



MBD TDP Reference Guide

MBD TDP 参考指南

MAN-00011 / 4

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MBD: Model Based Definition

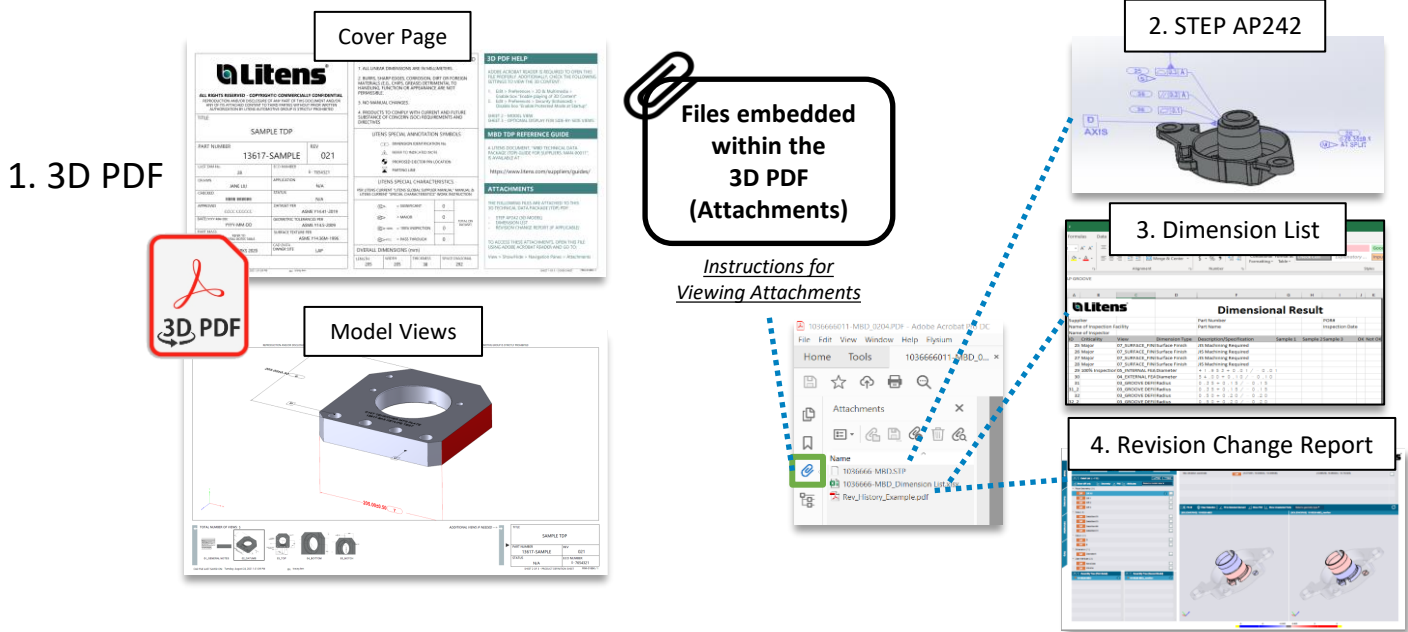
TDP: Technical Data Package

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TDP Overview

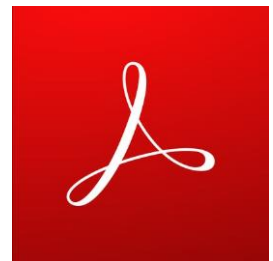
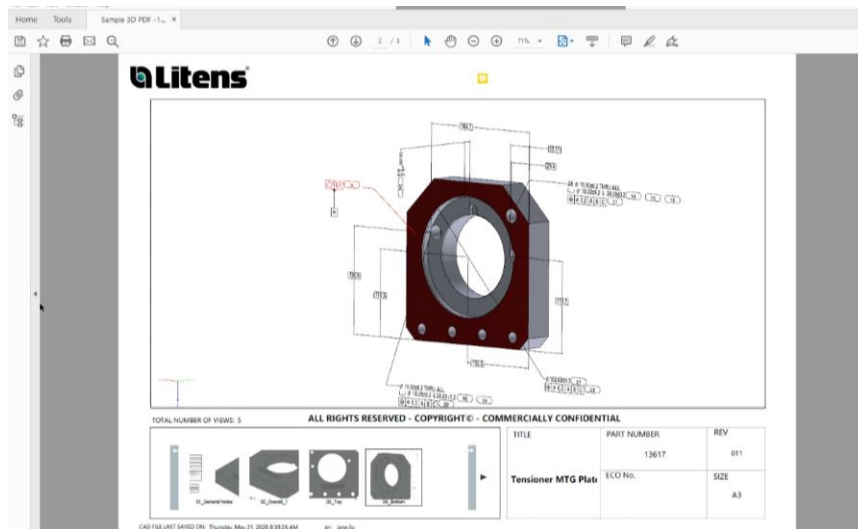
A Technical Data Package (“TDP”) contains the technical description of an item, adequate for supporting acquisition strategies, production, engineering, and quality assurance. The TDP is stored in a single 3D PDF file with attachments. 技术数据包 (“TDP”) 包含项目的技术描述，足以支持采购策略、生产、工程和质量保证。TDP 存储在带有附件的单个 3D PDF 文件中。



