

5in1 GAUGE

Quartz STEPPING DRIVE φ80

Common for
501-F1L/F1R/F0L/F0R
(No.2)

- Thank you for purchasing our PIVOT product. Please read these instructions carefully before installing or using this device.
- When installing this product, we recommend that if technical knowledge becomes necessary please consult a qualified mechanic.
 - Please do not lose this user's guide, as you will hold liable for the cost of reissuing it.

CONTENTS

		Already attached to Meter Unit							
Meter	Control Unit	Band Clamp	Base Holder	Pillar Bracket	Double-sided Tapes (L) x 3	Double-sided Tape (S) x 1			
Philips Head Machine Screws (M5) x 2	Hexagonal Washer Nuts (M5) x 2	Tap Screws (L) x 2 / (S) x 2	Wire Connectors x 3	Resistor Wire	Diagram Manual for each ECU type	User's Guide			

※ If you wish to use to display other than the tachometer, you should purchase the necessary sensors separately. (Can be used in conjunction with will all sensors in the SG and Gekko Series.)

- Temperature Sensor (Common for water temp. and oil temp.) SG-5TS /
- Pressure Sensor (Common for oil pressure and fuel pressure) SG-5PS / Boost Sensor SG-5BP

FEATURES

- Microcomputer controlled stepping motor drive provides highly precise display.
 - With just 1 display area, you get 4 types of data which Tachometer, Water Temperature, Oil Temperature and Pressure (either Oil Pressure, Fuel Pressure, or Boost Pressure) displayed and a Shift Lamp for a total of 5 display items.
 - When a limit has been exceeded in mode other than being displayed, the monitoring lamp will blink and simultaneously the display will change to that mode. One-touch switching possible!
 - Possible to make a desired warning setting for each display. (Warning settings for shift lamp, water temp., oil temp., boost are on the ascending and oil pressure, and fuel pressure are on the descending side.)
 - Blue LED Permeating Illumination (501-F1L / F0L) . Red LED Permeating Illumination (501-F1R / F0R) .
 - Brightness of the shift lamp automatically decreases with the small lamps light up at night.
 - It is possible to view peak data for each type with just the touch of a button.
 - Space saving installation gives you 60% more space than if installed separately.
 - All of the signals can be transmitted between controller and gauge via one serial communication cable, allowing you to keep your dashboard looking sleek and smart.
- [Opening Demo]** By turning the key switch on, the meter lamp will flash on, the needle will move in a fixed pattern (search for 0), and the shift lamp will switch on.
- [Demonstration Mode]** The unit is equipped with a demo mode for use on cars in shops and dealers. The needle and lamp will operate in a random fashion.

PART NAMES AND FUNCTIONS

METER UNIT

< FRONT >

※ During opening demo mode the meter light will come on whether or not the small lamps are ON or OFF.

[501-F1L / F1R]

Sequential Shift Lamp
The meter is equipped with a sequential shift lamp, which is designed to have the first lamp go on at 1000rpm before the set shift point and all three lamps to blink at the shift point.

Monitoring Lamp (Common)
Notifies the type of data being displayed by the needle.

Needle (Common)

[501-F0L / F0R]

Flashing Shift Lamp
Super high luminosity (4 LEDs) shift lamp, set in a large cutout aluminum body, can be set to switch on at desired engine revolution.

Display Range

- 0rpm ~ 14,000rpm
- 0°C ~ 140°C (When installing the temperature sensor)
- 0kpa ~ 140kpa (When installing the boost sensor)
- 0kpa ~ 1,000kpa (When installing the pressure sensor)
- ※ When no sensor is installed the needle stands at 0.

