

**TECHNICAL MANUAL**

**TRANSPORTABILITY GUIDANCE**

**TRANSPORT OF CATERPILLAR, MODEL  
D8K-8S-8 TRACTOR, WITH RIPPER OR  
WINCH ON M870, 40-TON, LOWBED  
SEMITRAILER USING THE M920  
TRUCK TRACTOR**

Technical Manual }  
 No. 55-2410-234-14 }

HEADQUARTERS  
 DEPARTMENT OF THE ARMY  
 Washington, DC, 10 August 1984

**TRANSPORTABILITY GUIDANCE  
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**1. Purpose and Scope**

This manual provides transportability guidance for movement, by highway mode only, of the Army D8K-8S-8 tractor on the M870 trailer. The text prescribes procedures and materials for the loading and tiedown of the D8K tractor.

**2. Description**

The model D8K-8S-8 is a full tracked, low-speed, drawbar pull tractor. It is powered by a four-stroke cycle, six-cylinder, diesel engine, Model D342. The planetary-type power shift is 21 inches (530 mm) in diameter and has high-torque-capacity oil clutches. A special valve permits unrestricted speed and direction changes under full load. Hydraulically actuated, multiple-disc oil clutches require no adjustments. The tractor is capable of performing all types of construction work including ripping, ditching and dozing.

**3. Sectionalization**

a. The overall height can be reduced from 134.25 inches (3.41 m) to 106 inches (2.69 m) by removing the exhaust stack and rollover protection system (ROPS).

b. With the D8K tractor on the M870 trailer, the total height from the ground to the top of the ROPS is 177.25 inches and from the top of the ROPS to the bottom of the trailer main frame is 164 inches. This height exceeds the vertical clearance of many bridges. Preplanned and selective routing is required.

**4. Item Characteristics and Related Data**

Data are based on item in unloaded condition plus fuel.

National Stock Number ....2410-00-574-7598  
 Line Item Number .....W88699

**Dimensions:**

Length .....321.0 in. (5.10 m)  
 Width.....156.0 in. (3.96 m)  
 Height.....134.3 in. (3.41 m)  
 Reduced height.....106.0 in. (2.69 m)  
 Weight (operational) ..... 86,422 lb (37 201 kg)

**Shipping Data:**

**Operational:**

Volume .....3891.9 ft<sup>3</sup> (110.2 m<sup>3</sup>)  
 Area.....347.8 ft<sup>2</sup> (32.3 m<sup>2</sup>)

**Reduced:**

Volume .....1458.6 ft<sup>3</sup> (41.3 m<sup>3</sup>)  
 Area.....165 ft<sup>2</sup> (15.3 m<sup>2</sup>)

**5. Preparation and Loading**

*a. Materials.*

(1) Four chain assemblies. Each assembly consists of two, 120-inch-long, 1/2-inch-diameter chains with hooks on each end (breaking strength, 45,000 pounds). (This type of chain is shown in the February 1983 General Catalog of The Crosby Group Inc., PO Box 3128, Tulsa, Oklahoma 74101; or, in the catalog of McMaster-Carr Supply Company, PO Box 4355, Chicago, Illinois 60683).

(2) Four load binders. Each binder is 1/2-inch in diameter (breaking strength, 45,000 pounds).

*b. Procedures.*

(1) Extend the outriggers and use extra timbers to raise the outrigger floor level with the trailer floor.

(2) With the M870 trailer gooseneck extended flat, drive the D8K tractor onto the M870 trailer as shown in figure 1. Park and brake the D8K tractor near the trailer's rear axles to keep the heavy load off the front of the trailer and trucktractor winch cable. Raise the M870 trailer gooseneck to the travel position and connect the semitrailer to the M920 truck tractor as shown in figure 2. Check contact between the outrigger plank

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and D8K tractor tracks. If there is no contact, correct.

*Figure 1. D8K tractor driven onto the semitrailer, gooseneck extended.*

*Figure 2. M870 trailer being connected to the M920 truck tractor.*

(3) Position the D8K tractor so that the center of the fourth roller (fig 3) is located 122 inches from the intersection of the gooseneck and the trailer deck, as shown in figure 4. Lower the ripper shank from the extreme up position until it contacts the trailer gooseneck.

*Figure 3. D8K tractor center-of-balance location (fourth roller).*

*Figure 4. Position of D8K tractor on the M870 semitrailer.*

(4) For the D8K tractor equipped with a winch, back the tractor until the bulldozer rests over the middle trailer axle, as shown in figure 5.

*Figure 5. D8K tractor (with winch) positioned on M870 trailer with bulldozer over the trailer's middle axle.*

(5) Apply tiedowns as shown in figure 6 and detailed below.

