

DAT/EM Systems International 2014 Merrill Field Drive, Anchorage, Alaska USA Phone (907) 522-3681 support@datem.com, web: www.datem.com Snapping Guide for the Summit Evolution Stereoplotter with DAT/EM Capture for AutoCAD

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Introduction

This guide offers hints for snapping using the DAT/EM Summit Evolution stereoplotter (Summit), DAT/EM Capture for AutoCAD (Capture), and DAT/EM MapEditor for AutoCAD (MapEditor). This includes how to set a 2D or 3D snap, snap mode settings, keyins to use for the DAT/EM Keypad and Summit's Button Manager buttons, and enforcing snaps as a post-process using MapEditor.

Do This First! Turn Off Unwanted Snaps and Tracking After AutoCAD Installation

All versions of AutoCAD install with some default locks and coordinate snaps set on, which you will need to turn off. Some of them are very important, such as grid, coordinate resolution snap, axis, and angle locks that will prevent the AutoCAD cursor from moving to or digitizing at the exact locations of the Summit cursor.

This may be done after installing AutoCAD, and either before or after configuring AutoCAD to run with DAT/EM Capture. It should be done before digitizing any vectors in AutoCAD using DAT/EM Capture and the Summit digitizer. Check the following:

1. View the icons along the lower right edge of the AutoCAD window and turn off Polar Tracking, Snap mode, and Orthomode. They are off if they do not have a blue highlight.



AutoCAD 2020 defaults shown. Turn off **Polar Tracking** (first blue highlighted icon on the left). If you find them on in your version, also turn off **Snap** mode and **Orthomode**.

Other versions may have other locks on. Hover the system mouse over each blue highlighted icon to see what it is. Turn off anything that might interfere with drawing using Summit.

Important! SNAP (SNAPMODE) is not an object snapping command! Its name can be misleading! SNAP is a coordinate resolution snap, which rounds off the coordinates of digitized points to the nearest resolution value, such as 0.01 meter or foot. *SNAP must be off for photogrammetric mapping!* SNAPMODE is a "dangerous" snap; by installation default, it is on and set to a small distance such as 0.01. You may not notice that it's on, because the rounding could be small, yet when it is on, the digitized coordinates will always be rounded. For example, if Summit is at x=100.0263 and SNAP is on with X spacing at 0.01, the digitized x coordinate will be x=100.0300. We would much rather SNAP be off so that it digitizes at the exact stereoplotter position. Turn it off with the SNAP OFF keyin (this is the same as setting the SNAPMODE variable) or right click on its icon along the lower edge of the AutoCAD window and select Settings, then uncheck Snap On:

Command: **SNAP** Specify snap spacing or [ON/OFF/Aspect/Legacy/Style/Type] <0.0100>: **off**

	Shap and Gird	Polar Tracking	Object Snap	3D Object Snap	Dynamic Input	Quick Properties	Selection Cycling		
η οπ!	Snap On (F9)			àrid On (F7)				
	Snap spacir	ng W		G	id style				
	Snap X spa	acing: Turns Sr	nap mode on	or off. You can a	lso turn Snap n	node on			
	Snap Y spa	oroffby acing: using th	/ clicking Sna ie SNAPMOD	p on the status b E system variable	ar, by pressing a	F9, or by			
					j oneet/iayout				
		and r spacing		Gr	id spacing				
	Polar spacir	ng		G	rid X spacing:	0.0000			
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	SNAPMODE (F9)	
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Note: OSNAP may be either on or off. OSNAP is used for object snapping and will be toggled often during regular use. It doesn't matter whether it is on or off now.

Use AutoCAD "Help" to look up any settings that are unknown to you. Some of them do not interfere with mapping activities or are used frequently, and you may want them visible.

(Optional, but recommended) To prevent snap mode, orthomode, or polar tracking from being turned back on by a stray mouse click, you could optionally remove their icons from the display. First make sure the modes are turned off (not highlighted in blue), because *turning off the icon display does not toggle the current mode setting!* Once the modes are off, click the three parallel lines icon on the far lower right corner. Uncheck Snap Mode, Ortho Mode, and Polar Tracking.



