

For people who think driving should be fun...



From Pontiac—the people who agree.



Fun, to us, means performance. And performance means . . . well . . . you name it. It's personal. Your own bag.

All we ask is that you appreciate cars as fine, precision machinery.

This book is dedicated to people who do. People who want to know why. How. So they can get more out of those hours they spend on wheels.

That's how seriously we think the fun of driving should be taken. If you agree, dig in.

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power train

It starts with an explosion. Up to 10,000 lbs. of force on each of eight beefy pistons. It twists at a crank-

shaft. Vehemently. Gears are thrown into activity. A wrenching at the driveshaft. Torque. More

gears. And into the rear wheels. Amid the turmoil, you are calmly, sedately, under way.

1970 Pontiac GTO Hardtop Coupe



basic engine

Combustion chamber. Detroit's best have come up with a number of designs. Most popular, the wedge. And modifications thereof.

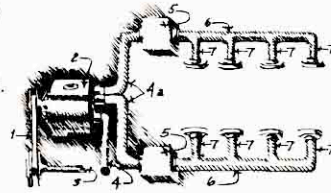
They all work on a squish principle. Gas and air are literally squirted to one side of the chamber on the compression stroke. This increases turbulence. Gives a better burn. Reduces the possibility of spark knock. Cuts exhaust emissions. And complements a high compression ratio.

The most recent step in the evolution of the wedge is called the spherized wedge. It's squishier yet. The chamber is undercut at the valves to unshroud them. Simple. But pow! Free-flowing, maximum breathing. And a



significant increase in the available power. Now every combustion chamber comes into this world clean. One step this side of sterile. The object is to keep it that way. For two good reasons. Lower exhaust emissions. And higher power.

The slipstick jockeys have two methods. One is the air pump. A tricky kind of afterburner. Once the exhaust valve has opened, additional air causes further burning to handle unburned combustibles. A very efficient way to lower emissions. Expensive, too. The pump runs off the engine and swallows up 8-10 valuable ponies.



The other system really isn't a system. It's much too uncomplicated. You simply

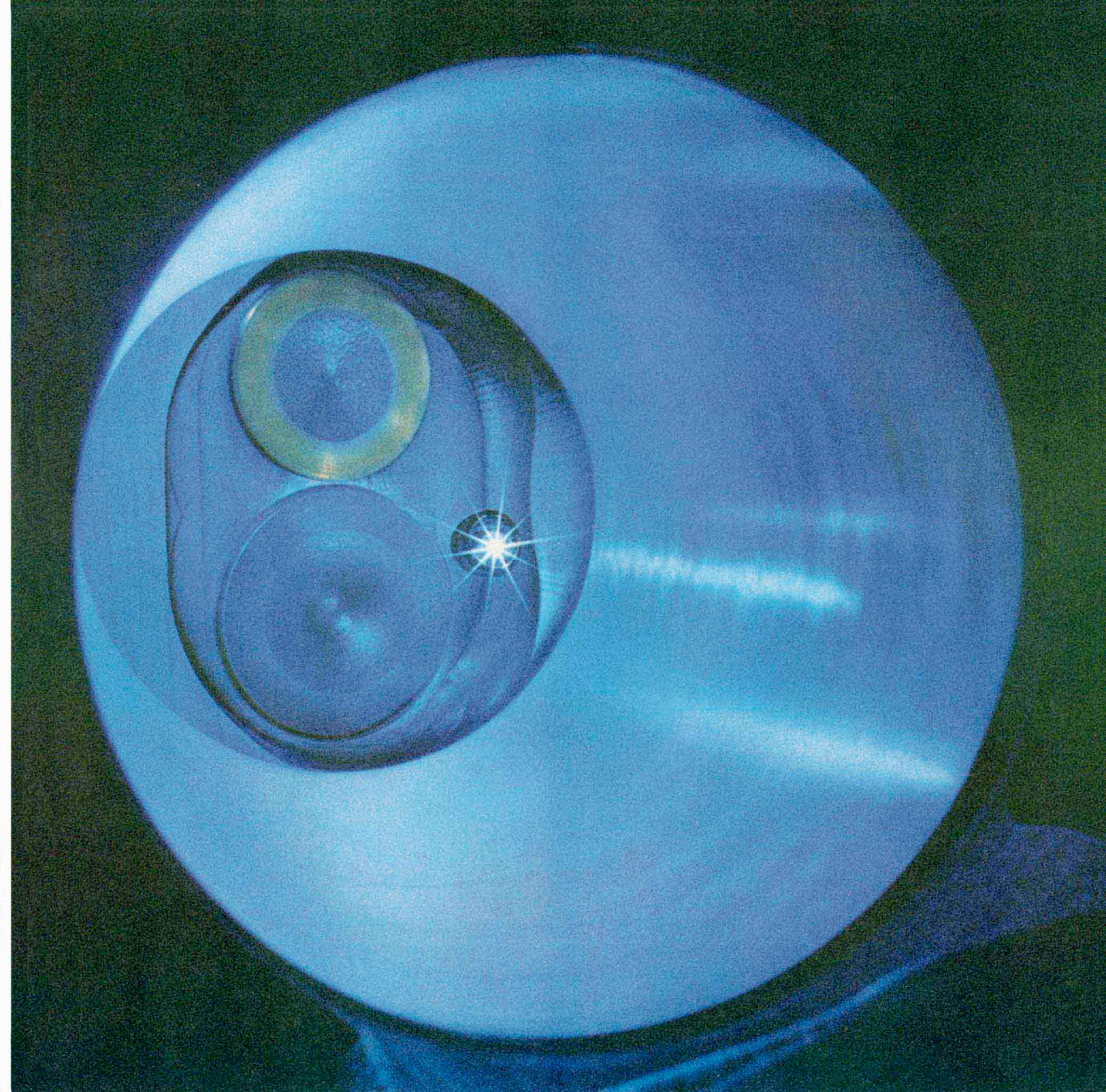
machine every interior surface of the head. And polish the cylinder walls. So there's a whole lot less for carbon deposits to cling to. And combustion is cleaner the first time.

Very efficient. But economical, too. Those 8-10 ponies can go back to work where they belong. And those glowing rascals that cause spark knock are wiped out. Whoosh!

Machining and polishing also allow a tolerance of ± 1 cc. As compared to $\pm 3-4$ cc. for cast chambers. Obviously important when you need maximum compression for economy at part throttle. It's also important for keeping a constant octane requirement between cylinders.

You know, that air pump setup has us wondering if some slipstick jockeys jockey as well as others.

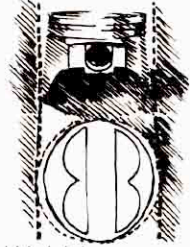
ENGINE	MODEL	BHP @ RPM	TORQUE (lb.-ft. @ rpm)	BLOCK							HEAD						
				Material	Type	Bore and Stroke	Displacement	Deck Clearance	Numbering, Front to Rear		Firing Order	Material	Combustion Chamber Type	Compression Ratio	Chamber Vol. (cc.)		
									L. Bank	R. Bank							
400	GTO	350 @ 5000	445 @ 3000	alloy cast iron	machine polished cylinder bores	4.12 x 3.75	400 cu. in.	.023				alloy cast iron	fully machined wedge with large squish area	10.25:1	75.70		
	G. P.						400 cu. in.	.023						10.50:1	66.27		
Ram Air	GTO Judge	366 @ 5100	445 @ 3600			4.15 x 4.21	455 cu. in.	.013	1-3-5-7	2-4-6-8	1-8-4-3-6-5-7-2			10.25:1	89.96		
	G. P.	370 @ 4600	500 @ 3100			4.12 x 3.75	400 cu. in.	.023						fully machined spherized wedge	10.50:1	69.12	
455	GTO	360 @ 4300	500 @ 2700														
	G. P.	370 @ 4600	500 @ 3100														
Ram Air IV	GTO	370 @ 5500	445 @ 3900														
	Judge																



basic engine ... still more

Pistons. Let's bust a bubble. There are those who would have us believe that "cam-ground" pistons are performancey indeed. They are nice. So nice, practically every car on the road has them.

What every car on the road doesn't have is wobble-ground pistons. Basically, they're cam-ground at the top, rounder at the skirt. Flared. So they don't slap when cold. Or scuff when hot.



A nice side benefit. Wobble-ground pistons don't require steel struts to control thermal expansion. (Others do.) How those extra pounds do add up.

Rings. Molybdenum rings. Don't try to say it. They're known in the trade as Mols. And the more compression rings with

Moly surfaces, the better.

They have excellent resistance to wear. They don't scuff. (Because Moly's melting point is 4750°F—twice as high as chrome's.) They're porous enough to tote a minute film of oil to the top cylinder area. And they have high particle hardness. (Better wear under dirty conditions.)

We use Moly compression rings across the board.

Crankshaft & bearings. A cast, nodular iron crankshaft may not seem special. It isn't. Everybody who's anybody has one.

Four-bolt bearing caps on the mains, however, are very special.

They do things like give your block the best strength-to-weight ratio

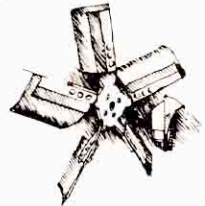
in the business. That's what they did for ours. You'll find 4-bolt caps on



about every engine below.

Windage tray. Time for another bubble. The windage tray keeps oil from foaming in the crankcase. True. Every high-performance engine should have one. False. Every engine should have one.

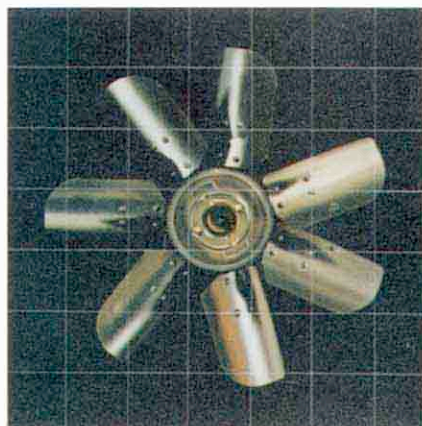
Fans. They cool. They also eat horsepower. Conventional fans slurp up 20-24 horses @ 6000 fan rpm. Flex fans, about 5 or 6. And a clutch fan, about 4 or 5 horses. Take your choice.



