

Service Information

MACHINE TYPE : YG88/YG88R

No: SI0807002E-000

CLASSIFICATION : Installation / Adjustment / Machine setting

ISSUED DATE: July 29, 2008

YG88: How to add the special nozzles and perform setting for the added nozzles

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Caution:

When adding the custom-ordered nozzles to the machine, and perform setting in order to enable the added nozzles to be used on the machine referring to this document, please make sure that a facility manager or a maintenance personnel performs the setting, or perform it under the supervision of them.

Also please observe the following:

1. Make a backup copy of the machine data.
When editing the coordinates or settings of the machine, you may fail the setting, which may disable the operation of the machine. In this case, you will be able to restore the data with the backup copy.
2. Make sure to press the [Emergency stop] button before the work operation.
As a part of your body gets in the machine during the work operation, please make sure to press the [Emergency stop] button before hand. Otherwise, it could cause an industrial accident.

Service Information

1. Background information

■ What is “Automatic nozzle change”?

“Automatic nozzle change” is the function that the machine exchanges nozzles automatically. There are the following two methods.

One is the method for exchanging nozzles by using the nozzle station (Hereafter called the “ANC”), and the other method by using the flying nozzles. (Hereafter called the “FNC”).

The FNC is not explained in this document.

■ How to specify the location to set the special nozzles

Specify the head number to attach the nozzle to.

Check if the special nozzle can be fit into the nozzle station and if there is available space for the nozzle on the station, then specify the station number.

There are four types of ANC special nozzles. Figure 2 shows the positional relation of each nozzle body and its positioning-pins.

Caution:

The spacers need to be replaced or added depends on the special nozzle. If you see the nozzle station from directly above, you can see the spacers are mounted with the screws. Loosen the screws and replace the spacer to the one for the special nozzle.

■ The layout drawing of the YG88R nozzle station

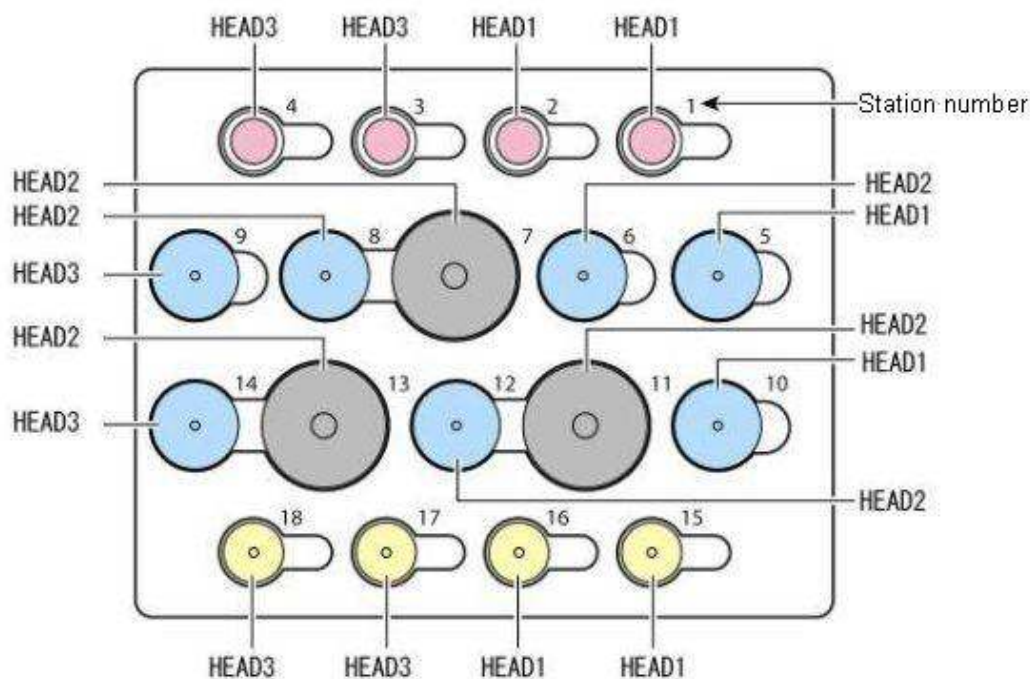


Figure 1

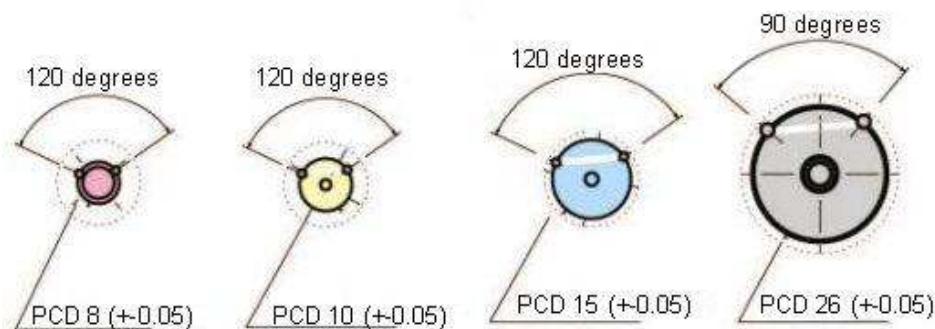


Figure 2

Service Information

1.1. Setting procedures

- Setting of the “Head Specification
- Setting of the “Mount Nozzle Specification”
- Setting of the “Nozzle Data” information
- Setting of the nozzle station information
- Adjustment of the sensor amplifier
- Adjustment of the coordinate of the nozzle station
- Setting of the vacuum level
- Consecutive nozzle change
- Setting of the Offline software (If you have the software.)

Note:

*The under mentioned procedures are explained under the following conditions as an example.

- The machine: YG88 and YG88R models
- Head: Head 1
- Nozzle: Special nozzle A, Type 22A
- The station number that the nozzle to be stored in: Nozzle station No.1

Caution:

The information in this document is subject to change due to the modification of the machine without prior notice.

The images of the screen shown in this document are the ones used when the document was created, so they may be different from the images shown on the screens of the machine you are currently using.

