# Mitsubishi robot re-calibration after battery change

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# Status of the robot system after batteries are empty

The batteries of the robot system has to be replaced if the robot gives an origin lost message or a low battery warning. If the robot system is idle for a longer period, then also the robot losses its origin data due to drain of the battries. Once the origin data is lost the co-ordinates of the robot looks like in the figure 1.

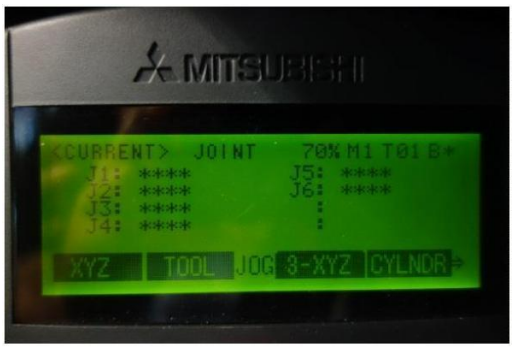


Fig. 1: Robot co-ordinate after the orgin is lost

To set the origin back, the empty batteries has to be replaced with a new ones. All of the following steps should be performed by turning the controller ON.

# Removing the batteries from Robot arm

Step 1. Remove the screws holding the cover located behind the robot arm.

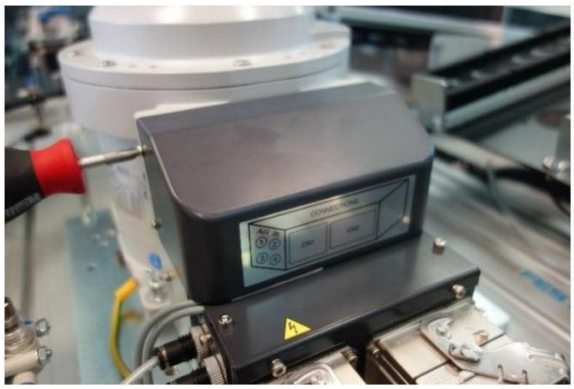

Fig. 2: Removing the screws on the robot arm [Note: Screw locations depends on robot type]

Step 2. Unplug the battery connectors.

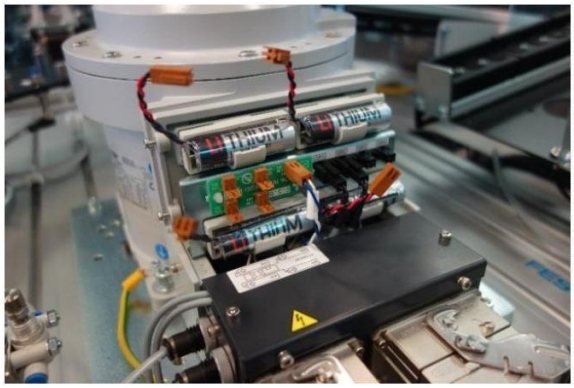

Fig. 3: Unplugged battery connectors

Step 3. Remove the batteries from the battery holder

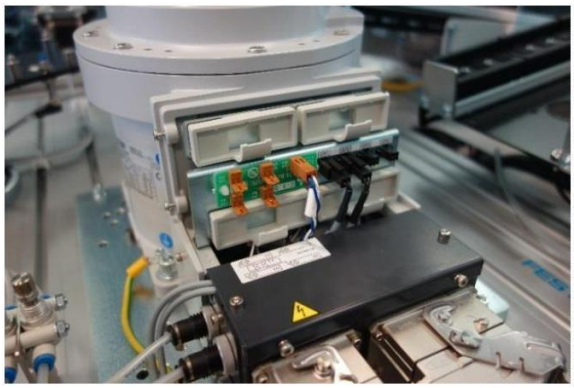

Fig. 4: Removing the batteries from the holders

# Replacing the batteries on the robot arm

Step 1. Insert the new battries inside the battery holder.

Step 2. Connect the batteries to the electronic board in the robot arm.

