The Ford Special Vehicle Team designs and develops performance vehicles that can deliver years of driving pleasure and value for the automotive enthusiast.
"The SVT people have elevated the Mustang into a legitimate GT, a car you can really believe in as a long-distance mile eater rather than a short-haul tire smoker...The Cobra is a car that America can feel proud of and that car enthusiasts are going to adore." — AUTOMOBILE MAGAZINE

The Pony Car Phenomenon

For more than three decades, people have loved the "pony car," that purely American invention which combines aggressive GT styling with V8 torque and horsepower. These all-American GTs were designed around the notion that the acceleration and visceral sensations an American V8 performance car can deliver are a unique and enjoyable experience. The original Ford Mustang defined the genre back in 1964.

But brute power married to a simplistic suspension became passe, and cars that pursued this sort of performance were relegated to the backwaters of modern automotive development. To survive in the 1990s, the classic 1960s pony car was forced to evolve into a modern driver's car, combining a sophisticated, stress-relieving powertrain with a supple and compliant suspension. And the SVT Mustang Cobra has led the way.

The SVT Mustang Cobra strikes a balance between powertrain and chassis, combining prowess and long-distance comfort, a balance in which no one system overwhelms any other. Of greater importance, the Cobra is a joy to drive, performing well under a wide range of real conditions.

The enthusiast press has lauded the SVT Mustang Cobra as a milestone in the U.S. auto industry. In a comparison test between the SVT Mustang Cobra and the BMW M3, Automobile Magazine stated that "the SVT people have elevated the Mustang into a legitimate GT, a car you can really believe in as a long-distance mile eater rather than a short-haul tire smoker...The Cobra is a car that America can feel proud of and that car enthusiasts are going to adore."
Engine Architecture

To provide the SVT Mustang Cobra with the kind of fire-breathing and powerful engine a driver’s car must have, SVT employs a highly evolved performance derivative of the Ford 4.6-liter double overhead cam V8. This engine incorporates more than 100 specially designed components that enhance power and torque. To deliver this engine in a reasonable priced performance car, Ford drew on manufacturing and technical resources throughout the world.

The Block and Crankshaft

Ticketed, the Italian company responsible for casting the Cobra engine block and heads, also manufactures aluminum components for Ferrari road and Formula One cars, as well as other Italian and European performance cars. The Cobra block, cast in Carmonagna, Italy, has a “deep skirt,” which means that the bottom edge of the block extends well below the crankshaft’s centerline. This design endows the engine’s bottom end with great rigidity and provides a superior mating surface with the transmission. For long-term durability, iron cylinder liners are used.

The steel crankshaft is forged by Geblach-Werke in Homberg/Vest, Germany (see photo on back cover). The counterweights, placed opposite every throw of the crankshaft, contribute to the engine’s exceptionally smooth revving characteristics from idle to redline. A wide radius reamed beneath the crankshaft stripes excess oil away from the crankshaft and directs it to the deep oil sump. The Cobra flywheel, which mates to the crankshaft with eight bolts, is made of nodular iron, an especially strong and durable metal.

Pistons, Rods, and Bearings

The modular iron main bearing caps attach to the block with nor two or four, but six bolts, spreading attention and load over a greater area of the block. On each side of the bearing caps, two bolts reach upward into the block in conventional fashion, and one bolt runs horizontally into the side of the cap through the skirt of the block.

To handle the considerable torque generated by the Cobra engine, the six-forged-alloy connecting rods form a big end more robust than those found in any other Ford 4.6-liter passenger-car engine. Made from powdered metal that is compacted into the rough shape of a connecting rod and then "hot-pressed" in a forge, these components are remarkably strong due to the millions of bonds created on the molecular level during the forging process.

After forging, the rod big ends are mechanically fracture-split to create the bearing cap. Due to the irregular, interlocking surfaces along the fracture line, the bearing cap and rod can be misaligned only one way, ensuring an exact fit and making the entire bearing cap assembly especially strong. All main and rod bearing inserts are made from aluminum.
Above: As shown in this actual production assembly, the SVT Cobra heads follow classic double overhead cam design principles. Chain-driven hollow cams run in line-bored journals. The cam lobes act upon roller-finger followers, which incorporate hydraulic valve-lash adjustments. The roller-finger followers press on the valve tips. Beehive valve springs made of steel were used for valve movement.
The Cobra Powertrain

Ford powertrain engineers focused development on two main areas of the Cobra engine: enhancing the exceptional breathing abilities of a four-valve engine, and exploiting the free-revving nature of a twin-cam head design.

