

3DPS Cut Tools - User Guide

Version 1.0.12 · 3D Project Systems · contact@3dprojectsystems.com

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1. Quick Start: your first flat pattern in 5 minutes

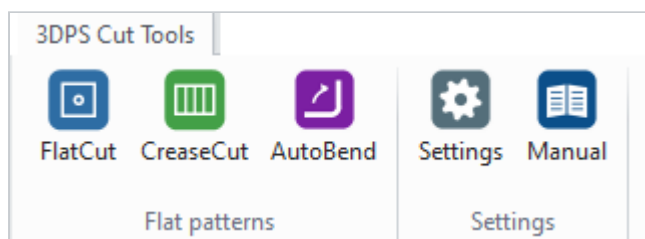
What you get: the flat length and width of a part, its cut perimeter, and a clean DXF file ready for the cutting machine - from one click. All values are in the **units of the part** (mm, inch...).

Before you start

- ZW3D 2025, 2026 or 2027 on Windows.
- 3DPS Cut Tools installed (the installer asks which ZW3D versions to add it to). The first 31 days are a free trial; see [9. Activate your license](#) after that.
- A part: a ZW3D sheet metal part, a part imported from STEP, or a flat part.

Steps

1. **First time only: check the Settings (1 minute).** Start ZW3D. A new ribbon tab, **3DPS Cut Tools**, has five buttons: **FlatCut**, **CreaseCut**, **AutoBend**, **Settings** and **Manual**.



Click **Settings** and choose:

- the **language** of the messages;
- the **attribute names** the plugin writes in your part's user attributes: use your own names, or pick a language and click **Use default names for the selected language** (LENGTH, WIDTH...);
- the **K-factor**: asked at every run, taken from the part, or one fixed value for all parts.

Click **OK**. The settings are kept for all your next runs.

2. Open the part.
3. Save the part (File > Save) if it is new or was just imported. The DXF gets the name of the part file and is saved in the same folder, so the part must exist on disk first. If you forget, the plugin asks:
 - **Yes** saves it now;
 - **No** continues without saving - only the user attributes are written, no DXF file is saved;
 - **Cancel** stops.
4. Click the command for your part:
 - **FlatCut** - for any part cut flat from a sheet, with no bend or crease lines in the DXF: laser-cut sheet metal, textiles, gaskets, foam... The DXF contains only the outline and the holes.
 - **CreaseCut** - the same, plus **one line on every bend**:

- **sheet metal** - one **bend centerline** per bend, instead of the two bend-tangent lines of a standard CAD flat pattern (for example to mark the bends on the blank);
- **corrugated plastic and cardboard** - the **crease lines**.

5. If the K-factor is set to be asked: press **Enter** to use the part's own value, or type a value (for example 0.41) and press Enter.

What you should see

In the **Output** panel, one line with the result, for example:

```
CreaseCut OK - LENGTH=503.1 WIDTH=100.0 CUT_PERIMETER=1206 CREASES=200 THICKNESS=10.00 mm
-> part_name.dxf [auto-bend]
```

- **LENGTH x WIDTH** = the size of the flat blank, **CUT_PERIMETER** = total cut length (outline + holes), **THICKNESS** = sheet thickness; CreaseCut adds **CREASES** = total length of the bend / crease lines.
- **All values are in the units of the part** (mm in this example; a part in inches gives inches).
- **part_name.dxf** has the same name as your part file and is saved in the same folder.
- The same values are written in the part, in **File > Properties > User**.
- **[auto-bend]** means the part had no bend information yet and the plugin added it (Mark Bend). **Save the part** to keep it.

```
CreaseCut OK - LENGTH=503.1 WIDTH=100.0
CUT_PERIMETER=1206 CREASES=200 THICKNESS=10.00 mm
-> T_part.dxf [auto-bend]
-> Mark Bend applied automatically; save the part to keep it.
```

The DXF of the same part (CreaseCut): the outline of the blank, and one line in the middle of each bend.



If you don't see this

- *"part does not look like sheet metal (or Mark Bend is missing)"* - the part is not a sheet of constant thickness (a solid block, a casting...). Nothing is changed. See [19. Common messages](#).
- *"file not saved yet - save it first"* - the part was never saved, so there is no file name and no folder for the DXF yet. Save it and run the command again.
- Anything else: see [20. Getting support](#).

