

ADVANCED 3D INSPECTION MACHINE



Maintenance Manual

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Revision History

Date	Version	Remark
June 2018	1.0	Renewal of Maintenance Manual
November 2018	1.1	Updated 'Items of Regular Inspection'
February 2019	1.2	Updated Safety Labels

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Trademarks

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Product specifications may change without prior notice.



This product has earned the CE marking of EU.

Safety Precautions

Incorrect operation may cause a safety accident or system malfunction. Please follow the following precautions.

Caution/Danger/Warning

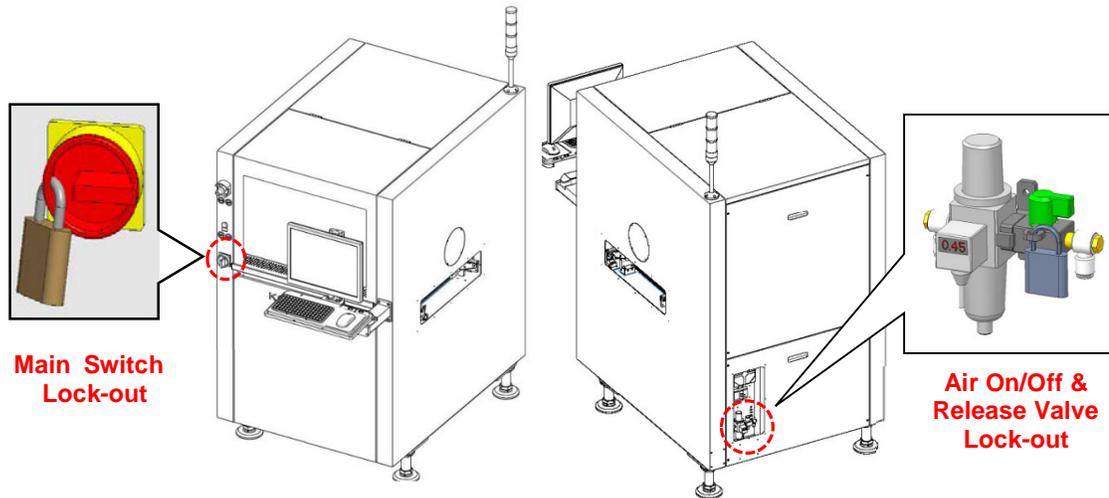
- ✓ Read and familiarize yourself with the following precautions before operating the system.
- ✓ Read and familiarize yourself with the precautions in safety labels placed on the system.
- ✓ Make sure to comply with these precautions to prevent any unexpected safety hazard or damage that may occur during system operation
- ✓ **Safety labels** are classified as Danger, Warning, Caution, Prohibition, and Mandatory as follows.

 <p>Danger</p>	<p>Danger – An immediately hazardous situation that may result in death or major injury, or damage to the system.</p>
 <p>Warning</p>	<p>Warning – A potentially hazardous situation that may result in major or minor injury, or damage to the system.</p>
 <p>Caution</p>	<p>Caution – A potentially hazardous situation that may result in major or minor injury, or damage to the system.</p>
 <p>Prohibition</p>	<p>Prohibition – Prohibitive Actions.</p>
 <p>Mandatory</p>	<p>Mandatory – A required action to be taken to avoid the danger.</p>

Lock-out & Tag-out Procedures

For safe maintenance and repair work of the machine, a lockable Main Switch is installed on the machine. This is a safety device that prevents other workers from turning on power or Air On/Off and Release Valve when the operator is performing maintenance and repair work. Lock-out & Tag-out is the required safety procedures which must be followed when carrying out Type 1 Task or other safety-related works.

For Lock-out & Tag-out, follow the steps below.



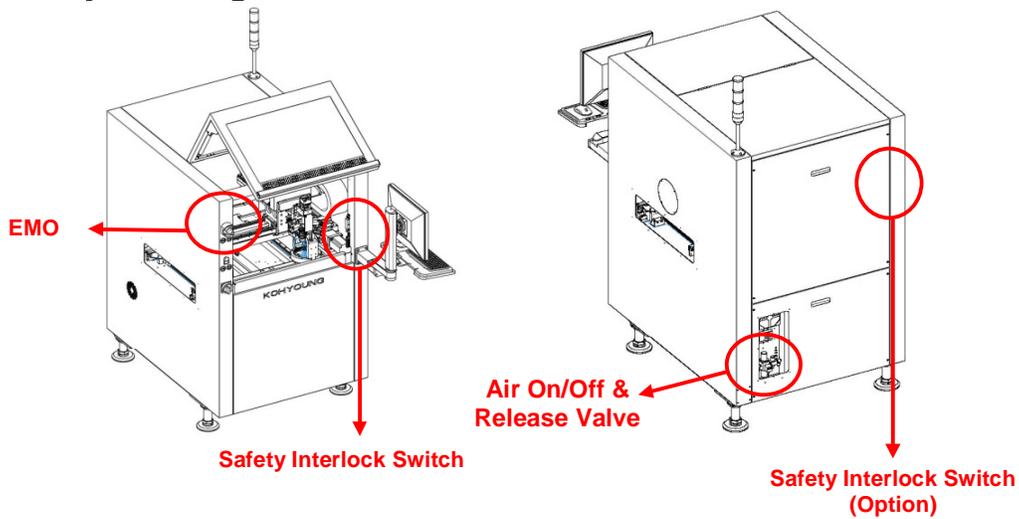
1. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
2. Proceed with the required work.
3. After completing the work, unlock the Main Switch and the Air On/Off and Release Valve and turn on the power.
4. Turn ON the computer power switch and then operate the control programs.

Operating Switch

	<p>Main Switch</p>	<p>A switch to turn ON or OFF the main power of the system</p>
	<p>Emergency Stop/ Emergency Off</p>	<p>A switch to use when an emergency or safety hazard occurs during system operation.</p> <ul style="list-style-type: none"> • How to operate: 3 Tower lamps will flash when (EMS/EMO) switch is pressed. The system will stop immediately, and the main power will be turned off. • How to repair: Pull the (EMS/EMO) switch after the problem is fixed. Then press the start button or click the start button on the screen.
	<p>Start Button</p>	<p>A button to activate the PCB inspection. When the green button is pressed or the start button on the main program is clicked, PCB inspection will be activated.</p>
	<p>Stop Button</p>	<p>A button to pause the system momentarily. When the red button is pressed or the stop button on the main program is clicked, the system will be paused.</p>
	<p>Control Power Switch</p>	<p>Supplies power to the sensors and control boards of the system.</p>
	<p>Control Power Lamp</p>	<p>Displays whether the control power is on or not.</p>

 A circular lamp with a red lens and a silver metal ring. The lens has the words "MAIN POWER" repeated around its perimeter.	Main Power Lamp	Displays whether the main power is on or not.
 A black rectangular electronic component with two screws at the top. It has the text "EUCHNER" and "C09E-KVA" printed on it.	Safety Interlock Switch	<ul style="list-style-type: none">• How to operate: When the cover of the device is opened the safety interlock switch will automatically stop the system.• How to repair: Close the cover of the device and press the start button or click the start button on the left side of the monitor.

Interlock System Signal and Action



Interlock System	Related Switch	Delay Time	Tower Lamp Color	H/W S/W	Action 1 Actuator Power	Action 2 Power State of Machine-Safety circuits and computer systems excluded
If EMO is Activated	EMO	0 sec	Red	H/W	Servo Motor Power Off	Turn Off Machine
If EMO is Inactivated	EMO	0 sec	Green	H/W	Servo Motor Power On	Turn On Machine
If Door Interlock Switch is Activated (Lockable Type Safety Interlock Switch)	Door Interlock Switch1	0 sec	Red	H/W	Servo Motor Power Off	Turn Off Machine
If Door Interlock Switch is Inactivated (Lockable Type Safety Interlock Switch)	Door Interlock Switch1	0 sec	Green	H/W	Servo Motor Power On	Turn On Machine
If Door Interlock Switch is Activated (Magnetic Type Safety Interlock Switch)	Door Interlock Switch2	0 sec	Red	H/W	Servo Motor Power Off	Turn Off Machine
If Door Interlock Switch is Inactivated (Magnetic Type Safety Interlock Switch)	Door Interlock Switch2	0 sec	Green	H/W	Servo Motor Power On	Turn On Machine
Air On/Off and Release Valve is Activated (at Low Pressure)	Air On/Off and Release Valve	0 sec	Red	S/W	Servo Motor Control Stop	Turn On Machine
Air On/Off and Release Valve Activated (at High Pressure)	Air On/Off and Release Valve	0 sec	Red	S/W	Servo Motor Control Stop	Turn On Machine

Safety Labels and Signs

	<h3>General Safety Rules</h3>
<ul style="list-style-type: none"> • Only authorized personnel who have completed the training can use the machine, while others cannot use the machine. • If the machine is to be turned off for a long period of time, disconnect the power cable and the Air On/Off and Release Valve, and perform Lock-out & Tag-out. • When installing the machine, make sure to connect PE wire (Green and Yellow stripe). • Be careful not to contaminate the machine with foreign objects. • Perform maintenance activities according to the safety procedures specified in this document. • Do not insert your hands into the board inlet/outlet on the left and right sides of the machine when the machine is switched on. 	

<h3>Electrical Danger</h3>	
	<ul style="list-style-type: none"> • DANGER As a general rule, electrical work must be performed after turning off the Main Switch and performing Lock-out & Tag-out. • DANGER When the Main Switch is turned on, electrical work must be carried out according to the specified operating procedures in this document.
 <p>WARNING Electric Shock Hazard, Electric current is live even when the machine is idle. Unit must be serviced by authorized personnel only.</p>	<ul style="list-style-type: none"> • WARNING Electrical power could still be in flow after the main power is cut. • WARNING Authorized person only.
 <p>DANGER Electric Shock Hazard. Turn off main power before performing maintenance.</p>	<ul style="list-style-type: none"> • DANGER As a general rule, electrical work must be performed after turning off the Main Switch and performing Lock-out & Tag-out. • DANGER When the Main Switch is turned on, electrical work must be carried out according to the specified operating procedures in this document.
 <p>WARNING Protective Earth, Establish and maintain protective earth ground according to the operator's manual.</p>	<ul style="list-style-type: none"> • WARNING Improper grounding may lead to electric shock or malfunction of the machine. • WARNING Establish and maintain protective earth grounding according to the operator's manual

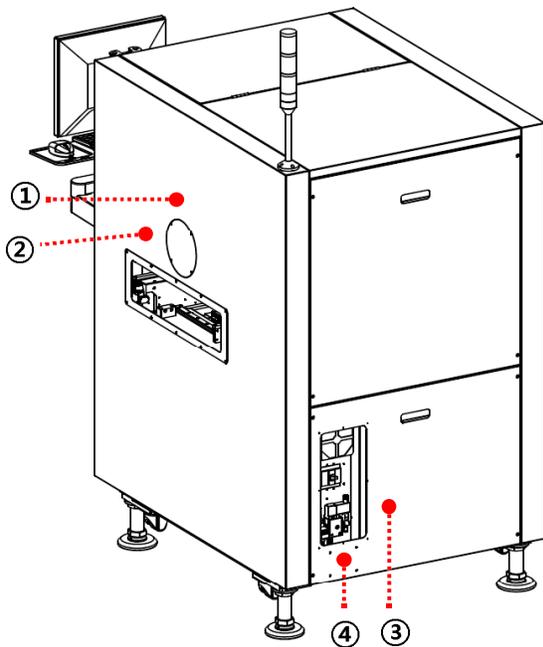
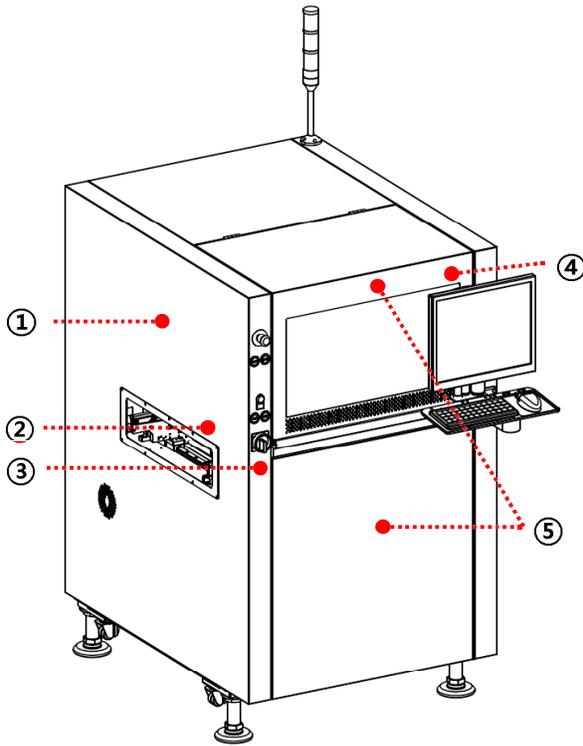
Mechanical Danger	
	<ul style="list-style-type: none"> • WARNING When opening the Fixed Cover, make sure to turn off the Main Switch or turn off the Control Power Switch to stop the machine. • WARNING Do not insert your hands into the PCB inlet/outlet on the left and right sides of the machine.
	<ul style="list-style-type: none"> • WARNING Do not spray compressed air on skin or eyes. • WARNING When repairing pneumatic device, perform Lock-out & Tag-out on the pneumatic valves of the machine.
	<ul style="list-style-type: none"> • DANGER Do not put your head into the machine while power is supplied. • DANGER Before putting any part of your body into the machine, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch. • DANGER Indicate “Danger” sign on moving parts of the device.
	<ul style="list-style-type: none"> • WARNING Do not touch the device while running. • WARNING Before putting any part of your body into the machine, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch
	<ul style="list-style-type: none"> • WARNING Do not open the door of the device while running. • WARNING Before putting any part of your body into the machine, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch
	<ul style="list-style-type: none"> • WARNING Before conducting maintenance, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch • WARNING Before conducting maintenance, make sure to cut off the main air and release the air.
	<ul style="list-style-type: none"> • DANGER Do not put your head into the machine while power is supplied. • DANGER Before putting any part of your body into the machine, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch. • DANGER Indicate “Danger” sign on moving parts of the device.
	<ul style="list-style-type: none"> • WARNING When opening the Fixed Cover, make sure to turn off the Main Switch or turn off the Control Power Switch to stop the machine. • WARNING Do not insert your hands into the PCB inlet/outlet on the left and right sides of the machine.

	<ul style="list-style-type: none"> • WARNING Do not touch the device while running. • WARNING Before putting any part of your body into the machine, make sure to turn OFF the Main Switch and perform Lock-out, or turn OFF the Control Power Switch.
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Prohibition	
	<ul style="list-style-type: none"> • CAUTION Do not disassemble or modify the machine. Doing so may damage the machine.
 <div data-bbox="342 661 505 774" style="border: 1px solid black; padding: 2px;"> <p>WARNING</p> <p>Do Not Touch, Do not remove/detach the Door Safeguard Interlock Key from the keyholder. Do not disassemble without permission.</p> </div>	<ul style="list-style-type: none"> • WARNING Do not remove or disassemble Door Interlock Switch

Mandatory	
	<ul style="list-style-type: none"> • Please read this manual thoroughly before using the machine.
	<ul style="list-style-type: none"> • Please observe the procedure of Lock-out & Tag-out during maintenance work.
 <div data-bbox="342 1230 505 1325" style="border: 1px solid black; padding: 2px;"> <p>System Error, Attempting to backup data while the machine is operating may result in system error.</p> </div>	<ul style="list-style-type: none"> • Stop the device when it is saving data. • Not stopping the device may lead to malfunctioning.
<div data-bbox="224 1367 480 1465" style="border: 1px solid black; padding: 2px;">  <p>Use Only Specified Grease Grease Type : PS2 (NSK)</p> </div> <div data-bbox="224 1478 480 1577" style="border: 1px solid black; padding: 2px;">  <p>Use Only Specified Grease Grease Type : AFB (THK)</p> </div>	<ul style="list-style-type: none"> • Use designated grease only. • For LM of NSK, it is recommended to use GREASE PS2. • For LM of THK, it is recommended to use GREASE AFB.
 <div data-bbox="342 1625 505 1738" style="border: 1px solid black; padding: 2px;"> <p>Pack Vision-PC separately from the equipment. Transport Vision-PC separately HDD crash may result if packaged together.</p> </div>	<ul style="list-style-type: none"> • Separate the PC when moving the device. • Moving with the PC attached may lead to hard disk damage.

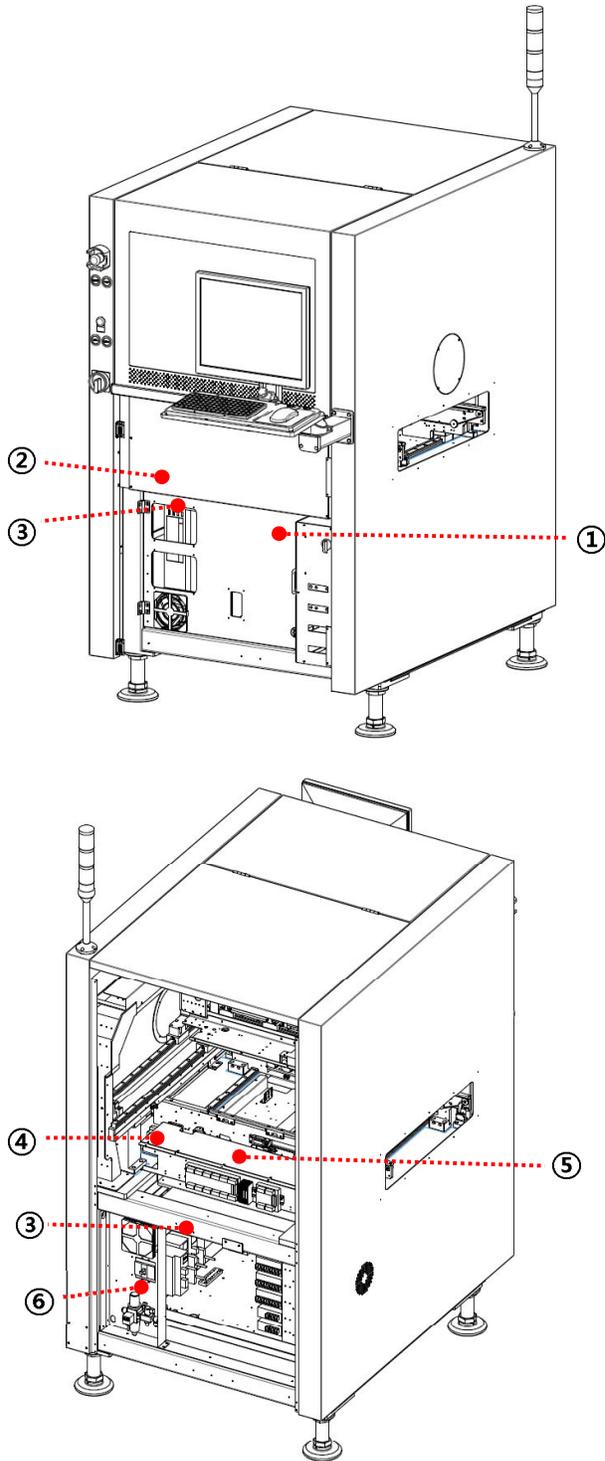
Location of Safety Labels



①																							
②	<p>WARNING Avoid Injury. Do not touch equipment while machine is operating.</p>																						
③	<p>Maintenance Checklist</p> <table border="1"> <thead> <tr> <th>Unit</th> <th>Checkpoints</th> <th>min</th> <th>max</th> </tr> </thead> <tbody> <tr> <td rowspan="2">X Gantry</td> <td>Lubricate Ball Screw</td> <td>—</td> <td>V</td> </tr> <tr> <td>Lubricate LM Guides</td> <td>—</td> <td>V</td> </tr> <tr> <td rowspan="2">Y Gantry</td> <td>Lubricate Ball Screw</td> <td>—</td> <td>V</td> </tr> <tr> <td>Lubricate LM Guides</td> <td>—</td> <td>V</td> </tr> <tr> <td>Filter</td> <td>Clean FAN Filters</td> <td>—</td> <td>V</td> </tr> </tbody> </table> <p>※ Check regularly to avoid system malfunction and excessive noise,</p>	Unit	Checkpoints	min	max	X Gantry	Lubricate Ball Screw	—	V	Lubricate LM Guides	—	V	Y Gantry	Lubricate Ball Screw	—	V	Lubricate LM Guides	—	V	Filter	Clean FAN Filters	—	V
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	Lubricate LM Guides	—	V																				
Filter	Clean FAN Filters	—	V																				
④	<p>WARNING Avoid Injury. Do not open the door while the equipment is operating.</p> <p>CLOSE</p>																						
⑤																							

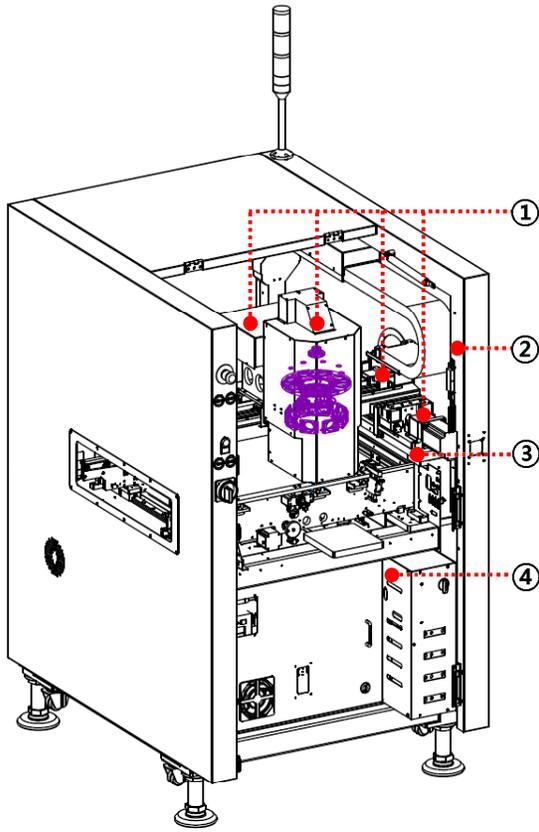
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③	<p>WARNING Avoid Injury. Before maintenance, disconnect main air pressure and release any air within the equipment.</p>																																
④	<table border="1"> <thead> <tr> <th colspan="2">KOH YOUNG TECHNOLOGY Inc.</th> </tr> </thead> <tbody> <tr><td>Product Name</td><td>Advanced 3D Inspection Machine</td></tr> <tr><td>Model Number</td><td>KY9030-2</td></tr> <tr><td>Serial Number</td><td>CP_30_0000_XXXX</td></tr> <tr><td>Trade Name</td><td>Advanced KY9030</td></tr> <tr><td>Voltage</td><td>200V±10% 50/60Hz</td></tr> <tr><td>Rated Current</td><td>1.5A</td></tr> <tr><td>Control Size</td><td>10.4" (265mm)</td></tr> <tr><td>OS</td><td>Windows 7</td></tr> <tr><td>Compressed Power</td><td>0.5 - 0.8 MPa</td></tr> <tr><td>Capacity</td><td>2.2kg</td></tr> <tr><td>Weight</td><td>400kg</td></tr> <tr><td>Machine Dimensions</td><td>1000×1200×1627</td></tr> <tr><td>IP Grade</td><td>IP 2X</td></tr> <tr><td>Crating Size</td><td>1710mm</td></tr> <tr><td>Year of Manufacture</td><td>2017</td></tr> </tbody> </table> <p>Manufactured by KOH YOUNG TECHNOLOGY Inc. 1st Floor, Hyeon-Valley, 441-10, Gyeongbuk-Do, Daegu, Korea 705-8021 Tel : 82 2 8343 8000 Fax : 82 2 8343 8001 Home page : www.kohyoung.com</p> <p style="text-align: right;">CE Made in Korea</p>	KOH YOUNG TECHNOLOGY Inc.		Product Name	Advanced 3D Inspection Machine	Model Number	KY9030-2	Serial Number	CP_30_0000_XXXX	Trade Name	Advanced KY9030	Voltage	200V±10% 50/60Hz	Rated Current	1.5A	Control Size	10.4" (265mm)	OS	Windows 7	Compressed Power	0.5 - 0.8 MPa	Capacity	2.2kg	Weight	400kg	Machine Dimensions	1000×1200×1627	IP Grade	IP 2X	Crating Size	1710mm	Year of Manufacture	2017
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※ **Note:** The location of the safety labels and the appearance of the machine may vary depending on the model.

