



INDUSTRIAL SEWING MACHINE

MODEL

**PLK-G2008H**

TECHNICAL MANUAL

SEWING MACHINE HEAD BASIC

## FOR SAFE USE

Before the installation, operation, and inspection for this product, read the “FOR SAFE USE” and the technical manuals carefully. Also read the other technical manuals, “Control Unit” and “Operation Panel” describing some instructions, which are not in this manual, and use the sewing machine properly.

## SAFETY INDICATIONS

	<b>DANGER</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
	<b>CAUTION</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage. Note that CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

## CAUTION INDICATIONS

No.	Caution indication	Description
1		<p><u>Precaution for sewing machine operation:</u></p> <p>Indicates that removing the safety and operating the sewing machine for some other purposes with power-on are prohibited.</p> <ul style="list-style-type: none"> <li>● Please do not operate the sewing machine without protective equipment such as an eye guard, a belt cover or the others.</li> <li>● Please turn off the power switch when threading, changing a needle and a bobbin, cleaning, and lubricating.</li> </ul>
2		<p><u>Caution for fingers injury:</u></p> <p>Indicates a possibility of fingers (hands) injury in a certain condition.</p>
3		<p><u>Caution for squeezing fingers:</u></p> <p>Indicates a possibility of squeezing fingers in a certain condition.</p>
4		<p><u>Indication of pulley rotation direction:</u></p> <p>Indicates a normal pulley rotation direction of sewing machine.</p>

## SAFETY PRECAUTIONS



### DANGER

To prevent from receiving an electric shock, always turn off a power switch and unplug power supply when opening a control box, and then open after ten minutes passes.



### CAUTION

#### USAGE ENVIRONMENT

Please do not operate the sewing machine under the following conditions.

- (1) In the ambient temperature of 35 degrees (95°F) or more than 35 degrees, or the ambient temperature of 5 degrees or less than 5 degrees (41°F).
- (2) In the ambient temperature of 55 degrees (131°F) or more than 55 degrees, or the ambient temperature of -10 degrees or less than -10 degrees (18°F) during transportation.
- (3) In the relative humidity exceeding 85% or less than 45%.
- (4) In the open-air place or the location that receives direct sunlight.
- (5) In the place near heat sources such as heating devices.
- (6) In the atmosphere filled with dust, explosive gas, or corrosive gas.
- (7) In the place where the fluctuation in the power voltage of 10% or more than 10%, or the power voltage of -10% or less than -10% of the fixed power voltage.
- (8) In the place where the power source cannot supply enough voltage to keep the motor running.
- (9) In the place filled with strong electric noises such as high-frequency welders.

#### INSTALLATION

- (1) Please have some specialists, who have enough experience for the sewing machine installations, install the sewing machine.
- (2) Please have a qualified electrician perform necessary electric wiring.
- (3) Please do not operate until the sewing machine is repaired when any damage or fault is found on the sewing machine at the installation.
- (4) Please do not refurbish the sewing machine.
- (5) The sewing machine is heavy. For the safety, please make sure to install the sewing machine head by more than one person.
- (6) When tilting the sewing machine, please stand at the hinge side and hold the sewing machine with both hands. Also, please lock the caster on the steel stand
- (7) When tilting the sewing machine, the work clamp slides toward the hinges. Remember to move the work clamps Fully to the right side of the casting before placing the sewing head in the sewing position.
- (8) Please lock the caster on the steel stand to prevent the machine from moving before tilting the sewing machine.

- (9) Please make sure to fit the safety protective equipment (the motor cover or the others) and the accessory protective equipment (the eye guard) that removed temporarily for installation.
- (10) If the table and the steel stand are not MITSUBISHI original, the table and the steel stand have to be strong enough to withstand the weight and vibration of the sewing machine.
- (11) When fitting the caster to the steel stand that are not MITSUBISHI original, the caster with locking function has to be strong enough to withstand the weight and vibration of the sewing machine.

## SEWING

- (1) Please make sure to turn the power switch off before installing or replacing needles.
- (2) Please pay attention for the fingers not to be injured by the needle point.
- (3) Please make sure to turn power switch off before lubricating.
- (4) Please pay attention that oil does not get on your skin or in your eyes as it may cause an inflammation.
- (5) Please make sure to keep oil out of the reach of children who may drink oil by mistake.
- (6) Please make sure to turn the power switch off before threading a needle.
- (7) Before starting the sewing, please make sure the position and the function of the halt switch.
- (8) Please do not touch the operating parts during sewing operation.
- (9) It is very dangerous to operate the sewing machine without safety guards (eye guards, belt covers, link covers, finger guards or the others).  
Please make sure to operate the sewing machine with safety guards.
- (10) Please make sure to turn the power switch off when stopping the sewing machine temporarily.
- (11) Please do not operate the foot switch during sewing.

## ADJUSTMENT

- (1) Please make sure to turn the power switch off before adjusting the sewing machine.
- (2) If the adjustment is required while the power switch on, do not step on the foot switch by mistake.
- (3) Please be careful not to be injured by a sharp part such as the needle and the shuttle hook point.
- (4) Please make sure to put the safety guards (eye guards, belt guards, link covers, or the others) back on the initial position after the sewing machine adjustment.
- (5) Please make sure to lock the caster on the table when tilting the sewing machine.

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## 1. STRUCTURE OF THE SEWING MACHINE

PLK-G2008H electronic pattern sewing machine consists of the following main parts.



<1>: Sewing machine head   <2>: Main motor   <3>: Halt switch   <4>: Control box  
<5>: Operation panel   <6>: Work holder foot switch   <7>: Start foot switch   <8>: Steel stand  
<9>: Thread stand   <10>: Power switch   <11>: Air regulator

## 2. INSTALLATION



### CAUTION

- (1) Please have some specialists, who have enough experience for the sewing machine installations, install the sewing machine.
- (2) Please have a Qualified Electrician perform necessary electric wiring.
- (3) Please do not operate until the sewing machine is repaired when any damage or fault is found on the sewing machine at the installation.
- (4) Please do not refurbish the sewing machine.
- (5) If the table and the steel stand are not MITSUBISHI original, the table and the steel stand have to be strong enough to withstand the weight and Vibration of the sewing machine.
- (6) When fitting the caster to the steel stand that are not MITSUBISHI original, the caster with locking function has to be strong enough to withstand the weight and Vibration of the sewing machine.

