

Self-Test

Your machines made good parts for years and they can make good parts again!

If you are having issues with “Out of Tolerance” parts you can diagnose it yourself with a little help using our Self-Test. Please keep in mind that it is only a starting point and will need to be adapted to your specific situation.

Some questions to ask. (Before you spend your money to call for service and have a machine laser calibrated.)

- Is the finish as expected?
- Are the holes on location?
- To machine good parts, are you constantly editing your tool offsets or modifying part programs?
- Do you bore holes instead of circular interpolate them?
- Do you shim under your parts to make them square?
- Is there only one operator that can make good parts on a particular machine?

Some easy self-checks can provide you a world of information.

You have all the tools; a machine, a machinist, a piece of steel, the tooling, and the inspection department. There is no immediate need or reason to call for service until you know the outcome of the self-test.

OUR SELF TEST

- Enter the part program and leave it alone do not edit to improve part dimensions.
- Circular interpolate a pocket or thru hole, remove it from the machine and inspect it.
 - Is it round?
 - Is it the correct size?
 - Is it flat / scalloped at the quadrants?
- Relocate the part in a different location and do it again with no material removal. (just blue it up)
 - Does it come out the same?
- Cut a rectangular pocket, remove it from the machine and inspect it.
 - Is it square?
 - Is it tapered in any way?
 - Is it the correct size?
- Relocate the part in a different location and do it again with no material removal. (just blue it)
 - Does it come out the same?
- Circular interpolate two holes different size (smaller), remove it from the machine and inspect it.
 - Are the holes the correct size??
 - Are the holes round?
 - Are they the same?
 - Are they on location?
- Relocate the part in a different location and do it again with no material removal. (just blue it)
 - Does it come out the same?
- Put some pin holes on location, remove it from the machine and inspect it.
 - Are they on location?
- Relocate the part and try it again with no material removal, (just blue it)
 - Are they the same?

- Face mill the top, and / or fly cut it.
 - Is the overlap blend stepped?
 - Is there a swirl pattern?
 - Is the finish as expected?
- Relocate the part in a different location and do it again with no material removal. (just blue it)
 - Does it come out the same?

You should see a nice even pattern (Blanchard Swirl) with both sides of the tool evident. If any of the above tests do not come out as expected your machine may need some help.

Some of the results indicate.

- Basic level condition of the machine. (It may be twisted?)
- Straightness of the machine.
- Squareness between axes.
- Tight or loose guide way gibs.
- Backlash in the drive system. (Ball screw end play and/ or backlash)
- Positioning accuracy.

Supplying this information will give any technician a head start and save you in the long run.

Now you have some basic trouble shooting information needed to take the next step.

Question is:

- Can we do it in house?
- Do we have the tools?
- Do we want to buy the tools?
- Do we know a good mechanic?
- Does he have all the tools?
- Does he want to buy the tools?
 - Can he laser validate the machine, calibrate the axes and certify the results?

We are hands-on experienced and we HAVE the tools. We stand ready to help. If you would like more information contact us anytime.

Email: timpray@measurementandmachine.com or call (313) 530-5083.

Now that you have made your decision here are some of my general rules for any good machine tool alignment and calibration.

The first step is to precision level the machine base. **(At the rails not the table top)**

With this completed you must check and adjust the gibs, now comes the time to check and adjust squareness between the axes (x to y, x to z, and y to z) and parallelism (spindle tram). These adjustments sound simple and they are for the experienced machine tool service technician. Now bring out your laser, verify and fine tune all the necessary adjustments and calibrate the pitch error compensation to bring the machine to optimum running condition

Now, repeat your tests to verify all the work. A good final part is the best confirmation that you have your machine is back in optimum condition!