



ROLLER CHAIN PART
USER DEFINED FEATURE
INSTRUCTIONS



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Overview

The roller chain part UDF (User Defined Feature) is intended to provide a simple and robust solution for the creation of standard roller chains for both millimeter and inch part models. The UDF also provides feedback to the user in many ways.

Some of the feedback includes:

- Actual modeled pitch
- Actual designed length
- Number of chain segments
- Verifies if pitch is standard (status)
- Recommended purchase length (minimum)

The following image illustrates the results of a completed (mm) part using the roller chain part UDF.

STANDARD ROLLER CHAIN PITCH SIZE PER CHAIN No.														
	25	35	40	41	50	60	80	100	120	140	160	180	200	240
mm	6.350	9.525	12.700	12.700	15.875	19.050	25.400	31.750	38.100	44.450	50.800	57.150	63.500	76.200
in	0.250	0.375	0.500	0.500	0.625	0.750	1.000	1.250	1.500	1.750	2.000	2.250	2.500	3.000

NOTE: SET YOUR INPUT PITCH VALUE FROM THE CHART ABOVE
PART MODEL UNITS MUST BE MILLIMETER OR INCH AND YOUR PITCH MUST CORRESPOND TO THE CORRECT MODEL UNITS

INPUTS TIP: SET SELECTION FILTER TO ANNOTATION TO SELECT VALUE

TARGETED CHAIN PITCH: 9.525

THE TARGETED CHAIN IS A LIGHTWEIGHT STANDARD (i.e. No. 41): FALSE

DESIGN RECOMMENDATIONS AND RESULTS

STATUS: **OK** STANDARD PITCH USED FOR CALCULATIONS

RECOMMENDED PURCHASE LENGTH: 400.05 MIN

DESIGNED LENGTH: 386.71

CHAIN SEGMENTS: 42

DESIGNED PITCH: 9.2073

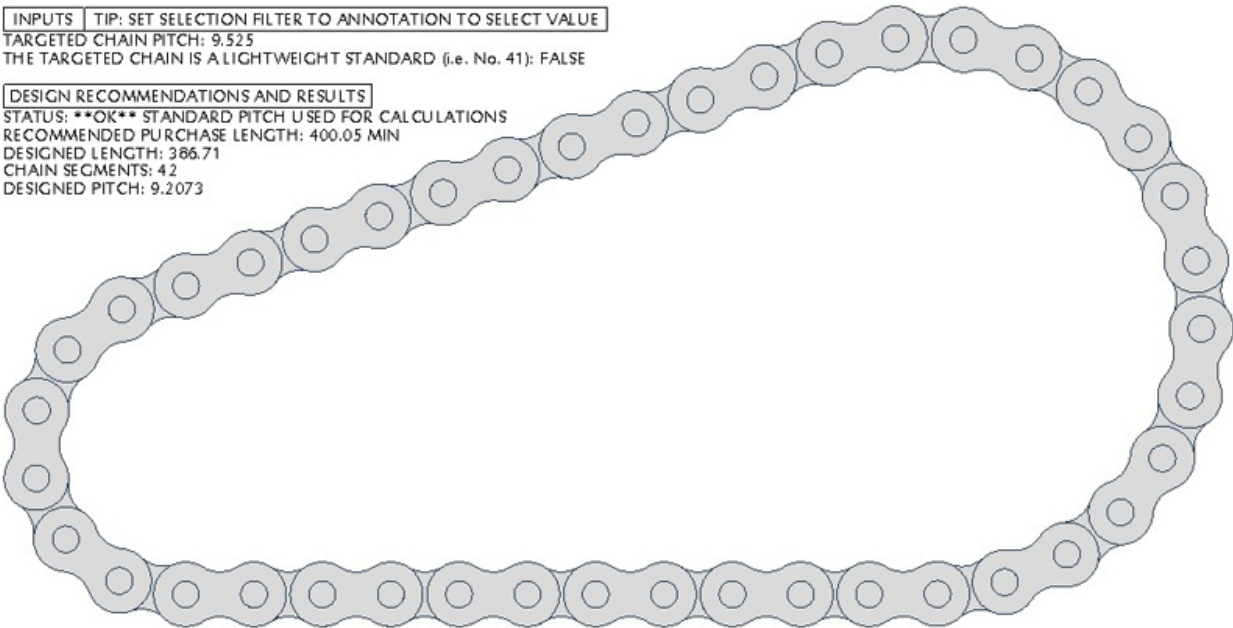


Figure 1

Requirements

To use the roller chain part UDF the user must have:

