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The Pontiac 400 engine is a classic powerhouse famous for its durability and strong performance, making it a favorite among car enthusiasts and rebuilders alike. When it comes to customizing and improving this legendary engine, one of the most common questions that pop up is, how much can you bore a Pontiac 400? Boring an engine involves enlarging the diameter of the cylinders to restore or enhance performance, but its not something to take lightly. There are specific limits and considerations to keep in mind to ensure you dont compromise the engines integrity or longevity. In this article, well explore everything you need to know about boring a Pontiac 400, including the factors that influence how far you can go, recommended boring sizes, and essential tips for maximizing your engines potential while keeping it safe and reliable.Understanding the Pontiac 400 Engine: An Overview of Boring LimitsThe Pontiac 400 cubic inch engine has carved out its place in muscle car history thanks to its iron block, strong castings, and high-performance potential. When you consider boring this engine, its all about increasing bore sizes to improve compression ratios and overall horsepower. Typically, the bore size of a stock Pontiac 400 is around 4.12 inches, with a standard piston size of approximately 4.120 inches. Boring the engine means removing some material from the cylinder walls to accommodate larger pistons. But heres the catch: you cant go overboard because excessive boring weakens the engines structure, risking cracks or failures over time. The general rule of thumb is that most Pontiac 400 blocks can be safely bored up to 0.030 inches oversize, which translates to approximately 4.150 inches in bore diameter. Going beyond this can be risky unless the block is specially prepared or reinforced, making it a critical aspect of engine rebuilding and performance tuning.Factors That Influence How Much You Can Bore a Pontiac 400Several factors play a role in determining just how far you can bore a Pontiac 400 engine without sacrificing its durability. First and foremost, the condition of your engine block mattersif its worn, cracked, or has uneven cylinder walls, you might need to stick with smaller bore increases or consider additional machining work. The thickness of the cylinder walls is another crucial factor; too thin and they become prone to warping or cracking when enlarged. Additionally, the purpose of your build can influence your decisionwhether youre aiming for a mild rebuild or a high-performance, racing setup, the extent of boring will differ. The type of pistons and rings you plan to use is also vital, as larger bores require compatible components. Lastly, some Pontiac blocks are more robust and designed for larger oversizes, so knowing your specific engines build quality and casting number can help you make informed decisions about safe boring limits.Recommended Boring Sizes for Pontiac 400: What Experts SayIndustry experts generally recommend that you dont exceed a 0.030-inch bore increase on a Pontiac 400 for safety and longevity. With this size, your engine can reach around 4.150 inches in bore diameter, which typically provides a solid performance boost without introducing too much risk to the block. Some seasoned rebuilders might push the limit to 0.040 inches (around 4.160 inches), but only if the block is thoroughly checked and reinforced. Going beyond that, such as 0.060 inches or more, is extremely risky, often resulting in weakened walls and poor heat dissipation. Its crucial to have your engine block professionally measured and inspected before deciding on a bore size. Remember, enhancing power isnt just about enlarging the cylinders but also ensuring the rest of your engine components can handle the increased stress safely.Step-by-Step Guide to Boring a Pontiac 400 SafelyBoring a Pontiac 400 is a process best left to skilled professionals, but understanding the steps involved can help you prepare or communicate effectively with your machine shop. First, the engine must be thoroughly disassembled, cleaning all parts and inspecting the block for any cracks or defects. Next, the machinist will measure the current cylinder dimensions and wall thickness to determine the safe boring limit. They will then attach the engine to a precision boring machine, carefully removing small amounts of materialtypically around 0.010 to 0.030 inchesper pass to achieve the desired oversize. Final honing smooths out surface imperfections and ensures proper ring seating. Throughout this process, maintaining correct piston clearance and ensuring cylinder walls remain thick enough are critical points. Lastly, the engine gets a thorough cleaning, and new pistons, rings, and potentially upgraded components are installed to match the new bore size. Properly boring a Pontiac 400 prevents issues like overheating, oil consumption, and premature wear, ensuring a reliable boost in performance.Signs Youve Bored Your Pontiac 400 Too Much and What to DoOverboring your Pontiac 400 to the point where the cylinder walls become too thin can spell trouble down the road. Signs of excessive boring include abnormal engine noise, increased oil consumption, overheating issues, and a noticeable decrease in compression. If your engine starts to run rough or you see cracks or discoloration around the cylinders, these are red flags indicating youve gone too far. What should you do if that happens? First, stop running the engine immediately to prevent further damage. The best course of action is consulting a professional machinist who can evaluate whether the block can be reinforced or if its time to consider replacing the engine or performing additional machining