

Installation Drawings and IDF or PCF Files (3D Model files)

Introduction

Installation drawings are normally used to draw larger Isometrics which can then be broken into fabrication drawings. The Installation drawings can be used to price the installation (field) labor and Fabrication drawings will price the shop labor.

Installation drawings can be created very rapidly by importing the 3D model files produced by many engineering companies. This eliminates the need for drawing and reduces checking time before splitting into fabrication spool drawings. After importing an IDF or PCF file you may need to clean up the drawing by adjusting the locations of some of the dimensions and item tags, and you might need to change some attachment images. Note that a drawing imported from an IDF or PCF file is editable in the same way as if it had been drawn directly using AcornPipe. You can change the orientation, enlarge or reduce the drawing, shrink or stretch individual pipe lengths, add or reposition notes or details, and then save the drawing. All clean up is done in AcornPipe without having to use any third party software and most drawings can be cleaned up in about 10-15 minutes. Installation drawings are most commonly made on 11x17 size paper and fabrication drawings on legal size.

Importing

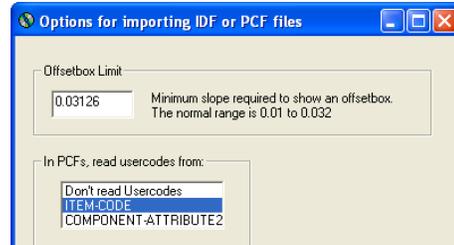
Before importing any IDF files or PCF files you need to create pipe specs in AcornPipe to match the specs in the files you will be importing. The specs should have the correct materials and wall thicknesses for all sizes of pipe and fittings on those drawings. Materials and wall thicknesses on imported drawings are taken from the pipe spec. Fitting ratings, flange ratings and flange faces are normally read from the file.

If you have been using AcornPipe for some time but are just starting to import IDF or PCF files, contact Acorn Pipe Systems Inc. and ask for an updated set of master files suitable for importing. These will contain the latest additions to the IDF/PCF import repertoire.

From the installation drawing screen, select File/Read IDF/PCF File.. Navigate to the folder holding the files, select the first one, and it will be imported. You can then scale the drawing up or down, check the attachment images, adjust dimension locations, etc. before saving the drawing using the File/Save As menu. There is a shortcut of Ctrl+I to automatically select and import the next file from the same folder. If the imported drawing has lines crossing over each other you can immediately use Set/North Arrow Direction to switch to a different orientation. You need to keep track of drawings you have imported since if they are imported again and saved they will count against the key again. Many users find it useful to move the source IDF files to a different folder after they have been imported. This helps them avoid importing the same file more than once.

Offset boxes vs slopes

When a line is close to horizontal, rather than showing an offsetbox, you may prefer to have it appear horizontal, with an arrow showing the desired slope. You can define the minimum slope required to show an offsetbox under Local Settings\IDF Settings. The allowable range is 0 to 0.05. The default value is 0.03126.



IDF and PCF files vary depending on the source application, so if you have trouble importing a specific file, please contact Acorn Pipe Systems. You may be asked to send us a sample or two of the file(s) so we can evaluate the issue.

Stretching Pipes

Suppose you have just imported a large isometric (but not saved it yet), and because of pipe crossovers or some other reason you would like to adjust pipe lengths. Select Tools/IDF or PCF Adjustments or press Ctrl-J. A small blue circle appears on the first item in the drawing. Pressing the left or right arrows moves the circle back and forth between items. Pressing Ctrl-Right moves it to the next pipe. When the circle is on a pipe, the pipe is shown in red. If you want the pipe to be longer, press the Up arrow a few times and the red line gets longer. Proceed to the next pipe to be lengthened and make a longer red line as before. Then press Enter. The iso will be reconstituted using the adjusted pipe lengths. If the lengths are still not quite what you want, you can press Ctrl-J and make further adjustments, repeating the process until you are happy with the pipe lengths. Nothing is counted until you save the drawing.

After you have saved the drawing, you can come back later and modify it, but this particular pipe stretching method will not be available unless you decide to reimport the drawing. Without reimporting the drawing you can still adjust pipe lengths by moving items around, and that works well for fairly small isos. For large isos, try to make any required pipe length adjustments before you save.

Cleaning up Drawings

Re-sizing drawings

Under Tools/Scale drawing you have the option of enlarging or reducing the drawing to fit the page. You can then use Ctrl+A to select everything on the drawing and use the direction keys to reposition the drawing exactly where you want it.

