



Commercial Off The Shelf Item Creation

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ALS - GENERAL
MISCELLANEOUS

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1 REVISION HISTORY

Rev.	CM Number	Description of Change
A		Baseline
B		Add instructions for Described By Documents
C		Add Informative state

2 APPROVALS

The following individual(s) shall approve this document:

Approver	Project Role
Ken Chow	ALS-U Chief Engineer
Scott Burns	ALS-U CAD Integration Manager
Issa Mukhar	ALS-U Systems Engineering Manager
Windchill Approved / Concurred By srburns	

3 ABBREVIATIONS AND ACRONYMS

ALS	Advanced Light Source
ALS-U	Advanced Light Source Upgrade
CAD	Computer Aided Design, Computer Aided Drafting
COTS	Commercial Off The Shelf
HW	Hardware, any COTS Item

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4 INTRODUCTION

This procedure provides the methods required for the creation of Commercial Off the Shelf Items within the LBNL Windchill System and associated CAD data. COTS is defined as, any item, which can be procured from a Manufacturer, using a unique manufacturer specified identifier. This object is commonly obtainable by the general population. The COTS Item is something that is bought, that is a Buy Item. Buy items are procured from sources, be it a vendor, supplier, distributor, manufacturer representative, or directly from the manufacturer. There are two categories of COTS, Specification Driven and Manufacturer Driven. All COTS are intended to be available to be used by any design activity at LBNL. The COTS items will be located in a Library within the Windchill system. The Windchill system will assign a unique number, and the Number of the item in the Windchill system will have a prefix of HW. An example would be HW-1000-3124, for the Number of the COTS item in Windchill.

4.1 Specification Driven COTS

The Specification Driven COTS, are items which multiple manufacturers offer for sale and are created according to common specifications. Common specifications examples are; ISO, DIN, MILSTD, ASME, etc. The manufacturer may have their own part number, order number, but the object is fit, form and function is driven by the specification. Because there is the use of a published specification, the object shall be described in the Windchill system according to the specification, not the manufacturer part number. The implication is, that the item can be ordered from any manufacturer that meets the specification. The specific manufacturers part number, order number, item number or other, is not the defining part number in the Windchill system. They can be included as an alternate or other part number in the Windchill system. The specific specification that provides the basis and technical requirements for the COTS item must be used for the attribute Specification Number.

4.2 Manufacturer Driven COTS

The Manufacturer Driven COTS, are described, form, fit, and function, by a specific part number. The Windchill system will have the manufacturer part number and the manufacturer name as an attribute for the COTS item. The manufacturer's data sheet which describes the COTS item will be associated to the Windchill item, via a Described By Documents relationship within the COTS WT Part.



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4.3 Required Attributes in the Windchill System

The COTS items, both Specification and Manufacturer, shall have required attributes associated and must have values supplied for the item. The attributes are;

HW Type – Value is either Manufacturer or Specification

Manufacturer Part Number – Required if HW Type is 'Manufacturer'. Otherwise 'Blank'.

Manufacturer Name – Only required if HW Type is Manufacturer, N/A if Specification

Specification Number - Required if HW Type is 'Specification'. Otherwise 'Blank'.

ROHS – Yes/No/NA

AHJ – Authority Having Jurisdiction, the person who is performing this role.

Material – Provide information from the Data Sheet or Specification

Units – Enumerated List

Federal Specification Code (FSC) – Enumerated List

Required: A Manufacturer's data sheet for the part, if it is a Manufacturer driven COTS. This shall be loaded on the COTS WT Part - Related Objects tab under the Described by documents.

4.4 Entering Required Attributes in the Creo Part Model

COTs parts need the item classification filled in. In the Creo part model, you need to select the component type as COTS, the drawing type as Vendor Item, and select the category / project code, which for COTS is always (EG) ENGINEERING DIVISION, category 1 (appropriate category from the pull-down menu) and category 2 (appropriate category from the pull-down menu). The shortcut mapkey 'par' takes you directly to categories to fill out. Typing in the 'Category Code' populates the following Codes. Choose the 'FSC' pick from the pulldown.



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HW-1000-1503 [A.2]

FLNG, UHV, SS, BORED, ROT, 2.75 OD, 1.5 C-BORE

COMPONENT TYPE *
COTS WTPart

DRAWING TYPE
VENDOR ITEM

CATEGORY CODE
EG1200

CATEGORY / PROJECT
(EG) ENGINEERING DIVISION

CATEGORY #2 / TITLE #1
(12) HARDWARE - FASTENERS

CATEGORY #3 / TITLE #2
(00) ANCHORS

CURRENT STATE
WORKING

WORKSPACE
WTWS://PDMLINK.LBL.GOV/TEN

WINDCHILL LOCATION
/ALS-U/CAD DOCUMENTS

UNITS MM-KG-S

MATERIAL SSTL_304L
Change Material

Scroll down and enter the Mfr. name and part number fields. Enter ROHS and FSC Code. You may also change the material if required.

COMPONENT TYPE FIELDS

MANUFACTURER
KURT J LESKER

MANUFACTURER ITEM NUMBER
F0275X150R

SPECIFICATION NUMBER

ROHS (RESTRICTION OF HAZARDOUS SUBSTANCES) *
NO

AHJ (AUTHORITY HAVING JURISDICTION)

FSC (FEDERAL SUPPLY CODE) *

CHANGE DESCRIPTION
BASELINE RELEASE

Open / Create Associated Drawing Set Notes Save & Upload

Click Save & Upload when finished.



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4.5 Model Geometry

The item should contain as much fidelity as needed and no more than that. There should be enough fidelity for the interfaces with other items, such as threaded holes, clearance holes, clocking features, etc. to be shown and modeled.

