

Description for Purchase (DFP)
for
Tool Kit, Electronic System Maintenance (ESMTK)

1 SCOPE

- 1.1 Scope. This description for purchase (DFP) covers the Electronic System Maintenance Tool Kit (ESMTK) consisting of common hand tools used for essential maintenance functions at the Field/Sustainment units, on combat vehicle fire control computer systems, and on related equipment. The tool kit shall support MOS (Military Occupational Specialty) 91G, Fire Control Repairer.

2 APPLICABLE DOCUMENTS

- 2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this DFP. This section does not include documents cited in other sections of this DFP or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, and 5 of this DFP, 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 the most current revisions as of the date of issue for this DFP as listed in the ASSIST military database and supplement thereto, cited in the solicitation.

Military Standards

MIL-STD-1916	DOD Preferred Methods for Acceptance of Product
MIL-STD-2073-1D	Standard Practice for Military Packaging
MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests

Department of Defense (DOD) Handbooks

DOD-HDBK-743	Anthropometry of U.S. Military Personnel (Metric)
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(Copies of these documents are available online from the ASSIST military database at <http://assist.daps.dla.mil/quicksearch/> or 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 DFP to the extent specified herein. Unless otherwise specified, the issues of these documents are the most current revisions as of the date of issue for this DFP as listed in the ASSIST military database and supplement thereto, cited in the solicitation.

Commercial Item Description (CID)

A-A-2311	File, Hand (American Pattern), Flat
A-A-2312	File, Hand (American Pattern), Half-Round
A-A-2318	File, Hand (American Pattern), Round, Regular
A-A-50271	Plate Identification
A-A-59486	Padlock Set (Individually Keyed or Keyed Alike)

(Copies of these documents are available online from the ASSIST military database at <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

Army Drawings

7680631	Dioptometer
7597708	Wrench, Adjustable Teat
7597712	Pin Adjusting, Driving
8284044	Wrench, Adjustable Teat
8284045	Wrench, Adjustable Teat

(Copies of Top Level drawings in Appendix A; additional copies and lower level drawings may be obtained)

2.3 Non-Government publications. The following document(s) form a part of this DFP to the extent specified herein. Unless otherwise specified, the issues of these documents are the most current revisions as of the date of issue for this DFP as listed in the ASSIST military database and supplement thereto, cited in the solicitation.

ASME (American Society of Mechanical Engineers)

B18.3	Socket Cap, Shoulder, and Set Screws, Hex and Spline Keys (Inch Series)
B107.10	Handles and Attachments for Hand Socket Wrenches
B107.100	Flat Wrenches
B107.300	Torque Instruments
B107.400	Striking Tools

B107.410	Struck Tools
B107.500	Pliers
B107.600	Screwdrivers

(Copies of the above publications are available from The American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990)

ASTM (American Society for Testing and Materials)

D6251	Standard Specification for Wood-Cleated Panelboard Shipping Boxes
D4169	Standard Practice for Performance Testing of Shipping Containers and Systems

(Copies of the above publications are available from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this DFP and the references cited herein, the text of this DFP shall take precedence. Nothing in this DFP, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3 REQUIREMENTS

3.1 Preproduction verification. When specified in the contract, the contractor shall furnish one or more sets for preproduction verification inspection in accordance with section 4 herein. The sets submitted shall be in accordance with the requirements of this DFP. The approved preproduction sample and the production items shall be in accordance with the terms of the contract. Approval of the preproduction verification shall not relieve the contractor of the responsibility to furnish equipment in accordance with the requirements of this DFP. All items supplied under this contract shall be identical to the approved preproduction verification sample; including packaging requirements listed in section 5 herein.

3.2 Materials. The kit shall be new and constructed of parts and materials that are without defects. Unless otherwise specified herein, the kit and its various items shall be made of any suitable material that will meet the performance requirements set forth in this DFP.

3.3 Industrial quality tools. All components supplied with this set shall be industrial quality. For the purposes of this procurement, the term “industrial quality tools” versus household-use tools or general purpose tools are defined as tools commercially marketed and manufactured for constant, rigorous, industrial or professional environment use. The items offered shall have either achieved industrial market acceptance (as defined in paragraph 3.3.1) or have been satisfactorily supplied to the Government under current or recent contracts for the same or similar requirements. Industrial quality tools are used primarily by skilled professionals and technicians in such areas as machine shops, automotive maintenance and repair facilities, aircraft maintenance and repair facilities, industrial automotive assembly plants, fleet

maintenance facilities, and airline service facilities. The tools will be used for specialized applications in an environment of virtual constant use, (i.e. around-the-clock 8 hour shifts), with applications requiring high torque, low slippage, and strict tolerances.

3.3.1 Market acceptance. Market acceptance is demonstrated by the component having a higher percentage of sales to industrial/professional customers than to retail or government customers. Advertising or marketing literature that indicates “professional grade” or “industrial quality”, or merely stating that an item is “professional grade” or “industrial quality” is insufficient to establish industrial quality tools since these are terms for which there is no generally accepted definition. A claim that an item is manufactured to an industry consensus standard is also insufficient to establish industrial quality tools. The contracting officer may require offerors to provide evidence of market acceptance in the professional or industrial market. Evidence of acceptance by industrial/professional customers includes sales to fleet operators, distributors, contractors, industrial and professional users, and sales to distributors who retail exclusively to the professional or industrial market.

3.3.2 Brand name or Equal. The items identified in Table 1 shall be offered as either Brand Name or Equal. Each component listed contains manufacturer's part numbers for reference.

Brand Name or Equal products shall be provided. Offerors may offer an equivalent item provided that the offered item has the same or better form, fit, function, quality and warranty as the brand name item. If an equal product is provided the product shall comply with the Salient Characteristics of the component tools which refers to: A. Compliance with applicable commercial item descriptions (3.5 through 3.6), B. Compliance with Industrial Quality definition as defined in 3.3, C. Compliance with Individual dimensions and characteristics outlined in 3.5.1 through 3.5.94 as well as section 3.6 in its entirety, and D. Compliance with the warranty requirements outlined in Table 1 of section 3.5.

3.4 Warranty. All components shall be supplied with the same or better warranties as specified in Table 1 below. The warranties shall become part of the contract or delivery order.

3.5 Components. The ESMTK shall be furnished with the brand name or equal components and corresponding quantities as listed in Table 1.

TABLE 1: Components

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3.5.1	Alignment Tool	EA	1	M	5120	Jonard AT-6241
3.5.2	Blower, Watchmaker's	EA	1	M	3439	Esslinger 30540
3.5.3	Crimping Tool	EA	1	M	5120	Daniels Manufacturing Corporation HX4-501
3.5.4	File, Hand, Set	SE	1	N	5110	
1	Barrett Hand File	EA	1	N	5110	
2	Crossing Hand File	EA	1	N	5110	

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3	Equaling Hand File	EA	1	N	5110	
4	Half-Round Hand File	EA	1	N	5110	
5	Joint Round Edge Hand File	EA	1	N	5110	
6	Knife Hand File	EA	1	N	5110	
7	Marking Hand File	EA	1	N	5110	
8	Round Hand File	EA	1	N	5110	
9	Slitting Hand File	EA	1	N	5110	
10	Square Hand File	EA	1	N	5110	
11	Three-Square Hand File	EA	1	N	5110	
12	Warding Hand File	EA	1	N	5110	
13	Case	EA	1	N	5110	
3.5.5	File, Hand, Flat	EA	1	N	5110	ICS Cutting F-H-08SC
3.5.6	File, Hand, Half-round	EA	1	N	5110	ICS Cutting F-HR-06SC
3.5.7	File, Hand, Round	EA	1	N	5110	ICS Cutting F-R-04SC
3.5.8	Handle, File	EA	1	M	5110	General Tool 890
3.5.9	Dioptometer	EA	1	M	1240	Seiler Instruments 7680631
3.5.10	Flashlight, Right Angle	EA	1	M	6230	Fulton Industries Inc. N47
3.5.11	Flashlight, Spot or Flood Lighting	EA	1	M	6230	Maglite M2A016
3.5.12	Flashlight, Fixed or Flashing	EA	1	M	6230	Fulton Industries Inc. N42
3.5.13	Hammer, Ball Peen	EA	1	M	5120	Barco Tool 04504
3.5.14	Hammer, Dead Blow, 5 oz	EA	1	LL	5120	Trusty-Cook Inc S0
3.5.15	Hammer, Dead Blow, 24 oz	EA	1	LL	5120	Nupla 10180
3.5.16	Hex Key Set, Screwdriver, 4 pc (piece)	SE	1	LL	5120	5120-00-679-4460
1	Hex Key, 0.035 inch	EA	1	LL	5120	
2	Hex Key, 0.05 inch	EA	1	LL	5120	
3	Hex Key, 1/16 inch	EA	1	LL	5120	
4	Hex Key, 5/64 inch	EA	1	LL	5120	
3.5.17	Hex Key Set, Screwdriver, 11 pc	SE	1	LL	5120	Bondhus 10737
1	Hex Key, 5/64 inch	EA	1	LL	5120	
2	Hex Key, 3/32 inch	EA	1	LL	5120	
3	Hex Key, 7/64 inch	EA	1	LL	5120	
4	Hex Key, 1/8 inch	EA	1	LL	5120	
5	Hex Key, 9/64 inch	EA	1	LL	5120	
6	Hex Key, 5/32 inch	EA	1	LL	5120	
7	Hex Key, 3/16 inch	EA	1	LL	5120	
8	Hex Key, 7/32 inch	EA	1	LL	5120	
9	Hex Key, 1/4 inch	EA	1	LL	5120	
10	Hex Key, 5/16 inch	EA	1	LL	5120	
11	Hex Key, 3/8 inch	EA	1	LL	5120	
3.5.18	Hex Key Set, L-Style, Ball-Tip,	SE	1	LL	5120	Eklind 13213

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
	13 pc					
1	Hex Key, Ball Tip, 0.050 inch	EA	1	LL	5120	
2	Hex Key, Ball Tip, 1/16 inch	EA	1	LL	5120	
3	Hex Key, Ball Tip, 5/64 inch	EA	1	LL	5120	
4	Hex Key, Ball Tip, 3/32 inch	EA	1	LL	5120	
5	Hex Key, Ball Tip, 7/64 inch	EA	1	LL	5120	
6	Hex Key, Ball Tip, 1/8 inch	EA	1	LL	5120	
7	Hex Key, Ball Tip, 9/64 inch	EA	1	LL	5120	
8	Hex Key, Ball Tip, 5/32 inch	EA	1	LL	5120	
9	Hex Key, Ball Tip, 3/16 inch	EA	1	LL	5120	
10	Hex Key, Ball Tip, 7/32 inch	EA	1	LL	5120	
11	Hex Key, Ball Tip, 1/4 inch	EA	1	LL	5120	
12	Hex Key, Ball Tip, 5/16 inch	EA	1	LL	5120	
13	Hex Key, Ball Tip, 3/8 inch	EA	1	LL	5120	
14	Plastic holder	EA	1	N	5120	
3.5.19	Hex Key, Short, 0.028 inch	EA	1	LL	5120	Bondhus 12247
3.5.20	Hex Key, Short, 0.035 inch	EA	1	LL	5120	Bondhus 12248
3.5.21	Hex Key, Short, 0.050 inch	EA	1	LL	5120	Bondhus 12202
3.5.22	Hex Key, Short, 7/64 inch	EA	1	LL	5120	Bondhus 12206
3.5.23	Hex Key, Short, 9/64 inch	EA	1	LL	5120	Bondhus 12208
3.5.24	Hex Key Set, L-Style, Ball-Tip, Metric, 13 pc	SE	1	LL	5120	Bondhus 10995
1	Hex Key, Ball Tip, 1.5 mm	EA	1	LL	5120	
2	Hex Key, Ball Tip, 2 mm	EA	1	LL	5120	
3	Hex Key, Ball Tip, 2.5 mm	EA	1	LL	5120	
4	Hex Key, Ball Tip, 3 mm	EA	1	LL	5120	
5	Hex Key, Ball Tip, 4 mm	EA	1	LL	5120	
6	Hex Key, Ball Tip, 4.5 mm	EA	1	LL	5120	
7	Hex Key, Ball Tip, 5 mm	EA	1	LL	5120	
8	Hex Key, Ball Tip, 5.5 mm	EA	1	LL	5120	
9	Hex Key, Ball Tip, 6 mm	EA	1	LL	5120	
10	Hex Key, Ball Tip, 7 mm	EA	1	LL	5120	
11	Hex Key, Ball Tip, 8 mm	EA	1	LL	5120	
12	Hex Key, Ball Tip, 9 mm	EA	1	LL	5120	
13	Hex Key, Ball Tip, 10 mm	EA	1	LL	5120	
14	Plastic holder	EA	1	N	5120	
3.5.25	Knife, Putty	EA	1	M	5120	Marshalltown 10761
3.5.26	Mirror, Inspection	EA	1	M	5120	Stanley Proto J2372
3.5.27	Finger, Mechanical	EA	1	M	5120	Ullman Devices 17
3.5.28	Pocket Knife	EA	1	M	5110	R Murphy Knives 229
3.5.29	Pliers, Needle Nose	EA	1	LL	5120	Stanley Proto J226G
3.5.30	Pliers, Bent Nose, Needle Nose	EA	1	LL	5120	Stanley Proto J225G
3.5.31	Pliers Set, Retaining Ring	SE	1	LL	5120	SK Hand Tool 7622

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
1	External Retaining Ring Pliers	EA	1	LL	5120	
2	Internal Retaining Ring Pliers	EA	1	LL	5120	
3	Interchangeable Tips, 0.038 inch 90-degree	PR	4	N	5120	
4	Interchangeable Tips, 0.047 inch straight	PR	4	N	5120	
5	Interchangeable Tips, 0.047 inch 45-degree	PR	4	N	5120	
6	Interchangeable Tips, 0.070 inch straight	PR	4	N	5120	
7	Case	EA	1	N	5120	
3.5.32	Pliers, Diagonal Cutting, 6 inch	EA	1	LL	5110	Stanley Proto J206G
3.5.33	Pliers, Diagonal Cutting, 4 inch	EA	1	LL	5110	Stanley Proto J204G
3.5.34	Pliers, Diagonal Cutting, 6 inch, wire stripping	EA	1	LL	5110	Klein Tool D240-6
3.5.35	Pliers, Combination Slip Joint	EA	1	LL	5120	Stanley Proto J278
3.5.36	Pliers, Slip Joint, Angled Jaw	EA	1	LL	5120	Stanley Proto J263SG
3.5.37	Pliers, Wire Twister	EA	1	LL	5120	Stanley Proto J191
3.5.38	Plumb Bob	EA	1	LL	5210	LS Starrett 36113 (PB-8)
3.5.39	Punch Set, Drive Pin	EA	1	M	5120	5120-00-883-3003
1	Pin Punch, 1/16 inch	EA	1	M	5120	
2	Pin Punch, 3/32 inch	EA	1	M	5120	
3	Pin Punch, 1/8 inch	EA	1	M	5120	
4	Pin Punch, 5/32 inch	EA	1	M	5120	
5	Pin Punch, 3/16 inch	EA	1	M	5120	
6	Pin Punch, 7/32 inch	EA	1	M	5120	
7	Pin Punch, 1/4 inch	EA	1	M	5120	
8	Pin Punch, 5/16 inch	EA	1	M	5120	
9	Pin Punch, 3/8 inch	EA	1	M	5120	
3.5.40	Punch, Drive Pin, 1/16 inch	EA	1	M	5120	Stanley Proto J471/4X1/16
3.5.41	Pin Adjusting, Driving, Punch	EA	1	M	5120	Army Drawing 7597712
3.5.42	Punch, Center, 5/32 inch	EA	1	M	5120	Mayhew Tool 24001
3.5.43	Drift Pin, 3/16 to 1/4 inch	EA	1	M	5120	5120-00-239-0035
3.5.44	Chisel, Cold, 1/4 inch	EA	1	M	5110	Stanley Proto J86A3/16
3.5.45	Repair Tool, Pneumatic	EA	1	M	5120	General Machine Products Co. 74710
3.5.46	Rule, Machinist's, 6 inch	EA	1	LL	5210	LS Starrett 52688 (C607R-6)
3.5.47	Scissors, Electrician's	EA	1	LL	5110	Klein Cutlery 100CS
3.5.48	Scraper, Bearing, Flat	EA	1	LL	5110	CS Osborne 389
3.5.49	Scraper, Bearing, Three-Square	EA	1	LL	5110	CS Osborne 242
3.5.50	Screw Starter	EA	1	M	5120	Ullman Devices DE-1
3.5.51	Jeweler's Screwdriver Set	EA	1	LL	5120	Moody Tools 58-0116

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
1	Jeweler's Screwdriver, 0.025 inch	EA	1	LL	5120	
2	Jeweler's Screwdriver, 0.040 inch	EA	1	LL	5120	
3	Jeweler's Screwdriver, 0.055 inch	EA	1	LL	5120	
4	Jeweler's Screwdriver, 0.070 inch	EA	1	LL	5120	
5	Jeweler's Screwdriver, 0.080 inch	EA	1	LL	5120	
6	Jeweler's Screwdriver, 0.100 inch	EA	1	LL	5120	
7	Tool pouch, roll or case	EA	1	N	5120	
3.5.52	Screwdriver Set	SE	1	LL	5120	See Below:
1	Phillips #1	EA	1	LL	5120	Snap-On Tool SHDP31IRR
2	Phillips #2	EA	1	LL	5120	Snap-On Tool SHDP42IRR
3	Phillips #3	EA	1	LL	5120	Snap-On Tool SHDP63IRR
4	Phillips #4	EA	1	LL	5120	Snap-On Tool SHDP64IRR
5	Offset Phillips #1 and 2	EA	1	LL	5120	SK Hand Tool 70012
6	Offset Phillips #3 and 4	EA	1	LL	5120	SK Hand Tool 70034
3.5.53	Screwdriver, Phillips #0	EA	1	LL	5120	Klein Tool 604-3
3.5.54	Screwdriver, Slotted, 5/16 inch	EA	1	LL	5120	Mac Tool PJRB6AR
3.5.55	Screwdriver, Slotted, 1/8 inch, 8 inch blade	EA	1	LL	5120	Armstrong Tool 66-259
3.5.56	Screwdriver, Slotted, 1/8 inch, Pocket	EA	1	LL	5120	Klein Tool A130-2
3.5.57	Screwdriver, Slotted, 3/16 inch, 8 inch blade	EA	1	LL	5120	Snap-On Tool SSDE68C
3.5.58	Screwdriver, Slotted, 3/16 inch, 5 inch blade	EA	1	LL	5120	Stanley Proto J9633C
3.5.59	Screwdriver, Slotted, 1/4 inch, Stubby	EA	1	LL	5120	Stanley Proto J88002
3.5.60	Screwdriver, Slotted, 3/8 inch	EA	1	LL	5120	Mac Tool PKRB12AR
3.5.61	Screwdriver, Offset, Slotted, 5/32 inch	EA	1	LL	5120	Armstrong Tool 66-601
3.5.62	Screwdriver, Torque Limiting, 1/4 inch	EA	1	LL	5120	Stanley Proto 6106
3.5.63	Scriber, Machinist	EA	1	LL	5120	L S Starrett 50321 (68B)
3.5.64	Clip, Alligator	EA	6	M	5999	GC Electronics 33-080-BU

