



EMB145 – EMB135

AIRCRAFT
MAINTENANCE MANUAL

TCAS BOTTOM OMNI ANTENNA - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to remove and install the TCAS bottom omnidirectional antenna.
- B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
34-43-03-000-801-A	TCAS BOTTOM OMNIDIRECTIONAL AN- TENNA - REMOVAL	ALL
34-43-03-400-801-A	TCAS BOTTOM OMNIDIRECTIONAL AN- TENNA - INSTALLATION	ALL



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TASK 34-43-03-000-801-A

EFFECTIVITY: ALL

2. TCAS BOTTOM OMNIDIRECTIONAL ANTENNA - REMOVAL

A. General

- (1) This task gives the procedures to remove the TCAS bottom omnidirectional antenna.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Lower forward fuselage - Section II

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Polyethylene Spatula	To remove sealant	AR

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Cockpit floor and lower forward fuselage

I. Preparation

SUBTASK 841-002-A

WARNING: MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU DO THE MAINTENANCE PROCEDURES. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.

- (1) Make sure that the aircraft is safe for maintenance.
- (2) On the Overhead Panel, make sure that the GPU pushbutton is set to the OFF position, and attach a DO-NOT-SET-ON tag to it.

- (3) On the Overhead Panel, make sure that the BATT 1 and BATT 2 switches are set to the OFF position, and attach DO-NOT-SET-AUTO tags to them.
- (4) Remove door 123BL (AMM MPP 06-41-01/100).

J. Removal

SUBTASK 020-002-A

- (1) (AIRCRAFT WITH ANTENNAS THAT DO NOT HAVE GEL CONDUCTIVE GASKET) To remove TCAS bottom antenna, do as follows: ([Figure 401](#))

- (a) Disconnect the coaxial connector (1) from the TCAS bottom antenna (2).

CAUTION: BE CAREFUL WHEN YOU USE THE POLYETHYLENE SPATULA TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRCRAFT SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (b) Use a spatula to remove the sealant from around the fuselage skin hole and the TCAS bottom antenna (2), on the inner surface of the fuselage skin hole.
 - (c) Use a spatula to remove the sealant from around the TCAS bottom antenna (2) and from the aircraft skin.
 - (d) Remove the sealant used as a protection of the screws (3).
 - (e) Remove the screws (3).

CAUTION: BE CAREFUL WHEN YOU USE THE POLYETHYLENE SPATULA TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRCRAFT SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (f) Use a spatula between the baseplate of the TCAS bottom antenna (2) and the aircraft skin to make the separation.
 - (g) Carefully pull the TCAS bottom antenna (2) away from the fuselage.
 - (h) Remove the TCAS bottom antenna (2).

- (2) (AIRCRAFT WITH ANTENNAS THAT HAVE GEL CONDUCTIVE GASKET) To remove TCAS bottom antenna, do as follows: ([Figure 402](#))

- (a) Disconnect the coaxial connector (1) from the TCAS bottom antenna (2).

CAUTION: BE CAREFUL WHEN YOU USE THE POLYETHYLENE SPATULA TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRCRAFT SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (b) Use a spatula to remove the sealant from around the fuselage skin hole and the TCAS bottom antenna (2), on the inner surface of the fuselage skin hole.
 - (c) Use a spatula to remove the sealant from the contour of the TCAS bottom antenna (2) and from the aircraft skin.



