

Itemize Your Life with Autodesk Vault Professional

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Code: MA1475

Within this class you will learn what items are and how to provide both engineering staff and non-engineering (no access to a CAD application) with access to the data. We will cover how to issue new stock numbers and build intelligent naming schemes.

Learning Objectives

At the end of this class, you will be able to:

- Identify the pros and cons of items and make an intelligent decision on when and how items should be applied.
- attach your CAD data smartly with proper property (metadata) information mapping.
- provide a mechanism for exchange of data between Vault and enterprise resource planning (ERP), manufacturing resource planning (MRP), and product lifecycle management (PLM) systems.
- Apply release management
- create bills of materials (BOMs) for your items.
- Use change orders, Integrating items

About the Speaker

A specialist in the manufacturing industry Mike provides training, support, and implementation on manufacturing solutions. His strong Autodesk mechanical knowledge is supplemented with a strong understanding of document management, hardware, networking, and other Autodesk technologies. With many certifications both present (Inventor Certification) and past (MICE, DMICE) and his past experience in the Autodesk Reseller channel he is very highly regarded within the industry

Currently the Technical Services Manager for Prairie Machine & Parts he is responsible for overseeing the engineering department's technical operations and the strategic technical growth of the department

ITEMIZE YOUR LIFE WITH AUTODESK VAULT PROFESSIONAL	1
CODE: MA1475.....	1
LEARNING OBJECTIVES.....	1
ABOUT THE SPEAKER	1
VAULT ITEMS.....	4
WHAT ARE ITEMS?	4
SHOULD I USE ITEMS?	4
THE ITEM MASTER.....	5
FINDING ITEMS.....	6
NEW ITEM CREATION	7
ITEM EDITING	8
CATEGORIES	8
VAULT ITEMS – FOR THE ADMINISTRATOR.....	9
ITEM SECURITY.....	9
GENERAL SETTINGS.....	9
CONFIGURING ITEM LIFECYCLE SETTINGS.....	10
WATERMARK SETTINGS	11
CATEGORY CONFIGURATION	13
CAD INTEGRATION	15
UPDATING AN ITEM	15
ASSIGNING EXISTING FILES TO ITEMS	15
ATTACHING A FILE TO AN ITEM THAT ALREADY EXISTS	18
CAD INTEGRATION – FOR THE ADMINISTRATOR.....	20
BILL OF MATERIALS.....	22
EDITING THE BOM	23
<i>Adding Items</i>	23
<i>Overriding Quantities</i>	24
<i>Comparing Bill of Materials</i>	25
<i>Exporting Bill of Materials</i>	26
ITEM LIFECYCLES AND ITEM REVISIONS	27
ADJUSTING THE REVISION LEVEL OF AN ITEM.....	27
LIFECYCLES.....	28
<i>Changing the item lifecycle state</i>	28
WATERMARKING	29
ROLL BACK LIFECYCLE STATE CHANGE.....	30
AUTOMATIC REVISION BUMPING	32
RESTORING ITEMS.....	33
PURGING ITEMS	33

CHANGE ORDERS.....	34
WHAT ARE CHANGE ORDERS?	34
CREATING NEW CHANGE ORDERS (AND SUBMITTING FOR WORK)	35
COMPLETING THE REQUIRED CHANGES (AKA DOING THE WORK)	37
REVIEWING, APPROVING, AND SETTING EFFECTIVITY	39
EXPORTING ITEM DATA	40
EXPORT	40
EXPORT ITEM	40
USING THE API	41
AUTODESK 360 PLM	42

Vault Items

What are Items?

Like how a recipe or business card represents information and provides a method for organization and quickly locating, items represent things within our business. **Items** represent the components that the company manage, assemble, sell and manufacture.

Each item is identified by its own unique item number (or sometimes referred to as part number). Items can represent a variety of things including parts and assemblies, instructional guides, consumable goods (fluids, lubricants, etc), and any related Bill of Material. Some items might be purchased, while others are manufactured internally.

Within **Vault Professional**, items are records stored within an item master. The item master is a master list of everything within the engineering system. Each item is assigned an unique item number (identifier) which is used to locate, edit, update, and track changes to an item.

Items are used to:

- Provide access to the data for everyone who needs access. This will also include non-engineering staff without access to a CAD application.
- Provide a mechanism for the exchange of data between systems
- Issue new numbers (i.e. stock numbers)
- Release Management (lifecycles)

NOTE: Items and the Item Master are **ONLY** available within Vault Professional

Should I use Items?

Should you use items? Ask yourself these questions...

- Do I need to deliver data to a downstream application, like MRP, ERP, PLM, etc, etc?
- Do non-engineering or non-cad people need access to data about my parts and assemblies? Possibly manipulate Bill Of Material data?
- Do I want a method to manage revisions? And control what downstream users see of my data?
- Do I want to manage CAD AND non-CAD things?
- Do I want to release data locking it from access?
- Do I want to use Change Orders to control and track revisions?

The Item Master

The Item Master is its own area within Vault Professional and is a listing of ALL the items within the Vault.

- The items are not and cannot be broken into sub-folders... it's a flat view
- The initial view is limited to 100-items (or whatever is configured by your Vault Administrator)

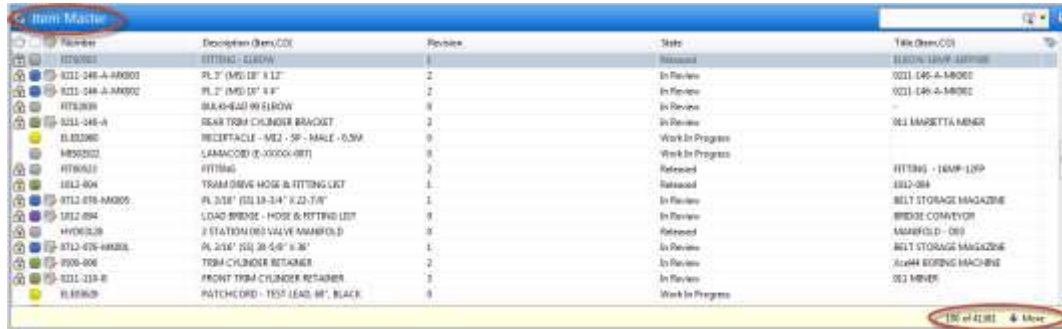
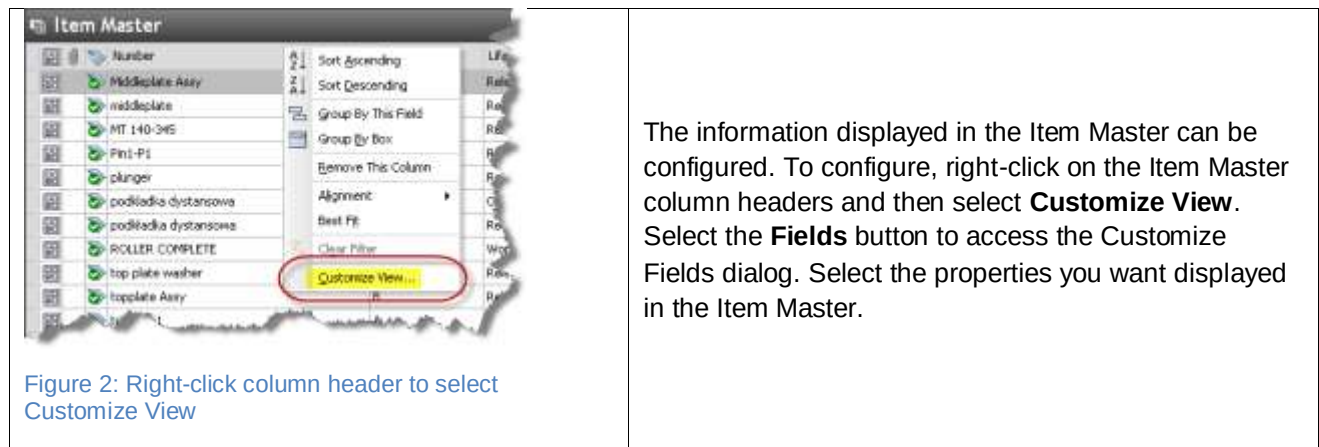


Figure 1: Item Master



When an item is selected, Vault presents information about the item that is very similar to what is shown for files.

- **General** – The properties (both standard and custom), a thumbnail, and the associated files of the item.
- **History** – Displays the revisions (and versions) of the item.
- **Bill of Materials** – Similar to files “Uses” view except that it gives a true BOM view of the attached file including the quantity of the components making up the item.
- **Where Used** – Where the item is used within the Vault. Useful to analyze potential impact of adjusting the item or files attached to the item.
- **Change Order** – View current or previous applied change orders.
- **View** – View the files attached to the item (select the file in the *Associated files* area to view).

Finding Items

Opposed to scrolling through hundreds of items to locate the one you need, searching for or filtering items can quickly locate your items. Searching is accomplished using the search bar or using the advanced find functionality.

By default the basic search will search through all item properties. To be more specific when searching, the search can be expanded and specific item properties can be searched.

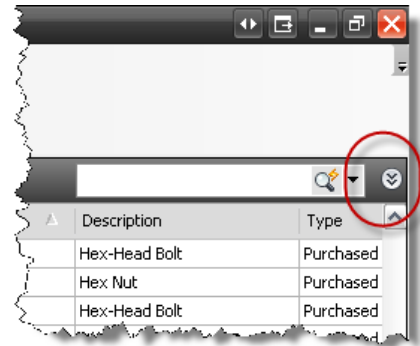


Figure 3: Expanding the Basic Search

Use the advanced **Find** to build more specific searches (and saved them if used frequently)



Figure 4: Using the Advanced Find to only search for items in the Item Master

Custom View Filters provide a method to reduce the number of items displayed in the item master, making finding your desired item easier.

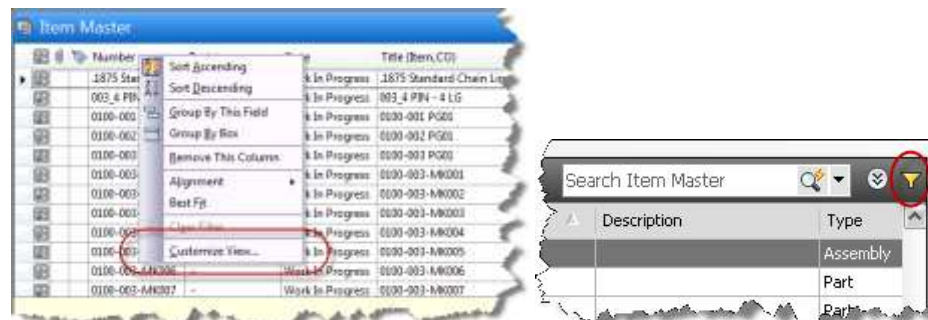
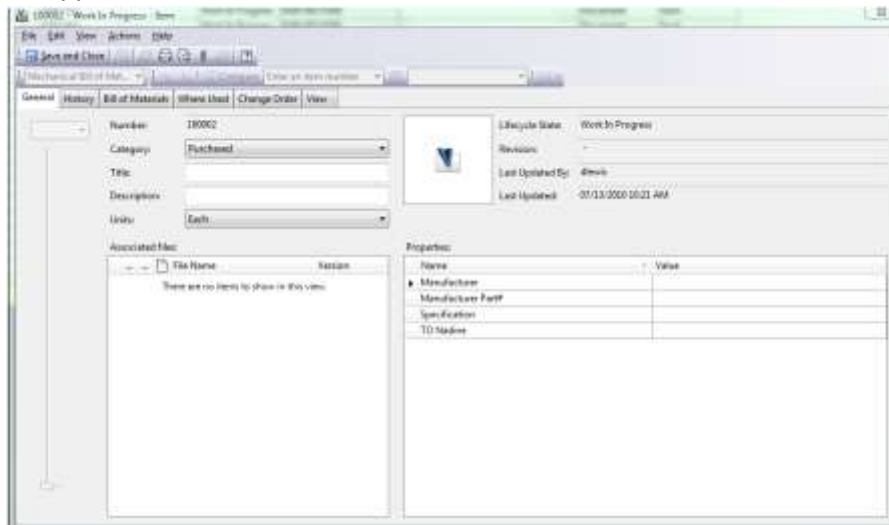


Figure 5: Applying Custom View Filter

New Item Creation

Not all items need to be built from an existing file, nor do items have to have an associated files. If you have a new part or find that the part you require is **NOT** in the current Vault file database, you will have to create a new item.

