



**ALFA ROMEO AUSTRALIA**  
*Public Affairs & Media*

## **ALFA ROMEO 159 ARRIVES IN AUSTRALIA**

One of the most eagerly awaited new cars to arrive in Australia this year, the all-new Alfa Romeo 159, has gone on sale today (1 June 2006) and it is the new benchmark for stylish sports sedans, as well as heralding the arrival of a whole range of new cars from the legendary Italian car maker that will arrive over next six months.

“If the Alfa Romeo 156 was the car that redefined Alfa Romeo, then the Alfa Romeo 159 is the car that takes Alfa Romeo to the next level,” explains David Stone, General Manager of Alfa Romeo in Australia. “Indeed, it would be fair to say that the 159 is even more important than the 156 as it will provide not just an expanded range of sports sedans, it is also the basis for three more new models due this year, the 159 Sportwagon, Brera and Spider, as well as models as yet unannounced.”

Designed by Giorgetto Giugiaro in collaboration with Alfa Romeo Centro Stile at Arese, Milan, the new Alfa 159 combines superlative engineering with outstanding performance and handling characteristics appropriate to the pedigree of one of the world’s most famous sporting marques.

The Alfa 159 is built on a brand new platform, making it one of the toughest cars around, with a best-in-class torsional rigidity of over 180,000 daNm/rad. In terms of safety, it has nothing to fear from the competition, and has recently been awarded the prestigious five-star safety rating from Euro NCAP, which puts it ahead of the field for its segment with regard to crash safety performance.

One of the Italian sporting car manufacturer’s aims with the Alfa 159 project was to take the lead in the field of automotive passive safety. An Alfa Romeo engineered all-new premium floorpan, which incorporates high performance materials, multi-ply sheet metal, and laser welding, was the starting point.

The construction of the bodyshell also benefits from numerous measures, such as the use of boxed elements that are connected rigidly both transversely and vertically; three ‘load lines’ in the front, longitudinal beams that run the entire length of the car, built-in deformable structures, and a large number of spot welds around structural nodes.

### **ATECO AUTOMOTIVE PTY LTD**

Street Address: Heritage Building, Campus Business Park, 350 Parramatta Road, Homebush NSW 2140 Australia.  
Postal Address: Ateco Automotive Pty Ltd, Locked Bag 260, Silverwater, NSW 1811, Australia  
A.B.N. 34 000 486 706

Telephone: 02 9701 8000  
Direct Telephone 02 9701 8015  
Fax: 02 9701 3555  
Mobile +61 0407 913 244  
E-mail: erowe@ateco.com.au



The result is impressive and class-leading torsional rigidity of the bodyshell. The Alfa 159 also boasts seven airbags, including a special bag to protect the driver's knees, and sidebags that extend all along the complete window area. In addition, there are innovative restraint systems with pre-tensioners and load limiters on the seatbelts, and front seats with an anti-whiplash system that automatically brings the head restraint closer to the occupant's neck in the event of a rear impact.

The torsional rigidity of this new generation chassis also assures optimum roadholding, and superb strength and safety even in the event of a high-speed collision. This is achieved by using cutting edge technology, innovative materials, and the use of high-strength steels (58% of the total), and dual-phase steels (7%).

The central (B) pillar has three reinforcement levels to protect passengers from side-on collisions, whilst the high-strength steel floor has been designed with three load lines to prevent it from folding even in high speed head-on collisions.

Three versions of the new Alfa 159, priced from \$49,990 to \$74,990, are on sale now with a choice of three powerplants. Two new direct injection petrol engines – 2.2 litre 136 kW 4-cylinder unit and a 3.2 litre 191 kW V6 – combine the JTS (Jet Thrust Stoichiometric) direct injection technology of Alfa Romeo with continuously variable valve timing, (both inlet and exhaust), for the first time.

With specific power outputs of between 60 and 62 kW/litre, and almost 90% of maximum torque available at just 2000 rpm, all both new JTS units boast outstanding performance, yet offer significant fuel savings and readily comply with stringent Euro 4 exhaust emission regulations.

From launch the 159 will be available with the 2.4 litre 20 valve 147 kW 5-cylinder JTD turbo diesel engine powerplant, featuring the company's renowned JTD MultiJet common rail direct injection systems and exemplify the company's on-going pre-eminence in the field of diesel technology

The JTD unit also features variable geometry turbocharging, and incorporate a 'for life', maintenance-free particulate trap (DPF) in anticipation of Euro 5 emissions regulations.

All three launch engines are mated to smooth, precise 6-speed manual gearboxes. Additionally, six-speed automatic transmissions will become available on 2.4 JTDM and 3.2 V6 JTS versions of the new Alfa 159 in early 2007.

The 3.2 JTS engined versions of the new Alfa 159 are equipped, as standard, with Alfa Romeo's state-of-the-art Q4 permanent four-wheel drive system. Q4 employs three differentials, with a self-locking Torsen C unit at the centre of the system which divides drive torque by a ratio of 57% to the rear wheels and 43% to the front in normal driving conditions. Torque is split between front and rear axles and constantly modulated by the central Torsen differential on the basis of available grip, with a bias towards the rear axle promoting handling characteristics appropriate to an Alfa Romeo sports saloon.

The suspension of the new Alfa 159 combines revisions to the proven high double wishbone set-up of the outgoing Alfa 156 with a new, sophisticated multilink rear configuration. The new system is designed to promote smooth, accurate steering responses, exceptional stability and controllability – even when close to adhesion limits – and first class body control allied to remarkable comfort over all road surface conditions.



The powerful braking system of the Alfa 159 comprises 305mm ventilated front discs, and 278mm solid discs at the rear. Versions powered by the 3.2 JTS petrol and 2.4 JTDM turbodiesel engines feature larger, 330mm ventilated discs and Brembo four piston monobloc aluminium callipers at the front, with 292mm ventilated discs at the rear, for even greater, fade-free stopping power.

In the best Alfa Romeo tradition, the Alfa 159 offers direct, lively and responsive speed-sensitive power assisted steering, with a rack requiring just 2.3 turns lock-to-lock; the most direct steering in its class.

