

Primary Fuel Flow/Pressure

FP-5L

Installation Instructions

II 0506931, Rev I 7/2/02*****

II S0506931, Rev C 2/18/05

You must read this manual before installing or operating the instrument. This manual contains warranty and other information that may affect your decision to install this product and/or the safety of your aircraft.



S/N: _____



Electronics International Inc.

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1. Important Notice: MUST READ!

If you think it is not important to read this manual, you're wrong! This manual contains important installation information that may affect the safety of your aircraft, delay your installation or affect the operation of your instrument. You Must read this manual prior to installing your instrument. Any deviation from these installation instructions is the sole responsibility of the installer/pilot and may render the STC invalid.

Read the Warranty / Agreement. There is information in the Warranty / Agreement that may alter your decision to install this product. **If you do not accept the terms of the Warranty / Agreement, do not install this product.** This product may be returned for a refund. Contact Electronics International Inc. for details.

The FT-60 Fuel Transducer is intended to be used on aircraft equipped with fuel pumps with engines rated below 350 H.P. **A gravity feed fuel system or any engine rated over 350 H.P. must use an FT-90 flow transducer. An engine rated over 550 H.P. must use the FT-180 flow transducer.**

Transducer Identification:

FT-60 - Red Cube.
FT-90 - Gold Cube.
FT-180 - Black Cube.

If your aircraft is not covered on our STC (found at the back of this manual), **you must perform the flow and pressure tests in FAA document A.C. 23-16 (Powerplant Guide for Certification of Part 23 Airplanes) to insure safe and proper operation.**

Installation of the FP-5L on an aircraft with a fuel return line from the Pressure Carburetor requires a FFDM-1 Differential Module (see Product Catalog and Price List).

The placard "Do Not Rely on Fuel Flow Instrument to Determine Fuel Levels in Tanks" must be mounted on the aircraft instrument panel near the FP-5L.

If the aircraft is equipped with a primary fuel flow and/or pressure instrument, the following placard must be mounted on the aircraft instrument panel near the FP-5L: "Refer to Original Fuel Flow/Pressure Instrumentation for Primary Information."

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2. Warranty / Agreement

Electronics International Inc. (E.I. inc.) warrants this instrument and system components to be free from defects in materials and workmanship for a period of one year from the user invoice date. **Fuel Flow and Pressure Transducers are NOT covered under this warranty.** They are covered by the original equipment manufacturer. Electronics International Inc. will repair or replace any item, at its sole discretion, covered under the terms of this Warranty provided the item is returned to the factory prepaid.

1. This Warranty shall not apply to any product that has been repaired or altered by any person other than Electronics International Inc., or that has been subjected to misuse, accident, incorrect wiring, negligence, improper or unprofessional assembly or improper installation by any person. **This warranty does not cover any reimbursement for any person's time for installation, removal, assembly or repair.** Electronics International retains the right to determine the reason or cause for warranty repair.
2. This Warranty does not extend to any machine, vehicle, boat, aircraft or any other device to which the Electronics International Inc. product may be connected, attached, interconnected or used in conjunction with in any way.
3. The obligation assumed by Electronics International Inc. under this Warranty is limited to repair, replacement or refund of the product, at the sole discretion of Electronics International Inc.
4. Electronics International Inc. is not liable for expenses incurred by the customer or installer due to factory updates, modifications, improvements, upgrades, changes, or any other alterations to the product that may affect the form, fit, function or operation of the product.
5. Personal injury or property damage due to misinterpretation or lack of understanding of this product is solely the pilot's responsibility. The pilot **must** understand the operation of this product before flying the aircraft. Do not allow anyone to operate the aircraft that does not know the operation of this product. Keep the Operating Manual in the aircraft at all times.
6. E. I. Inc. is not responsible for shipping charges or damages incurred under this Warranty.
7. No representative is authorized to assume any other liability for Electronics International Inc. in connection with the sale of Electronics International Inc. products.
8. **If you do not agree to and accept the terms of this Warranty, you may return the product for a refund.**

This Warranty is made only to the original user. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR OBLIGATIONS: EXPRESS OR IMPLIED. MANUFACTURER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PURCHASER AGREES THAT IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS OR LOSS OF USE OR OTHER ECONOMIC LOSS. EXCEPT AS EXPRESSLY PROVIDED HEREIN, MANUFACTURER DISCLAIMS ALL OTHER LIABILITY TO PURCHASER OR ANY OTHER PERSON IN CONNECTION WITH THE USE OR PERFORMANCE OF MANUFACTURER'S PRODUCTS, INCLUDING SPECIFICALLY LIABILITY IN TORT.

3. Installation Instructions

3.1 Important Information and Initial Check Out:

A. If your aircraft monitors the pressure out of a fuel pump, the FP-5L can replace that gauge. If there are pressure limits, these limits must be set in the FP-5L.

If your aircraft monitors the pressure at the flow divider (spider) and there are limits in units of pressure, you must monitor the spider pressure with the FP-5L. If the limits are in units of flow (lbs/hr, gal/hr, ...), you do not have to monitor the fuel pressure at the spider.

B. The installer and aircraft owner must read the Warranty before starting the installation. There is information in the Warranty that may alter your decision to install this instrument. If you do not accept the terms of the Warranty, do not install this instrument.

C. If you are not an FAA Certified Aircraft Mechanic familiar with the issues of installing aircraft fuel flow and pressure instruments, Do Not attempt to install this instrument. The installer should use current aircraft standards and practices to install this instrument (refer to AC 43.13).

D. Check that any necessary FAA Approvals (STCs, etc.) are available for your aircraft before starting the installation. The FAA Approved Model List (AML) is located at the back of this manual. Resolve any issues you may have before starting the installation.

E. Before starting installation, read the entire Installation Instructions and resolve any installation, operating and performance issues you may have before starting the installation.

F. THIS INSTALLATION WILL REQUIRE SOME PARTS UNIQUE TO YOUR AIRCRAFT THAT ARE NOT SUPPLIED IN THE KIT (including, but not limited to hoses and fittings). Acquire all the parts necessary to install this instrument before starting the installation.

G. Check that the instrument and flow transducer make and model are correct before starting the installation (check your invoice and the markings on the side of the instrument). The FT-60 flow transducer is intended to be used on aircraft equipped with fuel pumps with engines rated at or below 350 H.P. A gravity feed fuel system or any engine rated over 350 H.P. must use an FT-90 flow transducer; an engine rated over 550 HP must use the FT-180 flow transducer. A pressure carbureted engine with a fuel return line requires an FFDM-I (see price sheet).

Transducer Identification:

FT-60 - Red Cube
FT-90 - Gold Cube
FT-180 - Black Cube

H. Before starting the installation make sure the unit will fit in the location you intend to install it without obstructing the operation of any controls.

I. If this instrument is to replace an existing unit in the aircraft, it is the installer's responsibility to move or replace any existing instruments or components in accordance with FAA approved methods and procedures. The following Installation Instructions do not cover moving or the removal of any existing instruments or components.

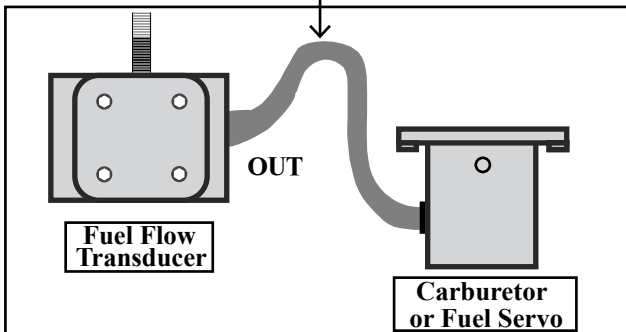
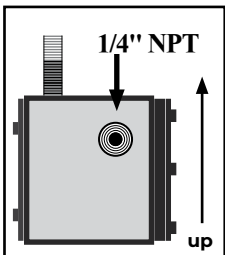
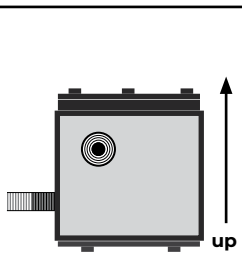
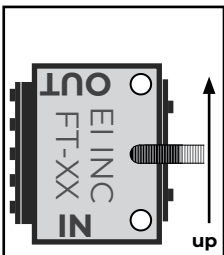
3.2 Install the Fuel Flow Transducer:

Mount the Fuel Flow Transducer using the appropriate drawing at the back of this manual.

Aircraft Configuration	Drawing #	Page
Fuel injected engine without a fuel return line from the fuel servo (most Lycomings).	129931 or 1229932	20 or 22
Fuel injected engine with a fuel return line from the fuel servo (most Continentals).	0415941	21
Carbureted engine with a fuel pump and no fuel return line.	1229931 or 1229932	20 or 22
Carbureted engine with a fuel pump and a fuel return line (requires an FFDM-1 Module).	129931 or 1229932, and 1015941	20 or 22 or 23
Carbureted engine with a gravity feed fuel system (requires an FT-90 Flow Transducer).	1229931 or 1229932	20 or 22

The mounting instructions listed below must be followed when installing a Fuel Flow Transducer. Positioning the transducer correctly will keep trapped air from potentially disrupting accurate flow readings.

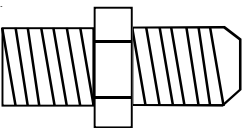
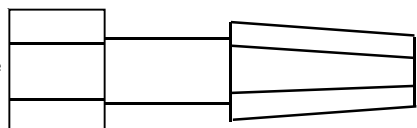
Note: If your engine is equipped with a Pressure Carburetor, with a fuel return line from the carburetor back to the fuel tank, you will need to install two flow transducers: one in the feed line from the fuel pump to the carburetor and one in the return line from the carburetor back to the fuel tank. Also, a Fuel Flow Differential Module (FFDM-1) will need to be installed. See drawings 1229932 and 1015941 in the installation drawings section of this manual for more detail.

<u>Mounting Position</u>			<u>Fuel Line Connection</u>
- The direction of the flow of fuel through the transducer is marked on the transducer. - Mount the transducer with any of these options: - The wires pointing up. - The side with five bolts faced up. - The fuel flow output side facing up. - Any combination thereof.			If the transducer output port is mounted on a slope or grade more than 4 inches per foot higher than the carburetor or fuel servo port, add a curve in the fuel line between the transducer and the carburetor or fuel servo. This adjustment helps unwanted air bubbles escape from the Flow Transducer, ensuring accurate readings. Add Curve to Fuel Line (To keep air bubbles out of Fuel Flow Transducer) 
 Option 1 Side View	 Option 2 Side View	 Option 3 Side View	

These adjustments help unwanted air bubbles escape from the Flow Transducer, ensuring accurate readings.

- A. The transducer output port should be mounted lower, even or no more than 4" per foot higher than the carburetor inlet port (or fuel servo on a fuel injected engine). If this is not possible, a loop should be put in the fuel line between the Fuel Flow Transducer and the carburetor or fuel servo (see diagram below).
- B. Do not remove the debris caps on the flow transducer until the fuel hoses are ready to be installed.
- C. The flow of fuel through the transducer must follow the direction marked on the transducer.
- D. The flow transducer must be mounted with either the wires pointing up, the side with five bolts facing up, the output port pointing up, or any combination of these orientations.
- E. Before connecting any hoses, thoroughly clean them and insure they are free of any loose material. High air pressure may be used, however, **do not allow high air pressure to pass through the flow transducer.**
- F. When mounting a Fuel Flow Transducer make provisions for the Fuel Pressure Transducer as necessary.

You may want to consider using some Fittings and Hoses shown below. Note: **DO NOT EXCEED a torque of 15 ft. lbs. or screw the fittings tighter than two full turns past hand tight, whichever happens first.**

<u>Fittings:</u>	<u>Hose Fittings:</u>
 1/4" NPT Flare	 Flare Hose
#4 Straight - AN816-4-4D #6 Straight - AN816-6D #8 Straight - AN816-7D	Straight - MS24587-XX, Stratoflex 300-, Aeroquip 400- 45° - MS27226-XX, Stratoflex 646- and 640, Aeroquip 980006 90° - MS27224-XX, Stratoflex 649- and 643, Aeroquip 980005
#6 45° - MS20823-6D #4 90° - MS20822-4-4D #6 90° - MS20822-6D	NOTE: The Stratoflex teflon hose can be much more flexible and easier to route than most existing hoses. If you have a hard to fit installation, consider this hose.