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3.5.65	De-soldering Tool	EA	1	M	3439	Edsyn Inc. DS017
3.5.66	Soldering Aid Tool	EA	1	M	3439	Waldom Electronics 9088
3.5.67	Soldering and Desoldering Set	EA	1	M	3439	Cooper Tool WTCPK
1	Soldering Pencil	EA	1	M	3439	
2	Transformer Assembly	EA	1	M	3439	
3	Holder, Soldering Iron	EA	1	M	3439	
4	De-Soldering Attachment	EA	1	M	3439	
5	Straight Tip, 1/16 inch	EA	1	M	3439	
6	Straight Tip, 3/32 inch	EA	1	M	3439	
7	Straight Tip, 1/8 inch	EA	1	M	3439	
8	Straight Tip, 1/8 inch, 700 deg	EA	1	M	3439	
9	Straight Tip, 5/64 inch, 700 deg	EA	1	M	3439	
10	Bent Tip, 7/32 inch	EA	1	M	3439	
11	Bent Tip, 3/64 inch	EA	1	M	3439	
12	Bent Tip, 7/32 inch, 90-deg	EA	1	M	3439	
13	Straight Tip, 7/32 inch, Wire Stripping	EA	1	M	3439	
14	Straight Tip, Dual Inline, 7/32 inch	EA	1	M	3439	
15	Straight Tip, Round, 7/32 inch	EA	1	M	3439	
16	De-soldering Tip, 5/64 inch	EA	1	M	3439	
17	De-soldering Tip, 3/32 inch	EA	1	M	3439	
18	De-soldering Tip, 1/8 inch	EA	1	M	3439	
19	De-soldering Tip, 0.135 inch	EA	1	M	3439	
20	De-soldering Tip, 0.216 by 0.156 inch	EA	1	M	3439	
21	De-soldering Tip, 0.216 by 0.170 inch	EA	1	M	3439	
22	Case	EA	1	N	3439	
3.5.68	Soldering Iron, Pencil-type	EA	1	M	3439	3439-00-944-4918
3.5.69	Stripper, Wire	EA	1	M	5110	SK Hand Tool 45-092
3.5.70	Tape, Measuring	EA	1	LL	5210	US Tape 57613
3.5.71	Tweezers, Cross Locking	EA	1	M	5120	Grobet USA H500
3.5.72	Tweezers, Sharp Point	EA	1	M	5120	Grobet USA H511
3.5.73	Vise Pin, Set	EA	1	M	5120	L S Starrett 50604 (S162Z)
1	Vise Pin, 0.000 to 0.040 inch (example range)	EA	1	M	5120	
2	Vise Pin, 0.025 to 0.062 inch (example range)	EA	1	M	5120	
3	Vise Pin, 0.045 to 0.125 inch (example range)	EA	1	M	5120	
4	Vise Pin, 0.115 to 0.187 inch (example range)	EA	1	M	5120	

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3.5.74	Vise, Bench Clamp	EA	1	M	5120	Yost Vises 250
3.5.75	Wrench Kit, 1/4 inch drive	SE	1	M	5120	Snap-On (see para 3.5.75)
1	Socket, shallow, 1/8 in. 6-pt	EA	1	M	5120	TM04
2	Socket, shallow, 5/32 in. 6-pt	EA	1	M	5120	TM05
3	Socket, shallow, 3/16 in. 6-pt	EA	1	M	5120	TM6
4	Socket, shallow, 7/32 in. 6-pt	EA	1	M	5120	TM7
5	Socket, shallow, 1/4 in. 6-pt	EA	1	M	5120	TM8
6	Socket, shallow, 9/32 in. 6-pt	EA	1	M	5120	TM9
7	Socket, shallow, 5/16 in. 6-pt	EA	1	M	5120	TM10
8	Socket, shallow, 11/32 in. 6-pt	EA	1	M	5120	TM11
9	Socket, shallow, 3/8 in. 6-pt	EA	1	M	5120	TM12
10	Socket, shallow, 7/16 in. 6-pt	EA	1	M	5120	TM14
11	Socket, shallow, 1/2 in. 6-pt	EA	1	M	5120	TM16
12	Socket, shallow, 9/16 in. 6-pt	EA	1	M	5120	TM18
13	Socket, deep, 3/16 in. 6-pt	EA	1	M	5120	STM6
14	Socket, deep, 7/32 in. 6-pt	EA	1	M	5120	STM7
15	Socket, deep, 1/4 in. 6-pt	EA	1	M	5120	STM8
16	Socket, deep, 9/32 in. 6-pt	EA	1	M	5120	STM9
17	Socket, deep, 5/16 in. 6-pt	EA	1	M	5120	STM10
18	Socket, deep, 11/32 in. 6-pt	EA	1	M	5120	STM11
19	Socket, deep, 3/8 in. 6-pt	EA	1	M	5120	STM12
20	Socket, deep, 7/16 in. 6-pt	EA	1	M	5120	STM14
21	Socket, deep, 1/2 in. 6-pt	EA	1	M	5120	STM16
22	Socket, deep, 9/16 in. 6-pt	EA	1	M	5120	STM18
23	Sliding T-handle	EA	1	M	5120	TM5
24	Breaker Bar	EA	1	M	5120	TM10G
25	Ratchet Spinner	EA	1	M	5120	TMS70A
26	Speeder	EA	1	M	5120	TMS4E
27	Flexible Driver	EA	1	M	5120	TM62B
28	Standard Driver	EA	1	M	5120	SGT4BR
29	Ratchet, sealed head	EA	1	M	5120	T72
30	Double square socket, 1/4 in. 8-pt	EA	1	M	5120	TM408
31	Double square socket, 5/16 in. 8-pt	EA	1	M	5120	TM410
32	Double square socket, 3/8 in. 8-pt	EA	1	M	5120	TM412
33	Flexible Extension	EA	1	M	5120	TM61A
34	Flexible Carburetor Adjusting Tool	EA	1	M	5120	TM65
35	Flat tip socket driver	EA	1	M	5120	TM82
36	Hex Driver, 5/64 in.	EA	1	M	5120	TMA2.5E

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
37	Hex Driver, 3/32 in.	EA	1	M	5120	TMA3E
38	Hex Driver, 7/64 in.	EA	1	M	5120	TMA3.5E
39	Hex Driver, 1/8 in.	EA	1	M	5120	TMA4E
40	Hex Driver, 9/64 in.	EA	1	M	5120	TMA4.5E
41	Hex Driver, 5/32 in.	EA	1	M	5120	TMA5E
42	Hex Driver, 3/16 in.	EA	1	M	5120	TMA6E
43	Hex Driver, 7/32 in.	EA	1	M	5120	TMA7E
44	Hex Driver, 1/4 in.	EA	1	M	5120	TMA8E
45	Flat tip socket driver, 3/16 in.	EA	1	M	5120	TMC104E
46	Flat tip socket driver, 1/4 in.	EA	1	M	5120	TMC105E
47	Flat tip socket driver, 3/8 in.	EA	1	M	5120	TMC106E
48	Phillips #1 Socket Driver	EA	1	M	5120	TMP12E
49	Phillips #2 Socket Driver	EA	1	M	5120	TMP22E
50	Phillips #2 Socket Driver, Long	EA	1	M	5120	TMP23E
51	Universal Socket, 1/4 inch	EA	1	M	5120	TMU81B
52	Universal Socket, 5/16 inch	EA	1	M	5120	TMU101A
53	Universal Socket, 3/8 inch	EA	1	M	5120	TMU121A
54	Universal Socket, 7/16 inch	EA	1	M	5120	TMU141A
55	Universal Socket, 1/2 inch	EA	1	M	5120	TMU161A
56	Universal Socket, 9/16 inch	EA	1	M	5120	TMU181A
57	Universal Joint	EA	1	M	5120	TMU8B
58	Extension, 2 inches	EA	1	M	5120	TMXK2
59	Extension, 4 inches	EA	1	M	5120	TMXK4
60	Extension, 6 inches	EA	1	M	5120	TMXK60
61	Extension, 14 inches	EA	1	M	5120	TMXK140
3.5.76	Hex Bit Set	SE	1	M	5130	Stanley Proto J6930, J6931, J60002, J60008, J60020, J60202, J60206 and J60208
1	Adapter, 1/4 in. square to 1/4 in. hex	EA	1	M	5130	
2	Adapter, 3/8 in. square to 1/4 in. hex	EA	1	M	5130	
3	Phillips #1 bit	EA	1	M	5130	
4	Phillips #2 bit	EA	1	M	5130	
5	Phillips #3 bit	EA	1	M	5130	
6	Slotted 3/16 inch bit	EA	1	M	5130	
7	Slotted 1/4 inch bit	EA	1	M	5130	
8	Slotted 9/32 inch bit	EA	1	M	5130	
3.5.77	Adapter, Socket Wrench, 3/8 to 1/4 inch square	EA	1	M	5120	SK Hand Tool 384
3.5.78	Adapter, Socket Wrench, 1/4 to 3/8 inch square	EA	1	LL	5120	SK Hand Tool 385

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3.5.79	Wrench Set, Socket, 3/8 inch drive	SE	1	LL	5120	Snap-On (see para 3.5.79)
1	Socket, 3/8 inch	EA	1	LL	5120	F121
2	Socket, 7/16 inch	EA	1	LL	5120	F141
3	Socket, 1/2 inch	EA	1	LL	5120	F161
4	Socket, 9/16 inch	EA	1	LL	5120	F181
5	Socket, 5/8 inch	EA	1	LL	5120	F201
6	Socket, 11/16 inch	EA	1	LL	5120	F221
7	Socket, 3/4 inch	EA	1	LL	5120	F241
8	Socket, 13/16 inch	EA	1	LL	5120	F261
9	Socket, 7/8 inch	EA	1	LL	5120	F281
10	Socket, deep, 1/2 inch	EA	1	LL	5120	SF161
11	Socket, deep, 9/16 inch	EA	1	LL	5120	SF181
12	Socket, deep, 5/8 inch	EA	1	LL	5120	SF201
13	Socket, deep, 11/16 inch	EA	1	LL	5120	SF221
14	Socket, deep, 3/4 inch	EA	1	LL	5120	SF241
15	Socket, deep, 13/16 inch	EA	1	LL	5120	SF261
16	Universal socket, 1/2 inch	EA	1	LL	5120	FU16B
17	Universal socket, 9/16 inch	EA	1	LL	5120	FU18B
18	Extension, 6 inches	EA	1	LL	5120	FXX6
19	Extension, 11-12 inches	EA	1	LL	5120	FXX11
20	Breaker Bar	EA	1	LL	5120	F10LC
21	Speeder	EA	1	LL	5120	F4LB
22	Ratchet	EA	1	LL	5120	F80
23	Universal Joint	EA	1	LL	5120	FU8A
3.5.80	Wrench Set, Combination, 12-point	SE	1	LL	5120	Snap-On see below:
1	Wrench, 5/16 inch	EA	1	LL	5120	OEX10B
2	Wrench, 3/8 inch	EA	1	LL	5120	OEX12B
3	Wrench, 7/16 inch	EA	1	LL	5120	OEX14B
4	Wrench, 1/2 inch	EA	1	LL	5120	OEX16B
5	Wrench, 9/16 inch	EA	1	LL	5120	OEX18B
6	Wrench, 5/8 inch	EA	1	LL	5120	OEX20B
7	Wrench, 11/16 inch	EA	1	LL	5120	OEX22B
8	Wrench, 3/4 inch	EA	1	LL	5120	OEX24B
9	Wrench, 13/16 inch	EA	1	LL	5120	OEX26B
10	Wrench, 7/8 inch	EA	1	LL	5120	OEX28B
11	Wrench, 15/16 inch	EA	1	LL	5120	OEX30B
12	Wrench, 1 inch	EA	1	LL	5120	OEX32B
3.5.81	Wrench Set, Combination, 6-point	SE	1	LL	5120	Snap-On OXI709SBK
1	Wrench, 1/8 inch	EA	1	LL	5120	OXI4SB
2	Wrench, 5/32 inch	EA	1	LL	5120	OXI5SB

Para	Nomenclature	UI ¹	QTY	WTY ²	FSC	Suggested part number / NSN
3	Wrench, 3/16 inch	EA	1	LL	5120	OXI6SB
4	Wrench, 7/32 inch	EA	1	LL	5120	OXI7SB
5	Wrench, 1/4 inch	EA	1	LL	5120	OXI8SB
6	Wrench, 9/32 inch	EA	1	LL	5120	OXI9SB
7	Wrench, 5/16 inch	EA	1	LL	5120	OXI10SB
8	Wrench, 11/32 inch	EA	1	LL	5120	OXI11SB
9	Wrench, 3/8 inch	EA	1	LL	5120	OXI12SB
3.5.82	Wrench, Strap	EA	1	LL	5120	Rigid Tool 31355
3.5.83	Wrench, Adjustable, 6 inches	EA	1	LL	5120	Stanley Proto J706
3.5.84	Wrench, Adjustable, 10 inches	EA	1	LL	5120	Stanley Proto J710
3.5.85	Wrench, Adjustable, 12 inches	EA	1	LL	5120	Stanley Proto J712
3.5.86	Wrench Set, Spanner	SE	1	N	5120	A. W. Mack 40191
1	Spanner wrench, 9/16 inch	EA	1	N	5120	
2	Spanner wrench, 15/16 inch	EA	1	N	5120	
3	Spanner wrench, 1-1/4 inch	EA	1	N	5120	
4	Spanner wrench, 1-7/16 inch	EA	1	N	5120	
5	Spanner wrench, 1-5/8 inch	EA	1	N	5120	
6	Spanner wrench, 1-13/16 inch	EA	1	N	5120	
3.5.87	Wrench, Spanner, Adjustable Arms, 2 inch	EA	1	M	5120	Armstrong Tool 34-151
3.5.88	Wrench, Spanner, Adjustable Arms, 8 inch	EA	1	M	5120	Army Drawing 7597708
3.5.89	Wrench, Spanner, Adjustable Arms, 4 inches long	EA	1	M	5120	Army Drawing 8284044
3.5.90	Wrench, Spanner, Adjustable Arms	EA	1	M	5120	Army Drawing 8284045
3.5.91	C-Clamp	EA	3	LL	5120	Armstrong Tool 78-404
3.5.92	Box, Small Parts	EA	1	M	8115	Flambeau T203
3.5.93	Bag, Tool	EA	1	M	5140	CH Ellis 03-7071
3.5.94	Tool Box	EA	1-2	M	5140	

*Acronyms:

QTY - Quantity

FSC - Federal Supply Class

NSN - National Stock Number

Para - paragraph

¹UI (unit) definitions:

EA - each

SE - set

PR - pair

²WTY (warranty) definitions:

LL - Limited Lifetime warranty

M - Manufacturer's stated commercial warranty

N - No warranty

3.5.1 Alignment tool. The electronics alignment tool shall be made of non-conductive thermoplastic material and be used to harness and separate fine wire terminals in computers, telephones and cables. The tool shall have a 1/4 inch diameter plastic shaft at one end and shall be stepped down to a 5/32 inch diameter at the other end. Each end shall feature a different size flat-tip screwdriver tip. The tool shall be 6.5 to 7.5 inches long overall.

3.5.2 Blower, Watchmaker's. The watchmaker's blower shall consist of a squeeze bulb and a long thin spout for accurate positioning. The blower shall produce a burst of air to remove light foreign matter such as dust and metal chips from around parts and drilled holes when the bulb is compressed by the user. The blower shall have an overall diameter of no more than 2.75 inches and an overall length of no more than 4.5 inches.

3.5.3 Crimping Tool. The set shall include one open frame crimp tool and one die. The open frame crimp tool shall be capable of crimping a variety of sizes and types of ferrules, coaxial connectors, contacts, splices and terminal lugs to cables and wires. The crimp tool shall be capable of accepting interchangeable dies. The die shall have two cavities: one for wire sizes 10 through 12 AWG (American Wire Gauge) and one for wire sizes 14 through 26 AWG. The tool shall crimp SAE (Society of Automotive Engineers) AS (Aerospace Standard) terminal lugs AS 25036, AS 17143, & AS 7928, also end caps AS 25274, insulated disconnect splices AS 27249, and permanent electric splice AS 81824/2-2 and -3. The set shall include the crimp tool with die installed, turrets, inspection gage and a 9/64 inch hex wrench.

3.5.4 File, Hand, Set. The file set shall consist of no less than twelve (12) files with number 2 cut, each with an overall length of 6 to 6.5 inches. The set shall include no less than one each of the following types: barrette, crossing, equaling, half-round, joint round edge, knife, marking, round, slitting, square, three-square, and warding. The files shall each have a knurled handle. The set shall be supplied with a vinyl case capable of housing each file in a separate pocket or position.

3.5.5 File, Hand, Flat. The flat hand file shall have an overall length of 8 ± 0.125 inches and shall be a second-cut, American pattern hand file. The file shall be a Type II, second-cut file in accordance with CID A-A-2311.

3.5.6 File, Hand, Half-round. The hand file shall have an overall length of 6 ± 0.125 inches, an overall width of 0.625 ± 0.0625 inches and an overall half-round thickness of 0.1563 ± 0.0313 inches. The hand file shall be a Type II, second-cut, American Pattern, half-round hand file in accordance with CID A-A-2312.

3.5.7 File, Hand, Round. The hand file shall have an overall length of 4 ± 0.125 inches and shall be a second-cut, American pattern, round file with a diameter of 0.1875 ± 0.0313 inches. The file shall be in accordance with CID A-A-2318.

3.5.8 Handle, File. The file handle shall have adjustable clamping jaws and shall be used to hold all hand files described in this DFP. The clamping jaws shall grip the entire length of the file tang and shall be adjustable with a knurled adjusting knob. The file handle shall be wood, plastic or any other suitable material for use in dusty, oily and wet areas. All metal surfaces shall

have a corrosion resistant surface finish. The handle shall be 3.875 to 4.375 inches long by no less than 1 inch in diameter at the largest diameter.