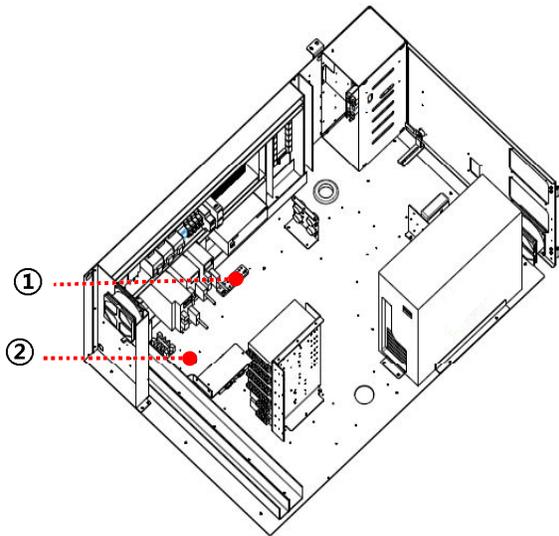


①	 <p>Pack Vision-PC separately from the equipment. Transport Vision-PC separately HDD crash may result if packaged together.</p>
②	 <p>System Error. Attempting to backup data while the machine is operating may result in system error.</p>
③	
④	 <p>Solenoid Valve This unit is to be serviced by authorized personnel only. 此装置は専門員のみ 禁止接近(特許人員以外) 許可された者以外は触れない事</p>
⑤	 <p>⚠ DANGER Electric Shock Hazard. Turn off main power before performing maintenance.</p>
⑥	

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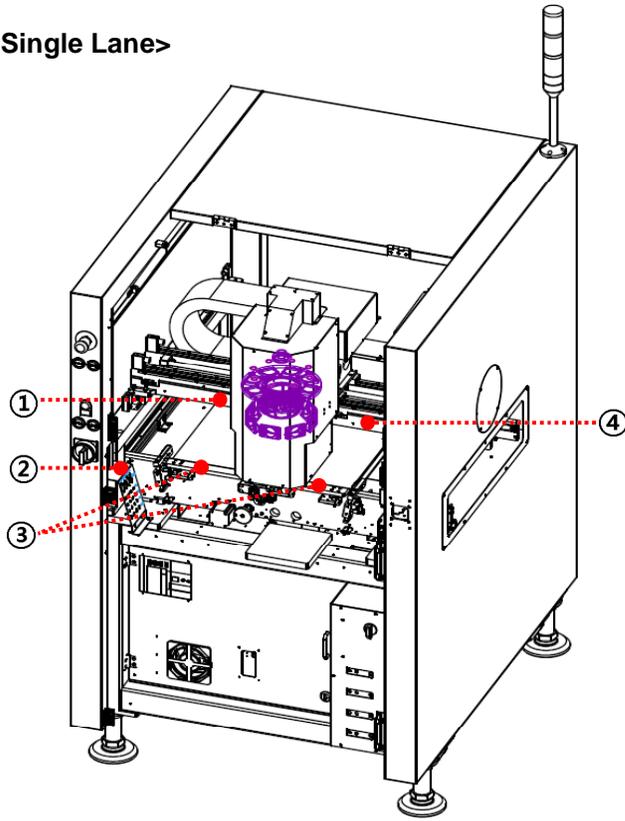
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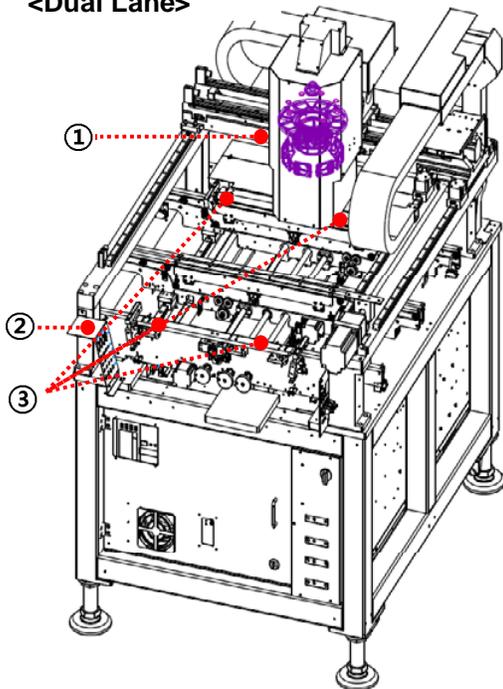
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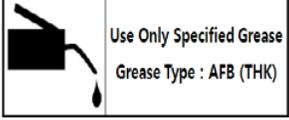
※ **Note:** The location of the safety labels and the appearance of the machine may vary depending on the model.

<Single Lane>



<Dual Lane>



①	
②	
③	
④	 

※ **Note:** The location of the safety labels and the appearance of the machine may vary depending on the model.

Before Operation

- ✓ **DANGER:** Ground the GND terminal using a copper wire with a cross-section area greater than 2.0mm² before using the system. Otherwise, there may be an electric shock or noise.
- ✓ **DANGER:** Avoid contact between the system's moving mechanical parts and your body, clothing or other objects. Make sure to check if it is safe before supplying power to the system.
- ✓ **CAUTION:** Make sure that the system is turned off before slowly supplying compressed air to the system for normal system operation.
- ✓ **CAUTION:** Make sure to check the system before connecting its power cable to the power supply.
- ✓ **WARNING:** Restrict use or maintenance of the system to persons trained for system operation and maintenance.
- ✓ **CAUTION:** If a natural disaster such as an earthquake, flood or fire occurs, stop system operation immediately and remove the power cable.
- ✓ **CAUTION:** Do not locate flammable materials or gas near the system. This may lead to explosion or fire.

During Maintenance

- ✓ **DANGER:** If a hazardous situation occurs during system operation, press the Emergency OFF Switch (EMO) immediately and set the Main Switch to OFF.
- ✓ **DANGER:** When more than one person is engaged in system operation, ensure proper communication to prevent any unforeseen accidents.
- ✓ **DANGER:** Do not open the Fixed Cover during system operation. This may lead to personal injury or damage.
- ✓ **DANGER:** If abnormal conditions occur during system operation, make sure to shut down power to the system before taking necessary actions.
- ✓ **DANGER:** When the green tower lamp is ON, handle the system with care as the system is in automatic operation even though it appears to have stopped.
- ✓ **DANGER:** If users notice anything unusual in the operation of the system, stop the system first and then shut down the power.
- ✓ **DANGER:** Do not attempt to stop the operation of safety interlock or manipulate the various sensors of the system by yourself. Malfunctioning of the safety interlock may lead to system errors or personal injury or damage.
- ✓ **DANGER:** Do not operate the system when the Fixed Cover is open. Ignoring this safety instruction can lead to operator wounds / injuries.
- ✓ **WARNING:** Turn the system off during part replacement or system calibration. When the system has completely stopped, remove the power cable from the power supply and then follow the required steps for replacement or calibration.
- ✓ **WARNING:** Make sure to keep hands and other objects out of the buffer conveyor on either side. Ignoring safety instructions can lead to operator wounds / injuries.
- ✓ **WARNING:** No person other than an operator should be allowed into the system operation area.
- ✓ **CAUTION:** Do not attempt to manipulate the various sensors attached to the conveyors on the left and right sides of the system by yourself. This may lead to system errors or other problems.

Product/Parts Control and Inspection

Items of Regular Inspection

Unit	Item	Check/Maintenance	Maintenance Cycle			
			Every Operation	Every Month	Every 6 Months	Every 12 Months
Power and Switch	Main Power Switch Panel	Main Power ON/OFF		○		
		EMO and Safety sensor operation	○			
		Switch operation	○			
Air Pressure Controller	Air Pressure UNIT	Moisture filtration		○		
		Supplied Air Pressure	○			
X-Y Axis	LM Guide	Smooth movement in the overall Stroke	○			
		Grease lubrication			○	
	Ball Screw	Movement in the overall stroke	○			
		Grease lubrication			○	
	Operation	Abnormal noise/vibration	○			
Conveyor	Belt	Wear and tear of Belts	○			
		Belt tension			○	
		Connection of Belts	○			
		Wear and connection to the belt			○	
	Roller	Roller rotation condition			○	
	PCB Transfer	Obstructions during PCB transfer	○			
Distance between two ends when adjusting width					○	
Electric Box	Computer	Computer Location/Connector check				○
	Power	Power connection and cable check				○
	Board	Boards connection/Connector check				○
	Fan	Fan Functioning Check	○			
		Fan Filter check and change		○		
Cleaning	Electric Box Cleaning				○	

Unit	Item	Check/Maintenance	Maintenance Cycle			
			Every Operation	Every Month	Every 6 Months	Every 12 Months
Probe	Camera	Camera connection check				○
		Camera cable connection check				○
	Cover	Cleaning check			○	
	Illumination	Projection Illumination check			○	
		2D Illumination check			○	
Calibration	Target's measurement value check using a calibration jig			○		
Door	Upper Door	Safety Interlock Switch functioning/ Key connection check	○			
		Door and magnetic connection check	○			
	Lower Door	Door and magnetic connection check				○
Etc.	Cover	Cover damage and deformation check				○
	Tower Lamp check	Operation of toper lamp	○			
	Alarm	Alarm functioning and sound check		○		

Types of Maintenance Work

All maintenance works described in this document are categorized into one of the following four maintenance types. As each task type defined below is indicated for every maintenance item, carefully follow each type when performing maintenance work.

- **Type 1 Task:** Maintenance/Repair/Inspection work that is performed after turning off all power.
- **Type 2 Task:** Maintenance/Repair/Inspection work that is performed while the power is supplied, but the circuit is covered or insulated.
- **Type 3 Task:** Maintenance/Repair/Inspection work that is performed in a state where the power is supplied and the person can come into contact with electricity. However, if the exposure of electricity is lower than 30 volts rms, 42.4 volts peak, 60 volts dc, or below 240 volt-amps.
- **Type 4 Task:** Maintenance/Repair/Inspection work that is performed in a state where the power is supplied, and the person is likely to be electric shocked. However, if the exposure of electricity is 30 volts rms, 42.4 volts peak, 60 volts dc, or higher than 240 volt-amps.

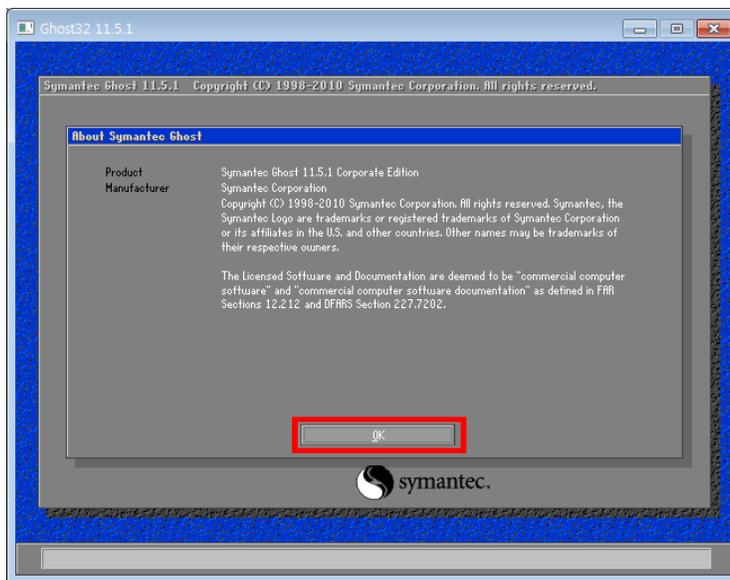
PC Maintenance

To maintain and preserve critical materials, such as inspection programs and inspection data, check a vision PC periodically. The maintenance items for a vision PC can be divided into three types:

- Regularly checking for viruses
- Deleting unnecessary files and old data
- System backup and recovery

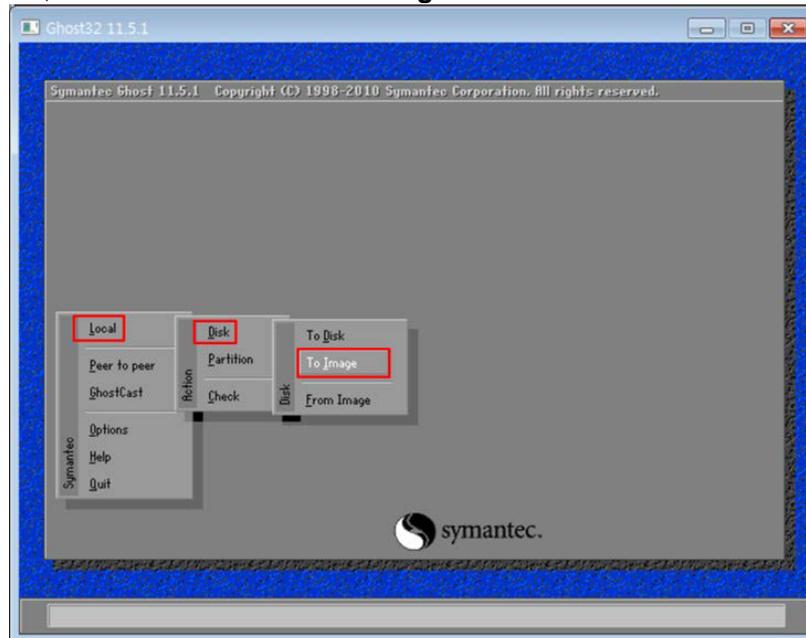
PC System Backup and Recovery- Run Ghost (HP PC)

1. Insert Symantec Ghost Booting Disk into the CD-ROM and turn the PC on.
2. Press **ESC** button before Windows start Booting and move to Startup Menu.
3. Click **BootMenu**.
4. Select **Legacy- hp DVDRAM GUB0N**.
5. Click **OK** when Ghost program is opened as below.

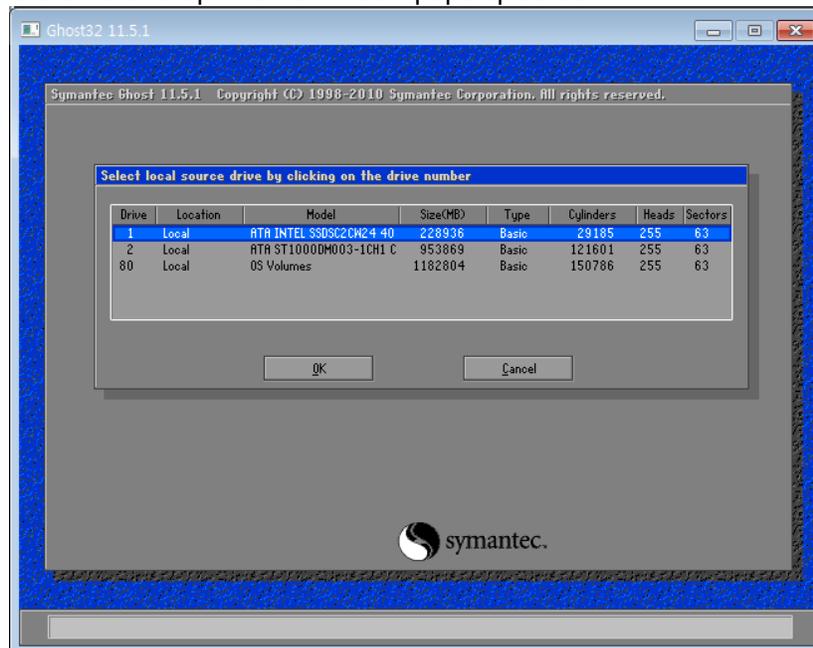


PC System Backup (HP PC)

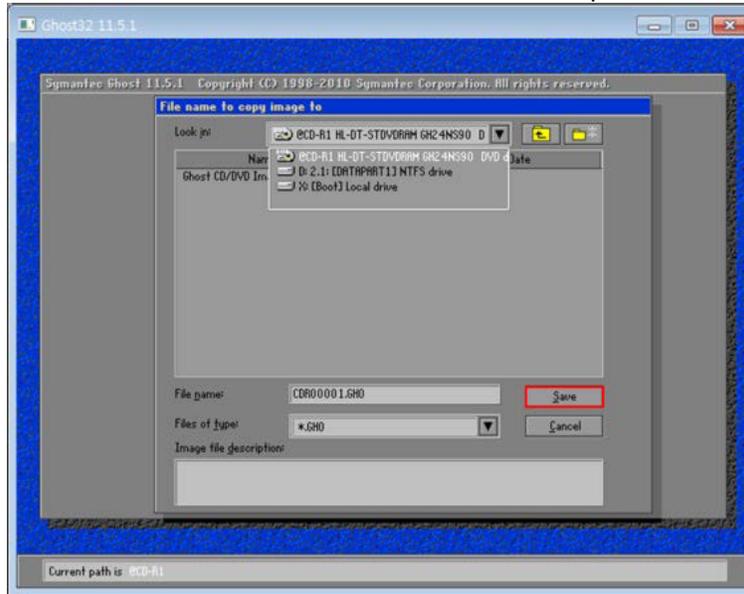
1. Run **Ghost**, select **Local > Disk > To Image**.



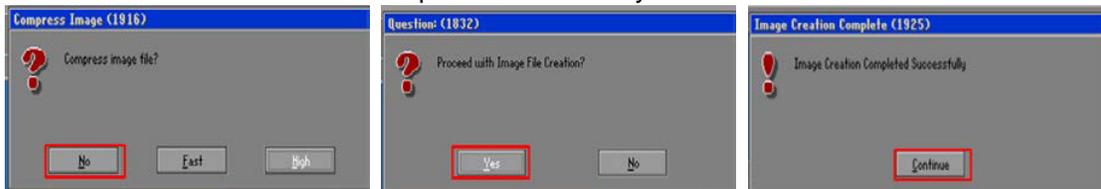
2. Choose a disk to backup when a window pops up as below.



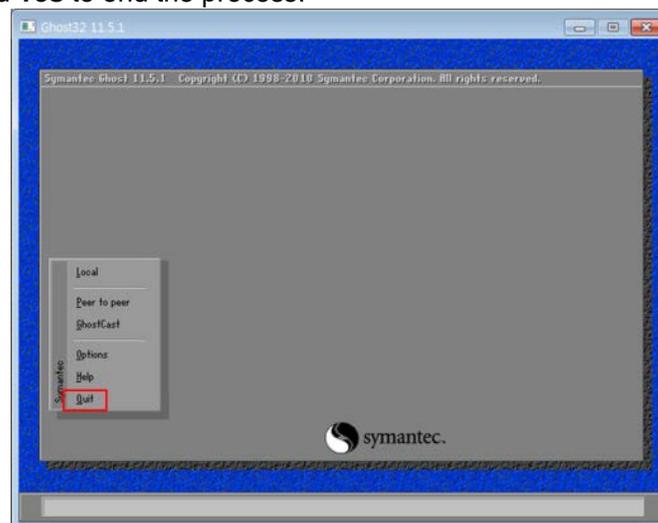
3. Designate a name and the file location for the Ghost backup file and click **Save**.



4. When a window pops up to ask whether to compress the file, click **No**.
5. When a window pops up to ask whether to proceed creating the file, click **Yes**.
6. Click **Continue** when it is completed successfully.