Both passive and active safety features are comprehensively represented in the new Alfa 159. In addition to seven airbags, seatbelt pretensioners, and a fully integrated Fire Prevention System, the new car comes with a comprehensive range of state-of-the-art electronic braking, traction control and stability systems fitted as standard. ABS anti-lock braking is combined with Electronic Brakeforce Distribution over all four wheels, and a sophisticated Vehicle Dynamic Control unit enhances cornering stability. VDC is further augmented by Anti-Schlupf Regelung (ASR) to limit wheelspin during acceleration.

The Motor Speed Regulator (MSR) modulates braking torque when changing down through the gears, and a unique Hill Holder function facilitates smooth hill starts.

The sporting lines and compact dimensions of the new Alfa 159 belie a surprisingly spacious, flexible interior. The new car has a wheelbase 105mm longer than its predecessor, significantly improving both front and rear passenger legroom. Moreover, despite being less tall than the 156, the new Alfa Romeo offers improved front and rear door access and an increase in interior headroom, particularly in the rear.

As with all Alfa Romeo models, driver orientated ergonomics, superior passenger comfort and lavish standard equipment levels are fundamental to the interior design of the new Italian sports saloon. The Alfa 159 boasts an extremely generous standard equipment specification offering, even on entry level vehicles, many features only available as expensive options on rival models, including seven airbags, automatic Dual Zone climate control, cruise control, rear parking sensors, auto dimming rear view mirror, a multi-function display and trip computer, fog lights, 17 inch spoked alloy wheels (18 inch on the V6), and an RDS 8-speaker stereo radio with ten CD stacker and steering wheel mounted controls.

Optional equipment includes a sunroof, metallic paint and 18" alloy wheels.



## THE ALFA ROMEO 159 ~ DESIGN

Styled by Giorgetto Giugiaro in collaboration with Alfa Romeo Centro Stile, the all-new 159 is 225mm longer and 85mm wider than the outgoing 156 it replaces. Designed around an all-new high strength platform, it maintains a long-standing Alfa Romeo tradition of engineering excellence, outstanding performance and a thoroughly engaging sporting prowess within a highly distinctive, compact saloon car package. As with all Alfa Romeo models, driver orientated ergonomics, superior passenger comfort and generous standard equipment levels are fundamental to the interior design of the new sports saloon.

### Styling

Continuing a design trend prevalent in the recent Alfa Romeo model range, the legendary Villa d'Este style Alfa shield with horizontal chrome bars dominates the front of the 159. The grille extends full-height from the bonnet's leading edge to the lower lip of a deep air dam, bisecting both an upper air intake housing purposeful, three lamp headlight clusters, and an expansive lower air intake, with circular fog lamps at its extremities.

The top of the shield generates powerful bonnet coachwork lines which flow seamlessly into steeply raked 'A' pillars. Once again, the number plate is offset to the left; a style signature echoing past classics, and unique to Alfa Romeo.

In profile, the new Alfa's taut, rising waistline flows from the pronounced flare of the front wheel arches to give the 159 an assertive, purposeful stance. The passenger compartment 'rests' on a powerful 'shoulder', demarcating door handle and side indicator positions, which reaches its broadest point above the rear wheel arch to reinforce the new wide track of the 159.

Further back, the strongly raked rear window finishes well behind the wheel arch above a visually compact rear end featuring slim, horizontal light clusters which bisect the boot shut line. Full width colour coded bumpers, and a boot lid spoiler reinforce the new broad, muscular stance of the 159.

The new Alfa 159 will be available in a choice of nine colours at launch, including both solid and metallic black, three shades of grey – Stromboli, Vesuvio and Titanio – Alfa Silver, Alfa Red, Oltremare Blue and Rubino Red.

### Interior

Despite retaining the relatively compact dimensions appropriate to an Alfa Romeo sports saloon, the new 159 has a wheelbase 105mm longer than its predecessor, significantly improving both front and rear passenger legroom. Moreover, despite being lower than the 156, the new Alfa offers improved front and rear door access and an increase in interior headroom, particularly in the rear.

As with all Alfa Romeo cars, the interior is focused on the driver's immediate surroundings, which have been designed with an emphasis on ergonomic functionality. A height adjustable driver's seat allied to a rake and reach adjustable, leather clad steering wheel guarantee a perfect driving position for the widest possible cross-section of customers.

The driver's instrument binnacle houses large, deeply hooded speedometer and rev counter dials, backlit in white to optimise the driver's night vision. A multi-lingual, multi-function display gives access to a wide range



of functions as well as the trip computer. Subsidiary gauges comprise fuel and engine temperature, turbo boost (diesel) and oil temperature (petrol).

The Alfa 159's driver orientated centre console places a new, electronic key-activated engine start button, a sophisticated Dual Zone climate control and a stereo radio/CD player within easy operational reach of the driver. Specifically built and optimised for the Alfa 159, the stereo features a power output of 4x30 watts and eight speakers, offering outstanding sound quality.

The standard 60:40 split/folding rear seat with integral armrest allows for the rapid expansion of the 405 litre luggage compartment into a robust, practical load platform offering impressive stowage space. There are up to 14 storage areas of various sizes within the cabin, including a large glove compartment, an insulated bin in the front centre armrest and a storage compartment in the pull-out central rear armrest.

As befitting a sports saloon, exceptional build quality, elegant surroundings and superior comfort levels are assured aboard the new Alfa 159. A highly rigid bodyshell allied to a high quality fascia moulding, extensive carpet soundproofing and thick, 5mm front side window glazing, have been designed to reduce cabin noise and vibration to a minimum.

Turismo trim level models are upholstered in Alfatex, a soft, durable, easy to clean fabric patented by Alfa Romeo, available in black, grey or beige with a range of complementary dashboard colours. All 159 models will come with a choice of black, tan or red leather upholstery fitted as standard.



## THE ALFA ROMEO 159 ~ EQUIPMENT

The new Alfa 159 boasts an extremely generous standard specification, many features only being available as expensive options on rival models.

