

Tachometer Installation and Operation Instructions

For Ducati & Rotax

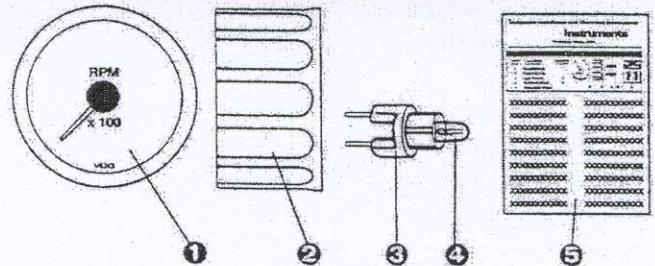
SIEMENS VDO

A u t o m o t i v e

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

Parts List

Item	Description	Quantity
1.	2 1/16" (52mm) Tachometer	1
2.	VDO Spin-Lok™ Mounting Clamp	1
3.	Light Socket	2
4.	12-volt light bulb	2
5.	Installation/Operation Instructions	1



Tools and Additional Materials Needed for Installation:

- 2 1/16" (52mm) hole saw or jigsaw (may not be needed)
- Five 1/4" Female Spade Terminals
- Philips and/or flathead screwdriver
- Pliers and/or wrenches
- Crimping tool and/or soldering iron

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 your dealer or VDO Instruments at **1-800-265-1818**

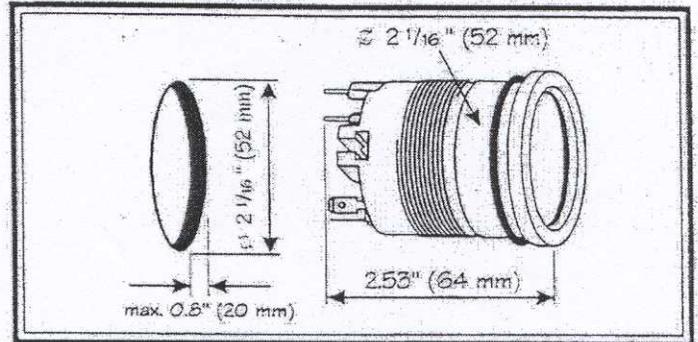


Diagram A

Tachometer dimensions and mounting information

file to slightly enlarge the opening until the gauge fits properly. See Diagram A.

4a. **MOUNTING CLAMP:** Rotate the tachometer in its hole until it is easy to read, then secure it using the VDO Spin-Lok™ Mounting Clamp. Hand-tighten the clamp until the gauge can no longer be rotated by hand in the panel. See Diagram B to determine the proper mounting clamp direction.

Tachometer Installation:

1. Insert the light bulb into the lamp socket. Twist the socket into the socket hole on the back of the gauge.
2. Select the location where you will mount the tachometer. Lay out and mark a center point for the gauge.
3. Cut a 2 1/16" (52 mm) diameter hole. Place the tachometer into its hole to be sure it fits. If the fit is too snug, use a

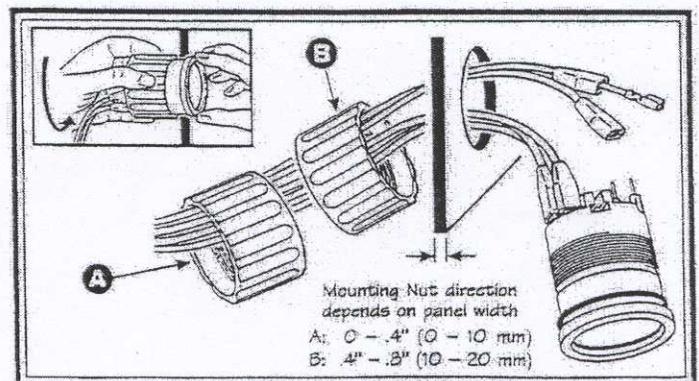


Diagram B

Proper mounting using VDO's Spin-Lok™ Mounting Clamp

4b. **MOUNTING BRACKET:** To mount your tachometer with the optional VDO Mounting Bracket, place the mounting bolts into the slots on the back of the gauge. Slip the mounting bracket over the mounting bolts. Screw on the accompanying nuts. Use a wrench to tighten the nuts until the tachometer can no longer be rotated by hand. **DO NOT OVERTIGHTEN.** See Diagram C.

