

8 DECEMBER 1999



Maintenance

OPERATION OF HANGAR DOORS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: 22 LG/QA

Certified by: 22 LG/CMS (CMSgt Kreif)

Pages: 12

Distribution: F

This instruction implements AFD 21-1, *Managing Aerospace Equipment Maintenance*, outlining responsibilities and procedures for the operation of the hangar doors in Buildings 1106, 1166, and 1176. Kansas Air National Guard (KSANG) hangar door operations will be coordinated with KSANG production supervisor and/or building custodian. This instruction is the source document for qualifying maintenance personnel to operate hangar doors and is applicable to all personnel who operate these doors.

1. Responsibilities:

1.1. Each commander and supervisor affected will ensure compliance with this instruction.

1.1.1. Only personnel trained in accordance with this instruction are authorized to operate doors and train others.

1.1.2. Training shall be documented in each individual's AF Form 623, equivalent form, and/or the applicable computer database (G081-MCCN000660 for 1166 and 1176, G081-MCCN000650 and/or CAMS-094 and CAMS-0539 for Buildings 1106 and 1107).

1.2. Building custodians are responsible for the following:

1.2.1. Monitor the status of the doors and manage Civil Engineering (CE) work orders for required maintenance. Assign an urgent priority to all work orders that affect safety or normal door operation.

1.2.2. Notify the Maintenance Aircraft Coordination Center (MACC) #3632, CE, and the Fire Department of any door malfunction that causes lockout/tagout procedures to be initiated. Only CE personnel and the designated contractor will implement and remove lockout/tagout procedures. Doors that can be moved manually will be identified as such on the tag. Building custodians must maintain a lockout/tagout log book.

1.2.3. Building custodians will advise the MACC of any hangar door maintenance during normal duty hours. MACC will coordinate hangar door maintenance after normal hours.

2. Procedures:

2.1. Hangar door training and operation will be performed in accordance with **Attachment 1** for Buildings 1106, and **Attachment 2** for Buildings 1166 and 1176. For manual door operations refer to attachments 3 for building 1106, **Attachment 4** for building 1176, and **Attachment 5** for building 1166.

2.2. Manual operation of the doors is only authorized if the following precautions are observed:

2.2.1. Only doors that are rendered safe by lockout/tagout procedures and specifically identified on the danger tag that manual operation is authorized shall be operated manually. Personnel authorized to perform lockout/tagout procedures must ensure that the door motor clutch is disengaged as part of their lockout procedures, if they authorize manual control.

2.2.2. If a malfunctioning door is to be moved by other than manual means (i.e., UKE or truck), a Maintenance Squadron (MXS) production supervisor must authorize and oversee the movement.

2.3. When severe weather threatens (lightning within 5 miles or winds exceeding 34 knots), MACC personnel will notify MXS production supervisor, who will ensure their respective hangar doors are closed.

2.4. When the ambient air temperature is 32 degrees Fahrenheit (0 degrees Celsius) or below. The hangar doors will be kept closed until aircraft or equipment has reached hangar and will only be opened when aircraft is positioned for entry or exit, and closed immediately thereafter.

2.5. All hangar doors should be kept closed whenever possible to prevent bird entry. To preclude damage to the bird entry barriers in Hangars 1106 and 1107, do not open the doors any further than necessary into the door closet area. Floor/door alignment marks must be observed when closing doors in Hangar 1106.

2.6. Doors will only be opened when aircraft is positioned for entry or exit, and closed immediately thereafter.

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Attachment 1

HANGAR DOOR OPERATION PROCEDURES - BUILDING 1106

CAUTION

DO NOT OPEN DOORS IF WINDS EXCEED 40 KNOTS!_

If winds are 15 to 40 knots, open a down-wind door on the opposite side of the building first.

A1.1. PREPARING TO OPEN AIRCRAFT HANGAR DOORS: Accomplish the following prior to moving hangar doors:

A1.1.1. Inspect the door tracks for obstructions, debris, and foreign objects.

