



## 3<sup>rd</sup> Gen MagneShocks™ for STREET-RODS

### What is a 3<sup>rd</sup> Gen MagneShock™ ?

- The MagneShock™ is an “intelligent *Computer Controlled* ULTRA-adjustable” shock absorber (damper) system.
- It is the ULTIMATE shock “SYSTEM” – much more than any double, triple or even six-way adjustable shock! It allows you to actually “tailor” the shape of the Force-Velocity curve – by merely inputting the damping you want at five (5) different velocities.
- You can set the ENTIRE damping curve on one or ALL 4 SHOCKS simultaneously to settings YOU determine. And, you can save it all as a “SETUP”.
- You can save up to five (5) SETUPS. And, call any of these SETUPS up with a Remote-Switch, instantly changing ALL 4 shocks to the settings you previously determined, whenever you like.

EXAMPLE: You could have a setup for:

1. SMOOTHEST RIDE - Street – very soft for the BEST RIDE.
  2. Normal HIGHWAY – soft ride but very STABLE.
  3. HIGH-SPEED Cruising – exceptionally STABLE.
  4. DRAG Launch – same as ProStocks & ProMods –best 60 ft times.
  5. Super STIFF – for “Giant Burnouts” or whatever else you want.
- It has UNIQUE “damping bump-stops” for both Rebound & Compression - you can program the points, near the limits of travel, where the damping force will increase to FULL-STIFF to help prevent Bottoming-out & Topping-out.
  - Uses Magneto-Rheological (M-R) fluid (instead of oil).
  - It uses solid-state electronic control instead of mechanical control.
  - Offers more adjustment & more features than ANY OTHER shock in the World.

### Want The ABSOLUTE LATEST and the ABSOLUTE BEST?

This is it!

#### The MagneShock SYSTEM is composed of 4 basic components

(& the cables in between them).

1. The CONTROLLER box is the “Brains”.  
It tells each shock what damping to have at all times.
2. The SHOCKS look like conventional shocks (except for the cable on top).
3. The PROGRAMMER box is used for:
  - A. Defining the Force-Velocity “curve” of each shock,
  - B. Defining complete shock “setups”,
  - C. Setting position of “Damping Bump-Stops” & other shock parameters,
  - D. Letting you see what all these settings are.
4. The REMOTE Switch mounts in the cockpit for “REAL-TIME” adjustments.  
It will instantly change all four (4) shocks to any pre-defined “setup”.

You need buy only one set of shocks.

The Controller adjusts them to any desired damping over a very wide range.

Can be shocks OR coil-overs. Coil-over kits are available for 2-1/4” & 2-1/2” ID springs/



### Features:

- There is NO LIMIT on your creativity. The switches don't have to be manual:
  1. You could change all the shocks when you put the throttle to the floor.
  2. You could have it change all the shocks when you turn on the Nitrous or when Blower pressure exceeds some value.
  3. You could have different SETUPS for different gears.
- The Programmer adjusts the shocks individually, in both Rebound & Compression, to ANY desired Force-Velocity curve
- You can define five (5) points on the Force-Velocity curve – including at ZERO velocity!
- Response curves that are IMPOSSIBLE on conventional shocks are easy on MagneShocks.
- The 5-position Rotary Remote-switch can be mounted on the dash to call any of the five (5) “setups” anytime you desire.
- UNIQUE “damping-bump-stops”, for both Rebound & Compression, built-in.  
Its kind of like rubber Compression-Bumpers but MUCH BETTER -  
– you ALSO have an “Extension-Bumper”, they can work in BOTH directions & they ABSORB the energy and don't “spring back” like rubber.  
You can define the exact points, at both extremes of shock travel (both directions), where each shock goes to FULL-STIFF.  
Prevent the shocks from Bottoming out OR Topping out – improves ride & handling on rough roads.  
This could SAVE your suspension system (and a lot more) if your car is really LOW.
- All changes made on the Programmer are in REAL-TIME – with the car running or not.
- You can disconnect and remove the Programmer anytime you are not actually programming (OR; you can also leave it connected all the time).
- The Programmer can be easily read in bright sunlight or at night.
- Very low current draw (averages about 1 ampere for the entire system – MAX of 2 amps).
- Operates on standard 12V (or even 16V) systems - Simply connect the Controller to the ignition or accessories switch so it is on when the engine is on.
- MagneShocks™ is relatively fade-free and insensitive to heat when compared to ALL other shocks.
- We offer ANY LENGTH and ANY MOUNTING type – whatever you have – we can make it –with NO extra charges.
- Shocks with more or less damping “RANGE” (proportionally much stiffer or much softer) are available on special order.
- Software development is “continuous” - updates for the Programmer will be available to all for a modest cost.

