



SUPASHOCK
RACING SUSPENSION

Supashock – The Suspension Revolution.

Introduction.

The Supashock concept was born in 2006 when Kevin Weeks and Oscar Fiorinotto embarked upon the challenge of creating the perfect damper. The backgrounds of Kevin and Oscar could not be more different. Kevin is one of Australia's most successful entrepreneurs in the construction industry. Kevin is also a keen racing driver, and competes in a number of circuit racing and tarmac rally disciplines at the highest level.

Meanwhile, Oscar has 20 years of experience in motorsport, and is regarded as one of Australia's most educated and innovative motor-racing engineers. Oscar has worked with many leading teams in Australian V8 Supercar series, as well as one of England's top F3000 teams, and he also contributed significantly to damper design during the early days of Australian V8 Supercar competition. Supashock Suspension was created through Kevin Weeks' and Oscar Fiorinotto's diverse talents, and their shared passion for motorsport.

Kevin had experienced a large number of different dampers in his tarmac rally competitions, but had never been totally satisfied with their performance. In one of his Porsche rally cars, Kevin experimented with a wide range of dampers and shock absorbers in his Porsche tarmac rally car, but no product adequately addressed the Porsche's natural tendency to become unstable and difficult to control when driven to the limit. It was from this experience that Kevin and Oscar decided to pursue a different direction with the damper design.

They combined their resources, with Kevin Weeks providing the financial backing and capital, while Oscar Fiorinotto delivered his technical knowledge and expertise. Together, they scoured the globe, trying and testing all types of different shocks and springs. There were frustrations; there were failures; but finally, after several years of perseverance and hard work, Kevin and Oscar came up with a suspension system that was just as suitable for comfortable highway cruising as it was for fierce, intense motorsport competition in the world's toughest environments. The Supashock Suspension revolution had arrived.





The design criteria.

The following criteria were used in the design and development of Supashock:

- Bespoke design- Product designed specifically for the application at hand.
- Support- Product specifications to be incorporated into an ongoing support and setup program, tailored to the customer.
- Performance – the suspension needed to provide dynamic handling in all conditions and environments.
- Aesthetic appeal – the suspension components needed to be visually appealing to motoring enthusiasts.
- Flexibility – the suspension needed to provide dynamic brilliance for the ferocity of motorsport competition, but also a comfortable ride for family highway cruising.
- Middle range pricing.
- Durability – the ability to withstand extreme pressure, vibration and temperature conditions.
- Low friction.
- Easily adjustable – intuitive, not confusing, and able to be adjusted by people with very basic mechanical knowledge.

Supashock was designed to be the most cost-effective, efficient damper on the market.

The design process.

The Supashock design process started with concept sketches of the basic damper design. To minimise the number of moving parts, the thrushaft system was used.

Once the basic design was complete, more sophisticated 3D models were created using the latest Unigraphics computer software. This software facilitated the conduction of Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tests.

The FEA structural test simulated stress on different parts of the damper. This analysis was used to ensure the construction of the damper was both as stiff and as light as possible.

The CFD testing was used to analyse the hydraulic component of the damper, optimising piston and porting design to ensure the most efficient flow of hydraulic fluid through the damper.

These two simulation tests were combined to create a complete 3D model. This model was then extensively tested, analysed and refined.



The Supashock difference.

The key to the impressive flexibility of the Supashock Damper System is its responsiveness. With conventional dampers, there is a hydraulic lag between the compression and rebound of the damper. This lag is an inherent design flaw which reduces the performance and response of conventional dampers. The Supashock Damper System was designed to eliminate this lag, and is therefore ultra-responsive, ensuring the car that it is fitted to maintains its composure, regardless of the terrain it is driving over.

Supashock dampers feature easy adjustments, which can be made by anyone with even very limited mechanical knowledge.

These adjustments allow the damping co-efficient (damping force with the velocity of the car motion being damped) to be adjusted to cater for different types of driving conditions, while also featuring a unique camber and ride-height adjustment system.

As a result, the Supashock Damper System is sturdy and reliable, making it perfect for the tough conditions and extreme forces present in rallying applications.

Manufacturing.

Materials used in the construction of Supashock dampers are of aircraft-grade billet material, ensuring maximum durability and a long life-span. All dampers are machined using 4-axis and 5-axis Computerised Numerical Control (CNC) machines, ensuring the highest accuracy, repeatability and quality in the manufacturing process.

Overall, this process ensures an extremely high standard of finish and quality for Supashock dampers. Supashock dampers are manufactured to suit a wide range of different vehicles.



Racing & Rallying.

Supashock has already been used in various tarmac rally events, with great success. Cars equipped with Supashock have won many of Australia's top tarmac rallies including Classic Adelaide, Targa High Country and the Legend of the Lakes Hillclimb at Mount Gambier.

Team Mitsubishi Ralliart also used the Supashock Damper System in the 2010 Bathurst 12 Hour production-car race, setting the lap record.

