TABLE OF CONTENTS

1. *Read This First* 2
2. *Instrument Labeling* 3
3. *Operation* 4
4. *Locating and Installing the Indicator and Remote Alarm Display* 6
5. *EDM-900 & EDM-930 Key Card Installation* 7
6. *Routing the Wiring Harnesses* 8
7. *Power Connection* 8
8. *Probe Wiring* 9
9. *Wiring Markings* 9
10. *Exhaust Gas Temperature Probe (EGT) Installation* 9
11. *Turbine Inlet Temperature (TIT) Probe Installation (optional)* 10
12. *Cylinder Head Temperature (CHT) Probe Installation* 11
13. *Outside Air Temperature (OAT) Probe Installation* 11
14. *Induction Air (IAT), Compressor Discharge Temperature Probe Installation (optional)* 11
15. *Carburetor Probe Installation (optional)* 12
16. *Oil Temperature Probe Installation* 12
17. *Oil Pressure Sensor Installation* 12
18. *Fuel Pressure Sensor Installation* 13
19. *Ammeter Shunt Installation* 14
20. *General Fuel Flow Transducer Installation* 15
21. *Fuel Level Sender Wiring Types* 15
22. *GPS Interface* 18
23. *Manifold Pressure (MAP) Sensor* 19
24. *RPM Sensor installation* 21
25. *EDM-900/930 Specifications and Limitations* 22
26. *Component Parts* 23
27. *Weight and Balance Data* 24
28. *Pilot Programmable Mode* 25
29. *Trouble Shooting* 28
30. *Connector Pin Assignments for 4,6,7,8,9 cylinders* 29

Edm-900/930 34

31. *Instructions for Continued Airworthiness (ICA)* ***Error! Bookmark not defined.***
23. *Certificate of Compliance, Fuel Level Transmitters* 37
24. *Instructions for Continued Airworthiness (ICA)* 37
32. *Fuel Flow installation Report 503* *Appendix-A*

The Owner of the EDM-900/930 must keep this manual

J.P. INSTRUMENTS
PO BOX 7033
HUNTINGTON BEACH CA

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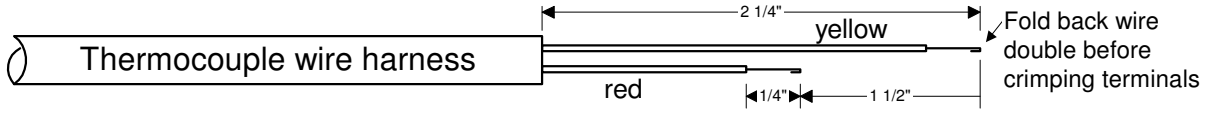
1. Read This First

- The following notes apply to a new installation. **Read this section before proceeding**.
- The JPI warranty found in the back of the pilots guide clearly states that JPI will replace defective parts under warranty, **but does NOT cover labor to remove or install any parts**.
- The most common cause of probe problems is poor terminal crimps. Crimp ring terminals with AMP tool or equivalent. **Fold back the wire double before crimping terminals.**



- This installation will require some parts unique to your aircraft that are not supplied with the kit, (including but not limited to tie-wraps, hoses and fittings). Acquire all the necessary parts prior to beginning the installation.
- Do not use aluminum fittings or Teflon tape or pipe sealant with the FXT-201 or FXT-231 fuel flow transducer.
- Write down the K-factor engraved on the side of the fuel flow transducer here _____. Once the transducer is installed and covered with the fire sleeve, you will not be able to access this K factor.
- Determine the locations of all holes before drilling to ensure that nothing interferes with the probe, clamp, clamp screw or wire.
- Provide service loops at the instrument so that it can be moved for maintenance or troubleshooting.
- Thermocouple wire length is not critical. Trim to required length, allowing for service loops at the engine so that probes can be swapped with probes on adjacent cylinders for troubleshooting purposes.
- Dress all wires away from high temperature components such as exhaust stacks.
- Never splice thermocouple wire using copper wire. Use only K-type thermocouple wire. Solder using zinc chloride flux such as Nokorode brand – rosin flux alone won't work.
- Observe correct polarity on all probe wires. Connect like colors together (red to red, yellow to yellow).
- **The instrument must be grounded at the engine**, not at the avionics ground.
- Record the installation of the EDM-900 or EDM-930 on a FAA form 337. Make an entry in the aircraft logbook.

2. Instrument Labeling

The TSO label on the instrument is marked as to the instrument configuration.
The part number of the instrument is as follows:
Model designation system by part number for EDM-900/930

Model Number / Part Number	Description
EDM-900 PN 790000-A- [XXX]	**Plasma Type Display**
EDM-930 PN 790000-C- [XXX]	**TFT (liquid crystal) Type Display**

PRIMARY INSTRUMENTS

EGT 4-6	**FUEL FLOW**	**Remote Display**
CHT 4-6	**FUEL PRESS**	**TIT**
OIL TEMP	**RPM**	**CDT**
OIL PRESS	**MAP**	**FUEL Quantity**

NON-PRIMARY INSTRUMENTS

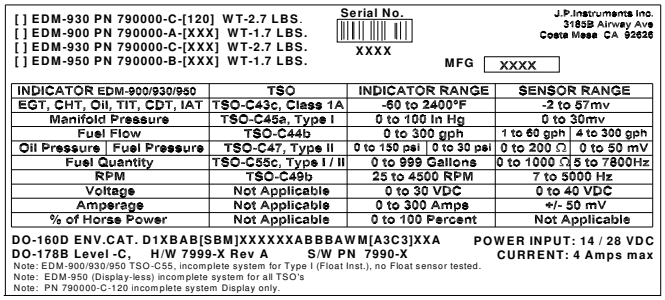
OAT, AMP, VOLTS, CARB, IAT
Shock Cooling Lean Find
Differential EGT
Percent of HP

Example PN 790000-A-(XXX)

(XXX)	4	6	7	8	9	EGT	CHT	RPM	MAP	O-P	O-T	OAT	FF	V/A	RAD	FLEV	F-P	TIT	CDT	IAT/CRB
	Cylinder					**OPTION**														
120		X				—	—	—	—	—	NA - Display only									
012																				
011																				
010		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	
009					X	X	X	X	X	X	X	X	X	X	X	X				
008				X		X	X	X	X	X	X	X	X	X	X	X				
007			X			X	X	X	X	X	X	X	X	X	X	X				
006		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	
005	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	
004		X				X	X	X	X	X	X	X	X	X	X	X				
003	X					X	X	X	X	X	X	X	X	X	X	X				
002		X				X	X	X	X	X	X	X	X	X	X	X	X			
001	X					X	X	X	X	X	X	X	X	X	X	X	X			

CYLINDER & OPTIONS CONFIGURATION

2.1 Primary TSO Label



3. Operation

The EDM-900/930 is a combined electronic indicating system which simultaneously displays to the pilot powerplant and aircraft systems operating parameters. It includes the following indicating systems; replacing all previous primary digital and/or analog instruments:

1. Engine revolutions per minute
2. Engine Manifold Pressure (MAP)
3. Engine Cylinder Head Temperature
4. Engine Exhaust Gas Temperature
5. Engine Oil Temperature
6. Engine Oil Pressure
7. Fuel Pressure
8. Fuel Flow
9. Fuel Quantity (Left Wing and Right Wing tanks)
10. Alternator/Generator Output - Volts and Amps.
11. Outside Air Temperature
12. Turbocharger, Compressor Discharge Temperature (Primary on some turbocharged engines).
13. Turbine Inlet Temperature
14. Induction Air Temperature or Carburetor inlet temperature

Refer to Pilots Guide Rev D or higher or AFM for detailed operating instructions.

3.1 Remote Alarm Display (RAD)

The RAD is a 0.2" high, 8 character independent display. The RAD will still function if the main display is inoperable. An alarm—such as the CHT is 480° on cylinder number 2—is displayed as 480CHT2. The label CHT2 will flash whenever an over-temperature exists and will extinguish when the temperature falls below the limit temperature. Other alarms would be displayed as, for example: 2780 RPM.

The RAD is located directly in front of the pilot and displays digital caution and limit excedances when any of the parameters has reached its preset trigger point. Whenever limit alarms are not triggered, the RAD continuously displays MAP and RPM.

On initial startup or whenever power is turned on, the words "EDM900 (or EDM-930) PRIMARY" is displayed, followed by the make and model of the aircraft for which the primary limits are set

Reference: Pilots Guide Rev D or later.

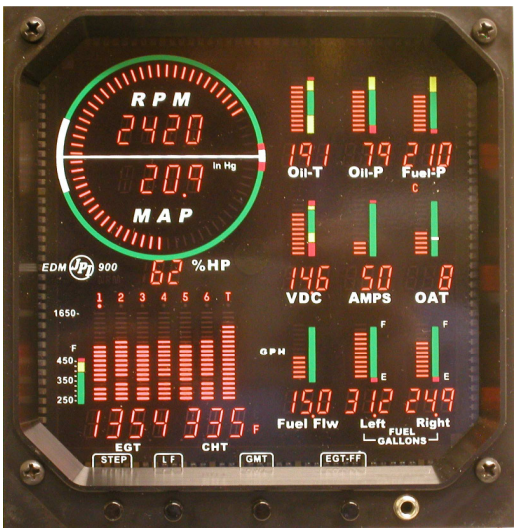
Alarm hierarchy

When a measurement limit is reached, the pilot should momentarily depress the STEP button on the EDM-900/930 instrument to extinguish the particular flashing alarm acronyms. If another measurement has also reached its limit, that label will then begin to flash. The pilot should continue to monitor the affected parameters as he would if a conventional analog display had reached a limit. The bar graph functions of CHT, EGT, and TIT remain displayed for easy reference should one of these limits be reached.

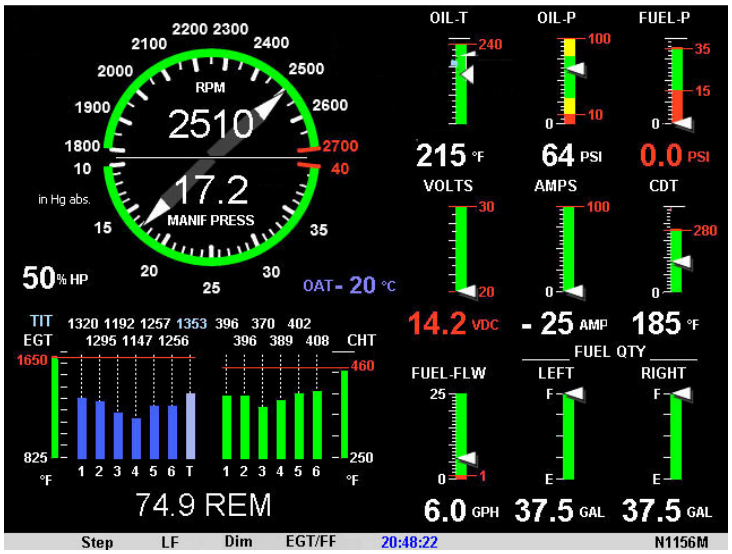
Dimming

Automatic dimming is provided to dim both the panel display and the remote alarm display. Dimming can also be accomplished manually to change the Automatic setting. Tapping the far right button below the display decreases brightness. Continuously holding this button increases brightness.

Remote Display



EDM-900 Display



EDM-930 Display

4. Locating and Installing the Indicator and Remote Alarm Display

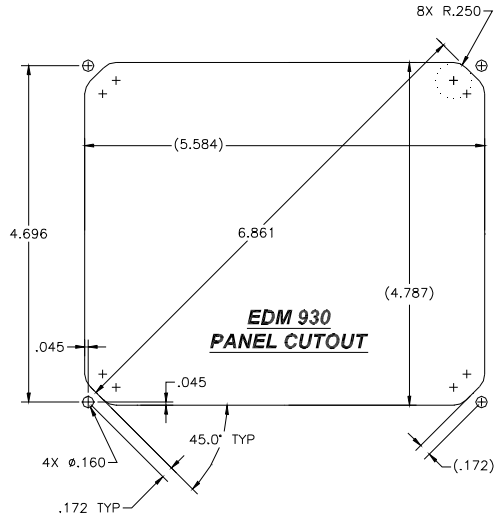
4.1 Single Engine Aircraft EDM-900/930

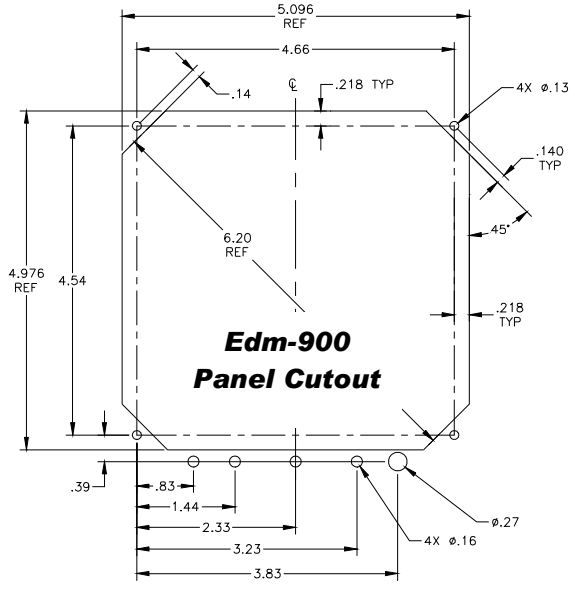
A) The EDM-900/930 display should be located as close as possible to the pilot with an unobstructed view and for easy access to the buttons on the instrument. A remote display is also provided for alarm indications directly in front of the pilot. Installation should be done in accordance with advisory circular AC43.13-1A.

The diagram below should be used as a guide for cutting and drilling the mounting and buttonholes in the instrument panel. The dimensions shown are for the final cutouts. Allow extra clearance for any panel finish such as powder coat. The plastic button caps are removable by grasping and pulling each off. The EDM-900 mounts in a custom 5+ inch cutout and the 930 mounts in a 6x4.5 cutout. Mount the indicator using the figure below as a guide.