3.3 Install the D-Sub Connector Wire Harness:

Starting from under the instrument panel, route the D-Sub connector wire harness up to the instrument mounting location. (See the Wiring Diagram in section 4 of this manual). Place the D-Sub connector about one inch back from the panel. Tie wrap the harness in place approximately one foot back from the D-Sub connector. This will allow the harness to be flexible and accommodate varying lengths in the wiring. **Be sure these wires do not obstruct the freedom of travel of any controls.**

3.4 Route the Power and Ground Wires:

In the wire harness are two sets of red and black 8' wire bundles used for the fuel pressure transducer and the fuel flow transducer. Also, there are red and black 3' wires used for instrument power and ground. Route the 3' red wire in the harness to the aircraft's 12 or 24 volt main or emergency bus as applicable via an independent circuit breaker (five amps or less). An alternate method would be to route the red lead to the bus via a one amp inline fuse. **With this method a spare fuse must be kept in the aircraft.** Route the 3' black wire in the harness to a good ground. **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.**

3.5 Route the Backlight Wires:

Connect the backlight wires as follows:

A. The digital display backlight is recommended to always be at full brightness when your instrument is powered on. However, you can adjust the backlight brightness by connecting the appropriate wires to a panel light rheostat.

- 1) For a 12-volt system connect the white/brown wire to the bus (or rheostat) and connect the white/red wire to ground (see Wiring Diagram).
- 2) For a 24-volt system leave the white/brown wire open and connect the white/red wire to the bus or rheostat (see Wiring Diagram).

B. Connect the white/orange wire to the panel light rheostat. This wire will dim the Display Mode Indicator LEDs for night operation when the panel lights are turned on. If this line is left open, the Display Mode Indicator LEDs will remain at full intensity at all times. Also, if the voltage on this line drops below 11.5 volts, the analog LEDs will be displayed at full intensity. **Tie wrap all wires so they do not obstruct the freedom of travel of any controls.**

Note: This line may be connected to the CP-1 Intensity Control Pot (see Price Catalog and Price List).

3.6 Route the (Optional) External Warning Control Line:

The white/yellow wire can be connected to E.I.'s external light (model AL-1), buzzer (model ATG-1), a relay, or similar devices. This wire provides a ground when the red warning light is activated. Ensure the current on this line does not exceed 0.2 amps, as higher currents will damage the instrument. If this feature is not in use, leave the line open.. **Tie wrap this wire so it does not obstruct the freedom of travel of any controls.**

3.7 Route the Fuel Flow Transducer Wires:

The wire harness includes an 8' cable with red, black and white wires. Route and connect these 8' wires to the fuel flow transducer using the OLC-2 overlap connectors supplied with the transducer. See OLC-2 instructions, included with the harness packet, for details. If your engine is equipped with a fuel return line from the carburetor back to the fuel tank, route these wires to the Fuel Flow Differential Module (FFDM-1). See the drawing in section 6 of this manual.

Excess wires can be bundled and secured with tie wraps under the instrument panel. Alternatively, you may trim the wires to an appropriate length before connecting them to the fuel flow transducer using the OLC-2 connectors. **Ensure all wires are tie wrapped securely so they do not obstruct the freedom of travel of any controls.**

3.8 Install the (Optional) Pressure Transducer:

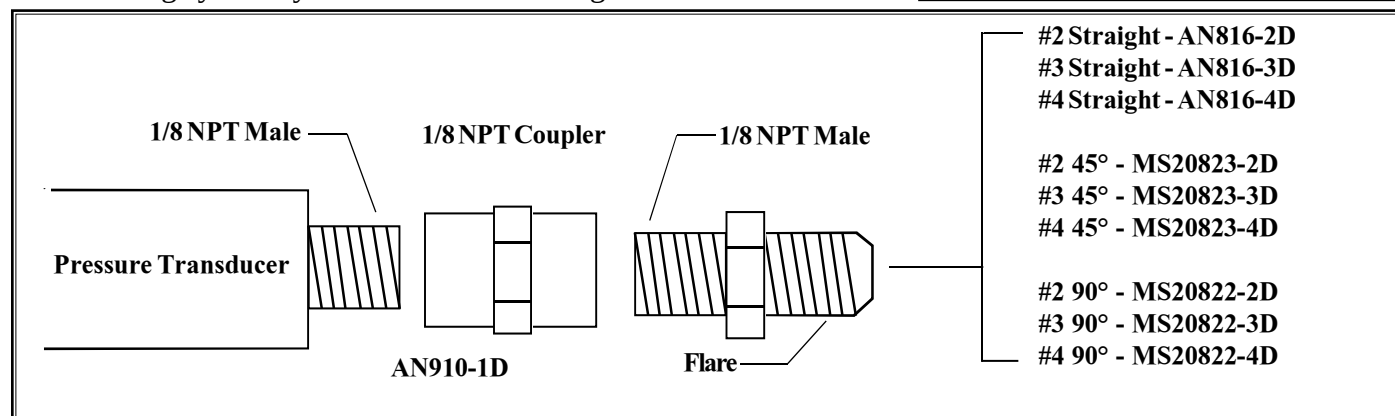
If your aircraft monitors the pressure out of a fuel pump, the FP-5L can replace that gauge. If there are pressure limits, these limits must be set in the FP-5L.

If your aircraft monitors the pressure at the flow divider (spider) and there are limits in units of pressure, you must monitor the spider pressure with the FP-5L. If the limits are in units of flow (lbs/hr, gal/hr, ...), you do not have to monitor the fuel pressure at the spider.

Find a convenient location on the firewall and mount the fuel pressure transducer with the clamp provided. **Do not mount the pressure transducer to an engine baffle or directly on the engine supported by an adapter or fitting.** Vibration can cause the adapter to break. The fuel pressure transducer is equipped with a 1/8" NPT male port. This port can be adapted to any fuel pressure line. Use only a flexible hose and fittings suitable for aircraft use. Route a flexible fuel pressure line from the fuel pressure pickup point to the fuel pressure transducer and tighten all fittings. **Do not use the case of the pressure transducer to tighten the pressure fittings.**



Some Fittings you may want to consider using are shown below:



3.9 Connect the RS-232/422 Input Lines:

Connecting the FP-5L Input Lines to a compatible GPS unit allows the FP-5L to display Fuel-to-Destination, Fuel Reserve, Nautical Miles per Gallon and Statute Miles per Gallon information. The FP-5L has three GPS Receive Formats: 1. "In1" for all panel mount GPS units (9600 baud); 2. "In2" for Northstar (1200 baud); 3. "In3" for hand held GPS units (NMEA at 4800 baud). The protocol is 1 start bit, 8 data bits and 1 stop bit and the RS-232 update time of the GPS unit should be 1 to 2 seconds. The GPS unit may require some setup. You may want to contact a knowledgeable instrument shop or the GPS factory to help with the hookup and setup of the GPS unit. See the "Power-Up Programmable Settings" section in the FP-5L Operating Instructions to configure the FP-5L RS-232 input.

3.10 Connect the RS-232 Output Line:

Connecting the FP-5L Output Line to a compatible GPS unit allows the GPS unit to use the fuel data transmitted by the FP-5L. The FP-5L has three GPS Transmit Formats: 1. "Ot1" outputs older Shadin fuel flow data (for Arnav, King and newer Garmin GPS units); 2. "Ot2" outputs the Shadin fuel flow

sentence (for Garmin and other GPS units); 3. “Ot3” outputs a modified Shadin Fuel/Airdata sentence (for UPS GPS units). The GPS unit may require some setup. You may want to contact a knowledgeable instrument shop or the GPS factory to help with the hookup and setup of the GPS unit. See the “Power-Up Programmable Settings” section in the FP-5L Operating Instructions to configure the FP-5L RS-232 output.

Connect the FP-5L RS-232 Output Line (White/Green Wire) to the GPS RS-232 Input Line. Do not connect any GPS shield wires to the FP-5L. They should be left open.

Type of Hook-up	FP-5L Connections	GPS Connections
RS-232	RS-232 Input (white/blue wire)	RS-232
RS-422 or RS-486	RS-232 Input (white/blue wire)	- Output
		+Output (connect a 120 ohm resistor between the + Output and - Output)
Note: Do not connect any GPS shield wires to the FP-5L. They should be left open		

3.11 Install the Fuel Flow Differential Module (FFDM-1)

If your engine is equipped with a fuel return line from the carburetor back to the fuel tank, install the FFDM-1 in the aircraft as outlined below (see diagram at the back of this manual). Otherwise, omit this step.

- A. Connect the circular connector to the FFDM-1.
- B. Install the FFDM-1 under the instrument panel using two tie wraps on each end of the module to support it to a wire bundle or bracket.
- C. Route and connect the 3' red power lead to the 12 or 24 volt bus via a 1-amp fuse.
- D. Route and connect the 3' black ground lead to the same ground used for the FP-5L.
- E. Route and connect the 8' red, black and white leads marked “Feed” to the flow transducer installed in the fuel line from the fuel pump to the carburetor using OLC-1 Overlap Connectors supplied with the transducer. See OLC-2 Installation Instructions for details.
- F. Route and connect the 8' red, black and white leads marked “Return” to the flow transducer installed in the return fuel line from the carburetor to the fuel tank using OLC-1 Overlap Connectors supplied with the transducer. See OLC-2 Installation Instructions for details.
- G. Connect the 8' white lead to the same color lead from the FP-5L.
- H. Any excess wires can be rolled up and secured with a tie wrap under the instrument panel. **Ensure the wires are tie wrapped so they do not obstruct the movement of any controls.** You may also choose to cut the transducer wires to a specific length before connecting them to the fuel flow transducer with the OLC-2 connectors.

Note: The flow transducers for the FFDM-1 and the FP-5L **MUST** be the same model. For example, if the FP-5L uses an FT-60 flow transducer, the FFDM-1 must also use an FT-60.

3.12 Install the Instrument in the Panel:

Install the instrument from behind the instrument panel using 6 x 32 screws. These screws must not be any longer than 1/2". Tie wrap any loose wires as needed. Make sure the instrument and wire do not obstruct the operation of any controls. Mount the placard "Do Not Rely on Fuel Flow Instrument to Determine Fuel Levels in Tanks" on the aircraft instrument panel near the FP-5L.

Additionally, if your FP-5L is not your aircraft's primary fuel flow and/or pressure instrument, you **MUST** mount a placard on your instrument panel near your FP-5L which states "Refer to Original Fuel Flow/Pressure Instrumentation for Primary Information." However, if your FP-5L is functioning as a primary instrument, this placard is unnecessary.

3.13 Connect the D-Sub to the Instrument:

Push the two mating connectors together. Fasten the connection with the provided D-Sub screw hardware. Tie wrap the wire harness in place. Be sure these wires do not obstruct the freedom of travel of any controls.

3.14 System Check out:

Check instrument operation as follows:

- A. Turn the aircraft master switch on (engine off) and verify that the red warning LEDs on the FP-5L flash and the green "REM" mode LED is blinking. A problem at this step could be caused by poor connections on the red or black power and ground leads.
- B. Set the instrument toggle switch to "FLOW" and check for a digital fuel flow reading of "000." A problem at this step could be caused by a poor connection or crossed flow transducer wires. The voltage on the flow transducer wires (with the transducer removed from the instrument) should measure as follows:
 - Red Wire - +8.5 to 14 Volts
 - Black Wire - 0 Volts
 - White Wire - 0 or 5 Volts (pulsed when fuel is flowing)
- C. Check the digital display backlight. With high or medium ambient light it is hard to see the digital display backlight (it is only required during low ambient light conditions but should be on at all times).
- D. If the Display Mode Indicator LED dimming wire has been connected, turn the panel light rheostat up and look for the Display Mode Indicator LEDs to dim.
- E. With the engine running, check the "FLOW" Display Mode to read properly. If there is a problem at this point see step B above for troubleshooting information. To see if the instrument is receiving pulses from the flow transducer, disconnect the white wire from the transducer and short it rapidly (white wire to the instrument) to ground. A reading should appear on the display.

