

Adapting a metric sport bike brake caliper to a 1979 Moto Guzzi SP1000.

by Leo Weisman, toller@aol.com

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Why adapt a caliper from a Japanese motorcycle? My original complaint was that even with a substantial pull on the brake lever, the bike would only come to a slow stop. That plus occasional arthritis in my hands motivated me to find a way to have an effective front brake without requiring King Kong hands. My first plan had been to use a different master cylinder that would give me more mechanical advantage, but the replacement did not offer much change and I suspected the old 2 piston Brembo's just were not up to the task. Pete Roper suggested using a caliper from a Japanese sport bike. It had never occurred to me that this could be done, but Pete's encouragement and my watching many episodes of Monster Garage gave me the confidence to do it.

There is an adapter available to replace the 2 piston Brembo caliper with a 4 piston Brembo caliper (\$75.00 adapter & shipping: <http://www.guzzitech.com/store/Brakeadapt.html>). Since I don't have that caliper handy and wanting to hold the cost down, I checked out eBay and found a large listing of calipers. I purchased for a "buy it now" price of \$35.00 a set from a CBR929RR figuring a heavy sport bike ought to have great brakes, as well as a full array of pads and compounds.

The photo to the left is my first effort. Using a drill press and abrasive chop saw from Harbor Freight, the whole project took about 4 hours. I haven't removed it to trim off the excess metal or paint it yet. For this article, I made a new mount for the left rotor. The second one turned out looking much better and took far less time.

Though I am not trying to be discouraging, the usual disclaimers: if you take on this project, you do so at your own risk. Be sure to use the best components available. My experience with the stiffness of the metal used gave me confidence that it had the correct characteristics for the project. If you do not have a source for metal stock, consider Shapiro Supply; they have a downloadable catalog and will ship mail-order <http://www.shapirosupply.com/>. If you have any questions, you can email me at toller@aol.com.

Though I made this mount for the Moto Guzzi, the same can be done for BMW's that use the same mediocre Brembo caliper as on my machine, or adapt just about any caliper to any rotor. Just make sure to test the combination of components carefully before embarking on a track day. I wouldn't suggest this project for a bike under warrantee, as its bound to violate the warrantee terms.





This is the second mount build, solely for the purpose of these photos. If I connected this caliper to the linked brake system, the proportioning would be far to much to the front wheel when engaging the foot brake. I'm more likely to try and mount this caliper on the rear rotor.

