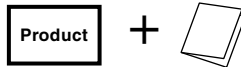


# USER'S MANUAL (Product Number: THA-BM)

Thank you for purchasing PIVOT "3-drive-AC" for **BMW&MINI**.

Please read this manual carefully and keep it for future reference.

- If this product is given to another user, make sure to include this User's Manual.

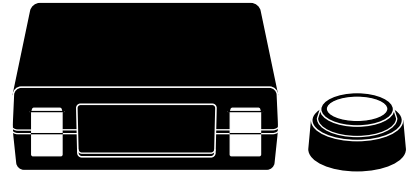


## Contents

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Throttle Controller with AUTO CRUISE Control

## 3 drive · AC AUTO CRUISE & THROTTLE



For **BMW&MINI**

THA-BM

※ This product is solely designed for BMW and MINI. It can not be used with other models.



### After installation, make sure to carry out "Initial Settings".

After having installed this product, make sure to make settings for your car's special characteristics by carrying out the "Initial Settings" on Page 7. If the "Initial Settings" are not carried out, a **Check Engine Light** may go on. Also, the unit will remain in **NORMAL Mode** even if the Mode is switched.

### Worried about Installation?

If you are worried about carrying out wiring or other installation procedures please consult your dealer.

**This product can not be installed in car models which come with standard auto-cruise control.**

### Only use with Manufacturer's Original ECU.

Do not install this product if the ECU is not the original one or when a sub-ECU is being used.

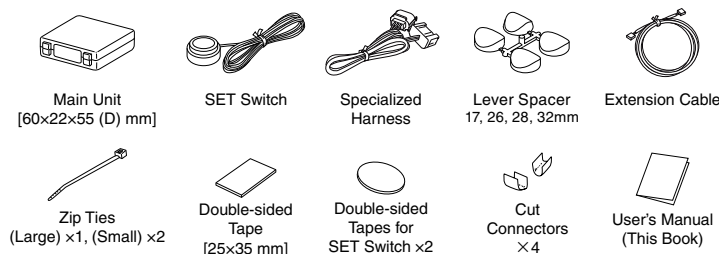
### Set to NORMAL Mode upon Removal of Product.

When uninstalling the product, make sure to return it to **normal (NORMAL)** Mode before carrying out any work. Reconnecting this product in a different mode may cause the **Check Engine Light** to come on.

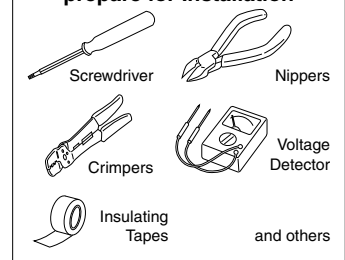
### Modifying this Product is Forbidden.

Under no circumstances should modifications or changes be made to this product. Doing so may cause damage not only to the product, but to the car and the operation of the car in which it is installed.

## Please check the contents of the package



## Tools and Materials to prepare for Installation



Before Using

Features

Connecting The Wires

Installing The Product

Initial Settings

Speed Pulse Settings

How to Operate

Trouble-Shooting

# Features

Before Using

Features

Connecting The Wires

Installing The Product

Initial Settings

Speed Pulse Settings

How to Operate

Trouble-Shooting

## Higher Performance Response and AUTO CRUISE Control!

3-drive · AC is our newly designed throttle controller for adjusting response in all types of driving from Sports to Eco-driving; now featuring an AUTO CRUISE function.

### BASIC FEATURES

#### SAFE & SMART

**Same Color Display** Using the same orange color as the model standard gauges makes for the perfect fit.

**Compact All-in-One Body** This compact all-in-one body makes it possible to install in out of the way places such as storage box or near the steering wheel.

**Digital Control** Micro-computer control means less noise and less heat.

**Initial Setting Method** Stable balanced control is possible by running the "Initial Settings" program after having finished installation; this will help reduce troubles caused by voltage differences found in each car model.

**Safety First** System designed to give priority to safety even in times of trouble.

### AUTO CRUISE

#### COMFORTABLE & ECO

**AUTO CRUISE** AUTO CRUISE allows you to set the most suitable speed to cruise at while driving; resulting in superior fuel-efficiency. (Approx. 30 to 140 km/h)

**Stable Speed Control** Our exclusively designed system lessens quick changes in speed; bringing you automatic cruise control with even more comfort.

**User-Friendly Switch for Smooth Operation** The separate switch allows for easy one-handed operation and installs almost anywhere with double-sided tape.

**Deactivating Operation** Stepping on the brake while Auto-Cruise is activated will deactivate its operation and return to normal driving mode. Auto-Cruise will also be deactivated when the "Set" switch is pressed, if the brake fuse burns out, or if the speed is much lower than the set speed.

**Prevent Abnormal Acceleration** Our safety design uses a microcomputer to monitor two kinds of output signal and if an abnormality is sensed will return to normal driving Mode to prevent abnormal acceleration.

**Example of speed difference test**  $59^{+1}_{-0}$  km/h

#### Example of fuel consumption test

AUTO CRUISE 60km/h **12.4 km/L** (121 cc)

Variable Speed Driving 55-65 km/h **9.9 km/L** (151 cc)

Variable Speed Driving 50-70 km/h **8.2 km/L** (183 cc)

· WAGON R (MH23S) · Road grade: Upward slope of approx. 1.5 degrees  
 · Running distance: 1.5 km  
 ※ Variable speed driving was obtained by accelerating up and down around the set speed.

## THROTTLE CONTROL

### SPORTS & ECO

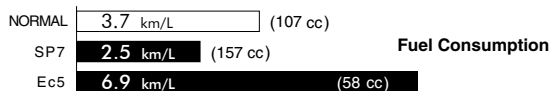
**SPORTS & ECO** 3-drive enables both the "raising" and "lowering" of response to acceleration in electronic throttle car models, giving the driver control over acceleration response for both sports driving and Eco-driving.

**12-Step Adjustment** A wide variety of possible adjustments to meet your need; 7 for SPORTS and 5 for ECO.

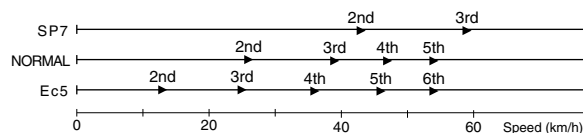
**Acceleration Monitor** This shows the amount of acceleration; especially useful when trying to be careful about not over accelerating as in Eco-driving.

#### Performance Results of Each Mode (0-400 m)

· HONDA STEP WGN (RG1)

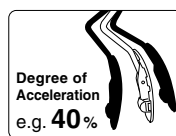
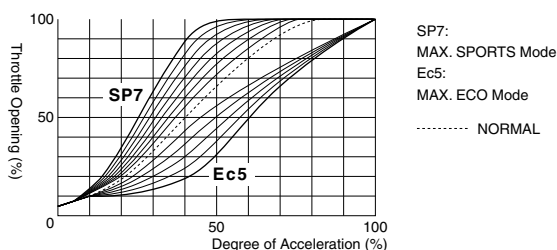


#### AT Gear Position Pattern · VW GOLF GTI (1KAXX)

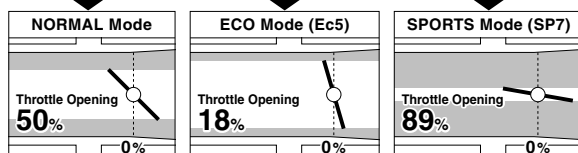


SP7: MAX. SPORTS Mode Ec5: MAX. ECO Mode Degree of acceleration: 30%  
 ※ In models with CVT or in which changes in speed bring less shock, the noticeable differences may be less.