Recommended PDF Viewer – Adobe推荐的 PDF 查看器 - Adobe

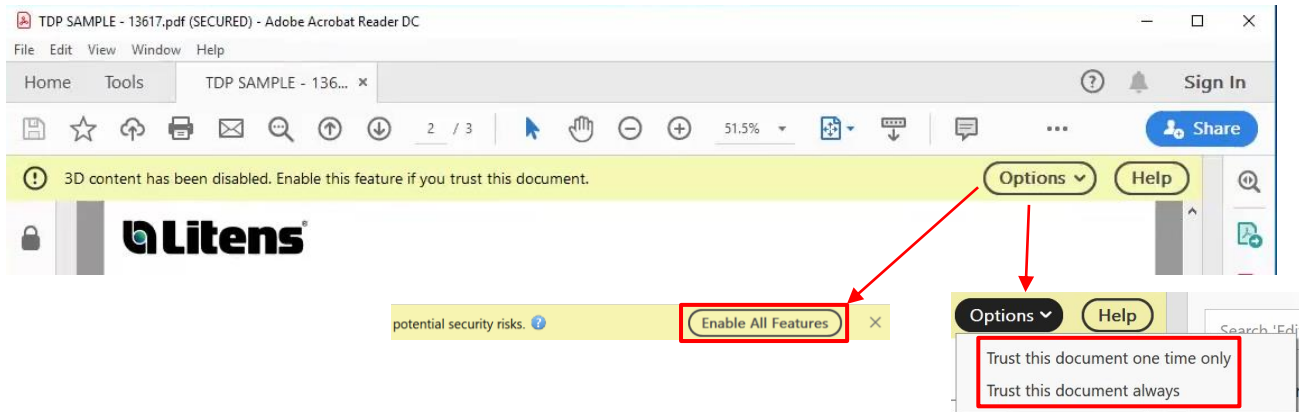
The recommended 3D PDF viewer is **Adobe Acrobat Reader**. Other PDF viewers, such as Microsoft Edge and Google Chrome, do **not** support 3D models. 推荐的 3D PDF 查看器是 Adobe Acrobat Reader。其他 PDF 查看器不支持 3D 模型，例如 Microsoft Edge 和 Google Chrome。

It is available to download for free on Adobe’s site: [Link to Adobe](#)
它可以在 Adobe 的网站上免费下载



Recommended Adobe Settings 推荐的 Adobe 设置

When opening a 3D PDF, a yellow banner may appear over the top saying “3D content has been disabled”. Click “Enable All Features” or select “Trust this document...” in the options menu. Then, adjust your Adobe settings as shown below to avoid these yellow notices for future files. 打开 3D PDF 时，顶部可能会出现一个黄色横幅，上面写着“3D 内容已被禁用”。单击“启用所有功能”或在选项菜单中选择“信任此文档...”。然后，如下所示调整您的 Adobe 设置，以避免将来的文件出现这些黄色通知。



Please use the following Adobe settings for opening 3D PDF's. Otherwise, the 3D content may not work properly. 3D PDF files must be closed for settings to apply.

请使用以下 Adobe 设置打开 3D PDF。否则，3D 内容可能无法正常工作。必须关闭 3D PDF 文件才能应用设置。

Go to **Edit > Preferences** at the top toolbar. Check the following categories 转到顶部工具栏上的编辑 > 首选项。检查以下类别

1. **Enable playing of 3D Content > Enable**
启用 3D 内容播放 > 启用
2. **Preferred Renderer > DirectX 9**
首选渲染器 > DirectX 9
3. **Preferred 3D PMI Rendering Mode >**
“Always render 3D PMI in front of model”
首选 3D PMI 渲染模式
> “总是在模型前面渲染 3D PMI”

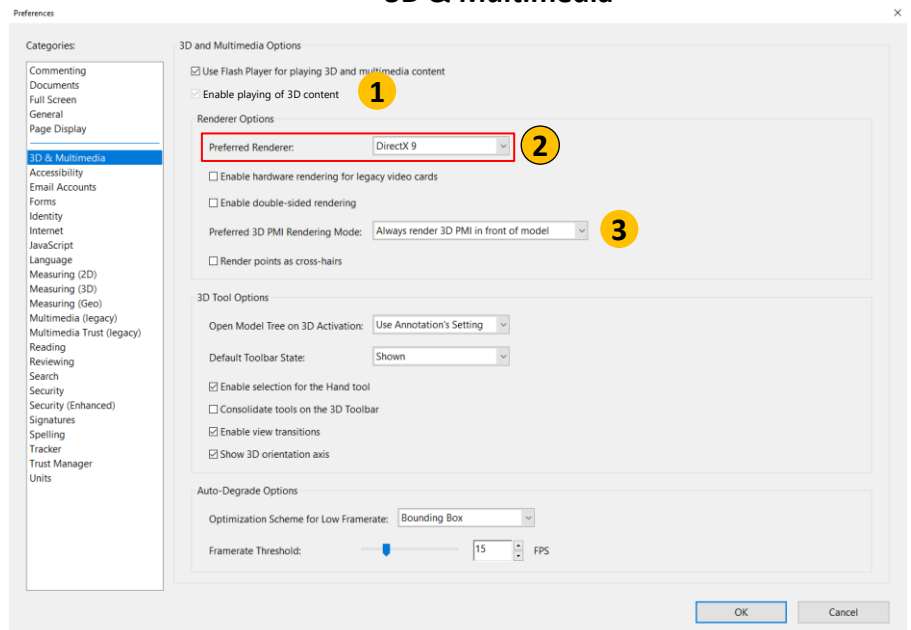
Adobe Help Article:

[Displaying 3D models in PDFs](#)
(see 3D preferences)

Adobe 帮助文章:

[在 PDF 中显示 3D 模型 \(请参阅 3D 首选项\)](#)

