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B727-2735A 01/84
Sheet 1 of 12 OPR565
AIRCRAFT NO. _____
STATION _____
DATE _____

REASON FOR RIGGING _____

B-727 ELEVATOR AND ELEVATOR TAB CONTROL SYSTEM ADJUSTMENT/TEST (EAL)

[redacted] [redacted]

1. General

A. The procedures in this form are for the adjustment of the entire Elevator and Elevator Tab System. Specific segments of the system may be adjusted by performing the procedures called out in the "Rigging Check Required Table." When portions of this procedure are accomplished, the applicable items of "Safety Check," paragraph 16, must also be accomplished and signed for. Items not required by the "Rigging Check Required Table" may be voided by a supervisor.

B. The Elevator and Elevator Tab Systems can be rigged with the airplane either on jacks or on the landing gear.

C. The following WARNINGS must be adhered to whenever work is performed on the Elevator and Elevator Tab System.

WARNING: PRESSURIZING HYDRAULIC SYSTEMS WILL SUPPLY POWER TO AILERON, RUDDER, ELEVATOR, SPOILER, SPEED BRAKE, TRAILING EDGE, AND LEADING EDGE FLAP SYSTEMS.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, MAKE CERTAIN THAT CONTROLS ARE IN CORRECT POSITION AND SYSTEMS NOT BEING TESTED ARE ISOLATED AND TAGGED TO PREVENT INJURY TO PERSONNEL OR DAMAGE TO AIRPLANE AND EQUIPMENT.

D. When a new cable has been installed the cable should be adjusted, unless otherwise specified in the appropriate maintenance manual, to twice the tension called for in the cable tension charts. The system should then be cycled several times and the cable tension readjusted to conform to the tension called for in the cable tension charts.

E. Certain Components/Units in ATA 27 system are Rquired Inspection Items (RII). Refer to Engineering and Maintenance General Manual, Chapter 7-60-2 for details.

RIGGING CHECK REQUIRED TABLE

Component	Rigging Check Required
Elevator Control Cables - EAL, EBL, EAR, EBR	Para. 5, 9, 16
Elevators - Elevator Power Control Package	Para. 6, 7, 10, 14, 16
Stabilizer Actuated Elevator - Trim Control	Para. 3, 11, 14, 16
Elevator Feel Computer	Para. 8*, 12, 13, 15, 16
Elevator Control Linkage	Para. 3, 4, 7, 10, 11, 14, 16
Elevator Tab Control Linkage	Para. 6, 7, 9, 16
Elevator Aft Control Quadrant	Para. 3, 4, 5, 9, 10, 11, 12, 14, 16
Elevator Control Tabs	Para. 6, 10, 16
Elevator Feel Control Unit	Para. 3, 11, 14, 16

*If safety pin seal has been broken prior to accomplishing para. 8, additional testing must be accomplished per MM 27-30-0, Adjustment/Test--Test Feel Force System and Autopilot Authority.

2. Equipment and Material

A. Tensiometer--0 to 320 pounds capacity.
B. Source of Air pressure capable of delivering a maximum of 5.00 PSIG.
C. Protractors--Elevator and Control Tab--MIT 65-72781-1 and -2, or equivalent.

