



EMB145 - EMB135

AIRCRAFT  
MAINTENANCE MANUAL

LIGHTED PUSHBUTTONS - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the typical procedures to remove/install the lighted pushbuttons and its lamps.
- 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
20-13-04-000-801-A	LIGHTED PUSHBUTTONS - REMOVAL (TYPICAL)	ALL
20-13-04-400-801-A	LIGHTED PUSHBUTTONS - INSTALLATION (TYPICAL)	ALL
20-13-04-000-802-A	LIGHTED PUSHBUTTON LAMPS - REMOVAL (TYPICAL)	ALL
20-13-04-400-802-A	LIGHTED PUSHBUTTON LAMPS - INSTALLATION (TYPICAL)	ALL



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TASK 20-13-04-000-801-A

EFFECTIVITY: ALL

2. LIGHTED PUSHBUTTONS - REMOVAL (TYPICAL)

A. General

- (1) This task gives the typical procedures to remove lighted pushbutton(s).

NOTE: This task is not applicable to a specific lighted pushbutton.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-13-10-000-801-A/400	CONTROL PANELS - REMOVAL (TYPICAL)

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 114	Lamp Capsule Extraction Tool	To Remove the Lamp Capsule	

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	Where applicable

I. Preparation

SUBTASK 841-002-A

NOTE: This task is not applicable to a specific lighted pushbutton.

- (1) Remove the panel, if applicable (AMM TASK 20-13-10-000-801-A/400).

J. Removal (Figure 401)

SUBTASK 020-002-A

- (1) Refer to the applicable Wiring Manual to find the circuit breaker(s) of the equipment where the pushbutton is installed.
- (2) On the circuit breaker panel, open the applicable circuit breaker(s) and put a circuit breaker ring and tag (inoperative - do not operate) on it (each one of them).



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CAUTION: BEFORE YOU REMOVE THE LAMP CAPSULE, MAKE SURE THAT THE PUSHBUTTON IS SET TO OFF (OUT) POSITION. IF YOU REMOVE THE LAMP CAPSULE WITH THE PUSHBUTTON IN THE PUSHED (IN) POSITION, YOU WILL CAUSE A MALFUNCTION TO THE SWITCH.

- (3) Make sure that the pushbutton (1) is in the off (out) position.
- (4) Pull the lamp capsule (2) from the switch housing (3) with your fingernail or with the lamp capsule extraction tool.

