



Turbo Timer type-1 Installation Manual

Parts List

#	Part No.	Description	Quantity	Remarks
1	4101-RA011	Main Unit (Silver)	1	
	4101-RA012	Main Unit (Purple)		
2		Splice Connector	3	Red
3		Parking Brake Wire	1	Gray
4		RPM Signal Wire	1	Brown
5		Speed Sensor Wire	1	Blue
6		Double-sided Tape	1	
7		Tie Wrap	3	100mm

1. Key Switch Connector

Remove the steering column cover to locate the key switch connector.

- Some vehicles may have the key switch connected directly to the main connector plug.
- To ensure a proper connection, use an HKS Turbo Timer harness (call for application).

(1) Remove the cable from the negative terminal of the battery.

(2) Connect the Turbo Timer harness in between the key switch connector and main connector plug.

Note: If no Turbo Timer harness is available, connect the following behind the main connector plug:

Red - [12] volt constant

Green - [12] volt ignition

Blue - [12] volt accessory

(3) Connect the 3Pin connector to the Turbo Timer.

(4) Connect the black ground wire onto a good chassis ground. To ensure a good ground, make sure there is no paint below the mounting surface (sand if necessary).

2. Connecting the safety circuit wire

(1) Connect the gray wire from the Turbo Timer to the supplied gray parking brake wire.

(2) Using the supplied splice connector, connect the gray parking brake wire to the vehicles parking brake wire.

3. Connecting the rpm signal wire

(1) Connect the brown wire from the Turbo Timer to the supplied brown rpm signal wire.

(2) Refer to the corresponding vehicle list to find the correct ECU diagram.

(3) Using the supplied splice connector, connect the brown rpm signal wire to the corresponding "I" in the ECU signal diagram.

Note: This rpm signal must be a [5] volt digital signal. If using a [12] volt analog signal, use part # 4599-SA002.

4. Connecting the speed sensor wire

(1) Connect the blue wire from the Turbo Timer to the supplied blue speed sensor wire.

(2) Refer to the corresponding vehicle list to find the correct ECU diagram.

(3) Using the supplied splice connector, connect the blue speed sensor wire to the corresponding "S" in the ECU signal diagram.

5. Securing the main unit

(1) Wipe off dust, water, or oil using a dry cloth where the unit will be placed.

(2) Use the supplied double-sided tape to secure the unit.

(3) Clean up the wiring using tie wraps in various locations.

6. Work after installation

(1) Reinstall all removed parts back to their original positions.

(2) Reconnect the negative cable onto the battery.

WIRING CHART

The following diagrams may differ slightly depending on vehicle year, or model (California or Federal). Confirm that the diagram shown corresponds to your vehicle by referencing the factory repair manual. Locate the engine control unit (ECU) using the diagram below.

CHART EXPLANATION

B- 12 volt ignition

U- 12 volt battery

E- Ground

P- Pressure sensor, air flow signal

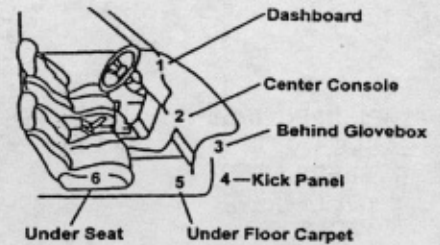
(Note: some applications have multiple "P" signals-Use P(AFR) for AFR and P(FCD) for FCD)

