

Iron Sportster cylinder head R&R

Tips and tricks for removing and replacing the cylinder heads.

The tips and tricks:

1. **Clean everything with engine cleaner, hose off, and blow off with air.**
2. **Use S&S style intake clamps.**
3. **Tighten the heads and barrels after the intake manifold.**
4. **Don't over-tighten exhaust clamps.**
5. **A 7/16 12-point socket on a Snap-On universal joint will clear frame.**
6. **A 7/16 combo wrench will fit head bolts from the side.**
7. **Loosen the rocker box if head bolt binds.**
8. **Have a bin or tray for all the parts.**
9. **As always, return the tools to the toolbox as you work.**



As simple as the four head bolts look, there are many little subtle things you have to know about. (Click for video.)

It's easy to whip the cylinder heads off if the engine is out of the motorcycle. It is brutal if the engine is in the frame. The engine is offset so that the frame rail is almost over the right-hand head bolts. This is not a problem on the front head, but the rear head can be a bear to remove.

Some folks leave the pushrods in, and use a 7/16 12-point socket and a universal joint adapter. This won't work in the frame, since the pushrods will force the rear frame. You really should take the pushrods out first. Then the oil lines, now you can get the heads.

You can sneak a 12-point 7/16 combo wrench in from the side, and use a cheater bar to loosen and tighten the right-hand bolts. Use a torque wrench on the front bolts, feel how tight with the combo wrench, and duplicate on the rear head now that you have a feel for the pull on the wrench.



The stock intake clamps use Philips-head screws. There is a slot to remove the head so you can unwrap the strap to get it around the manifold. You can see how torn up the screws can get. An intake leak here will burn a front piston and cost you thousands of dollars. The clamps that are installed above the stock ones are S&S aftermarket style. They clamp up much better and with an O-ring manifold you can get away with no support strap holding up the carburetor.



All you need is a nut-driver to tighten the S&S style intake clamps. If you align the intake manifold right, it will be plenty tight and stiff and no intake air leaks.

Read the service manual, so you learn that you are supposed to leave the head bolts and cylinder base nuts loose, then install and tighten the intake manifold, then tighten the head bolts and cylinder base nuts. This allows the heads and barrels to rotate to just the right angle for the intake manifold. You can hold the manifold up to the heads to get an idea if the angle is right.

Never install the manifold with the carb and air filter together. Be sure to just install the manifold so you can get your finger inside to make sure the O-ring is not pinched. Early bikes use O-ring intake seals. After 1979 or so, they went to rubber bands. Those can work OK, but be sure to have a strap or bracket that supports the carburetor.

There are aftermarket kits that convert and O-ring setup to a rubber-band type. There are spacers to fill in the O-ring groove, then you need the rubber bands as well as new larger clamps that fit the rubber band style intake manifold. I prefer the O-rings. They work great if you use Viton rings, and you can get away with no support strap on the carb for a chopper look, as long as you use S&S type intake clamps.

To make sure you don't have an air leak, let the bike idle and spray some carb cleaner at the clamps, being careful not spray goes into the carb venturi. If the RPM changes, you have a leak. I used to glom silicone over the O-ring, but that can cause problem if some leaks into the manifold. If the manifold groove is damaged, get a new one. If the head groove is damaged, you can build it back up with JB-Weld or have a welder fix it.



The oldest stock exhaust clamps are thin sheet metal with a flange for strength. If the exhaust pipe has a nice split where the head spigot fits, then this clamp will actually work.



Later model clamps might look like this, still using a separate bolt to tighten.



This is the aftermarket exhaust clamp a lot of folks prefer. Be careful, you can reef down on the cap-head screw so much it snaps the spigot off the cylinder head. Then you have to take the head off, and find a welder that can weld a steel tube into a cast iron head. I had this done by Kenny Puccio and it lasted 10 years, so it can be done. If the threads on the clamp strip, you can use a nut and longer bolt.



This is the misery of getting the heads off. With the engine in the frame you can use a 3/8 universal adapter to get around the frame rail over these rear head bolts. You can also sneak a 7/16 box-end wrench in from the side, once the pushrods are out of the way.

Once you have the bolts loose, it can still be misery to get them up past the rocker box. You need a high-quality socket with the thinnest wall you can find. The bolt will not go in or out with the washer up against the head. You have to plop the washer down on the head and then feed the bolt, or when removing, make sure the washer flops down away from the rocker box.

You might need to loosen the bolts on the rocker box to get a stubborn head bolt to clear the rocker box. The problem is as the socket runs the bolt upwards, it wedges against the side of the rocker box. Once you do get the thing apart, take a half-round file or a rotary sander wheel to the rocker box to open up the clearance to the head bolts. This might be part of polishing the box so it looks better. Never chrome rocker boxes. They are porous aluminum and will pit and peel. You can polish them to look almost like chrome but without the bluish sheen.