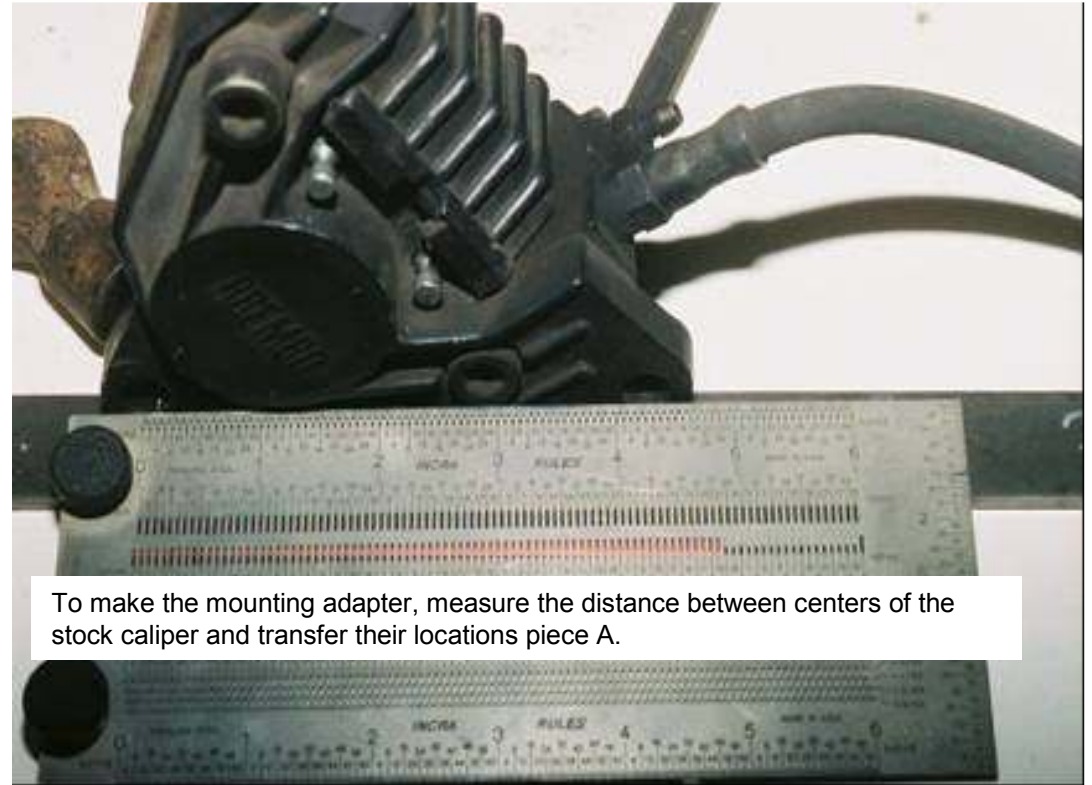


My first effort, a mounted caliper from a CBR929RR purchased on eBay for \$35.00 connected to the hand brake. I still have the linked brakes to the left rotor and rear brake. Note the metal stock used, My source is listed below.

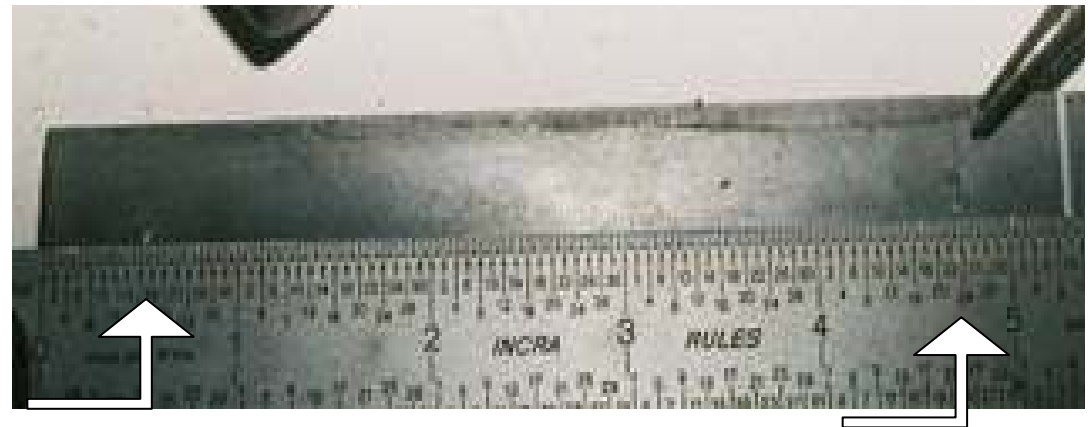
| Steel flat cold finish 1018 | | | | |
|-----------------------------|-------|--------------|---------------------|---------------------|
| Thickness | Width | Weight /foot | Price per foot 1-6' | Price per foot > 6' |
| 3/16 | 1 | .6381 | 1.75' | .85' |
| 3/16 | 2 | 1.276 | 3.50' | 2.00' |

Page 13 of the Shapiro Supply Catalog
<http://www.shapirosupply.com/Catalog.pdf>

Purchase the caliper and metal stock first. Cut a piece of 3/16th / 1" stock an inch or two longer than the width of the caliper at the mount. Excess can be trimmed later. Remove the stock Brembo and measure the distance on centers between the mounting holes. Transfer the width to the 3/16th / 1" stock. Line the piece up on the fork tub lower and determine how close it can be mounted. On mine, the holes had to be about 1/8th inch off center to clear the curve of the lower fork and fit flat against the mount ears. For convenience, I'll refer to this as piece A.



