

MISTER MUSCLE OF

1970

Biuck's new GS 455 makes it hard to stay away from the muscle-car mania



By Steve Kelly ■ Buick may have the surprise issue in the super-car series this model year. The 400-cubic-inch engine in their GS series has been replaced by a 455-inch version, conservatively rated at 360 horsepower in Stage 1 dress. The standard GS 455 engine has a 350 rating, and both figures are taken at 4600 rpm. Torque is 510 lbs-ft at 2800 rpm on both 455's. Combined with the new powerplant is one of the most eye-appealing exterior shapes this car has ever had, and it may qualify as the best-looking intermediate and/or muscle car of the season.

The auto-buying world may not be ready for—or in need of—plus-400-cubic-inch V8-engined super cars, but that's gradually becoming the only size to be offered in the identity-laden performance cars. Time will have to be the judge as to whether or not this is the proper direction for U.S. auto makers to be heading.

Cylinder bore is 4.3125 inches in the new 455, versus 4.040 in the earlier 400-inch V8. Bore-spacing is the same at 4.750 inches. Stroke is also the same between 400 and 455: 3.90 inches. The 455 is derived directly from the 1967-introduced, wedge-shaped combustion chamber engine. Cast aluminum alloy pistons, forged rods, and a nodular iron crank (with the same journal diameter size as a 400-incher) make up the lower end. Compression ratio is 10.0:1 for both "regular" GS 455's and Stage 1 models. A

single Rochester Quadrajet is used on all GS engines. The 350-horsepower camshaft readings are identical to 455 V8-powered LeSabre and Wildcat Buicks, though in those cars the same engine carries a 370-horsepower rate, and with the same torque figure. Wonder who's running their dyno! These specs are: Intake opens 17° BTC, closes 93° ABC for a 290° duration; exhaust opens 93° BBC, closes 49° ATC, for a duration of 322°. Valve opening overlap is 66°. Lift at the valve is .3891-inch on the intake, and .4602-inch on the exhaust. Hydraulic lifters are used, and 1.60:1 ratio rocker arms are fitted. The higher rpm range Stage 1 cam specifications are: Intake opens 28° BTC, closes 108° ABC, with a duration of 316°; exhaust opens at 98° BBC, closes 62° ATC; 2.13-inch intake and 1.755-inch exhaust. No significant change is made to the lifters or rockers with Stage 1 pieces.

The Stage 1 option consists of low-restriction dual exhausts, high-rpm-operation valve train, a special hydraulic lifter cam, revised oil pump, 3.64:1 ratio limited-slip axle, and higher shift-point automatic transmission, when the Turbo Hydro is ordered.

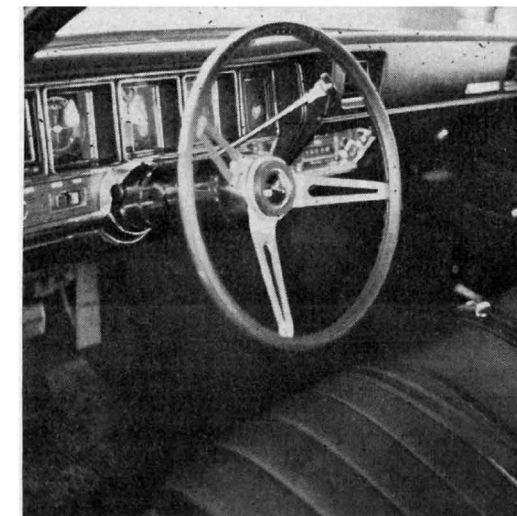
External appearance of a 455 is no different from a 400/430 design, but changes within the bigger displacement block render it quite different from the early engine. Main bearing caps have deeper sections, and main bolts have been altered for easier servicing. An en-

