



EMB145 – EMB135

AIRCRAFT
MAINTENANCE MANUAL

RELAYS AND SOCKETS - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the typical procedures to remove and install relays and sockets.
- B. This procedure is not applicable to the removal and installation of a specific relay and socket. It is for all relays and sockets that have the same assembly as shown in the figure in this task.
- C. 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
20-13-02-000-801-A	RELAYS - REMOVAL (TYPICAL)	ALL
20-13-02-400-801-A	RELAYS - INSTALLATION (TYPICAL)	ALL
20-13-02-000-802-A	SOCKETS - REMOVAL (TYPICAL)	ALL
20-13-02-400-802-A	SOCKETS - INSTALLATION (TYPICAL)	ALL



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TASK 20-13-02-000-801-A

EFFECTIVITY: ALL

2. RELAYS - REMOVAL (TYPICAL)

A. General

- (1) This task gives the typical procedures to remove relays.

B. References

REFERENCE	DESIGNATION
WM 20-13-03	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
-		Compartment or area where the related relay is installed

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Area where the related relay is installed

I. Preparation

SUBTASK 841-002-A

- (1) Open the correct circuit breakers that supply power to the related relay, and attach a DO-NOT-CLOSE tag to them.

NOTE: Refer to the correct wiring diagrams to identify the circuit breakers.

- (2) Get access to the compartment or area where the related relay is installed.

NOTE: To find the location of the related relay, refer to WM 20-13-03.

J. Removal (Figure 401)

SUBTASK 020-002-A

- (1) Remove the nuts (6) and washers (7) from the stud (10).



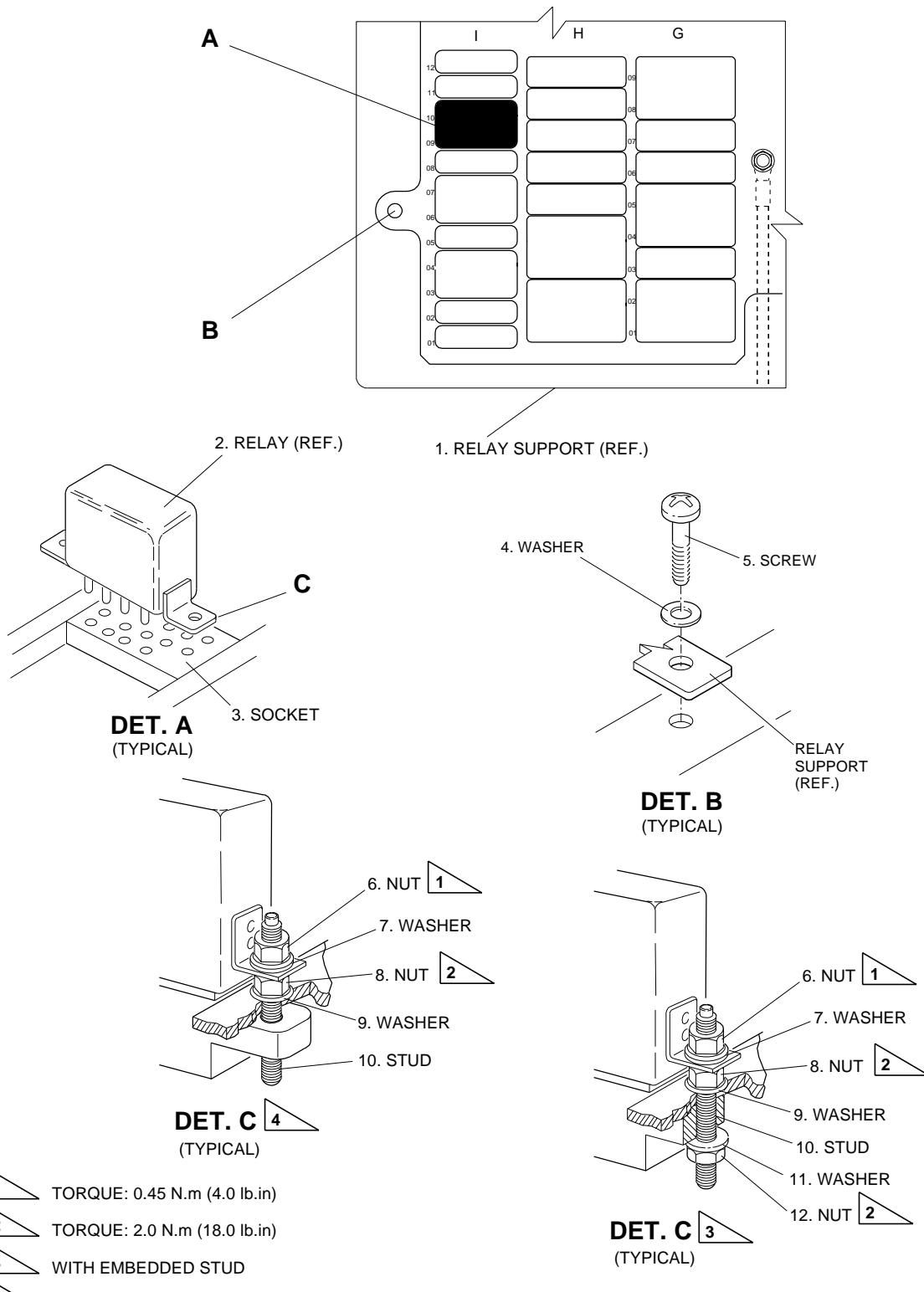
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-
- (2) Remove the relay (2) from the socket (3).