To make the mounting adapter, measure the distance between centers of the stock caliper and transfer their locations piece A.



Centers are 4 1/4" on my SP1000. Mark and center punch the location for the first hole. Use a compass to transfer the distance between centers, scribe an arc. Center punch for accurate placement and drilling.

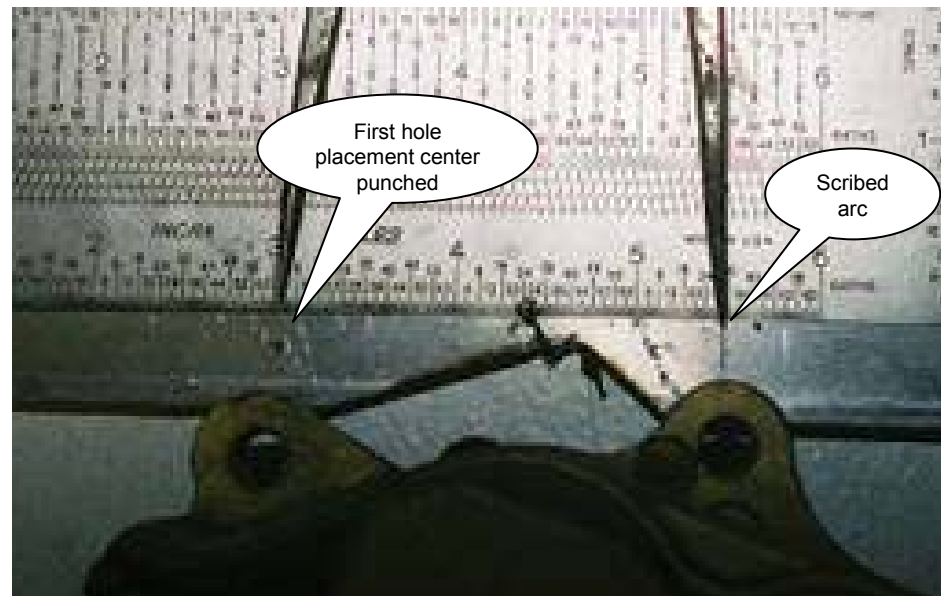


15/64th is as close as I could come to the stock bolt that originally held the caliper to the fork lower tube on my '79 SP1000. After drilling second hole in piece A, mount it to the lower fork tube "ears" to check fit. If the bolts bind, file the hole as necessary.



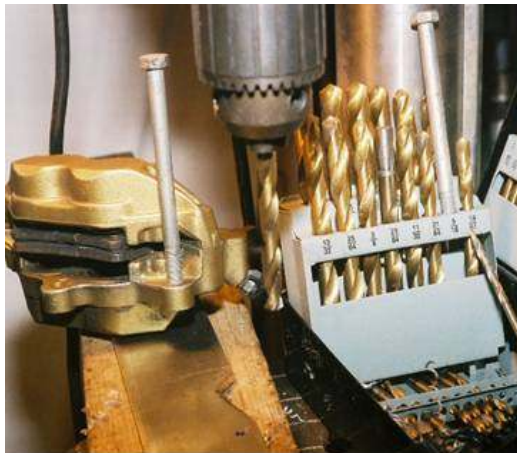
Layout mount position for caliper to piece B. This caliper requires some material be removed for the mounting holes to be fully on the metal. You can use a grinder, metal cutting jig saw or abrasive saw to remove the material. Remove small amounts and periodically check what remains to be removed.

