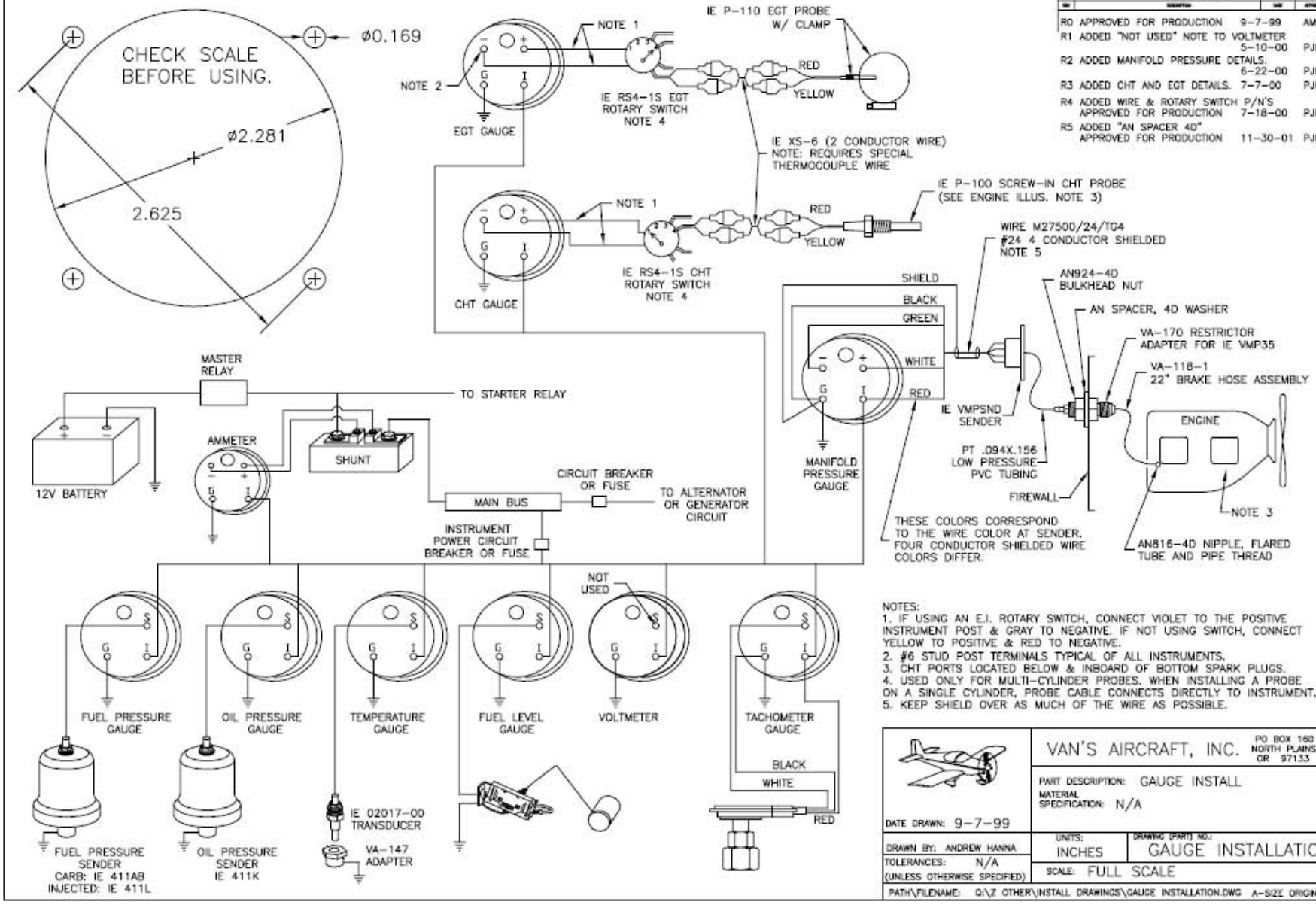


R0	APPROVED FOR PRODUCTION	9-7-99	AMH
R1	ADDED "NOT USED" NOTE TO VOLTMETER	5-10-00	PJR
R2	ADDED MANIFOLD PRESSURE DETAILS.	6-22-00	PJR
R3	ADDED CHT AND EGT DETAILS.	7-7-00	PJR
R4	ADDED WIRE & ROTARY SWITCH P/N'S APPROVED FOR PRODUCTION	7-18-00	PJR
R5	ADDED "AN SPACER 4D" APPROVED FOR PRODUCTION	11-30-01	PJR