3.5.9 Dioptometer. The dioptometer shall be used to determine the diopter setting of another instrument. The dioptometer shall feature an optical eyepiece, an adjustable focus with diopter scale, a double convex lens, and dyalyte lens arrangement. The dioptometer shall have a magnification capability of 4.7x, field of view 12 degrees, diameter of exit pupil of 0.185 inches, effective focal length (EFL) of objective 4.123 inches, EFL of eyepiece 0.865 inches and an overall length of 7 inches. The dioptometer shall be in accordance with top level Army Drawing 7680631 (see Appendix A).

3.5.10 Flashlight, Right Angle. The flashlight shall either have a head fixed at 90 ± 5 degrees from the body or a head that pivots from 0 to 90 ± 5 degrees from the body. The flashlight shall have an overall length of no more than 8.5 inches. The flashlight shall be powered with replaceable batteries and shall have a colorless transparent lens. The flashlight shall be capable of fixed or flashing light operation and be capable of standing on the base without support for hands free operation, both with and without the head pivoted to 90-degrees. The flashlight shall feature a belt clip and shall have a body made of impact resistant plastic or metal. The flashlight shall be black, gray or olive drab in color overall and all metal parts shall have a corrosion resistant coating and be painted. The flashlight shall water-proof and shall be supplied with a replacement bulb. The replacement bulb shall be stored in the body of the flashlight or packaged separately. The flashlight shall be supplied with the batteries uninstalled and packaged separately.

3.5.11 Flashlight, Spot or Flood Lighting. The flashlight shall have an overall length of 5 to 6 inches with a straight handle and fixed head. The flashlight shall have an aluminum body with a corrosion resistant coating and shall be colored black overall. The flashlight shall have a bulb that produces a high intensity light beam capable of adjusting from spot to flood lighting. The flashlight shall be water and shock resistant, shall have a colorless transparent lens and shall be capable of converting from a flashlight into candle-type mode. The flashlight shall be supplied with a replacement bulb either stored in the body of the flashlight or packaged separately. The flashlight shall be supplied with the batteries uninstalled and packaged separately.

3.5.12 Flashlight, Fixed or Flashing. The 3 VDC (volts direct current) flashlight shall be a straight, tubular type device powered by replaceable batteries. The flashlight shall have a slide switch to power on and off, durable plastic housing and shall be waterproof. The flashlight shall have a translucent, colorless lens and shall have fixed and flashing light beam motion. The lens shall be replaceable. The flashlight shall be supplied with the required batteries, uninstalled, and a replacement bulb. The flashlight shall be no more than 9 inches long overall, no more than 2.25 inches in diameter, shall have a mounting ring and shall be black, gray or olive drab in color.

3.5.13 Hammer, Ball Peen. The hammer shall have a 4 ounce (oz) ball peen head in accordance with ASME B107.400. The hammer shall have a fiberglass handle with cushion grip and an overall length of 9 to 11 inches. The hammer head shall be steel with corrosion resistant surface finish.

3.5.14 Hammer, Dead Blow, 5 oz. The dead blow hammer shall weigh 5 to 9 oz, have a length of no more than 10 inches, a head length of no more than 3 inches and a head diameter of no more than 1 inch. The hammer shall be steel overall with a soft, non-sparking, urethane or similar rubber coating on all surfaces including the handle, head and faces.

3.5.15 Hammer, Dead Blow, 24 oz. The dead blow hammer shall weigh 23 to 25 oz, have a length of 11 to 13 inches and a head length of 3 to 5 inches. The hammer shall be steel overall with non-marring striking surfaces and a cushion grip on the handle.

3.5.16 Hex Key Set, Screwdriver, 4 pc (piece). The hex key set shall consist of no less than four (4) straight ball-tip hex keys with screwdriver-type plastic handles. The hex keys shall be standard length and shall be steel overall with corrosion resistant black oxide surface finish. The set shall include no less than one each of the following hex key sizes: 0.035, 0.05, 1/16, and 5/64 inch. The 0.035 inch hex key may be supplied as an L-key or with a t-handle if necessary.

3.5.17 Hex Key Set, Screwdriver, 11 pc. The hex key set shall consist of no less than eleven (11) straight ball-tip hex keys with screwdriver-type plastic handles. The hex keys shall each have a long length and be steel overall with corrosion resistant black oxide surface finish. The set shall include no less than one each of the following hex key sizes: 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, and 3/8.

3.5.18 Hex Key Set, L-Style, Ball-Tip, 13 pc. The hex key set shall consist of no less than 13 ball-hex-L keys supplied in a plastic holder capable of housing all keys. The hex keys shall be steel overall with a black corrosion resistant surface finish and long length arms, the longest not to exceed 7 inches. The hex keys shall include no less than one each of the following sizes: 0.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16 and 3/8 inches.

3.5.19 Hex Key, Short, 0.028 inch. The hex key shall have a 0.028 inch (or 0.71 millimeters) hex tip and a short length L-handle. The hex key shall be steel with corrosion resistant black oxide surface finish. The hex key shall have an overall length of no more than 1.340 inches and a long arm length of 1.125 to 1.312 inches. The hex key shall be in accordance with ASME B18.3.

3.5.20 Hex Key, Short, 0.035 inch. The hex key shall have a 0.035 inch (0.89 mm) hex tip and a short length L-handle. The hex key shall be steel with corrosion resistant black oxide surface finish. The hex key shall have an overall length of no more than 1.347 inches and a long arm length of 1.125 to 1.312 inches. The hex key shall be in accordance with ASME B18.3.

3.5.21 Hex Key, Short, 0.050 inch. The hex key shall have a 0.050 inch hex tip and a short length L-handle. The hex key shall be steel with corrosion resistant black oxide surface finish. The hex key shall have an overall length of no more than 1.800 inches and a long arm length of 1.562 to 1.750 inches. The hex key shall be in accordance with ASME B18.3.

3.5.22 Hex Key, Short, 7/64 inch. The hex key shall have a 7/64 inch hex tip and a short length L-handle. The hex key shall be steel with corrosion resistant black oxide surface finish.

The hex key shall have an overall length of no more than 2.328 inches and a long arm length of 2.031 to 2.218 inches. The hex key shall be in accordance with ASME B18.3.

3.5.23 Hex Key, Short, 9/64 inch. The hex key shall have a 9/64 inch hex tip and a short length L-handle. The hex key shall be steel with corrosion resistant black oxide surface finish. The hex key shall have an overall length of no more than 2.610 inches and a long arm length of 2.281 to 2.469 inches. The hex key shall be in accordance with ASME B18.3.

3.5.24 Hex Key Set, L-Style, Ball-Tip, Metric, 13 pc. The hex key set shall consist of no less than 13 ball-hex-L keys supplied in a plastic holder capable of housing all keys. The hex keys shall be steel overall with a black corrosion resistant surface finish and long length arms, the longest not to exceed 7 inches. The hex keys shall include no less than one each of the following sizes: 1.5, 2, 2.5, 3, 4, 4.5, 5, 5.5, 6, 7, 8, 9, and 10 mm. The set shall be supplied with a bag or tool roll capable of housing all hex keys in this set in separate pockets or compartments.

3.5.25 Knife, Putty. The putty knife shall have a stainless steel flexible blade with corrosion resistant surface finish that is 1 to 1.5 inches wide by 3 to 4 inches long. The putty knife shall have a wood or plastic handle with or without cushion grip. The blade tang shall extend through the length of the handle.

3.5.26 Mirror, Inspection. The inspection mirror shall feature a circular mirror no less than 2-1/4 inches in diameter attached with a moveable joint to a telescoping rod. The mirror shall be capable of swiveling to any angle with respect to the rod and the rod shall extend from no less than 10 to 14 inches in length.

3.5.27 Finger, Mechanical. The mechanical finger shall be used as a pick-up tool and shall feature two claws that are mechanized to grip when the plunger-type handle is compressed. The claws shall be capable of opening to no less than 0.8125 (13/16) inches and the actuation force shall be no more than 18 pounds. The tool shall have a flexible body with an overall length of 13 to 14 inches.

3.5.28 Pocket Knife. The pocket knife shall be an electrician's knife with no less than two blades; one spear knife blade and one flat tip screwdriver blade with a wire scraper. The blades shall each have a length of no less than 2.375 inches. The knife shall have an overall closed length of 3.6875 to 3.8125 inches and shall feature a clevis or shackle. The body of the knife shall be black or a similar dark color overall.

3.5.29 Pliers, Needle Nose. The needle nose pliers shall have a straight, half-round, tapered nose with flat serrated jaws for gripping and be supplied with side cutters. The pliers shall be 6 to 7 inches long with vinyl grips on the handles. The pliers shall have a jaw opening of no less than 1.5 inches. The pliers shall be steel overall with corrosion resistant surface finish and shall be Type III, Class 4 needle nose pliers in accordance with ASME B107.500 (B107.13).

3.5.30 Pliers, Bent Nose, Needle Nose. The bent nose needle nose pliers shall have flat serrated jaws for gripping and round sides. The pliers shall be 5.50 to 7.40 inches long overall with vinyl grips. The pliers shall have a jaw length of 1.25 to 1.90 inches and jaw opening of no

less than 0.50 inches. The pliers shall be steel overall with corrosion resistant surface finish and shall be Type III, Class 2 bent nose pliers in accordance with ASME B107.500 (B107.13).

3.5.31 Pliers Set, Retaining Ring. The retaining ring pliers set shall include one pair of external pliers, one pair of internal pliers and no less than 4 pairs each of the following four interchangeable tips (16 tips total): 0.038 inch 90-degree, 0.047 inch straight, 0.047 inch 45-degree and 0.070 inch straight tips. The pliers shall have spring returns and vinyl grips on the handles. The tips shall be capable of being securely mounted to both types of pliers. The set shall be supplied with a case capable of housing both pliers and all of the tips.

3.5.32 Pliers, Diagonal Cutting, 6 inch. The diagonal cutting pliers shall have standard cutting blades and narrow jaws. The pliers shall have an overall length of 5.5 to 6.5 inches with a jaw opening of no less than 0.44 inches and shall feature vinyl grips on the handles. The pliers shall be steel overall with corrosion resistant surface finish. The pliers shall be Type I, Class 1 pliers in accordance with ASME B107.500 (B107.11).

3.5.33 Pliers, Diagonal Cutting, 4.5 inch. The diagonal cutting pliers shall have standard cutting blades and narrow jaws. The pliers shall have an overall length of 4.25 to 4.69 inches with a jaw opening of no less than 0.25 inches and shall feature vinyl grips on the handles. The pliers shall be steel overall with corrosion resistant surface finish. The pliers shall be Type I, Class 1 pliers in accordance with ASME B107.500 (B107.11).

3.5.34 Pliers, Diagonal Cutting, 6 inch, wire stripping. The diagonal cutting pliers shall have standard cutting blades and a tapered nose for confined areas. The pliers shall have an overall length of 6 to 6.25 inches, shall have a wire stripping hole capable of stripping 16-gauge wire, and shall feature vinyl grips on the handles. The pliers shall be steel overall with corrosion resistant surface finish.

3.5.35 Pliers, Combination Slip Joint. The regular combination slip joint pliers shall be steel overall with chromium surface finish and vinyl grips on the handles. The pliers shall have no less than two positions and shall feature wire cutters. The pliers shall be 7 to 9 inches long overall and shall be Type II, Class 1, Style A pliers in accordance with ASME B107.500 (B107.23).

3.5.36 Pliers, Slip Joint, Angled Jaw. The angled nose slip joint pliers shall be steel overall with corrosion resistant surface finish and vinyl grips on the handles. The pliers shall have multiple tongue-and-grooves and straight serrated jaws. The pliers shall be 9.5 to 10.5 inches long overall with a jaw opening of no less than 1.5 inches.

3.5.37 Pliers, Wire Twister. The right-hand safety wire pliers shall have a manual or automatic return and a wire capacity of no less than 0.020 to 0.051 inches. The pliers shall feature a diagonal nose, standard serrated jaws and a wire cutter. The pliers shall be made of steel overall with brass parts if necessary and shall have a corrosion resistant surface finish overall. The right-hand safety wire pliers shall have a nominal length of 9 inches, an overall length of 10 to 10.5 inches and be Type I, Class 1 or 2, Style A pliers in accordance with ASME B107.500 (B107.18).

3.5.38 Plumb Bob. The plumb bob shall be made of solid steel or brass overall with corrosion resistant surface finish. The plumb bob shall be supplied with either a removable or non-removable top. The plumb bob shall have an opening for the string, a hexagonal body and a point opposite the string end. The plumb bob shall be 7.5 to 8.5 oz.

3.5.39 Punch Set, Drive Pin. The drive pin punch set shall consist of no less than 9 punches, each with an overall length of 3.875 to 4.125 inches. The punch set shall include no less than one each of the following point sizes: 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16 and 3/8 inch. The punches shall be solid or two-piece, Type II, Class 5 pin punches with required markings in accordance with ASME B107.410 (B107.48).

3.5.40 Punch, Drive Pin, 1/16 inch. The drive pin punch shall have a 1/16 inch point and an overall length of 3 to 4.5 inches. The punch shall have a one-piece design, a round shaft, a knurled grip and shall be made of steel overall with corrosion resistant surface finish.

3.5.41 Pin Adjusting, Driving, Punch. The adjusting driving pin shall be a double ended drive pin punch with an overall length of 2.4844 to 2.5156 inches. The punch shall have a 0.045 to 0.050 inch point that is 0.2969 to 0.3281 inches long at one end and a 0.095 to 0.100 inch point that is 0.9844 to 1.0156 inches long at the opposite end. The punch shall have a shank diameter of 0.1406 to 0.1719 inches. The punch shall be permanently marked with the size and be supplied in accordance with Army Drawing 7597712 (see Appendix A), NSN 5120-00-759-7712.

3.5.42 Punch, Center, 5/32 inch. The center punch shall have a 3/8 inch hexagonal shank, a 5/32 inch point and shall be no less than 4 inches long overall. The punch shall be made of steel overall with corrosion resistant surface finish, be permanently marked as required and shall be a Type II, Class 3 center punch in accordance with ASME B107.410 (B107.48).

3.5.43 Drift Pin, 3/16 to 1/4 inch. The drift pin shall have a single taper and be made of brass overall. The drift pin shall have an overall length of 3.75 to 4.25 inches and a diameter of no more than 1/4 inch that tapers to a 3/16 inch point.

3.5.44 Chisel, Cold, 1/4 inch. The cold chisel shall have a 1/4 inch wide beveled cutting edge and a flat or convex striking surface. The chisel shall be made of corrosion resistant steel overall and be supplied with the required permanent markings. The cold chisel shall be a Type I, Class 2 chisel in accordance with ASME B107.410 (B107.48).

3.5.45 Repair Tool, Pneumatic. The pneumatic repair tool shall be used for removing or replacing valve cores, tapping inner stem threads, and chasing outer stem threads. The tool shall be supplied with a wrench to remove valve cores and a tap and thread cutting die for removing burrs from threads and valve top seats. The tool shall also be capable of being used as a wrench to screw valves into the cable sheath.

3.5.46 Rule, Machinist's, 6 inch. The machinist rule shall be made of steel overall with corrosion resistant surface finish. The rule shall measure a length of no less than 6 inches, shall

have a width of 0.75 ± 0.0625 inches and shall be rigid. The rule shall have graduations in no less than the following: 1/16, 1/32, 1/64 and aircraft quick-reading in 1/100ths of an inch.

3.5.47 Scissors, Electrician's. The electrician's scissors shall be steel overall with a corrosion resistant surface finish. The scissors shall have an overall length of 5 to 5.5 inches and a blade length of no less than 1.625 inches. The scissors shall feature a scraper and file on the back edges of the blades and shall be used for wire splicing, cutting insulation, stripping insulation and cutting harness ties.

3.5.48 Scraper, Bearing, Flat. The bearing scraper shall be a flat type scraper with a wood or plastic handle. The scraper shall have a blade length of no less than 5 inches and no more than 10 inches. The scraper shall be steel overall with a width of no more than 1.10 inches.

3.5.49 Scraper, Bearing, Three-Square. The bearing scraper shall be a three-square type scraper with a wood or plastic handle. The scraper shall have a blade length of 3.75 to 4.25 inches and shall be steel overall.

3.5.50 Screw Starter. The screw starter shall be double-ended with a Phillips head screw starter on one end and a slotted head screw starter on the other. The screw starter shall be steel overall with corrosion resistant surface finish and a nylon body or handle. The screw starter shall have an overall length of 8.75 to 9.25 inches and shall be capable of releasing and resetting automatically.

3.5.51 Jeweler's Screwdriver Set. The jeweler's screwdriver set shall include no less than six slotted drivers with steel handles and a knurled grip. The set shall include no less than one each of the following slotted tip sizes: 0.025, 0.040, 0.055, 0.070, 0.080 and 0.100 inches. The screwdrivers shall have an overall length of 3.75 to 4.25 inches each and shall have corrosion resistant surface finish on all metal surfaces. The set shall be supplied with a tool pouch, roll or case capable of housing all six jeweler's screwdrivers.

3.5.52 Screwdriver Set. The screwdriver set shall consist of no less than one each of the following:

- a. Phillips #1. The screwdriver shall have a Phillips #1 tip with anti-camout ribs (ACR), a steel blade with corrosion resistant surface finish and a plastic handle with or without a cushion grip. The screwdriver shall have an overall length of 6.75 to 7.5 inches and shall feature a hexagonal bolster.
- b. Phillips #2. The screwdriver shall have a Phillips #2 tip with ACR, a steel blade with corrosion resistant surface finish and a plastic handle with or without a cushion grip. The screwdriver shall have an overall length of 8.25 to 9.5 inches and shall feature a hexagonal bolster.
- c. Phillips #3. The screwdriver shall have a Phillips #3 tip with ACR, a steel blade with corrosion resistant surface finish and a plastic handle with or without a cushion grip. The screwdriver shall have an overall length of 10.5 to 11.25 inches and shall feature a hexagonal bolster.
- d. Phillips #4. The screwdriver shall have a Phillips #4 tip with ACR, a steel blade with corrosion resistant surface finish and a plastic handle with or

without a cushion grip. The screwdriver shall have an overall length of 11 to 13.5 inches and shall feature a hexagonal bolster.

- e. Offset, Phillips #1 and #2. The screwdriver shall have a Phillips #1 tip on one end and a Phillips #2 tip on the other. The two tips shall be offset by 90 ± 5 degrees in opposite directions from the center. The screwdriver shall be steel overall with chromium surface finish and shall have an overall length of 4.5 to 5 inches.
- f. Offset, Phillips #3 and #4. The screwdriver shall have a Phillips #3 tip on one end and a Phillips #4 tip on the other. The two tips shall be offset by 90 ± 5 degrees in opposite directions from the center. The screwdriver shall be steel overall with chromium surface finish and shall have an overall length of 5.5 to 6.5 inches.

