

**BY ORDER OF THE
RAMSTEIN AIR BASE COMMANDER
(USAFE)**

**RAMSTEIN AIR BASE INSTRUCTION
91-103**

13 MARCH 2025

Safety



**AIRCRAFT SHELTER AND HANGAR
DOOR OPERATION AND TRAINING**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 21-1, Maintenance of Military Materiel, AFPD 91-2, Safety Program, maintenance operating instruction is required by Department of the Air Force Instruction (DAFI) 21-101, Aircraft and Equipment Maintenance Management, and DAFMAN 91-203, Air Force Occupational Safety, Fire, and Health Standards, Paragraph 24.14.. This instruction establishes responsibilities and procedures for protective aircraft shelter (PAS) and hangar door operations. This instruction is applicable to Ramstein Air Base and 424th Airbase Squadron, Chievres Air Base by providing proper direction on the use and training regarding shelter and hangar doors, not specifically addressed by DAFMAN 91-203, Air Force Occupational Safety Fire, and Health Standards. This instruction requires the collection and maintenance of information protected by the Privacy Act of 1974, authorized by 10 U.S.C. 8013, Secretary of the Air Force. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, Records Management and Information Governance Program, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Department of the Air Force (DAF) Form 847, Recommendation for Change of Publication; route DAF Form 847s through the appropriate chain of command.

SUMMARY OF CHANGES

Update Air Force Occupational Safety and Health (AFOSH) Standards to the new DAFMAN 91-203 standards dated 25 March 2022.

1. APPLICABILITY . This instruction applies to agencies occupying or utilizing aircraft hangars, engine hush houses, or protective aircraft shelter (PAS) equipped with aircraft sized doors. This includes both electrically and manually operated doors and applies regardless of whether or not the facility is still utilized to house aircraft. Geographically Separated Units will create their own Operational Letter of Procedures or Operating Instruction to establish their Aircraft Shelter and Hangar Door Operation and Training Program to comply with the parent Air Force Instruction (91-203) requirements. Any hangar, hush house, or PAS modified in a manner that physically prevents the doors from being operated (open and closed) are not required to be IAW this operating instruction as these modified doors can no longer create hazards associated with hangar doors. The configuration of any modified facility will be inspected by 86 Airlift Wing (AW) Safety Office to assist in determining applicability of this operating instruction. After the inspection, the appropriate safety office will draft a memorandum for record to reflect the details of the assessment and facility configuration (to include specific modifications that prevent the doors from being operated). Include a statement requiring the unit to contact 86 AW Safety Office in the event the facility is further modified in a manner that allows the doors to operate. In this case, the facility will be required to be in full compliance with this standard.

2. GENERAL POLICY. Hangar door operations are inherently dangerous and have caused numerous Air Force crushing injuries and deaths. Personnel operating powered or manual doors must be extremely vigilant to protect themselves and others. Body positioning is extremely important, as all hangar doors have crush points. Never allow anyone to position their body, head, hands or feet in an area that can put them at risk. Strict adherence to operating instructions is essential to prevent injuries.

2.1. Door operators must be formally trained on shelter/hangar door operations and foam activation safety using the procedures outlined in this instruction.

2.2. Hangar and shelter doors, as well as door operating mechanisms, must be maintained in good working condition in order to mitigate the inherent hazards to the greatest extent possible.

2.3. Door operating checklists (in both English and host nation) will be coordinated through the 86 AW Safety Office and approved checklists will be posted at each hangar door control panel.

3. MARKINGS FOR POWERED HANGAR DOORS.

3.1. IAW DAFMAN 91-203 Paragraph 24.14.8. maintain a clear zone of at least 50 feet around all sides of a hangar, shelter, or nose dock. All hangar doors will be marked with yellow or yellow and black hash-marked lines IAW DAFMAN 91-203 paragraph 7.1.8.1.1.6 and 7.1.8.1.1.7.

4. INSPECTION AND TESTING.

4.1. Squadron commanders will appoint, in writing, facility managers to either 786 CES Customer Service or local building maintenance entity, as applicable.. Document inspections of electrically operated doors monthly and manually operated doors quarterly,

along with service contract periodic inspections, on an AF Information Management Tool (IMT) Form 2411, Inspection Document, and post it, along with the door operating checklist, adjacent to the door controls.