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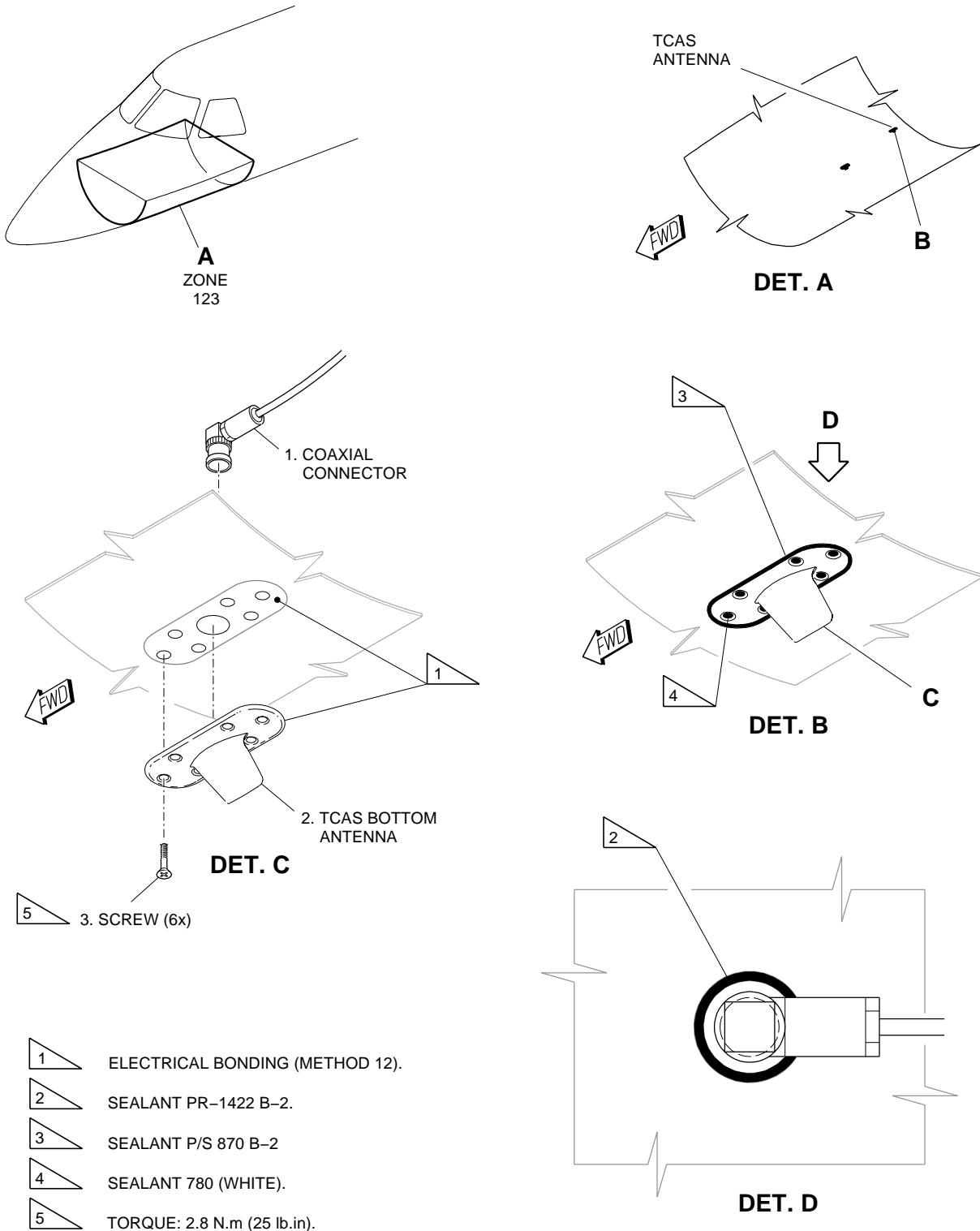
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- (d) Remove the sealant used as a protection of the screws (3).
- (e) Remove the screws (3).

