

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

KIT, SPARK PLUG CLEANING
(ALLEN ELECTRIC AND EQUIPMENT CO.,
MODEL 30-99) (4910-786-9271)

This copy is a reprint which includes current
pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY
JULY 1965

Change }
NO. 1 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 3 October 1972

Operator's Manual
KIT, SPARK PLUG CLEANING
(ALLEN ELECTRIC AND EQUIPMENT CO.,
MODEL 30-99) (4910-786-9271)

This change is current as of 20 September 1972.

TM 9-4910-454-10, 9 July 1965, is changed as follows:
The items in the following table, formerly included as part of the Basic Issue Items List on pages 10 and 11, are now designated as components or parts of the end item configuration. Paragraph 3c. of the appendix provides manufacturers' codes for the items in the table.

Page 8. Appendix, Section II is amended to read as follows:

PART	FSCM/PART NUMBER
ADAPTER: 14-mm	01216:600472
ADAPTER. 18-mm	01216:600473
ADAPTER, SLEEVE CLEANER:	70040:AV17-1
ADAPTER, SPARK PLUG CLEANER: ru,	70040:CL-82

PART	FSCM/PART NUMBER
14-mm size spark plug accommodated. 2-13/16 in. dia of shoulder, 2 in. dia of body, 1/2 in. h of body ADAPTER. SPARK PLUG CLEANER: ru, 18-mm size spark plug accommodated, 2-13/16 in. dia of show, 2 in. dia of body, 1/2 in. h of body CARRYING CASE: CLEANING COMPOUND, INSULATOR SLEEVE: CLEANING COMPOUND, SPARK PLUG: CONVERSION PLUG: COUPLING. PUSH TYPE: NOZZLE: SPARK PLUG RACK: TERMINAL CONNECTOR: VIBRATOR CLEANER	70040 CL-98 01216:A600859 70040:AV7-1 70040:CL3 01216:1661 01216:6006882 01216:600459-1 01216:600704 01216:A600478 01216:A600702

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 9 July 1965

TM 9-4910-454-10 is published for the information and use of all concerned.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-31 requirements for Operator and Crew for All Fixed Wing and All Rotor Wing Aircraft.

U.S. Government Printing Office: 1965-200-501/5212A
823-399

**Section II
BASIC ISSUE ITEMS LIST**

(1) Source maint and recov. Code			(2) Federal stock no.	(3) Description	(4) Unit of Issue	(5) Qty. inc in unit
(a) Source	(b) Maint	(c) Recov.		TOOLS AND EQUIPMENT FOR: KIT, SPARK PLUG CLEANING (4910-786-9271)		
C	O/C	-	NA	BOX: (01216: A60848)	EA	1
C	O/C	-	4910-787-4328	GAGE, GAP SETTING: (700.40AV.	EA	2
C	O/C	-	4910-056-7250	GAP SPACER: (70040: CL-250)	EA	5
C	O/C	-	NA	GAPPING TOOL: (01216: A0600705)	EA	1
C	O/C	-	4910-787-4826	HOLDER, SPARK PLUG: cleaning tool, 2 blade (70040:CL-248)	EA	2
C	O/C	-	6650-256-9058	MAGNIFIER. monocular. 2 cir lens, self illuminated, 2 in. dia, 5 X power, plastic frame, plastic or mtl hdl	EA	1
C	O/C	-	NA	THREAD SEAL: (01216:600769)	EA	2
C	O/C	-	4910-789-0930	TOOL, SLEEVE CLEANER, SPARK PLUG: (70040: CL-241)	EA	6

Federal stock numbers are being assigned for items marked NA and then numbers will be published at a later date.

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
Major General, U.S. Army
The Adjutant General

BRUCE PALMER, JR.
General, U.S. Army
Acting Chief of Staff

Distribution:

To be distributed in accordance with DA Form 12-31 requirements for Operator and Crew for All Fixed and Rotor Wing Aircraft (qty rqr block nr. 93)

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SPECIFICATIONS:

Dimensions:	Height	13 1/4"
	Width	21"
	Depth	13 1/8"
Color:	White	
Compressed Air Requirement:	0-160-PSI	
Electrical Requirement:	115V, 60 Cycle	

Section I

Spark Plug Servicing Instructions

Installation:

1. Position unit on bench for easy Spark Plug cleaning and testing. Three mounting holes provided in base for securing to bench.
2. Attach Air Line (120 to 150 psig) to trap by use of Quick Disconnect Coupling.
3. Plug A. C. Cord in to Power Supply Receptacle (110-120 Volts, 60 cycle). Three wire A. C. cord supplied with unit. If receptacle is two wire, use three wire A. C. adapter supplied with unit, and properly ground third wire.
4. Raise lid, remove rubber plug adapter and pour cleaning compound into blast chamber.

