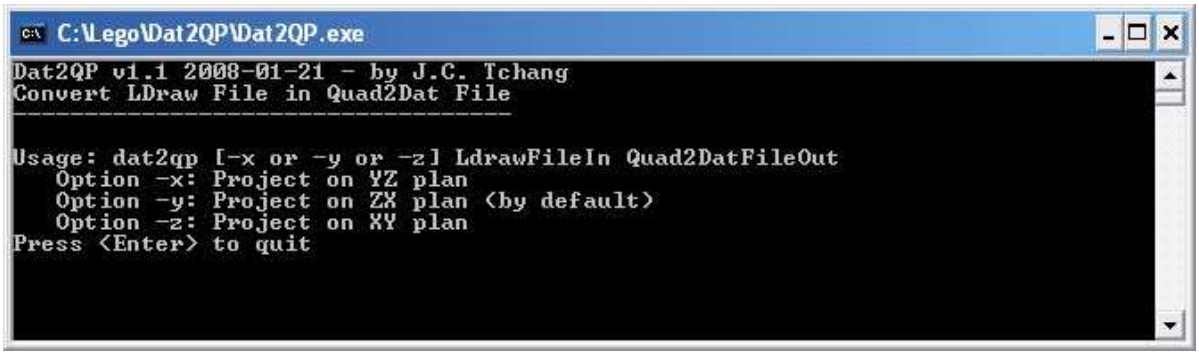
Dat2QP: LDraw to Quad2Dat converter

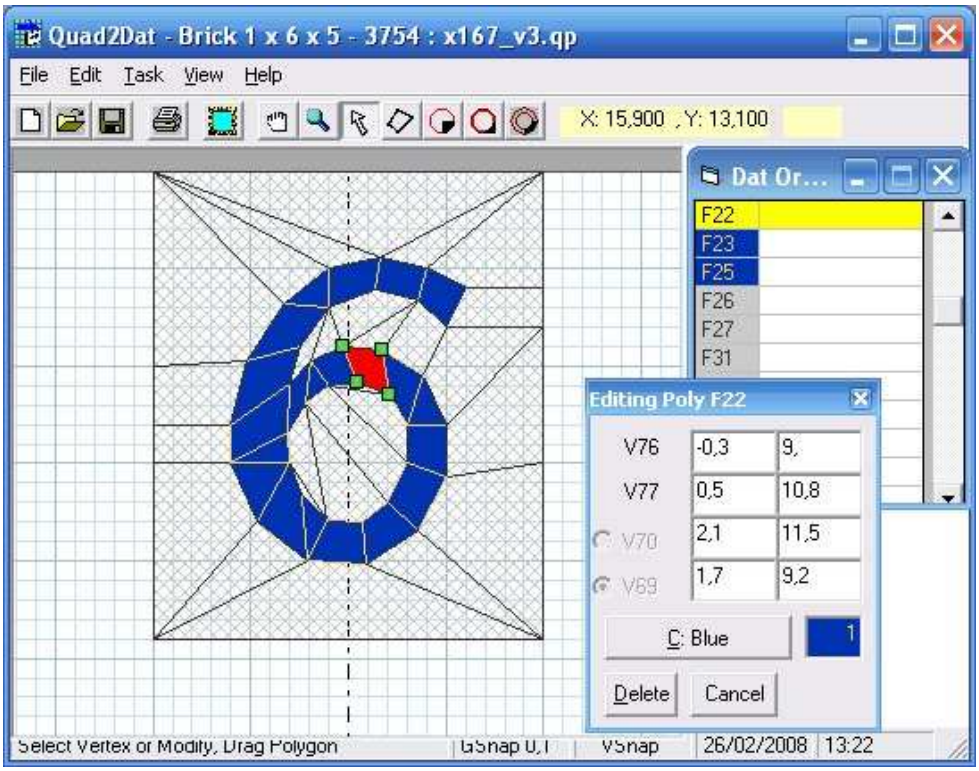
Dat2QP is a tool written in C++ by J.C. Tchang. It allows to convert a LDraw file into a **Quad2Dat** one.



Dat2QP sample run, showing usage.

Purpose of the program

Quad2Dat is a program written by **Chris Alano**, allowing creation of patterns for LDraw parts. Despite many imperfections and crashes, this tool remains the best in its category. Thanks, Chris. You may download it **here**.



Quad2Dat sample run.

