Tachometer Installation and Operation Instructions

Addendum for Dual Shift Point (DSP) Eliminator Tachometer

Siemens VDO

Allentown, Pennsylvania USA

THE INSTRUCTIONS FOR OPERATION AND ELECTRICAL WIRING FOR THIS TACHOMETER FOLLOWS. USE IS RESTRICTED TO 12 VOLT NEGATIVE GROUND ELECTRICAL SYSTEMS.

IMPORTANT: *The installation and general wiring for this tachometer is essentially the same as for those mentioned elsewhere in these instructions. There are minor differences, however, which are described here. Please read and understand them before proceeding.*

I. DSP Tach Switch Settings and Wiring

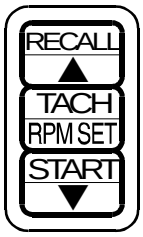
Wiring for the ***Top DSP Eliminator*** and ***Pro DSP Eliminator*** is the same as for the other tachometers. Please refer to the proper sections in the main *Eliminator Tachometer Installation and Operation Instructions* to determine the proper switch settings and wiring for the vehicle and tachometer you are using. Also, refer to the diagrams contained in this addendum and note the subtle changes between the DSP Eliminator Tachometers and the other Eliminator Tachometers.

II. DSP Eliminator Tachometer Operation

The unique feature of these tachometers is the capability to have two (2) shift light indications. Note, however, that the RPM value of the second shift point must be higher than the RPM value of the first shift point.

Setting the Shift Points:

1. To set the shift points, press the ***TACH/RPM SET*** button. The tach pointer will move to approximately 3000 RPM, and a dot will appear in the upper right hand corner of the display, to indicate that you are in the "set shift point" mode. On the display itself, ***S-1*** will appear for one second, then the LED will display the current 1st shift value. Press the up (▲) or down (▼) arrow until the display reads your desired RPM value. When it does, press the ***TACH / RPM SET*** button again. Your first shift point is now set.



Now the display will show ***S-2*** for one second, followed by the current 2nd shift RPM value. If you wish to change the second shift point to a new RPM value, simply repeat the previous instructions for setting the desired value. When you have done so, press the ***TACH / RPM SET*** button to return to the ***TACH*** mode.

TO START RECORDING:

Top DSP Eliminator:

Press the START button to begin recording. When you do, the display will indicate ".0.0.1" until the first shift point is reached. Then, the display will show ".0.0.2" to indicate a change from the first shift point to the second shift point. The display will continue to show the second shift point until it is reset by any of the following methods:

1. Toggling power
2. Resetting the shift points
3. Starting the memory
4. Recalling memory.

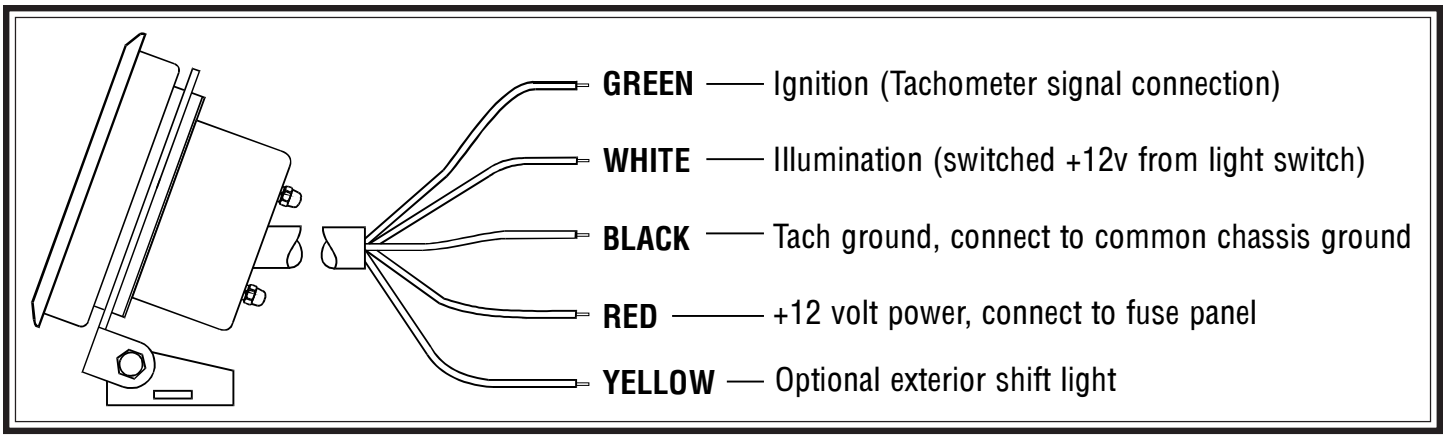


Diagram A

DSP Eliminator Wire Color Code and Hookup Description

Part # 0 511 012 428 Rev. **07/03**

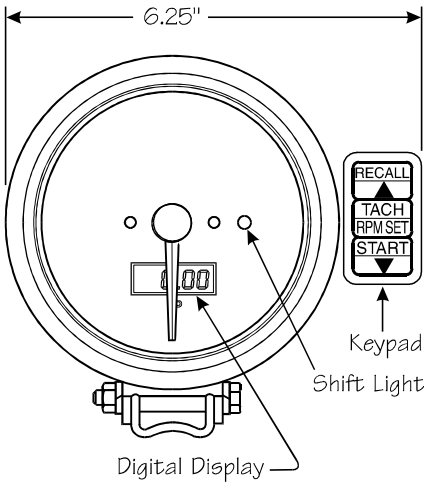
Pro DSP Eliminator:

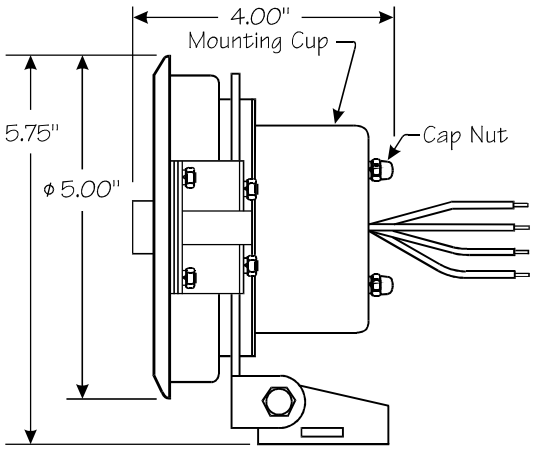
Setting shift points for the Pro DSP Eliminator is the same as for setting shift points for the Top DSP Eliminator, except for the following:

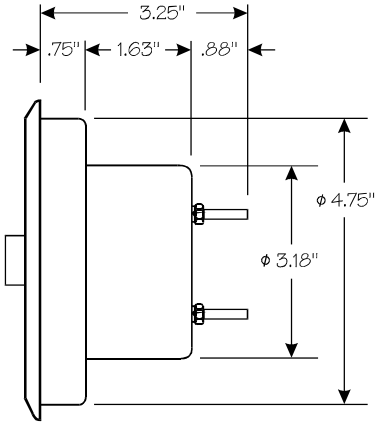
When you press the clear button, the display will flash "0.00" twice, followed by the 1st shift point value. After the 1st shift point value is reached, the 2nd shift point value is displayed until reset as described previously.

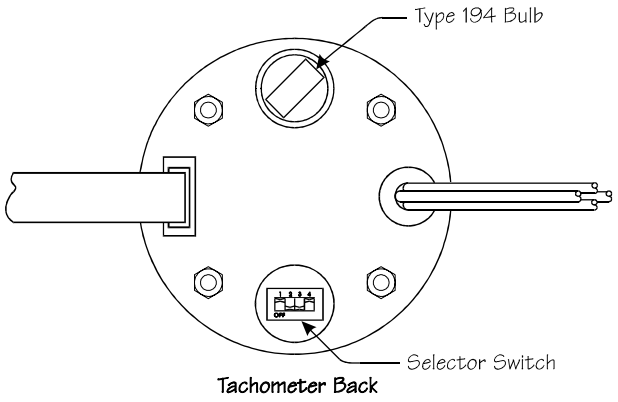
RECALL:

To recall your recording, follow the procedures outlined for all ***Eliminator Tachometers*** in the main Installation and Operating Instructions.









SELECTOR SWITCH SETTINGS				
CYLINDER SELECTION			IGNITION TYPE	
CYLINDERS	SWITCH SETTINGS		IGNITION	SWITCH SETTING
4	1 & 2 on		Standard	4 on
6	1 off, 2 on		Electronic	4 off
8	1 on, 2 off		CD (Box)	4 on
			CD (+ Side of Coil)	4 off

MEMORY SETTING	
LENGTH	SWITCH SETTING
50 Seconds	3 on
200 Seconds	3 off

← Switch 3 setting for Top DSP Eliminator Tach ONLY

Diagram B

DSP Eliminator Dimensions and Switch Settings

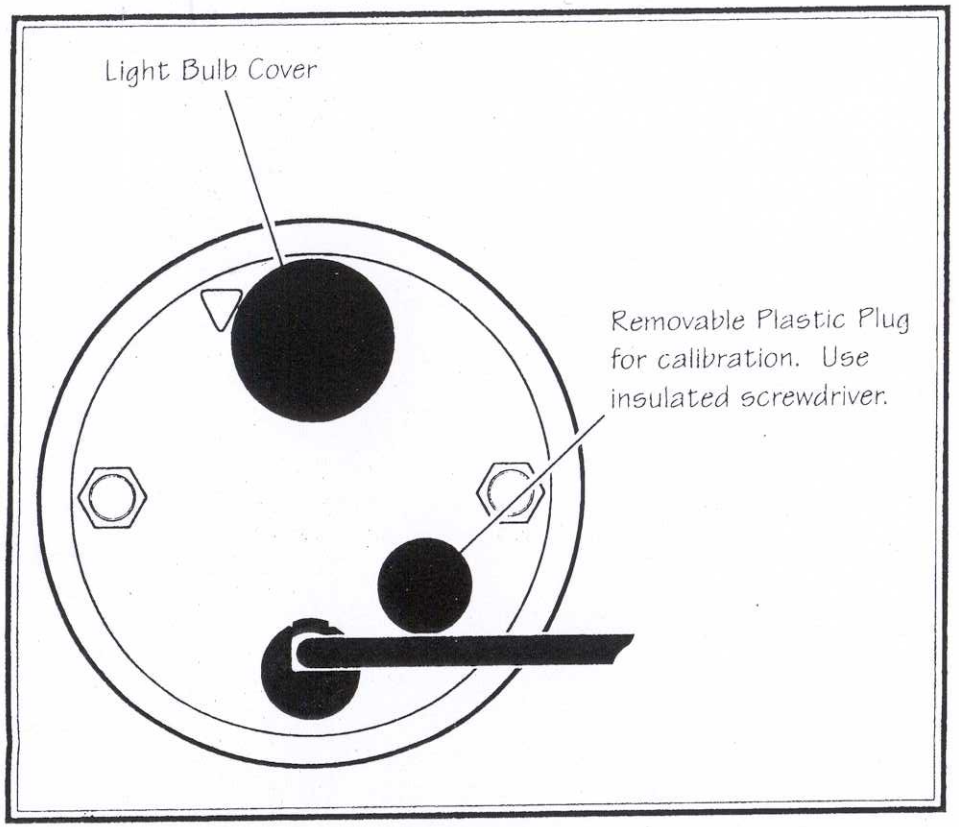


Diagram D
Speedometer Calibration Using Insulated Screwdriver

D&S Performance Guarantee

All items distributed by D&S Performance and Custom Parts, Inc. are guaranteed in accordance with the manufacturer's own terms of warranty (see the VDO Warranty, below). Any defective parts will be replaced in a prompt and just manner. All items sold are considered by law a customer assembled item and carry no liability to the maker. In no case can D&S Performance and Custom Parts, Inc. assume any liability of any type.