After sufficient material is removed, mark and center punch the location for the first hole. Use a compass to transfer the distance between centers, scribe an arc





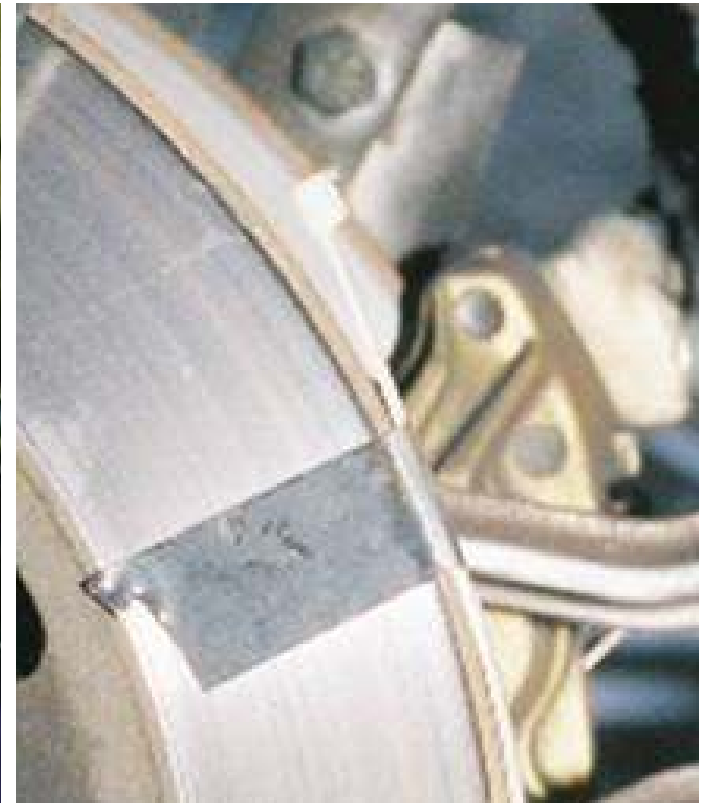
Drill a pilot hole, then the full size hole for only one end of the caliper.



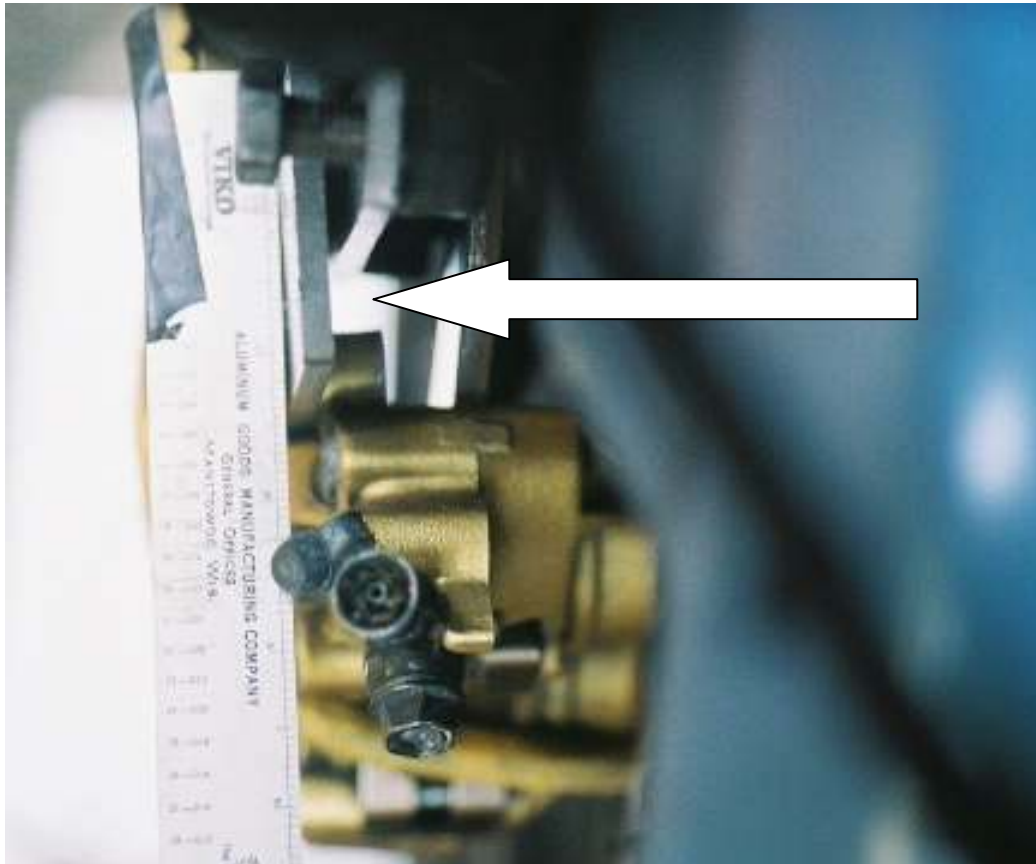
Size the holes carefully. For this caliper, $5/16^{\text{th}}$ is about as close as I can come to the metric size. As before, I center punched the location, then transferred the distance between centers with a compass. drilled a pilot hole with a small bit before drilling with the full size drill.