#### 2-1. Preparation of the table

If the table is not MITSUBISHI original, the thickness of the table is required to have 40mm more. And please refer to the cut out table drawing for your own preparation.

The cut out drawing is shown on the last page of the another [SEWING MACHINE HEAD] technical manual as APPENDIX 6 drawing.

#### 2-2. Preparation of the steel stand

If the steel stand is not MITSUBISHI original, please refer to the assembling drawing for your own preparation.

The assembling drawing is shown on the last page of the another [SEWING MACHINE HEAD] technical manual as APPENDIX 6 drawing.

If the steel stand is MITSUBISHI original, please assemble the steel stand with the assembling instructions enclosed in the packing.

#### 2-3. Installation of the motor

If the motor is purchased without assembling to the table, the motor has to be installed underneath the table.

Please install the motor with the instructions explained in the paragraph [installation of the motor] on the another [CONTROL UNIT] technical manual.

#### 2-4. Installation of the control box

If the control box is purchased without assembling to the table, the control box has to be installed underneath the table.

Please install the control box with the instruction in the paragraph [installation of the control box] on the another [CONTROL UNIT] technical manual.

#### 2-5. Connection of the operation panel

Please install the operation panel referring following figure of control box backside view.

#### 2-6. Installation of the power switch

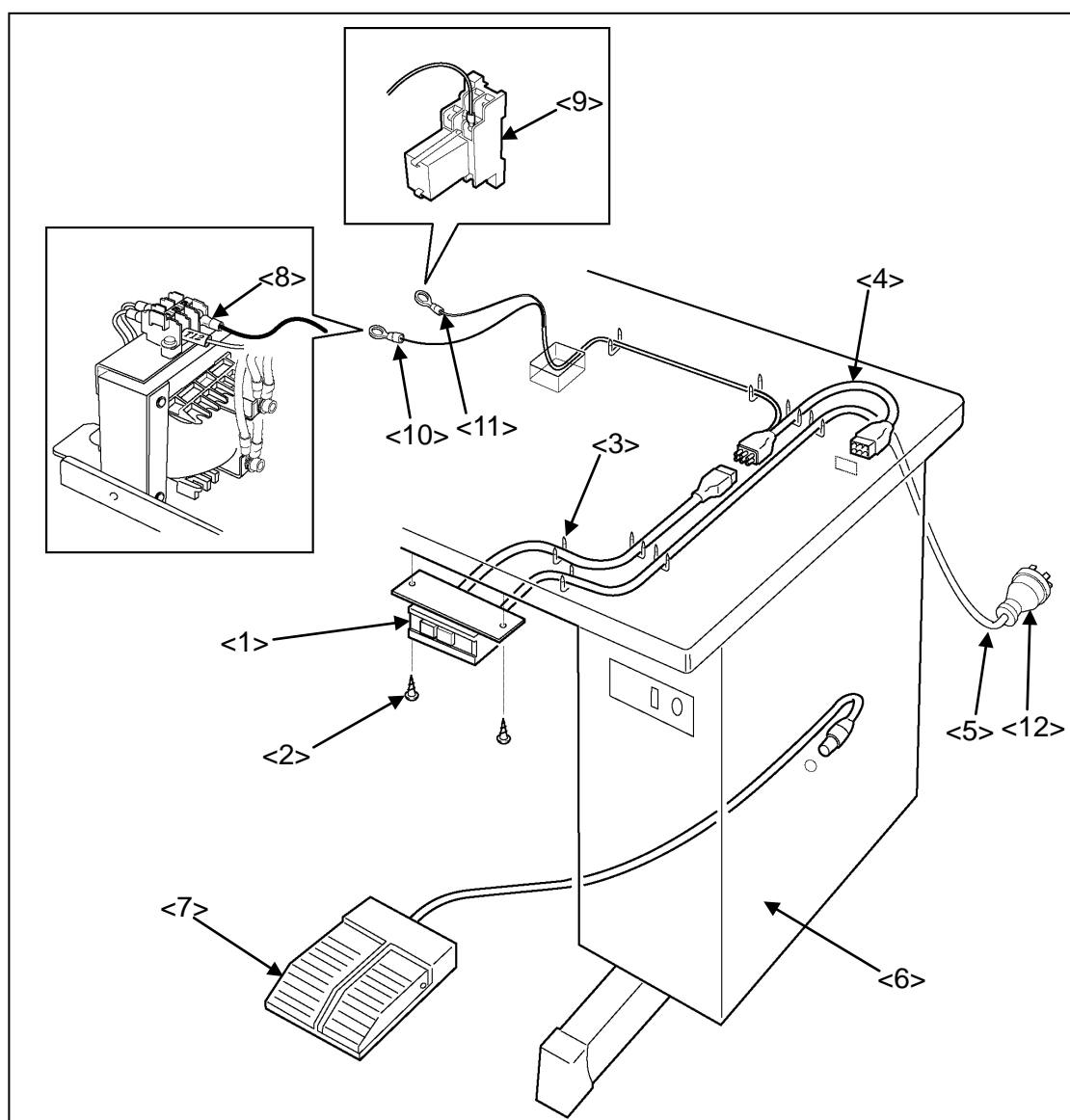
- (1) Mount the power switch (No.1) with the wood screw (No.2) underneath the table as shown on the figure.
- (2) Fix the electric cords with the staples (No.3) underneath the table.
- (3) Hook up the connector of the power switch (No1) to the connector of the cable (No.4).

- (4) Hook up the connector of the cable (No.4) to the CON B connector of the control box (No.6).
- (5) Connect the terminal (No.10) of the cable in black (No.4) to the terminal adapter on the transformer (No.8). Two terminal has been prepared on this transformer (for 210V and for 230V). Detail of wiring are informed in APPENDIX 1 on the last page of the another [SEWING MACHINE HEAD] technical manual.
- (6) Connect the other terminal (No.11) of the cable in white to the terminal adapter PORT No.5 of the relay socket (No.9). Detail of wiring are informed in APPENDIX 1 on the last page of the another [SEWING MACHINE HEAD] technical manual.