VDO Limited Warranty

VDO North America warrants all merchandise against defects in factory workmanship and materials for a period of 24 months after purchase. This warranty applies to the first retail purchaser and covers only those products exposed to normal use or service. Provisions of this warranty shall not apply to a VDO product used for a purpose for which it is not designed, or which has been altered in any way that would be detrimental to the performance or life of the product, or misapplication, misuse, negligence or accident. On any part or product found to be defective after examination by VDO North America, VDO North America will only repair or replace the merchandise through the original selling dealer or on a direct basis. VDO North America assumes no responsibility for diagnosis, removal and/or installation labor, loss of vehicle use, loss of time, inconvenience or any other consequential expenses. The warranties herin are in lieu of any other expressed or implied warranties, including any implied warranty of merchantability or fitness, and any other obligation on the part of VDO North America, or selling dealer.

(NOTE: This is a "Limited Warranty" as defined by the Magnuson-Moss Warranty Act of 1975.)

❶ BEGIN HERE

CAUTION: Read these instructions thoroughly before making installation. Do not deviate from assembly or wiring instructions. Always disconnect battery ground before making any electrical connections. If in doubt, please contact Dan at D&S at 814-774-2591.

Speedometer Installation:

The D&S Speedometer uses all existing Mini Gauge Mounts that utilize a 2.390" to 61 mm diameter hole, the universal Y-Bracket or D&S Stock Handle Bar Riser Mount.

Parts List

Item	Description	Quantity
1.	Speedometer (2 7/16" [61 mm] diameter)	1
2.	Installation Instructions	1

Tools and Materials Needed For Installation:

16 Gauge stranded, insulated wire
Mounting hardware
Small tools: wrench or nut driver, utility knife, pliers, etc.

Optional Mounting:

1. D&S can supply a stainless steel bottom mount bracket for single gauge installation on stock Harley Davidson 3-piece straight risers. This mount will allow mounting the speedometer and an auxiliary Tachometer very cleanly and easily (P/N DS-135).

2. Both the speedometer and a tachometer can be custom dash mounted. However, you will need to fabricate a dash plate and mounting bracket for the back of the gauge. See Diagram A for gauge dimensions.

[text continues at #❷] ➞

CAUTION!!!

If you have modified your motorcycle, you may have to calibrate the speedometer before it will work properly in your application. Please read carefully the section on calibrating your speedometer if this situation applies to you.

D&S Speedometer

Installation Instructions

Instruction Sheet # 0 512 013 004
Rev. 04/99

INSTRUCTIONS FOR THE INSTALLATION OF THE SPEEDOMETER ARE CONTAINED HEREIN. USE IS RESTRICTED TO 12-VOLT NEGATIVE GROUND ELECTRICAL SYSTEMS. LIGHT BULB, IF SUPPLIED, IS 12 VOLT.