*Figure 6. D8K tractor positioned and tied down on the M870 trailer.*

(6) Connect all chains in complete loops to create double the breaking strength of the assemblies. Pass the two chain assemblies at the rear of the D8K around the top ripper pin, through the lower gooseneck fold gap in the trailer, and under the side chassis frame member. Then loop them through the number one tiedown ring. This threading is shown in figure 6.

(7) Pass the two chain assemblies at the front of the D8K around the tow hook and the trailer chassis member located between the two forward rear tires. This threading is shown in figure 6.

(8) When tying down a winch-equipped D8K, attach two tiedowns to the rear clevis on the winch; pass them through the lower gooseneck fold gap in the trailer and under the side chassis frame member; then loop them through the number one tiedown ring.

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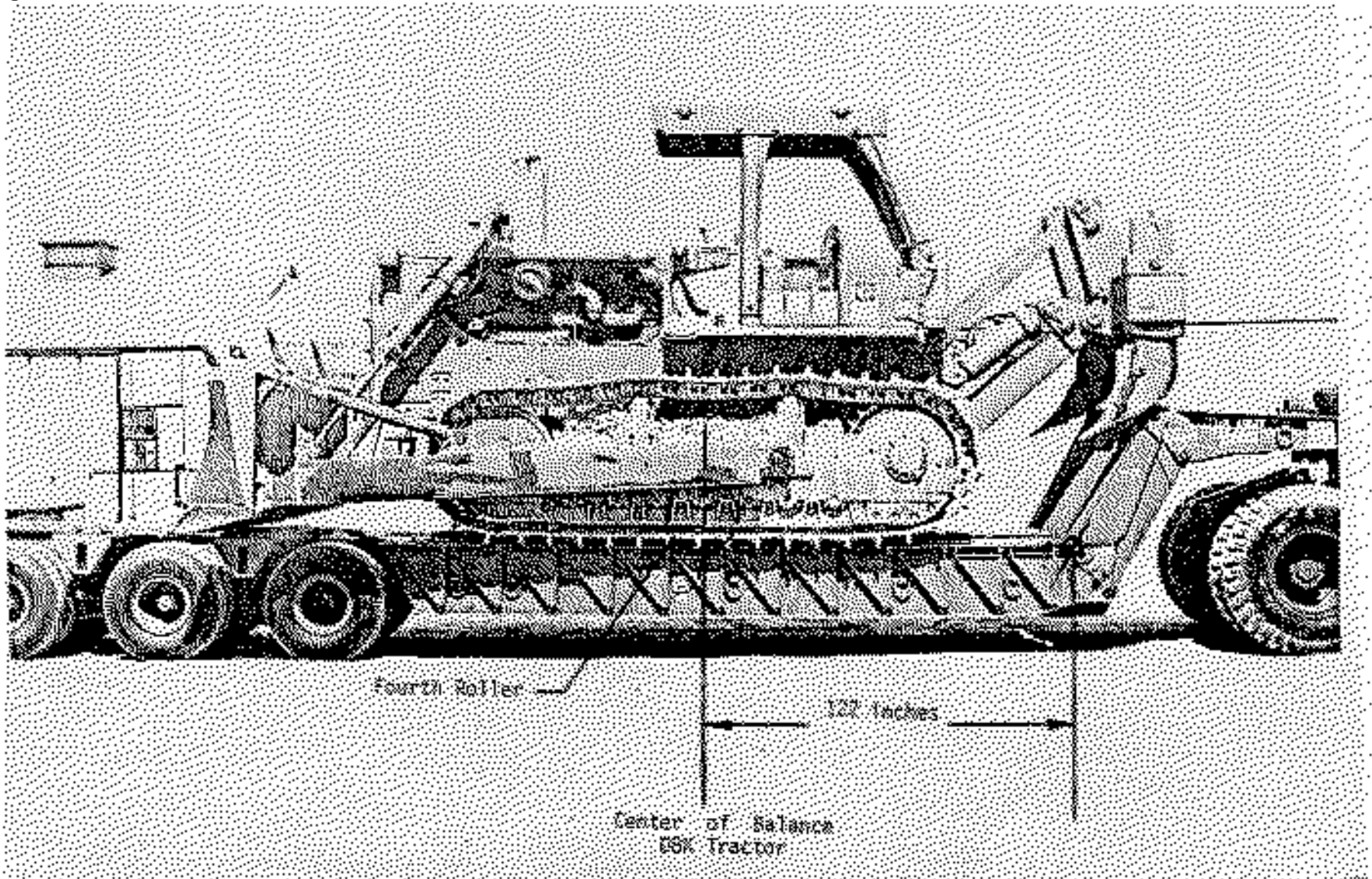


Figure 1. D8K tractor driven onto the semitrailer, gooseneck extended.