NOTES:
1. IF USING AN E.I. ROTARY SWITCH, CONNECT VIOLET TO THE POSITIVE INSTRUMENT POST & GRAY TO NEGATIVE. IF NOT USING SWITCH, CONNECT YELLOW TO POSITIVE & RED TO NEGATIVE.
2. #6 STUD POST TERMINALS TYPICAL OF ALL INSTRUMENTS.
3. CHT PORTS LOCATED BELOW & INBOARD OF BOTTOM SPARK PLUGS.
4. USED ONLY FOR MULTI-CYLINDER PROBES. WHEN INSTALLING A PROBE ON A SINGLE CYLINDER, PROBE CABLE CONNECTS DIRECTLY TO INSTRUMENT.
5. KEEP SHIELD OVER AS MUCH OF THE WIRE AS POSSIBLE.

VAN'S AIRCRAFT, INC. PO BOX 160 NORTH PLAINS, OR 97133

PART DESCRIPTION: GAUGE INSTALL
MATERIAL SPECIFICATION: N/A

DATE DRAWN: 9-7-99
DRAWN BY: ANDREW HANNA
TOLERANCES: N/A (UNLESS OTHERWISE SPECIFIED)
UNITS: INCHES
DRAWING (PART) NO.: GAUGE INSTALLATION
SCALE: FULL SCALE
PATH\FILENAME: Q:\Z OTHER\INSTALL DRAWINGS\GAUGE INSTALLATION.DWG A-SIZE ORIGINAL

INSTALLING VAN'S VAM 40 AMMETER

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE VAMSHUNT 40, a 40 Amp, 40 millivolt sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Amperage range from –40 to 40 AMP.
- Gauge accuracy within 2% throughout its range.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the ammeter please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13.)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the shunt. There are a couple of possible variations in the wiring location of the shunt. The location we show in the wiring diagram is the most popular.

Connect the terminals on the shunt to the terminals on the back of the gauge case using 18-gauge wire. Observe the polarity shown in the wiring diagram.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. A drawing with cut-out dimensions is included.

Troubleshooting.

If the gauge is not working first check the power and ground. The voltage must be between 11 and 16 volts.+

INSTALLING VAN'S CHT CYLINDER HEAD TEMPERATUE GAUGE

Specifications

- Power required 11-16 volts DC
- 270 Degrees of sweep for high resolution
- Recommended Probe sensor is Van's P/N IE P-100. Optional is the use of IE RS4-1S CHT or IE RS4-2S upgrade kits to provide for multiple cylinder selection with rotary switch.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Temperature range from 1000-1600 Deg.F.
- Gauge accuracy within 2% throughout its range.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the Cylinder Head Temperature gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauge in unused, like new condition for a refund.

Read through all of the following instructions before beginning the installation.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Install the probe(s) on the cylinder head(s) as follows:

If installing a probe on a single cylinder you should select the cylinder that will tend to run the hottest during climb. On RVs this is commonly cylinder #3 (right rear) but it can vary between the different models and by how well the cowl and baffling is installed

Apply a small amount of thread antiseize to the probe threads and screw it into the port on the bottom of the cylinder head(s). Route the wires clear of the exhaust pipes as much as possible. Label a connection cable at both ends (CHT #1, etc.) Connect and route the wire from the probe to the instrument or selector switch.

If you are installing probes on multiple cylinders using Van's P/N IE RS4-1S CHT or IE RS4-2S, then the connection cables should be routed to the selector switch.

If a single probe is being used, the spade connectors are removed from the end of the cable and a #6 ring terminal installed for connection to the instrument stud. It is OK to shorten the connection cable(s).

Use the instructions and diagram supplied with the switch kit to connect each cylinder to its appropriate switch position. Note that the IE RS4-2S switch has two complete sets of wires. One set for EGT and one set for CHT. Selecting any cylinder number with the switch will then select that cylinder number on the instrument that corresponds to that particular wire set (EGT or CHT). You can use wire left over from shortening the connection cables to reach between the switch and the instrument terminals.