Step 3. Screw back the battery housing on the arm.

# Removing the batteries from controller

Step 1. Open the battery cover located on the cotroller.

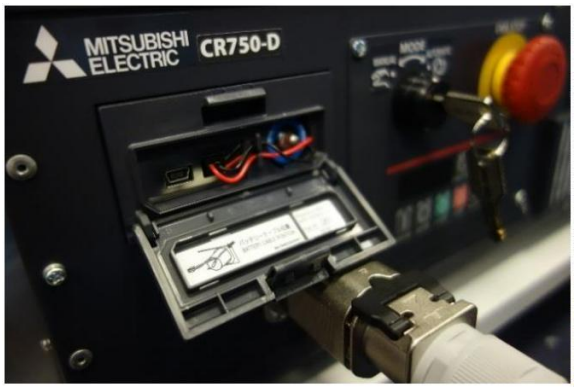


Fig. 5: Opening the battery cover on the controller [Note: locations depends on controller type]

Step 2. Unplug the battery cable.


Fig. 6: Unplugging the battery cable

Step 3. Lift the battery a bit up and then pull it out.


Fig. 7: Removing the battery

# Replacing the batteries on the controller

Step 1.Insert the new battery inside the battery holder.

Step 2. Connect the battery cables.

Step 3. Close the battery housing.

# Calibrating Axis 1 to 4

To move the robot arm to the calibration position, individual axis should be moved to a predefined position. To move freely, the breaks of indidual axis has to be relased. This is explained in the steps below.

Step 1. Turn on the key switch on the controller to manual mode.

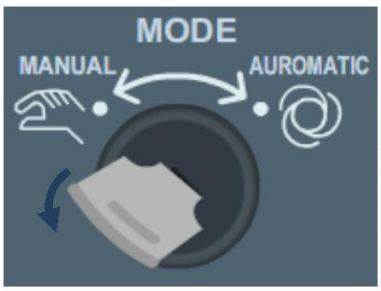


Fig. 8: Key switch position

Step 2. Enable the teach box.

Fig. 9: Enabeling the teach box

Step 3. Close all of the open window till you see the welcome screen.

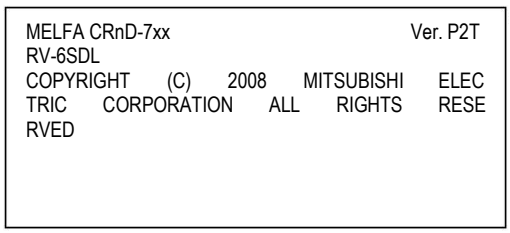


Fig. 10: Robot Welcome screen [Note: This welcome screen is based on the Tech Box: R32TB]