Select **Item Master** in the file tree in Vault. Select the **New Item** Option  **New** , The following window will appear:



The new item will be assigned a new item number based on the default naming scheme to adjust this select **Actions -> Change Item Number**.

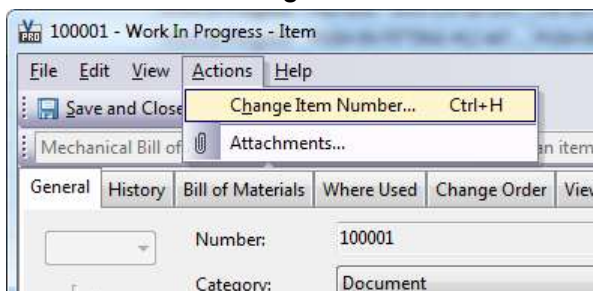


Figure 6: Change Item Number

When changing the item number the Item number will be temporarily checked out to you so that it remains as a unique number. If you chose to close the **Create Item** window without saving, Vault will return the item number to the pool.

Once you've adjusted the item number you want to make sure the new item has the proper information, typically you'll want to enter information for the Category, Title, Description, and any custom properties configured by your Vault Administrator

Note: The item can later be attached to a file. When the item is attached to the file; the next time the item is updated, it will write all the item properties to that particular file.

Item Editing

For an item to be edited, the item must be in the **Work in Progress** state **AND** no other user can be editing that item. An item record can be opened in the Edit tab. This option allows the user too:

- Modify the title and description fields.
- Add, remove and modify user-defined properties.
- Attach and modify attachments.

The following item attributes can be edited within the **Item Record** dialog box:

- Item **Title** Text & Item **Description** text.
- Item **Category** - Select the drop-down arrow and then select the desired category from the list. [A list is provided in the Appendix]
- File Attachments (To attach a file to the item select **Attachments**)

Categories

Categories provide a mechanism to classify items to make it easier to identify what the component belongs too. For example it can be difficult if I only look at a plate with some holes in it to know what the plate belongs to. Categories also provide another mechanism for filtering and searching.

Vault Items – For the Administrator

Item Security

There are three specific roles for accessing and working with items: Item Editor (Level 1), Item Editor (Level 2), and Item Reviewer.

Item Reviewer grants access to the user to the item master in which they can view items but can not make any changes.

Item Editor Level 1 provides access to the items to makes changes but they can not manually adjust revisions, change lifecycles, or delete items. Level 2 adds the ability to adjust item revisions, change lifecycle and delete items (conditionally) amongst other things.

General Settings



1. **Item Enablement** - Is the Item environment enabled?
2. **Configure Units** – the units of measure available to the item (for quantity)
3. **Disable Assignment of Design Files** – when assigning items to components are their “design” files like drawings or presentations also attached.

Configuring Item Lifecycle Settings

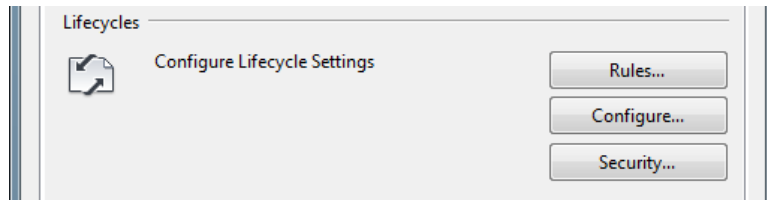


Figure 7: Configure Lifecycle Settings

With items the “out-of-the-box” lifecycle states provided are *Work In Progress*, *In Review*, *Released*, and *Obsolete*. The names of these states can be adjusted but cannot be deleted nor can additional states be created

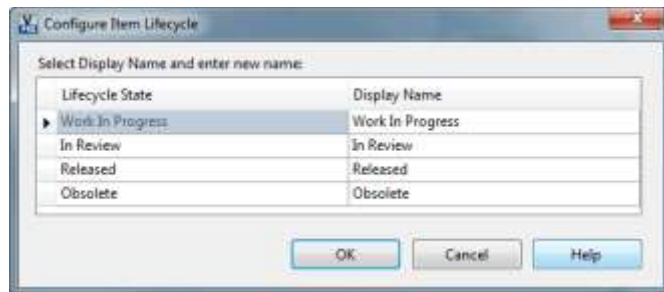


Figure 8: Configuring Item Lifecycle Names

The Item Lifecycle Rules are used to control when the revision value of the item is automatically “bumped” and what revision level it is bumped to. Bumped simply refers to the action of automatically increasing the revision level, like revision 3 to revision 4. The starting revision value and the level of the revision is completely controlled by the revision scheme.

In the example shown below the state change of moving the item from Released to Work in Progress is configured to Bump the Primary Revision. For example depending on the revision scheme applied to the item this would mean that the item could go from 1 to 2 or from A to B

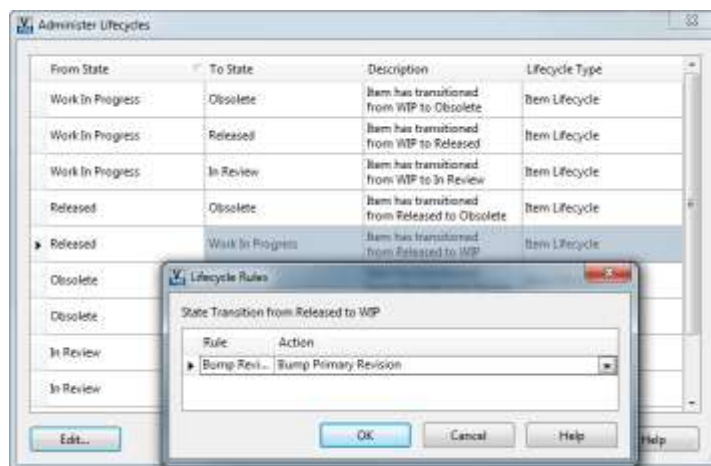


Figure 9: Lifecycle Rules

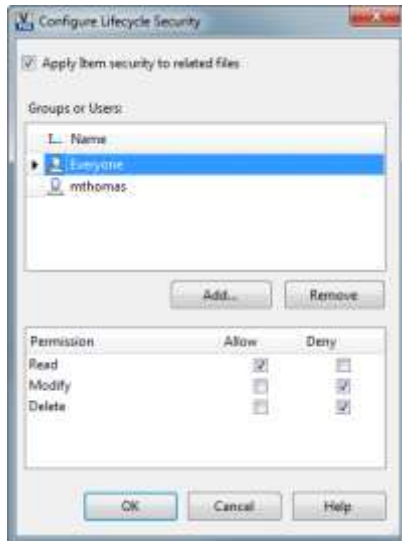


Figure 10: Item Security

By default when an Item is released the files associated with the item are also locked meaning that the files can only be edited when the item is in the Work in Progress State.

By adjusting the security specific users can be granted the ability to modify files and / or delete them even when the item is released and locked. This can be useful for certain functions like migrating Inventor data without having to WIP the items or bump the item revision level

Watermark Settings

When viewing the files associated to the Item Vault can be configured to display a watermark on the associated DWF(x) Visualization so that users can quickly and easily identify the current state of the file and item. This helps prevents using the drawing / data when it is currently not ready, as in not released.

Lifecycle state based watermarks like “Released” are the default and most common. Property based (limited to one property item property) or a custom static value can also be used but are very limited in the formatting.



Figure 11: WIP Watermark

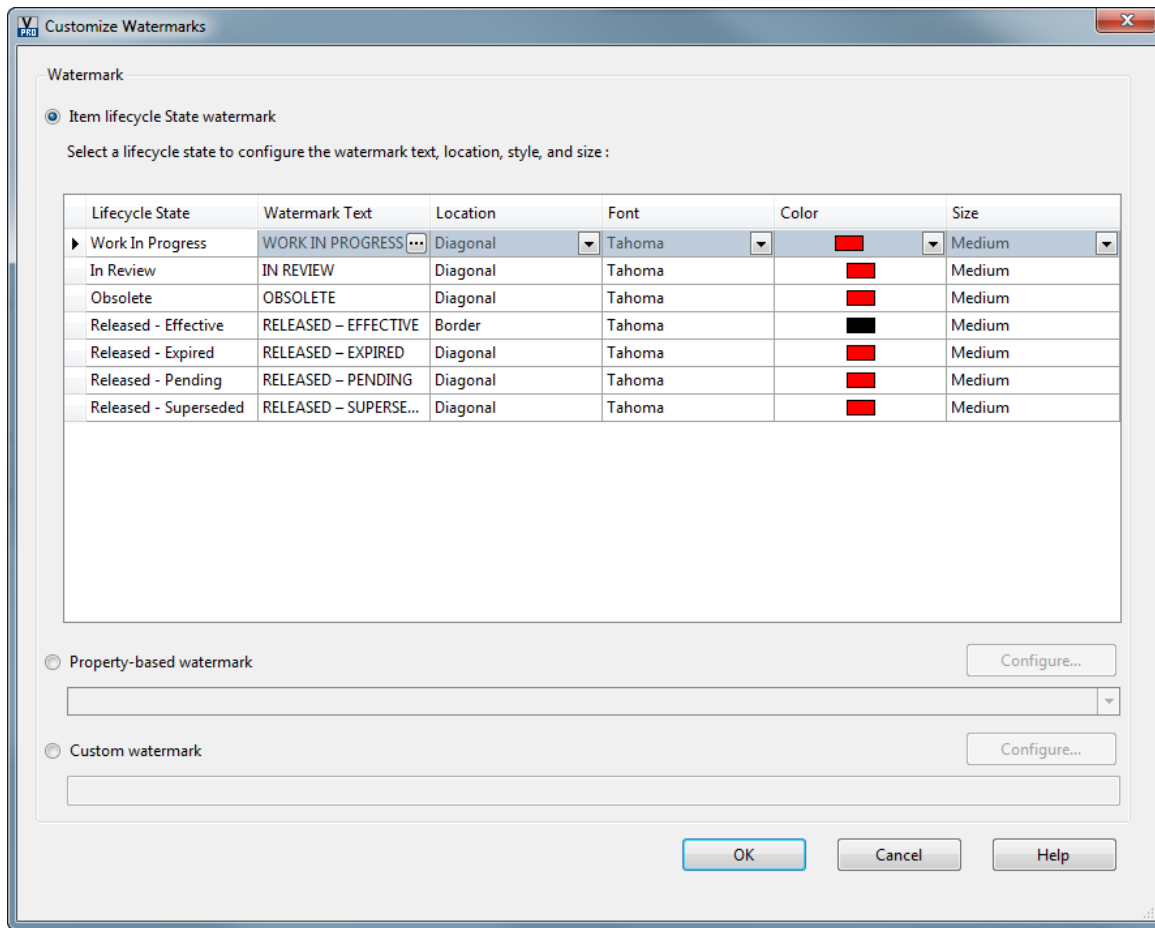
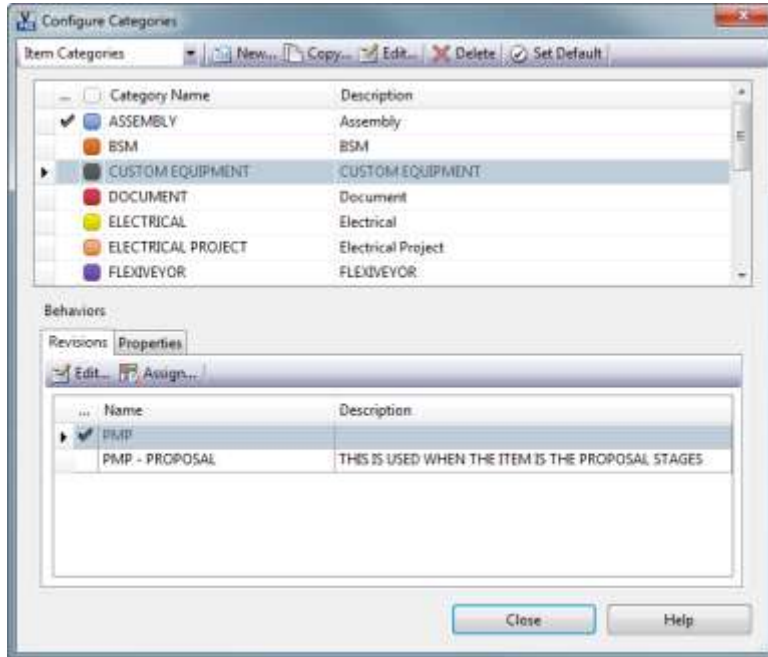


Figure 12: Watermark Configuration

Category Configuration

Categories provide a mechanism to classify items to make it easier to identify what the component belongs too. All items are assigned to a category.