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3. Check Adjustment of Stabilizer Actuated Trim Mechanism A. With the elevator hydraulic systems A and B depressurized, stabilizer C dimension at 25.98 (± 0.10) inches and the feel control unit contacting the stop, check that the gap between the stabilizer roller and surface of stabilizer trim cam is as shown in detail A, figure 502. If adjustment is required, check here ◯ and proceed as follows: 1) With hydraulic systems A and B depressurized, stabilizer C dimension at 25.98 (± 0.10) inches and feel control unit contacting the stop, adjust feel control unit rod (6), as required, to obtain dimension as shown in detail A, figure 502. 2) Tighten feel control unit rod check nuts.		XXX
3) Accomplish Para. 14.		XXX
4. Check Adjustment of Elevator Control System Linkage A. With elevator hydraulic systems A and B depressurized and stabilizer C dimension at 12.91 (± 0.10) inches, check that rig pins No. 1 and No. 2 fit freely in outboard cranks (6, figure 503). If adjustment is required, check here and proceed as follows: 1) With elevator hydraulic systems A and B depressurized and stabilizer C dimension set at 12.91 (± 0.10) inches, lightly jiggle aft elevator quadrant to ensure quadrant is centered and check that feel control unit still contacts stop (8, figure 502). 2) Adjust left and/or right inboard control rod, as required, so both No. 1 and No. 2 rig pins fit freely. Note: A maximum of 14 threads may be visible beyond checknut after adjustment. 3) Safety inboard control rod bolts and tighten checknuts.		XXX
5. Check Adjustment of Elevator Control Cables EA/EB A. With elevator hydraulic systems A and B depressurized, stabilizer C dimension at 12.91 (± 0.10) inches and rig pins No. 1 and No. 2 installed in outboard cranks (6, figure 503), check that rig pin No. 5 fits freely in left forward control quadrant (figure 503), and that cable tension is within limits. If adjustment is required, check here ◯ and proceed as follows:		XXX

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1) With hydraulic systems A and B depressurized, stabilizer C dimension at 12.91 (± 0.10) inches and rig pins No. 1 and No. 2 installed in outboard cranks, adjust EA/EB cables to proper tension and differentially adjust turnbarrels to allow rig pin No. 5 to be inserted freely. 2) Safety turnbarrels. 3) Check to ensure feel control unit contacts its stop.		XXX
6. Check Adjustment Tab Linkage A. With elevator hydraulic systems A and B depressurized, stabilizer C dimension at 12.91 (± 0.10) inches and rig pins No. 3 and No. 4 installed in idler link (figure 503), position elevator at zero degrees and check that tab is aligned with elevator, at tab trailing edge within ± 0.04 inch or ± 0.35 degree. If adjustment is required, check here ○ and proceed as follows: 1) With hydraulic systems A and B depressurized, stabilizer C dimension at 12.91 (± 0.10) inches and rig pins No. 3 and No. 4 installed in idler link, position elevator at zero degrees. Adjust aft control tab pushrod until control tab is aligned with elevator, at tab trailing edge, within ± 0.04 inch or ± 0.35 degree. 2) Tighten aft control tab pushrod checknuts, and safety.		XXX
7. Check Adjustment of Power Control Package A. With elevator hydraulic systems A and B pressurized, stabilizer C dimension at 12.91 (± 0.10) inches and rig pins No. 1 and No. 2 installed in outboard cranks (6, figure 503), make the following checks: 1) The elevator is 0.80 (± 0.10) degrees down from stabilizer chord plane on -100 aircraft or 1.65 (± 0.10) degrees down from stabilizer chord plane on -200 aircraft. If adjustment is required, check here ○ and adjust power control package input rod (7, figure 503) to meet the above requirements. CAUTION: HYDRAULIC SYSTEMS MUST BE DEPRESSURIZED WHENEVER THE INPUT ROD IS DISCONNECTED FROM THE POWER CONTROL PACKAGE. Note: Use fine adjustment (sleeve only) for deviations less than 1.3 degrees or course adjustment (sleeve and rod end) for deviation of more than 1.3 degrees. Note: A maximum of 14 threads may be visible beyond the checknuts on the sleeve and rod end.		XXX

