



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

## 2005 Acura TSX- Introduction

The TSX sports sedan complements the sporty TL and the luxurious RL. The TSX is positioned as a stepping stone to these established nameplates, providing luxury sedan buyers with an entry point to the Acura brand.

The front-wheel drive TSX was engineered and appointed to compete with Europe's best sedans in the sporty near-luxury segment (the European D segment). This segment includes cars like the Audi A4 and the BMW 3 Series.

In keeping with its European competitors, the TSX driving character is sharply focused on the sporty end of the scale. Its double-wishbone front and multi-link rear suspension has sophisticated geometry that helps the TSX corner flat and resist acceleration lift and braking dive. In addition, the TSX has P215/50R17 Michelin MXM4 V-rated tires, 4-wheel disc brakes, and an impressive arsenal of electronic driver aids including Vehicle Stability Assist (VSA) with traction control and an Anti-lock Braking System (ABS). A highly refined power rack-and-pinion steering system provides outstanding road feel that rivals the best Europe can offer. The takeaway for the driver is an ultra-competent entry luxury sports sedan that's immensely fun to drive.

The precise handling of the TSX perfectly complements its 200-hp 2.4-liter *i*-VTEC(TM) 4-cylinder engine. It is available with either a 6-speed manual transmission (with a lightweight magnesium case) or a 5-speed SportShift(TM) automatic that offers quick and precise gear changes. Thanks to its *i*-VTEC(R) intelligent variable valve timing and lift, the engine provides a broad, useable powerband that's uncommon in a 4-cylinder engine, together with a stirring high-rpm power rush. The TSX engine, with its 7100-rpm redline is backed by 40 years of Honda international racing experience in Formula One, CART and Grand Prix motorcycles.

The 60/40-split fold-down rear seat holds three adults with 3-point seatbelts in all positions, and allows easy expansion of the generous 13.0 cu. ft. of trunk space. The seat back can also be locked upright for security. LATCH child-seat attachment points enable the attachment of up to two compatible child seats quickly and securely in the rear outboard positions.

Creature comforts include a dual-zone climate control system and a power moonroof with sliding shade. Steering-wheel mounted switches control the standard 360-watt Premium Sound System, 6-disc in-dash CD changer, cruise control and functions of the optional latest-generation Acura Navigation System with Voice Recognition(TM).

For 2005, the TSX receives several upgrades including the addition of XM Satellite Radio, heated door mirrors, a 4-way power adjustable passenger seat, and new color combination - Ebony interior available with the Milano Red exterior color option, illuminated audio and cruise controls on the steering wheel.

### Highlights

- 2.4L 16-valve *i*-VTEC 4-cylinder engine 200
- 6-speed manual transmission
- 5-speed Sequential SportShift transmission
- Drive-by-wire throttle system
- Ultra rigid unit body construction
- 4-wheel double-wishbone suspension
- 4-wheel disc brakes with ABS

### DESIGN SUMMARY

While the TSX is a finely honed sports sedan, it's also a magnificently comfortable 5-passenger commuter. Its tremendous unit body stiffness, achieved through the use of high-tensile steel and state-of-the-art computer engineering processes, makes an ideal attachment point for the suspension, and also offers a quiet haven for passengers. Attention to aerodynamics has provided a drag coefficient (Cd) as low as that of any other sedan in the TSX segment. The benefits of this aero-achievement include enhanced high-speed stability and an aggressive appearance.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The interior of the TSX connotes a sporty feeling, backed by the latest safety advances including side airbags and side curtain airbags with a larger protective area than that of the competition. The racing-inspired front seats feature pronounced side bolsters that help keep the driver and front passenger comfortable while cornering. The steering column is manually adjustable for both telescope and tilt. An 8-way power adjustable driver's seat and, new for 2005, a 4-way adjustable passenger seat comes standard on every TSX.

#### **TARGET BUYER**

Young. Hip. Technically astute. Raised on Japanese cars. Aspiring to own upscale brands. They are all of this and much more, but these terms perfectly define the buyers that are attracted to the distinctive styling of the TSX, its advanced engineering and its sporting handling. Today's leading automotive designs are sporty and aggressive, and TSX buyers will recognize these cues in this sporty Acura sedan.

#### **Acura TSX owner demographics:**

- 57 percent male
- Median age 35 years
- 48 percent married
- 84 percent college educated
- \$82,000 median household income

These young and affluent buyers have an emotional attachment to their cars, but require a rational base to support their purchases. The TSX supports both needs with its outstanding handling, strong engine performance, distinctive overall design character, and the world-class quality inherent in all Acura products.

#### **SINGLE TRIM LEVEL WITH MANY STANDARD FEATURES**

The Acura TSX comes in one trim level that includes perforated leather upholstery, a power glass moonroof, HID headlights, a premium sound system and much more. It features either a close-ratio 6-speed manual transmission or an advanced 5-speed SportShift automatic transmission. The only factory option is the Acura Navigation System with Voice Recognition.

#### **BODY FEATURES**

- Rigid unit body structure with extensive use of high-tensile steel
- Best in class aerodynamic performance
- High Intensity Discharge (HID) headlamps
- UV light-reflecting green-tinted glass
- Scratch-resistant bright metal Acura doorsill garnishes
- Multiplex wiring circuits
- Power glass moonroof
- Power mirrors with integrated turn signals

#### **CHASSIS FEATURES**

- Double-wishbone front suspension
- Double-wishbone multi-link rear suspension
- Front and rear stabilizer bars
- Lightweight rear aluminum suspension knuckles
- Anti-dive and anti-lift suspension geometry
- Quick-ratio power rack-and-pinion steering
- 17 x 7-inch alloy wheels
- P215/50R17 Michelin MXM4 V-rated all-season high performance tires
- 4-wheel disc brakes with ABS



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

- Vehicle Stability Assist (VSA) with traction control
- Extensive NVH measures

#### POWERTRAIN FEATURES

- Advanced 2.4-liter DOHC *i*-VTEC in-line 4-cylinder
- 200 horsepower @ 6800 rpm
- 166 lbs.-ft. torque @ 4500 rpm
- *i*-VTEC "intelligent" Variable Valve Timing and Lift Electronic Control
- Advanced Programmed Fuel Injection (PGM-FI)
- Direct ignition system
- Drive-by-wire throttle control
- Dual balance shafts
- 6-speed close-ratio manual transmission
- 5-speed Sequential SportShift(R) automatic transmission
- 110,000-mile tune-up interval

#### COMFORT AND CONVENIENCE FEATURES

- Easy-to-read analog instruments with LED backlit illumination
- Leather-wrapped 3-spoke steering wheel
- Steering column with adjustable reach and tilt
- Perforated leather performance-oriented heated front bucket seats
- 8-way power driver's seat with adjustable lumbar support
- 4-way adjustable power passenger seat
- Dual-zone automatic climate control system
- Power windows with driver's auto-down and up feature with auto-reverse
- Power adjustable heated door mirrors
- Keyless entry system with panic button and window controls
  
- 8-speaker, 360-watt Acura premium sound system
- XM(R) Satellite Radio
- 60/40 split-folding rear seatback with locking feature
- Available Acura Navigation System with Voice Recognition
- Engine immobilizer with rolling code

#### SAFETY FEATURES

- Front dual-stage, dual-threshold airbags
- Front seat side airbags with passenger height and position sensors
- Side curtain airbags
- Front and rear crumple zones
- Energy-absorbing sliding front subframe
- Front seat belt pretensioners with load limiters
- Lower Anchors and Tethers for Children (LATCH) system in rear outboard seating positions

#### ENVIRONMENTAL FEATURES

- Reduction of lead in construction
- Elimination of polyvinyl chlorides (PVC) from instrument panel and other parts
- Extensive use of recycled materials



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

- CARB LEV-2 emissions certified

## 2005 Acura TSX- Powertrain Part 1

September 1, 2004 -- Torrance, Calif. --

The TSX is a precisely engineered sports sedan that blends agility and handling with 5-passenger comfort. That delicate balance of attributes drove every aspect of development, including the selection of the powertrain. When it came to choosing a powertrain configuration for the TSX, the path soon became clear. A V-6 like that in the TL would deliver abundant power, but would increase the size and weight of the car, and move the TSX away from its sporting intentions. An in-line 4-cylinder, using the latest Acura technologies, would make for a lighter, well-balanced, more compact vehicle that put the emphasis on overall sporting performance and handling responsiveness.

Power for the TSX comes from an advanced 2.4-liter DOHC *i*-VTEC in-line 4-cylinder that builds on the technology found in the RSX Type-S sports coupe. With an *i*-VTEC "intelligent" valve control system that features Variable Valve Timing and Lift Electronic Control (VTEC) combined with Variable Timing Control (VTC), the TSX engine delivers formidable power, impressive fuel economy and very low exhaust emissions.

	2005 TSX	
Engine	L-4 DOHC <i>i</i> -VTEC	
Displacement	2354 cc (2.4-liter)	
Compression ratio	10.5:1	
Fuel type	Premium Unleaded, 91 Octane	
Horsepower @ rpm	200 @ 6800	
Torque @ rpm (lbs.-ft.)	166 @ 4500	
Transmission	6 MT	5 AT
EPA estimated mileage City/Highway	21/30	22/31
Emissions certification	EPA Tier 2-Bin 5, CARB LEV-2	

The all-aluminum powerplant has four-valves-per-cylinder and free-flowing intake and exhaust systems that combine to deliver 200 horsepower at 6800 rpm- a figure that betters the European competition by up to 32 horsepower. The strong 166 pound-feet of torque at 4500 rpm and 21/30 City/Highway EPA mileage rating are also highly competitive-a remarkable achievement considering this engine's formidable horsepower output.

ENGINE PERFORMANCE COMPARISON				
	2005 Acura TSX	2004 Audi A4 1.8 T	2004 BMW 325i	2005 Mercedes- Benz C240
Engine	2.4-liter DOHC <i>i</i> -VTEC I-	1.8-liter DOHC I-4 turbo	2.5-liter DOHC I-6	2.6-liter SOHC V- 6

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

	4			
Horsepower @ rpm	200 @ 6800	170 @ 5900	184 @ 6000	168 @ 5700
Torque @ rpm (lbs.-ft.)	166 @ 4500	166 @ 1950	175 @ 3500	177 @ 4700
Standard transmission	6 MT or 5AT	5 MT	5 MT	6 MT
EPA estimated mileage City/Highway	21/30 (MT) 22/31 (AT)	22/31	20/29	19/25

Despite its power output, the TSX engine is also very clean. With its rear-mounted exhaust layout, close-coupled catalyst and advanced Programmed Fuel Injection (PGM-FI) the TSX meets strict Tier 2-Bin 5, and Low Emission Vehicle-2 (LEV-2) standards.

