THRUST LEVER RESOLVER - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures for the thrust-lever-resolver functional check and adjustment.

   B. The thrust lever resolver is installed in the control stand assembly.

   C. These procedures are applicable to the LH and RH thrust-lever resolvers.

   D. Each resolver has two coils, one for each FADEC. Each coil sends information to its related FADEC (A and B), in the same engine.

   E. 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*
76-12-01-700-801-A	THRUST LEVER RESOLVER - FUNCTIONAL CHECK	ALL
76-12-01-820-801-A	THRUST LEVER RESOLVER - ADJUSTMENT PROCEDURES	ALL

TASK 76-12-01-700-801-A
EFFECTIVITY: ALL

2. THRUST LEVER RESOLVER - FUNCTIONAL CHECK

A. General

(1) To access the FADEC discrete label, obey these instructions:

(a) For aircraft with -009 CMC, use Data Acquisition Software (DAS) GSE 211 or GSE 331 or GSE 505 or GSE 535.

(b) For aircraft with -010 CMC, use Data Acquisition Software (DAS) GSE 263 or GSE 331 or GSE 505 or GSE 535.

(c) For aircraft with -011 CMC, use Data Acquisition Software (DAS) GSE 331 or GSE 505 or GSE 535.

(d) For aircraft with -012 CMC, use Data Acquisition Software (DAS) GSE 505 or GSE 535.

(e) For aircraft with -013 CMC, use Data Acquisition Software (DAS) GSE 535, which is compatible with all the CMC versions available.

(2) Obey these instructions to do the functional check of the thrust lever resolver.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 76-12-01-820-801-A/500	THRUST LEVER RESOLVER - ADJUSTMENT PROCEDURES
AMM TASK 78-33-01-980-801-A/200	ISOLATION CONTROL UNIT - INHIBITION PROCEDURES

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 130	Personal Computer	Downloading	
GSE 134	CMC/PC Interconnection Cable	To interconnect the PC and the CMC	
GSE 211	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 263	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 331	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 505	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 535	Data Acquisition Software (DAS)	To read the FADEC discrete label	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
01	Does the task	Cockpit

I. Preparation

SUBTASK 841-002-A

CAUTION: WHEN YOU DOWNLOAD OR READ THE FADEC DATA THROUGH THE CMC WITH A LAPTOP, THE CMC SWITCH, ON THE MAINTENANCE PANEL, MUST BE SET TO THE "INHIBIT" POSITION, AND THE MFD MUST NOT BE SET TO SHOW MAINTENANCE MESSAGES.

(1) Put the ICU in the "INHIBIT" position (AMM TASK 78-33-01-980-801-A/200).

WARNING: BEFORE YOU OPEN THE N2 CIRCUIT BREAKERS, MAKE SURE THAT THE SENSORS PITOT 1 - TAT 1/AOA 1, PITOT 3, AND PITOT 2 - TAT 2/AOA 2, ON THE OVERHEAD PANEL, ARE SET AT OFF. THIS IS TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE MATERIAL.

(2) (FOR AIRCRAFT WITHOUT THRUST REVERSER) On the circuit breaker panel, open these circuit breakers and attach DO-NOT-CLOSE tags to them:

– N2 SIGNAL - 1A/2A - 1B/2B

– HYD. ELEC. PUMP - 1/2

(3) (FOR AIRCRAFT WITH THRUST REVERSER) On the circuit breaker panel, open these circuit breakers and attach DO-NOT-CLOSE tags to them:

– N2 SIGNAL - 1A/2A - 1B/2B

– HYD. ELEC. PUMP - 1/2

– THRUST REVERSER - 1/2

(4) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(5) Make sure that the CMC switch, on the maintenance panel, is set to inhibit the MFD from the displaying of the maintenance messages.

J. Functional Check (Figure 501) (Figure 502) (Figure 503) (Figure 504)

SUBTASK 720-002-A

CAUTION: • BEFORE YOU DISCONNECT OR CONNECT THE TLA RESOLVERS OR OTHER COMPONENT THAT INTERFACES WITH THE FADEC, YOU MUST OPEN THE RELATED FADEC CIRCUIT BREAKERS.

