***BY ORDER OF THE COMMANDER***
***439 AIRLIFT WING***

***439TH AIRLIFT WING INSTRUCTION***
***21-105***

***21 AUGUST 2020***

***Maintenance***

# *CONSOLIDATED TOOL PROGRAM AND CYBER DISCIPLINE*

**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 releasable restrictions on this publication.

---

OPR: 439MXG/MXQ

Certified by: 439 MXG/CC
(Col David C. Post)

Supersedes: 439AWI21-105, 7 September 2018

Pages: 11

---

This instruction implements Air Force Policy Directive (AFPD) 21-1, *Maintenance of Military Materiel, 29 October 2015* and Air Force Instruction (AFI) 21-101, *Aircraft and Equipment Maintenance Management,* 21 May 2015. It establishes procedures, objectives, and responsibilities to control tools, equipment, and electronic devices from all wing agencies dispatching to aircraft parking/runway/taxi areas and 439th Maintenance Group (MXG) aircraft maintenance facilities. It applies to the 439th Maintenance Group (439MXG) and all units assigned, 439th Operations Support Squadron (439 OSS), Life Support (439OSS/OSL) section and the 337th Airlift Squadron (337 AS). Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, 1 March 2008; and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer any 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 Form 847 to 439 MXG/MXQ, 350 Hangar Avenue, Box 21, Westover ARB, Chicopee, MA 01022-1771.

## *SUMMARY OF CHANGES*

This instruction has been re-written to include cyber discipline requirements.

**1. Definition.** A Consolidated Tool Kit (CTK) is defined as tools or equipment stored in a securable controlled area or container. Each tool or piece of equipment in the CTK shall have an assigned location identified by either an inlay cut in the shape of the tool or a shadowed layout.

The presence or absence of any tool or equipment can therefore be readily determined by visually scanning the CTK. The work center supervisor will include the actual location of the tool or equipment on the Master Inventory List (MIL).

**2. Responsibilities.** Supervisors at all levels must ensure personnel assigned to their sections conform to the procedures established in this instruction and other applicable directives. The squadron maintenance officer and/or section superintendents are responsible for management of the CTK program and will appoint a CTK custodian for each flight/element. The CTK custodian will provide requests for tools to the unit's Government Purchase Card holder for procurement.

**3. Procedures.**

3.1. CTK/Tool Identification.

3.1.1. Each tool or separate piece of equipment shall be permanently marked with its CTK designator. As a general rule, smooth uninterrupted surfaces of .125" (1/8th inch) or greater may be legibly marked using standard engraving equipment. To help expedite tool sign out/in, work centers may use a bar-code system to issue/turn-in tools and equipment in accordance with **paragraph 3.1.7** of this instruction.

3.1.2. Small tools or items that cannot be marked as described above (such as drill bits, allen wrench sets, apexes, etc.) will be stored as a set in a container marked with the CTK designator and the total number of items. The container is counted as one of the items. Work centers will provide a detailed inventory of these small items using one of the following options:

3.1.2.1. The container will include a description of each item (size and quantity), and the MIL will list one set with total number of pieces (including container) **OR**

3.1.2.2. The MIL will list the container and each item separately. ***NOTE***: Screwdriver handles will not be used to permanently store apexes but may be used temporarily when more than one apex is required for a specific task. Upon completion of the task, the apexes will be accounted for and returned to their container. Screwdrivers used in this manner must have their caps marked with the CTK designator. Supervisors may opt to permanently seal caps to the screwdrivers.

3.1.3. CTK/Tool identification numbering will comply with the Tool Control System (TCMax) as outlined in AFI 21-101, Chapter 10, and will incorporate "W5" as the first two digits of the World Wide Identifier (WWID) for Westover. A list of Equipment Identification Designators (EID) for 439 MXG work centers is available using the TCMax system. EIDs must not conflict with another work centers' markings.