F. Check the FP-5L display to read a number when the “F. to D.” (Fuel-to-Destination) button is pushed. You may have to fly the aircraft before the GPS unit will output data. If the “F. to D.” function is not working properly, use the following chart to help find your problem.

FP-5L Display	Comments
Off	The FP-5L is not receiving serial data. Check connections and the setup of the Loran/GPS unit.
'on (note the bar)	The FP-5L is receiving serial data but it does not have the proper protocol. Check connections to the Loran/GPS and Interface settings on the FP-5L.
on	The FP-5L is receiving RS-232 data but the Speed and/or Distance data is missing. Check the setup of the Loran/GPS unit.

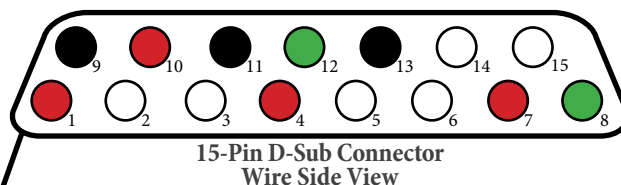
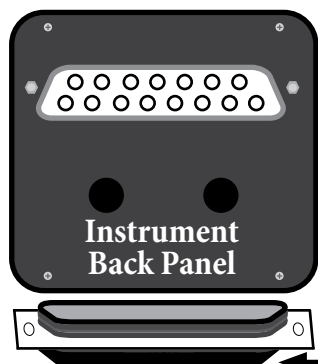
G. After running the engine, check the fuel hoses, transducers and fittings for leaks.

3.15 Initial Programming:

The Power-Up Programmable Settings for the FP-5L must be set up for your aircraft. See the Power-Up Programmable Setting section in the Operating Instruction manual for set up information.

4. FP-5L-PSI Wiring Diagram With Pressure

DB01242307 Rev. B



Pin 1 (Red - 20ga): Power Lead

Connects to 12- or 24-Volt Bus via 1-amp fuse.
Do NOT connect the instrument to constant power.

Pin 9 (Black - 20ga): Ground Lead

Connects to ground.

Pin 2 (White - 20ga): To External Warning Light

Pulls low when the discharge or high volts light is on.

Pin 10 (Red - 20ga):

Pin 3 (White - 20ga): To Fuel Flow Transducer

Pin 11 (Black - 20ga): CBL-3D-8'

Pin 4 (Red - 20ga):

Pin 12 (Green - 20ga): To Pressure Transducer

Pin 5 (White - 20ga): CBL-4D-8'

Pin 13 (Black - 20ga):

Pin 6 (White - 20ga): 12V Backlight

Backlight control line. Connects to 12-volt bus. 12 volts turn on the digital display backlight. Leave open for a 24-volt system.

Pin 14 (White - 20ga): 24V Backlight

Backlight control line. Connects to 24-volt bus. 24 volts turn on the digital display backlight. Connect to ground for 12-volt system.

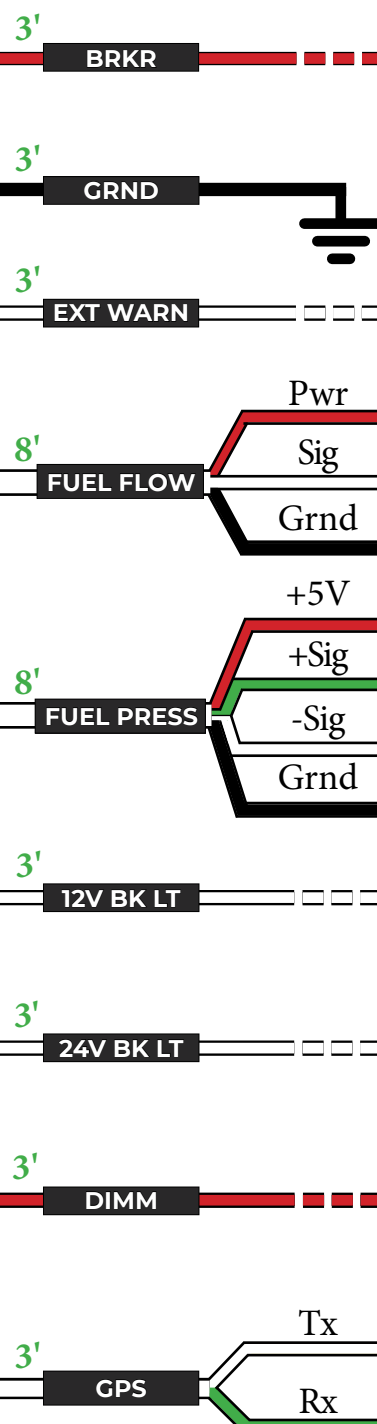
Pin 7 (Red - 20ga): LED Intensity Control

Display mode indicator LED dimming line. Connects to panel light rheostat. 12/24 volts dims the display mode LEDs.

Pin 15 (White - 20ga):

Pin 8 (Green - 20ga): To GPS

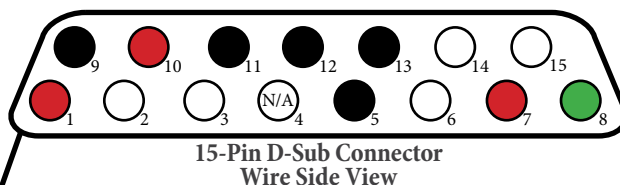
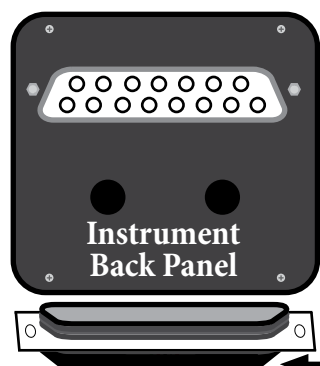
Pin 8 (Green - 20ga): CBL-2D-3'



5. FP-5L-NP Wiring Diagram

No Pressure

DB01242307 Rev. B



Pin 1 (Red - 20ga): Power Lead

Connects to 12- or 24-Volt Bus via 1-amp fuse.
Do NOT connect the instrument to constant power.

Pin 9 (Black - 20ga): Ground Lead

Connects to ground.

Pin 2 (White - 20ga): To External Warning Light

Pulls low when the discharge or high volts light is on.

Pin 10 (Red - 20ga):

Pin 3 (White - 20ga): To Fuel Flow Transducer

Pin 11 (Black - 20ga): CBL-3D-8'

Pin 12

Pin 5

Pin 13

Unused Pressure Channel Jumper

Pin 6 (White - 20ga): 12V Backlight

Backlight control line. Connects to 12-volt bus. 12 volts turn on the digital display backlight. Leave open for a 24-volt system.

Pin 14 (White - 20ga): 24V Backlight

Backlight control line. Connects to 24-volt bus. 24 volts turn on the digital display backlight. Connect to ground for 12-volt system.

Pin 7 (Red - 20ga): LED Intensity Control

Display mode indicator LED dimming line. Connects to panel light rheostat. 12/24 volts dims the display mode LEDs.

Pin 15 (White - 20ga):

Pin 8 (Green - 20ga): To GPS

Pin 8 (Green - 20ga): CBL-2D-3'

3'

BRKR

3'

GRND

3'

EXT WARN

8'

FUEL FLOW

+5V

Sig

Grnd

3'

12V BK LT

3'

24V BK LT

3'

DIMM

3'

GPS

Tx

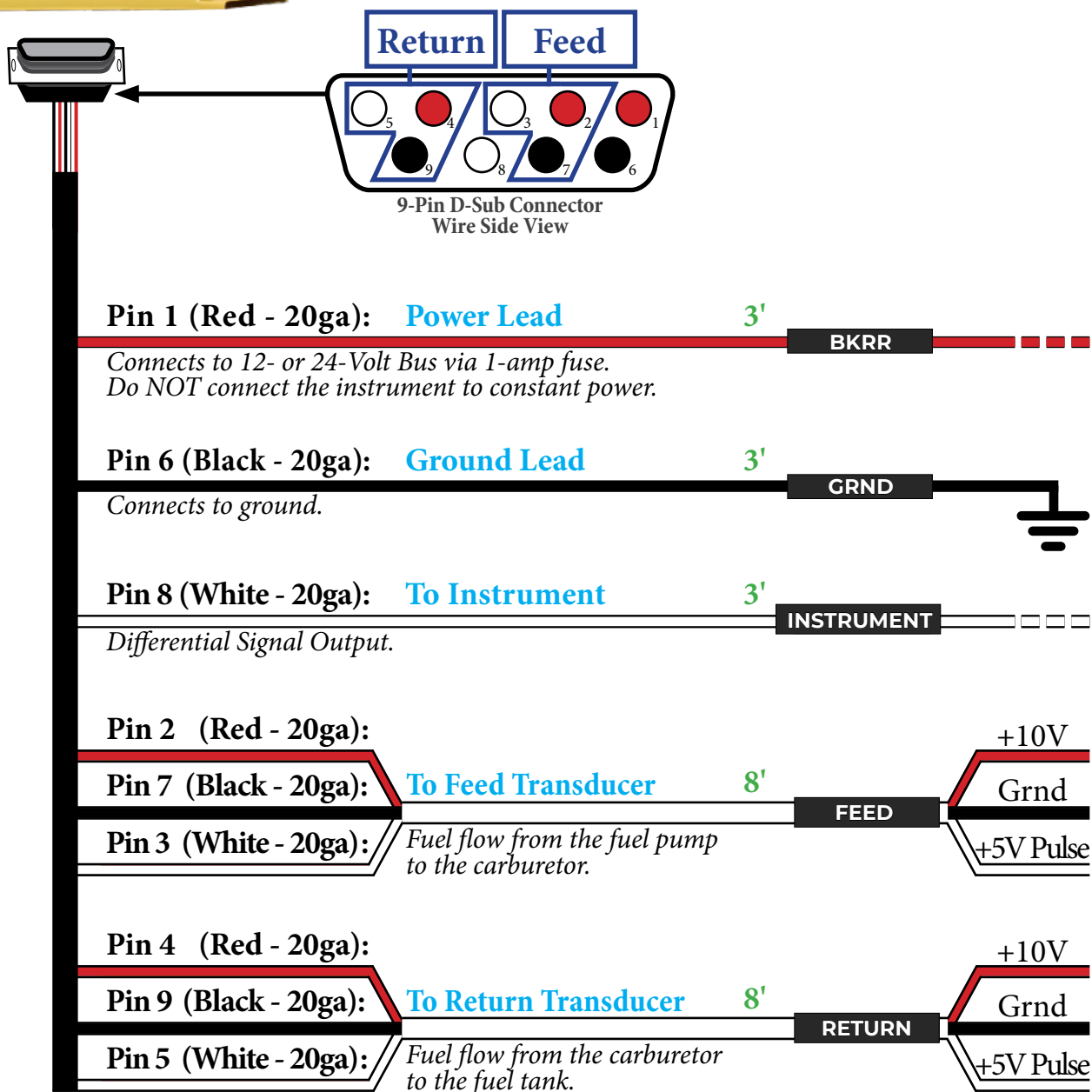
Rx

6. FFDM-1: Fuel Flow Differential Module

Wiring Diagram

Used in installations with carburetor engines with a fuel return line

GK11082401 Rev. New



7. Specs & Operating Features

Model:

FP-5L (Fuel Flow/Pressure Instrument)

Case Dimensions:

2.5" x 2.5" x 2.7" depth, 2 1/4" Bezel.

Weight:

Instrument Only: 7 Oz.

Flow Transducer FT-60, FT-90 or FT-180: 6 Oz.

Environmental:

Meets TSO C44a/C47

Power Requirements:

7.5 to 35 Volts, 1/10 Amp.

Green Display Mode Indicator LEDs:

The intensity of these LEDs is controlled by the dimming wire. 12 or 24 volts on this wire will dim the LEDs for night operation.

Red Low Fuel Warning LED:

This LED will blink any time the programmed First or Second Low Fuel limit, Time to Empty Limit or Reoccurring Alarm is violated. The Low Fuel Warning LED is always displayed at full intensity and will flash on power-up.

