

Tips and Techniques in I-DEAS Drafting

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Premium Partners:



Microsoft

Brian Slick – I-DEAS History

- Co-op with SDRC, Fall 1996 (MS3)
- I-DEAS Instructor, June 1998 – October 2001
 - Design-related topics: Part Design, Assembly, 2D/3D Drafting, Best Practices, Surfacing, Harness, and C3P equivalents
- Contract Drafter → Sr. Project Engineer – Ferno
 - Created hundreds of parts, assemblies, drawings
 - “Assembly Manager” for several large (700+ instance) assemblies
 - User training and support
 - CAD evaluation and testing
- Winner of 2004 and 2005 PLM World “Top Gun” Contests



Ferno-Washington, Inc.

- Privately held, global company
- Multiple product lines in Emergency, Mortuary, Therapy, and Veterinary markets.



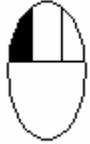
FERNO



Overview

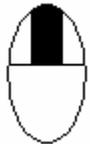
- Basics
- View Creation
- Dimensioning
- Customization
- Miscellaneous Tips

Basics – Mouse Buttons



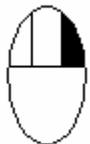
Left Mouse Button

- Single click – select
- Double click – edit



Middle Mouse Button

- Single click – ***Done***
- Click-and-drag – ***Move***
- Ctrl + click-and-drag – ***Copy***



Right Mouse Button

- Single click – ***Cancel***

Basics – Icon States

State	Regular Command	View Command
 <p>Spring-Loaded</p>	<p>Performs command once, then automatically shuts off</p>	<p>Command applies only to active view</p>
 <p>Locked</p>	<p>Command remains available for repeated use until deactivated (<i>Done</i> or <i>Cancel</i>)</p>	<p>Command will prompt for multiple views</p>

Basics – Mnemonics



Every command in Drafting can be accessed from the keyboard with a 2-letter combination. Typing the letters (no need to hit enter) will 1) activate the command, and 2) float the icon to the top of the stack. This can be a handy way to locate icons.

Some common handy mnemonics:

VB – View Border

VS – View Properties (formerly View Scale)

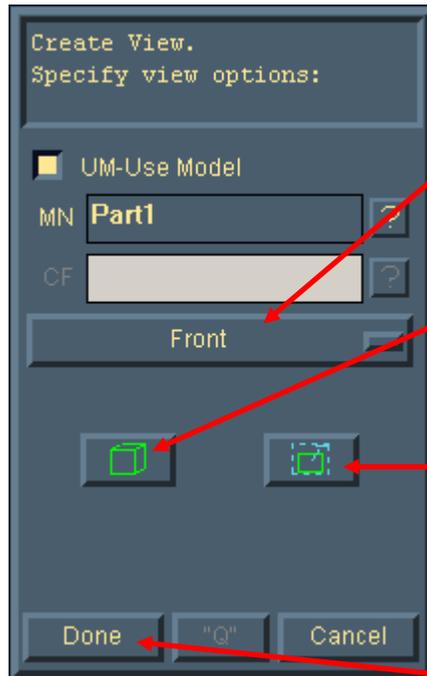
VV – View Visibility

VM – Move View

UU – Undo

UR – Redo

View Creation



View being created

Define using 3D Model Window

Define using Model Views

Define using Global XYZ (if no other options specified)

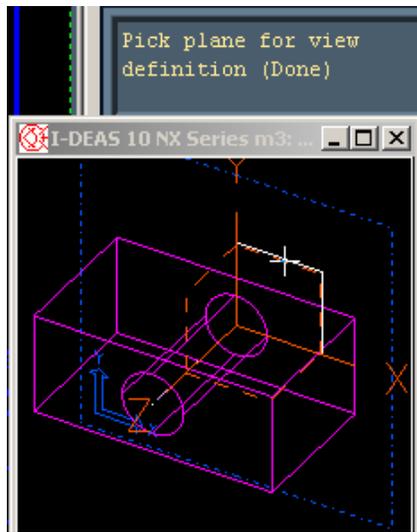
View Creation – Best Practices

View should be associatively related to the model

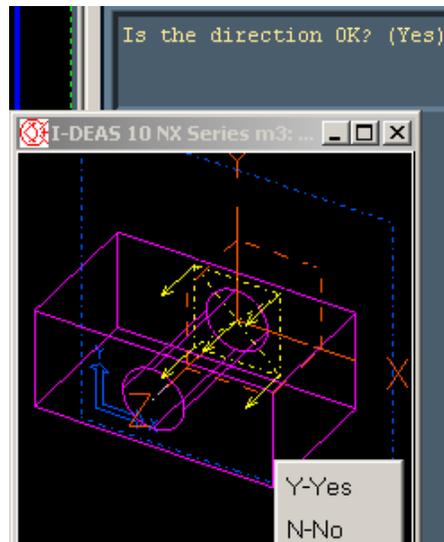
- If the part is moved or rotated (A BAD PRACTICE!), drawing views will be adversely affected if they are not properly tied to the model
- Only Model Views and 3D Viewer establish view direction associativity, so if they were not used, there is no relationship
- 3D Viewer usage alone does not guarantee relationship, a plane and a vector must be used for view associativity

