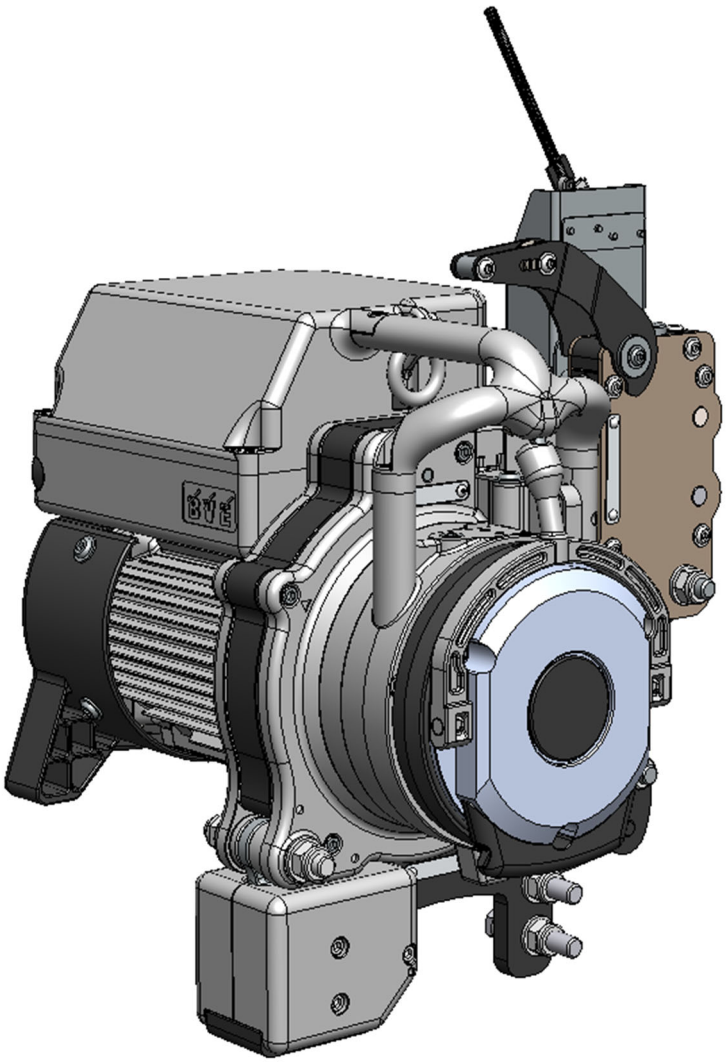
BISOMAC308

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 must read and completely understand this manual.
+ All operators must be thoroughly trained and certified in the use of the equipment, 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 time.
+ 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 equipment 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.

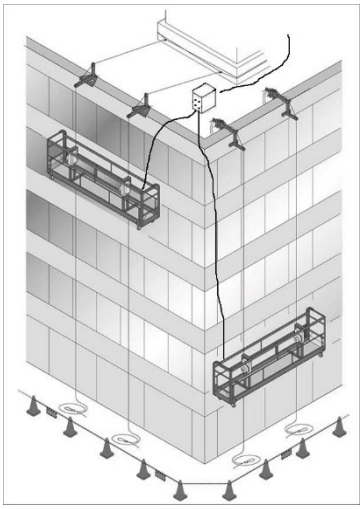
TABLE OF CONTENTS

[ATTACHMENT]

Attachment 1: BISOMAC308 1P-600 Wiring diagram

Attachment 2: BISOMAC308 3P-600 Wiring diagram

0. READ BEFORE USE

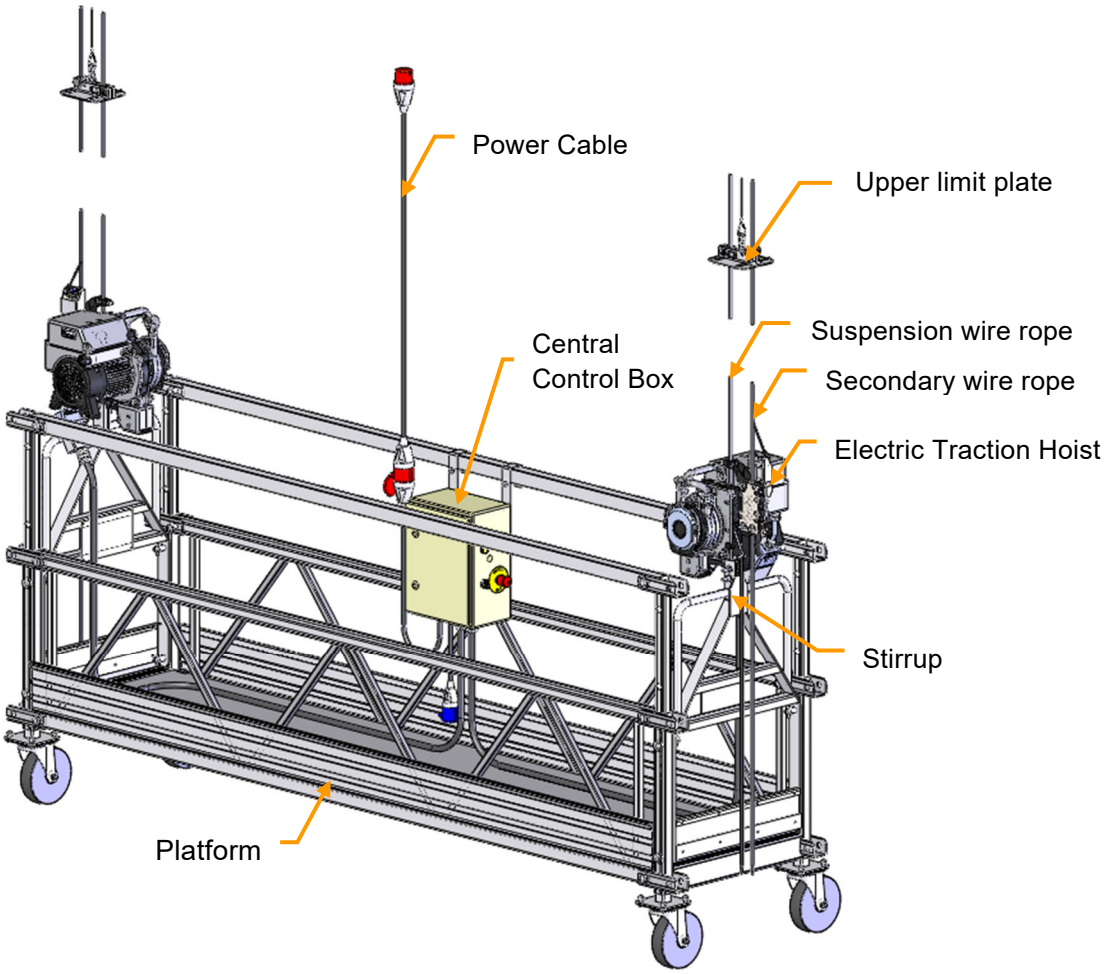


This Operator's Manual is written for operators to use the equipment safely and properly. To fully understand the usage of the equipment, please refer to the following instructions and system compositions. (See picture-1) It is responsibility of the user of this equipment to determine whether the equipment 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 (TSP) and a suspension rig that are assembled at site prior to carrying out the task. TSAE are then dismantled and removed from site on completion of the work which 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;

a) Main switch

NOTE: Main switch or Junction box shall have 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 (Automatic circuit breaker type-C)

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

2. USAGE ENVIRONMENT

Temperature Range: between -10 ℃ and 55 ℃

Humidity: 75% or less

Protection Grade: IP54

Maximum Wind Speed: In accordance with the specifications of SAE.

Altitude: 1,000 meter or lower

3. CAUTIONS BEFORE USING

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

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

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

d) In case the area below TSP is open to the public, preventive measures have to be taken to safeguard the people below (Ex. Barriers, roof protected walk ways, etc.).

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

f) Overload Detection Device may not cover TSP in all configurations. The operators must check that loading of platform does not exceed rated load of each platform.

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

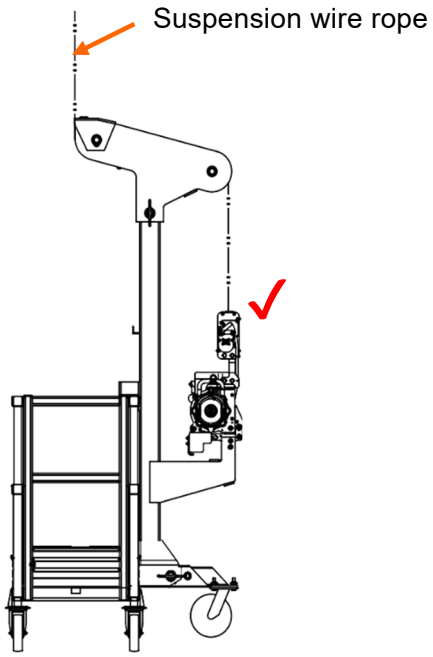
h) Use only certified safety harness, lanyard, rope grabs, and independent life lines at all times.

i) In the cold weather, lifting operation of the hoist may not be available smoothly. Also, the hoist may not descend even emergency controlled descent lever is operated. Preventive measure not the hoist to be cooled must be taken.

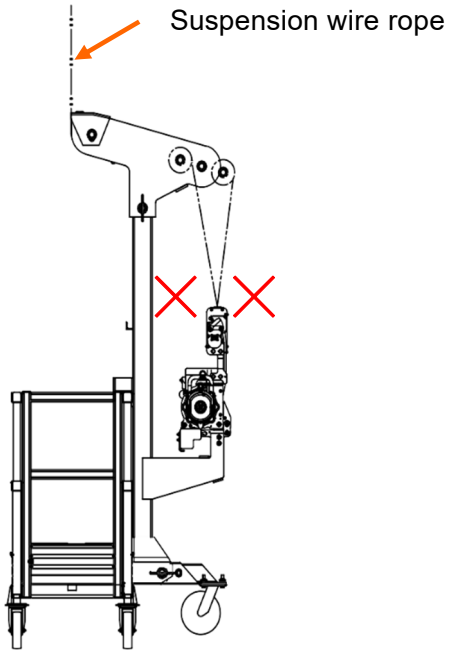
j) If the load on the platform is light, descent speed of emergency controlled descent may be slower.

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

[Installation of the hoist 1]

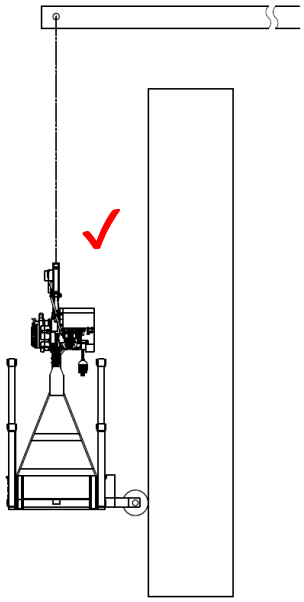


Correct Installation

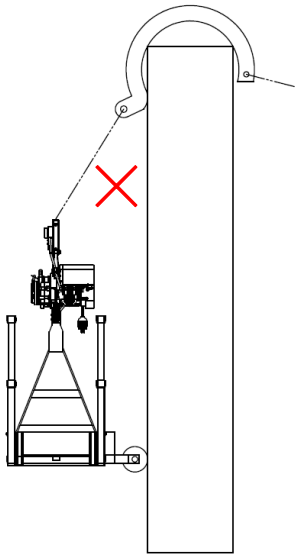


NOT vertically suspended

[Installation of the hoist 2]



Correct Installation



NOT vertically suspended

4. CAUTIONS WHEN USING

a) Stop operating and notify supervisor if any faults which may damage to safety of the equipment is found.

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

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

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

5. PROHIBITIONS

a) The hoist is used only to raise, support and lower 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 the water.

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

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

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

k) Do not use the hoist in 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 indoor. In case necessarily store the products outdoor, only as a temporary storing, cover the products by waterproof sheeting or the like to prevent to be exposed to the direct sunlight and rain. Storage place shall be well ventilated not to become hot and humid, and avoid the products to be exposed to dusts, metal powders, and corrosive gas.

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

c) Place the products as the wire rope inlet faces upward.

d) If the products have been stored longer than 1 year, change the oil in the gear box and perform pre-shipment inspection according to the Maintenance Procedure Manual.

e) If the products are to be stored longer than 3 months after use, operate without load a few minutes once every 3 months. When start using again, inspect the products if the electromagnetic brake works normally, and ensure that there is no abnormal noise, vibration, heating.

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 failure in storing as determined in the Operator's Manual.

c) Normal wear, tear, deterioration, corrosion, and consumable items.

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

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

h) Any defect caused by fall or the damage in transportation.

