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40 Stroker Lessons

Article by Chuckthebeatertruck of the XLFORUM [1)]

This write up is focused only on one topic: lessons learned living with a stroked ironhead sportster as a regular, street ridden bike.
There's always interest in hot rodding these bikes coupled with a lack of real world information from 2025.

Whilst the techniques and craftsmanship of 1975 are still applicable; the parts to build a brand new, stroked ironhead are now scarce or non-existent. The "classic" sources for parts such as S&S, Manley, or Andrews have either discontinued ironhead stroker parts or are slowly but surely cutting down their ironhead offerings to very limited choices. Road conditions are way different than 1975, ditto tires, brakes, lamps and other sundries. Add in fifty years of fish tales, and there is a lot of poor info out there which lead guys down rose colored paths.

In short, if you aren't riding a stroker right now, semi-regularly, this is not the post for you.
However . . .
If you want info on why you're way better off buying an intact bike vs trying to build one in 2025, read on.

Before I got into ironheads by accident; I spent about 20 years building high-performance Triumphs and BSAs. I didn't walk into strokers casually or without understanding I needed to learn a whole new language. It's taken the better part of a decade and some 20,000 miles to come to terms with the lessons passed on to me by generous ironhead mentors who have, literally, built hundreds of strokers, not a few strokers.

As a result, over the past several years I have had the pleasure of building as well as resurrecting a fair number of ironhead strokers ranging from 64 to 86 inches and I've helped a good number of folks get their strokers back up to snuff.I've learned a great deal about what makes different strokes and displacements tick, earned by thousands of miles in the saddle. I've taken strokers on road trips, used them for commuting to work through major urban traffic, used them on multi day antique road runs, and built one for my wife's first street bike. Many of the lessons shared in this post can be found all over XL Forum – but they are not in one place.

So, in the spirit of "giving thanks" to the mentors who helped me get to this stage; here is some of what I learned:

1. Displacement and stroke should not be confused. An 84 inch bike built with 3-7/16 pistons and 4.5" stroke is a much more pleasant beast to live with than an 86" bike with 3-3/8 pistons and 4-13/16

stroke. Strokes of 4.5 inches and less are simply happy beasts. And, they are beasts. I honestly don't recommend going for a stroke bigger than 4-5/8 if you're dead set on building one. There's a reason Harley itself stopped just short of 4-5/8 with the KHK. You don't really learn that reason until you've experienced a number of different strokes for more than a casual ride.

2. Bigger doesn't always mean faster. A well sorted 64" bike can nip the heels of an average 74-76" bike. A sorted 76-80" bike can nip the heels of an "eh" mid-80" bike. And, unless you have very fast reflexes and a long road, your 84" plus bike won't be what you think. They rip through the rev range so fast that you have to experience it to believe it. It is not like a stroked big twin, not at all. It's very, very surprising.
3. Shoving in a cam much over a 480 lift is wasting time and beating parts in 2025. Do as you like.
4. Valve springs and pistons are the biggest limiting factors. There are few good springs, few choices in valves and no commercial pistons available. Custom order is the name of the game and it gets pricey very fast. As of 2025, only T&O is offering "off the shelf" stroker flywheels at a not insubstantial cost. Very few of us would choose T&O iron flywheels for an all out stroker performance build. There's a reason S&S offered forged steel wheels (hint; they started out offering cast wheels and quickly changed to forged). Unless you have a nearly complete machine shop at home (including a sunnen honing station) and are adept at building your own lower ends . . .it is going to get very, very pricey in short order.
5. Every stroker is unique and requires a thoughtful owner to be fuss free(ish). It's a passion in 2025, especially when working on bikes that have been together for decades. Respect bikes that have evolved and survived. Learn from them. Every time I've seen a new stroker owner f up their bike it's because they thought they knew better than the previous owner who ran the bike for decades. They started "improving" the bike and promptly broke what they "fixed." Be a custodian, not a tinkerer when you resurrect an old hot rod.
6. My favorite daily rider is a 900-based, 63" bike. They are not powder puffs and nothing like a stock 61" or 1000cc bike. They will surprise and delight you. They step out quick and are great for urban commuting. I have tried them as stroked/stock bore and big bore/stock stroke. I like the stroked version just a bit better – but they both really run well when sorted. I often take this particular bike to work – rolling through nearly 40 miles of very heavy, very dense traffic.
7. A well sorted bike in the mid-80 inch and up range is basically a giant electric motor. When geared correctly, they rev much faster than a stock bike with every gear change at least 20 mph faster than a stock bike. It can be hard to wrap your head around how fast they rev and how much they adore spinning north of 5000 rpm. I'm not kidding. Missed shifts are an actual problem because of how they rev, which leads you to get picky about how a transmission is set up. Even when riding with a gentle right hand; I don't even click into fourth until 60-65mph on my 86" bike. And, the closer you get to 90 inches the more likely you'll enjoy a final drive ratio approaching 2:1. Big motors do fun things and the bigger the motor the more interesting things can get.
8. 1967 and up xlh and 1970 and up h/ch frames (aka long frame) are terrific for long straights. My strokers in 900 short frames eat them for breakfast in any type of twisty situation or urban stop light running. Long frames are stable for hole shots but terrible for back wheel power rides. I prefer the more lively feel of a short frame with about 70-80 rear wheel horsepower.
9. You will become extremely picky about parts when you get north of 78" I mean REAL picky. Until you've seen how fast and thoroughly you can destroy parts, you won't believe this. I literally ate a compensating sprocket's cam ears off a bike . . . and wasn't even beating the bike very hard. Primary tensioners can get pretzeled instantly. Every weak part gets weeded out and the questions you start developing are nothing like you'd expect – and it is even harder to find someone who's been in your shoes and can help you actually plot a solution. Old magazine articles are HILARIOUS because they are contain enough bull$hit to fill two Olympic sized swimming pools. You don't really