- PTC's Creo Elements Pro or newer version (i.e. Creo X.X). Commercial or Educational UDF's are provided
- A part model in either millimeter or inch units
- Within the part mode a composite curve representing the path or stage for the roller chain

Some examples of composite curves:

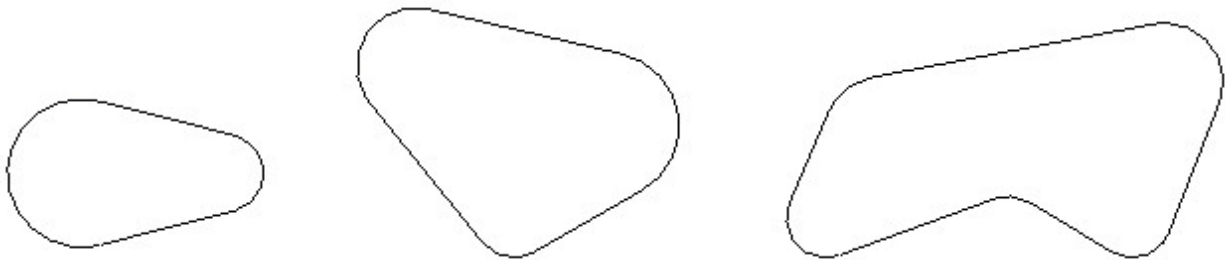


Figure 2

Tip: It is also recommended that the user have a basic understanding of the expected chain pitch. If this is unknown at time of placement of the UDF the user may want to initialize the UDF using the smallest standard pitch available for the model units ($mm=6.35$ and $in=.25$)

Millimeter Example

Create or open a part that contains a composite curve.

1. **Insert>User-Defined Feature**, "roller_chain_part", **Open, OK**
2. Depending on your model you may be prompted to select how to handle your UDF dependency. Accept the default "**Advanced reference configuration**".

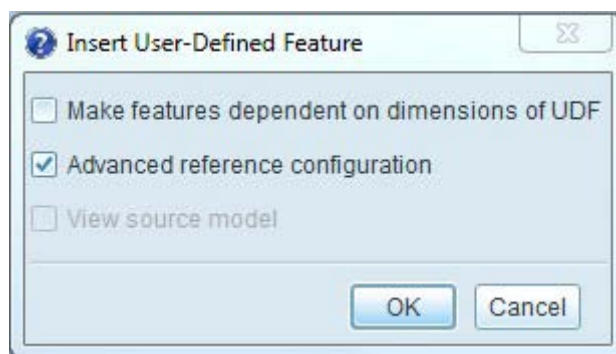


Figure 3

- Next, the UDF feature placement dialog box will appear. Utilize the **Variables** tab to set your chain pitch value if known. Standard values for millimeter parts are shown in figure 1.

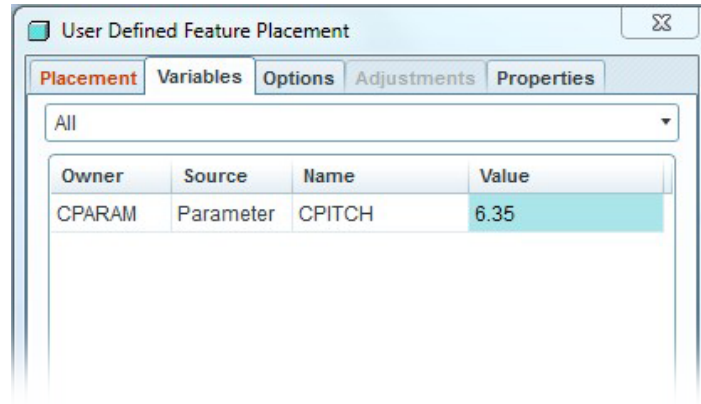


Figure 4

- Lastly, select the **Placement** tab to select your curve and click **OK** (green check mark).

