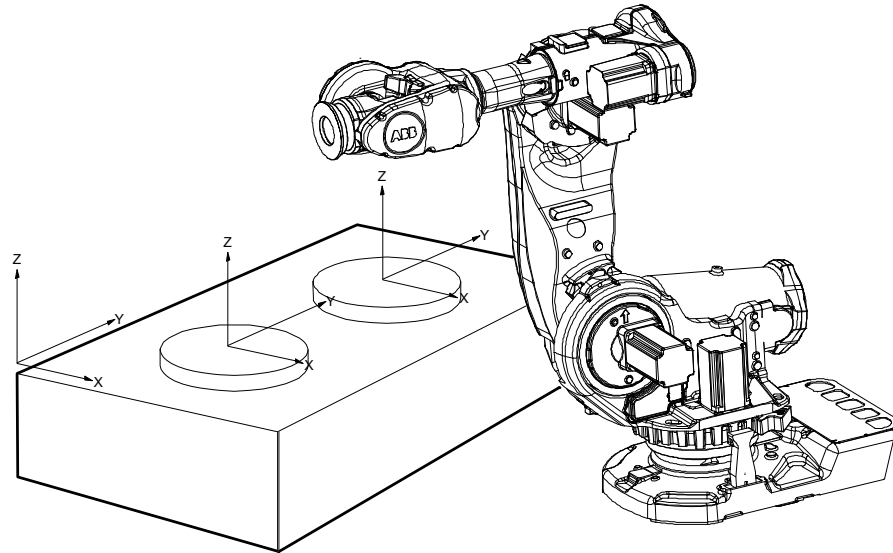


5.6 Work objects

5.6.1 What is a work object?

Illustration



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Description

A work object is a coordinate system with specific properties attached to it. It is mainly used to simplify programming when editing programs due to displacements of specific tasks, objects processes etc.

The work object coordinate system must be defined in two frames, the user frame (related to the world frame) and the object frame (related to the user frame).

Work objects are often created to simplify jogging along the object's surfaces. There might be several different work objects created so you must choose which one to use for jogging.

Payloads are important when working with grippers. In order to position and manipulate an object as accurate as possible its weight must be accounted for. You must choose which one to use for jogging.

5 Programming and testing

5.6.2 Creating a work object

5.6.2 Creating a work object

What happens when I create a work object?

A variable of the type `wobjdata` is created. The variable's name will be the name of the work object. For more information on data types, see *Technical reference manual - RAPID Instructions, Functions and Data types*.

This is detailed in section [What is a work object? on page 191](#).

Creating a work object

The work object's coordinate system is now identical with the world coordinate system. To define the position and orientation of the work object's coordinate system, see [Editing the work object declaration on page 198](#).

	Action
1	On the ABB menu, tap Jogging .
2	Tap Work Object to display the list of available work objects.
3	Tap New... to create a new work object.
4	Tap OK .

Work object declaration settings

If you want to change...	then...	Recommendation
the work object's name	tap the ... button next to it	Work objects are automatically named <code>wobj</code> followed by a running number, for example <code>wobj10</code> , <code>wobj27</code> . You should change this to something more descriptive. If you change the name of a work object after it is referenced in any program you must also change all occurrences of that work object.
the scope	select the scope of choice from the menu	Work objects should always be global to be available to all modules in the program.
the storage type	-	Work object variables must always be persistent.
the module	select the module in which this work object should be declared from the menu	

5.6.3 Defining the work object coordinate system

Overview

Defining a work object means that the robot is used to point out the location of it. This is done by defining three positions, two on the x-axis and one on the y-axis. When defining a work object you can use either the user frame or the object frame or both. The user select frame and the object frame usually coincides. If not, the object frame is displaced from the user frame.

How to select method

This procedure describes how to select method for defining either user frame or object frame or both. Note that this only works for a user created work object, not the default work object, wobj0. Defining work object can also be done from the **Program Data** window.