B) The Remote Alarm Display PN-790749 mounts in a ½ inch hole in the panel directly in front of the pilot..

4.2





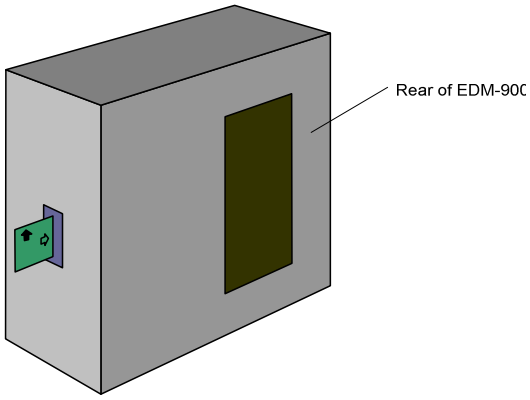
5. EDM-900 & EDM-930 Key Card Installation

The EDM Key Card activates the primary engine instrument abilities of you engine monitor. This card contains the primary engine instrument data. After installation do not remove the Key Card from the instrument. The key card is programmed with the serial number of your EDM and the make, model and year of your aircraft. Every time you power up the EDM, the Remote Auxiliary Display (RAD) will show your aircraft make and model.

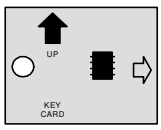
Installation

With the EDM removed from the aircraft, position it on a flat surface with the rear of the instrument facing you as shown below. You do not have to remove any cables if you have sufficient service loop available. The location of the Key Card access door is different between the EDM-900 and EDM-930. Follow the appropriate instructions below.

EDM-900

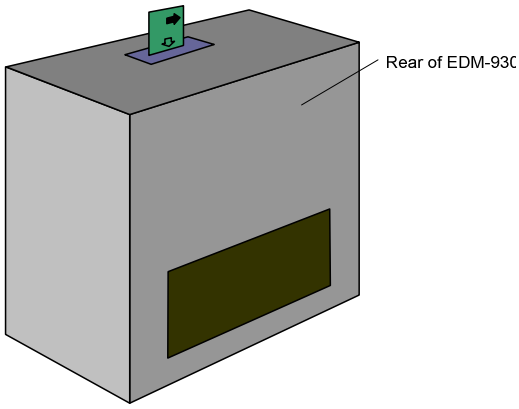


Open the small access door on the side of the EDM-900 using the appropriate tool.

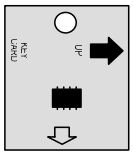


Hold the Key Card so that the UP arrow is facing up and in insertion arrow is facing to the right.

EDM-930



Open the small access door on the top of the EDM-930 using the appropriate tool.



Hold the Key Card so that the UP arrow is facing to the right and in insertion arrow is facing to down.

Insert the Key Card in the guide rails until you feel it snap into place. Secure the access door.

Power up the EDM and confirm that your aircraft make and model is initially shown in the RAD upon power up. Install the EDM back into the aircraft. Your installation of the Key Card is complete.

If your EDM should ever have to be replaced with a unit with a different serial number, the factory will reprogram your Key Card to match the new serial number.

6. Routing the Wiring Harnesses

Five connectors are protruding from the rear of the instrument. Connect the five wiring harnesses to the rear of the instrument and run the cables through the firewall into the engine compartment. Allow sufficient service loop to facilitate removal of the connectors for servicing. These wiring harnesses are labeled as follows:

Conn	Harness PN	
J1	790200	Oil temperature, Induction temperature, Carburetor temperature, Outside air temperature, Turbine inlet temperature, Turbine inlet temperature 2, Power, Engine ground, MFD input, MFD output
J2	700700 700702	CHT, EGT 6 cylinder CHT, EGT 4 cylinder
J3	790420	RPM, MAP, Oil pressure
J4	700709	Serial data to GPS, Serial data from GPS, Fuel flow transducer
J5	790719-1 790719-2 790719-3 790719-4 790719-5 790719-6 790719-7 790719-8	no fuel level Fuel pressure Carb, amperes, no fuel level Fuel pressure Carb , amperes, capacitive fuel level Fuel pressure Carb, amperes, resistive fuel level option No Fuel Level, Fuel Pressure Injected, psi, Amps Fuel pressure Injected psi, amperes, capacitive fuel level Fuel pressure Injected psi, amperes, resistive fuel level. Fuel pressure Injected psi, amperes, Voltage fuel level. Fuel pressure Carb, amperes, voltage fuel level.
J6	790745	Category 5 jack and cable for External remote display

Route the wires from the connectors through the firewall using fireproof rubber grommets and flame retarding silicone. Use an existing hole if possible. All wires must be routed away from high temperature areas (exhaust stacks, turbochargers, etc.). Secure probe and sensor leads to a convenient location on the engine approximately 8 to 12 inches from the probe or sensor, being sure there is sufficient slack to absorb engine torque. It is essential in routing the probe wire that this wire not be allowed to touch metal parts of the air-frame or engine since abrasion will destroy this high temperature wire. Secure wires along the route to the indicator. Secure wire using original clamps, tape or tie wrap if possible.

CAUTION: Be sure any wiring does not obstruct the control movement under the instrument panel.

The probe wires must **not** be tied in with **ignition**, alternator or engine cabin heater ignition wires because of potential interference with temperature readings.

The temperature probe wiring harness is made of Chromel-Alumel alloy wires that **must not be substituted or extended with copper wire**. The power and ground wire are normal copper. Temperature probe leads may be spliced with additional Chromel-Alumel wire using copper butt splices.

When the installation is complete all wires should be secured using ties and carefully checked for interference, rubbing or chafing with flight control cables or other moving parts.

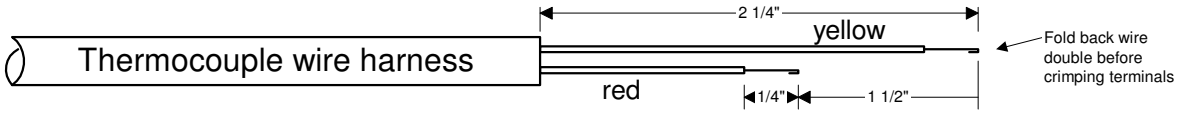
7. Power Connection

The EDM-900/930automatically accommodates both 14 and 28-volt electrical systems. **The instrument may reset on engine start** for 14vdc systems, this is normal. Instrument resets at 10 vdc. Using the J1 connector harness 790200, connect the power lead (red) to a **separate 5-amp circuit breaker for each instrument** connected to the **master** power bus. **Connect the ground wire to the engine block.** The EDM-900 has a 10-second warm-up. No connection to the aircraft dimmer system is required because the instrument dims automatically with reductions in ambient light.

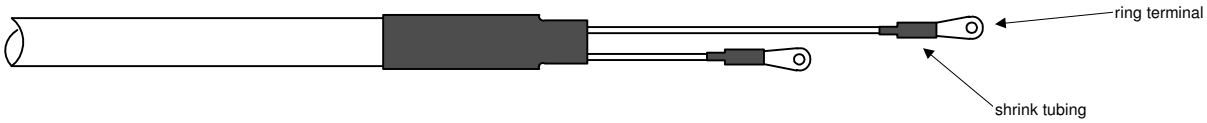
8. Probe Wiring

When cutting the pair of leads to the proper length to connect to the probes, leave enough slack in the wiring so that probe may be interchanged to an adjacent cylinder if necessary for trouble-shooting and servicing. Thermocouple wire length is not critical and should be trimmed to any length as required for a clean installation.

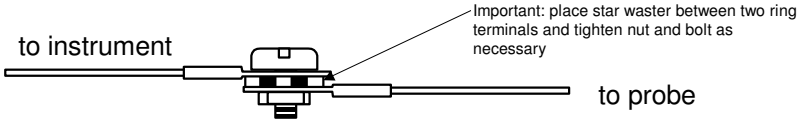
The Temperature probe must be wired with the correct polarity. The temperature probe connects to its temperature indicator with yellow jacket Teflon Chromel Alumel wire supplied. Strip the wires as shown below—observing color-coding.



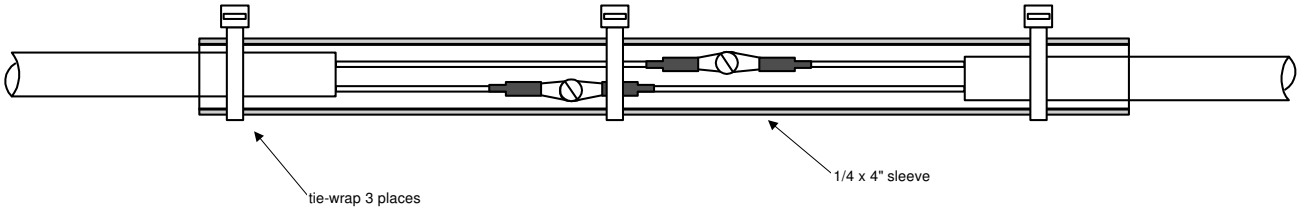
Terminate each wire with a crimp-on ring terminal, provided. The ring terminals may be crimped with a "service-type" tool, however AMP part number 48518 crimp tool is recommended. Verify the quality of each crimp with a sharp tug on the wire. The terminal should be impossible to pull off when crimped correctly.



Place a ¼ x 4-inch sleeve over each pair of wires in the wiring. Connect the wire ring lug to the probe ring lug using the supplied number 4 screws and nuts, placing the star washer *between* the ring lugs, not against the nut.



Slide the sleeve over the joint and secure with three tie-wraps.



The most common installation problems are related to poor quality terminations.

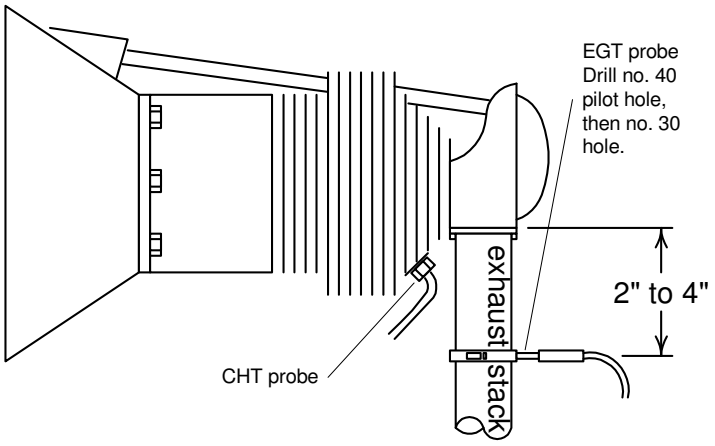
9. Wiring Markings

The EDM-900/930is supplied with special Teflon insulated Chromel Alumel factory assembled wiring harness configured for the correct number of cylinders. The wire harness is marked E1= EGT-1, C1= CHT-1, etc.

NOTE: Unlike most other EGT & CHT installations **the probe wire length is not critical** and should be trimmed to any length as required for a clean installation. **Do not extend the thermocouple wire with copper wire.**

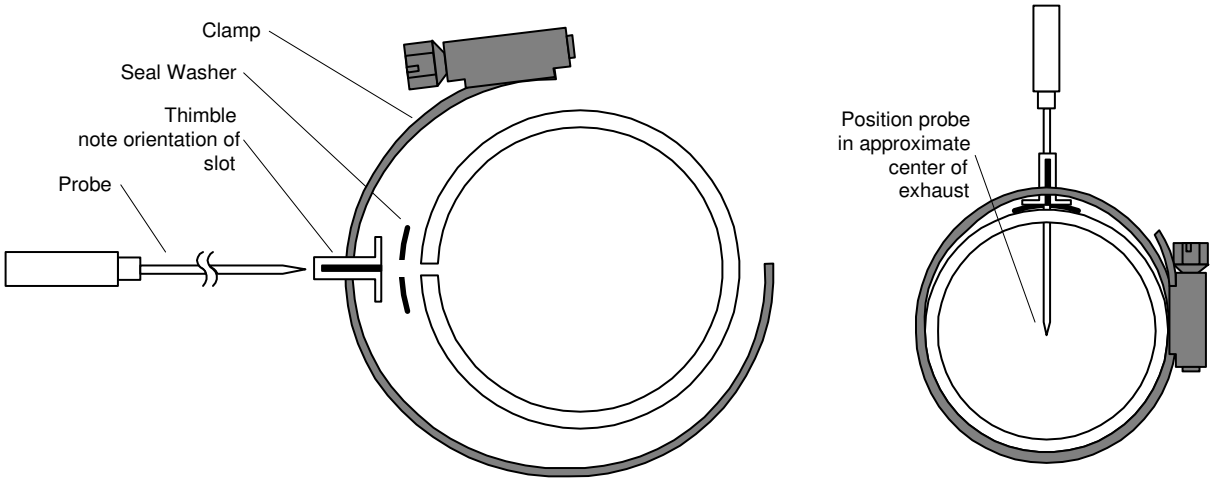
10. Exhaust Gas Temperature Probe (EGT) Installation

Use the J2 connector harness 700700 or 700702 labeled E1 through E4 or E6. Remove the existing EGT gage and Probe. Replace with JPI probe M-111 in all exhaust stacks.



The Model M-111 Probe will fit any engines where the existing holes in the exhaust stack are 1/8" to 1/4" in diameter. If no hole exists, it will require the drilling of a 1/8" diameter hole and ream to fit. It is important that each probe be mounted the same distance from its exhaust stack flange. A nominal distance of 2 to 4 inches from the exhaust flange is recommended. **If the recommended distance is impractical** because of obstructions, slip joints or bends in the exhaust system then position the probes a uniform distance from the flange as space permits. **Do not mount probes in slip joints.** Be certain to locate all holes BEFORE drilling to ensure that nothing interferes with the probe, clamp, screw or wire. Careful matching of probe position will provide best temperature readings.