Next: [2. Supported files](#) - the same commands work on a whole assembly.

2. Supported files

Any ZW3D file with parts in it:

- **native ZW3D parts and assemblies** - sheet metal or not, with or without history;
- **STEP files**, opened or imported in ZW3D - the plugin adds the missing bend information itself (see [5. Prepare sheet metal parts imported from STEP](#)).

FlatCut, **CreaseCut** and **AutoBend** work the same way in a **Part** and in an **Assembly**.

In a Part: the part you have open.

- A part with several bodies is processed body by body; each body gets its own DXF (`part_name_B1.dxf` , `part_name_B2.dxf` ...). Identical bodies are listed once, with the quantity (`[B1 x 2]`).

In an Assembly: all the parts, in all the sub-assemblies, down to the last level - with these rules:

- **Hidden (blanked) or suppressed** components are skipped. Hiding a sub-assembly hides all the parts inside it, so they are skipped too.
- **Only some components:** select them in the assembly tree (**Ctrl + click**) before you click the command. Only the selected components (and what is inside them) are processed.
- A part used several times (copies, patterns) is processed **once**.
- **Standard parts** - ISO, DIN or JIS in the name (screws, nuts, washers) - are skipped.
- **Tubes and profiles** are recognised: FlatCut and CreaseCut list them under *PROFILES / TUBES*, with their section and cut length, and write both in the part's user attributes (PROFILE, CUT_LENGTH). AutoBend leaves them unchanged.
- Bodies that also exist as separate parts in the assembly (a "skeleton" part) are skipped, so nothing is counted twice.

At the end you get **one report** for the whole assembly (see [12. The report](#)).

Mirrored and linked copies (made with Mirror in ZW3D) are processed too. If the report ends with "NOTE: Mirror / linked copies need Regen", see [17. What the plugin adds to your model](#).

How to... - every page has the same five blocks

What you get · Before you start · Steps · What you should see · If you don't see this

3. Get the cut dimensions and the DXF of one part

What you get: for one part - the flat size, the cut perimeter, the sheet thickness (and the crease length with CreaseCut), written in the part, plus a DXF for the cutting machine.

Before you start

- The part is open (not an assembly) and saved at least once.
- Settings checked once (see [1. Quick Start](#), step 1).

Steps

1. Click **FlatCut** (outline and holes only) or **CreaseCut** (outline, holes and bend / crease lines).
2. If asked, answer the K-factor question (**Enter** = the part's own value).

What you should see

- In Output: FlatCut OK - LENGTH=... WIDTH=... CUT_PERIMETER=... THICKNESS=... mm -> part_name.dxf
- part_name.dxf next to the part file.
- The values in **File > Properties > User**.
- The tag at the end of the line tells you how the part was handled:
 - no tag - the part already had its bends defined in ZW3D;
 - [flat] - a flat part (no bends): measured directly;
 - [auto-bend] - the plugin added the bend information (Mark Bend) - **save the part**;
 - [flatten] - the bends were already known to ZW3D (for example a mirrored copy); the plugin only created the flat pattern - **save the part**.
- A part with several bodies gives one line and one DXF per body (part_name_B1.dxf ...).

If you don't see this

- *"part looks like sheet metal but has NO Mark Bend"* - the plugin could not add the bend information automatically. The line below it tells why. Apply **Mark Bend** by hand and run again.
- *"part does not look like sheet metal"* - not a sheet of constant thickness; nothing is changed.
- *"profile, not sheet metal"* - a tube or profile: no DXF, but the section and cut length are written in the part (PROFILE, CUT_LENGTH).
- *"standard part (ISO in name) - skipped"* - the file name contains ISO, DIN or JIS.

4. Process a whole assembly - or only some components

What you get: one run for all the parts of an assembly, a DXF and the attributes for every part, and one report at the end.

Before you start

- The assembly is open and active, and saved.
- To process **only some** components: select them in the assembly tree (**Ctrl + click**). Without a selection, all visible components are processed.
- Hide (Blank) what you don't want: hidden components are never processed.