3.5.53 Screwdriver, Phillips #0. The screwdriver shall have a Phillips number 0 tip, a blade length of 2.5 to 4 inches and an overall length of no more than 6.25 inches. The screwdriver shall have a steel blade with chromium surface finish and a plastic handle with or without cushion grip. The screwdriver tip shall be in accordance with ASME B107.600 (B107.30).

3.5.54 Screwdriver, Slotted, 5/16 inch. The screwdriver shall have a plastic handle, a steel square shank with chromium surface finish and a 5/16 inch flared tip. The screwdriver shall have a blade length of 5.875 to 6.125 inches long, an overall length of 10.5 to 11.25 inches long and shall be provided with or without a cushion grip. The screwdriver tip shall be in accordance with ASME B107.600 (B107.15).

3.5.55 Screwdriver, Slotted, 1/8 inch, 8 inch blade. The screwdriver shall have a plastic handle, a steel shank with chromium surface finish and a 1/8 inch slotted tip width. The screwdriver shall have a blade length of 7.75 to 8.25 inches and shall be provided with or without a cushion grip. The screwdriver tip shall be in accordance with ASME B107.600 (B107.15).

3.5.56 Screwdriver, Slotted, 1/8 inch, Pocket. The pocket screwdriver shall have a 1/8 inch slotted tip with a thickness of 0.019 to 0.025 inches. The screwdriver shall have an overall length of 4.5 to 5.25 inches, a plastic handle, a pocket clip and a steel blade with chromium surface finish.

3.5.57 Screwdriver, Slotted, 3/16 inch, 8 inch blade. The slotted screwdriver shall have a plastic handle and a steel blade with chromium surface finish and a 3/16 inch tip. The screwdriver shall have a blade length of 7.875 to 8.125 inches and shall be provided with or without a cushion grip. The tip shall be in accordance with ASME B107.600 (B107.15).

3.5.58 Screwdriver, Slotted, 3/16 inch, 5 inch blade. The slotted screwdriver shall have a plastic handle, a steel blade with chromium surface finish and a 3/16 inch tip with straight sides. The screwdriver shall have a blade length of 4.875 to 5.125 inches and shall be provided with or without a cushion grip. The tip shall be in accordance with ASME B107.600 (B107.15).

3.5.59 Screwdriver, Slotted, 1/4 inch, Stubby. The slotted screwdriver shall have a 1/4 inch flared tip with a thickness of 0.036 to 0.044 inches. The screwdriver shall have a blade length of no more than 2 inches and an overall length of no more than 4 inches. The screwdriver shall have a plastic handle and a steel blade with chromium surface finish.

3.5.60 Screwdriver, Slotted, 3/8 inch. The slotted screwdriver shall have a plastic handle, a steel blade with chromium surface finish and a 3/8 inch flared tip. The screwdriver shall have a blade length of 11.875 to 12.125 and shall be provided with or without a cushion grip. The screwdriver shall feature a hex bolster on the shaft. The tip shall be in accordance with ASME B107.600 (B107.15).

3.5.61 Screwdriver, Offset, Slotted, 5/32 inch. The offset screwdriver shall be steel overall with chromium surface finish. The screwdriver shall have two 5/32 inch slotted tips, each offset by 90 ± 5 degrees in opposite directions from the center. The screwdriver shall have a shank length of 2.875 to 3.125 inches.

3.5.62 Screwdriver, Torque Limiting, 1/4 inch. The torque limiting screwdriver shall have a range of no more than 7 to no less than 35 inch-pounds (in-lbs) with increments of no more than 2 in-lbs and shall have an audible or feel impulse. The tool shall have a 1/4 inch hexagonal internal drive and shall have corrosion resistance surface finish overall. The tool shall have a micrometer type adjustment and be capable of turning clockwise and counterclockwise. The tool shall be supplied with a carry case capable of housing the screwdriver without movement. The tool shall be a Type III, Class A, Style 1, Design B tool in accordance with ASME B107.300 (B107.14).

3.5.63 Scriber, Machinist. The machinist scriber shall have a double point including one straight point and one regular 90 ± 5 degree bent point. The scriber shall be no less than 8 inches and no more than 9 inches long overall. The scriber shall feature an adjustable handle with a knurled grip.

3.5.64 Clip, Alligator. The alligator clip shall be made of nickel-plated copper and have a jaw opening of no less than 0.375 inches. The clip shall be rated for no less than 5 amps, have serrated jaws and a length of 1 to 1.25 inches. The clip shall be used for solder or crimp connections and shall feature a screw/banana connection.

3.5.65 De-soldering Tool. The de-soldering tool shall be capable of being loaded and operated with one hand and shall be used for heavy duty applications. The tool shall have a spring loaded shaft power source, vacuum pick-up action and a vacuum adjustment control. The tool shall have a cleaning mechanism integrated into the shaft that cleans the tip. The tool shall have an overall length of 12.5 to 13.5 inches with a 1/8 inch diameter tip.

3.5.66 Soldering Aid Tool. The soldering aid tool shall have two ends including a stainless steel brush on one end and a straight fork tip on the other end. The tool shall have a grip in between the two ends and shall be 7.5 to 8.5 inches long overall. The tool shall be steel overall with chromium surface finish and be used to clean solder from electrical contacts.

3.5.67 Soldering and De-soldering Set. The soldering and de-soldering set shall consist of no less than twenty-one (21) components, including no less than one each of the items described in a through u below. The set shall include a durable case capable of housing all items in this set in an organized, restrained manner so items do not scatter about the case during shipping and storage.

- a. Soldering Pencil. The 24V, 48 watt electric soldering pencil shall be supplied with no less than a 12-foot long cord and a 3/16 inch screwdriver tip.
- b. Transformer Assembly. The transformer shall be compatible with the soldering pencil described above (a). The transformer may be installed inside the case.
- c. Holder, Soldering Iron. The soldering iron holder shall consist of a steel cage and a base. The soldering iron holder shall be capable of holding the soldering pencil described above (a).
- d. De-Soldering Attachment. The de-soldering attachment shall be a bulb with a steel tube and a screw-type de-soldering adapter for use with the soldering pencil (a).
- e. Straight Tip, 1/16 inch. The soldering iron tip shall have a 1/16 inch straight screwdriver-type tip diameter, shall be made of copper with iron surface treatment and rated for no less than 600-degrees Fahrenheit. The tip shall press fit to the soldering pencil.
- f. Straight Tip, 3/32 inch. The soldering iron tip shall have a 3/32 inch straight screwdriver-type tip diameter, shall be made of copper with iron surface treatment and rated for no less than 600-degrees Fahrenheit. The tip shall press fit to the soldering pencil.
- g. Straight Tip, 1/8 inch. The soldering iron tip shall have a 1/8 inch straight screwdriver-type tip diameter, shall be made of copper with iron surface treatment and rated for no less than 600-degrees Fahrenheit. The tip shall press fit to the soldering pencil.
- h. Straight Tip, 1/8 inch, 700 deg. The soldering iron tip shall have a 1/8 inch straight screwdriver-type tip diameter, shall be made of copper and be rated for no less than 700-degrees Fahrenheit. The tip shall press fit to the soldering pencil.
- i. Straight Tip, 5/64 inch, 700 deg. The soldering iron tip shall have a 5/64 inch straight screwdriver-type tip width, shall be made of copper and be rated for no less than 700-degrees Fahrenheit. The tip shall press fit to the soldering pencil.
- j. Bent Tip, 7/32 inch. The soldering iron tip shall have a 7/32 inch wide screwdriver-type tip with a 30-degree bend and a tip reach length of 1/2 inches. The soldering iron tip shall be made of copper with iron surface treatment, be rated for no less than 600-degrees Fahrenheit and shall press fit to the soldering pencil.
- k. Bent Tip, 3/64 inch. The soldering iron tip shall have a 3/64 inch wide screwdriver-type tip with a 30-degree bend and a tip reach length of 1/2 inches. The soldering iron tip shall be made of copper with iron surface

treatment, be rated for no less than 600-degrees Fahrenheit and shall press fit to the soldering pencil.

- l. Bent Tip, 7/32 inch, 90-deg. The soldering iron tip shall have a 7/32 inch wide screwdriver-type tip with a 90-degree bend and a tip reach length of 1/2 inches. The soldering iron tip shall be made of copper, be rated for no less than 24 volts and 48 watts, and shall be used for coupling nut mounting on the soldering pencil.
- m. Straight Tip, 7/32 inch, Wire Stripping. The wire stripping soldering iron tip shall have a 7/32 inch wide straight screwdriver-type tip with an overall length of 2-1/4 inches. The soldering iron tip shall be made of copper, shall have an integral heating element, and shall be rated for 24 volts and 48.0 watts.
- n. Straight Tip, Dual Inline, 7/32 inch. The dual inline soldering iron tip shall have a 7/32 inch diameter mounting end and a slotted tip end style with an integral heating element. The tip shall have an overall length of 2.5 inches, be made of copper, be coupled with nut mounting to the electric soldering pencil, and be rated for no less than 48.0 watts.
- o. Straight Tip, Round, 7/32 inch. The soldering iron tip shall have a 7/32 inch diameter straight, round body with a conical tip reach length of 1/4 inches. The soldering iron tip shall be made of copper, be coupled with nut mounting to the electric soldering pencil, include an integral heating element, and shall be rated for no less than 48.0 watts.
- p. De-soldering Tip, 5/64 inch. The de-soldering iron tip shall have a tip inner diameter of 0.038 inches and outer diameter of 0.078 inches. The de-soldering tip shall have a threaded mating end.
- q. De-soldering Tip, 3/32 inch. The de-soldering iron tip shall have a tip inner diameter of 0.046 inches and outer diameter of 0.095 inches. The de-soldering tip shall have a threaded mating end.
- r. De-soldering Tip, 1/8 inch. The de-soldering iron tip shall have a tip inner diameter of 0.059 inches and outer diameter of 0.125 inches. The de-soldering tip shall have a threaded mating end.
- s. De-soldering Tip, 0.135 inch. The de-soldering iron tip shall have a tip inner diameter of 1/16 inches and outer diameter of 0.135 inches. The de-soldering tip shall have a threaded mating end.
- t. De-soldering Tip, 0.216 by 0.156 inch. The de-soldering iron tip shall have a tip inner diameter of 0.156 inches and outer diameter of 0.216 inches. The de-soldering tip shall have a threaded mating end.
- u. De-soldering Tip, 0.216 by 0.170 inch. The de-soldering iron tip shall have a tip inner diameter of 0.170 inches and outer diameter of 0.216 inches. The de-soldering tip shall have a threaded mating end.

3.5.68 Soldering Iron, Pencil-type. The soldering iron shall be a pencil-type iron powered by 115 VAC (volts alternating current) \pm 5 percent (%) (109.25 to 120.75 VAC). The soldering iron shall have a cord and be rated for no less than 40 watts. The soldering iron shall have a replaceable tip and shall be supplied with no less than one 1/4 inch diameter round tip. The soldering iron shall have either a setscrew or threaded tip mounting method. The soldering iron shall be furnished with the commercial user's manual.

3.5.69 Stripper, Wire. The wire strippers shall have a wire gripper to hold the wire in place and knife-type blades for stripping. The tool shall be capable of stripping wire sizes no less than the following: 10 to 22 AWG. The cutting blades shall be replaceable and the stripper shall be able to cut and strip insulation leaving the wire both fully or partially stripped and free from damage for a length of no less than 0.75 inches. The wire strippers shall feature cushion grips on the handles.

3.5.70 Tape, Measuring. The measuring tape shall have a steel blade that is no less than 6-foot long and no more than 1 inch wide. The blade shall measure in no less than feet, inches and 1/16ths of an inch the entire length of the blade. The blade shall measure in no more than 1/32nds of an inch for no less than the first 6 inches of the blade. The steel blade shall have an enamel surface treatment with black increment markings and shall be corrosion resistant. The tape measure shall have either a manual or an automatic return with a mechanism to lock the blade out when extended. The hook shall be attached to the blade with no less than three rivets and the tape measure shall have a durable, impact resistant, non-reflective plastic case.

3.5.71 Tweezers, Cross Locking. The tweezers shall be cross locking type tweezers creating permanent tension. The tweezers shall have serrated jaws and be used for soldering operations or for holding parts in place. The tweezers shall be made of steel with corrosion resistant surface finish and shall have an overall length of 6.25 to 6.75 inches.

3.5.72 Tweezers, Sharp Point. The tweezers shall have straight, sharp points and smooth jaws. The tweezers shall be made of steel overall with corrosion resistant surface finish. The tweezers shall have an overall length of 6 to 7 inches.

3.5.73 Vise Pin, Set. The set shall include no less than four hollow core vise pins, each with a knurled handle and locking collets. The pins shall be steel overall with corrosion resistant surface finish. The set shall have a range of no less than 0 to 0.187 inches; the following is an example of what the pin vise capacities could be: 0.000 to 0.040 inch, 0.025 to 0.062 inch, 0.045 to 0.125 inch, and 0.115 to 0.187 inch. The pin vises shall each have an overall length of no less than 3. inches and no more than 4.25 inches.

3.5.74 Vise, Bench Clamp. The bench vise shall have a clamp-on base capable of mounting to bench tops no less than 0.5 inch to no more than 1.875 inches thick. The bench vise shall be steel overall with corrosion resistant surface finish and shall have integral front and back jaws. The vise shall have a jaw width of 2.5 ± 0.125 inches, a jaw opening of no less than 2.25 inches and a throat depth of no less than 1.25 inches. The jaws and bench clamp shall be adjustable with a tee- or sliding-bar-type handle.

3.5.75 Wrench Kit, 1/4 inch drive. The wrench kit shall consist of no less than 61 components. The set shall consist of no less than one each of the items listed in Table 2 below.

TABLE 2: Wrench Kit Components

Item #	Description	Snap-On Known Part Number
1	Socket, shallow, 1/4-inch drive, 1/8-inch 6-point, steel with chromium surface finish.	TM04
2	Socket, shallow, 1/4-inch drive, 5/32-inch 6-point, steel with chromium surface finish.	TM05
3	Socket, shallow, 1/4-inch drive, 3/16-inch 6-point, steel with chromium surface finish.	TM6
4	Socket, shallow, 1/4-inch drive, 7/32-inch 6-point, steel with chromium surface finish.	TM7
5	Socket, shallow, 1/4-inch drive, 1/4-inch 6-point, steel with chromium surface finish.	TM8
6	Socket, shallow, 1/4-inch drive, 9/32-inch 6-point, steel with chromium surface finish.	TM9
7	Socket, shallow, 1/4-inch drive, 5/16-inch 6-point, steel with chromium surface finish.	TM10
8	Socket, shallow, 1/4-inch drive, 11/32-inch 6-point, steel with chromium surface finish.	TM11
9	Socket, shallow, 1/4-inch drive, 3/8-inch 6-point, steel with chromium surface finish.	TM12
10	Socket, shallow, 1/4-inch drive, 7/16-inch 6-point, steel with chromium surface finish.	TM14
11	Socket, shallow, 1/4 inch drive, 1/2-inch 6-point, steel with chromium surface finish.	TM16
12	Socket, shallow, 1/4 inch drive, 9/16-inch 6-point, steel with chromium surface finish.	TM18
13	Socket, Deep length, 1/4 inch drive, 3/16-inch 6-point, steel with chromium surface finish.	STM6
14	Socket, Deep length, 1/4 inch drive, 7/32-inch 6-point, steel with chromium surface finish.	STM7
15	Socket, Deep length, 1/4 inch drive, 1/4-inch 6-point, steel with chromium surface finish.	STM8
16	Socket, Deep length, 1/4 inch drive, 9/32-inch 6-point, steel with chromium surface finish.	STM9
17	Socket, Deep length, 1/4 inch drive, 5/16-inch 6-point, steel with chromium surface finish.	STM10
18	Socket, Deep length, 1/4 inch drive, 11/32-inch 6-point, steel with chromium surface finish.	STM11
19	Socket, Deep length, 1/4 inch drive, 3/8-inch 6-point, steel with chromium surface finish.	STM12
20	Socket, Deep length, 1/4 inch drive, 7/16-inch 6-point, steel with chromium surface finish.	STM14

TABLE 2: Wrench Kit Components

Item #	Description	Snap-On Known Part Number
21	Socket, Deep length, 1/4 inch drive, 1/2-inch 6-point, steel with chromium surface finish.	STM16
22	Socket, Deep length, 1/4 inch drive, 9/16-inch 6-point, steel with chromium surface finish.	STM18
23	Sliding T-handle, 1/4-inch drive, 4. to 5 inches long, 5/16-inch handle diameter, steel with chromium surface finish	TM5
24	Breaker Bar, 1/4-inch drive, 5.75 to 6.25 inches long, steel with chromium surface finish	TM10G
25	Ratchet Spinner, 1/4-inch drive, 1 ± 0.1875 inch outer diameter, steel with chromium surface finish	TMS70A
26	Speeder, 1/4-inch drive, 15.75 to 16.25 inches long, steel with chromium surface finish	TMS4E
27	Flexible Driver, 1/4-inch drive, 6 to 7.5 inches long overall, screwdriver-type handle, flexible shaft, steel with corrosion resistant surface finish	TM62B
28	Standard Driver, 1/4-inch drive, screwdriver-type handle, 6 to 7.5 inches long overall, steel shaft with chromium surface finish	SGT4BR
29	Ratchet, sealed head, no less than 72-teeth, 1/4-inch drive, no more than 5-degree gear action, 4 to 5.5 inches long overall, 90 ft-lbs torque, steel with chromium surface finish	T72
30	Double Square Socket, standard length, 1/4-inch drive, 1/4-inch 8-point, steel with chromium surface finish	TM408
31	Double Square Socket, standard length, 1/4-inch drive, 5/16-inch 8-point, steel with chromium surface finish	TM410
32	Double Square Socket, standard length, 1/4-inch drive, 3/8-inch 8-point, steel with chromium surface finish	TM412
33	Flexible Extension, 1/4-inch drive, 6 inches long, steel with chromium surface finish	TM61A
34	Flexible Carburetor Adjusting Tool, 1/4-inch square drive, flexible adjusting wrench, 19 to 21 inches long	TM65
35	Flat Tip Socket Driver, 1/4-inch drive, short length, 1/4-inch by 0.036 inch flat tip, steel with chromium surface finish	TM82
36	Hex Driver, standard length, 1/4-inch drive, 5/64-inch hex head, steel with chromium surface finish	TMA2.5E
37	Hex Driver, standard length, 1/4-inch drive, 3/32-inch hex head, steel with chromium surface finish	TMA3E
38	Hex Driver, standard length, 1/4-inch drive, 7/64-inch hex head, steel with chromium surface finish	TMA3.5E