Using manufacturer, or other, STEP files for the model geometry is acceptable, if the process for importing the feature is done in the approved LBNL manner¹. Particular attention must be exercised to make sure that the number of layers is kept to a minimum. Best practices should be used to only have the LBNL start Part Layers in the model and no more. The material for the model should be set to equal what the manufacturer states. In the case of a COTS item which is made of mixed materials, it may be necessary to determine the volume of the model and calculate the density so that the weight of the item equals the published value. The attribute for material, and material assigned in the model, should match that of the data sheet or specification.

In the case of threads, actual helical features must not be used to depict thread pitch and size, for either internal or external threads. Threads must be depicted by surfaces. For an externally threaded feature, the pitch minor diameter is to be modeled as a solid. With the major diameter modeled as a surface. For in internal thread, the minor diameter is modeled as a solid and the major diameter as a surface. This method is mandatory as it provides the basis for an accurate assessment when running interference checks between components within a system. The depth of the thread for external is according to the design or the specification of the component. The depth of the thread for internal is according to the design authority or specification.

If a COTS item consists of many parts assembled together, the model geometry should be that of a single solid representing the extents of the object. Internal features can be accommodated if the feature is pertinent to the object. Creating COTS models which are an assembly of individual models is not a preferred practice. For the rare instances when a COTS item could be shown in a design with geometry that varies, these situations are best dealt with a different model and not that of the COTS item in the Windchill system. (Remember any Design authority can use the COTS item within the library, therefore static nominal models must be generated for the library)

¹ Please see EPG Websites URL's:

<https://commons.lbl.gov/display/epg/How+to+import+an+Assembly+STEP+file+into+Creo+Parametric+as+a+Single+Part+File>

Or

<https://commons.lbl.gov/display/epg/How+to+import+STEP+files+into+Creo+Parametric+and+Assign+LBNL+Numbers+to+It>



No drawing is required to document the item. A simplified dimension check drawing, including attribute information and layer information can be generated, but is not necessary.

The only Windchill objects required are a COTS WT Part object and a model. In addition if the COTS item is manufacturer driven item, then the accompanying datasheet describing the object is required.

4.6 Modification Item Drawing

A Modification Item is a special case of using COTS. This case is defined as, using a purchased COTS item, and having some aspect of it modified or changed by the LBNL Design agency, in some manner to meet LBNL design requirement(s). The modifications can be made by any suitable vendor, either internal (shops) or external (vendor fabrication). In this case, the Windchill Number of the object would be a typical LBNL WT Part. The method for creation is to use the unmodified COTS item, and assemble it into an assembly model, with a Mechanical Part WT Part numbered from WC. The attributes for this object will make use of the COTS item, so that it can be known what to acquire to have modified. The drawing for the Modified Item will utilize the Global Requirements Manual describing how to indicate the items is altered. See example below. Reference ASME Y14.24, Types and Applications for Engineering Drawings, for specific requirements for a Modification Drawing and what is required to be contained within the drawing.

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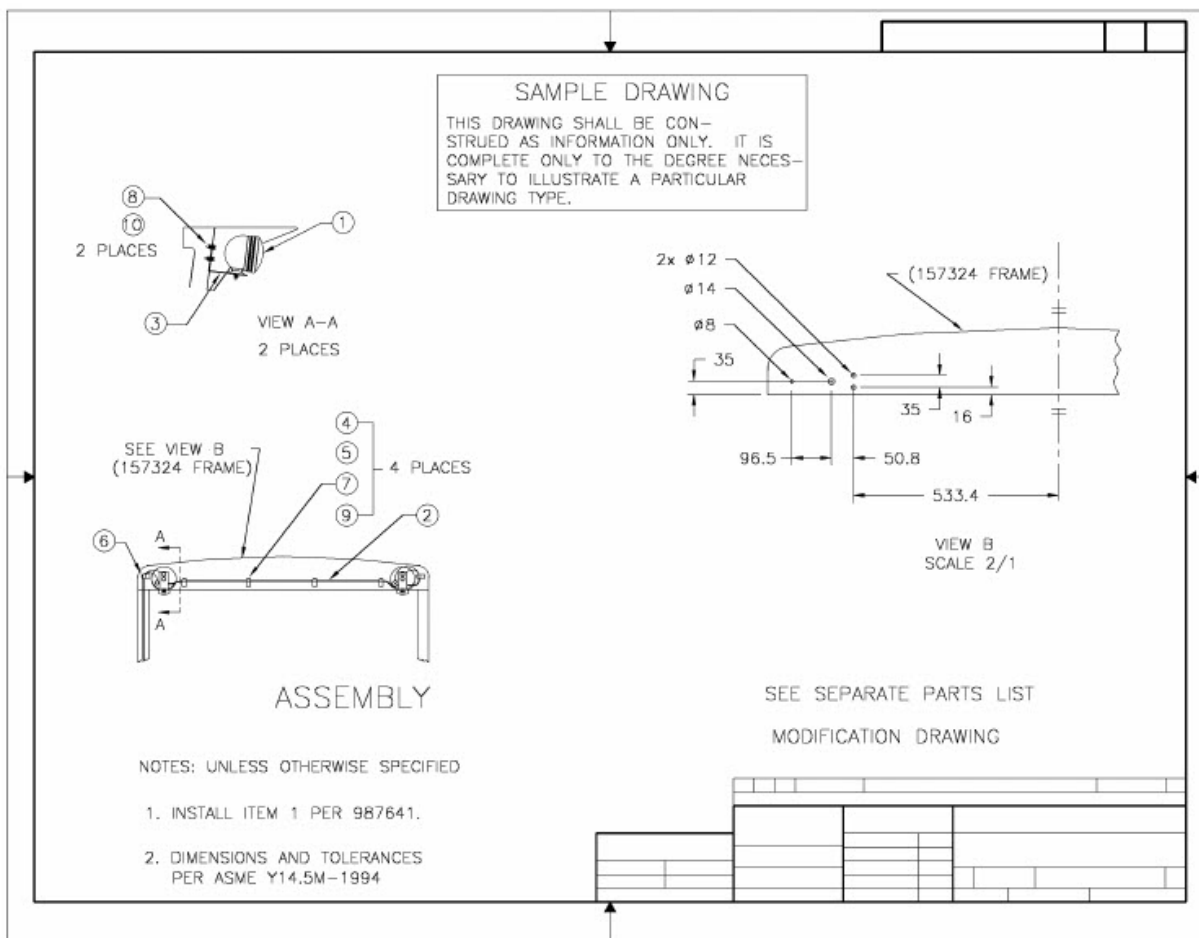


