



## - Installation Manual -

00B 60J XXXX  
e-con2 Electronic Damper Controller



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Thank you for purchasing CUSCO products. Please make certain that this instruction manual and the vehicle's factory service manual is fully read and acknowledged prior to installation. When transferring usage of the product, please make sure the instruction manual is given to the new owner with the product, or to anyone operating the vehicle. When this product or the vehicle equipped with this product is given/let borrow to others, please hand this manual to the person who receive the product or vehicle.



Wear protective eyewear and gloves.



## Please read this first

### Attention

A potential possibility of malfunction and (or) breakage can result to the product and (or) to the vehicle if this indication is ignored, if wrongful usage and (or) operation is performed.

- This instruction manual includes the usage and installation. Read this manual thoroughly before operating. Please keep this instruction in the vehicle at all times.
- This product is for on-road or competition use only. By reading this warning the customer acknowledges that Cusco products are not permitted for use on public highways.
- This product includes all components listed in this instruction manual. If there are any missing or damaged parts, please contact an authorized CUSCO retailer.
- Always disconnect the battery before beginning any type of work on the vehicle.
- CUSCO cannot be responsible for any loss or damage to the product or the vehicle, when used in combination with other product(s) and (or) unauthorized tamperment to this product.
- CUSCO cannot be responsible for any injury or damage caused to the individual or third party as well as malfunction of the vehicle, products and (or) accessories.
- This product and accessories can be changed without prior notice due to production and manufacturing reasons.
- CUSCO cannot be responsible for any factory OEM parts lost during temporary removal process when performing installation.
- Some components such as car audio and clock can lose memory when the battery is disconnected while installing. After completion of the installation process, recover the setting referring to each instruction manual. CUSCO cannot be responsible for lost settings.
- Perform periodical inspection. The durability of this product can vary depending the surrounding conditions and usage.
- CUSCO cannot be responsible for any voided factory warranty due to installation of this product.
- Acknowledge that the installation of CUSCO products will alter vehicle control characteristics. Operate vehicle with extreme caution after product installation.
- Always install products according to the automobile manufacturer factory service manual unless otherwise specified in this installation manual.

### Danger

An immediate possibility of serious injury and (or) even death can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.

- Any service to the car with removal of the parts should be performed by trained professionals at a properly equipped workshop.
- Resting, sleeping in the car, or working in the car or in the closed garage can cause carbon monoxide poisoning, which can be fatal. Must turn the engine off and keep the area well ventilated.
- Always place wheel chock to prevent the vehicle from moving.
- Be careful with wiring when making connections directly in relationship with driving equipment, such as engine, steering, brake, and air-bag.
- Always make sure that the wiring is done properly. Take extra caution when dealing with positive and negative polarity. Make sure that the wires are insulated and there are no loose wires. If any wiring is performed in error, it may cause a fire on this product and/or the vehicle. Please disconnect the battery terminal wires before beginning the installation process. In case if it is not possible to shut off the power supply, it is your own responsibility to protect yourself from any injury as well as avoid electric shock and/or short circuit which can cause damage to the product and/or the vehicle.
- Use and install Cusco products only as directed by the manufacturer. Do not modify product to unspecified application. Misuse of product may lead to serious injury or death.

### Warning

A potential possibility of serious injury and (or) even death can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.

- Exhaust manifold, radiator, and engine can be very hot. Please provide sufficient cool down time before starting any installs.
- Exhaust manifold, radiator, engine can be extremely hot while the vehicle is running immediately prior to vehicle usage. There is high possibility of injury when coming in contact with such components.
- Keep clear from infants, small children, and animals. Keep small parts away to avoid accidents. (prevent the parts from being swallowed/inhaled)
- Exhaust pipe can be very hot. Wear proper protective clothing when working in or around this area.
- Avoid installing any product in areas that can interfere with vision of the front windshield, driving equipments, and/ or air-bag system and other safety features..
- Take caution when installing this product near electric wires, water hoses, and air hoses. and avoid in cutting and damages to them. Damaging the electric wires, water hoses, and air hoses can cause short circuit and/or critical engine damage.

### Caution

A potential possibility of serious injury and (or) even death can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.

- Dropping and/or applying the excessive force to this product before or during installation can cause damage, resulting in malfunction of the product.
- This product is designed to be used in 12V power vehicles only. Do not install this product in different voltage supplied vehicle.
- Make sure to insulate the unused connector and wirings to avoid short circuiting.
- Always use the supplied hardware.
- Installation of components on the passenger side or center section can interfere with safety standards. Please check within local regulations before installing.
- Use a soft cloth to clean the product gently. Using cleaners or abrasive agents can damage the product.

## Notes

### Warning

- Installation by non-professionals and unauthorized shops voids product warranty.
- Always focus on driving first, and never on the gauge displays. This may cause vehicle accidents and can even result in death.
- Perform product setting adjustment and other operation when the vehicle is parked at safe place.
- Do not disassemble or apply any modifications to this product. Such alterations can cause vehicle accidents or product damage. This also voids the product warranty.
- If any problem is found (wet/odor/smoke/erratic movement etc.), stop using the product IMMEDIATELY and contact your local retailer. Prolonged usage with such symptom can lead to accident or vehicle damage.
- CUSCO cannot be responsible for any damages while using this product, or any damages caused by this product usage.

