Fuel Flow/Pressure

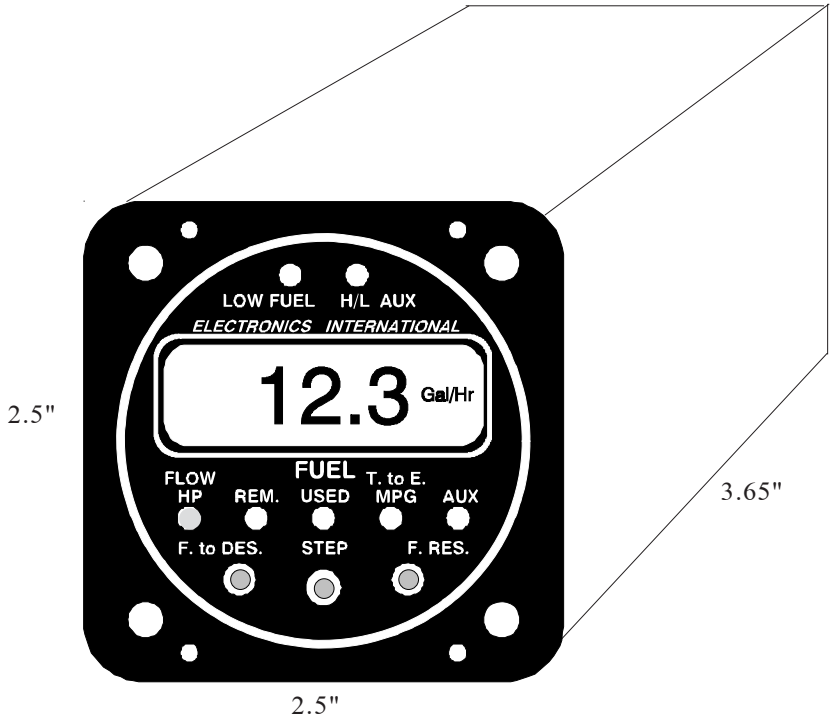
(FP-5 and FP-5L)

Installation Instructions

II 0506931

5/6/93
Rev. I: 7/2/02***

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.



Unit Model:_____ **S/N:**_____

Flow Transducer Model:_____ **S/N:**_____

Electronics International Inc.®

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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-5 on an aircraft with a fuel return line from the Pressure Carburetor requires a FFDM-1 Differential Module (see price sheet).

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-5/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-5/FP-5L: "Refer to Original Fuel Flow/Pressure Instrumentation for Primary Information."

Contents

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.**

FP-5 and FP-5L
Installation Instructions

1. Important Information and Initial Check Out

A. 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.

B. 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).

C. 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.

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

E. 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.

F. 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 below 350 H.P. A gravity feed fuel system or any engine rated over 350 H.P. must use an FT-90 flow transduer; 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-l (see price sheet).

Transducer Identification:

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

G. 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.

H. 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.

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).	1229932 or 1229931	18 or 17
Fuel injected engine with a fuel return line from the fuel servo (most Continentals).	0415941	20
Carbureted engine with a fuel pump and no fuel return line.	1229932 or 1229931	18 or 17
Carbureted engine with a fuel pump and a fuel return line (requires an FFDM-1 Module).	1229932 or 1229931, and 1015941	18 or 17, and 19
Carbureted engine with a gravity feed fuel system (requires an FT-90 Flow Transducer).	1229932 or 1229931	18 or 17

The instructions listed below must be followed when installing a Fuel Flow Transducer.

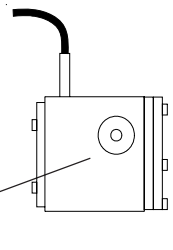
Note: If your engine is equipped with a Pressure Carburetor with a fuel return line from the carburetor back to the fuel tank, you will need to install two flow transducers: one in the feed line from the fuel pump to the carburetor and one in the return line from the carburetor back to the fuel tank.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

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).

End View

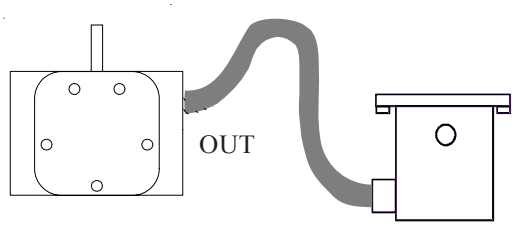
Note: • The direction of the flow of fuel through the transducer is marked on the transducer.

• Mount the transducer with the wires pointing up or the cap with five bolts up or the output up or any combination thereof.



Side View

If the transducer is more than 4" per foot higher than the carburetor or fuel servo port, put a loop in the fuel line between the transducer and the carburetor or fuel servo. This will allow bubbles to vacate the Flow Transducer.



B. Do not remove the yellow 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.

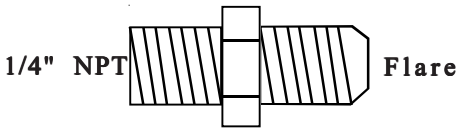
D. The flow transducer must be mounted so the wires exiting the transducer are pointing up or the cap with five bolts are pointing up or the output port is pointing up or any combination thereof..

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.**

Fittings:

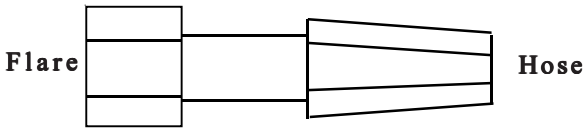


#4 Straight - AN816-4-4D
#6 Straight - AN816-6D
#8 Straight - AN816-7D

#6 45° - MS20823-6D

#4 90° - MS20822-4-4D
#6 90° - MS20822-6D

Hose Fittings:



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

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. Install the Circular Connector

Starting from under the instrument panel, route the circular connector wire harness up to the instrument mounting location. (See the Wiring Diagram at the back of this manual). Place the circular connector about 8 inches back from the panel. Tie wrap the harness in place approximately 1 foot back from the circular connector. This will allow the harness to be flexible and accommodate varying lengths in instrument wires. **Be sure these wires do not obstruct the freedom of travel of any controls.**

4. Route the Power and Ground Wires

In the wire harness are two sets of red and black 6' 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 in-line 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.**

5. Route the Backlight Wires

Connect the backlight wires as follows:

A. It is recommended to permanently power up the digital display backlight, although, you can connect 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 sheet).

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), voice annunciator (model AV-17), a relay, etc. This wire grounds when the red warning light is on. The current in this line must be limited to 2/10 of an amp maximum. Exceeding this limit will damage the instrument. If this feature is not used, leave this line open. **Tie wrap this wire so it does not obstruct the freedom of travel of any controls.**

7. Route the Fuel Flow Transducer Wires

The wire harness includes 6' cable with red, black and white wires. Route and connect these 6' wires to the fuel flow transducer using the OLC-1 Overlap Connectors supplied with the transducer. See OLC-1 Instructions 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 appropriate drawing at the back of this manual.

Any excess wires can be rolled up and tie wrapped under the instrument panel. **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.** You may decide to cut these wires to a specific length prior to connecting to the fuel flow transducer with the OLC-1 connectors.

8. Install A Functional Module

If the Aux channel on the FP-5 is to be used to monitor a function (EGT, TIT, Fuel Pressure, Oil Pressure, etc.) an appropriate Functional Module must be installed. A Functional Module is a small box with circuitry used to convert Temperature, Pressure, Voltage, Amps, etc. to an appropriate signal the FP-5 can display on the Aux channel. These modules are small and light and are tie wrapped under the instrument panel. They come with a Circular Connector so they may be installed and removed easily.