3D & Multimedia

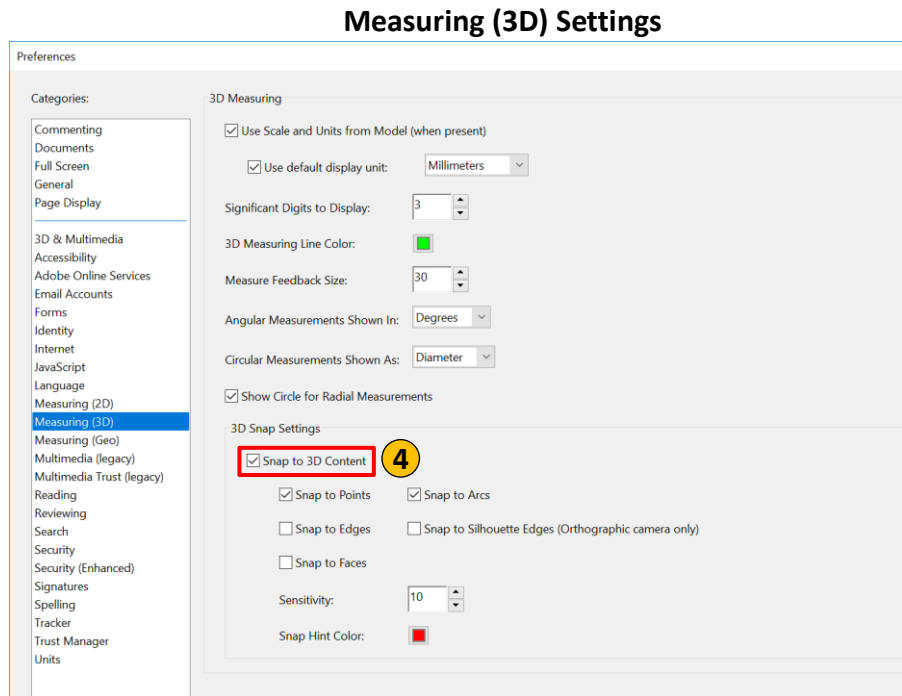


More settings
on next page

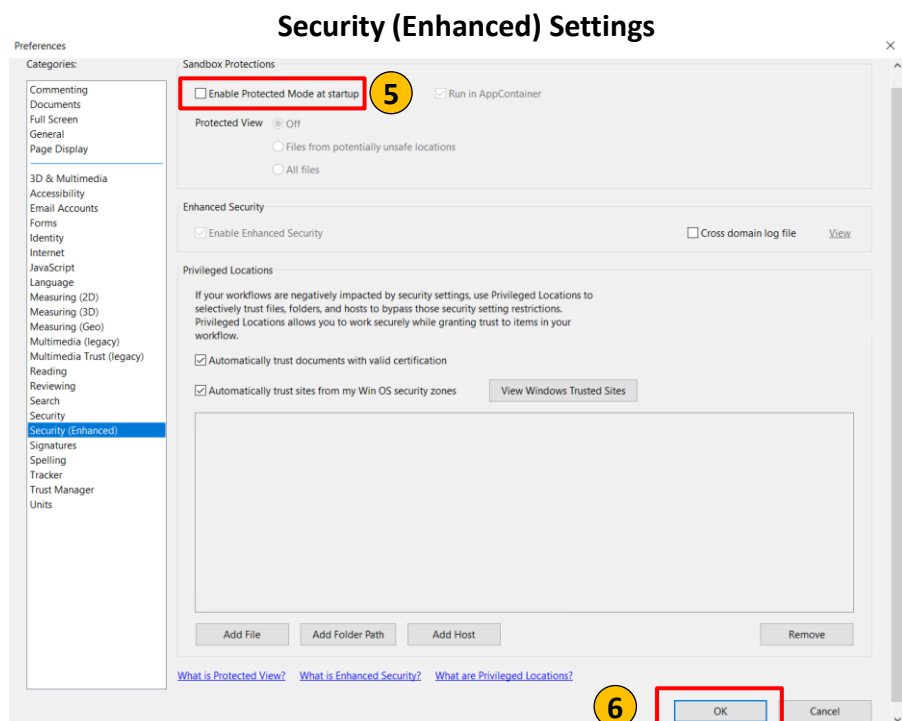
Go to **Edit > Preferences** at the top toolbar. Check the following categories

转到顶部工具栏上的编辑 > 首选项。检查以下类别

4. Snap to 3D Content > Enable
对齐 3D 内容 > 启用



5. Enable Protected Mode at startup
-> Disable
启动时启用保护模式 > 禁用



6. Click OK and close the 3D PDF file for the settings to apply.




















More settings on
previous page

Litens 3D PDF Overview 莱顿3D PDF 概述

Sheet 1 – Cover Page 表 1 – 封面

The cover page will show when the 3D PDF is opened. This page includes title-block information and a help section for new users. 打开 3D PDF 时将显示封面。此页面包括标题栏信息和新用户的帮助部分。

