

## DESCRIPTION FOR PURCHASE

## SET, STANDARD AUTOMOTIVE TOOL (SATS)

## 1. SCOPE.

1.1. Scope. This specification describes a Set consisting of selected tools and equipment used to sustain a wide variety of tactical and combat equipment on the battlefield, primarily automotive vehicles. The Set supports maintenance activities in all areas of the battlefield, from the lowest level of maintenance conducted just out of sight of the enemy to the highest level of maintenance conducted in rear areas of the Theater of Operations. The Set consists of a core selection of tools and equipment suitable for support of the lowest level of maintenance. The tools and equipment are placed in rugged storage media integrated with a transportable, rapidly deployable, highly mobile, trailer-mountable tactical shelter. To increase the shop capabilities for maintenance at higher levels where needed, modular tool kits will supplement the core set. As of the date of issue for this specification, two such modules have been identified, and others are under study.

1.2. Classification. Items deliverable under this specification are as follows.

## Class I: SATS Core Set

Level 1: SATS Core set components integrated with trailer-mounted shelter.

Level 2: SATS Core set components with storage media.

Level 3: SATS Core set components only.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be use in improving this document should be addressed to: HQ ARDEC, AMSTA-AR-WEP-RB, Rock Island IL 61299-7300.

**DISTRIBUTION STATEMENT A.** Approved for public release: distribution is unlimited.

Class II: SATS Module #1

Level 1: SATS Module #1 components integrated with the core set in the trailer-mounted shelter.

Level 2: SATS Module #1 components with storage media.

Level 3: SATS Module #1 components only.

Class III: SATS Module #2

Level 1: SATS Module #2 components integrated with the core set and Module I in the trailer-mounted shelter.

Level 2: SATS Module #2 components with storage media.

Level 3: SATS Module #2 components only.

## 2. APPLICABLE DOCUMENTS

2.1. General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. This section lists documents related to integration of the equipment and shelter. Specifications related to the tools and other items are contained in Appendices A, B, and C, as applicable. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

### 2.2. Government documents.

2.2.1. Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see paragraph 6.2).

## SPECIFICATIONS

### FEDERAL

A-A-50271

- Plate, Identification

STANDARDS

FEDERAL

FED-STD-595 - Colors Used in Government Procurement

DEPARTMENT OF DEFENSE

MIL-STD-129 - Standard Practice for Military Marking  
MIL-STD-810 - Environmental Test Methods and Engineering Guidelines

PAMPHLETS

DEPARTMENT OF THE ARMY

DA PAM 40-501 - Hearing Conservation Program

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

2.2.2. Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

NONE

2.3. Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation

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(see paragraph 6.2)

ACOUSTICAL SOCIETY OF AMERICA (ASA)

ASA S1.4 - Specification for Sound Level Meters

(Application for copies should be addressed to the Acoustical Society of America (ASA), 120 Wall Street, 32nd Floor, New York, NY 10005-3993.)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI Z535.4 - Product Safety Signs and Labels

(Application for copies should be addressed to the American National Standards Institute, 11 W. 42<sup>nd</sup> Street, New York, New York 10036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM SI 10 - Standard for Use of the International System of Units (SI): The Modern Metric System

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pa 19428-2959.)

2.4. Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1. First article. When specified, a sample shall be subjected to first article inspection in accordance with paragraph 4.2.

3.2. Performance.

3.2.1. Deliverable items.

3.2.1.1. Class I. The SATS Core Set shall consist of the items specified in the Components List found in Appendix A.

3.2.1.1.1 Class I, Level 1. Class I, Level 1, shall consist of self-contained, integrated units equipped for

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safe performance of a variety of maintenance and maintenance-related processes. Each unit shall consist of a standardized trailer-mounted tactical shelter capable of containing the items specified in Appendix A in storage media along with any other equipment needed to fulfill the requirements of this specification. As appropriate, the shop components shall be mounted in or on the shelter and plumbed or wired as necessary to form integrated, fully functional units. The SATS shelter, mounted or dismounted, must be capable of rapid deployment, employment, and re-deployment with minimal preparation, and of operating in unimproved areas. The SATS must be rapidly operational with minimal support upon arrival in a Theater of Operations.

3.2.1.1.2 Class I, Level 2. Class I, Level 2, shall consist of the items specified in Appendix A along with storage media identical to that supplied under Class I, Level 1, such that a Class I, Level 1 unit can be obtained by incorporating the Class I, Level 2 unit in a trailer-mounted SATS shelter. Class I, Level 2, items are exempted from requirements in this specification that are applicable only to integration with the shelter.

3.2.1.1.3 Class I, Level 3. Class I, Level 3, shall consist of the items specified in Appendix A. Class I, Level 3 items are exempted from requirements in this specification that are applicable only to integration with the shelter.

3.2.1.2. Class II. The SATS Module #1 shall consist of the items specified in the Components List found in Appendix B.

3.2.1.2.1 Class II, Level 1. Class II, Level 1, shall consist of self-contained, integrated units equipped for safe performance of a variety of maintenance and maintenance-related processes. Each unit shall consist of a standardized trailer-mounted tactical shelter capable of containing the items specified in Appendices A & B along with any other equipment needed to fulfill the requirements of this specification. As appropriate, the shop components shall be mounted in or on the shelter and plumbed or wired as necessary to form integrated, fully functional units; however, the storage media for items in Appendix A shall be physically and visually separate from the storage media for items in Appendix B. The SATS shall be otherwise identical to those supplied under Class I, Level 1.

3.2.1.2.2 Class II, Level 2. Class II, Level 2, shall consist of the items specified in Appendix B along with storage media identical to that supplied under Class II, Level 1 for the Appendix B items, such that a Class II, Level 1 unit can be obtained by incorporating the Class II, Level 2 unit in a Class I Level I trailer-mounted SATS shelter. Class II, Level 2, items are exempted from the requirements in this specification that are applicable only to integration with the shelter.

3.2.1.2.3 Class II, Level 3. Class II, Level 3, shall consist of the items specified in Appendix B Class II, Level 3 items are exempted from the requirements in this specification that are applicable only to the shelter.

3.2.1.3. Class III. The SATS Module #2 shall consist of the items specified in the Components List found in Appendix C.

3.2.1.3.1 Class III, Level 1. Class III, Level 1, shall consist of self-contained, integrated units equipped for safe performance of a variety of maintenance and maintenance-related processes. Each

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unit shall consist of a standardized trailer-mounted tactical shelter capable of containing the items specified in Appendices A, B, & C along with any other equipment needed to fulfill the requirements of this specification. As appropriate, the shop components shall be mounted in or on the shelter and plumbed or wired as necessary to form integrated, fully functional units; however, the storage media for items in Appendix C shall be physically and visually separate from the storage media for items in Appendices A & B. The SATS shelters shall be otherwise identical to those supplied under Class II, Level 1.

3.2.1.3.2 Class III, Level 2. Class III, Level 2, shall consist of the items specified in Appendix C along with storage media identical to that supplied under Class III, Level 1 for the Appendix C items, such that a Class III, Level 1 unit can be obtained by incorporating the Class III, Level 2 unit in a Class II Level I trailer-mounted SATS shelter. Class III, Level 2, items are exempted from the requirements in this specification that are applicable only to integration with the shelter.

3.2.1.3.3 Class III, Level 3. Class III, Level 3, shall consist of the items specified in Appendix C. Class III, Level 3 items are exempted from the requirements in this specification that are applicable only to integration with the shelter.

3.2.1.4. Tools and related items. The components listed in Appendices A thru C shall be industrial or professional quality. Industrial/professional quality tools are normally distinguished from general-purpose and homeowner quality tools in that they are marketed to professional tradesmen for constant and rigorous use in commercial and industrial environments. Only industrial/professional quality tools that have verifiable marketplace acceptance shall be included in this Set.

3.2.1.5. Disclaimer. In order to help clarify the Government's requirements digital images of actual tools available in the commercial market place have been included along with text describing the tools. The use of any particular image does not imply that the Government has a preference for a specific brand of tool, nor does it imply that the tool in the image automatically meets our requirements, especially as they relate to those requirements driven by law regarding tools that must be made inside the United States or its territories or any other governing rules, regulations and laws. The text description of the tool is the controlling requirement. It is the responsibility of the suppliers and manufacturers to assure that each tool offered to fulfill the need meets all of the requirements related to the tool.

3.2.2. Workbenches. The shelter furnishings shall include at least two workbenches, each with a work surface not less than thirty inches wide and sixteen inches deep. The work surfaces shall be resilient enough to withstand impacts typical of maintenance operations without chipping, cracking, or splintering, and shall be highly resistant to damage from sun and rain. One workbench shall attach to the exterior of the shelter for operation, and shall be detachable for storage inside the shelter during transport. The other shall be portable and free-standing. Each workbench and its supporting structure shall be capable of supporting at least 250 pounds without suffering permanent deformation or other damage. The portable workbench shall have a work surface height of  $36 \pm 1$  inch and shall be self-supporting and stable on soft surfaces such as sand, mud, and snow. The mounts for the attachable workbench shall be adjustable to provide a working surface height of  $36 \pm 3$  inches both when the shelter is trailer-mounted

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and when the shelter is dismantled. An attachment point for bench-mount grinders shall be provided on one end of each workbench, but the grinder(s) shall be detachable for storage inside the shelter during transport, and dedicated storage location(s) shall be provided for that purpose. Dedicated storage locations shall be provided for the workbenches as well.

3.2.3. Vise mounts. The machinist's vise listed in Appendix A and the pipe vise listed in Appendix B shall have dedicated storage locations inside the shelter, but shall be provided with fixtures which permit them to be mounted in suitable locations on the outside of the shelter when needed. The vise mounts shall be adjustable to provide a vise base height of  $36 \pm 3$  inches both when the shelter is wheel mounted and when the shelter is dismantled. When mounted on their fixtures, the vises shall have the full range of motion and uses anticipated by their design, including at least one position free of obstructions in the vertical plane of the jaws of the machinist's vise. In addition the vise mount and its supporting members (e.g. workbench, shelter frame, etc.) shall be rigid enough and stable enough to support the vise and work piece, and durable enough to withstand the forces exerted on the vise without sustaining permanent deformation or other damage. They shall be capable of withstanding both clockwise and counterclockwise torque of 100 foot-pounds on each of the three axes of the machinist's vise while supporting the weight of the vise plus a forty-five pound work piece.

3.2.4. Computer Work Station. The storage media for the Core Set shall include a cabinet-mounted computer workstation capable of housing ~~an AN/TYQ-33(V) Version 1 Tactical Army Combat Service Support (CSS) Computer System (TACCS)~~ a desktop personal computer with keyboard, monitor, and printer at a height suitable for access by a standing operator. The workstation cabinet shall incorporate a lockable roll-up door, ~~storage space for the computer system carrying cases,~~ storage space for a box of printer paper, and a segmented rack with storage space for 50 CD Jewel Cases. The workstation shall be permanently installed in the shelter, and shall be provided with outlets connected to the shelter electrical system, and data port(s) connected to the shelter communications pass-through panel.

### 3.3. Inputs and interfaces.

3.3.1. Shelter/vehicle. The trailer-mounted shelters for the SATS shall be suitable for towing by an Army M1083 5 Ton Standard Cargo Truck and other Medium Tactical Vehicles (MTVs). MTVs will be the prime movers for the SATS; however the SATs shelter shall also be suitable for transport by Palletized Load System (PLS) trucks or trailers, as well as Heavy Enhanced Mobility Tactical Trucks with Load Handling Systems (HEMTT-LHS). During normal tactical operations the shelter will be trailer-mounted at all times; however, to provide maximum operational flexibility, the shelter-mounted SATS shall be capable of stand-alone operation when dismantled from its trailer, and when mounted on a pallet that is dismantled from a pallet transporter (i.e. PLS, PLS Trailer, and HEMTT-LHS). No SATS components or tools will be transported in the MTV cargo bed or on another vehicle. To meet these requirements, the SATS shelter shall conform to ANSI Rigid Wall Relocatable Structure standards for non-expandable shelters meeting ISO Type 1C or 1CX Freight Container standards, and the trailer shall be a skeleton-type container trailer such as the Army's Containerized Kitchen Trailer. Performance requirements for trailers are provided in Appendix E. Performance requirements for

shelters are provided in Appendix F.

3.3.1.1. Government Furnished Material (GFM) modification. If utilizing trailers or shelters provided by the Government, the contractor may modify Government-furnished tactical shelters and/or tactical trailers as necessary to meet the requirements of this specification, provided the safety and performance of the MTV and towed unit are not compromised.

3.3.1.2. Size. When ready for transport the overall width of the SATS trailer shall not exceed 96 inches, and no part mounted to the shelter shall extend beyond the planes defined by the outer surfaces of the shelter corner blocks.

3.3.2. Human interface. The SATS shall be suitable for setup, operation, and maintenance by the majority of U.S. Army personnel, from the fifth percentile female to the ninety-fifth percentile male. Basic U.S. Army anthropometrics charts and applicable DOD human engineering guidelines are provided in Appendix D.

3.3.2.1. Task loading. The shop shall be easy to set up for operation and to prepare for transportation. The tasks required to prepare the SATS for ground transport after operation, and likewise to prepare it for operation after ground transport, shall not require two soldiers more than 1 hour.

3.3.2.2. Illumination level. The SATS shelter is required to provide permanently mounted 110 volt AC interior lighting. The lighting system provides both visible spectrum white light and Night Vision Device (NVD) safe light (i.e. blue-green light not detectable to NVDs) (see 3.4.2.2). The interior white lights provide general task illumination of at least 50 foot-candles (540 Lux), measured at thirty inches above the enclosure floor, and the light is distributed so as to minimize glare and specular reflection. If incorporation of the SATS components or storage media in the shelter will block the light from any fixture, the shelter lighting shall be rearranged or otherwise modified to maintain the task illumination at its original level.

3.3.2.3. Protective clothing. The SATS shall be operable and maintainable by personnel wearing heavy gloves and clothing suitable for cold weather (also see paragraph 3.4.2.3).

3.3.2.4. Working environment. The SATS shelter shall incorporate an Army Standard environmental control unit (a combination heater and air conditioner) supplied by the Government. The contractor will fully integrate the GFM environmental control unit in the SATS shelter.

