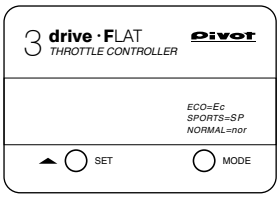
Throttle Controller *3-drive·FLAT*

USER'S MANUAL (Product Number : THF2)

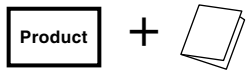
THF2

(Minor changes from May, 2013)



Thank you for purchasing PIVOT product.
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

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 5. 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.

Only use 3-drive Specialized Harness.

Using another type of harness will cause troubles and failure; use only the 3-drive specialized harness.

Set to NORMAL Mode upon Removal of Product.

When uninstalling the product, make sure to return it to nor (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.

⚠ 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.

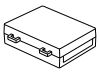
⚠ CAUTION

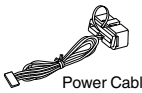
Improper use or disregard of these warnings may cause injury to persons, damage the product and/or other things.

- 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 THF2".
- 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 electrotap.
- 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 benzine.
  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.

Please check the contents of the package


Controller
[50×34×14(D)mm]


Unit
[50×22×70(D)mm]


Power Cable with OBD Connector


Double-sided Tape
[25×35mm] ×2


Cut Connectors ×3


Zip Ties
(Large) ×2, (Small) ×2


User's Manual
(This Book)

Tools and Materials to prepare for Installation


Screwdriver


Nippers


Crimpers


Insulating Tapes

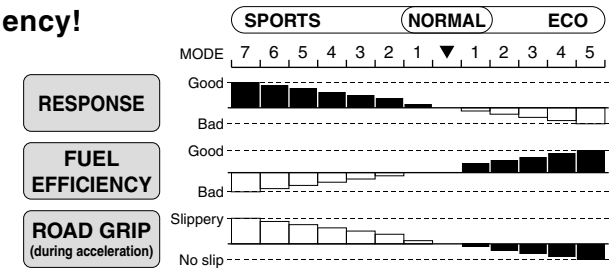
and others

Features

SPORTS & ECO

Control Acceleration and Fuel Efficiency!

SPORTS Mode is for higher response driving.
ECO mode is for better fuel efficiency, more comfort or when on slippery roads.



Note: Even in ECO mode, if rapid acceleration is carried out over and over again fuel efficiency will not increase.

Select the kind of response to match your driving.

3-drive enables changing the response for electronic throttle car models and gives you, the driver, the freedom to select the type of acceleration response you need or desire: quick acceleration for speedy driving to slower acceleration for eco-driving.

Performance

FLAT CONTROLLER	The simple 14mm-thin case design allows for unobtrusive installation even in prominent places.
SPORTS MODE	High response for sporty situations. (ideal for circuit, mountain driving, etc...)
ECO MODE	Low response for eco-driving situations. (perfect for city and fuel conscious driving)
NORMAL MODE	Normal performance.
3 MODES 12 STEPS	One-touch selection between 3 modes and 12 steps. (SPORTS Mode = 7 steps ECO Mode = 5 steps)
ACCELERATION MONITOR	Displays the amount of pressure on the accelerator and helps to prevent poor fuel efficiency due to over acceleration.

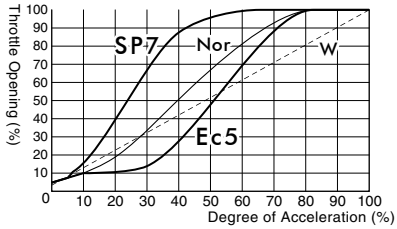
MODE MEMORY	The mode when you start the engine is selectable; the "Same as last" mode or "Normal" mode.
EASY INSTALLATION	Easy installation using car model specific coupling harness. (sold separately)
INITIAL SETTINGS MODE	Stable balanced control is possible by running the "Initial Settings" program after having finished installation; this will help reduce troubles caused by voltage differences found in each car model.

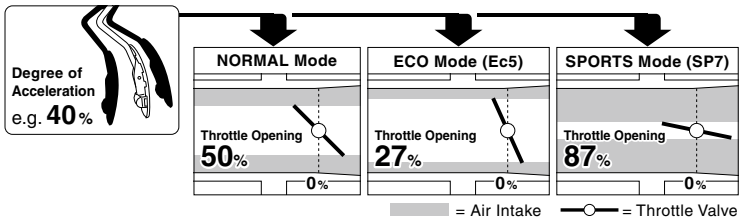
Safety

1. Prevents sudden starts by reverting to same response as under normal setting.
2. Normal Control when in Reverse. (wiring where necessary)
3. Returns to Normal in case of faulty wiring or circuitry. (See Note 1 below)
4. Discrete 2 Signal Control for Safety.

