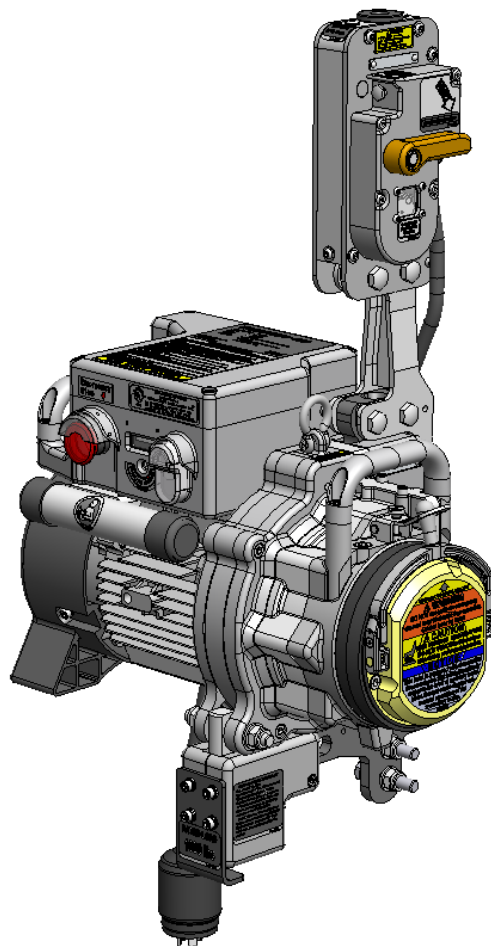

BISOMAC210

Electric Traction Hoist

Operator's Manual

North American Model
with Overload Detection Device



NIHON BISOH CO., LTD.

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THIS TRACTION HOIST.

Failure to follow the safety precautions and instructions in this manual could result in serious injury, death or damage to the Hoist.

WARNING

- All operators must read and understand this manual before operating this Hoist.
- All operators must be fully trained in the use of the equipment including its safety features.
- Each day before the equipment is used, the operator must carry out the Daily Tests and Inspections described in Section 7 of this manual to confirm that equipment is in a normal and safe operating condition.
- Only authorized and physically fit operators shall operate the equipment.
- Any operation in violation of these instructions is at the operator's own risk and may result in serious injuries.
- Ask for a replacement if this manual is ever lost or becomes illegible.
- Only use spare parts and steel wire rope provided and/or specified by NIHON BISOH CO., LTD.
- Use only machinery or incorporated component, which has been declared to be in conformity with UL1323, CAN-Z 271-101 and national implementing.
- Before erecting or dismantling and use of suspended scaffold, please read CODE OF SAFE PRACTICES FOR ADJUSTABLE SUSPENDED SCAFFOLDS CO-DEVELOPED BY SCAFFOLDING, SHORING and FORMING INSTITUTE (SSFI) and SCAFFOLD & ACCESS INDUSTRY ASSOCIATION, INC. (SAIA).

MANUFACTURER: NIHON BISOH CO., LTD.

Contents

0. READ BEFORE USING BISOMAC TRACTION HOIST	1
1. FOR SAFE USE	5
1.1 General	5
1.2 Maintenance	5
1.3 Categories of Safety Instructions	6
2. SPECIFICATION	14
2.1 BISOMAC	14
2.2 BISOLOCK	15
2.3 BISOLOAD	15
2.4 Wire Rope	16
2.5 Manufacturer Recommended Power Cable	17
3. FUNCTION AND DESCRIPTION OF EACH COMPONENT	18
3.1 BISOMAC Traction Hoist	18
3.2 BISOLOCK	21
3.3 BISOLOAD	22
4. WORK ENVIRONMENT	23
5. SET UP INSTRUCTIONS	24
STEP 1 Installation of Safety Devices to the Hoist	28
STEP 2 Connection of Power Supply	30
STEP 3 Main Wire Rope Reeving	32
STEP 4 Mounting BISOMAC to the platform	33
STEP 5 Perform Daily Inspection	33
6. OPERATION / HANDLING METHODS	34
6.1 Carrying BISOMAC Traction Hoist	37
6.2 BISOMAC Traction Hoist 's Operation and How to Use	37
6.2.1 Operation and Use of Emergency Stop	37
6.2.2 Emergency Descent Lever	38
6.2.3 How to Reset BISOLOCK	39
7. DAILY TESTS AND INSPECTIONS	40
7.1 Test and Inspection Procedure of Rigging	43
7.2 Test and Inspection Procedure of Wire Rope	43
7.2.1 Profile and Dimension of Wire Rope	43
7.2.2 Preparation of Wire Rope End	45
7.3 Test and Inspection of BISOMAC Traction Hoist	46
7.3.1 Test Procedures for Lifting and Use of the Emergency Stop	46
7.3.2 Test Procedures for Controlled Descent Device	47
7.3.3 Test Procedures for BISOLOCK	48

8. PERIODIC INSPECTIONS 49

9. TROUBLESHOOTING AT JOB SITE 50

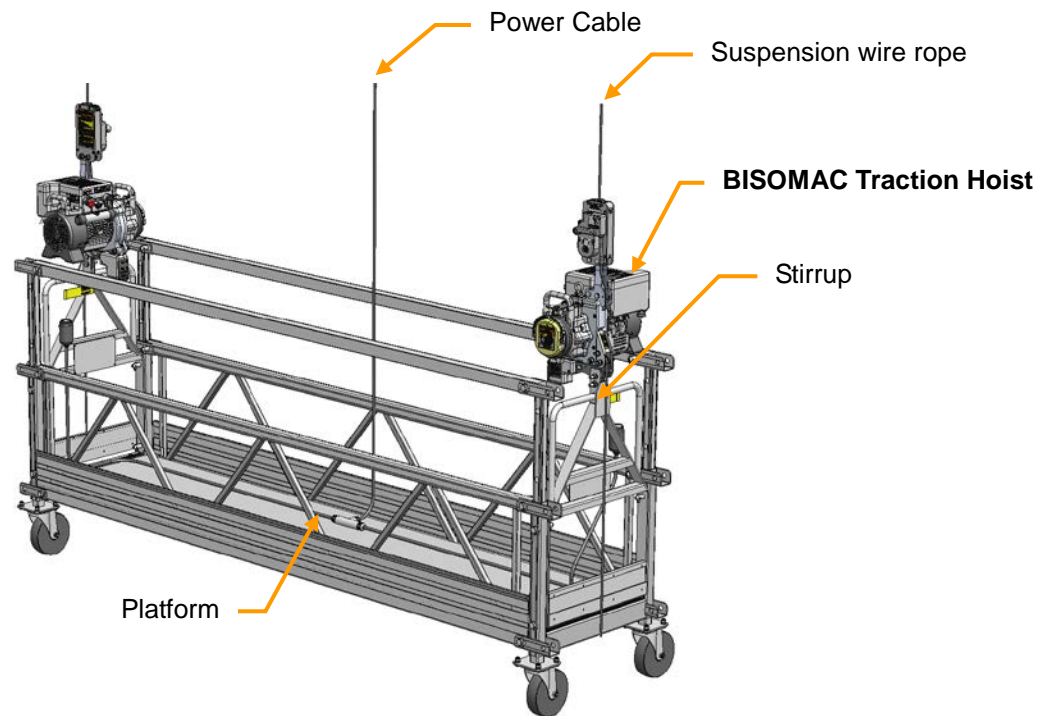
Attachment:

1. *Electric Control and Electric Parts Function*

2. *CODE OF SAFE PRACTICES FOR ADJUSTABLE SUSPENDED SCAFFOL*

0. READ BEFORE USING BISOMAC TRACTION HOIST

This Operator's Manual had been prepared for the safe and proper operation of the **BISOMAC Electric Traction Hoist** (referred to as "BISOMAC"). To understand the usage of the BISOMAC Traction Hoist, please refer to the following explanation and system compositions. It is operator's responsibility to be sure that this hoist is used safely and properly.



1. Power Supply to the equipment must be fitted with

- I. Main switch

NOTE: Main switch with key-lock or Junction Box with key-lock shall be provided.

- II. Residual Current Device (or Ground fault circuit interrupter) of 30 mA

- III. Overcurrent Protective Device (Automatic fuse Type C)

NOTE: Check that the specifications of the electrical supply cable match the power requirement of the platform and will avoid a voltage drop due to cable length.

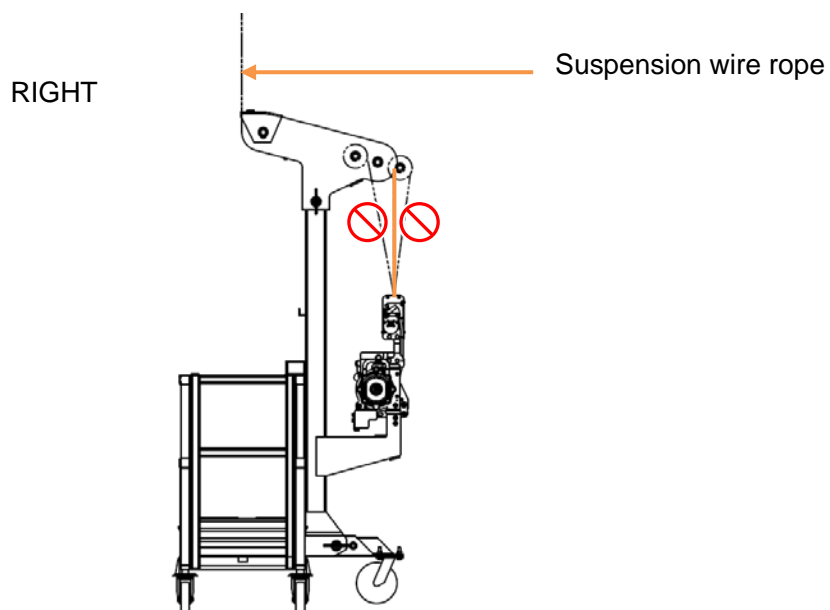
2. Weather conditions

- I. Temperature Range: 14° F (-10° C) and 104° F (+40° C)
- II. Contaminants: Degree of protection IP54
- III. Altitude: Less than 3,280 ft (1,000 meter)

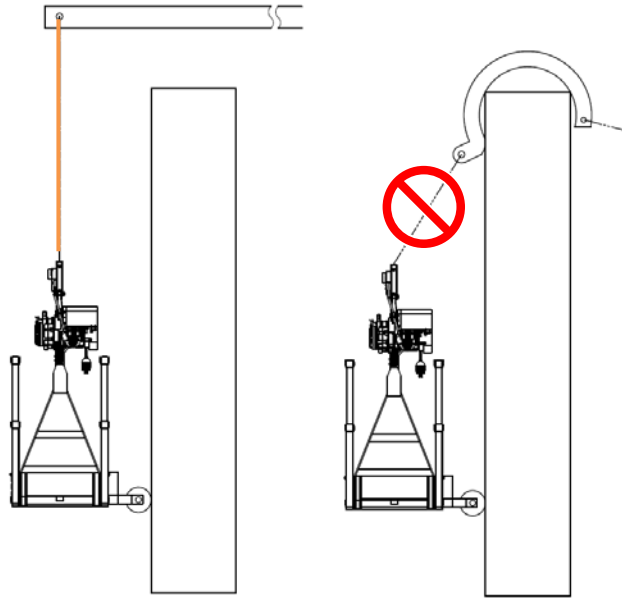
3. Precautions prior to use

- I. Before using the equipment, operators must carry out the Daily Tests and Inspections described in Section 7 of this manual and make sure that the equipment is in normal working condition.
- II. Before using the equipment, operators must confirm that there are no obstacles along the movement of the platform.
- III. Before using the equipment, the suspension system must be checked to ensure the stability of the platform at all times.
- IV. In case the area below the platform is open to the public, preventive measures have to be taken to safeguard the people below (e.g. barriers, roof protected walkways, etc.)
- V. All hazards related to the platform encountering obstructions are not completely covered by the platform's safety devices. The operator shall check for obstructions along the travel of the platform.
- VI. An area on the platform must be available to allow operators to operate the hoist safely.
- VII. Use approved personnel harnesses, lanyards, rope grabs, and independent lifelines at all times.
- VIII. Under the environment outside temperature is low, it would difficult for BISOMAC and emergency control descent to be functioned properly. Please take measures to prevent you from cooling the machine.
- IX. Under light load, the emergency control descent may slow down. DO NOT use BISOMAC under the minimum load as described in Section 2.1.
- X. Make sure suspension wire rope remains vertical and that the suspension points are directly above the hoist at all times.

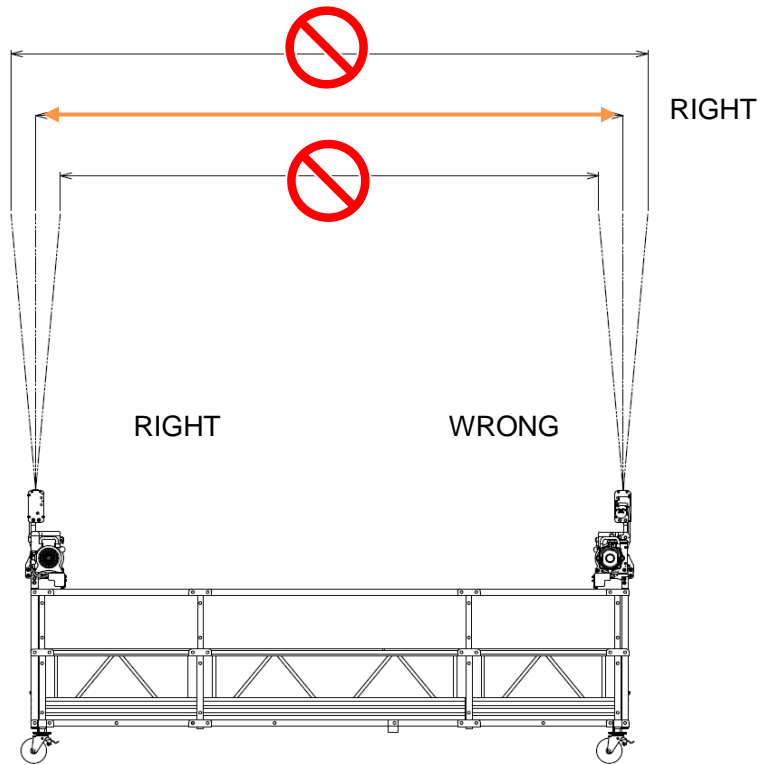
Example 1:



Example 2:



Example 3:



4. Precautions during use

- I. The operators must stop working with the equipment and notify the supervisor if faults, damage to the equipment or other circumstances may jeopardize safety.
- II. A suitable communication between the operator and the supervisor is recommended.
- III. When you leave a platform, shut off the power supply at the main switch and lock it so that no one else can operate it.
- IV. When the hoist stops for more than 30 minutes in low temperature, the hoist can be difficult to rise. In that case, allow the hoist 30 seconds to idle or lower the hoist before trying to use.

5. Forbidden Uses

- I. Two units or more of the BISOMAC are not allowed to use on one wire rope.
- II. BISOMAC is not allowed to use by inserting a wire rope into the wire rope outlet.
- III. Do not tight end of suspension wire rope when using BISOMAC.
- IV. Do not apply more than 45 lbs discharge resistance to the end of wire rope.
- V. BISOMAC is not allowed to use in the water.
- VI. BISOMAC is not allowed to use as a lifting device of a permanent elevator.
- VII. BISOMAC is not allowed to use as a medical traction device.

1. FOR SAFE USE

1.1 General

This Operator's Manual is applicable to the BISOMAC Electric Traction Hoist manufactured by Nihon Bisoh Co., Ltd. The BISOMAC Traction Hoist (referred to as "Hoist") consists of Hoist Device (referred to as "BISOMAC") and Overspeed Detection Device (referred to as "BISOLOCK") and Overload Detection Device (referred to as "BISOLOAD").

BISOMAC Traction Hoist consists of:

- I. BISOMAC
- II. BISOLOCK
- III. BISOLOAD

NOTE: Safety Device means BISOLOCK and BISOLOAD in this manual.

NOTE: Please refer to Section 2 for specification of each device.

- A) Read and fully understand this manual before using the BISOMAC.
- B) The BISOMAC is designed for vertical ascent and descent of personnel-carrying suspended platforms. The BISOMAC should only be used for this purpose.
- C) All operators must be fully trained in the use of the equipment including its safety features.
- D) Daily Tests and Inspections described in Section 7 must be performed at the start of each work shift.
- E) Use Section 9 troubleshooting guide in this manual to solve problems.
Understand the problem before attempting to solve it.
It is very important that anyone using the BISOMAC determine for themselves whether the BISOMAC is safe. You must be familiar with the operating characteristics of the BISOMAC. You must understand how the BISOMAC will interact with other equipment and it is very important to confirm safety of the whole platform. You must also be certain not to jeopardize yourself or others, or cause damage to the surroundings, or the BISOMAC.



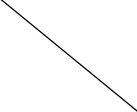
1.2 Maintenance

Handling, maintenance, inspections and repairs of the following products must be performed by trained personnel only who have been read the BISOMAC Maintenance Manuals (another sheet).

NOTE: There are individual maintenance manuals for the hoist and safety devices.