3.3.2.5. Storage.

3.3.2.5.1 Easy access. All equipment and expendable supplies in the shelter-mounted SATS shall be accessible by personnel standing inside the shelter (stooping and bending are permitted). To accommodate standing operation for personnel the distance from the floor to any overhead obstruction inside the shelter shall be at least 76 inches when in operational mode. An unobstructed height of 78 inches or more is preferred. Because the SATS shelters will serve primarily as repositories for tools and equipment to be used elsewhere, ease of manual loading and unloading of SATS components while in operational mode is an important consideration.

3.3.2.5.2 Storage media. While selection and arrangement of storage media is left to the discretion of

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the contractor, the government anticipates that the majority of SATS components will be stored in drawers or enclosed shelving. The configuration of drawer and shelving units are subject to the following specialized human engineering constraints for this application:

The SATS shelter has an outside width limited to 96 inches, and if the contractor chooses to install drawers and shelving along both sidewalls, facing a center aisle, the aisle may be reduced to the absolute minimum. The aisle shall be wide enough to permit each cabinet door and drawer to be fully opened and to permit installation and removal of all drawers and shelves. While it is standard practice to provide sufficient aisle space to accommodate both a fully-open drawer and a person accessing the drawer from the front, the aisle space in this application may be reduced to accommodate the fully-open drawer or shelving door only; provided the soldier can reach the entire contents of the drawer or shelf and operate restraint devices (see paragraph 3.5.1.3) from either side. The width of the drawers and the location of their lock-in/lock-out devices shall accommodate the 5<sup>th</sup> percentile Army female functional reach of 25.2 inches, and the top of the highest drawer shall be no higher than 48 inches to accommodate the shoulder height of the 5<sup>th</sup> percentile Army female. Clearance in front of the handles of open drawers and clearance for shelving doors shall be at least 3" to assure soldiers wearing MOP IV gear and winter gloves are able to grasp them. To permit passage of 95<sup>th</sup> percentile Army males in bulky winter clothing, the aisle shall be no less than 27 inches wide at any point. The contractor is cautioned that some SATS components will not pass through an aisle that narrow, and the ability to load and unload said items must be taken into consideration.

Upon acceptance of the configuration and performance of the core set and each succeeding module when loaded in the SATS shelter, the component list for the core set and each module will be amended to include the requisite storage media (See Appendices A, B, & C).

3.3.2.5.3 Organized storage. Each item carried in the SATS shelter shall have a specifically designated storage location. The storage methods employed shall provide a probability of at least 0.8 that the operator can locate any individual component required to perform a maintenance mission in 3 minutes or less.

3.3.2.5.4 Proximate storage. Items normally used together shall be stored in the same area of the SATS shelter. The SATS provides tools specifically for service of equipment powered by internal combustion engines, primarily vehicles, as well as more generic capabilities for repair and service. The following task-oriented groupings of tools are provided as examples.

Lubrication – tools for greasing and oiling moving parts; injecting grease into standard fittings; packing and adjusting wheel bearings; dispensing oil; sampling oil for analysis; and for changing lubrication system and hydraulic system oils and filters.

Pneumatic and hydraulic brakes – tools for repairing and adjusting brakes; replacing brake shoes and pads; locating air leaks; and filling and bleeding hydraulic brake systems.

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Wheels and tires – tools and equipment for repairing punctures; inflating tires; changing tires; repairing tire valves; removing and replacing wheel studs; checking and adjusting toe-in; lifting and supporting vehicles; and removing wheel and axle assemblies.

Electrical systems – tools and equipment for slave (jump) starting vehicles; charging batteries; servicing batteries (adding water and cleaning terminals); testing batteries and generating systems; replacing electrical terminals; and performing power and continuity checks.

Cooling systems – tools and equipment for dispensing coolant; draining and filling coolant systems; straightening radiator fins; checking coolant strength; and for brazing and soldering radiators.

Fasteners – tools and equipment for installing and removing common fasteners, applying high torque, and applying measured torque

Metalworking – tools and equipment for grinding metal, drilling and tapping holes, and cutting and restoring threads.

Cleaning and degreasing tools and equipment

Woodworking tools

3.3.2.5.5 Linear products. Excepting the Booster Cable Assemblies (Appendix A, Item 22) and the Special Power Cable Kits (Appendix A, Item 23, and Appendix C, Item 4), flexible linear products more than ten feet long, such as hoses and electrical cords, shall be stored on reels or looms. Straps, ties, or other devices shall be provided for linear products not stored on reels or looms to permit them to be stored and hand-carried in neat coils.

3.3.2.5.6 Visual cues. The storage method used for each item shall provide the operator a visual cue when an item is not in its designated storage location.

3.3.2.5.7 Rapid inventory. The integration of the SATS into the shelter shall facilitate rapid inventory. The storage methods employed shall provide a probability of at least 0.8 that the operator can verify within two hours or less that all items in the core set are present and secured in their designated storage locations. In like manner there shall be a probability of at least 0.8 that the operator can inventory Module 1 in one hour or less, and Module 2 in one hour or less. In the event an item is absent from the shop, the operator shall be provided with the means to identify the specific item by name and description. There shall be a probability of at least 0.8 that any missing item be identifiable by name and NSN; or by name, part number, and supplier's CAGE code; within three minutes.

3.3.2.6. Plates and labels. All identification, warning, and instruction plates and labels shall be permanently affixed to the SATS shelter or individual components, as appropriate. They shall be

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resistant to deterioration caused by heat, cold, solar radiation, water, and petroleum products to the extent that they will remain intact and readily legible for the expected economic life of the SATS.

Marking shall be accomplished in a manner that does not adversely affect the life and utility of the SATS or its equipment. All plates and labels shall be printed in the English language, and may be supplemented by graphical symbols.

3.3.2.7. Item identification. A plate conforming to A-A-50271, Composition A, Class 2 or Composition D, and containing the following data shall identify each SATS shelter. The item identification shall be placed in a location on the exterior of the SATS shelter that is plainly visible when the SATS shelter has been closed in preparation for transport or storage.

- a. Nomenclature: (to be identified by contract/delivery order)
- b. NSN: (to be identified by contract/delivery order)
- c. LIN: (to be identified by contract/delivery order)
- d. Specification data: DFP 420
- e. Manufacturer: CAGE or NSCM and PIN \*\*
- f. Serial Number: \*
- g. Acquisition instrument identification number: \*\*

\* Format optional

\*\* See definitions

3.3.2.8. Shipping data. A shipping data plate shall be furnished for each SATS shelter and shall conform to A-A-50271, Composition A, Class 2 or composition D. Silhouettes of the SATS shelter in transport configuration that indicate the center of gravity of the fully-loaded trailer-mounted shelter along each axis as well as the locations of the lifting and tie-down provisions shall be included on the data plate. A separate shipping data plate shall provide the same information for the fully-loaded, dismounted shelter. The shipping data plates shall be placed in a location on the exterior of the SATS that is plainly visible when the SATS shelter has been closed in preparation for transport or storage.

3.3.2.9. Hazard identification. Unguarded physical hazards (see paragraph 3.5.1) shall be identified. Product safety signs and labels shall conform to ANSI Z535.4.

3.3.2.9.1 Noise hazards. If the steady-state noise produced by the compressor(s) or other SATS components in any mode of operation exceeds 85 decibels (dB) on the A-weighted scale, noise hazard caution signs that require the operator to wear hearing protection shall be posted on the compressor or other component in conspicuous locations.

3.3.2.9.2 Lift hazards. Caution signs shall be provided for stored items that exceed the safe limits for a single person to lift using both hands (see Appendix D).

## 3.4. Environment.

3.4.1. Environmental protection. The SATS must provide spill containment equipment and supplies for

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maintenance operations involving coolant, fuel, solvent, petroleum, oils, and lubricants.

3.4.2. Survivability. The SATS must be survivable in the battlefield environment.

3.4.2.1. Protective coloration. For concealment, the exterior of the trailer-mounted shelter must be provided with a color scheme that will blend in with the operational environment. Camouflage patterns supplied by the Army shall not be altered. Brackets or other hardware attached to the shelter exterior shall be coated to match the camouflage pattern in that area. Stairs, ramps, landings, handrails and other hardware required for access to the trailer-mounted shelter shall also be incorporated in the camouflage pattern and coated accordingly.

3.4.2.2. Blackout conditions. While in its operational configuration with the personnel entryway(s) closed, the shelter is required to be light tight. None of the light generated when the interior lights of the shelter are illuminated is visible from any point outside the shelter. The personnel entryway is required to be provided with an interlock that opens the electrical circuit(s) for the interior lights so that the white lights are completely extinguished and replaced with NVD-safe lighting before the light-tight seal of the entryway is broken. The interlock feature is also required to be provided with a switch or other mechanism permitting it to be deactivated when not needed. These features shall not be altered.

3.4.2.3. Nuclear, Biological, and Chemical Contamination Survivability. The trailer and the exterior of the SATS shelter are required to be nuclear, biological and chemical (NBC) contamination survivable to the extent practicable. The shelter interior as well as the tools, equipment, storage media, and expendable supplies mounted or stored in the shop shelter need not be NBC contamination survivable. Modifications to the trailer and/or shelter, including the installation of brackets or other hardware on the exterior of the shelter, shall not degrade the contamination survivability of the shelter. (This is a military-unique requirement.)

3.4.3. Weather protection. The SATS shelter is required to protect its contents from rain; from accumulations of ice and snow; and from accumulations of road dirt, dust, and mud. Modifications to the shelter attendant to the installation of SATS components shall not degrade this capability.

3.4.4. Fungus and moisture. All hoses, electric cable covers and other elastomer parts that are exposed to air shall be fungus resistant.

3.4.5. Ozone. All hoses, electric cable covers and other elastomer parts exposed to air shall be ozone resistant.

3.5. Safety. The SATS shall not present any uncontrolled safety or health hazards throughout the life cycle of the system. The SATS shall incorporate the following features to assure safe operation.

3.5.1. Physical hazard control. Mechanical guards, electrical insulation, thermal insulation, and other safety devices shall be provided to protect operators and maintenance personnel from inadvertent contact with moving parts, electrically energized parts, high temperature surfaces, and other physical hazards (see Appendix D). The safety devices shall not interfere with operation of the SATS. Exposed sharp corners and sharp edges on SATS parts shall be eliminated if they serve no functional purpose. Hazards that cannot be eliminated, cannot be controlled by equipment placement, and cannot be

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controlled by protective devices shall be identified to the user by printed warnings or cautions.

3.5.2. Physical strain control. Caution signs (see paragraph 3.3.4.3) shall be provided for stored items that exceed the safe limits for manual lift (see Appendix D).

3.5.3. Component restraints. Doors, drawers, and other moving parts of the storage media shall be provided with restraints as necessary to secure them in the open and closed positions. The restraints shall prevent unintended movement of the moving parts due to transport (see paragraph 3.6). Items stored in the SATS shall be provided with restraints to secure them in place. The restraints shall prevent the stored items from being dislodged during transport (see paragraph 3.6).

3.5.4. Stairs, ladders, and ramps. The contractor shall provide a safe means of entry and exit for the shelter in both trailer-mounted and dismounted modes. Because the mission of the SATS inherently requires hand-carrying loads of tools, equipment, and other items into and out of the shelter, neither ladders nor stair-ladders shall be used to provide access to the shelter.

3.5.5. Tread surfaces. Stair treads, ramps, and floors shall be provided with open grates or other easily cleaned features to deal with accumulations of tracked mud and snow.

3.5.6. Anti-Entrapment Measures. The shelter is required to have anti-entrapment measures to prevent personnel from being locked inside, i.e. an escape hatch that can be opened only from the inside, and a locking and latching mechanisms on the door that permits a locked door to be opened from the inside. Modifications to the shelter attendant to the installation of SATS components shall neither alter nor interfere with the operation of these features, and the escape hatch shall not be blocked.

3.6. Transportability. The Class I Level 1, Class II Level 1, and Class III Level 1 SATS, both trailer-mounted and dismounted, shall be suitable for commercial and military shipment via sea, rail, and highway. The trailer and shelter shall each be suitable for commercial and military transport by air.

3.6.1. Shock and vibration. The fully loaded SATS shelter and the trailer, whether shipped separately or as a combined unit, shall withstand the shocks and vibration associated with commercial shipment as secured cargo without sustaining damage or degradation in performance. During or following shipment, there shall be no damage to or displacement of any component, accessory, part, or tool installed in or on the shop, and no evidence of damage to the shelter or trailer.

3.6.2. Rail transport. In rail transport mode Class I Level 1, Class II Level 1, and Class III Level 1 SATS shall withstand, without damage to or displacement of any stored component or damage to the shelter, the shock and vibration imparted by coupling rail cars at impact speeds up to 8 miles per hour (mph).

3.6.3. Air transport. The SATS shelter shall be suitable for transport by the U.S. Air Force C130 and larger cargo aircraft and for external airlift by helicopter. The shelter is required to be provided with a vent to prevent damage due to emergency decompression of the aircraft. Modifications to the shelter attendant to the installation of SATS components shall neither alter nor interfere with the operation of this feature, and the vent shall not be blocked. The center of gravity of the loaded SATS shelter shall be marked on the shelter exterior in accordance with MIL-STD-129.

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3.6.4. Military ground transport. The fully loaded trailer-mounted SATS shall be suitable for transport by Army M1083 tactical cargo trucks as a towed package.

3.6.4.1. Weight. The weight of the complete Class III, Level 1 SATS when fully loaded and prepared for ground transport shall not cause the shelter to exceed its Gross Weight rating of 15,000 lbs, and shall not cause the trailer to exceed its Combined Weight Rating (CWR) or the weight rating for any of its axles. The weight of the tools in the Component Lists is subject to variation, depending on the specific items procured; the approximate total weights without the storage media (see 3.3.3.5.3) are 2,500 pounds for the Core Set, 2,400 pounds for Module 1, and 1,100 pounds for Module 2.

