

RUDDER ACTUATORS - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

- A. This section gives the procedure to adjust the rudder actuators and to do a check on the rudder actuator for leakage.
- 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
27-22-02-700-801-A	ADJUSTMENT OF THE RUDDER ACTUATORS	ALL
27-22-02-700-802-A	CHECK OF THE RUDDER ACTUATORS FOR LEAKAGE	ALL

TASK 27-22-02-700-801-A

EFFECTIVITY: ALL

2. ADJUSTMENT OF THE RUDDER ACTUATORS

A. General

- (1) This task gives the procedure to adjust the rudder actuator stroke related to the rudder I deflection.
- (2) Do this task only if it is necessary to replace an actuator ([AMM TASK 27-22-02-400-801-A/400](#)).
- (3) [Figure 501](#) gives the rudder actuator locations.
- (4) [Figure 502](#) gives the protractor installation.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM MPP 06-41-03/100	- COMPONENT LOCATION
AMM MPP 06-42-00/100	-
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 27-22-02-400-801-A/400	RUDDER ACTUATOR - INSTALLATION
AMM TASK 27-23-00-700-804-A/500	RUDDER SYSTEM - OPERATIONAL CHECK
AMM TASK 29-10-00-860-801-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH HTS
IPC 27-22-00	RUDDER HYDRAULIC ACTUATION

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Area below the cockpit floor - LH
223	223HZ	Cockpit
224	224HZ	Cockpit
312	312AR	Empennage
325	325AL	Empennage

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 036	Platform, Hydraulic, Aircraft	To get access to the rudder	
GSE 044	Headset, ramp handling	Communication	
GSE 059	Protractor, control surface deflection	To measure the rudder deflection	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Screw, NASM(MS)24694-6 (or similar with #8-32UNC thread, 19/32 in. length)	To attach the base of GSE-059 to the air-craft	1

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MS20995C32	Lockwire	AR
Commercially available	Double-face adhesive-tape	AR

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Cotter pin	IPC 27-22-00	2

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Rudder
1	Helps the other technician	Cockpit

I. Preparation

SUBTASK 841-002-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Do not do other tasks on the rudder system.
- (3) Release the pressure of the hydraulic system ([AMM TASK 29-10-00-860-801-A/200](#)).
- (4) Remove panels 223HZ and 224HZ ([AMM MPP 06-41-03/100](#)) and make sure that the rudder pedals are free to move from the right backstop to the left backstop.
- (5) Open panels 123BL (AMM MPP 06-41-01/100), 312AR (AMM MPP 06-42-00/100) and 325AL (AMM MPP 06-42-00/100) and make sure that there are no rig pins installed in the forward rudder torque tube, rear fuselage torque tube, and rudder power control unit.
- (6) Make sure that the rudder is in the neutral position item J.(1) of ([AMM TASK 27-23-00-700-804-A/500](#)).

J. Adjustment of the Rudder Actuator ([Figure 501](#))

SUBTASK 720-002-A

WARNING: • THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.

- MAKE SURE THAT THERE ARE NO PERSONS OR OBJECTS IN THE RUDDER TRAVEL AREA.

- (1) Install the protractor, with screw NASM(MS)24694-6 or with a double face adhesive tape, to the fin/rudder I and set it to zero ([Figure 502](#)).

CAUTION: BE CAREFUL NO TO CAUSE DAMAGE TO THE PIN LOCK-RIGHT AND PIN LOCK-LEFT.

- (2) Remove the lower rudder feedback rod. See ([Figure 501](#)).
- (3) With the hands, move the rudder I surface to the left and to the right, as far as the actuator backstop, and make sure that there is no interference between the fin and rudder I.

- (4) EFFECTIVITY: ON AIRCRAFT WITH RUDDER ACTUATOR UP TO PN-360340-1005

Do a check of the rudder I deflection.

