RM Series Inverted Coilover

- Inverted monotube damper bodies
- Pillowball upper mount
- Camber adjustable top mounts
- Aluminium top plates
- 30 way adjustable damping
- Adjustable spring platform
- Height adjustment via bottom mount to retain full damper travel
- Bearing mounted upper front spring platform
- Dust boot to protect damper seals
- * some features are dependent on model

Inverted damper:

The BC Racing RM series feature high quality damping adjustable monotube inverted dampers at the front or front and rear, depending on vehicle. The RM coilovers offer the majority of the features of the BR series but with the additional benefit of the inverted damper unit. Inverting the damper unit brings with it a number of advantages.

Reduced unsprung weight

Unsprung weight is reduced by moving the oil and gas reservoir way from the hub and attaching it to the shell. Unsprung weight is vital to a cars performance as a lighter wheel and hub assembly which readily moves in response to road bumps will have more grip when tracking over an imperfect road. A high unsprung weight can lead to wheel hop over bumpy ground and will reduce the quality of the ride and also untlimate handling as anything that impairs the suspension ability to maintain contact between road and tyre will be of detriment to the cars performance.

Reduced heat transfer to the gas and oil reservoir

Any hard driven car with generate a lot of heat within its braking system. This heat is conducted through the hub to the damper unit. By inverting the oil and gas reservoir the oil and gas is moved away from the hub assembly . This reduces the amount of conducted heat being transferred from the braking system to the hub then to the damper and then on to the gas and oil. As the oil and gas is heated its properties change which has a knock on effect on the damping

characteristics of the suspension. By keeping the gas and oil temperatures down BC Racing RM coilovers keep damping rates more consistant resulting in better performing suspension and ultimately allowing you to corner faster, which is the bottom line.

Reduced flex

The large 42mm damper rod and inverted design gives the inverted damper units much greater strength and resistance to side loadings. By reducing flex the RM inverted units lead to more consistant steering geometry resulting in more predicatable and responsive handling.

Corner weight adjustment:

The lower spring platform of the BC Racing coilovers are adjustable. This allows the car to be set up for corner weighting to achieve perfect balance and ensures that maximum tyre efficiency is achieved.

The car needs to be placing equal weight on each tyre on an axle so both front tyres need to be taking equal loading as do both rears. This makes sure that both tyres are doing their equal share of work when cornering which increases overall grip, maximises corner speed and reduces lap times.

Optional assister springs can be purchased to allow wheel droop to be dialled into the unit to suit specific needs.

Ride height adjustment

Ride height is determined by the position of the coilover bottom mount. The mount can be wound up and down the damper body to give a full range of adjustment.

Because ride height is determined by an adjustable bottom mount rather than spring platform you retain full damper travel regardless of the ride height run.

Damping adjustment:

The RM Series coilovers feature 30 way damping adjustment that combines both rebound and compression in one adjuster for simplicity and ease of use. This adjustable facility allows you to fine tune the vehicle to meet the relevant conditions.

By tweaking front and rear damping you can adjust the way the car handles. Increasing damping force on the rear relative to the front, for example, will start moving the vehicle into a more oversteer orientated stance.

If you want to go drag racing in a rear wheel drive car then you want the back of the car to squat off the line to maximise weight transfer to the rear and therefore onto the rear tyres. This maximises traction and helps prevent wheel spin. To achieve this you would soften the rear dampers to allow faster compression. If you had the rear dampers set to hard, as you might run the car on a race track, then the car would be less inclined to squat so traction would be reduced.

Conversely, if you want to go drifting and are finding it hard to break traction and are having problems with understeer then making the rear dampers harder will help reduce traction whilst making the front dampers softer will give greater front traction. This will make the rear of the car looser whilst minimising understeer thus altering the vehicles handling characteristics more towards drift than drag, road or track.

Pillowball (rose joint) upper mount:

Many of the BC Racing RM coilovers come with pillowball upper mounts. The mount itself is made from aluminium alloy, anodised and then bead blasted to give a high quality, durable finish.

The pillowballs themselves are of Japanese manufacture and their solid nature eliminates any flex or play associated with the standard rubber mounts so improving response and handling.

Camber adjustment:

If its possible to include camber adjustment on your vehicle then the BC Racing coilovers automatically include camber adjustable aluminium pillowball top mounts. These feature the same high quality Japanese manufactured pillowball but give the added benefit of an adjustable top mount that allows camber to be set to suit your needs be it road, track or drift.