2. This has nothing to do with snapping, but it may bother you, so here's a bonus hint. To turn off the WCS compass that appears by default in the upper right corner of the AutoCAD view, key in on the command line:

Command: DISPLAYVIEWCUBEIN2D

Enter new value for DISPLAYVIEWCUBEIN2D <ON>: OFF

Also click the "x" on the remaining toolbar:



AutoCAD Object Snapping Commands

While using DAT/EM Capture for AutoCAD, most snapping will be done with AutoCAD's **OSNAP** modes combined with the **OSNAPZ** variable to control the elevation of the snap.

Note: The exception is the **AUTOARC3D** command, which has a built-in 2D/3D snap toggle. See page 13.

Note: The AutoCAD terms are confusing. AutoCAD's "2D Object snap" (OSNAP) and "3D Object snap" (3DOSNAP) descriptions refer to the *type of objects being snapping to*; they do not refer to the elevation of the snap point.

- In photogrammetric mapping, we typically use AutoCAD's "2D Object Snap" (OSNAP) for snapping to the type of objects we use most often, such as points, blocks, and polylines. The AutoCAD tooltip for this snap is, "*Snap cursor to 2D reference points,*" which is misleading. This snap can be 2D (xy of the snapped-to object, stereoplotter z) when the OSNAPZ variable is off and 3D (full xyz of the snapped-to object) when OSNAPZ is on.
- "3D Object snap" (3DOSNAP) is for snapping to 3D objects such as solids, which are typically not the type of objects we draw for photogrammetric mapping; however, if you often create 3D solids or surfaces, you may certainly use 3DOSNAP and 3DOSNAPZ. Just substitute it in the instructions below where we mention OSNAP and OSNAPZ.

We will discuss the more typical OSNAP and OSNAPZ combination in this document. The following sections introduce the snapping commands, first alone, and then in combination with each other. See:

- "OSNAP" immediately below.
- "OSNAPZ" on page 10
- "Combining OSNAP, OSNAPZ, and Other Commands" on page 12
- "AutoCAD Snap Overrides, Such as NEA and INT" on page 13

OSNAP

The most commonly used snap toggle is **OSNAP <ON/OFF>** along with all the OSNAP commands that set its snap modes, such as **nearest**, **midpoint**, **intersection**, **center**, and **endpoint** snapping.

Commands: '-OSNAP <On/Off/OSNAP mode-setting subcommands>

OSNAP entered directly on the AutoCAD Command line activates a dialog, but dialogs are slow and may cancel an ongoing drawing command. The - suppresses the dialog. Starting with ' makes the command transparent so it can be run during a drawing command without breaking the command. Here, we use both characters.

• If you are using a localized language version of AutoCAD, you can use either the localized language version of the command or use the English version command starting with the _ character. For example, '-_OSNAP. Most of the examples below do not show the _ character, but you can add it if necessary.

Examples of transparent and dialog-suppressed OSNAP keyins:

'-osnap off
'-osnap end
'-osnap nea
'-osnap int
There are more. See table below.

Or set more than one snap type at a time, example: '-osnap end,nea,int,cen

Each of the commands to set these snap modes (end, nea, int, etc.) also turn on OSNAP. This means you need a separate command to set OSNAP OFF, but perhaps not for ON.

The following image is a screen capture of AutoCAD 2020 "Help" showing OSNAP snap modes. The CAPITAL letters indicate the shorter version of the keyin. (You may search for the equivalent of this list in your particular AutoCAD version's Help, in case anything has changed in the different versions.)

