

# I-DEAS TDM Item Naming & Numbering Rules

Revision History			
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## 1 Purpose

This document was established to standardize the naming and numbering of items within every I-DEAS TDM.

## 2 List of Terms & Definitions

**Table 1: Terms & Definitions**

<b>Term</b>	<b>Description</b>
ASME Y14.38-1999	ASME Standard: Abbreviations and Acronyms
ASME Y14.100-2004	ASME Standard: Engineering Drawing Practices
TDM	I-DEAS Team Data Manager
FEM	Finite Element Model
Item	A drawing, part, assembly, or FEM in a TDM
Dataset	Same as <i>Item</i>
Item Master	Normally a 3D part or assembly <i>Item</i> that is used to create drawings or FEMs, but can also be a standalone 2D drawing if a 3D model does not exist.
Part Number	TDM field "Part Number". Applicable to all Items.
Part Name	TDM field "Part Name". Applicable to all Items.
Item Master Drawing	The drawing that fully describes the <i>Item Master</i> depicted within it.
Non-Item Master Drawing	These drawings are not <i>Item Master Drawings</i> but instead serve some other purpose than to describe the <i>Item Master</i> . These types of drawing are typically layout, installation, packaging, or tooling drawings. Can also a production traveler or an engineering specification.
Drawing Title	The name of the drawing as shown in its Title Block.
TCEng	Teamcenter Engineering
Common Item	Usually a purchased vendor item. Also referred to as standard hardware.

If there is a conflict between the information contained within this document and any referenced document therein, this document supersedes the referenced document.

## 3 General TDM Item Numbering Rules

1. All *Items* shall have a numeric 6-digit Fermilab in the *Part Number* field or be left blank if it does not have a 6-digit number assigned to it. Letters and special characters are not allowed. See Figure 1.
2. *Item Masters* shall have the same 6-digit *Part Number* as their related *Item Master Drawings*. See Figure 1.

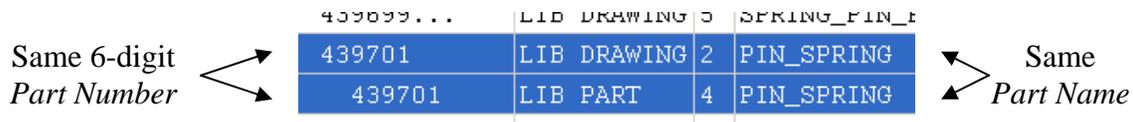


Figure 1: Item Numbering/Naming Example

#### 4 General TDM Item Naming Rules

1. All Items shall have a Part Name.
2. Item Masters shall have the same Part Name as their related Item Master Drawings. See Figure 1.
3. Part Names shall be 7 min. and 32 max. characters in length.
4. Part Names shall be UPPER case.
5. Do NOT use spaces in Part Names. Instead, use the “\_” underscore character to separate words, and use the “-” hyphen character to string terms together.
6. Part Names shall not contain the following special characters:  
! @ # \$ % ^ & \* . , ' : ; ` ~ \ + / { } [ ] ( ) = | < > ? "
  - a) General Format: **Y-XXX**  
Where, Y is a whole number and X is a decimal or fractional value
  - b) The number of X decimal places may vary depending on need.
  - c) The unit of measure should be appended to the size designation (IN, MM, FT, CM, PSI, LB, N, etc.).
  - d) For consistency and to avoid confusion, all values less than 1 should still have a “0-” prefix. For example, a fractional number such as “1/2” should be written as “0-500” rather than “500”. Without this, the “500” could be interpreted as 500 units long rather than a half unit. See Table 2: Numerical Size Syntax Examples.
7. Numerical size designations should be displayed as follows:

Table 2: Numerical Size Syntax Examples

Small Fraction	¼	0-250
Small Decimal	.188	0-188
Whole Number	1	1-0
Mixed Fraction	1-1/3	1-333
Mixed Decimal	6.312	6-312

8. Part Names shall consist of a noun or noun phrase (basic name) and modifiers, if necessary, to differentiate like items. The first modifier narrows the concept established by the basic name, and succeeding modifiers continue the process. For example,