Shift Lamp

- Lamp Color = Red
- Brightness = Linkage to Small Lamps
- Setting Range = 2,000rpm ~ 14,000rpm (100rpm units)
- Lighting Pattern of Sequential Shift Lamp (501-F1L/F1R)

1,000rpm before setting (warning light)		First lamp lights up
500rpm before setting (warning light)		First two lamps light up
Reaches rpm setting		All lamps blink

Monitoring Lamp

- Lamp Color = Red
- WAT-T x10°C Lamp lights up when displaying water temperature.
- OIL-T x10°C Lamp lights up when displaying oil temperature.
- PRESS x100KPa Lamp lights up when displaying pressure. (Either oil pressure, fuel pressure, or boost.)
- BOOST x10KPa

※ All lamps are off when displaying the tachometer.

NOTE: About a Warning Display

When any of the warning settings for water temp., oil temp. and or pressure (either oil pressure, fuel pressure, or boost) has been exceeded, the monitoring lamp will blink to display a warning.

- ① If a warning setting has been exceeded during display mode.
The monitoring lamp begins to blink.
- ② If a warning setting is exceeded other than during display mode.
The monitoring lamp will blink and simultaneously the display will change to that mode. When the reading falls below the set value (exceeds when PRESS displays) the display will return to normal.
- ③ If a warning setting has been exceeded in multiple mode.
The display changes in order every 2.5 seconds.
• Warning Display Mode • Exceed Setting Mode
- ④ If during warning priority display you wish to return to the normal display.
Change the warning settings and cancel the warning display. See [Operations Settings C].

※ The shift lamp will operate normally regardless of the above procedures.

⚠ Warning settings for shift lamp, water temp., oil temp., boost are on the ascending and oil pressure, and fuel pressure are on the descending side.

< SIDE >

Band Clamp (Common)
Use to attach the base holder or the pillar bracket and fix the meter.

Base Holder or Pillar Bracket (Common)
Use to fix meter to the body of car.

< BACK >

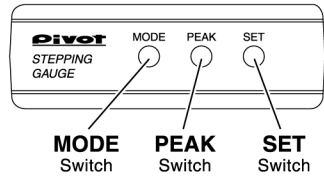
2-pin Coupler (Common)
(501-F1L/F1R) Not used.
(501-F0L/F0R) Connect to 2-pin coupler cable from shift lamp.

4-pin Coupler (Common)
Connect to 4-pin coupler cable.

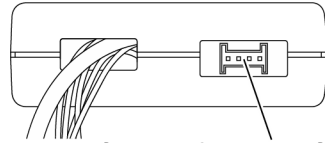
[501-F0L / F0R]
Hexagonal Washer Nut
Possible to adjust position of shift lamp. (See diagram below.)
⚠ Make sure to securely tighten hexagonal nut.

CONTROL UNIT

<FRONT>



<BACK>



Connector for Pressure Sensor (4P)

SWITCH OPERATIONS SETTINGS (Settings and Verification)

CAUTION When carrying out these operations, make sure to park your car in a safe place. Trying to do these operations while the car is moving, may cause trouble and damage.

NOTE After completing the settings please make sure to return to the normal display (completing the setting procedure by pressing **SET** switch) before turning off the key switch.

A Cylinder Number Settings

※ Check the cylinder number setting by counting the number times the shift lamp blinks.

Be sure to adjust the cylinder number setting according to the table to the below after having made sure of the number of cylinders and cycles for the car in which you are installing. However, with some car models the settings may differ depending on the place you connect to the rpm signal.

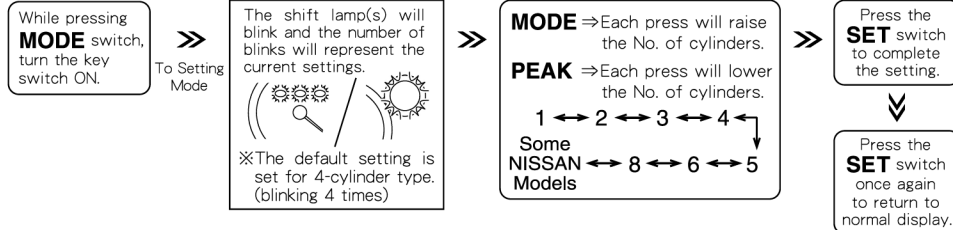
Cylinder No. Setting	1	2	3	4	5	6	8	Some NISSAN Models
No. of Blinks	1	2	3	4	5	6	8	Light up
No. of Cylinders	Independent firing	2	3	4	2	Rotary	5	3
Cycles	4	4	4	2	4	2	4	4