4.2. Inspect all warning and safety markings of powered hangar doors monthly, and either repair (if within their capability) or initiate a work order through 786 CES Service Call or their local building maintenance entity to have the deficiency remedied. Coordinate the work order through the 86 AW Safety office to determine if a Risk Assessment Code is necessary. A visual inspection shall be made (and any discrepancies corrected) before operation IAW DAFMAN 91-203 paragraph 23.14.4. Warning lights are required in high noise areas if the audible alarm is difficult to hear. Use caution to avoid stroboscopic effects IAW DAFMAN 91-203 paragraph 24.14.5

4.2.1. Contact 786 CES Customer Service or 86 AW Safety Office if unsure about any inspection or marking requirements. Submit work orders immediately to correct any deficiencies noted.

4.3. In conjunction with the wing annual ground safety inspection, the 86 AW Safety Office will conduct an annual hangar door safety program inspection for any organization this operating instruction applies to.

5. TRAINING.

5.1. Personnel will be fully trained within their duty section on safety considerations, mechanical condition inspection, proper door operating procedures, and foam activation safety before being authorized to operate any hangar or aircraft shelter doors.

5.2. Supervisors will ensure that their personnel have been properly trained on door operating procedures using the squadron's on the job training (OJT) program.

5.3. Squadron commander or designated representative will approve all hangar door operators prior to being authorized to operate hangar doors.

5.4. All lesson plans must be reviewed and coordinated through the 86 AW Safety Office before being used to certify hazard familiarity or door operation.

5.5. All personnel who routinely work in areas with hangar doors but do not operate hangar doors will receive general hangar door hazard training prior to being exposed to associated hazards. This training will be performed as part of the work center's job safety training program and documented IAW **Paragraph 6.1** of this instruction. Use **Attachment 3** as a briefing guide.

5.6. Personnel who regularly work in areas with hangar doors and are required to operate the hangar doors will be trained IAW DAFMAN 91-203 Paragraph 24.14.3. This training will be documented IAW Paragraph 6.2. of this instruction. Units will tailor the sample lesson plan in **Attachment 4** to their specific facility.

6. DOCUMENTATION.

6.1. All personnel exposed to the hazards posed by hangar doors will receive general hangar door hazard training as part of their work center specific safety training. Supervisors will document this as part of their work center safety training contained in the Job Safety Training Outline (JSTO). Training must address the hazards and precautions

required when in proximity of hangar doors. Document the completion of work center safety training on the member's AF Form 55, Employee Safety and Health Record, electronic equivalent or in the Maintenance Information System (MIS). Contractors will document training on contractor-specific training records.

6.1.1. [G081 codes.

6.1.1.1. [RAMU 000022 Block Training Tier 2.

6.1.1.2. [Not Utilized.

6.1.1.3. [RAMU 000023 Block Training Tier 3.

6.2. Hangar door operation training will be documented in the MIS and tracked on a special certification roster for maintenance personnel. For non-maintenance personnel, training will be documented on DAF Form 797 or electronic equivalent. Contractors will document training on contractor specific training records. There are separate course codes loaded for the facilities as follows:

6.2.1. G081 codes:

6.2.1.1. RAMU 000020 – Electrical / Manual Operations of Hangar Doors for Aircraft Maintenance Personnel

6.2.1.2. RAMU 000021 – Dual Bay Electric Hangar Doors

6.2.2. 721 AMXS will use:

6.2.2.1. RAMS 000008 – Hangar 5 Door Trainer/Certifier

6.2.2.2. RAMS 000009 – Hangar 5 Door Operator

7. WINTER OPERATIONS.

7.1. Units will clear snow from all ground safety markings and ensure door tracks are clear of debris that could hinder operation.

7.2. Door operators will ensure doors are closed after aircraft, vehicle, or equipment has moved past the clear zone, to the greatest extent possible. This is necessary to allow the facility to maintain temperatures above freezing. If doors are left in the open position, temperatures inside facility could drop below freezing causing heat and water lines to rupture.

8. MANUALLY OPENING HANGAR DOORS.

8.1. A minimum of three personnel will be utilized when opening hangar doors.

8.2. At no time are vehicles authorized to open hangar doors.

ADRIENNE L. WILLIAMS, Brigadier General,
USAF
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 21-101, Aircraft and Equipment Maintenance Management, 21 February 2024

