

**BY ORDER OF THE COMMANDER  
433D AIRLIFT WING**

**433 AIR WING INSTRUCTION 21-104**

**8 AUGUST 2013**

**Maintenance**

**TOOL CONTROL PROGRAM**



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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Air and Space Maintenance*. This instruction extends the guidance of Air Force Instruction (AFI) 21-101 *Aircraft and Equipment and Maintenance Management*. It provides guidance and procedures on creating, managing and disseminating directive and non-directive publications and forms throughout 433 Airlift Wing (AW). It establishes procedures and precautionary measures for ensuring tool control to assigned aircraft and personnel. This instruction applies to all Wing agencies dispatching to aircraft parking/runway/taxi areas and MXG maintenance Areas. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. OPR has determined that no waivers may be granted for any part of the publication.

**SUMMARY OF CHANGES**

This revision has been formatted to change group and wing commander, and to incorporate the TCMax system. This publication also reflects new publication format changes.

**1. Tool Accountability and Control.**

1.1. Work centers will use a “show and know” concept for Composite Tool Kit (CTKs), cabinets and shadow boards, employing either cut-outs, labels, shadows, or silhouettes that facilitate the immediate identification of missing tools.

1.2. Issue of Tools and CTKs:

1.2.1. Work centers will use Tool Accountability System (TCMax) for accountability and control of tools and tool kits. *NOTE: Aircrew Tools and Aircrew Flight Equipment CTKs will be manually tracked in accordance with IAW AFI 21-101 and AFI 11-301 VI, Aircrew Flight Equipment (AFE) Program.* Additionally, ALS shops will develop local tracking procedures to track quantity of serviceable/unserviceable oxygen connectors dispatched to and from the flightline.

1.2.2. The individual checking out the tool or kit bears the responsibility for the control and security of the tool or kit until it is returned to the tool center. Dispatched kits and equipment must be secured when left unattended. Unattended kits located within a controlled area must be locked but need not be secured to another object. Never secure kits to the exterior of an aircraft.

1.2.3. Dispatchable CTKs will contain an Air Force Reserve Command (AFRC) Form 177, *Consolidated Tool Kit Inventory and Control Log*. CTKs transferred from one individual to another at the job site will be inventoried by both parties and the transfer will be documented on the AFRC Form 177.

1.2.4. Tools and kits will be turned in at the end of each assigned shift. Tools and kits required for longer than the current shift (e.g. Temporary Deployment (TDY), deployments, etc.) will be issued “Long Term” in TCMax.

1.3. Inventory Procedures:

1.3.1. Maintain a Master Inventory List (MIL) for inventory purposes in every CTK.

1.3.2. Dispatchable tool kits will be inventoried by the tool center monitor and the individual checking out the kit at issue and again at return. Additionally, while in use, kits must be inventoried prior to aircraft or equipment operation (engine runs, operational checks, etc.) when maintenance has been performed.

1.3.3. Tool centers must account for all CTKs, tools, and dispatchable equipment at the beginning and end of each shift:

1.3.3.1. The contents of dispatchable CTKs need not be inventoried until signed out. Contents of non-dispatchable CTKs that are opened must be inventoried at the beginning and end of each shift.

1.3.3.2. CTKs used in an off-equipment environment (in-shop) that are not dispatched may be left open for multiple personnel to use during a shift. In-shop CTKs are inventoried each time they are opened and/or closed.

1.3.4. In work centers where only one employee is present, tool kits will be inventoried by the shop supervisor at the next shift change. In the event that there is only one individual and one shift in a work center, the flight chief or production supervisor will provide oversight for tool checkout.

1.3.5. Inventory of replacement/spare tools must be accomplished and documented quarterly.

1.3.6. A work center master tool inventory listing must be established and kept in the shop chief's office or tool center. At least annually and when the CTK custodian changes, supervisors will ensure that a comprehensive inventory of all tools is accomplished and documented:

1.3.6.1. Perform an extensive inspection to include condition, Equipment Identification Designators (EIDs), and accuracy of the MIL.