Insert the probe in the exhaust or previously drilled hole so that the tip of the probe is in the **center of the exhaust stream**. Tighten the stainless steel clamp to a torque of 45 in/Lbs. Cut off the excess strap close to the screw.



RADIAL ENGINES

Radial engine exhaust, require a larger EGT clamp (supplied) to fit the 2.5 inch exhaust pipe. The EGT probe is installed in the same fashion as a Lycoming or Continental engine and should be placed between the exhaust pipe flange and the accumulator at a distance of 2 to 3 inches form the engine exhaust flange. Cylinder head temperatures are measured with a spark plug gasket type probe placed under the front sparkplugs . Refer to the engine manufactures red line and set the EDM-700 appropriately. Front spark plugs will read 15 to 20 degrees cooler than the rear plugs. Do not route the EGT/CHT harness in with the ignition harness. Do not extend the yellow thermocouple leads with copper wire.

11. Turbine Inlet Temperature (TIT) Probe Installation (optional)

Use the J1 connector harness 700200 and insert the yellow wire into the connector pin 16 and the red wire into pin 17. The standard TIT probe PN M111-T with a #48 clamp is placed in the exhaust stack accumulator to a maximum depth of 1/2 inch and approximately 4 inches from the turbine inlet if possible, on the waste-gate side of the turbine.

11.1 TIT for second Turbine Inlet Temperature

Use the J1 connector harness 700200 and insert the yellow wire into the connector pin 18 and the red wire into pin 17. The standard JPI TIT probe P/N M-111-T with a special clamp is placed in the exhaust stack accumulator to a **maximum** depth of 1/2 inch and approximately four inches from the Turbine inlet if possible, on the waste gate side of the turbine.

11.2 Using the Factory original TIT Probe

The factory installed TIT probe (K-calibration) is compatible with the JPI EDM-900/930System. Connect the JPI wire marked TIT in parallel with the factory probe noting color polarity. See the EDM-900/930Pilot's Guide for the factory TIT probe calibration procedure only if you want to have the EDM and the factory probe to operate off of one TIT. Replacement probes should be purchased per part number from the aircraft manufacturer.

If you choose to use only the EDM-900/930TIT display you may remove the factory installed TIT indicator and leave the TIT probe installed. Connect the JPI wire marked TIT directly to the probe noting color polarity. The TIT probe should now have only the JPI leads attached to it. No calibration of the EDM-900/930is necessary.

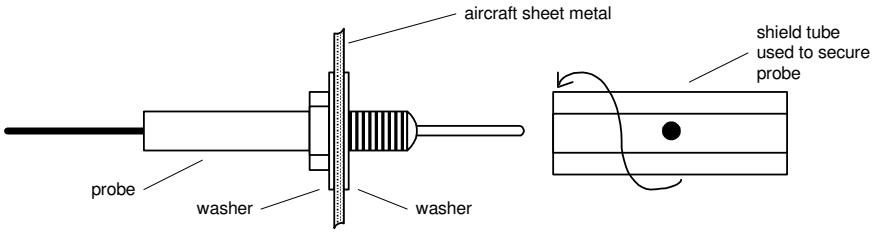
12. Cylinder Head Temperature (CHT) Probe Installation

Use the J2 connector harness 700700 or 700702 labeled C1 through C4 or C6. The JPI probe is a bayonet probe P/N 5050-T that has a captive 3/8-24 boss that is screwed into the head of each cylinder.

For Indicator replacement, replace your existing CHT probe and adapter, a bayonet or screw in type with one supplied by JPI. Install the probe on the same cylinder from which you removed the original equipment probe. Your current CHT probe is installed in the hottest cylinder as determined by the airframe manufacturer. Alternate method To keep the existing CHT gage functional install a JPI PN 5050-A adapter probe.

13. Outside Air Temperature (OAT) Probe Installation

Use the J1 connector harness 700200 labeled OAT. All wiring must be type K thermocouple wire. Do not splice ordinary copper wire in any temperature probe circuits.



Install the OAT probe, PN 400510 in the airframe manufacturer's recommended location. If this information is not available, place the OAT probe in clean airflow such as in a cabin air scoop or below the underside of the wing away from engine heat or exhaust. In this case it is recommended that the installation be done similar to the antenna installation instructions of AC 43.12-2a *Acceptable Methods, Techniques and Practices*.

The outside aluminum shield tube is used to both hold the probe in place and shield it from radiated heat from the sun. The OAT option is displayed as an independent digital temperature bar graph such as "75."

14. Induction Air (IAT), Compressor Discharge Temperature Probe Install (optional)

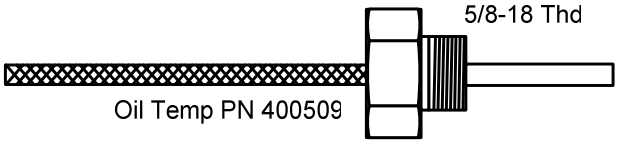
Use the J1 connector harness 700200 and insert the yellow wire into the connector pin 3 and the red wire into pin 4. All wiring must be type K thermocouple wire. The Induction Air Temperature probe, (IAT), is installed just after the inter-cooler and the Compressor Discharge Temperature (CDT) just before the inter-cooler. The probe is the same as an EGT probe and installed similarly to an EGT probe. A large clamp is supplied to fit around the air duct leaving the inter-cooler. Alternately a 1/8 NPT fitting is available. IAT option is displayed as an independent digital temperature like "125 IAT". On non-turbo engines the IAT in reality is the Carburetor temperature and displayed as "34 CRB."

15. Carburetor Probe Installation (optional)

Use the J1 connector harness 700200 and insert the yellow wire into the connector pin 5 and the red wire into pin 6. All wiring must be type K thermocouple wire. Do not splice ordinary copper wire in any temperature probe circuits. Locate the access hole (1/4-24 thread) in the carburetor near the butterfly valve. Remove the screw plug now in that hole and screw the CRB probe into the carburetor throat. No drilling or machining of the carburetor is necessary.

16. Oil Temperature Probe Installation

The sensor port is a standard 5/8-18 thread for both the Continental and Lycoming engines. Probe PN 400509 is a complete assembly using type K thermocouple wire (red/yellow). Connect the wire marked oil temperature observing polarity. Wire length has no effect on the readings. Oil temperature will be displayed as an independent temperature digital and bar-graph. Check with engine manufactures proper location for oil temperature. Check for oil leaks before first flight.

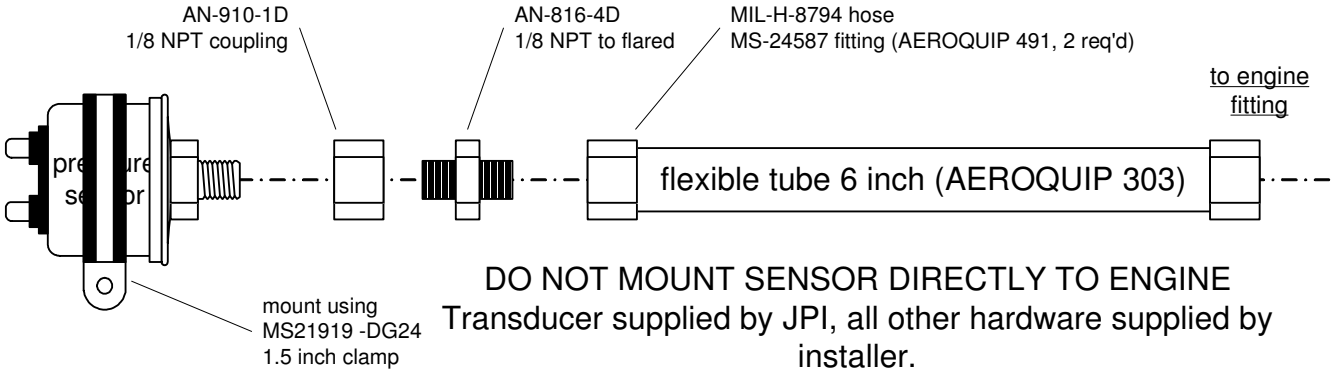


17. Oil Pressure Sensor Installation

Use the J3 connector harness 790420 labeled OIL-P for a VDO pressure sensor (shown in diagram below). Use J4 for a Sensym pressure sensor (not shown).

Oil pressure sensor mount using an aluminum clamp MS21919. Mount to firewall.

Mount the pressure sensor to the pressure line using a flexible hose and fittings (not supplied) as depicted in the drawing below. Use aluminum clamp to mount the pressure sensor to firewall. Do not mount the sensor directly to



DO NOT MOUNT SENSOR DIRECTLY TO ENGINE
Transducer supplied by JPI, all other hardware supplied by installer.

the engine. Connect the other end of the hose to the engine manufacturer's recommended location for engine oil pressure.

17.1 Alternate method of installation keeping the original sensors in the aircraft operational

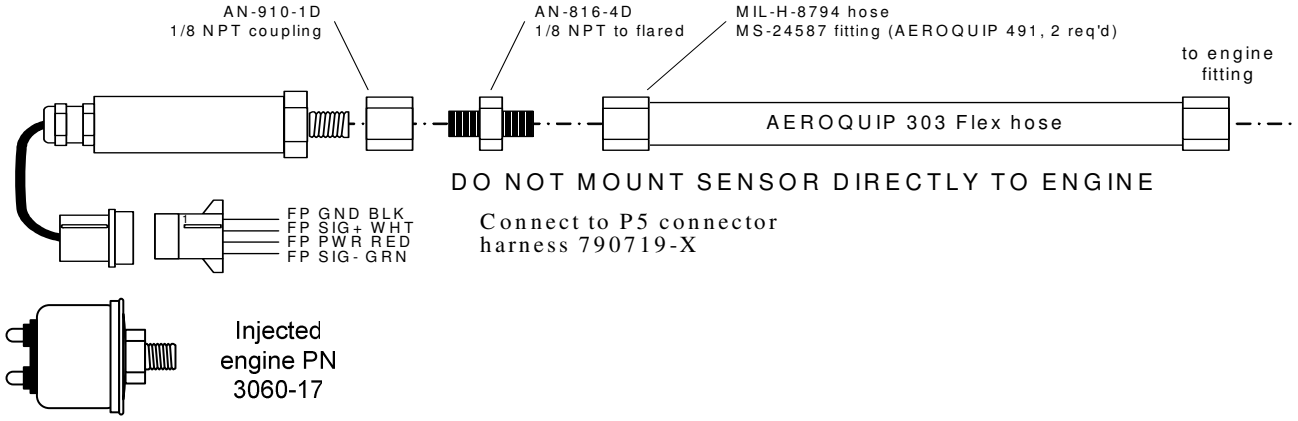
The oil pressure sensor is teed off the oil pressure line feeding the original aircraft gage or the oil pressure switch is removed and the sender is installed in that location.

18. Fuel Pressure Sensor Installation

Use the J5 connector harness 790719-X labeled FUELP.

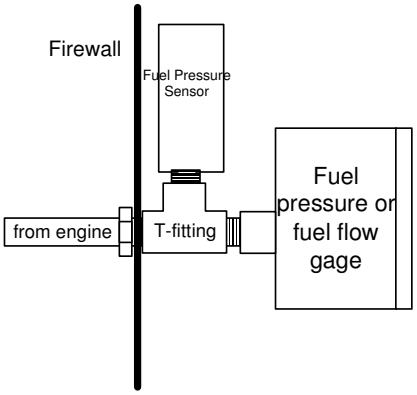
Mount the pressure sensor to the pressure line using a flexible hose and fittings (not supplied) as depicted in the drawing below. Use Aluminum Clamps MS21919WDG25, or WDG14 to mount the pressure sensor to engine mount structure or firewall. Do not mount the sensor's directly to the engine. Connect the other end of the hose to the existing pressure line. Later, you will connect the pressure sensor to the four pressure sensor wires through the supplied 4-pin connector. Part No. 790719() required for Carburetor engines OR Transducer PN 3060-17 for injected engines. PN 3060-17 is a resistive and requires two wires with no polarity.

For Sensym sensor (shown below), crimp the four pins of the female Molex connector to the harness, matching the wire colors. Secure to firewall with Aluminum Clamp MS21919 WDG14. For injected engines use clamp MS21919WDG 25.



18.1 Alternate method of installation keeping the original sensors in the aircraft operational

The fuel pressure sensor is teed of the pressure line feeding the original aircraft pressure gage.

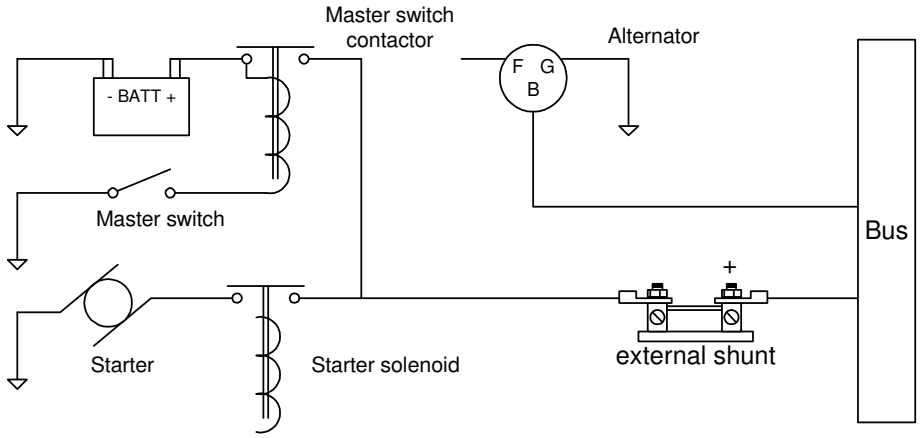


19. Ammeter Shunt Installation

Use the J5 connector harness 790719-X labeled AMP+ and AMP-. Connect the harness leads using ring terminals to the smaller terminal screws on the side of the shunt.