Steps

1. Click **FlatCut** or **CreaseCut**.
2. If a window "*Before processing, please check*" opens, read it:
 - parts with **more than 50 bodies** usually are purchased parts (motors, lamps...): **Yes** processes them too, **No** skips them (they are listed in the report), **Cancel** stops;
 - parts with **unsaved changes**: their DXF follows what you see on screen - save them afterwards.
3. Answer the K-factor question if asked.
4. Wait. Large assemblies show the progress in Output (... 40/117 parts (34%)). **Esc** stops after the current part (see 10).

What you should see

At the end, the **report** in Output (and in the log file), for example:

```
=====
      CreaseCut - Assembly report
=====
PROCESSED OK (4):
  Mounting_Plate  L=300.0 W=200.0 P=1676 B=0 mm [flat]
  Bracket_Hem    L=169.2 W=120.0 P=749 B=360 mm [auto-bend]
STANDARD PARTS (ISO/DIN/JIS in name) - skipped (1):
  ISO 4017 M8x16  (ISO)
PROFILES / TUBES - cut length, no DXF (1):
  Square_Tube_20x20x2  (closed profile (tube 20x20x2.0, L=500.0))
=====
CreaseCut: Mark Bend applied automatically on 3 part(s) [auto-bend] - save the assembly (and parts) to keep it.
```

Every part appears once, in one section. All sections are explained in [12. The report](#). If parts got [auto-bend] or [flatten]: **save the assembly and its parts** (File > Save All).

If you don't see this

- "*the selection contains no components - all visible components are processed*" - you selected something that is not a component (a face, a feature). Select components in the tree.
- A part you expected is missing - is it hidden, or a standard part (ISO/DIN/JIS in the name)?
- *SHEET METAL WITHOUT MARK BEND* section - see [3. If you don't see this](#).

5. Prepare sheet metal parts imported from STEP (AutoBend)

What you get: the bend information (Mark Bend) and the flat pattern added to bent parts that came from STEP, so ZW3D treats them as sheet metal - without exporting anything.

You don't need AutoBend before FlatCut or CreaseCut: they do the same step automatically when a part needs it. Use AutoBend when you only want the parts prepared, for example to open the flat pattern in ZW3D, to make a drawing of it, or to work on the part with the ZW3D sheet metal tools.

Before you start

- A part or an assembly, opened or imported from STEP, and saved.

Steps

1. Click **AutoBend** - or **FlatCut** / **CreaseCut**, which do the same step and also write the dimensions and the DXF.
2. Answer the K-factor question if asked.

What you should see

- In a part: AutoBend: MARKED - 2 bends, t=1.50 .
- In an assembly, the report: **MARKED** (bend information added), **ALREADY HAD BENDS** (not changed), **FAILED - apply Mark Bend manually, NOT SHEET METAL, SKELETON**, for example LM10MZF-2_POS3 (2 bends + 5 hems, t=1.00) .
- **Save the part / the assembly** to keep the changes.

If you don't see this

- *FAILED - Mark Bend could not be applied (or unfold check failed)* - ZW3D could not unfold the part with the bends found. The part is left exactly as it was. Apply Mark Bend by hand.
- *NOT SHEET METAL* - not a sheet of constant thickness, a profile, or a standard part.

6. Work with parts that have hems

What you get: correct flat patterns for parts with hems (edges folded back 180°), imported from STEP - nothing extra to do, the plugin recognises the hems.

Before you start

- As for any part (3) or assembly (4).

Steps

1. Run **FlatCut**, **CreaseCut** or **AutoBend** as usual.

What you should see

- In the report: part_name (2 bends + 5 hems, t=1.00) (AutoBend) or the usual line with [auto-bend] .
- "parts with hems - the unfolded copy is kept in the hidden layer FLAT". A part with hems cannot be folded back by ZW3D once its hems are unfolded, so the plugin works on a copy: the part you see stays folded, the unfolded copy is kept in a **hidden layer named FLAT**, and the flat pattern and the DXF come from it.
- The part's mass in File > Properties is set from the folded part, so the copy is not counted twice.