understand this until you've gained enough experience across multiple bikes at multiple displacements. It really is a matter of time in saddle; which is hard for today's instant gratification crowd to grasp.

10. It is far cheaper and far easier to resurrect a survivor than to try and build a new stroker in 2025. A buddy recently picked up a 93" bike for $1000 and previously dropped a whopping $2000 putting together a 74" bike with a totally fresh motor from various bits and bobs collected very inexpensively on CL and FB Marketplace. Same guy also happened into two other 64 and 72 inch strokers, none of which cost more than 2500. My own 86" bike was less than 4k. I couldn't even collect the parts to build it for less than $6,000. Hence it is generally cheaper and easier to resurrect a survivor than to try and build a new stroker in 2025.
11. The bigger the bike the more your overall gearing will also make you think about chains and tension. You'll understand when you get there.
12. When it's all said and done, you'll have spent a mini-fortune on a bike that was obsolescent 40 years ago. You'll grin, but you aren't going to be street champion in 2025.
13. If you think .009-.012 piston to cylinder clearances are "excessive" - wait till you see the ring end gaps. It will all make sense when you realize how extremely hot you can get a stroker. And yes, they do use oil, but nothing like you think. Plugs don't foul. And you'll get picky about plugs. Get stuck in stop and go for 15 minutes on an 86" bike with the oil sitting at 210-230 and you'll get this. No, an oil cooler won't help the way you think and yes you want the oil pulling all that heat out of the motor. Glazing a plug from hard high speed running, yep, totally possible.
14. Bikes north of 80 inches are not for casual owners. Like having a giant breed dog, just set aside $$ for mechanical bills, the stuff that gets destroyed just because, and each season's wear items. Seasonal wear items can include chains. Don't overlook this unless you like to repair broken cases.
15. If you have multiple strokers, chances are you ride the smallest AND largest displacement ones the most.
16. It is really hard not to enjoy 64-72 inch bikes. They own like stockers, run hard, and generally keep their issues in the not-so-bad range.
17. You won't actually understand why you've spent $150 on a special kicker shaft until you are faced with a long stroke, big bore bike. You'll also never bother with how to kick discussions. You'll also understand when people say they only have 20-25 good kicks in them, so one kick bikes are not so much a nice to have as a need to have. Ride enough kick to life big-inch strokers and you'll also experience something weird: it's hard suddenly to start stock bikes. Seriously. Where the piston stops on compression for a stroker and where it stops on a stock bike is very different and that does affect things. It takes a minute to reset the brain to smoothly start stock bikes. I almost kill myself staring my stock 1959 XLH – and it's actually the only one that I worry a bit about kicking because I go right through the kick like a hot knife through butter. And, no, I'm not down on compression – it's just what happens when you mostly ride big inch bikes.
18. Original Sifton and pretty much all Leinweber cams are FUN, and beat valve train parts mercilessly. The more fun the cam, the more parts suffer. See lesson 14.
19. The phrase: "minus minus cams make it kick easy" will leave you laughing if you live with minus/minus sets for any length of time. Starting, yes-ish. Kicking, not really. I have two bikes on full minus as well as one with +h intakes and -/- exhausts. I'm familiar with them under a wide variety of street conditions and can tell you they aren't what guys type about for starting/kicking. However, until you experience -/- in bikes north of the mid70 inches, you don't quite know how insanely good they feel when the motor goes full glass smooth and PULLS at 6000 rpm. They get better with size and compression but are lumpy nuggets and a little limp off idle. Wick them up and the fun begins. But, they aren't mythical nor magical. Personally, I like stock p cams for most "normal" strokers between 64 and 74 inches or the +h and -/- combo for a little more fun.

