



For details on the TCP fixed operation, see section 2.8.1 “Motion about TCP” in OPERATOR’S MANUAL.

8.3.3 Automatic Measurement of the Tool Load and the Center of Gravity

8.3.3.1 What is the Automatic Measurement of the Tool Load and the Center of Gravity?

With this function, the user can register the load of tool and the position of the tools center of gravity.

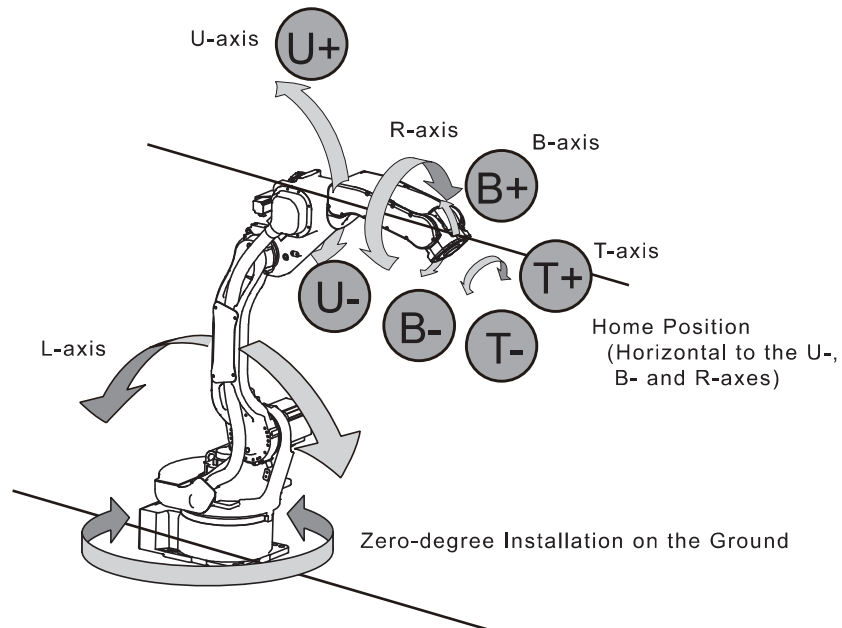
The tool load and the position of it’s center of gravity are measured and registered in a tool file.



This function can be used where the manipulator is installed level on the ground.
For the conditions required for manipulator installation, refer to section 8.4 “ARM Control” on page 8-39.

8.3.3.2 Measurement of the Tool Load and the Center of Gravity

To measure the tool load and the center of gravity, move the manipulator to its home position (horizontal to the U-, B- and R-axes) and operate the U-, B- and T-axes.



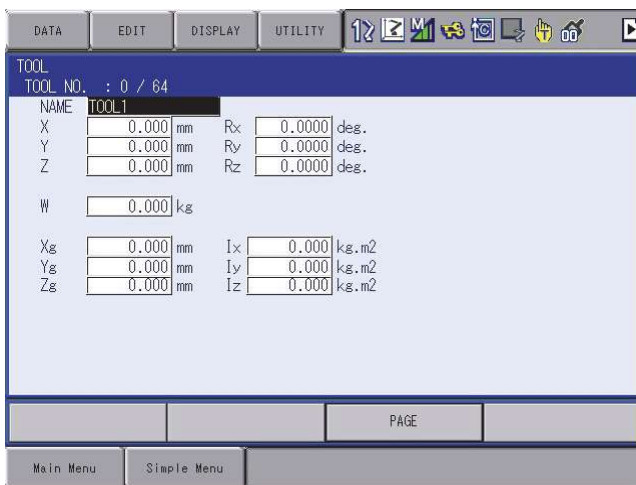
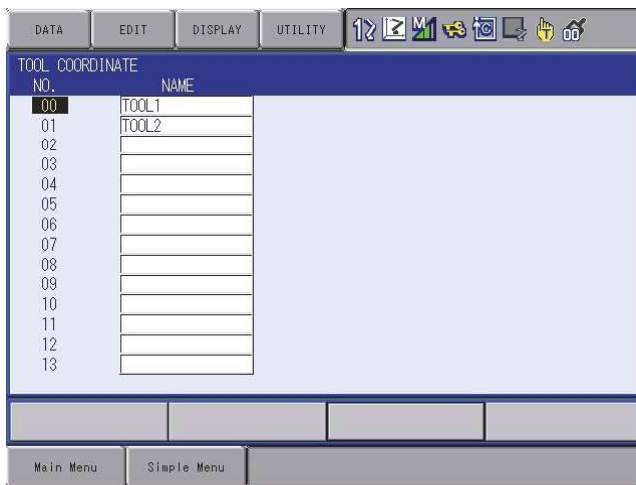
To correctly measure the tool load or the center of gravity, remove the cables or wires connected to the tool.

1. Select {ROBOT} under the main menu.

2. Select {TOOL}.

- The tool list window appears.
- The tool list window is called up only when the file extension function is valid.

If the file extension function is invalid, the tool coordinate window appears.



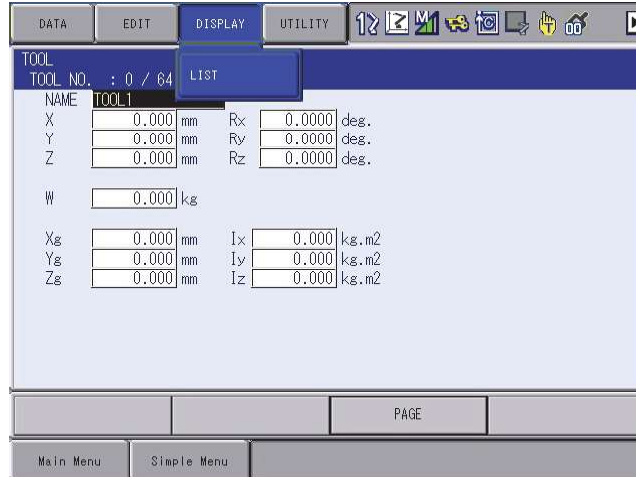
3. Select the desired tool number.

