Throttle Controller *3-drive·FLAT / 3-DRIVE*

USER'S MANUAL

3 **drive · F**LAT
THROTTLE CONTROLLER

3-DRIVE
THROTTLE CONTROLLER

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.

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 Lamp** 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 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 nor (Normal) Mode before carrying out any work. Reconnecting this product in a different mode may cause the **CHECK Lamp** to come on.

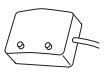
Modifying this Product is Forbidden.

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.

CONTENTS

Please check the contents of the package


Controller (3-drive・FLAT) [50×34×14 (D) mm]


Controller (3-DRIVE) [51×35×22 (D) mm]


Unit [60×20×50 (D) mm]


Black Extension Cord


Double-sided Tapes [25×35mm] ×2


Cut Connectors ×4


Male Connector with Covers ×2


Zip tie


User's Manual

⚠ 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 Park or Neutral; it is dangerous to carry out these settings while the engine is running.
- ●When making adjustments, please begin at the lowest setting and slowly make changes while 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 it is extremely dangerous to operate switches or pay prolonged attention to the display.
- ●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.

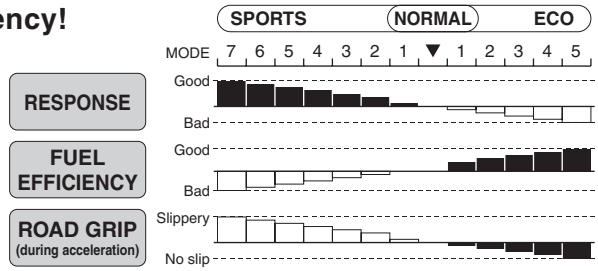
- ●PIVOT Corporation accepts no responsibility, in any manner whatsoever, for damage and/or trouble to your vehicle or product, nor for any accidents that are the result of the misuse of this product.
- ●Please confirm that the type of vehicle you wish to install into is listed in the list of compatible models.
- ●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 lamp 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.

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.

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.



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

Performance

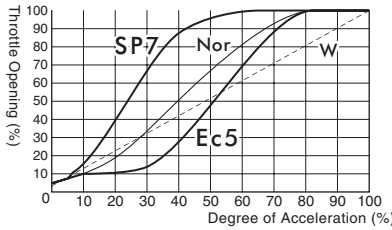
FLAT CONTROLLER (Only 3-drive･FLAT)	The simple 14mm-thin case design allows for unobtrusive installation even in prominent places.
SPORTS MODE	High response for sporty situations. (ideal for circuit, mountain driving, etc...)
ECO MODE	Low response for eco-driving situations. (perfect for city and fuel conscious driving)
NORMAL MODE	Regular response for normal conditions.
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 "Same as Last" mode allow you to re-start your engine in the same mode as last time. (If you wish to start the engine in "Normal" mode, wiring can be done to ING)
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.

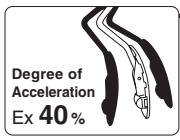
Safety

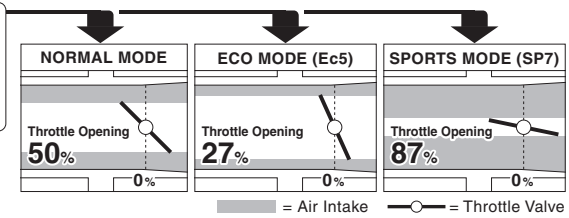
1. Prevents sudden starts by reverting to same response as under normal setting.
2. Normal Control when in Reverse. (wiring where necessary)
3. Returns to Normal in case of faulty wiring or circuitry. ※1
4. Discrete 2 Signal Control for Safety.

※1 When using the OBD2 connector for running tests, disconnecting the connector will not cause any harm to the car.