The TSX is offered with either a 6-speed close-ratio manual transmission or a 5-speed SportShift automatic. The manual gearbox features a lightweight magnesium alloy case and multi-cone synchronizers. This transmission has a light, quick action and very short shift throws.

The 5-speed SportShift automatic can function as a conventional automatic transmission or, at the driver's option, can be shifted manually for hands-on sporting fun. Working in combination with the drive-by-wire throttle system, the SportShift transmission's shift logic has gotten even smarter. The electronically controlled throttle and transmission work together to choreograph shifts, resulting in smooth shifts.

## POWERTRAIN

### AT A GLANCE

#### Engine

- 2.4-liter, DOHC, *i*-VTEC 4-cylinder engine that produces 200 horsepower at 6800 rpm and 166 lbs.-ft. of torque at 4500 rpm
- *i*-VTEC "intelligent" valve-control system adds VTC (Variable Timing Control) to VTEC
- Drive-by-wire throttle control system
- Computer-controlled Programmed Fuel Injection (PGM-FI)
- Dual balance shafts for exceptional smoothness
- Direct ignition system
- Lightweight alloy pistons and high-strength connecting rods
- 110,000-mile tune-up intervals

#### Emissions/Fuel Economy

- Estimated mileage of 22/31 mpg (City/Highway, 5 AT) and 21/30 mpg (City/Highway, 6 MT) (based on EPA method)
- Meets strict EPA Tier 2-Bin 5, Carb Low Emission Vehicle-2 (LEV 2-) standards
- Rear-facing exhaust ports and under-floor converter provide faster catalyst light-off



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

### **6-Speed Manual Transmission**

- Close-ratio 6-speed improves performance and fuel efficiency
- Compact, lightweight magnesium transmission case and bellhousing (the first in an Acura vehicle)
- Multi-cone synchronization on all gears for light shifting effort
- Short 45 mm shift throws for "race car" like shift feel
- Short clutch pedal stroke with light effort
- Compact clutch with low inertia for quicker acceleration
- Advanced clutch torsion mechanism reduces gear noise

### **5-Speed Sequential SportShift Automatic Transmission**

- Quick-response 5-speed Sequential SportShift allows semi-manual operation
- Drive-by-wire cooperative control facilitates quicker shifts
- Ratios complement engine's powerband for improved performance and efficiency
- Lockup torque converter design delivers superior fuel economy
- Intuitive 5-position shift gate
- Advanced Grade Logic Control for reduced gear "hunting" when driving on steep hills
- Linear solenoid direct-acting control for reduced shift shock and improved shift smoothness and responsiveness

### **Noise, Vibration (NV)**

- Chain-driven balance shafts mounted on lower block in oil pan
- Maintenance-free silent-chain camshaft drive
- Aluminum block with cast-in, centrifugally cast iron cylinder liners for light weight and durability
- Aluminum block and one piece aluminum crankshaft carrier for improved strength
- Maintenance-free serpentine accessory drive with auto-tensioner

### ***i*-VTEC VALVE-CONTROL SYSTEM**

The TSX features the latest iteration of the Variable Valve Timing and Lift Electronic Control (VTEC) system that first appeared in the Acura NSX supercar. By varying valve lift based on key engine parameters, VTEC lets the engine develop strong low-end torque and exceptional high rpm power. The TSX engine features the "intelligent" *i*-VTEC system, which first appeared in the RSX Type-S sports coupe. This "intelligent" system adds VTC (Variable Timing Control) to VTEC to provide continuously variable camshaft timing. By allowing the valve lift and valve timing to be adjusted to suit the engine's operating parameters from moment to moment, *i*-VTEC provides substantial performance, efficiency and emissions improvements.

### **VTEC (Variable Timing and Lift Electronic Control)**

VTEC is an innovative system that adjusts the lift and opening duration of the valves to help the engine produce strong low-rpm torque and excellent high-rpm power. At low rpm, VTEC automatically adjusts valve timing and lift for optimum cylinder filling. In this low rpm mode, the timing of the intake valves is staggered and their lift is asymmetric, which creates a swirl effect within the combustion chambers. With better mixing in the cylinders, burn speed and combustion stability are improved. As engine rpm builds, VTEC transitions to a high-lift, long-duration cam profile for improved high-rpm engine output.

The TSX uses a variation of this technology that is very similar to that of the NSX. With three rockers operating each pair of intake *and* exhaust valves in each cylinder, the TSX powerplant varies the opening lift and duration of the intake and exhaust valves. At low rpm, the valves follow low-lift, short duration camshaft profiles to help boost low-end torque. Above 6000 rpm, the intake and exhaust valves are operated by high-lift, long-duration cam profiles, for maximum high rpm horsepower.

### **VTC (Variable Timing Control)**



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The *i*-VTEC system incorporates VTC (Variable Timing Control), which continuously adjusts the intake cam timing to suit engine operating conditions. This precise control of cam timing benefits power output, fuel economy and emissions performance.

The powertrain control unit monitors cam position, intake manifold pressure and engine rpm, then commands a VTC actuator to advance or retard the intake cam, optimizing engine output and reducing emissions. At idle, the intake cam is almost fully retarded to deliver a stable idle and reduce oxides of nitrogen (NO<sub>x</sub>) emissions. The intake cam is progressively advanced as rpm builds, so the intake valves open sooner and valve overlap increases. This reduces pumping losses, which increases fuel economy and further reduces exhaust emissions due to the creation of an internal exhaust-gas recirculation effect. By continuously optimizing the amount of intake cam advance or retard based on the operating conditions, the TSX engine is both powerful and exceptionally flexible.

### **DRIVE-BY-WIRE THROTTLE CONTROL SYSTEM**

An electronic drive-by-wire system helps enhance the driving character of the TSX. With smart electronics connecting the throttle pedal to the throttle butterfly in the intake tract, the engine response can be optimized to suit the driving conditions and to better match the driver's expectations. By eliminating the direct throttle cable connection to the engine, the ratio between pedal movement and throttle butterfly movement can be continuously optimized. This adjustable "gain" between throttle and engine is a significant step forward in drivability.

To establish the current driving conditions, the system monitors pedal position, throttle position, vehicle speed, engine speed, calculated road slope and corner radius and engine vacuum. This information is then used to define the throttle control sensitivity.

From the driver's standpoint (because the drive-by-wire system is combined with other functions such as VSA and Traction Control) this means that the way the TSX responds to throttle pedal movements is tailored to the driving conditions. In stop-and-go driving, the pedal response has low gain and is smooth and progressive for easy driving. A similar low-gain response makes starting out on snowy or icy roads more predictable. In low- to medium-speed driving conditions, the gain increases to improve response and acceleration. In high speed driving, the gain increases further still, so that there's ample response for passing. The system also alters response based on the road slope, providing more throttle gain on uphill, and less on downhill, and also reduces changes in gain on curvy roads to make the car easy to control.

The throttle system works with the available SportShift 5-speed automatic transmission to make shifts faster and smoother than has been possible before. By coordinating the throttle opening with the transmission's shifting functions, engine power can be precisely tailored to the needs of the transmission at every point during the shifting process. That means less shift shock and delay, no matter the driving situation.

The TSX uses a DC motor to control the throttle butterfly position in the intake tract. Large bearings and internal upgrades give the motor greater resistance to vibration.

## **2005 Acura TSX- Powertrain Part 2**

September 1, 2004 -- Torrance, Calif. -- **PROGRAMMED FUEL INJECTION (PGM-FI)**

The *i*-VTEC 4-cylinder engine features Programmed Fuel Injection (PGM-FI), which relies on an array of sensors to constantly monitor a number of critical operating variables. The system tracks throttle position, intake air temperature, water temperature, ambient air pressure (altitude), intake manifold pressure, exhaust/air/fuel ratios and the position of the crankshaft and camshaft. High-efficiency air-assisted fuel injectors deliver fuel to each cylinder. These multi-hole injectors direct fuel around the intake valve stem for improved atomization, better power output and reduced emissions.

### **TUNED INTAKE**

The TSX uses a single-stage intake manifold that is specially tuned for the engine's power characteristics. Fixed-length intake runners are tuned in length, size and shape to provide an optimal blend of low-rpm torque and high-rpm response, while supporting the advanced *i*-VTEC valve control system.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

## EXHAUST SYSTEM

Exhaust flow is critical to performance and figures heavily in the strong power characteristics of the TSX. The high-flow rear-mounted exhaust manifold is constructed of stainless steel. Downstream, large pipe sizes increase flow, and the system splits to feed into free-flowing dual silencers and exhaust tips.

## EMISSIONS CONTROL

As automotive emissions standards tighten, a trend toward decreased power output is the natural result. The challenge with the TSX was to advance power output while simultaneously reducing emissions. The payoff for these efforts was a strong 83 horsepower per-liter peak output, coupled with compliance with some of the toughest emissions regulations in America, the California Air Resources Board (CARB) LEV-2 standard. Compared to LEV-1-LEV, this stricter standard mandates a 75-percent reduction in NOx level and extends the emissions compliance/useful life by 20 percent, to 120,000 miles.

<b>California Emission Standards (gram/mi.)</b>				
	LEV-1		Tier 2-Bin 5	
			LEV-2 (TSX)	
	50,000 mi.	100,000 mi.	50,000 mi.	120,000 mi.
CO (g/m)	3.4	4.2	3.4	4.2
NMOG (g/m)	0.075	0.09	0.075	0.09
NOx (g/m)	0.20	0.30	0.05	0.07

\*NMOG = Non Methane Organic Gas

The foundation for exceptional emissions performance was laid by the basic architecture of the TSX. The exhaust port and exhaust system are positioned to the rear of the transversely mounted engine. This means the catalytic converter can be positioned closer to the engine than is possible with a conventional front-exhaust configuration that sweeps under the engine to reach the converter. With the under-floor catalyst, light-off of the multi-cell converter is quick after starting. A low heat-mass stainless steel exhaust manifold also speeds converter light-off.