larged main oil gallery reduces chance of the crankshaft "drying out" at high rpm, with subsequent bearing damage now being less of a risk. Stage 1 V8's have a 60 psi oil pump regulator spring, versus the normal 40 psi. The new valve gear takes oil from the hydraulic lifters and passes it up through the tubular pushrods to the new pattern rocker arms. The rockers are low-porosity, pressure die-cast aluminum, retained on carbo-nitrided, extruded rocker shafts by small nylon buttons. Steel composition head gaskets are new to this engine, as are 7/16-inch intake manifold bolts, replacing the older, 3/8-inch cap screws. Water pump seals are now produced from an extremely hard, smooth ceramic material which resists corrosion and abrasion. Most of the new pieces won't adapt directly to 400/430-cubic-inch Buick engines, but mounting points on the 455 are exactly the same, making a transplant of this engine to earlier chassis very easy.

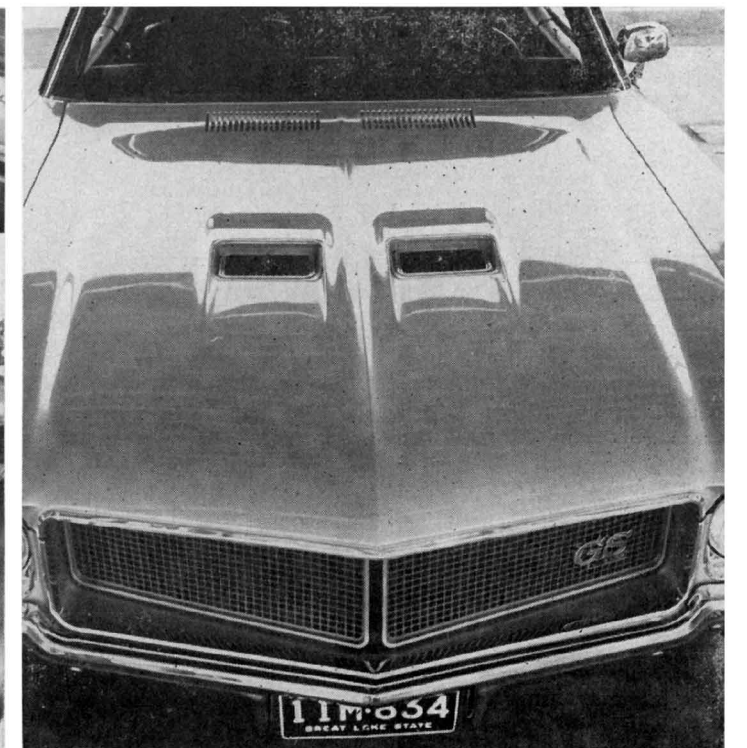
Our testing was conducted in the hot Arizona desert, near Mesa. Despite the 100-degree temperature, the near-4000-pound coupe performed without complaint. The GS 455 ran below the 14.5-second quarter-mile clocking as soon as I discovered the automatic selected the optimum shift points better than I could do it manually. On earlier runs, my shifting was made at the 5500-rpm mark, which means the shifts actually occurred at 5600-5700 rpm due to the slight lag

between lever movement and trans action. This proved too far past the power curve to suit the totally stock engine. The revised Turbo Hydro with Stage 1 Buicks has shift points set at 5300 rpm for both upshifts, and that's exactly where it should shift with the stock setup. The car dropped to 14.4-second quarter-miles with the lever in "D" and my foot hard to the firewall. All runs were made with two people aboard, and the 14.4 times (and there were many of them) proved this car was quicker than some early-model street hemis tested in exactly the same trim. The car is surprisingly close to current showroom-fresh hemi MoPars, though it does have the benefit of 29 more cubic inches. A '69 GS 400 tested in our June 1969 issue, after receiving a liberal amount of handiwork and equipment, produced 12.7-second e.t.'s; and an identical four-speed GS 400 ran very low 12-second quarters. The same treatment to a GS 455 will certainly obtain high- or mid-11-second clockings.