These terminal adapter are located inside of the motor cover of machine head.

- (7) Attach the power plug (No.12) to the another end of the power switch cord (No.5).
- Detail of wiring are informed in APPENDIX 1 and 2 on the last page of the another [SEWING MACHINE HEAD] technical manual.

[Notice] Power plug (No.12) is not included in accessory box.



## 2-7. Connection of the foot switch

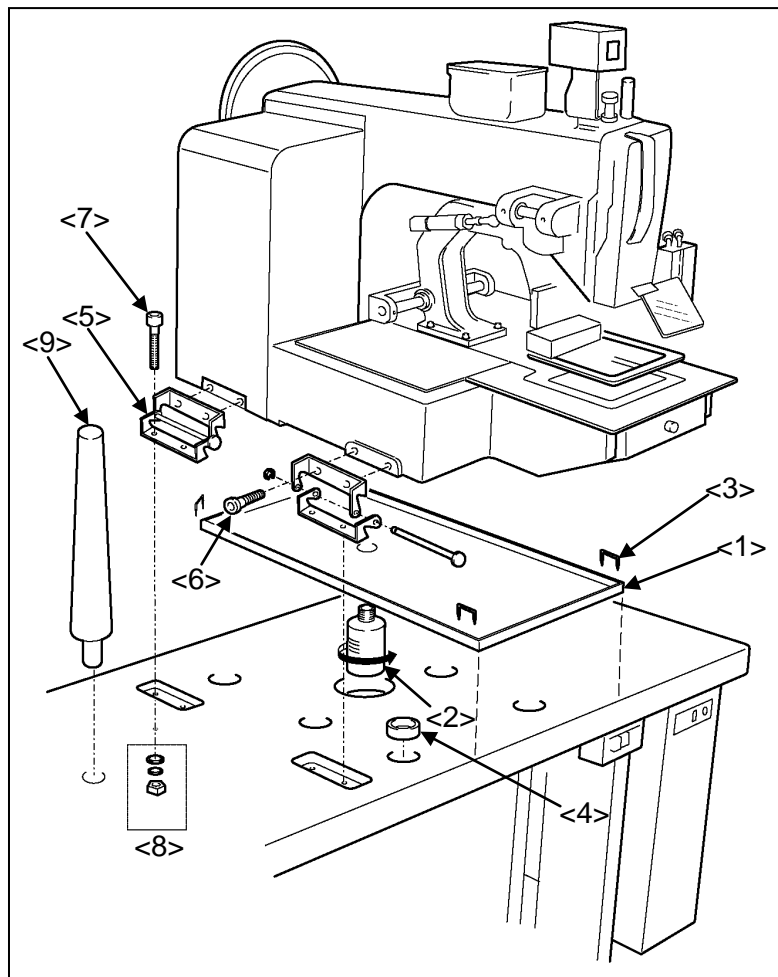
Connect the foot switch (No.7) to CON H connector of the control box (No.6).

Details are informed in [3-11. Connection of the electric cables] on the last page of the another [SEWING MACHINE HEAD] technical manual.



## 2-8. Installation of the oil pan

- (1) Assemble the oil pan (No.1) and oil bottle (No.2) which are enclosed in the accessory box.
- (2) Insert the oil bottle (No.2) into the table top cut-out hole.
- (3) Install the oil pan (No.1) fit with the table front edge.
- (4) Fix the oil pan (No.1) at its four corners on the table top with four staples (No.3) en-closed in the accessory box.



## 2-9. Installation of the sewing machine head



### CAUTION

- (1) The sewing machine is heavy. For the safety, please make sure to install the sewing machine head by more than one person.
- (2) When tilting the sewing machine, please stand at the hinge side and hold the sewing machine with both hands. Also, please lock the caster on the steel stand.

- (1) Make sure to hold the machine table with the caster stopper.
- (2) Fit the rubber cushion pads (No.4) into the each hole on the table top. The rubber cushion pads (No.4) are enclosed in the accessory box.
- (3) Put the sewing machine head on the table top and set the each leg to the each rubber cushion pad (No.4).

- (4) Attach two hinges (No.5) temporarily, with the hexagonal socket head set screws (No.6) fastening with the thread holes light, on the left side surface of the machine bed. At this time, take notice of the E-shaped snap ring must be come to the behind.
- (5) These parts are all enclosed in the accessory box.
- (6) Fit the screw holes of the hinges (No.5) to the bolt setting holes on the table top then, pass the bolt (No.7) through these holes and fasten the bolt (No.7) to fix the hinges (No.5) with the flat washers, the spring washers and the nuts (No.8).
- (7) Fasten firmly hexagonal socket head set screws (No.6) which set the hinges (No.5) temporarily at above procedure (4) then, fix the hinges (No.5) perfectly.
- (8) Insert the head support stand (No.9) into the hole on the table top.

