
Number: SB 2X-77-04 R1
Issued: August 16, 2012
Revised: May 8, 2013

SNS SUBJECT: 77-00 ENGINE INDICATING - MAP / Oil Pressure Sensor Replacement

1. COMPLIANCE

Recommended, On Condition: Accomplish this Service Bulletin On Condition of erratic MAP or Oil Pressure sensor indication.

This Service Bulletin has been revised to add alternate part numbers, and to correlate the item numbers in the Parts Lists and the illustrations.

Operators who have successfully complied with the original release of this Service Bulletin, dated August 16, 2012, need take no further action.

2. EFFECTIVITY

SR20 Serials 1005 thru 2085, 2088 thru 2097, 2112 thru 2116, 2118, 2119, 2121, 2127, 2128, 2133 thru 2135, 2148 thru 2155.

SR22 Serials 0002 thru 3849.

SR22T Serials 0001 thru 0310.

3. APPROVAL

FAA approval has been obtained on all technical data in this Service Bulletin that affects type design.

4. PURPOSE

On affected aircraft, the MAP / oil pressure sensors may experience strain at the connector terminations where signal intermittences could occur. To reduce potential erratic indications of MAP or oil pressure, this Service Bulletin provides for the installation of the MAP / Oil Pressure Sensor Replacement kit.

5. DESCRIPTION

This Service Bulletin contains instructions to facilitate installation of the MAP / Oil Pressure Sensor Replacement kit.

6. WARRANTY INFORMATION

For aircraft under warranty at the issue date of this Service Bulletin, Cirrus Design will cover all parts and labor costs for this Service Bulletin if the work is accomplished within the Compliance time period and the work is performed at an authorized Cirrus Design Service Center.

7. MANPOWER REQUIREMENTS

3.0 man-hours

8. OTHER PUBLICATIONS AFFECTED

SR20 Airplane Maintenance Manual (p/n 12137-001)

SR22 / SR22T Airplane Maintenance Manual (p/n 13773-001)

SR20 Illustrated Parts Catalog (p/n 12138-001)

SR22 / SR22T Illustrated Parts Catalog (p/n 13774-001)

SR20 Wiring Manual (p/n 12129-001)

SR22 / SR22T Wiring Manual (p/n 13775-001)

EFFECTIVITY:

SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118, 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.

9. WEIGHT AND BALANCE

N/A

10. MATERIAL INFORMATION

SR20 Serials 1005 thru 2085, 2088 thru 2097, 2112 thru 2116, 2118, 2119, 2121, 2127, 2128, 2133 thru 2135, 2148 thru 2155:

Reference Kit 70264-003 or order the following parts.

Item No.	Description	P/N or Spec.	Supplier	Quantity
1	Manifold Pressure Sensor	12635-003 <i>alternate for</i> 12635-001	Cirrus Design	1
2	Oil Pressure Sensor	12635-004 <i>alternate for</i> 12635-002	Cirrus Design	1
3	Pressure Sensor Connector Harness	29613-001	Cirrus Design	2
4	Clamp	50743-601	Cirrus Design	2
5	Grommet	MS35489-7	Cirrus Design	1
6	Rivets	MS20470AD3	Cirrus Design	4
7	Pressure Sensor Strain Relief, Straight	26864-001	Cirrus Design	1
8	Pressure Sensor Strain Relief, 90 Degree	26864-002	Cirrus Design	1
9	Connector Plate	29629-001	Cirrus Design	1

SR22 Serials 0002 thru 3849:

Reference Kit 70264-002 or order the following parts.

Item No.	Description	P/N or Spec.	Supplier	Quantity
1	Manifold Pressure Sensor	12635-003 <i>alternate for</i> 12635-001	Cirrus Design	1
2	Oil Pressure Sensor	12635-004 <i>alternate for</i> 12635-002	Cirrus Design	1
3	Pressure Sensor Connector Harness	29613-001	Cirrus Design	2
4	Clamp	50743-601	Cirrus Design	2
5	Grommet	MS35489-7	Cirrus Design	1
6	Rivets	MS20470AD3	Cirrus Design	4
7	Pressure Sensor Strain Relief, Straight	26864-001	Cirrus Design	1
8	Pressure Sensor Strain Relief, 90 Degree	26864-002	Cirrus Design	1
9	Connector Plate	29629-002	Cirrus Design	1

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 SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.