The default setting is set for 4-cylinder type. (blinking 4 times)

① For NISSAN models with independent firing and connected to the ignition coil (⊖), make the cylinder setting "1". If you set at the number of cylinders the display will read: Display value / No. of cylinders. Ex: For a 6-cylinder car with the setting at 6, the meter should regularly read 3,000rpm, but will be displayed as 500 rpm.

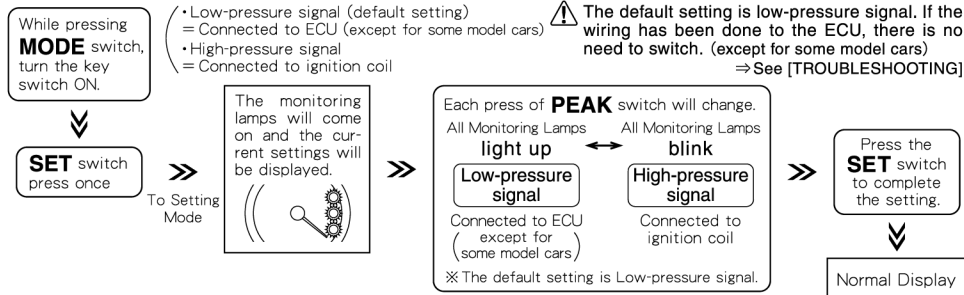
② For Rotary engine cars, set the cylinder setting to "4".

③ For others, see the attached [Diagram Manual for each ECU type].

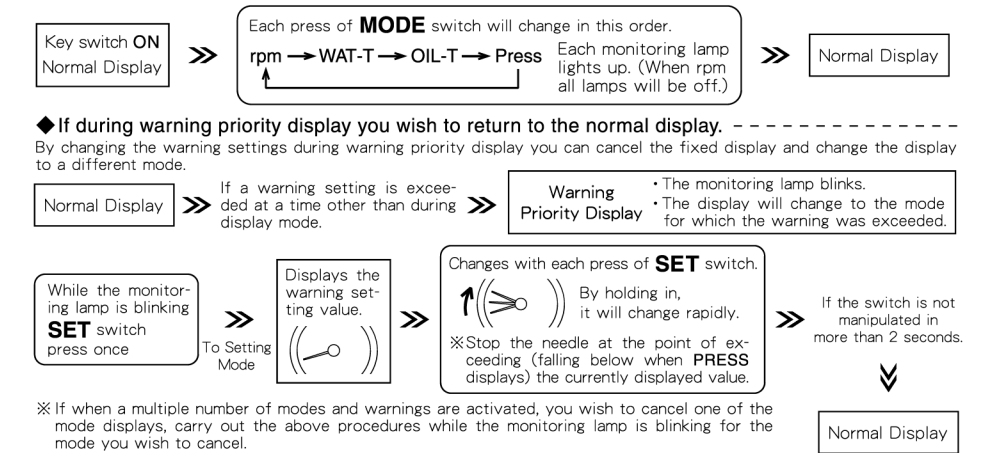


B Signal Pressure Switch

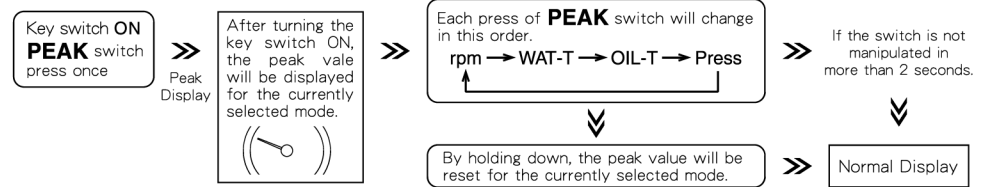
Change the signal pressure switch depending upon where the engine rpm signal wiring has been done.