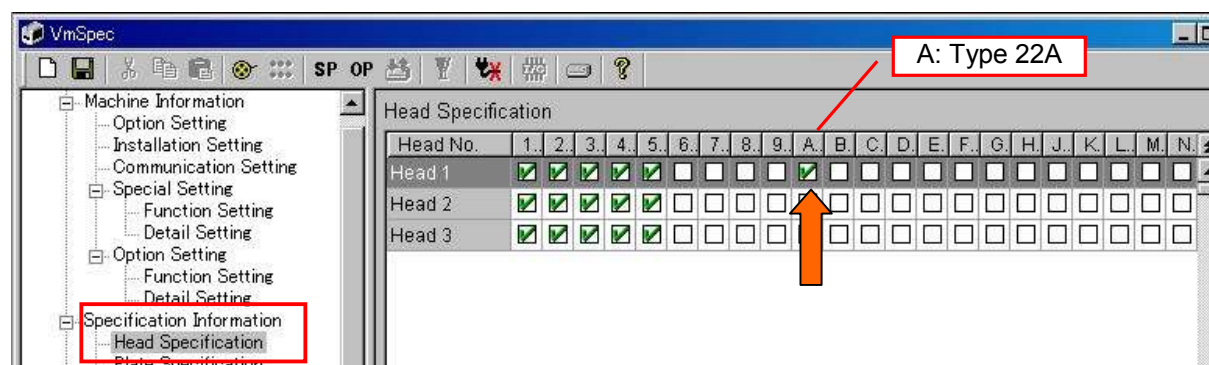
1.1.1. Setting of the “Head Specification”

Click on the [Machine] button and select “Head Specification” in the “Specification Information”. Specify the available nozzle for each head on this screen.



Figure 3

Check the box of the “Type 22A” nozzle on the “Head 1” row to enable to use the special nozzle on the Head 1.



<Check box> - Checked: Available / - Unchecked: Not available

Figure 4

Service Information

1.1.2. Setting of the “Mount Nozzle Specification”

Click on the [Machine] button and select “Nozzle Type” in the “Mount Nozzle Specification” (Figure 5). Specify which nozzle corresponds to which component on this screen.

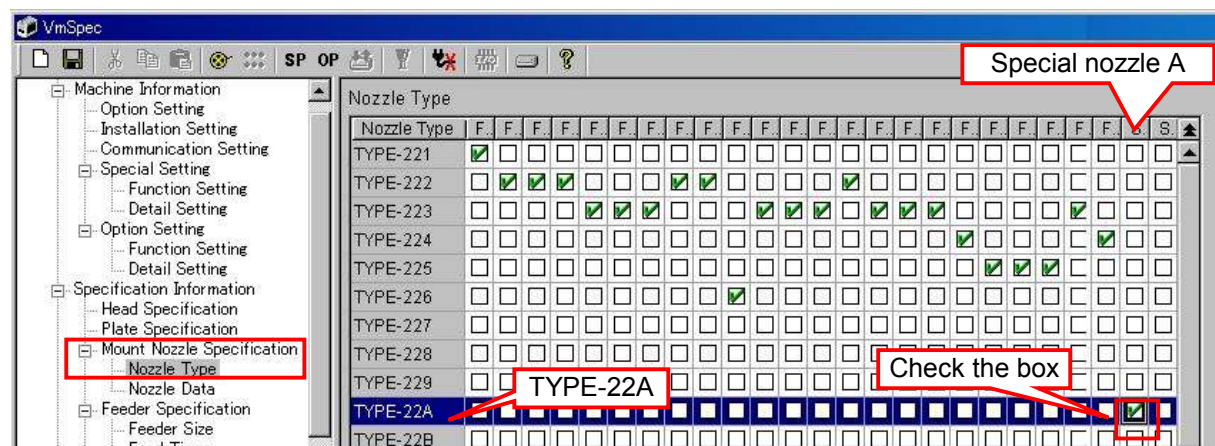
Tick the box where the “Type 22A” row and the “Special Nozzle A” column cross.

This enables the “TYPE-22A” nozzle to be used when the “SP. NozzleA” is selected from the “Required Nozzle” on the “Basic” tab in the “Parts Information”.

Caution:

Only one type of nozzle can be set per a type of component.

For example, you cannot specify the two types of nozzles “TYPE 22A” and “TYPE 221” for “Special Nozzle A”



<Check box>

- Checked: The nozzle used when selected from the dropdown list of the “Required Nozzle” item.
- Unchecked: The nozzles that are not used

Figure 5

1.1.3. Setting of the “Nozzle Data” information

Click on the [Machine] button and select “Nozzle Data” in the “Mount Nozzle Specification”.

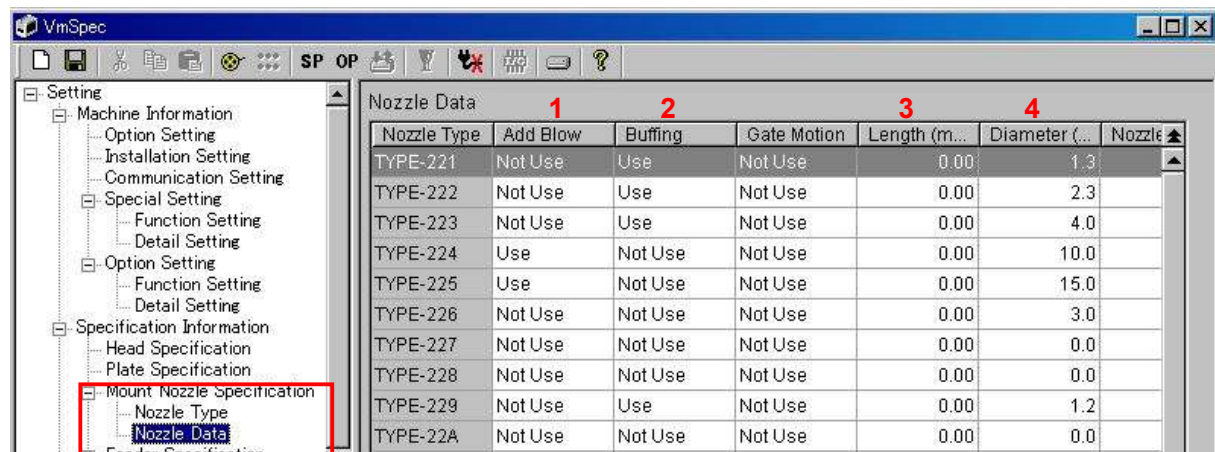


Figure 6

1. “Add Blow”: When you need to apply extra positive pressure to the nozzle in order to prevent the nozzle brings back the mounted component, select “Use”. If you do not need it, select “Not Use”. It is recommended to select “Use” when using nozzles that are equipped with O-ring such as TYPE 224 and TYPE 225 nozzles.
2. “Buffing”: When the nozzle has a spring, select “Use”. If it does not, select “Not Use”.
(Example: The nozzles that have a spring: TYPE 221, 222 and 223)

Service Information

- Length (mm): Set the nozzle length with reference to the TYPE 222 Nozzle.
* If a nozzle is longer than the TYPE 222 Nozzle, input the difference by a minus (coordinate) indication.
- Diameter (mm): Input the maximum outer diameter at the tip of the nozzle.