like installing thicker sleeves. Preventative measures include adhering to recommended boring limits, regularly checking for signs of wear, and avoiding aggressive oversize boring unless your block is specifically prepared for it. Remember, risking the power and reliability of your Pontiac 400 isnt worth cutting cornersovershooting the safe boring limit can lead to costly repairs or engine failure.At-Home or Professional Boring: Pros and Cons for Your Pontiac 400Deciding whether to bore your Pontiac 400 yourself or leave it to the pros depends on your skill level, available equipment, and your ultimate goals. Doing it at home might seem tempting if youre handy with tools, but precision is key herean inaccurate bore can damage your engine forever. Professional machine shops have the specialized equipment and expertise to bore cylinders uniformly and within exact specifications, drastically reducing risks. Plus, they can inspect the engine block for cracks or weaknesses before boring, ensuring your build is solid from the start. On the flip side, doing it yourself can save money, but only if youre experienced and equipped with a high-quality boring machine. Otherwise, you might end up with uneven cylinders, unnecessary machine marks, or worse, damaging your block. For most enthusiasts aiming for a reliable, performance-oriented build, trusting an experienced professional is worth the investment, especially to ensure the engine stays strong and safe under higher stress levels.Tools and Techniques for Boring a Pontiac 400 CorrectlyWhen it comes to boring your Pontiac 400 properly, the tools and techniques used make all the difference. Precision boring machines are the heart of this processthey spin the cylinder bore at a consistent rate while the machinist guides a cutting tool to remove a small, controlled amount of material. The key is to perform multiple passes, gradually increasing the bore diameter to the desired size without over-stressing the material. Good technique involves using high-quality, sharp cutting tools and knowing how much material can be safely removed in one go. Additionally, experts often use honing tools afterward to ensure a smooth, even finish that promotes perfect ring seating and efficient combustion. Maintaining proper coolant flow during machining helps prevent overheating and warping. Accurate measurement tools, such as bore gauges and micrometers, ensure the bore size stays within safe and recommended limits. These combined techniques and precision tools are essential to achieving a balanced, high-performance engine that lasts thousands of miles.Common Issues and Risks When Boring a Pontiac 400 Beyond Recommended LimitsPushing your Pontiac 400 beyond its recommended boring limits can lead to a host of issues that threaten engine reliability and longevity. Overboring thin cylinders become prone to cracking, especially under high-stress conditions like racing or aggressive driving. Warping and distortion can occur if the engine is not reinforced or if cooling isnt sufficient, leading to leaks and poor compression. Theres also an increased risk of piston slap, oil consumption, and overheating, which can quickly deteriorate engine health. Moreover, excessive boring weakens cylinder walls, making them less able to withstand the pressure from combustion cycles. This, in turn, reduces the engines overall durability and can lead to catastrophic failures. Always remember, although increasing bore size can boost horsepower, overdoing it introduces vulnerabilities that might not show up immediately but wreak havoc in the long run. To avoid these issues, sticking within safe boring ranges and consulting professionals for reinforcement options is highly advised.Maximizing Engine Performance: Boring Tips for a Pontiac 400If you want to squeeze every ounce of performance from your Pontiac 400, boring is just one piece of the puzzle. Pairing proper boring with high-quality pistons and rings that match the new bore size can significantly improve power and efficiency. Choosing pistons with the right compression height, dish design, and material allows for optimized combustion and fuel efficiency. Additionally, considering a slight overbore within safe limits helps increase displacement, which is directly tied to horsepower gains. Combine this with a good camshaft, upgraded exhaust system, and proper tuning, and youve got a recipe for a beast on the streets or the track. Remember, the goal is to achieve a balanced buildadding power while maintaining reliability. Also, dont forget routine maintenance, including regular oil changes and inspections, to keep everything running smoothly. With the right approach, boring your Pontiac 400 can unlock a new level of performance without sacrificing long-term dependability.Upgrading Pistons and Cylinders After Boring a Pontiac 400Once youve bored your Pontiac 400, upgrading your pistons is a smart move to maximize your engines new capacity and power output. Modern pistons come with improved materials, better thermal conductivity, and precise engineering for enhanced performance and durability. Choose pistons that are compatible with your bore size, usually slightly oversized, such as +0.020 or +0.030 inch. These pistons should also match your intended usewhether its a street car, hot rod, or race engineso consider compression ratios, weight, and piston design. Upgrading also involves checking the condition of the cylinders after boring; some builders opt for a slight hone and the installation of a thin sleeve to reinforce the walls if theyve been enlarged close to the limit. Proper piston installation, including correct clearances and lubrication, is crucial for avoiding piston slap, knocking, or premature wear. Ultimately, a