Trailer Capacity

Vehicle	Max Trailer CWR	Payload	Weight Rating, Each Axle
XCK2000	21,000 lb	15,000 lb	12,000 lb

3.6.4.2. Balance. When prepared for transport, the weight of SATS trailer-mounted shelter shall be properly balanced. The center of gravity (CG) shall be within 6 inches of the longitudinal centerline of the shop shelter and so located that, when trailer-mounted, the lunette/pintle load is not less than 1,050 lbs and not more than 2,100 lbs. The CG of the loaded SATS trailer-mounted shelter in transport mode shall be at a height producing a trailer Static Stability Factor (one-half the track width divided by the height of the CG) of at least 0.75.

Vehicle Towing Capacity

Vehicle	Max Trailer GVW	Max Pintle Weight	Pintle Height
M1083	21,000	2,100	36"

3.6.4.3. Ground Mobility. When loaded with the tools and equipment specified herein the SATS shall have the durability to withstand being transported over a variety of surfaces including 30% on primary roads, 65% on secondary roads, and 5% on open cross-country. The surfaces traversed shall include various states of disrepair that may be encountered worldwide, including bumps, cobblestone, and washboard. During or following the travel, there shall be no damage to, or displacement of, any component, accessory, part, or tool installed in or on the shop and no evidence of damage to the shelter. Maximum safe speed for the surface and conditions shall be maintained; not to exceed 50 mph

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on primary roads, 35 mph on secondary roads, and 15 mph for travel cross-country.

3.7. Economic life. The SATS shall have a projected economic life of not less than fifteen years under the service conditions described herein.

3.8. Reliability/Maintainability. The design of the SATS shall provide a Mission Capable Status rate of 90% with 80% confidence.

3.9. Ease of maintenance.

3.9.1. Access. It shall be possible for the majority of Army personnel to perform preventative maintenance on the SATS shelter without removing or disassembling any part of the storage media (see Appendix D).

3.9.2. Fastening devices. Screws, pins, bolts, and similar parts shall be installed with means for preventing loss of tightness. The methods for preventing loss of tightness shall be according to accepted engineering standards and practices. No such parts subject to removal or adjustment shall be swaged, staked, or otherwise deformed.

3.9.3. Cleaning. The shelter is required to be washable inside and out. Any features within the shelter that could become collection points for water are required to be provided with drains. The drains shall not be blocked.

## 4. VERIFICATION

4.1. General provisions. The inspections (examinations and tests) herein shall be performed to determine whether the item conforms to Section 3 of this specification. If the contractor supplies a trailer that has not been adopted as an Army standard tactical trailer and/or a shelter that has not been adopted as an Army standard tactical shelter, the inspections of Appendix E and Appendix F, respectively, shall also be performed.

4.1.1. Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2)
- b. Conformance inspection (see 4.3)

**TABLE I. Requirement/verification matrix**

<u>Verification Methods</u> <u>Verification Class</u>				
N - Not Applicable      A = First Article				
1 - Analysis                              B = Conformance				
2 - Demonstration				
3 - Examination				
4 - Test (F = First Article only)				
Title	Section 3	Verification Method	Verification Class	Section 4

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	Requirement	N	1	2	3	4	A	B	Requirement
Tools and related items	3.2.1.4				X		X	X	4.5
Workbenches	3.2.2			X			X		4.5.1
Vise mounts	3.2.3			X			X		4.5.2
Computer Workstation	3.2.4			X			X		4.5.3
Shelter/vehicle	3.3.1			X			X		4.6.1
GFM modification	3.3.1.1				X		X		4.6.1.1
Size	3.3.1.2				X		X		4.6.1.2
Human interface	3.3.				X		X		4.6.2
Task loading	3.3.2.1			X			X		4.6.2.1
Illumination level	3.3.2.2			X			X		4.6.2.2
Protective clothing	3.3.2.3			X			X		4.6.2.3
Working environment.	3.3.2.4			X			X		4.6.2.4
Easy access	3.3.2.5.1			X			X		4.6.2.5.1
Storage media	3.3.3.5.2				X		X		4.6.2.5.2
Organized storage & Visual Cues	3.3.2.5.3 & 3.3.2.5.6				X		X	X	4.6.2.5.3
Proximate storage	3.3.2.5.4				X		X	X	4.6.2.5.4
Linear products	3.3.2.5.5				X		X	X	4.6.2.5.5
Rapid inventory	3.3.2.5.7			X			X		4.6.2.5.6
Plates and labels	3.3.3				X		X		4.6.3
Item identification	3.3.3.1				X		X	X	4.6.3.1
Shipping data	3.3.3.2				X		X	X	4.6.3.2
Hazard identification	3.3.3.3				X		X	X	4.6.3.3
Noise hazards	3.3.3.3.1					X	X		4.6.3.3.1
Lift hazards	3.3.3.3.2				X		X	X	4.6.3.3.2
Environmental protection	3.4.1				X		X	X	4.7.1
Protective coloration	3.4.2.1				X		X	X	4.7.2.1
Blackout conditions	3.4.2.2				X		X		4.7.2.2
Nuclear, Biological, and Chemical Contamination Survivability	3.4.2.3		X				X		4.7.2.3
Weather protection	3.4.3					X	X		4.7.2.4
Fungus and moisture	3.4.4			X			X		4.7.2.5
Ozone	3.4.5			X			X		4.7.2.6
Physical hazard control	3.5.1				X		X	X	4.8.1
Physical strain control	3.5.2			X			X		4.8.1.1
Component restraints	3.5.3			X			X		4.8.1.2
Stairs and ladders	3.5.4				X		X	X	4.8.1.3

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Tread surfaces	3.5.5				X		X	X	4.8.1.4
Anti-Entrapment	3.5.6				X		X	X	4.8.1.5
Transportability	3.6		X				X		4.9.1
Shock and vibration	3.6.1		X				X		4.9.2
Rail transport	3.6.2					X	X		4.9.3
Air transport	3.6.3			X			X		4.9.4
Military ground transport	3.6.4				X		X		4.9.5
Weight	3.6.4.1				X		X		4.9.5.1
Balance	3.6.4.2			X			X		4.9.5.2
Ground Mobility	3.6.4.3					X	X		4.9.5.3
Economic life	3.7		X				X		4.10
Reliability/Maintainability	3.8		X				X		4.11
Access	3.9.1			X			X		4.12.1
Fastening devices	3.9.2				X		X	X	4.12.2
Cleaning	3.9.3				X		X	X	4.12.3

4.1.2. Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified herein.

### 4.2. First article inspection.

4.2.1. Submission. The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation in accordance with the specified verification methods of Table I. The first article inspection shall consist of a minimum of one complete Class III Level 1 SATS.

4.2.2. Inspections to be performed. As determined by the Government, the first article assemblies, components and test specimens may be subjected to any or all of the verification methods specified (see Table I). Unless otherwise specified all the inspections shall be performed.

4.2.3. Rejection. If any test assemblies, test specimen or test components fails to comply with any of the applicable requirements, the first article sample shall be rejected. The Government reserves the right to terminate inspection upon any failure of a test assembly, specimen or component to comply with any of the requirements.

### 4.3. Conformance inspection.

4.3.1. Compliance. Conformance inspections shall be applied to production units being offered for acceptance under the contract. These inspections shall include all verifications listed in Table I.

4.3.2. Inspection lot formation. Lot formation shall be in accordance with Section 4 of MIL-STD-1916.

4.3.3. Sampling plan determination. Conformance verification methods are specified in Table I. When required by contract or cited herein, attribute sampling inspections shall be conducted in accordance with MIL-STD-1916 using verification level I.

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4.3.4. Rejection. Failure of any unit to pass any verification shall be cause for rejection of the unit.

4.4. Preparation. Prepare the SATS for testing by performing normal service, lubrication, and adjustment of the SATS components and the GFM shelter and trailer as recommended by the manufacturer.

4.5. Tools and related items. Verify that the SATS tools, machinery, and related supplies as specified in the Component List (Appendices A, B, and C, as applicable) are present and are of industrial or professional grade. Verify that the Core Set and Modules are physically and visually segregated for storage and transport as required.

4.5.1. Workbench. Verify workbenches are provided with the SATS shelter. Measure the work surface dimensions and distance from ground level. The surface shall not be less than 30 inches wide and 16 inches deep. The work surface shall be  $39 \pm 3$  inches from ground level with the shelter trailer-mounted in operational mode and with the shelter dismounted. With a 20-oz striking hammer, apply several impacts, typical of repair shop operation, to various areas of the work surface. The work surface may be dimpled or dented, but shall have no chipping or fractures as a result of the hammer blows. Place a minimum dead weight of 250 pounds on the workbench surface and let it rest at least two (2) minutes. Move the dead weight to not less than 3 other positions on the surface. The dead weight shall not cover a surface area greater than 120 square inches at any time. There shall be no visible permanent deformation to the workbench or shelter upon completion of the test. Verify that a mount for the bench-mount grinders in Appendices A and C is provided on one end of each workbench. Verify that the grinders can be dismounted, and have dedicated storage locations within the shelter. Verify that dedicated storage locations are provided for the workbenches as well.

4.5.2. Vise mount. Verify that the vises are removable from their storage locations and mount in the operational positions provided. Confirm that the vises can be adjusted without obstruction throughout the full range of motion provided by their designs. In the jaws of the machinist's vise, fasten a rod that is at least four (4) feet in length perpendicular to the workbench surface, and verify there is at least one position where no vertical obstruction exists. A minimal 45-pound test weight shall be clamped in the jaws of the machinist's vice, and attach a standard torque wrench. Apply a 100 foot-pound torque to the test weight, first clockwise then counterclockwise, in planes that are parallel to and perpendicular to the horizontal centerline of the SATS. Examine the vise support for instability, insufficient rigidity, and visible permanent deformation. Evidence thereof shall be cause for rejection.

4.5.3. Computer Work Station. Verify that the Core SATS is supplied with a cabinet-mounted computer workstation with secure storage space for a ~~AN/TYQ-33(V) Version 1 Tactical Army Combat Service Support (CSS) Computer System (TACCS)~~ desktop personal computer with monitor, keyboard, and printer at a height suitable for access by a standing operator, storage space for the computer system carrying cases, storage space for a box of printer paper, and a segmented rack with storage space for 50 CD Jewel Cases. Verify that the workstation is designed for the operator to use the computer while standing. Verify that the workstation is permanently installed in the shelter, and is provided with electrical outlets connected to the shelter electrical system, and data port(s) connected to the shelter communications pass-through panel.

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### 4.6. Interfaces.

4.6.1. Shelter/vehicle. Verify that the SATS units are installed in trailer-mounted shelters meeting ANSI and ISO standards, and that the storage configuration does not require that any SATS components or tools be transported in the MTV cargo bed or on another vehicle.

4.6.1.1. GFM modifications. Verify that permanent documentation exists for any contractor-made vehicle or shelter modifications.

4.6.1.2. Size. Verify that the overall width of the SATS when transported does not exceed 96 inches, and that no part mounted to the shelter extends beyond the planes defined by the outer surfaces of the shelter corner blocks.

4.6.2. Human interface. Verify the SATS complies with the guidelines of Appendix D, and that its equipment and machinery are easily accessible and operable

4.6.2.1. Task loading. Demonstrate that the SATS can be readily set up for operation by two persons in one hour or less. When finished, demonstrate that the same operators can return all equipment to its storage location, and prepare the shop for transport within the same timeframe.

4.6.2.2. Protective clothing. Verify the SATS can be set up for operation by troops wearing heavy gloves and winter gear.

4.6.2.3. Illumination level. With the interior lights of the shelter turned on and the shelter door(s) closed, measure the light intensity thirty inches above the shelter floor, with a luminance meter. Confirm there are at least fifty (50) foot candles of illumination, and that glare and specular reflection are visually tolerable.

4.6.2.4. Working environment. Verify that GFM environmental control unit(s) (heater and air conditioner) has been installed in working order.

4.6.2.5. Storage.

4.6.2.5.1 Easy access. Using operators that meet the anthropometrical requirements of Appendix D, with hands encased in heavy cold weather gloves, demonstrate that all equipment and supplies stored within the SATS are accessible while standing in the shelter (stooping and bending are permitted). Verify the floor to ceiling/overhead obstruction height inside the shelter is at least 76 inches.

4.6.2.5.2 Storage media. Verify that the SATS unit has integral storage media suitable for stowing all equipment, publications, and expendable supplies during transportation, storage, and periods of non-use. Verify cabinets or other storage media are suitable for use as freestanding units.

4.6.2.5.3 Organized storage & visual cues. Survey each item carried by the SATS unit and verify each has a designated storage location. Also verify that each location has a visible cue when the item is not in storage.

4.6.2.5.4 Proximate storage. Verify that items used together are stored in the same area.

4.6.2.5.5 Linear products. Examine all stored flexible linear products. Confirm that, all flexible linear products 10-feet or greater in length are stored on reels or looms, with the exception of the booster

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cables, and the special power cable kits, which shall be stored in coils with the aid of straps or other devices.

4.6.2.5.6 Rapid inventory. With all items in their storage locations, measure the time required to have 1 operator inventory the SATS unit for all its tools, machinery, and related supplies being present and secured in their proper location. The measured time shall not be greater than two hours for the core set and nor more than one hour each for Modules 1 and 2. Any missing item shall be identifiable by name and NSN, or by name, CAGE code, and part number within 1 minute.

4.6.3. Plates and labels. Examine all plates and labels affixed to the SATS unit. Affirm that the US English language is used. Examine all plate and label material specification sheets, including marking, engraving techniques. Verify that they are resistant to all environmental elements and petroleum products and will remain legible for 10 years.

4.6.3.1. SATS identification plate. Locate the SATS unit identification plate. Verify that it is plainly visible on the exterior of the SATS shelter, and that it contains the information and material requirements of paragraph 3.3.4.1.

4.6.3.2. SATS shipping data plate. Locate the SATS unit shipping data plates. Confirm them to be plainly visible on the exterior of the shelter when the SATS is in transport mode. Verify that they contain the information and material requirements of paragraph 3.3.4.2.

4.6.3.3. Hazard identification. In an operational mode, examine the SATS unit for all unguarded physical hazards (see 3.5.1) and verify that all are properly identified and labeled in accordance with ANSI Z535.4.

