V-Twin Mfg.
DIGITAL SPEEDOMETER & TACHOMETER
VT Part No. 39-0758

This is a custom application and rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.

INSTRUCTION

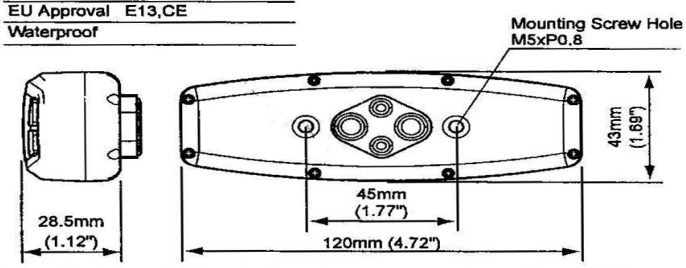
Digital Speedometer & Tachometer

"ASURA" Multi Function Computer offers you "ALL IN ONE".
All the necessary functions are included in a compact housing (120Lx40Wx28.5H mm / 4.7Lx1.7Wx1.14H inch). Designed to be used on motorcycles and ATV's regardless of whether or not the vehicle generates electrical speed signal, since a reed sensor is included in the kit.
Two screw holes(M5) on the back of the housing offers many mounting options. The supplied handlebar bracket enables to mount on any type of stock and custom handlebar with 7/8" through 1-1/4" diameter. Any type of aftermarket bracket with 45mm(1.77") mount-pitch can also be used for a custom mount.
Hidden Wiring solution can be made if you make a hole on handlebar.

SPECIFICATIONS

FUNCTIONS	SPECIFICATIONS
Housing Size	120mmx43mmx28.5mm (4.72"x1.69"x1.12")
LCD	Blue LCD with LED backlit
Power	DC10V - 16V
Operating Temperature	-20°C - +70°C (-4°F - +158°F)
Accuracy of Clock	+/- 70sec/month
Accuracy of Volt Meter	+/- 1.0%
Speedometer	0 - 399 km/h or 0 - 299MPH
Odometer	0 - 99,999.9km (mile)
Trip Odometer 1/2	0 - 999.9km (mile)
Engine Speed Display	0 - 20,000rpm
Clock	12h / 24h
Air Temperature Gauge	-10°C - +60°C (+14°F - +140°F)
Oil Temperature Gauge	+40°C - +200°C (+104°F - +392°F)

