TECHNICAL MANUAL

OPERATION INSTRUCTIONS

CONCRETE - MOBILE ® MIXER BODY

M919, MODEL 8CM-24/F

NSN 3895-01-028-4391

DAFFIN MOBILE PRODUCTS DIVISION OF BARBER-GREENE COMPANY

(MANUAL PREPARED BY AM GENERAL CORPORATION)

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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DAFFIN MOBILE PRODUCTS DIVISION OF BARBER-GREENE COMPANY
(MODEL 8CM-24/F)

TM 5-3895-372-10, is changed as follows

1. Remove old pages and insert new pages as indicated below
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Remove pages	Insert pages
i and ii	i and ii
1-3 through 1-6	1-3 through 1-6
2-5 and 2-6	2-5 and 2-6
2-11 and 2-12	2-11 and 2-12
3-35 through 3-38	3-35 through 3-38
C-1 through D-2	C-1 through D-2

File this change in front of the publication for reference purposes.

By Order of the Secretary of the Army

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Major General United States Army
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Distribution:
To be distributed in accordance with DA Form 12-25B. Operator Maintenance Requirements for Mixer, Concrete.

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DEPARTMENT OF THE ARMY
Washington, D.C. 5 October 1979

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CONCRETE-MOBILE® MIXER BODY

DAFFIN MOBILE PRODUCTS DIVISION OF BARBER-GREENE COMPANY (MODEL 8CM-24/F)

REPORTING OF ERRORS

You can help improve this publication. If you find any mistakes, or If you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms) direct to US Army Tank-Automotive Command, ATTN DRSTA-MBP, Warren, MI 48090. A reply will be furnished to you.

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WARNING

When operating the Concrete-Mobile ® mixer body, be sure to observe all warnings identified in the TM-9-2320-273-10, Operator's Manual for the M919 truck chassis. The warning conditions most likely to be encountered during concrete mixing operations are repeated here.

CARBON MONOXIDE POISONING CAN BE DEADLY

Carbon monoxide is a colorless, odorless, poisonous gas, which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air contaminated with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, or coma. Permanent brain damage can result from severe exposure.

Carbon monoxide occurs in the exhaust fumes of fuel-burning internal combustion engines and can become dangerous under conditions of inadequate ventilation. The following precautions must be observed to insure the safety of personnel:

A. DO NOT operate the engine of a vehicle in an enclosed area unless it is ADEQUATELY VENTILATED.

B. DO NOT idle the engine for long periods without maintaining ADEQUATE VENTILATION in the personnel compartments and immediate area.

C. DO NOT operate any vehicle with inspection plates, cover plates, or engine compartment doors removed unless it is necessary for maintenance purpose.

D. BE ALERT at all times during vehicle operation for exhaust odors, and exposure symptoms. If either is present, IMMEDIATELY VENTILATE the area. If symptoms persist, remove affected personnel from the area and treat as follows.

(1) Expose to fresh air.

(2) Keep warm.

(3) DO NOT PERMIT EXERCISE.

(4) If necessary, administer artificial respiration.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.

a

WARNING

EXHAUST SYSTEM COMPONENTS CAN CAUSE SEVERE BURNS

During normal operation the exhaust pipe and muffler can become very hot. Be careful not to touch these components with your bare hands. Do not allow your body to come in contact with the pipe or muffler. Exhaust system components may be hot enough to cause serious burns.

AVOID CONTACT WITH CEMENT AND WET CONCRETE

Prolonged contact with cement or wet concrete can cause skin irritation or burns. During loading operations with cement or while working with wet concrete, take every precaution to avoid contact with skin. Skin areas that have been exposed either directly or through saturated clothing should be washed thoroughly with water. If any cement or concrete material gets into the eye, flush immediately with water and GET PROMPT MEDICAL ATTENTION.

CEMENT DUST CAN BE HARMFUL

During loading operations or at any time there is cement dust in the air, take precautions to avoid direct inhalation of the dust. If you must be in the immediate vicinity of the dust, wear a dust mask; or if none is available, cover your nose and mouth with a cloth. CEMENT DUST CAN CAUSE SERIOUS LUNG PROBLEMS.

MOVING MACHINERY IS DANGEROUS

When working in the area of the V-belts on the main drive, the cement and dry admix chain drives, or the mixing trough auger, be extremely careful to avoid contact with or catching clothing in moving parts. Serious injury or loss of life can result from entanglement in moving machinery.

CHECK AREA BEFORE LOWERING TROUGH

Be sure all personnel are clear before you begin to lower the mixing trough.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual is for your use in operating and maintaining the Concrete-Mobile® mixer unit which is mounted on an M919 truck chassis. Instructions for operating and maintaining the vehicle chassis are contained in TM 9-2320-273-10. Equipment description herein is non-metric and does not require metric conversion or special tools. Tactical instructions will include metric units in addition to English units. Clarity of instructions is not impaired.

1-2. Maintenance Forms and Records.

Equipment maintenance forms and procedures for their use are contained in TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. Reporting Equipment Improvement Recommendations (EIR).

ElR's will be prepared on DA Form 2407, Maintenance Request. Instructions for preparing ElR's are provided in TM 38-750, The Army Maintenance Management System (TAMMS). ElR's should be mailed directly to Commander, U.S. Army Tank-Automotive Material Readiness Command, ATTN: DRSTA-MVB, Warren, Michigan 48090. A reply will be furnished directly to you.

Section II. DESCRIPTION AND DATA

1-4. Description.

a. Component Locations. Figure 1-1 identifies major components and their locations

b. General. The Concrete-Mobile® mixer unit (hereafter referred to as the mixer) is a combination materials transporter and concrete mixing plant. The special body is mounted on a model M919 truck chassis (see TM 9-2320-273-10 for truck operating procedures). The mixer carries sufficient unmixed material to produce fresh concrete in any quantity up to 8 cubic yards (6.12 m^3). The concrete is mixed at the site and since the unit has been precisely calibrated, mixes can be produced that meet or exceed American Concrete Institute and American Association of State Highway and Transportation Officials standards for design strength. The unit can be used on an intermittent or continuous basis. However, continuous operation is dependent on the availability of raw material at the site. Some control settings for the mix operations vary from truck to truck and from site to site. The operating instructions in this manual identify which settings vary. Your supervisor will provide you with the correct settings for your truck

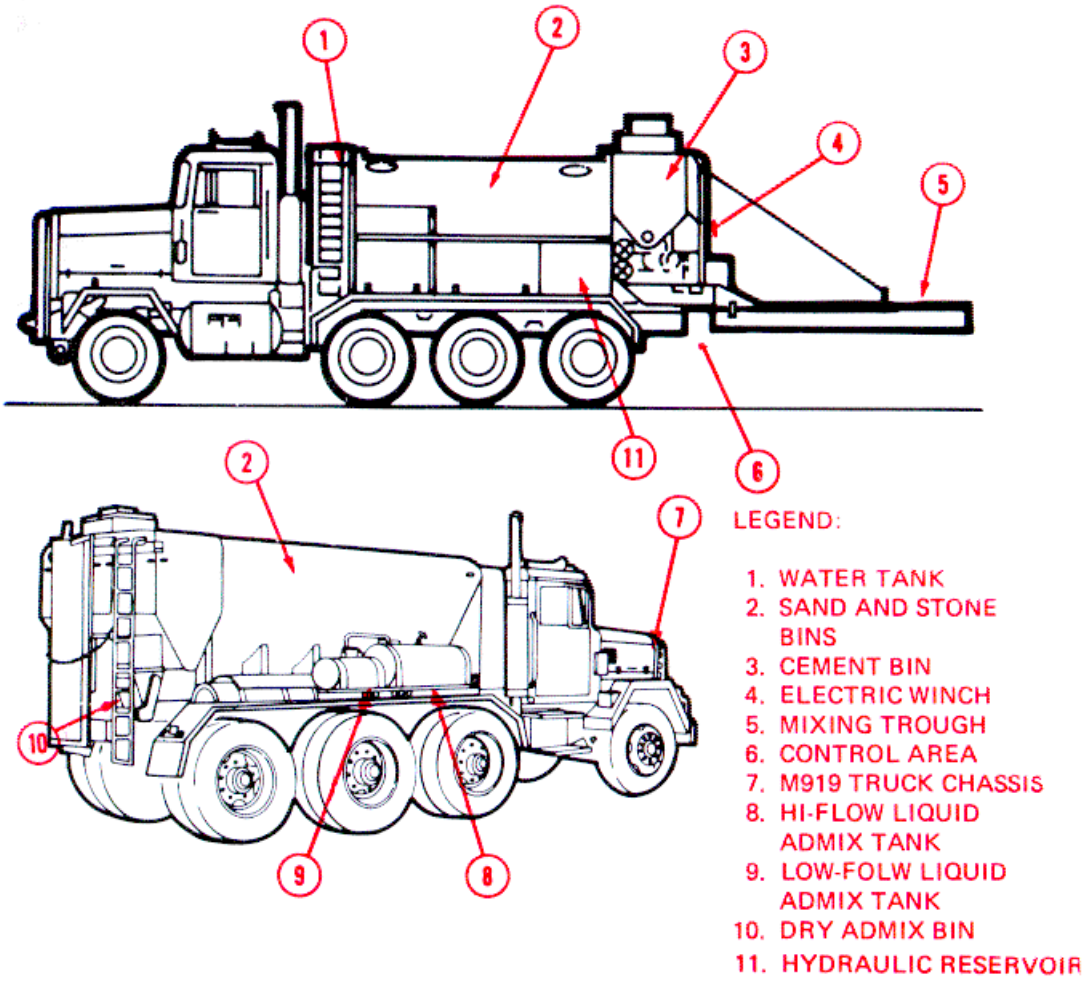


Figure 1-1. Major Components and Their Location

c. Major Components. (See fig. 1-1)

(1) Water Tank - The water tank holds 400 gallons (1514 l) of potable (drinkable) water. The water flow is adjusted by a control valve for use in the mix operation. Water in this tank is also used for cleanup after mixing operations.

(2) Sand and Stone Bins - The sand bin and stone bin are actually two compartments of the same vessel. The sand bin portion (left side), holds 40 percent of the total aggregate carried by the mixer. The stone bin portion (right side), holds 60 percent of the total aggregates. Since damp sand has a tendency to bridge over the conveyor, the bins have a shaker system to break up packed sand. The main conveyor belt carries sand and stone from the bottom of the bins to the mixing trough.

(3) Cement Bin - The cement bin holds 63 cubic feet (1.78 m^3) of dry cement for mixing up to 8 cubic yards (6.12 m^3) of cement. The bin contains an aerator system for "fluffing" the cement. Fluffing is necessary because cement has a tendency to pack, especially during transport. The bin also has an auger and a feeder. The auger conveys cement to a rotary type feeder The feeder dispenses cement onto the main conveyor belt.

(4) Electric Winch - The electric winch raises and lowers the mixing trough, and supports it during cement production.

(5) Mixing Trough - The mixing trough mixes dry and wet ingredients (sand, stone, cement, water and admixtures). They are mixed into concrete by an auger located in the trough. The auger also conveys the mixed concrete to the chute for placement

(6) Control Area - Mixer controls are clustered at the left rear of the unit. This allows the operator to see the mixing process as he runs the machine. From the control area the operator can adjust ingredient proportions, position the mixing trough, and start or stop the mixing operation.

(7) M919 Truck Chassis - The mixer body is mounted on an M919 truck chassis. The mixer unit is powered by the truck engine. For more information, see TM 9-2320-273-10.

(8) Hi-Flow Liquid Admix Tank - The hi-flow admix tank holds 42 gallons (159 1) of admixture solution for injection into the mix.

(9) Low-Flow Liquid Admix Tank- The low-flow admix tank holds 12 gallons (45 I1) of admixture solution for injection into the mix This tank serves the same purpose as the Hi-Flow tank but is used when smaller quantities of admixture are needed.

(10) Dry Admix Bin - The dry admix bin holds 2.35 cubic feet (0.66 m^3) of powdered admixture. Augers in the bin guide the powder into a feeder shaft. The feeder delivers the admixture to the main conveyor belt. The dial setting on the bin determines the delivery rate.

(11) Hydraulic Reservoir - Stores 32 gallons of hydraulic fluid to operate the hydraulic system.

d. Functional Description. The cement meter-feeder dispenses cement from the cement bin at a constant rate. Each mixer is calibrated at the factory and settings are provided on a permanent plate in the control area. To produce different types of concrete, you will vary the amounts of sand, stone, water and admix which are added to the cement.

(1) Sand delivery is controlled by a gate limiting the amount of sand carried out of the bin by the main conveyor belt.

(2) Stone delivery is controlled by a similar gate mounted on the rear of the stone bin.

(3) Water proportions are adjusted by the water control. A dial mounted on the valve helps you set the flow.

(4) Liquid admix flow rates are set by a pair of flowmeters (one for each tank). Flow is adjusted with a lever.

(5) Dry admix metering is controlled by a dial setting on the bin.

(6) When the PTO is engaged, power is supplied through a belt-driven shaft to the water pump and hydraulic pump. When the main clutch is engaged, the belt-driven shaft also turns the main conveyor belt. If the cement and dry admix clutches are engaged, the cement and dry admix feeders will turn along with the main conveyor. The main clutch lever is mechanically linked to valves which open the water and liquid admix lines. Thus, engaging the main clutch starts delivery of all ingredients The main conveyor dumps dry ingredients into the mixing trough, where the water and liquid admix are added. The hydraulically powered auger in the trough mixes the ingredients as it pushes them to the delivery chutes. These removable chutes guide the wet concrete into place.

e. Controls and Indicators.

(1) Meter Register Reset Knob (Fig. 1-2, Sheet 1) - The reset knob is used to set the meter register reading back to zero.

(2) Tachometer (Fig. 1-2, Sheet 1) - The tachometer shows operating speed of the mixer hydraulic oil pump. During normal operation, the reading should be 1620-1720 rpm.

(3) Meter Register (Fig. 1-2, Sheet 1) - The meter register is a digital counter that registers 10 for each revolution of the cement meter-feeder. Normal speed of the cement meter-feeder is 14.2 RPM, therefore, the meter register shows 142 for each minute of operation. By dividing the meter count for a concrete placement by the known meter count for one cubic yard of the concrete design being used, the number of yards of concrete dispensed can be calculated.

(4) Bypass Valve (Fig. 1-2, Sheet 1) - The bypass valve regulates flow of hydraulic fluid and is used to slow the mix-auger for washout. Turn the valve handle counterclockwise to decrease speed of the auger. Close the valve (clockwise) during normal operation.

(5) Control Valve (Fig. 1-2, Sheet 1) -The control valve starts and stops the mixing auger. Pull the lever (rearward) to start the mixing auger and push the lever forward to stop the operation.

(6) Throttle Control (Fig. 1-2, Sheet 1) - The throttle control lever regulates the truck engine speed. For information on truck engine operation refer to TM 9-2320273-10. The throttle control is adjusted to obtain the desired mixer hydraulic oil pump speed as indicated on the mixer tachometer. Pull the throttle control lever until it is against the rear stop for minimum engine speed and push it against the front stop for maximum engine speed.

(7) Winch Control Box (Fig 1-2, Sheet 1) - The winch control box provides all controls for lowering and raising the mixing trough. Switches are labeled JOG, RAISE, and LOWER. When the RAISE button is depressed, the mixing trough moves upward until the button is released or it strikes a micro switch mounted in the raise circuit. This micro switch protects the mixing trough from damage, should the RAISE button be held depressed longer then necessary to reach the "lock position" for the mixing trough. To unlock the mixing trough, it is necessary to apply pressure in the raise direction and depress the JOG button while unlatching the mixing trough. After the mixing trough is unlatched depress the LOWER button to lower the mixing trough to the desired position.

(8) Low-Flow Meter (Fig. 1-2, Sheet 1) - The low-flow meter functions in the same manner as the hi-flow meter except that it regulates flow from the low-flow admix system.

(9) Hi-Flow Meter (Fig. 1-2, Sheet 1) - The hi-flow meter regulates the quantity of liquid admix from the hi-flow system that is being mixed into the concrete batch. The float valve in the sight glass is preset to the desired mix. The hi-flow lever sets the flow. Raise up on the lever to increase flow. Lower the lever to decrease or stop flow.

(10) Low-Flow and Hi-Flow Quick Acting Valves (Fig. 1-2, Sheet 1) - The quick acting valves open and close automatically whenever the main clutch is engaged or disengaged. If the quick-acting valve is closed you must hold it open manually in order to operate the flowmeter lever for the system you are working with.

(11) Sand Dial (Fig. 1-2, Sheet 2) - The sand dial control wheel raises and lowers the sand gate, allowing more or less sand to be added to the mix. A pointer is connected to the control wheel shaft and moves over the dial face as the control wheel is turned. The dial setting is obtained from the mix settings chart. A stop screw locks the gate to prevent movement after the setting is made.

(12) Stone Dial (Fig. 1-2, Sheet 2) - The stone dial control wheel raises and lowers the stone gate to allow more or less stone to be added to the mix. A pointer is connected to the control wheel shaft and moves over the dial face as the control wheel is turned. The dial setting is obtained from the mix settings chart. A stop screw locks the gate to prevent movement after the setting is made.

(13) Air Shutoff Valve (Fig. 1-2, Sheet 2) - The air shutoff valve is an on/off valve for controlling air to the vibrators, fluffer pads, and liquid admix system. Turn clockwise to close and counterclockwise to open.

(14) Screen Vibrator Valve (Fig. 1-2, Sheet 2) - The screen vibrator valve is an on/ off valve for controlling air to cement vibrating screens. Turn clockwise to close and counterclockwise to open.

(15) Fluffer Valve (Fig. 1-2, Sheet 2) - The fluffer valve controls air to aerator pads in the bottom of the cement bin. Depress the lever for about 10 seconds to "fluff" the cement in the bin. The cement meter-feeder is calibrated for fluffed cement and after road travel the cement tends to pack down.

(16) Main Clutch Lever - The main clutch lever engages the conveyor belt which runs under the sand and stone bins. By engaging this lever, the operator brings sand and stone to the rear of the unit where it drops off the conveyor belt into the mixing trough. Simultaneously, an interlock causes the quick acting water and admixture valves to be opened. Because the cement meter-feeder is mechanically driven by a roller chain from the rear conveyor belt shaft, cement is automatically metered onto the sand and stone conveyor belt at the same time.

(17) Water Control (Fig. 1-2, Sheet 2) - The water control regulates the amount of water fed into the mix. Adjust the pointer to the setting specified in the mix settings chart.

(18) Dry Admix Dog Clutch Lever (Fig. 1-2, Sheet 2) - This lever engages a clutch to feed dry admix into the mixing trough and disengages the clutch to stop the flow of dry admix. Push the lever left to engage the clutch and right to disengage it.

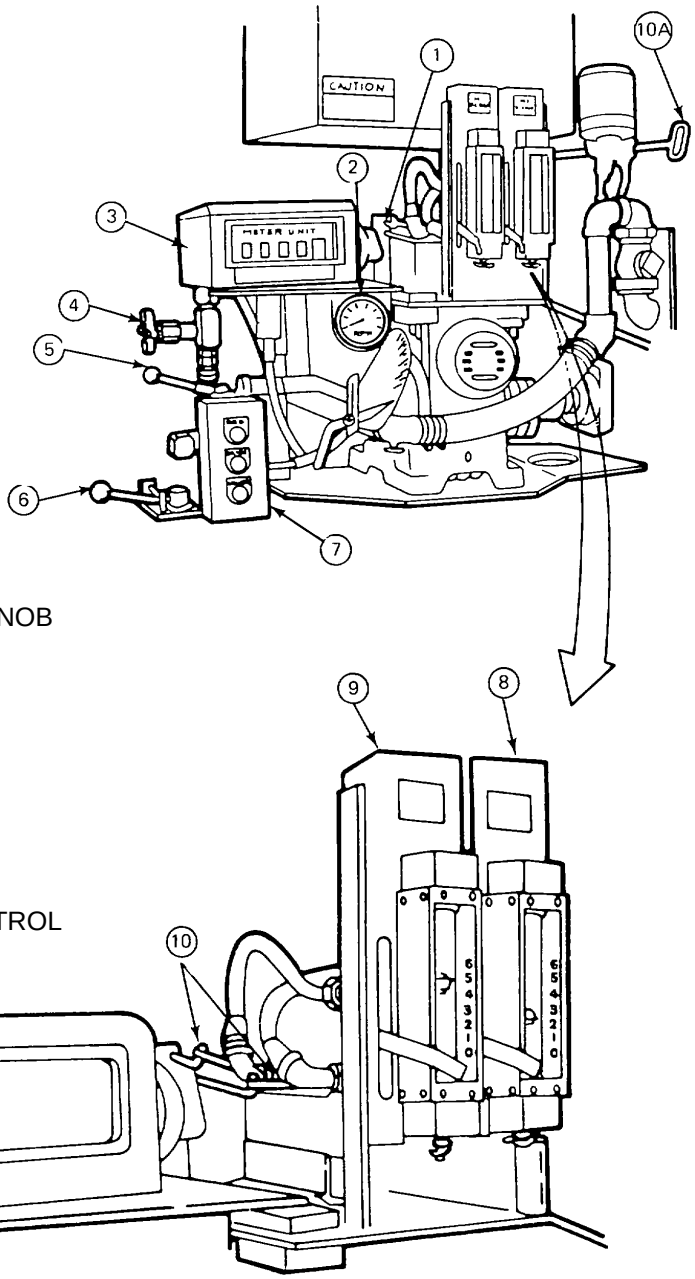
(19) Dry Admix Control Dial (Fig. 1-2, Sheet 2) - The dry admix control dial regulates the amount of dry admix that is added to the mix. Adjustment to the amount of admix can be made by loosening the pointer knob and setting the pointer at the setting specified on the mix settings chart.

(20) Cement Bin Clutch Lever (Fig. 1-2, Sheet 3) - The lever engages and disengages the cement bin clutch which provides power to the feeder mechanism. To start feeding cement into the mix, push the lever to the left. To stop feeding cement pull the lever to the right. A locking arm is provided to lock the clutch in the engaged position. Lift to release the lock.

(21) Inclinometer (Fig. 1-2, Sheet 3) - The inclinometer indicates the degree of slant in the mixing trough. In normal operation, the slant is 15-25°. If adjustment is required, operate the winch controls to raise or lower the mixing trough.

(22) Swivel Ring Lockarm (Fig. 1-2, Sheet 3) - The swivel ring lockarm prevents the swivel ring from turning when in the up position. To rotate the swivel ring from 0° to 1700 push the lockarm down, then rotate the swivel ring so that the trough is in the desired position, then raise up the lockarm.

(23) Manual Vibrator Control Handle (Fig. 1-2, Sheet 1) - The manual vibrator control handle is connected to the rear vibrator air valve. It provides a means of manually "shaking" the aggregate bins should their contents become too packed or the automatic controls fall.



LEGEND

1. METER REGISTER RESET KNOB
2. TACHOMETER
3. METER REGISTER
4. BYPASS VALVE
5. CONTROL VALVE
6. THROTTLE CONTROL
7. WINCH CONTROL BOX
8. LOW-FLOW METER
9. HI-FLOW METER
10. QUICK ACTING VALVE (2)
10A. MANUAL VIBRATOR CONTROL HANDLE

Figure 1-2. Controls and Indicators (Sheet 1 of 3)

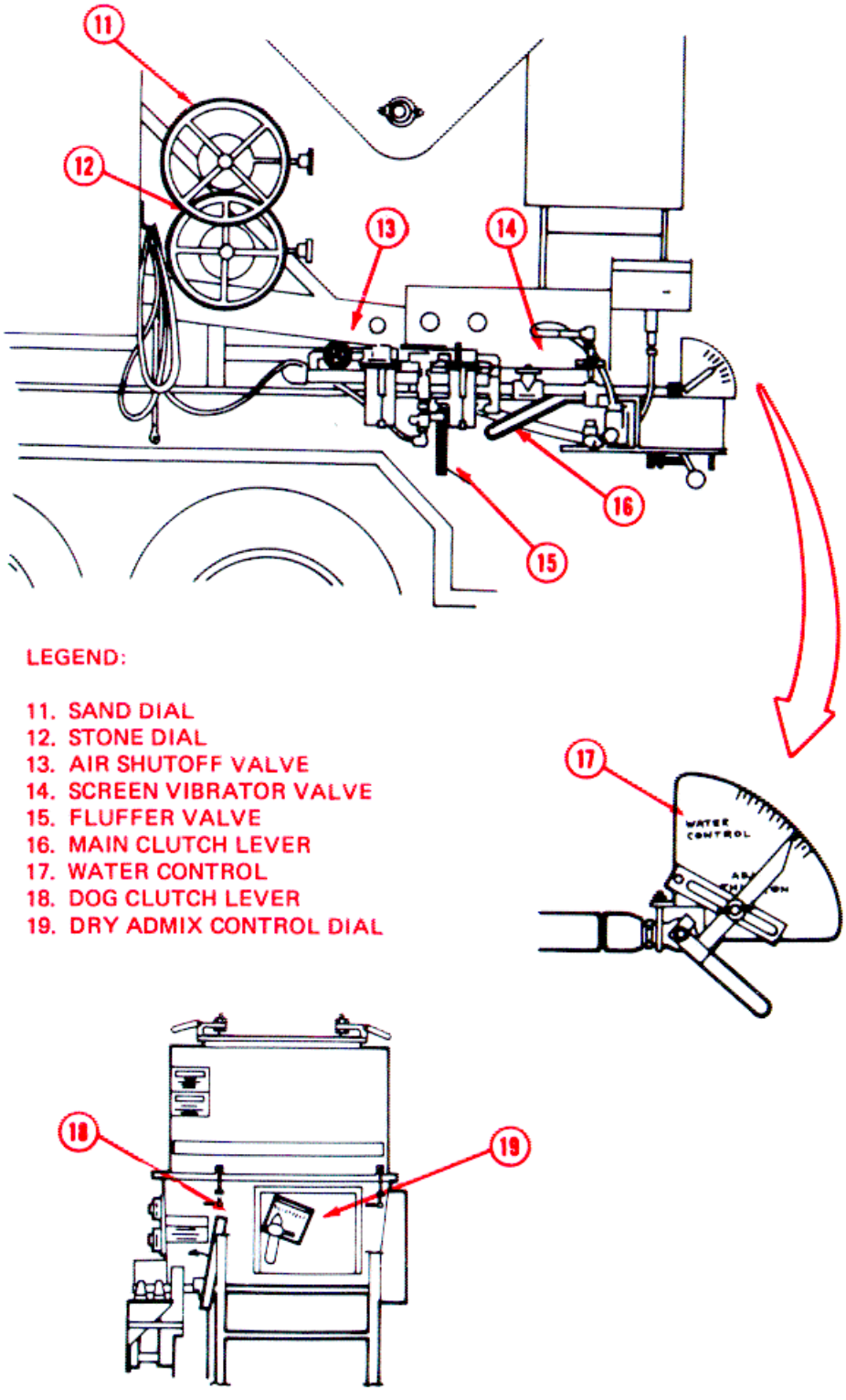


Figure 1-2. Controls and Indicators (Sheet 2 of 3).

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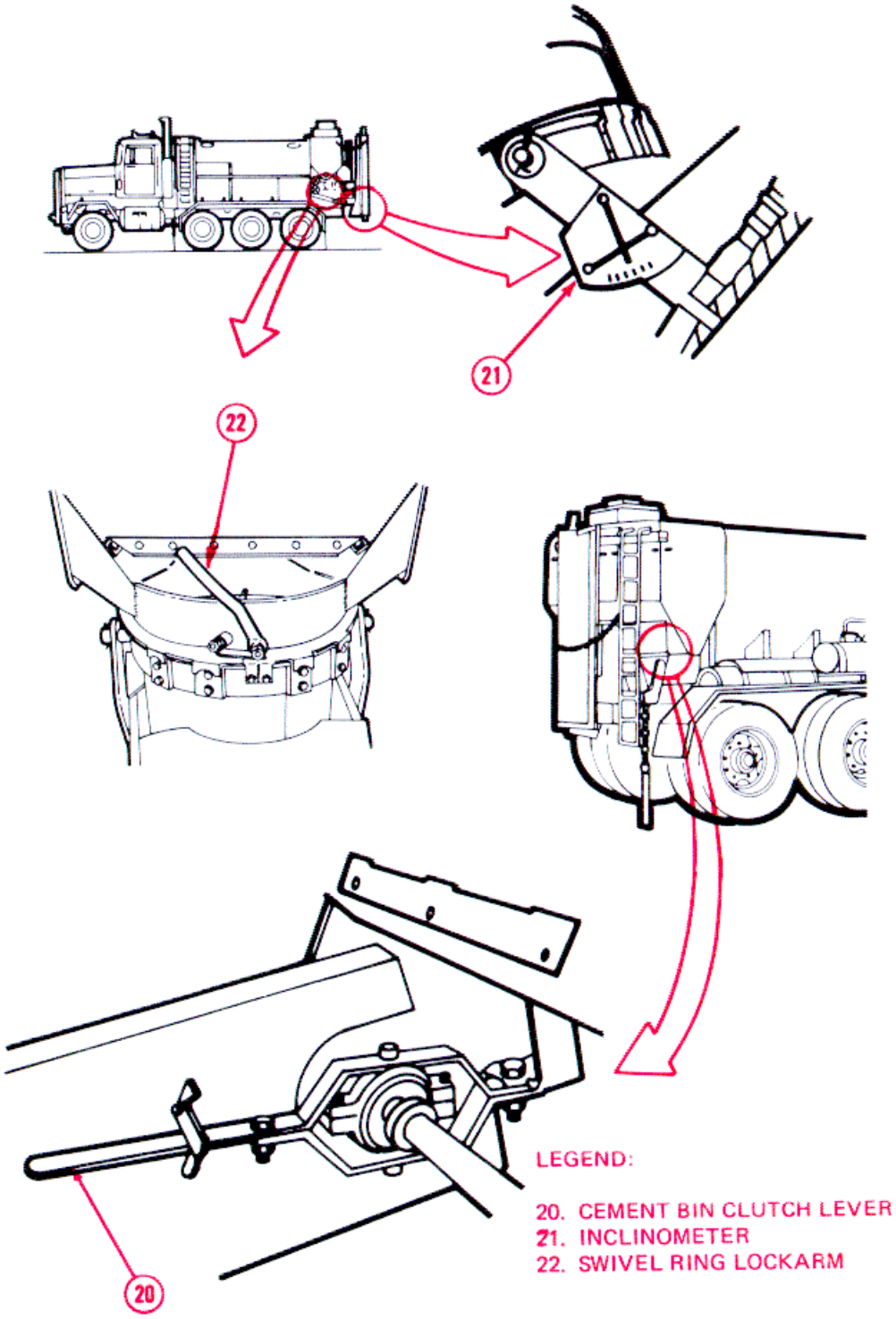

Figure 1-2. Controls and Indicators (Sheet 3 of 3).

1-5. Tabulated Data.

a. Capacities, Weights, and Dimensions. Table 1-1 lists data on mixer capacities, weights, and dimensions which you may need when you are operating the equipment.

b. Instruction and Data Plates. Figure 1-3 identifies mixer instruction and data plates

Table 1-1. Mixer Body Capacities, Weights, and Dimensions

Capacities	
Cement bin	63 cu ft (1 76 m^3)
Sand bin	128 cu ft (3.58 m^3)
Stone bin	182 cu ft (5.10 m^3)
Water tank	400 gal (1514 l)
Hi-flow admix tank	42 gal (158.97 l)
Low-flow admix tank	12 gal (45 42 l)
Dry admix bin	2.35 cu ft (0.066 m^3)
Weights (Including Chassis)	
Empty	37,540 lbs (17,043 Kg)
Loaded	73,090 lbs (33,183 Kg)
Dimensions (Including Chassis)	
Height (over horns - empty)	127.93 in. (325 cm)
Width	96 in. (244 cm)
Length	374.4 in. (951 cm)

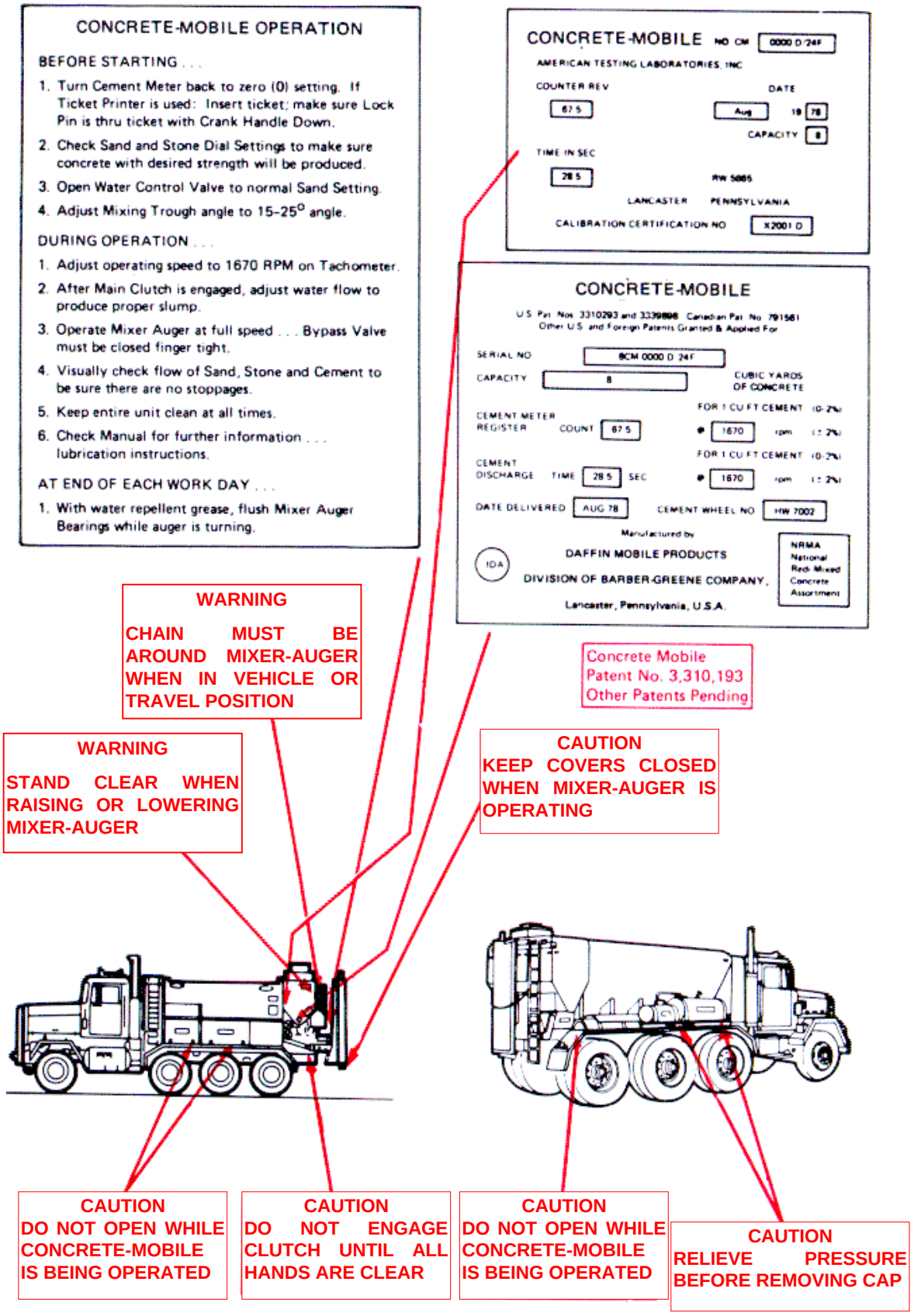

Figure 1-3. Instruction and Data Plates

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CHAPTER 2
OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. Introduction.

This section will tell you how to load, start up, operate and shut down the mixer under ordinary conditions. It identifies controls and tells you how to use them. Making good concrete is easy If you follow the instructions exactly.

NOTE

See TM 9-2320-273-10 for M919 truck chassis operating instructions.

2-2. Concrete Mix Settings.

a. Mixer Set-Up. The first thing that is required before placing a mixer in service is to perform the calculations needed to "set-up" a mixer to produce concrete with a specified mix design, whether stated by weight or volume.

b. Mixer Calibration. Because there are slight variations in each mixer, each unit is carefully calibrated at the factory to determine the following factors required to calculate cement mix settings charts.

(1) Cement Meter Count This is the meter count required to discharge one cubic foot of cement into a mix.

(2) Cement Discharge Time. This is the number of seconds required to discharge the one cubic foot of cement into a mix.

c. Calibration Data and Certification Plates. The calibration data and certification plates (fig 2-1) are installed on every mixer and pertain to that mixer only.

d. Mix Settings Information.

CAUTION

Every mixer needs its own mix settings chart. Make a separate chart for each machine. Make sure each operator uses only the chart for his machine.

NOTE

See Fig 1-3 for location of plates on vehicle.

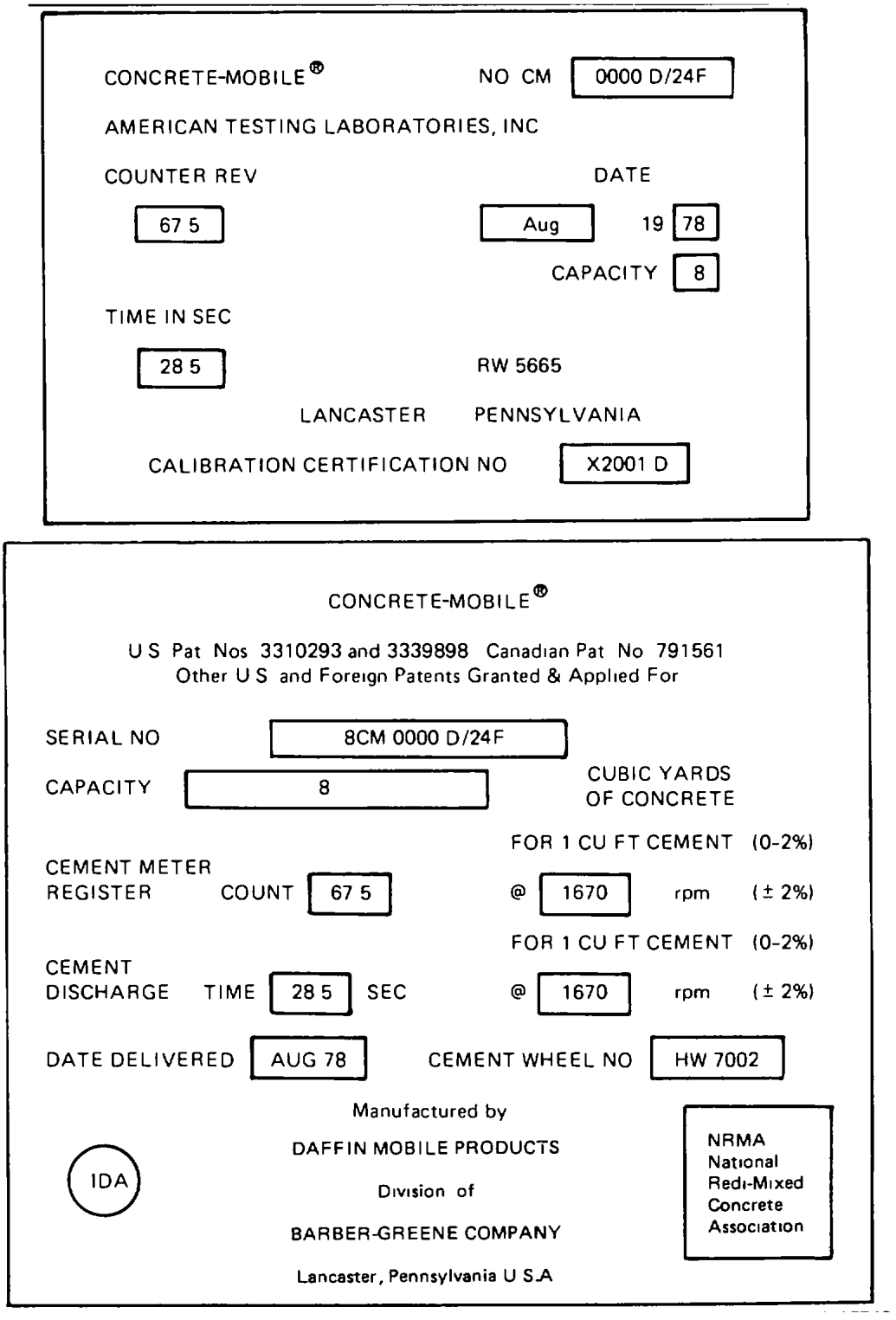

Figure 2-1. Calibration Data and Certification Plates.

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(1) Mix design information required to produce one cubic yard of cement must be known before any settings can be calculated. The following information is needed:

(a) Concrete strength.

(b) Pounds of sand.

(c) Pounds of stone.

(d) Pounds (or bags) of cement.

(e) Gallons of water.

(f) Percent of calcium chloride admix.

(g) Ounces of liquid admix per bag of cement (hi-flow).

(h) Ounces of liquid admix per bag of cement (low-flow).

(i) Dry admix setting.

(2) The following weights of the mix design ingredients must be obtained from the supplier or laboratory:

(a) A cubic foot of dry rodded sand.

(b) A cubic foot of dry rodded stone.

(c) A bag of cement.

NOTE

A bag of TYPE 1 (normal Portland cement weighs 94 lbs (42.68 kg.).

(3) The following information about the mixer is required. This information will be different for each unit.

(a) Serial number.

(b) Cement meter count.

(c) Cement discharge time.

e. Mix Settings Calculations

(1) Because the mixer materials proportioning system is based on volume of material dispensed within a given period of time or “count” on the meter-register and because mix designs are usually furnished in terms of the weights of the materials in a cubic yard of concrete, it is necessary to first convert these weights to their volumetric equivalents.