Object Snap Mode	5
Specify one or m one name, separ	ore object snap modes by entering the uppercase characters of the name in the following table. If you enter more than ate the names with commas.
Mode	Description
ENDpoint	Snaps to the closest endpoint or corner of a geometric object
MIDpoint	Snaps to the midpoint of a geometric object
CENter	Snaps to the center of an arc, circle, ellipse, or elliptical arc
Geometric CEnter	Snaps to the centroid of any closed polylines and splines
NODe	Snaps to a point object, dimension definition point, or dimension text origin
QUAdrant	Snaps to a quadrant point of an arc, circle, ellipse, or elliptical arc
INTersection	Snaps to the intersection of geometric objects
EXTension	Causes a temporary extension line or arc to be displayed when you pass the cursor over the endpoint of objects, so you can specify points on the extension
INSertion	Snaps to the insertion point of objects such as an attribute, a block, or text
PERpendicular	Snaps to a point perpendicular to the selected geometric object
TANgent	Snaps to the tangent of an arc, circle, ellipse, elliptical arc, polyline arc, or spline
NEArest	Snaps to the nearest point on an object such as an arc, circle, ellipse, elliptical arc, line, point, polyline, ray, spline, or xline
APParent intersection	Snaps to the visual intersection of two objects that do not intersect in 3D space but may appear to intersect in the current view
PARallel	Constrains a new line segment, polyline segment, ray or xline to be parallel to an existing linear object that you identify by hovering your cursor
NONe	Turns off object snap modes
For more informa	ation on each of these object snap modes, see the Object Snap tab of the Drafting Settings dialog box.

Autodesk's AutoCAD 2020 "Help" for OSNAP keyins, which may be set on a digitizer "User CAD" button or the DAT/EM Keypad.

Any AutoCAD command line keyin that affects snapping may be activated from the DAT/EM Keypad or a Summit Button Manager "User CAD" button. See below:

- "OSNAP on the DAT/EM Keypad", immediately below
- "OSNAP on a Button Manager Button", page 8

OSNAP on the DAT/EM Keypad

You can set the DAT/EM Keypad to make the OSNAP settings with the most commonly used OSNAP toggles and modes. Examples of settings in the Keypad Controller's Edit Key Text field:

'-osnap off{RET} (this sets all running snapping modes off/unchecked)

'-osnap end{RET} (this sets snapping on and the snap mode to end)

'-osnap nea{RET}

'-osnap int{RET}

When these are issued separately, they turn off other modes and set only the single listed mode.

Da	tem Key	pad Co	ntroller - (C:\Progra	mData\Date	em Systems\ke	ypad\Ac	adWit.		
File I	Edit Vie	w Ov	erlay Too	ls Help						
🖻 🖌	l 🕼		S 🕹	Þa 🛍	N 📷	a + ×	♦ ♦	Sna	pping D	emo
1			5				10	11	12	13
	OSN	AP Set	tings	6	2D/3D Sna	ap Settings				
15	usnap	Usnap	Usnap 1	· ·	snapZ OFF	OsnapZ ON	24	25	26	27
	0#	End	Near		20 6020	20 6020				
29		Ena	I Near	24	ZU Shap	3D Shap	20	20	40	44
2.5			Edit I	Key	11.55		1 36 1	39		\mathbf{x}
	Co	ombinat		ĸey						
43	End	Snap			Numbe	r 118 🛋				
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57	End	Snap		ader						
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113	114	115	Text	'-osnap n	near{RET}					
										-
127	128	129	Reco	rd keystrok	kes 😐 📗					
			Fuce	table					1	
			Exect	JUGDIE						

Example of the DAT/EM Keypad button **Text** that sets OSNAP to the near point snap mode and turns off all other snap modes

Alternatively, you may set multiple OSNAP modes on at one time by listing them separated by a , character:





Example of Keypad key that sets the End, Near, and Intersection snap modes on at the same time

OSNAP on a Button Manager Button

On a Summit Button Manager button (**Summit** > **Tools** > **Button Manager**), it's possible to set either one setting or string together multiple settings to use in series each time you press the button. Separate each distinct command with the colon : character. Each time you press the button, it will issue the next command past the :, cycling around to the beginning after issuing the last command.