Air Intake

The SVT Cobra engine begins the process of making horsepower with a specially designed conical air cleaner that sits just ahead of anMona air mass sensor. The air then moves further downstream to the twin 3½-inch bores of the throttle body. The butterfly valves in the bores open simultaneously, not in stages, giving the engine exceptional throttle response by quickly yet progressively delivering large volumes of air to the intake plenum.

Eight-room-length cast aluminum runners (developed in partnership with an aerospace engineering company) are placed inside the plenum. One runner feeds each cylinder. A “T” split placed in the manifold just above the valves directs air to the primary and secondary valves, but only one of the two intake valves is fed at all times. The sequential port fuel injection system features one 34 lb/hr injector per cylinder.

Placed above each secondary intake valve is a 4mm butterfly pintle throttle. Below, 3,750 rpm, the pintle throttles are closed, thus blocking airflow to the secondary valves. With one valve feeding each combustion chamber at low revs, airflow velocities are higher, and the resulting “swirl” of the fuel-air mixture is faster, producing better cylinder filling and quicker, more complete burning. This results in improved low-end torque and exhaust emissions.

Between 3,750 and 7,000 rpm, the engine computer makes two key adjustments: the secondary port throttles are opened, allowing a nearly unrestricted flow of air through all 16 intake valves at mid and high revs; and the injectors deliver more fuel to the cylinders. The pintle throttle system helps preserve ample low-end torque, while providing the high-speed horsepower characteristic of a twin-cam four-valve design.

Engine Computer, Exhaust

The Ford EEC-V engine computer system monitors engine functions—air flow, rpm, crankshaft position, camshaft position—and can make millions of adjustments per second to deliver the spark and fuel-air mixture at the optimum time to maximize power and fuel economy. The SVT Cobra also has a highly sophisticated on-board engine diagnostic system that meets Federal OBD II requirements.

The SVT Cobra high-performance, molybdenum iron exhaust manifolds feed exhaust gases into a stainless steel dual exhaust designed with the lowest possible bend in order to maximize efficiency and speed exhaust flow. The 2.25-inch exhaust pipes are linked by a crossover pipe that balances the pressure pulses through the low-restriction mufflers. The system is visually distinguished by twin 2.75-inch polished exhaust tips.

Consistent oil temperatures in this high-performance engine are maintained by a water-to-oil cooler mounted directly to the left side of the block, with an oil filter placed on its end. Water returning from the radiator to the engine block first runs through the cooler, reducing oil temperatures significantly, allowing higher sustained revs, and extending potential engine life. The engine coolant system is designed to maintain normal coolant temperatures even under race track or autocross conditions.

Transmission, Differential

The Cobra transmission is the Borg-Warner T54. First and second gears have large double-cone synchros to smooth engagement and increase durability, while reverse gear is removed from the gearbox when forward gears are engaged, reducing noise and wear. The T54 makes extensive use of needle and roller bearings, ensuring smooth and quiet operation. Finally, the clutch housing is integrated into the transmission assembly, providing a much stiffer engine/transmission package, which reduces powertrain noise and vibration.

Power is delivered to the rear wheels through a limited-slip differential with a 3.27 axle ratio, which provides strong acceleration in all gears, without sacrificing quiet and comfort in high-speed driving.

Power, Torque, Performance

The SVT Cobra engine is free-revving from idle to its 6,800-rpm redline (fuel shut-off occurs at 7,000). It produces 503 horsepower at 6,800 rpm, and 501 lb-ft of torque at 4,800 rpm. The Cobra engine matches the traditional 1960s muscle car horsepower; the Cobra V8 generates more than one horsepower per cubic inch. In the more contemporary (and more demanding) measure, the Cobra V8 develops 66.50 horsepower per liter.