3.1.3.1. 439th Aircraft Maintenance Squadron (439 AMXS). CTKs or equipment will be numbered as "W5O". The next digit will be a letter indicating the specialty, e.g., A=AFIN, C=CNAD, E=ELEN, F=Flight line, H=HYD, J=Jets, S=Support or T=Transient maintenance; the last five digits will be assigned by the tool control organization and will be alpha/numeric to identify the specific CTK or piece of equipment.

3.1.3.2. 439 AMXS Mobility. CTKs will be numbered as follows: W5OM. The next digit will be a letter indicating the specialty, e.g., A=AFIN, C=CNAD, E=ELEN, F=Flight line, H=HYD, J=Jets, S=Support; the last four digits will be assigned by the

tool control organization and will be alpha/numeric to identify the specific CTK or piece of equipment.

3.1.3.3. 439th Maintenance Squadron (439 MXS). CTKs or equipment will be numbered as "W5MX" with the next digit identifying the shop, e.g., A=AFIN, G=AGE, R=Aero Repair, C=CNAD, E=ELEN, F=Fuels, H=Hydraulics, D=ISO, P=Propulsion, S=SMCO, M=Metals Tech, N=NDI. The remaining digits will be assigned by the tool control organization and will be alpha/numeric to identify the specific CTK or piece of equipment. One minor variation to this format may be necessary to comply with TCMax requirements when marking items stored on shelves in cabinets. If needed, MXS markings may begin with "W5M", with the next digit identifying the shop code to meet TCMax requirements.

3.1.3.4. The Munitions work center will mark their tools/equipment "W5AMMO", with the remaining digits assigned by the work center to identify the specific CTK or equipment.

3.1.3.5. CTK or equipment assigned to 439 MXG Quality Assurance will be marked "W5QA" with the remaining digits assigned by the work center to identify the specific CTK or equipment. Individual issued tools/PPE will be marked with "W5QA" plus the individual's five digit employee number.

3.1.4. Tools used on the aircraft or the flight line by the 439 OSS/OSL section or 337 AS will be included in a CTK and positively controlled. These tools will be etched using the 9 digit format as directed by the TCMax. The first two digits will be "W5" indicating Westover ARB, the next two digits will be "AF" for Aircrew Flight Equipment and "AS" for the 337AS, and U for Survival. The remaining five digits will be alpha-numeric to identify the specific CTK that the tool or item is assigned to, example- W5AFE0005.

3.1.5. Depot and Contract Field Team personnel are subject to CTK tool control procedures outlined in this instruction. **Exception**: Contractors and Most Efficient Organizations are not required to use TCMax until the contract is renewed and the requirement for using TCMax is added to the follow-on contract, or the contractor/MEO voluntarily elects to use TCMax at no additional expense to the government. Tool inventories will be accomplished at the beginning of each shift, prior to departing the job site, and at the end of each shift.

3.1.6. Tools or components that are part of a mock-up or test-set will be marked with the associated equipment CTK designator. Work centers will maintain strict accountability, control, and issue of these types of tools and components.

3.1.7. Work centers may affix non-metallic bar code labels on tools and equipment as a means of permanently marking the items as long as the use of the tool and its work environment does not interfere with the adhesion of the label or render the label unreadable. When bar code labels are not a suitable method of permanent marking (e.g., tools too small in size to affix a label to or tools that bar-code labels will not adhere to), a listing of bar codes may be maintained in the tool room and used to issue or turn-in those items. Such items must be permanently marked with the EID by etching or other means. **Note**: Prior to using the Laser Etcher owned by AMXS, personnel will receive laser

safety training from Bioenvironmental Engineering in accordance with AFOSH Standard 48-139, *Laser Radiation Protection Program,* and ANSI Z136.1, *Safe Use Of Lasers*.

3.1.8. Issued Personal Protective Equipment (PPE)/Tools such as ear defenders, communication headsets, reflective belts, etc, will be marked with a TCMax approved CTK designator that begins with "W5" and ends with alpha-numeric characters that link the items to the responsible individual. Their initial issue is recorded in TCMax. Supervisors will ensure an annual inventory of all issued PPE/Tools is accomplished, document on the MIL and maintain a copy.