You can choose snap toggles and mode methods to suit your project and personal preferences. This first set of examples shows how to set single OSNAP snapping modes:

 Type=User CAD, Action='-osnap off{RET}
 (this sets all running snapping modes off/unchecked)

 Type=User CAD, Action='-osnap end{RET}
 (this sets snapping on and the snap mode to end)

 Type=User CAD, Action='-osnap nea{RET}
 Type=User CAD, Action='-osnap int{RET}

You could make a simple OSNAP on/off toggle button. This example would toggle OSNAP without setting or changing the snap modes:

Type=User CAD, Action='-osnap off{RET}<mark>:</mark>'-osnap on{RET}

However, since the snap mode keyins also turn on OSNAP, you could set a single button to a series that first turns OSNAP off, then sets the individual modes with subsequent presses:

Type=User CAD, Action='-osnap off{RET}:'-osnap end{RET}:'-osnap nea{RET}:'-osnap int{RET}

For example, to change from *Osnap End* to *Intersection* in this example, you would press the button two times:

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	Solumouses	D or Stealth E/V		Stealth Z	Z/I Mouse	topo Mou
Config	uration AO-	Acad	~	New Save As	. Delete	Default
	-	A .::				GSS Softm
#	Type	Action			6	
1	None			2	10 3	
2	Plotter	Pick		5 \	14	⁷ 11
3	Generic C	Cancel/Reset	/Fi	99		/ 15
4	None			13		/ 19 。
5	None			17	~~~~	°12
6	UserCad	'-osnap off{RE	T}:		00-	16
7	None	2			D'GA	20
8	None	'-osnap	off{RET}:'-	osnap end{RET}:'-osna	p near{RET}:'-osnap	o int{RET}
9	None			/	KX \	100 million (1970)
10	None			t		
11	None					
12	None				1´ `4	
13	None			Left Shift		Right Shift
14	None			Double Shift←		→ Double Shif
	Mana		¥.			

Example of a series of OSNAP settings on one Button Manager button (the : character method only works in Button Manager, not on the DAT/EM Keypad)

Alternatively, you could set a series that first sets OSNAP off followed by a combination of multiple OSNAP modes. Osnap mode settings turn on OSNAP, so you don't need to include OSNAP ON:

Type=User CAD, Action='-osnap off{RET}:'-osnap end,nea,int,cen{RET}

OSNAPZ

OSNAPZ is the variable used to toggle 2D and 3D object snapping for OSNAP. It works for all drawing commands except AUTOARC3D (see "AUTOARC3D Uses Its Own 2D/3D Snap Toggle Instead of OSNAPZ" on page 13).

OSNAPZ is used together with OSNAP and OSNAP's snapping modes (see "OSNAP" starting on page 5 above).

- **'OSNAPZ 1** transparently activates 3D snapping (snapped-to xy, Summit stereoplotter z)
- **'OSNAPZ 0** transparently activates 2D snapping (snapped-to xyz)
- The ' character allows it to be set transparently, without breaking any active drawing command.
- For localized language versions of AutoCAD, use the equivalent command or optionally use _ to use the English command in a localized language AutoCAD version, for example '_OSNAPZ 1.
- The character is not used in this case, because OSNAPZ does not launch a dialog. It is an environment variable setting keyin. The environment variable is also shown in a dialog, but in this case AutoCAD's OPTIONS dialog > Drafting tab > Replace Z with the current elevation. This is given for information only; it's faster to enter the OSNAPZ <1/0> command.

Options	×
Current profile: < <unnamed profile="">></unnamed>	Current drawing: Drawing1LCTest.dwg
Files Display Open and Save Plot and Publish System User	Preferences Drafting 3D Modeling Selection Profiles
AutoSnap Settings ☑ Marker ☑ Magnet ☑ Display AutoSnap tooltip	AutoTrack Settings Display polar tracking vector Display full-screen tracking vector Display AutoTrack tooltip
Display AutoSnap aperture box	Alignment Point Acquisition Automatic Shift to acquire
AutoSnap Marker Size	Aperture Size
Object Snap Options ✓ Ignore hatch objects ✓ Ignore dimension extension lines	Drafting Tooltip Settings Lights Glyph Settings
Ignore negative Z object snaps for Dynamic UCS Replace Z value with current elevation	Cameras Glyph Settings_
Specifies that object snaps ignore the Z-value of the snap location and use the Z-value of the elevation se current UCS.	object et for the OK Cancel Apply Help

Replace Z value with current elevation shows the current state of the OSNAPZ variable

Suggested information in AutoCAD Help: Search for "About using object snaps", "Commands for object snaps". Remember that when Autodesk mentions 2D and 3D, they mean the type of object you're snapping to, such as polylines or solids, not the (x,y,z) coordinate of an object snap. Their "2D Object" means objects such as 2D polylines, 3D polylines, points, and blocks. Their "3D Object" means objects such as solids.

