



POTENTIOMETERS - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to adjust the FDR potentiometers.
- B. The potentiometers give information about position of the aileron control wheels 1(2), the elevator control columns 1(2), and the rudder pedal.
- 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
31-31-04-700-801-A	FDR POTENTIOMETERS - ADJUSTMENT	ALL



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TASK 31-31-04-700-801-A

EFFECTIVITY: ALL

2. FDR POTENTIOMETERS - ADJUSTMENT

A. General

- (1) This task gives the procedures to adjust the FDR potentiometers.

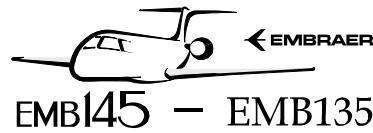
NOTE: Make sure that the flight control system is adjusted and that DAU 1 and DAU 2 are installed on the aircraft.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM MPP 06-41-02/100	-
AMM MPP 06-41-03/100	- COMPONENT LOCATION
AMM MPP 06-44-00/100	- COMPONENT LOCATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 25-11-01-000-801-A/400	PILOT SEAT - REMOVAL
AMM TASK 25-11-01-400-801-A/400	PILOT SEAT - INSTALLATION
AMM TASK 27-10-00-000-801-A/400	AILERON - REMOVAL
AMM TASK 27-10-00-400-801-A/400	AILERON - INSTALLATION
AMM TASK 27-20-00-700-801-A/500	ADJUSTMENT OF THE RUDDER NEUTRAL POSITION AND DEFLECTIONS OF RUDDER I AND RUDDER II
AMM TASK 27-31-00-700-802-A/500	ADJUSTMENT OF THE ELEVATOR PRIMARY BACKSTOP AND SECONDARY BACKSTOP
AMM TASK 28-41-00-200-801-A/600	-
AlliedSignal Avionics Inc. PN = 998-1743-600	-
SB145-27-0050	-
TASK 27-20-00-700-802-A	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
221	221GF	Cockpit floor
221	221EF	Cockpit floor - LH side
222	222FF	Cockpit floor - RH side
223	223LZ	Cockpit, LH side - Maintenance panel
272	272DR	Fuselage rear section I - Right side



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D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 036	Platform - Hydraulic, Aircraft	To get access to the rear electronic compartment	
GSE 044	Headset - Ramp handling	For communication	
GSE 070	Protractor - Digital	To measure the control column deflection angle	
GSE 092	Hand-Held Download Unit (HHDLU)	To monitor the potentiometer data in real time	

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	Cockpit
1	Does the task	Rear electronic compartment

I. Preparation ([Figure 501](#))

SUBTASK 841-002-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)).
- (3) Connect the headsets (GSE 044).
- (4) Put the hydraulic platform (GSE 036) to the necessary height to get access to the rear electronic compartment.
- (5) Open access door 272DR (AMM MPP 06-41-01/100).
- (6) On the circuit breaker panel, open the FDR circuit breaker and attach a DO-NOT-CLOSE tag to it.
- (7) Open maintenance panel door 223LZ ([AMM MPP 06-41-03/100](#)).
- (8) Make sure that the DFDR switch, on the maintenance panel, is at the NORM position.
- (9) In the rear electronic compartment, connect to the FDR the Hand-Held Download Unit (HHDLU) with the PCMCIA card inserted in it (Refer to User's Manual, Hand-Held Download Unit, AlliedSignal Avionics Inc. PN = 998-1743-600).



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- (10) On the circuit breaker panel, remove the DO-NOT-CLOSE tag from the FDR circuit breaker and close it.
- (11) On the maintenance panel, set the DFDR switch to the TEST position.
- (12) To set the parameters on the HHDLU, obey the instructions in the User's Manual, Hand-Held Download Unit (Refer to AlliedSignal Avionics Inc. PN = 998-1743-600).

NOTE: Set the SUBFRAME, WORD, and BASE to adjust the potentiometers. Use Table 501 as a reference.