3.1.9. Personal tools not controlled through CTK procedures are not authorized on the flight line or in any maintenance area. Personally purchased tools are not authorized.

3.1.10. Personal cell phones and other electronic devices possessed on the flight line or in maintenance work areas will only be used for official/authorized business. Established communication methods (LMR, DCN, etc.) should be used whenever possible or when directed by unit supervision. Cell phones will not be used while actively performing maintenance and will not be used as a replacement for aircraft interphone communication. While performing maintenance actions, electronic devices not required in the performance of maintenance, shall be powered off. Placing these devices in the silent or vibrate mode does not satisfy this requirement. This restriction does not apply to personnel performing maintenance management duties (e.g., Pro Super, Expediter). External listening devices like earbuds, earphones, or wireless devices are prohibited Personnel will also comply with restrictions in TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*; AFMAN 91-201, *Explosive Safety Standards*; AFI 91-207, *The USAF Traffic Safety Program*; AFI 31-218, *Motor Vehicle Traffic Supervision*; AFMAN 33-282, *Computer Security (COMPUSEC)*; and aircraft and equipment TOs.

3.2. Tool/Equipment Sign Out/In. Tools and equipment will be signed out through the central tool room for the assigned areas. MXG employees requesting tools will provide the tool room attendant with their G081 assigned employee number. Personnel assigned to the 337 AS may sign out tools through the 439 AMXS CTK section and will use the number assigned to them in the TCMax system, i.e., 337##. The tool room attendant will ensure the number provided corresponds with the requestor prior to issuing the tools.

3.3. Locally developed or modified tools/equipment requires approval by MXQ before being placed into service. Supervisors will obtain a Local Tool Manufacture Approval worksheet from the QA office to coordinate requests for locally manufactured or modified tools/equipment. Locally manufactured or modified tools that carry loads or apply torque (i.e., items welded together or bent to create custom configurations for wrenches, screwdrivers, etc.) require non-destructive inspection (NDI) testing prior to being approved by MXQ. Supervisors will review locally developed or modified tools/equipment every 2 years to ensure the tools are still necessary. Locally developed tools and equipment are controlled the same as all other CTK items.

**4. Accountability and Control.**

4.1. Account for all CTKs, tools, and dispatchable equipment at the beginning and end of each shift. Separate shift inventories must be documented by both outgoing and incoming

personnel. CTKs present during tool room shift inventories do not need to be opened for inventory. Beginning/end of shift inventories must be documented in TCMax.

4.2. Tools and/or equipment will not be issued or turned in without a physical inventory and a general visual inspection of the condition to ensure each item is accounted for and serviceable. The tool-room attendant and the person signing out/in the tools or equipment are equally responsible for ensuring all items are accounted for. Each tool kit will include a copy of the MIL (TCMax generated product).

4.2.1. When CTK's are geographically decentralized from the tool storage facility (i.e. RISO T-Tail tool kit, Wing stand tool kits) accountability inventories will be accomplished and documented on AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*, by the gaining employee. Differing employee concept applies for sign in/out procedures. These inventories will be accomplished after CTK sign out and prior to CTK sign in of TCMax.

4.3. Each CTK or piece of equipment must have a designated location for inventory and accountability. When TCMax is not available, accountability inventories will be documented at the beginning and end of each shift using AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*. Completed forms will be maintained for a minimum of 30 days after the last entry.

4.4. Work center supervisor will ensure an annual inventory of all tools and equipment is accomplished, document on the MIL and maintain a copy for each type of CTK.

4.5. Perform a visual inventory of all applicable CTK at the completion of jobs or tasks. Accomplish an inventory prior to operation of any aircraft or equipment when maintenance actions were performed (e.g., engine run, landing gear retraction, flight control operational checks).