1.3.6.2. Inspect all tools for serviceability (reference Technical Order (TO) 32-1-101, *Use and Care of Hand Tools and Measuring Tools*).

1.4. Tool center monitors will ensure an adequate supply of AFRC Forms 177 are kept on hand. In the event of computer outage, tool check out/in will be documented on the AFRC Form 177 until connectivity is restored and TCMax can be updated. Tool room monitors will update TCMax as soon as it is available.

1.5. Control of Consumable and Expendable Items:

1.5.1. Consumables and expendables such as safety wire and apexes, may be maintained in CTKs provided that:

1.5.1.1. They are marked with a proper EID.

1.5.1.2. They are tracked in TCMax and identified as consumables on the MIL.

1.5.1.3. When broken or consumed, the tool monitor will exchange them on a one-for-one basis. Lost consumables/expendables will be treated as lost tools (see paragraph 6). Monitors will not issue replacement consumables without a lost tool report or the broken/consumed item (e.g. broken apex or empty container).

1.5.2. Rag Control:

1.5.2.1. Rags may be of different types (e.g. lint free white, red shop rags, grey absorbent pads). However, each type will be uniform in size, shape and color and issued separately from other types of rags.

1.5.2.2. Work centers may pre-package rags to add to CTKs. Packages will be added to the MIL and marked with the CTK number, type and number of rags. Packages will be replenished at inventory upon return to the tool center.

1.5.2.3. Soiled rags will be retained in plastic bags until turned in to the tool center at the end of the shift. When necessary, tool center monitors may exchange soiled rags for clean rags on a one for one basis. Tool center monitors will dispose of rags in their proper containers.

1.6. Individual Issue Equipment:

1.6.1. For equipment that will be issued to and maintained by individuals, designated monitors will create a 'CTK' in TCMax for each individual receiving equipment.

This CTK number will contain the first four digits of the shop World Wide Identifier (WWID) (See paragraph 3.1.7.) and the employee number of the individual receiving the equipment (e.g. R5FM00285). Supervisors need not show the CTK as 'issued' in TCMMax.

1.6.1.1. Each item of individual issued equipment will be marked with the WWID as described above.

1.6.1.2. Supervisors may elect to create individual equipment kits that will be maintained in the tool room and issued out in TCMMax on an as needed basis (use standard identification conventions as described in paragraphs 3.1.7. through 3.2. to mark these kits).

1.6.1.3. Use of personal tools (other than as specified above) is strictly prohibited.

1.6.1.4. Lost/missing individual equipment will be treated as lost tools. Comply with the procedures outlined in paragraph 6 of this instruction.

#### 1.7. Tool Procurement Monitors:

1.7.1. Personnel authorized to procure unit tools will be limited to individuals designated by squadron commanders, maintenance operations officers or superintendents.

1.7.2. Replacement/spare tools will be strictly controlled by flight chiefs and/or designated tool procurement monitors. Replacement tools will not be issued to replenish a CTK without the broken tool or a completed lost tool report. Warranty tools requiring replacement will be returned to the manufacture for replacement.

1.7.3. Procurement monitors/flight chiefs will ensure that the local manufacture of tools is either Technical Order (TO) directed or approved by Quality Assurance (QA) and processed in accordance with MXG Operating Instruction (OI) 21-115, *Local Manufacture Policy*.

1.7.4. Procurement monitors will manage the turn-in and control of warranted tools.

#### 1.8. Squadrons will appoint the following individuals:

1.8.1. Limit authorization to clear Red X's when a tool/item cannot be located to no lower than Maintenance Operations Officer/Superintendent (MXOO SUPT).

1.8.2. Tool Center TCMMax Administrators (primary and alternate) are to administer the tool center's TCMMax Program and serve as liaison to the group TCMMax Administrator.

1.8.3. CTK Monitors (as many as necessary to ensure adequate tool center coverage). In smaller shops Tool Center Administrators and CTK Monitors may be the same individuals.

#### 1.9. Emergency Response Equipment (e.g. crash recovery, Hazardous Material (HAZMAT), etc.):

1.9.1. All equipment must be inspected for serviceability before and after each use (including exercises).

1.9.2. Portable kits, trailers, etc. must have a Master Inventory List (MIL) for inventory purposes. Conduct a complete inventory using the MIL prior to and after each use.

