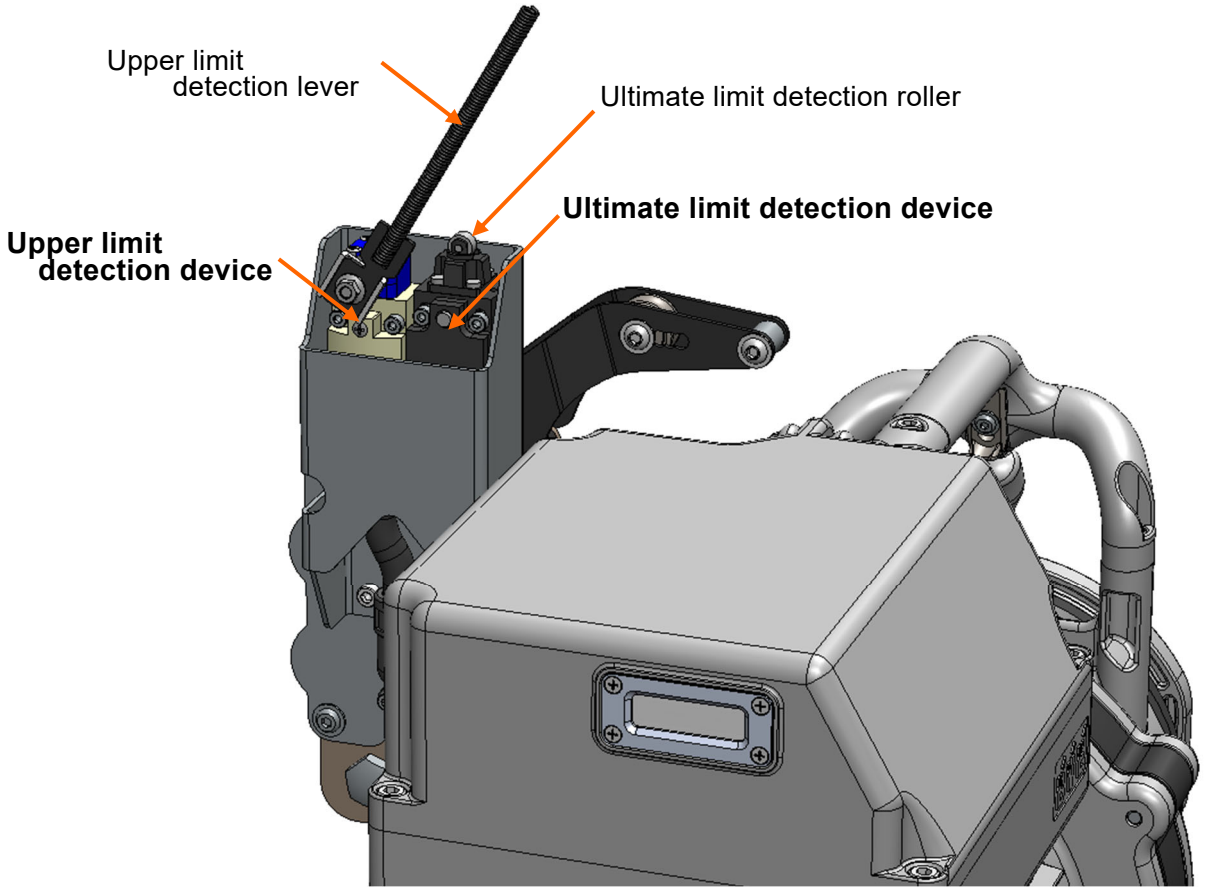
[WARNING: Tests and inspections of the BISOLIMIT]

WARNING

Stop using immediately if the BISOLIMIT does not work properly. Replace with a BISOLIMIT that has been inspected and has passed all test.
The upper/ultimate limit may not be detected, resulting in damage to the suspension rig or platform from a fall. Consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

1. Push one side of the upper limit detection lever down and operate the UP button.
2. Confirm that the hoist does not operate UP travel. (See Picture-19)
3. Confirm that DOWN travel is available even when the upper limit detection lever is pressed.
4. Push the ultimate limit detection roller and operate the UP button. Confirm that both hoists do not lift the platform up. (See Picture-19)
5. Operate DOWN travel while the ultimate limit detection roller is pressed. Confirm that both hoists do not lower the platform down.
6. Apply the same procedure to another BISOLIMIT.

NOTE: If the BISOLIMIT does not work properly, contact the local distributor for a replacement.



[Picture-19]

8. PERIODIC MAINTENANCE

Periodic maintenance must be performed by authorized personnel if the hoist corresponds to any of following conditions.