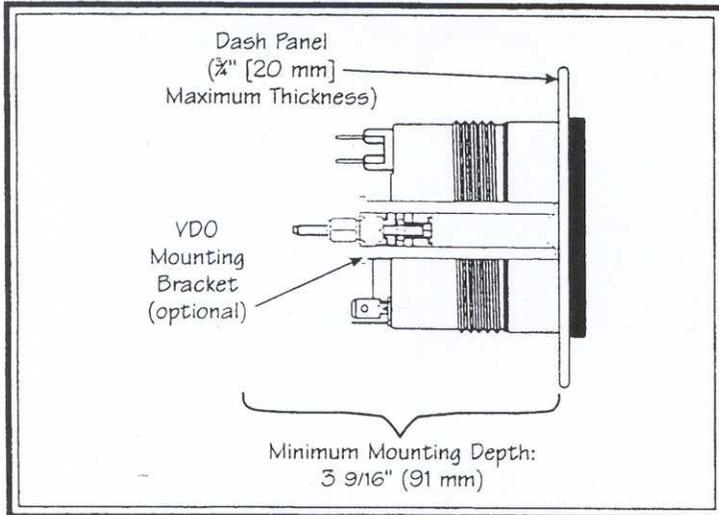


Diagram C

Mounting with the optional VDO Mounting Bracket

Wiring the Tachometer:

Wiring your new VDO Tachometer is a simple and straightforward procedure, as shown in Diagram D.

1. Run a series of wires from the tachometer through the firewall to:
 - a) an adequate ground location (either the negative battery terminal, or the spot where the negative bat-

- tery terminal is connected [grounded] to the frame of the vehicle);
- b) a switched +12 volt source (usually after the fuse in the fuse box); and
- c) the light switch (also after the fuse in the fuse box);
- d) the signal source you will be using with your tachometer— either the AC Tap on the alternator or the Terminal 1 of the ignition coil [or an additional terminal on special ignition systems. In the case of special ignition systems (such as transistor/coil ignition systems, electronic and fully electronic ignitions) please ask the vehicle manufacturer or the ignition system manufacturer where to find the correct signal terminal)].

2. Connect the ground wire to:
 - a) the terminal on the back of the tachometer marked (-),
 - and
 - b) one terminal on the lamp socket.
3. Connect the +12 volt wire from the switched +12 volt source to the terminal on the back of the gauge marked (+).
4. Connect the wire from the light switch to the remaining terminal on the lamp socket.
5. Connect the wire from the ignition coil, as shown in Diagram D) to the #2 terminal on the tachometer.
6. At this point, the installation and wiring of your tachometer is complete. Reconnect the negative battery terminal which you disconnected before beginning this installation. Turn on the lights to be sure they are working. Before the tachometer will function properly, it must be configured, as shown on the next page.