Install any Functional Modules at this time. Installation Instructions for the various Functional Modules come with the modules and are supplements to this installation manual.

9. (FP-5L Only) 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-5(L) Operating Instructions to configure the FP-5L RS-232 input.

Type of Hook-up	*FP-5L Connections*	*GPS Connections*
RS-232	RS-232 Input (white/blue wire)	RS-232 Output
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.		

10. (FP-5L Only) 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 transmited 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-5(L) 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.

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 oulined 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-5.

E. Route and connect the 6' 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-1 Installation Instructions for details.

F. Route and connect the 6' 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-1 Installation Instructions for details.

G. Connect the 1' red, black and white leads to the same color 6' leads from the FP-5.

H. Any excess wires can be rolled up and tie wrapped under the instrument panel. **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.** You may decide to cut the transducer wires to a specific length prior to connecting to the fuel flow transducer with the OLC-1 connectors.

Note: The flow transducers for the FFDM-1 and the FP-5 **MUST** be of the same model (i.e., if the FP-5 uses an FT-60 flow transducer, then the FFDM-1 must use a FT-60 flow transducer).

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-5.**

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-5: "Refer to Original Fuel Flow/Pressure Instrumentation for Primary Information".

13. Connect the Circular Connector to the Instrument

A. Push the two mating connectors together and twist them until they snap into position.

B. Turn the locking ring on the instrument connector clockwise (1 1/2 turns) until it locks into position.

14. System Check-out

Check instrument operation as follows:

A. Turn the aircraft master switch on (engine off) and verify that the red warning LED's on the FP-5 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 - +9 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. (FP-5L Only) 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 the Loran/GPS 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.

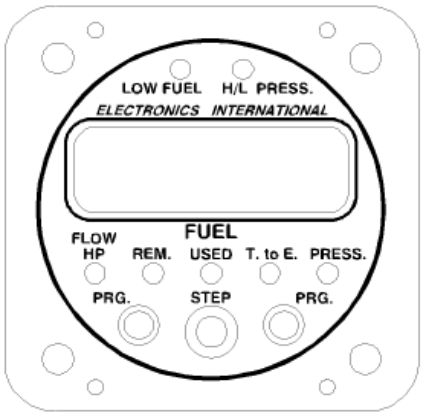
G. **After running the engine, check the fuel hoses, transducers and fittings for leaks.**

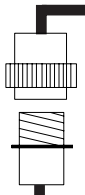
15. Initial Programming

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

Fuel Flow/Pressure (FP-5 and FP-5L) Wiring Diagram

Do not use screws longer than 1/2" (4 ea.).





Circular Connector

Wire Harness

Red — 3' Power Lead, connects to 12 or 24 Volt Bus.

Black — 3' Ground Lead, connects to Ground.

White/Brwn — 3' Backlight Control Line, connects to 12 Volt Bus. 12 volts turns on the digital display backlight.

White/Red — 3' Backlight Control Line, connects to 24 Volt Bus. Connect to ground for 12 Volt System.

White/Orng — 3' Display Mode Indicator LED Dimming Line, connects to Panel Light Rheostat. 12/24 volts dims the Display Mode LEDs.

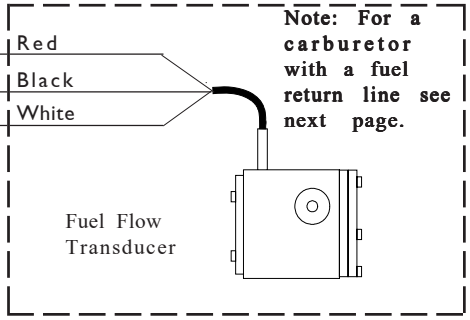
White/Yel — **3'** (Optional) External Warning Control Line. Can be connected to a relay to control an external light, buzzer, etc. Grounds when Red Warning Light is on. Current must be limited to 2/10 amp maximum.

Wht/Blu, Wht/Grn — **2ea - 3'** (FP-5L Only) RS-232/422 Serial Lines. See the FP-5 and FP-5L Circular Connector data on page 14.

White/Red Wire, White/Yel Wire, White Wire — AUX Channel Input Lines. See the Installation Instructions for the approprlate Functional Module.

6' Red Wire
6' Black Wire
6' White Wire

Connect the same color of 6' wires from the unit to the Fuel Flow Transducer.

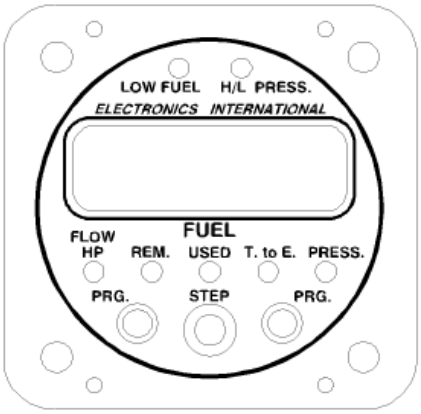


Note: For a carburetor with a fuel return line see next page.

FP-5(L) / FFDM-1 Interconnect Wiring Diagram

WARNING!

Electronics International Inc. only authorizes the installation of the FFDM-1 with the FP-5 or FP-5L. Installing the FFDM-1 with any other manufacturer's instrument may seriously jeopardize the safety of the aircraft.



Circular Connector

Red — 6' Red Wire
Black — 6' Black Wire
White — 6' White Wire

Circular Connector

Fuel Flow Differential Module (FFDM-1). Used with the FP-5(L) for carbureted engines with a fuel return line.

Partial wiring diagram for the FP-5 or FP-5L.

Red — 3' Power Lead, connects to 12 or 24 Volt Bus Via 1 amp fuse.

Black — 3' Ground Lead, connects to same ground as FP-5(L).

6' Red Wire — Red
6' Black Wire — Black
6' White Wire — White

Wire bundle marked "Feed"

Fuel Flow Transducer mounted in the fuel line <u>from the Fuel Pump to the Carburetor.</u>

6' Red Wire — Red
6' Black Wire — Black
6' White Wire — White

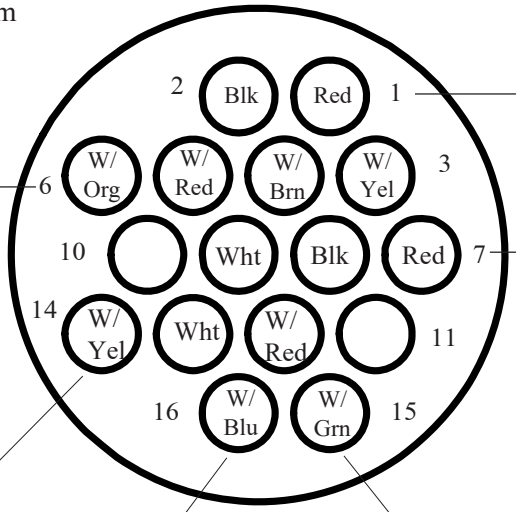
Wire bundle marked "Return"

Fuel Flow Transducer mounted in the fuel return line <u>from the Carburetor to the fuel tank.</u>

FP-5 and FP-5L
Circular Connector

Connecting Cable Harness, Back View (wire side)
or
Instrument Connector, Front View

Note: See Wiring Diagram for hookup information.



1 and 2 connect to power and ground.

3 through 6 are for back-light, LED dimming and external warning.

7 through 9 connects to the Fuel Flow Trans-ducer.