Operation

The CHT instrument has built-in hysteresis delay that requires an approximately 5 second delay between a change in temperature value and a display of the new temperature. Example – a large temperature change in a very short period of time will have a much longer delay than a very small temperature change. This provides for a very accurate, stable reading with no needle quivering.

Troubleshooting.

If the gauge is not working first check the power and ground (a very high percentage of instrument problems are caused by faulty grounds). The voltage must be between 11 and 16 volts.

If the power and ground are connected correctly, check to be sure that the probe connections are not reversed, as this will cause no reading to be displayed on the instrument, but it should not cause any damage.

Double-check all connections, particularly ones that you crimped on yourself.

INSTALLING VAN'S EGT EXHAUST GAS TEMPERATUE GAUGE

Specifications

- Power required 11-16 volts DC
- 270 Degrees of sweep for high resolution
- Recommended Probe sensor is Van's P/N IE P-110. Optional is the use of IE RS4-1S EGT or IE RS4-2S upgrade kits to provide for multiple cylinder selection with rotary switch.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Temperature range from 1000-1600 Deg.F.
- Gauge accuracy within 2% throughout its range.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the Exhaust Gas Temperature gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauge in unused, like new condition for a refund.

Read through all of the following instructions before beginning the installation.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Install the probe(s) on the exhaust system as follows:

If installing a probe on a single cylinder you should select the cylinder that is the leanest at cruise power. On RVs using the Van's FAB 320 or 360 airbox, this is commonly cylinder #3 (right rear) but not always.

The ideal vertical position on the pipe is 1 ½" below the exhaust port outlet of the cylinder, but ease of installation should prevail. We recommend that you do not drill holes for the probe until all other wiring is completed and you have the bottom spark plugs and spark plug cables installed. Mark the hole position so that the probe body and wires will not interfere with anything. Center punch the hole location and drill a 13/64" hole. When drilling in stainless steel pipes be sure to turn the drill bit slowly. Clamp the probe in place and route the wires clear of the exhaust pipes as much as possible. Any extra portion of the clamp strap may be cut off. Label a connection cable at both ends (EGT CYL #1 etc.). Connect and route the wire from the probe to the

instrument or selector switch. If you are installing probes on multiple cylinders using Van's P/N IE RS4-1S EGT or IE RS4-2S, then the connection cables should be routed to the selector switch. Do the same for the remaining cylinders as required.

If a single probe is being used, the spade connectors are removed from the end of the cable and a #6 ring terminal installed for connection to the instrument stud. It is OK to shorten the connection cable(s).

Use the instructions and diagram supplied with the switch kit to connect each cylinder to its appropriate switch position. Note that the IE RS4-2S switch has two complete sets of wires. One set for EGT and one set for CHT. Selecting any cylinder number with the switch will then select that cylinder number on the instrument that corresponds to that particular wire set (EGT or CHT). The Violet and Gray wire from each wire set gets connected to the instrument that corresponds to the particular wire set (EGT or CHT). You can use wire left over from shortening the connection cables to reach between the switch and the instrument terminals. Install #6 ring terminals to the ends of the wires that connect to the instrument.

Operation

The EGT instrument has built-in hysteresis delay that requires an approximately 5 second delay between a change in temperature value and a display of the new temperature. Example – a large temperature change in a very short period of time will have a much longer delay than a very small temperature change. This provides for a very accurate, stable reading with no needle quivering.

Troubleshooting.

If the gauge is not working first check the power and ground (a very high percentage of instrument problems are caused by faulty grounds). The voltage must be between 11 and 16 volts.

If the power and ground are connected correctly, check to be sure that the probe connections are not reversed, as this will cause no reading to be displayed on the instrument, but it should not cause any damage.

Double-check all connections, particularly ones that you crimped on yourself.

