NOTE: Some R172 model airplanes are equipped with a 28 volt electrical system. The gauges and instrument clusters are supplied with 12 volts through a voltage regulator.

*NOTE: Model 185 airplanes with serials 185-0968 thru 185-1149 and equipped with an IO-470 engine are not affected by this service kit.

**NOTE: For 180 model airplanes, serial numbers 18052285 thru 18052500 and 182 model airplanes, serial numbers 18260056 thru 18263475, this service kit is applicable for airplanes equipped with a TCM O-470-S model engine only.

DESCRIPTION

The following procedure provides instructions to replace existing Stewart Warner oil temperature gauge and sensor probe with a new Rochester oil temperature gauge and sending unit.
SERVICE KIT

SK172-110E

APPROVAL

FAA approval has been obtained on technical data in this publication that affects airplane type design.

For Reims Aviation airplanes: DGAC approval has been obtained on technical data in this publication that affects airplane type design.

REFERENCE

SEB92-13, SEB92-14, and SEB92-20

CHANGE IN WEIGHT AND BALANCE

MODEL ........................................... All listed in the Effectivity section
WEIGHT CHANGE ............................ Negligible

MATERIAL INFORMATION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK172-110E</td>
<td>1</td>
<td>Kit, consisting of the following parts:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C485035 16 Ft Wire - Blue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C486127 1 Ft Wire - White</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P618000 6 ft Sleeving - VarGlass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1367-1-8 1 Terminal - Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1367-1-10 4 Terminal - Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MS25036-150 1 Terminal - Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1367-1-13RT 1 Terminal - Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S2335-1 1 Sending Unit - Oil Temperature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0059-00127 1 Backplate Kit - 6 Gauge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6246-00615 1 Gauge - Oil Temperature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Instructions</td>
</tr>
</tbody>
</table>

NOTE: In addition to the parts furnished in this kit the following sealant will be required to complete this modification.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMNP009</td>
<td>1 pt</td>
<td>Sealant (Type IV Firewall Sealant)</td>
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</table>

ACCOMPLISHMENT INSTRUCTIONS

1. (Refer to Figure 1, Sheet 1.) Removal and installation of oil temperature gauge and sensor:
   A. Disconnect all electrical power from the airplane. Attach maintenance warning tags to the battery and external power receptacle stating:
      WARNING: DO NOT CONNECT ELECTRICAL POWER - MAINTENANCE IN PROGRESS
   B. Remove cowlimg from engine compartment to gain access to oil temperature sensor.
C. Remove existing temperature bulb from engine. Install new S2335-1 oil temperature sending unit in same location.
D. Remove and retain screw and firewall feed-thru halves from firewall.
E. Remove glove box and copilot’s interphone control, if required for easier access.
F. Remove decorative cover from over instrument panel. Disconnect and cap oil pressure line. Remove and retain screws holding cluster onto instrument panel. Feed oil temperature gauge capillary tube and temperature bulb through firewall and remove cluster from panel.
G. Disconnect and label all wires from back of the cluster.
H. Remove cluster cover from backplate.
I. On Model 210 airplanes equipped with a capacitance fuel indicating system, accomplish the following step:
   1. (Refer to Figure 1, Sheet 4, Detail B, After Modification.) Drill two 0.50 inch holes in the new backplate between the “IGN” and “SEND” to provide access to the calibration feature of the existing fuel gauges. After drilling holes, proceed to step J.
J. Remove top left gauge from original backplate and install on the new 0007-00553 (component of 0059-00127 Backplate Kit) backplate. Repeat this procedure for each gauge in the cluster except for the the oil temperature gauge, and any other gauge that is to be replaced at this time. New gauges should be installed in the appropriate locations.
K. (Refer to Figure 1, Sheet 5, Detail C) Install ground stud in backplate.
L. (Refer to Figure 1, Sheet 5, Detail D) Install oil pressure gauge on backplate.
M. (Figure 1, Sheet 3, Detail B - After Modification.) If Stewart Warner oil pressure gauge is to be reused, install 0007-00554 (component of the 0059-00127 Backplate Kit) backplate on outside of case side of 0007-00553 backplate using hardware supplied with backplate. Install nuts on outside of case.
N. Reinstall backplate to cover cluster.
O. Fold the blue wire and cut to create two equal pieces. Label one “ENG GND” and the other “OT SEND”. Route both wires from the gauge through the firewall feed-thru to the grounding point and the oil temperature sending unit along the existing wire bundle(s). Reinstall firewall feed-thru and seal around wires with CMNP009 or equivalent firewall sealant.
P. Slip a 4 ft section of VarGlass sleeving over the engine end of the “OT SEND” wire. Crimp a S1367-1-10 ring terminal to each end of the “OT SEND” wire and connect to sending unit and “SEND” terminal of gauge. Slip the 2 ft section of VarGlass sleeving over the engine end of the “ENG GND” wire. Crimp a S1367-1-8 ring terminal to the gauge end of the “ENG GND” wire and attach to the “GND” stud of the gauge. Crimp a MS25036-150 or S1367-1-13RT ring terminal (whichever fits the chosen stud or bolt) to the engine end of “ENG GND” wire and attach wire to upper left stud or screw of oil filter housing, or lower starter flange stud if airplane is not equipped with an oil filter. Length of “ENG GND” and “OT SEND” wires to be determined on installation. Secure wires to surrounding structure as required.
Q. Refer to Figure 2, Sheets 1 through 5 as required.