1.9.3. At least annually (or as directed in TOs, manufacturer's manuals or other directives) conduct a thorough inspection and inventory. Include operational checks when directed by applicable technical data.

1.9.4. Supervisors must load dispatchable emergency response equipment into TCMMax for issue and to track and document inventories/inspections. In shop equipment (e.g. spill kits) inspections and inventories may be tracked in the Maintenance Information System (MIS).

## 2. Tool Identification.

2.1. All tools will be etched to identify them to a CTK. Tools which cannot be etched because of size will be placed in a container. The container will be marked with the CTK number and the number and size(s) of tools it contains.

2.2. Tools owned by Contract Field Teams (CFTs), Depot Teams and Factory Representatives will be marked with a unique designator that identifies the team. The contract Quality Assurance Representative (QAR) will monitor CFTs for compliance.

2.3. Tools/expendable items used for titanium engine blade blending or oxygen system maintenance will be kept in a special purpose kits separated from other tools. These kits will be marked "Controlled Items" "For Titanium Engine Blade Blending Only" For tools utilized in oxygen system maintenance, mark them with the following statement: "For Oxygen System Use Only"

## 3. Tool Accountability System (TCMax).

3.1. While TCMax is used to document inventories, it does not relieve the issuer and issuee of physical inventory responsibilities at issue and turn in.

3.1.1. The AFRC Form, 177 *Consolidated Tool Kit Inventory and Control Log* will be maintained in dispatchable CTKs to document on the job site transfer of CTKs (paragraph 1.2.3.). The AFRC Form 175, *Missing/Removed Tools*, will also be maintained in CTKs to document broken and missing tools until the tool center TCMax administrator transfers the data into TCMax. At the time of TCMax update, the tool center TCMax administrator will line through the item and initial the "Verified By" block of the AFRC Form175.

3.1.2. The TCMax database will be backed up at least once every 30 days. TCMax transaction and inspection history will be maintained for 2 years. Manual documentation will be maintained for 30 days unless otherwise specified.

3.2. Tool Center EIDs. The following identifiers are assigned as the first four digits of every TCMax EID in the Maintenance Group (MXG):

3.2.1. Fabrication:

3.2.1.1. Structural Repair:

3.2.1.1.1. Main (Building 898)	R5	F	S
3.2.1.1.2. Corrosion/Mold	R5	F	M
3.2.1.1.3. Fiberglass	R5	F	F

3.2.1.1.4. Isochronal/Refurbishment	R5	F	R
3.2.1.2. Metals Technology	R5	F	W
3.2.1.3. Survival Equipment	R5	F	B
3.2.1.4. Non-Destructive Inspection	R5	F	N
3.2.2. Avionics:			
3.2.2.1. Autopilot & Flight Instrumentation	R5	V	A
3.2.2.2. Communication & Navigation	R5	V	C
3.2.2.3. Electronic Warfare	R5	VE	
3.2.3. Accessories:			
3.2.3.1. Pneudraulics	R5	A	P
3.2.3.2. Fuels	R5	A	F
3.2.3.3. Electro-Environmental	R5	A	E
3.2.4. Maintenance:			
3.2.4.1. Isochronal	R5	M	I
3.2.4.2. Aero Repair	R5	M	A
3.2.4.3. Wheel & Tire	R5	M	T
3.2.5. Aerospace Ground Equipment	R5	G	G
3.2.6. Propulsion	R5	C	P
3.2.7. Maintenance Squadron (MXS) Mobility	R5	B	M
3.2.8. Aircraft Maintenance Squadron (AMXS)	R5	A	S
3.2.9. Quality Assurance	R5	Q	A
3.2.10. Aircrew Flight Equipment	R5	L	S
3.3. Test Measurement and Diagnostic Equipment (TMDE):			
3.3.1. All TMDE will be controlled and checked out in TCMax.			
3.3.2. EIDs for the TMDE laboratory will not be changed, however, dispatchable TMDE must also be marked with a WWID EID.			