Step 4. Press the F1 key on the teach box to see the menu

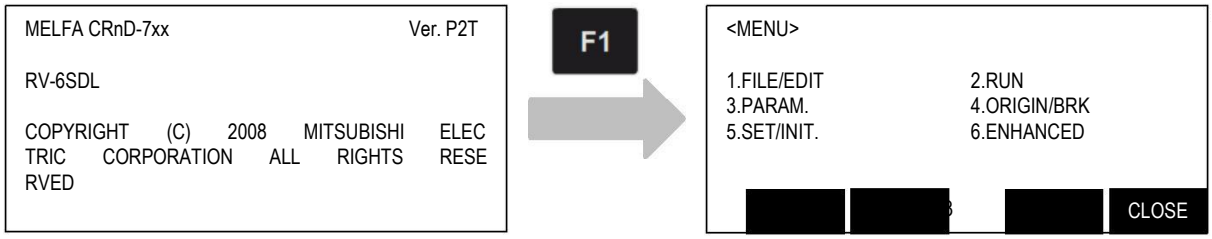


Fig. 11: Menu items

Step 5. Press the 4 GHI on the teach box to enter Origin/Break menu

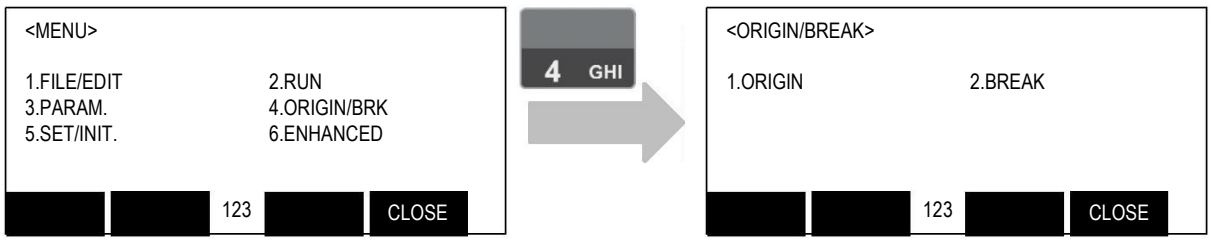


Fig. 12: Origin/Break menu

Step 6. Press the -Z (J3) 2 ABC on the teach box to enter break menu.

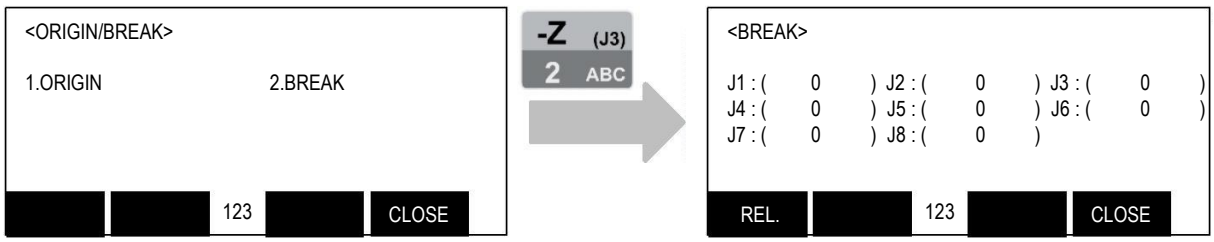


Fig. 13: Break menu

Step 7. Move the cursor to the J1 variable using the arrow keys and press the 1 '() key on the teach box, this will set the value 1 for the variable.

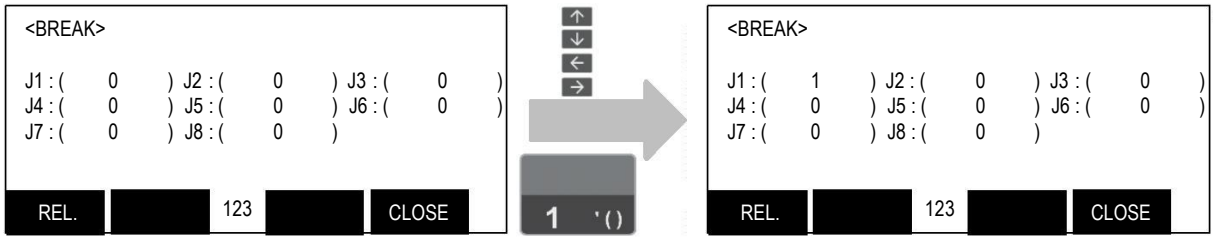


Fig. 14: Arrow keys and selecting Joint 1

Step 8. To relase the break of the J1 axis hold dead man switch + F1 .

Note: Once the axis are moved to its desired location set the value back to zero.