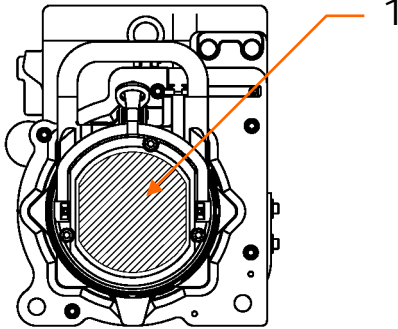

1.3 Categories of Safety Instructions

The safety instructions are classified according to risk levels.

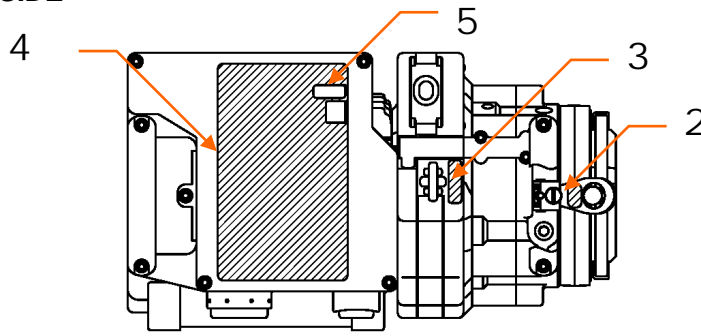
Symbol	Code Word	Meaning
	WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to show potential damage to property.
	NOTE	Indicates a potentially hazardous situation which, if not avoided, could result in damage of the BISOMAC or BISOMAC could not work properly.

Warning labels attached to Hoist and Safety Devices

The operator must check that the following labels are attached properly and legible.

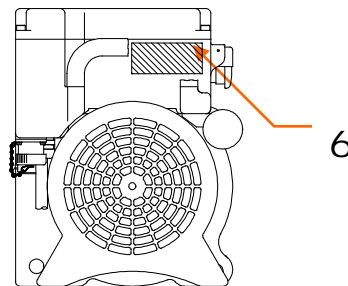
BISOMAC FRONT SIDE		
		
Description	Message / LOCATION	Label
1. Emergency Control Descent & Electromagnetic Brake Caution	<ul style="list-style-type: none"> • Instruction of Emergency Control Descent Lever • Instruction of Electromagnetic Brake • Warning of burnt <p>ELECTROMAGNETIC BRAKE</p>	

BISOMAC TOP SIDE



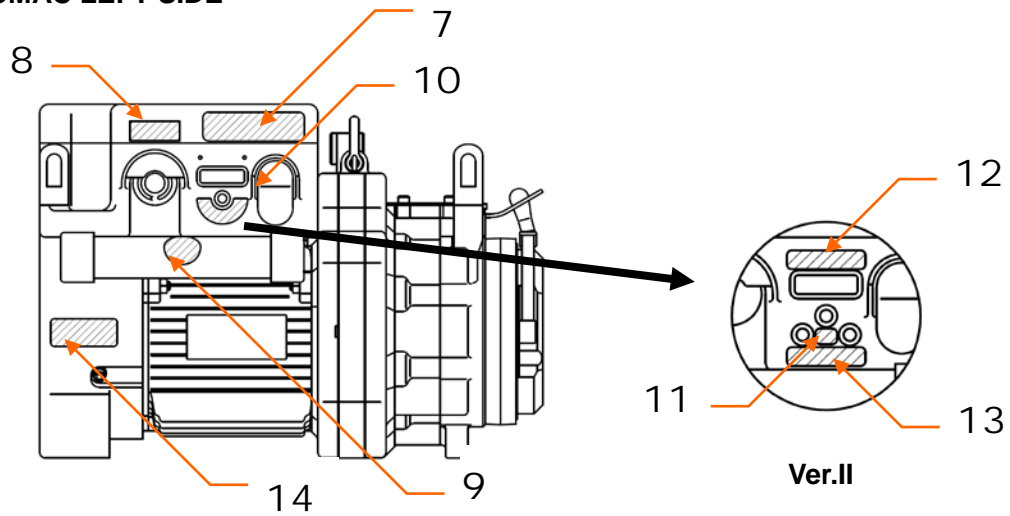
Description	Message / LOCATION	Label
2. Lever Stopper	<ul style="list-style-type: none"> •Instruction of Brake Release Lever Stopper <p>LEVER STOPPER</p>	
3. Max Lift	<ul style="list-style-type: none"> •Instruction of Shackle max lift. <p>CASING A</p>	
4. Speciation and Operation	<ul style="list-style-type: none"> •Instruction of Specification and operation •With QR Code to access operator's manual by electronic device <p>CONTROL BOX COVER</p>	
5. Ver. II	<ul style="list-style-type: none"> •Instruction of Version of BISOMAC <p>CONTROL BOX COVER</p>	

BISOMAC BACK SIDE



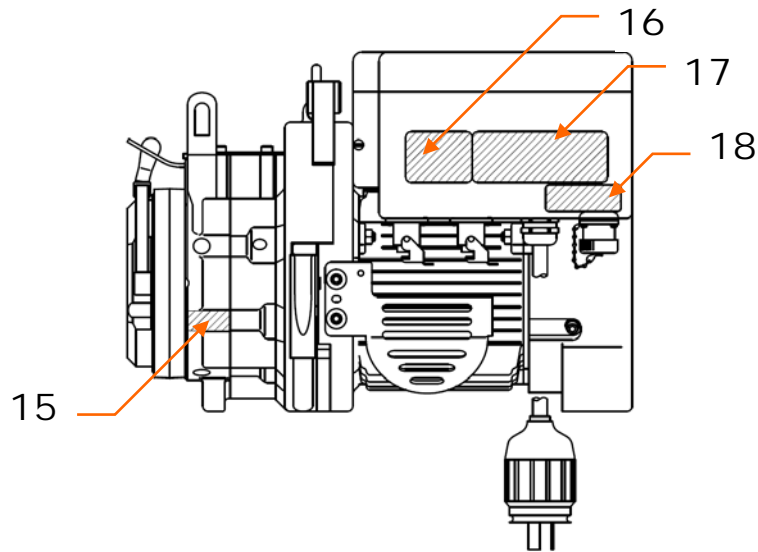
Description	Message / LOCATION	Label
6. Restriction Use	<ul style="list-style-type: none"> •Instruction to Operator <p>CONTROL BOX</p>	


BISOMAC LEFT SIDE



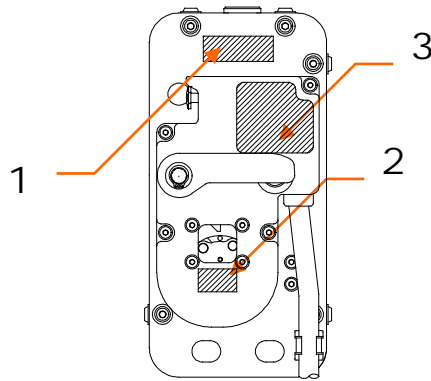
Description	Message / LOCATION	Label
7. UL Classification	<ul style="list-style-type: none"> •UL Certification Label <p>CONTROL BOX COVER</p>	
8. Emergency Stop Button	<ul style="list-style-type: none"> • Instruction of Emergency Stop Button <p>CONTROL BOX COVER</p>	
9. Operator's Manual	<ul style="list-style-type: none"> • Showing location of Operation Manual <p>OPERATOR'S MANUAL HOLDER</p>	
10. Overload Indicator	<ul style="list-style-type: none"> - Instruction of Overload Indicator <i>Ver. I only.</i> <p>CONTROL BOX</p>	
11. OL	<ul style="list-style-type: none"> - Instruction of Overload Indicator <i>Ver. II only.</i> <p>CONTROL BOX</p>	
12. Hour Meter	<ul style="list-style-type: none"> • Instruction of Hour Meter <i>Ver. II only.</i> <p>CONTROL BOX</p>	
13. Ver. II	<ul style="list-style-type: none"> •Instruction of Version of BISOMAC210 <i>Ver. II only.</i> <p>CONTROL BOX</p>	
14. Power Voltage	<ul style="list-style-type: none"> •Instruction of Power Voltage <p>FAN COVER</p>	




BISOMAC BACK SIDE



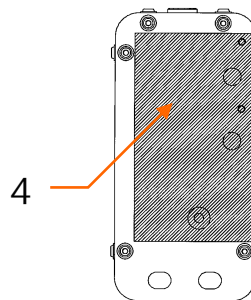
Description	Message / LOCATION	Label
15. Gear 210	<ul style="list-style-type: none"> • Specification of Gear <p>GEAR BOX</p>	<p>Mechanical Horsepower Rating:1.5kW Maximum Input Speed:1950r/min Gear Ratio:1/110 Service Factor:1.0 Thermal Horsepower Rating:1.5kW Use oil as required per the manufacture. D79-7772</p>
16. Plug Mark	<ul style="list-style-type: none"> • Instruction of plug mark position of Safety Device <p>CONTROL BOX</p>	
17. Plug Connection	<ul style="list-style-type: none"> • Instruction when connecting the plug of safety device, and pendant switch <p>CONTROL BOX</p>	<p>⚠ WARNING</p> <p>Before connecting, check to make sure the plugs are dry and no water is left inside. Failure to do so may cause malfunction, resulting in serious injury or death.</p>
18. NOTICE	<ul style="list-style-type: none"> • Instruction of Pendant Switch <i>Ver. II only.</i> <p>CONTROL BOX</p>	<p>NOTICE</p> <p>Pendant control must be internally configured by authorized dealer before use.</p>


BISOLOCK FRONT SIDE



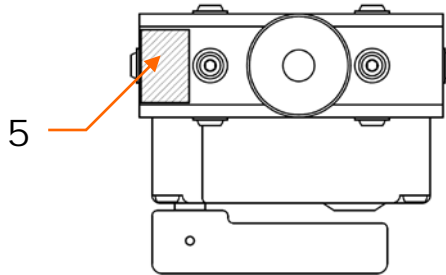
Description	Message / LOCATION	Label
1. Instruction of inability of lifting	<ul style="list-style-type: none"> • Instruction to inability of lifting SIDE PLATE 1	
2. Governor Inspection Window	<ul style="list-style-type: none"> • Instruction of Governor Rotation GOVERNOR COVER	
3. Overspeed Indicator & Reset	<ul style="list-style-type: none"> • Instruction of BISOLOCK • Reset Lever Direction GOVERNOR COVER	


BISOLOCK BACK SIDE



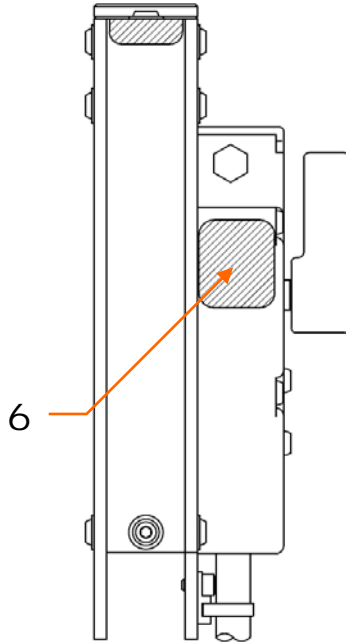
Description	Message / LOCATION	Label
4. Instruction of Overspeed Detection Device	<ul style="list-style-type: none"> • Instruction how to deal when the device activate • Instruction of BISOLOCK SIDE PLATE 2	


BISOLOCK TOP SIDE

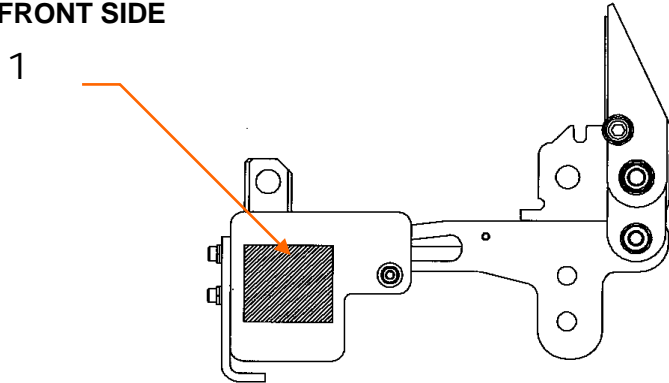



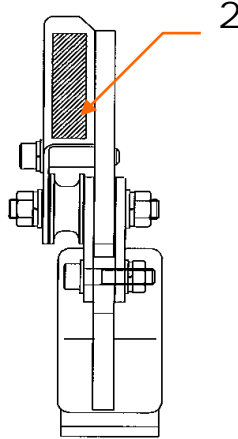

Description	Message / LOCATION	Label
5. Wire Rope Diameter	<ul style="list-style-type: none"> •Instruction of Wire Rope Diameter SIDE COVER 1	

BISOLOCK LEFT SIDE

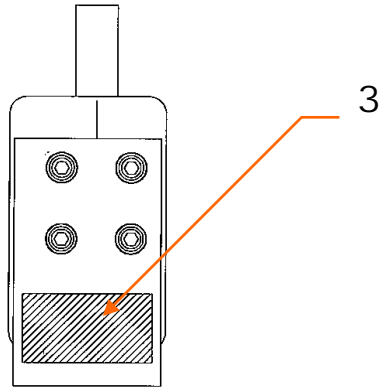


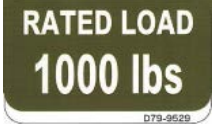
Description	Message / LOCATION	Label
6. Instruction of Manual Trip Button	<ul style="list-style-type: none"> •Instruction of Manual Trip Button GOVERNOR COVER	

BISOLOAD FRONT SIDE		
		
Description	Message / LOCATION	Label
1. Instruction of Overload Detection Device	<ul style="list-style-type: none"> •Instruction of BISOLOAD LIMIT SWITCH COVER LA	

BISOLOAD RIGHT SIDE		
		
Description	Message / LOCATION	Label
2. Wire Rope Exit	<ul style="list-style-type: none"> •Instruction of Wire Rope Exit ROPE COVER	

BISOLOAD LEFT SIDE



Description	Message / LOCATION	Label
3. Rated Load	- Instruction of Rated Load GUARD	 <p>A rectangular label with a dark background and white text. The text reads "RATED LOAD" in a smaller font above "1000 lbs" in a larger font. A small number "079-9529" is visible at the bottom right of the label.</p>

2. SPECIFICATIONS

2.1 BISOMAC - Traction Hoist

PRODUCT LINEUP

Model	Load Capacity (lbs)	Voltage	Ampere (A)	Wire Rope dia.		BISOLOAD 800	Coverage	
				Nominal Diameter	Range			
210-0750	750	1Phase 208V	10	5/16 in.	0.315 in.	YES	UL1323	
210-1000	1000			8 mm	~ 0.331 in. (8~8.4 mm)			
210-1500	1500		13	3/8 in.	0.354 in.		CAN/CSA Z271-10	
210-1000U	1000		10	9 mm	~ 0.331 in. (8~8.4 mm)			
210-1258U	1250		13	5/16 in.	8 mm		0.315 in.	UL1323
210-1508U	1500							

Power	1Phase 208V \pm 10% (60Hz)
Motor Power	1.5 kW (4P)
Speed	35 ft/min (10.6 m/min)
Rated Operating Time	60 minutes
Minimum Load Capacity	440 lbs (220 kg)
Noise	64 dB NOTE: This value is measured at a position 1 meter away from a noise meter. It varies depending on the power supply voltage and ambient environment.
Protection Construction	IP54
Dimensions (H x W x D) w/safety devices	29.5 in. (749 mm) x 12.4 in. (315 mm) x 17.9 in. (455 mm)
Hoist Self Weight	108 lbs (49 kg)
Weight include safety devices	130 lbs (59 kg) BISOLOCK SP-800: 11 lbs (5 kg) BISOLOAD-800: 9 lbs (4 kg)
Control Method	Independent Control Method
Safety Features	1. Electromagnetic Brake 2. Emergency stop – Cut all power to the electric motor 3. Motor built-in thermal protector (Temperature detection type) 4. Thermal relay (Excess current detection type) NOTE: Only in 1Phase specifications

MAINTENANCE

Maintain every 100 hour of operation hour or no longer than every year. See Maintenance Manual for instructions on maintaining.

**NOTE: THIS DIFFERS FROM CONDITION OF USE AT WORK SITES,
refer to Section 4 Work Environments.**

2.2 BISOLOCK - Overspeed detection device

Model	SP-800
Rated Load	1,500 lbs (680 kg)
Activation Speed	98.4 ft/min (30 m/min)
Dimensions (H x W x D)	10 in. (253 mm) x 4.7 in. (120 mm) x 4 in. (103 mm)
Weight	BISOLOCK SP-800 : 11 lbs (5 kg) BISOLOCK Bracket : 2 lbs (1 kg)
Control Feature	No descending while this device is activated.
Voltage	208V

2.3 BISOLOAD - Overload detection device

Model	800			
Rated Load	750 lbs (340 kg)	1,000 lbs (453 kg)	1,250 lbs (566 kg)	1,500 lbs (680 kg)
Dimension (H x W x D)	10.4 in. (264 mm) x 12.4 in. (314 mm) x 3.7 in. (95 mm)			
Weight	9 lbs (4 kg)			
Activating Load	1,125 lbs (510.3 kg) = 750 lbs x 150% 1,500 lbs (680.4 kg) = 1,000lbs x 150% 1,875 lbs (850.5 kg) = 1,250 lbs x 150% 2,250 lbs (1,020.5 kg) = 1,500 lbs x 150%			
Control Feature	No ascending while this device is activated.			
Use Voltage	208 V			

2.4 WIRE ROPE (Variety specified by us)



WARNING

USE only authorized Wire Rope shown as below. Using any other Wire Rope could make BISOMAC and BISOLOCK malfunction. It could cause the platform to fall or tilt, possibly resulting in falls and serious injury or death.