well-matched piston set ensures that all the effort put into boring and rebuilding your Pontiac 400 translates into a reliable powerhouse that delivers on the street or strip.FAQs about Boring a Pontiac 400Q: How much can you bore a Pontiac 400 without risking damage?Most experts recommend staying within a 0.030-inch oversize, which translates to approximately 4.150 inches in diameter. Going beyond that can compromise the engines structural integrity unless specifically reinforced.Q: Can I bore my Pontiac 400 at home? While technically possible if you have advanced skills and the right equipment, its better to leave boring to professionals due to the precision required and potential risks involved.Q: What signs indicate Ive bored my Pontiac 400 too much?Signs include unusual engine noise, decreased compression, overheating, or oil consumption. If you notice these, seek professional evaluation immediately.Q: Does boring increase engine horsepower? Yes, enlarging the cylinders increases displacement, which can lead to more horsepowerespecially when paired with appropriate upgrades to pistons, camshafts, and fueling systems.Q: Is it worth upgrading pistons after boring? Absolutely. Upgrading pistons ensures proper fit, optimal performance, and durability, particularly when maximizing the benefits of a larger bore. PONTIAC ENGINE CHART ENGINE BORE STROKE MAIN DIA. 326 CU. IN. Stock Bore 3.720 3.750 3.00 30 over 3.750 60 over 3.780 350 CU. IN. Stock Bore 3.875 3.750 3.00 30 over 3.905 60 over 3.935 389 CU. IN. Stock Bore 4.062 3.750 3.00 30 over 4.092 60 over 4.122 400 CU. IN. Stock Bore 4.120 3.750 3.00 30 over 4.150 60 over 4.180 421 CU. IN. Stock Bore 4.093 4.000 3.25 30 over 4.123 60 over 4.153 428 CU. IN. Stock Bore 4.120 4.000 3.25 30 over 4.150 60 over 4.180 455 CU. IN. Stock Bore 4.151 4.210 3.25 30 over 4.181 60 over 4.211 BPI ASSEMBLIES/ENGINES CU. IN. BORE STROKE MAIN DIA. 461 CU. IN. BPI 4.155 4.250 3.00/3.250 467 CU. IN. BPI 4.181 4.250 3.00/3.250 474 CU. IN. BPI 4.211 4.250 3.00/3.250 496 CU. IN. BPI 4.310 4.250 3.00 505 CU. IN. BPI 4.350 4.250 3.00 511 CU. IN. BPI 4.375 4.250 3.00 487 CU. IN. BPI 4.155 4.500 3.00/3.250 494 CU. IN. BPI 4.181 4.500 3.00/3.250 501 CU. IN. BPI 4.211 4.500 3.00/3.250 525 CU. IN. BPI 4.310 4.500 3.00 535 CU. IN. BPI 4.350 4.500 3.00 541 CU. IN. BPI 4.375 4.500 3.00 326 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 3.720 326 348 370 +.030 3.750 331 353 376 +.040 3.760 333 355 378 +.050 3.770 335 357 380 +.060 3.780 337 359 382 350 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 3.875 354 377 401 +.030 3.905 359 383 407 +.040 3.915 361 385 409 +.050 3.925 363 387 411 +.060 3.935 365 389 413 389 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 4.062 389 415 441 467 +.030 4.092 395 421 447 473 +.040 4.102 396 423 449 476 +.050 4.112 398 425 452 478 +.060 4.122 400 427 454 480 400 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 4.120 400 427 449 453 480 +.030 4.150 406 433 456 460 487 +.035 4.155 407 434 457 461 488 +.040 4.160 408 435 458 462 489 +.050 4.170 410 437 460 464 492 +.060 4.180 412 439 462 467 494 +.065 4.185 413 440 463 468 495 421 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 4.093 421 443 447 474 +.030 4.123 427 450 454 481 +.035 4.128 428 451 455 482 +.040 4.133 429 452 456 483 +.050 4.143 431 454 458 485 +.060 4.153 433 456 461 488 +.065 4.158 435 457 462 489 428 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 4.120 427 449 453 480 +.030 4.150 433 456 460 487 +.035 4.155 434 457 461 488 +.040 4.160 435 458 462 489 +.050 4.170 437 460 464 492 +.060 4.180 439 462 467 494 +.065 4.185 440 463 468 495 455 Block Stroke Bore 3.75 4.00 4.21 4.25 4.50 Stock 4.151 456 460 487 +.030 4.181 462 467 494 +.035 4.186 464 468 495 +.040 4.191 465 469 497 +.050 4.201 467 471 499 +.060 4.211 469 474 501 +.065 4.216 470 475 503 Top 060 over 400 is called a 413. But I know that whats called a 406 (. 030) is really 407 cu in.How many cubic inches is a 400 small block?Internal Dimensions. General Motors achieved the 400 SBC engines displacement by increasing the bore to 4.125 inches and the crankshaft stroke to 3.75 inches actual displacement is just over 400.9 cubic inches. How many cubic inches is a 350 bored 30 over?030 over, and a . 030 bored 350 is actually 355 cubic inches. What is the largest factory SBC?The LS7 is the largest factory-installed small-block Chevy V-8 ever, displacing 427.8 cubic inches or just over 7.0 liters.What is the bore size of a 400 SBC 30 over?Yes, 4.125 is standard bore on a 400. What cubic inch is a Pontiac 400 bored 30 over?Pontiac Blocks- Bore and StrokePONTIAC ENGINE CHARTENGINEBORE400 CU. IN.Stock Bore4.12030 over4.15060 over4.180How much horsepower does a stock 400 SBC have?How much HP can a stock 400 SBC handle? Registered. 400 cranks are nodular iron and will handle 500 hp easy.How big can you make a 400 small block?The original 265ci small block used a very short 3.00-inch stroke and the block was designed with plenty of clearance in the crankcase area for a larger stroke. Again by 1970, GM engineers had stretched that stroke out to 3.75- inches to create the 400.What is a 350 with a 400 crank?Go the other way, 350 Crank in a 400 Block, you get a 377. big bore, short stroke like the old 301/302 sbcs.Whats a 408 stroker?The 408 Ford is an excellent choice for those looking for a Windsor based stroker engine to fit in place of an existing 351. The additional stroke provides a boost in power along with better throttle response, acceleration, and overall performance. Features forged pistons, hydraulic roller camshaft, and aluminum heads.Is a 400 SBC a good motor?Evening all the 400 is a great motor especially for street use. It has the power where you really need