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MicroStation V8 Training Manual 2D Level 1

The first seven pages of Module 5, *Snaps and Tentative-points*, are shown below. The first pages are typical for all Modules - they provide the Module title and set out the learning objectives. The suggested time for completion of the Module is given at the end of Page 5-2.

Pages 5-3 to 5-7 are instructional pages and, in this case, introduce MicroStation's AccuSnap and manual snapping system, vital for accurate element placement.

Please note the "Tool Tip" boxes on various pages; these are located throughout the Manual to emphasize a technique or to add specific points of information.

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MICROSTATION V8
2D LEVEL 1

Module 5

**SNAPS and TENTATIVE
POINTS**

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Module Information

Prerequisites:

Module 4 MicroStation - 2D

Introduction:

As mentioned in an earlier Module, one of the major attributes of any CAD software is the ability to draw *absolutely precise* drawings. Such precision not only includes dimensional accuracy but also includes accurate *connections* between the elements in your drawing. This Module introduces the concept of *snapping to elements or locations* that assists in the accurate placement of new elements or the editing of existing elements.

Objective(s):

- 5.1 Set the Keypoint snap mode.
- 5.2 Identify (and change) snap options in the Locks setting box.
- 5.3 Use AccuSnap to automatically place tentative points and snap to elements.
- 5.4 Identify element keypoint snap locations and change Divisor setting.
- 5.5 Identify and describe all snap modes.
- 5.6 Identify (and change) the tentative point button assignment and manually place tentative points.
- 5.7 Perform snap override operations.
- 5.8 Perform “cycling” snap operations with simple elements.
- 5.9 Describe the use of tentative points as coordinate references.
- 5.10 Use the Shift-tentative point option to select snap modes.
- 5.11 Identify AccuSnap settings options.

Time:

This Module should be completed within 2.5 hours.

DISCUSSION:

It is very important that you develop speed and efficiency in the use of *snaps* when drawing or editing. I strongly urge you to practice the following procedures until you are totally comfortable with the snap options and their actions.

The process you use to ensure *accurate connection* of elements is called “snapping”, where elements are connected to each other in a variety of ways. If you are new to computer aided drafting (CAD), you must understand that dimensional accuracy and accurate connection of elements is vital in the drawing process. Without dimensional and connection accuracy you cannot dimension elements automatically or hatch enclosed areas, just to name two common CAD functions.

MicroStation uses a system of *tentative points* and *snap points* to snap to elements. As you will see, this is a two-part process that provides very flexible and intuitive snapping procedures.

MicroStation provides two methods for snapping to elements:

1. **AccuSnap**, an *automatic* snapping function that displays tentative points on elements.
2. A **Manual Tentative Point** system with which you *manually* place tentative points before accepting a snap location.

You will likely use *AccuSnap* for almost all of your drafting functions, but some snap operations only work with manual tentative points.

MicroStation also offers *four* methods of setting the snap *mode*. You can decide for yourself which method you prefer as you work through the instruction that follows.

5.1 SETTING THE KEYPOINT SNAP MODE

Before you start working with AccuSnap, it is important that you have the correct *active snap mode* selected. MicroStation provides a range of snap modes for use in a variety of drawing situations, and you need to know what modes are available and how to set them. However, to start with, I want you to set the *Keypoint* mode as the active snap mode.

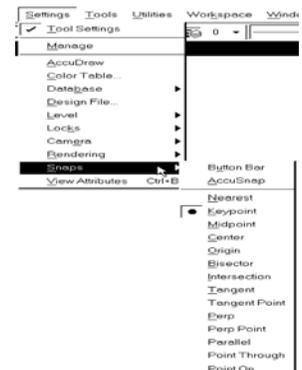
TOOL TIP !

The *active snap mode* is *always* available when drawing or editing. You do *not* need to set the active snap before each use.

In typical MicroStation style, there are several methods of setting the active snap mode. Let’s quickly run through three of them, and then you can choose which is best for you.

First, take a look at the *Snap Mode tool box*. Do the following:

Step 1 Go to the *Settings* menu and open the *Snaps* option.

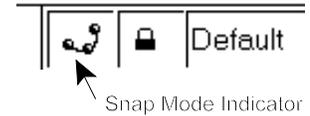


This will display a list of all the snap *modes*. One of them will have a *black dot* next to its name (most likely the default *Keypoint* mode), indicating the mode that is *currently active*.

If the Keypoint mode is *not* the active mode, then set it active by doing the following:

Step 2 Hold down the *Shift* key and *left-click* on the *Keypoint* mode.

