

REPLACEMENT BRAKE LINE INSTALLATION

Congratulations on the purchase of your new custom-fit, DOT-approved original-style rubber or replacement stainless steel brake lines for your Yamaha XJ-series bike! The use of these rubber lines will help restore your braking performance to original specs; if you're replacing with stainless, these lines will greatly enhance the "feel" of your brake lever, giving you better control and stronger, more precise braking ability. Please get used to the newer feel of your brake lever under a variety of stopping conditions after you get the lines installed and properly bled, as you want to know how the bike is going to react before you have to put it to the test.

INSTALLATION:

Notice that each of the hoses are marked as to both:

a) which hose it is (i.e. LH caliper, or Master Cylinder, etc.). Also, "LH" means left-hand, or the clutch lever side of the bike, while RH means right-hand, or the brake lever side – in other words, **AS YOU SIT ON THE BIKE.**

b) which end goes to which mounting point. Each hose is tagged with a piece of tape that tells you which end goes to the "termination point". On master cylinder lines, that tagged end is where that hose attaches to the master cylinder.

On the caliper line(s), the tagged end is where that hose attaches to the caliper.



Parts and tools that you will want



12mm closed end wrench or short 12mm socket



Paper towels

Plastic trash bag or similar protective material to place over the top of your fender, fork legs, wheel rims and tires, etc. When you remove the lines from the distribution block/joint, brake fluid will leak from there down onto your fender. **DON'T LET BRAKE FLUID RUIN YOUR PAINT!**

Some type of ground cover to go under the front brake calipers. Again, you're going to leak brake fluid when you undo those lines.

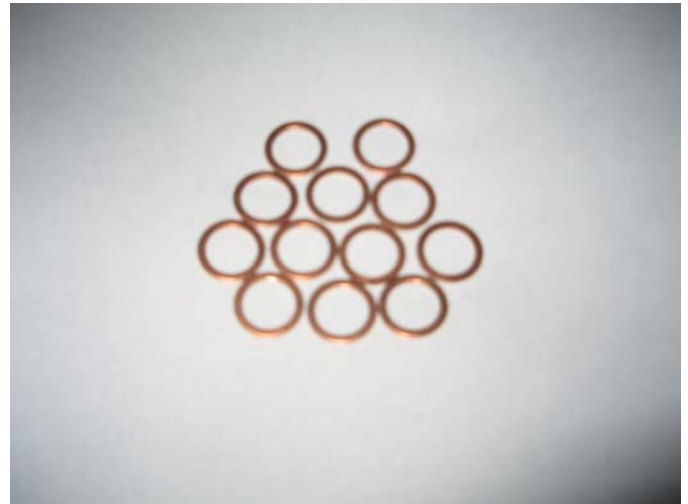
A small hammer to help you break loose the union bolts that secure your brake lines. Bolts that have never been removed, or have not been removed in quite some time, tend to "weld" themselves to the threads of the item that they are screwed into.

Other small tools, flat and phillips head screwdrivers in case you have to take some things apart in order to access the distribution block... it gets crowded down there! It is sometimes necessary to remove the lower fork tree "cover plate"; the flat plastic plate that says YAMAHA on it, or in the case of the 650RJ Seca, says nothing at all. The distribution block usually lives directly behind this cover plate. Sometimes it is possible to access the distribution block without removing this cover (usually the models that have the "L"-shaped distribution block); on models that have the long, straight "log"-type distribution joint, it's normally necessary to remove this cover plate, usually by the removal of two or four small phillips-head screws.

New brake fluid. Never, EVER re-use brake fluid! You can read some very interesting information in regards to the different types of brake fluid that are available, pros and cons, here:



You will ALWAYS want to replace your brake line fitting crush washers with new ones, because the old ones will be... well, um... crushed. We carry these (our part number is [HCP4231](#)) and have them available if you have not already supplied yourself with new ones. Do NOT re-use old crush washers! They may not seal properly.



It is strongly recommended that you replace the union bolts with new ones (part number varies by application), especially if they have never been replaced before. They accumulate junk inside of their passages, which will contaminate your new brake fluid. This picture shows why it's a good idea.