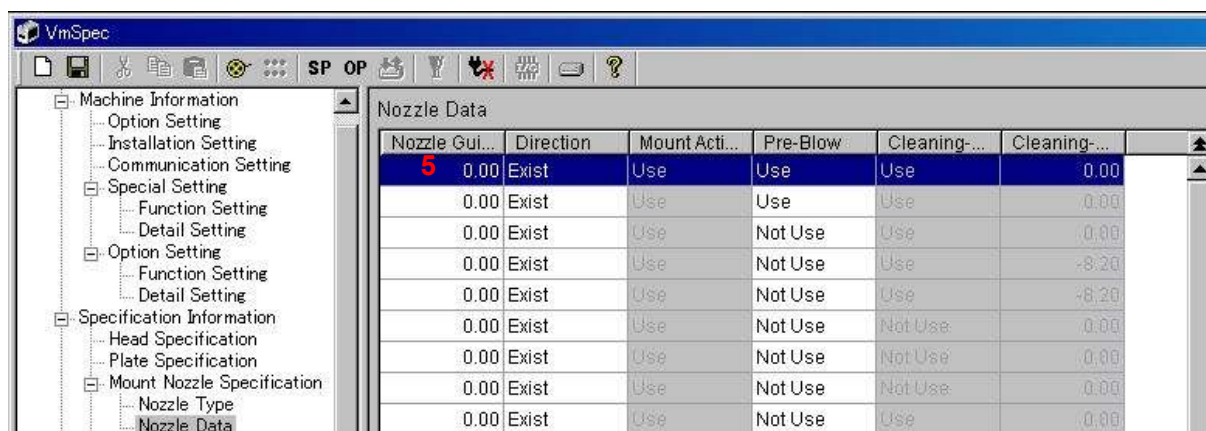


Figure 7

- Nozzle Guide Length (mm) : Set the nozzle guide length for the nozzles whose vacuum height changes depends on their shape.
(Example: Gripper nozzles or nozzles that pick up components by vacuuming the lateral side of the components.)

*If you input the nozzle guide length, the “Nozzle Touch Point Offset” function activates when the nozzle vacuums components.

Leave the other items as default setting.

1.1.4. Setting of the “Nozzle Station” information

- Press the [Emergency stop] button. Perform the following work operation under emergency-stop conditions.
Open the shutter of the nozzle station and remove the nozzle from the head, then put the nozzle back to the station.

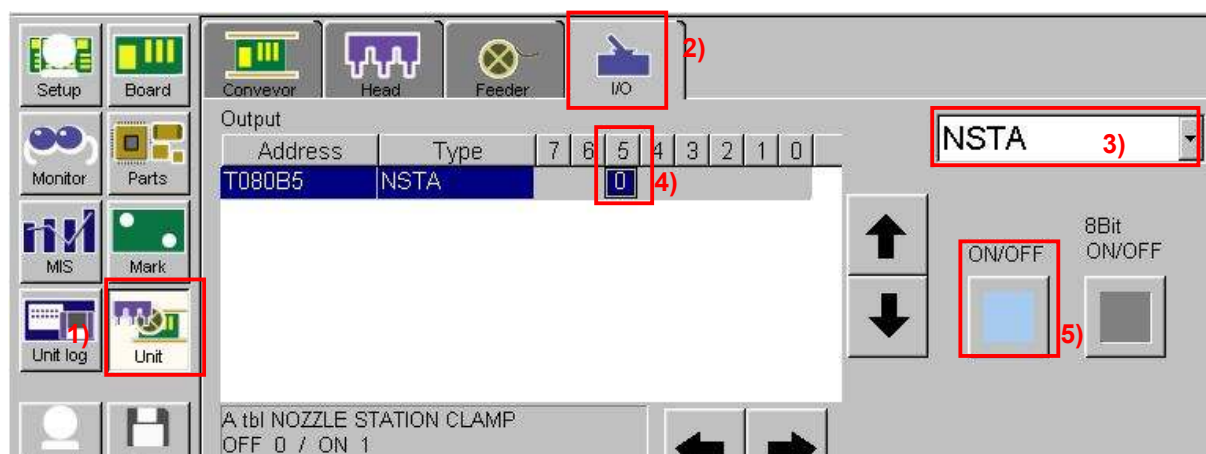


Figure 8

- Click on the [Unit] button.
- Select the “I/O” tab.
- Select “NSTA” from the dropdown list on the “Output” side.
- Select “T080B5”(NOZZLE STATION CLAMP/ OFF)
- Click on the [ON/OFF] button.
- The shutter opens. Remove the nozzle from Head 1 and put it back to the station.
Store the special nozzle to be newly added in the available station where the nozzle can fit in.

Service Information

2. Click on the [Machine] button and select “Nozzle Station” in the “Station”.

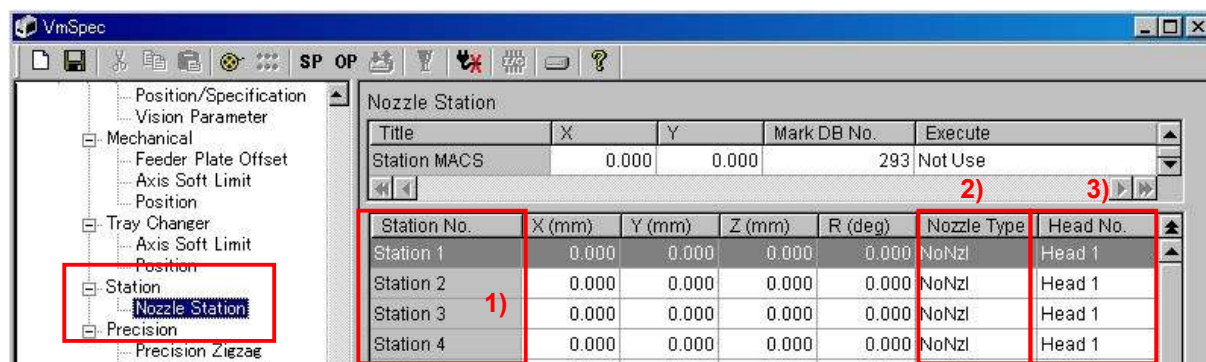


Figure 9

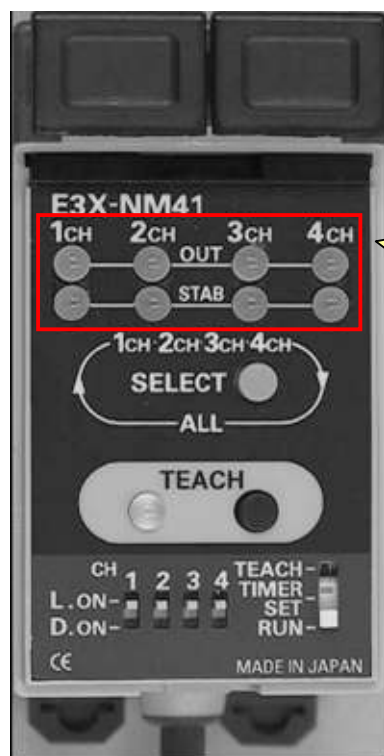
- 1) Referring to the drawing of the nozzle station, check which station is available. Input the data in the field of the station where the added nozzle will be actually stored.
- 2) Set which type of nozzle is stored in which station. Select the nozzle type that you specified in “1.1.1. Setting of the “Head Specification””.
- 3) Set which head is to be used for exchanging the nozzles. Select the head number that you specified in “1.1.1. Setting of the “Head Specification””.