No.	1	2	3	4	5
Diameter	8.4 mm	8.0 mm	8.0 mm	8.2 mm	8.3 mm
Construction	5x26	4x39	4x40	6x19 IWRC	4x26
Min. Breaking Load (actual)	51.5 kN (5,253 kg)	44.3 kN (4,520 kg)	44.4 kN (4,540 kg)	40.5 kN (4,131 kg)	45.0 kN (4,590 kg)
Treatment	Galvanized	Galvanized	Galvanized	Galvanized	Galvanized
Applicable Model	210-0750 210-1000 210-1000U 210-1258U 210-1508U				
Caution	Variety specified by us.				

No.	1	2	3
Diameter	9.5 mm	9.0 mm	9.2 mm
Construction	5x19	4x36 WS	5x26
Min. Breaking Load (actual)	64.0 kN (6,530 kg)	67.15 kN (6,850 kg)	66.8 kN (6,816 kg)
Treatment	Galvanized	Galvanized	Galvanized
Applicable Model	210-1500		
Caution	Variety specified by us. This wire rope does not meet CAN/CSA-Z271-10, so it cannot be used in Canada.	Variety specified by us.	

2. 5 Manufacturer Recommended Power Cable

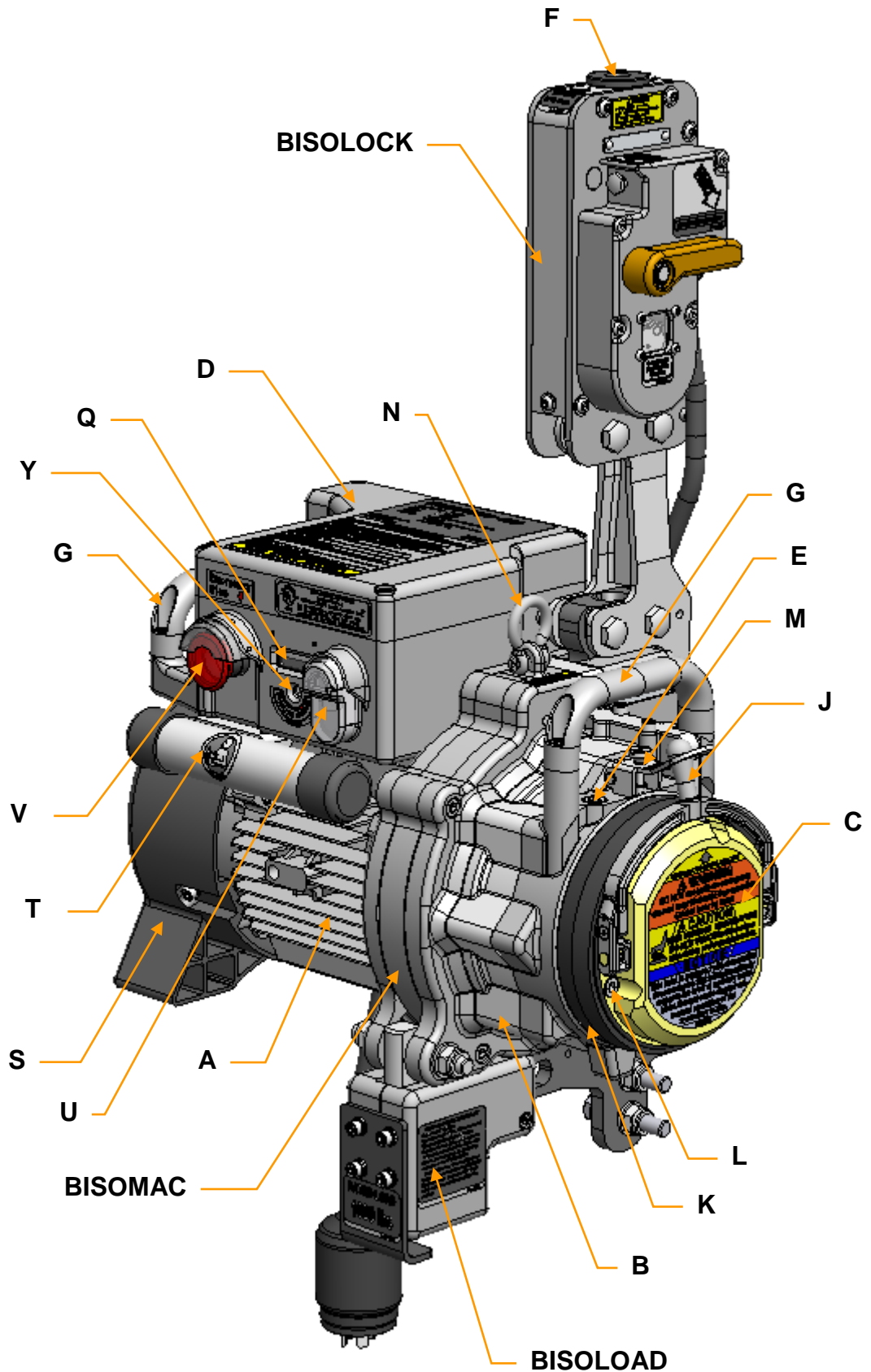
NOTE

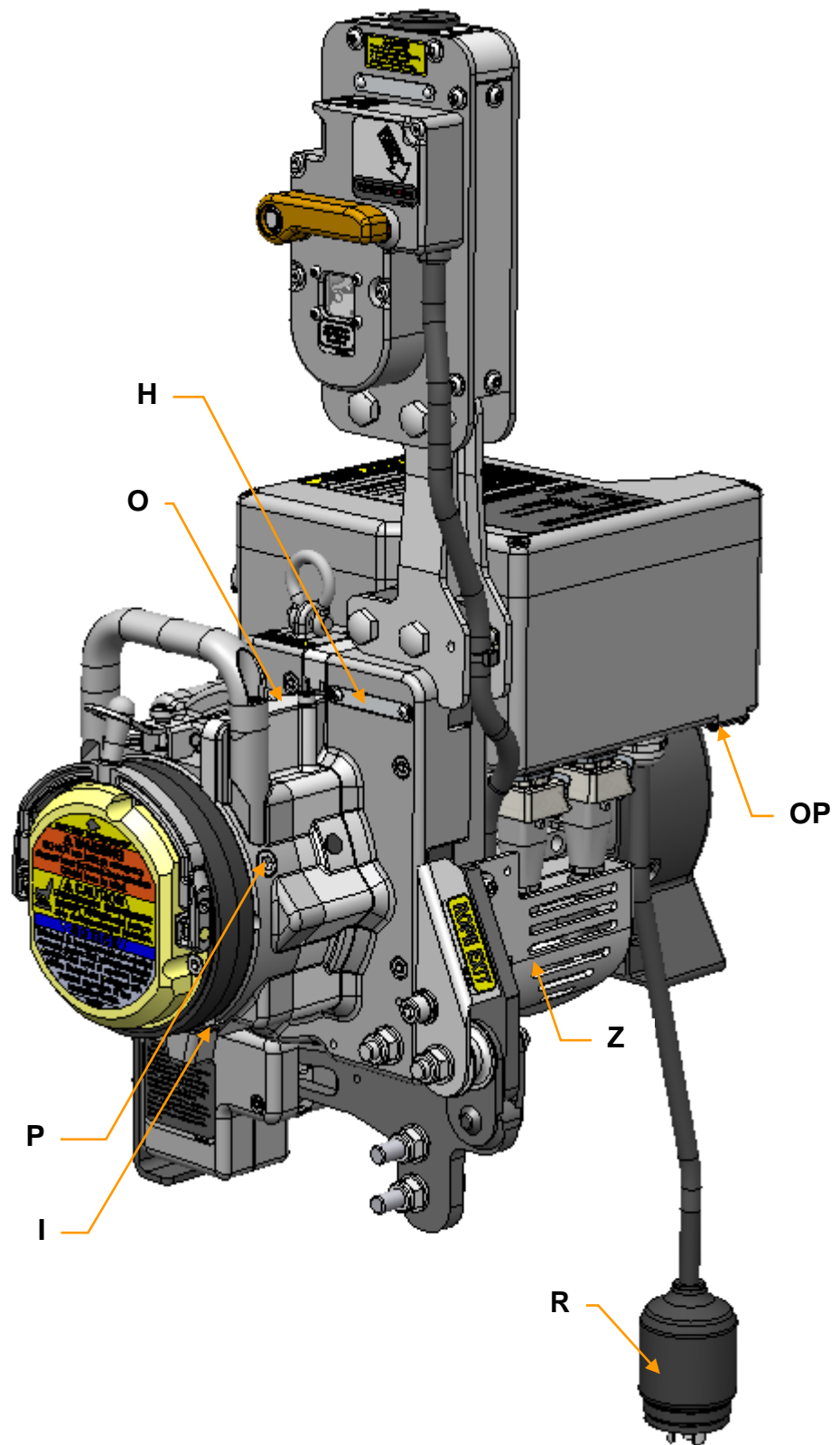
Due to the various possible suspended platform loading situations and electric voltage sources, it is not possible to specify the length of power cable exactly. In case the BISOMAC Traction Hoist has difficulties starting up due to low voltage, take counter measures against voltage drop by boosting the power supply voltage or using a thicker gauge cable such as 8/3.

Recommended Type	SOOW
Core and Size	3 cores 10 AWG
Rated Voltage	600 V
Recommended Length	500 ft (152 m) per platform

3. FUNCTION AND DESCRIPTION OF EACH COMPONENT

3.1 BISOMAC TRACTION HOIST





	FUNCTION	DESCRIPTION
A	Electric Motor	BISOMAC is powered by electricity through gear drive.
B	Gear Box	Decelerate motor's rotation for lifting appointed suspension load and speed.
C	Electromagnetic Brake	Electromagnetic Brake is released when the Operation Button is pressed. The BISOMAC stops when the Operation Button is released or the main power is disconnected.
D	Control Box	Electric components are assembled to control the BISOMAC lifting.
E	Fluid Refill Hole	Use when replacing oil.
F	Suspension Wire Rope Inlet	For inserting main suspension wire rope.
G	Carrying Handles	Use when carrying BISOMAC.
H	Serial Number	BISOMAC Serial Number.
I	Fluid Drain Hole	Use when replacing oil.
J	Emergency Descent Lever	This allows the platform to be lowered at regular speed when electrical power to the BISOMAC is lost.
K	Protection Cover	Does not allow water and dirt to get into Electromagnetic Brake.
L	Water-proof Cap Bolt	Cap bolt with sealing to avoid water getting into the Electromagnetic Brake.
M	Lever Stopper	Lock automatically to prevent misoperation and malfunction of Emergency Descent Lever. Locked automatically.
N	Shackle for Transportation	Only use at transportation of the BISOMAC. CAUTION: Max lifting load is 165bs (75g).
O	Guard Plate for Brake Leads	Protect Brake Leads from damages.
P	Oil Level Gauge Plug	Use when replacing of oil.
Q	Hour Meter	Shows the BISOMAC's integrated operating hours.
R	AC Power Plug	This plug is for connecting the BISOMAC to the worksite power supply.
S	Fan Cover	Protects operator from being struck by the fan and prevents damage to the fan and motor
T	Operator's Manual Tube	Install Operator's Manual.
U	Power Indication & Operation Button	The Power Indication is lit when connecting power. Controls the vertical motion of the BISOMAC. Operation Button disengages when released.
V	Emergency Stop Button	This Button is for emergency stop. Press this Button in case the BISOMAC does not stop even releasing the Operation Button.
Y	Overload Indicator Lamp	This Indicator lamp is lit, when BISOLOAD is activated. NOTE: Only for BISOLOAD is equipped model.
Z	Cable Guard	Protection Metal for Cable and Connector.
OP	Inlet for Pendant Switch (Optional)	Allow using Up/Down by remote control pendant switch. NOTE: Pendant switch is optional. Please contact local authorized the BISOMAC distributor. NOTE for Ver II: When Pendant Switch is in use, you cannot operate with the Operation Button on the BISOMAC.

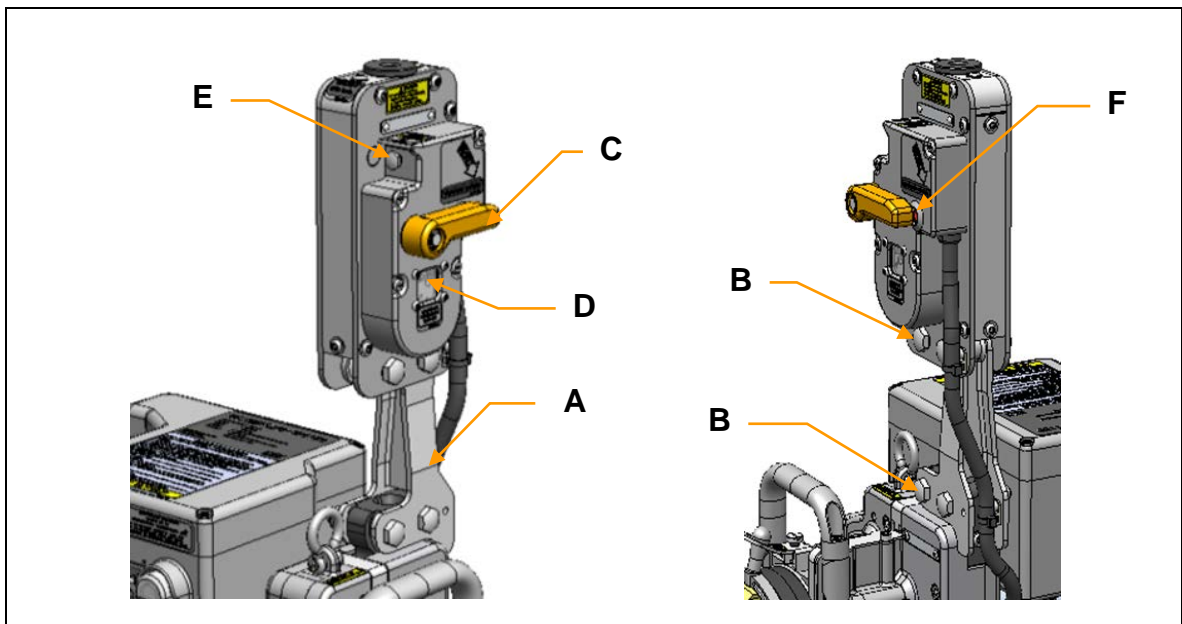
3.2 BISOLOCK

BISOLOCK engages wire rope when platform suddenly falls. Once BISOLOCK activates, the platform would not descend due to electric interlock. You can confirm the activation visually by the indicator lamp on the hoist. During the activation, you can ascend but not descend. The indicator lamp on the BISOLOCK is lit, when pressing “Down” Button.

WARNING

When platform suddenly falls and the BISOLOCK activates, only trained and authorized personnel are allowed to reset this device. Contact the local authorized BISOLOCK distributor and wait for rescue of the operators on the platform.

Improperly resetting the device may result in the platform falling and tilting, allowing persons or things to fall and possibly resulting in serious injury, death or damage.



	FUNCTION	DESCRIPTION
A	BISOLOCK Bracket	Use to attach BISOLOCK and BISOMAC.
B	BISOLOCK Bracket and BISOLOCK Special Bolt	Use to attach BISOLOCK Bracket and BISOMAC. (Q'ty: 4 pcs)
C	Reset Lever	Use when resetting the BISOLOCK. NOTE: When huge power applies to the Device such as shock load, attempt to reset forcibly, the Safety Pin in the Lever will damage and will not allow resetting the Lever.
D	Governor Inspection Window	Confirm Rotating of Governor
F	Manual Trip Button	This Trip Button is for manual activation of the BISOLOCK.
F	Overspeed Indicator	In case of activation of the Overspeed Detection Device, the Indicator is lit when pressing “Down” Button.

3.3 BISOLOAD

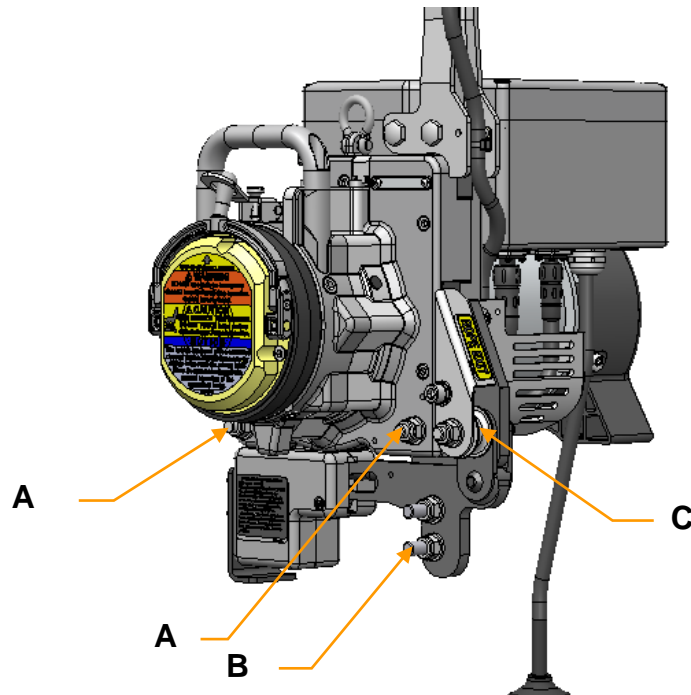
BISOLOAD prevents excess load from platform. When load on the platform exceeds approximately 150% of rated load, the Device detects it and prevents BISOMAC from going up. It can be descending. When BISOLOCK is activated, the Indicator lamp is lit. There is a guide to support wire rope discharging from BISOMAC.