*SR22T Serials 0001 thru 0310:
Reference Kit 70264-001 or order the following parts.*

Item No.	Description	P/N or Spec.	Supplier	Quantity
2	Oil Pressure Sensor	12635-004 alternate for 12635-002	Cirrus Design	1
3	Pressure Sensor Connector Harness	29613-001	Cirrus Design	2
4	Clamp	50743-601	Cirrus Design	1
5	Grommet	MS35489-7	Cirrus Design	1
6	Rivets	MS20470AD3	Cirrus Design	4
7	Pressure Sensor Strain Relief, Straight	26864-001	Cirrus Design	1
9	Connector Plate	29629-002	Cirrus Design	1

SR22 and SR22T Serials with Black Baffle: Order 29629-003 to obtain the following part.

Item No.	Description	P/N or Spec.	Supplier	Quantity
9	Connector Plate, (Black)	29629-003	Cirrus Design	1

11. ACCOMPLISHMENT INSTRUCTIONS

A. Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Solder Sleeve, Splice	D-110-41	Raychem Corporation Menlo Park, CA 94025 415-361-3333	Wiring harness.
Tag, Wire Marker	CM-SCE-1/4-4H		Wiring harness.
Corrugated Loom, 0.25 Inch ID	LCN-250-100	Waytek, Inc. Chanhassen, MN 55317 800-328-2724	Wiring harness.
Heat Shrink Tubing, Black, Small	M23053/5-104-0	Any Source	Wiring harness.
Heat Shrink Tubing, Black, Large	M23053/5-105-0	Any Source	Wiring harness.
Tape, Silicone, Fusion	608036-1	Tyco Electronics 1816 Old Homestead Lane Lancaster, PA 17601	Wiring harness.
Cable Tie, 1.5 Inch Dia.	PLT1.5I-C30	Panduit 18900 Panduit Drive Tinley Park, IL 60487	Secure wiring harness.
12-inch Scale	-	Any Source	Measure.
Permanent Marker	-	Any Source	Mark.
Rotary Power Tool	100-grit	Any Source	Trim material.
Carbide Disc	-	Any Source	Trim material.
Drill Bit	#40	Any Source	Drill holes for baffle modification.
Deburring Tool	-	Any Source	Deburr.
Touch-N-Prep Pen	Alodine 1132	Henkel Technologies Madison Heights, MI 48071 248-583-9300	Corrosion protection.
Thread Sealant	Loctite 565	Henkel Corporation Bay Point, CA 94565-0031 925-458-8278	Pressure sensor installation
Isopropyl Alcohol	TT-I-735 Grade A or B	Any Source	Clean installation area.
Cotton Cloth (clean, lint free)	-	Any Source	Clean installation area.
Compressed Air	-	Any Source	Clean installation area.
Vacuum	-	Any Source	Clean installation area.

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 SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.

