

Nitemare 455 Pontiac V-8 Dyno Test



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Burt Reynolds 1936-2018

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Longroof 4-Speed: '64 Safari Street Machine

Dept. X: 850 HP LSX Solstice



Blueprinting Basics: **The Big Wrap-Up...**

Tuning and Dyno Testing the Nitemare Performance 455 Pontiac "Raffle Engine"

Tom Sanders, of Higganum, Connecticut is the lucky winner of the Nitemare Performance 455 Pontiac- Congratulations!



**Story by Jason Scott
Photos by Darrin Magro**



Despite being what Nitemare Performance's Darrin Magro considers a "mild" build, the 462 cubic inch Pontiac turned Exxtreme Fabrication's Land & Sea dyno water brake to the tune of 508 ft-lbs of torque and 452 hp. Plenty stout for a "mild" crate motor.

Okay, let's just cut to the chase: Five hundred and eight foot-pounds of torque. Four hundred and fifty-two horsepower. At 462 cubes, that's just shy of one horsepower per cubic inch. Not bad for a naturally-aspirated, hydraulic-cammed engine burning 89-octane via a pump-gas-friendly 9.5:1 compression ratio using iron heads and a single four-barrel.

Sure, it might not scare Hellcat or Demon drivers, nor anyone in a

late-model ZR1 Corvette, ZL1 Camaro, or Shelby GT350 Mustang. But it'll sure give them a run for their money. The same goes for folks driving old-school Street Hemis, LS-6 Chevelles, or Boss 429 Fords.

This is one potent Poncho. And it's more than capable of giving just about any challenger a good run for its money.

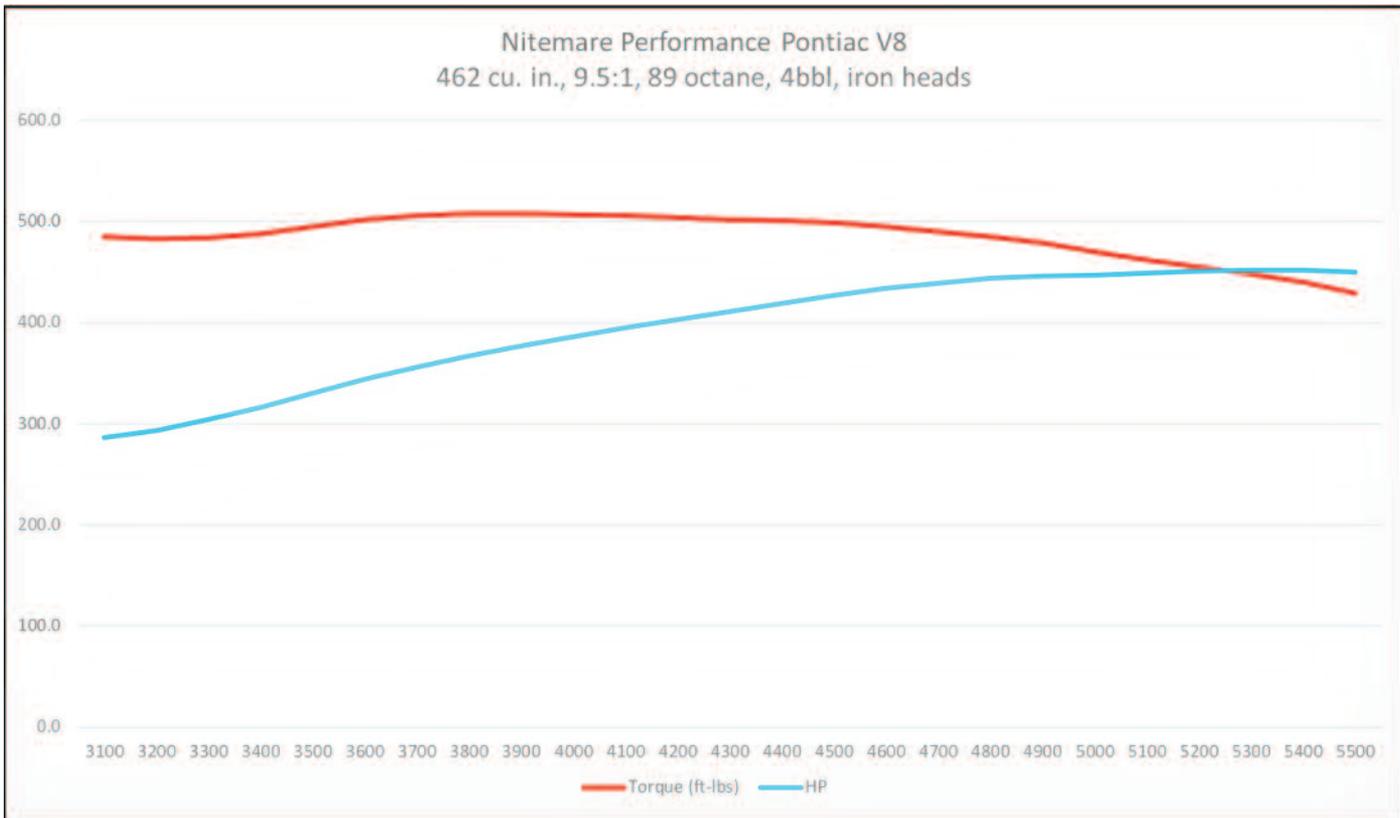
And the irony is: it isn't even built to be a race motor. This thing is built to survive countless miles of