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

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

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

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

1. FOR SAFE USE

1.1 General

This Operator's Manual (referred to as this manual) is applicable to the BISOMAC308-1P600 and BISOMAC308-3P600 Electric Traction Hoist manufactured by NIHON BISOH Co., Ltd.
BISOMAC308 Electric Traction Hoist (referred to as the hoist) is 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 word "Safety Devices" in this manual includes BISOLOCK, BISOLOAD, and BISOLIMIT. For the specification of each device, refer to "2. SPECIFICATIONS".

1. Read and fully understand this manual before using this equipment.
2. The hoist is designed to be used to raise, support and lower platform.
3. Operating, handling, maintenance, inspection, and repairing 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 which possibly caused by the hoist according to "9. TROUBLESHOOTING" to find the cause of problem and take corrective action.
6. The hoist is used to raise, support and lower suspended scaffolds, work cages and bosun chairs on, or in building(s) and structures. If used for any other purpose, you must take all necessary precautions to be sure that both design and operation are hazard free, and such use conforms with manufacturer's specifications.
7. This instruction 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 this 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, inspections and repairs of the hoist must be performed by trained and certified personnel according to Maintenance Procedure Manual of each device (separately issued).

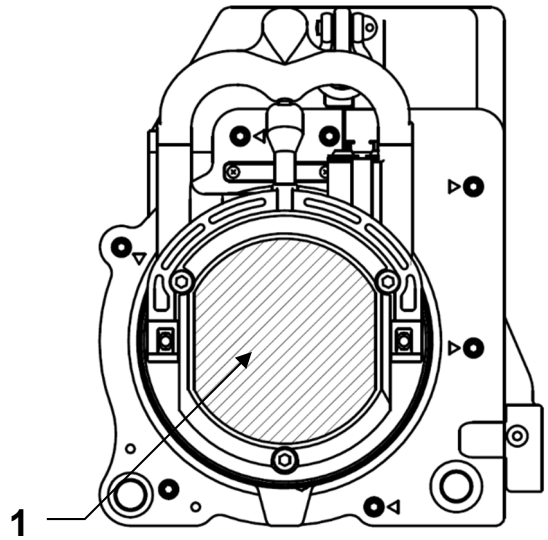
1.3 Hazard Symbols

Safety instructions are classified according to risk levels.

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

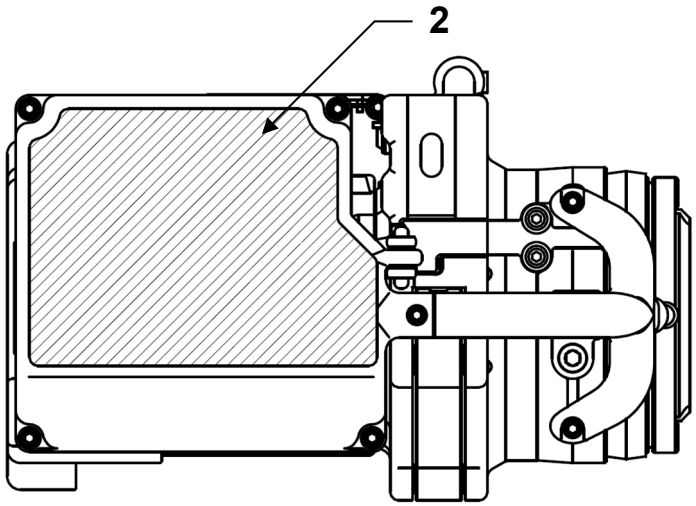
Safety instructions attached to the hoist and safety devices

[BISOMAC Front side]



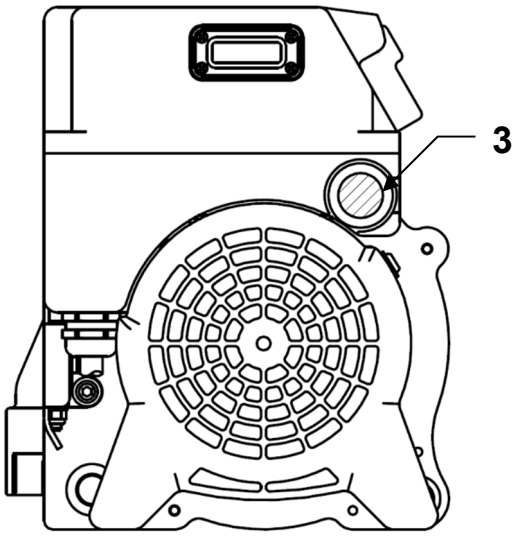
Description	Meaning and Location
1. EMERGENCY DESCENT	●Instruction of Emergency controlled descent ●Instruction of Electromagnetic Brake ●Warning of skin burn [Electromagnetic Brake]

[BISOMAC Upper side]



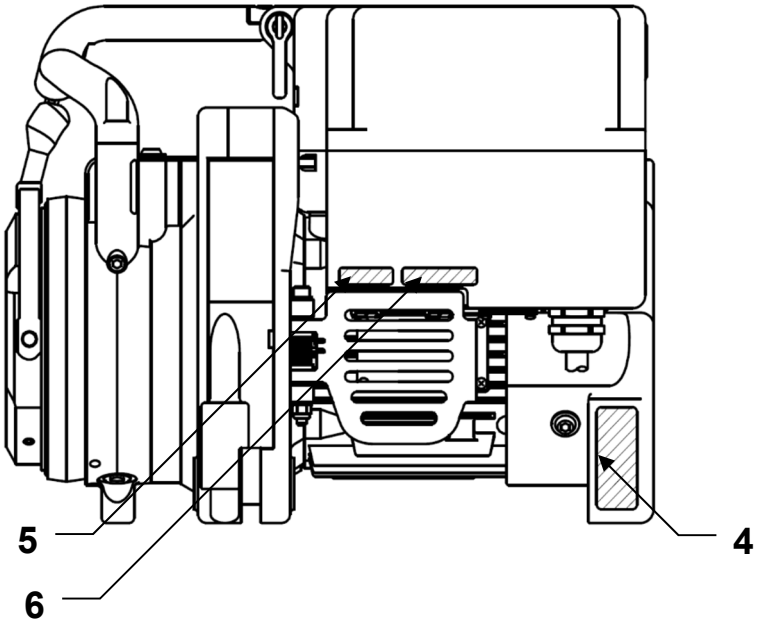
Description	Meaning and Location
2. 1P-600/3P-600	●Instruction of Specification and operation ●QR code to access Operator's manual on web ●Instruction of shackle's limit load [Control Box Cover]

[BISOMAC Back side]



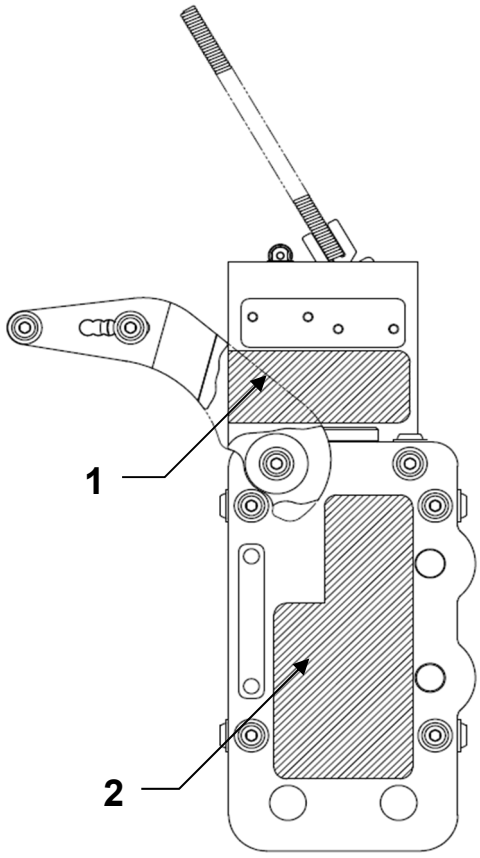
Description	Meaning and Location
3. Manual Mark	●Showing location of Operator's manual [Control Box]

[BISOMAC Right side]



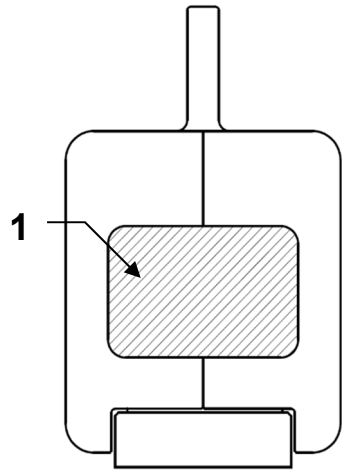
Description	Meaning and Location
4. POWER 230V/POWER 400V	●Instruction of voltage [Fan Cover]
5. Overload	●Instruction of connecting plug of BISOLOAD [Control Box]
6. Upper/Ultimate	●Instruction of connecting plug of BISOLIMIT [Control Box]

[BISOLOCK / BISOLIMIT Front side]



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

[BISOLOAD Left side]



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

2. SPECIFICATIONS

2.1 BISOMAC308

Model	Rated Load (kg)	Voltage	Rated Current	Wire Rope dia.		BISOLOAD	Applicable Standard
				Nominal Diameter	Range		
BISOMAC308 1P-600	600	1Phase 230 V	8.0 A	9.0 mm	9.0-9.5 mm	Yes	+BS EN 1808
BISOMAC308 3P-600	600	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 1m 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 decent equipment 3. Motor built-in thermal protector (temperature detection) 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 last maintenance. **NOTE**: It depends on the actual condition of use at work sites. (Refer to “4. WORK ENVIRONMENTS”.	

2.2 BISOLOCK

Model	BISOLOCK308-AT609EU
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 kg
Control Feature	Unable ascending if the Upper Limit Detection is activated. Unable lifting if the Ultimate Limit Detection is activated.
Voltage	230 V

2.3 BISOLOAD

Model	BISOLOAD308-600EU
Rated Load	600 kg
Dimension (H × W × D)	236 mm × 343 mm × 78 mm
Self-Weight	4 kg
Activating Load	750 kg (600 kg × 125 %)
Control Feature	Unable ascending 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 ascending if the Upper Limit Detection is activated. Unable lifting if the Ultimate Limit Detection is activated.
Voltage	230 V

2.5 Wire Rope (Designated by NIHON BISOH)

No.	1	2	3
Nominal Diameter	9.0 mm	9.4 mm	9.2 mm
Construction	4 × 36WS	4 × 36WS	5 × 26
Min. Breaking Load	67.2 kN (6857 kg)	64.9 kN (6622 kg)	66.8 kN (6816 kg)
Finish	Galvanized	Galvanized	Galvanized
Applicable Model	・BISOMAC308 1P-600 ・BISOMAC308 3P-600		
NOTE	Designated wire ropes by NIHON BISOH		