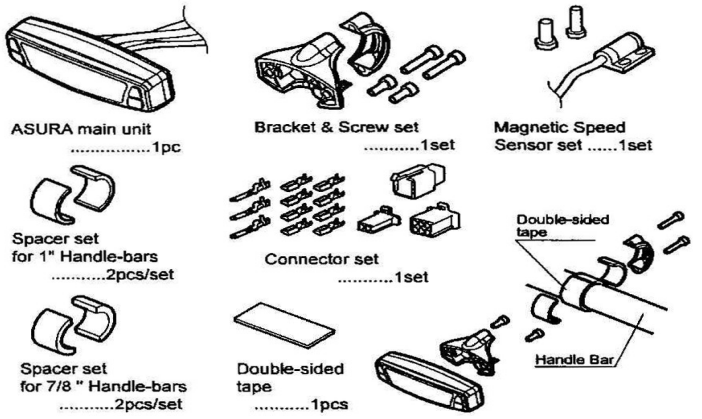
EU Approval E13,CE
Waterproof



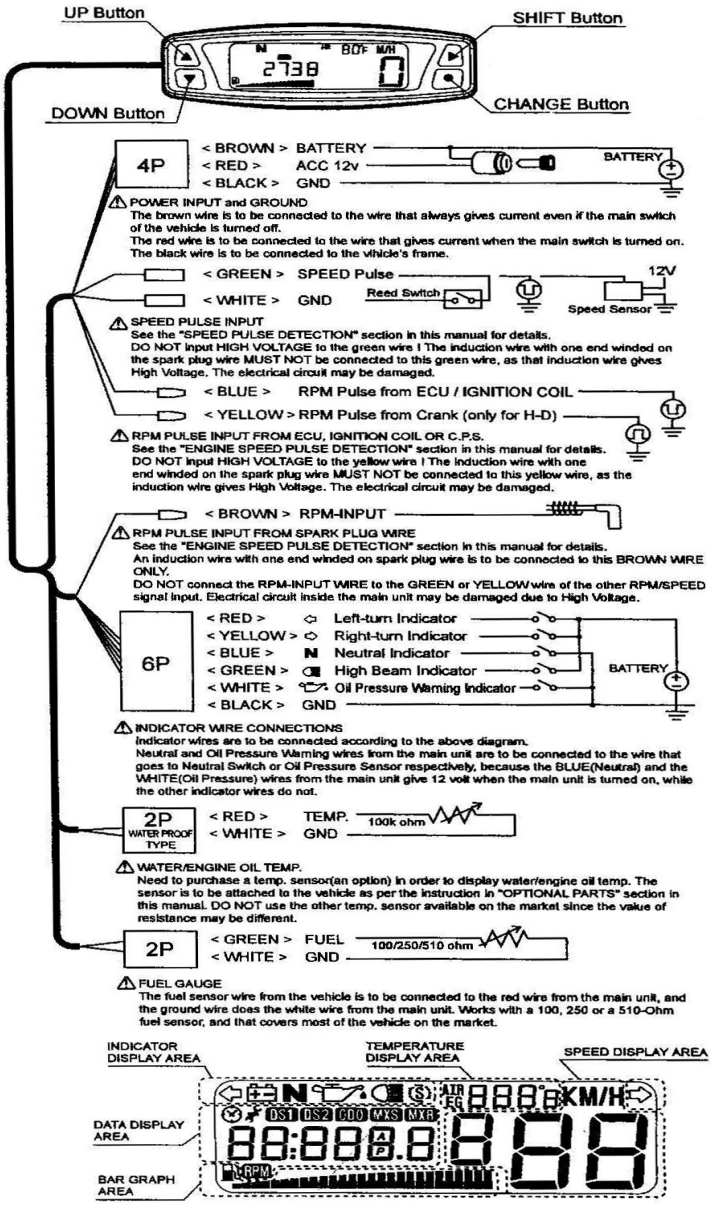
⚠CAUTION

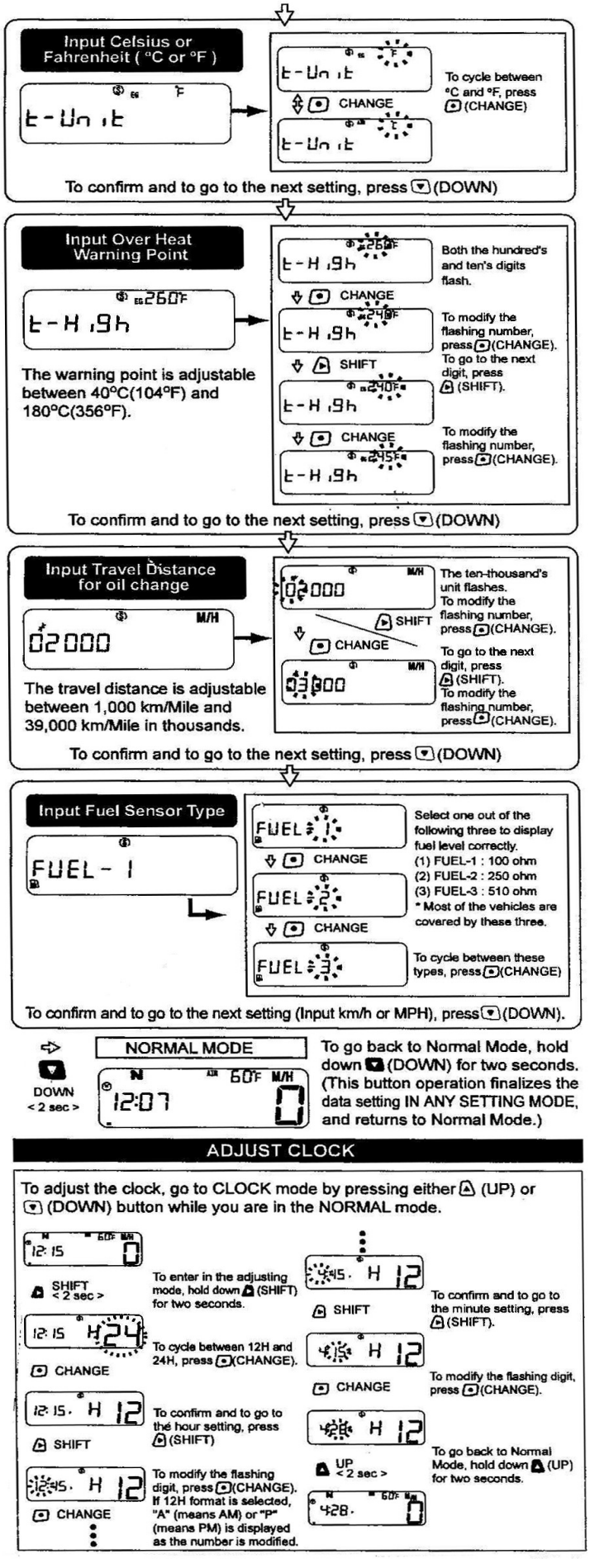
1. Read all instructions before use.
2. Disconnect the ground wire from the negative post of vehicle's battery before installation.
3. Use ASURA computer for the intended purpose of use
4. DO NOT disassemble ASURA computer. It may be damaged and water may come in.
5. DO NOT leave ASURA computer under the sunlight when not used
6. Avoid contact with gasoline, brake fluid or other chemicals. It may be damaged
7. For motorcycles that do not generate electrical speed pulse, use the supplied Magnetic Speed Sensor Set or a device(separately sold) that turns mechanical speedometer cable movement into electrical pulse.
8. Removing the original speedometer may impair some original functions such as turn signal auto canceller, igniter and/or immobilizer.
9. Designed for a 12 volt system. ASURA does NOT work with a 6 volt system or a battery-less system.
10. Be sure that ASURA displays the right speed before used on street.
11. DO NOT hit, drop or give a shock on ASURA main unit. It may be damaged due to a precision part.
12. Rubber mounting is recommended for vehicles with much vibration
13. After installation, check to see if all the parts are correctly installed, and see if all the screws are torqued properly.
14. Periodical inspection of the installed parts is required every 500km(300mile). If anything unusual may be found while driving, stop at a safe place to check.

