

## Data Needed for Welding Reach & Cycle-Time Studies

### Introduction

For a simulation to produce accurate results, specific kinds of data are needed from the customer, or the simulation results will fail.

Below are lists of common and unique data types required for a successful welding simulation.

### List of Data Needed for Welding Simulations:

Below are 6 data types needed for a weld simulation.

#### 1. 3D Model of the Cell Layout

- a. If using Yaskawa ArcWorlds, provide the model number of the ArcWorld to be tested.
- b. If a 3D model is not available, then a 2D drawing can be used, but there is less accuracy, and it may take longer to construct a 3D sim from it.
- c. 2D drawings need to include a plan view and elevation view.
- d. If there is no layout, then the results will be simply conceptual.

#### 2. 3D Model of the Torch

- a. If the customer does not have the torch model, then supply the bend angle and length of the torch.

#### 3. 3D model of the Part

- a. If all is given are just dimensions of a block, then the best that can be done is a basic 4-corners reach check.

#### 4. 3D model of the Fixture

- a. If there is no fixture, then cycle-time studies cannot be completed, and a reach analysis will be a lot less accurate.
- b. Fixtures have clamps and without clamps, the robot may artificially be able to reach a location that it cannot.

#### 5. Weld Print

- a. The weld print shows where are the welds are located.

#### 6. Customer requested Cycle-Time...if needed

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](http://motoman.com). Please contact the Partner Support team at [partnersupport@motoman.com](mailto:partnersupport@motoman.com) for updates or clarification.

## About CAD model formats

When importing 3D models into MotoSim, the best CAD formats are in this order:

1. Original CAD format (Solidworks, Inventor, CATIA, CREO, etc.)
2. Parasolid (x\_t)
3. STEP file
4. IGES

## Bonus Information:

1. If the robot will be on a track, then the customer will need to provide all the necessary track data
  - a. Track direction (X, Y, or Z, or combination of the three)
  - b. Rack & Pinion or Ball Screw drive
  - c. Motion Range (+/-)
  - d. Reduction Ratio (numerator and denominator)
  - e. Pinion diameter
  - f. Yaskawa Motor model number
  - g. Yaskawa Servo amp model number
  - h. Converter model number
  - i. Rotation direction
  - j. Max RPM
  - k. Accel Time
  - l. Inertia Ratio