The two specification levels include the following:

### Alfa Romeo 159 1.9, 2.2 and 2.4 JTD:

- Leather Upholstery
- Front and rear electric windows
- Dual Zone climate control
- Remote central locking with immobiliser
- Electric heated and folding door mirrors
- 7 airbags, including driver's knee bag
- Electronic key and start button
- Stereo radio/CD with steering wheel audio controls
- Leather steering wheel and gearknob
- Fog lights
- 10 stack CD player
- Cruise control
- ABS with EBD and HBA
- VDC with hill holder
- 17" alloy wheels
- Visibility pack (rain and dusk sensors)
- Rear parking sensors

### Alfa Romeo 159 3.2 V6:

In addition to the above specification, V6 adds:

- 18" alloy wheels
- Xenon headlights with washers
- Front electrically operated seats with memory on the driver's seat
- Bose sound system
- Handsfree Bluetooth telephone connection with USB i-Pod connection

### ENHANCED COMFORT AND TELEMATICS

The Alfa 159 interior offers the very latest systems made possible by today's technology, and a range of options carefully considered to simplify and enhance life on board. Key options include sunroof, metallic paint electrically adjustable front seats, a Bose sound system, Bluetooth mobile phone connectivity and 18" alloy wheels.

#### Dual climate control

Dual Zone climate control, fitted as standard across the Alfa 159 range, makes it possible for driver and front seat passenger to select a temperature differential of up to 16 degrees on either side of the cabin.

The system has solar sensors that monitor solar gain within the two zones and adjust the temperature accordingly. The systems also feature a highly efficient active carbon pollen filter, and an Air Quality Sensor



which automatically activates the climate control recirculation function to prevent the intake of air in areas of high pollution.

**Bluetooth connectivity**

Standard in Alfa 159 V6 and an option on other models, the 159 offers Bluetooth hands-free mobile phone technology with voice recognition, to ensure maximum driving safety under all conditions. The system allows for the use of Bluetooth compatible mobile phones anywhere on board, even when stowed in storage compartments, jackets or handbags.

The Bluetooth hands-free system is fully integrated into the new Alfa. It is accessed via a control panel display allied to control keys located on the steering wheel as well as the latest voice activation technology, which has no need to learn a user's voice in advance. It will store details of and manage up to five mobile phones, enabling more than one passenger to make use of the hands-free facility.

The system automatically lowers the volume of the radio, and allows the driver and passengers to hear the caller through the stereo loudspeakers. An integral, echo-cancellation device maintains sound quality without any deterioration in timbre, thus preventing unpleasant, metallic tones.

**Bose sound system**

The sophisticated Bose sound system, developed for Alfa Romeo by America's leading acoustic Hi-Fi company, offers exceptional listening quality for each passenger under all conditions is standard on 159 V6.

The 570 watt system comprises a radio/CD player with MP3 compatibility and 10 loudspeakers, including a subwoofer built into the luggage compartment with its own 6-channel, 200 watt, digital amplifier for the reproduction of the lowest frequencies.

**Xenon headlamps**

The safety benefits of xenon headlights, which are standard on the 159 V6, over conventional halogen lamps are underlined by simple statistics: light intensity doubles, as does the longevity of the lamp itself. Xenon headlamps also consume less energy and distribute the light beam more effectively.

Due to their brighter, far reaching illumination, the new optional xenon headlamps are combined with an automatic ride corrector which compensates not only for static changes due to axle load variation, but also dynamic changes caused by acceleration and braking.

**Cruise control**

The standard Cruise control, operable at speeds over 30 kmh, instantly cuts out when the driver presses the brake or clutch pedal. When the ASR traction control is active, it naturally takes priority over cruise control, the system returning the car to the previous set speed once ASR has ceased to function.

**Follow me home headlights**

This is practical, safety conscious innovation designed to light the interior of a garage or a path to the front door after the car has been locked. Follow Me Home activates the dipped beams and sidelights of the new Alfa 159 by operating the light flasher stalk within two minutes of turning off the engine. Each time the stalk is operated, light activation is extended by 30 seconds up to a maximum of three-and-a-half minutes.



**Parking sensors**

The new Alfa 159 is equipped with rear parking sensor equipment which are activated whenever the ignition is switched on and reverse gear engaged.

The rear system consists of four ultrasound sensors installed in the rear bumper and linked to an electronic control unit and a buzzer. The four detectors cover the rear corners of the new Alfa 159 from a distance of less than 60cm, and the area immediately behind the car from a distance of less than 150cm. Proximity information is transmitted to the driver in the form of beeps at intervals. The beeps are emitted with increasing frequency, becoming a continuous signal when the car reaches a distance of 30cm from any obstacle.





## THE ALFA ROMEO 159 ~ ENGINES AND TRANSMISSIONS

The Alfa 159 offers a choice of four powerplants. Two new direct injection petrol engines – 2.2 litre 136 kW 4-cylinder units and a 3.2 litre 191 kW V6 – combine the JTS (Jet Thrust Stoichiometric) direct injection technology of Alfa Romeo with continuously variable valve timing, (both inlet and exhaust), for the first time.

With specific power outputs of between 60 and 62 kW/litre, and almost 90% of maximum torque available at just 2000 rpm, all three new JTS units boast outstanding performance, yet offer significant fuel savings and readily comply with stringent Euro 4 exhaust emission regulations.

The two diesel engine options which complete the launch range exemplify the company's on-going pre-eminence in the field of diesel technology: a 1.9 litre 16 valve 110 kW 4-cylinder unit, and a 2.4 litre 20 valve 147 kW 5-cylinder powerplant, both of which feature the company's renowned JTD MultiJet common rail direct injection systems.

Both units also feature variable geometry turbocharging, and incorporate a 'for life', maintenance-free particulate trap (DPF) in anticipation of Euro 5 emissions regulations. Available in 2007, Alfa Romeo's widely acclaimed twin overhead camshaft 1.9 JTDM 16v unit now combines a power delivery of 110 kW with a remarkable 305 Nm of torque – a figure comparable to that generated by the company's four overhead camshaft, 24 valve, all-aluminium 3.2 litre JTS V6.

All four engines are mated to smooth, precise 6-speed manual gearboxes. Six-speed automatic transmissions will become available on 1.9 and 2.4 JTDM and 3.2 V6 JTS versions of the new Alfa 159 later in early 2007.

The 2.2 JTS and 1.9 JTDM versions of the new Alfa 159 are mated to the M32.6 6-speed manual gearbox, whilst 3.2 JTS and 2.4 JTDM models are equipped with the F40 6-speed manual transmission. The ratios of both transmissions have been chosen to emphasise performance, and gear change smoothness and accuracy have been enhanced by the use of multiple cone synchronisers.