**Basic Name      1<sup>st</sup> Modifier      2<sup>nd</sup> Modifier**  
 FLANGE\_ MAIN-COUPLER\_ RIGHT-SIDE

**Basic Name      1<sup>st</sup> Modifier      2<sup>nd</sup> Modifier**

JUNCTION-BOX\_3Q120\_ MAIN-COUPLER

9. The *Part Names* of 3D *Item Masters* and therefore their related 2D *Item Master Drawings* should be the same as, or at least similar to, the 3<sup>rd</sup> line of the *Item Master Drawing's Drawing Title* without violating any of the other rules in this document.
10. *Part Names* should not contain references to projects, institutions, or a person's name.
11. *Part Name* should not contain words like "Part1", "junk", or modifiers such as "old" or "new".
12. Abbreviations are acceptable and should follow ASME Y14.38-1999 and *Fermilab Engineering Acronyms and Abbreviations* list respectively. Please be consistent when applying abbreviations.
13. *Part Names* for assembly *Items* should contain the string, "ASSY", within the basic name. For example,

Basic Name Examples with "ASSY"		
ASSY-	BRACKET ASSY-	SUBASSY-

14. *Part Names* and *Drawing Titles* should follow Section 5 of ASME Y14.100-2004. See Appendix A.

## 5 Exceptions to the General Naming/Numbering Rules

### 5.1 Non-Item Master Drawings

These drawings should have their own unique *Part Name* and *Part Number*. These drawings will be tracked as their own *Item Master* in TCEng. These types of drawing are typically layout, installation, packaging, or tooling drawings. They can also a production traveler or an engineering specification.

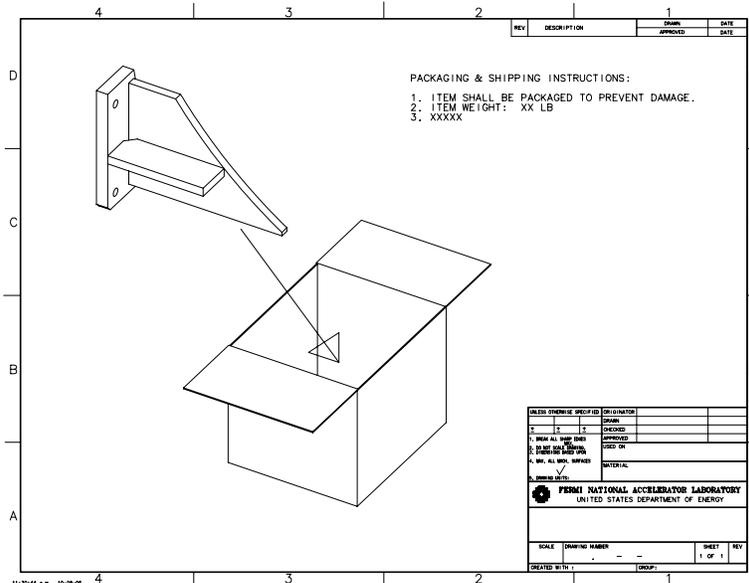


Figure 2: Example of a Non-Item Master Drawing (Packaging Drawing Shown)

## 5.2 Multi-Sheet Drawings

Multi-sheet drawings that consist of separate drawing *Items* for each sheet shall have unique *Part Names* assigned to them to distinguish them from one another since they will all have the same *Part Number*. This is required for migration to Teamcenter. See 5.2.1 for a suggested method of doing this.

### 5.2.1 Making Unique Part Names for Multi-Sheet Drawings (Recommendation)

A recommended method is to append a “\_X” to the *Part Name* of each drawing *Item* where “X” is the sheet number.

## 5.3 Finite Element Models (FEMs) & Related Abstract Parts

### 5.3.1 FEMs Related to an Item Master

FEMs that are directly related to an *Item Master* can have the same *Part Number* as the *Item Master* if it is desired to track and revise the FEM alongside the *Item Master* in TCEng. If this behavior is not desired, then the FEM should have a unique *Part Number*. The *Part Name* may vary. It is important to note that this is an infrequent scenario. Most FEMs are generated from a separate abstract part *Item* rather than from an *Item Master*. See 5.3.2.

### 5.3.2 FEMs Related to an Abstract Copy of an Item Master

These FEMs and their related abstract part *Items* should share a unique *Part Number* that differs from the original *Item Master* that the abstract *Item* represents. This will allow both *Items* to be tracked together within TCEng. It is typically good practice to use the original *Item Master Part Number* and then append the string “FEM” to both the FEM *Item* and its related *Item* as shown below.

If the *Item Master Part Number* is 123456, then the FEM and its related *Item Part Numbers* will be:

123456FEM	FE MODEL	HOUSING-FEM
123456FEM	PART	HOUSING-FEM

**Figure 3: Example of FEM Naming/Numbering**

## 6 Common Item Naming/Numbering Rules

*Common Items* shall be named in accordance with the *General TDM Naming and Numbering Rules* listed in this document with the following additional requirements:

### 6.1 General Format

The general format to use for *Common Items* is described below.