WARNING

Lessen load from platform when

- **Platform will not ascend even you press the Up Button.**
- **Platform will ascend with pumping.**

The overload may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.



	FUNCTION	DESCRIPTION
A	BISOLOAD Special Bolts B	Use to attach BISOLOAD to BISOMAC (Q'ty: 2 pcs)
B	Special Bolts of Stirrup	Use to attach BISOLOAD to Stirrup (Q'ty: 2 pcs)
C	Guide Roller	Guide for supporting end rope load discharging from BISOMAC.

4. WORK ENVIRONMENT

Many work environments contain contaminants that could adversely affect the performance of the BISOMAC and the Safety devices. Perform the daily tests described in Section 7 to ensure that the BISOMAC is operating properly. If contaminants such as paint, epoxy, cement, corrosive chemicals or sand blasting is present at the work site, use the protective cover for BISOMAC and the safety devices in accordance with instructions and precautions below on this page.

The protective cover may obstruct some or all of the safety warnings and instruction labels on the BISOMAC and the safety devices. Before operating the BISOMAC and the safety devices equipped with the protective cover, the operator must remove the protective cover and read and understand all of the labels on the BISOMAC. Each new operator must fully understand all warning and instruction labels before operating the BISOMAC.

WARNING

ALWAYS test and inspect the BISOMAC on a daily basis especially in work environments contains contaminants. Maintain hoist (see Maintenance Manual) after completing work at each work site to remove dusts and foreign objects inside of the hoist. Improper maintenance may result in the platform falling or tilting, allowing persons or things to fall or tilt and possibly resulting in serious injury, death or damage.

WARNING

NEVER use the BISOMAC in an explosive atmosphere, under water, or in a marine environment. Especially, use in explosive or wet atmospheres could result in serious injury or death from fire, explosions, or electric shock.

NOTE: An explosive atmosphere is one in which flammable gases or vapors or small particles are or may be present in the air in quantities sufficient to produce an explosive or ignitable mixture.

CAUTION

Prolonged use of the BISOMAC with the protective cover in place may result in the motor overheating due to restricted air supply. This can cause the BISOMAC to stop moving. When using the protective cover, be sure that the cooling fan has an unobstructed air supply to the motor and the motor is not overheated.

NOTE: Make sure to use the protective cover for BISOMAC and the safety devices, if contaminants such as paint, epoxy, cement, corrosive chemicals or sand blasting are present at the work site.

NOTE: In an environment temperature below the freezing point, components of the hoist might be impaired with water drops or moisture frozen. Also, BISOMAC may not start well with the gear box oil hardened. Please take countermeasures not to have the inside of the hoist frozen after work.

5. SET UP INSTRUCTIONS

This section describes procedure of the BISOMAC for safety operation. Before attempting set up, read and understand Steps 1 - 5 of this section which describes the installation procedures of the BISOMAC and the safety devices.

WARNING: INSTALLATION

WARNING

DO NOT allow anyone under suspended platform. If necessary, provide protection below the suspended platform to prevent potential serious injury or death to passers-by from falling objects.

WARNING

DO NOT use different types of hoists in the same platform. Otherwise, an operation error may occur from the difference in the hoists' performance (ascending and descending speed, etc.) and the difference of the operation method and the safety unit. This may result in the platform falling or tilting, allowing persons or things to fall or tilt and possibly resulting in serious injury, death or damage.

WARNING

When attaching the BISOMAC to the platform, it is necessary to plan how to attach safety devices in advance, otherwise, the safety devices may not activate. Failure to activate may cause serious injury, death or damage.

WARNING

Attach Ground Fault Circuit Interrupter to power source and ensure that is properly grounded. Failure to do so increases the risk of electric shock or electrocution.

WARNING

DO NOT use damaged or cracked power cable and control cables. Doing so could result in electrocution or death.

 **WARNING**

When connecting the plug to the Pendant Switch Inlet or the Safety Devices to BISOMAC, verify that inner side of the plug is dry and there is no deposit of water. Due to malfunction of hoist, platform may fall down or topple the operator, and there is a risk of injury or death of the operator or the passerby.

 **CAUTION**

Use protective cover over the BISOMAC. Otherwise the BISOMAC get dirty and may malfunction.

 **CAUTION**

Replace rubber cover of the Power Indicator and the Operation Button if they get damaged. Otherwise, the button and indicator get dirty and may malfunction.

CAUTION: CONNECTING POWER

 **CAUTION**

The Voltage supplied to the BISOMAC should not exceed $\pm 10\%$ rated voltage (See Section 2.1) while lifting. If the voltage is not in the proper range, the BISOMAC may not operate or the motor may overheat and malfunction or create a burn hazard. Note: The rated voltage range shown above is permitted to only temporary operation. It is not permitted to continuous operation of the BISOMAC.

WARNING: MAIN WIRE ROPE AND SAFETY WIRE ROPE

 **WARNING**

The BISOMAC and BISOLOCK operation requires the use of authorized wire rope and the strict adherence to the operation methods and the instructions. If using a wire rope that is not required, the wire rope will have reduced strength and will be served. This may cause the platform to fall or tilt, resulting in falls and serious injury or death.

 **WARNING**

DO NOT expose the wire rope to fire, temperatures above 200° F (93° C), electrical current, or corrosive atmospheres and chemicals. Doing so will reduce the rope's strength and possibly allow the rope to break. This could result in platform falling or tilting, possibly causing serious injury, death or damage.

- Discard the wire rope if any damage is evident after completing the project.
- If there is anything suspicious, replace with a new wire rope.
- Discard wire rope that has been exposed to any of these conditions.

 **WARNING**

The suspension wire rope should be long enough (lifting height plus at least 6.56 ft. / 2 meter) to cover the height where the platform is placed on the ground or on the specified area. If the wire rope cannot cover the height where the platform can be placed on a stable area, the wire rope may slip out of the BISOMAC. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

DO NOT operate the BISOMAC with a wire rope having a kink or deformation. Doing so will damage the hoist inside and interfere with the up and down movement of the BISOMAC. Also, this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

When fixing the suspension wire rope and the safety wire rope to the building material, be sure that these wire ropes are not contacting any sharp edge. Otherwise, if the wire rope becomes heavily loaded and severed by a sharp edge, this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

The wire rope should be able to go through the inside of the BISOMAC freely. Inconsistent winding speed suggests the wire rope or the BISOMAC may be damaged. Stop operation at once and replace the wire rope or the BISOMAC. If it is used continuously, the wire rope may be severed or the BISOMAC may stop. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

DO NOT fasten or apply load to the tail end of the suspension wire rope discharged from the BISOMAC. Otherwise, the internal parts of the BISOMAC will become extremely worn and the wire rope may be damaged or severed. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **CAUTION**

DO NOT put your hand near the wire rope inlet when self-reveeing the wire rope and moving the platform up and down. Otherwise, your hand may be caught in the opening along with the wire rope, causing serious injury.

CAUTION: BISOMAC INSTALLATIONS

 **CAUTION**

DO NOT throw or drop the BISOMAC. The BISOMAC may become damaged and cannot be used and may result in serious injury or property damage.

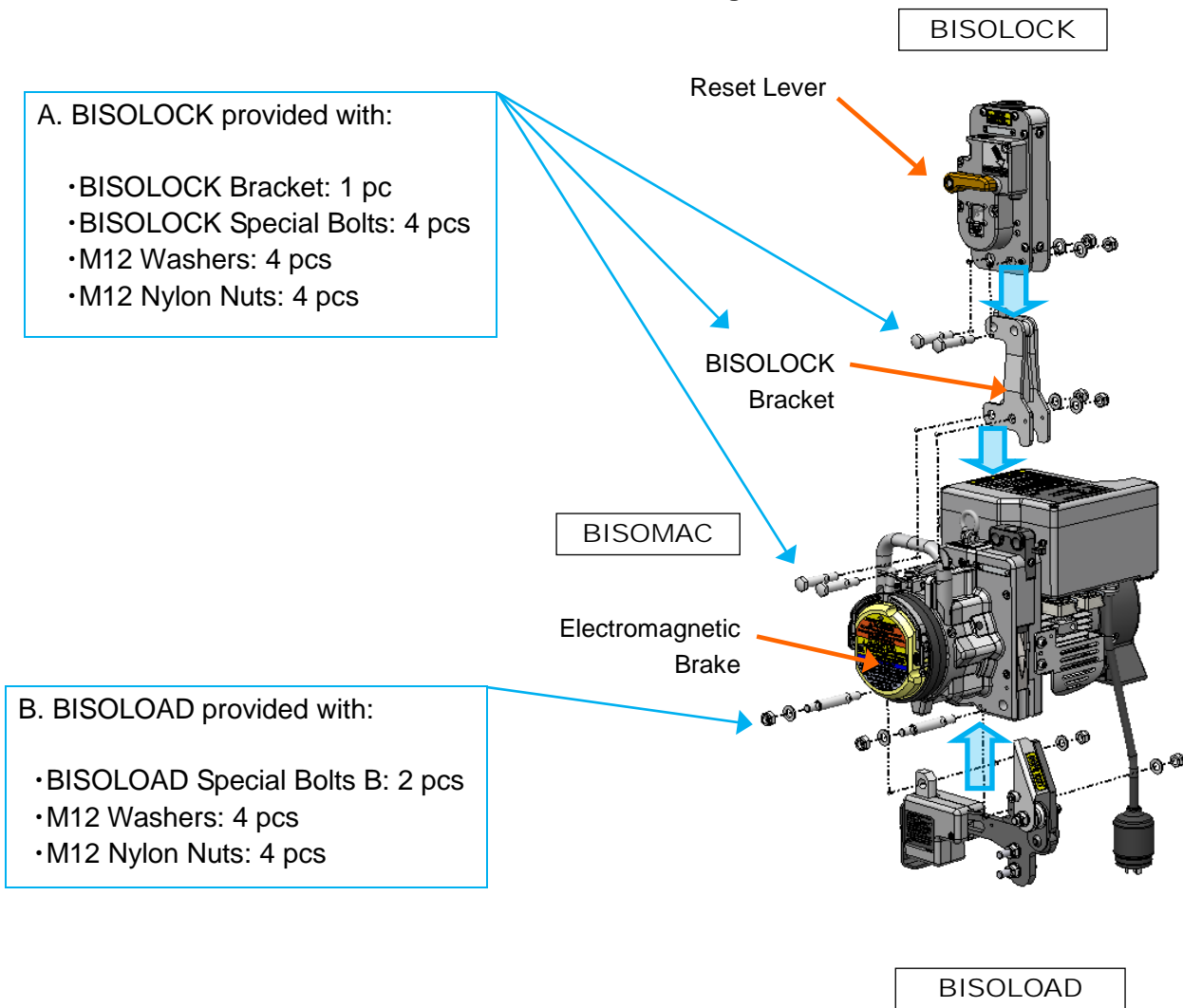
 **CAUTION**

DO NOT pull or step the cables of the safety device.
Lead the cables and connector to break, BISOMAC and Safety Devices cannot be used.

STEP1 Installation of Safety Devices to the Hoist

First install the Overspeed Detection Device and Stirrup Adapter to Hoist.
See instructions below.

Fig. 1



1. Attach the BISOLOCK Bracket to the BISOMAC with tightening 2 Bolts, 2 Washers and 2 Nylon Nuts.

2. Insert BISOLOCK Bracket into the BISOMAC from the top as shown and tighten with 2 BISOLOCK Special Bolts, 2 Washers, and 2 Nylon Nuts. Install it so that the Electromagnetic Brake and the Reset Lever will face the same side. Use Torque Wrench to tighten the Bolts. (See Fig.1)

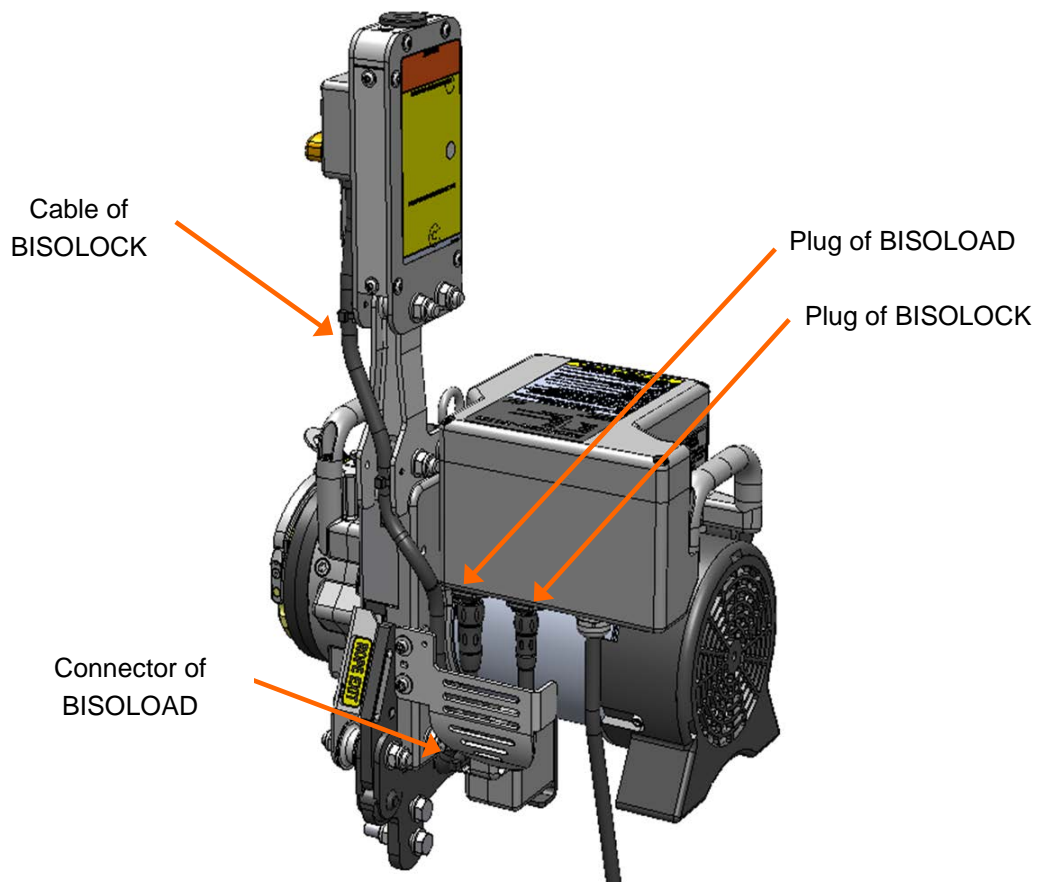
Torque Standard: 76 N·m (770 kgf·cm)

3. Attach the BISOLOAD with the BISOMAC from the bottom as shown and tighten with BISOLOAD Special Bolts B provided, 4 Washers and 4 Nylon Nuts. Use Torque Wrench to tighten the Bolts.

Torque Standard: 76 N·m (770 kgf·cm)

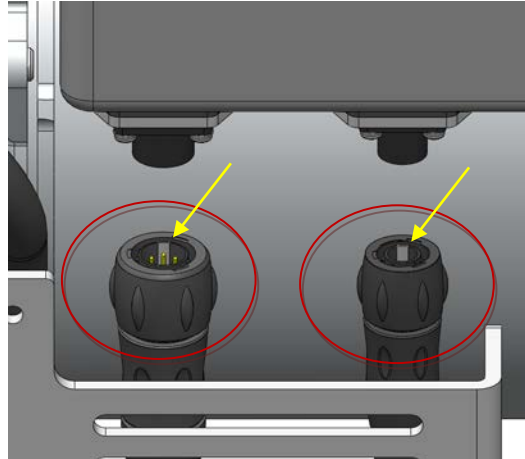
4. Connect the Plug of the BISOLOCK and BISOLOAD to the BISOMAC as shown (See Fig.2).

Fig. 2



5. Insert the white mark (yellow arrow part) of the connector at the motor side and turn it counterclockwise to fix the connector. (See Fig.3)
6. When removing the connector, pull it downward while turning it clockwise. (See Fig.3)

Fig. 3



STEP 2 Connection of Power Supply

WARNING

DO NOT pull or step the cables of the safety device and AC power plug.
Lead the cables and connector to break and it could result in electrocution or death.

CAUTION

Use electric power source and power cable suitable for BISOMAC.
When electric power source not suitable to specifications is used, it may heat up and damage the cable etc., and equipment may no longer operate normally.

1. Connect the AC Power Plug of the BISOMAC to power distribution board.
Please check the types of connector.

The types of female connector and the cover are shown below.

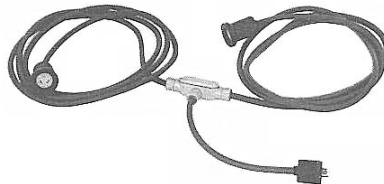
- 1Phase : HBL2323 (Maker: HUBBEL)
- Cover : HBL6032 (Maker: HUBBEL)

2. Necessary power per units is shown below.

Model	Ampere (A)
210-0750	10
210-1000	10
210-1500	13
210-1000U	10
210-1258U	13
210-1508U	13

If pair of hoists is used on the same platform, install “Y” electric supply yoke in the power line to provide power to each hoist.