Again, with OSNAPZ, you can put the command line version on the DAT/EM Keypad or a Button Manager button. For the Keypad, make 2D snap and 3D snap buttons. See examples in:

- "OSNAPZ on the DAT/EM Keypad" immediately below
- "OSNAPZ on a Button Manager Button" on page 12 below

OSNAPZ on the DAT/EM Keypad

For simple OSNAPZ toggles on the DAT/EM Keypad, set two separate buttons to:

'osnapz 0{RET}

'osnapz 1{RET}



Example of setting OSNAPZ to 0 for a 3D snap on the DAT/EM Keypad

You can also combine the OSNAPZ setting with other commands. See "Combining OSNAP, OSNAPZ, and Other Commands" on page 12.

OSNAPZ on a Button Manager Button

For the Button Manager button, make a toggle button that combines them on one button. Use the ' for transparent operation (- is not needed, because this keyin does not launch a dialog). Use : to separate the commands:

Type=User CAD, Action='osnapz 1{RET}:'osnapz 0{RET}

Combining OSNAP, OSNAPZ, and Other Commands

Any command keyins that work in AutoCAD may be combined on the DAT/EM Keypad and Button Manager buttons. You may combine OSNAP and OSNAPZ commands on the same keys and buttons and add any other keyin strings that work in AutoCAD, such as layer settings and drawing commands.

Both the Button Manager and the Keypad see **{RET}** as a return character, which you would use anywhere you might key in a return (Enter keyboard key) if using the Command line in AutoCAD. This allows you to string together multiple commands on one key or button.

The following are two examples that set a layer, set the snap to 2D or 3D, set multiple snap modes, and start the 3DPOLY command. These can be copied to a DAT/EM Keypad key or a Button Manager **User Cad** button:

```
-layer{RET}s{RET}road-paved{RET}{RET}'osnapz 0{RET}'-osnap near,end{RET}3dpoly{RET}
```

¹⁰⁰ Combination Snapping and Drawing							
Laver=ROAD-PAVED Laver=FEN 3D Near.End Snap 3DPOLY 3DPOLY	CE Snap	120	121	122	123	124	125
Edit Key					497	430	139
Number 114	Labe Laye	l r=ROAD-	PAVED			+	53
Background	3DPC)LY				A	31
184 – Output	-						- 35
C Launch Executable C Keyboard O C	apture 🔘	Summit/	LandScape	•			
Text _layer{RET}s{RET}road-paved{RE	T}{RET}'o	snapz 0{F	{ET}'-osnaj	p near,end	(RET)3dpc	oly{RET}	19
Becord keystrokes							

-layer{RET}s{RET}FENCE{RET}{RET}'osnapz 1{RET}'-osnap near,end{RET}3dpoly{RET}

Example of a Keypad key that's a combination of snapping and drawing settings

In the case of the Button Manager, you can both combine commands and/or make a series of commands separated by the : character. Each time the button is pressed, the next in the series is submitted. The following line would alternately toggle 2D and 3D snapping, set multiple snap modes (Near and Endpoint), and start the 3DPOLY command (this is one continuous line, which is wrapped to fit in this document view):

'osnapz 0{RET}'-osnap near,end{RET}3dpoly{RET}<mark>:</mark>'osnapz 1{RET}'-osnap near,end{RET}3dpoly{RET}

In the following example, a third command that turns off snapping is added to the series. All three commands start 3DPOLY, but with different OSNAP and OSNAPZ settings in each (this is one continuous line, which is wrapped to fit in this document view):

'-osnap off{RET}3dpoly{RET}:'osnapz 0{RET}'-osnap near,end{RET}3dpoly{RET}: 1{RET}'-osnap near,end{RET}3dpoly{RET}

You can combine any keyins that suit your Keypad or Button Manager needs.