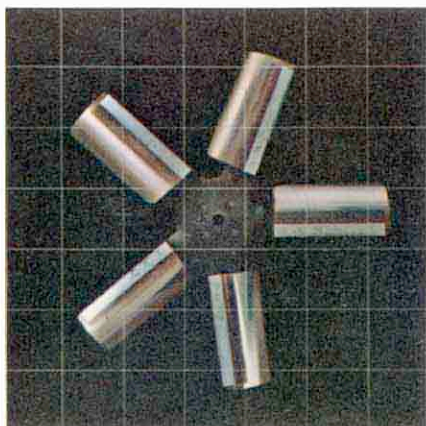
Why the difference?

The flex fan blades flatten out at high rpm. Less resistance. Less drain. The clutch fan is thermostatically controlled. Cold, it runs no faster than 1000 rpm. Hot, it engages and picks up to 1800 rpm. All because of a little clutch.

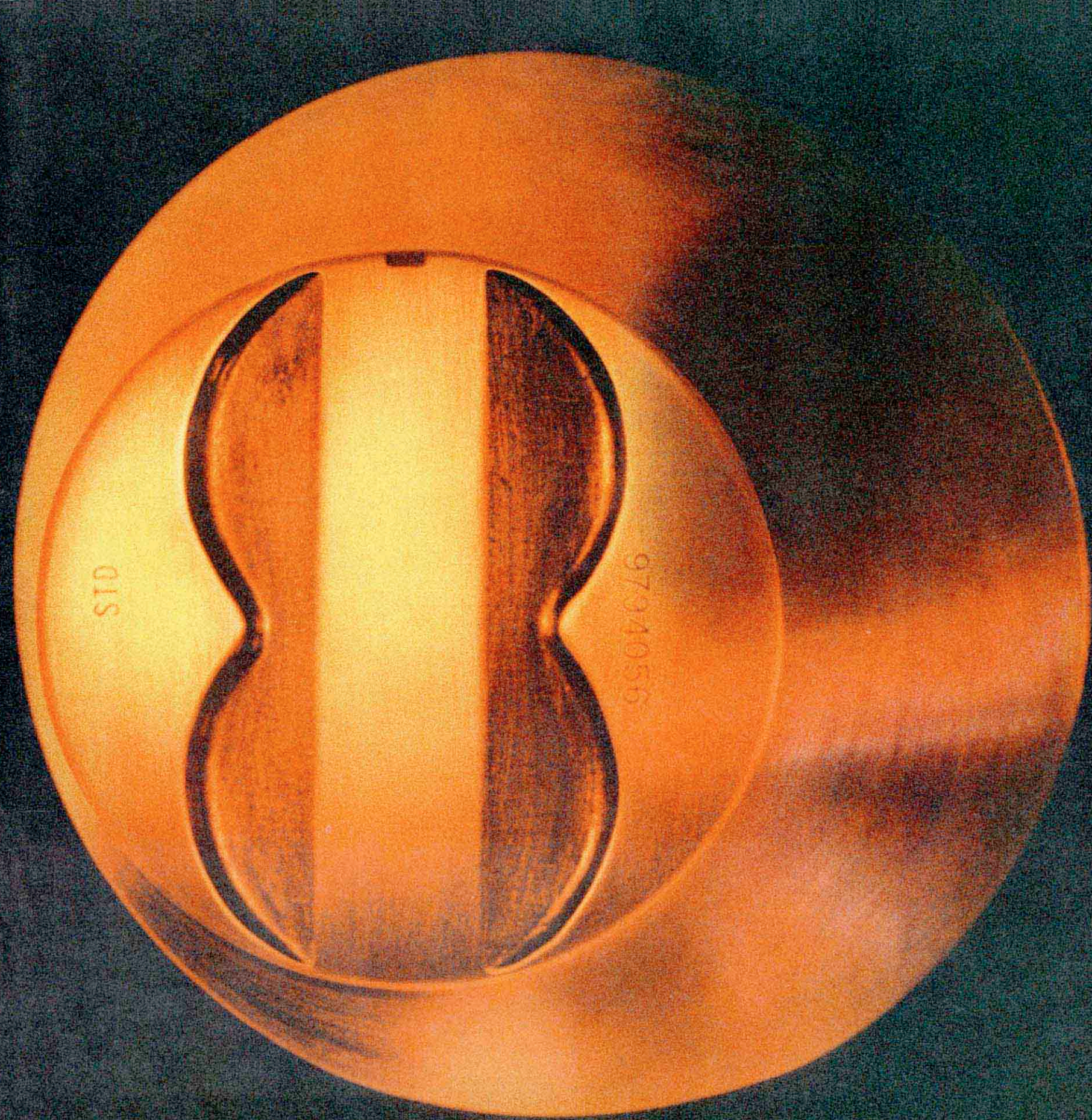
ENGINE	MODEL	PIS-TONS		RINGS			RODS & BEAR-INGS	CRANKSHAFT (Nodular Iron)		CAPAC-ITIES (Oil)	FAN
		Material & Type	Compression #1	Compression #2	Oil #3	Main Bearings		Bearing Caps			
400	GTO G.P.	cast aluminum alloy				two chrome-plated rails, with slotted stainless steel expander	Arma-steel rods	Moraine 400-A #1, 2, 3, 4 lower	Armasteel 4-bolt (man.) alloy iron 2-bolt (auto.)	18.3 qts. (5)	19" dia 5-blade power flex
Ram Air	GTO Judge	wobble ground (dual cam)	re-verse twist barrel-faced moly filled	re-verse twist taper-faced moly filled			Moraine 400-A bearings	Moraine 400-A #1, 2, 3, 4 upper and lower		18.3 qts. (5)	
455	GTO G.P.							Moraine 400-A all except #5 upper	Armasteel 4-bolt	17.5 qts. (5)	
Ram Air IV	GTO Judge	forged aluminum alloy						Moraine 400-A #1, 2, 3, 4 upper and lower		18.3 qts. (5)	



Available thermostatic, 19" clutch fan



19" Power-Flex fan standard on GTO and G.P.



induction/exhaust system

Air intake. Cold air is dense air. (Remember high school physics?) And dense air coaxes more horses out of an engine. Which is why Pontiac pioneered Ram Air way back in '65.

Here's how the '70 edition works. We use two sets of doors to control air intake. Manual doors on the hood scoops, controlled from the driver's seat. And two vacuum-operated doors that work off intake manifold pressure.

At part throttle during warm-up, the vacuum doors pull preheated air from across the exhaust manifold. Good, level-road economy. At full throttle after warm-up, the normal underhood air is shut off in favor of a flow from the hood scoops.

Someday, somebody may catch up. **Carburetor.** Based on the number of people copying it, the 4MV Quadra-Jet

should be a good example. The primary bores are 1-3/8" small. For good flexible part-throttle driving. Good torque feel. Good throttle response. Good fuel economy. Good atomization. Good, smooth idle. Good. Good. Good.

The secondaries are big. 2-1/4" big. Big enough to gag a cylinder with air. Except for a velocity-controlled air valve.

This little nifty opens as the engine requires more combustibles. It promotes a smooth torque transmission and prevents over-carburetion at low speeds.

Intake manifold & ports. Intake manifolds are pretty much alike. 180° dual level.

Ports have to be large enough to provide flow characteristics required to develop an engine's capabilities. That's why the 10% increase in the size of the ports on the Ram Air IV.

Exhaust manifold & ports. Beware the little flapper valve in lots of right-hand ex-

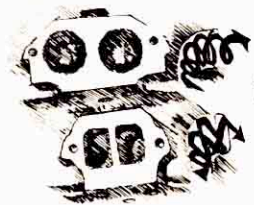
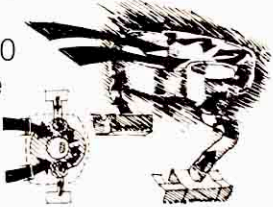
haust manifolds. At best, it probably rattles. It also sticks. Often enough to make a guy hot under more than the collar.

It really doesn't have to exist. If you can get enough external manifold heat to warm up enough air to heat the fuel mixture and uncoil the automatic choke. We can do exactly that.

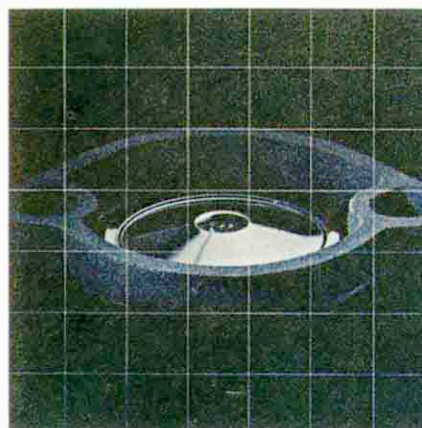
Exhaust ports should be large. We increased the Ram Air IV's by 36% to prove it. And they're round. (Got that all you budding plumbing and heating contractors?)

Mufflers & tailpipes. It's pressure, not decibals, that counts. So our mufflers are a compromise. Between noise and back pressure. We won. 50% less back pressure for GTO. And still mellow.

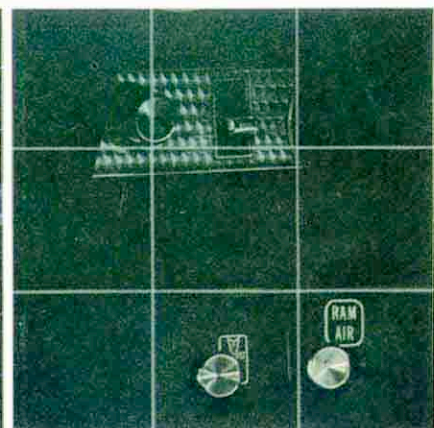
Tailpipes are duals with chrome split outlets. Subtle.