1. For all airplanes except model 210 airplanes equipped with a capacitance fuel indicating system.
   Determine length of the white wire required to construct a jumper wire from the right fuel
gauge “IGN” (or "A+") terminal to the “A+” terminal for the oil temperature gauge.
Crimp a S1367-1-10 ring terminal to each end of the jumper wire and attach to both
gauges.

2. For model 210 airplanes equipped with a capacitance fuel indicating system.
   Determine length of the white wire required to construct a jumper wire from the Cylinder
Head Temperature gauge (CHT) “IGN” (or "A+") terminal to the “A+” terminal for the oil
temperature gauge. Crimp a S1367-1-10 ring terminal to each end of the jumper wire and
attach to both gauges.

R. Reconnect wires to gauges and oil pressure line to oil pressure gauge.

S. Remove warning tags from battery and ground power receptacle. Reconnect negative battery
cable.

T. Reinstall cowling and any access plates removed for maintenance. Perform ground run-up
operational check to confirm gauge readings. Check oil temperature sending unit on engine
and oil pressure line at cluster for oil leaks.

2. Make an entry in the airplane logbook stating this service kit has been installed.
Figure 1. Oil Temperature Gauge and Sending Unit Replacement (Sheet 1 of 5)
TYPICAL SIX-GAUGE CLUSTER - BACK VIEW BEFORE MODIFICATION
EXCEPT MODEL 210 AIRPLANES EQUIPPED WITH A CAPACITANCE FUEL INDICATING SYSTEM

Figure 1. Oil Temperature Gauge and Sending Unit Replacement (Sheet 2)
Figure 1. Oil Temperature Gauge and Sending Unit Replacement (Sheet 3)
SERVICE KIT

0.50 INCH DIAMETER HOLE (2 REQUIRED) (TYPICAL LEFT AND RIGHT FUEL GAUGES)

LEFT FUEL GAUGE TERMINALS (REFERENCE)

0.50 (TYPICAL)

NEW 0007-00553 BACKPLATE (PART OF 0007-00127 BACKPLATE KIT)

CLUSTER COVER (REFERENCE)

NEW JUMPER WIRE C485035 WIRE LENGTH AS REQUIRED

0.312 (TYPICAL)

EXISTING POTENTIOMETER-REINSTALL ON MODIFIED CLUSTER

AMMETER TERMINALS (REFERENCE)

CYLINDER HEAD TEMPERATURE GAUGE (REFERENCE)

OIL PRESSURE LINE (REFERENCE)

WIRE 12 VOLTS IN (REFERENCE)

SENSE WIRE TO ENGINE-MOUNTED CHT TEMPERATURE SENDING UNIT (REFERENCE)

0007-00554 BACKPLATE (PART OF 0007-00127 BACKPLATE KIT) UTILIZE TO MOUNT STEWART WARNER OIL PRESSURE GAUGE ON NEW 0007-00553 BACKPLATE

NEW GROUND WIRE TO UPPER LEFT STUD OF OIL FILTER HOUSING (C485035 WIRE LENGTH AS REQUIRED)

NEW SENSE WIRE TO ENGINE-MOUNTED OIL TEMPERATURE SENDING UNIT (C485035 WIRE LENGTH AS REQUIRED)

DETAIL B

SIX-GAUGE CLUSTER - BACK VIEW AFTER MODIFICATION FOR MODEL 210 AIRPLANES EQUIPPED WITH A CAPACITANCE FUEL INDICATING SYSTEM ONLY

Figure 1. Oil Temperature Gauge and Sending Unit Replacement (Sheet 4)
Figure 1. Oil Temperature Gauge and Sending Unit Replacement (Sheet 5)
Figure 2. Oil Temperature Gauge and Sending Unit Wire Diagrams (Sheet 1 of 5)
For airplanes equipped with a 28 volt electrical system:
12 volts from low voltage sensor (28V in - 12V out)

For airplanes equipped with a 12 volt electrical system:
12 volts from main bus via instrument circuit breaker.

Typical six-gauge cluster wiring - after modification

All except model 210 airplanes equipped with a capacitance fuel indicating system

T-41 airplanes refer to sheets 4 and 5

Figure 2. Oil Temperature Gauge and Sending Unit Wire Diagrams (Sheet 2)
TYPICAL SIX-GAUGE CLUSTER WIRING -
AFTER MODIFICATION
FOR MODEL 210 AIRPLANES EQUIPPED WITH A CAPACITANCE FUEL INDICATING SYSTEM
ONLY

Figure 2. Oil Temperature Gauge and Sending Unit Wire Diagram (Sheet 3)
Figure 2. Oil Temperature Gauge and Sending Unit Wire Diagram (Sheet 4)
Figure 2. Oil Temperature Gauge and Sending Unit Wire Diagram (Sheet 5)