it. As far as overheating goes, make sure you have a good cooling system and you should be fine.What is a 400 cubic inch engine?One of Chryslers greatest engines was the 400 cubic inch, 6.8 L V8. It was introduced in 1972. This engine was also known as part of the wedge family of engines because of the wedge shaped combustion chambers used. The massive motor produced up to 410 hp, a monumental amount of power for this time. I just cracked open my 400, and noticed it had been bored over .030, and it had small scoring on the cylinder walls. Is the block salvageable? The scoring is very minimal. I can barely feel it with my fingernail. I was going to see if boring it out .010 more will round out the scoring, so any feedback will be nice. -Jay .040 400s aren't bad. If you had to hone it .010 over stock. Someone drag guys will run up to .060 overbore but they build heat quick. Why did you crack open? What's the engines history? The reason I tore apart the engine is because i noticed it has been running pretty bad lately, and i found out it was a bent push rod. Im also building it to be a torque monster. And when i saw the cylinders, I used a caliper dial to measure the bore, and noticed it had been bored .030 over. Then I saw the cylinder scoring. I can barely feel it with my fingernail, but I want to bore it more. That scoring isnt bad. So my question is, being bored .030 over already, will boring it over another .010, to .020 be bad? I have a 4 core radiator and a tranny cooler. Im going to run a cooler thermostat if i run into any heating problems. The block is a 509 casted block. is the block junk? It can be honed to .040 Nothing special about a 509 block. I've read where guys like them but I personally have never noticed anything better or worse from them Im going to run a cooler thermostat if i run into any heating problems. Just as an FYI, the thermostat sets the engines minimum temperature, it has no bearing on maximum engine temp. If an engine overheats due to something like an overbore, the only cure is to push more fluid through it, or move fluid through the engine faster, or suck more heat out of the coolant stream via a more efficient heat exchange through a better radiator/fan setup. Or a combination of all of them. IMO bore as little as possible...overboring provides so little benefit in terms of power production (especially at the risk of thin walls, increased heat problems, etc), it's at the bottom of my list of mods to do to make power. If you were thinking that way.Maybe I dealt with a lazy machine shop, but they weren't willing to bore my engine anything other than the obligatory .030" in any case. I either wanted .010 or .020 (can't recall, but there were pistons available) in the thought that I'd rather have thicker cylinder walls for the next rebuild. I suspect its more about setup effort than ability to cut .010" accurately, but I'm not a machinist. Nothing wrong with .040. At .060 or any type of high dollar build, I would probably spend the extra to have it sonic checked before investing too much money. I know of a few guys that have bored them to .080 and used block fill up to the freeze plugs for race use only and they have held fine. I've also seen guys crack blocks with no overbore so that's why I suggest the sonic test. If its just a mild/ stock street motor, I probably wouldn't be the least concerned. I agree with dyeager535 that I try and bore as least as possible; usually .020, .040, .060 so that I or the future owner can get one more rebuild out of the block. There used to be some shops that would do "remanufacturing" of blocks by putting all new sleeves in each bore and returning back to standard bore. I know that they did some 400's but I don't remember what it looked like with the siamese bores. Supposedly, the sleeved blocks were extremely strong and none of my friends had any issues. Probably not being done much anymore with all the LS motors opening up the supply of core SBC blocks. As far as heating or cooling problems, I have run 4-5 400 blocks over the last 20 years and while they may run a few degrees hotter over a comparable non-siamesed sbc, it isn't anything to fret about. Regardless of motor size, use the right fan, radiatior, cap, pump, etc and you'll be fine. Seems like most of the guys I knew that had the overheating problems either ran their cooling system from their stock motor or had a heavy load for extended period of time in their old truck that was undermaintained. Punching eight sleeves into a block? I think I would just find another core.Martin The reason I tore apart the engine is because i noticed it has been running pretty bad lately, and i found out it was a bent push rod. Im also building it to be a torque monster. And when i saw the cylinders, I used a caliper dial to measure the bore, and noticed it had been bored .030 over. Then I saw the cylinder scoring. I can barely feel it with my fingernail, but I want to bore it more. That scoring isnt bad. So my question is, being bored .030 over already, will boring it over another .010, to .020 be bad? I have a 4 core radiator and a tranny cooler. Im going to run a cooler thermostat if i run into any heating problems. The block is a 509 casted block. is the block junk? . If an engine has heating problems and you install a cooler temp t-stat it will run even hotter. Alot of people don't understand how the cooling system works. My 400 is .040 over and with a big radiator it does just fine so far. The cooler thermostat won't do anything more. Just put a standard 180* or so. yep, my 30 over with 180 stat will still run 190-200 all day long. yep, my 30 over with 180 stat will still run 190-200 all day long. The only time mine even goes over 180 is when I run in 4hi. I started