In the Vault Settings dialog box the **Behaviors** tab provides category management options.

Figure 13: Configure Category Dialog

Use the **New** button to define a new category and specify the name and colour of the category icon. This dialog is also used to set the default category. Using the drop-down in the upper left corner you can filter the list to only show item categories

You assign Revision Schemes to the Category making these revision schemes the only available options to items assigned to that category. You also set the default scheme to use with that category

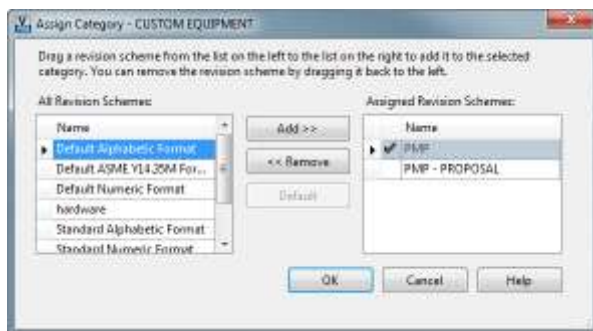


Figure 14: Category Revision Schemes

UPD (User Property Definitions) can also be configured on a per category basis. This allows you to have item properties assigned to one category and not appeared on another.



Figure 15: Category Property

CAD Integration

Updating an Item

Updating an item synchronizes the item with the associated file version's properties. This means that the files properties (for example Description) will overwrite the item's properties.

- An item can be updated even when the associated file has not changed. This allows the user to update any properties that have been globally added since the last update.
- When an item linked to an assembly is updated, a new item is created for each new file that is associated with it.
- If any of the drawing files that are originally associated with the CAD files are removed, the files association with the item is also removed when the item is updated.
- Items are sometimes required to be updated before performing certain operations (Eg. Change of state, deletion, etc.)

Assigning Existing Files to Items

When an item is assigned to a file within vault, an item record is created in vault's Item Master. This allows the CAD data to be tracked throughout its lifecycle. To assign an item to a file, that file must be checked into vault.

Autodesk Inventor files, AutoCAD DWG files, AutoCAD Electrical projects and any non-CAD files (such as Microsoft Office Documents, PDF's, etc) can be assigned items.

When the item is created, an item number is automatically generated. A different item name than the default can also be applied. When issuing any item, Vault will temporarily issue out the number to the user creating the item. If the item is created, the number will be generated and added to the Item Master. If the item is discarded before being issued, then the number will be placed back into the pool of item numbers for later issuing.

Your Vault can be customized to map properties between files and the item. In most cases the properties are multi-directional; meaning that changes made to either the file or to the item automatically update each other.

NOTE: When an item is assigned to an Autodesk Inventor .iam or .ipt file **the related 2D files are automatically associated with that item. This means that when you go to assign item numbers to files with dependants, you would** want to select the top-most non-drawing level of the design to ensure all of the related files are assigned the correct item number (i.e. the main assembly).

Quick Summary

1. Add the file(s) to Vault and ensure they are checked-in
2. Locate & select the top-most level of the files, right-click and select assign item
3. Ensure the correct item numbers have been assigned, if not adjust as necessary.
4. Address any duplicates (if found)
5. Click Finish to generate (or update) the items

Detailed Summary

In the vault view right-click on one (or more) files and select **Assign Item**.

A new item is created for each of the selected files and also for the files related to the selected files. For example with Inventor assemblies an item will be generated for the assembly plus items for all of the components of assemblies.

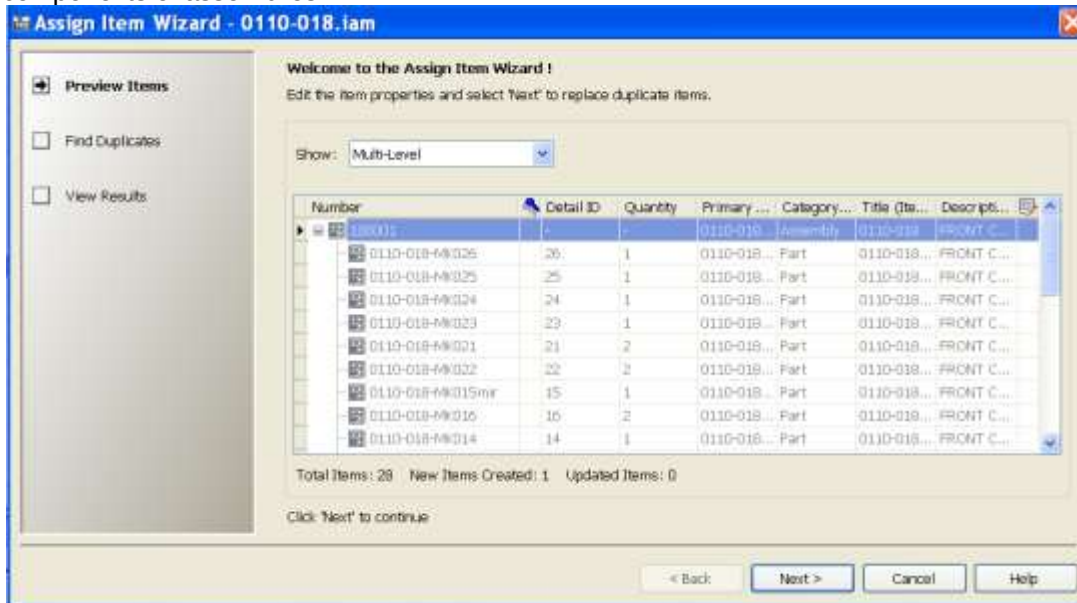


Figure 16: Assigning Item Wizard Dialogue Box

The **Show** drop-down list allows the user to change what type of item list is displayed:

1. The **Multi-Level** option displays a hierarchical list of all the items to be created. Top level assemblies can be expanded or collapsed to show or hide all of the related items.
2. The **All Items** option displays a flat list of all items.
3. The **New Items** option displays a flat list of new items to be created. Any items to be updated are not included in this list.
4. The **Updated Items** option displays a flat list of the items to be updated. Items to be created are not included in this list.

Notes: The **equivalence icon**  is displayed for any items that contain secondary files. To see what files are involved, place the cursor over the icon.

If the item number that the file has been automatically assigned is correct, do nothing. If the item number that the file has been assigned with is incorrect right-click on the item and select **Change Item Number** from the context menu.



Figure 17: Changing Incorrect Item Numbers

In the **Change Item Number** dialog box, a number of pre-set formats have been created for entering the item number of the file.

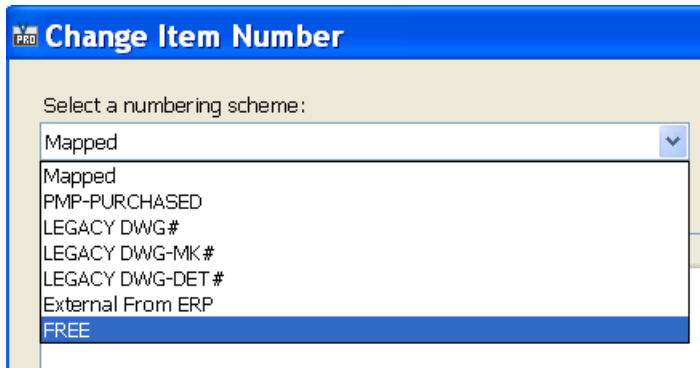


Figure 18: An Example of Custom Formats for Item Numbering

In most cases when assigning numbers to Inventor files, the Mapped scheme will suffice. Assign the desired item number and then select **OK**

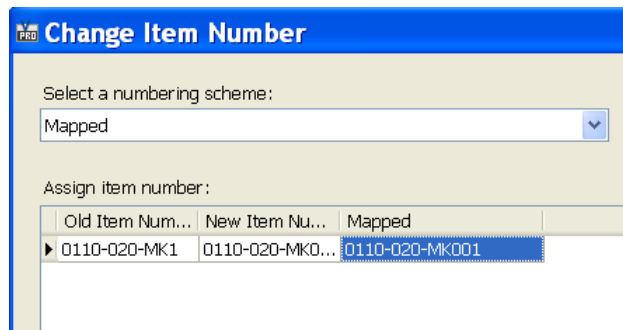


Figure 19: Changed Item Number

After clicking Next you will be presented with the **Find Duplicates** section. This section identifies items that already exist in the Item Master with your desired item number.

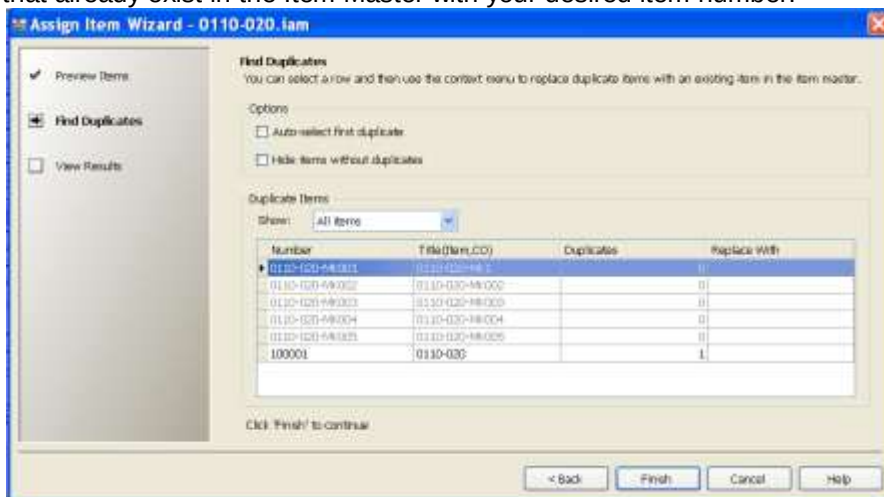


Figure 20: Find Duplicates Dialogue Box

Note: This dialog can also be used to replace the item with an existing item.

If there are duplicate items that need to be replaced with existing items, right-click on the item needing replaced and select the **Select Replacement Item** option.

Attaching a file to an Item that Already Exists

When the item is created first and the CAD file is attached afterwards, a slightly different process is used to attach the CAD file as the primary attachment. When assigning the item you'll be given the option to 'find' existing items so that you can assign the current file to an already created item.

