COMMON AND SPECIALITY CHUCKS FOR USE ON THE WOODLATHE

Chuck
A device which holds the workpiece on then lathe. A chuck can take many different forms.

Faceplate
Circular plate held on the headstock spindle to which the workpiece is attached by screws.

***Chuck use**

Most bowl and plate forms
Screwed to wood that will be turned
Screwed to waste block that is glued to wood that will be turned
CA glue, epoxy, or wood glue
Use wood glue on both faces to be joined with paper between

***Advantage**	**DISADVANTAGE**
Inexpensive	Not self centering
Versatile – Good general purpose	

Jacob's chuck
Originally a proprietary name for a type of drill chuck which can also be held in the headstock or tailstock of a lathe.

***Chuck use**

Attached to a morse taper is used mainly for drilling when in tailstock
It can be used in headstock to hold a small work piece instead of a drill.

***Advantage**	**DISADVANTAGE (for mounting wood)**
Self centering	Leaves indentations on wood
Best way to hold drill for drilling	Small diam. tenons only
	May work out of headstock

Four jaw independent chuck

***Advantage**	**DISADVANTAGE**
Best for off center work and irregular shaped pieces	Difficult to center

Three jaw chuck
A self-centering chuck found used mostly on a metal lathe.

Four jaw chuck (Vicmarc & Axminister)
A self-centering chuck These chucks are often known as scroll chucks because of the internal spiral grooves which move the jaws. See scroll chucks below.

Scroll chuck

A four-jaw chuck, now very popular amongst woodturners. So named because the teeth on the underside of the jaws engage in a raised spiral (i.e. scroll) on the back-plate. Movement of the back-plate causes the jaws to move in or out in unison.

***Chuck use**

Available from a variety of manufacturers in a variety of sizes

Usually comes with or has available a variety of accessories for holding wood

Expansion mode (into recess), Contracting mode (around spigot), Dovetail jaws, Gripper jaws, Shark jaws, Long nose jaws, Bowl jaw segments, Screw, Cole jaws (Nova), Jumbo/Mega jaws (Oneway)

***Advantage**	**DISADVANTAGE**
Versatile (see above list)	Expensive
Self centering	
Easy to mount and remount	

Precision combination chuck

A popular proprietary chuck with attachments which can perform many of the functions performed by the chucks listed here. It works on the basis of expanding or contracting collets. Nowadays, scroll chucks are preferred.

Jam chuck

A scrap piece of plywood or solid wood attached to a faceplate, with a recess turned into it to accept the rim of a bowl or plate

***Chuck use**

Turn bottom of plates or open bowls as long as the rim is flat and round

With a spigot and using the tailstock it is possible to turn the bottom of natural edge bowl and vases

***Advantage**	**DISADVANTAGE**
Inexpensive	Must reshape for each use
Self centering	light duty use only (delicate touch)

Screw chuck

A chuck with a single screw fixed in the centre to which the workpiece can be attached.

Also a part of most scroll chucks

***Chuck use**

Bowls, goblets, finials

Initial roughing and bottom preparation

***Advantage**	**DISADVANTAGE**

Easy & fast attachment	Must have larger screw for larger work

Pin chuck

A chuck with a metal pin which is jammed into a hole drilled in the workpiece.

***Chuck use**

Roughing out of the blank and bottom preparation

***Advantage**	**DISADVANTAGE**
Great for green logs	Unable to reorient the log once on lathe
Quick mounting	only for shaping outside and bottom

Cup chuck

A chuck with a deep recess into which a spigot on the workpiece can be driven.

Eggs and spheres are sometimes turned with this

***Chuck use**

Short spindle shaped work without using the tailstock

***Advantage**	**DISADVANTAGE**
Self centering	not for large work
Good for production work	Usually made by turner

Morse taper (spindle)

Uses the existing taper in the headstock to hold a piece of wood when making something small

***Advantage**	**DISADVANTAGE**
Self centering	Must turn morse taper?????
Holds small work well	

Collet chuck

A holding device that forms a collar around the object to be held and exerts a strong clamping force on the object when it is tightened via a tapered outer collar.

***Chuck use**

Small items like tops and wine bottle stoppers

***Advantage**	**DISADVANTAGE**
Self centering	different size collet for each size of tenon
Quick attachment	

Vacuum chuck

Uses the normal atmospheric pressure and a vacuum to act as a clamp to hold the work

***Chuck use**

May be used to hold spinning wood on lathe as a foot if shaped on a bowl (light cuts)

Excellent for holding wood while sanding

May be used to hold material off the lathe for carving or shaping

Reverse turning of natural edge pieces

*Advantage	DISADVANTAGE
Holds work other chucks cannot	Requires vacuum chuck
	Expensive (usually)
	Not self centering

Straka chuck (Doughnut)

***Chuck use**

A homemade chuck that is used to hold a bowl when forming the foot (reverse turning)

Reverse turning of natural edge pieces, sanding of finished work with a spigot

*Advantage	DISADVANTAGE
Inexpensive	Must make yourself (Not available commercially)
Holds work very well	Not self centering

Longworth chuck

***Chuck use**

A homemade chuck that is used to hold a bowl when forming the foot (reverse turning)

Works like jumbo jaws

*Advantage	DISADVANTAGE
Inexpensive	Must make yourself (Now available commercially)
Self centering	light duty use only (delicate touch)

Escoulen chuck

A multi-axis chuck

***Chuck use**

As a cup chuck will hold the piece of wood for a single axis turning

As an eccentric chuck it will hold a piece of wood for variable axis woodturning

*Advantage	DISADVANTAGE
Holds work other chucks cannot	Expensive
	Limited use

Escoulen reversed ball and socket chuck

A multi-axis chuck

***Chuck use**

Will turn off center with the axis parallel to the spindle

Will do eccentric turning, in changing the angle of the axis

Can combine both of the previous functions

***Advantage**	**DISADVANTAGE**
Holds work other chucks cannot	Expensive
	Limited use

This is a sampling of the many chucks available. I know that Sorby and other manufactures have multi axis chucks and there are chucks out there I may not know about, but these are what I had available at the time of this demo.

Sources

http://www.wbnoble.com/
Click on articles
Scroll down and click on: All about vacuum chucking for woodturners

http://www.cumberlandwoodturners.com/
click on tips
click on methods and jigs for reverse turning bowls

http://www.woodturners.org/tech_tips/misc-pages/chuck_type.pdf