COMPONENTS & INSTALLATION



WIRING DIAGRAM & OVERVIEW





TROUBLE SHOOTING

Speed is displayed when the vehicle is standing.
Calibrate the speed again. Number of speed pulse input may extremely be low.

Speed is NOT displayed
Wire connection of the speed sensor may be incorrect. Check service manual of the vehicle to see if the wires are connected correctly.
By detaching the vehicle's original equipment speedometer, the power-supply to the speed sensor may be cut-off on some vehicles. In that case, the BLUE wire(5V Output) from the main unit is to be connected with the positive(+) wire of the speed sensor in order to activate it.
Be sure the speed calibration is correctly done before use.

Unstable SPEED/RPM display
Be sure the black wire is firmly connected to the vehicle's frame. Painting is to be removed from the area where the ground terminal is attached.

RPM is NOT displayed
Try the other detection methods.
If the pulse needs to be detected from primary wire of ignition coil, try to connect the BROWN wire to the primary wire, even though the wiring diagram instructs to use the GREEN wire.

LCD Display is Slow
The LCD display becomes slow as the ambient temperature goes close to zero 0 Celsius or 32 Fahrenheit due to the nature of LCD. This is NOT a defect of LCD, and LCD display becomes normal as the ambient temperature goes up.

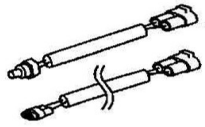
LCD Display is Black
The LCD display becomes black when exposed to direct sunlight while not riding.
This is because of the nature of LCD, and is NOT a defect.
Avoid the exposure of the main unit to direct sunlight when not riding.

Frozen Display
In case the display is frozen, disconnect the 4-P connector of the main unit for a few seconds and connect it again to restart. Or disconnect the negative wire of the battery to cut the power supply for a seconds, and the connect it again to restart.

LOW BATTERY WARNING
Before the engine start, LOW BATTERY WARNING icon goes on when the main switch is turned on. This is NOT a defect of the warning function, as long as the warning icon goes off a few seconds after the engine start.

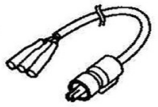
The Others
For further help, go to the local dealer where you purchased ASURA from.

