# WARNING
## BEFORE INSTALLATION

- **DISCONNECT THE BATTERY FROM THE ENGINE.**
- **MAKE SURE THE ENGINE CAN'T OPERATE DURING INSTALL.**
- **FOLLOW ALL ENGINE SAFETY WARNINGS.**
- **READ THE FOLLOWING INSTALLATION INSTRUCTIONS.**

## PLEASE READ INSTRUCTIONS BEFORE INSTALLING

A visual inspection is recommended for this product before installation in case of damage during shipment. It is your responsibility to have a qualified person to install this unit.

### Over Speed Switch (PS-2372)

This device allows for the activation of the PASV when the engine goes over the pre-set RPM. When tripped it activates a relay which can run on time delay of 12-15 seconds. This allows for the engine to run safely, especially if no one is able to access a toggle switch or view the engine.

### Configuration

Please use either one of the configurations below:

1.Low Frequency - used with a connection to the alternator
(NOTE: Must have a W-Post or W-Cable)

2.Mag. Pick up - used with a supplied magnetic pickup (PS-2848)

### Setting up the Over Speed Switch

*Refer to page 3*

### LED status

CRK - Crank

OSD - Over Speed which turns on when the trip point is reached

### Installation Location

The speed switch is constructed in a water-resistant housing to protect the electronics. The mounting location should be carefully selected before installation. Use a location that is away from direct water or continuous splashing (e.g. close to wheel wells, etc.)

**⚠CAUTION**

**Before doing any of the wiring make sure to turn off the power and stop the engine.**

### Specifications

Power requirements: 12VDC (9-16 VDC) / 24VDV (18-30 VDC)
Relay maximum output current: 10A-28VDC/10A-240VAC
Turning control speed setting range: 0-3000RPM +/-1%
Over speed protection speed setting range: 0-5000RPM +/-1%
Speed sensor signal range: AC1~100VRMS, 85-1000MHz
Power consumption: 0.24W + 0.38 x 2W Relay power consumption
Relay output way: passive output
Operating environment temperature range: -30°C to +85°C
Size: 114.8x107x38 (mm)

**NOTE:** *The additional clockwise turn for the Potentiometer in the Second Method is to compensate for normal over-revving of the engine (e.g., going downhill.) If setting based on RPM (Method One above) compensate for normal over-revving of the engine.*

### LED Lights & Speed Adjustment


### Magnetic Pickup (PS-2848)

This item is an AC generator and is typically found installed into the flywheel housing of an engine. The starter ring generates a voltage pulse every time a gear tooth passes the end of the sensor.

### Specifications

Dimensions: 5/8-18 UNF fully thread 3" rod

***If a different size Magnetic Pickup is required please contact Mitey Titan Industries Inc.***

***The supplied harness comes pre-connected with the Magnetic Pickup. If the speed switch is being installed with Option 1 on the following page utilizing the alternator, remove the Magnetic Pickup from the harness at the connector and instead connect the supplied Pig-Tail with the black and white wires that are included in the kit.***

*Next page for Installation*

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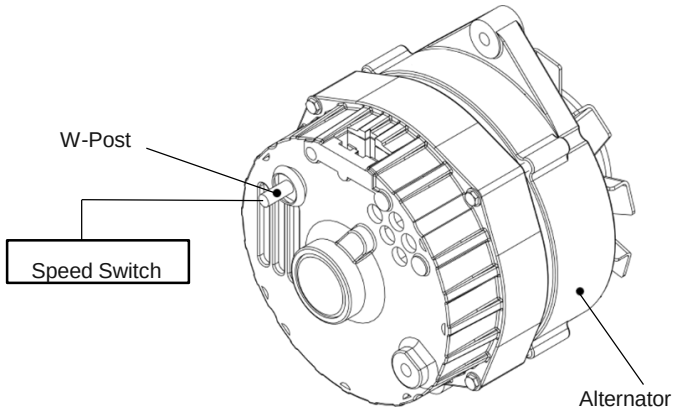
## Typical Installation of LF Position Speed Switch – *Option 1*

Before you begin, ensure to change the connector by removing the Magnetic Pickup and connecting the supplied pig-tail.

-Find the alternator on the engine
-Check if your alternator has a W-Post*.
-Once found connect the white wire from the W-Post to the speed switch
-Make sure to also connect the ground to something.

