

**THIS BULLETIN DOES NOT CHANGE AIRCRAFT TYPE DESIGN**

SUBJECT: Mooney M20U and M20V Aircraft Flight Control Balancing After Paint

MODELS/ SN **M20U** - S/N 32-0001, 32-0003, 32-0008
AFFECTED: **M20V** - S/N 33-0004, 33-0006, 33-0007, 33-0009

TIME OF **Before Next Flight**
COMPLIANCE:

INTRODUCTION: Mooney International Corporation discovered after final paint was completed by an outside vendor, the Flight Control Surfaces were not properly balanced per Mooney Specifications. Mooney Engineering has determined that the aircraft listed will need to have the specified control surfaces removed and balanced per Mooney specifications found in the applicable Service and Maintenance Manual. If any Control Surface is found to be out of specifications, you will need to contact Mooney Product Support at support@mooney.com or 830-792-2919 for further action.

INSTRUCTIONS: **Read entire procedures before beginning work.**

NOTE:

All work to be done in accordance with FAA AC43.13.

NOTE:

Record ALL Surface Rigging Values before removing components. Run trim wheel up, all the way to the stop before removing components.

- CAUTION -

DO NOT move control surfaces to extreme angles. Be gentle with tabs and do not bend them.

1.0 AILERON REMOVAL/INSTALLATION - Refer to Figure SIM20-335-1

- 1.1. Turn the Master Switch off, and place aircraft on jacks per applicable Service and Maintenance Manual.
- 1.2. Only on Ovation (M20U), remove screws mounting outboard plastic flap hinge fairings.
- 1.3. Remove control tube attaching Bolt AN4-11, Nut MS17825-4, Washer NAS1149F0432P and Cotter Pin AN380-2-2 at aileron horn, refer to **Figure SIM20-335-1**.
- 1.4. Carefully remove bolts, nuts and washers from the three attaching hinges, note each hinge hardware on Aileron Hinge Zone chart(s) **LH Figure SIM20-335-4** and **RH Figure SIM20-335-5**. It will be necessary to remove screws MS51861-24 and aluminum fairing 230018-501 to gain access to head of bolt(s), bag and tag these for reassembly, refer to **Figure SIM20-335-1**. Keep aluminum fairings in order of location when removed for reassembly.
- 1.5. Remove ailerons by pulling straight aft until hinges are clear; rotate inboard portion down and forward to allow aileron balance weights to clear wing tip.
- 1.6. Balance both Ailerons to specifications found in Chapter 27- 91- 00 of the applicable Mooney Service and Maintenance Manual, be sure to install static wicks (if removed).
- 1.7. If Balance is within Specifications, continue to **Step 1.9**.
- 1.8. If Balance is NOT within Specifications, call or email Mooney Product Support for further action.
- 1.9. Re- Install IN reverse sequence as removed, refer to Chapter 5 in the applicable Service and Maintenance Manual for hardware torque values. Refer to Aileron Hinge Zone chart(s) **LH Figure SIM20-335-4** and **RH Figure SIM20-335-5** for stack- up of hardware (use new mounting nuts and cotter pins upon reassembly).

**THIS BULLETIN DOES NOT CHANGE AIRCRAFT TYPE DESIGN****2.0 RUDDER REMOVAL/INSTALLATION - Refer to Figure SIM20-335-2**

- 2.1. Disconnect rudder push-pull tube from rudder horn by removing Bolt AN3-10, Washers NAS1149F0332P, Nut MS17825-3 and Cotter Pin MS24665-151, refer to **Figure SIM20-335-2**.
- 2.2. Disconnect (un-pin) Strobe Light harness from lower tailcone/rudder area.
- 2.3. Remove attaching hardware at rudder hinges, note each hinge hardware on zone chart(s) **Figure SIM20-335-8**
- 2.4. Secure and stow control rods to prevent damage to painted skins.
- 2.5. Remove rudder by pulling it straight aft.

NOTE:

Keep Control Yoke from moving in/out with a piece of PVC or suitable tube, as damage could occur if control rod assembly snags on painted skins.

- 2.6. Balance rudder to specifications found in Chapter 27- 91 - 00 of the applicable Mooney Service and Maintenance Manual, be sure to install static wicks (if removed).
- 2.7. If Balance is within Specifications, continue to **Step 2.9**.
- 2.8. If Balance is NOT within Specifications, call or email Mooney Product Support for further action.
- 2.9. Re- Install IN reverse sequence as removed, refer to Chapter 5 in the applicable Service and Maintenance Manual for hardware torque values. Refer to Rudder Hinge Zone chart **Figure SIM20-335-8** for stack- up of hardware (use new nuts and cotter pins upon reassembly).

