

SPECIAL ISSUE: THE SCOOP ON THE NEW MODELS!

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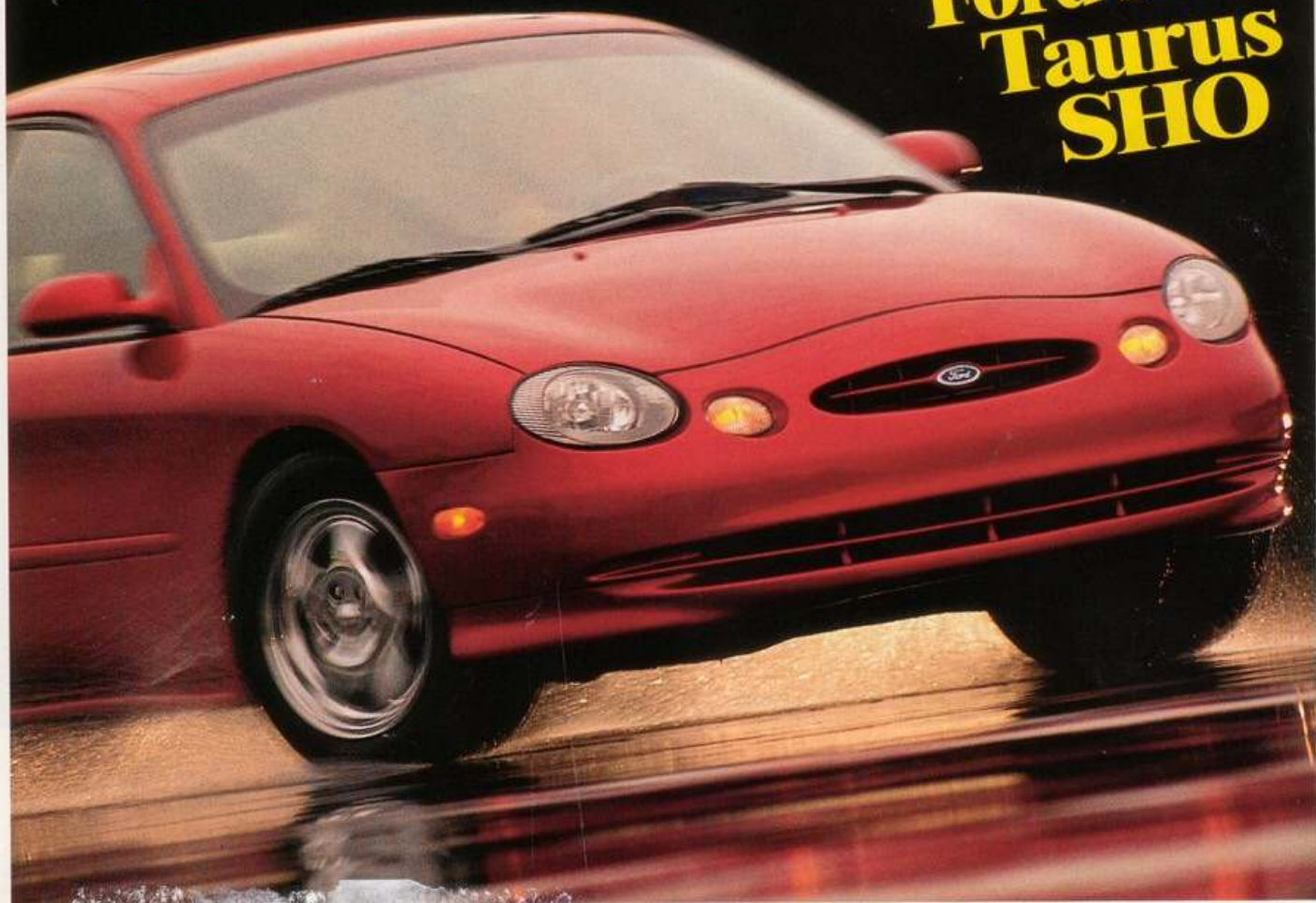
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330-HP CORVETTE GS

1996
New Cars

FIRST TEST:
Ford's V-8
Taurus
SHO



WE DRIVE: Chevy's 300-hp Camaro SS, Ford's Explorer V-8.
Ferrari's sizzling 200-mph F50, Honda's all-new line of Civics.
PLUS: The sad saga of Jerry Wiegert and his vaunted Vector.



Ford Taurus SHO

The robust runner matures into a four-door Mark VIII.

BY BARRY WINFIELD

If there was anything wrong with the first SHO Taurus, it was that it lacked refinement. It certainly did not lack performance. Even with the automatic transmission that was introduced for 1993 to bolster sales, the SHO ran to 60 mph in 7.6 seconds and tripped the quarter-mile lights in 15.7 seconds. That put it in the company of the BMW 325i and the Acura Legend. Along with such sprightly acceleration came marvelous midrange flexibility and rip-snorting throttle response.

Somehow, this failed to impress the sports-sedan clique, who refrained from purchasing SHO Taursuses in even the modest numbers Ford had hoped for. It's a risky wager, but we bet the new Ford

Taurus SHO does not suffer the same fate.

