

RoboDK Add-In for Autodesk Fusion 360

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RoboDK Add-In for Fusion 360

The RoboDK add-in for Autodesk Fusion 360 allows you to combine Autodesk Fusion 360 3D CAD/CAM modeling features with RoboDK for robot simulation robot machining and offline programming.

With the RoboDK plug-in for Fusion 360 you can easily load 3D models created in Fusion 360 to RoboDK. This plug-in allows you to program more than 30 different robot manufacturers and 400 robots directly from Autodesk Fusion 360.

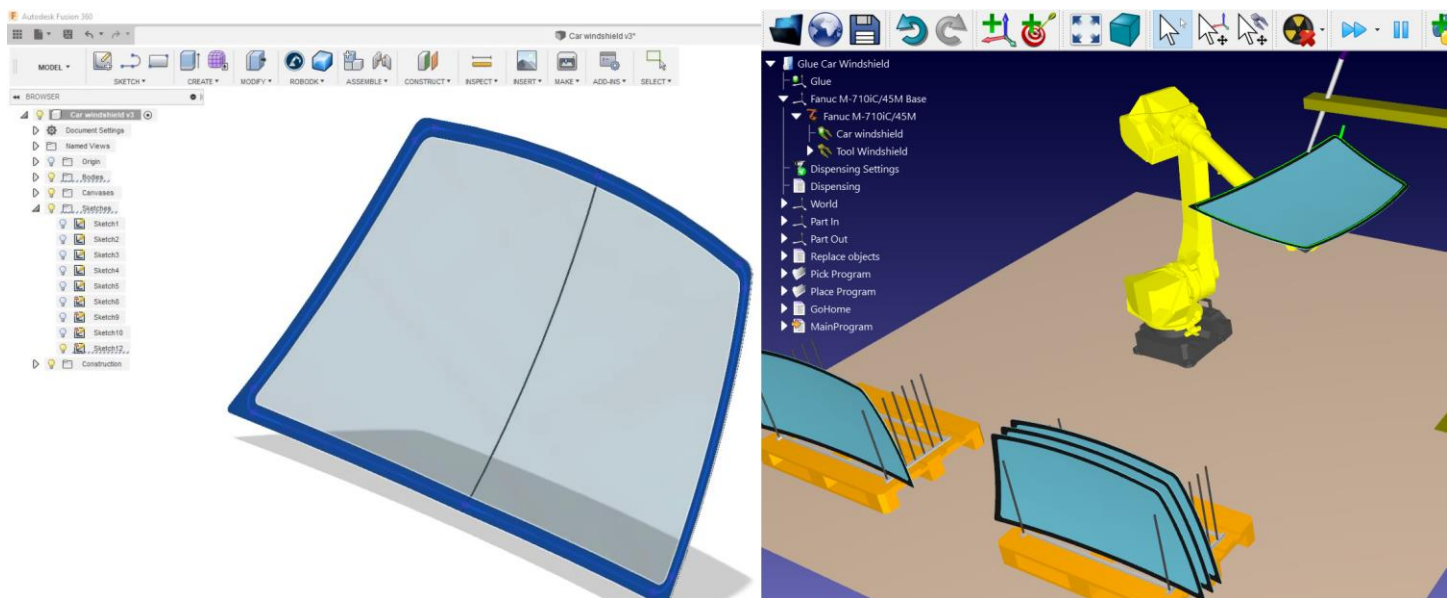
Robots can be easily programmed as 5-axis machines for manufacturing applications such as drilling, welding, trimming, 3D printing or robot machining. More information available in the [robot machining section](#).

The [robot post processors section](#) shows a list of the robot brands and robot controllers supported in RoboDK. It is also possible to modify or create new post processors to customize program generation.

Video: Overview of the RoboDK Add-In for Fusion 360: <https://www.youtube.com/watch?v=gxob-94fNLo>.

Note: Read this [Getting started guide](#) if this is your first time using an industrial robot.

The RoboDK Add-In for Fusion is free if you have a [RoboDK license](#).