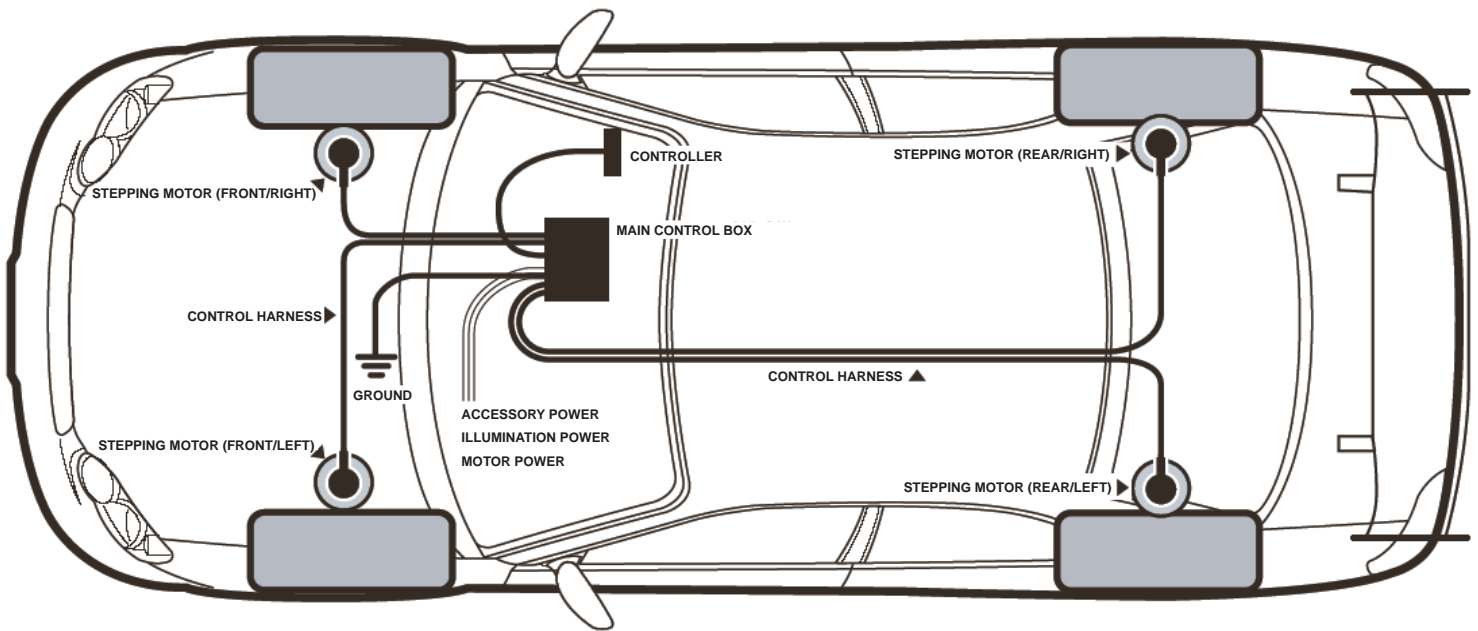


# WIRING INSTALLATION



## WARNING

Make certain to follow all precautionary details listed in Pg.2 before starting installation.



## 1. Power Wires Installation

- Accessory Power Wire (RED)  
Connect using the electro tap to any accessory wire (ACC 12V)
- Illumination Power Wire (YELLOW)  
Connect using the electro tap to any car audio system illumination wire (12V Light Switch)
- Motor Wire (FUSED)  
Splice and connect to any accessory wire (ACC 12V)



## WARNING

Confirm that the ACC 12V wire for the Motor Wire has plenty of voltage. Lack of power will result in insufficient motor operation.

- Ground Wire (BLACK)  
Securely connect to a chassis ground or any ground wire.

## 2. Control Harness Installation

- The control box harness features a smaller connector than the rest. Laying out the harness in the engine bay, trunk space, and interior cabin will make installation more easier. Connector ends are labeled per their designated points.
  - Yellow Tape = Control Harness (4m length)
  - Black Tape = Control Harness (5m length)

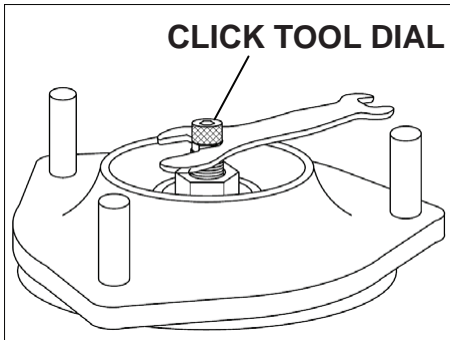


## WARNING

Keep the wiring harness away from heat, especially the harness routed inside the engine and trunk space. Avoid installation while engine is hot and allow sufficient cool down time before starting any work.

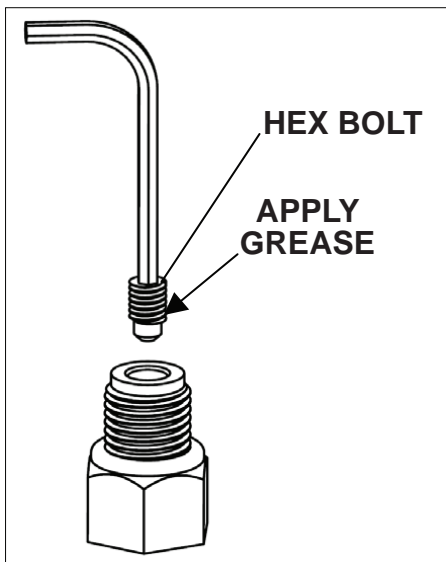
## MOTOR INSTALLATION

The motors are installed on top of the shock assembly (shock absorber, spring, upper mount) The shock absorber nuts will not be easily accessible following the installation of the motors so make sure they are torqued to the proper specifications. The motors can be installed with either the shock absorber assembly installed on the vehicle or off the vehicle but this is dependent on vehicle application. Make sure that the shock absorber top is clean and free from any external debris before mounting the motors.