OPTIONAL PARTS

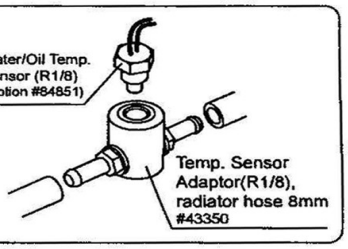

Water/Oil Temp. Sensor (R1/8) & Extension Wire #84851

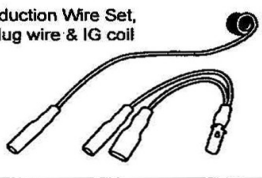

Sensor Fitting (R1/8) for Oil drain bolt

M12xP1.5	#85018
M14xP1.25	#85019
M14xP1.5	#85020
M16xP1.5	#85021
M18xP1.5	#85022
M20xP1.0	#85023
M20xP1.5	#85024


Speed Pulse Converter

A1 type #61118	M11 Female Thread
B1 type #61120	M12 Female Thread
G2 type #61122	Φ15 Insert
A2 type #61124	M12 Female Thread
J1 type #61126	Φ18 Insert
H type #61130	Φ10 Insert
X1 type #61128	Speedometer cable mount



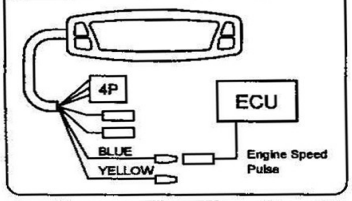

RPM Induction Wire Set, spark plug wire & IG coil #40841

ENGINE SPEED PULSE DETECTION

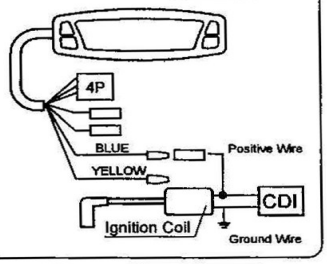
You have four choices to detect the pulse, and choose one from the following.

⚠ Attention
DO NOT detect two or more different pulses.
ASURA DOES NOT display the right engine speed.

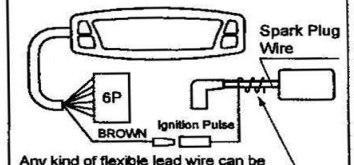
Detection from ECU



Detection from primary wire of ignition coil



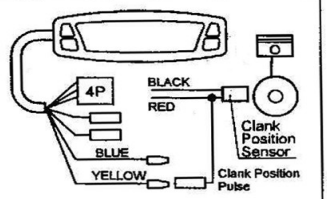
Detection from spark plug wire



Any kind of flexible lead wire can be used as the RPM induction wire. Wind the induction wire 5-6 times on the spark plug wire, and wrap it with vinyl tape. Or purchase the optional RPM induction wire shown at the end of this manual.

⚠ Attention
The induction wire with one end winded on the spark plug wire MUST BE connected to this BROWN WIRE ONLY. DO NOT connect it to any other wires. The main unit may be damaged by high voltage.

Detection from Crank Position Sensor



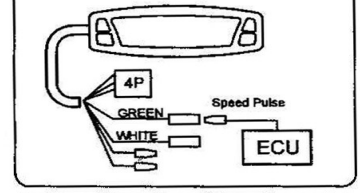
⚠ Attention
For 2000 up Harley Davidson motorcycles only.

SPEED PULSE DETECTION

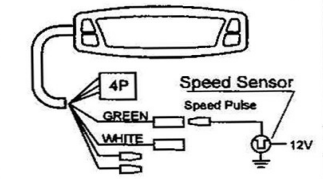
You have four choices to detect the pulse, and choose one from the following.

⚠ Attention
DO NOT detect two or more different pulses.
ASURA DOES NOT display the right engine speed.

Detection from ECU

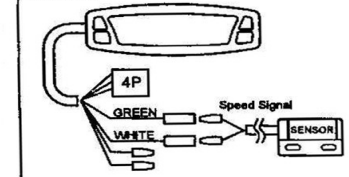


Detection from Stock Speed Sensor



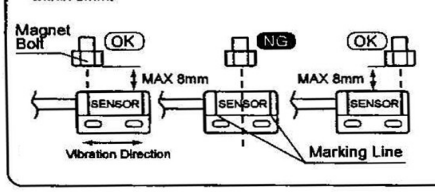
Detection from the supplied Magnetic Speed Sensor

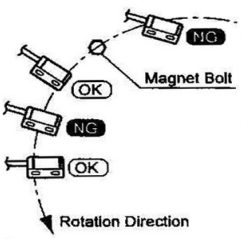
For vehicles that DO NOT generate electrical speed pulse, use the supplied magnetic speed sensor.