1. One year from purchase
2. One year since the last periodic maintenance
3. One hundred operation hours since the last periodic maintenance
4. The hoist is used in a dirty environment

NOTE: Above periods are at the longest, under proper use according to this manual. Since the actual use conditions are uncertain, appropriate maintenance cycle shall be determined depending on the actual conditions and referring to the above periods.

*Procedure of Periodic Maintenance, refer to the Maintenance Procedure Manual of each device. (Separately issued)

⚠ WARNING

1. Repairs of component parts of the hoist shall be performed only by authorized personnel.
Otherwise, the hoist may malfunction or be unable to operate normally. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

2. Use only parts designated by the manufacturer as a replacement.
Otherwise, the hoist may malfunction or be unable to operate normally. This may cause the platform to fall or tilt; consequently, the operators or objects might fall, resulting in serious injury or death to operators or passers-by.

9. TROUBLESHOOTING AT JOB SITE

[Mishandling]

This section describes possible problems caused by mishandling and solutions.

⚠ WARNING

If the hoist does not return to its normal condition even when the following solutions (Case I-IX) have been attempted, contact the local distributor and replace.
Repairs and corrective actions shall be performed only by authorized and properly trained personnel. Improper repairs and corrective actions may cause serious accidents.

Case Ⅰ The hoist does not run

Possible cause	Solution
1. Power is off.	1. Turn on the main power. Connect the power plug properly.
2. Emergency stop switch is activated.	2. Reset the emergency stop switch.
3. Overload protection is activated.	3. Reduce the load from the platform.
4. Reverse phase detector is activated. (Only 3 phase model)	4. Check the phase of power.
5. Ultimate limit detection device is activated.	5. Check that the limit switch roller is pressed.
6. BISOLIMIT is disconnected.	6. Connect the BISOLIMIT properly.

Case Ⅱ The hoist runs and can descend but cannot ascend or ascend while pumping

Possible cause	Solution
1. BISOLOAD is disconnected.	1. Connect the BISOLOAD properly.
2. BISOLOAD is activated.	2. Reduce the load from the platform.
3. Insufficient voltage.	3. Supply sufficient voltage as power. (Section 2.1)
4. Power cable is too long or too small.	4. Replace the power cable with a shorter or thicker one.
5. Upper limit detection device is activated.	5. Check that the limit switch lever is pressed.

Case Ⅲ Motor runs normally but wire rope is not wound.

Possible cause	Solution
1. Poor bullet.	1. Retouch the rope end as instructed. (Section 7.2.2)
2. Wire rope is kinked or deformed.	2. Stop operating and replace the wire rope immediately.
3. Dirt or other material is obstructing the inside or rope exit of the hoist.	3. Clean out the rope exit.

Case Ⅳ The hoist winds the wire rope but the platform is not lifted.

Possible cause	Solution
1. Improper wire rope is used.	1. Replace with the designated wire rope. (Section 2.5)
2. Defective wire rope (worn out, broken wire, deformation, etc.)	2. Replace with normal wire rope.

Case Ⅴ Lifting speed is too slow.

Possible cause	Solution
1. Insufficient voltage.	1. Replace the power cable with a proper one or supply sufficient voltage. (Section 2.1)
2. Defective wire rope (worn out, broken wire, deformation, etc.)	2. Replace with normal wire rope.

