



PICTURE FRAME TUTORIAL

An Introduction to DriveWorksXpress

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INTRODUCTION TO DRIVEWORKSXPRESS

DriveWorksXpress is entry-level Design Automation software included in SOLIDWORKS. It is ideal if the designs and projects you work on are the **Same but Different**. It is widely used in many industries from trailers to conveyors, furniture to machinery, mechanical seals to pressure vessels, windows & doors.

You'll find it already installed and waiting for you to use under the SOLIDWORKS Tools menu. It is ideal for everyday repetitive design tasks. Use it to create multiple variations of SOLIDWORKS Parts, Assemblies and Drawings quickly and accurately.

This DriveWorksXpress tutorial is intended to provide a quick introduction to using DriveWorksXpress.

The Tutorial will show how DriveWorksXpress can:

- Reduce the cost of custom designs
- Create SOLIDWORKS assembly, parts and drawings quickly
- Enhance product quality
- Eliminate or reduce repetitive tasks

Upon successful completion of this tutorial, you will be able to:

- Drive SOLIDWORKS part and assembly geometry with DriveWorksXpress
- Create a DriveWorksXpress input form and link the input fields to the SOLIDWORKS model
- Write rules to configure and run your design projects
- Generate new parts, assemblies and drawings

ABOUT THE TUTORIAL

In this tutorial, we will be automating the creation of a picture frame. Imagine you work for a company that designs and manufactures picture frames, where each picture frame you design is the same but different.

The height, width and material of the picture can be changed. This means a custom design needs to be produced for each sales enquiry or order. This could take a few hours and be very repetitive for you, the engineer. Time spent creating custom files manually could also delay the company's sales cycle.

However, by using DriveWorksXpress, it is possible to reduce both the lead time and the cost of custom designs to help companies to be more competitive and win more business.



GETTING STARTED

To begin this tutorial, you will need to download the SOLIDWORKS project files for the picture frame from the DriveWorksXpress website: <u>www.driveworksxpress.com</u>

The SOLIDWORKS files are contained within a zipped file.

Ensure you extract the files from this folder before beginning the training.

By following this DriveWorksXpress tutorial you will soon be automating your own designs in SOLIDWORKS.

DRIVEWORKSXPRESS NAVIGATION BAR



REGISTRATION AND BASIC SETUP

DriveWorksXpress is included in every seat of SOLIDWORKS. You'll find DriveWorksXpress by navigating to Tools > Xpress Products > DriveWorksXpress in the SOLIDWORKS tool bar.

The first time you use DriveWorksXpress in SOLIDWORKS 2015, you will need to log into your SOLIDWORKS account and register DriveWorksXpress.

If you are using SOLIDWORKS 2014, you can skip directly to 1.2 Basic Setup.

DRIVEWORKSXPRESS 2015 REGISTRATION

STEP 1

You'll need your SOLIDWORKS Serial Number. You can find this by navigating to: Help > About SOLIDWORKS.



Click 'Show Serial Number' and copy it ready for step two.

| About SOLIDWORKS | × |
|---|----------|
| SOLIDWORKS® Premium 2015 x64 Edition OK SP 0.0 Serial No.: Show Serial Number Serial No.: Show Serial Number © 1995-2014 Dassault Systèmes U.S. Patents 5,815,154; 6,219,049; 6,219,055; 6,611,725; 6,844,877; 6,898,560; 6,906,7' 7,079,990; 7,477,262; 7,558,705; 7,571,079; 7,590,497; 7,643,027; 7,672,822; 7,688,318: 7,694,238; 7,853,940; 8,305,376; 8,581,902; 8,817,028 and certai | 12; n |
| Foreign patents, including EP 1, 116, 190 B1 and JP 3, 517, 643. Other patents pending Portions of this software © 1999, 2002-2010 ComponentOne, LLC. Portions of this software © 2007-2014 DriveWorks Ltd. Portions of this software © 1998-2014 Geometric Ltd. Portions of this software © 1996-2012 Microsoft Corporation. All rights reserved. Portions of this software © 1995-2012 Spatial Corporation. Portions of this software © 2001-2014 Luxology, LLC. All rights reserved, patents pending. | · |
| Portions of this software © 1992-2010 The University of Tennessee. All rights reserved. This work contains the following software owned by Siemens Industry Software | ~ |
| License Agreement Adobe Copyrights | |
| Click Connect to visit the SOLIDWORKS web site and learn more about the Company and Product. | |

STEP 2

Once you've got your SOLIDWORKS Serial Number, open DriveWorksXpress.