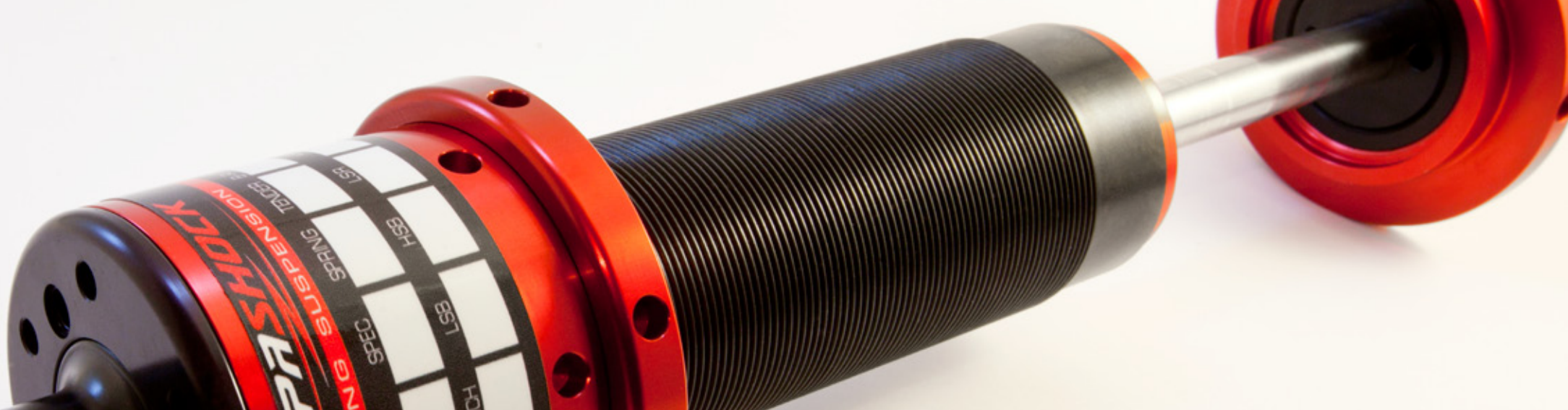
Supashock has recently become an option shock-absorber for some vehicles in the Australian GT Championship. In 2011, the Supashock-equipped Lamborghini Gallardo GT3 of Kevin Weeks qualified on pole position for Round 3 of the championship at Eastern Creek, and broke the lap record in Round 4 of the championship at Townsville before winning the event's second race. Greg Crick has also benefited from the Supashock Suspension, taking a race victory in his Dodge Viper.

The drivers who have experienced the Supashock Damper System have all pointed towards its tendency to neutralise the handling on the vehicles they are fitted to, resulting in increased driver confidence which leads to faster stage and lap times.

Supashock on the road.

While the Supashock Damper System has been successfully used in the gruelling environment of competitive motorsport, this development experience has translated to a damper system that also benefits everyday drivers who want added safety margins and handling benefits compared to factory suspension setups.

With the Supashock Damper System, public road users can be confident in knowing that their vehicle will have higher limits of adhesion compared to the factory suspension package, giving them added active safety potential in emergencies. In addition to this, the stability and response gains from the Supashock Damper System translate to a more enjoyable on-road driving experience for motoring enthusiasts.



Testimonials.

Hear what the drivers have to say about the Supashock Damper System.

Damien White (Bathurst 12 Hour winner)

"As soon as I drove out of pit lane, I knew this damper was something special."

Greg Crick (2-time Targa Tasmania winner and 2006 Australian GT champion)

"My Dodge Viper now responds to the most minute suspension changes and looks after its tyres over a 1-hour race distance like never before. It is fantastic to be able to use an Australian-built and developed product."

Tristan Catford – President, Mitsubishi GSR Car Club

"I was very impressed with the setup with the Supashock dampers. When I first drove on the dampers, it was a completely foreign experience, because the understeer, which is a normal characteristic of the Mitsubishi Evo, was virtually eliminated."

"There was actually more oversteer, and I was overcommitting to corners, because I was able to carry so much more speed on the entry into corners, so it was a learning experience to adapt my driving style to the new setup. It certainly gives the driver a lot more confidence with the understeer eradicated."

"The ride quality is still firm, but certainly not as harsh or raw as the previous setup. The car isn't jarring or bottoming out any more, which is definitely an improvement."

Andrew Burnard – Tarmac Rally Driver, Mitsubishi Evo VIII

"I had some experience driving my Mitsubishi Evo VIII with the production-spec Bilstein setup. It had massive understeer, there was a lot of body roll, and quite frankly, it was a handful to drive. My first experience with the Supashock dampers was during testing and evaluation for Classic Adelaide last year. We probably did about 5000 to 6000 kilometres."

"The transformation was amazing, because all of a sudden, there was no understeer. The car's handling became absolutely neutral, and the level of grip was just incredible."

"A lot of Mitsubishi Evo competitors have invested in complex and expensive electronic differential setups

to try and eliminate the understeer, but the Supashock suspension achieved the same result using production-spec diffs."

"The other big advantage of the Supashock suspension is that it can flatter the ability of an average driver by giving them the confidence to push the car harder. We've already had some success using the Supashock dampers; we won the Adelaide Hills Rally last year and finished second behind Kevin Weeks in his Lamborghini this year."

Kevin Weeks – Tarmac Rally Driver, Historic Porsche 911 RS

"I first drove on the Supashock dampers during reconnaissance for the Classic Adelaide last year, driving a Mitsubishi Evo. I was simply amazed at how the car's handling was transformed. It was sensational."

"At first, I actually ran over the apex of corners because I was used to turning in early because of the understeer. But the dampers held the front of the car up and virtually eliminated the understeer."

"I then had the Supashock dampers fitted to my historic Porsche tarmac rally car. Normally with the Porsche, one of the handling characteristics is power understeer on the exit of corners; you hesitate on the throttle coming


out of corners because the car wants to push straight ahead. But the Supashock dampers dialled out a lot of that power understeer, meaning I was able to accelerate earlier on the exit of corners."


Stay tuned for more exciting details on the revolutionary Supashock suspension components.


If you have any questions, feedback or would like to place an order tailored to your car contact:

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