12 through 14 connects to a Functional Module

RS-232/422 Input (FP-5L Only)

RS-232 Output (FP-5L Only)

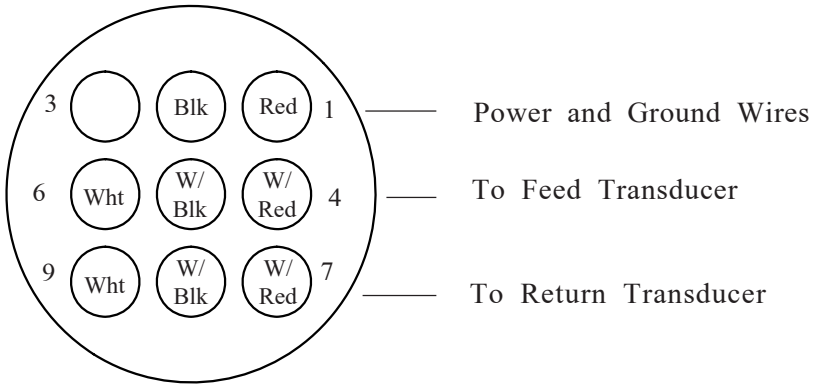
FFDM-1 Circular Connector

Connecting Cable Harness, Back View (wire side)

or

Module Connector, Front View

Note: See Wiring Diagram for hook up information.



Specifications and Operating Features

Model:

FP-5 and FP-5L (Fuel Flow/Pressure Instrument)

Case Dimensions:

2.5" x 2.5" x 3.65" depth, 2 1/4" Bezel.

Weight:

Instrument Only:	11 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 AUX Warning LED:

This LED will blink any time the programmed High or Low AUX limit is violated. The H/L AUX 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.
Aux 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
Aux:	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
AUX:	+/- 1999

RS-232/422 Input Ports (FP-5L Only)

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 (FP-5L Only)

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)

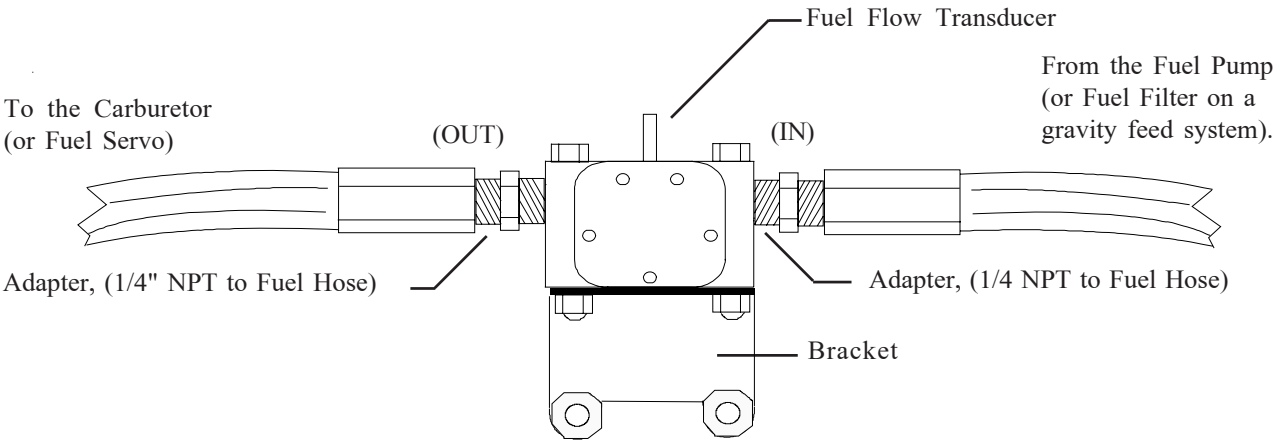
Range:	0.6 to 70+ GPH
Linearity:	1% over an engines normal operating range.
K Factor:	Approx. 68,000
Pressure Drop:	0.5 PSI at 28 GPH
	2.0 PSI at 56 GPH
Working Press:	1000 PSI
Min. Burst Press:	4000 PSI
Temp. Range:	-65° C to 125° C
Fuel Ports:	1/4" Female NPT

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:	1000 PSI
Min. Burst Press:	4000 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:	1000 PSI
Min. Burst Press:	4000 PSI
Temp. Range:	-65° C to 125° C
Fuel Ports:	1/4" Female NPT with #8 Female Flare Fitting



Mounting Procedure

1. Find a convenient location on the fire wall (away from any hot exhaust pipes) and mount a bracket for the Fuel Flow Transducer. Check both sides of the fire wall 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. You must use the FT-180 (Black Cube) for any engine over 550 H.P. If the Transducer is mounted within 6" of an exhaust pipe, the Flow Transducer must be wrapped with Fire Sleeving.

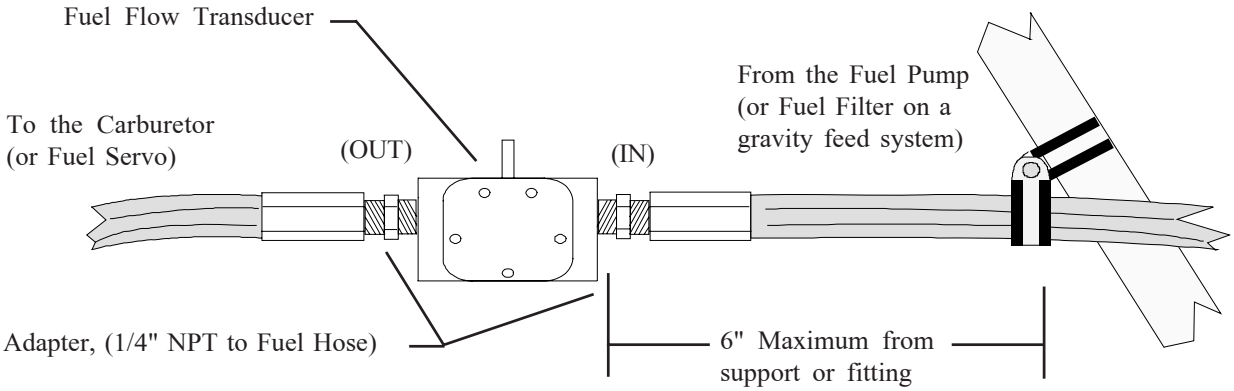
3. Remove the fuel hose which goes from the Fuel Pump (or the Fuel Filter on a gravity feed system) to the Carburetor (or Fuel Servo).

4. Purchase two new hoses, one 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 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 specification. The new hoses must be the same size as the current hoses in the aircraft. A source of fittings and fabricated hoses is:

Sacramento Sky Ranch Inc. (916) 421-7672 (800) 433-3564 Fax: (916) 421-5719	OR	Varga Enterprises Inc. (480) 963-6936 (800) 966-6936 FAX: (480) 899-0324	OR	Hoses Unlimited Inc. (510) 483-8521 Fax: (510) 483-8524

5. Read the Installation Instructions for important installation considerations.

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



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.

2. Remove the fuel hose which goes from the Fuel Pump (or the Fuel Fliter on a gravity feed system) to the Carburetor (or Fuel Servo).