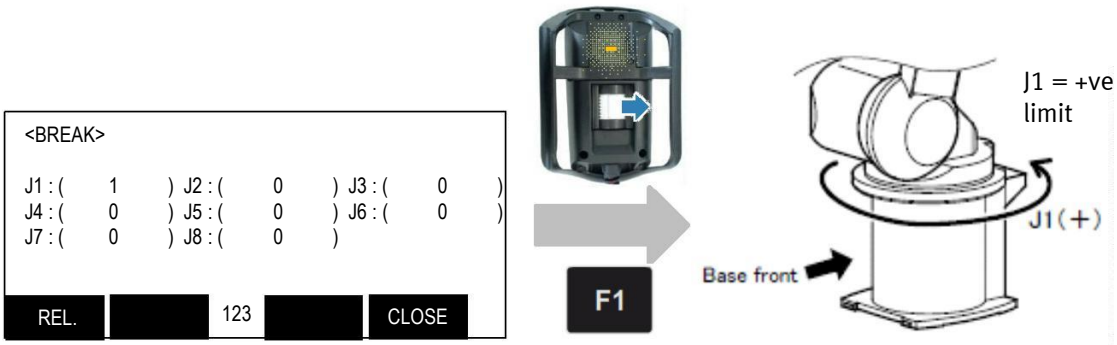


Fig. 14: Releasing the breaks on J1 axis

Step 9. Now move the J1 axis to its mechanical limit in the positive direction. A lable on the robot axis shows the direction. + -

Step 10. Repeat the step 7 to 8 for the axis J2.

Step 11. Now move the J2 axis to its mechanical limit in the negative direction. A lable on the robot axis shows the direction + -

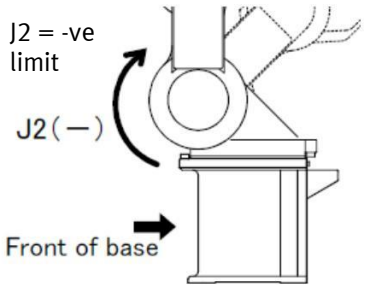


Fig. 15: J2 axis at it -ve mechanical limit

Step 12. Repeat the step 7 to 8 for the axis J3 and J4.

Step 13. Now move the J3 and J4 axis to its mechanical limit in the positive direction. A lable on the robot axis shows the direction + -

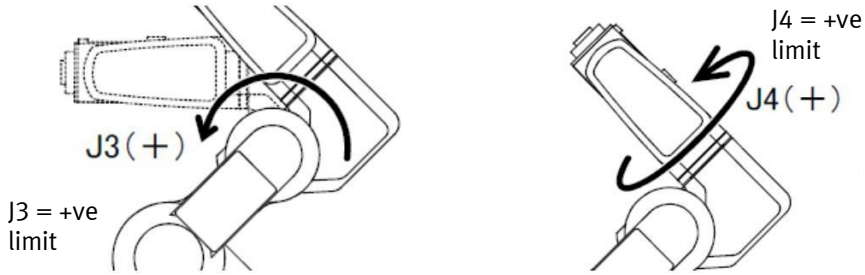


Fig. 16: J3 & J4 axis at it's +ve mechanical limit

Step 14. Once the axis 1 -4 are at its mechanical limit press the F4 key to go back to Origin/Break menu.

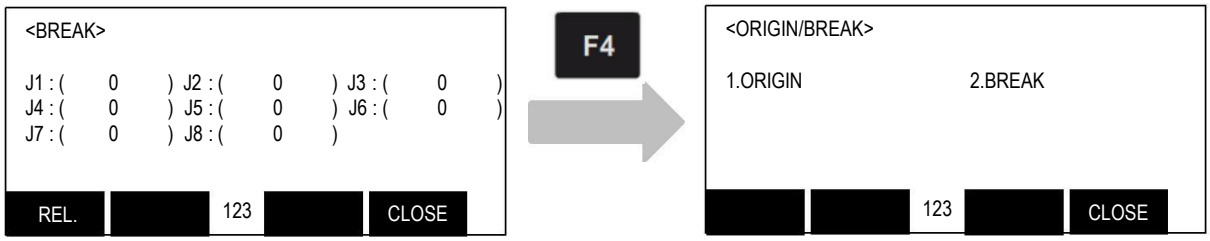


Fig. 17: Origin/Break menu

Step 15. Press the 1 '() key on the teach box to enter the Origin menu.