TABLE 2: Wrench Kit Components

Item #	Description	Snap-On Known Part Number
39	Hex Driver, standard length, 1/4-inch drive, 1/8-inch hex head, steel with chromium surface finish	TMA4E
40	Hex Driver, standard length, 1/4-inch drive, 9/64-inch hex head, steel with chromium surface finish	TMA4.5E
41	Hex Driver, standard length, 1/4-inch drive, 5/32-inch hex head, steel with chromium surface finish	TMA5E
42	Hex Driver, standard length, 1/4-inch drive, 3/16-inch hex head, steel with chromium surface finish	TMA6E
43	Hex Driver, standard length, 1/4-inch drive, 7/32-inch hex head, steel with chromium surface finish	TMA7E
44	Hex Driver, standard length, 1/4-inch drive, 1/4-inch hex head, steel with chromium surface finish	TMA8E
45	Flat Tip Socket Driver, 1/4-inch drive, standard length, 3/16 inch flat tip, steel with chromium surface finish	TMC104E
46	Flat Tip Socket Driver, 1/4-inch drive, standard length, 1/4 inch flat tip, steel with chromium surface finish	TMC105E
47	Flat Tip Socket Driver, 1/4-inch drive, standard length, 3/8 inch flat tip, steel with chromium surface finish	TMC106E
48	Phillips Socket Driver, standard length, 1/4-inch drive, Phillips #1, steel with chromium surface finish	TMP12E
49	Phillips Socket Driver, standard length, 1/4-inch drive, Phillips #2, steel with chromium surface finish	TMP22E
50	Phillips Socket Driver, long length, 1/4-inch drive, Phillips #2, steel with chromium surface finish	TMP23E
51	Universal Socket, shallow, 12-point, 1/4-inch drive, 1/4-inch socket, steel with chromium surface finish	TMU81B
52	Universal Socket, shallow, 12-point, 1/4-inch drive, 5/16-inch socket, steel with chromium surface finish	TMU101A
53	Universal Socket, shallow, 12-point, 1/4-inch drive, 3/8-inch socket, steel with chromium surface finish	TMU121A
54	Universal Socket, shallow, 12-point, 1/4-inch drive, 7/16-inch socket, steel with chromium surface finish	TMU141A
55	Universal Socket, shallow, 12-point, 1/4-inch drive, 1/2-inch socket, steel with chromium surface finish	TMU161A
56	Universal Socket, shallow, 12-point, 1/4-inch drive, 9/16-inch socket, steel with chromium surface finish	TMU181A
57	Universal Joint, friction ball, 1/4-inch drive, steel with chromium surface finish	TMU8B
58	Extension, knurled grip, 1/4-inch drive, 2 inches long, steel with chromium surface finish	TMXK2

TABLE 2: <u>Wrench Kit Components</u>		
Item #	Description	Snap-On Known Part Number
59	Extension, knurled grip, 1/4-inch drive, 4 inches long, steel with chromium surface finish	TMXK4
60	Extension, knurled grip, 1/4-inch drive, 6 inches long, steel with chromium surface finish	TMXK60
61	Extension, knurled grip, 1/4-inch drive, 14 inches long, steel with chromium surface finish	TMXK140

3.5.76 Hex Bit Set. The hex bit set shall include no less than 8 components including no less than two adapters and six screwdriver bits. The two adapters shall include no less than one each of the following: 1/4 inch square drive to 1/4 inch hex drive and 3/8 inch square drive to 1/4 inch hex drive. The two adapters shall be capable of connecting the ratchet wrenches, described in 3.5.75 and 3.5.79, to the hex bits supplied in this set. The six screwdriver hex bits shall include no less than one each of the following 1/4-inch drive bits: Phillips #1, Phillips #2, Phillips #3, slotted 3/16 inch, slotted 1/4 inch and slotted 9/32 inch bits. The adapters and bits shall be steel overall with corrosion resistant surface treatment.

3.5.77 Adapter, Socket Wrench, 3/8 to 1/4 inch square. The socket wrench drive adapter shall have a 3/8 inch female drive and a 1/4 inch male drive. The adapter shall have an overall length of 0.625 to 1.125 inches and shall be a Type II, Class 3, Style A adapter in accordance with ASME B107.10. The adapter shall be steel overall with chromium surface finish.

3.5.78 Adapter, Socket Wrench, 1/4 to 3/8 inch square. The socket wrench drive adapter shall have a 1/4 inch square female drive and a 3/8 inch square male drive. The adapter shall have an overall length of 0.625 to 1 inches and shall be a Type II, Class 3, Style A adapter in accordance with ASME B107.10. The adapter shall be steel overall with chromium or equivalent corrosion resistant surface finish.

3.5.79 Wrench Set, Socket, 3/8-inch drive. The socket wrench set shall consist of no less than 23 components. The set shall include no less than one each of the items listed in Table 3 below.

TABLE 3: <u>Wrench Set, 3/8-inch components</u>		
Item #	Description	Snap-On Known Part Number
1	Socket, shallow, 3/8-inch drive, 3/8-inch 12-point socket, steel with chromium surface finish	F121
2	Socket, shallow, 3/8-inch drive, 7/16-inch 12-point socket, steel with chromium surface finish	F141
3	Socket, shallow, 3/8-inch drive, 1/2-inch 12-point socket, steel with chromium surface finish	F161
4	Socket, shallow, 3/8-inch drive, 9/16-inch 12-point socket,	F181

TABLE 3: Wrench Set, 3/8-inch components		
Item #	Description	Snap-On Known Part Number
	steel with chromium surface finish	
5	Socket, shallow, 3/8-inch drive, 5/8-inch 12-point socket, steel with chromium surface finish	F201
6	Socket, shallow, 3/8-inch drive, 11/16-inch 12-point socket, steel with chromium surface finish	F221
7	Socket, shallow, 3/8-inch drive, 3/4-inch 12-point socket, steel with chromium surface finish	F241
8	Socket, shallow, 3/8-inch drive, 13/16-inch 12-point socket, steel with chromium surface finish	F261
9	Socket, shallow, 3/8-inch drive, 7/8-inch 12-point socket, steel with chromium surface finish	F281
10	Socket, deep, 3/8-inch drive, 1/2-inch 12-point socket, steel with chromium surface finish	SF161
11	Socket, deep, 3/8-inch drive, 9/16-inch 12-point socket, steel with chromium surface finish	SF181
12	Socket, deep, 3/8-inch drive, 5/8-inch 12-point socket, steel with chromium surface finish	SF201
13	Socket, deep, 3/8-inch drive, 11/16-inch 12-point socket, steel with chromium surface finish	SF221
14	Socket, deep, 3/8-inch drive, 3/4-inch 12-point socket, steel with chromium surface finish	SF241
15	Socket, deep, 3/8-inch drive, 13/16-inch 12-point socket, steel with chromium surface finish	SF261
16	Universal Socket, shallow, 12-point, 3/8-inch drive, 1/2-inch socket, steel with chromium surface finish	FU16B
17	Universal Socket, shallow, 12-point, 3/8-inch drive, 9/16-inch socket, steel with chromium surface finish	FU18B
18	Extension, knurled grip, 3/8-inch drive, 6 inches long, steel with chromium surface finish	FXK6
19	Extension, knurled grip, 3/8-inch drive, 11 to 12 inches long, steel with chromium surface finish	FXK11
20	Breaker Bar, 3/8-inch drive, 8 to 10 inches long, steel with chromium surface finish	F10LC
21	Speeder, 3/8-inch drive, 16 to 18 inches long, steel with chromium surface finish	F4LB
22	Ratchet, sealed head, no less than 72 teeth, no less than 4.5-degree gear action, 3/8-inch drive, 6 to 8 inches long, reversible, steel with chromium surface finish	F80
23	Universal Joint, friction ball, 3/8-inch drive, steel with chromium surface finish	FU8A

3.5.80 Wrench Set, Combination, 12-point. The wrench set shall consist of no less than twelve (12) combination box and open end, 12-point wrenches that are made of steel overall with

chromium surface finish. The wrenches shall be standard length and shall include no less than one each of the following wrenching sizes: 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, and 1 inch. The wrenches shall be in accordance with ASME B107.100.

3.5.81 Wrench Set, Combination, 6-point. The wrench set shall consist of no less than nine (9) combination box and open end, 6-point wrenches that are made of steel overall with chromium surface finish. The wrenches shall be standard length and shall include no less than the following wrenching sizes: 1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, and 3/8 inch. The wrenches shall be in accordance with ASME B107.100.

3.5.82 Wrench, Strap. The strap wrench shall consist of a metallic pipe handle and a water-resistant coated strap. The wrench shall have a handle length of 11.5 to 12 inches, a strap no less than 16.5 inches long and 1 to 1.0938 inches, a pipe capacity of no less than 2 inches and an overall outer diameter tube capacity of no less than 3.5 inches. The handle shall have corrosion resistant surface finish.

3.5.83 Wrench, Adjustable, 6 inches. The adjustable wrench shall be 5.5 to 6.5 inches long overall with a jaw opening of no less than 0.756 inches. The wrench shall feature a rack and worm adjustment, shall be steel overall with chromium surface finish and shall be a Type 1 adjustable wrench in accordance with ASME B107.100 (B107.8).

3.5.84 Wrench, Adjustable, 10 inches. The adjustable wrench shall be 9.5 to 10.5 inches long overall with an extra wide jaw opening of no less than 1.29 inches. The wrench shall feature a rack and worm adjustment, shall be steel overall with chromium surface finish, and shall be a Type 2 adjustable wrench in accordance with ASME B107.100 (B107.8).

3.5.85 Wrench, Adjustable, 12 inches. The adjustable wrench shall be 11.5 to 12.5 inches long overall with an extra wide jaw opening of no less than 1.5 inches. The wrench shall feature a rack and worm adjustment, shall be steel overall with chromium surface finish, and shall be a Type 2 adjustable wrench in accordance with ASME B107.100 (B107.8).

3.5.86 Wrench Set, Spanner. The spanner wrench set shall consist of no less than six spanner wrenches, all nested and supplied with one handle. The handle shall have an overall length of 3.875 to 4.125 inches, a 1/4 inch diameter and shall be flatted to 3/16 inch at one end. The set shall include no less than one each of the follower spanner wrench sizes: 9/16, 15/16, 1-1/4, 1-7/16, 1-5/8, and 1-13/16 inches. The set shall have a black oxide, chromium or nickel finish.

3.5.87 Wrench, Spanner, Adjustable Arms, 2 inch. The spanner wrench shall be a pin-type wrench with two adjustable arms joint at one end with a pin. The wrench shall have an overall folded length of 6.375 ± 0.0625 inches, a pin diameter of 0.177 to 0.188 inches and a center to center distance between pins of no less than 2 inches. The spanner wrench shall be steel overall with corrosion resistant surface finish.

3.5.88 Wrench, Spanner, Adjustable Arms, 8 inch. The spanner wrench shall be a pin-type wrench with two adjustable arms joined at one end with a pin. The wrench shall have an overall

length of 3.95 to 3.96 inches and a pin diameter of 0.065 to 0.070 inches. The center to center distance between pins shall be adjustable from no more than 0.188 to no less than 7.358 inches. The spanner wrench shall be in accordance with Army Drawing 7597708 (see Appendix A).

3.5.89 Wrench, Spanner, Adjustable Arms, 4 inches long. The spanner wrench shall be a pin-type wrench with two adjustable arms joined at one end with a pin. The wrench shall have an overall length of 3.95 to 3.96 inches and a pin diameter of 0.0310 to 0.0315 inches. The maximum center to center distance between pins shall be no less than 2 inches. The spanner wrench shall be in accordance with Army Drawing 8284044 (see Appendix A).

3.5.90 Wrench, Spanner, Adjustable Arms. The spanner wrench shall be a pin-type wrench with two adjustable arms joined at one end with a pin. The wrench shall have an overall length of 3.95 to 3.96 inches and a pin diameter of 0.0518 to 0.0523 inches. The spanner wrench shall be in accordance with Army Drawing 8284045 (see Appendix A).

3.5.91 C-Clamp. The C-clamp shall have a screw with a t-handle for clamping and a capacity of no less than 0 to 4 inches. The clamp shall have a throat depth of no less than 2.75 inches and be rated for no less than 4100 pounds. The clamp shall be steel overall with black corrosion resistant surface finish.

3.5.92 Box, Small Parts. The small parts box shall be made of cellulose acetate butyrate or similar material and shall consist of a base with a hinged lid. The box shall be no less than 6.875 inches long by no less than 3.937 inches wide by no less than 1.062 inches deep. The box shall include an adequate number of moveable dividers that when installed can create no less than 17 separate compartments including 16 equally sized compartments and one larger compartment that is no less than 4 by 1.375 inches, or when removed can create no less than six equally sized compartments.

3.5.93 Bag, Tool. The bag shall be a collapsible bag that shall fold flat into a cube not larger than 14 inches long, 10 inches wide, and 3 inches thick. When expanded, the bag shall not exceed 14 inches long, 10 inches wide and 11 inches tall. The bag shall be water resistant, have a zipper closure, handles for carrying and shall be capable of carrying no less than 40 pounds. External pouches or pockets are acceptable but not required.

3.5.94 Tool Box. The tool box shall be in accordance with paragraph 3.6 requirements. All items described in this set (3.5.1 through 3.5.93) shall be housed in separate locations, in organizing liner (see 3.6.3.2) and within the tool box drawers with the exception of the following items: 3.5.10 (right angle flashlight), 3.5.11 (spot or flood lighting flashlight), 3.5.62 (torque limiting screwdriver), 3.5.67 (soldering and de-soldering set), 3.5.68 (soldering iron), 3.5.74 (vise), 3.5.75 (wrench kit) and 3.5.93 (tool bag). The exceptions listed above shall be stored within the tool box, in a drawer or top bin, but may be stored without the organizing liner. If the excepted items are stored without the organizing liner, protective barriers shall be incorporated to prevent movement and damage during shipping, transportation and storage. Tools of similar type, for example, sockets, flat wrenches and screwdrivers, shall be stored together as much as possible. The Government's representative will provide approval of the layout configuration.

The tool box shall be supplied with the padlock(s) installed and in accordance with CID A-A-59486 (see 3.6.3.5).

3.6 Tool Box Requirements.

3.6.1 Design. The tool box shall have the following characteristics:

- a. Drawers that open to the front (see 3.6.3.1)
- b. A 3 inch nominal deep top storage location (see 3.6.3.3)
- c. A way to secure the drawers to keep them from opening while the tool box is being moved around (see 3.6.3.1)
- d. The ability to accept an organizing method that will display each tool in its dedicated location and that will retain the tools in their positions during use; transport and rough handling of the tool box (see 3.6.3.2)
- e. Permanently attached wheels and a handle for rolling the tool box around without having to carry it (see 3.6.3.6)
- f. The ability to carry and move the tool load described in this DFP (3.5.1 through 3.5.93).
- g. The ability to reconfigure the drawers in the field (3.6.3.1).

3.6.2 Tool box construction. The tool box shall be new and constructed of parts and materials that are without defects. Each tool box shall be delivered assembled and fully loaded with the tool load described herein.

3.6.2.1 Materials. Unless otherwise specified herein, the tool box shall be made of any suitable material that will meet all of the performance requirements set forth in this specification. The materials used in the tool box shall be resistant to refrigerants, automotive oils, greases, and lubricants, fuels including gasoline, diesel fuel, JP-8 and JP-4, acids, bases, alcohol, coolants and cleaning agents. All metal parts shall be corrosion resistant.

3.6.2.2 Workmanship. The quality of workmanship imparted to the tool box shall equal or exceed that typically provided to domestically produce commercial products of this type. The tool boxes presented for acceptance shall have been manufactured with skill and care; shall be uniform, neat, and clean; and shall be free from irregularities and anomalies which degrade form, fit, function, performance or appearance.

3.6.3 Interface dimensions. The exterior dimensions of the tool box, including wheels, handles, feet, stacking features, etc., shall not exceed 18 inches in height, 15 inches in width and 24 inches in length when it is in its working position. The interior of the tool box shall be large enough to hold all items described herein (3.5.1 through 3.5.93, with the exceptions specified in 3.5.94) in drawers and do so in an organized fashion that supports the rapid inventory capability and the position retention capability.

3.6.3.1 Drawers. Drawers shall be hung in such a manner that they will not sag into the path of other drawers or accidentally come out of the tool box when fully opened. All tools in the drawer shall be accessible when a drawer is opened to its full extension. Drawers shall be

retained in their closed position while the tool box is being moved around. Drawers shall be provided with a stop that prevents them from accidentally coming out of the tool box when pulled open. A method of defeating the stop action that does not require removal of hardware shall be provided so that the drawers may be taken out of the tool box intentionally. Drawers shall be capable of accepting a tool organizing liner that fills the drawer from side to side and front to back and that is contoured to hold each tool in an individual pocket or retention feature. The mix of drawers shall be able to be reconfigured in the field. For example, two smaller height drawers replaced with a deeper drawer and vice versa. The tool box shall be furnished with an adequate number of drawers and corresponding drawer sizes to accommodate all tools in this tool kit.

3.6.3.2 Drawer organizers. Each drawer shall include a tool organizing method that fills the drawer from side to side and front to back and that is contoured to hold the tools in separate pockets or retention features. The tool organizing method shall retain tools in position to provide for rapid inventory of the tool load, and to maintain the position of tools under rough handling and shipping conditions. Each contoured retention feature shall securely hold the tool in place so that when the tool box is dropped or the tool box is turned over, the tools will be retained in position. Each contoured retention feature shall allow easy removal of the tool and shall include as necessary pick holes, cut out or recessed areas or protrusion of tools above the tool organizing method. The organizing method shall provide contrasting color underneath the tools to aid in rapid inventory. The materials used in the tool organizing method, shall be resistant to water, refrigerants, automotive oils, greases, lubricants, fuels including gasoline, diesel fuel, JP-8 and JP-4, acids, bases, coolants, alcohols and cleaning agents. If foam is used, it shall be closed-cell and shall have a water absorption rate of no more than 0.02 pounds/square foot over the cut surfaces when tested in accordance with ASTM D3575. Each retention feature shall be smooth and free from rough edges.