#### 4. Tools Damaged or Removed from CTKs.

- 4.1. All damaged tools will be turned in to the tool procurement monitor for replacement.
- 4.2. Shop chiefs and tool center monitors will ensure prompt replacement of damaged tools.
- 4.3. While awaiting replacement, the tool center monitor will cover the cut-out/shadow until a replacement tool is issued. Develop a system for immediate identification of missing tools. For example, use a red tag or tags for broken/missing tools, blue for long term issue and green for TMDE awaiting calibration. All removed tools will be documented on the AFRC

Form 175 until TCMAX is updated. The AFRC Form 175 will be maintained in the tool kit with the tool inventory listing.

## 5. Lost Tool Procedures.

### 5.1. Flightline and Aircraft.

5.1.1. An individual losing a tool on or around an aircraft will report immediately to the expediter and/or shop supervisor. If not found after an initial search, the expediter or supervisor will notify the flight line production supervisor and Maintenance Operations Center (MOC) who, in turn, will notify the MXG/CC and QA. The aircraft will be immediately grounded and lost tool procedures initiated. The individual losing the tool is responsible for initiation of lost tool procedures. The expediter or shop chief will ensure initiation of AFRC Form 174, *Lost Tool/Object Report*, before the next shift change.

5.1.2. Enter a Red X discrepancy in the aircraft forms stating the type of tool and the last known area the tool was used.

5.1.3. Conduct a thorough search. If the tool is found, the investigation is complete. If the tool is not found, the Maintenance Operations Officer/Superintendent (MXOO/SUPT) will sign block 8 of the AFRC Form 174, authorizing termination of the search and clearance of the Red X (see paragraph 1.8.1.). If at any time during or following the investigation, the tool is found and retrieved, notify the expediter, production super (or flight chief) and MOC, who in turn, will notify the MXG/CC and QA.

5.1.3.1. After normal duty hours, authorization to terminate the search may be obtained from the MXOO/SUPT by telephone. In this event, write "telecom" in the INDIVIDUAL INITIALS column of block 8 and enter the time and date of authorization in the TIME/DATE INITIALED column. Obtain signature for the block 8 of the AFRC Form 174 the following duty day.

5.1.4. Expediters or shop chiefs will ensure complete documentation (all blocks) of the AFRC Form 174. Forward one completed copy each to the tool center monitor, squadron supervision, and QA within 48 hours of losing the tool. Tool centers will maintain AFRC Forms 174 on file until the item is found or 1 year, whichever comes first.

### 5.2. Post Taxi/Take-off Procedures.

5.2.1. MOC will notify the MXG/CC and Command Post immediately upon the post take-off discovery of a lost tool.

5.2.2. Command Post will contact the aircraft and brief the crew on the type of tool and last known area the tool was used.

5.2.3. Away from home station, the aircraft commander (following a thorough search) has the authority to clear a Red X when a tool cannot be found.

5.2.4. The aircraft will immediately be placed on a Red X upon return to home station and the expediter or production supervisor will ensure compliance with the procedures outlined in paragraph 5.

### 5.3. In Shop/Off Equipment.

5.3.1. Individuals losing a tool in the shop area will report to the supervisor immediately.

5.3.2. If not found after an initial search, immediately place a Red X in any affected equipment forms, Air Force Technical Order(AFTO) Form 244, *Industrial / Support Equipment Record*, or equivalent. Use Lockout/Tagout procedures outlined in 433D MXG OI 21-119, *Lockout/Tagout Program*, when applicable.

5.3.3. Conduct a thorough search including dismantlement if necessary and practical.

5.3.4. If after a thorough search, the tool is not found, the individual losing the tool is responsible for initiation of lost tool procedures. Shop chiefs are responsible for ensuring initiation of the AFRC Form 174 prior to the next shift change. Notify MOC of the lost tool who, in turn, will notify the MXG/CC and QA. The MXOO/SUPT will sign block 8 of the AFRC Form 174 authorizing termination of the search. Shop supervisors are responsible for ensuring complete documentation of the AFRC Form 174. Forward one completed copy each to the tool center monitor, squadron supervision and QA within 48 hours of losing the tool. The tool center monitor will maintain AFRC Forms 174 until the item is found or 1 year, whichever comes first.

