

## Installing a New Exhaust System on Your Motorcycle

It's not hard, but there are a few things to know before you try to mount that new exhaust pipe on your motorcycle. From the August 2003 issue of *Motorcycle Cruiser* magazine. By [Mark Zimmerman](#).



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*We installed this Roadhouse Brand system on the Suzuki Intruder 1500 LC.*

Many cruiser owners simply plan to change the exhaust system when they buy a new cruiser. Pipe swaps are popular for any number of reasons. Obviously, a new pipe changes the look and sound of the bike. There may also be some performance advantages to be gained. Or the stock system may have been damaged and cost of an aftermarket system is much less than the stock system. Finally, replacing the stock exhaust is a job well within the abilities of any shade-tree mechanic, making this particular mod a lot more attractive to the average rider than, say, degreasing in the cams.

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In theory, installing a new set of pipes involves little more than waiting for the stock system to cool off, unbolting it and tossing on the new stuff, right? Well, uh, yeah, in most cases that really is about all it takes. Having said that, there are some tricks that may make the installation of your new pipe go somewhat smoother. **Tool Time**

Common hand tools are all you'll need to perform a pipe change. A few common combination wrenches and a matching socket set (metric or functional sizes) will cover most of it. In some cases you may also need an Allen wrench or two.

Along with the wrenches, you should also have some antiseize compound on hand. I'm a big believer in using antiseize between most threaded and sliding connections and suggest you do the same. However, if you believe heat and rust are nature's own Loctite, then feel free

to assemble your exhaust system without it. Antiseize compounds come in several forms. I prefer the copper- or nickel-based stuff for exhaust system connections, as they seem to resist the heat a bit better than the graphite-based version. All three types work well, though, and can be purchased at most motorcycle shops or automotive jobbers.



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*A couple of sockets, a few wrenches and some copper-based antiseize compound are all you should need to install most exhaust systems.*

If the head pipes are going to be removed, which they will be if you're installing a complete exhaust system as opposed to a slip-on muffler, find out beforehand if new gaskets for the port-to-pipe joint are included. If they aren't, order some; they're cheap insurance against exhaust leaks.

## Preliminaries

Start by giving the OEM exhaust the quick once-over. Will you need to remove any major components other than the exhaust itself? Probably not, but on some liquid-cooled cruisers, the radiator may have to be removed or loosened to gain access to the front cylinder's head pipe. Try to determine if the exhaust will need dismantling or if it can come off in one big chunk. It's also a good idea to compare the head sizes of the fasteners to your tools. It sucks when your 13mm socket rounds off that 12mm bolt head. Now is also the best time to find out if you've forgotten anything, like that 8mm Allen socket you lent your buddy, as opposed to when the exhaust is half off and you realize the last bolt holding the old pipe to the bike requires an 8mm Allen socket.

You may also want to see if the new system will block or limit access to the oil filter or oil drain. If so, now is a good time to perform an oil change (or reconsider your choice of exhaust systems).



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*Before removing the stock system, do a quick inventory of the new stuff. It sure beats getting halfway through the job before realizing a crucial part is missing.*

Lastly, take a quick inventory of the new system. Lay out each piece and compare it to the manufacturer's parts list, making certain all the clamps and hardware needed to install the new exhaust are there, as well as any gaskets. You may also want to do a trial fit of the new system while it's still on the bench, if only for practice.

## Take It All Off

Start by loosening, but not removing, all of the nuts and bolts that attach the exhaust system to the motorcycle. If you're only replacing the

muffler with a slip-on, there is probably no need to loosen the head pipe. Once everything is slack, remove the bolts holding each component, then remove the components, starting with the muffler. This may be easier said than done, particularly if the bike has some miles on it and heat and corrosion have done their dirty work. If the muffler is just stuck, spray some sort of rust-busting lubricant, such as WD-40, CRC-556 or Liquid Wrench, into the muffler joint, let it stand for a few minutes and then try twisting the muffler slightly as you pull backward. If it simply won't budge, place a block of wood against the mounting bracket and give it a few good raps with a hammer. If you have a helper handy, have him (or her) pull and twist the muffler as you pound on it. In most cases this method will free up the most recalcitrant muffler, though it may not look like much when you're done.