INSTALLING VAN'S VFP15 FUEL PRESSURE GAUGE

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE411AB, a 0 to 16 PSI input, 33 to 240 Ohm resistive sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Pressure range from 0-15 PSI.
- Green arc from 2 to 6 PSI with redlines at 0.5 and 8 PSI. This matches the requirements for inlet pressure to most Lycoming carburation systems.
- Gauge accuracy within 2% throughout its range and a calibration point of 3 PSI.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the fuel pressure gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (see AC 43.13.)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the sender. DO NOT INSTALL SENDER DIRECTLY ON THE ENGINE. Use a remote mount system. A sender mounted directly on the engine will vibrate and may fatigue and break with potentially disastrous consequences.

Connect the terminal on Van's P/N IE 411AB sender to the terminal marked S on the back of the tachometer case using 18-gauge wire.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. A drawing with cut-out dimensions is included.

Troubleshooting

If the gauge is not working first check the power and ground (a very high percentage instrument problems are caused by faulty grounds. Double check the sender ground.) The voltage must be between 11 and 16 volts.

If the gauge shows a full scale reading, disconnect the sender from the lead. If the gauge returns to zero the sender is shorted to ground. If the gauge remains at full scale, remove the sender wire from the back of the gauge. If the gauge returns to zero the wire is shorted. If the needle remains at full the gauge is probably faulty.

If the gauge shows a zero reading remove the wire from the sender and ground it. If the gauge goes to full scale the sender is bad. If the gauge still reads zero, ground the sensor stud on the back of the case. If the gauge goes to full scale the wire is broken. If the needle remains on zero the gauge is faulty.

INSTALLING VAN'S VFP50 FUEL PRESSURE GAUGE

Specifications:

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE 411L, a 0-60 PSI input, 33-240 Ohm resistive sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Pressure range from 0-50 PSI.
- Green arc from 14 to 45 PSI with redlines at 14 and 45 PSI. Matches the requirements for inlet pressure to most Lycoming fuel injection systems.
- Gauge accuracy within 2% throughout its range and a calibration point of 25 PSI.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the fuel pressure gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the sender. DO NOT INSTALL THE SENDER DIRECTLY ON THE ENGINE. Use a remote mount system. A sender mounted directly on the engine will vibrate and may fatigue and break with potentially disastrous consequences.

Connect the terminal on Van's P/N IE 411L sender to the terminal marked S on the back of the tachometer case using 18-gauge wire.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Troubleshooting

If the gauge is not working first check the power and ground (a very high percentage instrument problems are caused by faulty grounds. Double check the sender ground.) The voltage must be between 11 and 16 volts.

If the gauge shows a full scale reading disconnect the sender from the lead. If the gauge returns to zero the sender is shorted to ground. If the gauge remains at full scale, remove the sender wire from the back of the gauge. If the gauge returns to zero the wire is shorted. If the needle remains at full scale the gauge is probably faulty.

If the gauge shows a zero reading remove the wire from the sender and ground it. If the gauge goes to full scale the sender is bad. If the gauge still reads zero, ground the sensor stud on the back of the case. If the gauge goes to full scale the wire is broken. If the needle remains on zero the gauge is faulty.

INSTALLING THE VANS VFL15 FUEL GAUGE

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE F-385B (left tank) or IE F-385C (right tank), a 33 to 240 Ohm float type resistive sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Fuel level range from 0-15 Gallons.
- Yellow arc from 5 to 2.5 gallons, red arc from 2.5 to 0 gallons. Matches the tank shape of the RV-6 and RV-8 to provide reasonable accuracy.
- Gauge accuracy within 2% throughout its range and a calibration point of 2.5 gallons.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the fuel level gauge please read the above warranty and check to make sure the range markings on the gauge match your aircraft. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

Wing dihedral in the RV-6/6A and RV-8/8A keeps the inboard bay of the fuel tank (where the senders are) full until 15 or 16 gallons remain. The float does not move until three (RV-6/6A) or five (RV-8/8A) gallons of fuel are used. Even though there is no "full" marked on the gauges, they give as accurate a reading as possible with a float type sender.

The gauge should be installed to current aircraft standards (See AC 43.13.)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

The gauge is designed to work with the tank shape of the RV-6 and RV-8. To achieve the best accuracy the float should come within 1/8 inch of the top and bottom of the tank at full throw.

Connect the terminal on Van's P/N IE F-385B (left tank) or IE F-385C (right tank) sender to the terminal marked S on the back of the gauge case using 18-gauge wire.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. A drawing with cut-out dimensions is included.