⚠ WARNING

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

2. Use 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 and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

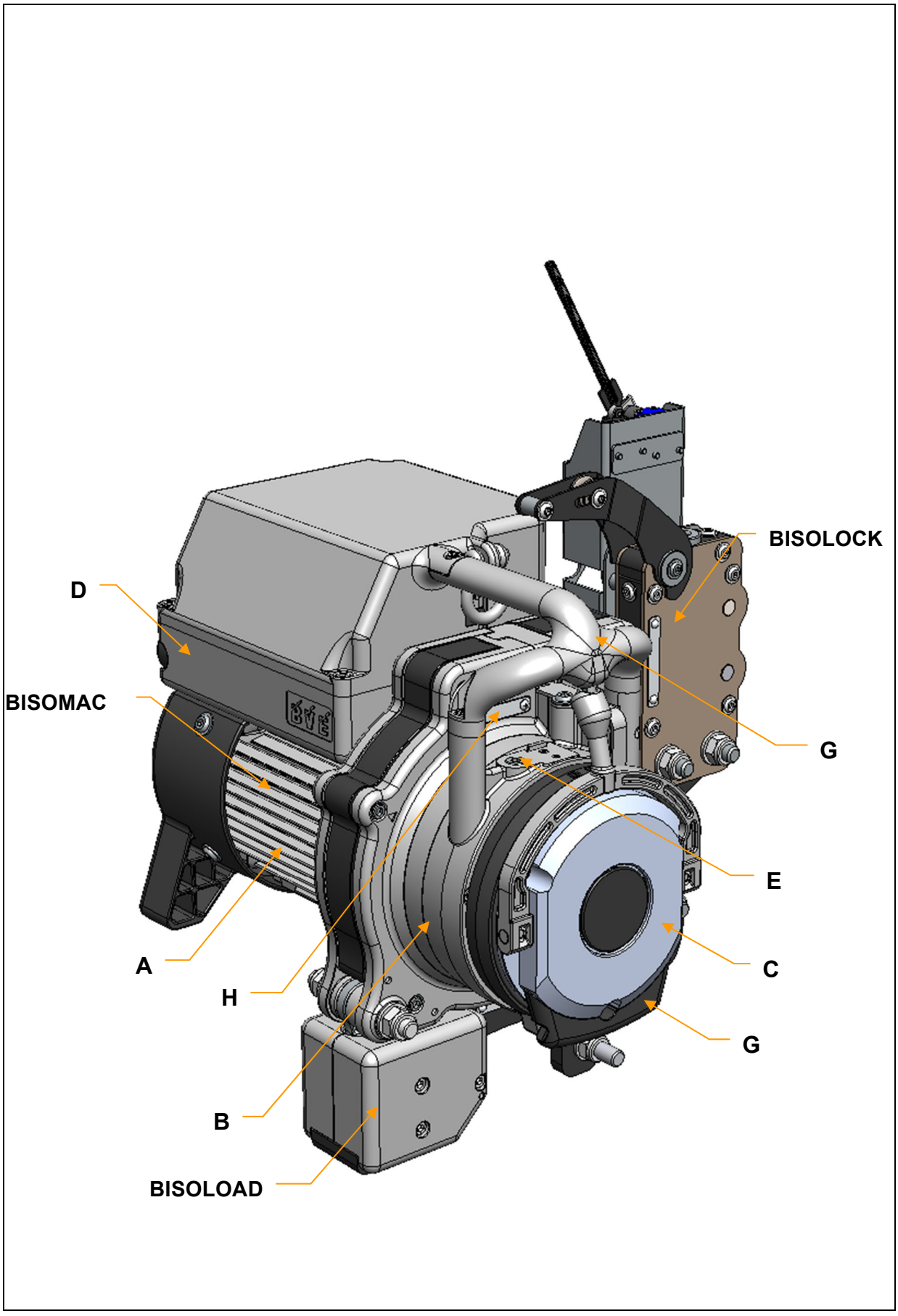
2.6 Power Cable

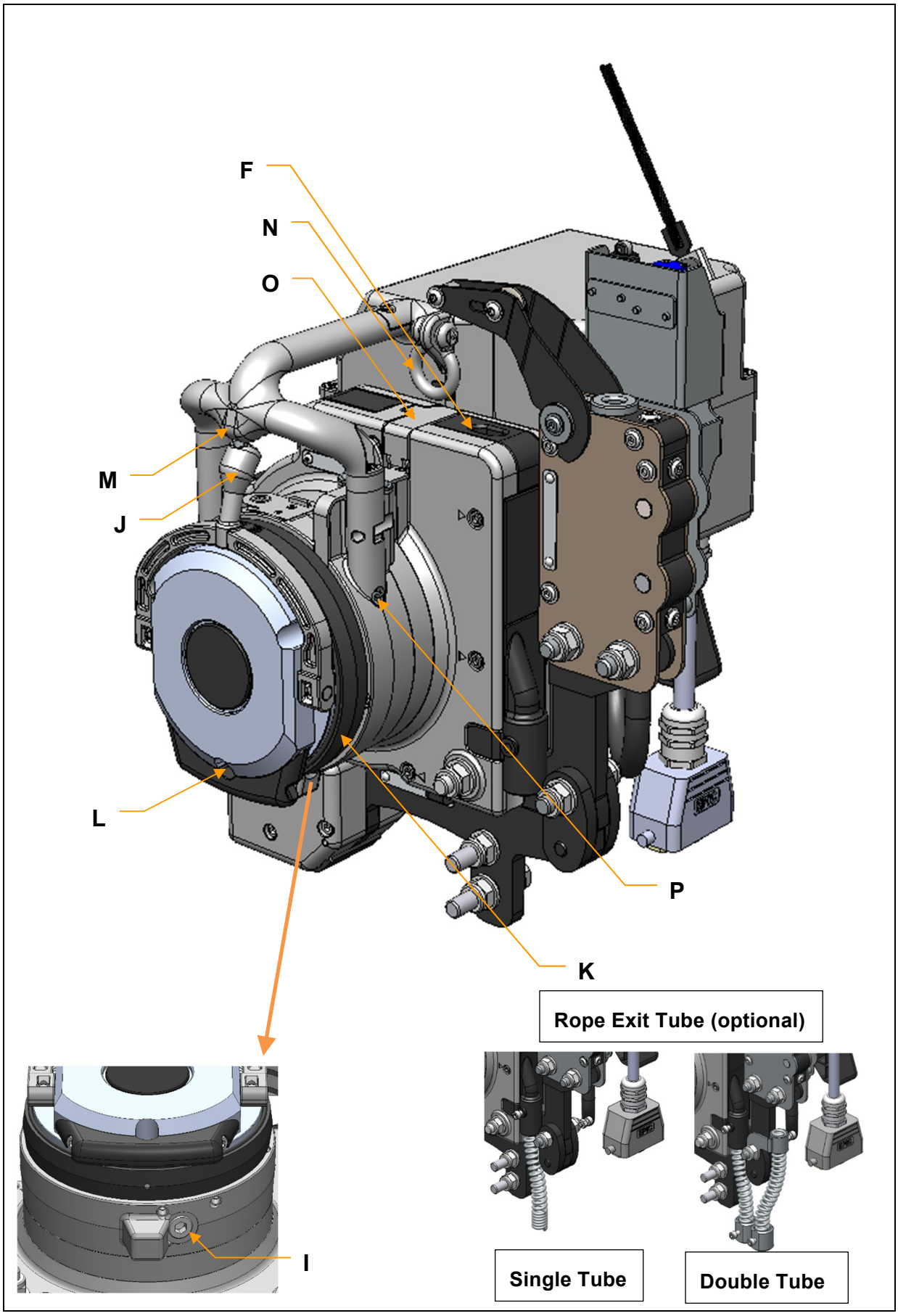
NOTE: Due to the various possible suspended platform loading situations and power sources, it is impossible to specify the maximum length of the power cable exactly. When the hoist is difficult to start up, take measures against voltage drop such as boosting voltage and/or using thicker size of cable.

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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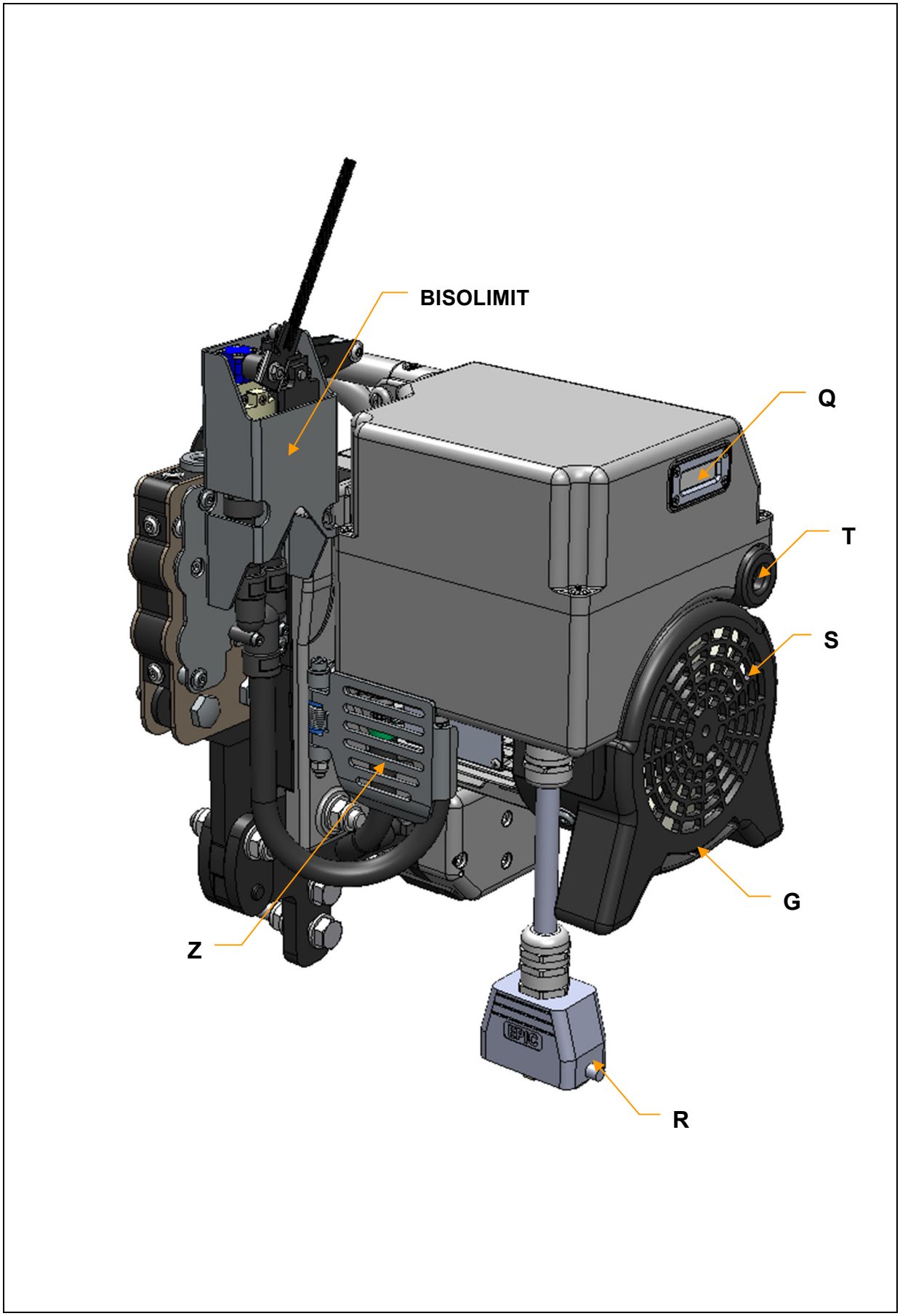
Rope Exit Tube (optional)
Single Tube
Double Tube


BISOLIMIT
Q
T
S
G
Z
R

	DESCRIPTION	FUNCTION
A	Electric Motor	BISOMAC is driven by the motor with electricity.
B	Gear Box	Decelerate rotation speed of the motor to lift the rated load with rated speed.
C	Electromagnetic Brake	Released when the operation button is pressed. When the operation button is released or power is cut off, brake is activated and BISOMAC stops lifting.
D	Control Box	Electric components inside.
E	Oil Inlet	Open it when replacing oil.
F	Suspension wire rope inlet	Inserting suspension wire rope from here.
G	Handle	Use when carrying BISOMAC.
H	Serial Number	Serial Number of BISOMAC.
I	Oil Outlet	Open it when discharging oil.
J	Emergency Controlled Descent Lever	It allows downward travel at a controlled speed without power.
K	Dust Cover	Protection cover not water and dirt to get into Electromagnetic Brake.
L	Water-proof Cap Bolt	Cap bolt with sealing to avoid water getting into Electromagnetic Brake.
M	Lever Stopper	Lock the lever automatically to prevent misoperation and malfunction of Emergency controlled descent lever.
N	Shackle	Use it when carrying BISOMAC by hanging. **NOTE:** Maximum lifting load is 50 kg.
O	Guard Plate for Brake Cable	Protect Brake cable from damage.
P	Oil Level Gauge Plug	Open it to check the oil level.
Q	Hour Meter	Displays accumulated operating hours.
R	AC Power Plug	Connect it to power source to supply power to BISOMAC.
S	Fan Cover	Protects operator from being struck by the fan and prevents damage to the fan and motor.
T	Cap	Operator’s manual is stored inside.
Z	Cable Guard	Protection plate for cables and connectors.
OP	Rope Exit Tube (Single/Double) (Optional)	Guiding discharged suspension and secondary wire rope.

3.2 BISOLOCK

BISOLOCK is fall arrest device which holds secondary wire rope when the platform angle exceeds determined angle.

When upper limit switch is activated, the ascending operation cannot be performed due to the electrical interlock. Also, once the ultimate limit is activated, the hoist completely stop operating.

⚠ WARNING

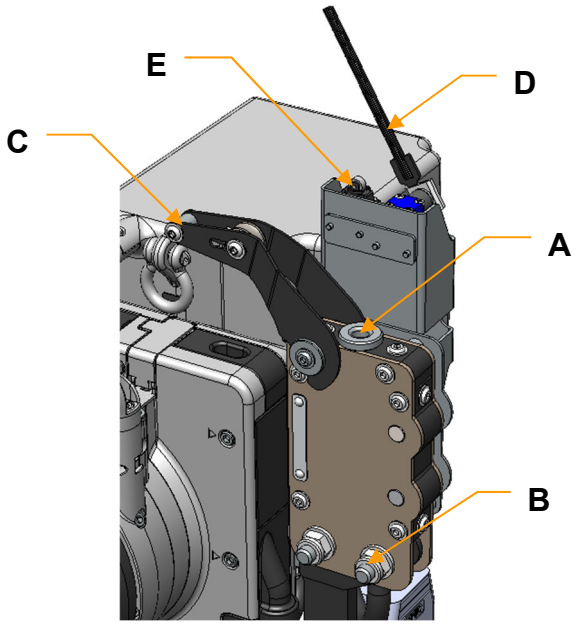
If the platform suddenly inclined and BISOLOCK is activated, only trained and authorized personnel are allowed to release BISOLOCK.