Keep in mind

- **Do not delete the FLAT layer** or the copy in it: the flat pattern of the part depends on it.

If you don't see this

- *FAILED* on a part with hems - see [5. If you don't see this](#).
-

7. Show the cut dimensions in your drawing

What you get: LENGTH, WIDTH, THICKNESS... of each part as columns in the drawing's BOM.

Before you start

- The plugin has run on the parts (the values are in File > Properties > User).

Steps

1. In the drawing, open the **table format** of the BOM.
2. Set the attribute type to **User**: the plugin's attributes (LENGTH, WIDTH, THICKNESS...) appear in the list.
3. Add the ones you want as columns.

What you should see

- The values of each part in the BOM.

If you don't see this

- Old values after a new run of the plugin: **Regen** the drawing.
-

8. Change the language, the attribute names or the K-factor

What you get: the plugin talks in your language, writes the attribute names you use in your drawings, and uses the K-factor you want.

Before you start

- Nothing - the Settings window can be opened any time, with or without a part.

Steps

1. Click **Settings**.
2. **Messages:** *Auto (follow ZW3D), English, Romana, Deutsch or Turkce*.
3. **Attribute names** (Length, Width, Thickness, Cut perimeter, Creases, Profile, Cut length) - your own names or the predefined ones: type your own names (A-Z, 0-9 and _, up to 63 characters), or pick a language above and click **Use default names for the selected language**.
4. **K-factor:**
 - *Ask at every run* - the question appears at each run;

- *Part default* - the value saved in each part (Sheet Metal Attributes), no question;
- *Fixed value* - the same value for all parts (between 0 and 1, for example 0.41), no question.

5. Click **OK**.

What you should see

- "3DPS Cut Tools: settings saved (...)" in Output. The next run uses the new settings; no restart.
- If you renamed the attributes: the next run removes the old names from the parts it processes and writes the new ones. Attributes you added yourself are never touched.

If you don't see this

- "... is not a valid name" - use only A-Z, 0-9 and _ (no spaces).
- "the fixed K-factor must be a number between 0 and 1".
- The settings are personal (one file per Windows user, for all ZW3D versions).

9. Activate your license

What you get: FlatCut, CreaseCut and AutoBend working after the 31-day trial.

Before you start

- During the trial, each run shows how many days are left. Each command (FlatCut, CreaseCut, AutoBend) has its own license.

Steps

1. Click **Settings** and find your **Machine ID** (it identifies this computer).
2. Click **Copy Machine ID** and send it to contact@3dprojectsystems.com, with the commands you need.
3. You receive a license key for each command. Paste each key in its field in **Settings**.
4. Click **OK**.

What you should see

- "3DPS Cut Tools: FlatCut license saved." - and in Settings: *FlatCut - licensed* (or *licensed until* a date).

If you don't see this

- "the key is not valid for this computer" - the key was made for another Machine ID, or it was not pasted completely.
 - "the key pasted at FlatCut is a CreaseCut key" - paste each key in the field of its command.
 - "the license expired on ..." - ask for a renewal at contact@3dprojectsystems.com.
 - The license is tied to this computer. Changing computers: send the new Machine ID.
-

10. Stop a long run

What you get: a long assembly run stopped cleanly, with a report of what was done.

Steps

1. Press **Esc** while the plugin is working.

What you should see

- The plugin finishes the part it is working on, then stops: "*STOPPED with Esc after 40 of 117 parts - the report shows only what was done.*"
- The report lists only the processed parts. Their DXF files and attributes are complete.

If you don't see this

- A very large part (hundreds of bodies) can take a while before Esc is checked again - wait for the current part to finish.

11. Commands

All commands are in the ribbon tab **3DPS Cut Tools** and work in a Part and in an Assembly.

Button	What it does	Writes in the part	DXF
FlatCut	flat size and cut perimeter of each part	LENGTH, WIDTH, THICKNESS, CUT_PERIMETER (tubes / profiles: PROFILE, CUT_LENGTH)	outline and holes
CreaseCut	the same, plus one line per bend / crease (sheet metal: bend centerline; corrugated plastic, cardboard: crease line)	the same + CREASES	outline, holes and bend / crease lines
AutoBend	adds the bend information (Mark Bend) and the flat pattern to parts imported from STEP	-	-
Settings	language, attribute names, K-factor, license	-	-
Manual	opens this guide	-	-

12. The report

FlatCut and CreaseCut end every run on an assembly with a report in Output (and in the log file). Each part appears once, in one section.