Level the airplane in the roll and pitch axes and add 2.5 gallons of fuel to an empty tank(s). The needles should come close to the 2.5 mark on the face. Repeat for 5, 10, and 15 gallons to check the calibration between the sender and the gauge. The gauge will continue to read 15 gallons whenever the tank contains that amount or more. The amount on the gauges will not be precise when the tanks are nearly full, but by giving up a little accuracy in this situation, they are more accurate when fuel is low, where increased accuracy is more desirable.

Troubleshooting

If the gauge is not working first check the power and ground (a very high percentage instrument problems are caused by faulty grounds. Double check the sender ground.) The voltage must be between 11 and 16 volts.

If the gauge shows a full scale reading disconnect the sender from the lead. If the gauge returns to zero the sender is shorted to ground. If the gauge remains at full scale, remove the sender wire from the back of the gauge. If the gauge returns to zero the wire is shorted. If the needle remains at full scale the gauge is probably faulty.

If the gauge shows a zero reading remove the wire from the sender and ground it. If the gauge goes to full scale the sender is bad. If the gauge still reads zero, ground the sensor stud on the back of the case. If the gauge goes to full scale the wire is broken. If the needle remains on zero the gauge is faulty.

INSTALLING VAN'S VMP35 MANIFOLD PRESSURE GAUGE

Specifications

- Power required 11-16 volts DC
- 270 Degrees of sweep for high resolution
- Required transducer sender is Van's P/N IE VMPSND
- Recommended installation for the IE VMPSND is in the cockpit to avoid exposure to heat and moisture of the engine compartment. All the fittings, tubing, wire, and instructions necessary are included in Van's P/N IE VMP INSTALLATION KIT.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Voltage range from 8-16 volts.
- Vacuum range is 10-35 inches of mercury.
- Gauge accuracy within 2% throughout its range.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the Manifold Pressure gauges please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

Read through all of the following instructions before beginning the installation.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Install the sender transducer. We use an Aeroquip 303-4 hose from the port on the #3 (right rear) engine cylinder to the firewall. Then through the firewall with a custom made bulkhead fitting to adapt from the #4 hose to a 3/32" PVC tube that connects to the sender. If you use Van's P/N IE VMP INSTALLATION KIT all the required parts to complete the job are included. The sender should ideally be mounted so that it is higher than the port on the engine, and so that the inlet points down to make it more difficult for any fluid to get into it.

Connect the transducer to the instrument using 24 Ga. Shielded wire (we use 4-conductor type). Connect the black wire of the transducer to the ground terminal of the instrument and the red wire of the transducer to the I (ign. Power) terminal on the instrument. Be sure not to get them reversed or you can damage the transducer.

The green wire of the transducer gets connected to the terminal marked – and the white wire gets connected to the terminal marked +. Most likely the shielded cable you use to make these connections will not have conductors with the colors of Red, Black, Green, and white. You need to keep track of which wire you connect to each color on the transducer and then connect them accordingly at the instrument.

Connect the transducer to the engine hose with a piece of 3/32" tubing.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Operation

The manifold Pressure instrument has built-in hysteresis delay that requires an approximately 5 second delay between a change in throttle setting and a display of the new manifold pressure value. Example – a large throttle change in a very short period of time will have a much longer delay than a very small throttle change. This provides for a very accurate, stable reading with no needle quivering.

It is normal for the MP gauge to fluctuate when the PTT button is pressed. The RF from the Com antenna can affect the instrument, but it will not damage it. Some builders have shielded the transducer and wiring to avoid this, but unless you want to read the MP while transmitting on the radio, it is not necessary.

Troubleshooting.

If the gauge is not working first check the power and ground (a very high percentage of instrument problems are caused by faulty grounds). The voltage must be between 11 and 16 volts.

If the power and ground are connected correctly, check to be sure that the transducer connections are not reversed.

Double-check all connections and check the leads from the sender for more than zero ohms of resistance. Consider 3 ohms a maximum.