Examples of Throttle Opening







SP7= Best SPORTS Mode (7 steps) **W**= For models with wire-type throttle
Ec5= Best ECO Mode (5 steps) **Nor**= Standard Response

※Fine tune control with 7 steps for Sports Mode and 5 for ECO Mode.
※The measurements for standard response were taken with a Suzuki Swift model car and depending on your model may differ.
※In some car models with a Valvematic engine, control is carried out by the intake valve rather than the throttle valve.

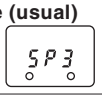
CONNECTION METHOD

1 Select the mode status you wish to use when re-starting

SELECT

Key ON.

A. Upon restart use Previous Mode (usual)
This will start up using the same settings that were used up to the previous time.



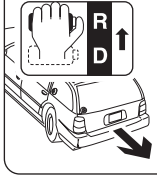
→ **The power connection should be to the diagnostic monitoring connector.**
See **Point of Installation 1** on **page 3**

B. Upon restart use only Normal Mode
Offering extra safety this will start up using only normal mode.

→ **The power connection should be connected to IGN. (key ON 12V)**
See **Point of Installation 2** on **page 3**

2 Select the mode status you wish to use when using reverse

SELECT



A. When using reverse use control mode as is set (usual) → **No Wiring**

B. When using reverse use normal mode
Offering extra safety when backing up this will use only normal mode. → **Wire to the reverse gear.** **to page 4**

→ **3 Carry out wiring** **to page 3**

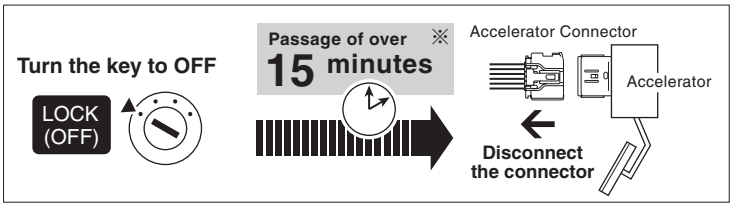
procedure 1 CONNECTING THE WIRES

⚠ **For details about connecting a specialized harness, see the explanation sheet which comes with the harness.**

Preparation for Wiring

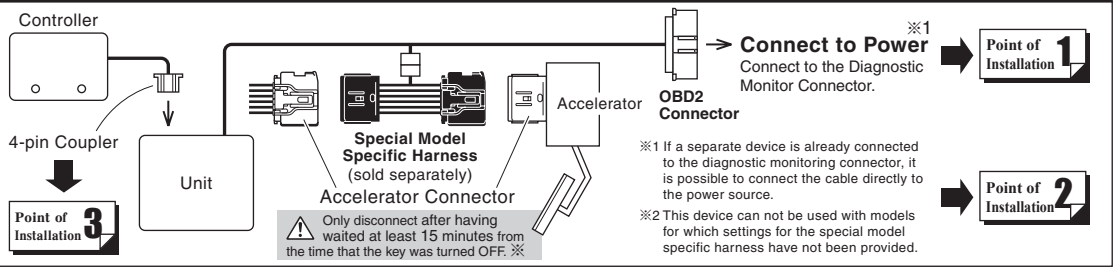
⚠ Only disconnect the accelerator connector after having waited **at least 15 minutes from the time that the key was turned OFF.** ※

Depending on the type of vehicle, if the connector is disconnected before the ECU power is switched OFF the Check Lamp may go on. (How to Turn Off the CHECK Lamp ⇒ Page 8)



Basic Wiring

When installing, make sure to use the correct specialized harness for your model of car.

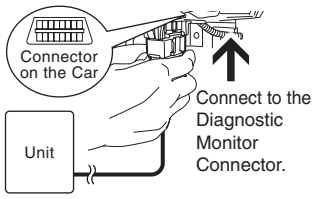


※VW, AUDI = 15 minutes

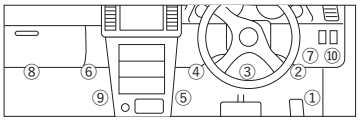
Point of Installation 1 Connect to Power

Connect the OBD2 Connector with **key switch OFF.**

※When using the OBD2 connector for running tests, disconnecting the connector will not cause any harm to the car.



