

Advanced Drawing Techniques voice

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This section will introduce you to some advanced drawing techniques and when to use them. These techniques usually employ special rules, but in general are fairly easy to understand and use.

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Removed and revolved views are used when there is limited space to put the view in its normal position. Looking at the first figure you can see that the space for the right side view is limited, so it has been removed and placed elsewhere on the drawing. This view may be scaled if necessary. Since it is removed, it must be labeled.

The next figure shows a revolved view. Revolved views are removed and rotated. The rotation angle, scale, and view name are noted.

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Detail views are used for small features or when there just isn't enough room to place all the required dimensions. The detail view may be shown at an increased scale and must be labeled. This is because the view is removed. Looking at the figure, the left end of the connecting rod is shown in a detail view. Notice that the section of the part that is going to be detailed is indicated with a circle.

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Partial views are used when you don't need to show a complete view. The extra information gained by showing a complete view may not be needed or it may obscure the feature that you really want to describe. The figure shows a partial right side view. We only need the right side view to show the size of the hole. The rest of the information would just clutter up the view.

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Auxiliary views are views that are created by projecting at an angle to the principle planes. They are used mainly when a feature on the part is angled and we need to show this feature true size. The first figure shows an auxiliary projection plane. The box represents the principle projection planes. The second figure shows the orthographic projection of the object with the auxiliary view. Note that auxiliary views are often shown as a partial view.

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A related part is a part that assembles with the part you are detailing. A related view is a drawing of this related part. Since you are not dimensioning this part, it is shown in phantom line type. The figure shows a clamp that clamps on to a block. The block is a related part and the view is shown in phantom.

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A cast or molded part is created by pouring a molten material such as metal or plastic into a mold and allowed to solidify. When we say a cast part, we are usually talking about a metal. When we say a molded part, we are usually talking about a plastic. The figures show a simple casting set up. Note that the mold is made from two mating pieces. Where the pieces meet is called the parting line.

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Look at the cast bottle opener. This part was made in a sand cast. Note the rough surfaces. The smooth surfaces are created by machining the part after it has been cast. The part surfaces are usually drafted away from the parting line. This means that the surfaces are angled. This allows the part to be extracted from the mold more easily. Cast part usually have a lot of rounded corners. It is hard to make a sharp corner in a mold and even if you could, you wouldn't want to for safety and strength reasons.

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Some surfaces on a metal castings are machined after the casting process. If a surface is intended to be machined a surface texture symbol is placed on the drawing. The first figure shows the three general forms that the surface texture symbol can take and the second figure shows details about the specifications that can be made. The third figure shows the bottle opener drawing. Note the surface texture symbols, the parting line symbol, the drafted surfaces and the drawing notes. These are all commonly found on a cast part drawing.

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Welding joins two or more metal pieces by melting the joint and then allowing it to solidify. Sometime a filler rod is used to add material. Welding is a permanent means of joining pieces of metal. A weld symbol needs to be used where ever there is going to be a weld. The figure shows a few examples of weld symbols and their use.