6980 Professional Parkway East, Sarasota, Florida, 34240 941/907-1000

AUTO-MOTIVE | INBOARDS (GAS) | STERN DRIVES | OUT-BOARDS

TACHOMETER/TACHOMETER-HOURMETER INSTRUCTIONS

(GASOLINE FUELED OUTBOARD WITH ALTERNATOR, AUTOMOTIVE, STERN DRIVE OR INBOARD ENGINES)

NOT FOR USE WITH DIESEL ENGINES

READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY BEFORE PROCEEDING WITH INSTALLATION

CAUTION:
DO NOT DEVIATE FROM WIRING INSTRUCTIONS. INCORRECT INSTALLATION COULD CAUSE ELECTRICAL SHORT WITH POSSIBLE FIRE. ALWAYS DISCONNECT BATTERY BEFORE MAKING ANY ELECTRICAL CONNECTIONS.

THIS TACHOMETER (OR TACHOMETER/HOURMETER) IS DESIGNED TO OPERATE ONLY ON:

A. IN 12 VOLT DC SYSTEMS (For use in 24 vdc systems, order Voltage Reducer P/N 50446P004)

B. ON INBOARD AND STERN DRIVE FOUR-CYCLE GAS ENGINES WITH STANDARD IGNITION OR FACTORY INSTALLED ELECTRONIC IGNITIONS, (except as noted in Inboard, I/O and Automotive Section of Application Chart, Page 4).

C. OR ON OUTBOARD ENGINES (2 & 4 CYCLE) WITH ALTERNATORS HAVING 4, 6, 8, 10, OR 12 MAGNETIC POLES (See Outboard fection of Application Chart, Page 4). If your brand or model is not listed, contact your dealer for assistance.

NOTE: Engine designs are subject to change. All data shown is based on latest information available at time of publication. Teleflex assumes no responsibility for its correctness, or misapplication of its products.

INCLUDED WITH THIS INSTRUMENT
1. Instrument
2. Mounting Bracket Kit
3. Instructions

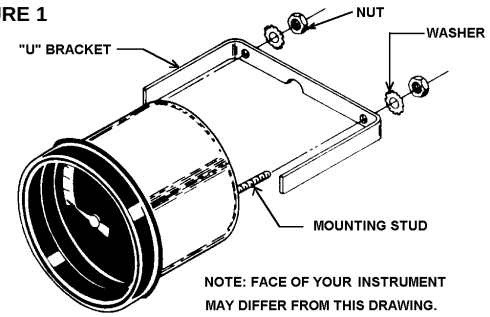
NOTE: VARIOUS STANDARD-MAKING ORGANIZATIONS HAVE ESTABLISHED RULES FOR WIRING. THOSE APPLICABLE TO YOUR APPLICATION SHOULD BE FOLLOWED.

ADDITIONAL SUPPLIES NEEDED FOR INSTALLATION:
1. No. 16 Stranded insulated wire
2. Insulated terminal lugs

GAUGE INSTALLATION

1. If there is no hole available in your dash, select a mounting position for the gauge which provides easy readability from the operator's position. Check behind Mounting Panel for installation clearance.
2. Depending on gauge model, cut a 3-13/32" (87 mm) or 4-5/8" (117 mm) diameter hole through the panel at the desired location.
3. Insert gauge through the hole, and secure with "U"-shaped bracket, nuts/ washers supplied. See Figure 1. Legs of bracket may be shortened if required.

FIGURE 1



CAUTION: DO NOT OVER TIGHTEN NUTS, OR YOU MAY CRACK THE GAUGE HOUSING OR THE MOUNTING PANEL

INSTRUMENT WIRING- All Applicarions (FIGURE 2 & 3):

1. Run a wire from the ëGNDí (Ground) terminal of the gauge to electrical system ground.

2. Run a wire from the ëLTí (Light) terminal of gauge to the panel light switch, or the 'LTí terminal of another gauge.

3. Run a wire from ëIGNí terminal of gauge to ëIGNí terminal of ignition switch or the 'Ií terminal of another gauge, or other switched power source.

NEXT SEE ENGINE TYPE FOR FINAL SENDER WIRING.

INBOARD, STERN DRIVE, AUTOMOTIVE INSTALLATION (FIGURE 2):

4. Connect a wire from the tachometer's ëSENDí (Sender) terminal to the ë-í (Minus) terminal of the engine's ignition coil or tachometer output of electronic ignition power pack.