Dimensions

You can easily adjust the dimension line locations - just click on one of the arrows at the end of a dimension line and drag the line to your preferred location. If both ends of a dimension line are very close to a pipe you might need to hold down the control key while clicking on the arrow. This avoids having the branch menu come up when you don't need it. You can add a dimension by pressing F6 and then clicking on the ends of the desired dimension. The amount of the dimension is filled in automatically. If there is a dimension that is not required, right-click on one of the dimension arrows to hide it.

Weld Gaps

AcornPipe specs can allow for weld gaps or pullbacks. However, these gaps are assumed to be zero on installation drawings or when importing IDF or PCF files into installation drawings. When an installation drawing is split into spools, the gaps are incorporated automatically.

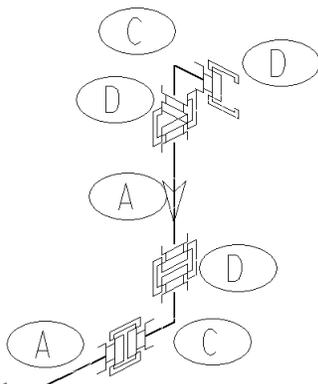
Item Tags

To move an item tag, press F9 and then drag the item tag to the desired location. While dragging a tag, the item description appears beside it and a blue circle indicates the corresponding pipe or fitting item.

Image Orientation

In many cases there will be more than one valid image choice for a flange, reducer etc. but one of those valid choices may simply look better in the context of the drawing. To change an item image choice, first press F11 to get into select mode, then select one item by clicking on its item tag. With that one item selected, press the spacebar to switch the image choice. Then click on the tag again. With flanges, reducers, and couplings there are normally just two possible choices, but nipples may have up to four choices if their end types are different.

If you need to change the orientation of an attachment, select the item and then press Q or W to switch the image through all regular directions. Once an image has been reoriented, click the tag again to unselect it. Then select the next item or press ESC to exit from select mode.



If the selected item is a Victaulic coupling, you can switch the image choice of the adjacent ends to suit the coupling image choice by pressing E while the coupling is still selected.

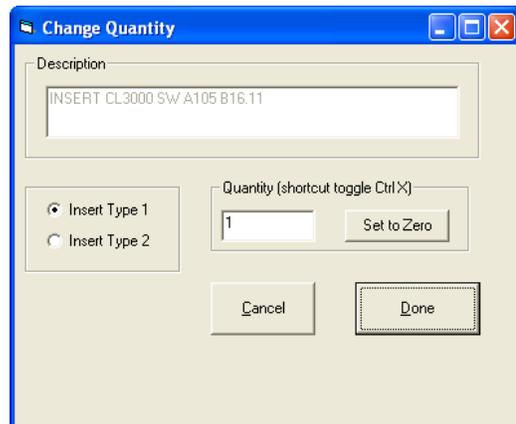
For example, to align the Victaulic coupling on the vertical leg of the upper elbow shown, press F11 to get into Select mode, click on the appropriate tag D to select only the coupling, then press the spacebar to switch to the alternate image choice for the Victaulic coupling. Then, while the coupling is still selected, press E to align the grooved end image on the adjacent pipe or fitting.

Changing Item images

As much as possible the program tries to put the correct image for attachments and inline accessories. If the image selected is not the one you want you can draw another item with the correct image, then Select the item you want to change and press T (for "Transfer"). This will transfer the new fitting image to the item you have selected. You can then use Tools/Change Quantity, then click on the Item tag and set this new image to be used for any future occurrences of this item. You can also substitute a Standard Detail for any image if the detail has been made into an item but these cannot be set for future imports. This is because Standard details do not have any direction choices to let the program select the correct image for subsequent imports.

The Change Quantity option (Shortcut: Ctrl-Q) can also be used to set the correct dia-Inch for its weld and the weight for any item. Then make these the default for future imports. Normally you would be changing attachments to different types of attachments as the program cannot know what the various images should be and will use the small shoe image as a default. You may be changing the small shoe image to be a large shoe image or on vertical lines you may just show a structural support. The structural dummy legs can be used to show any steel supports and can be drawn without a weld. With structural dummy legs the direction of the leg is selected with the right mouse button first, then when the image appears, rotate the image with the right mouse button before left-clicking to accept the one you need. This option also allows for No Image if you only need an item tag for an item such as support beams which are not going to be fabricated. The image could also be changed to be a pipe clamp, for example. As you do more imports there should be less cleanup to do on each new drawing.