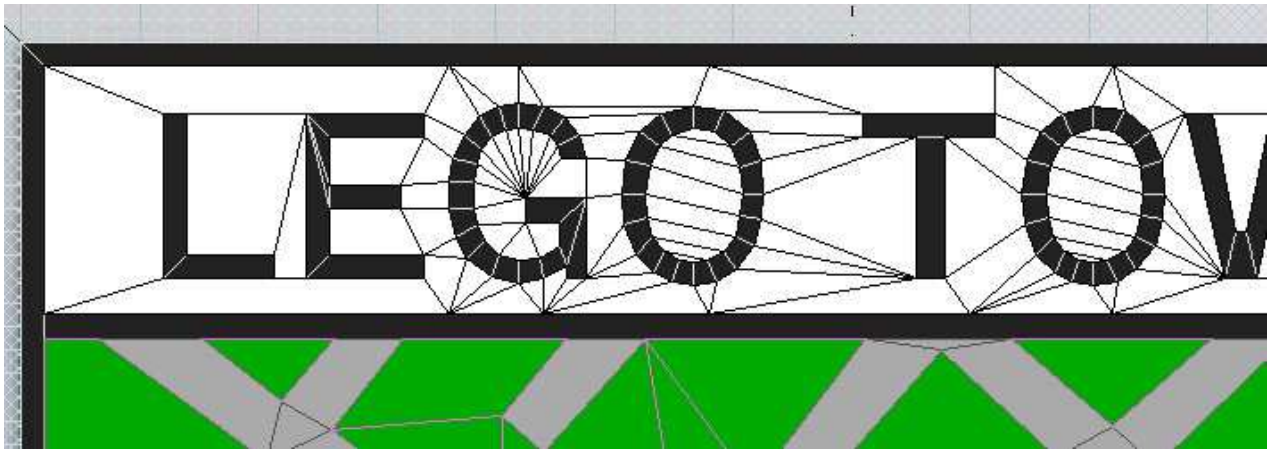
The purpose of **Dat2QP** tool is to allow recovering existing LDraw patterns to easily modify or complete them using **Quad2Dat**.

Dat2QP converts 3D quads or triangles to 2D (projection on a plane) and writes the result using Quad2Dat file format (.qp). You may choose projection direction along X, Y (default) or Z axis.

Another use of **Dat2QP** is to allow use of tools outside **Quad2Dat**, such as :

- Copy or mirror repetitive stuff using **MLCad** or another program.

- Use **Txt2Dat** to create the text section of a sticker.
- Retrieve special templates (not included in **Quad2Dat**) from a LDraw file.
- Etc ...



Duplication example: the first "O" letter was created with **Quad2Dat**, then duplicated with **MLcad** before creating the white background.

Example of special template: the shape is retrieved from 2586.DAT, after inlining disc primitives using LDDP, and converting the result with **Dat2QP**. Here we can see the selection of a vertex on the edge of the shape (V6).

Download

Dat2QP package, including Windows program, source file and this documentation.

No installation is required, just unzip the archive and copy the executable file (dat2qp.exe) in a directory. For example, I use folder c:\lego\dat2qp.