(2) This selection of the manual explains how to make the necessary conversions using four sample worksheets. Along with the conversions these worksheets are also used to find the mix settings required for an individual mixer unit. To make a permanent record of mix settings, a sample mix settings chart is shown.

f. Control Data Worksheet. (See fig. 2-2.)

CAUTION

The filled-out worksheets are only examples. Do not use them to make concrete

(1) Basic Information (1). This information pertains to ingredients, mix design and mixer data and is the basis of all calculations. All data is lettered and these letters will be used as a reference to perform the calculations on the worksheet. In some cases you may not get the information to complete both pounds of cement cu-yd (F) and bags of cement cu-yd (G); therefore, you may have to calculate one or the other. Calculate as follows:

NOTE

In all calculations round all answers to the nearest tenth.

(a) If you do not know bags of cement (G), divide pounds of cement by weight per bag.

$$\frac{545}{\text{lbs per cu yd}} \div \frac{94}{\text{lbs per bag}} = \frac{5.79}{\text{bags per cu yd}} = 5.8$$

(b) If you do not know pounds of cement (F), multiply bags of cement by weight per bag.

$$\frac{5.8}{\text{lbs per cu yd}} \times \frac{94}{\text{lbs per bag}} = \frac{545}{\text{lbs per cu yd}}$$

(2) Cement Meter Count (2). In this calculation (T) refers to time or “count” on the meter-register.

(3) Sand Dial Setting (3). In this calculation (X) refers to the answer of your first calculation. The (S) refers to the answer of your second calculation and is the number used to determine the setting using mix setting graph (fig. 2-3) for standard sand.

CONTROL DATA WORKSHEET

CONCRETE-MOBILE® S/N-8-CM-000-D/24-F DATE

1 BASIC INFORMATION

INGREDIENTS DATA

(A) WEIGHT OF SAND (cu ft) 103

(B) WEIGHT OF STONE (cu ft) 98

CONCRETE-MOBILE® DATA

(J) CEMENT METER COUNT 67.5

(K) CEMENT DISCHARGE TIME 28.5

MIX DESIGN DATA

(C) CONCRETE STRENGTH 3000

(D) POUNDS OF SAND (cu yd) 1287

(E) POUNDS OF STONE (cu yd) 1773

(F) POUNDS OF CEMENT (cu yd) 545

(G) BAGS OF CEMENT (cu yd) 5.8

(H) GALLONS OF WATER (cu yd) 37.0

2. CEMENT METER COUNT 392

(J) 67.5 CEMENT METER COUNT X (G) 5.8 BAGS OF CEMENT PER CU YD = (T) 391.50 = 392 METER COUNT PER CU YD

3. SAND DIAL SETTING 5.0

(D) 1287 POUNDS OF SAND ÷ (A) 103 WEIGHT OF SAND = (X) 12.49 = 12.5 CU FT OF SAND

(T) 392 METER COUNT PER CU YD − (X) 12.5 CU FT OF SAND = (S) 31.36 = 31.4 METER COUNT PER FOOT OF SAND

NOTE Using results (S) determine sand dial setting using sand graph (fig 4-3)

4. STONE DIAL SETTING 8.9

(E) 1773 POUNDS OF STONE ÷ (B) 98 WEIGHT OF STONE = (X) 18.09 = 18.1 CU FT OF STONE

(T) 392 METER COUNT PER CU YD − (X) 18.1 CU FT OF STONE = (S) 21.65 = 21.7 METER COUNT PER FOOT OF STONE

NOTE Using results (S) determine stone dial setting for 3/4 in crushed stone (used for this example) using stone graph (fig 4-5)

5. WATER SETTING – DRY SAND 13.5

(G) 5.8 BAGS OF CEMENT PER CU YD X (K) 28.5 CEMENT DISCHARGE TIME = (X) 165.30 = 165 SECONDS PER CU YD

(X) 165 SECONDS PER CU YD − 60 SECONDS PER MINUTE = (Y) 2.75 MINUTES PER CU YD

(H) 37.0 GALLONS PER CU YD − (Y) 2.75 MINUTES PER CU YD = (S) 13.45 = 13.5 WATER SETTING FOR DRY SAND

6. WATER SETTING – NORMAL SAND 10.7

(D) 1287 POUNDS OF SAND X 006 = (M) 7.72 = 7.7 GALLONS WATER IN SAND

(H) 37.0 GALLONS PER CU YD − (M) 7.7 GALLONS IN SAND = (R) 29.3 GALLONS TO BE ADDED

(R) 29.3 GALLONS TO BE ADDED − (Y) 2.75 MINUTES PER CU YD = (W) 10.65 = 10.7 WATER SETTING FOR NORMAL SAND

Figure 2-2. Control Data Worksheet.

TA 213859

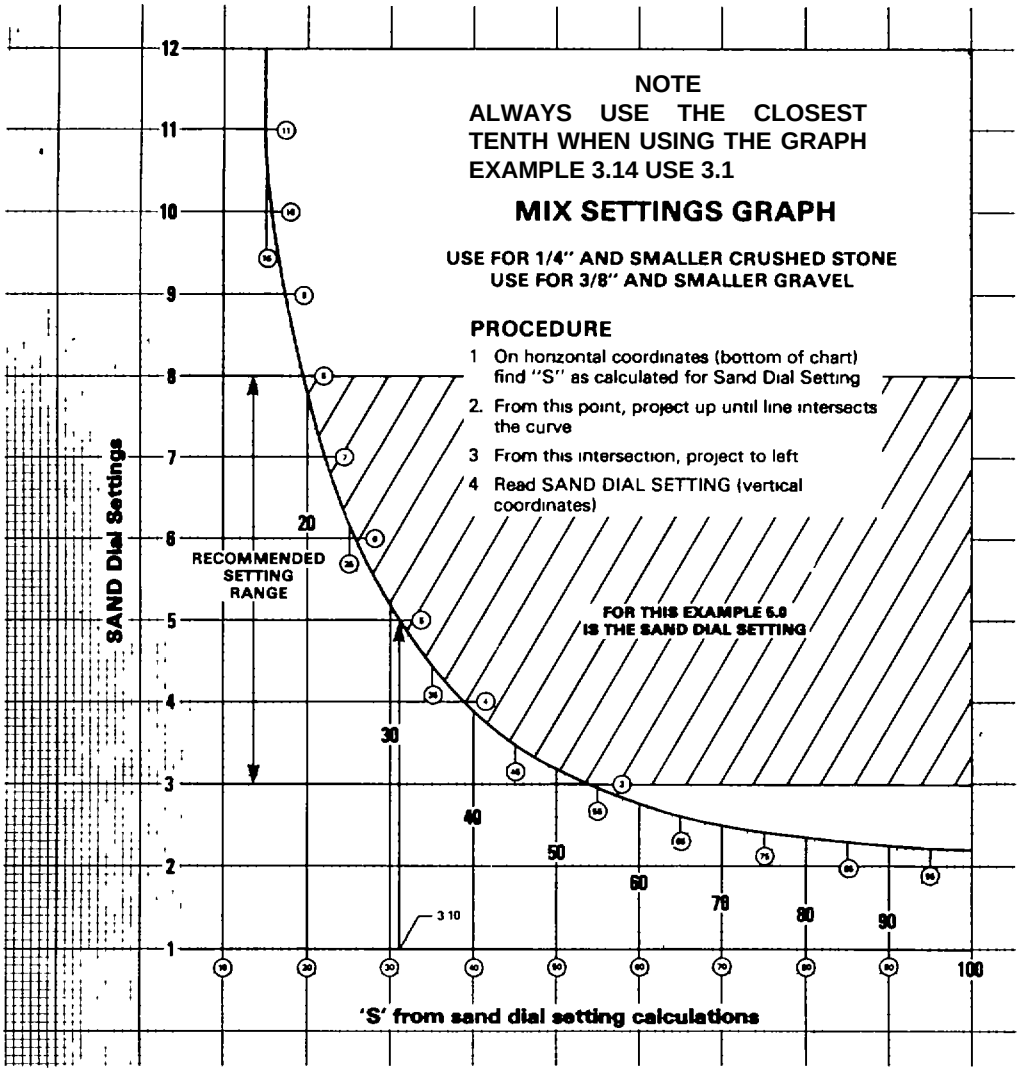


Figure 2-3. Sand Dial Setting Graph.

(4) Stone Dial Setting (4, fig. 2-2). In this calculation (X) refers to the answer of your first calculation and (S) refers to the answer of your second calculation and is the number used to determine the setting using one of three graphs depending upon the size of stone or gravel you are using. In the example being used 3/4 in. crushed stone is being used so the setting figure will be taken from figure 2-5. The three graphs are as follows:

(a) Figure 2-3 - For 1/4 in. and smaller crushed stone or 3/8 in. and smaller gravel.

(b) Figure 2-4 - For 1/2 in. up to 1 in. gravel or 3/8 in. to 1/2 in. crushed stone.

(c) Figure 2-5 - For 5/8 in. up to 1 in. crushed stone.

TA 075469

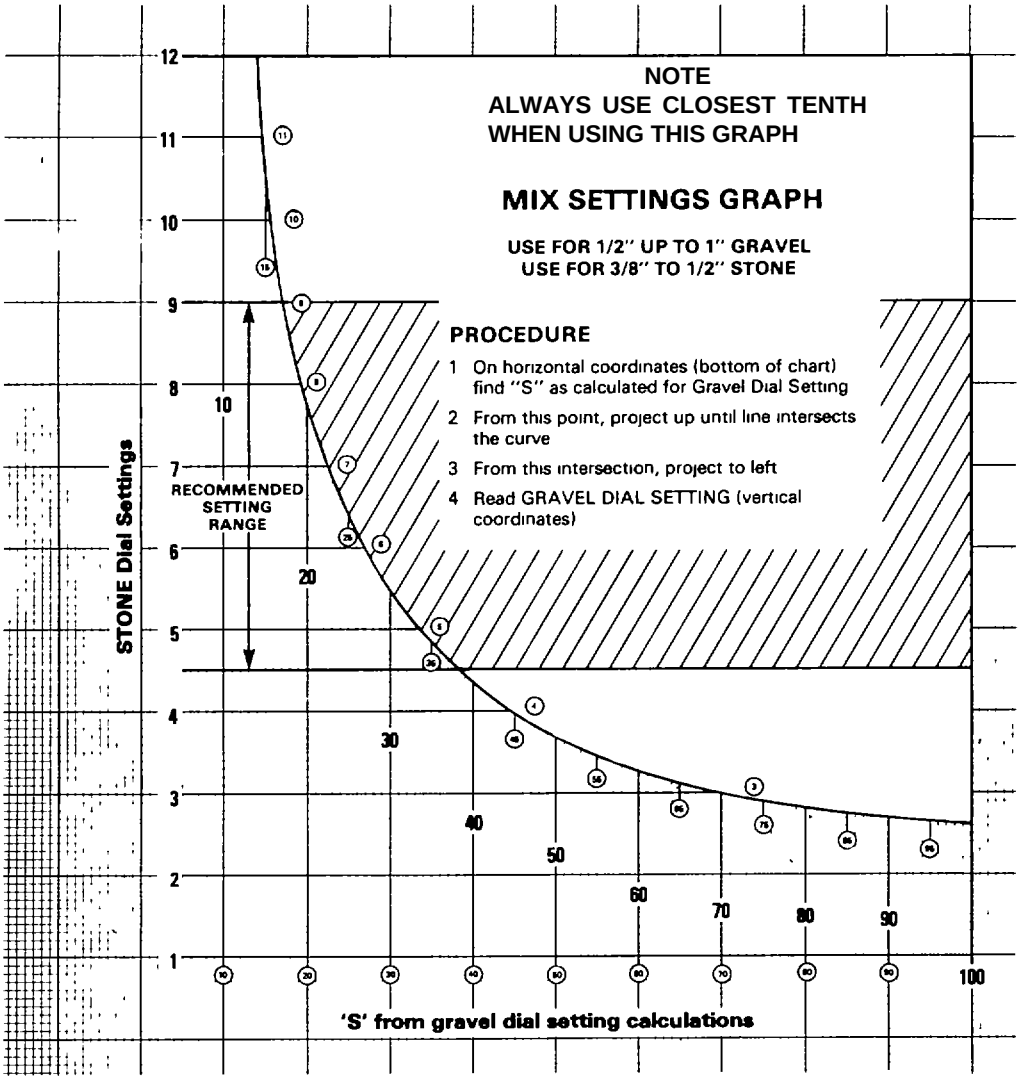


Figure 2-4. Stone Dial Setting Graph.

(5) Water Setting - Dry Sand (5, fig. 2-2). In this calculation (X) refers to the answer of your first calculation and (Y) the answer to your second calculation with (S) referring to the water setting for dry sand.

(6) Water Setting - Normal Sand (6, fig. 2-2). In this calculation (M) refers to moisture or gallons of water in the amount of sand required for the mix design, The (R) refers to the required gallons of water to be added. The (Y) refers to the (Y) in your previous calculation (5) with (W) being the final answer for this calculation or water setting for normal sand. The .006 is a constant used for 5% moisture by weight used in all calculations of this type.

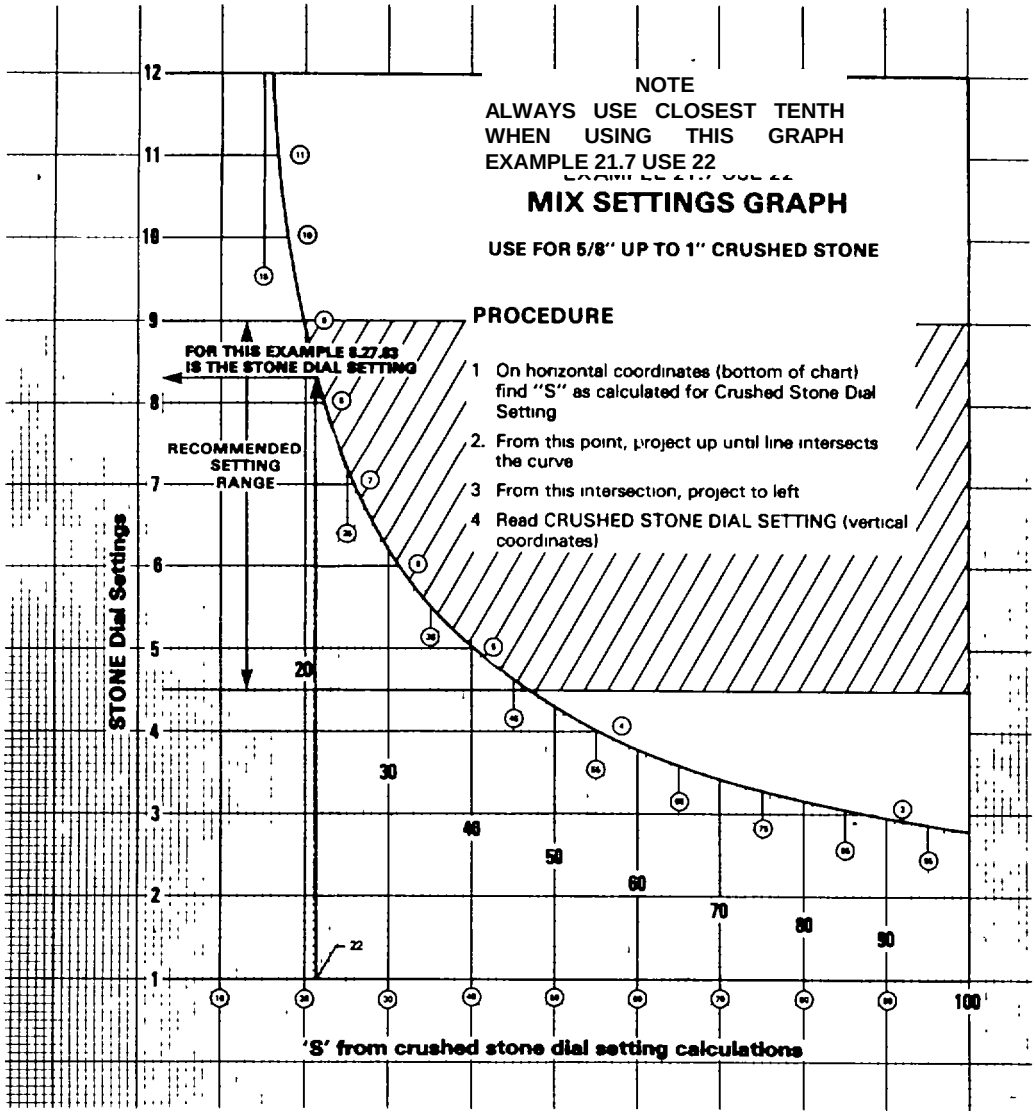


Figure 2-5. Stone Dial Setting Graph.

g. Hi-Flow Admix Worksheet. (See fig. 2-6.)

CAUTION

The filled out worksheet are only examples. Do not use them to make concrete.

(1) This system is calibrated in qt min and solution is usually added to concrete at a certain amount per bag of cement, or per pound of cement. Therefore, it is necessary to know how many bags of cement are discharged from the mixer unit in one minute (2 answer C, fig. 2-6).

NOTE

Calculations are based on solutions in which one quart solution contains admixture for one bag of cement.

CONCRETE-MOBILE® S/N-8-CM-000-D/24-F DATE

NOTE

Calculations are based on solutions in which one quart solution contains admixture for one bag of cement

1 REQUIRED INFORMATION

(A) CEMENT DISCHARGE TIME (seconds per bag) (K, FIG 2-2) 28.5

(B) OUNCES OF ADMIXTURE PER BAG OF CEMENT (FROM MIX DESIGN) 7

2. QUARTS PER MINUTE

60 seconds per minute − (A) $\frac{28.5}{\text{SECONDS PER BAG}}$ = (C $\frac{2.10}{\text{BAGS PER MINUTE}}$

Since there should be one quart of solution for each bag, (C) is also quarts of solution per minute = (C) $\frac{2.10}{\text{QUARTS PER MINUTE}}$

3. FLOWMETER SETTING (HI-FLOW)

Find (C) on the quarts scale of the Hi-Flow Admix Diagram (fig 2-7) Go left to find setting on the flowmeter scale

2.3
HI-FLOW ADMIX SETTING

4 TO CHANGE THE CONCENTRATION OF ADMIXTURE

(D) NEW CONCENTRATION OF ADMIXTURE PER BAG OF CEMENT $\frac{5}{\text{(OUNCES PER BAG)}}$

(D) $\frac{5}{\text{(NEW CONCENTRATION)}}$ − (B) $\frac{7}{\text{(OUNCES PER BAG)}}$ = (E) $\frac{5/7}{\text{(QUARTS OF SOLUTION PER BAG CEMENT − NEW CONCENTRATION)}}$

(E) $\frac{5/7}{}$ X (C) $\frac{2.10}{\text{(QUARTS OF SOLUTION PER MINUTE)}}$ = (F) $\frac{1.5}{\text{(QUARTS OF SOLUTION PER MINUTE − NEW CONCENTRATION)}}$

Find (F) on the quarts scale of the Hi Flow Admix Diagram (fig 2-7) go left to find new setting on the flowmeter scale

1.6
HI-FLOW ADMIX SETTING

Figure 2-6.. Hi-Flow Admix Worksheet.

TA 075472

(2) To make a solution admixture that contains 7 oz. of admixture for each quart of solution:

32 (oz-qt)
-7 (oz-qt of admixture to be used)
25 (oz of water to be added)

So, for every 7 oz. of admix, add 25 oz. of water. A container of any size can be used as long as the ratio remains 7 to 25.

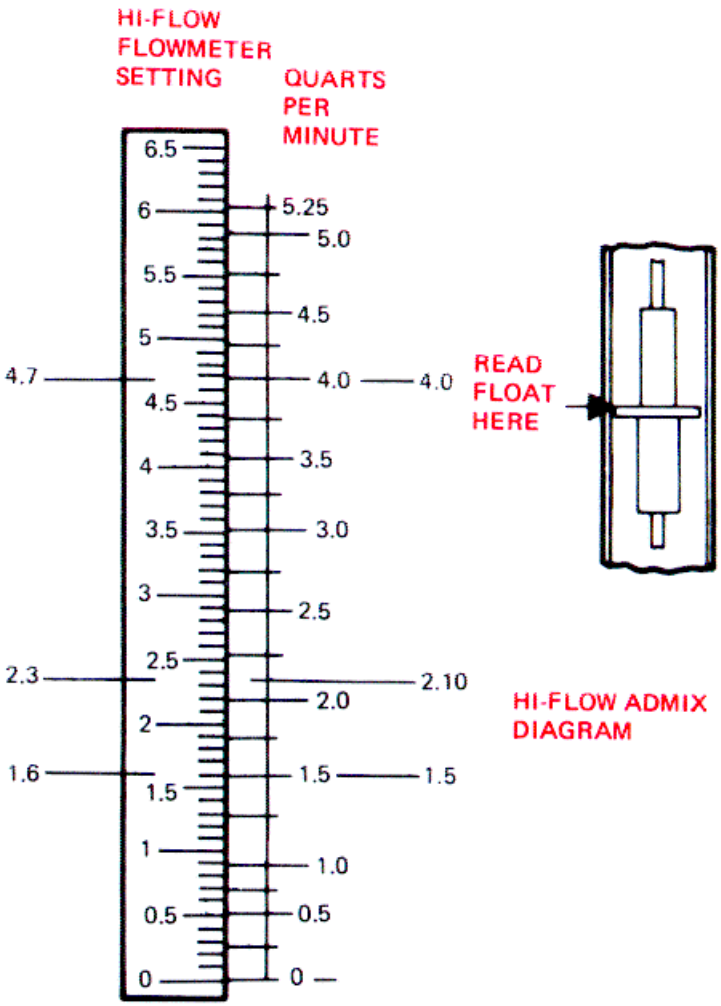


Figure 2-7. Hi-Flow Admix Diagram.

TA 075473

(3) To change the Concentration of Admixture (4). The concentration we have been using is 7 oz/bag, to change this to 5 oz/bag all that is necessary is to multiply the qts-min figure by 5/7 (this way it is not necessary to know how much solution remains in the tank, or to dilute the solution you should not mix solutions in the tank anyway). This method works for any change you want to make.

h. Calcium Chloride Admix Worksheet (Hi-Flow System). (See fig. 2-8.)

CAUTION

The filled out worksheets are only examples. Do not use them to make concrete.

CALCIUM CHLORIDE ADMIX WORKSHEET
(HI-FLOW SYSTEM)

CONCRETE-MOBILE® S/N-8-CM-000-D/24-F DATE

NOTE
Calculations are based on solutions of 1 pound of Calcium Chloride per quart of water (4 pounds per gallon).

1 REQUIRED INFORMATION

(A) MINUTES PER CU YD (Y, FIG 2-2) 2.75

(B) PERCENT OF CALCIUM CHLORIDE (FROM MIX DESIGN) 2%

(C) POUNDS OF CEMENT-CU YD (F, FIG 2-2) 545

2 POUNDS OF CALCIUM CHLORIDE

(C) 545 (POUNDS OF CEMENT PER CU YD) X (B) .02 (% OF CALCIUM CHLORIDE) = (D) 10.9 (POUNDS OF CALCIUM CHLORIDE)

3 QUARTS PER MINUTE

(D) 109 (POUNDS OF CALCIUM CHLORIDE) – (A) 2.75 (MINUTES PER CU YD) = (E) 3.96 = 4.0 (POUNDS PER MINUTE)

Since 1 quart admix has 1 pound calcium chloride in it, pounds per minute and quarts per minute are the same

= (F) 40 (QUARTS PER MINUTE)

4 FLOWMETER SETTING (HI-FLOW)

Find (F) on the quart scale of figure 2-7 Go left to find setting on the flowmeter scale

4.7

HI-FLOW ADMIX SETTING

Figure 2-8. Calcium Chloride Admix Worksheet.

TA 075474

(1) To make a useable solution with calcium chloride flakes, you will need a clean 55 gallon drum with the top removed, water, and 200 lbs of calcium flakes.

(2) Method: Fill the drum half full of water, add 200 lbs of calcium flakes. Then fill the drum with water. This will give you a solution that contains close to 1 lb of calcium for each qt of solution. 4 qts-gal, and you have 50 gallons of solution, so:

> 50 multiplied by 4 = 200 qts and you have added 200 lbs of flakes, so 1 qt contains 1 lb calcium.

i. Low-Flow Admix Worksheet. (See fig. 2-9.)

LOW FLOW ADMIX WORKSHEET

CONCRETE-MOBILE® S/N-8-CM-000-D/24-F DATE

NOTE
Calculations are based on solutions with one ounce of admix per six ounces of solution.

1 REQUIRED INFORMATION

(A) CEMENT DISCHARGE TIME (K, FIG. 2 2) 28.5

(B) OUNCES OF ADMIXTURE PER BAG (FROM MIX DESIGN) 1

2. MINUTES PER BAG

(A) 28.5 (SECONDS PER BAG) − 60 = (C) .475 (MINUTES PER BAG)

3. OUNCES SOLUTION PER MINUTE

(B) 1 (OUNCES ADMIX PER BAG) − (C) .475 (MINUTES PER BAG) = (D) 2.10 (OUNCES ADMIX PER MINUTE)

(D) 2.10 (OUNCES ADMIX PER MINUTE) x 6 (OUNCES SOLUTION PER OUNCE ADMIX) = (E) 12.6 (OUNCES SOLUTION PER MINUTE)

4 FLOWMETER SETTING (LOW-FLOW)

Find (E) on the ounces scale of the Low-Flow Admix Diagram (fig. 2-10) Go left to find setting on the flowmeter scale

06
LOW FLOW ADMIX SETTING

Figure 2-9. Low-Flow Admix Worksheet.

TA 075475

CAUTION

The filled-out worksheets are only examples. Do not use them to make concrete.

(1) The low-flow system is used when it is necessary to inject small amounts of admix solution per bag of cement.

(2) When using the low-flow system, it is best to mix a six part solution (5 parts water to 1 part admixture) so every six ounces of solution contains one ounce of mixture.

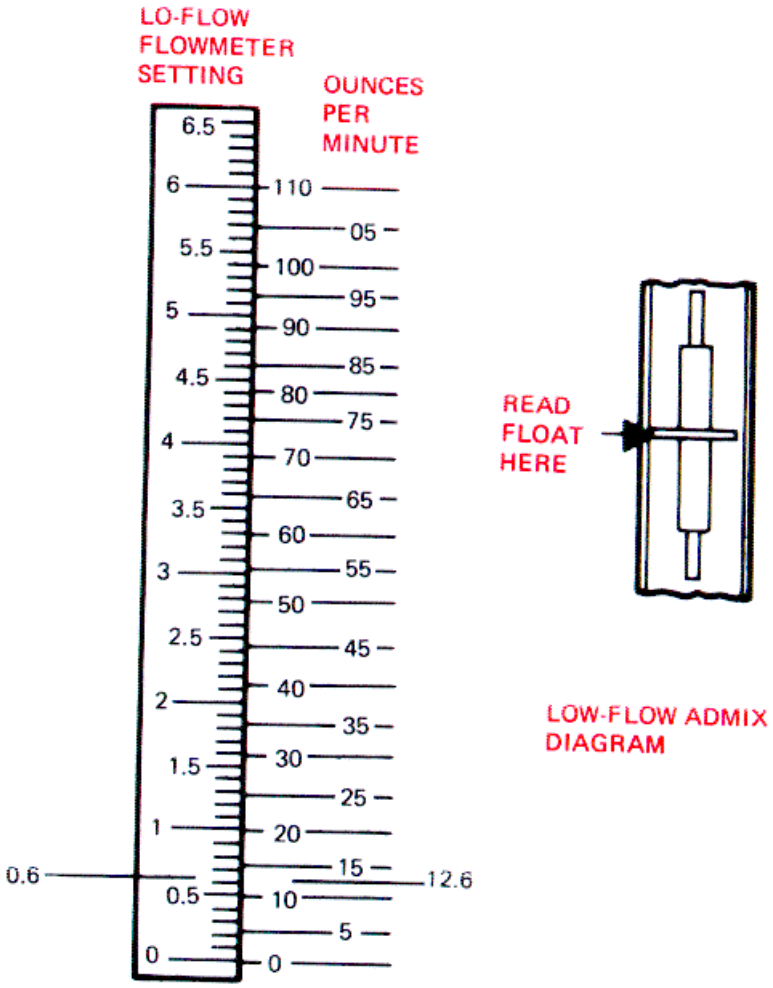


Figure 2-10. Low-Flow Admix Diagram.

TA 075476

j. Mix Setting Chart.

CAUTION

The filled-out chart is only an example. Do not use it to make concrete. Whenever admixtures are used, the amount of solution being added to the mixture in gallons per minute must be subtracted from the water settings found in water settings calculations.

(1) Determine change in water settings when using admixture in the following manner

(a) If the hi-flow admix system is being used divide answer (C, fig 2-6) by four to get gallons per minute.

$$\frac{\text{2.10 (C, Fig. 4-6)}}{\text{Qts Per Minute}} \div \frac{4}{\text{Qts/Gal}} = \frac{.525 = .5}{\text{Gal Per Minute}}$$

(b) If the low-flow admix system is being used divide answer (E, fig 2-9) by 128 to get gallons per minute.

$$\frac{\text{12 6 (E, Fig.4-9)}}{\text{Ounces Per Minute}} \div \frac{128}{\text{Ounces/Gal}} = \frac{0.98 = 0.1}{\text{Gal Per Minute}}$$

(c) Subtract either (1) or (2) or the total of both from either water setting (S or W, fig. 2-2).

13.5	(Water Setting S, Fig.2-2)
- .5	(Gal Per Minute Hi-Flow System)
13.0	(New Water Setting)

Or

10.7	(Water Setting W, Fig.2-2)
- .6	(Total Gal Per Minute Hi- and Low-Flow Systems)
10 1	(New Water Setting)

(2) Complete mix setting chart (fig. 2-11) In the following manner.

CONCRETE-MOBILE®

DESIGNS - MIX SETTINGS

8-CM-000-D/24-F®
CONCRETE-MOBILE SERIAL NUMBER

CEMENT METER COUNT 67.5
CEMENT DISCHARGE TURNS 28.5 SEC

CONCRETE STRENGTH PSI – 28 DAY TEST	3000 PSI	____ PSI	____ PSI	____ PSI	____ PSI
CEMENT METER COUNT FOR 1 CUBIC YARD CONCRETE	392				
LBS /CUBIC YARD	545 LBS	____ LBS	____ LBS	____ LBS	____ LBS
SAND DIAL SETTING	5.0				
LBS /CUBIC YARD	1287 LBS	____ LBS	____ LBS	____ LBS	____ LBS
STONE DIAL SETTING	83				
LBS /CUBIC YARD	1773 LBS	____ LBS	____ LBS	____ LBS	____ LBS
WATER GAL /CUBIC YARD	570 GAL	____ GAL	____ GAL	____ GAL	____ GAL
WATER SETTING FOR DRY SAND	13.5 GPM	____ GPM	____ GPM	____ GPM	____ GPM
WATER SETTING FOR NORMAL SAND	10.7 GPM	____ GPM	____ GPM	____ GPM	____ GPM

ADMIX SYSTEMS

HI-FLOW	Admixture	CALCIUM CHLORIDE				
	Amount per quart	1 POUND				
FLOWMETER SETTING		4.7				
LOW-FLOW	Admixture (1 part admixture, 5 parts water)					
FLOWMETER SETTING		0.6				
DRY	Admixture	NONE				
DIAL SETTING**						

Type Cement TYPE I NORMAL
Type Sand STANDARD Source GEN CEMENT Weight* 103
Type Stone CRUSHED Source GEN CEMENT Weight* 98 Size 3/4-1
Source of Concrete Design Data CORPS OF ENGINEERS Date 27 SEPT 78
*Pounds per Cubic Foot, Dry Rodded **REFER TO TM 5-3895-372-20

Figure 2-11. Mix Settings Chart.

TA 075477

(a) Concrete-Mobile®mixer serial number

(b) Cement meter count - (J, fig.2-2)

(c) Cement discharge turns - (K)

(d) Concrete strength - (C)

(e) Cement meter count (cu yd) - (T)

(f) Lbs/cu yd - (F)

(g) Sand dial setting - (3)

(h) Lbs/cu yd - (D)

(i) Stone dial setting - (4)

(j) Lbs/cu yd - (E)

(k) Water gal/cu yd - (H)

(l) Water setting dry sand - (S)

(m) Water setting normal sand - (W)

(n) Hi-flow admixture - (fig. 2-8)

(o) Amount per quart - (note)

(p) Flowmeter setting - (4)

(q) Low-flow admixture - (fig. 2-9)

(r) Flowmeter setting - (4)

k. Meter-Feeder Calibration.

NOTE

The mixer cannot produce good concrete if meter calibration is inaccurate. If there is any doubt the accuracy of cement delivery, check calibration. This procedure should be done by the operator with organizational supervision. Be sure to perform all *Preparation* steps (Item 1) before starting *Calibration* (Item 2). Check calibration at least once a year.

(1) Preparation

(a) Have the following items on hand to complete the calibration.

(1) 36 bags type 1 (normal) Portland cement (minimum quantity).

(2) Stopwatch (accurate in seconds).

(3) Six clean, dry, 3 cu ft (.084 m^3) containers

(4) Scale -0-250 lbs (0-113.5 kg) accurate to 1 lb (.454 kg).

(b) Empty sand and stone bins.

(c) Remove mixing trough assembly. (Notify organizational maintenance).

(d) Clean sand and stone bins thoroughly. Sweep and brush until all aggregates are removed.

(e) Clean conveyor belt thoroughly. Be sure chain is clean.

(f) Check operation of four vibrators. (Check by feel of hand against side of bin close to vibrator).

(g) Clean meter-feeder wheel thoroughly.

(h) Check that spring tine arms move three-fourths to one inch (1.9 to 2 5 cm) against spring tension (notify organizational maintenance).

(i) Check cement bin auger for bent or missing fingers (notify direct support maintenance).

(j) Check meter register operation. Be sure there is no loose play in cable (notify organizational maintenance)

(k) Using auxiliary cement bin or quick-loading hopper, add 3 to 5 in. (8 to 13 cm) of cement to cement bin (para 2-6).

(l) Actuate air pads with short, sharp blasts (para 2-12). Check for gentle puffs of cement. Torn cloths will cause blasts of air If no puffs are seen, cloths are clogged (notify organizational maintenance).

(m) Using auxiliary cement bin or quick loading hopper, fill the cement bin with type 1 (normal) Portland cement. Bin must have at least 36 bags of cement in it.

(n) Remove auxiliary cement bin or quick loading hopper and inspect air breather hole (fig.2-12). Hole (1) must be free of all dust or dirt. Clean, if required, using a stiff wire.

(o) Be sure ground straps (2) and (3) are in good condition and touching ground. Avoid calibrating on wooden floors since ground will not be established.

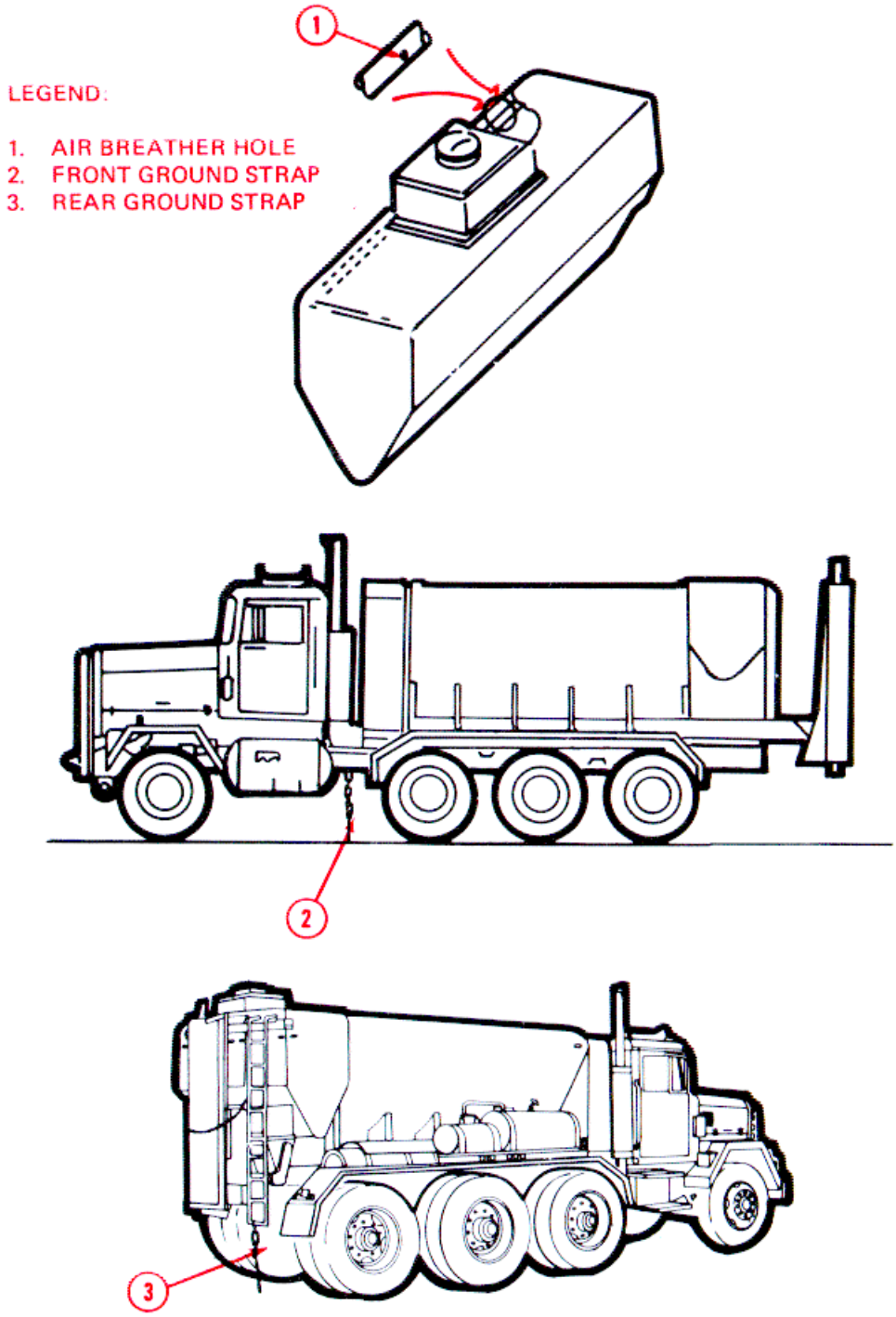


Figure 2-12. Meter-Feeder Calibration.

TA 075478

(2) Calibration

(a) Lock-up fan on engine (refer to TM 9-2320-273-10).

(b) Start engine and engage PTO (refer to TM 9-2320-273-10).

(c) Adjust throttle so that tachometer reads 1700 RPM (para 2-10).

NOTE

Tachometer reading must remain in the 1600-1700 rpm range when system is under load. If rpm varies beyond these limits during calibration, the step being done should be repeated. Always use chain oiler when conveyor is in operation.

(d) Place container under swivel ring to catch cement.

(e) Be sure that belt is primed with cement Belt from feeder to swivel ring must have cement on it.

(f) Engage cement bin clutch (para 2-11) and main drive clutch (para 2-12). Run out at least three bags of cement. Disengage main drive clutch and remove container

(g) Set meter register to zero (para 2-11).

(h) Place an empty container on scale and record weight on worksheet

(i) Engage the main clutch (para 2-12) and start the stopwatch. When meter register reads 100, disengage clutch and stop the stopwatch. Record time

(j) Record exact reading on meter register and set back to zero.

(k) Record weight of container with cement and remove from scale.

(l) Place another container on scale and record weight of container.

(m) Engage main clutch and start stopwatch. When meter register reads 100, disengage clutch and stop stopwatch. Record time.

(n) Record exact reading on meter register and set back to zero.

(o) Record weight of container with cement and remove from scale.

(p) Continue procedure with containers #3, #4, and #5.

(3) Calculate meter count and discharge time.

NOTE

Check to be sure that you have recorded the weight of empty container, weight of container with cement, time and register count for each container. See facing page for copy of worksheet.

(a) Fill In serial number on worksheet.

(b) Subtract empty weight (b) from full weight (a) to find cement weight (c) for each container.

(c) Add up total cement weight, total time and total meter count.

(d) Fill in total pounds and multiply by .02. Subtract to find adjusted weight.

(e) Divide total meter count by adjusted weight.

(f) Multiply by 94 (the number of pounds in a cubic foot of cement).

(g) Divide total time by adjusted weight.

(h) Multiply by 94.

(i) When the meter count varies from the original calibration by more than ± 4 points, It Is recommended that the calibration be rechecked. Refill cement bin and carefully repeat the preparation steps listed in paragraph 2-2 k (1). If meter count does not come within the ± 4 point range the second time, report problem to Organizational Maintenance.

CONCRETE-MOBILE® CALIBRATION WORKSHEET

NOTE

Do not use these calculations for any other mixer body . . only for the one specified by the Serial Number on this Worksheet.

1. Serial Number

2. Test Information	Drum #1	Drum #2	Drum #3	Drum #4	Drum #5		
a. Weight of drum with cement							
b. Weight of empty drum						Total	
c. Weight of cement (b-a)							Total Weight
d. Time (seconds)							Total Time
e. Meter register count							Total Meter Count

3. Cement Meter Count

a. Total pounds (Step 2) x 0.002 = 2% of Total lbs

b. Total pounds (Step 2) - 2% (from a) = Adjusted weight

c. Total Meter Count (from Step 2) + Adjusted weight (from b) = Weight factor (to 4 decimals)

d. Weight factor (from c) x 94 = New Cement Meter Count

CONCRETE-MOBILE CALIBRATION WORKSHEET (Continued)

NOTE

You answer will include decimals to one or two places. Use the nearest half (0.5) number as the new, re-calibrated Cement Meter Count (for one cubic foot of cement). Enter this figure in the box.