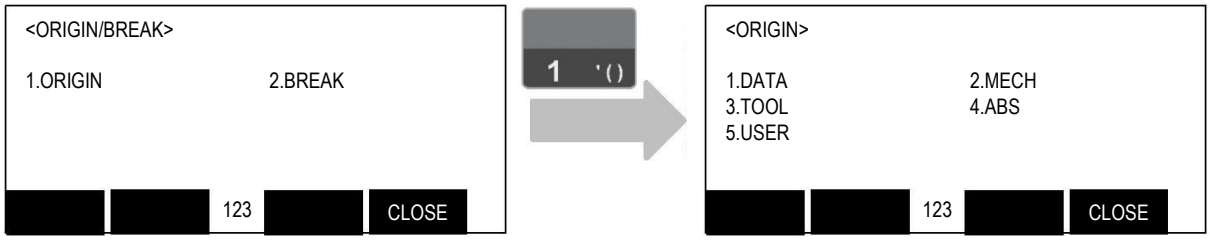


Fig. 18: Origin menu

Step 16. Press the -Z (J3) 2 ABC key on the teach box to enter mechanical calibration menu.

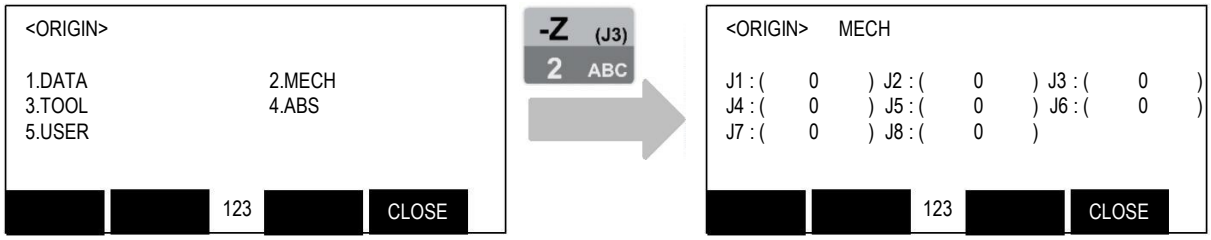


Fig. 19: Mechanical calibration menu

Step 17. Move the cursor to the J1 variable using the arrow keys and press the 1 '() key on the teach box, this will set the value 1 for the variable. Repeat this step 17 for J2, J3 and J4

Step 18. Now press the EXE button on the teach box. A message pops up to set the origin, confirm by pressing the F1 button.

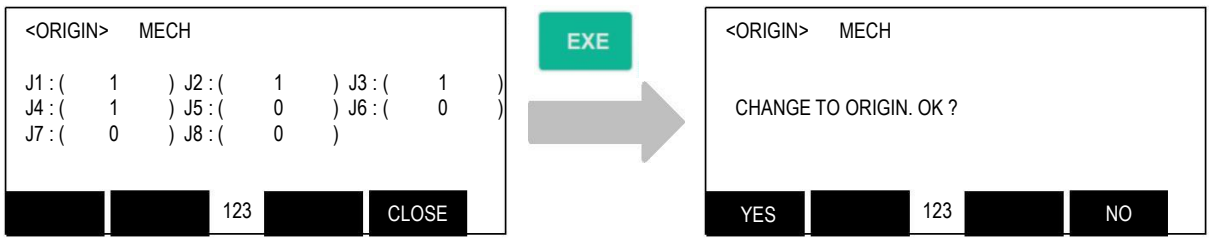


Fig. 20: Setting the origin

# Calibrating Axis 5 to 6

Step 1. Perform the steps 1 to 6 of the “Calibrating Axis 1 to 4” section.

Step 2. Move the cursor to the J5 variable using the arrow keys and press the 1 '() key on the teach box, this will set the value 1 for the variable. Repeat the same for J6.