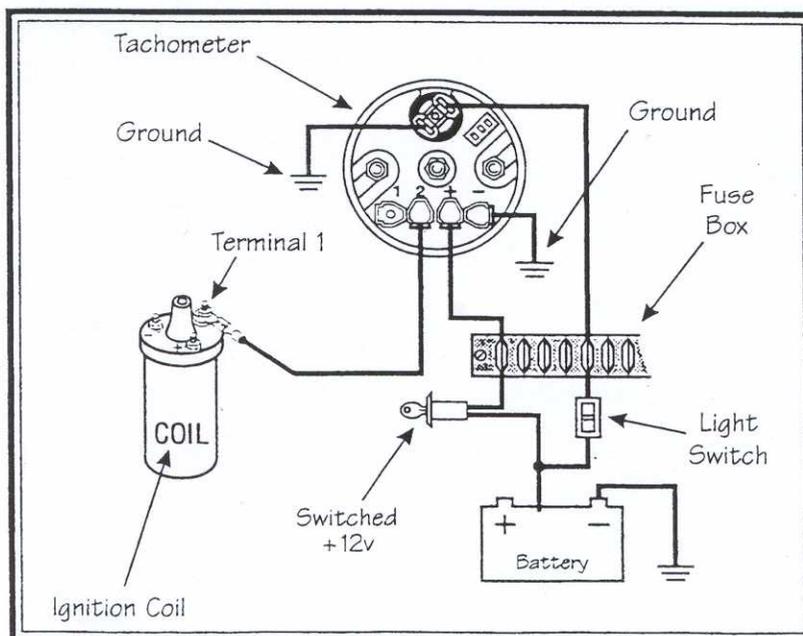
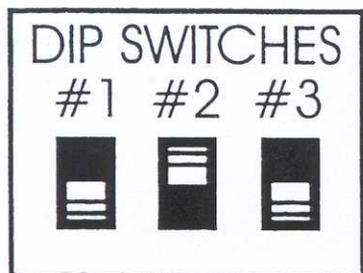
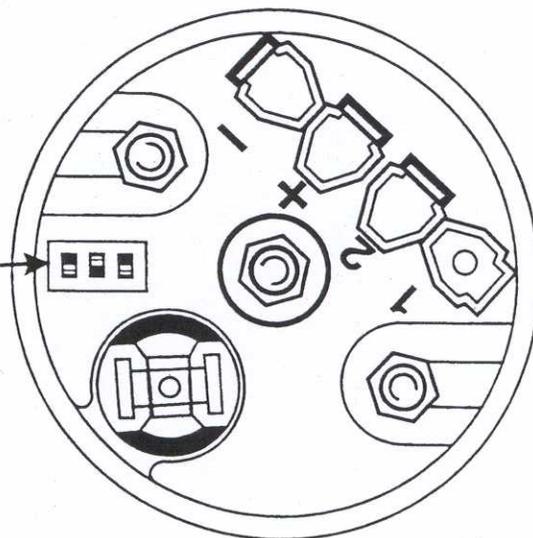


Diagram D

Proper wiring of the VDO Tachometer with the Ignition Coil



(Ducati [503/582]
Setting shown)



TACHOMETER For ROTAX and DUCATI			
Dip Switch			
#1	#2	#3	
On	Off	Off	Rotax (912)
Off	On	Off	Ducati (503/582)

[Note: See Page 4 for Fine Calibration]

Diagram E

Configure by setting the DIP Switches on the rear of the VDO Tachometer

Configuring the Tachometer:

Before your VDO Tachometer will function properly with your engine, you will need to configure it as shown in Diagram E.

When you have finished, your installation is complete *unless you determine that a fine adjustment is necessary.*

The table in Diagram E shows how to set the DIP switches for use with either the Rotax or Ducati.

In some instances, you may need to perform a fine adjustment of the dial pointer, as described on the next page.