Why? Because the car has moved into a new niche, its focus has altered, and its image has shifted upmarket. And the car will cost a lot more—about \$33,000, Ford tells us. The new SHO is more a four-door Lincoln Mark VIII than it is a souped-up family sedan. The choice of a V-8 underlines that fact as much as it fulfills the prophecy we heard from Ford officials a few years ago that all Fords would soon be powered by engines from their own drawing boards.

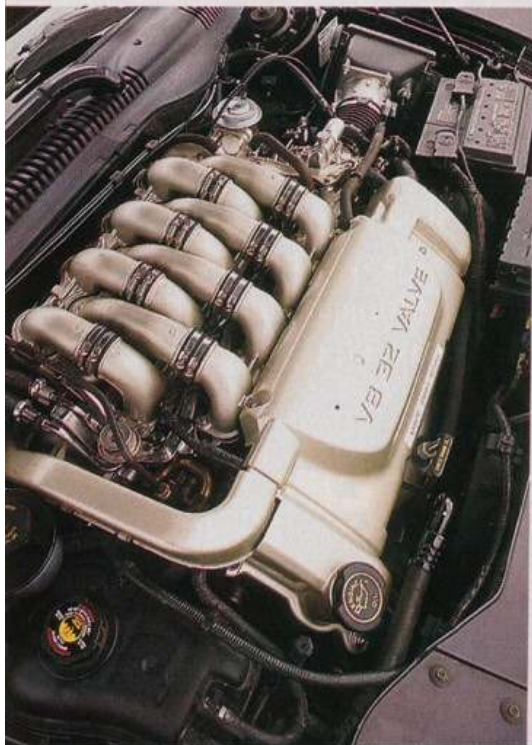
The new SHO's engine shares the basic architecture of the Duratec 2.5-liter V-6 found in the smaller Contour, with exactly the same bore, stroke, and cylinder spacing. Development time decreases when all of an engine's dimensions and parameters have already been explored. This commonality endows the 3.4-liter V-8 with a



60-degree angle between cylinder banks, relinquishing the usual 90-degree V-8's inherent equilibrium and making the installation of a balance shaft necessary.

Although this is a Ford engine, development was shared by Yamaha, which machines and assembles the engines in Japan after receiving castings produced, using a patented Cosworth process, by Ford's plant in Windsor, Ontario. The finished engines are shipped back to Ford's Atlanta assembly plant for installation in the SHO Taurus. It is the only Ford engine with direct ignition, reverse-flow cooling, and aluminum bucket tappets in the valvetrain. (See Tech Highlights, page 67.)

And what a civilized engine it is. Producing just a satisfying purr at cruising speeds—and a mellow snarl when spurred to greater effort—the four-cam V-8 sounds and feels more expensive than the V-6 it replaces. But it doesn't have the immediacy that the old V-6 flaunted, nor the enthusiastic midrange pickup. Although the V-8 produces more torque (225 pound-feet





versus 215 at the same 4800 rpm), it seems to lack the V-6's instant midrange throttle response.

The early prototype SHO we tested was also less capable in every performance category except braking, where it equaled the old car's 197-foot stopping distance from 70 mph. Its 8.0-second 0-to-60 time makes it 0.4 second slower than the previous SHO automatic we tested. It was also a half-second slower in the quarter-mile. The impression of having less midrange response is heightened by the fact that the new SHO comes only with an automatic transmission; it downshifts obediently at any generous measure of throttle increase, choosing to rev rather than to lug. And this impression is also reinforced by the somewhat distant nature of the well-isolated powerplant.

In the old SHO, a dig at the throttle produced an exuberant snarl from the engine, a distinct tug of torque steer at the wheel, and a surge of power. In the new car, such things are handled much more circumspectly, the sensations diluted by the improved body structure, the well-behaved steering, the seamless transmission, and the thick layer of refinement that coats all of the car's mechanical exploits.

The only part of the new SHO's repertoire that is uncharacteristically rude is the ride quality across abrupt breaks in the pavement. Over tar patches and bad expansion strips, the suspension thumps like a buckboard—this despite automatic dual-level damping, which is informed by ride-height sensors and initiated by electronics. Over less sudden undulations, the ride is nice and flat, with little roll or pitch to disturb its attitude.

The SHO is also very quiet on pavement that lacks the sharp breaks needed to set up that disturbing percussion, and it covers ground with a tempo understated by the car's good composure and quiet ride. Helping keep the act together is a remarkably smooth and precise variably assisted steering gear, along with handling that keeps the car faithfully on your chosen line without any of the deviations you usually expect from changes in surface camber or texture.

Here again, the quality of the new SHO's steering and handling is subtle, engineered to keep the occupants isolated from the action rather than involved in it. You have to detect the tiny bit of road feel through the damped steering mechanism and to acknowledge the good off-center

response visually rather than as a tactile change of wheel effort.