- If the deflection is not between 16.5 degrees and 18 degrees on each side, do the procedure that follows:

- (a) Disconnect the actuator from rudder I and remove the lockwire from the rod end.
- (b) Turn the actuator rod end to the left or to the right to get a deflection from 16.5 degrees to 18 degrees on each side.
- (c) Connect the actuator rudder I ([AMM TASK 27-22-02-400-801-A/400](#)). Do not install the cotter pin.
- (d) Do a check of the rudder I deflection. Do this step again until you get a deflection from 16.5 degrees to 18 degrees on each side.

- If you do not get a deflection between 16.5 degrees and 18 degrees on each side, install a new actuator ([AMM TASK 27-22-02-400-801-A/400](#)).

- (e) Do steps a thru d again for the new actuator.

- (5) EFFECTIVITY: ON AIRCRAFT WITH RUDDER ACTUATOR PN-360340-1007

Do a check of the rudder I deflection.

- If the deflection is not 11.25 degrees \pm 0.25 degrees on each side, do the procedure that follows:

- (a) Disconnect the actuator from rudder I and remove the lockwire from the rod end.

- (b) Turn the actuator rod end to the left or to the right to get a deflection of 11.25 degrees \pm 0.25 degrees on each side.
- (c) Connect the actuator rudder I ([AMM TASK 27-22-02-400-801-A/400](#)). Do not install the cotter pin.
- (d) Do a check of the rudder I deflection. Do this step again until you get a deflection of 11.25 degrees \pm 0.25 degrees on each side.
 - If you do not get a deflection of 11.25 degrees \pm 0.25 degrees on each side, install a new actuator ([AMM TASK 27-22-02-400-801-A/400](#)).
- (e) Do steps a thru d again for the new actuator.
- (6) Install the cotter pin.

K. Follow-on

SUBTASK 842-002-A

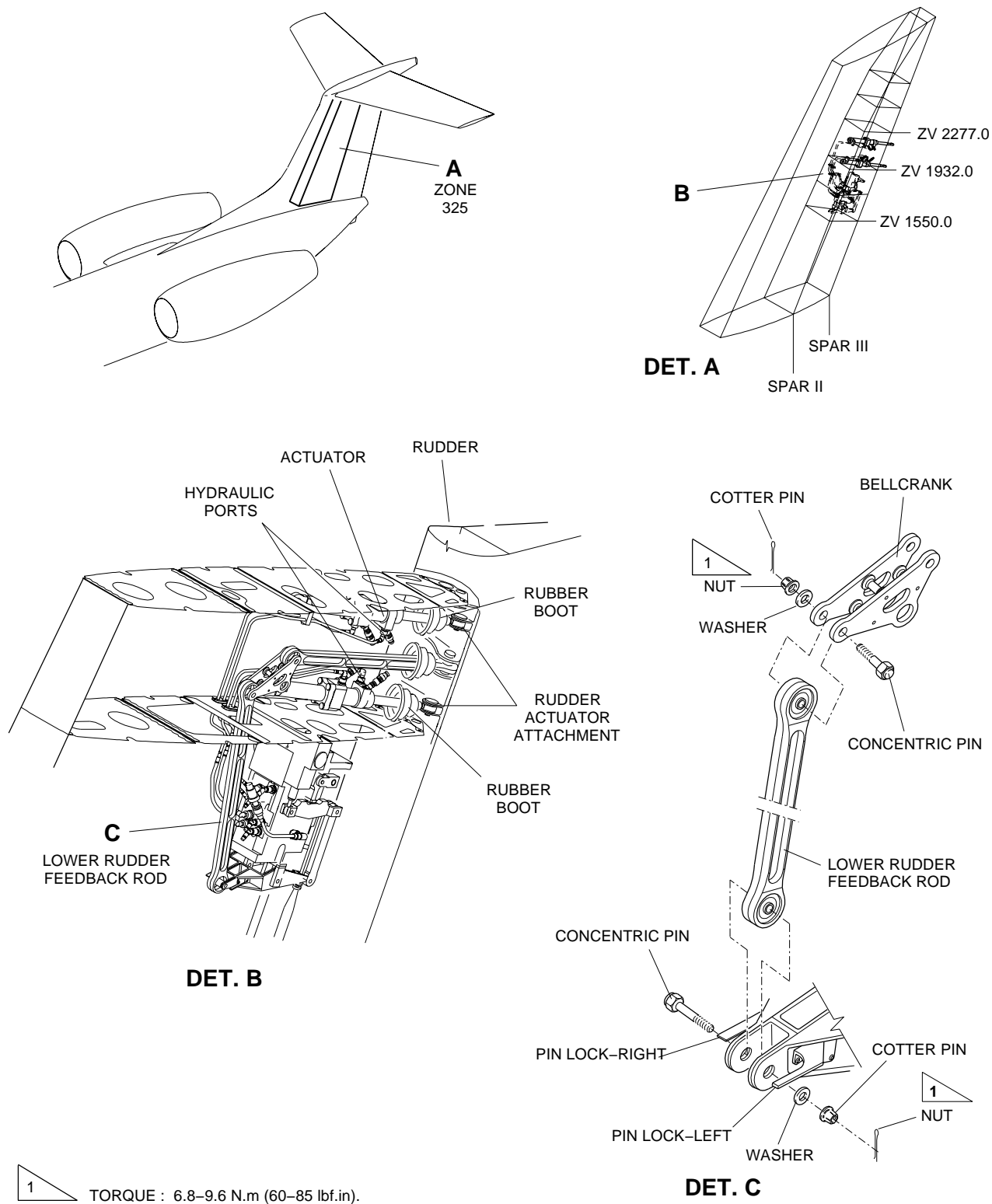
CAUTION: BE CAREFUL NO TO CAUSE DAMAGE TO THE PIN LOCK-RIGHT AND PIN LOCK-LEFT.