Summary

1. Locate the **file** you want to assign to the item and use the assign item wizard (i.e. Right-click, Assign Item).
2. On the **Find Duplicates** page, right-click in the *Replace with* area to **Select Replacement Item**.
3. In the **Select Replacement Item** dialog click the Find button to show the Find dialog. Using the Basic or Advanced search, locate the item you want to attach the file too. Select the item and click OK.
4. Select the existing item you want to attach the file to (I think that was already said in the previous step)

Detailed Summary

1. In the vault view right-click on one or more files and select **Assign Item**.
2. In the first dialog (assign item number) Vault will assign temporary Item numbers to the files. As you'll be searching for existing items to attach the files to in the next step, you can click next to proceed. When the file is attached to existing items, the temporary item numbers will be released back into Vault.
3. Right-click on the item and select the **Select Replacement Item** option.



Figure 21: Select Replacement Item Option

4. In the **Select Replacement Item** dialog, click the Find button to show the Find dialog. Using the Basic or Advanced search, locate the item you want to attach the file too. Select the item and click OK.

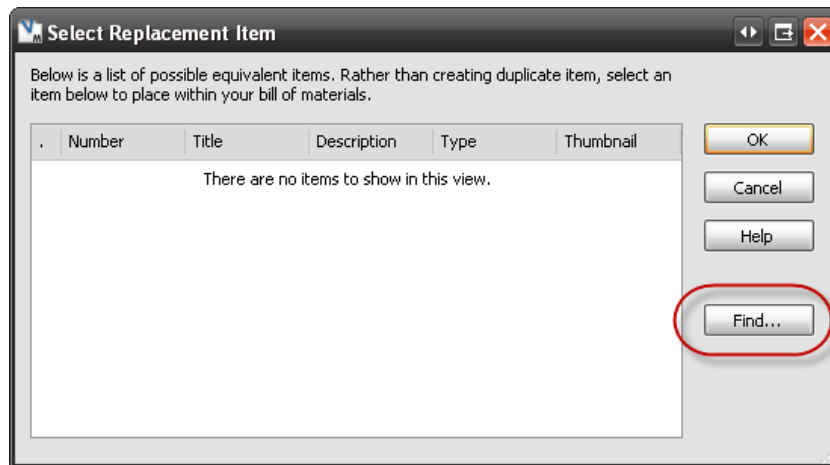


Figure 22: Click Find...

5. After the item has been located, the following window will appear. Toggle the checkmark to select the replacement item. Click OK.

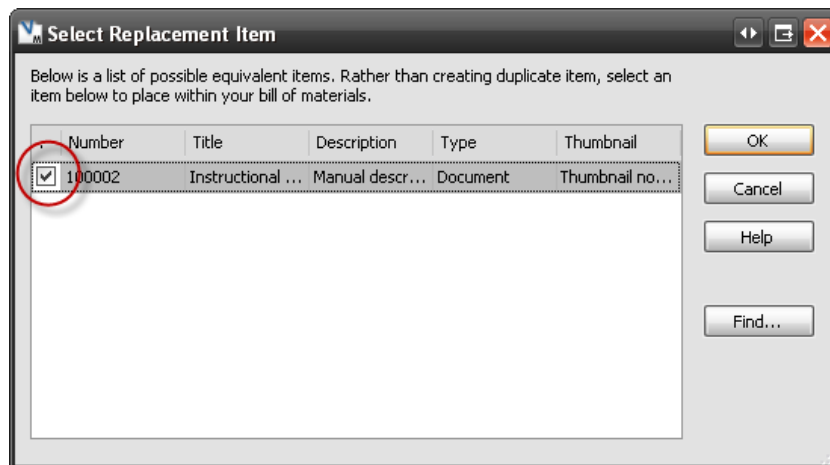


Figure 23: Select the item

CAD Integration – For the Administrator

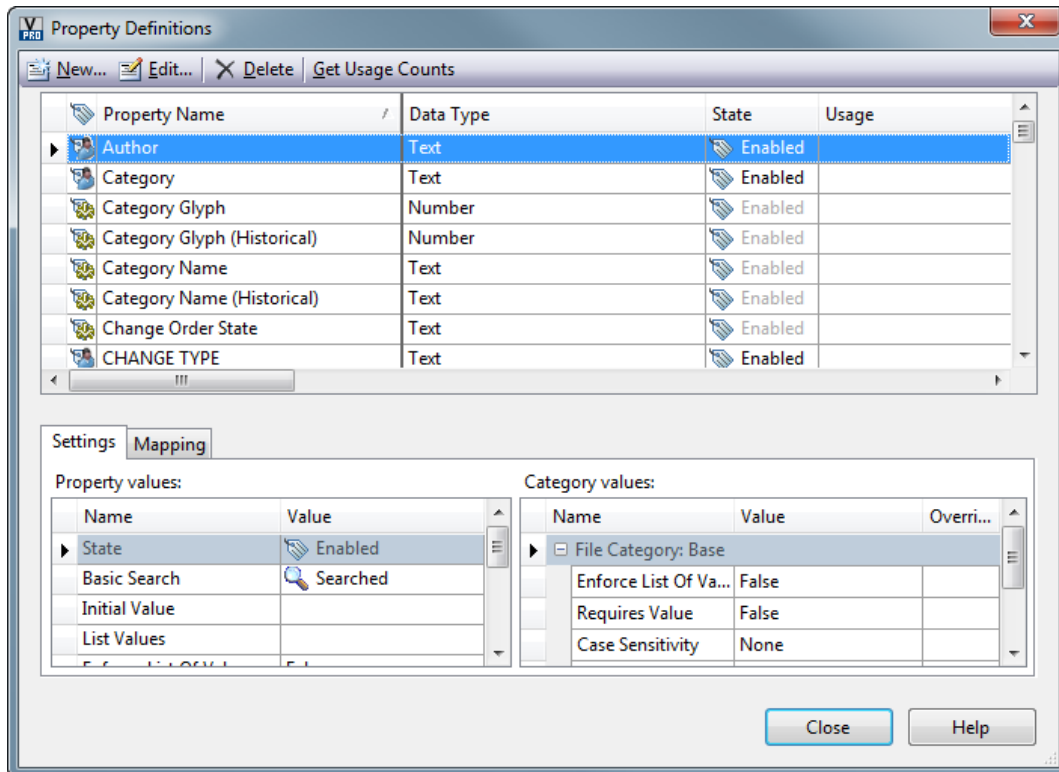


Figure 24: Property Definition Dialog

When the property definition is edited the available options will vary depending on whether it is a system property (aka “out-of-the-box”) or a user defined property. New Properties can be created and the association determines where that property available. The options for association include files, items, change orders, or reference designators.

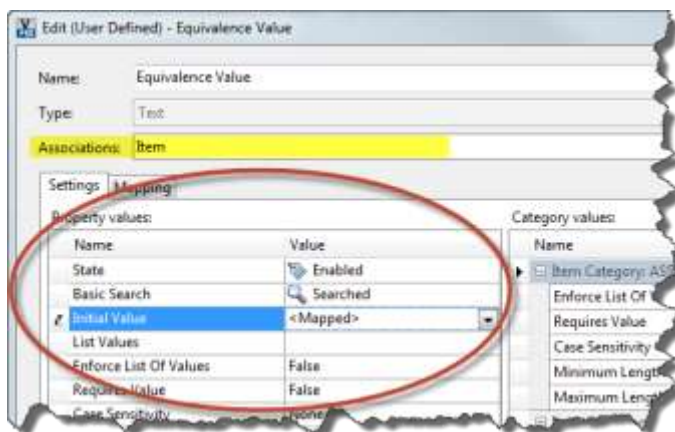


Figure 25: Property Editing

When editing a property definition, system or user, you can adjust some settings on a per category basis. This includes the minimum and maximum length of the property value, case sensitivity, and whether the property value is required.

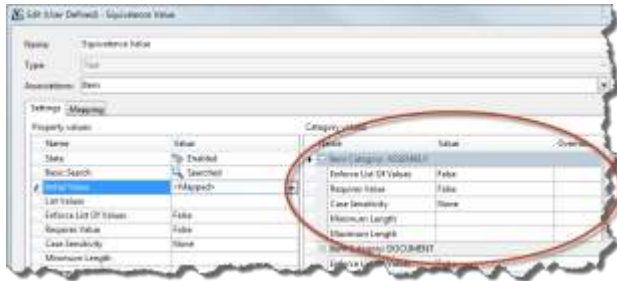


Figure 26: Property Overrides per Category

[From the Autodesk Wiki site...](#)

“Mapping priority determines the order in which properties are written to a file or item. If more than one property writes to a particular file, the highest ranking property takes precedence. You can map properties to a user-defined property (UDP) so that values from the master file, such as a file property, are written to the subordinate UDP.”

“When both file and item UDPs are mapped to the same file property, the item UDP takes precedence”.

When configuring the property mapping the first thing to select is the Provider as this determines the content provider that will be feeding the item the information. In most cases you will need a file within Vault that contains the property you want to map. After browsing and selecting the file to provide the data you will select the specific property to map.

NOTE: AutoCAD Block Attributes are a bit different as you need to index the AutoCAD block attributes to index from the ADMS Console.

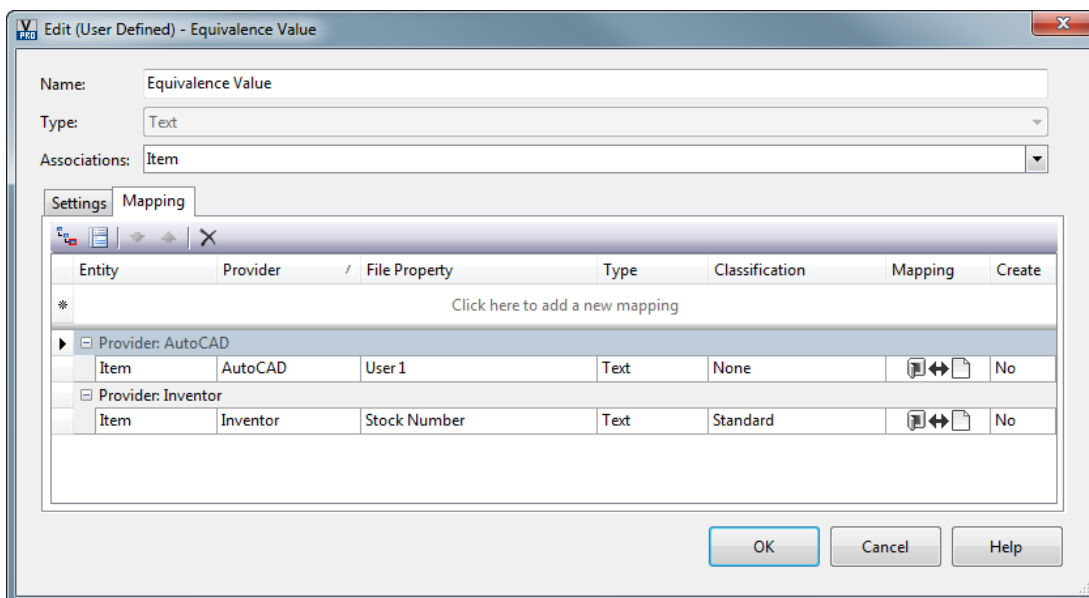


Figure 27: Property Mapping

Bill of Materials

Each item lists a Bill of Materials (BOM) for the files attached to the item. The BOM is a list of components, their properties, the quantities, and how the components are structured.

