DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

VEHICLE PROTECTIVE CLOSURES:

USE AND PROTECTION

Refs: AR 755-1; AR 755-20; AMCR 37-17; TM 38-450

Headquarters, Department of the Army, Washington, D. C.

27 September 1966

Section I. GENERAL

1. Purpose. This bulletin is published to prescribe Department of the Army policy and to insure maximum utilization of vehicle protective closures.

2. Scope. Instructions contained in this bulletin apply to the Department of the Army, CONUS, and oversea commands. They will be implemented by all personnel involved in the

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Figure 1. Views of a typical closure.

use and disposition of vehicle protective closures.

3. General Policy. *a.* Vehicle protective closures will be used to protect vehicles for which they are designed during shipment and storage. Use and disposition of vehicle protective closures will be in accordance with the procedures, controls, and instructions set forth herein.

b. Project and commodity managers will, prior to procuring new closures, determine the availability of closures in the supply system for use by manufacturing facilities on continuing production.

4. Definition. Closures, as referred to herein, are those protective devices consisting of framework and flexible cover, installed on track laying vehicles (combat or special purpose). Views of a typical closure are depicted in figure 1.

5. Classification. Vehicle protective closures are accountable free-issue items and are assigned Federal stock numbers. They are provided new or reused with the vehicle at time of manufacture. They may also be drawn from the supply system by any unit in the field for purposes outlined in paragraph 8.

6. Intended Use. Vehicle closures are intended to provide protection against the detrimental effects of the elements during shipments and periods of inactivity. Properly used, closures lesson deterioration of vehicle components due to the elements and prevent a consequent adverse effect on combat readiness.

7. Procedure. *a.* The category of maintenance placing vehicles in field use will remove the vehicle closures and retain them for authorized requirements (para 8). If there is no requirement for authorized use the closure will be turned in to local supply elements.

b. When local supply elements determine that they have vehicle closure in excess of local authorized requirements, they will declare this excess through channels in accordance with AR 755-1 and AR 755-20.

(1) Local supply elements of oversea commands will declare the excess to the managing ICP in their theater.

(a) The ICP will notify the element declaring the excess to which depot these items are to be returned. Part of this notice will be a fund citation to cover transportation charges. No credit for the item will be issued (AMCR 37-17).

(b) Local supply elements will package vehicle closures for return to depot in accordance with paragraph 11.

(c) The oversea ICP, upon accumulation of vehicle closures in excess of its needs, will declare to Army Tank Automotive Command the quantity not required. Only items in condition code A and economically repairable condition and packaged as prescribed in paragraph 11 will be acceptable for return. No credit for the item will be issued.

(2) In CONUS excesses will be declared to the U.S. Army Tank Automotive Center (ATAC), Warren, Mich., 48090, the managing NICP.

(a) The NICP will notify the element declaring the excess to which depot the items are to be returned. Part of this notice will be a fund citation to cover transportation charges. No credit for the item will be issued (AMCR 37-17).

(b) Local supply elements will package vehicle closures for return to depot in accordance with paragraph 11.

(c) The repair and repackaging of these items will be accomplished in accordance with current directives and procedures governing secondary items.

(d) Units requiring the issue of vehicle closure based on authorization cited in paragraph 8 will submit a MIL, STRIP requisition through normal supply channels. Requisitions will be accepted by the NICP on a "fill or kill" basis. Na back orders will be established for these closures.

(e) Major item mangers and project managers may also requisition vehicle closures from the supply system. Method outlined in this paragraph applies except transportation funding will be cited.

8. Priority of Use. Priorities for closures are as follows:

a. Vehicles authorized closures being shipped from manufacturer and/or depot.

b. Vehicles authorized closures that are to be stored in other than controlled humidity or

warehouse storage. Examples of this type of inactivity are as follows:

(1) Prepositioned stocks.
(2) Mobility reserve stocks.
(3) Outside depot storage (non0reserve).
(4) Float vehicles.
(5) Administrative storage (TB ORD 1045).

c. Field service vehicles originally authorized protective closures that are in open storage awaiting rebuild, repairs and/or parts.

d. Similar type vehicles not originally authorized protective closures, but for which available closures can be modified and used if required, i.e., M60 tank closures on an M48A3 Tank. Local modification is authorized except that the modification will not readily prevent reuse of the closure on the vehicle for which it was designed.