Red H/L Pressure Warning LED:

This LED will blink any time the programmed High or Low Pressure limit is violated. The H/L Pressure Warning LED is always displayed at full intensity and will flash on power-up.

Digital Display:

LCD (viewable in direct sunlight), with 12 and 24 volt backlight control wires for night operation. Displays "8888" on power up.

External Warning Control Line:

Grounds when any Red Warning LED is on or blinking. Current should be limited to 2/10 amp.

Accuracy:

Flow:	2% or better in accordance with TSO C44a.
Pressure Channel:	2% in accordance with TSO.

Resolution:

Fuel Flow:	0.1 Gal. or 1 Lb. or 1 Ltr.
Fuel Remaining:	0.1 Gal. up to 99.9 Gal or 1 Lb. or 1 Ltr.
Fuel Used:	0.1 Gal. up to 99.9 Gal or 1 Lb. or 1 Ltr.
Time to Empty:	1 minute
Pressure:	1 or 0.1 (programmable).

Max Displayed Range (Unit Only):

Fuel Flow:	199.9 Gals/Hr or 162.0 br Gal/Hr or 1199 Lbs/Hr or 749 Ltr/Hr.
Fuel Remaining:	999 Gals. or 811 br Gal. or 1999 Lbs. or 1999 Ltr.
Fuel Used:	999 Gals. or 811 br Gal. or 1999 Lbs. or 1999 Ltr.
Time to Empty:	19 hours 59 minutes
Pressure:	+/- 1999

RS-232/422 Input Ports:

Single Line Receive Method:	RS-232C or RS-423
Dual Line Receive Method:	RS-422 or RS-485 (with 120 ohm external resistor)
Protocol:	1 Start bit, 8 Data bits, 1 Stop bit.
Baud Rate:	1200, 4800, 9600
Receive Format:	Moving Map, Northstar or NMEA.

RS-232/422 Output Port:

Transmit Method:	RS-232C Single Line.
Protocol:	1 Start bit, 8 Data bits, 1 Stop bit.
Baud Rate:	9600 (Receive Format must be set to Moving Map).
Transmit Format:	King KLN88, Garmin, or UPS.

Fuel Flow Transducer, Standard (FT-60):

Range:	0.6 to 70+ GPH
Linearity:	1% over an engines normal operating range.
K Factor:	Approx. 68,000
Pressure Drop:	0.5 PSI at 28 GPH 2.0 PSI at 56 GPH
Working Press:	250 PSI
Min. Burst Press:	4,000 PSI
Temp. Range:	-65° C to 125° C
Fuel Ports:	1/4" Female NPT

Fuel Flow Transducer, Special (FT-90):

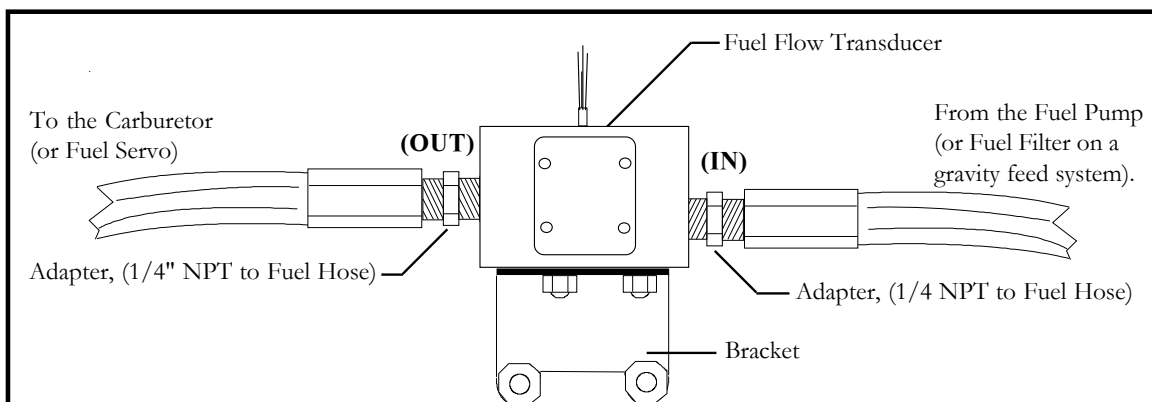
Range:	2 to 125+ GPH
K Factor:	Approx. 33,800
Pressure Drop:	0.5 PSI at 63 GPH 2.0 PSI at 127 GPH
Working Press:	250 PSI
Min. Burst Press:	4,000 PSI
Temp. Range:	-65° C to 125° C
Fuel Ports:	1/4" Female NPT

Fuel Flow Transducer, Special (FT-180):

Range:	2 to 250 GPH
K Factor:	Approx. 22,400
Pressure Drop:	0.5 PSI at 88 GPH 2.0 PSI at 176 GPH
Working Press:	250 PSI
Min. Burst Press:	4,000 PSI
Temp. Range:	-65° C to 125° C
Fuel Ports:	1/4" Female NPT with #8 Female Flare Fitting

8. Fuel Flow Transducer Installation Drawings

8.1 Fuel Pump to the Carburetor or Fuel Servo (Firewall):



Mounting Procedure:

1. Find a convenient location on the firewall (away from any hot exhaust pipes) and mount a bracket for the Fuel Flow Transducer. Check both sides of the firewall for clearance before drilling any holes.
2. Mount the Fuel Flow Transducer onto the Bracket. **You must use the FT-90 (Gold Cube) Fuel Flow Transducer on a gravity feed system or for any engine over 350 H.P.** If the Transducer is mounted within 6" of an exhaust pipe, the Flow Transducer must be wrapped with Fire Sleeving.
3. Remove the fuel hose which goes from the Fuel Pump (or the Fuel Filter on a gravity feed system) to the Carburetor (or Fuel Servo).
4. Purchase two new hoses, one to be used from the fuel pump (or the Fuel Filter) to the Fuel Flow Transducer (making provisions for the fuel pressure transducer as necessary) and the other to be used from the Fuel Flow Transducer to the carburetor (or Fuel Servo). **There must be flexible hose in and out of the Transducer.** The hoses must meet TSO-C53a Type C or D FAA specifications. **The new hoses must be the same size as the current hoses in the aircraft.** Source of fittings and fabricated hoses are:

Aircraft Spruce
aircraftspruce.com
(877) 477-7823

5. Read the Installation Instructions for important installation considerations.

Drawn By:	R.R.		<i>Electronics International Inc.</i> Installation of a Fuel Flow Transducer on the Firewall and in the fuel line <u>from the fuel pump to the carburetor or fuel servo.</u> Note: <u>Not applicable</u> for a fuel-injected engine with a fuel return line (see D/N 0415941).
Approved By:	R.R.		
Scale:	None		
Material:			
Next Assembly:			
P/N:	Date: 12/29/93	Rev: D: 7/2/02	D/N: 1229931

8.2 Fuel Servo to the Flow Divider (Suspended):

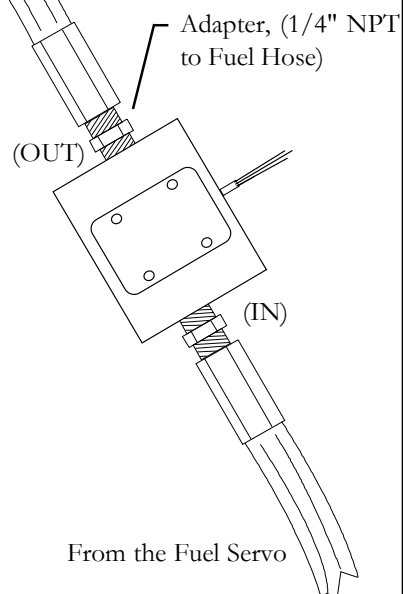
Mounting Procedure:

1. Find a convenient location between the Fuel Servo and Flow Divider and away from any hot exhaust pipes to suspend the Fuel Flow Transducer. The Transducer must be mounted within 6" of a hose support or fitting. The support or fitting may be on the input or output line of the Flow Transducer and the support may be to an adjacent hose.
2. Remove the fuel hose which goes from the Fuel Servo to the Flow Divider.
3. Purchase two new hoses: one to be used from the Fuel Servo to the Fuel Flow Transducer and the other to be used from the Fuel Flow Transducer to the Flow Divider. **There must be flexible hose in and out of the Fuel Transducer.** The hoses must meet TSO-C53a Type C or D FAA specifications. **The new hoses must be the same size as the current hoses in the aircraft.** Sources of fittings and fabricated hoses are:

Aircraft Spruce
aircraftspruce.com
(877) 477-7823

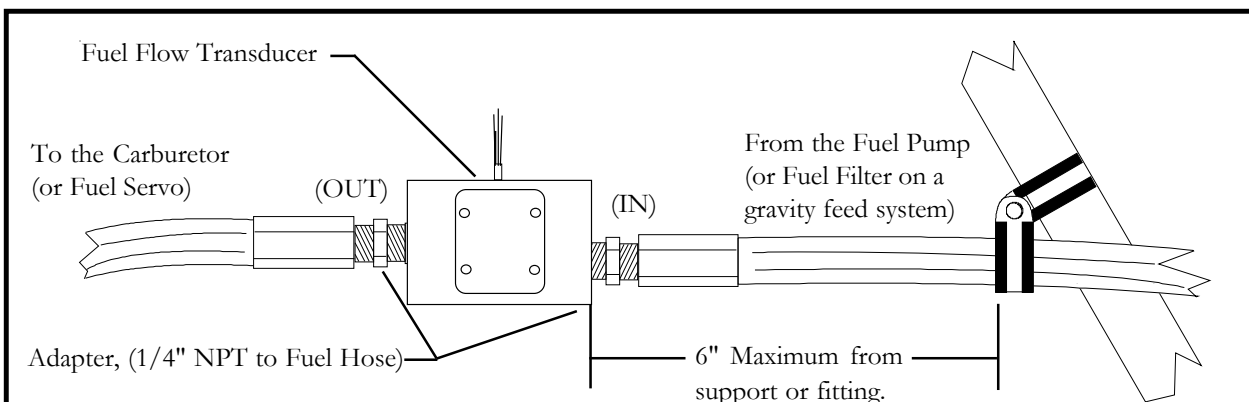
4. Mount the Fuel Flow Transducer in the fuel line. **You must use the FT-90 (Gold Cube) Fuel Flow Transducer on any engine over 350 H.P.** If the Transducer is mounted within 6" of an exhaust pipe, the Flow Transducer must be wrapped with Fire Sleeving.
5. **Read the Installation Instructions for important installation considerations.**

To the Flow Divider



Drawn By:	R. R.	<i>Electronics International Inc.</i>		
Approved By:	R.R.	Installation of the Fuel Flow Transducer suspended in the fuel line <u>between the Fuel Servo and the Flow Divider.</u> Note: <u>Only applicable</u> for installation on aircraft with a fuel return line from the Fuel Servo.		
Scale:	None			
Material:				
Next Assembly:				
P/N:		Date: 4/15/94	Rev: B: 7/2/02	D/N: 0415941

8.3 Fuel Pump to Carburetor or Fuel Servo (Suspended):



Mounting Procedure:

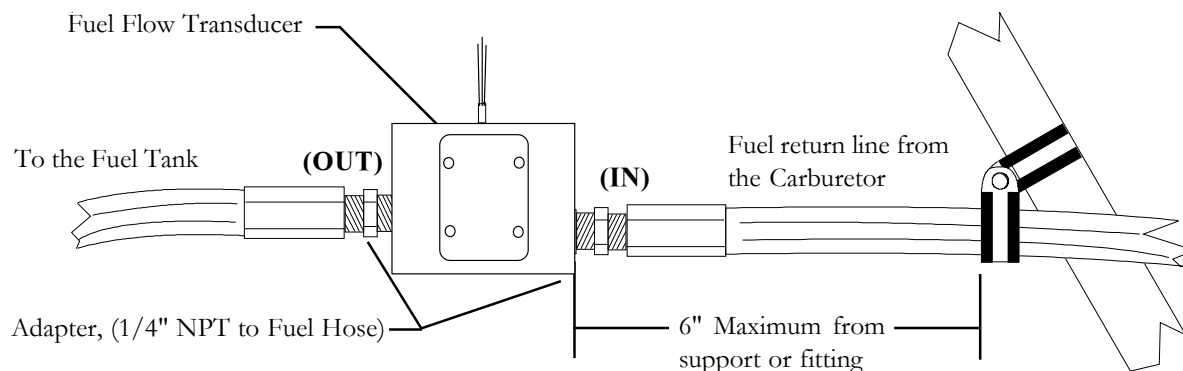
1. Find a convenient location within 6" of a hose support or fitting and away from any hot exhaust pipes to suspend the Fuel Flow Transducer. The hose support or fitting may be on the input or output line of the Flow Transducer and the support may be to an adjacent hose.
2. Remove the fuel hose which goes from the Fuel Pump (or the Fuel Filter on a gravity feed system) to the Carburetor (or Fuel Servo).
3. Purchase two new hoses: one to be used from the fuel pump (or the Fuel Filter) to the Fuel Flow Transducer and the other to be used from the Fuel Flow Transducer to the carburetor (or Fuel Servo). **There must be flexible hose in and out of the Transducer.** The hoses must meet TSO-C53a Type C or D FAA specifications. **The new hoses must be the same size as the current hoses in the aircraft.** Source of fittings and fabricated hoses are:

Aircraft Spruce
aircraftspruce.com
(877) 477-7823

4. Mount the Fuel Flow Transducer in the fuel line. **You must use the FT-90 (Gold Cube) Fuel Flow Transducer on a gravity feed system or for any engine over 350 H.P.** If the Transducer is mounted within 6" of an exhaust pipe, the Flow Transducer must be wrapped with Fire Sleeving.
5. **Read the Installation Instructions for important installation considerations.**

Drawn By:	R.R.	<i>Electronics International Inc.</i>		
Approved By:	R.R.	Installation of a Fuel Flow Transducer suspended in the fuel line <u>from the fuel pump to the carburetor or fuel servo.</u> Note: <u>Not applicable</u> for a fuel-injected engine with a fuel return line (see D/N 0415941).		
Scale:	None			
Material:				
Next Assembly:				
P/N:		Date: 12/29/93	Rev: D: 7/2/02	D/N: 1229932

8.4 Carburetor Return to Fuel Tank (Suspended):



Mounting Procedure:

1. Find a convenient location within 6" of a hose support or fitting and away from any hot exhaust pipes to suspend the Fuel Flow Transducer. The hose support or fitting may be on the input or output line of the Flow Transducer and the support may be to an adjacent hose.
2. Remove the return fuel hose which goes from the Carburetor to the Fuel Tank.
3. Purchase two new hoses: one to be used from the Carburetor to the Fuel Flow Transducer and the other to be used from the Fuel Flow Transducer to the Fuel Tank. **There must be flexible hose in and out of the Transducer.** The hoses must meet TSO-C53a Type C or D FAA specifications. **The new hoses must be the same size as the current hose in the aircraft.** Source of fittings and fabricated hoses are:

Aircraft Spruce
aircraftspruce.com
(877) 477-7823

4. Mount the Fuel Flow Transducer in the fuel return line. **You must use the FT-90 (Gold Cube Fuel Flow Transducer on any engine over 350 H.P.** If the Transducer is mounted within 6" of an exhaust pipe, the Flow Transducer must be wrapped with Fire Sleeving.
5. **Read the Installation Instructions for important installation considerations.**

Drawn By: R.R.	<i>Electronics International Inc.</i>		
Approved By: R.R.	Installation of a Fuel Flow Transducer suspended in the <u>fuel return line</u> from the carburetor to the fuel tank. Note: <u>Only applicable</u> for installation on aircraft with a fuel return line from the <u>Carburetor</u>.		
Scale: None			
Material:			
Next Assembly:			
P/N:	Date: 10/15/94	Rev: A: 7/2/02	D/N: 1015941

9. STC Information

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Duplicate Original to replace lost STC

Number SA00068SE

This certificate, issued to: **Electronics International, Inc.**
63296 Powell Butte Highway
Bend, OR 97701

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the * Regulations.*

Original Product—Type Certificate Number: *See attached FAA Approved Model List (AML)
Make: No. SA00068SE for a list of approved airplane
Model: models and applicable airworthiness regulations.

Description of the Type Design Change: Electronics International fuel flow/pressure instrument manufactured and installed in accordance with the drawings and installation instructions specified on the FAA AML of this STC, or later FAA approved revision.

NOTE: The instrument approved by this STC is to be used as a secondary instrument only. This approval does not allow the removal of any original equipment instrumentation. See the continuation sheet for required placards

Limitations and Conditions: Approval of this change in type design applies to the airplanes and factory installed or STC'd float combinations listed on the AML only. This approval should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, Continuation Sheet, and AML must be maintained as part of the permanent records for the modified aircraft.

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

(See Continuation Sheet page 3.)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: November 1, 1993

Date reissued: October 15, 2002

Date of issuance: March 31, 1994

Date amended: October 15, 2002



By direction of the Administrator

(Signature)
Acting Manager, Seattle Aircraft
Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA FORM 8110-2(10-68)

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SA00068SE

Electronics International, Inc.

Reissued: October 15, 2002

Amended: October 15, 2002

Limitations and Conditions: (cont'd)

The following placards must be located on the instrument panel adjacent to the Electronics International fuel flow/pressure instrument approved by this STC:

For all aircraft models:

“DO NOT RELY ON FUEL FLOW INSTRUMENT TO
DETERMINE FUEL LEVELS IN TANKS”

For aircraft originally equipped with fuel flow and/or pressure instruments:

“REFER TO ORIGINAL FUEL FLOW/PRESSURE
INSTRUMENTATION FOR PRIMARY INFORMATION:

- END -

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA FORM 8110-2(10-68)

Page 3 of 3 Pages

FAA APPROVED MODEL LIST (AML) SA00068SE
FOR
ELECTRONICS INTERNATIONAL, INC.
FUEL FLOW/PRESSURE INSTRUMENTS

ITEM#	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWINGS		INSTALLATION INSTRUCTIONS	
					NUMBER	REVISION	NUMBER	REVISION
					C 06-04-2002 of Later FAA Approved Revisions			
					TD1130921 II 0506931 Approved			
1	AERO COMMANDER (Volare) 2 AERONCA INC. (Also See American Champion)	10, 10A, 100, 100A, 100-180 50-L, 50-LA, 65-LA, 65-LB 15AC, S15AC C-3, PC-3 AMT-100, AMT-200, AMT-200S, AMT-300 TG00004AT See Socata	1A21 A-702 A-802 A-396	CAR 3 CAR 4A CAR 3 BUL 7A CFR 21	11	11	11	11
3	AEROMOT							20-2010
4	AEROSPATIALE							11-2003
5	AG CAT Grumman)							None
6	AIR TRACTOR INC.							
7	ALLIANCE AIRCRAFT GROUP (Helio Enterprises)	G-164, G164A, G164B, G164C, G-164D G-164B-15T, G-164B-34T, G-164B-T AT-250, AT-300, -301, -302, -400, -400A AT-401, AT-401A, AT-401B, AT-402, AT-402A, AT-402B, AT-501 AT-502, AT-502A, AT-502B, AT-503, AT-503A, AT-504 AT-802, AT-802A, AT-602 H-250, H-295, HT-295 H-391B, H-395, H395A H-391 H-700, H-800	1A16 1A16 A9SW A17SW A17SW A19SW 1A8 1A8 1A8	CAR 8 CAR 8 FAR 21 FAR 21 FAR 21 FAR 23 CAR 3 CAR 3 CAR 3	11	11	11	11
		See Univair	AS1NM	FAR 21	11	11	11	11
		A-60, A-60+	S00002SE	FAR 21	11	11	11	11
		A-1-50	A-759	CAR 4A	11	11	11	11
		7AC, 7BCM, 7DC, S7DC	A-759	CAR 4A	11	11	11	11
		7ACA, S7AC, 7BCM (L-16A)	A-759	CAR 4A	11	11	11	11
		7CCM, S7CCM	A-759	CAR 4A	11	11	11	11
		7FC, 7JC, 7EC, S7EC, 7GC, 7HC, 7KC	A-759	CAR 4A	11	11	11	11
		7GCA, 7GCB, 7GCAA, 7KCAB, 7ECA, 7GCB	A-759	CAR 4A	11	11	11	11
		7KCAB, L-16A, L-16B	A-759	CAR 4A	11	11	11	11
8	ALON	7GCB	A-759	CAR 8	11	11	11	11
		8KCAB, 8GCBC	A21CE	FAR 23	11	11	11	11
		11AC, 11BC, S11AC, S11BC	A-761	CAR 4A	11	11	11	11
		11CC, S11CC			11	11	11	11
9	AMERICAN BLIMP COMPANY							02-11-200
10	AMERICAN CHAMPION (Aeronca, Bellanca, Trylek)							3
								10-16-1997
								02-11-200
								3
								10-20-2010
11	AMERICAN GENERAL AIRCRAFT							
12	AUGUSTAIR INC. (Varga)	See Gulfstream American 2150, 2150A, 2180						

FAA APPROVED MODEL LIST (AML)
SA00068SE FOR
ELECTRONICS INTERNATIONAL, INC.
FUEL FLOW/PRESSURE INSTRUMENTS

ORIGINAL ISSUE DATE: March 31, 1994

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWINGS		INSTALLATION INSTRUCTIONS		AML AMENDED DATE
					NUMBER	REVISION	NUMBER	REVISION	
15	BELL HELICOPTER	47, 47B, 47D, 47D1, 47E, 47G, 47G-2, 47H-1	H1	ALTERNATION	NUMBER	REVISION	"	"	02-11-20
		2H1, 47J, 47K, 47J-2, 47J-2A, B-2, B-2A, B-2B,	2H1	CAR 6	"	"	"	"	03 None
		47G-2A, 47G-2A-1, 47G-3, 47G-3B, 47G-3B-1	2H2	CAR 6	"	"	"	"	None
		47G-4, 47G-4A, 47G5, 47G-3B-2, 47G-5A, 47G-3B-2A	2H3	CAR 6	"	"	"	"	None
16	BELLANCA AIRCRAFT CORPORATION (See American Champion)	17-30A, 17-31A	2H3	CAR 6	"	"	"	"	None
		17-31ATC	A18CE	FAR 23	"	"	"	"	None
		DW-1	A18CE	FAR 23	"	"	"	"	None
		14-13, 14-13-2, 14-13-3, 14-13-3W	A4NW	FAR 21	"	"	"	"	02-11-2003
17	BOEING AIRCRAFT 18 BRANTLY	14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	A-77	CAR 4A	"	"	"	"	02-11-2003
		75 thru E75, A75J1, A75L300, A75N1 thru E75N1, IB75A	3 1A3	CAR 3	"	"	"	"	02-11-2003
		B-2, B-2A, B-2B	A-743	CAR 4A	"	"	"	"	02-11-2003
		47, 47B, 47D, 47D1, 47E, 47G, 47G-2, 47H-1	2H2	CAR 6	"	"	"	"	02-11-2003
19	CESSNA AIRCRAFT CORP.	47G-2A, 47G-2A-1, 47G-3, 47G-3B, 47G-3B-1, 47G-3B-2, 47G-3B-2A	H1	CAR 6	"	"	"	"	02-11-2003
		47G-4, 47G-4A, 47G-5, 47G-5A	2H3	CAR 6	"	"	"	"	02-11-2003
		120, 140	A-768	CAR 4A	"	"	"	"	02-11-2003
		C-145, C-165	A-70	CAR 4A	"	"	"	"	02-11-2003
		150 thru 150M, A150K, A150L, A150M, 152, A152	1	CAR 3	"	"	"	"	10-20-2010
		170 thru 170B	A799	CAR 3	"	"	"	"	02-11-2003
		172 thru 172Q	3A12	CAR 3	"	"	"	"	02-11-2003
		172R, 172S	3A12	FAR 23	"	"	"	"	02-11-2003
		172RG	3A17	CAR 3	"	"	"	"	02-11-2003
		P172D	3A17	CAR 3	"	"	"	"	10-20-2010
		R172E thru R172K	3A17	CAR 3	"	"	"	"	02-11-2003
		175 thru 175C	A13CE	CAR 3	"	"	"	"	10-16-1997
		177 thru 177B	A20CE	CAR 3	"	"	"	"	"
		177RG	5A6	"	"	"	"	"	"
		180 thru 180K	3A13	"	"	"	"	"	"
		182 thru 182S, 182T	3A13	"	"	"	"	"	"
		R182, T182, T182T, TR182	3A13	"	"	"	"	"	"