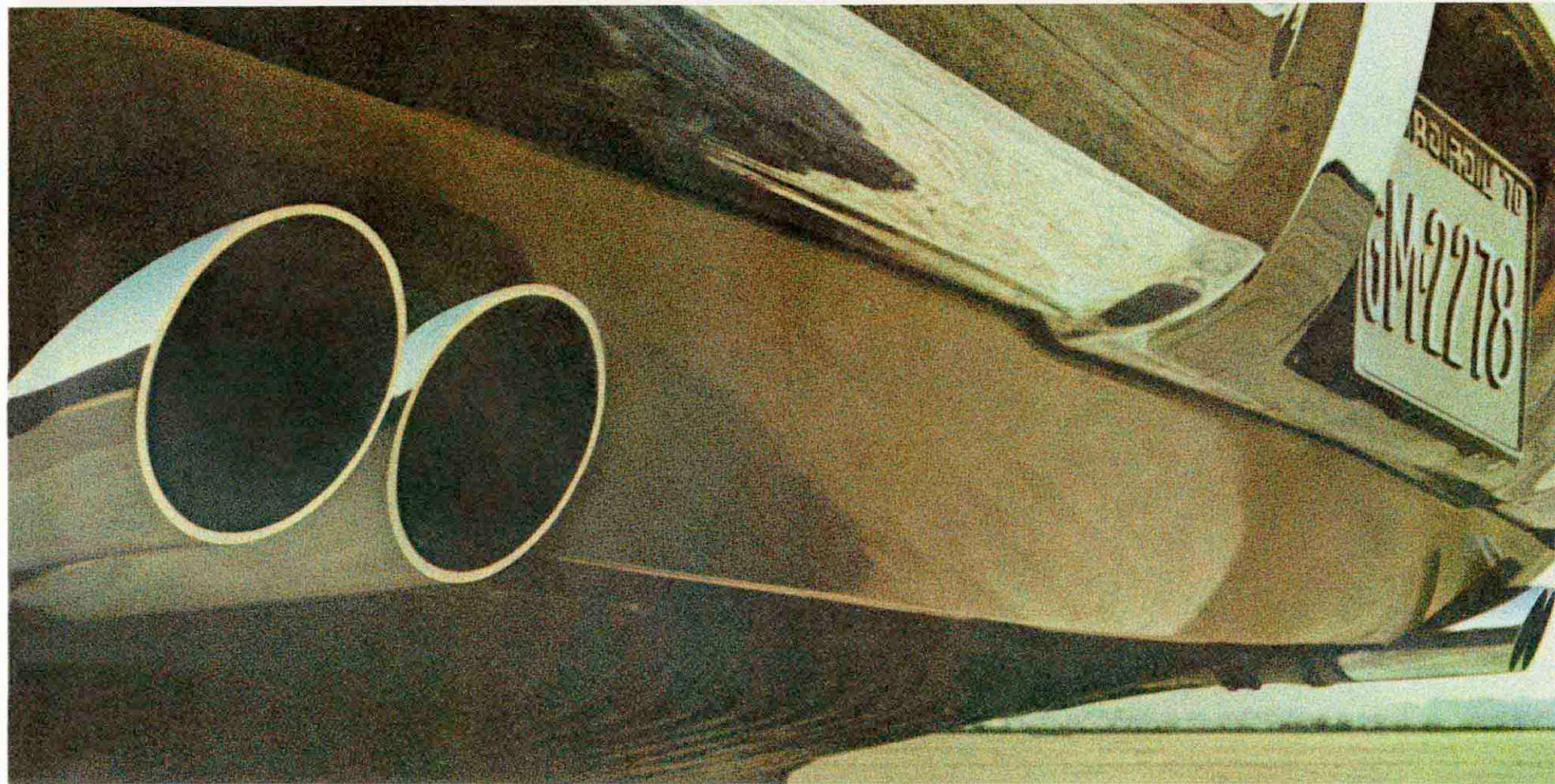
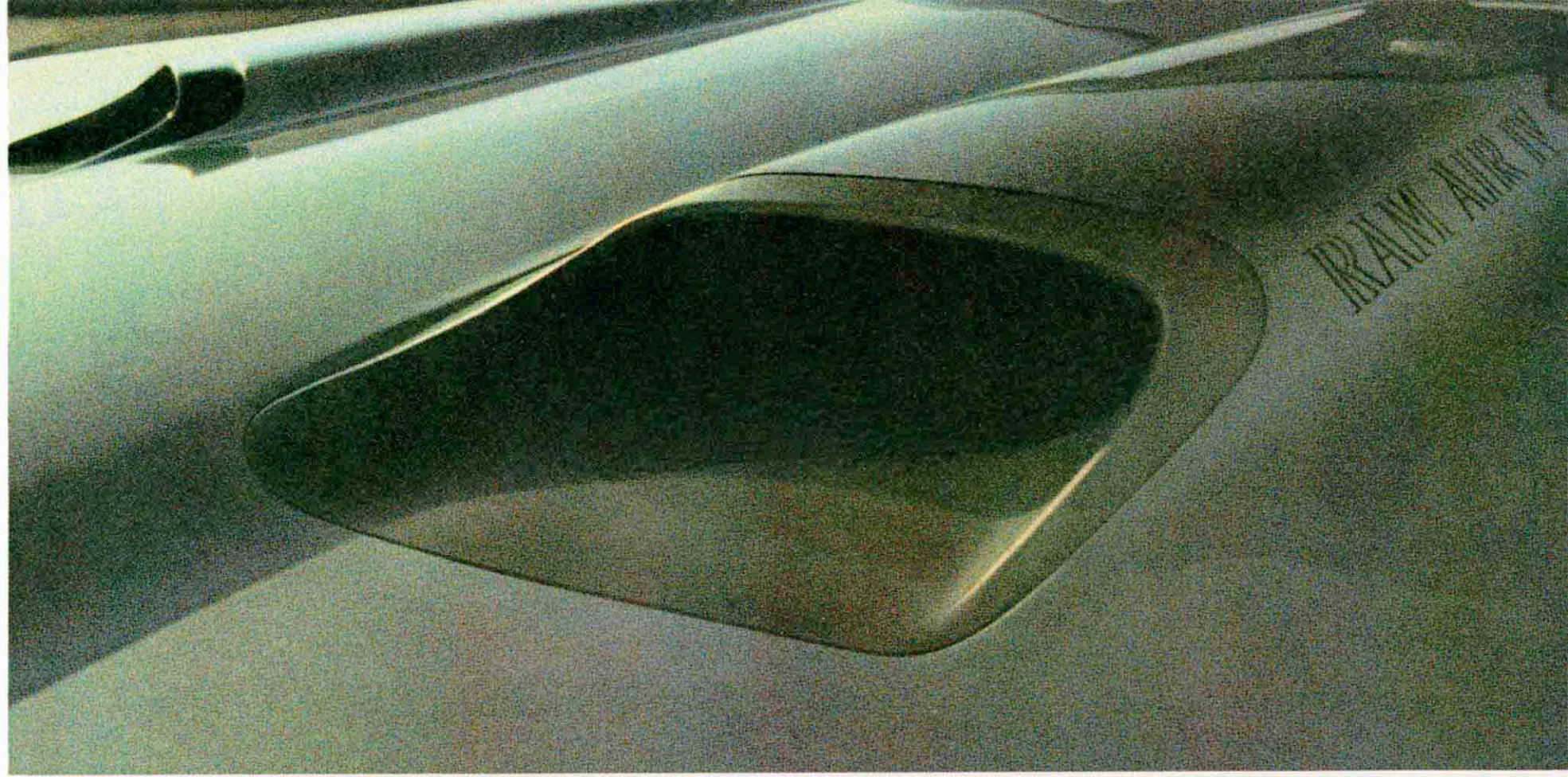
ENGINE	MODEL	INDUCTION			EXHAUST		
		Type	Carburetion	Intake Manifold	Manifold Type	Exhaust Pipe, Muffler Type	Tailpipe
400	GTO	dual intake—underhood	Quadra-Jet 4-bbl	cast iron	cast iron, low-restriction	dual 2-in. main with dual low-restriction performance dual system on GTO	2.25-in. dual, chrome split outlets
	G.P.	single intake—underhood					2.25-in. dual exhaust
Ram Air	GTO Judge	outside air ram induction	Quadra-Jet 4-bbl	cast iron			2.25-in. dual, chrome split outlets
455	GTO	dual intake—underhood	Quadra-Jet 4-bbl	cast iron			2.25-in. dual, chrome split outlets
	G.P.				2.25-in. dual exhaust		
Ram Air IV	GTO Judge	outside air ram induction	Quadra-Jet 4-bbl	aluminum	cast iron, straight-runner	2.25-in. dual, chrome split outlets	



Air box hood seal for GTO's available Ram Air.



Ram Air hood scoop control.



valve system

Camshaft. Cams by computer. The coming thing for everybody. Here at Pontiac. And advantages are numerous.

Accuracy. Cams can be computed to one-millionth of an inch.

Flexibility. Cams can be tailored to the exact specs of a specific engine. The high-lift, long-duration Ram Air IV cam is a computer coup.

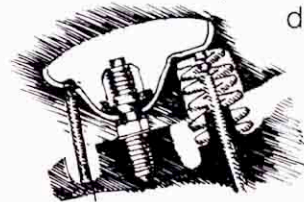
And speed. Without computers, tailoring time is too much time.

Lifters. Match them to the valve system and the engine. A limited-travel lifter on high-performance V-8's helps stop over-revving. Lash is set for .030"- .050" travel.

Pushrods & rocker studs. If a pushrod doesn't cave in or gall under high stress, it's a winner. Let's hear it for the hollow tube design with hardened ball bearing ends. Nobody caves that baby in.

Ever had a press-in rocker arm stud

come loose on you? The only repair is to drill and thread. Why not start that way? A threaded stud holds adjustment, never pulls out, seldom gets stuck.

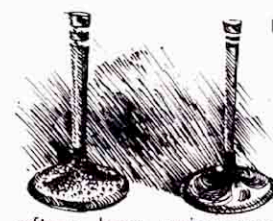


Is it bragging to report that all our studs are threaded this year? Even if it's a fact?