The *i*-VTEC cylinder head plays a large role in emissions reduction as well, by fostering internal exhaust gas recirculation, which cuts NOx. Air-assisted fuel injectors reduce hydrocarbons after starting, while a Linear Air/Fuel sensor positioned in the exhaust system just upstream of the catalyst improves air/fuel mixture control.

## CYLINDER HEAD / VALVETRAIN

The cylinder head is pressure-cast aluminum alloy and features four-valves-per-cylinder driven by dual overhead cams. An automatically adjusted silent-type chain drives the cams; it is maintenance free and runs in an oil bath for maximum durability. The combustion chambers have large "squish" areas to promote faster flame propagation and more complete burning-factors in reduced carbon monoxide (CO) and hydrocarbon (HC) exhaust emissions.

## CRANKSHAFT, ENGINE BLOCK AND OIL PAN

The TSX uses a forged-steel crankshaft with a relatively long 99 mm throw. To reduce friction and improve long term durability, the crankshaft journals are micropolished. The die-cast lightweight aluminum block has cast-in





Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

iron cylinder liners with 87 mm bores. The liners are made using a spin casting, centrifugal process. To maximize the rigidity and minimize noise and vibration, the block is a 2-piece design that fully supports the five main bearings with a single cast-alloy bed-plate assembly.

### **NOISE, VIBRATION AND HARSHNESS (NVH) CONTROL**

The high output in-line 4-cylinder engine features comprehensive NVH reduction features. The pressure-cast block with its bed-plate type main bearing cap is a highly rigid assembly, helping to resist vibration. A pair of chain-driven balance shafts further smoothes the inherent vibration of a large displacement in-line 4-cylinder layout. A self-adjusting silent-type camshaft chain and a serpentine accessory drive belt also reduce NVH.

### **110,000-MILE TUNE-UP INTERVALS**

With a self-adjusting silent-type cam chain, long wearing platinum-tipped spark plugs and a precision-engineered valve train, the TSX is engineered for low maintenance. Other than routine fluid changes and inspections, the first scheduled engine tune-up is required at 110,000 miles.

### **6-SPEED MANUAL TRANSMISSION**

One of the standard transmissions in the TSX is a close-ratio 6-speed manual gearbox. With exceptionally short 45 mm shift throws (most European sedans have shift throws of about 60-65 mm) and a precise, light shifting action, this transmission perfectly complements the car's sporting character. With six gear ratios instead of the more common 5-ratio arrangement, the TSX has closely spaced gears for superior acceleration, yet still has a top gear that allows for a low and efficient cruising rpm.

To reduce weight, the compact transmission case and bellhousing are cast of a special magnesium alloy—the first use of this lightweight material in the transmission of an Acura product. This complex casting is seven pounds lighter than the comparable aluminum version, and is highly rigid to damp out noise and vibration. Inside, the gearbox has multi-cone synchronizers on all gears (including reverse) to reduce shifting effort.

A lightweight clutch with low-inertial mass allows the engine to rev quickly, the clutch pedal stroke is short and the effort is comfortably low. A broad and progressive engagement band makes the TSX easy to launch smoothly from a stop. The clutch incorporates a wide-angle clutch-torsion mechanism that reduces the gear rattling sound that is common in many manual-transmission designs.

### **5-SPEED SEQUENTIAL SportShift AUTOMATIC TRANSMISSION**

To deliver the smoothness and convenience of an automatic transmission, coupled with the performance and sporting feel of a manual gearbox, the TSX offers a 5-speed Sequential Sport-Shift automatic. With five closely spaced ratios, the automatic transmission helps deliver impressive acceleration performance. An advanced Grade Logic Control System and intelligent shift programming combine with a drive-by-wire throttle control to deliver remarkably swift and smooth shifts and intuitively correct gear selection.

The TSX automatic transmission reduces shift shock and improves shift smoothness with the use of an industry-leading linear solenoid direct-acting control. The TSX also utilizes an intuitive 5-position shift gate design.

The SportShift transmission can be operated in two different modes: fully automatic or with driver-selected ratios. In automatic mode, its Grade Logic Control System provides smart ratio selection regardless road gradient. With sensors that monitor throttle position, vehicle speed and acceleration/deceleration, the system compares these parameters with a map stored in the transmission computer. Based on this information, the system can determine if the vehicle is on an incline and adjusts the shift schedule for improved climbing power or downhill engine braking.

To switch SportShift to the manual mode, the driver simply moves the selector lever to a special gate to the left of the "Drive" position. When in manual mode, a forward push of the lever selects a higher gear and a rearward pull selects a lower gear. An LED display between the tachometer and speedometer indicates which of the five available gears is in use.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Shift logic is unique in manual mode, with firmer, faster gear change programming that has a feel similar to that of a manual gearbox. Built-in safety override features make SportShift smarter than any conventional manual transmission, however. Under acceleration, the transmission will hold the selected ratio until commanded to upshift. If the driver doesn't make the upshift in time, the engine ECU will cut off the fuel flow to prevent the engine from over-revving. If the high-rpm condition continues for an extended period even after the fuel is cut (as might be possible on a steep downhill) the transmission will upshift automatically to preclude engine damage. Another important safety feature: The logic will not allow a downshift that would cause the engine to over-rev if the driver selects too low of a gear ratio. To preclude the vehicle starting from a stop in a high gear if the driver inadvertently forgets to downshift, the transmission automatically downshifts as the car decelerates to a complete stop.

To accommodate the high-revving engine's horsepower and torque output, a heavy-duty torque converter is used and the countershaft is constructed of high-strength material. To boost efficiency, the transmission has a low-friction clutch and a special super-thin torque converter. The thin torque converter results in a compact transmission unit. Other space saving measures include a double-row idle gear and a tightly packaged second-gear clutch.

#### **ACTIVE LOCKUP TORQUE CONVERTER**

To improve fuel economy and while maintaining a high level of drivability, the 5-speed automatic transmission includes an active lockup torque converter. With the precise control afforded by a linear solenoid, the system expands the speed and throttle setting range in which lockup can be engaged in the top four gears. The resulting reduction in transmission slippage results in a 2-percent improvement in fuel mileage in both city and highway driving. Due to its efficiency and taller (higher numerically) final drive ratio, the SportShift automatic transmission-equipped TSX actually delivers better fuel economy than does the standard 6-speed manual gearbox counterpart under similar driving conditions.

#### **COOPERATION BETWEEN 5AT AND DRIVE-BY-WIRE**

With the TSX drive-by-wire system, the operation of the automatic transmission and engine are fully integrated, resulting in remarkable shift smoothness, and a significant reduction in shifting time. With this cooperation between engine and transmission, shift time from second to first gear drops from 1.15 second to just 0.7 second—a 40-percent improvement.

### **Acura TSX Combines Performance, Refinement and Style Hot-Selling Sports Sedan Gets XM(R), other New Features for 2005**

September 1, 2004 -- Torrance, Calif. -- The Acura TSX sports sedan combines a powerful engine, choice of 6-speed manual or 5-speed Sequential SportShift™ automatic transmission, drive-by-wire throttle control system and race-bred suspension with an ergonomic interior filled with the latest technology to deliver a strong blend of performance, refinement and style.

"We had high expectations for the TSX, and it has exceeded those expectations in a big way," said Dick Colliver, executive vice president, auto sales. "The TSX has carved out a solid niche in the sports sedan segment and become an important component of our lineup."

For 2005, the TSX gets heated sideview mirrors and additional interior features including, a 4-way adjustable power passenger seat and standard XM(R) Satellite Radio, which provides over 100 stations of CD-quality music.

The TSX features an advanced 2.4 liter DOHC i-VTEC(TM) engine that generates 200 horsepower at 6800 rpm, 166 lb-ft of torque at 4500 rpm and overall performance comparable to some competitors with 6-cylinder powerplants. The i-VTEC "intelligent" valve-control system delivers enhanced performance across a broad power band in addition to improved fuel economy and reduced exhaust emissions. A direct ignition system with knock control helps to optimize power and fuel efficiency by ensuring a properly timed spark at all engine speeds.

The TSX engine is equipped with a drive-by-wire throttle control system that eliminates the need for a mechanical connection between the accelerator pedal and the engine, and continuously adjusts the sensitivity of the accelerator pedal to match current driving conditions. It also incorporates throttle control into the car's VSA (Vehicle Stability Assist(R)) system, controls the vehicle's cruise control function and modulates the throttle to help make automatic transmission shifts even smoother.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The TSX engine is equipped with platinum-tipped spark plugs and a self-adjusting cam chain to help it run for 110,000 miles before requiring a major scheduled tune-up.

Since many performance enthusiasts prefer shifting gears themselves, the TSX comes with a close-ratio 6-speed manual transmission or a compact 5-speed Sequential SportShift™ automatic transmission for an additional cost. The lightweight 6-speed gearbox features short shift throws and multi-cone synchronizers on all gears for quick, light shifting action. For the first time on an Acura, the transmission case is made from magnesium alloy, a material typically reserved for racing applications. This case weighs 6.6 pounds less than a comparable aluminum unit and is extremely rigid to damp out noise and vibration.

Despite its impressive 200 horsepower output, the TSX with manual transmission delivers 21 mpg city/30mpg highway, while the TSX with automatic transmission delivers 22 mpg city/31 mpg highway. Air-assisted fuel injectors, an underfloor catalyzer and a high-flow, low-heat mass exhaust manifold help the TSX achieve LEV-2 emissions status.

To complement its high-adrenaline powertrain with sports car-like handling, the TSX features an extremely rigid unit body structure and a race-bred, 4-wheel-independent double-wishbone suspension. The suspension is track-tuned to reduce lift, dive and body roll and boasts gas-pressurized shock absorbers and large front and rear stabilizer bars. A quick-ratio, variable power assist rack-and-pinion steering system provides outstanding feel and responsiveness and features an anti-kickback valve for reduced kickback on rough roads.

Handling is further enhanced through the application of a Vehicle Stability Assist system (VSA(R)) that works in concert with the braking and drive-by-wire throttle systems to provide enhanced control during acceleration, braking and cornering. This 4-channel system orchestrates the throttle and each of the vehicle's four disc brakes to seamlessly integrate traction control, Anti-lock braking and stability enhancement for increased driver control during acceleration, braking and cornering.

To provide stability and ensure superb stopping power, the TSX is equipped with 4-wheel disc brakes with 4-channel ABS, 17-inch alloy wheels and P215/50R17 Michelin tires.

