

## Onshape Robot Modeling ([Video Tutorial](#))

### 1) Import the CAD model.

Import the robot CAD, manual, and datasheet into Onshape in a new document. The CAD models can usually be found on the manufacturers' websites or in open source repositories. Name the document with the make and model number of the robot, and share it with the Robots team.

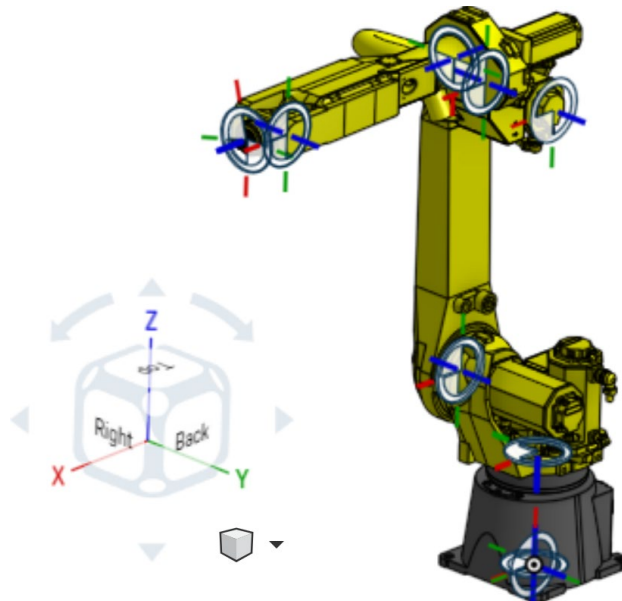
### 2) Place mate connectors.

Put mate connectors on each joint of each link, plus an extra one on the wrist where an end effector would connect. The Z-axis of each mate connector should point along the joint axis.



### 3) Assemble links.

Construct a main assembly file from the parts files. Z-axis should point up, and X-axis should point forward. The origin should be at the base of the robot. Set the joint limits to match those given in the robot datasheet. Be sure to verify correct axis directions (+-)!



List the XYZ coordinates for each joint origin in a .txt file (units in m). These will be needed later for forward kinematics calculations. You can import the file to your Onshape document if you like.

#### 4) Robot CAD Models:

Variety: [https://robodk.com/robotlib/robotlib\\_app](https://robodk.com/robotlib/robotlib_app)

[https://grabcad.com/library/tag/robot%20arm?page=1&time=all\\_time&query=robot%20arm](https://grabcad.com/library/tag/robot%20arm?page=1&time=all_time&query=robot%20arm)

<https://www.3dcontentcentral.com/Search.aspx?arg=robots&PageSize=10&SortBy=match>

ABB: <https://new.abb.com/products/robotics/industrial-robots/robot-selector>

Universal Robots: <https://www.universal-robots.com/download/?query=cad> or  
[https://www.universal-robots.com/download/?query=STEP%20files&type\[\]=98771](https://www.universal-robots.com/download/?query=STEP%20files&type[]=98771)

Epson: <https://epson.com/For-Work/Robots/c/w8?q=>