4.5.1. When mission needs dictate the transfer of tools/equipment at the job site, the losing and gaining individuals will be equally responsible for ensuring positive tool control and accountability. The losing and gaining individuals will each inventory the tools/equipment being transferred. The inventory and transfer will be documented on an AF Form 177, *Consolidated Tool Kit Inventory and Control Log*, or automated TCMax product. Both individuals will sign the form certifying that all tools/equipment are accounted for. The losing individual will turn in the form to the tool room attendant prior to the end of their shift. The tool room attendant will then reassign possession in TCMax to the gaining individual.

4.6. When only one-person is assigned to a shift/work center, the individual will request a responsible person from a nearby work center to assist in the inventory and sign in/out of tools and equipment.

4.7. When tool kits are signed out for use in TDY locations (TCMax not available), the individual responsible for the tools will accomplish an inventory prior to the first use and after the last use of each day. This inventory will be documented on AFRC Form 177, or approved equivalent form included in the kit. This requirement applies to tool kits issued to Mission Essential Personnel (MEP) and 337 AS flight crew members. If only one MEP is assigned to the mission, he or she will request a crew member to verify the contents of the kit and sign the form.

4.8. Tools or equipment that are missing or removed will be documented in TCMax and on AF Form 175, *Missing/Removed Tools and Equipment* or TCMax equivalent form and will be maintained in the tool kit. Remove the EID from broken/removed tools with the exception of warranty tools where removal of the EID would void the tool warranty.

4.9. Crash recovery equipment will be controlled using the same method as any other CTK. Tools/equipment will be identified to include the CTK designator per **paragraph 3.1.1** of this instruction.

4.10. Replacement tools (including expendable/consumable items such as apexes, drill bits, etc.) will be controlled by the work center supervisor and tracked in TCMax. Broken tools will be documented in TCMax and exchanged on a one-for-one basis by the supervisor or their designated representative. An inventory of all replacement stock will be accomplished and documented quarterly.

4.10.1. When interchanging like items that are not identical (different brand, shape, etc.), annotate changes on the MIL, initialed and dated by the supervisor or designated representative until the MIL is updated and reproduced.

4.11. Shop and aircraft rags will be positively controlled as a CTK issue/turn-in item. Work centers will determine quantity limits to be issued. (The quantity of rags turned-in shall equal the quantity signed-out).

4.12. Broken/unserviceable tools covered by warranty will be controlled by the work center supervisor until replaced. Each broken/unserviceable tool will be annotated on an inventory control log which will be controlled by the work center supervisor.

4.13. Hazardous Materials (HAZMAT) will be procured in accordance with Westover ARB 439 AWI 48-102, *Hazard Communication Program*, and all applicable directives. HAZMAT stored in the work center will be controlled by the work center supervisor. HAZMAT included in a CTK will be controlled by the user. The user will ensure HAZMAT is used in a manner consistent with applicable directives and in accordance with the Safety Data Sheet.

**5. MIL.** Supervisors will use TCMax to maintain master inventory lists for each tool kit assigned. Each tool box will contain a copy of the MIL to aid in the inventory and accountability of its contents. The MIL describes the characteristics, quantity and location for each item assigned to the kit (e.g., Drawer 1; ¼" drive x ½" 6-point socket; QTY = 1). Consumables such as safety wire, adhesives, wire bundle lacing, solder, etc., will be identified as consumables on the MIL. The inventory list will indicate the location of items assigned to the kit that are sub-located elsewhere.

**6. Foreign Object Damage (FOD) Control.** FOD bags will be attached to each dispatchable toolbox. Non-dispatchable containers/CTKs that remain in a shop environment, where permanent FOD containers are available, do not require a FOD bag

**7. Unserviceable Tools.** Work center supervisors will ensure that all unserviceable tools are repaired or replaced in a timely manner. Tool boxes with unserviceable tools may be dispatched provided the unserviceable tools are removed and properly documented. Unserviceable, non-repairable tools will be secured and accounted for until processed for disposal or turn-in. Tools being disposed of or turned in will have the CTK designator and bar-coding identification

removed with the exception of warranty tools where removal of the EID would void the tool warranty.