Note 1: When using the OBD connector for running tests, disconnecting the connector will not cause any harm to the car.

Examples of Throttle Opening

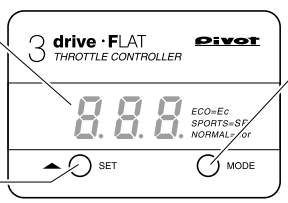




SP7= MAX. SPORTS Mode (7 steps) W= For models with wire-type throttle
Ec5= MAX. ECO Mode (5 steps) Nor= Standard Performance
• SUZUKI SWIFT (ZC31S)

Note: Fine tune control with 7 steps for Sports Mode and 5 for ECO Mode.
In some car models with a Valvematic engine, control is carried out by the intake valve rather than the throttle valve.

Part Names



1 Display
- Mode Display
- Degree of Acceleration Display (15–100%)
- Display Each Settings

2 SET Switch
- For Adjusting the Change Ratio for each Mode
- Initial Settings

3 MODE Switch
- Switching Modes
- Setting for when Restarting the Engine

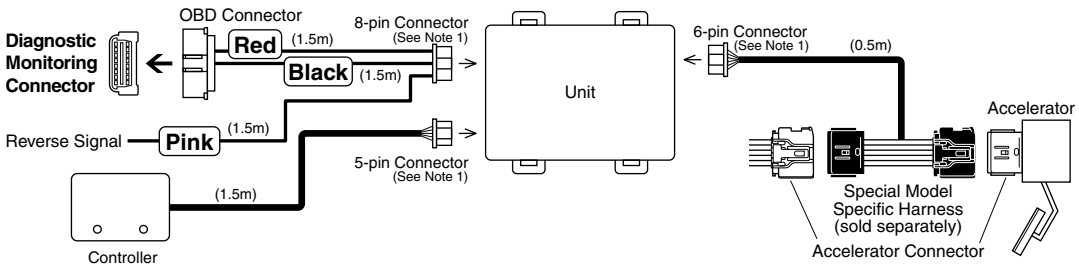
Turning off the Display

Note: This product is interlocked with the ECU (engine computer) power. Depending on the model of car, the display may remain on for up to 15 minutes even after the ignition has been turned off; this is normal.

procedure 1 Connecting The Wires

Basic Wiring

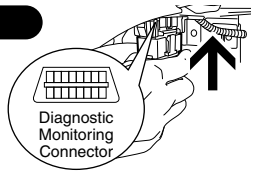
When installing make sure to use the correct Specialized Harness for your car model.



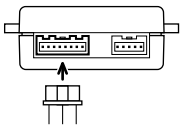
Note 1: After inserting the connector, pull lightly to make sure that it is securely locked.

Power Cable

OBD Connector — **Connect to the Diagnostic Monitoring Connector.**

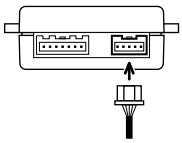


8-pin Connector — **Connect to the side of the unit.**



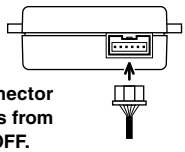
Controller

5-pin Connector — **Connect to the side of the unit.**



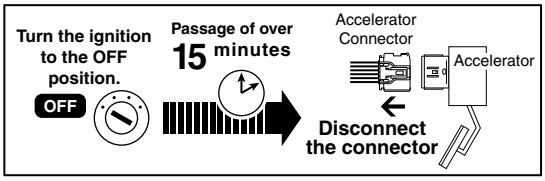
Special Model Specific Harness (sold separately)

6-pin Connector — **Connect to the side of the unit.**



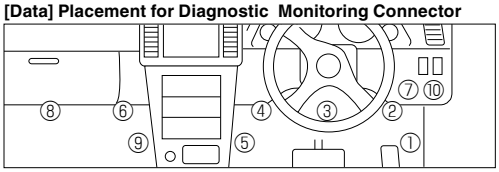
⚠ Only disconnect the accelerator connector after having waited at least 15 minutes from the time that the ignition was turned OFF.