View Creation – 3D Viewer Best Practice

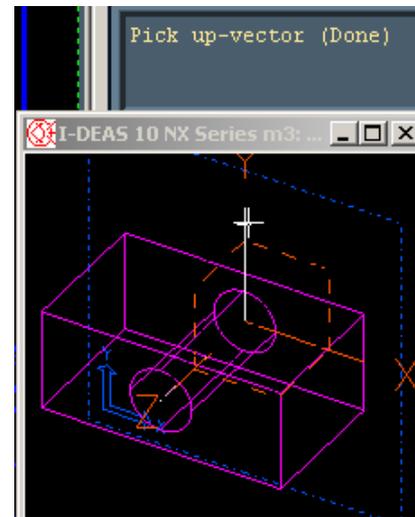
1. Pick View Plane



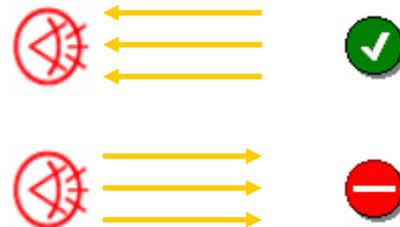
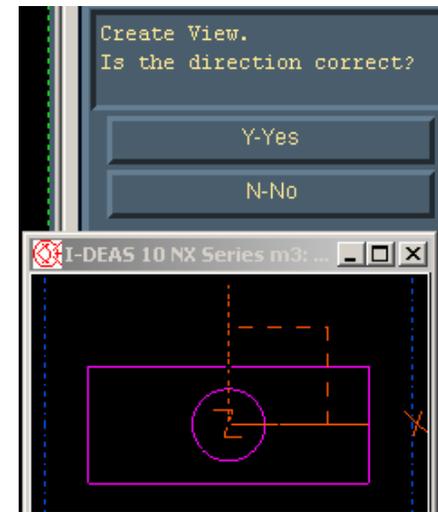
2. Pick Plane View Direction



3. Pick Up Direction

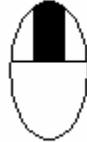
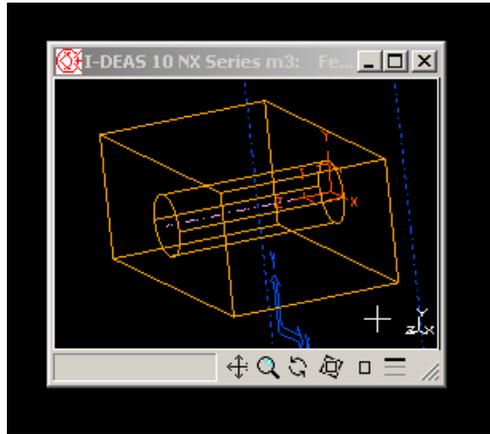


4. Confirm View

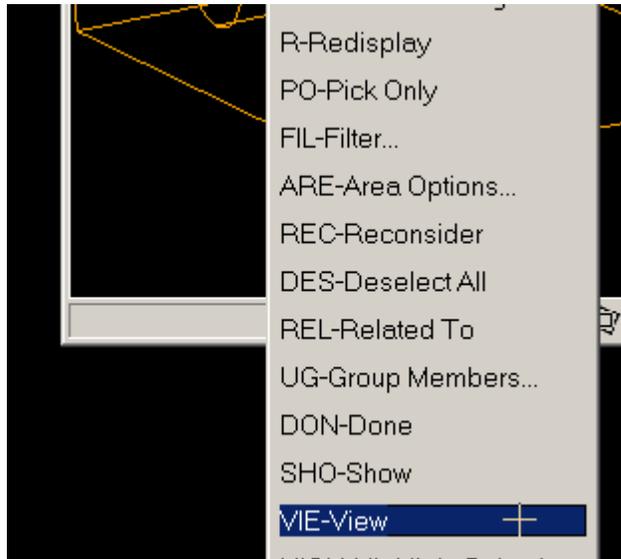


This procedure must be followed in order to establish an associative view direction relationship with the model

View Creation – 3D Viewer Options



With mouse in Viewer window, hitting MB2 will take view as-is. There is no relationship to the model, but it is an easy way to create non-standard views.