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2) The tab is 0.25 (± 0.30) degree up on -100 aircraft or the tab is 0.50 (± 0.30) degree up on -200 aircraft. If adjustment is required, check here ◯ and adjust forward control tab pushrod (9, figure 503) to meet the above requirements. Note: Install pushrod bolt with head to left. 3) Tighten input rod and forward control tab pushrod checknuts.		XXX
8. Check Adjustment of Elevator Feel Computer A. Check that safety pin is installed and safety wire is sealed in computer rig pin holes. Note: Accomplish this step only when a feel control unit has been removed/installed or replaced. 1) If safety pin seal has been broken prior to accomplishing this step, check here ◯ and perform additional testing per MM 27-30-0, Adjustment/Test (Test Feel Force System and Autopilot Authority).		
B. With elevator hydraulic systems A and B depressurized and stabilizer C dimension at 19.81 (± 0.01) inches, check that rig pin No. 6 fits freely in computer input crank (figure 504). If adjustment is required, check here ◯ and proceed as follows: 1) With elevator hydraulic systems A and B depressurized and stabilizer C dimension at 19.81 (± 0.01) inches, disconnect input rod at the adjustable end, install rig pin No. 6 in the computer input crank, and adjust rod until bolt hole is aligned to nearest 1/2 turn of rod end. 2) Remove rig pin and connect input rod. 3) Tighten input rod checknut.		XXX
9. Test Manual Mode Operation A. With elevator hydraulic systems A and B depressurized and stabilizer jackscrew upper stops in contact, operate control column through full travel and check for smooth operation with no binding. B. Move control column aft until column stops are contacted. Check that elevator moves up 15 (± 1.5) degrees and tab moves down 22 (± 1) degrees on -100 aircraft or that elevator moves up 14.25 (± 1.5) degrees and tab moves down 21.75 (± 1) degrees on -200 aircraft. NOTE: During manual mode, a hand assist may be required to obtain the desired control surface position. If after the assist, the control surface maintains the required position, the test requirement has been satisfied.		

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C. Move control column forward until column stops are contacted. Check that elevator moves down 11 (± 1.5) degrees and tab moves up 14 (± 1) degrees on -100 aircraft or that elevator moves down 11.75 (± 1.5) degrees and tab moves up 14.25 (± 1) degrees on -200 aircraft.		
10. Test Power Mode Operation A. With elevator hydraulic systems A and B pressurized and stabilizer jackscrew C dimension 21.32 (± 0.10) inches, operate control column through full travel and check for smooth operation with no binding. B. Move control column forward approximately 2 degrees and release. Check that elevator is down 0.80 (± 0.30) degree and tab is up 0.25 (± 0.30) degree on -100 aircraft or that elevator is down 1.65 (± 0.30) degree and tab is up 0.50 (± 0.30) degree on -200 aircraft. Note: If the requirements of paragraphs 10A and/or 10B cannot be met, accomplish Friction Test per MM 27-30-0, par. 4, Test Elevator Surface Friction and Surface Balance. C. Move control column aft approximately 2 degrees and release. Check that elevator is down 0.80 (± 0.30) degree and tab is up 0.25 (± 0.30) degree on -100 aircraft or that elevator is down 1.65 (± 0.30) degree and tab is up 0.50 (± 0.30) degree on -200 aircraft. D. Move control column aft until column stops are contacted. Check that elevator is up 25 (+ 1.75/-0.75) degrees and tab is down 9.25 (+ 1/-0.50) degrees. E. Move control column forward until column stops are contacted. Check that elevator is down 17 (± 0.75) degrees and tab is up 6 (± 0.50) degrees. F. Repeat steps D & E using only "A" system hydraulics, then "B" system.		
11. Test Stabilizer Actuated Elevator Trim Mechanism A. With elevator hydraulic systems A and B pressurized and stabilizer C dimension at 4.52 (± 0.10) inches, pressurize both feel force Q systems to 5.00 (± 0.10) PSI. CAUTION: PRESSURE OVER 6 PSI MAY DAMAGE COMPUTER. B. Jiggle control column to center system and check that elevators are up 3.00 (± 0.75) degrees on -100 aircraft or that elevators are up 2.25 (± 0.75) degrees on -200 aircraft. C. Remove pressure from both feel force Q systems.		