Install

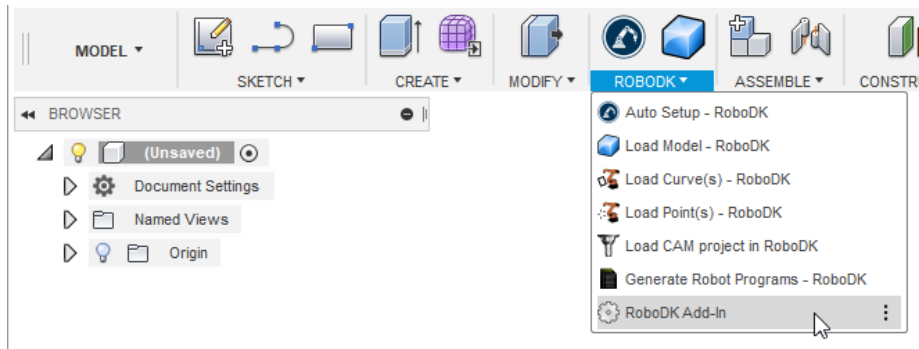
If you have already installed Autodesk Fusion 360 and RoboDK you may already have the RoboDK Add-In for Fusion installed and ready. The RoboDK Add-In for Fusion 360 should be visible in the Toolbar.

Note: The RoboDK Add-In for Fusion should be installed in C:/RoboDK/Other/Plugin-Fusion360/. If you don't see the RoboDK toolbar in Fusion 360 you should follow the instructions to [install the plug-in manually](#).


Note: The Fusion 360 Add-In may change RoboDK's default settings to match Fusions's 3D mouse navigation and window style. This behavior can be changed in the [Plugin settings window](#). Or by setting the [default RoboDK settings](#).

Fusion 360 Toolbar







The default RoboDK toolbar for Autodesk Fusion 360 includes a dedicated toolbar for RoboDK with 7 commands for CAD and CAM purposes.



Tip: You can select **Pin to Toolbar** (from the right menu) to see a specific command on top of the toolbar.

-  **Auto Setup** – This button allows you to load any selected geometry (curves or points). You can also select surfaces to extract curve normal. The geometry will be loaded in RoboDK together with the 3D model.

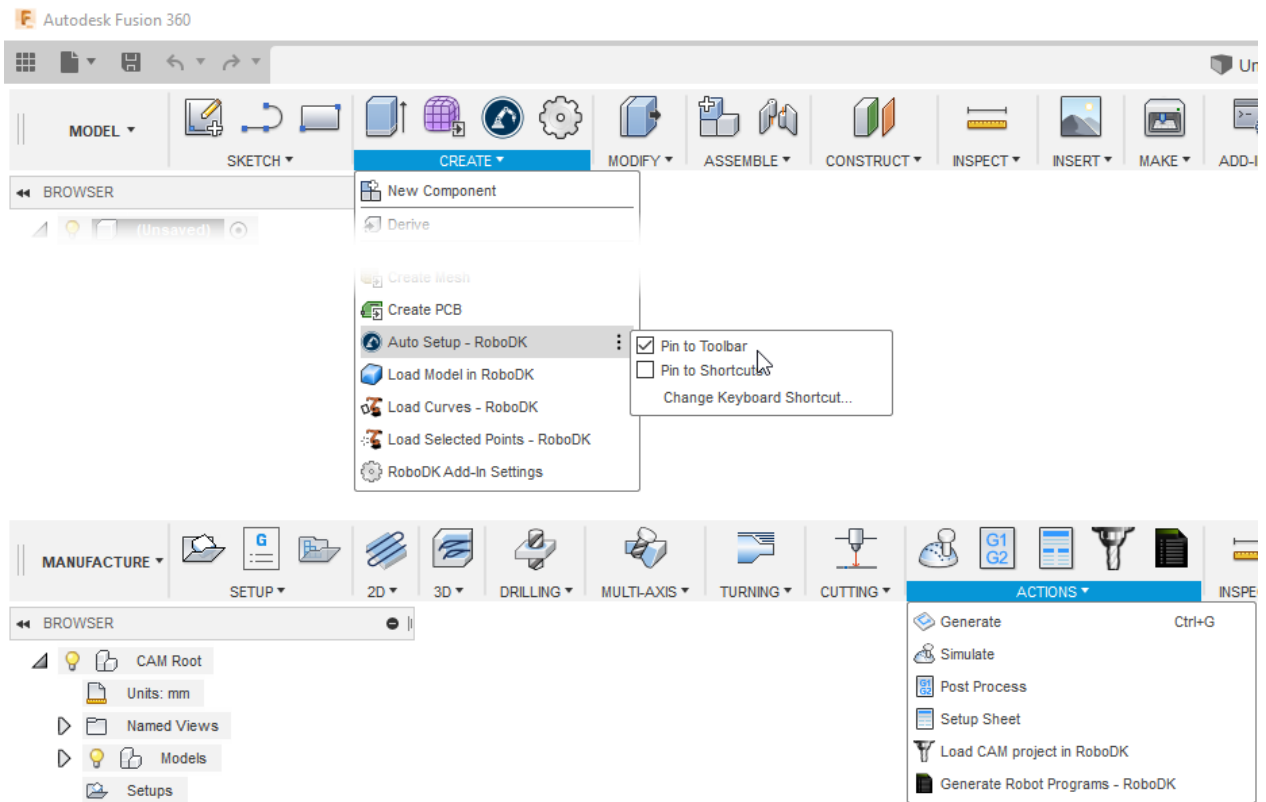
Tip: You can select multiple geometries (entities) by holding the Ctrl key. You should select the geometry before triggering the commands.