street duty, burning regular old pump gas—and not even premium.

More Than The Sum Of Its Parts

According to Nitemare Performance's Darrin Magro, "insane horsepower was never the goal for this motor," he said, describing the raffle engine. "Our goal was to build a rock-solid reliable, extremely torquey engine based on a proven combination of components and meticulous preparation.

Opposite page: Here's the crate motor, all prettied-up and ready to be raffled off, prior to its trip to the dyno. It's loaded with proven go-fast goodies like an all-forged Scat rotating assembly, a mild .500"-lift hydraulic cam and 1.5:1 roller-tip rockers from Comp, and, of course, a bunch of Nitemare Performance's exclusive high-performance parts and even more of their engine engineering know-how.



Check out that (red) torque curve! It's hardly a curve at all. Nice and broad and flat, just what you want for a high-performance street motor.

Then raffle it off to benefit a couple worthwhile children's charities."

So, there are no unobtainium parts. There's no rocket science. No magic. And no power adders. Just a good ol' fashioned Pontiac V8 that's been carefully blueprinted, balanced, and tuned to make gobs and gobs of torque from now until the cows come home.

The build-up was chronicled in a series of issues earlier this year, but in case you missed those, here's a somewhat-brief summary of what's inside the raffle motor:

Magro and his crew started with a "seasoned" Pontiac 400 block that Magro carefully inspected, measured, and prepped before filling it with high-strength internals, including a SCAT forged steel crankshaft, matching SCAT forged

rods fitted with ARP bolts, and Keith Black forged aluminum pistons. A quite mild, .500"-lift Comp Cams hydraulic flat-tappet cam is turned by way of Nitemare's own double-row, true roller timing set, and pushes on a set of Comp hydraulic flat tappets and one-piece Magnum pushrods.

The heads are Pontiac 6X iron units. Like the block, they're intensely inspected and prepped by Nitemare, then flow-tested to ensure they support ample flow for the power goals. In this case, the Nitemare 6Xs out-flow even the legendary Ram Air IV factory heads, which explains how the engine out-performs the Ram Air IV. The heads are loaded with stainless steel Ferrea valves, Comp springs to complement the cam, and 1.5:1

Comp Cams' Magnum roller-tip rockers to actuate the valves. A Jomar Performance stud-girdle was added to ensure valvetrain stability. The heads are capped with a pair of Nitemare's fabricated aluminum valve covers to keep the oil in and dirt and dust out of the engine.

A host of Nitemare-specific upgraded components ensure that the engine's oiling system is more than up to the task of keeping the engine lubricated, including a Nitemare-modified high-volume Melling pump fitted with Nitemare's extra-thick pump plate and Nitemare's custom pickup to complement the Nitemare custom road racing oil pan. The hardened steel Nitemare Pro series oil pump driveshaft features a steel sleeve to

prevent the shaft from disengaging from the pump's input shaft.

