

PROGRAMMING the 3rd Gen MagneShock™ System for DRAG-RACING

Getting Started

- Identify all of the cables and their corresponding connections located on the controller and display.
 - **Do not plug in components when the controller is powered.**
 - The Controller is fused (4 amp). Requires 12 or 16-volt supply (max 2 amp) and should be activated with the ignition switch or from an accessory power wire.
 - Securely route shock cables away from moving parts and exhaust components.
 - Securely mount Controller box and **be certain it is grounded to the chassis.**
 - The Programmer box need not be mounted and need not be grounded.
- It is not required for operation – only for Programming the Controller and seeing programmed values.

Using the PROGRAMMER (Display box)

Mode is changed by the **Display-On-Off** button.

Different “Parameters” are selected & changes are **SAVED** by the **Edit/Save** button.

You move from one “value” to another on the **WHEEL** LEDs (or sometimes view the different **SETUPS**) by the **CW-CCW** switch.

You make “values” higher or lower with the **STIFF-SOFT** switch.

You can define the Force-Velocity curve of each shock, in each **SETUP**, at **THREE (3)** different Velocities (in rebound & compression): **0** (ZERO velocity – the force required to start the shock moving), **1** inches/second & **3** inches/second.

There are **8 SETUPS** (#0, #1, #2, #3, #4, #5, #6 & #7): Each contains all the Rebound & Compression damping settings at all 3 different velocities for all 4 shocks (displayed on the **WHEEL** LEDs) and the timer duration.

OFF Mode (“F”):

When first powered up an “F” (display oFf) appears in on the bottom center **COMMAND** LED & the upper center **SETUP** LED will display “0, 1 or 4” depending on the position of the **SELECTOR** switch (“0” if cable is disconnected).

NO other LEDs light up – nobody can see your settings unless you want them to.

Pressing the **Display-On-Off** button will cycle through “A” (Automatic), “U” (User) & “E” (Edit) & then restart at “F”.

NOTE: the Controller is ALWAYS functional – you just can see much in this mode.

USER Mode (“A”):

This can be used to “SIMULATE” an actual race (and verify switching & damping forces on a dyno).

To **SEE** settings: press **Display-On-Off** again – it goes to Automatic mode, “A” displays in the **COMMAND** LED.

Only the “0” velocity damping settings display in **WHEEL** LEDs.

If the **SELECTOR** switch is connected, it will display the starting **SETUP** for each position (#0,#1, or #4). **CW-CCW** is NOT active.

If the **SELECTOR** switch is on **BURNOUT**, only **SETUP “0”** is displayed

If the **SELECTOR** switch is on Race-1 it will first display the starting **SETUP “1”**.

If, at this point, you give it a **LAUNCH** signal the **SETUP #1**TIMER starts & shifts to **SETUP #2** - the **TIMER** runs & shifts to **SETUP #3**.

Its timer will start & then shift to **SETUP #7** when it receives the **CHUTE-PULLED** signal or when it times out – whichever comes first.

It will then stay in **SETUP “7” (SHUT-OFF/Braking)** until you move the **SELECTOR** switch or turn off power to the Controller.

Race-2 is similar except it starts in #4, shifts to #5, then to #6 & finally to #7 (**SHUT-OFF** is the same for both Race-1 & Race-1).

Pressing **Edit/Save** will cycle through the 3 velocities and the timer setting (“H”=Hold time).

If the **SELECTOR** switch is NOT connected it will be the same as **USER** Mode.

USER Mode (“U”):

Used to **SEE** all **SETUP** settings or for testing a a shock on the dyno. It **IGNORES** the **SELECTOR** switch, **LAUNCH** & **CHUTE-PULLED** signals.

Press **Display-On-Off** again – it goes to **USER** mode, “U” displays in the **COMMAND** LED., the **CW-CCW** is active & you can move it to see all **SETUPS**

(The **SELECTOR** switch will be ignored if connected. You cannot see parameters “L” & “P” in this mode).

Velocity “0” is 1st displayed. Pressing **Edit/Save** cycles through the 3 velocities (“0”, “1” & “3”) &e the timer setting (“H”=Hold time).

EDIT Mode (“E”):

To Edit damping, timing & the other special parameters.

Press **Display-On-Off** again – the **COMMAND** LED displays an “E”. The **SETUP** LED will initially display **SETUP “0”**.