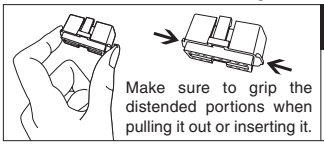
【Data】 Placement Diagram for Diagnostic Monitoring Connector



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 right side of steering panel (with lid)
⑧At the left foot of the passenger seat
⑨At the left side of the center console
⑩Panel to right of steering wheel

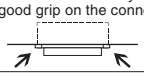
【Reference 1】 Notes about using the OBD2 Connector

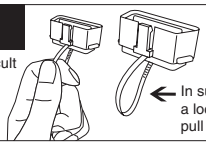


Make sure to grip the distended portions when pulling it out or inserting it.

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 cases, use a lock tie to push or pull the connector.

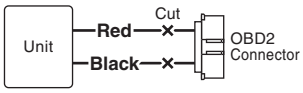
⚠ CAUTION

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

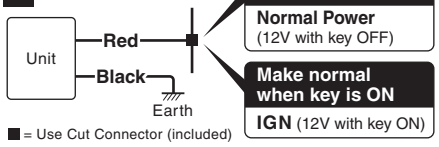
Point of Installation 2 If Power comes from Other Source / Start Normally by Switching Key to ON

If the diagnostic monitoring connector cannot be used for safety purposes when the key is ON under normal conditions please follow the wiring directions as written below.

1 Cut the black and red wires coming from the OBD2 connector and wire separately as necessary.



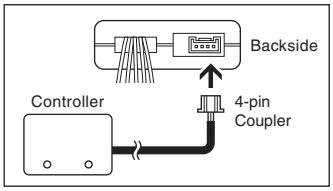
2



■ = Use Cut Connector (included)

Point of Installation 3 Connect to Controller

Insert the 4p coupler from the controller into the terminal at the back of the unit.



【Reference 2】 How to use the Connectors

1 10mm
Peel off of the vinyl cover at connection.

2 10mm
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.

【Reference 3】 How to use the Male Connectors

1 Male sleeve Wire
Pull the cable through the male sleeve.

2 10mm
Remove about 10 mm of the cable casing.

3
Turn back the tip of the wires.

4 Male Connector
Connect the male connector to the end of the cable.

5 Crimp these places
Crimp down with crimpers to make sure that the inner wires are firmly connected to the inner part of the connector and that the cable section is connected to the outer part of the connector.

6
Affix the male sleeve to the places as mentioned above.

NOTE: After connecting the male and female connectors, make sure to firmly twist the male sleeve inside the female sleeve.

About Wiring for Reverse Gear

If this wiring procedure is used, when the vehicle is put into reverse it will automatically return to normal acceleration.

⚠ Usually there is no need to wire to reverse.

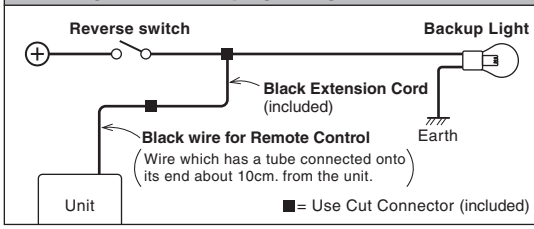
Usually when using reverse the degree of acceleration is at most about 10%; in this range there is hardly any change so it is not necessary to wire for using reverse.

Wiring procedure

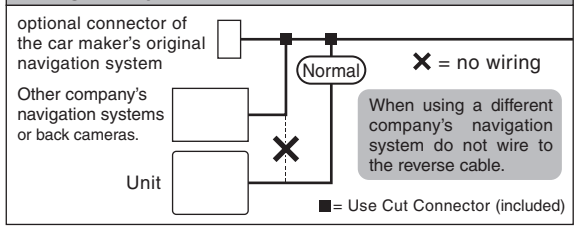
①Disconnect the power source (OBD2 Connector) from the car.
②Carry out Wiring to Reverse.
③Reconnect to the power source (OBD2 Connector).
④Carry out Initial Settings (see Page 5).