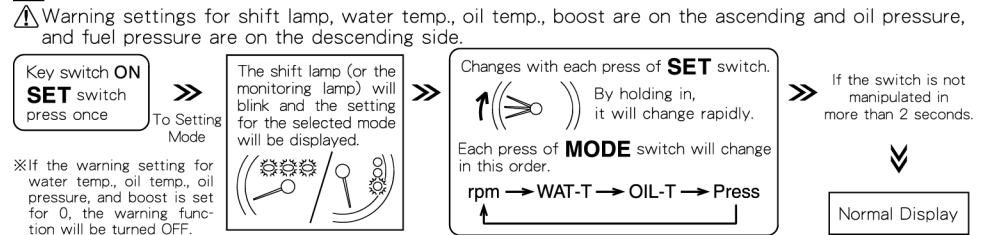
C Selecting the Display Mode



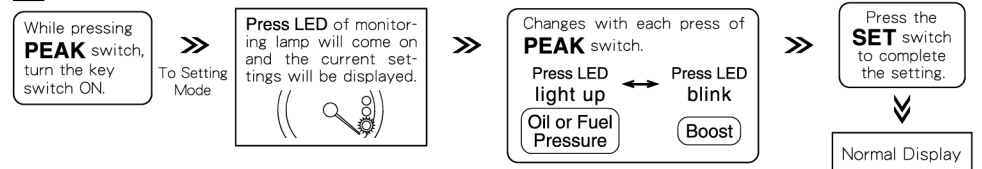
D Peak Display and Reset



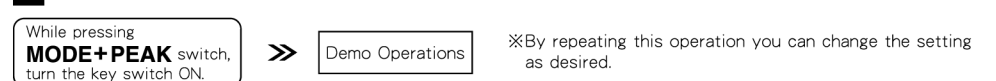
E Warning Settings



F PRESS Type Settings



G Demonstration Mode

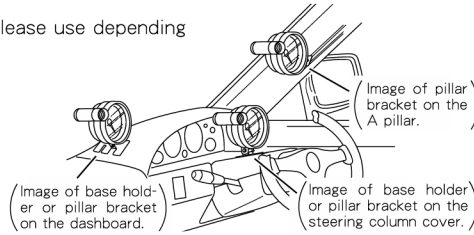


METER INSTALLATION

■ There are 2 kinds of installation stands. Please use depending on installation place & condition.

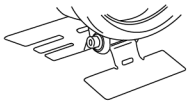
⚠ 1 The pillar bracket must be used if attaching to the A pillar of car. If installed with double-sided tape, vibration may cause the meter to fall.

⚠ 2 Even if the meter is to be installed on the dashboard or steering column cover, it is best to use the pillar bracket and screws when possible.



⚠ Please check & confirm the strength, material, & thickness of the installation place. If it is unstable, it may difficult to see the meter because of vibration. In such a case, reinforce the stand by fastening it to a steel plate or by fixing it with tapping screws directly to a steel plate on the vehicle.

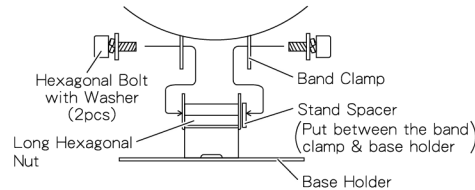
A Base Holder



Used on sturdy places with double-sided tape.
(Ex: on the steering column cover or dashboard, etc.)