- Move the cursor to the desired number in the tool list window and press [SELECT].
- The tool coordinate window of the selected number is shown.
- In the tool coordinate window, the number can be changed by pressing the [PAGE] or selecting [PAGE].

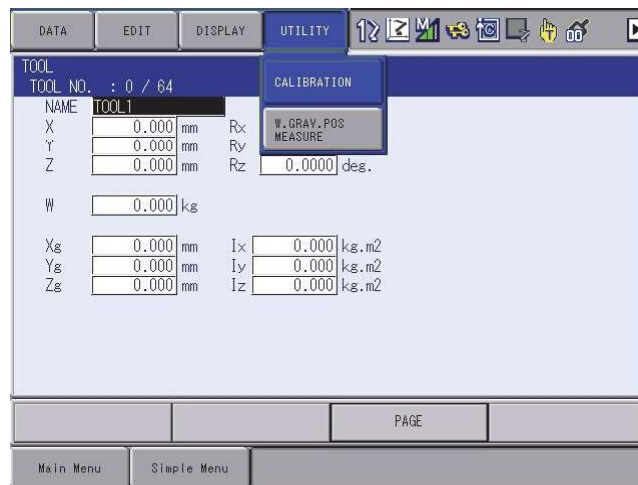
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8.3 Tool Data Setting

- To switch the tool list window and the tool coordinate window, press {DISPLAY} → {LIST} or {DISPLAY} → {COORDINATE DATA}.

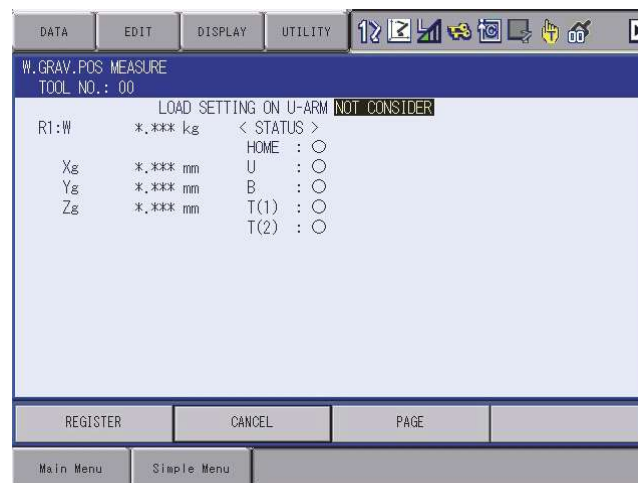


4. Select {UTILITY} under the menu.



5. Select {W.GRAV.POS MEASURE}.

- The window for the automatic measurement of the tool load and the center of gravity is shown.



6. Press the [PAGE].

- In a system with several manipulators, use the [PAGE] to change the group to be controlled.

7. Press [FWD].

- Press [FWD] once, and the manipulator moves to the home position (horizontal to the U-, B- and R-axes).

8. Press [FWD] again.

- Press [FWD] again, and measurement starts. Keep the button pressed until measurement is completed.

The manipulator moves in the order listed below. Once measurement is completed, “○” changes to “●”.

- ① Measurement of the U-axis: U-axis home position +4.5 degrees → -4.5 degrees
- ② Measurement of the B-axis: B-axis home position +4.5 degrees → -4.5 degrees

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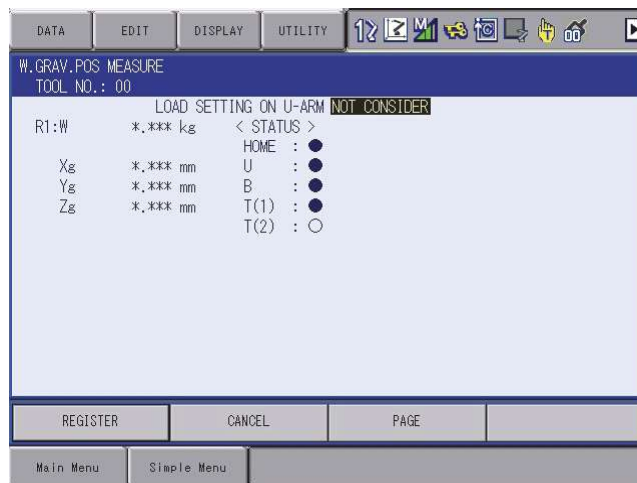
8.3 Tool Data Setting

- ③ First measurement of the T-axis: T-axis home position +4.5 degrees
→ -4.5 degrees
- ④ Second measurement of the T-axis: T-axis home position +60 degrees
degrees → +4.5 degrees → -4.5 degrees



- The speed during measurement automatically changes to “Medium”.
- During the measurement, “HOME” or “U” blinks on the screen.
- During the measurement, the [FWD] button has to be kept pressed. If the button is released during the measurement or if it is released before “O” changes into “●”, the measurement is aborted and the following message appears: “Stopped measurement”
- The measurement starts again from the first home position.

- When all the measurements are completed or when all the “O” marks have changed into “●”, the measured data appears on the screen.



9. Select “REGISTER”.

- The measured data is registered in the tool file, and the tool coordinate window appears.
- Select “CANCEL” to call up the tool list window without registering the measured data in the tool file.