You will be asked to log into your My SOLIDWORKS account and register DriveWorksXpress with your SOLIDWORKS Serial Number.

| Enable DriveWorksXpress | × |
|---|---|
| DriveWorksXpress is an introductory version of fully featured DriveWorks. To enable DriveWorksXpress, access DriveWorksXpress tutorials, and learn more about DriveWorks, visit: | |
| My.solidworks.com/xpress If your computer does not have internet access, you can visit my.solidworks.com from another computer to receive your Xpress Product code by email and enter it below. | |
| DriveWorksXpress Product Code: Note: You will need your SOLIDWORKS Serial Number to generate Xpress product codes. You can find your serial number from the Help menu > About SOLIDWORKS. | |
| OK Cancel | |

If you don't already have an account, you will need to create one with SOLIDWORKS. This is really easy, just click the link to create an account.

| ccess a wide range of technical a cluding the SolidWorks Customer Iv.SolidWorks, and more. | nd community resources Portal, Forums, | |
|--|---|-------|
| Email Address: | | |
| Email | | |
| Password: | | |
| Password | | |
| Log in Cancel | | |
| Forgot your password? | | |
| Need help? | | |
| on't have a SolidWorks account? | Create one today | A ANG |
| earn about the benefits of joining | | |

STEP 3

Once you're logged in, you will get an Activation Code for DriveWorksXpress.

SOLIDWORKS 2015 DriveWorksXpress

| 1 Learn more about DriveWorksXpress, view Lessons, videos and more. |
|--|
| You will need the code to enable DriveWorksXpress when prompted in SOLIDWORKS. |
| SOLIDWORKS Serial #: |
| SOLIDWORKS Version: |
| Xpress Product: |
| Activation Code: |
| View other Xpress products |

Copy the Activation Code and return to SOLIDWORKS.

Paste the code into the activation window and click OK.

| Enable DriveWorksXpress | |
|---|---|
| DriveWorksXpress is an introductory version of fully featured DriveWorks. To enable DriveWorksXpress, access DriveWorksXpress tutorials, and learn more about DriveWorks, visit: | |
| My.solidworks.com/xpress If your computer does not have internet access, you can visit my.solidworks.com from another computer to receive your Xpress Product code by email and enter it below. | |
| DriveWorksXpress Product Code: Note: You will need your SOLIDWORKS Serial Number to generate Xpress product codes. You can find your serial number from the Help menu > About SOLIDWORKS. | : |
| OK Cancel | |

DriveWorksXpress will be activated and the task pane will open.

You're now ready to automate your designs with DriveWorksXpress!

BASIC SETUP

LAUNCHING DRIVEWORKSXPRESS

Click on the 'Tools' tab in the SOLIDWORKS menu bar and select DriveWorksXpress from the drop-down options.

| ∂S soli∂ works | File | View | Tool | Help | 2 | - 🗋 | > | - 1 | B - I | 9- | R - | 8 | e | = - |
|-----------------------|------|------|------|------------------|---------------------|----------|-------------|-----|-------|----|-----|---|----------|-----|
| | | | | SolidWo | SolidWorks Explorer | | | | | | | | | |
| | | | | DriveWorksXpress | | | | | | | | | | |
| | | | | Design Checker | | | | | | | | | | |
| | | | | Compare • | | | | | | | | | | |
| | | | | Macro | | | | • | | | | | | |
| | | | | Add-Ins. | | | | | | | | | | |
| | | | | Save/Res | tore S | Settings | | | | | | | | |
| | | | | Customi | ze | | | | | | | | | |
| | | | 5 | Options. | | | | | | | | | | |
| | | | _ | | | | | | | | | | | |

This activates DriveWorksXpress, which will open on the right hand side of the screen.

The DriveWorksXpress Welcome Page gives you three options:

Create / Change Database

This allows you to create a new project or load and change an existing project

• Add / Edit Models

Add more models to the existing project

Run Models

Jump directly to Run to specify a new variation using a completed project



CREATE A NEW DATABASE

To create a new DriveWorksXpress Database, click the 'Create/Change Database' radio button.

| Click 'Next' in the DriveWorksXpress | Task |
|--------------------------------------|------|
| Pane. | |

You will automatically be asked to open a new database.