3.6.3.3 Top. The top of the tool box shall open up to reveal a tool storage area that is 3 inches deep nominally when the lid is closed. Alternately, an additional drawer at the top of the tool box allowing the storage of items 3 inches tall may be provided without an organizing liner. The drawer shall allow full access when opened and shall be capable of holding no less than 50 pounds evenly distributed at full extension.

3.6.3.4 Weight Requirement. Each tool box, including all items inside of it, shall be capable of being lifted and moved by manpower without modification or use of an adapter on the cases. The tool box shall not exceed an overall weight of 100 pounds when fully loaded.

3.6.3.5 Security. The tool box shall include a locking feature for the entire tool box that uses one or two padlocks conforming to the requirements of Commercial Item Description A-A-59486. With the padlock installed, the tool box locking feature (exclusive of the padlock) shall resist intrusion by prying for no less than 2 minutes. The eye through which the padlock fits shall be capable of withstanding a pull of no less than 250 pounds. The tool box shall include a means to tether the tool box to a post or pillar by means of a chain than can be run from tool box to tool box and then locked with a padlock. The tethering features shall withstand a pull of no less than 250 pounds. If a securely attached handle that can be used for this purpose is not included in the design of the tool box, then another feature shall be provided that will serve this purpose. When two or more padlocks are required to secure the tool box(es), the padlocks shall be keyed alike.

3.6.3.6 Side handles. The tool box shall include two handles, one on each end of the tool box, which shall be rated as a pair for not less than 250 pounds of weight. Side handles that are added to the tool box, not molded as part of the tool box, shall be affixed using fasteners that cannot be readily removed, i.e. rivets or screws that cannot be removed with a screw driver. (Reason: The handle will be used to tie the tool box to a fixed post or pillar with a cable and padlock for security. If the handle can be easily removed, then the tool box can be carried away without having to defeat the cable or padlock.)

3.6.3.7 Movement aids. The tool box shall include a set of permanently attached wheels and extendable handle that will aid in moving the tool box around. When the fully loaded tool box is pulled by the extended handle over a 20° (36.4%) side slope, it shall not tip over or become unstable. The tool box shall not become unstable when pulled over the terrain specified in paragraph 3.6.3.6.1.

3.6.3.7.1 Wheels. The wheels shall provide the ability to roll the fully loaded tool box around on paved, hard floor surfaces, grass and gravel surfaces. The wheels shall be attached to and be integrated into the design of the tool box. Wheels, axles and any wheel mounting brackets shall be rugged and shall withstand being rolled over bumps and cracks in pavement, gravel surfaces, and shall withstand shocks incurred when the fully loaded tool box is dropped to pavement from a height of no less than 36 inches. The wheels and casters of a fully loaded tool box shall be able to be rolled over a concrete or asphalt road surface for no less than 10 miles without requiring replacement. When rolled no less than 100 feet over a gravel surface that contains ¾ inch and smaller material, the wheels shall roll without resistance, shall not be damaged and shall not bind. The presence of the wheels shall not interfere with the stacking ability. All of the wheels shall be able to be replaced in no longer than 10 minutes using only typical hand tools. A spare set of wheels shall be furnished with each tool box.

3.6.3.8 Handle. The distance from the floor to the bottom of the extended handle shall be no less than 41 inches to allow the user to pull the fully loaded chest across a floor without having to stoop over to grip the handle or without hitting his heel while pulling the chest. The handle used for this purpose shall not be the same handle that is used for lifting and carrying the chest. If the chest is to move about on two wheels then the handle shall provide complete and solid control of the direction of the chest as it moves about. The handle shall withstand repeated use without deforming or becoming unstable. If four wheels are used then the handle may be rigid or may be a pull strap. If the handle is a pull strap, then it may attach to one of the handles used for lifting and carrying. The fully extended handle shall withstand a load of no less than 100 pounds placed across it.

3.6.4 General performance.

3.6.4.1 Stack ability. The tool box shall be designed for stack ability, avoiding the placement of handles, clasps, or other features in such a position as to interfere with stacking with themselves or other items of similar size. When four fully loaded tool boxes (including necessary tools) are stacked, a 20 pound tipping force applied to the top tool box in any direction shall not cause the tool boxes to fall.

3.6.4.2 Human engineering. The tool box, including the handle and clasps, shall be designed so that the tool box can be carried, opened, and closed by a person wearing insulated work gloves. Each clasp or latch shall be able to be opened and closed with one gloved hand and require no more than 20 pounds of force to open or close the latch. All latching mechanisms shall be on the face of the latch, shall be operable from a single point, and have a positive catch. If a bar type handle is used the clearance for the hand inside the handle shall be not less than 2 inches by 4.5 inch. If a recessed, molded type handle is used the space provided for the hand shall be not less than 2 inches (from palm side to knuckle side) by 5.25 inches (thumb side to little finger side) and ¾ inch clearance for the finger tips.

3.6.4.3 Crush resistance. The tool box, when closed, latched, in its normal resting position, and at an ambient temperature of no less than 170°F shall protect its contents from damage. It shall withstand, without damage or permanent deformation to itself, a load consisting of three other identical fully loaded tool boxes stacked on top of it for no less than one hour. The stack of tool boxes shall be secured with straps through the handles of the top tool box or with straps over the entire stack to the floor or a pallet. After the removal of the three other tool boxes all tool boxes shall have retained their original shape.

3.6.4.4 Impact resistance. When fully loaded, closed, latched and placed in its normal resting position in a room temperature environment, the tool box shall withstand impacts from dropped objects. As a minimum it shall withstand an impact from a steel bar weighing no less than 3 pounds, with a cross section no larger than 3/16 x 1 inch and with an edge radii no larger than 1/16 inch. This bar shall have been dropped in free fall from a height of no less than 8 feet, and shall have landed narrow end down on the lid of the tool box. The tool box shall absorb this blow without suffering permanent deformation to its general overall configuration. The steel bar shall not penetrate the lid.

3.6.4.5 Cold temperature performance. When loaded with the specified tools, closed, latched, and stored for three hours at a temperature no warmer than -25°F, the tool box shall withstand falls to a concrete floor surface from 24 inches without sustaining damage and continue to be operable with latches, handles and wheels working, lid opening and closing without difficulty and drawers opening and closing without difficulty. This requirement shall be supplemented by the requirement for warranty as stated in the contract.

3.6.4.6 Water resistance. When closed and fastened, the tool box shall withstand immersion in water, without water entry, to a depth of no less than 1 meter (3.28 feet) to the uppermost surface of the tool box for no less than 30 minutes when tested in accordance with test method 512.4 of MIL-STD-810. The tool box shall be conditioned so that its temperature is no less than 27°C (80.6°F) above the water temperature prior to immersion. The tool box shall be tied down using the handles or the tiedown points or weighted with other loaded tool boxes stacked upon the test item. Prior to conditioning and testing, the tool box shall have been unlatched, opened, closed and re-latched no fewer than 10 times.

3.6.4.7 Dust resistance. The closed and latched tool box shall withstand dust penetration by blowing dust at a velocity of 8.9 meters/second (1750 feet/minute) when tested in accordance

with Method 510.4, Procedure 1 of MIL-STD-810. Ambient temperature for the test shall be 150°F.

3.6.4.8 Ambient temperature rough handling resistance. A fully loaded tool box, with the wheels and the handle attached, shall withstand being dropped from a height of no less than 60 inches onto a concrete floor and being rolled over on the floor, 360 degrees, four times, once over each lower edge, without sustaining any permanent deformation or damage to the tool box body, wheels, and handle, or without movement of any of the tools. This requirement shall be supplemented by the requirement for warranty as stated in the contract.

3.6.4.9 Storage temperature rough handling resistance. A fully loaded tool box, with the wheels and the handle attached, and after having been stored at a temperature of no less than 170°F for no less than 3 hours shall withstand being dropped from a height of no less than 36 inches onto a concrete floor onto the wheels four times without sustaining any permanent deformation or damage to the tool box or its wheels and handle.

3.6.5 Finish. The exterior surface finish shall be clean, corrosion resistant, non-reflective and non-glossy. The exterior of the tool box shall have no sharp edges or projections. The color of the tool box shall be subdued. The exterior of the tool box shall have a provision for a UII/UID (Unique Item Identification/Unique Identification) label to be affixed.

3.6.6 Plates and Labels. All plates and labels shall be permanently affixed to the tool box. They shall be 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 tool box. All plates and labels shall be printed in the English language and may be supplemented by graphical symbols.

3.6.6.1 Item Identification label. Each tool box shall have a data plate permanently and legibly marked with the following information, including all information required to be inserted in the blanks indicated:

- a. End Item Nomenclature: Electronic Systems Maintenance Tool Kit (ESMTK)
- b. End Item LIN: TBD
- c. End Item NSN: TBD
- d. End Item Serial No.: TBD
- e. Box ___ of ___
- f. Specification Data: TACOM-ARDEC DFP 622
- g. Manufacturer: CAGE or NSCM and PIN
- h. Acquisition instrument identification number

*TBD: To Be Determined

CAGE: Commercial and Government Entity Code

NSCM: NATO Supply Code for Manufacturers

PIN: Part or Identifying Number

The data plate shall conform to A-A-50271, Composition A, Class 2 or Composition D, and contain the data described herein. The item identification plate shall be placed in a location on the exterior of the tool box that is plainly visible when the tool box has been closed and latched in preparation for shipment.

3.6.6.2 Shipping Data. Shipping markings and labels shall be provided in accordance with Section 5 of this DFP.

3.6.7 Pressure relief. The tool box shall include an automatic pressure relief valve that regulates air with changing altitude and temperature to equalize pressures, while keeping water and dust out.

3.6.7.1 Warning label. Each tool box shall have a warning label prominently displayed on the exterior of the tool box. The warning label shall state "Two person lift required" and the weight of the object.

3.6.8 Markings. A diagram or photograph showing the location of each component of the ESMTK tool set in their loaded positions shall be provided with each tool box and shall be permanently affixed to the inside of the tool box. In addition, warranty information concerning the tools and the tool box shall also be permanently affixed to the inside of the tool box. Warranty information shall include no less than the following: the Government contract number, the date of manufacture (month and year), the name and the address of the contractor, a toll free phone number for warranty service calls, and any other means of contacting the contractor such as data fax number or e-mail address. A complete list of tools including the nomenclature, manufacturer's part number and NSN, when known, shall also be permanently affixed to the inside of the tool box. The diagram, tool list and warranty information may be combined into one document or may be provided separately.

3.6.9 Unique Item Identification (UII/UID). In addition to the requirements of DFARS clause 252.211-7003, when the cost of the complete tool kit exceeds an amount of \$5000, each kit shall be marked with a UII/UID that has machine-readable data elements that will distinguish it from all other like and unlike items. Each unique item identifier shall be globally unique and unambiguous. The UII/UID data elements shall be contained in a 2D (2-dimensional) Data Matrix symbol with Error Correction Code (ECC) 200 symbol in accordance with ISO/IEC 16022. Any individual component within this set for which the cost to the Government exceeds \$5000 shall also be marked with a UII/UID. Markings shall conform to MIL-STD-130. The identifier shall remain intact and readily human and machine readable for the expected life of the set. The unique item identifier shall not be repeated during the life of the contract. If construct number 2 is used (serialization within the original part number of the enterprise), the contractor shall maintain the original part number on the item for the life of the item (see "Department of Defense Guide to Uniquely Identifying Items: Assuring Valuation, Accountability and Control of Government Property", Version 1.4). Further guidance on unique item identification may be found at http://www.acq.osd.mil/dpap/Docs/uid/guide_1_4.pdf and <http://www.acq.osd.mil/dpap/pdi/uid/index.html>.

The 2D data matrix symbol shall not only contain information relating to a UII/UID number but shall also include the following information with the asterisks (*) filled in correctly:

NSN: TBD*

Electronic System Maintenance Tool Kit (ESMTK)

Consists of __* Tool Boxes

4 QUALITY ASSURANCE PROVISIONS

4.1 General Provisions. The product verifications and conformance inspections stated herein shall be performed to determine whether the item conforms to Section 3 of this Description for Purchase. Unless otherwise specified in the contract, all verifications and inspections shall be performed in accordance with the conditions specified herein. The contractor is responsible for the performance of all product verifications and conformance inspections specified herein. The contractor may use his own or any other facilities suitable for the performance of the verifications and inspections, unless disapproved by the Government. The Government reserves the right to perform any of the verifications and inspections set forth in this DFP, at a later date and in its own facilities, where such verifications and inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

- a. Product performance verification (see 4.2)
- b. Conformance inspection (see 4.3)

4.2 Product Performance Verification. Product performance verification is performed before full production begins and is intended to verify that the product is designed and manufactured to meet the requirements of this specification. It includes visual and manual inspections, some of which result in measured or counted values, as well as tests and demonstrations to prove compliance of the tested product and all of its assemblies and subcomponents with the requirements of this specification. It also includes the product conformance inspections, as described in paragraph 4.3, that will be performed during production to prove that all inspected characteristics are in compliance at the beginning of production. Product submittal, inspections and acceptance criteria are as follows:

- a. Submission. The contractor shall submit one or more sets for product verification and conformance inspections. (see 3.1)
- b. Inspections to be performed. As determined by the Government, the set assemblies, components and specimens may be subjected to any or all of the verifications and inspections specified in Section 4 herein.
- c. Rejection. If any kit assembly, component or specimen fails to comply with any of the applicable requirements, the entire kit shall be rejected. The Government reserves the right to terminate further verifications and inspections upon any failure of a kit assembly, specimen or component to comply with any of the requirements.

4.2.1 Tool Box Construction Verifications: Verify that the components of the tool box meet the requirements of paragraph 3.6 and all sub paragraphs.

4.2.1.1 Materials. Verify the materials used in the tool box are resistant to refrigerants, automotive oils, greases, and lubricants, fuels including gasoline, diesel fuel, JP-8 and JP-4, acids, bases, alcohol, coolants and cleaning agents. Verify with objective evidence that all metal parts and hardware of the tool box are corrosion resistant or suitably processed to resist corrosion. (see 3.6.2.1)

4.2.1.2 Interface dimensions. Verify the exterior dimensions of the tool box, including wheels, handles, feet, stacking features, etc., is not greater than 18 inches in height, 15 inches in width and 24 inches in length when it is in its working position. Verify the interior of the tool box is large enough to hold all items described herein (3.5.1 through 3.5.93, with the exceptions specified in 3.5.94) in drawers and do so in an organized fashion that supports the rapid inventory capability and the position retention capability. (see 3.6.3)

4.2.1.3 Drawers. Verify the drawers are hung in such a manner that they will not sag into the path of other drawers or accidentally come out of the tool box when fully opened. Verify all tools in the drawer shall be accessible when a drawer is opened to its full extension. Drawers shall be retained in their closed position while the tool box is being moved around. Verify the drawers are provided with a stop that prevents them from accidentally coming out of the tool box when pulled open. Verify there is a method to defeat the stop action that does not require a tool so that the drawers may be taken out of the tool box intentionally. Verify the drawers are capable of accepting a tool organizing liner that fills the drawer from side to side and front to back and that is contoured to hold each tool in an individual pocket or retention feature. Verify the mix of drawers can be configured in the field by demonstrating two smaller height drawers can be replaced with a deeper drawer and vice versa. Verify the tool box is furnished with an adequate number of drawers and corresponding drawer sizes to accommodate all tools in this tool kit. (see 3.6.3.1)

4.2.1.4 Drawer organizers. Verify the tool organizing liners fill the tool box to prevent as much movement as possible. If foam is used, verify it is closed cell and has a water absorption limit of no more than 0.020 lbs/ft² over cut surfaces by testing in accordance with ASTM D3575. Verify the organizing liner provides contrasting color underneath the tools. Verify by objective evidence the materials used in the tool organizing liner are resistant to water, refrigerants, automotive oils, greases, lubricants, fuels including gasoline, diesel fuel, JP-8 and JP-4, acids, bases, coolants, aircraft hydraulic fluid, alcohols and cleaning agents. Verify each retention feature is smooth and free from rough edges. (see 3.6.3.2)

4.2.1.5 Top. Verify the top tool storage area is 3 inches minimum deep when the lid is closed. In the case where an additional drawer at the top of the tool box is provided, that allows the storage of items, verify it is no less than 3 inches tall. Verify the drawer allows full access when opened. Verify the drawer is capable of holding a load of 50 pounds by evenly distributing the load at full extension. (see 3.6.3.3)

4.2.1.6 Weight Requirement. Verify that the weight of each fully loaded tool box does not exceed an overall weight of 100 pounds. (see 3.6.3.4)

4.2.1.7 Security. Verify the tool box has a locking feature for the entire tool box that uses one or two padlocks conforming to the requirements of Commercial Item Description A-A-59486. Demonstrate with the padlock installed, the tool box locking feature (exclusive of the padlock) is resistant to intrusion by prying for no less than 2 minutes. Apply a pull force of 250 pounds minimum to the eye through which the padlock fits. Apply a pull force of 250 pounds minimum to the tethering features. Verify if more than one padlock for the entire set is used, all padlocks are keyed alike. Failure of the tool box to meet above tests shall constitute failure of this requirement. (see 3.6.3.5)

4.2.1.8 Side handles. Verify the tool box has two handles, one on each end of the tool box, which are rated as a pair for not less than 250 pounds of weight. Verify side handles that are added to the tool box, not molded as part of the tool box, are affixed using fasteners that cannot be readily removed, i.e. rivets or screws that cannot be removed with a screw driver. (see 3.6.3.6)

4.2.1.9 Movement aids. Verify the tool box is equipped with a set of permanently attached wheels and handle. Verify by demonstration that a fully loaded tool box pulled by the extended handle over a 20° (36.4%) side slope does not tip over or become unstable. (see 3.6.3.7)

4.2.1.10 Wheels. Demonstrate the wheels provide the ability to roll a fully loaded tool box around on paved, hard floor surfaces, grass and gravel surfaces. Verify by demonstration that the wheels, axles and any wheel mounting brackets will withstand being rolled over bumps and cracks in pavement and gravel surfaces. Verify the wheels will not sustain damage from shocks by dropping a fully loaded tool box to the pavement from a height of no less than 36 inches. Verify by demonstrating or performing an equivalent test that the wheels and casters of a fully loaded tool box can be rolled over a concrete or asphalt road surface for no less than 10 miles without requiring replacement. Verify that the wheels roll without resistance, are not damaged and do not bind by rolling a fully loaded tool box over a gravel surface, that contains ¾ inch and smaller material, for no less than 100 feet. Demonstrate all of the wheels can be replaced in less than 10 minutes using only typical hand tools. (see 3.6.3.7.1)

4.2.1.11 Handle. Verify the distance from the floor to the bottom of the extended handle is no less than 41 inches. Demonstrate a handle can withstand a load without damage by applying a load of no less than 100 pounds across it. (see 3.6.3.8)