Consequently, the new SHO is less of an overt driver's car, even though it exhibits much better poise than its predecessor. Most of the torque steer is gone, but the new car still swivels slightly off-course under full throttle, at the same time revealing a mild locked-up steering effect. Squeeze in a degree of correction and the car locks onto a heading slightly off-course in the other direction, if you're still accelerating hard.

Mainly, though, the new SHO just goes obediently about its business. The electronically controlled AX4N transmission is among the least intrusive mechanisms of its kind, producing upshifts (just above 6000 rpm, despite the 7000-rpm redline) that are a perfect blend of speed and smoothness, and downshifts that are more apparent on the tach than they are through the seat of the pants. Squeeze the overdrive button off while cruising and you can watch the tach needle swing to a new position without any discernible driveline surge. It's that smooth.

Along with the creamy driveline, the new SHO has a roomy interior filled with sculpted forms, organic moldings, and



swoopy panels. When you slide inside it, any expectations of a sporty persona dissolve. The accommodations are generous and comfortable. The switches are clear and easy to use, with decent tactile qualities, but the surfaces are as impersonal as the control interfaces. The oval center console, in particular, is an art-deco affectation that feels as if it will not grow friendlier with time.

Still, the only part of the SHO's polished new upscale personality that does not work is the jittery, clumpy ride on high-frequency pavement breaks. The rest of it—questionable styling aside—is genteel enough to lure luxury-car aspirants who wouldn't have considered the previous Taurus SHO. As for the fans of the previous car... Ford must be hoping that they have matured, too.

Vehicle type: front-engine, front-wheel-drive, 5-passenger, 4-door sedan

Estimated base price: \$33,000

Major standard accessories: power steering, windows, seats, and locks, A/C, cruise control, tilt steering, rear defroster

Sound system: Ford JBL AM/FM-stereo radio/cassette, 7 speakers

ENGINE

Type.....V-8, aluminum block and heads
 Bore x stroke.....3.24 x 3.13 in, 82.4 x 79.5mm
 Displacement.....207 cu in, 3392cc
 Compression ratio.....10.0:1
 Engine-control system.....Ford EEC-V with port fuel injection
 Emissions controls.....3-way catalytic converter, feedback fuel-air-ratio control
 Valve gear.....chain-driven double overhead cams, 4 valves per cylinder
 Power (SAE net).....225 bhp @ 6000 rpm
 Torque (SAE net).....225 lb-ft @ 4800 rpm
 Redline.....7000 rpm

DRIVETRAIN

Transmission.....4-speed automatic with lockup torque converter
 Final-drive ratio.....3.77:1

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	2.77	7.1	50 mph (7000 rpm)
II	1.54	12.7	89 mph (7000 rpm)
III	1.00	19.6	130 mph (6600 rpm)
IV	0.69	28.4	136 mph (4800 rpm)

DIMENSIONS AND CAPACITIES

Wheelbase.....108.5 in
 Track, F/R.....61.6/61.4 in
 Length.....198.3 in
 Width.....73.1 in
 Height.....55.7 in
 Ground clearance.....4.8 in
 Curb weight.....3574 lb
 Weight distribution, F/R.....64.4/35.6%

Fuel capacity.....16.1 gal
 Oil capacity.....5.5 qt
 Water capacity.....10.6 qt

CHASSIS/BODY

Type.....unit construction with a rubber-isolated powertrain cradle
 Body material.....welded steel stampings

INTERIOR

SAE volume, front seat.....56 cu ft
 rear seat.....47 cu ft
 luggage space.....18 cu ft
 Front seats.....bucket
 Seat adjustments.....fore and aft, seatback angle, front height, rear height, lumbar support
 Restraint systems, front.....manual 3-point belts, driver and passenger airbags
 rear.....manual 3-point belts
 General comfort.....poor fair **good** excellent
 Fore-and-aft support.....poor fair **good** excellent
 Lateral support.....poor fair **good** excellent

SUSPENSION

F.....ind, strut located by a control arm, coil springs, 2-position electronically controlled shock absorbers, anti-roll bar
 R.....ind, strut located by 1 trailing link and 2 lateral links, coil springs, 2-position electronically controlled shock absorbers, anti-roll bar

STEERING

Type.....rack-and-pinion, power-assisted
 Turns lock-to-lock.....2.7
 Turning circle curb-to-curb.....38.6 ft

BRAKES

F.....11.5 x 1.0-in vented disc
 R.....10.0 x 0.6-in disc
 Power assist.....vacuum with anti-lock control

WHEELS AND TIRES

Wheel size.....8.0 x 16 in
 Wheel type.....cast aluminum
 Tires.....Goodyear Eagle RS-A, P225/55VR-16
 Test inflation pressures, F/R.....30/30 psi

CAR AND DRIVER TEST RESULTS

ACCELERATION

	Seconds
Zero to 30 mph.....	2.9
40 mph.....	4.2
50 mph.....	5.9
60 mph.....	8.0
70 mph.....	10.5
80 mph.....	13.8
90 mph.....	18.1
100 mph.....	22.4
110 mph.....	28.1
120 mph.....	39.2
Street start, 5-80 mph.....	8.0
Top-gear acceleration, 30-50 mph.....	4.1
50-70 mph.....	5.1
Standing 1/4-mile.....	16.2 sec @ 86 mph
Top speed (drag limited).....	136 mph

