

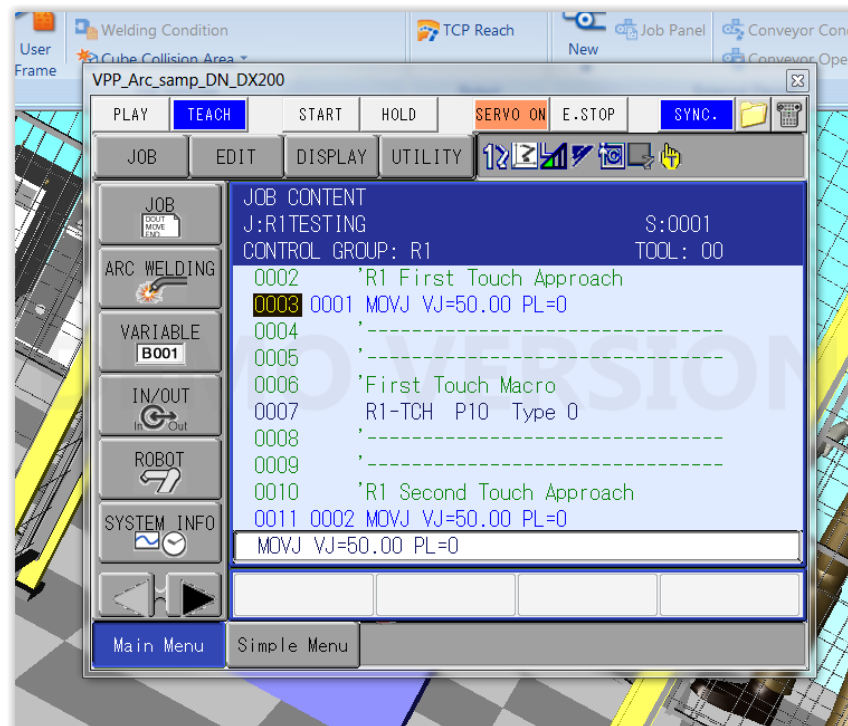
This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

## Touch Sense with Macro Jobs (2TCH)

This guide is going to assume that you are searching a linear line with two 2-TCH macro jobs.

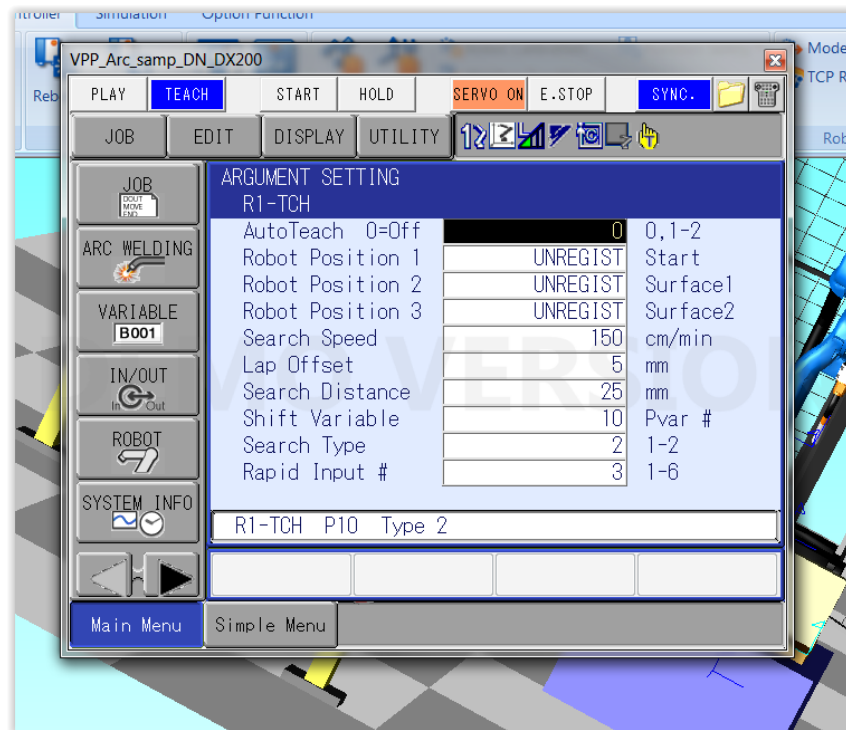
With this basic structure you will have two positions of searching. You will have one at the first search, then the macro. You will then have another move to the second search, and then the macro. Use actual points!!!! Do not rely on the reference position of the macro job.