The body of the TSX offers best-in-class aerodynamics and crisp sports sedan lines. In front, styling cues include a signature 5-sided Acura grille, style lines starting at the top of the front fender flares and gradually rising to the rear, High Intensity Discharge (HID) headlights and large air openings beneath the front bumper, which guide airflow to the radiator. In the rear, the backlight slopes to meet a short, high trunk lid, which terminates sharply to help air separate cleanly off the back of the car at speed. For 2005, heated sideview mirrors have been applied.

The TSX is available in seven exterior colors: Satin Silver Metallic, White Pearl, Nighthawk Black Pearl, Arctic Blue Metallic, Meteor Silver Metallic, Milano Red and Carbon Gray Pearl. For 2005, the Ebony leather interior is available on models with Milano Red exterior.

The five-passenger interior of the TSX is sporty yet refined with modern LED-illuminated instrumentation, intuitive controls, and a long list of standard luxury amenities. The comprehensively equipped TSX features deeply bolstered, perforated leather seating, a leather-wrapped three-spoke sport steering wheel with wheel-mounted audio and cruise control switches, dual-zone automatic climate control, a power moonroof, a 360-watt Acura Premium Sound System (which for 2005 receives standard XM(R) Satellite Radio), power windows and door locks and keyless entry. Standard 8-way power driver's seat adjustment and a tilt and telescopic steering wheel allow the TSX to accommodate a wide range of drivers. For 2005, a 4-way adjustable power passenger seat has been applied for increased comfort.

The Acura Navigation System with Voice Recognition (TM) is available as a factory-installed option. This latest-generation navigation system features an 8-inch touch screen display, a comprehensive destination guide with 7 million points of interest spanning the continental United States, 3-D graphics for freeway on and off ramps and turn-by-turn voice guidance.

In addition to its highly rigid, computer-designed structure, the TSX incorporates a vast arsenal of the latest safety technologies including standard side curtain airbags to help protect vehicle occupants from head and neck injuries in the event of a sufficient side impact. To ensure that the airbag covers the front and rear side windows instantaneously, compressed helium inflators deploy the curtain in a mere 0.015 seconds.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The TSX is also equipped with dual-stage, dual-threshold driver's and front passenger's airbags, and side airbags for the driver and front passenger. The passenger's side airbag uses seven sensors in the seatback and side bolster to determine the height and position of the occupant. If the sensors detect that a child or small-statured adult is leaning into the deployment path of the side airbag, the bag will not deploy.

Like all Acura models, the TSX is covered by a comprehensive 4-year/50,000 mile bumper-to-bumper limited warranty. Additional ownership benefits include Acura Total Luxury Care (TLC), which provides free 24-hour roadside assistance, concierge service, and trip routing.

### 2005 Acura TSX Features

September 1, 2004 -- Torrance, Calif. --

<b>ENGINEERING FEATURES</b>
2.4-liter DOHC i-VTEC(TM) aluminum alloy 4-cylinder engine
200-horsepower at 6800 rpm and 166 lb-ft of torque at 4500 rpm
Drive-by-wire throttle system
Computer-controlled Programmed Fuel Injection (PGM-FI)
Direct ignition system with knock control sensor
Close-ratio 6-speed manual transmission with magnesium alloy case
or
5-speed Sequential SportShift(TM) automatic transmission with Grade Logic Control
4-wheel-independent double-wishbone suspension with multi-link rear
Front and rear stabilizer bars
4-wheel disc brakes with ventilated front discs
4-channel Anti-lock Braking System (ABS)
Vehicle Stability Assist (VSA(R)) with traction control
17-inch alloy wheels with V-rated all-season performance tires
Torque-sensing, variable power-assisted rack-and-pinion steering
LEV-2 exhaust emission control system
110,000-mile tune-up interval
.
<b>INTERIOR FEATURES</b>
<b>SEATING and TRIM</b>
Perforated leather seating
Leather-wrapped sport steering wheel
Heated front seats
8-way adjustable power driver's seat
4-way adjustable front passenger's seat
Driver's and front passenger's seat back pockets
Adjustable driver's seat lumbar support
Adjustable front headrests
Locking 60/40 split fold-down rear seat
Rear seat armrest
Carpeted floor mats

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Ebony or Quartz leather interior with metallic-look trim
Parchment leather interior with wood-patterned trim
.
<b>COMFORT and CONVENIENCE</b>
Power glass moonroof with tilt feature and sliding sunshade
Dual-zone automatic climate control with micron air-filtration system
360-watt Acura Premium Sound System with in-dash 6-disc CD changer and 8 speakers
XM(R) Satellite Radio
Acura Navigation System with Voice Recognition(TM) w/audio and climate control commands (Optional)
Steering wheel-mounted illuminated remote audio controls
Steering wheel-mounted remote cruise control
Manual tilt and telescopic steering wheel
Power windows, power door mirrors and power door locks
Auto-up/down driver's window with auto-reverse feature
Keyless entry system with window controls and panic button
Window controls integrated with driver's door key lock
Leather-covered front center console with sliding arm rest
In-dash CD storage compartment with illumination
Illuminated power window switches
LED-illuminated instrumentation
Dual trip meters
Outside temperature gauge
Overhead map lights
Front and rear dual beverage holders
Interior trunk closing handle
Overhead storage compartment for sunglasses
Door storage compartments
Maintenance interval reminder
Auto-dim day/night rearview mirror
Illuminated driver's and front passenger's vanity mirrors
HomeLink(R) remote control system
Two 12-volt power outlets
Side-window defoggers
Blue LED ambient lighting
Digital clock
.
<b>EXTERIOR FEATURES</b>
Xenon High Intensity Discharge (HID) headlights
Turn signal indicators in side mirrors
Rear window defroster with timer
Printed radio antenna
Galvanized steel body panels
Speed-sensing windshield wipers with mist feature
Heat-rejecting glass



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Auto-off headlights
Remote trunk/fuel door release
Stainless steel door sill plates
Electric trunk switch
Flush-mounted rear glass
Folding side mirrors
Heated sideview mirrors
.
<b>SAFETY &amp; SECURITY FEATURES</b>
Driver and front passenger dual-stage front air bags
Driver and front passenger side air bags with passenger position sensors
Front and rear side curtain air bags
3-point seatbelts for all five seating positions
Front seat belt pretensioners with load-limiters
Lower Anchors and Tethers for Children (LATCH) system on rear outboard seats
Interior phosphorescent emergency trunk opener
Side-impact door beams
Front and rear crumple zones
Sliding front subframe
Panic button on keyless entry system
Theft-deterrent system
Engine immobilizer system

### 2005 Acura TSX- Body

September 1, 2004 -- Torrance, Calif. -- The exterior styling of the TSX sets a course that will be reflected in future Acura sedans. Familiar Acura cues are echoed in the TSX sheet metal, but in an emotional, evocative way that gives the TSX an aggressive, sporting appearance. The cleanly distinctive body form of the TSX also suggests-and rightly so-a strong commitment to aerodynamics.

Underneath the fresh exterior shape is an extremely rigid unit body structure that serves as the foundation for the car's spirited driving demeanor. The use of special high-strength materials and advanced computer modeling provide the TSX driver with a performance experience that fully lives up to the car's visual promise.

In total, the TSX embodies stylish performance and craftsmanship, while bringing substantial added excitement to the Acura line.

#### DESIGN OBJECTIVES

The rigid and aerodynamic body of the TSX is styled to emphasize performance. Its 105.1-inch wheelbase pushes the wheels to the corners of the body to allow more significant interior space, while the rounded cabin serves as an efficient aerodynamic shape. The result is a European-style exterior appearance and maximum interior space.

Overall lines are crisp and taut, with a muscular tension that promises performance in a clear but understated way. In front, there is a signature Acura grille, style lines diverging back along the hood, and low, minimalist High Intensity Discharge (HID) headlamps. Large air openings beneath the front bumper guide airflow to the radiator. Together with 17-inch wheels and tires that fill the wheel arches, the appearance is aggressive and poised.

The body sides have a crisp style line starting at the top of the front fender flare and gradually rising to the rear. Thick C-pillars offer a high level of structural strength and rollover protection while advancing the car's muscular appearance. Chrome-plated door pulls are luxurious in appearance, feel and operation. Exceptionally narrow body gaps speak of precision engineering and attention to detail.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

In back, the rear window slopes at a shallow angle to meet a short/high trunk lid. The trunk lid terminates sharply to help air separate cleanly off the back of the car at high speeds, reducing turbulence and improving stability and fuel economy.

The all-glass windshield reflects UV rays to help cool the interior.

### **STATIC AND DYNAMIC STIFFNESS**

The cornerstone for any sports sedan is its structural stiffness. An immensely strong unit body is required to provide a quiet and squeak-free interior, to allow the suspension to be tuned both for road holding and for a comfortable ride, and to provide the greatest possible crash safety. The Acura TSX unit body was computer engineered and modeled to give the car precisely these traits.

From the very beginning, the goal for TSX stiffness was two of Europe's most successful and respected four-door sedans, the Audi A4 and the BMW 3 Series. The TSX surpasses both these cars in bending and torsional rigidity. Achieving superior rigidity and balance of front/rear stiffness required special attention to the front bulkhead and the area in front of the radiator, below the front fender edges, at the bottom of the B-pillars and the area in and around the C-pillars. But the results were worth the effort, as the TSX offers maximum strength with minimum weight, a body structure highly resistant to squeaks and rattles, extremely sharp handling characteristics, and minimal levels of noise, vibration and harshness (NVH).

### **AERODYNAMIC PERFORMANCE**

Outstanding aerodynamic performance was a primary focus of TSX designers. This pursuit of airflow control paid off on many levels, including interior quietness from wind noise, a low Cd for superior efficiency, and handling stability at high speeds. The aerodynamic drag coefficient of the TSX is among the top in the class, according to internal testing.

The concept behind the tapered front end and rounded cabin of the TSX is to let air flow smoothly around the front bumper side and body sides. Engineers worked to remove the gap between each wheel arch and tire to reduce airflow disturbance. To better control airflow around each wheel and tire, minimizing turbulence, the TSX also has polypropylene inner fenders, engine undercover, mid-floor and a rear floor covers, and air dams located underneath the body at the forward edge of each wheel well.

### **WIND NOISE**

In simple terms, aerodynamic turbulence causes noise and drag. Therefore, the same methodology that improves aerodynamic performance also lowers wind noise inside the passenger cabin. In the TSX, one significant gain comes from the shape of the A-pillars and the outside mirrors. The mirrors incorporate a modest V-angle that helps separate the air over and under the mirror, reducing turbulence and noise.

