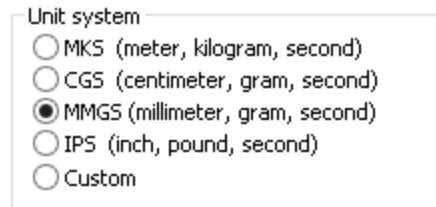


## First start of software:

- Set to “millimeter, gram, second”



- The default menu visible after opening a new part is “Command Manager”
- Get rid of that. Right-click top bar, un-check

- Then, check these menus:

- “sketch”
- “features”
- “tools”
- “reference geometry”
- “sheet metal”



See? Much better. No toggling between stupid tabs, you can reach functions with just a single click, and on top of that your wide screen is much better utilized as long as you move these menus to the sides.

*Recap: To pick your personal menus and set up your workspace, right-click on the empty useless space in your windows-window (E.U.W.W.S.) up on top of the screen that every windows user is endowed with regardless whether they want it or not.*



And to make it even better:

Define you very own function keys!

Recommendation:

F2: “shaded with edges”

F3: “measure”

F4: “others – front”

F5: “others – right”

F6: “others – top”

F7: “others – isometric”

F8: “insert mate”

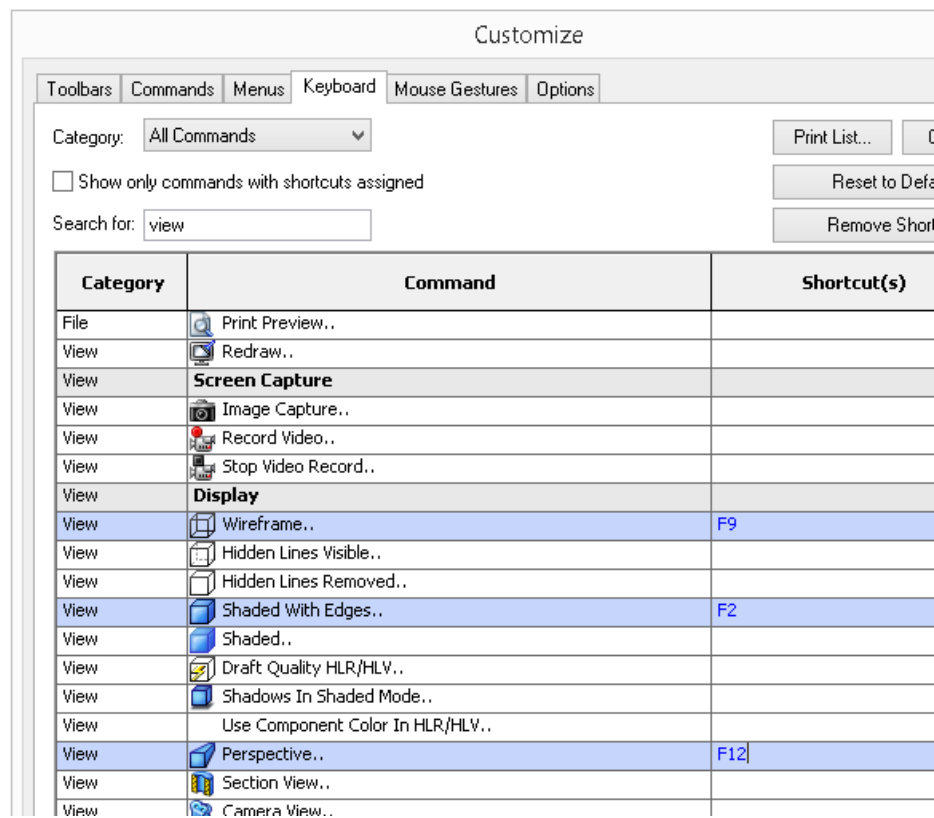
F9: “wireframe”

F10: “normal to”

F11: “modify persepective”

F12: “view perspective”