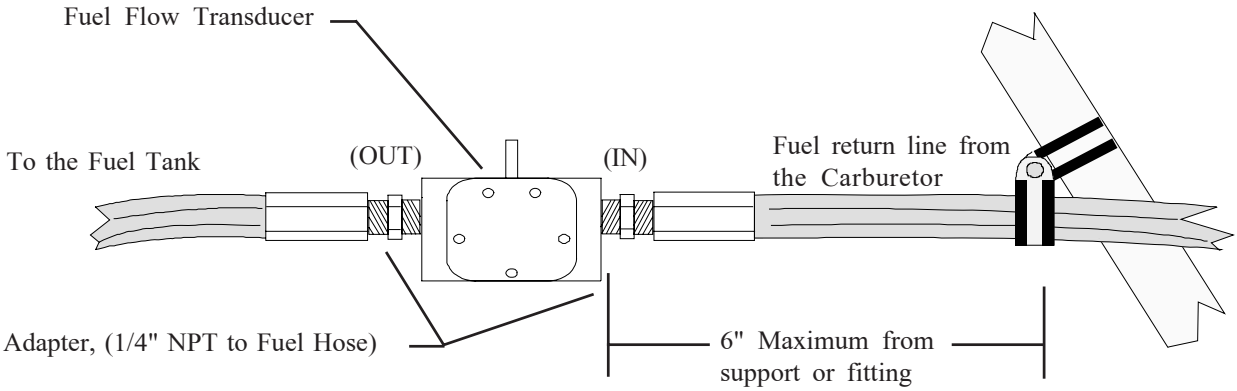
3. Purchase two new hoses: one to be used from the fuel pump (or the Fuel Filter) to the Fuel Flow Transducer and the other to be used from the Fuel Flow Transducer to the carburetor (or Fuel Servo). There must be flexible hose in and out of the Transducer. The hoses must meet TSO-C53a Type C or D FAA specification. The new hoses must be the same size as the current hoses in the aircraft. A source of fittings and fabricated hoses is:

Sacramento Sky Ranch Inc. (916) 421-7672 (800) 433-3564 Fax: (916) 421-5719	OR	Varga Enterprises Inc. (480) 963-6936 (800) 966-6936 FAX: (480) 899-0324	OR	Hoses Unlimited Inc. (510) 483-8521 Fax: (510) 483-8524

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. You must use the FT-180 (Black Cube) for any engine over 550 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.	***Electronics International Inc.***		
Approved By: R.R.	**Installation of a Fuel Flow Transducer suspended in the fuel line from the fuel pump to the carburetor or fuel servo.**		
Scale: None			
Material:	**Note: Not applicable for a fuel injected engine with a fuel return line (see D/N 0415941).**		
Next Assembly:			
P/N:	Date: 12/29/93	Rev: D: 7/2/02	D/N: 1229932



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.

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 specification. The new hoses must be the same size as the current hose in the aircraft. A source of fittings and fabricated hoses is:

Sacramento Sky Ranch Inc.
(916) 421-7672
(800) 433-3564
Fax: (916) 421-5719

OR

Varga Enterprises Inc.
(480) 963-6936
(800) 966-6936
FAX: (480) 899-0324

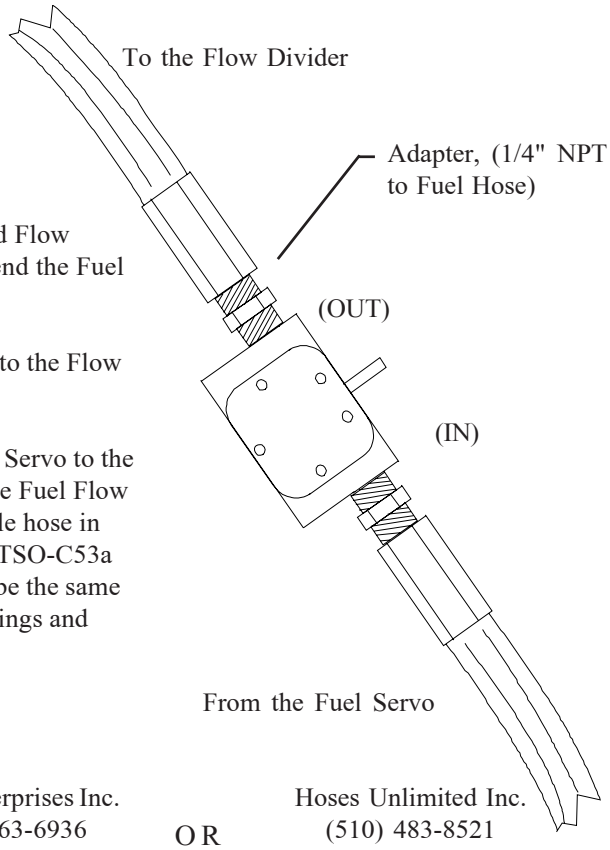
OR

Hoses Unlimited Inc.
(510) 483-8521
Fax: (510) 483-8524

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 that has over 350 H.P. You must use the FT-180 (Black Cube) for any engine over 550 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.	***Electronics International Inc.***		
Approved By: R.R.	**Installation of a Fuel Flow Transducer suspended in the fuel return line from the carburetor to the fuel tank.**		
Scale: None			
Material:	**Note: Only applicable for installation on aircraft with a fuel return line from the Carburetor.**		
Next Assembly:			
P/N:	Date: 10/15/94	Rev: A: 7/2/02	D/N: 1015941



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.

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 specification. The new hoses must be the same size as the current hose in the aircraft. A source of fittings and fabricated hoses is:

Sacramento Sky Ranch Inc.
(916) 421-7672
(800) 433-3564
Fax: (916) 421-5719

OR

Varga Enterprises Inc.
(480) 963-6936
(800) 966-6936
FAX: (480) 899-0324

OR

Hoses Unlimited Inc.
(510) 483-8521
Fax: (510) 483-8524

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. You must use the FT-180 (Black Cube) for any engine over 550 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.	***Electronics International Inc.***		
Approved By: R.R.	**Installation of the Fuel Flow Transducer suspended in the fuel line between the Fuel Servo and the Flow Divider.**		
Scale: None			
Material:	**Note: Only applicable for installation on aircraft with a fuel return line from the Fuel Servo.**		
Next Assembly:			
P/N:	Date: 4/15/94	Rev: B: 7/2/02	D/N: 0415941

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 thereto as specified hereon meets the airworthiness requirements of Part 3 of the 3 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

Signature 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 (8-82)

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 (8-82)