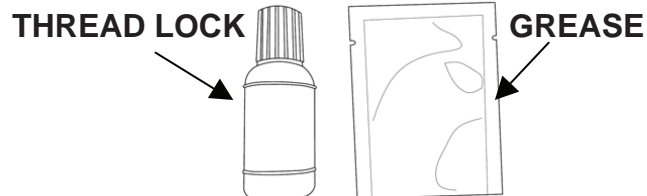


- Remove the click tool dial with the included spanner wrench

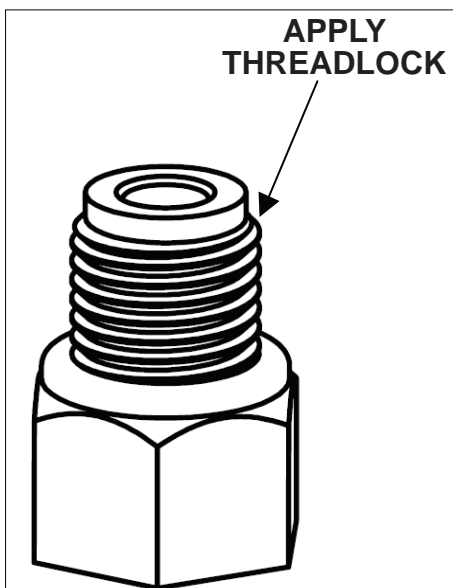
- ⚠ Confirm first that the suspension coilovers are e-con2 compliant. An attempt to install on a non-compliant suspension model may result in internal gas or oil leakage of the shock absorber. Confirm and proceed only after the model has been checked for compliancy.
- ⚠ Save and store the removed click tool dial in a safe place  
Reinstallation torque specs: 2.5 N-m (0.25kgf-m)  
(additional reference: approx 5° past hand-tightened point)



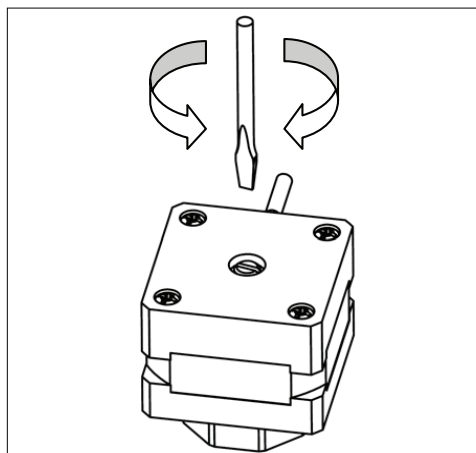
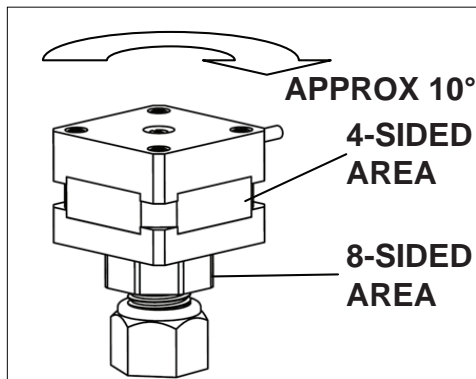
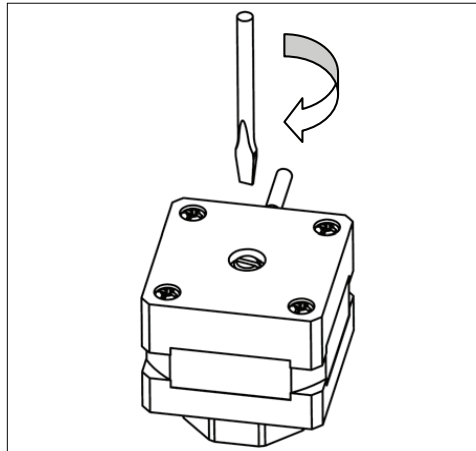
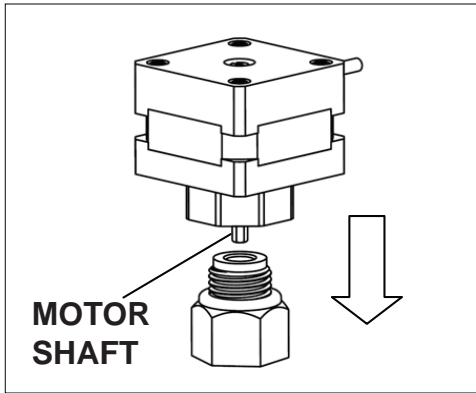
- After removing click tool dial, use the included 3mm hex wrench to remove hex bolt.
- Confirm first that the motor shaft slides in freely on the hex bolt.
- Apply the included grease on to the hex bolt thread.



- Reinstall the hex bolt on to the shock rod and tighten clockwise until it stops. Loosen the hex bolt 8 turns counter clockwise.
- ⚠ If the hex bolt is not loosened correctly, the motorshaft may not function properly. Unecessary loads applied to the motor may result in mechanical failure.
- ⚠ Make sure that the hex bolt screws in the shock shaft without any unusual resistance. Do not force the hex bolt in if the threads may be damaged.
- ⚠ Do not overtighten the hex bolt. Doing this may apply unecessary load to the shock internals and will affect the dampening adjustment feature.
- Apply the included thread lock to the threads of the shock shaft.
- ⚠ Make sure that the thread lock does not enter inside of the hex bolt area or the dampening adjustment feature will not function.



## MOTOR INSTALLATION



## MOTOR MAINTENANCE

- Resetting the motors periodically will maintain proper dampening levels. Dampening position may become offset if the reset procedure has not been performed for a long period.
- Reapplying grease to the hex bolt periodically will prolong motor life.
- Disconnect the motor connectors when performing vehicle height adjustment.



Confirm before installation that the motor assembly fits on top of the shock shaft without any issues. Make sure that the threads without any issues.



Some suspension kits may feature different shock shafts on the front or rear. Please take this into account before beginning installation.

- Peel the rubber cover off the motor units.
  - ※ The rubber cover does not come off the harness portion
- Slide the hex end of the motor onto the shock shaft. Hand tighten the motor by turning it clock-wise until a small amount of resistance is felt. Begin turning the motor with a flathead screwdriver clock-wise until the unit is lightly snug.



If the motor shaft hex portion is not properly inserted into the shock shaft, the assembly may not perform as indicated.



Do not overtighten the motor assembly or stop turning when any irregular resistance is felt. This may result in stripped hex bolts.

- Torque down the motor assembly.
  - Approx 10° from stopping point indicated above.



Torque specification 3N-m (0.3kgf-m)



Never tighten the motor assembly by handling it at the 4-sided area.