INSTALLING VAN'S VOP100 OIL PRESSURE GAUGE

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE 411K, a 0-100 PSI input, 33 to 240 Ohm resistive sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Pressure range from 0-100 PSI.
- Yellow arc from 25 to 55 PSI, green arc from 55 to 95 PSI, with redlines at 25 and 95 PSI. Matches the requirements for oil pressure to most Lycoming engines.
- Gauge accuracy within 2% throughout its range and a calibration point of 80 PSI.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the oil pressure gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the sender. DO NOT INSTALL THE SENDER DIRECTLY ON THE ENGINE. Use a remote mount system such as Van's VA-168 firewall mounted manifold. A sender mounted directly on the engine will vibrate and may fatigue and break with potentially disastrous consequences.

Connect the terminal on Van's P/N IE 411K sender to the terminal marked S on the back of the gauge case using 18-gauge wire.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Troubleshooting

If the gauge is not working first check the power and ground (a very high percentage instrument problems are caused by faulty grounds. Double check the sender ground.) The voltage must be between 11 and 16 volts.

If the gauge shows a full scale reading, disconnect the sender from the lead. If the gauge returns to zero the sender is shorted to ground. If the gauge remains at full scale, remove the sender wire from the back of the gauge. If the gauge returns to zero the wire is shorted. If the needle remains at full scale the gauge is probably faulty.

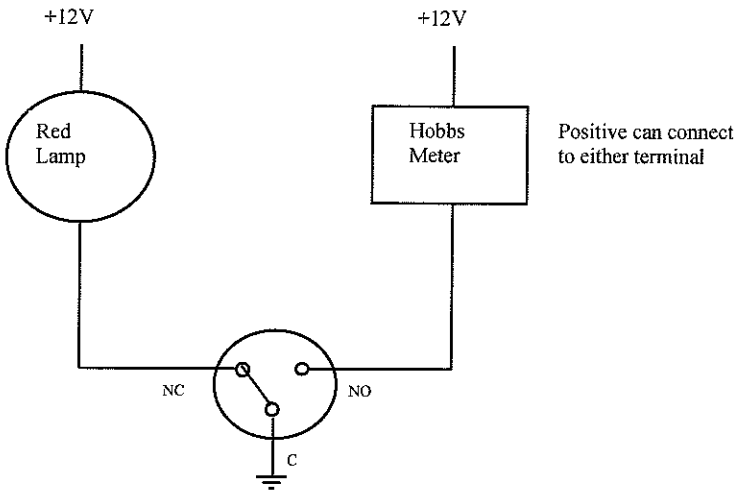
If the gauge shows a zero reading, remove the wire from the sender and ground it. If the gauge goes to full scale the sender is faulty or has a bad ground. If the gauge still reads zero, ground the sensor stud on the back of the case. If the gauge goes to full scale the wire is broken. If the needle remains on zero the gauge is faulty.

HOBBS & PRESSURE SWITCH

In looking at a single pole, double throw (SPDT) switch available for the Hobbs hour meter, the solution is simple. The light also acts as an idiot light if the oil pressure should fall below 15 pounds of oil pressure. Here is how it works. When you turn the master switch on, power is supplied to the BIG red light. The current flows down through the oil pressure switch (pn IE SPDT PRES-15 SW) where the circuit is completed to ground. The light glows, but as soon as you start the engine, the oil pressure switches the switch to the NO (normally open) position and the light goes out. At the same time, the Hobbs meter now starts accumulating time.

While flying, if the oil pressure drops below 15 pounds, the switch will move to the NC (normally closed) position and the BIG reg light comes on.

Assuming you completed your flight without the oil pressure loss, when you shut the engine down, the oil pressure will drop and the light will come on, informing you that the Master Switch is still on. This is when you would normally turn the Master off.



INSTALLING VAN'S VOT250 OIL TEMPERATURE GAUGE

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE 02017-00, a 0 to 240 Degree input, 33 to 240 Ohm output sender.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Temperature range from 50-250 PSI.
- Yellow arc from 50 to 140 Degrees, green arc from 140 to 245 Degrees, with redline at 245 Degrees. Matches the requirements for oil temperature for most Lycoming engines.
- Gauge accuracy within 2% throughout its range and a calibration point of 200 Degrees.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the oil pressure gauge please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the sender. Your engine may require the VA-147 adapter to allow the threads to match.