I- RPM signal

S- Speed Sensor

T- Throttle Position Sensor

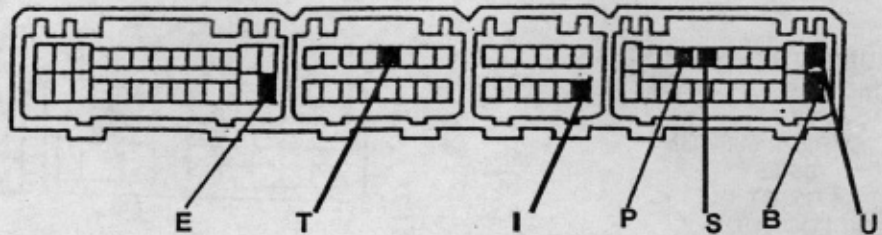
#- Injector Signal



* ALL DIAGRAMS ARE SHOWN FROM THE WIRE SIDE OF THE HARNESS

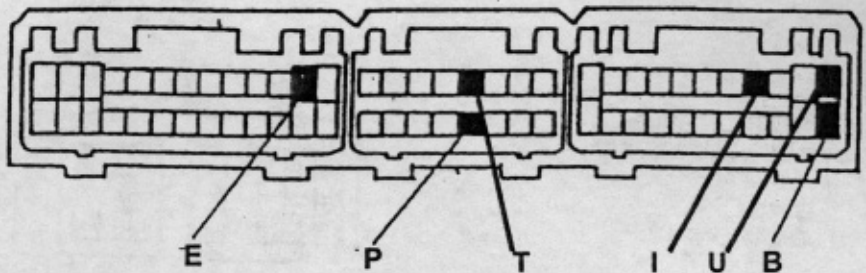
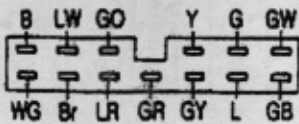
MAZDA

MAZDA RX7 TWIN TURBO 11/91+
13B-REW
ECU LOCATION- 5



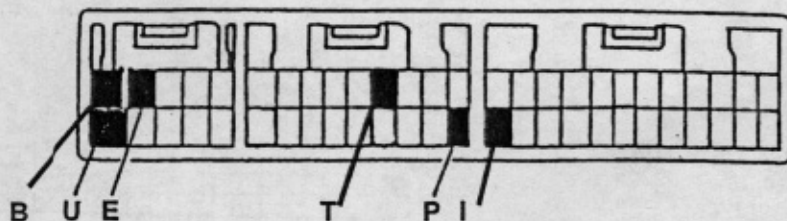
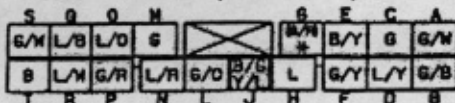
MAZDA RX7 TURBO 3/89-10-91
13BT
ECU LOCATION- 5

Below: Factory Cruise Control Unit Harness
Location - 4 (Driver Side)
Use "G/R" wire for speed sensor input-"S"



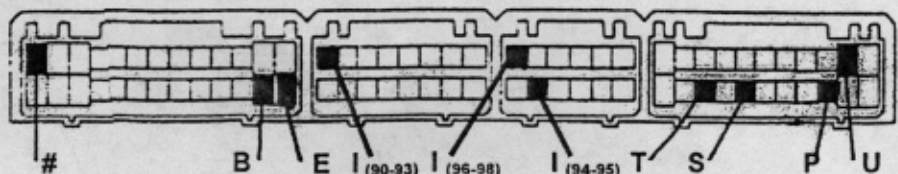
MAZDA RX7 TURBO 9/85-2/89
13BT
ECU LOCATION- 5

Below: Factory Cruise Control Unit Harness
Location - 4 (Driver Side)
Use "G/R" wire for speed sensor input-"S"



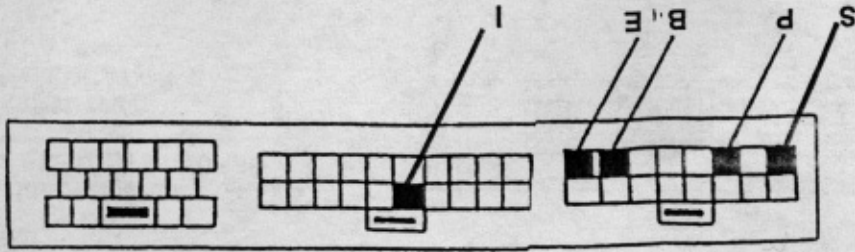
MITSUBISHI

MITSUBISHI 3000GT VR-4
DODGE STEALTH RT TURBO
90-98
6G72BT
ECU LOCATION- 2

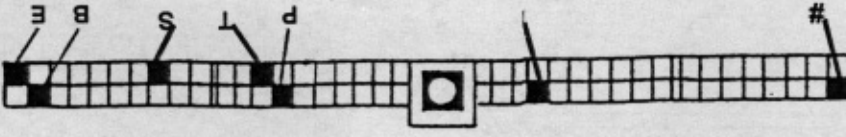


NISSAN

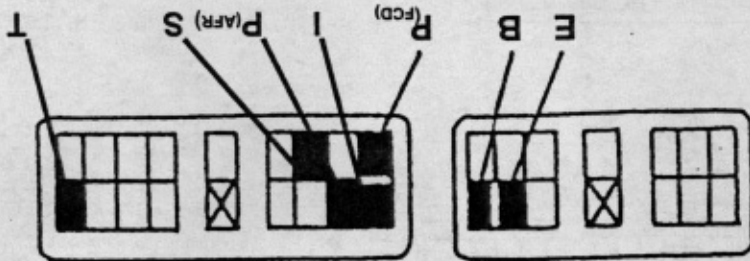
NISSAN 300ZX TURBO
84-88
VG30DET
ECU LOCATION-4