By studying the airflow through the channel between the mirror and the A-pillar, engineers learned that the speed of the passing air stream through the channel had a pronounced effect on noise levels inside the car. When air accelerates through this channel, it creates high-frequency wind noise. However, shaping this channel as an expanding V-shaped passage opening toward the rear (along with carefully shaping the A-pillar, and contouring and precisely positioning the mirror housing) helps keep air from "peeling" or tumbling across the glass. Eliminating this vortex substantially reduces both mid- and high frequency noises—a reduction of as much as 1.4 dB at some speeds.

Mid- and high-frequency wind noises are very low in the Acura TSX compared to its competitors. Occupants hear the advantage on every drive, but it is particularly beneficial at highway speeds or when side winds are present.

### **LARGE TIRES AND TIGHT FITTING WHEEL ARCHES**

The Acura TSX has generously sized P215/50R17 tires that fill out the wheel arches nicely, giving the car a distinguished, muscular appearance. In addition, close tolerances between the tires and the wheel arches improve both appearance and aerodynamic performance.

### **LIGHTING**



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The TSX comes standard with High Intensity Discharge (HID) low beams and halogen high beams. With their wider beam pattern and roughly 100-foot greater range than ordinary halogen lamps, HID headlights are an effective safety feature. The "color" of the light appears to be somewhat blue compared to conventional headlights with their yellow tinge, but HID headlamps reveal truer colors and provide better clarity than halogen lights. They are three times as efficient as conventional halogen lamps (using less electrical energy) and produce nearly twice the illumination and more than double the bulb life. Aerodynamic wrap around lenses integrate the headlights into the body for efficient aerodynamics and a characteristic Acura "face."

In the rear, separate round brake and turn-signal lamps, tail lamps, and back-up lamps lend a performance-car appearance.

### **GLASS AREA AND VISIBILITY**

Safety and driving enjoyment are both dependent on good outside visibility. The Acura TSX offers 284 degrees of outward visibility. Engineers worked especially hard on making the rear 3/4 view expansive for safety in traffic and to ease parking.

The windshield, backlight and side glass all reduce the penetration of ultraviolet (UV) light into the cabin, creating a more relaxed driving environment and helping to prolong the interior material finishes.

### **POWER GLASS MOONROOF**

The moonroof of the TSX is a point of pride for the Acura engineering team. It starts with a rigid roof structure that permits a solid mounting position for the glass panel and mechanism. The tinted glass panel fits flush with the roof exterior and features a flush seal that reduces the chance of wind noise while improving appearance.

A special linkage and motor are designed to operate quietly. Together with a pop-up air deflector, this makes the moonroof quiet to operate and quiet in operation. A sliding interior sunshade helps keep the interior cool and shade the passengers from unwanted sunlight when the moonroof is closed.

### **MULTIPLEXING**

To simplify wiring and to add functionality to the electrical system, the TSX has multiplexed wiring. With multiplexing, a single wire can carry multiple command signals simultaneously. Each signal carries a unique binary code that is only recognized by the intended target location.

Multiplex wiring makes features like the programmed instrument and interior illumination and keyed and keyless power window control possible. It also dramatically reduces wiring complexity, cost and weight, while improving electrical-system reliability and durability.

### **DOOR CLOSING SOUND**

Some of the most powerful luxury cues a car can give its owner are almost completely subconscious. One example is the sound of a door closing. Acura engineers methodically refined the design of the door sashes of the TSX (the surrounding door structure) to reduce high-frequency resonance excited when the doors are closed.

The door latches themselves are carefully engineered to latch securely with a light closing pressure, and to emit a quality sound.

Acura engineers also designed a special "bumping door seal" that purposefully transmits a certain low-frequency vibration to the door itself. This desirable vibration is heard as a substantial sound as the door closes, evoking the impression of substance and quality.

Even tiny details like a door checker—the mechanism that limits the door's maximum opening—play a part in perceptions of quality. That's why the TSX doors use a type of checker that lets the door open more fluidly, yet has a pronounced detent at intermediate, partially open positions.

### **COLOR PALETTE**





Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The TSX is available in seven exterior colors: Satin Silver Metallic, Premium White Pearl, Nighthawk Black Pearl, Arctic Blue Metallic, Meteor Silver Metallic, Milano Red and Carbon Gray Pearl.

#### NVH MEASURES

Engineers attacked noise, vibration and harshness (NVH) from all quarters when designing the TSX. In front, the engine/suspension subframe uses a vibration-canceling structure and highly rigid aluminum engine mounts to help keep engine and road vibration from entering the passenger cabin. The rear suspension subframe uses stiff construction and beefy box-section dimensions to reduce the transmission of road shock and vibration.

Interior quietness is also enhanced through the use of a special sound-absorbing roof lining and urethane molded floor liner, instrument panel and rear wheelhouse insulators. Additional measures include an under-hood insulator, special noise insulation in the front fender bulkheads, a rear tray (parcel shelf) insulator, and a "melt sheet" sandwich panel in the dashboard. An array of polypropylene underbody panels reduce road noise as well as direct airflow.

#### ENGINE MOUNT SYSTEM

Since the engine is the heaviest concentrated component in a vehicle, and the source of significant vibration, the mounting system that supports it has a profound effect on interior noise levels, handling and overall driving characteristics. Isolating the engine from the body with "soft" mounts can make for good NVH characteristics, but wreak havoc on handling and driveline performance as the engine moves on its mounts. Conversely, locking the engine in place (like in a racing machine) is the best from a handling standpoint, but guarantees unbearable NVH performance. For the TSX, neither extreme was appropriate. The TSX uses a carefully orchestrated system of six mounts to combine impressively high levels of isolation with stable engine placement for precise handling.

Two mounts are placed below the TSX engine's center of gravity, and attach the engine to the front subframe, which itself is isolated from the car's body by bolted rubber mounts. The forward-most of these two "center of gravity" engine mounts is an electronically controlled hydraulic unit with variable dual-mode stiffness. It switches between a setting optimized for damping vibration at idle, and another firmer setting for higher speeds and rougher roads. The rear most of the center of gravity mounts is a non-adjusting hydraulic unit.

To keep the engine properly positioned during severe maneuvering, another electronically controlled dual-mode mount is placed high on the right side of the engine to tie it to the body structure. Finally, to carry the weight of the transmission and limit powertrain movement, a series of three mounts position the transmission.

#### ANTI-CORROSION MEASURES

The Acura TSX is built from the unit body up to resist corrosion over the years and miles. This process begins with the use of galvanized steel throughout the unit body, which provides excellent resistance to corrosion. Once assembled, the galvanized unit body assembly is immersed in an electroplating bath, seams are filled with highly durable sealants and key underbody areas receive anti-chipping coatings. Only then is the body primed and painted with the top coats.

The Acura TSX body is covered by a 5-year/unlimited-mile limited warranty for outer body rust-through.

#### 2005 Acura TSX Specifications

September 1, 2004 -- Torrance, Calif. --

<b>POWERTRAIN</b>	
Engine Type	16-valve, DOHC, 2.4-liter, i-VTEC 4-cylinder
Horsepower, SAE Net	200 hp @ 6800 rpm
Torque, SAE Net	166 lb-ft @ 4500 rpm

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Redline	7100 rpm
Bore & Stroke	87 mm x 99 mm
Displacement	143.6 cu. in. (2354 cc)
Compression Ratio	10.5:1
Induction System	Programmed Fuel Injection (PGM-FI)
Valvetrain	i-VTEC intelligent Variable Valve Timing and Lift Electronic Control (VTC), DOHC, 4-valves-per-cylinder, chain-driven camshafts and variable timing control
Engine Block	Aluminum alloy with cast-in iron liners
Cylinder Head	Aluminum alloy with 4 valves-per-cylinder and pent-roof combustion chambers
Emission Control	LEV-2 (Low Emissions Vehicle-II)
Ignition System	Direct ignition system
Alternator	105 amp. max
Battery	12V, maintenance free
Recommended Fuel	Premium Unleaded
Layout	Transverse-mounted, front engine, front-wheel-drive
<b>Transmission</b>	
6-speed manual Ratios (:1) 1st 3.267 2nd 1.880 3rd 1.355 4th 1.028 5th 0.825 6th 0.659 Reverse 3.583 Final 4.7	5-speed Sequential SportShift automatic Ratios (:1) 1st 2.652 2nd 1.517 3rd 1.082 4th 0.773 5th 0.566  Reverse 2.000 Final 4.44
<b>CHASSIS</b>	
Body Type	Steel unit body
Front Suspension	Independent, double-wishbone with coil springs and stabilizer bar
Rear Suspension	Independent multi-link double-wishbone with coil springs and stabilizer bar
Shock Absorbers	Telescopic, hydraulic nitrogen gas filled
<b>Stabilizer Bars</b>	
Front Rear	25.4 mm x 4.5 mm wall thickness 15 mm solid
Steering Type	Torque-sensing, variable power assist rack-and-pinion
Steering Ratio	14.8:1
Steering Wheel Turns (lock to lock)	2.7

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Turning Circle (curb to curb)	40.0 feet
Wheels	17x7JJ 7-spoke alloy wheels
Tires	Michelin P215/50R17 all-season high-performance
Braking System	4-wheel disc brakes with 4-channel ABS
Front Discs	Ventilated, 11.8 in (300 mm) diameter x 28 mm thickness
Rear Discs	Solid 10.2 in (260 mm) diameter x 9 mm thickness
Anti-lock Braking System (ABS)	4-channel
Vehicle Stability Assist (VSA)	Throttle control and brake control utilizing yaw, lateral g, speed and steering sensors for traction control and stability enhancement
Traction Control System (TCS)	Incorporated into VSA
<b>CAPACITIES</b>	
Crankcase	5.3
Cooling System	MT 7.4 U.S. qt. AT 7.3 U.S. qt.
Fuel Tank	17.1 gallons
<b>Volumes</b>	
Passenger	91 cu. ft.
Cargo	13.0 cu. ft. without Navigation System 12.8 cu. ft. with Navigation System
Total	104 cu. ft. without Navigation System 103.8 cu. ft. with Navigation System
<b>FUEL ECONOMY</b>	
EPA Fuel Mileage-City/ Highway	Manual: 21/29 Automatic: 22/31
<b>EXTERIOR DIMENSIONS</b>	
Wheelbase	105.1 inches (2670 mm)
Track, front	59.6 inches (1515 mm)
Track, rear	59.6 inches (1515 mm)
Overall Length	183.3 in (4657 mm)
Overall Width	69.4 in (1762 mm)
Overall Height	57.3 in (1456 mm)
Minimum Ground Clearance	4.7 in (Full-Load) 6.2 in (Unladen)
Curb Weight MT without Navigation System MT with Navigation System AT without Navigation System AT with Navigation System	3230 lbs 3241 lbs. 3318 lbs. 3329 lbs.
Weight Distribution (%front/rear) MT AT	60/40 61/39
<b>INTERIOR DIMENSIONS</b>	
Front	
Head Room	37.8 in (960 mm)
Leg Room	42.4 in (1076 mm)
Hip Room	54.4 in (1381 mm)