Check the fit and file if necessary to allow both bolts to enter without binding. For now, ignore that the two pieces A & B have been drilled and bolted together as this will come later.



Tape down a quick tie or some other item to act as a spacer when aligning the caliper to allow the rotor some clearance from the caliper.



This view is looking down from above to see how much gap there is between the new rotor and the mounting plate. It is about $\frac{1}{2}$ ". This measurement was transferred to the 2" mounting plate and tapered. The marked line on the plate to the right is almost parallel to the fork down tube. The line should have been drawn from $\frac{1}{2}$ " at the top to a line that would extend just below the center of the axel. Had I marked and cut it correctly, the mounting bolt for the bottom of piece A would have also gone through piece B.



The goal is to mount the new caliper as close to the original mounts as possible for rigidity. The bungee is to hold the caliper firmly to the rotor



Bolt piece A to the fork lower tube and bolt piece B to the caliper. Remove the brake pads from the caliper and press in the pistons sufficiently that they cannot touch the rotor. With the quick-tie mounted as a spacer on the edge of the rotor, place the caliper on the rotor so it firmly touches the outer edge. Circle the rotor assembly until it bumps against the other adapter piece. You may have to either press the caliper against the outboard or inboard side of the rotor for piece A and B to overlap. Mark the position for pieces A & B to be bolted together.



After drilling the holes, transfer the location to the second piece, mark, center punch, and drill. I chose 5/16th holes and used 8.8 hardened bolts and nuts plus Loctite.

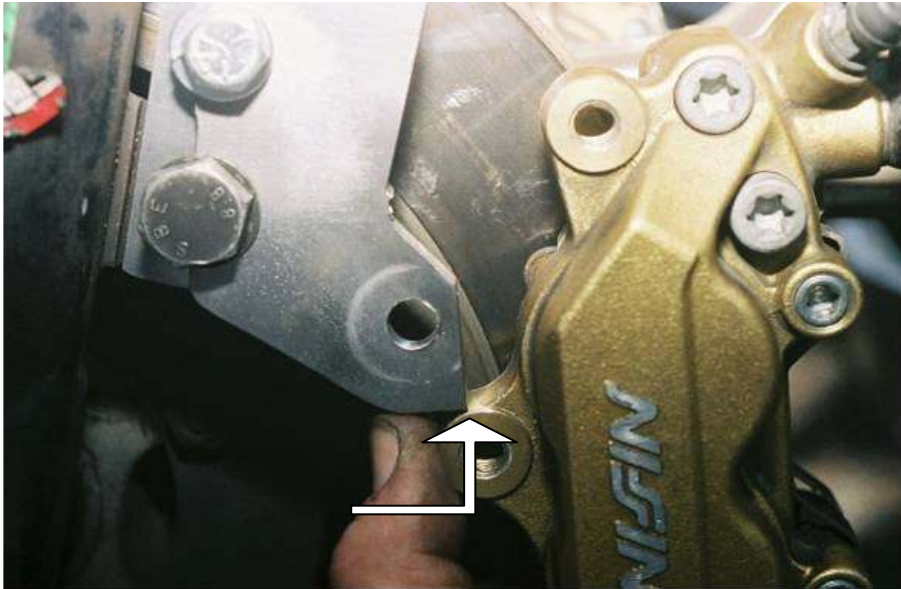


The fitted mounting plates together. Be sure to mark the pieces so they won't inadvertently be assembled incorrectly changing the alignment of the caliper to the rotor.

