

## Preliminary Steps

1. Read instructions thoroughly. The installation of this product requires the expertise of a trained automotive mechanic. Please consult a qualified mechanic if you have not had training in the proper installation of instruments.
2. Determine ideal mounting location. Choose a location that will not obstruct visibility or impair driving. Consult your vehicle's repair manual to locate:
  - A) Water temperature port
  - B) 12V ignition switch or fuse box
  - C) Oil pressure port
3. Consult vehicle manual to determine best route for tubing. Choose a path free from hazard of moving parts or hot engine components.
4. Assemble tools and parts required for installation.
5. Disconnect negative (-) battery cable. Do not allow cable to touch battery or any metal. (NOTE: Disconnecting battery ground may require you to re-program your radio station and clock after reconnection.)
6. Remove gauges from metal panel. Notice their placement to make reassembly easier.
7. Hold console in desired mounting location and use as a template to mark drill holes on underside of dash.

8. Drill holes with an 1/8" drill bit and mount bracket under dash using self-tapping screws provided.

**CAUTION:** Some late model vehicles use electronic pressure and temperature senders for engine control functions. Before removing the original senders, we recommend that you contact your Auto Dealer to be sure no critical functions will be disrupted.

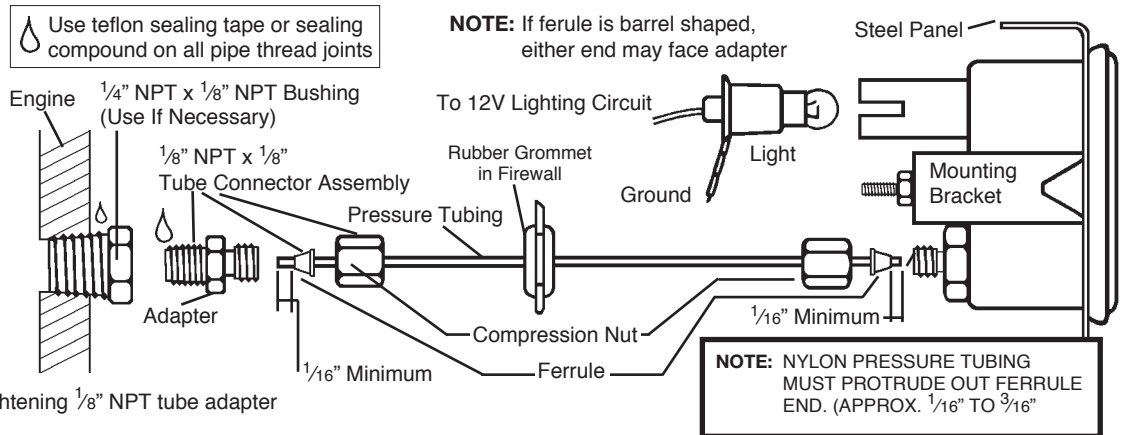
- With pressure gauges, it is beneficial to add a T-fitting to install your new gauge and to keep the warning light operational. This allows you to monitor the pressure and still have a warning light to indicate emergency conditions.

## Important Assembly Procedures To Follow

1. Tighten nuts and lock washer that secure the gauge mounting bracket. Be sure they are not so tight as to bend or distort mounting bracket.
2. **Electrical Connections**  
Install additional wiring and hardware as shown in diagrams below. Now tighten the outer nut while holding the inner nut. This is the only correct procedure and must be followed to insure safe electrical connections. This applies to both the gauge and sender connections.
3. Make sure wires are not rubbing against metal or each other.  
**NOTE:** Install gauges when engine is cool.

## Oil Pressure

1. Drill a 3/8" dia. hole in firewall. Install rubber grommet provided in firewall to insulate tubing where it passes through sheet metal.
2. Remove existing oil pressure sender. (For computerized vehicles see caution in Preliminary Steps.) Install 1/8" NPT adapter with 1/16" open-end wrench in this location using sealing compound on pipe threads. If 1/4" NPT bushing is needed, install it first with 9/16" open-end wrench. Be



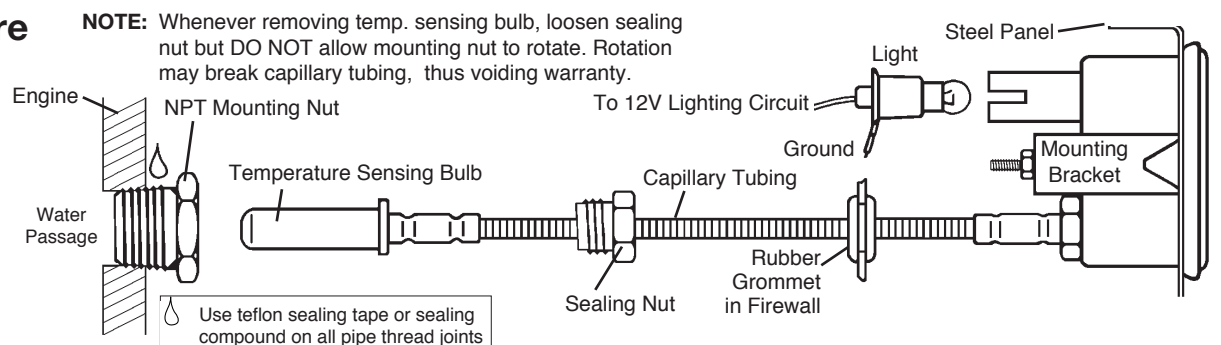
sure to hold 1/4" NPT bushing while tightening 1/8" NPT tube adapter firmly with 1/16" open-end wrench.