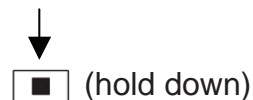
Exceeding the indicated torque specifications may apply unnecessary loads to the motor resulting in failure.

- Using a flathead screwdriver, loosen the motor five revolutions counter clock-wise to check that the it turns smooth.
- Put back the rubber cover on to the motor assembly.

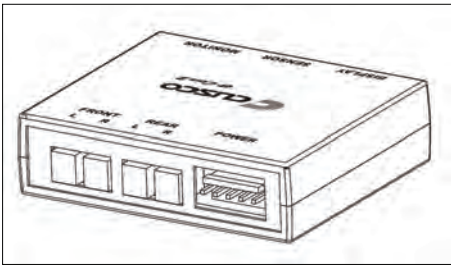


Pulling the rubber covers forcefully may damage the electrical wires. Please handle gently.

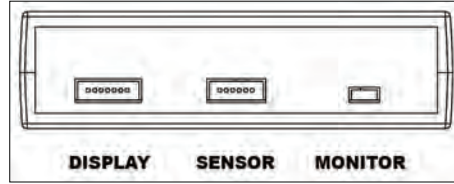
- Once the control box, wiring harness, and motors have been installed, hold down and reset the e-con2.  
Reset Buttons  (hold down)



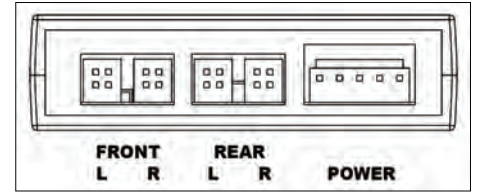
※ The motors will be automatically reset at this point. (Module will check for dampening parameters)



Controller Box

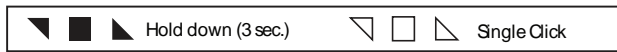


Controller Box: Front

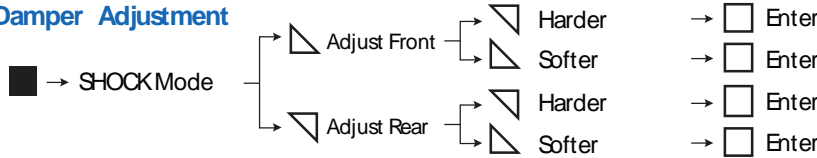


Controller Box: Rear

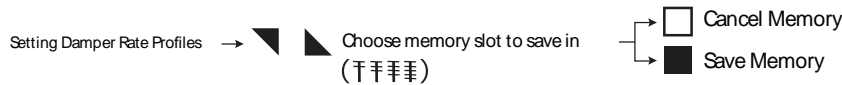
# e-con2 - Quick Guide



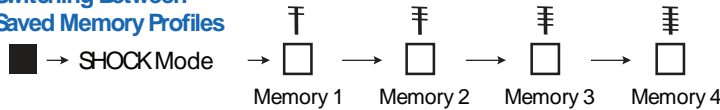
## Damper Adjustment



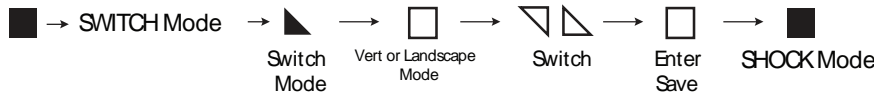
## Setting Memory Profile



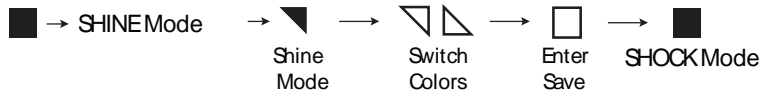
## Switching Between Saved Memory Profiles



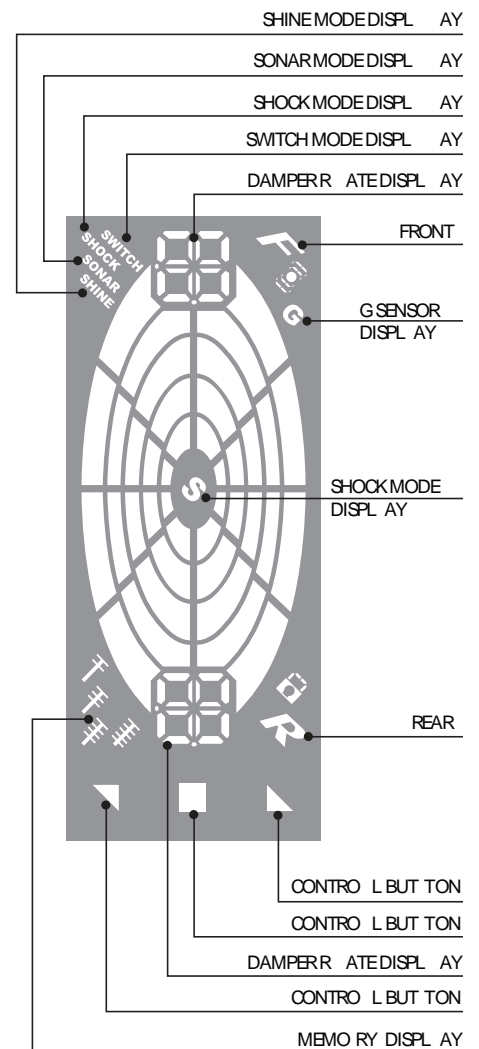
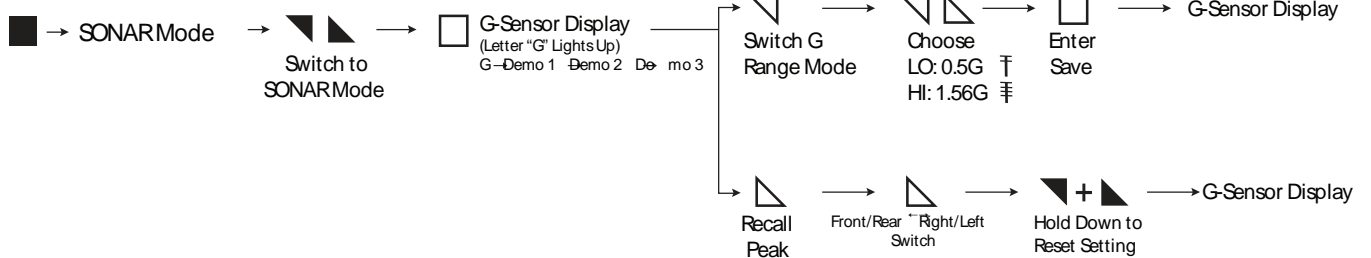
## Vertical or Landscape Display