NEW CEMENT METER COUNT ____

4. Discharge Time

a. ____ (Total seconds (Step 2)) ÷ ____ (Adjusted weight (from 3b)) = ____ (Time factor (to 4 decimals))

b. ____ (Time Factor (from a)) x 94 = ____ (New Time)

NOTE

Your answer will include decimals to one or two places. Use the nearest half (0.5) as the new, re-calibrated time in seconds to discharge one cubic foot of cement. Enter this figure in the box.

NEW TIME ____

2-3. Initial Guidelines.

Before you operate the mobile mixer, you should

a. Perform your before (B) PMCS. If necessary, notify Organizational Maintenance of problems.

b. Know how to use the mixer safely and efficiently.

c. Be sure you know what ingredients and what mix design you should use.

2-4. Filling the Water Tank.

CAUTION

Concrete should be made with clean water. If possible, use potable water (fit for drinking). If there are any impurities in the water, use the inlet strainer.

a. Open the side panels of the truck by lifting up on the latches (fig 2-13). Each panel has a brace to support it in a raised position.

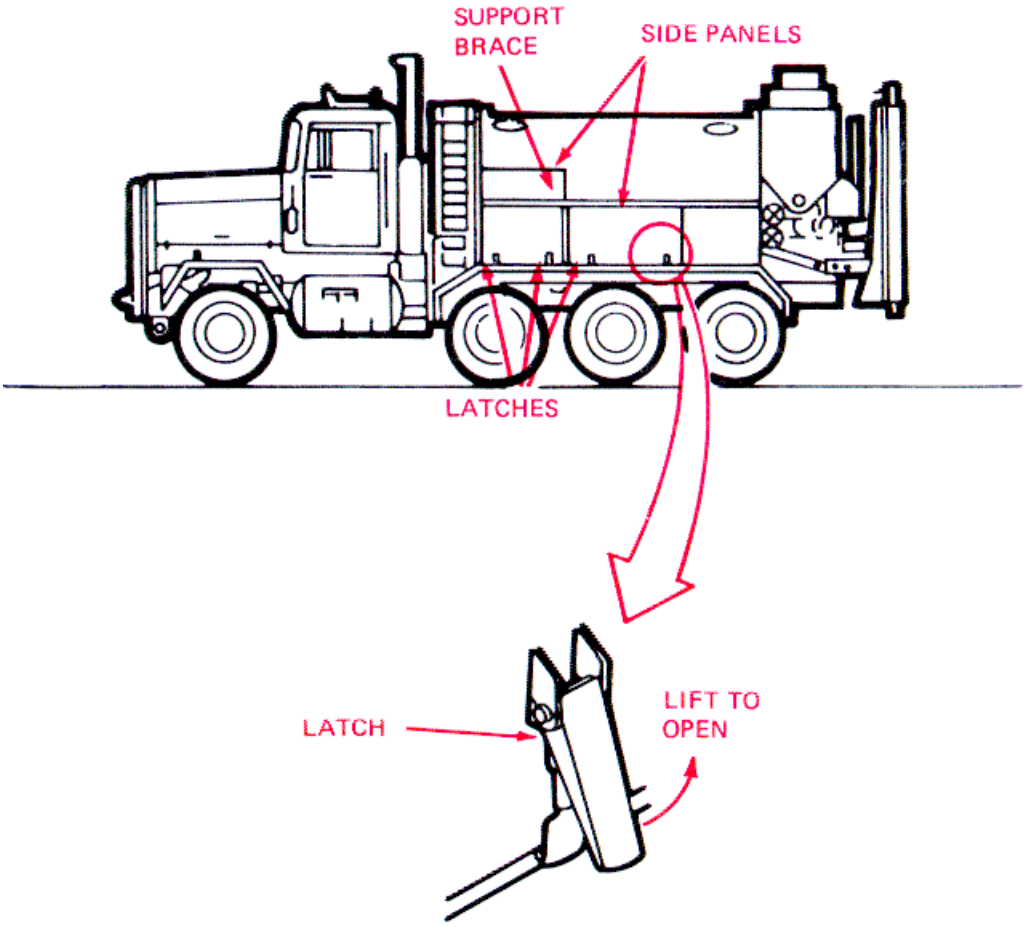


Figure 2-13. Side Panels.

TA 075479

b. Check that the drain valve is turned all the way clockwise. Be sure that the eight draincocks and the vents are closed (fig. 2-14).

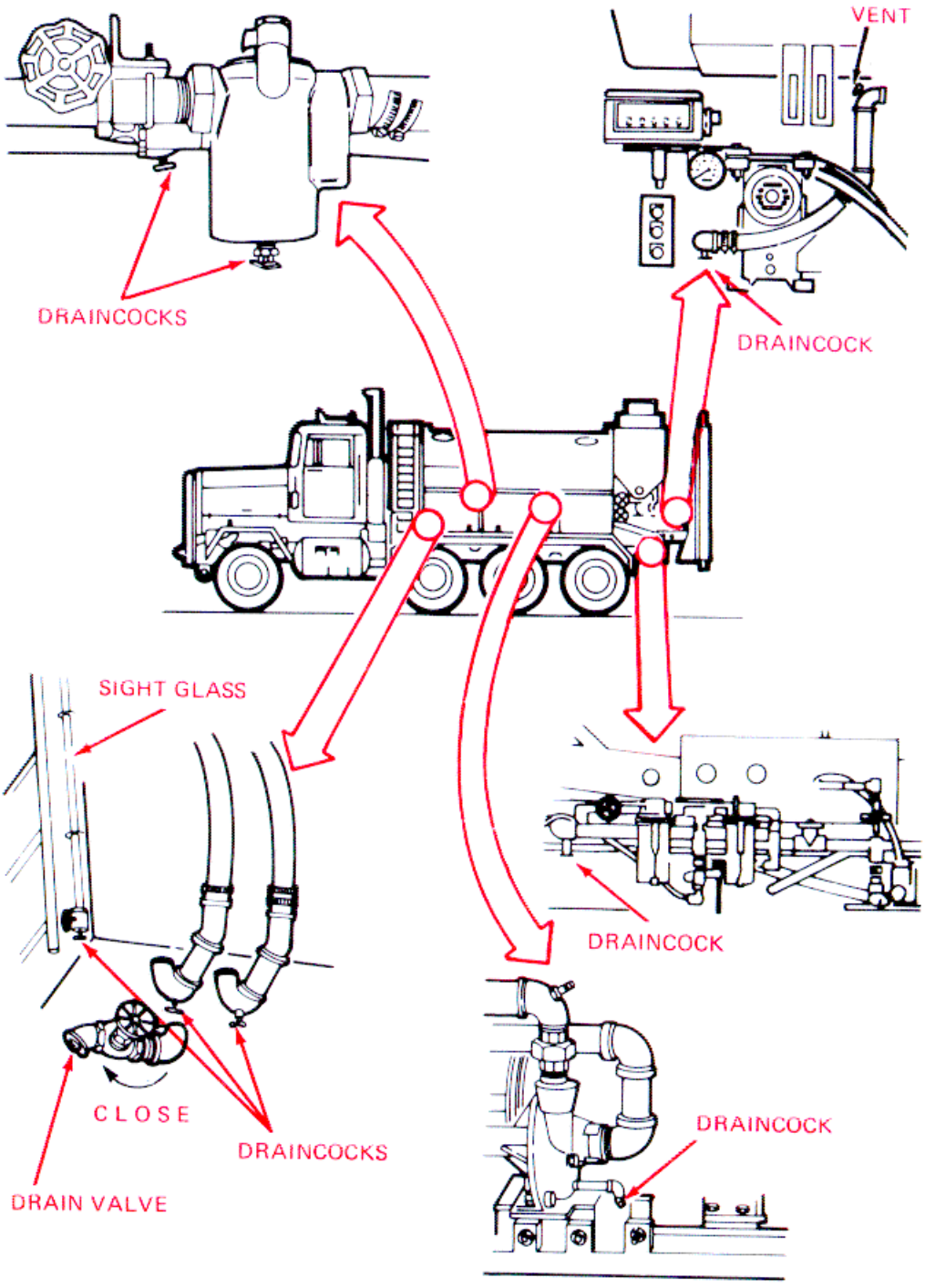


Figure 2-14. Water Drain, Draincocks, and Vents.

TA 075480

c. Lower the side panels. Flip the latches (fig 2-13) downward to lock the panels In place.

d. If you are using non-potable water (not fit for drinking) you must fill through the square opening. (There is a cylindrical strainer in this opening). Otherwise you may use whichever fill hole is easier (fig. 2-15).

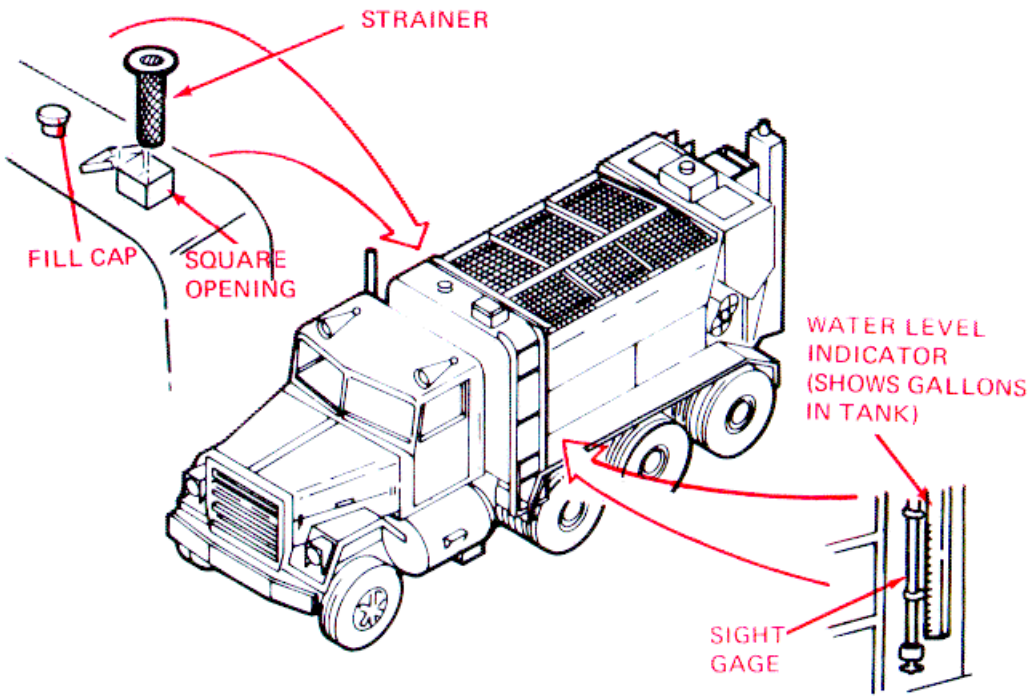


Figure 2-15. Filling the Water Tank

NOTE

If the strainer in the square opening is clogged, lift it out and wash it with water.

e. Fill the tank to the desired level. You can tell how full the tank is by watching the water level in the sight gage. Next to the tube are markings telling you how many gallons are in the tank (fig. 2-15).

TA 075481

f. When the tank has been filled, rinse out the inlet strainer (fig. 2-15) (if you used it). Put it back In the square opening.

g. Put the fill cap (fig. 2-15) back onto the fill opening

2-5. Filling the Aggregate Bins.

a. Remove the tarpaulin by disconnecting the tie-down ropes from the hooks on the sides of the bins (fig. 2-16).

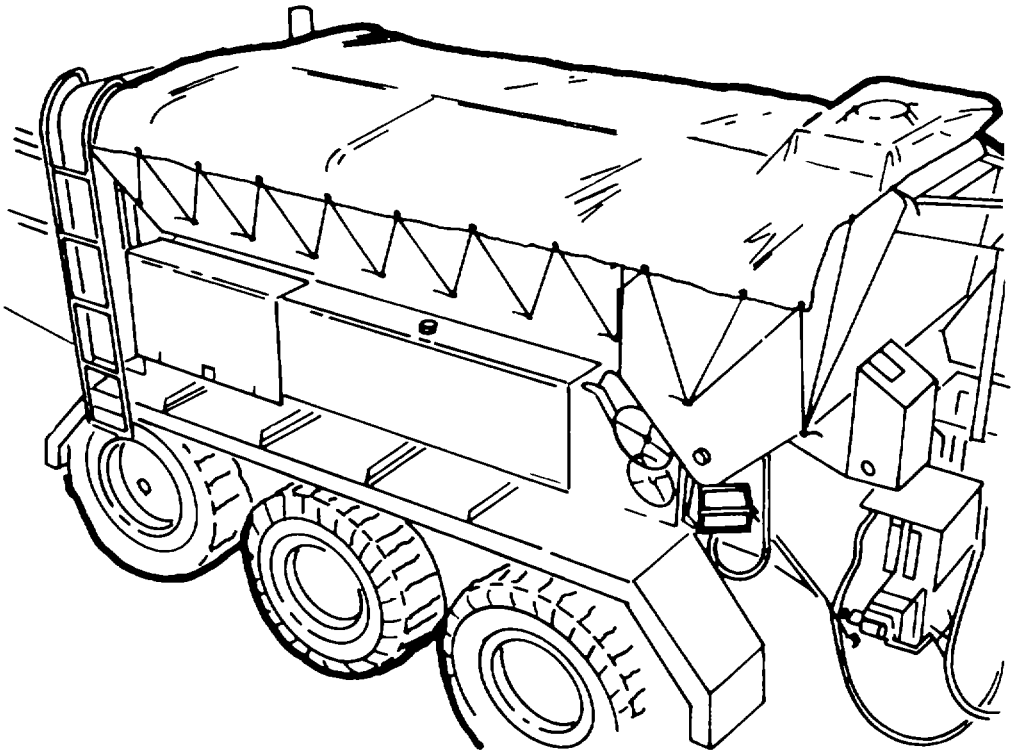


Figure 2-16. Tarpaulin.

CAUTION

Be sure there is enough clearance above the bins to load the aggregates. Be sure that all the aggregates fall into the correct bin.

TA 075482

b. Use a front-end loader to dump the sand through the screens into the sand bin. These screens keep large rocks and other foreign matter out of the bin (fig. 2-17).

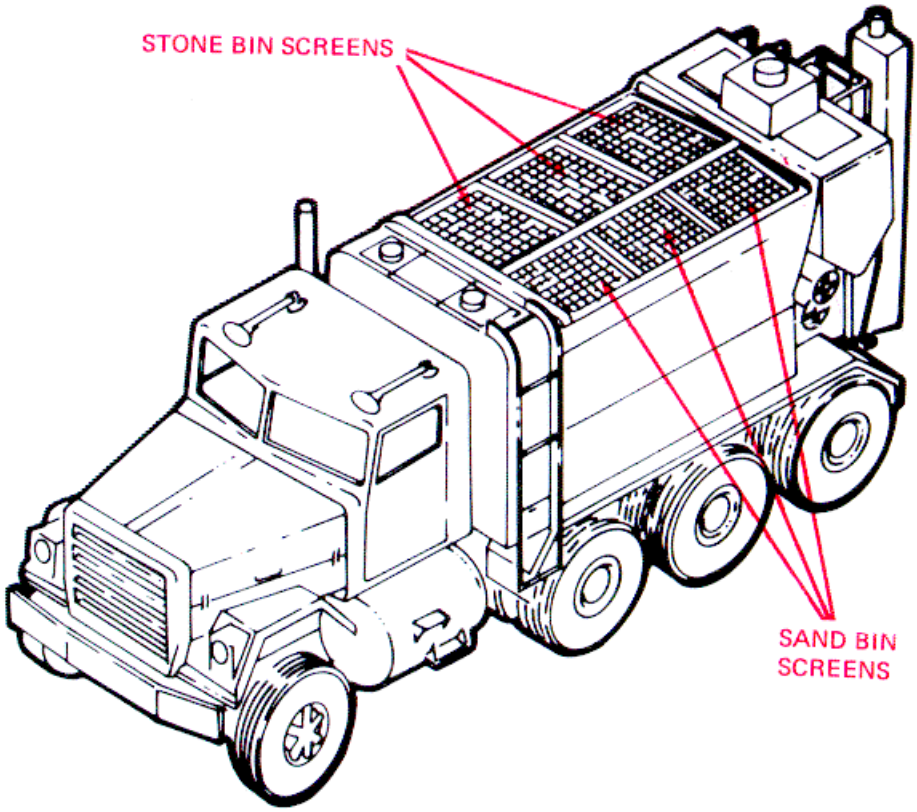


Figure 2-17. Loading the Aggregate Bins.

c. Use a front-end loader to dump the stone through the screens into the stone bin. Discard stones that do not pass through screen.

NOTE

Sometimes stone remains caught on the screens. When you have finished dumping stone on the screens, climb onto the top of the unit. Kick the stone through the screens into the bin.

TA 075483

d. When the bin Is full, spread the tarpaulin over the screens. Loop the tie-down ropes over the hooks

2-6. Filling the Cement Bin.

WARNING

Cement dust can be harmful. During loading operations or any time there is cement dust in the air, take precautions to avoid direct inhalation of the dust. If you must be in the immediate vicinity of dust, wear a dust mask; or if none is available, cover your nose and mouth with a cloth. CEMENT DUST CAN CAUSE SERIOUS LUNG PROBLEMS.

a. Open the air shutoff valve and the screen vibrator valve by turning them all the way counterclockwise (fig. 2-18).

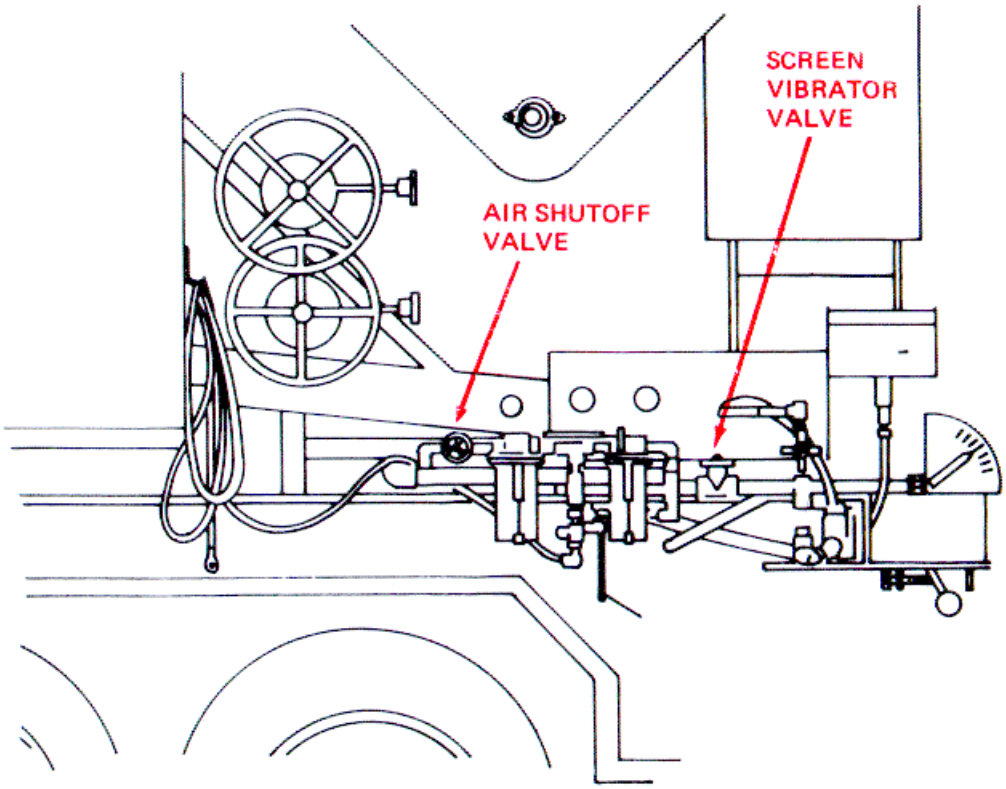


Figure 2-18. Air Shutoff Valve.

TA 075484

b. Use the quick-disconnect fitting to connect the vibrator air line. The vibrator shakes a screen Inside the hopper to sift the cement (fig. 2-19).

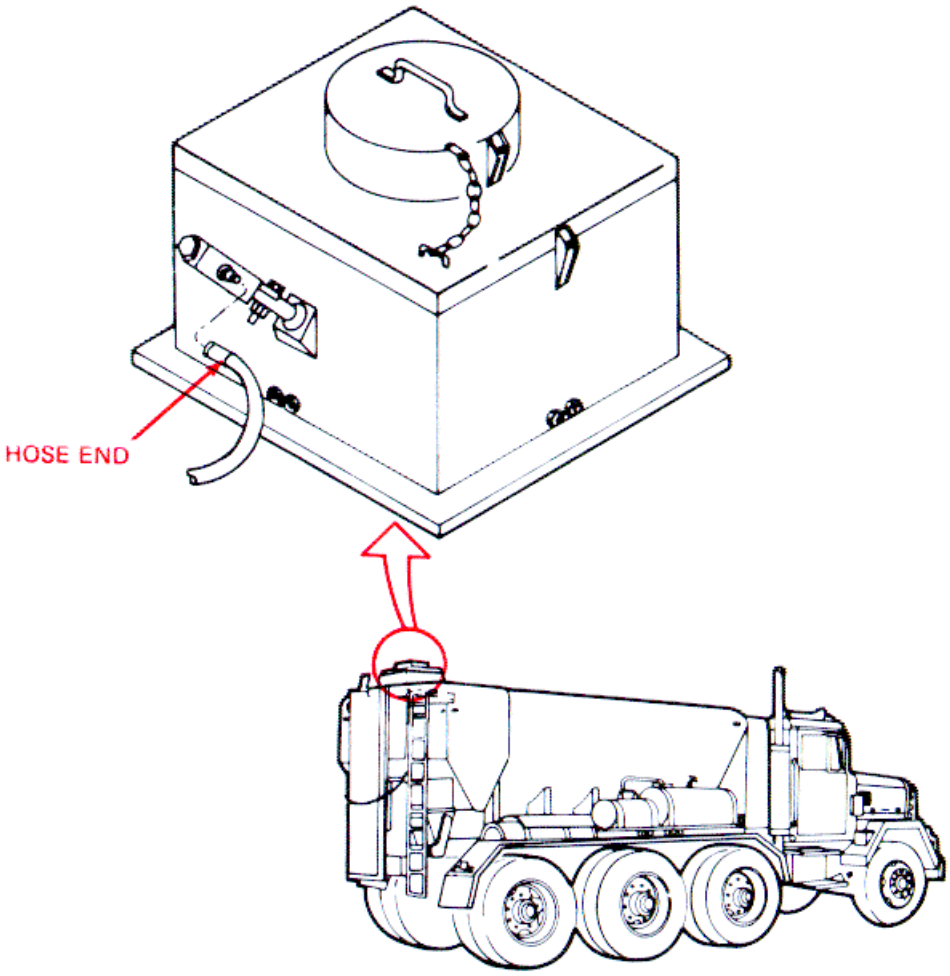


Figure 2-19. Screen Vibrator Quick-Disconnect.

TA 075485

NOTE

The vibrator will not function if chassis air pressure is below 65 psi (448kPa). If necessary, start up the truck (see TM 9-2320-273-10) to build up air pressure.

c. To load cement from an "elephant trunk" loader, remove the round cap and fit trunk into the opening (fig. 2-20). Fill the bin.

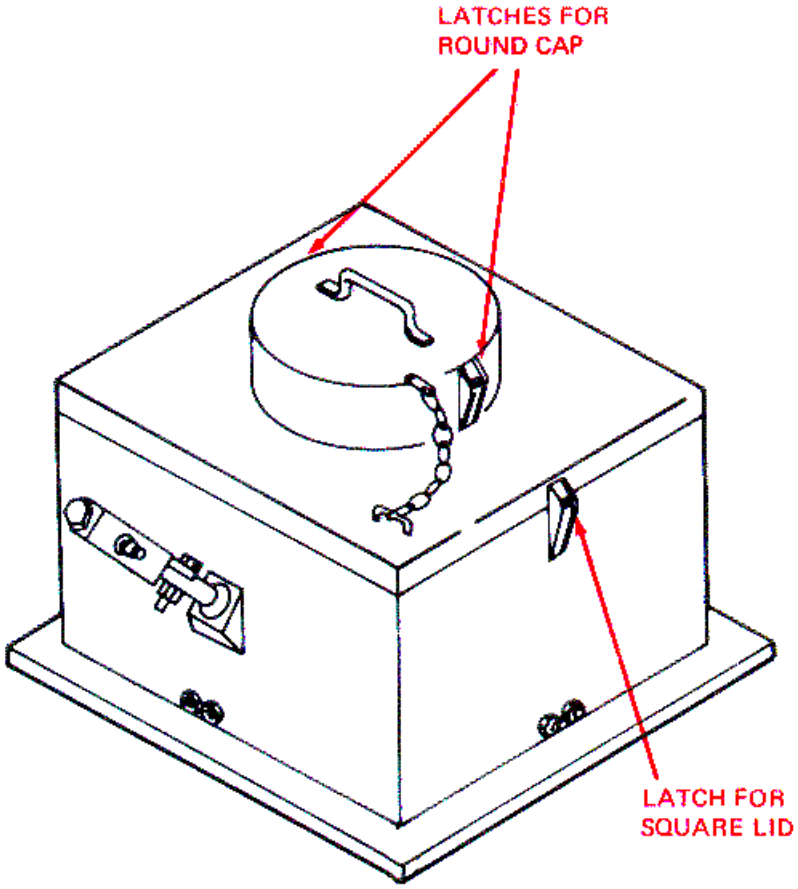


Figure 2-20. Quick-Loading Hopper.

TA 075486

d. To load cement from a chute or auxiliary bin; remove the square hopper lid (fig. 2-20). Fill the bin.

e. Disconnect vibrator air line (fig. 2-19).

f. Close hopper lid or put round cap back on. Close the latches Check to be sure the covers fit securely (fig. 2-20).

g. Close the air shutoff valve and the screen vibrator valve by turning them all the way clockwise (fig. 2-18)

2-7. Filling the Hi-Flow Admix Tank.

CAUTION

Always prepare admix solutions in a separate container. Never mix solutions in the tank. Never put undiluted admix in the tanks.

NOTE

For this procedure you will need a clean container calibrated in quarts. It must be large enough to hold the amount of solution you are mixing.

a. Preparing Calcium Chloride Solution

(1) Weigh out the required number of pounds of dry calcium chloride.

(2) Put the calcium chloride in the clean container.

(3) Add water until the number of quarts of solution equals the number of pounds of calcium chloride.

(4) Example If you used 45 lbs (20 kg) of calcium chloride, add water until you have 45 qts (43 I1) of solution.

b. Diluting Liquid Admixtures for the Hi-Flow System.

(1) Check the mix design to see how much admix is required per bag of cement. Multiply by the number of bags of cement you will be using.

(2) Put this amount of admix (enough for as many bags of cement as you will use) into the clean container.

(3) Add clean water until the number of quarts of solution equals the number of bags of cement.

(4) Example: If you need 7 oz (207 ml) of admix per bag, and expect to use 60 bags of cement, put 420 oz (12421 ml) of admix in the container. Add enough clean water to make 60 qts (57 l) of solution.

c. Putting Solution into the Hi-Flow Tank. (See fig. 2-21.)

(1) Close the drain valve, the air gate valve, and the solution gate valve. (Turn them all the way clockwise.)

(2) Open both gage valves. (Turn them all the way counterclockwise). Check that the vent and draincock on the gage valves are closed.

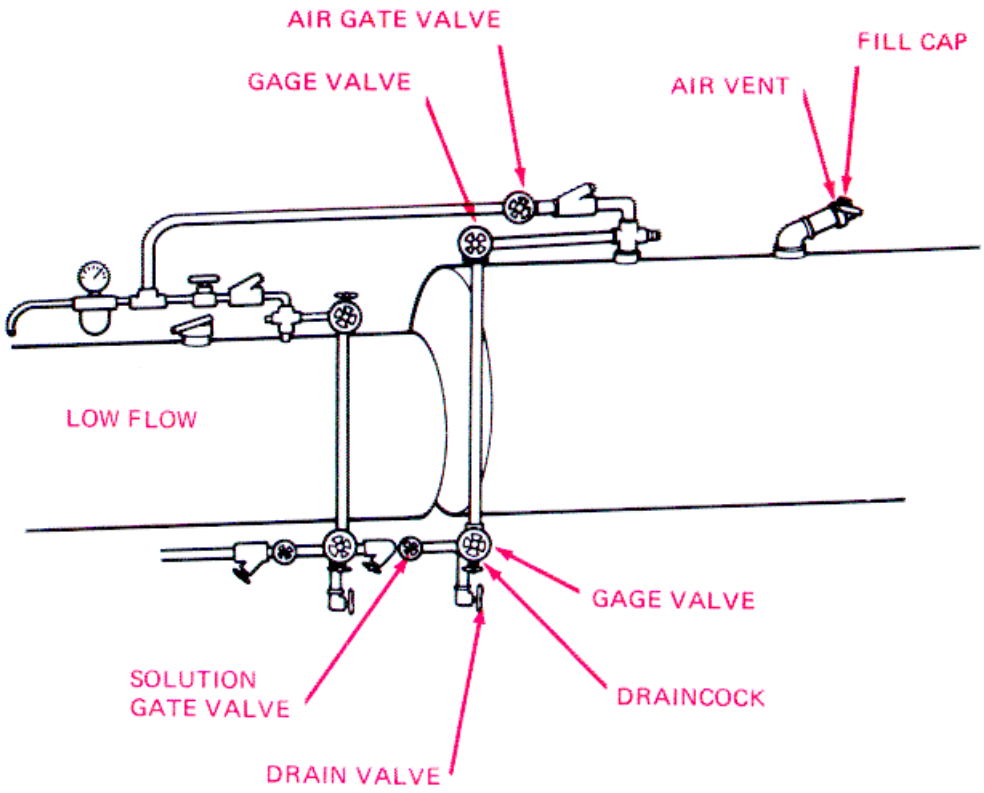


Figure 2-21. Filling the Hi-Flow Admix Tank.

TA 075487

(3) Loosen the vent on the fill cap and allow air pressure to vent.

WARNING

Do not remove the fill cap until all air pressure is vented

(4) Remove the fill cap

(5) Check that the solution is thoroughly mixed. Pour it into the tank. The sight gage will show the level of liquid in the tank.

(6) Put the fill cap on handtight.

(7) Tighten the vent on the fill cap finger tight.

2-8. Filling the Low-Flow Admix Tank.

CAUTION

Always prepare admix solutions in a separate container. Never mix solutions in the tank. Never put undiluted admix in the tanks.

NOTE

For this procedure you \will need a clean container large enough to hold the amount of solution you are mixing. You will also need a clean container to measure the admixture.

a. Diluting Liquid Admixtures for the Low-Flow System

(1) Check the mix design to see how much admix Is required per bag of cement. Multiply by the number of bags of cement you will be using.

(2) Put this amount of admix (enough for as many bags of cement as you will be using) in the large container.

(3) Add five times that amount of water.

(4) Example: If you need 2 oz (59.14 ml) of admix per bag, and expect to use 32 bags of cement, put 64 oz (1892 ml) (2 qts) (1.89 1) of admix in the container. Add 10 qts (9.46 I1) of clean water.

NOTE

No matter what you use to measure the admix, you should use five parts of water to each part of admix.

b. Putting Solution into the Low-Flow Tank. (See fig. 2-22).

(1) Close the air gate valve, the solution gate valve, and the drain valve. (Turn them all the way clockwise.).

(2) Open the two gage valves. (Turn them all the way counterclockwise). Be sure the draincock and vent on the gage valves are closed.

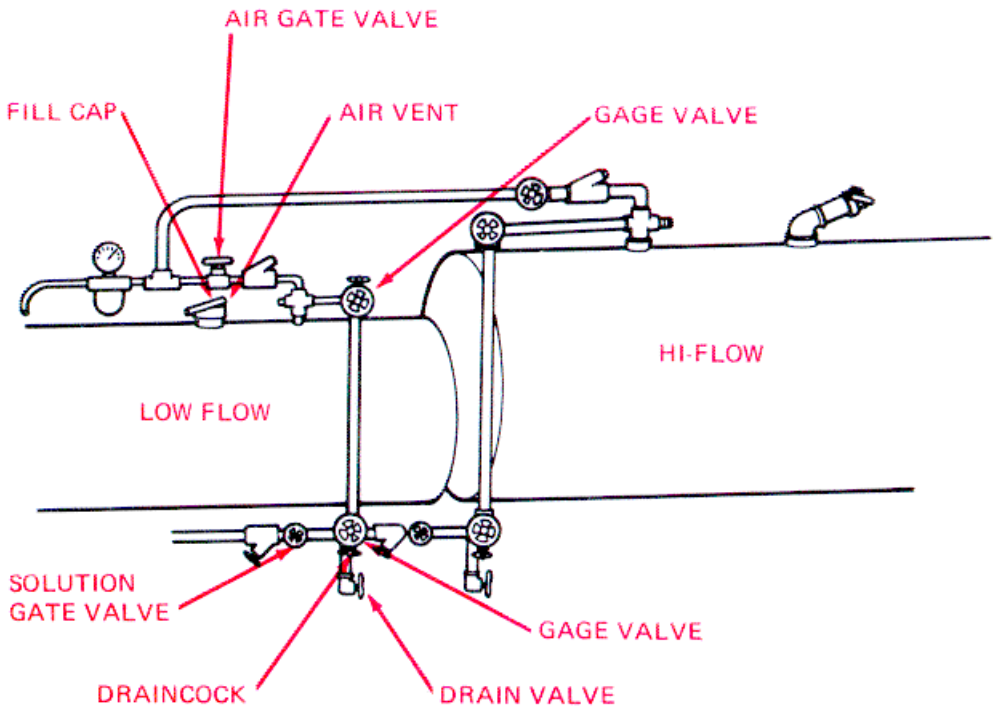


Figure 2-22. Filling the Low-Flow Admix Tank.

TA 075488

(3) Loosen the vent on the fill cap and allow air pressure to vent

WARNING

Do not remove the fill cap until all air pressure is vented.

(4) Remove the fill cap

(5) Check that the solution Is thoroughly mixed. Pour it into the tank. The sight gage will show the level of liquid in the tank.

(6) Put the fill cap on handtight.

(7) Tighten the vent finger tight.

2-9. Filling the Dry Admix Hopper. (See fig.2-23.)

a. Loosen the latches by pushing upward. Remove the hopper lid.

b. Pour dry admix into the hopper.

c. Put the lid on the hopper. Tighten both latches securely.

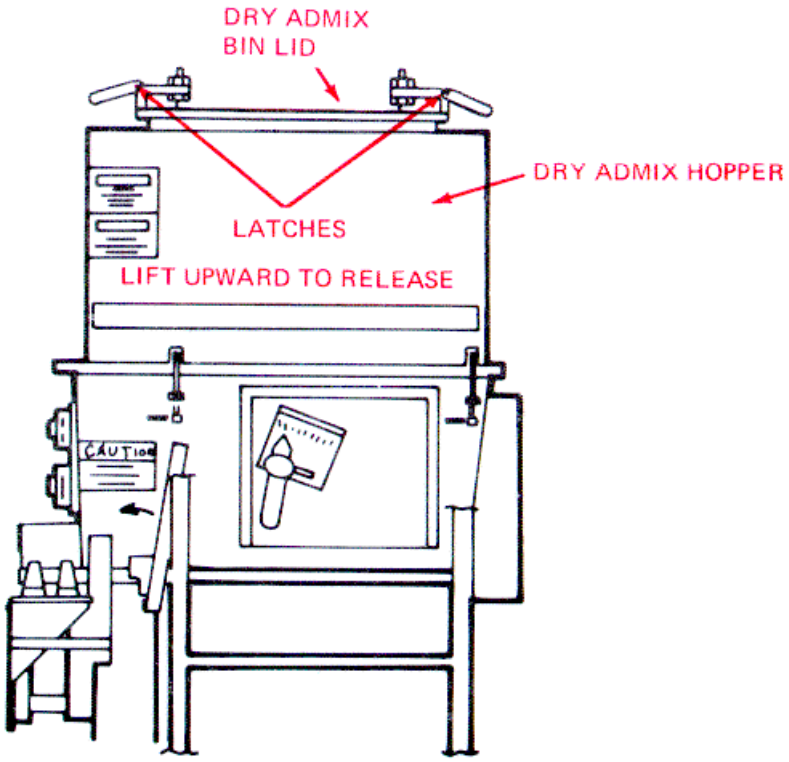


Figure 2-23. Filling the Dry Admix Hopper.

TA 075489

2-10. Starting Up The Mixer.

NOTE

The truck engine must be operating while you run the mixer. The fan should be locked up prior to starting. Truck should be in neutral with the parking brake set. (See TM 9-2320-273-10).

a. Open Water System

(1) Open the side panels on the left side of the sand bin (fig. 2-13).

(2) Check to be sure all eight draincocks and the vents are closed (fig. 2-24).

(3) Open the water shutoff valve. (Turn it all the way counterclockwise) (fig.2-24).

b. Engage PTO. See TM 9-2320-273-10.

c. Bleed Water System.

(1) Open throttle control until tachometer reads 900-1000 rpm (fig. 2-25).

NOTE

All instruction s in this book refers to the mixer tachometer. This tachometer measures hydraulic pump speed. Do not confuse it with the tachograph in the cab.

(2) Open the washout hose valve. Spray water from the washout hose until it flows in a steady stream.

d. Adjust Pump Speed. (See fig.2-25.). Adjust throttle control until the tachometer reads 1620-1720 rpm.

e. Adjust Water Pressure. (See fig.2-24.).

(1) Open the washout hose valve.

(2) Turn the handle on the water relief valve until washout hose sprays water about 35 ft (10.68 m).

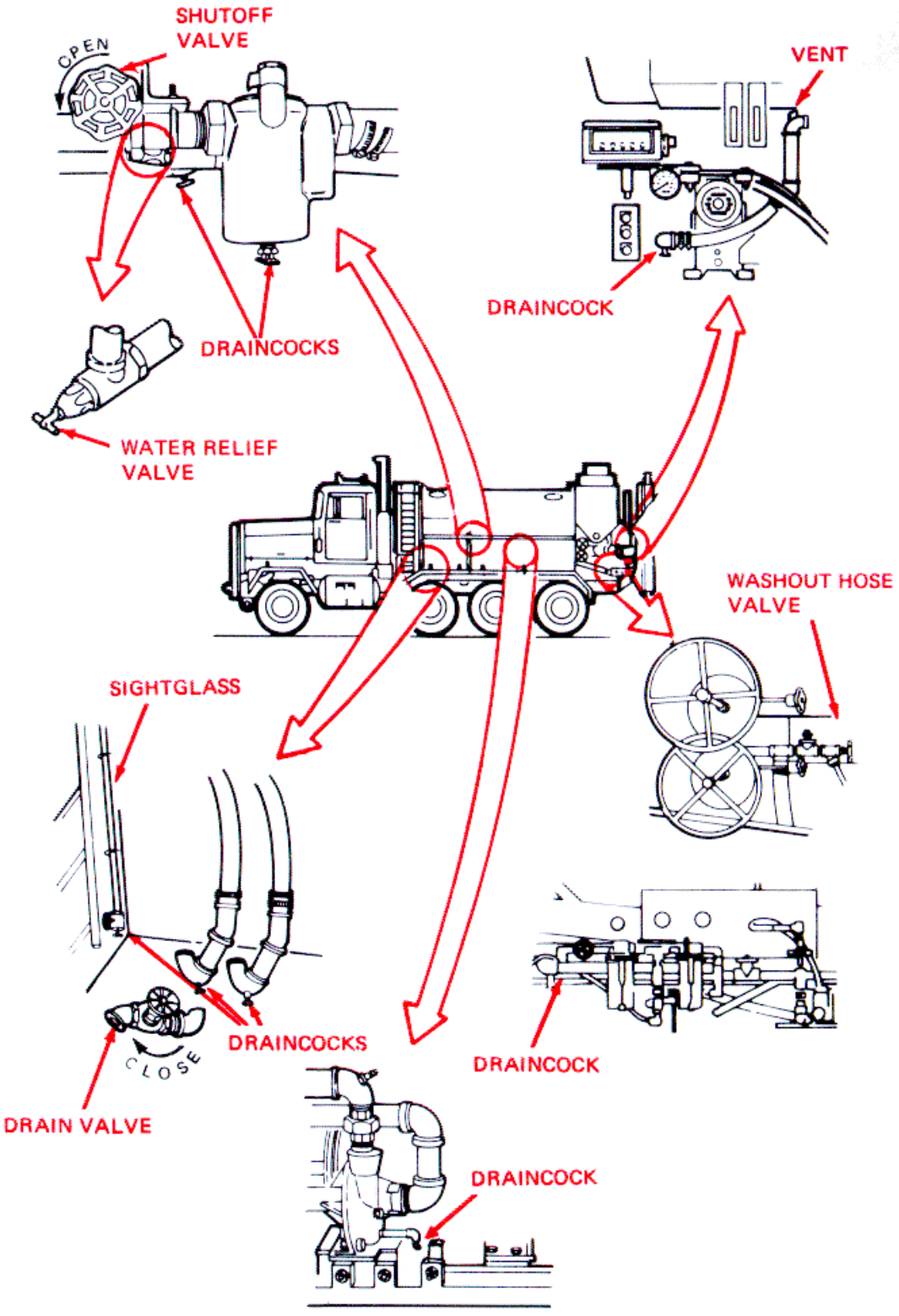


Figure 2-24. Opening the Water System.