A Nitemare Performance stainless steel, braced valley pan sits beneath a Nitemare-ported Edelbrock Torker intake that's fitted with a one-inch Jomar Performance Power-Cone spacer and a Quick Fuel 850-cfm carb. A Pertronix electronic-ignition distributor, Flame-Thrower high-output coil and wires, plus tried-and-true AC plugs comprise the ignition system. And Doug's Headers get rid of any left-over gases from the combustion process.

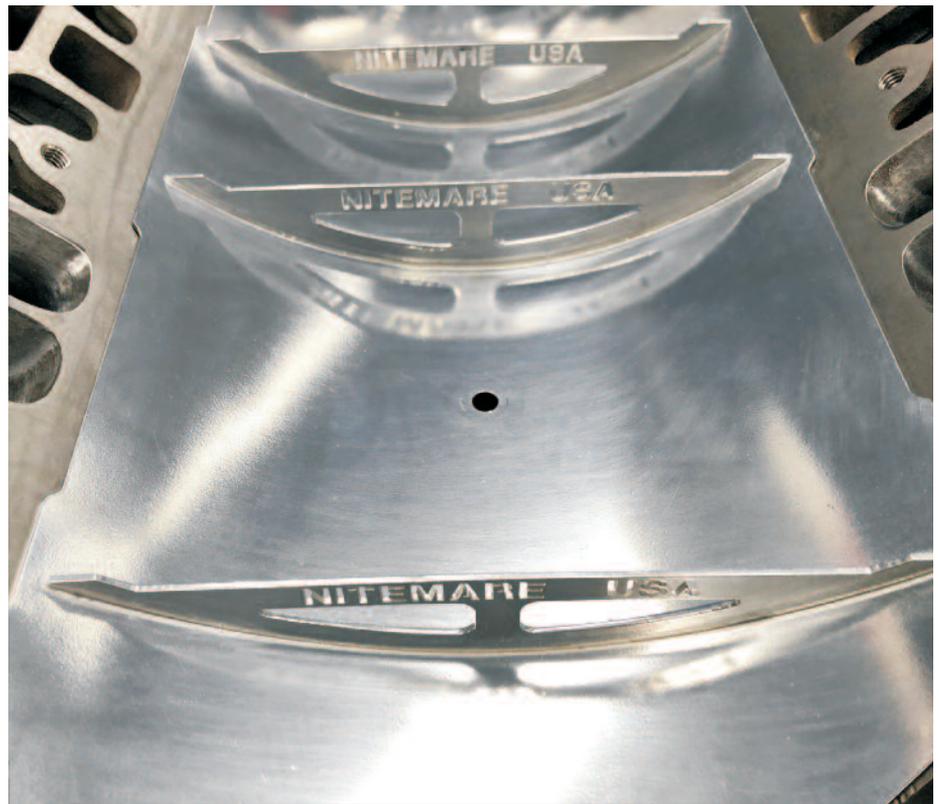
Other goodies in the engine are equally proven pieces: Cometic multi-layer-steel head gaskets; BOP Engineering one-piece oil pan and rear main seal gaskets; a BHJ/Nitemare Performance harmonic damper; a full complement of ARP engine fasteners from National Parts Warehouse; a B&B Performance remanufactured power steering pump; pulleys and brackets protected by Central Connecticut Coatings; a TCI SFI-approved flexplate; a PowerMaster high-output starter and alternator; and several quarts of Driven Racing Oil's Hot Rod Oil.

Again: quality components that are assembled by Magro with meticulous attention to detail throughout the blueprinting process.