4.6.3.3.1 Noise hazards. Measure the noise generated by the any noise generating components of the SATS unit while being operated in a free field using the A scale at slow response on a sound level meter meeting the Type I requirements of ASA S1.4. Establish a steady state 85 dB (A) contour surrounding the compressor by measuring at least 8 locations, at a height of 5 feet above the ground plane at angular increments of not more than 45 degrees from the noise source. The maximum distance at which 85 dB (A) is obtained shall be indicated on a noise hazard caution sign posted on the component.

4.6.3.3.2 Lift hazards. Verify that caution signs are placed on all stored items exceeding the Design Weight Limits of Appendix D.

4.7. Environment.

4.7.1. Environmental protection. Verify the SATS unit includes spill containment equipment and supplies compatible with coolant, fuel, solvent, petroleum, oils, and lubricants, and rated for containing a spill equal to the volume of the largest liquid container in the SATS unit.

4.7.2. Battlefield survivability.

4.7.2.1. Protective coloration. Confirm that all metal parts added to the SATS trailer and the shelter exterior have a protective finish in accordance with MIL-STD-171, finish 7.3.1 plus 20.24 (CARC) for aluminum and finish 5.1.1 plus 20.24 for ferrous metals and is compatible with the camouflage pattern (if

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approved).

4.7.2.2. Blackout conditions. With the SATS unit in its operational configuration, the personnel entryway(s) closed and the interior lights on, visually verify the shelter is light tight. No light, generated when the interior lights of the shelter are illuminated, may be visible from any point outside the shelter when the shelter is surrounded by darkness in a lightless room. Verify the personnel entryway interlock is functional.

4.7.2.3. Nuclear, Biological, and Chemical Contamination Survivability. Verify that modifications to the trailer and the exterior of the SATS shelter have not diminished their ability to be decontaminated. Documentation shall consist of an analysis from Dugway Proving Ground.

4.7.2.4. Weather protection. Verify that modifications to the shelter have not degraded its ability to protect its contents from weather. The SATS shall be tested in accordance with MIL-STD-810E, Method 506.3, Procedure II with a nozzle pressure of 40 psig (276 kPa) and a duration of at least 40 minutes. During the test, all items shall be in their storage locations and all doors and panels shall be closed and locked. Immediately following the test open all doors and panels and examine for any evidence of water. Water in any cavity of the shelter shall be cause for rejection.

4.7.2.5. Fungus and moisture. Examine the material specifications all materials used in the SATS and verify that all hoses, cable covers and other elastomer parts are fungi and moisture resistant.

4.7.2.6. Ozone. Examine the material specifications of all hoses, electric cable covers, and other elastomer parts exposed to the atmosphere. Verify that all materials used in the SATS are ozone resistant.

### 4.8. Safety.

4.8.1. Physical hazard control. Examine the SATS unit and confirm all moving parts, electrically energized parts, and high temperature surfaces are provided with guards, covers, or insulation to protect personnel from inadvertent contact. Also, confirm that safety guards, covers, and insulation, do not interfere with the operation of the SATS. Verify that any physical hazard that cannot use protective devices is identified, by type, with a plainly visible warning sign.

4.8.1.1. Physical strain control. Verify the physical exertion required when setting up the SATS unit for operation in the field, and when preparing it for ground transport does not exceed safe limits for the target population (see Appendix D).

4.8.1.2. Component restraints. Verify that all doors, drawers, and other moving parts of the storage system are provided with restraints.

4.8.1.3. Stairs and ladders. Verify that neither ladders nor stair-ladders are used to provide access to the shelter. Verify that any stairs or ramps incorporated in the shelter design conform to the guidelines of Appendix D.

4.8.1.4. Tread surfaces. Verify the shelter floor, ramp, stair treads, and other walking surfaces have non-slip surfaces. Verify that stair treads, ramps, and floors have open grating or other easily cleaned

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features to deal with accumulations of tracked mud and snow.

4.8.1.5. Anti-Entrapment Measures. Verify that the anti-entrapment measures of the shelter have not been rendered inaccessible or inoperable.

4.9. Transportability.

4.9.1. Commercial transport. Provide an analysis showing that the SATS in its transport mode is suitable for commercial shipping via air, sea, or highway.

4.9.2. Shock and vibration. Provide an analysis showing that the SATS withstands the shocks and vibration associated with commercial shipment as secured cargo without sustaining damage or degradation in performance. The analysis shall also state that during or following shipment, no damage to or displacement of any component, accessory, part, or tool installed in or on the shop, and no evidence of damage to the shop shelter mounting points.

4.9.3. Rail transport. The trailer-mounted SATS shall be tested in accordance with MIL-STD-810E, Method 516.4, Procedure VIII - Rail Impact. The SATS shall be in transport configuration for the test, with all items in their storage locations and all doors and drawers closed and locked. Binding of any door or drawer; dislodgment of or damage to any stored item; or damage to any part of the shelter shall be cause for rejection.

4.9.4. Military air transport. Verify that the SATS shelter and trailer are suitable for transport by the U.S. Air Force C130 and larger cargo aircraft and for external airlift by helicopter. Verify that the shelter decompression vent has not been blocked or rendered inoperable. Verify that the center of gravity of the SATS shelter in transport mode is marked on the shelter exterior in accordance with MIL-STD-129.

4.9.5. Military ground transport. Verify that the SATS is suitable for transport by M1083 tactical cargo trucks as a towed package by performing the tests specified in Appendix E.

4.9.5.1. Weight. Weigh the complete Class III Level 1 SATS shelter and trailer when fully loaded and prepared for ground transport. Verify that it does not exceed the M1083 towing capacity of 21,000 lbs or the weight rating for any trailer axle when configured for military deployment.

4.9.5.2. Balance. Verify that the weight of SATS is properly balanced in its shelter and that the CG of the SATS is at a height producing a Static Stability Factor of 0.75 or more.

4.9.5.3. Ground Mobility. Transport the SATS over a mission/field support test track that simulates in-service conditions as follows: not more than 6000 miles on a Secondary Road course of native soil composition, 500 miles on a moderately rough Cross Country course of native loam with quarry spall composition and 50 miles on a Belgian Block course. In addition, 5 laps around a segmented Road Shock and Vibration Course consisting of 2-inch Washboard, 2 to 4 inch Radial Washboard, 3-inch Spaced Bump and a 6-inch Washboard shall be required. Maximum safe speed for the surface and conditions shall be maintained; not to exceed 35 mph on secondary roads, 15 mph for travel cross-country, and 15 mph for Belgian Block course. Speeds for the Road Shock and Vibration course shall vary between 2-10 mph. Any evidence of damage to the shelter, including loose or missing fasteners,

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any damage to, or displacement of, any component, accessory, part, or tool installed in or on the SATS, or the failure of any item of equipment in the SATS to function properly upon completion of the test shall be cause for rejection.

4.10. Economic life. The contractor shall provide a report detailing the projected economic life of the SATS is at least ten years. The projection may be made based on historical data regarding the economic life of items having similar design and manufacture, test data, or a combination thereof. Lack of supportive objective evidence in the report shall be cause for rejection.

4.11. Reliability/Maintainability. The contractor shall provide an analysis demonstrating 80% confidence the SATS will have a Mission Capable status 90% of the time. The projection may be made based on historical data regarding the reliability and maintainability of items having similar design and manufacture, test data, or a combination thereof. Lack of supportive objective evidence in the report shall be cause for rejection.

4.12. Ease of maintenance.

4.12.1. Access. Using operators meeting the anthropometrical requirements of Appendix D, demonstrate that all routine preventative maintenance tasks can be performed without dismounting the shop from its trailer and without removing or disassembling any part of the storage media.

4.12.2. Fastening devices. Examine all removable fasteners on the SATS and verify that all use some means of keeping tightness and none are staked, swaged, or otherwise deformed.

4.12.3. Cleaning. Within the SATS shelter locate all points that may become collection points for cleaning fluid and verify each has a drain port.

## 5. PACKAGING

5.1. Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see paragraph 6.2). When actual packaging of materiel is to be performed by DOD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1. Intended use. The SATS is primarily intended for use by personnel engaged in the maintenance and repair of military equipment while away from fixed maintenance facilities. To maintain continuity of training and practice, the SATS will regularly be used in garrison operations as well.

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6.2. Noise limits. The requirement for posting Noise Hazard signs on all equipment generating noise in excess of 85 dB (A) and the requirement for hearing protection support the Army Hearing Conservation Program (see DA PAM 40-501). The Army program requirement is more conservative than the standard OSHA requirement, which sets the threshold criterion at 90 dB (A) for an 8-hour exposure. If technically and economically feasible, it is preferred that the noise level of the SATS not exceed 85 dB (A).

6.3. Trailer lights and reflectors. The lights and reflectors required for military tactical trailers are generally identical to those required by Federal Motor Vehicle Safety Standards (FMVSS), except that the combination tail and stop light assemblies contain blackout lights on a separate circuit.

6.4. Measurement system. The US Customary System of Units (US) or the International System of Units (SI) may be used in construction of the SATS. In this specification, all measurements, dimensions, sizes, and capacities are given in the US system. These measurements may be converted to the SI system by using the conversion factors and methods specified in IEEE/ASTM SI 10.

6.5. Definitions.

6.5.1. Displacement. Displacement is dislodgment of any tool or item of equipment from its designated position. Movement of a tool or item of equipment within its designated position without any dislodgment is permitted.

6.5.2. Fully loaded. The Set is fully loaded when it is completely equipped and ready for operation. In addition to the full compliment of items on the components list, the shelter contains the full compliment of expendable supplies, including filled acetylene/propylene and oxygen cylinders. In the opposite (unloaded) condition, all equipment that is normally affixed to the trailer or shelter when in use remains on the trailer, but the gas cylinders and all other stored items have been removed.

6.5.3. Secured cargo. Secured cargo is cargo that is securely tied or blocked in all three axes with respect to the bed of the transport vehicle.

6.5.4. Primary road. A thoroughfare or highway. The preferred route between economically and strategically important destinations (usually communities) that carries heavy and high-density traffic. In the United States “primary road” implies a high-speed paved road (see “Surface Types” below).

6.5.5. Secondary road. Any road other than a primary road. A secondary road may or may not be paved, and is intended for medium-weight, low-density traffic. Although many secondary roads in the United States are equal in quality to the primary roads, for the purposes of this specification secondary roads are considered to be trails and aggregate-surfaced roads (see “Surface Types” below).

6.5.6. Surface types. The surface types defined herein refer to those provided at the U.S. Army’s Aberdeen Proving Ground (APG), Aberdeen, Maryland. Because alternate test courses may be utilized, the definitions provided are descriptive in nature and refer to APG test courses considered standard. Also, the illustrations provided show the surface courses only, and do not reflect sub-courses or roadbed preparation. It should be noted that road types, grades, and methods of construction cover a broad spectrum, and it is not practical to replicate or test for every conceivable surface type.

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6.5.7. High-speed paved road. Commonly known as a highway. The surface is paved with bituminous concrete (also variously known as blacktop, asphalt, tarmac, or macadam) or Portland cement concrete. This is a hard, smooth, level, crowned road with gradual turns and clear lines of sight that permit vehicle operation at high speed. Recommended and generally accepted construction materials and methods vary depending on soil conditions, climate, and expected traffic burden. These roads have two or more lanes with a minimum width of nine feet each and a crown to 2 degrees. This surface type is represented at APG by the Perryman Test Area's Three Mile Straight-away, which has paved turnarounds at each end to permit continuous high-speed travel. In the United States, most primary and many secondary roads are high-speed paved roads.

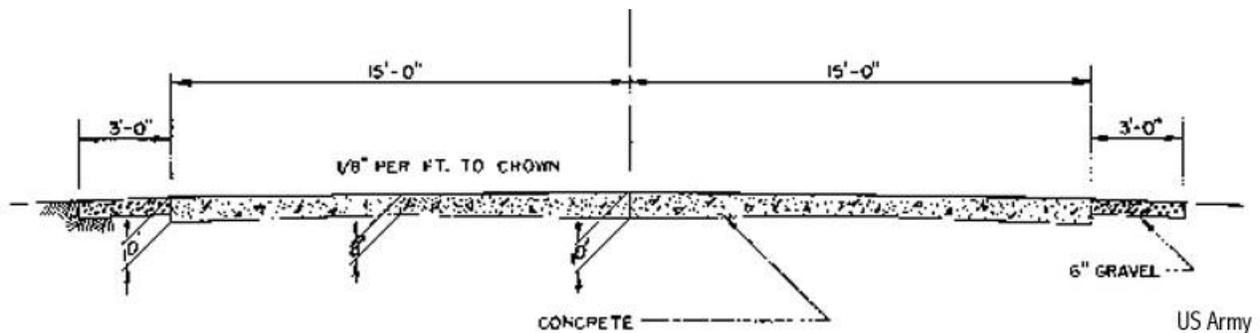


Figure 1. Transverse Section of High Speed Paved Road

6.5.7.1. Aggregate-surfaced road. Commonly known as a gravel road. The surface is paved with compacted aggregate consisting of gravel or crushed stone, and has a crown maintained by grading. It is a smooth, level road that permits vehicle operation at moderately high speed. The road bed is usually prepared by grading and compaction. (Roads of this type were originally called macadam roads after their inventor, John Macadam. Improvement on this construction by the addition of tar or asphalt as a binder has resulted in some blurring of this distinction in common usage – see “High-speed Paved Road,” above.) These roads have two lanes with a minimum width of eight feet each. This surface type is represented at APG by the Munson Test Area's Improved Gravel Road course. In the United States, most gravel roads are secondary roads. Aggregate-surfaced roads are the preferred method for construction of temporary roads by combat engineers in a theater of operations.