Wiring place : Backup Light Signal	Check Wiring
When key is ON (engine not running) and in **P** (Park) or **N** (Neutral) = 0V **R** (Reverse Gear) = 12V	nor When put into reverse, if it is in normal the small dot will light up.

If wiring to the back up lights signal.



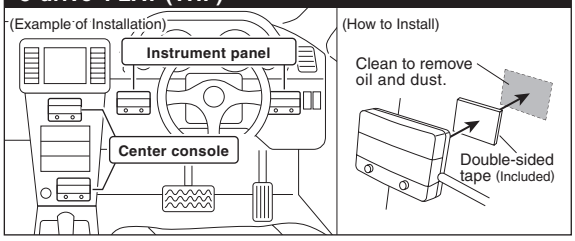
If wiring to the optional connector of the genuine navigation system.



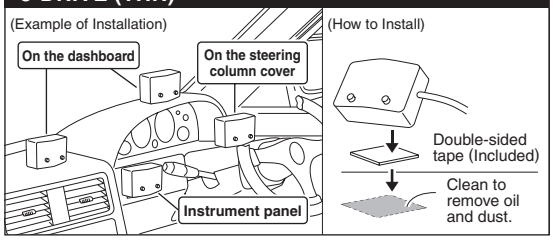
procedure2 INSTALLING THE PRODUCTS

Controller Affix with double-sided tape to a position which is easy to see and which allows for easy operation.

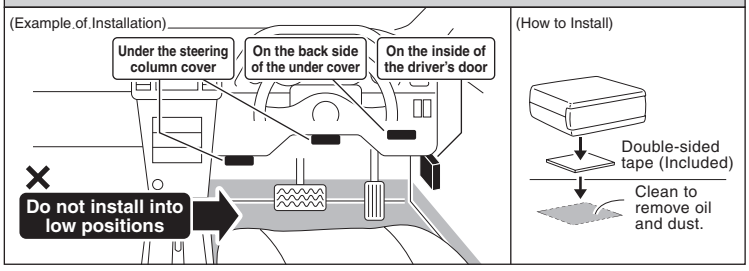
3-drive·FLAT (THF)



3-DRIVE (THR)



Unit As shown in the diagram to the right, use the double-sided tape to fasten the units into positions not usually affected by water.



⚠ Please be sure to bundle away all wires with tape, etc...

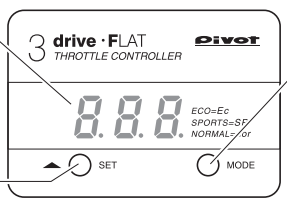
It is very dangerous to pull tangled wires by force or allow tangled wires to interfere with driving.

Part Names

Common name to 3-drive·FLAT and 3-DRIVE

1 Display
- Mode Display
- Degree of Acceleration Display (15 - 100%)
- For Initial Settings

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



3 MODE Switch
- For Switching Modes

Turning off the Display

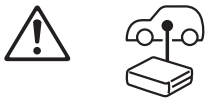
※This product is interlocked with the ECU (engine computer) power. Depending on the model of car, the display may remain on for up to 15 minutes even after the engine has been turned off; this is normal.

※When turning off, the degree of acceleration will flash on; this is not a malfunction.

procedure 3 INITIAL SETTINGS (Degree of Acceleration Setting)

Make sure to carry out these settings.

When installing for the first time



If after Initial Settings wiring to reverse was carried out

When installing into a different car

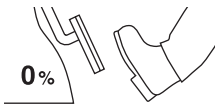
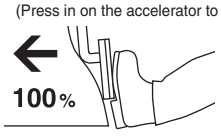
※After having made the settings, even if the connectors are pulled apart there is no need to remake the settings.

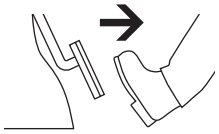
- This operation sets the car' s accelerator characteristics into the controller unit.
- If the "Initial Settings" are not carried out, the unit will remain in Normal mode even if the mode is switched.
- If this settings have been improperly made a check lamp may go on.