20. You will discover pretty much all current repo parts have very short fuses when used in strokers. Hunting NOS OEM parts will become a hobby.
21. You won't think of chains, tires, or brakes as anything other than seasonal wear items if you use the bike for more than casual riding. If you don't think of them this way, chances are you will learn an expensive lesson one day.
22. Ring changes are weekend affairs whenever you notice dirty oil too soon or excessive smoke at idle. Might be three seasons, might be three hard runs. Ignoring = oops, need a piston and $$$. Suddenly, pin buttons are your friend. Copper head gaskets are NOT your friend here and you'll soon discover most serious guys – and particularly guys who owned shops and/or hold national records/championships will not use copper head gaskets in their personal bikes. Do as you wish or flip your lid and figure out why.
23. You will become a piston collector. Yes, yes you will. And folks will start calling you with "hey, I found this part . . ." questions which are really: "do you want to buy this stuff from me" questions.
24. Build enough of these and get them to last more than a few thousand miles without mechanical work and you'll just start understanding how flexible the ironhead motor can be. You'll start mixing and matching parts in new ways, stretching your experience that little bit further. Only other guys who have been in your shoes will understand – others, especially internet pundits, will tell you it is all wrong and can't work. As an illustrious member would remind us: There's a difference between knowing the name of something and knowing something.
25. Andrews gears can be beat into pretzel dust by a well-tuned stroker of more or less any displacement. They may not shatter, but I've managed to crush the dog pockets or have found crushed pockets on more than one set of gears. You know the nice milled ones? Yeah, you can kill them.
26. A well-built Prestolite can easily start a 64-74" bike up to 10.5:1 with a 200cca battery. It will also start bigger bikes at around 9:1 if you up the amperage; but starts struggling pretty badly with long strokes above 4-3/4 regardless of CR. In this case, a 1.4kw starter does make a difference – but it also needs a very strong battery for bigger displacement bikes. Kicking a bike with a stroke north of 4-3/4 is very doable for anyone of average size if the ignition is battery/coil. Mags are a different beast and will humble almost anyone once the displacement gets into the upper 70s. Biggest tip I ever got, if you have an electric starter that struggles; press the starter button as you begin your kick. It's electrically assisted kicking. Sounds nuts, actually works. And, no, I'm not joking or taking the piss.
27. If you are concerned about your oil reaching 180 degrees, don't deal with a big stroker. You'll learn a whole new language of heat management as the displacement goes up and your right hand grows heavier. Your worry also goes way down when riding hot bikes after a few seasons with a big stroker. You will think of "bench clearances" in all new ways – unless you spend all your time at the bench.
28. Voltage regulators may become a thing for you. Depending on how heavy your hand and where your bike vibes hard in the rev range, you may become a bit into this topic. Cycle Electric regulators are not necessarily a cure. It is bike dependent. Some strokers also kill batteries, hence why some prefer mags. And, yes, you can shear the end off a generator armature when you whack the throttle. You'll soon discover a lot of serious guys have armatures on the shelf for this reason.
29. On a short frame 900, if you regularly ride over 85-100mph, and particularly over 110, and need to grab the binders, I strongly recommend adding a cross brace between the upper motor mount and casting below the steering head. You'll learn why. A 450 pound bike shaking like a wet dog gets your attention.
30. To number 29. . .if you're a grown idiot and live somewhere that you can routinely do 20 second or more full wot roll ons. . .you'll grow to love an L series carb for roll ons. But, you'll need to be

prepared for how bad the ticket is going to be when the radar gun goes off, and you'll realize it's a solid 350 feet to stop from 100+ regardless of binders. You just come up on stuff and need to think faaaaaaaar ahead. So much fun, so little fuse. And, it's a lot easier to pull power wheelies with a drum front end than a heavy disc front. I can generally catch air with every gear change on my 78" bike. It also means if you have a front wheel speedometer that it's relatively easy to destroy the speedo drive when the wheel touches back down. I've taken to using a GPS speedometer to avoid this issue after snapping several speedo cables and mangling one drive. I "could" simply keep the front wheel on the ground – but there's zero fun in that mentality.