5.3.4.1. After normal duty hours, authorization to terminate the search may be obtained from the MXOO/SUPT by telephone. In this event, write "telecom" in the INDIVIDUAL INITIALS column of block 8 and enter the time and date of authorization in the TIME/DATE INITIALED column. Obtain signature for the block 8 of the AFRC Form 174 the following duty day.

5.3.5. If at any time, the tool is found, notify the supervisor, the tool center monitor and MOC, who in turn, will notify the MXG/CC and QA.

JEFFERY T. PENNINGTON, COLONEL, USAFR  
Commander, 433D Airlift Wing

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

AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program*, 25 February 2009

AFI 21-101, *Aircraft Equipment Maintenance Management*, 26 July 2010

AFMAN-33-363, *Management of Records*, 1 March 2008

AFPD 21-1, *Air and Space Maintenance*, 25 February 2003

TO 32-1-101, *Use and Care of Hand Tools and Measuring Tools*, 1 December 2004

MXGOI 21-115, *Local Manufacture Policy*

MXGOI 21-119, *Lockout/Tagout Program*

***Prescribed Forms***

None.

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

AFRC Form 174, *Lost Tool/Object Report*

AFRC Form 175, *Missing/Removed Tools and Equipment*

AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*

AFTO Form 244, *Industrial/Support Equipment Record*

***Abbreviations and Acronyms***

**AF**—Air Force

**AFE**—Aircrew Flight Equipment

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFPD**—Air Force Policy Directive

**AFRC**—Air Force Reserve Command

**AFTO**—Air Force Technical Order

**AMXS**—Aircraft Maintenance Squadron

**AW**—Airlift Wing

**CFT**—Contract Field Team

**CTK**—Composite Tool Kit

**EID**—Equipment Identification Number

**HAZMAT**—Hazardous Material

**IAW**—in accordance with  
**LAN**—Local Area Network  
**MIL**—Master Inventory List  
**MIS**—Maintenance Information System  
**MOC**—Maintenance Operations Center  
**MXG**—Maintenance Group  
**MXG/CC**—Maintenance Group Commander  
**MXOO/SUPT**—Maintenance Operations Officer/Superintendent  
**MXGQ**—Quality Assurance  
**MXS**—Maintenance Squadron  
**OI**—Operating Instruction  
**OPR**—Office of Primary Responsibility  
**PAS**—Personnel Accounting Symbol  
**QA**—Quality Assurance  
**QAR**—Quality Assurance Representative  
**RDS**—Records Disposition Schedule  
**TCMax**—Tool Accountability System  
**TDY**—Temporary Duty Assignments  
**TMDE**—Test Measurement and Diagnostic Equipment  
**TO**—Technical Order  
**WWID**—World Wide Identification Code

### *Terms*

**CTK**— A controlled area or container used to store tools or equipment and maintain order, positive control and ease of inventory. May be in the form of a toolbox, a shadow board, shelves, cabinets, etc.

**Group TCMax Administrator**— Appointed by the Maintenance Group Commander (MXG/CC), serves as the focal point for TCMax implementation, training and liaison to Local Area Network (LAN) administrators and tool center administrators.

**TCMax**— A Microsoft Windows™ based application used to track the issue and return of tools, inventory control and integrate bar coding devices. See the TCMax user manual for more information on the capabilities of TCMax.

**Tool Center**— A centralized tool room with controlled access that maintains custodial responsibility for the tools used in a maintenance area.

**Tool Center Custodian(s)/Monitors**— Individual(s) appointed by the shop chief or flight chief to assume custodial duties of a tool center (i.e. issue, receipt & inventory of tools). Appoint a primary custodian and as many monitors as necessary to ensure coverage of the tool center.

**Tool Center Administrator**— The TCMax program administrator for a tool center. Serves as liaison to the group TCMax administrator and tool center monitors. Appointed by flight chiefs. Each tool center will have an administrator and an alternate. Tool center administrators will define, input and change tool/CTK data as necessary in TCMax.