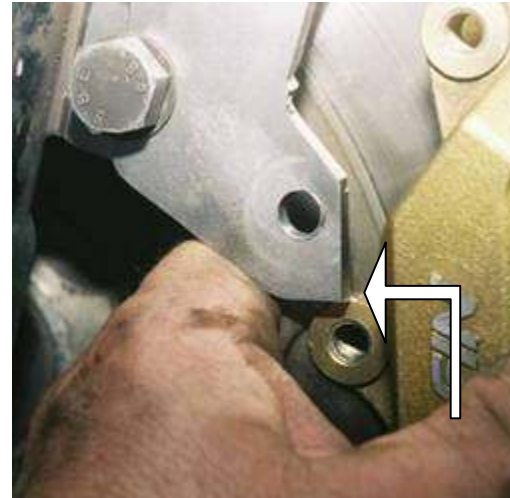


The finished mount pieces with all the excess metal removed, sharp edges rounded and all burrs filed flat. Note the arrow: I trimmed this so the mount bolt through piece A would not be half on piece B. Had I trimmed piece B correctly, the bolt would have passed fully through both pieces as it does on the first mount (see the photo of the right side caliper for detail).

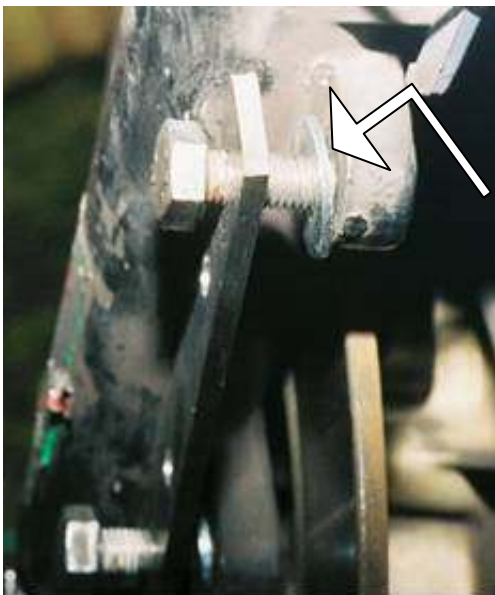
Shimming



Bolt piece A and B together and then to the fork lower. With the brake pads pressed in as far as they will go or removed, press the brake pad surface of the caliper against one side of the rotor and identify where on the edge of the mount it hits.



Press the brake pad surface against the other side of the rotor and identify where on the edge it hits. Half the distance between where the caliper hits while pressed against the rotor from each side is the thickness needed to shim the caliper to center it on the rotor. In this case, the caliper needs to be moved out from the wheel. Depending on the caliper used, it may be necessary to move the caliper in towards the wheel.



A shim is mounted between piece A and both fork lower mounting "ear" to move the caliper outward. Had it been necessary to move it inboard, I would have placed the shims between the caliper and piece B.



The finished mounted caliper. I'm still considering welding pieces A&B together and removing the bolts. Paint the mount bracket in your favorite color. Reassemble using semi-permanent Loctite on the bolts and nuts.

I've installed HH pads for better grip. This caliper calls for a banjo fitting as does the one at the master cylinder. I found that pretty much any banjo to banjo brake line will work. My next step is to order braided brake lines. Be sure to bleed the brakes, then check the caliper for binding and reshim as necessary.

That's pretty much it. If you have suggestions, criticisms, discover errors or have a question, contact me at toller@aol.com. THE END