19.1 Charge/Discharge configuration

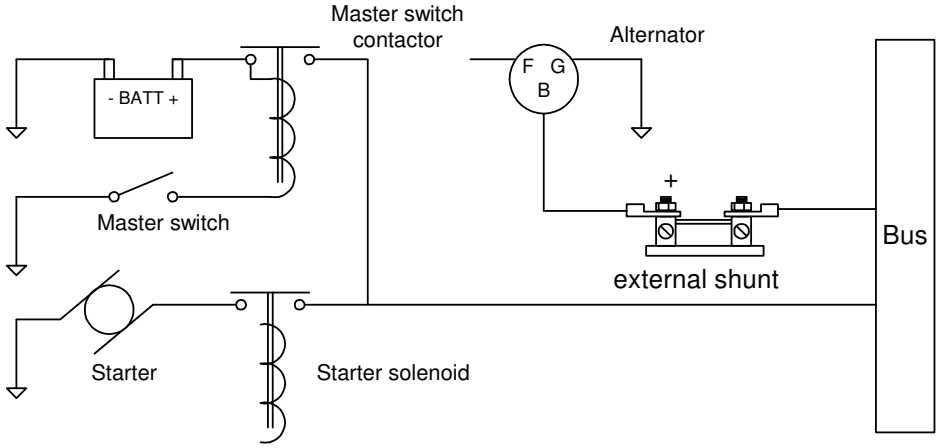
The shunt can be installed between the master contactor and the main bus in which case it will be in the ammeter configuration showing battery charge and discharge. Be sure that the *positive* side of the shunt is connected to the main bus in the *ammeter* configuration. The alarm will be triggered by a discharge condition.



Ammeter Configuration

19.2 Load Meter Configuration

Alternatively the shunt can be installed between the alternator output and the main bus in which case it will be the load meter configuration showing alternator load (positive only). Be sure that the *negative* side of the shunt is connected to the main bus in the *load meter* configuration. There is no alarm.



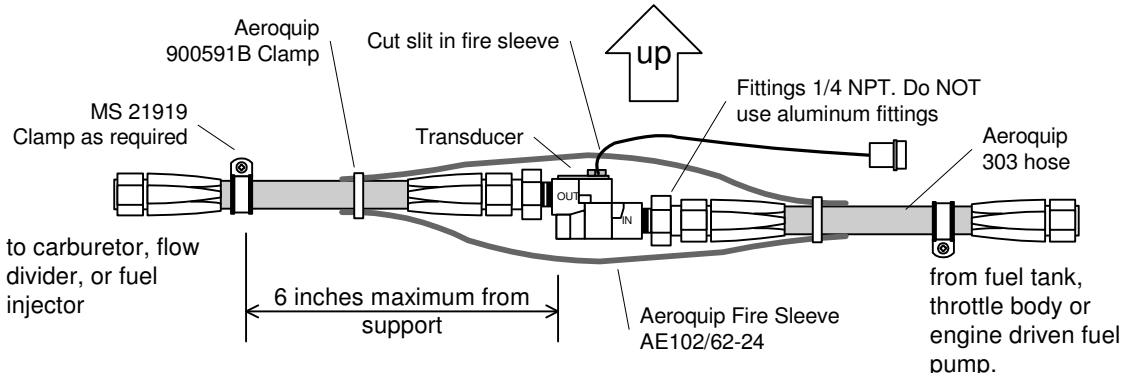
Load Meter Configuration

20. General Fuel Flow Transducer Installation

Use the J4 connector harness 700709 labeled FFSIG (white), FFPWR (red), and FFGND (black). If no previous fuel flow transducer is installed, install transducer per **APPENDIX-A Report 503 FUEL FLOW TRANSDUCER INSTALLATION.**
The EDM-900/930 receives signal from any installed FloScan Transducer with the following FloScan P/N's embossed on to the top of the transducer. The K-Factor is marked on the side of the Transducer and on a white ticket. Wire per drawing 790744, Route the JPI wires along the existing wiring bundle lacing every foot.
The EDM is approved to work with the following Shadin equivalent PN.

FloScan PN	Shadin equivalent PN
201-A	
201-B	680501/680600
201-C	
231	680503

Before connecting any hoses to the transducer, thoroughly clean them and insure they are free of any loose material. **Never pass air pressure through the transducer or use Teflon tape/pipe cement; damage will occur.** Use only steel fittings supplied never use aluminum fittings on transducer. Remove the transducer cap plugs only when ready to install the hoses. Note the direction of fuel flow marked on the transducer. Fuel must flow in this direction. Reverse flow installations will read ½ the required flow. Mount the transducer with the three wires pointing up. The K-factor is printed on the side of the transducer and on a tag. Write down the K-factor here for future reference _____.



The EDM-900fuel flow transducer receives signal from any installed 201 or 231 transducer with either of these part numbers embossed on to the top of the transducer**. For specific engine Installations see Appendix Report 503**

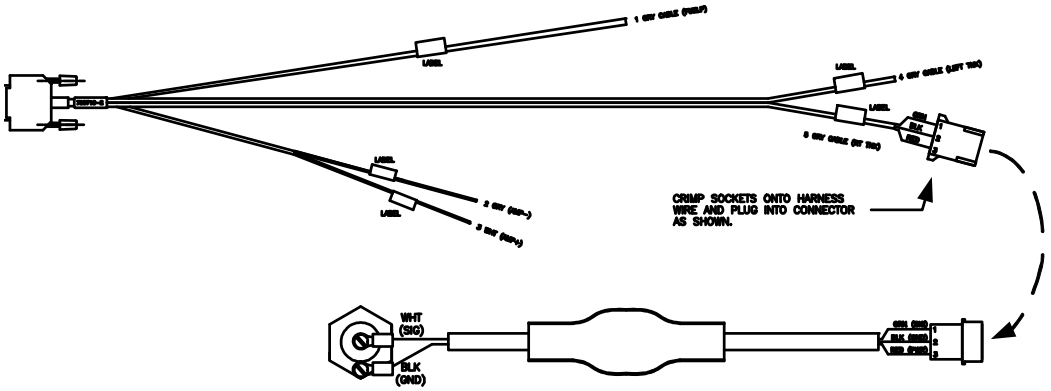
21. Fuel Level Sender Wiring Types

JPI strongly recommends replacing the fuel quantity sensors when installing the EDM**.**
The EDM-930 supports fuel level sensors for directly reading the fuel level in aircraft fuel tanks. The EDM-900/930 contains a fuel table which contains calibration values to convert sensor readings into fuel quantity in the graphs section display. The fuel quantity gauges will not be present on the display until the fuel table for your aircraft has been installed on the Key Card by JPI. The EDM-900/930 function with Resistive/voltage (Change in Resistance or voltage) and Capacitance (Change in frequency) type fuel level senders. In some cases the resistive reading is converted into voltage before it enters the EDM

21.1 Capacitive Sender

Use the J5 connector harness 700719-2 with two gray cables (3 wire) labeled LEFT TNK and RT TANK. After senders are installed, connect them to the J5 FP/FQ/AMP wiring harness as shown below (only the right tank

sender is shown for illustration purposes). Trim the pair of gray cables labeled LEFT TNK and RT TANK to length, then crimp the three female contacts onto the harness wire, and insert them into the connector housing. Connect this to the capacitive sender pod cable and connect the white wire of the pod cable to the center, insulated terminal on the sender, and the black wire to the terminal mounted on the metal body on the sender. Repeat for the other tank sender. **"*FUEL LEVEL CAPACITANCE*" the readings will be in HZ.**

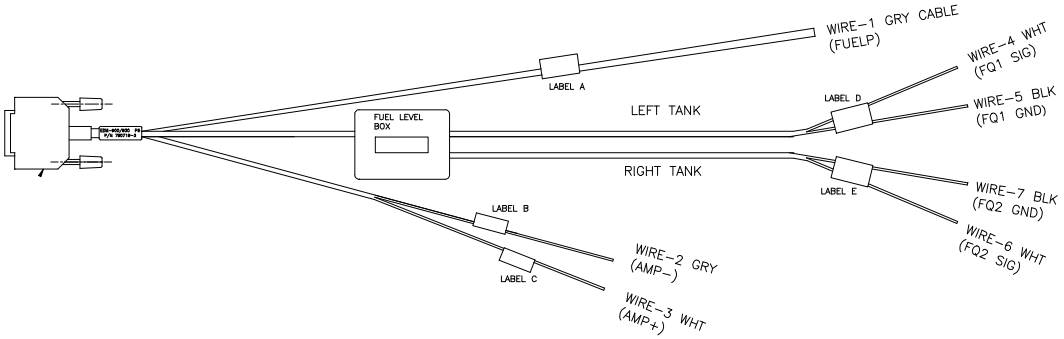


21.2 Resistive Sender – EDM-900/930 as Fuel Level indicator

Disconnect the fuel level senders from the aircraft's existing wiring harness, and connect them to the JPI supplied harnesses as described below. Make sure they do not have voltage on them before connecting to the EDM.

Use J5 connector harness 790719-3 with two white/black wire pairs labeled LEFT TNK RES and RT TANK RES. On installed sensors connect them to the J5 FP/FQ/AMP wiring harness as shown below. Connect the white wire to the signal terminal and black wire to the ground terminal of the corresponding resistive fuel level sensor.

"*FUEL LEVEL RESISTANCE*" the readings will be in Ohms.



Resistive Harness PN 790719-3

21.3 Resistive Sender – EDM-900/930 as supplemental Fuel Level indicator

Use J5 connector harness 790719-3 with a small black box just after the connector has two white/black wire pairs labeled LEFT TNK RES and RT TANK RES. Disconnect the white wires going to the factory gages and mark left and right. Connect the appropriate white wire in the harness to the white wire signal terminal and black wire to the ground terminal of the corresponding resistive fuel level sensor. A good ground is very important and so get as

close as possible to the fuel sender. Make the connection on the existing fuel level gage terminals. When using the EDM to calibrate the sender you will see **"*FUEL LEVEL VOLTAGE*" the readings will be in volts .5 to 4.5.**

21.4 Fuel Tank Setup

The EDM-900/930 supports fuel level sensors for directly reading the fuel level in aircraft fuel tanks. The EDM-900/930 contains a fuel table which contains calibration values to convert sensor readings into fuel quantity in the graphs section display. The fuel quantity gauges will not be present on the display until the fuel table for your aircraft has been installed on the Key Card by JPI, USD and REM will be displayed. Use the following procedure for determining the values that JPI will install into the fuel tables on your Key Card.

The most accurate way to enter calibration values into the fuel table is to completely drain the aircraft fuel tanks and record readings while filling each tank from empty to full in incremental steps.

Note: The owner of the aircraft is responsible for assuring the correct contents of the fuel tables.

21.4.1 Determining Calibration Points

First determine how many fuel level calibration points you wish to use. If your tanks or fuel senders are non-linear, use more points. Otherwise use just 2. Select the row in the table below to determine how to calibrate your fuel level indicator.

The following is the procedure to initially calibrate your fuel senders. You should only have to do this once. You will determine the 2 to 5 fuel level calibration points for one tank and write them in the chart below. These values will be entered using the procedure, ***Error! Reference source not found.***, in the next subsection.

Left fuel level calibration point			Right fuel level calibration point		
	Left Cal	Left Fuel		Right Cal	Right Fuel
L1	[ ][ ][ ][ ]	*[0] [0].[0]**	R1	[ ][ ][ ][ ]	*[0] [0].[0]**
L2	[ ][ ][ ][ ]	[ ][ ].[ ]	R2	[ ][ ][ ][ ]	[ ][ ].[ ]
L3	[ ][ ][ ][ ]	[ ][ ].[ ]	R3	[ ][ ][ ][ ]	[ ][ ].[ ]

* unusable fuel level is entered as 00.0

NEVER add or remove fuel from the aircraft when the master switch is turned on.

21.4.2 Setting Fuel Calibration Points

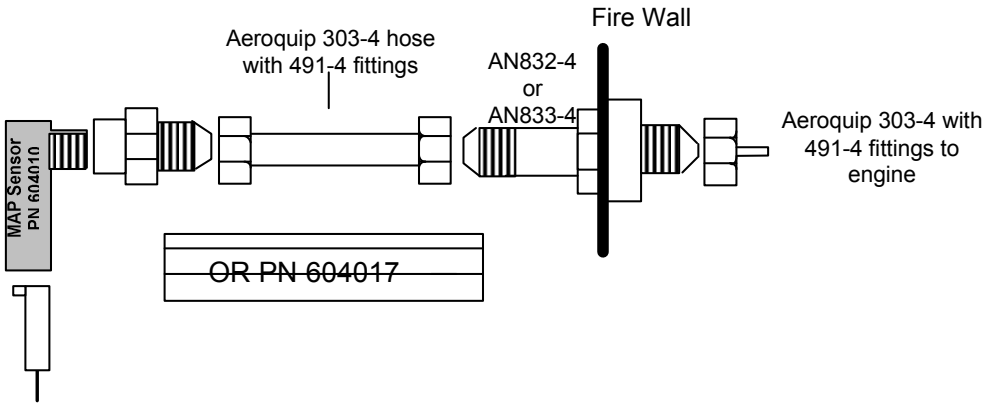
The fuel quantity gauges will not be present on the display until the fuel table for your aircraft has been installed on the Key Card by JPI. Use the following procedure for determining the values that JPI will install into the fuel tables on your Key Card. The most accurate reading come from the installed EDM-930. Inform JPI if the readings were taken off of the EDM or a digital volt meter. Note: Before you install the EDM-930 you can take readings with an Ohm Meter. If you feel the factory Fuel Level gages were accurate you can disconnect the aircraft fuel level transducer and in its place, place an Ohm Box. Adjusting the Ohm Box to get the aircraft fuel level needle to a specific location and then reading the ohms, thus creating a table. The most accurate method is using the EDM system to measure.

