

Description for CAD-Models

Available model variants

- simplified models of MAiRA
- size S, M, L
- “Pro” and “Basic” Version
- 6- or 7-Axes variants

How to open them:

Download the STEP-file and open it with a CAD-Software of your choice.

What's inside the models

MAiRA with all general available features.

Base (Link0):

- robot cable connector
- floor mounting
- 3x vision sensor
- pressured air input: 1x Ø6mm

Head (Link6 & 7):

- endeffector-Flange ISO 9409-1-50-7-M6
- 8-pin connectors - 3x output
- pressured air output: 3x Ø3mm
- speaker
- touch buttons
- 2x vision sensor

How to configure your robot model

All models contain several bodies:

Links and vision sensors (Housing & Field of View)

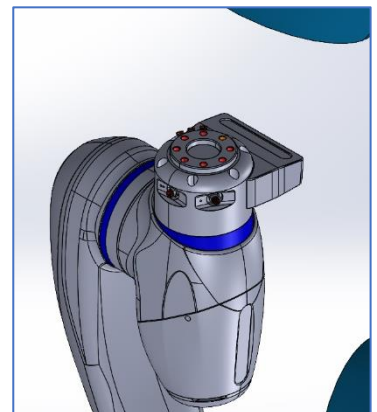
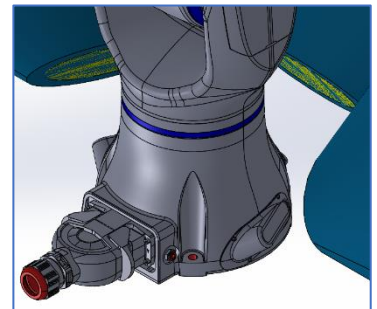
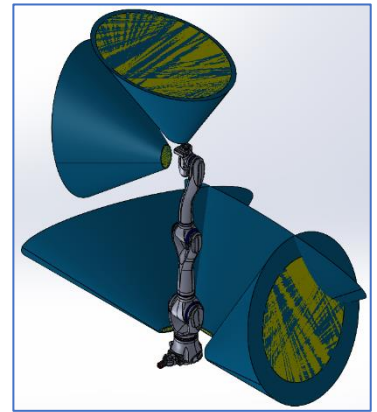
=> 8 Links and 5x vision sensor.

You can delete or hide the bodies you do not need.

Depending on the settings of your CAD-software all bodies may be moveable and not fixed. If so, you need to fix all bodies in the imported position (all axes = 0°). If you aim to move the robot inside a simulation tool, see “How to make MAiRA move”.

Things to be considered

- Surfaces that might be relevant for the user (connectors, floor mounting, etc.) are highlighted in red.
- The maximum ideal distance from the vision sensor to the object is 500mm.
- For a 6DOF robot disable motion for axis 3 (it might also be helpful to change color of LED body for axis 3).



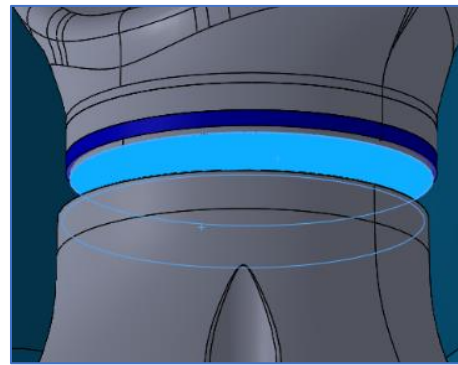
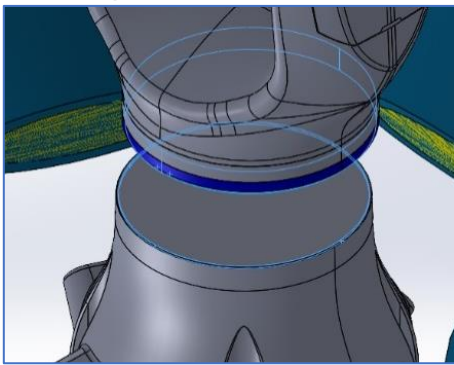
Link0_R3_SIMPLE<1>
 Cameras_Link0<1>
 Cameras_Link0_FoV<1>
 Link1_R3_SIMPLE<1>
 Link2_R3_SIMPLE<1>
 Link3_R3_M_SIMPLE<1>
 Link4_R3_SIMPLE<1>
 Link5_R3_M_SIMPLE<1>
 Link6_R3_SIMPLE<1> ->
 Camera_Link6_FoV<1>
 Link7_R3_SIMPLE<1>
 Camera_Link7<1>
 Camera_Link7_FoV<1>

How to make MAiRA move

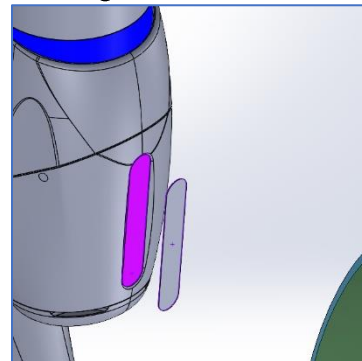
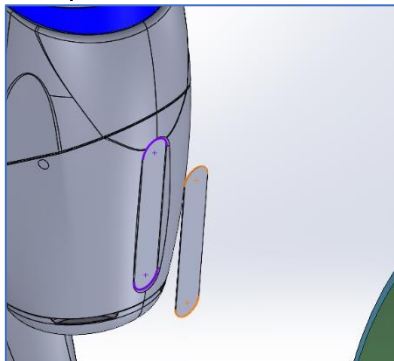
There are cylindrical cutouts and extensions between Links to represent joints. In order to move the robot model within the given joint limits (see table), connect all joints as follows.

Axis	Joint limit
1	+/- 180°
2	+/- 120°
3	+/- 150°
4	+/- 150°
5	+/- 180°
6	+/- 145°
7	+/- 180°

1. Place "Link0" & "Cameras_Link0" & "Cameras_Link0_FoV"
 - a. Set all 3 planes of Link0 & origin to be congruent
 - b. Set all 3 planes of Cameras & Link0 to be congruent
 - c. Set all 3 planes of FoV & Link0 to be congruent
2. Place "Link1" onto "Link0"
 - a. Set the cylinders of Link0 & Link1 to be concentric
 - b. Set the parallel surfaces of the cylinders to be congruent
 - c. Set the joint limit of Axis1 according to table



3. Repeat with placing
 - a. "Link2" into "Link1"
 - b. "Link3" onto "Link2"
 - c. "Link4" into "Link3"
 - d. "Link5" onto "Link4"
 - e. "Link6" onto "Link5"
 - f. "Link7" onto "Link6"
4. Place "Camera_Link6_FoV"
 - a. Set both half circles of Camera to be concentric with the cutout on Link6
 - b. Set the parallel surfaces of Camera & Link6 to be congruent



5. Place "Camera_Link7" & "Camera_Link7_FoV"
 - a. Set all 3 planes of Link7 & Camera to be congruent
 - b. Set all 3 planes of FoV & Link7 to be congruent