#### Examples of Changes in Throttle Opening · SUZUKI SWIFT (ZC31S)



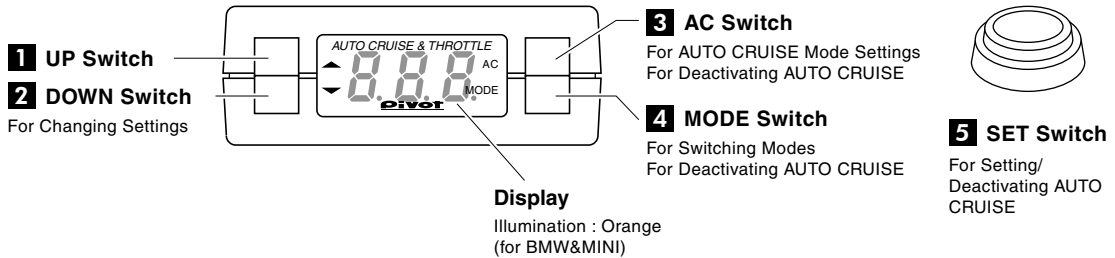
■ Air Intake  
 ○ Throttle Valve



※ These figures were obtained through a driving test and may be different from results on actual road conditions.

※ In some car models with a Valvematic engine, control is carried out by the exhaust valve rather than the throttle valve.

## Part Names



## Display Items

### Display Items

Display	Details
SP1~SP7	SPORTS Mode (higher number = higher response)
Ec1~Ec5	ECO Mode (higher number = lower response)
nor	NORMAL (Normal Performance)
R00	Degree of Acceleration
on.	AUTO CRUISE Mode: ON
off	AUTO CRUISE Mode: OFF
Rcc	AUTO CRUISE in Operation
bAc	Reverse (when in SPORTS Mode only)

### Display for Settings

Display	Details
cAr	Initial Settings Mode
L00	Position when accelerator is not pressed down.
H00	Position when accelerator is fully pressed down.
SEt	Settings Completed
PLS	Speed Pulse Setting Mode
P-0	Speed Pulse Number
L-0	Adjust AUTO CRUISE Level

## WARNING

Improper use or disregard of these warnings may result in the injury or death of people.

- When making initial settings make sure to stop the engine and place in Parking or Neutral. It is dangerous to carry out these settings while the engine is running.
- Do not work in areas where there is excessive exhaust. Due to vehicle exhaust emission poisoning or fire may result in a damage to humans.
- Do not crush the cable. Please be careful that the cable does not get crushed by the seat rail or car door steel plate, nor cut by any sharp steel plate as this may cause a poor connection or an electric short leading to fire or other danger.
- While driving DO NOT operate switches or pay prolonged attention to the display; it is extremely dangerous.
- Make sure that all wiring and fastening down of the product does not interfere with driving nor be done in such a way as to cause poor connections.

## CAUTION

Improper use or disregard of these warnings may cause injury to persons, damage the product and/or other things.

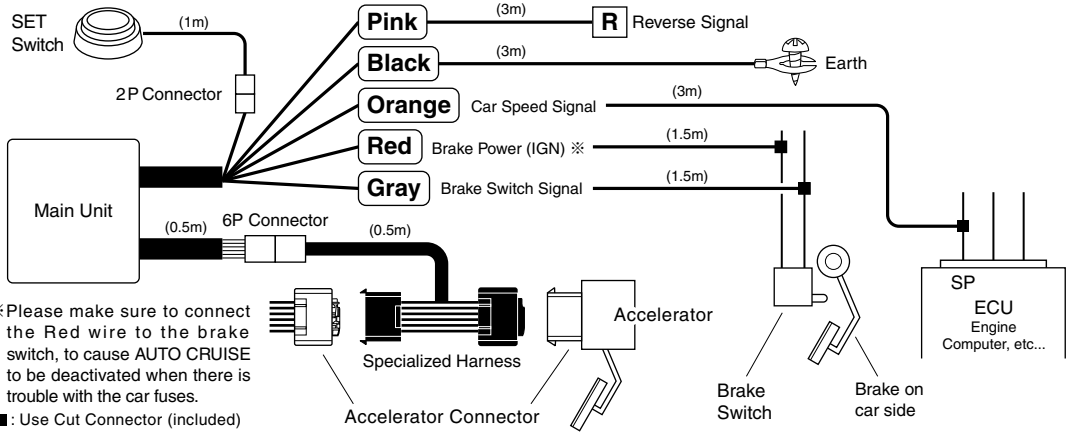
- PIVOT Corporation accepts no responsibility, in any manner whatsoever, for damage and/or trouble to your vehicle or product, nor for any accidents that are the result of the misuse of this product.
- Please confirm that the type of vehicle you wish to install into is listed in the "list of Specialized Harnesses by Car Model for 3-drive -AC (for BMW&MINI)".
- When installing this product, we recommend that if technical knowledge becomes necessary please consult a qualified mechanic.
- If the device is improperly installed or settings have been improperly made a Check Engine Light may go on.
- Do not use electrotrap.
- Wiring should be carried out using the attached "cut connector" or by soldering, make sure to securely insulate all wiring parts with insulation tape, and confirm that no wires are sticking out.
- Please wipe with a soft dry cloth (a lens cloth).
- Please do not use alcohol or benzene. This may cause damage to the painted surface or cracks in the plastic.
- Do not, in any manner, process, take apart, or make changes to this product.

# procedure 1

## Connecting The Wires

### Basic Wiring

When installing make sure to use the Specialized Harness (included).



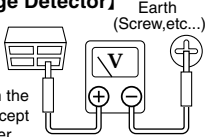
● When connecting to the car side wires, do not only use “electrotrap” as this may result in a poor electrical connection. Please use the supplied “cut connectors” or solder the wires together and make sure to use insulation tape to securely insulate the wire connection.

● Remove the battery cables from the minus terminals before carrying out the wiring.

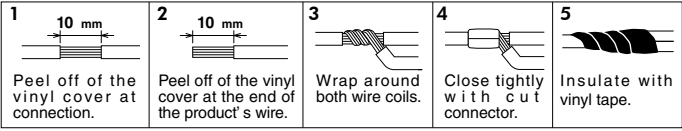
#### [How to use the Voltage Detector]

Please make sure to test voltage at all wiring positions.

※ Make sure that the key is in the OFF position at all times except when using the voltage tester.



#### [Reference] How to use the Connectors



※ When crimping, please use crimpers or use pliers to bend and then solder together.

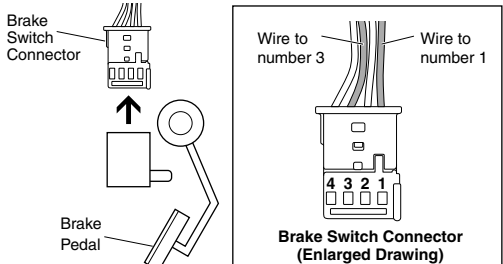
#### Brake Switch (Brake Power and Brake Switch Signal)



● Please make sure to connect the red cable to the brake switch, to cause AUTO CRUISE to be deactivated when there is trouble with the car fuses.

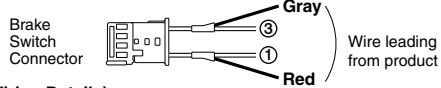
● After having completed the wiring confirm that the brake lamp is working properly.

- 1 Key switch OFF (remove the key).
- 2 Remove the under panel and disconnect the Brake Switch connector.