- B. Remove key from ignition.
- C. Set BAT 1, BAT 2, and AVIONICS switches to OFF positions.
- D. Remove engine cowling. (Refer to AMM 71-10)
- E. Disconnect battery. (Refer to AMM 24-30)
- F. Modify aft baffle. **(See Figure 01)**
- (1) *SR22/SR22T Serials*: Move J/P103 connectors to lower inboard hole of baffle as shown.
 - (2) Trim connector hole in aft right baffle.
 - (a) At aft side of aft right baffle, measure cut-out area.
 - 1 *SR20 Serials*: From RH edge of inboard connector opening, measure 1.1 inches (27.9 mm) to left and mark vertical line.
 - 2 *SR22 Serials 0002 thru 0277*: From LH edge of outboard upper connector opening, measure 1.2 inches (30.5 mm) to right and mark vertical line.
 - 3 *SR22 Serials 0278 thru 3849*: From RH edge of upper connector opening, measure 1.1 inches (27.9 mm) to left and mark vertical line.
 - 4 *SR22T Serials*: From RH edge of upper connector opening, measure 1.1 inches (27.9 mm) to left and mark vertical line.
 - 5 From upper and lower offset corners, mark horizontal lines to intersect with vertical line.
 - (b) Using rotary power tool with carbide disc, cut outlined region from baffle assembly.
 - (c) Solvent clean trimmed edges of baffle assembly. (Refer to AMM 20-30)
 - (d) Apply Alodine to abraded surfaces of baffle assembly.
 - (3) Install plate.
 - (a) *SR22 and SR22T Serials w/ black anodized baffle*: Discard plate (29629-002), use black plate (29629-003).
 - (b) *SR22 Serials 0002 thru 0277*: Position plate on aft baffle over connector hole so that cut-out is centered (0.4 inch from upper cut-out to upper edge of plate, LH edge of plate aligned with RH edge of inboard upper connector hole within +0.1/-0.0 inch).
 - (c) *SR20 Serials*: Position plate on aft baffle over connector hole so that cut-out is centered (0.6 inch from upper cut-out to upper edge of plate, 0.2 inch from RH cut-out edge to RH edge of plate).
 - (d) *SR22 Serials 0278 thru 3849, & SR22T Serials*: Position plate on aft baffle over connector hole so that cut-out is centered (0.4 inch from upper cut-out to upper edge of plate, 0.5 inch from LH cut-out edge to LH edge of plate).
 - (e) Using #40 drill bit, match drill through plate and aft baffle at pilot hole locations.
 - (f) Deburr and apply Alodine to drilled holes.
 - (g) Install rivets securing plate to baffle assembly. (Refer to AMM 20-70)
 - (h) Solvent clean abraded surfaces of baffle assembly. (Refer to AMM 20-30)
 - (i) Apply Alodine to abraded surfaces of baffle assembly.
- G. Remove and discard oil pressure sensor. (Refer to AMM 79-30)
- H. Replace oil pressure sensor.
 - (1) Apply Loctite to sensor threads per manufacturer's instructions.
 - (2) *SR20 Serials*: Position sensor to engine and install.
 - (3) *SR22/SR22T Serials*: Position sensor to oil cooler and install.
- I. *SR20/SR22 Serials*: Remove and discard MAP sensor. (Refer to AMM 77-10)
- J. *SR20/SR22 Serials*: Replace MAP sensor.
 - (1) Apply Loctite to sensor threads per manufacturer's instructions.
 - (2) Position sensor to engine manifold and install.

EFFECTIVITY:

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SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.

K. Replace oil pressure sensor connector. (Refer to WM 20-10) **(See Figure 02)**

- (1) Disconnect and discard wiring from P101 to oil pressure sensor.
- (2) Remove P101 from firewall forward wire harness. Cut ORG wire at connector; stagger remaining wire cuts away from connector.

Note: It is permissible to stagger in different order than shown.

- (3) Add pressure sensor connector assembly to SEOP2230-22 (*Serials w/ Perspective Avionics*) or SEOP100-22 (*Serials w/o Perspective Avionics*).

- (a) Trim pressure sensor connector assembly wires.

Note: Wire lengths are varied to accommodate staggering of splices. It is permissible to stagger splices in different order than shown.

Tin the wire ends with solder prior to applying the solder sleeves.

- (b) Splice wires using solder sleeves.

Note: Visually inspect solder joints to ensure solder has flowed completely and wetted onto wires properly.

- (c) Cover splices with small heat shrink.
- (d) Cover splices together with second layer of large heat shrink.

- (4) Wrap wires with fusion tape and cover wire with split, corrugated loom. Ensure that the loom covers all of heat shrink at splice joints. Secure loom with cable ties within 0.5 inch of open ends of loom where indicated and at intervals of 5 - 10 inches along loom.

Note: The fusion tape should be compressed beneath the loom to provide grip on the wires near the sensor connector.

- (5) Add connector label to P243 (oil pressure sensor connector) using wire marker.
- (6) Connect P243 to oil pressure sensor.
- (7) Secure wiring per standard practices.

Note: Ensure proper wire slack between the sensor and the engine mount to accommodate engine motion.

L. Replace MAP sensor connector. (Refer to WM 20-10) **(See Figure 02)**

- (1) Disconnect and discard wiring from J105 to MAP sensor.
- (2) Remove J105 from firewall forward wire harness. Cut ORG wire at connector; stagger remaining wire cuts away from connector.

Note: It is permissible to stagger in different order than shown.

- (3) Add pressure sensor connector assembly to SEMP109-22.

- (a) Trim pressure sensor connector assembly wires.

Note: Wire lengths are varied to accommodate staggering of splices. It is permissible to stagger splices in different order than shown.

- (b) Insert MAP sensor wiring through grommet. Grommet will be positioned after splicing.

Note: Tin the wire ends with solder prior to applying the solder sleeves.

- (c) Splice wires using solder sleeves.

Note: Visually inspect solder joints to ensure solder has flowed completely and wetted onto wires properly.