Operation:

1. Select rubber spark plug adapter to fit spark plug being cleaned. Hold in place over blast chamber by use of retaining ring.
2. Place 14 mm or short reach 18 mm spark plugs in adapter to gasket seat. Long reach 18 mm spark plugs insert approx 1/2 of total thread length.

Note:

Spark plugs should be cleaned and free from all oil, grease, and cleaning fluids for best cleaning results.

3. Hold spark plug with one hand and rotate terminal end in circular motion approximately one inch in diameter and push "sand" button with other hand for about five seconds.
4. Using same circular motion, push "Air" button for about five seconds to clear clinging particles of compound from spark plug.
5. Using inspection light, inspect firing end of spark plug. If spark plug has heavy combustion or lead deposits, set aside for cleaning on vibrator unit. (See cleaning instruction on Vibrator Unit.)
6. If slight or no deposits are noted but plug is not cleaned satisfactorily, a second, or a max. of three cleanings can be used.
7. Inspect terminal end of spark plug. If cleaning is necessary, refer to instructions on Insulation Cleaning Tool.

Maintenance:

1. Use recommended cleaning compound conforming to type III-MIL-C-744B.
2. Compound should be changed after approx. 300 spark plugs have been cleaned. Replace spark plug adapters and nozzle when necessary.
3. Drain moisture trap in air supply line daily to avoid an accumulation of water. Cleaning efficiency will be reduced with damp compound.

Section II

Vibrator Cleaner Instructions

Installation:

1. Position unit on bench.
2. Place a cleaning tool in arm, and plug A.C. Cord into power supply receptacle (110-120 Volts, 60 cycle), use A. C. Adapter if necessary.
3. A dust collector or an exhaust duct should be used under vibrating tool when in use to carry away dust and particles from spark plugs with heavy combustion or lead deposits. (Dust is very toxic.)

Operation:

Only Spark Plugs with Heavy Combustion or Lead Deposits, and Free From Grease, Oil, should be cleaned on vibrator cleaner.

1. Hold spark plug so both cleaning tool tips enter into cavity at firing end.
2. Hold spark plug against the cleaning tool with one hand, with other hand depress push button on top of unit.
3. With a semirotating motion work spark plug against the vibrating tool. This action will break up and loosen the heavy deposits.
4. Each spark plug should be cleaned on blast cleaner after the above has been performed.

Section III

Insulator Cleaning Tool

Instruction:

1. Apply a small quantity of cleaning compound into terminal end of spark plug.
2. Insert rotating cleaning tool into terminal end of spark plug until it bottoms on contact. Run cleaning tool in and out of plug (approx. 3/8" stroke) five or six times.
3. Inspect internal surface of insulating sleeve. If clean, rinse out with warm water (120° to 150° F). Reject spark plug if insulating sleeve is cracked or chipped.
4. Dry insulating sleeve by air blast or by placing spark plug in holding tray with terminal end down and placing tray in oven for 30 minutes at 225° F.

Section IV

Gap Setting Tool Instructions

1. Fasten gap setting tool in a convenient position on the work bench.
2. Use floating bushing in gapping tool for gapping 14 mm spark plugs. Insert loose bushing into floating bushing for gapping 18 mm spark plugs.
3. Insert spark plug firing end into tool bushing so protruding jaws enter firing end cavity.
4. Place gap size spacer between center electrode and ground electrode. Push button on top of gap setting tool so both ground electrodes are squeezing the spacer gauge against the center electrode.
5. Remove gapped spark plug from gap setting tool and install next spark plug. Repeat above operation.

Section V

ELECTRICAL TESTING INSTRUCTIONS

CAUTION

HI-TENSION CABLE HAS HIGH VOLTAGE WHEN H. T. BUTTON IS DEPRESSED.

1. Select two spark plug adapters to fit the spark plugs being tested, 14 or 18 mm, and screw into compression chamber.
2. Screw spark plug, less gaskets, finger tight into each chamber. For best results, a slight air leak is necessary.

Note:

All spark plugs should be cleaned and gapped to manufacturer's specifications.