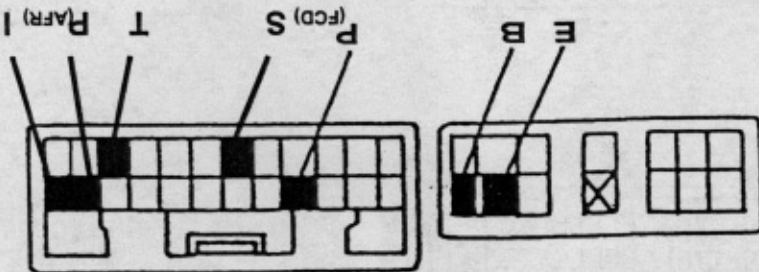
NISSAN 300ZX TWIN TURBO
90-96
VG30DET
ECU LOCATION-5



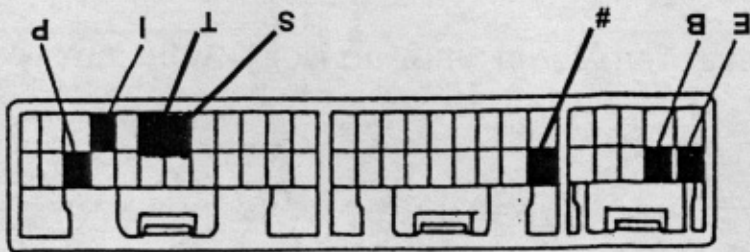
NISSAN 300ZX TWIN TURBO
85-86
G54BT
ECU LOCATION-4
MITSUBISHI STARION ES/ESIR
PLYMOUTH CONQUEST TSI



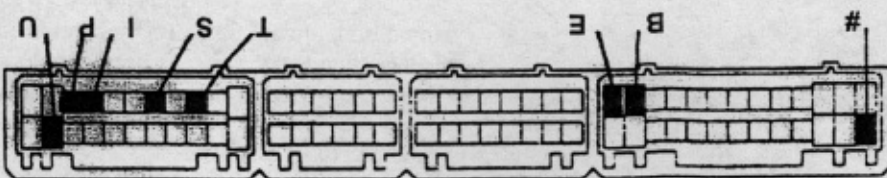
MITSUBISHI STARION ES
83-86
MITSUBISHI MIRAGE
85-86
G54BT
ECU LOCATION-4
MITSUBISHI STARION ES
PLYMOUTH CONQUEST