Contact local authorized distributor for rescue. Improper reset 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.

⚠ WARNING

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

Contact local authorized distributor for rescue. Improper reset 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.



	DESCRIPTION	FUNCTION
A	Secondary wire rope inlet	Inserting secondary wire rope.
B	BISOLOCK mounting bolt	Bolts for fixing BISOLOCK to BISOLOAD. (2 pcs)
C	Tilt Detecting Lever	Detect tilting and slack rope.
D	Upper Limit Switch	Ascending operation unable when the Upper Limit is detected.
E	Ultimate Limit Switch	If the upper limit is not detected properly and continue ascending, ultimate limit switch will be activated. When the ultimate limit is detected, the hoist completely stop operating. Contact local authorized distributor for rescue.

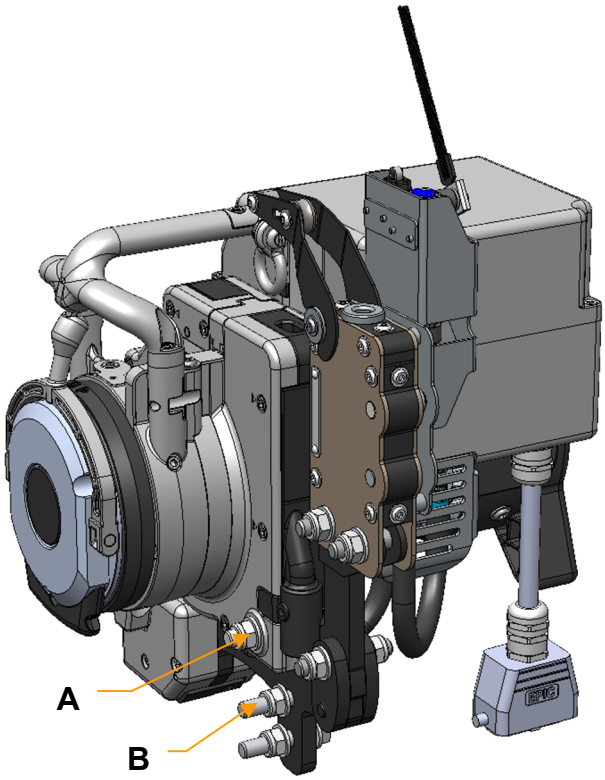
3.3 BISOLOAD

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

⚠WARNING

If the equipment does not ascend or bounces while ascending, reduce the load on the platform.

Rigging may drop or the platform may tilt due to overloading. 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.



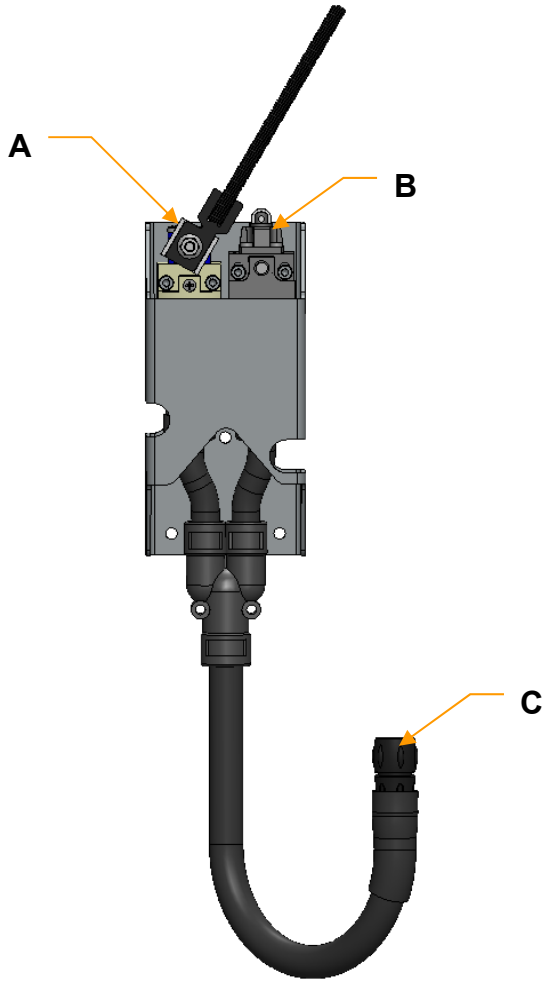
	DESCRIPTION	FUNCTION
A	BISOLOAD mounting bolt B	Bolts for fixing BISOLOAD to BISOMAC. (2 pcs)
B	Stirrup fixing bolt	Bolts for fixing the hoist to the platform. (2 pcs)

3.4 BISOLIMIT

BISOLIMIT is Upper/Ultimate limit detection device. When the upper limit switch is activated, the ascending operation cannot be performed due to the electrical interlock. Also, once the ultimate limit switch will be activated, the platform will be unable to operate at all.

⚠ WARNING

If the ultimate limit switch is activated, only trained and authorized personnel are allowed to release BISOLOCK. Contact local authorized distributor for rescue.
Improper reset 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.



	Description	Function
A	Upper limit switch	Ascending operation unable when the Upper Limit is detected.
B	Ultimate limit switch	If the upper limit is not detected properly and continue ascending, ultimate limit switch will be activated. When the ultimate limit is detected, the hoist completely stops operating. Contact 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 which may affect 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.

Protective covers may hide safety instructions and warning labels. Before operating the hoist, put off the covers and make 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 disassemble maintenance after completing work at each work site to remove contamination in the hoist and inspect the operation of the hoist.
Contamination in the hoist may cause 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.

2. Never operate the hoist in an explosive atmosphere. The hoist is not designed to be used in such environment.
If the hoist is used in an explosive atmosphere, explosion or fire may occur. This might result in serious accidents.

NOTE: An explosive atmosphere is defined as a mixture of dangerous substances with air, under atmospheric conditions, 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 protective covers may cause overheating of motor.
When using protective covers, check if the air supply to the motor is sufficient frequently, and if it's overheated, stop operating and wait for cooling 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 protective covers are recommended.

NOTE: When using the hoist in freezing temperatures, freezing of moistures in the hoist may affect the operation of components of the hoist. Oil in the gear box may be cured. This may cause BISOMAC to start hardly. After work, necessary preventive measure not to freeze moistures in the hoist must be taken.

5. SET UP INSTRUCTIONS

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

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

[WARNING: INSTALLATION]

⚠ WARNING

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

2. Do not use different type of hoist in one platform.
Otherwise, operation error may occur from the difference in the performance (lifting speed, etc.) and the difference of the operation method of hoists and safety devices. 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.

3. When attaching the hoist to the platform, make sure how to fix safety devices in advance.
Otherwise, safety feature may not work properly. 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. Attach ground fault circuit interrupter to 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 power cable and control cable which damaged or cracked.
Doing so could result in electrocution or death.

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

7. When connecting safety devices to BISOMAC, make sure that the plug is completely dry and no moisture inside.
Otherwise, malfunction may occur. 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.

⚠ CAUTION

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

[CAUTION: CONNECTING POWER]

⚠ CAUTION

Voltage supplied to the hoist should not exceed the rated voltage range (refer to Section 2.1).
Otherwise motor may get overheated, result in malfunction or injury of operator.
Rated voltage range (±10%) is only temporarily acceptable. It does not mean continuously acceptable voltage range.

[WARNING: SUSPENSION WIRE ROPE AND SECONDARY WIRE ROPE]

⚠WARNING

1. Use only authorized wire rope. Strictly follow the method of use and instructions of manufacturer.
Otherwise BISOMAC and safety devices cannot achieve proper supporting strength or the rope may get birdcaged or broken. 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.

2. Do not expose the wire rope to fire, temperatures above 93℃, 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 and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

- Worn, kinked, birdcaged or damaged wire rope cannot be repaired. Must be replaced.
- When in doubt, replace wire rope.
- If wire rope is exposed to corrosive chemicals, do not save, replace it.

3. The wire rope must be long enough to exceed the distance that platform will land on the ground or in place. (At least 2 m or more)
Wire rope may get ran off from the platform. 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. Do not operate the hoist with faulty wire rope such as kinked, deformed, tied, etc.
Faulty wire rope may damage inside the hoist or wire rope may be broken. 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.

5. When fixing wire rope to a building, be sure that the wire rope does not contact any sharp edge.
Otherwise, wire rope may be broken. 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. Also broken wire rope may fall.

6. Make sure that wire rope runs freely through the hoist.
In consistent reeving speed suggests 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 be broken or the hoist may stop. 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. Do not secure or apply load to the end of 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 and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

8. Suspension wire rope and secondary wire rope shall be installed with the range of distance 100±10mm.
Otherwise BISOLOCK will not work properly. 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.

⚠CAUTION

Do not touch the wire rope while the hoist is operating.
There is a risk of 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 hoist.
The hoist may be damaged and cannot be operated. Also this may cause 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.

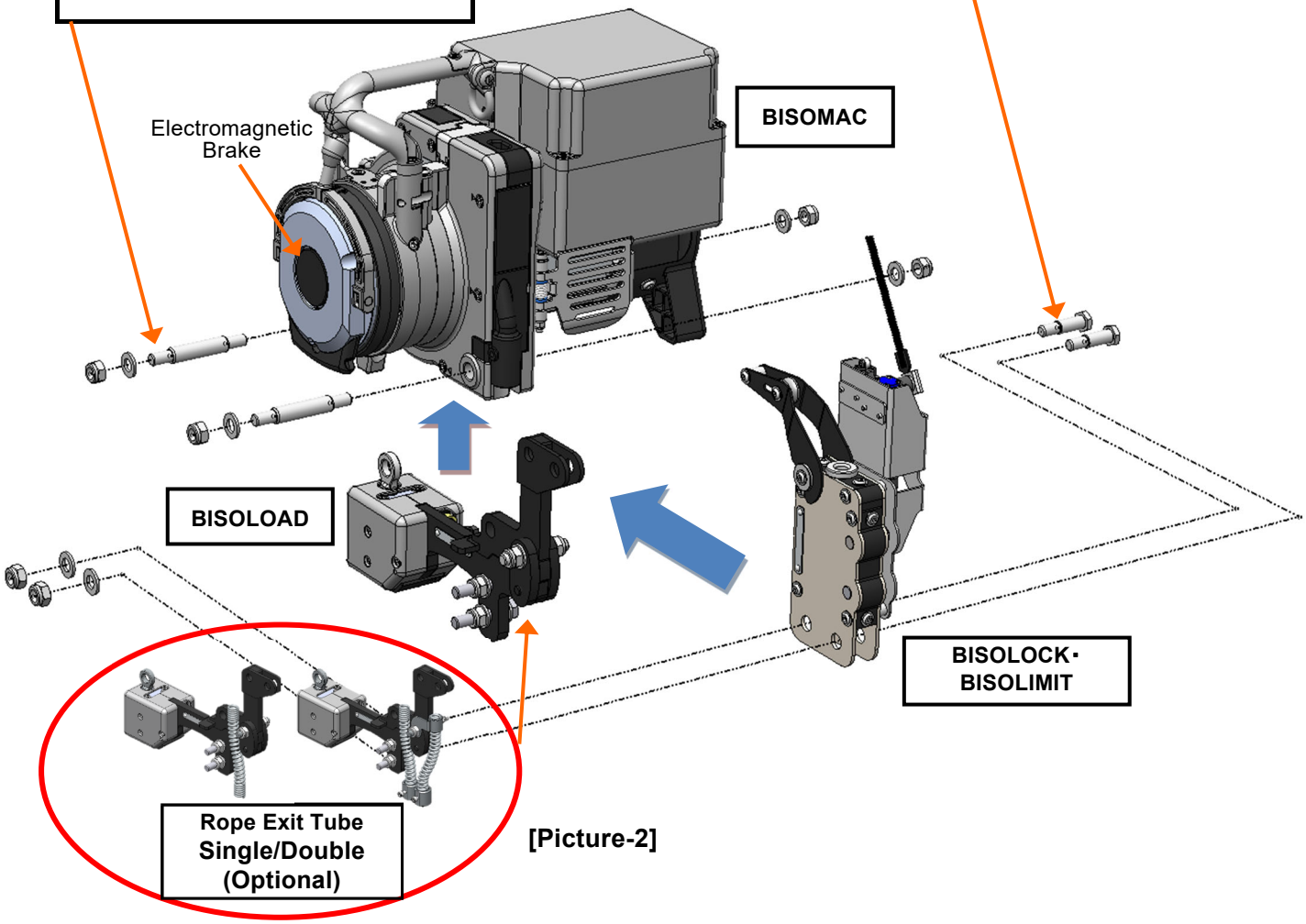
STEP 1 **Installation of safety devices to BISOMAC**

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

[Components]