Browse to the location where you want to create your new database and name it 'Picture Frame'.

Click 'Open' to save the database and continue.

A new DriveWorksXpress database will be saved in your specified location.



CAPTURING MODELS AND DIMENSIONS

CAPTURING SOLIDWORKS MODELS

Click 'Next' to navigate to the new window within the DriveWorksXpress Task Pane.

This will allow you to capture your models and the parameters that will be controlled. There are three ways to select which models are to be captured and driven using DriveWorksXpress:

- Browse for new model
 If no models are open in SOLIDWORKS, you can browse to the location of the files you would like to be driven and automated using DriveWorksXpress

 Use current open model
 If you currently have a part or assembly open in SOLIDWORKS, DriveWorksXpress can capture these models to be driven and automated
- Models already in DriveWorksXpress

If you have previously captured models within DriveWorksXpress, these will be displayed in the DriveWorksXpress Task Pane



Make sure 'Browse for new model' is selected and click 'Next'.

Browse to the location on your hard drive where you have saved your picture frame files, open the folder and select the SOLIDWORKS Assembly Document called 'Frame Assembly.SLDASM'

Click 'Open'

The picture frame assembly will open in SOLIDWORKS.

Once DriveWorksXpress knows the location of the files, we'll need to tell it which components we want to capture dimensions and features from.

| 🛃 Captured Models | |
|-------------------------------|--|
| 🤣 Captured Assembly Structure | |
| Dimensions and Features | |
| 🛃 Custom Properties | |
| 🕅 Drawing And Configurations | |

The DriveWorksXpress Task Pane will now show all of the options for capturing model information.

NOTE – It is possible for these tabs to be dragged and compressed into one line in order to create more work space in DriveWorksXpress.



So don't worry if you don't see the tabs displayed in the image above. It is possible that you may see the following at the bottom of the Task Pane:

Captured Models

This shows the models that have been captured inside of DriveWorks.

• Captured Assembly Structure

This allows you to see all the models making up the structure of the assembly within a 'tree' formation. This option allows you to select which models within the assembly that you would like to capture.

• Dimensions and Features

Dimensions and features can be controlled by double clicking a model from the model list within the model tree above the Capture options and then clicking 'Dimensions and Features'.

• Custom Properties

Any custom property that has been assigned in SOLIDWORKS can be captured and driven by DriveWorksXpress.

• Drawings and Configurations

If there are manufacturing drawings, they can be located and added to DriveWorksXpress by selecting this tab and hitting 'Browse' under the 'Drawings' heading.

If rules are required to drive which configuration of a part or assembly gets used, this can also be indicated in the 'Drawing and Configurations' option.



At the bottom of the Task Pane, select the 'Captured Assembly Structure' tab. This will display check boxes next to each model in the assembly. Select the parts/assemblies that you want DriveWorksXpress to control by checking the box next to each item.

The top level assembly (Frame Assembly) will already be checked. In this exercise, we will also control the Back, Frame, Glass and Mat.

Capture the models Back, Frame, Glass and Mat and in the Captured Assembly Structure.

CAPTURING DIMENSIONS AND FEATURES

The Dimensions and Features tab allows you to choose which parameters from a model or assembly you would like to capture and drive. You can then assign a descriptive name to the dimension or feature you have selected to make them easier to identify and create rules for.

A parameter is captured by selecting the 'Captured Models' tab and then double clicking on the model that the parameter exists in.



This will open the model in SOLIDWORKS allowing you to select the dimensions and features you wish to capture and control.

| | Address: | width@Sketch1@Back.Part | | | | | |
|---|----------|-------------------------|--------|--------|--|--|--|
| ~ | Name: | Width | | | | | |
| | | Add | Cancel | Remove | | | |

With the models captured, begin the process of capturing the parameters that you need to control. The following steps will guide you through the process of capturing dimensions and features in DriveWorksXpress.

CAPTURING THE BACK

Double click on the Back in the 'Captured Models' tab and then select the 'Dimensions and Features' tab.



We need to capture two dimensions from the Back model.

Using the SOLIDWORKS feature tree that is displayed on the left hand side of the screen, double click on the feature named 'Boss-Extrude 1'. Select the feature and three dimensions should appear.



Select the dimension '7.000' that appears on the model.

In the DriveWorksXpress Task Pane, the SOLIDWORKS Name for the dimension appears in the text box labelled 'Address'.