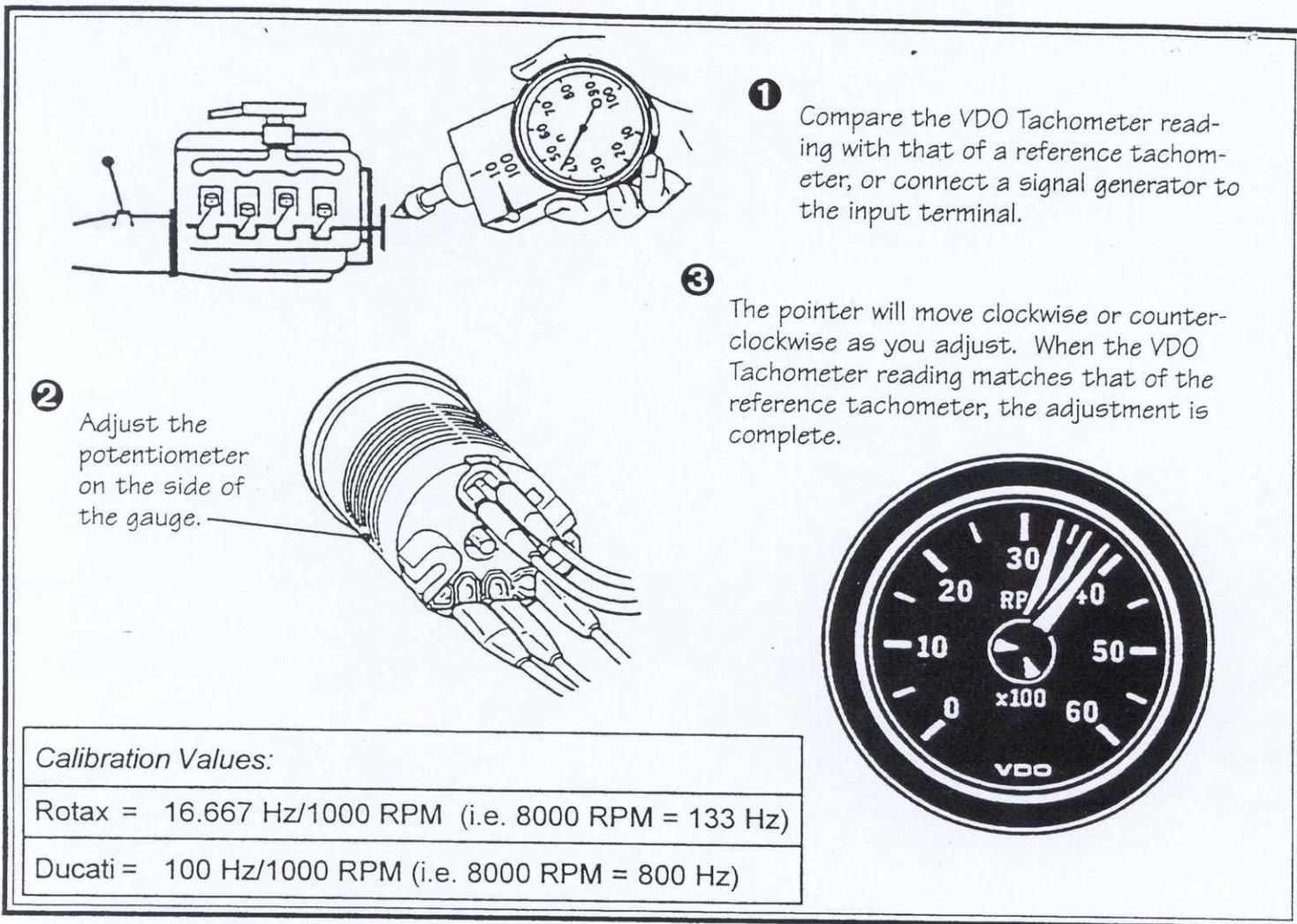


Diagram F

Steps to take to perform a fine adjustment of the VDO Tachometer

Adjustment of the Tachometer Pointer:

Use of the VDO Tachometer with either the Rotax or Ducati may require a fine adjustment of the pointer. This can be done as shown in Diagram F. Please note that this calibration is designed to adjust the reading between 30% and 100% of the RPM range.

1. Compare the RPM indication on your VDO Tachometer with a reference indication on a device like a view tachometer.
2. Use an insulated screwdriver to adjust the potentiometer located on the side of the VDO Tachometer.

3. You will see the pointer move clockwise and counterclockwise as you adjust the potentiometer. When the reading exactly matches that of the reference tachometer, the adjustment is complete.

At this point, the installation of your VDO Tachometer is complete. The tachometer should illuminate when you turn on your lights, and should give you an accurate indication of the revolutions per minute of your engine. If it doesn't, check your wiring, make sure the DIP switches are set properly according to the table on Page 3, and that all necessary adjustments have been made.

VDO Limited Warranty

VDO Instruments 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, VDO will only repair or replace the merchandise through the

original selling dealer or on a direct basis. VDO 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 herein 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 Instruments, or selling dealer.