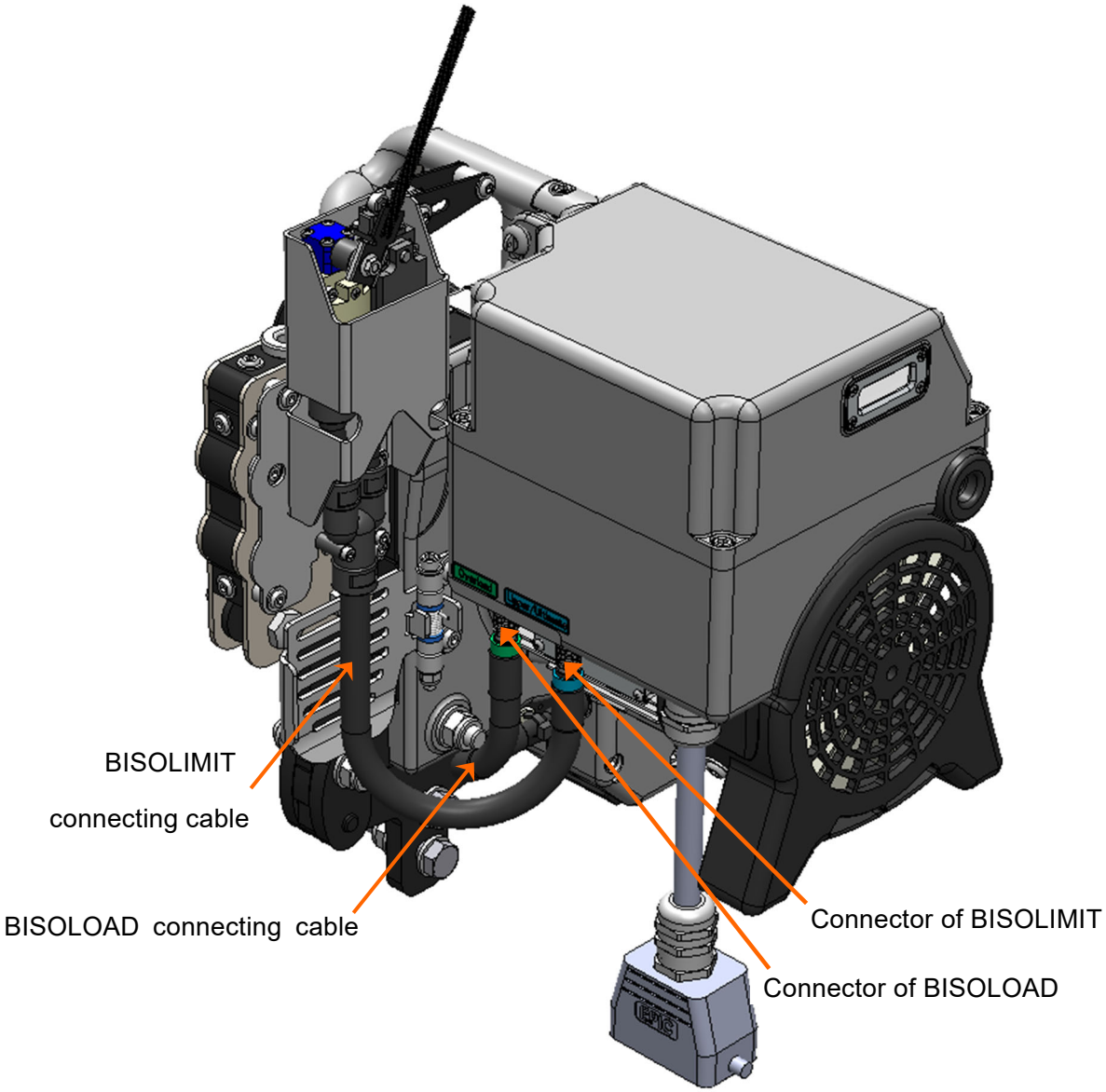
[Provided by NIHON BISOH]
- ●BISOLOAD mounting bolt B (2 pcs)
- ●Plain washer M12 (4 pcs)
- ●Nylon nut M12 (4 pcs)

[Provided by NIHON BISOH]
- ●BISOLOCK mounting bolt (2 pcs)
- ●Plain washer M12 (2 pcs)
- ●Nylon nut M12 (2 pcs)



[Picture-2]

1. Set BISOLOAD under BISOMAC and fix with 2 pcs of BISOLOAD mounting bolt B, 4 pcs of Plain washer M12, and 4 pcs of Nylon nut M12. (See Picture-2) Tighten the bolts with specified torque by using torque wrench. Tightening torque: 76 N・m (770 kgf・cm)
2. Set BISOLOCK on BISOLOAD and fix with 2 pcs of BISOLOCK mounting bolt, 2 pcs of Plain washer M12, and 2 pcs of Nylon nut M12. Tilt detecting lever shall face BISOMAC side. (See Picture-2) Tighten the bolts with specified torque by using torque wrench.
   Tightening torque: 76 N・m (770 kgf・cm)
3. Connect the plugs of BISOLIMIT and BISOLOAD to BISOMAC. (See Picture-3)

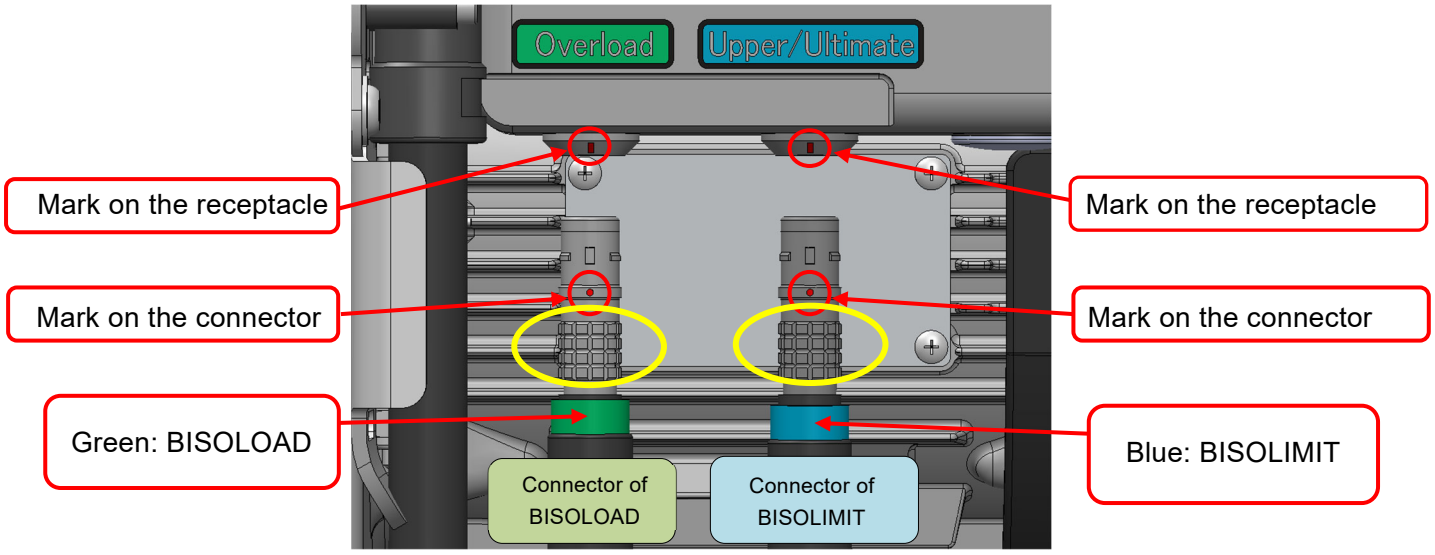


[Picture-3]

4. Connect the cables 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 power cable of 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 suitable power cable and power source for 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 power cable of BISOMAC to power supply from central control box.

Please check the types of connector.

Phase	Type	Manufacturer
1P	10.193000	CONTACT
3P	10.195000	CONTACT

Cover the socket with appropriate cover shown below.

Phase	Type	Manufacturer
1P	70.040400	CONTACT
3P	70.090200	CONTACT

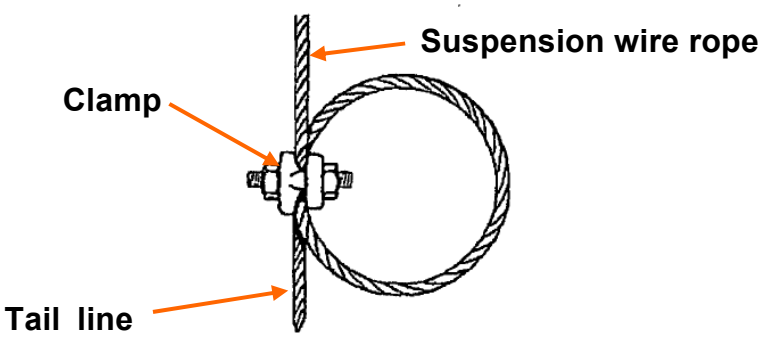
2. Required power per one unit of BISOMAC.

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

3. Ensure that Emergency stop button on central control box and interlock of safety devices are not activated.
4. Ensure that current capacity and size of circuit breaker 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 BISOMAC approximately 15 cm.
2. Push UP button while pushing wire rope in to BISOMAC lightly until the wire rope feeds automatically.
3. Make sure that the suspension wire rope comes out from outlet without any obstruction and moves both up and down direction freely.
4. Distances between riggings and wire rope inlet of the hoist must be equal as suspension wire ropes are suspended vertically.
5. To prevent the platform from running off the suspension wire ropes, secure the tail line as Picture-5.



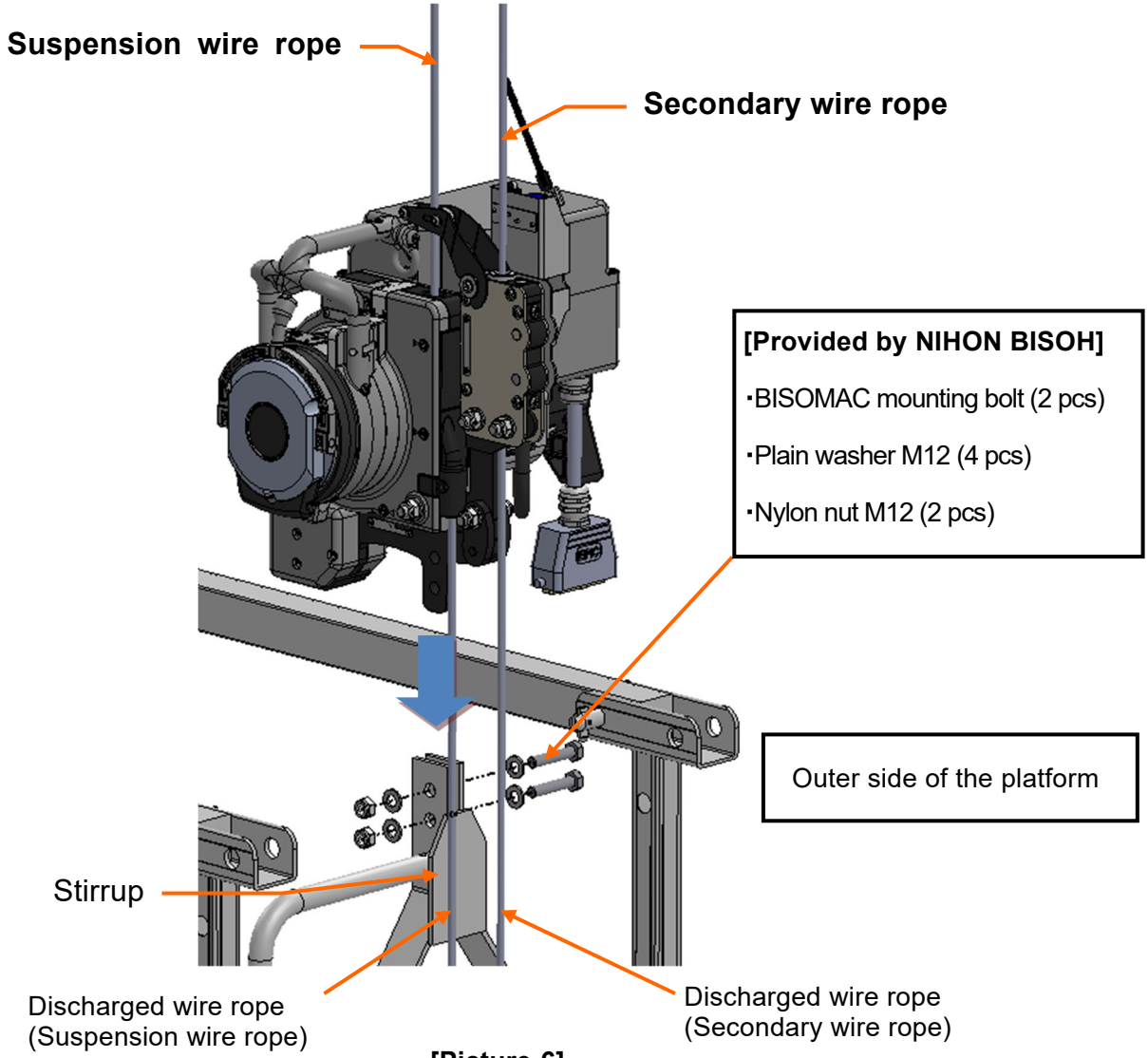
[Picture-5]

STEP 4 **Installation of the hoist**

Press UP button and lift the platform from the ground. Align bolt passing holes of BISOLOAD and stirrup of the platform, then fix with 2pcs of BISOMAC mounting bolt, 4 pcs of Plain washer M12, and 2 pcs of Nylon nut M12. (See Picture-6) The hoist shall be set as the exited wire ropes are positioned on the outer side of the platform. (See Picture-6)

Tighten the bolts with specified torque by using torque wrench.