Depending on the type of vehicle, if the connector is disconnected before the ECU power is switched OFF the Check Engine Light may go on. (If the Light comes on: ⇒Refer to Page 8, "How to Turn Off the Check Engine Light")



Note: For details about connecting the specialized harness, please refer to the user's manual that came with that harness.

[Data] Placement for Diagnostic Monitoring Connector



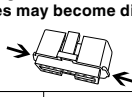
TOYOTA	①②③④⑦	MAZDA	②④⑩
NISSAN	①②③④⑤⑦	SUBARU	②③
HONDA	②④⑤⑥⑧⑨	SUZUKI	②④
MITSUBISHI	②③④⑤	DAIHATSU	②③④⑤
BMW · MINI	②③④⑤	VW · AUDI	②③④

①By the accelerator pedal
②At the right foot of the driver seat (with lid)
③At foot of driver seat in the center
④At the left foot of the driver seat (with lid)
⑤At the right side of the center console
⑥At the right foot of the passenger seat
⑦Behind the panel by the steering (with lid)
⑧At the left foot of the passenger seat
⑨At the left side of the center console
⑩Panel to right of steering wheel(upper part of small storage box)

[Reference 1] Notes about using the OBD Connector

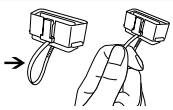
⚠ CAUTION **Do not pull on the wires when trying to remove the connector; the wires may become disconnected.**

Make sure to grip the distended portions when pulling it out or inserting it.



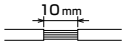
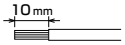
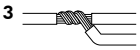
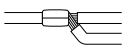
If you unable to get a grip on the distended portions.

With some car models it may be difficult to get a good grip on the connector.



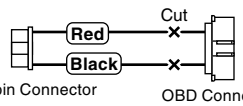
In such case, pull out the connector by pulling on the end of the zip tie.

[Reference] How to use the Cut Connectors

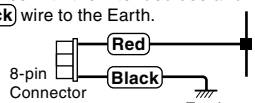
1  Peel off of the vinyl cover at connection.	2  Peel off of the vinyl cover at the end of the product' s wire.	3  Wrap around both wire coils.
4  Close tightly with cut connector.	5  Insulate with vinyl tape.	Note: When crimping, please use crimpers or use pliers to bend and then solder together.

If Power comes from Other Source / How to make display off linked to the ignition

1 Cut the **Red** and **Black** wires coming from the OBD connector.



2 Connect the **Red** wire either way in accordance with the intended use and the **Black** wire to the Earth.



■ = Use Cut Connector

Normal Power (Permanent 12V)
Display OFF linked to ECU

or

IGN (12V with the ignition ON)
Display OFF linked to the ignition

About Wiring for Reverse

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).

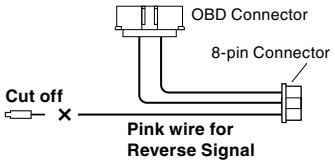
⚠ Usually there is no need to wire to reverse.

When put into reverse, the degree of acceleration is small and quick acceleration will not occur; it is not necessary to wire for reverse.

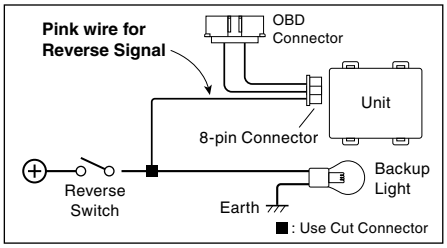
Wiring place: Reverse Signal	Check Wiring
When the ignition in the ON position (engine not running) and in **R (Reverse) = 12V, Other Positions = 0V**	bAc If in SPORTS Mode, when the reverse signal is input the display will read "bAc" .

(Wiring Method)

Cut off the insulation tube from at the tip of the Pink wire for reverse signal. Connect with the following procedure.

