



Aircraft and Medical Instruments

U.M.A., Inc. • 260 Main St., P.O. Box 100 • Dayton, Virginia 22821 • Phone (540)879-2040
E-mail umainc@umainstruments.com Web Site <http://www.umainstruments.com> FAX: (540) 879-2738

TACHOMETER INSTALLATION INSTRUCTIONS, NON -TSO

UMA's line of tachometers cover just about any application. These instructions cover most normal installation requirements but there are always unusual situations. In the event you are having a problem, call our technical help department at 800-842-5578. We will be glad to give you the needed assistance.

MOUNTING INSTRUCTIONS TACHOMETERS

1 1/4" tachs have #6-32 threaded holes in the bezel so nuts are not required. The bezel is aluminum so do not over tighten screws. 2 1/4" and 3 1/8" tachs do not have threaded mounting holes. You will need nuts to secure the mounting screws, #6 suggested.

When running wires to the tach from the engine compartment, keep wires away from high heat sources and ignition system wires and components including magnetos, especially if using unshielded spark plug wires.

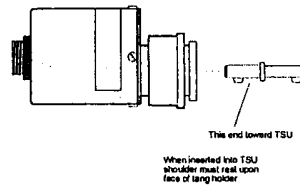
When wiring the tach to the aircraft power, use an inline fuse or breaker of no more than 1 amp.

When connecting signal input wire to a lighting coil, use a 1/4 amp inline fuse in the line to the coil.

SENDING UNITS/PICKUPS

Some tachs require a signal pickup to be mounted either to the engine or a magneto. This will depend on the type of tach and pickup purchased. Follow these instructions for mounting the pickups.

1Ax Tach Sending Unit



Installation Instructions:

1. Insert the tang provided, and mount to the engine tachometer drive port. It may be necessary to rotate the unit for clearance from other accessories mounted on the gear case. The centerline is offset for this purpose. Use Loctite 242 on threads, tighten with pliers.
 2. Route tach wiring harness away from high temperature objects and ignition system wires and components and secure in place.
 3. Attach the connector on the wiring harness from the tachometer to the pickup/sending unit.
 4. Connect the other end of the harness to the tachometer mounted in the instrument panel.
 5. Connect the aircraft power to the harness, Red (+) and Black (-) wires.
- NOTE: The TSU will operate effectively in either direction.

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For T1A9-(1)or(2) Magneto Pick-up

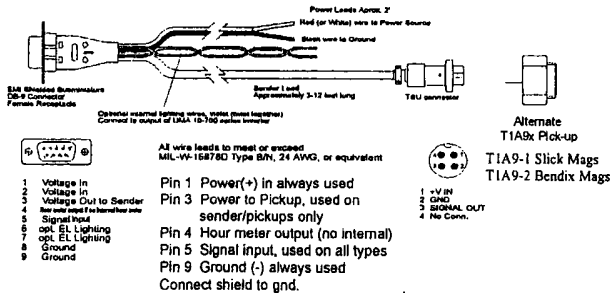


1. Mount the pick-up on either magneto, in the threaded port on the magneto case.
2. **Use the port closest to the magneto drive.** Hand tighten, then tighten 1/8 turn max. more. Use removable thread locker, Loctite 242 or equivalent. MIL-S-46163A
3. Run the wire bundle to the cockpit, install connector and connect to tachometer.
Type T1A9x pickups require attaching the connector. Follow the wiring data here for hookup.
Red is power to Pickup, Black is Ground, White is signal to tach.

ELECTRICAL CONNECTIONS

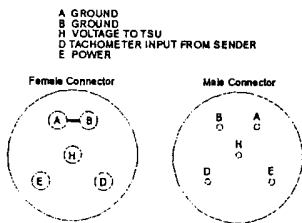
Your tach may have one of several different connection options depending on the model. The wiring follows one of three possible types, a DB-9, 5 pin, or wire pigtails. Use one of the following diagrams depending on the connector on your tach.

DB-9 Connector Tachs



- Pin 1 & 2 Aircraft Power (+)
- Pin 8 & 9 Grounds. (Black wire) or (Blu/Wht) (-)
- Pin 3 Power to sender/pickup (Red wire) or (Org/Wht) (+)
- Pin 5 Signal Input (White wire)
- Pins 6 & 7 Optional lighting, connect to inverter

5 Pin connector Tachs



- Pin E— Aircraft Power (+)
- Pin A or B— Grounds. (Black Wire) or (Blu/Wht) (-)
- Pin H—Power to sender/pickup (Red wire) or (Org/Wht)
- Pin D—Signal Input (White wire)
- Connect shield to gnd.

For internal lighting option. Two separate violet wires connect to lighting inverter.