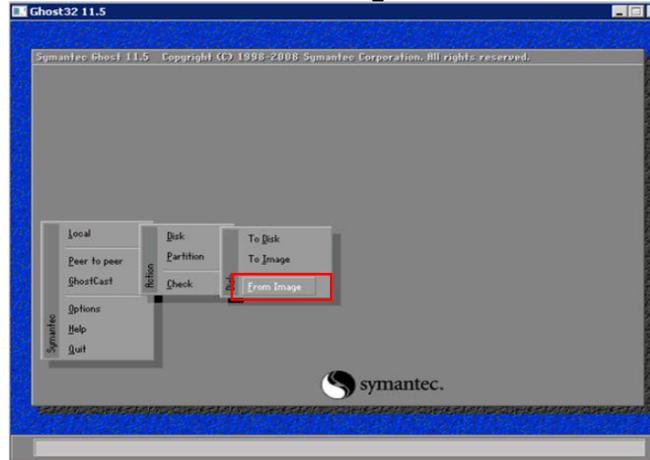


7. Click **Quit** and **Yes** to end the process.

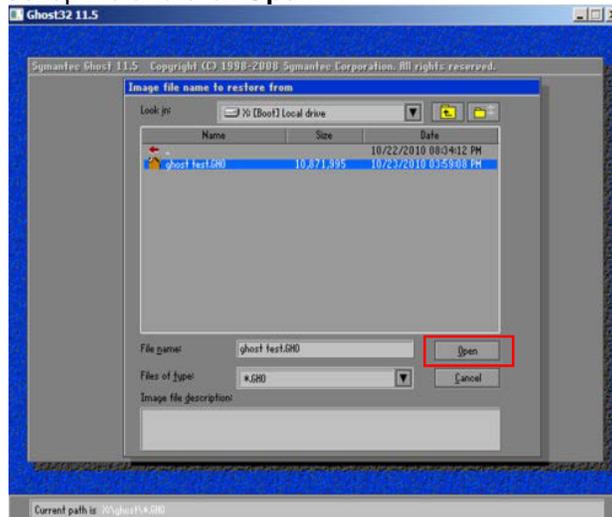


PC System Recovery (FOR HP PC)

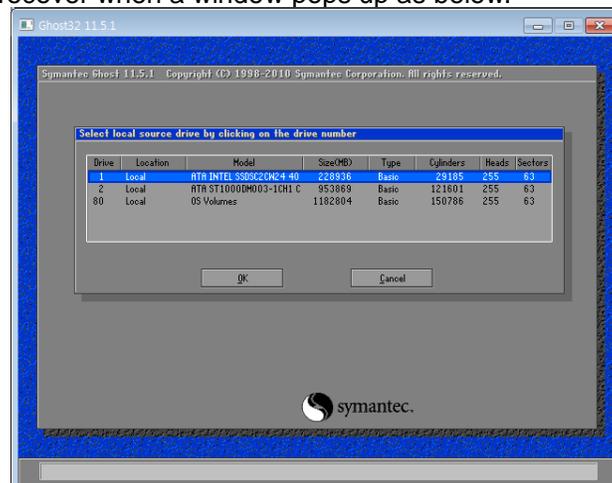
1. Run Ghost, select **Local > Disk > From Image**.



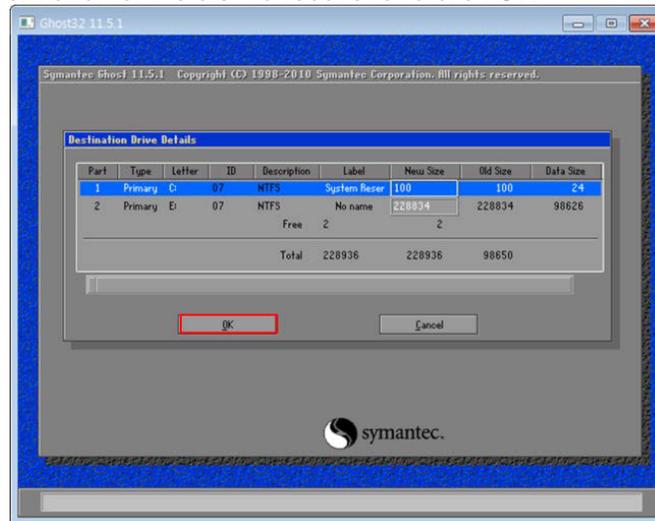
2. Select a *GHO backup file and click **Open**.



3. Select a disk to recover when a window pops up as below.



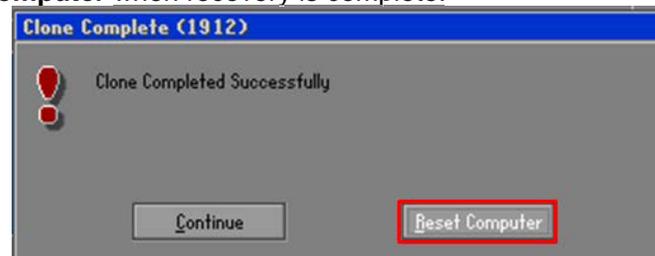
4. Confirm the information of the disk to recover and click **OK**



5. Click **Yes** when a pop-up asks whether to proceed with disk restore.

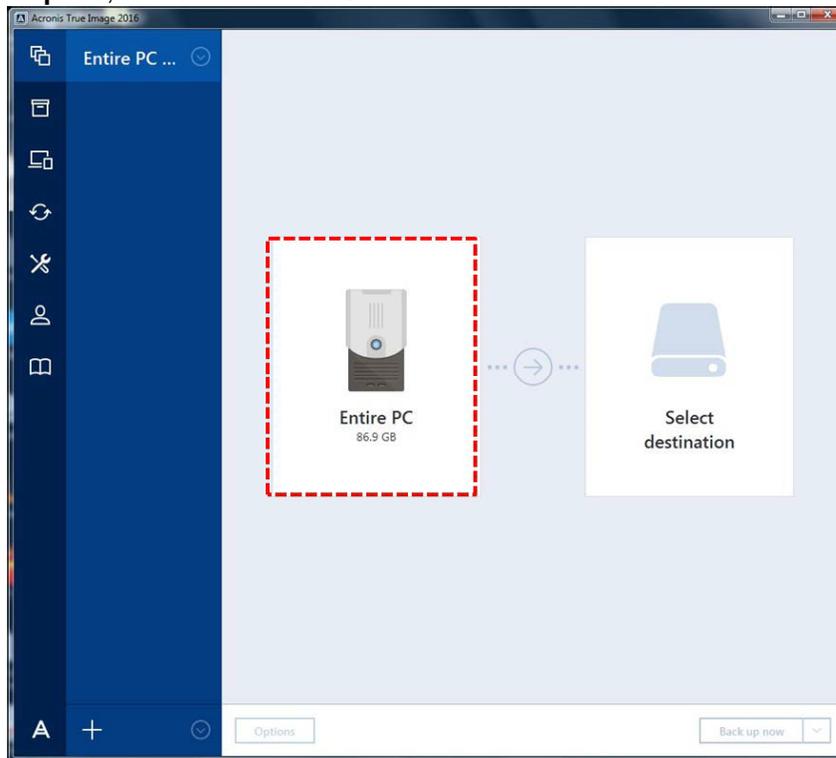


6. Click **Reset Computer** when recovery is complete.

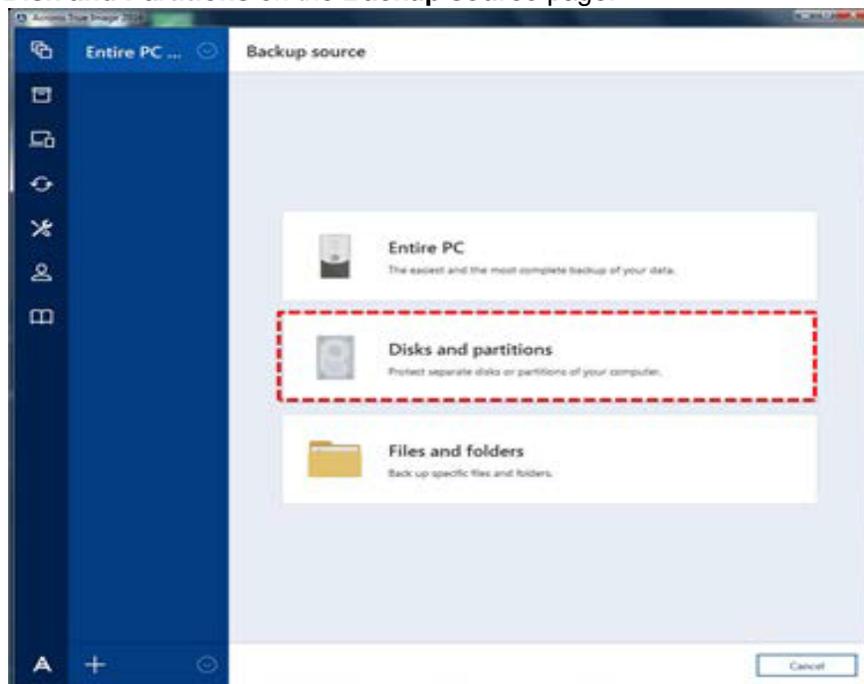


PC System Backup (FOR DELL PC)

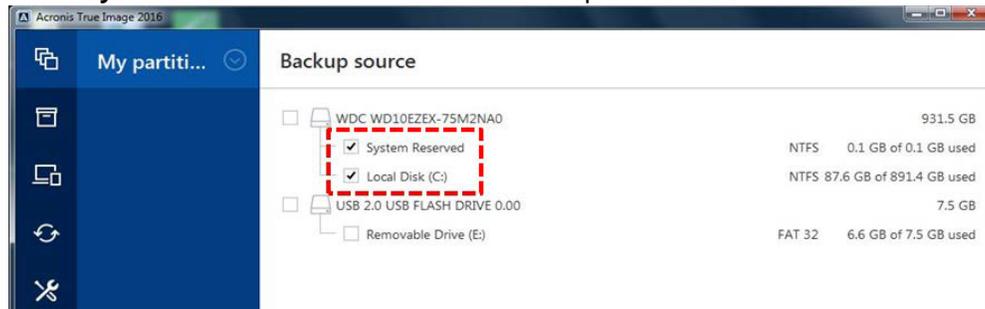
1. Run **Acronis**.
2. Go to **Backup** tab, and click **Entire PC** menu.



3. Click **Disk and Partitions** on the **Backup source** page.



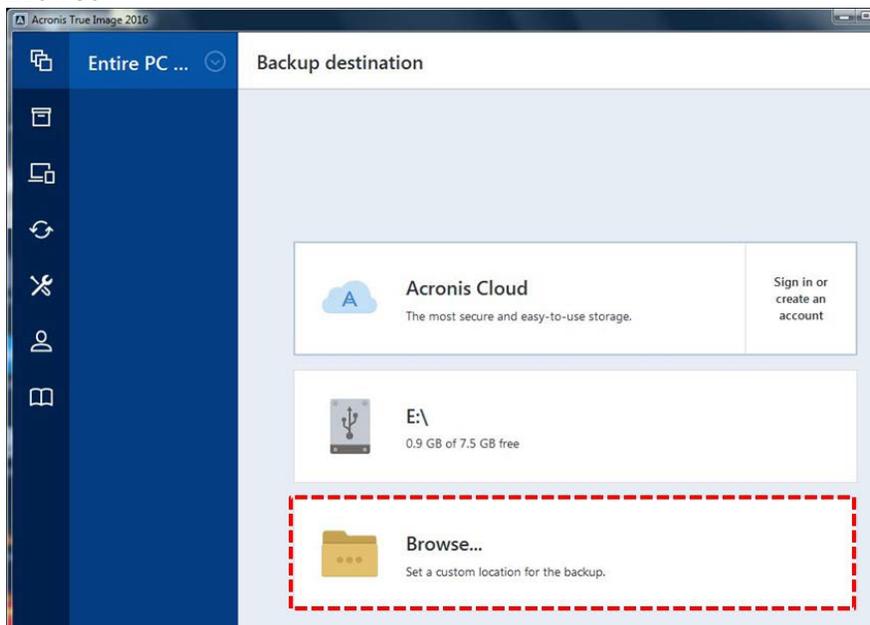
4. Select **System Reserved** and the disk to back up and click **OK**.



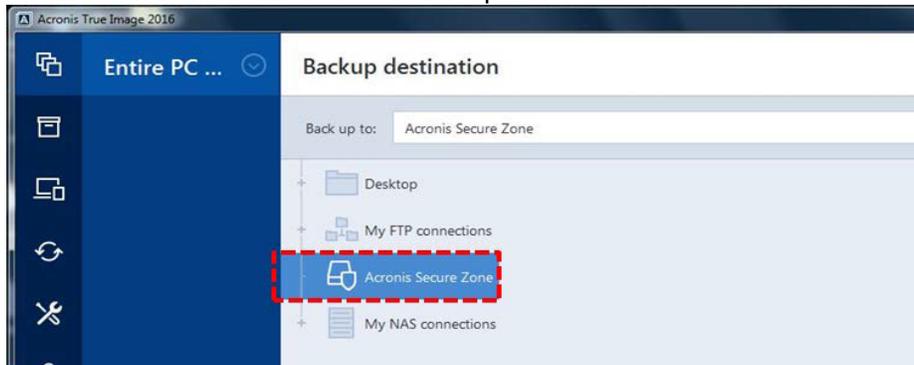
5. Click **Select destination** for setting up the path to back up.



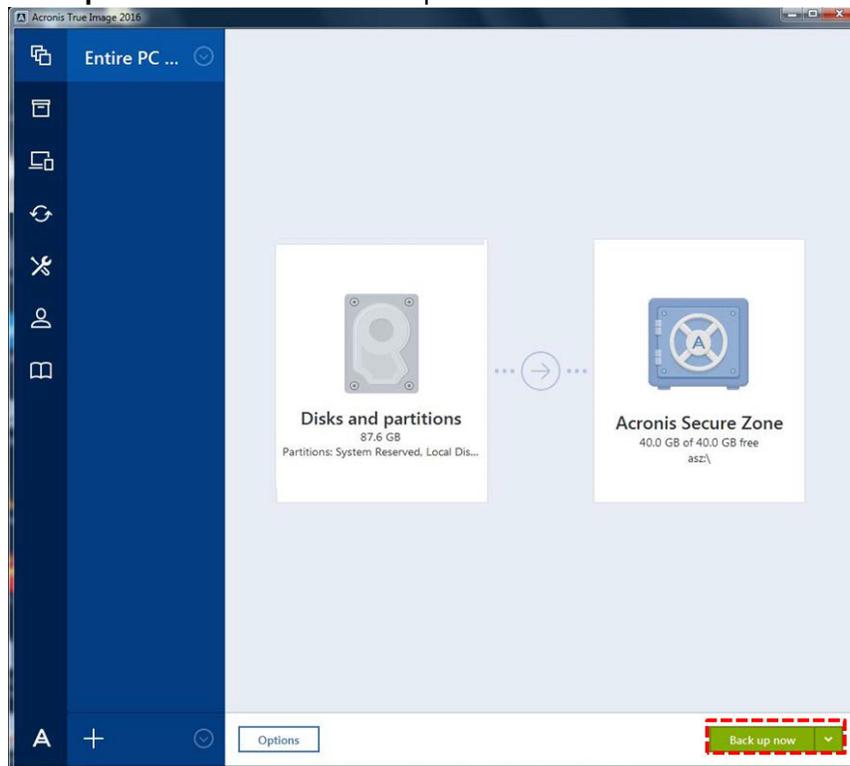
6. Click **Browse**.



7. Select **Acronis Secure Zone** for the backup destination.

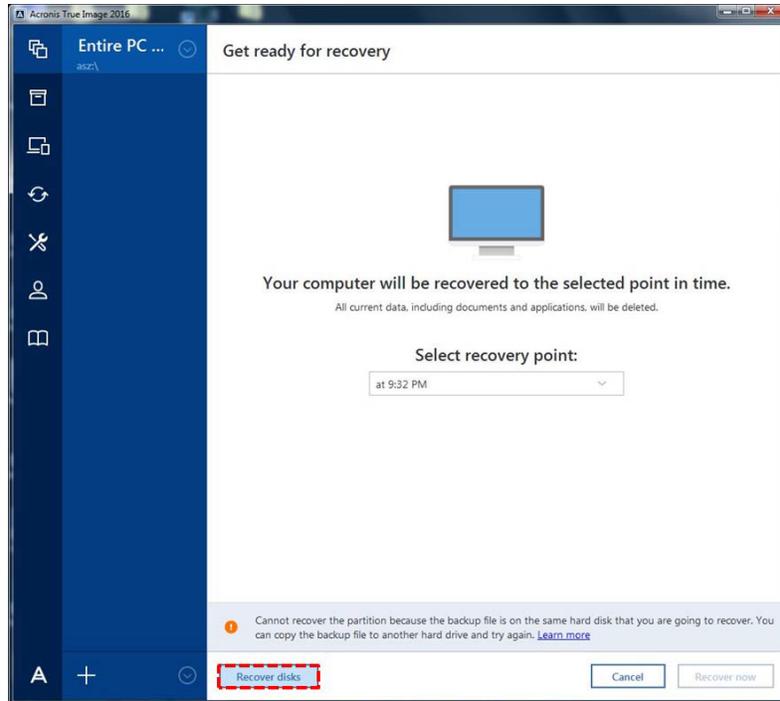


8. Click **Back up Now** button to start backup

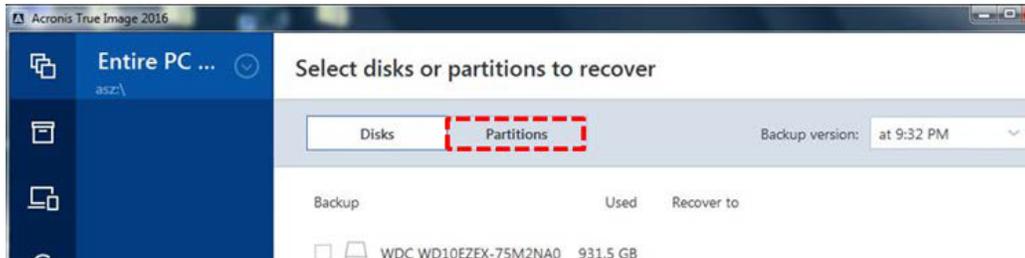


PC System Recovery (FOR DELL PC)

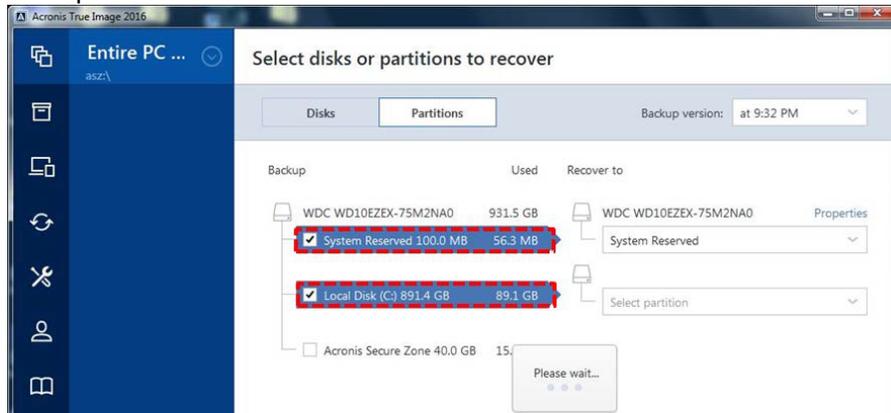
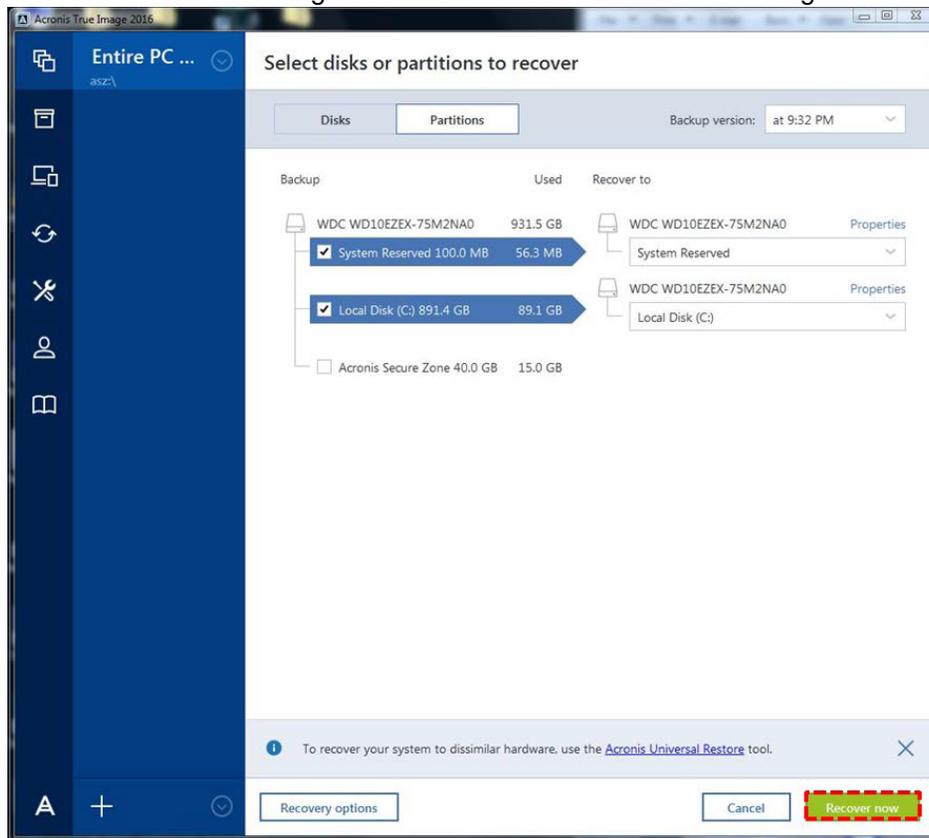
1. Run **Acronis**.
2. Click **Recover disks** on the left bottom.