Action
1 On the ABB menu, tap Jogging
2 Tap Work object to display the list of available work objects.
3 Tap the work object you want to define, then tap Edit .
4 In the menu, tap Define.....
5 Select method from the User method and/or the Object method menu. See How to define the user frame on page 194 and How to define the object frame on page 195

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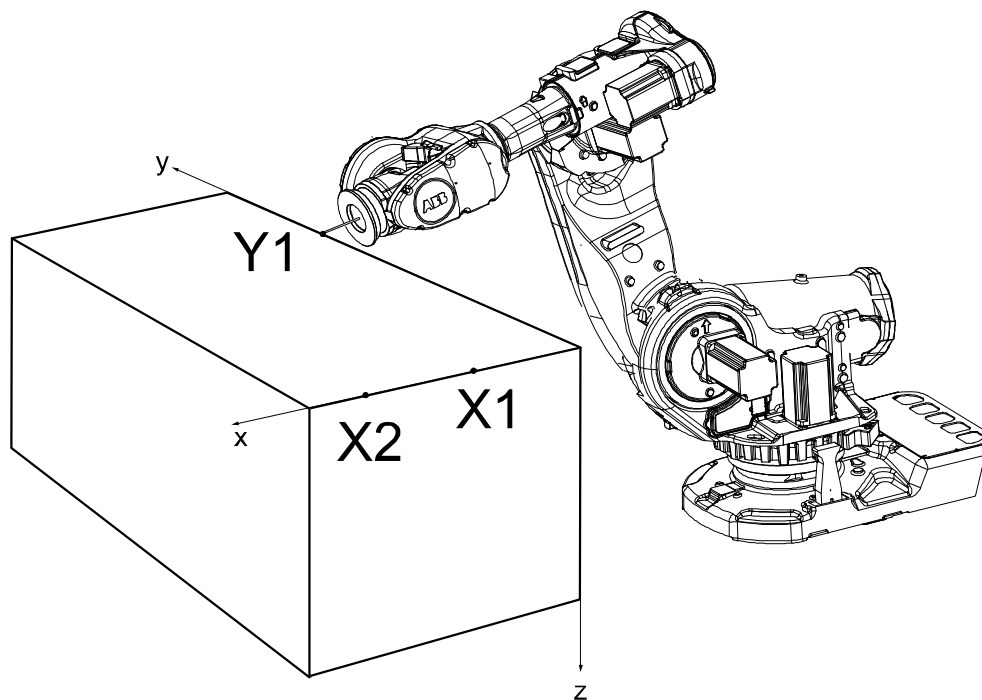
5 Programming and testing

5.6.3 Defining the work object coordinate system

Continued

How to define the user frame

This section details how to define the user frame.



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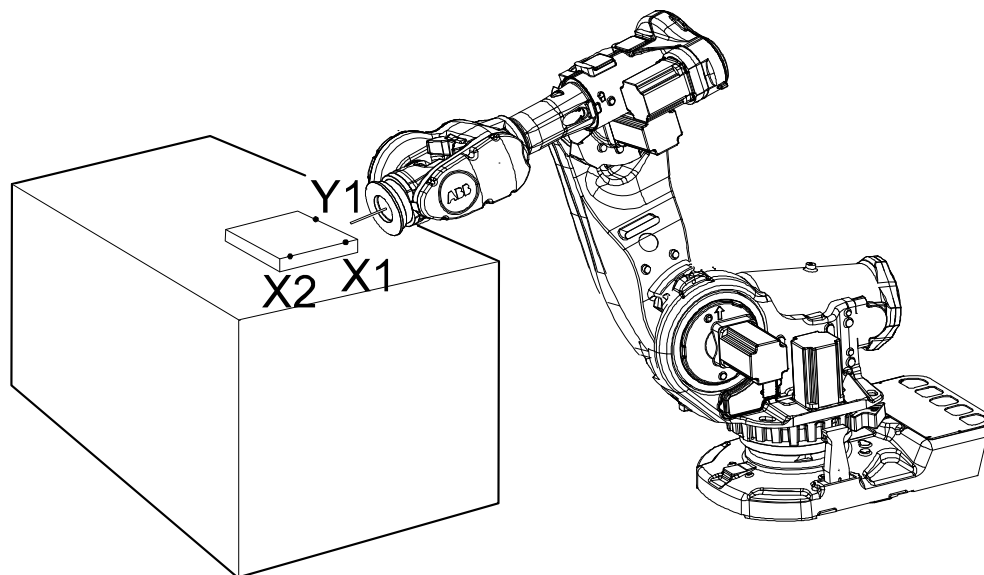
The x axis will go through points X1-X2, and the y axis through Y1.