SW Reducing Inserts are of either Type 1 or Type 2 configuration, depending on the fitting rating and the extent of the reduction. During importing, AcornPipe assigns Type 1 or Type 2 using a hard-coded table based on classes 3000, 6000, and 9000. If an insert is assigned the wrong type, you can change it using the Change Quantity dialog. Press Ctrl-Q and click on the Item Tag of the Insert. Then pick Type 1 or Type 2. The description in the BOM will update next time you press F4 or the BOM is regenerated.



Notes

You can select a note simply by clicking on the lower left corner of its first letter. If that point is very close to a pipe, hold down the alt key while clicking on the note. Otherwise the program may bring up the branch menu. If that happens, press ESC to back out of it.

Once you have selected a note, you can edit its text in the dialog box. When done editing, click Done. At this point you can reposition the note using the arrow keys. You can toggle between

large and small steps by pressing the 5 key. For very small steps, press the 0 (zero) key. To reorient the note, press the spacebar to step through the available directions. Once you have the note the way you want it, press Enter.

Breakpoints

Breakpoints are used to control how an installation drawing is to be broken into spools. In the Tools Menu there is an option to Add/Remove Breakpoints which allows you to click on any weld to designate a spool break at that point. The program will always assume a break at flanges. If the weld you click on is between a Pipe and Fitting you will have the option of adding Trim to the pipe at that location. Trim will be added only when the drawing is split into spools and the amount of trim is set in the Job/Spec setup under Fabrication drawings. If trim is added at a break the pipe will be given a plain end at that location and the installation labor will count a Field Cut and Field Weld for that point.

Copy/Paste

Sometimes the installation drawings you import do not terminate at the locations you want. For example, two adjacent drawings may connect at a weld, which you could eliminate by connecting at a nearby flange instead. With AcornPipe, it is possible to Copy a section or all of one imported drawing, then load another imported drawing, then click in open space and choose Paste. If an open end of the copied section matches the coordinates of an open end on the current drawing, the copied section will be pasted onto that end. You can return to the original drawing and delete the copied section if you want. If you are copying and pasting drawings together you may want to scale down drawings before you start or this can be done after they are combined.

Break into Spools

The drawing must be saved or re-saved after you make any changes before it can be broken into Spools. Selecting File/Break into Spools will bring up some controls on the right side of the screen, with a preliminary list of how many items will be on each spool. If you click on one of the spools it will select all items to be included in that spool together with any notes or details it plans to include. To change the items and details which go with a particular spool use F11 (select items) or F12 (select/notes/details) to choose items or details to be included with that spool. Details or notes can be included with more than one spool if you want. The default spool numbers used when breaking up the Isometric use the Iso control number plus an A, B, C, etc. and will remove the first character of the control number which is normally a zero. The order of the spools can be changed before breaking them by moving them up or down to change the order. Spools are saved one at a time and you have the option of editing any of the fields in the Save-As screen or adding extra drawing information. You may not want to break all items into spools and any items not included in spools will be considered field items. As you exit the installation drawing after saving spools you will be asked to re-save the drawing; this will record the control number of the destination spool for each item.

Fabrication drawings

If you have installation drawings on 11x17 size paper and the spools are going to be on legal size, you will need to move each spool to center it on the drawing page. You may also want to scale up the spool to fill the drawing area. If you exit the Installation drawings and go to Fabrication after breaking an Isometric the last few spools will be on the Recent list and can be quickly loaded and moved, or re-sized, etc.

A quick way to center a drawing is to rescale it to 95% or 105% of its current size.

Cost

Importing any IDF or PCF file is free provided you don't save it. This means you can try out the importing feature at no cost. This includes stretching and shrinking pipes and importing with different north arrow configurations. If you do decide to save the imported drawing, AcornPipe will increment the drawing counter by an amount that depends on the number of items imported. For this purpose items include pipes, elbows, flanges, etc. but not bolt sets nor inline accessories, such as gaskets. When you save an import of up to five items, there is a count of one drawing. Note that this is the same as if you had created the drawing yourself. You can then modify and add more items to the drawing manually in the normal way. If the import includes more than 5 items, the number of counts increases linearly, up to a maximum of nine counts for importing 37 or more items. So if you import a large drawing with 100 or 200 items, the nine-count maximum applies to the save. Once the imported drawing has been saved, it can be printed, modified, extended, split into spools, etc. on the same basis as if you had drawn it yourself.