

List of thing to detail for enhancement requests:

1. + direction of Assembly plane offsets
2. Reference angle for sheet metal bend ----its a 10 deg bend, not 170
3. Ability to fold up given flats without altering the flat pattern as long as all sheet metal is within 10 thicknesses of non plastic sheet.
4. Additional modeling step. The machining operation. This allows details to be added to sheet metal part without effecting the flat because it's a post bending operation. This should also be allowed to be used as a direct flat editor.....ie can be pre or post bend.
5. Additional options for 2 way and 3 way corners.
 - a. Small holes allowed in 3 way corners.
 - b. Slot configuration for 3 way coroners...slot can be smaller or larger than hole.
 - c. optional feedback about 2 way corners. I want the corner cutout size as feedback.
6. Add gage to the occurrence properties page, or anywhere so that sheet metal gages can be edited for all the sheet metal parts of an assembly at once.
7. reduce the CPU overhead for keeping the gage table attached, or allow the gage to display on parts lists without the XLS being attached.
8. The sides of flanges angle needs many enhancements.
 - a. The flat is clean at angle....need graphic
 - b. The angle can start anywhere.
9. The ability to place a variable in any cell of any table. **ER-7246776 ER-7233281**
10. 2 and 3 way corner design when two sheets are involved....graphic needed
11. Simplify flat command. When all other issues cant be solved, allow the flat to be edited for simpler outlines for punch machines and 3D printing. This could be handled using #4 on this list.
12. Bitmaps, Bumpmaps, and hatch patterns for commonly used patterned steel: Diamond, Expanded, Perforated plate, Screens.
13. Ability to display the following in draft: Document name formula, Material tab name, Where used (both directions)
14. Optional flange reference of back gage rather than the distance to inside or outside of sheet.
15. Reference cube in ordered assembly and sheet metal parts. Ability to sync and co-inside the two would also be nice. **ER-7541685**
16. Reference cube, enhanced for 45 deg chams on any corner (2 way or 3 way). Very similar to the viewpoint cube options. **ER-7541685**
17. I need to learn more about feature re-use, but I would like to be able to reuse collections of flanges on other parts.
18. Allow a chain of flanges to be around the 4+ edges of a tab.
19. This one is the tallest request: Add many features to the bend sequence interface to automatically generate back gage and stick out on bend tables. I will need to make hand sketches of how the interface would work. The best description is the bend line has an arrow normal to it defaulting to facing the line from the face of the tab. The arrow can be rotated around the line to any direction the bend is cumming from. Using that line as a reference, The outer most portion of the part to and from the bend are automatically used, and can graphically be re-picked to the back gage and stick out measurements from the bend line. The stick out and back gage are new columns in the bend table.
20. Add new arrow styles for bend table graphics. Diamond shaped arrow heads that center around the destination line. Filled and hollow version for up vs down (solid is up). Even half filled (right or left....up or down) are also good options to show what bends are not 90 deg up.
21. File names as variables that can pass through mixed with string variable math. Lets say the assembly is named A. and one of the parts is named P. Lets also say I have another variable called X1. Now I want

to make a new variable = APX1. If the file name of the assembly or part, or the name of X1 changes, so the does variable name. This would help facilitate my current work around for lack of stick out and back gage for bend tables. This would be done in either the assembly or the draft file of the assembly.

Er-7497645 **ER-7264306**

22. Have switches to display cross break in any view of a sheet metal part. Also have a switch to actually edit the geometry for cross break so that other parts can match the finished profile.

ER-7233460 BEND TABLE/CROSSBREAK ANGLE DISPLAY

23. Item number in annotation. **ER-7497817 ER-7264305**

23b: FLAT PATTERN ITEM NUMBER IN DRAFT **ER-7256038**

24. All text formatting other than the baseline style should have the following controls: Multiplier factor from standard text, bold, underline, italic. This includes view labels.

25. Add the option of bend lines to flat pattern view. currently it's only the start and end of the bends that show up. This would avoid an addition sketch when my manual back gage dimensions are placed in the model file instead of draft.