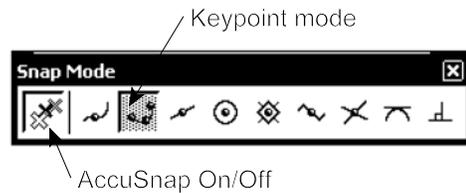
The menu will disappear. Look at the *Snap Mode Indicator* at the *bottom-center* of your screen. You should see a symbol of an arc-shaped line with three filled circles that represents the Keypoint snap mode.



Note: *This is not the best way to set a snap mode* because you must navigate through the pulldown menus.

Try a *second* method for setting the snap mode:

Step 1 In the *Settings/Snaps* pulldown, click on the *Button Bar* option.



This action will float the *Snap Mode button bar* on your screen, from which you can select the desired snap modes. This is a more convenient way of selecting snap modes but, as always, remember that a floating or docked bar will take up screen space.

TOOL TIP !

You are likely to use the *Keypoint* snap the most since it can be set to snap to both the ends and to the midpoint of elements.

On the button bar, the *first* and *third* buttons should be depressed. If the third button, the Keypoint mode, is not depressed, then *double-click* on it to make it the active snap mode. The first button turns AccuSnap On or Off.

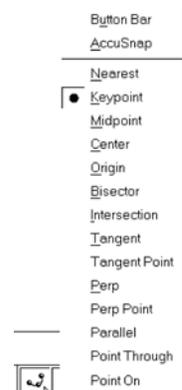
By default, MicroStation does not display all available snap modes on the button bar. Later, you will expand the button bar to show all snap modes.

Now try the *third* method for setting the active snap mode:

Step 1 Click on the *Snap Mode Indicator* at the bottom-center of your screen.

This action will pop up the list of snap modes. Again, the Keypoint mode should have the black dot indicating it is the active mode.

To set the *active* snap mode with this method, hold down the *Shift* key and *click* on the a snap mode. Try this now: hold down the *Shift* key and click on the *Center* mode. The list disappears but notice that the mode symbol has changed to a circle with a filled dot. This is the Center mode symbol. Click on the Snap Mode Indicator again. Notice the Center mode has the black dot. Hold down the Shift key and click on the Keypoint mode to set it active. Check that the Keypoint symbol is shown in the Snap Mode Indicator.



Clearly, the third method of setting the active snap mode is the most efficient if you need to conserve screen space. If you are working on a large screen, you may find that floating and docking the Snap Mode Button Bar to be more efficient. There is a fourth method you will use later in this Module.

Before you practice using the Keypoint snap there is one last setting you should look at that will come in useful later.

5.2 SNAPS and the LOCKS SETTINGS BOX

To ensure that MicroStation will actually snap to elements you need to look at the *Locks* settings box. Do the following:

Step 1 Pull down the *Settings* menu and open the *Locks* and *Full* settings box.

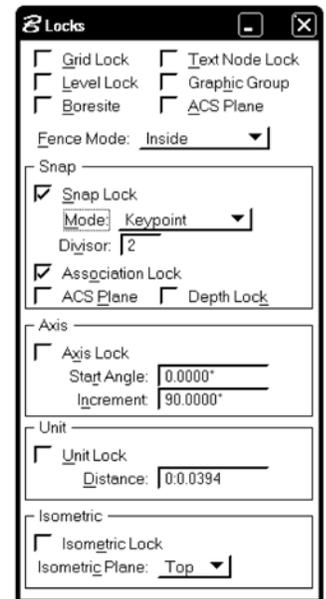
Step 2 Go to the *Snap* section of the box and set the following if they are not already set:

Snap Lock Set this to ON by ensuring there is a tick in the box. MicroStation will *not* snap to elements unless this option is on. *AccuSnap*, which you will look at next, will still work whether this setting is ON or OFF.

Mode Set the initial *Active Snap Mode* here. *Keypoint* should already be set. If another snap is shown in the field, click on the field and select *Keypoint*.

Divisor The default value is 2. Reset to that value if it is different. You will be working with this setting later. The divisor can also be set outside this dialog box.

Association Make sure this toggle is also ON. This will become a useful option later when you work with dimensions.



The above settings are the defaults for a standard MicroStation setup, and simply ensure that you are able to follow the instruction in this Module without difficulty. As a matter of interest, the Mode setting is a fifth method of setting the active snap mode, but it is so inefficient that it can be ignored.

Close the Locks settings box when you are finished.

Before you start the next Section you need to have a few line elements in your view. They should be single lines spaced apart from each other. The elements you placed in Module 3 are probably quite messy by now, so it would help to delete everything in your design and place new lines. To delete all existing elements go to *Edit/Select All*. This will select *all* elements in the design! With all elements selected, press the *Delete* key on your keyboard or click on the *Delete Element* tool. Now place several single, separated lines in the view using the *Place Line* tool.