## 2-10. Installation of the V-belt

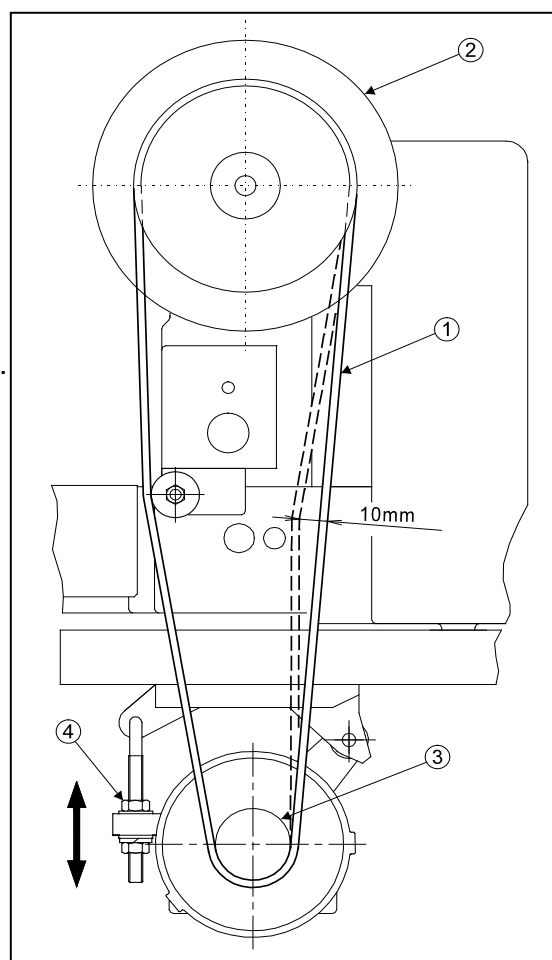
- (1) Put the V-belt (No.1) across the sewing machine pulley (No.2) and the motor pulley (No.3) with passing it through the slit on the table top.
- (2) The V-belt (No.1) is enclosed in the accessory box.
- (3) Push the center portion of V-belt by the finger with the pressure of about 0.1 N (1 kgf). If the V-belt tension is proper, it should be yielded about 10mm. If the V-belt tension is not proper, please adjust it with changing the motor setting position with loosening the nuts (No.4).

[Notice] About the motor pulley (No.3) it is necessary to use only PLK-G2008H accessory. Other motor pulley for the PLK-E1008H/2008H and PLK-B1008H are different in size. Please do not use that kind of motor pulleys.

### Suitable motor pulley

PLK-G2008H : T85 / PLK-E1008H/2008H : T100  
/ PLK-B1008H : T100


**NOTE** The V-belt becomes loose after a long period machine running. If the looseness is recognized definitely, firstly turn the power OFF then adjust the V-belt tension again as the above procedure.



## 2-11. Connection of the electric cables (Refer to the figure on the following page)

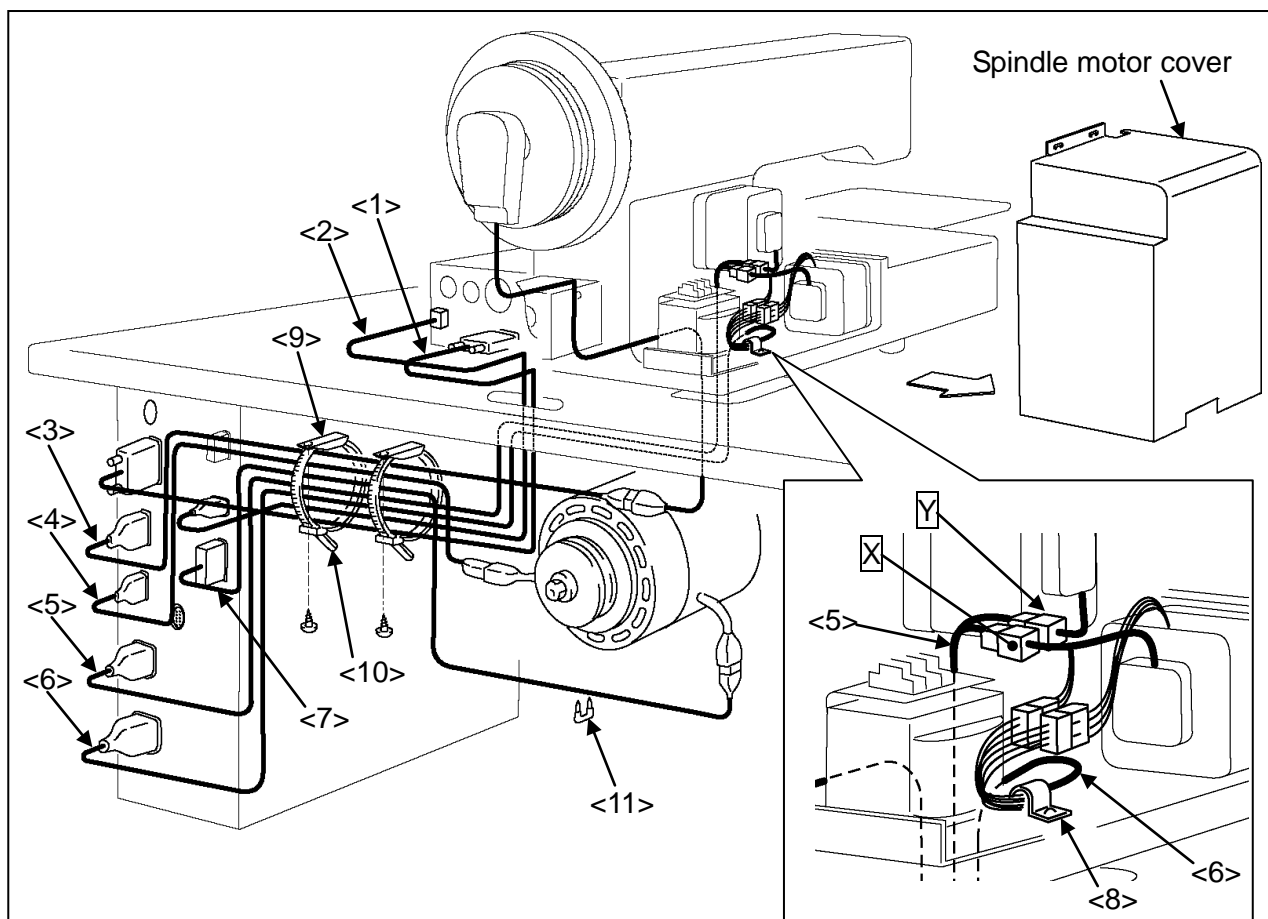


### CAUTION

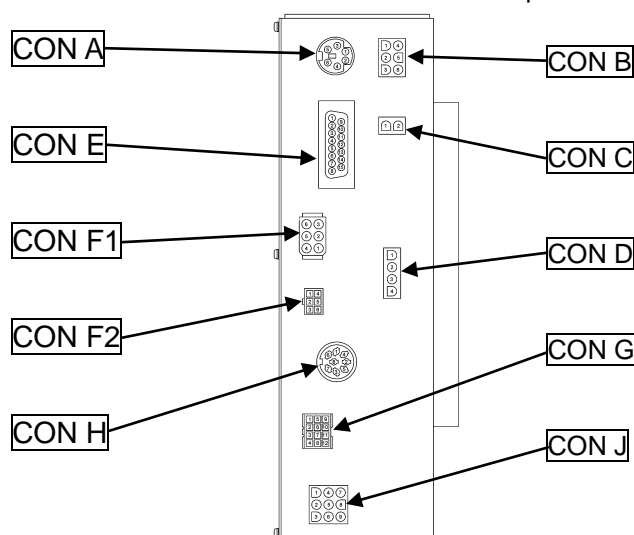
(1) Please make sure to ground the place where there is a  mark. Failure to do so may cause electric shock and or malfunction.

