DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

LOAD-TESTING VEHICLES USED TO HANDLE MISSILES AND ROCKETS MEDIUM WRECKER M62, MEDIUM WRECKER TRUCK M543 SERIES, AND M816; AND WRECKER-TRUCK TRACTOR M246 SERIES, AND M819

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

1 *September 1978*

Section I. INTRODUCTION

1. Scope.

This bulletin tells how to prepare test weights and load-test the vehicles listed in the title. These instructions apply only to the vehicles when they are used to handle missiles and rockets and are in addition to the regular service and inspections prescribed in the vehicle technical manuals.

2. Requirements for Load-Testing.

Load-testing these vehicles is *necessary to* aid in detecting defects in the crane mechanisms. When the vehicles are assigned as handling equipment for missiles and rockets, they will be tested annually and retested whenever modifications or repairs are made that could affect the strength or lifting capabilities of the vehicles. Tests are to be performed by or under the supervision **of** qualified maintenance personnel.

Section II. PROCEDURES

3. Test Weights.

Weights of 4,000 pounds and 10,000 pounds **are** required. Five 2,000-pound weights can be made as shown in figure 1 and can be used in combina- tions to provide the required poundage. **The** weight of the concrete is figured at 148 pounds per **cubic** foot of gravel concrete. TM 5-615 gives detailed instructions on mixing concrete. Mark each weight plainly to indicate its weight.

● 'This bulletin supercedes TB 9-352, 4 May 1972.
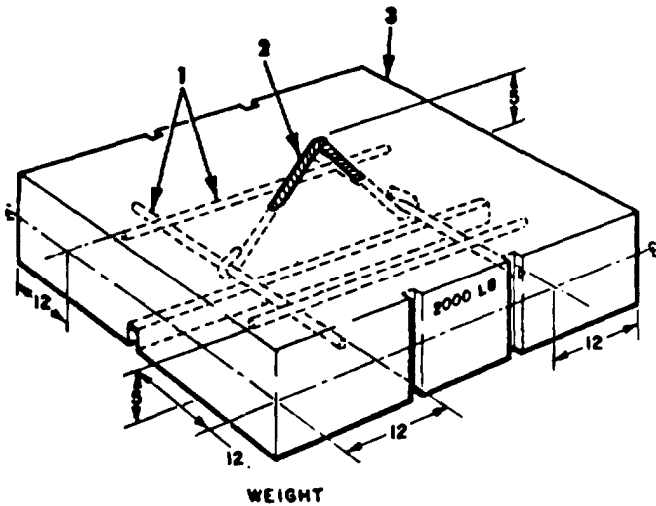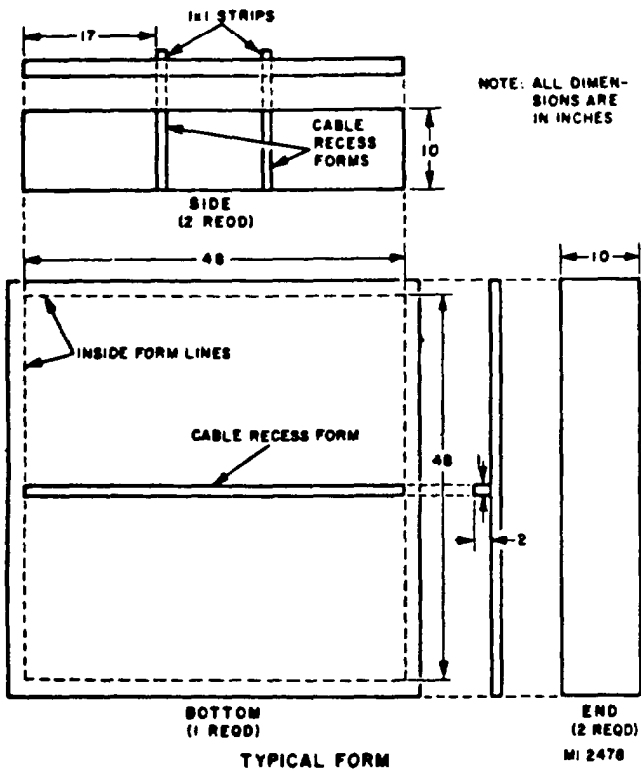
1. 5/8-inch round steel bar
2. 5/8-inch wire rope
3. Concrete mass

Figure1. Test-weight fabrication details

When loads are applied to the boom cable, all personnel other than the operator must retire to a safe distance.

Use only wire rope of sufficient strength for the weight to be lifted.

CAUTION

When handling the test weights and performing load-tests, do not exceed the maximum weights for the various boom radii specified on the safe-load data plates located on the cover of the control-valve bank in the operator's compartment.

4. **Combining Fabricated Test Weights.**

a. Place a test weight over a loop of 5/8 wire rope so that the wire rope will lie in the cable recesses (fig. 1) on the sides of the weight when the weight is lifted.

b. Place a second weight on the first, alining the cable recess in the bottom of the second weight with the lift cable of the firstweight.Also aline the side cable recesses.

c. Pass the wrecker hook through the wire-rope loop, and lift until the loop is tense. This forms the 4,000-pound test weight.

d. A 10,000-pound test weight is formed by stacking five weights in the manner described above.

5. **Load-Testing M62, M543, M543A1, M543A2, and M816.**

a. 4,000-Pound *Test.* With the outriggers down, test with a two-part line as follows:

(1) Attach a 4,000-pound test weight to the wrecker hook.