• AFTER A FADEC CHANGE OR REPROGRAMMING, OR ENGINE CHANGE, YOU MUST OPEN/CLOSE THE FADEC CIRCUIT BREAKERS AND RESET THE FADECs TWO TIMES.

(1) Do the thrust lever resolver functional check for each FADEC as follows:

(2) Through the interconnection cable (GSE 134), connect, to the maintenance panel, the laptop (GSE 130) with the DAS software installed.

(3) Deenergize the FADECs not related to the check.

(4) (For Data Acquisition Software GSE 211 or GSE 263) On the DAS menu, select "DOWNLOAD", then select the applicable FADEC.

(5) (For Data Acquisition Software GSE 331 or GSE 505 or GSE 535) On the DAS menu, select the "FADEC LABELS" icon, then select the applicable FADEC.

(6) Select "ANALOG" and the TLA must be read on the screen, in the TLA area.

(7) Put the thrust levers in these set points to do the check of the thrust lever resolvers.

(8) Table 501 - THRUST LEVER RESOLVER - SET POINTS

Effectivity: AIRCRAFT WITHOUT THRUST REVERSER

SET POINT	OPERATING RANGE (IN TLA DEGREES)
IDLE	25.0 ± 0.5
THRUST SET	75.0 ± 0.5
MAX. STOP	82.0 ± 0.5

NOTE: You must do the check of one resolver coil at a time. Thus, you must deenergize the 3 other FADECs and do the check of each resolver coil, one by one.

(9) Table 502 - THRUST LEVER RESOLVER - SET POINTS

Effectivity: AIRCRAFT WITH THRUST REVERSER

SET POINT	**OPERATING RANGE (IN TLA DEGREES)**	
MIN. STOP	2.0	± 0.5
MIN. REVERSE	14.0	+ 0.5 - 0.0
IDLE	25.0	± 0.5
THRUST SET	75.0	± 0.5
MAX. STOP	82.0	± 0.5

NOTE: You must do the check of one resolver coil at a time. Thus, you must deenergize the 3 other FADECs and do the check of each resolver coil, one by one.

(10) Do the procedure again for the other FADEC/resolver coils.

(11) If necessary, adjust the thrust lever resolver (AMM TASK 76-12-01-820-801-A/500).

(12) Get out of the program and turn off the laptop.

(13) Disconnect, from the maintenance panel, the interconnection cable (GSE 134) and the laptop (GSE 130) with the DAS software installed.

K. Follow-on

SUBTASK 842-002-A

(1) Make sure that the CMC switch is in the normal position, on the maintenance panel.

(2) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(3) (FOR AIRCRAFT WITHOUT THRUST REVERSER) On the circuit breaker panel, remove the DO-NOT-CLOSE tags and close these circuit breakers:

- N2 SIGNAL - 1A/2A - 1B/2B
- HYD. ELEC. PUMP - 1/2

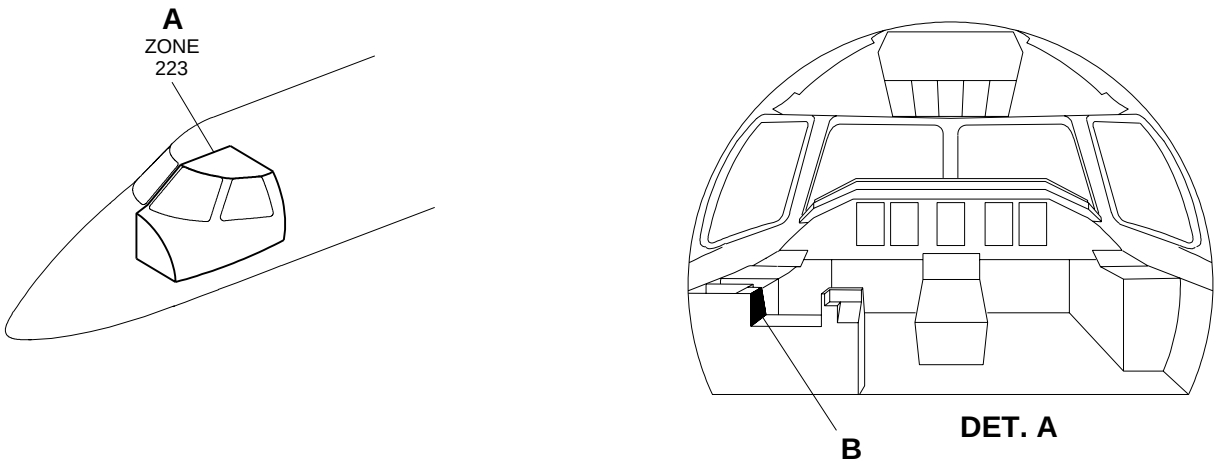
(4) (FOR AIRCRAFT WITH THRUST REVERSER) On the circuit breaker panel, remove the DO-NOT-CLOSE tags and close these circuit breakers:

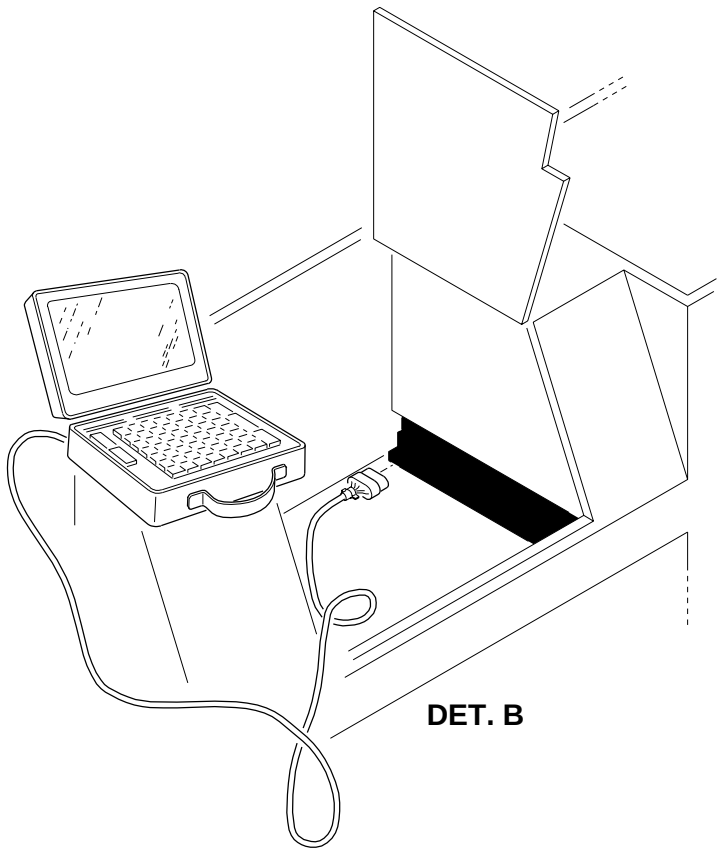
- N2 SIGNAL - 1A/2A - 1B/2B
- HYD. ELEC. PUMP - 1/2
- THRUST REVERSER - 1/2

(5) Put the ICU in the "DE-INHIBIT" position (AMM TASK 78-33-01-980-801-A/200).