## Changing Display Color



## G-Sensor (Option)



# Basic Operation in SHOCK MODE

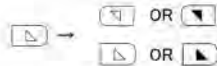
In this mode, the shock absorbers are manually controlled by the user, and programming of memory banks are set. Full Motor Reset Function can also be performed.

## Shock Absorber Manual Control Method

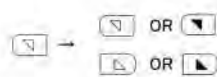
Put the unit into SHOCK MODE by toggling the main mode. Verify that the SHOCK ICON is displayed in the corner of the display



Front Shock Absorber Control



Rear Shock Absorber Control

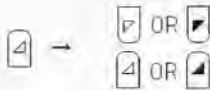


Toggle the following keys and verify the changes in the corresponding numeric figure of the front and rear shock settings, independently

Smaller the numeral displayed the stiffer the shock setting  
Larger the numeral displayed the softer the shock setting

Holding the adjustment keys changes the numbers rapidly, Single push of the same keys change the setting in single numerical steps.

Front Shock Absorber Control



For the horizontal display mode, the operation is the same with the key layout as shown.

Rear Shock Absorber Control



## Shock Absorber Setting - Memory Bank Operation

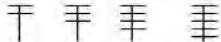
This operation allows retention of user preset into 4 separate memory bank positions. By toggling the following buttons as follows, perform the operations to preset shock settings.



Push and HOLD either key to make the [F], [R] icon as well as respective memory position icon blink.



By HOLDING the the buttons once again, the bank position can be selected by the striped icon.



Finalize the memory and conform by pushing this key

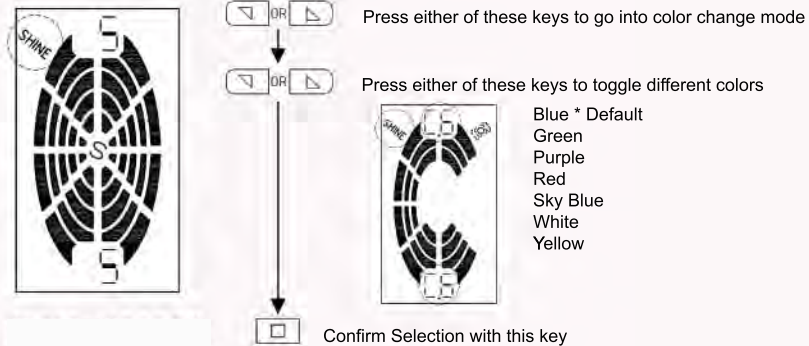




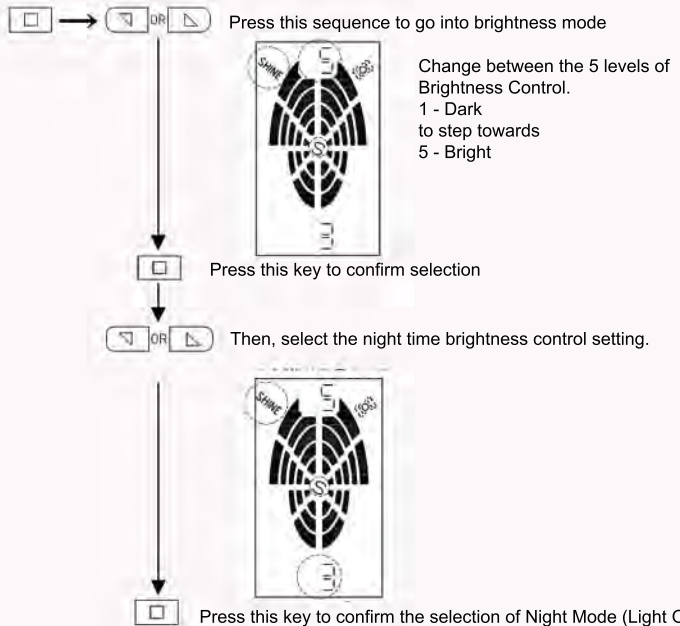
# Shine Mode Operation

This mode allows display options for screen to be selected. Toggle the Main switch to display the [SHINE] icon to be displayed in the corner of the screen.

To change the display color follow these sequence of key inputs.



To change the display brightness for both normal and night time modes (Light on)



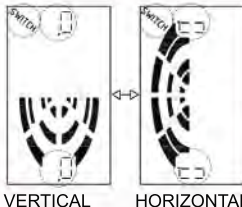
## Switch Mode Operation

This mode allows for various system options to be changed on the unit.

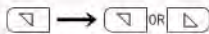
Toggle the MAIN modes to display the [SWITCH] display at the corner of the screen.



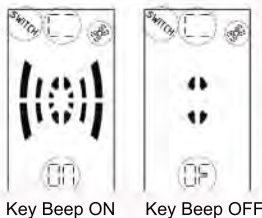
Toggle these keys in sequence to change between HORIZONTAL Screen mode or VERTICAL Screen mode.



Select the choice by Confirming with this button



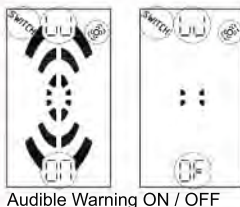
Toggle these keys in sequence to change CONTROL KEY BEEPING to ON or OFF



Select the choice by confirming with this button



Toggle these key sequence for changing AUDIBLE WARNING Options between ON and OFF.



