



SUSPENSION KIT INFORMATION

for kit #D190-3211-K
1996-99 M3; Stage I

Congratulations on the purchase of a Dinan Engineering Suspension System for your car. Thousands of hours of research and development have gone into our systems to ensure that all of our chassis components work in concert with each other. Our goal is to improve upon the excellent handling already engineered into every BMW by the factory.

Note to technicians -- Please ensure that the customer receives this information packet after installation is complete.

PARTS LIST

Qty	Part Number	Description
2	D140-1364	Koni Front Strut Inserts
2	D140-0720	Koni Rear Shocks
2	D100-0520	Front Springs
2	D100-0323	Rear Springs

INSTALLATION NOTES

- Most components are installed in accordance with BMW's recommended factory procedure. Those items which require a different procedure have been supplied with their own installation instructions.
- After installation, the vehicle must be aligned to the included specifications. *Dinan's specifications have been optimized for a vehicle equipped with the components supplied in this kit. If aftermarket suspension components from another manufacturer are installed, your alignment requirements and results may vary.*

VEHICLE SETUP

*** Dinan Engineering does not suggest or condone driving faster than posted speed limits, or in a manner unsafe for given conditions. Performance driving should be done under controlled conditions on a track, not on the street.*

Vehicle dynamics is a very complex subject. Numerous factors affect how a car will respond to driver inputs and road conditions. The information presented in these two sections was obtained thru extensive testing using a vehicle meeting the following conditions:

- The suspension components were installed per BMW factory recommended procedure and/or Dinan's supplied instructions.
- The vehicle has been aligned to Dinan's specifications. This is a critical first step! Do not attempt to evaluate a car's handling unless the alignment angles have first been measured and adjusted to the specified values.
- Wheels and tires are of the same size and type on all four corners. Different size/type tires mixed on a car can dramatically affect the car's handling.
- Tires are in good condition, and inflated to the following cold pressures:
 - 32 psi front / 30 psi rear for street tires
 - 30 psi front / 28 psi rear for showroom stock racing tires (i.e., BFGoodrich RI, Yokohama A008R or A032R, etc.)

The recommended initial settings for this suspension kit are as follows:

Front struts: 1-1/8 turns up from full soft. Struts shipped from Dinan have already been adjusted to this setting.
 Rear shocks: 1-1/8 turns up from full soft. Shocks shipped from Dinan have already been adjusted to this setting.

VEHICLE ADJUSTMENTS

The above settings were determined thru our testing to create a very responsive and well-balanced vehicle which is still comfortable in everyday driving. Note, however, that there is no "magic" vehicle setup which performs optimally under all conditions.

Numerous factors affect how a car will handle. Some of which include:

- Weather and road surface condition
- Vehicle weight and weight distribution
- Tire type, size, and condition
- Engine output and power curve
- Driving style

The adjustable features of this suspension kit will allow you to modify the vehicle's handling to suit your needs. Note: the shock adjustment is very sensitive -- changes should be done in pairs (i.e., both front struts adjusted equally), and in steps of 1/8 of a turn, no more, no less. *We have found that keeping the shocks set between 1 and 1-1/4 turns up from full soft will cover the majority of street and track conditions that you are likely to encounter.*

Some definitions:

- *Understeer*: The condition when the front tires lose traction before the rear tires. Since the front tires are sliding, the car will tend to go in a straight line and steering response diminishes. Understeering cars tend to be easier to control for novice drivers.
- *Oversteer*: The condition when the rear tires lose traction before the front tires. Since the rear tires are sliding, the car will tend to get sideways. Oversteering cars are generally less stable and more difficult to control.
- *High speed corner*: For the purposes of this discussion, these are corners on the track which are taken at speeds in excess of 70 mph.

For the best street/track compromise

- Set the rear shocks at 1-1/8 turn
- Set front shocks to 1 turn for the street, and 1-1/4 turns for the track.

If a generally softer setup is desired

Set all shocks to 1 turn up from full soft -- the softer valving will provide a more comfortable ride. If the car oversteers with this setup, adjust the front swaybar 1 hole stiffer, if this option exists.

If the car exhibits oversteer during corner entry

Adjust one or more of the following:

- Set front struts stiffer by 1/8 turn. This adjustment has several effects:
 - a) less oversteer on corner entry (also less likelihood of snap oversteer)
 - b) improves stability at high speeds
 - c) may hinder power application during 1st and 2nd gear corner exits
 - d) ride quality may degrade due to added stiffness
- Set rear shocks stiffer by 1/8 turn. This adjustment has several effects:
 - a) increases corner entry understeer
 - b) improves stability at high speeds
 - c) ride quality may degrade due to added stiffness

If the car does not turn-in as well as you'd like (corner entry understeer)

Adjust one or more of the following:

- Set front struts softer by 1/8 turn. This adjustment has several effects:
 - a) less understeer during corner entry
 - b) less stability at high speeds
 - c) allows more power application during 1st and 2nd gear corner exits
 - d) improved ride quality

- Set rear shocks softer by 1/8 turn. This adjustment has several effects:
 - a) improved corner entry
 - b) less stability at high speeds
 - c) improved ride quality

If the car oversteers in some (but not all) corners

This may be the result of abrupt driver inputs upsetting the car. We suggest stiffening all four shocks by 1/8 turn. The increased stability from the added damping often helps to make the car less sensitive to abrupt driver inputs.

In general, cars with good corner entry response will perform better on tracks with many low-speed, tight corners. For a track with more high-speed corners, the set up should have more of an emphasis on stability instead.

We hope you enjoy your Dinan Engineering suspension kit!