EFFECTIVITY: ALL

Thrust Lever Resolver - Component Locations
Figure 501





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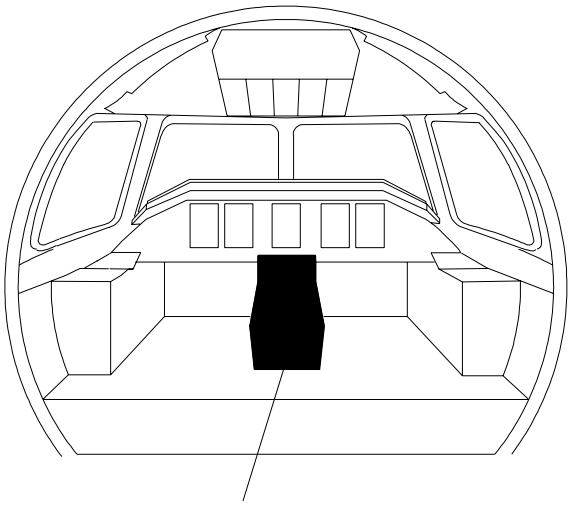
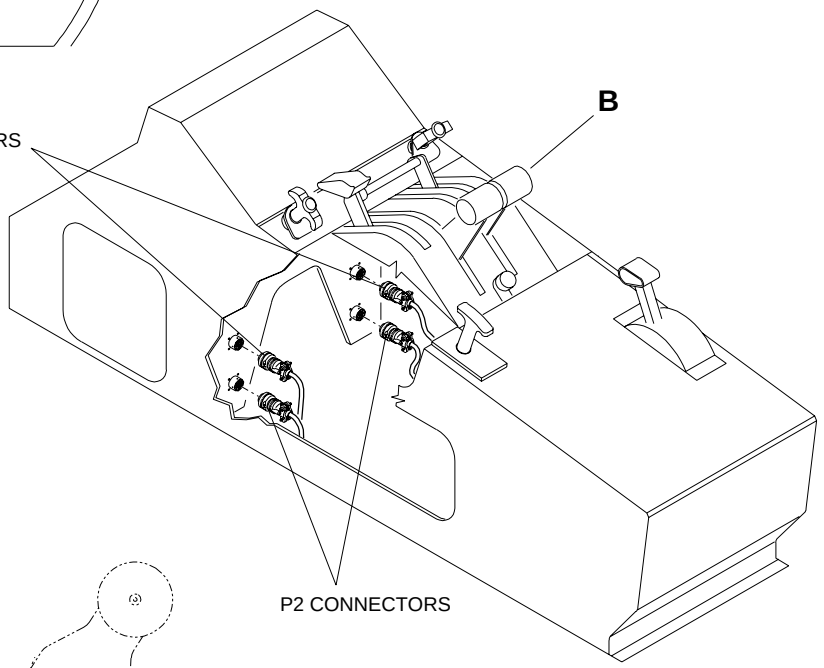
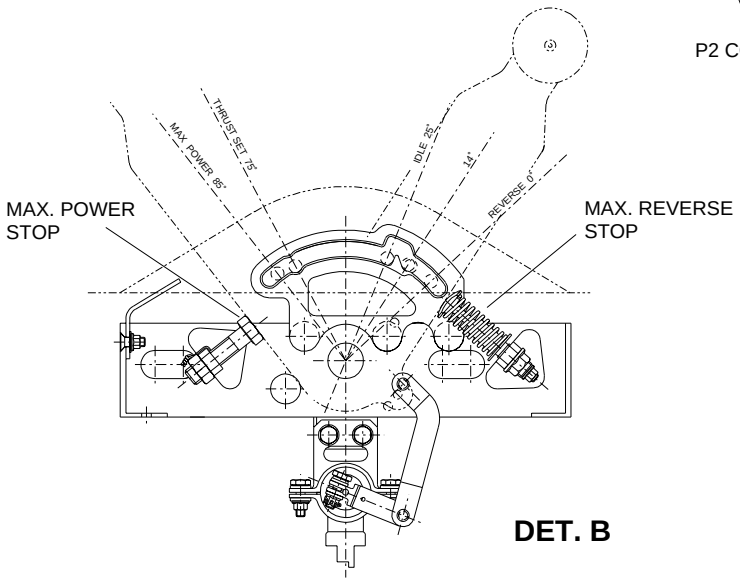
EFFECTIVITY: AIRCRAFT WITH THRUST REVERSER
Thrust Lever Resolver - Component Locations
Figure 502