- (d) Cover splices with small heat shrink.
(e) Cover splices together with second layer of large heat shrink.
(4) Wrap the wire bundle with fusion tape, position grommet over fusion tape, and install corrugated loom. Secure loom with cable ties within 0.5 inch of open ends of loom where indicated and at intervals of 5 - 10 inches along loom.

Note: *SR20 and SR22 Serials:* The fusion tape should be compressed beneath the loom to provide grip on the wires near the sensor connector.

- (5) Add connector label to P242 (map sensor connector) using wire marker.
(6) Route connector P242 through hole in connector plate. Install grommet in hole and slide wire through grommet to appropriate position.
(7) Route and connect P242 to MAP sensor.
(8) Secure wiring per standard practices.

Note: Ensure proper wire slack between the sensor and the engine mount to accommodate engine motion.

M. Install oil pressure sensor strain relief. **(See Figure 03)**

- (1) Install strain relief onto oil pressure sensor.
(2) Orient strain relief and sensor body on engine as required to ensure appropriate wire routing.

N. *SR20/SR22 Serials:* Install map sensor strain relief. **(See Figure 03)**

- (1) Install strain relief onto MAP sensor.

O. Connect battery. (Refer to AMM 24-30)

P. Per effectivity, Perform Operational Test - MAP Gage/Indication. (Refer to AMM 77-10)

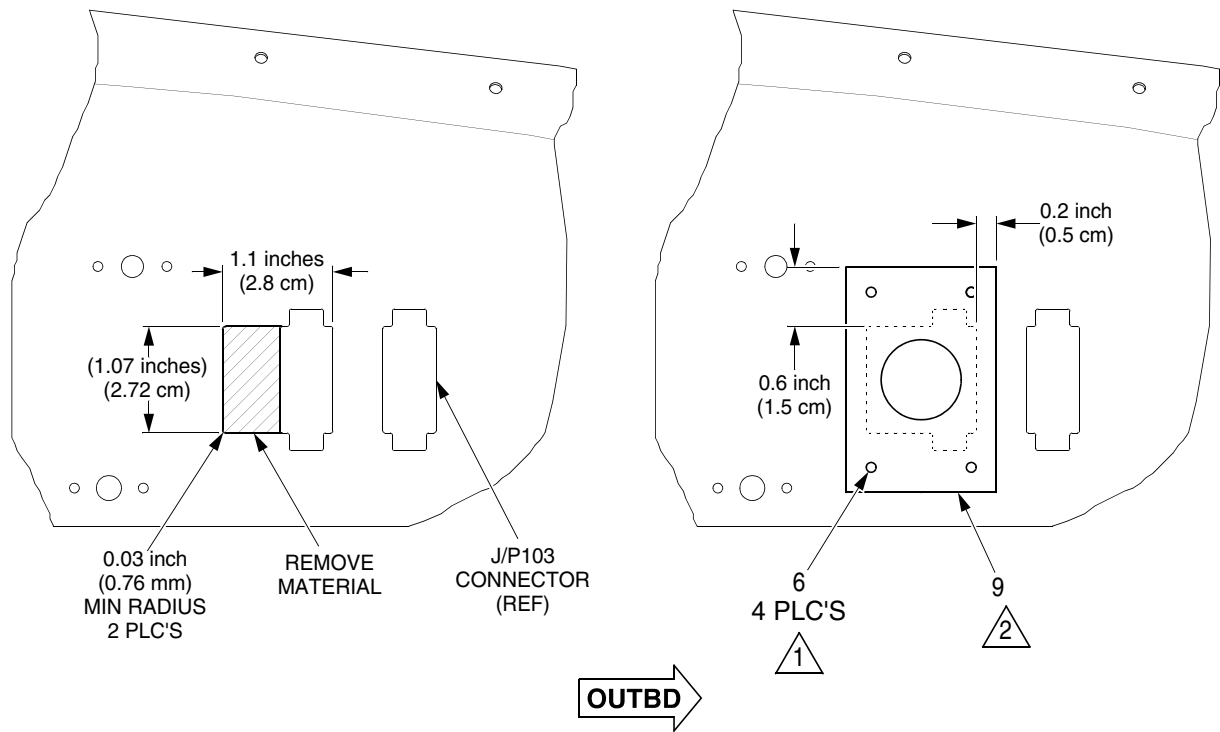
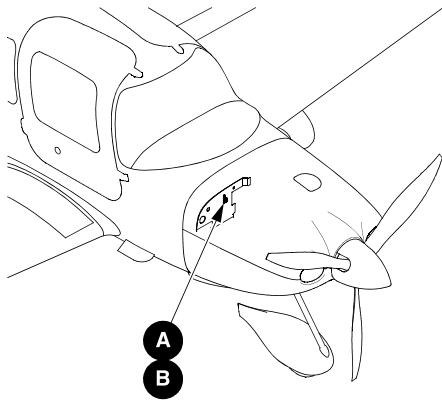
Q. Per effectivity, Perform Operational Test - Oil Pressure Gage/ Indication. (Refer to AMM 79-30)