3. Select **Partitions**.



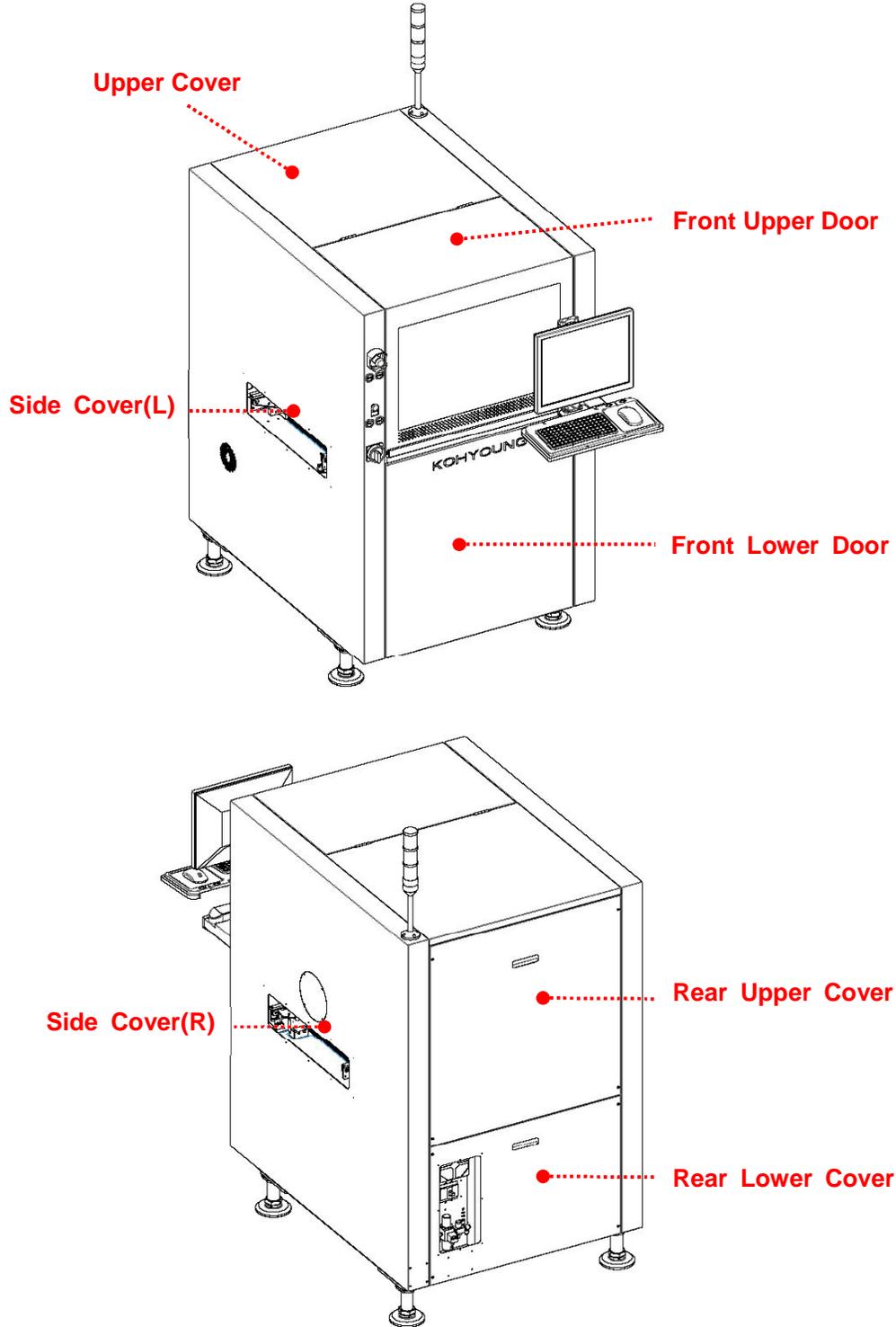
4. Select the partition to recover.

5. Click **Recover now** on the right bottom to start recover after rebooting.

※ **Note:** For more details about system backup and recovery, refer to the Acronis True Image user guide on the Acronis homepage.

Acronis True Image user guide: <http://www.acronis.co.kr/support/documentation/>

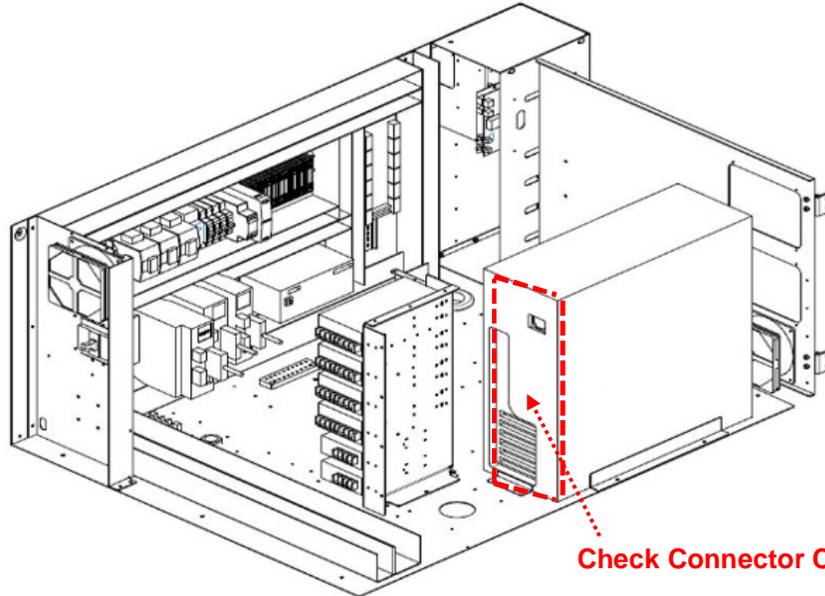
Name of Door and Cover



※ **Note:** The name of doors and covers may vary depending on the model.

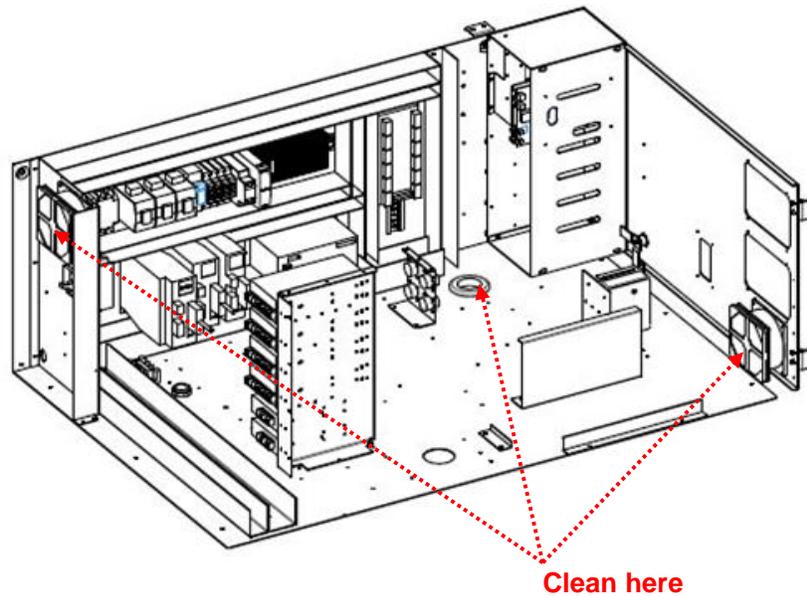
Checking Electric Parts and Cleaning

Checking connection of connector (Type 1 Task)



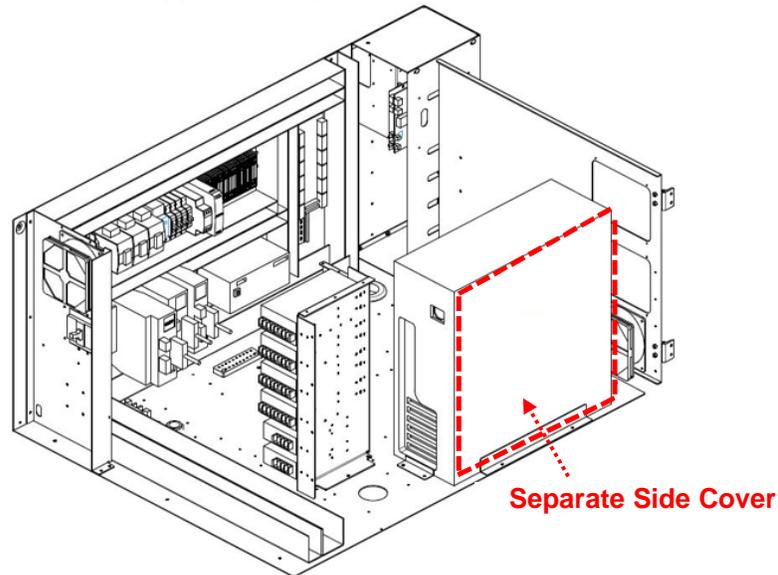
1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Disassemble the Rear Lower Cover.
4. Check the Connector state.
5. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
6. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

Cleaning Lower Electric Power Box (Type 1 Task)



1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Disassemble the Rear Lower Cover.
4. Open all the doors in the lower side of the Electric Power Box.
5. Use compressed air and vacuum cleaner to remove all the dust inside the Box.
6. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
7. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

Cleaning Inside of the PC (Type 1 Task)



1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Disassemble the Front Lower Door and disassemble the Rear Lower Cover.
4. Disassemble all connectors to VISION PC.
5. After taking out the VISION PC from the front side, open the Side Cover.
6. Eliminate any dust in the Electrical Box with compressed air and a vacuum cleaner.
7. After completing the cleaning, connect PC connector.
8. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
9. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

Checking Main Components

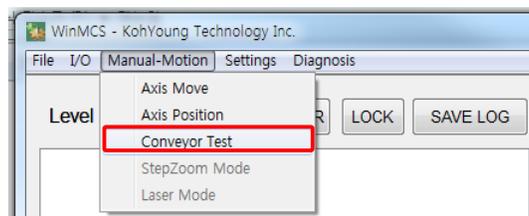
Checking Operation of Conveyor Belt

To check that Conveyor Belt, is properly operating, run the Conveyor Belt according to the following procedures.

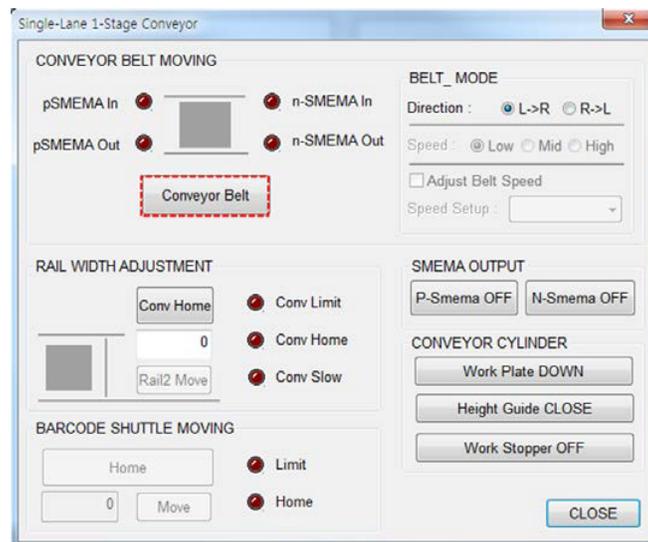
1. Double-click the icon on the desktop to launch **WinMCS**.



2. Select **Conveyor Test** in the **Manual-Motion** menu.



3. When the Conveyor Test window appears, click '**Conveyor Belt**' as follows



4. Enter the PCB into the PCB inlet and make sure that the PCB moves well along the conveyor.

※ **Note:** To check the operation of the Conveyor Belt, you must log in at the SV (Supervisor) or higher level.

Checking IO Status Dialog

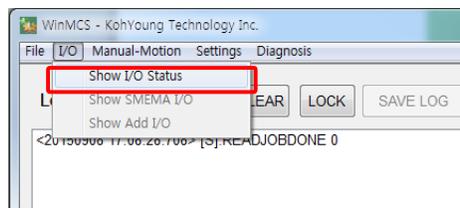
Checking Input Status Dialog

To check that the replaced PCB Check Sensor is properly operating after its replacement, check the Input Status Dialog in **WinMCS** according to the following procedures.

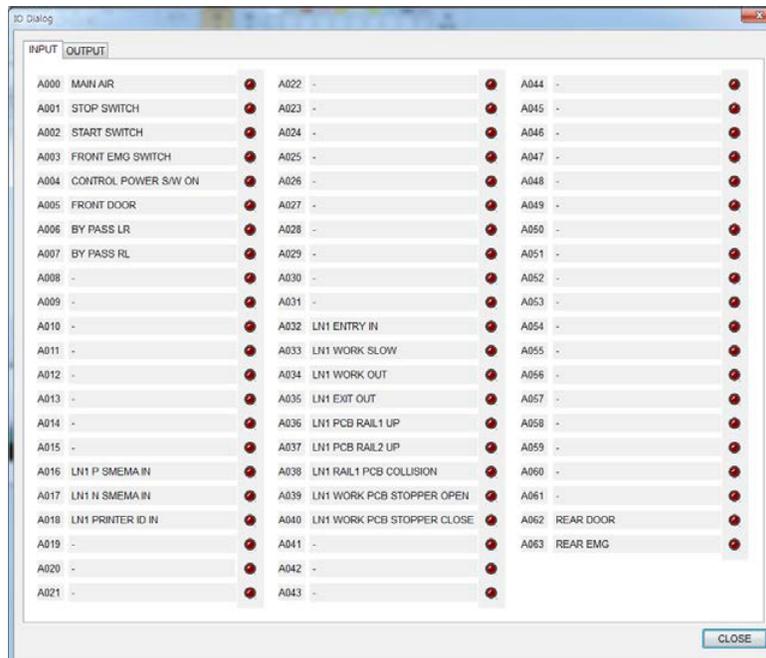
1. Double-click the icon on the desktop to launch **WinMCS**.



2. Select **Show I/O Status** in the **I/O** menu.



3. When IO Dialog window appears as follows, go to **INPUT** tab to check the operation state of each sensor.



4. The INPUT PORT list is as follows.

Maintenance Item	IO Item
Replacing PCB Guide and Height Guide	HEIGHT GUIDE OPEN
Replacing PCB Guide and Height Guide	HEIGHT GUIDE CLOSE
Replacing Stopper and Tip	WORK OUT PCB STP. OPEN
Replacing Stopper and Tip	WORK OUT PCB STP. CLOSE
Replacing Lamp	T-ALRAM
Replacing Lamp	T-GREEN
Replacing Lamp	T-YELLOW
Replacing Lamp	T-ALRAM
Replacing Manifold Component and Solenoid Valve	PCB RAIL 1/2 UP
Replacing Manifold Component and Solenoid Valve	PCB RAIL 1/2 DOWN
Replacing Manifold Component and Solenoid Valve	HEIGHT GUIDE OPEN
Replacing Manifold Component and Solenoid Valve	HEIGHT GUIDE CLOSE
Replacing Manifold Component and Solenoid Valve	WORK OUT PCB STP. OPEN
Replacing Manifold Component and Solenoid Valve	WORK OUT PCB STP. CLOSE

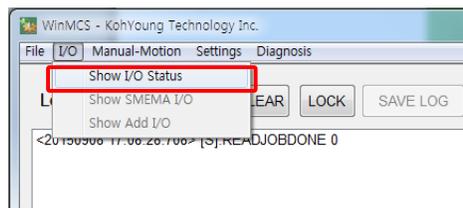
Checking Output Status Dialog

To check that Up/down Rail and Tower Lamp are properly operating, check the Output Status Dialog in **WinMCS** according to the following procedures.

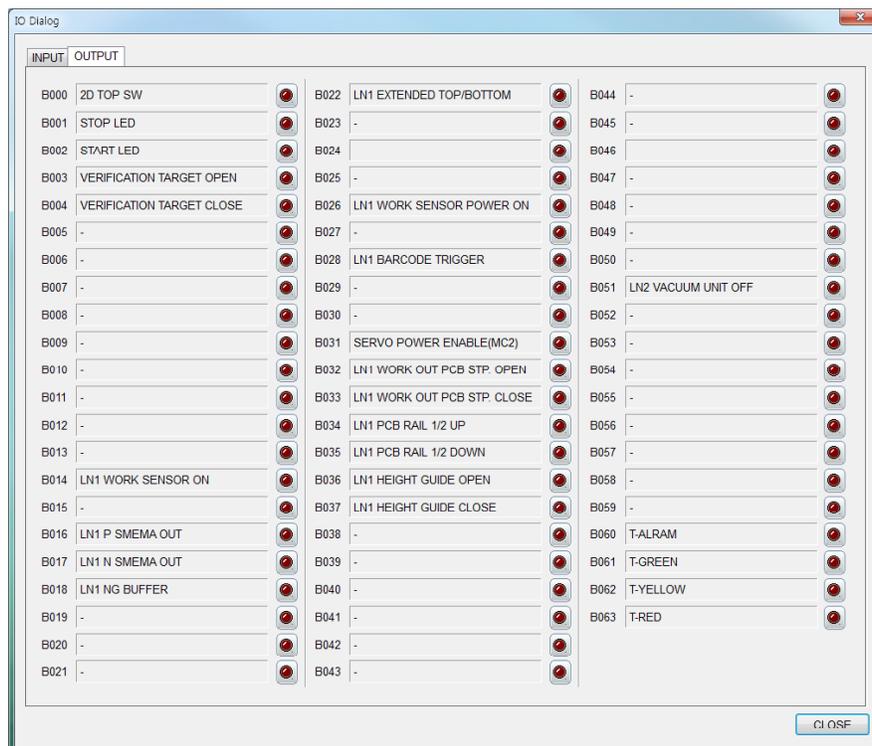
1. Double-click the icon on the desktop to launch **WinMCS**.



2. Select '**Show I/O Status**' in the **I/O** menu.



3. When IO Dialog window appears as follows, go to **OUTPUT** tab to check the operation state of each sensor.



4. The OUTPUT PORT list is as follows.

Maintenance Item	IO Item
Replacing PCB Guide and Height Guide	HEIGHT GUIDE OPEN
Replacing PCB Guide and Height Guide	HEIGHT GUIDE CLOSE
Check Tower Lamp	T-ALRAM
Check Tower Lamp	T-GREEN
Check Tower Lamp	T-YELLOW
Check Tower Lamp	T-RED
Check Manifold Component and Solenoid Valve	PCB RAIL 1/2 UP
Check Manifold Component and Solenoid Valve	PCB RAIL 1/2 DOWN
Check front item SMEMA connection status	LN1 P SMEMA OUT
Check back item SMEMA connection status	LN1 N SMEMA OUT

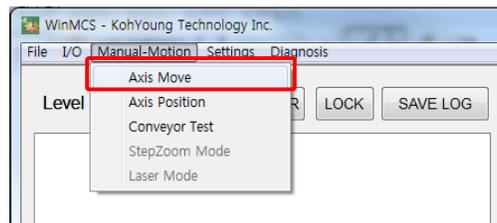
Checking Gantry Limit Sensor

To check that the Gantry Limit Sensor is properly operating, check the Axis operation signals in **WinMCS** according to the following procedures.

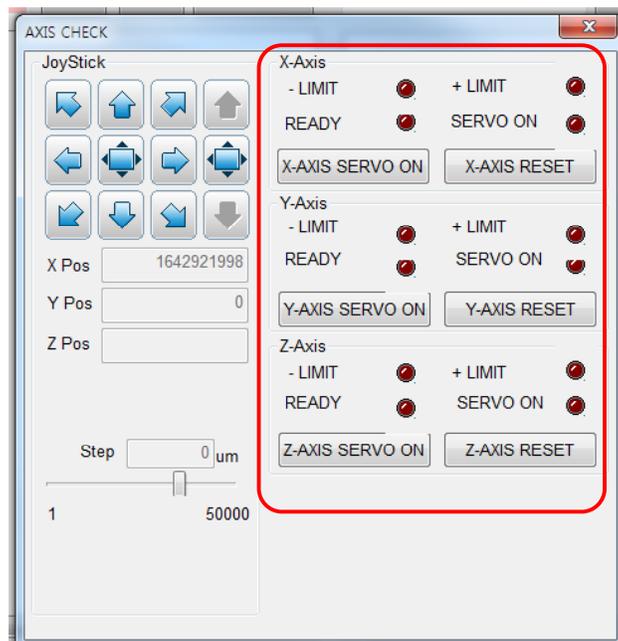
1. Double-click the icon on the desktop to launch **WinMCS**.



2. Select **Axis Move** in the **Manual-Motion** menu.



3. When **AXIS CHECK** window appears as follows, put the object of 1mm or less on the Limit Sensor to check its operation.



4. If the LIMIT sensor is lit, press **AXIS RESET** and check the operation of Limit Sensor of X, Y, and Z Axis in the same way.

※ **Note:** In order to check the operation of the Gantry Limit Sensor, you must log in at the SV (Supervisor) or higher level.

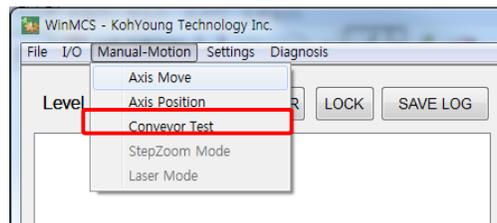
Checking Conveyor Limit Sensor

To check that the Conveyor Limit Sensor is properly operating, check the Conveyor operation signals in **WinMCS** according to the following procedures.

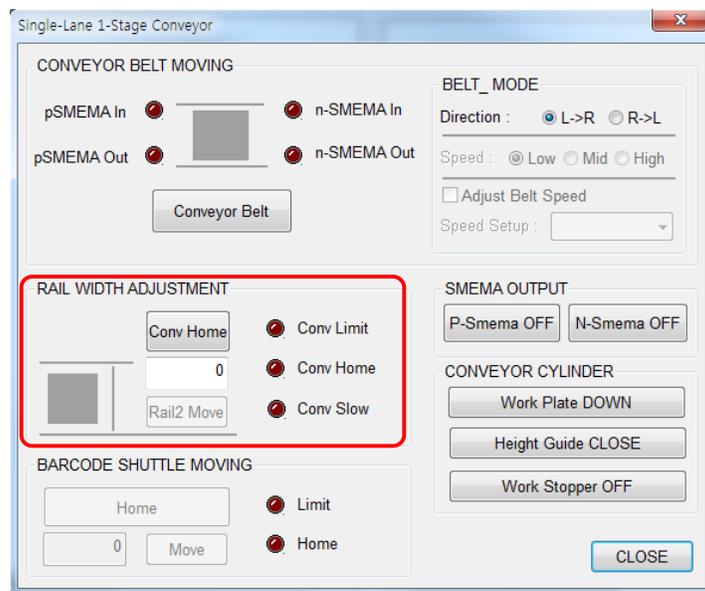
1. Double-click the icon on the desktop to launch **WinMCS**.



