

TECH BY CHRIS MAIDA

ZIPPER'S TORKSTER 1200 KIT

A top end-only upgrade that'll wake up your Sportster, big time

Hot XL

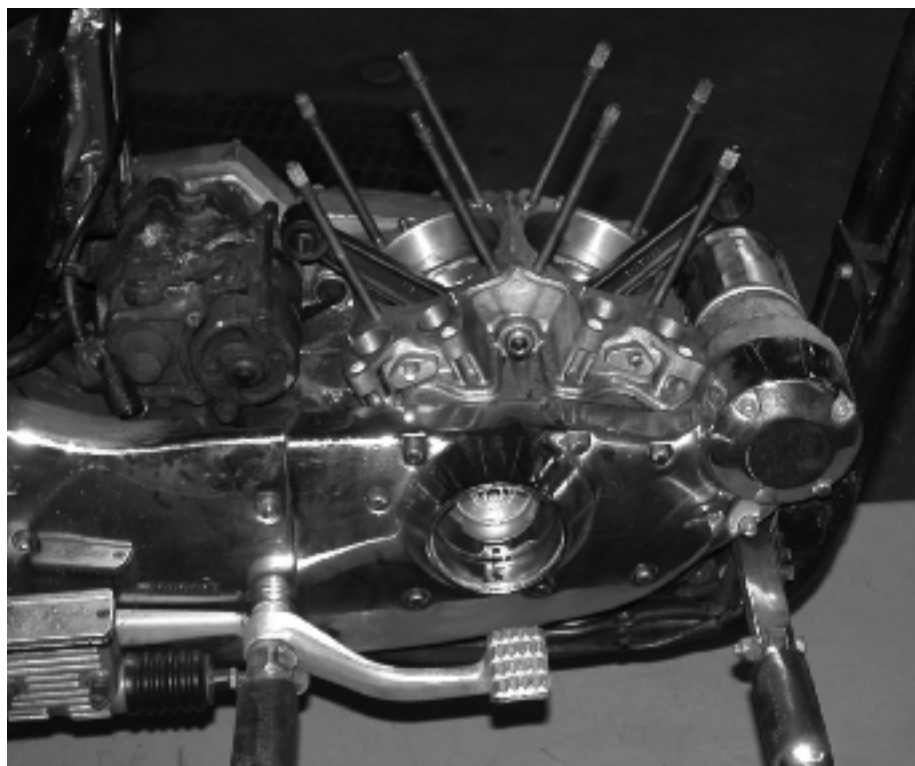
IT USUALLY DOESN'T TAKE TOO LONG, MAYBE A riding season or two, before 883 owners start looking for ways to get more power from their Sportsters. If this is where you are at the moment, have we got a nice 1200cc upgrade for you.

The power mavens at Zipper's, a respected high performance shop on the East Coast, has an engine upgrade kit that involves only removing and re-installing the top end of the engine. That's right. The guys at Zipper's do everything else, except the tuning, of course. The kit is called the Torkster and, as the accompanying photos show, all you do is remove your engine's heads, cylinders, and carb and send them to Zipper's for reworking, which usually takes a couple of weeks.

The Torkster is a detailed cylinder and head



2 The first step of the assembly is to check the gap on the Zipper's-supplied rings. The two compression rings should be 0.014"-0.016". The three-piece oil rings should be 0.001"-0.006".



1 Our starting point has the top end removed, as well as the stock ignition module system. Eric will next clean all the gasket surfaces with brake cleaner to prep the engine for the rebuild.



3 Eric washes the cylinders inside and out, as well as all the oil holes. He then blows the holes out with pressurized air to make sure they are clean of all machining debris.



4 Eric installs the rings onto the Zipper's pistons with the oil ring gaps placed opposite each other at 90 degrees to the valves, while the second compression ring gap is by the intake valve. The top ring's gap is offset from the exhaust.



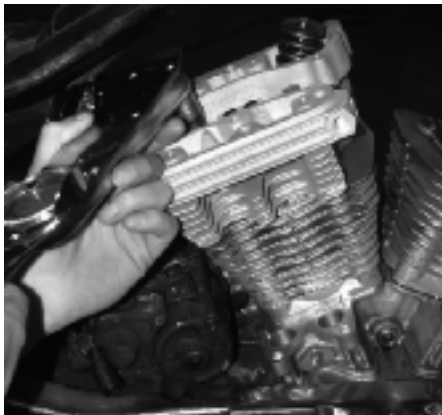
5 After inserting one of the wrist pin clips, Eric slips the Zipper's-supplied wrist pin part way into the piston, just up to the connecting rod gap, so the piston can be installed onto the rod.