3. Insert terminal connector into spark plug terminal end (shielded aircraft type).
4. Place H.T. wire clip on terminal connector in spark plug.
5. Push H.T. voltage button and slowly turn pressure valve.
6. Observe spark plug firing in mirror located under spark plugs while air pressure is increased in compression chamber.
 - A. Spark shall be bright and continuous throughout increase of pressure from 115 to 135 psig. (Occasional sparking may be noted at terminal end under high pressures.)
 - B. If plug stops firing during increase of pressure from 20 to 90 psig, check terminal and contact ends of plug for chipped or cracked insulators and overall cleanliness. If insulator is chipped or cracked, reject plug. If dirty, clean and retest. If plug fails second test, reject it.

7. Place terminal connector in other spark plug and connect H. T. wire clip. Repeat above steps starting with No. 4.
8. Release H. T. voltage button, close air valve, and remove spark plugs from unit.
9. The next two spark plugs are now ready to test. Install and repeat above procedures.

Note

To remove dirt and dust from compression chamber, turn on air valve with spark plug removed.

SECTION VI

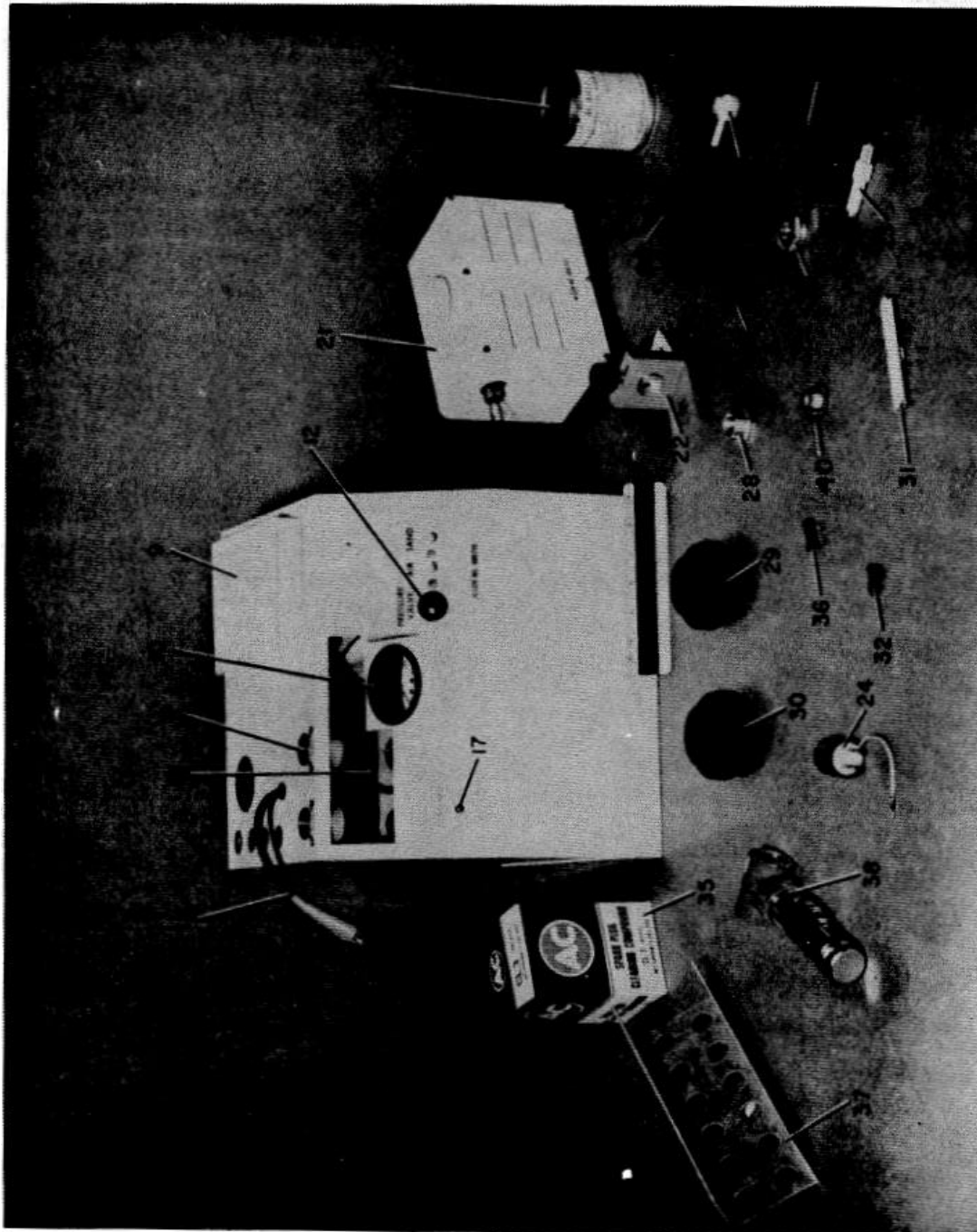
SPARK PLUG CLEANING & TESTING UNIT

(Fine Wire)