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	
					TD1130021	C 06-04-2002 or Later FAA Approved Revision	II 0506931	107-02-2002 or Later FAA Approved Revision	
1	AERO COMMANDER (Volaire)	10, 10A, 100, 100A, 100-180	1A21	CAR 3	"	"	"	"	02-11-2003
2	AERONCA INC.	50-L, 50-LA, 65-LA, 65-LB	A-702	CAR 4A	"	"	"	"	02-11-2003
	(Also See American Champion)	15AC, 515AC	A-802	CAR 3	"	"	"	"	10-16-1987
		C-3, PC-3	A-396	BUL 7A	"	"	"	"	10-20-2010
3	AEROMOT	AMT-100, AMT-200, AMT-200S, AMT-300	TC00004AT	CFR 21	"	"	"	"	02-11-2003
4	AEROSPATIALE	See Socata	———	———	———	———	———	———	None
5	AG CAT (Inactive)	G-164, G164A, G164B, G164C, G-164D	1A16	CAR 8	"	"	"	"	02-11-2003
		G-164B-15T, G-164B-34T, G-164B-T	1A16	CAR 8	"	"	"	"	02-11-2003
6	AIR TRACTOR INC.	AT-250, AT-300, -301, -302, -400, -400A	A9SW	FAR 21	"	"	"	"	10-20-2010
		AT-401, AT-401A, AT-401B, AT-402, AT-402A, AT-402B, AT-501	A17SW	FAR 21	"	"	"	"	10-20-2010
		AT-502, AT-502A, AT-502B, AT-503, AT-503A, AT-504	A17SW	FAR 21	"	"	"	"	10-20-2010
		AT-602, AT-602A, AT-802	A19SW	FAR 23	"	"	"	"	10-20-2010
7	ALLIANCE AIRCRAFT GROUP (Helio Enterprises)	H-250, H-295, HT-295	1A8	CAR 3	"	"	"	"	02-11-2003
		H-391B, H-395, H395A	1A8	CAR 3	"	"	"	"	10-17-1994
		H-391	1A8	CAR 3	"	"	"	"	02-11-2003
		H-700, H-800	1A8	CAR 3	"	"	"	"	10-17-1994
8	ALSIN	See Univair	———	———	———	———	———	———	02-11-2003
9	AMERICAN BLIMP COMPANY	A-60, A-60+	A5NM	FAR 21	"	"	"	"	10-16-1987
		A-1-50	SA00025E	FAR 21	"	"	"	"	10-16-1987
10	AMERICAN CHAMPION	7AC, 7BCM, 7DC, 7EDC	A-759	CAR 4A	"	"	"	"	02-11-2003
	(Aeronca, Bellanca, Tri-Pek)	7ACA, 7CAC, 7BCM (L-16A)	A-759	CAR 4A	"	"	"	"	10-20-2010
		7CCM, 7CCM	A-759	CAR 4A	"	"	"	"	02-11-2003
		7FC, 7JC, 7EC, 7EC, 7GC, 7HC, 7KC	A-759	CAR 4A	"	"	"	"	10-20-2010
		7GCA, 7GCB, 7GCAA, 7KCAB, 7ECA, 7GCBC	A-759	CAR 4A	"	"	"	"	02-11-2003
		7KCAB, L-16A, L-16B	A-759	CAR 4A	"	"	"	"	02-11-2003
		7GCBA	A-759	CAR 8	"	"	"	"	02-11-2003
		8KCAB, 8GCBC	A21CE	FAR 23	"	"	"	"	02-11-2003
		11AC, 11BC, 511AC, 511BC	A-761	CAR 4A	"	"	"	"	02-11-2003
		11CC, 511CC	A-796	CAR 3	"	"	"	"	02-11-2003
11	AMERICAN GENERAL AIRCRAFT	See Gulfstream American	———	———	———	———	———	———	02-11-2003
12	AVIDYNE INC. (Viargo)	2150, 2150A, 2180	4A19	CAR 3	"	"	"	"	02-11-2003

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	
13	AVIAT INC.	A-1, A-1A, A-1B	A22NM	FAR 23	"	"	"	"	02-11-2003
	(Pitts, Sky. Child F. Doyle)	A-1C-180, A-1C-200	A22NM	FAR 23	"	"	"	"	10-20-2010
	(Christen Industries)	S-1S, S-1T, S-2	A8SO	FAR 23	"	"	"	"	02-11-2003
	(White International)	S-2A, S-2S, S-2B, S-2C	A8SO	FAR 23	"	"	"	"	02-11-2003
14	BEECH AIRCRAFT CORP.	18A, S18A	630	BUL 7A	"	"	"	"	02-11-2003
		18D, A18A, A18D, SA18A, SA18D	A-684	BUL 7A	"	"	"	"	02-11-2003
		19A, B19, M19A, 23, A23, A23A, A23-24, C23, B23	A1CE	CAR 3	"	"	"	"	None
		A24, A24R, B24R, C24R, A23-19	A1CE	CAR 3	"	"	"	"	02-11-2003
		35, 35R, A35, B35, C35, D35, E35, F35, G35	A-777	CAR 3	"	"	"	"	None
		H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 35-33	3A15	CAR 3	"	"	"	"	02-11-2003
		35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A	3A15	CAR 3	"	"	"	"	02-11-2003
		F33C, G33, 36, A36, A36TC, B36TC	3A15	CAR 3	"	"	"	"	None
		45 (YT-34), A45 (T-34A, B-45), D45 (T34B)	5A3	CAR 3	"	"	"	"	10-20-2010
		50, B50, C50, D50, D50A, D50B, D50C	5A4	CAR 3	"	"	"	"	02-11-2003
		D50E, D50E-5980, E50, F50, G50, H50, J50	5A4	CAR 3	"	"	"	"	02-11-2003
		A55, B55, B55B, C55, C55A, D55, D55A, E55, E55A	3A16	CAR 3	"	"	"	"	None
		56TC, A56TC	3A16	CAR 3	"	"	"	"	None
		58, 58A	3A16	CAR 3	"	"	"	"	02-11-2003
		58P, 58PA, 58TC, 58TCA	A23CE	FAR 23	"	"	"	"	None
		60, A60, B60	A12CE	FAR 23	"	"	"	"	None
		65, 65-80, 65-A80, 65-88, 65-B80, A65, A65-8200, 70	3A20	CAR 3	"	"	"	"	02-11-2003
		65-90, 65-A90-8800, 65-A90	3A20	CAR 3	"	"	"	"	10-20-2010
		65-A90-1 (JU-21A, RU-21A, RU-21D, RU-21H, U-21A, U-21G)	3A20	CAR 3	"	"	"	"	10-20-2010
		65-A90-2 (RU-21B), 65-A90-3 (RU-21C)	3A20	CAR 3	"	"	"	"	10-20-2010
		65-A90-4 (RU-21E, RU-21H), 65-B80, 70, A65, A-65-8200, B90	3A20	CAR 3	"	"	"	"	10-20-2010
		C90, C90A, C90GT, C90GTi, E90, H90 (T-44A)	3A20	CAR 3	"	"	"	"	10-20-2010
		76	A29CE	FAR 23	"	"	"	"	None
		77	A3OCE	FAR 23	"	"	"	"	None
		95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55	3A16	CAR 3	"	"	"	"	None
		95-B55A, 95-B55B, 95-C55, 95-C55A	3A16	CAR 3	"	"	"	"	None

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	CAR 6	"	"	"	"	02-11-2003
		2H1, 47J, 47K, 47J-2, 47J-2A	2H1	CAR 6	"	"	"	"	None
		B-2, B-2A, B-2B	2H2	CAR 6	"	"	"	"	None
	BELL HELICOPTER (Cont.)	47G-2A, 47G-2A-1, 47G-3, 47G-3B, 47G-3B-1	2H3	CAR 6	"	"	"	"	None
		47G-4, 47G-4A, 47G5, 47G-3B-2, 47G-5A, 47G-3B-2A	2H3	CAR 6	"	"	"	"	None
16	BELLANCA AIRCRAFT CORPORATION	17-30A, 17-31A	A18CE	FAR 23	"	"	"	"	None
		17-31ATC	A18CE	FAR 23	"	"	"	"	None
	(See American Champion)	DW-1	A4NW	FAR 21	"	"	"	"	02-11-2003
		14-13, 14-13-2, 14-13-3, 14-13-3W	A-773	CAR 4A	"	"	"	"	02-11-2003
		14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	1A3	CAR 3	"	"	"	"	02-11-2003
17	BOEING AIRCRAFT	75 thru E75, A75J1, A75L300, A75N1 thru E75N1, B75A	A-743	CAR 4A	"	"	"	"	02-11-2003
18	BRANTLY	B-2, B-2A, B-2B	2H2	CAR 6	"	"	"	"	02-11-2003
		47, 47B, 47D, 47D1, 47E,	H1	CAR 6	"	"	"	"	02-11-2003
		47G, 47G-2, 47H-1	H1	CAR 6	"	"	"	"	02-11-2003
		47G-2A, 47G-2A-1,	2H3	CAR 6	"	"	"	"	02-11-2003
		47G-3, 47G-3B, 47G-3B-1, 47G-3B-2, 47G-3B-2A	2H3	CAR 6	"	"	"	"	02-11-2003
		47G-4, 47G-4A,	2H3	CAR 6	"	"	"	"	02-11-2003
		47G-5, 47G-5A	2H3	CAR 6	"	"	"	"	02-11-2003
19	CESSNA AIRCRAFT CORP.	120, 140	A-760	CAR 4A	"	"	"	"	02-11-2003
		C-145, C-165	A-701	CAR 4A	"	"	"	"	02-11-2003
		150 thru 150M, A150K, A150L, A150M, 152, A152	3A19	CAR 3	"	"	"	"	10-20-2010
		170 thru 170B	A-799	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	3A17	CAR 3	"	"	"	"	10-16-1997
		177 thru 177B	A13CE	FAR 23	"	"	"	"	02-11-2003
		177RG	A20CE	FAR 23	"	"	"	"	02-11-2003
		180 thru 180K	5A8	CAR 3	"	"	"	"	02-11-2003
		182 thru 182S, 182T	3A13	CAR 3	"	"	"	"	10-20-2010
		R182, T182, T182T, TR182	3A13	CAR 3	"	"	"	"	10-20-2010

