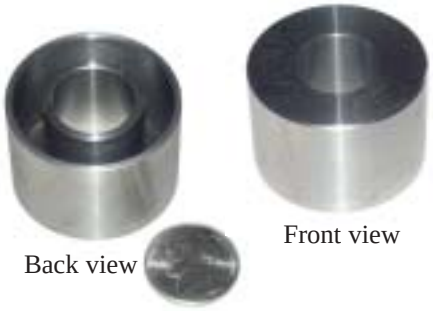
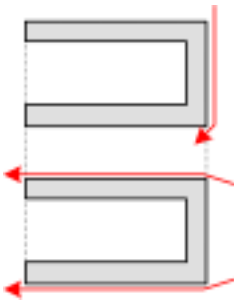
Omni*Turn* Interesting Examples

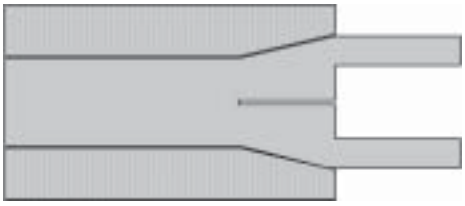
Blank from a Multi

Here is an interesting example that shows how important work holding is! This part has to be bored on the ID, faced, and turned on the OD. The finish must be a 32 or better and the bore is critical since there will be a bushing pressed in. The end users is looking to hold .0005" total on the bore.



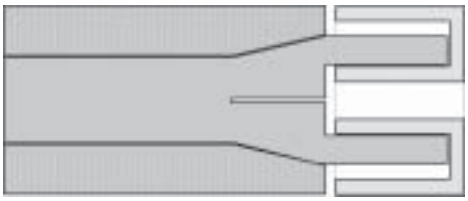


Operations to be performed



Work Holding - extended 5C collet

The work holding is being done by an extended 5C collet. The original collet was holding on the entire length of the part.

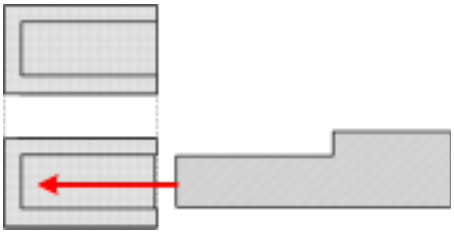


Original collet holding part

The parts that were turned with the original collet has a number of problems with bore size and shape.

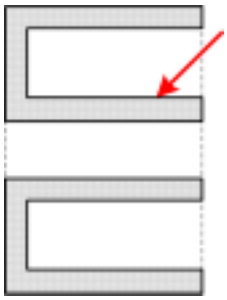
- Inconsistent size down the length of the bore. The hole would be good in the front, vary by as much as .001 in the middle and then be good in the back.
- The hole was not round, there were sections were the hole was oval.
- Repeatability was a problem, it was if the slide was not repeating.

After checking everything it came down to the work holding and blank problems. The part is being blanked on a multi. The inner cavity is being cleared out with a trepanning face grooving tool. This tool puts a fair amount of pressure on the material.

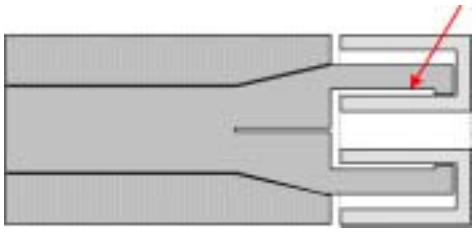


Trepan operation on Multi Spindle

When the trepan tool pulls out it was found to leave a scroll mark on the inside major diameter.



This scroll mark was enough to create havoc with the part size. The work holding collet was relieved so that it would only hold on the front edge. This edge is near the bottom of the cavity where the front wall of the part supports the gripping force.



Collet with relief

The relief in the collet made all the difference. Now the parts were consistent and we were able to hold the required .0005" total bore tolerance consistently.