Connect the terminal on Van's P/N IE 02017-00 transducer to the terminal marked S on the back of the gauge using 18-gauge wire.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Troubleshooting

If the gauge is not working first check the power and ground (a very high percentage instrument problems are caused by faulty grounds. Double check the sender ground.) The voltage must be between 11 and 16 volts.

If the gauge shows a full scale reading disconnect the sender from the lead. If the gauge returns to zero the sender is shorted to ground. If the gauge remains at full scale, remove the sender wire from the back of the gauge. If the gauge returns to zero the wire is shorted. If the needle remains at full scale the gauge is probably faulty.

If the gauge shows a zero reading remove the wire from the sender and ground it. If the gauge goes to full scale the sender is bad. If the gauge still reads zero, ground the sensor stud on the back of the case. If the gauge goes to full scale the wire is broken. If the needle remains on zero the gauge is faulty.

INSTALLING VAN'S VTACH3500 TACHOMETER

Specifications

- Power required 11-16 volts DC
- Recommended sending unit is a Van's P/N IE 2501610.
- Recommended tach cable drive tips for Lycoming O-320/360 is a 2.56 long tip with one end a 0.104 square and the other end a 0.152 tang. Van's P/N IE 104152x2.56.
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power and sensor studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- RPM range from 0-3500.
- Green arc from 500 to 2700 RPM with redline at 2700.
- Gauge accuracy within 2% throughout its range and a calibration point of 2600 RPM.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the tachometer please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

Install the sender on the engine

Using 18-gauge wire (it does not need to be shielded), connect the black wire on the sender (Van's P/N IE 2501610) to the "G" terminal on the instrument, the red wire to the instrument power circuit, and the white wire to the terminal marked S on the back of the tachometer case.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Troubleshooting

If the gauge is not working first check that the power and ground wiring is correct. The battery voltage must be between 11 and 16 volts.

Be sure the internal drive key(inside the housing or cable connecting the transducer and the engine) is actually turning the transducer. If it is not properly engaged then the gauge will show "0" or the rpm will fluctuate

Measure the output of the transducer between ground and the white wire with a millivolt meter. There should be a few millivolts present when the transducer cable is turned with the master switch on.

INSTALLING VAN'S VV16 VOLTMETER

Specifications

- Power required 11-16 volts DC
- Internal lighting uses 14 volts maximum and is easily controlled with a panel light dimmer (Van's P/N ES DIMMER, LAMP 1.5A) to provide the desired lighting level.
- Power studs accept a #6 ring terminal (Van's P/N ES 36152).
- 6-32 brass nuts are molded into the instrument case for mounting to the panel.
- Voltage range from 8-16 volts.
- Yellow arc from 12 to 13 and 15 to 16 volts, green arc from 13 to 15 volts. Gauge accuracy within 2% throughout its range and a calibration point of 13 volts.

Warranty

Van's Aircraft warrants this instrument to be free from defects in materials and workmanship for a period of 60 days from the end user invoice date. Warranty is limited to repair, replacement, or refund of defective parts at the discretion of Van's Aircraft. Parts must be returned prepaid to Van's aircraft for warranty inspection. This warranty does not cover misuse, accident, or negligent repair or installation.

This warranty is in lieu of any other expressed or implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of the Van's Aircraft. In no event will Van's Aircraft be liable for incidental or consequential damages.

Installation

Before you install the voltmeter please read the above warranty and check to make sure the range markings on the gauge match your engine. If you are unsatisfied with either please return the gauges in unused, like new condition for a refund.

The gauge should be installed to current aircraft standards (See AC 43.13)

Use 18-gauge wire and connect the terminal marked I to the circuit chosen for the instrument power. If the gauges are wired backwards they will be ruined. Double check.

Use 18-gauge wire to connect the terminal marked G to ground.

The gauges have an internal "light on a post" arrangement. One wire from the light needs to go to ground and the other needs to be connected to the panel light dimmer. The light is easily removed by grasping the rubber plug that holds it in the back of the instrument (the one the wires go through) and pulling it out.

Install the gauge in the panel. The gauge requires a standard 2 ¼" aircraft cutout for mounting. We have included a drawing with dimensions to help layout where to cut.

Troubleshooting.

If the gauge is not working first check the power and ground. The voltage must be between 11 and 16 volts.