⚠ Attention **Speed Sensor & Magnet Installation**

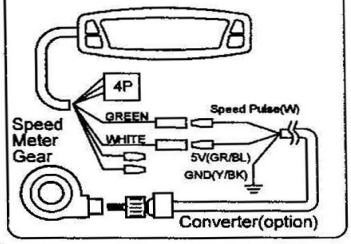
1. Align the center of the magnet to either of sensor marking line.
2. Installing the sensor parallel to the vibration direction creates optimal anti-vibration effect.
3. Make sure the gap between the magnet and the sensor is within 8mm.





Detection from the speedometer cable

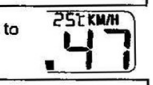
Need to purchase and install a converter (an option) that turns mechanical movement into electrical pulse. Install the converter to pick up electrical pulse.



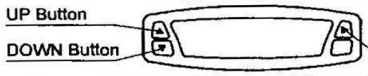
NORMAL MODE DISPLAYS

SPEED DISPLAY AREA

SPEED Speed is displayed from 0 to 399km/h(KM/H) or from 0 to 299MPH(M/H).

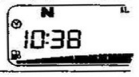


DATA DISPLAY AREA

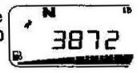


To cycle displays, press UP or DOWN button under normal mode.

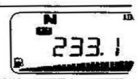
TIME The clock is displayed in either 12H or 24H format.



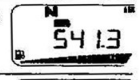
OIL CHANGE The manually setup distance is counted down to zero as the vehicle runs, and "Oil Change"-icon flashes and tells you the oil changing time. The setup range of distance is 0-39,000 km or mile. To turn off the flashing icon, go to data setting mode and reset the travel distance.



TRIP1 OS1 Trip Odometer-1 display shows how much distance has been traveled since the last reset. To reset, hold down – (SHIFT) for 2 seconds.

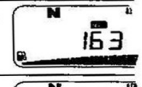


TRIP2 OS2 Trip Odometer-2 display shows how much distance has been traveled since the last reset. To reset, hold down (SHIFT) for 2 seconds.

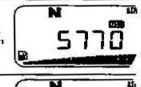


ODO ODO Odometer display shows how much distance has been traveled since the installation. The odometer is NOT resettable.

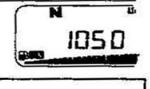
MAX SPEED MXS The maximum speed is automatically memorized since the last reset and is recalled. To reset, hold down (SHIFT) for 2 seconds.



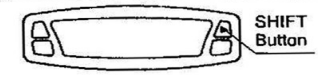
MAX RPM MXR The maximum engine speed is automatically memorized since the last reset and is recalled. To reset, hold down (SHIFT) for 2 seconds.



RPM RPM The engine speed is numerically displayed from 0 to 20,000 RPM.

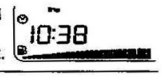


BAR GRAPH AREA



The bar graph displays either engine speed or fuel gauge. To switch between them, press SHIFT button.

FUEL GAUGE Displays remaining fuel level, when connected to a fuel sensor. Works with a 100, 250 or a 510-Ohm fuel sensor, and that covers most of the bikes on the market.

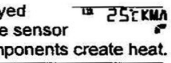


RPM The RPM bar graph progressively lights up as RPM increases. By setting the maximum RPM of the vehicle, the 37 bars are ideally divided so that the last bar lights up when engine speed reaches the set up maximum RPM.
Also, by setting the RPM warning point, entire bar graph flashes while RPM exceeds the warning point.

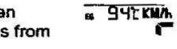
TEMPERATURE DISPLAY AREA

The temperature display area displays either ambient temperature or water/engine oil temperature. To switch between them, press CHANGE button.

AIR TEMP. AIR Displays ambient temperature. However, the displayed temperature may be higher than actual, because the sensor is mounted inside the main unit where electrical components create heat.



ENGINE OIL TEMP. EG Displays water/engine oil temp. The temp. sensor (an option) needs to be attached to the designated wires from the main unit.
The temp. range is from 40 to 200 Celsius or from 104 to 392 Fahrenheit, and "-L-" or "-H-" is displayed when the temperature is lower or higher than the range.