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Shoulder Room	55.4 in (1406 mm)
Rear	
Head Room	37.3 in (947 mm)
Leg Room	34.2 in (868 mm)
Hip Room	54.4 in (1382 mm)
Shoulder Room	53.5 in (1360 mm)
<b>WARRANTIES</b>	
Vehicle	4-year/50,000-mile limited warranty
Outer Body Rust-Through	5-year/unlimited-mile limited warranty
Acura Total Luxury Care (TLC) with roadside assistance	4-year/50,000 mile

## 2005 Acura TSX- Chassis

September 1, 2004 -- Torrance, Calif. -- The Acura TSX is more than Acura's entry sedan. It is a responsive, balanced, sharp-handling sports sedan that is designed to compete on equal terms with Europe's best -whether front-drive, rear-drive or all-wheel drive. This capability begins with impressive unit body stiffness, which allows the precise tuning of the double-wishbone front and rear suspension systems for maximum responsiveness, flat cornering, and high-speed stability.

### GOALS AND BENCHMARKS

The ride, handling and stability targets for the Acura TSX were to be better than the most respected compact sport sedans of Europe. As explained in the previous body section, this high performance level required an especially stiff unit body structure to enhance ride and handling precision as well as crash safety. This robust structure makes it possible to tune the suspension for a responsive, satisfying sport driving experience-not to compensate for body flex and resonance.

In today's sophisticated sport sedan market, one of the greatest challenges is in finding a balance that offers sports-car like handling, reassuring high-speed stability and abundant comfort for passengers at all times. To accomplish this, Acura chose independent double-wishbone front and rear suspension with a combination of steel and aluminum components and specific geometry designed to control lift, dive and body roll. The result is exceptional dynamic performance and stability at all speeds, a very comfortable ride, and greater confidence and enjoyment for the driver and passengers. Even as it approaches its high ultimate cornering limits, the TSX responds accurately to steering and throttle inputs.

### FRONT SUSPENSION

The TSX front suspension is a double-wishbone system with sport-tuned shock absorbers and stabilizer, and a shock-tower bar. This set up provides quick response and precise suspension geometry control throughout its range of travel. This is evident when the TSX is driven hard through uneven or undulating corners. The car remains balanced and composed in an environment where even some premium European products become unsettled.

Computer-developed front suspension geometry allowed TSX designers to build in subtle handling enhancements. The TSX has pronounced steering self-centering to improve high-speed stability and lane control. There is also an anti-dive aspect to the geometry to keep the TSX from pitching forward excessively during hard braking, so the car feels more composed. Anti-lift aspects minimize excessive front end lift during hard acceleration. Subtle changes to front wheel toe control while cornering and braking simultaneously further improve vehicle stability. A special compliance bushing located at the front of the front suspension subframe allows controlled fore-aft compliance under rough road conditions, netting superior ride quality. Both front and rear suspension systems use coil-over shock absorbers that offer quick response and particularly high rebound damping rates, coupled with relatively firm springs. As the stiffer springs compress, this stronger rebound damping is required to control the spring energy as it is released. Extensive on-road and racetrack testing in Europe, America and Japan was used to find the ideal suspension tuning balance between sporting performance and ride comfort.

### REAR SUSPENSION

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

In keeping with the goals of sporty handling for TSX, a 5-link rear suspension design is employed. The system utilizes an aluminum knuckle and double tubular wishbones. The light aluminum knuckle yields a weight reduction of 13.2 lbs. while providing 50 percent greater rigidity over iron. One benefit of the lighter knuckle is better ride quality. Because it has less "unsprung" weight, the suspension is more responsive to road roughness.

Like the front suspension, the system uses anti-dive geometry that helps keep the TSX stable-and the passengers more comfortable-during hard braking. Built-in toe control geometry helps optimize vehicle stability during corner turn-in, while a high level of roll stiffness, provided by a stabilizer bar, also helps the TSX remain stable during hard cornering by minimizing body roll.

Acura engineers adjusted the rear suspension "roll center" (the theoretical axis around which the car "rolls" or leans while cornering) to be as close as practical to its center of gravity (the height at which the vehicle's weight is effectively centered). This enhances the responsiveness and helps the TSX body to remain flat during sharp maneuvering.

## **POWER RACK-AND-PINION STEERING**

There were three primary goals in developing the quick-ratio power rack-and-pinion steering system: reduce resistance in the system, improve linearity of steering response, and reduce steering-wheel kickback on rough roads. Here's how these objectives were accomplished.

- A lighter feel was obtained by tightening the tolerances in the rack-and-pinion assembly and adopting a steering damper with a variable-damping feature.
- Improving the stiffness of the steering mounting bushing and subframe yielded a more linear steering response on-center by reducing variance in the mounting assembly.
- To reduce kickback, a special variable hydraulic valve was incorporated into the steering gearbox valve housing. The valve works to absorb sudden shock in the steering system such as caused by potholes. It markedly reduces the kickback torque to the steering wheel in such instances.

## **P215/50R17 TIRES**

The standard P215/50R17 93V MXM4 M+S all-season high-performance tires on the TSX provide an impressive combination of ride and handling. Jointly developed by Acura and Michelin, these tires also promote fuel efficiency through reduced rolling resistance. The tires mount on 17x7-inch aluminum wheels to visually fill the wheel arches, giving the TSX a more aggressive, muscular appearance.

## **BRAKING**

The TSX has 4-wheel disc brakes with large 11.8-inch ventilated front rotors and 10.2-inch solid rear rotors designed to provide exceptional braking feel. A 4-channel anti-lock braking system is standard.

To achieve a solid brake pedal feel, engineers used three main strategies:

- A low 2.6:1 pedal ratio is used, together with a small 20.6 mm master cylinder piston. This reduces pedal travel and provides better brake "feel."
- A lighter and more powerful single (instead of tandem) master power vacuum unit improves stopping power.
- Ultra-stiff front brake calipers that reduce flex and require 8-percent less pedal stroke.

These components provide the TSX with a state-of-the-art braking system that delivers in a firm, confidence inspiring pedal feel with excellent braking effect, even in severe conditions.

## **VEHICLE STABILITY ASSIST**

Vehicle Stability Assist (VSA) is standard on every Acura TSX. It uses anti-lock braking system (ABS) technology, together with lateral acceleration sensors, wheel-speed sensors, steering position sensors and a dedicated microprocessor to detect wheel slip (understeer or oversteer). This helps the driver control the vehicle through a



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

nearly instantaneous reduction in engine output (through the drive-by-wire throttle control) or the rapid pulsing application of one or more brakes as appropriate.

For example, if the driver enters a corner too quickly and the vehicle's front wheels begin to slip (understeer), VSA almost instantly detects the situation and interprets it as understeer. VSA then reduces engine torque and selectively applies the brake on the inner front and rear wheels to help counter the understeer and enhance the driver's control. The correction happens so quickly and so seamlessly that the situation is often resolved before the driver is even aware of it.

Another potential scenario involves a traction loss at the rear wheels, such as might be encountered when cornering on a dirty road or when encountering black ice. VSA detects the rear tires beginning to slip and quickly applies the outer front and rear brakes to counter the unwanted yawing motion and help restore control to the driver.

VSA is armed automatically when the TSX starts. Any time the system is triggered, an instrument-panel-warning lamp alerts the driver that VSA is operating. The system can be switched off completely via an instrument-panel-mounted switch.

The VSA system also handles traction control functions, enabling the vehicle to start and climb hills on low-friction surfaces with much greater ability and controllability. It utilizes ABS technology to sense wheel spin on the front (drive) wheels, then implements individual brake application and drive-by-wire throttle control to restore traction. The benefit is greater security and active safety during winter snow driving or on other slippery surfaces including sand or water.

## **2005 Acura TSX- Interior**

September 1, 2004 -- Torrance, Calif. -- Slide into the TSX driver's seat, and the purposeful nature of the cockpit immediately becomes apparent. This is a driver's car. Benchmarked throughout its development against some of the world's best sports sedans, the TSX interior is a study in driving efficiency. Instruments are modern and concise, and all controls have a satisfying mechanical feel. The result is that you quickly feel at home and in complete control.

The TSX is more than just a hard-edged sports sedan; the fit and finish of the materials transcend the class. From the supportive perforated leather seating, to the dual automatic climate control system to the 360-watt Acura premium sound system, there is a tangible feeling of quality here. For 2005, the TSX receives XM(R) Satellite Radio, Heated door mirrors and a 4-way power adjustable passenger seat.

### **INTERIOR AT-A-GLANCE**

- Cockpit designed for performance driving
- Large, easy-to-read LED backlit analog instruments
- Small-diameter, leather-wrapped 3-spoke steering wheel with tilt and telescope feature
- Leather-trimmed seats
- Supportive, performance-oriented front bucket seats
- 8-way power driver's seat with adjustable lumbar support for superior comfort
- New for 2005, 4-way power adjustable passenger seat
- Comprehensive luxury features, including automatic dual-zone climate control system, power windows, power door mirrors, and keyless entry system
- 8-speaker, 360-watt Acura Premium Sound System with 6-disc in-dash CD changer
- Comprehensive safety features including side curtain airbags (see the Safety section for information on all TSX safety features)
- XM Satellite Radio
- Roomy interior with seating for five passengers
- Blue LED ambient lighting
- 60/40 locking split-folding rear seatback
- Homelink(R) remote control system
- Keyless entry system with window controls, panic button and entry callback chirp

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

- A high level of interior finish, including a "seamless" passenger airbag cover that blends into the instrument panel
- Available Acura Navigation System with Voice Recognition

## **STYLING**

The sporting focus is immediately apparent in the TSX interior layout. Driver controls include large analog instrumentation and a thick-rimmed, small-diameter steering wheel with important controls integrated into its tapered spokes. Breathable perforated leather upholstery is standard. Metallic-look accents on the steering wheel compliment a sweeping accent band runs from door to door across the instrument panel. In cars with Parchment leather interiors, this accent band is finished in a warm wood pattern, while both the Ebony and Quartz interiors have an accent band with a satin alloy finish.

