

**BY ORDER OF THE COMMANDER
KADENA AIR BASE**

**KADENA AIR BASE INSTRUCTION
21-101**



17 JUNE 2025

Maintenance

WELDING ON AIRCRAFT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing website at www.e-Publishing.af.mil

RELEASABILITY: There are no releasability restrictions on this publication

OPR: 18 EMS/MXMF

Certified by: 18 EMS/CC
(Maj Kori L. Fontaine)

Supersedes: KADENAABI21-101
17 November 2020

Pages: 5

This instruction implements Department of the Air Force Policy Directive (DAFPD) 21-1, *Maintenance of Military Materiel*. It establishes procedures for on aircraft welding. This publication applies to all 18th Wing military, civilian, contract personnel and units assigned or attached to Kadena Air Base (AB) unless limited by waiver granted under host-tenant agreement. 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 (IAW) 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 DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Paragraph **1.4.1** has been added. Aircraft Welding Fire Safety Checklist, AF Form 2519, *All Purpose Checklist* (**Attachment 2**) has been re-written. References throughout this publication have been revised to meet current Department of the Air Force (DAF) format. References reflect current materials.

1. Responsibilities.

1.1. Maintenance Operations Center (MOC) will:

1.1.1. Notify the appropriate Aircraft Maintenance Unit (AMU) of the welding requirements.

1.2. AMUs will:

1.2.1. Provide fireguard, tug operator, tow team, door operators, and sufficient personnel to position the aircraft for welding.

1.2.2. Prepare the aircraft for welding by completing their portion of the Aircraft Welding Fire Safety Checklist, AF Form 2519, *All Purpose Checklist* (**Attachment 2**). Once complete, the AMU will ensure the checklist is given to the 18th Equipment Maintenance Squadron (18 EMS) Fabrication Flight Metals Technology section.

1.2.3. Notify MOC when personnel and aircraft are ready for Metals Technology (welders).

1.3. Fire Department will:

1.3.1. Complete required fire safety checklists.

1.3.2. Issue the DAF Form 592, *Hot Work Permit*, to Metals Technology.

1.3.3. Review the completed Aircraft Welding Fire Safety Checklist prior to start of welding.

1.3.4. Provide standby fire truck at welding site if fire extinguishers cannot be provided.

1.4. 18 EMS Fabrication Flight Aircraft Metals Technology section will:

1.4.1. Review Department of the Air Force Manual (DAFMAN) 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, paragraph 20.8.3, *Aircraft Welding*, to become knowledgeable on any other requirements that may exist before beginning any welding operation.

1.4.2. Dispatch two welding shop personnel with required equipment to the welding site when notified by MOC that the aircraft is ready for welding.

1.4.3. Complete the 18 EMS portion of the Aircraft Welding Fire Safety Checklist.

1.4.4. Ensure all checklist items are complete and welding area is properly prepared. The Aircraft Metals Technology section will initiate all coordination with the 18th Civil Engineer Squadron (18 CES) Fire Department to ensure standby fire truck is available. 18 CES Fire Department will determine the area meets fire safety protocol and will issue the DAF Form 592 to the Aircraft Metals Technology section.

2. Procedures.

2.1. IAW Air Force Manual (DAFMAN) 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, paragraph 24.3.3.4, *Welding on Aircraft*, should be done outside of hangars, if possible. Aircraft may be parked in suitable hangars (Buildings 3560 and 3660) with Fire Department authorization; as fire suppression systems will have to be disabled to weld inside of any hangar. If hangar space cannot be made available, aircraft can be welded while parked in three-sided revetments provided the ground wind speed is 5 knots, or less and the ground is dry with no rain anticipated.

2.2. C-130 aircraft may be welded on the hardstands provided wind speed does not exceed 5 knots. Alternate areas/hangars can be utilized if coordinated on a case-by-case basis with the Fire Department.

2.3. Aircraft requiring silver (hard) soldering can be accomplished at any location provided the following criteria are met.

2.3.1. Not in the immediate vicinity of other aircraft.

2.3.2. Not within 100 feet of flammable materials to include in ground fuel storage tanks.

2.4. All items under Mobility of Aircraft in [Attachment 2](#) will not apply for welding/silver soldering operations conducted in open areas.