9. Federal Stock Number Identification. Federal stock number identification has been assigned to the following protective closures for control purposes. Unless otherwise indicated closures listed fit all models of the vehicle series identified.

M60	FSN 2540-897-7372
M113 and M106	FSN 2540-716-8084
M56	FSN 2590-733-4707
M116	FSN 2540-907-9011
M114	FSN 2540-912-3927
M578	FSN 2540-907-9009
M577	FSN 2540-075-1757
XM474	FSN 2540-075-1758
M107 and M110	FSN 2540-907-9010
M108 and M109	FSN 2540-912-3928
M88	FSN 2540-939-7431
M728	FSN 2540-999-6744

10. Publication and Repair Parts Support.

a. Installation and Removal. The following specifications provide instructions for installation and removal of the protective closures.

Vehicle	*Applicable Specification*
M56	MIL-G45319 (ORD)
M60	MIL-T-45309
M88	MIL-R-45378
M106 and M113	MIL-C-45360
M107 and M10	MIL-G-46723
M108 and M109	TM 9-2350-217-20
M114	TM 9-2320-224-20
M116	MIL-C-46747
XM474	MIL-C-46779
M577	MIL-C46746
M578	MIL-R-46710
M728 (T118)	DAPD 565

b. Repair Parts. Component parts of vehicle closures (excluding common hardware) are not items of supply. Lost or damaged parts will be replaced by local fabrication. Drawings of the component parts are contained in the specification listed in paragraph 10a above.

11. Preservation, Packaging, and Packing.

a. Excess vehicle protective closures being returned from the local supply element to the collection depots will be preserved, packaged, and packed in accordance with section 2.

b. Excess condition code F vehicle protective closures being returned to CONUS from oversea depots will be preserved, packaged, and packed in accordance with section 2.

c. Condition code A vehicle protective closures being prepared for storage or shipment will be preserved, packaged, and packed in accordance with the applicable packaging data sheet. When a packaging data sheet is not available for a particular closure the general instructions provided in section 3 will be followed.

Vehicle	*Closure FSN*	*Applicable Packaging Data Sheet*
M56	2590-733-4707	10868845
M60	2540-897-7372	10893901
M106 and M113	2540-716-8084	10917810
XM474	2540-075-1758	10908010
M577	2540-075-1757	10918220
M88	2540-939-7431	10894740

Section II. GENERAL INSTRUCTIONS BULK PACKING OF VEHICLE PROTECTIVE CLOSURES

12. Cleaning. Components of the closures will be wiped clean of mud, dirt, and grease. Nonmetallic components will be thoroughly aired and dried before being rolled, folded, or coiled for packing.

13. Prepacking Unitizing. Components of each closure will be utilized together as follows. Damaged components that are not economically repairable should not be unitized or packed for return.