Valves. Bigger doesn't necessarily mean better. But valve material can be better. A GM 8440 intake has a very high hot strength. Chrome plating the stem cuts wear, ergo cuts poor seating. Aluminizing the tulip reduces seat erosion.

Most exhaust valves are SAE 21-2M. Better yet with chrome-plated stems, aluminized tulips and projection-welded tips to reduce fatigue.

You'll notice the phrase "swirl polished"



used to describe Ram Air IV valves. A little something we whipped up to increase valve life.

The tulip, as cast, often has microscopic nicks. Potential break points. Swirl polishing eliminates these nicks. So much for break points.

Valve springs. Determine a speed at which you want an engine to run. Then build a spring to keep up. Otherwise, ain't nobody going nowhere.

There are two ways to dampen. A small ribbon spring can slow main spring oscillation with friction. It can inhibit rotation of the valve and cause wear. Hiss!

How about two springs, one inside the other, with the helices in the same direction? Ah. Smooth, well-controlled rotation. Yea!

ENGINE	MODEL	CAMSHAFT Type and Drive	TIMING						LIFTERS Type	PUSHRODS Type	ROCKER ARMS	INTAKE VALVES			EXHAUST VALVES			
			Intake			Exhaust						Material and Head Dia.	Angle of Seat/Face	Lift @ 0 Lash	Material and Head Dia.	Angle of Seat/Face	Lift @ 0 Lash	
			Opens (°BTC)	Closes (°ABC)	Duration	Opens (°BBC)	Closes (°ATC)	Duration										Overlap
400	GTO	hardened alloy cast iron	23°†*	70°†*	273°†*	78°†*	31°†*	289°†*	54°†*	hydraulic	ball-bearing capped hollow steel	stamped one-piece steel threaded studs 1.50:1 ratio (R.A. IV 1.65:1)	all valves GM 8440 aluminized face and chrome-plated stem	30°/29°	.410	all valves 21-2M aluminized face end chrome-plated stem	45°/44°	.413
	G. P.		23°†	70°†	273°†	78°†	31°†	289°†	54°†									
Ram Air	GTO	chain drive with nylon-covered aluminum alloy sprocket	31°†	77°†	288°†	90°†	32°†	302°†	63°†	hydraulic	ball-bearing capped hollow steel	stamped one-piece steel threaded studs 1.50:1 ratio (R.A. IV 1.65:1)	2.11 inches	30°/29°	.414†	1.77 inches	45°/44°	.413
	Judge		23°*	70°*	273°*	78°*	31°*	289°*	54°*									
455	GTO	chain drive with nylon-covered aluminum alloy sprocket	31°†	77°†	288°†	90°†	32°†	302°†	63°†	hydraulic	ball-bearing capped hollow steel	stamped one-piece steel threaded studs 1.50:1 ratio (R.A. IV 1.65:1)	extra chrome and swirl polished tulip	30°/29°	.527	extra chrome and swirl polished tulip	45°/44°	.527
	G. P.		23°*	70°*	273°*	78°*	31°*	289°*	54°*									
Ram Air IV	GTO	chain drive with nylon-covered aluminum alloy sprocket	42°†*	86°†*	308°†*	95°†*	45°†*	320°†*	87°†*	hydraulic (limited travel)†	ball-bearing capped hollow steel	stamped one-piece steel threaded studs 1.50:1 ratio (R.A. IV 1.65:1)	extra chrome and swirl polished tulip	30°/29°	.527	extra chrome and swirl polished tulip	45°/44°	.527
	Judge		42°†*	86°†*	308°†*	95°†*	45°†*	320°†*	87°†*									

†Manual Transmission *Automatic Transmission



clutch/transmission

Clutch. Run right out and get the biggest, heaviest clutch you can find. Providing, of course, you don't mind plunking down lots and lots of money for broken transmissions. Frequently.

You see, a clutch is supposed to absorb shock. Ha! Those big brutes can actually make things rougher for the gears, drive train and axle.

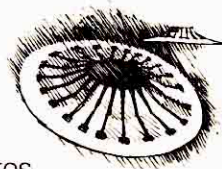
The ideal—a clutch that's big enough to transmit torque, small enough to make it easy on the transmission.

The great clutch debate. Diaphragm

spring vs. coil spring. We'll take the former. It's lighter, less complex, with the same plate load. No contest.

As for pressure plates, we run a special balance on the GTO's before we test the entire system.

Transmission. Muncie and Hurst. Magic words in 3- and 4-speed manuals. There's another which might not be so magical. Close-ratio. It gets a lot of glory for things a wide-ratio does better. Like per-

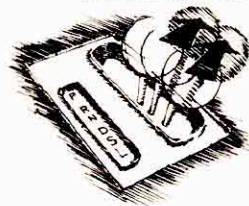


forming in a normal speed range. Say, up to 60 mph.

A close-ratio comes into its own with high axle ratios. On curvy roads where you brake, shift and accelerate often.

Some words on our very own shifter for an automatic gearbox. The Rally Sports Shifter.

A ratchet setup makes shifting fast and easy. A slap with the heel of your hand, and you're in gear. Another slap, another gear.

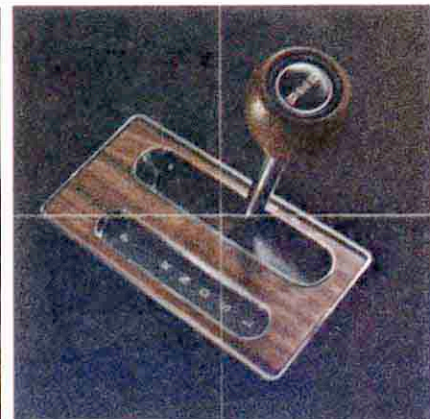


**Standard on Ram Air IV

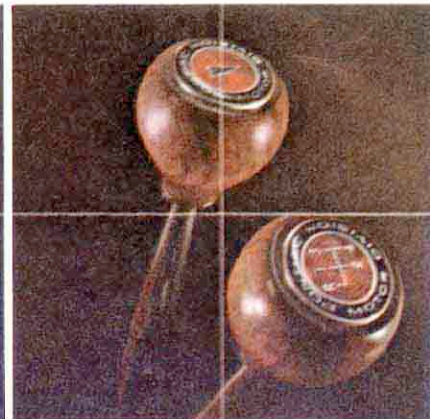
*Available only with bench seat on G.P.

MODELS	3-SPEED HEAVY-DUTY				4-SPEED WIDE-RATIO				4-SPEED CLOSE-RATIO**				3-SPEED TURBO HYDRA-MATIC							
	Standard With:	Make:	Ratios: (1,2,3,R)	Shifter and Location	Avail. With:	Make:	Ratios: (1,2,3,4,R)	Shifter and Location	Avail. With:	Make:	Ratios: (1,2,3,4,R)	Shifter and Location	Avail. With:	Selector Ratios				Shifter and Location		
														L (1)	S (1,2)	D (1,2,3)	R			
All	400		2.42:1 1.58:1 1.00:1	Hurst floor mtd. GTO Judge	400		2.52:1 1.88:1 1.46:1 1.00:1	Hurst floor mtd. GTO Judge	400 (GTO only)		2.20:1 1.64:1 1.28:1 1.00:1	Hurst floor mtd. GTO Judge	400	2.48:1	2.48:1 1.48:1	2.48:1 1.48:1 1.00:1	2.08:1	console mtd. avail. all	column mtd. avail. all*	
	Ram Air Muncie		2.41:1	Hurst floor mtd. GTO Judge	Ram Air Muncie		2.59:1	Hurst floor mtd. GTO Judge	Ram Air Muncie		2.27:1	Hurst floor mtd. GTO Judge	Ram Air	455						
	455			Hurst floor mtd. GTO Judge	455			Hurst floor mtd. GTO Judge	455			Hurst floor mtd. GTO Judge	R.A. IV							

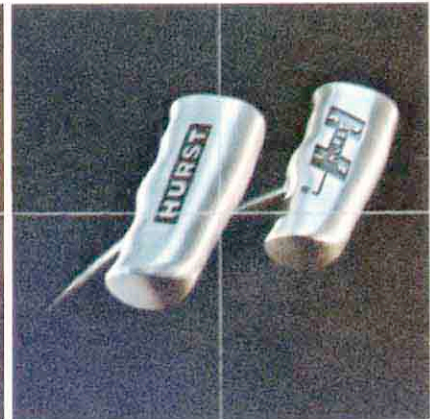
ENGINE	MODEL	CLUTCH			
		Load (lbs.)	Plate O.D.—I.D. Thkness.	Eff. Area (sq. in.)	Press. Plate/Release Bearing
400	GTO G.P.	2350	10.4—6.5 .140	85.56	bent-finger diaphragm spring/sealed ball thrust
Ram Air	GTO Judge	2350	10.4—6.5 .140	85.56	
455	GTO G.P.	2450	11.0—6.5 .135	104.1	
Ram Air IV	GTO Judge	2350	10.4—6.5 .140	85.56	