3 Using the supplied “cut connectors” connect as directed below.

- Red** Brake Power Wire to number 1
- Gray** Brake Switch Signal Wire to number 3



(Wiring Details)  
Wire to number 1 : With key inserted 12V; with key removed 0V  
Wire to number 3 : With key inserted and brake pedal depressed 12V; Without brake pedal depressed 0V

4 Return the Brake Connector to its original position.

#### Car Speed Signal / Earth

※ The wiring position may differ depending on model of car. Please carry out procedures as outlined below.

##### Orange Car Speed Signal



Do not wire the speed signal to the CAN-BUS adaptor.

Wiring the speed signal to the CAN-BUS adaptor will result in a lack of signal capacity which in turn will adversely affect other devices; make sure to wire as directed.

##### Black Earth (with earth terminal)

Fasten to a screw of a metal part which is earthed.

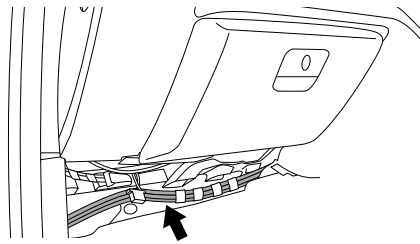


※ Painted screws and screws connected to plastic parts are not earthed; make sure to connect only to a place which is earthed.

#### BMW 1 Series / 3 Series / X1

- 1 Key switch OFF (remove the key).
- 2 Connect the Orange wire to the speed signal using the following procedure.

① Remove the under panel from beneath the glove compartment.



Before Using

Features

Connecting The Wires

Installing The Product

Initial Settings

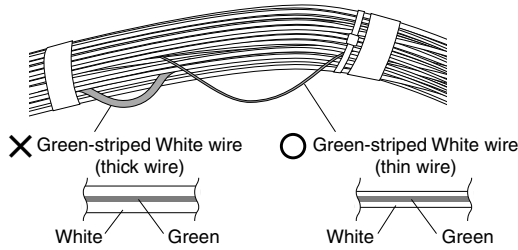
Speed Pulse Settings

How to Operate

Trouble-Shooting

② From the bunch of wires, find the two Green-striped White wires.

※ For X1, there is only one Green-striped White wire.

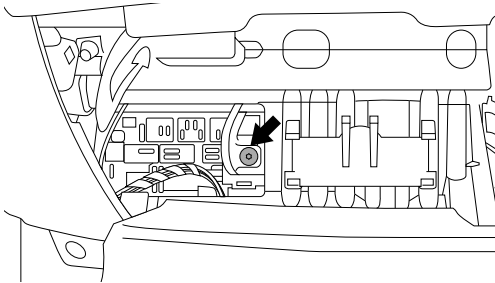


③ Connect to the thin wire using the supplied "cut connectors"

- O thin wire : Diameter of wire 1.2 mm
- X thick wire : Diameter of wire 2.4 mm

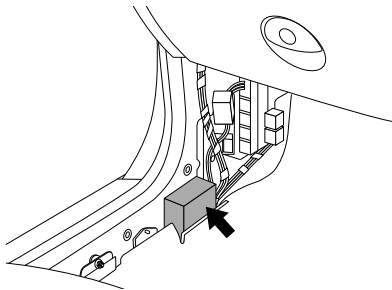
3 Connect the Black wire to Earth.

Fasten the earth terminal to the torque screw (T27) at the back of the glove compartment.

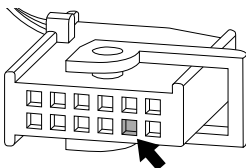


MINI R50 Series

- 1 Key switch OFF (remove the key).
- 2 Remove the side trim from the passenger's seat side.
- 3 Connect the Orange wire to the speed signal using the following procedure.
  - ① Remove the connector of the side mirror storage unit.

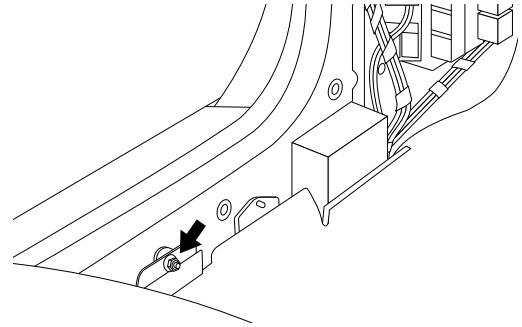


② Connect to the position as shown below.



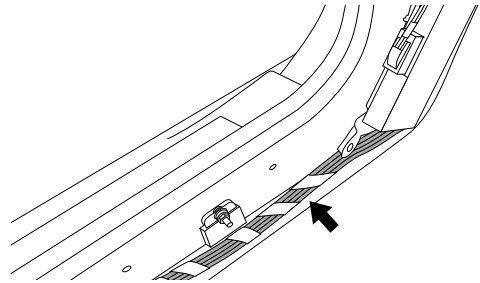
4 Connect the Black wire to Earth.

Fasten the earth terminal to the earth nut as shown below.



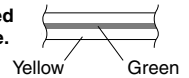
MINI R56 Series

- 1 Key switch OFF (remove the key).
- 2 Remove the side trim from the passenger's seat side.



3 Connect the Orange wire to the speed signal using the following procedure.

① From the bunch of wires, find the two Green-striped Yellow wires.



② Use a tester to check the voltage of the wires.

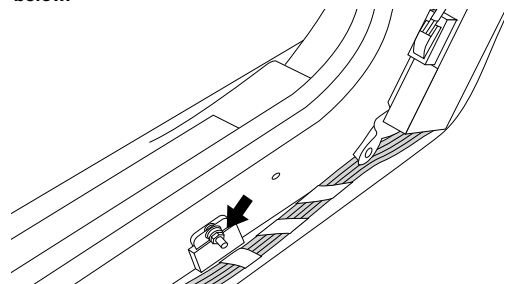
- (How to Test)
1. Key switch OFF
  2. Set the tester to Voltage (V).

Wire 1	0 V or 12 V	Wire to connect to the Orange wire
Wire 2	5 v	Wire not to be connected

③ According to the testing results connect to wire 1 (0V or 12V).

4 Connect the Black wire to Earth.

Fasten the earth terminal to the earth nut as shown below.



Before Using

Features

Connecting The Wires

Installing The Product

Initial Settings

Speed Pulse Settings

How to Operate

Trouble-Shooting

## Reverse Signal

By wiring to reverse, it is possible when in SPORTS Mode to automatically switch to NORMAL Mode when the gear is put into **R** (Reverse). Also, during this time it will become impossible to set to AUTO CRUISE.

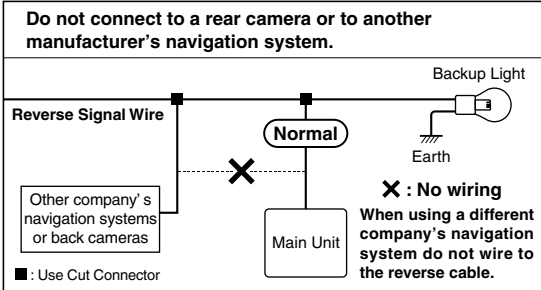
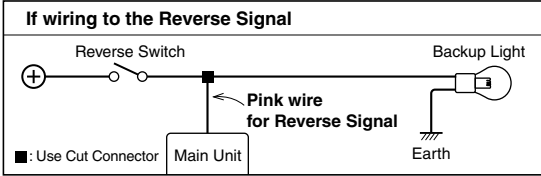
- ※ When put into reverse, the degree of acceleration is small and quick acceleration will not occur; it is not necessary to wire for reverse.
- ※ This does not operate when in ECO Mode or NORMAL Mode.