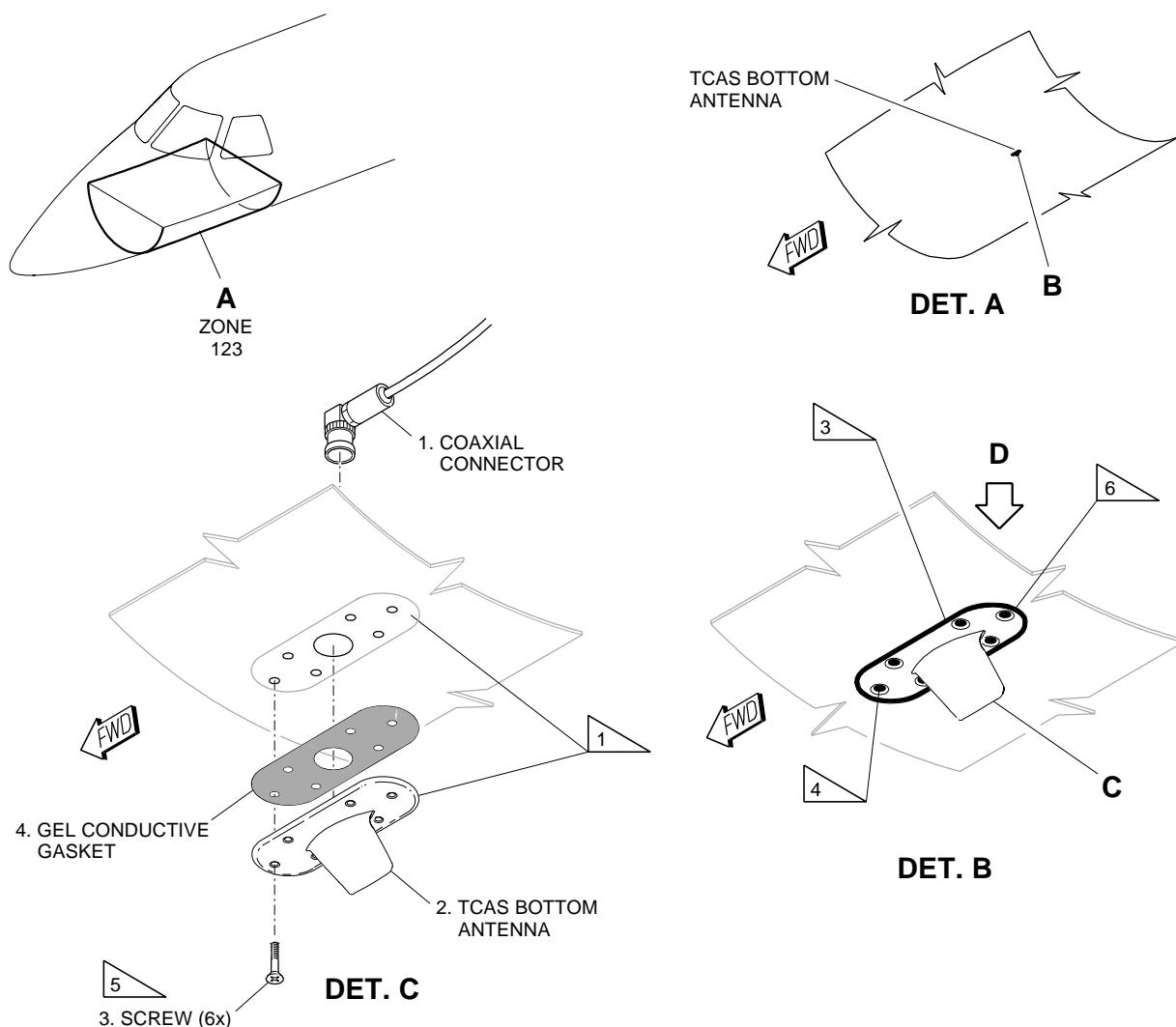
CAUTION: BE CAREFUL WHEN YOU USE THE POLYETHYLENE SPATULA TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRCRAFT SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (f) Use a spatula between the baseplate of the TCAS bottom antenna (2) and the aircraft skin to make the separation.
- (g) Carefully pull the TCAS bottom antenna (2) away from the fuselage.
- (h) Remove the TCAS bottom antenna (2).
- (i) Remove and discard the gel conductive gasket (4).
- (j) Use a spatula to remove the sealant from around the connector of the TCAS bottom antenna (2).

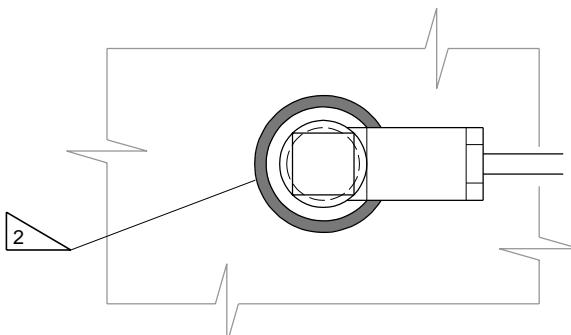
EFFECTIVITY: AIRCRAFT WITH ANTENNAS THAT DO NOT HAVE GEL CONDUCTIVE GASKET
TCAS Bottom Omnidirectional Antenna - Removal/Installation
Figure 401



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EFFECTIVITY: AIRCRAFT WITH ANTENNAS THAT HAVE GEL CONDUCTIVE GASKET
TCAS Bottom Omnidirectional Antenna - Removal/Installation
Figure 402


-  1 ELECTRICAL BONDING (METHOD 12).
-  2 SEALANT PR1422 B-2.
-  3 SEALANT P/S 870 B-2
-  4 SEALANT 780 (WHITE).
-  5 TORQUE: 2.8 N.m (25 lb.in).
-  6 PAINT ECL-G-46 / PC-233 / TR109.