3.0 ELEVATOR REMOVAL/INSTALLATION - Refer to Figure SIM20-335-2**NOTE:**

It may be feasible to use a roll of duct tape to hold the Elevator at a slight angle, to aid the removal of hardware. Damage could occur if extending Elevator at extreme angles.

NOTE:

Keep Control Yoke from moving in/out with a piece of PVC or suitable tube, as damage could occur if control rod assembly snags on painted skins.

- 3.1. Disconnect elevator push pull tubes, by removing Bolt AN3-10, Washers NAS1149F0332P, Nut MS17825-3 and Cotter Pin MS24665-151, refer to **Figure SIM20-335-2**.
- 3.2. Remove bolts, nuts and washers from the four attaching hinges, note each hinge hardware on zone chart(s) **LH Figure SIM20-335-6** and **RH Figure SIM20-335-7** as required., refer to **Figure SIM20-335-2**.
- 3.3. Remove both elevators by pulling it straight aft.
- 3.4. Balance elevators to specifications found in Chapter 27- 91 - 00 of the applicable Mooney Service and Maintenance Manual, be sure to install static wicks (if removed).
- 3.5. If Balance is within Specifications, continue to **Step 3.6**.
- 3.6. If Balance is NOT within Specifications, call or email Mooney Product Support for further action.
- 3.7. Re- Install IN reverse sequence as removed, refer to Chapter 5 in the applicable Service and Maintenance Manual for hardware torque values. Refer to Elevator Hinge Zone chart(s) **LH Figure SIM20-335-6** and **RH Figure SIM20-335-7** for stack- up of hardware (use new nuts and cotter pins upon reassembly).



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4.0 RETURN TO SERVICE - Refer to the applicable Service and Maintenance Manual

- 4.1. Inspect flight controls for full travel, proper rigging, free- play, binding, security of mounting, proper lubrication and proper direction of control surface movement with relation to control wheel movement, refer to Chapter 27 of the applicable Service and Maintenance Manual.
- 4.2. Check tail strobe operation.
- 4.3. Confirm level flight, refer to Chapter 27 of the applicable Service and Maintenance Manual.

NOTE:

Fill out compliance card and send by MAIL or FAX to Mooney International Corporation as indicated on the attached Compliance Card. (See Figure SBM20-335-9)

- 4.4. Return aircraft to service.
- 4.5. Procedure complete.

WARRANTY: Mooney International Corporation will warrant labor 8 hours in accordance with procedures of this Service Bulletin for aircraft currently covered under the Mooney International Corporation factory warranty program.

REFERENCE DATA:

- 1. Applicable Mooney Service and Maintenance Manual
- 2. Product Support email: support@mooney.com or phone: 830-792-2919
- 3. Applicable Mooney Illustrated Parts Catalog

PARTS LIST: Mooney International Corporation, Service Bulletin Parts Kit(s):

<u>Item</u>	<u>P/N</u>	<u>Description</u>	<u>Qty</u>
		N/A - Shop supplied hardware	