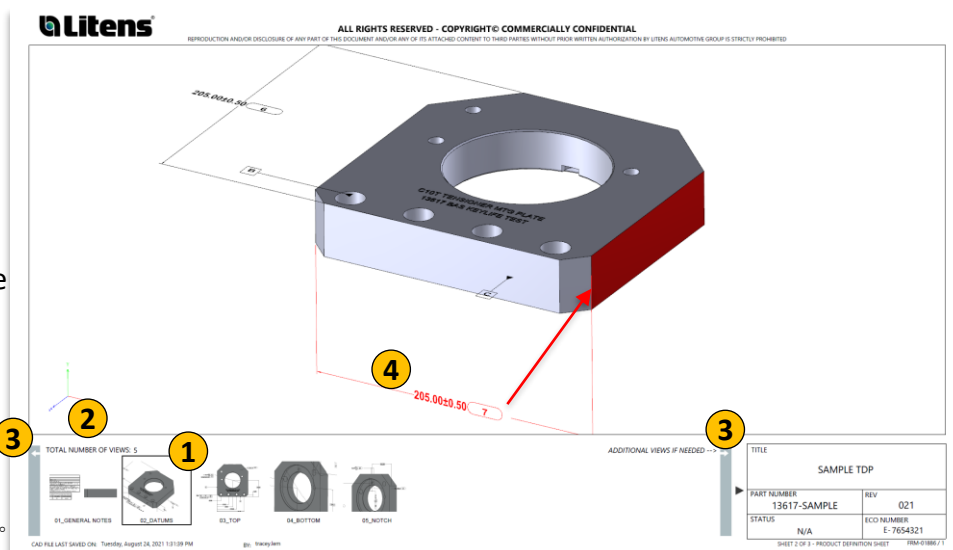
 <p>ALL RIGHTS RESERVED - COPYRIGHT © COMMERCIALLY CONFIDENTIAL REPRODUCTION AND/OR DISCLOSURE OF ANY PART OF THIS DOCUMENT AND/OR ANY OF ITS ATTACHED CONTENT TO THIRD PARTIES WITHOUT PRIOR WRITTEN AUTHORIZATION BY LITENS AUTOMOTIVE GROUP IS STRICTLY PROHIBITED</p>		<p>GENERAL NOTES UNLESS OTHERWISE SPECIFIED</p> <ol style="list-style-type: none"> 1. ALL LINEAR DIMENSIONS ARE IN MILLIMETERS. 2. BURRS, SHARP EDGES, CORROSION, DIRT OR FOREIGN MATERIALS (E.G., CHIPS, GREASE) DETRIMENTAL TO HANDLING, FUNCTION OR APPEARANCE ARE NOT PERMISSIBLE. 3. NO MANUAL CHANGES. 4. PRODUCTS TO COMPLY WITH CURRENT AND FUTURE SUBSTANCE OF CONCERN (SOC) REQUIREMENTS AND DIRECTIVES 														
<p>3D PDF HELP</p> <p>ADOBE ACROBAT READER IS REQUIRED TO OPEN THIS FILE PROPERLY. ADDITIONALLY, CHECK THE FOLLOWING SETTINGS TO VIEW THE 3D CONTENT:</p> <ol style="list-style-type: none"> 1. Edit > Preferences > 3D & Multimedia > Enable box "Enable playing of 3D Content" 2. Edit > Preferences > Security (Enhanced) > Disable box "Enable Protected Mode at Startup" <p>SHEET 2 - MODEL VIEW SHEET 3 - OPTIONAL DISPLAY FOR SIDE-BY-SIDE VIEWS</p>																
<p>TITLE</p> <p>SAMPLE TDP</p>		<p>MBD TDP REFERENCE GUIDE</p> <p>A LITENS DOCUMENT, "MBD TECHNICAL DATA PACKAGE (TDP) GUIDE FOR SUPPLIERS: MAN-00011", IS AVAILABLE AT:</p> <p>https://www.litens.com/suppliers</p>														
<p>PART NUMBER</p> <p>13617-SAMPLE</p>		<p>REV</p> <p>021</p>														
<p>LAST DIM No.</p> <p>28</p>		<p>ECO NUMBER</p> <p>E-7654321</p>														
<p>DRAWN</p> <p>JANE LIU</p>		<p>APPLICATION</p> <p>N/A</p>														
<p>CHECKED</p> <p>BBBB BBBB</p>		<p>STATUS</p> <p>N/A</p>														
<p>APPROVED</p> <p>CCCC CCCCC</p>		<p>DATASET PER</p> <p>ASME Y14.41-2019</p>														
<p>DATE (YYYY-MM-DD)</p> <p>YYYY-MM-DD</p>		<p>GEOMETRIC TOLERANCES PER</p> <p>ASME Y14.5-2009</p>														
<p>PART MASS</p> <p>TOTAL REF. REFER TO GENERAL NOTES TABLE</p>		<p>SURFACE TEXTURE PER</p> <p>ASME Y14.36M-1996</p>														
<p>CAD SYSTEM</p> <p>SOLIDWORKS 2020</p>		<p>CAD DATA OWNER SITE</p> <p>LAP</p>														
<p>CAD FILE</p> <p>U:\13617 TDP\13617 - REV021</p>																
<p><small>CAD FILE LAST SAVED ON: Tuesday, August 24, 2021 13:18 PM</small></p>		<p><small>litens.com</small></p>														
<p>LITENS SPECIAL ANNOTATION SYMBOLS</p> <p> DIMENSION IDENTIFICATION No.</p> <p> REFER TO INDICATED NOTE</p> <p> PROPOSED EJECTOR PIN LOCATION</p> <p> PARTING LINE</p>		<p>LITENS SPECIAL CHARACTERISTICS</p> <p>PER LITENS CURRENT "LITENS GLOBAL SUPPLIER MANUAL" MANUAL & LITENS CURRENT "SPECIAL CHARACTERISTICS" WORK INSTRUCTION</p> <table border="1"> <tr> <td></td> <td>= SIGNIFICANT</td> <td>0</td> <td rowspan="4">TOTAL ON DATASET</td> </tr> <tr> <td></td> <td>= MAJOR</td> <td>0</td> </tr> <tr> <td></td> <td>= 100% INSPECTION</td> <td>0</td> </tr> <tr> <td></td> <td>= PASS THROUGH</td> <td>0</td> </tr> </table>			= SIGNIFICANT	0	TOTAL ON DATASET		= MAJOR	0		= 100% INSPECTION	0		= PASS THROUGH	0
	= SIGNIFICANT	0	TOTAL ON DATASET													
	= MAJOR	0														
	= 100% INSPECTION	0														
	= PASS THROUGH	0														
<p>OVERALL DIMENSIONS (mm)</p> <table border="1"> <tr> <td>LENGTH</td> <td>WIDTH</td> <td>THICKNESS</td> <td>SPACE DIAGONAL</td> </tr> <tr> <td>205</td> <td>205</td> <td>38</td> <td>292</td> </tr> </table>				LENGTH	WIDTH	THICKNESS	SPACE DIAGONAL	205	205	38	292					
LENGTH	WIDTH	THICKNESS	SPACE DIAGONAL													
205	205	38	292													
<p>ATTACHMENTS</p> <p>THE FOLLOWING FILES ARE ATTACHED TO THIS 3D TECHNICAL DATA PACKAGE (TDP) PDF:</p> <ul style="list-style-type: none"> - STEP AP242 (3D MODEL) - DIMENSION LIST - REVISION CHANGE REPORT (IF APPLICABLE) <p>TO ACCESS THESE ATTACHMENTS, OPEN THIS FILE USING ADOBE ACROBAT READER AND GO TO:</p> <p>View > Show/Hide > Navigation Panes > Attachments</p>																

Help Info
帮助信息

Sheet 2 - Model View 表 2 - 模型视图

The second page displays all model views, including general notes and an embedded 3D model. Listed are four key features and functions: 第二页显示所有模型视图，包括一般注释和嵌入式 3D 模型。列出了四个关键特性和功能：