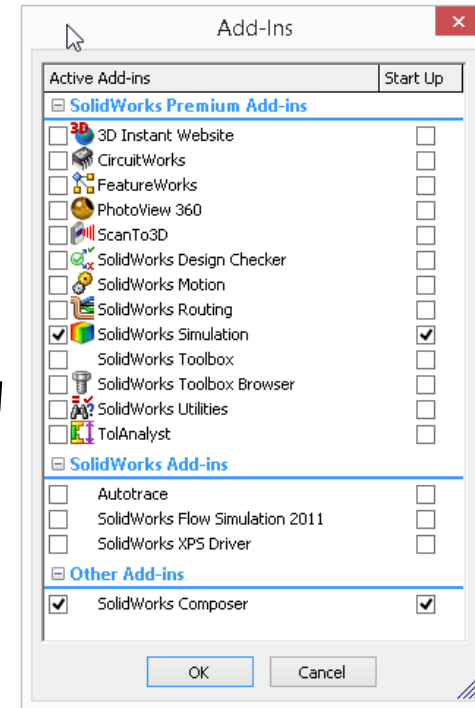
Once you get familiar with SolidWorks, you can set your own preferences.





## Setting up your workspace

- there are way more buttons than you think!
  - drag and drop to make your very personal menus.
  - to activate SW Simulation: “tools” ...”add-ins”
  - check start-up button if you wish it to start automatically (but that eats resources)
- 
- SW needs lots of resources. Free some on your computer by going to “system” ....”advanced” .....”performance” .....”adjust for best performance”
  - Run “msconfig” and do a selective startup, getting rid of lots of junk your machine might be running in the background. (keep your virus scanner)
  - Restart often. Windows likes that.



## Making Parts:

- blue lines: bad ☹️
- black lines: good 😊 (defined vs. under defined)
- use relations and auxiliary lines to define lines and drawing features

## When making more parts by using “save as copy”, beware:

- the original part in your assembly will be replaced by that newly saved part ☹️
- there is a button in the save-as window that you have you check to make that won't happen unintentionally.



## Solids: Extrusions are not all the same

- Sheet metal can be bend, the other can't
- Boss-Extrudes can have lots of copied and patterned features, sheet metal parts will give you error messages

## When exporting DXF files:

- Name DXF files that are destined for waterjet or laser cutting as follows:

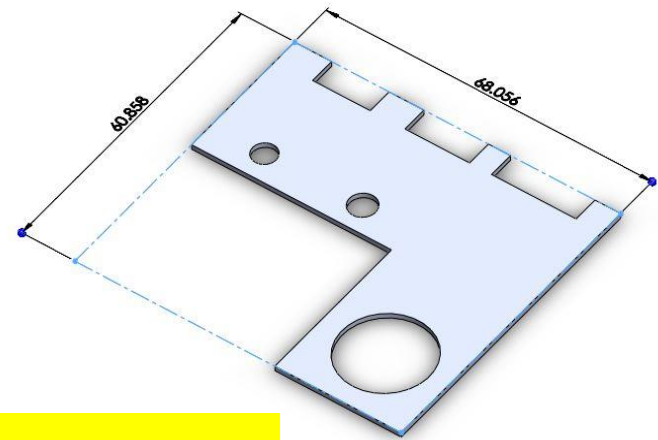
“3x LEG steel 0\_7mm thick” = telling it all!

- always know the overall dimensions of your part, that helps when you work at the machine. Knowing is better than guessing!

