

## SAVVA Technical Tip 129 - Solving the 3/16" Dilemma

The following was sent in by Peter Vlietstra. Peter is a bike enthusiast and sometimes I think they are one step ahead of us car chaps – thanks Peter.

Many of the parts on vintage motorcycles are held together by 3/16" fasteners. Without any real rule, cycle parts and tin-ware tended to be BSC threads, machine parts tended to be BSF threads and instrument parts tended to be BA threads. Post 1951, the BSI (British Standards Institute) tried to kill off the BSF range below 1/4" and tried to restrict the entire BSC range, so 2BA became more prevalent. The Hall Green people also used a lot of 3/16" BSW (at 24 tpi), but this is an odd one out, not included in this discussion.

Nuts and bolts get mixed up and interchanged, sometimes without even knowing it. Trying to sort this out can be a headache. To try and work out whether this was an issue or not, I drew up the following table and added in the M5 screw thread for good measure:

Thread	2BA	3/16" BSF	3/16" BSC	M5 x 0.8
Effective diam mm	4.22	4.25	4.34	4.48
Included angle	47.5	55	60	60
Pitch mm	0.810	0.794	0.794	0.800
Pitch tpi	31.36	32	32	31.75

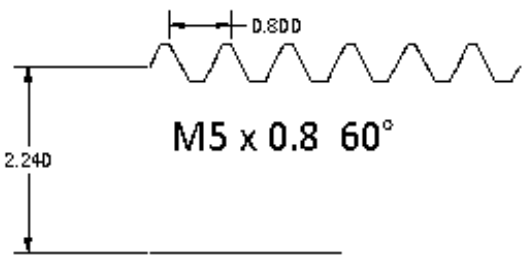
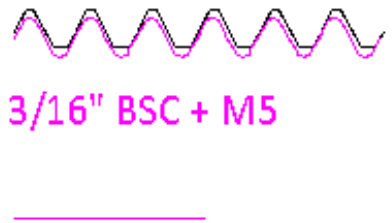
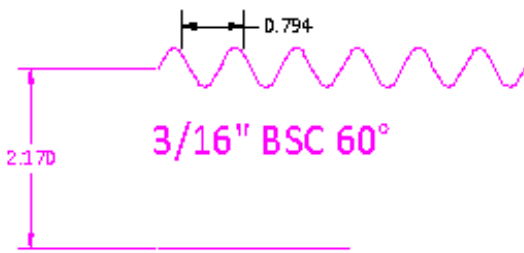
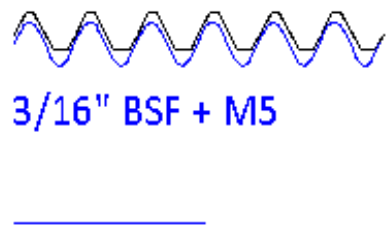
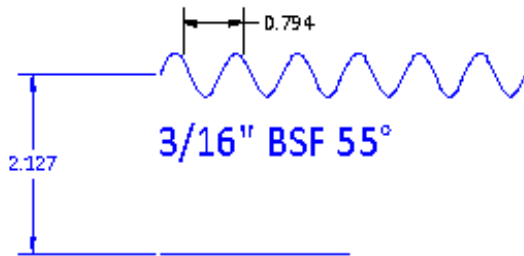
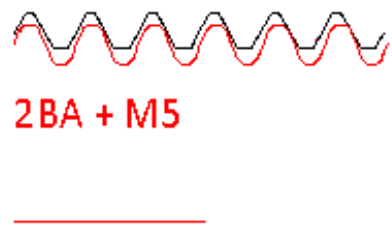
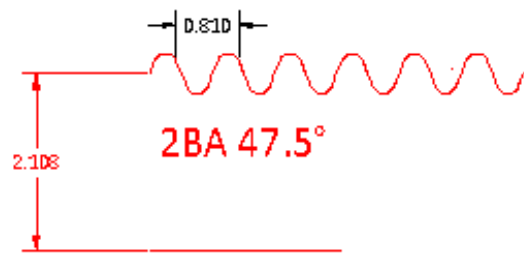
The smaller the included angle, the deeper the thread, so the greater the overall diameter. Overall diameters all seem to range between 4.75 to 4.85 mm.

Using a combination of nuts and bolts, and doing a little fitting, I then drew up the following table of fits: (this is all rather subjective!)

		Nuts			
		2BA	3/16" BSF	3/16" BSC	M5 x 0.8
Bolts	2BA	Right	Tight	Tight	Easy
	3/16" BSF	Tight	Right	Easy	Easy
	3/16" BSC	No go	Tight	Right	Easy
	M5 x 0.8	No go	No go	No go	Right

This table still did not resolve my headache. I was also having difficulties getting the fasteners I wanted in BA, BSF and BSC. I could however find all the bolts I needed in M5 with hex head, cheese head, countersunk and socket head. (Classic round head is derived from cheese head using a belt sander.)

I was sitting in my workshop, pondering over a Castle as what to do next when I had an idea. I took an M5 x 0.8 tap, fitted it to my hand drill, a little cutting paste, and converted all the female threads to metric!



Comparison of thread profiles on a common axis.