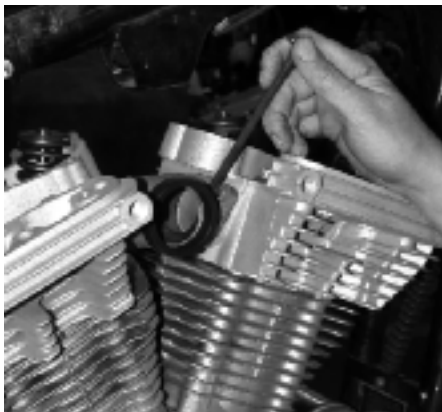
6 After slipping the Zipper's-supplied base gaskets onto the cases, Eric installs the pistons onto their connecting rods by sliding the wrist pins in and installing the other wrist pin clips.



7 Once he has prelubed the cylinders and pistons with 20W-50 oil, Eric uses a ring compressor to install the bored-out cylinders on their respective studs and over their pistons.



8 After positioning a Zipper's-supplied head gasket onto both cylinders, Eric bolts on the Zipper's reworked heads as per the torque pattern in the H-D manual.



9 Once new Zipper's-supplied manifold gaskets are in place, Eric reinstalls the stock manifold using the stock hardware and a 1/4" Yost Performance manifold tool.



10 Before we can install the Zipper's collapsible pushrod tubes and new blocks, Eric must first use a pair of vise grips to remove the stock locator pins in the right crackcase.



11 Eric then installs new Zipper's-supplied O-rings into the heads. Be sure the O-rings seat fully in the sockets in the head.



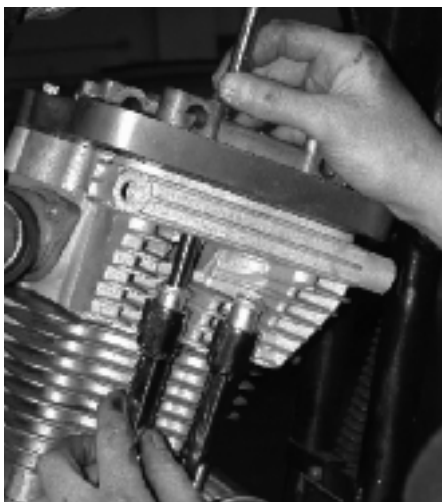
12 With a new Zipper's-supplied lower rocker box gasket in place, Eric installs the lower rocker box onto the head using the stock hardware, except for the two 1/2" bolts on the right side of the engine. Just snug the hardware for now.



13 Eric positions the Zipper's pushrod tube bases onto the right crankcase and loosely bolts them into place with a 1/4" Allen. These bases come complete with seals installed.



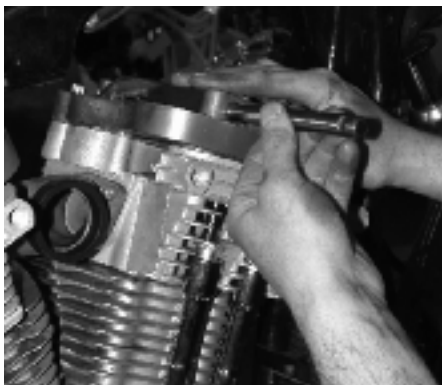
14 Eric now slips the Zipper's white bottom seal onto the bottom of the pushrod tube. Note: The pushrod tubes come assembled with the middle seals already installed.



15 After fully collapsing the Andrews pushrods, Eric positions the pushrod tubes over their bases and slips the intake (short) and exhaust (long) pushrods into their respective tubes.



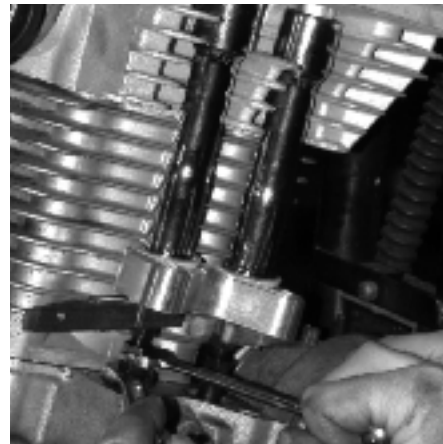
16 After jacking up the rear of the bike, Eric rotates the rear wheel and spins the engine to get the lifters to their lowest position, so he can install the rocker arms and shafts.



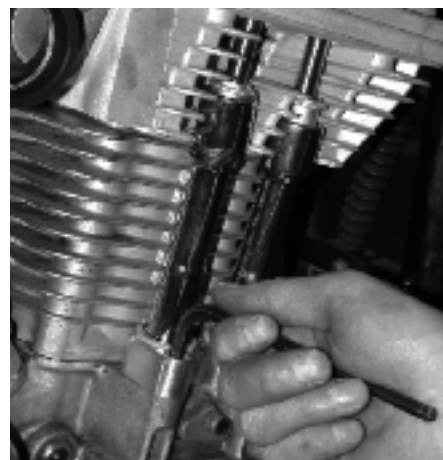
17 Eric positions the stock rocker arms in the lower rocker box and slips the shafts, with the notch on the shaft on the right side lined up with the bolt-hole, into the rocker and box.



18 After installing the two 1/2" bolts he left out earlier, Eric torques all the lower box bolts, as per the sequence in the H-D manual, using a 3/16" Allen, 7/16" socket, and 1/2" wrench.