Section	Meaning
PROCESSED OK	DXF and attributes done. Line: name L= W= P= [B=] units [tags]
SHEET METAL WITHOUT MARK BEND	looks like sheet metal, but the bend information could not be added - apply Mark Bend by hand and run again
IGNORED - not sheet metal	not a sheet of constant thickness (blocks, castings, hardware)
SKELETON multi-body (skipped)	a part whose bodies also exist as separate parts in the assembly
MULTI-BODY PARTS	parts processed body by body (one DXF per body)
STANDARD PARTS	ISO, DIN or JIS in the name - skipped
PROFILES / TUBES	tubes and profiles: section and cut length, no DXF
ASSEMBLIES WITH OWN GEOMETRY	solids drawn directly in an assembly (not in a part) - not processed
PURCHASED PARTS?	more than 50 bodies, skipped at the start (your choice)

Tags at the end of a line:

Tag	Meaning
[flat]	a flat part, without bends
[auto-bend]	the plugin added the bend information (Mark Bend) - save the part
[flatten]	the bends were already known to ZW3D; the plugin only created the flat pattern - save the part
[B1 x 2]	body 1 of a multi-body part, found 2 times

AutoBend has its own report: **MARKED, ALREADY HAD BENDS, FAILED - apply Mark Bend manually, NOT SHEET METAL, SKELETON**. A marked part shows what was found: name (2 bends + 5 hems, t=1.00) .

13. Attributes written in the part

Written in **File > Properties > User, in the units of the part**. The names can be changed in Settings (your own names or the predefined ones).

Default name	Value	Rounded to (mm / inch)
LENGTH	length of the flat blank	0.1 mm / 0.01 in
WIDTH	width of the flat blank	0.1 mm / 0.01 in
THICKNESS	sheet thickness	0.01 mm / 0.001 in
CUT_PERIMETER	total cut length: outline + holes	1 mm / 0.1 in
CREASES	total length of the bend / crease lines (CreaseCut)	1 mm / 0.1 in
PROFILE	tubes / profiles: TUBE 20x20x2, PROFILE 40x40	-
CUT_LENGTH	tubes / profiles: cut length	0.1 mm / 0.01 in

A multi-body part gets the attributes only if all its bodies are the same part; otherwise each body has only its DXF.

14. What is in the DXF

- **Continuous lines** - the outline and the holes: what the machine cuts. Their total length is CUT_PERIMETER.
 - **Dashed lines** - markings (for example the edges of a formed area): not cut, not in CUT_PERIMETER.
 - **Bend / crease lines** - CreaseCut only, one line per bend or crease (on sheet metal: the bend centerline, not the two bend-tangent lines), in their own colour (5, blue). Their total length is CREASES.
 - Lines drawn twice by ZW3D (a continuous and a dashed copy of the same edge) are cleaned up, so the machine does not cut an edge twice.
-

15. Files created next to your model

File	Where	When
part_name.dxf	next to the part file	every part processed (overwritten at the next run)
part_name_B1.dxf, _B2 ...	next to the part file	multi-body parts, one per body
model_name_Command.log	next to the opened part / assembly	every run (overwritten at the next run)
Command.log	%USERPROFILE%\3DPS\CutTools\	when the model is not saved, or its folder path is too long
model_name_Command.3dpsdiag	next to the log	only when turned on in <i>Settings</i> (off by default) - a diagnostic file for support (encoded, see 20)

Your settings are kept in %APPDATA%\3DPS\CutTools\CutTools.ini (one file per Windows user, for all ZW3D versions).