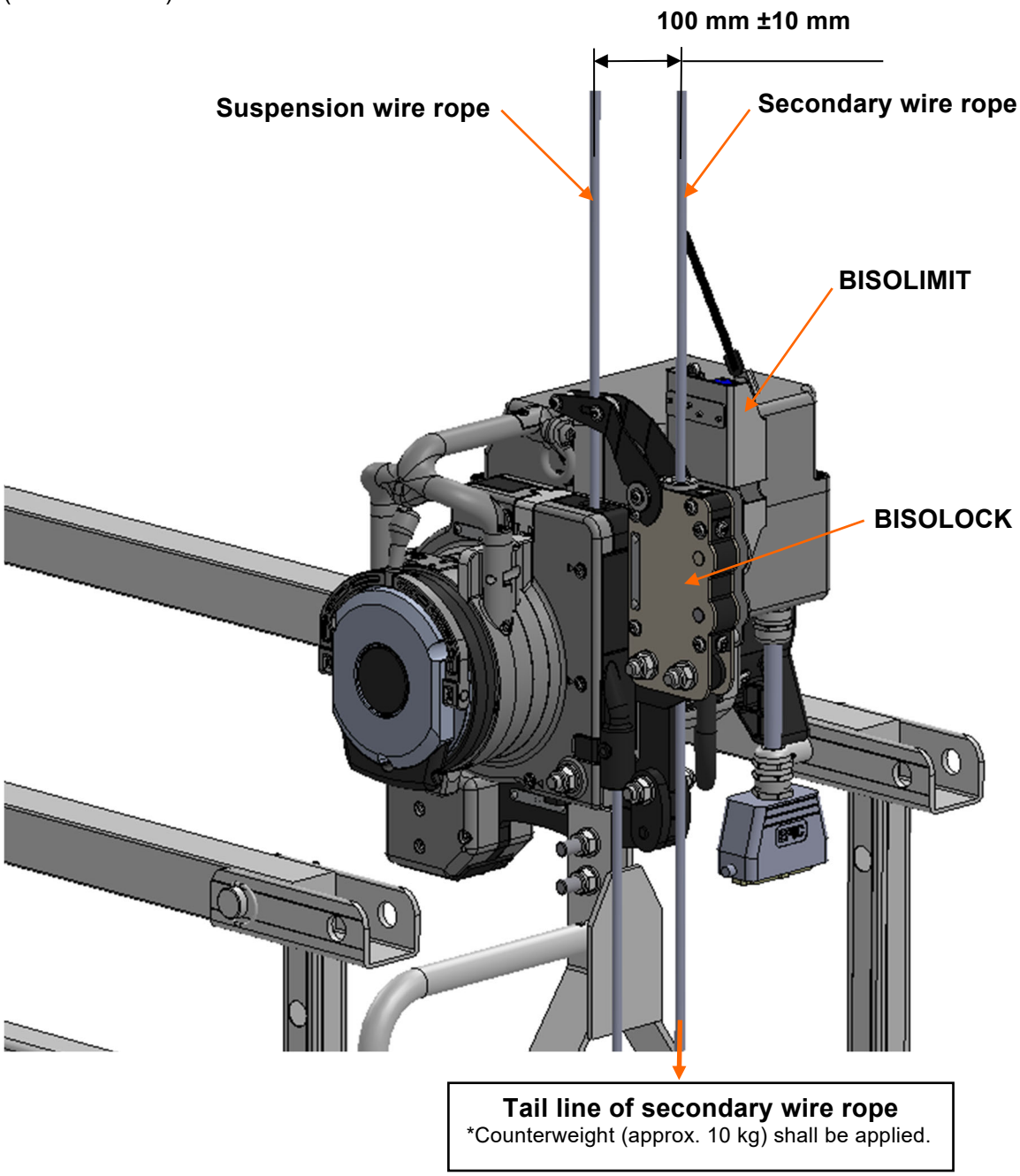
Tightening torque: 76 N･m (770 kgf･cm)



[Picture-6]

STEP 5 Installation of secondary wire rope

1. Lift the platform and apply tension to suspension wire rope.
2. Insert secondary wire rope to BISOLOCK and set as there is not slack in the rope. Check if the rope moves freely inside BISOLOCK.
3. Apply counterweight (more than 10 kg) to tail line of secondary wire rope to prevent secondary wire rope from being lifted up and keep it vertical.
4. Distance between suspension wire rope and secondary wire rope shall be 100±10mm. (See Picture-7)



[Picture-7]

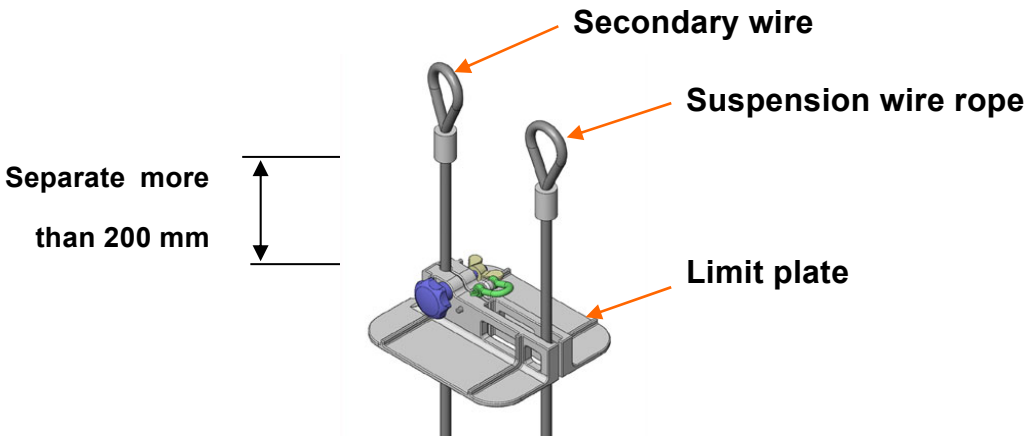
STEP 6 Perform daily inspection

Perform daily inspection according to section 7.

STEP 7 Install limit plate of BISOLIMIT

Install limit plate of BISOLIMIT with distance at least 200 mm from suspension rig.

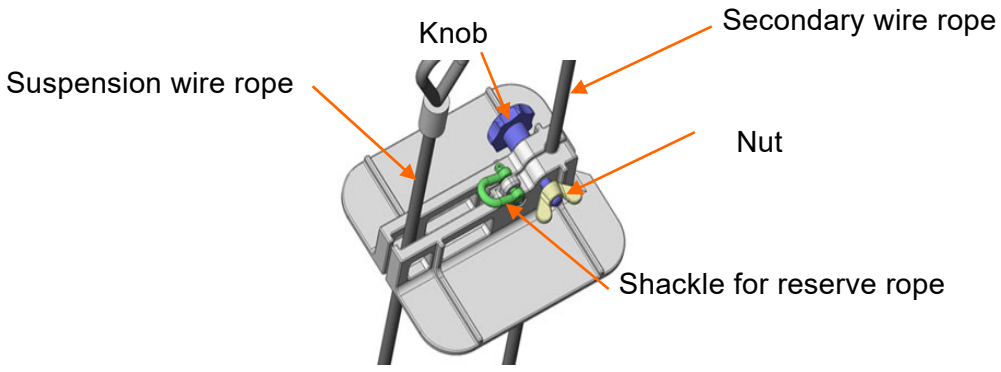
(See Picture-8)



[Picture-8]

[Installation procedure]

1. Install limit plate as two plates pinch suspension wire rope and secondary wire rope. (See Picture-9) *Suspension wire rope shall be installed to the side which have wider space.
2. Tighten Knob (blue knob in the Picture-9) until limit plate is maintained by friction force with wire ropes.
3. Tighten Nut (yellow butterfly nut in the Picture-9) until it hits the limit plate.
   *This nut is for preventing loosening, not necessary to tighten further after hitting the plate.
4. Do not tear off adhesives on the female screw.
5. When installing limit plate, use reserve rope to prevent falling. Tie reserve rope to 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 labels on the hoist.
Failure to comply with these instruction 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.

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

⚠ CAUTION

Do not apply excessive load to shackle.
Applying load exceeding 50 kg, shackle may be broken. It may cause the hoist to fall, resulting in injury or damage to property.

[CAUTION: Carrying]

⚠ CAUTION

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

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

[CAUTION: Storage]

⚠ CAUTION

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

NOTE: Do not stack BISOMAC more than 2 steps. Otherwise BISOMAC may fall down and be damaged.

[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 and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.
2. **Always allow 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 and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.
3. **Do not use the hoist if 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 and consequently 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 switch or switch cover and allow water to get in to the hoist. It may cause malfunction of the hoist and the platform to fall or tilt and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

CAUTION

Do not operate BISOMAC longer than 60 minutes during any 2 hours period.
Otherwise Electromagnetic brake and Motor will become very hot and could result in burn injury.

[WARNING: Controlled descent lever]

WARNING

1. **Use Emergency controlled descent lever only when power supply is cut off.**
   After use, make sure to lock the Emergency controlled descent lever with lever stopper. Otherwise the hoist may not stop during operation. It 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.
2. **Do not operate Emergency controlled descent lever when operating the hoist with operating switch.**
   The hoist may not stop during operation and It 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.
3. **Before operating the hoist, ensure that Emergency controlled descent lever is vertical and locked with lever stopper. (See Picture-10)**
   The hoist may not stop or the brake may not work properly. It 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. **Operate Emergency controlled descent lever only by hand.**
   The hoist may not stop during operation and It 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.
5. **After using Emergency controlled descent lever, make sure that the lever is locked automatically by lever stopper. (See Picture-10)**
   The hoist may not stop or the brake may not work properly. It 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.

⚠CAUTION

1. Disconnect power cable from central control box when using 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 Emergency controlled descent lever as far as it go toward.
If lowering down without releasing the brake completely, the hoist may get overheated or the brake gets worn down and loses braking force. In this case, the brake may not be repairable.

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

6.1 Carrying the hoist

In order to safely transport the hoist, detach BISOLOCK and BISOLOAD from BISOMAC.