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Figure 2. M870 trailer being connected to the M920 truck tractor.

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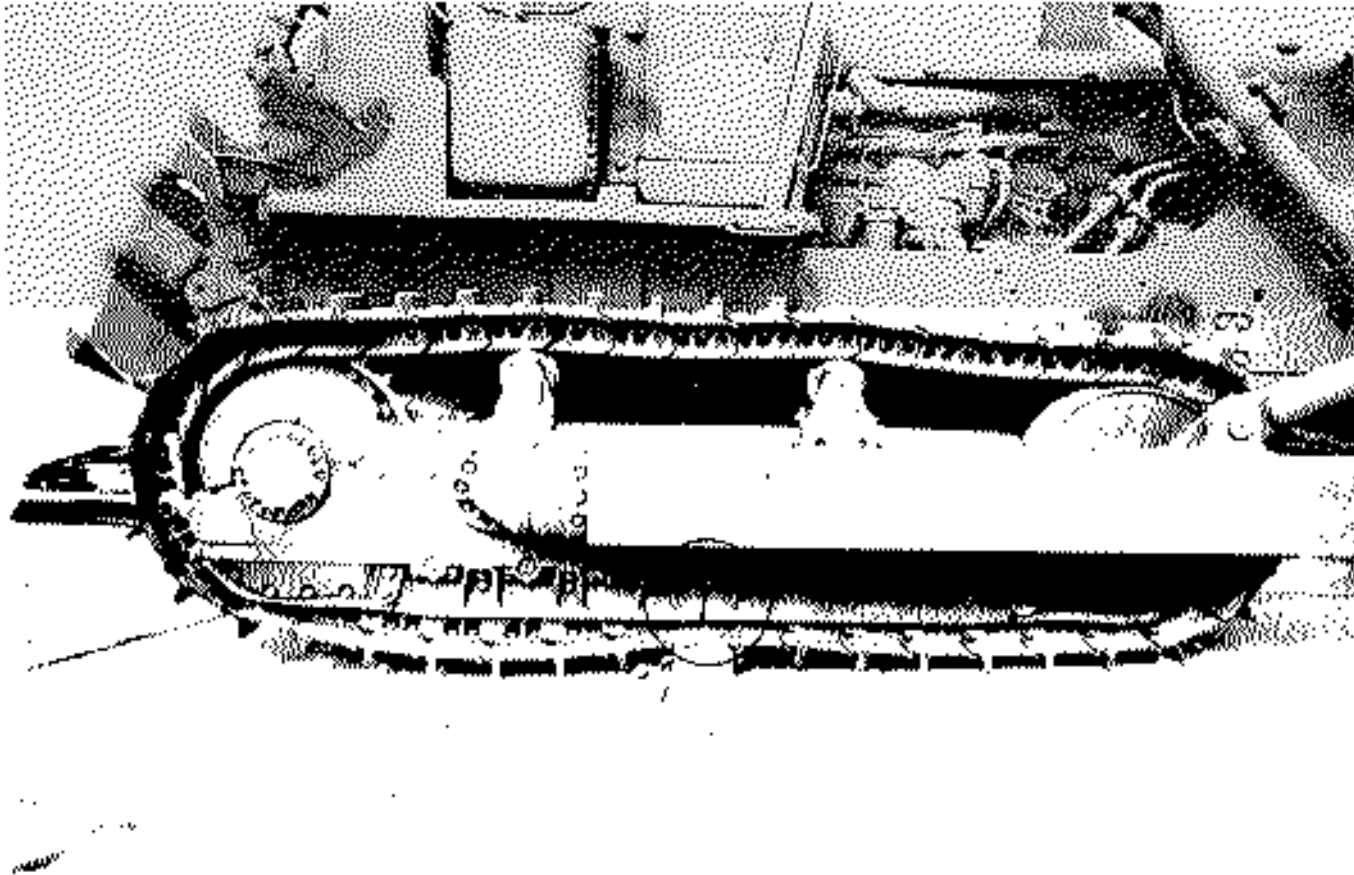


Figure 3. D8K tractor center-of-balance location (fourth roller).

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Figure 4. Position of D8K tractor on the M870 semitrailer.