### Petrol Engines

#### 3.2 JTS V6

- 3195cc
- 60 degree V, 6-cylinders, 24 valves
- Power: 191 kW @ 6200rpm
- Torque: 322 Nm @ 4500rpm
- Timing gear: 4 OHC, continuous dual VVT
- Transmission: 6-speed manual, 4-wheel drive
- Top speed: 240 kmh
- Acceleration 0-100 kmh: 7.0 seconds
- Fuel consumption:
  - in town: 16.9 l/100 km
  - out of town: 8.4 l/100 km
  - combined: 11.5 l/100 km
  - CO<sub>2</sub>: 273 g/km



Making its debut in the new Alfa 159, the spirited new quadruple overhead camshaft all-aluminium V6 powerplant features both the company's JTS direct petrol injection system and twin phase continuously variable valve timing. Developed by Fiat Powertrain Technologies, a new industrial enterprise created to integrate all the Fiat Group's innovation capabilities and expertise in engines and transmissions, the new all-alloy engines feature cylinder heads, pistons, induction and exhaust systems designed and built by Alfa Romeo. Final assembly of this engine is carried out in Italy, at the Pomigliano D'Arco Alfa Romeo plant.

This outstanding unit takes its name – Jet Thrust Stoichiometric – from its specific combustion system, an original Alfa Romeo concept that involves the high pressure injection of fuel, at 120 bar, directly into the combustion chamber with a stoichiometric mixture optimised to increase engine power and torque first and foremost – thus adapting this technology to the requirements of a sporting car – whilst adopting the stratified charge method to reduce fuel consumption in a limited speed band close to idling.

Hence the 3.2 JTS engine in the new Alfa 159 operates with a lean burn system up to about 1500rpm, making significant fuel savings. Above this engine speed, however, it burns a stoichiometric air-fuel mixture – i.e. with a conventional 14.7:1 ratio between the two components – thus guaranteeing performance superior to that achievable by a conventional, indirect injection unit.

Primarily, this is because fuel injected directly into the combustion chamber – instead of the intake ports – cools intake air, thus increasing the engine's volumetric efficiency. As the temperature drops, so the gases increase in density and the volume therefore decreases, allowing more air into the combustion chamber. Cooling the chamber also reduces the risk of engine knock, allowing for an increase in compression ratio – in this case to 11.25:1 – and a commensurate improvement in engine efficiency.

Allied to JTS technology, the light aluminium alloy cylinder heads of the new 3.2 litre V6 also features 'Twin Phaser' continuously variable valve timing – for both intake and exhaust – already adopted on 4-cylinder JTS Alfa Romeo engines. Via two camshafts per cylinder bank, variable valve timing allows the phase angle of both inlet and exhaust cams to be varied by up to 50 degrees, optimising the volumetric efficiency of the engine at all engine speeds whilst reducing fuel consumption and emissions under lighter throttle settings.

The new camshaft drive system features maintenance-free chain drive with automatic hydraulic tensioners, whilst the valves themselves are controlled by a low friction roller finger system with hydraulic uptake of tappet play.

This refined new V6 combines power and torque peaks of 191 kW at 6200rpm and 322 Nm at 4500rpm respectively with smooth, linear power delivery from low speeds. Some 90% of peak torque is available from just 1800rpm and maintained up to 6250rpm. Hence, the 3.2 litre V6 24v unit delivers sensational performance, but is also very docile, and the Alfa 159 can cruise effortlessly in sixth gear at less than 2000rpm, yet accelerate rapidly and smoothly away without the need for changing gear.

Mated to an F40 6-speed manual transmission and the Q4 four-wheel drive system, the 3.2 litre JTS V6 engine will accelerate the new Alfa 159 from 0-100 kmh in 7.0 seconds and on to a top speed of 240 kmh, yet it easily meets the stringent Euro Stage 4 exhaust emission limits.

## **2.2 JTS**

- 2198cc
- 4-cylinders, 16 valves



- Power: 136 kW @ 6500rpm
- Torque: 230 Nm @ 4500rpm
- Timing gear: DOHC, continuous dual VVT
- Transmission: 6-speed manual
- Top speed: 222 kmh
- Acceleration 0-100 kmh: 8.8 seconds
- Fuel consumption:
  - in town: 13.0 l/100 km
  - out of town: 7.3 l/100 km
  - combined: 9.4 l/100 km
  - CO<sub>2</sub>: 221 g/km

The new 2.2 version of the 4-cylinder Alfa Romeo JTS powerplant features aluminium cylinder heads, blocks and crankcases, effecting a weight reduction of some 20% over the units they replace.

The engines also adopts the 'Twin Phaser' continuously variable valve timing described above. In addition, they feature a low friction, maintenance-free chain drive to the camshafts and water pump and are further equipped with a dual detonation sensor to improve sensitivity to engine knock, enhancing maximum performance.

Mated to an M32.6 6-speed manual transmission, the Euro 4 compliant 2.2 litre unit develops 136 KW at 6500rpm, and 230 Nm of torque at 4500rpm. These high power outputs require the use of sodium cooled exhaust valves. The 159 2.2 JTS will accelerate from 0-100 kmh in just 8.8 seconds, and still return 7.3 l/100 km on the open road or more than 30 mpg in the old money.

## **Diesel Engine**

### **2.4 JTDM 20v**

- 2387cc
- 5-cylinders, 20 valves
- Power: 147 kW @ 4000rpm
- Torque: 400 Nm @ 2000rpm
- Timing gear: DOHC
- Transmission: 6-speed manual
- Top speed: 230 kmh
- Acceleration 0-100 kmh: 8.4 seconds
- Fuel consumption:
  - in town: 9.2 l/100 km
  - out of town: 5.4 l/100 km
  - combined: 6.8 l/100 km
  - CO<sub>2</sub>: 179g/km

Alfa Romeo was first to the market with a JTD Common Rail direct injection diesel engine when the Alfa 156 was launched in Europe during 1997. This crucial lead in diesel technology has not been squandered and, in its latest 20 valve MultiJet guise, the new 5-cylinder 2.4 litre unit is the most powerful engine in the Alfa Romeo JTDM family, with a specific power output of 62 kW/litre.



### **MultiJet Technology**

Within a UniJet engine, a pilot injection raises temperature and pressure inside the cylinder to improve combustion at the time of the main stroke. However, by dividing the main injection into a number of smaller injections, a MultiJet engine affords a fuller, more gradual combustion whilst the amount of diesel burnt at each stroke remains the same; thus facilitating smoother, quieter combustion, reduced emissions and increased performance.