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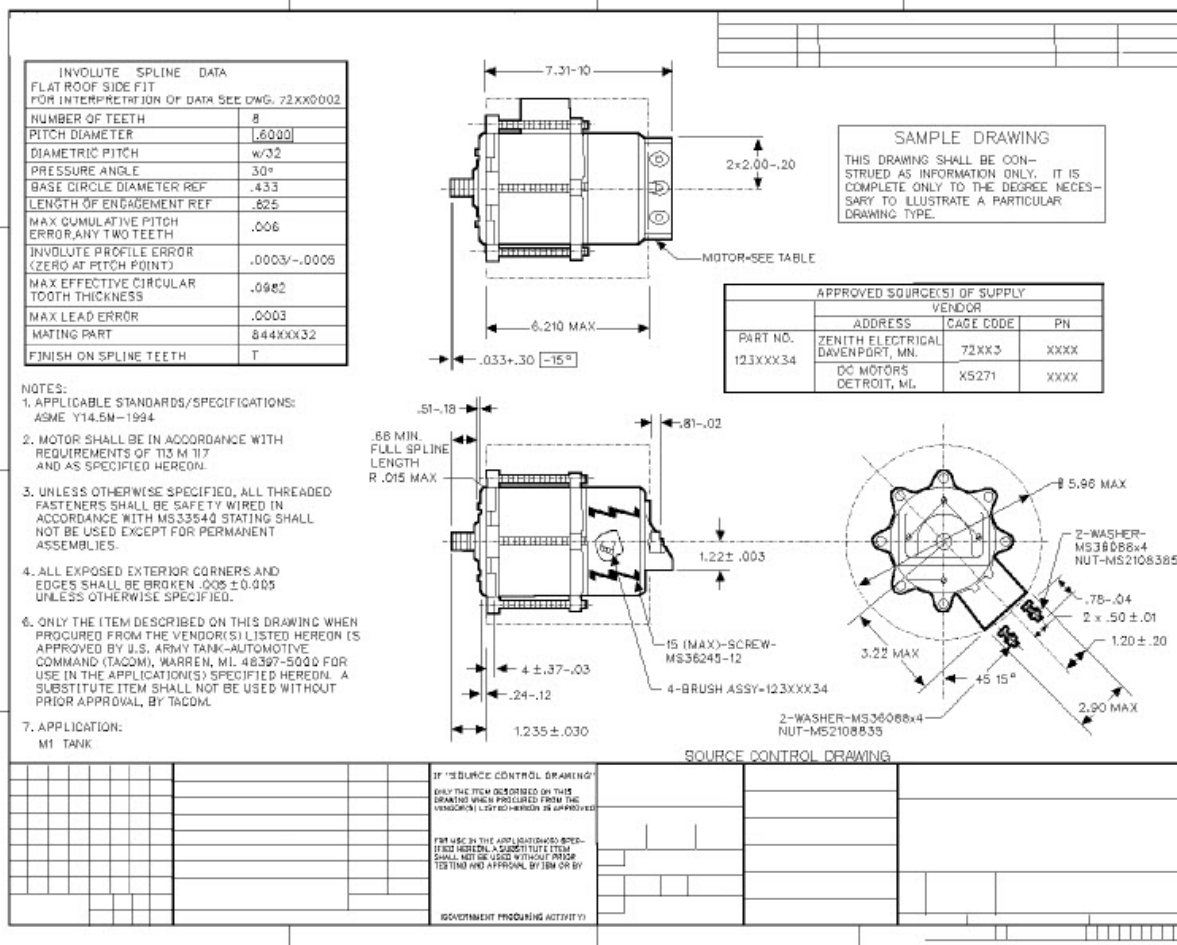
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4.7 Source Control Drawing (SOCD)

Although a Source Controlled Item, described by a Source Control Drawing (SOCD), is not a Commercial Off the Shelf Item, it is relevant to mention here. LBNL utilizes a SOCD to describe to a specific manufacturer the exact requirements the object must meet, including using the LBNL part number and not the manufacturers. An SOCD item does not meet the criteria of COTS, because the general population cannot purchase the item from a catalog readily available to the public. A SOCD item, is an object which may have origins from a manufacturer but LBNL as the design agency, has specified other requirements that the manufacturer must adhere to over and above the manufacturer's requirements. In this case the item will have an AL- auto numbered part number, and be described by an SOCD Drawing. Below is an example of an SOCD Drawing. Reference ASME Y14.24, Types and Applications for Engineering Drawings, for specific requirements for an SOCD and what is required to be contained within the drawing.