To Begin, go to #❶

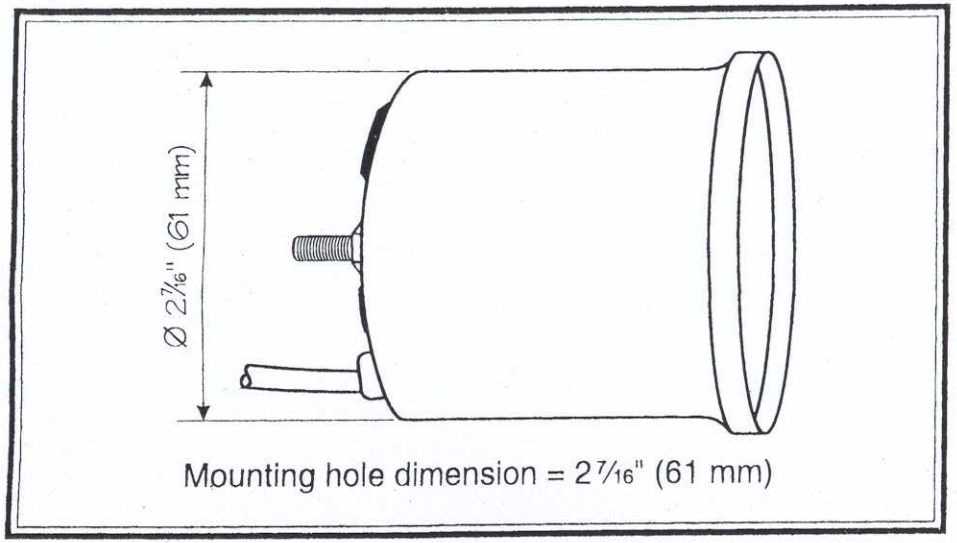


Diagram A
Gauge dimensions

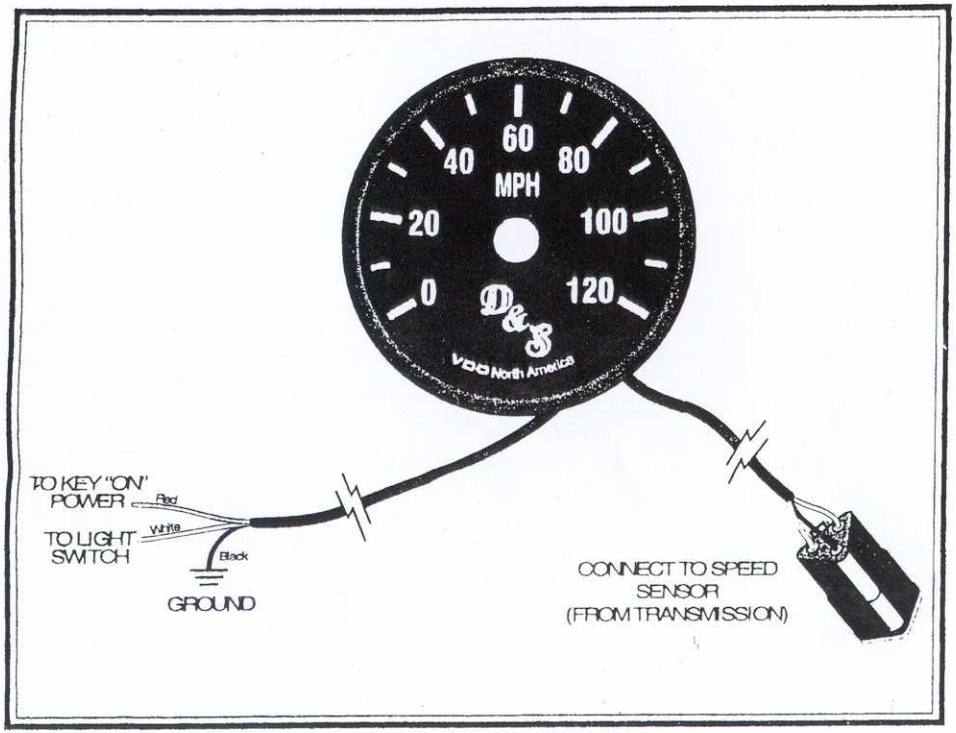


Diagram B
Proper wiring of the D&S Speedometer

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Speedometer Wiring:

1. The D&S Speedometer has a wire harness with two cables. The cable with the triangular connector is designed to mate with a standard Harley-Davidson Hall-effect speed sensor.

2. Connect the wiring in the cables, and the modular plug, to the appropriate locations/terminals as shown in Diagram B:

RED — Connect to "Key On" switched power.

BLACK — Connect to a good ground.

WHITE — Connect to the light switch.

NOTE: Both of the power feeds from the "Key On" and the light switch should be protected with a 2-Amp fuse.

At this point, the installation of the Speedometer is complete.

Calibration of the Speedometer:

Your D&S Speedometer is calibrated by the manufacturer for the Harley-Davidson 883 Domestic and Great Britain XL-Sportster. The calibration will correspond to a frequency from the speed sensor of 1306 Hertz at 60 MPH, which equates to 78,360 pulses per mile.

The speedometer has a calibration adjustment range of approximately 990 to 1950 Hz and equates to a range of 59,400 to 117,000 pulses per mile. Because of the wide range of adjustment it is unlikely that you will have any problems calibrating your speedometer.

If the calibration needs to be changed from the factory setting due to tire size or different drive train components, it is recommended that the adjustment be performed on a dynamometer, by a trained technician, at a known speed between 60-80 MPH (preferably 80 MPH). Adjust the calibration using an insulated 3/32" screwdriver (See Diagram D). Also, see the calibration hint and example in Diagram C.

Hint: If you know the following information, you can determine if the Speedometer can be calibrated for your application:

Tire revolutions per mile (rolling circumference)
Rear end ratio
Number of teeth on the gear the the speed sensor senses.

Use this formula to calculate the pulses per mile:
PPM= (Tire Revs/Mile) x (Rear End Ratio) x (Number of teeth)

Example: Assume you have the following information:
26" tire; 3.372 Rear Axle Ratio; 30 teeth on the gear.

Tire revs/mile = 63,360 (Tire Diameter in inches x 3.1416)
Using a 26" Tire = 63,360/26 x 3.1416 = 775.7 revs/mile

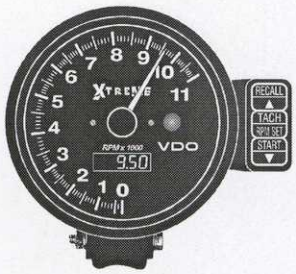
PPM = 775.7 x 3.372 x 30 = 78,469.81 pulses/mile

In this case, the calculated pulses per mile is so close to the factory calibration that no adjustment should be necessary.

Diagram C
Calibration Hint and Calibration Example

XTREME® Tachometer

Installation and Operation Instructions



SIEMENS VDO

A u t o m o t i v e

THE INSTRUCTIONS FOR INSTALLATION AND ELECTRICAL WIRING FOR THESE TACHOMETERS FOLLOW. USE IS RESTRICTED TO 12 VOLT NEGATIVE GROUND ELECTRICAL SYSTEMS.

Parts List

Item	Description	Quantity
1.	Tachometer	1
2.	Decals, 2" x 4" (not contingency decals)	2
3.	Posi-Lock™ Connectors	6

Optional Items Which May Be Needed:

Remote Keypad Cable, 6' #240 207
Flush Dash Mounting Bracket #240 104
On-Dash Mounting Bracket #240 103

CAUTION: Read these instructions thoroughly before making installation. Always wear safety glasses, and always disconnect the battery ground before making any electrical connections. If in doubt, please contact your dealer or VDO Instruments at **1-800-265-1818**

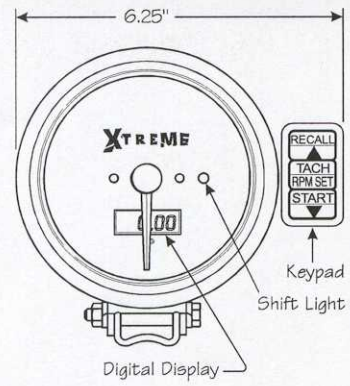
Tachometer Installation

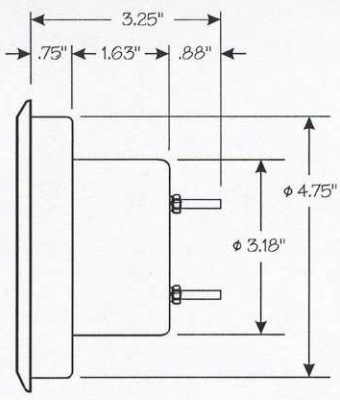
Installing the tachometer is a three-step process.