running in 4lo more often and she keeps nice and cool. I use to run a built 400sbc . ex drag race motor . I used a stock 3 core 81-91 tall rad in the truck . I ran shroud / no shroud / mech fan / clutch fan . never had problems with temp . always was 195-200* . unless heavy play time with gas pedal . and was in a long bed with 1tons 4.10 and 38" swampers with th350 tranny and 205 tcase. Good working cooling system should be fine for anything you are wanting to run the truck. If your worried run a electric fan to assist the clutch fan when the going gets slow.. The only time mine even goes over 180 is when I run in 4hi. I started running in 4lo more often and she keeps nice and cool. Adam. Where do you run your temp sender? Im currious because ive just finished up running some cooling ststem tests on a 406 engine. And was watching temps in various places my temp sender was all stock gm and in left head like stock . my temp sender was all stock gm and in left head like stock . Yeah same here. Always run on the left head when I can. I feel its more accurate. See when some run next to the tstat the temp reads lower than in the head I am running a 406sbc that is 30 over. It is 10.2:1 with a comp 264hr cam. It has aluminum heads and intake which have had a lot of porting. The engine is blue printed and balanced, crank and rods are forged, crank has been trued and re heat treated, reused hyper pistons since we only had to hone the cylinders this time. It is built as a torque monster. It starts pulling hard at 2,000 rpm and screams to 5,000+ with the roller setup. I run a 165 thermostat and it runs at 160-185 when the weather is in the 70's and 80's. I run 91 gas and 22 degrees of centrifugal advance at 3,000 rpm with 10 initial, and another 16 for vac. advance. I don't have any pinging issues with only the truck loaded down (79 C20 long bed th400 Gearvendors, 4.10 14bff, 33" rear tires). I haven't towed with it yet.I would not go back to a 383 or 350 vs. the 406. The torque on a well built 406 is nuts vs. the smaller sbc's. I would not want to bore more than necessary. 400 blocks are getting harder to find. Depending on how much machine work was done on your block, it could get pricey to later have to replace the block and fit the internals to it, vs. being able to bore it again. And I totally agree with a built 406 vs a 383 or 350. I just did one with out steem holes with angled milled old 350 circle track heads. Gonna try it. Ive read and heard pros and cos and seems it can be done. So far its ran on a run stand and doesn't overheat. Its .030 over and shoulda gone .040. But its a learning engine. I know how it would have been with stock heads or a closed chamber. I have all autometer electric gauges. I run the temp off the passenger's side head. I ran it off the intake before and I had the factory gauge off the driver's head.The worked over edelbrock heads on my 406 DO have steam holes. The previous build on this 406 did run warmer, but it wasn't hot, and it had a lot of details that needed fixed. I ran the 383 with the same heads and intake, but it was before all the porting. Pontiac - Race The next Level 08-27-2009, 10:49 AM The most inches you can get out of a 400 block? If you put a stroker kit in a 400 block with longer rods, what's the most cubic inches you can get out of it? 08-27-2009, 11:00 AM 487CI but not recomended as it has a long crank arm and not much left for future boring. 467 is more common. _________________ Derek B. Current best: 11.97@110 1.65-60' !!! '74 ventura, (Fired july 14/06) '74 462 4-bolt (9.5-1), SCAT, Ross, T-II w/850DP (shaker455), TH350, Conti 10'' 3800, Supercomps, Magnaflow, 3'' Pypes, 3.73's, 28x13.5-15 ET streets. 1970 Beismeyer 17' flatbottom vdrive, 11.8:1 455P, ported heads, dual Qjet tunnel ram. 08-27-2009, 11:22 AM They make a 4.75 crank and with boring 60 over would be a 521 cu. How good is that I don't know ? ? 08-27-2009, 11:48 AM I don't think an oem block can be clearance for a 4.75 crank. 08-27-2009, 12:05 PM CI. OUT OF A 400? I would go with a the largest bore and shortest stroke on a 400ci. engine if I was to build one for my self,with light weight pistons and rods.It would make a fast revving hight horse power engine,with all the natural torque of a Pontiac always makes..JMO Quote: Originally Posted by 71 T/A If you put a stroker kit in a 400 block with longer rods, what's the most cubic inches you can get out of it? 08-27-2009, 06:00 PM Jim did you ever get an answer to the last question? Seems the deck support and bottom of the water jacket of a 350/400 dont look smaller but I never measured. FWIW my shop charged $100 and pennies(w/tax) a hole per Darton sleeve installed and sized to my pistons (honed). severe water jacket corrosion on those original 3. on initial inspection it didnt look great. He set up on the boring machine and I watched a shadow get larger. The end jacket and other bank in fine shape have no idea why just the left rear 3 were so nasty. In hindsight it would have only cost $500 more to sleeve all 8 and have my choice of bore options!(not to mention strong uniform unquestionable cylinder wall integrity) DOH! I would be wary of too big a bore due to head gaskets but 4.25 is cool. In a typical stock block being pushed hard.(6000+rpm) Id avoid anything more than 4" stroke. Yuk a Pontiac 426 - 427 or 454 just sounds wrong tho. 08-27-2009, 08:15 PM We sell a kit that makes it 495 ci. Honestly thats as big as I would go. All the way to bottom. UNDER $2000 and FULLY balanced :-) Ace _________________ Am I glad I got out of the business I was in? HELL YEAH!!! 08-27-2009, 08:19 PM i have a 502. Butler rotating assembly. 