FSN 4910-786-9271

ALLEN MODEL No. 30-99

Figure 1



SECTION VI

SPARK PLUG CLEANING & TESTING UNIT

(Fine Wire)

FSN 4910-786-9271

ALLEN MODEL No. 30-99

PARTS LIST

1.	Carrying Case			A600859
2.	Box			A600848
3.	Spark Plug Cleaning & Testing Unit			A600710
4.	Air Jet			600470
5.	Bag			600454
6.	Clamp	(2)		600455
7.	Case - Screened			A600444
8.	Compression Chamber			A600911
9.	Cover			A600446
10.	Gauge			600447
11.	H.T. Lead			A600453
12.	Knob			16853
13.	Mirror			600448
14.	Mixer Assy.			A600874
15.	Nozzle	(18)		600459-1
16.	Retainer			600450-1
17.	Switch P.B.			18058
18.	Transformer			600451
19.	Trap			600452-1
20.	Valve			600700

LOOSE PARTS & ACCESSORIES

21.	Vibrator Cleaner			A600702
22.	Gapping Tool			A600705
23.	Terminal Connector			A600478
24.	Conversion Plug			16061
25.	Cleaning Tool Part	AC CL-241	(6)	600442
26.	Nozzle		(18)	600459-1
27.	Adapter - 14MM		(2)	600472
28.	Adapter - 18MM		(2)	600473
29.	Adapter - 14MM (Rubber)	AC CL-82	(2)	600475
30.	Adapter - 18MM (Rubber)	AC CL-98	(2)	600476
31.	Feeler Gauge	AC AV14-1	(2)	600477
32.	Spacer Gauge	AC CL-250	(5)	600479
33.	Cleaning Tool Assy.	AC AV17-1		600480
34.	Insulator Cleaner	AC AV7-1		600481
35.	Cleaning Compound	AC CL-3	(6 Boxes)	600482
36.	Cleaning Tool	AC CL-248	(2)	600483
37.	Spark Plug Rack			600704
38.	Inspection Light	AC AV24-1		600706
39.	Thread Seal		(2)	600769
40.	Coupling - Push Type			600882
41.	Instruction Manual		(2)	25377

APPENDIX

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix is a list of basic issue items. It is composed of those items which make up the major end item of equipment and the operator's tools and equipment that are issued with the equipment and are required for stockage.

2. Requisitioning a Part to Which FSN Has Not Been Assigned

When requisitioning a C source (local procurement) item identified only by a manufacturer's part number, it is mandatory that the following information be furnished the supply officer:

a. Manufacturer's code number (5 digit No. preceding the colon in the descriptive colm).

b. Manufacturer's part number (the No., and sometimes letters, following the colon, a above). Dashes, commas, or other marks must be included exactly as listed.

c. Nomenclature exactly as listed herein, including dimensions if necessary.

d. Name of manufacturer of end item (from cover of TM or manufacturer's nameplate).

e. Federal stock number of end item (from TM).

f. Manufacturer's model number (from TM or name/data plate, preferably name/data plate).

g. Manufacturer's serial number (from name/data plate).

h. Any other information such as type, frame number, and electrical characteristics, if applicable.

i. If DD Form 1348 (DOD Single Line Items Requisition System Document (Manual)) is used, fill in all blocks except 4, 5, 6, and Remarks field, in accordance with AR 725-50.

Complete form as follows:

- (1) In blocks 4, 5, and 6, list the manufacturer's code, and manufacturer's part number (as listed in description colm).
- (2) In Remarks field, list noun name (repair part), end item application (FSN of end item), manufacturer, model number (end item), serial number (end item), and any other pertinent information such as frame number, type, etc.

3. Explanation of Columns

a. Source, Maintenance, and Recoverability Code (colm 1).