Different file formats are needed for different machines:

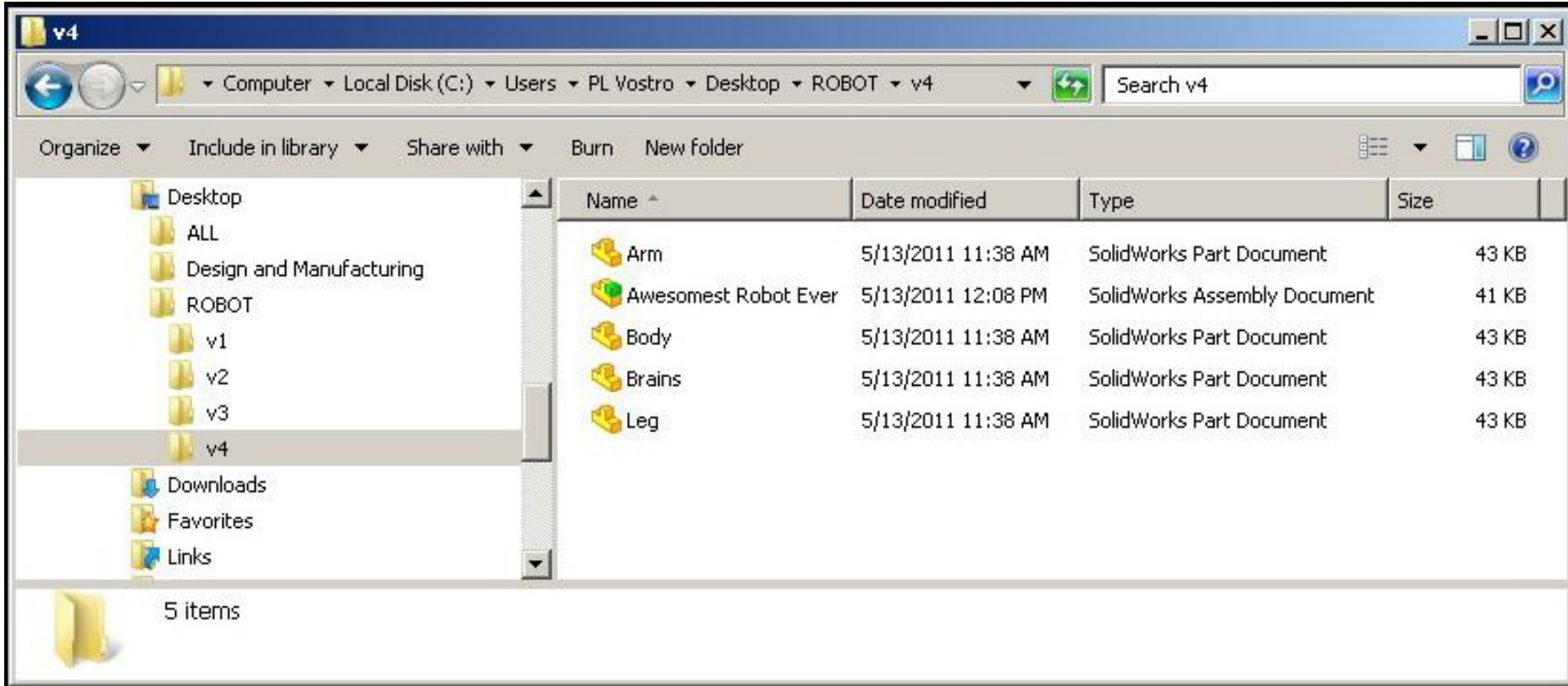
Waterjet and Laser: DXF

3D Printer: STL



**Repeat: Always memorize the overall dimensions of your part!**

When opening your parts at a machine, you will be able to see if your part is still the right size, or if it got scaled up or down by accident. Happens frequently!



Other good systems to keep track of what you are doing are folders named for years, months, and dates of when things were made. Companies will 'freeze' designs at certain times to make sure earlier products can be reliably repaired and maintained.