2. Select **Conveyor Test** in the **Manual-Motion** menu.



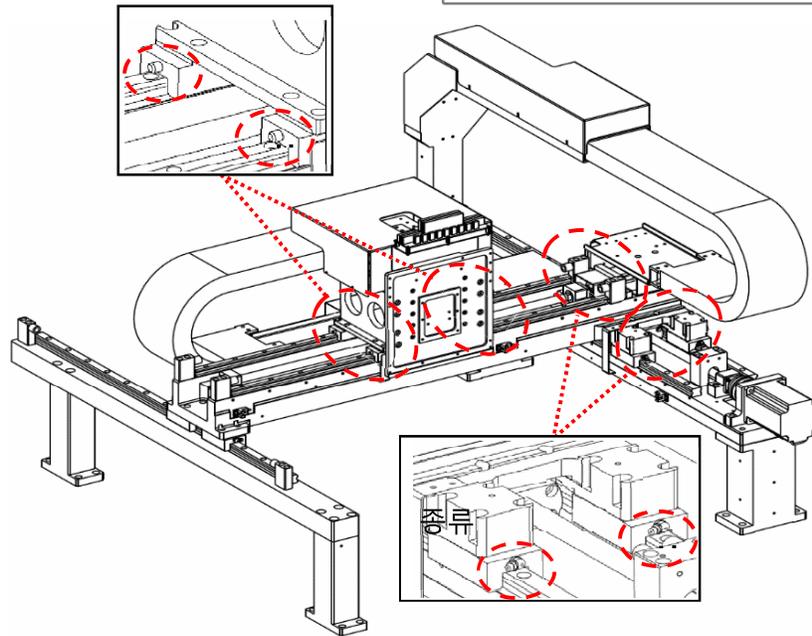
3. When the **Conveyor Text** window appears as follows, put the object of 1mm or less on a Limit Sensor in **RAIL WIDTH ADJUSTMENT** to check if Input signal is properly lit.



※ **Note:** To check the operation of the Conveyor Limit Sensor, you must log in at the SV (Supervisor) or higher level.

Gantry Greasing (Type 1 Task)

※ **Note:** Grease type: **NSK: PS2, THK: AFB**



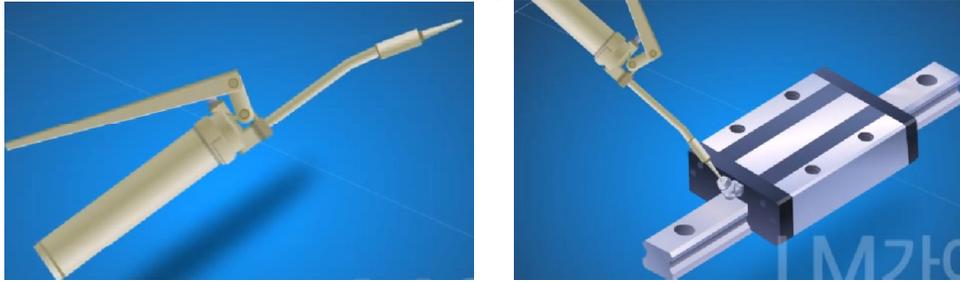
1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Lower Doors and the Front Upper Door.
4. Clean off remaining grease on LM guide and Ball screws.
5. Put grease in the grease gun.
6. Apply approximately 30cc of grease to LM Block and Screw Nuts respectively and move X-Y Gantry up/down.
7. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
8. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

※ **Note:** Regulate the greasing intervals depending on the condition of the moving parts in the X-Y Gantry and color and state of the grease.

※ **Note:** To ensure normal operation, grease the parts marked below every 6 months.

Grease Information

We recommend the following products for bearing grease used in the machine.



< NSK GREASE >

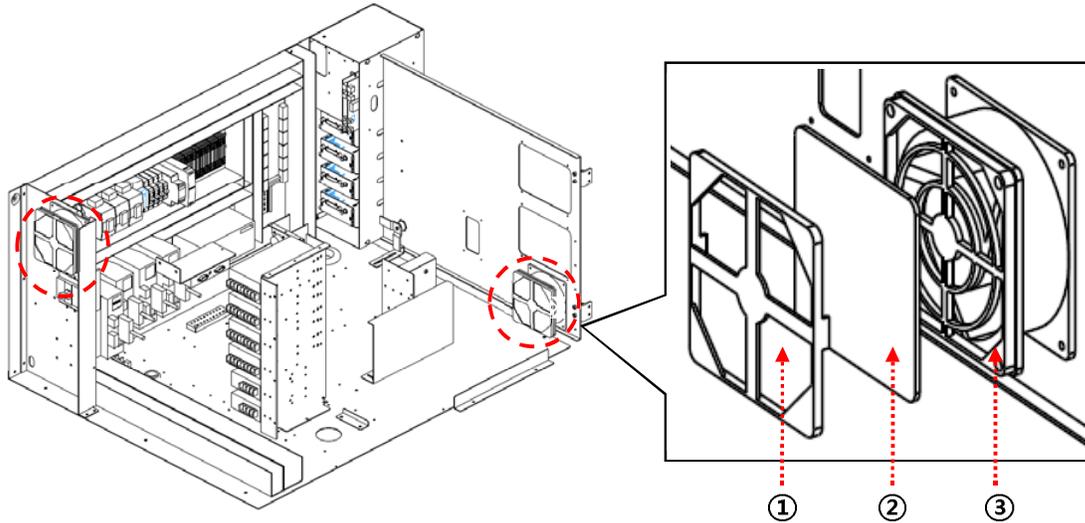
- **Product Name:** Lubricating Grease
- **Model:** NSK GREASE PS2
- **Company Name:** NSK Ltd.
- **Website:** <http://www.kr.nsk.com/>
- **Hazards**
 - Physical and chemical hazards: Not applicable
 - Influence on human body: Repeated exposure may cause skin irritation.
- **First Aid**
 - Eye contact: Wash off immediately with water within a minimum of 15 minutes and seek medical advice.
 - Skin contact: Remove with cloth or paper and thoroughly wash with water and soap
 - Ingestion: Get medical advice and do not vomit.

< THK Grease>

- **Product Name:** AFB-LF Grease
- **Model:** THK GREASE AFB
- **Company Name:** THK Ltd.
- **Website:** <http://www.thk.com>
- **Hazards**
 - Physical and chemical hazards: Not applicable
 - Influence on human body: Repeated exposure may cause skin irritation.
- **First Aid**
 - Eye contact: Wash off immediately with water within a minimum of 15 minutes and seek medical advice.
 - Skin contact: Remove with cloth or paper and thoroughly wash with water and soap
 - Ingestion: Get medical advice and do not vomit.

Replacing Parts

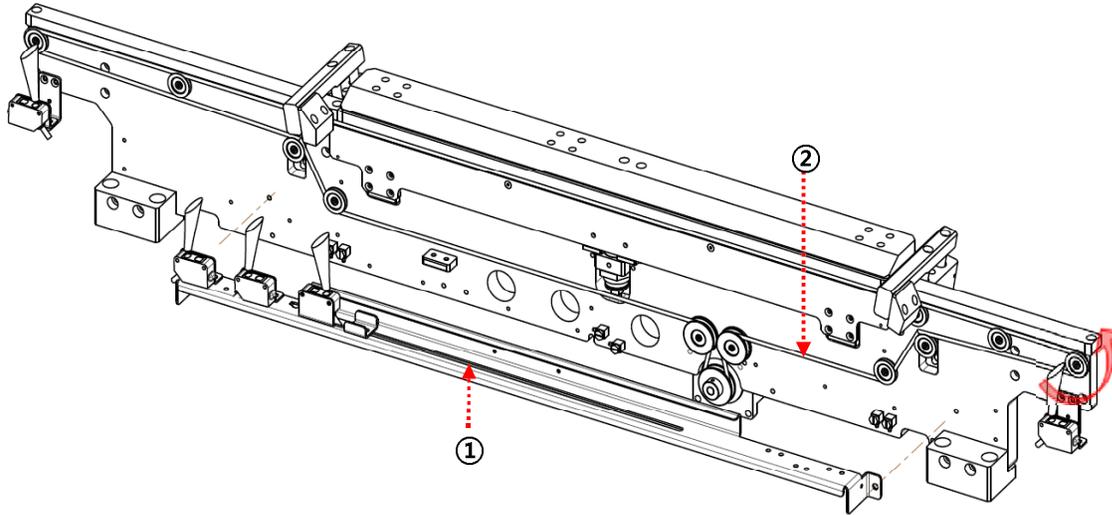
Replacing Fan Filters (Type 1 Task)



Item	Description	Item	Description
①	Filter Cover	②	Fan Filter
③	Filter Base		

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Disassemble the Front Lower Doors and disassemble the Rear Lower Cover.
4. Open all lower doors of Electric Box.
5. Remove the Filter Cover (①) from the Filter Base (③).
6. Replace with a new Fan Filter (②) and assemble the Filter Cover (①).
7. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
8. Check if the Fan is operating properly.

Replacing Conveyor Belts (Type 1 Task) Ring Belt (Type 1 Task)

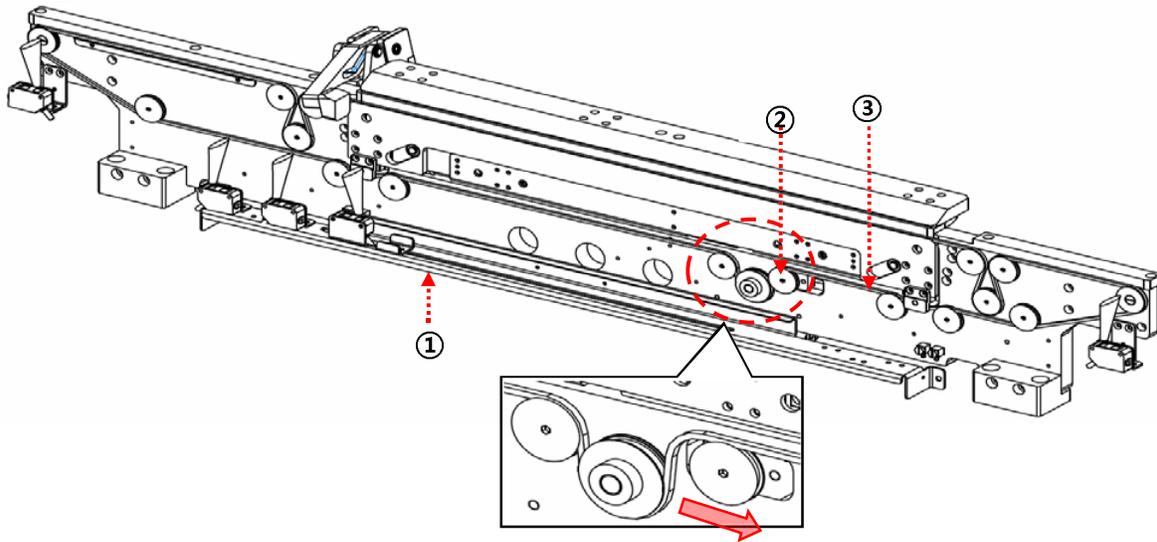


Item	Description	Item	Description
①	Slower Sensor Rail	②	Ring Belt

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble Rear Upper Cover.
4. Disassemble the Slower Sensor Rail (①), and then Ring Belt (②) as shown in the diagram.
5. Assemble the new Ring Belt(②).
6. Check the Belt Tension and set it to the appropriate Tension with the Tensioner, if it is loose.
7. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
8. Check if Conveyor Belt rotation state is appropriate by turning on the Conveyor Belt Transfer Motor after entering PCB.

※ Note: As for how to check the operation state of Belt rotation, refer to [Checking Operation of Conveyor Belt](#) in this manual.

Timing Belt (Type 1 Task)

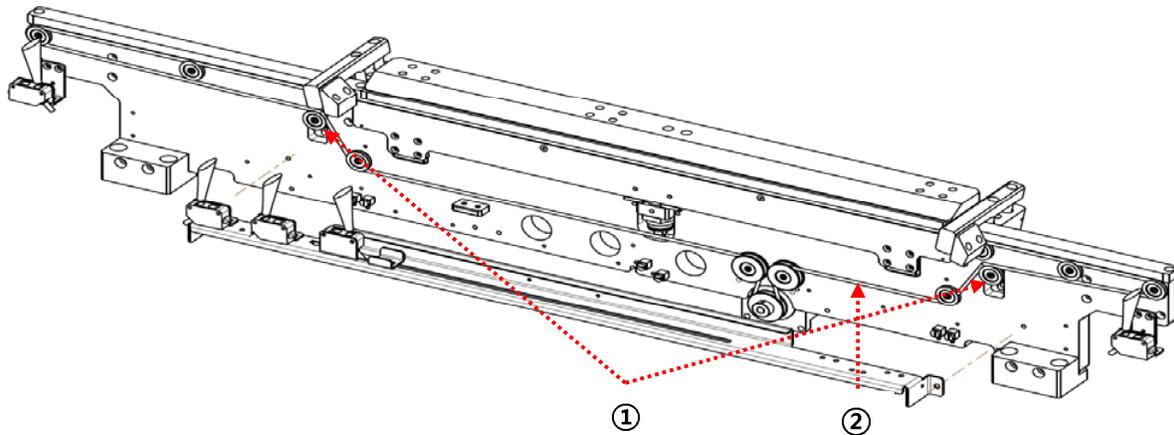


Item	Description	Item	Description
①	Slower Sensor Rail	③	Conveyor Belt
②	Tensioner		

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble Rear Upper Cover.
4. Disassemble the Slower Sensor Rail (①), as shown in the diagram.
5. Loosen the bolt from the Tensioner (②) and disassemble the Conveyor Belt (③) by pushing as shown in the diagram.
6. Assemble the new Conveyor Belt and assemble the Tensioner (②) by pushing it in the pulley direction.
7. Check the Belt Tension and set it to the appropriate Tension with the Tensioner, if it is loose.
8. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
9. Check if Conveyor Belt rotation state is appropriate by turning on the Conveyor Belt Transfer Motor after entering PCB.

※ **Note:** As for how to check the operation state of Belt rotation, refer to [Checking Operation of Conveyor Belt](#) in this manual.

Replacing Rollers (Type 1 Task) Ring Belt Type (Type 1 Task)



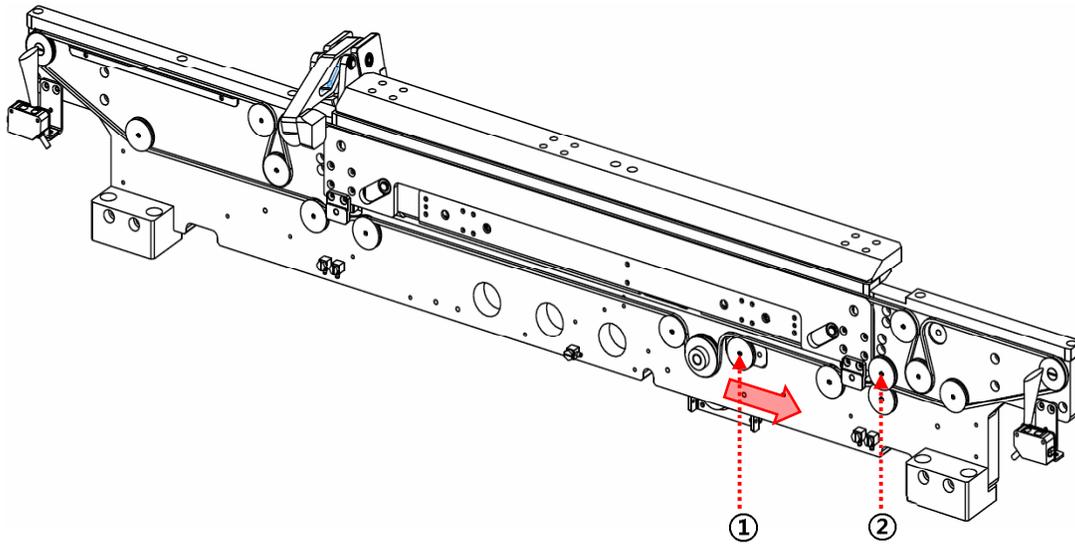
Item	Description	Item	Description
①	Tensioner	②	Roller

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble Rear Upper Cover.
4. Loosen the M4 bolt from Tensioner (①) and loosen the belt by pushing the Tensioner, as shown in the diagram.
5. Replace the damaged Roller (②) with a wrench.
6. After replacing the rollers, assemble the Tensioner (①) by pushing it in the pulley direction.
7. Check the Belt Tension and set it to the appropriate Tension with the Tensioner, if it is loose.
8. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
9. Check if Conveyor Belt rotation state is appropriate by turning on the Conveyor Belt Transfer Motor after entering PCB.

※ **Note:** The tension should be adjusted using the tensioner every 3 month.

※ **Note:** As for how to check the operation state of Belt rotation, refer to [Checking Operation of Conveyor Belt](#) in this manual.

Timing Belt Type (Type 1 Task)



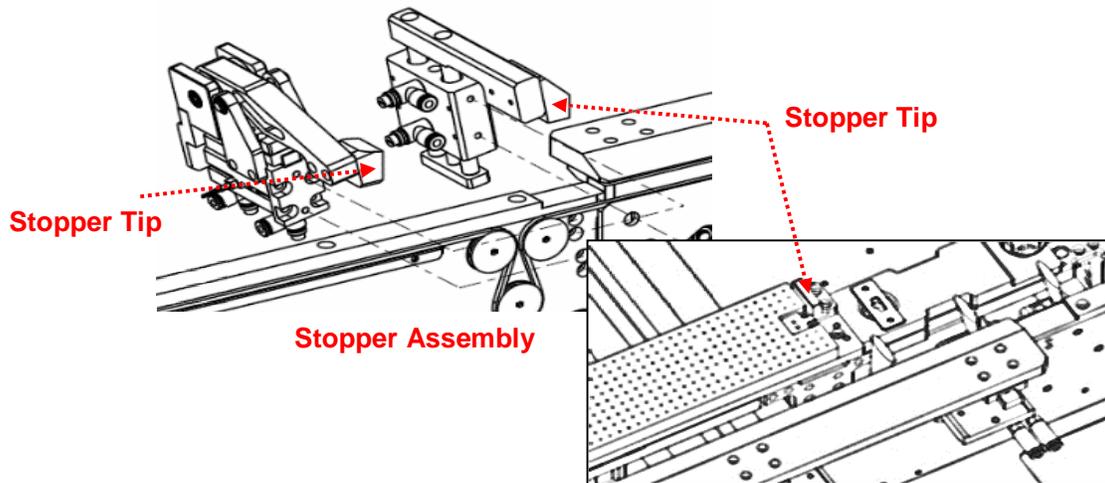
Item	Description	Item	Description
①	Tensioner	②	Roller

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble Rear Upper Cover.
4. Loosen the M4 bolt from Tensioner (①) and loosen the belt by pushing the Tensioner, as shown in the diagram.
5. Replace the damaged Roller (②) with a wrench.
6. After replacing the rollers, assemble the Tensioner (①) by pushing it in the pulley direction.
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8. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
9. Check if Conveyor Belt rotation state is appropriate by turning on the Conveyor Belt Transfer Motor after entering PCB.

※ **Note:** The tension should be adjusted using the tensioner every 3 month.

※ **Note:** As for how to check the operation state of Belt rotation, refer to [Checking Operation of Conveyor Belt](#) in this manual.

Stoppers Assembly and Replacing Stopper Tip (Type 1 Task)



Stopper Assembly (Type 1 Task)

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble the Rear Lower Cover.
4. Remove the air-hose from Stopper Assembly.
5. Remove the Stopper Assembly from the Conveyor as in the diagram and attach the new Stopper Assembly to the Conveyor.
6. Check the I/O Number and attach to the Stopper Assembly.
7. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
8. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.
9. Check that the Stopper is operating properly by using I/O screen.

※ **Note:** Stopper Tip of Stopper Assembly wears away as PCBs enter.
It is recommended to change it in every 6 months if worn off.

※ **Note:** As for how to check the I/O Screen, refer to [Checking I/O status Dialog.](#)

Stopper Tip (Type 1 Task)

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door and disassemble the Rear Lower Cover.
4. Remove the air-hose from Stopper Assembly.
5. Remove the Stopper Assembly from the Conveyor as in the diagram and attach the new Stopper Assembly to the Conveyor.
6. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
7. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.
8. Check that the Stopper is operating properly by using I/O screen.

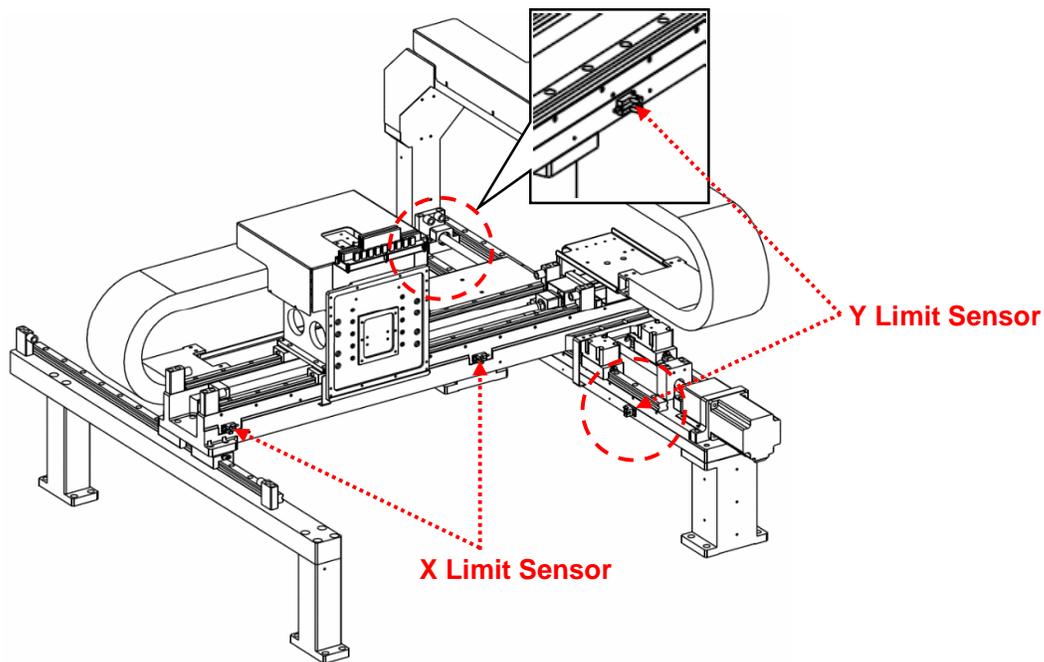
※ **Note:** Stopper Tip of Stopper Assembly wears away as PCBs enter.