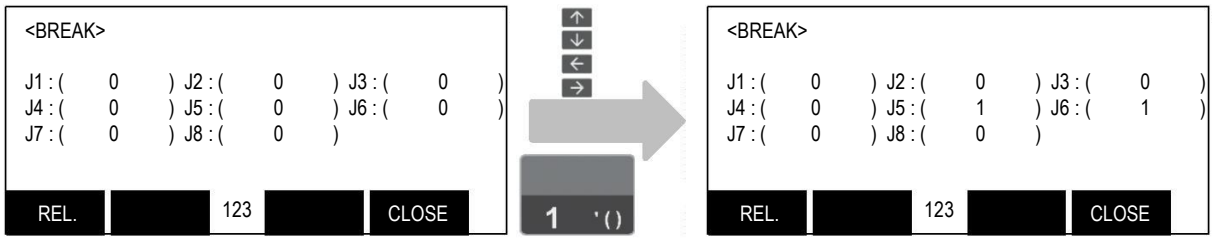


Fig. 21: Arrow keys and selecting Joint 1

Step 3. To relase the break hold dead man switch + F1 .

Note: Once the axis are moved to its desired location set the value back to zero.

Step 9. Now move the J5 axis to its mechanical limit in the positive direction. A label on the robot axis shows the direction. + -

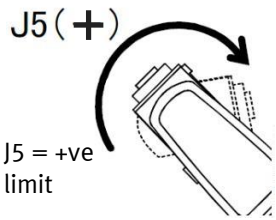


Fig. 22: J5 axis at its +ve mechanical limit

Step 10. Now rotate the J6 axis to align the calibration sticker in line.

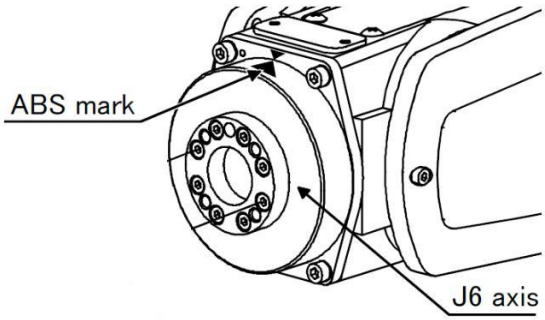


Fig. 23: Aliging the calibration sticker on J6

Step 11. Press the F4 key to go back to Origin/Break menu.

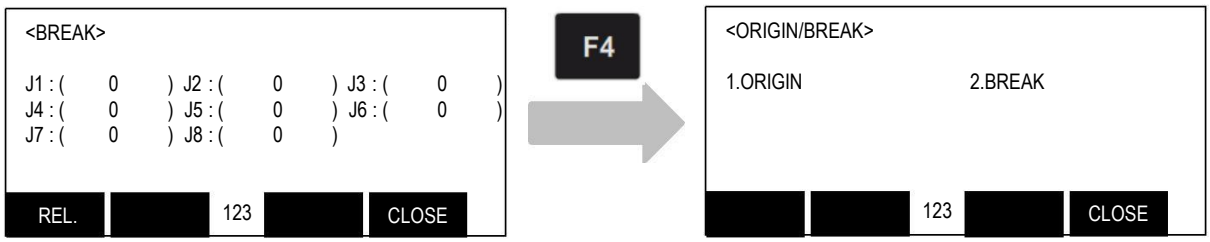


Fig. 24: Origin/Break menu

Step 12. Press the 

key on the teach box to enter the Origin menu.