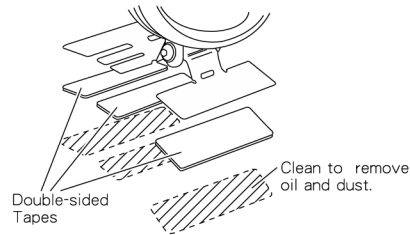
1. Installation with Base Holder

- 1 Insert the long hexagonal nut inside the base holder.
- 2 Put in the stand spacer between upper side of the band clamp & base holder (only one side).
- 3 Temporarily fix with the hexagonal bolts.
- 4 Put the meter into the band clamp.
- 5 Firmly fix by tightening hexagonal bolts.

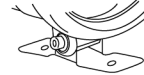


2. Attaching to Vehicle

- 1 Carefully decide installation place.
 - 2 Bend the stand to securely fit the place of installation.
 - 3 Clean the surface; removing all oil or dust.
 - 4 Fasten using the large double-sided tape.
- ⚠ Please be sure about where you wish to install the meter, as it is not advisable to reuse double-sided tape.



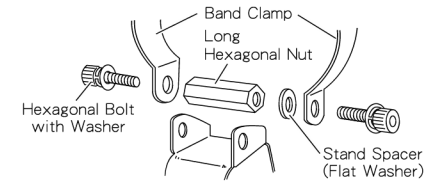
B Pillar Bracket



Used when fixing meter with screws on A pillar, etc.
(Use tapping screws or bolts & nut.)

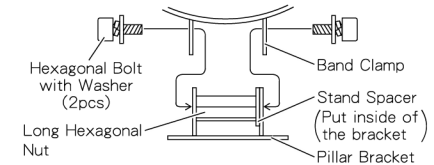
1. Remove the Base Holder

Make sure not to lose any removed parts.



2. Installation with Pillar Bracket

- 1 Insert the long hexagonal nut and stand spacer inside the pillar bracket.
- 2 Temporarily fix with the hexagonal bolts.
- 3 Put the meter into the band clamp.
- 4 Firm fix by tightening the hexagonal bolts.

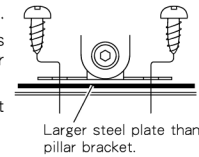


3. Attaching to Vehicle

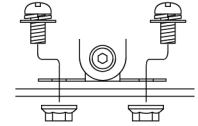
Please check & confirm the strength, material, and thickness of the installation place and fix securely with tapping screws or bolts & nuts.

◆ If the installation place is made of steel plate; It should be fixed with the short tapping screws.

- If the steel plate is too thin.
 - 1 Use a steel plate which is a little larger than the pillar bracket.
 - 2 Put it between the bracket and the installation place.

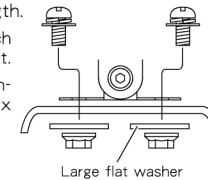


- If the installation place is removable. Fix with bolts & nuts.

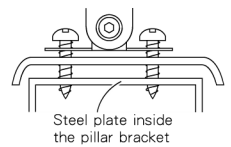


◆ If the installation place is made of plastic; Please check & confirm the strength, material, & thickness of the installation place and fix by bolts & nuts.

- If it seems of poor strength.
 - 1 Use a flat washer which is a little larger than a nut.
 - 2 Place the flat washer inside of plastic and fix with bolts & nuts.



- If the pillar bracket can be fixed by penetrating to the inside of the steel plate. Use the long tapping screws.



If you wish to use to display other than the tachometer, you should purchase the necessary sensors separately.

WATER/OIL
TEMP
(SG-5TS)



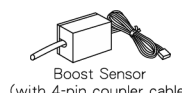
Temperature Sensor
3-pin Coupler Cable

OIL/FUEL
PRESS
(SG-5PS)



Pressure Sensor
4-pin Coupler Cable

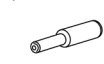
BOOST
(SG-5BP)



Boost Sensor
(with 4-pin coupler cable)
Zip Ties X 3



T-Joint
Rubber Hose (5cm)



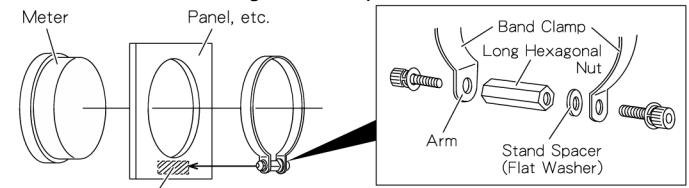
Conversion Joint
Nylon Hose (2m)



I-Joint
Double-sided Tape

● How to affix the rear of the unit when installing into front panel.