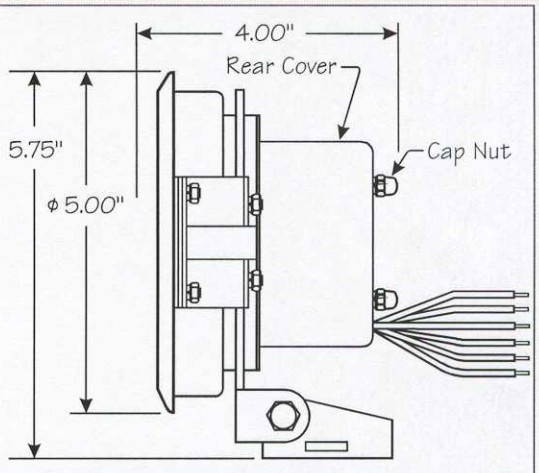
1. Program the Tachometer

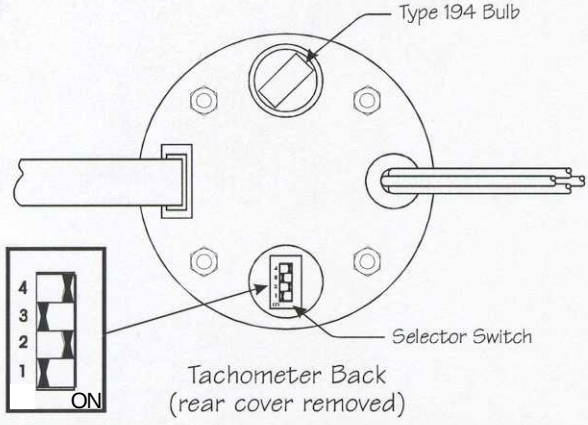
Your Xtreme tachometer is factory programmed for an eight cylinder engine. For other applications the selector switches must be set according to **Diagram A.**

- Remove the 4 cap nuts, lockwashers and rear cover.
- Find your application in **Diagram A** and set the switches accordingly.
- Replace the rear cover, lockwashers and cap nuts. DO NOT OVERTIGHTEN!









SELECTOR SWITCH SETTINGS	
CYLINDER SELECTION	
SWITCH SETTINGS	CYLINDERS
#1 on	**2 Cylinder (legends cars): motorcycle engines**
#2 on	**4 Cylinder or 4 Pole**
#'s 1 & 2 on	**5 Cylinder**
#3 on	**6 Cylinder or 6 Pole**
#'s 1& 3 on	**8 Cylinder**
#'s 2 & 3 on	**10 Cylinder**
#'s 1 & 2 & 3 on	**12 Cylinder or 8, 12, 18 pole snowmobile:outboard engines**

For 1 & 3 cylinders check owners manuel for number of poles

Diagram A

Dimensions and Selector Switch Settings

P/N 0 515 010 482 Rev. 04/04

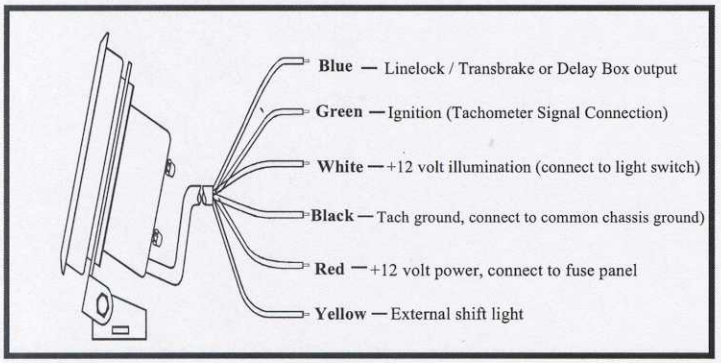


Diagram C
General Wiring Information

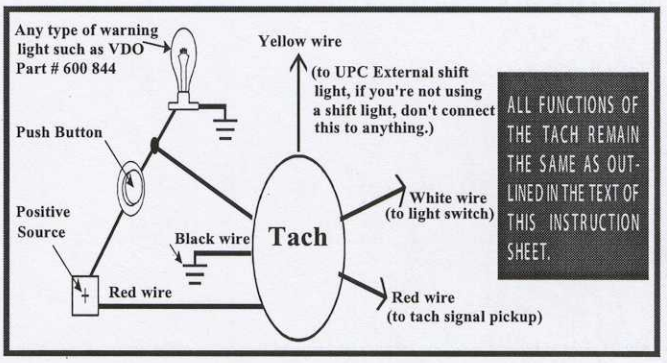


Diagram D
Xtreme Wiring for Circle Track/Road Racing Applications

Xtreme Tachometer Operation

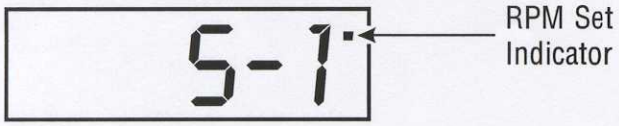
1. Setting the Record Length

- Press and hold in **"TACH/RPM SET"** while you turn on the power.

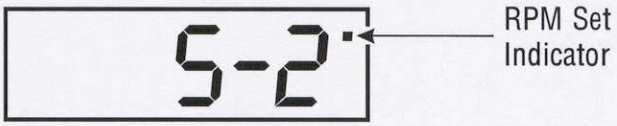
- Press the up (▲) arrow to change the record time to 360 seconds, or the down (▼) arrow to change back to 90 seconds [factory setting is for 90 sec.]. A dot appears in the Digital Display when you record and play back in the 360 second mode. Press **"TACH/RPM SET"** to return to the tach mode.

2. Setting the Shift Points

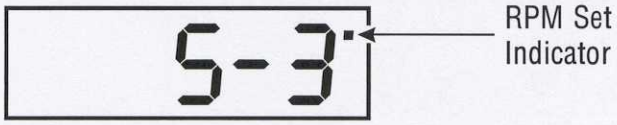
- Press the **"TACH/RPM SET"** button while in normal [tach] mode. The tach pointer will move to 3000 RPM [approx.] and a dot will appear in the display to indicate "RPM SET" mode. "S-1" appears in the display itself to indicate you are about to set shift point #1.