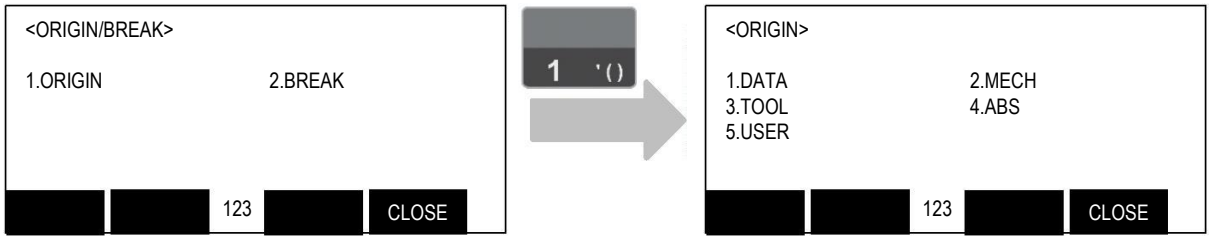


Fig. 25: Origin menu

Step 13. Press the 

key on the teach box to enter mechanical calibration menu.

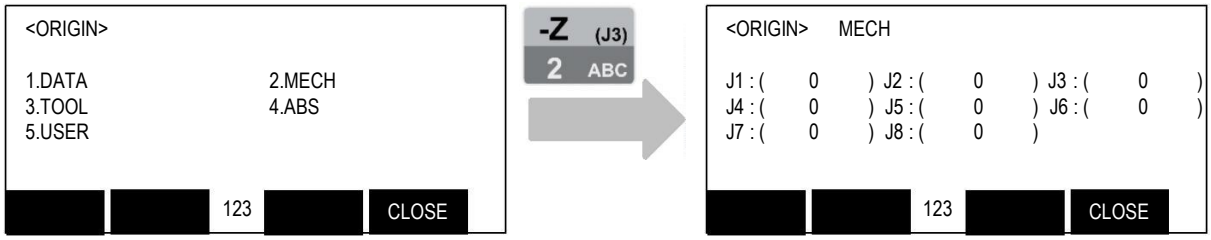


Fig. 26: Mechanical calibration menu

Step 14. Move the cursor to the J5 and J6 variable using the arrow keys and press the 

key on the teach box, this will set the value 1 for the variable.

Step 15. Now hold the dead man switch and press the 

button on the teach box. A message pops up to set the origin, confirm by pressing the 

button.

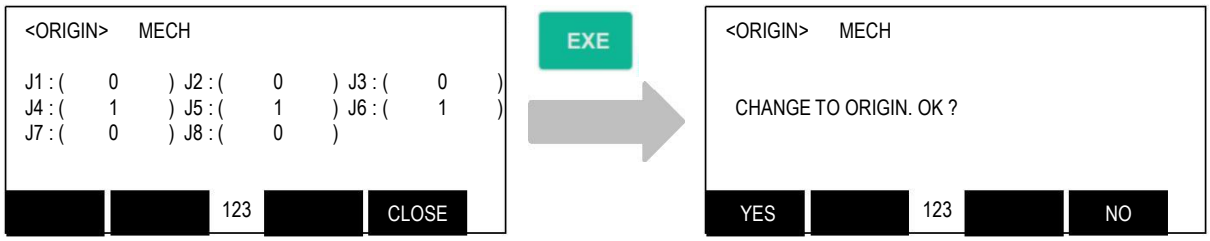


Fig. 27: Setting the origin

# Intialize the battery counter

Step 1. Turn on the key switch on the controller to manual mode.

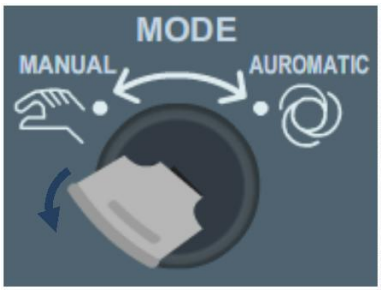


Fig. 8: Key switch position

Step 2. Enable the teach box.

Fig. 9: Enabling the teach box

Step 3. Close all of the open window till you see the welcome screen.