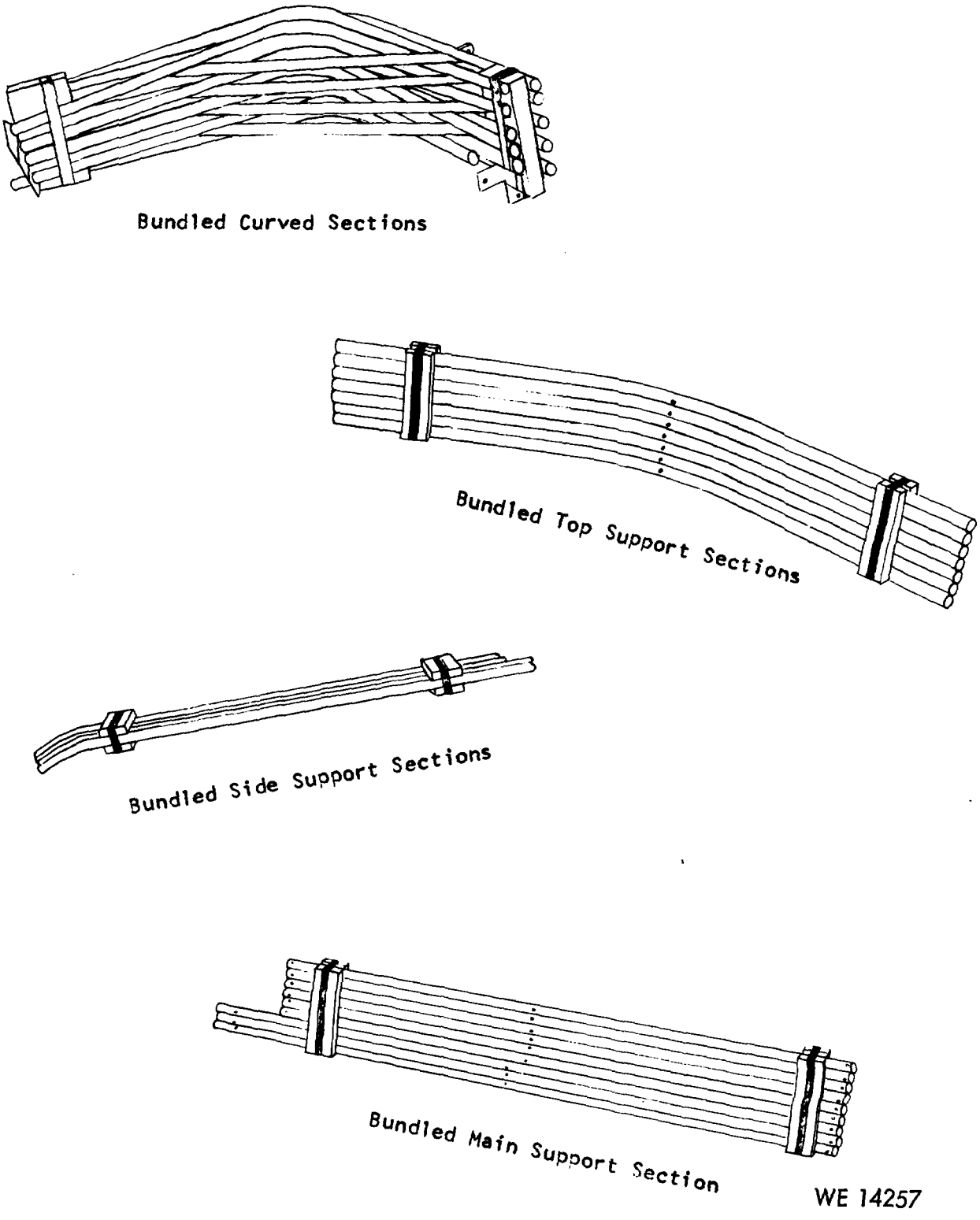

Figure 2. Bundled sections of metal base frame and tubing.