MITSUBISHI ECLIPSE
EAGLE TALON
CHRYSLER LASER
10/89-94
4G63
ECU LOCATION-2

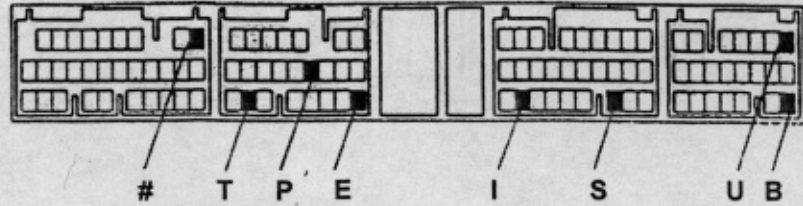


MITSUBISHI ECLIPSE
EAGLE TALON
95-99
4G63
ECU LOCATION-2

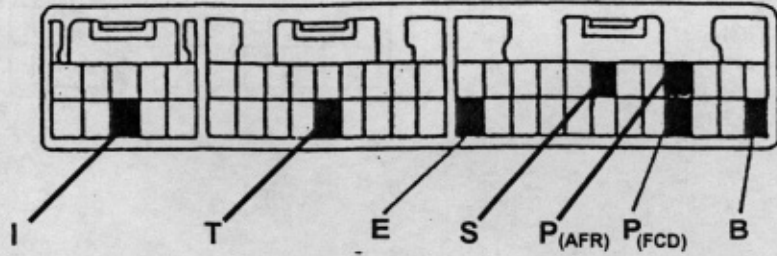


TOYOTA

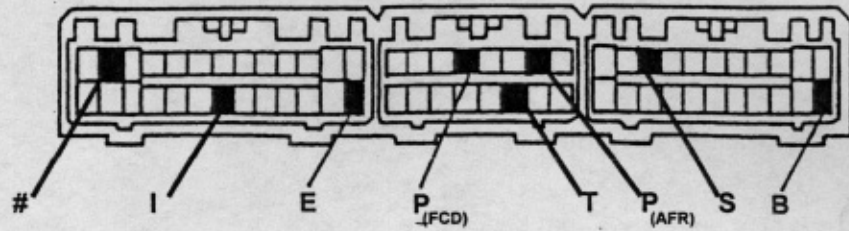
TOYOTA CELICA GTS
 CELICA GT
 MR2-SPYDER
 00+
 2ZZ-GE / 1ZZ-FE
 ECU LOCATION-



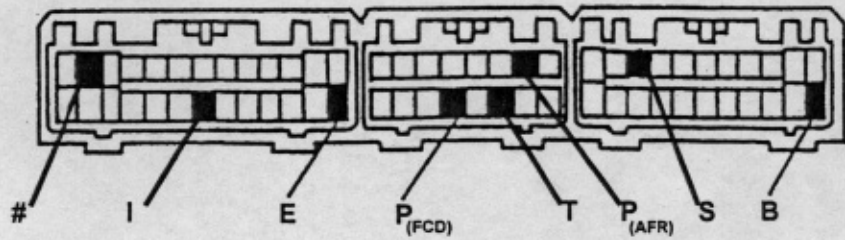
TOYOTA CELICA ALL-TRAC
 10/86-9/89
 3SGTE
 ECU LOCATION- 2



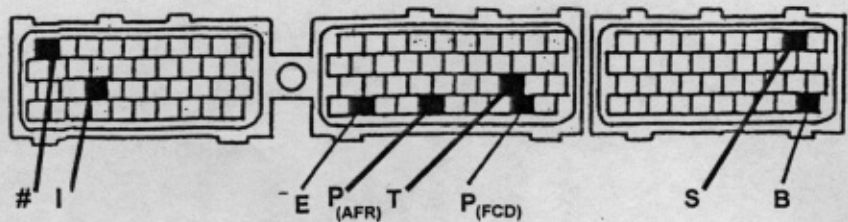
TOYOTA MR2 TURBO
 1993-1995
 3SGTE
 ECU LOCATION- TRUNK
 TOYOTA CELICA ALL-TRAC
 1990-1993
 3SGTE
 ECU LOCATION- 2



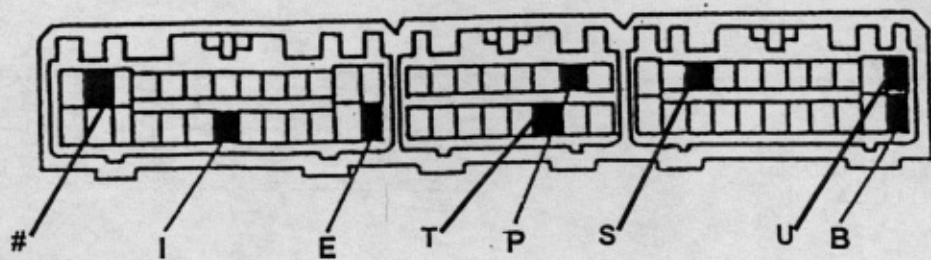
TOYOTA MR2 TURBO
 1991-1992
 3SGTE
 ECU LOCATION- TRUNK



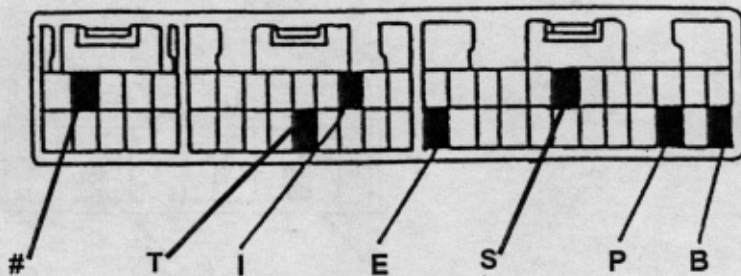
TOYOTA SUPRA TWIN TURBO
 1993-1998
 2JZGTE
 ECU LOCATION- 5