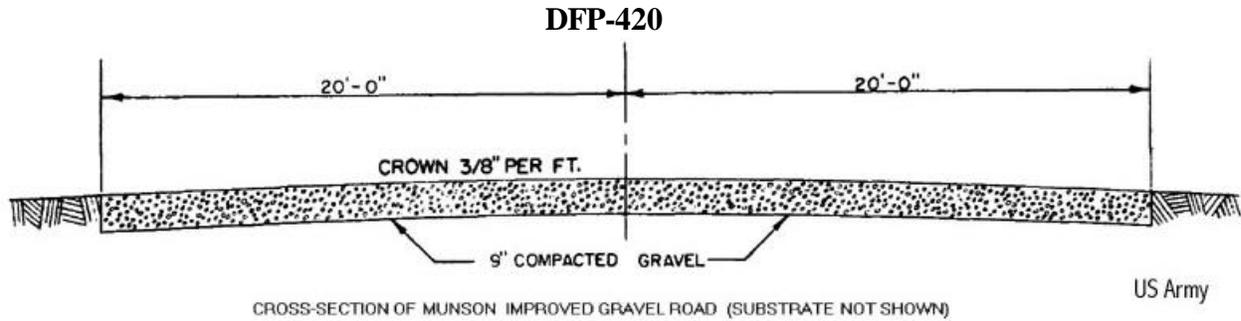


Figure 2. Transverse Section of Aggregate-surfaced Road

6.5.7.2. Trail. Commonly known as a dirt or country road. The surface is unpaved and consists of native soil or gravel. It is a rough road that permits vehicle operation at moderately low speed. The road is prepared and maintained by grading, and by filling ruts and potholes with native soil, gravel, or crushed stone. In the United States, all unpaved roads are secondary roads. This is the preferred method for construction of expedient roads by combat engineers in a theater of operations. Trails are represented at APG by the Perryman Test Area's Secondary Roads A (light to smooth) and B (moderately severe), and the Churchville Test Area's Course C (smooth but hilly). Churchville Course C is primarily reserved for testing wheeled vehicle test items, particularly trailers.

6.5.7.3. Open cross-country terrain. No road. The surface traversed is free of major obstacles such as trees, brush, large rocks, gullies and ditches. It consists of unimproved open fields, broken ground, or loose sand and gravel. It is a rough surface that permits vehicle operation only at low speed. It is represented at APG by the Churchville Test Area's Courses A and B, and the Perryman Test Area's Courses One through Four. Perryman Course One is the least severe. It has a roughness of 0.4 inches RMS, and is primarily reserved for testing wheeled vehicle systems.

6.5.7.4. Cobblestone. A surface paved with unevenly laid stones forming a rough, undulating surface. It is represented at APG by the Munson Test Area's Belgian Block course, which has a roughness varying from 0.82 to 0.87 inches RMS.

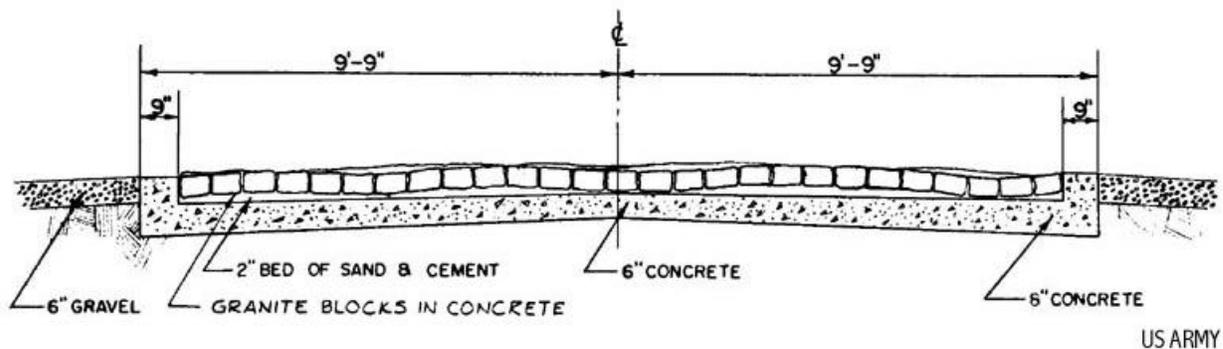
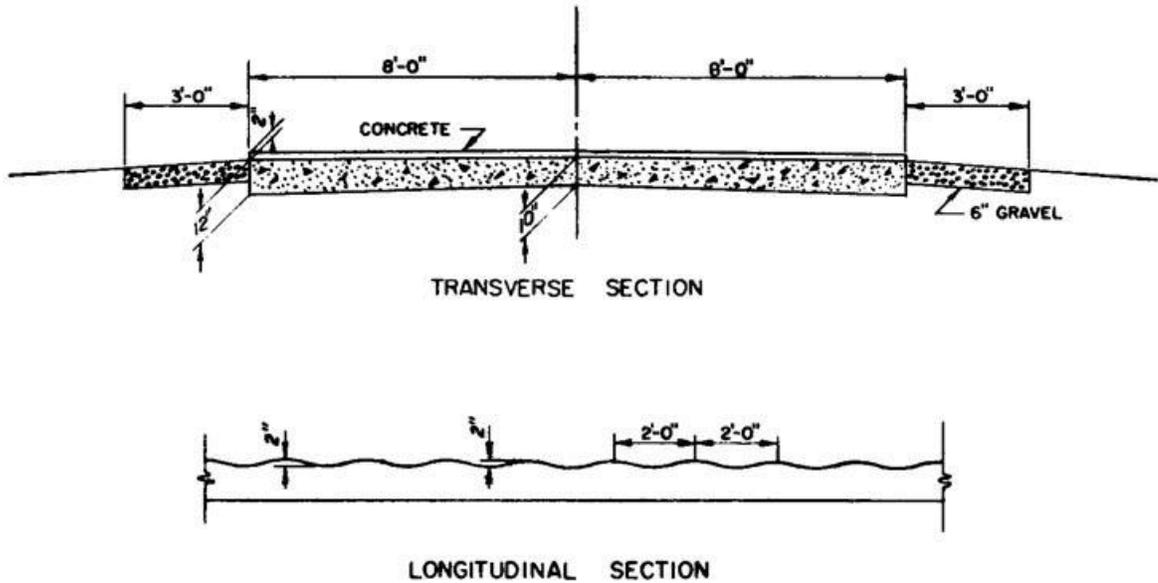


Figure 3. Transverse Section of Munson Belgian Block Course at APG

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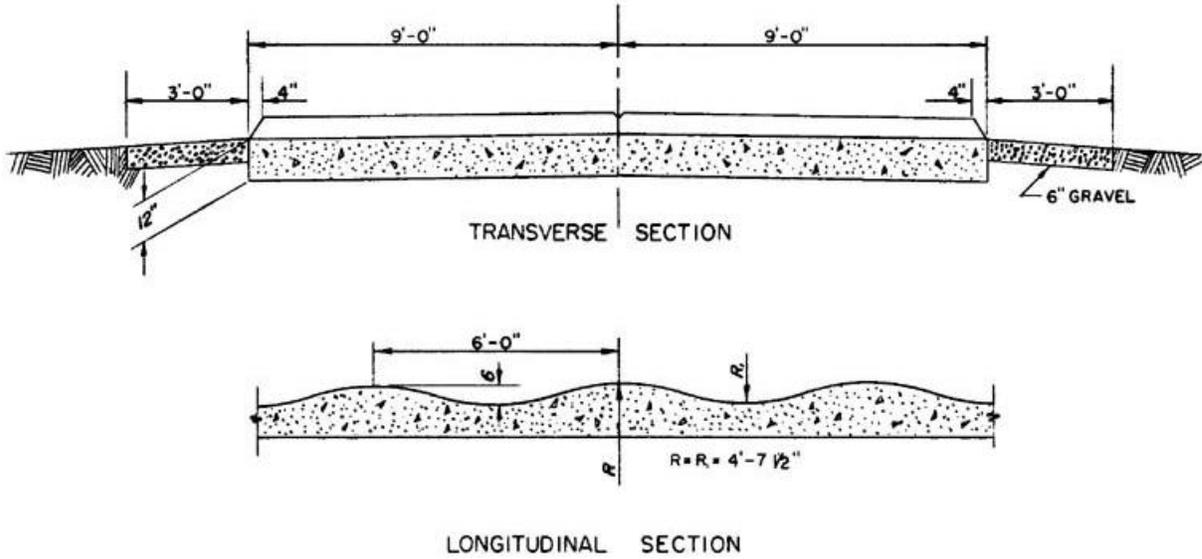
6.5.7.5. Washboard. A corrugated surface formed in dirt or gravel roads by very heavy vehicle traffic. This surface is represented at APG by the Munson Test Area's 2-Inch Washboard, 6-Inch Washboard, and 2-to-4-Inch Radial Washboard courses.



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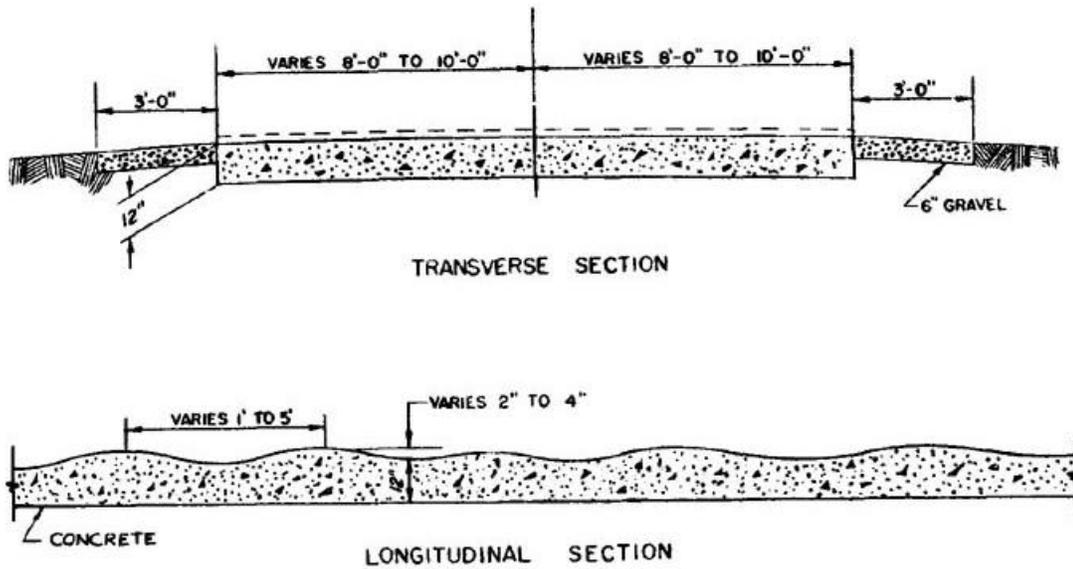
Figure 4. Section Views of Munson 2-Inch Washboard Course at APG

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US ARMY

Figure 5. Section Views of Munson 6-Inch Washboard Course at APG



US ARMY

Figure 6. Section Views of the Munson Radial Washboard Course at APG

6.5.7.6. Bumps. Surface discontinuities such as may be formed by buckled concrete, speed bumps, railroad tracks, bridge deck edges, or other features that are isolated enough to allow the vehicle suspension to “settle down” between jolts. This surface is represented at APG by the Munson Test



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deviations from the norm divided by the number of observations in a sample. In the specific case of characterizing the roughness of a towing surface, the surface deviations from level are measured by a profilometer. Using the RMS value provides a neutral method for determining the effective roughness of different surfaces.

6.5.9. Acquisition instrument identification number: The Government acquiring activity's contract or purchase order number.

6.5.10. Part or Identifying Number (PIN): The identifier assigned by the manufacturer, which uniquely identifies the SATS relative to the manufacturer; often a model number or top assembly drawing number.

6.5.11. Commercial and Government Entity (CAGE) Code: a five-character code which is assigned to commercial and Government activities that manufacturer or develop items, or provide services or supplies to the Government. The CAGE was previously called the manufacturer's code, code identification number, or Federal Supply Code for Manufacturers (FSCM).

6.5.12. NATO Supply Code for Manufacturers (NSCM): A five-position alpha-numeric code assigned to manufacturers that are located in a country other than the United States or Canada, and are a source of supply for items acquired by the Federal Government, NATO member nations, and other participating friendly Governments.

6.6. Subject terms (key word) listing.

Environmental  
Roadability  
Set  
Tools and equipment

6.7. Acronyms in this specification. The acronyms used in this specification are:

DoD	- Department of Defense
DoDISS	- Department of Defense Index of Specifications and Standards
GVW	- Gross Vehicle Weight
GVWR	- Gross Vehicle Weight Rating
LIN	- Line Item Number
NSN	- National Stock Number

Custodian:  
Army - AL

Preparing Activity:  
Army – AL

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### APPENDIX A COMPONENT LIST SATS CORE TOOLS

For the systems that will be used as Production Representative Systems for testing purposes, all components listed in the following table will be provided and space within the shelter allocated for each component.

For all future delivery orders components listed with Remarks Code 16 or Remarks Code 22, space will be allocated within the shelter for each item and that location documented, however, the item itself will not be provided.