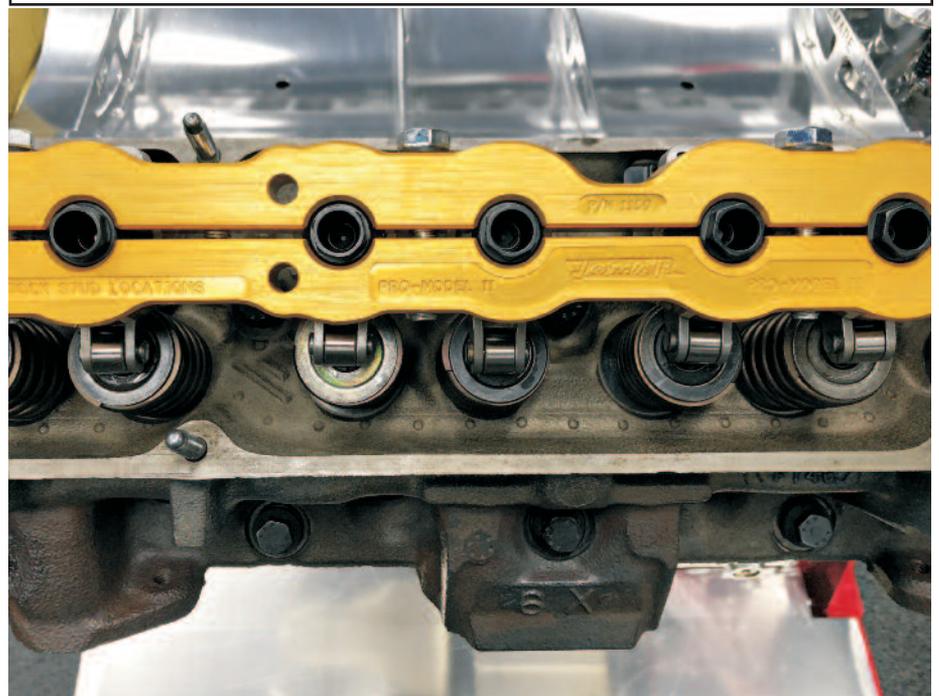
Test Prep

Just like in high school or college, it pays to prepare for a big test.

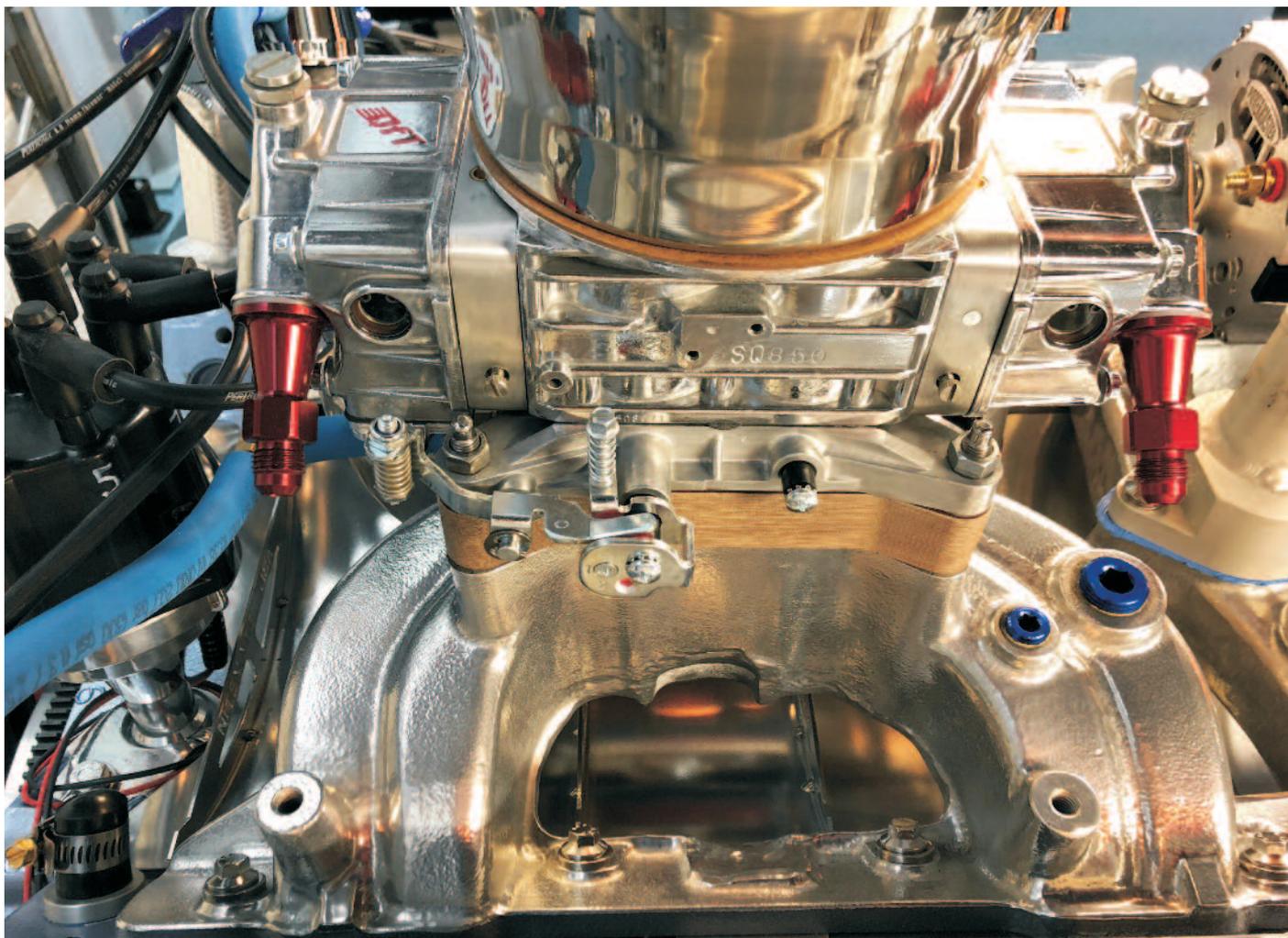
In this case, since dyno time is expensive (most dynos charge by



