

## CHAPTER 19

### SUITABLE SINGLE-POINT RIGGING PROCEDURES FOR LIQUID CONTAINERS

#### 19-1. Introduction

This chapter contains rigging procedures for single-point lift of liquid containers that are suitable for sling load. Each rigging procedure is found in a paragraph that includes a description of the load, materials required for rigging, and steps to complete the procedure. An applicability paragraph is also a part of each paragraph and identifies the suitable loads. The suitable single-point rigging procedures for liquid containers are in this section. Para-

graphs 19-2 through 19-4 give detailed instructions for rigging loads.

**NOTE: Reach Pendants may be used on all single point loads. A static discharge person is not required when using a Reach Pendant.**

#### 19-2. Tank, Fabric, Collapsible, 10,000-Gallon

**a. Applicability.** The following item in Table 19-1 is suitable for sling load by all ARMY helicopters with suitable lift capacity:

**Table 19-1. Tank, Fabric, Collapsible, 10,000-Gallon**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Tank, Fabric, Collapsible, 10,000-gallon	1,040	10K	100/100	35

#### CAUTION

**THIS LOAD MAY BECOME UNSTABLE AT AIRSPEEDS ABOVE 35 KNOTS**

**b. Materials.** The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

**c. Personnel.** Two persons can prepare and rig this load in 10 minutes.

**d. Procedures.** The following procedures apply to this load:

**(1) Preparation.** Ensure all safety latches on the cover are securely closed.

**(2) Rigging.** Rig the load according to the steps in Figure 19-1.

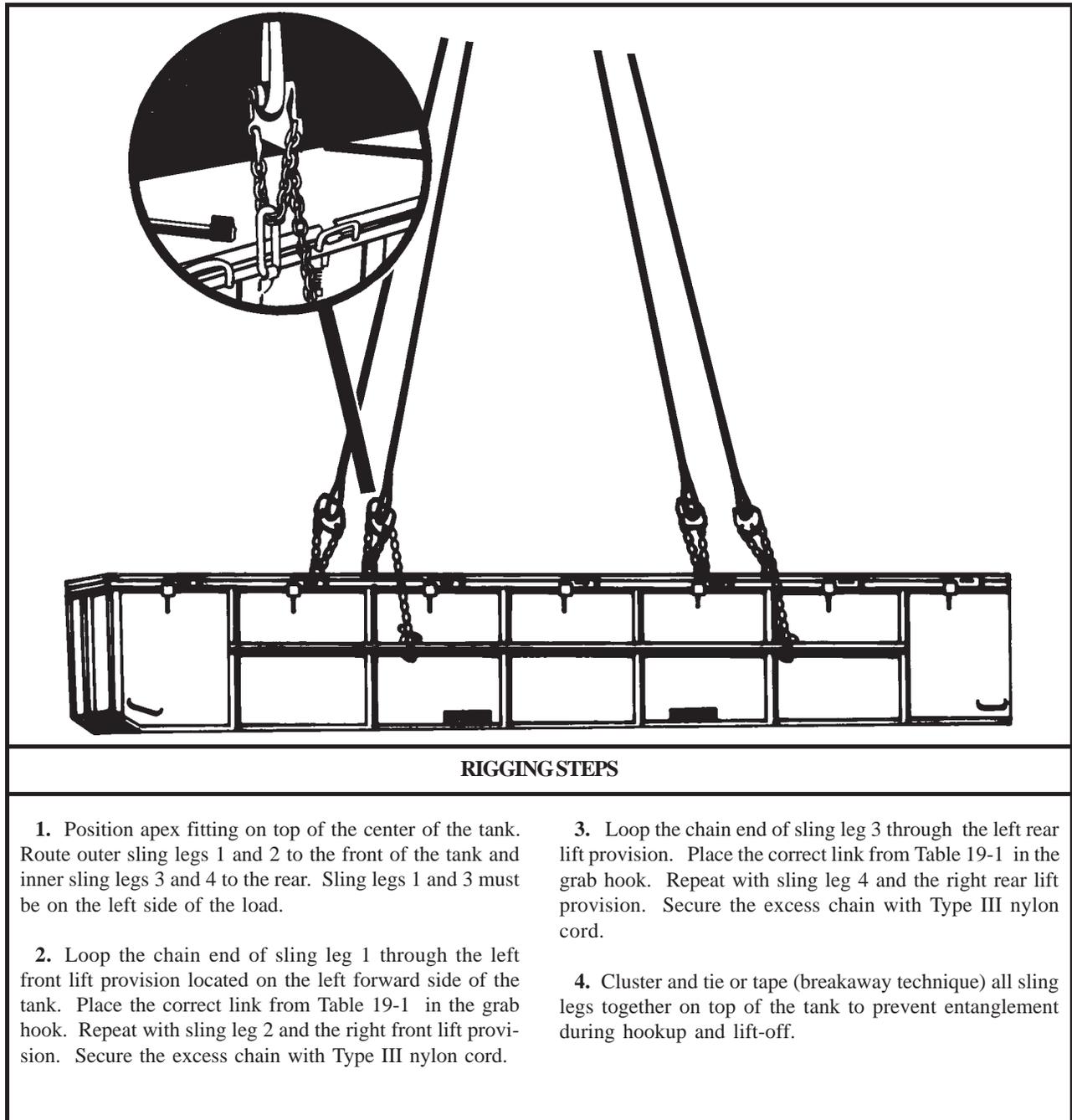
**NOTE: Do not carry more than one tank at a time.**