Caution:

The head number to be allocated varies depends on the station. Please refer to Figure 1, “The layout drawing of the YG88R nozzle station”.

1.1.5. Adjustment of the sensor amplifier for the nozzle station

One amplifier is assigned to four sets of the fiber sensors for the nozzle detection.



The channel on the left corresponds to the smaller numbers of the station, and the channel on the right corresponds to the bigger ones.
(Example: 1CH is assigned to the station from 1 through 4, and 2CH is assigned to the station from 5 through 8.)

- When only the green light lights up:
A nozzle exists in the ANC.
- When both the green and the orange lights light up:
A nozzle does not exist in the ANC.
(The machine judges that the nozzle is attached to the head.)
- When the green light is blinking, off, or about to turns off:
The detection is unstable.

Figure 10

Service Information

Note:

The amplifier has two types of LEDs. The orange LEDs on the upper row indicate whether the nozzle exists or not. The green LEDs indicate if the amplifiers are working properly.

Normally the station numbers are allocated from the smaller numbers to the bigger ones, from left to right.

Please check if the sensor works properly by taking out and putting in the nozzle at the station.

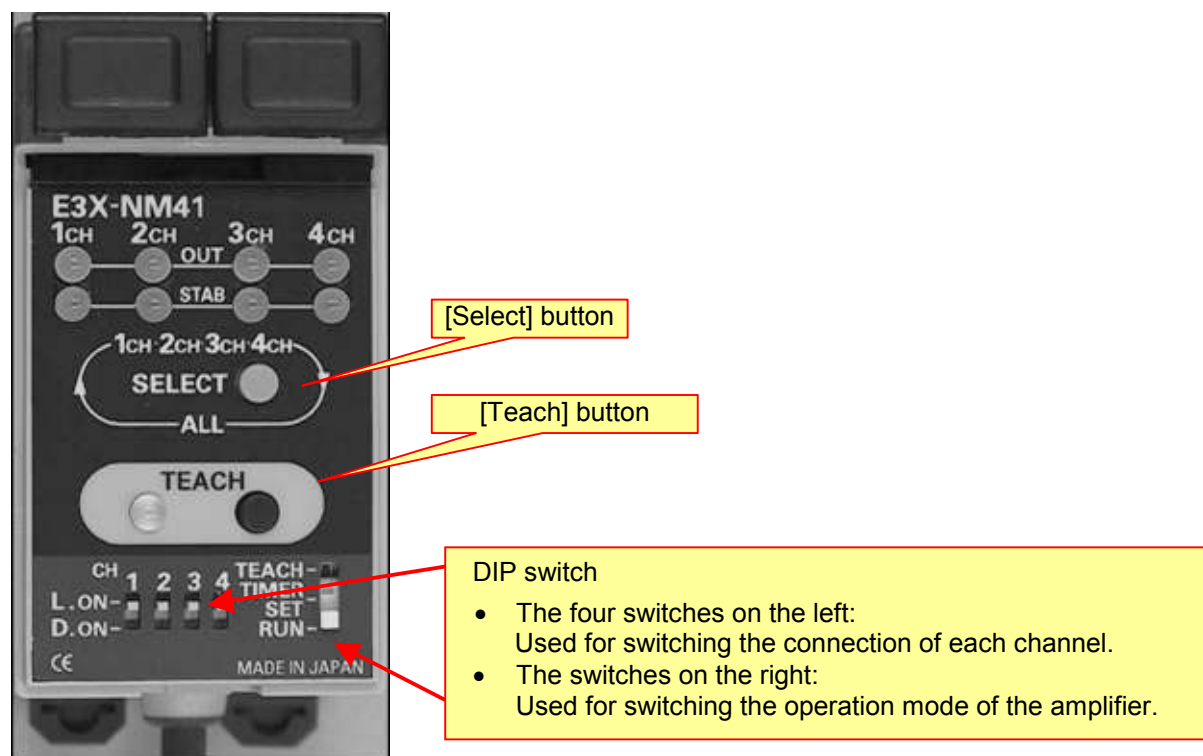


Figure 11

1. Check the “D-ON/L-ON” switch. (The switch for switching the operation mode)
Remove the amplifier cover and check if the DIP switch is set to “D-ON (Dark on)”.
2. Adjust the maximum sensitivity of the nozzle.
Remove the nozzle from the station to be adjusted, and set the DIP switch at the lower right of the amplifier to “TEACH” mode.
3. Press the [Select] button and select the channel that corresponds to the station number to be adjusted.
The channels are indicated in the following order every time you press the button.
CH1 → CH2 → CH3 → CH4 → ALL → CH1 ...
* Please do not use “ALL”.
4. Keep pressing the [TEACH] button until it beeps, in order to set the maximum sensitivity.
5. Put the DIP switch at the lower right of the amplifier back to “RUN” mode to complete the setting.
The DIP switch is changed to [TEACH] mode again in the next adjustment, however you should not omit this procedure.
In order to adjust the maximum sensitivity for other channels, please repeat the procedure from 1 through 5.
When adjusting the maximum sensitivity, please make sure to adjust the detection sensitivity of the channel, too.
6. Adjust the detection sensitivity of the nozzle.
Set the DIP switch to the [TEACH] mode again, and press the [SELECT] button to select the channel to be adjusted.

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7. Store the nozzle in the station and click on the [TEACH] button.
8. Take out the nozzle from the station, and press the [TEACH] button again.
If the color of the LED of the [TEACH] part changes with the beep, it indicates that the setting was completed successfully.

If you hear the blips intermittently, it indicates that the distance between the fiber sensor and the nozzle is not appropriate. In this case, adjust the position of the fiber sensor by moving it closer to the nozzle.
9. Put the DIP switch at the lower right of the amplifier back to "RUN" mode to complete the setting.
10. Repeat the procedure from 6 through 9 to perform adjustment for the other channels.
11. When all the adjustment is completed, put the amplifier cover back to its original position.

1.1.6. Adjust the coordinate of the nozzle station

Perform trace for the nozzle exchange position XY with the adjustment utility.

1.1.6.1. Perform teaching for the nozzle exchange position XY coordinate

1. Click on the [Board] button on the [Setup] screen and read the board data "MCH_SETUP".
2. Click on the [Utilities] button to display the login dialog.
3. Input the user name and the password to startup the adjustment utility.
4. Click on the [ANC] button on the CalibSm main menu.