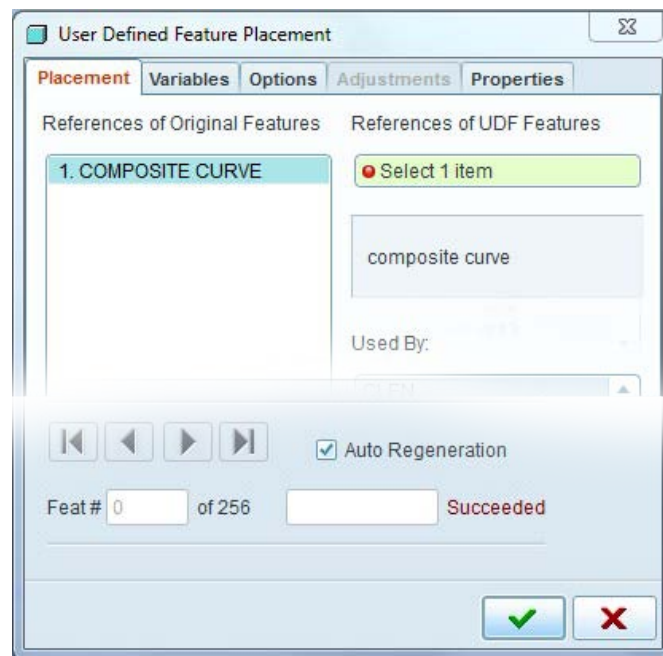


Figure 5

Inch Example

Create or open a part that contains a composite curve.

- Insert>User-Defined Feature**, "roller_chain_part", **Open**, **OK**

2. Depending on your model you may be prompted to select how to handle your UDF dependency. Accept the default "**Advanced reference configuration**".

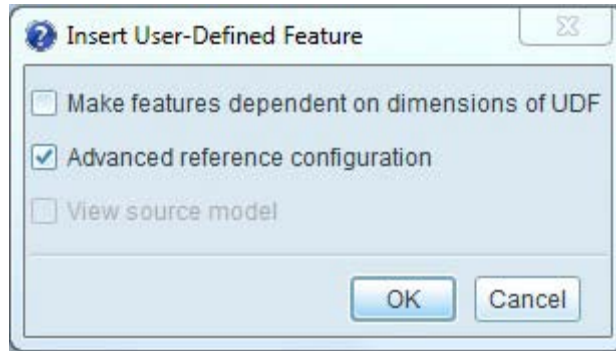


Figure 6

3. Because the part you are placing the UDF into is of unit inch you will receive an information prompt. Select **OK** and continue

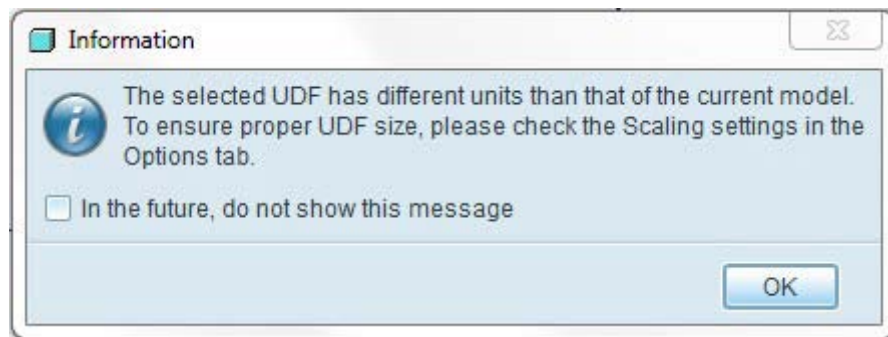


Figure 7

- Next, the UDF feature placement dialog box will appear. It is critical that when placing the UDF into an inch part that you enter the **Options** tab and select the **Keep dimension values** option.

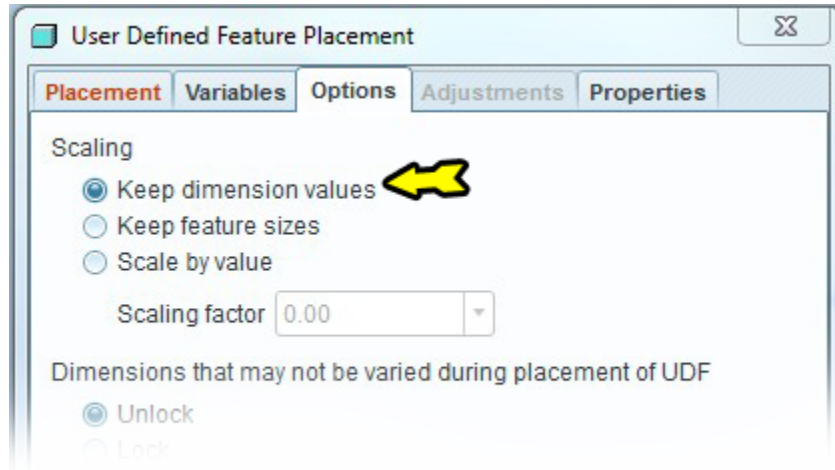


Figure 8

- Next, utilize the **Variables** tab to set your chain pitch value if known. Standard values for inch parts are shown in figure 1.