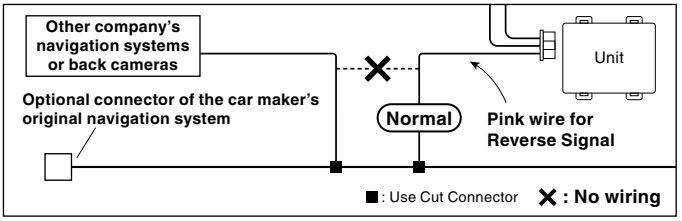


■If wiring to the Reverse Signal



■If wiring to the optional connector of the car maker's original navigation system

When using a different company's navigation system do not wire to the reverse cable.



procedure2 Installing The Products

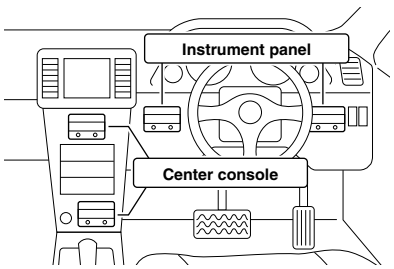
Do not use magnetic holders, such as for a smartphone, to prevent malfunction.

⚠ **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.**

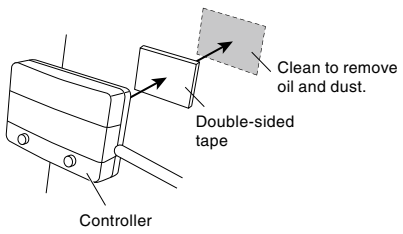
Installing The Controller

Install the Controller to a position which is easy to see and operate.

(Example of Installation)

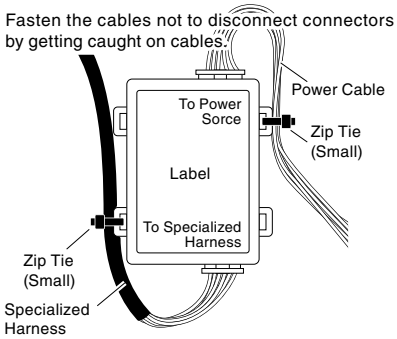


• Fastening to a Flat Place



Cable processing of the Unit

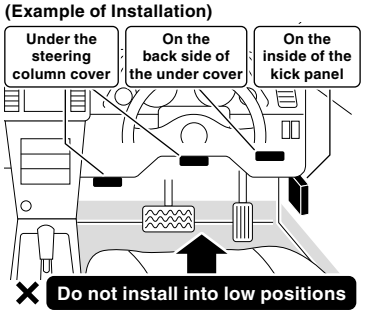
Fasten the cables not to disconnect connectors by getting caught on cables.



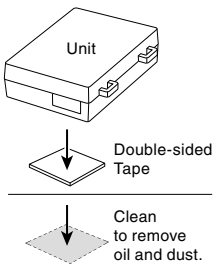
Installing The Unit

As shown in the diagram below, fasten the unit into positions not usually affected by water.

(Example of Installation)



Fastening to a Flat Place



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**

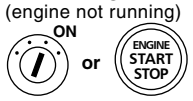
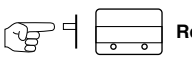
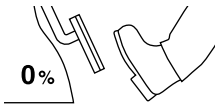
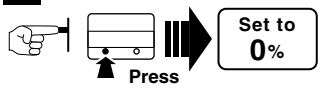
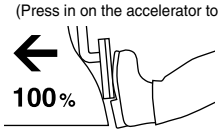
- **This operation sets the car's accelerator characteristics into the controller unit.**
- **If the "Initial Settings" are not carried out, the unit will remain in NORMAL Mode even if the Mode is switched.**
- **If this settings have been improperly made a Check Engine Light may go on.**

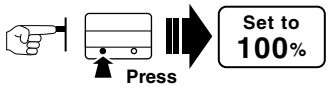
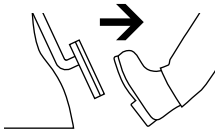
Before making the "Initial Settings"

⚠ **1. Make settings only after having completed all wiring (connector installation).**

2. Make settings with the ignition in the ON position(engine not running) and the gear in P (Parking) or N (Neutral).

[Making the Settings]

Operational Procedure	Controller Display Area
1 ▸ **Turn the ignition ON.** (engine not running)  **Without braking, press down twice**	nor (nor Display) ⚠ If nor does not appear, press the MODE switch until nor appears.
2 ▸ **Press the SET switch until "0" is displayed.**  **Press until "0" appears**	cAr ⇩ 5 4 ··· 1 0 Count down from 5 to 0 after the "cAr" blinking.
3 ▸ **When "0" appears release the SET switch.**  **Release**	**(e.g.)** (See Note 1) L 1.5 Voltage Display (e.g. = L1.5)
4 ▸ **Pedal is not pressed down.** (Release the accelerator to 0%) 	**(e.g.)** (See Note 1) L 1.5 Voltage Display (e.g. = L1.5)
5 ▸ **Press the SET switch.** 	SEt (SEt Display)
6 ▸ **Pedal is completely pressed down.** (Press in on the accelerator to 100%) 	**(e.g.)** (See Note 1) H4.5 Voltage Display (e.g. = H4.5)

