

DeltaCad Users Group Member Submitted File Instructions/Comments/Info.

Macro File Download Title: "Isometric"

Created/Shared by DCUG Member: "CLYDSDALE"

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TITLE: (suggested macro name) "ISOMETRIC VIEW"

DESCRIPTION: This macro includes routines which set up a 3-D isometric pictorial view and then transfers user-selected points and lines from a standard 3-view orthogonal drawing to the isometric pictorial.

NOTES ON APPLICATION OF THE MACRO: Basically, the Isometric View macro is applied by setting up the 3-D isometric coordinates, and then sequentially selecting points in the orthogonal views so as to locate each feature-defining point in 3-D space. Running the macro transfers the feature points to correct locations in the 3-D isometric view. The isometric pictorial is completed by using normal DeltaCAD drawing functions to connect the feature points in the isometric view ("isoview").

Since the macro's point entities are only identified by their sequence, no other point entities can exist on the drawing. Any existing points which must not be lost can be temporarily marked using a different entity (such as an arrowhead), or a temporary second copy of the drawing can be used for creating the isometric view.

The macro expects a 3-view orthographic drawing with consistent and accurate projection of entities between the views - Front, Right Side, and Top. Rectangular boxes are added in each view which surround the object and form the basis for an isometric box ("isobox") as a visualization aide in the isometric view. If only 2 views are available, an empty "phantom" box can be created that would surround the missing view.

The Isometric View macro offers 4 subroutines:

- The "Set Layers, Clear Points" procedure prompts the setup of two convenient new drawing layers ("isobox" and "isoview"), and offers to clear existing points in the drawing.
- The "Setup Isometric View" procedure creates a 3-D, 30/60 deg isobox which surrounds the subject, aids 3-D visualization, and helps in selecting the key feature-defining points to be transferred. The macro creates the isobox on its own drawing layer, so that it can be easily turned on or off.
- The "Isopoints" subroutine is selected to transfer up to 5 feature-defining points per run. The transferred points are located on the "isoview" layer, where the isometric view is created.
- The "Isolines" subroutine is selected to transfer up to 2 lines per run, as defined by 4 end points. The lines are located on the "isoview" layer.

Points which are transferred to the isoview should be immediately used for their ultimate purpose or otherwise marked, since they must be erased when setting up the transfer of additional points or lines.

Circles in the ortho views can be created on the isometric by transferring 4 points and then using the <Draw an ellipse within> command within those points. The iso ellipse can then be scaled up to pass through the points. The <Draw an elliptical arc> command can also be used for arcs in the isoview.

All lines defining the object do not normally need to be transferred to the isometric view. After key points and lines have been transferred, the <Line with two points>, <Parallel line>, and <Slide endpoint> commands can be used effectively in the isometric view.

The isometric view turns out to be 1.23 times larger than the 3-view object. This can be corrected if desired by scaling the entire completed isometric view by 0.81.

The isometric view is a pictorial intended for illustration purposes only (do not scale for fabrication). Some "artistic license" may be used for treatment of hidden lines, etc. for best visualization of the object.

If the user becomes proficient in the procedure including the click-on sequence and the location of origin point entries, then both the "Set Layers" and the "Setup" step with its isobox can be skipped.

The following [DeltaCAD](#) drawings have been submitted which include examples of isometric views created by the macro:

[Iso_Reference.dc](#)

[Iso_Bracket.dc](#)

[Iso_Fire.dc](#)

NOTE: The above samples are available on the [DeltaCad Users Group Drawings Download Page](#).

Each of these drawings has permanent points at the 4 origin locations. You may try the transfer subroutine on any of these drawings by jumping directly to Step 11) below. Don't forget to <Erase Temp> points before trying additional transfers.

The macro is necessarily quite "picky" regarding the click-on sequence and the accuracy of the orthogonal views, so expect error messages and failures when starting out. However, if you stick with it and become reasonably proficient you will find that using the macro to add an isometric view to your DCAD drawing is not all that difficult, and is well worth the effort!

STEP-BY-STEP INSTRUCTIONS:

(See also the DeltaCAD drawing "[Iso_Reference.dc](#)")

ISOMETRIC VIEW PROCEDURE

- 1) The Isometric View macro transfers key points from the orthogonal drawing views to an isometric pictorial view.
- 2) Any point entities existing in the drawing must be removed before applying the macro.
- 3) The term "click on" is used here to mean "add a temporary point entity at that location". (Double mouse clicks for an existing location)
- 4) The sequence for clicking on the specified or selected points is critical.

SETUP AND ISOBOX OPTIONS:

- 5) The options are intended to help set up the isometric view and to create an "isobox" around the part as an aid in visualization. Jump to Item 10) to disregard these options.

- 6) Run the macro, select "Set Layers, Clear Points" to set convenient layers and delete point entities.
- 7) Draw a closed rectangular box around the part so that the box is correctly projected in each orthogonal view. Note that sides of the box may or may not be sides of the actual part. The "origin" is that box corner closest to the other views.
- 8) Click on each box corner counterclockwise from origin in the 3 views per the following sequence:

| | | | | |
|-----|---|-----|-----|-------------------|
| 1,0 | 1,1 | 1,2 | 1,3 | (Front view) |
| 2,0 | 2,1 | 2,2 | 2,3 | (Right side view) |
| 3,0 | 3,1 | 3,2 | 3,3 | (Top view) |
| 4,0 | (4,0 locates the origin point for the isometric view) | | | |
- 9) Run the macro, select "Setup Isometric View" to create the isobox on the isobox layer.

DIRECT TRANSFERS:

- 10) Delete all point entities in the drawing. Locate PERMANENT points at origin locations for the 3 orthogonal plus one isometric view in order. (1,0 2,0 3,0 4,0)
- 11) Select a key feature-defining point. Click on the point in the FRONT, RIGHT SIDE, and TOP views in order, with no skips. If a view is not available or the point cannot be located, click on the origin point for that view to maintain sequence.
- 12) Repeat for up to 5 points total
- 13) Run macro, select "Isopoints". Draw the feature or mark new points in the isometric view, erase all temporary points.
- 14) Select up to 2 feature-defining lines. Treat their ends as points -- proceed as per 11) through 13) but select "Isolines".

TROUBLESHOOTING:

- 15) An error message will usually be due to an incorrect click sequence or invalid orthogonal points. It is normally best to erase all temporary points and start again at Item 11). If the error repeats, check that the origins and selected point(s) are accurately located in the orthogonal views and start again at Item 10).