WIRE PIGTAILS

Red	Aircraft Power (+)
Black	Ground (-)
White	Signal Input
Yellow	Hour Meter Drive (where used)
Violet(2)	Optional lighting to inverter.

For extending wires gauge #18 to #24 teflon should be used!

ENGINE CONNECTIONS

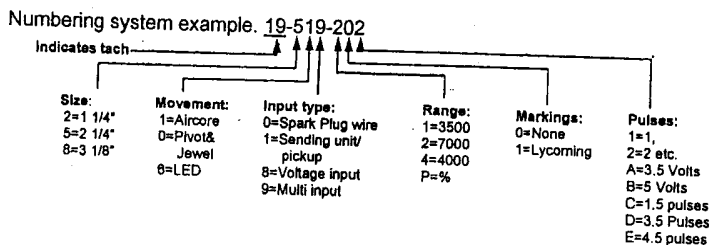
- Rotax 912/914:** Connect the **Signal Input** wire of the tachometer to one of the wires from the output coil/pickup, and connect the other wire from the output coil/pickup to the same ground point used by the tachometer. Connect the shield to ground. If applicable. If the tachometer acts erratically, especially at high RPM, install a 270 ohm, 1/2 watt resistor from signal input to ground.
- Rotax 503/582:** Connect **Signal Input** wire of tachometer to **GREY** tach drive wire from engine. connect **Ground** wire of tachometer to **BROWN** (ground) wire from engine harness.
- Jabiru all types:** Connect **Signal Input** of tach to one of the lighting coil wires ahead of the voltage regulator.
- HKS-700E:** Connect **Signal Input** to White/Green wire from engine lighting coil.
- Rotec all types:** Connect **Signal Input** to points (-) side of ignition coil.
- Lycoming/Continental/Franklin:** Tach sending unit or Magneto pickup. TSO types also available for these engines.
- VW:** Connect **Signal Input** to points side (-) of ignition coil. Some ignition systems accommodate magneto pickup types.
- Auto Engines:** Connect **Signal Input** to either points side (-) of ignition coil or Ignition module tach output.
- Cascade Conv:** Connect **Signal Input** from engine (three phase generator) to **Pin 4 & 5** of DB-9 connector on tachometer, where Pin 4 is -(minus) input and Pin 5 is +(input)! Part numbers for this tachs are: 19-519-6CW (NG tach) and 19-519-PCW (propeller tach)

TACHS FOR SPARK PLUG WIRE PICK-UP DO NOT USE ON SHIELDED WIRES

- 1) Route coaxial cable to engine area. Use wire ties to secure the cable as needed. Route the cable away from hot surfaces and moving parts. Keep pickup wire, end of coax, away from all spark plug wires except the one being tied to.
- 2) The end of the coaxial cable pigtail should be wrapped tightly around one spark plug wire, using approximately one to three turns and secured with wire ties and insulated with electrical tape. Wrap wire as close to spark plug as possible to avoid picking up signals from another spark plug wire.
- 3) Adjustment of pigtail location and/or number of wraps and/or spacing of wrap may be needed to assure proper operation over the operating RPM range.

GENERAL INFORMATION AND SPECIFICATIONS

Fuse (Power):	Max. 1 Amp Fast Acting
Current Draw:	110 mA max + hour meter
Supply Voltage:	+10 to +28 Volts DC.
Hourmeter Output	+12V @ 20ma max.
Accuracy	within 25 RPM



The hour meter, if installed, is set to turn on at 1800 RPM and above unless specified differently. It is not customer adjustable. The internal hour meter records real time when running. The hour meter output available on some units is also set to turn on at 1800 RPM and above and is not customer adjustable.

Warranty

UMA, Inc. warrants all products to be free from defects in material and workmanship under normal use and operation. UMA does not warrant any product which has been damaged as the result of accident, abuse, negligence, improper operational voltage, lightning, fire, flood, or other acts of nature. Any indication that the unit has been opened can void warranty. Under no circumstances shall UMA be liable for any loss or damage, direct, consequential or incidental, arising from the use of or inability to use this product.

This warranty is limited to the repair or replacement, at the manufacturer's option, of any product or part thereof, which has been returned to UMA within the specified warranty period, and which after examination shall disclose to the customer service department's satisfaction that the product is defective. Transportation to the factory or authorized service center must be prepaid; the product after repair or replacement, will be returned at the expense of the dealer or end customer. This warranty does not apply to any product or integral part thereof, which has been altered or serviced by other than the manufacturer or authorized service center.

The warranty period is twelve (12) months to the user.
This warranty supersedes all other warranties either expressed or implied and shall be governed and executed under the laws of the Commonwealth of Virginia, U.S.A.