31. And the controversial lesson: even a well experienced motorcycle mechanic needs to learn a new language and new tricks to deal with a 900 stroker. The bigger the bike, the bigger the learning curve. Similarly, the quality of machining and the quality of assembly directly affect power plant life spans. A well-built stroker can roll a lot of miles with nothing more than ring jobs when built by an experienced hand. My 86" bike is testament. The bottom end has been together 50 years and used HARD. I'm still beating on it today. I shift at 6-6200 rpm on a 4-13/16 stroke with irreplaceable 3-3/8 pistons. Do the math and you'll find the piston speed is just shy of 5000 feet per minute. I don't worry about that speed – at all – and know the bike is just fine. I bought the bike because of its history and knowledge it was done right the first time by someone who knew what they were doing. If you consider there are literally no 3-3/8 stroker pistons to be had . . .you'll understand why this is more of a lesson than folks imagine.
32. And the weird lesson: you can put enough force through the 67-70 dry clutch electric start basket to cause slip in the very upper range. I have had to do a ton of careful work to have clutches which hold full power north of 90-100mph. Rolling and air resistance is part of it. You'll get really good at keeping a dry clutch dry and understanding how to inspect steels as well as set the free play. Failure to do so equals a bike that feels like it is running hard but in reality the power isn't transferring. You just start bleeding off speed when you should still be pulling through to 120-125 mph with ease. And, I am not talking about 120 on your speedometer. I use a GPS tracker to get true speeds. Most stock speedos seem to be off by around 10% above 100mph. Hence, your "120 indicated" is more like 105. The GPS eliminates the guess work; but also eliminates your ability to "embellish" the speed.
33. Each of these bikes has its own sweet spot. One of the bikes I helped resurrect is a 76" running 21/51 gearing. Its caretaker rode out to Davenport and reported the bike is very, very happy at 70-75mph cruising. I also had the chance to beat the nuggets out of a KHK, which uses a stroked crank from the factory. That bike ran very, very sweetly at 75-80mph on stock gearing. Think about that next time you are convinced you must lower the stock gearing on your stock bike to highway cruise. Then realize most of what you are feeling is the chassis – not the motor. You ride the chassis – not the motor. Where it vibes is a by product of many things, including how carefully you assembled the chassis.
34. You will develop a love of particular carbs, but also come to understand many carbs work quite well with stroked bikes. I've used l series, super b, super e, and keihin cv without fuss. I like the b and the l for their pure simplicity and fuss free nature after you dial them in. However, the Keihin CV is the champion of fuel economy and can get you very clean plugs with little work. I truly recommend it for 90% of Ironhead owners.
35. You may be surprised to discover a well-built 2:1 straight pipe may be quieter than a 2 into 2 system on mufflers. And, you may be surprised the -62 slash cut mufflers (65230-62) are basically not too far off the sound of straights. OEM are even better than the current repos. They are delightful to me. I also have bikes on the -65a and they are rather "quiet" compared to the -62s.
36. Light bikes can be a handful, especially to younger riders used to more modern machinery. My 78" bike is extremely light and even wears alloy cylinders. In my ever crazier quest – the generator is

about to come off as I have been testing different battery packs and found one that doesn't die from heavy vibration and can run my lamps for days at a time without recharging. Anyways, that bike is a 900, mag fired bike stripped of pretty much everything but the lamps and horn. It weighs around 400 pounds and is soooooooooooooo much more lively on the road than a stock bike. It just shoots into corners effortlessly. The steering is light and lovely. BUT, jump on the brakes at 110 mph and your brake modulation to riding skill will get a workout. The combo of power and light weight creates a fun bike that you need to pay attention to or it will bite you when you push things.
37. Spending half a day on the kicker system alone will seem really reasonable.
38. Respect the grey haired person who boots one of these bigger strokers to life without thinking. I watched a 72 year old with double knee replacement straddle kick a mag-fired 76" like a stock bike. Think that dude had a little past stroker experience? It isn't about size – it is about experience.
39. Don't ever discount the crusty looking bike. Seriously. These bikes oft hide in plain sight. They are shiny on the inside. Failure to understand why the front wheel bounces off the pavement at idle means you're going to lose at least one c-note when trying to play Johnny Bad-ass with your "fast" stock bike. I had a ton of fun annoying a guy on his "highly tuned" 110-inch modern bike last autumn when cruising on my 86" bike testing valve lash. I had the minus/minus set pretty well lashed and it was pulling very, very hard as a result. I was literally riding one handed behind him as he was giving it all he had and waving every time I saw him look in his mirrors to see if he had shaken me. Pugsley wasn't even working hard and the howl above 4K from the lashed cams was hair raising to anyone within 50 meters. We got up to a light and he was PISSED to see a rusty, crusty "girls bike" was what was giving him so much grief. Failure to understand what you're looking at will leave you humiliated more often than not.
40. You will be surprised your fuel economy is often better than a stock bike. 55 mpg is totally doable and I consistently get 45-50 mpg from all the strokers regardless of size. You need less throttle to cruise and the 2.2 gallon tank isn't as limiting as it is on a stock bike!

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