BRAKING

70-0 mph @ impending lockup.....197 ft
 Fade.....**none** light moderate heavy

HANDLING

Roadholding, 300-ft-dia skidpad.....0.79 g
 Understeer.....minimal **moderate** excessive

PROJECTED FUEL ECONOMY

EPA city driving.....**18 mpg**
 EPA highway driving.....26 mpg

INTERIOR SOUND LEVEL

Idle.....44 dBA
 Full-throttle acceleration.....71 dBA
 70-mph cruising.....68 dBA
 70-mph coasting.....68 dBA



Saturn's sedan and wagon get newly sculpted plastic panels.

the wagons meet the '97 side-impact standards. Daytime running lamps show up here, too. The wagons also get the same engine refinements as the other '96 Saturns.

FORD

ASPIRE—No major changes to this small Korean-built car.

ESCORT—An integrated child seat is optional, as is a "sport appearance" package with aluminum wheels.

CONTOUR—More rear legroom comes from scooping out the front seatbacks.

PROBE—The suspension on the GT model is made smoother-riding, and the seats get richer-looking fabric.

MUSTANG—Two new V-8 engines, an SOHC making 215 hp and a DOHC making 305 hp, grace the GT and Cobra. The \$25,310 Cobra gets the stronger engine, larger brakes, a limited-slip differential, and hood scoops; it's available from a limited number of dealers. About 2000 Cobras will wear "mystic" paint, a light-refracting coating that alternately appears green, amber, gold, and purple (see page 25). The \$18,750 GT comes standard with the SOHC engine and one-inch-smaller wheels than the Cobra. The base coupe and convertible gain 5 hp in the standard 3.8-liter V-6, for 150 hp total. All Mustangs get a new front cross-member and improved front suspension geometry.

TAURUS—The all-new sedan is 5.4 inches longer than before, but looks smaller with rounder bodywork and an oval rear window. The base GL model gets a 145-hp 3.0-liter pushrod V-6, a revised version of the 140-hp Vulcan engine currently available. The uplevel LX gets a 200-hp DOHC 3.0-liter V-6 derived from the 2.5-liter in the Contour. The new car has a stiffer body structure and more glass area, especially in the windshield. Sci-fi fans will like the oval-shaped climate-control and radio pod on the dash. A new Taurus SHO follows in spring with a 225-hp 32-valve 3.4-liter V-8, a firmer suspension, and wider tires (see page 38); four-speed automatic is the only transmission.

THUNDERBIRD—The bird's beak gets a redo, and the super-charged SC is dropped. The base V-6 gets 5 hp more.

CROWN VICTORIA—This surviving rear-driver may become the next cop favorite. It gets a new two-spoke steering wheel.

WINDSTAR—The 3.8-liter V-6 engine standard on the uplevel LX and optional on the GL gets a power increase of 45 hp for 200 total (see page 83). The final-drive ratio is higher, too. Traction control is a new option, with four-wheel disc brakes, on 3.8-liter models.

AEROSTAR—No major changes for '96.

EXPLORER—A V-8 engine is added, a 210-hp version of the old 4.9-liter Mustang engine; it's available in rear-drive uplevel XLT models, but is expected also for four-wheel-drivers in 1996 (see page 61). An integrated child seat is also added to five-doors.

RANGER—No changes planned at press time.

F-SERIES—No changes planned at press time.

BRONCO—No changes planned at press time.

CLUB WAGON—No Eddie Bauer version is yet available.

LINCOLN

CONTINENTAL—The new Continental with a DOHC 4.6-liter V-8 was introduced in spring. A slick "panic button" system uses GPS satellites and a cellular phone to summon help in emergencies. Added to this anti-terrorism equipment are run-flat tires.

TOWN CAR—A "Diamond Anniversary" edition gets embroidery on its leather seats.

MARK VIII—The LSC has been resurrected, with a 290-hp version of the Mark VIII's standard 280-hp V-8.

MERCURY

TRACER—See Ford Escort.

MYSTIQUE—See Ford Contour.

COUGAR XR7—The standard 3.8-liter V-6 gets a 5-hp boost to 145, and the nose and tail have been slightly restyled.

SABLE—The new Sable sedan is 199.7 inches long, 7.5 inches longer than before. The Sable wagon is about a half-inch shorter than the sedan. The base GS sedan gets a 145-hp version of the familiar Vulcan (no relation to Leonard Nimoy) V-6, and the LS gets a 200-hp DOHC 3.0-liter V-6.

GRAND MARQUIS—Last year's head restraints remain exclusive of a de Sade trim package. New colors and a new steering wheel mark the '96s.

VILLAGER—The nose and the tail are restyled, a passenger airbag is added, and built-in child seats are optional.

MOUNTAINEER—This V-8 version of the four-door Ford Explorer is expected to be introduced in the first half of 1996.