**TYPE-STYLE\_SIZE\_MATERIAL\_FINISH\_[SPECIFICATION]**

**BOLD** = Required parameter.

*ITALICS* = Required only if the parameter applies to the item.

[*ITALICS*] = Optional text if room is available.

**TYPE** – The basic name of the item. Types will often require definition of an acronym.

*STYLE* – Modifier used to narrow the definition of **TYPE**. Some specific *STYLE* values for common head & drive types are listed below.

*SIZE* – Size specification for the item. May be of the form Width X Length, or for a fastener Pitch X Length, Diameter, Displacement for a PUMP etc. Remember to use NOMINAL sizes and lengths. If too lengthy then use MFG, Part No. Some specific *SIZE* parameters are listed below for *SIZE-PITCH*, *LENGTH*, and *DIA*.

**Table 3: SIZE-PITCH Syntax Examples for Threads**

English #6-32	NO6-32
Metric M4x.7	M4X0-7
English 1/4-20	250-20
Metric M6x1	M6X1-0

**Table 4: LENGTH Syntax Examples**

1 in	1-00
20 mm	20MM

**Table 5: DIA Syntax Examples**

.125 in	0-125
1.25 in	1-25
1 in	1-0
6 mm	6MM
6.3 mm	6-3MM

*MATERIAL* – Determine applicable materials that may apply to the component and define acronyms for each. The base material should be listed first with the composition number,

if any, second. Please use abbreviations IAW *Fermilab Engineering Acronyms and Abbreviations*. If a material abbreviation is not listed, try using the Period Table of the Elements designations. If it is a proprietary material, you can use the trademarked name.

**Table 6: MATERIAL Syntax Examples**

Aluminum 6061	AL6061-T6
Brass	BRS
Carbon Steel 1018	CS1018
Copper	CU
Delrin®	DELRIN
Inconel	INCON
Nylon	NYL
Polyvinylchloride	PVC
Stainless Steel 18-8	SS18-8
Stainless Steel 304	SS304

*FINISH* – Determine applicable material finishes available for the item, may be combined with the *MATERIAL*.

**Table 7: FINISH Syntax Examples**

Zinc Plated	ZINC
Black Oxide	BO
Anodized	ANDZ
Painted	PTD

[*SPECIFICATION*] - Specification that item conforms to: ISO, DIN, ANSI, SAE, etc...

## 6.2 Screws, Nuts, Pins, Rivets, Washers

For commonality, these items should be identified as shown below.

### Screws

**SCR-STYLE\_SIZE-PITCH\_LENGTH\_MATERIAL\_FINISH\_[SPECIFICATION]**

*STYLE* – The type of screw along with the head and drive style, respectively. See Table 8: Screw Style Examples and Table 9: Head Style Examples**Error! Reference source not found.** Head/drive style combinations are also permissible. See Table 11: Head/Drive Combination Examples.

**Table 8: Screw Style Examples**

Machine	MACH
Cap	CAP
Shoulder	SHLDR
Self-Tapping	SLFTPG
Thumb	THUM
Vented	VENT
Wood	WOOD

**Table 9: Head Style Examples**

82° Countersunk Head	82CSK
90° Countersunk Head	90CSK
100° Countersunk Head	100CSK
Binding Head	BDGH
Button Head	BTNHD
Fillister Head	FILH
Hexagonal Head	HEXHD
Oval Head	OVH
Pan Head	PNH
Round Head	RDH
Square Head	SQH
Truss Head	TRH

**Table 10: Drive Style Examples**

Hex Socket	HEXSOC
Phillips	PH
Slotted	SLTD
Torx®	TORX

**Table 11: Head/Drive Combination Examples**

Cross Recessed Head	CRSHD
Flat Head Cap	FHC
Socket Head Cap	SHC
Phillips Head	PHH

Setscrews

**SSCR-STYLE\_SIZE-PITCH\_LENGTH\_MATERIAL\_FINISH\_[SPECIFICATION]**

*STYLE* – The type of setscrew along with point and drive style. See Table 12: Setscrew Point Style Examples.