R. Install engine cowling. (Refer to AMM 71-10)

S. Complete airplane records by noting compliance with SB 2X-77-04 R1 in Aircraft Logbook. |

EFFECTIVITY:

SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118, 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.



Serials SR20 1005 thru 2155.

- NOTE**
- ① Using 0.098-inch drill bit, drill rivet holes in baffle.
 - ② Position doubler plate to aft side of baffle and secure with rivets.

- LEGEND**
- 6. Rivet
 - 9. Connector Plate

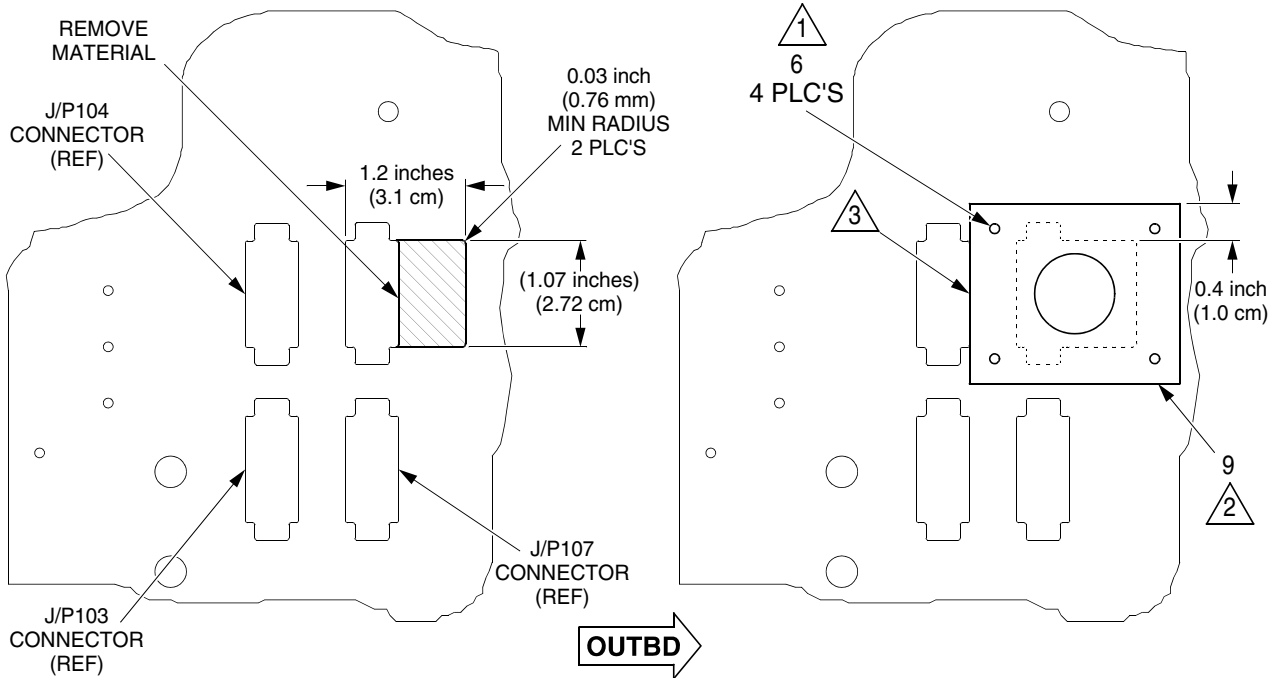
DETAIL A