- To change views, click the thumbnail in the Carousel.**
要更改视图，请单击视图列表中的缩略图。
- The total number of views is listed**
显示视图总数。
- To scroll through the list of views, use the left and right navigation buttons**
要滚动浏览视图列表，请使用左右导航按钮。
- When a dimension is selected, the associated features will highlight on the model in red.**
选择尺寸后，相关特征将在模型上以红色突出显示。

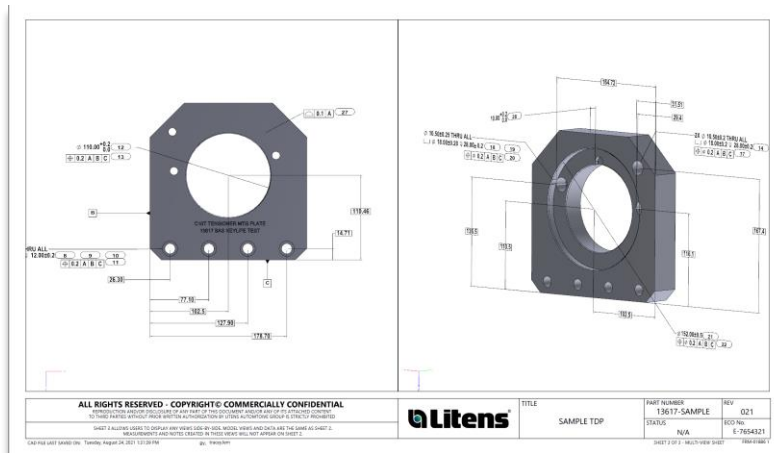
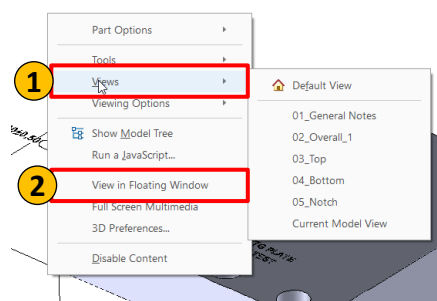


Sheet 3 - Side-by-Side View 表 3 - 并排视图

The third page displays a side-by-side view of the model.

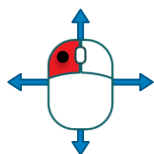
第三页显示模型的并排视图。

- ① To **change views**, right click on the model, select “Views” and select the desired view.
要更改视图，请右键单击模型，选择“视图”并选择所需的视图。
- ② To **create a resizable floating window of the view**, right click and select “View in Floating Window”.
要创建视图的可调整大小的浮动窗口，请右键单击并选择“在浮动窗口中查看”。

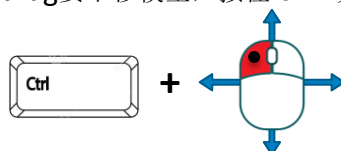


Viewing Tools 查看工具

To **rotate** the model, hold left-click and drag
要旋转模型，请按住左键并拖动

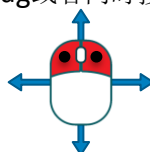


To **pan** the model, hold CTRL and drag
要平移模型，按住 CTRL 并拖动



Or hold both left and right mouse buttons and drag
或者同时按住鼠标左右键并拖动

Or 或者



To **zoom** in/out, scroll in and out over the model
要放大/缩小，请在模型上朝内和外滚动

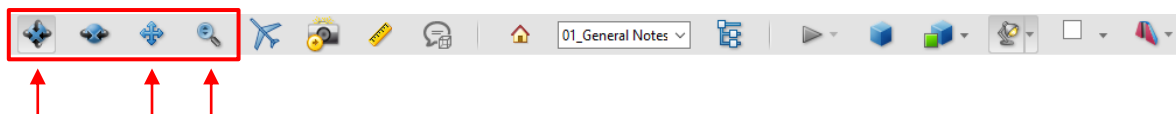


Or hold right-click and drag
或者按住右键并拖动

Or 或者



Alternatively, use the icons in the toolbar to access the viewing tools
或者，使用工具栏中的图标访问查看工具



Additional Adobe Help Articles: 其他 Adobe 帮助文章:

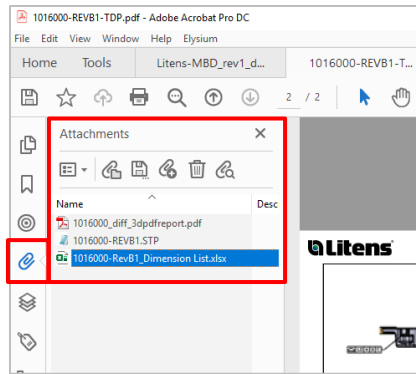
- [Displaying 3D models in PDFs](#) 在 PDF 中显示 3D 模型
- [Interacting with 3D models](#) 与 3D 模型交互

Viewing TDP Attachments 查看 TDP 附件

Attachments on a TDP include a STEP AP242 file (.stp), a Dimension List (Excel) and a Revision Change Report, if applicable. To access, click the **paperclip** (📎) on the left. Attachments can be opened or saved. TDP 上的附件包括 STEP AP242 文件 (.stp)、尺寸列表 (Excel) 和版本变更报告（如果适用）。要访问，请单击左侧的回形针 (📎)。可以打开或保存附件。



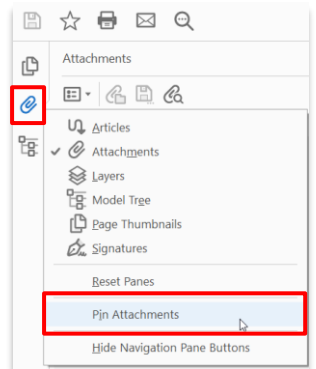
Note: if there is no paperclip icon, click the left-side panel to expand the toolbar:
注意：如果没有回形针图标，单击左侧面板展开工具栏：



Tip: To always show the attachment list when opening future PDF's:
Right-click over Attachments (📎) and select Pin Attachments.