BEFORE YOU START:

PLEASE read all the way through these instructions! There are a couple of points that you will need to keep in mind when performing the fitting of your lines, and it is helpful if you have those points in mind before you start wrenching! Reading through these instructions will make the task easier, and result in a more correctly installed set of brake lines.

By the way, reading through the instructions will probably take more time than actually fitting the new lines onto the bike!

1) Be aware that unlike rubber lines, which are obviously a bit more flexible, stainless steel brake lines have zero torsional, or twisting ability; and it is for that reason that we have trial-fitted each bike's pattern lines onto a real, ORIGINAL, 100% STOCK BIKE to make sure that we got all the critical dimensions and parameters correct. By that, we mean hose length, bend angles of the end fittings, and "clocking", or orientation of the end fittings for both each end fitting and their relationship to each other.

So... if your bike is NOT stock, or if you're not sure whether it is or not, steel lines may be difficult or impossible to install; rubber lines may (or may not) still be fitted with some effort. "Stock" means the wheels, forks, calipers, hoses, hose distribution block or joint(s), handlebars and master cylinder are factory original or equivalent! The handlebars and master cylinder also need to be rotated or positioned in their stock positions.

NEVER TRY TO FORCE RUBBER LINES INTO PLACE USING ACUTE OR SEVERE BENDING OF THE HOSE. THIS WILL INTERNALLY DAMAGE THE INNER FLUID PASSAGE AND CAN LEAD TO REDUCED BRAKE LINE PERFORMANCE OR CATASTROPHIC FAILURE WHEN YOU NEED IT MOST!

A panic stop is a bad time to find out you've kinked your brake lines.

2) Take a moment and note CAREFULLY how the original lines are oriented and routed:

- through the caliper routing brackets
- through the frame and any wire/hose routing guides
- over and under any other cables, wiring harnesses, etc.

The routing of the lines is not always a direct, straight-line path from point A to point B, nor is it always an "intuitive" route. (Hey, that's mass-production assembly line reality for you.) In fact, because of this, it is recommended that you leave your original lines in place while doing the new hose routing and alignment... just remove the union bolts from the ends and push the rubber lines out of the way until you make your end point connections, and only then finally remove your original lines from the bike.

BEFORE YOU LOOSEN YOUR ORIGINAL LINES FROM THEIR END POINTS:



3) Note carefully how the end fittings (aka "banjo" fittings) lay up against their end joints. Many of the end points (calipers and distribution joints especially) have "tabs" cast into the housing that the "neck" of the banjo fitting lays against, thus assuring the proper placement and direction of the fitting; the right-hand caliper (above) and a distribution joint (right) from a 750 Maxim are shown here as examples. Although there may be a slight amount of rotational "play" allowed by such tab(s), it is always wise to lay the banjo fitting "neck" directly against the locating tab.



ALSO: note carefully how the bend of the banjo fittings is oriented against the master cylinder, the caliper, and the distribution block. IN MOST CASES, the bend flares away from the master cylinder or caliper body. Again, this is not always intuitive – I would suggest that you WRITE IT DOWN (or even take pictures, if you have a digital camera) before you loosen or remove the original lines, as in many cases (especially with the master cylinder) it is possible to install the banjo fitting onto the master cylinder either way, with the bend flared towards or away from the master cylinder. (This may not make sense now, but you'll see what I mean when you're standing in front of it.)

Trust me: once you remove the lines, you'll find that you forget which way they were oriented rather quickly, and again, especially with the master cylinder, the rubber hose CAN be installed in either orientation!

For the calipers, the banjo fitting is almost ALWAYS towards the REAR of the bike, AWAY from the caliper.

Banjo bend direction at LH CALIPER: _____

Banjo bend direction at RH CALIPER: _____

Banjo bend direction at MASTER CYLINDER: _____

Banjo bend direction at DISTRIBUTION BLOCK FROM MASTER CYLINDER: _____

TO LH CALIPER: _____

TO RH CALIPER: _____

Note: of course, some banjo fittings do not have a bend to them; they are perfectly straight in relation to the attached hose direction.