- Press the up (▲) arrow or the down (▼) arrow until the display reads your desired RPM value.
- Press **"TACH/RPM SET"** again to save this value. The display will show "S-2" briefly, then it will show the second shift RPM value.

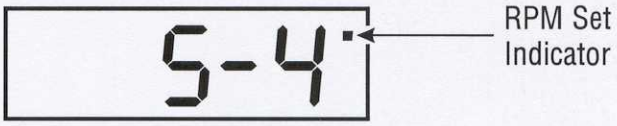


- Press **"TACH/RPM SET"** again to save this value. The display will now show "S-3" briefly, then it will show the third shift RPM value.



Repeat the above procedure to set your desired third shift RPM value.

- Press **"TACH/RPM SET"** again to save this value. The display will now show "S-4" briefly, then it will show the fourth shift RPM value.



Repeat the above procedure to set your desired fourth shift RPM value.

- Press **"TACH/RPM SET"** again to save this value and return to the normal [*tachometer*] mode.

NOTE: If only one shift point is required, set the second, third and fourth shift point values to the same value as the first shift point value. If two shift points are required, set the third and fourth values the same as the second. If three shift points are requred, set the fourth shift point the same as the third.

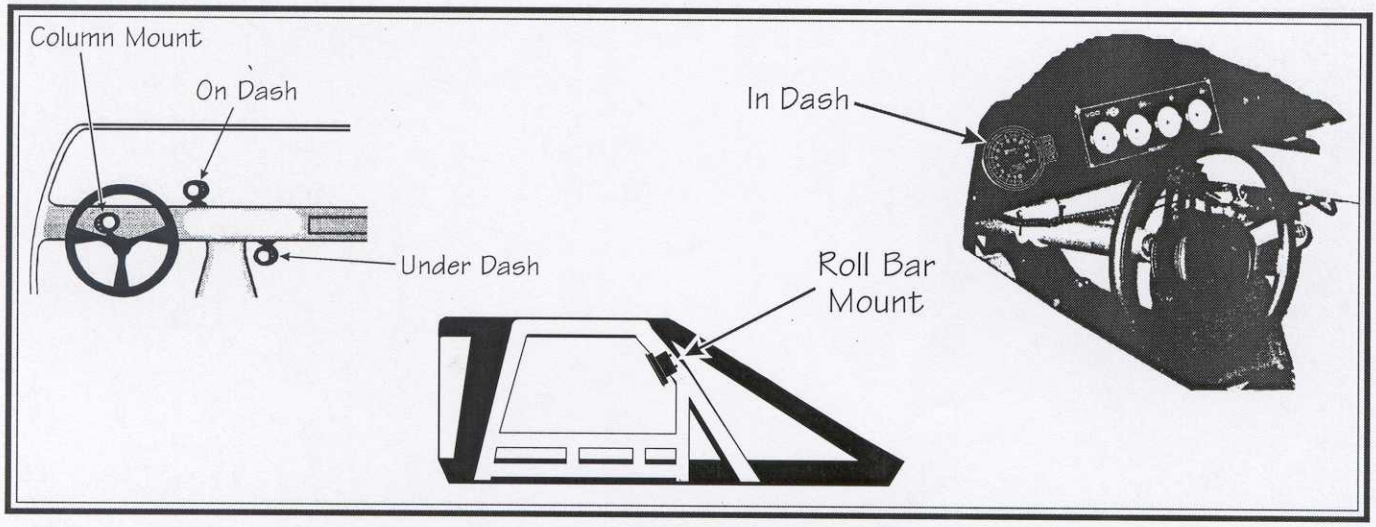


Diagram B

Possible mounting locations for the Extreme Tachometer

2. Mounting the Tachometer

Your Xtreme tachometer can be mounted almost anywhere. Several suggestions are illustrated in **Diagram B.** Some installation techniques may require optional accessories, cutting, or drilling new holes.

MOUNTING NOTES:

- The most common mounting location is on the steering column or roll cage using a band clamp and the included short mounting bracket.
- For mounting in the dash, optional flush mounting bracket [P/N 240 104] is recommended. The rear cover may also be used as a mounting clamp for in dash mounting.
- For mounting on top of the dash, optional longer mounting bracket [P/N 240 103] is recommended.

REMOTE KEYPAD MOUNTING:

- Remove the four cap nuts, lockwashers and rear cover.
- Pull the keypad cable connector straight out from the back of the tachometer.
- Remove the two hex bolts, keypad and bracket from the tachometer.
- Mount the keypad bracket in the new location.
- Connect optional extension cable [P/N 240 207] between the keypad cable connector and the connector at the rear of the tachometer.
- Replace the rear cover, lockwashers and cap nuts. **DO NOT OVERTIGHTEN!**

MOUNTING CAUTIONS:

- Make sure your Xtreme Tachometer does not rest against any glass, windshield A pillars, or any roll cage tubes.
- VDO does not recommend mounting your Xtreme Tachometer close to other electrical components or their associated wiring. For example, the ignition system box, the ignition coil, electric fuel pump, etc.

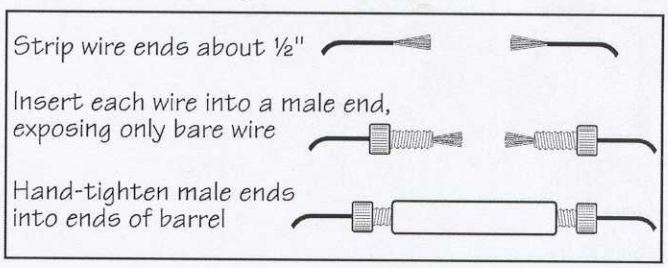
3. Wiring the Tachometer

- Turn off the ignition and disconnect the negative terminal from the battery post if you haven't already done so.
- Wire the tachometer to the vehicle as shown in either **Diagram C** * or **Diagram D** *.

  * Refer to your vehicle's owner/service manual or the aftermarket ignition manufacturer's instructions for the recommended place to tap the signal. Typical examples are shown in the table below.