-  **Load Part** – Loads the 3D model from Fusion 360 to RoboDK. Features such as curves or points won't be loaded.
-  **Load Point(s)** – Load all the points selected in RoboDK as a new object. All selected surfaces will be used to calculate point normals. These normals are important as they define the robot's approach axis.
-  **Load Curve(s)** – Load all the curves selected in RoboDK as a new item. All selected surfaces will be used to calculate curve normals. These normals are important as they will define the robot's approach axis.
-  **Settings** – Open the [default Settings window](#).
-  **Load CAM Project** – Load the machining project in RoboDK. If multiple tools are used for machining RoboDK will automatically split the program to have one project settings for each tool. This behavior can be changed in **Tools-Options-CAM**.
-  **Generate Robot Program** – Generate all programs available in the RoboDK project.

The main difference between **Auto Setup** and **Load Curve(s)** or **Load Point(s)** is that Auto Setup loads the part and creates a new Curve/Point follow project. Using Load Curve(s) or Load Point(s) is faster and will just update the existing geometry features in RoboDK, keeping previously defined settings.

Tip: Using the default settings, if you want to load more than one object from Fusion you should rename the objects once they have been loaded in RoboDK.

You will also find 5 commands under the **CREATE** tab from the **MODEL** Workspace (CAD features) and 2 commands under the **ACTIONS** tab from the **MANUFACTURE** Workspace (CAM features).



Settings

You can change the default RoboDK plug-in settings by selecting the **Settings** button.

Note: These RoboDK settings are saved with the file.

ROBODK ADD-IN SETTINGS

Select Basic Settings Advanced Settings

Points

Curves

Faces

OK Cancel

ROBODK ADD-IN SETTINGS

Select Basic Settings Advanced Settings

▼ Item Names in RoboDK

Object Name

Override

Project Name

Robot Name

Reference Name

Tool Name

Program Name

▼ Curve/Points Settings

Always Update Part

Load Path as Points

Alternate Curve Dire...