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** (Park) or **N** (Neutral).

Making the Settings

Operational Procedure	Controller Display Area
1 ▸ **Key ON.**※1 (engine not running) 	nor (nor Display) ※Make sure to only use "Normal" mode when carrying this out. ※If wiring to reverse the display will show either nor or nor..
2 ▸ **Press the "SET" switch until "0" is displayed.**  **Press until "0" appears**	- - - ⇩ 7 6 ··· 1 0 Count down from 7 to 0 after the "---"
3 ▸ **When "0" appears release the "SET" switch.**  **Release**	**(Ex)**※2 L 1.5 Blink Voltage Display (Ex = L1.5)
4 ▸ **Pedal is not pressed down.** (Release the accelerator to 0%) 	**(Ex)**※2 L 1.5 Blink Voltage Display (Ex = L1.5)
5 ▸ **Press the "SET" switch.** 	SEt (SEt Display)
6 ▸ **Pedal is completely pressed down.** (Press in on the accelerator to 100%) 	**(Ex)**※2 H 4.5 Blink Voltage Display (Ex = 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

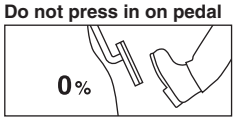
If the device is re-installed into a different vehicle, make sure to carry out these settings again.

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

Check the Settings

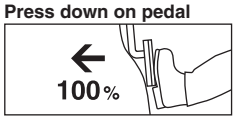
※If the display is incorrect start again from step **2** above.

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** .

※1 If the car has standard push start system, follow the User's Manual of the car to turn the Key to ON.
※2 The values shown in the display will vary depending on the type of car.

Make sure to carry out this operation.

HOW TO OPERATE

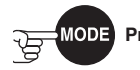
Switching the Mode and Change Ratio

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 ▸ **Key ON.**
(Engine Start)

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



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

Ec 0 ⇄ nor ⇄ SP 0

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

3 When Switching Modes **2** and Ec 0 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 0 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

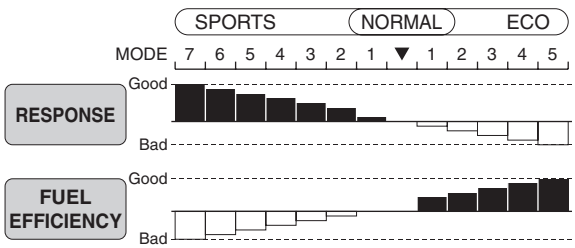
Smallest Change Ratio (+10%) (+20%) (+30%) Greatest Change Ratio (+50%)

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

The change ratio and mode is set into the memory when the key switched to OFF and can be used as is the next time the key is switched ON. (when power connection is normal)

⚠ If while in “Normal” Mode, the SET switch is pressed in for a long time, the unit will return to “Initial Settings”; if this happens stop all operations and return to the normal display.

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



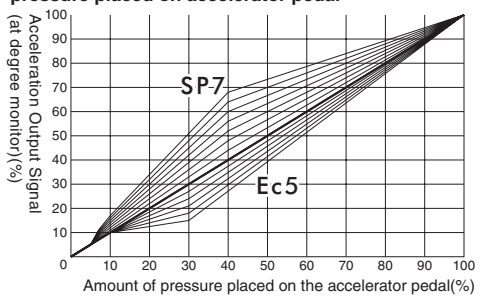
※ECO Mode increases fuel efficiency over normal conditions by suppressing rapid acceleration; if rapid acceleration is purposefully carried out fuel efficiency will be reduced.