MagneShock™ Div. of Arre Industries Inc. 5412 New Peachtree Rd. Atlanta GA 30341

Phn: 770-451-8694 Fax 866-586-8854

[www.magneshocks.com](http://www.magneshocks.com) [mail@magneshocks.com](mailto:mail@magneshocks.com)



## What are the Advantages of 3<sup>rd</sup> Gen MagneShocks?

1. You don't have to buy a lot of shocks.  
Because you can "tailor" each shock to almost any Force-Velocity curve (MILLIONS of combinations are possible).  
You will NOT need to buy ANY specially valved shocks.  
You will usually only NEED four (4) MagneShocks – if you have 4 you have EVERYTHING!
2. You do not need to "re-valve" shocks. The programmer will make each shock whatever you want it to be.
3. No waiting, research or extra money for specially valved shocks.  
You can PROGRAM & try curves you'd never dream of BUYING. You can make "useful" curves that are IMPOSSIBLE on conventional shocks.
4. Re-programming a shock takes only seconds. No need for tedious & EXPENSIVE re-valving work (that can only be confirmed with a shock dyno).
5. There is no need for a "shock-man" and no need for a shock dyno. And, you can do it over & over again.
6. No need for testing time.  
We will help you by furnishing settings & recommendations FREE of Charge – just call or look on our website
7. You can change the shock's damping in "REAL-TIME" with the programmer  
It can actually be done while GOING DOWN THE ROAD. .
8. Then, if you find a setup you like.  
When you have the shocks set as you like you can SAVE the entire "setup".  
Any "setup" can be changed at a later time to however you desire –  
- as many times as you want
9. You can even have a "SETUP" for the RAIN!  
Rain requires very soft shocks for maximum traction – softer than you would ever dream of normally running – you CAN have it - WHEN you want it.  
And, it can SAVE your wheels, tires & suspension system.
10. UNIQUE "damping-bump-stops", for both Extension & Compression, built-in.  
Bottoming-out can be handled to a degree with rubber bump-stops.  
Dealing with topping-out is usually impossible.  
This can improve SAFETY as well as handling on rough roads.  
And, it can SAVE your wheels, tires & suspension system.
11. MagneShocks are not cheap. BUT, the ARE the FUTURE.  
**Think about it** - How much would you have paid - sometime in the past - to have the RIGHT shocks when you NEEDED them? (to avoid an accident?)



## HOW IT WORKS

Each shock is controlled by a computer and each shock contains a very fast and accurate position sensor.

Each sensor tells the controller the absolute position of its shock's piston (4,000 times every second).

The computer's MCU then uses this data to calculate the direction of travel and actual piston velocity of each shock.

The MCU then controls the damping force "automatically" in response to this data.

It updates the damping force 4,000 times every second for each shock.

It is velocity sensitive, just like a hydraulic shock, but it is also position sensitive.

The computer knows when the suspension is about to bottom out or top out & it automatically increases damping force.

This improves handling and minimizes the stress on everything – which reduces failures of suspension components.

The force – velocity curve is programmed BY YOU into the controller.