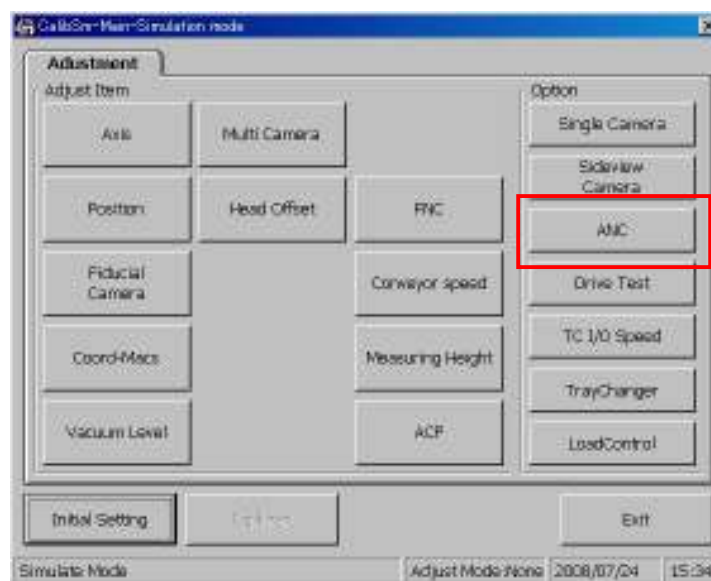


Figure 12

5. Check if "Teaching" is selected from the "Menu" at the upper left of the screen.

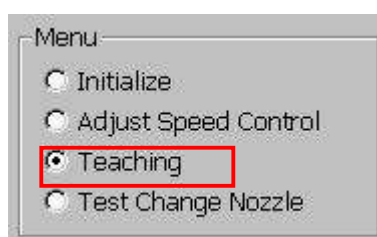


Figure 13

Service Information

- Press the [Emergency Stop] button and set the nozzle to the station.
- Set the Mark number for the Macs recognition.

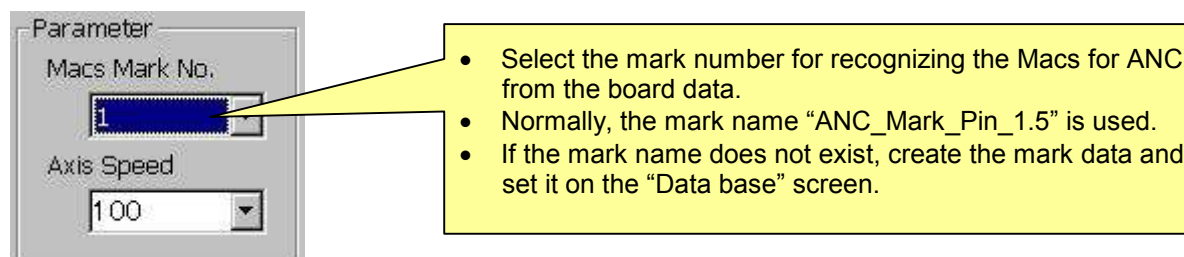


Figure 14

- Release the [Emergency Stop] button and click on the [Get Macs Mark] button. If it is successfully performed, the display "No Macs" changes to "Use Macs".

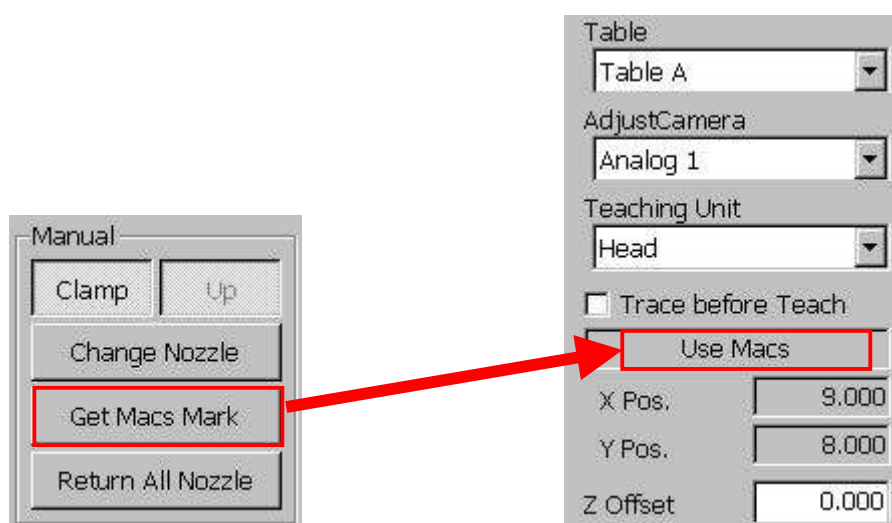


Figure 15

- Select "Move camera" from the dropdown list of the "Teaching Unit".

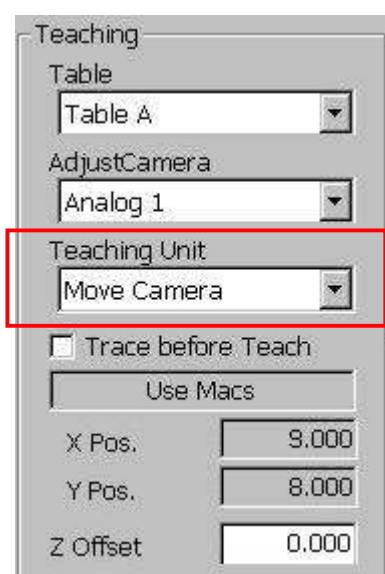


Figure 16

Service Information

10. Select the "X Pos." and "Y Pos." of the station number to be adjusted.

If the fields are selected, the message at the lower left of the window changes to "Axis XY teaching".

No.	X Pos.	Y Pos.	Z Pos.	R Pos.	Type	Head
1	5.000	3.000	4.000	2.000	221	1
2	2.000	10.000	0.000	4.000	222	2
3	5.000	1.000	5.000	2.000	223	2
4	5.000	1.000	10.000	7.000	224	2
5	4.000	1.000	8.000	5.000	225	2
6	9.000	0.000	2.000	0.000	226	1

Axis XY teaching

Figure 17

11. Click on the [Trace] button to move the camera to above the nozzle.

12. Perform teaching for the nozzle exchange position XY.
After clicking on the [Trace] button, click on the [Teach] button.