### Pink ● Gear Position

When in **R** (Reverse): 12V, other positions: 0V

**(How to Test)** With Key switched to ON (engine not operating) put gear into reverse.

**(How to Wire)** Cut the black tube of the wire tip and connect referring the diagrams below.



### (Check Wiring)

bAc

If in SPORTS Mode, when the reverse signal is input the display will read "bAc" and the unit will switch to NORMAL Mode.

**⚠ Do not wire for reverse to the CAN-BUS adaptor for your car navigation system.**

Due to a lack in signal capacity by wiring the reverse signal to the CAN-BUS adaptor of a navigation system (other than standard one) the system may not be able to supply route guidance and there may be effects on other devices. Please either do not wire to the reverse signal or wire to another place.

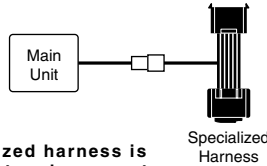
### If Reverse Signal is of Pulse Type

If you have wired to reverse and it does not work properly, it is because the reverse signal is of 12V pulse type. If this is the case please purchase our Reverse Adaptor (¥1,500).

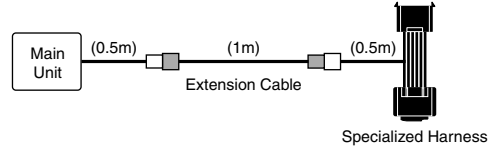
(With a tester it is possible to check the reverse wiring to see if it is 12V, but it is not possible to check if it is of pulse type.)

## Specialized Harness

**6P Connector** Connect to the 6-pin connector on the specialized harness.



※ Please use Extension Cable (included) as necessary.



### 1 Remove the accelerator pedal.

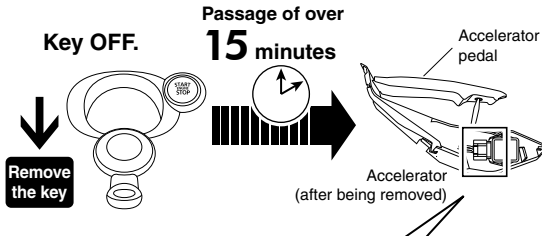
※ To ensure that the specialized harness is connected properly, make sure to only carry out the installation after the accelerator pedal has been disconnected.

Type A	Type B
BMW 1 Series / 3 Series MINI R56 Series	MINI R50 Series
① Remove the rubber cover from the bottom of the accelerator pedal and unscrew the screw. (Front) There is a rubber cover and screw	① Dislodge the catch on the left side of the accelerator pedal with a wide (7mm or above) flathead screwdriver. 7 mm or above Accelerator pedal Inside catch Flathead screwdriver (Large)
② Pull off towards the top. 	② Lift up with the screwdriver and slide the pedal to the left about 1 cm. Slide the pedal to the left about 1 cm
③ With a thinner flathead screwdriver (6mm or less), insert into the same place as in ①. ③ 6 mm or less Accelerator pedal Inside catch Flathead screwdriver (Small)	④ Pull completely off. 
④ Lifting up as in ② with the screwdriver, slide the pedal further to the left and then pull completely off.	

- 2 After the key was turned OFF for at least 15 minutes, pull off the accelerator connector by pressing on the hooks on the sides of the connector (female side).

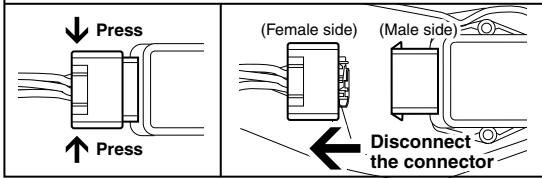
Depending on the type of vehicle, if the connector is disconnected before 15 minutes from the time that the key was turned OFF the Check Engine Light may go on.

(If the Check Engine Light comes on: ⇒Refer to "How to Turn Off the Check Engine Light" of Page 16.)



**How to Disconnect the connector**

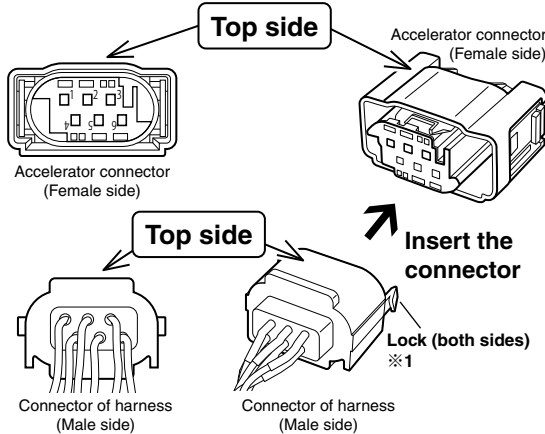
When removing the connector make sure to press down on the hook and pull strongly to remove.



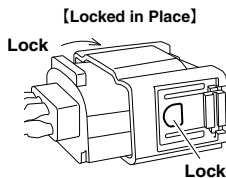
- 3 Insert the male side of the Specialized Harness into the female side of the accelerator connector.

The connectors must both be going in the correct direction with the top side up; see below for details.

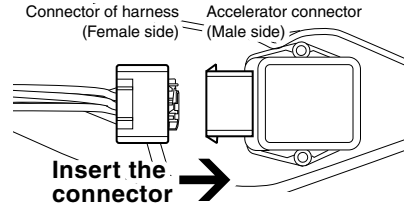
**About insertion direction**



※1 Insert completely until you hear a click noise so that both sides are fully locked into place and can not come apart.

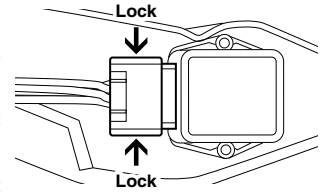


- 4 Insert the female side of the Specialized Harness into the male side of the accelerator connector.



Insert the connector as far as it can go and make sure both sides are locked into place.

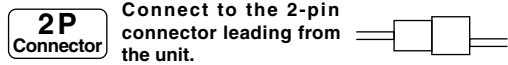
※If the direction is not correct the connector can not be fully inserted and will not lock.



- 5 Return the accelerator pedal and connect the 6-pin connector from the Specialized Harness to the 6-pin connector on the product.

※If the cable is not long enough to install to the center console, use the extension cable included with the product.

**SET Switch**



**Wiring for when you wish not use AUTO CRUISE**

- Red** IGN (12V with Key ON) (OK for other than brake)
- Black** Earth
- Gray** **Orange** Do not connect to anywhere

Before Using  
Features  
Connecting The Wires  
Installing The Product  
Initial Settings  
Speed Pulse Settings  
How to Operate  
Trouble-Shooting

## procedure 2

# Installing The Product



**Do not use magnetic holders, such as for a smartphone, to prevent malfunction.**

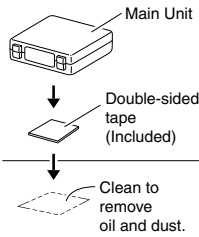


**Please be sure to bundle away all wires with tape not to get damaged by any steel plate or screws as this may cause short circuit.**

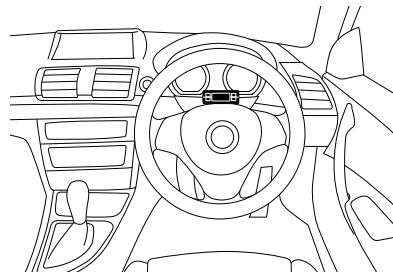
## Installing The Main Unit

Install the Main Unit to a position which is easy to see.