It is recommended to change it in every 6 months if worn off.

※ **Note:** As for how to check the I/O Screen, refer to [Checking I/O status Dialog.](#)

Replacing Gantry Limit Sensors (Type 1 & 2 Task)

Replacement Work(Type 1 Task)



1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out and perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door.
4. Remove the Limit Sensor connector.
5. Install a new Limit Sensor and apply the connector to the new Limit Sensor.
6. After completing the replacement, unlock the Main Switch and the Air On/Off and Release Valve, and then supply the power.
7. Check if Height Guide is operating properly on I/O screen.

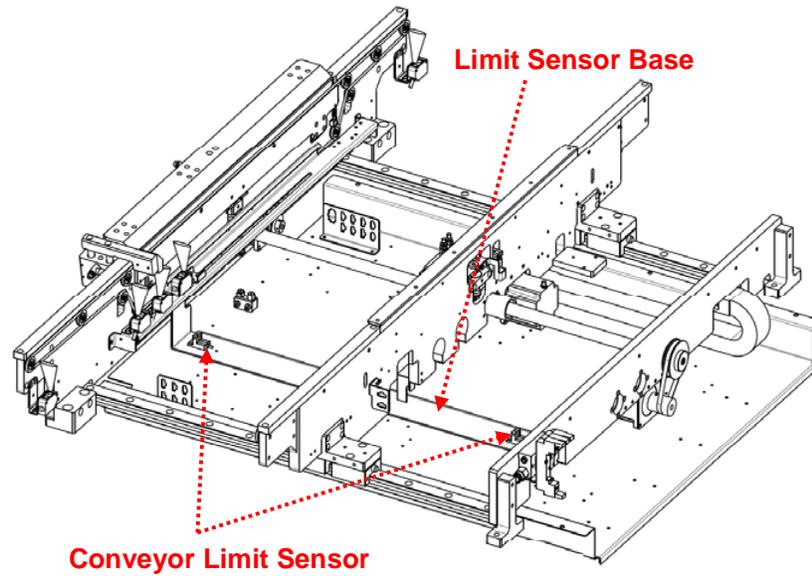
Checking Operation(Type 2 Task)

1. Open the Front Upper Door.
2. Check that the PCB Check Sensor is operating properly by using I/O screen by keeping an object whose thickness is smaller than 1mm close to the sensor.

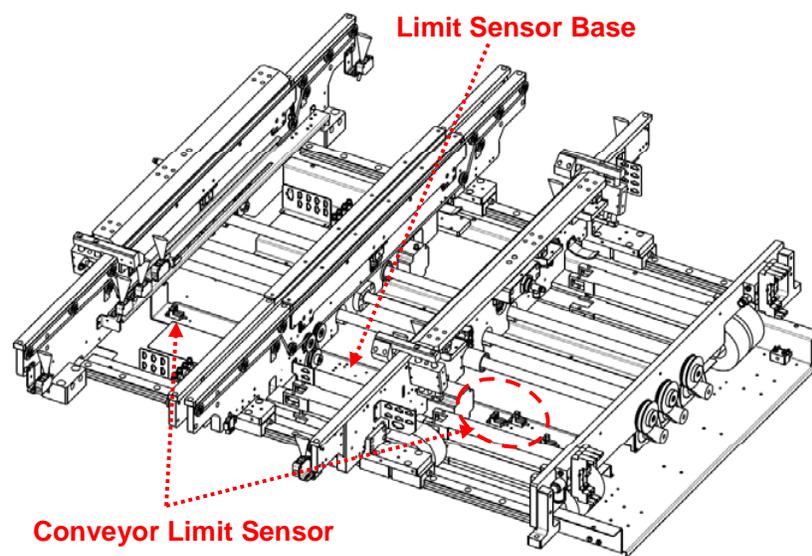
※ **Note:** Manually move the X-Y Axis Gantry to see if there is any contact with the cable.

※ **Note:** As for how to check the Gantry Limit Sensor, refer to [Checking Gantry Limit Sensor](#).

Replacing Conveyor Limit Sensors (Type 1 & 2 Task) Ring Belt Type (Type 1 Task)



<Single Lane>



<Dual Lane>

- **Replacing Conveyor Limit Sensor (Type 1 Task)**

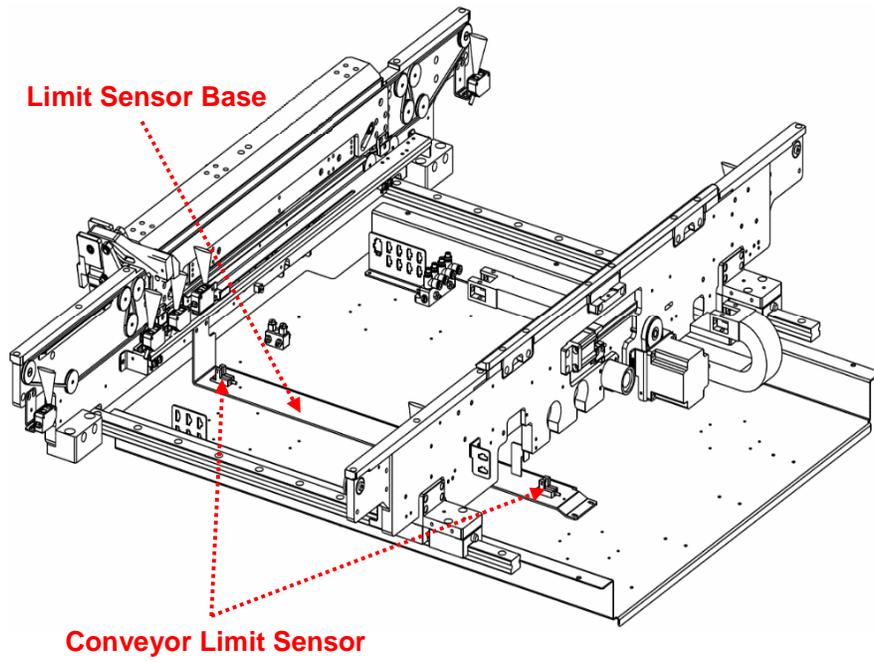
1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door.
4. Disassemble the Sensor from the Limit Sensor Base, and then disassemble Limit Sensor Connector.
5. Assemble the new Limit Sensor to the Limit Sensor Base. Check the I/O number and attach the connector.
6. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
7. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

- **Checking Operation of PCB Check Sensors (Type 2 Task)**

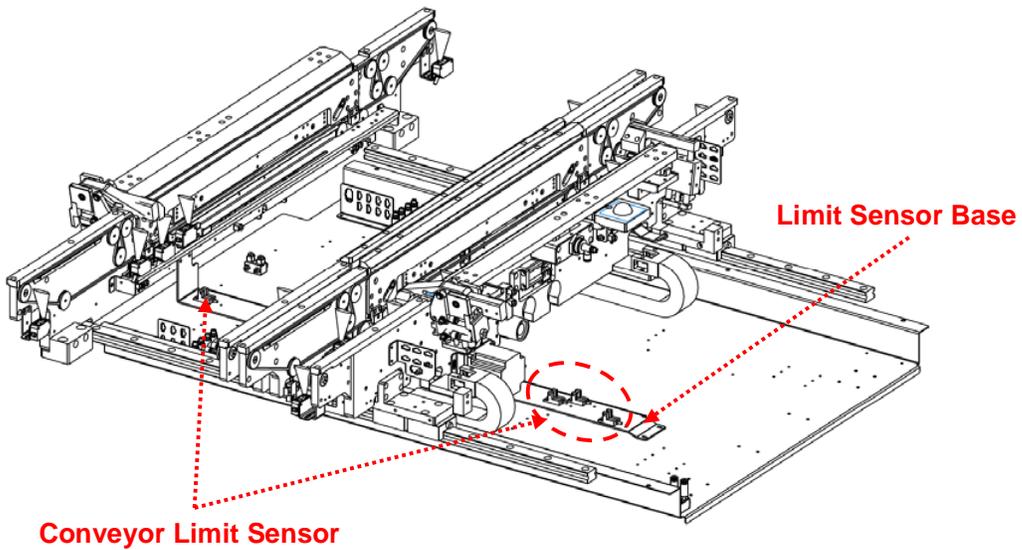
1. Open the Front Upper Door.
2. Check that the PCB Check Sensor is operating properly by using I/O screen by keeping an object close to the sensor at the height of PCB inspection.

※ **Note:** As for how to check the Conveyor Limit Sensor, refer to [Checking Conveyor Limit Sensor](#).

Timing Belt Type (Type 1 Task)



<Single Lane>



<Dual Lane>

- **Replacing Conveyor Limit Sensor (Type 1 Task)**

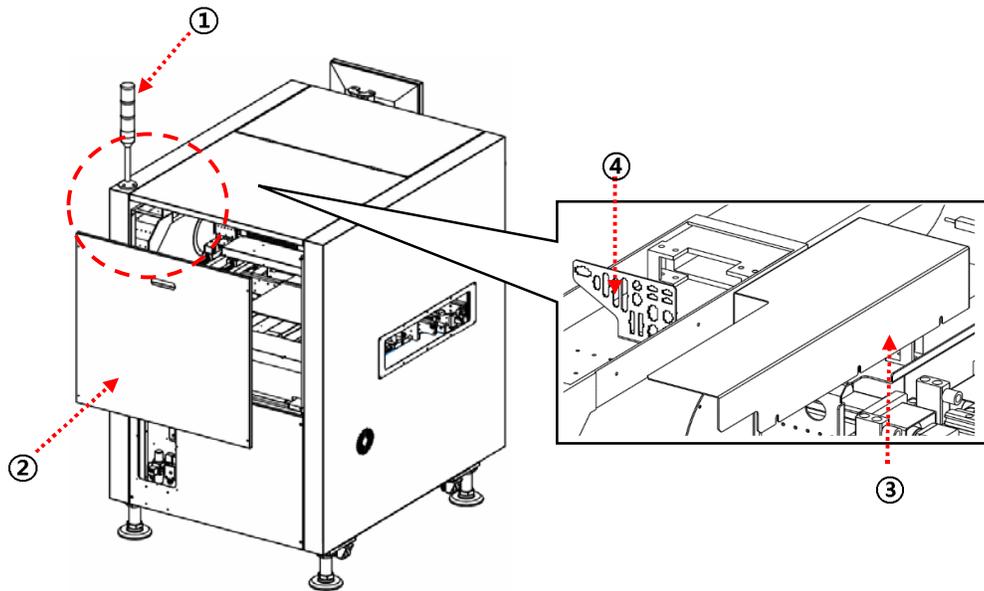
1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Open the Front Upper Door.
4. Disassemble the Sensor from the Limit Sensor Base, and then disassemble Limit Sensor Connector.
5. Assemble the new Limit Sensor to the Limit Sensor Base. Check the I/O number and attach the connector.
6. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
7. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.

- **Checking Operation of PCB Check Sensors (Type 2 Task)**

1. Open the Front Upper Door.
2. Check that the PCB Check Sensor is operating properly by using I/O screen by keeping an object close to the sensor at the height of PCB inspection.

※ **Note:** As for how to check the Conveyor Limit Sensor, refer to [Checking Conveyor Limit Sensor](#).

Replacing Tower Lamp (Type 1 Task)



Item	Description	Item	Description
①	Lamp	②	Rear Upper Cover
③	Y Caflux Cover	④	Lamp Sensor Connector

1. Shut down the control program of the system and PC. If it is not possible to shut down the PC, press and hold the power switch for more than 3 seconds to force shutdown.
2. Turn off the Main Switch and the Air On/Off and Release Valve and lock them out, and then perform Tag-out indicating the maintenance is in progress (Lock-out & Tag-out). The operator should carry the key to the lock.
3. Disassemble the Rear Upper Cover (②).
4. Remove the Y Caflux Cover (③) and the Lamp Sensor Connector (④).
5. Remove the Lamp(①) from the Cover and install the new Lamp in the reverse order.
6. After completing all maintenance activities, unlock the Main Switch and the Air On/Off and Release Valve and then supply the power.
7. Turn on the power switch of the computer and operate the control program to see if the system is operating properly.
8. Check that the Lamp is operating properly by using I/O screen.

※ **Note:** As for how to check the I/O Screen, refer to [Checking IO Status Dialog](#).

System Installation

Required Items for Installation

	Item	Q'ty
1	Cross Level Gauge	1 unit
2	Wrench	1 unit
3	Manually Operated Hydraulic Lift	1 unit
4	PCB or Plate for System Alignment	2 units

Installation Procedure

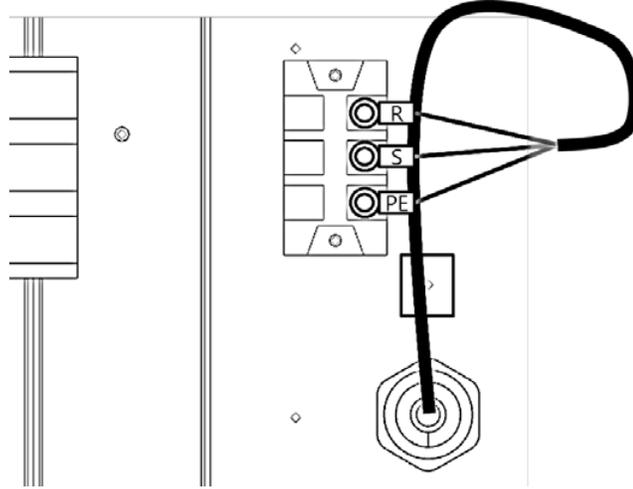
1. Unpack system, PC and Monitor boxes.
2. Open the Front Upper Door and install the PC.
3. Open the Rear Lower Cover and connect the PC to the cable.
4. Install the system in the assembly Line and connect SMEMA.
5. Align and level the system.
6. Disassemble the X-Y Gantry Fix Brackets.
7. Check the cable and voltage when connecting to the cable.
8. Connect the Air Hose.
9. Manually test the X-Y Gantry and I/O. If everything is functioning properly, operate the system.
10. Check that the system is operating properly.

※ Caution:

- If the PCB fails to import, export or convey, go to step 4.
- If vibration occurs or PCB conveying fails when operating the system, go back to step 5.

Power Connection

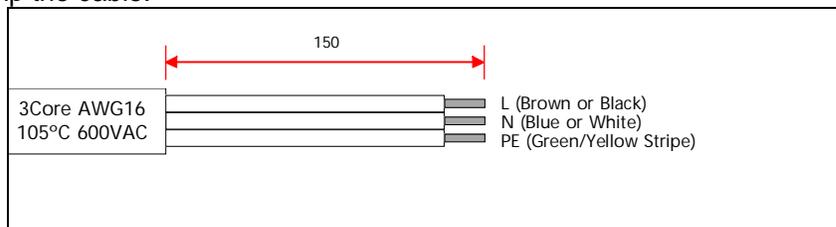
1. Connect in the order of PE(Protective Earth)-S(N)-R(L) on the Main Terminal as shown in the picture below.
2. Connect the cable to the Terminal Block and fix it with the bolts.



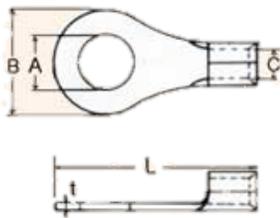
Power Supply and Cabling

1. Use single-phase 220V \pm 10% for power supply.
2. Use the cable of 3Core AWG16 (105°C, 600VAC), whose outer diameter should be 8mm to 12mm.
3. After stripping the cable, crimp the O-LUG according to the following order.

- ① Strip the cable.



- ② Insert the cable into the O-LUG, and crimp it with a lug crimper.

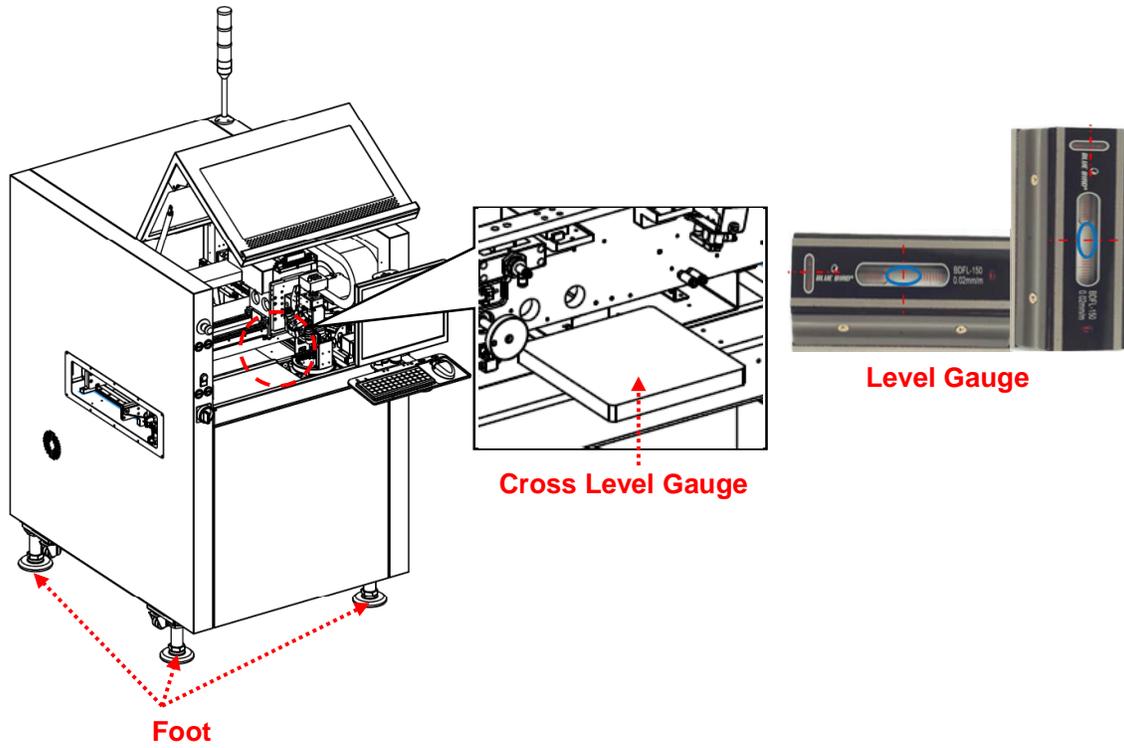


A : 5	B : 8
C : 3	L : 16
Wire : AWG16	Item : M5 O-LUG

Part Number of Crimping Tool : JOT-06, Manufacturer : JEONO

Cross Level Gauge and Foot Locations

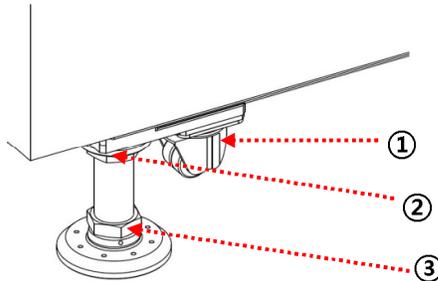
Level the system by adjusting the 4 feet with a spanner after putting the Cross Level Gauge onto the Level Gauge Plate to make sure that the machine is level. (Adjust air bubble to be at the center)



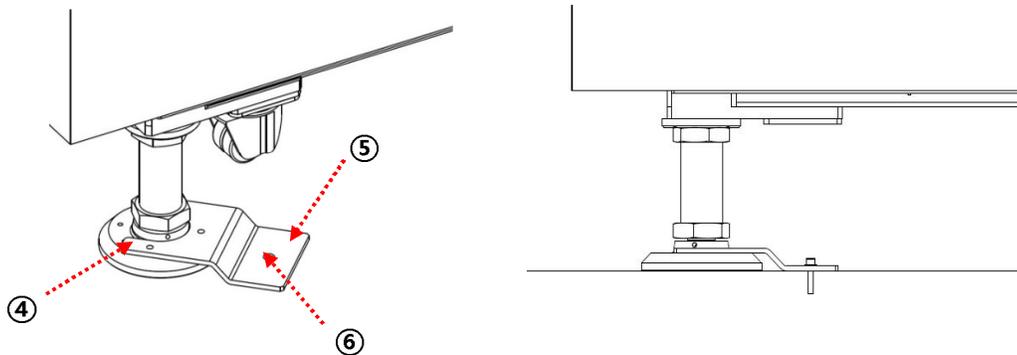
How to Fix Anchor Bolt

Fix the anchor bolts which are assembled to the foot in the following order.

1. Use a monkey spanner to release the Fix Nut(①).
2. Adjust the height by turning the Foot Bolt(②) to the left and right with the monkey spanner.

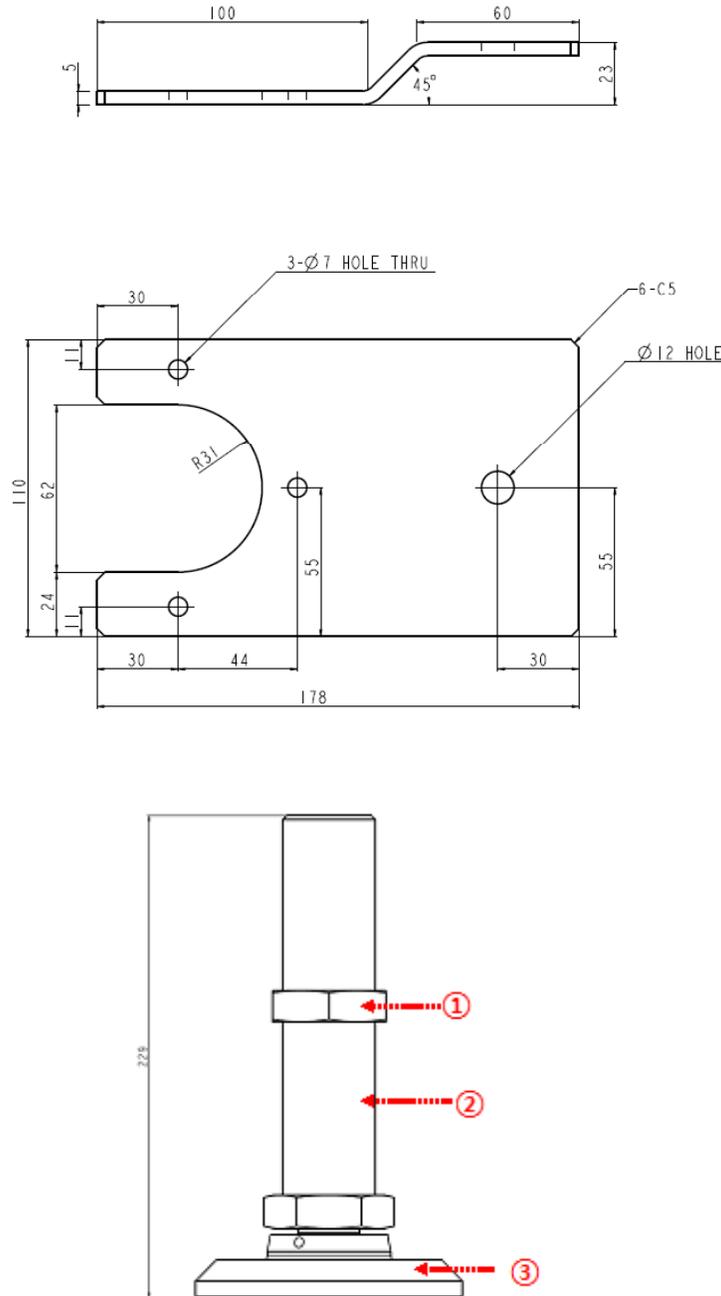


3. Select a position to fix the Fix Foot Bracket(⑤) on Foot Base(④), and then fix it with M6 nut.
4. Insert the bolt in the hole(⑥) to fix it on the floor.