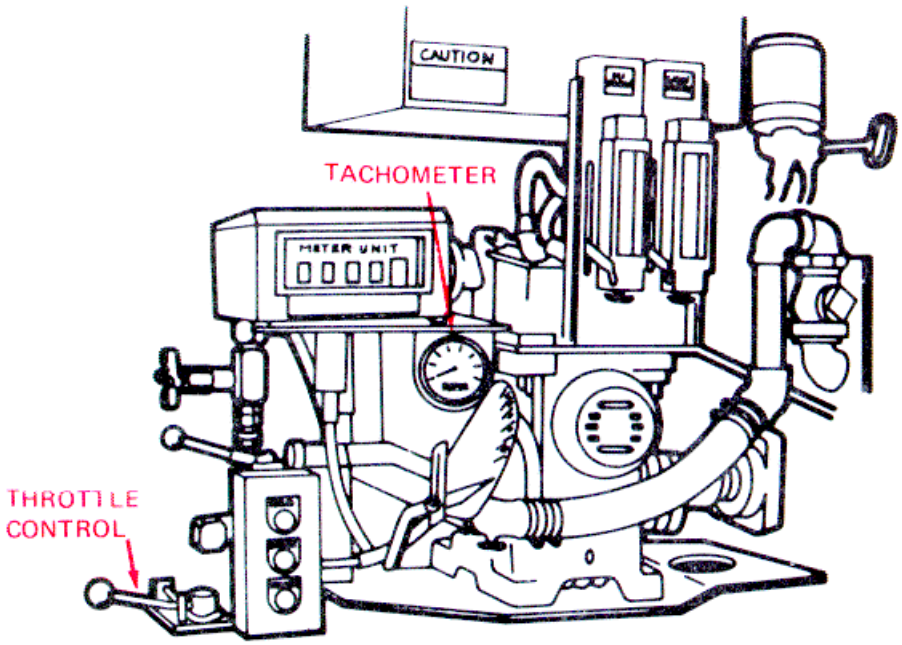


Figure 2-25. Throttle Control

TA 075491

(3) Close the washout hose valve (fig. 2-24).

(4) Close the side panel on the left side of the sand bin (fig .2-13).

f. Open Air Shutoff Valve. (See fig. 2-26.) Turn counterclockwise all the way.

g. Position Mixing Trough

WARNING

Be sure all personnel are clear before you lower the mixing trough.

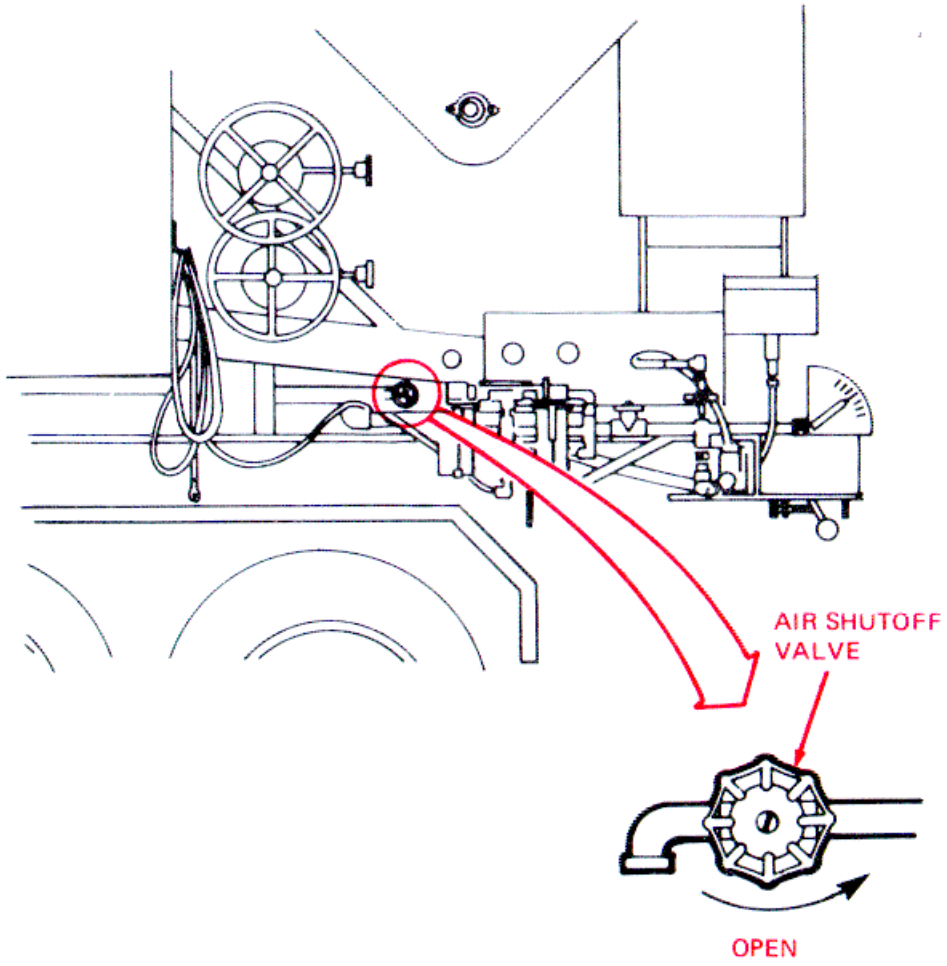


Figure 2-26. Air Shutoff Valve.

TA 075492

(1) Unhook safety chain (fig. 2-27).

(2) Raise the locking arm handle to release the trough

CAUTION

Raising the trough too far will cause the locking arm to bind. It can also bend the auger.

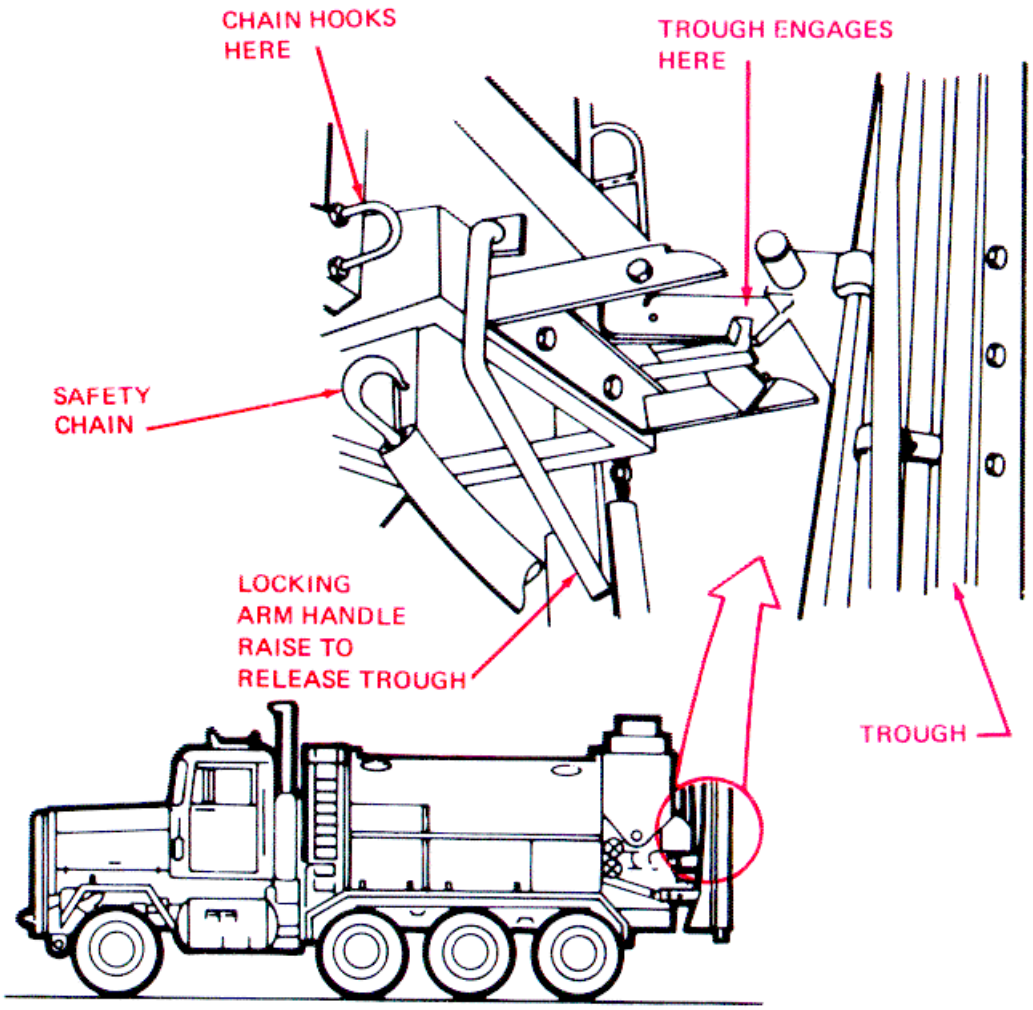


Figure 2-27. Mixing Trough Chain and Locking Arm.

TA 075493

NOTE

If the locking arm is stuck, push and release the JOG and the RAISE buttons at the same time. Jog the trough upward only enough to release the locking arm (fig. 2-28).

(3) Press the LOWER button to lower the trough (fig. 2-28). The inclinometer should read 15-25° (fig. 2-29). If you need to raise the trough, push the RAISE button.

(4) Lower the swivel ring lock arm (fig. 2-30). Swing the trough to left or right as required. Raise the lock arm to lock trough (if desired).

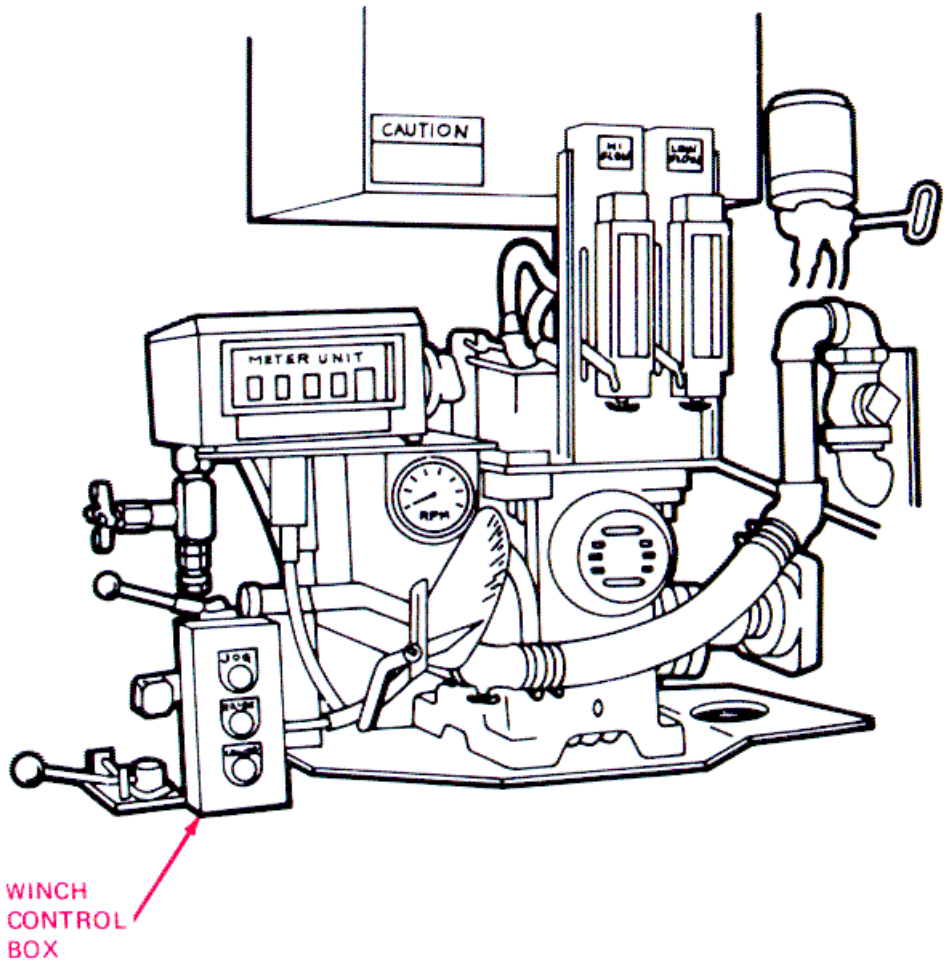


Figure 2-28. Winch Control Box.

TA 075494

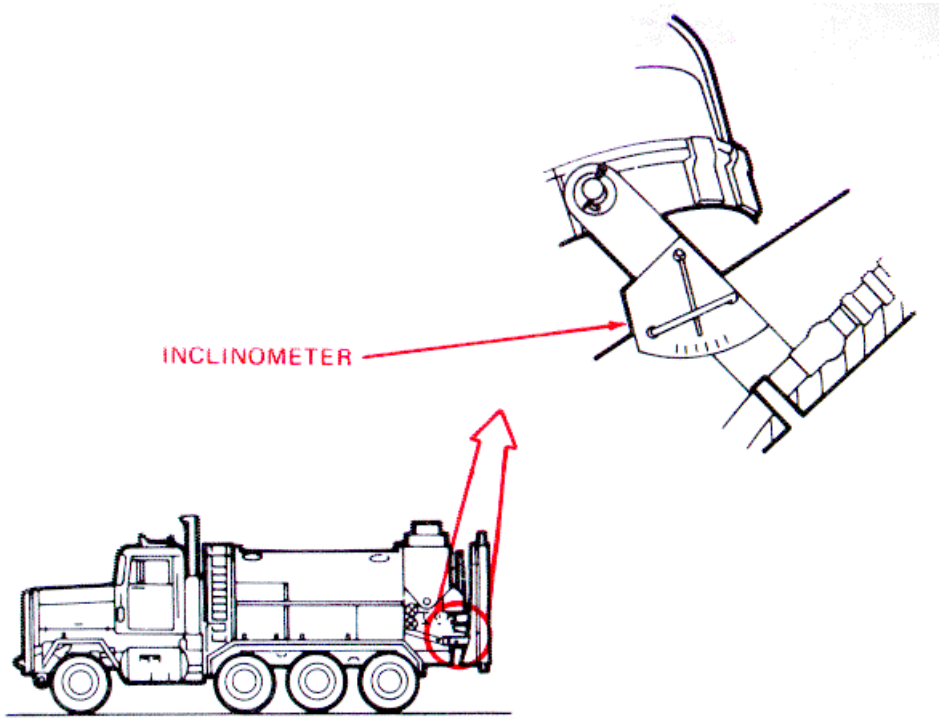


Figure 2-29. Inclinometer.

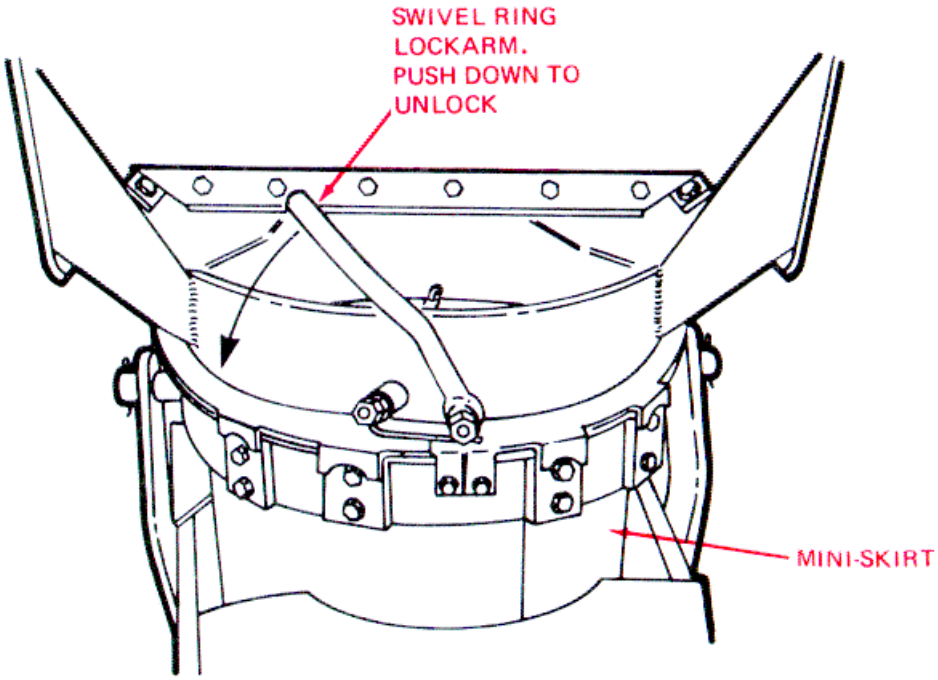


Figure 2-30. Swivel Ring Lock Arm.

h. Attach Delivery Chutes. (See fig. 2-31.)

NOTE
Use one, two, or no delivery chutes, as required.

(1) Remove the chutes from the rack on the right fender.

(2) Hook the slots of the upper chute over the pins on the mixing trough.

(3) Hold the chute at the desired angle by pressing the chain into the slotted bar on the trough.

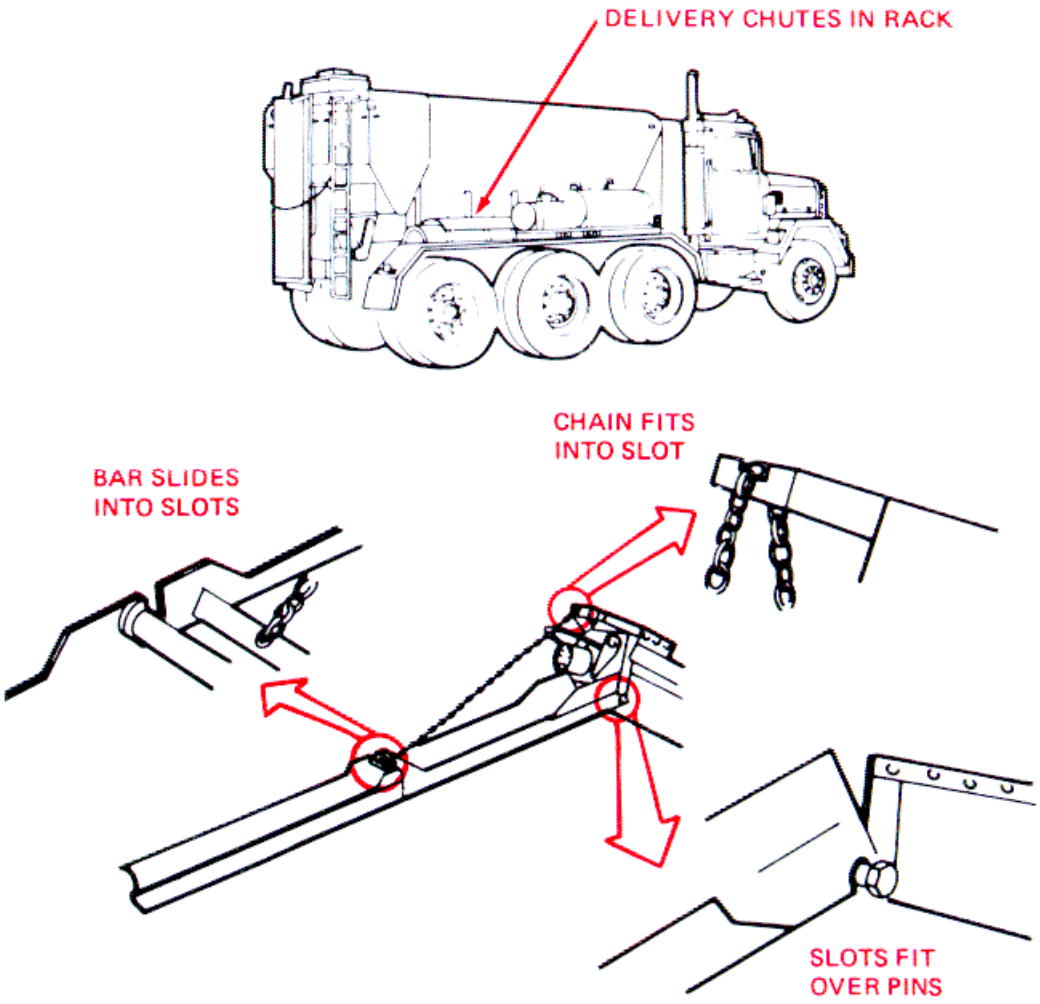


Figure 2-31. Delivery Chutes.

TA 075496

(4) Slide the bar on the lower chute into the slots on the upper chute.

2-11. Setting Mix Controls.

a. Set Liquid Admix Controls. (See fig. 2-32)

(1) Adjust air pressure. Turn the T-handle on the air regulator until the gage reads 14.5 to 15.5 psi.

(2) If you plan to use the hi-flow admix system, open the hi-flow air and solution gate valves.

(3) If you plan to use the low-flow system, open the low-flow air and solution gate valves.

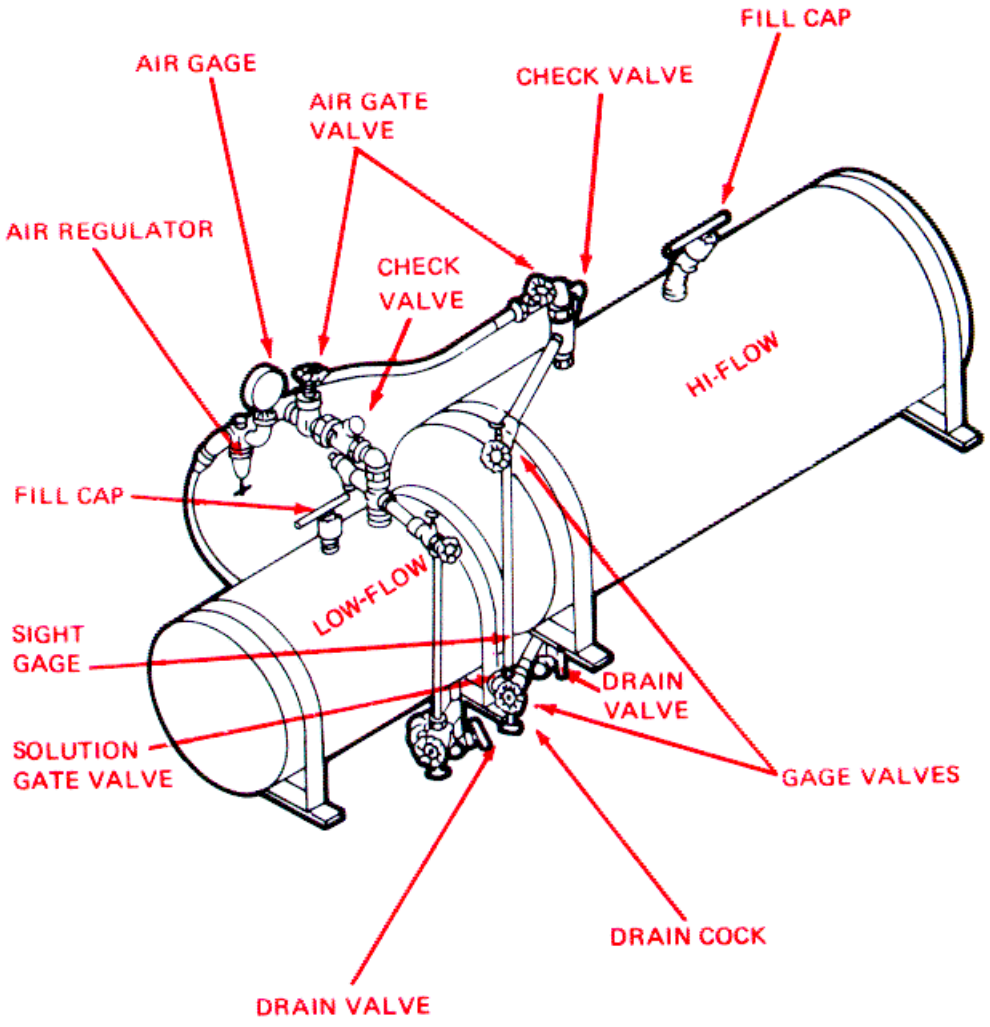


Figure 2-32. Opening the Liquid Admix Tanks.

TA 075497

(4) Check to be sure the air gage still reads 14.5 to 15.5 psi

(5) If you are using the hi-flow system, manually hold the hi-flow quick-acting valve open (fig. 2-33). Adjust the flowmeter lever until the float Is at the setting you have been given. Release the valve

(6) If you are using the low-flow system, manually hold the low-flow quick-acting valve open. Adjust the flow meter lever until the float is at the setting you have been given. Release the valve.

NOTE

During operation, check flowmeters frequently to be sure they are still properly adjusted.

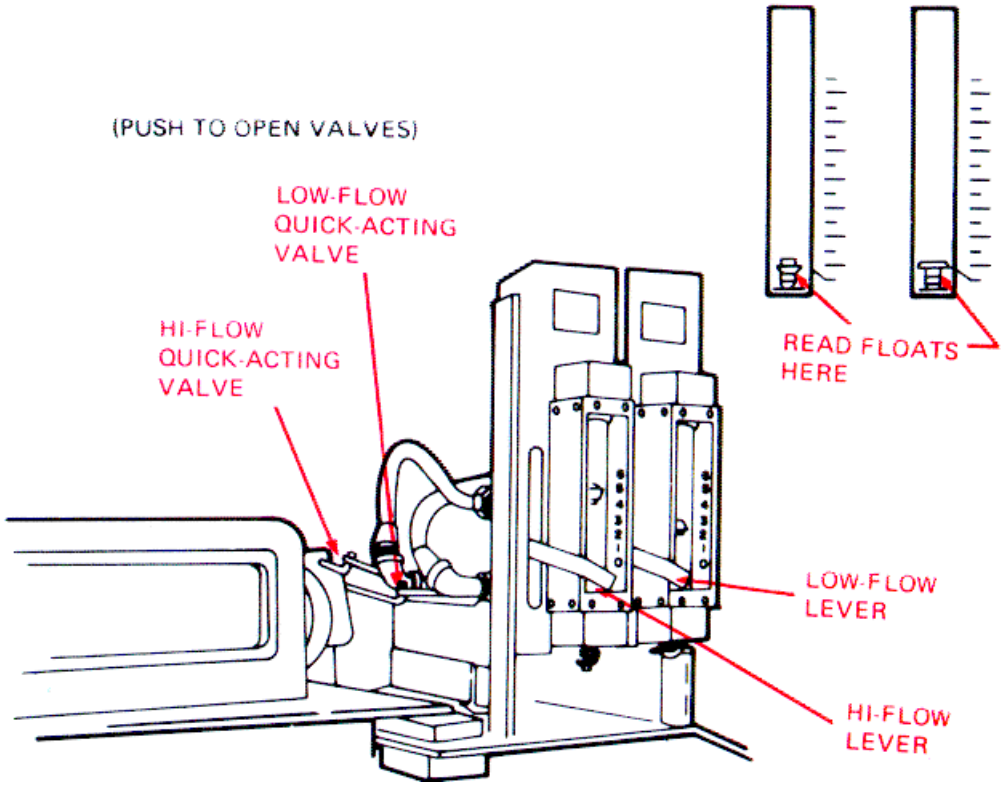


Figure 2-33. Flowmeters Adjustment.

TA 075498

b. Set Dry Admix Controls. (See. fig. 2-34.)

NOTE
If your design does not call for dry admix, go on to c.

(1) Loosen the black knob on the dry admix meter.

(2) Set the pointer to the setting you have been given.

(3) Tighten the knob.

(4) Engage the dog clutch. (Push the clutch lever to the left.).

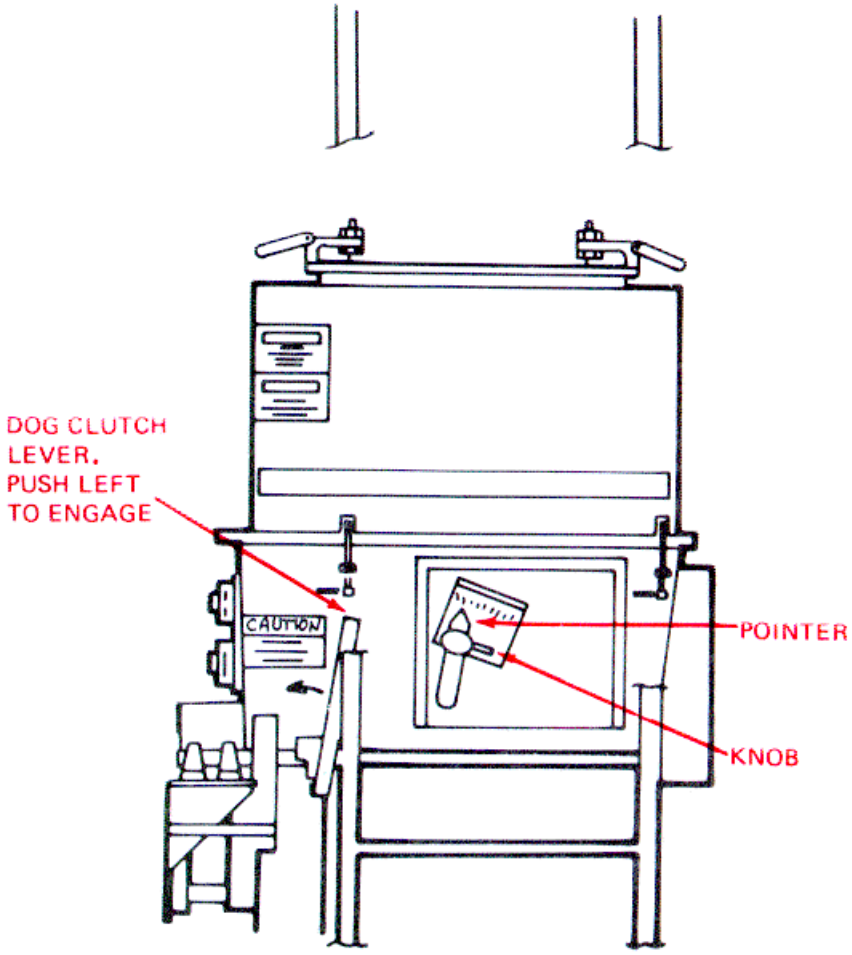


Figure 2-34. Dry Admix Controls.

TA 075499

NOTE

If dogs do not line up, engage the clutch until they do. Never leave dogs engaged when not in use.

c. Set Water Control. (See fig. 2-35)

(1) Loosen the wingnut on the pointer.

(2) Set the pointer to the setting you have been given. Always adjust the pointer upwards and then bring pointer back down to new setting. If you are moving from a higher setting to a lower one, move the pointer below the new setting, then back up Into place.

(3) Tighten the wingnut.

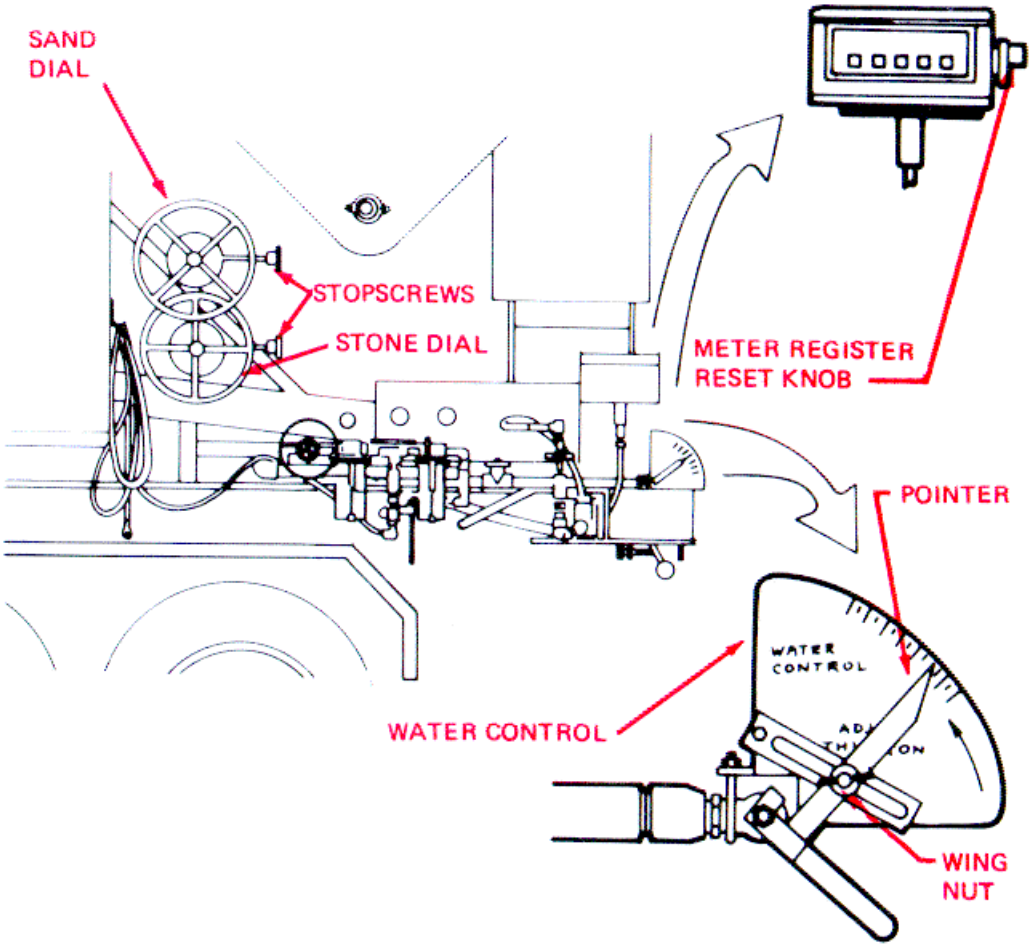


Figure 2-35. Main Ingredients Controls.

TA 075500

d. Engage Cement Bin Clutch. Check that cement bin clutch is engaged (fig. 2-36).

e. Set Sand Dial. (See fig. 2-35).

(1) Loosen the sand dial stopscrew.

(2) Turn the handwheel until the pointer shows the sand dial setting you have been given. Always adjust the pointer upwards. If you are moving from a higher setting to a lower one, move the pointer below the new setting. Then back up into place.

(3) Tighten the stopscrew.

f. Set Stone Dial. (See fig. 2-35).

(1) Loosen the stone dial stopscrew.

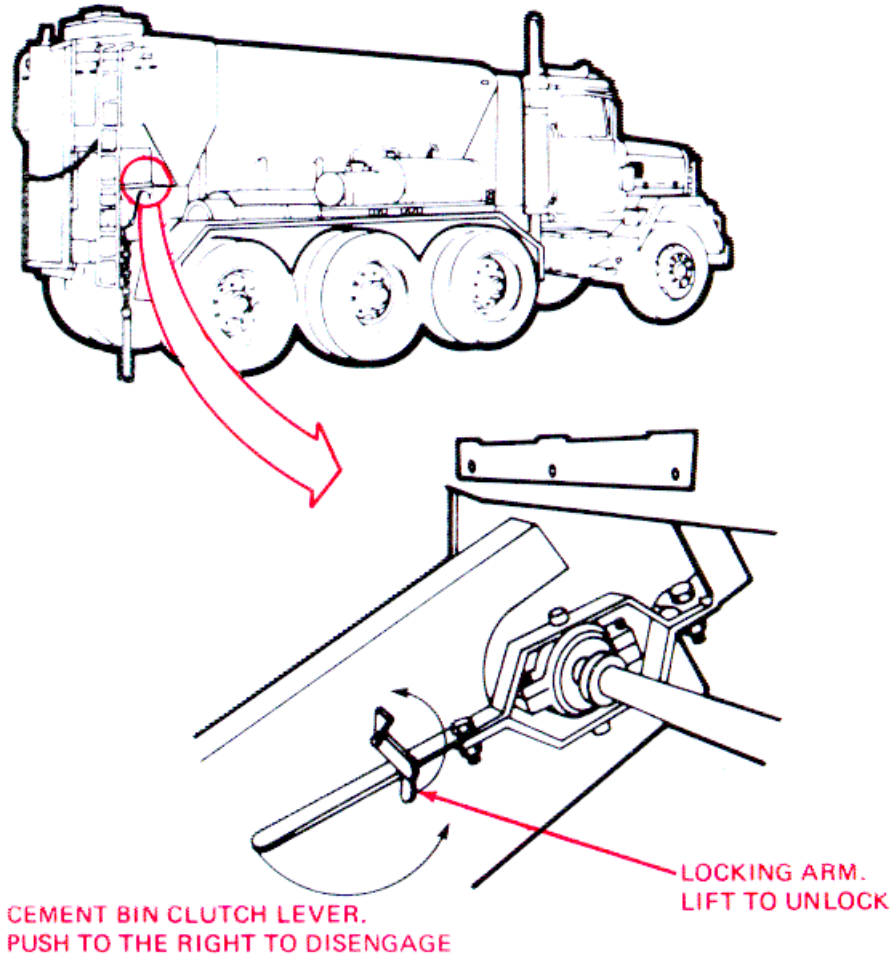


Figure 2-36. Cement Bin Clutch.

TA 075501

(2) Turn the handwheel until the pointer shows the stone dial setting you have been given. Always adjust the pointer upwards

(3) Tighten the stopscrew.

NOTE

When setting dials to a lower setting, it may become necessary to "slip" the main clutch which will actuate the conveyor belt slightly. This procedure will prevent stones or sand from binding the aggregate gates.

g. Set Meter Register to Zero. (See fig. 2-35.)

CAUTION

Never reset the meter register while it is operating.

Turn the reset knob until it comes to a full stop,

Push in on the reset knob. Turn It clockwise until It stops. Check that the register reads 0000.0.

2-12. Producing Concrete.

a. Fluff Cement. (See fig. 2-37.) Push the fluffer control valve upward several times. This blows air through the pads in the cement bin and loosens packed cement.

b. Turn on Chain Oiler. (See fig. 2-38.)

CAUTION

Be sure to turn the chain oiler on whenever the main conveyor is operated. Failure to do so may cause serious damage to the main conveyor system

(1) Flip lever to mid position to turn chain oiler on.

(2) Check that oil drips at about five drops per minute. Adjust the needle valves as required. Turn in to decrease flow and turn out to increase flow.

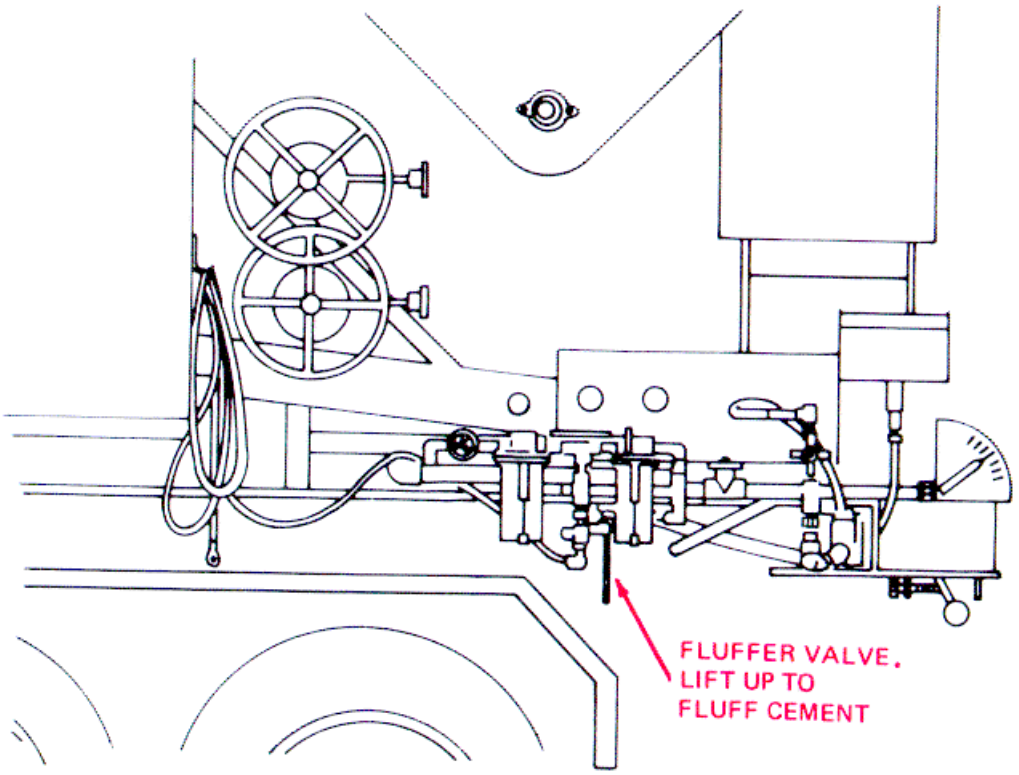


Figure 2-37. Fluffer Control Valve.

TA 075502

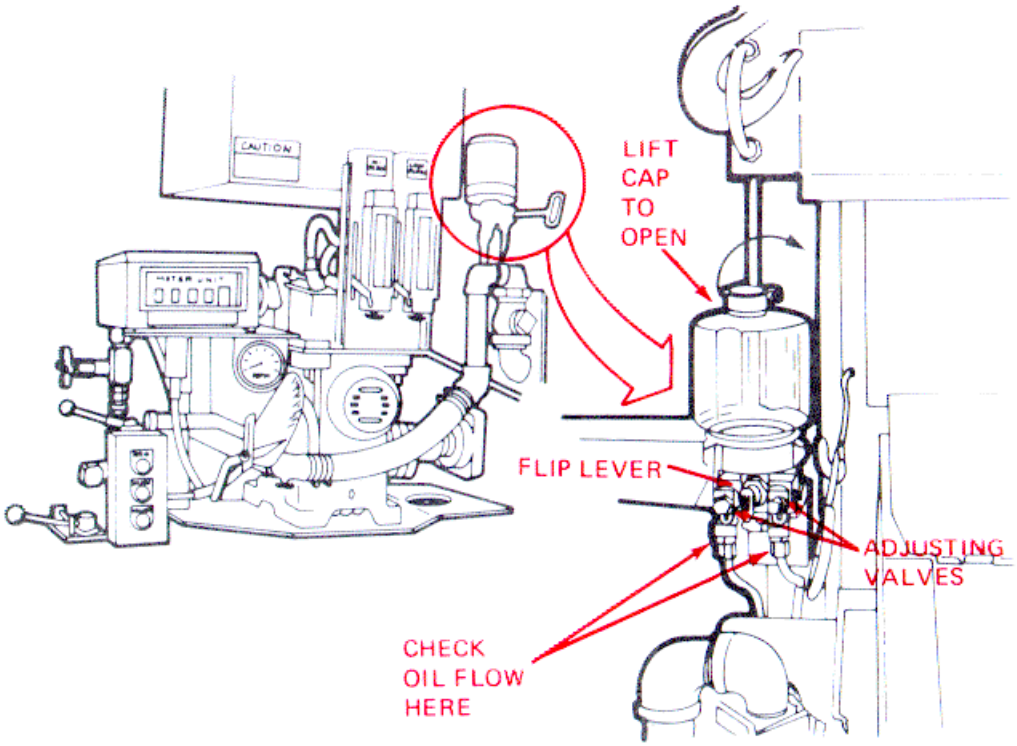


Figure 2-38. Chain Oiler

TA 075503

c. Check Bypass Valve. (See fig. 2-39.) Valve should be closed finger tight (turn clockwise).

d. Check Tachometer. (See fig. 2-40) Tachometer should read 1620-1720 rpm. Use throttle control to adjust speed, if necessary.

