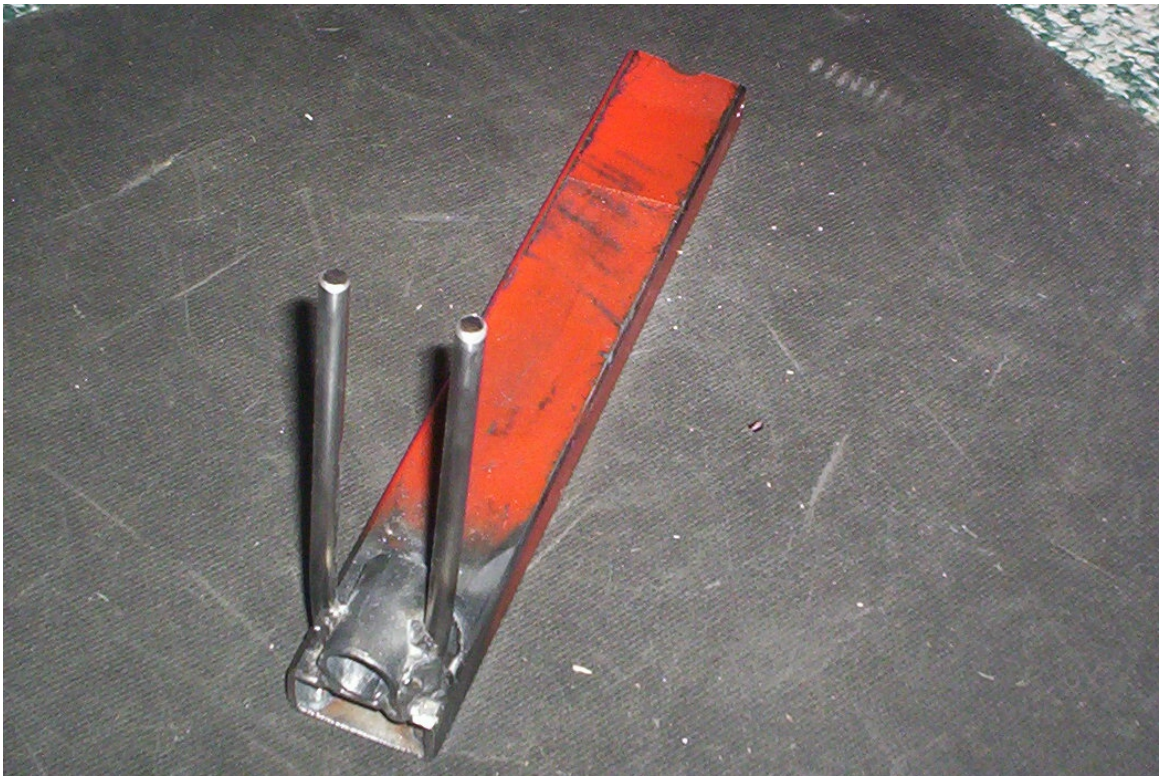
Morton Gripper Calibration Device

This is a simple device used to calibrate grippers. The grippers are installed into a fixture and weight is added to a strap to pull the gripper closed. The amount of weight to just close a gripper is then considered its overall strength in pounds. It is possible to chart out how much weight it takes to move the gripper 1” 2” and such to also plot out the difficulty of the sweep as well. We have calibrated all of my grippers and Dave’s grippers and in every case we both agreed that the ratings accurately depicted the correct order and relative difficulty of the gripper. Where we felt one gripper was considerably harder than another, the weight to close it bore this out. When we felt one was just a touch easier than another the results showed that as well.



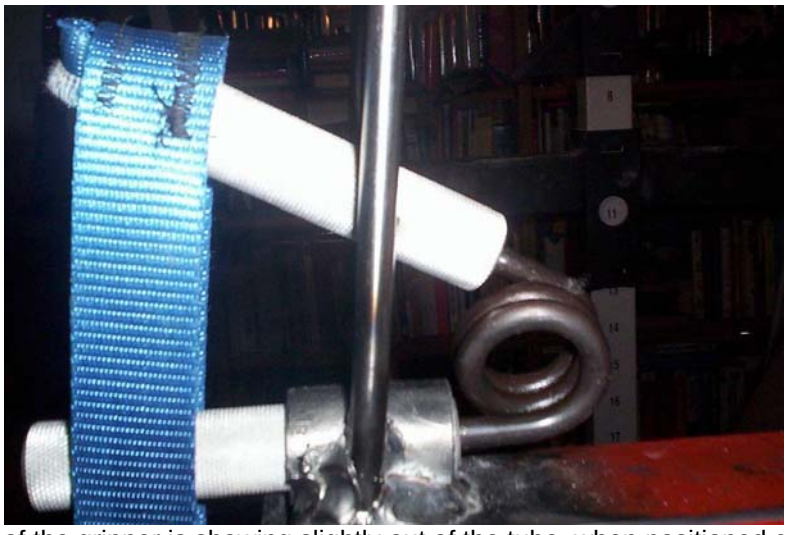
The base is a square tube 2"x 7/8" OD 12" long. You will need to clamp the base to something so the gripper can hang off the edge. This is important as the weight you place on the gripper will try to flip the whole device over and could result in some serious damage to yourself or your home if it does come flipping out. If you do get hit with a flying device be sure to send me pictures, I will laugh at your expense. Also watch your toes; hanging 200 some pounds on a gripper with a thing like this clamped to something is dangerous. Don’t say I didn’t warn you. I will still laugh at the pictures though.