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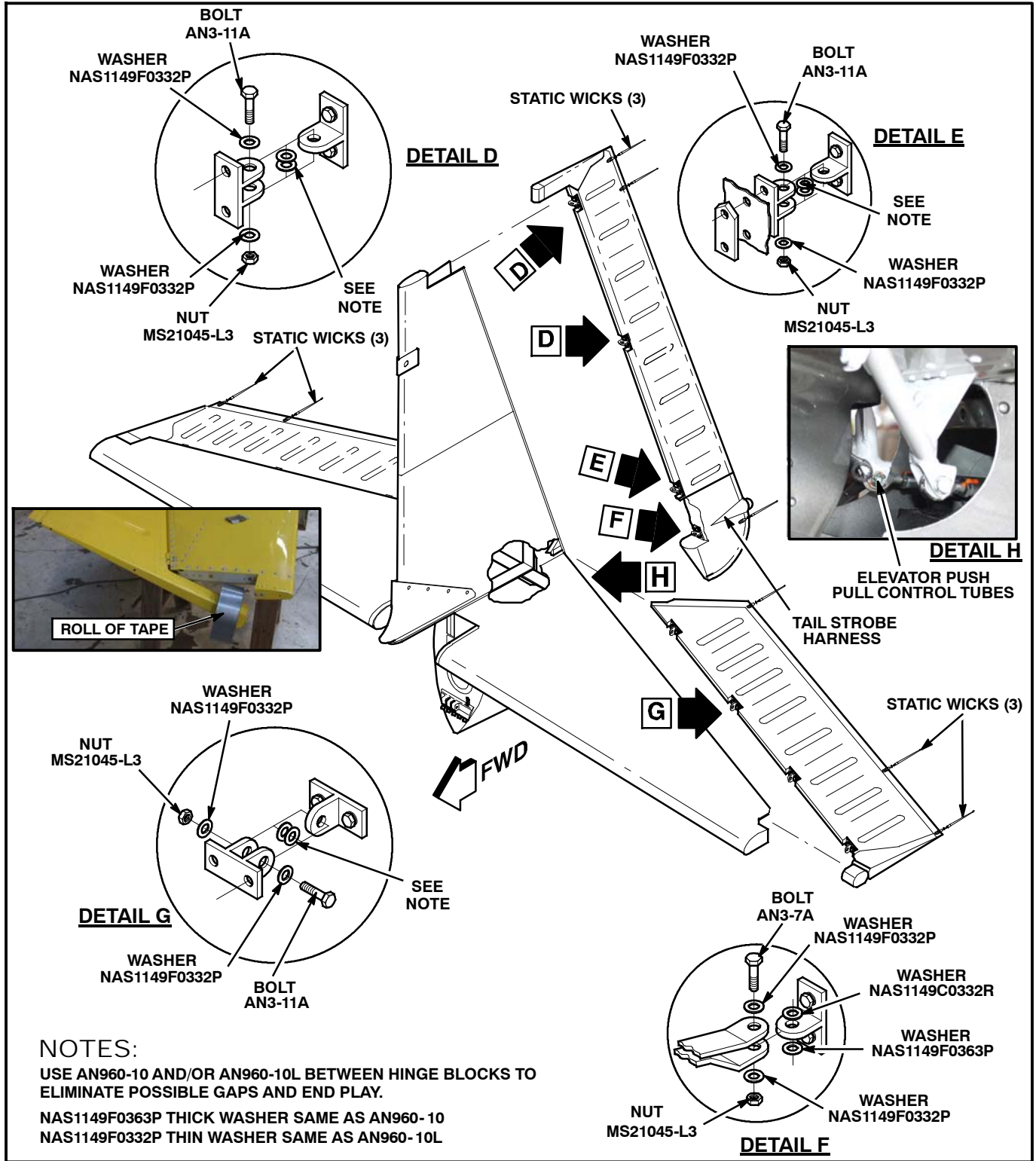


Figure SBM20-335-2 - RUDDER AND ELEVATOR INSTALLATION



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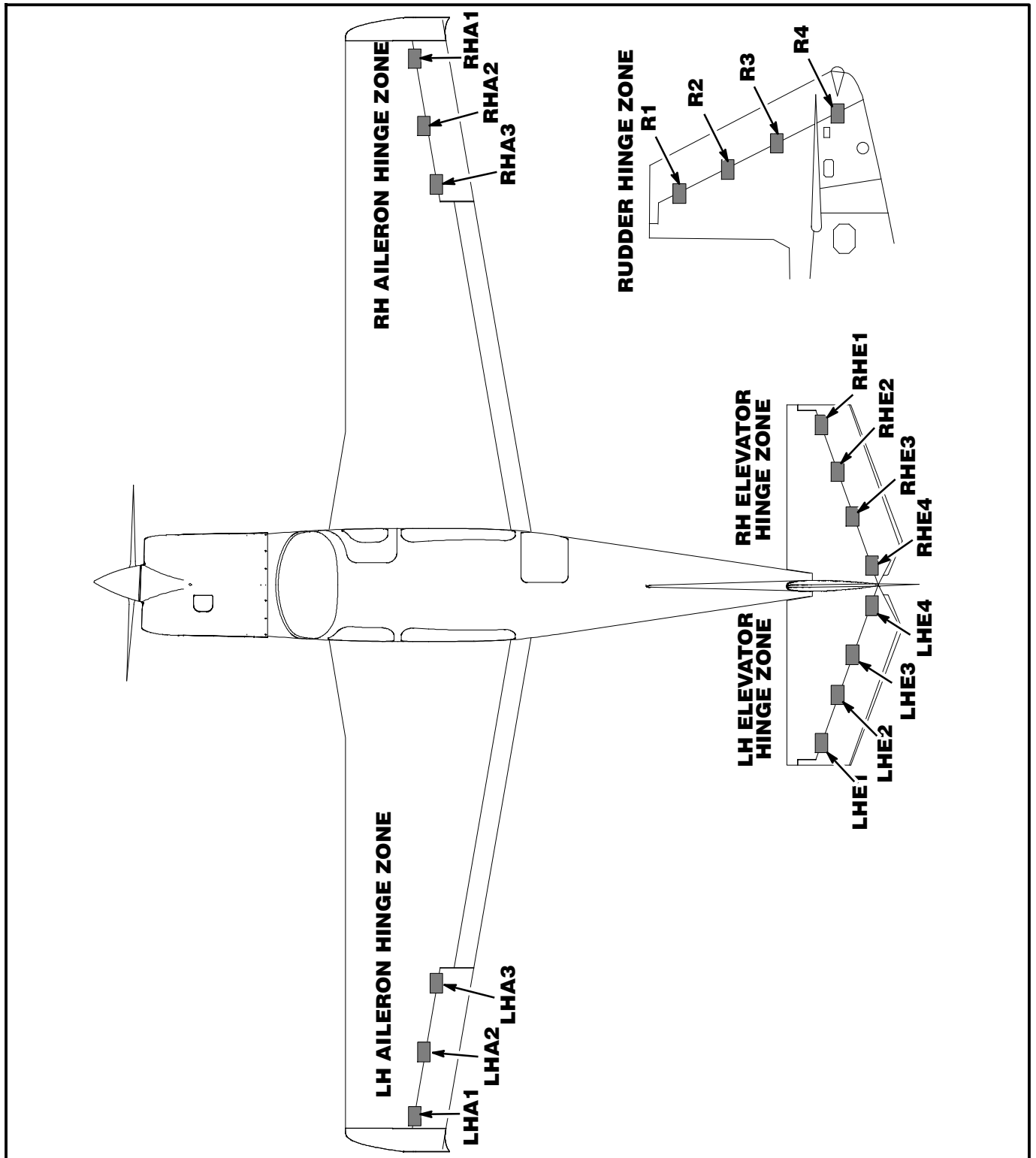