AFT RIGHT BAFFLE LOOKING FWD

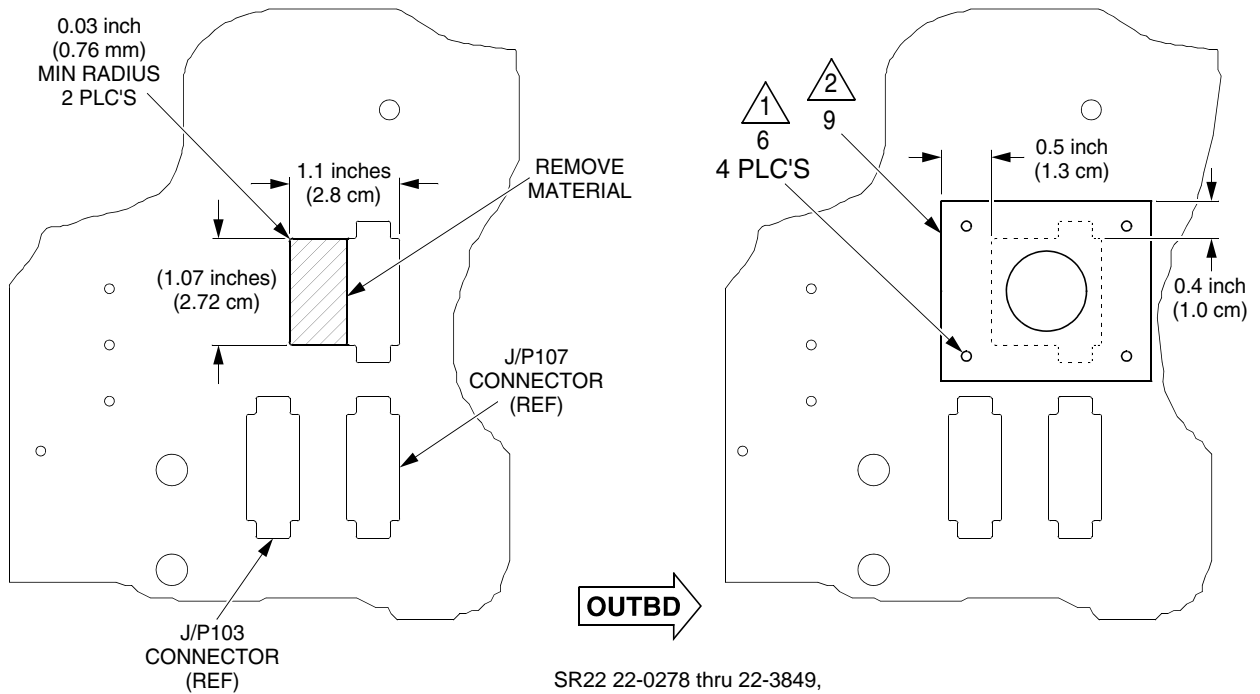
SR2_SB77_1459A

Figure 01
Baffle Modification (1 of 2)

EFFECTIVITY:
SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118, 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.



SR22 22-0002 thru 22-0277.



SR22 22-0278 thru 22-3849,
SR22T 22T-0001 thru 22T-0310.

NOTE

- 1 Using 0.098-inch drill bit, drill rivet holes in baffle.
- 2 Position doubler plate to aft side of baffle and secure with rivets.
- 3 Align plate with this edge +0.1 / -0.0 (+2.5 / -0.0 cm)