Move the robot to the point you want to search, make that a position, and then add the Macro. It should look something like this.



This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

Once this is done, go ahead and move the cursor to the Macro, on the instruction side. Press select twice to enter the detail edit screen of the Macro job. It will bring up this screen.



You will need to make sure the settings are correct. Set AutoTeach to =1, this will enable AutoTeach.

Search Speed can stay the same, this is the speed in which the robot moves while searching. I recommend search speed stay under 300cm/sec

Lap Offset is generally set to a low number. This will have the robot move a set distance away from the first surface before the second search. I usually set between 2-5mm, if doing a 2 TCH this MUST be set.

Search Distance is the distance the robot will search from the first point before it will display a search error if no surface is detected. Set to appropriate number or leave at default.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

Shift Variable is the variable in which the searched offsets will be stored. Every search in the same search section MUST be different. We can overwrite variables, but not until we have used the new data! So, each touch before the weld should have a different variable. Once the welding has been done with the current data it can be used again. Since we are searching two points, we will have two variables, in this example we will use P010, and P011.

Search Type will define the type of search you are setting up. 1 will be a single touch - you will only be searching in a single direction. 2 will be used if you are wanting to search for 2 different directions. A 2 touch is what we are using in this example.

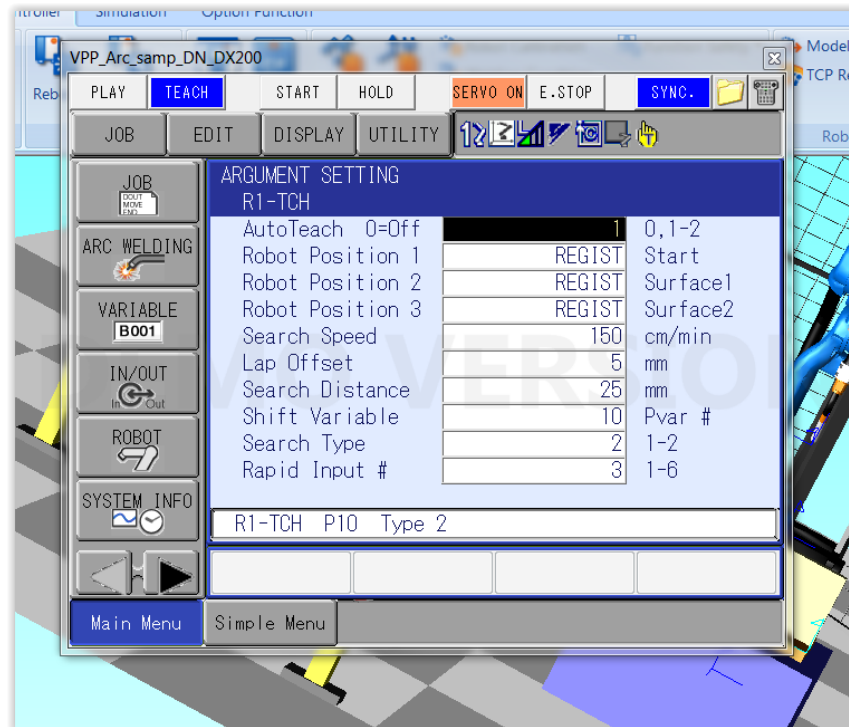
Rapid Input # is the input that is sensing the change in state for the search. With Touchsense it will be a 3. With Accufast it will be a 4. You can always check the supplied electrical drawings to double check this.

Now that you have all the settings correct you can now register your search positions. The first robot position will be the same position as the position you registered right before the macro. With servo power on, press Modify Enter.