4.2.1.12 Stack ability. Verify the tool box is designed for stack ability, avoiding the placement of handles, clasps, or other features in such a position as to interfere with stacking with themselves or other items of similar size. Demonstrate the tipping requirement by stacking four fully loaded tool boxes (including necessary tools) and apply a 20 pound tipping force to the top tool box in any direction. The force shall not cause the tool boxes to fall. (see 3.6.4.1)

4.2.1.13 Human engineering demonstration. Verify by demonstrating the tool box, including the handle and clasps, can be carried, opened, and closed by a person wearing insulated work

gloves. Demonstrate each clasp or latch can be opened and closed using only one gloved hand. Measure the force to open or close the latch does not exceed 20 pounds. If a bar type handle is used verify the clearance for the hand inside the handle is not less than 2 inches by 4.5 inches. If a recessed, molded type handle is used verify the space provided for the hand is not less than 2 inches (from palm side to knuckle side) by 5.25 inches (thumb side to little finger side) and $\frac{3}{4}$ inch clearance for the finger tips. (see 3.6.4.2)

4.2.1.14 Crush resistance. Condition four tool boxes stacked that are fully loaded, closed, latched, in their normal resting position, at a temperature of no less than 170°F for 1 hour. The stack of tool boxes shall be secured with straps through the handles of the top tool box or with straps over the entire stack to the floor or a pallet. After the removal of the top three other tool boxes all tool boxes shall have retained their original shape. (see 3.6.4.3)

4.2.1.15 Impact resistance. A fully loaded tool box shall be inspected for resistance to damage from impacts of sharp falling objects. A steel bar weighing not less than 3.0 pounds, with a cross section no larger than $\frac{3}{16}$ x 1 inch and with an edge radii no larger than $\frac{1}{16}$ inch shall be dropped in free fall from a height of no less than 8 feet. The bar shall land narrow end down on the tool box. Any penetration or effect beyond minor denting of the exterior shall constitute failure of this requirement. (see 3.6.4.4)

4.2.1.16 Cold temperature performance. Condition a fully loaded tool box with the specified tools, closed, latched, and stored for a minimum of three hours at a temperature no warmer than -25°F. The tool box shall then be dropped onto a concrete floor surface from a minimum height of 24 inches. Verify the tool box did not sustain damage by operating all latches and handles, lid opening and closing without difficulty and drawers (if used) opening and closing without difficulty. Failure of the tool box to withstand being dropped without sustaining damages as described above shall constitute failure of this requirement. (see 3.6.4.5)

4.2.1.17 Water entry resistance. Verify by testing the tool box for water entry in accordance with test method 512.4 of MIL-STD-810. Prior to conditioning unlatch, open, close and re-latch the tool box no fewer than 10 times. Condition the tool box so that its temperature is no less than 27°C (80.6°F) above the water temperature prior to immersion. Close and fasten the tool box and immerse it in water to a depth of no less than 1 meter (3.28 feet) to the uppermost surface of the tool box for no less than 30 minutes. Tie down the tool box using the handles, the tie down points or weighted with other loaded tool boxes stacked upon the test item. Upon removal of the tool box from the immersion dry the exterior of the tool box. Upon removal from immersion, presence of any water inside the tool box shall constitute failure to meet this requirement. (see 3.6.4.6)

4.2.1.18 Dust resistance. Close and latch a fully loaded tool box for no less than 3 hours at a temperature of no less than 150°F. Within 10 minutes after conditioning subject the tool box to blowing dust at a velocity of 8.9 meters/second (1750 feet/minute) when tested in accordance with Method 510.4, Procedure 1 of MIL-STD-810. (see 3.6.4.7)

4.2.1.19 Ambient temperature rough handling resistance. Condition the fully loaded tool box for no less than 4 hours at ambient temperature. Drop the fully loaded tool box 4 times from 60

inches onto a concrete floor, each time landing on a different one of the four bottom edges. After being dropped inspect the locking features and the tool box operates properly without degradation of performance. The fully loaded tool boxes shall then be rolled over on the floor so it's top is on the ground as well as being rolled 360 degrees, four times, once over each side. All this shall be accomplished without sustaining any permanent damage or degradation to the proper functioning of the tool boxes, or the tools being damaged, becoming dislodged and moving freely around in the tool boxes. Failure of the tool box to withstand being dropped without sustaining damages as described above, including damage to the wheels or pull handle, or failure of tool organizing liner to retain the tools in position shall constitute failure of this requirement. (see 3.6.4.8)

4.2.1.20 Storage temperature rough handling resistance. Condition a fully loaded tool box, closed, latched, and stored for no less than 3 hours at a temperature of no less than 170°F. Drop the tool box from a height of no less than 36 inches onto a concrete floor a total of four times. Inspect the tool box for evidence of any permanent damage or degradation to the proper functioning of the tool box. Failure of the tool box to withstand being dropped without sustaining damages as described above, including damage to the wheels or pull handle, shall constitute failure of this requirement. (see 3.6.4.9)

4.2.1.21 Finish. Verify the exterior surface finish of each tool box is clean, corrosion resistant, non-reflective, non-glossy and have no sharp edges or projections. Verify the color of the tool box is subdued. Verify the exterior of the tool box has a provision for a Unique Identification label (UID). (see 3.6.5)

4.2.1.22 Pressure relief. Verify the tool box contains a pressure relief valve to compensation of differential pressures and that it does not alter the waterproof, dustproof, or any other design requirement of the tool box. (see 3.6.7)

4.2.1.23 Unique Item Identification. If the cost of the set exceeds \$5,000, verify the proper UII/UID is supplied and attached. (see 3.6.9)

4.3 Conformance inspection. Conformance inspection shall be applied to the first units inspected at the Product Performance Verification step (see 4.2) and to production units being offered for acceptance under the contract. These inspections shall include all verifications listed under paragraph 4.3 and shall be limited to the examination of product to verify compliance with design requirements established during product performance verification.

4.3.1 Inspection lot formation. Inspection lots shall be formed in accordance with Section 4 of MIL-STD-1916.

4.3.1.1 Sampling Plan Determination. Sampling inspections shall be conducted in accordance with MIL-STD-1916 using Verification Level I.

4.3.1.2 Rejection: Failure of any unit to pass any verification shall be cause for rejection of the lot.

4.3.2 Product examination. Visually, dimensionally, and manually examine each set to determine conformance with the requirements. Visual examination shall include verification of completeness of manufacture and assembly, proper cleaning, and freedom from the identified defects. Dimensional examination includes measuring dimensions as specified and weighing the unit. Manual examinations shall include the operation of movable parts by hand to assure proper functioning. (see 3.5.1 through 3.5.94)

4.3.3 Industrial quality components. When required, verify that the components provided conform to industrial standards through substantial evidence of sales to industrial customers. (see 3.3)

4.3.4 Warranty and markings. Verify that warranties of all components are provided in accordance with manufacturing requirements as specified in the contract. Verify the tool set is supplied with required diagrams or photographs showing tool location, warranty information and part numbers/NSNs. (see 3.4, 3.6.8)

4.3.5 Components and related items loaded into the tool box. Verify all the components, as listed on Table 1, are loaded into the tool box in the quantities indicated. (see 3.5, 3.5.94)

4.3.6 Workmanship. Verify the quality of workmanship imparted to the tool sets equal or exceed that typically provided to domestically produced, commercial tool boxes of these types. Verify the sets presented for acceptance have been manufactured with skill and care; uniform, neat, and clean; and free from irregularities and anomalies which degrade form, fit, function, performance or appearance. (see 3.6.2.2)

4.3.7 Plates and Labels. Verify all identification, warning and instruction plates and labels are permanently affixed to the tool box and contains all required information described in paragraphs 3.6.6.1, 3.6.6.2 and 3.6.6.3, including all information required to be inserted in the blanks indicated. Verify all plates and labels are printed using the English language and may be supplemented by graphical symbols. (see 3.6.6 and sub-paragraphs)

4.3.8 Packaging. Verify that unit packaging, unit package markings, shipping containers, shipping container markings, packing lists, quality certification heat treatment markings and unitization requirements are in accordance with Section 5 of this DFP. Failure to comply with the requirements may be cause for rejection.

4.4 Changes to materials, processes, or configuration. The contracting officer shall be informed of any changes to the materials, processes, or configuration of any characteristic of the units. The contracting officer shall determine if the reported changes to materials, processes, or configuration shall require additional verifications. In addition, the Contracting Officer shall be provided the date of production and the UII/UID number corresponding to when the indentified change is to be incorporated.

4.5 Conformance of subsequent production quantity. All products offered for acceptance throughout the life of the contract shall conform to all of the requirements of the contract.

The Government reserves the right to re-verify conformance with requirements at any time during the life of the contract whenever there is a lapse in production for a period in excess of one year; or whenever a change occurs in place of performance, manufacturing process, material used, specification, or source of supply and return to the contractor such product that does not conform to the specified requirements in accordance with FAR Clause 52.212-4(a) of the contract. When any of the conditions above occur, the Contractor shall notify the Contracting Officer so that a determination can be made concerning the need for additional product performance verification and conformance inspections. Costs of any additional testing and inspection shall be borne by the Contractor, unless the change was directed by the Government. Further, any production delays caused by additional testing and inspection will not be the basis for an excusable delay as defined in FAR 52.212-4 of this contract. Such delays shall not form the basis for adjustment in contract price or delivery schedule.

5 PRESERVATION, PACKING AND PACKAGING

5.1 Packaging. Preservation, packaging, packing, unitization and marking furnished by the supplier shall provide protection for a minimum of one year, provide for multiple handling, redistribution and shipment by any mode and meet or exceed the following requirements.

5.1.1 Cleanliness. Items shall be free of dirt and other contaminants which would contribute to the deterioration of the item or which would require cleaning by the customer prior to use. Coatings and preservatives applied to the item for protection are not considered contaminants. When cleaning is necessary, the cleaning process shall not be injurious to the item and will not remove item surface finish.

5.1.2 Preservation. Items susceptible to corrosion or deterioration shall be provided protection by means of preservative coatings, volatile corrosion inhibitors, desiccants, waterproof and/or water/vapor-proof barriers.

5.1.3 Cushioning. Items requiring protection from physical and mechanical damage (e.g. fragile, sensitive, material critical) or which could cause physical damage to other items shall be protected by wrapping, cushioning, pack compartmentalization, or other means to mitigate shock and vibration to prevent damage during handling and shipment. Items of a delicate nature shall not be subjected to damage from rugged items contained within the kit. Non-critical items of odd shapes or having sharp protrusions will not damage other items or protective barriers.

5.2 Unit package. Items may be packaged within tool storage systems if placed in a dedicated position within a tool chest, cabinet or box, where there is no potential for corrosion or physical damage and can be identified by a layout plan. Otherwise a unit package shall be so designed and constructed that it will contain the contents with no damage to the item(s), and with minimal damage to the unit pack during shipment and storage in the shipping container, and will allow subsequent handling. The outermost component of a unit package shall be a container such as a sealed bag, carton or box.

- 5.3 Unit package quantity. Unless otherwise specified, the unit package quantity shall be one each part, set, assembly, kit, etc.
- 5.4 Intermediate package. If items are placed in the tool storage system, then segregation of those items within a tool box shall be accomplished in accordance with instructions for the interior storage system. Intermediate packaging is required whenever one or more of the following conditions exists:
- a. The quantity is over one (1) gross of the same national stock number.
 - b. The use enhances handling and inventorying.
 - c. The exterior surface of the unit pack is a bag of any type, regardless of size.
 - d. The unit pack is less than 64 cubic inches.
 - e. The weight of the unit pack is less than five (5) pounds and no dimension is over twelve (12) inches.
 - f. Intermediate containers shall be limited to a maximum of 100 unit packs, a net load of 40 pounds, or a maximum volume of 1.5 cubic feet, whichever occurs first.
- 5.5 Shipping containers. Unit packages and intermediate packages not meeting the requirements for a shipping container shall be packed in shipping containers. All shipping containers shall be the most cost effective and shall be of minimum cube to contain and protect the items. The shipping container (including any necessary blocking, bracing, cushioning, or waterproofing) shall comply with the regulations of the carrier used and shall provide safe delivery to the destination at the lowest tariff cost. The shipping container shall be capable of multiple handling, stacking no less than 10 feet high, and storage under favorable conditions (such as enclosed facilities) for a minimum of one year, and shall be fabricated in accordance with MIL-STD-2073-1D.
- 5.6 Unitization. Shipments of identical items going to the same destination shall be palletized if they have a total cubic displacement of 50 cubic feet or more unless skids or other forklift handling features are included on the containers. Pallet loads shall be stable, and to the greatest extent possible, provide a level top for ease of stacking. A palletized load shall be of a size to allow for placement of two loads high and wide in a conveyance. The weight capacity of the pallet shall be adequate for the load. The preferred commercial expendable pallet is a 40 x 48 inch, 4-way entry pallet although variations may be permitted as dictated by the characteristics of the items being unitized. All variations must be approved by Contracting Office prior to implementation. The load shall be contained in a manner that will permit safe handling during shipment and storage.
- 5.7 Marking. All unit packages, intermediate packs, exterior shipping containers, and, as applicable, unitized loads shall be marked in accordance with MIL-STD-129, Revision P Change Notice 4, dated 19 Sep 2007 including bar coding and a MSL label. Each component unit package shall be marked at a minimum of Part Number, Nomenclature, Quantity and Unit of Issue; however, the Nomenclature shall be omitted from the shipping containers. The contractor is responsible for application of special markings as discussed in the Military Standard regardless of whether specified in the contract or not. Special markings include, but are not limited to, Shelf-life markings, structural markings, and transportation special handling markings.

When a (set/kit/assembly, etc.) requires two or more containers, each container shall be marked (IAW) 5.2.14 of MIL-STD-129P (1 of 2, 2 of 2). Marking of the number of (sets/kits, etc) constructed shall also apply (Set 1, Set 2, Set 3). Multiple (sets/kits, etc) shall maintain consistency of contents to each container by packing all containers marked 1 of 5 with duplicate items, all containers marked 2 of 5 shall be duplicated to contain same items, with same consistency for the remaining containers of each (set/kit). A 2-inch disc of a high contrast color shall be placed above the numbers on each container. See FIGURE 33 for marking in MIL-STD-129P.

Passive RFID tagging is required in all contracts that contain DFARS clause 252.211-7006. Contractors shall check the solicitation and/or contract for this clause. For details and most recent information, see <http://www.acq.osd.mil/log/rfid/index.htm> for the current DoD Suppliers' Passive RFID Information Guide and Supplier Implementation Plan. If the item has UII/UID markings then the UII/UID needs to be 2D bar coded and applied on the unit package, intermediate and exterior containers, and the unit load.

- 5.8 Hazardous Materials (as applicable). Hazardous materials are defined as a substance, or waste which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated. (This includes all items listed as hazardous in Titles 29, 40 and 49 CFR and other applicable modal regulations effective at the time of shipment.) When applicable, the packaging and marking for hazardous material shall comply with the requirements for the mode of transport and the applicable performance packaging contained in the following documents:

International Air Transport Association (IATA)
 Dangerous Goods Regulations
 International Maritime Dangerous Goods Code (IMDG)
 Code of Federal Regulations (CFR) Title 29, Title 40, and Title 49
 Joint Service Regulation
 AFJMAN24-204/TM38-250/NAVSUPPUB 505/MCO P4030.19/DLAM 4145.3 (for military air shipments)

If the shipment originates from outside the continental United States, the shipment shall be prepared in accordance with the United Nations Recommendations on the Transport of Dangerous Goods in a manner acceptable to the Competent Authority of the nation of origin and in accordance with regulations of all applicable carriers.

- 5.9 Heat treatment and marking of wood packaging materials. All non-manufactured wood used in packaging shall be heat treated to a core temperature of 56 degrees Celsius for a minimum of 30 minutes. The box/pallet manufacturer and the manufacturer of wood used as inner packaging shall be affiliated with an inspection agency accredited by the board of review of the American Lumber Standard Committee (ALSC). The box/pallet manufacturer and the manufacturer of wood used as inner packaging shall ensure tractability to the original source of heat treatment. Each box/pallet shall be marked to show the conformance to the International Plant Protection Convention Standard (IPPC).

Boxes/pallets and any wood used as inner packaging made of non-manufactured wood shall be heat-treated. The quality mark shall be placed on both ends of the outer packaging, between the end cleats or end battens; on two sides of the pallet. Foreign manufacturers shall have the heat treatment of non-manufactured wood products verified in accordance with their National Plant Protection Organization's compliance program.

- 5.10 Quality assurance. The contractor is responsible for establishing a quality system. Full consideration to examinations, inspections, and tests will be given to ensure the acceptability of the commercial package. All items, packing configurations, and markings supplied under this contract shall be identical to the product verification.
- 5.11 Supplemental. The unit package for the Electronic Systems Maintenance Tool Kit or the ESMTK with supplements shall be a box of one each.

Paragraphs 5.1 and 5.2 above apply to each component of the set for unit packaging. Electric or battery operated devices, grease, liquids (threadlock), shall be heat sealed in a bag conforming to manufacturer's sealing methods. Storage or attachment of items to the inside or outside of the tool box lid is unacceptable. All items described in this DFP shall be secured by the use of blocking and bracing, designated compartment placement, organizers, straps, foam cutouts, vacuum packs, or other approved devices to prevent movement.

When packaged items are not contained within the tool chest, storage cabinet or tool box, they shall be consolidated into a wood-cleated box shipping container constructed in accordance with (IAW) ASTM D6251. Manuals, parts lists, and warranty information shall be packed in sealed water proof packaging that is reusable, i.e. zip lock bag. Packing Lists shall be sealed in water-resistant envelopes and secured to the exterior of the load or container in the most protected location.

When the weight of a tool box/container is greater than 100 pounds, the tool box/container shall be provided with skids. Skids shall be designed to accommodate multiple forklift moves from the front and rear of container. Skid planks will not protrude past the footprint of the load for shipment and the load shall not extend past the edges of skid. The weight of the items contained within each tool box/container shall be evenly distributed such that the center of balance remains in the middle of the tool box.

The weight of the consolidated load of one complete kit shall be evenly distributed on the skid or pallet and shall be capable of stacking up to 10 feet high. The exterior unit pack shall be marked for handling to include "THIS SIDE UP" with an arrow indicating the correct direction. The center of balance shall be marked (IAW) MIL-STD-129P, Para 5.2.17 and FIGURE 36 for ease of visibility to (MHE) operator. The contractor shall furnish the contracting officer with the shipping size and weight prior to shipment of first article.