TOYOTA SUPRA TURBO
8/88-92
7MGTE
ECU LOCATION- 3



TOYOTA SUPRA TURBO
2/86-7/88
7MGTE
ECU LOCATION- 3



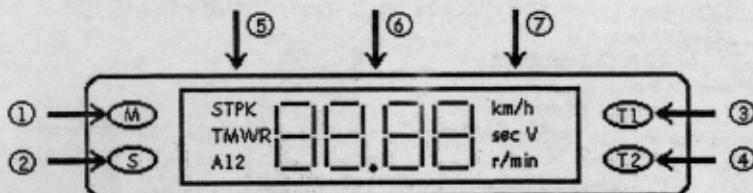


Turbo Timer type-1 Users Manual

Preface

The HKS Turbo Timer type-1 is a turbo timer that comes with a full measurement function. It is a requirement when it comes to cars equipped with turbo, for it will prevent the bearing and shafts from burning after a run. The turbo timer allows you to adjust the after idle interval before the engine shuts off.

- Turbo Timer function
 - Manual Mode: can be set in increments of 30 seconds from 0 – 10min.
 - Memory Mode: It will let you select from MEMORY 1 (1 min.) or MEMORY 2 (3 min.) with a push of a button.
 - Auto Mode: Will determine the engine's condition from the rpm and automatically set a time between 0 – 5 min.
- Speed / Speed Peak Hold display function
 - Will display the current speed (0 [km/h] ~ 390 [km/h]). It also can display the speed peak.
- Speed Warning function
 - Will set the warning speed (10 [km/h] ~ 390 [km/h]).
- Engine RPM / RPM Peak Hold display function
 - Will display the current rpm (100 [r/min] ~ 9900 [r/min]). It also can display the rpm peak.
- Engine RPM Warning (shift up indicator, red zone indicator) function
 - Will set the warning rpm (1000 [r/min] ~ 9900 [r/min]).
- Quarter Mile Time (Section time) / Acceleration Interval calculation function
 - Auto start or manual start can determine the section times shown below. Mid range acceleration can also be determined.
0-100[m], 0-200[m], 0-400[m], 200-400[m],
0-100[km/h], 0-150[km/h], 0-200[km/h], 50-100[km/h],
100-150[km/h]
- Stopwatch function
 - Interval measurement and lap time can be measured.
- Battery Voltage display / Voltage Warning function
 - Will help prevent a dead battery with the battery voltage display and warning function.
 - The fixed minimum warning voltage is 10.0[V] and the maximum is 16.0[V].
- Large LCD screen panel display
 - The backlight in the normal state is a blue LED, but when the timer or warning function is in effect the light will become red.
- Safety Circuit function
 - F
- 12V exclusive
 - This product is exclusively for DC12V negative ground vehicles. Please do not install in 24V vehicles.



Names and functions of various parts

1. [M] switch
 - When the timer is off, it will switch modes.
 - When the timer is running, it will shut it off (use when you want to stop the engine while the timer is counting down.)
2. [S] switch
 - Use to set and select in each mode.
3. [T1] switch : Will be used for the following.
 - Memory Timer
 - Clearing the speed display mode and speed peak
 - Reset the ¼ mile time
 - Increase set number
 - Clearing the rpm peak during the engine rpm display mode
 - Start the lap time calculation
4. [T2] switch : Will be used for the following.
 - Memory Timer 2
 - Start and end speed learn mode
 - ¼ mile manual start
 - Start and end stopwatch
 - Decrease Settings (Down)
 - Display the previous ¼ mile time
 - Start and end rpm learn mode
 - End lap time
5. Mode display section : Displays the mode
6. Number display section : Displays the numbers
7. Unit display section : Displays the units
8. Turbo Timer Reset: Use when it's not functioning properly.
 1. Hold down the [S] and [T2] switch for more than 2 seconds.
 2. Will return to the default in manual timer mode.