IGNITION	TYPE	CONNECTIONS
Standard	points/breakerless	negative terminal on coil
CD	points	points connection to CD box
	breakerless	positive terminal on coil
Electronic	MSD, ACCEL, MALLORY, DDIS (distributorless), etc.	Tach output terminal on ignition box, or points connection to ignition box, or negative coil

- Be sure to connect the tachometer wires using the supplied Posi-Lock™ Connectors. Use them as shown in the following illustration:



3. To Record A Run

- Press the **"START"** button [or activate **"LINE LOCK / TRANSBRAKE"** if connected]. Once recording has begun, the display will show the number of the run being stored (#1 to #4).
- If four runs are stored and the **"START"** button is pushed [or **"LINE LOCK / TRANSBRAKE"** is activated], the display will read

If a driver has already started a run when he presses **"START"** and discovers the memory full, he has five seconds to press **"START"** again to clear the memory and record his current run. If the driver chooses not to clear memory at this time, the Xtreme Tachometer will return to normal mode in 5 seconds. He can wait until the end of his run to clear the memory as outlined in Step 5.

- To stop recording, either press **"TACH/RPM SET"** or turn off the power. In any case, recording will stop automatically after the elapse of the preset time: 90 or 360 seconds.

4. To Recall A Run

- Press the **"RECALL"** button. The display will show the default 1:3 [slow motion] setting. If you want to play back the run in real time (1:1), quickly [within two seconds] press **"RECALL"** again.
- The display will now show the number of the last run recorded (1, 2, 3 or 4). If the number of the run showing on the display is not the run you want to play back, quickly [within two seconds] press **"RECALL"** again (and again and again, etc.) to cycle through the run numbers until you get to the one you want to play back. Playback begins after 2 seconds.
- To rewind or fast forward at any time during playback, press (▼) [rewind] or (▲) [fast forward]. Fast forward will occur at double time if real-time [1:1] playback is selected. Fast forward will occur in real time if slow motion playback is selected.
- If the recording was activated using **LINE LOCK** or **TRANS BRAKE**, the display will count down to the point of last release to show launch. If *FAST FORWARD* or *REWIND* is pressed, the display will pause at the point of each line lock release. When the replay is finished, the display will read "END" and show the peak RPM achieved.

NOTE: RECALL will not function if the input is above 2000 RPM.

5. To Clear the Memory

- Press (▲) and (▼) at the same time and hold in the buttons while turning on the power.

The display will flash twice:

When it is finished flashing the memory will be clear and ready for a new test session.

HELPFUL HINTS TO AVOID ERRATIC TACH READINGS DURING REPLAY:

- Check plug wires. If they're more than a season old, replace them.
- Coil wires begin fatiguing faster than other wires...some at 60 passes or ½ season. Check them.
- Are the crank trigger wires too close to the coil wire?
- Is the spark plug gap more than .040? Gaps of more than .040 will cause the wires to fatigue faster.

VDO Limited Warranty

VDO North America, LLC. warrants all merchandise against defects in factory workmanship and materials for a period of 24 months after purchase. This warranty applies to the first retail purchaser and covers only those products exposed to normal use or service. Provisions of this warranty shall not apply to a VDO product used for a purpose for which it is not designed, or which has been altered in any way that would be detrimental to the performance or life of the product, or misapplication, misuse, negligence or accident. On any part or product found to be defective after examination by VDO North America, VDO North America will only repair or replace the merchandise through the original selling dealer or on a direct basis. VDO North America assumes no responsibility for diagnosis, removal and/or installation labor, loss of vehicle use, loss of time, inconvenience or any other consequential expenses. The warranties herin are in lieu of any other expressed or implied warranties, including any implied warranty of merchantability or fitness, and any other obligation on the part of VDO North America, or selling dealer. **(NOTE: This is a "Limited Warranty" as defined by the Magnuson-Moss Warranty Act of 1975.)**

Performance Shift Light Tachometer
Performance Tachometer

Installation and Operation Instructions

Siemens VDO

Allentown, Pennsylvania USA

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Item	Description	Quantity
1.	Tachometer	1
2.	Decals, 2" x 4" (not contingency decals)	2
3.	Green Lamp Cover	2
4.	Red Lamp Cover	2

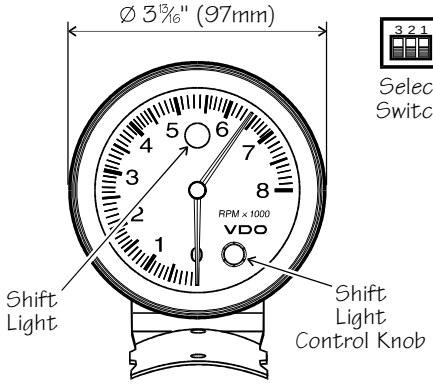
CAUTION: Read these instructions thoroughly before making installation. Always wear safety glasses, and always disconnect the battery ground before making any electrical connections. If in doubt, please contact your dealer or VDO Instruments at **1-800-265-1818.**

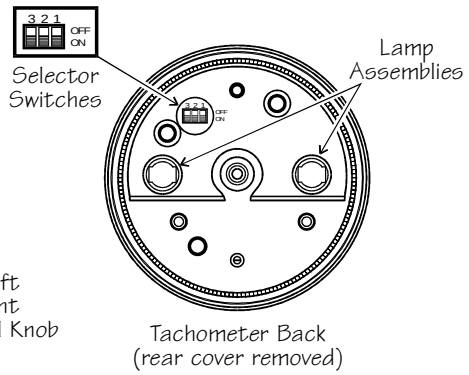
Tachometer Installation

1. Cylinder Selection

Your tachometer is factory programmed for an eight cylinder engine. For other applications the selector switches must be set according to **Diagram A.**

- Remove the 3 Philips head screws from the rear cover.
- Remove the rear cover.
- Find your application in **Diagram A** and set the switches accordingly.
- Replace the rear cover and three screws. **DO NOT OVERTIGHTEN!**