AutoCAD Snap Overrides, Such as NEA and INT

If OSNAP is off, you may still accomplish a snap with AutoCAD snap override keyins, such as NEA (onetime near snap) and INT (one-time intersection snap). See AutoCAD Help for more information on how these overrides work.

DAT/EM Snapping Commands

The following sections discuss DAT/EM-specific snap commands and tools.

- "AUTOARC3D Uses Its Own 2D/3D Snap Toggle" immediately below
- "ADVOSNAPS (DAT/EM "<u>Advanced OSNAP Settings</u>")" on page 15
- "DATEMSNAP Drives the Cursor to Snap Locations" on page 15

AUTOARC3D Uses Its Own 2D/3D Snap Toggle Instead of OSNAPZ

OSNAPZ works to toggle 2D/3D snapping for many digitizing commands, but not for DAT/EM's AUTOARC3D. Historically, some AutoCAD versions didn't work properly toggling OSNAPZ during AUTOARC3D, so DAT/EM added a 2D/3D snap toggle that is internal to the command.

AUTOARC3D still uses OSNAP to turn overall snapping on and off and to set snap modes, such as end or near. It is only OSNAPZ that doesn't affect AUTOARC3D

Notice the AUTOARC3D command line prompt includes "Plotter z" and shows the current setting in square brackets, [OFF] or [ON]:

Command: AUTOARC3D From point/Stroke/<u>Plotter z[OFF]</u>:P From point/Stroke/<u>Plotter z[ON]</u>:p From point/Stroke/<u>Plotter z[OFF]</u>: "Plotter z" indicates whether a snap will use the stereoplotter elevation or not.

- When "Plotter z" is off, AUTOARC3D will snap in 2D.
- When "Plotter z" is on, AUTOARC3D will snap in 3D.
- Toggle it with **p** or **P**.

Example of two separate Keypad keys to start AUTOARC3D and to toggle its snap:

-layer{RET}s{RET}ROAD-UNPAVED{RET}{RET}'-osnap near,end{RET}autoarc3D{RET}
p{RET}

Exception: "P" to Toggle Snap with AUTOARC3D Laver = ROAD-PAVED Laver = FENCE Ρ OSNAP Near .End OSNAP Near.End Toddle 2D/3D Snap AUTOARC3D AUTOARC3D during AUTOARC3D 158 🔳 Edit Key × Number 142 + Label Header + Label Width 3 × Layer = ROAD-PAVED Height 1 OSNAP Near,End А AUTOARC3D ** Background 🛄 🖛 Output ◯ Launch Executable ◯ Keyboard ◉ Capture ◯ Summit/LandScape Text -layer{RET}s{RET}road-paved{RET}{RET}'osnap near,end{RET}autoarc3d{RET} Record keystrokes 👩 💼 🥏

This key sets a layer, sets OSNAP snapping modes, and starts AUTOARC3D

	128	Ð	ception	: "P" to Toggle Snap with A	UTOARC3D					
Laver = ROAD-PAVED OSNAP Near.End AUTOARC3D			AVED End D	Laver=FENCE OSNAP Near.End AUTOARC3D	¹⁴⁸ P Toaale 2D/ durina AUT	151	152	153	154	
	156	157	158	Edit Key	200	1	100	100)	×
	170	171	172	Numbe Label Header	r 148 🜩					
	184	185	186	Width	3	Label P Toggle 2D/3) Snap		×	
	198	199	200	Background 🔲 🗸		during AUTO	ARC3D		A	
	212	213	214	Output O Launch Executable O Key	board 💿 Captu	ıre 🔾 Summi	t/LandSc	аре		
	226	227	228	Record keystrokes	. 2					

This key toggles AUTOARC3D's 2D/3D snap setting

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AUTOARC2D Uses OSNAPZ

To clarify, there is a difference between AUTOARC<u>3D</u> and AUTOARC<u>2D</u> snapping methods. AUTOARC<u>2D</u> only needs to specify the elevation of its first point, since it draws a 2D polyline at the first point's elevation. AUTOARC<u>2D</u>'s first point snap is compatible with OSNAP and OSNAPZ. Only AUTOARC<u>3D</u> has its own 2D/3D snap toggle.