Invert Normals

Scale Path/Points

▼ Program Update Level

Program Update Level

OK Cancel

ROBODK ADD-IN SETTINGS

Select Basic Settings Advanced Settings

▼ RoboDK Settings

Preview Selection

Use Fusion theme in RoboDK

Communication Port

Startup Options

▼ Polyline Curve Settings

Linear Tolerance

Mix Normals Tolerance


▼ Object Export Options

Export Format


Display all Curves

OK Cancel

Basic settings:

- **Object Name** – Set the name of the curve/points object that will be loaded in RoboDK. If this case is left blank, the name of the part or the assembly file will be used.
- **Override** – Override the object loaded previously in RoboDK if there is a name match.
- **Project Name** – Set the name/path of the RoboDK project/station (.RDK file) to use. If the file is already loaded it will use the existing project. If the open project in RoboDK does not match with the file name it will open the project if the full path is specified.
- **Robot Name** – Set the name of the robot that will be used in RoboDK (if you have more than 1 robot in your project). The robot name must match the name visible in the RoboDK station tree. Leave this value empty (default) to use the first or only robot available.
- **Reference Name** – Set the name of the reference frame to place the path with respect to the robot. The name should match the visible name in the RoboDK station tree. If a name is not provided, the active [Reference Frame](#)  will be used.

Tip: If you want to use a numbered Reference frame automatically you can add the reference number at the end of the name. For example: 'Reference 1'.

- **Tool Name** – Set the name of the tool (TCP) to use with the robot to follow the path. The name should match the visible name in the RoboDK station tree. If a name is not provided, the active [Tool Frame](#)  will be used.

Tip: If you want to use a numbered Tool automatically you can add the tool number at the end of the name. For example: 'Tool 1'.

- **Program Name** – Set the name of the program file that will be generated.

Note: Make sure you select the option to generate the program and code to see the program.

- **Always Update Part**– Check this option to always update the 3D model from Fusion to RoboDK. This will update the part when you select curves or points.
- **Load Path as Points** – Check this option to convert a curve into points, so a [Point follow project](#) will be created in RoboDK. This is useful for manufacturing operations such as drilling. Uncheck this option to load the path as a [Curve follow project](#).
- **Alternate Curve Directions** - Check this option to alternate the direction of movement with each pass (Zig-Zag pattern).
- **Invert Normals** – Check this option to invert the calculated surface normals. This will flip the robot's tool orientation.

Advanced Settings:

- **Use Fusion 360 Theme in RoboDK** – Start RoboDK with Autodesk Fusion 360 theme. This includes changing the behavior of the mouse for 3D navigation and the background color. These settings can be changed in the RoboDK menu: **Tools-Options**.
- **Communication Port** – Set the communication port to communicate with RoboDK. Multiple instances of RoboDK can be running at the same time and use different setups if a different port is used. When this value is set to -1 (default), the default port is used (20500).
- **Startup Options** – Set the arguments to pass to RoboDK the first time it starts. For example, to start RoboDK quietly you can set '/NOSPLASH /NOSHOW /HIDDEN'. Programs can still be generated even if RoboDK is not displayed. More information in the [Command Line](#) section of the RoboDK API.
- **Linear Tolerance (mm)** – Set the linear accuracy to split curves as a set of points.
- **Mix Normals Tolerance (mm)** – Set the distance tolerance used to mix normal calculations among multiple surfaces.
- **Export Format** – Select the export format to load the part in RoboDK.
- **Display all object curves** – Display the curves loaded in RoboDK even if they are not selected. You can change this setting in RoboDK (Tools-Options-Display-Display Curves).

Examples

This section shows basic examples combining Autodesk Fusion 360 projects with RoboDK for robot simulation and offline programming purposes.

Laser Cutting

The following example shows how you can program an industrial robot for a laser cutting application.

Video: Laser Cutting with a Motoman robot <https://www.youtube.com/watch?v=MZcPXkyT8s>.

Glue Dispensing

The following example shows how you can create a robot simulation and program for a glue dispensing application. In this example, the robot holds the part and the tool is static. This type of setup is also referred to as **Remote TCP**.

Video: Windshield glue dispensing with a Fanuc robot <https://www.youtube.com/watch?v=YrepmoQtNnA>.

Robotic Deburring

The following example shows how you can program a robot for a deburring application. This example requires using Fusion's Manufacturing workbench (CAM/machining tools) and will help you use Fusion and RoboDK for robot machining applications.

Video: Robot deburring with an ABB robot <https://www.youtube.com/watch?v=HaMlCaEjaAk>.