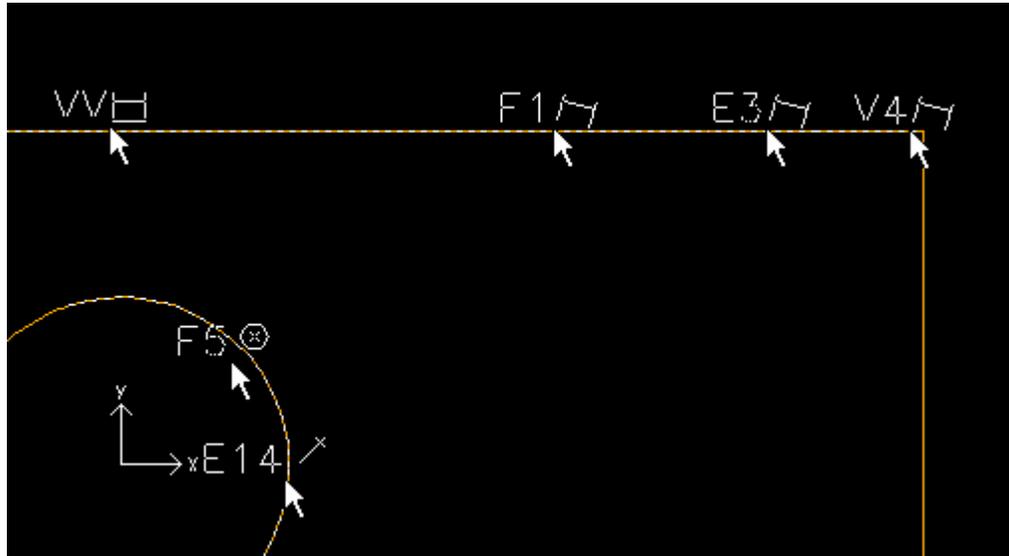
With mouse in Viewer window, hitting MB3 will present plane and view options.

View Creation – 3D Viewer MB3 Options

Some MB3 Capabilities In 3D Viewer Window

- Redisplay View Window
 - View → Redisplay (Draw) → Done With View
- Toggle display mode (shaded, outline, hidden)
 - View → Display → *Selections* → Done With View
- Access Display Filters
 - View → Display Filters → *Selections* → Done With View
- Access Workbench Views
 - View → Manage Workbench Views → *Selections* → Done With View

Dimensioning Best Practices - Entities



- F – Face
- E – Edge
- V – Vertex
- VV – Vertex-to-Vertex
- ⊗ – Circle Center
- ⌘ – Circle Quadrant

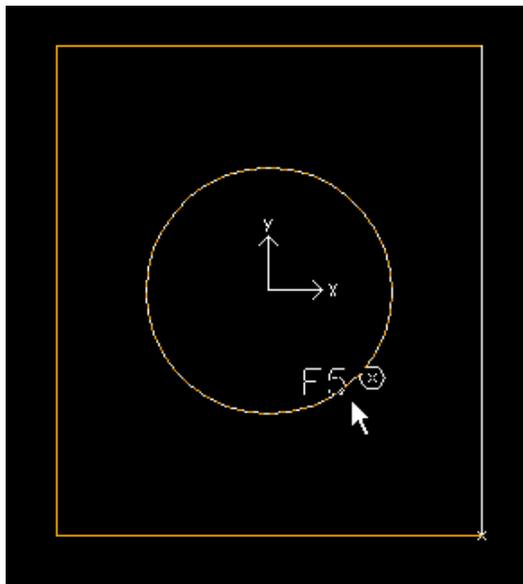
Drafting provides visual feedback regarding the solid geometry that will be dimensioned. The solid entity chosen depends on mouse location.

Standard best practices from Modeler apply: prefer faces over anything else, vertices as a last resort, etc. Zooming in might be required to locate the face.

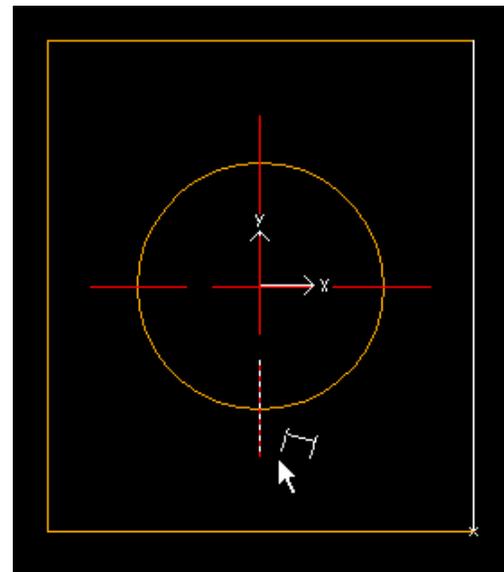
Dimensioning Best Practices - Circles

Create dimensions to circle centers, NOT circle center marks.