5. Set Tachometer's rotary Selector Switch to "C" position number as number of engine's cylinders: 4C for 4 cylinder, etc.

6. For inboard, stern drive or automotive engine, wiring is complete. Proceed to "**AFTER INSTALLATION CHECKOUT".**

Continued on page 2

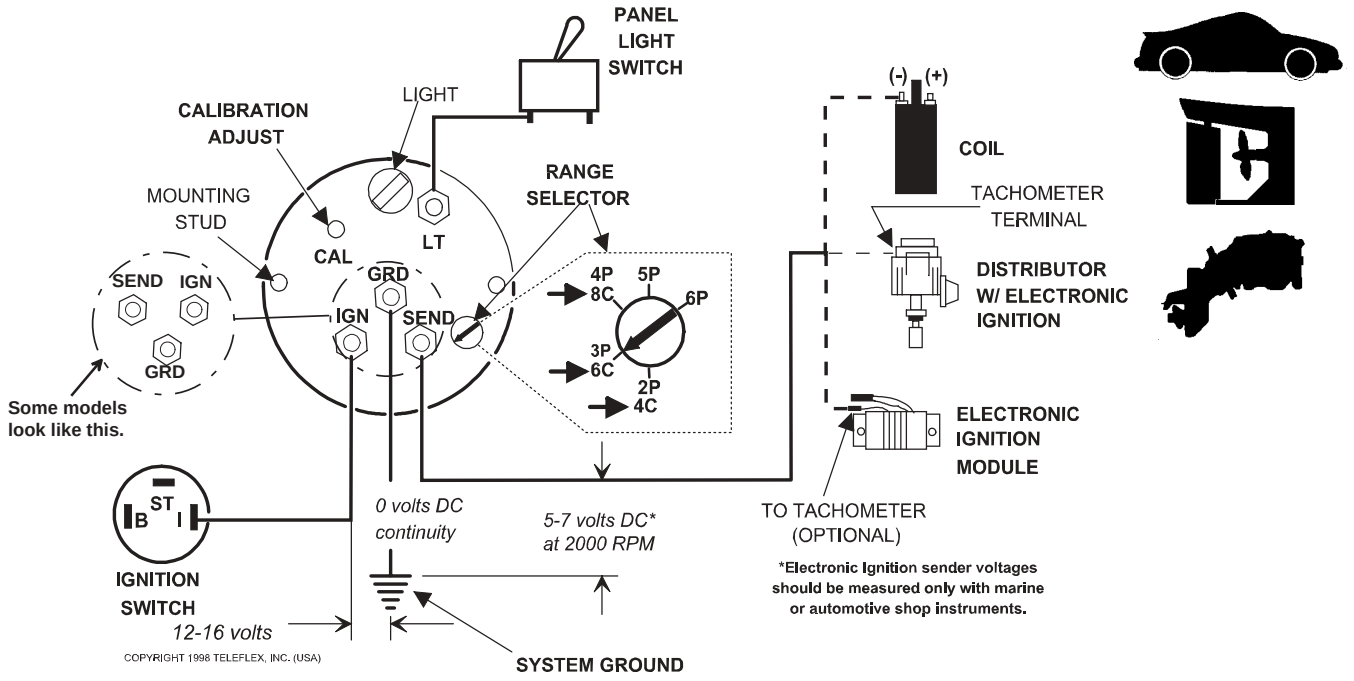


FIGURE 2- I/O, INBOARD and AUTOMOTIVE TACHOMETER, 4,6 OR 8 CYLINDER

OUTBOARD INSTALLATION (FIGURE 3):

If your Engine's throttle /shift control box is furnished with a plug-in socket, harnesses are available to simplify installation. For Evinrude/Johnson prior to 1996 (3 Pin socket), use P/N IH14767. For Mariner/Mercury (5 Pin socket), use P/N IH15105. See Wiring Instructions packed with harness (if used).

EVINRUDE, JOHNSON OUTBOARDS, OMC SEA DRIVE AND JET DRIVE ENGINES

Connect Tachometer SEND terminal to one of the following:
Gray wire in Control Box or in Main Engine Harnes.
Gray, Gray/Yellow wire on Engines electrical strip.
Gray, Gray/Yellow wire at Rectifier/Stator.

MARINER/MERCURY OUTBOARD ENGINES

Connect Tachometer SEND terminal to one of the following:
Gray wire in Control Box or in Main Engine Harness.
Gray, Gray/Yellow wire at Engine electrical strip or at Rectifier/Stator.