Overall, packaging shall successfully pass test levels of ASTM D 4169, Distribution Cycle 18, Assurance Level (I for level A pack, or II for level B pack), Acceptance Criterion 3. Testing shall be witnessed by the Government Quality Assurance Representative. Packaged gross weight and size shall be included on the test report as well as a detailed description of the

packaging. The Contractor is exempted from testing if previous data for same or similar items can be provided (see Para. 5.6 of MIL-STD-2073-1D) and is acceptable to the Government.

Questions concerning packaging requirements may be directed to a Packaging Specialist through the Contracting Specialist.

6 Notes

- 6.1 Anthropometry. From DOD-HDBK-743, Anthropometry of U.S. Military Personnel, for barefoot males the 95th percentile knuckle (Metacarpal III) height value – the vertical distance from the floor to the knuckle of the middle finger (Metacarpal III) – is 82.3 cm (32.4 inches) and the same for barefoot females in the 5th percentile is 64.6 cm (25.4 inches). In accordance with “Anthropometry of the Clothed US Army Ground Troop and Combat Vehicle Crewman”, winter clothing and protective gear is expected to add 8.9 cm (3.5 inches) to troops’ stature (height). In the boxes towing position the length of the handle shall take the additional height into account.

Appendix A:
Army Drawings

F 7680631

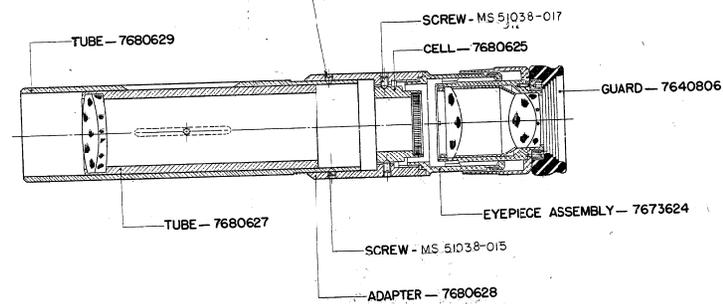
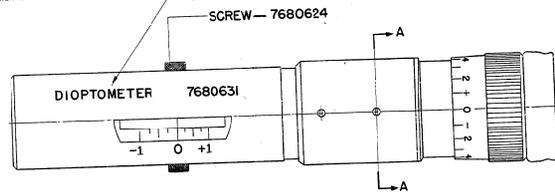
ACCURACY REQUIREMENTS

ANY DIOPTRIC SETTING OF THE DIOPTRIC METER SHALL AGREE WITH THE CORRESPONDING SCALE READING WITHIN $\pm 1/16$ DIOPTRIC FOR MOTION OF THE OBJECTIVE LENS AND $\pm 1/4$ DIOPTRIC FOR THE CORRESPONDING MOTION OF THE EYEPIECE.



SECTION A-A

ENGRAVE LETTERS AND NUMBERS $\frac{1}{16}$ HIGH X.010 DEEP CENTRALLY SPACED, FILL WITH FINISH 20.20 SPEC MIL-P-1201



DIOPTRIC METER
LIST OF SPECIFICATIONS

ITEM	SPECIFICATION
1	DIOPTRIC METER, GENERAL SPECIFICATION
2	RHE CONTROL MATERIAL, GENERAL SPECIFICATION
3	COVERING, MANUFACTURE AND INSPECTION OF
4	PAINTING AND FINISHING OF RHE CONTROL INSTRUMENTS
5	GENERAL SPECIFICATIONS FOR
6	MARKING OF SHIPMENTS
7	ALUMINUM ALLOY, BARS, RODS, AND WIRE
8	BRASS LEAD AND INCLINATION OF LOCKED BARS, SHAPES & FORINGS
9	METALS, GENERAL SPECIFICATION FOR INSP. OF
10	COPPER-NICKEL ZINC ALLOY RODS, BARS, AND SHAPES
11	STEEL, COMBINATION FOSTERITE, BARS AND FORINGS
12	TUBING, ALUMINUM ALLOY ROUND, SEAMLESS
13	TUBING, BRASS SEAMLESS
14	GLASS, OPTICAL
15	PLASTIC MATERIALS, MOLDED THERMOSETTING

LIST OF DRAWINGS

ITEM	DRAWING NUMBER	REVISION
1	F 7680631	A
2	A 5184407	
3	A 5184408	
4	A 5184409	
5	A 5184410	
6	A 5184411	
7	A 5184412	
8	A 5184413	
9	A 5184414	
10	A 5184415	
11	A 5184416	
12	A 5184417	
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DESIGN ACTIVITY U.S. ARMY
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
MONTANA ARSENAL, NEW BRUNSWICK, NEW JERSEY 07100-0000

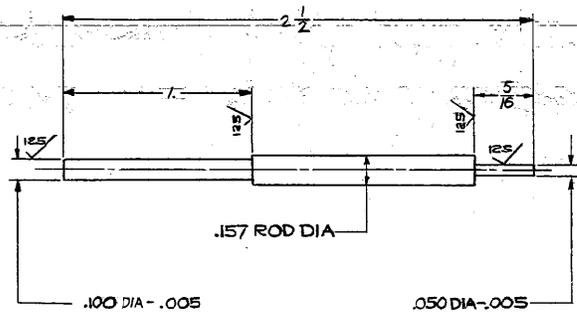
APPLICABLE DOCUMENTS PART NO. 7680631
PARTS LIST-PL 7680631 FSCM NO. 19200

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84	DESIGNED BY	
85	DESIGNED BY	
86	DESIGNED BY	
87	DESIGNED BY	
88	DESIGNED BY	
89	DESIGNED BY	
90	DESIGNED BY	
91	DESIGNED BY	
92	DESIGNED BY	
93	DESIGNED BY	
94	DESIGNED BY	
95	DESIGNED BY	
96	DESIGNED BY	
97	DESIGNED BY	
98	DESIGNED BY	
99	DESIGNED BY	
100	DESIGNED BY	

DIOPTRIC METER
PART NO. 7680631

G9X3000

PHYSICAL PROPERTIES		APPLICATION		A7597712			
YP		NEXT ASSY	USED ON				
TS		TOOL SETS		REVISIONS			
EL 2				STN	DESCRIPTION	DATE	APPROVAL
RA				A	SUPERSEDES A7597712 W/O/C	9-1-52	<i>[Signature]</i>
BH				B	SEE EO F 30502	5-15-64	<i>[Signature]</i>
RH	C 35- C 45	DO NOT	APPLY PART NO.	C	NOR FSE 2003 85-01-16	850828	<i>[Signature]</i>
		NO	NO SUCCESSOR	D	NOR FSE 2002/850416	870129	<i>[Signature]</i>



BREAK ALL SHARP EDGES

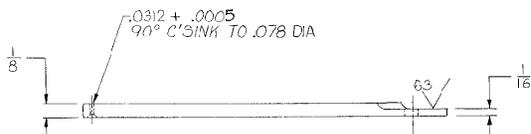
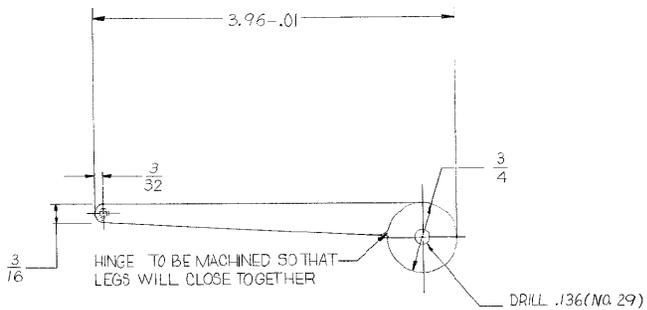
CURRENT DESIGN ACTIVITY FSCM NO. 19200
U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT CENTER
DOVER, NEW JERSEY 07804

FEDERAL STOCK NO. 5120-00-759-7712
ASSIGNED TO THIS PART

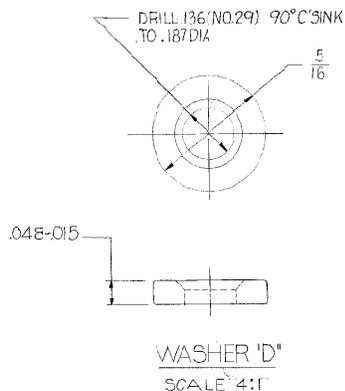
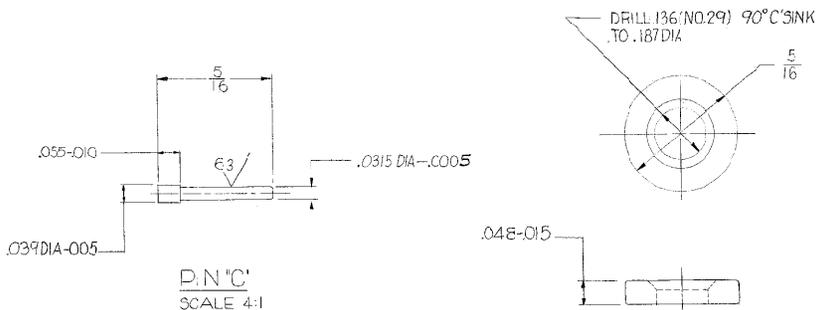
LOGISTICALLY REASSIGNED
GAINING ACTIVITY USA SUPPORT
COMM AND FSC-5120
AUTHORITY AR 701-5120

CODE IDENT NO. 19200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS ± .005 FRACTIONS ± 1/16 ANGLES ± 1° MATERIAL TOOL STEEL CARBON & CARBON-VANADIUM STEEL WITH 0.40% C TO 0.50% C HEAT TREATMENT HEAT TREAT TO PHYSICAL CHARACTERISTICS SHOWN. FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING SEPT 1, 1951 DRAFTSMAN <i>[Signature]</i> CHECKER <i>[Signature]</i> TRACER <i>[Signature]</i> ENGINEER <i>[Signature]</i>	PIN ADJUSTING, DRIVING	FIRE CONTROL INSTRUMENT GROUP ORDNANCE CORPS DEPT OF THE ARMY FRANKFORD ARSENAL PHILA 37, PA
	SUBMITTED <i>[Signature]</i> APPROVED BY ORDER OF THE CHIEF OF ORDNANCE <i>[Signature]</i> ENG. ORG. CORPS		ENG. ORG. CORPS SCALE 2:1 UNIT WT DWG NO. 7597712 SHEET 1 OF 1

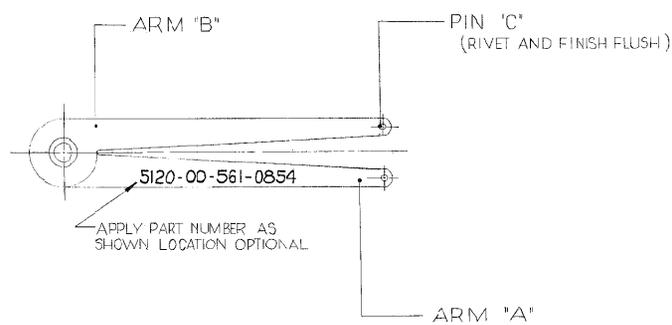
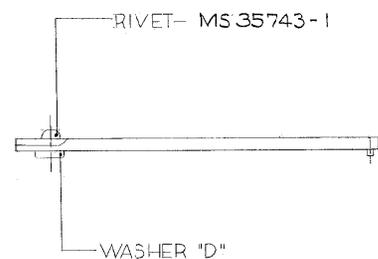


ARM "A" (COUNTERSINK AS SHOWN)
 ARM "B" (COUNTERSINK OPPOSITE SIDE)



LINE	LIST OF PARTS	QUAN REQD	MATERIAL	MATERIAL SPECIFICATION
1	WRENCH, ADJ. TEAT			
2	ARM "A"	1	WD-1020	QQ-5-633
3	ARM "B"	1	WD-1020	QQ-5-633
4	PIN "C"	2	↑	57-108
5	WASHER "D"	1	WD-1020	QQ-5-633
6	RIVET-(MS35743-1)	1	COML	

↑ CARBON TOOL STEEL, CLASS A3



BREAK ALL SHARP EDGES
 1/25/
 VALL OVER EXCEPT AS NOTED.

CURRENT DESIGN ACTIVITY CAGE CODE 19200
 U.S. ARMY
 ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
 PICATINNY ARSENAL, NEW JERSEY 07806-3000

SYM	DESCRIPTION	DATE	APPROVAL
B	NOR DIT2023/910605	910802	HH SK
A	ITEMS A&B QUANT WAS 2	1-27-53	
	ITEMS A,B&D, MAT'L.		
	WAS 57-108		

PHYSICAL PROPERTIES		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DATE OF DRAWING	
YP		TOLERANCES ON DECIMALS ± .005		SEPT 1, 1952	
TS		ANGLES ±	FRACTIONS ±	DRAFTSMAN	CHECKER
EL 1		MATERIAL		TRACER	CHECKER
RA		HEAT TREATMENT		ENGINEER	ENGINEER
BH		APPLICATION		SUBMITTED	
RM		DO NOT: APPLY PART NO.	FINAL PROTECTIVE FINISH	APPROVED BY ORDER OF THE CHIEF OF ORDNANCE	
		DO	AS SPECIFIED	ENGINE DEPT	

WRENCH, ADJUSTABLE TEAT

ORIGINAL CAGE CODE 19200

SCALE 1:1 UNIT WT

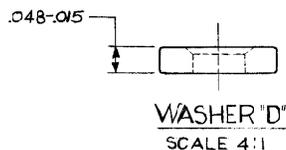
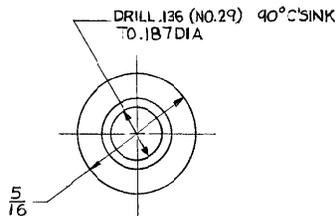
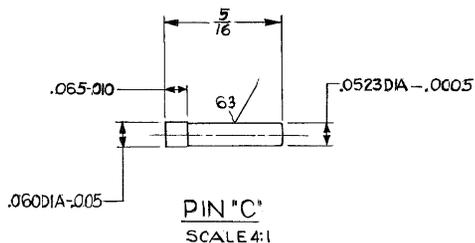
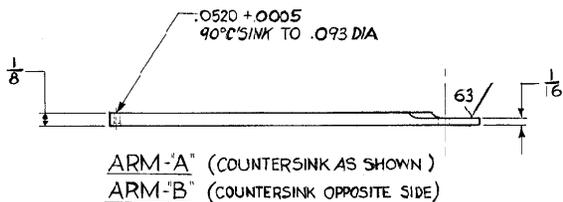
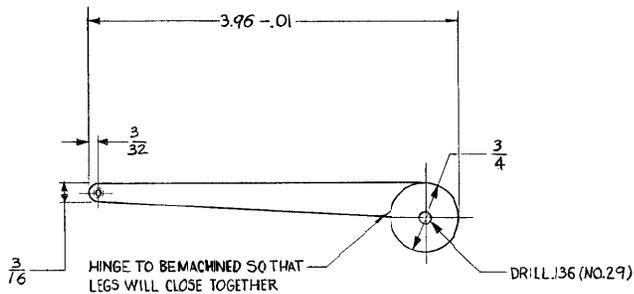
REVISIONS

FIRE CONTROL INSTRUMENT GROUP
 ORDNANCE DEPT
 DEPT OF THE ARMY
 FRANKFORD ARSENAL
 PHILA 33 PA.

DWG SIZE C 8284044

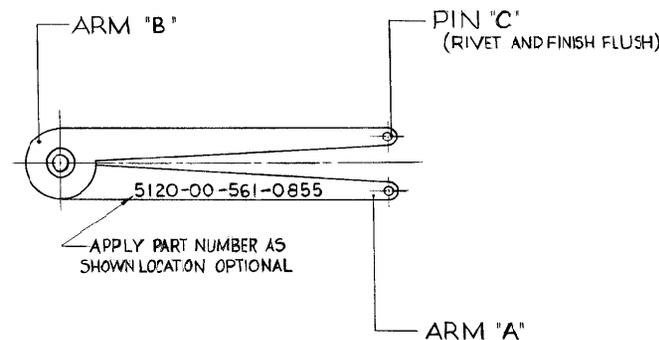
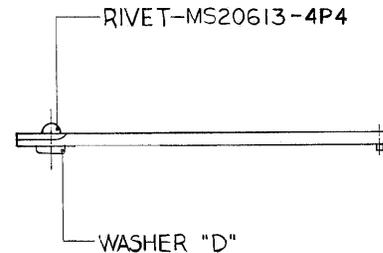
SHEET 1 OF 1

C0284044



COL	1	2	3	4
UNIT	LIST OF PARTS	QUAN REQ'D	MATERIAL	MATERIAL SPECIFICATION
1	WRENCH ADJ. TEAT			
2	ARM "A"	1	1020	ASTM A 108
3	ARM "B"	1	1020	ASTM A 108
4	PIN "C"	2		QQ-T-570
5	WASHER "D"	1	1020	ASTM A 108
6	RIVET (MS20613-4P4)	1		

↑ = CARBON TOOL STEEL, CLASS A3



BREAK ALL SHARP EDGES

125/
✓ ALL OVER EXCEPT AS NOTED.

SYM	DESCRIPTION	DATE	APPROVAL
B	NORF4E2002/841003	861211	MR [Signature]
A	ITEMS A,B & D QUANT. WAS 2	2-27-53	
	ITEMS A, B & D, MAT'L.		
	WAS 57-108		
	SUPRESEDES W/20 ON DRAWING	9-1-52	
	18-1752 W/20		

CURRENT DESIGN ACTIVITY FSCM NO. 19200
U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT CENTER
DOVER, NEW JERSEY 07801

PHYSICAL PROPERTIES		TOLERANCES ON DECIMALS ± .005		ORIGINAL DATE OF DRAWING SEPT 1, 1952	
YP		ANGLES	FRACTIONS ± 24	DRAFTSMAN	CHKR Hmc
TS		MATERIAL		TRACER	CHECKER [Signature]
EL 2		HEAT TREATMENT		ENGINEER	ENGINEER [Signature]
RA	TOOL SETS	FINAL PROTECTIVE FINISH		SUBMITTED	
BH	NEXT ASSY USED ON			APPROVED BY	
RH	APPLICATION			CHIEF OF ORDNANCE	
	DO NOT APPLY PART NO.			ENG CRD DEPT	
	DO AS SPECIFIED			ENG CRD DEPT	

WRENCH ADJUSTABLE TEAT

M

SCALE 1:1 UNIT WT

FIRE CONTROL INSTRUMENT GROUP
ORDNANCE DEPT
DEPT OF THE ARMY
FRANKFORD ARSENAL
PHILA 37, PA

DWG SIZE 8284045
C SHEET OF

C 8284045