Figure SBM20-335-3 - OVERALL LOCATION OF CONTROL SURFACE HINGE ZONES

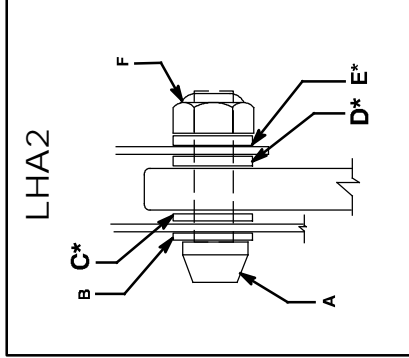


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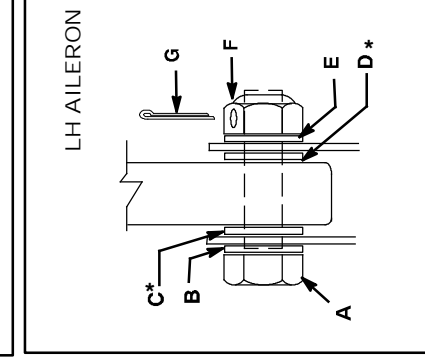
LH AILERON HINGE ZONES

*Note - Denote "Thick" and/or "Thin" washer shim and quantity

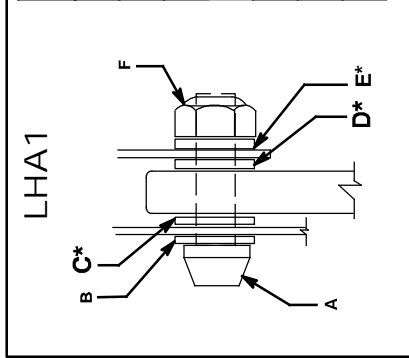
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A	MS20004-12 BOLT	1
B	MS20002C4 CSK WASHER	1
C*	NAS70CL261-500 WASHER	
D*	NAS70CL261-500 WASHER	
E*	NAS1149F0463P (Thick)	
E*	NAS1149F0432 (Thin)	
F	MS21042-4 NUT	1



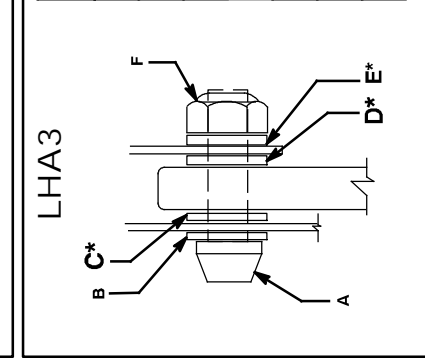
Item	Part Number Description	QTY
A	AN4-11 BOLT	1
B	NAS1149F0432P (Thin)	1
C*	NAS1149F0432P (Thin)	
D*	NAS1149F0432P (Thin)	
E	NAS1149F0432P (Thin)	1
F	MS17825-4 NUT	1
G	AN380-2-2 COTTER PIN	1