NOTE: A yellow warning triangle will appear if the Name field is empty. This disappears once a valid name has been typed in.

In this example the SOLIDWORKS Address is called: 'width@Sketch1@Back.Part'

| | Address: | width@Sketch1@Back.Part | | | | | | |
|---|----------|-------------------------|--------|--------|--|--|--|--|
| ~ | Name: | Width | | | | | | |
| | | Add | Cancel | Remove | | | | |

The name of this dimension has been changed in SOLIDWORKS. DriveWorks has picked up on this, so has given the name the same name as the SOLIDWORKS Dimension.

Click 'Add'.

We need to capture the height of the Back now.



Double click on the feature named 'Boss-Extrude 1'. Select the dimension '5.000' that appears on the model.

The name of this dimension has already been changed to Height in SOLIDWORKS. Click 'Add'.

The captured dimensions can now be seen in the DriveWorksXpress Task Bar.



The next step is to capture the rest of the features and dimensions from each individual part of the Photo Frame Assembly.

CAPTURING THE MAT

Navigate back to the original Picture Frame assembly window in SOLIDWORKS by clicking 'Back', clicking 'Captured Models' or by closing the open model and clicking 'Next'.



The Mat and the Back both require the dimensions Width and Height to be captured.

Click on 'Captured Models' tab and double click 'Mat' in the model tree.

Select the 'Dimensions and Features' tab at the bottom of the DriveWorksXpress Task Pane.

Using the SOLIDWORKS feature tree that is displayed on the left hand side of the screen, double click on the feature named 'Boss-Extrude 1'.



Select the dimension '7.000'. In the DriveWorksXpress Task Pane, click 'Add'.

Next, select the dimension '5.000', click 'Add'.



CAPTURING THE GLASS

Using the same method as previously demonstrated, capture the following dimensions for the 'Glass' model. Remember to click 'Add' for each dimension!

Select the 'Captured Models' tab in the DriveWorksXpress Task Pane. Double click the 'Glass' model from the model tree.

Capture the following dimensions:

| Feature Name | Dimension Value | DriveWorks Name | Explanation |
|----------------|------------------------|-----------------|----------------------------------|
| Boss-Extrude 1 | 7.000 | Width | Controls the width of the glass |
| Boss-Extrude 1 | 5.000 | Height | Controls the height of the glass |

CAPTURING THE FRAME

Using the same method as previously demonstrated, capture the following dimensions for the 'Frame' model. Remember to click 'Add' for each dimension!

Select the 'Captured Models' tab in the DriveWorksXpress Task Pane. Double click the 'Frame' model from the model tree.

Capture the following dimensions:

| Feature Name | Dimension Value | DriveWorks Name | Explanation |
|----------------|------------------------|-----------------|----------------------------------|
| Boss-Extrude 1 | 8.740 | Frame Width | Controls the width of the frame |
| Boss-Extrude 1 | 6.740 | Frame Height | Controls the height of the frame |

Select the Drawing and Configurations tab at the bottom on the DriveWorksXpress Task Pane.

| 🛃 Captured Models | Drawing And Configurations |
|------------------------------|---|
| nterstand Features | Configuration |
| 🛃 Custom Properties | Do you want to control configurations in the model based |
| 🕅 Drawing And Configurations | on rules? |
| | \bigcirc No, leave this model on the current configuration |
| | Yes, allow me to create a rule to switch configurations |

Select the Option, 'Yes, allow me to create a rule to switch configurations'.

CAPTURING DRAWINGS

With DriveWorksXpress you can capture your SOLIDWORKS engineering drawings. This feature means that when a new version of the model is made using DriveWorksXpress, the engineering drawing of that component is also updated to match it. Click the 'Browse' button to search your hard drive for the corresponding SOLIDWORKS drawing file.



Open the Frame Assembly and browse for the drawing 'Frame Assembly.SLDDRW'.

Click 'Open' top capture the drawing.

It is possible to add one drawing per part or assembly.

The captured drawing will be updated and saved with a new name every time a specification is run.

CAPTURING CUSTOM PROPERTIES

By linking Annotation Text to the value of a Custom Property, DriveWorksXpress can automatically populate Drawing Borders with information that is specific to each newly created model.

To do this you must capture the Custom Properties that you would like to control. Then, build a rule for these properties and ensure that a value is driven into them every time.