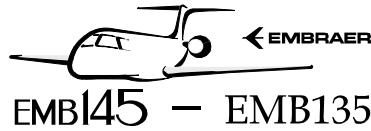
EFFECTIVITY: ALL

Relays - Removal/Installation (Typical)

Figure 401



EM145AMM200153D.DGN



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TASK 20-13-02-400-801-A

EFFECTIVITY: ALL

3. RELAYS - INSTALLATION (TYPICAL)

A. General

- (1) This task gives the typical procedures to install relays.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-13-02-000-801-A/400	RELAYS - REMOVAL (TYPICAL)
WM 20-13-03	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
-		Compartment or area where the related relay is installed

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Area where the related relay is installed

I. Installation (Figure 401)

SUBTASK 420-002-A

- (1) Make sure that the aircraft is in the same configuration as it was at the end of the removal [AMM TASK 20-13-02-000-801-A/400](#).
- (2) Get access to the compartment or area where the relay will be installed.
- (3) Put the relay (2) in its installation position.
- (4) Install the relay (2) on the socket (3).
- (5) Install the washers (7) and nuts (6) to the stud (10).



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CAUTION: YOU MUST CORRECT THE TORQUE VALUES IF THE TORQUE WRENCH ADAPTER IS AT AN ANGLE DIFFERENT FROM 90 DEGREES IN RELATION TO THE TORQUE WRENCH. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (6) Use the torque wrench to torque each nut (6) to 0.45 N.m (4.0 lb.in).
- (7) Apply drop of torque seal F-925 to the nut (6) as a check mark.

J. Follow-on

SUBTASK 842-002-A

- (1) Close the access to the compartment or area where the related relay is installed.
NOTE: To find the location of the related relay, refer to WM 20-13-03.
- (2) Close the correct circuit breakers that supply power to the related relay, and remove a DO-NOT-CLOSE tag to them.
NOTE: Refer to the correct wiring diagrams to identify the circuit breakers.



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TASK 20-13-02-000-802-A

EFFECTIVITY: ALL

4. SOCKETS - REMOVAL (TYPICAL)

A. General

- (1) This task gives the typical procedures to remove sockets.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-13-02-000-801-A/400	RELAYS - REMOVAL (TYPICAL)
WM 20-13-03	-
WM 20-50-01	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
-		Compartment or area where the related socket is installed

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Area where the related socket is installed

I. Preparation

SUBTASK 841-003-A

- (1) Open the correct circuit breakers that supply power to the related socket and attach a DO-NOT-CLOSE tag to them.

NOTE: Refer to the correct wiring diagrams to identify the circuit breakers.

- (2) Get access to the compartment or area where the related socket is installed.

NOTE: The socket has the same number of the relay, just the begin is different, for relays the number begins with K and for sockets it begins with XK, then when you find the location of the relay, it is the same for to socket. Then, to find the location of the related socket, refer to WM 20-13-03.