Item	Part Number Description	QTY
A	MS20004-12 BOLT	1
B	MS20002C4 CSK WASHER	1
C*	NAS70CL261-500 WASHER	
D*	NAS70CL261-500 WASHER	
E*	NAS1149F0463P (Thick)	
E*	NAS1149F0432 (Thin)	
F	MS21042-4 NUT	1



Item	Part Number Description	QTY
A	MS20004-12 BOLT	1
B	MS20002C4 CSK WASHER	1
C*	NAS70CL261-500 WASHER	
D*	NAS70CL261-500 WASHER	
E*	NAS1149F0463P (Thick)	
E*	NAS1149F0432 (Thin)	
F	MS21042-4 NUT	1



NOTES: NAS1149F0463P SAME AS AN960-416 (.063 Thick) NAS1149F0363P SAME AS AN960-10 (.063 Thick)
 NAS1149F0432P SAME AS AN960-416L (.032 Thin) NAS1149F0332P SAME AS AN960-10L (.032 Thin)

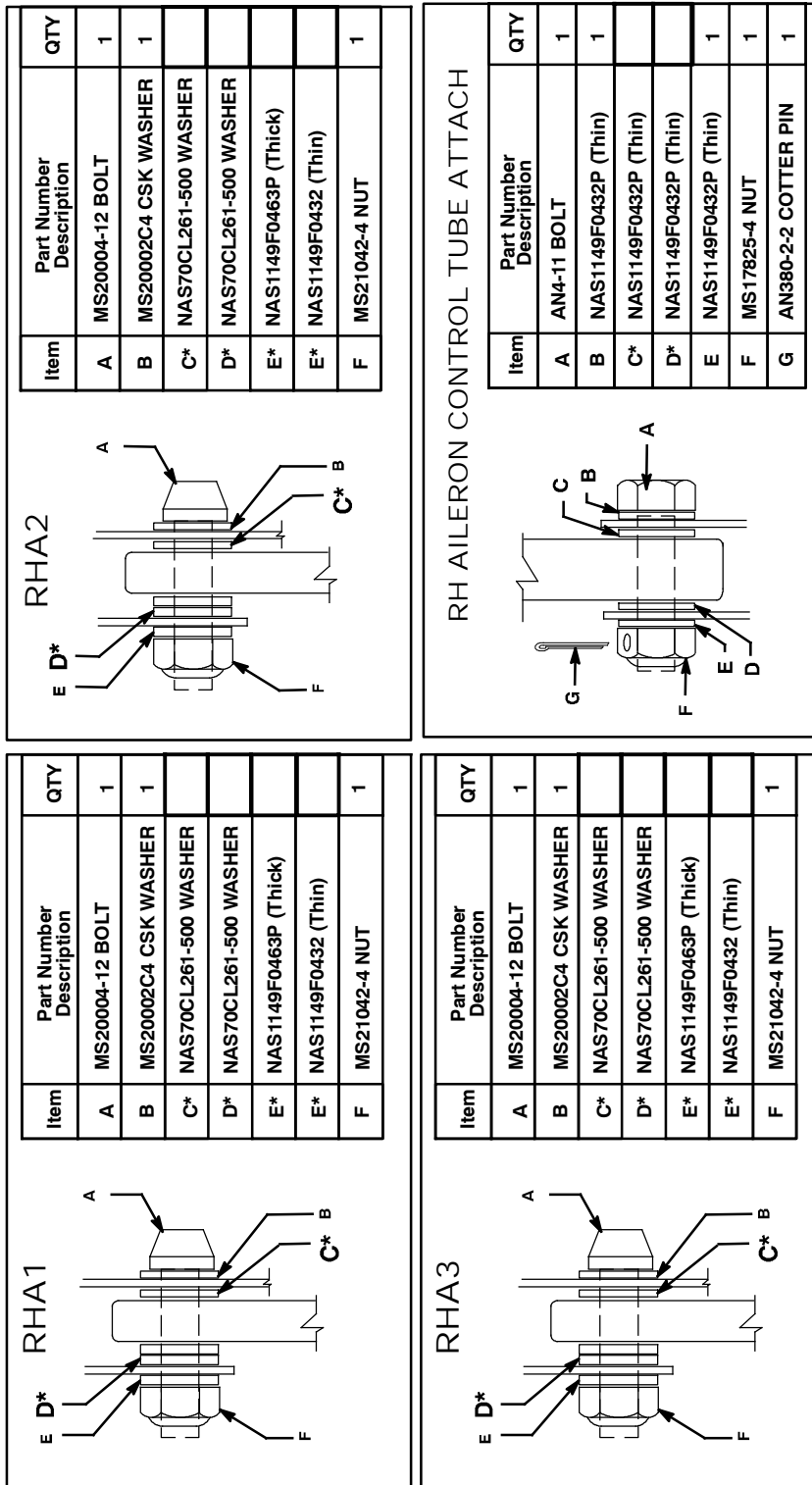
Figure SBM20-335-4 - LH AILERON HINGE ZONE CHART