Turn OFF the aircraft master switch	
1	Empty left then right tanks, putting back the unusable fuel. (**first fuel level calibration point**)
Hold the right-most button while turning ON master switch, and see one of three messages:	**1. Resistive Fuel Level** **2. Fuel Level Voltage** **3. Capacitive Fuel Level**
2	With the left and right tanks empty or at unusable fuel level, **write down** the displayed calibration values L1 & R1. This is the empty (0) fuel level. You will see typical reading like: **LEFT TANK READING 148.8 OHMS or 2.55 volts or 4532 Hz** **RIGHT TANK READING 151.8 OHMS or 2.45 volts or 4123 Hz**
Turn OFF the aircraft master switch	
3	Add fuel to the left and right tanks and bring it up to the **second fuel level calibration point** level (or full for a two point calibration) Make sure the tank is full. Some aircraft seem full but can take much more fuel by filling slowly.
Hold the right-most button while turning ON master switch.	
4	With the left and right tanks at the second calibration point, **write down** the displayed calibration values L2 & R2 **and** the amount of fuel now in each tank. For a 2 point calibration, stop here.
Turn OFF the aircraft master switch	
5	Add fuel to the left and right tanks and bring it up to the **third fuel level calibration point** level (or full for a three point calibration)
Hold the right-most button while turning ON master switch.	
6	With the left and right tanks at the third calibration point, **write down** the displayed calibration values L3 & R3 **and** the amount of fuel now in each tank. For a 3 point calibration, stop here.
Turn OFF the aircraft master switch.	
7	Add fuel to the left and right tanks and bring it up to the **fourth fuel level calibration point** level (or full for a four point calibration)
Hold the right-most button while turning ON master switch.	
8	With the left and right tanks at the fourth calibration point, **write down** the displayed calibration values L4 & R4 **and** the amount of fuel now in each tank. For a 4 point calibration, stop here.
Turn OFF the aircraft master switch	
9	Add fuel to the left and right tanks and bring it up to **full** for the **fifth fuel level point calibration point** level. Shake the aircraft to make sure you are full. On some aircraft full is not at the filler cap point.
Hold the right-most button while turning ON master switch.	
10	With the left and right tanks at the fifth calibration point, **write down** the displayed calibration values L5 & R5 **and** the amount of fuel now in each tank (fuel tanks).

22. GPS Interface

Use the J4 connector harness 790709 labeled RS232 OUT TO GPS (white) and RS232 IN FROM GPS (gray). Refer to the Manufactures GPS manual for the required pin connections on the GPS.

23. Manifold Pressure (MAP) Sensor

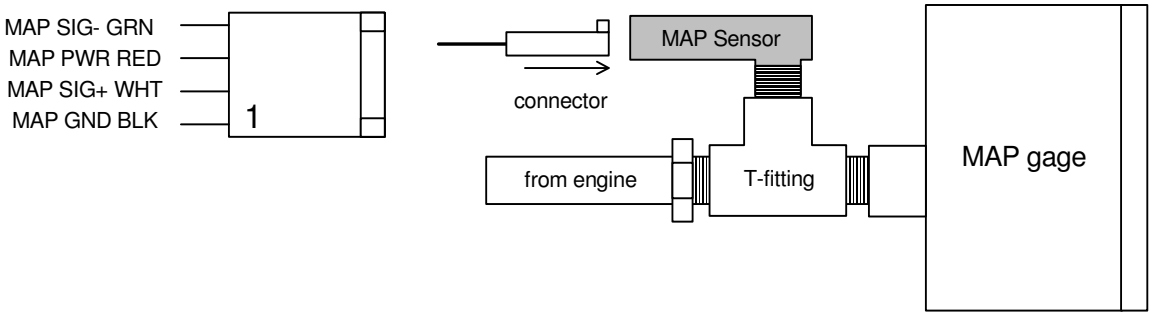


Screw a AN816-4D (flared to pipe thread) into the Aeroquip 303 hose to and from the bulkhead fitting an 832-4 as shown below if not already installed from the aircraft factory MAP gage.

23.1 Alternate method of Manifold pressure transmitter installation in aircraft using existing Manifold Pressure gage

For the JPI sensor use the J3 connector harness 790420 and connect the 4 leads using the supplied 4-pin connector and pins.

Install a T-fitting in the aircraft's MAP gage line in the cockpit near the MAP gage. Install the JPI MAP sensor P/N 604010 on the T-fitting. The MAP sensor uses a 1/8 NPT fitting.



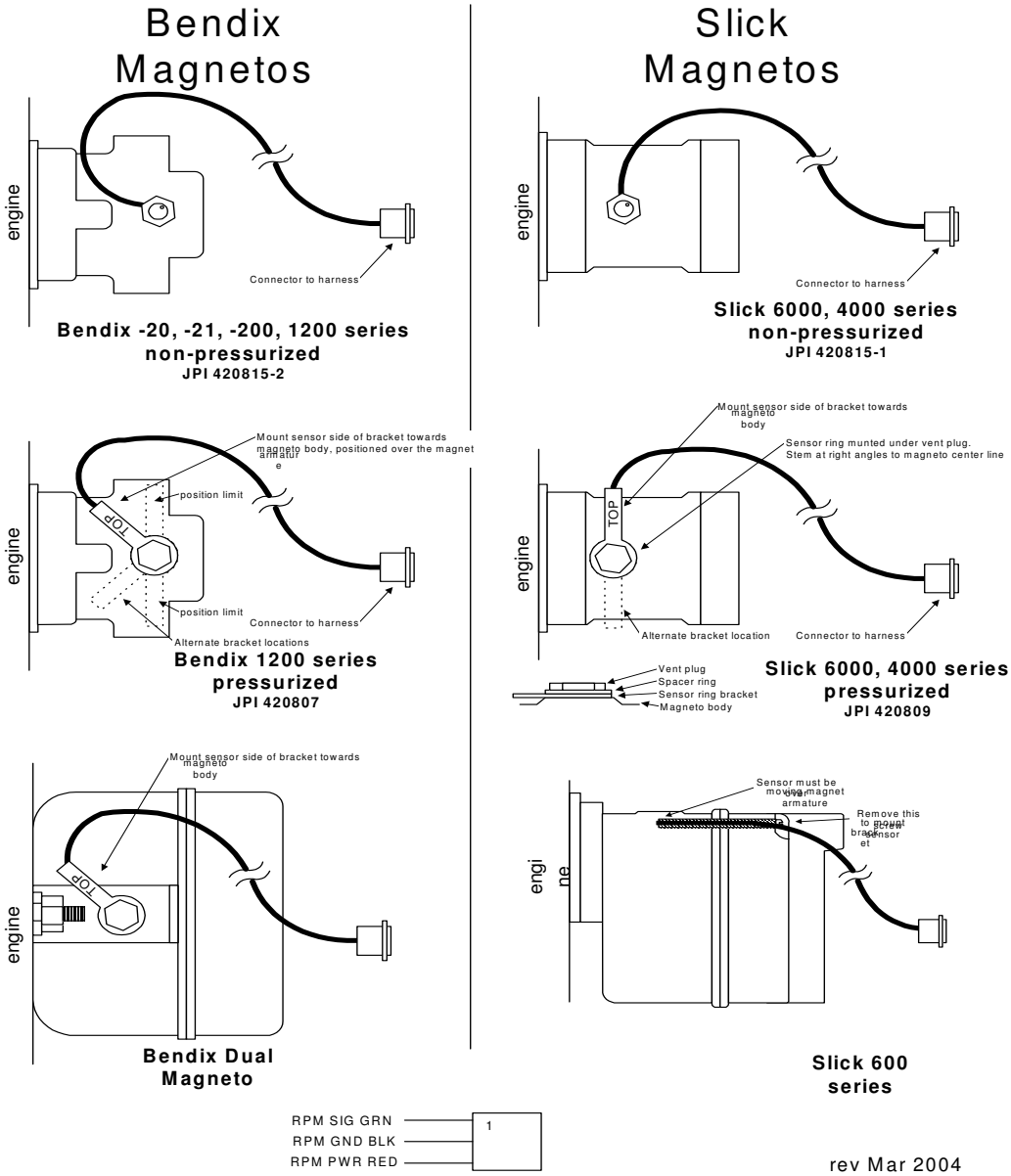
23.2 Manifold Pressure Calibration

The manifold pressure must be calibrated to the ambient air pressure. Enter the current ambient barometric pressure. The engine must *not* be running. This setting is *not* the same as the altimeter setting that you receive from ATIS or Unicom. It will vary with field elevation. Use the chart below to calculate the MP FACTOR. Multiply this MP FACTOR by the altimeter setting that you receive from ATIS or Unicom. For example if the field elevation is 1700 ft and the altimeter setting is 30.1, the MP FACTOR is 0.9400 from the table. Multiply 30.1 x 0.9400 to get the ambient MP of 28.29.

Field Elev.	MP FACTOR						
-500	1.0182	1400	0..4	3300	0.8863	5200	0.8258
-400	1.0145	1500	0.9469	3400	0.8830	5300	0.8227
-300	1.0109	1600	0.9435	3500	0.8798	5400	0.8196
-200	1.0073	1700	0.9400	3600	0.8765	5500	0.8165
-100	1.0036	1800	0.9366	3700	0.8733	5600	0.8135
0	1.0000	1900	0.9332	3800	0.8700	5700	0.8104
100	0.9964	2000	0.9298	3900	0.8668	5800	0.8074
200	0.9928	2100	0.9264	4000	0.8636	5900	0.8043
300	0.9892	2200	0.9230	4100	0.8604	6000	0.8013
400	0.9856	2300	0.9196	4200	0.8572	6100	0.7983
500	0.9821	2400	0.9162	4300	0.8540	6200	0.7953
600	0.9785	2500	0.9129	4400	0.8508	6300	0.7923
700	0.9750	2600	0.9095	4500	0.8477	6400	0.7893
800	0.9714	2700	0.9062	4600	0.8445	6500	0.7863
900	0.9679	2800	0.9028	4700	0.8414	6600	0.7833
1000	0.9644	2900	0.8995	4800	0.8382	6700	0.7804
1100	0.9609	3000	0.8962	4900	0.8351		
1200	0.9574	3100	0.8929	5000	0.8320		
1300	0.9539	3200	0.8896	5100	0.8289		

24. RPM Sensor installation

Use the J3 connector harness 790420 and connect the 3 leads using the supplied 3-pin connector and pins. There are three types of magnetos commonly in use. You must have the correct RPM sensor for the magneto installed in the aircraft. The following part numbers apply: Slick -4000, -6000 use JPI P/N 420815. For the Bendix -1200 use P/N 420815. Dual magnetos use JPI PN 420810. Mount the sensor as shown in the appropriate diagram below.



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25. EDM-900/930 Specifications and Limitations

The following parameters must be customized for the aircraft into which the EDM-900/930 is installed.

Factory set limits or default values for EDM-900/930

1.	TIT 1650 F	TSO-C43
2.	CHT 450 F	TSO-C43
3.	Oil Temp Low 90 F	TSO-C43
4.	Oil Temp HI 230F	TSO-C43
5.	Oil Press low 15 psi	TSO-47
6.	Oil Press Hi 100 psi	TSO-47
7.	Vacuum 0- 15”hg	TSO-47
8.	RPM 2700 Limit and range	TSO-C49
9.	RPM set to cyl 6	TSO-C49
10.	Map 32 In hg HI	TSO-C45
11.	Map setting 29.90 In Hg	TSO-C45
12.	Fuel Pressure Hi 35 psi Injected	TSO-47
13.	Fuel Pressure Lo 15 psi Injected	TSO-47
14.	Fuel Pressure Hi 8 psi Carb	TSO-47
15.	Fuel Pressure Lo .5 psi Carb	TSO-47
16.	Fuel Flow 24 GPH	TSO-C44
17.	K-factor 29.99	
18.	Carburetor filter smoothing 1	
19.	Ammeter configuration (load or charge-discharge). Load	NON TSO
20.	HC-120 (% of HP)	NON TSO
21.	Fuel Level Resistive/Capacitive	TSO-55
22.	Low fuel 10 Gal	
23.	Low time 45 Min	
24.	Main tank 75 gallons	
25.	Aux tank 0	
26.	GPS set at GARMIN	
27.	Diff 500 degrees	TSO-C43
28.	CLD 60 degrees per minute	TSO-C43
29.	Amps limit 100 amps	NON TSO
30.	Record time, 6 sec intervals	NON TSO
31.	Hobbs on at 1000 RPM	NON TSO

On 14 vdc systems during start-up the EDM may reset it self. This is normal due to extremely low battery voltage. The conditions and test required for TSO approval of this article are minimum performance standards. It is the responsibility of those desiring to install this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. The article may be installed only if installation of the article is approved by the Administrator. The functions of Volts, Amps, and Horse Power were tested to DO-160D and DO-178B, but not TSO’d since no TSO exist for these functions. Deviation granted for TSO-C49b to include digital display and sensor. All TSO required probes, transmitters and sensors also tested to DO-160D.