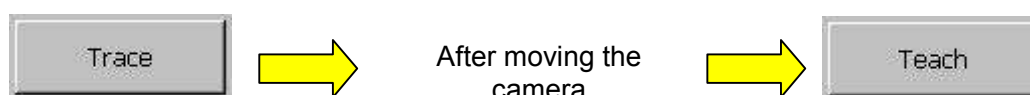


Figure 18

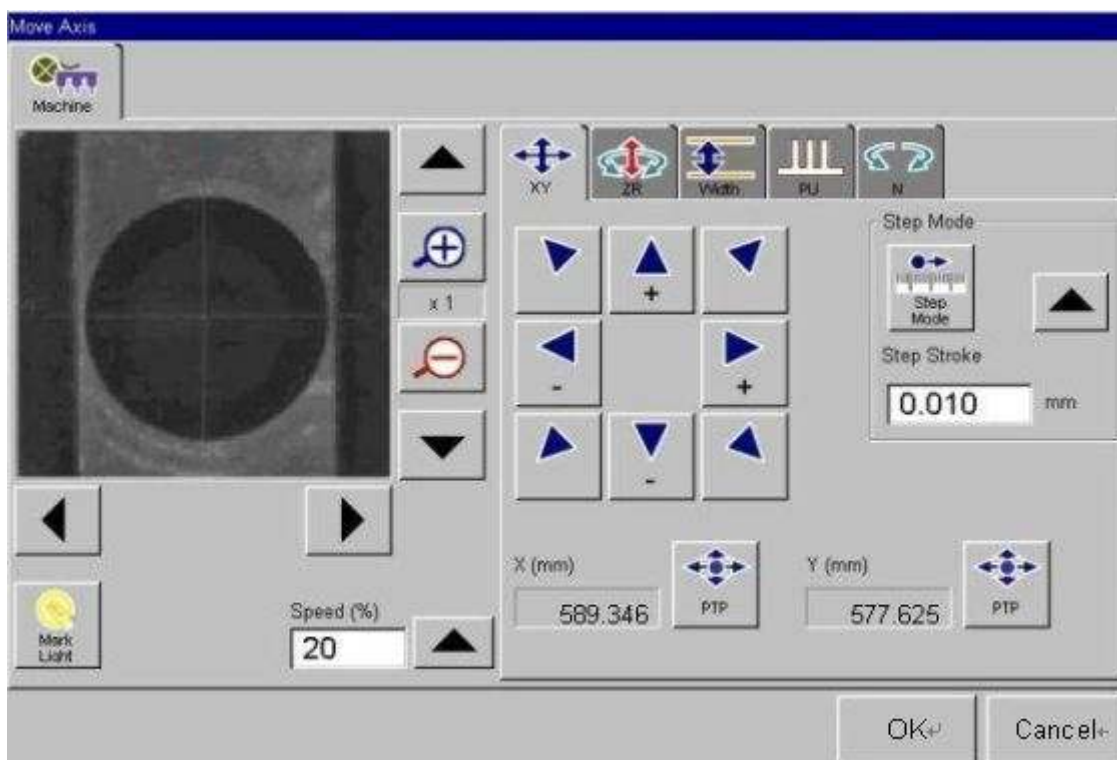


Figure 19

13. Match the cross line to the center of the nozzle hole, and then click on the [OK] button.

Service Information

1.1.6.2. Perform teaching for the nozzle exchange position of the R coordinate

Please make sure to complete the adjustment for the nozzle exchange position XY coordinate before hand.

1. Check if "Head" is selected from the dropdown list of the "Teaching unit".
2. Press the [Emergency Stop] button and set the nozzle to the ANC.

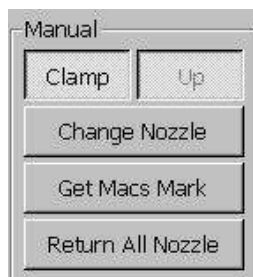


Figure 20

3. Trace the nozzle exchange position XY for the station number to be adjusted.
* Please refer to the "1.1.6.1. Perform teaching for the nozzle exchange position XY coordinate" for the method.
4. Select the R coordinate of the station to be adjusted from the list. If the "R Pos." field is selected, the message at the lower left of the window changes to "Axis R teaching".

No.	X Pos.	Y Pos.	Z Pos.	R Pos.	Type	Head
1	5.000	3.000	4.000	2.000	221	1
2	2.000	10.000	0.000	4.000	222	2
3	5.000	1.000	5.000	2.000	223	2
4	5.000	1.000	10.000	7.000	224	2
5	4.000	1.000	8.000	5.000	225	2
6	0.000	0.000	2.000	0.000	226	1

Axis R teaching

Figure 21

5. Click on the [Clamp] button and release the ANC clamp.
6. After pressing the [Emergency Stop] button, lower the head by hand to insert it into the station. Then click on the [Teach] button.
As there are positioning-pins located in the nozzle hole, before clamping the nozzle by the head, rotate the head so that the cutout part of the nozzle and the head fit properly.
* Make sure that the head clamps the nozzle properly.
7. The dialog box (See Figure 22) appears. Turn the R-axis of the head clockwise until the positioning pin is pressed against one side of the cutout part of the nozzle, and click on the [OK] button.

Caution:

Rotate the R-axis with the head being inside the station. As the movable range of the R-axis is limited when the nozzle is stored in the station, please be careful not to damage the nozzle by pressing the positioning pin against the nozzle too hard.



Figure 22

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- You can also adjust the R-axis position by the following method.
 - 1) Rotate the R-axis slightly clockwise when raising the nozzle.
 - 2) Lower the head by hand to insert it into the station (of the ANC).
 - 3) When the head touches the bottom of the station, check if the head is stored in the station properly.
 - 4) Repeat the procedure 1) through 3) until just before the R-axis position reaches the point where the nozzle and the head do not fit to each other.
 - 5) Click on the [OK] button at the point just before the nozzle cannot be stored in the station.

- 8. The following dialog box appears. Turn the R-axis of the head anticlockwise until the positioning pin touches one side of the cutout part of the nozzle and stops, and then click on the [OK] button.



Figure 23

Caution:

Rotate the R-axis with the head pressed against the ANC. As the movable range of the R-axis is limited when the nozzle is stored in the station, please be careful not to damage the nozzle by pressing the positioning pin against the nozzle too hard.

1.1.6.3. Perform teaching for the Z-axis

Please make sure to complete the adjustment of the nozzle exchange position X, Y and R before performing teaching for the Z-axis.

1. Check if "Head" is selected from the dropdown list of the "Teaching unit."
2. Click on the [Clamp] button and set the nozzles to the ANC.
3. Trace the nozzle exchange position X, Y of the station to be adjusted.
*Please refer to "1.1.6.1. Perform teaching for the nozzle exchange position XY coordinate".
4. Select the R coordinate of the station to be adjusted from the list. If the "R Pos." field is selected, the message at the lower left of the window changes to "Axis R teaching".
5. Release the [Emergency Stop] button and click on the [Trace] button.
The head to be adjusted rotates and the R-axis stops at the coordinate for the nozzle exchange position.
6. Select the Z-axis of the station to be adjusted from the list.