NOTE

Remember to check the mixer tachometer, not the cab tachometer.

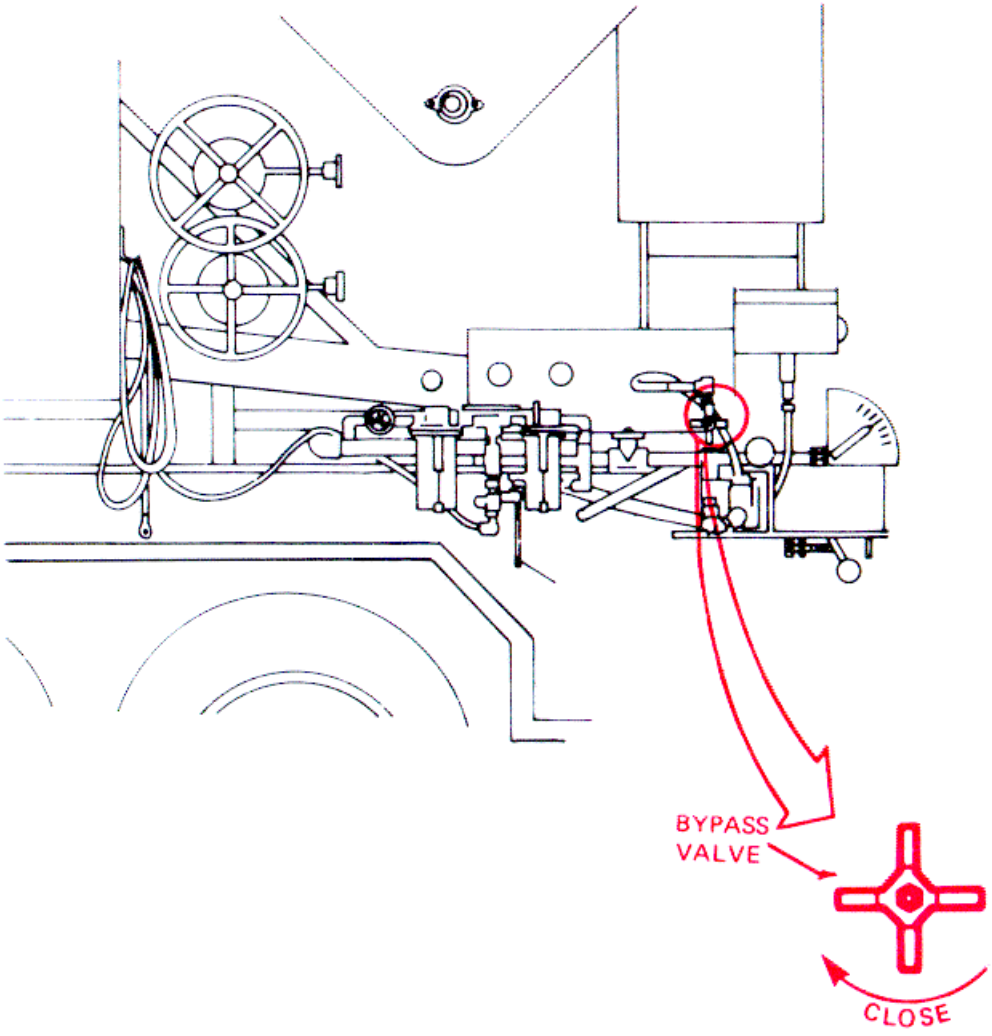


Figure 2-39. Bypass Valve.

TA 075504

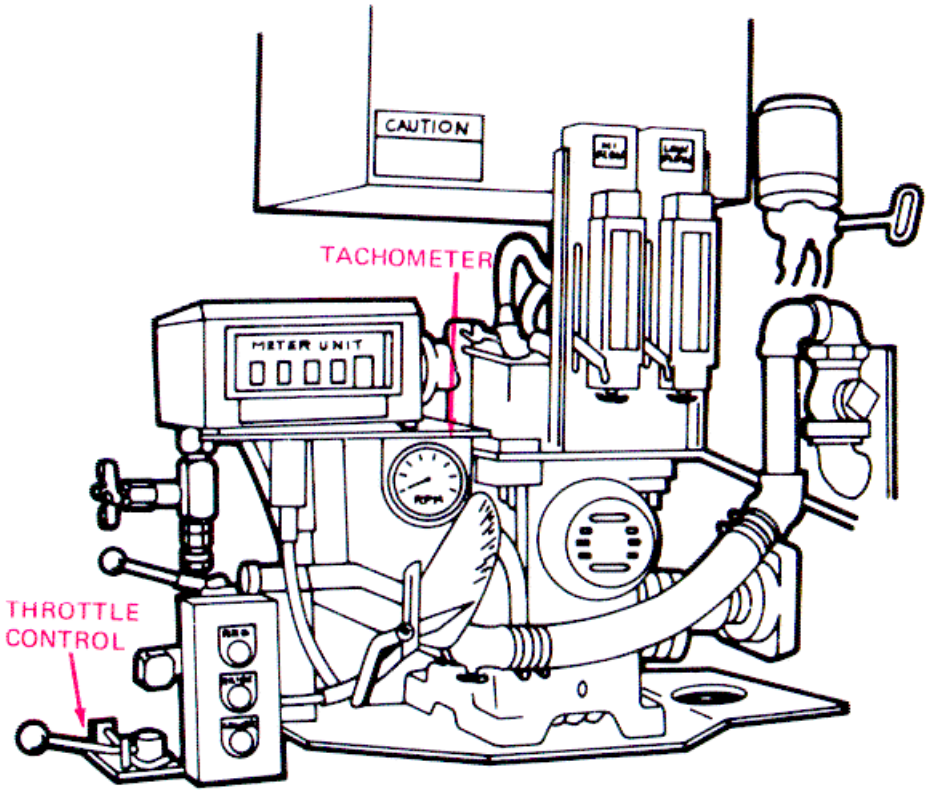


Figure 2-40. Tachometer and Throttle Control.

e. Engage Main Clutch and Control Valve. (See fig. 2-41).

(1) Pull the control valve towards the mixing trough. This starts the mixing auger.

(2) Pull main clutch lever towards mixing trough. This actuates the main conveyor belt and starts delivery of all ingredients.

NOTE

After the control valve is open, recheck the tachometer. If necessary, adjust the throttle control to obtain a pump speed of 1620-1720 rpm (fig. 2-40).

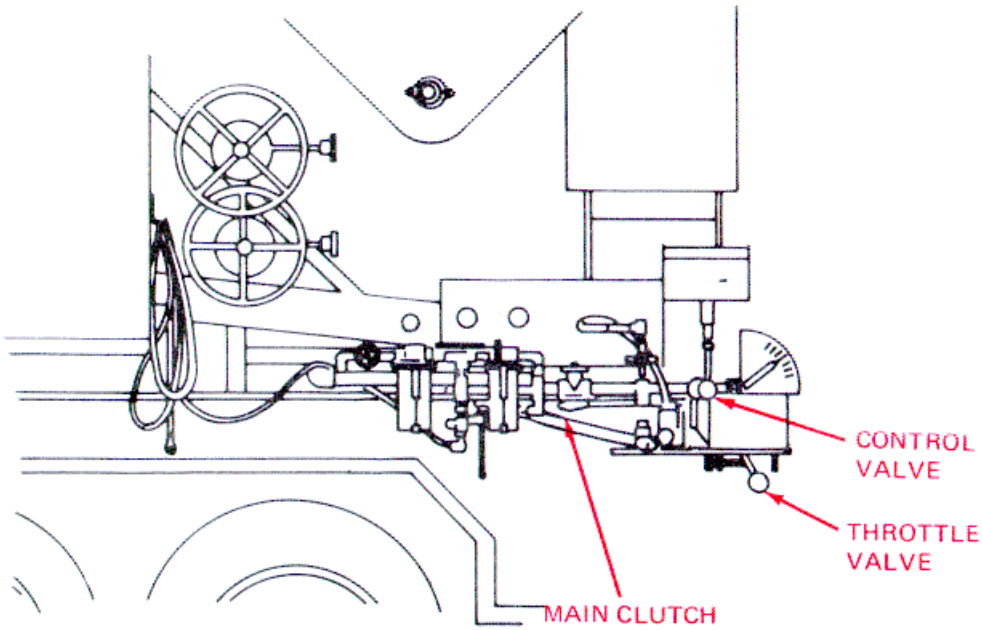


Figure 2-41. Main Clutch and Control Valve.

f. Watch Concrete Production. Be prepared to stop the mixer if trouble occurs. Troubleshooting procedures are given in chapter 3, section III.

NOTE

During operation, the extension clutches and mixing trough may be swung from side to side as required for concrete delivery. Instructions for adjusting the mixing trough are given in paragraph 2-10g.

g. Slump Check

(1) Slump Measurements.

(a) Slump is a measure of how wet or dry concrete is. The concrete mix design specifies the desired slump. The mix settings chart (fig. 2-11) shows two water settings, one for dry sand and one for normal sand. The correct water setting needed will be somewhere between the two. Adjust the water setting until the slump matches the mix design specification. If you cannot get the correct slump with a setting somewhere between the DRY and NORMAL settings.

(b) Perform monthly PMCS (table 3-1). Then recheck slump.

(c) If slump is still not within specifications, refer problem to mix designer.

(2) Preparation.

(a) Place slump cone (fig. 2-42) on a flat level surface and moisten the cone.

(b) Set all controls to the settings as calculated for the mix design using a water setting halfway between the normal sand and dry sand settings.

(c) Prepare vehicle for concrete production.

(3) Conduct Test.

(a) Begin concrete production and waste the initial production (approximately a shovel full) until a stabilized, uniform concrete mix Is being produced, then swing the mix conveyor for discharge into a wheelbarrow. Fill the wheelbarrow with mixed concrete.

(b) Fill slump cone one-third full from wheelbarrow.

(c) Using rounded end of steel rod, rod concrete 25 strokes.

(d) Add concrete to the slump cone until it is two-thirds full.

(e) Rod concrete 25 strokes. Rod must penetrate second layer with each stroke.

(f) Add concrete to fill the slump cone.

(g) Rod 25 strokes. Rod must penetrate second layer with each stroke. Concrete must be level with top of cone when rodding is completed.

(h) Carefully remove the cone by lifting it straight up.

(i) Place the slump cone next to the cone of concrete.

(j) Place the one end of the steel rod on top of slump cone with the other end over the cone of concrete (fig. 2-42).

(k) Using a ruler measure the difference in height between the top of the slump cone and the top of the cone of concrete. This difference (in inches) is the slump. For general concrete construction this slump is three inches.

(l) If slump is not within mix design specifications slightly decrease or increase the water setting, however, never decrease the setting below the normal sand setting nor increase the setting above the dry sand setting and recheck slump. To increase slump increase water, to de- crease slump decrease water.

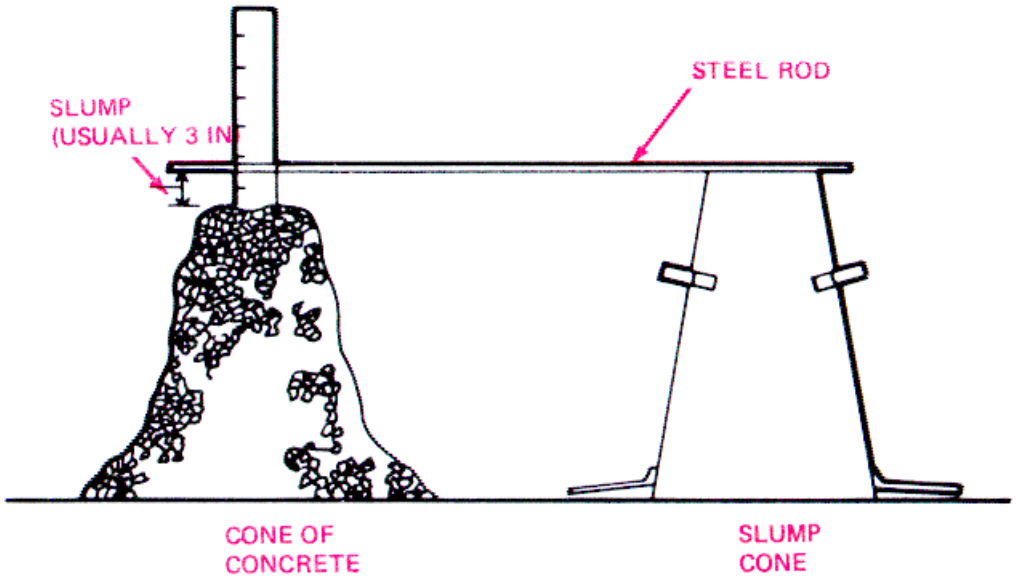


Figure 2-42. Slump Measurement.

(m) If you cannot get slump within specifications perform monthly PMCS and try again

h. Yield Check

NOTE
This check should only be performed after the slump check has been performed.

(1) Determine cement meter count for one-fourth cubic yard of concrete by dividing cement meter count (fig. 2-11) by four: 392 ÷ 4 = 98.

(2) With sand and stone dials properly set, start the mixer and produce concrete until all systems are full and mixed concrete is being discharged at a full rate from the mix conveyor. Then stop the equipment with all concrete systems full.

(3) Place quarter yard box on a level surface

(4) Set cement meter to zero (para 2-11 g, fig. 2-35).

(5) Discharge concrete into the quarter yard box until cement meter reads 98 and stop production immediately.

(6) Screed the concrete. Concrete should be just level with top of the box.

(7) If box is not full, or it overflows, repeat check twice more and average results.

(8) If box Is consistently too full or not full enough recheck calculations and settings. If these are correct, notify mix designer.

2-13. Stopping Operation.

CAUTION

If the operation is stopped temporarily for any reason and shut down time will exceed the set-up time of the mix being used, the auger trough must be emptied.

a. Disengage the Main Clutch and Close the Control Valve. (See fig. 2-41.)

(1) Push the main clutch lever forward. This stops ingredients delivery and main conveyor operation.

(2) Allow the mixing trough to empty mixed ingredients, then push the control valve lever forward.

(3) Pull the throttle lever against the rear stop.

NOTE

At this point you may change control settings and put the mixer back in operation (paras 2-10 and 2-11). To shut down the mixer continue with the steps below.

CAUTION

Failure to turn the chain oiler off will result in oil in the next batch of cement.

b. Turn Off the Chain Oiler. Pull flip lever down. (See fig. 2-38.)

CAUTION

Clean the mixer and lubricate the mixing auger bearings whenever you stop concrete production. Do not wait until the end of the day.

c. Clean Up the Mixer. See paragraph 3-7.

d. Disengage the PTO. See TM 9-2320-273-10.

e. Perform Your After (A) PMCS. See table 3-1.

f. Close the Air Shutoff Valve. (See fig. 2-43.) Turn it all the way clockwise.

g. Remove and Stow the Delivery Chutes. (See fig. 2-44.)

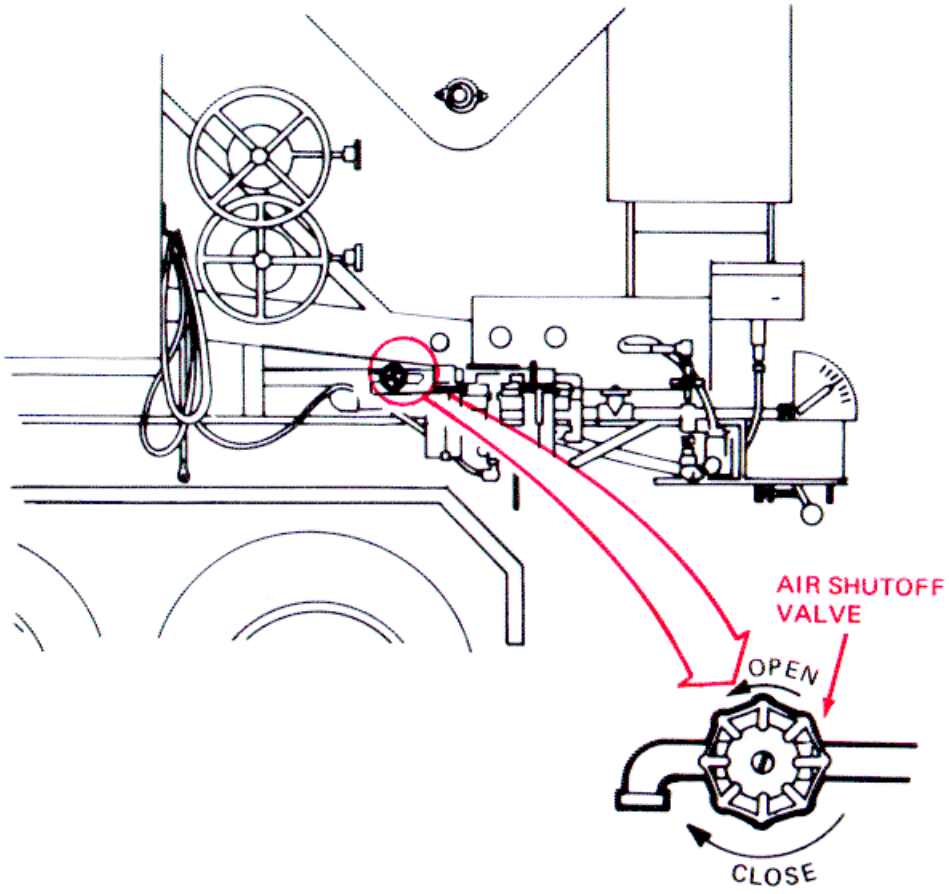


Figure 2-43. Air Shutoff Valve.

TA 075508

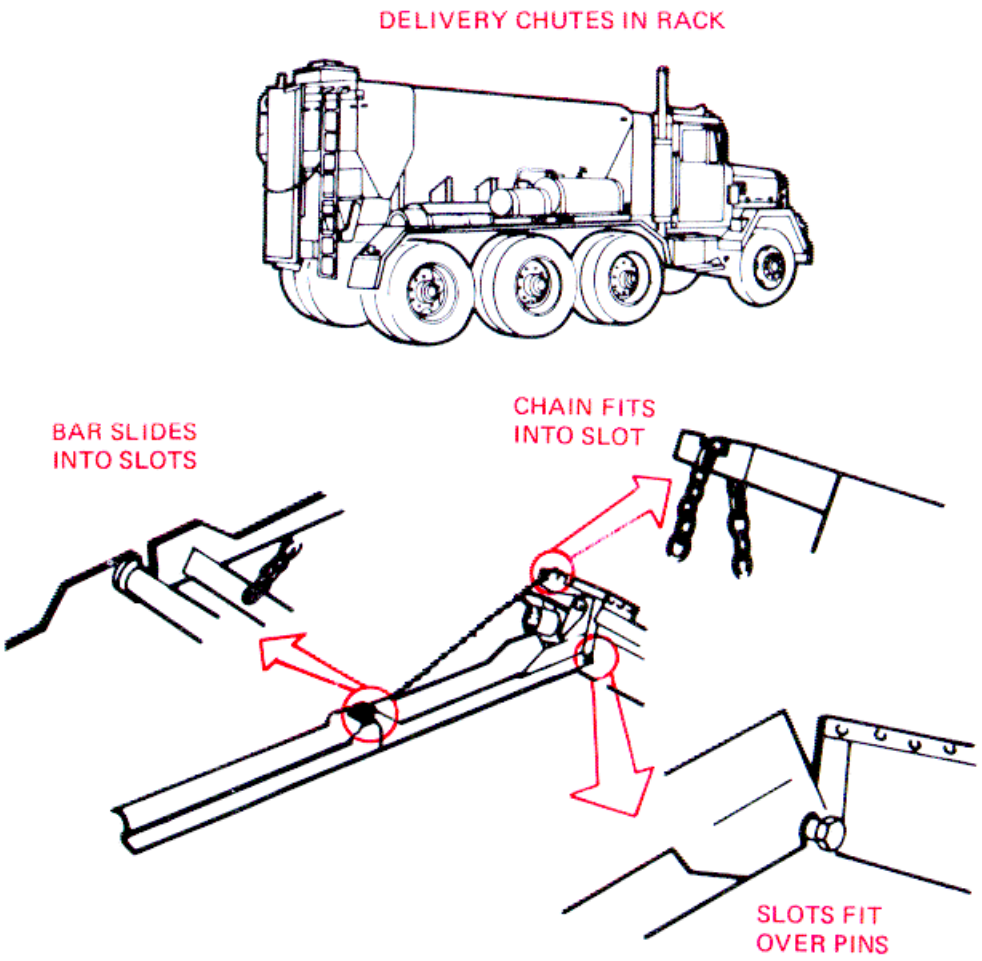


Figure 2-44. Delivery Chutes.

h. Store the Mixing Trough in the Travel Position. (See fig. 2-45 and 2-46).

(1) Push down the swivel lock arm Swing the mixing trough to the center position, as shown in Figure 2-43. The lock arm must remain in the down position, otherwise the latch shield for the mixing trough protective covers may bend or otherwise cause the swivel ring lock arm to break off.

NOTE

The center of the two short tabs should aline with the lock arm (fig. 2-45).

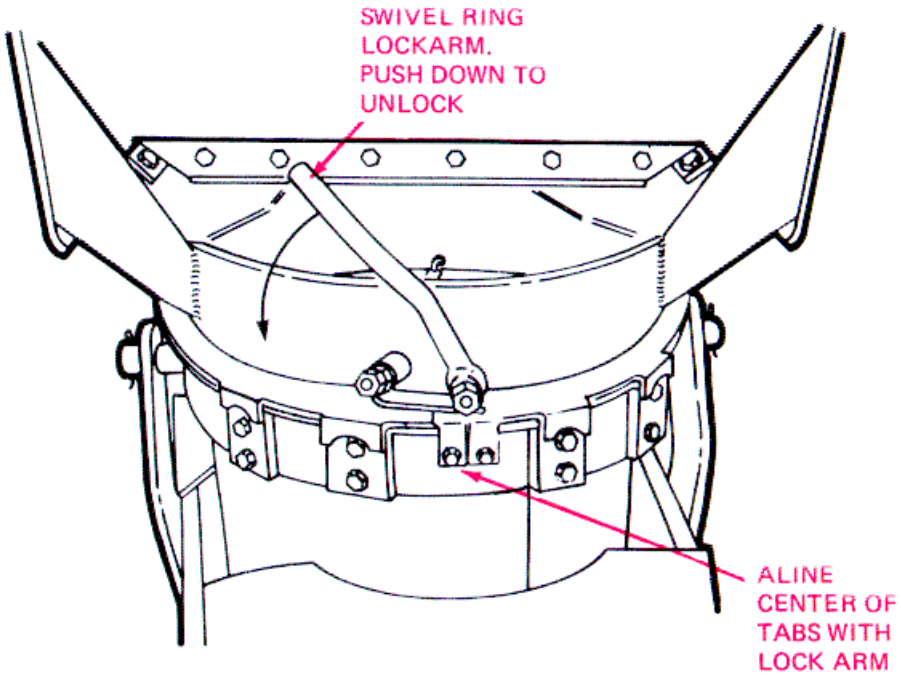


Figure 2-45. Swivel Ring Lock.

CAUTION

Raising the mixing trough will cause the locking arm to bind. It can also bend the auger.

(2) Push the RAISE button. Release the button when the mixing trough is engaged by the locking arm (fig. 2-46).

(3) If the trough stops before the arm is engaged, continue pressing the RAISE button. Push and release the JOG button to raise the mixing trough, until the latch engages (fig. 2-46).

(4) Check that the mixing trough is held securely by the locking arm. Press the lower button, until cable tension is relieved and latch is supporting mixing trough

(5) Fasten the safety chain around the mixing trough

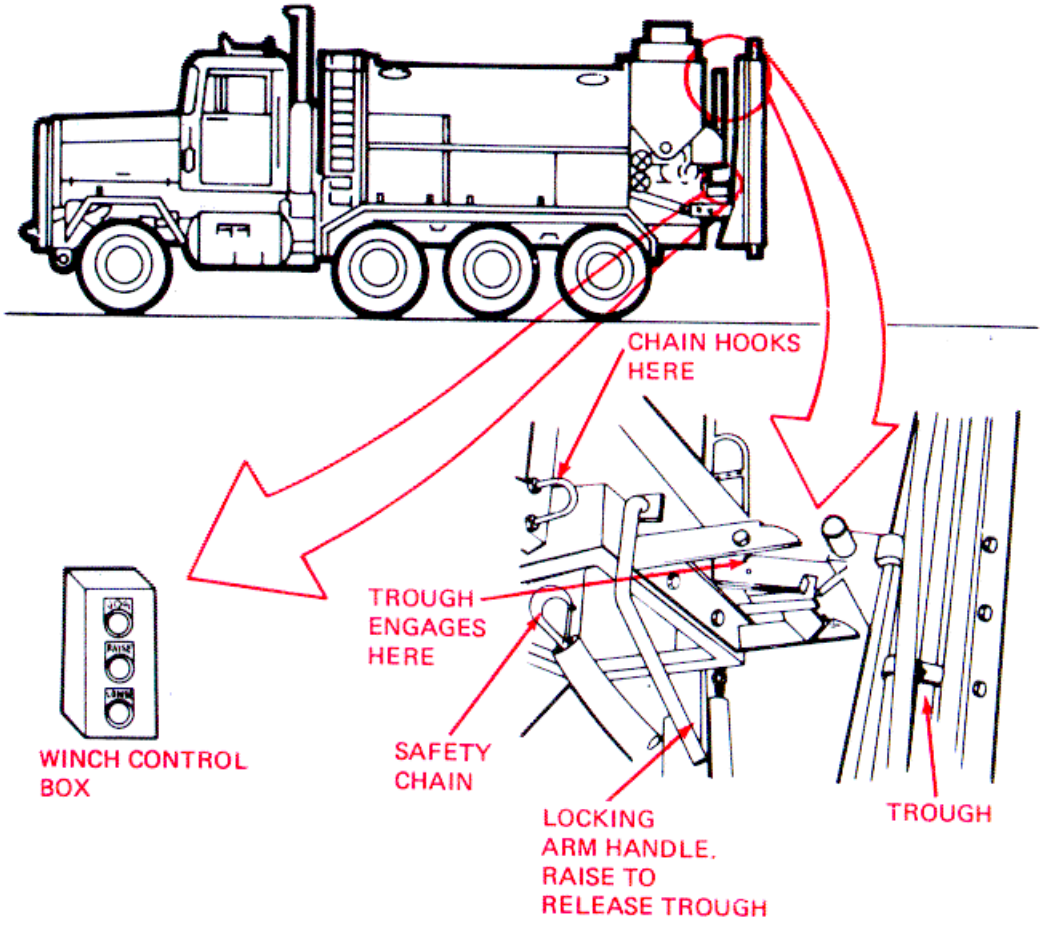


Figure 2-46. Stowing the Mixing Trough.

CAUTION

The M919 is now ready to be driven away or shut down. If you shut down the engine, be sure to allow the turbocharger to cool off first. (See TM 9-2320-273-10).

TA 075511

Section II. OPERATION OF AUXILIARY EQUIPMENT

2-14. INTRODUCTION.

This section tells you how to use the auxiliary cement bin. This bin is used as an aid in loading cement. It holds approximately 26 cu ft (.73 cu m) of cement

2-15. Loading Cement Using the Auxiliary Cement Bin.

WARNING

Before attaching the auxiliary bin to the bucket, verify that the front-end loader has a minimum safe capacity of 4,000 lbs (1816 kg) in its fully extended position, and that the bucket can be raised high enough and extend far enough over the left hand side of the mixer to reach above the quick loading hopper. If the required clearance cannot be met and a larger front end loader is not available, a pit must be dug for the mixer or a ramp built for the front-end loader. Negligence can result in equipment damage and/or bodily injury.

WARNING

Inspect chains, chain binders, and shackles before use for proper location and damage (fig. 2-47). If damage to parts affects their strength, notify organizational maintenance. Damaged parts may result in equipment damage and/or bodily injury.

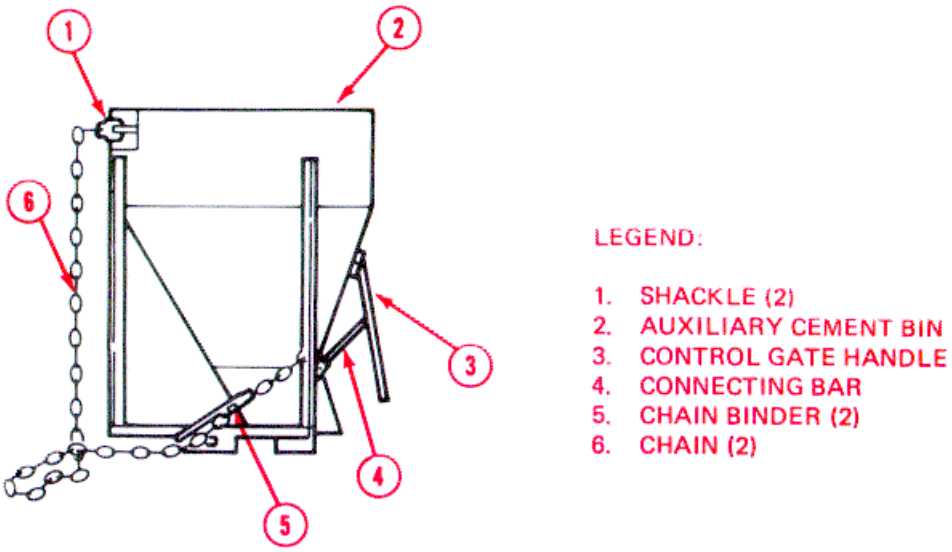


Figure 2-47. Auxiliary Cement Bin.

TA 075512

a. Attach the Auxiliary Bin to the Bucket of a Front End Loader. (Fig. 248).

(1) Center the front-end loader bucket (6) with the center of the front of the auxiliary cement bin (2).

(2) Tilt the bucket cutter blade (5) until It is parallel with the ground.

(3) Move the front-end loader forward until the cutter blade (5) is against the stops at the back of the support slot (4).

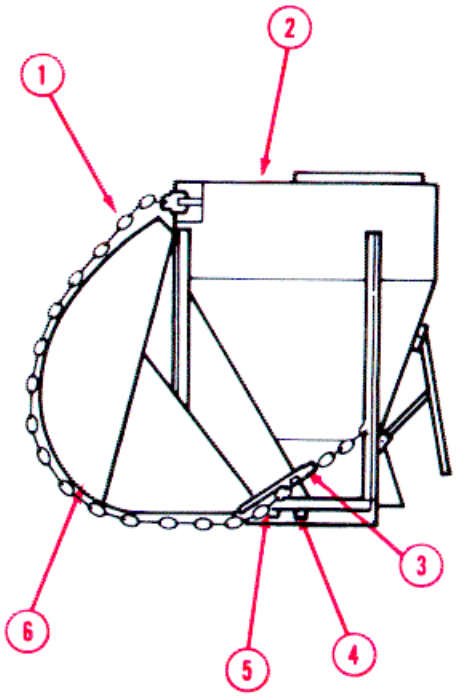
(4) Tilt the bucket (6) so that the top of the bucket is close to the top of the auxiliary cement bin (2) at the same time that the cutter blade is against the stops at the back of the support slots (4).

WARNING

The chain binders must pull in a straight line. Never tighten the chain binder if it is over a sharp corner or over a round object. Improper chain retention can cause bodily injury and/or equipment damage.

(5) Secure the auxiliary cement bin (2) to the bucket (6) with two chains (1). Tighten the chains with two chain binders (3).

(6) After both chains (1) are secured properly, lift the bucket (6) a few feet off the ground and check for tightness of the chain. If adjustment is required, place the auxiliary cement bin (2) back on the ground before releasing the chain binders (3).



LEGEND:

1. CHAIN (2)
2. AUXILIARY CEMENT BIN
3. CHAIN BINDER (2)
4. SUPPORT SLOT
5. CUTTER BLADE
6. BUCKET

Figure 2-48. Attaching the Auxiliary Cement Bin.

TA 075513

WARNING

Cement dust can be harmful. During loading operations or any time there is dust in the air, take precautions to avoid direct inhalation of the dust. If you must be in the immediate vicinity of dust, wear a dust mask; or if none is available, cover your nose and mouth with a cloth. CEMENT DUST CAN CAUSE SERIOUS LUNG PROBLEMS.

WARNING

Prolonged contact with cement or wet concrete can cause skin irritation or burns. During loading operations with cement or while working with wet concrete, take every precaution to avoid contact with skin. Skin areas that have been exposed either directly or through saturated clothing should be washed thoroughly with water. If any cement or concrete material gets into the eye, flush immediately with water and get PROMPT MEDICAL ATTENTION.

NOTE

The auxiliary bin may be filled while the mixer is away at a job site. Having the auxiliary bin loaded when the mixer arrives will speed up reloading of the mixer.

b. Fill the Auxiliary Cement Bin. (Fig. 2-49)

(1) Close the control gate (3) on the auxiliary cement bin by pushing the control gate handle (2) down.

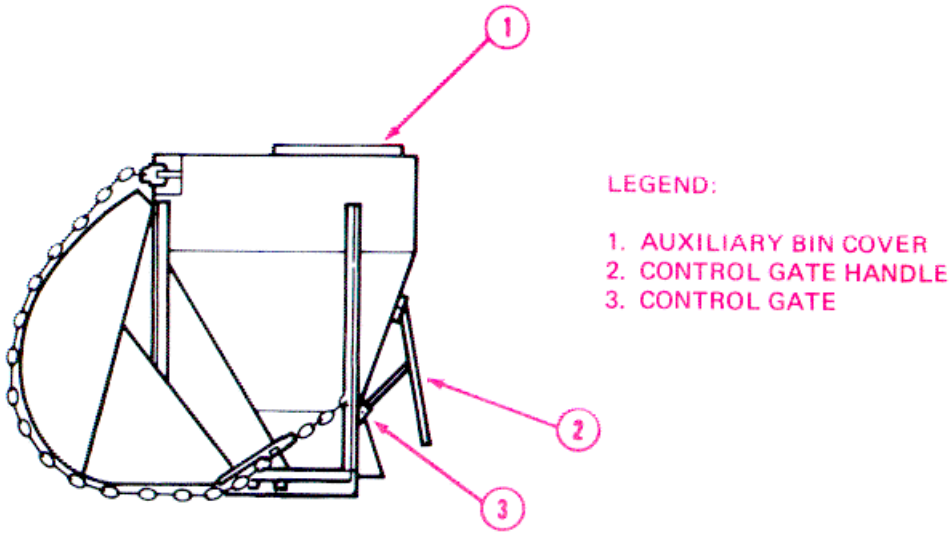


Figure 2-49. Filling the Auxiliary Cement Bin.

TA 075514

(2) Remove the auxiliary bin cover (1).

(3) Fill the auxiliary bin with cement (18 to 20, 94 pound (42.7 kg) bags).

(4) Install cover (1).

c. Load Cement In the Quick Loading Hopper. (Fig. 2-50).

(1) Open the air shutoff valve and the screen vibrator valve by turning them all the way counterclockwise (fig. 2-18).

(2) Remove the square cover (1, fig. 2-50) from the quick loading hopper (2).

(3) Connect the vibrator air line (fig. 2-19).

WARNING

The loaded auxiliary cement bin can weigh as much as 4,000 lbs (1,816 kg). The front-end loader must be operated on level ground to be certain that no tipping will occur when the bin is raised into position. Equipment damage and/or bodily injury can result.

CAUTION

Position one crew member on top of the mixer to guide the front-end loader operator, otherwise equipment damage could result.

(4) Approach the mixer from the left side and raise the auxiliary cement bin (3, fig. 2-50) until it clears the quick-loading hopper (2).

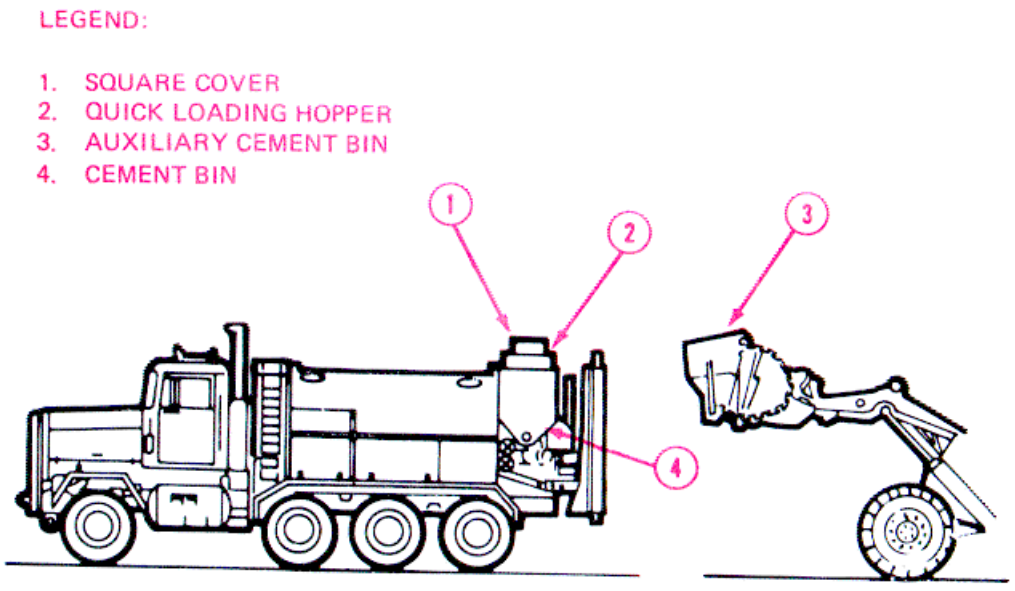


Figure 2-50. Loading the Mixer.

(5) Keeping the auxiliary cement bin (3) vertical, position the opening in the auxiliary cement bin (3) over the quick-loading hopper (2).

(6) Carefully lower the auxiliary cement bin (3) so that it is close to the mixer cement bin (4) without touching it.

(7) Open the control gate by pulling up on the control gate handle (2, fig. 2-49) and allow ail cement to fall into the cement bin (4, fig. 2-50).

(8) When the auxiliary cement bin (3) is empty, close the control gate by pushing down on the control gate handle (2, fig. 2-49).

(9) Lower the auxiliary cement bin to the ground.

(10) Put the square cover (1, fig. 2-50) on the quick-loading hopper (2) and disconnect the vibrator air line (fig. 2-19).

(11) Close the air shutoff and the screen vibrator valves by turning them clockwise (fig. 2-18).

Section III. OPERATION UNDER UNUSUAL CONDITIONS

2-16. Operation in Cold Weather.

a. The mixer is capable of producing concrete at the job site at temperatures as low as -50°F (-47°C). Follow these guidelines when operating the mixer in cold weather (below 32°F) (0°C)).

(1) Water System.

(a) Heat the mixing water up to 180°F (82°C) prior to loading on board the mixer equipment. The higher temperature of the water will compensate for heat loss when transferred into the water tank and maintain an average temperature of 140°F (60°C) when entering the mixing trough, depending on conditions.

(b) Store the mixer in a protected area sufficiently long enough to raise the temperature of the metal parts of the mixer to 350F (20C). Water lines may be wrapped with thermal tape to meet temperature requirements.

(c) When water is being loaded into the water tank (1, fig. 2-51), the shut-off valve (3) shall be closed. Close gage valve (4) with the drain cock (5) open. The shut-off valve (3) and the gage valve (4) shall remain closed while enroute to the job site.

(d) On arrival at the job site, the shut-off valve (3) shall be fully opened. If the water has frozen in the lines ahead of the shut-off valve, use a small heating torch and warm up all water lines, valves, and pump between the water shut-off valve and the water discharge nozzles (2). When all water lines are warmed sufficiently to prevent flash Icing (above 40°F (4.50°C)), the frozen lines between the water tank and the shut-off valve shall be heated until water is flowing freely to the water discharge nozzles. Gage valve (4) shall remain closed at all times during sub-freezing weather to prevent the water sight gage (6) from freezing or rupturing.

(2) Cement System.

Production of Portland Cement Concrete shall proceed in the same manner as in normal weather.

(3) Aggregate System.

(a) The sand and stone bins of the mixer equipment should be heated to a temperature of not less than 35°F (2°C). Heating the mixer equipment may be accomplished by storing in a heated, protected area if available or covering with a large tarpaulin and blowing heat from a construction type hot air heater under the tarpaulin.

