

**Here are some other common sources of a chattering condition:**

1. Tool set ahead of center.
2. A sticky, or jerky, cross-slide action.
3. Worn, out-of-round roller.
4. Roller of wrong diameter for job.
5. Not enough front rake on shave tool, start with one to two degrees rake, increase up to 15 degrees as required until chatter stops.  
This is possible on straight cuts only.  
Shave tools with deep profiles would require correcting depths of steps to hold size.
6. Cross-slide cam or linkage worn or loose.
7. Spindle bearings in machine are worn or need adjustment.
8. Surface speed and feed may be incorrect for the job. Make slight changes to determine if this is the case.
9. Float spring on shave holder is not tight enough.
10. Guide pin bore's out of round.

**Summary**

On any machine in good condition, shaving will produce diameters which are round, and on size within +/- .0005. Contours can be produced which otherwise would be possible only by tracing. By its nature, shaving can almost always be completed in less revolutions than an end-working operation; hence shaving seldom is the limiter on cycle time. Shaving also has its built-in diameter controls; it does not rely on exact cross slide stroke length for accuracy, and to a certain extent, it can compensate for index or spindle errors. If holders, and the machines, are in good condition, and if properly designed, correctly ground tools are used at appropriate feeds and speeds, shaving gives minimum trouble. If trouble occurs, look to the Force "E" factor. Simple as it seems, control of Force "E" is the key to efficient shaving.

## Tool Design / Constant "A"

For any one particular holder there is a constant "A" figured from the bottom of the tool to the centerline of the work. This constant is computed according to size of dovetail and the capacity of the holder as follows:

- For the 1/2 inch size dovetail the constant is equal to 3/8 inch plus 1/2 the capacity of the holder being used.
- For the 5/8 to 1-1/2 inch size dovetail inclusive the constant is equal to 1/2 inch plus 1/2 the capacity of the holder being used.
- For the 1-5/8 inch size dovetail the constant is equal to 3/4 inch plus 1/2 the capacity of the holder being used.

With this constant "A" the overall height of the tool may be figured. From constant "A" subtract one half the smallest diameter to be shaved. The remainder is the overall height of the tool and all steps are dimensioned down from this surface. (Note: No correction for 1/4 degree front clearance is needed on steps of shave tool). The overall tool height may vary by plus or minus 1/32 inch. Adjustment in the holder compensate for this variation in tool height. Be sure to position the roll on part to be shaved to obtain the best supporting surface.

The length of the tool is obtained directly from the tooling chart. It is important that the face and heel of the shave tool be ground with the 1/4 degree angle as shown.

**Example:** Shave the .500 and .375 diameters of the part shown at right, using a SDT-7120, 5/8 size Slater shave tool holder.