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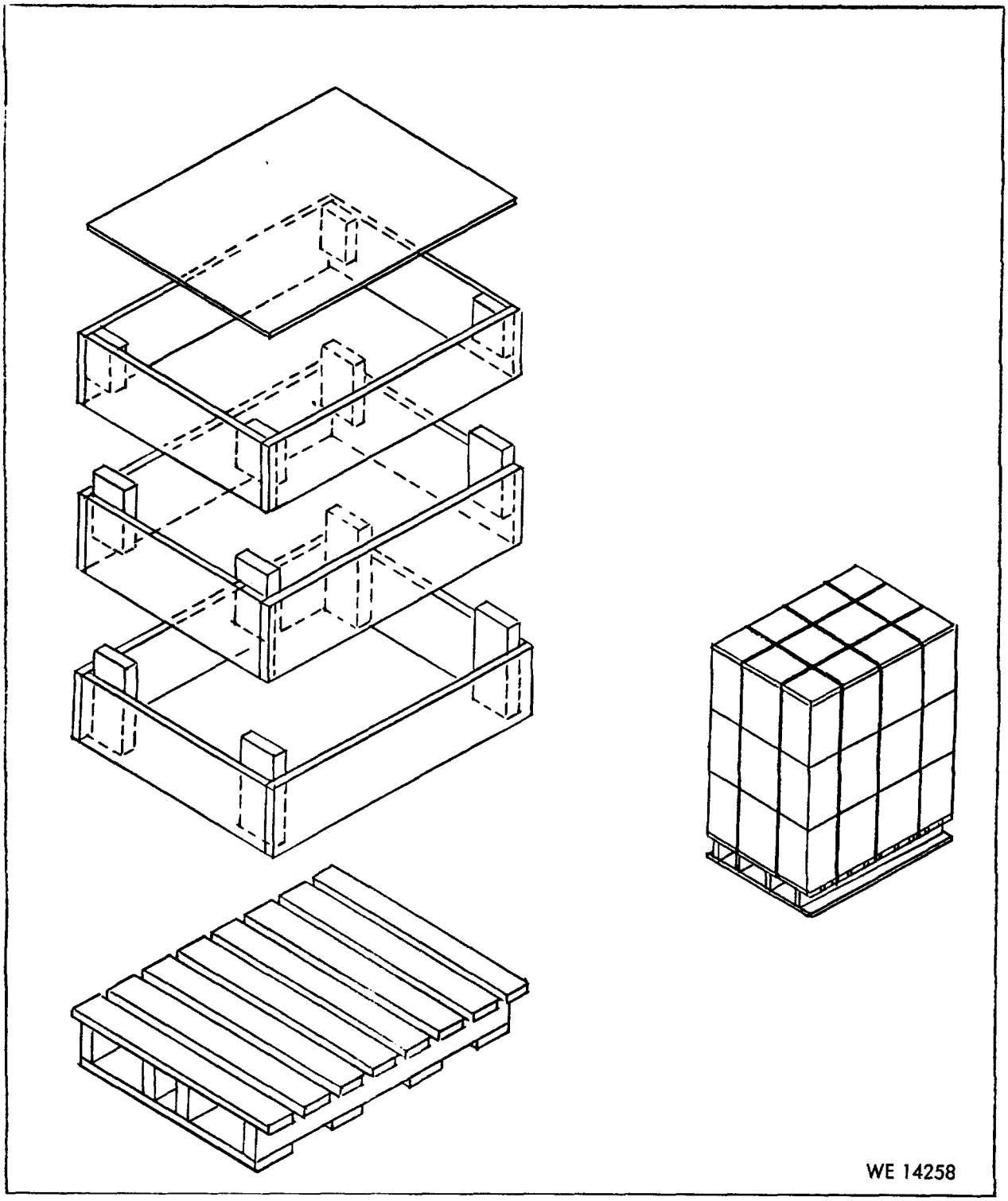

Figure 3. Pallet box.

a. Sections of the metal base frame and like sections of tubing will be bundled together as illustrated in figure 2. The bundled items will be secured together by wire, rope, or tape.

b. Similar splice plates, brackets, and supports will be unitized together by carbonizing or by being secured together with wire, rope, or tape.

c. Hardware items such as nuts and bolts will be unitized by size, by carbonizing, or bagging in a waterproof bag.

d. Nonmetallic components, such as straps, bindings, webbing, and rope will be rolled or coiled and like items unitized in a water resistant fiberboard box.

14. Packing. The unitized closure will be packed in a pallet box as illustrated in figure 3.

a. The pallet box will be constructed from nominal 1- and 2-inch lumber as illustrated. The width of the pallet will not be less than 36 inches and not exceed 48 inches. The height will not exceed 54 inches. The bottom box section will be toe-in nailed to the pallet. The height of the box can be expanded to accommodate increased quantities of closures by adding box sections.

b. The folded covers will be stowed on the bottom of the pallet box with the other components stowed on top. The components will be so arranged to minimize damage and a wooden divider will be placed between the covers and the other components.

c. The box will be secured to the pallet with five 1 1/4- x .035-inch QQ-S-781 flat steel straps. Two of the straps will be positioned over the box, (across the length), under the pallet deck boards, inside the outboard pallet stringers. Three of the straps will be positioned over the box, (across the width), and under the pallet deck, through strapping slots in the stringers. The straps will be evenly spaced on each side of the pallet box and equally tensioned.