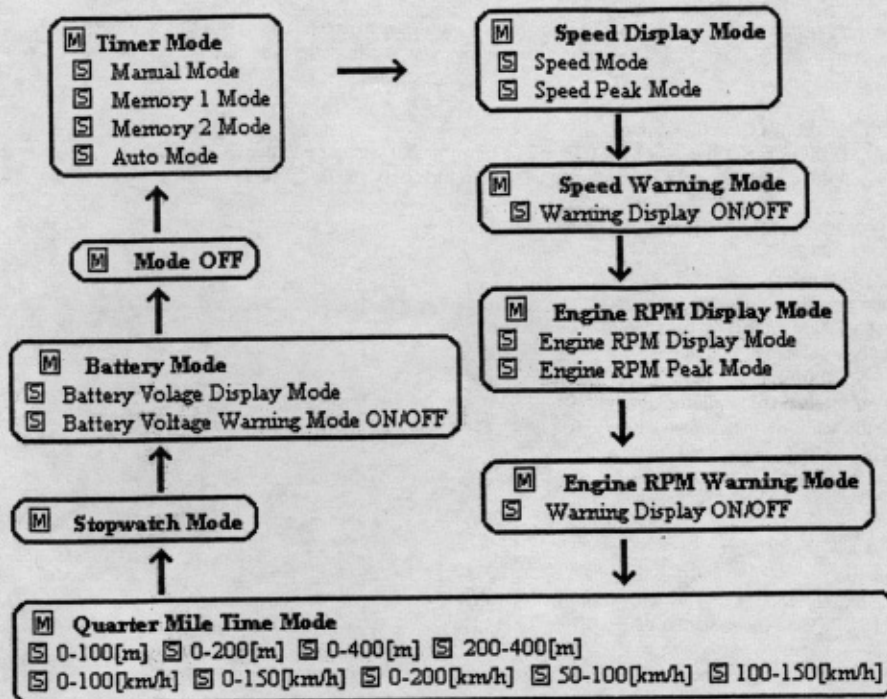
Control instructions

All the controls are to be done when the ignition is ON.

1. Mode select

There are 9 main modes to the turbo timer, which are shown below and in each of those there are sub modes. To change between main modes, press the [M] switch when the timer is not in effect. And to change sub modes, press the [S] switch.

([M]:Main Mode [S]:Sub Mode)



2. Timer Mode

When the [S] switch is pressed during Timer Mode, it will switch sub modes.

(1) Sub Mode settings

- (1) Manual Mode: [TM] will flash. The setup can be made between 0-10min.
The timer setting can be made using the [T1] switch (up) and [T2] switch (down). (The setting interval is in increments of 30 sec.)
 - (2) Memory 1 Mode: [TM1] will flash. A setting for a fixated timer for 1min.
If you press the [T2] switch, it will change to memory 2, which is the fixated 3min timer.
 - (3) Memory 2 Mode: [TM2] will flash. A setting for a fixated timer for 3 min.
If you press the [T1] switch, it will change to memory 1, which is the fixated 1min timer.
 - (4) Auto Mode: [TMA] will flash. This will determine the engine rpm and automatically set the timer between 0-5min due to the condition of the engine.
 - The auto setting time changes due to the rpm (if the rpm is below 1500[r/min], the auto time will stay at 0.00).
 - Turn the ignition ON and if [A] is blinking, then it means that the auto setting is ready.
 - After turning on the engine, if the Turbo Timer detects the rpm, [A] will flash.
 - If you change to auto mode while the engine is running, [A] will flash and displays the auto time.
 - [A] may flash when slowing down extremely quick, but this is normal.
- (2) Timer Activation
- When the ignition is turned OFF, the Turbo Timer will countdown according to the set time.
 - The countdown is occurs every 1 second, along with the flashing backlight and beeping taking place simultaneously.
 - When the display numbers hit 0.00 the engine will shut off along with the display.
- Timer OFF function
 - If the [M] switch is pressed during the countdown, the countdown will stop and the Timer will turn OFF (the next time the ignition is turned ON, the Turbo Timer will automatically turn ON and goes back to the normal setup.)
 - Switching from Auto Timer to Memory Mode
 - If the [T1] switch is pressed while the auto timer is in effect, it will switch to Memory 1 Mode. And if the [T2] switch is pressed, it will switch to Memory 2 Mode.
 - Revising the setting time while Manual Mode is in effect
 - While the Manual Mode is in effect, press [T1] (up) or [T2] (down) to set the time in 30-second intervals (the set time for the Manual Mode will not change).
 - Timer function in other mode conditions
 - When the ignition is turned OFF in modes other than the Timer Mode (excludes OFF Mode), it will automatically go to the previous set Timer Mode and begins to countdown.

