FM 4-20.137 (FM 10-537)
AIR FORCE TO 13C7-1-19

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING FORWARD AREA REFUELING EQUIPMENT (FARE) AND ADVANCED AVIATION FORWARD AREA REFUELING SYSTEM (AAFARS)

JUNE 2003

HEADQUARTERS
DEPARTMENT OF THE ARMY
DEPARTMENT OF THE AIR FORCE

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Preface

This manual tells and shows how to prepare and rig the following configurations of the Forward Area Refueling Equipment (FARE) Systems, the 4-inch, 350-GPM Wheel-Mounted Pumping Assembly, and the Advanced Aviation Forward Area Refueling System (AAFARS) for low-velocity airdrop from a C-130, C-141, C-17, and C-5 aircraft.

User Information

The proponent of this publication is HQ TRADOC. You are encouraged to report any errors or omissions and to suggest ways of making this a better manual. Army personnel, send your comments on DA Form 2028 directly to:

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Introduction

This manual shows and tells how to rig the forward area refueling equipment (FARE), to include the rigging of hazardous material--gasoline, JP4, and diesel fuel. The FARE is rigged with the following:

Trailers. M101, M101A1, 3/4-ton, two-wheel trailers for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Two Fuel Drums. Two 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Seven Fuel Drums. Seven 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Vehicle. M998, 1 1/4-ton truck (HMMWV) for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

This manual shows and tells how to rig the 4-inch, 350 GPM wheel-mounted pumping assembly, to include the rigging of hazardous material-- gasoline, JP4, and diesel fuel. The 4-inch, 350-GPM wheel-mounted pumping assembly is rigged with the following:

Pumps and Separators. Two 4-inch, 350-GPM wheel-mounted pumping assemblies and two separators are rigged for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Three Fuel Drums. Three 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Four Fuel Drums. Four 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Five Fuel Drums. Five 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Six Fuel Drums. Six 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

This manual shows and tells how to rig the Advanced Aviation Forward Area Refueling System (AAFARS), to include the rigging of hazardous material-- gasoline, JP4, and diesel fuel. The AAFARS is rigged with the following:

Three Fuel Drums. Three 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Four Fuel Drums. Four 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Five Fuel Drums. Five 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Six Fuel Drums. Six 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Seven Fuel Drums. Seven 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

The following conditions must be met when rigging these loads:

CAUTION:
There must be no more than 432 gallons of liquid in each drum when rigged for low-velocity airdrop. Do not pressurize drums with air.

Hazardous Material. When included as a part of these loads, fuel must be packaged, marked, and labeled as described in AFMAN(I) 24-204/TM 38-250.

Weight. Each drum of fuel MUST be weighed to learn its exact weight, as the drum has no gauge to measure the liquid content. For computing liquid weight per US gallon, 6 pounds are used for gasoline, 6.4 pounds for JP4 fuel, 6.7 pounds for JP8 fuel, and 6.68 pounds for diesel fuel. When empty, the drum weighs 250 pounds.

CAUTION:
Because the fuel drum is flexible, it will rebound upon ground impact and the lashings may be broken. This could free the drum and allow it to roll off the platform and create a possible hazard in the immediate area.

Manuals. A copy of this manual must be available to the joint airdrop inspectors during the before- and after-loading inspections.

NOTICE of EXCEPTION:
The procedures in this manual for installing the Suspension Sling Safety Ties may differ from those in FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. An exception to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this manual **MUST** be followed.