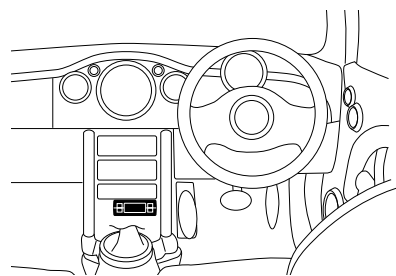
### (How to Install)



### (Example of Installation)



BMW 1 Series / 3 Series



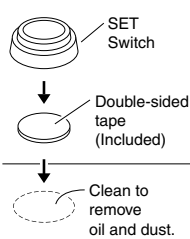
MINI

## Installing The SET Switch

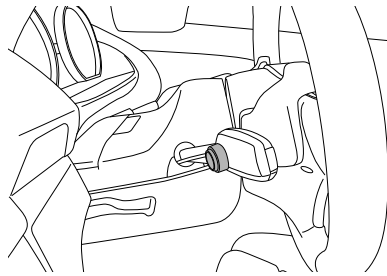
Install the SET switch to a position which is easy to operate.

### ●For Direct Installation (BMW, MINI R50 Series)

### (How to Install)

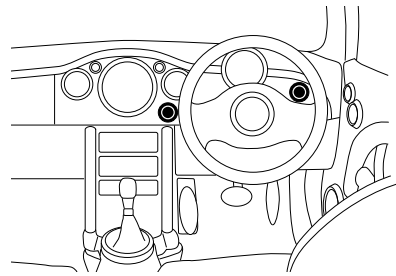


### (Example of Installation)



BMW 1 Series / 3 Series

### (Other Installation Examples)

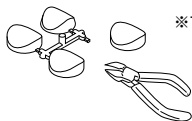


MINI R50 Series

### ●When Using the Specialized Lever Spacer (For MINI R56 Series)

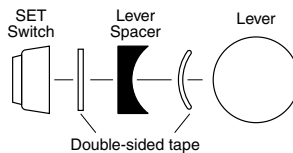
### (How to Install)

① Cut off the 17mm spacer.

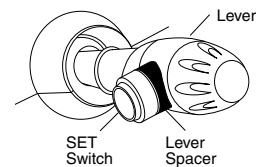


※The size of spacer is on flat side

② Fix to side of the lever using double-sided tape.



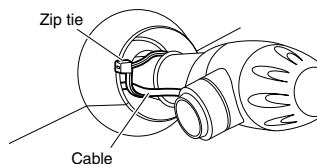
### (Example of the Spacer Installation)



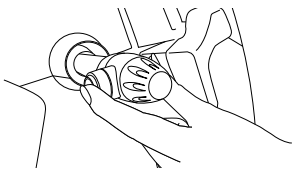
### About fastening wires down

Fasten down the cable from the switch using the Zip tie included with the product. And cut excess Zip tie.

※When pulling the cable into the column cover, be careful not to crush or smash it.



※When pressing in on the switch, use your thumb to keep the lever from moving and press in on the switch.





**procedure 3**

# Initial Settings (Degree of Acceleration Setting)

Make sure to carry out these settings.

When installing for the first time



**Initial Settings**

When installing into a different car



**Initial Settings**

- This operation sets the car's accelerator characteristics into the controller unit.
- If the "Initial Settings" are not carried out, the unit will remain in NORMAL Mode even if the Mode is switched.
- If this settings have been improperly made a Check Engine Light may go on.

Before Using

Features

Connecting The Wires

Installing The Product

Initial Settings **Make sure to carry out this operation.**

Speed Pulse Settings





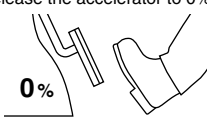


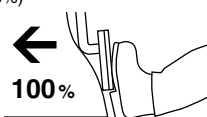
How to Operate


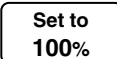
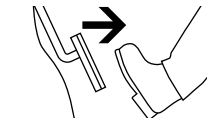

Trouble-Shooting

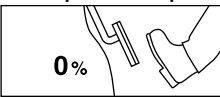

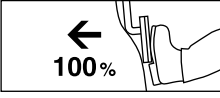

## Before making the "Initial Settings"

1. Make settings only after having completed all wiring (connector installation).
2. Make settings with the **key in the ON (engine not running)** position and the gear in **P (Parking)** or **N (Neutral)**.


## (Making the Settings)

Operational Procedure	Main Unit Display Area
<b>1</b> Key ON.  Engine not running	nor. or nor (nor Display)  If nor does not appear, press the MODE switch until nor appears.
<b>2</b> Press the UP switch for 10 seconds or longer to change the display to "0".  Press until "0" appears	cAR Blink ↓ - 5 - - 4 - ⋮ - 0 - Count down from 5 to 0 after the "cAR" blink.
<b>3</b> When "0" appears release the UP switch.  Release	(e.g.) <sup>※1</sup> L 1.5 Voltage Display (e.g., L1.5)
<b>4</b> Pedal is not pressed down. (Release the accelerator to 0%)  0%	(e.g.) <sup>※1</sup> L 1.5 Voltage Display (e.g., L1.5)
<b>5</b> Press the UP switch.  Press  Set to 0%	SET (SET Display)
<b>6</b> Pedal is completely pressed down. (Press in on the accelerator to 100%)  100%	(e.g.) <sup>※1</sup> H 4.5 Voltage Display (e.g., H4.5)

Operational Procedure	Main Unit Display Area
<b>7</b> With the accelerator at 100%, press the UP switch.  Press  Set to 100%	SET (SET Display) ↓ nor. or nor (nor will be displayed for 1 second) ↓ 100 (100 Display)
<b>8</b> Once the display changes to 100 release the accelerator. 	100 (100 Display) ↓ nor. or nor (nor Display)
<b>9</b> <b>Setting Completed</b> If the device is re-installed into a different vehicle, make sure to carry out these settings again.  After having finished settings and the battery or wires have been disconnected it is not necessary to carry out "Initial Settings".	

Check the Settings	※ If the display is incorrect start again from step 2 above.
Do not press in on pedal  0%	 nor. or nor (nor Display)
Press down on pedal  100%	 100 (100 Display)

※ Depending on characteristics of the accelerator or on how the accelerator is stepped on the display may read "A95" (95%).

 If Err is displayed at **7** If after the "Err" is shown the display returns to as shown in **4** ("L1.5" or so on), it means that the degree of acceleration settings have not been confirmed properly. Re-do the settings from step **4**.

※1 The values shown in the display will vary depending on the type of car.