DET. A



DET. B

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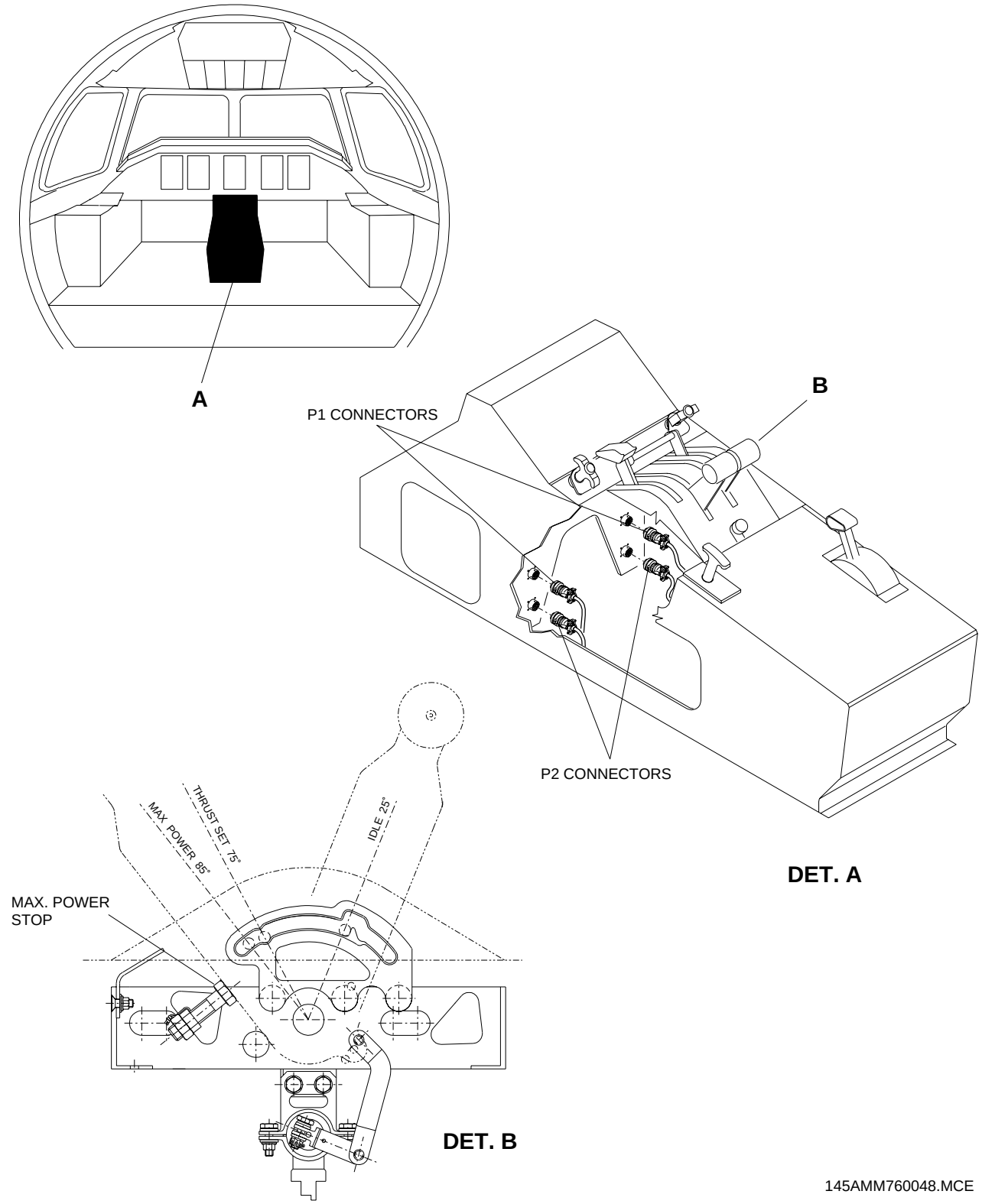