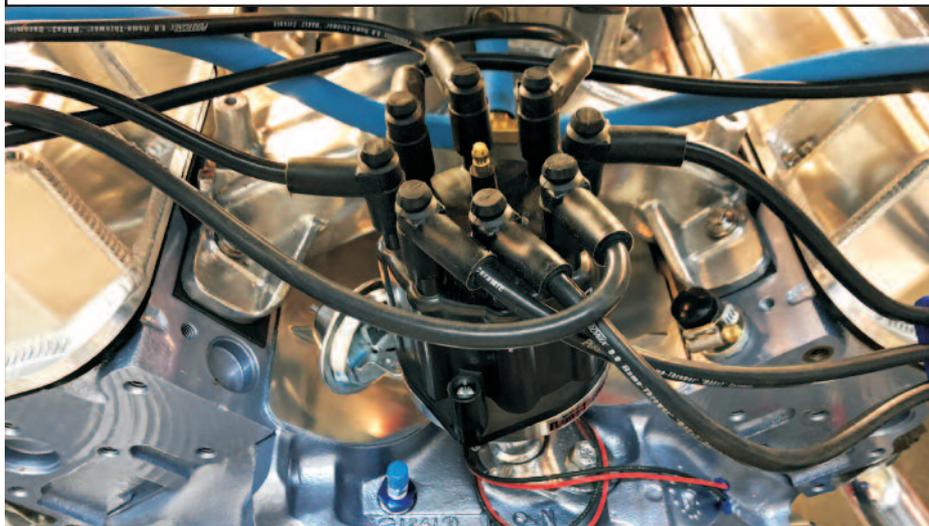
We really liked Nitemare's minimalist valley pan that helps improve air flow under an intake manifold to reduce intake air temps and shed a bit of weight. The stainless steel sheet is curved to perfectly match the shape of a Pontiac V8's valley area, and the welded-on cross-braces ensure that it holds that shape.



In anticipation of the lucky winner of the raffle motor plumbing up a nitrous kit or perhaps upgrading to one of Nitemare's higher-performance (and higher-rpm) camshafts, the engine is fitted with Jomar Performance's billet aluminum stud girdles, to keep the rocker studs from flexing under load.



Nitemare Performance ported and polished an Edelbrock Torker intake then bolted on a QuickFuel 850 cfm square-bore carb, with a Jomar Performance one-inch Power Cone phenolic spacer between the two, to add plenum area, smooth the flow of the intake charge from the carb to the intake, and keep the fuel cool.