A 3.64:1 limited-slip rear gear (the standard item) was in this car. Certain assembly-line GS models can be ordered with a 3.91 cog, and non-Stage 1 455 super-car intermediates receive a 3.42 ratio. G78-14 wide-pattern tires on 6-inch rim width wheels are standard, and while they don't bolster quarter-mile speeds, they do contribute to making this a good-handling car. H78 and G70 (Continued on following page)



ABOVE — Overall roadability is excellent. Rear stabilizer bar contributes to this Buick's agile ways. LEFT — Interior layout is very much like luxury-model Buick's. Full instrumentation is optional and recommended. Noise transfer to passenger compartment is at a very low level. BELOW LEFT — Twin snorkels on big Quadrajet air cleaner feed cool air from functional hood scoops. Compartment gets rather crowded with air conditioning installed. Chrome rocker covers are standard. RIGHT — Hood scoops nestle neatly in sheet metal, but they're in the wrong spot for grabbing heavy stream of air.



MISTER MUSCLE



GS 455 styling adds to its appeal. Big V8 ran well in desert tests and delivered acceptable fuel mileage.

profile tires are optional. The G78's on the rear did aid initial acceleration, though the relatively high stall speed of 1500 rpm can cause the rear wheels to slip if full stall is exercised. Driving out from a lower speed, around 1000 rpm, resulted in a more constant low-end pull and shorter time on the clocks.

Front disc brakes are optional for GS Buicks, and this is a recommended option. It's not that the 9.5-inch-diameter finned drums are no good; it's just that the disc option with a power booster is so much better. This car had drums, and no fault was found there, but there's nothing like front calipers for repeated straight-line stops.

Car length is shorter by 1.3 inches for 1970, though front overhang is greater. Handling traits are even better than before. A linkless-design rear stabilizer (which has been optional for more than a year on the GS) was fitted to this one. It has a 7/8-inch diameter, and connects each lower rear control arm, with the cross-section fitted firmly against the underside of the rear-end housing. There's a bigger one up front and the combination of the two gives excellent handling to the coil-sprung car. This setup makes a coil suspension behave properly during twisty-road driving. Stiffer shocks would aid good handling, though hampering normal ride "softness."

Variable-ratio, power steering is the only soft-touch steering option. It adds much to front end control; and when used in any GM intermediate, it brings the steering back to a closer relationship with the front wheels. "A" body cars have their linkage mounted forward of the front wheels, which sometimes causes the steering to be controlled as much by the front wheels as by the linkage. This isn't dangerous, considering that a driver is supposed to have his hands on the wheel, but the variable-ratio system gives more precise control from the steering wheel than previously possible. Gear ratio is 16:1 for the period of plus-or-minus 4° of pitman arm travel, and this advances (or reduces) to 12.4:1 ratio by the end of the arm travel. Low-speed directional change therefore receives more assist, and

sharp turns get less help. Getting the wheels off "center" is the biggest task, and here variable ratio proves its worth.

Interior styling is brightened by a new dash treatment similar in concept to the big Buick's. Bucket seats and a console are available, though the bench seat feels fine. Buckets do offer more leg support because the rounded backrest allows you to sit deeper in the seat. Warning lights are normally fitted to the panel, and full instrumentation can be included for an extra amount. A collapsible spare is optional.

Arizona's desert heat proved the value of the semi-closed cooling system included now on all Buicks. A translucent catch-can receives overflow, and this coolant is later drawn back into the radiator by a vacuum force that occurs after the engine has been shut down. This also provides for fluid level checks without removing the radiator cap. Had it not been for this feature, the GS 455 probably would've left all of its coolant on the desert floor. It left a healthy amount anyway.

An evaporative emission-control system is part of all California-sold '70 Buicks (and all other brands too). The fuel tank is closed off, and gas fumes are captured in a carbon canister and subsequently fed into the engine during operation. All '71 cars will have this.

Every GS-series Buick has fresh-air intake scoops in the hood. While they look great, they're placed too low and too far back to be able to capture the mainstream of passing air. Despite the disadvantage, these hood scoops are better than none at all.