26. Component Parts

	Single engine	
P.N. 790900 (-A,-B,-C)	-4Cyl	-6Cyl
Display and Indicator EDM-900/930	1	1
EGT probe KIT PN 128000	4	6
TIT probe with option KIT 120000	1	1
CHT probe KIT PN 126000	4	6
OAT probe with option KIT 122000	1	1
IAT probe with option KIT 130000	1	1
Carb temp probe if required	1	1
Oil probe with option KIT 124000	1	1
Oil pressure sender	1	1
Fuel pressure sender	1	1
Ammeter shunt	1	1
Fuel Flow transducer	1	1
Fuel Level sender option	1	1
MAP P/N 604010	1	1
RPM one of P/N 420815-1,-2	1	1

26.1 Component Parts List for EGT (PN 128000), TIT (PN 120) Probe

1 Thermocouple type K probe PN M-111
1 Stainless Steel Clamp Thimble
1 Stainless Steel Exhaust Seal Washer
1 Stainless Steel Screw Type Clamp
2 Ring Terminals
2 Screws and nuts 6-32 X 1/4
1 Fiberglass tube 1/2" X 4"

26.2 Component Parts list for CHT (PN 126000) probe

1 Bayonet Probe Thermocouple type K Spring loaded PN 5050-T
1 Or Gasket thermocouple probe type K PN MM-113
2 Ring Terminals
2 Screws and Nuts 6-32 X 1/4"
1 Fiberglass tube 1/2" X 4"

26.3 Component Parts list for OAT (PN 122000) probe

1 P/N 400510, OAT probe
2 Ring Terminals
2 Screws and Nuts 6-32 X1/4"
Fiberglass tube 1/2" X 4"

26.4 Component Parts list for IAT/CARB (PN 121000) probe

1 P/N 400128, IAT/CARB probe
2 Ring Terminals
2 Screws and Nuts 6-32 X1/4"
1 Fiberglass tube 1/2" X 4"

26.5 Component Parts list for OIL probe

1 P/N 400509 OIL probe
2 Ring Terminals
2 Screws and Nuts 6-32 X 1/4"
1 Fiberglass tube 1/2" X 4"

26.6 Component Parts list for VDO Oil Pressure sensor

1 P/N 3060-18, Oil pressure sender two wire
2 Ring Terminals

26.7 Component Parts list for Sensyn Oil Pressure sensor

1 P/N 790775-1, Oil pressure sender four wire
1 4-pin male connector housing
4 male crimp pins
1 4-pin female connector housing
4 female crimp pins

26.8 Component Parts list for Sensyn Fuel Pressure Sensor

1 P/N 790775 Fuel pressure sensor
1 4-pin male connector housing
4 male crimp pins
1 4-pin female connector housing
4 female crimp pins

26.9 Component Parts list for ampere shunt

1 P/N 159920 100 amp shunt
2 Ring Terminals

26.10 Component Parts list for Fuel Flow Transducer

1 fuel flow transducer, 201 or 231 PN 700900-1,-2
8 inches of 1.5"dia fire sleeve
1 3-pin connector housing
3 female pins
2 AN816-4-4 fittings

26.11 Component Parts list for JPI MAP sensor

1 P/N 604010, MAP sender

26.12 Components Parts list for RPM sensor P/N depends on Magneto make and model

Bendix magneto -20,1200	P/N 420815-1
Slick magneto 4000 or 6000	P/N 420815-2

27. Weight and Balance Data

Indicator PN 790000(-A) EDM-900	2.0 Lbs
Indicator PN 790000(-B) EDM-.	1.8 Lbs
Indicator PN 790000(-C) EDM-930	3.0 Lbs
EGT / TIT / CDT / IAT / OAT probe	2.0 oz. each / 0.125 lbs
CHT / Oil Temperature probe	1.5 oz. each / 0.094 lbs
4/6 Cylinder Harness 8 ft.	14.0 oz. each / 0.88 lbs
RPM and MAP	1.5 oz each / .094 lbs
Fuel Pressure Sender	3.9 oz each /
Oil Pressure Sender	4.4 oz each /

Harness each	1.0 Lbs

28. Pilot Programmable Mode

28.1.1.1 Pilot Programming Using EzConfig

JPI provides a configuration program that runs on an MSWindows PC, called EzConfig. See the www.jpinstruments.com web site to download. Follow the instructions in the EzConfig documentation to change these assignments.

28.1.1.2 Pilot Programming without EzConfig

To start the Pilot Program procedure, simultaneously hold the STEP and LF buttons for five seconds. You will see the word PROGRAM for two seconds and then the sequence shown in the chart below.

Tap the STEP button to advance to the next item in the list. Hold the STEP button to step back to the previous item. Tap the LF button to select alternate values of that item. Simultaneously hold both STEP and LF to exit.

STEP *advances next item*	LF *sequences through these values*	*Comments*
PROGRAM		*Stays on for two seconds.*
FUEL N	FILL? N	Tap LF to change fuel status. Exits program mode when done.
RATE 4	0 . . . 9	Index rate (pause time in seconds) in the Automatic Mode. 0 disables the Automatic Mode.
OAT F	OAT F⇔OAT C	To calibrate the OAT ±10°, hold both the STEP and LF buttons simultaneously for five seconds, which will proceed to the next step. Otherwise the next step will be skipped.
OAT+0	OAT-10 . . . OAT+10	This step will be normally be skipped. Adjust the indicated temperature up or down by up to 10°. For example, OAT+3 adjust the OAT 3° higher.
EGT 1?N	EGT 1?N⇔ EGT 1?Y	Y—Yes—sets the digital display to one-degree resolution; N—No—sets 10°. (10° resolution is easier to interpret the EGT's.)
HPC 125	70 HP HPC 125	%HP display will change when HP constant is adjusted. Hold STEP and LF for 5 seconds until you see ADJUST to set the HP calibration. Tap STEP to continue to the next step. See page 26→ To adjust the MAP, hold both the STEP and LF buttons simultaneously for five seconds, which will proceed to the next step. Otherwise the next step will be skipped.
MAP 29.9	MAP 20→32	Adjust the MAP. See page 26→
KP 29.90		Adjust the instrument's K-factor to match the fuel flow transducer K-factor. See page 26→
TRIP? N	TRIP? N⇔ TRIP? Y	N—No—Upon informing the EDM that you refueled the aircraft, reset total fuel used to 0. Y—Yes—accumulate total fuel used rather than reset to 0 at each refueling. See page 26→
HOBS VAL	2424 ENG⇔ 25 EDM⇔ 3567 FRM	Displays the engine hours and airframe hours.
END? Y	END? Y	STEP exits the pilot programming mode. LF reenters pilot programming mode.

28.1.2 Programming the Horsepower Constant

You must adjust the HP Constant once for your aircraft. You must perform this adjustment in the air while the aircraft is in flight between 5,000 and 8,000 feet MSL.

1. Enter the pilot program mode by simultaneously holding the STEP and LF buttons for five seconds.
2. Tap STEP repeatedly until you see—for example— HPC = I25. Then hold both the STEP and LF buttons display until you see ADJUST, followed by HPC= I25. The adjustment range for the HP Constant is 45 to 180.
3. Set the MP and RPM per your POH to 70 percent power. Let conditions stabilize.
4. Change the HP reading on the EDM-900 to 70 percent by adjusting the HP constant in the lower display by holding or tapping the LF button. Percent HP should be close to 100 percent during takeoff at sea level.
5. Tap the STEP button to proceed to the next step.

28.1.3 Programming the MAP

Sets the manifold pressure calibration (an sets the Carbureted fuel pressure zero points).

You may need to correct the MAP based on the **altimeter setting at a sea level airport.**

1. Enter the pilot program mode by simultaneously holding the Step and LF buttons for five seconds.
2. Tap Step/OK repeatedly until you see—for example— HPConstant=125. Then hold both the first two buttons Step/OK and Change buttons display until you see Adjust, followed by HP Constant=125.
3. Again, Hold both the two buttons, Step/OK and Change buttons display until you see ADJUST, followed by MAP+0. The adjustment range for the MAP is ±3.0 in Hg. As you adjust the MAP up or down you will see a change in the MAP gage under RPM. When you see the correct setting stop.
4. Tap the Step/OK button to proceed to the next step or hold both buttons again to exit setup.

Do this one time and only if the MAP on your manifold pressure gauge doesn't match the MAP shown on the EDM-900 You must do this on the ground with the engine turned off.

A. Absolute calibration: the table below shows the MAP for a given field elevation (down the left side of the table) and altimeter setting (along top row of the table). Find the entry in the table most closely matching your field elevation and current altimeter setting. Interpolate if necessary.

Alt setting-> field elev.	**29.0**	**29.2**	**29.4**	**29.6**	**29.8**	**29.9**	**30.0**	**30.2**	**30.4**	**30.6**	**30.8**	**31.0**
0	29.0	29.2	29.4	29.6	29.8	29.9	30.0	30.2	30.4	30.6	30.8	31.0
1000	28.0	28.2	28.4	28.5	28.7	28.8	28.9	29.1	29.3	29.5	29.7	29.9
2000	27.0	27.1	27.3	27.5	27.7	27.8	27.9	28.1	28.3	28.5	28.6	28.8
3000	26.0	26.2	26.3	26.5	26.7	26.8	26.9	27.1	27.2	27.4	27.6	27.8
4000	25.0	25.2	25.4	25.6	25.7	25.8	25.9	26.1	26.3	26.4	26.6	26.8
5000	24.1	24.3	24.5	24.6	24.8	24.9	25.0	25.1	25.3	25.5	25.6	25.8
6000	23.2	23.4	23.6	23.7	23.9	24.0	24.0	24.2	24.4	24.5	24.7	24.8
7000	22.4	22.5	22.7	22.8	23.0	23.1	23.1	23.3	23.5	23.6	23.8	23.9

Unless your airfield is close to sea level, do not set MAP to the local altimeter setting since that setting is the pressure corrected to sea level, and is not the same as your field elevation pressure.

Tap or hold the LF button to change the MAP value.

Tap the STEP button to proceed to the next item.

28.1.4 K factor

The K factor is shown on the fuel flow transducer as a four-digit number, which is the number of pulses generated per gallon of fuel flow. Before installing the transducer, write down the K factor here _____. To enter the number,

move the decimal point three places to the left. For example if the K factor on the fuel flow transducer is 29,123, enter 29.12 in the K factor parameter.

If the K factor is increased, the indicated fuel flow will decrease, and vice-versa. When the K factor is changed during a trip, calculations of fuel used, fuel remaining and time to empty are not retroactively recalculated.

28.1.4.1.1 Fine Tuning the K factor

The K factor shown on the fuel flow transducer does not take into account your aircraft's particular installation. Fuel hose diameters and lengths, elbows, fittings and routing can cause the true K factor to be different from that shown on the fuel flow transducer.

You must use the following procedure to fine tune the K factor.

1. Make at least three flights of about two to three hours each. Note the actual fuel used (as determined by topping the tanks) and the EDM-900 calculation of the fuel used for each flight USD.

Flight	*Fuel USED shown by EDM (total tank - REM)*	*Actual fuel used by topping tanks*
1		
2		
3		
Total	❶	❷

2. Total ❶ the EDM-900 calculated fuel used and ❷ the actual fuel used.
3. Record the current K factor here ❸_____ and in the table below.
4. Calculate the New K factor as follows:

$$\text{New K factor} = \frac{(❶\text{EDM fuel used}) \times (❸\text{Current K factor})}{(❷\text{actual fuel used})}$$

$$\text{New K factor} = \frac{(❶\_\_\_\_\_) \times (❸\_\_\_\_\_)}{(❷\_\_\_\_\_)}$$

Every time you fine tune the K factor, change it by only half of the amount calculated above, and record the measurements here:

Date	*❶EDM fuel used*	*❷actual fuel used*	*❸Current K factor*	*New K factor = ❶x❸/❷*	*Pilot's initials*

28.1.4.2 Programming the K factor

This procedure is different than for setting other parameters.

1. If you haven't already done so, start the Pilot Program procedure, by simultaneously hold the STEP and LF buttons for five seconds. You will see the word PROGRAM, followed by FUEL N.

2. Again, simultaneously hold the STEP and LF buttons for five seconds. You will the word FACTORY, followed by RESET? N.

3. Tap STEP button to advance to the FFLW? N screen.

4. Tap LF to enter the fuel flow submenu.

5. Tap STEP repeatedly until you see KF = 29.90 (for example)

6. Hold both the STEP and LF buttons simultaneously for five seconds. The first digit flashes (shown here as a larger digit only for illustration purposes): 29.90

7. Tap or hold the LF button to change flashing digit: I 9.90

8. Tap STEP button for next digit (hold STEP for previous digit): I 9.90

9. Tap or hold the LF button to change flashing digit: I 8.90

10. Tap STEP button for next digit (hold STEP for previous digit): I8.90

11. Repeat items 9 and 10 for the remaining two digits.

12. Hold STEP and LF buttons simultaneously for five seconds to exit the K factor parameter setup.

13. Tap STEP repeatedly until you see END ? Y, then Tap STEP once more to exit the factory setup mode.

28.1.5 Programming Accumulate Trip Total

Accumulate—default is OFF: resets the fuel used to 0 every time you inform the EDM-900 that the aircraft was refueled. With accumulate ON fuel used will not be reset to 0 when you inform the EDM-900 that the aircraft was refueled.

Select “No” if you wish to display total fuel used since the last time you informed the EDM-900 that the aircraft was refueled. Select “Yes” to display total fuel used for an extended trip with multiple fuel stops. This selection affects only the USD measurement.

During normal operation, to reset the accumulated fuel used display at any time, tap STEP until you see USD. Hold both STEP and LF until the display shows .0 USD.