Table 501 - HHDLU ADJUSTMENT PARAMETERS

POTENTIOMETER	SUB-FRAME	WORD (AIRCRAFT WITH AFDAU)	WORD (AIRCRAFT WITHOUT AFDAU)	BASE
Aileron Control Wheel 1	ALL	17	09	OCT
Aileron Control Wheel 2		49	25	
Elevator Control Column 1		15	08	
Elevator Control Column 2		47	24	
Rudder Pedal		109	55	

J. Potentiometers - Adjustment ([Figure 502](#)) ([Figure 503](#))

SUBTASK 710-002-A

- (1) To adjust the AILERON CONTROL WHEEL potentiometers:
 - (a) Remove access panels 551CB and 651CB ([AMM MPP 06-44-00/100](#)).
 - (b) Install the rig pins in the wing sectors to lock the aileron in the neutral position ([AMM TASK 27-10-00-000-801-A/400](#)).
 - (c) Remove floor panel 221GF (AMM MPP 06-41-02/100) to get access to the potentiometers.
 - (d) Loosen the bolt which attaches the bellcrank to the potentiometer shaft.
 - (e) Make sure that the WORD set on the HHDLU is for the aileron potentiometer that you will adjust (See Table 501).
 - (f) Use a screwdriver in the slot of the potentiometer shaft to turn it (clockwise or counterclockwise) until you get an indication between 1771 and 2007 on the HHDLU display.

NOTE: These values are for aileron control wheel 1 and aileron control wheel 2.

- (g) Attach the bellcrank with its bolt. Make sure that the value stays within 1771 and 2007.
- (h) Unlock the control wheel.
- (i) Position the control wheel fully to the left. The indication value on the HHDLU display must be between 0640 and 1020.

- (j) Position the control wheel fully to the right. The indication value on the HHDLU display must be between 3010 and 3170.

NOTE: If the indication value is not in the range specified, adjust the potentiometer again with the control wheel in the neutral position.

- (2) To adjust the ELEVATOR CONTROL COLUMN potentiometers:

- Put and lock the control column in the neutral position ([AMM TASK 27-31-00-700-802-A/500](#)).
- Remove the pilot seat ([AMM TASK 25-11-01-000-801-A/400](#)), then remove floor panel 221EF (AMM MPP 06-41-02/100) to get access to the potentiometer attached to elevator control column 1.
- Remove the copilot seat ([AMM TASK 25-11-01-000-801-A/400](#)), then remove floor panel 222FF (AMM MPP 06-41-02/100) to get access to the potentiometer attached to elevator control column 2.
- Loosen the bolt which attaches the bellcrank to the potentiometer shaft.
- Make sure that the WORD set on the HHDLU is for the elevator potentiometer that you will adjust (See Table 501).
- Use a screwdriver in the slot of the potentiometer shaft to turn it (clockwise or counterclockwise) until you get an indication between 1751 and 2025 on the HHDLU display.

NOTE: These values are for elevator control column 1 and elevator control column 2.

- Attach the bellcrank with its bolt. Make sure that the value stays within 1751 and 2025.
- Install the digital protractor (GSE 070) on the control column with adhesive tape (see figure 503). Make sure that the instrument is aligned with the column.
- Set the digital protractor to zero.
- Unlock the elevator control column.
- Move the control column to the positions given in table 502. The value indicated on the HHDLU display must be within the range specified in the table.

NOTE: If the indication value is not in the range specified, adjust the potentiometer again with the control column in the neutral position.

Table 502 - CONTROL COLUMN VALUES

EFFECTIVITY	POSITION	HHDLU (octal)
PRE-MOD SB 145-27-0050	5 degrees - forward	1163 - 1535
	10 degrees - rearward	2651 - 3156
POST-MOD SB145-27-0050	5 degrees - forward	1070 - 1516
	15 degrees - rearward	3320 - 3617

- (l) Remove the digital protractor (GSE 070) from the control column.
- (3) To adjust the RUDDER PEDAL potentiometer:
- Put and lock the rudder pedal in the neutral position ([AMM TASK 27-20-00-700-801-A/500](#)) or (TASK 27-20-00-700-802-A), as applicable.
 - Remove the copilot seat ([AMM TASK 25-11-01-000-801-A/400](#)), then remove floor panel 222FF (AMM MPP 06-41-02/100) to get access to the potentiometer attached to the rudder pedal mechanism.
 - Loosen the Allen screw which attaches the coupling shaft to the torque shaft of the rudder pedal.
 - Make sure that the WORD set on the HHDLU is for the rudder potentiometer (See Table 501).
 - Turn the potentiometer shaft (clockwise or counterclockwise) until you get an indication between 1740 and 2040 on the HHDLU display.
 - Attach the coupling shaft to the torque shaft and make sure the value stays between 1740 and 2040.
 - If the value does not stay between 1740 and 2040, loosen the screw of the clamp that attaches the potentiometer, and slightly turn the potentiometer body to get the value, then tighten the screw that attaches the clamp.
 - Unlock the rudder pedal.
- NOTE: Make sure that the aircraft is in the ground configuration.
- (i) Move the right pedal fully forward. The value shown on the HHDLU display must be in the range given in table 503.