All aspects of this car's performance, ranging from low-speed meandering to high-speed full-throttle enduros, were pleasing and satisfactory. It is a comfortable car, especially from an enthusiast's viewpoint, quiet-running, and carries outside styling that surpasses the majority of our current crop of muscle machines. Now, if the Flint, Michigan, group is as sharp in their marketing as they've proved to be with their engineering, a lot of hot rodders who appreciate good cars could be driving GS 455's before the year is over. ■ ■

VEHICLE

Buick GS 455 Stage I hardtop coupe

ENGINE

Type OHV V8
Cylinders 8
Bore & Stroke 4.3125 x 3.90 in.
Displacement 455 cu. in.
Compression ratio 10.0:1
Horsepower 360 @ 4600 rpm
Torque 510 lbs-ft @ 2800 rpm
Valves: Intake 2.125-in. dia.
Exhaust 1.750-in. dia.
Camshaft: Lift490-in.
Duration 316°
Overlap 90°
Rocker arm ratio 1.60:1
Tappets Hydraulic
Carburetion Single Rochester
Quadrjet; vacuum-actuated
secondary opening: 1.375-in.-dia.
primary bores; 2.250-in.-dia.
secondaries.

Exhaust Dual: low-restriction-type system

TRANSMISSION

Type ... Three-speed Turbo Hydra-Matic automatic, THM 400. Three-element torque converter; 2.05 maximum ratio at stall
Ratios: 1st 2.48:1
(42.5 mph @ 5000 rpm)
2nd 1.48:1
(70.0 mph @ 5000 rpm)
3rd 1.00:1
(105 mph @ 5000 rpm)

DIFFERENTIAL

Type ... Salisbury hypoid; semi-floating axle shafts. Limited-slip with Stage 1 package
Ring gear diameter 8.50 in.
Final drive gear ratio 3.64:1

BRAKES

Type Power-assisted drum type; finned aluminum front drums; composite cast-iron finned rear
Dimensions 9.5-in.-dia. drum
Total swept area 268.6 sq. in.
Effective area 152.0 sq. in.
Percent brake effectiveness, front (based on wheel cyl. size) 62.4%

SUSPENSION

Front ... Independent with coil springs and ball joint
Spring rate: 410 lb.-per-in.
Rear ... One-piece rear housing with coil springs (122 lb.-per-in. rate) and upper and lower torque arm location
Shocks Direct-acting tubular; 1.0-in.-dia. piston
Stabilizer: Front ... Link type, 970-in.-dia.
Rear ... Linkless, 875-in.-dia.
Tires G78-14, wide-pattern, fiberglass-belted
Wheel rim width 6.0 in.
Steering: Type Variable-ratio, power-assist. Saginaw; recirculating ball nut.
Gear ratio 16.1:1 in center; 12.4:1 at ends of travel
Overall ratio 18.7:1 in center; 15.4:1 at ends of travel
Turning circle: 39.9 ft., curb to curb
Wheel diameter 16.0 in.
Turns lock to lock 4.06

PERFORMANCE

Standing-start quarter-mile (2 aboard) 14.40 sec., 96 mph
0-30 mph 2.7 sec.
0-45 mph 4.5 sec.
0-60 mph 6.4 sec.
0-75 mph 9.4 sec.
40-60 mph 3.1 sec., 226.9 ft.
50-70 mph 3.5 sec., 308 ft.

FUEL CONSUMPTION

Best reading 14.9 mpg
Poorest 10.6 mpg
Average 12.5 mpg
Recommended fuel Premium

DIMENSIONS

Wheelbase 112.0 in.
Front track 59.4 in.
Rear track 59.0 in.
Overall height 53.4 in.
Overall width 75.6 in.
Overall length 200.7 in.
Shipping weight 3582 lb.
Test weight 3908 lb.
Body/frame construction Separate. Perimeter-type frame
Fuel tank capacity 20 gal.