CHRYSLER

CIRRUS—The 150-hp DOHC 2.4-liter four-cylinder of the lower-priced Dodge Stratus is now available in Chrysler's version of this sedan. A garage door opener is also standard, and at mid-year a power sunroof will be available.

SEBRING—Built on the Mitsubishi Galant platform by Diamond-Star in Illinois, the Sebring two-door was introduced early in 1995. The JXi convertible, added this year for around \$23,000, shares the same name but is built instead on the Chrysler Cirrus platform. The coupe's optional 2.5-liter V-6 is the JXi convertible's standard engine, mated to a four-speed automatic. No manuals here. The garage opener system is also available.

CONCORDE—Greenies in California, New York, Massachusetts, and Maine can get a TLEV engine—transitional low-emissions vehicle. A monochrome paint scheme is also available.

NEW YORKER/LHS—The garage opener and radio antenna are now built-in on both models. The New Yorker name, in use since 1939, passes into the history books on September 29. The name lives on for the European export market, however, and the bench seat continues as an option in the LHS.

TOWN & COUNTRY—Three models of this new minivan are available: a base and an LXi that are 199.7 inches long (nearly seven inches longer than last year), plus an LX that is 13 inches shorter than the others. The two engines are a new 158-hp 3.3-liter V-6 and a 166-hp 3.8-liter V-6. The Chrysler minivans are completely redesigned this year, with a new strut front suspension, better aerodynamics, lower door and rear hatch sills, concealed sliding-door tracks, and an optional driver's-side second sliding door. Seat and cargo space is greater, and the rear seats have rollers for easier removal. The luxu Town & Country has dual climate controls and eight-way power leather seats with memory.

Technical Highlights

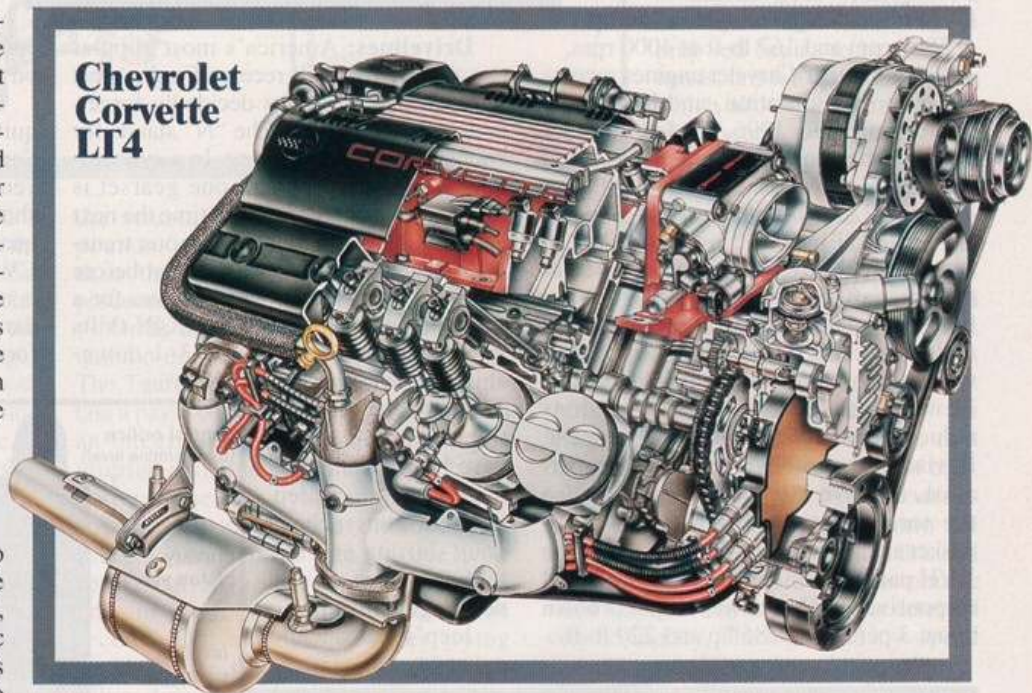
A well-traveled V-8, a level-headed minivan, and a Cadillac that knows when it's wet.

BY FRANK MARKUS

To paraphrase the lead-in to Garrison Keillor's "News from Lake Wobegon," it has been a quiet year in Detroit, Michigan, our hometown—at least in terms of technologically interesting hardware. The Ford Taurus/Mercury Sable and the Chrysler minivans dominate the new-vehicle scene, and both platforms provide significant fodder for these pages. Otherwise, the challenges of meeting the 1996 onboard diagnostic emissions (OBD II) requirements, along with the barrage of new products introduced in recent years, may have reduced the supply of cool new stuff this year.

The Taurus SHO sports the most newsworthy engine for 1996, but significant revisions have been made to many engines so they would fit into new products or meet OBD II. The Taurus SHO also gets a new transaxle, and Jeep's class-leading Quadra-Trac four-wheel-drive system goes viscous for 1996. In addition to its annual update of the Road Sensing Suspension, Cadillac has developed a new option called "Rain-sense," which wins our dual award for niftiest gizmo and cheesiest name.