**8. Security.** The work center supervisor is responsible for storing and securing CTKs/equipment. Kits and CTK storage areas will be kept locked when not in use or left unattended.

**9. Lost Tool/Object Documentation Procedures.**

9.1. Only individuals designated by 439 MXG/CC will clear the Red X entry when an item cannot be found. These individuals must be certified in GO81 course code, INSP 000145. If the missing item is found, a maintenance supervisor, certified in course code C5 00707 or 00708 may clear the Red X. A copy of the Lost Tool Report will be forwarded to the 439 MXG/QA.

9.2. In the event that a tool/item is discovered missing after an aircraft has taxied, but before takeoff, the individual making the discovery will immediately notify their supervisor. The supervisor will immediately contact Maintenance Operations Center (MOC) and 439 MXG/MXQ. MOC will in-turn contact Command Post (CP) and request that the aircraft return to parking so that a search for the lost tool/item may be conducted.

9.3. If a tool/item is discovered missing after the aircraft has taken off, the individual making the discovery will immediately notify their supervisor. The supervisor, in coordination with the production supervisor, will attempt to make a determination of the severity of the situation based on the last known location of the tool. The supervisor will immediately pass along all known information to MOC and 439 MXG/MXQ. MOC will immediately pass all pertinent information to the CP and in-turn the Aircraft Commander (AC). If there is any potential for the item to cause safety of flight concerns, the MOC will relay the information to the CP and request that the aircraft land immediately if it is in the local area. If the aircraft is out of the immediate area the AC will make the determination where to land and what procedures to follow.

9.4. If a tool/item is discovered missing off station, the Mission Essential Personnel (MEP) or flight crew will enter a Red X in the aircraft forms and inform the AC of the situation. If at a C-5 support base, the aircrew will inform the local MOC and MXQ of the condition. The MEP or flight crew will immediately perform a lost tool/item inspection. If the tool/item is recovered, the MEP or flight crew will clear the Red X per T.O. 00-20-1. If the tool/item cannot be recovered the AC will coordinate with the 439 MXG/CC to determine the procedures to be followed.

9.5. When any tool or item is determined or suspected to be missing on or near energized workbenches or machinery, the equipment will be locked out/tagged out. A Red-X discrepancy will be placed in the equipment forms describing the type of tool/item, and the probable area where the tool/item was lost. An AFRC Form 174, *Lost Tool/Object Report*, or TCMax generated form, will be initiated. The work center supervisor, Flight Chief, Maintenance Superintendent, and 439 MXG/MXQ will be notified as soon as possible. The workcenter supervisor will direct personnel to conduct a search for the missing tool/item. If the tool/item cannot be found, the flight chief will determine what further action is necessary.

**10. Cyber Discipline Requirements and Training.**

10.1. Maintaining positive cyber discipline practices of Department of Defense (DoD) Information Technology (IT) is critical to mission sustainment. DoD Instruction 8500.01, *Cybersecurity*, defines both hardware and software that is physically part of, dedicated to, or essential in real time to the mission performance of a special purpose systems. DoD IT is the most common IT encountered in flightline environments, and includes (but is not limited to) electronic tools, support equipment, and aircraft. The culture of positive cyber security must be fostered by all personnel working on the flightline.

10.2. The following requirements and controls are intended to fulfill requirements outlined in AFMAN 17-1301, *Computer Security (COMPUSEC)*, without incurring requirement for waivers, AFI 21-101, *Aircraft and Equipment Maintenance Management*, and T.O. 33-1-38, *Cybersecurity for Automatic Test Systems and Automatic Test Equipment in FSC*. Additional information regarding information assurance requirements and training can be found at: **https://cs2.eis.af.mil/sites/10060/default.aspx**.