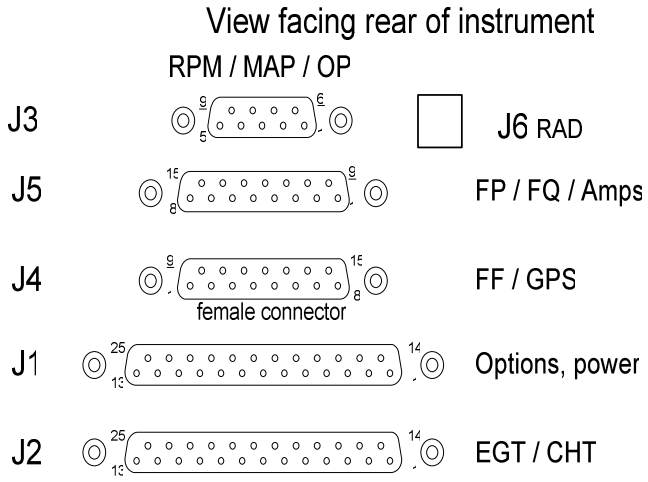
29. Trouble Shooting

1. **A missing column in the display upon start up** indicates the continuity check diagnostic routine has found an open line or probe with no connection. An error message will indicate which cylinder to look at.
2. **A missing column in the display during flight** indicates a reading that is jumping around or incorrect. The probe is removed from the line up to prevent false alarms.
3. **A negative reading** (-) in front of the number indicates reverse polarity on the red/yellow wire to probe.
4. **Using an ohmmeter** or continuity checker measure across the probe output leads. A good probe should be around 2- ohms and at the connector to the probe around 20 ohms.
5. **Erroneous or erratic readings on one cylinder reading.** Swap the suspected probe with a probe from a good cylinder. If the problem goes to the good cylinder the probe should be replaced. If the problem remains the same, it is in the Thermocouple hook-up wiring from the probe to the instrument or it can be in the ring terminals crimped to the wire. Remember to double back on the wire going into the ring terminal.
6. **EGT, large span**. Normally aspirated (carburetor) engines at normal cruise display a “DIFF” of 125 to 175 ^{o}F spread between cylinders. Injected engines at normal cruise display a “DIFF” 50 to 90 ^{o}F spread between cylinders. All cylinders are measured by a common circuitry. It is almost impossible **not to have** identical calibration on all channels.
7. If the temperature reading is changing more than 500°F in one second it should be questioned and a loose wire crimp or probe should be suspected. A malfunctioning probe will automatically be removed from the scan.
8. **All EGT or CHT readings seem to high or low or unsteady**. Use a DVM (digital voltmeter) to measure the difference between 900SCANNER ground and the engine block ground. If the difference is greater than 0.5 volts

with the alternator charging. Then remove the EDM-900/930ground (Black wire) from the instrument panel and connect it directly to the ENGINE BLOCK for GROUND.

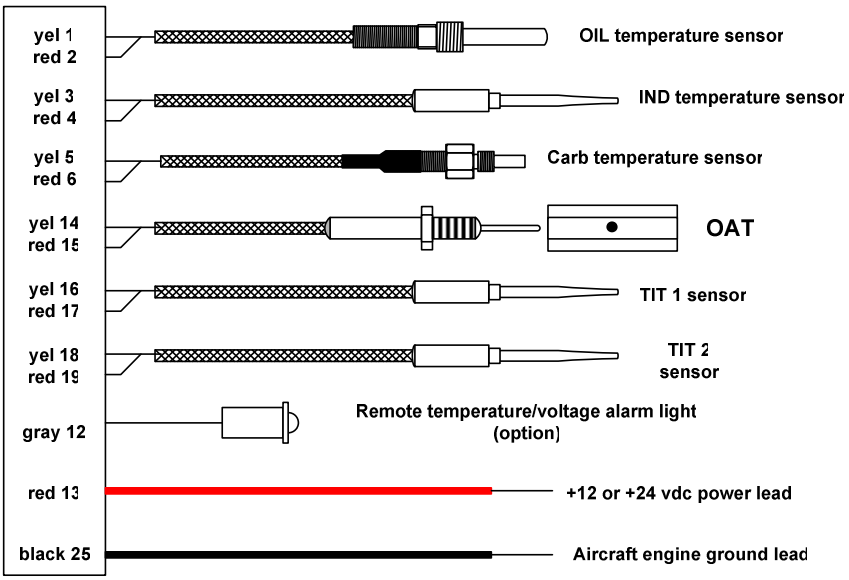
9. **OAT readings off by 25 degrees,** but oil and CHT readings OK, look for *copper wire spliced* in line to OAT probe. OAT reading can be fine tuned +/- 5 degrees, see reset procedure. Engine heat could also be the cause.
10. The instrument configures itself automatically for 4 or 6 cylinder engines, 14 or 28 volt electrical systems.

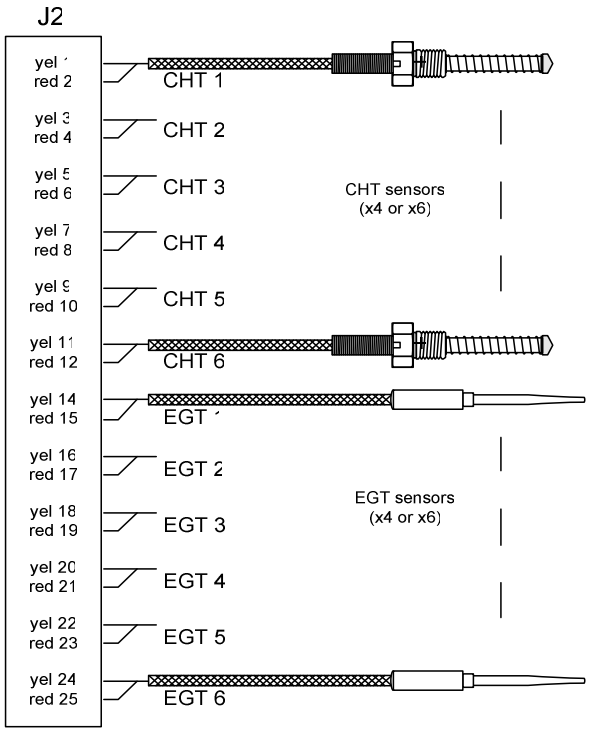
30. Connector Pin Assignments



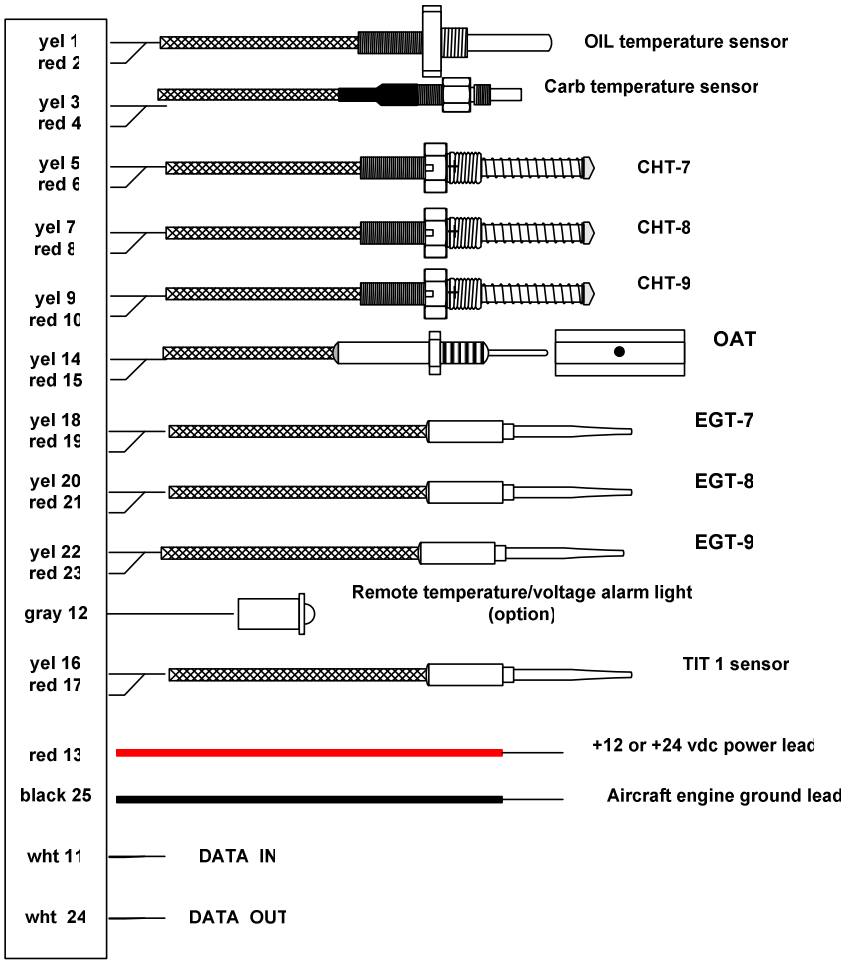
Rear View of EDM-900/930 Showing Connector Locations

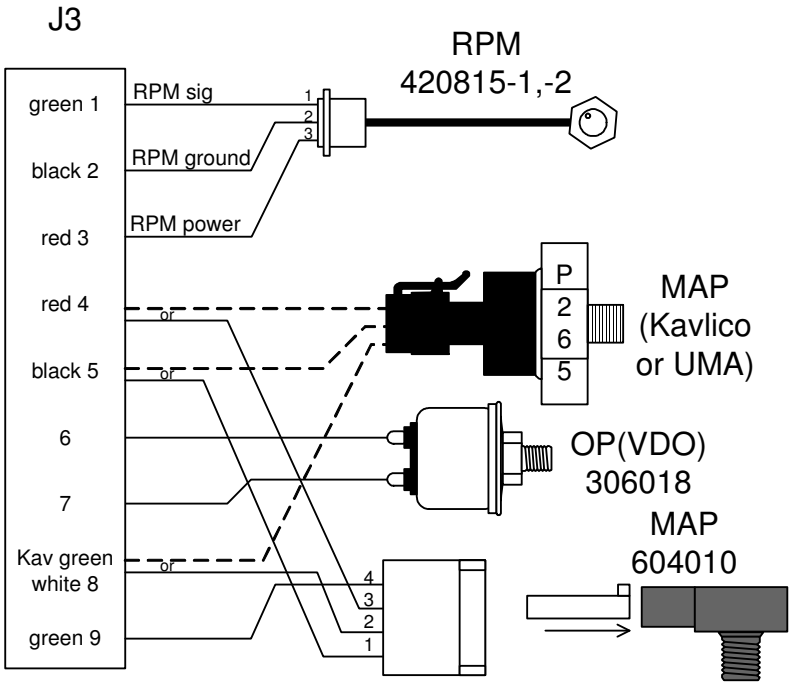
J1 For 4 and 6 cylinder installations

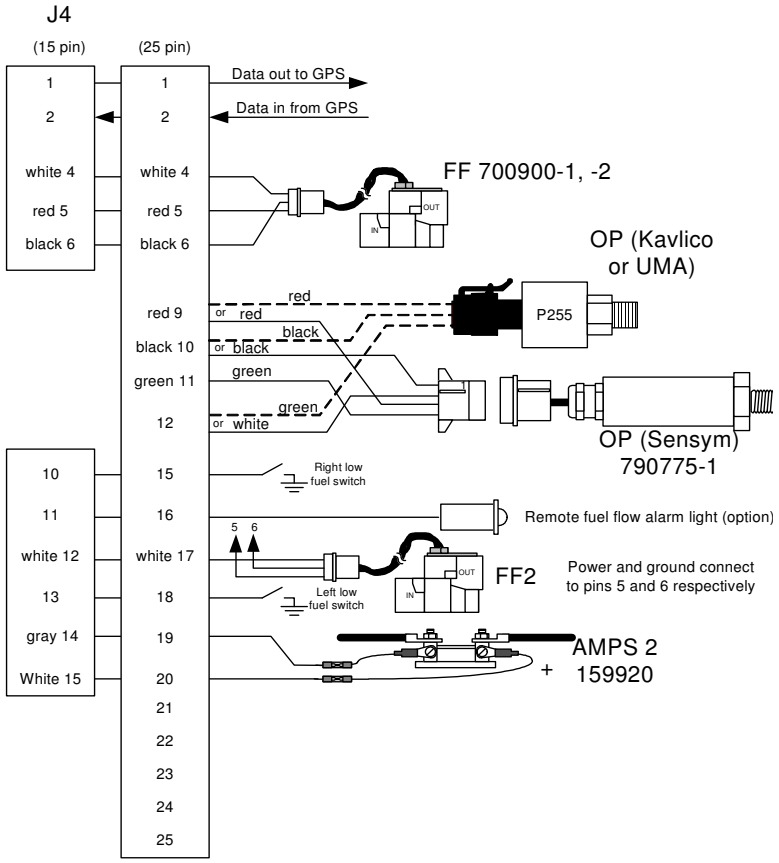




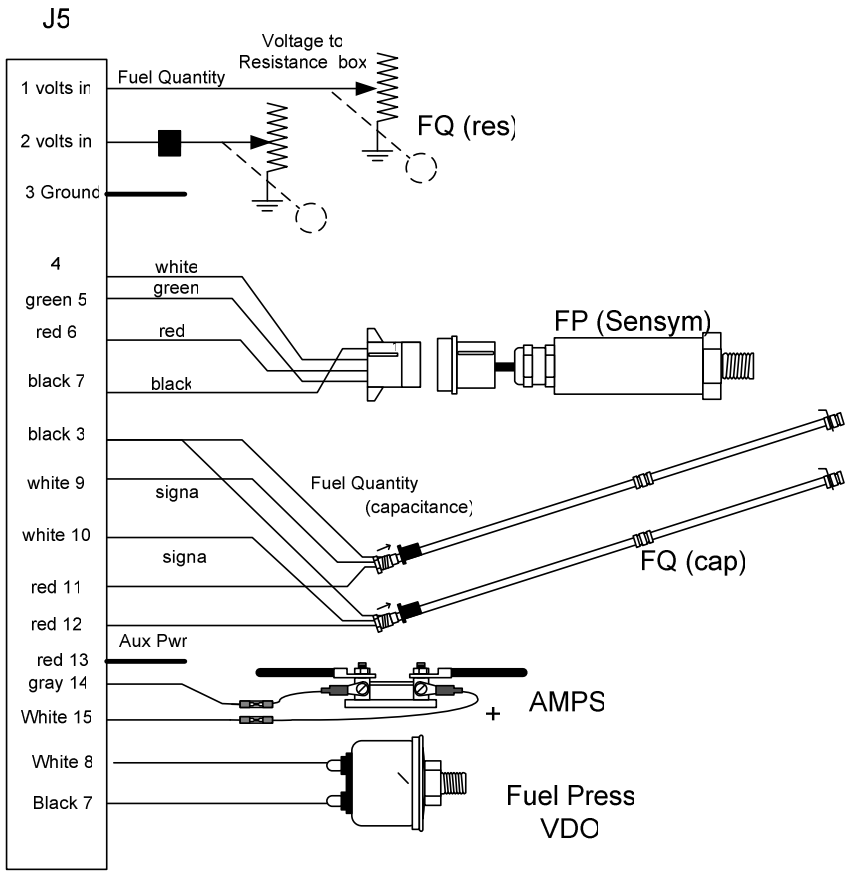
J1 FOR **7, 8**, and **9** cylinder installations