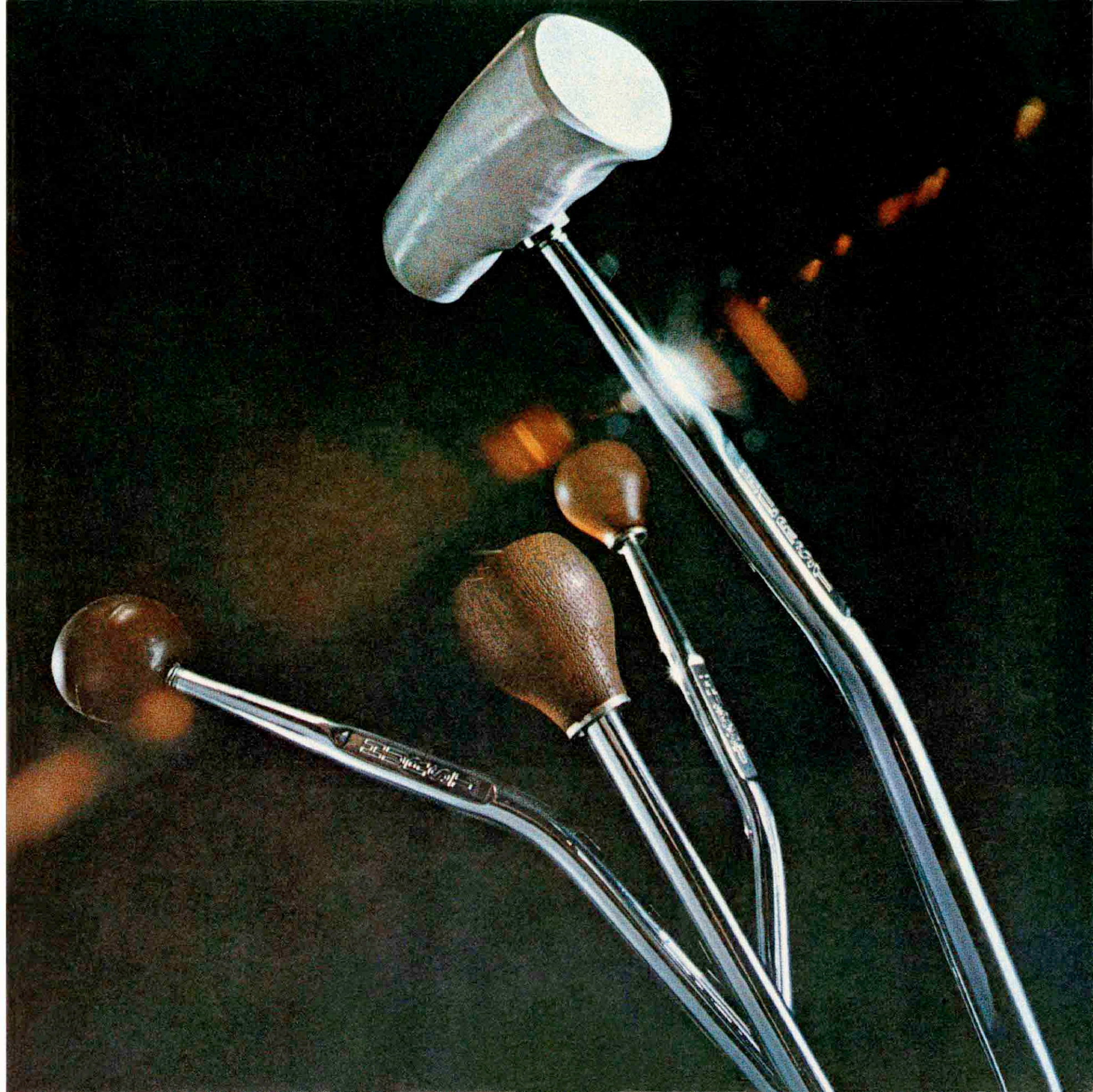
Rally Sports Shifter. Standard with available Turbo Hydra-matic and console.



Available 3 speed shift knob (left). Available 4 speed shift knob (right).



Available 3-speed T-shifter (left). Standard on The Judge. Available 4-speed T-shifter (right).



axles/wheels/tires

Axles. Theme on a heavy-duty axle. It should be a special, hot-forged, alloy steel job. Flexible. Slim. And tapered. To absorb shocks and reduce impact loads to the rest of the drive train.

Strength is a must. Able to take over 3000 ft. lbs. on each shaft. With tapered roller bearings for durability. And a heavily ribbed, thick-walled, nodular iron gear case that can handle just about anything you can dish out.

Inside, a 4-pinion system. Instead

of the usual 2. Yet overall, relatively compact.

We wouldn't be at all surprised if you found an axle just like that on this very page.

Time for another slap at "They." They say you should get the highest possible axle ratio. They could well be daft.

They're probably talking about the axle with the highest numerical designation. That's the lowest axle ratio.

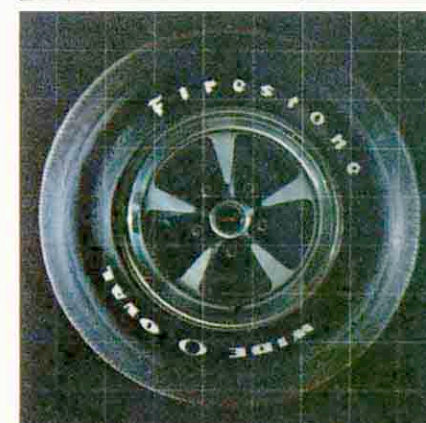
Let's say you forge ahead with some-

thing like a 4.33:1. Chances are good you'll spend a lot of time (and rubber) putting a high sheen on the streets. But your car will never reach its potential.

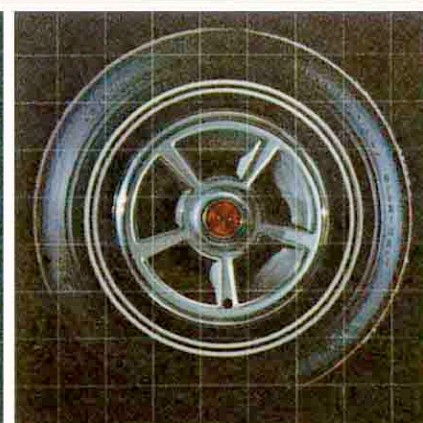
We're not knocking the 4.33. It's great. For its purpose. Like all axles. So pick and choose carefully.

Wheels & tires. Hey, what do you know. The pick-and-choose principle applies to wheels and tires, too. Match them to your driving needs. You can get a good start in the charts below.

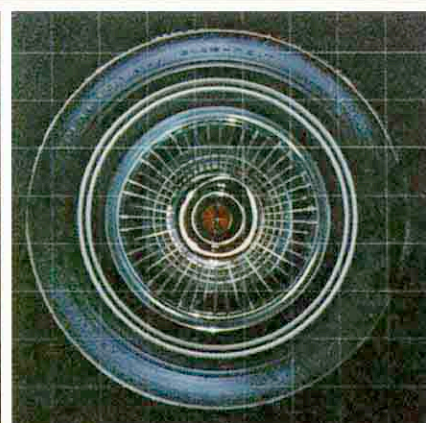
AXLE RATIOS (available Safe-T-Track is a must for all performance cars.)	ENGINE		400						RAM AIR		455				RAM AIR IV		WHEELS	MODEL	GTO, JUDGE	G.P.	MPH PER 1000 RPM IN HIGH GEAR									
	Trans.		3-speed		4-speed wide-ratio		4-speed close-ratio		Turbo Hydra-matic		All		3-speed both 4-speeds		Turbo Hydra-matic						4-speed close-ratio		Turbo Hydra-matic		Type	Axle Ratio	14-in. Tires		15-in. Tires	
			GTO	G.P.	GTO	G.P.	GTO	G.P.	GTO	G.P.	GTO Judge	GTO	G.P.	GTO	G.P.	GTO					G.P.	GTO, Judge	rim size (& flange)	bolt circle diam.			14 x 6JJ	14 x 7JJ	G78	G70
	std.		3.55	3.23	3.55	3.55			3.55	2.93	3.55	3.31	3.31	3.07		3.90														
available		3.08				3.90		3.23		3.23		3.90		3.55		3.31 (GTO Only)		4.33												
with air		3.23	3.23	3.23	3.31	N.A.		3.23	2.93	3.23	3.31	3.31	3.07		N.A.															



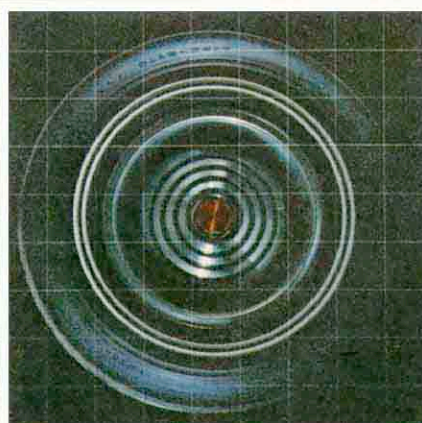
White-lettered tire and Rally II wheel. Both available.



Custom wheel cover and dual-stripe whitewall. Both available on GTO.



Simulated wire wheel cover and dual-stripe whitewall. Both available.



Custom wheel cover and dual-stripe whitewall. Both available on G.P.

chassis

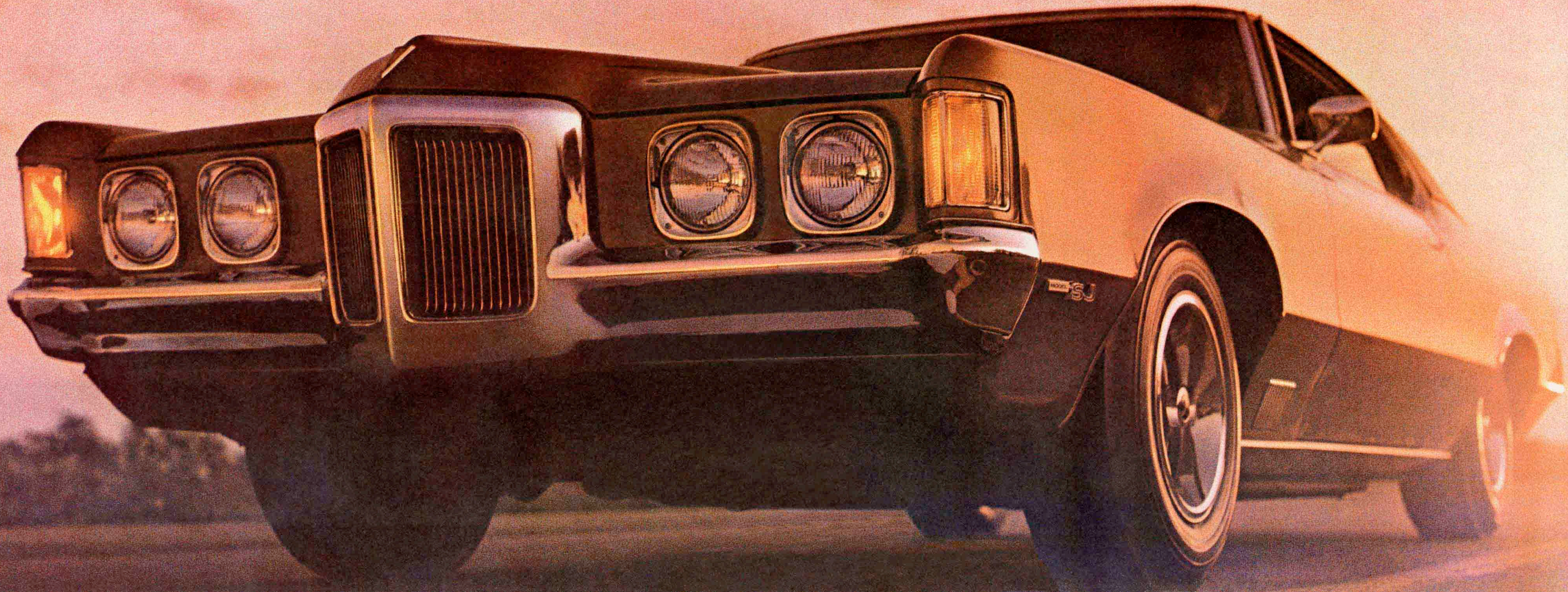
The power train's doing its thing.
Make it do yours.