Number	Detail ID	Quantity	Title	Revision
ROLLER COMPLETE	-	-	ROLLER COMPLETE...	-
0140-000		1	Corner Roller Asse...	A
0140-SKELE...		1	0140-SKELETON.ipt	-
0140-401-...		1	0140-401-OUTSIDE...	-
0140-403-MID		1	0140-403-MID.ipt	-
0140-401-...		1	0140-401-OUTSIDE...	-
0140-402-I...		1	0140-402-INSIDE-T...	-
0140-500		2	0140-500.iam	-
0140-514		1	0140-514.ipt	-
0140-5...		1	0140-500-M16.ipt	-
0140-512		2	0140-512.ipt	-
DIN 692...		2	M16.ipt	-
DIN 125...		2	16.ipt	-
0140-5...		1	0140-514-1.ipt	-

Figure 28: Assembly BOM

To work with the item's BOM you must first edit the item (right-click, Edit Item). Select the **Bill of Materials** tab. Note the item needs to be in the **Work in Progress** lifecycle state to make changes.



Similar to the Item Master the information displayed within the BOM is customizable. Right-click the column headers to access the Custom View dialog.

Alternatively you can use the Define custom views option to build saved custom views.

Figure 29: Custom Views

Editing the BOM

Adding Items

Not all components listed in the BOM have to originate in the attached file. Use the **Add New Row** button to add an existing item to the BOM.

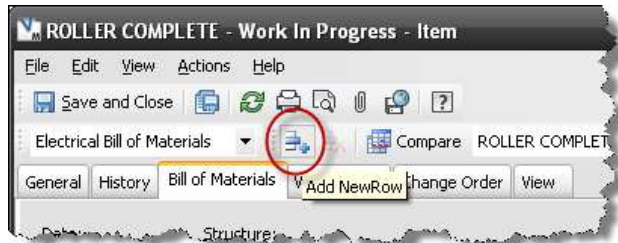


Figure 30: Click Add New Row

Search for and select the item to add to the BOM

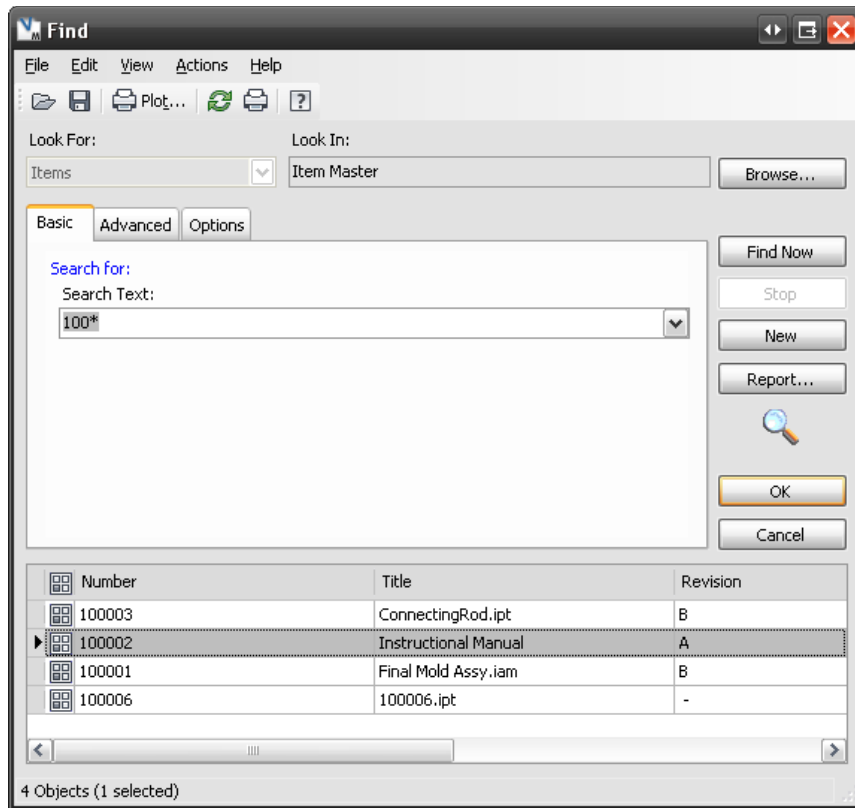


Figure 31: Click Add New Row

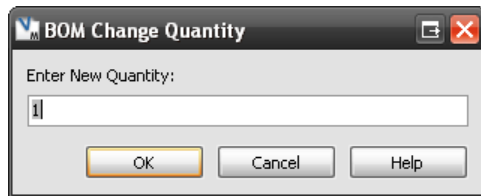
U 40x2...	1	DIN 1026 U U 40x20 - 400	-	Released
0140-408	1	0140-408.ipt	-	Released
ISO 2341 - A - 20 ...	2	20-40.ipt	-	Released
100002	1	Instructional Manual	A	Work In Progress

Figure 32: Item added to BOM

Overriding Quantities

The proper quantities of the items are generated automatically using the same units and quantities from the CAD model. There are times where it may be desired to override this at the item level. For example you may want to increase the amount of bolts or fasteners shown on the BOM to compensate for loss when the unit is shipped.

To override the quantity select the item within the BOM view, right-click, and select **Change Quantity** in the *Edit Bill of Material* flyout.



NOTE that quantity override can only be applied to a top-level component within the currently edited item.

Comparing Bill of Materials

Each revision of an item has an unique BOM as changes to the attached file can impact the BOM structure, the components contained within the assembly and the quantities. Vault Manufacturing provides a comparison tool to compare one revision of the BOM against the other, highlighting any differences.

In the toolbar use the drop-down to select the revision you wish to compare against and click the **Compare** button. The differences will be highlighted in colour and if you hover over the area a tooltip will present further information

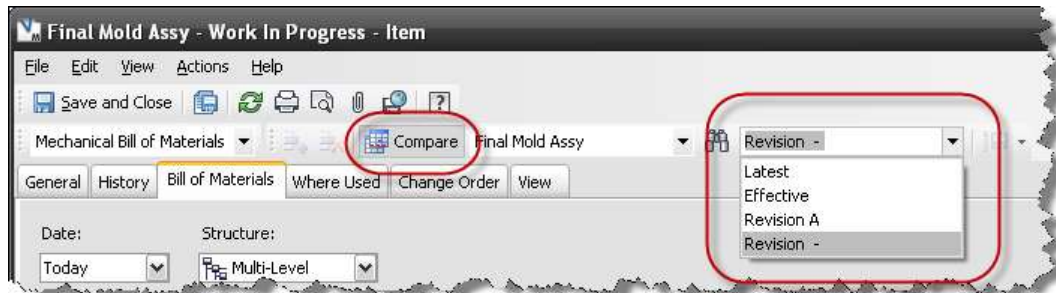


Figure 33: Select the Revision to compare against

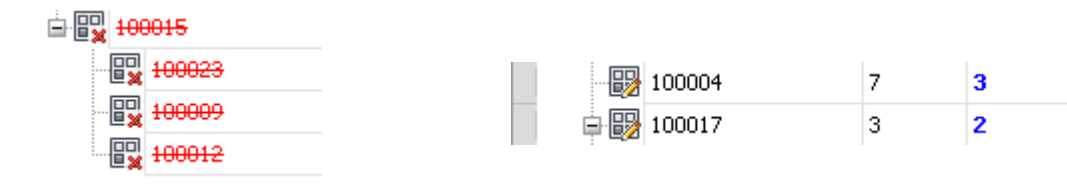
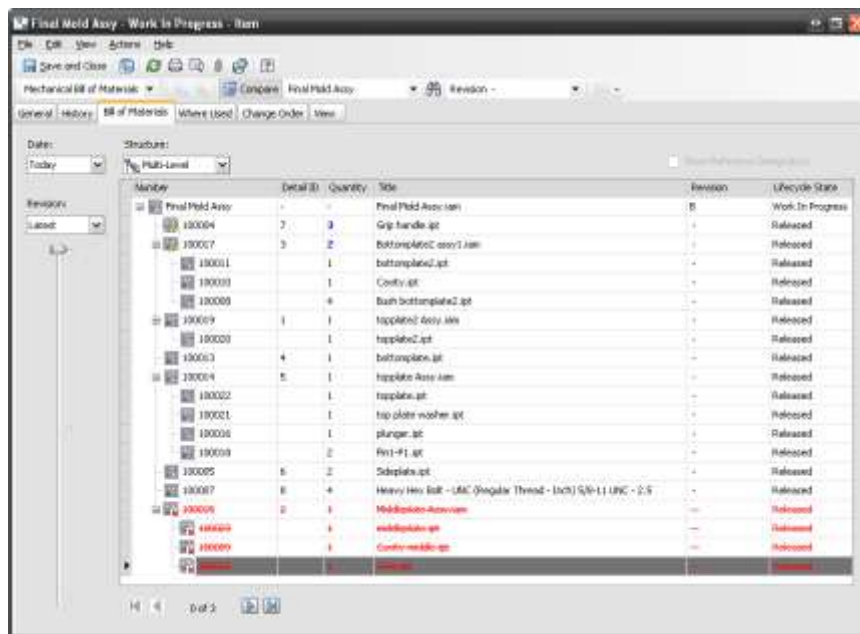
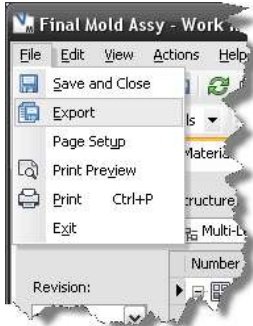


Figure 34: Differences are highlighted

Exporting Bill of Materials



The BOM data can be exported to be used in other applications, typically Microsoft Excel. The BOM can be exported in one of two ways:

- a tree hierarchal view showing each sub-assembly and their components
- a flat layout with re-used items rolled up into a single row showing the total quantity (i.e. cut list).

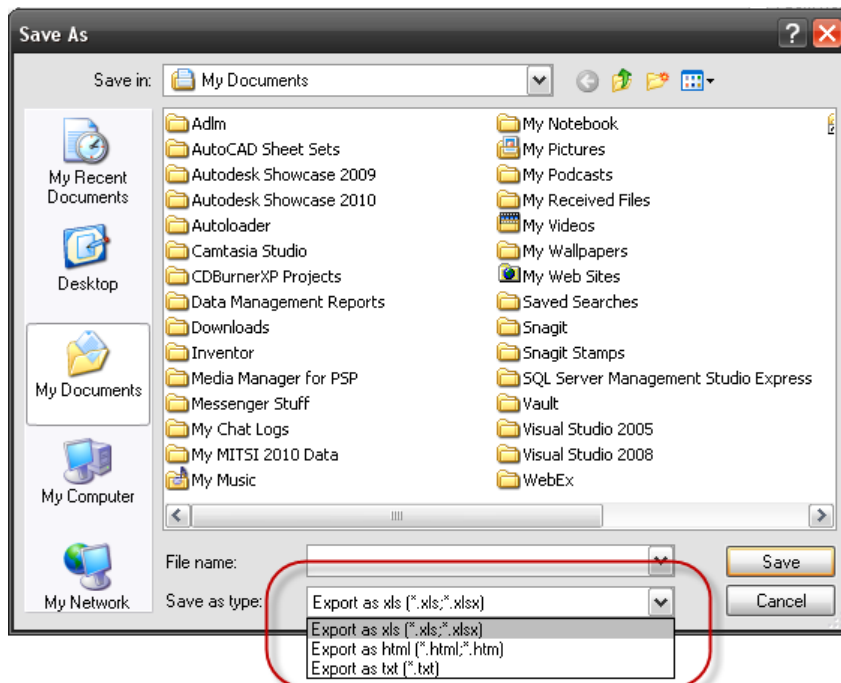


Figure 35: Select file type for export

Number	Detail ID	Quantity	Title	Revision	Lifecycle State
Final Mold Assy	-	-	Final Mold Assy.iam	8	Work in Progress
100004	7	3	Grip handle.ipt	-	Released
100017	3	2	Bottomplate2 assy1.iam	-	Released
100019	1	1	topplate2 Assy.iam	-	Released
100013	4	1	bottomplate.ipt	-	Released
100014	5	1	topplate Assy.iam	-	Released
100005	6	2	Sideplate.ipt	-	Released
100007	8	4	Heavy Hex Bolt - UNC (Regular Thread - Inch) 5/8-11 UNC - 2.5	-	Released
100011		1	bottomplate2.ipt	-	Released
100010		1	Cavity.ipt	-	Released
100008		4	Bush bottomplate2.ipt	-	Released
100020		1	topplate2.ipt	-	Released
100022		1	topplate.ipt	-	Released
100021		1	top plate washer.ipt	-	Released
100016		1	plunger.ipt	-	Released
100018		2	Pin1-#1.ipt	-	Released

Figure 36: Export shown in Microsoft Excel

Item Lifecycles and Item Revisions

Adjusting the Revision Level of an Item

Revisions are used to track the history of changes applied to an item. Once the item is created you can use item lifecycles to manage the revisions. Unfortunately there is no current method of having the file set the initial revision level of the item. However once the item is created the item revision will then be used to set the file's revision.