Corrosion protection:

The damper units are black chromed steel to give superb durability even through the darkest of European winters. The aluminium components (top mounts, locking collars etc) are anodised and the steel lower mounts go through an electrophoretic disposition process followed by powder coating. A random selection of steel components (brackets, dampers, screws etc) are put through a salt spray test once a month to check the quality of the protective processes and that anti corrosive properties are kept at the highest possible standard.

High quality coil springs:

BC Racing coilovers only use the highest quality steel for their spring manufacturer. They are produced from SAE9254 high strength durable cold wound steel.

The springs are compression tested through over 500,000 cycles with less that 5% deformation.

Patented concave lower locking collar:

Coilovers use a locking collar to prevent the bottom mount becoming loose. If the bottom mount becomes loose then the damper body can work its way down into the bottom mount so reducing ride height on that one corner which can lead to dangerous handling characteristics. This is a very common problem for coilovers in general. BC Racing utilise an innovative and patented designed lower locking collar with a bevelled edge that seats into a corresponding bevel in the coilover bottom mount. This vastly increases the surface area that the locking collar works on and so prevents the common and dangerous problem of the locking collars working loose.

High quality oil:

BC Racing dampers use a sophisticated shim stack design and high quality oil to consistently control the compression and rebound speed of the damper rod even under the most extreme conditions.

As the vehicles travels over rough ground the compression and rebound motion of the damper rod heats the oil. Poor quality dampers use cheap oil whose characteristics alter with varying temperatures. Its vital that high quality oil is used that can maintain consistent viscosity under a wide temperature operating range. Once the oil start to degrade, its properties change leading to damping changes leading to changes in the vehicles handling characteristics.

BC Racing ensures that only high quality oil is used so that damping rates are maintained not only for the moment in hand (i.e. whilst out for a back road blast on or track) but that long term longevity is maximised with oil that doesn't degrade quickly over time thus extending the dampers operating life significantly.

Nitrogen pressurised dampers:

When you work a damper hard on track or on high speed bumpy roads you can cause the oil to aerate and cavitation can occour. This causes foaming which effectively reduces the oils viscosity and so reduces the units damping effect. High quality oil goes a long way to help reduce this problem but BC Racing go one step further and pressurise the dampers with nitrogen. The nitrogen exerts a pressure on a floating piston which in turn exerts a permanent pressure on the oil dramatically reducing aeration and so improving the consistency and quality of the damping. The pressurised nitrogen also adds an additional element of effective spring rate to the damper unit.

Bearing mounted upper spring platform:

Because the spring twists as it compresses it is very important to minimise stiction between the spring and its seats. If this tension is not relieved then spring binding can occur leading to the spring rate effectively altering slightly as the spring compresses and extends. The tension

generated can lead to rapid deterioration of the spring pearches and in extreme cases can cause the spring platform and locking collars to loosen. This can lead to the platform and locking collars 'walking' down the damper resulting in un even ride height and danger of the spring dislocating under full damper extension.

The friction between spring and seats also has an effect on steering effort as the springs are physically turned with the wheels. This introduces additional unnecessary friction into the steering system which has a knock on detrimental effect on the vehicles handling characteristics.

The bearing mounted upper spring platform is one of BC Racings innovative designs. By vastly reducing stiction between the spring and its seats the BC Racing units avoid the above problems thus improving the efficiency of the steering system and allowing the spring and damper to work as designed.

Optional upgrades:

Damper adjusting extenders – to save you the time and trouble of removing the parcel shelf each time you want to adjust the damping on your BC Racing coilovers we can offer pairs of adjuster extenders. These attach to the adjuster knob on the top of the coilover and are available in three lengths, 110mm, 200mm and 250mm. They attach in seconds with a simple grub screw design.

Assister spring perch – you might prefer to run some droop with your coilovers or maybe you want to alter the ride by adding an additional smaller assister spring. The spring perch and assister springs allows you to do this. The springs are available in a wide range of spring rates.

Pillowball top mount – some applications come with hardened rubber top mounts as standard to ensure the highest quality ride and keep costs as reasonable as possible for road use but we often offer a pillowball upgrade for these vehicles should you want to remove this flex and make the car a little more hardcore. Upgrading to pillowball eliminates the flex inherent in even the hardened rubber used by BR Racing so improving the handling for those looking for the ultimate.