### Force-Velocity Curves:

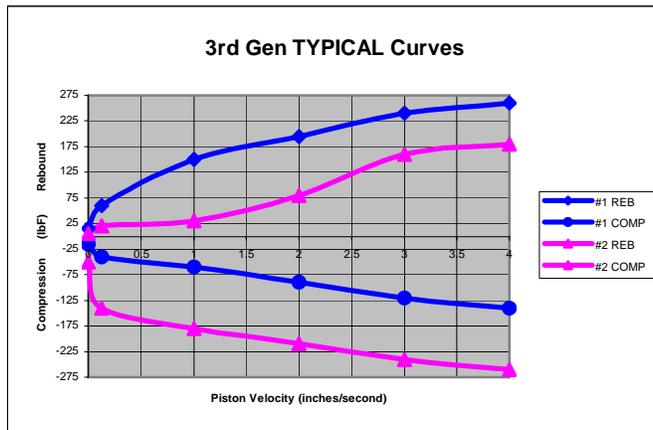
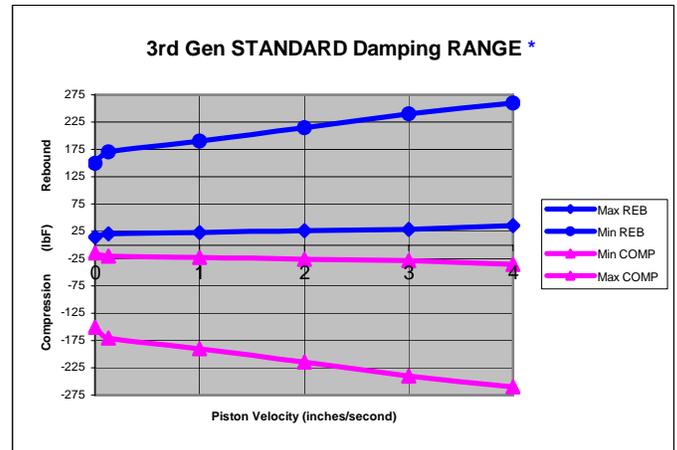


The damping can be adjusted at FIVE (5) velocities: 0, 1/2, 1, 3 & 7 inches/second.  
 The Controller linearly interpolates the damping in between these velocities.  
 The slope of the curve above 7 in/s is fixed (how fast it increases damping with increases in velocity).  
 The damping range for Rebound & Compression is about 10:1 at any of these 5 velocities.  
 Typically, damping at 0 in/sec can range from 15 to 170 lb,  
 damping at 1/2 in/sec can range from 16 to 180 lb,  
 damping at 1 in/sec can range from 17 to 190 lb,  
 damping at 3 in/sec can range from 26 to 240 lb,  
 damping at 7 in/sec can range from 36 to 320 lb.

**Fig. 1 - Standard Damping Range**  
 This represents the MIN & MAX possible dampings available on this shock.

You can select anything desired, at 0, 1/2, 1, 3 & 7 in/sec, in between these limits (between the BLUE lines for Rebound, between the Violet lines for compression).

\* Shocks with stiffer or softer RANGES are available. The relative "shape" of the curve "limits" will be about the same. But, the FORCE will be "proportionally" more or less (at all velocities).



**Fig. 2** This represents some "TYPICAL" Curves used on performance cars.

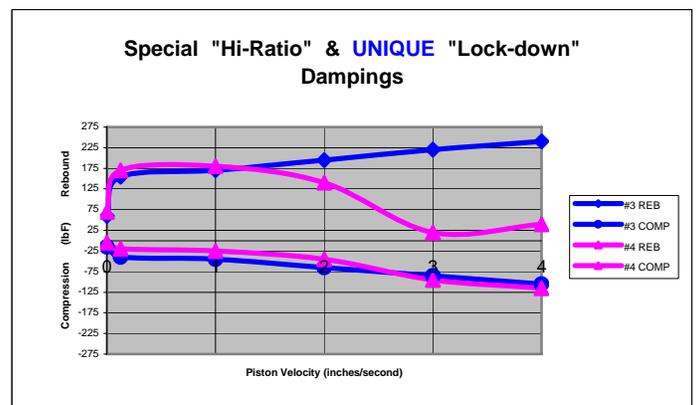
The BLUE one has more REB than COMP & is "typically" degressive.

The VIOLET one starts out with very Soft REB & very stiff COMP but it becomes nearly 50-50 by 4 in/sec (often used on a "90/10" DRAG Front).

**Fig. 3** This represents some UNIQUE & unusual curves.

The BLUE one has a high RATIO (Reb/Comp) & very little "slope".

The VIOLET one is simply IMPOSSIBLE with a conventional shock. It actually gets SOFTER as piston velocity increases!



**ONLY MagneShocks can get SOFTER as velocity goes up!**



## M-R Fluid

The M-R fluid is basically composed of micron size particles of iron suspended in an oil base. In the presence of a magnetic field these iron particles want to form chains & stick together. The stronger the field - the harder these particles stick together. This phenomenon changes the apparent viscosity of the M-R fluid, which, in turn, changes the damping force of the shock. M-R fluid's viscosity can be changed continuously; actually as fast as the magnetic field changes. The piston contains an orifice, through which the M-R fluid passes, and an electromagnet. The controller varies the magnetic field of the electromagnet and the damping force varies proportionally. The MagneShock™ has NO moving parts (like valves, springs, etc.) other than the piston and rod itself. Reaction time is very fast (usually only a few milliseconds).