FAA APPROVED MODEL LIST (AML) SA00068SE
FOR
ELECTRONICS INTERNATIONAL, INC.
FUEL FLOW/PRESSURE INSTRUMENTS

ORIGINAL ISSUE DATE: March 31, 1994

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWINGS		INSTALLATION INSTRUCTIONS		AML AMENDED DATE
					NUMBER	REVISION	NUMBER	REVISION	
CESSNA AIRCRAFT CORP. (Cont.)	185, 185A, 185B		3A24	CAR 3	"	"	"	"	02-11-2003
	185C, 185D, 185E, A185E, A185F 188, 188A, 188B		3A24	CAR 3	"	"	"	"	None
	A188, A188A, A188B, T188C		A9CE	FAR 23	"	"	"	"	02-11-2003
	190, 195, 195A, 195B		A9CE	FAR 23	"	"	"	"	10-20-2010
	206, 206H, P206 thru P206E, T206H		A-790	CAR 3	"	"	"	"	10-20-2010
	TP206A thru TP206E		A4CE	CAR 3	"	"	"	"	02-11-200
	U206 thru U206G, TU206A thru TU206G		A4CE	CAR 3	"	"	"	"	02-3
	207, 207A, T207, T207A		A4CE	CAR 3	"	"	"	"	11-2003
	210, 210A, 210B, 210C, 210D, 210E, 210F, 210K, 210R		A16CE	FAR 23	"	"	"	"	02-11-2003
	210-5 (205), 210-5A (205A)		3A21	CAR 3	"	"	"	"	10-20-2010
	T210F, 210G, T210G, 210H, 210J		3A21	CAR 3	"	"	"	"	02-11-2003
	T210H, T210J, T210K, 210M, 210K, 210L		3A21	CAR 3	"	"	"	"	None
	T210L, T210F, T210M, 210N, P210N, P210R, T210R		3A21	CAR 3	"	"	"	"	10-20-2010
	T210N		3A21	CAR 3	"	"	"	"	10-20-2010
	T303		A34CE	FAR 23	"	"	"	"	None
	305A, 305C, 305D, 305F		5A5	CAR 3	"	"	"	"	02-11-2003
	305B, 305E		3A14	CAR 3	"	"	"	"	02-11-2003
	310, 310A, 310B, 310C, 310D, 310E, 310F, 310H, E310H		3A10	CAR 3	"	"	"	"	02-11-2003
	310J, 310J, E310J, 310K, 310L		3A10	CAR 3	"	"	"	"	02-11-200
	310N, 310P, 310R, T310P, T310R		3A10	CAR 3	"	"	"	"	02-3
	T310Q		3A10	CAR 3	"	"	"	"	11-2003
	310Q		3A25	CAR 3	"	"	"	"	None
	320, 320A, 320B, 320C		3A25	CAR 3	"	"	"	"	None
	320D, 320E, 320F		3A11	CAR 3	"	"	"	"	02-11-2003
	321		A2CE	CAR 3	"	"	"	"	02-11-2003
	336		A6CE	CAR 3	"	"	"	"	02-11-2003
	337, 337A, 337B		A6CE	CAR 3	"	"	"	"	02-11-2003
	337E, 337C		A6CE	CAR 3	"	"	"	"	02-11-2003
	T337B, T337E, T337C		A6CE	CAR 3	"	"	"	"	02-11-2003
	337D, P337B, F337F		A6CE	CAR 3	"	"	"	"	02-11-2003
	M337B, 337H		A6CE	CAR 3	"	"	"	"	02-11-2003
	T337D, T337H		A6CE	CAR 3	"	"	"	"	02-11-2003
	340, 340A				"	"	"	"	02-11-2003
	401, 401A, 401B				"	"	"	"	

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SA00068SE FOR
ELECTRONICS INTERNATIONAL, INC.
FUEL FLOW/PRESSURE INSTRUMENTS

ORIGINAL ISSUE DATE: March 31, 1994

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWINGS		INSTALLATION INSTRUCTIONS		AML AMENDED DATE
					NUMBER	REVISION	NUMBER	REVISION	
20	CESSNA AIRCRAFT CORP. (Cont.)	402, 402A, 402B	A7CE	CAR 3	11	11	11	11	02-11-2003
		402C	A7CE	CAR 3	11	11	11	11	02-11-2003
		404	A25CE	FAR 23	11	11	11	11	02-11-2003
		406	A25CE	FAR 23	11	11	11	11	02-11-2003
		411, 411A 414,	A7CE	CAR 3	11	11	11	11	02-11-2003
		414A	A7CE	CAR 3	11	11	11	11	02-11-2003
		421, 421A, 421B	A7CE	CAR 3	11	11	11	11	02-11-200
		421C, 425	A7CE	CAR 3	11	11	11	11	3 None
		S-4A (Seibel)	5H2	CAR 6	11	11	11	11	02-11-2003
		See Aviat							02-11-2003
22	CHRISTEN INDUSTRIES	See Aviat							02-11-2003
		SR20, SR22 & SR22T	A00009CH	FAR 23	11	11	11	11	10-20-2010
		1000	2A6	CAR 8	11	11	11	11	02-11-2003
		12	2A12	CAR 8	11	11	11	11	02-11-2003
24	COMMANDER AIRCRAFT	112, 112TC, 112B, 112TCA	A12S0	FAR 23	11	11	11	11	04-20-1994
		114, 114A	A12S0	FAR 23	11	11	11	11	04-20-1994
		500, 500-A, 500-B, 500-S, 500-U, 520,	6A1	CAR 3	11	11	11	11	10-20-2010
		560, 560-A, 560-E	2A4	CAR 3	11	11	11	11	02-11-2003
		560-F, 680, 680-E, 680-F, 680FL, 680T,	2A4	CAR 3	11	11	11	11	10-16-1997
		680V, 680W, 681, 685	A12SW	FAR 23	11	11	11	11	02-11-2003
		690A thru 690D, 695, 695A, 695B	2A4	CAR 3	11	11	11	11	02-11-2003
		700	A12S0	FAR 23	11	11	11	11	10-20-2010
		720	A12S0	FAR 23	11	11	11	11	10-20-2010
		114B, 114TC	A-806	CAR 10	11	11	11	11	10-16-1997
25	DE HAVILLAND AIRCRAFT COMPANY, LTD. (Cont.)	DHC-2 Mk. I, DHC-2 Mk. II, DHC-2 Mk. III	A-815	CAR 10	11	11	11	11	02-11-2003
		DHC-3	A26N	CAR 10	11	11	11	11	02-11-2003
		DHC-1B-2-S3, DHC-1B-2-S5	M	FAR 21	11	11	11	11	02-11-2003
		DH82A	A5PC	FAR 21	11	11	11	11	02-11-2003
		DH82A	A8EU	FAR 21	11	11	11	11	02-11-2003
		DH.C1, 21, 22, 22A	AR-33	CAR 8	11	11	11	11	02-11-2003
		L-20A	TA4CH	FAR 21	11	11	11	11	02-11-2003
		DA 20-A1, DA 20-C1							
		DA 40, DA 40F							
		DO 27 Q-6							
26	DIAMOND AIRCRAFT INDUSTRIES	DO 28 A-1, DO 28 B-1							
		DO 28 D, DO 28 D-1							
		27 DORNIER-WERKE							

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28	DORNIER-WERKE (Contr.)	228-100, 228-101, 228-200, 228-201, 228-202, 228-212	A16EU	FAR 23	11	11	11	11	02-11-2003
		F-28, F-28A, F-28C, F-28F	H1CE	CAR 6	11	11	11	11	02-11-2003
		280, 280C, TH-28, 480, 280F, F-28FX	H1CE	CAR 6	11	11	11	11	02-11-2003
		See <i>Univair</i>							02-11-2003
29	ERCO	EA-300, EA-300S, EA 300/200, 300L	A67EU	FAR 23	11	11	11	11	02-11-2003
30	EXTRA FLUGZEUGBAU	24R9, 24R9S, 24R40, 24R40S, 24R46, 24R46A, 24R46S	A-706	CAR 4A	11	11	11	11	02-11-2003
		24W-9, 24W-9S, 24W-40, 24W-40S, 24W-41, 24W-41A	A-707	CAR 4A	11	11	11	11	02-11-2003
		24W-41AS, 24W-41S, 24W-46, 24W-46S	A-707	CAR 4A	11	11	11	11	02-11-2003
		M62A, M62A-3, M62A-4, M62B, M62C, M-628	A-724	CAR 4A	11	11	11	11	02-11-2003
31	FAIRCHILD	24 C8C, 24 C8CS	A-535	BUL 7A	11	11	11	11	02-11-2003
		M-84-C	A-2-599	CAR 4A	11	11	11	11	02-11-2003
		See <i>Univair</i>							02-11-2003
		FA-200-160, 180, 180AO	A4PC	CAR 10	11	11	11	11	02-11-2003
32	FORNEY	GC-1A, GC-1B	A-76	CAR 4A	11	11	11	11	02-11-2003
33	FUJI	GA-22A	6	CAR 3	11	11	11	11	02-11-2003
34	GLOBE (Swift)	GA-2, GA-2B	A483	CAR 4A	11	11	11	11	02-11-2003
35	GOODYEAR	G-115, 115A, 115B, 115C, 115D, 115D2	A-57E	FAR 21	11	11	11	11	02-11-2003
36	GROB	G-159	U 1A17	CAR 4B	11	11	11	11	None
37	GULFSTREAM AMERICAN CORP. (American General) (Gumman Aircraft) (Tiger Aircraft)	G-1159	A12EA	CAR 4B	11	11	11	11	None
		AA-1, AA-1A, AA-1B	A11EA	FAR 23	11	11	11	11	None
		AA-1C	A11EA	FAR 23	11	11	11	11	None
		AA-5, AA-5A, AA-5B, AG-5B	A16EA	FAR 23	11	11	11	11	02-11-2003
38	HELICOPTER	FJ Sky-Trac	H5EU	FAR 27	11	11	11	11	02-11-2003
39	TECHNIK 39 HELITECH CORP.	H-S-1N	H12WE	FAR 21	11	11	11	11	02-11-200
		15A, 20	3A3	CAR 4A	11	11	11	11	3
		UH-12, UH-12A	6H1	CAR 6	11	11	11	11	02-16-2002
		UH-12B, UH-12C	6H2	CAR 6	11	11	11	11	02-11-2003
40	HELIO Aircraft	UH-12D	4H10	CAR 6	11	11	11	11	02-11-2003
41	HILLER	UH-12E, UH-12E-L	4H11	CAR 6	11	11	11	11	02-11-2003
42	HILLER (Contr.)	UH-12L			11	11	11	11	02-11-200
		DGA-8 (Army UC-70C)			11	11	11	11	3
		DGA-9 (Army UC-70D), DGA-12 (Army UC-70A)			11	11	11	11	10-20-2010
		DGA-11			11	11	11	11	