However, a MultiJet engine differs from its Unijet counterpart in two essential areas; the injectors and the electronic control unit.

To facilitate multi-injection, the new injectors can both reduce the time lag between injections from 1500 to just 150 microseconds, and reduce the minimum quantity of fuel injected from 2 to less than 1 cu mm. In tandem, the new control unit modulates injection strategy continually to adjust to changes within three parameters; engine rpm, torque required at any given time by the driver and coolant temperature.

Thus, when coolant temperature is less than 60 degrees and torque requirement low, two small and one large injections are performed. As torque demand increases, the number of injections drops to two; one small and one large. Under conditions of high rpm and high torque demand, only one injection is required whilst, with coolant temperature at over 60 degrees, emissions are minimised with one small, one large, then one small injection in the sequence.

Hence, start-up times and exhaust smoke are reduced, noise levels and vibration are lowered to ensure a quieter drive and improved passenger comfort, fuel consumption is reduced by a further 10% and emission control reduction amounts to 50%; enough to bring the unit within Euro 4 emissions limits.

Derived from the familiar, 2.4 JTD five cylinder 10 valve common rail powerplant, several changes have been made to the latest version of this 20 valve turbodiesel to boost performance and engine torque at low speeds whilst returning impressive fuel consumption figures. The common rail system includes two new control strategies for automatically calibrating and balancing the diesel injection, to both lower noise and reduce vibration, whilst the direct injection pressure has been increased from 1400 to 1600 bar.

The engine also includes a number of new components; a cylinder head with small stem valves to boost inlet air quantity, fractured steel con rods of a new, stress resistant design, a new inlet manifold fitted with a throttle valve at one of the two inlet ports to control air turbulence, a new, high efficiency intercooler, and a throttle valve to prevent shaking if the engine is stalled.

The electronic EGR exhaust gas cooling system has also been modified; the lubricating circuit has a new oil pump and an external air/oil heat exchanger to cool the oil, whilst the water pump on the cooling circuit is also new.

Turboboost is provided by a KKK 2080 turbocharger with a variable geometry turbine that improves power delivery and also generates very high torque at low engine speeds; 90% of the impressive 400 Nm peak torque is available from between just 1750 and 3500rpm. Mated to an F40 6-speed manual gearbox, this allows the Alfa 2.4 JTD MultiJet to accelerate from 0-100 kmh in only 8.4 seconds, whilst returning a remarkable fuel consumption of just 6.8 l/100 km in the official combined cycle.



## ALFA ROMEO 159 ~ RIDE AND HANDLING

Allied to an all-new chassis, the suspension design of the new Alfa 159 is the outcome of an extensive and thorough development process aimed at achieving the highest possible levels of driveability and handling appropriate to a sporting marque, combined with optimum travelling comfort. It combines revisions to the proven high double wishbone set-up of the outgoing Alfa 156 with a sophisticated new multilink rear configuration. The whole system is designed to promote smooth, accurate steering response, exceptional stability and controllability – even when close to adhesion limits – and first class body control allied to remarkable comfort over all road surface conditions.

The 3.2 JTS version of the new Alfa 159 also benefit from the Q4 four-wheel drive system; a mechanical system enhanced by cutting edge electronic technology to guarantee the smoothest possible power delivery and optimum traction under all driving conditions.

### Front suspension

The high double wishbone front suspension of the Alfa 159 is a development of the set-up successfully employed on the 156. Its design, based on that universally employed in motorsport, offers precise control of wheel movement and affords the new Alfa Romeo an outstanding dynamic performance and extremely sensitive, accurate steering.

Engineering improvements to the aluminium upper and lower arm set-up include an increase in the size of the coaxial damper spring to improve its capacity to absorb poor road surfaces, the use of a pair of dry friction sliding bushes in the aluminium upper arm for strength, reliability and a more progressive action, and a relocation of the steering axis closer to the centre of the wheel for improved cornering response.

Additionally, the suspension is now connected to the chassis via a subframe which is stiffer than the previously employed crossbeam.

From a dynamic viewpoint, the high double wishbone layout combines long wheel travel with outstanding control. This configuration offers the Alfa 159 maximum tyre grip, improved traction under extreme conditions, a self-alignment effect proportional to the lateral acceleration applied in a corner, superior steering precision and sensitivity, graduated steering wheel effort up to adhesion limits, and the minimisation of pitching under extreme acceleration or braking.

### Rear suspension

At the rear, the Alfa 159 employs a new multilink suspension system to maximise driveability, handling performance and ride comfort. Through a combination of transverse and longitudinal links, the system facilitates extremely precise wheel movements in the vertical plane, whilst limiting longitudinal and transverse displacements to maintain optimum wheel positioning under load. Pitching is reduced, and maximum stability under braking is ensured.

Key features of the new multilink configuration include a higher anchorage point of the longitudinal link to facilitate a longer, more flexible suspension stroke, an enlarged bi-tube spring damper unit for improved ride comfort, and an aluminium upright with a high rigidity hub supporting the connection bushes for both camber and longitudinal links. In addition, the new set-up features a rear hydraulic bush to optimise filtering of poor road surfaces and a high yield steel crossbeam isolated from the bodyshell by four elastic bushes to dampen high frequency vibration.

**Steering**

All Alfa Romeo cars are renowned for their direct, lively and responsive steering feel. The 159 is no exception, and is fitted with hydraulically power assisted, speed sensitive steering which achieves a highly effective balance between low speed manoeuvrability and high speed accuracy and feel. With just 2.33 turns lock-to-lock and a ratio of 12.7 degrees of steer for every degree of steering wheel input, the new 159 offers the most direct steering in its class.

The telescopic steering column is divided into two sections for comfort and safety. The lower section is collapsible to ensure that steering wheel position is maintained relative to the driver during an impact. The upper section offers both reach and rake adjustment to the driver. A steel bracket and a highly rigid magnesium mount prevent vibration.

Careful matching of the steering geometry to the wheel arch volume has facilitated high steering angles even with the largest tyres fitted, affording the new Alfa a turning circle of just 11.2 metres between kerbs.