26. Allow any kind of cutout/hole/slot in and around sheet metal corners. Even if they are only partially on the corner. 2 way and 3 way type corners.

27. Allow mate flipping when fully constrained (say 3 plane mates. Right Now I have to delete the second to flip the 3rd than add the second back). The program should suspend and re-apply the second mate to allow a 3rd to be flipped.

28. Be able to edit what view in draft is designated as R1

29. Allow assembly features to create separate frame members for parts lists.

30. Have all variables that display as cut length use the same control for trailing 0's (Sheet, frame, custom)

31. SE should identify when two separate parts are actually the same in two condition: In the flat, and folded. The bill of materials should reflect the folded case, but flat pattern quantities should be about the flats only.

32. NOT SURE---

33 7334072: COPY FOLDER STRUCTURE

34 7304448 HOLE TABLE HEIGHT

35 MORE DETAILED HELP ON GAGE TABLE: **ER 7269367** ---EXPLAIN WHAT THE COLUMNS ARE FOR PLEASE

36 MOVE ORDERED ORIGIN: **ER-7259267**-----NO GO NEVERMIND

37 DOCUMENT NAME FORMULA IN DRAFT **ER-7257063**

38 REPAIR INCLUDE: **ER-7233280**

39 FORMAT ANNOTAION 7231615 COMPLETE IN st8

40 ALIGN TEXT TO OTHER OBJECTS **ER-7229838**: Why have alignment object? Just allow alignment to text to any line

41: ANNOTATION IN FIELDS **ER-7229804** (use variable in a table cell)

42: EDIT ROW HEIGHT HOLE TABLES: **ER-7229800**

7229788 BACK GAGE AND STICK OUT ON BEND TABLES

7229787 DUAL MONITOR, FULL SCREEN

7222211 HEM COMMAND

Priority list for enhancement requests. Priority primarily determined by lack or time of work arounds.

#1. 3 way sheet metal corners

- Small holes allowed down to diameter = sheet thickness or all the way to 0.
- Slot configuration of 3 way. Slot gap must be able to go from 0 to hole size. The angle of bend that is opposite the slot can be any angle from 0 to 180.
- Modified slot. The hole/end of slot can be moved from center of 3 way in direction of slot all the way until the hole is outside the plastic zone. Note: there no longer a hole in the center where all this started!

Two files to demonstrate the point

Gull wing cabinet door (*G2*). Because there is no work around, I had to use two separate sheet files. One for the flat pattern, one for the bent up part.

Reel cabinet drawing (*M-CAB*). I use drafting note to get smaller holes in the corner and manually add the slot. The interaction between the 3 way hole and slot fail my flat patterns frequently. Frustrating design limitation.

#2. Cross breaks can have the option to effect the model. Sometimes other sheets need to fill the space created by adding the cross break. Bend table angle also should be adjusted as a result of cross breaks. For example, a tab with 4 flanges and a cross break centered on the tab. Say the cross break is 6 deg, are the 90 deg flanges really a 90 deg bend?

Note: there are drafting issues with cross breaks, but those issues have a work arounds, and get moved much lower in the list as a result.

Why should this be an option rather than default? Mating of other components. Most users will not want the surface to accurately depict the cross breaks so things can be mated to the flat surface. But when designing other sheets to weld up to a cross break, the model shape is required. This would also automatically solve display of cross break issues that are much further down the list.

#3. Allow flat patterns to be bent up without alteration no matter what the flat looks like within 2 thicknesses of the bend line(s). Why: the work around is very time consuming. With known flat dimension, I re-make the part completely for the flat vs. the folded.

This is the very difficult to explain, but this should be part of a secondarily step with sheet metal.

Here is the process I'm seeking:

1. Make part with tabs and flanges
2. Flatten the part
3. Edit the flat pattern in the flat
4. Have the part bent back up using the adjusted flat pattern.

Example files: V-5377, and V-ST-M

I would organize step 3 as the "machining" step where many things could be done to the sheet metal pre or post bend that effect the finished part.