To adjust the revision of the item select it, right-click, and select **Change Revision...**

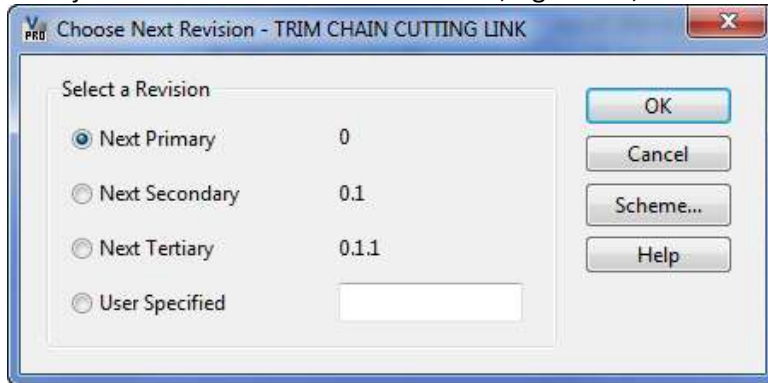


Figure 37: Search for the item, select it, and click OK

You can use the **Scheme** button to switch the Revision Scheme to a different type

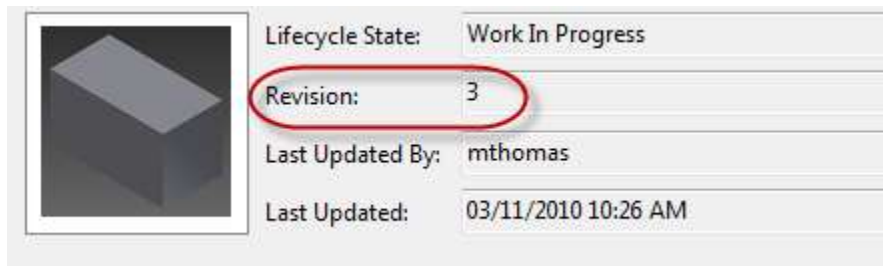


Figure 38: After update properties the file will match the item's revision level

NOTE: There is NO turning back the clock... once a revision level has been used you cannot go to a lower value!

Lifecycles

The lifecycle state of an item tracks the state of the item through the manufacturing process. This shows the state from the item creation (inception) to when the item is no longer required (retirement)

The initial state of items is **Work In Progress** (WIP) which shows that the designs attached to the item are not ready for manufacturing. In this state the files attached to the item are still editable and you can get the latest version of any attached CAD file. In this state the item can be updated. When the item is first created and still in WIP any “downstream” user, for example the ones will only access to the Web Client, may not have access to the item. At any time the only way to make changes to the files attached to the item is by setting the lifecycle state of the item to **Work in Progress**.

When an item is set to **In Review** it is basically waiting for the next step, say someone reviewing the design before releasing it for manufacturing. Any file attached to the item can not be edited and the item can not be updated.

Released items are then available for manufacturing allowing anyone with access to the Vault to see the item. Similar to In Review files attached to the item can not be edited and the item can not be updated. When changing the state to **Released** you specify the effectivity. **Effectivity** sets when the new item or changes to existing items should be put into effect, as in when it is actually ready for manufacturing and should be released. The default date is immediate

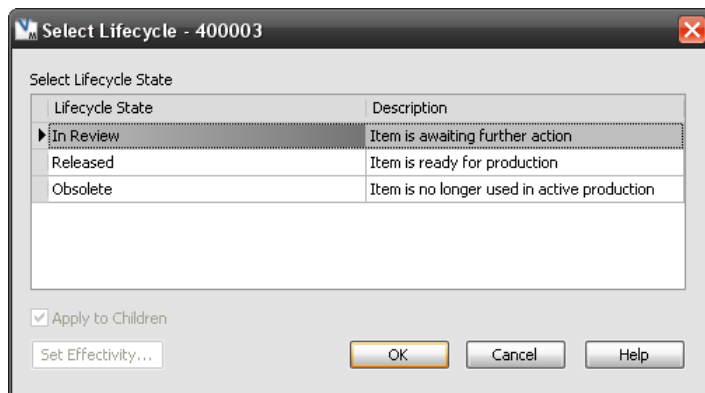
You will want to set an item to **Obsolete** when it is no longer required in production. An item set to obsolete can not be updated

NOTES:

- Multiple items can be selected holding SHIFT to apply lifecycle changes to the items selected
- The states do not need to be applied in order. For example an Item can be moved from WIP to Released skipping the In Review state
- The Vault Administrator can limit lifecycle changes to Change Orders (discussed later) making this functionality inaccessible
- Releasing an item captures that revision. After an item has been released previous revisions can be restored.

Changing the item lifecycle state

To change the lifecycle state of an item select the item, right-click, and select Change State. Select the desired state and click OK.



Depending on the files attached to the item the Apply to Children option may become available. When this is toggled on the selected lifecycle state will be applied to the item and all children (i.e. related components) of the item. In the case of an assembly the lifecycle state would be applied to the assembly and all of its components (sub-assemblies and parts)

Watermarking

The lifecycle state has a direct impact on watermarks shown when viewing the files attached to the item (either using Vault Explorer or the Web Client).

The watermark labels are customizable by the Vault Administrator, the following images show the watermarks using the “out-of-the-box” default options. In the following example a released item is moved to Work in Progress so that changes can be made to the design. Viewing the visualization file shows the previously released version of the drawing, with the watermark WORK IN PROGRESS across the drawing.

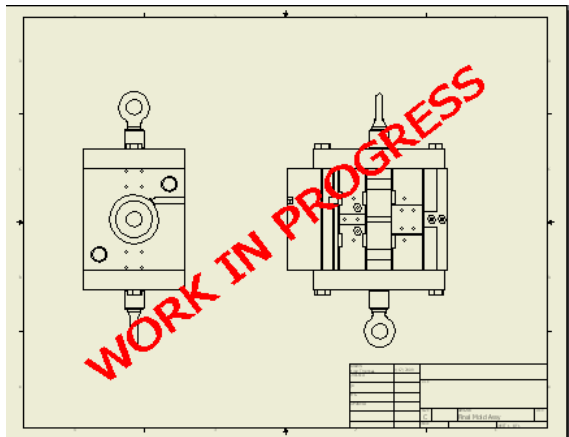


Figure 39: Drawing Visualization is updated when the item is updated

As the related CAD files are adjusted the view of the file will always show the most current checked-in version of the file. It is not until the item is updated does the item visualization update with the changes although the watermark is still applied

When the state of the item is changed to In Review the watermark label on the drawing visualization file is adjusted to match. When the item is set to released the watermark is either removed or adjusted to show the state of the revision (configured by the Vault Administrator)

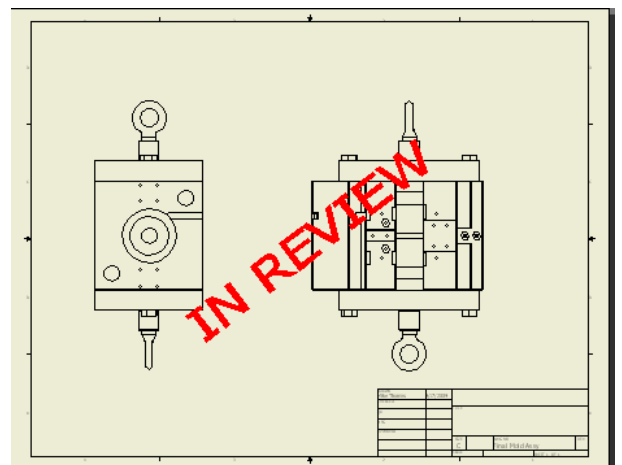


Figure 40: Item Lifecycle set to In Review

Roll Back Lifecycle State Change

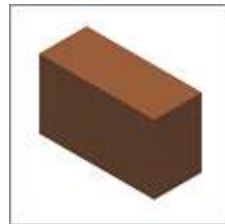
Lifecycle changes can be rolled back to a previous state. A few examples of when this might be used:

1. An item is released and it's been determined that further changes are required. It is desired that these changes are part of the same revision opposed to creating a new revision level. The state can be rolled-back to WIP, the changes made, and the item re-released
2. An item is put into WIP to make some changes. After it was decided that the changes are not required. The lifecycle can be rolled back to RELEASED restoring the files back to their previously released state

In the following example the RELEASED item (revision #1) is put into WIP. Changes are made to the file and it is checked back in and the item is updated.



Initial version of the file (Rev 1 – Version 5)



Modified version of the file (Rev2 – Version 6)

After the modifications it has been determined that the changes aren't really required. The item (and file) need to go back to the previously released revision of the item. **Roll Back Lifecycle State Change** will revert the item back to whichever state it was previously in.

When initiated you will be warned about the ramifications of rolling-back the lifecycle. **Most importantly** pay attention to the toggle *Create new file version for the associated file* as you will always want this enabled when rolling back from WIP to Released. This ensures that the version of the file goes back to the version of the file attached to the released revision of the item.