Picture. 1



3. Ensure that the Emergency Stop Button of the BISOMAC and the interlock of the Safety Devices are reset.

How to Confirm;

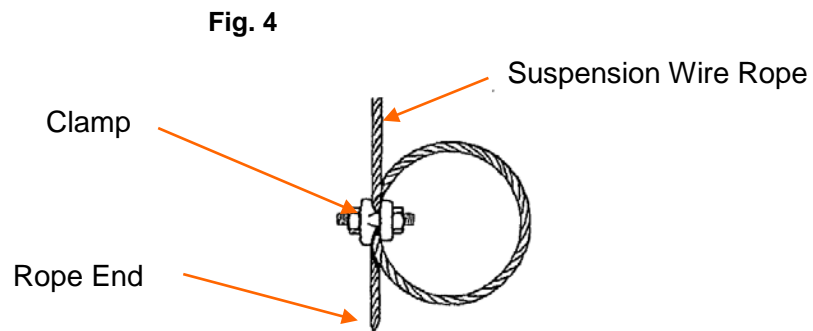
- Emergency Stop Button lamp is not lit.
- BISOLOCK reset lever is the vertical position.

4. Ensure that current capacity and size of circuit fuse of main switch is adequate, refer to specification in section 2.

5. Check if connector has any sign of deterioration etc.

STEP 3 Main Wire Rope Reeving

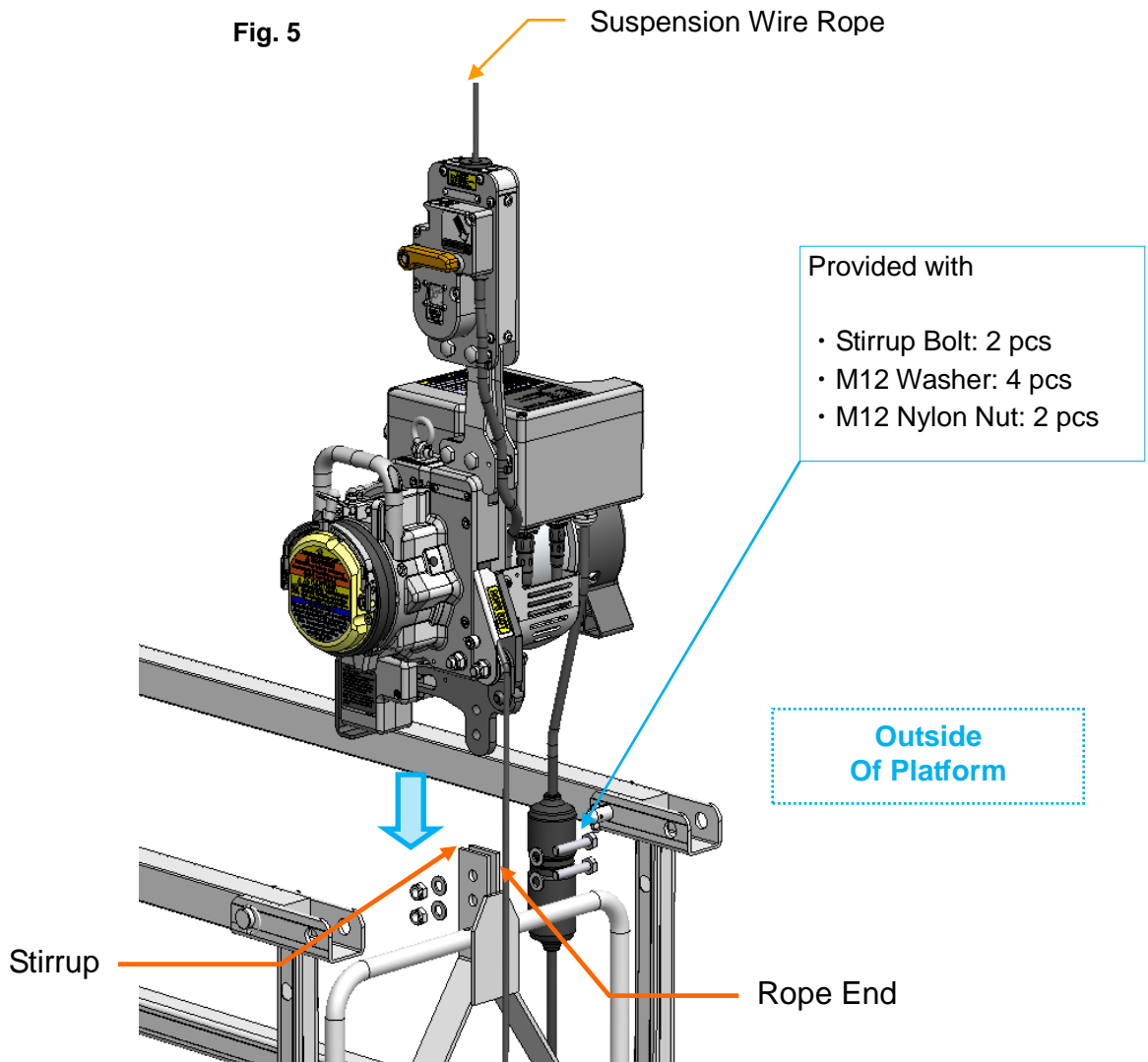
1. Insert the bullet end of the wire rope approximately 16 in. (40 cm) into the suspension wire rope inlet of the BISOMAC.
2. Press the "UP" Button while maintaining downward pressure on the wire rope until self-reeving starts.
3. Make sure the wire rope can freely exit the BISOMAC and is not blocked by any parts.
4. Install the suspension wire rope so that rope-to-rope distance of platform side and rigging side become equal.
5. To avoid run off the suspension wire rope from the BISOMAC, make the loop on the end of the suspension wire rope and fix it using the clamp as shown in the illustration.



STEP 4 Mounting BISOMAC to the platform

Press the “UP” Button to lift the BISOMAC from ground so that the hole in the BISOLOCK and the hole in stirrup are lined up, and then attach the hoist to the stirrup as shown in below with 2 Fix Bolts, 4 Washers and 2 Nylon (provided by Nihon Bisoh). Position of the ROPE END should be outside of the platform as shown.

Torque Standard: 76 N·m (770 kgf·cm)



STEP 5 Perform Daily Inspection

Follow Daily Tests and Inspections procedures in Section 7.

6. OPERATION / HANDLING METHODS

This section describes the following methods to safely handle and operate of the BISOMAC.

1. Explanation of operation and storage of the BISOMAC.
2. Explanation of operation methods of the BISOMAC.

WARNING

Each BISOMAC operator has to understand this operator's manual and the warning label before using. If the operator operates the BISOMAC improperly, this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

DO NOT exceed the maximum load of the BISOMAC. The rigging portion may fall, resulting in potential of death or injury to operators or passers-by.

CAUTION

DO NOT apply excess load on the shackle for transportation.
Applying load of 165 lbs (75 kg) above may damage the bow shackle, because of which BISOMAC may fall down and cause injury and damage the surrounding objects.

WARNING: CARRYING

CAUTION

The Carrying Handle is designed for carrying.
Using for other purpose may cause injury or damage the surrounding objects.

CAUTION

The Carrying Handle must be used by hand.
If not, BISOMAC may fall down because of the serious damage of handle while moving, which may cause injury or damage the surrounding objects.

CAUTION: STORAGE

CAUTION

When not in use, remove BISOLOAD from the BISOMAC (refer to section 5, step 1). Please store with care. Otherwise BISOMAC may fall down and cause injury, damage BISOMAC itself or surroundings.

NOTE: DO NOT stack up BISOMAC because it may damage BISOMAC making it unusable.

WARNING: REMOTE CONTROL PENDANT SWITCH

WARNING

Make the remote control cable length reachable from BISOMAC.

If you are operating at a location away from the BISOMAC, you cannot press the emergency stop button on the BISOMAC in an emergency, and this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

When remote control pendant switch is not in use, make sure to cover the inlet by water proof cap.

BISOMAC malfunction may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: LIFTING AND EMERGENCY STOP

WARNING

DO NOT have the Operation Button continuously depressed. Otherwise, the BISOMAC cannot stop. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

Always allow the BISOMAC to come to a full stop before changing the direction of travel. Failure to do so may result in control circuit failure, or may prevent the BISOMAC from stopping. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

DO NOT use the BISOMAC if the Emergency Stop Button does not operate.

Failure to do so may result in control circuit failure, or may not prevent the BISOMAC from stopping. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

Manually operate the emergency stop button and the raising/lowering button. Operating the buttons using tools etc. may damage the switch cover and the switch. Because of this, water may seep in and BISOMAC may not stop operating. Platform may tilt and operator or loaded objects may fall down resulting in injury or death of the operator or the passerby.

 **CAUTION**

DO NOT operate the BISOMAC more than 30 minutes during any 2 hours period. If you do so, the brake surface and motor will become very hot and could result in burns if it is touched.

WARNING: EMERGENCY DESCENT LEVER

 **WARNING**

Use the Emergency Descent Lever only in the event of loss of electric power. Put the Emergency Descent Lever through the hole of the Lever Stopper and attach it with screw after using. Otherwise, the BISOMAC may not stop, and this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

DO NOT use the Emergency Descent Lever when operating the Operation Button. Otherwise, the BISOMAC may not stop, and this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

Confirm that the Emergency Descent Lever is locked by the Lever Stopper and in the vertical position before operating the BISOMAC up and down. The brake may not function properly, causing the platform to continue to descend. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

Always operate the Emergency Descent Lever by hand. Otherwise, the BISOMAC cannot be stopped instantly. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

Make sure Emergency Descent Lever is locked automatically by lever stopper after use. (Fig.6) Otherwise, BISOMAC cannot be stopped instantly. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **CAUTION**

Be sure to remove the AC Power Plug of the BISOMAC from power source before using the Emergency Descent Lever. Otherwise, sudden movement may be induced when the power is regained. This may cause serious injury, death or damage to operators or passers-by.

 **CAUTION**

Pull the Emergency Descent Lever as far as it go toward. If failed to do so, it may result in serious burns, overheating of the BISOMAC and premature brake wear. If this occurs, the brake may become not repairable.

NOTE: DO NOT use the BISOMAC if the platform does not descend using the Emergency Descent Lever. Otherwise, the platform may not descent and it may not be possible to rescue operators in the event of a power failure. DO NOT use the BISOMAC until it is repaired and retested.

WARNING: BISOLOCK

 **CAUTION**

Ensure to manually operate the Manual Trip Button.
If not, it could make the Manual Trip Button break and BISOLOCK may malfunction.

 **CAUTION**

DO NOT reset BISOLOCK forcibly.
The pin inside the reset lever to brake and BISOLOCK may not function properly.

6.1 Carrying BISOMAC Traction Hoist

For safety transportation, separate the BISOMAC, BISOLOCK and BISOLOAD.
Refer to section 5, step 1.

BISOMAC self-weight: 108 lbs (49 kg)
BISOLOCK self-weight: 11 lbs (5 kg)
BISOLOCK Bracket self-weight: 2 lbs (1 kg)
BISOLOAD self-weight: 9 lbs (4 kg)

6.2 BISOMAC Traction Hoist 's Operation and How to Use

6.2.1 Operation and Use of Emergency Stop

- BISOMAC ascends by pressing "Up" Button
- BISOMAC descends by pressing "Down" Button.
- BISOMAC stops by pressing "Emergency Stop Button" and will not ascend or descend.

6.2.2 Emergency Descent Lever

- In the event of loss of electric power, the BISOMAC may be lowered at regular speed using this Emergency Descent Lever.
- The procedure is shown as below.
 - A) Disconnect the AC Power Plug of the BISOMAC from Power source.
 - B) Loosed the screw and unlock the lever stopper. (Fig.6)
 - C) Release the Electromagnetic Brake by gently pulling the Emergency Descent Lever as far as it will go toward the arrow as shown. The BISOMAC safely lowers at regular speed. (Fig.6)
 - D) Release your hands from the Emergency Descent Lever, then BISOMAC will stop.

NOTE: Do not apply excessive force to the Emergency Descent Lever. Applying a force of about 100 kg, it will damage the Pin and t will be impossible to descend in case of emergency. Please refer to Maintenance manual when it is needed to be fixed.

Always operate the Emergency Descent Lever by hand. Otherwise, the BISOMAC cannot be stopped instantly. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

Fig. 6

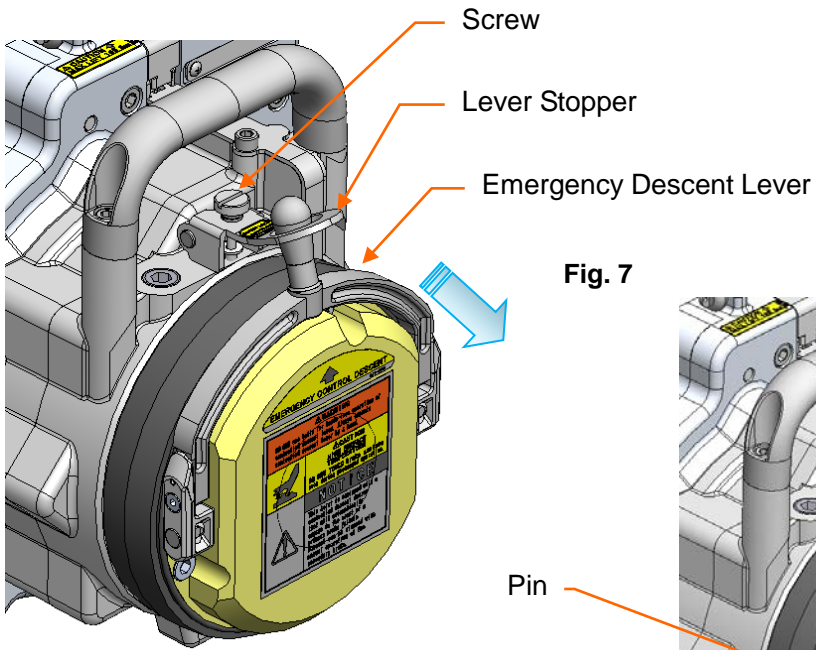
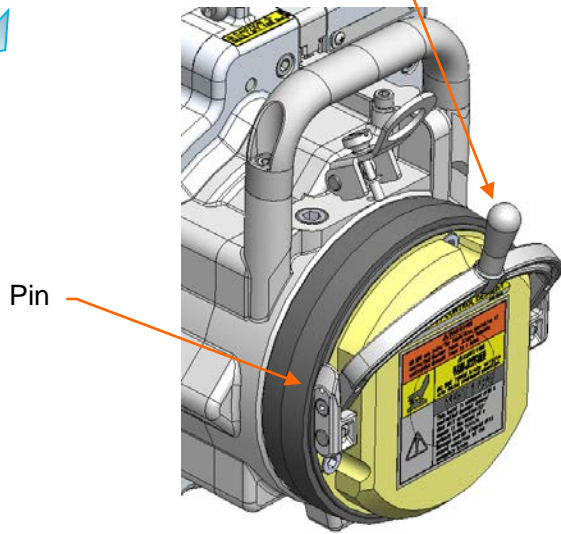


Fig. 7



6.2.3 How to Reset BISOLOCK

 **WARNING**

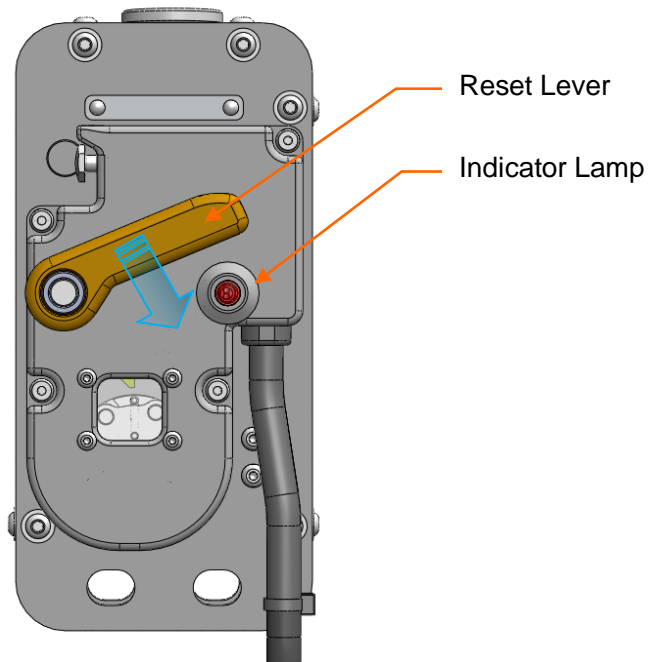
DO NOT reset the BISOLOCK until the safety is confirmed.

This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

Please follow the following instructions how to Reset BISOLOCK.

- A) Push “UP” button and reel in wire rope approx. 2 in (5 cm).
- B) Push the Reset Lever downward to reset the BISOLOCK. (Fig.8)
- C) If both of the indicator lamps is not lit, BISOLOCK is successfully reset. (Fig.8)

Fig. 8



7. DAILY TESTS AND INSPECTIONS

This section describes necessary test procedure before and after installation of the BISOMAC.

- Read and understand Steps 7.1 to 7.5 of this section describing the inspection and installation procedures of the BISOMAC before using.
- Follow each device's maintenance manuals if the daily tests and inspections are not described in this manual.

WARNING

DO NOT allow anyone under suspended platform. If necessary, provide protection below the suspended platform to prevent potential of death or injury to passers-by from falling objects.