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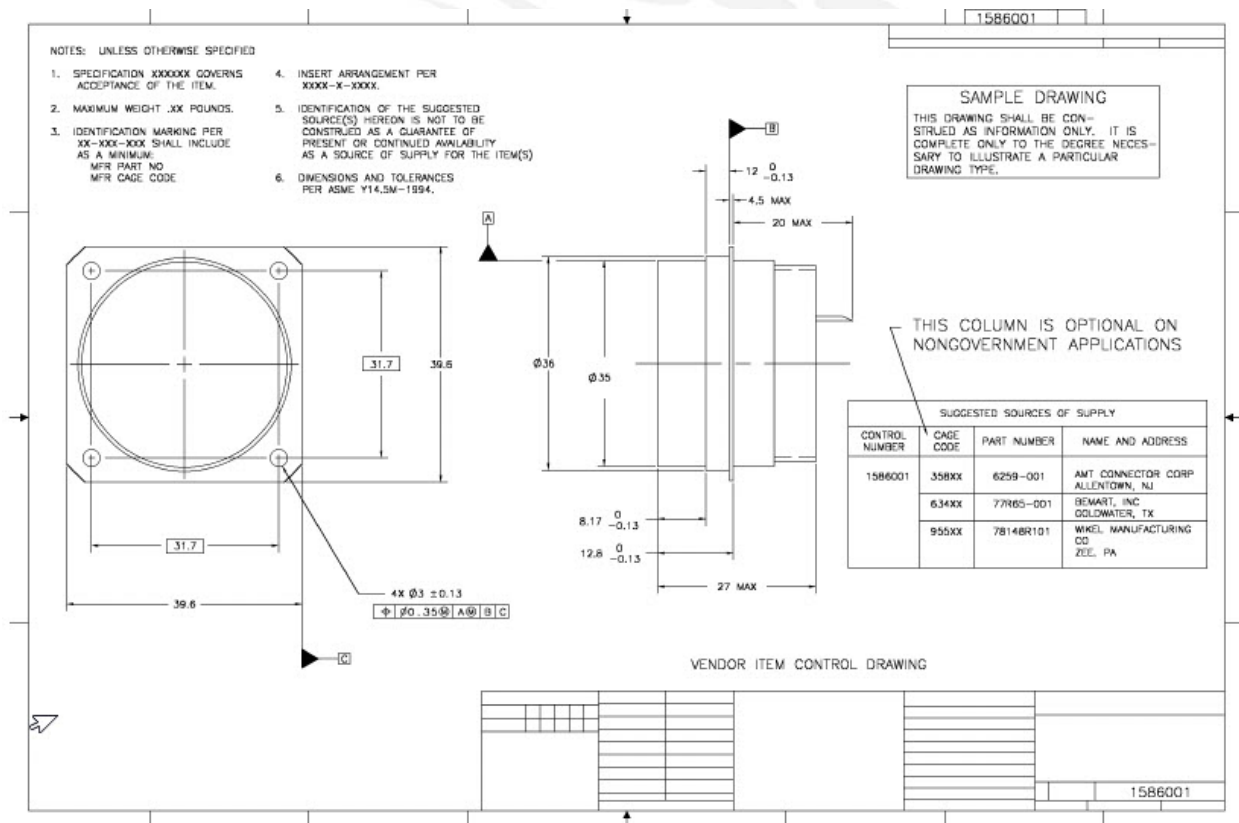
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4.8 Vendor Item Control Drawing (VICD)

Although a Vendor Item Controlled Item, described by a Vendor Item Control Drawing (VICD), is not a Commercial Off the Shelf Item, it is relevant to mention here. A VICD item is created by an LBNL design where there is some aspect of the COTS item LBNL has placed an additional requirement upon the item that several manufacturers can accommodate. The item delivered by these manufacturers will have the LBNL part number, not the manufacturers. A VICD item does not meet the criteria of COTS, because the general population cannot purchase the item from a catalog readily available to the public. A VICD item, is an object which may have origins from a manufacturer but LBNL as the design agency, has specified other requirements that the manufacturer must adhere to over and above the manufacturer's requirements. In this case the item will have an AL-auto numbered part number, and be described by a VICD Drawing. Below is an example of a VICD Drawing. Reference ASME Y14.24, Types and Applications for Engineering Drawings, for specific requirements for a VICD and what is required to be contained within the drawing.



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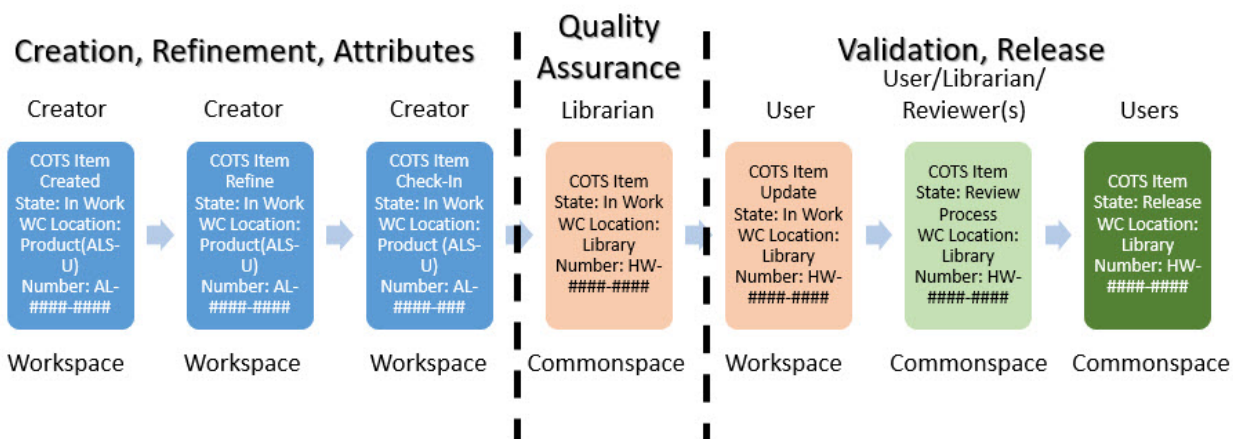
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5 PROCESS FOR CREATING AND RELEASING A COTS ITEM

The process begins when a user creates a new CAD item in their Windchill connected workspace, and the user knows it is a Buy or COTS item. Typically the item is created within the ALS-U Product, which dictates that the auto numbered item has a prefix of AL-. Since this item is destined to be a COTS item the prefix has to be HW-. A general user does not have the proper rights within the Windchill system to renumber the item for a HW- prefix. The renumbering of a COTS item will be accomplished by a Librarian². A Librarian role within the ALS-U system has the responsibility and ability to perform the operations of renumbering, renaming, moving, reviewing and approval of the item. The originator of the COTS item must notify a Librarian about the COTS item upon the items initial check-in to the Windchill System. This notification begins the process towards review and release of the item.