SELECTOR SWITCH SETTINGS	
CYLINDERS	SWITCH SETTINGS
2	#1 & #3 on
4	#3 on
6	#2 on
8	#2 & #3 on

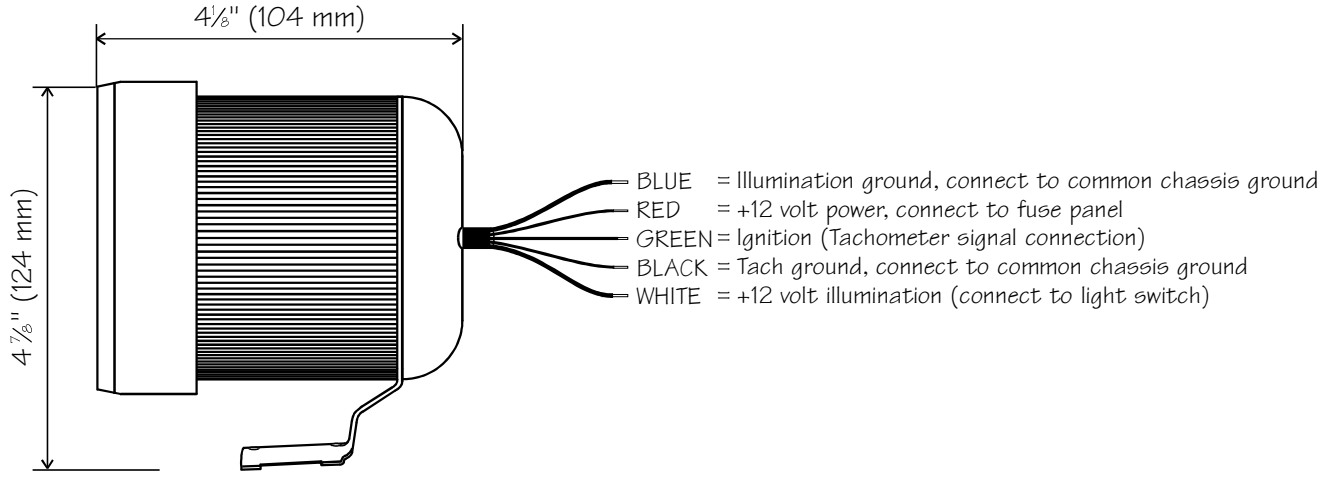


Diagram A

Dimensions, Selector Switch Settings and Wiring Chart

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2. Colored Illumination

You may use the colored lamp covers to customize your tachometer's illumination.

- Remove the 3 Phillips head screws from the rear cover.
- Remove the rear cover.
- Using long nose pliers, gently grip one of the lamp assemblies and give it about a quarter-turn counter-clockwise.
- Lift the lamp assembly straight out.
- Slide the colored lamp cover of your choice over the bulb section of the lamp assembly.
- Reinsert the lamp assembly, and lock it into position with about a quarter-turn clockwise.
- Repeat this procedure for the second lamp assembly.
- Replace the rear cover and the three screws. **DO NOT OVERTIGHTEN!**

3. Mounting the Tachometer

Determine the mounting position for your Tachometer that is best for you. The mounting bracket may be bent to adjust the viewing angle of your Tachometer's face.

- Recommended installation is on the steering column using a band clamp (available at a local auto parts store).
- Dash mounting uses the two holes provided in the base of the mounting bracket to secure the tachometer to the dash.

4. Wiring the Tachometer

- Turn off the ignition and disconnect the negative terminal from the battery post if you haven't already done so.
- Wire the tachometer to the vehicle as shown in **Diagram A**.

  ** Refer to your vehicle's owner/service manual or the aftermarket ignition manufacturer's instructions for the recommended place to tap the signal. Typical examples are shown in the table at upper right.

- Reconnect the battery and start your vehicle to test.

IGNITION	TYPE	CONNECTIONS
Standard	points/breakerless	negative terminal on coil
CD	points	points connection to CD box
	breakerless	positive terminal on coil
Electronic	MSD, ACCEL, MALLORY, DDIS (distributorless), etc.	Tach output terminal on ignition box, or points connection to ignition box, or negative coil

5. Shift Light Operation (Performance Shift Light Tachometers Only)

The RED Shift Light on your Tachometer's face (refer to Diagram A) will light up whenever your engine is running at or above your pre-set Shift Point RPM.

1. Setting the Shift Point:

- Turn ON the ignition. The engine MAY be running.
- Push in the Shift Light Control Knob (Diagram A).
- The RED Shift Light will turn on and the tachometer pointer will show the current Shift Point RPM.
- While holding in the Control Knob, slowly turn it until the tachometer pointer indicates your desired Shift Point RPM.
- Release the Control Knob. The Shift Light will turn OFF and your Shift Point RPM is set.

2. Checking the Shift Point:

You can quickly check your Shift Point RPM at any time, even while the engine is RUNNING:

- Turn ON the ignition. The engine MAY be running.
- Push in the Shift Light Control Knob.
- The RED Shift Light will turn on and the tachometer pointer will show the current Shift Point RPM.

Siemens VDO Limited Warranty

VDO North America, LLC. warrants all merchandise against defects in factory workmanship and materials for a period of 24 months after purchase. This warranty applies to the first retail purchaser and covers only those products exposed to normal use or service. Provisions of this warranty shall not apply to a VDO product used for a purpose for which it is not designed, or which has been altered in any way that would be detrimental to the performance or life of the product, or misapplication, misuse, negligence or accident. On any part or product found to be defective after examination by VDO North America, VDO North America will only repair or replace the merchandise through the original selling dealer or on a direct basis. VDO North America assumes no responsibility for diagnosis, removal and/or installation labor, loss of vehicle use, loss of time, inconvenience or any other consequential expenses. The warranties herin are in lieu of any other expressed or implied warranties, including any implied warranty of merchantability or fitness, and any other obligation on the part of VDO North America, or selling dealer. **(NOTE: This is a "Limited Warranty" as defined by the Magnuson-Moss Warranty Act of 1975.)**