**procedure 4**

# Speed Pulse Settings

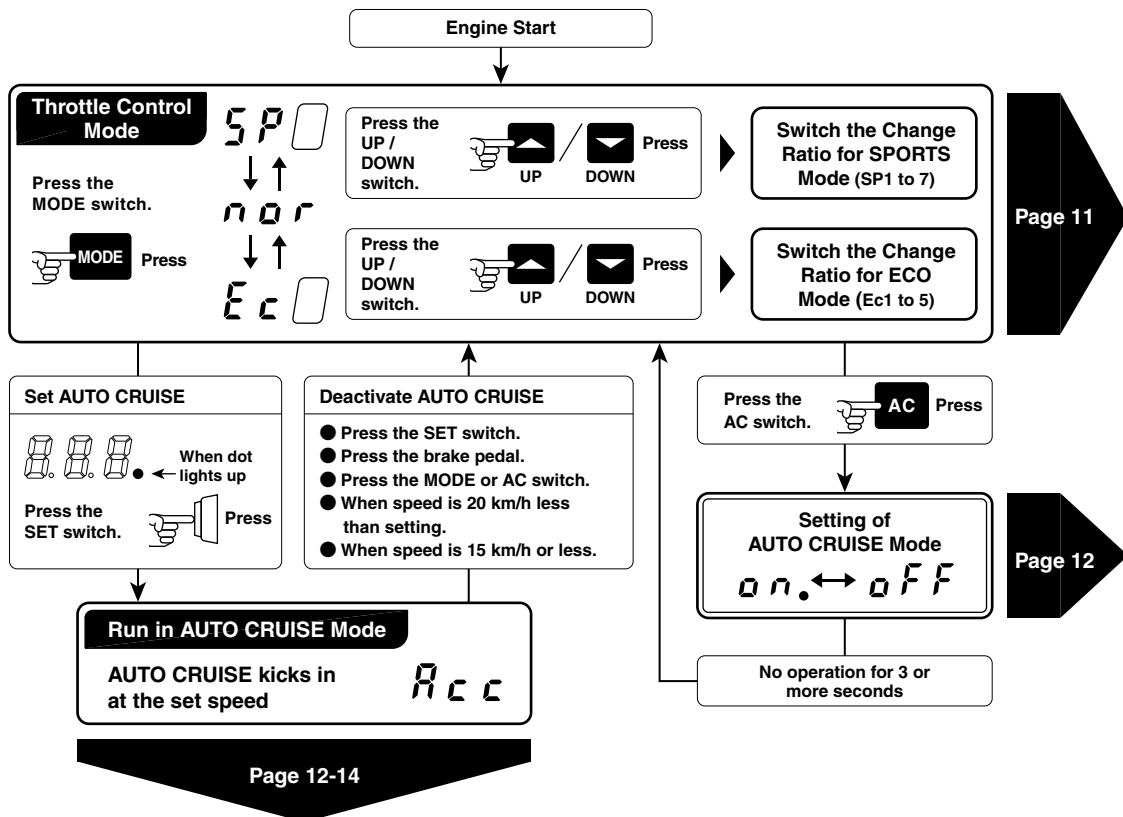
## [Making the Settings]

Operational Procedure	Main Unit Display Area
<b>1</b> Key ON. Engine not running	<i>nor.</i> or <i>nor</i> (nor Display) ⚠ If <i>nor</i> does not appear, press the MODE switch until <i>nor</i> appears.
<b>2</b> Press the DOWN switch for 3 seconds or longer. Press the switch for 3 seconds	<i>PLS</i> (PLS Display)
<b>3</b> Release the DOWN switch and the pulse setting will appear. Release	<i>P00</i> (Pulse Number Display)
<b>4</b> Press the UP / DOWN switches to select the desired pulse setting. Press UP / DOWN	<i>P36</i> For MINI (Factory Setting) ⬆ <i>P40</i> For BMW

Operational Procedure	Main Unit Display Area
<b>5</b> Do not operate any switches for 10 or more seconds.	<i>P00</i> (The selected pulse setting will blink) ↓ <i>P00</i> (The selected pulse setting will light up) ↓ <b>Display is Off</b>
<b>6</b> Returns to NORMAL Mode.	<i>nor.</i> or <i>nor</i> (nor Display)
<b>7</b> Setting Completed	

⚠ If AUTO CRUISE can not be set when the speedometer reads approximately 30 km/h, then the Pulse Setting is incorrect; please check and change.

## Basic Operation



Before Using

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Speed Pulse Settings

How to Operate

Trouble-Shooting

# Operating the Throttle Controller

Before Using Features Connecting The Wires Installing The Product Initial Settings Speed Pulse Settings How to Operate Trouble-Shooting

## Switching Response Levels

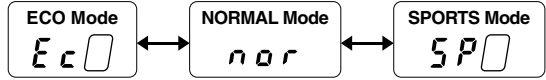
Make settings for response in each Mode.

### Switch the Mode

Switch between three modes: SPORTS Mode (Higher Response), ECO Mode (Lower Response), and NORMAL Mode (Standard Performance).

**1** Key ON.  
(Engine Start)

**2** The Mode will change with each pressing of the MODE switch.



※For safety, when changing modes always go through *nor* (NORMAL) one time.

#### About the Relay sound

When switching to *nor* for safety reasons the relay will go into operation and you will hear a clicking sound.

### Adjust the Change Ratio for each Mode

Switch the change ratios within SPORTS Mode (SP) and ECO Mode (Ec).

⚠ When making adjustments to the change ratios, begin at the lowest setting and slowly make changes while continually checking acceleration.

*Ec* is displayed, the ratio will change with each pressing of the UP / DOWN switch.



*SP* is displayed, the ratio will change with each pressing of the UP / DOWN switch.



Switching the Change Ratio for ECO Mode

*Ec* 5 ↔ *Ec* 4 ↔ *Ec* 3 ... *Ec* 1

Greatest Change Ratio (-50%)      (-40%)      (-30%)      Smallest Change Ratio (-10%)

Switching the Change Ratio for SPORTS Mode

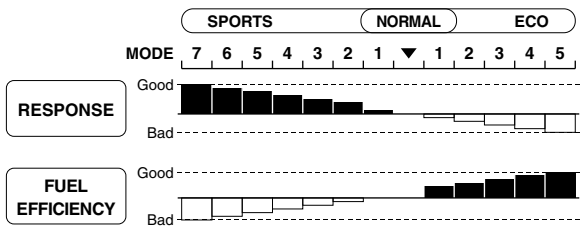
*SP* 1 ↔ *SP* 2 ↔ *SP* 3 ... *SP* 7

Smallest Change Ratio (+10%)      (+20%)      (+30%)      Greatest Change Ratio (+70%)

### ⚠ Saving Settings

All settings are saved even after the engine has been turned off. However, if the engine is turned off in 2 seconds or less after the last setting operation was carried out, the settings will not be saved.

### [Reference 1] Examples of changes in fuel consumption and response depending on change ratios



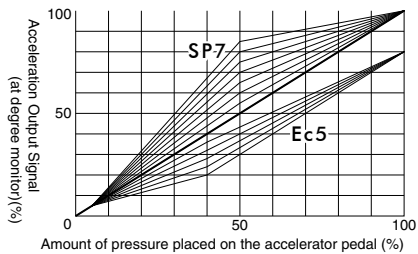
※In ECO Mode, because response is less than the standard fuel efficiency can be improved. However, if rapid acceleration is purposefully carried out fuel efficiency will be reduced.

※The changes in response will be greater as the vehicle's power is greater.

### [Reference 2] Basic Control Features

The changes throughout each Mode will be controlled smoothly without perceptible steps.

#### Acceleration output signal based on amount of pressure placed on accelerator pedal



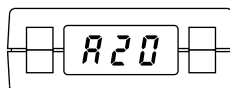
## Degree of Acceleration Monitor

Displays the amount of pressure placed on the accelerator pedal. (output signal) [15 - 100%, 5% unit]

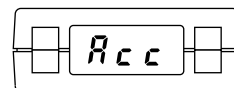
Degree of Acceleration Monitor shows the rate of acceleration output to the ECU where 0 represents the pedal not being pressed in and 100 equals when the pedal is fully pressed down.

※When in ECO Mode, even if the accelerator is stepped on a full 100% the output signal will only be 80%.

※Depending on characteristics of the accelerator or on how the accelerator is stepped on the display may read up to 95%. (when in SPORTS Mode and NORMAL Mode only)



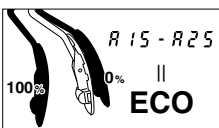
Degree of Acceleration (output) 20%



While in AUTO CRUISE (no degree display)

### USE 1 Check acceleration during ECO driving

To ensure reduced fuel consumption during acceleration the degree of acceleration should be between 15% and 25%. To further improve results use ECO Mode when wishing to save fuel.