Major Actions within the process:

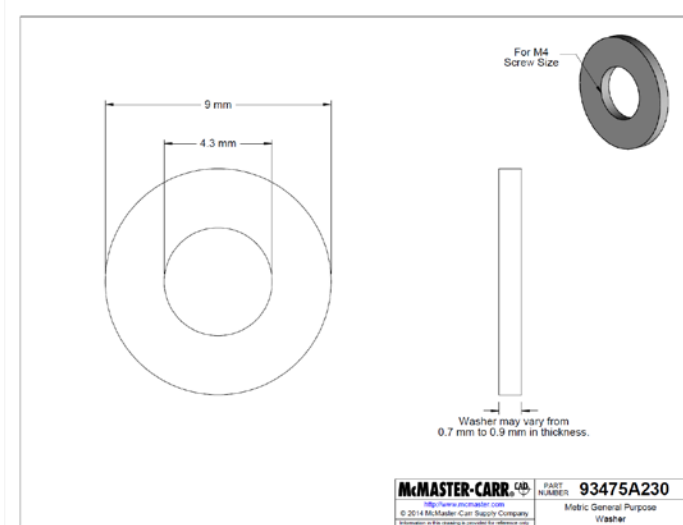
5.1 User Creates CAD Object in their CAD Session, Item is auto numbered with AL-####-####. User selects appropriate attributes relevant to COTS. If it is a Manufacturer driven COTS, the User uploads a Data sheet from manufacturer. This should be loaded on the COTS Wtpart - Related Objects tab under the Described by documents. If no Data Sheet is available as a PDF, a screenshot from the Mfr. Website is sufficient. User adds geometry, or, uses design data input such as STEP, using approved LBNL method.

5.1.1 The following steps are used to upload the Mfr. Data sheet into the Described By Documents on the COTS Wtpart. Note: The user must create the Data

² Please see AL-1212-8560 Windchill Librarian Role and Responsibility

sheet as a PDF on their hard drive before it can be uploaded as a Described by document.

5.1.2 Save the Mfr. data sheet on your hard drive. Here's an example:

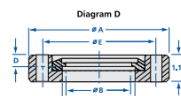
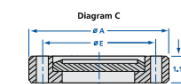
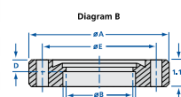
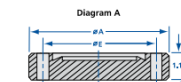
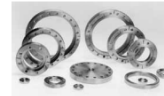


5.1.3 If you are using a Mfr. page with multiple parts, draw a box around the part number for clarity.

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Flanges & Fittings - CF Flanges 13 1/2", 14 1/2" & 16 1/2" Inch Nominal OD									
CF Flanges - 13 1/2" Inch Nominal OD									
MODEL NUMBER	TYPE	DIAGRAM	OD A	ID B	C	D	E	BOLT HOLES OR THREAD	DIAMETER
1325-000N	Blank	A	13.25	-	-	-	12.055	30	.390
1325-1000N	Bored	B	13.25	9.875	10.020	0.500	12.055	30	.390
1325-000NT	Blank	A	13.25	-	-	-	12.055	30	1/2-24
1325-1000NT	Bored	B	13.25	9.875	10.020	0.500	12.055	30	1/2-24
1325-000R	Blank	C	13.25	-	-	-	12.055	30	.390
1325-1000R	Bored	D	13.25	9.875	10.020	0.500	12.055	30	.390
1325-000RT	Blank	C	13.25	-	-	-	12.055	30	1/2-24
1325-1000RT	Bored	D	13.25	9.875	10.020	0.500	12.055	30	1/2-24
CF Flanges - 14 Inch Nominal OD									
MODEL NUMBER	TYPE	DIAGRAM	OD A	ID B	C	D	E	BOLT HOLES OR THREAD	DIAMETER
1400-000N	Blank	A	14.00	-	-	-	12.810	30	.390
1400-1200N	Bored	B	14.00	11.875	12.030	0.500	12.810	30	.390
1400-000NT	Blank	A	14.00	-	-	-	12.810	30	1/2-24
1400-1200NT	Bored	B	14.00	11.875	12.030	0.500	12.810	30	1/2-24
1400-000R	Blank	C	14.00	-	-	-	12.810	30	.390
1400-1200R	Bored	D	14.00	11.875	12.030	0.500	12.810	30	.390
1400-000RT	Blank	C	14.00	-	-	-	12.810	30	1/2-24
1400-1200RT	Bored	D	14.00	11.875	12.030	0.500	12.810	30	1/2-24
CF Flanges - 14 1/2" Inch Nominal OD									
MODEL NUMBER	TYPE	DIAGRAM	OD A	ID B	C	D	E	BOLT HOLES OR THREAD	DIAMETER
1450-000N	Blank	A	14.50	Blank	-	-	13.310	32	0.390
1450-1200N	Bored	B	14.50	11.875	12.020	0.500	13.310	32	0.390
1450-000NT	Blank	A	14.50	Blank	-	-	13.310	32	1/2-24
1450-1200NT	Bored	B	14.50	11.875	12.020	0.500	13.310	32	1/2-24
1450-000R	Blank	C	14.50	Blank	-	-	13.310	32	0.390
1450-1200R	Bored	D	14.50	11.875	12.020	0.500	13.310	32	0.390
1450-000RT	Blank	C	14.50	Blank	-	-	13.310	32	1/2-24
1450-1200RT	Bored	D	14.50	11.875	12.020	0.500	13.310	32	1/2-24
CF Flanges - 16 1/2" Inch Nominal OD									
MODEL NUMBER	TYPE	DIAGRAM	OD A	ID B	C	D	E	BOLT HOLES OR THREAD	DIAMETER
1650-000N	Blank	A	16.50	Blank	-	-	15.310	36	0.390
1650-1400N	Bored	B	16.50	13.750	14.020	0.500	15.310	36	0.390
1650-000NT	Blank	A	16.50	Blank	-	-	15.310	36	1/2-24
1650-1400NT	Bored	B	16.50	13.750	14.020	0.500	15.310	36	1/2-24
1650-000R	Blank	C	16.50	Blank	-	-	15.310	36	0.390
1650-1400R	Bored	D	16.50	13.750	14.020	0.500	15.310	36	0.390
1650-000RT	Blank	C	16.50	Blank	-	-	15.310	36	1/2-24
1650-1400RT	Bored	D	16.50	13.750	14.020	0.500	15.310	36	1/2-24