Case Ⅵ Unusual noises come from the hoist

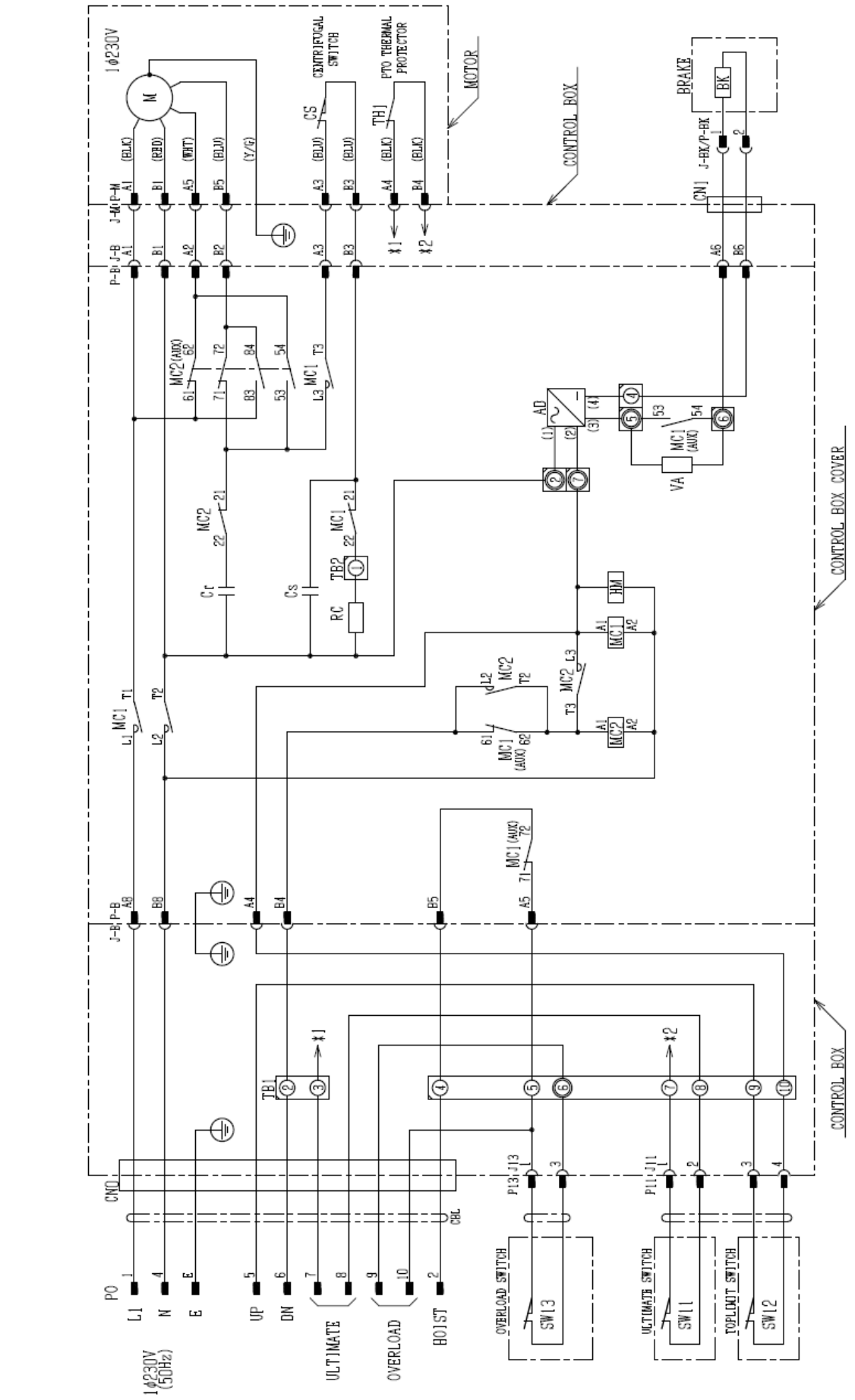
Possible cause	Solution
1. Insufficient oil in the gearbox.	1-4. Replace the hoist.
2. Damaged or broken gears.	
3. Contamination inside the hoist.	
4. Defect inside the hoist.	
5. Loosened bolts and nuts.	5. Check and tighten each bolt and nut.
6. Improper wire rope is used.	6. Replace with the designated wire rope. (Section 2.5)

Case Ⅶ BISOMAC becomes very hot.	
Possible cause	Solution
1. Voltage is too high. 2. Insufficient ventilation for the motor. 3. Heavily used. 4. Excessive load on the hoist.	1. Supply appropriate power. (Section 2.1) 2. Improve ventilation. 3. Keep the rated operating time. (Section 6) 4. Check that the weight of the platform and applied loads are appropriate for the hoist. If necessary, reduce the load.