The second Robot Position will be in the direction you want to search. Let's say we want to search in +Y. You will move the robot in the +Y direction and modify enter this as Robot Position 2.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

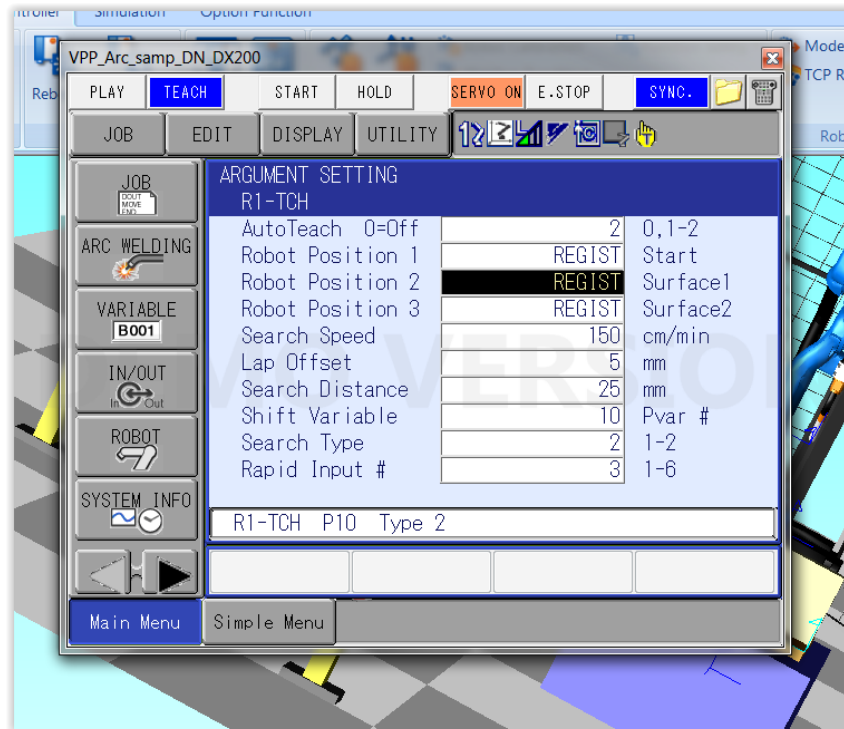
Forward back to Robot position 1. Move the robot in the direction you want to capture for the second offset. In this example let's say –Z. Move the robot in the –Z direction, then press Modify Enter. Your screen should look like this now



Press Enter two times to return and insert this new information into the job. You will then press and hold Interlock + Test Start. This will start the Autoteach routine and the robot will touch until it finds the correct search point. When it does it will tell you on the bottom of the screen to change auto teach to a 2 and modify robot position 2. Keep the servo power on during this operation.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

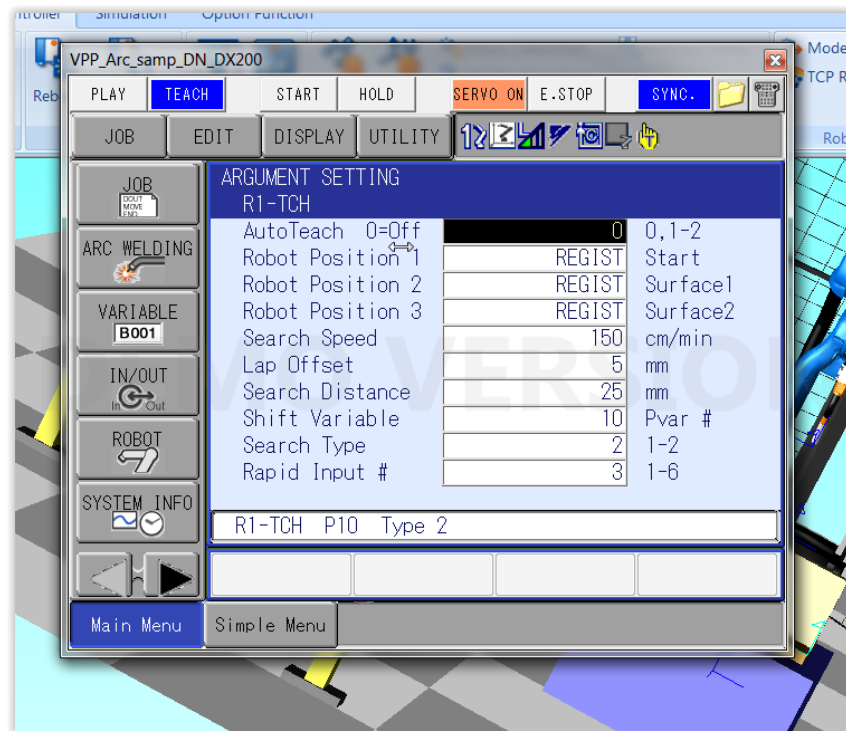
Move to the instruction side of the Macro, and press enter twice. Change AutoTeach to a 2, and move to Robot Position 2, and press Modify enter. You should see a screen like the following picture.