- 0-100[m], 0-200[m], 0-400[m], 0-100[km/h], 0-150[km/h], 0-200[km/h]
 1. Pull the vehicle to a complete stop (if the vehicle is not at a complete stop the numbers on the timer will flash and the time measurement cannot be made).
 2. When the vehicle comes to a complete stop, a beep will indicate that the timer is ready to measure the run.
 3. In measuring the run, you can choose between auto start and manual start. If the [T2] switch is pressed when [0.00] is lit up, it will change to manual start, and if the switch is not pressed, it will be auto start.

Auto Start:

- When the vehicle is driven, the timer automatically starts to measure the time.
- When the set distance or speed is obtained, the timer will automatically end and notifies the driver with a beep noise.

Manual Start:

- Press the [T2] switch to start a 3, 2, 1...countdown. Then the beep noise will sound and starts timing the run.

- Measuring 200-400[m]

1. Stop the vehicle stop (if the vehicle is not at a complete stop the numbers on the timer will flash and the time measurement cannot be made).
2. The timer will be ready once the vehicle comes to a complete stop, and the numbers will flash to notify the driver it is ready.
3. Start the run and once the distance reaches 200[m], the measuring will automatically start.
4. Once the vehicle hits 400[m] the measurement will automatically stop.

- Measuring 50-100[km/h], 100-150[km/h]

1. The vehicle speed must be below 50[km/h] for 50-100[km/h] and below 100[km/h] for 100-150[km/h] before setting the mode. Then the display will show [0.00] and it will be ready to measure. (if the vehicle is not under the specified speed, the display will show [—] and the measurement cannot be made).
2. Once the vehicle hits the start speed it will notify the driver with a beep noise.
3. After the vehicle hits the intended speed the measurement will be complete and notifies the driver with another beep noise.

- (4) Measured time display

- If the measured time is under 60sec, it will show from the tens place to the tenths place.
Ex. [12.48]
- If the measured time is over 60 sec, it will show the min first and then the display will change to show the seconds, and back and fourth.
Ex. [2] ↔ [12.48]
- The maximum range for the display is 10min. If the run exceeds 10min, then the display will show a [—].

- (5) Reset / Restart

- Press the [T1] switch to reset the measured time after each run. You can restart the measurement by repeating step (3).

- Displaying the previous measurement: after the current measurement, press the [T2] switch and it will display the previous measured time.

8. Stopwatch Mode

Time measurement and lap time measurement can be made.

- (1) Press the [M] switch to change to the stopwatch mode. [ST] should flash.

- (2) Time measurement

- Press [T2] to start and stop the stopwatch.
- To display the measured time it is the same procedure as the quarter mile measurement time.
- Press the [T1] switch to reset the values.

- (3) Lap time measurement

1. Time measurement
 - Press the [T2] switch to start the time measurement.
2. Lap time measurement
 - Press the [T1] switch during the time measurement to change to the lap time measurement.
 - The display will save the value when [T1] is pressed, and the backlight will change to red. At the same time it will start timing the 2nd run.
 - Press the [T1] switch to display each current lap and the next one will start simultaneously.
3. Finish
 - Press [T2] to end lap time.

- Time measurement and lap time measurement will display [—] when it exceeds 10 min.

9. Battery Voltage Mode

- (1) Press the [M] switch to change to the Battery Voltage Mode. [V] will flash on.

- (2) Press the [S] switch to change between voltage display, warning value, and warning ON / OFF. (initial setting is at warning OFF)

The battery voltage warning 1 is a set value of 16[V].

The battery voltage warning 2 is a set value of 10[V].

- When the warning is on, [WR] will flash on. But when it's off, [WR] will blink for 5sec and turn off.
- During Warning ON, if the voltage were to exceed 16[V] or go below 10[V], the backlight will turn red and warns the driver with a beep noise.
- If the [S] switch is pressed while the warning is on, it will shut the function off.

10. OFF Mode

- All the displays will turn off.
- The Turbo Timer is not active.
- Ignition ON/OFF does not matter.

11. Parking Brake

- If the ignition is turned off without the parking brake up, the Turbo Timer will not countdown and the engine will shut off.
- If the parking brake is disabled during the countdown of the Turbo Timer, the countdown will stop and the engine will shut off.

3. Speed Display Mode

This function allows you to display either the current speed or peak speed.

- (1) Press the [M] switch to change to the speed display mode. [km/h] will light up. The speed will be displayed once the vehicle starts moving. (May have a slight difference from the factory speedometer.)
- (2) Press the [S] switch to change to the peak speed display mode. [PK] will light up. Press [T1] during peak display to clear the peak unit.