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RH AILERON HINGE ZONES

*Note - Denote "Thick" and/or "Thin" washer shim and quantity



NOTES: NAS1149F0463P SAME AS AN960-416 (.063 Thick) NAS1149F0363P SAME AS AN960-10 (.063 Thick)
 NAS1149F0432P SAME AS AN960-416L (.032 Thin) NAS1149F0332P SAME AS AN960-10L (.032 Thin)

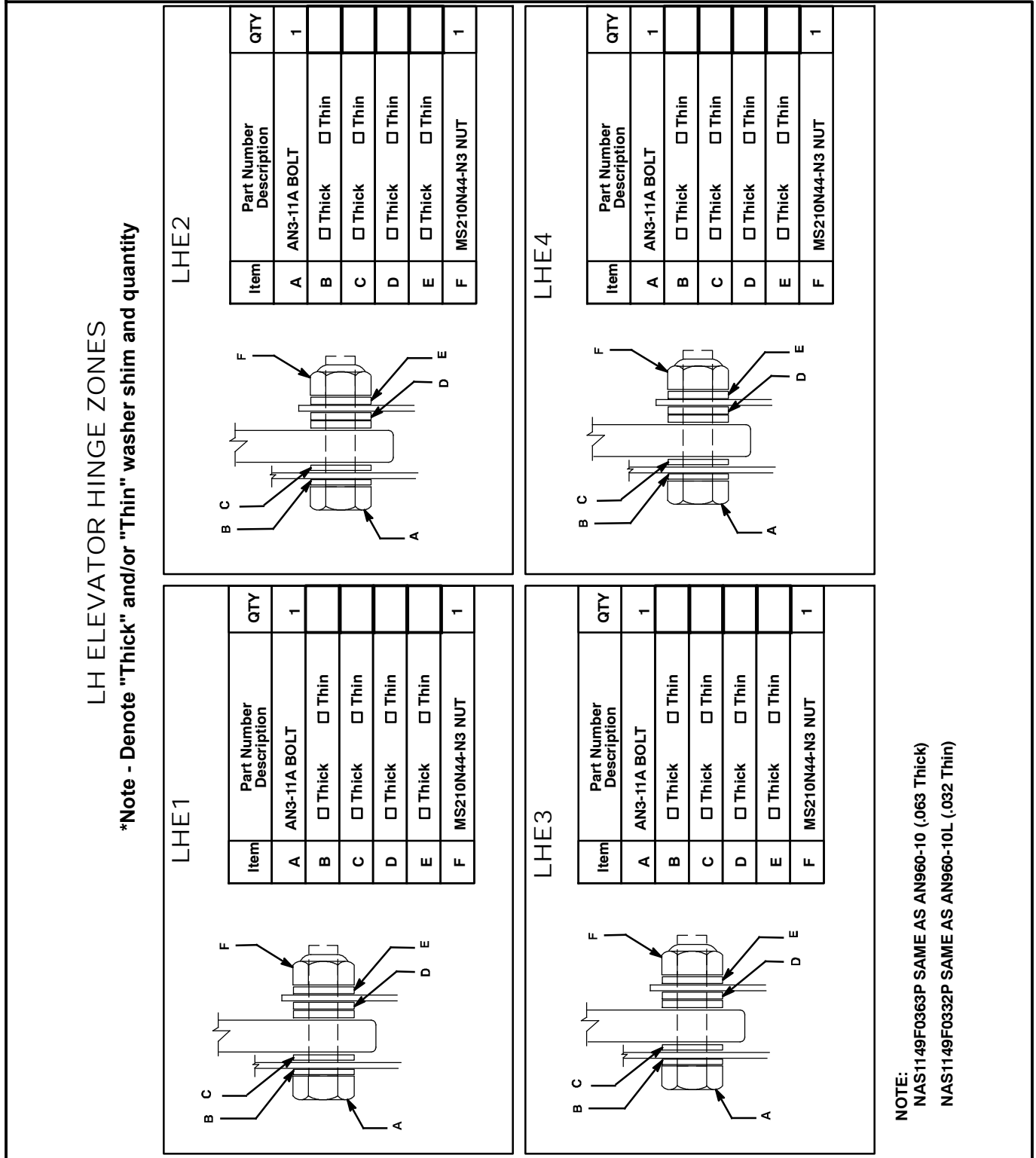
Figure SBM20-335-5 - RH AILERON HINGE ZONE CHART