**(3) Hookup.** The hookup team stands alongside the load. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup

team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the

designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



*Figure 19-1. Tank, Fabric, Collapsible, 10,000-Gallon*

### 19-3. 60,000-Gallon Fuel System Supply Point

**a. Applicability.** The following items in Table 19-2 are suitable for sling load by all **ARMY** helicopters with suitable lift capacity:

**Table 19-2. 60,000-Gallon Fuel System Supply Point**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Fuel System Supply Point, 60,000-Gallon	N/A	N/A	N/A	N/A
Net #1 - Pump	1,300	5K Net	N/A	100
Net #2 - Tanks	6,000	10K Net	N/A	100
Net #3 - Hoses	2,000	5K Net	N/A	100
Net #4 - Hoses	2,200	5K Net	N/A	100
Net #5 - Hoses	4,000	5K Net	N/A	100

**b. Materials.** The following materials are required to rig this load:

- (1) Net, cargo (5,000-pound capacity) (4 each).
- (2) Net, cargo (10,000-pound capacity).
- (3) Sling set (10,000-pound capacity) (2 each).
- (4) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (5) Cord, nylon, Type III, 550-pound breaking strength.
- (6) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (7) Apex fitting (25,000-pound capacity).

**c. Personnel.** Eight persons can prepare and rig this load in 60 minutes.

**d. Procedures.** The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(2) **Rigging.** Rig the load according to the steps in Figure 19-2.

