

2003 Dodge Viper SRT10; More Than 100 Changes Elevate its Technical Prowess

Beneath the skin that identifies the 2003 Dodge Viper SRT10 as the new incarnation of America's ultimate sports car lie hundreds of updates and improvements that combine to make it an outrageous performer in every regard.

The 2003 Viper SRT10 was designed throughout to meet a single mission: improve the Viper, but retain all of its "Viperness." It retains a front-engine, rear-wheel drive, two-seat layout, while an all-weather convertible top replaces roadster and coupe offerings. The wheelbase has been lengthened 2.6 inches to accommodate convertible top stowage.

Engine

While virtually all new and more powerful than ever, the 8.3-liter, 505 cubic-inch Dodge Viper V-10 engine retains the basic architecture of its predecessor. The Viper's hand-built aura carries over to engine manufacturing, making the Conner Avenue Assembly Plant the only auto plant in America that builds its own engines.

The new engine delivers 90 percent of its whopping 525 lb.-ft. of torque from 1500 to 5600 rpm. The all-new cast aluminum cylinder block has interference-fit cast-iron liners and cross-bolted main caps, and overall sealing is also improved.

Both bore and stroke have been increased over past models, raising displacement volume by 3.5 percent to 505 cubic inches. Block length, block height, bore spacing, firing order, rod length and compression ratio are unchanged.

The Viper V-10 includes a six main bearing crankshaft with increased stroke length and cross-bolted main bearing caps. All-new cast aluminum alloy pistons, weighing slightly less than prior years - despite larger diameter - are included, as are all-new cracked-steel connecting rods that are lighter yet stronger than prior model years.

The engine features a brand new wet-sump oil system with twin, cast-in wing tanks. The bottom of the pan is 3/4-in. closer to the crank centerline, allowing the engine to be lowered in the car for improved weight distribution.

Cylinder heads on the Viper V-10 are redesigned semi-permanent mold (SPM) 356 T6 aluminum, with improved intake port, exhaust port and combustion chamber cooling and sealing. Lower-profile die-cast magnesium cylinder head covers with steel internal baffles and anti-slosh foam are also new for 2003.

A single-piece, central dual-plenum, cast aluminum intake manifold is also new. It boasts shorter runners and a single, non-staged two-barrel throttle body for lower hoodline and higher peak horsepower RPM. The intake manifold is an all-inclusive Integrated Air and Fuel Module (IAFM) with tubular fuel rails, injectors, sensors, wiring and throttle body - delivered assembled and pre-tested.

A lighter weight, lower friction valvetrain is virtually all new, with roller rocker assemblies, single valve springs and larger diameter intake valves.

The exhaust system is comprised of fabricated 1.625-in. diameter tubular stainless steel Tri-Y exhaust manifolds. Each manifold is close coupled to a 1.0-liter catalyst with secondary-1.0 liter door sill catalysts and resonators, and aft of those are dual cross-over pipes with an "H" in the middle ending at tuned side exhaust exits.

Other engine highlights include a new engine oil cooler, a new cooling system with power steering pump hydraulically driven fan, a new air cleaner assembly with dual oval air filter elements, and a new power steering pump and pulley.

Transmission

The Dodge Viper's Tremec T56 six-speed manual transmission has become the standard of the performance car industry and is now featured in several competing models. It is fully synchronized with electronic reverse lockout and 1-4 skip shift. Other highlights include updated internal components improved with new heat-treating process, a short-

throw shifter and single piece main shaft.

Transmission torque capacity improvements were developed from work with the Dodge Viper GTS/R race car.

Weight Reduction

As is the case with increased power, reduced weight is one of the two most effective means by which a car's performance can be enhanced. Overall, the SRT10 weighs approximately 100 pounds less than previous models.

Thirty-four pounds were saved with the use of an award-winning one-piece magnesium front of dash, which replaces a multi-piece welded steel unit. Dodge engineers chose a cast magnesium instrument panel support, which provides lower torso energy management with no additional steel parts required - an industry first - as well as a weight savings. Use of magnesium played a further role in weight reduction, as the hard top standard feature was eliminated, with a change to an integral folding top with magnesium shell.

A full-width sport bar has been replaced by the integral folding top and vinyl-covered frame-mounted aluminum sport hoops. Additionally, the hood and front fenders have been redesigned, replacing the one-piece sheet-molded composite (SMC) clamshell hood with a conventional SMC hood and resin injection molded (RIM) fenders.

Other weight savings measures include use of zero pressure run-flat tires, which eliminate the need for the spare tire and jack; aluminum-bodied shock absorbers; side-exit exhaust with cross-over "H" pipe and resonators, which eliminates the need for full-length pipe routing of the mufflers; carbon fiber fender supports; and a new air conditioning compressor, which reduces weight by one pound.

Aerodynamics

DaimlerChrysler's rolling roadbed wind tunnel was used extensively for improved dynamic evaluation of the all-new 2003 Dodge Viper SRT10. The car was tested and tuned for low drag and front/rear downforce balance. The coefficient of drag was reduced by seven percent over the previous generation roadster.

A new 2 mm aluminum belly pan improves airflow and increases vehicle stability. The pan starts just behind the engine and continues to the rear fascia. Positive downforce is measured at 150 mph. Additional venturi tunnels just aft of the front fascia reduce lift and direct air toward brake components.

Chassis/Suspension

Frame stiffness on the 2003 Dodge Viper SRT10 is significantly increased for improved NVH and handling. A manufacturing process known as net form and pierce is used for improved dimensional control. Total torsional frame stiffness is increased 31 percent.