5.3 SNAPPING TO ELEMENTS WITH ACCUSNAP

Everything is now in place for you to begin drawing lines *from* snap points on the lines already in the view. You will probably already have noticed the snapping action when you placed the elements in the previous Modules.

First work with one of the lines you should already have on you screen. Do the following:

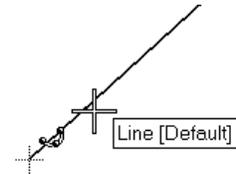
- Step 1** Start the *Place Line* tool.
Step 2 Move the cursor near *any location* on the line.

TOOL TIP !

The cursor has a "location area" around it that will find the line, so you don't need to waste time or motion trying to position the cursor exactly.

As you move the cursor *close* to the line you will see three things:

- The Keypoint snap symbol will appear.
- A small dotted "cross" will attach to the *end points* or *middle* of the line.
- A text box will pop up to tell you what you are about to snap to.

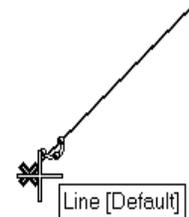


This is AccuSnap indicating that it has found *potential* snap points on the line. The *small dotted cross* is indicating the locations of *tentative "hint"* snap points.

The "hint" part implies that AccuSnap is finding *potential* snap points on the line. Note that there are three potential snap locations: *both ends* and the *middle* of the line. You will see why this is so later.

- Step 3** Move the cursor *close* to *one end* of the line.

The small dotted *tentative* snap changes to a heavy "X" shape attached to the endpoint of the line. This is a full *tentative point* and can be made into an *actual snap point* with a single left-click *data-point*. You will also notice that the line you are snapping to has been color *highlighted*. This confirms which element the tentative point is on, a very useful feature when using some of the more complex snaps or working in congested designs. *Always* take note of *which element is highlighted* when a tentative point is in place.



When the tentative point *is* in place you have three options:

1. If the *location* of the *tentative point* is where you want it, you can then enter a *data-point* to *confirm* the snap's location and a line will be drawn *from* the snap location.
2. If you don't like the tentative point location, simply move the cursor to another location and let AccuSnap find another tentative point location (that's why it's called "tentative"!). You can do this as many times as you need before you enter a *Data-point* to *confirm* the correct location.
3. If you want to *abandon* the entire snap process, press the *reset* button to cancel the operation.

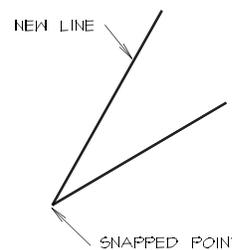
TOOL TIP !

Think of a tentative point as a *preview* of the actual snap location.

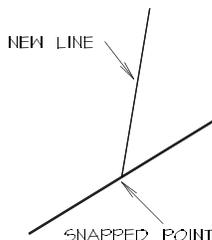
With the tentative point attached to the endpoint of the line, snap to the line and draw another as follows:

Step 4 Enter a *Data-point* to *confirm* the snap and draw a short line.

Reset to stop the line tool after drawing the short line. You have now *guaranteed* that the new line is connected *directly* to the end of the existing line.



New line starts from endpoint.



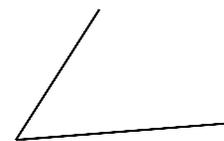
New line starts from midpoint.

Step 5 Now draw a new line from the *midpoint* of an existing line by locating a tentative-point near the midpoint of one of your lines.

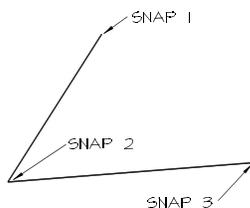
For practice, repeat these procedures several times using the remaining lines.

Try this example of snaps used with the *Construct Angle Bisector* tool which you will find on the *Linear Elements* tool box. This tool draws a line that *bisects* an angle, in this case the angle between two lines. Follow the *Status Line* prompts as you go.

Step 1 Draw the two lines shown at the right.



Step 2 Start the *Construct Angle Bisector* tool.

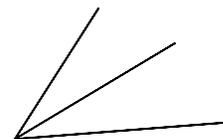


Step 3 *Snap* to the *endpoint* of the first line (Snap 1).

Step 4 *Snap* to the *angle vertex* (Snap 2).

Step 5 *Snap* to the *endpoint* of the second line (Snap 3).

The angle is bisected and the third line is drawn.



Be sure that you are completely comfortable with the basic AccuSnap tentative point and snap process before proceeding with this Module. If necessary, draw more lines and continue practicing.