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

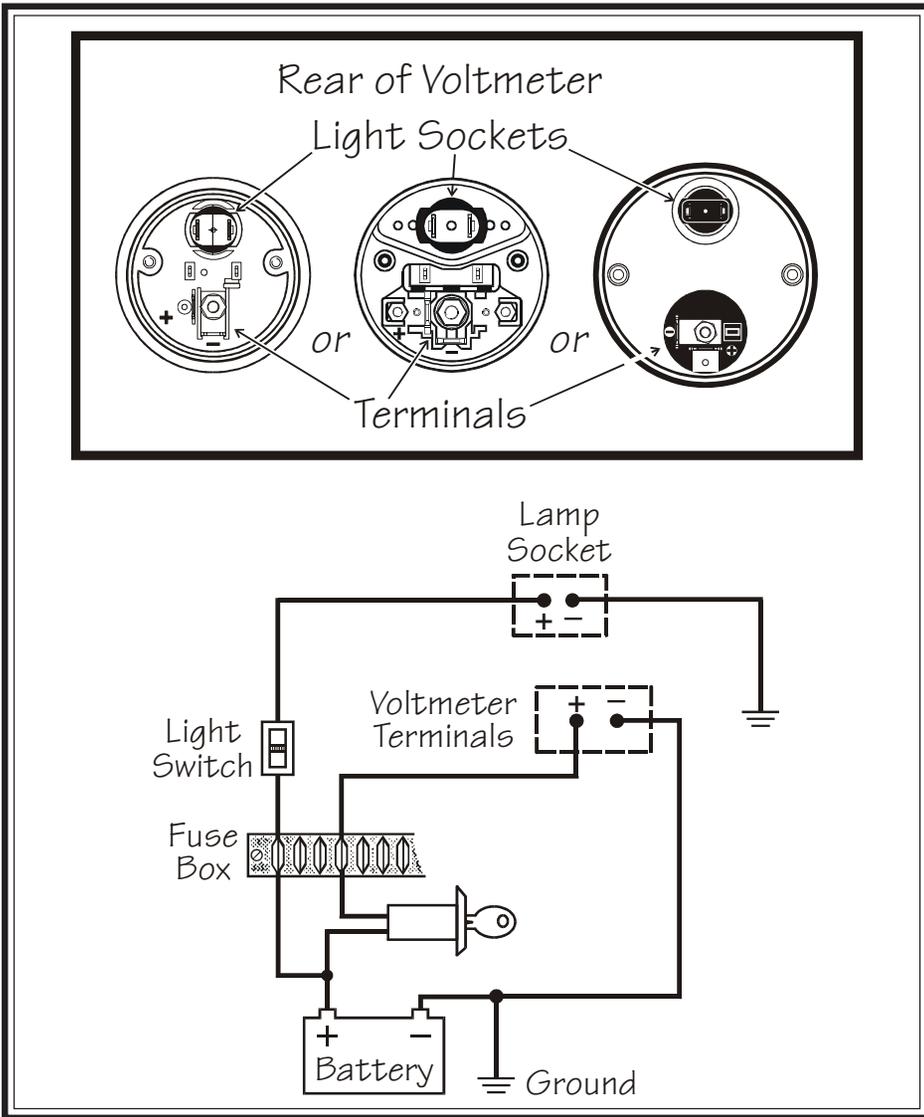


Diagram C
Proper wiring of the VDO Voltmeter

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1 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 your dealer or VDO Instruments at 1-800-265-1818.

IMPORTANT: Mounting dimensions vary for different gauges. Please be certain to follow the instructions for your specific gauge as described below.

Voltmeter Installation:

1. Select the location where you will mount the gauge, and mark a center point.

CAUTION!!!