There are two 7" 5/16" rods 1 1/4" apart standing straight up. These are safety supports that prevent the gripper from spinning over and dropping the weight stack.

The gripper will be inserted into a rigid conduit pipe 3/4" ID 1.5" long. 3/4” Rigid should be easy to get from the Home Depot or Lowes.

Here is a close up of the end. Notice that the safety support bars are going through the end of the square metal tubing and welded on top and bottom of the tube. Also Dave claims his welder was broken hence the drippy looking welds HAHAHAHAHAHAHA (he always calls my welds JB welds as in Just Barely welded, although none of my stuff has come apart… and none of it looks so sloppy) I guess the important part is this device needs to hold over 200 pounds, so make sure it is solid before you start using it. Drippy or not these welds are plenty strong enough.

Put the gripper in the device with the handles of the gripper coming out from the calibrator. Position the end of the gripper with the end of the steel tube that is holding the dogleg of the gripper.



NOTE: the end of the gripper is showing slightly out of the tube, when positioned correctly the end of the gripper should not protrude. The small amount of protrusion should not affect the results of the measurement but we tried to be very consistent with gripper positioning.

Make sure to always put the dogleg side of the gripper into the fixture. We also put a small piece of mylar film between the gripper handle and the tube used to hold the gripper to prevent damaging the knurling.

Here is the picture of the strap with the hook to connect to the loading pin for weights.

Position the strap so the end of the strap is at the end of the gripper. We put a small strap across the back of the strap to make a stop so we could easily position the strap on the gripper, it isn't required but it does make things easier. When you put the weight on and lift it to the calibrator the back strap prevents the strap from sliding too far from the end of the gripper. Then when you release the weight you can readjust the strap making it even with the end of the gripper by lifting the weight stack and pulling the strap to the very end of the gripper.

Here it is lined up with the strap at the end of the gripper.

Here a GM is loaded and a block of wood is used as a spreader. The goal is to not allow the strap to contact the fixed leg of the gripper and throw off the calibration. The picture on the left shows the loading pin loaded with 125 pounds. The picture on the right is when the gripper just closed with 150 pounds on it. In the picture the gripper looks close to the metal rod on the left, but it is not touching it.

The strap must be 1” wide, different widths would likely result in different values as the force will be spread over a different surface area. We used a strap from one of those “winch” type of straps that you use to hold things to your car.

Set the weight onto a loading pin attached to the strap. Make sure the gripper is not against the metal rods on the calibrator they are only there to prevent the gripper from spinning out. Any contact with these will induce some error into the measured result.

Put a base weight on the loading pin to get you close to closing the gripper and you can then add small plates on top of the weight stack to fine tune it closed. We would get it closed, reduce the weight, unload the gripper a small amount by lifting the stack up, and then very slowly let the weight back down. Making sure we are not bouncing the weight on the gripper, we then slowly added weight again to verify that the same result was achieved.

We have used two of these devices and both came up with the same numbers for specific grippers. We have measured grippers on different days as many as 6 times and always come up with the same number for the gripper. We use a 2.5 pound plate as the minimum increment, you could measure them to a much more precise number but I don't think differences below this are critical. Here is a list of grippers we measured:

Gripper	Pounds	Rating
Sport IM Frankyboys SPORT	42.5	0.08
T IM T	57.5	0.58
T IM Frankyboys T	57.5	0.58
#2 Franky Boys	110	2.13
SM Frankyboys SM	132.5	2.82
SM Plus	140	2.93
#3 FrankyBoy's easy one	142.5	2.96
#3 Gregs Training 3	145	3.00
#3 Gregs non COC 3	145	3.00
#3 Daves old hard 3	150	3.07
RB260 Steel Handle	150	3.07
GM Plus	150	3.07
GM	150	3.07
#3 Euro #3 Frankyboys Replica	152.5	3.11
#3 Daves 2k6 #3	152.5	3.11
#3 Gregs COC 2K3	152.5	3.11
RB260 Diesel 5th	155	3.14
#3 Gregs COC Single Stamped	157.5	3.18
MM1 FrankyBoy's MM1 Replica	160	3.21
#3 Gregs COC 2K6	160	3.21
#3 Daves 2K6	160	3.21
E Frankyboys narrow easy Elite	162.5	3.25
Elite Gregs	165	3.29
MM2 FrankyBoy's MM2 Replica	170	3.36
Elite Daves	172.5	3.39
RB300	172.5	3.39
MM3 Replica	180	3.50
Elite Plus	182.5	3.54
SE	185	3.57
MM6 Replica	200	3.79
#4 Daves Training #4	205	3.86
Greg's non COC #4	207.5	3.89
#4 Daves 2K5	217.5	4.04
#4 Gregs Hard #4	217.5	4.04

The gripper rating is a ratio to the base #3. We used my training #3 which I consider an easy #3 (although there are much easier #3s out there) and then every gripper is a ratio from that gripper. I will send out the spreadsheet after we get some more numbers (in pounds) and hopefully finalize the ratings scale. In truth the poundage is an easy way to compare grippers but people like to see things on a "3" scale.