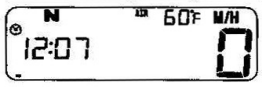


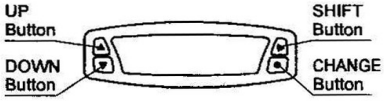
INDICATOR DISPLAY AREA

NEUTRAL	N	The indicators go on if connected to the proper wires from the vehicle. * Neutral and Oil Pressure Warning wires from the main unit are to be connected to the wire that goes to each switch, because the BLUE(Neutral) and the WHITE(Oil Pressure) wires from the main unit give 12 volt when the main unit is turned on, while the other indicator wires do not.
TURN SIGNAL	⇦⇨	
OIL PRESSURE WARNING		
HIGH BEEM		
LOW BATTERY WARNING		LOW BATTERY WARNING icon goes on when the battery voltage is between 12.0 - 12.3V, and flashes when the voltage is 11.9V or lower.
SETTING MARK	Ⓢ	SETTING MODE icon goes on during the data setting mode.

DATA SETTING MODE

NORMAL MODE

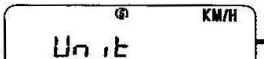


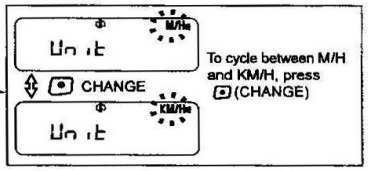


UP + DOWN < 2 sec >

To enter data setting mode, hold down (UP) + (DOWN) for two seconds.
To go back to Normal Mode, hold down (DOWN) for two seconds. (This button operation finalizes the data setting IN ANY SETTING MODE, and returns to Normal Mode.)

Input km/h or MPH





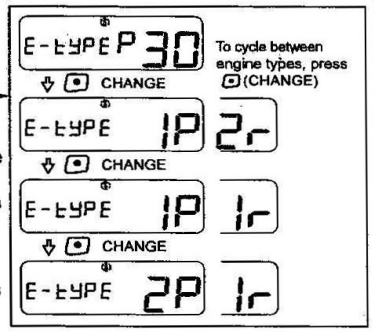
To cycle between M/H and KM/H, press (CHANGE)

To confirm and to go to the next setting, press (DOWN)

Input Number of Pulses per Revolution

The engine sends ignition pulse every revolution, and the number of pulses per revolution varies by engine type.

Select from the following four ;
(1) "1P/2r" - 1 pulse per 2 revolutions
(2) "1P/1r" - 1 pulse per revolution
(3) "2P/1r" - 2 pulses per revolution
(4) "P30" - ⓘ For 2000up Harley Davidson motorcycles ONLY.

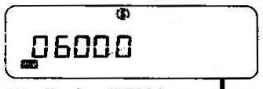


To cycle between engine types, press (CHANGE)

ⓘ
2000up Harley Davidson motorcycles have a crank position sensor (CPR).
It is highly recommended to detect pulse from CPR for 2000up Harley Davidson motorcycles.

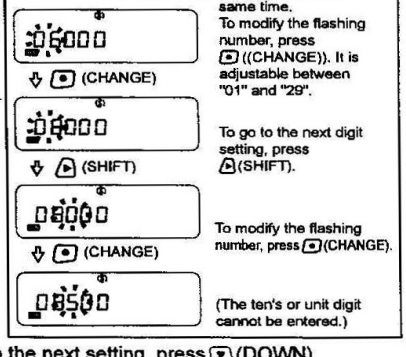
To confirm and to go to the next setting, press (DOWN)

Input Maximum RPM of The Vehicle



To display RPM bar graph ideally, it needs to input the Maximum RPM of the vehicle. The 37 bars are ideally divided so that the last bar lights up when engine speed reaches the setup maximum RPM.

When entered in this setting mode, both ten-thousand's and thousand's digits flash at the same time.



To modify the flashing number, press ((CHANGE)). It is adjustable between "01" and "29".

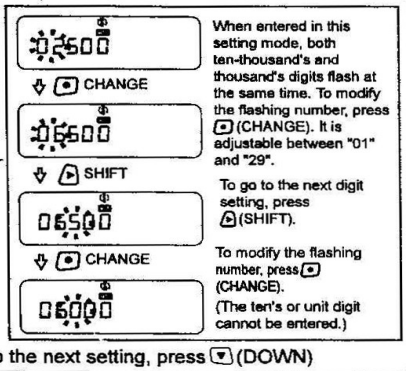
To go to the next digit setting, press (SHIFT).