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	Cessna Aircraft Corp. (Cont.)	185, 185A, 185B	3A24	CAR 3	"	"	"	"	02-11-2003
		185C, 185D, 185E, A185E, A185F	3A24	CAR 3	"	"	"	"	None
		188, 188A, 188B	A9CE	FAR 23	"	"	"	"	02-11-2003
		A188, A188A, A188B, T188C	A9CE	FAR 23	"	"	"	"	10-20-2010
		190, 195, 195A, 195B	A-790	CAR 3	"	"	"	"	10-20-2010
		206, 206H, P206 thru P206E, T206H	A4CE	CAR 3	"	"	"	"	02-11-2003
		TP206A thru TP206E	A4CE	CAR 3	"	"	"	"	02-11-2003
		U206 thru U206G, TU206A thru TU206G	A4CE	CAR 3	"	"	"	"	None
		207, 207A, T207, T207A	A10CE	FAR 23	"	"	"	"	02-11-2003
		210, 210A, 210B, 210C, 210D, 210E, 210F, 210K, 210R	3A21	CAR 3	"	"	"	"	10-20-2010
		210-5 (205), 210-5A (205A)	3A21	CAR 3	"	"	"	"	02-11-2003
		T210F, 210G, T210G, 210H, 210J	3A21	CAR 3	"	"	"	"	None
		T210H, T210J, T210K, 210M, 210N, 210L	3A21	CAR 3	"	"	"	"	10-20-2010
		T210L, T210F, T210M, 210N, P210N, P210R, T210R	3A21	CAR 3	"	"	"	"	10-20-2010
		T210N	3A21	CAR 3	"	"	"	"	None
		T303	A34CE	FAR 23	"	"	"	"	02-11-2003
		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
		310I, 310J, E310J, 310K, 310L	3A10	CAR 3	"	"	"	"	02-11-2003
		310N, 310P, 310R, T310P, T310R	3A10	CAR 3	"	"	"	"	02-11-2003
		T310Q	3A10	CAR 3	"	"	"	"	None
		310Q	3A10	CAR 3	"	"	"	"	None
		320, 320A, 320B, 320C	3A25	CAR 3	"	"	"	"	None
		320D, 320E, 320F	3A25	CAR 3	"	"	"	"	02-11-2003
		321	3A11	CAR 3	"	"	"	"	02-11-2003
		336	A2CE	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	3A25	CAR 3	"	"	"	"	02-11-2003
		401, 401A, 401B	A7CE	CAR 3	"	"	"	"	02-11-2003

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	Cessna Aircraft Corp. (Cont.)	402, 402A, 402B	A7CE	CAR 3	"	"	"	"	02-11-2003
		402C	A7CE	CAR 3	"	"	"	"	02-11-2003
		404	A25CE	FAR 23	"	"	"	"	02-11-2003
		406	A25CE	FAR 23	"	"	"	"	02-11-2003
		411, 411A	A7CE	CAR 3	"	"	"	"	02-11-2003
		414, 414A	A7CE	CAR 3	"	"	"	"	02-11-2003
		421, 421A, 421B	A7CE	CAR 3	"	"	"	"	02-11-2003
		421C, 425	A7CE	CAR 3	"	"	"	"	None
		S-4A (Sebel)	5H2	CAR 6	"	"	"	"	02-11-2003
20	Child, Doyle F.	*See Aviat*	———	———	———	———	———	———	02-11-2003
21	Christen Industries	*See Aviat*	———	———	———	———	———	———	02-11-2003
22	Cirrus Design Corporation	SR20, SR22 & SR22T	A00009CH	FAR 23	"	"	"	"	10-20-2010
23	Clark	1000	2A6	CAR 6	"	"	"	"	02-11-2003
		12	2A12	CAR 6	"	"	"	"	02-11-2003
24	Commander Aircraft	112, 112TC, 112B, 112TCA	A12SO	FAR 23	"	"	"	"	04-20-1994
		114, 114A	A12SO	FAR 23	"	"	"	"	04-20-1994
		500, 500-A, 500-B, 500-S, 500-U, 520, 560, 560-A, 560-E	6A1	CAR 3	"	"	"	"	10-20-2010
		560-F, 680, 680-E, 680-F, 680FL, 680T, 680V, 680W, 681, 685	2A4	CAR 3	"	"	"	"	02-11-2003
		690A thru 690D, 695, 695A, 695B	2A4	CAR 3	"	"	"	"	10-18-1997
		700	A12SW	FAR 23	"	"	"	"	02-11-2003
	Commander Aircraft (Cont.)	720	2A4	CAR 3	"	"	"	"	02-11-2003
		114B, 114TC	A12SO	FAR 23	"	"	"	"	10-20-2010
25	De Havilland Aircraft Company, Ltd.	DHC-2 Mk. I, DHC-2 Mk. II, DHC-2 Mk. III	A-806	CAR 10	"	"	"	"	10-20-2010
		DHC-3	A-815	CAR 10	"	"	"	"	10-18-1997
		DHC-1B-2-S3, DHC-1B-2-S5	A26NM	CAR 10	"	"	"	"	02-11-2003
		DH82A	A5PC	FAR 21	"	"	"	"	02-11-2003
		DH82A	A8EU	FAR 21	"	"	"	"	02-11-2003
	De Havilland Aircraft Company, Ltd. (Cont.)	DH.C1, 21, 22, 22A	A44EU	FAR 21	"	"	"	"	02-11-2003
		L-20A	AR-33	CAR 8	"	"	"	"	02-11-2003
26	Diamond Aircraft Industries	DA 20-A1, DA 20-C1	TA4CH	FAR 21	"	"	"	"	02-11-2003
		DA 40, DA 40F	A47CE	FAR 21	"	"	"	"	10-20-2010
27	Dornier-Werke	DO 27 Q-6	A8IN	CAR 10	"	"	"	"	02-11-2003
		DO 28 A-1, DO 28 B-1	7A13	CAR 10	"	"	"	"	02-11-2003
		DO 28 D, DO 28 D-1	A16EU	FAR 23	"	"	"	"	02-11-2003