- (1) Remove the stepping motor cover from sewing machine head.
- (2) Connect the machine head, motor and the control box with cables as shown on the figure.

- (3) Fix the X-Y spindle motor cable (No.6) with the nylon clip (No.8) on the sewing machine head which enclosed in the X-Y spindle motor cable set.
- (4) Hold the dangling cables under the table with accessory tie holders (No.9) and cord ties (No.10). At this time, please check whether the cables are not pulled when tilting the sewing machine.
- (5) Fix the cables with staples (No.11) as needed.



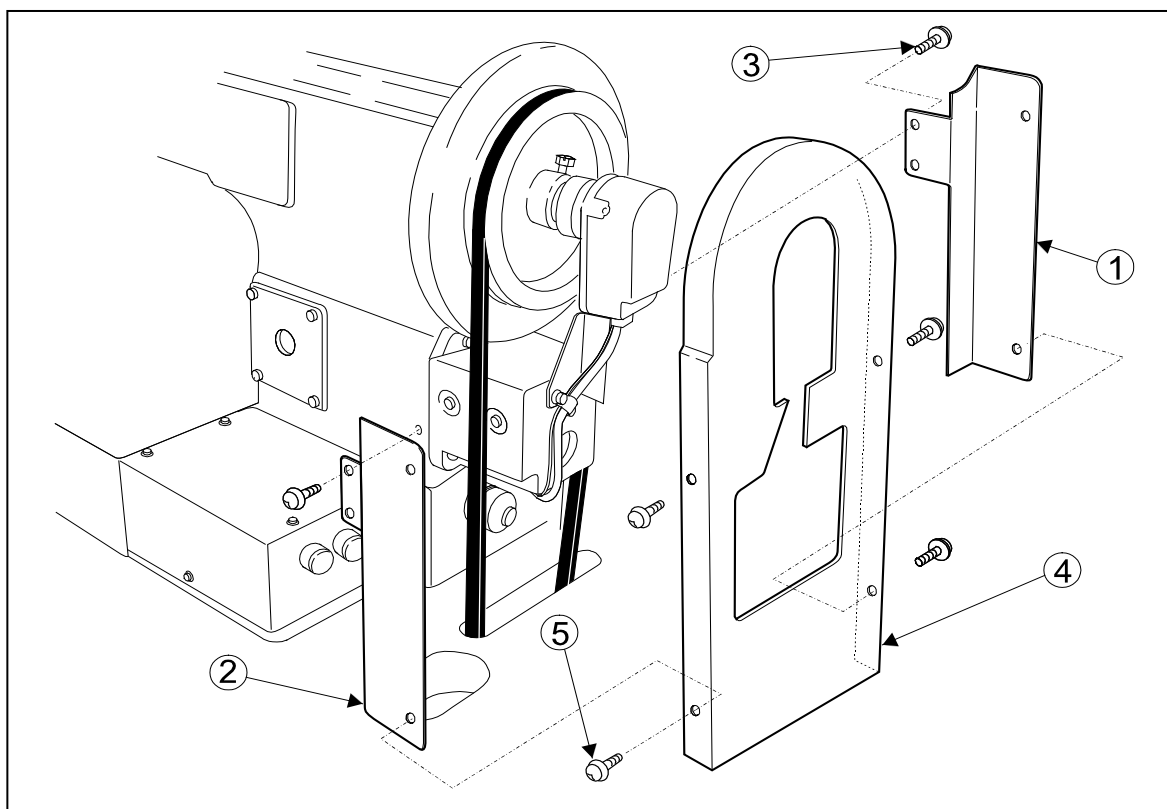
- <1>: Solenoid cable <2>: Solenoid power cable <3>: Detector junction cable  
 <4>: Spindle motor encoder junction cable  
 <5>: X-Y spindle encoder cable (X and Y different has exist)  
 <6>: X-Y spindle motor cable <7>: Spindle motor junction cable <8>: Nylon clip  
 <9>: Tie holder <10>: Cord tie <11>: Staple



- CON A: Operation panel  
 CON B: Power supply  
 CON C: Various solenoid DC power  
 CON D: Spindle motor  
 CON E: Various solenoid  
 CON F1: Detector  
 CON F2: Spindle encoder  
 CON G: X-Y spindle encoder  
 CON H: Foot switch  
 CON J: X-Y spindle stepping motor

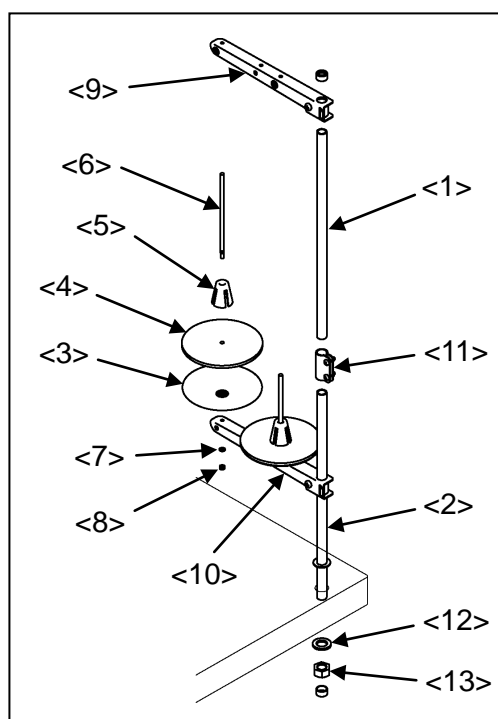
## 2-12. Installation of the belt cover

- (1) Attach the belt cover mounting plate (No.1, 2) to the sewing machine head with the set screws (No.3).
- (2) Put the belt cover (NO.4) on to the mounting plate with set screws (No.5).