Put the bit to it. Get control.
For cornering. Accelerating. Brak-

ing. And just plain enjoying.

If you don't know how it's done
after reading the next six pages,
come back and read them again.

1970 Pontiac Grand Prix Hardtop Coupe



frame/suspension

Frame. It's tuned. Like the Walla Walla Philharmonic. Because every item in a car has a resonance point. And if these points aren't balanced at the factory, you'll end up with a resonance point of your own, every time you get behind the wheel.

Of the three basic frame designs—stub, integral and full-separate—it's easier to tune road harshness out of the full-separate. (Guess which one we have.) The only metal-to-metal contact from frame to interior is in the wiring and the speedometer cable. Other junctions have big rubber mounts. All tuned.

Other factors to play with include: stock thickness, chassis spring rates, engine mount rates and cross-member rates.

That's tuning, baby, and it has nothing to do with Walla Walla.

Here comes that word tailoring again. But it's true for frames, too. Take Grand

Prix's. There's more stock thickness in the front end, as well as heavier cross members and side rails.

Suspension. Ride and handling. Our engineers refuse to define it for us. Not out of belligerence. But because it's impossible. Ride and handling characteristics vary all over the lot. GTO owners don't want luxury car handling and vice versa.

We'll restrict ourselves to things high-performance vehicles should have.

Like anti-sway bars. Front and rear. (We may lose our objectivity for a minute.

We're pretty excited about these bars.)

The front brute is a link-type stabilizer. Steel. A full 1-1/8" in diameter.

The rear is a brand-new, one-piece, steel bar 7/8" thick. It works this way. In a

clockwise turn, the body pushes down on B and twists the bar. The bar tries to untwist. And in doing so, tries to pull down on C, which is trying to go up. A and D remain relatively stationary throughout. And the effect is a flatter, smoother turn with less lean.

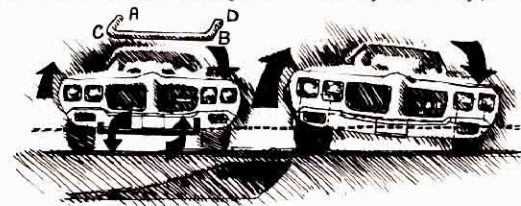
With more shock control, high-rate springs and more wheel control, we figure GTO is going to corner a little nicer this year.

Boing! And we're off on springs. Basically two types of springs: leaf and coil. Both have advantages.

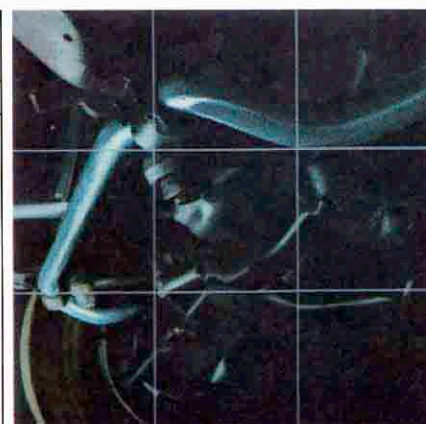
But the coil is quieter and more durable. And

a 4-link suspension doesn't allow spring wrap-up or axle "steer"

like the leaf. (You'll notice we didn't mention the torsion bar. Forget it. The torsion bar is really an unwound spring.)



MODEL	FRAME		Type		SUSPENSIONS				Shock Absorbers	
	Type	Body Mountings	Front	Rear	Spring Rate (lbs. per in.)	Stabilizer material & diam.	Front	Rear	Front	Rear
GTO Judge	all welded perimeter three cross members	compression and rebound	independent short & long arm design with compound antideive	four-link pivoted control arms	coil 280 (335 avail.)	coil 106 (144 avail.)	SAE 9260 steel link 1.125"	SAE 1070 steel one piece .875"	1-in. diameter mtd. inside spring	1-in. dia. Superlift/Auto Level Control avail. (A.L.C. incl. w/SJ)
G.P.	all welded perimeter four cross members				coil 280 (310 avail.)	coil 144 (160 avail.)	SAE 9260 steel link 1.000" (1.032" avail.)	N.A.		



GTO's 1-1/8" front stabilizer bar.



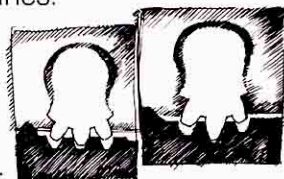
GTO's 7/8" new rear stabilizer bar.



steering

Manual. Most guidance systems are built around a recirculating ball nut gear system. We buy that. And we use it to get faster manual steering than most people have. But despite the fact that it's great, we still lean toward power steering for performance machines.

Power. This is the power steering we pioneered for performance cars. It's called variable-ratio. And the name is most descriptive. The ratio varies from 16.0:1



to 12.4:1. Overall appearance of the compact gear is similar to that of straight-ratio steering. The same nut. Variable-pitched gear teeth on the pitman shaft. And a long worm lead.

But in the variable-ratio gear design, the center tooth is longer. The teeth on each side, shorter.

This design results in a gear ratio of 16:1 (steering wheel center to 2° right or left), drops to 15:1 (off center right or left) and to 12.4:1 (14° off center left or right). It stays at 12.4:1 right up to the end of steering wheel travel.

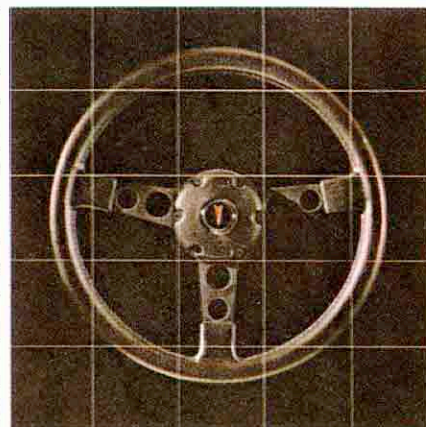
Not that you're interested much in parking. When you do have a tight spot, however, the variable-ratio gear provides a faster response without a change in effort.

Here's where you get convinced. On the road. You know how you have to change your driving techniques with most power steering? Not with variable-ratio.

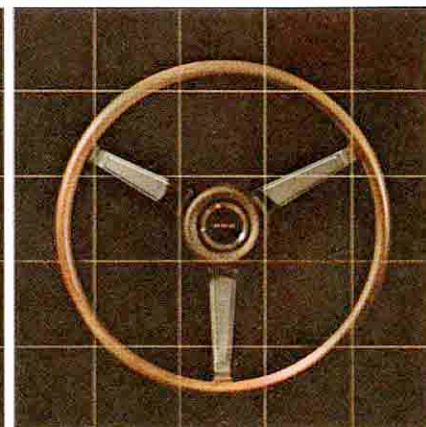
In the straight-ahead position, you get the same precise response and road feel you'd get with non-power steering.

We wouldn't have it any other way. We're Pontiac. And by now, you should be aware of how we feel about driving.

STEERING		GTO, JUDGE	GRAND PRIX
MANUAL (standard)	Gear Type	constant-ratio, semi-reversible ball nut gear	
	ratios	24.1—gear; 28.3:1—overall	24.1—gear; 26.4:1—overall
	turning circle wall to wall	40.5 ft.	42.4 ft.
	turning circle curb to curb	37.4 ft.	39.3 ft.
	no. of turns lock to lock	5.6	5.6
VARIABLE-RATIO POWER (available)	gear type	variable-ratio coaxial, semi-reversible ball nut gear	
	pump	integral rotary valve and vane pump driven by crank pulley	
	turning circle wall to wall	40.5 ft.	42.4 ft.
	turning circle curb to curb	37.4 ft.	39.3 ft.
	no. of turns lock to lock	3.5	2.9



New Formula Steering Wheel you can order.



Custom Sport Steering Wheel you can order.



brakes

What goes, must sooner or later stop. The automotive whiz kids have come up with two devices to help you do so. A drum brake. And a disc brake. Each is effective. We'll help you decide which to buy if you'll tell us what you need it for.

Drum brakes. Now, everybody knows about drum brakes. They're usually finned to help dissipate heat. They self-adjust when you back up. A few have unshrouded drums with openings in the wheels to further promote cooling.

The linings are made of a material with high resistance to glaze. And they can be riveted or bonded. The arguments linger. We side with the quieter rivet gang.

Although discs are achieving some

degree of popularity, drums are still king for straightaway performance. That figures. There's no constant drag.

Disc brakes. Most of what you've probably heard is true. Fade resistance is excellent. Because the disc brake can dissipate heat and keep the linings in their working temperature range.

This results primarily from the rotor construction of the disc, its location in the wheel, and the ventilation provided by the splash shield and wheel.