Burning the air and fuel charge is the responsibility of the Pertronix ignition system, which consists of a Plug-N-Play distributor, high-output coil, and shielded Flame-Thrower wires. The distributor stock-like appearance conceals the Ignitor III module within, which provides both multi-spark and adjustable rev-limiter functionality, in addition to increasing spark energy and eliminating pesky points.

the hour), Magro first bolted the completed engine to Nitemare's custom-built run stand to break-in the engine and verify that there weren't any oil or coolant leaks. Such maladies are far easier to fix on a run-stand than after the engine has been installed into a car and everything's been hooked up.

After break-in, but while the engine was still on the run stand, Magro reinstalled the inner valvesprings (which had been removed for break-in, to minimize the chance of wiping out a cam lobe), adjusted the valves, set the timing, then spent quality time ad-

justing the carb's idle mixture, jetting, and accelerator pump actuation, among other things.

Prepping it ahead of time meant that there'd be more time to optimize things on the dyno, instead of wasting valuable time just getting it in the ballpark.

Dyno Day

Dyno testing was conducted on the Land & Sea DYNomite engine dyno at Exstreme Fabrication in North Haven, Connecticut, not far from Nitemare Performance's machining and assembly shop.

After transferring the engine from a shipping stand to the dyno cart and hooking up the fuel, water, ignition, throttle, exhaust systems, along with various sensors, the engine was fired up and run with no load to allow everything to reach standard operating temperatures.

As a testament to Magro's methodical preparation of the engine and thorough tuning on the run stand, the very first pull yielded already-impressive numbers: 446 horsepower and 502 foot-pounds of torque.

With the air/fuel ratio right where Magro wanted it, several pulls were made bumping the timing up and down a few degrees, with the best numbers being made at 36 degrees: 452.4 horsepower at 5,300 rpm and 508.0 ft-lbs of torque at 3,900 rpm.

Best of Both Worlds

Despite not aiming for huge power numbers, Nitemare Performance took a conservative combination of

Nitemare Performance Crate Engine

462 Cubic Inch, Normally-Aspirated, Pontiac V-8, single 4-barrel carburetor; 89 octane fuel

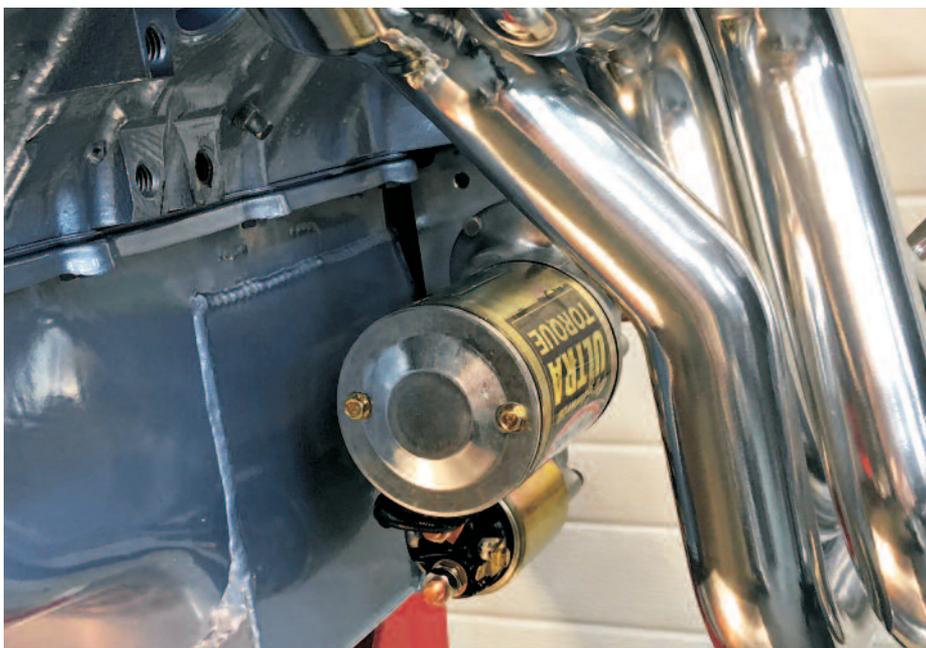
RPM	Torque (ft-lbs)	HP
3100	485.4	286.6
3200	482.5	293.8
3300	484.4	304.5
3400	488.2	316.3
3500	494.8	330.0
3600	502.0	344.1
3700	506.1	356.3
3800	507.7	367.2
3900	508.0	377.1
4000	507.1	386.2
4100	505.6	394.8
4200	503.8	402.9
4300	502.2	411.0
4400	501.0	419.5
4500	498.9	427.2
4600	495.2	433.7
4700	490.4	439.1
4800	485.2	443.6
4900	478.5	446.4
5000	470.1	447.5
5100	462.1	448.7
5200	455.3	450.7
5300	448.3	452.4
5400	439.8	452.3
5500	429.1	449.7