Table 503 - RUDDER PEDAL POSITION

POSITION	HHDLU (OCTAL)		
	FAA/CTA-CERTIFIED AIRCRAFT	JAA-CERTIFIED AIRCRAFT	
		WITH RUDDER MOVABLE PRIMARY STOP	WITHOUT RUDDER MOVABLE PRIMARY STOP
RIGHT PEDAL FULLY FORWARD	3103-4303	3103-4303	2400-3037
LEFT PEDAL FULLY FORWARD	0000-0767	0000-0767	0726-1365

- (j) Move the left pedal fully forward. The value shown on the HHDLU display must be in the range given in table 503.

NOTE: If the indicated value is not in the specified range, adjust the potentiometer again with the rudder pedal in the neutral position.



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K. Follow-on

SUBTASK 842-002-A

- (1) Set the DFDR switch, on the maintenance panel, to the NORM position.
- (2) Deenergize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).
- (3) Close maintenance panel door 223LZ ([AMM MPP 06-41-03/100](#)).
- (4) Disconnect the HHDLU from the FDR, and remove the PCMCIA card from it.
- (5) Close access door 272DR (AMM MPP 06-41-01/100).
- (6) Do an inspection on the fuel quantity indication harness (AMM TASK 28-41-00-200-801-A/600).

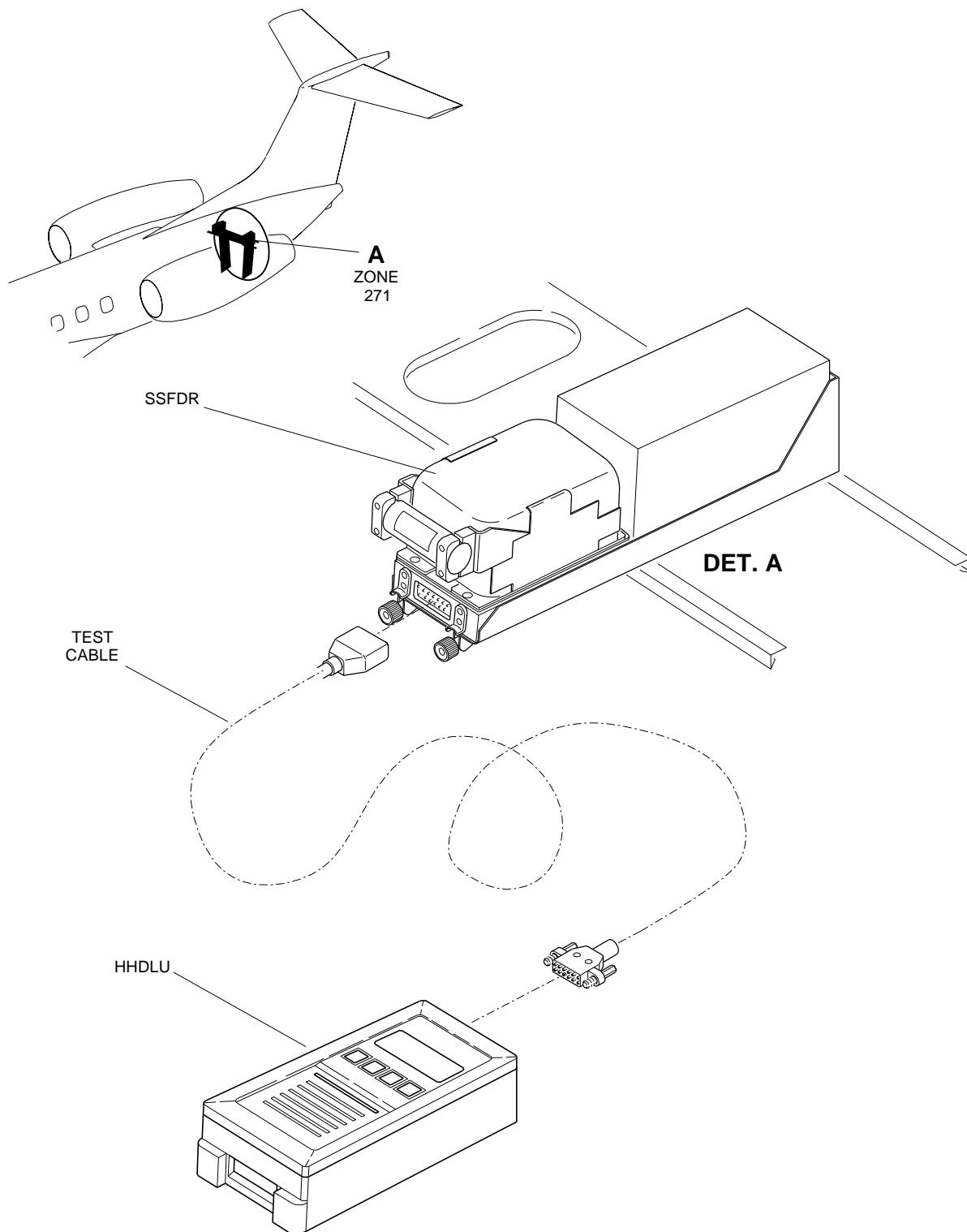
NOTE: The inspection of fuel quantity indication harness is a part of Critical Design Configuration Control Limitations (CDCCL) in the Airworthiness Limitations of the Maintenance Review Board Report (MRB).