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	Dornier-Werke (Cont.)	228-100, 228-101, 228-200, 228-201, 228-202, 228-212	A16EU	FAR 23	"	"	"	"	02-11-2003
28	Enstrom	F-28, F-28A, F-28C, F-28F	H1CE	CAR 6	"	"	"	"	02-11-2003
		280, 280C, TH-28, 480, 280F, F-28FX	H1CE	CAR 6	"	"	"	"	02-11-2003
29	ERCO	*See Univair*	———	———	———	———	———	———	02-11-2003
30	Extra Flugzeugbau	EA-300, EA-300S, EA 300/200, 300L	A67EU	FAR 23	"	"	"	"	02-11-2003
31	Fairchild	24R9, 24R9G, 24R40, 24R40S, 24R46, 24R46A, 24R46S	A-706	CAR 4A	"	"	"	"	02-11-2003
		24W-9, 24W-9S, 24W-40, 24W-40S, 24W-41, 24W-41A	A-707	CAR 4A	"	"	"	"	02-11-2003
		24W-41AS, 24W-41S, 24W-46, 24W-46S	A-707	CAR 4A	"	"	"	"	02-11-2003
		M62A, M62A-3, M62A-4, M62B, M62C, M-52B	A-724	CAR 4A	"	"	"	"	02-11-2003
		24 C8C, 24 C8CS	A-535	BUL 7A	"	"	"	"	02-11-2003
		M-64-C	A-2-599	CAR 4A	"	"	"	"	02-11-2003
32	Forney	*See Univair*	———	———	———	———	———	———	02-11-2003
33	Fuji	FA-200-160, 180, 180AO	A4PC	CAR 10	"	"	"	"	02-11-2003
34	Globe (Swift)	GC-1A, GC-1B	A-766	CAR 4A	"	"	"	"	02-11-2003
35	Goodyear	GA-22A	1A12	CAR 3	"	"	"	"	02-11-2003
		GA-2, GA-2B	A-784	CAR 4A	"	"	"	"	02-11-2003
36	Grob	G-115, 115A, 115B, 115C, 115C2, 115D, 115D2	A-57EU	FAR 21	"	"	"	"	02-11-2003
37	Gulfstream American Corp.	G-159	1A17	CAR 4B	"	"	"	"	None
	(American General)	G-115B	A12EA	CAR 4B	"	"	"	"	None
	(Grumman Aircraft)	AA-1, AA-1A, AA-1B	A11EA	FAR 23	"	"	"	"	None
	(Tiger Aircraft)	AA-1C	A11EA	FAR 23	"	"	"	"	None
		AA-5, AA-5A, AA-5B, AG-5B	A16EA	FAR 23	"	"	"	"	02-11-2003
38	Helicopter Technik	FJ Sky-Trac	H5EU	FAR 27	"	"	"	"	02-11-2003
39	Heltech Corp.	H-S-1N	H12WE	FAR 21	"	"	"	"	02-11-2003
40	Helio Aircraft	15A, 20	3A3	CAR 4A	"	"	"	"	10-16-1997
41	Hiller	UH-12, UH-12A	6H1	CAR 6	"	"	"	"	02-11-2003
		UH-12B, UH-12C	6H2	CAR 6	"	"	"	"	02-11-2003
	Hiller (Cont.)	UH-12D	4H10	CAR 6	"	"	"	"	02-11-2003
		UH-12E, UH-12E-L	4H11	CAR 6	"	"	"	"	02-11-2003
		UH-12L	H1WE	CAR 6	"	"	"	"	02-11-2003
42	Howard	DGA-6 (Army UC-70C)	612	BUL 7A	"	"	"	"	10-20-2010
		DGA-9 (Army UC-70D), DGA-12 (Army UC-70A)	645	BUL 7A	"	"	"	"	10-20-2010
		DGA-11	672	BUL 7A	"	"	"	"	10-20-2010

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	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	739	CAR 4A	"	"	"	"	10-20-2010
43	Interceptor	*See Prop-Jets*	———	———	———	———	———	———	02-11-2003
	Jodel	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
44	Lake (Revo)	C-1, C-2, LA-4, LA-4A, LA-4P, LA-4-200, 250	1A13	CAR 3	"	"	"	"	02-11-2003
45	Luscombe	8A thru 8F, T-8F	A-694	CAR 4A	"	"	"	"	10-16-1997
46	Marchetti	S205-18/F, -18/R	A9EU	FAR 21	"	"	"	"	02-11-2003
	(See SIAI)	S205-20/F, -20/R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S205-22/R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S208, S208A	A9EU	FAR 21	"	"	"	"	02-11-2003
		F260, F260B-F	A10EU	CAR 3	"	"	"	"	02-11-2003
		S211A	A66EU	FAR 23	"	"	"	"	02-11-2003
47	Maule	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
		M-5-220C, M-5-235C	3A23	CAR 3	"	"	"	"	None
		M-6-180, M-6-235	3A23	CAR 3	"	"	"	"	10-17-1994
		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
	Maule (Cont.)	M-7-420AC, MX-7-420, MXT-7-420, M-8-235	3A23	CAR 3	"	"	"	"	02-11-2003
48	Messerschmitt	BO-209-150 FV &RV	A27EU	FAR 21	"	"	"	"	02-11-2003
		BO-209-160 FV & RV	A27EU	FAR 21	"	"	"	"	02-11-2003
		BO 209-150 FF	A27EU	FAR 21	"	"	"	"	02-11-2003
49	Meyers	*See Interceptor*	———	———	———	———	———	———	02-11-2003

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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	"	"	"	"	10-20-2010
		M22	A60W	CAR 3	"	"	"	"	None
51	Moravan	Zlin 526L	A30EU	FAR 21	"	"	"	"	02-11-2003
		Zlin Z 242L, 143L	A76EU	FAR 21	"	"	"	"	02-11-2003
52	Navion	*See Thompson*	———	———	———	———	———	———	None
53	Partenavia	P-68, P-68B, P-68C, P-68TC P-68C-TC	A31EU	FAR 21	"	"	"	"	02-11-2003
54	Piaggio	P-166, P-166B, P-166C,	7A4	CAR 10	"	"	"	"	02-11-2003
		P-136-L, P-136-L1, P-136- L2	A-813	CAR 10	"	"	"	"	02-11-2003
55	Pilatus	PC-6, PC-6-H1, PC-6-H2,	7A15	CAR 10	"	"	"	"	02-11-2003
		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, 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, PC-6/C1-H2	7A15	CAR 3, 10	"	"	"	"	10-20-2010
		PC-7	A50EU	FAR 23	"	"	"	"	10-20-2010
		PC-12, PC-12/45, PC-12/47, PC-12/47E	A78EU	FAR 23	"	"	"	"	10-20-2010
56	Piper Aircraft Co.	PA-11, PA-11S, J3C-40, J3C-50, J3C-50S, J3C-65, J3C-65S	A-691	CAR 4A	"	"	"	"	02-11-2003
		PA-12, PA-12S	A-780	CAR 3	"	"	"	"	02-11-2003
		PA-14	A-797	CAR 3	"	"	"	"	02-11-2003
		PA-15	A-800	CAR 3	"	"	"	"	02-11-2003
		PA-16, PA-16S	1A1	CAR 3	"	"	"	"	02-11-2003
		PA-17	A-806	CAR 3	"	"	"	"	02-11-2003
		PA-18, PA-18A, PA-18AS, PA-18S, PA-19, PA-19S	1A2	CAR 3	"	"	"	"	02-11-2003
		PA-20, PA-20S	1A4	CAR 3	"	"	"	"	None
		PA-22, PA-22S	1A6	CAR 3	"	"	"	"	02-11-2003
		PA-23, PA-23-160, PA-23-235, PA-23-250	1A10	CAR 3	"	"	"	"	None
		PA-24, PA-24-250, PA-24-260, PA-24-400	1A15	CAR 3	"	"	"	"	02-11-2003
		PA-25, PA-25-235, PA-25-260	2A8	CAR 3	"	"	"	"	02-11-2003
		PA-28-140, PA-28-150, PA-28-151, PA-28-160, PA-28S-160	2A13	CAR 3	"	"	"	"	None
		PA-28-161, PA-28-180, PA-28R-180, PA-28-181, PA-28R-200	2A13	CAR 3	"	"	"	"	None
		PA-28R-201, PA-28-201T, PA-28R-201T, PA-28-235, PA-28-236	2A13	CAR 3	"	"	"	"	None