Model Number Definitions
 N = Nonrotatable, clearance bolt holes; NT = Nonrotatable, tapered bolt holes; R = Rotatable, clearance bolt holes
 RT = Rotatable, tapered bolt holes; M = Metric tapered bolt holes

REV 6/16

Call toll free 800-824-4166 or 530-842-4457 • FAX 530-842-9130

Visit our Web Site www.n-c.com

5.1.4 Navigate to the COTS Wtpart. Click on the Related Objects tab.

Actions

COTS Part - HW-1106-8219, WASHER, FLAT, 4MM, SS, A.1 (Design)

Details

Structure

Related Objects

Changes

History

Where Used

Traceability

Reps

Visualization and Attributes

More Attributes

Visualization and Attributes

Number:

 HW-1106-8219

Name:

 WASHER, FLAT, 4MM, SS

Version:

 A.1 (Design)

State:

 Working - Checked - Released - Obsolete - Rework - Under Review

Status:

 Checked in

Modified By:

 Administrator, Windchill

5.1.5 Click on Associate New.

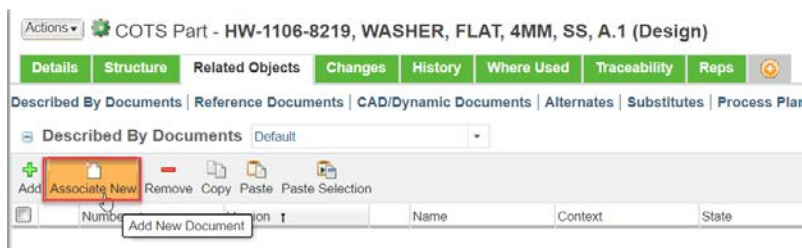


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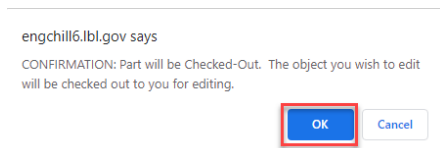
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5.1.6 When asked to check out the part, click OK.



5.1.7 Do not select a template.

New Document - Google Chrome

https://pdmlink.ibi.gov/Windchill/ptc1/document/related_doc_create_wizard_part_described?noRefDoc=true&Container=...

New Document

1 2 3

Set Attributes Category Code Set Attachments

Product: ALS-U
*** Type:** Document

Template: -- Select a Template --

*** Primary Content Source:** Local File

*** File Name:** **Browse...**

File Description:

Attributes

Number: (Generated)
*** Name:** Datasheet for McMaster-Carr 93475A230
Description:

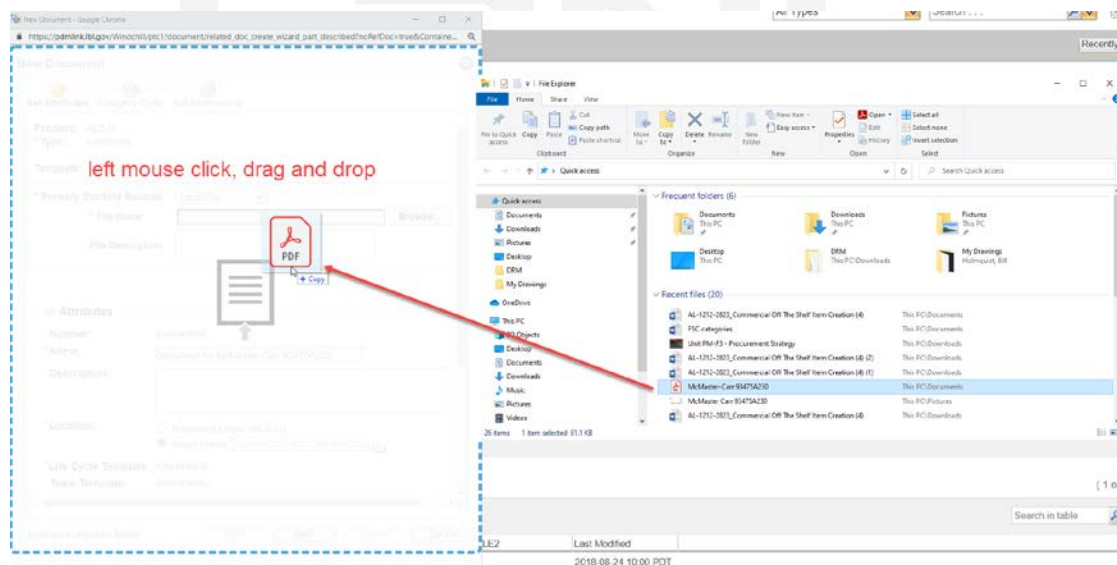
*** Location:**
☐ Autoselect Folder (/ALS-U)
☒ Select Folder (/ALS-U/CAD DOCUMENTS/CD)

*** Life Cycle Template:** (Generated)
Team Template: (Generated)

* Indicates required fields.