	Action	Information
1	In the User method pop up menu, tap 3 points .	
2	Press the three-position enabling device and jog the robot to the first (X1, X2 or Y1) point that you want to define.	Large distance between X1 and X2 is preferable for a more precise definition.
3	Select the point in the list.	
4	Tap Modify Position to define the point.	
5	Repeat steps 2 to 4 for the remaining points.	

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How to define the object frame

This section describes how to define the object frame if you want to displace it from the user frame.



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The x axis will go through points X1-X2, and the y axis through Y1.

	Action
1	In the Object method pop up menu, tap 3 points .
2	See steps 2 to 4 in the description of How to define the user frame on page 194 .

How to save the defined positions

Normally the defined positions are only used as temporary positions by the controller to calculate the position of the work object and are then discarded. However, the positions can also be saved to a program module for later use or analysis.

When saving the positions a new program module is created where the positions are stored with predefined names given by the controller. The names of the positions can be changed afterwards, but when loading the positions it is recommended to use the predefined names.

**Note**

Only the positions (robtargets) are saved. Make sure to note which tool was used when modifying the defined positions.

	Action
1	When the work object frame definition is completed and all positions have been modified, tap OK .
2	In the Save Modified Points dialog, tap Yes .
3	Tap ABC to change the name of the program module, tap OK to accept the name.

Continues on next page

5 Programming and testing

5.6.3 Defining the work object coordinate system

Continued

	Action
4	The names of the positions and the module is displayed in the Save dialog, tap OK .

How to load defined positions

In some cases it is not practical or possible to use the robot to define the positions. Then the positions can be defined or calculated elsewhere and loaded to the **Work Object Frame Definition** dialog.

Positions from any program module can be loaded, but it is recommended to use the module from the **Save Modified Points** dialog with predefined position names given by the controller.



CAUTION

Make sure that the correct tool and work object is activated in the **Work Object Frame Definition** dialog before loading any positions.

	Action
1	In the Work Object Frame Definition dialog, tap Positions and Load .
2	Tap the module that holds the calibration points, tap OK .
3	If the controller finds all or any predefined positions in the module, the positions are automatically loaded to the correct user or object point. In the Load dialog, tap OK .
4	If some positions are missing or do not have the correct names, the controller cannot load the positions automatically so the user is asked to match the positions manually. Tap each point in the list to assign the positions manually from the drop down list. Tap OK .
5	If necessary, use Modify Position to define any remaining points that could not be loaded.

5.6.4 Editing the work object data

Overview

Use the work object data definition to set the position and rotation of the user and object frames.

How to display the work object data

	Action
1	On the ABB menu, tap Jogging .
2	Tap Work object to display the list of available work objects.
3	Tap the work object you want to edit, then tap Edit .
4	Tap Change Value . The data that defines the work object appears.

How to set user and object frame values manually

The easiest way to set the work object and user coordinate systems position is to use the method described in [Defining the work object coordinate system on page 193](#). You can however edit the values manually using the guide below.

Values	Instance	Unit
The cartesian coordinates of the position of the object frame	oframe.trans.x oframe.trans.y oframe.trans.z	mm
The object frame orientation	oframe.rot.q1 oframe.rot.q2 oframe.rot.q3 oframe.rot.q4	-
The cartesian coordinates of the position of the user frame	uframe.trans.x uframe.trans.y uframe.trans.z	mm
The user frame orientation	uframe.rot.q1 uframe.rot.q2 uframe.rot.q3 uframe.rot.q4	-



Note

Editing work object data can also be done from the **Program Data** window.

5 Programming and testing

5.6.5 Editing the work object declaration

5.6.5 Editing the work object declaration

Overview

Use the declaration to change how the work object variable can be used in the program's modules.

Displaying the work object declaration

	Action
1	On the ABB menu, tap Jogging .
2	Tap Work object to see the list of available work objects.
3	Tap the work object you want to edit, then tap Edit .
4	In the menu, tap Change Declaration .
5	The work object's declaration appears.
6	Edit the tool declaration as listed in section Creating a work object on page 192 .



Note

If you change the name of a work object after it is referenced in any program you must also change all occurrences of that work object.

5.6.6 Deleting a work object

Deleting a work object

For more information about deleting a work object, see [Deleting a data instance on page 172](#).