Utilisation

Creation of input file

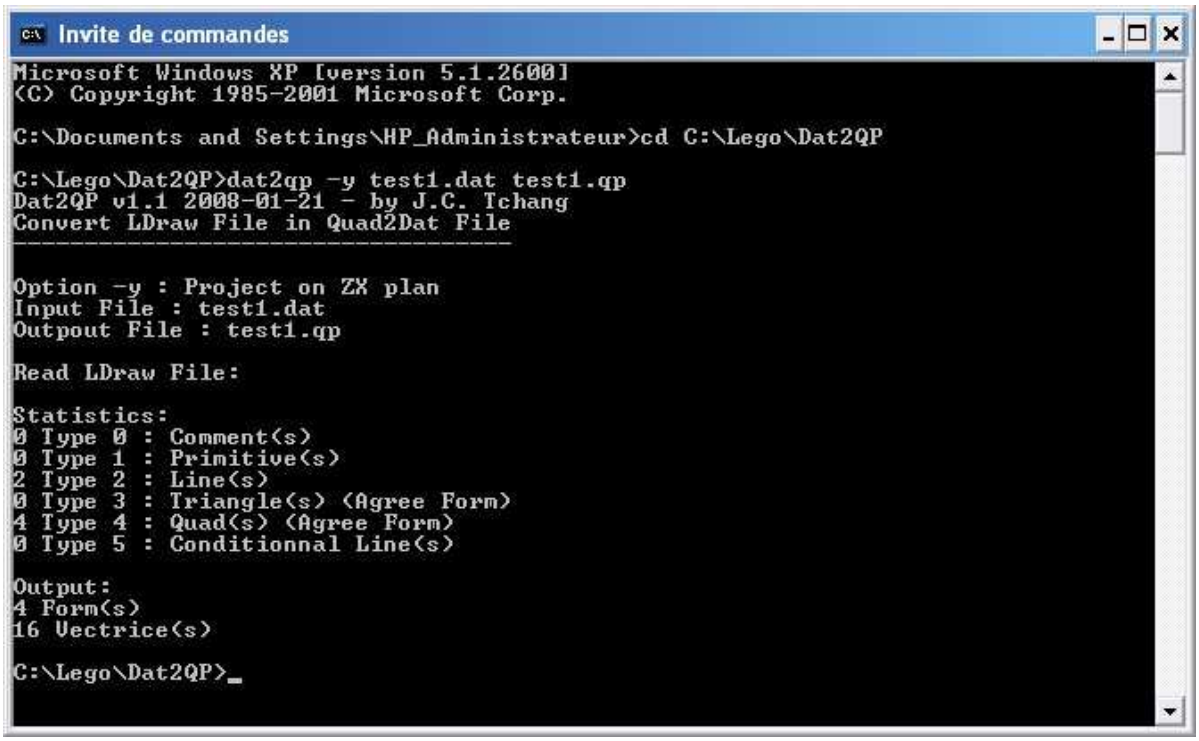
Your input file should contain the facets to be processed, that is to say triangles (type 3) and/or quads (type 4). **Dat2QP** doesn't manage primitives (type 1) that must be inlined by a tool such as **LDraw Design Pad (LDDP)**.

Place this file in the install folder of **Dat2QP**, e.g. in c:\lego\dat2qp.

Converting with Dat2QP

Open a "Command prompt" window (DOS box on older systems), then go to **Dat2QP** install folder: type the command cd c:\lego\dat2qp, or if you are not a command prompt wizard, just type cd followed by a space character, then from a Windows explorer opened on **Dat2QP** install folder, drag and drop the folder icon from the address bar onto the command prompt window, select this window and hit key. This is easier, especially if the install pass contains long file names.

Type in the command:
dat2qp [-x | -y | -z] input_file.dat output_file.qp
for example :
dat2qp -y test1.dat test1.qp



Sample use.

Using the output file with Quad2Dat

You may then use the output file, test1.qp for example, with **Quad2Dat**.

Note : if you get this error message when opening the file in **Quad2Dat**: "Run-time error '13': Type mismatch", your system is setup with a comma "," instead of dot "." as fractional part separator. Use your favorite text editor to replace all commas "," with dots ".".

The default template used by the conversion is the 1x6x5 brick. If the facets converted with Dat2QP do not fit the template, just hide it in Quad2Dat options: *View / Options...*, than in "Display" tab, uncheck "Template".

See Quad2Dat manual for more information.

Warning: **SAVE OFTEN** under different names when using Quad2Dat, because it crashes in many case with lost

of the data previously recorded.

Dat2QP characteristics

- **Dat2QP** checks that projected polygons are valid, and removes degenerated forms (common vertices), but does not check for 3 aligned vertices.
- To keep things simple, lines in the generated file are not ordered, and vertices with identical coordinates are kept separated.
- If you want to get a sorted .qp file with identical vertices suppression, just load and save the file with **Quad2Dat**.
- **Dat2QP** does not convert primitives (disc, ndis, ring, ...) since because of value rounding in Quad2Dat adjacent polygons might not have exactly the same coordinates.