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*Start by loosening, but not entirely removing, the exhaust-system mounting bolts.*

Once the muffler is off, you can remove the head pipes. These may take some juggling, and a wise man will protect any nearby painted pieces with some old towels or rags. (A brave or foolish man might be tempted to use new towels from the guest bathroom.)

Removing the head pipes may be complicated by a crossover tube on some models. A little physical exertion (a.k.a. pulling and prying) will usually get them off as a unit. In some cases, though, the crossover tube will have to be removed. Lots of WD-40 and a judicious use of force will generally do the trick here, though the crossover may come out looking like it's been hammered on if it's really frozen.



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*Once the stock system is off the bike, install any supplied brackets. The exhaust we're installing includes an aluminum bushing/spacer that replaces the OE rubber insulator.*

Some bikes use one-piece exhaust systems. These systems are usually a bit easier to remove. Once the bolts are loose, support the system with the aid of a friend, a small jack or a few pieces of strategically placed twine or wire. Remove the bolts and carefully lift out the exhaust system as a unit. This can be a bit heavy and unwieldy, so take care not to drop it on any painted parts or your tender fingers.

Once the old pipe is off, take a moment to inspect, clean and repair any damage to the normally inaccessible area hidden by the exhaust. If your new pipe includes mounting brackets, they should be installed at this point.

## **Slap It On**

Remove the old exhaust gaskets (if they haven't fallen out already), take a good look in the ports and excavate any loose carbon that might prevent the new pipes from seating properly. Install the new gaskets. A dab of grease or antiseize will help hold them in place. Next, place the head pipes into position, put a smear of antiseize on the studs or bolts and tighten the retaining collars just enough to keep the pipes from flopping around. Give the open end of the pipe a light coat of antiseize and slip on the collector (Y-pipe) or muffler as the case may be. All the pieces should fit together with a minimum of force. If you need a sledgehammer to pound any part of the exhaust system together, stop and find out what's gumming up the works before proceeding.



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*Inspect the exhaust port, remove the old sealing ring and clean out any mung that might prevent the new pipe from seating.*

Lightly coat the inside of the muffler with antiseize and install it onto the pipe. Loosely bolt it to its bracket and take a moment to make sure everything lines up and fits nicely. If it doesn't, make certain that you haven't overtightened the head pipes. At this point, all the fasteners should be no more than semi-snug. If a bit of jiggery-pokery won't get everything in line, you may need to perform a bit of field modification to make it right. Resist the temptation to force everything together, since all that will do is preload the exhaust system. After a few miles the tension will combine with the vibration to snap off the mounting bracket or crack the exhaust pipe. Better to spend an hour filing, shiming or doing whatever you need to do now to achieve a proper fit, than to ride home with your recently installed exhaust dragging along the pavement.



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*Install the new head pipes, tightening the bolts only enough to keep them from flopping around like a hooked bass. Don't tighten them to the point where the pipe can't move.*

After everything has been properly installed and correctly aligned, you can tighten it all up, starting at the cylinder head. By tightening the head pipe first, you ensure it seats correctly in the port and seals properly against the gasket. You don't have to be a gorilla here; the average exhaust-port stud size is only 8mm (5/16 inches), and 8mm studs should only be torqued to 175 inch-pounds or about 14.5 foot-pounds. Breaking a stud off in the head is not much fun, so go easy. If you snap the stud, there's a good chance the head will have to be removed to effect a proper repair.

After the collar bolts are snug, proceed to tighten the rest of the hardware in turn, working your way backward toward the

muffler. Reinstall any ancillary components removed during this exhausting process (sorry, I just couldn't help myself) and fire that baby up, basking in the aural ambiance.

**Editor's note:** *Do not give in to the temptation to dispose of your old original-equipment pipes, even if they are a bit beat up. You may very well want them in the future to pass an inspection or when the time comes to sell the bike. Even if your state does not require inspections now, it may in the future, and many buyers will not share your tastes in exhaust plumbing. Find room for them in the garage or attic. You might want to coat the with an anti-corrosion product.*



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*Run the muffler clamp bolt down, and tighten all the mounting hardware starting at the head pipes and working back to the muffler hanger.*

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