15. Marking. The packed closures will be marked in accordance with MILSTD-129.

Section III. GENERAL INSTRUCTIONS PRESERVATION, PACKAGING, PACKING VEHICLE PROTECTIVE CLOSURES

16. Cleaning and Repainting. Components of the closures will be cleaned method C-1 of MIL-P-116. Nonmetallic components will be thoroughly aired and dried before being rolled, folded, or coiled for packing. Originally painted items will be repainted to afford a "good as new" appearance.

17. Preservation. Unpainted surfaces of ferrous components (except washers, nuts, screws, bolts, and pins) will be preserved with grade 4, MIL-C-16173 (P-19) preservative.

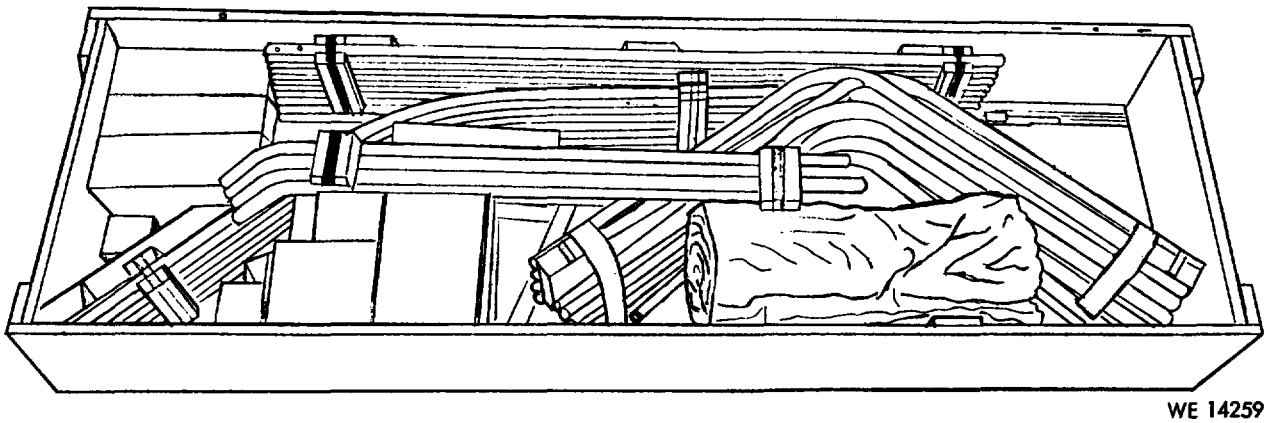

Figure 4. Example of unitized components packed in a shipping container.

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18. Preservation of Hardware. Washers, nuts, screws, bolts, and pins will be preserved by one of the following methods. Preserved like items (same items, same size) will be bagged in type II, class C, MIL-B-117 bags or class 1, IP378 (4 mil) bags. The bags will be heat sealed and the contents identified.

a. Preferred Method of Preservation. Insert a sheet of type I, class 2, style B, MILI--3420 paper into the bag with the items. The size of the sheet of paper will not be less than half the size of the bag.

b. Optional Method of Preservation. Preserve the items with MILI46002 preservative, allow the excess preservative to drain from the items before bagging.

19. Prepacking Unitizing. Sections of the metal base frame and like sections of tubing will be bundled together as illustrated in figure 2, section 2. Like assembly of hardware items such as packaged nuts, screws, and bolts, angle brackets and plates will be unitized together in weather-resistant PPP-B-636 fiberboard boxes. The boxes will be closed with 2-inch wide PPPT-60 tape. The tape will be applied on top and bottom seams and extend 3 inches onto each end panel. The contents will be identified on each box.

20. Packing. The unitized components, including the cover but not including wooden 2- x 4inch base frame sections exceeding 6 feet in length, will be packed in style 2, class 2, PPPB-621 as illustrated in figure 4. Wooden 2- x 4inch base frame sections exceeding 6 feet in length will be bundled together and secured with QQ-S781 flat steel strapping.

21. Marking. The packed closures will be marked in accordance with MIL-STD-129.

By Order of the Secretary of the Army:

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Ord Sec Gen Dep (5)
A Dep (1) except
BHAD (5)
SVAD (5)
SXAD (2)
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SIAD (3)
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NG: State AG (3); units-same as active Army except allowance is one copy.
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For explanation of abbreviations used, see AR 32050.

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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