※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



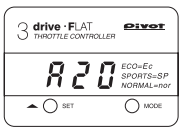
Degree of Acceleration Monitor

Displays the amount of pressure placed on the accelerator pedal. (output signal) [15 - 100%, 5% unit . 70 - 100%, 10% 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

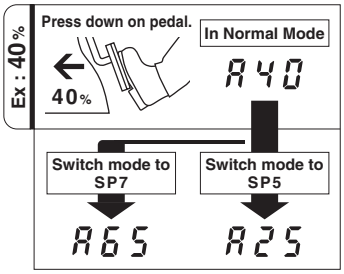
Please use to check the degree of acceleration for any type of driving, not just ECO.

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

[See the above Graph of “Basic Control Features”]

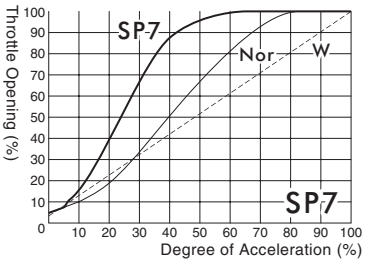
※The actual display may differ slightly.

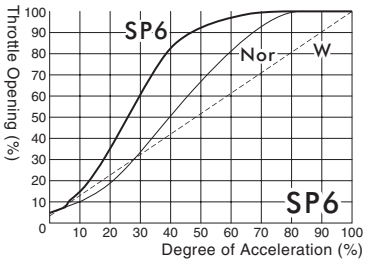


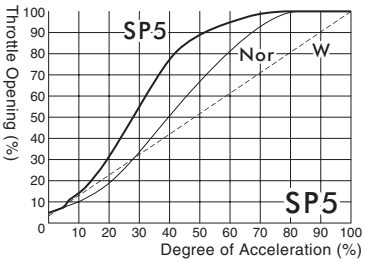
OVERVIEW OF CHANGE CHARACTERISTICS

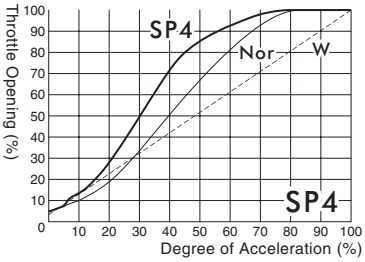
※Data are actual measurements for operations using a Swift Sports engine. ※Wire Type beginning at 3% is for when bypassing device.
※Characteristics will differ slightly depending upon make and model of car.
※**W** = For models with wire-type throttle **Nor** = Standard Response