No.	X Pos.	Y Pos.	Z Pos.	R Pos.	Type	Head
1	5.000	3.000	4.000	2.000	221	1
2	2.000	10.000	0.000	4.000	222	2
3	5.000	1.000	5.000	2.000	223	2
4	5.000	1.000	10.000	7.000	224	2
5	4.000	1.000	8.000	5.000	225	2
6	9.000	0.000	2.000	0.000	226	1

Axis Z teaching

Figure 24

Service Information

- Click on the [Teach] button, then the following dialog box appears.



Figure 25

- After pressing the [Emergency Stop] button, lower the head by hand to insert it into the station so that the head clamps the nozzle properly. Move the head up and down several times to make sure that the nozzle can be fit into the station smoothly. If it does not, adjust the R coordinate.
- Click on the [OK] button on the dialog box.

1.1.7. Set the vacuum level

Set the reference pickup /mount vacuum levels used to determine whether a component is being picked up or not, or whether it is being mounted (if the component detaches from the nozzle for being mounted) or not.

- Click on the [Utilities] button to display the login dialog.
- Input the user name and the password to startup the adjustment utility.

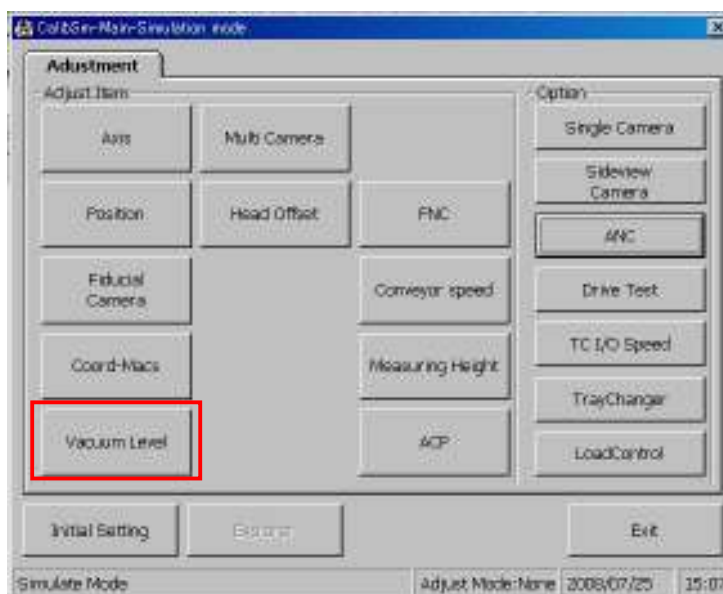


Figure 26

- Click on the [Vacuum level] button.

1.1.7.1. How to adjust the "Picking level"

- Select the head to be adjusted and nozzle type from the dropdown list at the upper left of the "Vacuum Level" screen.
- Select "Picking Level" from the "Adjust Item". The "Offset" value and "Measuring Way" do not need to be changed.
- Click on the [Nozzle Change] button in order to change the nozzle to the one to be adjusted.
- Click on the [Execute] button.

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- Check the pressure level with the nozzle open.
The following dialog box appears. When everything is ready, click on the [OK] button.



Figure 27

- When the measurement is completed, the following dialog appears. If you need to save the data, click on the [Yes] button.

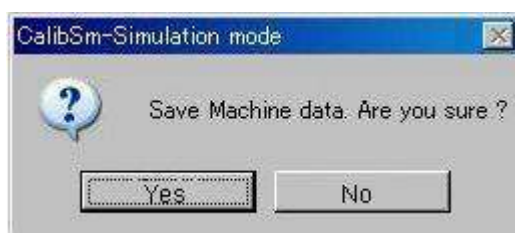


Figure 28

- When the following dialog appears, click on the [OK] button.

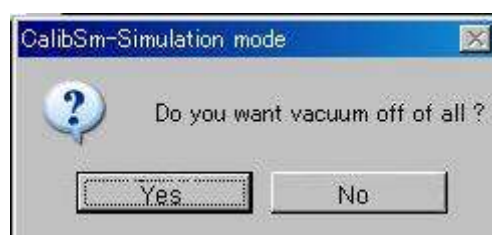


Figure 29

When the adjustment for the “Picking Level” is completed, move on to the adjustment for the “Mounting Level”.

1.1.7.2. How to adjust the “Mounting level”

- Select “Mounting Level” from the “Adjust Item”.
The “Offset” value and “Measuring Way” do not need to be changed.
- Click on the [Execute] button.
- Check the pressure level with the nozzle sealed.
The following dialog box appears. Press the [Emergency Stop] button and make the nozzle vacuum a piece of top tape of the carrier tape in order to seal the nozzle hole.

*When adjusting the “Mounting level” of the nozzles such as gripper nozzle, it is difficult to seal the nozzle hole. In this case, make the nozzle vacuum an actual component.
When everything is ready, click on the [OK] button.



Figure 30

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- When the measurement is completed, the result and the following dialog box appear.

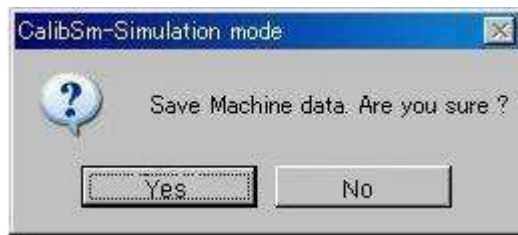


Figure 31

If you need to save the data, click on the [Yes] button.

- When the following dialog box appears, click on the [Yes] button.

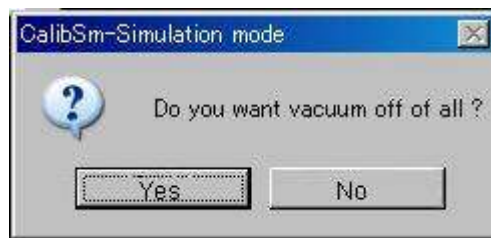


Figure 32

This is the end of the "Vacuum Level" adjustment.

1.1.8. Consecutive nozzle change

Check if the set nozzles can be changed automatically.

Display the "Adjust ANC" screen referring to "1.1.6. Adjust the coordinate of the nozzle station", section 1 to 4.

- Select "Test Change Nozzle" from the "Menu".