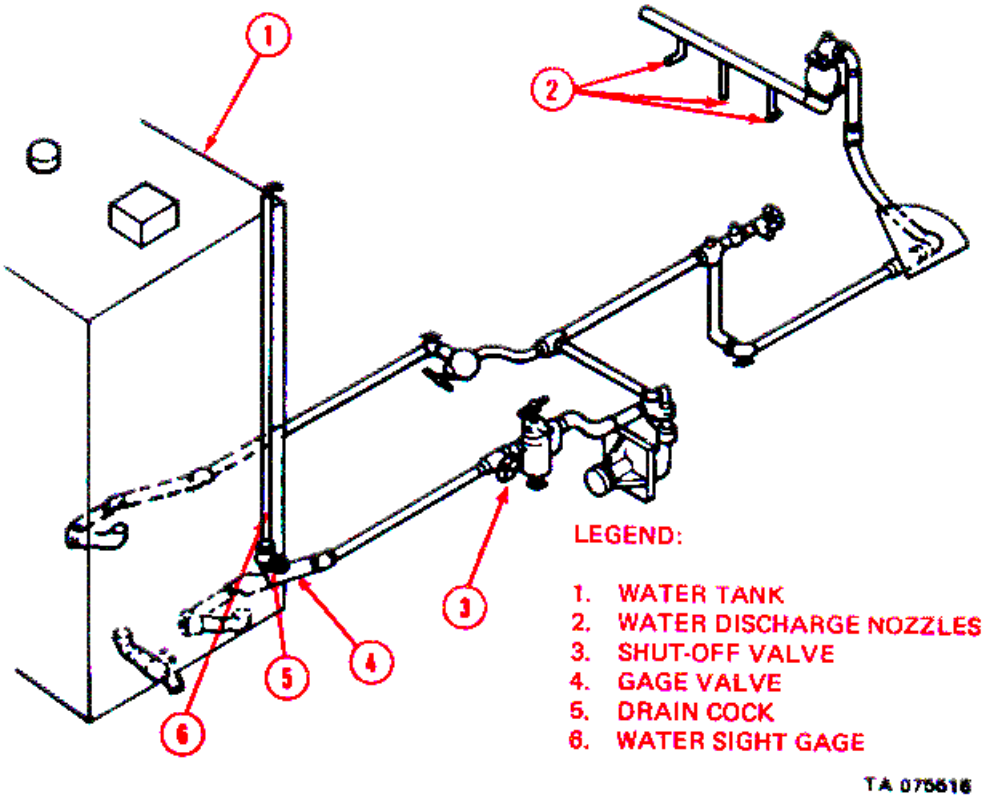


Figure 2-51. Water System.

TA 075516

(b) When ambient temperatures drop progressively below 32°F (0°C) facilities will be needed to heat the sand and stone stockpiles. Heating of the stockpiled sand and stone can be accomplished by covering with a tarpaulin and blowing heated air under the tarpaulin with a construction type hot air heater. Another means of heating the sand and stone can be accomplished by stockpiling the sand and stone over a culvert pipe or similar type of pipe that may be fabricated from empty oil drums. A fire can be maintained in the pipe or hot air blown in from a hot air heater. Covering the stockpile with a tarpaulin will conserve heat to the greatest degree possible. If heating of the stockpiled sand and stone is not possible, it will be necessary to have the sand and stone bin screens in place to remove the frozen lumps and ensure that the aggregates have been dried or are frozen dry and free flowing.

(c) Spread and secure the tarpaulin over the sand and stone bins after the mixer is loaded (fig. 2-16). The tarpaulin will retain heat to the greatest degree possible.

(4) Liquid Admix System.

The Liquid Admix System may be heated in the same manner as the water system. Check the mix design for maximum temperature that the admix solution may be heated before loading on board the mixer equipment.

(5) Dry Admix System.

Production of concrete using the dry admix system shall proceed in the same manner as in normal weather.

b. See paragraph 3-11 for special instructions on cleanup in cold weather.

2-17. Operation in Hot Weather.

Follow these guidelines when operating the mixer in hot weather.

a. Keep the tarpaulin over sand and stone bins to keep aggregates from drying out.

b. Check with the mix designer to see if the water setting should be increased.

c. Clean up immediately when you stop operation. Concrete sets faster in warm weather and may harden on the mixer.

2-18. Operation in Humid Weather.

Follow these guidelines when operating the mixer in humid weather.

a. Be sure cement bin cover fits tightly.

b. Empty the cement bin at the end of the day.

c. Use fluffer valve to fluff cement frequently (fig. 2-37).

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

CAUTION

Lubrication in accordance with LO 5-3895-372-12 and the instructions contained in the PMCS table (section II) is extremely important. Failure to lubricate the mixer body properly will result in unscheduled maintenance and increased downtime.

3-1. General.

LO 5-3895-372-12 tells you your responsibilities for lubrication of the mixer body It tells what lubricants to use and how often to lubricate each point.

3-2. Special Instructions.

a. Auger Bearing (See fig. 3-1.) Flush and lubricate this bearing every four hours during operation, and also after every cleanup. Lubricate it while the auger is turning. There are two fittings, one on the bearing and one over the seals. Use waterproof lithium grease on this bearing and seals. Place the grease gun on each fitting and pump in enough grease to displace all the previous grease. Wipe off the excess. This bearing cannot be greased too often or too much.

b. Chain Oiler (See fig. 3-2.) The chain oiler should dispense oil at the rate of five drops per minute. Check the flow rate by observing the sight glass located under the unit as shown In figure 3-2. Adjustment is made during the production of concrete (para 2-12b (2)).

c. Vibrator Air Lubricator (See fig. 3-3.) The vibrator air lubricator should dispense approximately one drop of oil every third vibration. This rate may be checked by observing the sight glass on top of the unit. To adjust flow rate, turn the screw on top of the unit clockwise to slow down oil flow or counterclockwise to speed up oil flow. Check the sight gage on the side of the reservoir to determine when the reservoir requires filling. Filling is only required when oil is not visible in the sight gage. To fill the reservoir unscrew the knurled cap on top of the unit and pour in oil. Observe the sight gage to determine when the reservoir is full Install and tighten the knurled cap finger tight.

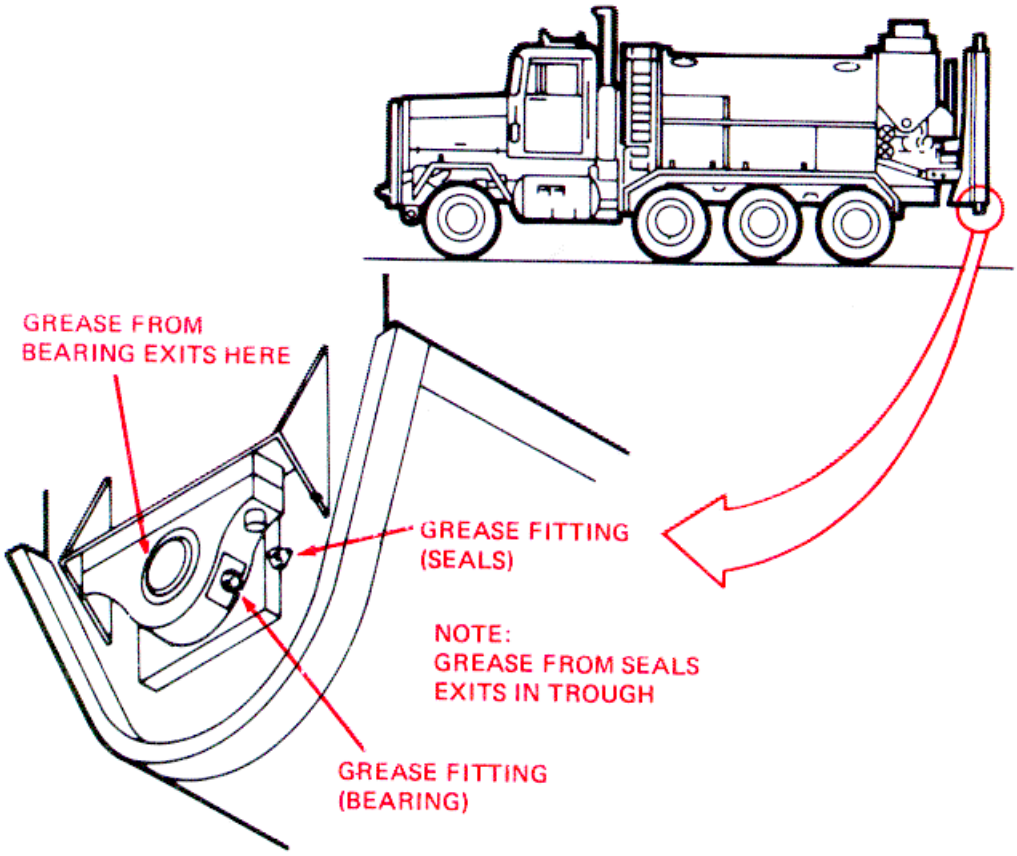


Figure 3-1. Auger Bearing.

TA 075517

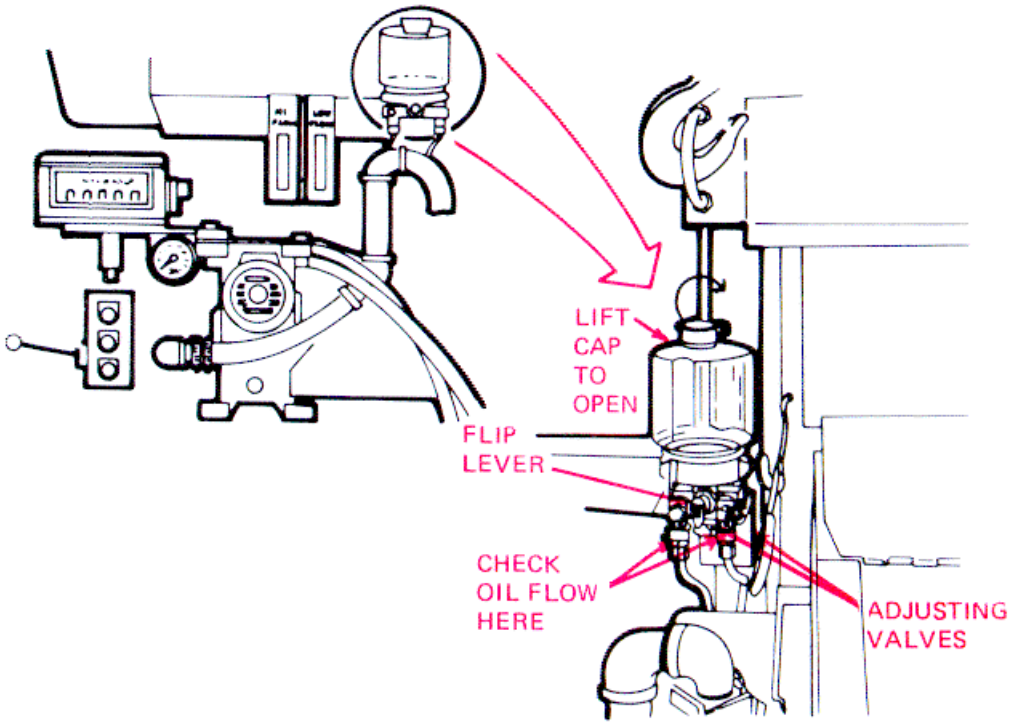


Figure 3-2. Chain Oiler.

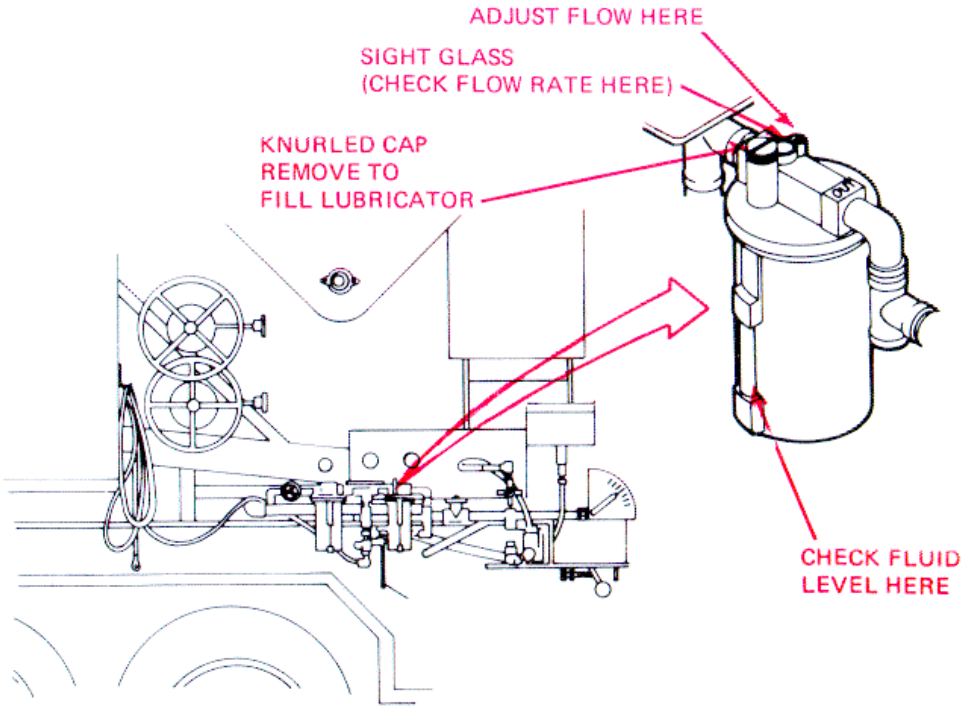


Figure 3-3. Vibrator Air Lubricator.

TA 075518

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-3. General.

a. Maintenance Forms and Records. Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses; they are a permanent record of the services, repairs, and modifications made on your mixer; they are reports to Organizational Maintenance and to your Commander; and they are a checklist for you when you want to know what is wrong with the mixer after its last use and whether those faults have been fixed. For the information you need on forms and records, see TM 38-750.

b. Preventive Maintenance Checks and Services. (See Table 3-1).

(1) Do your (B) PREVENTIVE MAINTENANCE just before you operate the mixer. Pay attention to the CAUTIONS and WARNINGS.

(2) Do your during (D) PREVENTIVE MAINTENANCE while the mixer and/or its component systems are in operation.

(3) Do your After (A) PREVENTIVE MAINTENANCE right after operating the mixer. Pay attention to the CAUTION S AND WARNINGS.

(4) Do your (W) PREVENTIVE MAINTENANCE weekly.

(5) Do your (M) PREVENTIVE MAINTENANCE once a month.

(6) If something doesn't work, troubleshoot it with the Instructions in this manual and notify your supervisor.

(7) Always do your PREVENTIVE MAINTENANCE in the same order until it gets to be a habit. Once you've had some practice, you'll spot anything wrong In a hurry.

(8) If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to Organizational Maintenance RIGHT NOW.

(9) When you do your PREVENTIVE MAINTENANCE, take along the tools you need to make all the checks. You always need a rag or two, also.

3-4. General Maintenance Procedures.

a. Cleanliness. The mixer body will operate practically trouble free if the proper emphasis is placed on cleaning and lubricating. Hardened cement in any area will cause operational problems, as will improper lubrication. Cleanup is relatively easy if done immediately after shutting down the unit but becomes much more difficult if It is put off. Dirt, grease, oil and debris only get in the way and may cover up a serious problem. Use dry cleaning solvent (SD-2) on all metal surfaces.

WARNING

Dry cleaning solvent SD-2, used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent 138°F (59°C).

b. Bolts, Nuts, and Screws - Check them all for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. If you find one you think Is loose, tighten it, or report it to Organizational Maintenance.

c. Welds - Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to Organizational Maintenance.

d. Electric Wires and Connectors - Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure the wires are in good shape.

e. Hydraulic Lines and Fittings - Look for wear, damage, leaks, and make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to Organizational Maintenance.

3-5. Fluid Leakage.

It is necessary for you to know how fluid leakage affects the status of the hydraulic system. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of the mixer. Learn, then be familiar with them and REMEMBER - WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR!

Leakage Definitions for Crew/Operator PMCS

CAUTION

Equipment operation is allowable with minor leakages (Class I or II). Of course, consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.

Class III leaks should be reported to your supervisor or to Organizational Maintenance.

CLASS I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
CLASS II	Leakage of fluid great enough to form drops but not enough to cause drops to drip from Item being checked/inspected.
CLASS III	Leakage of fluid great enough to form drops that fall from the Item being checked/inspected.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services.

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						NOTE **Item number of column shall be used as a source of item numbers for the "TM" Number" column on DA Form 2404, Equipment Inspection and Maintenance work-sheet, in recording results of PMCS.** **Within designated interval, these checks are to be performed in the order listed.** **Perform weekly as well as before PMC's if you are the assigned driver but have not operated the vehicle since the last weekly, or you are operating the vehicle for the first time.**	
						ELECTRICAL SYSTEM	
1			•			Visually inspect wiring and connectors for obvious damage, breaks or fraying.	
2	•					Make sure all clearance lamps are working, pull out head-lamp switch on truck instrument panel and check marker lamps.	
						BODY	
3	•					Visually inspect tanks and bins for obvious damage, weld breaks.	Cracked, broken welds.
4					•	Check all mounting tie downs and fasteners.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

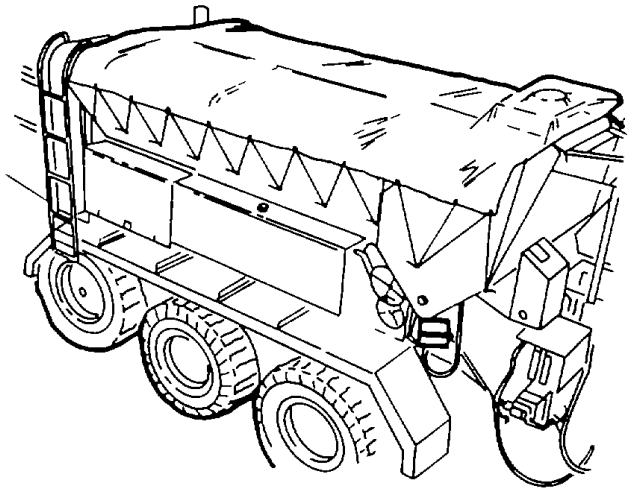
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
							
5	•					Check for evidence of leakage (water, oil, liquid admix and hydraulic fluid) on or under vehicle.	Class Ill leaks are evident.
						MAIN DRIVE	
6				•		Check drive belts for fraying and cracks.	
7				•		Check that PTO shaft guard clears shaft and belts.	
8				•		Check water pump for leaks.	
9				•		Check hydraulic pump for leaks.	

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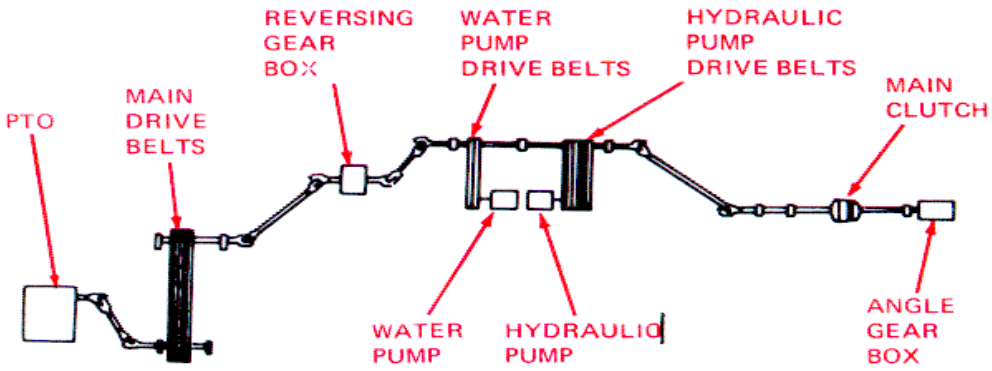
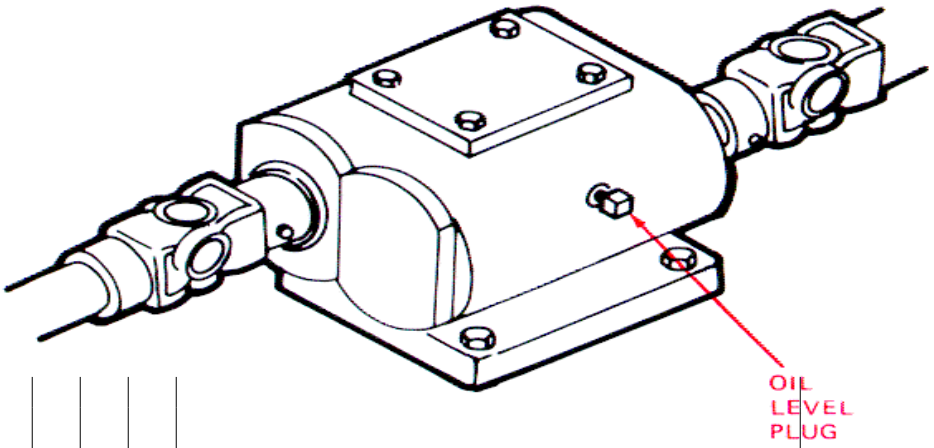
Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
10				•		Visually check reversing gear box for leaks. Check oil level. It should be to oil level plug.	



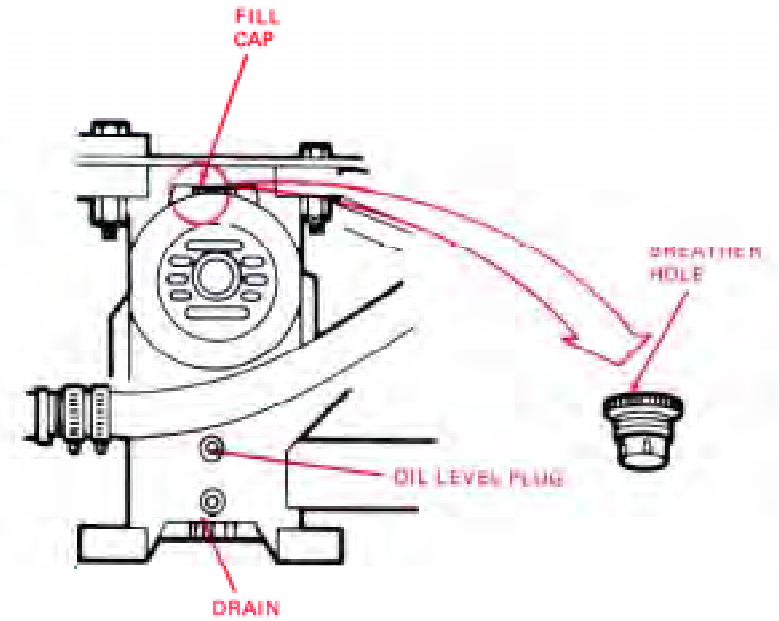


TA 075520

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
11				•		Visually check angle gear box for leaks. Check oil level. It should be to oil level plug. Check fill cap breather hole and clean if required.	
							
						WATER SYSTEM	
12	•					Using the sight gage, check for sediment in tank. Empty and flush if needed.	
13				•		Check inlet strainer (tank), if clogged, clean it.	

TA 075521

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

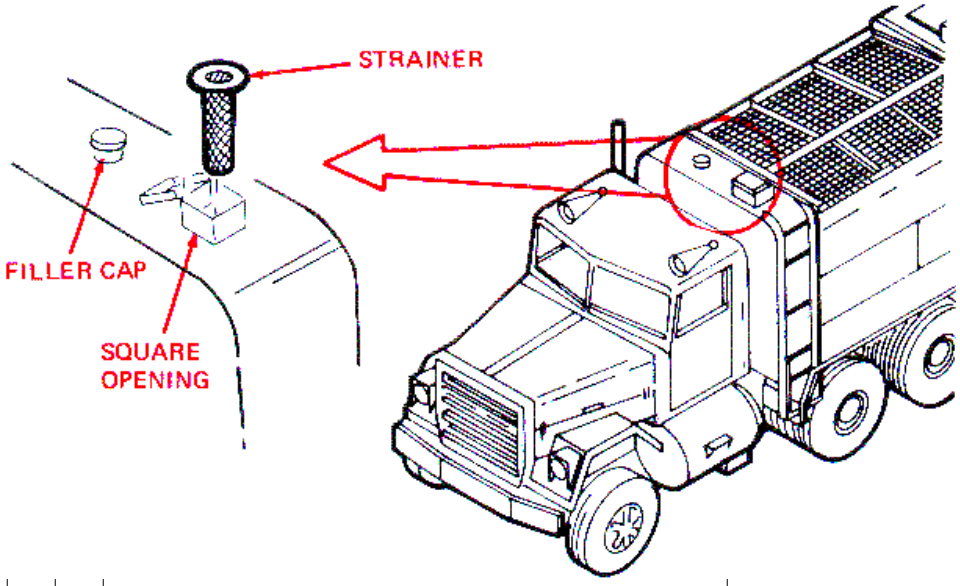
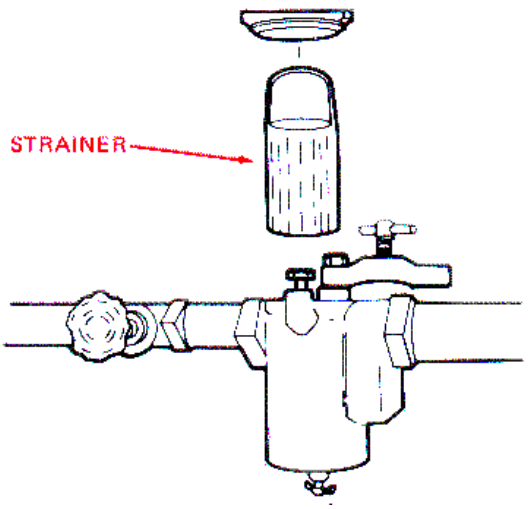
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
							
14				•		Check water system strainer. If clogged, clean it. 	

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Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

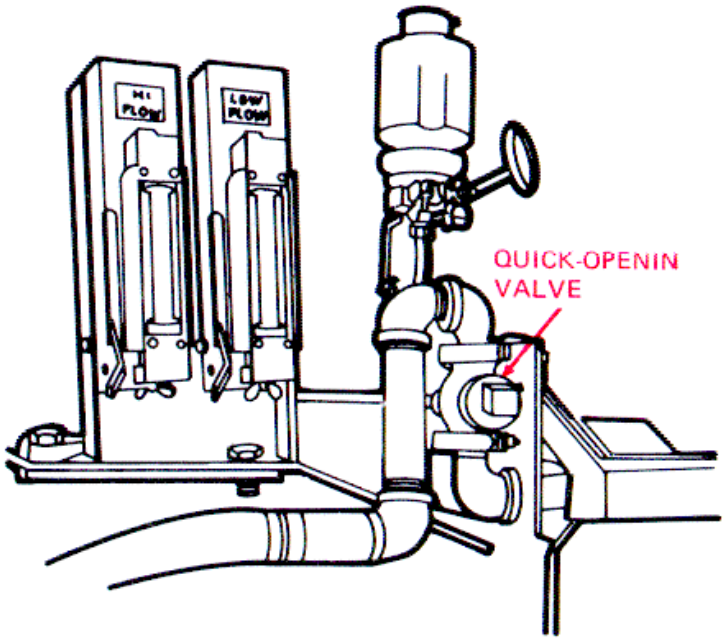
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
15	•					Check the quick-opening valve for ease of operation. Make sure the valve opens when the main clutch is engaged and closes when main clutch is disengaged. Make sure lever shifts and check to see if water is flowing.  TA 075523	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						SAND AND STONE BINS	
16				•		Check screens for broken rods and enlarged openings.	

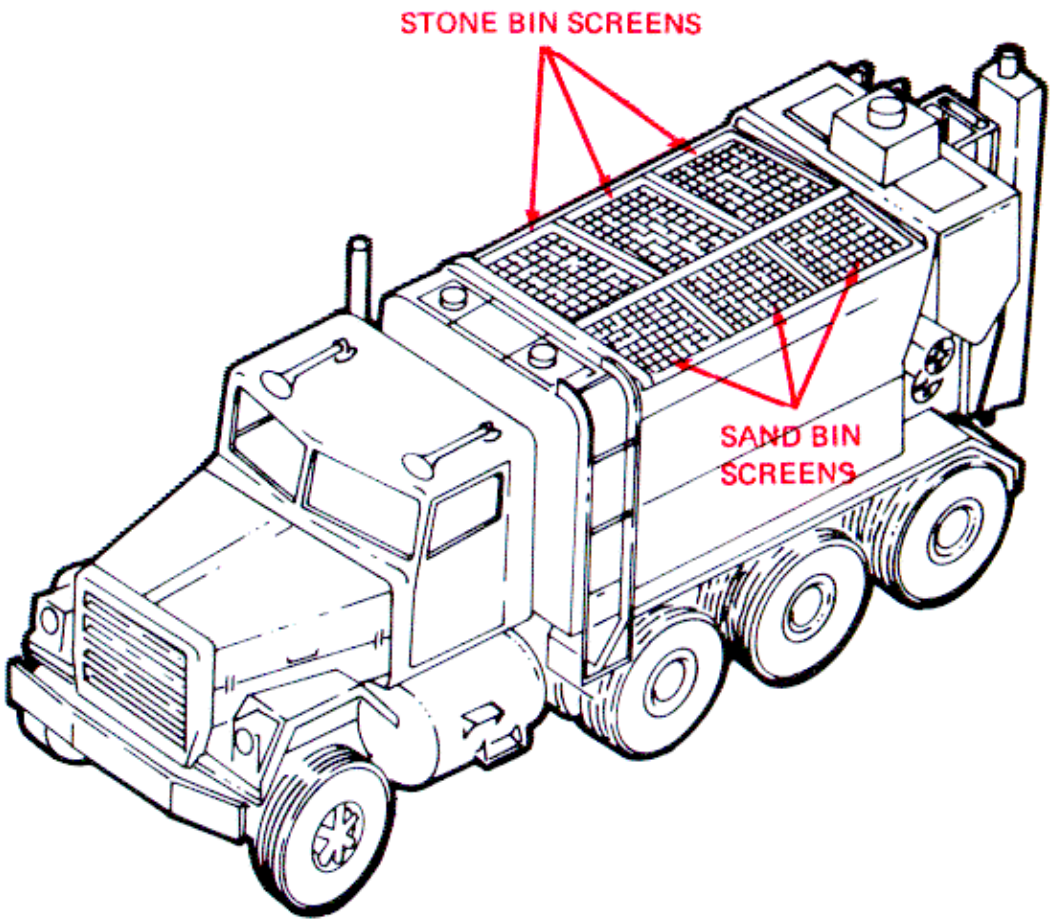


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Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						NOTE **Bins must be empty during the following check.**	
17				•		Check sand and stone gates for ease of operation.	
						CEMENT BIN	
18				•		Check that top of cement bin and cement screen are clean.	

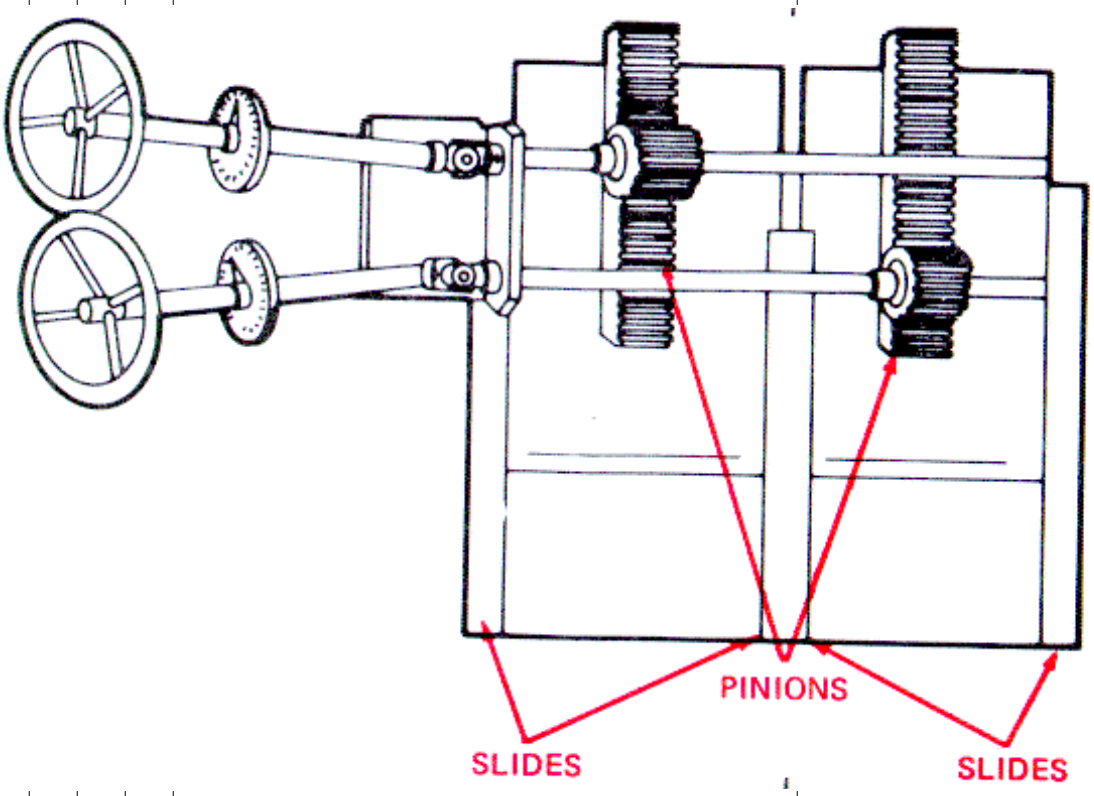

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Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before **D – During** **A – After** **W – Weekly** **M – Monthly**

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

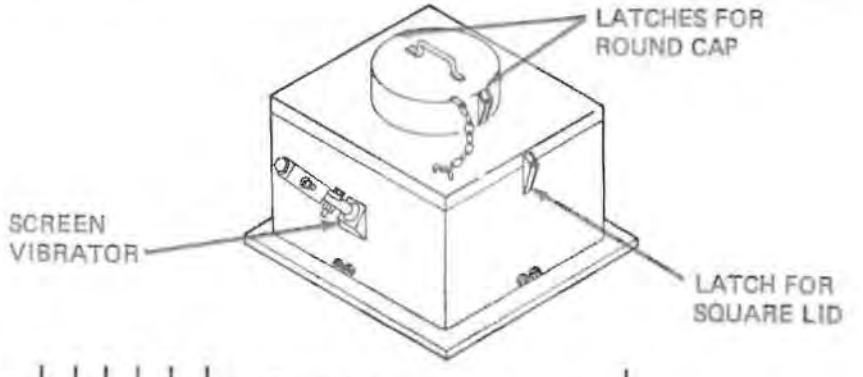
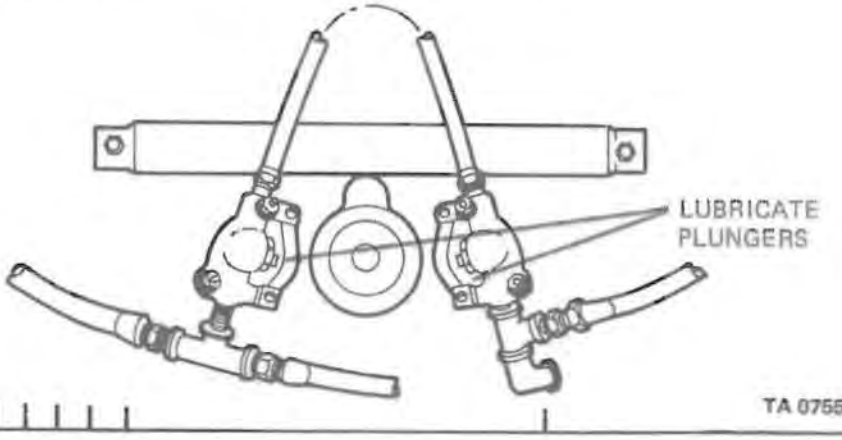
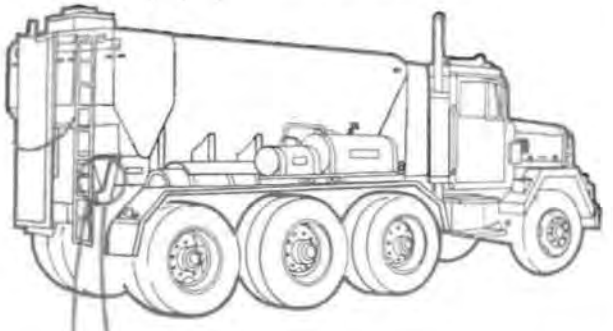
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
							
19	•					Check that cover seals tight on all sides.	
20				•		Check that screen vibration bolts and fittings are tight. With airlines connected, check operation.	
21		•				Check that cement feeder works freely. Using hand crank, give wheel one full turn. Check for broken tines or hammers.	
22		•				Check that fluffer control valve lets in air to fluff cement.	
							
							TA 075526

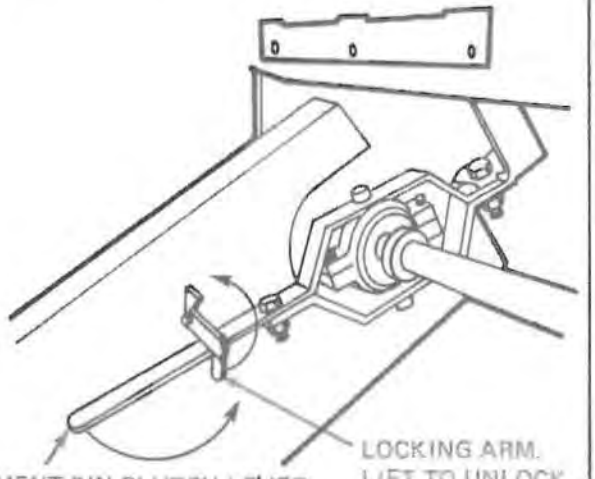
Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
23		•				Check cement bin clutch for ease of operation.	





						AUXILIARY CEMENT BIN	
24			•			Check chains for cracked or broken links.	
25			•			Check that unloading gate works free.	

TA 075527

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
						MIXING TROUGH	
26		•				Assure that hoses are not pinched when lowering or raising trough.	
27	•					Check locking arm and safety chain for cracked or broken links.	

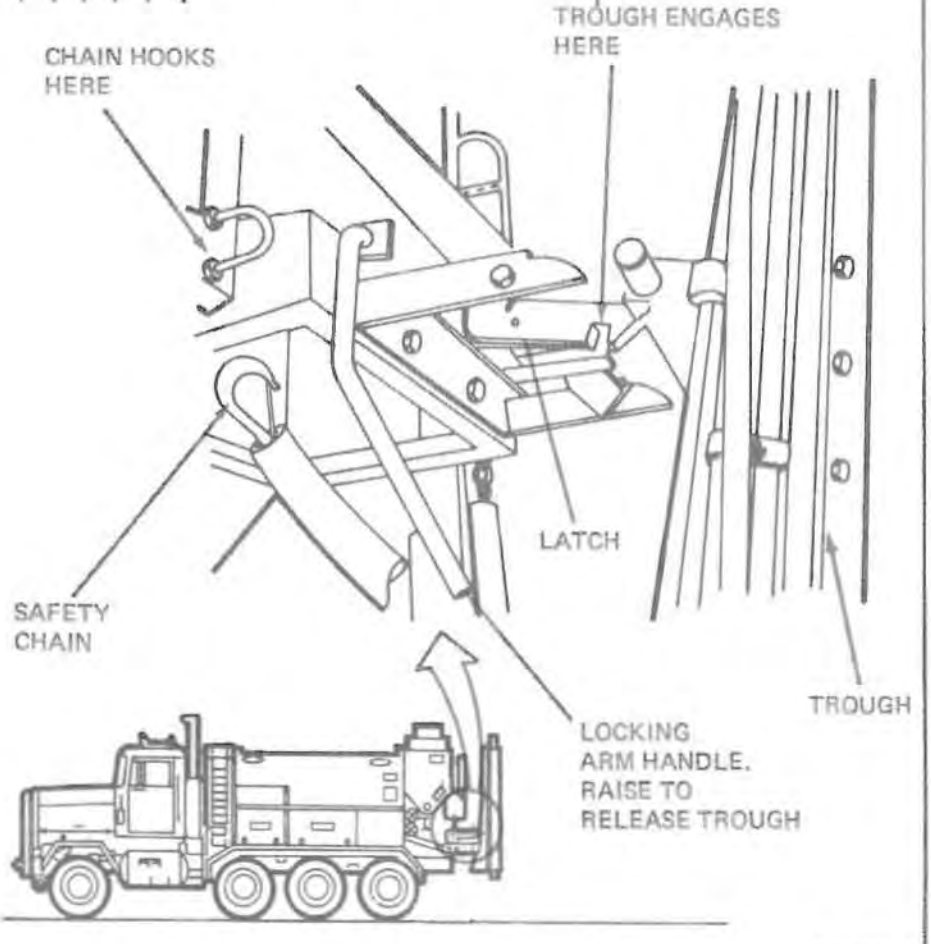


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Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
28		•				Check that swivel lock is working and secure and that inclinometer swings freely.	
29	•					Check miniskirt for rips and damage.	Torn miniskirt.

CAUTION

Flush and lubricate auger shaft bearing every four hours of operation.