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<b>SATS CORE TOOLS</b>					
	<b>NOMENCLATURE</b>	<b>UI</b>	<b>QTY</b>	<b>WTY*</b>	<b>RC**</b>
1	ADAPTER KIT, GREASE GUN COUPLING	EA	1	C	
2	ADJUSTING TOOL, BRAKE SHOE	EA	1	L	
3	ANALYZER, BATTERY AND CHARGING SYSTEM	EA	1		
4	APRON, UTILITY	EA	1	C	21
5	BAR, PINCH, 26"	EA	2	L	10
6	BAR, PINCH, 36"	EA	1	L	10
7	BAR, WRECKING	EA	1	L	10
8	BATTERY FILLER, GRAVITY	EA	1	C	
9	BATTERY FILLER, SYRINGE	EA	2	C	
10	BATTERY KIT, SERVICE	KT	1	C	
11	BENDER SET, TUBE, HAND ACTUATED	SE	1	N	
12	BLADE, HAND HACKSAW	BD	1	N	21
13	BLADE, ABRASIVE, CUT-OFF	PG	1	N	21
14	BLOW GUN, AIR	EA	2	C	10
15	BOX, TOTE	EA	5		10
16	BRAZING AND SOLDERING SET	EA	1	C	
17	BRUSH, FILE CLEANER	EA	1	C	21
18	BRUSH, WIRE, ROTARY, END ATTACHMENT, SOLID WIRE FILLED	EA	1	N	21
19	BRUSH, WIRE, ROTARY, END ATTACHMENT, CIRCULAR, SIDE FLARE	EA	1	N	21
20	BRUSH, WIRE, SCRATCH	EA	1	N	21
21	CABLE ASSEMBLY, POWER	EA	3	C	10
22	CABLE ASSEMBLY, BOOSTER	EA	2	C	
23	CABLE KIT, SPECIAL POWER	EA	1		10
24	CAN, RADIATOR FILLING	EA	2	C	
25	CAPS, VISE JAW	PR	2	N	
26	CHARGER, BATTERY (NOTE: GFM)	EA	1		
27	CLAMP, C	EA	2	L	
28	CLEANING COMPOUND, SOLVENT <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	CN	1		22
29	COMPRESSOR UNIT, RECIPROCATING	EA	1	C	
30	CREEPER, MECHANIC'S	EA	5	C	10
31	CRIMPING TOOL, TERMINAL	EA	1	C	
32	CROWBAR	EA	1	L	10
33	CROWFOOT ATTACHMENT SET, SOCKET WRENCH, FLARE NUT, INCH	SE	1	L	
34	CROWFOOT ATTACHMENT SET, SOCKET WRENCH, FLARE NUT, METRIC	SE	1	L	

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35	CUTTING AND FLARING KIT, TUBE	KT	1	C	
36	CUTTER, BOLT, LIGHTWEIGHT, 24"	EA	1	L	
37	CUTTER, BOLT, REPLACEMENT HEAD <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	EA	1	N	22
38	DEGREASER, PORTABLE	EA	1		
39	DIE AND TAP SET, RETHREADING	SE	1	L	
40	DIE AND TAP SET, THREAD	SE	1	L	
41	DRESSER, ABRASIVE WHEEL	EA	1	C	
42	DRILL-DRIVER, BATTERY OPERATED, RECHARGEABLE	SE	1	C	10
43	DRILL- DRIVER, ELECTRIC, ½"	EA	1	C	10
44	DRILL, BATTERY OPERATED, RECHARGEABLE, RIGHT ANGLE, 3/8"	SE	1	C	10
45	DRILL, ELECTRIC, PORTABLE, 3/8"	EA	1	C	10
46	DRILL, ELECTRIC, PORTABLE, ½"	EA	1	C	10
47	DRILL, PNEUMATIC, RIGHT ANGLE, 3/8"	EA	1	C	
48	DRILL SET, TWIST	SE	1	N	10
49	DRILL SET, TWIST, LEFT HAND	SE	1	N	10
50	EXTINGUISHER, FIRE**** <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	EA	2		10,16
51	EXTRACTOR SET, SCREW	SE	1	N	10
52	EXTRACTOR SET, HARDENED SCREW	KT	2	C	10
53	FACE SHIELD, INDUSTRIAL	EA	1	C	10
54	FILE SET, HAND	SE	1	C	
55	FILE SET, THREAD RESTORER	SE	1	C	
56	FILLER AND BLEEDER KIT, BRAKE SYSTEM	EA	1	C	
57	FILTER, SOLVENT <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	BX	1	N	22
58	FINGER, MECHANICAL	EA	1	C	
59	FOUNTAIN, EYE AND FACE	EA	1	C	
60	FUNNEL	EA	1	N	
61	FUNNEL, FLEXIBLE SPOUT	EA	1	N	
62	GAGE, WHEEL ALIGNMENT (NOTE: GFM)	EA	1	C	
63	GLOVES, RUBBER, INDUSTRIAL	PR	1	N	21
64	GOGGLES, INDUSTRIAL	PR	1	N	10
65	GREASE GUN KIT	EA	1	C	
66	GREASE GUN, PNEUMATIC	KT	1	C	10
67	GRINDING MACHINE, UTILITY	EA	1	C	10
68	GUN, FLUID, DIRECT DELIVERY	EA	2	C	
69	HAMMER, HAND, CARPENTER'S, CURVED CLAW, 16 OZ	EA	2	C	
70	HAMMER, HAND, SOFT FACE, DEAD BLOW, 52 OZ	EA	2	C	
71	HAMMER, HAND, SOFT FACE, DEAD BLOW, 10 OZ	EA	2	C	
72	HAMMER, SLEDGE, DOUBLE FACED, 10 LB	EA	2	C	
73	HAMMER, HAND, DEAD BLOW, BALL PEEN, 40 OZ	EA	2	C	
74	HAMMER SET, HOLDER AND INSERTS	SE	1	C	
75	HAMMER, PNEUMATIC	EA	1	C	
76	HANDLE, T, WITH EXTENSION	EA	1	L	

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77	HOLDER, PUNCH AND CHISEL	EA	1	C	10
78	HOSE ASSEMBLY, AIR, NON-METALLIC	EA	2	C	10
79	INFLATOR-GAGE AND HOSE ASSEMBLY, PNEUMATIC TIRE	EA	2	C	
80	JACK, DOLLY TYPE, HYDRAULIC, 10 TON *** (NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)	EA	1		10,16
81	JACK, BOTTLE, HYDRAULIC, HAND, 12 TON	EA	2	C	10
82	KEY SET, HEX, INCH	SE	1	L	
83	KEY SET, HEX, METRIC	SE	1	L	
84	LAMP, FLUORESCENT (NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)	EA	1	N	22
85	LIGHT, BATTERY OPERATED, RECHARGEABLE	SE	1	C	
86	LIGHT, EXTENSION, FLUORESCENT	EA	2	C	10
87	LIGHT, EXTENSION, LED (NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)	EA	1	N	22
88	LUBRICATING GUN, HAND	EA	3	C	10
89	LUBRICATING GUN, BATTERY OPERATED, RECHARGEABLE	SE	1	C	10
90	MEASURE, LIQUID, 8 QUART	EA	1	C	10
91	MEASURE, LIQUID, 2 QUART	EA	1	C	10
92	MULTIMETER	EA	2	C	10
93	MULTIPLIER, TORQUE	EA	1	L	
94	OILER, HAND	EA	2	C	10
95	PAN, DRAIN	EA	2	C	10
96	PLATE, BOLSTER, 24" x 24"	EA	2	N	10
97	PLATE, BOLSTER, 48" x 72"	EA	1	N	10
98	PLIERS, LOCK RING	EA	1	L	
99	PLIERS, LOCK RING	EA	1	L	
100	PLIERS SET, RETAINING RING	SE	1	L	10
101	PLIERS, BRAKE REPAIR, HEAVY	EA	1	L	
102	PLIERS, BRAKE REPAIR, LIGHT	EA	1	L	
103	PLIERS, WIRE TWISTER	EA	1	L	
104	PNEUMATIC BAG KIT, LIFTING	KT	1	C	10
105	PROPANE FUEL CYLINDER **** (NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)	EA			16,22
106	PULLER SET, MECHANICAL	SE	1	L	
107	PULLER, MECHANICAL, STEERING WHEEL	EA	1	L	
108	PULLER, MECHANICAL, PITMAN ARM	EA	1	L	
109	PUMP, LUBRICANT	EA	1	C	
110	PUNCH & CHISEL SET	SE	1	N	10
111	PUNCH SET, CUTTING, GASKET	SE	1	N	
112	SANDER/GRINDER, 4 1/2"	EA	1	C	
113	SAW, HAND, CROSSCUT	EA	1	C	
114	SAW, HAND, METAL CUTTING	EA	2	C	10
115	SAW, HAND, METAL CUTTING	EA	2	C	10
116	SCALE, WEIGHING	EA	1	C	
117	SCRAPER, GASKET	EA	2	L	
118	SCREWDRIVER ATTACHMENT SET, TORX	EA	1	L	

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119	SCREWDRIVER ATTACHMENT SET, INCH HEX	SE	1	L	
120	SCREWDRIVER ATTACHMENT SET, METRIC HEX	SE	1	L	
121	SCREWDRIVER SET, JEWELER'S	SE	1	L	
122	SCREWDRIVER SET	SE	1	L	
123	SCREWDRIVER SET, TORX	SE	1	L	
124	SHARPENER, DRILL, PORTABLE	EA	1	C	
125	SHEARS, BENT, TRIMMER	EA	1	C	
126	SOCKET SET, SOCKET WRENCH, 3/8" DRIVE, METRIC, UNIVERSAL	SE	1	L	
127	SOCKET SET, SOCKET WRENCH, 3/8" DRIVE, INCH, UNIVERSAL	SE	1	L	
128	SOCKET SET, SOCKET WRENCH, 3/4" DRIVE, INCH, REGULAR LENGTH	SE	1	L	
129	SOCKET SET, IMPACT WRENCH, 1/2" DRIVE, METRIC, UNIVERSAL	SE	1	L	
130	SOCKET SET, IMPACT WRENCH, 1/2" DRIVE, INCH UNIVERSAL	SE	1	L	
131	SOCKET SET, IMPACT WRENCH, 3/4" DRIVE, INCH, REGULAR LENGTH	SE	1	N	
132	SOCKET SET, MASTER, SOCKET WRENCH, 1/4", 3/8" AND 1/2" DRIVE	SE	1	L	
133	SOCKET SET, SOCKET WRENCH, WHEEL BEARING LOCKNUT	SE	1	L	
134	SOCKET SET, IMPACT WRENCH, 3/4" DRIVE, METRIC, REGULAR LENGTH	SE	1	N	
135	SOLDERING GUN	EA	1	C	
136	SPLITTING TOOL, NUT	EA	1	L	
137	STAND, VEHICLE SUPPORT <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	PR	2		16,10
138	TAPE, MEASURING, 25'	EA	1	C	10
139	TEST KIT, RADIATOR PRESSURE	EA	1	C	
140	TESTER, ANTIFREEZE SOLUTION	EA	2	C	10
141	TOOL KIT, BLIND FASTENER INSTALLATION	KT	1	C	
142	TOOL KIT, CUTTING, ABRASIVE, PNEUMATIC	EA	1	C	
143	TOOL KIT, ELECTRICAL CONTACT ***** <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	KT	1	C	16
144	TOOL KIT, SCREW INSERT	EA	1	N	
145	TOOL KIT, TIRE SERVICE	KT	1	C	
146	TRESTLE, HOIST, PORTABLE, 7 TON (NOTE: GFM)	PR	4		10
147	TRUCK, LIFT, WHEEL	EA	1		
148	WISE, MACHINIST'S, 4 INCH	EA	1	L	10
149	WHEEL, ABRASIVE, FINE GRIT <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	EA	1	N	22
150	WHEEL, ABRASIVE, COARSE GRIT <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	EA	1	N	22
151	WHEEL, ABRASIVE, TYPE 27 <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	PG	1	N	21
152	WHEEL, ABRASIVE, TYPE 29 <b>(NOTE: THIS ITEM FOR PRODUCTION REPRESENTATIVE SYSTEM ONLY)</b>	PG	1	N	22

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153	WRENCH, IMPACT, ELECTRIC, 3/4" SQUARE DRIVE, 400 FT-LB	EA	1	C	
154	WRENCH SET, FLARE NUT, INCH	SE	1	L	
155	WRENCH SET, BOX, INCH	SE	1	L	
156	WRENCH SET, BOX, METRIC	SE	1	L	
157	WRENCH, COMBINATION, INCH	SE	1	L	
158	WRENCH, COMBINATION, METRIC	SE	1	L	
159	WRENCH SET, OPEN END, METRIC	SE	1	L	
160	WRENCH SET, OPEN END, INCH	SE	1	L	
161	WRENCH SET, FLARE NUT, METRIC	SE	1	L	
162	WRENCH SET, MASTER, IMPACT WRENCH, 3/8" AND 1/2" DRIVE	SE	1	C	
163	WRENCH SET, IMPACT SOCKET, 3/4" DRIVE, INCH, REGULAR LENGTH	SE	1	N	
164	WRENCH, ADJUSTABLE, 18 INCH	EA	2	L	
165	WRENCH, ADJUSTABLE, AUTOMOTIVE, 15 INCH	EA	2	L	
166	WRENCH, ADJUSTABLE, 10 INCH	EA	2	L	
167	WRENCH, ADJUSTABLE, AUTOMOTIVE, 18 INCH	EA	2	L	
168	WRENCH, OIL FILTER	EA	1	L	
169	WRENCH, OIL FILTER, STRAP	EA	2	C	
170	WRENCH, PIPE, 18 INCH	EA	2	L	
171	WRENCH, PIPE, 10 INCH	EA	2	L	
172	WRENCH KIT, RATCHET, PNEUMATIC, 1/4" & 3/8" DRIVE	EA	2	C	10
173	WRENCH, TORQUE, DIAL, 1/4" DRIVE, 30 IN-LB	EA	1	C	10,25
174	WRENCH, TORQUE, DIAL, 3/8" DRIVE, 300 IN-LB	EA	1	C	10,25
175	WRENCH, TORQUE, CLICK, RATCHETING, 3/4" DRIVE, 600 FT-LB	EA	1	C	10,25
176	WRENCH, TORQUE, CLICK, RATCHETING, 3/8" DRIVE, 75 FT-LB	EA	1	C	10,25
177	WRENCH, TORQUE, CLICK, 1/2" DRIVE, 345 Nm	EA	1	C	10,25
178	WRENCH, TORQUE, CLICK, RATCHETING, 1/2" DRIVE, 250 FT-LB	EA	1	C	10,25
179	WRENCH, WHEEL STUD NUT, GEARED SOCKET	EA	1	L	10

WTY (Warranty) Column definitions:

L = Lifetime Warrant

C = Commercial Warranty Available

N = No Warranty required

\*\* RC (Remarks Code): For Government use only

**SPECIAL NOTATION:** Components marked with RC 16 or 22 will be provided by the contractor for Production Representative System only for purposes of space allocations, weights and testing. These components will not be included in all other future production sets.

16 = This item is not initially issued as a component of the SKO. The item may be requisitioned "as required" when authorized by the Commanding Officer.

22 = This is a consumable item, non-accountable on hand receipt, not issued with the tool set, quantity established by gaining unit.

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\*\*\* RC 16: Although authorized for inclusion in the set, the dolly jacks are unsuitable for use in the field. They shall not be supplied with the set as delivered, and will remain in garrison when the unit deploys.