## 2-13. Installation of the thread stand

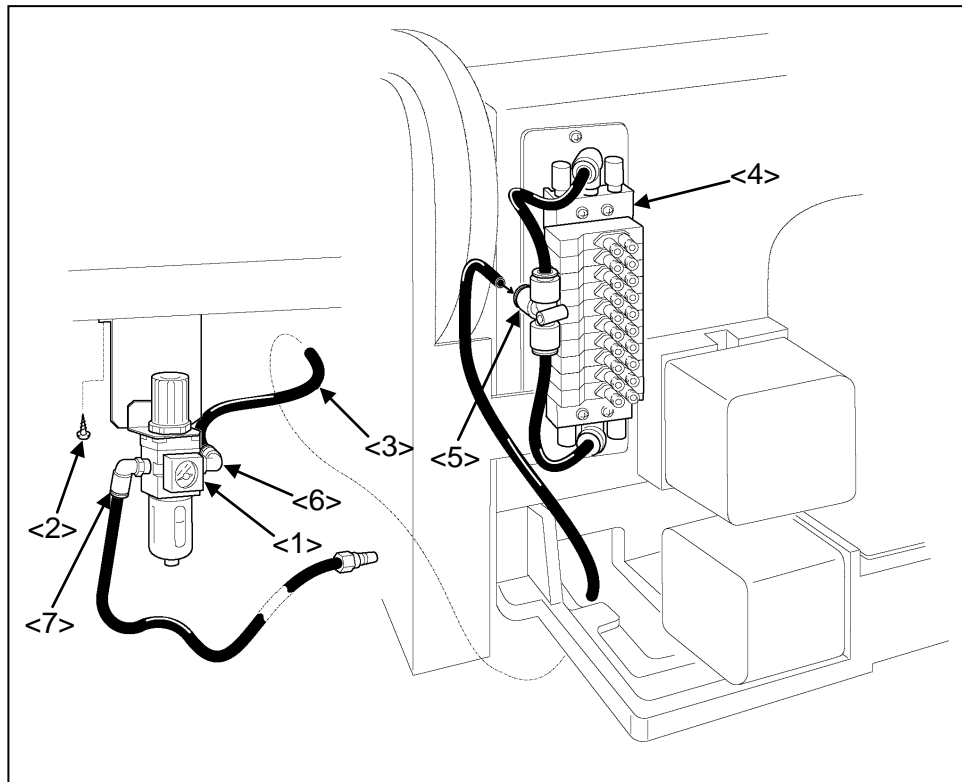
- (1) Assemble the parts (No.1 to No.11) of the thread stand as shown on the figure.
- (2) Fit the thread stand into the hole at the far right on the table stand with the nut (No.13) and the washers (No.12).



- <1>: Upper column pipe
- <2>: Lower column pipe
- <3>: Spool stand base (two stand bases)
- <4>: Spool mat (two mats)
- <5>: Spool holder (two holders)
- <6>: Spool shaft (two shafts)
- <7>: Spring washer (two washers)
- <8>: Nut (four nuts)
- <9>: Thread hunger
- <10>: Spool holder
- <11>: Column joint
- <12>: Washer
- <13>: Nut

## 2-14. Connection of the air tube

- (1) Remove the spindle motor cover.
- (2) Attach the air pressure regulator assembly (No.1) underneath the table with the wood screws (No.2). These are enclosed in the accessory box. There are pilot holes for the wood screw on the undersurface of the table..
- (3) Cut the part of size  $\varnothing 8$  air tube (No.3) enclosed in the accessory box into about 1.5 meter length then, insert one end of this air tube into the air fitting (No.5) of the manifold (No.4). The manifold is jointed with the magnet valves and located at the left side surface of the sewing machine head. Beside, pass the other end of the air tube (No.3) through the cut out hole of the table top then, insert it into the air outlet fitting (No.6) of the air pressure regulator (No.1).
- (4) Join the other end of the resting tube with the suitable air coupling to be adopted with the air supply source provided in your factory. One of the air couplings is enclosed in the accessory box.