Engines: V-8 power arrives in the Taurus SHO engine bay for the first time—225 horses worth at 6000 rpm (along with 225 lb-ft of torque at 4800 rpm). The modular 32-valve 3.4-liter engine was created by grafting two cylinders onto the 60-degree 2.5-liter Duratec V-6, with which the SHO engine shares bore, stroke, bore spacing, and such features as variable intake geometry and assembled camshafts. The SHO engine also blazes new trails for Ford by using reverse-flow cooling (cylinder heads are cooled first for improved emissions performance) and a coil-on-plug ignition system that eliminates spark-plug wires for reduced weight and improved cold starting. A counterrotating balance shaft acts to quell the shaking forces that result from the narrow cylinder-bank angle (90 degrees is normal in V-8s). Another first is the use of lightweight direct-acting aluminum bucket tappets, which Ford says



will not require adjustment for 100,000 miles.

While the SHO V-8 is very much a Ford engine, it was developed jointly with Yamaha (as was its V-6 progenitor), and that company will assemble the engines in Japan from blocks cast in Windsor, Ontario. Finished engines will then be shipped back to the Atlanta Taurus plant for assembly, meaning that these engines will have covered 12,000 miles before they leave the assembly line.

Lesser Tauri and Sables get fresh or freshened 3.0-liter V-6s. The base pushrod Vulcan V-6 has been upgraded with a strengthened block, new low-friction aluminum pistons, roller cam followers, and a lightened valvetrain, with a corresponding 3-percent increase in output to 145 hp and 170 lb-ft. The new Duratec engine was developed by boring out the Contour's 2.5-liter six, raising its compression ratio from 9.7 to 10.0:1, and enlarging the intake and exhaust valves, all of which yields 200 hp and 200 lb-ft of torque.

To keep the Corvette ahead of its lesser

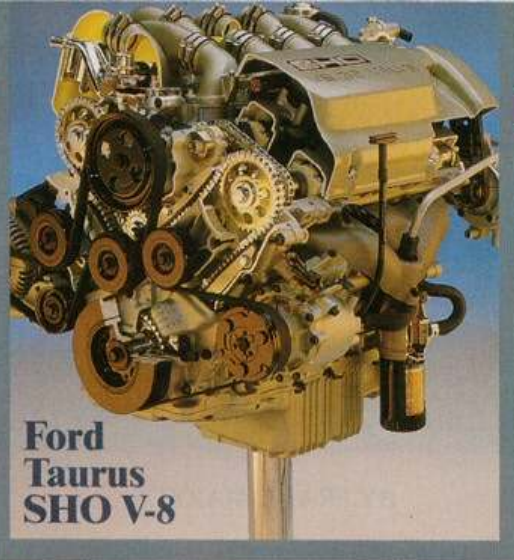
ram-air Camaro and Firebird cousins, Chevy has breathed 30 horsepower more into the LT1 and renamed it the LT4; it will be optional on Collectors' Series Corvettes and standard on the Grand Sport model (see story, page 73). The power comes from a more aggressive cam with greater valve lift and longer duration, lighter hollow-core valve stems, lighter valve springs, and larger intake and exhaust valves. GM also applied the GEN III friction reduction and efficiency upgrades to the pushrod 3.4-liter for an output of 180 hp and 205 lb-ft. The 3.4-liter DOHC engine has revised intake and exhaust systems, new cam timing, and a compression ratio hike which is good for a gain of 5 hp and 5 lb-ft of torque.

Last year, it was transmission fluid that would last as long as the car. This year, GM brings us coolant that lasts for 100,000 miles. Developed in conjunction with Havoline, DEX-COOL contains an organic acid that forms a thin corrosion-resistant barrier on cooling-system surfaces. It contains no abrasive silicates that can harm water pumps and seals, and it is

biodegradable. The new coolant will be installed in all GM cars produced in North America.

Chrysler's new 2.4-liter four-cylinder is gradually coming on line in the Cirrus/Stratus and as the base engine in the new minivan. It was developed by stroking the Neon's twin-cam 2.0-liter by a whopping 0.71 inch. A pair of counterrotating balance shafts are fitted to tame the rather large second-order shaking forces induced by the greater connecting-rod swing differences of a long-stroke design. Output is 150 hp at 5800 rpm and 167 lb-ft at 4000 rpm.

Several other Chrysler engines receive NVH (noise, vibration, and harshness) improvements for 1996. The Jeep 4.0-liter six gets the most comprehensive NVH package, along with the new name "Power Tech Six." Any in-line six-cylinder engine is fairly well balanced by nature, but in order to minimize the higher-order vibrations that afflict all engines, the block has been strengthened significantly with ribs that connect the inner and outer cooling walls and by a new main-bearing girdle. New low-friction aluminum pistons reduce reciprocating mass by 26 percent. Revised cam profiles quiet the valve operation, improve idle quality, and broaden the torque curve. A new valve-cover gasket and a retuned muffler round out the NVH package. Chrysler claims improved responsiveness, but power output is down about 3 percent to 185 hp and 220 lb-ft.