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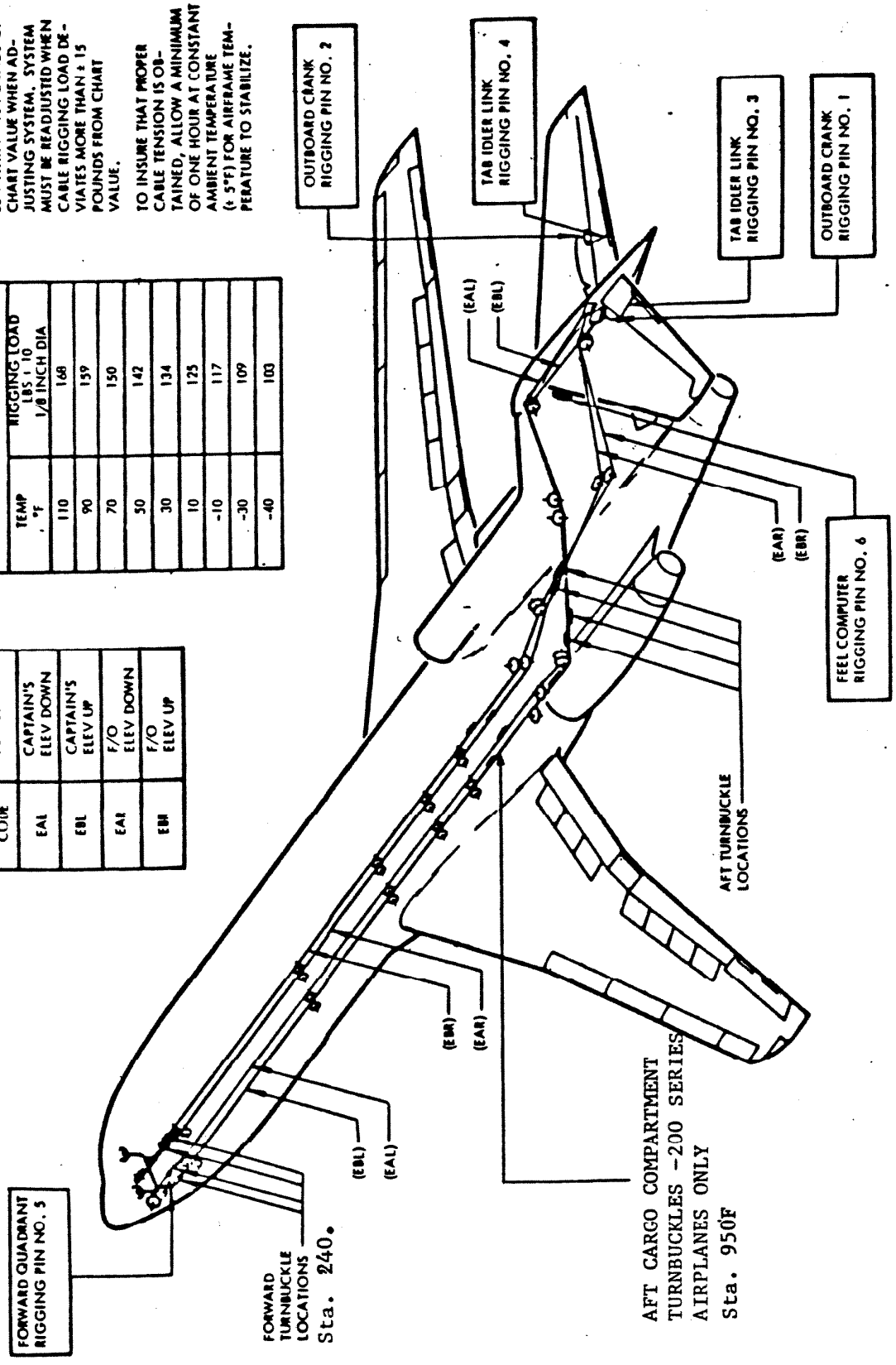
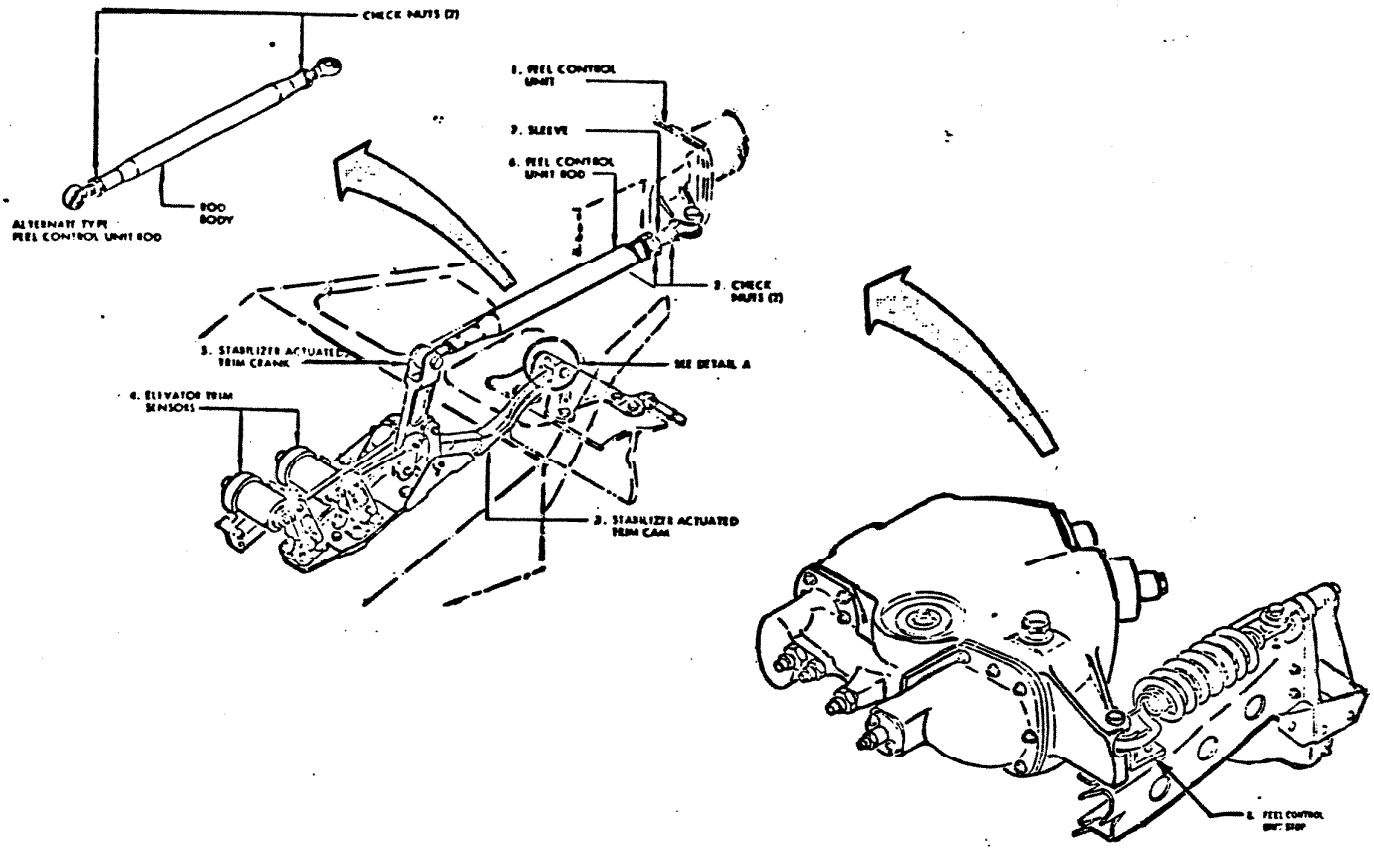
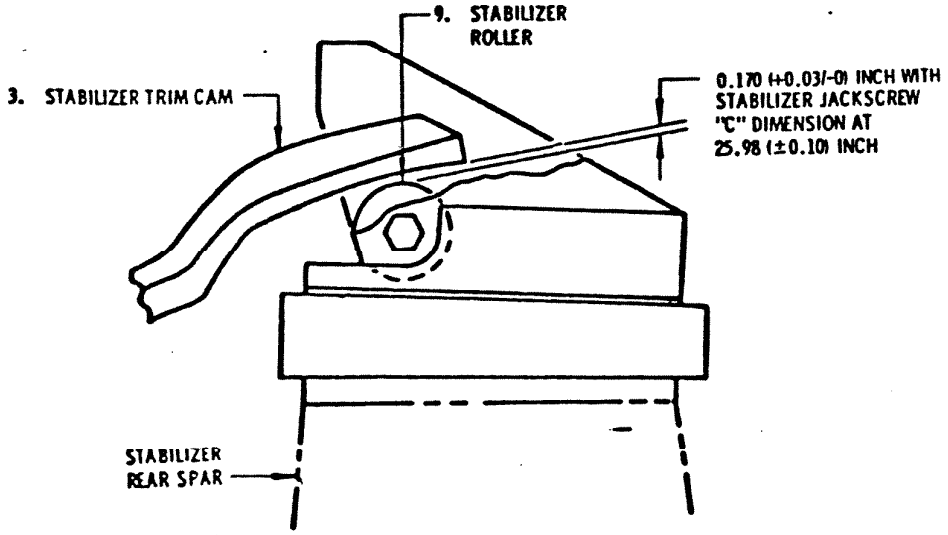
12. Test Differential Pressure Sensing Switch A. Position switch for elevator hydraulic system A to ON and switch elevator hydraulic system B to OFF. Check that elevator feel differential hydraulic pressure light on S/O lower panel illuminates. B. Position switch for elevator hydraulic system B to ON and switch elevator hydraulic system A to OFF. Check that elevator feel differential hydraulic pressure light on S/O lower panel illuminates. C. Position switches for elevator hydraulic systems A and B to ON. Check that elevator feel differential hydraulic pressure light goes out. D. Operate control column through full cycle in 3 seconds. Elevator feel light may momentarily illuminate. Check that it does not remain illuminated for more than one second and that it is not illuminated after column has stopped moving. E. Operate control column through full cycle in 8 seconds. Check that elevator feel light does not illuminate.		XXX
13. Test Feel Pitot System for Leakage A. Seal drain hole in systems A and B pitot heads located on fin and drain hole in trap of tubing inboard of pitot heads (if installed). B. Attach regulated air pressure lines to both pitot heads and pressurize pitot system to 5.00 PSI (436.95 knots). CAUTION: PRESSURE ABOVE 6 PSI (474.15 knots) MAY DAMAGE COMPUTER. C. Shut off pressure source. Pressure must not drop more than 0.30 PSI (12 knots) within a 2-minute period. D. Remove seals installed in step A.		XXX
14. Check Adjustment of Elevator Position Sensors per Maintenance Manual, Chapter 22-11-71.		XXX
15. Test Stabilizer Trim Potentiometer per Maintenance Manual, Chapter 22-11-61.		XXX