Operational Procedure	Controller Display Area
7 ▸ **With the accelerator at 100%, press the SET switch.** 	SEt (SEt Display) ⇩ 100 (100 Display)
8 ▸ **Once the display changes to 100 release the accelerator.** 	100 (100 Display) ⇩ nor (nor Display)

9 Setting Completed

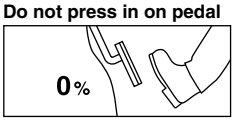
If the device is re-installed into a different vehicle, make sure to carry out these settings again.

After having finished settings and the battery or wires have been disconnected it is not necessary to carry out "Initial Settings".

Check the Settings

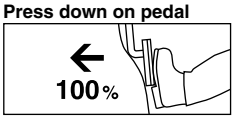
Note: If the display is incorrect, start again from step 2 above.

Do not press in on pedal



nor (nor Display)

Press down on pedal



100 (100 Display)

⚠ **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 .

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

How To Operate

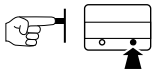
Switching the Mode and Change Ratio

It is possible to switch between NORMAL, ECO and SPORTS Modes, as well as, switch the change ratios respectively within ECO and SPORTS Modes.

In SPORTS Mode the larger the number the stronger the response will be and in ECO Mode the larger the number the weaker the response (less fuel consumption) will be.

1 **Engine START.**

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

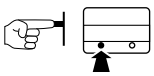


ECO Mode **NORMAL Mode** **SPORTS Mode**

Ec ⇄ nor ⇄ SP

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

3 When Switching Modes **2** and Ec is displayed.



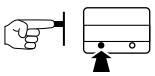
The ratio will change with each pressing of the SET switch.

Switching the Change Ratio for ECO Mode

Ec 1 → Ec 2 → Ec 3 → Ec 4 → Ec 5

Smallest Change Ratio (−10%) (−20%) (−30%) (−40%) Greatest Change Ratio (−50%)

When Switching Modes **2** and SP is displayed.



The ratio will change with each pressing of the SET switch.

Switching the Change Ratio for SPORTS Mode

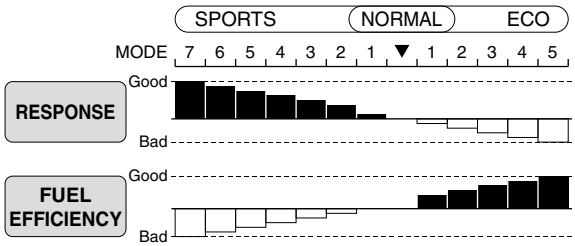
SP 1 → SP 2 → SP 3 ··· SP 7

Smallest Change Ratio (+10%) (+20%) (+30%) Greatest Change Ratio (+50%)

Even if the mode is switched the respective change ratio settings will not be changed.

For more details about the modes for when restarting the engine see Page 7 [Mode Settings for when Restarting the Engine].

Examples of changes in fuel consumption and response depending on change ratios



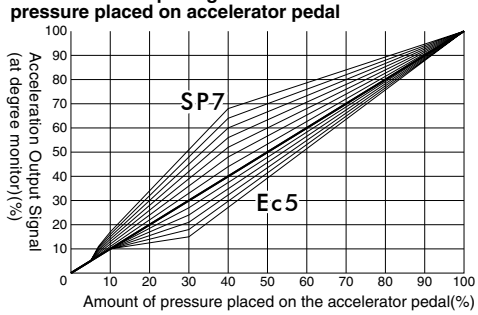
Note: ECO Mode increases fuel efficiency over normal conditions by suppressing rapid acceleration; if rapid acceleration is purposefully carried out fuel efficiency will be reduced.

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

Basic Control Features

The changes within each mode will be controlled smoothly without perceptible steps.

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

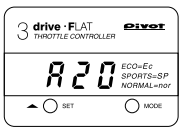


Degree of Acceleration Monitor

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.
- The display will show when degree is above 15%.