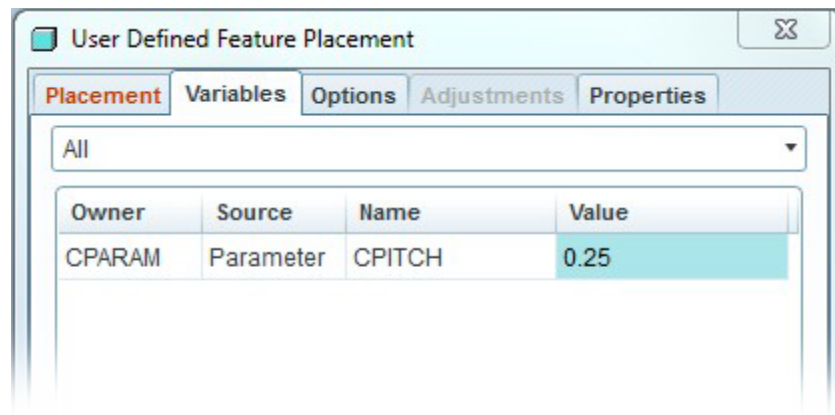


Figure 9

6. Lastly, select the **Placement** tab to select your curve and click **OK** (green check mark).

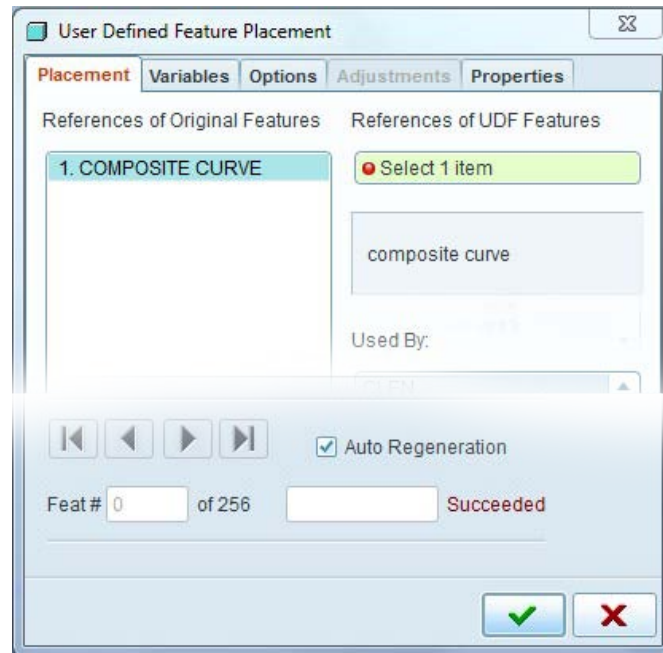


Figure 10

Understanding The Displayed Annotation

There are some very important aspects of the Roller Chain UDF that advanced users may want to consider.

1. Understand that the results produce a visually appealing chain. However, the results vary the actual pitch of the chain to fit your designed curve/path.
2. The results allow the user to make modifications to the inputs of Pitch and if the chain is of type "lightweight" (i.e. standard #41). These modifications can be made by simply editing the annotation for both item directly in the displayed annotation.
3. The status section in the results will indicate if you used a value that is non-standard and produce a warning.
4. The results will indicate the recommended purchase length of the chain based on your current design curve/path and your selected pitch.
5. The results will always indicate an even number of chain segments.

Because the UDF produces a visually appealing chain users will want to consider making adjustments to their designed curve/path. The ideal situation is to have the designed length = recommended purchase length. To achieve the ideal situation users may want to consider utilizing PTC's BMX to drive the UDF's analysis feature "CLEN" (Chain Length) to equal the Feature Parameter CTL (Chain Target Length) found in the feature "CPARAM".

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