3. To help prevent leaks, be sure the end of the nylon tubing is cut cleanly and straight. Slide compression nut onto tubing with threads toward end of tube. Next, slide ferrule onto end of tubing, leaving 3/16" between ferrule and end of tube. Insert end of tubing into the 1/8" NPT tube adapter. Apply pressure while inserting tube into adapter to allow full engagement between end of tubing and inside of adapter. Slide ferrule into bushing and then thread compression nut on adapter. Tighten compression nut (with 3/8" open wrench) while holding adapter firm (with 1/16" open-end wrench) while maintaining constant full engagement between end of tubing and inside of adapter. This will ensure the end of the tubing and

- inside of adapter are fully engaged, and form a tight seal. To make sure it is a snug fit, tug lightly on the nylon tubing to be certain it doesn't come out.
4. Route tubing through small grommet in firewall and cut to meet mounted panel (leave one foot of extra length before cutting). Be sure to avoid potential hazard of moving parts or hot engine components.
5. Secure gauge in mounted panel using non-insulated mounting bracket, two (2) lockwashers, and two (2) M5 nuts.
6. Slide compression nut and ferrule on gauge end of tubing. Tighten to back of gauge in the same manner described in Step 3 (Use 3/8" open-end wrench). See final procedures to complete installation.

## Water Temperature

1. If necessary drain antifreeze from cooled radiator into a container. Never drain hot coolant! Save antifreeze to refill radiator after installation.
2. Drill a 7/8" dia. hole in firewall and route temperature sensing bulb through mounted panel first and then through firewall. Slit rubber grommet and position in firewall hole to hold gauge tubing in place.



3. Locate the original temperature sending unit port (see caution at top of this page) and replace with gauge sending unit using the 1/2" NPT adapter supplied. Using sealing compound on threads, insert and tighten mounting nut in the port in engine. Insert temperature sensing bulb into mounting nut and carefully thread the sealing nut into the mounting nut. Be sure to hold the

- mounting nut securely while tightening sealing nut. Check that tubing is free from hazard of moving parts or hot engine components.
4. Refill radiator with coolant.
5. Secure gauge in mounted panel using non-insulated mounting bracket, two (2) lockwashers, and two (2) M5 nuts.  
**See final procedures to complete installation.**

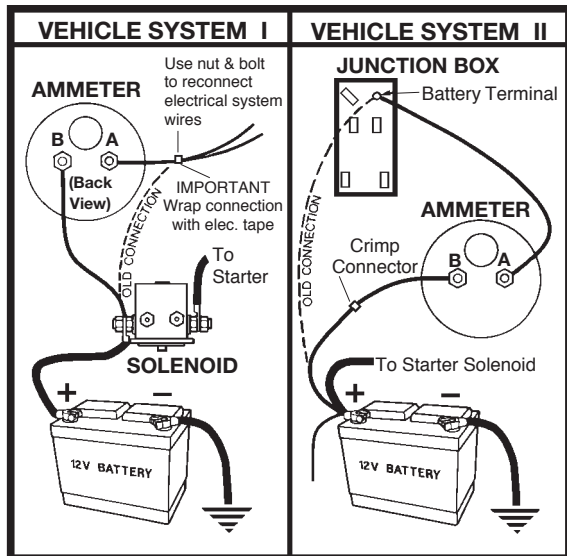
# Ammeter

## Read before installing:

### WARNING:

Have your maximum alternator output tested by an experienced mechanic. Choice of improper ammeter rating and/or wire size, and any loose connections can cause dangerous overheating, which could cause a fire in your vehicle. Ammeter and wire should have a capacity of at least 10 amps more than your vehicle's maximum alternator output.