### 3. LUBRICATION



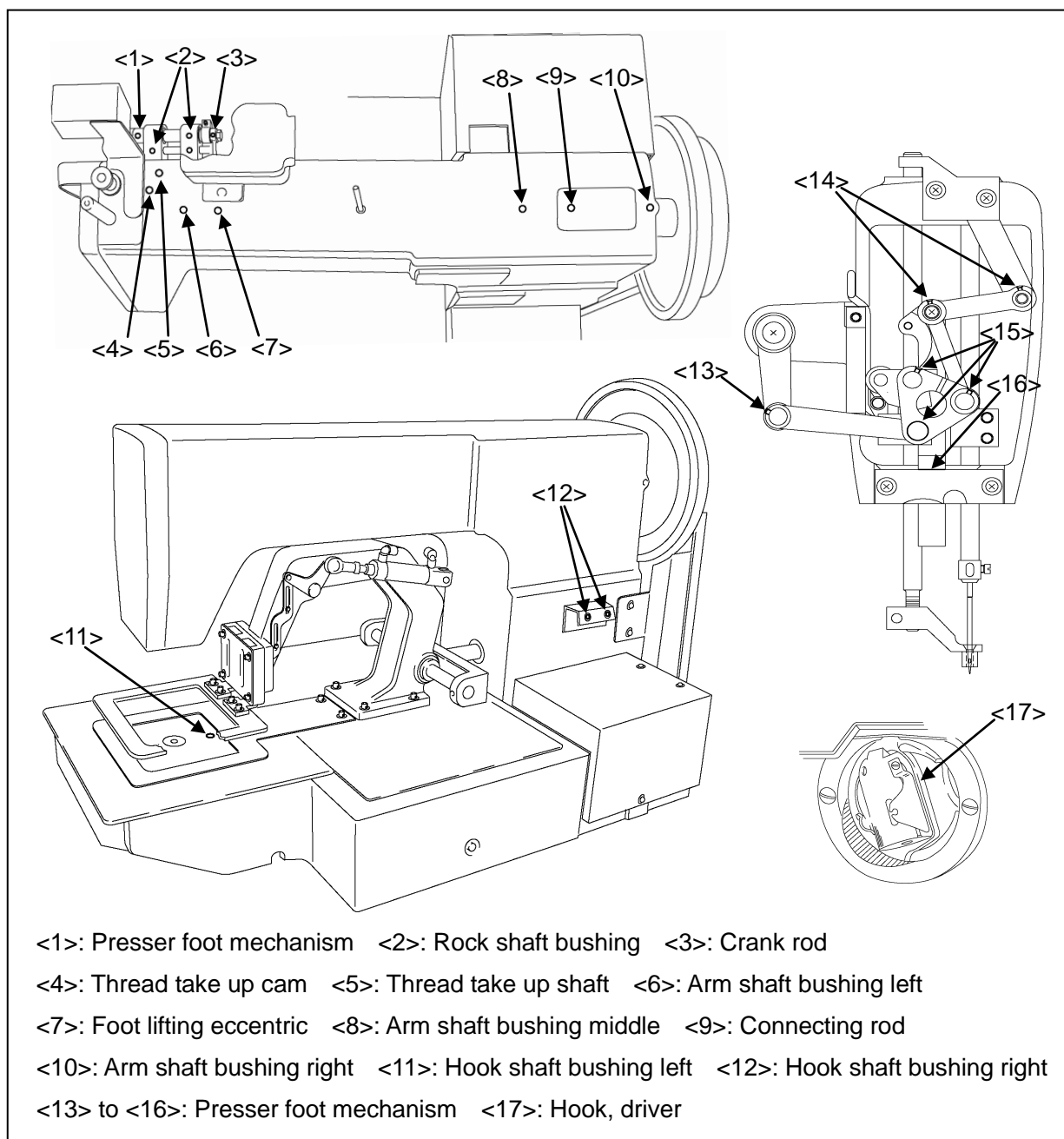
#### CAUTION

- (1) Please make sure to turn power switch off before lubricating.
- (2) Please pay attention that oil does not get on your skin or in your eyes as it may cause an inflammation.
- (3) Please make sure to keep oil out of the reach of children who may drink oil by mistake.

[Notice] Please make sure to lubricate when operating for the first time after the installation. Also, please make sure to check the amount of oil when the machine has not been used for a long time.

**NOTE** Please use high quality white machining oil.

Put some oil to red marked oil holes and other part as described below arrow sign.



## 4. PROPER OPERATION

### 4-1. Initial setting of the control box

When using the sewing machine for the first time, the model and the language of the sewing machine in use have to be set.

Refer to the instructions in the paragraph "[6] Initial Setting of System (Model/language Setting)" in the CONTROL UNIT technical manual.

### 4-2. Initial setting of the setting table

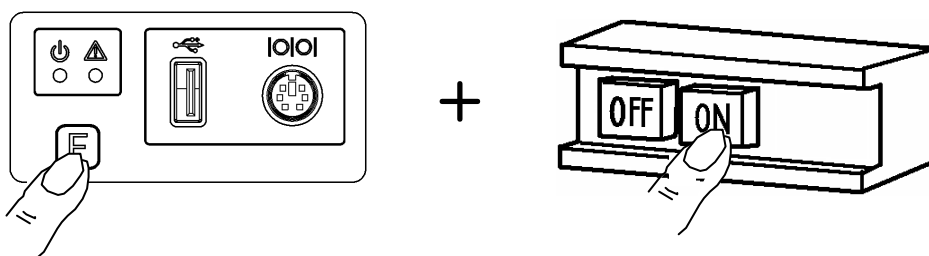
For the thermal trimming system function it is necessary to initial setting of setting table. Please perform the procedures below.

[Notice] If this setting not performed the thermal trimming system does not function.

#### 4-2-1. Reading of the Setting table / Step file

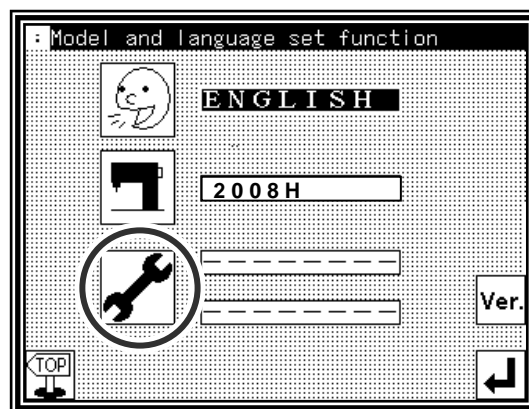
##### (1) Turning on the power supply

While holding down the [F] key on the front panel of the control box, turn the machine power ON.  
(Keep pushing [F] key until red LED on the front panel is turned on.)




##### (2) Setting of the Setting table / Step file

Press  .

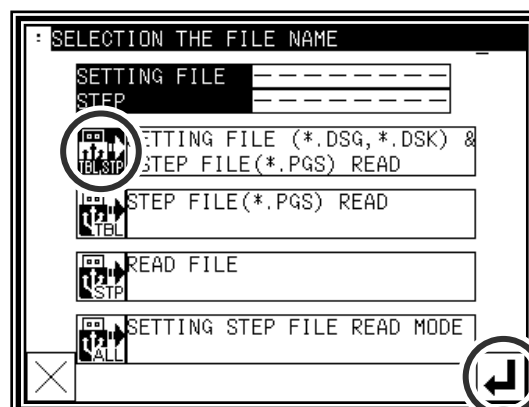


##### (3) Setting table / Step file reading mode

Press  .

To the connector on the front panel of the control box, connect the USB memory [\*1] for initial configuration that comes, please press  .


[\*1] If the USB memory for initial configuration that comes with is not available on the loss, etc., refer to the section of this technical manual "5-2-2. How to create a USB memory for initial configuration", please create a USB memory.