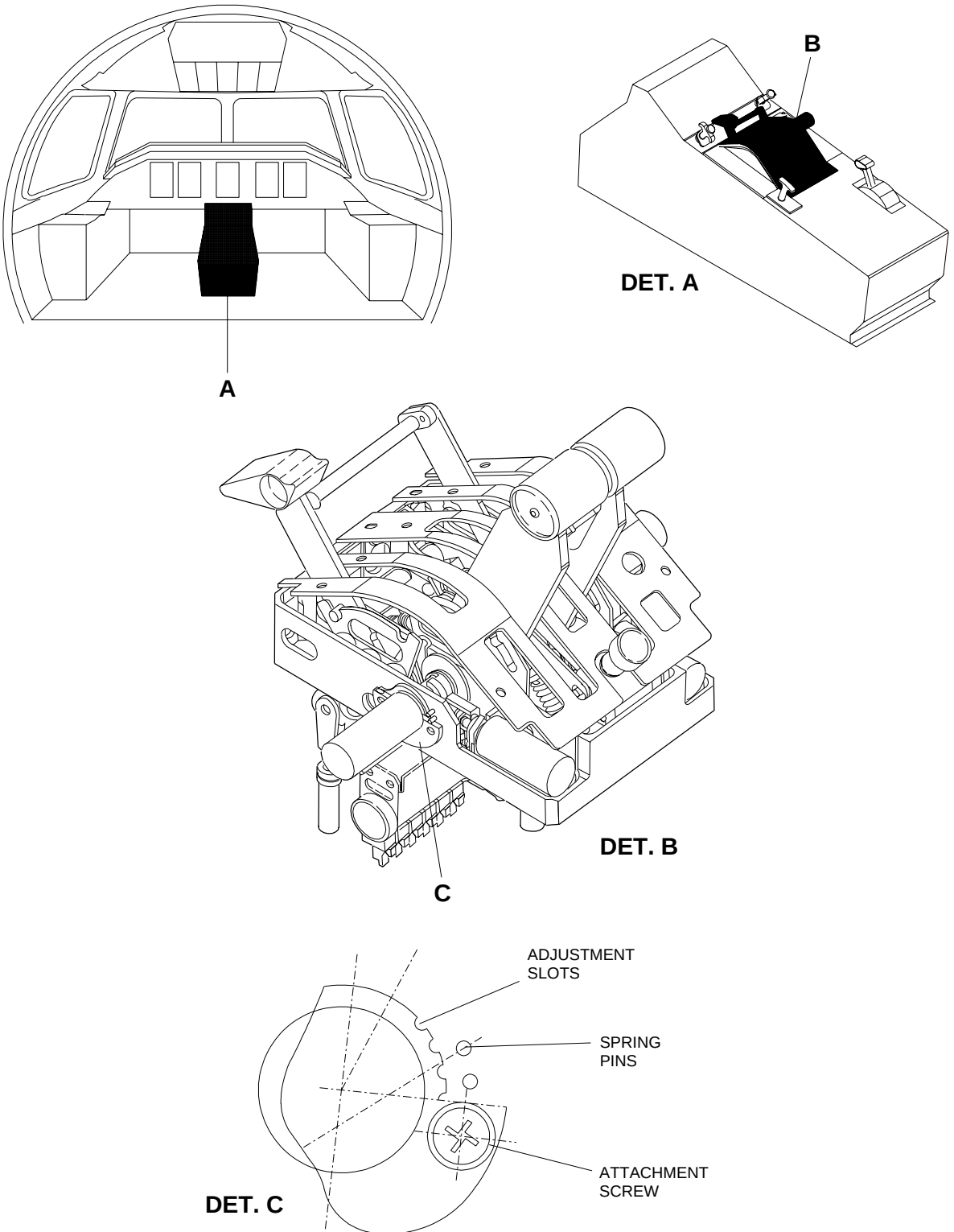
EFFECTIVITY: AIRCRAFT WITHOUT THRUST REVERSER
Thrust Lever Resolver - Component Locations
Figure 503