ADVOSNAPS (DAT/EM "<u>Advanced OSNAP Settings</u>")

ADVOSNAPS (DAT/EM Advanced OSNAP Settings) is a DAT/EM Capture command that lets you choose layers that AutoCAD OSNAP will either recognize or ignore for snapping.

- If **Activate Osnap layer filter** is unchecked, OSNAP will snap to all layers. This is the default behavior of OSNAP in AutoCAD.
- If Activate Osnap layer filter is checked on, only those layers that are checked on with Include, or unchecked with Exclude work with OSNAP Snapping.

DAT/EN	1 Advanced Object Snap Settings	×	0			
 Activate OSnap layer filter Include or Exclude Layers from Object Snap Include Exclude 						
Select	Layer name 0 ABANDONED-SITE AREA-PAVED AREA-UNPAVED BADHEIGHT BERM BOARDWALK BOUNDARY BREAKLINE BRIDGE	>				
Attem	pt to preserve current settings					

ADVOSNAPS shown checked on and several layers unchecked/checked

DATEMSNAP Drives the Cursor to Snap Locations

DAT/EM provides a command called DATEMSNAP that works during drawing with DAT/EM's AUTOARC3D and AutoCAD's 3DPOLY commands. It moves the stereoplotter cursor to selected snap coordinates in 2D or 3D, whichever is currently set by OSNAPZ or AUTOARC3D P.

To use DATEMSNAP, perform the following steps:

1. In an active drawing, turn on DATEMSNAP from a keyin or a DAT/EM Keypad key:

Command: **datemsnap** DATEMSNAP On/Off: **On** Datemsnap is now ON.

To turn it off, so that the stereoplotter stays in its original location while picking the snap:

Command: **datemsnap** DATEMSNAP On/Off: **Off** Datemsnap is now OFF.

To set DATEMSNAP on and off from two separate DAT/EM Keypad keys, use the strings: datemsnap{RET}on{RET} datemsnap{RET}off{RET}

To toggle DATEMSNAP from a Button Manager **User Cad** button, use the combined string: datemsnap{RET}on{RET}:datemsnap{RET}off{RET}

2. Start either **3DPOLY** or **AUTOARC3D** and begin drawing. During drawing, if you pick any type of snap, the stereoplotter will move to the snapped location.

Use MapEditor to Post-Process 2D and 3D Snaps

DAT/EM MapEditor for AutoCAD can post-process 2D and 3D snaps. It offers options to add nodes (vertices) or break objects at intersections.

MapEditor can be run on a quick, one-time-only, this-drawing-only basis, or it can run a list of preset tasks from a parameter file. If you often use the same drawing file template so that you always have the same set of layer names, it will be worth the time to create a parameter file to ensure the desired snaps. You will save a lot of time at the drawing stage if you have MapEditor perform the commonly done object snaps later.

Even if you carefully snap during digitizing, MapEditor can still check the snaps. It could catch that one out of a thousand that was missed or 2D snapped when it should have been 3D snapped. It can also quickly "visit" the edited locations to let you visually check the MapEditor edits. It could also simply visit the proposed edit locations and let you decide what to do there.

You can draw objects such as driveways, fences, and vegetation lines running into building roof polygons without worrying about precise 2D snaps at the time of drawing. You can also draw driveway lines that fall a little short or overlap the road. Run MapEditor Clip to remove the objects from inside the buildings while enforcing a 2D snap, then MapEditor Touch can extend or trim the driveways to the road using a 3D snap. It can also add a node (vertex) at the intersection on the road line and optionally create a "Visit" file for you to visually verify each edit:



Example of driveway lines drawn overlapping the road and building objects

🧭 Map Editor				×
3D to 2D	Clip Object(s)			
Add Z Text or Block	Clip Boundary Selection			
Breakline Filter	 Select boundary object(s). 	Count: 0	🖳 🗙	
Cleanup	0.			
Clip Around Text	Layer	BUILDING	~ 4	
Clip Objects CrossCheck	○ Set selection	All polylines	$\sim \textcircled{2}$	
Custom Command Densify Polyline	Object(s) to Clip Selection			
DTM Distributor	O Select object(s)	Count: 0		
Elevate Ubjects Erase Objects		Count.		
Filter	🔿 Layer	0	$\sim \Box_{2}$	
GridIt	Set selection	Drivou pueAll		
Highlight Ubjects Interpolate Contours	Set selection	Drivewayskii	× =	
Join	Clipping Method			
Labellt Modifu Blocks	Interior O Exterior			
Modity Text				
Offset Polylines	Clipped Object Management			
Pattern Roluling Longth	O Move clipped object(s) to laver	0	V B.	
Reverse	0		P.0.	
Scallop	 Move clipped to prefixed layer 	clipped_		
Set Elevation	Delete clipped objects			
Stope Check	C Delete empred epicets			
Spot Interpolation				
Square				Interactive Batch Processing
l ouch Visit				
Volume Calculation				
Weed Contours				Run the selected tool
XYZIn 💙				
			\	
			-	

Example of MapEditor Clip Objects set to clip the driveways out of the buildings, resulting in 2D snaps

🧭 Map Editor						×
3D to 2D Add Z Text or Block Breakline Filter	Touch Touch "From" Sel Select polyline(ection s). Count:	0		"From" Z Options	
Change Layer Cleanup Clip Around Text Clip Objects	Layer Set selection	0 DrivewausAll			Match Z to "To" polyline wi	thin: 5.0
CrossCheck Custom Command Densify Polyline DTM Distributor	Visit un-toucher	d "from" intersections	Filename:			pend
Elevate Objects Erase Objects Filter Gridt	─ Touch "To" Select	tion s). Count:	0		"To" Polyline Options Add vertex	
Highlight Objects Interpolate Contours Join	 Layer Set selection 	U RoadsAll		└↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓<	○ Break ○ Don't change "To" polyline	
Modify Blocks Modity Text Offset Polylines Pattern	Visit touched " Search radius: 7.0	o" intersections	Filename:			Append
Polyline Length Reverse Scallop Set Elevation Slope Check	Search steps: 4					
Smooth Spot Interpolation Square Touch					Interact	ive Batch Processing
Visit Volume Calculation Weed Contours XYZIn						n the selected tool

Example of MapEditor Touch settings to extend/trim the driveways to the road, resulting in 3D snaps and a node added to the road line at each driveway intersection.

As another example, you could ensure that breakline-level polylines always intersect with each other and have a node at their intersection. For this, use MapEditor's CrossCheck command set to average the elevations (result is a 3D snap) at intersections, add a node on both "from" and "to" objects, and optionally visit the edited intersections when finished.

🧭 Map Editor	×
3D to 2D Add Z Text or Block Breakline Filter Change Layer Cleanup Clip Around Text Clip Objects CrossCheck Custom Command Densify Polyline	Crosscheck/Z Check Polyline "From" Selection Select polyline(s). Count: Layer BREAKLINE Set selection All polylines At "From" Intersection No change Add vertex Break
DTM Distributor Elevate Objects Friter GridIt Highlight Objects Interpolate Contours Join Labellt Modify Blocks Modity Text Offset Polylines	Marking and Reporting Options Mark/report "from" objects: ON; Mark/report "to" objects: ON; Circle: OFF; Block: OFF; Text: OFF; Visit file: ON Restrict Search Area Use boundaries Object type; number selected: 0. Use INSIDE boundary Tool Configuration Find all xy and xyz intersections Find xy intersections with the same z values
Pattern Polyline Length Reverse Scallop Set Elevation Slope Check Smooth	O Find xy intersections with different z values Different z options O Find "near" intersections Near (x-y) tolerance: 1.0 Add line Layer: 0
Spot Interpolation Square Touch Visit Volume Calculation Weed Contours XYZIn	Skip intersections that have a snapped vertex Average elevations of added vertices

CrossCheck is set here to find intersections, ensure a 3D snap, and add nodes at the intersection. At the end of processing, CrossCheck can launch Visit to show the intersections that were either edited or qualify for editing.