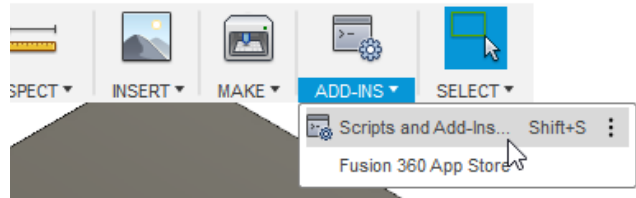
Manual Install

These are manual steps to setup the RoboDK plug-in for Autodesk Fusion 360. You should follow these steps if the RoboDK plug-in for Fusion was not automatically installed by default using the RoboDK installer:

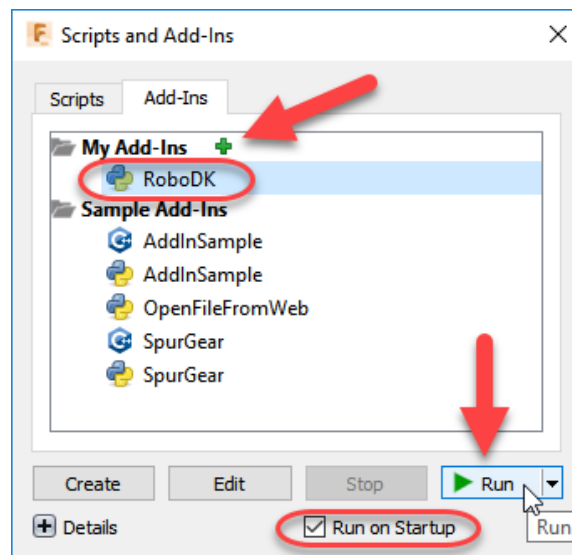
1. Install [Autodesk Fusion](#) (if you haven't done it yet).
2. Download and install [RoboDK](#).
3. Download the [RoboDK plugin for Autodesk Fusion 360](#).
4. Unzip the contents in **C:\RoboDK\Other\Plugin-Fusion360\RoboDK**

Install the RoboDK plug-in in Fusion 360:

5. Open Autodesk Fusion 360.
6. Select ADD-INS-Scripts and Add-Ins (Shift+S), from the **MODEL** workspace.

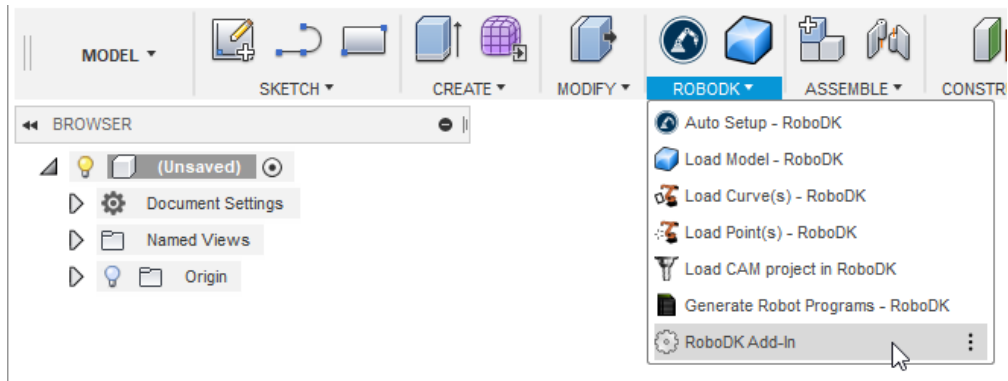


7. Select the Add-Ins tab
8. Select the green + button



9. Enter the following path:
C:\RoboDK\Other\Plugin-Fusion360\RoboDK
10. Check the option **Run on Startup** to start Fusion 360 with the RoboDK Add-In
11. Select **Run**

You should then see a toolbar called RoboDK in the **MODEL** workspace.



Furthermore, all CAD-related commands under the **CREATE** toolbar (from the **MODEL** workspace) and all CAM related commands under the **ACTIONS** toolbar (from the **MANUFACTURE** workspace).

Tip: You can select **Pin to Toolbar** (from the right menu) to see the options on top of the toolbar. The following image shows the recommended settings.