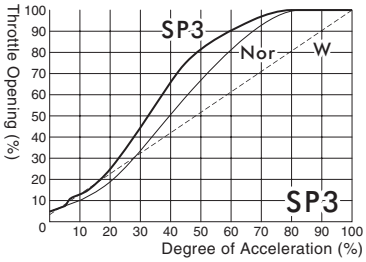
Example of Changes in SPORTS MODE

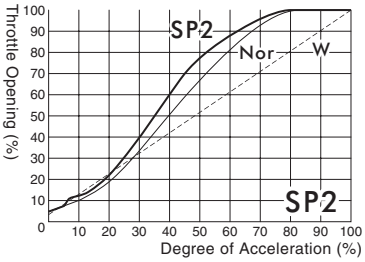


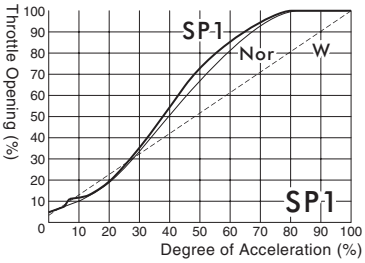






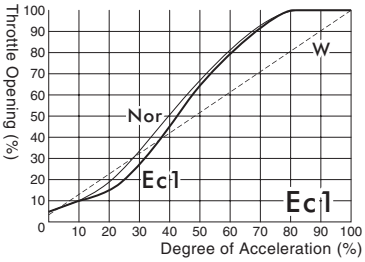


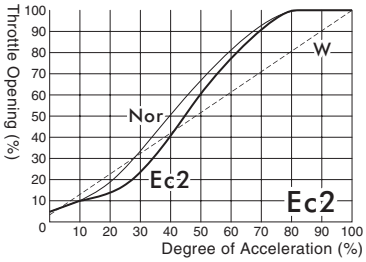


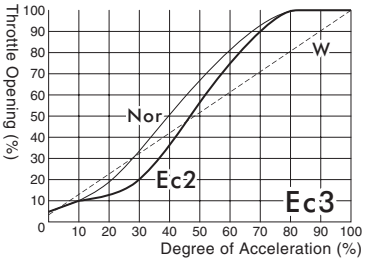


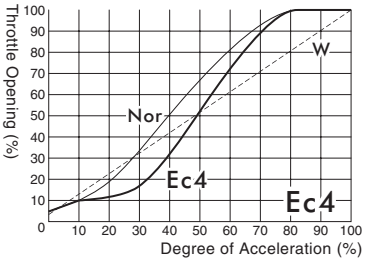
SP1 - 3 = Condition similar to wire throttle (degree of acceleration at app. 10 - 35%)
SP4 - 7 = Above + high throttle (degree of acceleration at around or above 35%)

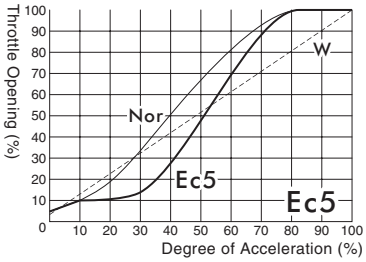
Example of Changes in ECO MODE











Ec1 - 5 = Low Acceleration
(for all degrees of acceleration)

IF THE PRODUCT DOES NOT OPERATE PROPERLY

Trouble	Possible Causes	Possible Solutions
If nor. does not appear in the Initial Settings.	Wiring to Reverse was carried out without disconnecting the power source (OBD2 connector) from the car.	Disconnect the power source(OBD2 connector) from the car and then reconnect it; Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
The display shows nor. when shifting to other than reverse.	After wiring to reverse, "Initial Settings" were not carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
When in reverse, nor. does not appear in the display.	The wiring to reverse was carried out improperly or there is a bad 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.	Follow the instructions for wiring to reverse found in this Manual (⇒Page 4).
	The back up lights have been changed to LED lamps.	●Replace the back up lights with the car maker's original lights. ●Do not carry out wiring to reverse.

TROUBLESHOOTING

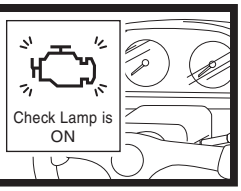
Trouble	Possible Causes	Possible Solutions
The key switch is set to ON but the display will not light up.	●Poor connection of OBD2 connector. ●If wiring has been direct to power the red and black wires may have been improperly wired or there is a poor connection. ●Poor connection of specialized harness. ●The specialized harness being used is incorrect.	Please reconfirm whether wiring and connections are correct or not.
A CHECK lamp in vehicle has gone on.	The accelerator connector was disconnected within 15 minutes after having turned the key to OFF.	Follow the instructions in this Manual (⇒Page 3) to connect to Accelerator Connector, and follow the directions "How to Turn Off the CHECK Lamp" as bellow to turn off the lamp.
	With the key switch in the ON position disconnect the accelerator connector or the connector attached to the unit.	Turn off by following the directions "How to Turn Off the CHECK Lamp" as bellow.
	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on Page 5 of this Manual, and follow the directions "How to Turn Off the CHECK Lamp" as below to turn off the lamp.
While making "Initial Settings" an Err appears in the display.	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
Even if the mode is changed, the changes cannot be felt.	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
The engine seems to stall easily.	The change ratio under ECO mode is too great.	Set the change ratio under ECO mode to a smaller value.
Even when the display is turned off, the degree of acceleration temporarily appears.	This is a specification of the system.	This is normal and is not a malfunction.
The engine 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 engine has been turned off; this is normal.	

Note

How to Turn Off the CHECK Lamp.

If the CHECK lamp comes on due to some operational mistake, please follow the directions below to turn it off.

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



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