## **DRIVER-ORIENTED COCKPIT**

The cockpit is the focal point of the driving experience in any sports sedan, and in the TSX, great care was taken to ensure that the control layout was functional and natural feeling. The supportive sport-oriented seating lays the foundation for positive vehicle control. With 8-way power driver's seat adjustment, and tilt and telescoping steering wheel, the TSX can accommodate diverse body types. A single lever controls both the tilt and telescopic functions; the telescopic range is 1.6 inches, and a special resin coating on the moving parts allows light, smooth operation. Large format instrumentation, audio and climate controls keep the focus on driving, not on deciphering confusing displays. Controls-particularly the standard 6-speed manual shifter-deliver positive tactile feedback.

## **LEATHER-WRAPPED STEERING WHEEL**

With its thick leather-wrapped rim and clean 3-spoke design, the TSX steering wheel is functional and beautiful. Frequently used control functions are integrated into the wheel for fingertip control. On the left spoke, there are audio controls set into the alloy-finish trim. A switch allows the volume to be adjusted up and down, while another switch lets you move forward or back through present radio stations or tracks on a CD. The "mode" button lets you toggle through AM, FM and CD audio sources.

Cruise-control functions are positioned on the right spoke within easy reach. A pair of devoted buttons control main cruise control power and "cancel." A switch chooses between resume/accelerate and decelerate/set. On cars equipped with the Acura Navigation System with Voice Recognition, a voice control switch (pressed by the driver when making voice commands) and a "cancel" switch are located on the lower left side of the steering wheel.

## **PERFORMANCE ENGINEERED FRONT BUCKET SEATS**

Seating is a key element of well-engineered sports sedans. The driver in particular needs to feel secure and connected with the vehicle to read the dynamic information the chassis and powertrain convey. The TSX driver's seat is engineered to deliver this sense of connection and control. Scaled to fit a wide range of body shapes, this 8-way power adjustable seat was designed using the best European seats as benchmarks. Lateral support is superior to that typically found in European sport sedans and special effort went into engineering the seat base and spring system to provide very stable support for the driver's pelvis.

For proper lumbar support regardless of the driver's body type, the driver's seat backrest lumbar mechanism is adjustable via a lever mounted on the right side of the seat back. The mechanism provides the correct amount of lumbar support needed, without the "sharp edged" feel that some less sophisticated mechanisms have.

New for 2005, the TSX is equipped with a 4-way power adjustable front passenger bucket seat.

## **LED INSTRUMENTATION**

Large analog instrumentation keeps the driver informed and in touch with the vehicle. The LED backlit instruments have a sophisticated, technical look. Progressive illumination of the gauge package gives the TSX cockpit a welcoming feel. When the door is first opened, the instrument lighting comes on at 10 percent brightness; when the key is put in the ignition, the brightness progressively increases to 100 percent in one second. When the ignition is turned on, the illuminated instruments come alive, indicating that all systems are up



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

and running. At the end of the drive, the process reverses. For 2005, both the audio and cruise control buttons on the steering wheel will also be illuminated and change from silver to black.

#### BOTTOM-HINGED ACCELERATOR PEDAL

Small details can have a pronounced effect on a driver's feeling of connection and control. To this end, the TSX has a bottom-hinged accelerator pedal. By offering a more linear feel and more natural motion, in conjunction with the engine's drive-by-wire throttle control this pedal allows finer control.

#### INTERIOR ROOM

The TSX is classified as a Compact car by the EPA, but its efficient packaging nets useful room where it is most appreciated by passengers. Foot room for both the driver and front passenger is substantial. Generous headroom-even in the back seat-means that even tall passengers can get comfortable in the TSX.

#### CARGO CARRYING VERSATILITY

By the standards of the class, the 13.0 cubic foot TSX trunk (12.8 cubic foot in TSX models with navigation system) is accommodating and versatile. The trunk lid can be opened with the keyless remote fob, or when the doors are unlocked, by pressing a hidden electric opening switch just above the rear license plate. Widely spaced hinges make access easy, and when closed, the hinges disappear into slots in the finished trunk lining and do not intrude on cargo space. The wiring for the power trunk-lid release and license plate light is completely hidden to improve trunk appearance.

With the flat load floor and a wide 44.9-inch opening, there's room for four medium-sized suitcases, four golf bags or even a folding wheelchair in the fully lined trunk. If you need even more space, the lockable 60/40 split-folding rear seatback can be lowered to mix cargo and passengers to suit the mission.

For security, a valet key is provided that will allow a parking attendant to operate the ignition, but not to open the glove box, trunk, or to unlock and fold the rear seatback.

#### COMFORT AND CONVENIENCE ITEMS

Throughout the TSX interior you'll find useful comfort and convenience features that make day to day driving more pleasant. Front and rear cup holders accommodate even large drinks, and numerous convenient storage bins and compartments are positioned throughout the interior, including seatback map pockets and in-door storage. Overhead sunglasses storage keeps your glasses protected when not in use. The padded, leather covered center armrest adjusts fore and aft to suit the driver; lift the lid and there's a 12-volt power outlet as well as room for CDs, a cell phone and plenty of other items. There's a leather-wrapped center armrest in the back seat too.

Heated front seats provide a welcome comfort on cold days, while a subtle ambient light in the ceiling-mounted overhead console illuminates the center console area with soft blue glow whenever the headlights are switched on. There is also a blue cascade light on the center panel above the enclosed storage area. The door-mounted window switches are illuminated to make them easy to locate at night. Twin 12-volt power outlets allow the use of auxiliary electronics while a HomeLink(R) remote system allows controlling up to three home electronic devices remotely from inside the car.

#### HIGH QUALITY INTERIOR FINISH

The TSX interior combines purposeful sporting functionality with decidedly upscale appointments. Subtle details in the interior fit and finish set it apart from the norm. The handsome instrument panel covering is created using a spray-formed urethane skin technology that eliminates PVC (which is difficult to handle during manufacturing and to eventually dispose of at the end of the vehicle's life). The material is less environmentally damaging to manufacture and allows the passenger-side airbag to be completely concealed. A laser-cut tear-line on the hidden underside of the instrument panel cover is invisible from the interior of the car, but provides a swing-open lid for the airbag should it deploy.





Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

Throughout the interior, soft materials are used everywhere a passenger is likely to touch, including padded leather door armrests, a leather wrapped steering wheel, and soft-touch interior door grab handles. The window pillars are finished in soft fabric, not plastic. The standards of interior fit have been raised, and fasteners have been carefully concealed.

#### **DUAL-ZONE AUTOMATIC CLIMATE CONTROL SYSTEM**

A standard dual-zone automatic climate control system ensures that the TSX driver and front passenger have precisely the driving environment they like. This automatic system has simple, intuitive controls and dual digital displays to indicate the set temperature. On cars equipped with the Acura Navigation System with Voice Recognition, key HVAC systems functions can be accomplished via voice commands.

#### **INJECTION MOLDED URETHANE FLOOR LINER**

A special one-piece injection-molded urethane mat lines the entire passenger compartment beneath the carpet, and cuts noise while providing a softer more luxurious floor surface. The mat's flat design frees up more useful interior space. Molded to seal the area under the front seat tracks, the mat has a more finished appearance and improves efficiency of the climate control system by smoothing airflow under the seats.

#### **INTERIOR COLOR & TRIM COMBINATIONS**

The TSX has standard perforated leather seating that is comfortably breathable. Based on exterior color, three different interior color combinations are available; all have a black upper instrument panel and center console top. With Parchment leather upholstery, the accent band that wraps from door to door is finished in a warm wood pattern. Ebony and Quartz leather upholstery comes matched with an alloy-finish accent band.

#### **KEYLESS REMOTE ENTRY**

An enhanced keyless entry system gives the TSX driver greater convenience and capability. The FM radio frequency key fob is resistant to strong electrical fields and interference. With a single push of the unlock button, it unlocks only the driver's door; a second push unlocks all the doors. If you hold the unlock button down for more than one second after unlocking all doors, all the windows open to ventilate the car's interior.

The key offers the same functions when it is placed in the lock on the driver's door. One twist unlocks only the driver's door; a second twist unlocks all the doors. Hold the key in the unlock position for more than one second, and all the windows begin to open; return the key to the normal position and the windows stop. When leaving the car, all open windows can be easily rolled up by holding the key in the "lock" position. For 2005, the keyless callback entry notification has been updated from a horn to a chirping sound.

#### **PREMIUM SOUND SYSTEM**

To deliver a high performance listening experience the TSX has a specially designed Acura premium sound system as standard equipment. The head unit is designed for simple, intuitive operation and incorporates an AM/FM tuner and a 6-disc CD changer. The amplifier section has eight devoted 45-watt amplifiers that deliver a total of 360 watts to eight speakers-more than enough power to handle the most demanding music.

To create clear imaging, a pair of 1-inch soft-dome tweeters is positioned near the top of the instrument panel; a 6.5-inch polypropylene-cone neodymium full-range speaker is located in each of the four doors. On the rear deck there are two 6 x 9-inch polypropylene-cone ferrite drivers. Tuned for the unique acoustics of the TSX cabin, this system is designed to deliver exceptional sound quality and accuracy at all seating positions.

Remote audio controls on the 3-spoke steering wheel put commonly used functions within easy reach of the driver. On cars equipped with the Acura Navigation System with Voice Recognition, select sound system functions can be accomplished via voice commands.

For 2005, XM Satellite Radio has been added as a standard feature. XM Satellite Radio lets TSX drivers listen to over 100 digital channels, many of which are commercial-free, with near-CD quality. Programming includes 70 music channels, 30 channels devoted to sports, talk, children's programming and entertainment, and one premium channel, which is available for an additional fee. A 90-day complementary subscription is included.

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

## **ACURA NAVIGATION SYSTEM WITH VOICE RECOGNITION**

The latest generation of Acura Navigation System makes its debut on the TSX, featuring an expansive 8-inch display, over seven million points of interest database and expanded voice-recognition capabilities. Available as a factory option on the TSX, the Acura Navigation System with Voice Recognition sets the standard for functionality and ease of use.