In the end, an engine is intended to place a car in motion, not perform on a dyno. The 1998 SVT Cobra accelerates from a standstill to 60 mph in 5.9 seconds. The quarter mile is covered in 13.90 seconds with a terminal speed of 101.6 mph. In closed-course testing, the SVT Cobra achieves a top speed of 152 mph.
“Jam your right foot to the Cobra’s floorboard and magic happens.”

—Motor Trend, February 1997
Suspension and Brakes

Because the body structure of the Mustang is so rigid—the more rigid the body structure, the more accurately a suspension can be tuned—Ford engineers were able to create a suspension that is both supple and athletic. Rather than simply stiffen the Cobra suspension with heavier springs and severely damped shock absorbers, Ford engineers tuned it to easily soak up dips and bumps while maintaining excellent contact and communication with the road.

Suspension Design and Tuning

The Cobra front suspension is a modified MacPherson-type design, with lower control arms, struts, and a 29mm stabilizer bar. Its geometry results in excellent steering turn-in and anti-dive characteristics. The hydrodynamically assisted rack-and-pinion steering has a communicative, precise feel.

The rear suspension employs a four-bar link system. Outboard lower trailing arms carry the springs, and a 26mm stabilizer bar links the two arms. Inboard upper trailing arms attach next to the differential housing. Horizontally mounted hydraulic leading links help locate the axle, limiting both its fore-aft movement and wheel hop during aggressive acceleration from a standstill and out of corners.

Wheels, Tires, Brakes

The newly designed 1998 Cobra cast alloy wheels and BF Goodrich tires are both derived from those first used on the 1995 SVT Mustang Cobra R race car: the 17.0 x 8.5-inch five-spoke wheels are clad with 245/45-ZR17 BF Goodrich Comp T/A ZR radials.

Braking is accomplished with four-wheel discs. Up front, the 13.3-inch vented discs feature twin-piston calipers sourced from PBR, an Australian manufacturer famous for its race-proven brake components. The inner rotors feature curved internal vanes that effectively and rapidly dissipate the heat that can build up under hard braking.

The four-wheel vented discs on the Cobra are monitored and controlled by a three-channel, four-sensor ABS system. This braking system gives the Cobra short stopping distances (66.0 mph in 127 feet) with excellent pedal modulation and limited kickback under ABS braking.
Special Features

To complement the significant powertrain and suspension attributes, the SVT Cobra is visually distinguished by a number of refinements. These include a special hood, rear valance panel that reads "COBRA," and polished exhaust tips. A front fascia incorporating round fog lamps remains exclusive to the SVT Cobra.

The driver's seat features four-way power adjustments and adjustments for rake (driver seat includes a power lumbar feature). The steering wheel is leather-wrapped. Instruments have white faces with black numbers; at night, the needle area is blue/green for visibility. The shift knob and shifter boot are leather-wrapped.

To protect your 1998 SVT Cobra, Ford has developed a passive anti-theft system, called SecuriLock. Each SVT Cobra key carries a radio transponder that contains a unique code selected from a potential of 72 million billion combinations. An antenna located in the steering column "interrogates" the key, then the key code is transmitted to a control module, where it is compared to the codes stored in the control module. If the key's code matches, a signal is sent to the EEC-V system to "enable" the engine to run. If the key code does not match or if no encoded key is detected, the EEC-V system will not allow the engine to run. Up to 16 additional keys can be programmed to operate the vehicle provided an original key is available at the same time. The SecuriLock system proved its effectiveness in 1996, as the theft rate for 1996 Mustang GTs and Cobras dropped by 77 percent compared to rates for 1995 Mustang GTs and Cobras. These dramatically lowered theft rates were maintained in 1997.*

Finally, as in 1994, '95, '96, and '97, SVT will produce a limited run of Cobra convertibles. For 1998, the SVT Cobra convertible will be available in all five exterior Cobra colors:
- Laser Red Tinted Clearcoat Metallic
- Black Clearcoat
- Crystal White Clearcoat
- and Bright Atlantic Blue Clearcoat
- Candy Yellow Clearcoat will be available mid-year.
The Ultimate Goal

The nucleus of Ford SVT is a small close-knit group of engineers, product planners, and marketing people who meet on a weekly basis. In creating its vehicles, SVT interacts with and draws heavily on the talents and knowledge of other driving enthusiasts at Ford and its key suppliers who work in the disciplines of design, product development, manufacturing, and marketing.