Insert a long hexagonal nut and a flat washer between the arms of the band clamp and tighten it from the back to affix it.

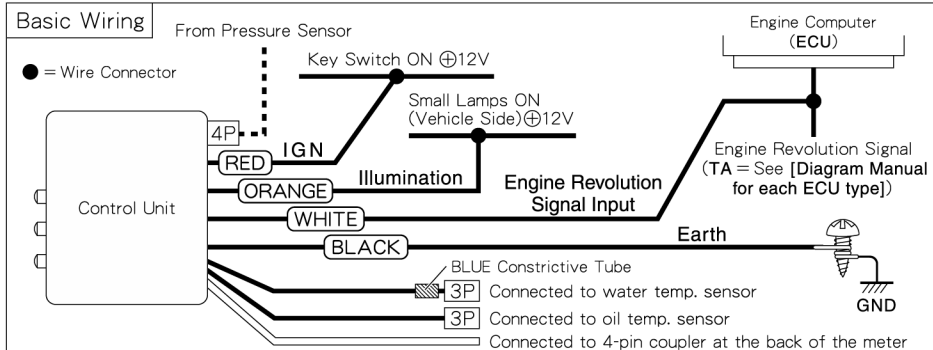


Use double-sided tape to hold the band clamp in place at the arms of the clamp.

CONNECTING THE WIRES

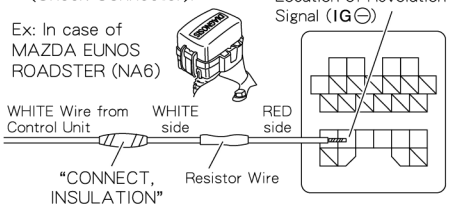
⚠ INSTALLATION WARNING

- For safety purposes, when working on your car always disconnect the ⊖ battery terminal. (Reconnect to check for power.)
- Connect each part securely. Imperfect connection may cause a malfunction.
- Make sure that all wire and snap connectors are firmly connected and insulated.
- Be careful when laying wires not to cause any electrical shorts or wire breakage.

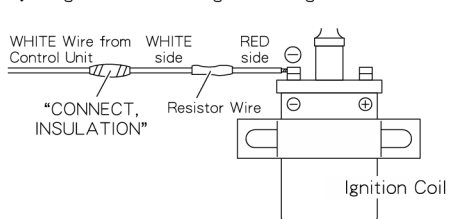


⚠ To get revolution signal from other than engine computer ⇒ Use resistor wire included in kit. See [Operations Settings **E**], make sure to change the signal pressure switch to high-pressure signal.

◆ To get Revolution Signal from Diagnosis (Check Connector).



◆ To get Revolution Signal from Ignition Coil.



① Securely connect each of the 4 wires from the control unit.

RED wire (IGN) = Connect to the wiring that carries (⊕12V) when the key switch ON.

ORANGE wire (Illumination) = Connect to the wiring that carries (⊕12V) when the small lamp switch ON.

WHITE wire (Engine Revolution Signal) = Connect to the wiring that carries revolution signal from engine computer.

- When connecting the revolution signal to the diagnosis or ignition coil.

Use resistor wire included in kit. (See diagram above)

(How to use) ① Connect the WHITE wire from the control unit to the WHITE resistor wire.

② Connect the RED resistor wire to IG ⊖ of diagnosis or ⊖ terminal of the ignition coil.

- When another device is already connected to the revolution signal from the ECU.

⇒ and that device works properly keep that wiring.

⇒ and the meter or other device stops working properly or sometimes becomes unstable disconnect from the ECU wire and get the revolution signal from the ignition coil or diagnosis.