Good

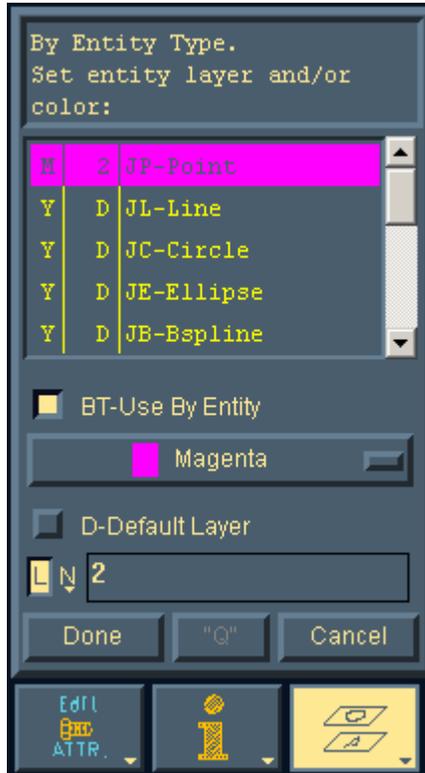


Bad



Don't create center marks until after dimensioning is complete.
Use "Break" or "Gap" if dimension line runs through center mark in an undesired fashion

Customization – By Entity Type

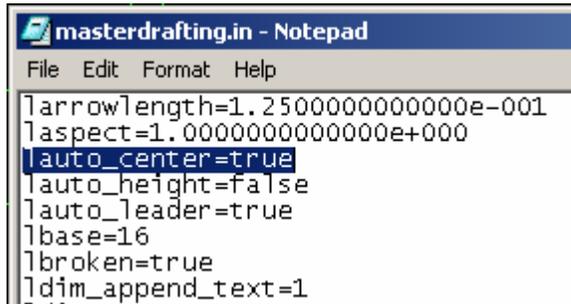


BT – By Entity Type

- Forces different types of entities to be specific colors and/or reside on specific layers
- Applies only to newly created items after BT is set, does not apply to existing items

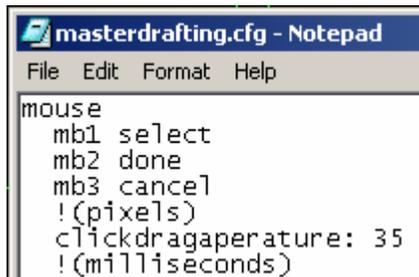
Customization – Configuration Files

Drafting preferences are stored in 2 files. It is worth exploring these files with a text editor to view the settings that can be configured. Make a backup backup copy before making changes.



```
masterdrafting.in - Notepad
File Edit Format Help
\arrowlength=1.2500000000000000e-001
\aspect=1.0000000000000000e+000
\auto_center=true
\auto_height=false
\auto_leader=true
\base=16
\broken=true
\dim_append_text=1
```

masterdrafting.in (or *.mm) stores default states for a variety of toggles. The highlighted example forces linear dimensions to be centered automatically without having to toggle each time



```
masterdrafting.cfg - Notepad
File Edit Format Help
mouse
mb1 select
mb2 done
mb3 cancel
!(pixels)
clickdragaperature: 35
!(milliseconds)
```

masterdrafting.cfg stores items controlled via Options → Drafting Preferences. Can be saved or restored via File → Defaults

Customization – Program Files (Macros)

File → Create Program

The easiest way to learn the macro language is to record a series of actions, and then look at the resulting file

The *.prg file will contain mnemonics for the commands chosen, indicate which options were used, and if applicable show mouse click coordinates

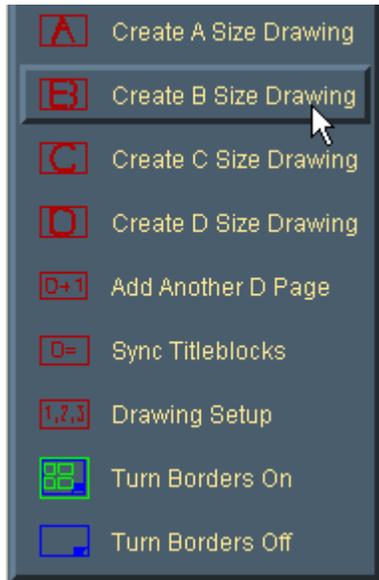
Customization – Sample Program

This sample inserts a titleblock into a drawing, and was created by recording the manual steps required:

X is command to execute. II is the mnemonic for Symbol Instance	X: II
K is a keyboard entry. N is the Name field, plus the path to the symbol.	K: N "M:\fwsymbols\B_size.sym"
Keyboard entry, the ^@ is the Return key (confirms symbol choice)	K: ^@
Keyboard entry, inserts a zero into the X field	K: X "0"
Keyboard entry, inserts a zero into the Y field	K: Y "0"
Return key (confirms symbol location)	K: ^@
Return key (takes defaults for symbol attributes)	K: ^@
Return key (takes defaults for symbol attributes)	K: ^@
Keyboard entry, the ^\$ is the Cancel button (exits symbol command)	K: ^\$
Last two lines indicate end of program	E : END
	E : **** END OF SESSION ****:

Online help is very useful for learning about macros

Customization – Custom Icons



Custom icons and icon panels can be created easily. Routine tasks can be only a single click away.

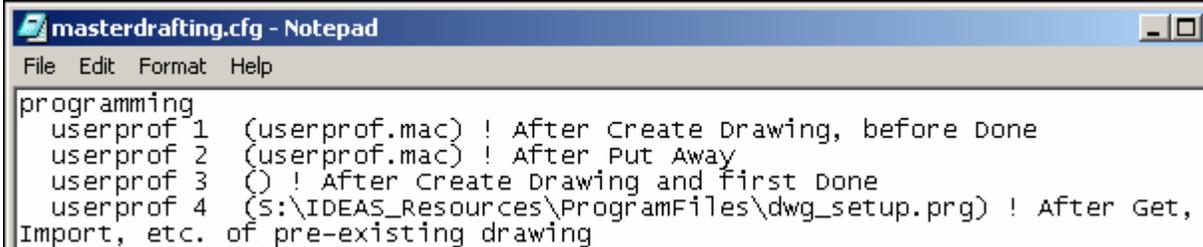


Icon panel information is stored in the masterdrafting.icn file. It is possible to force a custom panel to be the default.

Customization – Routine

Between configuration files and custom icons with custom macros, routine settings and activities can be easily accessed

Further automation can be achieved with macros set to automatically run at particular times



```
masterdrafting.cfg - Notepad
File Edit Format Help
programming
  userprof 1 (userprof.mac) ! After Create Drawing, before Done
  userprof 2 (userprof.mac) ! After Put Away
  userprof 3 ( ) ! After Create Drawing and first Done
  userprof 4 (S:\IDEAS_Resources\ProgramFiles\dwg_setup.prg) ! After Get,
  Import, etc. of pre-existing drawing
```

This example runs a macro that sets colors using By Entity Type every time a drawing is brought onto the screen

Miscellaneous Tips – Assembly Drawings

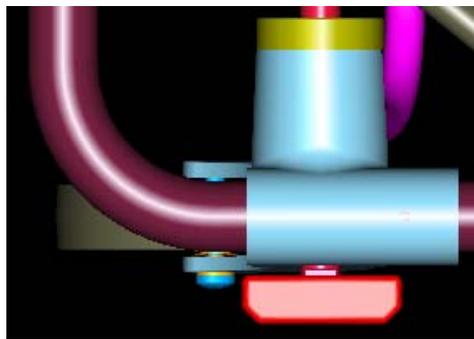
- Hidden instances will appear on a drawing
- Suppressed instances will not appear on a drawing
- To reduce visual clutter during view creation, hide all instances except for what will be needed to define the view direction
- Do not use Drafting's suppression capability unless absolutely necessary. Use assembly configurations instead. It's too easy to lose selection list in Drafting (as of 10m4).



← Don't bother

Miscellaneous Tips – HLP

- Hidden Line Processing can leave a lot to be desired

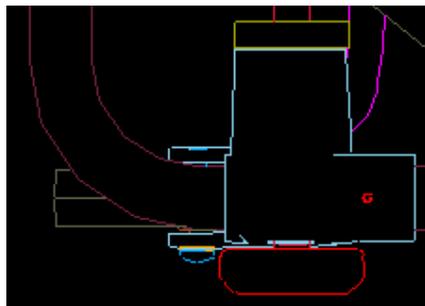


Precise



Unacceptable

- Try Fine instead of Precise



Better HLP, but faceted arcs unacceptable

- Worst case, draw 2D entities:



Incorrect entities are hidden, new items are drawn in yellow

The End

Questions? Comments?

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