A1.1.2. Ensure outside weather shields are not covered with ice, snow, or frozen to the cement before moving doors.

A1.1.3. Make certain all emergency exit (personnel) doors and clamshell (fuselage cutout) doors are latched securely.

A1.1.4. Check that all personnel and equipment are clear of door's path, including closet area.

A1.1.5. Post spotter on opposite side of door (from operator). Brief spotter that no one is allowed to cross the track area while the doors are in motion.

A1.2. OPENING AIRCRAFT HANGAR DOORS: After steps in A1.1 are accomplished, proceed as follows:

A1.2.1. Alert spotter that you are starting.

WARNING

Stop operation if horn does not sound! Alert spotter and proceed with caution.

Make sure building custodian or MACC is notified of the malfunction.

A1.2.2. Press and hold in the open switch. You should hear a horn before the door moves.

CAUTION

To preclude hitting the overlapping doors, clamshell doors must be closed and latched again when they are clear of the aircraft fuselage.

A1.2.3. Open doors at least 10 feet. If clamshell doors are open, stop--note caution above.

CAUTION

The door opening shall remain at least 10 feet, any time doors are open. When towing aircraft, open doors wide enough to provide a 10 foot clearance at each wingtip.

Do not change (open/close) direction until door comes to complete stop!

A1.2.4. Hold in the open switch until doors are in desired position.

A1.3. CLOSING AIRCRAFT HANGAR DOORS: After steps in A1.1 are accomplished, proceed as follows:

A1.3.1. Alert spotter that you are starting.

A1.3.2. Press and hold in close switch. You should hear a horn before the door moves.

WARNING_

Stop operation if horn does not sound! Alert spotter(s) and proceed with caution.

Make sure building custodian or MACC is notified of the malfunction.

A1.3.3. Close doors by holding close switch in. Stop doors at least 10 feet away from aircraft fuselage if tail is out and clamshell doors are closed; note caution below!

CAUTION_

To preclude hitting the aircraft fuselage, clamshell doors must be opened and latched again when they are clear of the overlapping doors.

A1.3.4. Continue closing doors to desired position (closed or open at least 10 feet) while monitoring clearances between hangar doors and the aircraft.

Attachment 2**HANGAR DOOR OPERATION PROCEDURES - BUILDINGS 1166/1176****WARNING**

Due to hazards involved with painting, fuel cell maintenance, and refurbishment, personnel must check with applicable hangar supervisors before attempting to open these doors.

CAUTION**DO NOT OPEN DOORS IF WINDS EXCEED 40 KNOTS!**

If winds are 15 to 40 knots, open a down-wind door on the opposite side of the building first.

A2.1. PREPARING TO OPEN AIRCRAFT HANGAR DOORS: Accomplish the following prior to moving hangar doors:

- A2.1.1. Inspect the door tracks for obstructions, debris, and foreign objects.
- A2.1.2. Ensure outside weather shields are not covered with ice, snow, or frozen to the cement before moving doors.
- A2.1.3. Make certain all emergency exit (personnel) doors are latched securely.
- A2.1.4. Check that all personnel and equipment are clear of doors path, including the closet area.
- A2.1.5. Post spotter on opposite side of door (from operator). Brief spotter that no one is allowed to cross the track area while the doors are in motion.

A2.2. OPENING AIRCRAFT HANGAR DOORS: After steps in **A2.1.** are accomplished, proceed as follows:

- A2.2.1. Alert spotter that you are starting.

WARNING:

Stop operation if horn does not sound! Alert spotter and proceed with caution.

Make sure building custodian or MACC is notified of the malfunction.

NOTE

Operating tail doors first will prevent main doors from operating.

- A2.2.2. Press and hold in main open switch. You should hear a horn before the door moves.

CAUTION:

If aircraft are being towed in or out, the tail slot door must be opened.