2.5. Items 5.1, 5.2, 5.5, 5.6, and 5.7 under Welding Equipment in [Attachment 2](#) will not apply when soldering operations are performed.

3. DAF Form 592, *Hot Work Permit*, will be signed by the Fire Department representative and welding technician and be kept at the welding site during the welding operation.

NICHOLAS B. EVANS
Brigadier General, USAF
Commander, 18th Wing

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

DAFPD 21-1, *Maintenance of Military Materiel*, 21 February 2024

DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 25 March 2022

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

Prescribed Forms

None

Adopted Forms

DAF Form 592, *Hot Work Permit*

DAF Form 847, *Recommendation for Change of Publication*

AF Form 2519, *All Purpose Checklist*

Abbreviation and Acronyms

AB—Air Base

AFI—Air Force Instruction

AMU—Aircraft Maintenance Unit

DAFMAN—Department of the Air Force Manual

DAFPD—Department of the Air Force Policy Directive

IAW—In accordance with

MOC—Maintenance Operations Center

OPR—Office of Primary Responsibility

Attachment 2

SAMPLE AIRCRAFT WELDING FIRE SAFETY CHECKLIST

Figure A2.1. Sample Aircraft Welding Fire Safety Checklist.

ALL PURPOSE CHECKLIST		PAGE 1	OF 1	PAGES
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA SAMPLE Aircraft Welding Fire Safety Checklist		OPR 18 EMS	DATE	
NO.	ITEM <i>(Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)</i>			
	1. SAFEGUARDING FUEL SYSTEM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.1 Review aircraft forms/MIS for fuel discrepancies that may cause "openings" to fuel cell. (AMU/CMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2 Fuel system closed on aircraft being welded. (CMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3 Fuel tank access plated in place (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.4 Fuel tanks topped off and vent openings closed or covered. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.5 Fuel lines, valves, and manifolds in place, secured and/or capped. (CMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.6 Fuel systems on adjacent aircraft within 100 ft. of welding point are closed. (CMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.7 Streamers attached to covered fuel vents. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.8 Pressure removed from fuel system (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2. HOUSEKEEPING	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.1 Clean area where welding is to be accomplished. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.2 Combustible materials removed 35 ft. from welding area. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.3 Floor clear of any oil or fuel spills. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.4 Floor drains checked in area for oil or fuel contamination. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3. MOBILITY OF AIRCRAFT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.1 Aircraft parking brakes off and wheels chocked. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.2 Tug and tow bar hooked to the aircraft. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.3 Clear path to permit towing aircraft outside (excluding doors). (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.4 Tail stand removed. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4. SAFEGUARDING OTHER WORK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.1 Review (DAFMAN) 91-203, Chapter 20, Welding, Cutting, and Other Hot Work for currency and become knowledgeable on any other requirements that may exist outside of this checklist. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.2 Check area including hangar floor drains with combustible gas analyzer before welding and every 15 minutes during welding. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.3 Welding area will be roped off. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.4 Welding area will have placards reading "WELDING OPERATION IN PROGRESS" (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.5 Screens, whenever possible will be placed around the welding operation. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.6 Covers for ultraviolet detector eyes will not be placed over the sensors until the fire department arrives on the scene and will be removed immediately after welding operations have ended. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.7 Suspend all other work on aircraft. (AMU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5. WELDING EQUIPMENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.1 Welding generator clear of aircraft engine and fuel tank vents. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.2 Static ground lead clamped to ground plug. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.3 Gas cylinders securely fastened to prevent tipping. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.4 Regulators and gauges working properly. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.5 All ground leads or cables positioned as close as possible to the area being welded. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.6 Electrical welding equipment components (other than flexible lead cables) kept at least 18 inches above the floor. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.7 All coiled welding cables spread out before use to prevent overheating. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6. FIRE PROTECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6.1 Fire extinguisher (20-B rating minimum) immediately adjacent of welding operation. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6.2 Fire extinguisher (80-B rating minimum) within 35 ft. of welding operation. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6.3 Ensure AMU assigns/provides fire guard. (EMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	SIGNATURE (EMS):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>