Ford Taurus SHO V-8

Drivelines: America's most popular car, the Taurus, will receive Ford's most advanced transaxle. Its decidedly forgettable name is AX4N. The "N" stands for "nonsynchronous" shifting. In a synchronous-shift transmission, one gearset is released at roughly the same time the next gear is engaged. Nonsynchronous transmissions engage the next gear just before releasing the last one, which makes for a smoother, quicker shift. The AX4N shifts in this manner for 3-2 and 3-1 downshifts as well as the 2-3 upshift. Additional friction plates have been installed to manage the added stress of nonsynchronous shifting and the higher output of the new engine lineup.

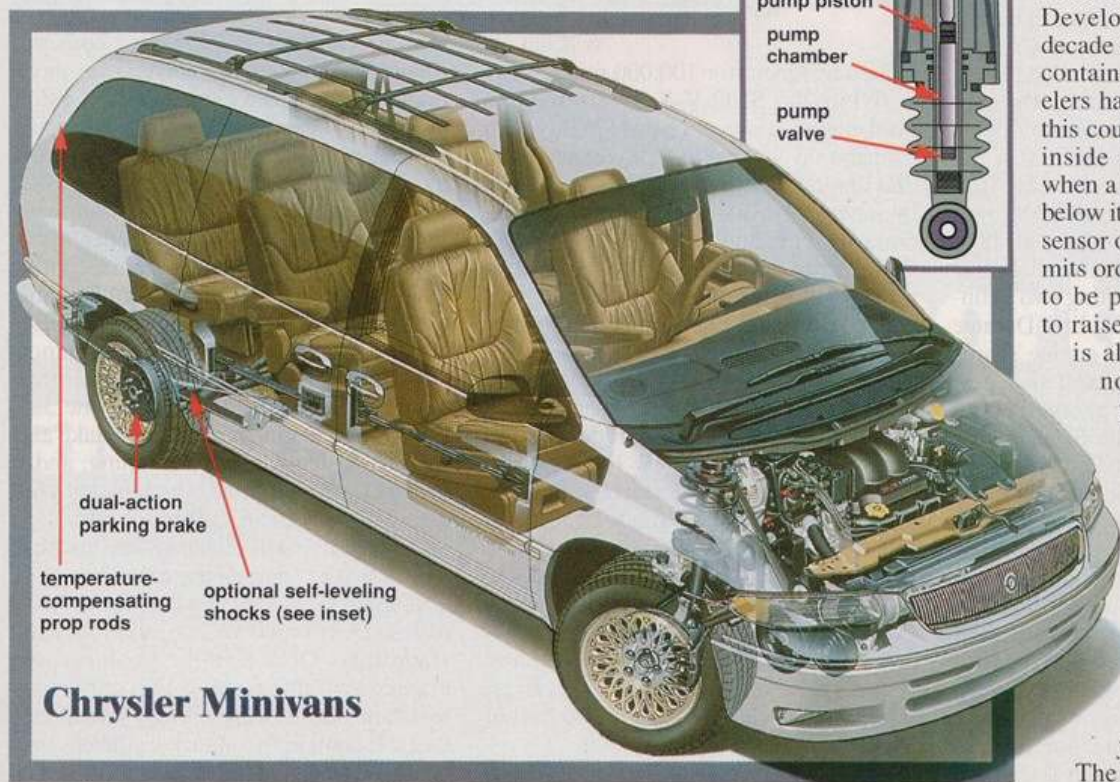
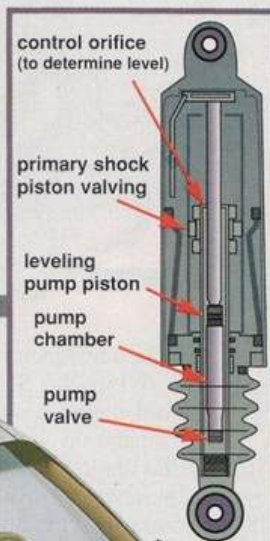
Jeep's class-lead-

ing Quadra-Trac four-wheel-drive system gets a viscous center differential this year in place of the lockable planetary differential previously used. The new setup sends 100 percent of the driving torque to the rear wheels until traction is lost, at which time virtually all of the torque can be directed to the front axle. This reduces driveline friction and improves handling on dry pavement. A low-range center differential lock is provided for serious off-roading. The Dana 44 rear axle gets an aluminum differential housing this year that saves 16 pounds, and a constant-velocity joint replaces the U-joint on the front prop shaft to reduce vibration.

Chassis: Cadillac engineers just can't quit tinkering with their high-tech Road Sensing Suspension. Now they've invented a new set of continuously variable shock absorbers to further refine the ride quality, and they've renamed the system CV-RSS. The damping rate at each corner is now infinitely variable over a range of damping rates that greatly exceeds the former "soft" and "firm" settings (see diagram). In cold weather, the system also accounts for the increased viscosity of the hydraulic fluid in the shocks when selecting the appropriate valve setting. The STS, ETC, and Concours get CV-RSS; all other models continue with the former system.