EFFECTIVITY: ALL

Thrust Lever Resolver - Component Locations
Figure 504



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TASK 76-12-01-820-801-A
EFFECTIVITY: ALL

3. THRUST LEVER RESOLVER - ADJUSTMENT PROCEDURES

A. General

(1) To get access to the FADEC discrete label, obey these instructions:

(a) For aircraft with -009 CMC, use Data Acquisition Software (DAS) GSE 211 or GSE 331 or GSE 505 or GSE 535.

(b) For aircraft with -010 CMC, use Data Acquisition Software (DAS) GSE 263 or GSE 331 or GSE 505 or GSE 535.

(c) For aircraft with -011 CMC, use Data Acquisition Software (DAS) GSE 331 or GSE 505 or GSE 535.

(d) For aircraft with -012 CMC, use Data Acquisition Software (DAS) GSE 505 or GSE 535.

(e) For aircraft with -013 CMC, use Data Acquisition Software (DAS) GSE 535, which is compatible with all the CMC versions available.

(2) Obey these instructions to adjust the thrust-lever resolver. The thrust-lever-resolver adjustment procedures include the mechanical-stop fine adjustments.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-03/100	- COMPONENT LOCATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-63-03-000-801-A/400	SPEED BRAKE COMMAND LEVER - REMOVAL
AMM TASK 27-63-03-400-801-A/400	SPEED BRAKE COMMAND LEVER - INSTALLATION
AMM TASK 76-11-01-000-801-A/400	CONTROL STAND ASSEMBLY - REMOVAL
AMM TASK 76-11-01-400-801-A/400	CONTROL STAND ASSEMBLY - INSTALLATION
AMM TASK 76-11-05-000-801-A/400	CONTROL STAND MASK - REMOVAL
AMM TASK 76-11-05-400-801-A/400	CONTROL STAND MASK - INSTALLATION
AMM TASK 78-33-01-980-801-A/200	ISOLATION CONTROL UNIT - INHIBITION PROCEDURES

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
223	223OZ	Control Pedestal
223	223NZ	Control Pedestal
223	223SZ	Control Pedestal
223	223RZ	Control Pedestal

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 130	Personal Computer	Downloading	
GSE 134	CMC/PC Interconnection Cable	To interconnect the PC and the CMC	
GSE 211	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 263	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 331	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 505	Data Acquisition Software (DAS)	To read the FADEC discrete label	
GSE 535	Data Acquisition Software (DAS)	To read the FADEC discrete label	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
01	Does the task	Cockpit

I. Preparation

SUBTASK 841-003-A

CAUTION: WHEN YOU DOWNLOAD OR READ THE FADEC DATA THROUGH THE CMC WITH A LAPTOP, THE CMC SWITCH, ON THE MAINTENANCE PANEL, MUST BE SET TO THE "INHIBIT" POSITION, AND THE MFD MUST NOT BE SET TO SHOW MAINTENANCE MESSAGES.

(1) Put the ICU in the "INHIBIT" position (AMM TASK 78-33-01-980-801-A/200).

WARNING: BEFORE YOU OPEN THE N2 CIRCUIT BREAKERS, MAKE SURE THAT THE SENSORS PITOT 1 - TAT 1/AOA 1, PITOT 3, AND PITOT 2 - TAT 2/AOA 2, ON THE OVERHEAD PANEL, ARE SET TO OFF. THIS IS TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE MATERIAL.

(2) (FOR AIRCRAFT WITHOUT THRUST REVERSER) On the circuit breaker panel, open these circuit breakers and attach DO-NOT-CLOSE tags to them:

– N2 SIGNAL - 1A/2A - 1B/2B

– HYD. ELEC. PUMP - 1/2

(3) (FOR AIRCRAFT WITH THRUST REVERSER) On the circuit breaker panel, open these circuit breakers and attach DO-NOT-CLOSE tags to them:

– N2 SIGNAL - 1A/2A - 1B/2B

– HYD. ELEC. PUMP - 1/2

– THRUST REVERSER - 1/2

(4) Remove access panels 223SZ and 223RZ (AMM MPP 06-41-03/100).

(5) Remove the control stand mask (AMM TASK 76-11-05-000-801-A/400).

(6) Remove the aileron-disconnect indication light from panel 223NZ, but do not disconnect the electrical connector (AMM TASK 76-11-01-000-801-A/400).

(7) NOTE: To do the step that follows, loosen the aileron-disconnect indication-light harness through access panel 223RZ.

Move access panel 223NZ to the right side of the control pedestal (AMM MPP 06-41-03/100).

(8) Remove the speed-brake command lever (AMM TASK 27-63-03-000-801-A/400).

(9) Remove the elevator-disconnect indication light from panel 223OZ, but do not disconnect the electrical connector (AMM TASK 76-11-01-000-801-A/400).

(10) NOTE: To do the step that follows, loosen the elevator-disconnect indication-light harness through access panel 223SZ.

Move access panel 223OZ to the left side of the control pedestal (AMM MPP 06-41-03/100).

(11) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(12) Put the CMC switch, on the maintenance panel, to the "INHIBIT" position, and make sure that the MFD is not set up to display maintenance messages.