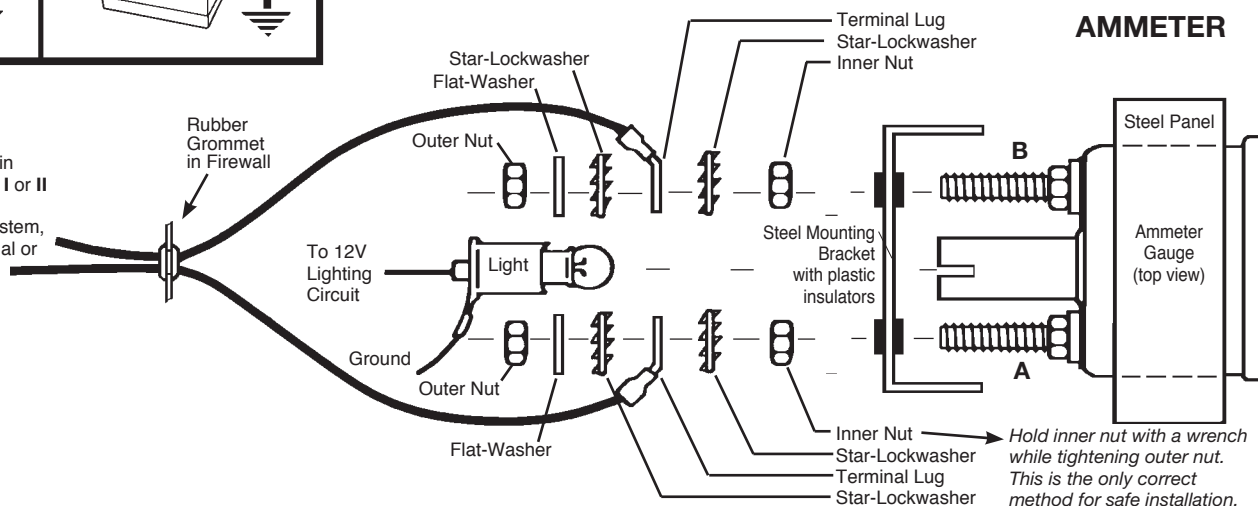
1. Read instructions thoroughly. The installation of this product requires the expertise of a trained automotive mechanic. Please consult a qualified mechanic if you have not had training in the proper installation of an ammeter.
2. Examine your vehicle to determine the best route for wiring to follow. Choose a path free of hazard of moving parts or hot engine components.
3. Disconnect negative (-) battery cable. (Wear safety glasses.)
4. Auto Meter No. 2228 wire kit must be used for installation. Kits contain a premium grade wire required for safe installation.
5. **IMPORTANT:** Verify that the nuts on both meter terminals are tight. Follow wiring diagram for car system I or II, and connect ammeter as illustrated.



### CAUTION DO NOT CONNECT THE AMMETER ACROSS THE BATTERY.

6. Secure gauge in mounted panel using insulated mounting bracket, two (2) M5 nuts.
7. **IMPORTANT:** Terminal lugs must be BOTH crimped and soldered to the wire, and star lockwashers must be used on both sides of the terminal lugs.
8. Tighten terminal nuts to compress star lockwashers into the terminal lugs.
9. Verify that **none** of the ammeter connections are to ground.
10. Reconnect negative (-) battery cable.
11. Leaving engine **off**, turn on lights. Indicator should read negative (-). If it reads positive (+), disconnect neg. battery terminal and reverse the wires on back of meter, then reconnect neg. battery terminal. **Before** starting car, double check that all connections are tight. After starting engine, check wiring connections for hot spots. Be prepared to shut engine off **immediately** if hot spots are detected.

Make Ammeter electrical connections as illustrated in Vehicle System diagram I or II above. If neither diagram matches your electrical system, consult your service manual or qualified mechanic.



## Final Procedures (For All Gauges)

1. Insert light bulb and socket assembly into back of gauge. Connect red lighting wire to 12V power source in dash lighting circuit. Connect black wires to good engine ground, such as dash or chassis ground bolt.
2. Reconnect negative (-) battery cable. Re-program your clock and radio if necessary.
3. Wrap a clean rag around fittings on back of oil pressure gauge and place a pan on the floor under them to protect the vehicle interior from potential oil leakage. Start engine and run for 30 seconds. Shut engine off and check rag and pan for leaks. If no leaks appear, start engine again and visually check **all** connections for leaks.

## Autogage Service

For service send your gauge to Auto Meter in a well packed shipping carton. Please include a note explaining what the problem is, the year and model of your vehicle, engine size, etc., and your phone number. If you are sending a gauge back for Warranty adjustment, you must include a copy (or original) of your sales receipt from the place of purchase. NOTE: For light bulb replacement, order Autogage No. 2389

## 12 MONTH LIMITED WARRANTY

The manufacturer warrants to the consumer that this product will be free from defects in materials and workmanship for a period of twelve (12) months from the date of the original purchase. Products that fail within this 12 month warranty period will be repaired or replaced at the manufacturer's option to the consumer, when determined by the manufacturer that the product failed because of defects in material or workmanship. This warranty is limited to the repair or replacement of parts in the instrument and the necessary labor done by the manufacturer to affect the repair or replacement of the instrument. In no event shall this warranty exceed the original purchase price of the instrument, nor shall the manufacturer be responsible for special, incidental or consequential damages or costs incurred due to failure of this product. Warranty claims to the manufacturer must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12 month warranty period. Breaking the meter seal, improper use or installation, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. The manufacturer disclaims any liability for consequential damages due to breach of any written or implied warranty on all products made by the manufacturer.

FOR SERVICE SEND TO: **AUTO METER PRODUCTS, INC.** 413 W. Elm St., Sycamore, IL 60178 USA (815) 899-0801

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