Discs are very responsive. Particularly in a hard stop. The linings are in constant contact with the rotor so there's no lag. This also means there's a more predictable pedal effort. Because

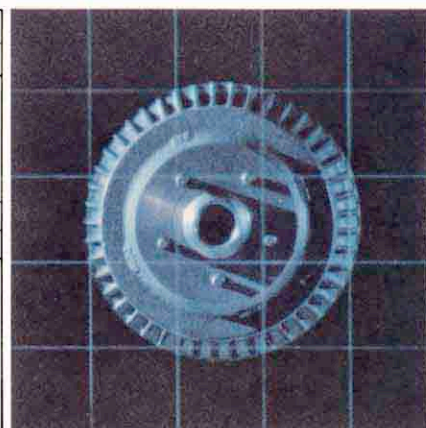
the rotor is kept warm. This constant contact also keeps the rotor swept clean. Water has virtually no effect because there's no way it can get in.

Specifically, Pontiac has a floating caliper disc. Braking is accomplished when two organic lining pads are forced against either side of the cast iron rotor. At each of the front wheels.

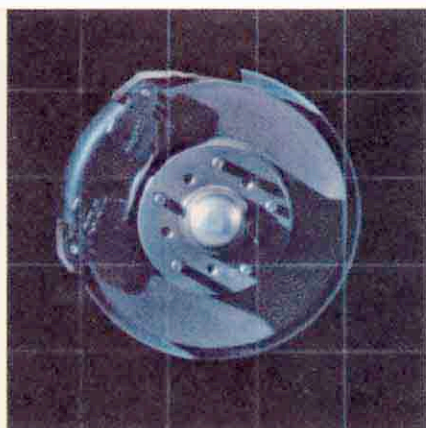
Only the linings, the actuating hydraulic pistons and interconnecting parts move laterally. The disc is rigidly attached to the hub of each wheel.

OK. Now you see why we refused to pick favorites between drum brakes and disc brakes. The only thing left to do was make them both available to you.

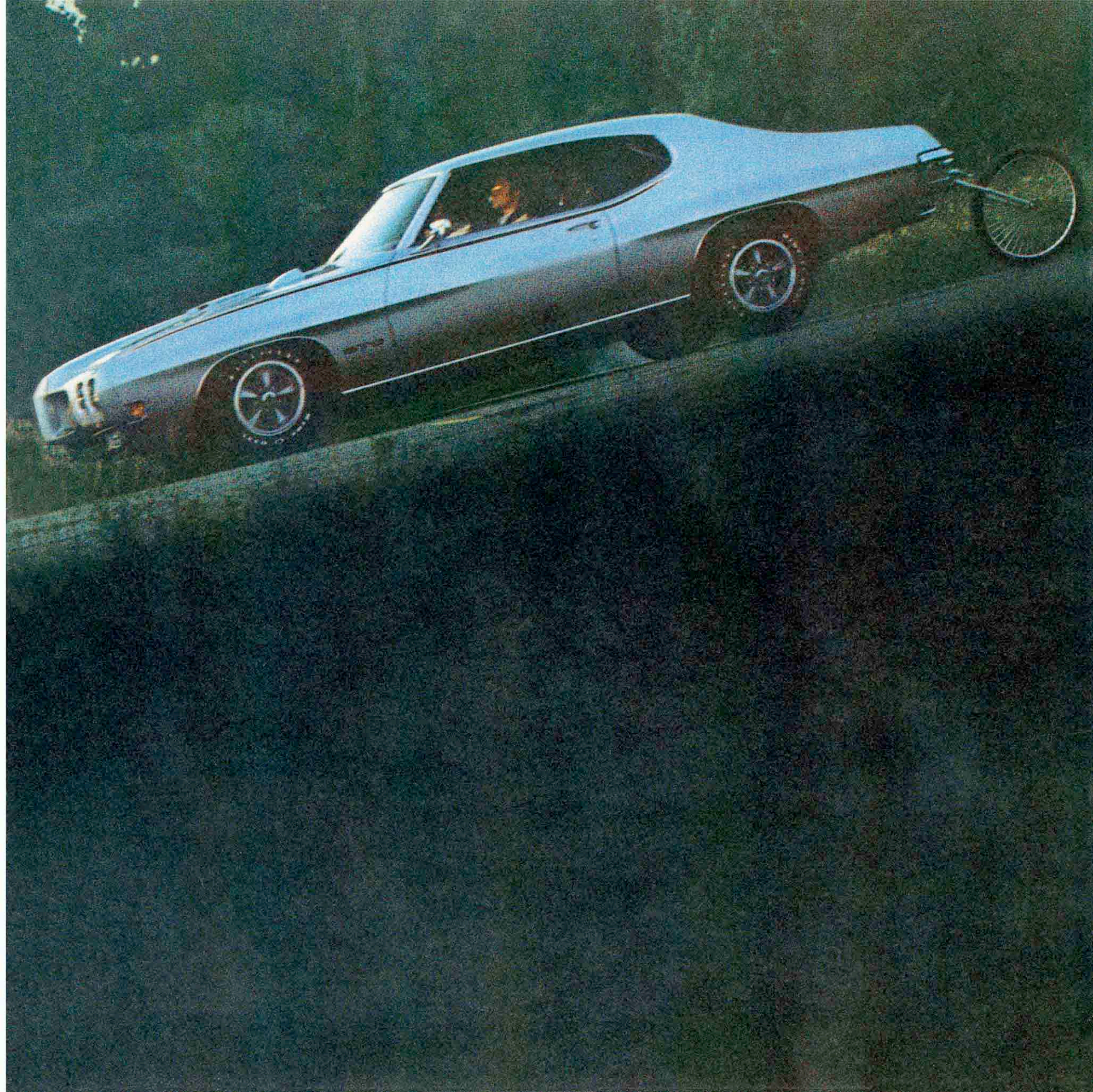
BRAKE DESCRIPTION			GTO, JUDGE		GRAND PRIX	
			Front	Rear	Front	Rear
DRUM	construction	finned, cast iron	standard	standard	N.A.	standard
	diameter	9.5 in.				
	lining material	riveted, molded asbestos				
	line pressure @ 100 lb. pedal load	700 lbs.				
	total swept area	standard				
	available	350.9 sq. in.	—			
DISC	construction	vented, cast iron	available	N.A.	standard	N.A.
	diameter	10.94 in.				
	lining material	riveted, molded asbestos				
	line pressure @ 100 lb. pedal load	800 lbs.				
	brake control with front discs	metering-type delay to prevent rear lockup				



Standard drum brake.



Power front disc brake you can order.

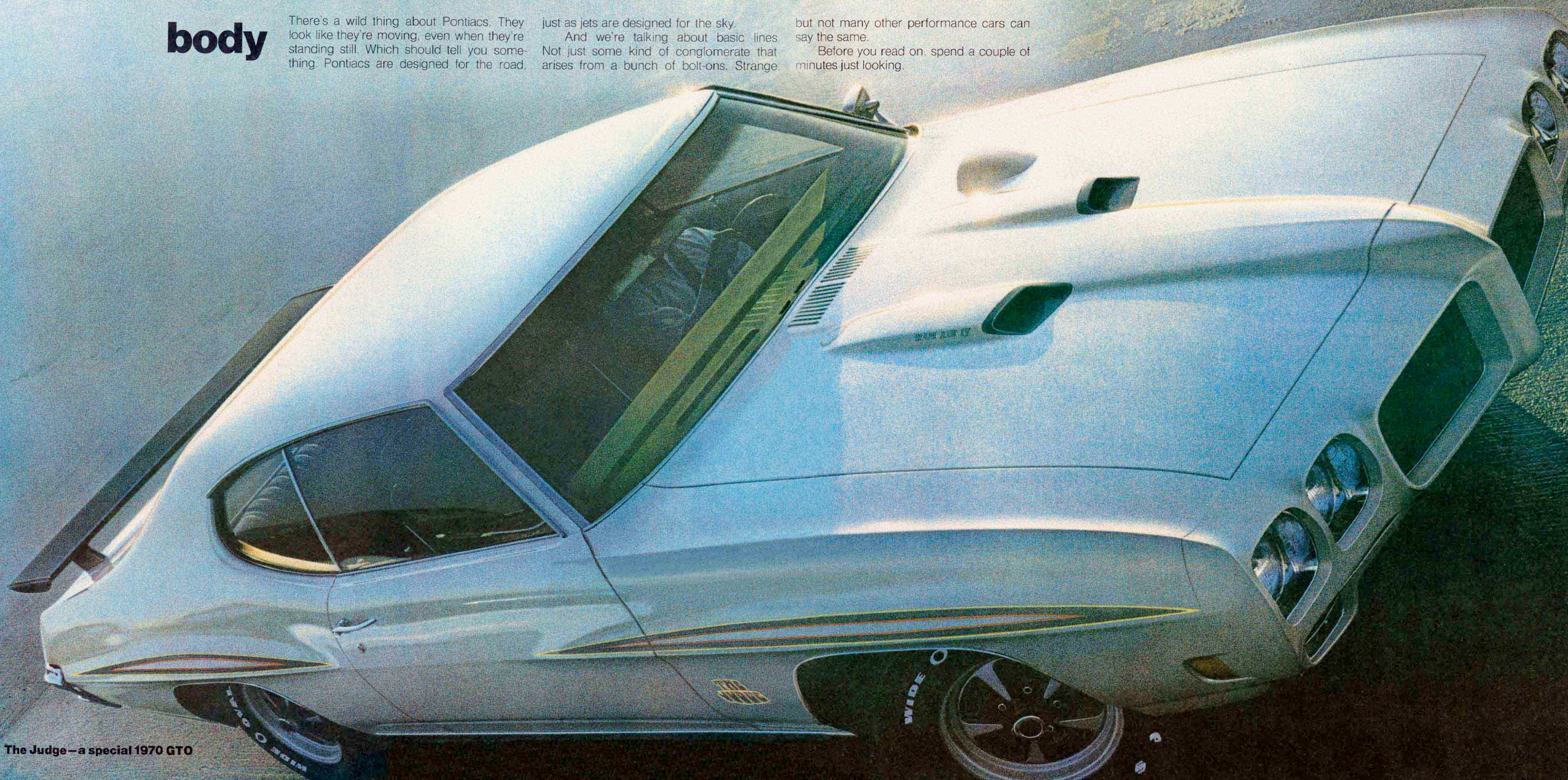


body

There's a wild thing about Pontiacs. They look like they're moving, even when they're standing still. Which should tell you something. Pontiacs are designed for the road,

just as jets are designed for the sky. And we're talking about basic lines. Not just some kind of conglomerate that arises from a bunch of bolt-ons. Strange

but not many other performance cars can say the same. Before you read on, spend a couple of minutes just looking.