Of the 4,000 Ford dealers in North America, fewer than 750 are certified to represent SVT. The annual commitment of these dealers to SVT includes in-depth technical seminars, training in customer-care techniques specific to the enthusiast drivers, and instruction in car control and performance driving. SVT-certified Ford dealers are dedicated to creating a culture within their dealerships that is friendly to the knowledgeable driving enthusiast. For the name and location of your nearest SVT-certified Ford dealership, call 1-800-FORD-SVT or visit our website at http://www.fordvehicles.com/SVT.

At the heart of the SVT philosophy is a deep commitment to skilled and enthusiastic driving. Every driver should be competent and responsible behind the wheel of a car, but SVT and its dealers believe drivers of performance cars like the SVT Cobra and its stablemate, the SVT Contour, should possess exemplary car-control skills. To foster that ethic, SVT offers new SVT owners a special discount at the Bob Bondurant School of High-Performance Driving. It's the desire of everyone at the factory and at SVT-certified Ford dealerships that SVT owners take advantage of this opportunity to hone their car-control skills, not only to become better and safer drivers, but also because such training will enhance the driving experience. In the spring of 1997 the Bondurant school began a transition to the SVT Mustang Cobra as its primary training vehicle.

The ultimate goal for Ford SVT and SVT dealers is to provide enthusiasts with many years of enjoyable driving. SVT invites you to visit your nearest SVT-certified Ford dealer to experience the 1998 Mustang Cobra.
1998 FORD SVT Cobra Technical Data

Wheels: Cast alloy painted wheels, 5-spline, 17 x 9 in.
Tires: BF Goodrich G-Extreme T/A 225/50R-17, unlimited tread warranty

COBRA INCLUDES

- Suspension system upgrade (driver and passenger side car seat), always wear your safety belt, secure children in the rear seat
- Tilt steering wheel
- Anti-lock brake system
- Accelerated sport mode (blue bolt for a driver with optional seats, cloth seat covers, and power brake booster support on the steering wheel)
- Postumi automatic AM/FM stereo receiver
- Center console display
- Power steering
- Power side windows, power door locks, power bed lift, additional interior color combinations
- Tinted glass
- Auto-dimming rearview mirror
- Dual-temperature climate control
- Remote keyless entry
- SecuriLock anti-theft system

AVAILABLE OPTIONS

- Electronic and Leather Trim Complete, consisting of leather interior package; Sport buckets with power lumbar support; M690 electronic steering wheel shifter, All-CM steering column, Total Auto-Throttle System (CATS)
- Rear seat speaker
- California emissions system
- High-stripe painted sunroof

COLOR AND TRIM

- Interior: Custom White Leather, Black Leather, Camel, Standard Leather, Beige, Standard Beige, Black (buckminster color). Less availability of Custom Yellow Leather (buckminster color), Black Cloth, Sailcloth Cloth, Black, Zephyr, Sailcloth Suede
- Interior: Custom White Leather, Black Leather, Camel, Standard Leather, Beige, Standard Beige, Black Cloth, Sailcloth Cloth, Black, Zephyr, Sailcloth Suede

DIMENSIONS AND CAPACITIES

- Wheelbase: 101.5 in (2,578 mm)
- Length: 187.5 in (4,760 mm)
- Height: 51.2 in (1,300 mm)
- Width: 71.1 in (1,806 mm)
- Track, F/R: 48.0 in (1,219 mm), 50.0 in (1,270 mm)
- Head Room: 16.2 in (412 mm)
- Leg Room: 32.0 in (813 mm)
- Fuel Tank: 15.4 gal (58.0 liters)
- Weight, Dry, S/C: 5,411 lbs

(No data for passenger weight)

PERFORMANCE

- 0-60 mph: 5.0 seconds
- Quarter mile: 13.59 seconds @ 101.4 mph
- Top speed: 152 mph
- Braking, 60-0 mph: 176 ft
- Braking, 60-0 mph: 277 ft
- 80-0 mph: 52.4 mph
- 100-0 mph: 88.0 mph

(All performance numbers were obtained under closed course conditions on a test track)