Press Enter 2 times to register the new data. Press and hold Interlock + Test Start and let the second half of the routine finish. Once done you will see on the bottom of the screen telling you to Modify Position 3, and set Teach to a 0.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

Move to the instruction side of the Macro, and press Select two times to get back to the detail edit screen. Set AutoTeach to a 0, cursor to Robot Position 3 and modify enter this. You should see a screen like the following picture.

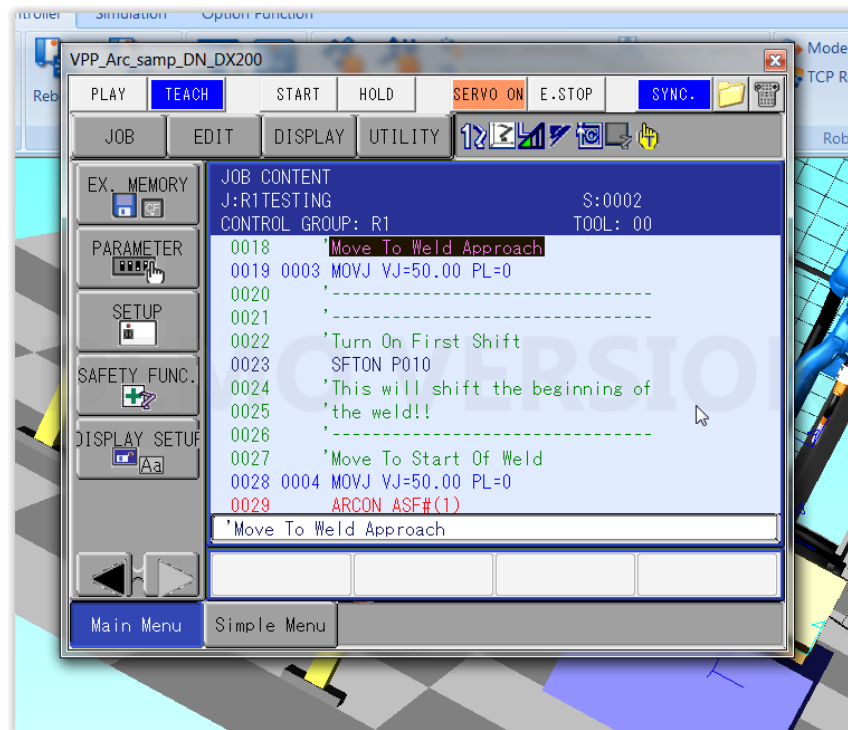


Press Enter 2 times to register this Data. You have now completed setting up the Macro. When you interlock test start it will run the job and store the information in P010. Go ahead and look at the numbers in P010. We want to see the numbers in the X, Y, Z to be BELOW 0. We want to see the numbers as close to all 0's as possible. You won't get it perfect, but make sure it is close.