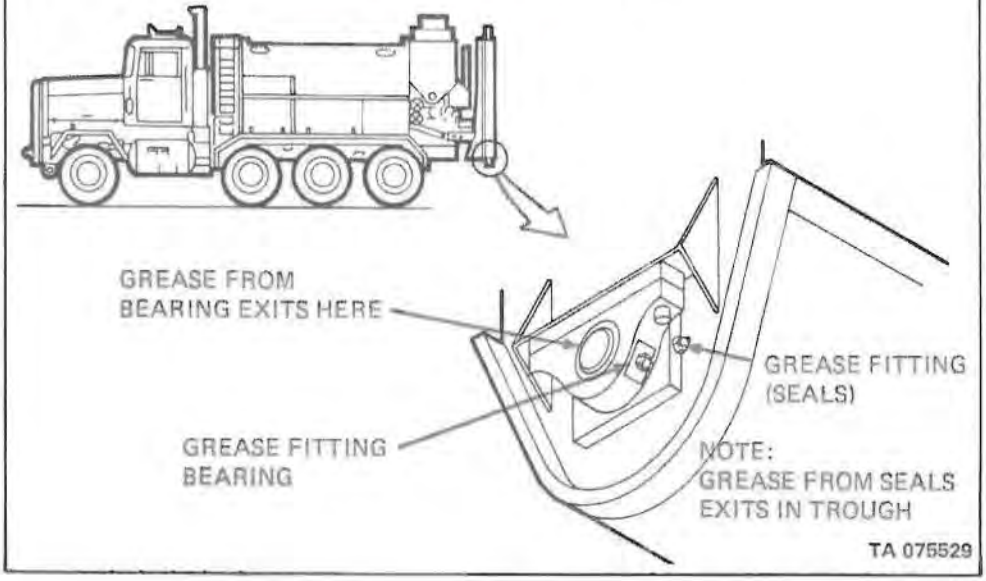


Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
30	•					Check mixer auger wear blades for wear and obvious damage to auger.	

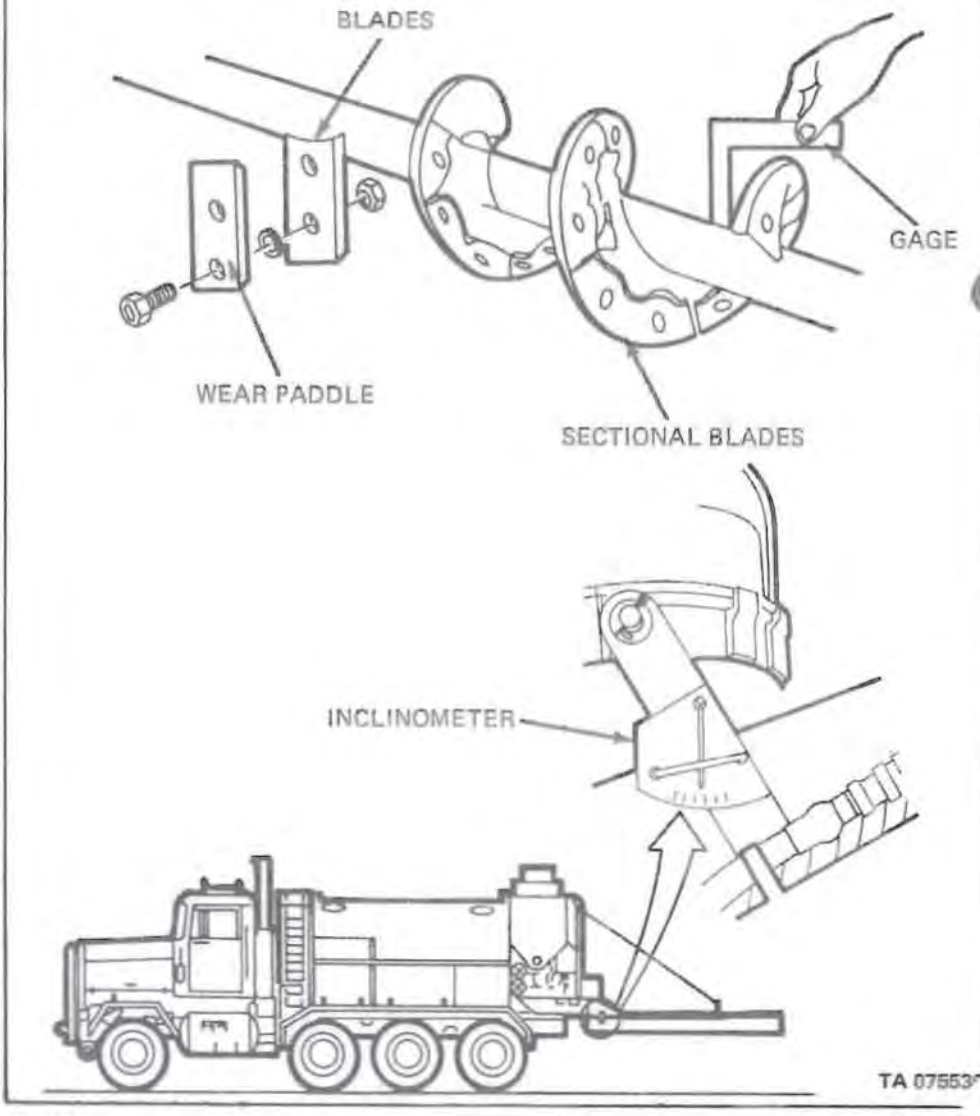
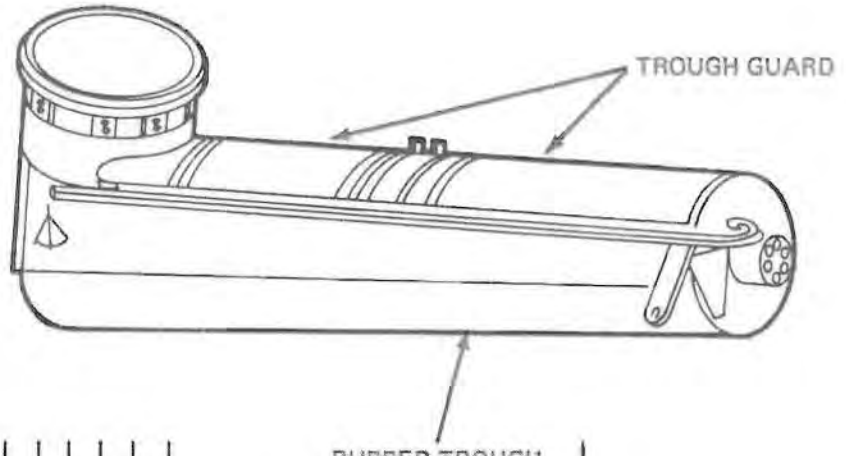


Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
31	•					Check the rubber trough for rips and damage. Check that guards, latches operate freely.	



NOTE

Wash down and clean mixing trough (auger) after every stop.

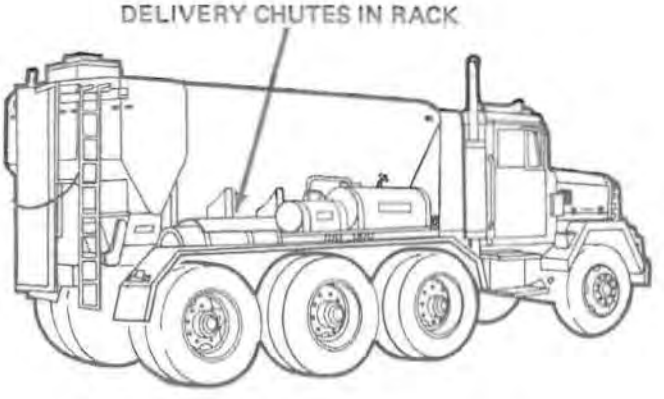
TA 075531

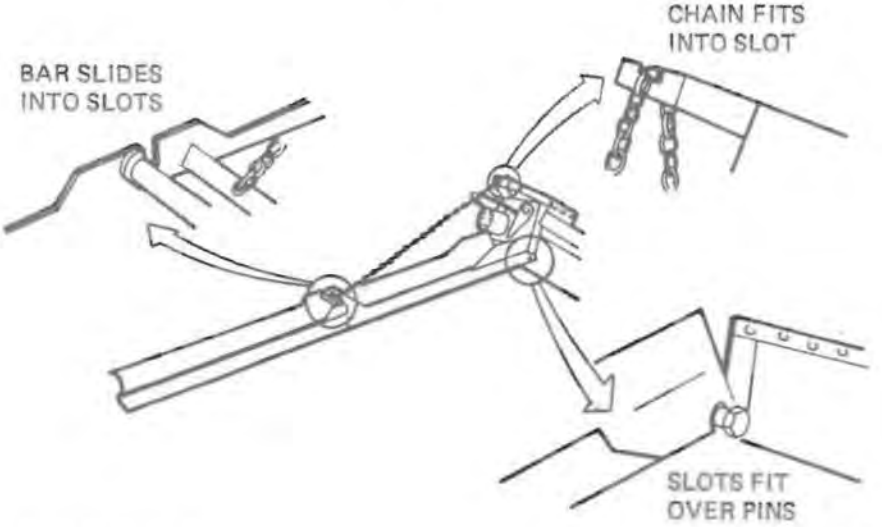
Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
32				•		Check the delivery chutes and check the chains for cracked or broken links.	





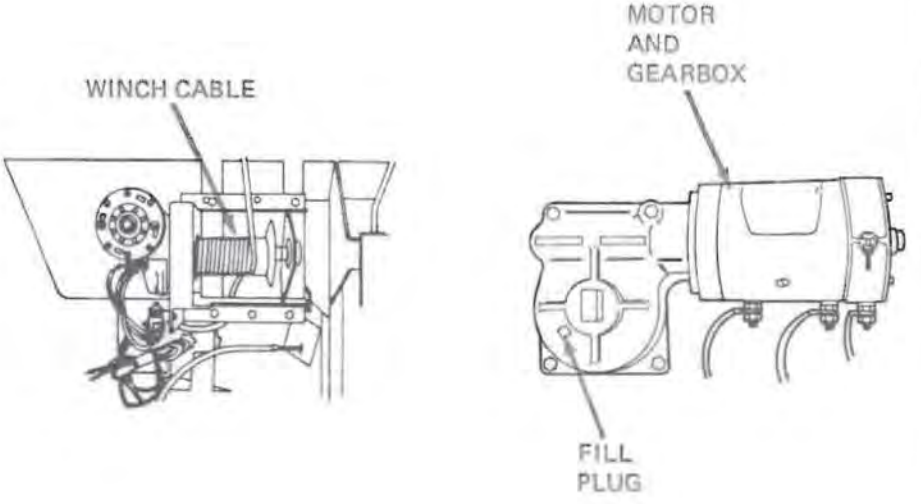
TA 075532

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B – Before D – During A – After W – Weekly M – Monthly

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
						WINCH	
33					•	Check mounting bolts and electrical connections.	
34		•				Check cable for fraying, kinks or broken strands.	
35				•		Visually check gear box for leaks. Check oil level. It should be to fill plug.	Class III leaks are evident.



TA 075533

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B – Before **D – During** **A – After** **W – Weekly** **M – Monthly**

OPERATOR PMCS – M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
						CONVEYOR	
36		●				Check belt wiper and make sure that aggregate is not passing through.	
37				●		Check chain sprocket for broken or cracked teeth and conveyor belt for broken or cracked links.	
38		●				Visually check belt for obvious sag.	
39				●		Check belt lacer for loose or broken prongs.	

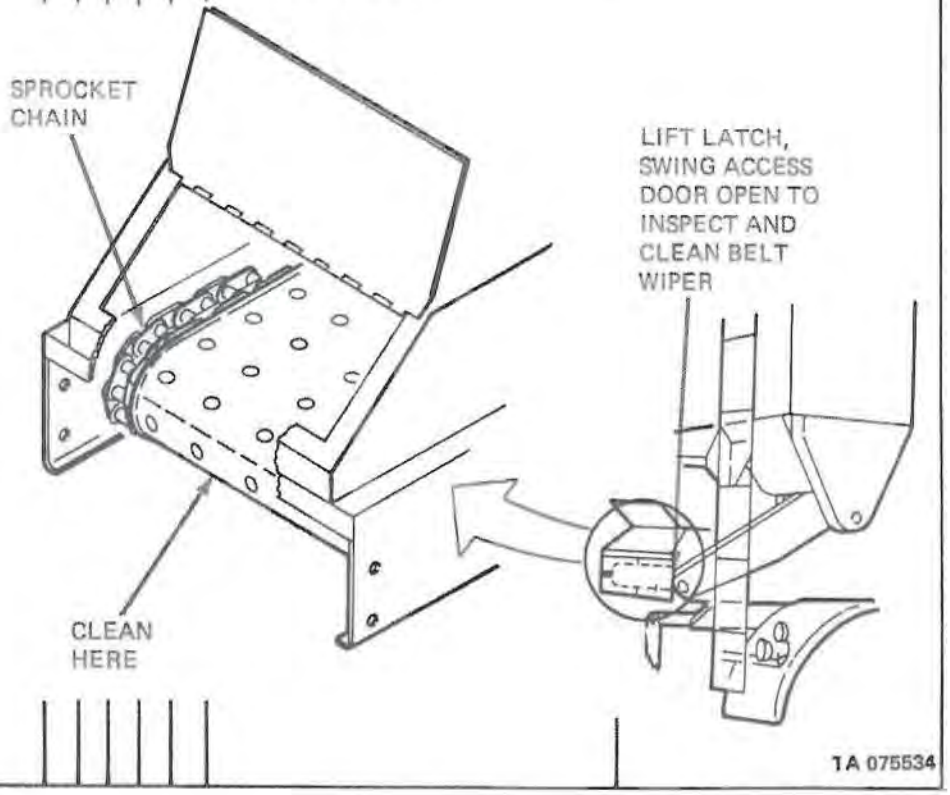
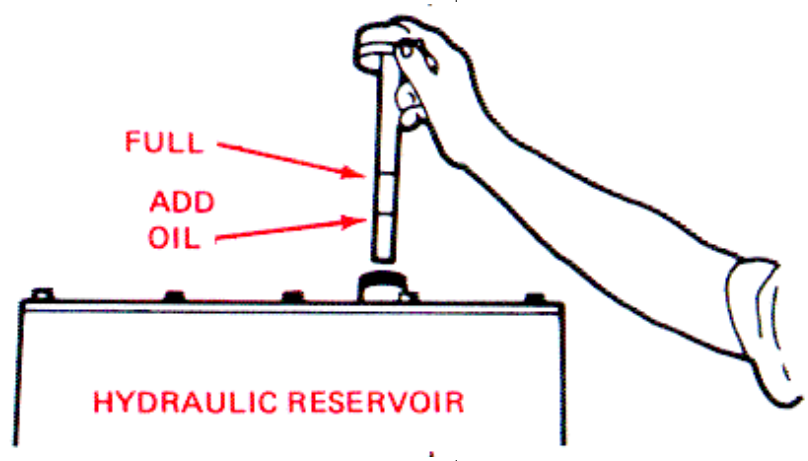


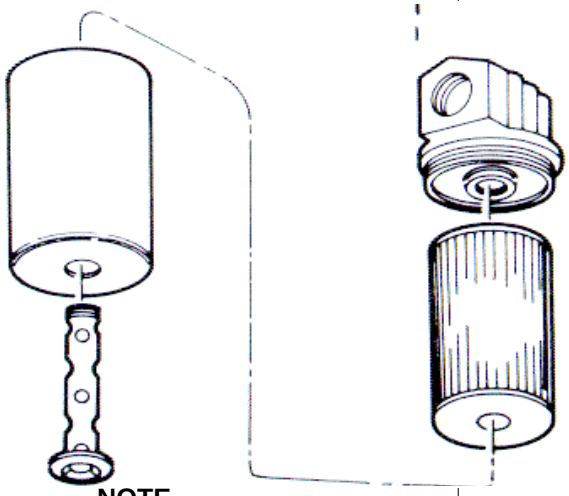
Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						HYDRAULIC SYSTEM	
40	•					Check hydraulic reservoir tank for leaks. Check oil level with dipstick and add as necessary.	Class III leaks are evident
41				•		Check all hydraulic lines for evidence of leaking.	Class III leaks are evident.
42				•		Check oil filter for leaks.	Class III leaks are evident.





NOTE

Change oil filter after 6 months then every two years.

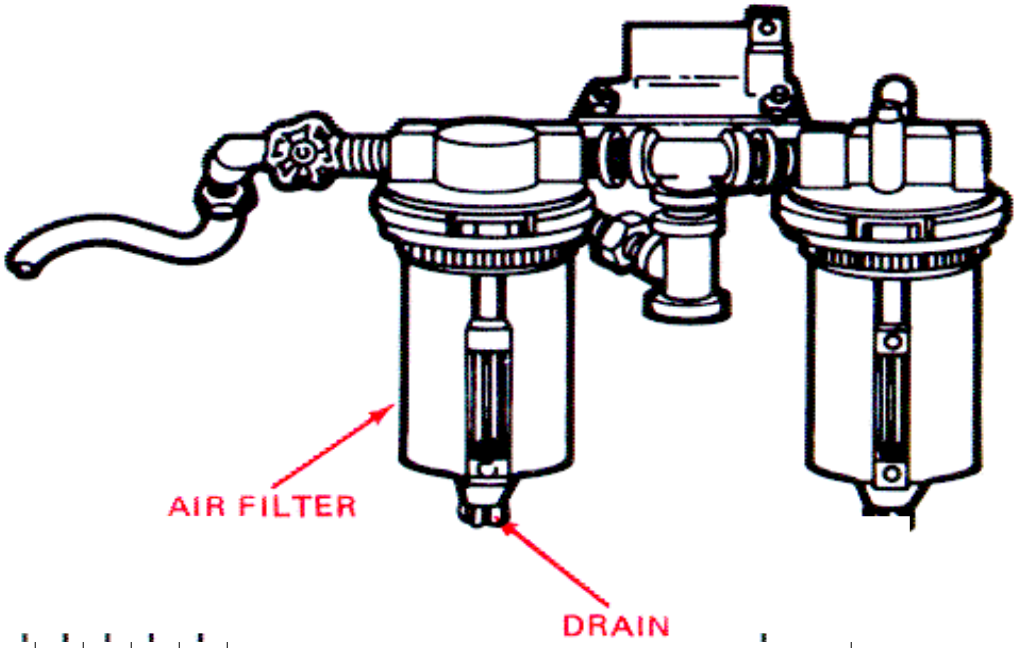
TA 075535

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						AIR SYSTEM	
43			•			Drain the air filter.	Air lubricator inoperative.
44		•				Check air lubricator for leaks and with the vibrator operating, there should be a drop of oil every third vibration. Fill if oil is not visible in sight glass.	



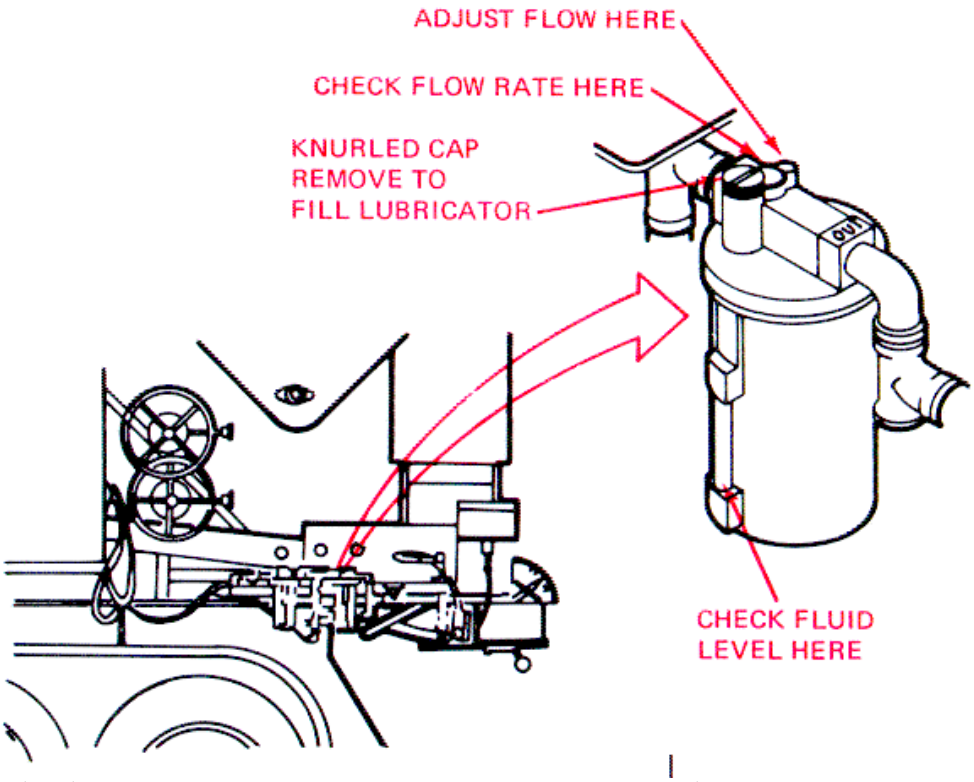
TA 075536

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued).

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
45		•				Check chain oiler for leaks. Check that oiler will operate with 5 drops per minute	Chain oiler Inoperative.



TA 075537

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

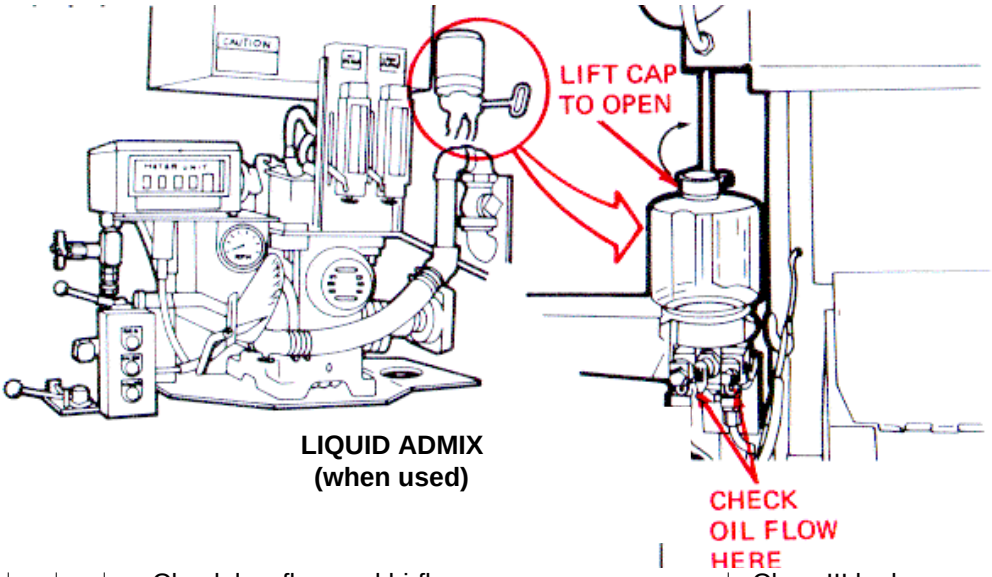
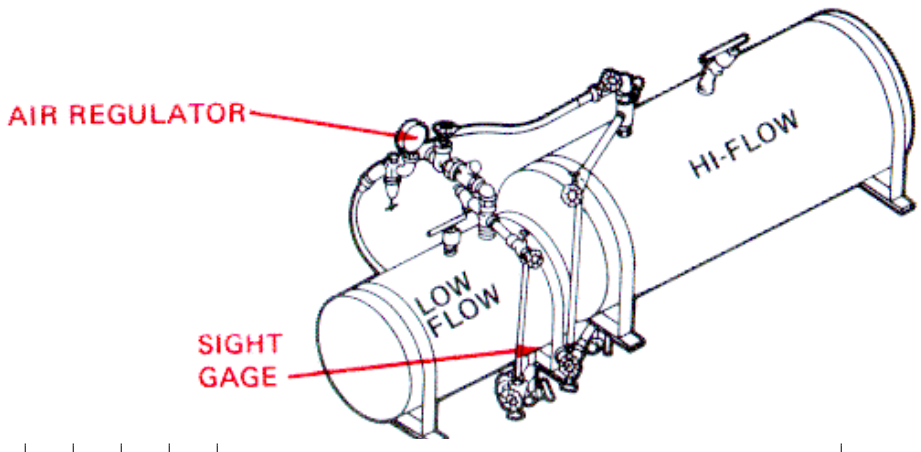
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						 **LIQUID ADMIX (when used)**	
46	•					Check low flow and hi-flow tanks for leaks.	Class III leaks are evident.
47			•			Unless told otherwise, drain and flush liquid admix tanks at the end of the day.	
48		•				Check air pressure gage for 15 PSI set with air regulator.	Gage inoperative or 15 PSI cannot be obtained.
49				•		Check sight gage on tank.	
							
							TA 075538

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

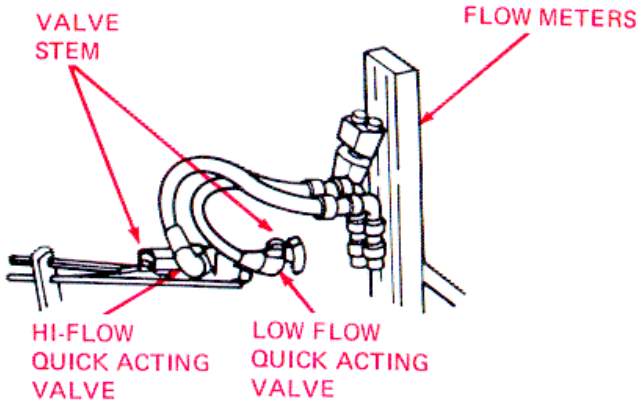
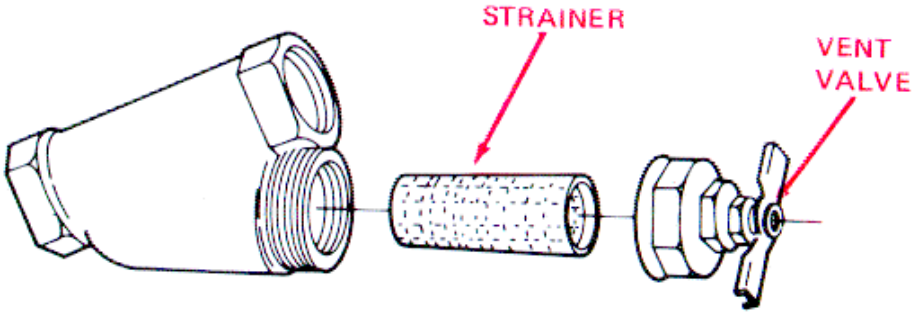
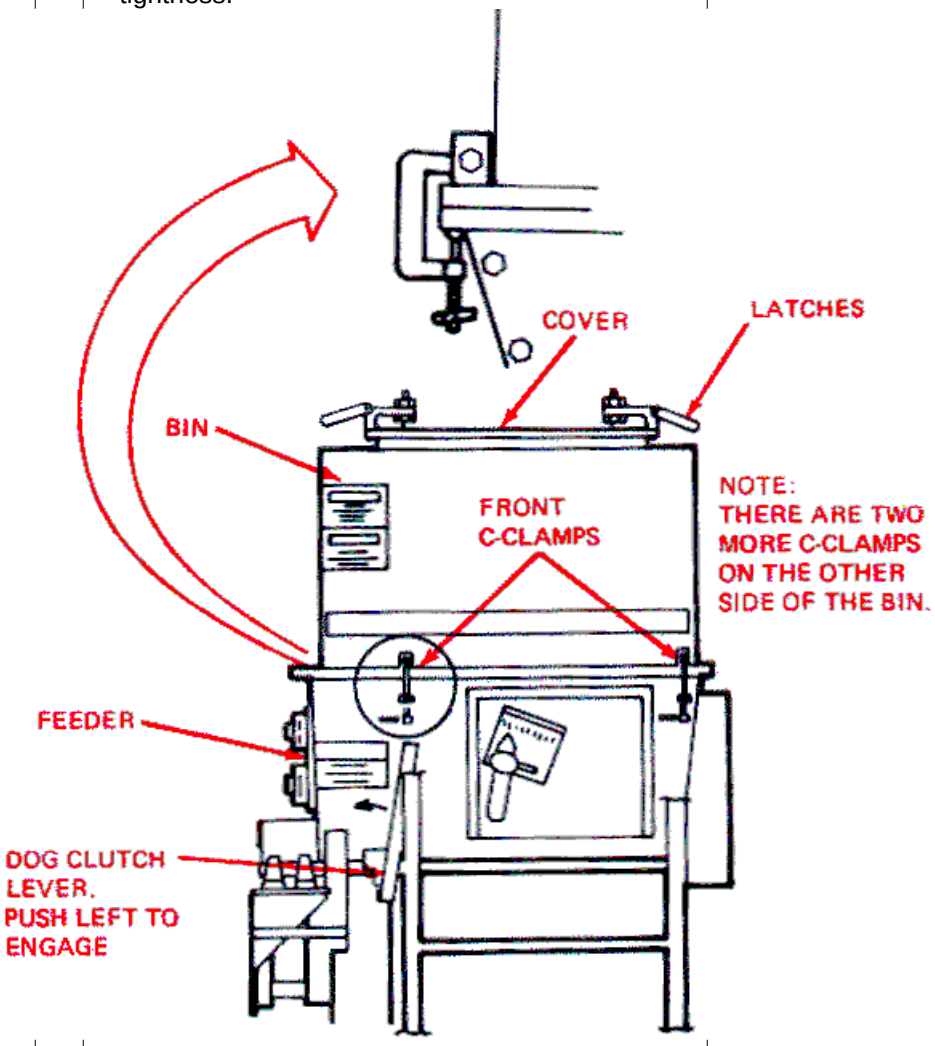
Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
							
50		•				Check the quick acting valves for leaks and ease of operation.	
51		•				Check flowmeter for operation.	Flowmeters inoperative.
52				•		Check strainer If clogged, replace.	
							
							TA 075539

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
						DRY ADMIX (when used)	
53				•		Check clamps and cover latches for tightness.	



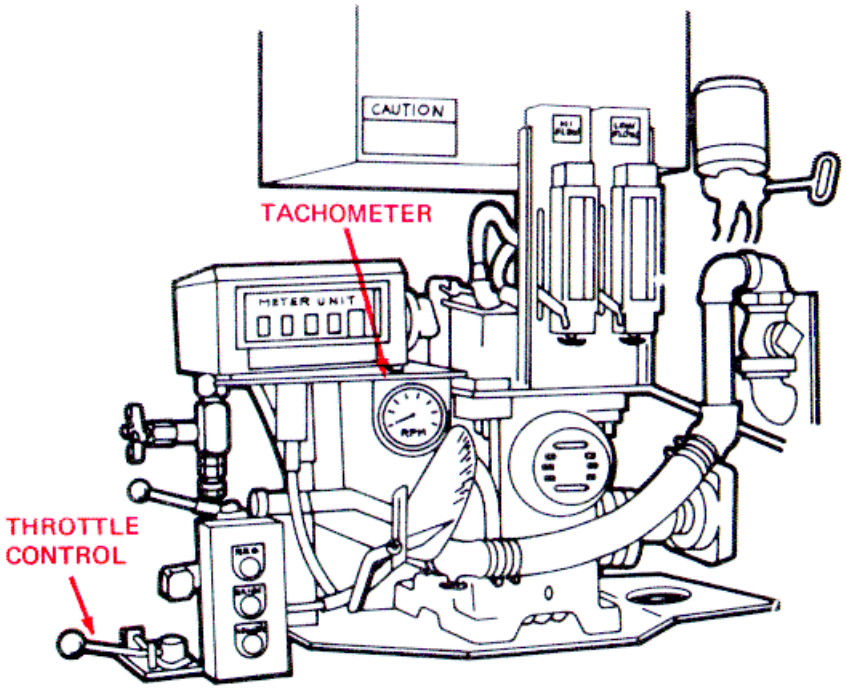
TA 07554

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (Continued)

B - Before **D - During** **A - After** **W - Weekly** **M - Monthly**

OPERATOR PMCS - M919 CONCRETE MOBILE MIXER BODY

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is not Ready/ Available If:
54		•				Check clutch for ease of operation.	
55		•				Check throttle control for ease of operation and tachometer during operation.	Tachometer inoperative



TA 075541

Section III. TROUBLESHOOTING

3-6. Introduction.

a. This section contains information for locating and correcting most of the operating troubles which may develop in the mixer body. Each malfunction for an Individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify Organizational Maintenance.

c. The table lists the common malfunctions which you may find during the operation or maintenance of the mixer or Its components. You should perform the test/inspections and corrective action in the order listed.

Table 3-2. Troubleshooting Procedures

Malfunction
Test or Inspection
Corrective Action

HYDRAULIC MIXER AUGER

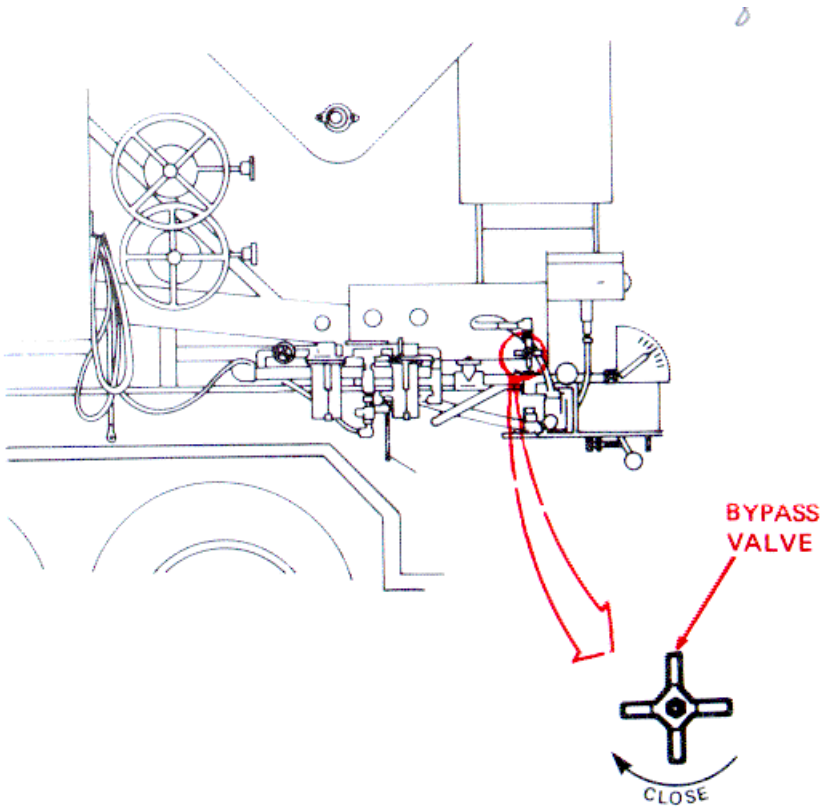
1. AUGER DOES NOT TURN WHEN HYDRAULIC CONTROL VALVE IS OPENED

Step 1. Check the tachometer. Speed should be 1620-1720 rpm. Use the hand throttle control to adjust the pump speed.

Step 2. Check to be sure the bypass valve is closed finger tight (It should be turned clockwise all the way.)

a. If valve is already closed, notify Organizational Maintenance

b. If valve is open, close it



TA 075542

Table 3-2. Troubleshooting Procedures - Continued

Malfunction Test or Inspection Corrective Action

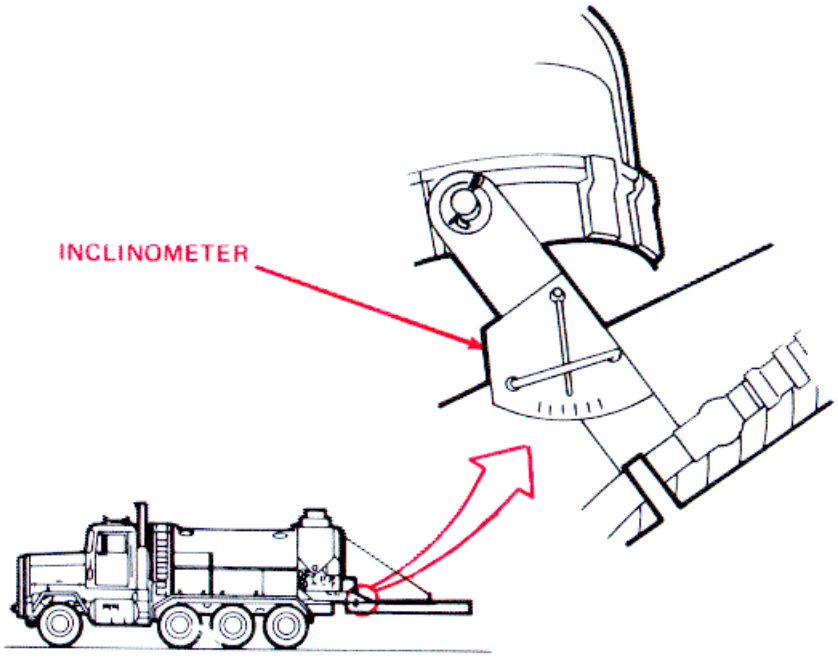
2. INGREDIENTS ARE NOT THOROUGHLY MIXED

Step 1. Raise mixing trough until Inclinometer reads 25°. Operate at this angle.
Step 2. If the step above does not correct the problem, Notify Organizational Maintenance

CEMENT SYSTEM

3. CEMENT DELIVERY IS UNEVEN OR AMOUNT SEEMS WRONG

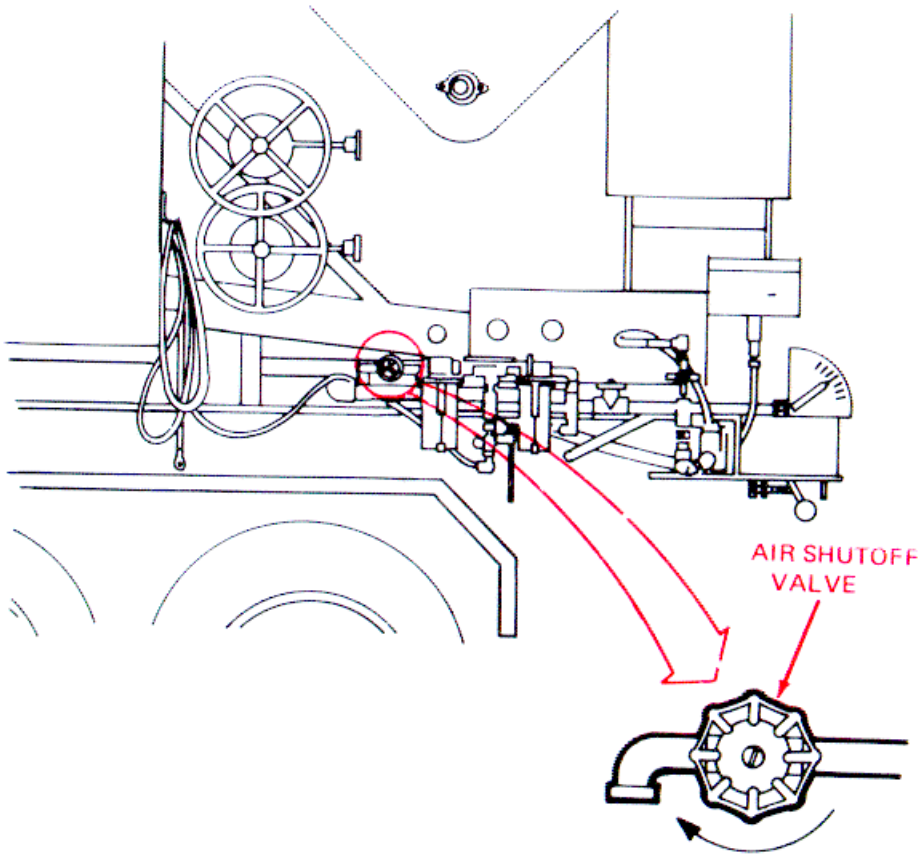
Step 1. Check to be sure all controls are at the settings you have been given.
If they are not, reset them
Step 2. a. Check that air shutoff valve Is open



TA 075543

Table 3-2. Troubleshooting Procedures - Continued

Malfunction
Test or Inspection
Corrective Action



TA 075544

Table 3-2. Troubleshooting Procedures - Continued

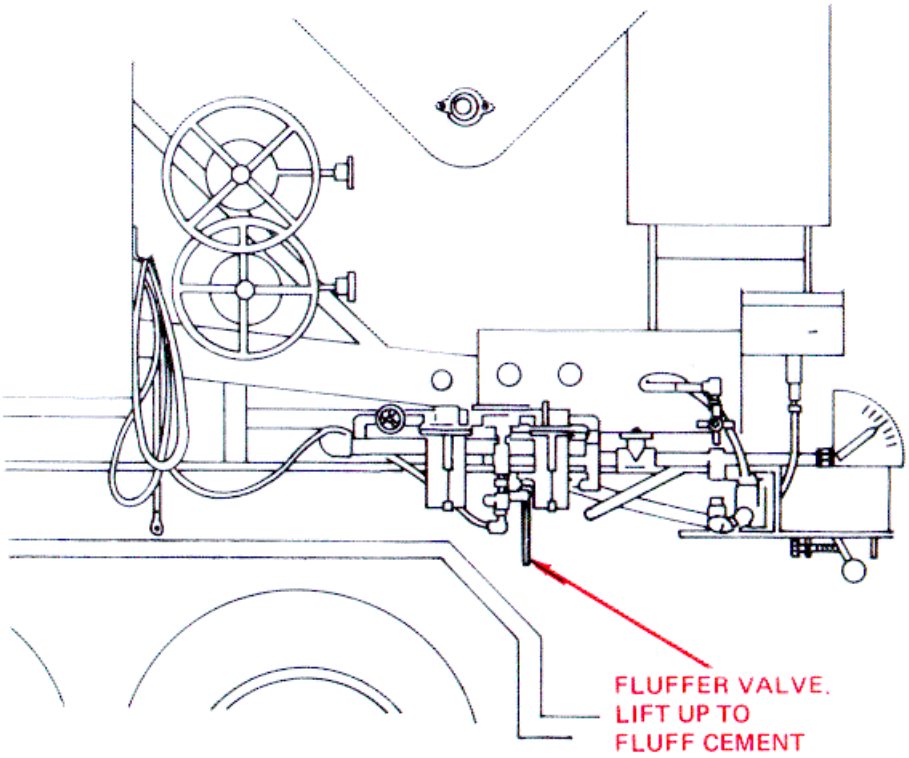
Malfunction Test or Inspection Corrective Action
b. Lift up on the fluffer valve lever several times to aerate the cement.    TA 075545

Table 3-2. Troubleshooting Procedures - Continued

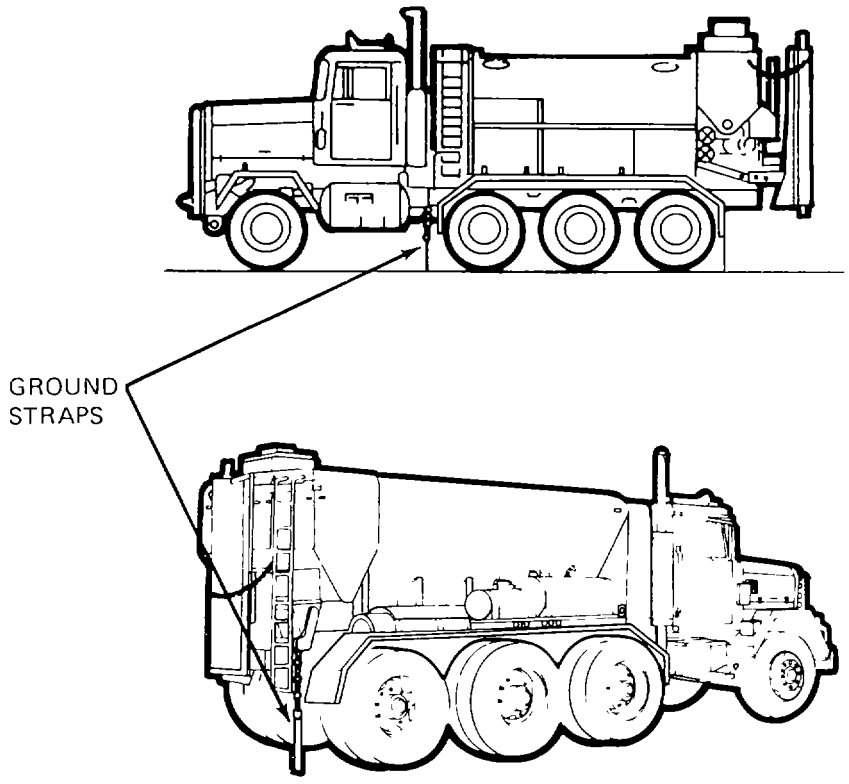
Malfunction Test or Inspection Corrective Action
Step 3. Check to be sure both ground straps are in good condition and touching ground. Arrange ground straps so that they contact the ground.      TA 075546

Table 3-2. Troubleshooting Procedures - Continued

Malfunction Test or Inspection Corrective Action

Step 4. If problem is still not corrected.
Notify Organizational Maintenance.