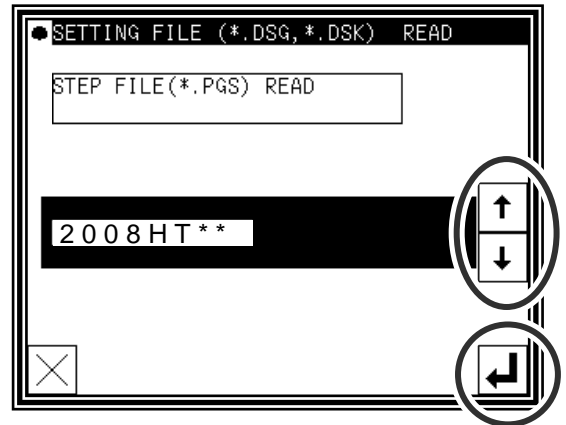


- (4) The screen to select the step file is displayed. Please choose the [2008HT \*\*] by using up and down arrow button. (The \*\* mark displays file version.)

[Notice] Please make sure that the file name

[2008HT \*\*] is selected correctly. If you are set in different file names, it may cause a malfunction.

Press  .



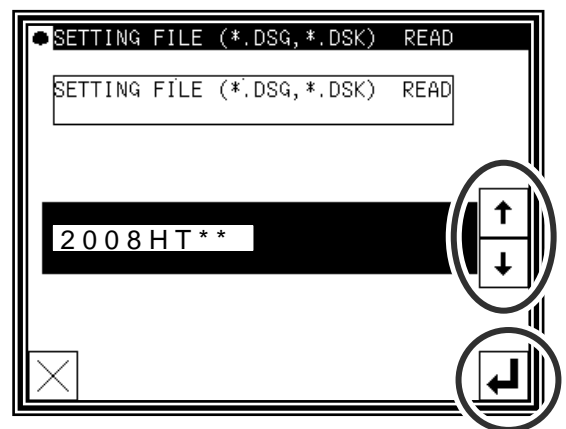
- (5) The screen to select the setting file is displayed.

Please choose the [2008HT \*\*] in the same way.

[Notice] Please make sure that the file name

[2008HT \*\*] is selected correctly. If you are set in different file names, it may cause a malfunction.

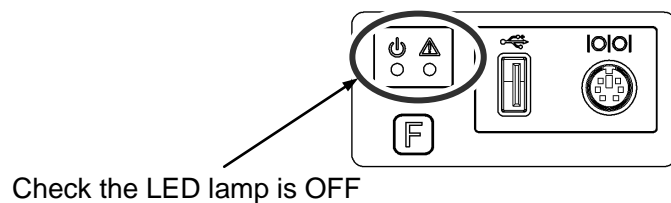
Press  .



- (6) Re-turning on the power supply

Please turn the power off the message "M-290 : READING COMPLETE" appears.

- (7) After check the LED lamp has completely off on the front panel of the control box, turn the power on.



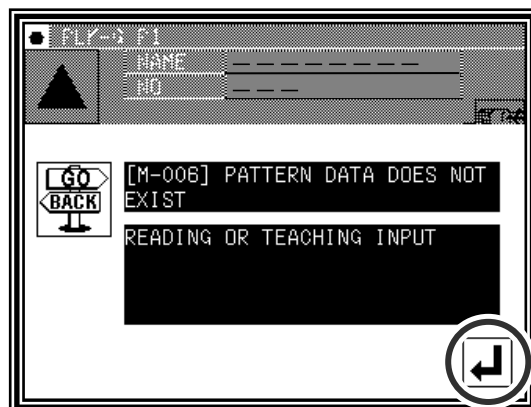


#### (8) Initial condition

Message "M-006 : PATTERN DATA DOES NOT EXIST" appears, press  , please switch

to the standard screen.

(It does not appear when the sewing data is stored.)



#### 4-2-2. How to create a USB memory for initial configuration

If the USB memory that came with is no longer available in the loss, etc., please create a USB memory for initial configuration in the following manner.

Coping setting table of the CD-ROM (PLK-G Document CD) to the USB memory by using copy tool.

PLK-G Document CD is enclosed in packing box of the operation panel (PLK-G-PAL).

[Note] If "USER\_system" is already exist in the USB memory, they are over-written.

(Please move other important data to other folder or memory before using copy tool.)

- (1) Inset the CD-ROM (PLK-G Document CD) to your PC.

Insert USB memory to the USB connector on your PC.

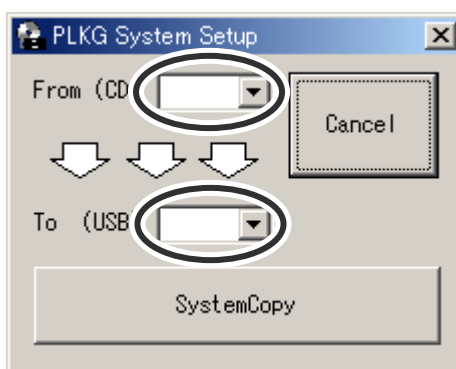
Check the CD-ROM drive and USB memory drive.

(ex. CD-ROM drive= "D:" , USB memory drive = "E:")

- (2) Open the CD-ROM root directory by using explorer etc.  
Double click "PLKG System Setup.exe"

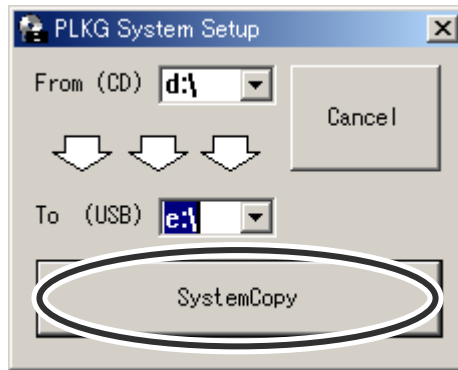


- (3) After open the PLKG System Setup window, select CD-ROM drive and USB memory drive respectively.




(4) Click the “System Copy” button.

Data copy will be executed.



(5) When copying is complete, the message will be appeared, then click OK button.

Press  button to close the window.

(6) The setting table copy to USB memory is completed. Please confirm the content of USB memory.

MEMO