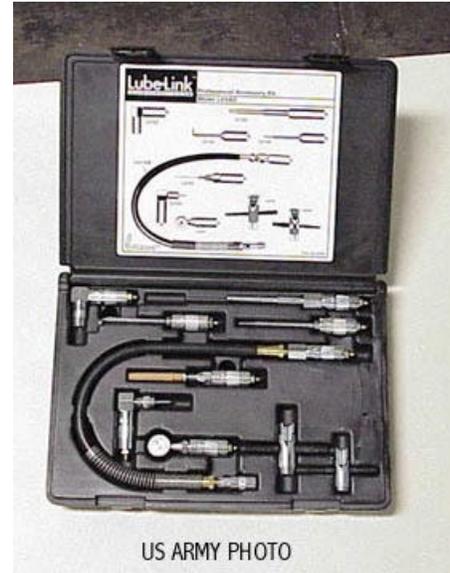
\*\*\*\* RC 16 & 22: Although authorized for inclusion in the set, cylinders containing compressed or liquefied gas shall not be supplied with the set as delivered in order to avoid issues regarding handling and transport of hazardous materials.

\*\*\*\*\* RC 16: The electrical contact tool kit is an optional item, which is not to be supplied with the set as delivered. Procurement of this item will be at the discretion of the local unit commander.

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A1. Adapter Kit, Grease Gun Coupling. Shall fit manual or air-operated grease guns. Shall attach to any standard grease coupler for immediate service.

	<b>Components</b>
1	18" Steel Braid Rubber Grease Hose W/ Spring Guard & 4-Jaw Coupler
2	Hypodermic Needle Coupler For Lubricating Sealed Bearings
3	Straight Needlepoint Coupler
4	90 Degree 3" Needlepoint Coupler
5	9" Rigid Extension W/ 4-Jaw Coupler
6	Needlepoint Coupler, Right Angle
7	Right Angle Coupler
8	Standard Button-Head Coupler
9	1/4"-28 Zerk Fitting Extractor
10	1/8" NPT Zerk Fitting Extractor
11	Carrying case



A2. Adjusting Tool, Brake Shoe. Shall have hook and slant ends. Both ends shall be .62" flat. It shall be made out hex stock with a diameter of .375". The overall length of the tool shall be 13" plus or minus 1".



A3. Analyzer, Battery and Charging System. Hand-held analyzer shall be rated to load test 12-volt batteries at 125 amps or more, and to test starters, charging systems, and battery state of charge. Insulated clamps shall be rated for at least 300 amps.



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A4. Apron, Utility. Shall be an impermeable utility apron made of chloroprene rubber-coated polyester fabric. Shall be a full-length bib-type apron nominally 48" long and 34" wide, with a tie-tape back.



A5. Bar, Pinch, 26". The pinch bar shall have one end offset and formed into a pinch point with a width of 1". The other end shall be rounded and tapered for bringing holes in metal plates into alignment for assembly. The bar shall have a nominal 26" length and 3/4" diameter, and shall be coated to resist corrosion (e.g. oil-coated, lacquered or painted).



A6. Bar, Pinch, 36". The pinch bar shall have one end offset and formed into a pinch point with a width of 1-1/4". The other end shall be rounded and tapered for bringing holes in metal plates into alignment for assembly. The bar shall have a nominal 36" length and 1" diameter, and shall be coated to resist corrosion (e.g. oil-coated, lacquered or painted).



A7. Bar, Wrecking. The bar shall have one end bent in the form of a gooseneck and the opposite end in the form of a pinch point. The gooseneck provided shall have a slotted claw suitable for pulling nails. The pinch point shall be offset and wedge shaped. The bar shall have a nominal 30" length overall, a 3/4" diameter, and shall be coated to resist corrosion (e.g. oil-coated, lacquered or painted). (Reference CID A-A-2566, Type I, Size 4)



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A8. Battery Filler, Gravity. The battery filler shall have a capacity of at least 2 quarts and shall shut off flow automatically when battery cells are filled to their proper level. Shall have an integral handle and a drip free design.



US ARMY PHOTO

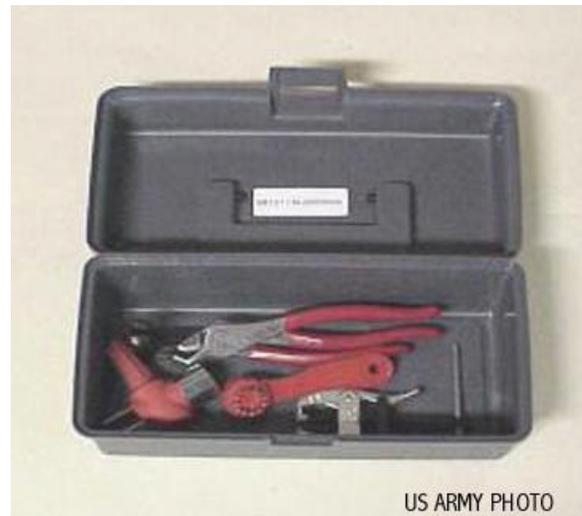
A9. Battery Filler, Syringe. The bulb-type syringe shall have a fluid capacity of at least 6 ounces and a flexible tube at least 6" long.



US ARMY PHOTO

A10. Battery Kit, Service. Shall consist of:

	Components
1	Angle Nose Pliers
2	Cable Clamp Pliers
3	Post Terminal Cleaner
4	Side Terminal Cleaner
5	Cable Clamp Puller
6	Carrying case



US ARMY PHOTO

A11. Bender Set, Tube, Hand Actuated. External coil spring, hand-actuated type, consisting of the following items:

	Components
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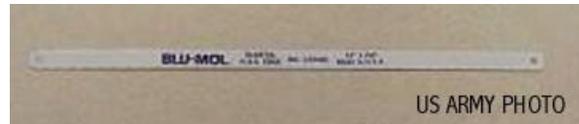


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**DFP-420**

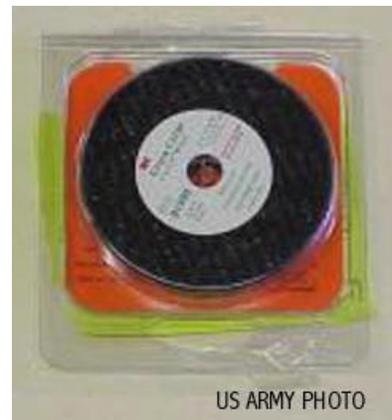
1	Spring for 1/4 " OD tube, 10-11" long
2	Spring for 5/16" OD tube, 10-11" long
3	Spring for 3/8" OD tube, 10-11" long
4	Spring for 7/16" OD tube, 12-13" long
4	Spring for 1/2" OD tube, 12-13" long
5	Spring for 5/8" OD tube, 12-13" long

A12. Blade, Hand Hacksaw. The blades shall be bimetal, 12" long, .025" thickness, 24 teeth per inch and shall have 10 blades per bundle. (For use with Items 115 and 116)



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A13. Blade, Abrasive, Cut-Off. The abrasive blade shall have an overall diameter of 3", a width of 1/16", and a 3/8" diameter arbor hole. (For use with item A141)



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A14. Blow Gun, Air. The gun shall be the "lever-over" style, capable of providing automatic reduction of the air in the nozzle to a pressure less than 30 psig when supplied with an upstream air pressure up to 150 psig. The control valve shall permit the delivery of air in short blasts or in a continuous flow at the option of the operator. The nozzle shall be detachable. The gun shall seal completely against airflow at all pressures up to 150 psig. For protection of the operator from chip fly-back, the gun shall have a nozzle capable of providing an air-cone barrier around the main stream. The gun shall comply with OSHA Program Directive 100-1 (29CFR Part 1910.24 and OSHA Instruction STD 1-13.1). The gun inlet shall be provided with 1/4-18 NPT female threads. A male 3/8" ID quick disconnect fitting shall be installed on each gun



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A15. Box, Tote. The tote box shall approximately be 18.25" long, 5.5" high, and 11" wide. The box configuration



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shall permit it to be nested and stacked with like boxes.

A16. Brazing And Soldering Set. This propane gas torch set shall be suitable for brazing, soldering, and heating and conform to Underwriters Laboratories standard UL 147. The torch shall use fuel cylinders of a standard size containing 14 ounces of propane gas and having threads conforming to connection 600 of Compressed Gas Association (CGA) Standard V-1. (Note: The carrying case shall provide a storage location for a fuel cylinder, but no fuel cylinder is to be provided with the set. See Item A99.) The set shall contain the contents specified below. (Reference CID A-A-51128)

	Components
1	Burner unit
2	Pencil burner head
3	Utility burner head
4	Soldering head
5	Flame spreader
6	Flint lighter
7	Carrying case



A17. Brush, File Cleaner. Shall consist of a handle of wood or other suitable material with a fine steel wire card on one side, and a stiff bristle fiber brush on the other side. Brush shall be approximately 9" overall length, bristle area shall be approximately 4.5" long X 1.5" wide.



A18. Brush, Wire, Rotary, End Attachment, Solid Wire Filled. Shall be a solid filled brush with crimped wire extending parallel to a 1/4" arbor shaft, filled to the center of the brush. The brush body shall have a 1" outside diameter. The brush shall be rated for a maximum speed of 8000 RPM. The wire shall be high carbon tempered steel, 0.0204" diameter, with a trim length of 0.75-1.125". The brush shall conform to ANSI standard B165.1.



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A19. Brush, Wire, Rotary End Attachment, Circular, Side Flair. Shall be a side flare brush with crimped wire extending 90-degrees from a 1/4" arbor shaft. The brush shall have a 1.5" outside diameter. The brush shall be rated for a maximum speed of 8000 RPM. The wire shall be crimped high carbon tempered steel, 0.0204" diameter. The brush shall conform to ANSI standard B165.1.



A20. Brush, Wire, Scratch. Shall be a curved-handle brush with bristles of 0.014" diameter carbon steel wire and are arranged in 4 X 18 rows. The exposed length of the bristles shall be approximately 1.125 to 1.250". The handle shall be wooden or molded plastic with an overall length of approximately 14 inches. The bristle area shall be 5.5 – 6.5" in length.



A21. Cable Assembly, Power. Shall be a three-conductor, 12 AWG extension cord for 120 VAC with insulation rated for 600 volts maximum. The cable jacket shall be oil, abrasion resistant, and the cable shall remain flexible at -25 degrees F. The cable assembly shall be 50' long with a NEMA 5-15P terminal on one end and a NEMA 5-15R terminal on the other end. Terminals shall be molded on the cable.



A22. Cable Assembly, Booster. Shall be automotive battery booster cables conforming to SAE J1494. Shall be Super Heavy-Duty (rated for 750 A, minimum), and at least 25' long.



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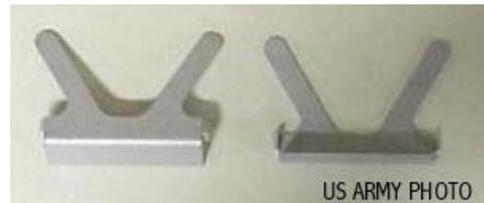
A23. Cable Kit, Special Power. The kit shall contain one cable assembly, P/N 11682336-1 and two adapters, with P/N 11677570. It is a slave-start (jumper) cable for military vehicles with connectors conforming to a NATO standard. (The coiled cable depicted forms a disk roughly 14" in diameter and 6" thick. Approximate weight is 32 lbs.)



A24. Can, Radiator Filling. Shall be Plastic with a 12 qt. capacity. Shall have an integral spout and handle.

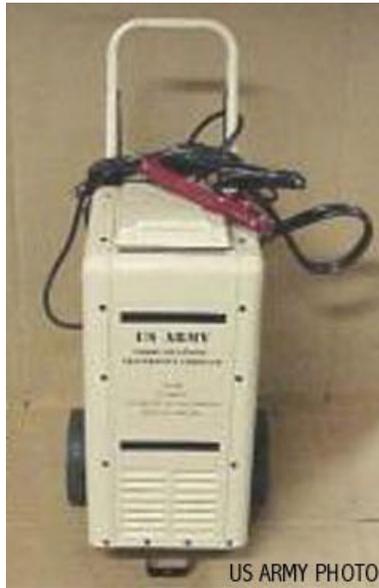


A25. Caps, Vise Jaw. Shall be for use in a 4" machinist's vise to protect hardware finish. The caps shall be copper, brass, or aluminum 1/8" thick. The vise jaw facing shall be at least 1". (See Item 134)



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A26. Charger, Battery. Shall be a 12 Volt and 24-Volt automatic charger for both flooded and sealed automotive batteries. The charger shall provide deep discharge recovery and bad battery detection. Shall be capable of operating on both 120 and 240 VAC, 50 or 60 HZ, single-phase current. The charger shall be rated for an output of at least 70 Amps at 12 VDC and 40 Amps at 24 VDC. Provides protection from both reverse polarity and sparking.



Shall be rated for all-weather outdoor use. Shall have a NATO slave receptacle adapter as well as standard battery terminal clamps. (NOTE: This item will be Government Furnished Material. The envelope dimensions of the item depicted are roughly 14" wide, 23" front-to-back, and 33.5" tall. Approximate weight is 70 lbs.)

A27. Clamp, C, 6" (Medium Service). Shall have 2.25" throat depth, a 5.75" minimum jaw opening with the screw fully retracted and an opening of not more than 2.625" when closed. The clamp shall be certified to a proof load of 11,250 lbs. The screw shall be at least 0.75" in diameter and have a swivel pad and a sliding cross pin handle at least 0.375" in diameter and 4" long.



A28. Cleaning Compound. Shall be a 5-gallon container of solvent for the degreaser (See item A38). Shall be biodegradable and contain no hazardous materials, conforming to MIL-PRF-680. (Note: This item is for the Production Representative System only.)



A29. Compressor Unit, Reciprocating. Shall be a portable compressor with a storage tank with outlet pressure regulator. The compressor shall have a 120-volt AC electric motor. Compressor shall be

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able to operate all SATS pneumatic tools and equipment at their designed level of capability and performance. Compressor shall have wheels and handle for ease of movement. A 3/8" ID "T" pipe fitting and two female 3/8" ID quick-disconnect fittings shall be installed on each compressor. One branch of the "T" shall also incorporate a mist lubricator. (Picture not available.)

A30. Creeper, Mechanic's. Shall be approximately 47" long and 25.5" wide. Shall have large wheels to roll over grates, cracks in pavement and rocky, loose soil. The creeper shall have a low profile design to allow for maximum workspace clearance.