Integration of Dat2QP into LDraw Design Pad

You may launch **Dat2QP** from LDraw Design Pad after creating the 3 .bat files below:
In dat2qp-x.bat :

```
cd c:\lego\dat2qp
dat2qp -x %1 %2\dat2qp-x_result.qp
```

In dat2qp-y.bat :

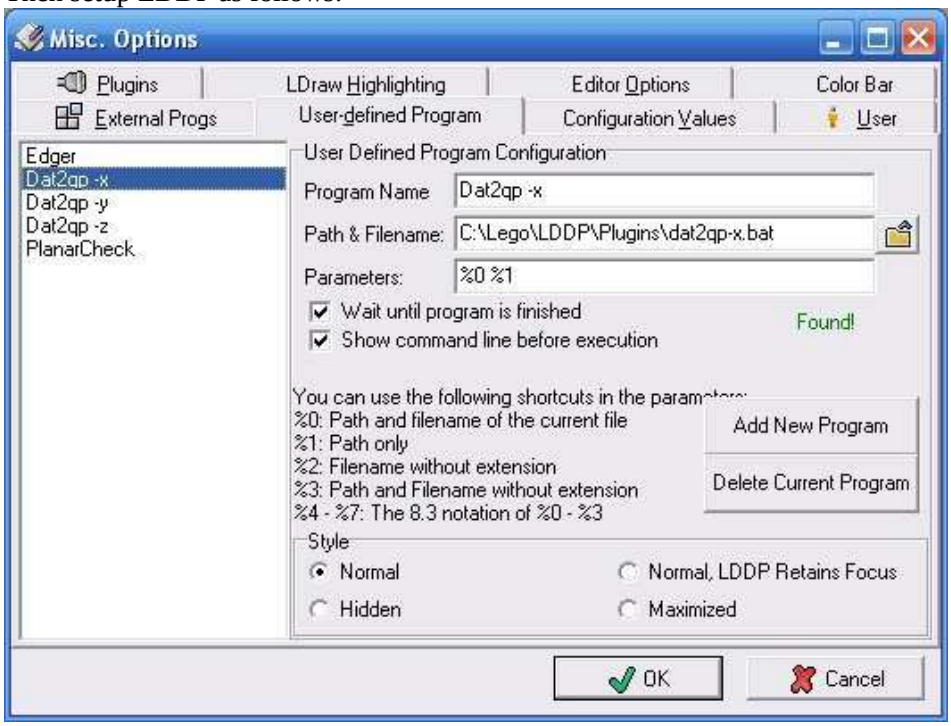
```
cd c:\lego\dat2qp
dat2qp -y %1 %2\dat2qp-y_result.qp
```

In dat2qp-z.bat :

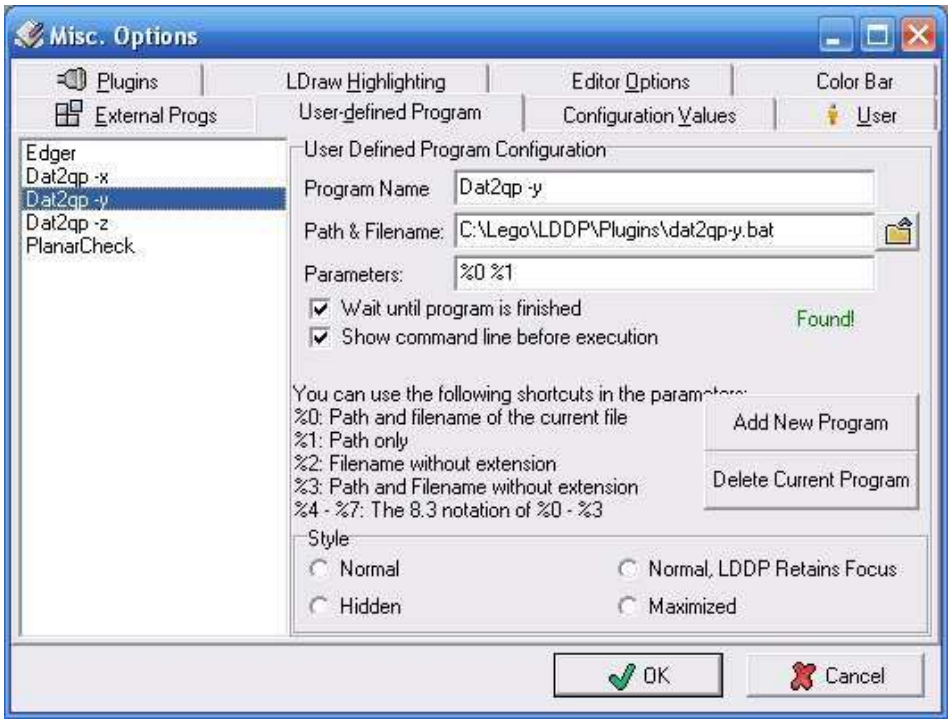
```
cd c:\lego\dat2qp
dat2qp -z %1 %2\dat2qp-z_result.qp
```