(Refer to section 5)

[Weight of each device]

BISOMAC: 38 kg

BISOLOCK (include BISOLIMIT): 3.5 kg

BISOLOAD: 4 kg

6.2 Operation methods of the hoist

6.2.1 Lifting and Emergency stop

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

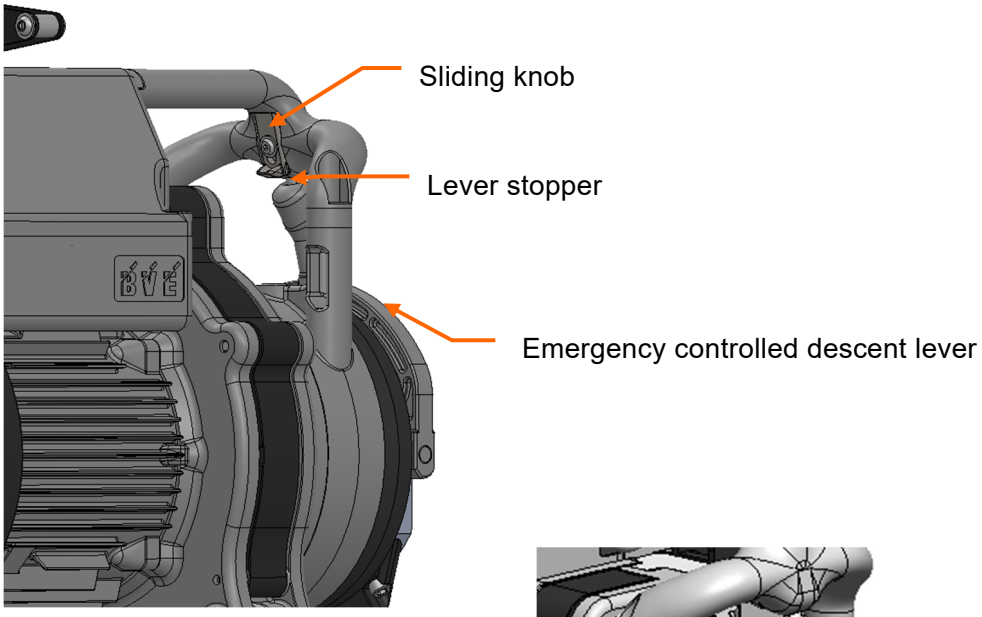
6.2.2 Emergency controlled descent lever

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

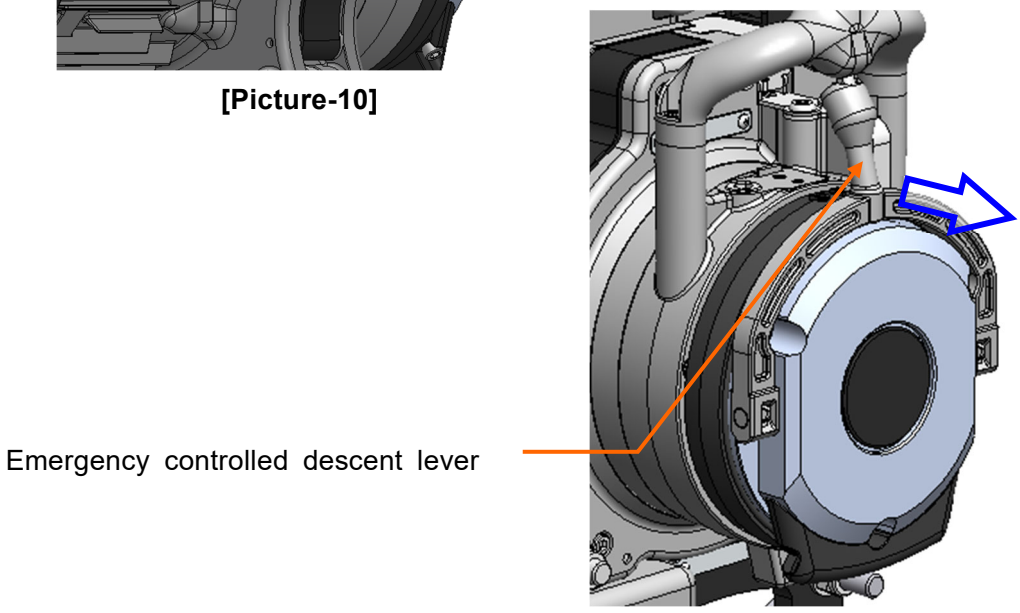
[Procedure of Emergency controlled descent]

1. Disconnect power plug from central control box.
2. Slide sliding knob and unlock lever stopper. (See Picture-10)
3. Release Electromagnetic brake by gently pulling 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 Emergency controlled descent lever is released.

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



[Picture-10]



[Picture-11]

6.2.3 Releasing procedure of BISOLOCK

⚠WARNING

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

It 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.

[How to reset BISOLOCK]

1. Operate UP travel and make the platform horizontal.
2. Push up roller lever and BISOLOCK is released.

NOTE: Do not push up roller lever by using force. Parts inside BISOLOCK may be damaged and may cause BISOLOCK not to be able to be released. Make sure to have the platform be safe and stable state before releasing BISOLOCK.

[CAUTION: Activation of BISOLOCK]

⚠CAUTION

1. **Before tilting the platform for operation check of BISOLOCK, ensure that there are not anything easy to slip or roll.**
   When the platform is tilted, such article may hit the operator and result in injury.
2. **Ensure that floor of the platform is not wet or slippery.**
   When the platform is tilted, operator may slip and result in injury.
3. **Adjusting activation angle of BISOLOCK shall be performed only by trained and authorized personnel.**
   Improper adjustment 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.

[Activation check of BISOLOCK]

1. Lift up the platform approximately 2 m.
2. Lower one side of the platform by central control box.
3. BISOLOCK shall be activated and hold secondary wire rope.

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

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

For the procedure of resetting BISOLOCK, refer to above [How to reset BISOLOCK] in this page.

7. DAILY TESTS AND INSPECTIONS

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

・Read 7.1-7.3 and fully understand procedures of tests and inspections.

・Devices and parts not described in this manual, follow manuals of each device and part.

⚠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 equipment 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 equipment 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 equipment 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 equipment 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 the hoist 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 on rigging materials, do not use the platform with such faulty materials.
Wire ropes may be cut or run off. 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.

Inspect all rigging materials which support load of the equipment (such as nut, bolt, clamp, wire clip, shackle, and so on) 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

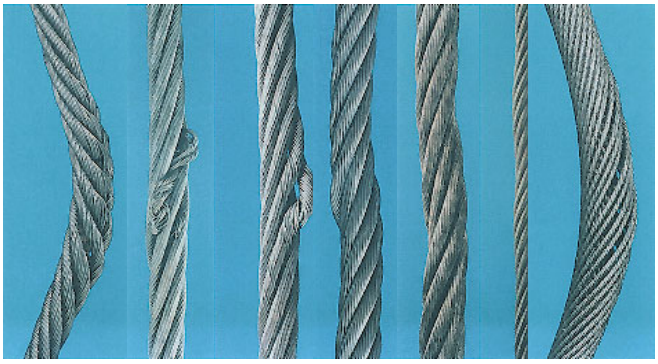
[WARNING: Tests and inspections of wire rope]

⚠WARNING

Inspect wire ropes periodically. If any abnormalities are found, replace with new one.
Wire rope is worn down by repeated using. Damaged or deformed wire rope may be cut due to loss of strength. 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.

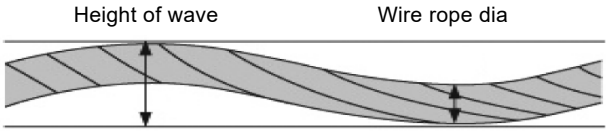
7.2.1 Shape and size of wire rope

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



[Photo-1]

1. Waviness (wave greater than 4/3 times of nominal diameter. (See Picture-12)

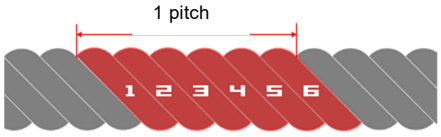


[Picture-12]

2. When loosened wires, deformation, or kink are found.
3. Broken wires which more than 10% of total number of wires per one pitch of wire rope.

   (Picture-13 shows one pitch of 6 strands wire rope)

   *Ex. Construction of wire rope is 6x19: 6 x 19 x 10% = 114 x 0.1 = 11.4



[Picture-13]

4. Average diameter of 9.0 mm wire rope becomes { 8.8 mm or less. / 9.5 mm or more.
5. Heavily rusted and found pitting on surface.
6. Wire rope that has been exposed to temperature above 93℃.

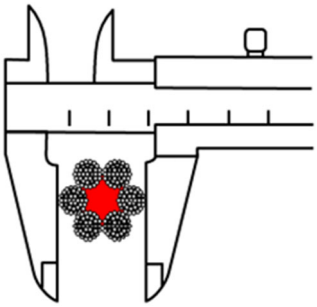
●Measure the diameter of wire rope as shown in Picture 14 and 15 below.

Measure the diameter of circumscribed circle of wire rope while load is applied. Measure 2 diameters per one circumference at different direction, and average the values.

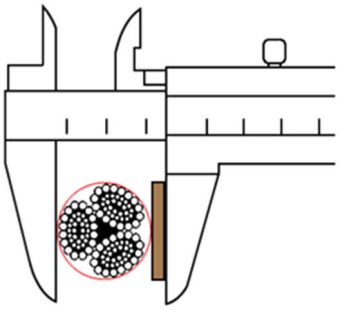
Diameter shall be measured several positions in the direction of length.

Wire rope with even number of strands shall be measured its largest cross section as shown in Picture-14.

Wire rope with uneven number of strands shall be measured with a board as shown in Picture-15. Value without thickness of the board is the diameter of wire rope.



[Picture-14]



[Picture-15]

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

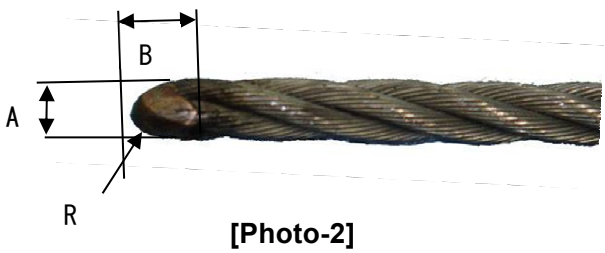
7.2.2 Shape and size of the end of wire rope

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

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

●The end of wire rope shall be shaped as below.

	9.0 mm wire rope
Diameter [A]	9.0-9.5 mm
Brazed portion [B]	Within 10.0 mm
Radius of top end [R]	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 the hoist which inspected and passed all test.
Otherwise, malfunction may occur. 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.

⚠CAUTION

If oil is leaking from BISOMAC, stop using immediately and replace with the hoist which inspected and passed all test.
Lacking oil cause Gear Box and Motor to overheat. This may cause burn injury to operator. Also, the overheating may cause serious damage to Gear Box and Motor. Smoke may be emitted, the hoist may become unable to work.

Pre-operation inspection

- Ensure that bolts, nuts, and cap of operator's manual storage of 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 to the platform.
- Ensure that central control box is connected to power supply.
- Check circuit breaker and ensure that 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 the hoist which inspected and passed all tests.
Do not use abnormal hoist. Parts inside the hoist may be damaged. Continued using 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.

2. Stop operating immediately if wire rope does not travel through the hoist while the platform is suspended even motor is working.
Wire rope may be jammed inside the hoist or sheave may be slipping. Continued using may result in damage to the equipment or wire rope to cut off. 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.

3. Do not use the hoist if Emergency stop switch does not work.
In the event of failure in circuit, the hoist may not be able to stop properly. 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. Operate Emergency stop switch and operation switch only by hand.
Using foreign objects to operate the hoist may damage to switch or switch cover and allow water to get in to the hoist. It may cause malfunction of the hoist and the platform to fall or tilt and consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

5. Stop operating immediately if the hoist travels to wrong direction.
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.

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

7.3.2 Tests and inspections: Controlled descent function

⚠CAUTION

1. Disconnect power cable from central control box when operate 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 Emergency controlled descent lever as far as it go toward.
If lowering down without releasing the brake completely, the hoist may get overheated or the brake gets worn down and loses braking force. In this case, the brake may not be repairable.

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

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

7.3.3 Tests and inspections: BISOLOCK

[WARNING: Tests and inspections of BISOLOCK]

⚠WARNING

1. Stop using immediately if BISOLOCK does not hold wire rope properly. Replace with BISOLOCK which inspected and passed all test.
Otherwise, BISOLOCK unable to prevent tilt or fall of the platform properly in case wire rope is broken or slippage. 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.

2. Adjust BISOLOCK if the activation angle is greater than 14 degrees. Adjustment shall be performed only by authorized personnel.
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.

[Activation check of BISOLOCK]

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

NOTE: If BISOLOCK does not hold wire rope properly, contact local distributor to replace.