Degree of Acceleration (output) (20%)



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 2 Check acceleration during regular driving

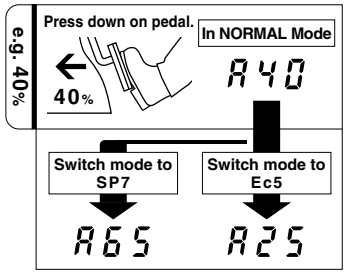
Please use to check the degree of acceleration for any type of driving, not just ECO Mode.

USE 3 Check control status

With the ignition 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 65% (A65) and if placed in Ec5 the display should change to 25% (A25).

[See the above Graph of "Basic Control Features"]

Note: The actual display may differ slightly.



Mode Settings For When Restarting The Engine

Mode and change ratio at the restart

The mode at the start of the engine is selectable of "Previous use mode" or "Normal mode".

Lock — **Previous use mode of change ratio**

Normal — **NORMAL Mode**

1 **Display SP mode**

2 **Press the MODE switch for 5 seconds**

Blinking for 3 seconds

3 **Release the MODE switch when current setting is displayed**

(e.g.) Display current setting

(Factory Setting=NORMAL Mode)

4 **Changes by each pressing the MODE switch**

(Lock) (Normal)

5 **With no operation for 5 seconds, the display will display current mode**

Setting Completed

Troubleshooting

Concerning Basic Operations and Car Problems

Trouble	Possible Causes	Possible Solutions
The ignition is set to the ON position but the display of the Main Unit will not light up. OR the display goes OFF while in use.	Brake fuse is burned out.	Please reconfirm whether wiring and connections are correct or not.
	The **Red** and **Black** wire may have been improperly wired or there is a poor connection.	
	Poor connection of **5-pin Connector**, **8-pin Connector** and **6-pin Connector**.	
	Poor connection of **Specialized Harness** .	
	Specialized Harness being used is incorrect.	
A Check Engine Light has gone on.	**The accelerator connector** or **Specialized Harness** was disconnected with the ignition in the ON position or within 15 minutes after having turned the ignition OFF.	Re-connect the disconnected connector and turn off the Light (See page 8 of this manual).
	The “Initial Settings” have not been properly carried out.	Make the “Initial Settings” (See page 5 of this manual) and turn off the Light (See page 8).
	The product was in a mode other than NORMAL Mode when removed from a car and installed into a different car.	After returning it to NORMAL Mode, carry out the “Initial Settings” (See page 5 of this manual) and turn off the Light (See page 8).
While making “Initial Settings” an Err appears in the display.	The “Initial Settings” have not been properly carried out.	Make the “Initial Settings” (See page 7 of this manual).
The ignition has been turned OFF but the display remain on.	This product is interlocked with the ECU (engine computer) power. Depending on the model of car, the display may remain on for up to 15 minutes even after the ignition has been turned off; this is normal.	

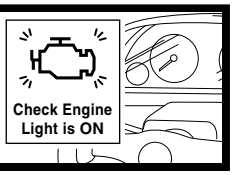
Concerning the Throttle Controller

Trouble	Possible Causes	Possible Solutions
Even if the Mode is changed, the changes cannot be felt.	The “Initial Settings” have not been properly carried out.	Make the “Initial Settings” (See page 5 of this manual).
The Mode and/or the setting of change ratios can not be saved.	The ignition has been turned to the OFF position immediately after having finished the setting of change ratios or changing the Mode.	After having made settings of change ratios or changing the Mode, wait for at least two seconds before turning the ignition to the OFF position.
While in SPORTS Mode, when put into reverse the display does not show bRc.	The **Pink** wire may have been improperly wired or there is a poor connection.	Please reconfirm whether wiring and connections are correct or not.
	The unit is connected to the reverse wire of a navigation system from another company.	Carry out Wiring to Reverse (See page 5 of this manual).

Note **How to Turn Off the Check Engine Light.**

If the Check Engine Light comes on due to some operational mistake, please follow the directions below to turn it off.

1. Under normal conditions, start and stop the engine several times.
2. If that does not turn off the lamp, disconnect the cable from ⊖ terminal of the battery for about 10 minutes.
3. If that does not turn off the lamp, please consult your local car dealer and have them turn it off.



(Note)
- 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.

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