Metallic-ceramic coated Doug's Headers handle removing the burned gases from the Nitemare Performance blueprinted factory 6X heads. The coated headers not only look nice and prevent rust, but they trap exhaust gas temperatures within the tubes, which improves flow through the headers.

components and put together an engine that has been proven on the dyno to out-perform even the

mightiest regular production engine that Pontiac had ever installed in a vehicle on an assembly line.



A Nitemare-specific PowerMaster "upside down" high-torque starter gets the engine cranking for fire up, but keeps the solenoid down low, away from header heat, to improve starting of hot engines.

Thanks to Nitemare's meticulous preparation of the components, and painstaking assembly process, they've shown that you don't need exotic cylinder heads, a huge cam, or even high compression to have yourself a Pontiac V-8 that should feel impressive on the street, able to rocket away from a stoplight when called upon, but also able to putter around town in a daily driver, too, from now until the cows come home.

And for those track-day activities when you need just a little more ... with a few tweaks or the addition of a mild nitrous shot, it can be transformed into an absolute animal, capable of holding its own against any challenger. It's the best of both worlds. What more could you want?

PP

Sources

Nitemare Performance

www.nitemareperformance.com

Blueprinted cylinder block, blueprinted cylinder heads, rebuilt timing cover, modified water pump, Pro Series oil pump assembly, oil pump cover plate, oil pickup, oil pan, oil pump drive-shaft, Pro Series aluminum water neck with jumper line, modified water pump, stainless valley pan, aluminum valve covers, fuel pump block-off plate, external dipstick tube, full factory pulley and bracket system, final assembly, custom painting, break-in, tuning.

B&B Performance

www.bbperformance.com

Fan, spacer, V-belts, power steering pump, lift plate, various fittings and plugs.

BHJ Dynamics

www.bhjdynamics.com

Harmonic dampener.

BOP Engineering

www.bopengineering.com

One-piece oil pan gasket; one-piece Viton rear main seal.

Central Connecticut Coatings

www.centralctcoatings.com

Powder-coating for pulleys, brackets; high-temp, dry film coatings for valley pan.

Cometic Gaskets

www.cometic.com

Cylinder head, timing cover, water pump, intake manifold, valve cover, and carburetor gaskets.

Competition Cams

www.compcams.com

Camshaft, lifters, pushrods, pushrod guide plates, roller-tip rocker arms, rocker studs, valve springs, valve seals, valve locks.

Driven Racing Oil

www.drivenracingoil.com

Break-in and Hot Rod motor oil, Defender fuel additive.

Doug's Headers

www.pertronix.com/prod/ex/dougs

Metallic-ceramic coated exhaust headers.

Exstreme Fabrication

www.exstremefab.com

Dyno testing.

Ferrea Racing Components

www.ferrea.com

Max Flow stainless steel intake & exhaust valves.

Holley Performance

www.holley.com

Quick Fuel 850 cfm carburetor; air cleaner assembly.

Jomar Performance

www.jomarperformance.com

Pro Stud Girdle; 1" Power Cone phenolic carb spacer; AN wrench set.

National Parts Warehouse

www.enationalperformance.com

Engine fastener kit.

Pertronix

www.pertronix.com

Distributor, electronic ignition module, ignition wires.

Powermaster Performance

www.powermastermotorsports.com

High-performance starter motor and alternator.

Scat Crankshafts

www.scatcrankshafts.com

Balanced rotating assembly: forged steel crankshaft, forged steel connecting rods, forged aluminum Keith Black pistons, performance piston rings, performance bearing set.

TCI Automotive

www.tciauto.com

SFI-approved flexplate.