AFPD 91-2, Safety Program, 03 September 2019

DAFI 21-101, Aircraft and Equipment Maintenance Management, 20 December 2023

AFMAN 33-363, Management of Records, 01 March 2008

Prescribed/Adopted Forms

AF Form 55, Employee Safety and Health Record

AF IMT 2411, Inspection Document

DAF Form 797, Job Qualification Standard Continuation / Command JQS

DAF Form 847, Recommendation for Change of Publication

Abbreviations and Acronyms

AFI—Air Force Instruction

AFPD—Air Force Policy Directive

AFRIMS—Air Force Records Information Management System

AW—Airlift Wing

CE—Civil Engineering

DAF—Department of the Air Force

DAFMAN—Department of the Air Force Manual

IAW—in accordance with

IMT—Information Management Tool

JSTO—Job Safety Training Outline

MIS—Maintenance Information System

MXG—Maintenance Group

OPR—Office of Primary Responsibility

PAS—Protective Aircraft Shelter

RDS—Records Disposition Schedule

Attachment 2

HANGAR DOOR SAFETY INSPECTION GUIDE**Table A2.1. Hangar Door Safety Inspection Guide.**

Facility # _____ Facility Type (i.e. Hangar, PAS, etc.) _____	
Item No.	CHECKPOINT AND REFERENCES
1	Are danger, safety or informative signs installed at all required hazardous locations? Reference: DAFMAN 91-203 para. 24.14.2.4
2	Are safety and warning signs in both English and host nation language? Reference: DAFMAN 91-203 para. 24.14.2.4
3	Confirm that, ‘only qualified employees shall perform hangar door maintenance’? Reference: DAFMAN 91-203 para. 24.14.4.
4	Do all hazardous areas have barriers such as chains or fencing to restrict personnel from entering? Reference: DAFMAN 91-203 para. 24.14.2.3
5	Are the door paths free of obstructions with door tracks and trackways in good condition and free of debris? Reference: DAFMAN 91-203 para.24.14.4
6	Is there a 5-ft clear zone around all hazardous areas marked by solid yellow or yellow and black hash-marked lines? Reference: DAFMAN 91-203 para. 24.14.2.3 and 7.1.8.1.1.6 and 7.1.8.1.1.7.
7	Have monthly operational tests of door movement, controls and safety features (warning horn, warning light, pressure sensor and limit switches where installed) been completed and documented by the building custodian? Reference: DAFMAN 91-203 para. 24.14.6
8	Is there proper documentation for all personnel exposed to the hazards posed by hangar doors to show they received general hangar door hazard training as part of their work center specific safety training during their work center safety training contained in the JSTO? Reference: RABI 91-103 para. 6.1
9	Is there a standard Hangar Door Awareness Training program for initial and annual refresher training for all personnel who routinely operate electric and manual doors? Reference: DAFMAN 91-203 para. 24.14.3
10	Is there proper documentation showing individuals that operate hangar doors received door operation training? Reference: RABI 91-103 para. 6.2
11	Do powered doors have a distinguishable audible alarm that automatically signals at least 5 seconds before any door section movement and sounds continuously while the door is opened? Reference: DAFMAN 91-203 para. 24.14.5

Attachment 3**GENERAL HANGAR DOOR HAZARD TRAINING LESSON PLAN****Table A3.1. General Hangar Door Hazard Training Lesson Plan.**

PLAN OF INSTRUCTION/LESSON PLAN		PAGE 1 OF 1
NAME OF INSTRUCTOR	UNIT	DATE
COURSE TITLE Hangar/Protective Aircraft Shelter (PAS) Door Operation	POI NO.	BLOCK NO.
BLOCK TITLE		
COURSE CONTENT		TIME
Given a briefing, students will become familiar with hazards and restrictions involving aircraft-sized facility doors.		
1. Introduction:		.1
2. Facility Types:		.1
1st Generation PAS 3rd Generation PAS		
Manual Overlapping/Telescoping		
Electrical Overlapping/Telescoping		
3. Hazardous Areas:		.2
Personnel entranceway within doors		
Swing arc for clamshell doors Pinch points between doors		
Recessed retraction area for telescoping doors		
4. Individual Responsibilities:		.1
Aware of surroundings		
Comply with warnings and prohibitions		
TOTAL TIME:		.5
SUPPORT MATERIAL AND GUIDANCE:		
<u>AUDIOVISUAL EQUIPMENT</u>	<u>AUDIOVISUAL AIDS</u>	
None	None	
<u>TRAINING EQUIPMENT</u>	<u>INSTRUCTIONAL MATERIAL</u>	
None	RABI 91-103	
INSTRUCTIONAL METHOD:		
Informal Lecture		
INSTRUCTIONAL GUIDANCE:		
Stress the life-threatening hazards posed by various facility doors		

Attachment 4

SAMPLE HANGAR DOOR HAZARD TRAINING LESSON PLAN

Table A4.1. Sample Hangar Door Hazard Training Lesson Plan.