These instructions contain information about gauges of different sizes. ***You must determine the size of your gauge before cutting any holes!***

Tools and Materials Needed For Installation:

16 Gauge stranded, insulated wire
Non-insulated 1/4" spade connectors
2 1/16" hole saw or 2 5/8" hole saw
Drill and drill bit set
Half-round file
Tape measure or ruler
Small tools: wrench or nut driver, utility knife, pliers, etc.

2. Cut a 2 1/16" (52 mm) diameter hole for all gauges **except** Pro Cockpit, which requires a 2 5/8" (66 mm) hole. If the gauge is too snug, use a file to slightly enlarge the opening. (Diagram A)

3. Insert the instrument and secure it with either the VDO Spin-Lok™ clamp or mounting bracket. The Spin-Lok™ clamp can be reversed to accommodate various panel thicknesses. (Diagram B)

DO NOT OVERTIGHTEN.

Wiring the Voltmeter:

1. Run wires from the instrument location through the firewall to:

a) a positive (+), switched power source (i.e.: after the fuse box and the ignition switch, or any other switch.

[text continues at #2] →

Parts List

Item	Description	Quantity
1.	Voltmeter (2 1/16" [52 mm] diameter)	1 or
	Voltmeter (2 5/8" [66 mm] diameter)	1
2.	Lamp Socket	1
3.	Light Bulb (12-volt)	1
4.	VDO Spin-Lok™ Clamp or VDO Mounting Bracket and nuts	1
5.	Installation Instructions	1

Siemens® VDO

Voltmeter

Installation Instructions

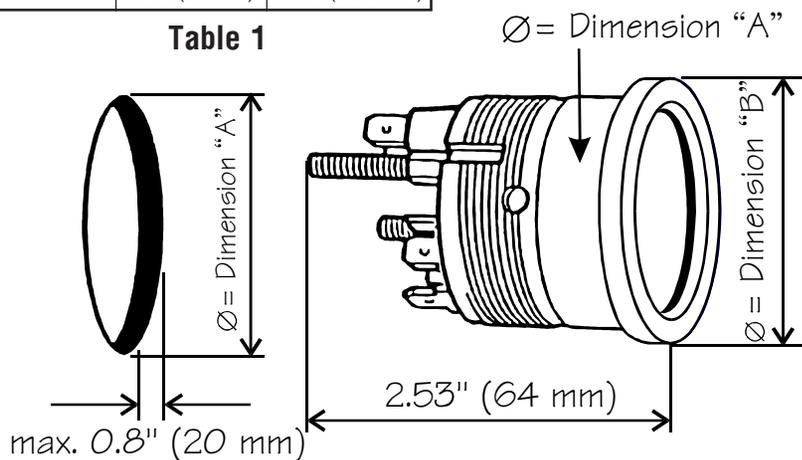
Instruction Sheet #0 515 012 068
Rev. 11/04

INSTRUCTIONS FOR THE INSTALLATION OF THE VOLTMETER ARE CONTAINED HEREIN. USE IS RESTRICTED TO 12 or 24-VOLT NEGATIVE GROUND ELECTRICAL SYSTEMS.

To Begin, go to #1

Gauge	Dimension "A"	Dimension "B"
Pro-Cockpit:	2 5/8" (66 mm)	2.77" (70 mm)
All other:	2 1/16" (52 mm)	2.19" (55.6 mm)