A31. Crimping Tool, Terminal. Crimping tool shall be a manual compression type for insulated and non-insulated solder-less terminals on wire sizes from 22 through 10 AWG. Shall be able to cut and strip 22 through 10 AWG wires. Shall have integral dies for trimming six sizes of threaded fasteners: 4-40, 6-32, 8-32, 10-24, and 10-32. Shall have an insulated handle.



A32. Crowbar. Shall be 59-62" long and approximately 1 1/4" wide. Shall have a round handle tapering slightly toward handle end. Shall have a pinch-point style work end with square sides and a flat, single-beveled edge. The work end shall be equal in width to the distance across the flat surfaces of the bar.



A33. Crowfoot Attachment Set, Socket Wrench, Flare Nut, Inch. Shall have 3/8" female square drive and include the following sizes: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4" and 13/16".



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A34. Crowfoot Attachment Set, Socket Wrench, Flare Nut, Metric. Shall have 3/8" female square drive, and include the following sizes: 9mm, 10mm, 11mm, 12mm, 13mm, 14mm, 15mm, 16mm, 17mm, and 18mm.



A35. Cutting and Flaring Kit, Tube. Shall be able to cut, bend and flare copper, brass, and aluminum tubing. The kit shall contain a tube cutter with a cutting range of 1/8 to 1-1/8". The kit shall include a deburring tool. The kit shall provide tools for forming single flares on 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", and 3/4" tubing, and double flaring on 3/16, 1/4, 5/16, 3/8 and 1/2" tubing. This kit shall include swaging adapters for: 3/16", 1/4", 3/8", 1/2", 5/8", and 3/4" tubing. Carrying case shall be provided.



A36. Cutter, Bolt, Lightweight, 24". Shall have insulated handles made out of high quality aircraft aluminum. The cutting heads shall be replaceable.



A37. Cutter, Bolt, Replacement Head. Shall fit item A37.  
**(Note: This item is for Production Representative System only)**



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A38. Degreaser, Portable. Shall be a portable table-top degreasing system including a tank at least 23” long by 17” wide by 6” deep. The system shall operate on 115 Volt 60 Hz current, and shall provide a recycling filtration system (0.1 micron) for recovery and re-use of the solvent. The system shall be provided with a cover equipped with a fusible link for emergency closure. Reusable air-transportable container for solvent shall be provided.



A39. Die And Tap Set, Rethreading. Shall be designed for removing nicks and burrs from damaged standard and metric threads. The set shall contain the following items:

	Components
	Rethreading Dies, Inch, National Coarse
1	1/4-20
2	5/16-18
3	3/8-16
4	7/16-14
5	1/2-13
6	9/16-12
7	5/8-11
	Rethreading Dies, Inch, National Fine
8	1/4-28
9	5/16-24
10	3/8-24
11	7/16-20
12	1/2-20
13	9/16-18
14	5/8-18
	Rethreading Dies, Metric
15	6-1.00
16	8-1.25
17	10-1.00
18	10-1.25
19	10-1.50



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20	11-1.50
21	12-1.25
22	12-1.50
23	12-1.75
24	14-1.50
	Rethreading Taps, Inch, National Coarse
25	¼-20
26	5/16-18
27	3/8-16
28	7/16-14
29	½-13
30	9/16-12
	Rethreading Taps, Inch, National Fine
31	¼-26
32	5/16-24
33	3/8-24
34	7/16-20
35	½-20
36	9/16-16
	Rethreading Taps, Metric
37	6-1.00
38	8-1.25
39	10-1.00
40	10-1.25
41	10-1.50
42	11-1.50
43	12-1.25
44	12-1.50
45	12-1.75
46	14-1.50
	Rethreading files
47	US thread pitch 11 to 24 TPI
48	Metric thread pitch 75mm to 3.0mm
49	Storage case

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A40. Die and Tap Set, Thread. The set shall have 34 fractional #4 to 1/2" and 1/8"-27 NPT. It shall have 34 pieces from 3 mm to 12 mm and 1/8-28 BSP. It shall have 36 HSS drill bits and 5 extractors. Carrying case shall be included.



Description
<b>Machine Screw Hand Tap and Die (1 Pair EA)</b>
4-40 NC
6-32 NC
8-32 NC
10-24 NC
10-32 NF
12-24 NC
<b>Fractional-size Hand Tap and Die (1 Pair EA)</b>
1/4 -20 NC
1/4 -28 NF
5/16- 18 NC
5/16- 24 NF
3/5-16 NC
3/8-24 NF
7/16-14 NC
7/16-20 NF
1/2-13 NC
1/2-20 NF
<b>Inch Straight Pipe Hand Tap and Die (1 Pair)</b>
1/8-27 NPT

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<b>Metric Machine Thread Hand Tap and Die (1 Pair EA)</b>
3mm -0.5
4mm-0.7
4mm-0.75
5mm-0.8
5mm-0.9
6mm-1
<b>Metric Hand Taps and Dies (1 Pair EA)</b>
7mm-1.0
8mm-1.0
8mm-1.25
9mm-1.0
9MM-1.25
10mm -1.25
10mm-1.5
11mm-1.5
12mm-1.5
12mm-1.75
<b>Metric Straight Pipe Hand Tap and Die (1 Pair)</b>
1/8-28 BSP
<b>Spiral Flute Screw Extractors – (1 EA by Drill Bit Size)</b>
5/64”
7/64”
5/27”
1/4”
19/64”
<b>Drive Tools (1 EA)</b>
Plain die stock for 5/8” hex dies

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Adjustable die stock
Adjustable handle tap wrench
T-handle wrench, #0 to ¼” Taps
T-handle wrench, ¼” to ½” Taps
<b>HSS Drill Bits (1 EA by Size &amp; Style)</b>
Wire Gage#: 3, 7, 9, 16, 19, 20, 21, 25, 29, 30, 36, 30, 43
Letter: B, J, H, O, S, R, Z, I, Q, U
Fractional: 5/16”, 3/8”, 13/32”, 21/64”, 25/64”, 27/64”, 29/64”, 5/64”, 7/64”, 5/32”, ¼” 19/64”
<b>Accessories (1 EA)</b>
Pitch gauge, metric
Pitch gauge, FART
Screwdriver
Carrying Case

A41. Dresser, Abrasive Wheel. Dresser shall be provided with replaceable cutters, and protective hood.



A42. Drill-Driver, Battery Operated, Rechargeable. Shall be an 18 volt, 2 Amp-Hour battery-operated, ½” drill with the following features: trigger-controlled variable speed; dual speed range (No-Load RPM Low: 0 to at least 400 rpm, High: 0 to at least 1000 rpm); trigger lock; forward and reverse operation; and a keyless chuck. For drilling operations, the drill shall produce at least 400 in-lbs torque at low speed and at least 120 in-lbs at high speed. For driving operations, the drill shall be furnished with a multi-position chuck permitting incremental limitation of the output torque over the range of 0 to at least 80 in-lbs. Battery and battery charger shall be supplied. Set shall come with a storage case.



A43. Drill, Driver, Electric, ½”. Shall be a “D” handle drill with a ½” keyed jaw chuck. Shall be reversible and have a 120 Volt 60 Hz, single-phase variable speed motor for speeds



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from 0 to at least 500 RPM. Shall be rated for drilling 1/2" holes in steel. Side handle shall be included.

A44. Drill, Battery Operated, Rechargeable, Right Angle, 3/8". Shall be an 18-volt, battery-operated, 3/8" drill with the following features: trigger-controlled variable speed; dual speed range (No-Load RPM Low: 0 to at least 400 rpm, High: 0 to at least 1000 rpm); trigger lock; forward and reverse operation; and a keyless chuck. The drill shall produce at least 300 in-lbs torque at low speed, and at least 60 in-lbs torque at high speed. Battery and battery charger shall be supplied. Set shall come with a storage case. (Photo not available.)

A45. Drill, Electric, Portable, 3/8". Shall have a 3/8" keyed jaw chuck, pistol grip handle and a variable speed 120 Volt 60 Hz motor for operation from 0 – 1300 RPM. Shall be rated for drilling holes in steel up to 3/8" in diameter. Shall be double insulated and designed for close quarters work. Drill head shall be not more than 4" from front to back, and not more than 2.5" in diameter.



A46. Drill, Electric, Portable, 1/2". Shall have a 1/2" keyed jaw chuck, pistol grip handle and a variable speed 120 Volt 60 Hz motor for operation from 0 – 750 RPM. Shall be rated for drilling holes in steel up to 1/2" in diameter. Shall be double insulated and designed for close quarters work. Drill head shall be not more than 4.5" from front to back, and not more than 2.5" in diameter.



A47. Drill, Pneumatic, Right Angle, 3/8". Shall have a 3/8" keyed jaw chuck. Shall have a rear exhaust. The drill shall have forward and reverse. Shall be lever actuated with a 1/2 hp motor and a minimum free speed of 1200 RPM. A male 3/8" ID quick disconnect fitting shall be installed on each drill.



A48. Drill Set, Twist. Shall contain 1 each, from 1/16 to 1/2", in 1/64 increments (29 bits). Drill bits shall be cobalt steel alloy with 135 degree split point and straight round shank. Drill bits shall be intended for use on stainless steels, heat-



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treated, steels, forgings, chilled cast iron, and other applications involving extreme hardness or abrasive materials. Shall have a drill bit index for storage.

A49. Drill Set, Twist, Left Hand. Shall contain 1 each, 5/64", 7/64", 1/8", 5/32", 3/16", 7/32", 1/4", 9/32", 19/64", 5/16", 11/32", 3/8", 13/32", 7/16", 15/32", and 1/2" (16 bits). Drill bits shall be cobalt steel alloy with 135 degree split point and straight round shank. Drill bits shall be intended for use on stainless steels, heat-treated, steels, forgings, chilled cast iron, and other applications involving extreme hardness or abrasive materials. Shall have a drill bit index for storage. (Picture not available.)

A50. Extinguisher, Fire. Shall be 5lb nominal capacity rating for Type A, B, and C fires. (**NOTE: This item for Production Representative System only.** Mounting location with appropriate signs or labels shall be provided.)



A51. Extractor Set, Screw. Shall be a set of left hand drill bits and corresponding spiral flute screw extractors. It shall contain 7 left-hand drill bits ranging from 1/8" to 1/2" by 16ths, and 6 sizes of screw extractor.



A52. Extractor Set, Hardened Screw. The extractor screw set shall be designed for extraction of high-strength fasteners, Grades 2 through 5 and Class 5.6 to 10.9, as well as stainless steel bolts. The set shall contain extractors suitable for removing FART fasteners sizes 1/8" through 1/2" and Metric fasteners sizes M3 through M12.



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A53. Face shield, Industrial. Shall be an industrial face shield with crown protector complying with ANSI Z87.1. The clear, replaceable visor shall be  $11.5 \pm 1$  inches wide by  $8.0 \pm 1$  inches long and at least 0.040 inches thick. The headgear shall be of the adjustable, positive lock style, with a tilting visor support.



A54. File Set, Hand. Shall consist of four files, two 12” long half-round American pattern bastard cut files, and two 12” long 1/2” diameter round American pattern bastard cut files. Each file shall have a plastic, permanently affixed, ergonomic handle



A55. File Set, Thread Restorer. Shall be a set of files designed to restore damaged or worn external threads. Each file shall have eight faces, with each face cut for restoring a different thread size. The set shall contain:

	Components
1	File for inch coarse threads, 11, 12, 13, 14, 18, 20, and 24 TPI
2	File for inch extra fine and extra coarse threads, 9, 10, 12, 16, 20, 27, 28, and 32 TPI
3	File for inch pipe threads, 8, 10, 11-1/2, 14, 16, 18, 24, and 27 TPI
4	File for metric threads, 0.75, 1.0, 1.25, 1.50, 1.75, 2.0, 2.5, and 3.0 mm
5	Carrying case



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A56. Filler And Bleeder Kit, Brake System. Shall be a manual fluid injector. Shall have a full-range adjustable metering. Shall be able to produce 150 psi of injection pressure with a 15ml injection dosage. The kit shall include:



	Components
1	Graduated fluid bottle assembly with quick couplers, debris magnet and holder
2	Tube connectors
3	1/8 x 0.150 90 degree Adapter for 1/8" bleeder valves or ports
4	3/16 x 4mm 90 degree Adapter for 1/8" or 3/16" valves
5	Quick coupler assembled with 3/16 x 4 mm 90 degree adapter
6	Quick couple assembly for 3/16" of 1/4" bleeder valves
7	Taper Tip Adapters (4 ea)
8	Luer Male/Female Plug
9	Universal Port Adapter
10	3/16" x 4mm Straight Adapter
11	3/16" x 0.150 Straight Adapter
12	3/16" x 3/16" Straight Adapter
13	Taper Adapter
14	Pedal Flush and Capture Assembly with check valve and quick couplers
15	28mm Bottle cap with siphon and quick coupler
16	33mm bottle cap with siphon and quick coupler
17	Hand-pumped Injector with inlet and outlet hose assemblies
18	Carrying case

A57. Filter, Solvent. Recycling filter for portable degreaser (Item A39), capable of removing particles down to one micron in size. **(Note: This item is for Production Representative System only)**



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A58. Finger, Mechanical. Shall have an overall length of 17.5", four claws, 1" jaw opening and an 8" flexible section.



A59. Fountain, Eye and Face. Shall be a pressurized self-contained eyewash conforming to ANSI/ISEA Z358.1. Shall have a stainless steel tank with a capacity of at least six gallons, and a 5-foot hand-held drench hose and nozzle.



A60. Funnel. Shall be a polypropylene funnel with a rigid spout and a capacity of 2 quarts.



A61. Funnel, Flexible Spout. Shall be a one-quart capacity funnel with a flexible spout at least 13 inches long, and a removable strainer. The spout shall have an automatic transmission tip. The strainer shall have a mesh of 70-100 per linear inch. (Reference CIDA-A-1068)



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A62. Gage, Wheel Alignment. Shall be a scribe-type toe-in Gauge for trucks which can extend up to a 96" (243.84 cm) width, with adjustable legs which can extend up to 17 1/2" (44.45 cm) high. (Photo not available.) (Note: This item will be Government Furnished Material.)