(2) With full extension and minimum elevation of the **boom** for an 18-foot radius, raise the test weight 2 feet by raising the cable hook.

(3) Traverse the boom left until the swing-stop is reached; traverse the boom right until the swing-stop is reached; then return the boom to it original position.

(4) Repeat (3) above but in the opposite direction, traversing right first. Then return the test weight to its original position on the ground.

(5) Repcat the cycle (2), (3), and(4) above for 10 minutes with a rest period of 30 seconds after each cycle.

b. 10,000-Pound Test.

(1) Prepare the vehicle by setting the outriggers in place and extending the boom to a 10-foot minimum lifting radius.

(2) Connect the wrecker hook to a 10,000-pound load. By actuating the lifting cylinders (boom control), raise the load to a height **of** at least 15 inches.

(3) Stabilize the load at this height and then hold it with the power-divider lever engaged. The maximum allowable drift-of-load (rate of descent) is 1/2-inch per minute for a total of not more than 3 inches in 6 minutes.

(4) Repeat (3) above with the power-divider lever disengaged. The allowable drift-of-load is the same.

6. Load-Testing the M246, M246A1, M246A2, and M819.

a. 4,000-Pound *Test.* With the outriggers extended, and with full extension and minimum elevation of the boom for a 26-foot radius, perform the steps in paragraph 5a(1) through (5).

b. 10,000-Pound Test. With the outriggers in place and the boom extended to a 10-foot minimum lifting radius, perform the steps in paragraph *5b(l)* through (4).

7. Final Inspection.

a. Upon completion of the load test, perform a thorough inspection of the crane mechanism for the following defects:

(1) Twisted, bent, and cracked frame members.

(2) Damaged bolts and pins.

(3) Frayed cable.

b. Equipment having defects noted in a above will be repaired or replaced in accordance with TM 9-2320-211 series.

8. Recording the Load-Test.

After satisfactory completion of the load test. mark the vehicle as follows:

a. Stencil the next load-test due date on the right side of the boom shipper, using l/2-inch letters as shown in figure 2.

b. The stencil markings will be the same color as the vehicle markings. If the vehicle is unmarked, the stencil marking colors will be as follows:

Color of vehicle	Color of marking
Olive drab	Chrome yellow
Marine Corps green	Chrome yellow
Strata blue	Chrome yellow
Navy gray	Black
Chrome yellow	Black

1. Shipper
2. Boom
3. Cab

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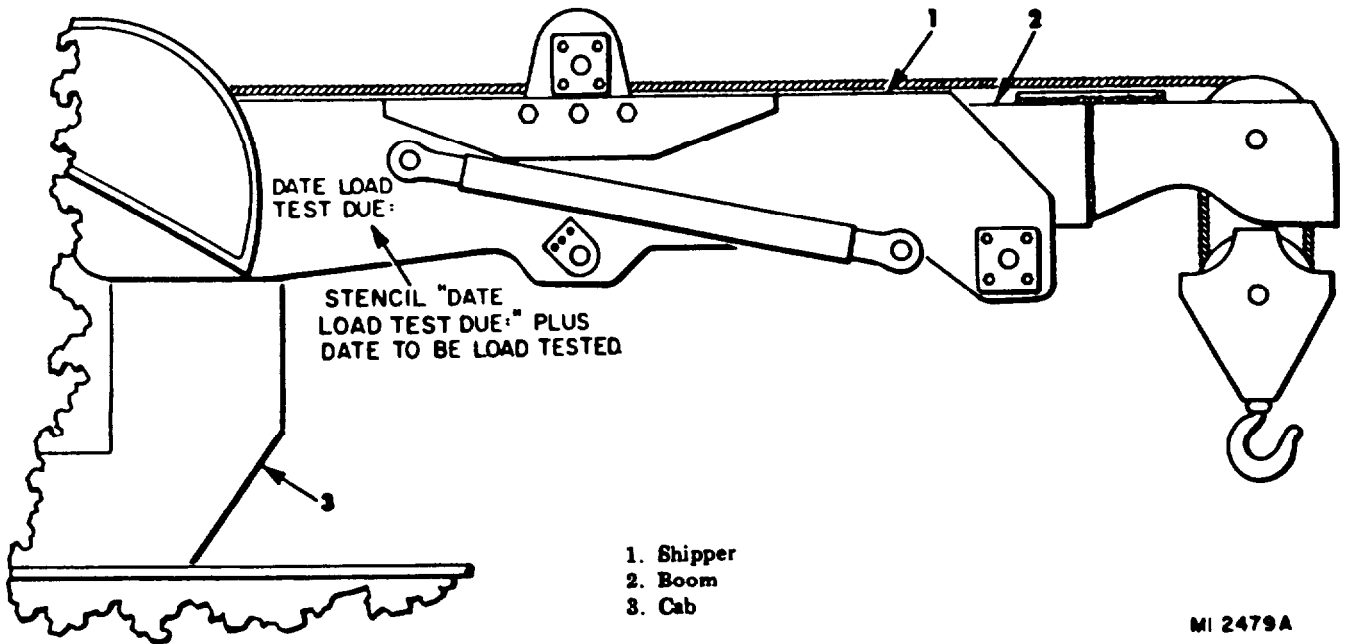
Figure 2. *Vehicle marking.*

By Order of the Secretary of the Army:

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Chief of Staff

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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 milliters = .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