Main doors must be fully opened to allow the tail slot door operation.

CAUTION:

The door opening shall remain at least 10 feet, any time doors are open.

Do not change (open/close) direction until door comes to complete stop.

- A2.2.3. Open doors to desired position (at least a 10-foot opening).

A2.2.4. Press and hold in tail door open switch. You should hear a horn before the doors move.

CAUTION:

If winds exceed 15 knots, open an up-wind door on the opposite side of the building first.

A2.3. CLOSING AIRCRAFT HANGAR DOORS: After steps in [A2.1](#) are accomplished, proceed as follows:

A2.3.1. Alert spotter that you are starting.

WARNING:

Stop operation if horn does not sound! Alert spotter(s) and proceed with caution.

Make sure building custodian or MACC is notified of the malfunction.

A2.3.2. Press and hold in tail slot door close switch. You should hear a horn before the door moves.

WARNING:

Stop operation if horn does not sound! Alert spotter(s) and proceed with caution.

Make sure building custodian or MACC is notified of the malfunction.

A2.3.3. After tail slot door is closed, close main doors to desired position (closed or open at least 10 feet) while monitoring clearances between hangar doors and the aircraft.

Attachment 3**MANUAL HANGAR DOOR OPERATING PROCEDURES – BUILDINGS 1106**

A3.1. PREPARING TO MOVE HANGAR DOORS: Accomplish the following prior to moving hangar doors:

NOTE: Tools required to disengage the door clutches (hangar door wrench or pipe wrench) are located in the ISO dock tool room (X-5491), Building 1106.

A3.1.1. Locate electrical drive motor on inner side of door.

NOTE: Some doors will have three 7/16” bolts instead of a setscrew on the chain drive sprocket.

A3.1.2. Remove clutch setscrew or bolts located on the chain drive sprocket.

A3.1.3. Twist the chain drive sprocket face counterclockwise to relieve spring tension. The drive motor is now disengaged.

A3.1.4. Inspect the door tracks for obstructions, debris, and foreign objects

A3.1.5. Ensure outside weather shields are not covered with ice, snow, or frozen to the cement before moving doors.

A3.1.6. Make certain all emergency exit (personnel) doors and clamshell (fuselage cutout) doors are latched securely.

A3.1.7. Check that all personnel and equipment are clear of door's path, including closet area.

A3.1.8. Post spotter on opposite side of door from operator. Brief spotter that no one is allowed to cross the door's path while the doors are in motion.

CAUTION:

DO NOT OPEN DOORS IF WINDS EXCEED 40 KNOTS!

If winds are 15 to 40 knots, open down-wind door on the opposite side of the building first.

A3.2. OPENING / CLOSING HANGAR DOORS: After completing preparation steps per **A3.1.**, proceed as follows:

A3.2.1. Alert spotter that you are moving prior to moving main doors.

CAUTION:

WITH DOOR CLUTCHES DISENGAGED THE DOOR BRAKES WILL BE INOPERATIVE. USE EXTREME CAUTION WHEN APPROACHING AIRCRAFT OR HANGAR DOORS STOPS. DO NOT EXCEED 1/2 WALKING SPEED.

CAUTION:

When opening hangar doors, clamshell doors must be closed and latched when they are clear of the aircraft fuselage to preclude hitting the overlapping hangar doors. When closing hangar

doors and aircraft is tail-out, clamshell doors must be opened and latched as soon as they are clear of overlapping hangar doors.

CAUTION:

The door opening shall remain at least 10 feet any time doors are open. When towing aircraft, open doors wide enough to provide a 15 foot clearance at each wingtip.

A3.2.2. If moving hangar door with a UKE, place a wooden aircraft chock between the UKE and the hangar door. Push the door (1/2 walking speed maximum) to desired position.

A3.2.3. If moving doors by hand (five personnel minimum recommended) push the door to desired position.