提示：要在打开以后的 PDF 时始终显示附件列表：右键单击附件 (📎) 并选择固定附件。

To hide this panel:
Right-click over Attachments (📎) and select Unpin Attachments.
要隐藏此面板：右键单击附件 (📎) 并选择取消固定附件



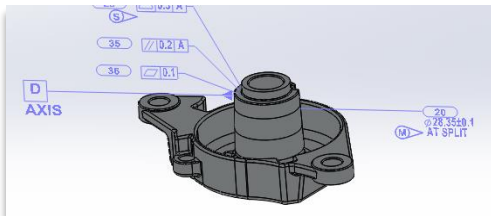
STEP AP242

A STEP AP242 is a neutral CAD format that is compatible with different CAD programs. The STEP AP242 file format contains PMI, while other STEP formats (eg. AP203, AP214) do not support PMI.

STEP AP242 是与不同 CAD 程序兼容的中性 CAD 格式。STEP AP242 文件格式包含 PMI，而其他 STEP 格式（例如 AP203、AP214）不支持 PMI。

Check your software to see if it supports STEP AP242 files and/or the embedded PMI.

检查您的软件是否支持 STEP AP242 文件和/或嵌入式 PMI。



A STEP AP242 file is a **Neutral** file

STEP AP242 文件是中性文件




Neutral: File format that can be read by any CAD system

中性：任何 CAD 系统都可以读取的文件格式








Dimension List 尺寸列表

The dimension list is an Excel sheet that is automatically generated using the MBD model. It will list dimensions, GD&T, notes and table entries. This sheet can be used during inspection for digitized measurement results.

尺寸列表是使用 MBD 模型自动生成的 Excel 表。它将列出尺寸、GD&T、注释和表格条目。该表可用于检查数字化测量结果。



Dimensional Result

Supplier			Part Number			POR#				
Name of Inspection Facility			Part Name			Inspection Date				
Name of Inspector										
ID	Criticality	View	Dimension Type	Description/Specification	Sample 1	Sample 2	Sample 3	OK	Not OK	Comment
13		03_FRONT	Flatness	 0 . 2 0						
14		04_RIGHT	Diameter	3 5 . 5 5 - 3 5 . 7 5						
15		03_FRONT	SurfaceProfile	 0 . 5 0 A						
16		06_LEFT	Diameter	2 4 . 5 - 2 4 . 8						
17		06_LEFT	Perpendicularity	 0 . 1 5 A						
18	Major	04_RIGHT	Radius	2 0 . 9 0 - 2 0 . 9 5						
19		03_FRONT	SurfaceProfile	 0 . 2 0 A						
20		06_LEFT	Position	 0 . 2 0 A B						
21		04_RIGHT	Diameter	4 1 . 5 - 4 1 . 7						
22		04_RIGHT	Position	 0 . 0 4 A B ①						
23		04_RIGHT	Position	 0 . 2 0 A B						

GD&T entries use a font called “SWGDT”.
It is free to download and install.

[Link to download font](#)

GD&T 条目使用一种称为 “SWGDT” 的字体
它可以免费下载和安装

[字体下载链接](#)

The Dimension ID and View
correspond to the 3D PDF
尺寸 ID 和 视图 对应 3D PDF

The Dimension ID and View correspond to the 3D PDF
尺寸 ID 和 视图 对应 3D PDF

GD&T entries use a font called "SWGDT".
It is free to download and install.

[Link to download font](#)

GD&T 条目使用一种称为 "SWGDT" 的字体
它可以免费下载和安装
[字体下载链接](#)

Revision Change Report (if applicable)版本变更报告（如果适用）

Revision history will be documented with Revision Change Reports for MBD models. The report contains the geometry and PMI differences between two revisions, with embedded 3D models

修订历史记录将与 MBD 模型的版本变更报告一起记录。该报告包含两个版本之间的几何和 PMI 差异，并带有嵌入式 3D 模型

1 Shows **groups**, where most changes will be in “Ungrouped”. There are separate groups for Tables and General Notes.

显示组，其中大多数更改将在“未分组”中。表格和一般注释有单独的组。

显示组，其中大多数更改将在“未分组”中。表格和一般注释有单独的组。

2 Lists the **individual differences** in the selected group. Select a difference to highlight it on the model.

列出所选组中的个体差异。选择一个差异以在模型上突出显示它。

3 Details will be listed when an individual difference is selected. Select a property to display the old and new values.

选择个体差异时会列出详细信息。选择一个属性以显示旧值和新值。

4 Shows a **side-by-side view** of the difference when it's selected. File and revision names are shown above the model views. The 3D models can rotate, pan and zoom.

选择时显示差异的并排视图。文件和版本名称显示在模型视图上方。3D 模型可以旋转、平移和缩放。

5 For **Table Changes**, select the group and drop-down arrow. Then select **Edit**. A pop-up window with the change description will appear.对于表更改，选择组和下拉箭头。然后选择编辑。将出现一个带有更改说明的弹出窗口。

JavaScript Window

Group name: GENERAL NOTES

Comment: Item 2 "Finish" information change

Approved flag

Revision Change Report (ctd.) 版本变更报告 (ctd.)