FORCE/CHRYSLER OUTBOARD ENGINES

NOTE: THIS TACHOMETER WILL NOT WORK ON MAGNAPOWER SERIES 1 ENGINES, OR THOSE MODELS WITH 20 POLE (PRESTOLITE) ALTERNATORS. CONTACT YOUR TELEFLEX DEALER FOR ASSISTANCE. Models with 8 and12 pole alternators - Same as Mariner/Mercury . See Application Chart on Page 4.

HONDA OUTBOARDS

Connect Tachometer terminals to the following wires from Control box:
Connect Gray wire to Tachometer's SEND terminal.
Connect Black wire to the Tachometer's GND terminal.
Connect Black/yellow wire to Tachometer's IGN (Ignition) Term.

SUZUKI OUTBOARD ENGINES

Connect the Tachometer SEND terminal to the following:
Locate the Yellow and the Black wires inside the Control Box.
Connect the tachometer's SEND terminal to the Yellow wire.
Connect the tachometer's GND terminal to black wire.
Keep wires in the Control Box away from all moving parts in Control.
Re-assemble Control Box.

TOHATSU/NISSAN OUTBOARD ENGINES

Connect the Tachometer SEND terminal to one of the following:
Check Wiring Harness inside Control Box for a Yellow wire.
Check terminal strip on engine powerhead and locate Yellow or Yellow/Gray wire from alternator.

YAMAHA OUTBOARD ENGINES

Connect the Tachometer terminal to the following wires:
Locate Green and Black wires on underside Shift Control Box.
Connect the tachometer's SEND terminal to green wire.
Connect the tachometer's GND terminal to the Black wire.
If the Green wire is not accessible at the Control box:
Connect the tachometers SEND terminal to green wire on powerhead electrical strip.
Connect the tachometer's GND terminal to any common ground.

Wiring is complete

Set Selector Switch on the rear of tachometer as shown in Application Chart on page 4

Continued on page 3

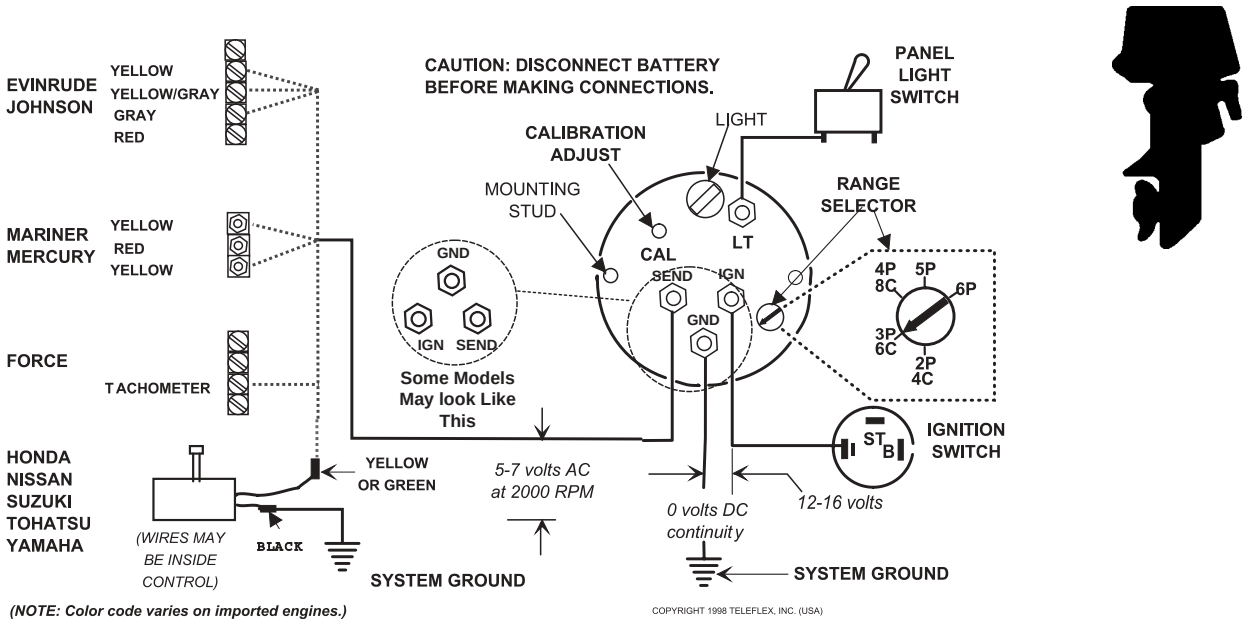


FIGURE 3

OUTBOARD TACHOMETER 2P, 3P, 4P, 5P & 6P

AFTER INSTALLATION CHECKOUT:

CAUTION: MAKE SURE THAT ELECTRICAL WIRING IS DRESSED AWAY FROM MOVING OR HOT ENGINE COMPONENTS.