7.3.4 Tests and inspections: BISOLIMIT

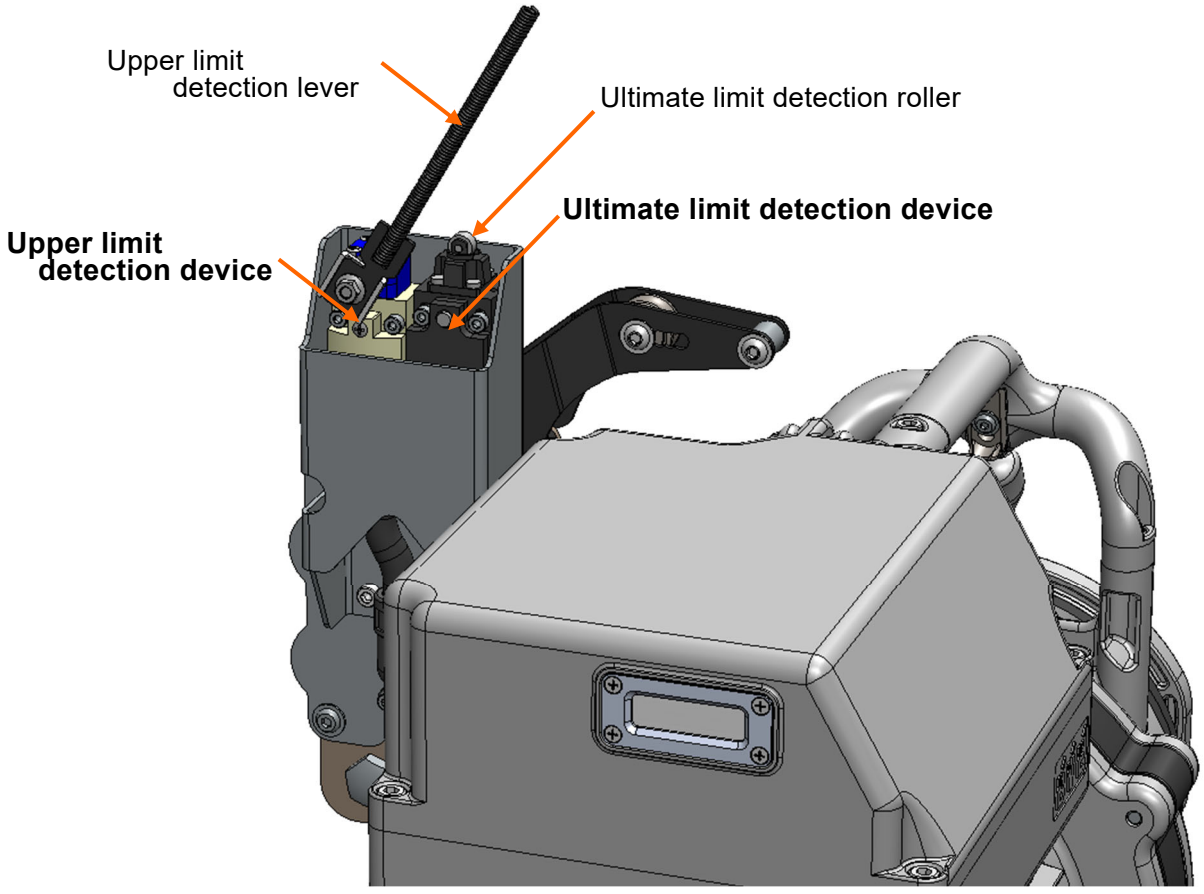
[WARNING: Tests and inspections of BISOLIMIT]

WARNING

Stop using immediately if BISOLIMIT does not work properly. Replace with BISOLIMIT which inspected and passed all test.
Upper/Ultimate limit may not be detected, resulting in damage to suspension rig or platform to fall. Consequently operators or objects might fall, resulting in serious injury or death to operators or passers-by.

1. Push one side of Upper limit detection lever down and operate UP button.
2. Confirm that the hoist does not operate UP travel. (See Picture-16)
3. Confirm that DOWN travel is available even Upper limit detection lever is pressed.
4. Push Ultimate limit detection roller and operate UP button. Confirm that both hoist does not lift up the platform. (See Picture-16)
5. Operate DOWN travel while Ultimate limit detection roller is pressed. Confirm that both hoist does not lower down the platform.
6. Apply same procedure to another BISOLIMIT.

NOTE: If BISOLIMIT does not work properly, contact local distributor to replace.



[Picture-16]

8. PERIODIC MAINTENANCE

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

1. 1 year from purchase
2. 1 year from last periodic maintenance
3. 100 hours from last periodic maintenance
4. The hoist is used in a dirty environment

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

*Procedure of Periodic Maintenance, refer to 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 unable to operate normally. 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.

2. Use only parts authorized by manufacturer for replacement.
Otherwise, the hoist may malfunction or unable to operate normally. 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.

9. TROUBLESHOOTING AT JOB SITE

[Mishandling]

This section describes possible troubles caused by mishandling and solutions for such troubles.

⚠ WARNING

If the hoist does not get back its normal condition even following solutions (Case I-IX) have been attempted, contact 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 main power. Connect power plug properly.
2. Emergency stop switch is activated.	2. Reset Emergency stop switch.
3. Overload protection is activated.	3. Reduce 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 if limit switch roller is pressed.
6. BISOLIMIT is disconnected.	6. Connect BISOLIMIT properly.

Case Ⅱ The hoist runs and able to descend but unable to ascend

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

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

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

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

Possible cause	Solution
1. Improper wire rope is used.	1. Replace with designated wire rope. (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 power cable with proper one or supply sufficient voltage. (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

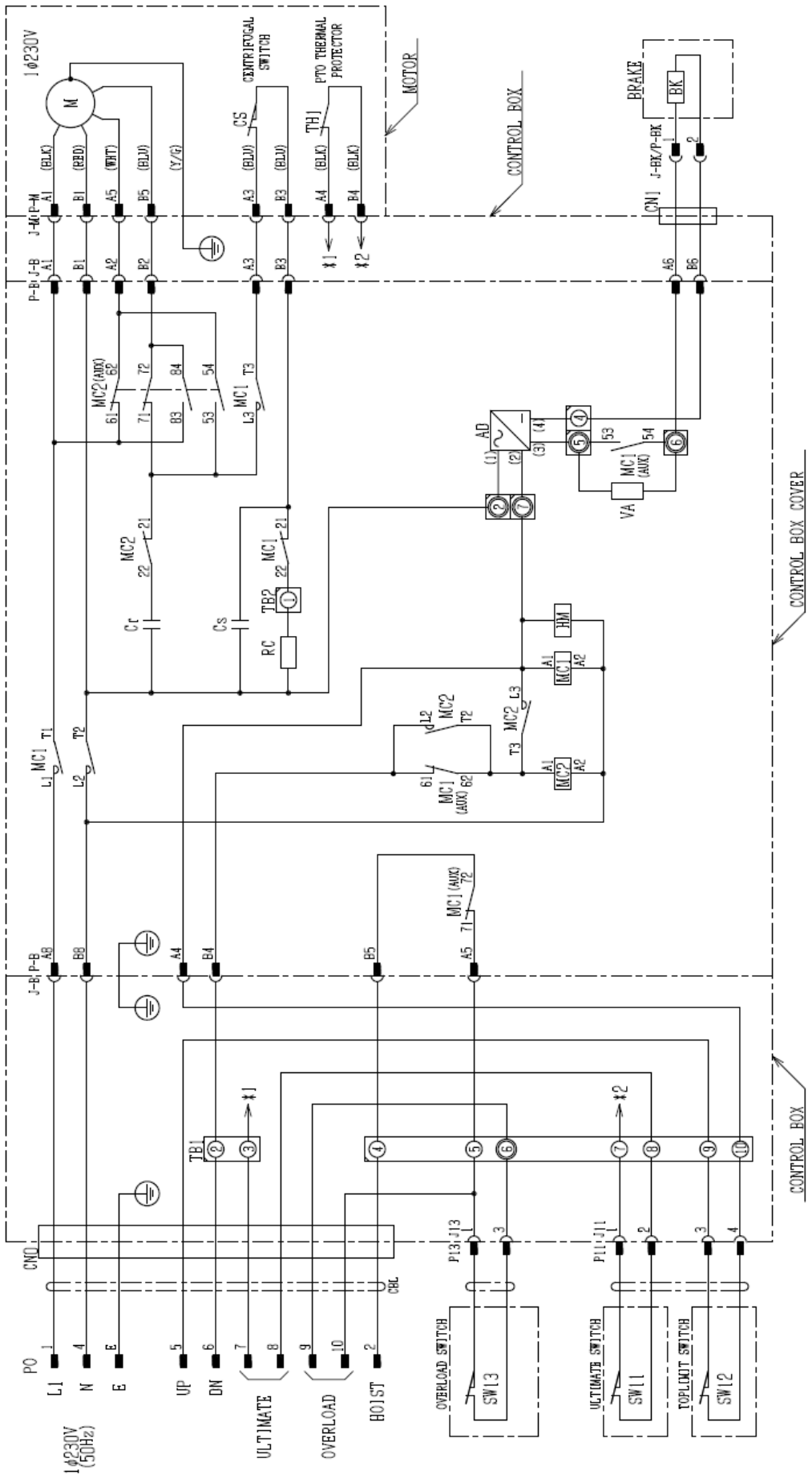
Possible cause	Solution
1. Insufficient oil in Gear box.	1-4. Replace the hoist.
2. Damaged or broken gears.	
3. Contamination inside the hoist.	
4. Defect inside the hoist.	
5. Loosened bolts and nuts.	5. Check and tighten each bolt and nut.
6. Improper wire rope is used.	6. Replace with designated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

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

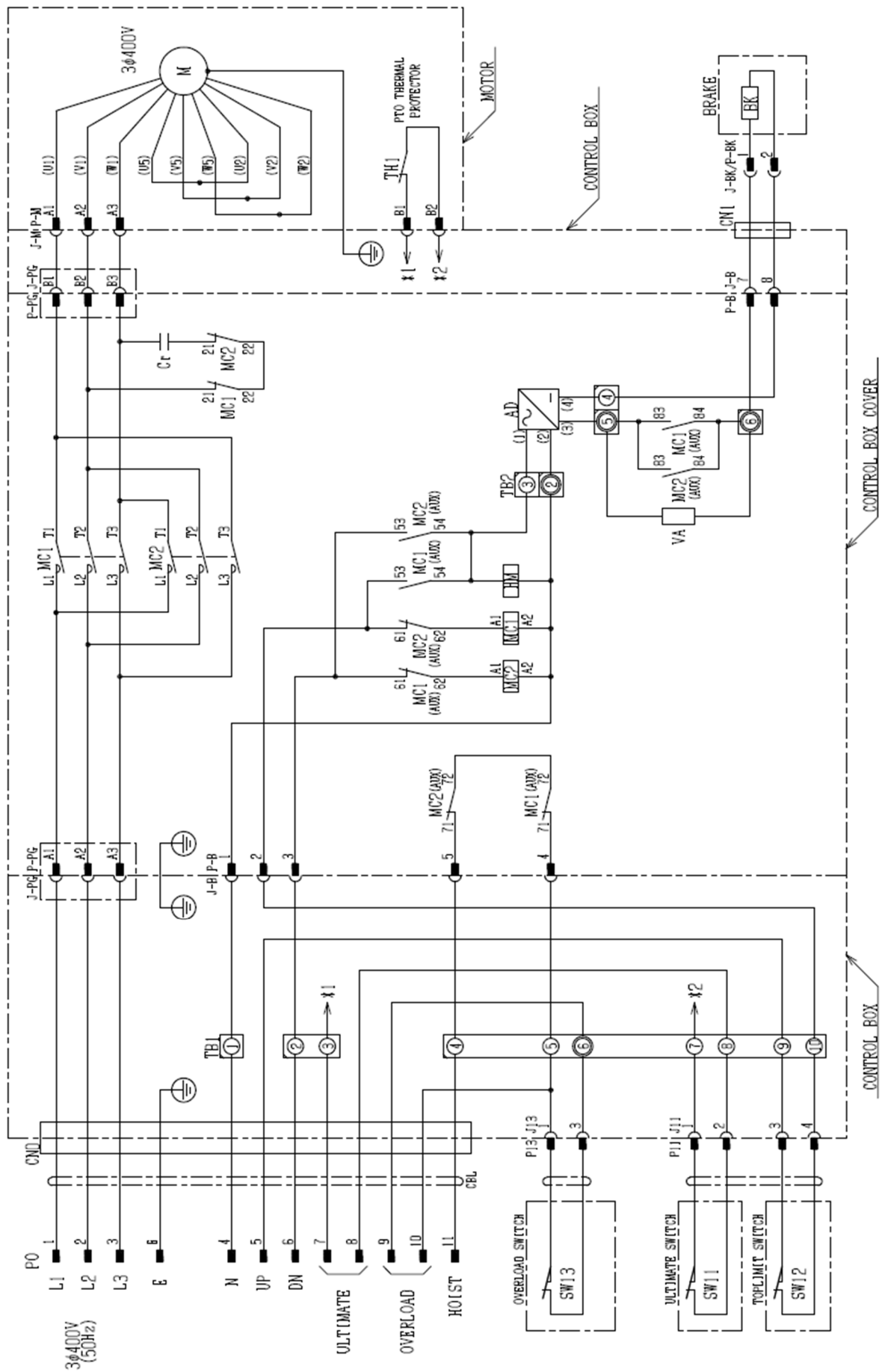
Case Ⅷ BISOLOCK is activated without tilting or slack rope.	
Possible cause	Solution
1. Kinked or deformed secondary wire rope. 2. Too thick diameter of secondary wire rope.	1. Stop operating and replace wire rope immediately. 2. Measure the diameter of wire rope. (7.2.1) If necessary, replace wire rope.

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

BISOMAC308 1P-600
Wiring diagram



BISOMAC308 3P-600
Wiring diagram



Revision history

Revision 1: December 17, 2018

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

Revision 2: September 25, 2020

1. Correct error.
2. Add explanation on safety devices. (BISOLOCK, BISOLOAD, BISOLIMIT)
3. Add use condition of the hoist.
4. Change sentences.

Revision 3 November 30, 2012

1. Correct error.
2. Standardized naming of wire rope (Japanese version only)
3. Standardized representation of the unit.
4. Add store procedure
5. Add warranty exemption conditions
6. .Add BISOLIMIT
7. Add Rope Exit Tube.
8. Add replacement criteria of wire rope.
9. Add troubleshooting

BISOMAC308 1P-600
BISOMAC308 3P-600

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