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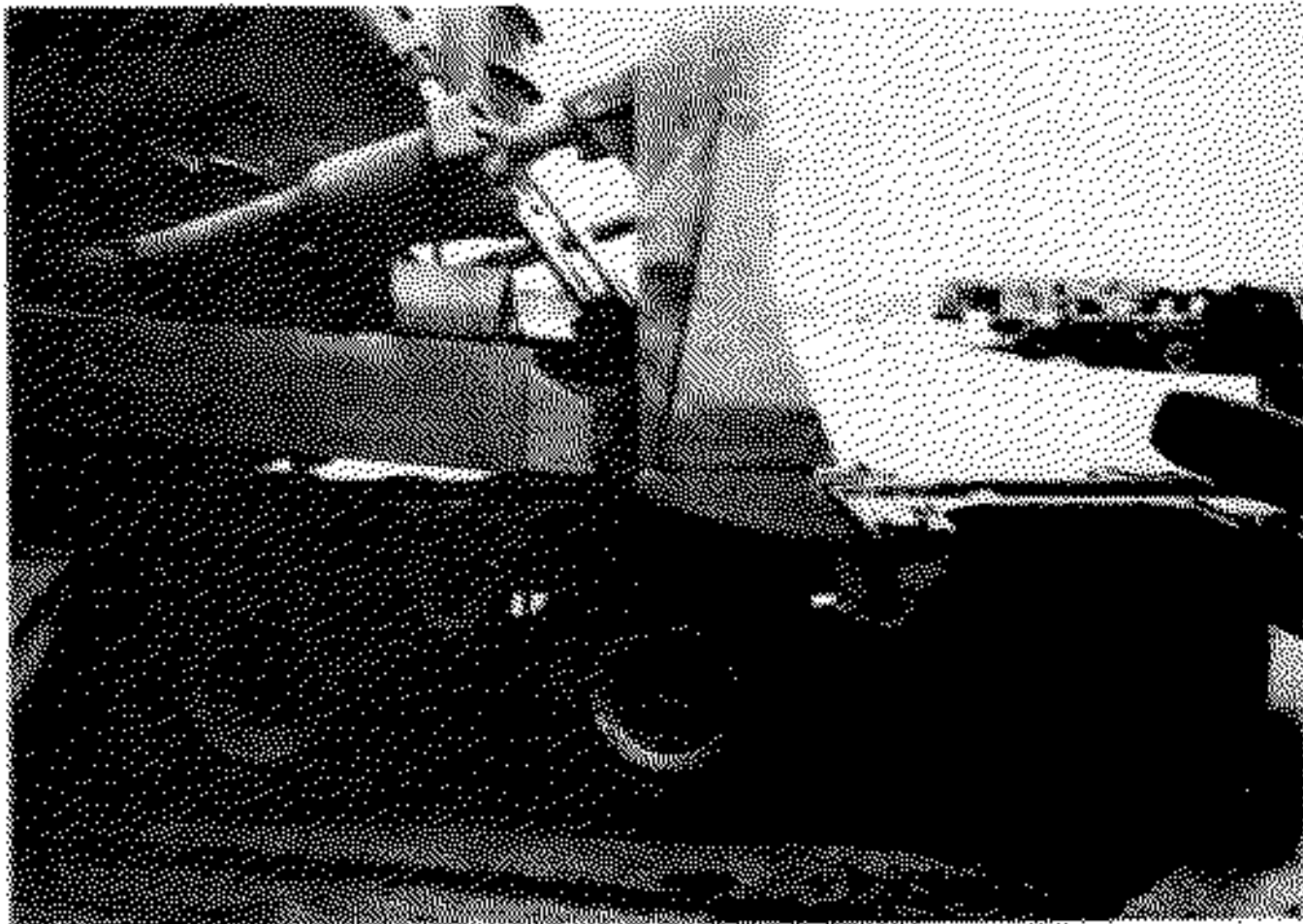
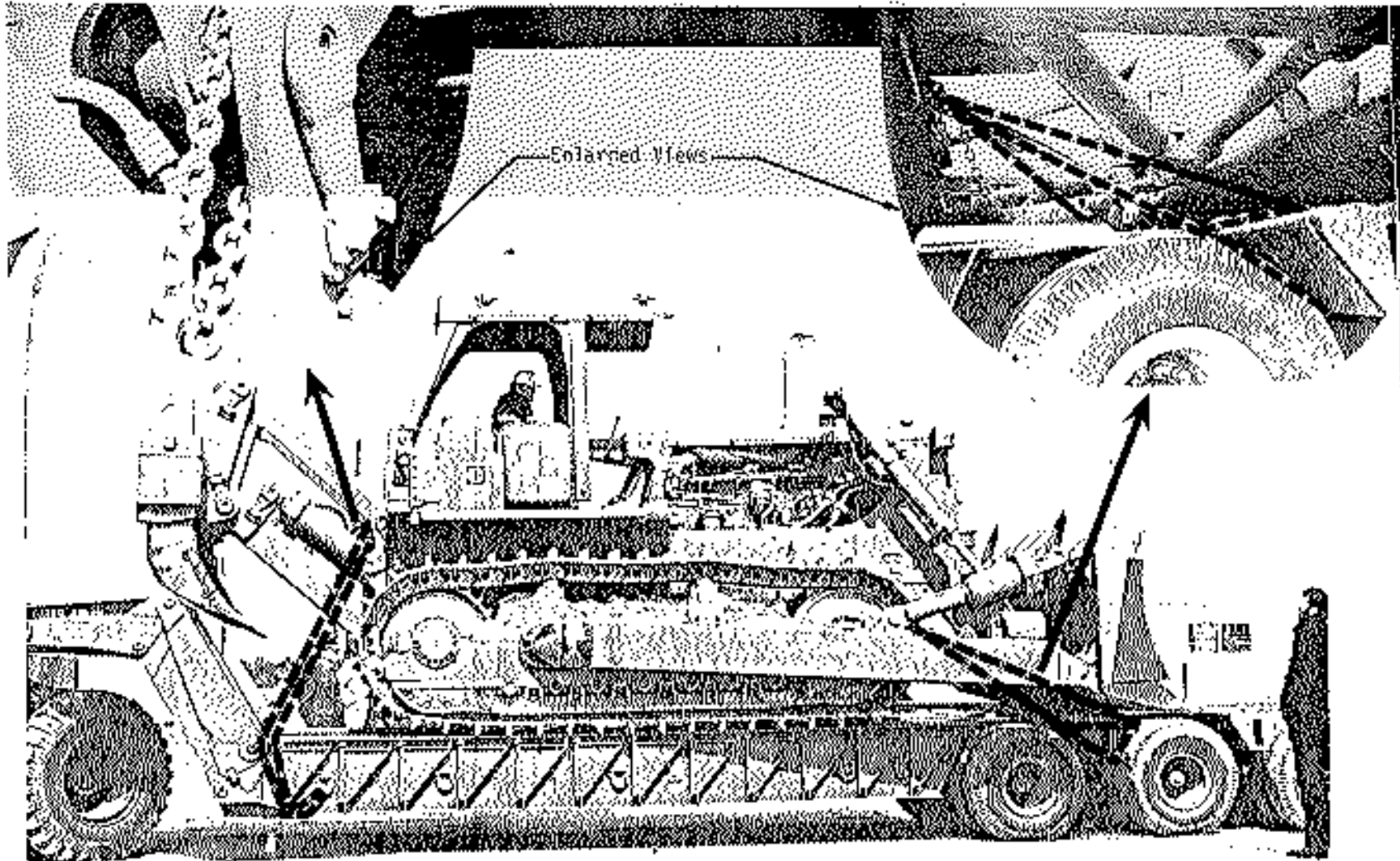