10.2.1. Only government equipment authorized by MDS or specialized equipment technical orders will be connected to Platform IT or other DoD IT via Universal Serial Bus (USB), card reader, cannon plug, Bluetooth, Infrared Red (IR), WiFi, or other connection method yet developed.

10.2.2. Government personnel will install updates, security patches, and software as directed by Air Force Network Alerts on Air Force enterprise network enabled desktops, laptops, eTools, and other Personal Electronic Devices (PEDs).

10.2.3. Government personnel will scan all removable media to include Automated Computer Program Identification Number System (ACPINS), software downloaded from government sites, e.g. Automated Weight & Balance System (AWBS), Electronic Software Distribution System (ESDS), etc., and flight data or faults from aircraft which facilitate data transfer across an "Air Gap".

10.2.4. If Malicious Code/Cyber Issues are suspected while using government information technologies equipment, personnel must immediately report and take remedial actions IAW T.O. 33-1-38.

10.3. Initial and annual Cyber Discipline will be documented IAW AFI 36-2201, *Air Force Training Program*, for all DoD personnel utilizing PEDs, computers, or test equipment that may be connected to weapon system Platform IT, and could result in malware intrusion into DoD IT or Platform IT.

10.3.1. Initial cyber discipline training will be given by the MXG Quality Assurance team and will be briefed annually during block training.

10.3.2. Maintenance personnel will utilize Maintenance Information System (MIS) training course code (ANCL 000002) to record training.

10.3.3. Non-maintenance personnel will receive through any combination of classroom, computer based training, block training, or testing procedures as coordinated with Unit Training Monitor (UTM). Training will be documented through AF Form 1098, *Special Task Certification and Recurring Training*, or automated training program.

10.4. Cyber Discipline Training will include the following elements:

10.4.1. User explanation of Authorized vs Non Authorized uses.

10.4.2. Quarantine and turn-in for media, equipment, or computer suspected of having malware to appropriate work-center supervisor and/or QA Cyber Manager IAW T.O. 33-1-38.

10.4.3. Recent cyber incidents (if any) that have degraded or damaged weapon systems to include lessons learned.

CRAIG C. PETERS, Colonel, USAF
Commander

**Attachment 1**

**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

***References***

AFPD 21-1, *Maintenance of Military Materiel, 29 October 2015*

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 21 May 2015

AFI 21-101_AFRCSUP_1, *Aircraft and Equipment Maintenance Management*, 24 Aug 2015

AFI 48-139, *Laser and Optical Radiation Protection Program*, 30 Sep 2014

Technical Manual00-20-1AFRCSUP, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, 21 Nov 2019Technical Order 33-1-38 *Cybersecurity for Automatic Test Systems*, 28 Apr 2018

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

439 AWI 48-102, *Hazard Communication Program*, 21 August 2013

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*, 22 September 2009

AFRC Form 175, *Missing/Removed Tools and Equipment*, 4 August 2015

AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*, 1 January 2007

AFRC Form 174, *Lost Tool/Object Report*, 1 January 2007

***Abbreviations and Acronyms***

**AC**—Aircraft Commander

**AF**—Air Force

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFOSH**—Air Force Occupational Safety and Health

**AFPD**—Air Force Policy Directive

**AFRIMS**—Air Force Records Information Management System

**AW**—Airlift Wing

**CP**—Command Post

**CTK**—Consolidated Tool Kit

**EID**—Equipment Identification Designator

**FOD**—Foreign Object Damage

**HAZMAT**—Hazardous Material

**LMR**—Land Mobile Radio

**MEO**—Most Efficient Organizations

**MEP**—Mission Essential Personnel

**MIL**—Master Inventory List

**MOC**—Maintenance Operations Center

**NDI**—Non-Destructive Inspection

**OPR**—Office of Primary Responsibility

**PPE**—Personal Protective Equipment

**RDS**—Records Disposition Schedule

**RISO**—Regionalized Isochronal Inspection

**WWID**—World Wide Identifier