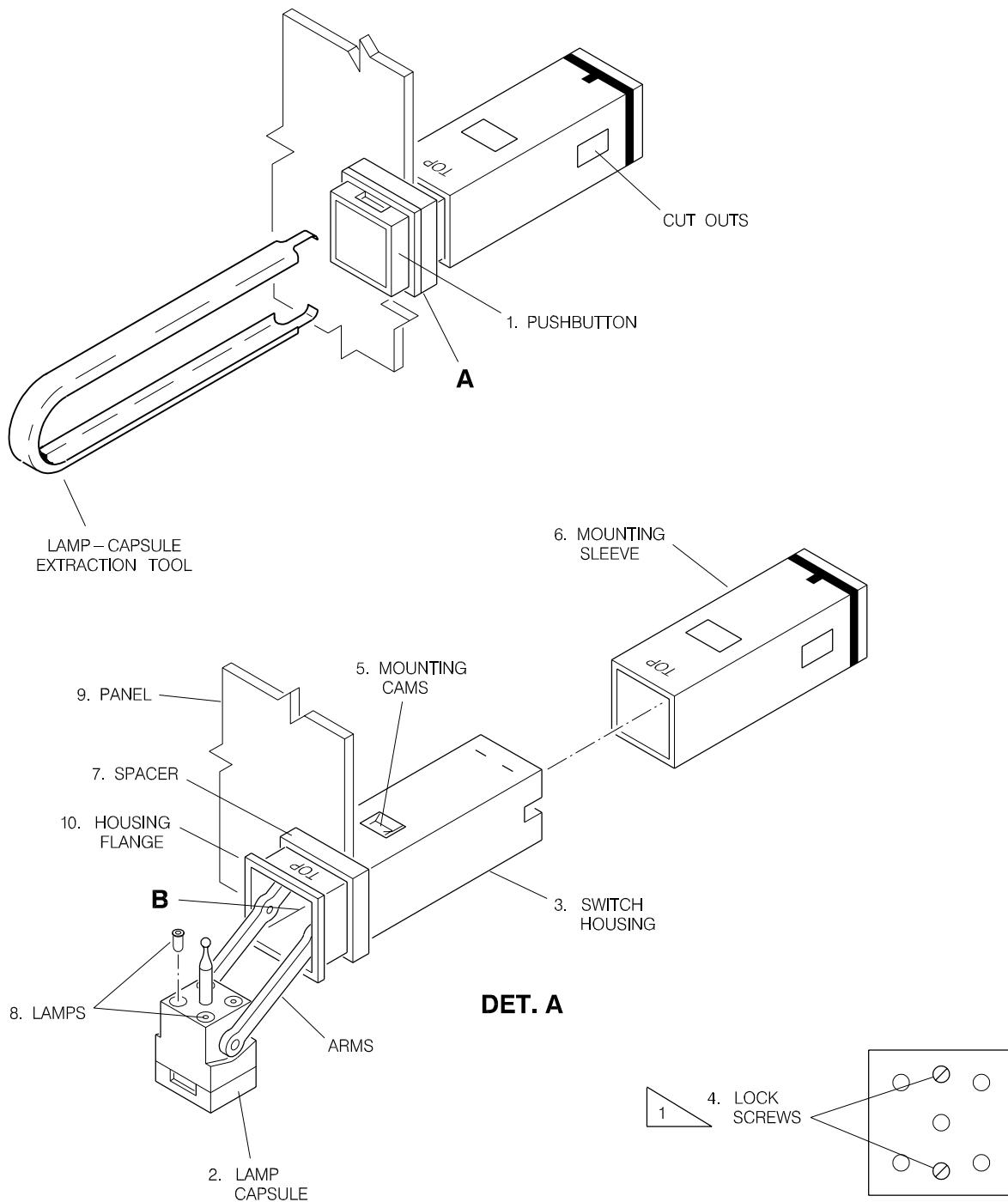
CAUTION: IF YOU TURN THE LOCK SCREWS PAST THEIR LOWEST POSITION, YOU WILL CAUSE DAMAGE TO THE SWITCH.

- (5) Turn the two lock screws (4) in the switch housing (3) counterclockwise to disengage the mounting cams (5). The screws will turn freely until the mounting cams (5) come to their lowest position.
- (6) Remove the switch housing (3) from the mounting sleeve (6) together with the spacer (7).

**EFFECTIVITY: ALL**

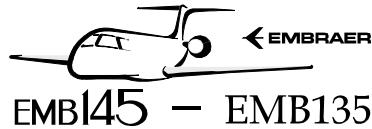
Lighted Pushbuttons - Removal/Installation

Figure 401



TORQUE VALUE  $0,127 \pm 0,014$  Nm ( $1,124 \pm 0,123$ )

145MM20024.MCE



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TASK 20-13-04-400-801-A

EFFECTIVITY: ALL

3. LIGHTED PUSHBUTTONS - INSTALLATION (TYPICAL)

A. General

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

NOTE: This task is not applicable to the installation of a specific lighted pushbutton.

B. Zones and Accesses

Not Applicable

C. Tools and Equipment

Not Applicable

D. Auxiliary Items

Not Applicable

E. Consumable Materials

Not Applicable

F. Expandable Parts

Not Applicable

G. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Where applicable

H. Installation (Figure 401)

SUBTASK 420-002-A

- (1) Make sure that the lamp capsule (2) is removed from the switch housing (3).

NOTE: Only on the THRUST RATING panel the spacer (7) is installed behind the panel (9).

- (2) Install the spacer (7) on the switch housing (3) in the same position as it was removed from, during the removal task (between the panel and the housing flange (10)).

CAUTION: MAKE SURE THAT THE WORD "TOP" ON THE LAMP CAPSULE IS ALIGNED WITH THE WORD "TOP" ON THE SWITCH HOUSING. A MALFUNCTION WILL OCCUR IF THE PUSHBUTTON IS INSTALLED IN OTHER POSITION.

- (3) Install the Switch housing (3) in the panel (9).

- (4) Move the mounting sleeve (6) on the switch housing (3), with the word TOP on the top of the mounting sleeve (6).