PLAN OF INSTRUCTION/LESSON PLAN		PAGE 1 OF 3
NAME OF INSTRUCTOR	UNIT	DATE
COURSE TITLE Hangar/Protective Aircraft Shelter (PAS) Door Operation	POI NO.	BLOCK NO.
BLOCK TITLE		
COURSE CONTENT		TIME
<p>Given a briefing, students will become familiar with hazards and restrictions involving aircraft-sized facility doors and will be able to safely operate building doors.</p> <p>OVERVIEW:</p> <ol style="list-style-type: none"> 1. Explain operating characteristics hangar/PAS doors (manual, electric,telescoping, etc.). <p>Ensure there is a minimum of 3 people when opening hangar doors manually.</p> <ol style="list-style-type: none"> 2. Explain safety hazards associated with using hangar doors (pinch points, door swing arcs, retraction recess areas, personnel doors within aircraft doors, etc). 3. Explain inspection procedures of electrical contacts in order for doors to operate (electric doors only). 4. Explain lock/unlock procedures for 1st generation PAS clamshell doors. 5. Explain primary procedures for opening and closing the hangar/PAS doors using the control panel (electric doors only). 6. Explain how to use emergency shutdown procedures and how to reset emergency switch on control panel (electric doors only). 7. Explain alternate and manual procedures for opening and closing electric hangar/PAS doors. 8. Explain purpose of electrical power override switch located on outside of building and the foam stop switch (if equipped). <p>DO NOT activate electrical power override switch under normal conditions. Activate switch only in the case of smoke and/or fire present in hangar.</p> <ol style="list-style-type: none"> 9. Update appropriate MIS course code and/or applicable training records. 		

Table A4.2. Sample Hangar Door Hazard Training Lesson Plan, Part 2.

PLAN OF INSTRUCTION/LESSON PLAN		PAGE 2 OF 3
SUPPORT MATERIAL AND GUIDANCE:		
<u>AUDIOVISUAL EQUIPMENT</u>	<u>AUDIOVISUAL AIDS</u>	
None	Hangar/Shelter Doors	
<u>TRAINING EQUIPMENT</u>	<u>INSTRUCTIONAL MATERIAL</u>	
None	RABI 91-103	
INSTRUCTIONAL METHOD:		
Informal Lecture		
INSTRUCTIONAL GUIDANCE:		
<ol style="list-style-type: none"> 1. Review the instructional material listed in this training plan when preparing to teach the use of the hangar or PAS door system. 2. Use of the hangar door system is required to move any type of equipment in or out of the facility. Identify the minimum door opening points regardless of the size of property to pass thru the doorway. 3. Identify safety hazards associated with using hangar doors. Pay particular attention to crush hazards, pinch points, entrapment areas (telescoping doors) and door within a door hazards. 4. Identify location of electrical contacts in order for doors to operate. 5. Identify location of the control panels located on either side of the hangar. 6. Identify door open and close limit lines painted on floor. 7. Identify door swing arc painted on floor of 1st generation PAS. 8. Identify location of manual override clutch handle on door electrical motors and explain how to use and proper position for opening and closing doors. 9. Identify location of electrical power override switch located on outside of building and foam stop switch (if equipped). <p>DO NOT activate electrical power override switch under normal conditions. Activate switch only in the case of smoke and/or fire present in hangar. Ensure there is a minimum of 3 people when opening hangar doors manually.</p>		

PLAN OF INSTRUCTION/LESSON PLAN	PAGE 3 OF 3
<p>TRAINING DEMONSTRATION AND APPLICATION:</p> <ol style="list-style-type: none"><li>1. Have trainee demonstrate primary procedures for opening and closing the hangar doors using the control panel.<li>2. Have trainee demonstrate proper clamshell door release procedures.<li>3. Have trainee demonstrate how to use emergency shutdown procedures and how to reset emergency switch on control panel.<li>4. Have trainee demonstrate alternate manual operating procedures for opening and closing electrical hangar or PAS doors.<li>5. Have trainee explain procedures for the foam stop switch. <p>CERTIFICATION:</p> <p>All agencies will document the appropriate hangar/PAS door operation training in the member's training records and MIS.</p> <p>MOTIVATION:</p> <p>To educate all personnel on the proper operating procedures for hangar or PAS door system, and help with familiarization of safety hazards, inspection, normal operation, and emergency stop procedures (electric doors only) to prevent injury or death to personnel and damage to equipment.</p>	