- (1) Install the lower rudder feedback rod. Refer to ([Figure 501](#)).
- (2) Remove the protractor.
- (3) Close all access panels.
- (4) Do the adjustment of the rudder neutral position and deflections ([AMM TASK 27-20-00-700-801-A/500](#)) as applicable.

EFFECTIVITY: ALL

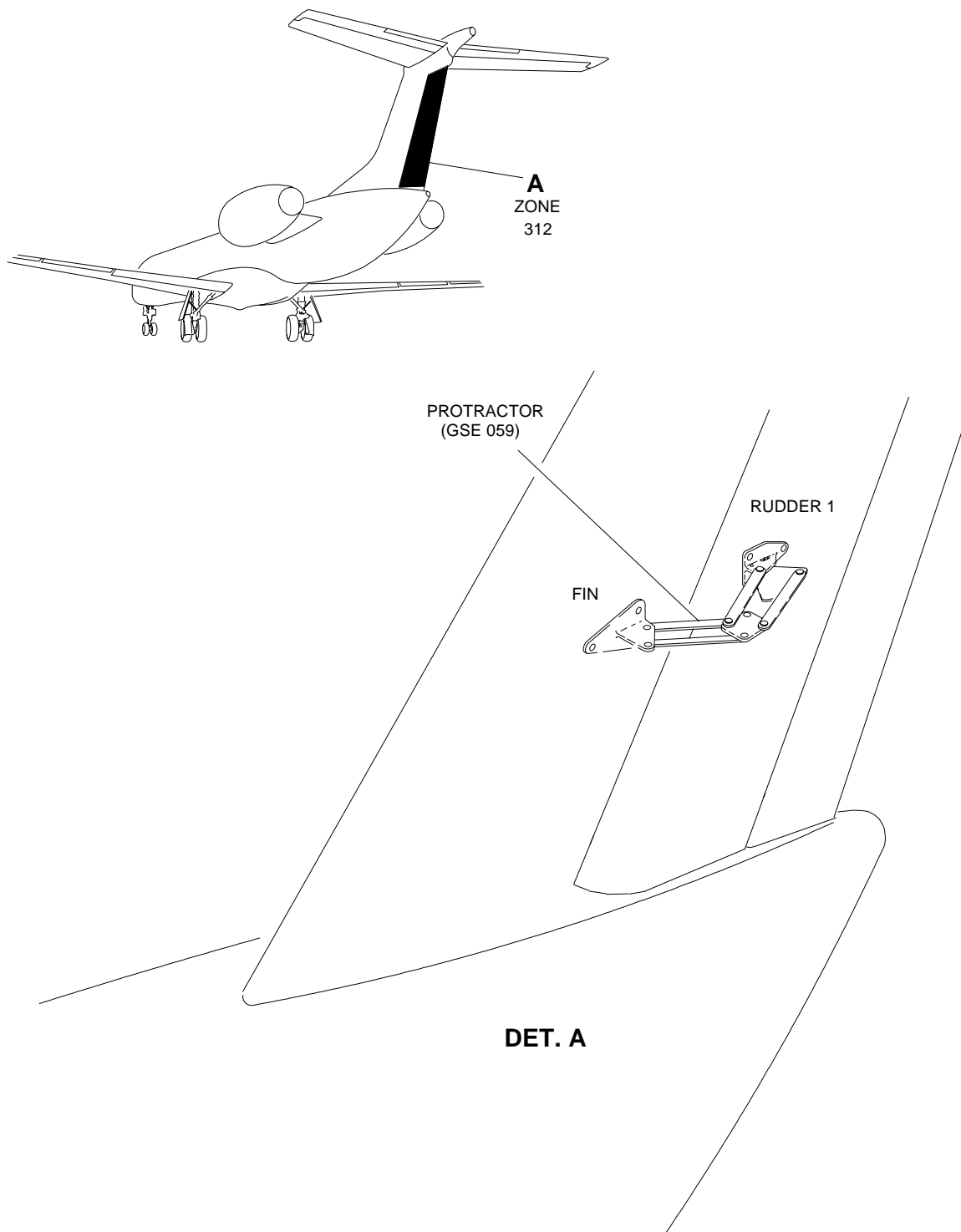
Lower Rudder Feedback Rod - Location

Figure 501



EM145AMM270367D.DGN

EFFECTIVITY: ALL
Protractor - Installation
Figure 502



EM145AMM270266C.DGN

TASK 27-22-02-700-802-A

EFFECTIVITY: ALL

3. CHECK OF THE RUDDER ACTUATORS FOR LEAKAGE

A. General

- (1) This task gives the procedures to do a check on the rudder actuators for leakage.
- (2) [Figure 503](#) gives the dynamic seal locations.
- (3) There are two actuators in the rudder system. Refer to (Figure 501).
- (4) [Figure 503](#) shows the rudder-actuator dynamic seal.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-42-00/100	-
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 29-10-00-860-801-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH HTS

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
325	325CL	Empennage
325	325JR	Empennage

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 036	Platform, Hydraulic, Aircraft	To get access to the vertical stabilizer	
GSE 044	Headset, ramp handling	Communication	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Rudder
1	Helps the other technician	Cockpit

I. Preparation

SUBTASK 841-003-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Do not do other tasks on the rudder system.
- (3) Get access to the vertical stabilizer.
- (4) Remove access panels 325CL and 325JR (AMM MPP 06-42-00/100).
- (5) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)).
- (6) Pressurize the hydraulic system ([AMM TASK 29-10-00-860-801-A/200](#)).

J. Check of the Rudder Actuators for Leakage ([Figure 503](#))

SUBTASK 720-003-A

- WARNING:**
- **MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE RUDDER TRAVEL AREA.**
 - **THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.**