### **TYPICAL Shock Dimensions & Uses:** (NOTE: We do not have STRUTS at this time)

Part No.	Description	Mountings	Extended	Comp.	Stroke
5239-20	Fronts	Eye/Eye (bush. OR brgs.)	14.74	10.83	3.91
5243-20	Front, JAG Rear & Rear of radically lowered cars	Eye/Eye (bush. OR brgs.)	15.51	11.23	4.28
5252-20	Front & Rear	Eye/Eye (bush. OR brgs.)	17.32	12.12	5.20
5261-20	Rears	Eye/Eye (bush. OR brgs.)	19.35	13.24	6.11
5280-20	Rears	Eye/Eye (bush. OR brgs.)	23.18	15.23	7.95
5239-15SB	Front of lowered GMS & big Ford type susp.	stud/barpin	14.21	10.30	3.91
5243-15SB	Front of STD-HEIGHT GMS & big Ford type susp.	stud/barpin	14.98	10.70	4.28
5243-15SD	Front of STD-HEIGHT early Mustang/AMC type susp.	stud/dual-stud	14.76	10.48	4.28
5261-20BE	Rear of lowered/racing most GMS (Monte Carlo etc) susp.	bar-pin/eye	19.35	13.24	6.11
5261-20BS	Rear of lowered/racing 70-82 Camaro susp.	bar-pin/stud	18.82	12.71	6.11
5261-20SE	Rear of lowered/racing 67-69 Camaro, big Ford susp.	stud/eye	18.82	12.71	6.11
5261-20SS	Rear of lowered/racing early Mustang etc. susps.	stud/stud	18.29	12.18	6.11
5280-20BE	Rear of STD-HEIGHT most GMS (Monte Carlo etc) susps.	stud/eye	23.18	15.23	7.95
5280-20SE	Rear of STD-HEIGHT 67-69 Camaro, big Ford susp.	stud/eye	22.65	14.70	7.95



#### Mountings:

Standard mountings are 1/2" ID spherical bearings on both ends (5/8" wide ball) and 5/8" ID bearings are a very popular option with Street-Rods. However, MagneShocks are available with whatever type of mountings you need. So, we also offer special step-sleeves (for smaller diameter bolts) & TEFLON bearing races. For "stock" type mounts we offer Rubber or Urethane bushings & several types of ends such as bar-pins & dual-studs – whatever you need.

#### Shock Absorber:

Piston, Rod & Floating-piston are the ONLY moving parts – no valves, springs, discs, needles, knobs, checks or other moving parts  
 Bore: 48mm  
 Rod: 14mm (303 stainless steel)  
 Shock Body: 54mm OD (6061-T6 aluminum)  
 Threaded body accepts old Carrera & ARS coil-over kits (very fast threads - 1/4" pitch)  
 Mono-tube "gas pressure" design with floating piston  
 Gas pressure: as required for damping range - usually 100 - 150 psi

#### Controller:

Aluminum box (1.5 lb) is 8-1/2 x 4-3/4 x 3-1/4", can be mounted anywhere in the car – MUST be grounded to the chassis.

#### Programmer:

Plastic box is 6-3/4 x 4-3/4 x 2-1/4", need not be mounted in the car, does not need a ground.

#### Cables:

Each shock cable is usually about 9' and the others are shorter. Other lengths are available upon request. Connectors are high quality, light plastic, water resistant, twist-lock types with gold plated contacts.

#### Remote Switch:

The 5-position switch is usually mounted on the dash where you can select any of the five (5) SETUPS at will. A 2-position switch is also available. Normally mounted on the Steering-Wheel - you can switch between two SETUPS with a "flick" of your thumb.



Any type of shock mounting is available on special order.

Shocks with a stiffer or softer damping range are also available.

**MagneShock™ Div. of Arre Industries Inc. 5412 New Peachtree Rd. Atlanta GA 30341**  
 Phn: 770-451-8694 Fax 866-586-8854 www.magnEshocks.com mail@magnEshocks.com