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LH ELEVATOR HINGE ZONES

*Note - Denote "Thick" and/or "Thin" washer shim and quantity

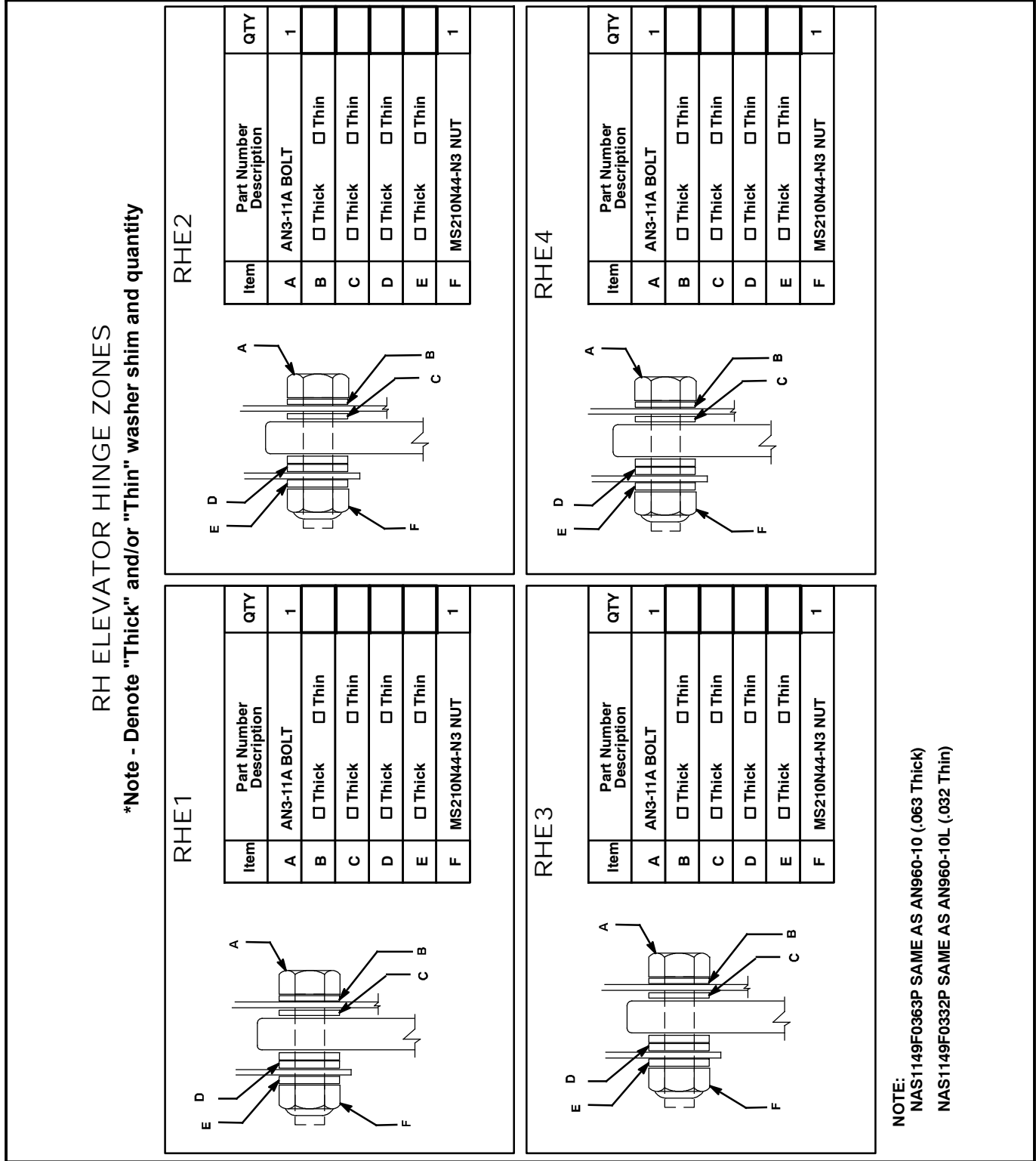




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RH ELEVATOR HINGE ZONES

*Note - Denote "Thick" and/or "Thin" washer shim and quantity





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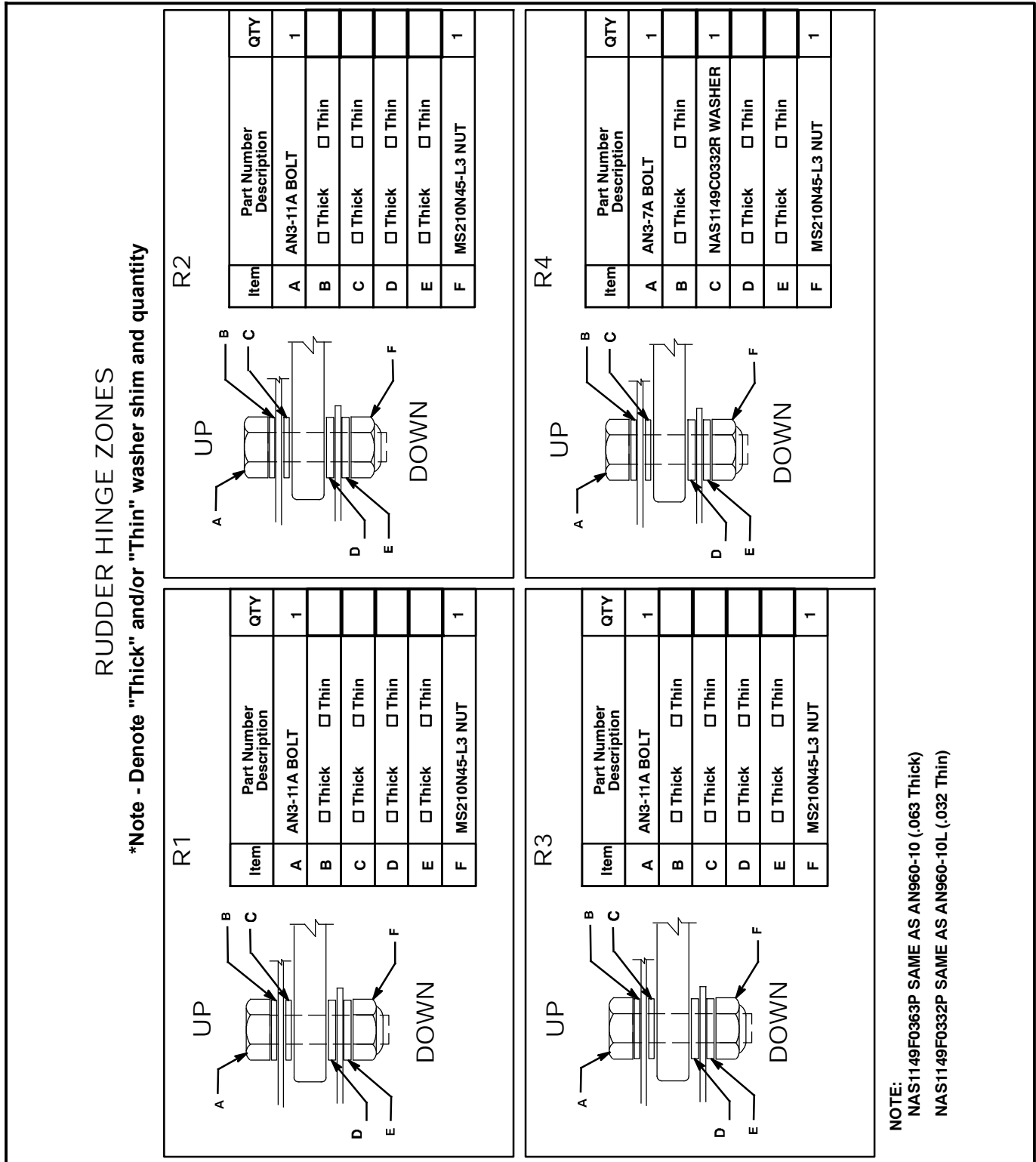


Figure SBM20-335-8 - RUDDER HINGE ZONE CHART



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MOONEY INTERNATIONAL CORPORATION
KERRVILLE, TEXAS 78028 - FAX 830-257-4635

SERVICE (BULLETIN) (INSTRUCTION) NO. _____ HAS BEEN COMPLIED
WITH ON AIRCRAFT MODEL _____ SERIAL NUMBER _____

Tach. Time: _____ N-Number _____ (Reg. No.)
Owner: _____ Date of Compliance: _____
_____ Complied By: _____

Inspection Report: _____

Form 07-0001

**PLACE
STAMP
HERE**

MOONEY INTERNATIONAL CORPORATION
ATT'N: TECHNICAL SUPPORT
165 Al Mooney Road North
Kerrville, Texas 78028

SEND TO: Mooney International Corporation
165 Al Mooney Road North
Kerrville, TX 78028
FAX: (830) 257-4635 or EMAIL support@mooney.com

Figure SB M20-334-9 - Compliance Card