DriveWorksXpress



This tree shows the structure of the assembly. Check the models you want to control.

| Custom Properties | |
|-------------------------------|--------|
| | Ş |
| Name | |
| | |
| Drawn by | |
| Material | |
| 🗹 🌇 Part Number | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| [] | |
| | Create |
| Show Captured Properties Only | |

Select the Custom Properties tab on the DriveWorksXpress Task Pane.

Check the Custom Properties Date, Drawn by, Material and Part Number.

CREATING INPUT FORMS

In DriveWorksXpress you can create an input form for entering the values for your new parts and drawings. This form can be used again and again to specify and generate all the new parts and drawings, based on the rules you set and values you enter.

ADDING CONTROLS

To access the Form Designer, click the 'Next' arrow at the top of the DriveWorksXpress Task Pane, or select the Form Creation Icon shown below.



Each control placed on the form requires three things:

- **Name** You must provide a descriptive name for the form control. This name will be the description the user sees as they fill in your form i.e. Customer Name
- Type Choose from five types of controls (inputs)

Text Box: Input text directly by typing

Numeric Text Box: Input numeric values and specify a minimum and maximum value

Drop Down: Provides a list of options to choose from

Spin Button: Users can select from a range of numeric values. A maximum and a minimum value, as well as the incremented value

Check Box: Places a checkbox on the form

• **Required** - Enforces a value to be entered

In this example, let's create a Customer Name and an Order Number using a Text Box. Later we will build a rule to append the Customer Name and Order Number to each file so that each set of new files in a specification can be easily identified.

Begin by adding a Text Box to the Form to allow a Customer Name to be entered.

| 🔶 🍬 💽 🖲 🚱 🏟 | 0 |
|---|----------------|
| DriveWorksXpress Design a form to collect requirements for new models. Create and name input fields for the form. | Drive Works |
| Name | |
| Customer Name | |
| Туре | |
| Text Box | ~ |
| Required | |
| | |

Add a new Text Box called Customer Name:

| Control Name | Control Type | Required |
|---------------|--------------|----------|
| Customer Name | Text Box | Yes |

Type the name of the Control and then use the Drop Down to select the Control Type.

Tick the 'Required' check box to ensure a Customer Name is entered for each new specification.

Click 'Next' to register the control and display the Control List.

Notice that the form control appears in the form designer within the DriveWorksXpress Task Pane. As you create your form, you can edit and delete controls, as well as change the order by using the Up and Down arrows.

| Image: | Ø 🔲 =x 🕟 | × | 0 |
|---|--|-------------------------|----------------|
| DriveWorksXpr Design a form to o models. Add, edit and dele form | ess collect requirement :te inputs as well as | :s for new test your | Drive Works |
| Name | Туре | Required | 🗔 Add |
| abl Customer Na | Text Box | True | 🛛 Edit |
| | | | 🍶 Test |
| | | | 📰 Delete |
| | | | ^ |

You can also test your form by clicking 'Test'.

Click 'Add' and repeat the steps to add the following controls:

Add a new Text Box called Order Number:

| Control Name | Control Type | Required |
|--------------|--------------|----------|
| Order Number | Text Box | Yes |

Add a control to specify the overall height of the finished model using Spin Button, which allows a maximum and a minimum value to be enforced as well as an increment.

Add a new Spin Button called Height:

| Control Name | Control Type | Min Value | Max Value | Increment |
|--------------|--------------|-----------|-----------|-----------|
| Height | Spin Button | 4 | 9 | 1 |

| 🤹 🔹 🚺 📧 🔝 🖘 📄 🗶 🛛 🥹 |
|--|
| DriveWorksXpress Design a form to collect requirements for new models. Create and name input fields for the form. |
| Name |
| Height |
| Туре |
| Spin Button 🗸 |
| Minimum Value |
| 4 |
| Maximum Value |
| 9 |
| Increment |
| 1 |

Add a new Drop Down called Width:

| Control Name | Control Type | Required | Options | |
|--------------|--------------|----------|---------|--|
| Width | Drop Down | Yes | 4 | |
| | | | 5 | |
| | | | 6 | |
| | | | 7 | |
| | | | 8 | |
| | | | 9 | |
| | | | 10 | |