- LEGEND**
- 6. Rivet
 - 9. Connector Plate

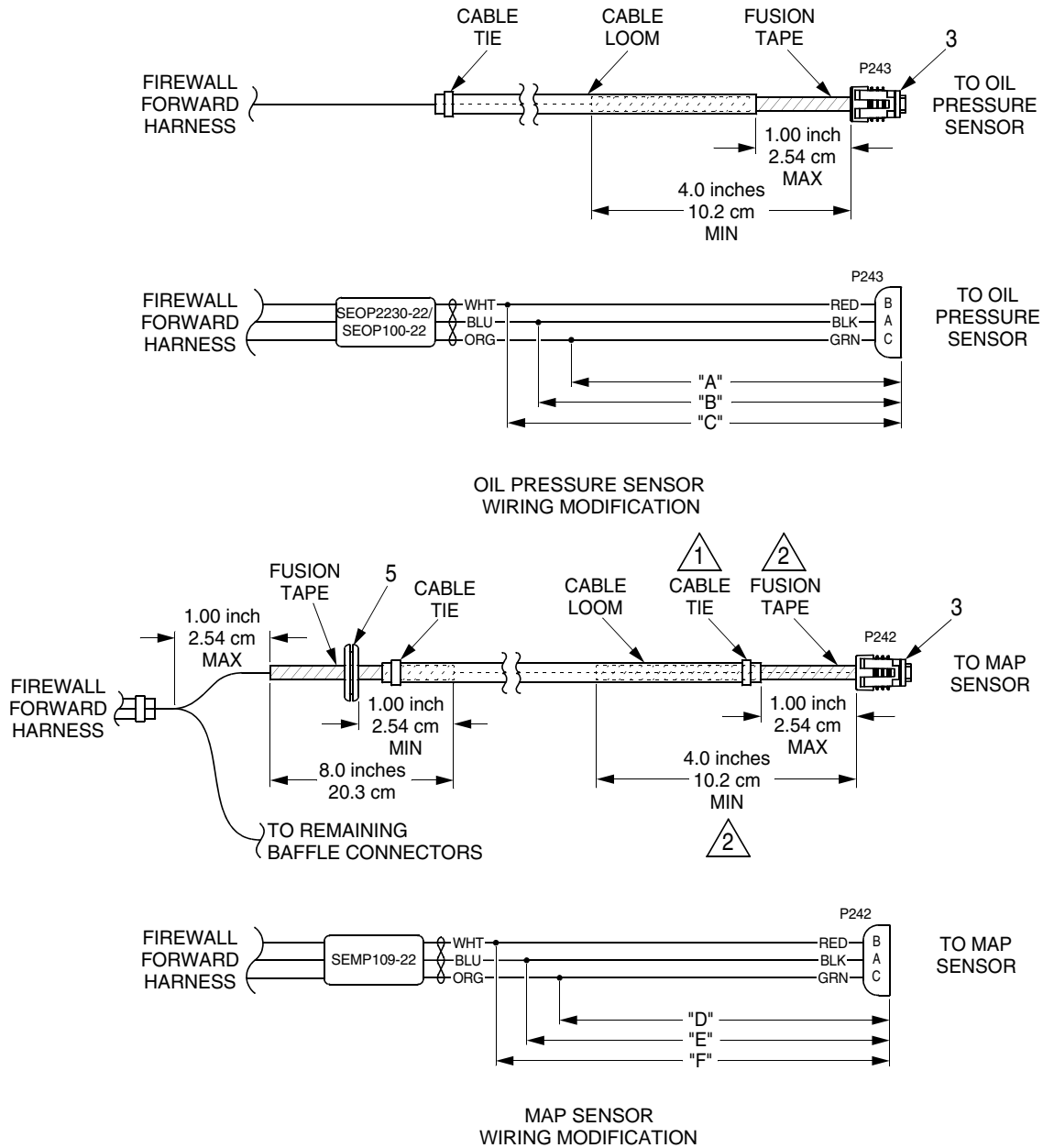
DETAIL B

AFT RIGHT BAFFLE LOOKING FWD

SR2_SB77_1460

Figure 01
Baffle Modification (2 of 2)

EFFECTIVITY:
SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118, 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.



NOTE

- ① Installed on SR22T only.
- ② Installed on SR20 and SR22 only.