Note: The files must be placed in the folder indicated in "Path & Filename:" field of the dialog boxes below. In these example it is the LDDP Plugins folder

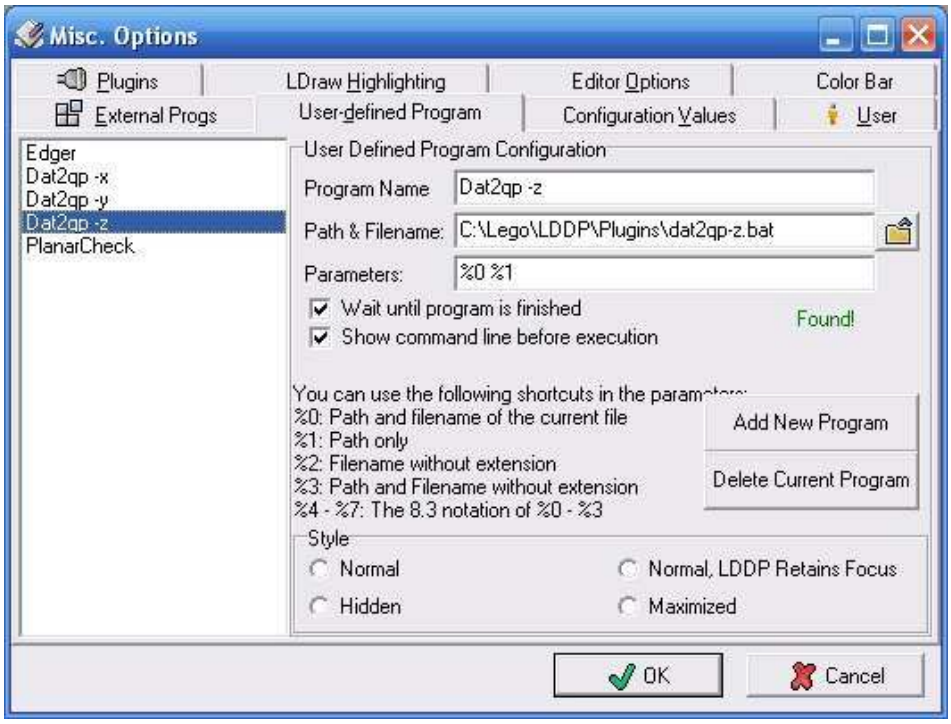
Then setup LDDP as follows:



To convert LDDP active file along X direction



To convert LDDP active file along Y direction



To convert LDDP active file along Z direction

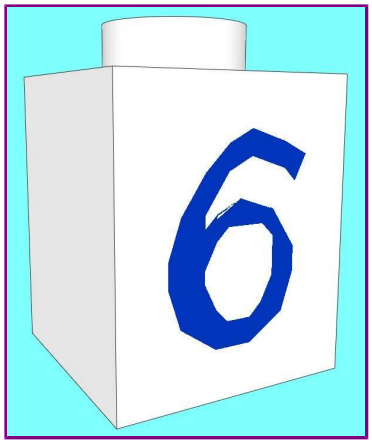
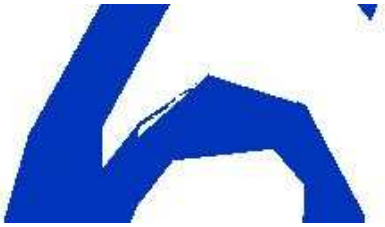
Once properly configured, you may launch Dat2QP within LDDP from the menu *Process/External Programs/User Defined Program*, or using "User Defined Program" icon in the "External Programs" toolbar:

Conversion result is in file dat2qp-x_result.qp, or dat2qp-y_result.qp, or dat2qp-z_result.qp, placed in the same directory as the original file.

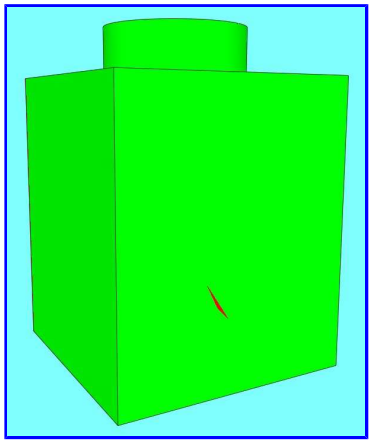
Tutorial: a concrete example

Browsing through LDraw parts library for the 1x1 brick with "6" I realize that this brick exists in two versions, one of them (3005-6.DAT) fits my needs.