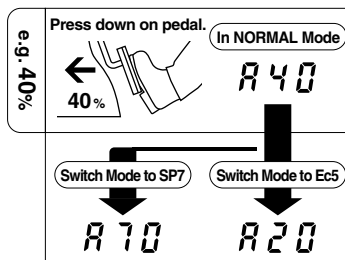


### USE 3 Check control status

With the key in the ON position and under NORMAL Mode press in the pedal until it reaches 40% (A40), if the Mode is changed to SP7 the display should read 70% (A70) and if placed in Ec5 the display should change to 20% (A20).

[⇒Refer to "Basic Control Features" of Page 11.]

※The actual display may differ slightly.



### USE 2 Check acceleration during regular driving

Please use to check the degree of acceleration for any type of driving, not just ECO Mode.

## Operating the AUTO CRUISE

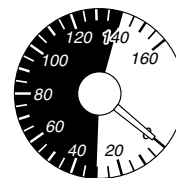
After setting to AUTO CRUISE, you can drive automatically at the set speed even without pressing down on the accelerator pedal.

- AUTO CRUISE is nothing more than an aid to assist drivers. Please make sure to follow all speed limits and practice safe driving.
- AUTO CRUISE can be dangerous if activated in the following conditions; do not use under these conditions.
  - ① On slippery Roads (snow and ice)
  - ② In traffic jams
  - ③ Around sudden curves and/or slopes
- Upon climbing a sudden slope, it is not possible to accelerate beyond the capability of the engine. Moreover, when going down a sudden decline the engine can not force deceleration other than from the engine brake; please use the brake when necessary.
- To avoid an increase in engine revolutions, do not put the gear in N (Neutral) or any other gear other than D (Drive) while in AUTO CRUISE.

### [Settable Speed]

Approximately 30 to 140 km/h

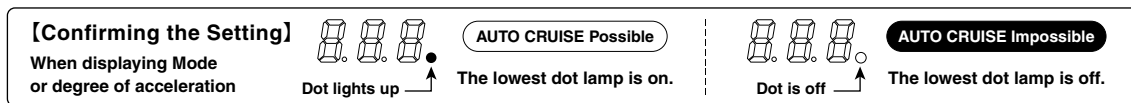
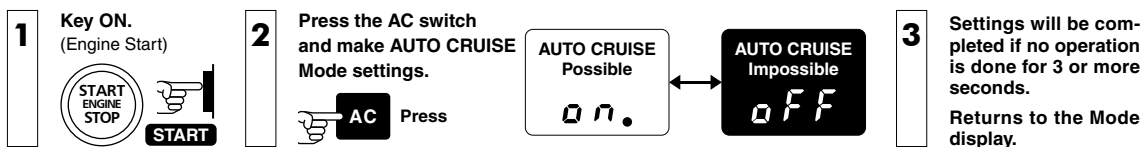
Due to differences in some standard meters, the setting will fall in the range of between 35 and 145 km/h.



## Mode Setting

Use the SET switch to turn AUTO CRUISE to ON or OFF.

※All settings are saved even after the engine has been turned off.




⚠ If you wish not to use AUTO CRUISE, please turn the AUTO CRUISE Mode to OFF.

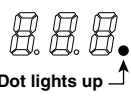
# Set and Deactivate

By pressing the SET switch at the desired speed, AUTO CRUISE will start when that speed is attained.

**1 Key ON.**  
(Engine Start)




**2 Mode Display**



Dot lights up

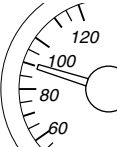
**3 Start Running**




Only when the dot lamp is on can AUTO CRUISE be used. Refer to "Mode Setting" of Page 12.

**4 When at the desired speed press in on the SET switch.**

Please try to set when there is as little change in speed as possible.



Press



**When setting make sure not to quickly depress the accelerator.**

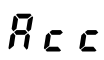
- When setting during a sudden hill climb the car will run more stably after decelerating a little.

**About the Relay sound (clicking noise)**

If you set under NORMAL Mode *n n r*, you will hear a noise from the relay working. If this bothers you, please set while in *S P l* or *E c l*.

**5 AUTO CRUISE kicks in at the set speed**


When in Acc, do not depress the accelerator for any other reason than for acceleration.



**[How to Deactivate]**

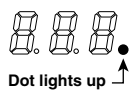
AUTO CRUISE can be deactivated using any of the following:

- Press the SET switch.
- Press the brake pedal.
- Press the MODE / AC switch.



**Returns to Step 3.**

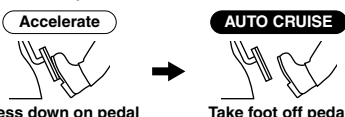
Mode Display



Dot lights up

**[How to Accelerate]**

- Press down on accelerator pedal to accelerate.
- Take foot off of pedal to return to AUTO CRUISE at the set speed.



**[Auto-Deactivation]**

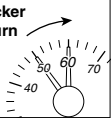
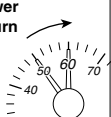
- When speed declines to 20 km/h or less than the set speed.
- When the speed declines to 15 km/h or less.

**[How to Reset]** After deactivation occurs, carry out as in step 4.

# Adjust Level

Depending on the size of your car's engine the amount of time it takes to return to the set cruising speed after a hill climb or other such condition will differ. By adjusting the level it is possible to change the amount of time for returning to the set cruising speed to be faster or slower to match your car's performance and desired ride.


Level adjustments may differ depending on car model or driving conditions; please use the following as a simple guideline and adjust to fit your needs. (The factory default setting is L-3)

<p><b>Up to L-5</b> (Quick Acceleration)</p> <p>For Smaller Engines</p>	<p>In car models with smaller engines, to have the car return to the set speed faster raise the level to L-5.</p>	<p>Quicker Return</p> 	<p>L-5 ↑ L-4 ↑ L-3 (Factory Setting) ↓ L-2 ↓ L-1</p>	<p><b>For Smaller Engines</b></p> <p><b>Quick</b> (Lessen difference in returning to speed)</p> <p>↑ Amount of Time to Return to Set Cruise Speed ↓ <b>Slow</b> (For more comfortable return to speed)</p> <p><b>For Larger Engines</b></p>	<p><b>[Setting Examples]</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>L-4</td> <td>BMW 116</td> </tr> <tr> <td>L-3</td> <td>BMW 320 MINI Cooper</td> </tr> <tr> <td>L-2</td> <td>BMW 135 MINI Cooper S</td> </tr> </table>	L-4	BMW 116	L-3	BMW 320 MINI Cooper	L-2	BMW 135 MINI Cooper S
L-4	BMW 116										
L-3	BMW 320 MINI Cooper										
L-2	BMW 135 MINI Cooper S										
<p><b>Down to L-1</b> (Slow Acceleration)</p> <p>For Larger Engines</p>	<p>In larger engine car models, to have the car ride more comfortably without sudden acceleration to return to the set speed, lower the level to L-1.</p>	<p>Slower Return</p> 									


**Operating switches or checking the display while driving may cause accidents; please use with the utmost consideration for safety.**