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					REVISION	NUMBER	REVISION	NUMBER	
43 INTERCEPTOR JODEL	HOWARD (Cont.)	DGA-15P (Army UC-70, Navy GH-1, GH-2, GH-3, NH-1)	A-717	CAR 4A	"	"	"	"	10-20-2010
		DGA-15J (Army UC-70B), DGA-15W	A-717	CAR 4A	"	"	"	"	10-20-2010
		DGA-18, DGA-18K	NUMBER	ALTERATION NUMBER	"	"	"	"	10-20-2010
		See Prop-Jets							02-11-2003
		D-140-B	A3IN	CAR 10	"	"	"	"	02-11-2003
		DR-1050	A4IN	CAR 10	"	"	"	"	02-11-2003
		D-1190	A10IN	CAR 10	"	"	"	"	02-11-2003
		150	A14IN	CAR 10	"	"	"	"	02-11-2003
		C-1, C-2, LA-4, LA-4A, LA-4P, LA-4-200, 250	1A13	CAR 3	"	"	"	"	02-11-2003
		8A thru 8F, T-8F	A-694	CAR 4A	"	"	"	"	10-16-1997
44 LAKE (Revo) 45 LUSCOMBE 46 MARCHETTI (See SIAI)		S205-18F, -18R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S205-20F, -20R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S205-22R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S208, S208A	A9EU	FAR 21	"	"	"	"	02-11-2003
		F260, F260B-F	A10EU	CAR 3	"	"	"	"	02-11-2003
		S211A	A86EU	FAR 23	"	"	"	"	02-11-2003
		M-4, M-4C, M-4S, M-4T, M-4-180C, M-4-180S, M-4-180T	3A23	CAR 3	"	"	"	"	02-11-2003
		M-4-210, M-4-210C, M-4-210S, M-4-210T	3A23	CAR 3	"	"	"	"	02-11-2003
		M-4-220, M-4-220C, M-4-220S, M-4-220T	3A23	CAR 3	"	"	"	"	02-11-2003
		M-5-180C, M-5-200, M-5-210C, M-5-210TC	3A23	CAR 3	"	"	"	"	None None
47 MAULE		M-5-220C, M-5-235C	3A23	CAR 3	"	"	"	"	10-17-1994
		M-6-180, M-6-235	3A23	CAR 3	"	"	"	"	02-11-2003
		MX-7-160, MX-7-160C, MXT-7-160	3A23	CAR 3	"	"	"	"	02-11-2003
		M-7-180, MX-7-180A thru MX-7-180C, MX-7-180AC	3A23	CAR 3	"	"	"	"	02-11-2003
		MXT-7-180, MXT-7-180A	3A23	CAR 3	"	"	"	"	02-11-2003
		M-7-235, M-7-235A thru M-7-235C, MT-7-235, MX-7-235	3A23	CAR 3	"	"	"	"	02-11-2003
		M-7-260, M-7-260C, MT-7-260	3A23	CAR 3	"	"	"	"	02-11-2003
		M-7-420AC, MX-7-420, MXT-7-420, M-8-235	3A23	CAR 3	"	"	"	"	02-11-2003
		BO-209-150 FV & RV			"	"	"	"	
		BO-209-160 FV & RV			"	"	"	"	
MAULE (Cont.)		BO 209-150 FF			"	"	"	"	
		See Interceptor			"	"	"	"	

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50	MOONEY AIRCRAFT	M-18C, M-18C55, M-18L, M-18LA	A-803	CAR 3	"	"	"	"	02-11-2003
		M20, M20A thru M20M	2A3	CAR 3	"	"	"	"	None
		M20R, M20S, M20TN	2A3	CAR 3	"	"	"	"	10-20-201
		M22	A6SW	CAR 3	"	"	"	"	0 None
		Zlin 526L	A30EU	FAR 21	"	"	"	"	02-11-2003
51	MORAVAN	Zlin Z 242L, 143L	A76EU	FAR 21	"	"	"	"	02-11-200
		See Thompson							3 None
52	NAVION	P-68, P-68B, P-68C, P-68TC P-68C-TC	A31EU	FAR 21	"	"	"	"	02-11-2003
		P-166, P-166B, P-166C	7A4	CAR 10	"	"	"	"	02-11-200
54	PIAGGIO	P-136-L, P-136-L1, P-136- L2	A-81	CAR 10	"	"	"	"	3
		PC-6, PC-6-H1, PC-6-H2	3	CAR 10	"	"	"	"	02-11-2003
55	PILATUS	PC-6/350, PC-6/350-H1, PC-6/350-H2	7A15	CAR 3, 10	"	"	"	"	02-11-2003
		PC-6/A, PC-6/A-H1, PC-6/A-H2	7A15	CAR 3, 10	"	"	"	"	10-20-2010
56	PIPER AIRCRAFT CO.	PC-6/B-H2, PC-6/B1-H2	7A15	CAR 3, 10	"	"	"	"	10-20-2010
		PC-6/B2-H2, PC-6/B2-H4, PC-6/C-H2,	7A15	CAR 3, 10	"	"	"	"	10-20-2010
		PC-6/C1-H2	A50EU	FAR 23	"	"	"	"	10-20-2010
		PC-7	A78EU	FAR 23	"	"	"	"	10-20-2010
		PC-12, PC-12/45, PC-12/47, PC-12/47E	A-691	CAR 4A	"	"	"	"	02-11-2003
		PA-11, PA-11S, J3C-40, J3C-50, J3C-50S,	A-780	CAR 3	"	"	"	"	02-11-2003
		J3C-65, J3C-65S	A-797	CAR 3	"	"	"	"	02-11-2003
		PA-12, PA-12S	A-800	CAR 3	"	"	"	"	02-11-2003
		PA-14	1A1	CAR 3	"	"	"	"	02-11-2003
		PA-15	A-805	CAR 3	"	"	"	"	02-11-2003
		PA-16, PA-16S	1A2	CAR 3	"	"	"	"	02-11-2003
		PA-17	1A4	CAR 3	"	"	"	"	None
		PA-18, PA-18A, PA-18AS, PA-18S, PA-19,	1A6	CAR 3	"	"	"	"	02-11-200
		PA-19S	1A10	CAR 3	"	"	"	"	3 None
		PA-20, PA-20S	1A15	CAR 3	"	"	"	"	02-11-2003
		PA-22, PA-22S	2A8	CAR 3	"	"	"	"	02-11-200
		PA-23, PA-23-160, PA-23-235, PA-23-250			"	"	"	"	3 None
		PA-24, PA-24-250, PA-24-260, PA-24-400			"	"	"	"	02-11-2003
		PA-25, PA-25-235, PA-25-260			"	"	"	"	02-11-200
		PA-28-140, PA-28-150, PA-28-151, PA-			"	"	"	"	3 None
		28-160, PA-28S-160			"	"	"	"	None
		PA-28-161, PA-28-180, PA-28R-180,			"	"	"	"	None
		PA-28-181, PA-28R-200			"	"	"	"	None
		PA-28R-201, PA-28-201T, PA-28R-201T,			"	"	"	"	None
		PA-28-235, PA-28-236			"	"	"	"	None

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57	PITTS	PIPER AIRCRAFT CO. (Cont.)	PA-28RT-201, PA-28RT-201T, PA-28S-180	CAR 3	"	"	"	"	02-11-2003
			PA-30	CAR 3	"	"	"	"	02-11-2003
			PA-31, PA-31-300, PA-31-325, PA-31-350	CAR 3	"	"	"	"	02-11-2003
			PA-31P, PA-31T, PA-31TT, PA-31T2, PA-31T3, PA-31P-350	CAR 3	"	"	"	"	02-11-2003
			PA-32-260, PA-32-300, PA-32R-300, PA-32RT-300T, PA-32-301	CAR 3	"	"	"	"	None
			PA-32-301T, PA-32R-301, PA-32R-301T	CAR 3	"	"	"	"	None
			PA-34-200, PA-34-200T, PA-34-220T	FAR 23	"	"	"	"	None
			PA-36-285, PA-36-300, PA-36-375	FAR 23	"	"	"	"	None
			PA-38-112	FAR 23	"	"	"	"	None
			PA-39, PA-40	CAR 3	"	"	"	"	02-11-2003
			PA-44-180, PA-44-180T	CAR 3	"	"	"	"	None
			PA-46-310P, PA-46-350P, PA-46-350T	FAR 23	"	"	"	"	10-20-2010
			PA-60-600 (Aerostar 600), PA-60-601 (Aerostar 601)	FAR 23	"	"	"	"	10-20-2010
			PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P)	FAR 23	"	"	"	"	10-20-2010
			PA-60-700P (Aerostar 700P)	FAR 23	"	"	"	"	10-20-2010
58	PROP-JETS (Interceptor)								
59	QUEST	(Aero Commander & Meyers)	See Aviat 200, 200A, 200B, 200C, 200D, 400	CAR 3	"	"	"	"	02-11-2003
60	REVO		Kodiak 100	FAR 23	"	"	"	"	10-20-2010
61	ROCKWELL		See Lake						
62	SIAM MARCHETTI		See Commander Aircraft						
63	SEABEE		S205-18/F, -18/R	FAR 21	"	"	"	"	02-11-2003
			S205-20/F, -20/R	FAR 21	"	"	"	"	02-11-2003
			S205-22/R	FAR 21	"	"	"	"	02-11-2003
			S208, S208A	FAR 21	"	"	"	"	02-11-2003
			F260, F260B-F	CAR 3	"	"	"	"	02-11-2003
			S211A	FAR 23	"	"	"	"	02-11-2003
			See Sky Enterprises						
			S-43, S-43B, S43W						
			RC-3	BUL 7A	"	"	"	"	02-11-2003
			See Aviat						
64	SIKORSKY		TB 9, TB 10, TB 20, TB 21						11-2003
65	SKY ENTERPRISES (SeaBee)		TB 200						None
66	SKY INTERNATIONAL		GA-7						
67	SOCATA GROUP (Aerospatiale)								

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68 STINSON 69 SWIFT (Globe) 70 TAYLORCRAFT	SOCATA GROUP (Aerospatiale) (Covr.)	MS 880B, MS 885, MS 892A-150, MS 892E-150, MS 893A	7A14	CAR 10	"	"	"	"	10-20-2010
		MS 893E, MS 894A, MS 894E, Rallye 100S, Rallye 150ST	7A14	CAR 10	"	"	"	"	10-20-2010
		Rallye 150T, Rallye 235C, Rallye 235E	7A14	CAR 10	"	"	"	"	10-20-2010
		See <i>Univair</i> GC-1A, GC-1B	A-766	CAR 4A	"	"	"	"	None
71 THOMPSON (Navion, North American)	TAYLORCRAFT (Covr.)	19, F19, F21, F21A, F21B, F22, F22A, F22B, F22C	1A9	CAR 3	"	"	"	"	10-16-1997
		A	A-643	BUL 7A	"	"	"	"	02-11-2003
		BC, BCS, BC-65, BCS-65, BC12-85, BCS12-65, BC12-D, BCS12-D, BC12-D1, BCS12-D1	A-696	CAR 4	"	"	"	"	02-11-2003
		BC12D-85, BCS12D-85, BC12D-4-85, BCS12D-4-85	A-696	CAR 4	"	"	"	"	02-11-2003
72 THRUSH AIRCRAFT, INC. (Ayres Corp) (Rockwell Commander)	TAYLORCRAFT (Covr.)	BF, BFS, BF-60, BFS-60, BF-65, BFS-65, BF 12-65	A-699	CAR 4	"	"	"	"	02-11-2003
		BL, BLS, BL-65, BLS-65, BL12-65, BLS12-65	A-700	CAR 4A	"	"	"	"	02-11-2003
		DC-65, DF-65, DL-65, DCO-65	A-746	CAR 4A	"	"	"	"	02-11-2003
		Navion, Navion A, B, C, D, E, F, G, H	A-782	CAR 3	"	"	"	"	10-20-2010
73 TIGER AIRCRAFT 74 TRYTEK 75 UNIVAIR AIRCART (Alon, Erco, Forney, Mooney) (Stinson)	TAYLORCRAFT (Covr.)	L-17A, L-17B, L-17C	A-782	CAR 3	"	"	"	"	None
		600 S2D, S2R, S2R-T34, S2R-T15, S2R-R3S, S2R-T11, S2R-T65	A4SW	CAR 8	"	"	"	"	10-20-2010
		S2RHG-T65, S2R-R1340, S2R-R1820, S2R-T45, S2R-G6, S2R-G10	A4SW	CAR 8	"	"	"	"	10-20-2010
		S2R-G5, S2RHG-T34, S2R-G1, S2R-T660	A4SW	CAR 8	"	"	"	"	10-20-2010
76 UNIVAIR AIRCART (Alon, Erco, Forney, Mooney) (Stinson)	TAYLORCRAFT (Covr.)	600 S-2D, S2R, S2R-T34, S2R-T15, S2R-T11, S2R-R3S, S2R-R1340	A3SW	CAR 3	"	"	"	"	10-20-2010
		S2A	2A9	CAR 8.10(a)(1)	"	"	"	"	10-20-2010
		S-2B, S-2C, 600-S2C	2A7	CAR 8.10(a)(1)	"	"	"	"	10-20-2010
		See <i>Gulfstream American</i> See <i>American Champion</i>			"	"	"	"	02-11-2003
77 UNIVAIR AIRCART (Alon, Erco, Forney, Mooney) (Stinson)	TAYLORCRAFT (Covr.)	108, 108-1, 108-2, 108-3, 108-5			"	"	"	"	
		V-77			"	"	"	"	
		L-5, L-5B, L-5C, L-5-D, L-5-E, L-5-E-1, L-5-G			"	"	"	"	
		10A, 10B			"	"	"	"	
78 UNIVAIR AIRCART (Alon, Erco, Forney, Mooney) (Stinson)	TAYLORCRAFT (Covr.)	415-C, 415-CD			"	"	"	"	
		415-D, E, G, F-1, F-1A, A-2, A2-A, M-10			"	"	"	"	
		HW-75			"	"	"	"	
					"	"	"	"	