Back Next Finish Cancel

5.1.8 You can drag a drop a file from your file explorer into the window:



5.1.9 Enter a name for the data sheet. The name should be in the format of “Datasheet for Mfr and Mfr. P/N.” Example: Datasheet for McMaster Carr 93475A2300

(If this is a specification driven COTS there is no need for a data sheet).

Attributes

Number: (Generated)

* Name: Datasheet for McMaster-Carr 93475A230

Description:

* Location: ☐ Autoselect Folder (/ALS-U)
☒ Select Folder /ALS-U/CAD DOCUMENTS/CD-

* Life Cycle Template: (Generated)

Team Template: (Generated)

* Indicates required fields.

Back Next Finish Cancel

5.1.10 Click Next:

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5.1.11 For Document Type: Select Specification.

5.1.12 Fill out the Category Codes 1, 2 and 3.

5.1.13 Click Next.


New Document ?

1 Set Attributes 2 **Category Code** 3 Set Attachments

  *All LBNL documents must have a category code. These codes set the corresponding project and title lines except for the detail title line which you can set below. For questions regarding category codes please contact [Doc Control](#)*

* **Document Type:**
SPECIFICATION

documents the specification that describes how the system is designed and developed to achieve specified requirements. Example: Engineering Specifications Document (ESD).

 **Category / Project**
(EG) ENGINEERING DIVISION

Category #2 / Title #1
(12) HARDWARE - FASTENERS

Category #3 / Title #2
(15) WASHERS

Category Code
EG1215

* Indicates required fields.

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5.1.14 Add the Attachment description. The format to be used is the vendor name and P/N.

New Document - Google Chrome


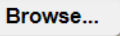
https://pdmlink.lbl.gov/Windchill/ptc1/document/related_doc_create_wizard_part_described?noRefDoc=true&ContainerOid=OR%3Aw...

New Document

1 Set Attributes 2 Category Code 3 Set Attachments

Attachments (1 objects)

Remove New Local File Attachment New URL Link Attachment New External Storage Attachment

	*Label or File Name	*URL/External Location	Attachment Description
	McMaster-Carr 93475A230 		McMaster-Carr 93475A230

(0 objects selected)

Back Next **Finish** Cancel

5.1.15 Click Finish.



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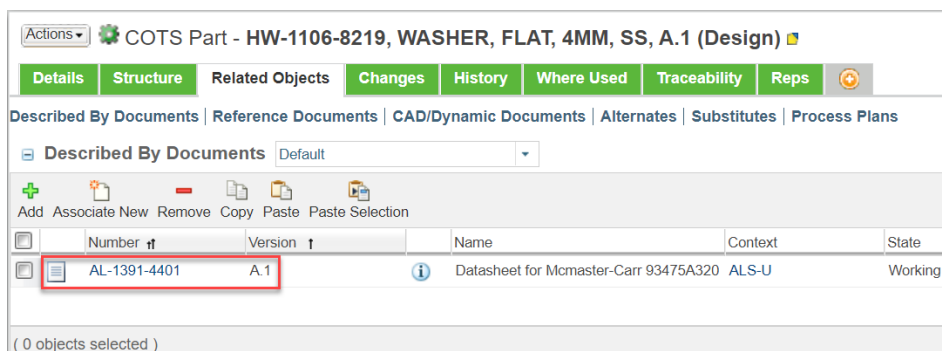
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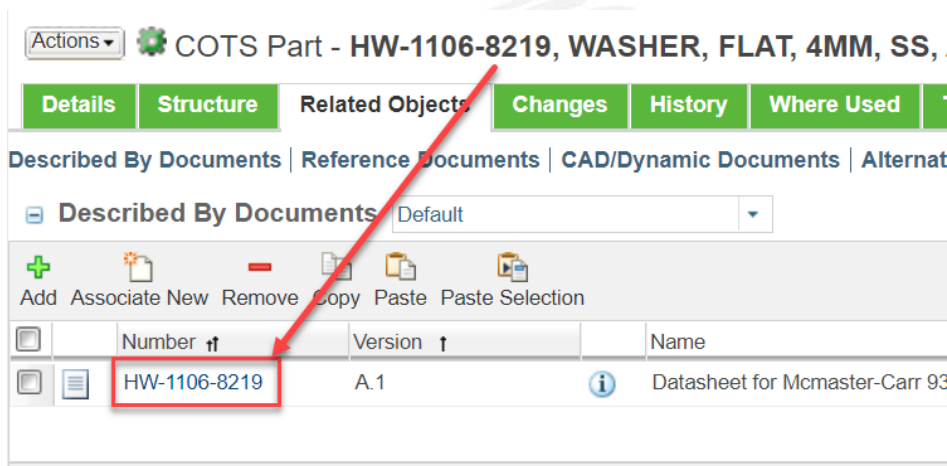