## [Making the Settings]

**1 While Running in AUTO CRUISE Mode**



**2 Pressing the switch will display the current level and by pressing UP / DOWN you can switch levels.**



**Change the AUTO CRUISE Level**

L-1 ↔ L-2 ↔ L-3 ↔ L-4 ↔ L-5

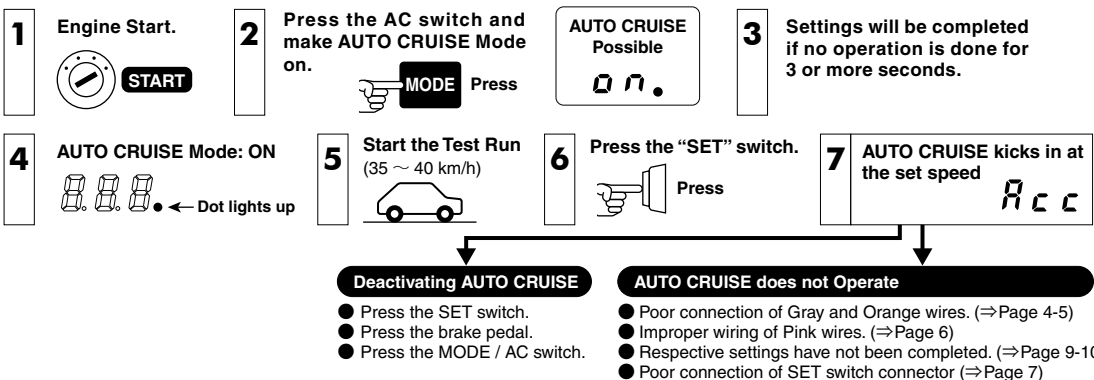
Low Level (Factory setting) High Level

Before Using  
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# Test Drive

After having carried out all of the necessary wiring and making settings in "Initial Settings" and "Speed Pulse Settings" please carry out a low-speed test run.

- ⚠ Please carry out the test drive in a safe spacious area away from pedestrians and traffic.
- Please make sure to carefully read this manual and understand how to operate the unit before taking a test run.



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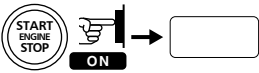


Speed Pulse Settings

How to Operate


Trouble-Shooting

# Troubleshooting

## Concerning Basic Operations and Car Problems

Trouble	Possible Causes	Possible Solutions
<p>The key switch is set to ON but the display of the Main Unit will not light up.</p> 	<p>Brake fuse is burned out.</p> <p>The <b>Red</b> and <b>Black</b> wires may have been improperly wired or there is a poor connection.</p> <p>Poor connection of <b>Specialized Harness</b> and <b>6P Connector</b>.</p>	<p>Please reconfirm whether wiring and connections are correct or not.</p>
<p>A Check Engine Light has gone on.</p> 	<p><b>The accelerator connector or Specialized Harness</b> was disconnected with the key switch in the ON position or within 15 minutes after having turned the key to OFF.</p> <p>The "Initial Settings" have not been properly carried out.</p> <p>The car reverse signal is set to pulse.</p>	<p>Connect to Accelerator Connector(⇒Page 6-7 of this Manual), and turn off the Check Engine Light (⇒Page 16).</p> <p>Make the "Initial Settings" (⇒Page 9 of this Manual), and turn off the Check Engine Light (⇒Page 16).</p> <p>Please check Page 6 of this Manual.</p>
<p>While making "Initial Settings" an "Err" appears in the display.</p> 	<p>The "Initial Settings" have not been properly carried out.</p>	<p>Make the settings by following the directions under <b>procedure 3</b> "Initial Settings" found on Page 9 of this Manual.</p>

## Concerning the Throttle Controller

Trouble	Possible Causes	Possible Solutions
<p>Even if the Mode is changed, the changes cannot be felt.</p>	<p>The "Initial Settings" have not been properly carried out.</p>	<p>Make the settings by following the directions under <b>procedure 3</b> "Initial Settings" found on Page 9 of this Manual.</p>
<p>The Mode and/or the setting of change ratios can not be saved.</p>	<p>The key was has been turned OFF immediately after having finished the setting of change ratios or changing the Mode.</p>	<p>After having made settings of change ratios or changing the Mode, wait for at least two seconds before turning the key OFF.</p>
<p>While in SPORTS Mode, when put into reverse the display does not show "bAc".</p> 	<p>The <b>Pink</b> wire may have been improperly wired or there is a poor connection.</p> <p>The unit is connected to the reverse wire of a navigation system from another company.</p> <p>The backup lights have been changed to LED lamps.</p>	<p>Please reconfirm whether wiring and connections are correct or not.</p> <p>Follow the instructions for wiring to reverse found in this Manual (⇒Page 6).</p> <ul style="list-style-type: none"> <li>● Replace the backup lights with the car maker's original lights.</li> <li>● Do not carry out wiring for Reverse Gear.</li> </ul>

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## Concerning AUTO CRUISE

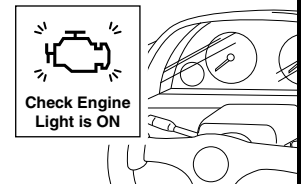
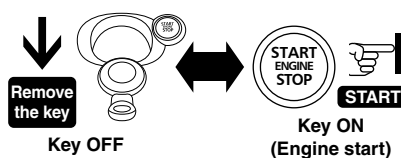
Trouble	Possible Causes	Possible Causes
AUTO CRUISE does not Operate.  	The <b>Gray</b> and <b>Orange</b> wires may have been improperly wired or there is a poor connection.	Please reconfirm whether wiring and connections are correct or not.
	Poor connection of <b>2P Connector</b> .	
	The <b>Pink</b> wire may have been improperly wired.	
	The setting is outside the allowable range.	Please refer to Page 12 of this manual "Mode Settings" to turn the dot lamp ON.
	AUTO CRUISE Mode is turned OFF. (dot is off)	
	The "Initial Settings" have not been properly carried out.	
After AUTO CRUISE is deactivated the display goes off.  	The brake fuse is burned out.	Please reconfirm whether wiring and connections are correct or not.
	The <b>Red</b> and <b>Black</b> wires may have been improperly wired or there is a poor connection. The <b>Specialized Harness</b> or the <b>6P Connector</b> has become disconnected.	
AUTO CRUISE is automatically deactivated and the display switches to throttle controller.  	The <b>Gray</b> and <b>Orange</b> wires may have been improperly wired or there is a poor connection.	Please reconfirm whether wiring and connections are correct or not.
	The <b>Pink</b> wire may have been improperly wired.	
	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under <b>procedure3</b> "Initial Settings" found on Page 9 of this Manual.
	AUTO CRUISE will be automatically deactivated if the speed declines to 20 km/h or less than the set speed or if the speed declines to 15 km/h or less.	
When climbing a hill, the speed is much slower than the set cruise speed.	The AUTO CRUISE Level has been adjusted to a lower level (lowest is L-1).	For details about adjusting see Page 13 of this manual "Adjust Level".
It feels like to return to the AUTO CRUISE speed is too quick and jumpy.	The AUTO CRUISE Level has been adjusted to a higher level (highest is L-5).	
Even at speeds above 30 km/h AUTO CRUISE does not kick in.	"Speed Pulse Settings" have not been properly carried out.	Make the settings by following the directions under <b>procedure4</b> "Speed Pulse Settings" found on Page 10 of this Manual.

### Note

### How to Turn Off the Check Engine Light

If all is carried out properly the Check Engine Light should not come on, but if for reason it does, please carry out the following to solve the problem.

- ① Under normal conditions, start and stop the engine several times.
- ② If that does not turn off the lamp, please consult your local car dealer and have them turn it off.



※Our products have already been recognized as our Industrial Property or are in the process of receiving Industrial Property status.

※We plan in the near future to take all possible legal measures to protect against unfair competition from look-alike products using similar designs, regulating characteristics, circuitry and circuitry layout.

※We strictly prohibit the unlicensed use of the PIVOT trademark and the unauthorized use of PIVOT User's Manual.