CAUTION: BEFORE RECONNECTING BATTERY, RECHECK WIRING TO BE SURE ALL CONNECTIONS ARE PROPERLY MADE. INCORRECT CONNECTIONS OR ELECTRICAL SHORTS COULD CAUSE DAMAGE OR FIRE IN SYSTEM. ELEMENTS OF ELECTRICAL SYSTEM SHOULD HAVE PROPER FUSES INSTALLED.

1. When wiring is completed, Connect Battery.
2. Turn Ignition Switch On. Tachometer Pointer must move to Zero position. (Models with Hourmeter -will hear "click" and the indicator wheel should advance every 3.6 seconds) If not, check wiring connections.
3. Start engine and check for proper operation. Tachometer will read too high if Selector Switch is set too low, or read too low if Switch is set too high.
4. When Ignition is turned off, pointer may come to rest anywhere on the dial.

CALIBRATION AND ADJUSTMENT:

The tachometer is factory calibrated to within +/- 3% Full Scale accuracy. Field calibration *should not* be necessary, but provision has been made for finer adjustment at a commonly used RPM, or for synchronization of twin installations. To verify Selector Switch Setting, or to fine-tune the adjustment will require use of a remote Master Tachometer.

1. Attach Master Tachometer to engine to obtain true RPM reading. With engine running, adjust throttle to mid-range RPM.
2. Insert a small blade screwdriver into Calibration hole in rear of tachometer case. Carefully rotate adjustment until tachometer reading matches Master Tachometer. Turning clockwise increases RPM.

NOTE: *ADJUSTMENT NEEDS ONLY MINIMAL TURNING TO AFFECT TACHOMETER READING. DO NOT FORCE ADJUSTMENT OR YOU WILL DAMAGE THE TACHOMETER.*

3. In Twin engine installations, synchronize engines at mid-range by Master Tachometer, and use Calibration procedures as above until tachometer readings match.

TROUBLE SHOOTING ADVICE

1. Be certain all wires are connected properly. Tachometer is protected electronically if wires are connected incorrectly.
2. Be sure all connections are bright (clean) and tight.
3. If tachometer does not 'zero' when power is turned on, the positive (IGN) and/or ground wires are not connected properly. Tachometer must zero when powered. When measured with a volt/ohmmeter, the power (IGN) to ground (GND) voltage must be 12-16 volts DC with the ignition on. If tachometer goes to zero and then refuses to track RPM it may indicate the voltage rectifier (O/B only) is not operating properly (even though the rectifier may be partially charging the battery). The rectifier should be checked for proper operation by a trained service technician.

4. If tachometer reads too high or too low RPM, the black rotary selector switch is not in the correct position. Refer to Chart. Changing switch positions while the engine is running will not damage the tachometer or engine. If the switch is between positions (not making contact), the pointer will go to the high end of the scale.

5. Connect a volt/ohmmeter to SEND and GND connections on the rear of the tachometer. With the engine at approximately 2000 RPM, it should read about 3-7 volts AC (O/B only). This will confirm the presence or absence of a signal at the tachometer. There is no similar test for Inboard, I/O or automotive engine.

6. Rotary switch positions 4C, 6C, and 8C are for four-cycle (gas) automotive, stern drive or inboard engines. Rotary switch positions

Continued on page 4

2P through 6P are for 2/4 cycle outboard engines equipped with alternators.

Additional Information for Evinrude/Johnson engines:

1. If tachometer does not work properly on the Gray wire on engines with water cooled voltage regulator, bypass the regulator and attach to yellow/gray wire from the alternator to the rectifier.

2. On occasion, the engine's main ground terminal (from main battery ground to the engine) has paint residue and does not make a proper ground. The nut, washer, and all connections should be removed, cleaned with a wire brush, and reassembled.

3. Some Evinrude/Johnson 48 (50), 88 (90) &112 (115) "SPL" engines may require the addition of a 1/2 watt, approximately 2000 ohm resistor, connected between the tachometer's "Send" & "Ground" terminals. If the pointer drops back to "0" as the engine accelerates (around 3500 rpm), the resistor is needed. If the problem still persists, the addition of a Bombardier Accessories voltage regulator is required.