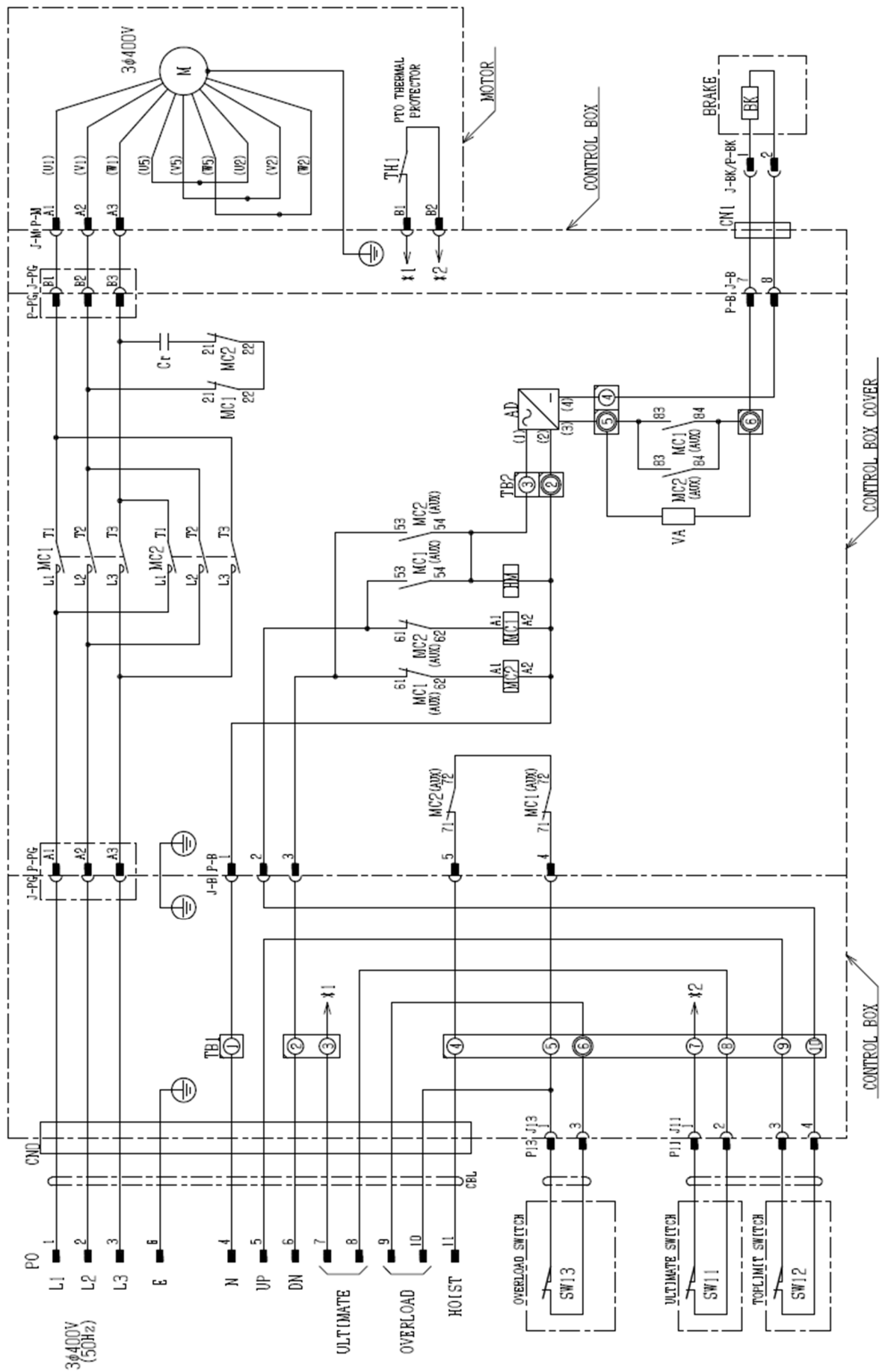
Case Ⅷ BISOLOCK is activated without tilting or slack in the rope.	
Possible cause	Solution
1. Kinked or deformed secondary wire rope. 2. The diameter of the secondary wire rope is too thick.	1. Stop operating and replace the wire rope immediately. 2. Measure the diameter of the wire rope. (Section 7.2.1) If necessary, replace the wire rope.

Case Ⅸ The hoist ascends with the UP button but cannot descend with the DOWN button.	
Possible cause	Solution
BISOLOCK is activated.	Reset BISOLOCK. 〈How to reset (Section 6.2.3) 1. Lift up and make the platform horizontal. 2. BISOLOCK is reset. *Do not release by using force. The parts inside the BISOLOCK may break and unable to reset.

BISOMAC308 1P-600
Wiring diagram



BISOMAC308 3P-600
Wiring diagram



Revision history

Revision 1: December 17, 2018

1. Added the minimum load to the hoist.
2. Added the precaution.

Revision 2: September 25, 2020

1. Corrected errors.
2. Added the explanation on safety devices. (BISOLOCK, BISOLOAD, BISOLIMIT)
3. Added the use condition of the hoist.
4. Changed sentences.

Revision 3: November 30, 2021

1. Corrected errors.
2. Standardized the naming of wire ropes (Japanese version only)
3. Standardized the representation of the unit.
4. Added store procedure
5. Added warranty exemption conditions
6. Added the BISOLIMIT
7. Added the rope exit tube.
8. Added the replacement criteria of wire rope.
9. Added the troubleshooting

Revision 4: October 19, 2022

1. Corrected errors.
2. Added [Illustration of the hoist 3].
3. Changed the location of the label [Manual Mark].
4. Changed [Photo-2].

Revision 5: March 14, 2024

1. Added designated wire rope.

Revision 6: July 11, 2025

1. Added 8 mm model.
2. Added manual handle.

BISOMAC308 Specifications for Europe
Single phase & Three phase
Electric Traction Hoist Operator's Manual

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