**Table 12: Setscrew Point Style Examples**

Flat Point	FP
Half Dog Point	HDP
Full Dog Point	FDP
Oval Point	OVP
Cup Point	CUPP
Cone Point	CONP

Nuts

**NUT-STYLE\_SIZE-PITCH\_THICKNESS\_MATERIAL\_FINISH\_[SPECIFICATION]**

Pins

**PIN-STYLE\_DIA\_LENGTH\_MATERIAL\_FINISH\_[SPECIFICATION]**

Rivets

**RVT-STYLE\_DIA\_LENGTH\_MATERIAL\_FINISH\_[SPECIFICATION]**

Washers

**WSHR-STYLE\_ID\_OD\_THICKNESS\_MATERIAL\_FINISH\_[SPECIFICATION]**

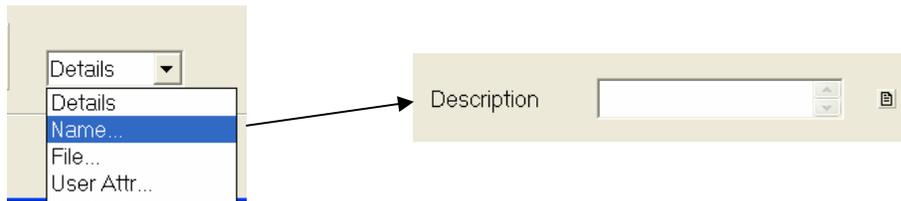
6.3 Exceptions to Accommodate the 32-character Name Limit

If the *Part Name* of your *Common Item* exceeds 32 characters, you will need to shorten the name by following the list in order of precedence.

- 1) Remove trailing zeros from size designations, i.e. 1-500 would translate to 1-5
- 2) Remove or modify the [SPECIFICATION], if applicable, and place it in the Description Field.
- 3) Remove or modify the optional parameter *FINISH*, if applicable, and place it in the Description Field.
- 4) Remove or modify the optional parameter *MATERIAL*, if applicable, and place it in the Description Field.
- 5) Remove less critical nominal sizes.
- 6) If the item has a *PITCH* parameter, remove it and place it in the Description Field.
- 7) Preserve the **TYPE** and *STYLE* only. If the user has to look in the Description Field to identify items of the same type, this is acceptable if none of the above reductions work.

6.4 Description Attribute

All *Common Items* shall have a 20-80 character uppercase Description attribute that should fully define the item, including the manufacturer and manufacture number.



## Appendix A General Rules for Drawing Titles (from Section 5 of ASME Y14.100-2004)

The title is the name by which the drawing or item will be known and consists of a basic name and modifier, when required, to differentiate like items.

The following rules apply to all titles:

- a) The title shall be as brief as possible, describe the item, and distinguish between similar items.
- b) The title shall consist of a noun or noun phrase (basic name). Modifiers may be used to distinguish between items with the same basic name.
  - 1) A modifier may be a single word or phrase. The first modifier narrows the concept established by the basic name, and succeeding modifiers continue the process.
  - 2) The conjunction “or” and preposition “for” shall not be used.
- c) The noun or noun phrase establishes the basic concept of an item.
  - 1) A compound noun or noun phrase is used when a single noun is not adequate.
  - 2) The noun or noun phrase describes the part and the usage of the part, not material or method of fabrication.
- d) The noun or noun phrase shall be used in singular form, except
  - 1) where the only form of the noun is plural, as in “TONGS”
  - 2) where the nature of the item requires the plural form, as in “GLOVES”
  - 3) where multiple single items appear on the same drawing, as in “FUSES”
- e) An ambiguous noun is not used alone but may be used as part of a noun phrase. For example

Preferred	Not Preferred
CIRCUIT-CARD-ASSEMBLY	ASSEMBLY_CIRCUIT-CARD
PRINTED-CIRCUIT-BOARD	BOARD_PRINTED-CIRCUIT

- f) When an item is not a container or material, but its name involves the use of a noun that ordinarily designates a container or material, a noun phrase shall be used as the basic name. For example

Preferred	Not Preferred
JUNCTION-BOX	BOX_JUNCTION
SOLDERING-IRON	IRON_SOLDERING

- g) Abbreviations should be avoided.
- h) The title shall be consistent with the title of the next assembly.
- i) When titles are used on continuation sheets, the title shall be the same on each sheet.
- j) Reference to major assemblies or end items shall not be used except when necessary to differentiate similar items.
- k) Nonpart drawings, such as schematic diagrams, shall include the drawing type as part of the title. For example

TRANSFORMER-ASSY\_SCHEMATIC-DIAGRAM

## Appendix B Naming and Numbering Examples

### Screw Examples

English Flat Head Screw, #10-32, .75 long, Zinc Plated Carbon Steel  
SCR-FLH\_10-32\_0-750\_CS\_ZINC

Metric Flat Head Screw, M6x1, 20mm long, Stainless Steel per DIN 9390  
SCR-FLH\_M6x1\_20MM\_SS\_DIN9390