- (1) Materiel numerical codes (col 1a). This column not required.
- (2) Source (colm 1b). This column indicates the selection status and source for the listed item. Source code used in this list is

<i>Code</i>	<i>Explanation</i>
C.....	Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

- (3) Maintenance level (colm 1c). This column indicates the category of maintenance authorized to install the listed item. Maintenance level code used in this list is-

<i>Code</i>	<i>Explanation</i>
O/C	Operator or crew maintenance

(4) *Recoverability* (colm 1d). This column indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recoverability code used in this list is-

<i>Code</i>	<i>Explanation</i>
R	Items which are economically repairable at direct and general support maintenance activities and normally are furnished by supply on an exchange basis.

b. Federal Stock Number (colm 2). Self explanatory.

c. Description (colm 3). The following manufacturer's codes are included in this column.

<i>Code</i>	<i>Explanation</i>
01216.....	Allen Electric and Equipment Co., Kalamazoo, Mich.

70040.....	AC Spark Plug Division of General Motors Corp., Flint, Mich.
------------	--

d. Unit of Issue (colm 4), *Quantity Authorized* (colm 5), and *Illustration* (colm 6). Self-explanatory.

4. Abbreviations

<i>Abbreviation</i>	<i>Explanation</i>
cir.....	circular
h	high, height
hdl.....	handle(d) (s)
mm	millimeter(s)
mtl	metal
ru	rubber

5. Errors, Comments, and/or Suggestions

Reports by the individual user, or errors, comments, and suggestions are encouraged. They should be reported on DA Form 2028 (Recommended Changes to DA Publications) and forwarded directly to Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-SMM-P, Rock Island Arsenal, Rock Island, Ill. 61202.

Section II. BASIC ISSUE ITEMS

(1) Source, maintenance, and recoverability code		(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity authorized	(6) Illustration	
						(a) Figure No.	(b) Item No.
			<p>MAJOR COMBINATION</p> <p>The following item is to be requisitioned for initial issue only.</p> <p>KIT, SPARK PLUG CLEANING: (01216:30-99)</p> <p>COMPONENTS OF MAJOR COMBINATION</p> <p>None authorized</p> <p>REPAIR PARTS</p> <p>NOZZLE:(01216:600459-1)</p> <p>TOOLS AND EQUIPMENT FOR: KIT, SPARK PLUG CLEANING: (01216 :30-99)</p> <p>ADAPTER: 14-mm (01216:600472)</p> <p>ADAPTER: 18-mm (01216:600473)</p> <p>ADAPTER, SLEEVE CLEANER: (70040:AV17-1)</p> <p>ADAPTER, SPARK PLUG CLEANER: ru, 14mm size spark plug accommodated, 2 13/16 in. dia of shoulder, 2 in. dia of body, 1/2 in. h of body (70040:CL-82).</p> <p>ADAPTER, SPARK PLUG CLEANER: ru, 18mm size spark plug accommodated, 2 13/16 in. dia of shoulder, 2 in. dia of body, 1/2 in. h of body (70040:CL-98).</p> <p>BOX: (01216:A600848)</p> <p>CARRYING CASE: (01216:A600859) -</p> <p>CLEANING COMPOUND, INSULATOR SLEEVE: (70040:AV7-1).</p> <p>CLEANING COMPOUND, SPARK PLUG: (70040:CL3).</p> <p>CONVERSION PLUG: (01216:16061)</p> <p>COUPLING, PUSH TYPE: (01216:600882)</p> <p>GAGE, GAP SETTING: (70040:AV14-1)</p> <p>GAP SPACER: (70040:CL-250)</p> <p>GAPPING TOOL: (01216:A600705)</p>	ea	18	1	26
C	O/C	4910-786-9271		ea	2	1	27
C	O/C			ea	2	1	28
C	O/C	4910-787-4329		ea	1	1	33
C	O/C	4910-356-8768		ea	2	1	29
C	O/C	4910-356-8769		ea	2	1	30
C	O/C			ea	1		
C	O/C			ea	1		
C	O/C	4910-787-4333		ea	1	1	34
C	O/C	4910-7874330		ea	6	1	35
C	O/C			ea	1	1	24
C	O/C			ea	1	1	40
C	O/C	4910-787-4328		ea	2	1	31
C	O/C	4910-056-7250		ea	5	1	32
C	O/C			ea	1	1	22

Section II. BASIC ISSUE ITEMS

(1) Source, maintenance, and recoverability code		(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity authorized	(6) Illustration	
						(a) Figure No.	(b) Item No.
(a)	(b)	(c)	(d)				
	C	O/C		ea	2	1	36
	C	O/C		ea	1	1	38
	C	O/C		ea	1	1	37
	C	O/C		ea	1	1	23
	C	O/C		ea	2	1	39
	C	O/C		ea	6	1	25
	C	O/C		ea	1	1	21

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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 decigrams = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 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

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
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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