The Judge—a special 1970 GTO

exterior

We promised performance cars that look like they're moving even when they're not. We're thinking of three in particular. GTO. The Judge. And Grand Prix.

You needn't be much of an historian to know that GTO was the first of a breed. In performance, yes. But in styling, too. We used it to introduce Endura.

Endura doesn't add horses to GTO. It adds looks. Because it's the special bumper material that doesn't bump. Instead of collecting dings, it bounces back. Kind of like hard rubber.

Bumpers may never be the same.

Neither will radio antennas. GTO is the proud possessor of a hidden radio antenna. Not much, really, but it gives you an idea of how much we think of GTO's styling.

The Judge is really a special GTO. With Ram Air Engine. A 3.55:1 axle. Blackened grille. Rear-deck airfoil. Front air dam. Special wheels. Striping. Special ID. See why people all rise for The Judge?



Grand Prix. We've had trouble convincing people it was built to perform. It's too beautiful. So read about our SJ model before you look. 455 V-8. Dual-snorkel air cleaner. Heavy-duty rear axle. Auxiliary gauges. And more.

Pontiac always has more.

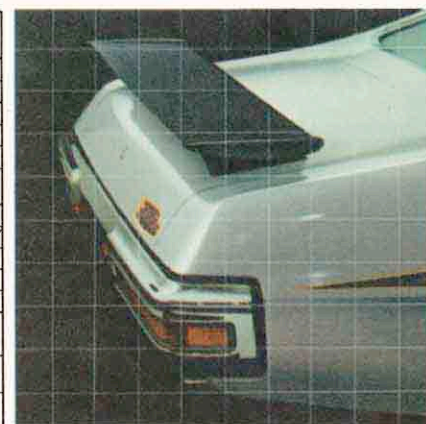
1970 Pontiac Safety Features.

Accident Prevention. Side Marker Lights and Reflectors • Parking Lamps that illuminate with Headlamps • Four-way Hazard Warning Flasher • Backup Lights • Lane-change Feature in Direction Signal Control

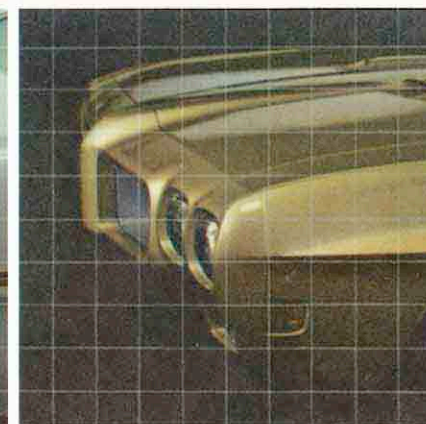
• Windshield Defrosters, Washers & Dual-speed Wipers • Wide-view, Inside Day/Night Mirror (Vinyl-edged, Shatter-resistant Glass & Deflecting Support) • Outside, Rearview Mirror • Bias-belted Fiberglass Tires & Tire Tread-wear Indicators • Dual Master Cylinder Brake System With Warning Light • Starter Safety Switch • Dual-action Safety Hood Latches.

Other Available Equipment. 7-blade Thermostatically Controlled Fan (Pg. 8) • Tinted Glass • Cordova Top • Wheels, Rally II (Pg. 16) • Wheel Covers (Including Simulated Wire-type) (Pg. 16) • Whitewalls; White-lettered Tires (Pg. 16) • Axle Ratios (Pg. 16) • Special-purpose Tires (Pg. 16) • Superlift Shock Absorbers (Pg. 20) • Automatic Level Control (Pg. 20) • Firm Ride and Handling Package (Pg. 20) • Limited-slip (Safe-T-Track) Differential (Pg. 16) • Heavy-duty Battery • Striping.

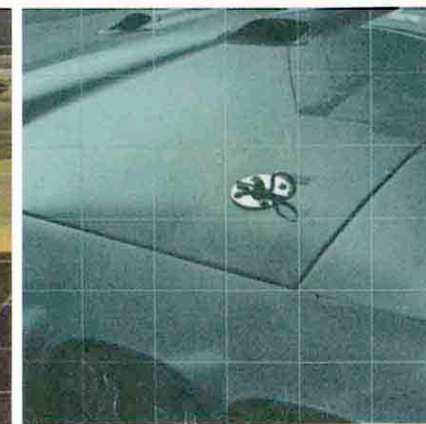
EXTERIOR	GTO, JUDGE		G.P.
	Hdtp.	Convertible	
Height			
overall height (B)	52.0"	52.3"	52.0"
Width			
track—front (A)	61"		62"
track—rear	60"		60"
max. overall car width (C)	76.7"		75.7"
Length			
overall car length	202.9"		210.2"
wheelbase	112"		118"
overhang—front	41.6"		41.0"
overhang—rear	49.3"		51.2"
EST. SHIPPING WEIGHTS, lbs.	GTO, JUDGE		G.P.
	Hdtp.	Convertible	
standard engine with 4-speed	3,609	3,659	3,790
standard engine with automatic	3,637	3,687	3,818



Rear airfoil on The Judge.



GTO's 1970 Endura nose.



Available hood lock pins.



interior

Performance car or no performance car, we can't think of a single excuse for the seats to look, or ride, like transplanted park benches. Ours don't.

In fact, interior comfort is a good part of the reason for dubbing our '70 GTO "The Humbler." Standard buckets are done up in knit and expanded Morrokide. Plush, leather-like stuff that "breathes" to keep you from melting on hot days, freezing on the cold ones.



Grand Prix's bucket-seat cockpit features liberal quantities of the same stuff. All Morrokide or leather also available.

A luxurious, integral console is standard on G.P. One's available on GTO and The Judge, too. Naturally, either one houses your floor-mounted shifter.

Refreshing, huh? All that niceness in

a performance car. Well, don't get carried away. There's business to attend to.

And one of our business barometers shows up as a bulge on the hood. Tachometer. Instant rpm viewing for anybody who orders it. Without turning his head from the road. Funny how people have to try it to become converts.

There are more barometers, of course. Rally gauges are available. Water temp. Oil pressure. And a clock (for those models that don't have one).

Now that's an interior. Maybe you can tell us how anybody could settle for less. **1970 Pontiac Safety Features.**

Occupant Protection. Seat Belts with Pushbutton Buckles for all Passenger Positions • Shoulder Belts with Pushbutton Buckles —Driver and Right Front Passenger (Except Convertibles) • Two Front-seat Head Restraints • Energy Absorbing Steering

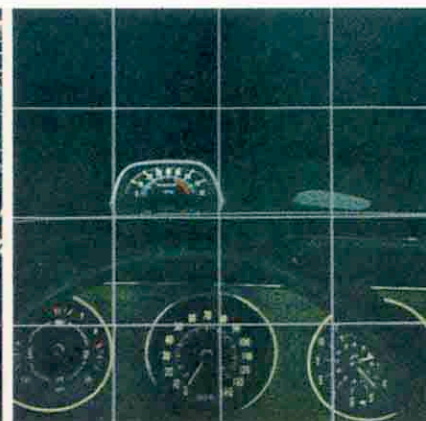
Column • Passenger-guard Door Locks with Forward-mounted Lock Buttons • Safety Door Latches and Hinges • Folding Seat Back Latches • Energy Absorbing Padded Instrument Panel and Front and Intermediate Seat Back Tops • Contoured Windshield Header (Except Convertibles) • Thick Laminate Windshield • Padded Sun Visors • Safety Armrests • Safety Steering Wheel • Side-guard Beam. Anti-theft. Anti-theft Ignition Key Warning Buzzer • Anti-theft Steering Column Lock.

Other Available Equipment. Radios: AM, AM/FM, AM/FM with FM Stereo Multiplex, Rear Speaker • Stereo Tape Player • Console • Custom Leather Trim (G.P.) • Custom Sport or Formula Steering Wheel (Pg. 22) • Tilt Steering Wheel • Variable-ratio Power Steering (Pg. 22) • Power Brakes (Pg. 24) • Rally Gauges • Hood or Instrument Panel Tachometer.

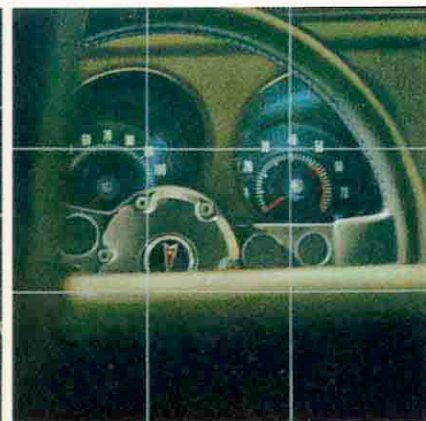
INTERIOR	GTO, JUDGE		GRAND PRIX
	Hardtop	Convertible	
Front Compartment			
head room	37.7 in.	38.5 in.	37.5 in.
leg room	42.4 in.	42.4 in.	42.4 in.
shoulder room	58.3 in.	58.3 in.	57.0 in.
hip room	59.7 in.	59.7 in.	57.5 in.
Rear Compartment			
head room	36.3 in.	36.9 in.	36.2 in.
leg room	31.9 in.	31.6 in.	31.6 in.
shoulder room	56.9 in.	47.9 in.	56.5 in.
hip room	58.3 in.	50.7 in.	52.7 in.



Knit vinyl and Morrokide GTO upholstery.



Hood-mounted tachometer and Rally Gauge Cluster with clock. Both available.



Available Rally Gauge Cluster with instrument panel tachometer.



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DM-27228



MARK OF EXCELLENCE



Now you know how seriously we take the fun of driving.