### **Acura Navigation System Features Summary**

- 8-inch screen
- Fast route calculation and search speed (3.0 sec. for points within 100-mile radius)
- Voice Recognition function minimizes need for keyboard entry
- Comprehensive destination guide has over seven million points of interest. Guide provides a business and recreation directory of virtually the entire continental United States complete with local addresses and business phone numbers. Categories include restaurants (searchable by type of cuisine), lodging, shopping, airports, hospitals, recreation areas and much more.
- 3-D turn-by-turn graphics for freeway on- and off-ramps make directions easy to understand
- Enhanced split screen mode provides additional route information
- Voice Recognition is linked to audio and climate control systems
- Day/Night visualization modes with user-selectable screen appearance
- Enhanced menus and improved surface street mapping
- Turn-by-turn voice guidance in either male or female voice (can be turned off at any time)
- Destination memory recalls current trip addresses and previous destinations

The Acura Navigation system tracks the vehicle's position via a GPS (Global Positioning System) antenna on the rear parcel shelf. If the antenna is obstructed by a tunnel, parking garage or tall building, an internal gyroscopic system and a speed sensor track the location of the vehicle so that the map information remains current and reliable until satellite reception is restored.

The system's ECU and updateable DVD database is located in the trunk; the large LCD touch screen is positioned high in the center section of the instrument panel where it's easy to see and reach. The Voice Recognition microphone is positioned in the front overhead map-light console, with the activation switch within fingertip reach on the steering wheel. Spoken directions from the system are played over the TSX sound system in a driver selectable male or female voice. To make on-screen directions easy to follow, the TSX Navigation System features a simultaneous "map view" and "3-D" route visualization.

### **VOICE RECOGNITION CAPABILITIES**

Acura Navigation Systems have long been praised for their simple operation and the system in the TSX is designed to advance that tradition further still. The system can be controlled three different ways: by voice, via the touch screen or with the joystick positioned next to the display.

To control the system by voice, the driver presses the "talk" button, located on the steering wheel. The system recognizes spoken commands such as "find nearest gas station," "find nearest ATM" or "find nearest Italian restaurant." Developed jointly by IBM and Honda R&D, the Acura Voice Recognition System has a vocabulary of approximately 150 commands and can recognize virtually any English-spoken accent.

The driver or passenger can also control the system via the touch screen by choosing menu options or spelling out a word (e.g., an address, business name or place) through a touch-sensitive on-screen keypad. (The keypad can be set to alphabetical or a common typewriter style layout.) Alternatively, the joystick can be used to select menu options or to select specific letters on the keypad to complete a word. A matte finish is used on the display to reduce glare and smudging.

A single DVD contains information for the entire United States so there are no regional CDs to contend with. Updates to the navigation system can be made by installing an updated DVD (available on-line or by calling a toll-free number).

# AUTO SPIES

Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

## 2005 Acura TSX- Safety

September 1, 2004 -- Torrance, Calif. -- The TSX uses the latest technologies to offer substantial enhancements to overall safety. But safety begins with the dynamic traits of the vehicle-in other words, how the vehicle can help its driver *avoid* an accident. In the TSX, such "active safety" or accident-avoidance capabilities include standard Vehicle Stability Assist (VSA) with traction control and anti-lock braking system (ABS). All play an integral role in the car's high safety marks.

When an accident is unavoidable, passive safety engineering provides for occupant protection. TSX passive safety begins with the vehicle's structural rigidity-its engineered-in crumple zones and sliding front subframe-and extends to front seatbelt pretensioners and load-limiters, and to its system of airbags. These include front SRS dual-stage/dual-threshold airbags, side airbags with position sensors on the passenger side, and side curtain airbags.

### CRASH SAFETY OBJECTIVES

All of these technologies were designed to provide Acura TSX passengers with these projected ratings:

- Front NCAP (35 mph) = 5 Star
- Offset IIHS (40 mph) = Good
- Side impact (38.5 mph SINCAP) = 4 Star

### SIDE IMPACT RATING

Besides the front offset test, one of the toughest crash-test targets in the automotive business is the side-impact test. The 2005 Acura TSX excels in side-impact (38.5 mph SINCAP) testing with a projected 4 Star rating. To accomplish this, Acura used high-tensile steel around the front passenger compartment that extends behind the B-pillars (center roof pillars).

Increasing side crash protection ability in a 38.5 mph SINCAP test required using high-tensile steel and strengthening the joints around the passenger compartment. This special steel is used in 53 percent of the unit body frame. The result is the extremely high capability to absorb and distribute energy forces in a side impact and other collisions. Of particular note are two extremely strong cross-member stiffeners (under the front seats and rear floor) that markedly enhances resistance to side impacts.

### SAFETY FEATURES

Following is a summary of the impressive array of TSX safety and security features.

- Dual-stage, dual-threshold front airbags
- Driver and front passenger's side airbags
- Position-sensing front seat passenger side airbag
- Side curtain airbags for all outboard seating positions
- Front seat-belt pretensioners with load-limiters
- Side-impact door beams
- Front and rear crumple zones
- Sliding front subframe
- Lower Anchors and Tethers for Children (LATCH) system
- Theft-deterrent system
- Engine immobilizer system

### DUAL-STAGE, DUAL-THRESHOLD FRONT AIRBAGS



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

The TSX is equipped with dual-stage, dual-threshold airbags for the driver and front passenger. These airbags are designed to minimize the potential for airbag injury while providing head and chest protection for the occupants in the event of a collision.

The TSX front airbags deploy at one of two rates depending on the severity of a crash and seatbelt usage.; During a lower speed collision, the airbag inflators are triggered in sequence, resulting in slower overall airbag deployment with less initial force.; During a higher speed collision, both inflators operate simultaneously for full, immediate inflation, to correspond with the greater impact force.

### **SIDE AIRBAG SYSTEM**

The airbags are located in the outboard seat side bolsters and deploy when sensors detect that a side impact is occurring. To prevent injury to a small child or small-stature adult, an innovative passenger position sensing system prevents side airbag deployment if the passenger is leaning into the side airbag deployment path. A total of seven sensors in the passenger seatback determine the height and position of the occupant; this helps the system determine if it is safe to deploy the side airbag. When the passenger returns to an upright seating position, the side airbag will reactivate so it can deploy and help protect the passenger in a side impact.

### **SIDE CURTAIN AIRBAGS**

The goal of the side curtain airbags is to help reduce head injury in a sufficient side impact. The side curtain airbag module is located in a long, slender compartment positioned along the roofline inside the vehicle. Because the airbag module extends from the A-pillar to the C-pillar, it protects both the front and outboard rear passengers.

Side-impact sensors located below the B-pillar, behind the rear seat area, and the main Supplemental Restraint System (SRS) sensor unit work together to signal a side curtain airbag deployment. A gas generator located in the C-pillar inflates the airbag via a channel in the roofline.

Deployment for the side curtain airbags is extremely quick-deployment takes less than 15 milliseconds (.015 sec.), whereas most competitors' side curtain airbags take more than 20 milliseconds to deploy. In addition, the TSX offers a larger side curtain airbag effective area, lower bag pressure and longer bag stroke, all in the interest of providing superior protection.

### **SEAT BELTS**

The front seat belts include two advanced technologies: seat-belt pretensioners and load-limiters. In the first few milliseconds following an impact, the seat-belt pretensioners automatically tighten the seat belts, since seat belts that are firmly secured around the passengers provide better protection. But if the deceleration forces rise above a predetermined threshold, the front seatbelts are designed to stretch to further mitigate deceleration forces on the body. The combination of seat-belt pretensioners and load-limiters, in conjunction with airbags, has been proven to be the best passive safety technology yet available.

### **LOWER ANCHORS AND TETHERS FOR CHILDREN (LATCH) SYSTEM**

The TSX has a Lower Anchors and Tethers for Children (LATCH) system in the rear seat area. LATCH features ready-to-use attachment points that allow compatible child safety seats to be installed without using the vehicle's seat belt system.

### **FRONT AND REAR CRUMPLE ZONES**

The TSX has advanced the use of deformable crumple zones. Together with the passive safety devices inside the car, these crumple zones contribute substantially to the high projected government crash-test ratings of the TSX. The crumple zones consist of supercomputer-modeled areas designed to provide progressive resistance to impact forces. The front and rear of the car are designed to deform in a collision to safely disperse collision forces, thereby slowing the deceleration of the passenger cabin in a controlled fashion. The sophisticated computer simulations allowed engineers to design structures that spread the impact forces through the floor of the unit body.



Internet preparation by [www.AutoSpies.com](http://www.AutoSpies.com)

### **SLIDING FRONT SUBFRAME**

In the event of a severe frontal collision, the sliding front subframe that holds the engine and front suspension moves rearward, helping to disperse crash energy. A 3.9-inch increase in the "crush stroke" (the distance that the sliding front subframe moves) over previous standards was made possible by collapsing the parts that join the subframe to the main frame.

### **ANTI-THEFT FEATURES**

To thwart would-be thieves, the TSX offers a wide array of security features including an electronic engine immobilizer. Security is also advanced by the use of reinforced door lock cylinders to help thwart break-ins, and protectors for the hood and trunk locks (located below front of the hood and inside trunk lid, respectively).

### **2005 Acura TSX- Environmental Sensitivity**

September 1, 2004 -- Torrance, Calif. -- One of the engineering goals for the Acura TSX program was to help protect the environment. Appropriately, in engineering and building the TSX, engineers sought various methods to make the vehicle more efficient, cleaner in operation and more completely recyclable.

Some of Acura's specific accomplishments include:

- Weight reduction

Reducing overall vehicle weight reduces the energy required to power the vehicle. Lightweight components include a magnesium manual transmission case (25-percent weight reduction), aluminum rear suspension knuckle (43-percent weight reduction), aluminum wheels and a lightweight melt-sheet insulator (17-percent weight reduction).

- Elimination of lead in construction

Efforts were made to eliminate lead use for the TSX, resulting in less than a third of lead content compared to the 1996 industry average.

- Elimination of (polyvinyl chlorides) PVCs

The use of PVC has been eliminated in manufacture of the urethane-covered instrument panel, inner door weather stripping, door moldings, rear door quarter seal, and shift knob.

- Use of recycled materials

The TSX uses a higher percentage of recycled materials in its construction. Bumpers are collected and recycled as pellets, then used for molding the aerodynamic under panels and bumper side spacers.