A3.2.4. Twist the chain drive sprocket face clockwise to reengage drive motor clutch.

A3.2.5. Tighten clutch setscrew or bolts located on the chain drive sprocket.

Attachment 4

MANUAL HANGAR DOOR OPERATING PROCEDURES – BUILDING 1176

A4.1. PREPARING TO MOVE HANGAR DOORS: Accomplish the following prior to moving hangar doors:

- A4.1.1. Ensure that electrical power to the doors is off. Power boxes for main doors are located on centerline doors. Power box for tail door is located on south wall near the tail door control switch box.
- A4.1.2. Open the lower access panel on the door containing the electrical controls (centerline door)
- A4.1.3. Loosen completely the 3 bolts on the clutch assembly.
- A4.1.4. Inspect the door tracks for obstructions, debris, and foreign objects.
- A4.1.5. Make certain all emergency exit (personnel) doors are closed securely.
- A4.1.6. Check that all personnel and equipment are clear of door's path, including closet area.
- A4.1.7. Post spotter on opposite side of door from operator. Brief spotter that no one is allowed to cross the door's path while the doors are in motion.

CAUTION:

DO NOT OPEN DOORS IF WINDS EXCEED 40 KNOTS!

If winds are 15 to 40 knots, open roll-up nose door first.

A4.2. OPENING HANGAR DOORS: After completing preparation steps per **A4.1.**, proceed as follows:

- A4.2.1. Alert spotter that you are moving prior to moving main doors.

CAUTION:

WITH DOOR CLUTCHES DISENGAGED THE DOOR BRAKES WILL BE INOPERATIVE. USE EXTREME CAUTION WHEN APPROACHING AIRCRAFT OR HANGAR DOORS STOPS. DO NOT EXCEED 1/2 WALKING SPEED.

CAUTION:

The door opening shall remain at least 10 feet any time doors are open. When towing aircraft, open doors wide enough to provide a 15 foot clearance at each wingtip.

- A4.2.2. Place a wooden aircraft chock between the uke and the hangar door. Push the door (1/2 walking speed maximum) to desired position.

- A4.2.3. Contact hangar door contractor to readjust drive motor clutches.

CAUTION:

If aircraft is being towed in or out, the tail door must be opened. Main hangar doors must be completely clear of the tail door track prior to opening tail door.

A4.2.4. Climb ladder to the top catwalk located just behind the tail door.

A4.2.5. Install the hand crank onto the motor and open the door

A4.3. CLOSING HANGAR DOORS: After completing preparation steps per **A4.1.**, proceed as follows: Climb ladder to the top catwalk located just behind the tail door.

A4.3.1. Climb ladder to the top catwalk located just behind the tail door.

A4.3.2. Install the hand crank onto the motor and close the tail door.

CAUTION:

Tail door must be completely closed prior to closing main hangar doors.

A4.3.3. Alert spotter that you are moving prior to moving main doors.

CAUTION:

WITH DOOR CLUTCHES DISENGAGED THE DOOR BRAKES WILL BE INOPERATIVE. USE EXTREME CAUTION WHEN APPROACHING AIRCRAFT OR HANGAR DOORS STOPS. DO NOT EXCEED 1/2 WALKING SPEED.

CAUTION:

The door opening shall remain at least 10 feet any time doors are open.

A4.3.4. If UKE cannot be positioned behind centerline door connect a chain from the centerline door eyelet to the UKE and pull the door (1/2 walking speed maximum) to desired position. If UKE can be positioned behind centerline door, place a wooden aircraft chock between the UKE and the hangar door and push the door (1/2 walking speed maximum) to desired position.

A4.3.5. Contact hangar door contractor to readjust drive motor clutches.

Attachment 5

MANUAL HANGAR DOOR OPERATION PROCEDURES - BUILDING 1166

A5.1. PREPARING TO MOVE HANGAR DOORS: Accomplish the following prior to moving hangar doors:

A5.1.1. On nose roll-up door motor, pull down small disconnect chain and secure to override motor clutches

A5.1.2. Locate electrical drive motor (1 per side). Remove clutch setscrew or bolt located on the side of the blue chain drive sprocket (top sprocket).