FAA APPROVED MODEL LIST (AML) SA00068SE
FOR
ELECTRONICS INTERNATIONAL, INC.
FUEL FLOW/PRESSURE INSTRUMENTS

ORIGINAL ISSUE DATE: March 31, 1994

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS OR ALTERATION	FAA SEALED DRAWING		INSTALLATION INSTRUCTIONS		AML AMENDED DATE
					NUMBER	REVISION	NUMBER	REVISION	
76 VARGA		See Augustair Inc.	A68EU	FAR 21	14	14	14	14	02-11-2003
77 WSK- "PZL-MIELIEC" OBR		PZL M20 03	TA5CH	FAR 21	14	14	14	14	02-11-2003
78 ZENAIR		CH2000							10-16-1997
END of LIST									

FAA

APPROVED:

AMENDED:
REISSUED:



Acting Manager, Seattle Aircraft Certification Office

April 20, 1994; October 17, 1994; October 16, 1997; July 19,

2002; February 11, 2003; October 20, 2010

United States of America
Department of Transportation Federal Aviation Administration
Supplemental Type Certificate

Number SA01157LA

This certificate, issued to **Electronics International, Inc.
63296 Powell Butte Hwy.
Bend, OR 97701**

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the * Regulations.*

Original Product—Type Certificate Number: * See attached FAA Approved Model List (AML)
Make: No. SA01157LA for a list of approved aircraft
Model: models and applicable airworthiness TCDS

Description of the Type Design Change: Installation of Electronics International Model FP-5 or FP-5L Fuel Flow/Fuel Pressure Instrument as a replacement instrument in accordance with document II SO506931 revisions listed on the attached AML No. SA01157LA, or later FAA approved revision.

Limitations and Conditions: The installation should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previously approved configuration will not introduce any adverse effect upon the airworthiness of the aircraft. The approval of this modification applies to the above noted airplane model series only. A copy of this STC, the AML, and Airplane Flight Manual Supplement, AFM2112, Rev. B, or later FAA approved revision must be included in the permanent records of the modified aircraft. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: September 11, 2000

Date reissued: December 3, 2001, January 20, 2005

Date of issuance: June 1, 2001

Date amended: January 20, 2005



By direction of the Administrator



(Signature)

Acting Manager, Seattle Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA FORM 8110-2(10-68)

United States of America

Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SA01157LA

Electronics International, Inc.

Reissued: December 3, 2001, January 20, 2005

Amended: January 20, 2005

Limitations and Conditions: (cont'd)

In locations where this STC removes an existing combination manifold pressure (MAP)/fuel flow instrument, an FAA approved MAP gage must be installed in the aircraft with the FP-5 or FP-5L fuel flow/fuel pressure instrument installed by this STC.

This instrument must not be the primary source of information for determining the fuel quantity on board.

The instrument fuel pressure limits must be programmed at the factory and may not be pilot programmable.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

FAA FORM 8110-2-1 (10-69)

This certificate may be transferred in accordance with FAR 21.47.

PAGE 3 OF 3 PAGES

FAA Approved Model List (AML) SA01157LA For Installation of Electronics International, Inc. Primary Fuel Flow/Pressure Instruments							
Issue Date: June 1, 2001							
Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis For Alteration	Flight Manual Supplement Number	Installation Instructions Number	AML Amended Date
12	Bellanca Aircraft Corporation (See American Champion)	17-30A, 17-31A	95-B95, B95A, D95A, B95, 95-55, 95-A55, 95-B55	CAR 3	AFM2112	B 7/09/2004 or Later FAA Approved Revision	
			95-B55A, 95-B55B, 95-C55, 95-C55A	CAR 3			
			17-30A, 17-31A	A18CE			
13	Boeing Aircraft	14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	17-31ATC	A18CE			
			14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	FAR 23			
			1A3	CAR 3			
14	Cessna Aircraft Corp.	75 thru E75, A75H, A75L300, A75N1 thru E75N1, B75A	A-743	CAR 4A			
			170 thru 170B	CAR 3			
			172 thru 172Q	CAR 3			
		172R, 172S	3A12	FAR 23			
			3A17	CAR 3			
			175 thru 175C	CAR 3			
		177A, 177B	A13CE	FAR 23			
			177R	A20CE			
			TR 82	CAR 3			
		185, 185A, 185B	3A24	CAR 3			
			185C, 185D, 185E, A185E, A185F	CAR 3			
			3A24	CAR 3			
		188, 188A, 188B, A188, A188A, A188B, T188C	A9CE	FAR 23			
			206, 206H, P206 thru P206E, T206H	CAR 3			
			TP206A thru TP206E	CAR 3			
		U206 thru U206G, TU206A thru TU206G	A4CE	CAR 3			
			207, 207A, T207, T207A	FAR 23			
			A16CE	CAR 3			
		210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G	3A21	CAR 3			
			210H, T210H, 210I, T210I, 210K, T210K, 210L, T210L	CAR 3			
			3A21	CAR 3			
		210M, T210M, 210N, P210N, T210N, 210R, P210R, T210R	3A21	CAR 3			
			210-5 (205), 210-5A (205A)	CAR 3			
			T303	FAR 23			
		305A, 305C, 305D, 305F	5A5	CAR 3			
			305B, 305E	CAR 3			
			3A14	CAR 3			
		310, 310A, 310B, 310C, 310D, 310E, 310F, 310G, 310H, E310H	3A10	CAR 3			
			310I, 310J, 310J-1, E310I, 310K, 310L	CAR 3			
			3A10	CAR 3			
		320, 320-1, 320A thru 320F, 335, 340, 340A	3A10	CAR 3			
			3A25	CAR 3			
			336, 337, 337A, 337B, 337C, 337D, 337E, 337F, 337G, 337H	CAR 3			
		M337B, P337H	A6CE	CAR 3			
			M337B, T337C, T337D, T337E, T337F, T337G, T337H	CAR 3			
			T337H-SP, 340, 340A	CAR 3			
		401, 401A, 401B, 402, 402A, 402B, 402C	A7CE	CAR 3			

FAA Approved Model List (AML) SA01157LA For Installation of Electronics International, Inc. Primary Fuel Flow/Pressure Instruments									
Issue Date: June 1, 2001									
Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis For Alteration	Flight Manual Supplement Number	Revision	Installation Instructions Number	Revision	AML Amended Date
15	Child Doyle F.	See Aviat							
16	Christen Industries	See Aviat							
17	Cirrus Design Corporation	SR20, SR22	A0009CH	FAR 23					10/17/2005
18	Clark	1000	2A6	CAR 8			II S0506931	Later FAA Approved Revision	1/20/2005
19	Commander Aircraft	112, 112B, 114, 114A, 112TC, 112TCA 114B 500, 500-A, 500-B, 500-S, 500-U, 520, 560, 560-A, 560-E 560-F, 680, 680-E, 680-F, 680-FL, 680-FL(P), 685 700 720	2A12 A1250 6A1 2A4 A12SW 2A4	CAR 8 FAR 23 CAR 3 CAR 3 FAR 23 CAR 3					6/1/2001 1/20/2005
20	DeHavilland Aircraft	DH82A DH 82A DH C1 Chipmunk 21, DH C1 Chipmunk 22A DH C1 Chipmunk 22 DHC-1B-2-S3, DHC-1B-2-S5 DHC-2 Mk. 1 (L-20A), DHC-2 Mk. II DHC-3 L-20A DA 20-A1, DA 20-C1 DA 40	A3PC A8EU A4EU A4EU A26NM A-806 A-815 AR-33 TA-CH A4CE	FAR 21 FAR 21 FAR 21 FAR 21 FAR 21 CAR 10 CAR 10 CAR 8 FAR 21 FAR 21					1/10/2006
21	Diamond Aircraft Industries	DA 20-A1, DA 20-C1							1/20/2005
22	Dornier-Werke	DO 27 Q-6 DO 28 A-1, DO 28 B-1 DO 28 D, DO 28 D-1 228-100, 228-101, 228-200, 228-201, 228-202, 228-212 See Univar	ASIN 7A13 A16EU A16EU	CAR 10 CAR 10 FAR 23 FAR 23					1/20/2005
23	ERCO	EA 200, EA 300, EA 300L	A6TEU	FAR 23					
24	Extra Flugzeugbau	EA-400	A3CE	FAR 21					10/17/2005
25	Forney	See Univar							1/20/2005
26	Globe (Swift)	GC-1A, GC-1B	A-766	CAR 1A					10/17/2005
27	Gulfstream American Corp. (American General, Grumman & Tiger)	AA-1, AA-1A, AA-1B, AA-1C AA-5, AA-5A, AA-5B, AG-5B See Prop-Jets	A11EA A16EA	FAR 23 FAR 23					1/20/2005
28	Interceptor	D-140-B	A31N	CAR 10					
29	Jodel	DR-1050 D-1190 150	A4IN A10IN A14IN	CAR 10 CAR 10 CAR 10					
30	Lake (Revo)	C-1, C-2, LA-4, LA-4A, LA-4P, LA-4-200, 250	1A13	CAR 3					1/10/2006
31	Lancair (Columbia)	LC-40-550FG, LC-42-550FG	A0003SE	FAR 23					10/17/2005

FAA Approved Model List (AML) SA01157LA For Installation of Electronics International, Inc. Primary Fuel Flow/Pressure Instruments									
Issue Date: June 1, 2001									
Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis For Alteration	Flight Manual Supplement Number	Installation Instructions Number	Revision	Installation Instructions Revision	AML Amended Date
42	Pitts	PA-39, PA-40	AIEA	CAR 3	AFM112	B 7092004 or Later FAA Approved Revision	B 7092004 or Later FAA Approved Revision		
43	Prop-Jets (Interceptor)	PA-44-180, PA-44-180T	A19SO	FAR 23					
44	Revo	PA-46-310T, PA-46-350P	A25SO	FAR 23					
45	Rockwell	See Aviat	3A18	CAR 3					
46	Sky International	200, 200A, 200B, 200D, 400							
47	Socata Group (Aerospatiale)	See Lake							
48	Stinson	See Commander Aircraft							
49	Swift	See Globe							
50	Thompson	Navion A, B, D, E, F, G, H	A-782	CAR 3					1/10/2006
51	Tiger Aircraft	L-17A, L-17B, L-17C	A-782	CAR 3					1/20/2005
52	Trytek	See Gulfstream American							
53	Univair Aircraft	See American Champion							
54	Varga	108, 108-1, 108-2, 108-3, 108-5	A-767	CAR 3					
55	WSK "PZL-Mielec" OBR	V-77	A-774	CAR 4A					
		L-5, L-5B, L-5C, L-5D, L-5E, L-5F-1	A-764	CAR 4A					
		See Augustar Inc.							
		PZL M20 03	A68EU	FAR 21					
	End of List								

Amended Date: 1/20/2005; 10/17/2005; 1/10/2006

 FAA Approved: 
 Acting Manager, Seattle Aircraft
 Certification Office

Providing Excellent Products and
Exceptional Customer Service Since 1979



Electronics
International Inc.