- (7) Install the floor panel removed (AMM MPP 06-41-02/100).
- (8) Install the removed seat ([AMM TASK 25-11-01-400-801-A/400](#)).
- (9) Remove the hydraulic platform (GSE 036).
- (10) Disconnect the headsets (GSE 044).
- (11) Remove the rig pins from the wing sectors ([AMM TASK 27-10-00-400-801-A/400](#)).
- (12) Install access panels 551CB and 651CB ([AMM MPP 06-44-00/100](#)).

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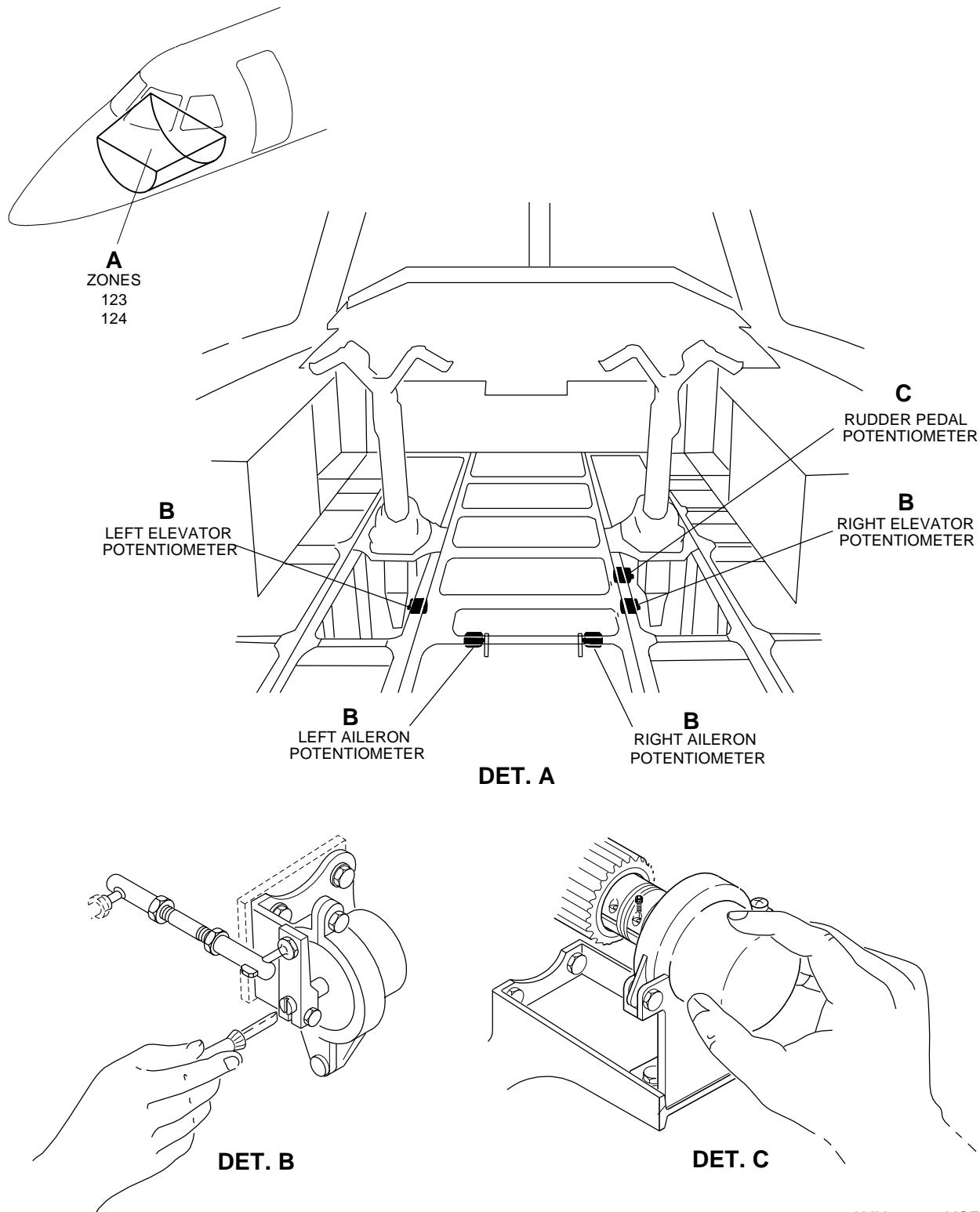
FDR Potentiometers Adjustment - HHDLU/FDR Interface