WARNING

NEVER perform any disassembly, maintenance, repair, or part replacement of the BISOMAC when it is suspended in air or is under load. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

ALWAYS test and inspect the BISOMAC on a daily basis, otherwise the BISOMAC may malfunction. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

Operator MUST carry out the DAILY TESTS AND INSPECTIONS in this manual to confirm that equipment is in a normal and safe operating condition. If not, it may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING

Test and inspect the BISOMAC on a daily basis especially in work environments that contain contaminants. (refer to section 4) Maintain hoist after completing work at each work site to remove dusts and foreign objects inside of hoist. Failure to do so may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: TEST PROCEDURE OF RIGGING METAL

 **WARNING**

If the Rigging is in an abnormal condition, STOP using platform. If the wire rope runs out from rigging or wire rope is cut, this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: TEST PROCEDURE OF WIRE ROPE

 **WARNING**

The wire rope will wear out with repeated operation. Therefore, it must be regularly inspected to be sure it is in good condition. If you use a wire rope that is deformed or damaged, it will have reduced strength and may break. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: TEST PROCEDURE OF LIFTING PLATFORM AND EMERGENCY STOP FUNCTION

 **WARNING**

If you hear any strange noises such as grinding during operation or if the BISOMAC does not appear to work normally, STOP it immediately. DO NOT continue to use the BISOMAC until it is replaced. It is possible that parts inside the BISOMAC have been damaged. Continuing to use the BISOMAC may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

STOP the BISOMAC immediately, when the BISOMAC is suspended in the air and the motor is running but the wire rope is not moving through the BISOMAC. Damaged wire rope may be jammed inside the BISOMAC. Any attempt to move the BISOMAC up or down can damage the equipment and/or sever the wire rope, making the BISOMAC unable to sustain a load. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **WARNING**

DO NOT use the BISOMAC if the Indication light is not visible when the Emergency Stop Button is pressed. Otherwise, the Emergency Stop device may not be operating and this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

 **CAUTION**

When oil is leaking from BISOMAC, stop using BISOMAC and replace with a defect-free product.

Reduction in the amount of oil increases the temperature of the Gear Reducer which may cause burn injury. Besides, operating it at high temperature may emit smoke from Gear Reducer and it may not be possible to ascent or descent the equipment.

WARNING: TEST PROCEDURE OF CONTROLLED DESCENT DEVICE

 **WARNING**

If the BISOMAC has a defect, replace it with one that has passed the pre-shipment inspection by certified personnel. BISOMAC, which has not passed the pre-shipment inspection, may malfunction or not perform normally. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: TEST PROCEDURE OF BISOLOCK

 **WARNING**

DO NOT use the BISOMAC if BISOLOCK does not engage the wire rope. Replace it with a properly operating BISOLOCK, failure to do so may cause the suspension wire rope to be cut, the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

WARNING: TEST AND INSPECTION PROCEDURE OF PENDANT SWITCH

WARNING

When the emergency stop button of the remote control pendant switch is pressed and the hoist operates, STOP using it immediately and replace it with a normal product. There is possibility of malfunction of BISOMAC control circuit or remote control pendant switch. If you use a remote control pendant switch that does not operate properly, the platform cannot stop in an emergency. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

7.1 Test Procedure for Rigging

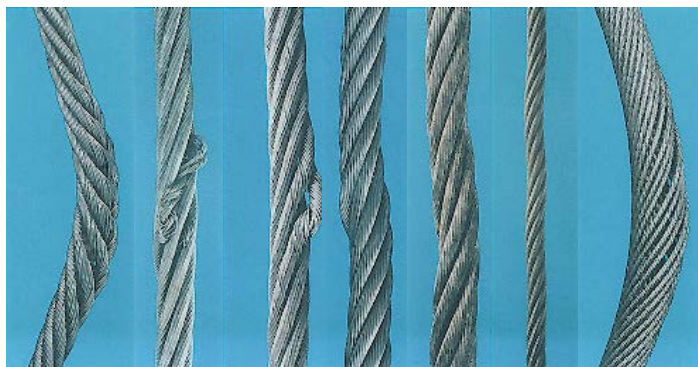
Inspect all components of the suspended platform, especially the components supporting loads, to be sure there are no signs of damage or excessive wear and that all fasteners (nuts, bolts, clamps, wire-clip, shackle, etc.) are properly and securely tightened.

7.2 Test Procedure for Wire Rope

7.2.1 Wire Rope and profile and dimension

- Wire rope **MUST** be taken out of service when ANY of the following conditions apply, refer to Picture.2.

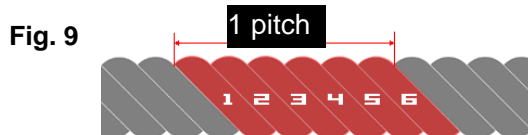
Picture. 2



- A. Loose, kinked, crushed, bird caged wire rope, waviness (more than $4/3d$) or any damage resulting in distortion of the rope structure.
- B. More than 10% of single wire is broken in one lay. (Fig.9)

Example: Wire Rope construction 6 x 19

$$6 \times 19 = 114 \text{ wires} \times 10 \% = 11 \text{ wires}$$



- C. In case the average diameter of wire rope is;

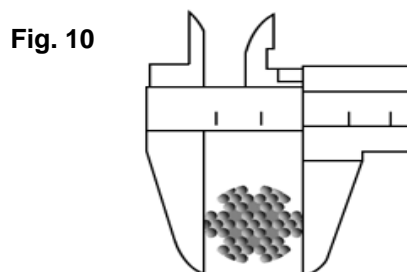
5/16 inch (8 mm)

[Dropped below ϕ 0.307 inch. (7.8 mm)
Exceeded ϕ 0.331 inch. (8.4 mm)

3/8 inch (9 mm)

[Dropped below ϕ 0.346 inch. (8.8 mm)
Exceeded ϕ 0.374 inch. (9.5 mm)

- D. Pitting on wire surfaces due to rusting corrosion.
- E. Evidence of exposure to temperatures above 200° F (93° C).
- With the load applied on the wire rope, measure the average value by taking measurement of diameter of circumcircle at two diagonally opposite places. Take measurement at few places in the length direction of rope.



NOTE: DO NOT use wire rope that has been worn, kinked, bird caged or damaged.
Replace it with new wire rope

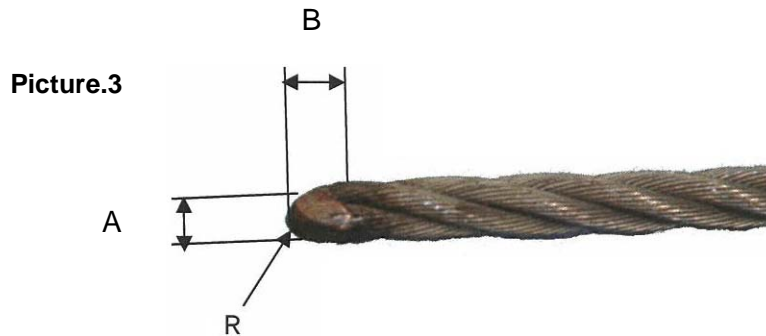
7.2.2 Preparation of the end of the wire rope

- The end of the wire rope must be prepared for insertion into the BISOMAC, refer to Picture.3.

NOTE: Improperly prepared bullet can cause the wire rope to jam in the BISOMAC, and the wire may get stuck in the hoist.

- The end of the wire rope treatment is shown as below.

	0.315 in. (8 mm)	0.354 in. (9 mm)
A. Wire rope diameter	0.315 in. (8 mm) to 0.331 in.(8.4 mm)	0.354 in. (9 mm) to 0.374 in. (9.5 mm)
B. Braze distance	Within 0.197 in.(5 mm)	Within 0.394 in. (10 mm)
R. Top Radius	R 0.118 in.(3 mm)	R 0.197 in. (5 mm)



7.3 Test and Inspection of BISOMAC Traction Hoist

Preliminary inspection items

- Check that none of the bolts/nuts and Operator's Manual Cap are loose.
- Check the visual appearance of the Traction Hoist (Include Cables and Connectors) that there is no damaged place such as crack or deformation.
- Check that the emergency stop button cover and ascent/descent button cover are not damaged such as crack.
- Check if BISOMAC are installed properly in the platform.
- Make sure the BISOMAC is connected to the stirrup properly and the AC Power Plug is connected to power source properly. And check circuit breaker.

7.3.1 Test Procedures for Lifting and Use of the Emergency Stop

When operated by BISOMAC main switch

1. Press the Operation Button of the BISOMAC to raise the platform about 40 in. (100 cm) off the ground and then lower it to its original position. Repeat this procedure several times. Check that there is not abnormal vibration such as the BISOMAC is shaking.
2. Check that hour meter is working normally.
3. Press the Emergency Stop Button to disconnect the power to the BISOMAC.
4. Make sure that the Indication light for the Emergency Stop Button is lit.
5. Press the Operation Button to confirm that the BISOMAC will not operate.
6. Reset the Emergency Stop Button and confirm that the BISOMAC will operate.

When operated by REMOTE CONTROL PENDANT SWITCH.

1. Press the Operation Button of the PENDANT SWITCH to raise the platform about 40 in. (100 cm) off the ground and then lower it to its original position. Repeat this procedure several times. Check that there is not abnormal vibration such as the BISOMAC is shaking.
2. Check that hour meter is working normally.
3. Press the Emergency Stop Button of the PENDANT SWITCH and shutdown the power supply of BISOMAC.
4. Verify that the red color display lamp of the Emergency Stop Button of the main body lights up.
5. Press the Operation Button of the PENDANT SWITCH and verify that BISOMAC doesn't operate.
6. Press the Operation Button of the main body and verify that BISOMAC doesn't operate.
7. Reset the Emergency Stop Button of the PENDANT SWITCH, and verify that the platform moves up and down once again.
8. Press the Emergency Stop Button of the main body and shutdown the power supply of BISOMAC.

9. Verify that the red color display lamp of the Emergency Stop Button of the main body lights up.
10. Press the Operation Button of the PENDANT SWITCH and verify that BISOMAC doesn't operate.
11. Press the Operation Button of the main body and verify that BISOMAC doesn't operate.
12. Reset the Emergency Stop Button of the main body, and verify that the platform moves up and down once again.

7.3.2 Test Procedures for Controlled Descent Device

 **CAUTION**

Be sure to remove the AC Power Plug of the BISOMAC from power source when using the Emergency Descent Lever. Otherwise, sudden movement may be induced when the power is regained. This may cause serious injury, death or damage to operators or passers-by.

 **CAUTION**

Pull the Emergency Descent Lever as far as it go toward. If failed to do so, it may result in serious burns, overheating of the BISOMAC and premature brake wear. If this occurs, the brake may become not repairable.

1. Raise the platform about 40 in. (100 cm) off the ground.
2. Disconnect the AC Power Plug of the BISOMAC from power source.
3. Release the Lever Stopper.
4. Release the Electromagnetic Brake by gently pulling the Emergency Descent Lever as far as it will go toward the arrow. The BISOMAC should safely lower at regular speed.
5. Confirm that the platform slowly descend at a controlled speed.

NOTE: If the descent speed looks too fast, contact local BISOMAC distributor.

7.3.3 Test Procedures for BISOLOCK



Ensure to manually operate the Manual Trip Button.

If not, it could make the Manual Trip Button break and BISOLOCK may malfunction.

Perform the following procedure to confirm of the BISOLOCK is operating normally.

1. Insert about 12 in. (30 cm) of wire rope into the BISOLOCK inlet.
2. Pull up the wire rope quickly.
3. Make sure that the wire rope is engaged.
4. Make sure the Overspeed Indicator lamp is lit when pressing the “Down” Button.
5. Push down the Reset Lever to reset the BISOLOCK.
6. Make sure the Overspeed Indicator lamp is not lit when pressing the “Down” Button.

Perform the following procedures to make sure the BISOLOCK holds loads normally.

1. Raise the platform about 20 in. (50 cm) off the ground.
2. Press the Manual Trip Button to activate the BISOLOCK. The Reset Lever turns anticlockwise and the Overspeed Indicator lamp is visualized.
3. Release the Electromagnetic Brake by pulling the Emergency Descent Lever to lower the platform.
4. The BISOLOCK engages the wire rope and the platform stop descending.
5. Press "Down" Button to confirm the platforms will not descent.
6. Confirm that the Overspeed Indicator lamp is lit when pressing “Down” Button.
7. Press down the Reset Lever while pressing “UP” Button to reset the BISOLOCK.
8. Push Operation Button to raise platform and confirm that the Governor is rotating.
Perform same procedure to the other side of the BISOLOCK.

NOTE: If the BISOLOCK does not engage the wire rope, contact the BISOLOCK local distributor and replace it with a properly functioning BISOLOCK.

8. PERIODIC INSPECTIONS

The BISOMAC has to conduct the following periodic inspections if the BISOMAC experiences the following conditions. The periodic inspections have to be performed by certified personnel.

The following time periods should be used to determine to perform periodic inspections. However, depending on job and environmental conditions, periodic inspections may need to be done sooner.

1. Unit is more than 1 year old after purchasing
2. Unit over 1 year after previous periodic inspection
3. Unit operation hour is over 100 hours since last periodic inspection
4. When BISOMAC used in a bad work environment, such as dirt, dust, etc.

NOTE: Follow the Traction Hoist Maintenance Manual concerning periodic inspections.



WARNING

Only trained and certified personnel may do repairs BISOMAC components.

Otherwise, the BISOMAC may malfunction or not perform normally. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.



WARNING

DO NOT replace any BISOMAC parts with ones that are not approved. Such

replacement may cause the BISOMAC to malfunction or not perform adequately. This may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

9. TROUBLESHOOTING AT JOB SITE

PROBLEM FROM MISHANDLING

The following information is intended to help identify faults that can occur and recommended corrections.

WARNING

If the problems (Case 1 – Case 8) cannot be solved by performing the corrective measures below, replace the hoist or contact local authorized BISOMAC distributor. All repairs and solution of these problems must be performed by trained and certified service personnel, otherwise, this may cause the platform to fall or tilt, and consequently operators or objects might fall, resulting in serious injury, death or damage to operators or passers-by.

CASE 1		
<i>Press “UP” or “Down” Buttons but BISOMAC will not Operate.</i>		
Problem		Solution
1	Main power is not connected.	Confirm the main power and the AC Power Plug connections are proper.
2	Emergency Stop Button is pushed.	Check the Power Indication lamp (RED) and reset the Emergency Stop Button.
3	Overload protection feature is activated due to overload.	Unload the weight in platform.
4	Reversed-Phase Detection Indicator is lit. Only for 3Phase model.	Check the phase of power supply and reconnect.

CASE 2		
<i>Press “UP” Button, but BISOMAC will not Ascent. Or chattering.</i>		
Problem		Solution
1	BISOLOAD’s connector is disconnected.	Check the BISOLOAD’s connection and make it right.
2	Weight is exceeded and BISOLOAD is activating.	Check the Overload Indicator lamp on BISOMAC is lit and unload the weight in platform
3	Voltage is too low.	Supply power within allowable power of BISOMAC, see Section 2.1.
4	Power Cable is too long or size is too small.	Shorten power cable or use larger size.

CASE 3***Motor runs but Hoist will not self-reeve***

Problem		Solution
1	Inadequate bullet on the wire rope.	Make sure the proper wire rope is used, see Section 7.2.2.
2	Wire rope is worn or damaged.	Stop operation of the BISOMAC immediately and replace wire rope.
3	The exit of wire rope is blocked.	Remove obstruction which caused blockage.

CASE 4***Hoist self-reeves, but will not lift platform***

Problem		Solution
1	Inadequate wire rope is used.	Make sure the proper wire rope is used, see Section 2.4.
2	Wire rope is worn or damaged.	Replace wire rope.

CASE 5**BISOMAC *ascending speed is too low.***

Problem		Solution
1	Power voltage is too low.	Check that voltage and replace it with correct power cable, see Section 2.1. Supply proper voltage, see Section 2.1.
2	Wire rope is worn or damaged.	Replace wire rope.

CASE 6		
BISOMAC <i>or safety devices makes unusual noise</i>		
Problem		Solution
1	Insufficient oil charge to the gear box.	Replace it with a properly functioning BISOMAC.
2	Gear box is broken.	
3	There will be problems in the each device inside.	
4	Foreign materials became deposited in the each device inside.	
5	Each device's bolts and nuts are loosened.	Check them and tighten properly.
6	Wire rope is not appropriate for BISOMAC.	Check manufacturer specified wire rope is used, see Section 2.4.

CASE 7		
BISOMAC <i>is too hot</i>		
Problem		Solution
1	Voltage of input power is too high	The supply voltage should not exceed +10 %, see Section 2.1.
2	Air supply to Motor is in bad condition.	Improve air ventilation on fan cover of BISOMAC.
3	Frequency use of BISOMAC.	Strict observance of BISOMAC operation hours, see Section 6.
4	Beyond BISOMAC lifting capacity.	Check the weight of platform and the load on it is right. If any problems found, adjust it to proper load.