4) Please do one line at a time when fitting. We recommend that you START the installing of each line at the distribution block or joint. Please replace your original crush washers with new ones; a crush washer goes on BOTH sides of the banjo fitting.

Tighten the union bolt to a finger tight setting... no need to torque them down yet, although a little bit won't hurt.



Then route the new line in the same manner and path as the original rubber line.

You will eventually get the new line to the other end of its travel, at its termination point.

5) Now, **MAKING SURE** that the line is routed correctly (and on caliper lines, especially through the hose retaining brackets), install the crush washers and union bolt through that end, again trying to fit it against any tab stops cast into the piece.

NOTE: the original rubber caliper lines, where they go through the hose routing bracket, are surrounded by a small rubber grommet, about 1" tall.

6) Once all the lines are installed and positioned properly, you should go back and torque down all the union bolts, starting from the master cylinder and work your way down, in order. Please note:

- THE PROPER TORQUE FOR STOCK UNION BOLTS IS 19 FT-LBS.
- THE PROPER TORQUE FOR AFTERMARKET UNION BOLTS IS 15 FT-LBS.

The use of incorrect torque values can and will distort the crush washers, the banjo bolts, or both, and can lead to both leaks and/or failure of your brake system!

7) Make sure you have not spilled brake fluid on, nor otherwise contaminated the brake pads or disc brake rotors during this process. If so, you will need to **THOROUGHLY** clean either or both items with the proper cleaning solvents, such as brake cleaner or a similar non-residue solvent.

A FEW DOZEN WORDS ABOUT BLEEDING BRAKES

Bleeding the brake system lines, if they are empty of fluid, is a royal pain in the butt.

The best way is to use a vacuum bleeder system, such as a Mity-Vac system or similar. (HCP5908)

If that's not an option, then I would install the master cylinder and the caliper lines, and leave the caliper lines unbolted from the caliper (place a catch can or bucket underneath), fill the master cylinder to the brim (sometimes turning the handlebars or repositioning the master cylinder slightly to allow the reservoir to be filled completely), and then gravity can "pre-bleed" fluid into the lines overnight. Once that's accomplished, then you can install the caliper lines to the calipers and proceed with a regular bleeding procedure.

Just be aware that the master cylinders on these bikes move an incredibly tiny amount of fluid on each lever pull, so it takes a good long while to fill the lines. Also, you can adjust the brake lever "plunger push-bolt" (or screw) to its maximum travel, so that each squeeze of the lever moves the piston the maximum amount of travel. They're supposed to have a small amount of play when all is said and done and it's ready for the road, but during the bleeding process it's very useful to set this adjuster screw for **MAXIMUM** piston travel, meaning minimum free play.



Of course, on 750 Seca models with cable-actuated brakes, this does not apply.

Other notes: make sure your brake bleeder screws are clean, and do not have any junk or residue built up within them. Such junk, which can accumulate in the lowest part of your system (the caliper well), can easily be pushed up into the bleeder screws when attempting to bleed a brake system. In fact, it's not a bad idea to replace your original bleeder screws with brand new ones.

HOWEVER, be aware that should you install "speed bleeders" on a system that is empty of fluid (such as when changing brake lines, rebuilding the master cylinder or calipers, etc.), the spring-gate mechanisms inside the speed-bleeder screws cannot be opened by the pressure from the air compressed inside the now-empty lines. In other words, when the brake lever is squeezed and the master cylinder is pumped, the air inside the lines compresses, and the resulting pressure isn't enough to open the gate on the speed bleeder. End result: brake fluid won't enter your system. The solution is to use the original bleeder screws to fill and bleed the system, THEN install the speed bleeder screws.

In fact, while your lines are off, now would be an excellent time to take your caliper and master cylinder apart and clean, inspect and/or rebuild them. I sell replacement caliper seals and pistons for many XJ models, as well as master cylinder rebuild kits. Please see the ad on the xjbikes.com website at:

<http://www.xjbikes.com/Forums/viewtopic/t=2584/postdays=0/postorder=asc/start=180.html>

or write to me directly at:

info@xj4ever.com

Len

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