CAUTION: DO NOT TIGHTEN THE LOCK SCREWS TOO MUCH. THIS COULD CAUSE DAMAGE TO THE SWITCH BODY AND THE LAMP CAPSULE WILL NOT MOVE FREELY.

- (5) Tighten the two lock screws (4) (refer to (Figure 401) for torque values).



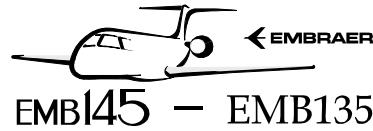
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- (6) Install the lamp capsule (2) into the switch housing (3) aligned with the word TOP of the pushbutton.

### I. Follow-on

#### SUBTASK 842-002-A

- (1) On the circuit breaker panel, remove the circuit breaker ring and tag (inoperative - do not operate) from the applicable circuit breaker(s) and close it (them).
- (2) Close and lock the applicable system panel.
- (3) Do an operational check of the switch to make sure that the lamp capsule is correctly engaged with the switch body.



TASK 20-13-04-000-802-A

EFFECTIVITY: ALL

4. LIGHTED PUSHBUTTON LAMPS - REMOVAL (TYPICAL)

## A. General

- (1) This task gives the procedures to remove the lamps installed into the lamp capsule.

## B. Zones and Accesses

Not Applicable

## C. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 114	Lamp Capsule Extraction Tool	Remove the Lamp Capsule	

## D. Auxiliary Items

Not Applicable

## E. Consumable Materials

Not Applicable

## F. Expandable Parts

Not Applicable

## G. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Where applicable

## H. Removal (Figure 401)

## SUBTASK 020-003-A

- (1) Refer to the applicable Wiring Manual to find the circuit breaker(s) of the equipment where the pushbutton is installed.
- (2) On the circuit breaker panel, open the applicable circuit breaker(s) and put a circuit breaker ring and tag (inoperative - do not operate) on it (each one of them).

**CAUTION: BEFORE YOU REMOVE THE LAMP CAPSULE, MAKE SURE THAT THE PUSHBUTTON IS IN THE OFF (OUT) POSITION. IF YOU REMOVE THE LAMP CAPSULE WITH THE PUSHBUTTON IN THE PUSHED (IN) POSITION YOU WILL CAUSE A MALFUNCTION TO THE SWITCH.**

- (3) Make sure that the pushbutton (1) is in the off (out) position.
- (4) Pull the lamp capsule (2) from the switch housing (3) with your fingernail or with the lamp capsule extraction tool.
- (5) Remove the applicable lamp(s) (8).

**TASK 20-13-04-400-802-A**
**EFFECTIVITY: ALL**
**5. LIGHTED PUSHBUTTON LAMPS - INSTALLATION (TYPICAL)**
**A. General**

- (1) This task gives the typical procedures to install the lighted pushbutton lamp.

**NOTE:** This task is not applicable to the installation of a specific lighted pushbutton.

**B. Zones and Accesses**

Not Applicable

**C. Tools and Equipment**

Not Applicable

**D. Auxiliary Items**

Not Applicable

**E. Consumable Materials**

Not Applicable

**F. Expandable Parts**

Not Applicable

**G. Persons Recommended**

QTY	FUNCTION	PLACE
1	Does the task	Where applicable

**H. Installation (Figure 401)**
**SUBTASK 420-003-A**

**CAUTION:** WHEN YOU CHANGE LAMPS, PUSH EACH OF THEM TIGHTLY TO MAKE SURE THAT THEY ARE INSTALLED CORRECTLY. INCORRECT INSTALLATION OF LAMPS CAN CAUSE INTERMITTENT OPERATION AND/OR MALFUNCTION OF THE ALTERNATE SWITCHING MECHANISM.

- (1) Install the new lamp(s) (8) in the lamp capsule (2). If the upper pair of the lamps is replaced, push the two together to prevent damage to the ground contact. Do the same procedure for the lower pair.
- (2) Install the lamp capsule (2) in the switch housing (3).

**I. Follow-on**
**SUBTASK 842-003-A**

- (1) On the circuit breaker panel, remove the circuit breaker ring and tag (inoperative - do not operate) from the applicable circuit breaker(s) and close it (them).
- (2) Do an operational check of the switch to make sure that the lamp capsule is correctly engaged with the switch body.