⚠ See [Operations Settings **B**], make sure to change the signal pressure switch to high-pressure signal.

⚠ When connecting the revolution signal to the ignition coil or diagnosis and the indicated rpm on the meter is obviously lower than actual rpm as shown on tachometer. May be caused by the individual wiring system of that model of car. (Ex: For a 6 cylinder car, the reading should be 3,000rpm, but display shows 500rpm)

See [Operations Settings **A**], change cylinder setting to "1".

BLACK wire (GND) = Screw into steel plate of car body to obtain earth.

② Connect the 4-pin coupler cable at back of control unit to the 4-pin coupler at the rear of the meter unit.

TROUBLESHOOTING ※Please make the following checks before seeking repair.

Trouble	Possible Causes	Possible Solutions
Engine is running but tachometer doesn't work.	<ul style="list-style-type: none"> Improper connection of RED wire (IGN). Improper connection of BLACK wire (GND). Improper connection WHITE wire (Engine Revolution Signal). 	Check the wire connections or conditions.
The car's tachometer and 501 meter readings are very different.	Contact failure of 4-pin coupler cable.	Check the coupler connection.
The car's tachometer and 501 meter readings are very different. (If the difference is small it may be a difference in tachometer precision.)	The cylinder setting is wrong.	See [Operations Settings A] and make any necessary changes.
Display dose not change.	Improper connection of each sensor and sensor cable.	Check the wire connections or conditions.
The shift lamp does not come on.	The engine rpm has not reached the set shift point.	See [Operations Settings E] and check the rpm shift point.
The shift lamp comes on at times other than when rotating settings.	Contact failure of 2-pin coupler. (501-FOL/FOR)	Check the coupler connection.
The shift lamp comes on at times other than when rotating settings.	The display is for pressure.	Switch the display mode to tachometer.
Even with the small lamps ON, the meter light does not come on.	The key switch is OFF.	Please turn the key ON and the small lamps ON.
	Improper connection of ORANGE wire (illumination).	Check the ORANGE wire connections or conditions.
With the key OFF, the needle does not rest on "0".	This is a characteristic of the stepping motor and is not a failure or breakdown. When tachometer displayed, with the key switch ON (engine stopped), a 0 should appear in the display after the opening demo is finished to show it is working properly.	
After connecting WHITE wire to the revolution signal of engine computer.	Check the WHITE wire connections or conditions.	
↓	If condition is not improved after checking connection and condition of WHITE wire, connect with the resistor wire as in diagram at right.	
<ul style="list-style-type: none"> Tachometer does not work, or is unstable. 	<p>⚠ See [Operations Settings E], make sure to change the signal pressure switch to high-pressure signal.</p> <p>WHITE Wire from Control Unit</p> <p>WHITE side</p> <p>RED side</p> <p>"CONNECT, INSULATION"</p> <p>Resistor Wire</p> <p>Engine Computer (ECU)</p> <p>Engine Revolution Signal (TA)</p>	

HOW TO USE THE WIRE CONNECTORS ※If soldering is possible, please do so.

Method 1 Connecting a new wire to the middle of another wire.		Method 2 Connecting two wires at their ends.	
1	Peel off about 10mm of the vinyl cover at connection point.	1	Peel off about 10mm of the vinyl covers at the end of the wires to be connected.
2	Peel off about 10mm of the vinyl cover at the end of the wire to be connected.	2	
3	Twist the uncovered wires.	3	
4	Close tightly with wire connector.	4	Close tightly with wire connector.
<p>※Use a crushing tool to press the wire connector. If you do not have such a tool, use pliers or such to fold and crush the connector together for a secure contact.</p>		<p>※After covering, make sure to insulate properly with vinyl tape.</p>	

PIVOT CORPORATION 87-3 OKADA SHIMO-OKADA MATSUMOTO-SHI NAGANO 390-0313 TEL0263-46-5901