Select the choice by confirming with this button.



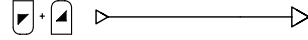
# eCon2 Overall Control Flow Diagram

\*\* Use the buttons according to the icons shown here

## Ignition On

### ☆ Initial Calibration

Push both buttons and hold while powering on ignition



### ☆ Control Panel Display On

Control Panel Off



Control Panel On



Key Lock On/Off



⊠ = Key Lock Icon

Automatically Selected After 2 second pause

OK

Hard 1 Step / Multiple Step by Long Hold

Soft 1 Step / Multiple Step by Long Hold

Repeat Push to Recall Memory

Cancel / Memory Enter

Select Memory Bank Number

System Reset

Front Shock Absorber

Rear Shock Absorber

Memory Recall

Memory Set

System Reset

Shock Mode Icon

**Shock Mode = Shock Absorber Basic Control**

OVERALL CONTROL MODE CHANGE

**SHINE = Display Options Mode**

SHINE Mode Icon

Brightness

Color

Daytime Setting

Night Setting (with parking lamp on)

Change

OK

**SONAR = Automated Module Control Mode**

Sonar Mode Icon

Demonstration Screen (6 Patterns)

With optional G-Sensor

G-Sensor Demo Screen (6 Patterns)

G-Peak Memory

Display Hi/Low Range

G-Sensor Reset

Longitudinal / Lateral G Peak

Low Range

High Range

RESET

**SWITCH = Options Setup Mode**

Switch Mode Icon

Display Vertical/Horizontal

Warning Alarm Sound

Keypad Sound

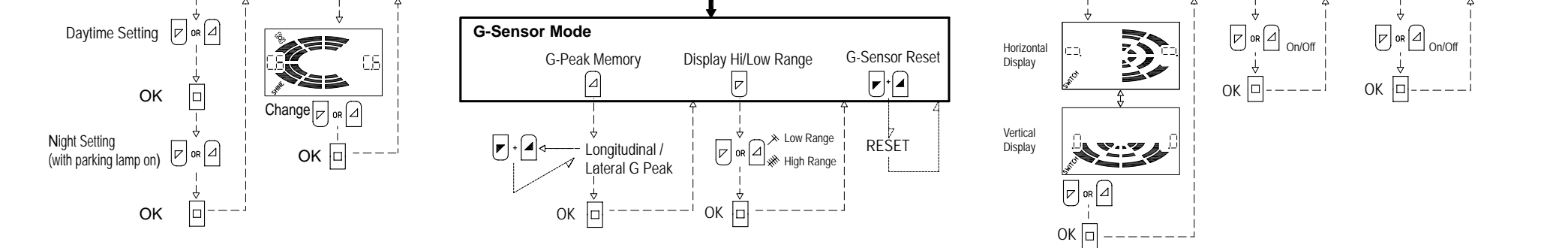
Horizontal Display

Vertical Display

On/Off

OK

Back to Shine Mode



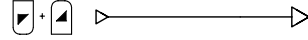
# eCon2 Overall Control Flow Diagram (Vertical)

\*\* Use the buttons according to the icons shown here

## Ignition On

### ☆ Initial Calibration

Push both buttons and hold while powering on ignition



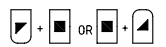
### ☆ Control Panel Display On



### Control Panel Off



### Key Lock On/Off



Key Lock Icon

Automatically Selected After 2 second pause

OK

Hard 1 Step / Multiple Step by Long Hold

Soft 1 Step / Long Hold

Front Shock Absorber

Rear Shock Absorber

Memory Recall

Memory Set

System Reset

Shock Mode Icon

**Shock Mode = Shock Absorber Basic Control**

OVERALL CONTROL MODE CHANGE

**SHINE = Display Options Mode**

SHINE Mode Icon

Brightness

Color

**SONAR = Automated Module Control Mode**

Demonstration Screen (6 Patterns)

With optional G-Sensor

G-Sensor Demo Screen (6 Patterns)

Sonar Mode Icon

**SWITCH = Options Setup Mode**

Switch Mode Icon

Display Vertical/Horizontal

Warning Alarm Sound

Keypad Sound

Back to Shine Mode

**G-Sensor Mode**

G-Peak Memory

Display Hi/Low Range

G-Sensor Reset

Longitudinal / Lateral G Peak

Low Range / High Range

RESET

Horizontal Display

Vertical Display

On/Off

OK

Daytime Setting

Night Setting (with parking lamp on)

Change

OK



## G-Sensor Option for e-Con2\

This is an optional unit to be used with e-Con2 Suspension Controller System and will not function as stand-alone unit.

### Installation Guide

#### Package Content:

- **G Sensor Main Unit** 1
- **Double Sided Adhesive** 1
- **Installation Manual** 1

### Precautions for Use

This is precision equipment, please treat with care

This unit requires a certain amount of labor in modifications to your vehicle, and professional installation is recommended which may incur additional costs by the installer.

Any installation error will not be covered under warranty

Remove all electrical power supply to the vehicle including all batteries, and capacitors. Be also aware that some settings may be lost in vehicle computers, audio/video, clocks, etc...

Avoid installations in places of direct sunlight, excessive heat or electrical interference, and harsh impact.

Secure all controller, box and harness in such way that it will not detach or impede upon driving, and securely mount the unit so that the display is legible and not difficult to control.

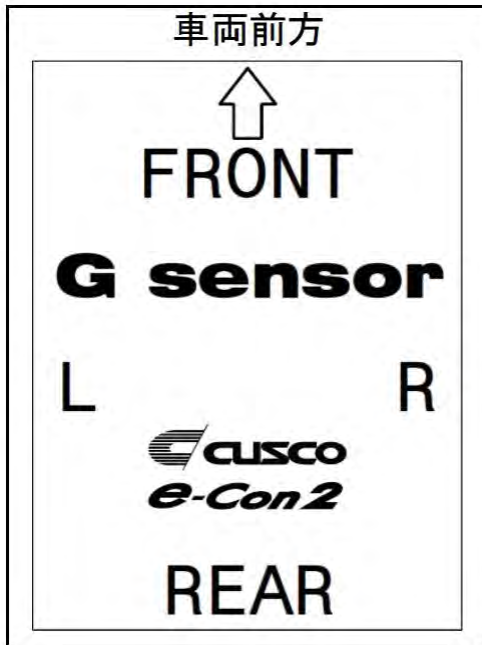
Be careful to feed and place, all wires and sockets carefully so as not to be shorted, cut, or stripped.