Additional Information:

附加信息:

Filters to view Geometry or PMI changes only
过滤器仅查看几何或 PMI 更改

Detail List		▲ Prev	▼ Next
<input checked="" type="checkbox"/> Show diff only	<input checked="" type="checkbox"/> Geometry <input checked="" type="checkbox"/> PMI <input checked="" type="checkbox"/> Attributes	No model views ▼	
Group name	Element name		
General Notes Change(1)	[Diff] Face Geometry : Diff.All		
Pulley Table Change(1)	[Diff] Face Geometry : Diff.1		
Ungrouped(13)	[Diff] Face Geometry : Diff.2		
	[Diff] Face Geometry : Diff.3		
	[Add] GD&T : / Surface Profile8		
	[Add] GD&T : / Surface Profile7		
	[Diff] Dimension : ChamferDepth1		
	[Diff] Dimension : Diameter2		
	[Diff] Dimension : DistanceBetween7 / Surface Profile7		
	[Diff] Dimension : Diameter13		
	[Diff] Dimension : Surface Profile3		
	[Add] Dimension : / Surface Profile8		
	[Rem] Dimension : Radius9 /		

Legend

[Diff] Item is different in new revision

新版本中的项目不同

[Add] Item was added in new revision

在新版本中添加了项目

[Rem] Item was removed in new revision

项目在新版本中被删除

Example - Face Geometry Changes

示例 - 面几何更改

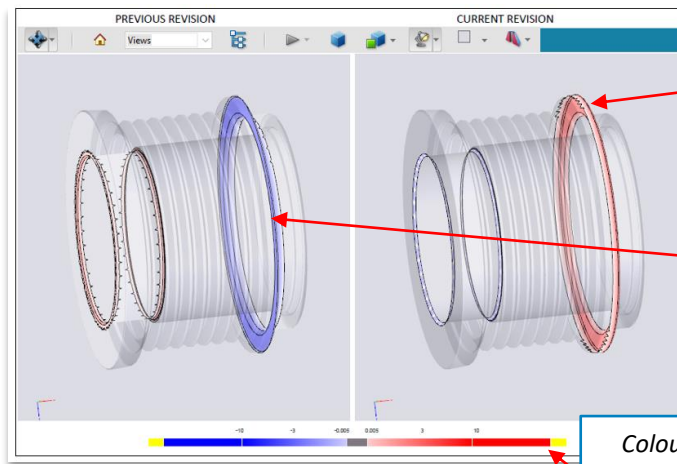
For any selected Face Geometry item, clicking on Max Deviation will display the deviation values in the Property section. 对于任何选定的面几何项目，单击最大偏差将在属性部分显示偏差值。

Element name
[Diff] Face Geometry : Diff.All
[Diff] Face Geometry : Diff.1
[Diff] Face Geometry : Diff.2
[Diff] Face Geometry : Diff.3

Property	Value (First Model)	Value (Second Model)
[Diff] Feature	0.250000 mm	0.250000 mm
[Diff] Max deviation	0.250000 mm	0.250000 mm
[Diff] Max deviation coordinate		

Diff.All will show all geometry changes on the model, using the Blue <--> Red colour scale. It's a good way to see an overview of all the geometry changes at once.
差异(所有)将使用蓝色 <--> 红色色标显示模型上的所有几何变化。这是一次查看所有几何变化概览的好方法。

Diff.(1,2,3,..) will show individual changes.
差异(1,2,3,..)将显示个别更改



Red = More material
红色=多材料

Blue = Less material
蓝色=少材料

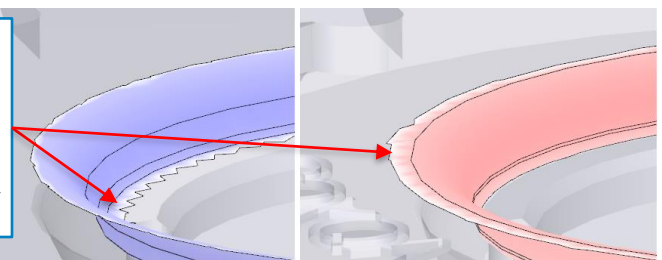
Colour scale: Magnitude of change correlates with colour saturation
色标: 变化幅度与颜色饱和度相关

White or light faces with jagged edges = No change

These are usually faces that are tangential to an actual design change. In this example, only the fillet radius (blue/red portion) changed

边缘呈锯齿状的白色或浅色面 = 无变化

这些通常是与实际设计更改相切的面。在此示例中，仅圆角半径(蓝色/红色部分)发生了变化



Adding Comments and Measurements in a 3D PDF

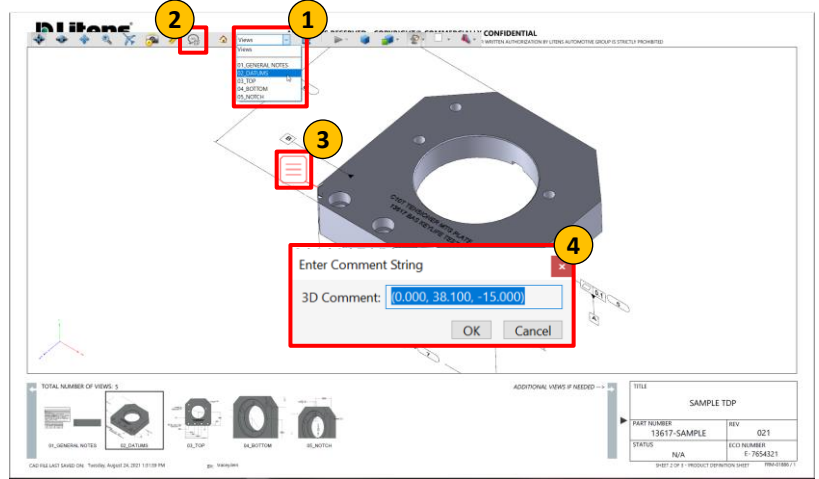
在 3D PDF 中添加注释和测量值

Adding Comments 添加评论

You can add comments to a view:

你可以向视图添加评论：

- 1 Select the desired view**
选择所需的视图
- 2 Click the Add 3D Comment button**
单击添加 3D 注释按钮
- 3 Click on a location on the model to anchor the comment, and then click where you want to place it**
单击模型上的某个位置以锚定注释，然后单击要放置它的位置



- 4 Type the comment in the box that appears (by default, the comment is the anchor's coordinates). Click OK or press ENTER to save.**

在出现的框中输入注释（默认情况下，注释是锚点的坐标）。单击确定或按 ENTER 保存。

Additional Adobe Help Article: [Commenting on 3D designs in PDFs](#)