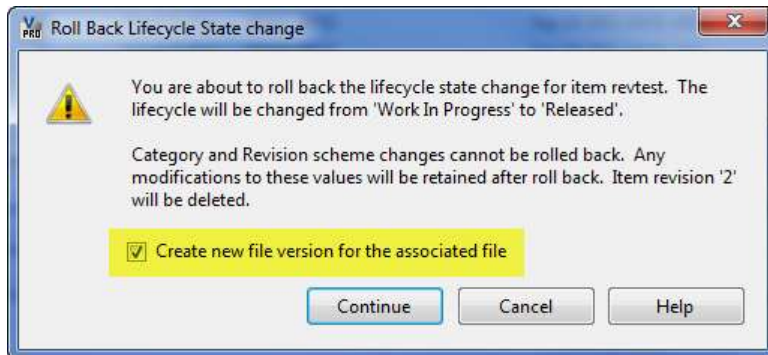


Figure 41: Lifecycle Change Warning

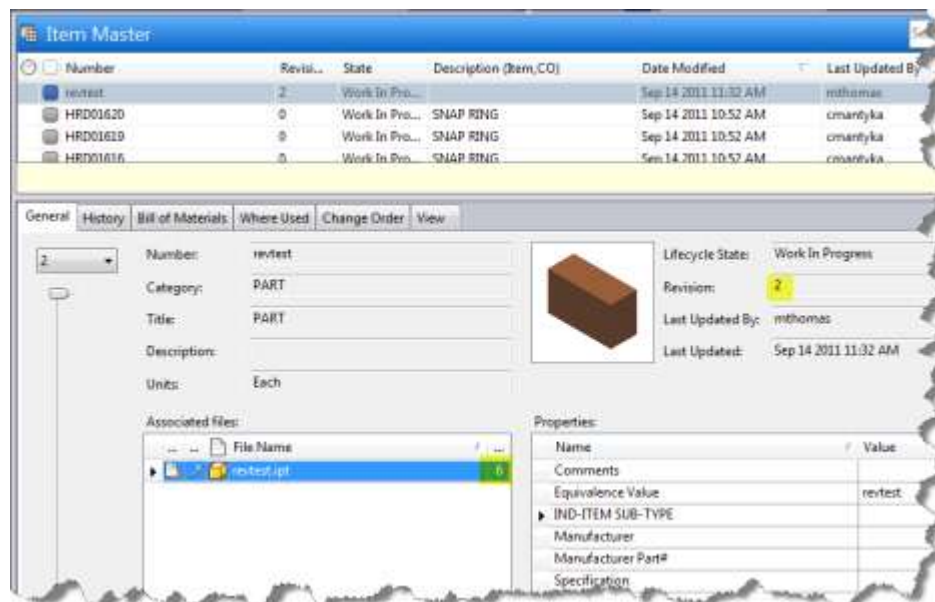


Figure 42: ITEM prior to lifecycle Rollback

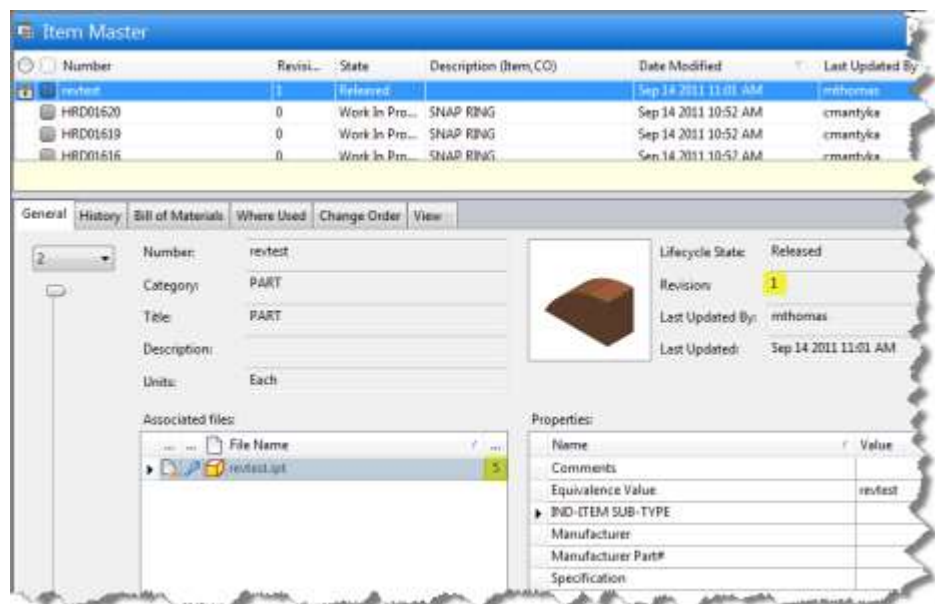
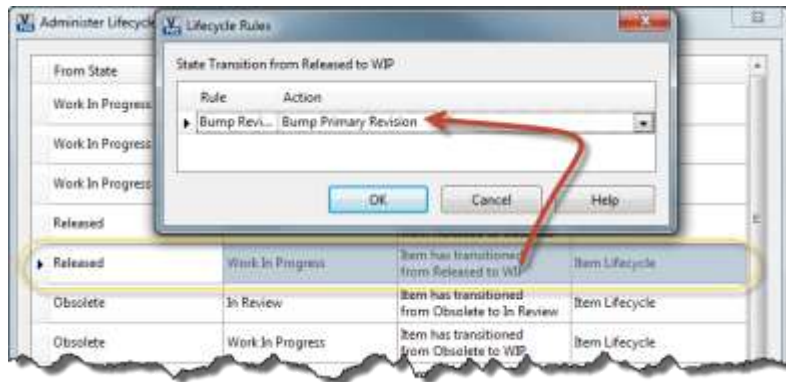


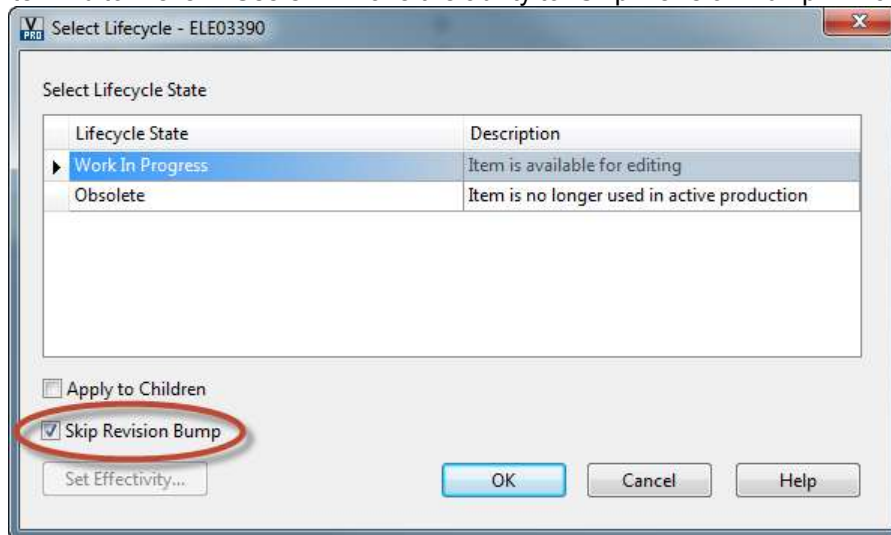
Figure 43: ITEM after lifecycle rollback

Automatic Revision Bumping

Item lifecycle changes can be configured to auto-bump the revision level



Item Editor Level 2 Users will have the ability to “Skip Revision Bump” which does exactly that

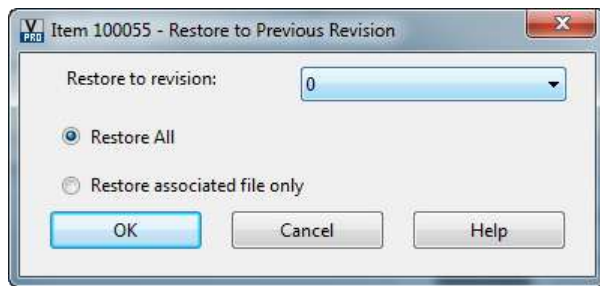


Restoring Items

Use the Restore command to restore the version of the associated files back to the version of a previously released item.

NOTES

- The associated CAD file is a new version
- The revision of the item remains unchanged.
- The item must be in WIP
- You can only restore an item that has been previously released.



Purging Items

Vault maintains a history of every version of an item, which is generated each time the item is updated, edited or changed state... this version history can be purged. Most common case of using this is that an item is renamed in a later WIP state, Vault will hold onto the previous item number. By purging you can reuse this number.

Change Orders

What are Change Orders?

When a design requires a change or modification you want to put controls in place to help manage the change. A record of the changes provides a history “trail” of what was changed, why it was changed and when the change occurred. Vault Professional provides **Change Orders** to capture the changes and manage the change as the modifications are completed, reviewed, and released to be manufactured. The change order is the historical “paper trail” of the why, how, when, who, and what of the design modifications

Change Orders are not available to everyone. You need to have at least basic level privileges to the items to create or participate in change orders. If you are unsure of your privileges talk to your Vault Administrator

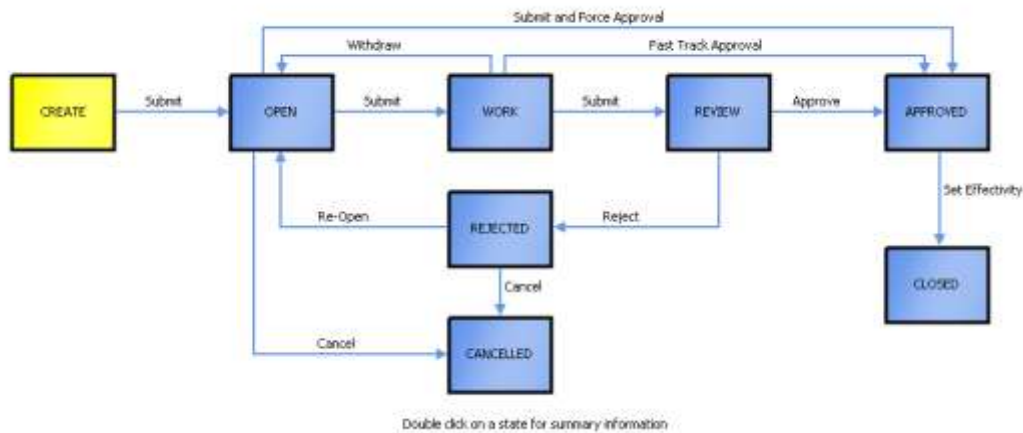


Figure 44: Change Order Workflow

The purpose of this document is to show how items integrate into Change Orders, not to explain how Change Orders work. For more information visit the Autodesk Wiki site at <http://wikihelp.autodesk.com>

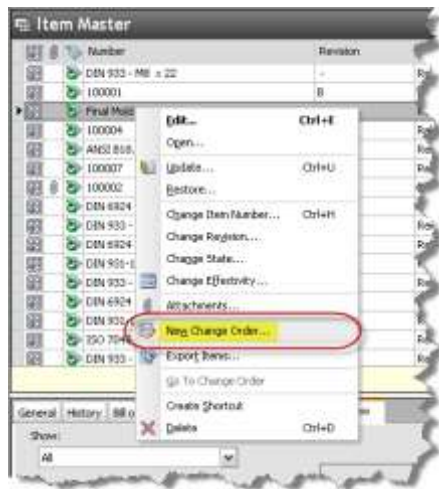
Creating New Change Orders (and Submitting for Work)

Quick Procedure

1. Locate the **item** requiring the change
2. Create the Change Order
3. Describe the change required
4. Markup the drawing (as required)
5. Assign the Routing
6. Submit it

Creating the Change Order

The first step to create the change order is to locate the item requiring the change, right-click, and select **New Change Order**. This puts the change order into the **Create** stage



At this point you will put in information about the required change. On the **General** tab the change order title and summary (description) are entered as well as the expected due date of the required changes.

Figure 45: Creating a New Change Order

The **Items** tab lists all the items requiring changes. Additional items that are not directly related / tied to the active item can be added to the Change Order using the **Add** button. This can include other assemblies or components requiring changes

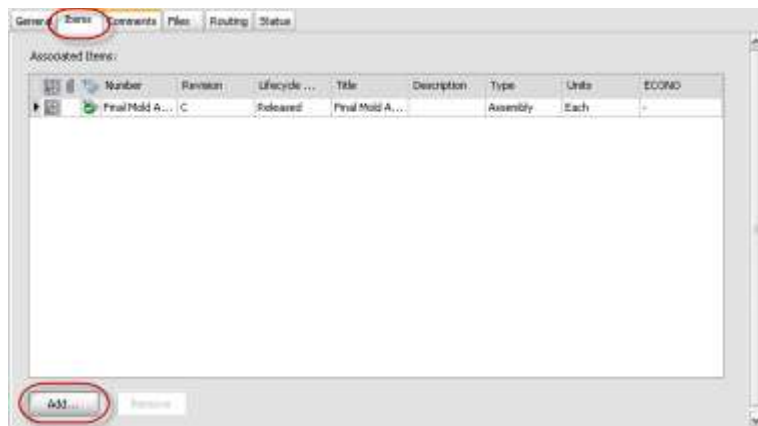


Figure 46: Items Tab of the Change Order

Completing the Required Changes (aka doing the work)

Once the change order enters the Work stage the Responsible Engineer can start making the required changes and modifications.