To modify the flashing number, press (CHANGE).

(The ten's or unit digit cannot be entered.)

To confirm and to go to the next setting, press (DOWN)

Input Over Revolution Warning Point



When entered in this setting mode, both ten-thousand's and thousand's digits flash at the same time. To modify the flashing number, press (CHANGE). It is adjustable between "01" and "29".

To go to the next digit setting, press (SHIFT).

To modify the flashing number, press (CHANGE).

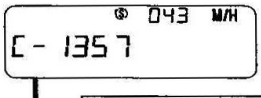
(The ten's or unit digit cannot be entered.)

To confirm and to go to the next setting, press (DOWN)

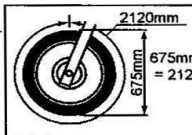
SPEED CALIBRATION

You have three choices to calibrate the speed, and choose one out of the following three.

Speed Calibration "Wheel Circumference Input"

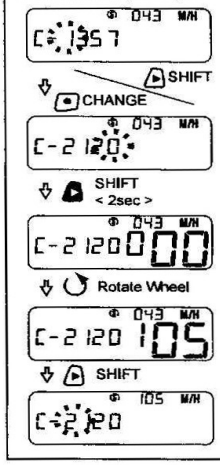


ⓘ
To skip this setting and to go to the next setting, press (DOWN).



Find the circumference by either measuring the wheel diameter or by rotate the wheel and measuring it.
The circumference is obtained from the wheel diameter by the following formula.
Wheel Diameter(in millimeter) x 3.14 = Circumference (in millimeter)
Wheel Diameter(in inch) x 3.14 x 25.4 = Circumference (in millimeter)

⚠ Attention
Check to see where the speed sensor is installed on the vehicle.
If the sensor is installed on the front wheel, measure the circumference of the front wheel.
And if the sensor is installed either on the rear wheel, transmission or on the drive sprocket, measure the circumference of the rear wheel.



When entered in this setting mode, thousand's digit flashes. To modify the flashing number, press (CHANGE).

To go to the next digit setting, press (SHIFT). To modify the flashing number, press (CHANGE). Continue this operation until the last digit is input.

To confirm and to go to the next step, hold down (SHIFT) for two seconds.

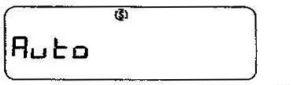
Now, you are entered in the "Automatic Pulse Counting Mode".

To count the pulse automatically, slowly rotate the wheel exactly once.
The display increases as the wheel is rotate and reads number of pulse obtained.

To finalize the setting, press (SHIFT).
The number of pulse obtained is displayed on the temp. display area.

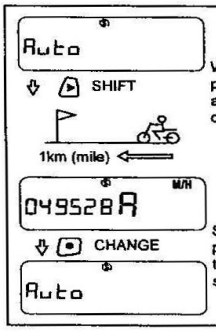
To confirm and to go to the next setting, press (DOWN)

Speed Calibration "Auto Calibration"



ⓘ
To skip this setting and to go to the next setting, press (DOWN).

You are now entered in "Auto Calibration" mode. By driving exactly one kilometer/mile, the speed is automatically calibrated.

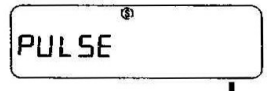


When ready to go, press (SHIFT), and drive exactly one kilometer/mile.

Stop the vehicle and press (CHANGE) to finalize the setting.

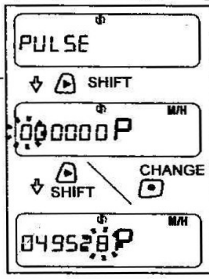
To confirm and to go to the next setting, press (DOWN)

Speed Calibration "Manual Pulse Input"



You are entered in "Manual Pulse Input" mode. By manually inputting the number of pulse obtained by exact one-kilometer / mile drive, the speed is calibrated.

ⓘ
To skip this setting and to go to the next setting, press (DOWN).



To enter the number of pulse, press (SHIFT).

The hundred-thousand's digit flashes. To modify the flashing digit, press (SHIFT).

To go to the next digit, press (CHANGE). To modify the flashing digit, press (SHIFT). Continue this operation until the last digit is input.

To confirm and to go to the next setting, press (DOWN)