A5.1.3. Remove three 9/16" bolts located on blue chain drive sprocket face.

A5.1.4. Twist the blue chain drive sprocket face counter-clockwise to relieve spring tension. The drive motor is now disengaged

A5.1.5. Make certain all emergency exit (personnel) doors are closed securely.

A5.1.6. Check that all personnel and equipment are clear of door's path, including closet area.

A5.1.7. Post spotter on opposite side of door from operator. Brief spotter that no one is allowed to cross the door's path while the doors are in motion.

CAUTION:

DO NOT OPEN DOORS IF WINDS EXCEED 40 KNOTS!

If winds are 15 to 40 knots, open roll-up nose door first.

A5.2. OPENING HANGAR DOORS: After completing preparation steps per **A5.1.**, proceed as follows:

A5.2.1. Alert spotter that you are moving prior to moving main doors.

CAUTION:

WITH DOOR CLUTCHES DISENGAGED THE DOOR BRAKES WILL BE INOPERATIVE. USE EXTREME CAUTION WHEN APPROACHING AIRCRAFT OR HANGAR DOORS STOPS. DO NOT EXCEED 1/2 WALKING SPEED.

CAUTION:

The door opening shall remain at least 10 feet any time doors are open. When towing aircraft, open doors wide enough to provide a 15 foot clearance at each wingtip.

WARNING:

Because of the door drive design, pressure to open the main doors can only be applied to the drive motor door.

NOTE: The main doors are interconnected and set-up to a 4:1 drive ratio. The door farthest from the drive motor will travel four times faster than the door closest to the drive motor.

A5.2.2. Push doors by hand (five personnel minimum recommended) to desired position.

A5.2.3. Twist the blue chain drive sprocket face clockwise to reengage drive motor clutch.

A5.2.4. Reinstall and tighten three 9/16" bolts in blue chain drive sprocket face.

A5.2.5. Reinstall and tighten clutch setscrew or bolt in side of blue chain drive sprocket face.

CAUTION:

If aircraft is being towed in or out, the tail door must be opened. Main hangar doors must be completely clear of the tail door track prior to opening tail door.

A5.2.6. From a Landall, pull the tail door chain hand-over-hand until the door is fully open.

A5.3. CLOSING HANGAR DOORS: After completing preparation steps per **A5.1.**, proceed as follows:

CAUTION:

Tail door must be completely closed prior to closing main hangar doors.

A5.3.1. From a Landall, pull the tail door chain hand-over-hand until the tail door is fully closed.

A5.3.2. Alert spotter that you are moving prior to moving main doors.

CAUTION:

WITH DOOR CLUTCHES DISENGAGED THE DOOR BRAKES WILL BE INOPERATIVE. USE EXTREME CAUTION WHEN APPROACHING AIRCRAFT OR HANGAR DOORS STOPS. DO NOT EXCEED 1/2 WALKING SPEED.

CAUTION:

The door opening shall remain at least 10 feet any time doors are open. When towing aircraft, open doors wide enough to provide a 15 foot clearance at each wingtip.

WARNING:

Because of the door drive design, pressure to open the main doors can only be applied to the drive motor door.

NOTE: The main doors are interconnected and set-up to a 4:1 drive ratio. The door farthest from the drive motor will travel four times faster than the door closest to the drive motor.

A5.3.3. Push doors by hand (five personnel minimum recommended) to desired position.

A5.3.4. Twist the blue chain drive sprocket face clockwise to reengage drive motor clutch.

A5.3.5. Reinstall and tighten three 9/16" bolts in blue chain drive sprocket face.

A5.3.6. Reinstall and tighten clutch setscrew or bolt in side of blue chain drive sprocket face.