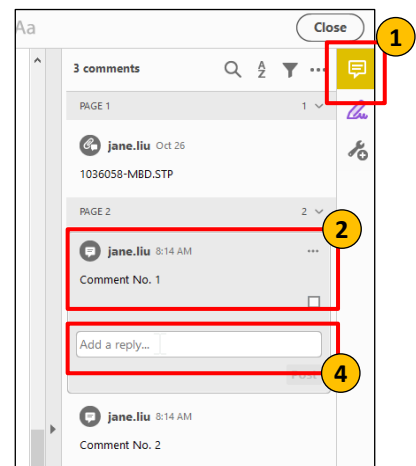
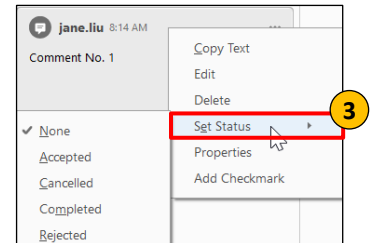
其他 Adobe 帮助文章: [评论 PDF 中的 3D 设计](#)

Reviewing Comments 查看评论

The Adobe Comment Tool allows users to: Adobe 评论工具允许用户：

- Reply to a comment 回复评论
- View previous replies 查看以前的回复
- Set status on a comment 设置评论状态

- 1 To view comments, click the Comment tool on the right side of the page.** A list of all comments and replies will appear 要查看评论，请单击页面右侧的评论工具。将出现所有评论和回复的列表
- 2 When a comment is selected, the corresponding view will be activated, and the comment will be highlighted in the view.** 选择评论时，会激活对应的视图，该评论会在视图中高亮显示
- 3 To set a status on a comment, select 'set status' in the comment option menu.** Next, select the desired status 为评论设置状态，请在评论选项菜单中选择“设置 状态”。接下来，选择所需的状态
- 4 To reply to a comment, select the comment and type in the reply in the text field.** Click 'Post' to post the reply 回复评论，请选择评论并在文本字段中输入回复。点击“发布”发布回复

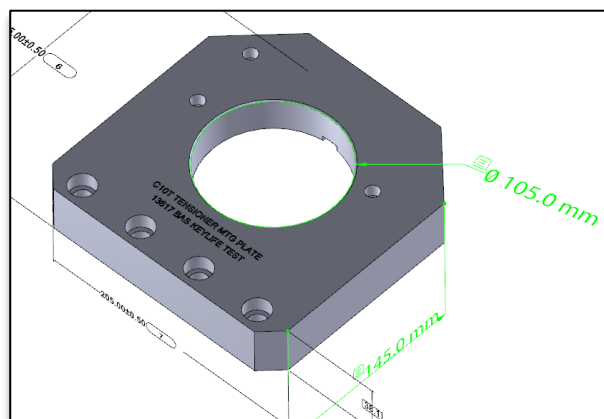


Additional Adobe Help article: [Managing Comments in Adobe](#)

其他 Adobe 帮助文章: [在 Adobe 中管理评论](#)

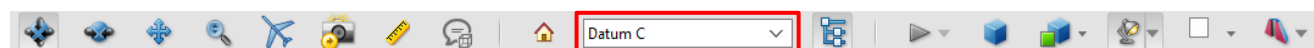
Adding Measurements 添加测量

Measurements can be added and saved on the 3D model. 可以在 3D 模型上添加和保存测量值。



To add a measurement: 添加测量

1. Select the view you want to make the measurement on. 选择要在其上进行的测量的视图。

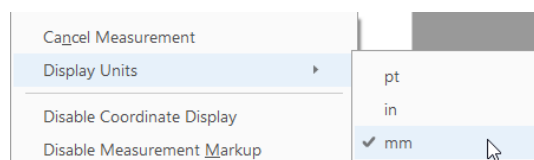


2. Select the 3D Measurement Tool  选择 3D 测量工具

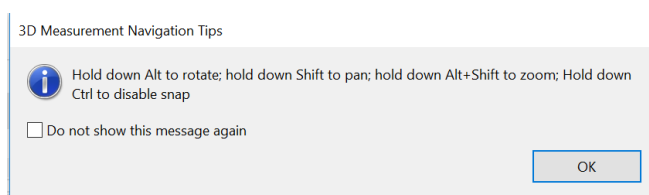
3. Change unit of measurement (optional; it uses the drawing's units by default) 更改测量单位（可选；默认使用绘图的单位）

- Right click and hover over *Display Units*
右键单击并将鼠标悬停在显示单位上

- Units can also be changed under 单位也可以在下面更改
Edit > Preferences > Measuring (3D) 编辑 > 首选项 > 测量 (3D)



4. If needed, use the keyboard shortcuts to view the model from a suitable perspective (the point/line/surface where you begin the measurement should be visible) 如果需要，使用键盘快捷键从合适的角度查看模型（开始测量的点/线/面应该可见）



5. Enable the suitable Snap Enable(s) and Measurement Type required for the measurement. 启用测量所需的合适的捕捉启用和测量类型。



6. Hovering over a feature will highlight it when measuring. Click on the feature(s) to take the measurement. Click again to place the measurement. 将鼠标悬停在某个要素上会在测量时突出显示它。单击特征进行测量。再次单击以放置测量。

Additional Adobe Help Article: [Measuring 3D objects in PDFs](#)

其他 Adobe 帮助文章: [测量 PDF 中的 3D 对象](#)

Revision History 修订记录

Refer to Compliant Pro for revision release dates.有关修订版发布日期，请参阅 Compliant Pro。

Revision 修订	Sections Changed 更改的部分	Changes Made 所做的更改
0	-	Initial Release 初次释放
1	Title page封面	Released on C-Pro 发布于 C-Pro Added Copyright on title page, revision history在标题页添加版权，修订历史
2	Recommended Adobe Settings 3D PDF Overview Viewing Attachments 推荐的 Adobe 设置 3D PDF 概述 查看附件	Revised recommended Adobe Security settings Updated 3D PDF template Added more info+examples to Revision History Report 修订了推荐的 Adobe 安全设置 更新了 3D PDF 模板 向修订历史报告添加了更多信息+示例
3	-	Added Chinese Translation of document
4	-	Added German Translation of document