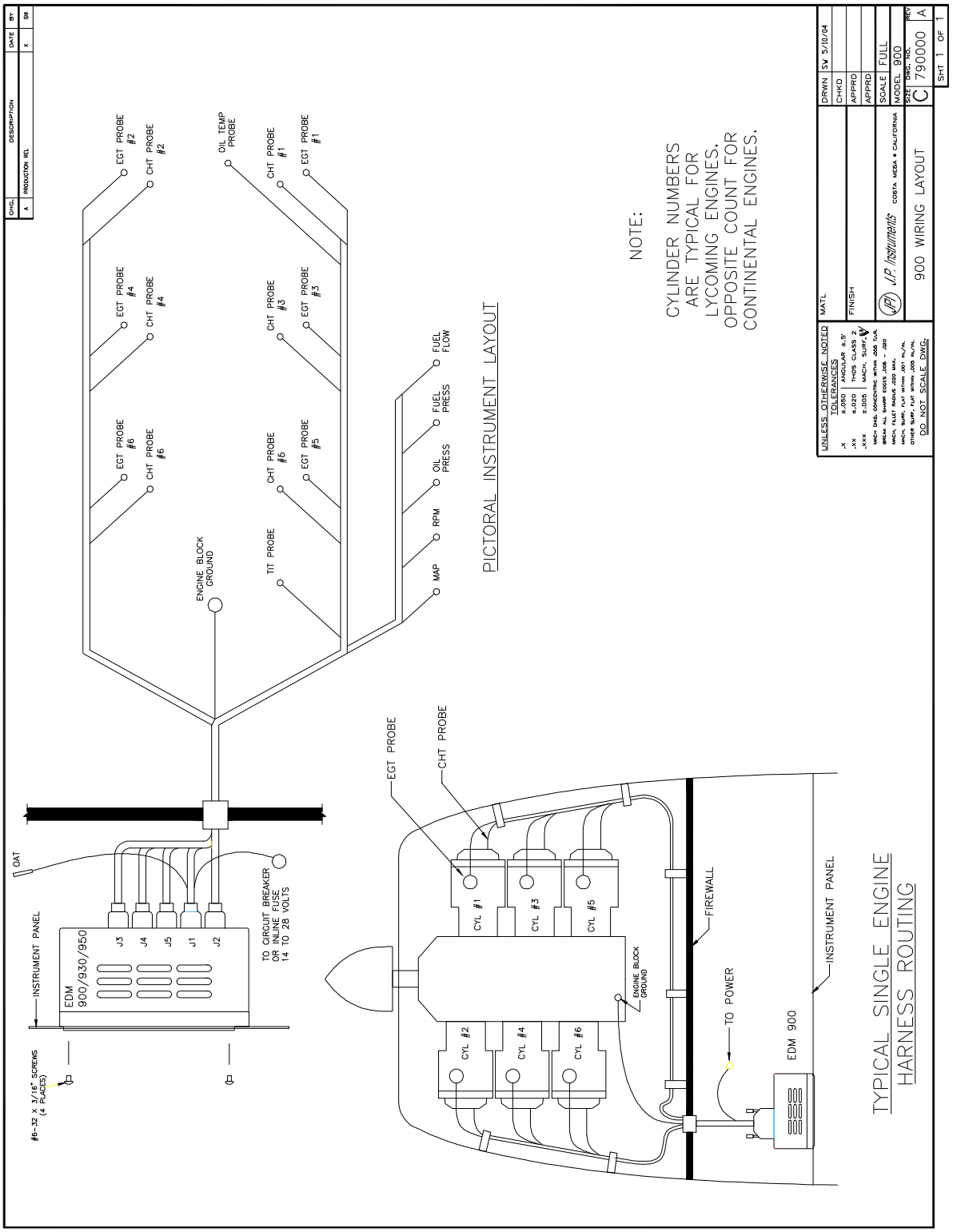


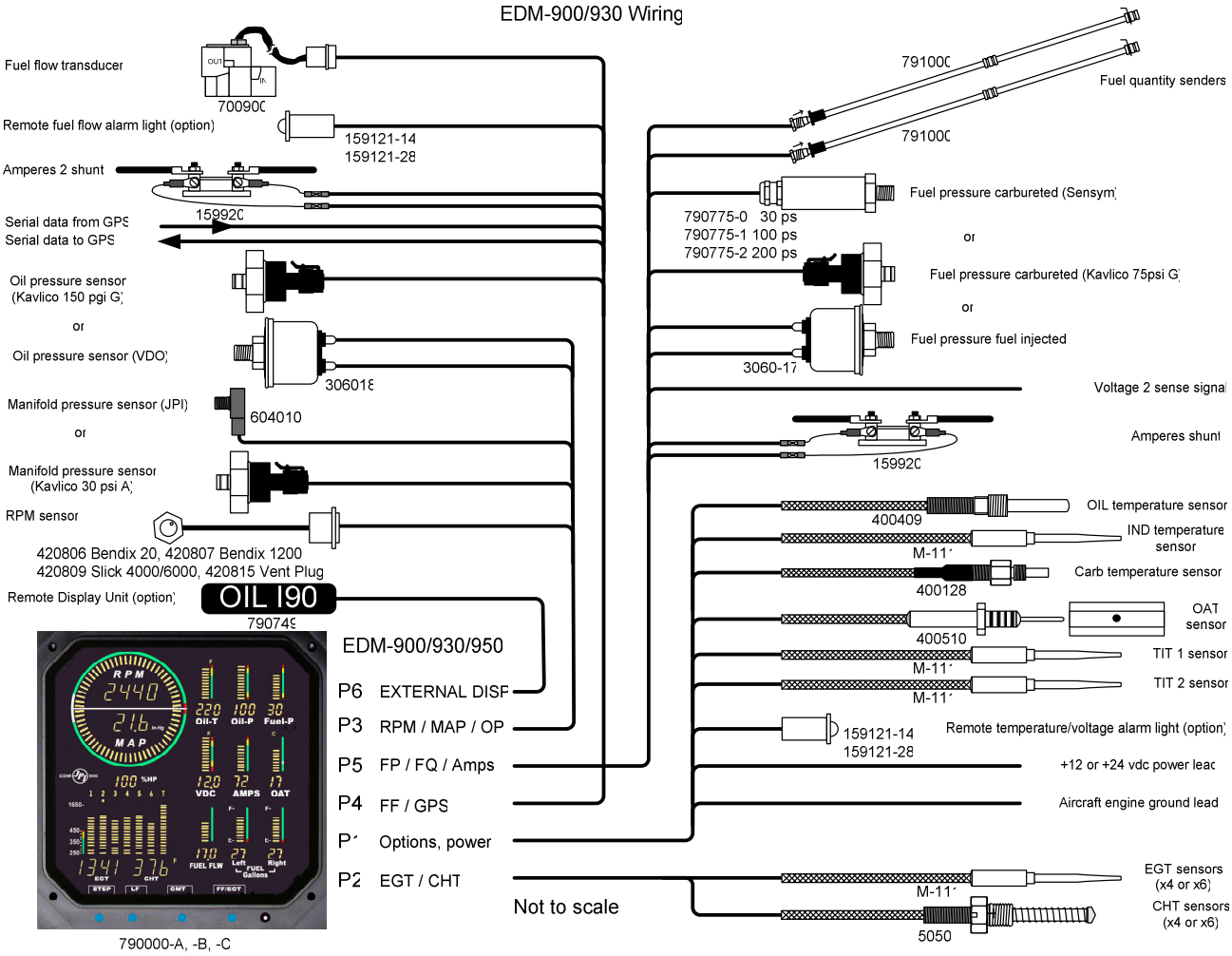

J3
RPM
420815-1,-2
green 1
RPM sig
black 2
RPM ground
red 3
RPM power
red 4
or
black 5
or
6
7
Kav green
white 8
or
green 9
1
2
3
P
2
6
5
MAP
(Kavlico
or UMA)
OP(VDO)
306018
MAP
604010
4
3
2
1


J4
(15 pin)
(25 pin)
1
2
white 4
red 5
black 6
10
11
white 12
13
gray 14
White 15
1
2
white 4
red 5
black 6
red 9
black 10
green 11
12
15
16
white 17
18
19
20
21
22
23
24
25
Data out to GPS
Data in from GPS
FF 700900-1, -2
OUT
IN
OP (Kavlico
or UMA)
red
or red
black
or black
green
green
or white
P255
OP (Sensym)
790775-1
Right low
fuel switch
Remote fuel flow alarm light (option)
5 6
FF2
Power and ground connect
to pins 5 and 6 respectively
Left low
fuel switch
AMPS 2
159920
+

Edm-900/930


J5
Voltage to
Resistance box
1 volts in
Fuel Quantity
FQ (res)
2 volts in
3 Ground
4
white
green 5
green
red 6
red
FP (Sensym)
black 7
black
black 3
white 9
signa
Fuel Quantity
(capacitance)
white 10
signa
FQ (cap)
red 11
red 12
Aux Pwr
red 13
gray 14
White 15
+
AMPS
White 8
Black 7
Fuel Press
VDO


EGT PROBE #2
CHT PROBE #2
EGT PROBE #4
CHT PROBE #4
EGT PROBE #6
CHT PROBE #6
OIL TEMP PROBE
CHT PROBE #1
EGT PROBE #1
CHT PROBE #3
EGT PROBE #3
CHT PROBE #5
EGT PROBE #5
FUEL FLOW
FUEL PRESS
OIL PRESS
RPM
MAP
TIT PROBE
ENGINE BLOCK GROUND
PICTORAL INSTRUMENT LAYOUT
NOTE:
CYLINDER NUMBERS ARE TYPICAL FOR LYCOMING ENGINES. OPPOSITE COUNT FOR CONTINENTAL ENGINES.
OAT
INSTRUMENT PANEL
EDM 900/930/950
J3
J4
J5
J1
J2
TO CIRCUIT BREAKER OR INLINE FUSE 14 TO 28 VOLTS
#6-32 X 3/16" SCREWS (4 PLACES)
EGT PROBE
CHT PROBE
CYL #1
CYL #3
CYL #5
CYL #2
CYL #4
CYL #6
ENGINE BLOCK GROUND
FIREWALL
TO POWER
EDM 900
INSTRUMENT PANEL
TYPICAL SINGLE ENGINE HARNESS ROUTING
J.P. Instruments
COSTA MESA • CALIFORNIA
900 WIRING LAYOUT
MODEL 900
SIZE C
DWG. NO. 790000
REV A
SHT 1 OF 1


EDM-900/930 Wiring
Fuel flow transducer
700900
Remote fuel flow alarm light (option)
159121-14
159121-28
Amperes 2 shunt
159920
Serial data from GPS
Serial data to GPS
Oil pressure sensor
(Kavlico 150 psi G)
or
Oil pressure sensor (VDO)
306018
Manifold pressure sensor (JPI)
604010
or
Manifold pressure sensor
(Kavlico 30 psi A)
RPM sensor
420806 Bendix 20, 420807 Bendix 1200
420809 Slick 4000/6000, 420815 Vent Plug
Remote Display Unit (option)
OIL I90
790749
790000-A, -B, -C
EDM-900/930/950
P6 EXTERNAL DISP
P3 RPM / MAP / OP
P5 FP / FQ / Amps
P4 FF / GPS
P1 Options, power
P2 EGT / CHT
Not to scale
791000
Fuel quantity senders
791000
Fuel pressure carbureted (Sensym)
790775-0 30 psi
790775-1 100 psi
790775-2 200 psi
or
Fuel pressure carbureted (Kavlico 75psi G)
or
Fuel pressure fuel injected
3060-17
Voltage 2 sense signal
Amperes shunt
159920
OIL temperature sensor
400409
IND temperature sensor
M-11
Carb temperature sensor
400128
OAT sensor
400510
TIT 1 sensor
M-11
TIT 2 sensor
M-11
159121-14
159121-28
Remote temperature/voltage alarm light (option)
+12 or +24 vdc power lead
Aircraft engine ground lead
EGT sensors (x4 or x6)
M-11
CHT sensors (x4 or x6)
5050

31. Certificate of Compliance, Fuel Level Transmitters

- **FAA AC 25.981-1B Section 7 states (concerning electrical arc generation, and filament heating energy):**

- **"Electrical transient amplitudes less than 40 volts may be considered less than the potential required to create sparks. In addition …a maximum of 20 microjoules is considered intrinsically safe for fuel quantity indicating systems."**

- **"… electrical power with the potential to create a filament heating ignition source in the fuel tank should be limited to less than 30 milliamperes RMS …, a factor of safety should be applied to this value when establishing a design limit."**

- **Circuitry connected to the fuel tank sensor is equivalent to a 5 VDC source in series with a 2200 ohm resistor, with a 0.01 microfarad capacitor in parallel.**

- **The maximum energy stored in the capacitor = ½ C* V^2 = 0.125 microjoule.**

- **The maximum current in the circuit (assuming a short circuit in tank) = V/R = 2.3 milliamperes.**

- **The maximum stored energy and current in the JPI EDM-900 / 930/. fuel level circuit are far below recommended minimums.**

23. Instructions for Continued Airworthiness (ICA)

There are no field adjustments and or calibration requirements for the EDM-900/930 instrument after initial installation. ICA is not required. Maintenance of nonfunctioning or malfunctioning components is limited to removal and replacement of JPI factory supplied new or repaired components as described in the troubleshooting section of the installation instructions.