4.211x4.500. Forged crank, GRP rods Ross pistons. Shift at 6800 go thru at 7000. _________________ 2007 Norwalk Quick 16 Winner 8.960 @152.24 8.96 dial 08-27-2009, 08:54 PM Quote: Originally Posted by Jim Zeek i have a 502. Butler rotating assembly. 4.211x4.500. Forged crank, GRP rods Ross pistons. Shift at 6800 go thru at 7000. The 502 is with a 400 block? Now that's for me! 08-27-2009, 09:44 PM Seems like a 455 block would be more cost effective... Plenty are already bored for four bolt mains. Just get some proform billet caps and the only extra cost is the align hone/bore. I know the 3" mains are stronger - but I'd think the 455 build would be cheaper. 08-27-2009, 09:51 PM Quote: Originally Posted by GTOLou Seems like a 455 block would be more cost effective... Plenty are already bored for four bolt mains. Just get some proform billet caps and the only extra cost is the align hone/bore. I know the 3" mains are stronger - but I'd think the 455 build would be cheaper. You are weaker with the factory straight 4 bolt mains. There is more meat in the bulkheads of most 400's (pre 76) than a 455. 2 bolt blocks with aftermarket splayed 4 bolt caps or just studded 2 bolt 400 stronger than 455 4 bolt. I wouldnt be concerned about 495 vs 502. Seven cubes are not significant 99% of the time. 08-27-2009, 10:35 PM Quote: Originally Posted by GTOLou Seems like a 455 block would be more cost effective... Plenty are already bored for four bolt mains. Just get some proform billet caps and the only extra cost is the align hone/bore. I know the 3" mains are stronger - but I'd think the 455 build would be cheaper. I have a 72 455 block at my machine shop right now getting magged and sonic checked. it is already .60 over so you can save some $$ on a few bore cuts. should be a good candidate to go .100 over. drilled and tapped for 4 bolt mains. (has 2 bolt caps now) will let you know when i get it back if interested. _________________ 2007 Norwalk Quick 16 Winner 8.960 @152.24 8.96 dial 08-28-2009, 07:47 AM I have only seen the 4.75 crank in 3 in no 3.25. AUTOBOHNENGINES on ebay has 521cu in he builds with a 400 block in Mich. I did get a quote from Kauffman to do a 521 cu, didn't sound bad. I kinda lean toward going 30 over instead of 60 over making it a 514 cu in. Now that just sounds odd for a pontiac. I bought my 69 new and had 197,000 miles on the motor when I pulled it out and started playing, thats another story. 08-28-2009, 11:10 AM ok, somebody has to ask: why would anyone want to do a 4.75 stroke in a STOCK block? with the amount of machine work and prep involved, wouldn't you be money ahead to get an IA block and have something that is not going to toss the main webbing on the ground the first time it makes the potential power that is there? or do you plan on putting a set of d ports on it with an "041" cam and rev it all the way to 4500rpm? _________________ '78 Ford Fairmont 526ci pontiac; true 10.5 tires and stock suspension. 5.14 @140.5 w/nos; 8.86@151 all motor.8.17@172 1/4 mile w/nos 08-28-2009, 11:26 AM Quote: Originally Posted by punisher#1 ok, somebody has to ask: why would anyone want to do a 4.75 stroke in a STOCK block? with the amount of machine work and prep involved, wouldn't you be money ahead to get an IA block and have something that is not going to toss the main webbing on the ground the first time it makes the potential power that is there? or do you plan on putting a set of d ports on it with an "041" cam and rev it all the way to 4500rpm? Actually that would be the best use of that motor. Heavy vehicle highway gears and let it grunt. I did a tq motor 400 once summit 2800 cam small valve heads all done by 3800 rpm. Stock governor shift at 4200 was perfect. Traction was a huge issue. 2.56 gears made the tq motor work though. Acceleration seemed out of character in the sense that the motor did not sound "fast" however 0-100 came up just as quick as some other higher rpm 400 street combos I'd run before. very deceiving. A 495 stock block low rpm tractor motor might be just right for a B body street car looking to go into the 11's and remain as flexible as a possible. 08-28-2009, 11:54 AM I ran a 494 for a while. 4.180 x 4.500, head gaskets started leaking, parked it as I did not want to make any more withdraws from the "luck bank". If you are going to spend $2500+ on a custom billet crank, why put it in a 40 year old stock block? I now have an IAII and the thought of driving over the bottom end has ceased. _________________ LIFT HEAVY, LIFE IS TOO SHORT TO BE SMALL! 08-28-2009, 01:32 PM The 4.75 crank is forged, 625.00. 08-28-2009, 02:51 PM Bingo we have a winner......Punisher #1 _________________ Due to the current economic conditions...the light at the end of the tunnel has been turned off. Meet you at the finish line.....don't be late! 08-28-2009, 04:43 PM Stronger Mains.... x' 2 on the splayed caps,they are much stonger than the original four bolt mains from the factorylll...JMO. jts Quote: Originally Posted by BruceWilkie You are weaker with the factory straight 4 bolt mains. There is more meat in the bulkheads of most 400's (pre 76) than a 455. 2 bolt blocks with aftermarket splayed 4 bolt caps or just studded 2 bolt 400 stronger than 455 4 bolt. I wouldnt be concerned about 495 vs 502. Seven cubes are not significant 99% of the time. 1998-2010 78blackbird@thepontiactransampage.com Feel free to drop me a note. * I am looking for some good articles for the third and fourth gen birds. If you have any that you would like to see on this site send them to me and I will post them on my site. The information in here is just an outline. The author claims no responsibility for the info contained in these pages. If unsure of any tip or modification seek a professional for the job. In some states this may violate pollution laws Check with your state on the laws. Not affiliated with Pontiac or General Motors As You Go Thru Life... DO A WHEELIE !!! Cubic Inches Year(s) Bore (inches) Stroke (inches) Main Journal size (inches) Rod Journal size (inches) 265 1977 ? 