DET. D

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TASK 34-43-03-400-801-A

EFFECTIVITY: ALL

3. TCAS BOTTOM OMNIDIRECTIONAL ANTENNA - INSTALLATION

A. General

- (1) This procedure gives the instructions to install the TCAS bottom omnidirectional antenna.
- (2) After the installation of the TCAS bottom omnidirectional antenna, it is necessary to energize the aircraft to make sure that the antenna is serviceable.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM SDS 34-43-00/1	
AMM TASK 20-13-21-700-801-A/200	ELECTRICAL BONDING TEST - STANDARD PROCEDURES
AMM TASK 20-13-21-910-801-A/200	TYPES OF ELECTRICAL BONDING AND SURFACE PREPARATION - STANDARD PROCEDURES
AMM TASK 34-43-03-000-801-A/400	TCAS BOTTOM OMNIDIRECTIONAL ANTENNA - REMOVAL
CPM 51-21-06	-
IPC 34-43-03	TCAS BOTTOM OMNIDIRECTIONAL ANTENNA
SRM 51-20-01	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Lower forward fuselage - Section II
232		Passenger cabin - RH side

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench	To torque	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Polyethylene spatula	To remove the sealant	AR
Commercially available	Clean dry cloth	To clean the antenna base	AR



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F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
ASTM-D-740	Methyl Ethyl Ketone (MEK)	AR
780 (WHITE) (ASTM-C-920)	Type II Class A White Silicone Sealant	AR
P/S870 B-2 (MIL-PRF-81733)	Type II CL B-2 Polysulfide Aerodynamic Sealant	AR
PR1422 B-2 (AMS-S-8802)	Type I, CL B-2 Polysulfide Sealant	AR
ECL-G-46/PC-233/TR109 (MEP 10-069)	High Polyurethane White Paint	AR

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Gel Conductive Gasket	IPC 34-43-03	1

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Cockpit and lower forward fuselage
1	Does the task	In the passenger cabin

I. Installation

SUBTASK 420-002-A

- (1) Make sure that the aircraft is in the same configuration as it was at the end of the removal task ([AMM TASK 34-43-03-000-801-A/400](#))
- (2) (AIRCRAFT WITH ANTENNAS THAT DO NOT HAVE GEL CONDUCTIVE GASKET)
To install TCAS bottom antenna, do as follows: (Figure 401)

WARNING: BE CAREFUL WHEN YOU USE THE METHYL ETHYL KETONE (MEK). PUT ON SAFETY GOGGLES, PROTECTIVE GLOVES AND CLOTHING. DO NOT BREATHE THE GAS. DO THE WORK IN AN AREA WHICH HAS A GOOD FLOW OF AIR. THE METHYL ETHYL KETONE (MEK) IS POISONOUS AND HIGHLY FLAMMABLE.

- (a) With a clean cloth soaked in Methyl Ethyl Ketone (MEK), clean the antenna base surface.

CAUTION: MAKE SURE THAT THE ELECTRICAL BONDING GIVES A GOOD ELECTRIC CONDUCTIVE PATH. IF NOT, DAMAGE TO THE AIRCRAFT AND TO THE EQUIPMENT CAN OCCUR.

- (b) Do the bonding procedure, method 12, on the antenna installation surface on the aircraft skin ([AMM TASK 20-13-21-910-801-A/200](#))
- (c) Put the TCAS bottom antenna (2) in installation position.
- (d) Install the screws (3).