2

Drive

Works

| 🤃 📫 🚺 🐨 💽 =x 🖒 | × |
|----------------|---|
|----------------|---|

DriveWorksXpress

Design a form to collect requirements for new

NOTE: Separate items in the Options field of the Drop Down by using pipe bars (1|2) or by pressing CTRL+ENTER after each entry to add a new row.

models. Create and name input fields for the form.

| Name | |
|--------------|---|
| Width | |
| Туре | |
| Drop Down | ¥ |
| Required | |
| \checkmark | |
| Options | |
| 4 | |
| 6 | |
| 7 | |
| 8 9 | |
| 10 | |

Add a new Drop Down called Material:

| Control Name | Control Type | Required | Options |
|--------------|--------------|----------|----------|
| Material | Drop Down | Yes | Oak |
| | | | Maple |
| | | | Pine |
| | | | Mahogany |

2

TEST MODE

B

| DriveWorksXpress | Drive |
|---|-------------|
| Enter information to test the form. Click on Set Defaults to see the current values when you fill out the form. | WORKS |
| | |
| Frame Assembly | |
| Customer Name | |
| | |
| Order Number | |
| PF- | |
| Height | |
| 4 | - |
| Width | |
| 4 | ~ |
| Material | |
| Oak | ~ |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | - 11 |
| | _ |
| Clear | et Defaults |

=x 📄 🔀

Click 'Test' within the Form Designer to preview the form you have created and test it out for yourself.

You will notice that as you fill out the forms with valid information, the background of the text boxes will change from pink to white and the yellow warning triangles will disappear.

If you hover over a control, information about the control will be shown in a tooltip.

It's good practice to set default values for controls. Setting default values makes building rules easier because the controls have values.

To set a default value, enter values into the form controls and click 'Set Defaults'.

RULES BUILDER

DriveWorksXpress lets you use Excel syntax to build rules to automate your SOLIDWORKS models.

Navigate to the Rules tab by clicking 'Next' or 'Rules' in the DriveWorksXpress Task Pane.



The Rules tab shows a summary of your rules and how many of each rule type there are. The summary also shows the number of unbuilt rules that must be completed before a new Specification can be created:

| 🗢 🔿 🕲 🗑 🗮 💌 🕨 | × | | | 3 |
|---|-----|---|---------|------|
| DriveWorksXpress The summary shows information about your rules. Select the rule types to edit. | | | | |
| Rule Type | All | 7 | Missing | Edit |
| File Names | 5 | / | 5 | ✓ |
| Configurations | 1 | / | 1 | |
| Custom Properties | 4 | / | 4 | |
| Dimensions | 8 | / | 8 | |
| Features | 0 | / | 0 | |
| Total | 18 | 7 | 18 | |

Selecting the check box against a Rule Type filters the rules by that type. It is possible to select more than one rule type at a time.

Filtering is helpful where there are large numbers of rules to be built. Where Rules are not required for a particular type, the check box will not be enabled.

The summary provides constant feedback on Total Number of Rules and Missing Rules (which still require rules to be built against them). Before you begin to create rules within this tutorial, here is a quick summary of the DriveWorksXpress Rules Builder.

| DriveWorksXpress Rule Builder |
|--|
| Rule: Scissor Lift Assembly Drive You are currently building a rule for a File Name. Works |
| Inputs Recent Math Logic A- A+ Clear Rule |
| abl CustomerName |
| abl OrderNumber |
| 🚺 Length |
| 🔝 Width |
| Result:- |
| File name rules specify text to be appended to the original file name. For example, for an assembly named Block.SLDASM if you enter =Customer as the rule and Acme is the selected customer name, the new file will be named Block Acme.SLDASM |
| Cancel OK |

There are four drop-down menus within the DriveWorksXpress Rule Builder:

Inputs

Lists the available controls that can be used in rules

Recent

This can be populated with commonly used text strings or equations

Math

Mathematical operators (e.g. add, subtract, and divide)

• Logic

Logical operators (e.g. IF, <, >, =)

FILE NAME RULES

File Name rules allow different sets of files that are generated for each new specification of an automated design to be easily identifiable. Each of the files being driven will be for a unique project and therefore will require a unique set of file names.