Fix Foot Bracket and Fixing Items

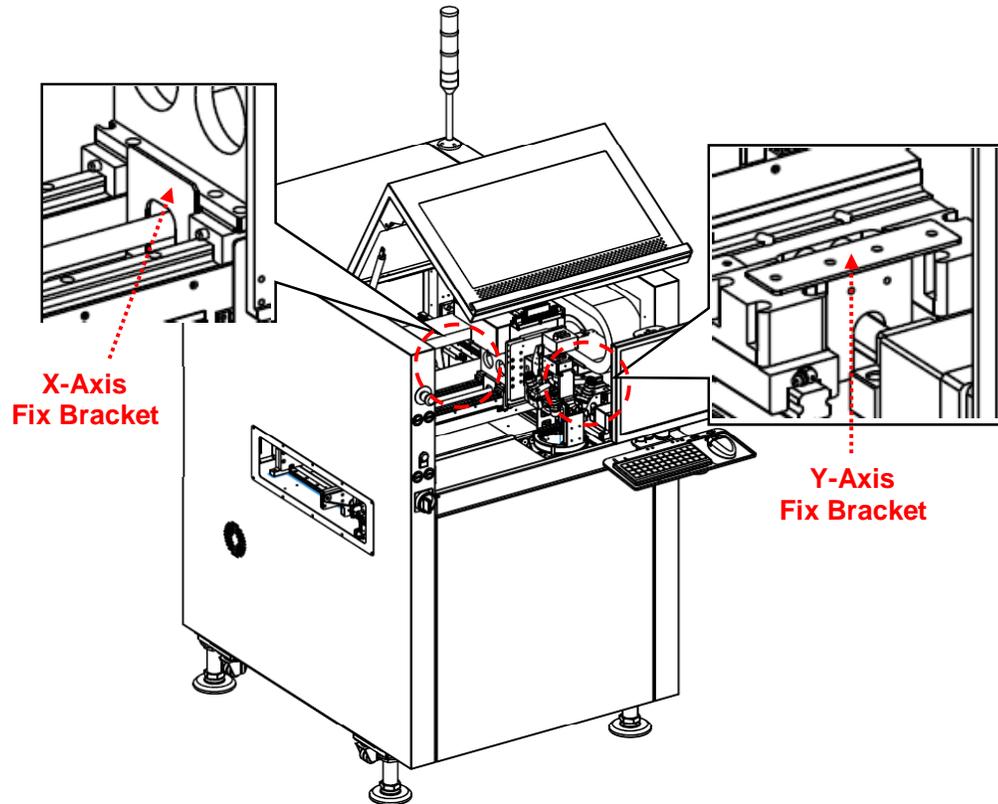
Material: SPCC, 5.0t, Coating: White zinc plating



No.	Description	Specification	Material	Q'ty	Remark
①	FIX NUT	M45 x P2.0	S45C	4	
②	FOOT BOLT	M45 x P2.0	S45C	4	
③	FOOT BASE		S45C	4	

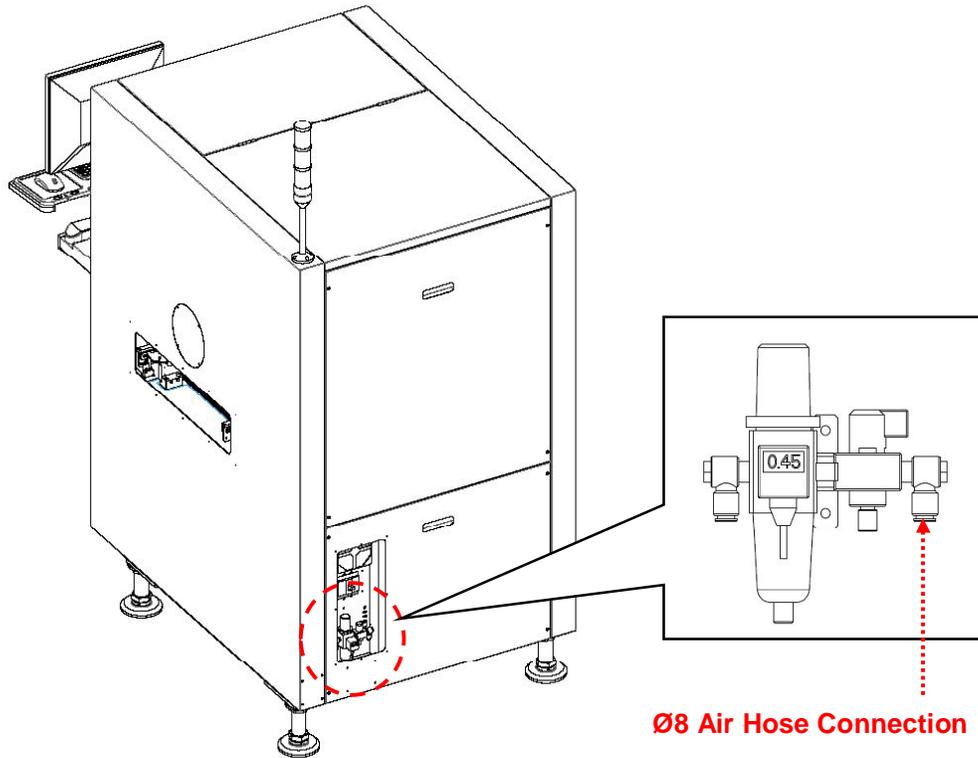
X-Y Axis Fix Bracket

Disassemble the Axis Fix Bracket with a wrench and check the X-Y Gantry or Conveyor for unnecessary objects.

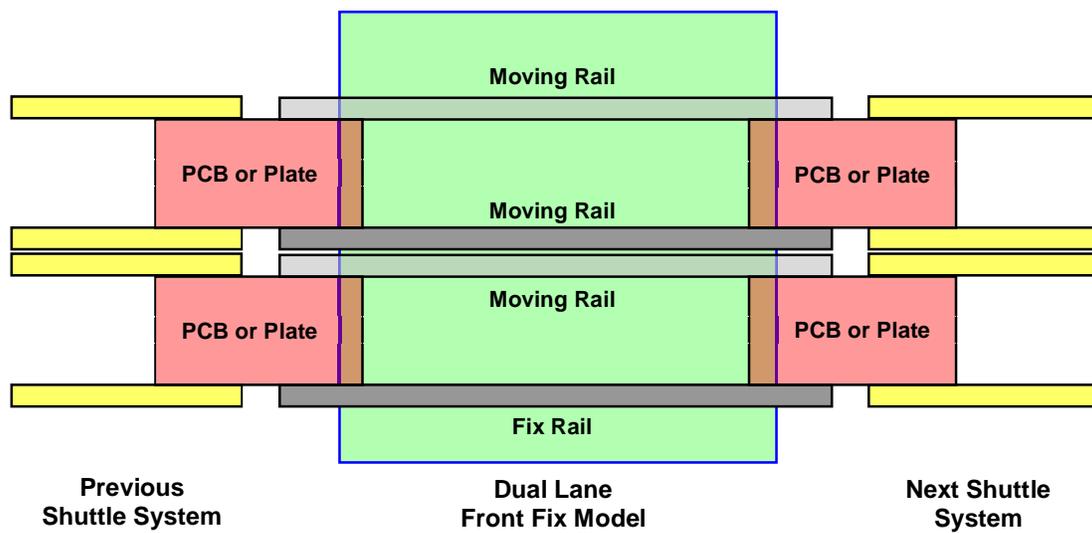
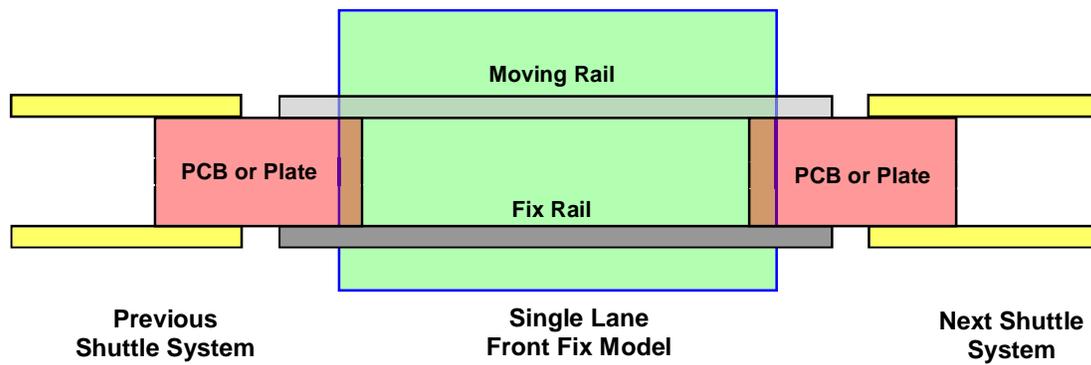


Air Hose Connection

Connect the Ø8 air hose in the designated location.



System Alignment



Packing and Storage

Packaging Items

- 3D Inspection System
- LCD Monitor
- Computer
- Tower Lamp
- Standard Part Box (User Manual, CD included)

Packaging procedure

1. Fix the bottom of the foot, located on the lower part of the machine, with a wooden Plat or Stopper Bracket.
2. Fix the Buffer Conveyor, located on the outside of the machine, with special fixing Jig or Bracket.
3. Pack the Monitor, Computer and Tower Lamp, located on the outside of the machine, separately after detaching them from the machine.
4. Fix the Monitor support, keyboard, keyboard support, mouse and mouse pad to the machine so that they cannot move.
5. Fix the probe, Conveyor, internal operating part X, Y and Z-axis with fixing Jig or Bracket.
6. Put a soft cloth or polyester sheet on the acrylic door to prevent damages, and then wrap the machine with adhesive vinyl wrap and foam.
7. Create a wooden box (crate) with the machine inside, and then attach a Shipping mark.
8. Attach the sticker with information including sender, receiver, Case No. and Gross Weight written on it.

※ Caution:

- Avoid impact or pressure on the Poly Carbonate (PC) door or system package.
- Use a Forklift to lift the system from the side. If lifted from the front or back, the system can tip, the machine may lose balance and fall.
- Observe the packaging rules to prevent damage or scratches.
- Use an air-ride truck to prevent damage for short distance transportation.

※ Caution: When moving the machine, please ask the packing company to use vacuum packing.

Package Weight and Size

Model(Size)	Package Weight	Package Size
L Series	750KGS	1280 x 2000 x 1880 mm
DL Series	850KGS	1280 x 2260 x 1880 mm

List of Parts

Standard Parts

	Item	Q'ty
1	SMEMA cable for previous system	1 ea
2	SMEMA cable for next system	1 ea
3	Power cable	1 ea
4	User Manual	1 ea
5	System recovery CD	1 ea
6	Windows CD & PC manual	1 ea
7	LAN Cable	1 ea
8	Air Cable	1 ea

Spare Parts

	Item		Single Lane	Dual Lane	
1	Roller	Timing Belt	A011-510026	1 ea	2 ea
		Ring Belt	SMALL 3D FLANGE ROLLER		
2	Conveyor Belt	Timing Belt	PGT2340_3GT	1 ea	2 ea
		Ring Belt	ESD-RING-BELT2130		
3	Fan Filters (120 x 120mm)		1 ea	1 ea	

Options

	Item	Q'ty
1	Calibration Target	1 ea
2	Offline Programming S/W (including Dongle Key)	1 ea
3	In-line barcode reader, platform and cable	1 ea
4	Camera barcode reader dongle key	1 ea
5	Handheld barcode reader	1 ea

Storage

The following is the environment for the machine storage.

- Temperature for operation: 20°C ~ 30°C (68°F ~ 86°F)
- Temperature for storage: 0°C ~ 30°C (32°F ~ 86°F)
- Acceptable humidity: 30~80%

※ Caution:

Save the machine in the environment specified below. Otherwise the machine may be damaged or may carry out a faulty operation.

System Specifications

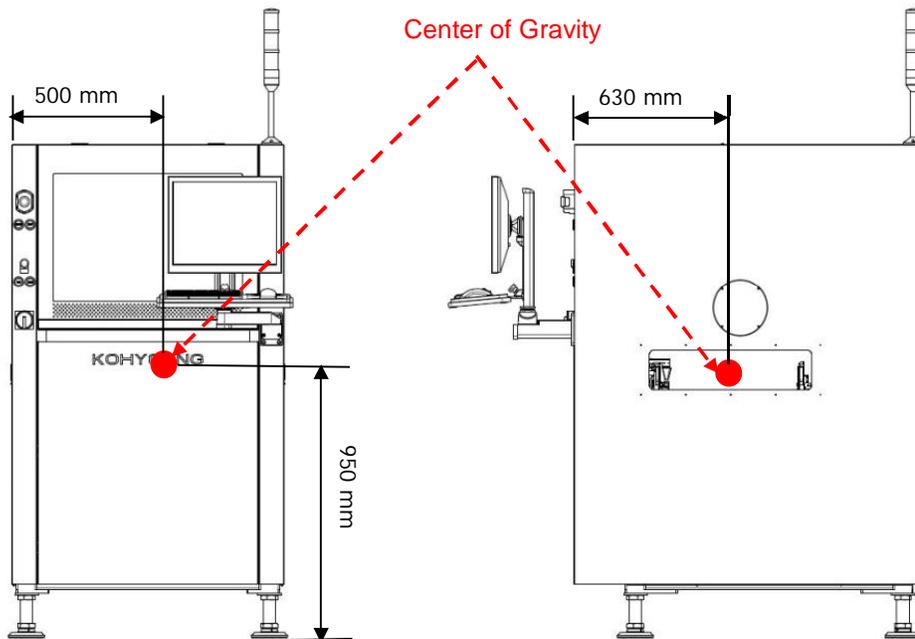
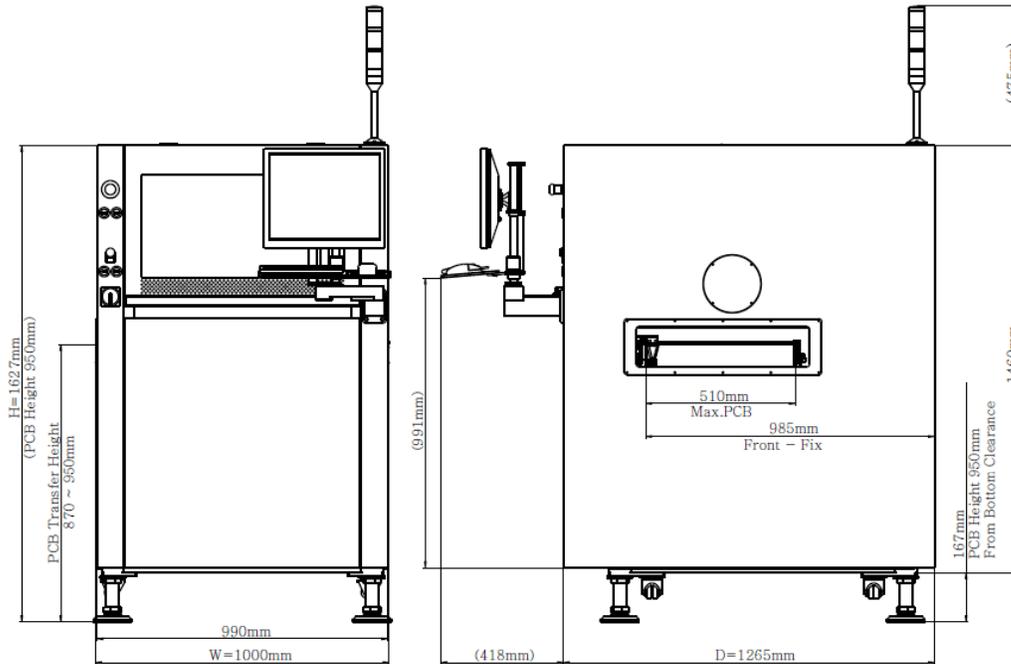
Item / Description		Machine Spec.		Remark	
		Single Lane	Dual Lane		
XY axis	Structure	XY Gantry		Same as SL	
	Drive	Servo Motor + Ball Screw		Same as SL	
	Encoder Type	Rotary Encoder		Same as SL	
	Resolution	1.0 μ m/pulse		Same as SL	
	Speed	1.0m/sec		Same as SL	
	Acceleration	SPI	1.0G		Same as SL
		AOI	0.8G		Same as SL
XY Accuracy (Include inspection accuracy)	$\pm 20 \mu$ m		Same as SL		
Operation Condition	Operation Temperature	20~30°C		Same as SL	
	Operation Humidity	30~80% (non-condensing)		Same as SL	
Safety	Certification	CE		Same as SL	
	Sound Noise (CE Regulation)	Lower than 65dB		Same as SL	
Installation Requirement	Electrical supply	200~240VAC, 50/60Hz (Single phase)		Same as SL	
	Power Consumption	10Amp(RMS peak)		Same as SL	
	Compressed Air	5Kgf/cm ² (0.45MPa)		Same as SL	
	Air Consumption	2NI/min(0.08cfm)		Same as SL	
	Diameter of air fitting	$\varnothing 8$ mm		Same as SL	
	Dimension (WxDx H)	Standard	1000x1265x1627 mm	1000x1445x1627 mm	H is when PCB Transfer Height is 950mm
	Weight	About 600kg		About 700kg	
Conveyor	Type	Front Fix/Rea Fix		Front Fix	
	Structure	1stage(1piece)		Same as SL	
	Belt Type	Ring	General Round		Option: ESD Round Belt
		Timing	ESD Timing		Same as SL
	Width adjustment	Automatic		Same as SL	
	PCB Transfer Height	Max.	950mm		Foot Spacer is recommended when using more than 950mm.
		Min.	870mm		
PCB Direction	Standard	L \rightarrow R		Same as SL	
	Change	User setting (2hrs required)		Same as SL	

Item / Description			Machine Spec		Remark	
			Single Lane	Dual Lane		
PCB Specification	PCB Size (X x Y)	Single Mode	510x510mm (Front Fix) 510x450mm (Rear Fix)	510x580mm	AOI 8M or higher: X axis size – 20mm	
		Dual Mode	N/A	510x320mm		
		Min.	50x50mm	Same as SL		
	PCB Thickness			0.4 ~ 4mm	Same as SL	
	Max. PCB Weight	Ring Belt		2kg	Same as SL	
		Timing Belt		5kg	Same as SL	
	Edge Clearance	Top		2.5mm	3mm	
		Bottom		3.5mm	3.5mm	
	Clearance	Top	SPI	14mm	Same as SL	
			AOI	50mm	Same as SL	
		Bottom		50mm	Same as SL	

Dimension & Center of Gravity

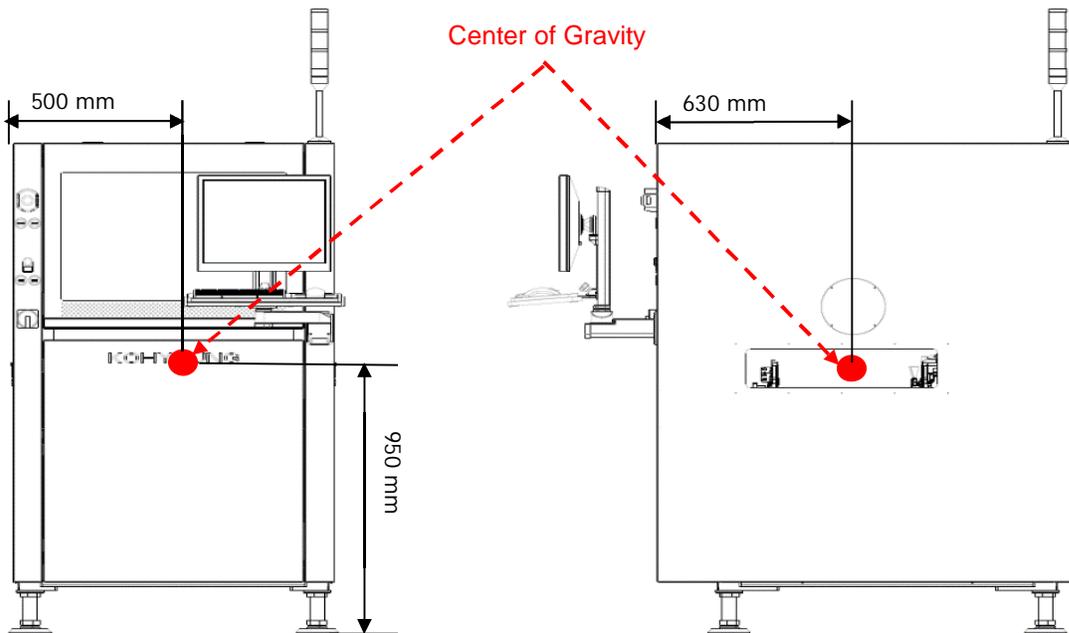
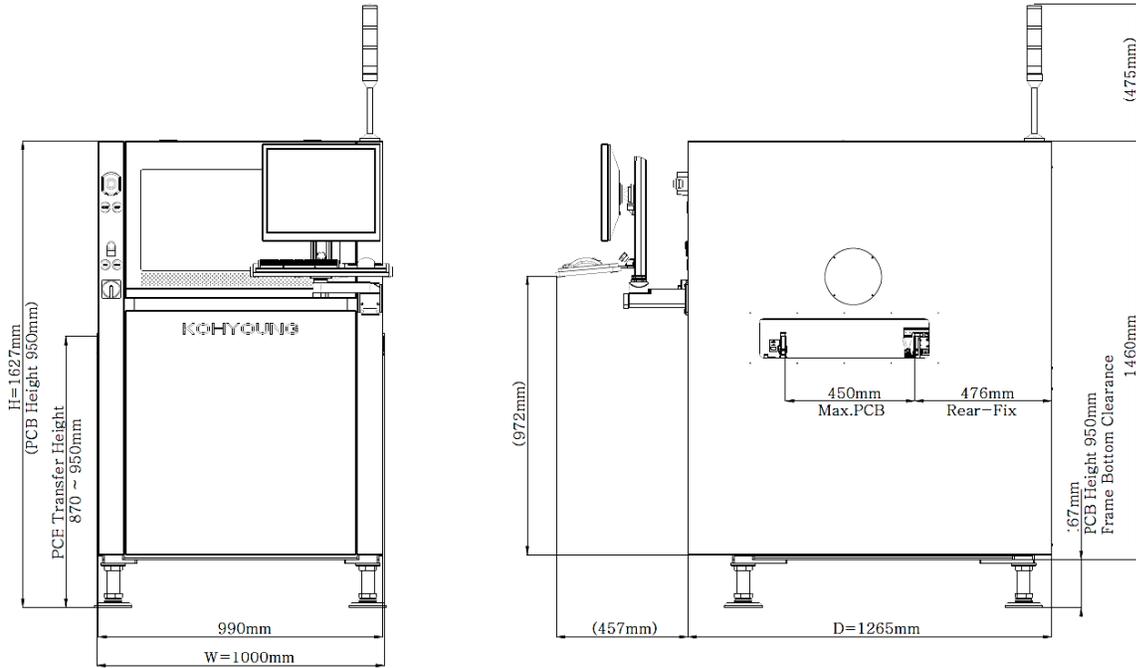
L Series Single Lane