Conversions:

$$1[\text{km/h}] = 0.62[\text{mph}]$$

● Speed learn mode

If there is a big difference in the display of the speedometer and turbo timer, there is a need for the computer to learn the speed sensor pulse. How to learn: (The driver should not perform the following while driving.)

- (1) Press [T2] during speed display mode to switch to learn mode. 40[km/h] will blink.
 - (2) Test run the vehicle and once the factory speedometer hits 40[km/h](24.85[mph]), press the [T2] switch. You will hear a beep and learn mode is complete.
 - (3) After completing the learn mode, it will go into speed display mode.
- * Learn error: About 2 minutes after learn mode is set the blinking 40[km/h] display will turn into a [—], then the backlight will blink and beep. Then after 5 sec. it will go back to the speed display mode.

4. Speed Warning Mode

Change to speed warning mode.

It will display the current set warning values. (Initial value is 40[km/h])

- Press [T1] (up) or [T2] (down) to set the warning values (the setting increments are 10[km/h] (6.2[mph])).
- Press the [S] switch to switch from warning ON / OFF.
- When [WR] is blinking, the warning is ON, and when the [WR] is flashing, the warning is OFF.
- If the vehicle exceeds the set warning value the backlight will start blinking red and a warning buzzer will sound.
- 5 sec after the setting is made, it will go to speed display mode and displays the current vehicle speed.
- If the [S] switch is pressed while the warning is in effect, the warning function will turn OFF.

5. Engine RPM Display Mode

This mode will display the rpm or peak rpm of the vehicle.

- (1) Press the [M] switch to switch to the engine rpm display mode. [r/min] will flash. The current rpm will be on display once the engine starts. (There might be a slight difference than the stock rpm.)
- (2) Press the [S] switch to change over to the peak rpm value and back. When the peak rpm value is displayed, [PK] will flash to indicate it. To clear the peak rpm press [T1].

● RPM learn mode

If there is a big difference in the display of the rpm meter and turbo timer, there is a need for the computer to learn the speed sensor pulse.

How to learn: (The driver should not perform the following while driving.)

- (1) Press [T2] during rpm display mode to switch to learn mode. 2000[r/min] will blink.
 - (2) Test run the vehicle and once the factory rpm meter hits 2000[r/min], press the [T2] switch. You will hear a beep and learn mode is complete.
 - (3) After completing the learn mode, it will go into rpm display mode.
- * Learn error: About 2 minutes after learn mode is set the blinking 2000[r/min] display will turn into a [—], then the backlight will blink and beep. Then after 5 sec. it will go back to the rpm display mode.

6. Engine RPM Warning Mode

- (1) Press the [M] switch to change to engine rpm warning mode.
 - (2) Press the [S] switch to select from Warning 1, Warning 2, or Warning OFF (Initial warning setting is on OFF). Warning 1 ([WR] lights up) is the shift up indicator. (initial value is 5000[r/min]) Warning 2 ([WR2] lights up) is the red zone indicator. (initial value is 8000[r/min])
- Press [T1] (up) or [T2] (down) to set the warning values. (RPM settings are in increments of 100[r/min]).
 - Press the [S] switch, and if [WR1] and [WR2] flash the warning will turn OFF. After 5 sec [WR1] and [WR2] will flash.
 - When [WR] is flashing, the warning is ON, and OFF when [WR] is not flashing.
 - When the engine rpm goes over the set value of warning 1, the backlight will flash red and you will hear a short beep noise to indicate the shift timing.
 - When the engine rpm goes over the set value of warning 2, the backlight will blink red and you will hear a long beep noise to indicate the rpm warning.
 - The setting value for warning 1 cannot exceed the setting value for warning 2.
 - If you press the [S] switch when the warning function is in effect, the warning function will turn OFF.
 - 5sec after setting it will go to the engine rpm display mode and it will display the current rpm.

7. Quarter Mile Time Mode

- (1) Press [M] to go into the quarter mile time mode.
- (2) Selecting modes
Press the [S] switch to choose from the following modes.
0-100[m], 0-200[m], 0-400[m], 200-400[m], 0-100[km/h], 0-150[km/h], 0-200[km/h],
50-100[km/h], 100-150[km/h]
- (3) Start and end time measurement.