Looking at this part with LDView, I see that this part is not perfect. Facets overlap, and there is a gap. I decide to improve it.

(Click on left side image to enlarge).

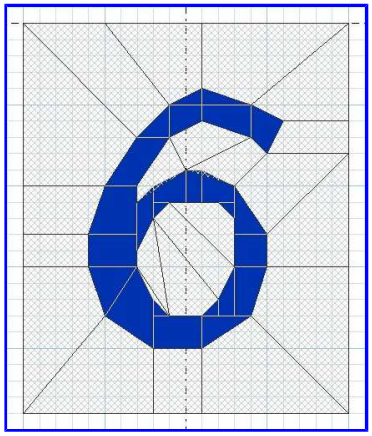
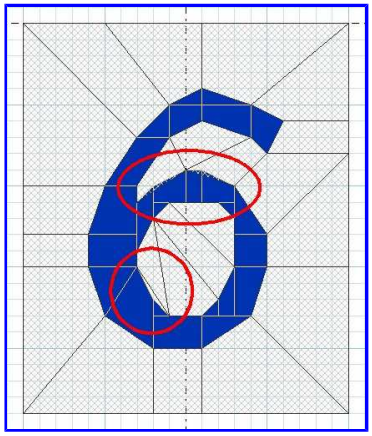


LDView BFC compliance test shows missing facet.
(Click on image to enlarge).

First I replace all faces and stud with subpart s\3005s01.dat without front.
Doing so I noticed that the bottom of the part was wrong. Using standard subparts avoid this kind of issues.

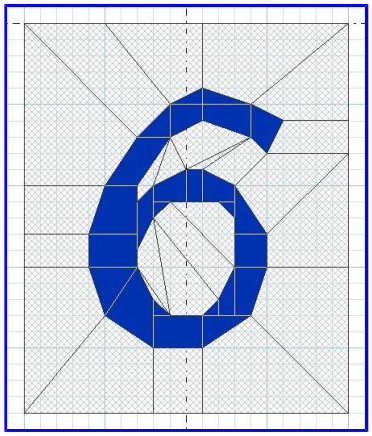
Then I convert the Ldraw file to Quad2dat using -z projection direction

A first glance with Quad2dat show two overlapping areas, and a missing triangle.

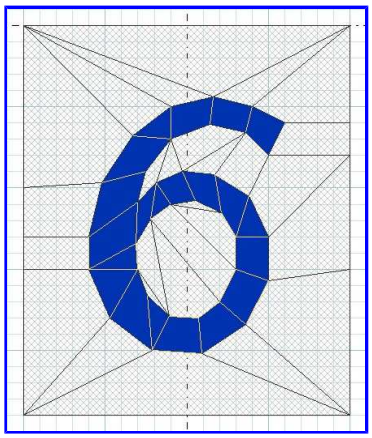
(Click on images to enlarge).

I suppress wrong facets and rebuild missing parts with quads and triangles of the right color.



(Click on image to enlarge).

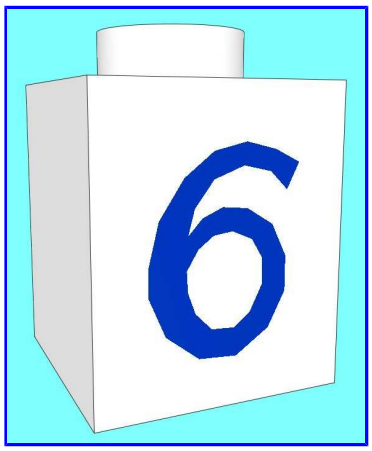
Now we can go further and suppress T junctions, always with the same method: delete facets and recreate them right.
Saving and reloading the file maybe helpful to suppress duplicated vertices.
We can then move some vertices to smooth letter curves, without adding new facets



(Click on left side image to enlarge).

This is not perfect, but looks like a bit more to right side photo. I didn't try to get exactly the same character height as there was many font variants used on this part year after year.

After a LDraw export and replacing the result in complete part file, we get our updated part.



(Click on image to enlarge).

Copyright

- Version 1.1 : Projection direction added, checks added, suppression of degenerated polygons.
- Version 1.0 : Initial Version.

French Manual: J.C. Tchang. English translation: Philo

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