5.1.16 Ensure you are viewing the COTS Wtpart. Select the Related Objects tab.

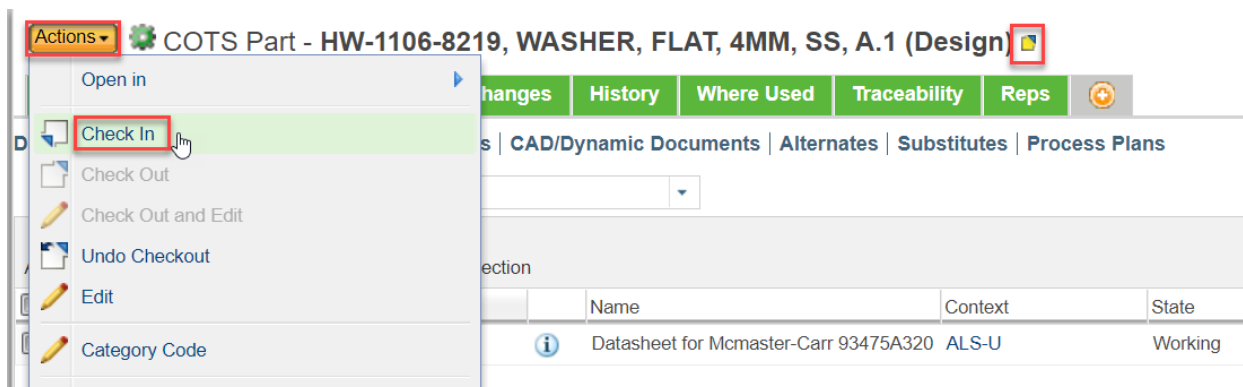
5.1.17 You should see the document in the described by documents.



5.1.18 Rename the Described by document to match the COTS WT part number.



5.1.19 Check the COTS Wtpart back into the Commonsplace (Windchill). Go to Actions>Check In



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5.1.20 Add comments, click OK

5.1.21 The Checked Out to you icon has disappeared. The WT part has iterated to the next value (in this example from A.1 to A.2).

5.2 If the User is importing a STEP file as an assembly, refer to the following instructions on the LBNL EPG website: (copy and paste this URL into a webpage).

<https://commons.lbl.gov/display/epg/How+to+import+an+Assembly+STEP+file+into+Creo+Parametric+as+a+Single+Part+File>

5.3 If the user is importing the STEP file as a part, refer to the following instructions on the LBNL EPG website: (copy and paste this URL into a webpage).

<https://commons.lbl.gov/display/epg/How+to+import+STEP+files+into+Creo+Parametric+and+Assign+LBNL+Numbers+to+It>



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- 5.4** User validates geometry, assigns all attributes, assigns material, or computes density to match items published weight.
- 5.5** User refines model, verifies placement in assembly, verifies quality of the model.
- 5.5.1** At this point the user needs to determine if this COTS item is related to an Assembly or Part that will be considered for an Informative State in Windchill or whether it should be processed for a typical released object. If it is determined to be a typical release then the user should move forward with the described process for a typical release as an HW item.
- 5.5.2** If the COTS object is to be considered for an Informative state along with its parent objects, then the process deviates from a typical release, and should skip to section 5.12 and 5.13.
- 5.6** User Checks item into Commonspace (Windchill) the model, then notifies a Librarian.
- 5.7** Librarian performs Quality Assurance, renumbers the object and moves it into an appropriate Library Location in Commonspace (Windchill). Once accepted, the Librarian will notify the user of the new part number with an HW- prefix.
- 5.8** User Updates their workspace information, continues on with design. Verifies the COTS item meets the requirements.
- 5.9** User notifies Librarian that the item can now be placed into the review and release process. The Librarian begins the review and release process.
- 5.10** COTS Item proceeds through the release process. Item is Released and any LBNL user may use it within their design.
- 5.11** If there needs to be a change to the object, then the object proceeds according to the revision process.
- 5.12** Informative State. A new lifecycle state has been created called Informative state. This is for information only and is a preliminary state prior to release for R&D purposes. Informative State parts will not be moved to the Hardware Library, but shall remain in the ALS-U Product folder. It can also remain as an AL- item and not be converted to HW- item.



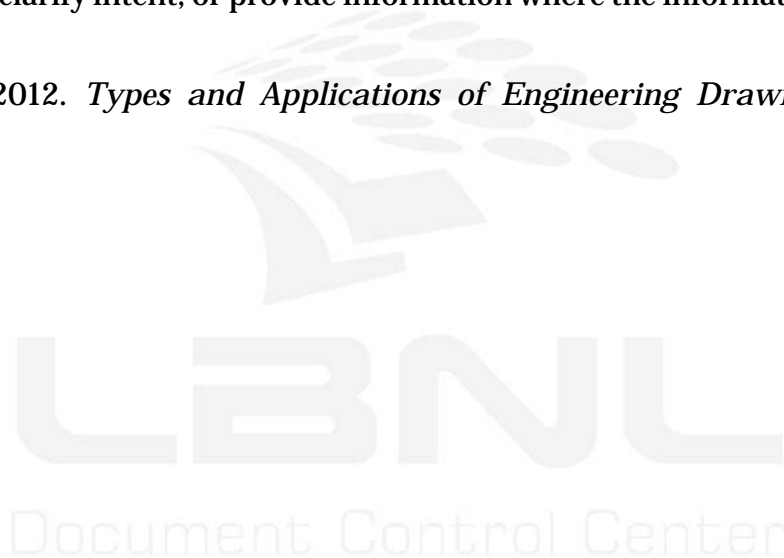
5.13 In order to promote a part from Informative state to Released state it must be revised via a Promotion Request. After revision then the object needs to resume according to section 5.7 through 5.10

Document Number	Title
AL-1212-8560	Librarian Roles and Responsibilities
AL-1215-0560	Federal Supply Classification Codes for WC
AL-1215-1240	Listing of Specifications describing Commercial Off the Shelf Items

6 REFERENCES

Documents listed in this section are considered reference documents that can be used to better describe, clarify intent, or provide information where the information was obtained from.

ASME Y14.24-2012. *Types and Applications of Engineering Drawings*. New York: ASME.



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