Chapter 1

Rigging FARE For Low -Velocity Airdrop On Type V Platform

SECTION I - RIGGING FARE WITH TWO 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

1-1. The Forward Area Refueling Equipment (FARE) is rigged on a 12-foot, type V platform with two G-11 cargo parachutes. There are two collapsible fuel drums as an accompanying load. When empty, each drum weighs 250 pounds. Each drum is filled with 432 gallons of liquid. Overall length is 162 inches. Width is 108 inches. Height is 70 inhes. Center of balance is 72 inches

Notes: 1. For drums filled with a liquid other than gasoline, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

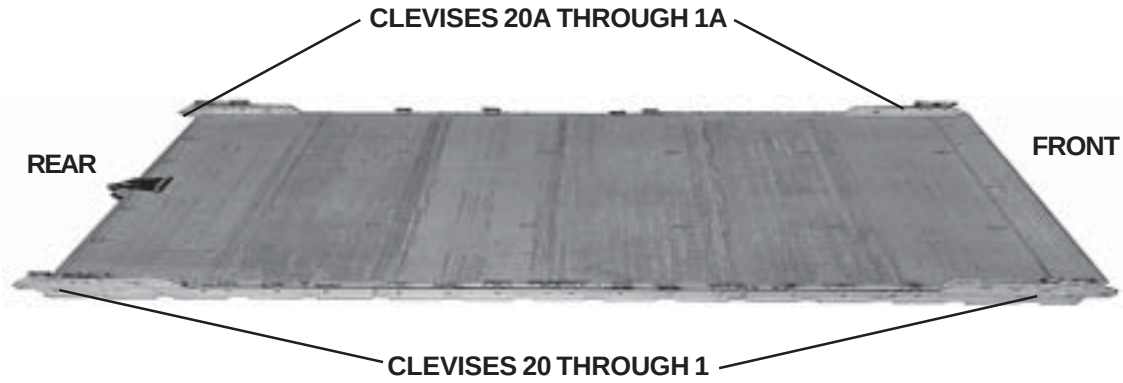
Table 1-1. Weight of Drum When Filled with Liquid

Fuel	Weight Per Gallon	Total Weight of Drum with 432 Gallons of Liquid
Gasoline	6 Pounds	2,842 Pounds
JP-4	6.4 Pounds	3,015 Pounds
JP-8	6.7 Pounds	3,145 Pounds
Diesel	6.68 Pounds	3,136 Pounds
Water	8.3 Pounds	3,835 Pounds

PREPARING PLATFORM

1-2. Prepare a 12-foot type V airdrop platform using four tandem links and 40 tie-down clevises as shown in Figure 1-1.

Notes: 1. The nose bumper may or may not be installed.
2. Measurements given in this section are from the front edge of the platform, NOT from the front edge of the nose bumper.



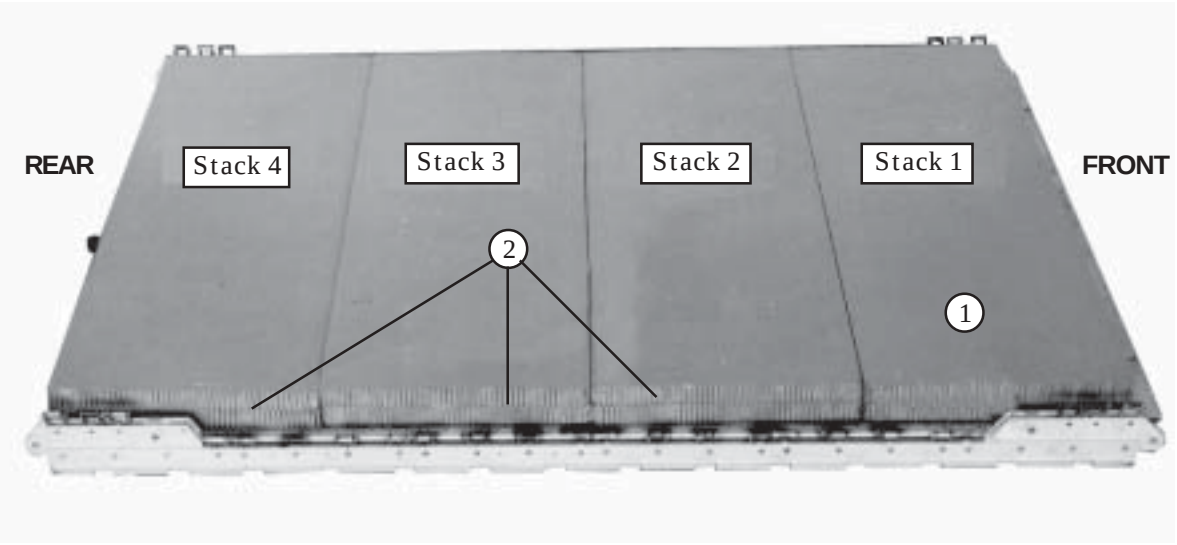
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link on the rear of each platform side rail using holes 22, 23, and 24.
4. Install a tie-down clevis to bushings 1, 2, and 3 on each front tandem link.
5. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, and 21.
6. Install a tie-down clevis to bushings 2, 3, and 4 on each rear tandem link.
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 20 and those bolted to the left side from 1A through 20A.