***NOTE:** If it doesn't have a W-Post, installing a W-Post may be possible thru an alternator shop. If W-Post is not an option look into acquiring magnetic pickup instead. (*see Option 2 below*)




## Typical Installation of Magnetic Pickup (PS-2848) – *Option 2*

-Drill & Tap a hole in the flywheel housing (Thread Size: 5/8"-18 UNF)
- Refer to the Magnetic Pickup Breakdown diagram on the right

**IMPORTANT:** Drilling too deep may damage ring gear teeth. Blow chips with air hose when drilling and tapping hole.

-Insert Magnetic Pickup and turn until it stops at the face of the gear.
-Back off the from the gear by turning 1/4, 1/2 or 3/4 turn counter clockwise 1/4 turn = 0.013" (0.33mm)
1/2 turn = 0.028" (0.71mm)
3/4" turn = 0.035" (0.88mm) - ***Recommended***
-Check gap clearance by rotating the gear completely around.

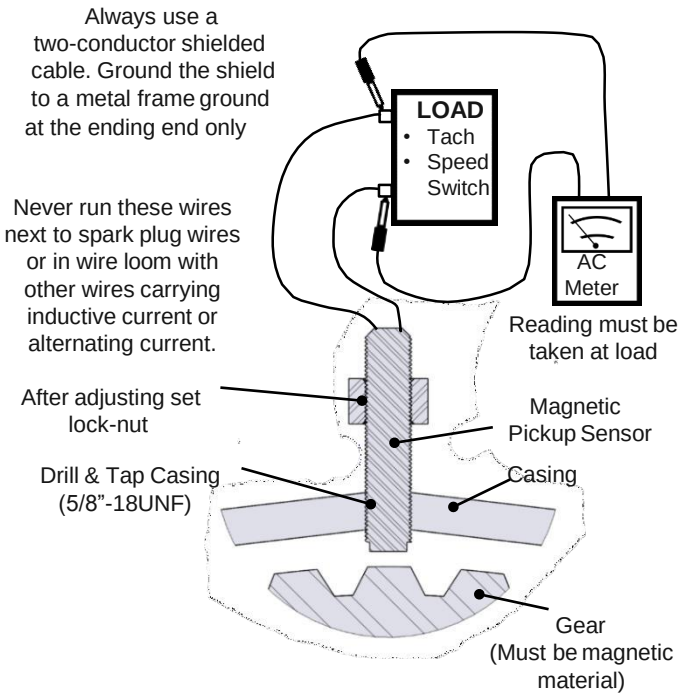
**NOTE:** Magnetic Pickup should be adjusted so that the minimum voltage is attained at the engine's lowest RPM. The voltage will increase as speed increases.

If erratic readings occur, remove Magnetic Pickup and check the magnetic tip for metal chips.

**⚠ CAUTION**

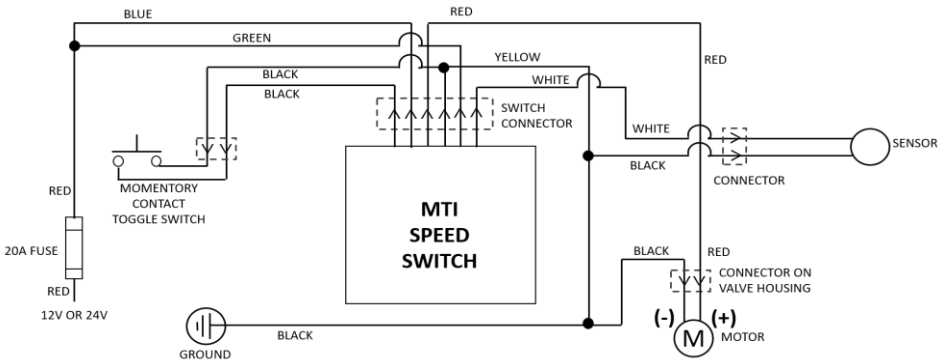
Make sure all electrical power is disconnected as well as the engine is turned off.

### Magnetic Pickup Breakdown




**NOTE:** Clean gear casing and magnetic sensor of metal chips or fillings

# WIRING DIAGRAM FOR PASV SPEED SWITCH

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## Setting up the Over Speed Switch