Model		Dimensions
L Series	Single Lane	1000 x 1265 x 1627mm



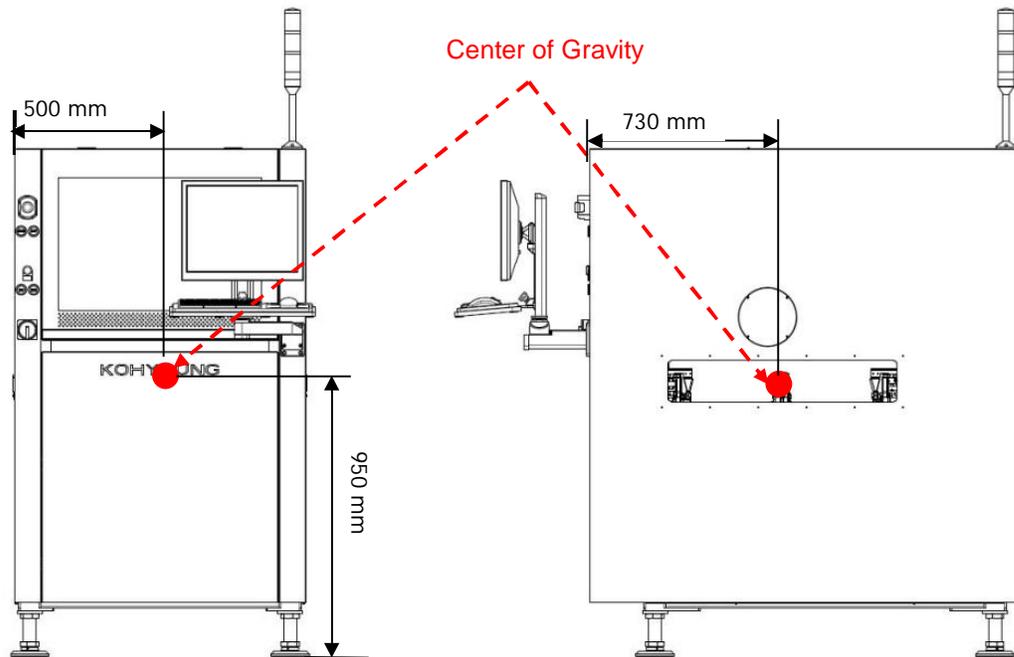
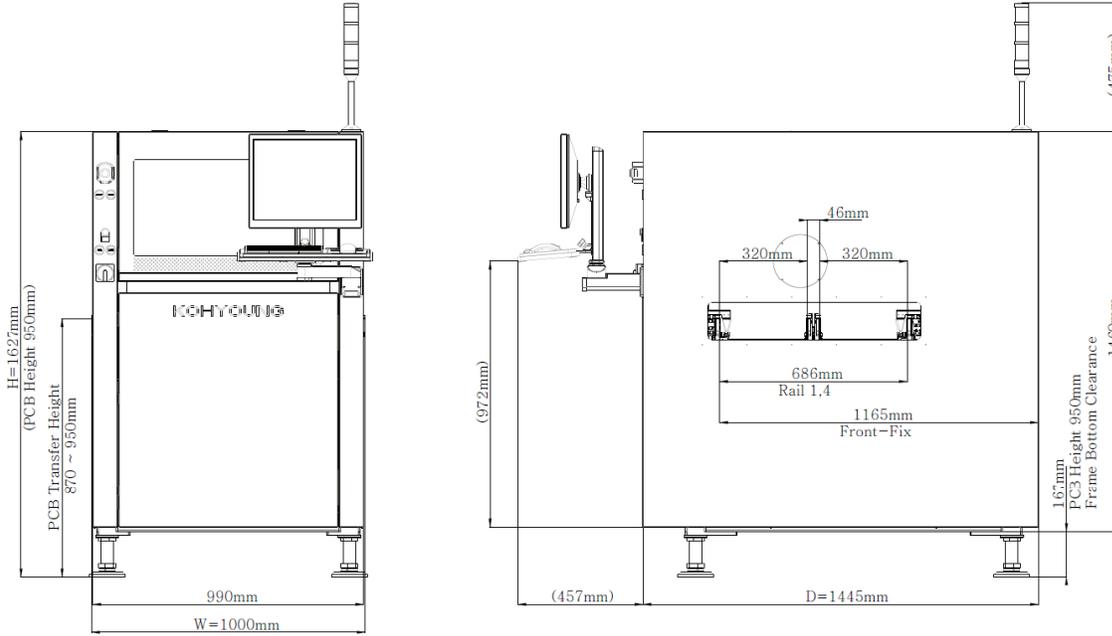
L Series_Single Lane_Rear Fix

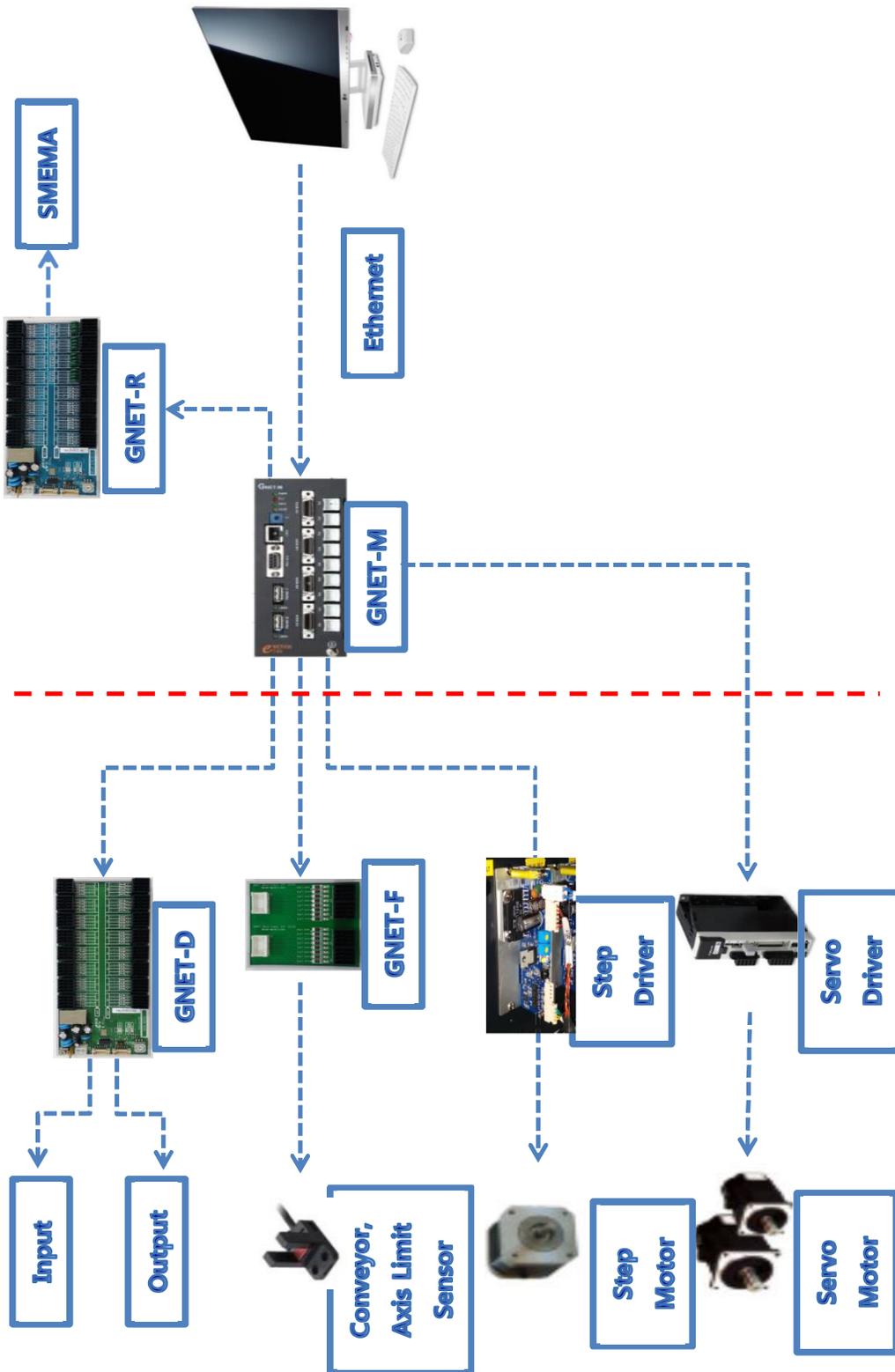
Model		Dimensions
L Series	Single Lane_Rear Fix	1000 x 1265 x 1627mm



L Series_Dual Lane

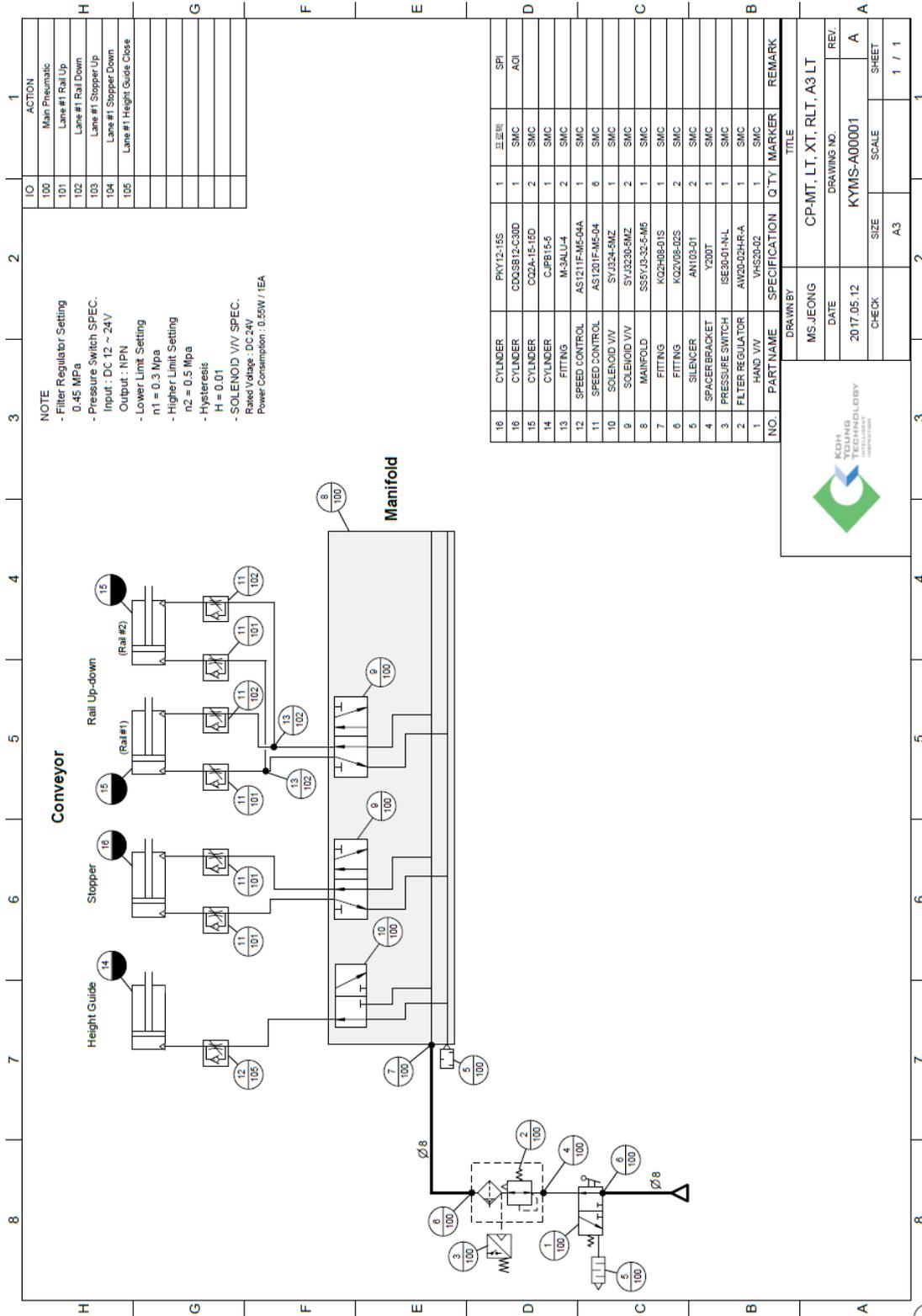
Model		Dimensions
L Series	Dual Lane	1000 x 1445 x 1627mm





Pneumatic Drawing

L Series_Single Lane_Timing Belt



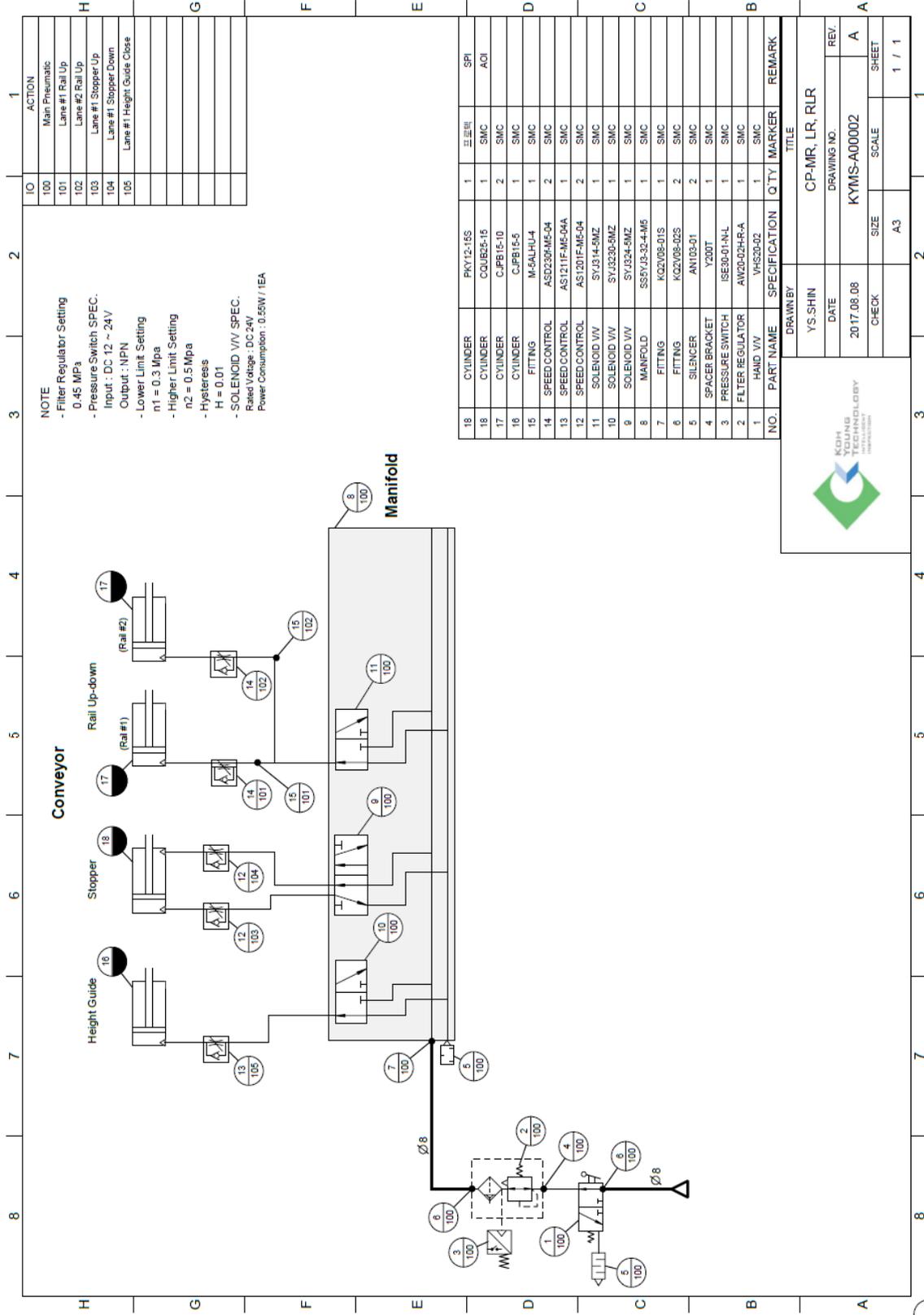
NOTE
 - Filter Regulator Setting
 0.45 MPa
 - Pressure Switch SPEC.
 Input : DC 12 ~ 24V
 Output : NPN
 - Lower Limit Setting
 n1 = 0.3 Mpa
 - Higher Limit Setting
 n2 = 0.5 Mpa
 - Hysteresis
 H = 0.01
 - SOLENOID V/V SPEC.
 Rated Voltage : DC 24V
 Power Consumption : 0.55W / 1EA

NO.	PART NAME	SPECIFICATION	Q.TY	MARKER	REMARK
1	SOLENOID V/V	VHS30-02	1	SMC	
2	SOLENOID V/V	AW20-02HR-A	1	SMC	
3	SOLENOID V/V	ISE30-01-NL	1	SMC	
4	SOLENOID V/V	Y200T	1	SMC	
5	SOLENOID V/V	AN103-01	2	SMC	
6	SOLENOID V/V	KG2V08-02S	2	SMC	
7	SOLENOID V/V	KG2V08-01S	1	SMC	
8	SOLENOID V/V	SS5VJ3-3S-5-M5	1	SMC	
9	SOLENOID V/V	SYJ3230-5MZ	2	SMC	
10	SOLENOID V/V	SYJ324-5MZ	1	SMC	
11	SOLENOID V/V	AS1201F-M5-04	1	SMC	
12	SOLENOID V/V	AS1211F-M5-04A	1	SMC	
13	FITTING	M-3ALU-L4	2	SMC	
14	CYLINDER	C-PS15-S	1	SMC	
15	CYLINDER	CG2A-15-16D	2	SMC	
16	CYLINDER	COCSB12-C30D	1	SMC	
17	CYLINDER	PKY12-16S	1	SMC	SPI

DRAWN BY		TITLE	
MS.JEONG	CP-MT, LT, XT, RLT, A3 LT	DRAWING NO.	REV.
2017.05.12	KYMS-A00001	SIZE	A
CHECK	SCALE	SHEET	1 / 1
	A3		



L Series_Single Lane_Ring Belt



NOTE
 - Filter Regulator Setting
 0.45 MPa
 - Pressure Switch SPEC.
 Input : DC 12 ~ 24V
 Output : NPN
 - Lower Limit Setting
 n1 = 0.3 Mpa
 - Higher Limit Setting
 n2 = 0.5 Mpa
 - Hysteresis
 H = 0.01
 - SOLENOID V/V SPEC.
 Rated Voltage : DC 24V
 Power Consumption : 0.55W / IEA

NO.	PART NAME	SPECIFICATION	QTY	MARKER	REMARK
1	HAND VV	VHS202	1	SMC	
2	FILTER REGULATOR	AW20-02HR-A	1	SMC	
3	PRESSURE SWITCH	ISE30-01-NL	1	SMC	
4	SPACER BRACKET	Y20T	1	SMC	
5	SILENCER	AN103-01	2	SMC	
6	FITTING	KQ2V05-02S	2	SMC	
7	SOLENOID VV	SS5VJ3-32-4M5	1	SMC	
8	SOLENOID VV	SVJ324-5MZ	1	SMC	
9	SOLENOID VV	SVJ314-5MZ	1	SMC	
10	SPEED CONTROL	AS1201F-M5-04	2	SMC	
11	SPEED CONTROL	AS1211F-M5-04A	1	SMC	
12	FITTING	M-5ALHJL4	1	SMC	
13	CYLINDER	CJFB15-5	1	SMC	
14	CYLINDER	CJFB15-10	2	SMC	
15	CYLINDER	PKY12-15S	1	SMC	SPI
16	CYLINDER	COURE25-15	1	SMC	AOI
17	CYLINDER	PKY12-15S	1	SMC	
18	CYLINDER	PKY12-15S	1	SMC	

DRAWN BY		TITLE	
YS.SHIN		CP-MR, LR, RLR	
DATE	2017.08.08	DRAWING NO.	KYMS-A00002
CHECK		SCALE	A
		SIZE	A3
		SHEET	1 / 1



L Series_Dual Lane