Figure 1-1. Platform Prepared

PREPARING HONEYCOMB

1-3. Place eight 96- by 36-inch pieces of honeycomb on the platform as shown in Figure 1-2.



(1) Place two 96- by 36-inch pieces of honeycomb flush with the front edge of the platform.

(2) Place three more sets of 96- by 36-inch pieces of honeycomb against those placed in step 1 above.

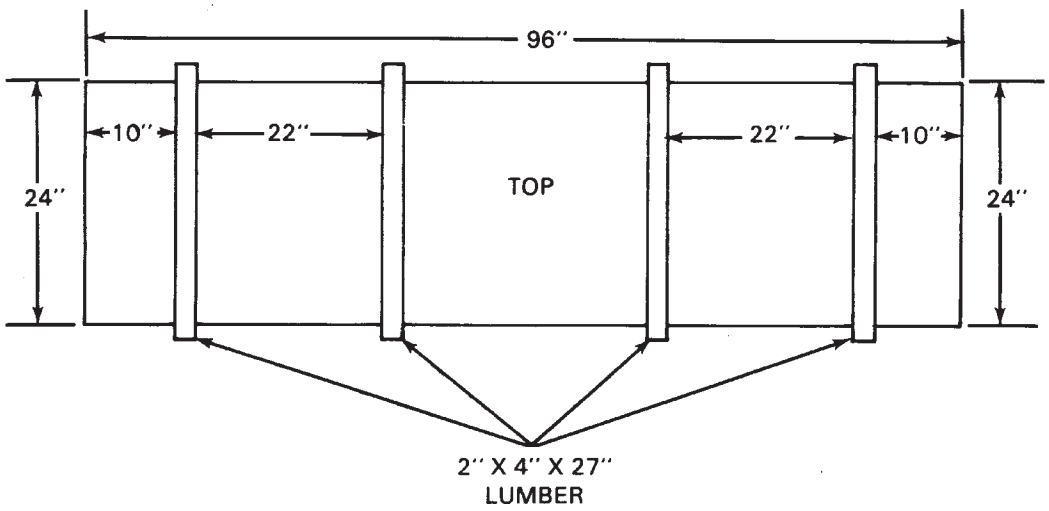
Figure 1-2. Honeycomb Placed on Platform

BUILDING CONTAINER FOR FARE

1-4. Build the container to stow the FARE as described below and as shown in Figure 1-3.

a. BUILDING TOP. Build the top for the container as shown in Figure 1-3.

Note: This drawing is not drawn to scale.



Steps:

1. Cut a 3/4- by 24- by 96-inch piece of plywood.
2. Cut four 2- by 4- by 27-inch pieces of lumber.
3. Place the 2- by 4-inch pieces of lumber so that they overhang on each side about 1 1/2 inches over the plywood.
4. Nail a 2- by 4-inch piece of lumber 10 inches from the 24-inch sides using eightpenny nails.
5. Nail a 2- by 4-inch piece of lumber 22 inches from the lumber placed in step 4 above using eightpenny nails.

Figure 1-3. Top for FARE Container Built