16. Safety Check	ACC. BY	CKD. BY
A. Check left and right inboard control rod for installation and safety.		
B. Check cables EBL-EAL-EBR-EAR in fuselage for safety of turnbuckles.		
C. Check power package input rod for installation and safety.		
D. Check forward tab control rod for installation and safety.		
E. Check aft tab pushrod bolt for installation and safety.		
F. Check computer input rod and crank for installation and safety.		
G. Check feel control unit rod for installation and safety.		
H. Remove all rigging pins.		
J. Check that rigging fixtures are removed and screws are installed.		
K. Close all access panels opened.		



ELEVATOR CONTROL SYSTEM
Figure 501

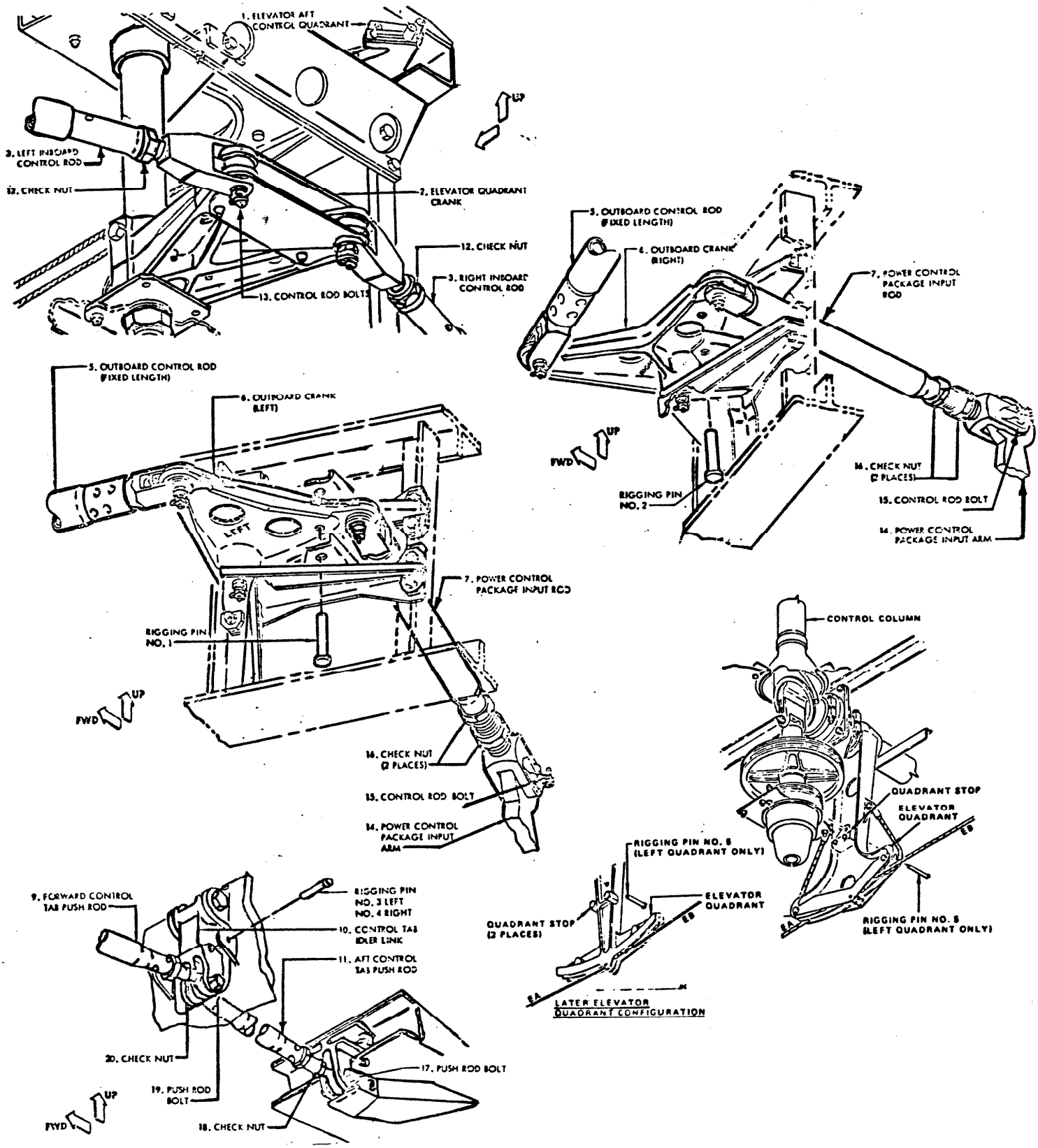




DETAIL A

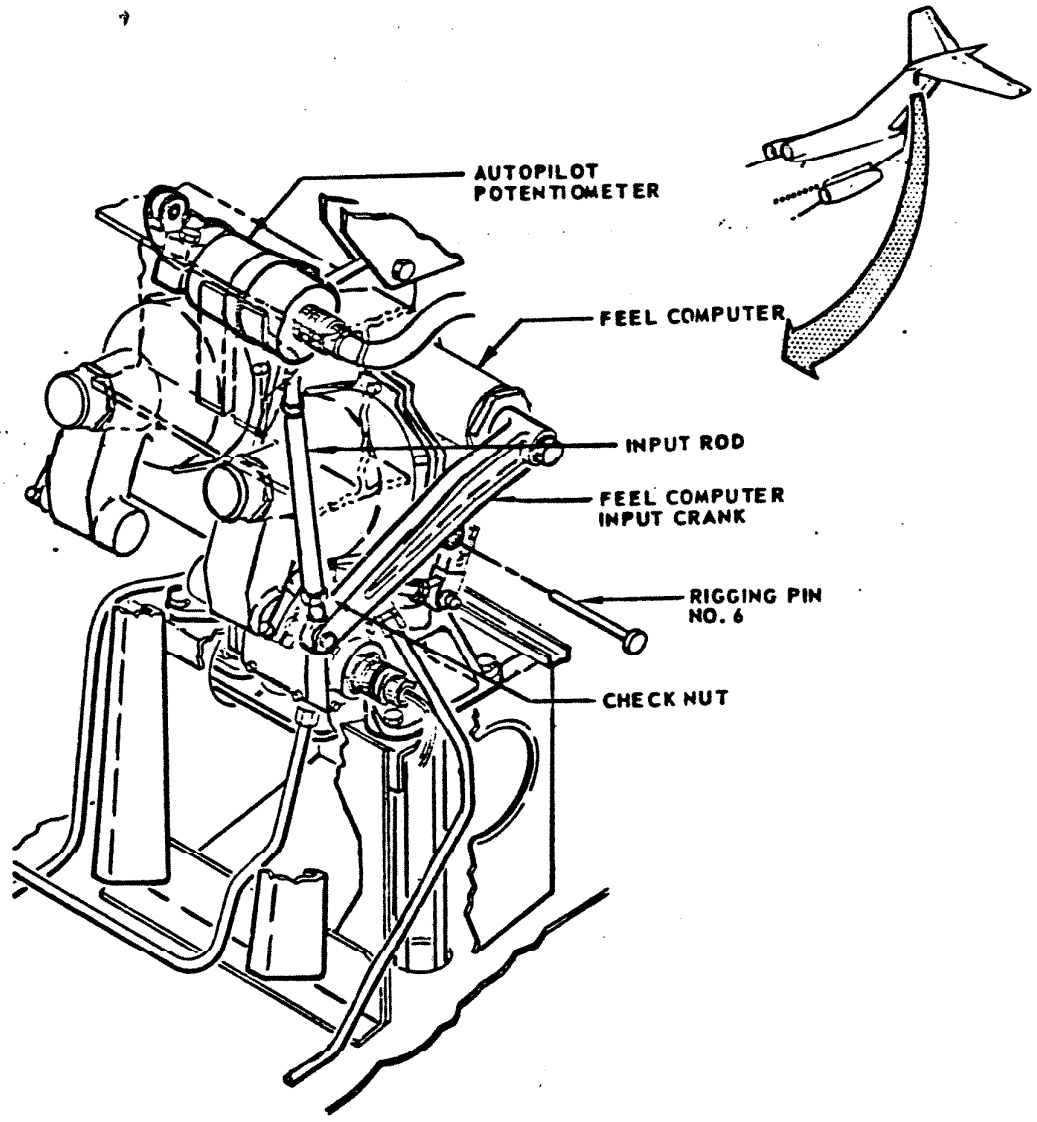
STABILIZER ACTUATED ELEVATOR TRIM MECHANISM

FIG. 502



ELEVATOR CONTROL SYSTEM LINKAGES

FIG. 502



ELEVATOR FEEL COMPUTER

FIG. 504