**Q4 four-wheel drive**

The 3.2 JTS engined version of the new Alfa 159 are equipped, as standard, with the Q4 permanent four-wheel drive system. Q4 employs three differentials, with a self-locking Torsen C unit at the centre of the system, which divides drive torque by a ratio of 57% to the rear wheels and 43% to the front in normal driving conditions.

Torque split between front and rear axles is constantly modulated by the central Torsen differential on the basis of available grip, with a bias towards the rear axle promoting sporting handling appropriate to the marque. Modulation is mechanical and continuous to guarantee the smoothest possible power delivery, and the system is further enhanced by the full range of electronic stability controls to guarantee optimum traction and performance under all driving conditions.



## THE ALFA ROMEO 159 ~ SAFETY

With a 5-star Euro NCAP safety rating to its name, and four stars for child occupant protection, the new Alfa 159 is at the top of its category in terms of passive safety. It also meets preventive safety needs with an adjustable cockpit that adapts perfectly to drivers of any size. The combination of a height adjustable driver's seat, and reach and rake adjustable steering, allied to an extensive glazed area, allows the best possible view of the road ahead. User-friendly ergonomics allow drivers to operate all instruments and controls without taking their eyes off the road.

### PASSIVE SAFETY

Within an all new bodyshell designed to provide class-leading torsional rigidity – over 180,000 daNm/rad – yet absorb impact with maximum efficiency, the new Alfa 159 may be fitted with up to eight airbags, seven of which are standard equipment, whilst front seatbelts with pretensioners and load limiters, anti-whiplash front seat head restraints, three-point rear seatbelts, anti-submarining front seats, ISOFIX child seat attachments and an FPS Fire Prevention System are all fitted as standard.

### Airbags

The new Alfa 159 is equipped with seven airbags; driver and passenger dual-stage front airbags, driver and passenger knee airbags, front side airbags, as well as two side curtain airbags providing head protection in the case of side impacts. Their operation is controlled by an electronic control unit that evaluates crash severity via a number of sensors located throughout the car.

The front passenger airbag may be deactivated manually via an ignition key switch on the fascia. A dashboard warning light indicates this condition. Though the seatbelt pretensioner remains active, a rear facing baby seat can therefore be safely fitted.

### Fire Prevention System

The FPS includes a cut-off valve and an inertia switch which immediately cuts the electric fuel pump. This prevents fuel loss in the case of impact, roll-over or damage to the fuel lines. The fuel tank is formed in a plastic resistant to mechanical stress and fire. Special care has been taken over the location of key components within the engine bay, electrical system, fuel system and brakes to minimise the risk of damage. The new interior trim is also flame resistant.

### ACTIVE SAFETY

The new servo assisted braking system employed by the Alfa 159 features two independent crossover hydraulic circuits to ensure prompt, linear braking and minimal stopping distances; 100-0 kmh in just 32 metres. The 159 versions powered by 2.2 JTS petrol and 1.9 JTDM turbodiesel engines are equipped with 305mm ventilated front discs and 278mm solid discs at the rear. Models powered by the 3.2 JTS petrol and 2.4 JTDM turbodiesel engines feature larger, 330mm ventilated discs and powerful, Brembo, four piston monobloc aluminium callipers at the front, with 292mm ventilated discs at the rear.

The new Alfa 159 is equipped, as standard, with a comprehensive range of state-of-the-art electronic braking, traction control and stability systems: ABS is combined with Electronic Brakeforce Distribution over all four wheels and Hydraulic Brake Assistance, whilst a sophisticated Vehicle Dynamic Control unit enhances cornering stability. VDC is further augmented by traction control to limit wheelspin during acceleration, Motor Speed Regulator to modulate braking torque when changing down through the gears, and a unique Hill Holder function to facilitate smooth hill starts.





### **ABS with EBD and HBA**

The Alfa 159 is fitted as standard with a Bosch 5.7 ABS anti-lock braking system, one of the most advanced units currently available. The system incorporates an electronic brakeforce distributor with four active sensors, four channels and a hydraulic control unit with 12 solenoids. Because the active sensors can themselves process a wheel input signal, rather than passing it on to the control unit, the system can both activate more quickly and detect speed signals far closer to zero.

The active sensors are less sensitive to interference from electromagnetic fields and road surface heating and, because they can detect very low speeds, augment the efficiency of the satellite navigation system by allowing more accurate updating of data on the route covered by the car.

EBD distributes braking action over all four wheels to prevent them locking, and ensures full control of the car in all situations. To reduce brake pad overheating, the system also adapts its operation to both grip availability and brake pad efficiency.

Though primarily conceived to automatically increase brake force when insufficient brake pedal loading has been applied during an emergency stopping procedure, Hydraulic Brake Assistance can even help experienced drivers who have applied the correct amount of pedal pressure, by reducing braking attenuation time in all cases (the time between initial pedal loading and maximum brake circuit pressure).

### **VDC**

This innovative switchable Vehicle Dynamic Control system is activated under extreme conditions when vehicle stability is at risk, helping the driver to control the car. As befits a true Alfa Romeo, however, VDC is a sporting system that does not interfere prematurely, allowing the full satisfaction of driver control to the limit of critical conditions. It can also be disengaged at the driver's command.

The VDC continuously monitors tyre grip in both longitudinal and lateral directions. If the car starts to slide, VDC cuts in to restore directional stability. It uses sensors to detect rotation of the car body about its vertical axis (yaw), lateral acceleration, and steering input. Comparing this data with computer generated parameters, the system establishes whether the car is cornering within its adhesion limits or if the front or rear wheels are about to lose grip.

To restore the required trajectory, VDC generates a yawing movement to counter that responsible for the vehicle's instability by braking the appropriate wheel individually and reducing engine power via the throttle. Exceptionally smooth brake modulation and engine power reduction are key attributes of a system designed by Alfa engineers to maintain outstanding performance and driving satisfaction throughout its operation.

### **ASR**

Anti-Schlupf Regelung, or traction control, is an additional feature of the VDC system, designed to limit wheelspin in cases of low road surface grip. This sophisticated system works at any speed and prevents the driven wheels from spinning by adjusting torque according to the grip coefficient detected at the time of slip. The system recognises loss of traction via the ABS sensors, and activates two different control systems to restore grip: in the case of both driven wheels spinning it reduces engine power via the throttle. If only one wheel spins, however, it is automatically braked; the resultant effect similar to that of a self-locking differential.