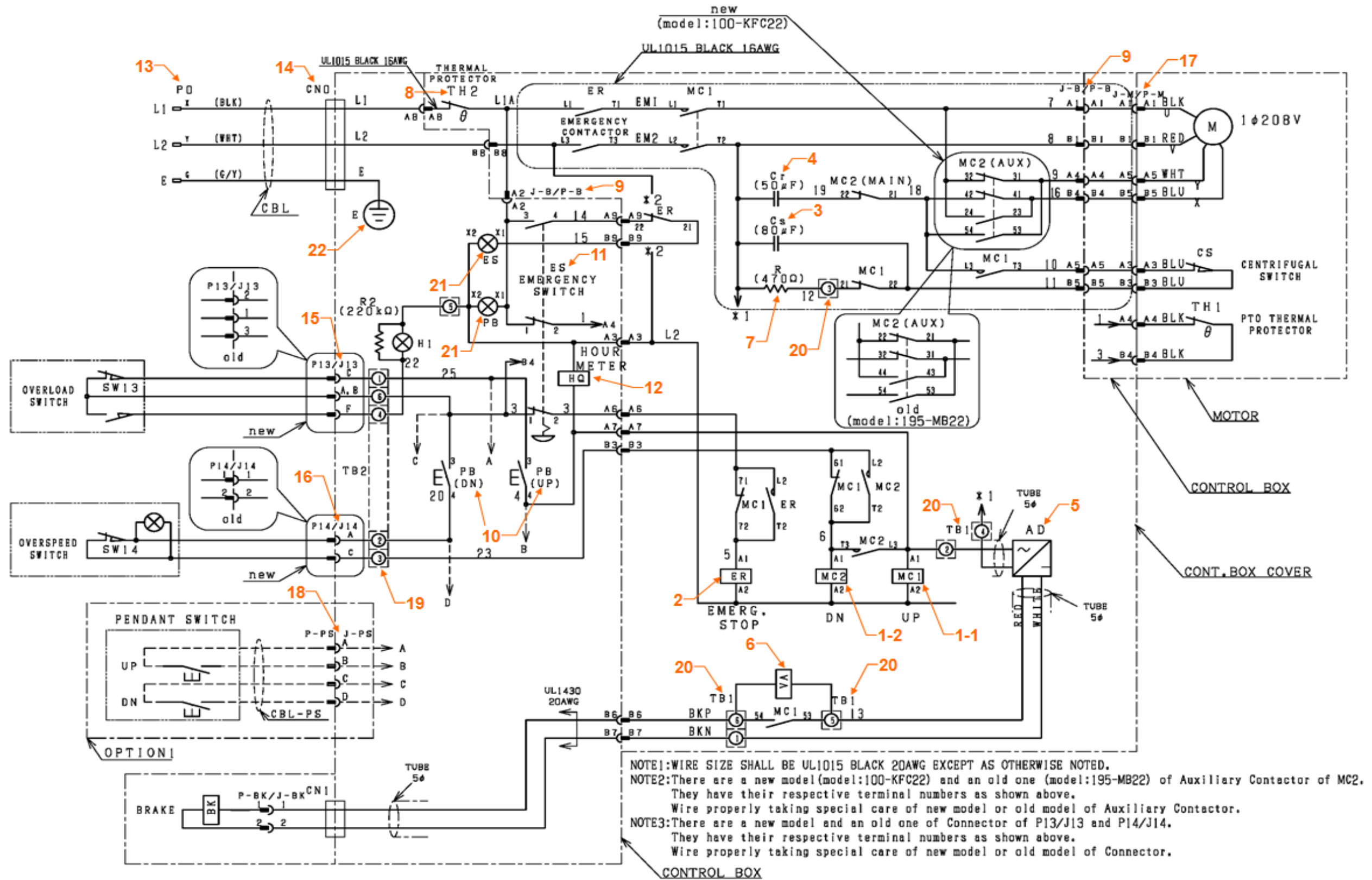
CASE 8
Press “Down” Button, but
BISOMAC *will not descend.*

Problem		Solution
1	Connector of BISOLOCK is unplugged.	Connect Connector of BISOLOCK properly.
2	BISOLOCK may be activated.	<p>Reset BISOLOCK.</p> <p>HOW TO RESET</p> <p>A) Lift the hoist by about 4 in. (10 cm).</p> <p>B) Lower the Reset Lever of BISOLOCK.</p> <p>NOTE: DO NOT reset forcefully. When the pin inside the lever of BISOLOCK is damaged, you may not be able to reset BISOLOCK.</p>

Ver. I

Electrical Control and Electric Parts Function for BISOMAC210-1000 / 1500 / 1000U / 1258U / 1508U

1. Control Circuit Diagram



2. Inside of Control Box Cover and Control Box

【Control Box Cover】

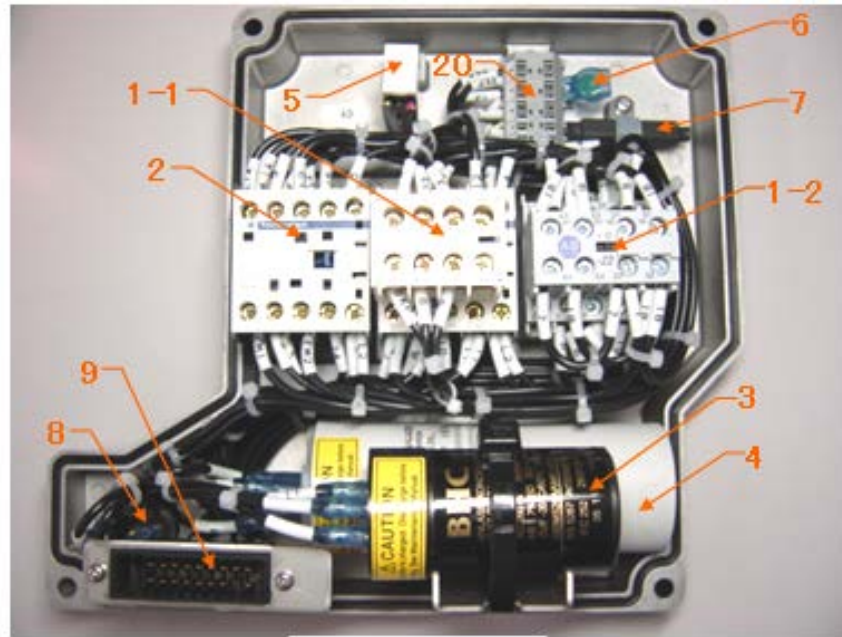


Photo-1

【Control Box】

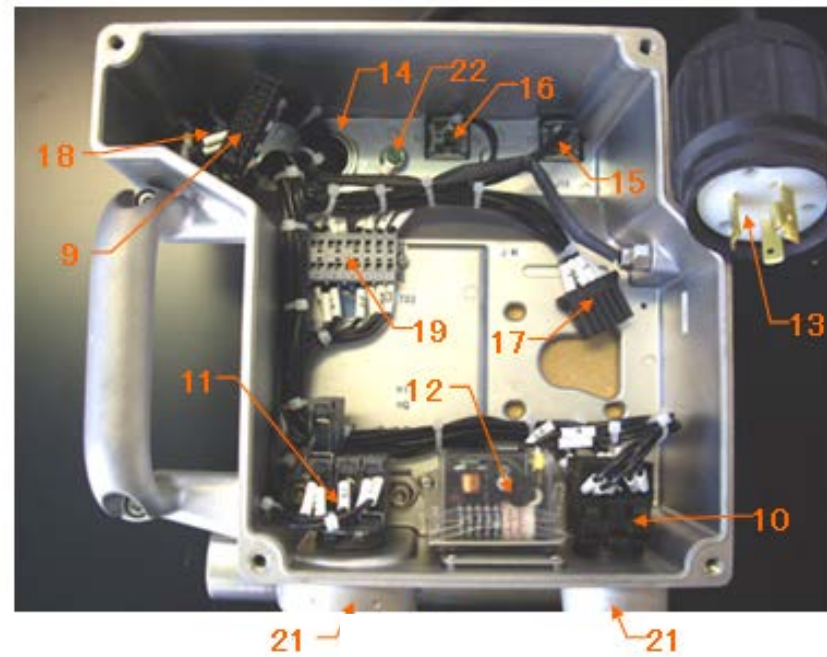


Photo-2

3. Part Name and Part Function

【Control Box Cover】

No	Tag No.	Part Name	Function
1-1	MC-1	Electromagnetic Contactor for Starting Motor	Starts motor.
1-2	MC-2	Electromagnetic Contactor for Running Motor	Controls rotation of motor.
2	ER	Electromagnetic Contactor for Emergency Stop	Shut down the main power.
3	Cs	Starting Condenser	Supplies the starting torque to the motor.
4	Cr	Running Condenser	Supplies the running torque to the moto and controls the descending speed at the time of manual brake release.
5	AD	Brake Power	Supplies the power to the electromagnetic brake.
6	VA	Varistor	Prevents the contact from being damaged by surge voltage.
7	R	Discharge Resistance	Prevents the contact from being damaged by surge current.
8	TH2	Thermal Protector	Detects surge current and shut down the power.
9	J-B P-B	Control Box Connector	Connects the Control box and the Control box cover.
20	TB1	Terminal Block	Connects and branch wires.

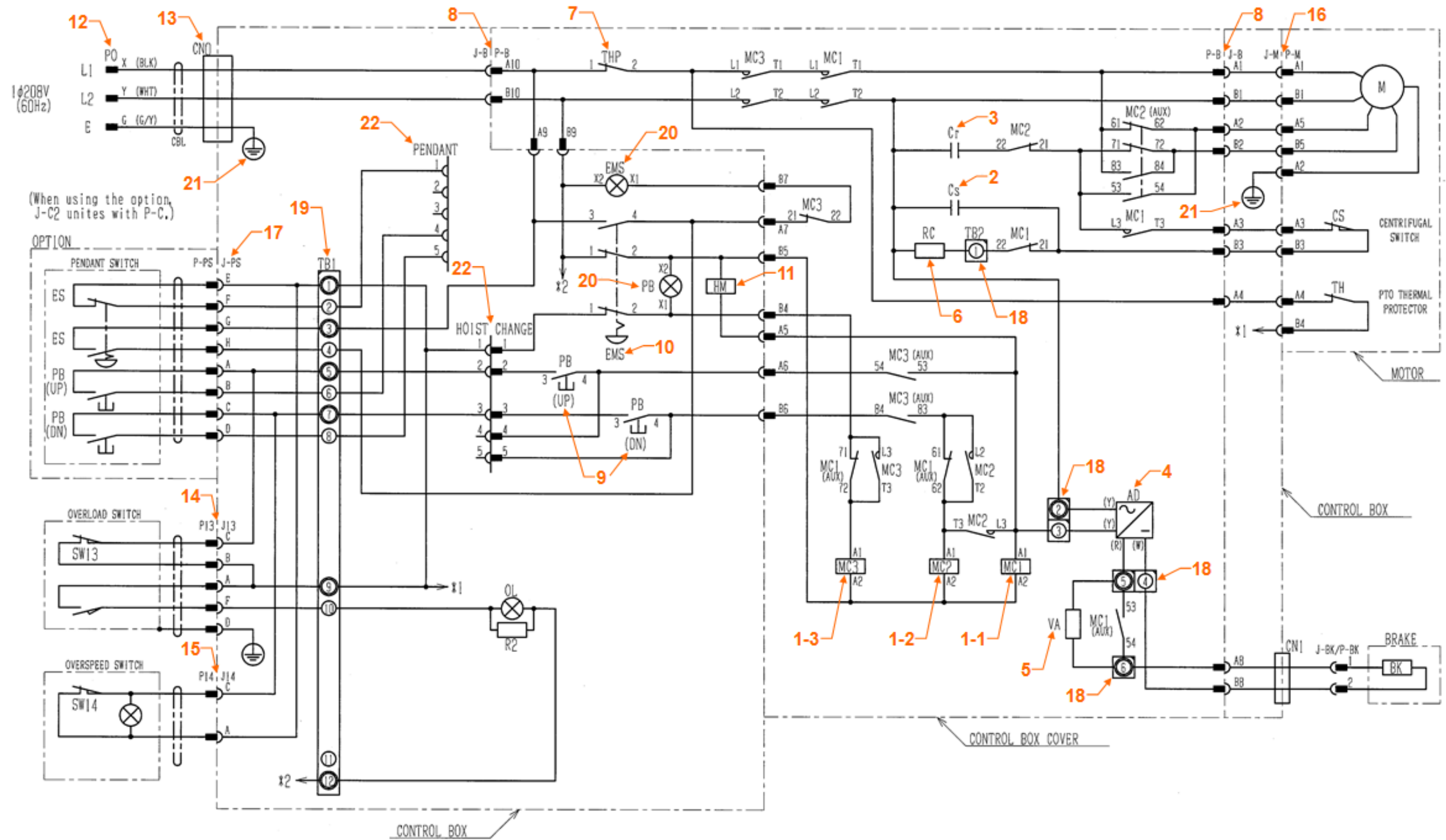
【Control Box】

No	Tag No.	Part Name	Function
10	PB	Ascending/Descending Button	Controls the electromagnetic contactor and electromagnetic brake.
11	ES	Emergency Stop Switch	Turns off the power to the control circuit.
12	HQ	Operating Time Integrating Meter	Displays the operating time.
13	P0	Power Plug	Connect the power cable.
14	CN0	Power Cable Ground	Secures the power cable.
15	J13	Socket for the Overload Detection Device	Connect the interlock of the Overload Detection Device
16	J14	Socket for the Overspeed Detection Device	Connect the interlock of the Overspeed Detection Device.
17	J-M P-M	Motor Connector	Connects the motor and the control box.
18	J-PS	Socket for the Pendant Switch (OPTION)	Connect the Pendant Switch. Pendant Switch is optional and need to convert with special kit. Please contact with BISOMAC210 local distributor.
19	TB2	Terminal Block	Connects and branch wires.
21	PB/ES	PB: Power Supply Injection Lamp ES: Emergency Stop Switch	Inform the working conditions of the device to operator by lighting and lights out of the lamp.
22	E	Ground	Prevent damage and electric shock of the device by the short circuit and over voltage.

Ver. II

Electrical Control and Electric Parts Function for BISO MAC210-1000 / 1500 / 1000U / 1258U / 1508U

1. Control Circuit Diagram



2. Inside of Control Box Cover and Control Box

【Control Box Cover】

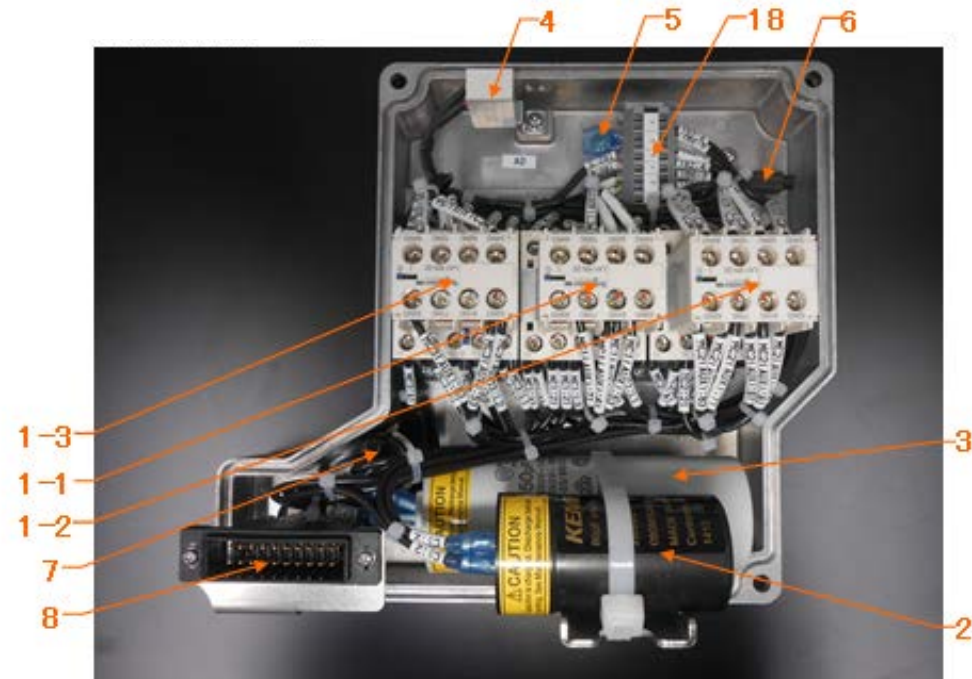


Photo-1

【Control Box】

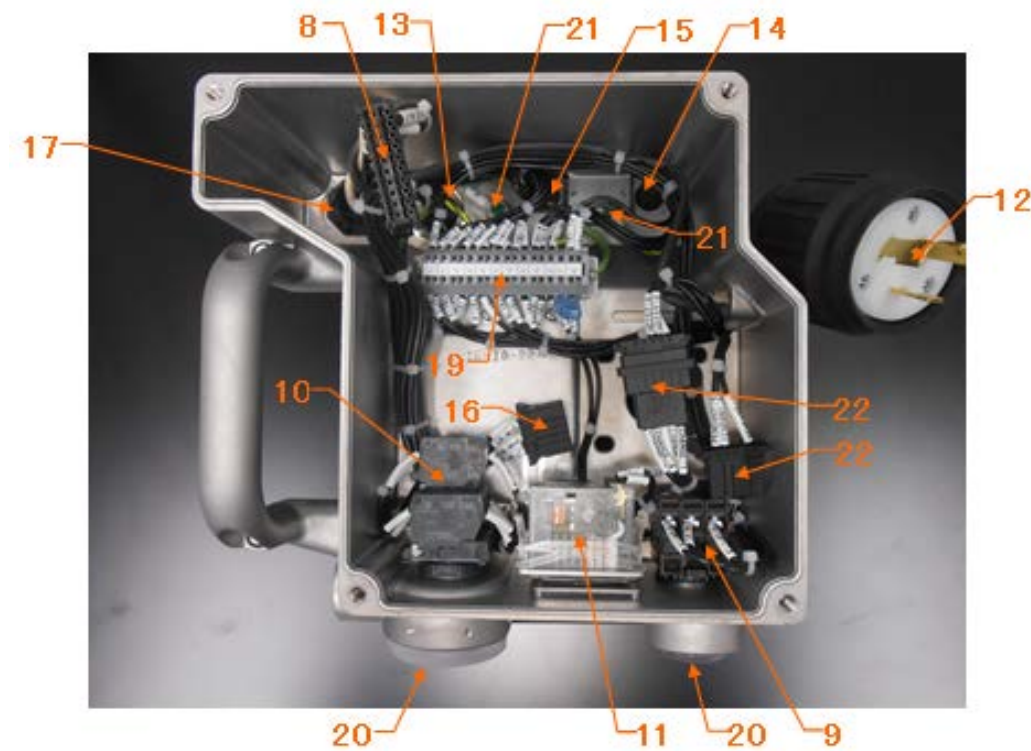


Photo-2

3. Part Name and Part Function

【Control Box Cover】

No	Tag No.	Part Name	Function
1-1	MC-1	Electromagnetic Contactor for Starting Motor	Starts motor.
1-2	MC-2	Electromagnetic Contactor for Running Motor	Controls rotation of motor.
1-3	MC-3	Electromagnetic Contactor for Emergency Stop	Shut down the main power.
2	Cs	Starting Condenser	Supplies the starting torque to the motor.
3	Cr	Running Condenser	Supplies the running torque to the motor and controls the descending speed at the time of manual brake release.
4	AD	Brake Power	Supplies the power to the electromagnetic brake.
5	VA	Varistor	Prevents the contact from being damaged by surge voltage.
6	RC	Discharge Resistance	Prevents the contact from being damaged by surge current.
7	THP	Thermal Protector	Detects surge current and shut down the power.
8	J-B P-B	Control Box Connector	Connects the Control box and the Control box cover.
18	TB2	Terminal Block	Connects and branch wires.