19 The pushrods can now be adjusted as per Andrews instructions using a couple of 7/16" wrenches. Eric holds the bases out of the way with a couple of clothespins so it's easy to adjust the pushrods.



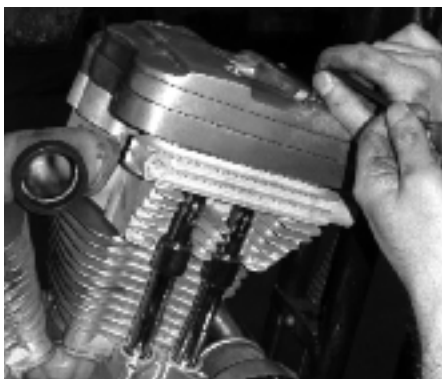
20 Eric can now bolt down the Zipper's pushrod tube bases using a 1/4" Allen. He first puts some red Loctite on the bolt threads.



21 After he extends the pushrod tubes, Eric pops in the top clip by using a flat-bladed screwdriver to press down on the collar as he pushes the clip into place.



22 The middle rocker box cover is now put into place after the Zipper's-supplied O-ring is installed. Note: Eric uses a dab of silicone in each corner to help keep the O-ring from shifting.



23 After putting another O-ring in the middle box's groove, Eric installs the top rocker box cover using a 3/16" Allen and the new washers and gaskets Zipper's supplied for the four cover bolts.



25 After removing the stock ignition disc, Eric bolts in the new Compu-Fire one using a 5/32" Allen. He also puts some blue Loctite on the bolt.



26 The new Compu-Fire ignition module is then installed using a flat-bladed screwdriver. Eric is setting it to dual-fire mode, since the bike's owner is not going to swap out the coil for a single-fire one.

24 With the Zipper's-provided carb-to-intake manifold seal in place, Eric slips the Zipper's-reworked stock CV carb into the manifold. The bike's Screamin' Eagle air cleaner is then reinstalled.



27 Eric then uses the rear wheel to position the top dead center mark in the timing hole located between the cylinders, so he can set the static timing on the ignition. Closing up the engine finishes the install.

machining package that centers around Zipper's proprietary blue-printing of the heads. The upgrade includes new hand-fitted Step-Lock guides, high-flow stainless steel valves, and a reworked and aligned port bowl that results in higher intake and exhaust velocities. Your stock heads also get new Teflon seals and a performance valve spring set. Of course, the cylinders are bored out to accept Zipper's lightweight, reverse-dome forged 1200cc pistons. As for your stock carb, it gets Zipper's HPCV upgrade for better throttle response. Even a complete new top-end gasket set is sent back with your reworked parts.

As for who would do the wrench spinning for this project, we went to see our buddies at Street Stuff in nearby Norwich, Connecticut. Eric took on the job and he had the engine back together in no time without a problem. That said, check out the Tips & Tricks sidebar for some additional info that'll help the project go a bit smoother. AIM

TIPS & TRICKS

TO PREP THE MOTOR, ERIC USES an air-powered pump to remove all the old oil from the lower end, as well as the oil tank. Eric has also checked the connecting rods and lower end to make sure they are well within tolerances.

Zipper's recommends using Andrews adjustable pushrods on this build. If you're using the stock nonadjustable ones, you should drop them into the pushrod tubes before you put the rocker arms into the rocker boxes on the engine.

Eric inspected the stock rocker arm shafts and bushings for wear before installing them. When slipping in the shafts, be sure to align the notch on the shaft with the bolt-hole in the rocker arm support on the right side of the boxes. Also, if needed, you can lightly tap the shaft into the arm and support with a plastic hammer.

When adjusting the pushrods, mark each one with a grease pencil, so it's easier to count the flats while making adjustments. **n**

RIDE & DYNO RESULTS

AS YOU CAN SEE IN THE CHART BELOW, ZIPPER'S 1200 TORKSTER KIT brought our rather tame 883 from a peak torque of 48 ft-lbs. at 5000 rpm to a much nicer 75 ft-lbs. at 4600 rpm! As for the horsepower, it also got a hefty boost, going from 47 at 5400 rpm to 71 at the same rpm. The best part of this upgrade is that, as promised, the engine now makes lots of torque. For example, starting right from the get-go, at 2000 rpm, the engine is making more torque (about 57 ft-lbs.) than it does at its best as an 883. For those into raw numbers, the torque increase is 27 ft-lbs., while the horsepower gain is 24. And since the engine went from about 54 cubic inches to about 74 inches in displacement, this represents a horsepower and torque gain of over one per cubic inch. And remember, that's with the stock cams.

By the way, these dyno runs were done by Dr. Dyno (be sure to check out his ongoing series in How It Works on dyno dos and don'ts). According to the doctor, he feels he could have gotten a couple of more ponies out of the bike if he spent some more time on the dyno tweaking the settings. However, this is a good example of what an average tuner would (should) get from this upgrade, so we decided to stop at this point. As for the choppy dyno lines on the chart, the rear chain had seen better days and needs to be changed out. **n**