Check the File Name check box and click 'Next' in the DriveWorksXpress Navigation.

| 🗢 🔿 🚺 🗑 🗐 💌 🕨 | × | | | 2 |
|---|-----|---|---------|------|
| DriveWorksXpress The summary shows information about your rules. Select the rule types to edit. | | | | |
| Rule Type | All | / | Missing | Edit |
| File Names | 5 | 7 | 5 | • |
| Configurations | 1 | / | 1 | |
| Custom Properties | 4 | / | 4 | |
| Dimensions | 8 | / | 8 | |
| Features | 0 | / | 0 | |
| Total | 18 | 7 | 18 | |

The captured components requiring a File Name rule will be listed.

You can choose to show all rules or just missing rules that have not been built yet. You also have the option to view your files as a List or in a Tree View. The default is List View.



BUILD A RULE FOR THE FRAME ASSEMBLY FILE NAME

Select the Frame Assembly Rule and then click 'Build'.

| 🗢 🔿 🔁 🛤 | 9 📰 =v 🕟 | × | 2 |
|---|---|--|-------|
| DriveWorksXpress The list or tree shows the rules that you selected. Select a rule to edit. | | | |
| Show Missing I | Rules Only | | Build |
| ○ View Tree |) View List | | Balla |
| View Tree (|) View List File Name | Туре | Value |
| View Tree Name Frame Asse |) View List File Name Frame Assem | Type File Name | Value |
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| View Tree Name Frame Asse Back Mat Frame | View List File Name Frame Assem Back Mat Frame | Type File Name File Name File Name File Name | Value |

The DriveWorksXpress Rules Builder will open.

All the file names that are going to be created for these models will need to be unique to that particular specification and therefore the file names should be populated with information that will allow the files to be easily identified. For this tutorial, this will involve using the customer's name and their order number within the file name.

To create unique file names for each new specification, file names should be populated with information that will allow you to recognise what they are. For the Frame Assembly, use the Customer Name and Order Number inputs to create file names that have the format, "Component OrderNumber – CustomerName".

Start by selecting the 'OrderNumber' control from the Inputs tab. This will now place the value from the control into the rule

To incorporate the hyphen between OrderNumber and CustomerName, ampersands (&) need to be used. This is because OrderNumber is one string and the hyphen is another string. Therefore, you need to type & "-".

The rule should now read OrderNumber & "-".

To finish off the File Name rule, type & CustomerName (or select 'CustomerName from the Input menu).

The completed rule should read: OrderNumber & "-" & CustomerName



An example of this rule when put into practice will read:

'Frame Assembly DW004 - John Smith'

Click 'OK' to exit the Rules Builder.

BACK, MAT AND GLASS FILE NAME RULES

There will now be four remaining File Name Rules. DriveWorksXpress allows you to build rules for all the selected models at the same time by holding down Ctrl or shift to multiple select:

Multi-select all of the Rules except Frame and then click 'Build'.

These rules are going to be different from the main assembly. We are going to incorporate the Height and the Width of the frame in to the rule. This will mean that DriveWorks will create and build up a standard set of components as their file name will be based on their actual size. This will speed up generation as DriveWorks will not create the part if it already exists.

Select the 'Height' control from the Inputs tab and type & "-"&. Finish the rule by selecting the 'Width' control from the Inputs tab.

The Rule should now read Height & "-" & Width.



An example of this rule when put into practice will read:

'Frame 5-10'

Click 'OK' to exit the Rules Builder.

FRAME FILE NAME RULE

There will now be one remaining File Name Rule for the Frame. The rule for the Frame will incorporate the Height, Width and Material inputs.

Select the 'Height' control from the Inputs tab and type & "-"& Select the 'Width' control from the Inputs tab and type & "-"&

Select the 'Material' control from the Inputs tab

The Rule should now read: Height & "-" & Width & "-" & Material.

An example of this rule when put into practice will read: 'Frame 5-10-Oak'

This could create a long File Name if Mahogany was chosen, so we are going to shorten the Material to the first two letters using the LEFT function. The LEFT function will take a specified number of characters from the left of a text string. Further information on this function can be found in the Little Book of Rules on page 130.

Select the Frame and build the following which will take the first two letters from the Left of the Material input

| Name | File Name Rule |
|-------|--|
| Frame | Height & "-" & Width & "-" & LEFT(Material , 2) |

| DriveWorksXpress Rule | e Builder 🛛 🗴 |
|--|---------------------|
| Rule: Frame Assembly.Frame You are currently building a rule for a File Name. | Drive Works |
| Inputs Recent Math Logic | A- 🗛 - Clear Rule 🥥 |
| Height & - & width & - & LEFI (Matenal, 2) | |

Click 'OK'.