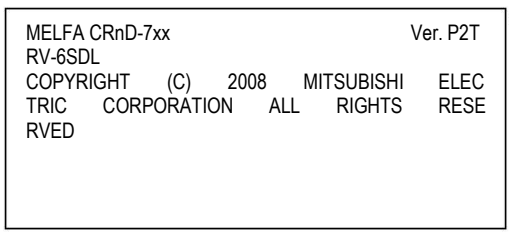


Fig. 10: Robot Welcome screen [Note: This welcome screen is based on the Tech Box: R32TB]

Step 4. Press the F1 key on the teach box to see the menu

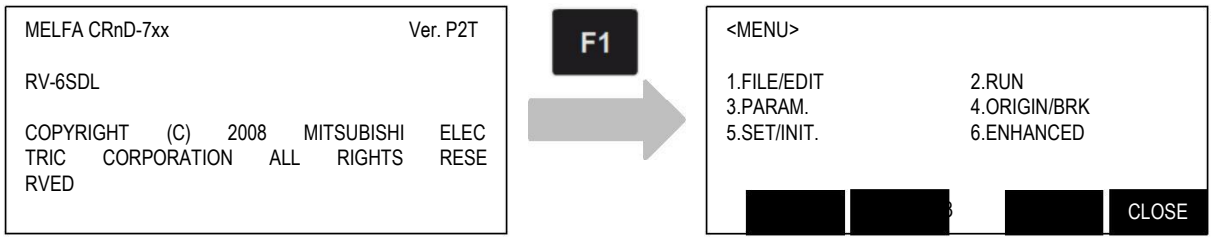


Fig. 11: Menu items

Step 5. Press the -A (J4) 5 JKL on the teach box to enter Set/INIT menu

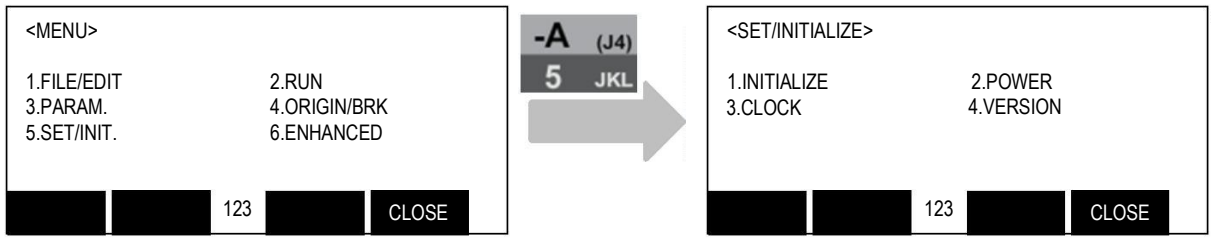


Fig. 12: Set/Initialize menu

Step 6. Press the 1 '() on the teach box to enter initialize menu.

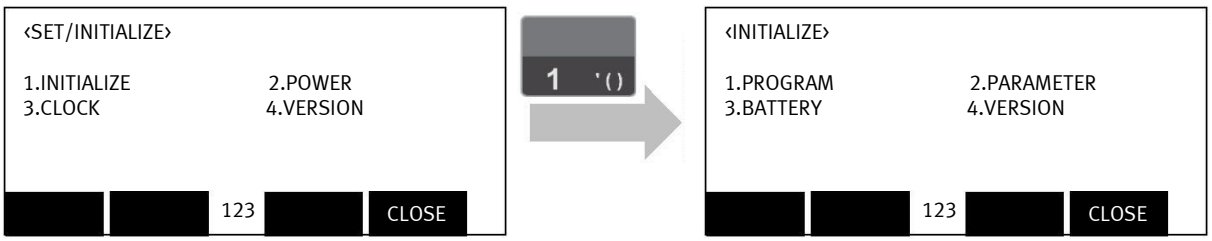


Fig. 13: Initialize menu

Step 7. Press the +Z (J3) 3 DEF on the teach box to enter battery initalize menu.


Step 8. Press the F1 key on the teach box to confirm. This will reset the battery counter.

Step 9. Restart the robot controller.