1. After you install the MTI Speed Activated Switch supplied with a wire harness to the equipment, start your engine. Check to see if there is a digital number displayed on the screen of the MTI Speed Activated Switch. *(**NOTE:** This number is not related to engine RPM on the tachometer).*
2. Increase your engine speed to maximum by pressing on the throttle looking at the Number on Display Screen of the Speed Activated Switch. Write this number here [ ] and add 20% to this number and write it here [ ]. This final value will be used to set P 3 in Step 5 below. (**NOTE:** This step may require two people; one to check the Number on Display Screen and the other to increase engine RPM to full throttle position)
3. Hold the Home button for 3 seconds. It will show 0000 on the screen *(See Pic 1)*
4. Press the Enter button four times to enter the password, it will show P 1 on the screen *(Factory Password is set to 0000 - See Pic 2)*
5. Now use buttons to go to P 3 and press the Enter Button This will allow you to change the factory default setting of P 3 which is preset to 5000. *(See Pic 3 & Pic 4)*
6. Use buttons to change each flashing number individually in P3 and press the Enter Button after each desired value until the final number from Step 2 is entered in P 3. Once the value has been updated, use to go to home screen
7. Now start the engine and hold for 5 seconds to activate the TEST Mode as marked on the switch, it will show TEST on your RPM switch screen *(See Pic 5)*
8. Slowly increase the RPM of your engine to safely shutdown your engine
9. In TEST mode, the threshold RPM required to shutdown the engine is reduced to 60%. Therefore in this case once the engine hits 60% value of Step 2 calculation that was entered in Step 5, the engine will safely shutdown., The switch stays in the TEST mode for 30 seconds *(**FOR EXAMPLE:** IF YOUR P3 VALUE IS SET AT 1000, YOUR ENGINE WILL SHUTDOWN AT 600 IN TEST MODE)*
10. Wait 15 seconds until valve is automatically reset.


Pic 1


Pic 2


Pic 3


Pic 4


Pic 5

**NOTE**: Refer to page 4 for default parameters settings

## Push Button Connections

The black wire with 1-1 should be in 1 pin connector (see fig. 1). The red and blue wire should be in 2 pin connector(see Fig.2)

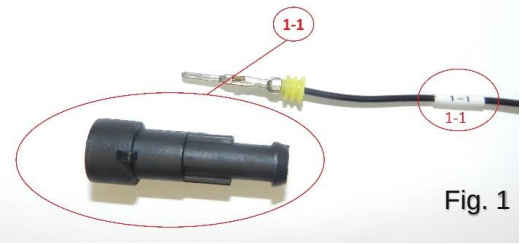


Fig. 1

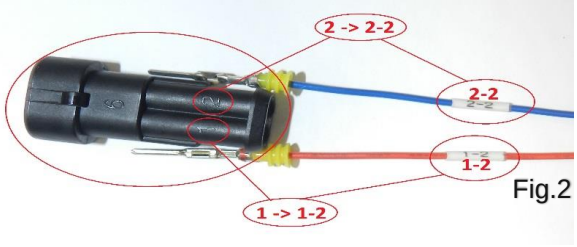


Fig.2

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| Page | Description | Default Value | Remark |
|---|---|---|---|
| **P1** | Engine Teeth Setting | 114 | Engine teeth, if teeth is 0, display frequency. If it's not 0, display speed. |
| **P2** | Crank Success Speed | 360 | When the frequency reaches the set value, closed barring output. |
| **P3** | Overspeed Protection Threshold | 5000 | Overspeed protection speed. |
| **P4** | Overspeed Protection Delay | 1s | When reaches the protection threshold delay action time |
| **P5** | Overspeed Protection Return Threshold | 100% | When the frequency is below the set parameters, the protection is automatically removed. When set to 100%, return threshold invalid, will restore directly if it reaches recovery delay. |
| **P6** | Overspeed Protection Restore Delay | 15s | When it reaches the return threshold delay action time. It will lock when set to 9999, restore until power is off. |
| **P7** | Overspeed Protection Restore Delay | 15s | When overspeed input port valid Overspeed protection relay delay output. |
| **P8** | Voltage Frequency Cycle Show | 0 | 0 only shows speed. 1 speed and voltage cycle show. |
| **P9** | Password | 0000 | Enter the correct password to enter the setup menu. The password can also be changed on this page. |
| **P10** | Battery Low Voltage Threshold | 8V | When the battery voltage falls below this threshold, resulting in a low battery alarm. |
| **P11** | Configurable Input Port Type | Unused | 0: Speeding input; 1: unused; 2-7: reserve only the advanced version has this feature. |
| **P12** | Configurable Input Port Delay | 0.5s | The input port detects the closing delay time (only the advanced version has this feature.) |
| **P13** | Configurable Output Port | Crank | 0. Unused; 1. Speeding; 2. Turning; 3. Battery low voltage; 4. Charging failure; 5-7. Reserve. |
| **P14** | Into Sleep Mode | 120 Min | When there is no speed / keys / over speed protection, time reaches the set value, the product goes into sleep mode. |
| **P15** | The Decreasing Rate of Over Speed Threshold | 60% | Long press 5s "DOWN" button, over speed threshold P3 ratio. |