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	Piper Aircraft Co. (Cont.)	PA-28RT-201, PA-28RT-201T, PA-28S-180	2A13	CAR 3	"	"	"	"	02-11-2003
		PA-30	A1EA	CAR 3	"	"	"	"	02-11-2003
		PA-31, PA-31-300, PA-31-325, PA-31-350	A20SO	CAR 3	"	"	"	"	02-11-2003
		PA-31P, PA-31T, PA-31T1, PA-31T2, PA-31T3, PA-31P-350	A8EA	CAR 3	"	"	"	"	02-11-2003
		PA-32-260, PA-32-300, PA-32R-300, PA-32RT-300T, PA-32-301	A3SO	CAR 3	"	"	"	"	None
		PA-32-301T, PA-32R-301, PA-32R-301T	A3SO	CAR 3	"	"	"	"	None
		PA-34-200, PA-34-200T, PA-34-220T	A7SO	FAR 23	"	"	"	"	None
		PA-36-285, PA-36-300, PA-36-375	A9SO	FAR 23	"	"	"	"	None
		PA-38-112	A16SO	FAR 23	"	"	"	"	None
		PA-39, PA-40	A1EA	CAR 3	"	"	"	"	02-11-2003
		PA-44-180, PA-44-180T	A19SO	FAR 23	"	"	"	"	None
		PA-46-310P, PA-46-350P, PA-46-350T	A25SO	FAR 23	"	"	"	"	10-20-2010
		PA-60-600 (Aerostar 600), PA-60-601 (Aerostar 601)	A17WE	FAR 23	"	"	"	"	10-20-2010
		PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P)	A17WE	FAR 23	"	"	"	"	10-20-2010
		PA-60-700P (Aerostar 700P)	A17WE	FAR 23	"	"	"	"	10-20-2010
57	Pitts	*See Aviat*	———	———	———	———	———	———	02-11-2003
58	Prop-Jets *(Interceptor)* (Aero Commander & Meyers)	200, 200A, 200B, 200C, 200D, 400	3A18	CAR 3	"	"	"	"	10-16-1997
59	Quest	Kodiak 100	A00007SE	FAR 23	"	"	"	"	10-20-2010
60	Revo	*See Lake*	———	———	———	———	———	———	02-11-2003
61	Rockwell	*See Commander Aircraft*	———	———	———	———	———	———	02-11-2003
62	SIAI Marchetti	S205-18/F, -18/R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S205-20/F, -20/R	A9EU	FAR 21	"	"	"	"	02-11-2003
		S205-22/R	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
63	Seabee	*See Sky Enterprises*	———	———	———	———	———	———	02-11-2003
64	Sikorsky	S-43, S-43B, S43W	A-593	BUL 7A	"	"	"	"	02-11-2003
65	Sky Enterprises (SeaBee)	RC-3	A-769	CAR 3	"	"	"	"	02-11-2003
66	Sky International	*See Aviat*	———	———	———	———	———	———	02-11-2003
67	Socata Group (Aerospatiale)	TB 9, TB 10, TB 20, TB 21	A51EU	CAR 3	"	"	"	"	None
		TB 20E	A51EU	CAR 3	"	"	"	"	02-11-2003
		GA-7	A17SO	FAR 23	"	"	"	"	02-11-2003

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	
	SOCATA GROUP (Aerospatiale) (Cont.)	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
68	STINSON	*See Univair*							None
69	SWIFT (Globe)	GC-1A, GC-1B	A-786	CAR 4A	"	"	"	"	10-16-1997
70	TAYLORCRAFT	19, F19, F21, F21A, F21B, F22, F22A, F22B, F22C	1A9	CAR 3	"	"	"	"	02-11-2003
		A	A-643	BUL 7A	"	"	"	"	02-11-2003
		BC, BCS, BC-65, BCS-65,	A-696	CAR 4	"	"	"	"	02-11-2003
		BC12-65, BCS12-65, BC12-D, BCS12-D, BC12-D1, BCS12-D1	A-696	CAR 4	"	"	"	"	02-11-2003
		BC12D-65, BCS12D-65, BC12D-4-65, BCS12D-4-65	A-696	CAR 4	"	"	"	"	02-11-2003
	TAYLORCRAFT (Cont.)	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
71	THOMPSON	Navion, Navion A, B, C, D, E, F, G, H	A-782	CAR 3	"	"	"	"	10-20-2010
	(Navion, North American)	L-17A, L-17B, L-17C	A-782	CAR 3	"	"	"	"	None
72	THRUSH AIRCRAFT, INC.	600 S2D, S-2R, S2R-T34, S2R-T15, S2R-R3S, S2R-T11, S2R-T65	A4SW	CAR 8	"	"	"	"	10-20-2010
	(Ayres Corp)	S2RHG-T65, S2R-R1340, S2R-R1820, S2R-T45, S2R-G6, S2R-G10	A4SW	CAR 8	"	"	"	"	10-20-2010
	(Rockwell Commander)	S2R-G5, S2RHG-T34, S2R-G1, S2R-T660	A4SW	CAR 8	"	"	"	"	10-20-2010
		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
73	TIGER AIRCRAFT	*See Gulfstream American*							02-11-2003
74	TRYTEK	*See American Champion*							02-11-2003
75	UNIVAIR AIRCART	108, 108-1, 108-2, 108-3, 108-5	A-787	CAR 3	"	"	"	"	10-16-1997
	(Alon, Ercoupe, Forney, Mooney)	V-77	A-774	CAR 4A	"	"	"	"	02-11-2003
	(Stinson)	L-5, L-6B, L-5C, L5-D, L5-E, L5-E-1, L5-G	A-764	CAR 4A	"	"	"	"	02-11-2003
		10A, 10B	A-738	CAR 4A	"	"	"	"	02-11-2003
		415-C, 415-CD	A-718	CAR 4A	"	"	"	"	02-11-2003
		415-D, E, G, F-1, F-1A, A-2, A2-A, M-10	A-787	CAR 3	"	"	"	"	02-11-2003
		HW-75	A-709	CAR 4A	"	"	"	"	02-11-2003

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					NUMBER	REVISION	NUMBER	REVISION	
76	VARGA	*See Aviastar Inc.*							02-11-2003
77	WSK- "PZL-MIELEC" OBR	PZL M20 03	A68EU	FAR 21	"	"	"	"	02-11-2003
78	ZENAIR	CH2000	TA5CH	FAR 21	"	"	"	"	10-16-1997
--	End of List								

FAA APPROVED: _____
Acting Manager, Seattle Aircraft Certification Office

AMENDED: April 20, 1994; October 17, 1994; October 16, 1997; July 19, 2002; February 11, 2003; October 20, 2010

REISSUED: _____