16. Settings

Field	Choices
Messages	Auto (follow ZW3D), English, Romana, Deutsch, Turkce
Length, Width, Thickness, Cut perimeter, Creases, Profile, Cut length	the attribute names (A-Z, 0-9, _, up to 63 characters)
Use default names for the selected language	fills the names in the language chosen above
K-factor	Ask at every run · Part default · Fixed value (0 to 1)
Diagnostic file for support	off (default): no diagnostic file; on: each run also writes the <code>.3dpsdiag</code> file next to the log (see 20)
Open log folder	opens the folder with the log of the open model
License (FlatCut, CreaseCut, AutoBend)	the state of each license and the field for its key
Machine ID / Copy Machine ID	the ID of this computer, needed for a license

Changes apply from the next run, without restarting ZW3D.

17. What the plugin adds to your model

To unfold a part, ZW3D needs to know where its bends are. Parts drawn with the ZW3D sheet metal tools already have this information; parts from STEP do not. When it is missing, the plugin adds it to the part (**Mark Bend**) and creates the flat pattern (**Flatten**) - the same steps you would do by hand. That is why you see `[auto-bend]` or `[flatten]`, and why you should **save** the parts afterwards.

- If the plugin cannot unfold a part correctly, it **removes what it added**: the part stays exactly as it was.
- **Parts with hems**: the unfolded copy stays in the hidden layer **FLAT** (see 6). Do not delete it. The part's mass (File > Properties) is set from the folded part.
- **Mirrored / linked copies**: ZW3D keeps the data of a mirrored copy in its **parent part**, so the plugin writes the attributes (or the Mark Bend) there. The copy shows the change after **Regen** - that is the note "*Mirror / linked copies need Regen*" at the end of the report.

18. K-factor and the flat length

When a sheet is bent, the inside is compressed and the outside is stretched. Somewhere between them is a layer that keeps its length; the **K-factor** says where it is, as a fraction of the thickness (0 = inside, 0.5 = middle). The flat length depends on it: the same part with another K-factor gives a slightly different flat length.

- Typical values are between 0.3 and 0.5; **0.41** is a common default.
- The right value depends on the material, the thickness and the tooling - **ask your bending shop** which value they use.

- Set it in **Settings > K-factor** (one value for all parts), or keep each part's own value (*Part default*, from the part's Sheet Metal Attributes).

19. Common messages and what to do

Message	What to do
<i>file not saved yet - save it first</i>	save the part, run again
<i>part does not look like sheet metal</i>	nothing to do - not a sheet part
<i>part looks like sheet metal but has NO Mark Bend</i>	apply Mark Bend by hand, run again
<i>profile, not sheet metal</i>	nothing to do - see PROFILE / CUT_LENGTH
<i>standard part (ISO in name) - skipped</i>	rename the file if it is not a standard part
<i>the selection contains no components</i>	select components in the tree, not faces or features
<i>STOPPED with Esc after ...</i>	run again to process the rest
<i>Mirror / linked copies need Regen</i>	Regen the assembly (see 17)
<i>trial version, N day(s) left / the 31-day trial has ended</i>	see 9. Activate your license
<i>the license key ... is not valid for this computer</i>	check the key was made for this Machine ID
<i>cannot write the DXF file ... Is it open elsewhere?</i>	close the DXF in other programs, run again

20. Getting support

Write to contact@3dprojectsystems.com and attach:

- the **log file** (`model_name_Command.log`) - **Settings > Open log folder** opens its folder;
- if we ask for it, the **diagnostic file** (`model_name_Command.3dpsdiag`, same folder): turn on **Settings > Diagnostic file for support**, run the command again, then send both files;
- if you can, the part or assembly (or a STEP of it);
- your ZW3D version and your Machine ID (Settings).

The last line of the log says which files to send. The log is plain text - open it to see what it contains; it has the part names and the report.

The diagnostic file is encoded: only 3D Project Systems can read it. It holds **only technical data about the run** - measurements and the steps the plugin took, with the parts numbered (*part 3 of 12*), not named. It contains **no part names, no folder paths, no geometry and no personal data**. It is **off by default** and written only while you keep it turned on. The plugin never sends it anywhere: it reaches us only if you send it. You can delete it at any time; when you turn it off, the next run also deletes the old one next to the log.

21. Version history and license

- **1.0.12** - first public release.

The license agreement (EULA) is in the installation folder (`EULA.txt`) and at **3dprojectsystems.com/eula/**.