The Viper SRT10's four-wheel independent suspension - with lightweight high-performance aluminum control arms and knuckles - features revised geometry for greater limit-handling progressivity. It includes lightweight aluminum-bodied front and rear coil-over shocks with revised tuning and new springs, six-bolt hubs, and tubular stabilizer bars.

The high-tech Viper SRT10 suspension includes a new Dana 44-4 Hydra-Lok torque-sensing, limited-slip differential with spread bearing design.

Steering is power-assist rack and pinion, with a 15.7:1 ratio.

Brakes

"World class" describes the stopping performance of the new Dodge Viper SRT10, thanks to improved braking components. The new brakes consist of Brembo 44/40 dual opposing piston fixed front calipers with 14-inch rotors. In the rear, new Brembo 42/38 dual opposing piston rear calipers also grip 14-inch rotors. The 2003 Viper also gets a new remote-mounted Brembo parking brake rear caliper. Molded brake-cooling ducts are found up front.

Wheels and Tires

Polished 18x10-inch front and 19x13-inch rear forged aluminum wheels with flush-mounted Viper medallion center caps wear P275/35ZR18 front and P345/30ZR19 rear black sidewall Michelin zero pressure (ZP) tires, with low-pressure sensors in the valve stems.

Exterior

All-new body panels retain Viper's traditional sports car design signature and continue extensive use of advanced materials.

New resin injection molded (RIM) and sheet-molded composite (SMC) panels make up the windshield frame, cowl panel, rear quarter panels, front fenders, doors, hood, decklid, and front and rear fascia.

The new Viper SRT10 also displays a larger grille opening, and integrated louvers are prominent on the new, lower hood, as well as new stamped aluminum side sills with aluminum heat shields and bonded insulation.

Interior

A new driver-focused design makes up the interior of the new 2003 Dodge Viper SRT10, complete with a relocated, center-mounted tachometer, real machined metal surfaces and improved pedal placement. A new, traditional pushbutton starter refires old-time sports car memories.

The center gauge stack includes an oil pressure gauge and warning lamp; oil temperature gauge and warning lamp; coolant temperature gauge and warning lamp; voltage gauge and charging system warning lamp; passenger airbag off indicator lamp; and the pushbutton start switch.

Included in the main gauge cluster is a 220 mph (355 kph) analog speedometer with an LCD odometer and trip odometer; a 7000 RPM tachometer with an up-shift and redline indicator arrow lamp; warning lights for door ajar, door unlocked and low tires; information center with warning lamps for seatbelts, brake system, decklid ajar and airbag; turn signal indicator lamp; high-beam indicator lamp; fog lights indicator lamp; ABS indicator lamp; and check engine indicator lamp.

The full-length floor console is equipped with a soft-touch molded-shape padded arm rest, covered storage bin with mat, CD storage, cigar lighter and airbag deactivation switch.

Satin chrome is featured on the gear shift lever and knob, gear shift boot trim ring, parking brake release handle, door handles and release levers, while the shift knob, shift boot, parking brake handle, parking brake boot and steering wheel rim are leather.

The throttle, brake and clutch pedals are power-adjustable, with four inches total travel. The feature aluminum diecast pedal pads and adjustable aluminum driver's foot rest (dead pedal).

Driver and passenger bucket seats are preferred suede and leather-style with six-point restraint system provisions.

The in-dash AM/FM radio is equipped with a six-disc in-head CD changer. Other audio features include a seven-channel 310 watt (RMS) under-seat amplifier, two 3/4-inch instrument panel-mounted tweeters, two 6 1/2-inch low-mass full-range Alpine loudspeakers, one 6 1/2-inch subwoofer with ported enclosure and two 2 3/4-inch fill speakers mounted in the bulkhead.

A new air conditioning design allows for improved performance and the addition of blend air, while a new duct design gives greater airflow.

The new Viper SRT10 also comes equipped with a new glove box with locking cover, and a new three-spoke, carbon fiber-look leather-wrapped steering wheel, with a Viper logo center medallion.

Convertible Top

The 2003 Dodge Viper SRT10 introduces the first true convertible top to America's ultimate sports car. It is a manual bi-fold clamshell soft top with a rigid cloth-covered magnesium front panel, a single center latch and a heated glass blacklight.

Smart glass actuation lowers and raises windows by 8 mm upon entrance and egress for optimum door sealing. A rigid front panel doubles as a functional tonneau, with a 180-pound load capacity in stowed position. The flat surface is useful in parade activities.

Safety

Next Generation, Multistage driver and front passenger air bags are found on the 2003 Dodge Viper SRT10, as are outboard-mounted, constant-force seat belt retractors with pretensioners.

The 2003 Viper marks the first use of low-profile flat (beam-style) front windshield wiper blades for better wet-weather visibility.

Other safety features include zero pressure run-flat tires with low-pressure sensors in the valve stems (and low-pressure warning lamp in dash); child seat upper tether anchorage; Lower Anchors and Tethers for Children (LATCH); an inside emergency trunk lid release; and an energy absorbing steering wheel.

Electrical

There are electrical system improvements abound on the new SRT10, but all the while retaining Viper's signature simplicity.

A new battery run-down protection system automatically turns off accessories if left on for an extended time when the car is not running. It also includes an operator-activated feature, doubling battery storage time.

High-intensity discharge (HID) low- and high-beam headlamps provide improved light output, while additional Halogen bulbs are in place for high-beam fill lighting.

Standard keyless entry includes door lock and unlock, decklid release and a panic button.

Other electrical features include door locks that are power operated and speed sensitive; new flush-mounted, electro-mechanical front door handles; an electric rear window defroster; a new electrical harnesses, a 136 amp alternator and 2.0 kw starter motor; new engine management sensors and powertrain control module; and a 600 amp maintenance-free battery.

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