Quick Summary of the steps:

1. Add related files (the files requiring changes)
2. Change the lifecycle state of the files to Work In Progress
3. Adjust item revision levels as necessary
4. Check-out the files and make the changes
5. Check-in the files
6. Update the items within the change order
7. Change the lifecycle state of any WIP items to "In Review"
8. Submit the change order for review

Completing the Required Changes

Typically only top-level assemblies and drawings will be attached to the change order. In order to make the required changes this needs to be expanded to add the *related* sub-components. This step is not required when dealing with parts or any non-assembly type file

To add the related components right-click on the item in the change order and select **Add Related...**

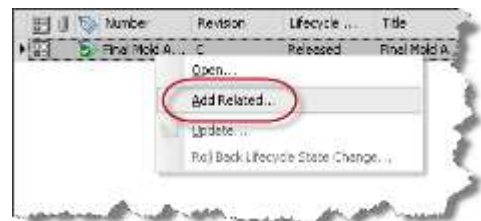


Figure 49: Add Related

Use Auto Add at the bottom of the dialog to add all Work In Progress items. This is important as you want to insure that all items related to the items changing are released by the change order. Select the items that require changes. This can be repeated at a later date if you find you missed adding required items.

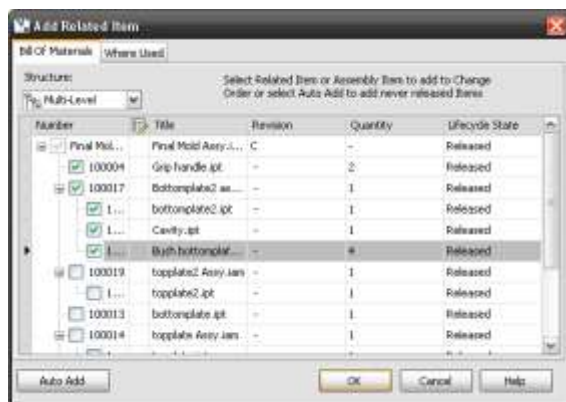


Figure 50: Add Related Items

It's also important to note that when you have completed the required changes you should use the Add Related / Auto Add to insure that any new items introduced to the assembly are included with the change order and subsequently released when the change order is approved and closed.



Figure 51: Change State

Once all the required items are added to the change order. To adjust the lifecycle state edit the change order and select the **Items** tab. Select the items you want to adjust (including Shift+picking to select multiple), right-click, select Change State. In this instance the only option will be WIP.

Once the attached files are set to WIP you can close the change order and use standard check-in / check-out Vault procedures to make the required changes. Once the changes are complete make sure that all files are checked back into the Vault.

The files are treated the same whether they are part of change order or not. When the lifecycle state is set to WIP the watermark on the item is the same



Figure 52: WIP Lifecycle

When all the changes are completed and the files are checked back into the Vault edit the change order and update the items. This can be done by selecting the items and use the right-click option or by selecting the Update All Items button



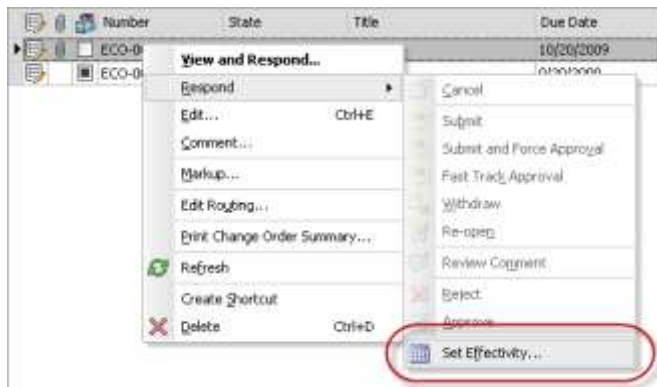
Figure 53: Update Items

Once the items are updated and you are satisfied with the changes you can change the lifecycle of the items to In Review. Submit the change order to move to the next stage (Review)

Reviewing, Approving, and Setting Effectivity

In the **Review** stage **Reviewers** can view the change order, make markups, and add comments.

In the **Review** stage **Approvers** can either Reject or Approve the changes. Rejecting the changes moves the change order back to a **Rejected** state where further decision can be made. Approving the changes moves the change order into the **Approved** state where the change order will await the setting of effectivity.



In the **Approved** state the Change Administrator sets the **Effectivity** releasing the change and closing the change order. If the lifecycle state of the attached items was not adjusted prior they will be automatically set to **Released** at this point.

Figure 54: Set Effectivity

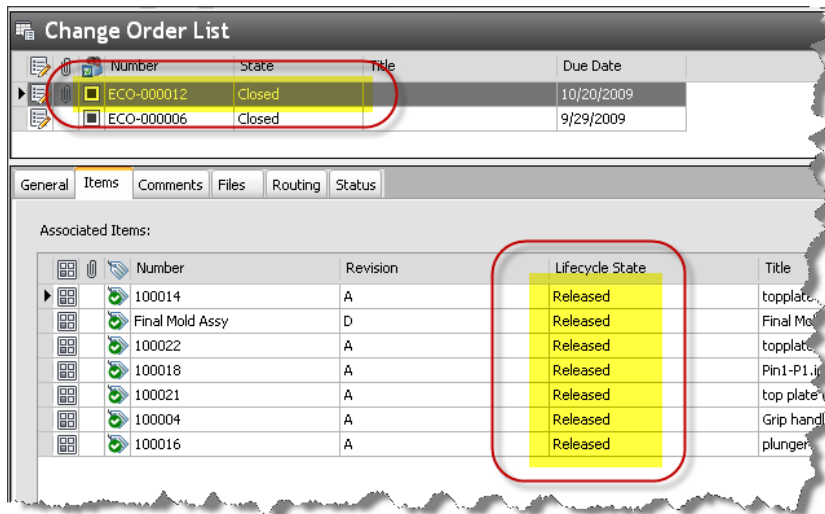


Figure 55: Change Order closed and Lifecycle state automatically set

Exporting Item Data

Export

The Export option exports exactly what you have on the screen. The items displayed on the screen with the properties displayed on the screen will be exported. Export as .xls, .xlsx, .html, .xml, .txt

Export Item

The items selected (and all of their children items) will be exported. You specify which properties are included during the export wizard process.

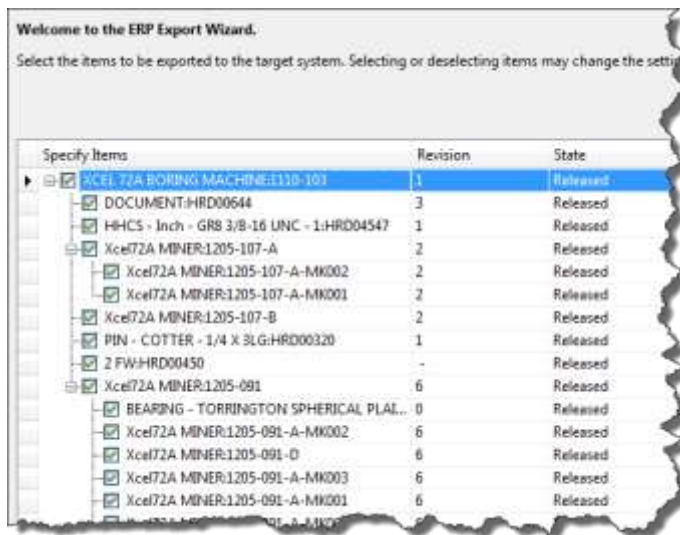


Figure 56: Page 1 of the Export Wizard

- You can export as MSMQ DWF, CSV, TDL, DWF, or XML
- Use Level numbers or Parent Items as the BOM level indicator
- Build saveable mappings to control which item properties are exported

NOTE: Only Released, Obsolete, or previously released items can be exported

Using the API

From Autodesk Wiki... *“If you know how to program, there are a large amount of customization possibilities though the Vault Application Programming Interfaces (APIs). Common customizations include utilities, automations, integrations with other systems, commands and data views.”*

Syntax

Visual Basic (Declaration)

```
Public Overridable Function ExportItemsAndBOM( _
    ByVal items() As PkgItem, _
    ByVal bom As PkgBOM, _
    ByVal sys As DataSys, _
    ByVal mappingInfo() As MapPair _
) As System.Boolean
```

C#

```
public virtual System.bool ExportItemsAndBOM(
    PkgItem[] items,
    PkgBOM bom,
    DataSys sys,
    MapPair[] mappingInfo
)
```

Parameters

items

The array of Items which contains the Item's properties

bom

The BOM structure

sys

The target system which Items and BOM information will be exported to

mappingInfo

The information used to specify how Item's and BOM's properties are mapped

Return Value

True means successful, False means failed

Required Permissions

ERPEXport

Figure 57: ExportItemsAndBom Syntax from Vault 2013 SDK

Autodesk 360 PLM

“Product Lifecycle Management (PLM) software accessible anytime, anywhere, to companies of any size”

Two options to transfer item data from Vault Pro into Autodesk PLM 360:

1. Export from Vault, Import into PLM 360
2. Autodesk PLM 360 Sync

The PLM Sync Service works in the background to transfer data from Vault into PLM 360. This only processes Released and Obsolete items. The Configuration Command within Vault the is used to administer and configure the utility

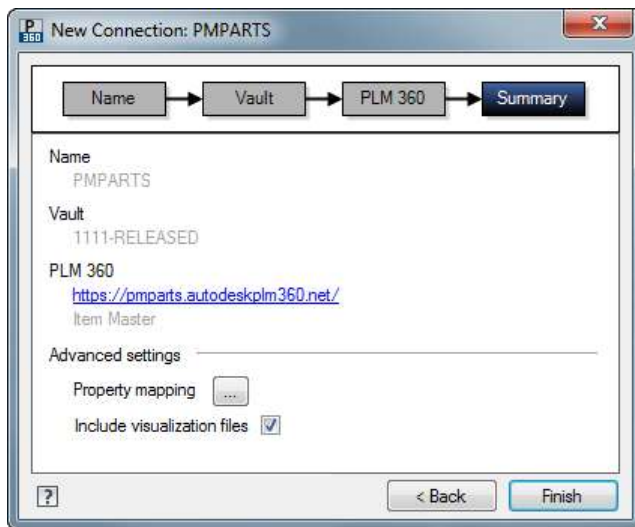
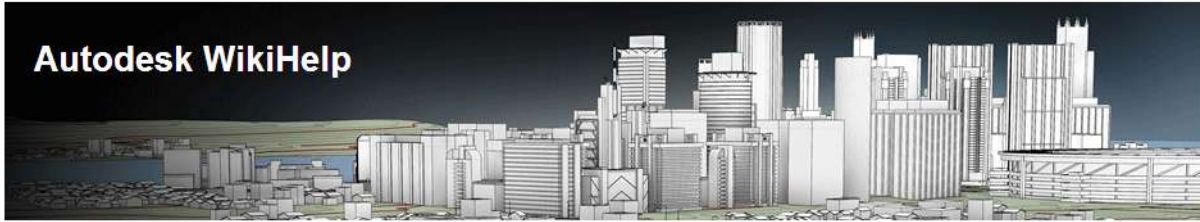


Figure 58: PLM Sync Configuration

More Information

The Autodesk Wiki site (<http://wikihelp.autodesk.com>) provides a wealth of information on the use and administration of Vault.



Autodesk WikiHelp

Alias >
AutoCAD Civil 3D >
Building Design Suite >
Factory Design Suite >
Flame Premium >
Inventor >
Inventor LT >
PLM 360 >
Product Design Suite >
Revit >
Simulation Mechanical >
Smoke >
Vault >
All products >

Autodesk WikiHelp
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Community Learning

- 1 Find and share information.
- 2 Contribute knowledge.

[How to add your knowledge](#)

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Automatically Add Drawing View Centerlines in Autodesk Inventor	★★★★★
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