Be sure to take caution on electrical wire and socket handling, and disconnect all power and electrical components before working with the electrical wire harnesses.

Take caution when using excessive water such as for cleaning engine bay and make sure that the motor unit and harness does not get excessively wet or become submersed.

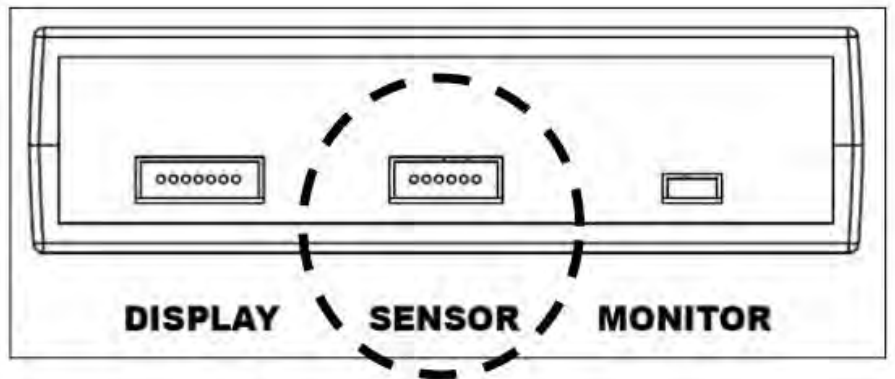
Please do NOT make any modifications to the unit, or use it on products other than recommended Cusco shock absorbers which are compatible.

## Installation Procedures



\*\*\* This unit is to be mounted completely horizontal and directional with the label shown. There is a gyro sensor inside the unit that needs to be positioned correctly to sense the dynamic motions of the vehicle correctly

Please take a look at this label on the unit, and position it and mount the unit securely on a clean surface.



Be sure to power off all connection and vehicle electrical supply.

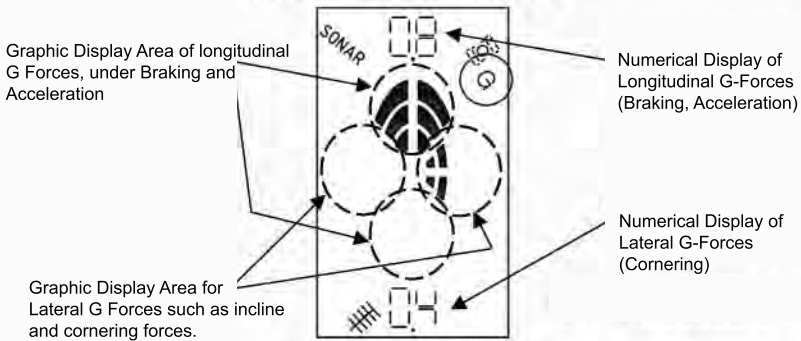
Connect the sensor harness to the socket labeled **SENSOR** as shown on the back of the e-Con2 Main Control Module.

When all connections and secured and G-Sensor unit is securely mounted, power on the vehicle and confirm that the G-Sensor Mode operation is available and functioning properly in the e-Con2 Main Controller.

# G- Sensor Mode

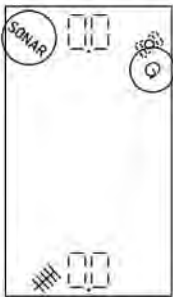
This mode requires the purchase of an optional sensor from Cusco Part # 00B 60JG

The addition of this unit allows for the lateral and longitudinal G forces to be shown in the Main Display Panel



Note: the Change in Horizontal and Vertical Display Mode change will switch the area display accordingly to properly show the correct orientation of front, rear, left and right.

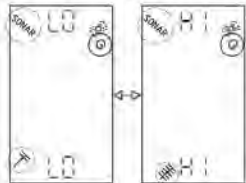
G-Sensor Display increments for Hi and Low range G Forces can be switched using the following key operations



Confirm that the Main Display is showing SONAR icon in the corner



Press this key sequence to toggle HIGH and LOW reading.



In the HIGH setting, the indicator will peak at approximately 2.0 G force.

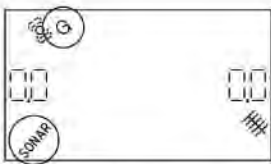
In the LOW setting, the indicator will peak at approximately 0.5 G force

The numerical value on the display will not change regardless of setting.

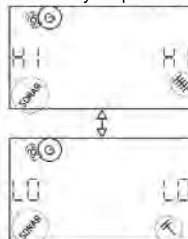


Confirm the setting using this key

For Horizontal Display Mode use the key strokes are as follows.



Press this key sequence to toggle HIGH and LOW reading



Confirm the setting using this key

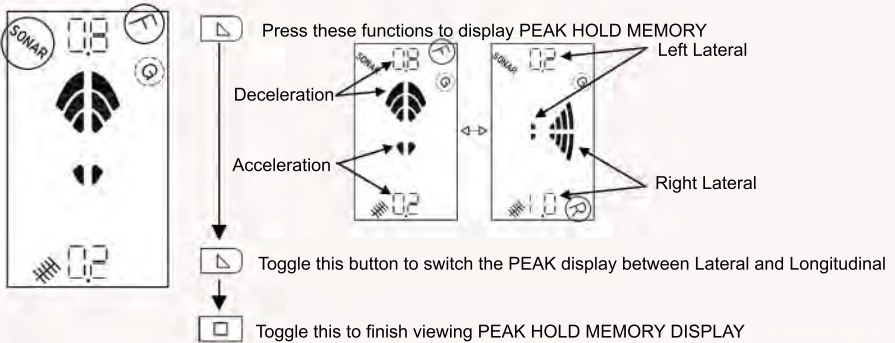
# G-Sensor Mode Peak Hold and Reset

In addition to the aforementioned G-Sensor reading function, the system can also retain the PEAK values of the indicated G-Forces.