J. Adjustment Procedures (Figure 501) (Figure 502) (Figure 503) (Figure 504)

SUBTASK 820-002-A

CAUTION:
- BEFORE YOU DISCONNECT OR CONNECT THE TLA RESOLVERS OR OTHER COMPONENT THAT INTERFACES WITH THE FADEC, YOU MUST OPEN THE RELATED FADEC CIRCUIT BREAKERS.
- AFTER THERE IS A FADEC CHANGE OR REPROGRAMMING, OR AN ENGINE CHANGE, YOU MUST OPEN/CLOSE THE FADEC CIRCUIT BREAKERS AND RESET THE FADECs TWO TIMES.

(1) Adjust the thrust lever resolver as follows:

(2) Through the interconnection cable (GSE 134), connect, to the maintenance panel, the laptop (GSE 130) with the DAS software installed.

(3) Deenergize the FADECs not related to the check.

(4) (For data acquisition software GSE 211 or GSE 263) On the DAS menu, select "DOWNLOAD", then select the applicable FADEC.

(5) (For data acquisition software GSE 331 or GSE 505 or GSE 535) On the DAS menu, select the "FADEC LABELS" icon, then select the applicable FADEC.

(6) Select "ANALOG" and the TLA must be read on the screen, in the TLA area.

(7) Put the thrust lever in the "IDLE STOP" position.

(8) Release the two resolver attachment screws.

(9) Put a screwdriver in the adjustment slot and turn each resolver until you have a TLA reading of 25.0 ± 0.5 degrees.

NOTE: Use the spring pins as a support for the screwdriver.

(10) Carefully tighten the resolver attachment screws. Read and write the TLA values.

(11) (FOR AIRCRAFT WITH THRUST REVERSER) Put the thrust levers at the maximum reverse stop and read the applicable value of TLA through FADECs 1A, 1B, 2A, and 2B.

(12) (FOR AIRCRAFT WITH THRUST REVERSER) Adjust each bolt of the maximum-reverse mechanical stop to a resolver reading of 2.0 ± 0.5 degrees.

NOTE: The minimum permitted value of the thrust lever is 0 degrees, but the adjustment value is 2.0 ± 0.5 degrees.

(13) Put the thrust levers at the maximum forward thrust stop and read the applicable value of TLA through FADECs 1A, 1B, 2A, and 2B.

(14) If necessary, cut the lockwire and adjust each maximum-forward-thrust mechanical stop to a resolver reading of 82.0 ± 0.5 degrees.

NOTE: The maximum permitted value of the thrust lever is 85 degrees, but the adjustment value is 82.0 ± 0.5 degrees.

(15) Tighten the screw with the nut and safety the nut.

(16) Get out of the program and turn off the laptop.

(17) Disconnect, from the maintenance panel, the interconnection cable (GSE 134) and the laptop (GSE 130) with the DAS software installed.

K. Follow-on

SUBTASK 842-003-A

(1) Move the CMC switch back to the "NORMAL" (center) position on the maintenance panel.

(2) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(3) Install access panel 223OZ (AMM MPP 06-41-03/100).

(4) Install the elevator-disconnect indication light to panel 223OZ (AMM TASK 76-11-01-400-801-A/400).

(5) Install the speed-brake command lever (AMM TASK 27-63-03-400-801-A/400).

(6) Install access panel 223NZ (AMM MPP 06-41-03/100).

(7) Install the aileron-disconnect indication light to panel 223NZ (AMM TASK 76-11-01-400-801-A/400).

(8) Install the control stand mask (AMM TASK 76-11-05-400-801-A/400).

(9) Install access panels 223SZ and 223RZ (AMM MPP 06-41-03/100).

(10) (FOR AIRCRAFT WITHOUT THRUST REVERSER) On the circuit breaker panel, remove the DO-NOT-CLOSE tags and close these circuit breakers:

- N2 SIGNAL - 1A/2A - 1B/2B
- HYD. ELEC. PUMP - 1/2

(11) (FOR AIRCRAFT WITH THRUST REVERSER) On the circuit breaker panel, remove the DO-NOT-CLOSE tags and close these circuit breakers:

- N2 SIGNAL - 1A/2A - 1B/2B
- HYD. ELEC. PUMP - 1/2
- THRUST REVERSER - 1/2

(12) Put the ICU in the "DE-INHIBIT" position (AMM TASK 78-33-01-980-801-A/200).