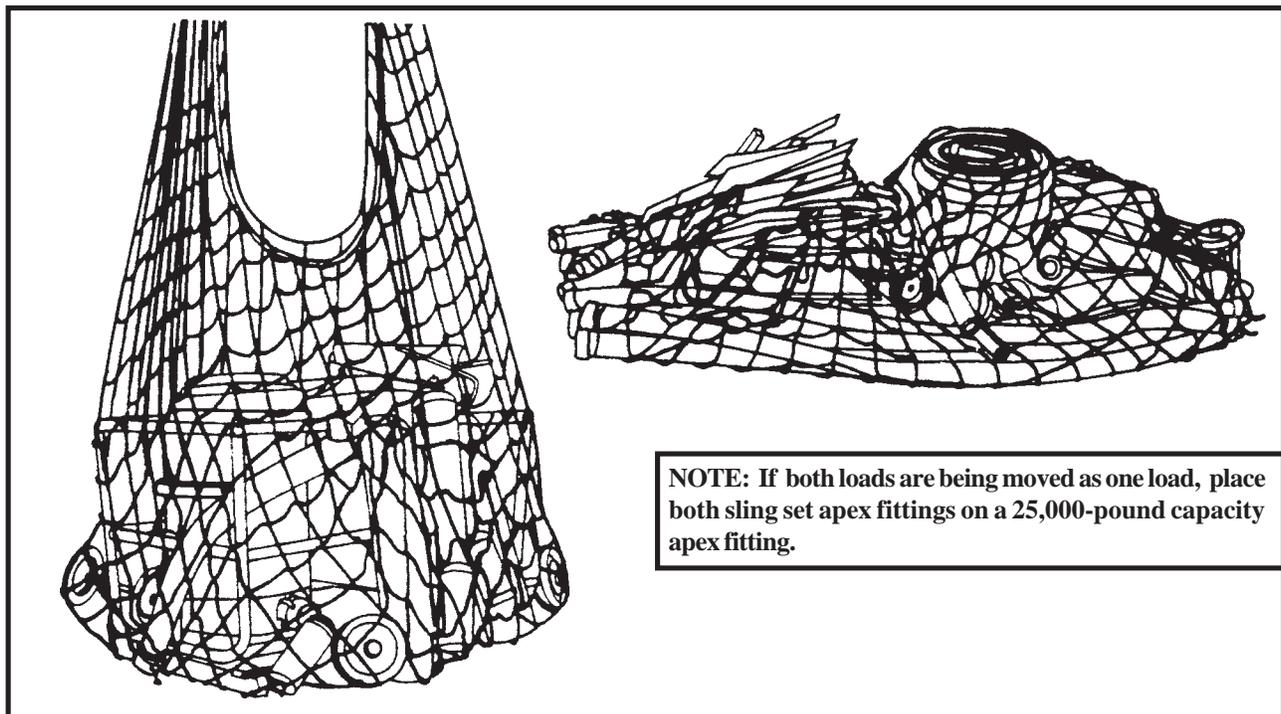
- (a) Spread out all five nets side by side.
- (b) Center the pump on net #1 (5,000-pound capacity).
- (c) Center two metal containers with tanks and fittings on net #2 (10,000-pound capacity). Position the third container on top of the bottom two containers.
- (d) Center both filters on net #3. Tie three fire extinguishers to each side of the filters with Type III nylon cord. Place six rolled hoses on top of the filters. Pull the net up around the load and tie the corners to the pumps.
- (e) Place 15 long hoses centered on net #4 (5,000-pound capacity). Build a pyramid of 120 hoses.

(f) Secure all signs on a pallet and secure with Type III nylon cord. Center the net on net #5. Secure four fire extinguishers on a second pallet and center on the net. Pile all remaining hoses on the pallets.

(3) **Hookup.** The hookup team stands alongside the load. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup

team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



**NOTE:** If both loads are being moved as one load, place both sling set apex fittings on a 25,000-pound capacity apex fitting.

RIGGING STEPS	
Load 1	Load 2
<ol style="list-style-type: none"> <li>1. Loop the chain end of one sling leg through the apex fitting of net 1 and insert link 3 in the grab hook.</li> <li>2. Loop the chain end of three sling legs through the apex fitting of net 2 and insert link 3 in the grab hook.</li> </ol>	<ol style="list-style-type: none"> <li>1. Loop the chain end of one sling leg through the apex fitting of net 3 and insert link 3 in the grab hook.</li> <li>2. Loop the chain end of one sling leg through the apex fitting of net 4 and insert link 3 in the grab hook.</li> <li>3. Loop the chain end of two sling legs through the apex fitting of net 5 and insert link 3 in the grab hook.</li> </ol>

Figure 19-2. 60,000-Gallon Fuel System Supply Point

## 19-4. One to Six 250-Gallon Water Drums

**a. Applicability.** The following items in Table 19-3 are suitable for sling load by all **ARMY** helicopters with suitable lift capacity:

**Table 19-3. One to Six 250-Gallon Water Drums**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
One Drum, Fabric, Water, 250-Gallon	2,210	10K	3	80
Two Drums, Fabric, Water, 250-Gallon	4,420	10K	3/3	80
Three Drums, Fabric, Water, 250-Gallon	6,630	10K	3/20	80
Four Drums, Fabric, Water, 250-Gallon	8,840	10K	3/3	80
Five Drums, Fabric, Water, 250-Gallon	11,050	10K	3/3/33	80
Six Drums, Fabric, Water, 250-Gallon	13,260	10K	3/3/22	80

**b. Materials.** The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity) with 2 additional sling legs.
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Apex fitting (25,000-pound capacity).