Click 'Back' in the DriveWorks navigation to return the Rules Summary Page.



CONFIGURATIONS RULES

DriveWorksXpress does not create new configurations but it can be set to drive an existing file.

Un-check File Names and check Configurations. Click next in the DriveWorksXpress navigation.

In the Frame model there are four configurations. Each of the four configurations has a different material. The name of each configuration represents the material assigned.

In order for DriveWorks to switch the configuration the exact name of the configuration must be entered in to the configuration rule.

Build a Rule for the Frame Configuration:

| Name | Rule |
|---------------|-------------------------------------|
| Configuration | Material & " <as machined="">"</as> |

Click 'Back' in the DriveWorksXpress navigation to return to Rules Summary.

CUSTOM PROPERTY RULES

You can capture and control Custom Properties in models using DriveWorksXpress. By linking drawing annotations to these Custom Properties, you can control drawing borders and notes.

Un-check Configurations and check Custom Properties. Click Next in the DriveWorksXpress Navigation.

To create this rule we want to use todays date. We could do this by adding a control on to the user form which requires the user to enter todays date, or better, we can use one of the built in functions to enter the date.

To do this we are going to use the TODAY function. You can also make use of the TEXT function with the TODAY function to format the date differently.

Build a Rule for Date using the Today() function:

| Name | Rule |
|----------|---------------------------|
| Drawn By | Text(Today(),"dd-mm-yyy") |

NOTE: An explanation of this function can be found in The Little Book of Rules on page 136.

Build a Rule for Drawn By using your own name:

| Name | Rule |
|----------|--------------------|
| Drawn By | "[YOUR NAME HERE]" |

Build a Rule for Material using the Input Material:

| Name | Rule |
|----------|----------|
| Material | Material |

Build a Rule for Part Number using the Inputs Height, Width and Material:

| Name | Rule |
|-------------|---|
| Part Number | Height &"-"&Width&"-"&LEFT(Material ,2) |

Click 'Back' in the DriveWorksXpress Navigation to return to Rules Summary.

DIMENSION RULES

Dimension rules allow you to automate your SOLIDWORKS models by taking information entered on the Form, calculating a result and then sending it to the SOLIDWORKS model. This allows you to control multiple dimesions at the same time using only a few inputs.

Un-check 'Custom Properties' and check 'Dimensions'. Click next in the DriveWorksXpress navigation.

The tables below show the name of each dimension and the rule that should be created for that dimension.

Build the following rules for the captured dimensions:

| Name | Rule |
|--------------|---------------|
| Width | Width |
| Height | Height |
| Frame Width | Width +1.74 |
| Frame Height | Height + 1.74 |

Click 'Back' in the DriveWorksXpress navigation to return to Rules Summary.

There are now 0 rules missing for the captured dimensions.

RUNNING THE PROJECT

Click 'Next' or 'Run' in the DriveWorksXpress navigation, which will take you to the 'Run' Task Pane.

| 🦛 🔿 🔞 🗊 🛐 🖘 🕟 🗙 | 3 |
|---|---|
| DriveWorksXpress Enter the required values in the form below. Complete the form to generate a new version of Frame Assembly. | |
| Defaults Last Used |] |
| Frame Assembly | |
| Customer Name | |
| Order Number | |
| PF- | |
| Height | |
| 4 | |
| Width | |
| 4 ~ | |
| Material | |
| Oak 🗸 | |
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| | |
| | |
| Clear Create |] |

Now that all of the rules are written for the project, new specifications can be created.

Within the Run Task Pane, you will be able to see the Form Controls you created earlier in the project.

Follow the Tool Tips and complete the Form.

All of the controls which require a value will appear with a pink background which will turn white once a suitable value is entered.

There are three methods of completing the Form. You can use the Default control values, Last Used values or enter new details.

Click 'Create'. DriveWorksXpress will now generate your new models and drawings.

A generation report is produced which shows activity on all of the driven values. Any errors will appear with a red cross, and all successful values will appear with a green tick.

To view the modified SOLIDWORKS Drawing File for this new model, open the folder where all the files have been saved to.



Congratulations! You have now completed this DriveWorksXpress Tutorial.

There is lots more downloadable content available at:

www.driveworksxpress.com

Now you've tried DriveWorksXpress, GO AUTOMATE your own SOLIDWORKS projects!