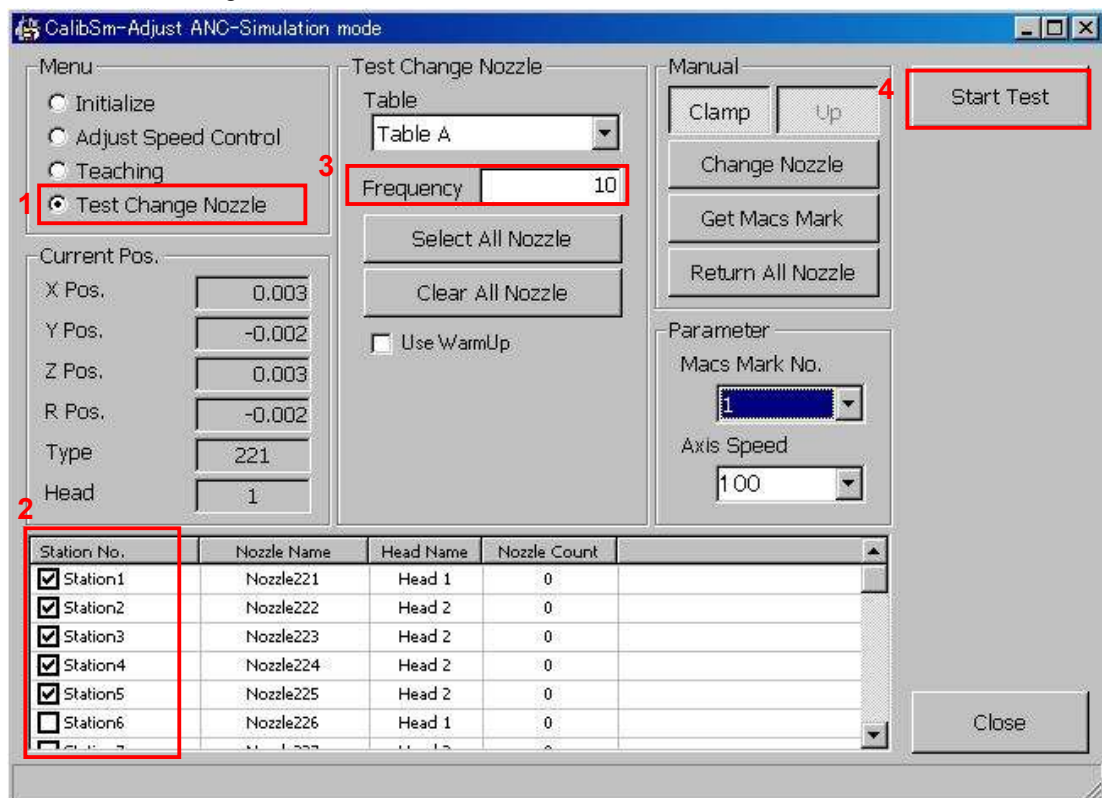


Figure 33

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2. Tick the check boxes of the nozzles that have been added.
(You can select all the nozzles if needed.)
3. Input the number of times that the test needs to be performed in the “Frequency” field.
(10 times is enough.)
4. Click on the [Start Test] button to start performing the test.

1.1.9. How to set the Offline software

1. After adding the new nozzles to the machine, make the backup copy of the system data.
* Please refer to the “YGOS User’s Manual” for details.
2. Connect the media that you stored the copy of the system data in the procedure 1 to the PC that YGOS is installed. Then perform “Re-register machine”.
*Right-click on the relevant model to display the menu. Select “Re-register machine” item from the dropdown list.

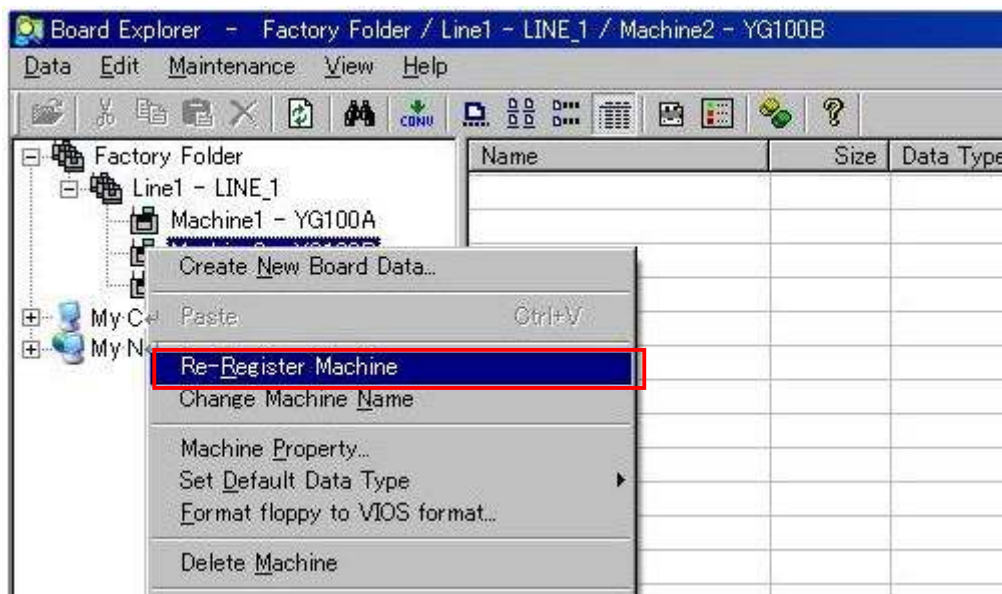


Figure 34

3. After performing “Re-Register Machine”, right-click on the relevant machine model on the screen again, and select the “Machine property” item from the menu to display the “Nozzle Type” screen.
As the setting for the “Nozzle Type” is not reflected by the Re-registration of the machine, you need to tick the relevant boxes manually.
*Please refer to “1.1.2. Setting of the “Mount Nozzle Specification”” for the method.

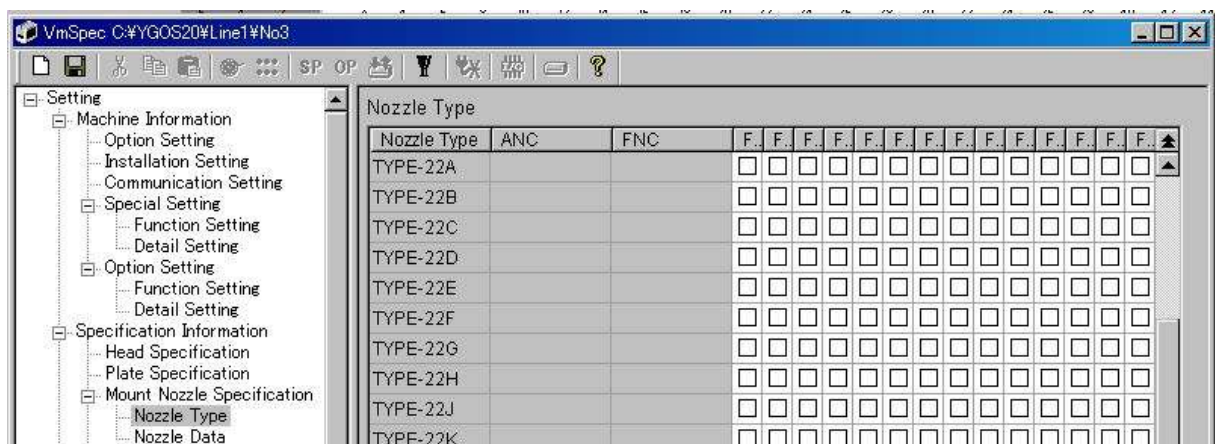


Figure 35