**c. Personnel.** One person can prepare and rig one drum in 5 minutes; add 5 minutes for each additional drum.

**d. Procedures.** The following procedures apply to this load:

- (1) **Preparation.** Align all drums side by side (if ap-

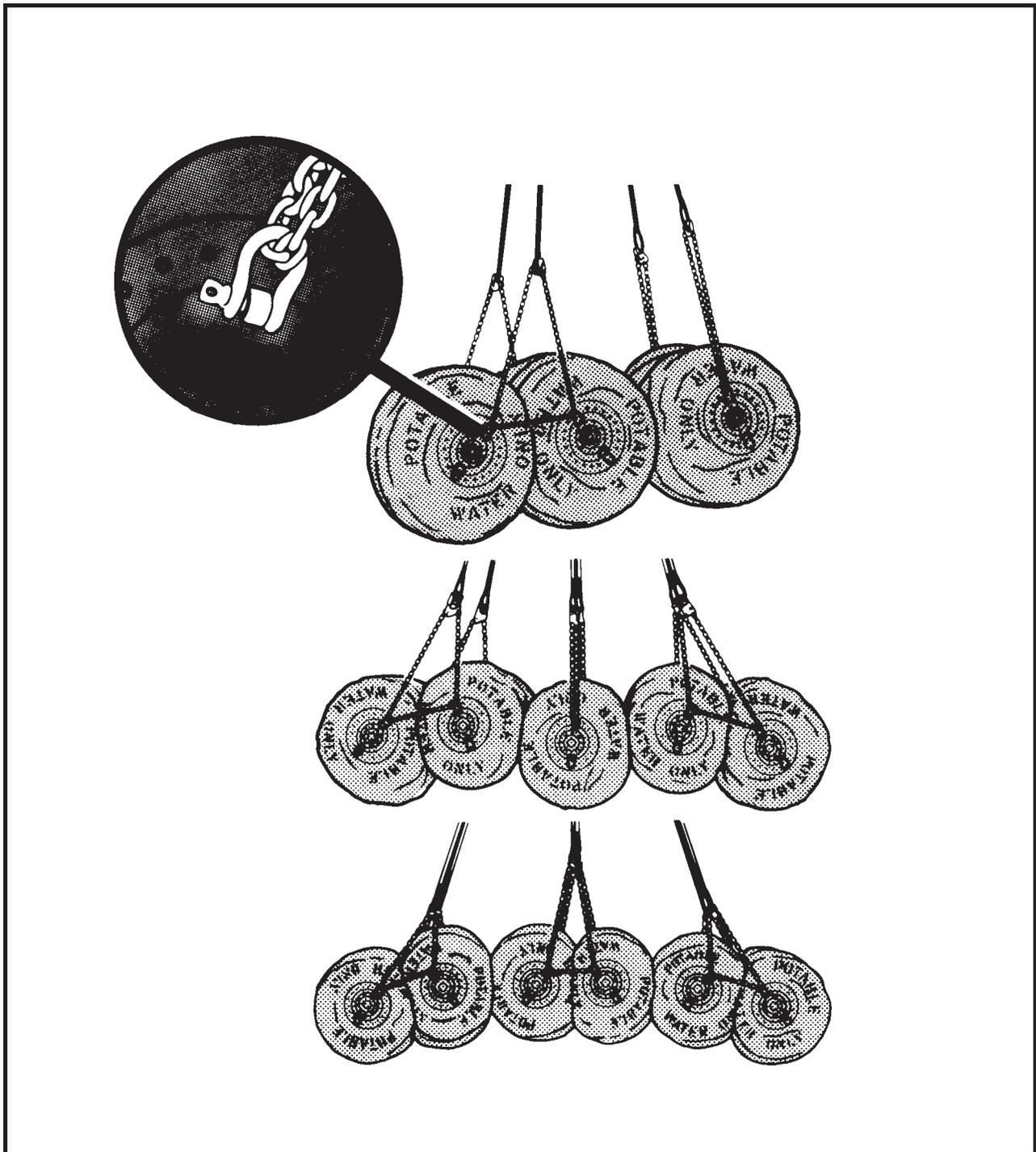
propriate) and rotate the hubs of each drum so a clevis is positioned at the top.