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- (3) Remove the relay that is installed with the socket that will be removed.

NOTE: To remove the related relay refer to [AMM TASK 20-13-02-000-801-A/400](#).

J. Removal (Figure 401)

SUBTASK 020-003-A

- (1) Remove the screws (5) and the washers (4) which attach the relay support (1) to the aircraft.
- (2) Remove the relay support (1) from the aircraft.
- (3) Remove the nuts (8) and washers (9) which attach the socket (3) to the relay support (1).

CAUTION: MAKE MATCH MARKS ON ALL THE ELECTRICAL WIRES OR CABLES BEFORE YOU DISCONNECT THEM. INCORRECT CONNECTION OF WIRES OR CABLES WILL CAUSE DAMAGE TO EQUIPMENT.

- (4) To remove the electrical connections from the socket (3) do the selection of a contact insertion/removal tool. Refer to WM 20-50-01.
- (5) Protect all electrical connections after you disconnect them.
- (6) Remove the socket (3).

TASK 20-13-02-400-802-A
EFFECTIVITY: ALL
5. SOCKETS - INSTALLATION (TYPICAL)
A. General

- (1) This task gives the typical procedures to install sockets.

B. References

<i>REFERENCE</i>	<i>DESIGNATION</i>
AMM TASK 20-13-02-000-802-A/400	SOCKETS - REMOVAL (TYPICAL)
AMM TASK 20-13-02-400-801-A/400	RELAYS - INSTALLATION (TYPICAL)
WM 20-13-03	-
WM 20-50-01	-

C. Zones and Accesses

<i>ZONE</i>	<i>PANEL/DOOR</i>	<i>LOCATION</i>
-	-	Compartment or area where the related socket is installed

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
1	Does the task	Area where the related socket is installed

I. Installation (Figure 401)
SUBTASK 420-003-A

- (1) Make sure that the aircraft is in the same configuration as it was at the end of the removal [AMM TASK 20-13-02-000-802-A/400](#).
- (2) Remove the protections from the electrical connections that were disconnected.

CAUTION: REFER TO THE MATCH MARKS MADE DURING THE REMOVAL WHEN YOU CONNECT THE ELECTRICAL WIRES OR CABLES. INCORRECT CONNECTION OF WIRES OR CABLES WILL CAUSE DAMAGE TO EQUIPMENT.

- (3) Before you install the socket, insert the electrical connections back into the socket (3). Do the selection of an insertion toll. Refer to WM 20-50-01.
- (4) Put the socket (3) in its installation position.
- (5) For sockets with removable stud, do as follows:
 - (a) Install and tighten the washers (11) and the nuts (12) which attach the socket (3) to the relay support (1).

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- (b) Use the torque wrench to torque each nut (12) to 2 N.m (18 lb.in).
- (c) Apply drop of torque seal F-925 to the nut (12) as a check mark.
- (6) Install and tighten the washers (9) and the nuts (8) which attach the socket (3) to the relay support (1).

CAUTION: YOU MUST CORRECT THE TORQUE VALUES IF THE TORQUE WRENCH ADAPTER IS AT AN ANGLE DIFFERENT FROM 90 DEGREES IN RELATION TO THE TORQUE WRENCH. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (7) Use the torque wrench to torque each nut (8) to 2 N.m (18 lb.in).
- (8) Apply drop of torque seal F-925 to the nut (8) as a check mark.
- (9) Put the relay support (1) in its installation position.
- (10) Install and tighten the washers (4) and the screws (5) which attach the relay support (1) to the aircraft.

J. Follow-on

SUBTASK 842-003-A

- (1) Install the relay that was removed.

NOTE: To install the related relay refer to [AMM TASK 20-13-02-400-801-A/400](#).

- (2) Close the access to the compartment or area where the related socket is installed.

NOTE: The socket has the same number of the relay, just the begin is different, for relays the number begins with K and for sockets it begins with XK, then when you find the location of the relay, it is the same for to socket. Then, to find the location of the related socket, refer to WM 20-13-03.

- (3) Close the correct circuit breakers that supply power to the related socket and remove a DO-NOT-CLOSE tag to them.

NOTE: Refer to the correct wiring diagrams to identify the circuit breakers.