【Control Box】

No	Tag No.	Part Name	Function
9	PB	Ascending/Descending Button	Controls the electromagnetic contactor and electromagnetic brake.
10	EMS	Emergency Stop Switch	Turns off the power to the control circuit.
11	HM	Operating Time Integrating Meter	Displays the operating time.
12	P0	Power Plug	Connect the power cable.
13	CN0	Power Cable Ground	Secures the power cable.
14	J13	Socket for the Overload Detection Device	Connect the interlock of the Overload Detection Device.
15	J14	Socket for the Overspeed Detection Device	Connect the interlock of the Overspeed Detection Device.
16	J-M P-M	Motor Connector	Connects the motor and the control box.
17	J-PS	Socket for the Pendant Switch (OPTION)	Connect the Pendant Switch. Pendant Switch is optional and need to convert with special kit. Please contact with BISOMAC210 local distributor.
19	TB1	Terminal Block	Connects and branch wires.
20	PB/EMS	PB: Power Supply Injection Lamp EMS: Emergency Stop Switch	Inform the working conditions of the device to operator by lighting and lights out of the lamp.
21	E	Ground	Prevent damage and electric shock of the device by the short circuit and over voltage.
22	PENDANT / HOIST	Switching Connector of Pendant and Hoist	Switch the operation by connecting with Pendant: Operation by Pendant Switch Hoist: Operation by Switch button on the hoist.

CODE OF SAFE PRACTICES

FOR

ADJUSTABLE SUSPENDED SCAFFOLDS

**CO-DEVELOPED BY SCAFFOLDING, SHORING and FORMING INSTITUTE (SSFI)
and SCAFFOLD & ACCESS INDUSTRY ASSOCIATION, INC. (SAIA)**

It shall be the responsibility of all users to read and comply with the following common sense guidelines which are designed to promote safety in the erecting, dismantling and use of adjustable suspended scaffolds. These guidelines do not purport to be all-inclusive nor to supplant or replace other additional safety and precautionary measures. If these guidelines conflict with any local, provincial, state, federal or other government regulations, the regulations shall supersede these guidelines and it shall be the responsibility of each user to comply therewith.

I. GENERAL GUIDELINES

- A. POST THESE SAFE PRACTICES** in a conspicuous place. Be sure that all persons who erect, use, relocate or dismantle adjustable suspended scaffold systems are fully aware of them. Use them in tool box safety meetings.
- B. FOLLOW ALL EQUIPMENT MANUFACTURER'S RECOMMENDATIONS** as well as all local, provincial, state and federal codes, ordinances and regulations relating to adjustable suspended scaffold systems.
- C. SURVEY THE JOB SITE.** A competent person shall survey the job site for hazards such as exposed electrical wires, obstructions and unguarded roof edges or openings.
- D. INSPECT ALL EQUIPMENT BEFORE EACH USE.** Never use any equipment that is damaged or defective in any way. Mark it or tag it as damaged or defective and remove it from the jobsite.
- E. ERECT AND DISMANTLE ADJUSTABLE SUSPENDED SCAFFOLD EQUIPMENT** in accordance with the design and/or manufacturer's recommendations.
- F. DO NOT ERECT, DISMANTLE OR ALTER ADJUSTABLE SUSPENDED SCAFFOLD SYSTEMS** except under the supervision of a competent person.
- G. DO NOT ABUSE OR MISUSE ADJUSTABLE SUSPENDED SCAFFOLD EQUIPMENT.** Never overload any equipment.
- H. ERECTED ADJUSTABLE SUSPENDED SCAFFOLDS ARE TO BE INSPECTED REGULARLY** by the user to be sure that they are maintained in a safe condition. Stop work and report any unsafe condition to your supervisor.
- I. NEVER TAKE CHANCES! IF IN DOUBT REGARDING THE SAFETY OR USE OF ADJUSTABLE SUSPENDED SCAFFOLDS, CONSULT A QUALIFIED PERSON.**
- J. NEVER USE ADJUSTABLE SUSPENDED SCAFFOLD EQUIPMENT FOR PURPOSES FOR WHICH IT WAS NOT INTENDED.**
- K. A COMPETENT PERSON SHALL CONSIDER STOPPING WORK WHEN WIND SPEED EXCEEDS 25 MPH FOR TWO-POINT ADJUSTABLE SUSPENDED SCAFFOLDS OR 20 MPH FOR SINGLE-POINT SUSPENSION.** If materials on a platform create a sail effect, stopping work at lower wind speeds must be considered.

- L. **ADJUSTABLE SUSPENDED SCAFFOLD SYSTEMS** are to be installed and used in accordance with the manufacturer's recommended procedures.
- M. **ADJUSTABLE SUSPENDED PLATFORMS MUST NEVER BE OPERATED NEAR LIVE POWER LINES** unless proper precautions are taken. Contact the power service provider for advice.
- N. **ALWAYS UTILIZE FALL ARREST EQUIPMENT** when working on adjustable suspended scaffolds or when working near unguarded edges.
- O. **DO NOT WORK FROM, INSTALL OR MOVE ADJUSTABLE SUSPENDED SCAFFOLDS** if you are sick or impaired in any way.
- P. **DO NOT WORK ON ADJUSTABLE SUSPENDED SCAFFOLDS** when under the influence of alcohol or drugs.
- Q. **DEBRIS SHOULD NOT BE STORED OR ALLOWED TO ACCUMULATE ON A PLATFORM.**
- R. **INDEPENDENT ADJUSTABLE SUSPENDED SCAFFOLDS ARE TO BE POSITIONED SO AS TO AVOID OVERLAPPING OR POSSIBLE INTERFERENCE FROM ANOTHER SCAFFOLD.**

II. GUIDELINES FOR ERECTION AND USE OF ADJUSTABLE SUSPENDED SCAFFOLD SYSTEMS

A. RIGGING:

1. **UTILIZE FALL PROTECTION EQUIPMENT** when rigging near unguarded edges.
2. **SUPPORTING DEVICES** must be capable of supporting the hoist rated load with a safety factor of four.
3. **ALL OVERHEAD RIGGING** must be secured from unwanted movement in any direction.
4. **COUNTERWEIGHTS USED WITH OUTRIGGER BEAMS** must be of a non-flowable material and must be secured to the beam to prevent accidental displacement.
5. **OUTRIGGER BEAMS THAT DO NOT USE COUNTERWEIGHTS** must be installed and secured to the roof structure with bolts or other direct connections. Direct connections shall be evaluated by a competent person.
6. **TIE BACK ALL TRANSPORTABLE RIGGING DEVICES.** Tieback shall be equivalent in strength to the suspension ropes.
7. **INSTALL TIEBACKS AT RIGHT ANGLES TO THE FACE OF THE BUILDING** and secure them without slack, to a suitable anchor capable of supporting the hoist rated load with a safety factor of four.
8. **IN THE EVENT THAT TIEBACKS CANNOT BE INSTALLED AT RIGHT ANGLES,** two tiebacks at opposing angles must be used to prevent movement.
9. **RIG AND USE HOISTING MACHINES DIRECTLY UNDER THEIR SUSPENSION POINTS** to prevent movement or side loading.

B. WIRE ROPE AND HARDWARE:

1. **USE ONLY WIRE ROPE AND ATTACHMENTS** specified by the hoisting machine manufacturer.
2. **HANDLE WIRE ROPE WITH CARE.** Always use gloves.
3. **COIL AND UNCOIL WIRE ROPE** in accordance with manufacturer's instructions in order to avoid kinking or damage.

4. **ASSURE THAT THE WIRE ROPE IS LONG ENOUGH** to reach to the lowest possible landing.
5. **CLEAN AND LUBRICATE WIRE ROPE** in accordance with the wire rope manufacturer's instructions.
6. **INSPECT WIRE ROPE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DO NOT USE WIRE ROPE THAT IS KINKED, BIRDCAGED, CORRODED, UNDERSIZED, OR DAMAGED IN ANY WAY.** Do not expose wire rope to fire, undue heat, corrosive atmosphere, electricity, chemicals or damage.
7. **WIRE ROPES USED WITH TRACTION HOISTS MUST HAVE PREPARED ENDS.** Follow hoist manufacturer's recommendations.
8. **USE THIMBLES AT ALL WIRE ROPE SUSPENSION TERMINATIONS.**
9. **USE J-BOLT WIRE ROPE CLAMPS OR SWEDGE FITTINGS. DO NOT USE U-BOLT CLAMPS.**
10. **TIGHTEN THE J-BOLT WIRE ROPE CLAMPS** in accordance with the manufacturer's instructions.

C. POWER SUPPLY FOR MOTORIZED EQUIPMENT:

1. **USE PROPERLY GROUNDED ELECTRICAL POWER CORDS.** Protect them with circuit breakers.
2. **USE POWER CORDS AND AIR HOSES OF THE PROPER SIZE THAT ARE LONG ENOUGH** for the application.
3. **POWER CORD and AIR HOSE CONNECTIONS MUST BE RESTRAINED** to prevent separation.
4. **USE STRAIN RELIEF DEVICES TO ATTACH POWER CORDS AND AIR SUPPLY HOSES TO THE PLATFORM,** to prevent them from separation.
5. **PROTECT POWER CORDS AND AIR HOSES FROM SHARP EDGES.**
6. **USE GROUND FAULT CIRCUIT INTERRUPTER (GFCI) WITH POWER TOOLS.**

D. FALL ARREST EQUIPMENT:

1. **EACH PERSON ON AN ADJUSTABLE SUSPENDED SCAFFOLD** must be attached to an independent fall arrest system.
2. **EACH VERTICAL LIFELINE SHALL BE ATTACHED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS** to a separate anchorage capable of supporting a minimum of 5000 pounds (2267 kg) or an anchorage designed by a qualified person.
3. **DO NOT WRAP LIFELINES AROUND STRUCTURAL MEMBERS** unless lifelines are protected and a suitable anchorage connection is used.
4. **PROTECT LIFELINES AT SHARP CORNERS AND EDGES** to prevent chafing.
5. **RIG FALL ARREST SYSTEMS** to minimize free fall.
6. **INSTALL VERTICAL LIFELINES SO THEY HANG FREELY.**
7. **USE LIFELINES** that are compatible with the rope grab.
8. **INSTALL ROPE GRAB IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.** Rope grab must be properly oriented.
9. **KEEP ROPE GRAB POSITIONED ABOVE YOUR HEAD.**
10. **UTILIZE FULL BODY HARNESSSES of the proper size and fit.**
11. **UTILIZE SHOCK ABSORBING LANYARD** attached to the D-ring at the center of your back between the shoulder blades.

- 12. INSPECT FALL PROTECTION ANCHORAGE / EQUIPMENT BEFORE EACH USE.** Consult the fall protection supplier for inspection procedures.
 - 13. WHEN A SECONDARY WIRE ROPE SYSTEM IS USED** instead of a vertical lifeline, attach the lanyard to a horizontal lifeline or an approved platform anchor.
- E. DURING USE:**
- 1. USE ALL EQUIPMENT AND ALL DEVICES** in accordance with the manufacturer's instructions.
 - 2. DO NOT OVERLOAD OR MODIFY EQUIPMENT.**
 - 3. INSPECT ALL EQUIPMENT INCLUDING HOISTS, PLATFORM, AND RIGGING** before each use.
 - 4. INSPECT WIRE ROPE BEFORE AND DURING USE.**
 - 5. USE CARE TO PREVENT DAMAGE TO EQUIPMENT.**
 - 6. CLEAN AND SERVICE EQUIPMENT REGULARLY.** Follow manufacturers' recommendations.
 - 7. ALWAYS MAINTAIN AT LEAST (4) FOUR WRAPS OF WIRE ROPE ON DRUM TYPE HOISTS.**
 - 8. DO NOT CONNECT PLATFORMS** unless the installation was designed for that purpose.
 - 9. DO NOT MOVE ADJUSTABLE SUSPENDED SCAFFOLDS HORIZONTALLY** unless safe work practices are followed.
 - 10. WHEN RIGGING FOR ANOTHER DROP** assure sufficient wire rope is available before moving the suspended platform horizontally to the next location.
- F. WELDING FROM SUSPENDED SCAFFOLDS REQUIRES SPECIAL TRAINING:**
- 1. ASSURE PLATFORM IS GROUNDED TO THE STRUCTURE** using a grounding conductor.
 - 2. INSULATE WIRE ROPE ABOVE AND BELOW THE PLATFORM.**
 - 3. INSULATE WIRE ROPE AT SUSPENSION POINT AND ASSURE WIRE ROPE DOES NOT CONTACT THE STRUCTURE ALONG ITS ENTIRE LENGTH.**
 - 4. PREVENT THE WIRE ROPE END FROM BECOMING GROUNDED.**
 - 5. INSULATE EACH HOIST WITH A PROTECTIVE COVER.**
 - 6. INSULATE TIE BACK WIRE ROPES AT THE CONNECTION POINTS.**

Since field conditions vary and are beyond the control of the SSFI and the SAIA, safe and proper use of adjustable suspended scaffolding is the sole responsibility of the user.

© Scaffolding, Shoring and Forming Institute, 1300 Sumner Ave., Cleveland, Ohio 44115;

(P) 216.241.7333; (F) 216.241.0105. www.ssfi.org

© Scaffold & Access Industry Association, 400 Admiral Blvd., Kansas City, MO 64106,

(P) 816.595.4860; (F) 816.472.7765. www.saiaonline.org

This document is the property of the SSFI and the SAIA. Permission for reprinting this document is granted in the interest of safety. Reprinting of this publication does not imply approval of product by or indicate membership in the Association.

NOTE:

Revision History

Date	Version	Revised Section	Revision
July 2010	5th revision	Drawing, etc.	Electric Circuit revised / Brake Label revised
Nov 2011	6th revision	Drawing	Electric Circuit revised
Mar 2013	7th revision	Labels	Add QR code and Gear Label
Dec 2013	8th revision	0.2)	Humidity deleted.
		7.6	Deleted.
June 2014	9th revision	1.3	Power Voltage Label revised
		1.3	Add Plug mark and Plug Connection Label
		5	Add 3 items on Warning Installation
		7.3	Add "Testing procedure when remote control pendant switch is connected"
May 2016	10th revision	/	<ol style="list-style-type: none"> 1. Modification in accordance with Version II (Ver.II). 2. Minor changes on some Warning, Caution and Note. 3. Add Attachment 2.
Feb 2018	12th revision	/	<ol style="list-style-type: none"> 1. Integrate all BISOMAC210 1Phase model into one manual. 2. Minor changes on some Warning, Caution and Note. 3. Some label location are changed. 4. Minor change on format. 5. Add note about noise
July 2018	13th revision	0.3 2.1 6	<ol style="list-style-type: none"> 1. Add precautions prior to use. 2. Add minimum load capacity on the specification. 3. Add Warning about remote control pendant switch.

BISOMAC210

Electric Traction Hoist Operator's Manual

North American Model
with Overload Detection Device

1st edition: February 2006
1st revision: November 2006
2nd revision: November 2006
3rd revision: April 2007
4th revision: July 2008
5th revision: July 2010
6th revision: November 2011
7th revision: March 2013
8th revision: December 2013
9th revision: June 2014
10th revision: May 2016
12th revision: February 2018
13th revision: July 2018



Published by:
Overseas Department
NIHON BISOH CO.,LTD.
3788 Hinami, Togitsu, Nagasaki, 851-2108 Japan
TEL: 81-95-882-1925 / FAX: 81-95-881-0177
www.bisoh.co.jp/en