Table 1



Pro-Cockpit, Industrial and Series 1 Gauges

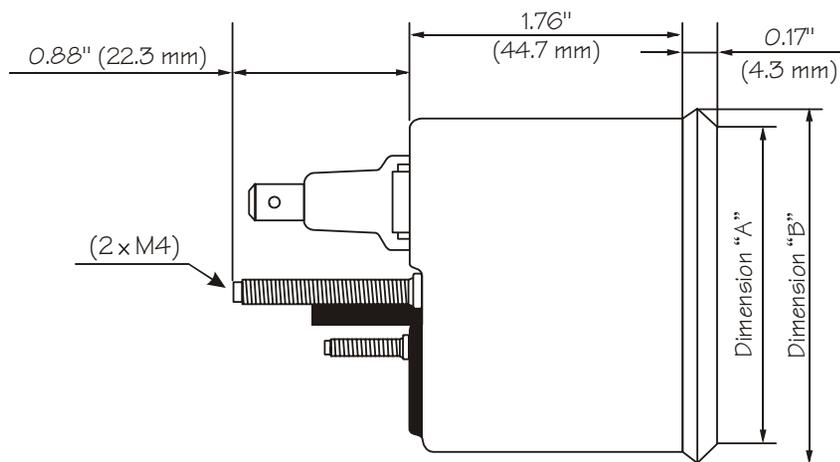


Diagram A
Gauge dimensions

2 CONTINUE HERE

This positive power source **MUST BE SWITCHED**, and must be protected with a fuse;

b) the light switch (also after the fuse in the fuse box); and

c) a good ground location .

2. Connect the positive (+) and negative [ground] (-) wires as shown in Diagram C.

3. Connect the appropriate positive (+)

and ground (negative [-]) wires to the terminals on the Voltmeter's lamp socket. Be sure that the ground wire from the lamp socket uses its own ground connection (separate from the one used by the gauge terminal ground), as shown in Diagram C.

At this point, the installation and wiring of your new VDO Voltmeter is complete. Turn on the ignition and the lights in the car and check to see that the instrument and light are working properly. If they aren't, re-check your wiring, referring to the wiring description in Diagram C.

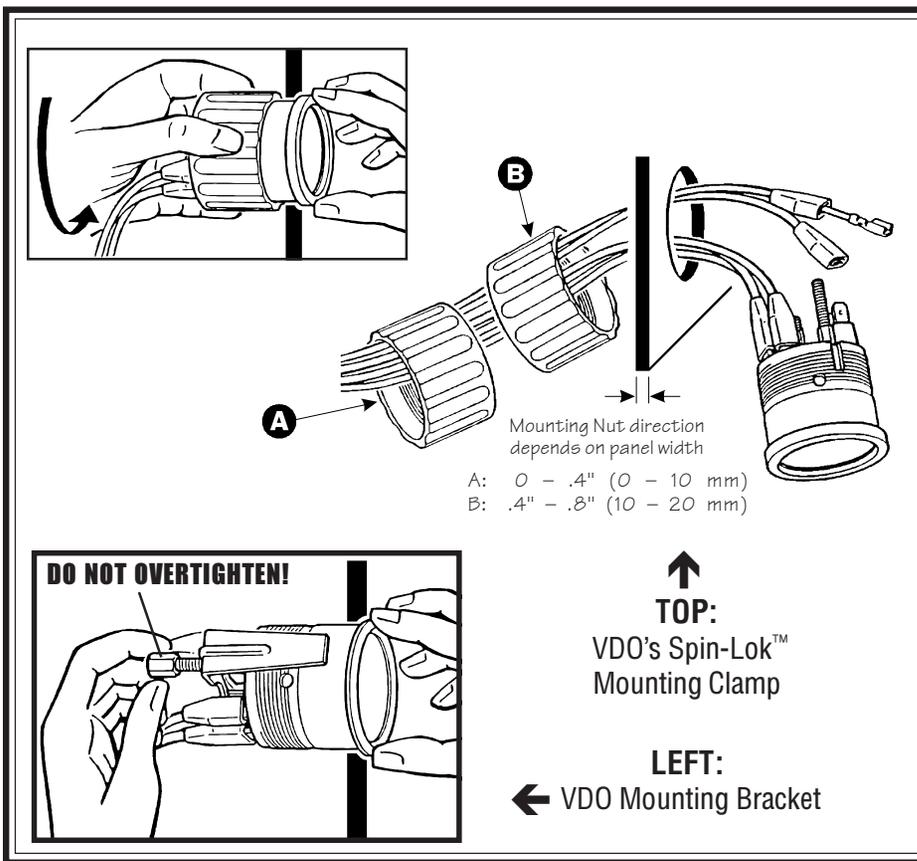


Diagram B
Mounting using VDO Mounting Bracket or VDO Spin-Lok™ Clamp