3.750 3.000 3.00 2.250 287 1955 3.750 3.250 2.50 2.20 301 1977 ? 4.000 3.000 3.00 2.250 303 1969-70 4.1250 2.840 3.00 2.250 316/317 1956 3.9375 3.250 2.50 2.20 326 1963 3.781 3.750 3.00 2.250 326 1964-67 3.71875 3.750 3.00 2.250 347 1957 3.9375 3.5625 2.623 2.20 350 1968-77 3.8750 3.750 3.00 2.250 366 1969-70 4.1530 3.3750 3.00 2.250 370 1958 4.0625 3.5625 2.623 2.20 389 1959-66 4.0625 3.750 3.00 2.250 400 1967-79 4.120 3.750 3.00 2.250 421 1961-66 4.09375 4.000 3.250 2.250 428 1967-69 4.120 4.000 3.250 2.250 455 1970-76 4.150 4.210 3.250 2.250 The Pontiac 400 was an iconic engine in its time and one of the most powerful ones that Pontiac produced. But is a Pontiac 400 a big block engine? We checked it out for you.The Pontiac 400 was a powerful engine. It was produced from 1964 to 1979 by Pontiac and was used in numerous vehicles like Grand Prix, Bonne Ville, and Firebird.It produced almost 335 horsepower in vehicles which were considered the most powerful ones of their time. So, is Pontiac 400 a big block? No, Pontiac 400 is not a big block engine. It is a single small block engine.What is a Big Block Engine?The engine block is the primary part of an internal combustion engine. It comprises the cylinder, crankcase, oil filter, coolant passages, and many more components.The big block engines are noted for larger bore(piston diameter), big valves, and long stroke(distance traveled by the piston from top dead center to bottom dead center). So, they produce more power compared to small block engines. These engines even look physically large and even have more weight. It can generate almost 5500 rpm.The big block engine was earlier designed for large vehicles like trucks before being introduced into passenger cars. It put a lot of pressure on the front axle because of its heavy weight. So it becomes challenging to accelerate the vehicle.The first version of the big block engine was initialized in 1958 and was of the U series. It was mainly capable of producing power in light trucks and some passenger cars.Later W series was initialized in the market from 1958 to 1965. The engine primarily consists of cast iron, and there were three displacement options, i.e., 348,409 and 427 cubic inches.Also Read: 350 Bored 30 Over HP: Unleashing Maximum Performance for Your EngineUnderstanding the Difference Between Big Block and Small Block Engines#1. WeightThe weight of a big block engine is high as it consists of more metal and large cylinders. The engine assembly is approximately 685 pounds.The small block engine weighs approximately 575 pounds. They also have metal and cylinders but fewer in number than big block engines.#2. RPMBig block engines generally come with 5500 rpm, whereas small block engines have a bit higher, i.e., 5800 rpm.#3. Fuel ConsumptionFuel consumption is higher in big block engines because it has larger cylinders. But small block engines have fewer cylinders and are also small. So they dont consume much fuel.#4. CostThe cost of a big block engine is higher compared to a small block engine.#5. Acceleration And HandlingBig block engines are heavy. But they produce more torque and power, which aids in overcoming the limitations of being heavyweight. Now, if we talk about small block engines, they are lower in weight. So you can handle the vehicle more easily, and the car accelerates more.#6. PistonBig block engines usually have pistons of larger bores and strokes, and it results in large displacement. But small block engines have pistons with large bores and small strokes, resulting in small displacement.#7. Wheel SizeBig block engines require large wheel sizes. They even cover up larger spaces because of more number of cylinders. The cylinders are even quite large. Small block engines require a small wheel size. They need little space because of less number of cylinders.#8. DisplacementIt is the volume of the cylinder. If an engine has more cylinder volume, it will add more air and fuel to the combustion chamber. It is usually expressed in cubic inches or liters. For example, if we say that the engine displacement is 400 cubic inches, it is equivalent to a 6L volume.Big block engines have an engine displacement of more than 400 cubic inches. But there are a few exceptions. For instance, if we talk about Chevy 396 engine doesnt have a displacement of above 400 cubic inches. But its engine is known as a big block because of its architecture.Old and small block engines had an engine displacement of less than 400 cubic inches. But now the displacement is increased because of additional airflow.#9. Size And ShapeThe big block engines have cylinders placed far from each other to increase air circulation. So they resemble more like a Y shape rather than a V shape. Now, if we talk about small block engines, their pistons are arranged to almost like a V shape.Pros and Cons of Big Block vs Small Block EnginesBig BlockSmall BlockProsBig block engines have larger strokes, bores, and valves. So the vehicles engine runs fast and hard and delivers more power.Big block engines last for many years.These engines are capable of producing more torque.Provide higher displacement compared to small block enginesEasy to handle and accelerate because of its lightweight.Not much expensiveThe engine requires less fuel in each revolution. So overall, they consume less fuel.LightweightConsBig block engines are made from different metals. So they are heavy.They consume more fuel.Due to its heavy weight, you will find it challenging to handle and accelerate.The cost of a big block engine is a bit high.Small