You can go to any desired **SETUP** (#1, #2, #3, #4, #5, #6 or #7, plus the “L” and the “P” parameters) with the **CW-CCW** switch.

It will **NOT** cycle - you can move forward & backward between them.

To Edit/Change DAMPING:

Once you have selected the **SETUP** with **CW-CCW**: Pressing **Edit/Save** again will allow you to actually edit the selected **SETUP**.

The **COMMAND** LED will now alternately flash between “E” and “0” (the first velocity). & ONE of the 8 **WHEEL** LEDs will flash.

The alternating “0” in the **COMMAND** LED is the first editable Velocity (the numbers on the **WHEEL** LEDs are the respective forces required to start the shock moving – ZERO velocity).

Now you can use the **CW-CCW** switch to move the “flashing” to the **WHEEL**’s and Rebound or Compression that you want to edit.

Then, move the **STIFF-SOFT** switch up or down to get the actual damping force you desire at ZERO-velocity.

NOTE: A displayed number without a decimal point it has an “implied extra ZERO”.

Example.: Damping “12.” = 12.(0) = 12 lb, whereas “12” = 12(0) = 120 lb

You can then move to any other **WHEEL**’s Rebound or Compression values to change that damping at ZERO-velocity.





To change other velocities & TIMING: Each time you press **Edit/Save** the **COMMAND** LED will cycle through “0”, “1”, “3” (velocities), “H” (timer Hold time) and then start over at “0” (alternately flashing with “E”).

You can use the **CW-CCW** & the **STIFF-SOFT** switches to edit all the damping values in each velocity.

When you select the **TIMER**, “d” will display in the **COMMAND** LED ” (alternately flashing with “E”) & **TIMES** will display only in the **FL WHEEL** LEDs (there is only one **TIME** for each 4-wheel **SETUP**). The total **TIMER** range is from 0.010 to 99.990 seconds.

TIMER: The time is displayed in **TWO WHEEL** LEDs. The top number is **WHOLE** Seconds and ends with a decimal point.

The two together are the whole “Hold time”. The bottom number is **MILLISECONDS** (changeable in **Hundredths** of a second).

Example: TOP number “01.” = 01.(0) = 1. Total Time **OR:** TOP number “04.” = 04.(0) = 4. Total Time LOWER number “54” = .55(0) = 550 = **1.550 sec.** LOWER number “07” = .07(0) = 070 = **4.070 sec.**

NOTES:

1. The **TIMER** is not used (ignored) in **SETUP** #0 (**BURNOUT**) – it remains in this **SETUP** as long as the **SELECTOR** switch is set to “**BURNOUT**”.
2. When in Race-1 (or Race-2) it starts in **SETUP** #1 (or #4). The timer does **NOT** start until it gets the **LAUNCH** signal.
3. The Computer looks for the timer to end when in **SETUP** #1 or 2 (and in 4 or 5). When it ends, it “shifts” to the next **SETUP**.
4. When in #3 (or #6) is looking for the **CHUTE-PULLED** signal to shift to #7 (**SHUT-OFF/Braking**) for the end of each run.
5. However; if #3 (or #6) times out, it will “shift to **SETUP** #7 (Shutoff) even if it did not receive the **CHUTE-PULLED** signal.
6. Thus, the **TIMER** also serves as a **SAFETY!** If it doesn’t receive a signal by the time specified it “shifts” to **SETUP** #7 anyway. So, it is “prudent” to set the #3 & #6 timers to slightly later than the time anticipated so that everything will still work pretty well even if for some reason it does not get its **CHUTE-PULLED** signal.
7. The **CHUTE-PULLED** signal overrides any other **SETUP** – it will go to **SETUP** #7 whenever it gets this signal.

To SAVE your changes:

At ANY time, you can **PRESS & HOLD Edit/Save** for about **TWO SECONDS** until the **COMMAND** LED changes to “S” for **SAVE**.

When you release the button, ALL numbers flash to indicate you have **SAVED** any changes made in this SETUP (or in the parameters).

It will **NOT** exit the **EDIT** mode after a **SAVE** – you may continue to make changes (& **SAVE** them if desired) to this **SETUP** (only).

NOTE: If you do not SAVE the data, any settings you have input will stay “**active**” until you get **OUT** of the **EDIT** Mode or turn the system power off. In either case, it will **LOSE** your changes & go back to the last “**SAVED**” settings.