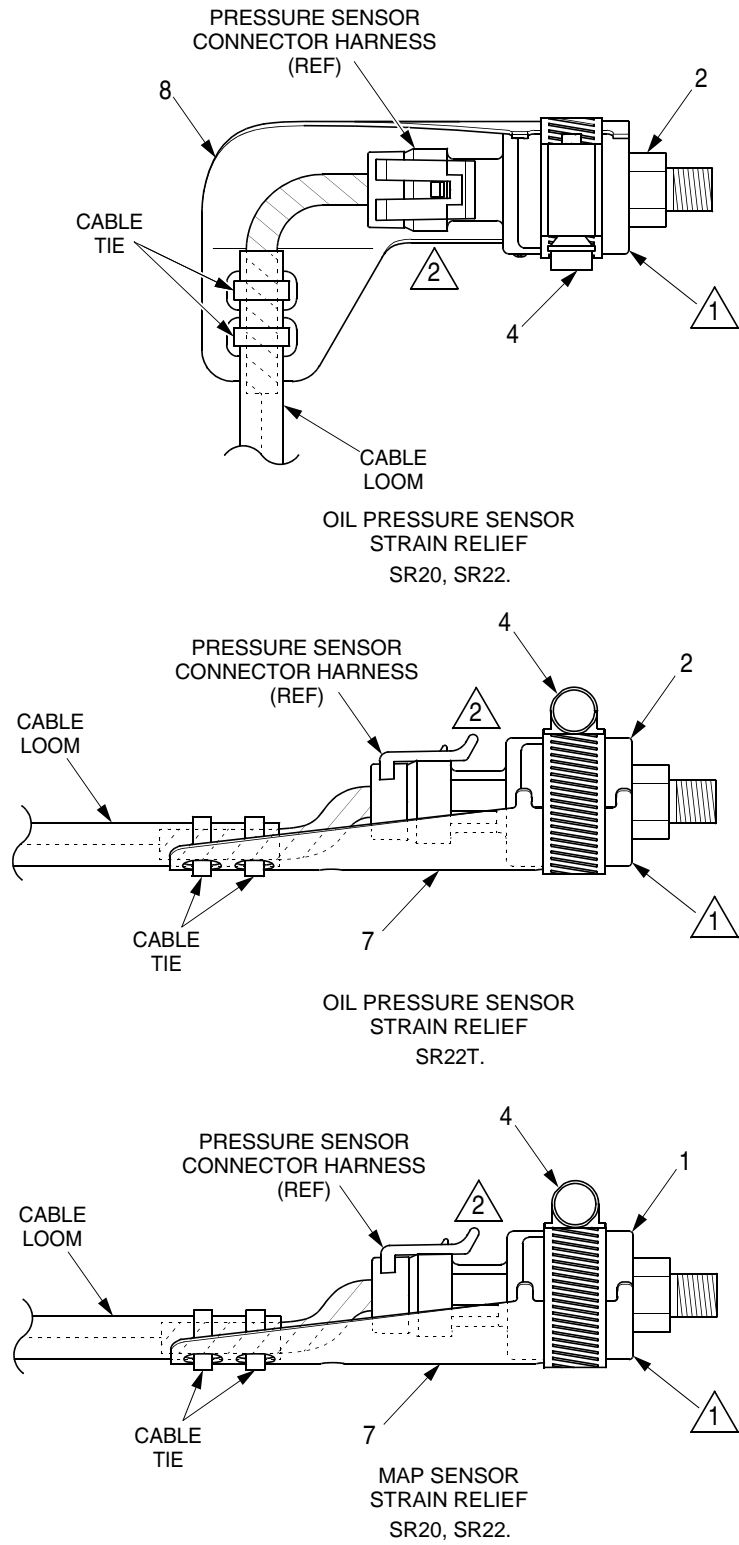
DIMENSION TABLE ±1.0 inch (±2.5 cm)			
	SR20	SR22	SR22T
A	17.5 inches (44.5 cm)	17.5 inches (44.5 cm)	17.5 inches (44.5 cm)
B	18.5 inches (47.0 cm)	18.5 inches (47.0 cm)	18.5 inches (47.0 cm)
C	19.5 inches (49.5 cm)	19.5 inches (49.5 cm)	19.5 inches (49.5 cm)
D	33.5 inches (85.1 cm)	47.5 inches (120.7 cm)	23.5 inches (59.7 cm)
E	34.5 inches (87.6 cm)	48.5 inches (123.2 cm)	24.5 inches (62.6 cm)
F	35.5 inches (90.2 cm)	49.5 inches (125.7 cm)	25.5 inches (64.8 cm)

LEGEND
 3. Pressure Sensor
 Connector Harness
 5. Grommet

SR2_SB77_1457A

**Figure 02
 Oil Pressure/ MAP Sensor Harness Modification**

EFFECTIVITY:
 SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118, 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
 SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.



- NOTE**
- 1 Align sensor with edge of strain relief ± 0.10 inch (± 2.5 cm).
 - 2 Ensure strain relief is oriented opposite connector lock tab.

- LEGEND**
- 1. Manifold Pressure Sensor
 - 2. Oil Pressure Sensor
 - 4. Clamp
 - 7. Strain Relief, Straight
 - 8. Strain Relief, 90 Degree

SR2_SB77_1458A

Figure 03
Sensor Relief Modification

EFFECTIVITY:
 SR20 Serials 1005 - 2085, 2088 - 2097, 2112 - 2116, 2118,
 2119, 2121, 2127, 2128, 2133-2135, 2148-2155.
 SR22 Serials 0002 thru 3849. SR22T Serials 0001 thru 0310.

Cirrus Design Corp
4515 Taylor Circle
Duluth, MN
55811-1548

STAMP



CIRRUS DESIGN CORPORATION
4515 TAYLOR CIRCLE
DULUTH, MN
55811-1548