ASR not only optimises vehicle safety in conditions of minimal or constantly varying degrees of grip, but also greatly reduces mechanical stress to the differential and gearbox through effective control of low speed take-off and traction.

The system is activated automatically whenever the engine is started, but may be deactivated via a switch on the centre console. A flashing warning light indicates ASR operation, whilst a second light illuminates to indicate system faults or irregularities. ASR deactivation is required when snow chains are fitted to allow for their effective use.

### **MSR**

The new Alfa 159 benefits from Motor Speed Regulator. MSR cuts in when a gear is shifted down abruptly under conditions of low grip, restoring torque to the engine to prevent instability as a result of engine braking-induced wheel lock-up.

### **Hill Holder**

Also integral to VDC, the Hill Holder system helps drivers pull smoothly away from an upwards-facing hill start. Operating via a static inclinometer sensor when first gear is engaged and both clutch and brake pedals are depressed, the control unit maintains front calliper pressure for about 1.5 seconds after the brake pedal is released to eliminate the risk of rolling backwards and ensure a smooth pull away. Hill Holder does not operate when setting off downhill in first gear, but does so when reverse is engaged and the driver wishes to back uphill.

Taken together, all these features make the Alfa 159 a new benchmark for its segment in terms of safety – one that is now certified by the five-star Euro NCAP rating, which acknowledges that the car has passed the most difficult tests simulating all types of accident (head-on, side-on, overturning, rear impact and fire), taking into account the various speeds at which impact may occur, the different types of obstacles encountered, and the need to protect occupants who may have very different physical characteristics.

The Alfa 159 was designed and built to embody uncompromising quality, a concept that guided the entire process of the car's development, starting with the vast number of tests to which it was subjected, right down to the manufacturing process. For the Alfa 159, quality also means class-leading dynamics, obtained by careful calibration of the sophisticated suspension, and the outstanding torsional rigidity of the all-new platform and bodyshell.

(ends)



## Alfa Romeo 159

### Technical Specifications

Specifications	2.2 JTS	3.2 JTS V6 Q4	2.4 JTDM
No. of cylinders, layout	4, in line	60 degree V6	5, in line
Bore x stroke (mm)	86 x 94.6	85.6 x 89	82 x 90.4
Capacity (cc)	2198	3195	2387
Compression ratio	11.3 : 1	11.25 : 1	17 : 1
Max. power output (kW-EC)	136	191	147
at rpm	6500	6200	4000
Peak torque Nm (lb.ft)	230 (170)	322 (237)	400 (295)
at rpm	4500	4500	2000
Timing system	2 OHC (chain), 4 valves per cylinder, electrohydraulic continuous double variable valve timing	4 OHC (chain), 4 valves per cylinder, electrohydraulic continuous variable valve timing	2 OHC (toothed belt), hydraulic tappets, 4 valves per cylinder, MultiJet direct injection with turbo and intercooler
Fuel feed	MED 7.6.1 electronic direct injection integrated with ignition	MED 7.6.1 electronic direct injection integrated with ignition	Bosch EDC16C39 electronic engine management system
Exhaust system	double with separate silencers and chromed tips	double with separate silencers and chromed tips	double with separate silencers and chromed tips
Electrical system	2.2 JTS	3.2 JTS V6 Q4	2.4 JTDM
Battery: capacity (Ah) / Generator (A)	70/120	90/150	90/150
Transmission	2.2 JTS	3.2 JTS V6 Q4	2.4 JTDM
Gearbox:	front wheel drive	four wheel drive	front wheel drive
1 <sup>st</sup>	3.818:1	3.917:1	3.769:1
2 <sup>nd</sup>	2.353:1	2.040:1	2.040:1
3 <sup>rd</sup>	1.571:1	1.365:1	1.321:1
4 <sup>th</sup>	1.146:1	1.048:1	0.954:1
5 <sup>th</sup>	0.943:1	0.846:1	0.755:1
6 <sup>th</sup>	0.861:1	0.740:1	0.623:1
Reverse	3.545:1	3.749:1	3.538:1



Final drive ratio	4.176:1	3.895:1	3.545:1
<b>Performance</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Top speed (mph)	222	240	228
0- 100 kmh (sec)	8.8	7.0	8.4
0-1000m (sec)	29.6	27.5	29.2
<b>Fuel consumption - emissions as per EC directive 1999/100</b>			
urban cycle	13.0	16.9	9.2
extra-urban cycle	7.3	8.4	5.4
combined cycle	9.4	11.5	6.8
CO <sub>2</sub> emissions (g/km)	221	273	179
<b>Tyres</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Tyres	225/50 R17	235/45 R18	225/50 R17
Wheels	Alloy 17 x 7.5	Alloy 18 x 8.0	Alloy 17 x 7.5
<b>Steering</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Steering system	Rack and pinion with hydraulic power steering	Rack and pinion with hydraulic power steering	Rack and pinion with hydraulic power steering
Turning circle (m)	11.1	11.1	11.1
<b>Suspension</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Front	High double wishbone	High double wishbone	High double wishbone
Rear	Multilink system	Multilink system	Multilink system
<b>Brakes (discs)</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Front (mm)	305 x 28 ventilated, 60mm piston and floating calliper	330 x 28 ventilated, fixed radial calliper in aluminium with 4 Ø 42mm pistons	330 x 28 ventilated, fixed radial calliper in aluminium with 4 Ø 42mm pistons
Rear (mm)	278 x 12 solid, combined 38mm floating calliper	292 x 22 ventilated, combined 42mm floating calliper	292 x 22 ventilated, combined 42mm floating calliper
<b>Weights and capacities</b>	<b>2.2 JTS</b>	<b>3.2 JTS V6 Q4</b>	<b>2.4 JTDM</b>
Fuel tank (litres)	70	69	70
DIN kerb weight (kg)	1490	1680	1630
Max. towable weight (kg)	1500	1500	1500



Dimensions	2.2 JTS	3.2 JTS V6 Q4	2.4 JTDM
Length/width/height (mm)	4660/1828/1422	4660/1828/1422	4660/1828/1422*
Wheelbase (mm)	2700	2700	2700
Front/rear track (mm)	1578/1555	1578/1555	1578/1555
Luggage space (dm <sup>3</sup> ) Seats up/Seats folded	405/645	405/645	405/645