To EXIT the EDIT mode:

At any time, you can simply press the **Display-On-Off** button to **EXIT** the **EDIT** mode.

Any changes made & **NOT SAVED** will be **LOST!** Anything you previously **SAVED** will still be there.

To Edit/Change “L” (Lowest-Limits of damping):

When you 1st enter the **EDIT** mode, use the **CW-CCW** switch to go past **SETUP** #7, to “L”.

(Normally, you don’t have to change these numbers – only if you use special, usually very stiff, shocks.)

[If already in **EDIT** mode: Press **Display-On-Off** to exit & re-enter **EDIT** mode (**COMMAND** LED displays “E”), use **CW-CCW** to select “L”]

Now, pressing **Edit/Save** again will allow you to actually **EDIT** the “Lowest-Limits” for each shock.

It will display special numbers in the same **WHEEL** LEDs that represent each shock.

These numbers are unique to each **TYPE** of shock (the Controller uses them to determine the Lowest-Limits of damping force).

Each MagneShock comes with these values marked on it. Controllers come preset from the factory for the most common shocks.

NOTE: A displayed number without a decimal point it has an “implied extra ZERO”.

Example.: Number “75.” = 75.(0) = **75**, whereas “12” = 12(0) = **120**

The 1st number is lowest & goes in the top WHEEL LED (Rebound position) & the 2nd lower number goes in the bottom WHEEL LED (Compression position).

To Edit/Change “P” (Position of Rebound & Compression BUMP-STOPS):

When you 1st enter the **EDIT** mode, use the **CW-CCW** switch to go past “L” to “P”.

These are the positions where the shock goes to **FULL STIFF** - to reduce the chance, & the bad effects, of **Bottoming & Topping** out.

These numbers also display in the two **WHEEL** LEDs for each shock and they can be set for each shock individually.

The upper **WHEEL** LED is for **Rebound** (largest), which is the point where it goes to **FULL STIFF** to help prevent topping out the shock/suspension.

The lower **WHEEL** LED is for **Compression** (smallest), the point where it goes to **FULL STIFF** to help prevent bottoming out the shock/suspension.

To set the Rebound-Bump-Stop: you must know the shock’s **STROKE**:

(measure the length/amount of rod showing at full extension – “metal-to-metal” - as if any rubber bumpers are not there).

Example: lets assume that your shock has 6.1” of stroke and you want the Controller to go to **FULL STIFF** at ½” before it tops out:

You set the **UPPER WHEEL** LED to 5.6” (6.1” –0.5”). It is measured in 1/10” increments.

When there is 5.6” (or more) of rod showing (0.5” or less of travel remaining) the damping will go to **FULL STIFF**.

To set the Compression-Bump-Stop:

If you want the Controller to go to **FULL STIFF** at 1.2” before it bottoms-out, you set the **LOWER WHEEL** LED to 1.2” (also 1/10” increments).

Note: If your shock has a rubber bumper you could set shock so it goes stiff before or after bumper contact.

When there is 1.2” (or less) of rod showing the Controller will turn the damping to be **FULL STIFF**.

You can **SAVE** any changes now: **PRESS & HOLD Edit/Save** for about **TWO SECONDS**. (See “**To SAVE your changes;**” above)

Use of external “SELECTOR” switch

When: 1. the **SELECTOR** switch is wired, 2. the cable connected and 3. none of the circuits are closed (**Race-1** position does **NOT** connect to ground);

It will put the Controller in “**SETUP** #1” to start a race (and it will display **SETUP** “1” if the Programmer is connected).

Other circuits in the cable represent the **BURNOUT** & **Race-2** positions of the **SELECTOR** switch, a wire for the **LAUNCH** signal

(to start the 1st **SETUP** timer going in a race), the **CHUTE-PULLED** signal (to call the **SHUT-OFF/Braking** **SETUP** #7) and a Ground wire.

If the **Race-2** circuit is closed to Ground - “**SETUP**” #4 will be called **FIRST** (& displayed if the Programmer is connected).

If the **BURNOUT** circuit is closed to Ground – **SETUP** #0 will be called (and displayed if the Programmer is connected).

There are two (2) other wires in the cable: one is for battery voltage (+12 or 16VDC) & one for +5VDC. These can be used for **LOW** drain relays.