- (2) **Rigging.** Rig the load according to the steps in Figure 19-3.

**NOTE: Route the sling legs so the odd numbered sling legs are to one side of the drum(s) and the even numbered sling legs are to the other side.**

(3) **Hookup.** The hookup team stands alongside the load. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

- (4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



*Figure 19-3. One to Six 250-Gallon Water Drums*

<b>RIGGING STEPS</b>	
<p style="text-align: center;"><b>ONE DRUM</b></p> <ol style="list-style-type: none"><li>1. Position apex fitting beside the drum. Route sling legs 1 and 3 to one side of the drum and sling legs 2 and 4 to the other side.</li><li>2. Loop the chain end of the sling legs through the clevis at the top of the hub. Place the correct link from Table 19-3 in the grab hook.</li></ol>	<p>from Table 19-3 in the grab hook. Repeat with sling leg 4 on the other side of the drums.</p>
<b>FIVE DRUMS</b>	
<p><b>NOTE: A single drum may be moved using a two-leg sling set.</b></p>	<ol style="list-style-type: none"><li>1. Configure a six-leg sling set using a 25,000-pound capacity apex fitting and six sling leg assemblies.</li><li>2. Position apex fitting on top of the drums. Route outer sling legs 1 and 2 to the front drum, middle sling legs 3 and 4 to the rear drum and inner sling legs 5 and 6 to the center drum.</li><li>3. Loop the chain end of sling leg 1 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 2 on the right side of the drums.</li><li>4. Loop the chain end of sling leg 3 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 4 on the right side of the drums.</li><li>5. Loop the chain end of sling leg 5 through the top clevis of the center drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 6 on the right side of the drum. Secure the excess chain with Type III nylon cord.</li></ol>
<b>SIX DRUMS</b>	
<p style="text-align: center;"><b>TWO DRUMS</b></p> <ol style="list-style-type: none"><li>1. Position apex fitting beside or on top of the two drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li><li>2. Loop the chain end of the sling leg through the appropriate clevis at the top of the hub for each drum. Place the correct link from Table 19-3 in the grab hook.</li></ol>	<ol style="list-style-type: none"><li>1. Configure a six-leg sling set using a 25,000-pound capacity apex fitting and six sling leg assemblies.</li><li>2. Position apex fitting on top of the drums. Route outer sling legs 1 and 2 to the front drum, middle sling legs 3 and 4 to the rear drum and inner sling legs 5 and 6 to the center drum.</li><li>3. Loop the chain end of sling leg 1 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 2 on the right side of the drums.</li><li>4. Loop the chain end of sling leg 3 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 4 on the right side of the drums.</li><li>5. Loop the chain end of sling leg 5 through the top clevis of both center drums. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 6 on the right side of the drums. Secure the excess chain with Type III nylon cord.</li></ol>
<p style="text-align: center;"><b>THREE DRUMS</b></p> <ol style="list-style-type: none"><li>1. Position apex fitting beside or on top of the drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li><li>2. Loop the chain end of sling leg 1 through the clevis at the top of the outer drum and through the clevis at the top of the center drum. Place the correct link from Table 19-3 in the grab hook.</li><li>3. Loop the chain end of sling leg 3 through the clevis at the top of the hub of the outer drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 4 on the other side of the drum. Secure the excess chain with Type III nylon cord.</li></ol>	
<p style="text-align: center;"><b>FOUR DRUMS</b></p> <ol style="list-style-type: none"><li>1. Position apex fitting beside or on top of the drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li><li>2. Loop the chain end of sling leg 1 through the clevis at the top of the outer drum and through the clevis at the top of the next inner drum. Place the correct link from Table 19-3 in the grab hook. Repeat with sling leg 2 on the other side of the drums.</li><li>3. Loop the chain end of sling leg 3 through the clevis at the top of the hub of the rear outer drum and through the clevis at the top of the next inner drum. Place the correct link</li></ol>	

Figure 19-3. One to Six 250-Gallon Water Drums (continued)

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