- (e) Use a torque wrench to torque the screws (3) to 2.8 N.m. (25lb.in) in a crisscross pattern.
 - (f) Do the bonding test between the connector of the TCAS bottom antenna (2) and aircraft ground ([AMM TASK 20-13-21-700-801-A/200](#)).
 - (g) Apply aerodynamic sealant P/S870 B-2 around the contour of the TCAS bottom antenna (2), on the skin (SRM 51-20-01).
 - (h) Apply sealant 780 (WHITE) on the screw heads until you fully fill the recesses in the antenna body (SRM 51-20-01).
 - (i) Apply sealant PR1422 B-2 around the fuselage skin hole and the TCAS antenna base, on the inner surface of the fuselage skin (SRM 51-20-01).
 - (j) Connect the electrical connector (1) to the antenna (2).
- (3) (AIRCRAFT WITH ANTENNAS THAT HAVE GEL CONDUCTIVE GASKET) To install TCAS bottom antenna, do as follows: (Figure 402)

WARNING: BE CAREFUL WHEN YOU USE THE METHYL ETHYL KETONE (MEK). PUT ON SAFETY GOGGLES, PROTECTIVE GLOVES AND CLOTHING. DO NOT BREATHE THE GAS. DO THE WORK IN AN AREA WHICH HAS A GOOD FLOW OF AIR. THE METHYL ETHYL KETONE (MEK) IS POISONOUS AND HIGHLY FLAMMABLE.

- (a) With a clean cloth soaked in Methyl Ethyl Ketone (MEK), clean the antenna base surface.
- (b) Carefully remove the protective release film identified with "ANTENNA SIDE" from gel conductive gasket (4).
- (c) Carefully align the gel conductive gasket (4) with the screw holes and connector, and install it to the base of the TCAS bottom antenna (2).
- (d) Carefully remove the protective release film identified with "AIRCRAFT SIDE" from the gel conductive gasket (4).

CAUTION: MAKE SURE THAT THE ELECTRICAL BONDING GIVES A GOOD ELECTRIC CONDUCTIVE PATH. IF NOT, DAMAGE TO THE AIRCRAFT AND TO THE EQUIPMENT CAN OCCUR.

- (e) Do the bonding procedure, method 12, on the antenna installation surface on the aircraft skin ([AMM TASK 20-13-21-910-801-A/200](#)).
- (f) Put the TCAS bottom antenna (2) in installation position.
- (g) Install the screws (3).
- (h) Use a torque wrench to torque the screws (3) to 2.8 N.m. (25lb.in) in a crisscross pattern.

CAUTION: BE CAREFUL WHEN YOU USE THE POLYETHYLENE SPATULA TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRCRAFT SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (i) If necessary, with a spatula, remove the excess gel of the conductive gel gasket (4) from around the TCAS bottom antenna (2) and from the aircraft skin.
- (j) Do the bonding test between the connector of the TCAS bottom antenna (2) and aircraft ground ([AMM TASK 20-13-21-700-801-A/200](#)).
- (k) Apply aerodynamic sealant P/S870 B-2 around the contour of the TCAS bottom antenna (2), on the skin (SRM 51-20-01).
- (l) Apply paint ECL-G-46/PC-233/TR109 on the screw (3) heads (CPM 51-21-06).
- (m) Apply sealant 780 (WHITE) on the screw heads until you fully fill the recesses in the antenna body (SRM 51-20-01).
- (n) Apply sealant PR1422 B-2 around the fuselage skin hole and the TCAS antenna base, on the inner surface of the fuselage skin (SRM 51-20-01).
- (o) Connect the electrical connector (1) to the antenna (2).

J. Follow-on

SUBTASK 842-002-A

- (1) Remove the DO-NOT-SET-AUTO tags from the BATT 1 and BATT 2 switches.
- (2) Remove the DO-NOT-SET-ON tag from the GPU pushbutton.
- (3) Make sure that the TCAS bottom omnidirectional antenna is serviceable as follows:
 - (a) Get access to the RH wardrobe.
 - (b) Remove the access panel on the wardrobe end wall to get access to the TCAS processor.
 - (c) Energize the aircraft, and make sure that the TCAS ([AMM SDS 34-43-00/1](#)) is serviceable and on.
 - (d) After the aircraft energization, stop for approximately 11 seconds and make sure that, on the TCAS processor, all led's are off.
 - (e) Deenergize the aircraft.
 - (f) Install the access panel of the RH wardrobe end wall.
- (4) Install door 123BL (AMM MPP 06-41-01/100).