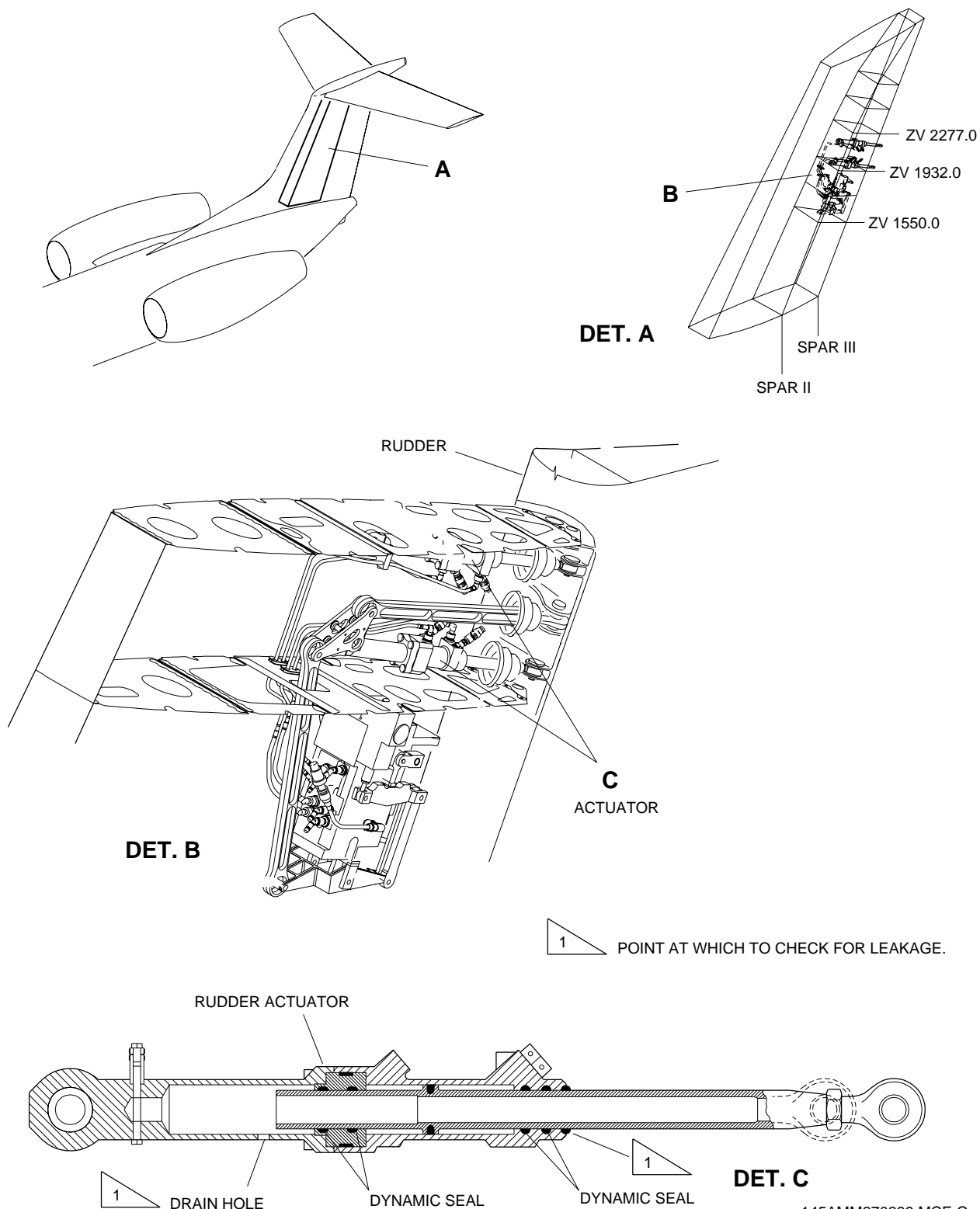
- (1) With the pedals, control the rudder fully to the right and fully to the left 25 times.
- (2) The maximum leakage at each rudder actuator dynamic seal is 2 (two) drops at each 25 cycles. Refer to ([Figure 503](#)).
- (3) If the leakage at each dynamic seal is more than 2 (two) drops, replace the actuator.

K. Follow-on

SUBTASK 842-003-A

- (1) Release the pressure from the hydraulic system ([AMM TASK 29-10-00-860-801-A/200](#)).
- (2) Deenergize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).
- (3) Install access panels 325CL and 325JR (AMM MPP 06-42-00/100).
- (4) Remove hydraulic platform GSE 036.

EFFECTIVITY: ALL
Dynamic Seals - Location
Figure 503



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