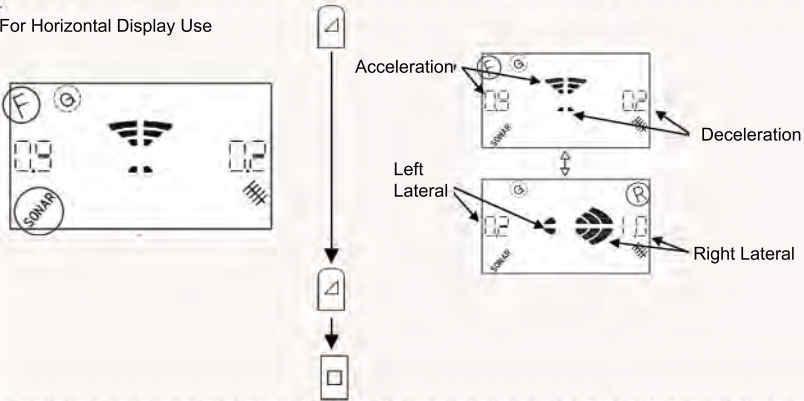
**G-Sensor Reset** - To Reset the sensor and initialize the unit, be sure to perform this operation on a very flat and level surface with vehicle completely stopped. Toggle the MAIN Display to show the SONAR Icon on the display corner. Both peak memory as well as reset will be performed in this operation.

 +  Full G-Sensor Reset



To set the PEAK MEMORY DISPLAY



For Horizontal Display Use



**To Clear the PEAK HOLD DATA** - Be sure that the SONAR mode is displayed as shown, and the Display is showing PEAK HOLD DATA. At this time, perform the following sequence of keys.

 +  Pressing this sequence will clear the PEAK HOLD DATA



# General Troubleshooting Guide

\*When the unit produces a warning buzzer or flashing warning screen, stop the car and discontinue use until the error has been resolved and all functions are normal.

Symptom	Possible Causes	Troubleshooting
Panel will not display	Control Unit is powered off	Turn the power on for the unit
	Controller Unit is not plugged in	Make sure all connections are secure
	Main Controller Box is not getting power	Check the fuses and all connections
Controller buttons not responding	Key Lock Feature is on	Unlock the Key Lock Feature
Error Display	Main Controller Box may not be plugged in correctly or not receiving power	Check the fuses and all connections
	One or more of the controllers are not plugged in	Check the connections to all motors
Controller Display not dimming with light switch	Illumination wire not connected	Check Illumination wire harness
Motor will not rotate the shock adjustment	Motors not mounted correctly or shock adjuster rod is stuck/stiff	Check mounting and adjustment rod and stiffness using a driver on the motor top.
G-Sensor Mode not switching on	G-Sensor is not receiving power or connected to the Main Control	Check all connections
Unintended Motor behavior	Main controller malfunction	Reset the power to the controller units by unplugging the unit, or disconnection power from the main electrical system

When the ERROR display is shown on screen during SHOCK MODE operation

Main Box Monitor Lamp	Controller Panel	Possible Causes	Troubleshooting
Red LED Flashing	E5	Power Failure	Check all power sources and wire connections, as well as fuses.
Orange Flashing	E2	General unit failure Most commonly caused by noise or inadequate power supply and grounding of the entire unit or portions thereof.	<ol style="list-style-type: none"> <li>1. Reset adjustment motors</li> <li>2. Ignition Cycle</li> <li>3. Reset all settings</li> <li>4. Check all grounding points for noises and loads</li> <li>5. Stop using the unit</li> </ol>
Orange lamp continuous	E1	Controller harness issues	Check all power and controller wires, then check all connections to adjustment motor units.

\*After the troubleshooting has been performed, reset the power by cycling the ignition power of the vehicle. If the condition has been resolved, the unit should operate normally. After the unit powers up correctly, be sure to perform a motor calibration reset to assure that all motors are initialized at the correct points. If the error is not resolved, power off the unit and consult your Cusco dealer for further assistance.

## Precautions for Use

This is a precision equipment, please treat with care

This unit requires a certain amount of labor in modifications to your vehicle, and professional installation is recommended which may incur additional costs by the installer.

Any installation error will not be covered under warranty

Remove all electrical power supply to the vehicle including all batteries, and capacitors. Be also aware that some settings may be lost in vehicle computers, audio/video, clocks, etc...

Avoid installations in places of direct sunlight, excessive heat or electrical interference, and harsh impact.

Secure all controller, box and harness in such way that it will not detach or impede upon driving, and securely mount the unit so that the display is legible and not difficult to control.

Be careful to feed and place, all wires and sockets carefully so as not to be shorted, cut, or stripped.

Mount and protect the motor in places like the trunk area, so that shifting articles in the car will not impact and damage the units.

Be sure to take caution on electrical wire and socket handling, and disconnect all power and electrical components before working with the electrical wire harnesses.

Click Adjustment Tool provided with the shocks are not to be used in conjunction with the eCon2 motors, so please remove them according to instructions and store them so as not to lose them in the future.

When working on the struts/shocks physically on the vehicle, be sure to power off the main unit, and unplug the motors, and remove them from the shock assembly to avoid damages to shocks as well as motors.

Please tighten all hardware on the shock absorber to proper torque. Over-tightening and under-tightening will cause general failures to the unit over time.

Avoid excessive use of the Econ2 adjuster and let the motors cool if the unit has been used continuously and heat is generated at the motors.

Take caution when using excessive water such as for cleaning engine bay and make sure that the motor unit and harness does not get excessively wet or become submersed.

Please do NOT make any modifications to the unit, or use it on products other than recommended Cusco shock absorbers which are compatible.