Replacement 12 Volt Light Bulb (with wedge base socket): Teleflex Part Number - IA62995

To remove light assembly, twist socket 1/8 turn counter-clockwise (may require pliers), pull assembly from tachometer. Reverse steps to install replacement.

If you require Technical Assistance or Warranty Replacement on this Product, contact your Dealer, or Teleflex Technical Service.

* Requires special tachometer for 20 pole alternator. Ask your dealer for Part Number 53743P.

*** Some Mariner/Mercury 30 & 40 HP (2 cylinder) non-USA built engines may require a Module (Mercury P/N 17461A2) when using any of these tachs.

**** Honda 40 & 50 (2005 & older) hp models may require module (Honda P/N 06383-ZV5305 if tachometer is erratic between idle and 1800 rpm.

***** TLDI engines also require addition of warning light panel Tohatsu 3Y9762510 and harness 3T5710420 to maintain warning functions.

Tachometer Outboard Application Chart

This Tachometer is suitable for use with engines listed below. If your Make/Model is not shown, consult your dealer.

	Alternator Poles	Switch Setting
Chrysler		
35 hp, 70 hp & up	12	6P
55 & 65 hp	20	*
Evinrude/Johnson**/Sea Drive**		
2 Stroke		
All V Models and 3 Cylinder engines	12	6P
2 cylinder 50& 55 hp (1971-77)	12	6P
2 cylinder 40-60 hp (1971-77)	10	5P
2 cylinder 4-35 hp (1977-91)	10	5P
2 cylinder 9.9-35 hp (1996-2004)	10	5P
2 cylinder 9.9-30 hp (2005 on)	10	5P
All other 2 cylinder	12	6P
4 Stroke		
All 25-225 hp	12	6P
9.9-15 hp	6	3P
Force (U.S. Marine)		
50 hp (thru early 1987,A & B models)	8	4P
85, 125 hp (all thru 1989)	20	*
90, 120 hp (all to 1991 rev. H)	20	*
150 hp (all to 1991 rev. B)	20	*
L Drive 85, 125 hp (1989 models)	20	*
L Drive 90, 120 hp (all to 1991 rev. B)	20	*
All other models	12	6P
Honda		
BF40/50**** hp (thru 2005), all BF35/45	6	3P
BF8D, BF9.9D, BF15D, BF20D	12	6P
All other models & Years	4	2P
Mercury*Mariner***		
2 Stroke		
6 thru 25 hp (U.S. origin)	8	4P
30, 40 hp (2 cyl) USA 0G053314 up	12	6P
35, 40 hp (2 cyl) USA 5823918 up	8	4P
35, 40 hp (2 cyl) BEL 9298955 up	8	4P
35, 40 hp (2 cyl) AUS 8070639 up	8	4P
35, 40 hp (2 cyl) CAN 7169337 up	8	4P
All other 2 stroke models	12	6P
4 Stroke		
8, 9.9 hp	6	3P
All other 4 stroke models	12	6P
Suzuki		
2 Stroke		
Less than 55 hp- (Except noted below)	4	2P
60, 65 hp thru 1985	4	2P
Cabrea 50-60 hp	6	3P
25, 30 hp 1993 and newer	6	3P
55, 60 hp 1985 and newer	12	6P
75 hp and up 1985 and newer	12	6P
Cabrea 75 hp and up all	12	6P
4 Stroke		
All 4 Stroke models	12	6P
Tohatsu/Nissan		
2 Stroke		
2 Cylinder & all TLDI engines*****	4	2P
3 Cylinder	6	3P
4 Cylinder	12	6P
4 Stroke		
All 4 Stroke models	12	6P
Yamaha		
2 Stroke		
9.9,15 hp	4	2P
25 thru 70 hp	6	3P
90 thru 250 hp	12	6P
4 Stroke		
F/T9.9, F15 hp	6	3P
F/T25 thru F225 hp	12	6P

Tachometer Inboard, Stern Drive & Automotive Application Chart

Not tested with and may not work with After Market electronic ignitions

This Tachometer is suitable for use with applications listed below

4, 6 and 8 cylinder, 4-CYCLE GAS AUTOMOTIVE, MARINE INBOARD & I/O ENGINES:

All with standard ignition or factory electronic ignition;, except Indmar LT-1 and early (1960's & 70's) Mercruisers with Thunderbolt Series 1 Ignition.

4 Cylinders	Switch Position 4C
6 Cylinders	Switch position 6C
8 Cylinders	Switch Position 8C