## Alfa Romeo 159

### Equipment and Features

▲ Standard    0: Option    D: Dealer-fit Option    N/A Not Available

	Alfa Romeo 159 2.2 JTS	Alfa Romeo 159 2.4 JTD	Alfa Romeo 159 3.2 V6
<b>EXTERNAL EQUIPMENT</b>			
Electrically adjustable, folding, heated door mirrors	▲	▲	▲
Hydrodynamic windscreen washers	▲	▲	▲
Headlight washer system	0	0	▲
Electrically operated sunroof <sup>(1)</sup>	0	0	0
Metallic paint	0	0	0
Twin exhaust tail pipes	▲	▲	▲
(432) 17" wire-spoke design alloy wheels with 225/50 R17 tyres	N/A	▲	N/A
(433) 17" diamond effect flat spoke alloy wheels with 225/50 R17 tyres	▲	N/A	N/A
(421) 18" 7 hole design alloy wheels with 235/45 R18 tyres	N/A	N/A	▲
(439) 18" wire-spoke design alloy wheels with 235/45 R18 tyres	0	0	0
<b>INTERIOR EQUIPMENT</b>			
Electric front and rear windows with one touch function and anti-intrusion sensor	▲	▲	▲
Three rear head restraints adjustable for height	▲	▲	▲



Stainless steel kick plates	▲	▲	▲
Front armrest with temperature controlled storage compartment	▲	▲	▲
Rear armrest with ski tunnel	▲	▲	▲
Electronic key with remote central locking and boot release	▲	▲	▲
Dual zone automatic climate control with split temperature and distribution function (air nozzles at rear, pollen filter with active carbon filter and AQS <sup>(3)</sup> )	▲	▲	▲
Leather steering-wheel and gear knob	▲	▲	▲
Steering-wheel mounted audio controls	▲	▲	▲
Steering wheel adjustable for distance and height	▲	▲	▲
5mm thick glass panes on front windows	▲	▲	▲
Glove compartment with courtesy light	▲	▲	▲
Luggage compartment with courtesy light	▲	▲	▲
Puddle light on front doors	▲	▲	▲
Diffused ambient lighting in cockpit	▲	▲	▲
Courtesy lights with reading spotlights front and rear	▲	▲	▲
Courtesy mirror on driver and passenger sun visors with built-in light	▲	▲	▲
Engine oil level gauge	▲	▲	▲
Interior carpeting in tufted velour	▲	▲	▲
Provision to install luggage/ski roof racks	▲	▲	▲
Internal electric boot release switch	▲	▲	▲
Internal central locking/release switch for doors	▲	▲	▲
Electronic start/stop button	▲	▲	▲
Aluminium centre console & trim inserts	▲	▲	▲



Front seats with three stage heating	0	0	▲
60/40 split folding rear seats with storage compartment in armrest	▲	▲	▲
Front seats manually adjustable (height, rake for driver and passenger)	▲	▲	N/A
Electrically adjustable front seats with three stage heating and electrically folding, adjustable heated door mirrors, with memory on driver's side	0	0	▲
Leather upholstery	▲	▲	▲
On-board instrumentation with multifunctional display	▲	▲	▲
Trip computer (two independent devices for range, fuel consumption, average speed, distance travelled)	▲	▲	▲
Cruise control	▲	▲	▲

**SAFETY/MECHANICAL PARTS**

Full size driver and passenger front airbags	▲	▲	▲
Full size window bags (front and rear protection)	▲	▲	▲
Front side bags (chest and pelvis protection)	▲	▲	▲
Driver's side knee bag	▲	▲	▲
Alfa code immobiliser	▲	▲	▲
VDC with Hill Holder (ABS + ASR + EBD + Brake Assistant)	▲	▲	▲
ASR/VDC cut-out control	▲	▲	▲
Fire Prevention System	▲	▲	▲
Front seatbelts with degressive load limiter and pretensioner on buckle	▲	▲	▲
Anti-intrusion bars in front and rear doors	▲	▲	▲
Self-adjusting rear seatbelt	▲	▲	▲
Belt not buckled buzzer, timed and deactivated when the car is stationary	▲	▲	▲



Headlight washer system with windscreen liquid level sensor	N/A	N/A	▲
Halogen headlights	▲	▲	N/A
Bi-xenon headlights (includes headlight washer system)	N/A	N/A	▲
Parking sensor built into rear bumper with audible obstacle alert	▲	▲	▲
Aluminium brake callipers with Alfa Romeo designation	N/A	▲	▲
'Follow me home' headlights	▲	▲	▲
Fog lights	▲	▲	▲
Child safety locks on rear doors	▲	▲	▲
Fuel cap secured by central locking	▲	▲	▲
Particulate filter (DPF) on diesel versions	N/A	▲	N/A
Full size alloy spare wheel	▲	▲	▲
<b>AUDIO/PHONE/NAVIGATION</b>			
Car radio with audio CD player (8 speakers)	▲	▲	N/A
CD auto-changer (10 disc)	▲	▲	▲
Hi-Fi Bose® sound system with digital amplifier (8 speakers + 1 central + subwoofer)	N/A	N/A	▲
Hands-free system with voice recognition and Bluetooth™ technology	Opt	Opt	▲



## ALFA ROMEO 159

### Recommended Retail Price List

These prices do not include dealer delivery, on-road costs or statutory charges

	Engine	Gearbox	Trim	Recommended Retail Price
<b>Alfa Romeo 159 2.2 JTS</b>	2.2 litre petrol	Six Speed manual	Leather	\$49,990
<b>Alfa Romeo 159 2.4 JTD</b>	2.4 litre Turbo Diesel	Six Speed manual	Leather	\$55,990
<b>Alfa Romeo 159 3.2 V6</b>	3.2 litre V6 engine	Six Speed manual Four wheel drive	Leather	\$74,990

## ALFA ROMEO 159

### Options and option prices

	Alfa Romeo 159 1.9 JTD-m	Alfa Romeo 159 2.2 JTS	Alfa Romeo 159 2.4 JTD-m	Alfa Romeo 159 3.2 V6
Metallic paint	\$1600	\$1600	\$1600	\$1600
Electrical adjustable seats, with memory on driver's side, and heated electrical folding wing mirrors, with memory on driver's side with three position heating	\$2750	\$2750	\$2750	Standard
Electrically operated sunroof	\$2250	\$2250	\$2250	\$2250