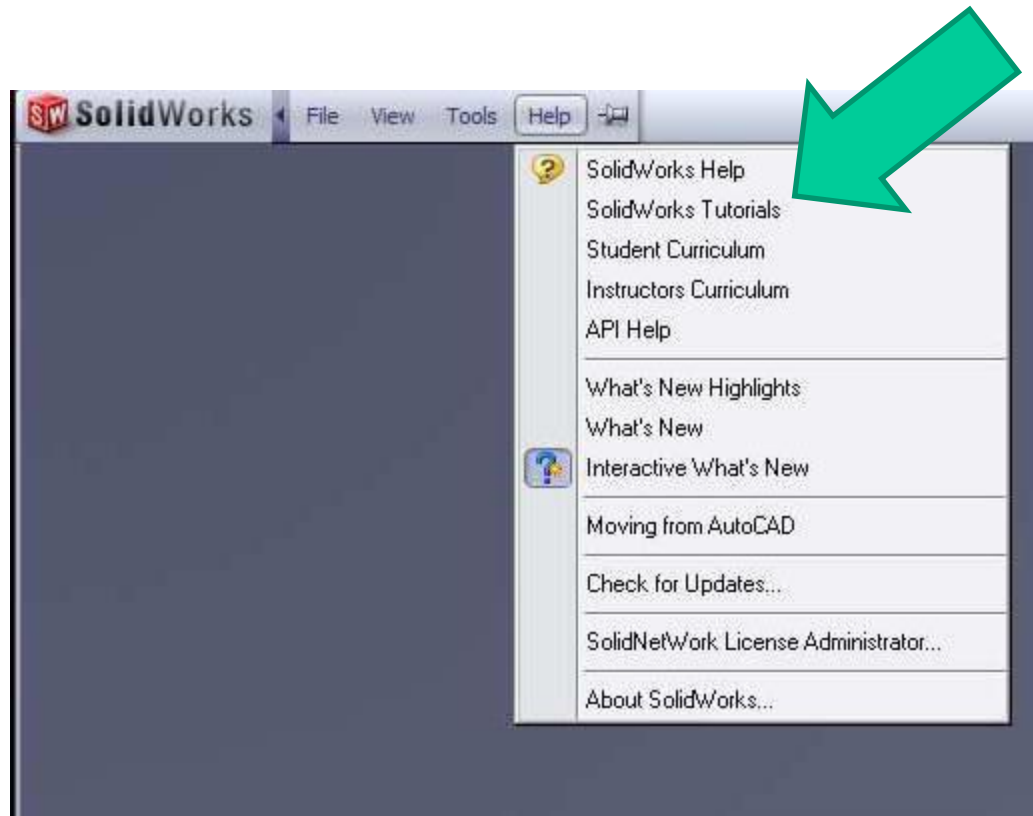
## Assemblies

- always assemble things the same way you would in reality.
- align bolts concentrically to holes, giving rotational freedom
- use advanced alignments and mates to define limits of motion, angular limits, gear ratios and more.
- see the tree to the left for information about parts being fully fixed or not
- tree can be partially undone by dragging the below line upwards

Don't put assemblies together and leave parts hang in mid-air. You might think everything fits and works just fine, but in fact it does not.



Solid Works tutorials can be found here:



# Layout, Measurement and Drawing

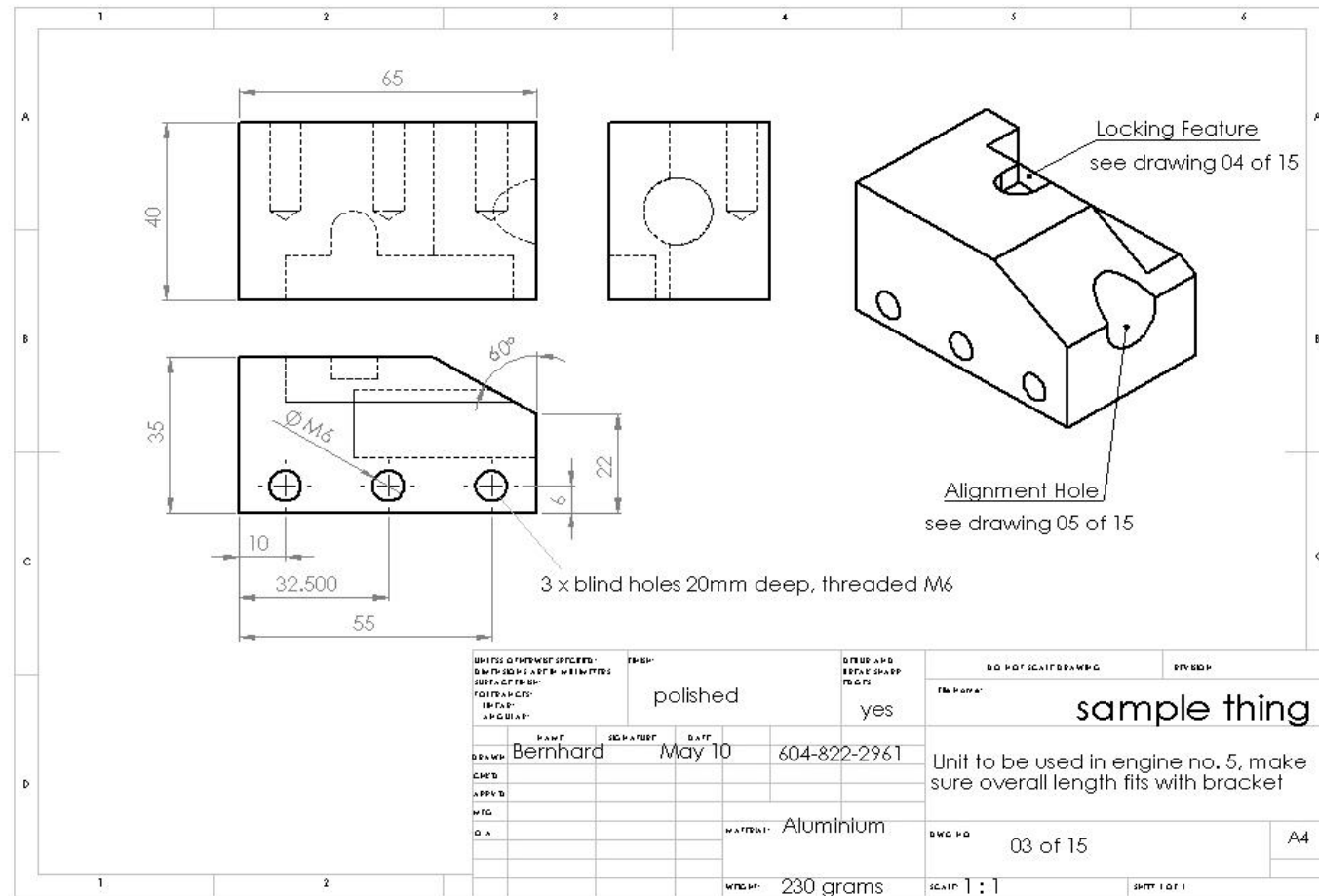
Good drawings tell you everything, excellent ones tell you exactly what you need to know:

## Basic info

- Looks
- Overall Size
- Material
- Part Name
- How many needed

## Details

- Tolerances
- Who drew it
- Context of the part
- Symmetries
- Repetitions
- Threads
- ....



- Overall Dimensions, Scale, tolerances, Symmetries, Units, 3D views such as isometric or perspective-projection, find hidden features and cavities, features such as threads or surface finishes, tolerances....
- Try looking at it like someone who has never seen the thing that you are showing on your drawing. Enough info there?



# Layout, Measurement and Drawing

## Drawings

- are a way to communicate what needs to be done
- can recommend an order in which to make parts
- should have everything relevant but not overload the reader
- naming: choose names that make sense to outsiders
- always include: scales, materials, features
- the context can be helpful to know
- go metric for dimensions (imperial on demand-only. imperial=lame.)