Move to the second search position, MAKE a point there. Insert a Macro job and set it up like you did the first one. The one difference now is to make the Position Variable P011.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

Once done, make a Mov to the approach point of your weld. You will now want to SFTON P010. This will change the position of the beginning of the weld. It should look something like this

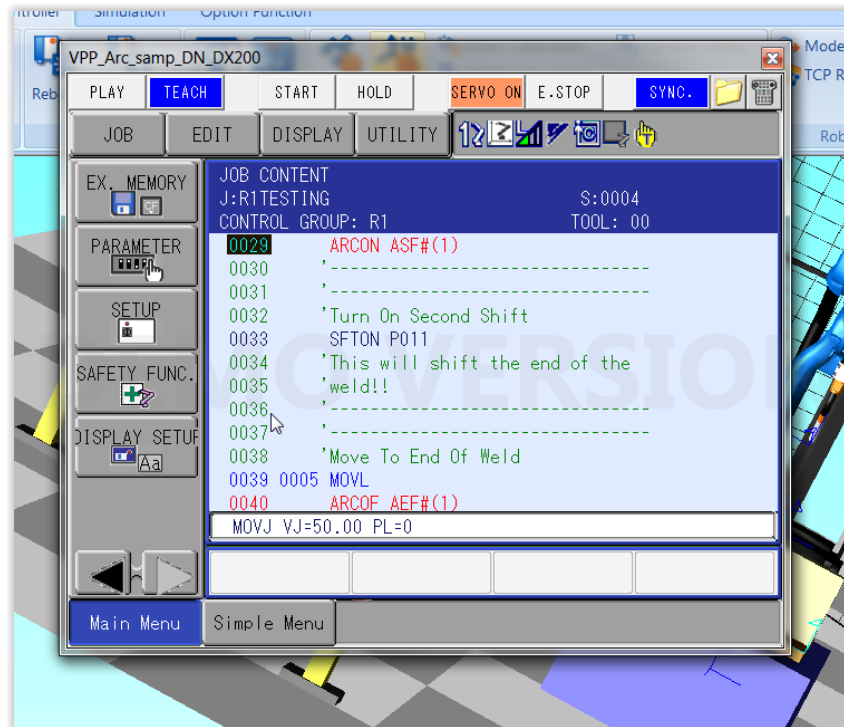


After the SFTON you will move to the start of your weld, and then ARCON.

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

You will then SFTON P011, this will change the position of the end of the weld.

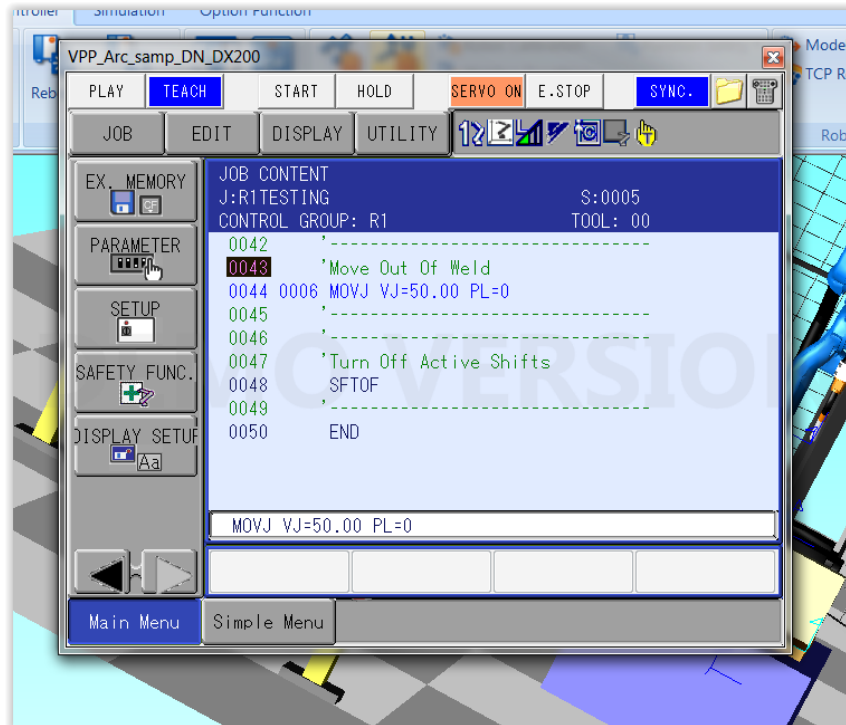
After the SFTON you will make a MOV at the end of the weld, followed by an ARCOF. It should look like this





This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

Once you have extinguished your arc, you will move away from the weld. Make this a MOV, and then SFTOF to cancel the active shifts.



You have now completed a simple 2-TCH routine.