Figure 501



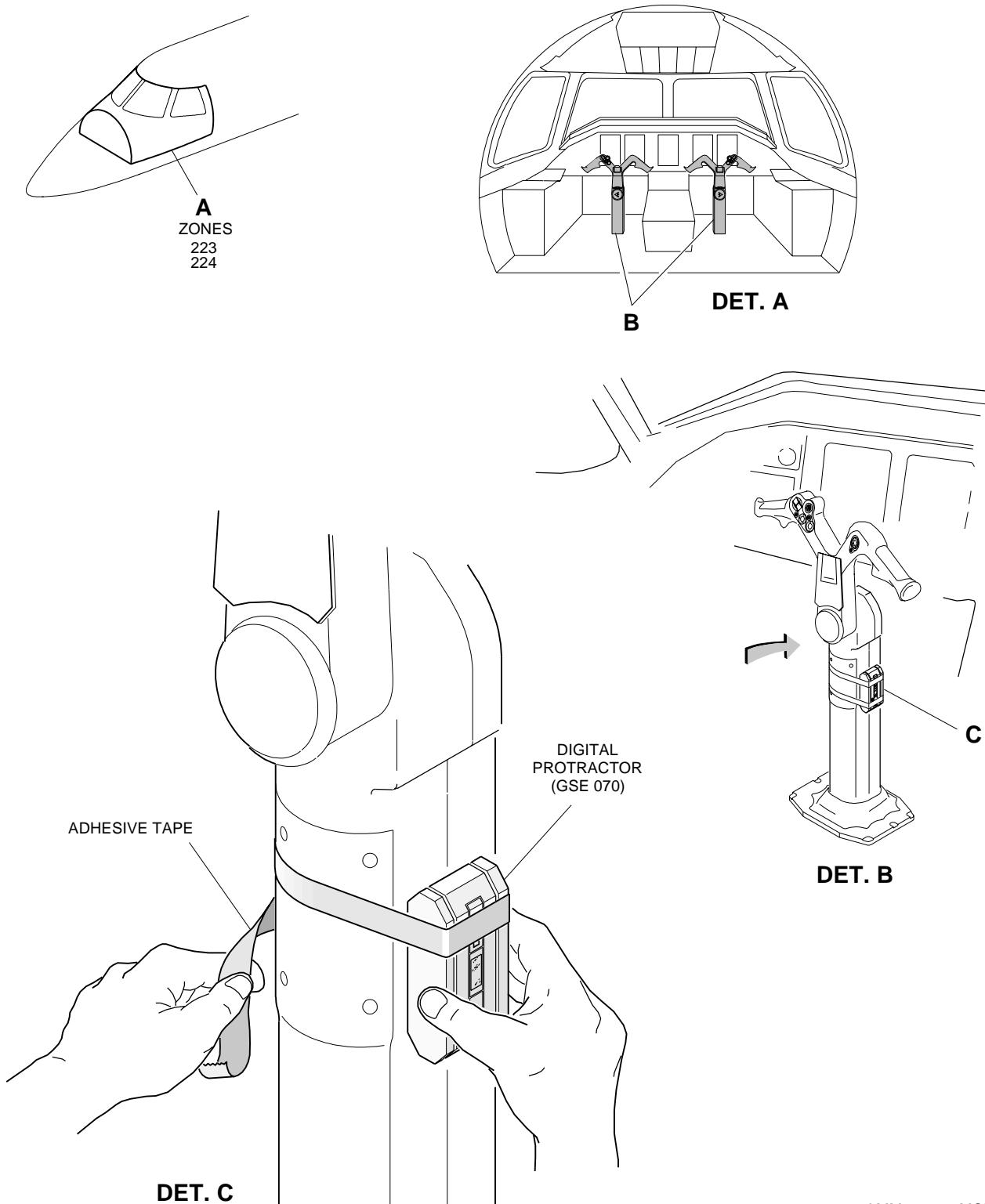
145AMM310019.MCE B

EFFECTIVITY: ALL
FDR Potentiometers - Adjustment
Figure 502



145AMM310075.MCE A

EFFECTIVITY: ALL
Digital Protractor Installation
Figure 503



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