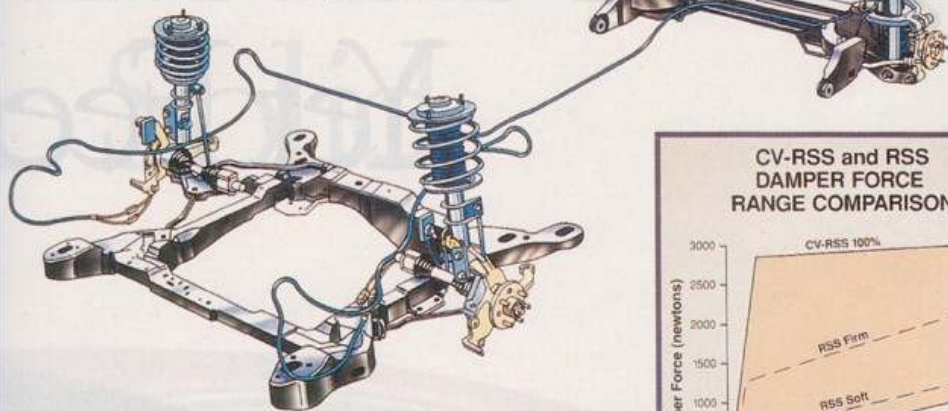
Chrysler has put elegantly simple new self-leveling shock absorbers in the new minivan. Developed in Europe over a decade ago by Boge, these self-contained, mechanical self-levelers have not been available in this country until now. A sensor inside the shock unit detects when a load drops the vehicle to below its normal ride height. This sensor opens a valve, which permits ordinary shock-absorber oil to be pumped into a reservoir to raise the vehicle. The pump is also internal, and it uses normal ride motions to provide the pumping action. The load-leveling option will become available during mid-1996.

Just inches away from those nifty shocks is an equally clever new parking-brake mechanism that energizes both brake shoes instead of just one, as in most cars. The service brakes function



Chrysler Minivans

Cadillac CV-RSS continuously variable shock damping



like any normal drum brake, with a hydraulic cylinder acting on one end of the shoes against a stationary pivot at the other end. But when the parking brake is actuated, the hydraulic cylinder becomes the stationary pivot, and a series of linkages allow the mechanical pivot to actuate both shoes. The result is better hill holding and less effort to engage the parking brake.

The Taurus and Sable chassis employ unique new tricks to improve structural rigidity and at the same time reduce parts count and build complexity. Up front there is a new one-piece radiator support, grille opening, and headlamp housing made of sheet-molding compound; it serves as a structural member and can be installed after the car is painted. The front and rear bumper reinforcement beams are integral stressed members of the chassis, unlike in most cars. And the traditional roof bows have been replaced by a one-piece structural fiberglass headliner that is bonded to the roof panel over its entire mating surface. These tricks, plus a lot of finite element tuning, help increase the Taurus's torsional rigidity by 87 percent and make

the structure 17 pounds lighter than that of its predecessor.

Odds and Ends: Two new anti-theft ignition-disabling devices appear this year. The Taurus and Sable ignition keys contain a passive (no battery) transponder with an integrated circuit. When the key is inserted and switched on, a radio transmitter in the lock cylinder emits a low-power signal that energizes the key circuit, causing it to respond with a code. If the code is correct, you're off and running. If not, the engine will shut off after one second. Oh, and don't bother trying someone else's key—there are 72 quadrillion different codes.

GM's new low-cost PASSLock system works like PASSKey, but without a resistor chip in the key. Instead, there is a Hall-effect sensor in the key cylinder that measures the unique magnetic properties of the ordinary steel key as it rotates in the lock. The cut pattern of every key has its own unique magnetic signature, which is unlikely to ever match that of a

thief's easy-out key-cylinder puller. No signature match, no start. This system appears first on the Grand Am, Achieva, and Skylark.

Ever have trouble raising a liftgate in zero-degree weather? Chrysler aims to solve this problem for minivan owners with its unique new temperature-compensating prop rods. The compensation is achieved when the mercury drops below 40 degrees F, at which point a small bimetallic tab inside the prop rod begins to bend. As it bends, this tab opens an orifice, which allows an extra volume of pressurized gas to assist in raising the liftgate.

Finally, our favorite new gizmo: Cadillac's Rainsense system. Rainsense automatically selects the wiper speed required to keep the windshield

clear by sensing the presence and amount of rain on the windshield. This is done with a series of eight light-emitting diodes that shine at an angle onto the inside of the windshield glass. The outer surface of a dry windshield will reflect this light back into a series of collectors, but raindrops refract some of that light out into the atmosphere. The collectors detect this and order up a swipe. There is no automatic wash function, and salt mist is not detected very accurately. The high- and low-speed settings can still be selected manually.

To activate Rainsense, the driver must switch the wipers to an "auto" setting, at which time the blades unpark themselves into view on the windshield. Cadillac says this encourages drivers to use the system only when rain is pending, which prevents the wipers from suddenly activating in a carwash, where they could be damaged.

Decadence or convenience? You be the judge. ●

Cadillac Rainsense