block engines have few cylinders. They even are of small size. So they produce high power like big block engines.About the Pontiac 400Pontiacs history dates back to 1965 GTO, but it was officially recognized in 1968. In 1955 Pontiac was selling over-the-counter components that the dealer or owner could install.The GTO purchaser can buy these counter components to increase the vehicles performance. It consists of a steel pan with a gasket and hood scoop. Cars equipped with a four-barrel carburetor and tri-power engines can take advantage of this package.Pontiac Engineers started working hard in 1967 to meet up with Chevrolet and Mopar. They increased the bore size by 0.030 inches and the displacement to 400 cubic inches. They even changed the valve size and cylinder head by reducing the piston valve angle.The intake manifold design was also improved in 1967, capable of generating high torque at low speed.The ram air was first time showcased in Pontiac Brochure in 1968. Additionally, in May 1968, Pontiac introduced a new cylinder head and round exhaust port. These heads could enhance the exhaust flow by almost 10 percent compared to the D port cylinder head.Pontiac introduced two upgraded ram air engines in 1969. Ram air 1V was one of the most powerful versions of the Pontiac 400, which can easily be marked by round and upgraded cylinder heads.The Pontiac 400 generated 370 HP in GTO trim and 345 HP in small Firebird, which made them the most powerful car for almost ten years.What Was Special About The Pontiac 400?The 389 block engine used in Catalina, GTO, and Lemans produces 330 horsepower. But when Pontiac 400 was used in cars equipped with a four-barrel carburetor, it had 360 horsepower, which was relatively high in the 1960s and 1970s.Pontiac is quite famous for its Ram air versions which had five total stages. The Engineers first set up the Ram air version in 1967. They slightly changed the camshaft, cylinder head, and exhaust manifold and even included a hood scoop.These changes reduced exhaust back pressure and enhanced the intake efficiency.In 1968 Pontiac introduced Ram air 11. The primary difference between Ram air 1 and Ram air 11 is the cylinder head port shape. The D shape port was changed to round one in Ram air 11.Later in 1969, Pontiac launched two versions of the Ram air engine. The Ram air 111(400 cubic inches V8) engine had D port heads. But Ram air1V has a round port head and made slight changes in the design of the intake ports. The final one was Ram air engine V, but unfortunately, it was never used in production.It was looking to make three versions of the engine. The first one is a 303 cubic inches short deck engine in a Trans arm car (1969) for participating in SCCA trans arm competition. The second one is a 366 cubic inches engine that can be used in NASCAR. The third one is 400 cubic inches for producing Firebirds.Pontiac Engineers produced various intakes for vehicles equipped with single and dual four-barrel carburetors.The Ram Air V blocks were quite heavy, and only 303 and 400 cubic inches engines were decided to be used for production. Unfortunately, in 1970 the SCCATrans arm rules and regulations were changed, so the project was dead.Later Ram air V blocks of 400 cubic engines became also a victim of a bad time. The RPO had permitted operating such an engine, but the vendor became bankrupt and was given the duty of producing special rods. It is estimated that less than 500 Ram air V 400 cubic engine swerve was produced then.Was The Pontiac 400 Big Block?Pontiac 389 was quite famous in the 1960s NASCAR. But in 1967, the Engineers made slight changes in the bore and incurred the engine displacement. The Pontian 400 engine could produce more power than Pontaic 389 and became immensely popular for its other benefits.But, Pontiac 400 is a single small block engine. The external dimensions of all its V8 engines, i.e., from 326 to 455 cubic inches, are almost identical.Most people think of the Pontiac 400 as a big block engine because of its higher displacement. But in reality, it is considered a medium size level engine. It cannot produce enough torque and power like a large engine.Frequently Asked Questions#1. Did Pontiac make a big block 400?Pontiac produced a single small block V 8 engine without adding a larger block which differs from all other manufacturers.The external measurement of all the V8 engines starting from 5.3 to 7.5 L, are almost similar.#2. Is a Pontiac 400 and a 455 on the same block?Both Pontiac 400 and Pontaic 455 are equipped with V8 engines. But they are not similar because Pontiac 400 has an engine displacement of 400 cubic inches, but Pontiac 455 has 455 cubic inches.Secondly, Pontiac 400 produces power of 335 Horsepower. But Pontaic 455 generates 360 Horsepower.#3. What engine is in the 400?In 1967 Pontaic made slight changes in the 389 cubic inches engine. It slightly increased the bore and raised the engine displacement to 400 cubic inches.The bore or diameter of the piston is 4.12 inches, and the stroke of the Pontiac 400 is 3.75 inches which is almost similar to Chevys big block 396 engine.Wrap UpThe Pontiac V8 engine was manufactured by the Pontiac division of General Motor Corporation between 1955 to 1981. In the 1960s, Pontiac 389 was quite popular. Later the engineers made slight changes in the diameter of the piston and raised the engine displacement to 400.The majority of people think Pontiac 400 as a big block engine. But it is a small block engine. All the Pontiac V8 engines are small blocks with similar connecting rod lengths, i.e., 6.625 inches.

Pontiac 400 bored 60 over cubic inches. Pontiac 400 bored 30 over cubic inches. How many cubic inches is a pontiac 400 bored 30 over. 400 pontiac bored 30 over.