#4 changes to flange design:

- Add setback as a controlling dimension to flanges
- Side angle should create crisp result and have controllable start location (distance +/- from whatever reference is used to create the flange)
- Flange controlling dimension should be switchable after creation.
- Allow “chain” flanges to go around all the sides of a tab

The most common reason I delete a flange is to add a dimension from one end or the other to where the flange starts. If I think this may be the case, I’m starting to use the 2 setback configuration more and more frequently.

The interaction between side angle and flange start/end should all work on the inside of the outer flange dimensions.

#5 Better feedback or alternate control for 2 way square cutouts. It is very difficult to achieve a specific size square corner cutout. Either provide instant feedback or allow that to be a control.

#6 Make some issues repairable:

Allow re-assignment of R1. If R1 is deleted and lots of annotation is referencing R1, the repair is really a pain. One has to figure out what the R# of the main model is, then go edit all the annotation to that R3

Allow repair of circular include commands. If an include is lost on an art, this has to be –redone including everything downstream.

#7 Better variable flow

- a. Flat pattern item number in annotation and using item callout
- b. Document number formula displayed in draft (Part and assembly)
- c. Part and assembly name as a variable (file name to Document # as example)
- d. Sting math for variable values AND variable names
- e. Allow placement of variables into any single table cell
- f. Have conditional display text strings (On/OFF). Example, X x Y x Z display in the parts Document number IF X, Y and Z exist. I don’t want x x showing up if X, Y Z don’t exist.
- g. Make trailing 0 display work the same for CutX, CutY, Protrusion, Frame, or Custom.

#8 Dimensional references made intuitive

- a. Assembly Y plane offset + in arrow direction
- b. Bend angle of sheets controlled with the amount of the angular bend (10 deg. not 170 deg.)

#9 bend table enhancement.

- a. Reference #7e
- b. Allow the following method within the bend # assignment program
 - a. When starring the bend # assignment, the part goes flat.
 - b. After first bend selected, graphically select the direction the bend is from, the back gage and stick out reference points
 - c. After bend one is input, that flange bends up, Repeat process of each bend
 - d. Add a tonnage calculation to each bend for indication of tonnage for each bend
 - e. Assign spring back value to each material, take that and crossbreaks into account when calculating bend angle display.

#10 Change or add option for mirroring of parts. I want a mirrored piece of sheet metal to be controlled from the same references as the original so that they can be edited separately and have its own CutX and CutY. No “{“ the cut display.

#11 Allow part modeling of cutouts in frame members and Automatic part file creation from frame members with a Naming program. This would allow frame pieces to be detail NOT as an assembly view.

#12 Sketch of slot tool.

#13 recognize chamfer tool for drafting, no matter how the cham was created.

#14 reference box for ordered assembly and file. Sync of the parts and Assembly cube implied when assembly driven part. This would allow an assembly driven part to be moved from one assembly to another.

#15 One step better text control:

Single setting for ALL text, right now detail views don't reference the main text controls. Annotation should use standard text as starting place, but allow Bold, Italic, underline, and a size multiplier.

#16 allow mate flipping under any condition. Example: 3 plane mates. Have to delete one of them to allow a flip. Have the program suspend and re-assign the last mate not being flipped it to make it work.

#17 Display cross breaks in draft as dotted lines, any perspective.

#18 Speed up gage editing. Make the XLS work faster and/or allow gage in the Occurrence properties so that all gages can be edited at once.

#19 Have program recognize when multiple flats are identical for qty display in draft. Sometimes this could change the parts list display, other times not, depends on how the parts are bent...see #20

#20 have program recognize when multiple bent parts are identical or a mirror for qty display in draft.

#21 display bend line in model flat pattern view

#22 Bit maps and matching hatch patterns for drafting/rendering display of patterned metals. Diamond plate, expanded metal, perf plate.

#23 New diamond arrow shape diamond centered on bend line. Filled, Hollow, Half filled to be used in flat pattern bending table display of what direction the bend is from.