Figure 5. D8K tractor (with winch) positioned on M870 trailer with bulldozer over the trailer middle axle.





--- Decotes 1/2-inch diameter chain in a complete loop.

Figure 6. D8K tractor positioned and tied down on the M870 trailer.

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By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.  
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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 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

## Cubic Measure

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

## Square measure

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

## Liquid Measure

1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 metric ton = 10 quintals = 1.1 short tons

## Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce inches	newton-meters	.0070062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
sq. inches	sq. centimeters	6.451	kilometers	miles	.621
sq. feet	sq. meters	.093	sq. centimeters	sq. inches	.155
sq. yards	sq. meters	.836	sq. meters	sq. yards	10.764
sq. miles	sq. kilometers	2.590	sq. kilometers	sq. miles	1.196
acres	sq. hectometers	.405	sq. hectometers	acres	2.471
cubic feet	cubic meters	.028	cubic meters	cubic feet	35.315
cubic yards	cubic meters	.765	milliliters	fluid ounces	.034
fluid ounces	milliliters	29.573	liters	pints	2.113
pints	liters	.472	liters	quarts	1.057
quarts	liters	.946	grams	ounces	.035
gallons	liters	3.785	kilograms	pounds	2.205
ounces	grams	28.349	metric tons	short tons	1.102
pounds	kilograms	.454	pound-feet	newton-meters	1.356
short tons	metric tons	.907			
pound inches	newton-meters	.11296			

## Temperature (Exact)

°F Fahrenheit temperature

5/9 ( after subtracting 32)

Celsius Temperature °C

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