AGGREGATE SUPPLY SYSTEM

4. MIX SEEMS TOO SANDY OR STONY

Step 1. Check to be sure all ingredients controls are at the settings you have been given.
If they are not, reset them (para 2-2).

Step 2. Check that bins have sand and stone in them.
Refill empty bins

Step 3. Check that vibrators are functioning. Place your hand on the side of the bin and feel for vibrations.
a. If vibrators are not functioning, see malfunction 6.
b. Sometimes the automatic vibrating action is not strong enough to shake aggregates onto the conveyor belt. Pull on the manual vibrator control to increase shaker action. See page 1-6 for correct location of manual vibrator control.

NOTE

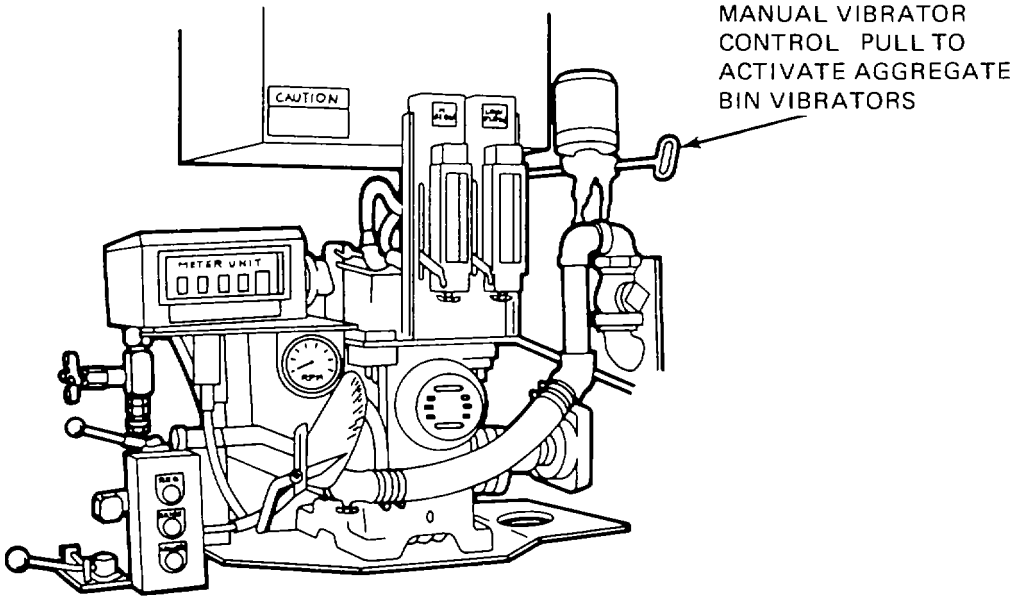
If sand is still bridged in the bin, poke it with a rod to break up the bridge.

Step 4. Check to see If gates are blocked.
Remove large stones or other objects blocking the gates.

Step 5. Refer problem to Organizational Maintenance.

Table 3-2. Troubleshooting Procedures - Continued

Malfunction
Test or Inspection
Corrective Action



5. MIX SEEMS TOO WET OR TOO DRY

Step 1. Check to be sure all ingredients controls are at the setting you have been given.
If they are not, reset them (para 2-2).

Step 2. Reset water control (para 2-11 c).
a. Loosen wingnut.
b. Move pointer to a setting lower than the one you want.
c. Move the pointer back up to the correct setting.
d. Tighten the wingnut.

Step 3. Open the washout hose valve Check to see if you can spray water about 32-38 ft (9 76-11 59 m).
Adjust water pressure (para 2-10 e).

Step 4. Check to be sure all eight draincocks and the vent are closed.
Close loose draincocks and vents (fig. 2-14).

Step 5. Check that the caps on both air fittings are tightly screwed on.
Tighten loose caps (fig. 3-21).

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Table 3-2. Troubleshooting Procedures - Continued

Malfunction
Test or Inspection
Corrective Action

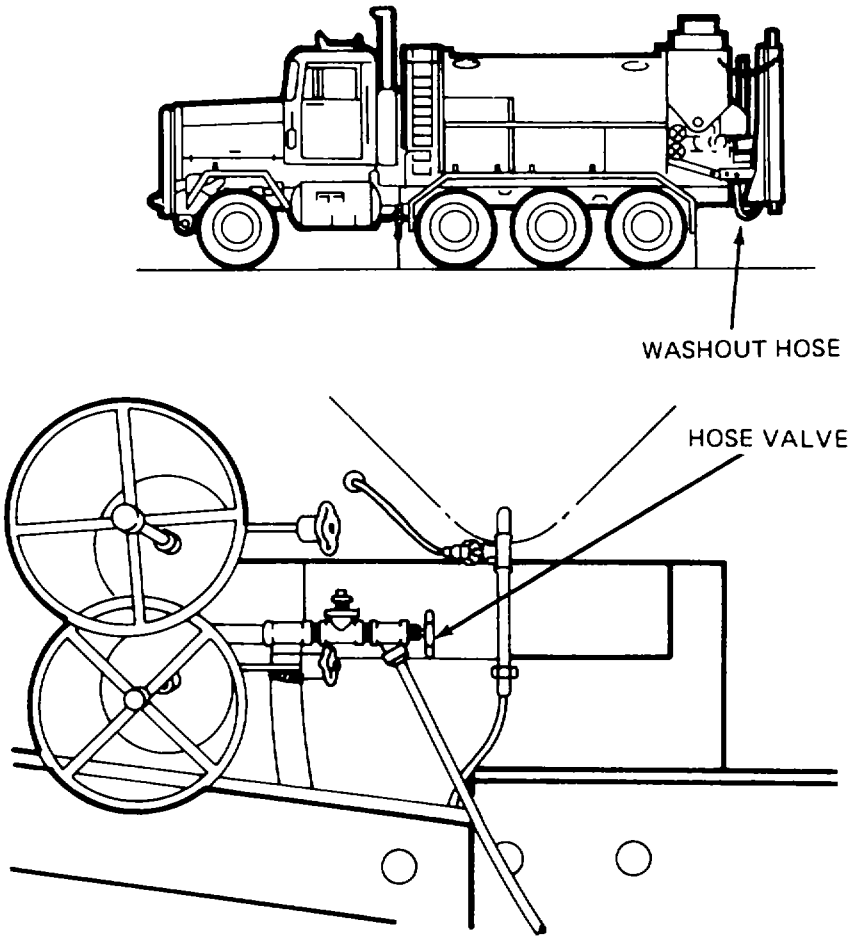

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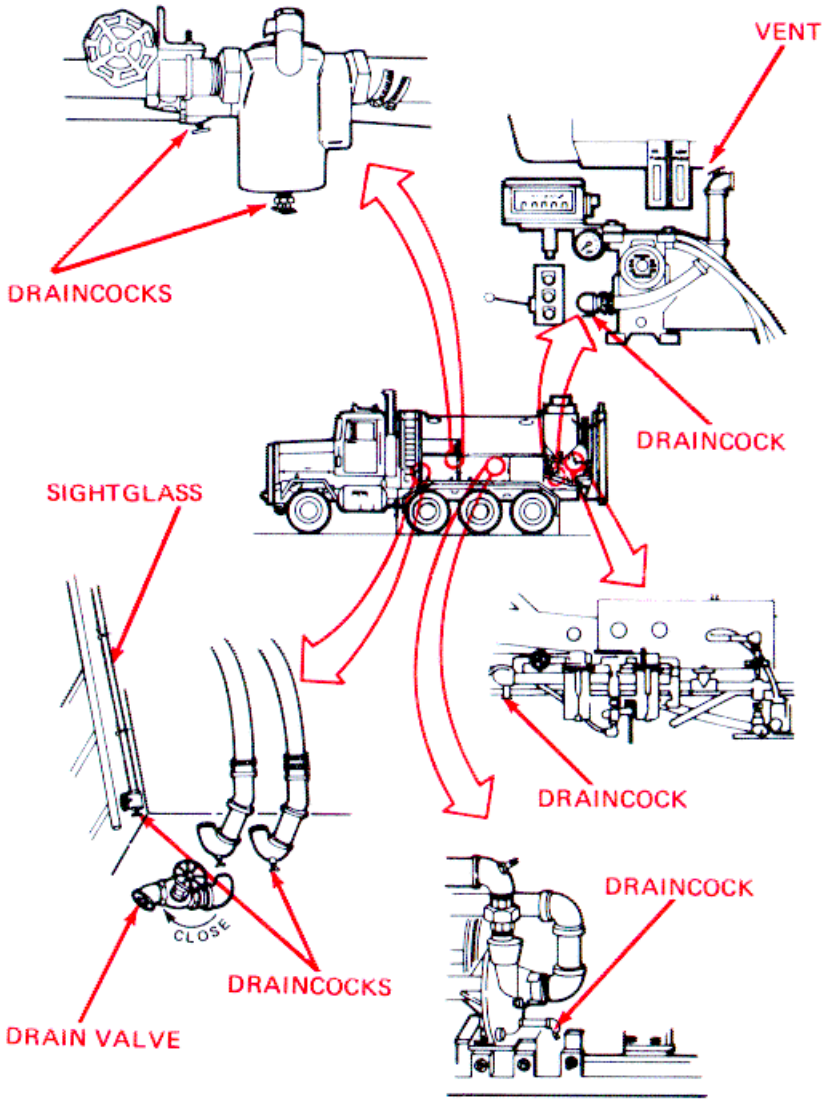
Table 3-2. Troubleshooting Procedures - Continued

Malfunction
Test or Inspection
Corrective Action



Step 6. Refer problem to Organizational Maintenance.

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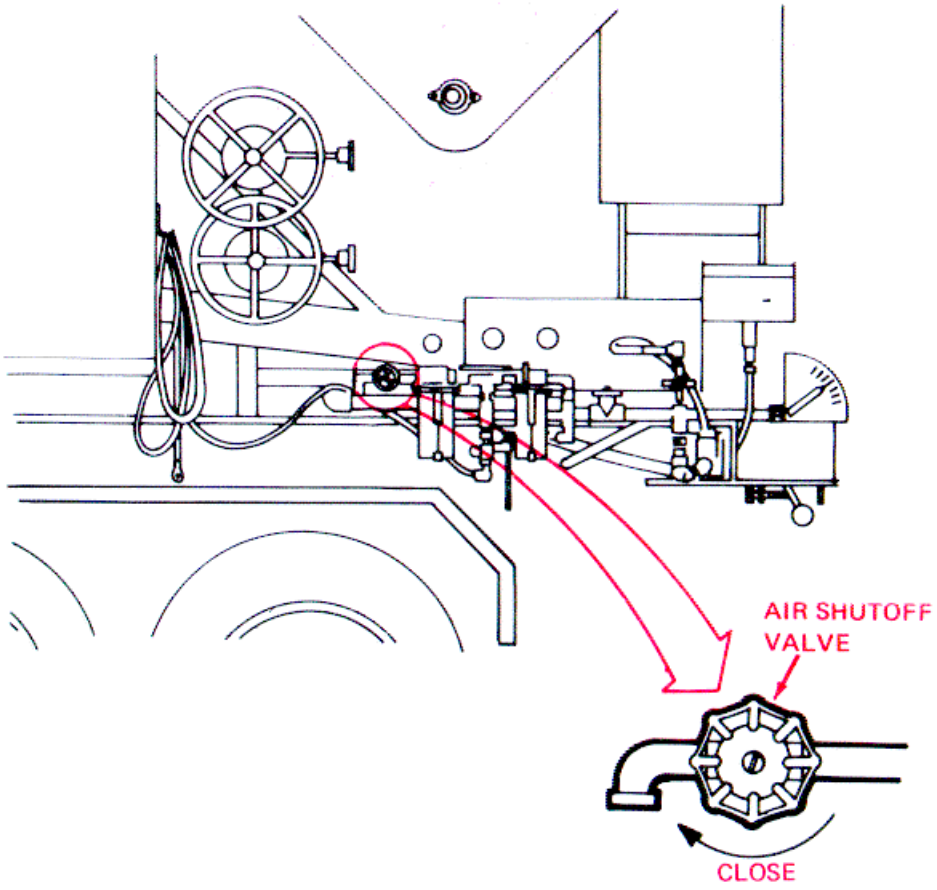
Table 3-2. Troubleshooting Procedures - Continued

Malfunction Test or Inspection Corrective Action
AIR SYSTEM
6. VIBRATORS DO NOT FUNCTION
Step 1. Check that chassis air pressure Is more than 65 psi (448 kPa). Troubleshoot chassis air system (see TM 9-2320-273-10). Step 2. Check that air shutoff valve is turned all the way counter-clockwise. Open air shutoff valve. Step 3. Check that fluffer valve to the cement bin aeration pads is closed completely and not stuck open. Check for proper lubrication on valve stem; lubricate as necessary to restore free movement. Step 4. Check to be certain that when previously shut down, the collar cam is in position to hold a vibrator actuating valve in an open position. To correct, rotate the cement meter-feeder sufficiently to move the collar cam away from the valve so that the valve will close. Step 5. Check that all admix tank petcocks are closed and that air is not leaking from any valves or petcocks in the admix system. Close petcocks as necessary. Step 6. If vibrators still do not function. Notify Organizational Maintenance.

Table 3-2. Troubleshooting Procedures - Continued

Malfunction
Test or Inspection
Corrective Action



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Section IV. MAINTENANCE PROCEDURES

3-7. Cleanup.

a. Introduction. Thorough cleaning is extremely important. A buildup of concrete will cause major problems in operation such as equipment failures, and the need for frequent maintenance. Also, cleaning becomes harder and harder if It Is not done well each time

CAUTION

Do not use water to clean the inside of the cement bin. Do not get water on the conveyor belt. Be sure all access panels are closed before you begin cleanup.

b. Mixing Trough. The mixing trough is difficult to clean because it receives a heavy accumulation of concrete. However, it Is important to clean it thoroughly.

(1) Adjust throttle control until tachometer reads 1620-1720 rpm (fig. 3-4).

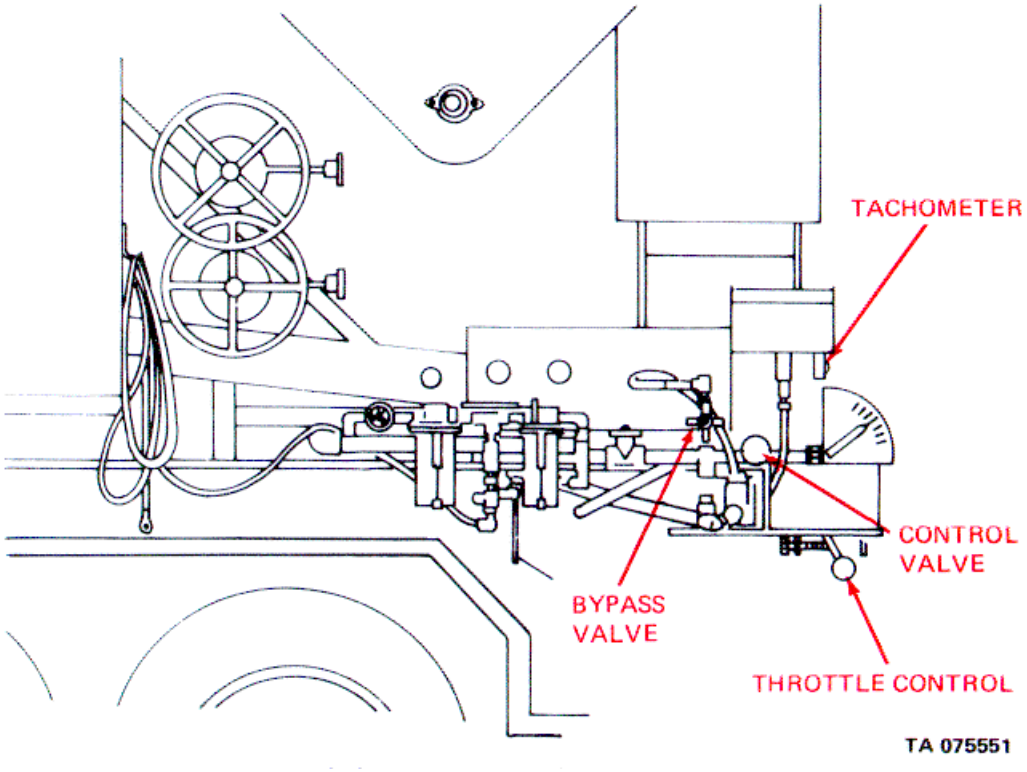

Figure 3-4. Throttle Control and Bypass Valve.

TA 075551

(2) Press the LOWER button until the mixing trough is level (0° angle).

(3) Open the control valve (fig 3-4) Allow the auger to carry excess concrete out of the trough.

(4) Open the bypass valve (turn counterclockwise) until the auger is turning at about half its normal speed (fig. 34).

WARNING

You will be working with the auger guards raised. Be careful not to catch your fingers or clothing in the auger. Carelessness may cause severe injury.

(5) Wash the swivel ring area, paying particular attention to the rear belt wiper within the swivel ring (table 3-1, item 36).

(6) Raise the trough guards (fig 3-5).

(7) Open the hose valve (fig 3-6).

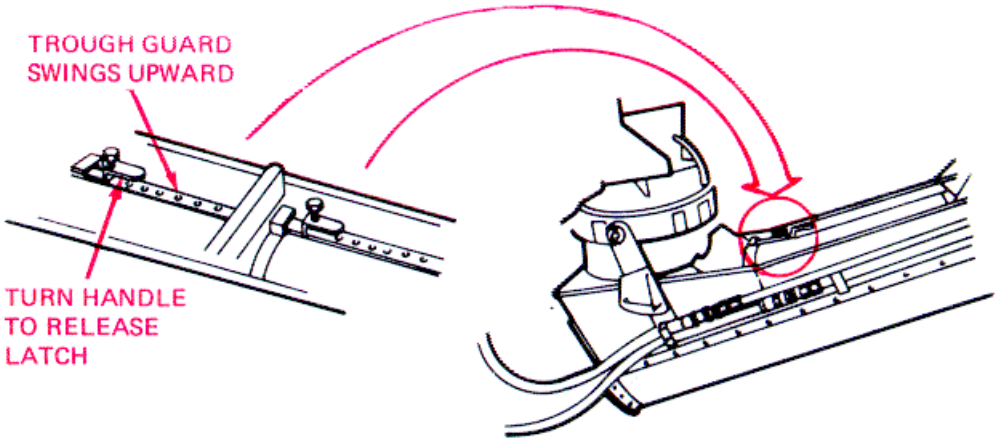

Figure 3-5. Trough Guards.

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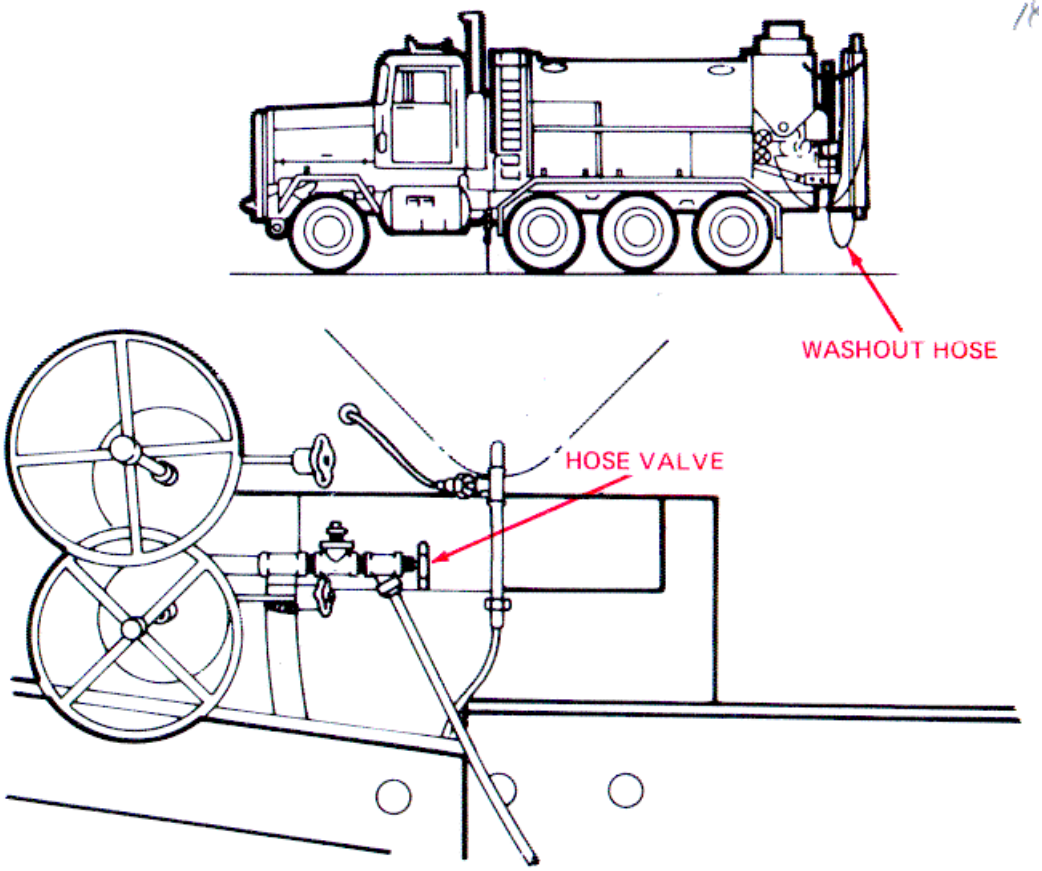

Figure 3-6. Hose Valve and Washout Hose.

WARNING

Avoid contact with wet concrete. It may cause skin irritation and burns. If skin is exposed directly or through saturated clothing, wash thoroughly with water. If any concrete gets into the eyes, flush immediately with water and GET PROMPT MEDICAL ATTENTION.

TA 075553

(8) Hold the cleanup hose about three feet from the surface being washed. Rinse away the wet concrete. Be careful not to splash wet concrete Into eyes or onto skin. Use a washout brush on areas where concrete sticks. Use a scraper if necessary.

NOTE

Wash both the inside and the outside of the trough. Wash the delivery chutes.

(9) Move the hose closer and rinse all areas thoroughly.

(10) Close the control valve and the bypass valve (fig. 3-4).

(11) Close the trough guards.

(12) Raise the mixing trough and clean the underside of trough and motor.

c. Body

(1) Check that all access panels and bin covers are securely closed.

CAUTION

Avoid getting water in the sand, stone, cement, or dry admix bins. Do not get water on the electrical wiring or the conveyor belt.

(2) Using the washout hose, rinse away all wet concrete. Use a cleanup brush or scraper on stubborn spots.

NOTE

Remember to remove spatters from the axles and wheels.

(3) Close the hose valve (fig. 3-6).

(4) Adjust the throttle until the engine is at normal idling speed.

CAUTION

Make sure you lubricate the auger bearing after cleanup (para 3-2).

3-8. Draining and Flushing the Liquid Admix Tanks.

CAUTION

Unless you are told otherwise, always drain and flush the liquid admix tanks at the end of the day. Many liquid admixture solutions will spoil, settle, or clog lines and valves. In temperatures below 32°F (0°C), many admixtures will freeze.

NOTE

Use the procedures below to drain and flush the hi-flow system, the low-flow system, or both, as required.

a. Drain. (See fig. 3-7.)

(1) Close the air gate valve (turn clockwise).

WARNING

Do not remove the fill cap until air pressure is entirely vented.

(2) Open the air vent on the tank cap. Allow all pressure to vent.

(3) Remove the fill cap (turn counterclockwise).

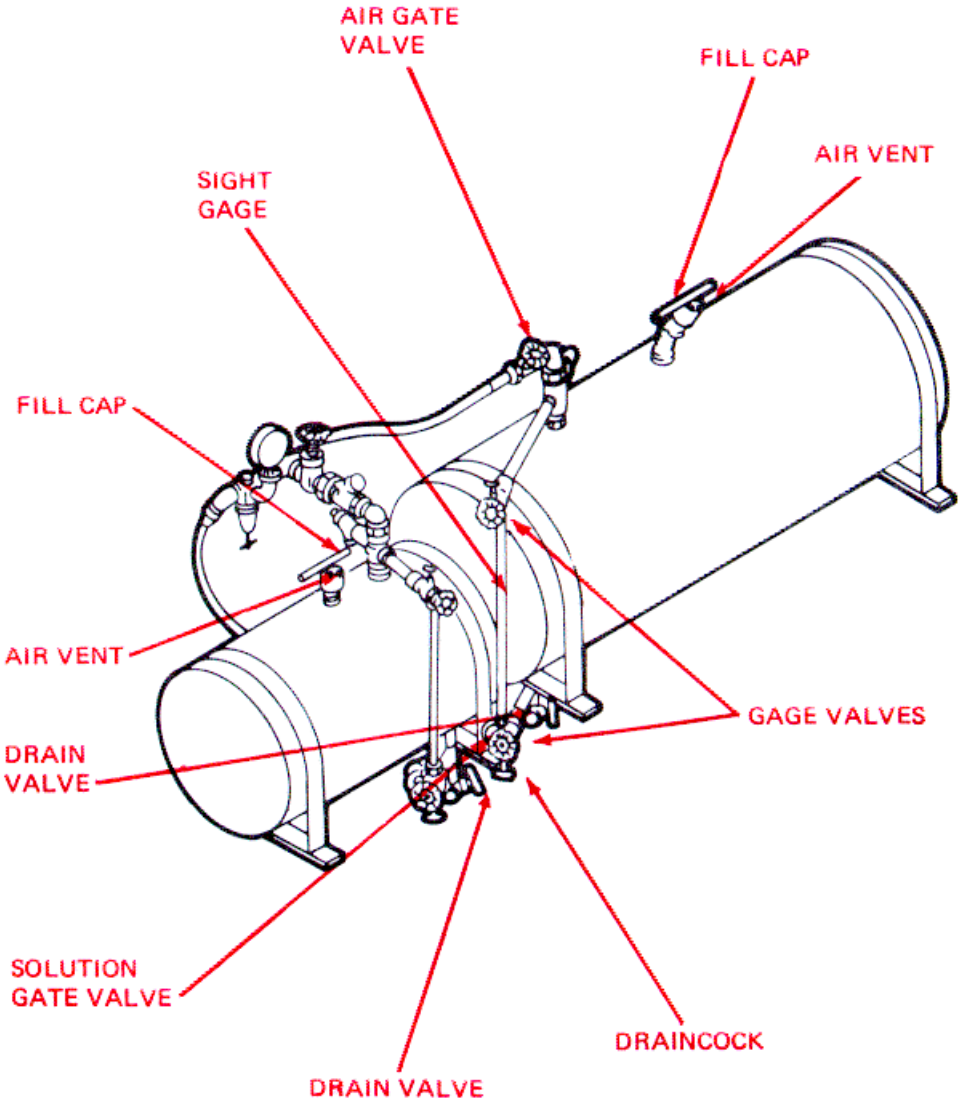

Figure 3-7. Liquid Admix Tanks.

TA 075554

(4) Open the drain valve. Allow all admixture to drain out.

(5) Close the drain valve.

b. Flush.

NOTE

Some admixtures require a special cleaning agent. If you used one of these admixtures, flush the system with the cleaning agent. Then flush it with water.

(1) Pour the cleaning agent or water into the tank. Fill the tank about 1/3 full.

(2) Hand tighten the fill cap (turn clockwise). Close the vent on the cap (fig. 3-7).

NOTE

Air pressure should be approximately 15 psi (103 kPa). Use the regulator handle to adjust it, if necessary (fig. 3-8).

(3) Open the air gate valve.

(4) Go to the control area. Manually open the quick-acting valve of the system you are flushing. (Pull out on the valve stem.) (See fig. 3-9). Release the valve when the flowmeter has been completely rinsed out.

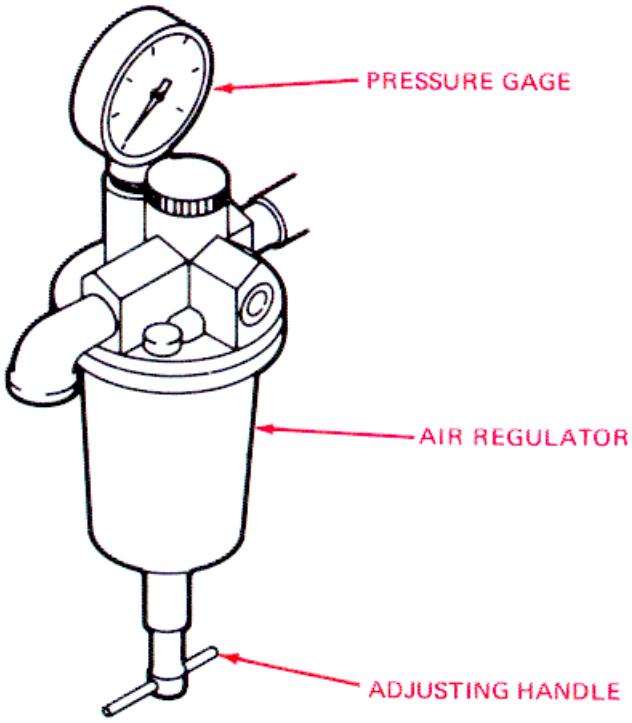

Figure 3-8. Air Pressure Gage and Regulator.

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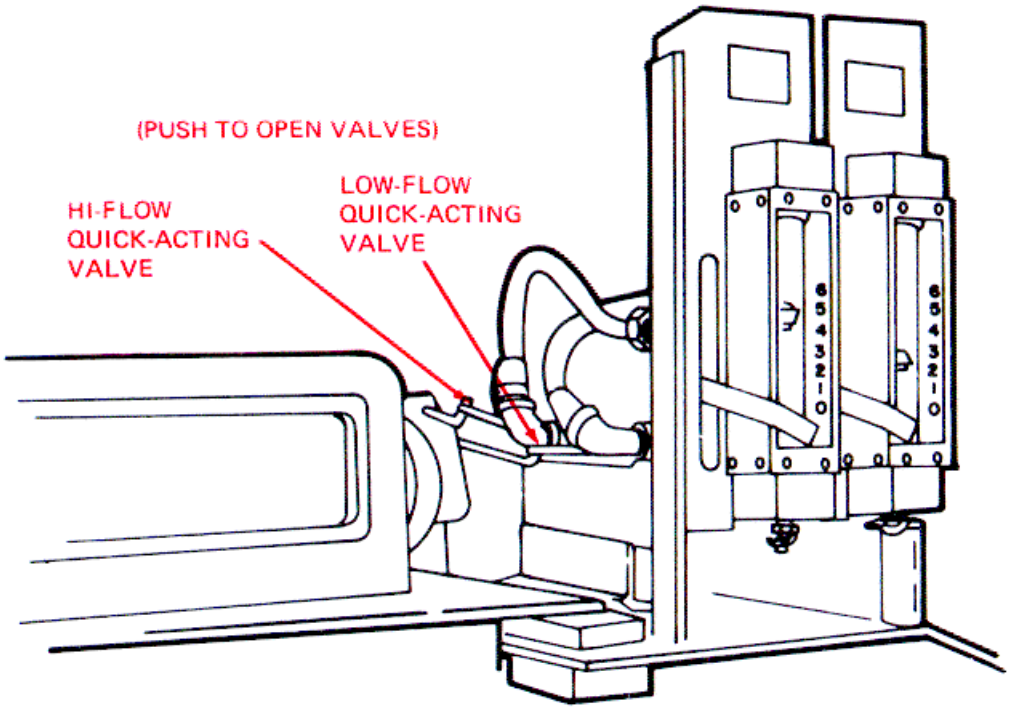

Figure 3-9. Quick-Acting Valves and Flowmeters.

TA 075556

(5) Open the drain valve (fig. 3-7) (turn counterclockwise). Allow the cleaning agent or water to drain.

(6) Close the air gate valve (turn clockwise).

(7) Close the drain valve (turn clockwise).

NOTE

If you flush the system with a cleaning agent, you should flush it again with clean water. In freezing weather, you should blow all moisture out of the system (para 3-11).

3-9. Emptying the Dry Admix Bin.

NOTE

Many dry admixtures absorb water and harden. These admixtures must always be removed from the bin at the end of the day.

a. Remove the Lower Hopper from the Upper Hopper. (See fig. 3-10) Unscrew the four C-clamps. Slide the dry admix tube out of the guides and remove the lower hopper.

b. Empty any Remaining Admix from the Lower Hopper.

c. Clean the Upper and Lower Hopper. Use a dry cloth.

NOTE

If necessary you may wash the upper and lower hopper. However, they must be absolutely and completely dry before they are reinstalled.

d. Install the Lower Hopper to the Upper Hopper. Slide the lower hopper into place Be sure the lower hopper tube and clutch are properly alined. Tighten the four C-clamps (fig. 3-10).

3-10. Aggregate Bins Cover.

The tarpaulin cover furnished with the mixer Is to be installed at all times except when loading the sand and stone bins This keeps moisture in the bins at the proper level. It also prevents blowing and freezing when the vehicle is enroute to the site. Install the tarpaulin as shown in figure 3-11.

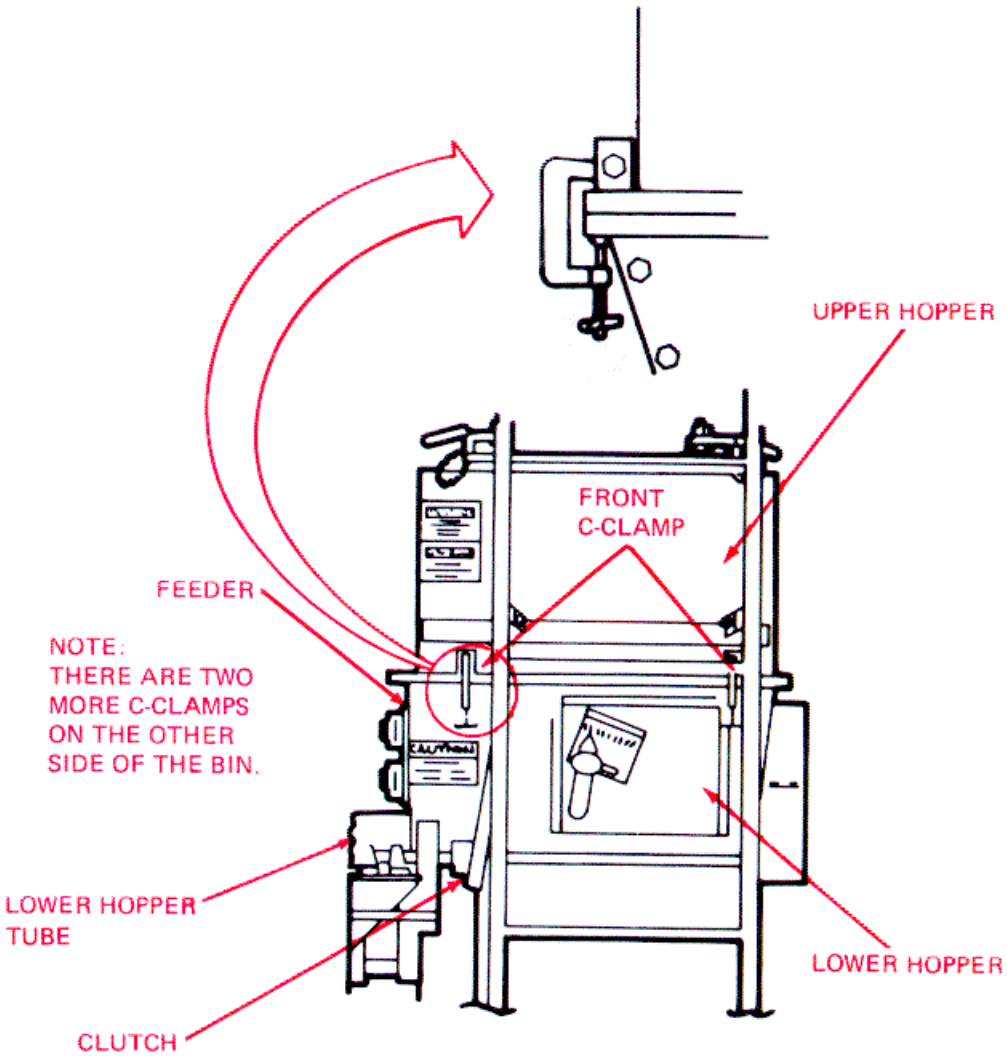

Figure 3-10. Dry Admix Feeder Clamps.

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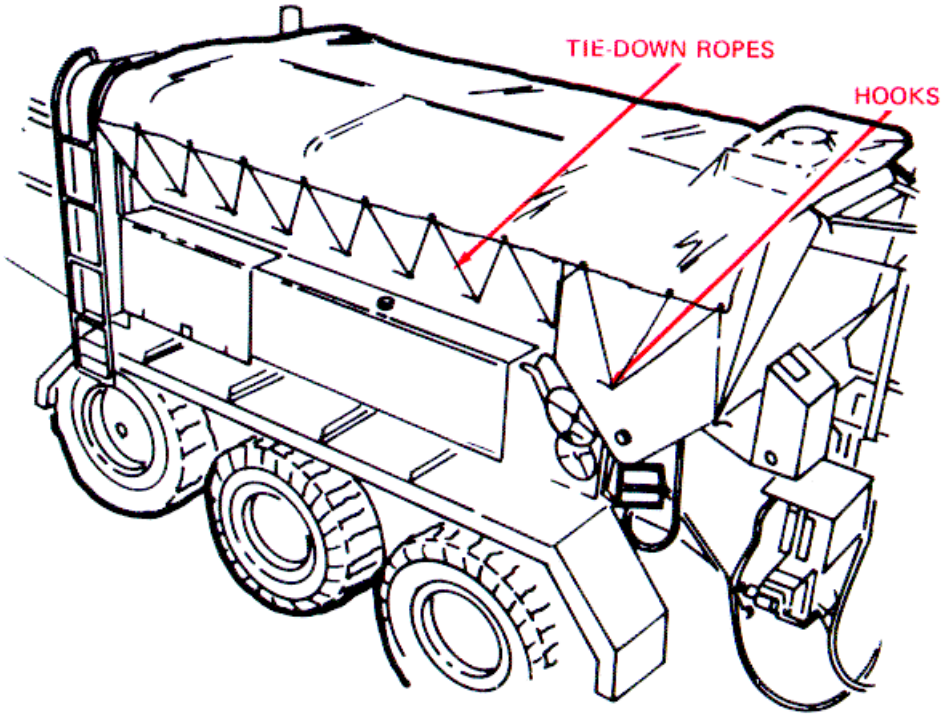

Figure 3-11. Tarpaulin.

3-11. Cleanup in Freezing Weather.

CAUTION

Freezing moisture may damage lines and valves. You must blow moisture out of the water system and admix system at the end of the day or if an extended delay is foreseen at the job site.

a. Blow Moisture from the Liquid Admix Systems.

(1) Open the vent and draincocks on each flowmeter (fig. 3-12).

(2) Open the vents and draincocks on the sight gages (fig. 3-13). Open the vents on the fill caps. Turn the drain valves counterclockwise to open them

NOTE

The air shutoff valve (fig. 3-14) must be open during step 3.

(3) Open the air gate valves (fig. 3-13). When no more admix comes from the draincocks and drains, close the air gate valves.

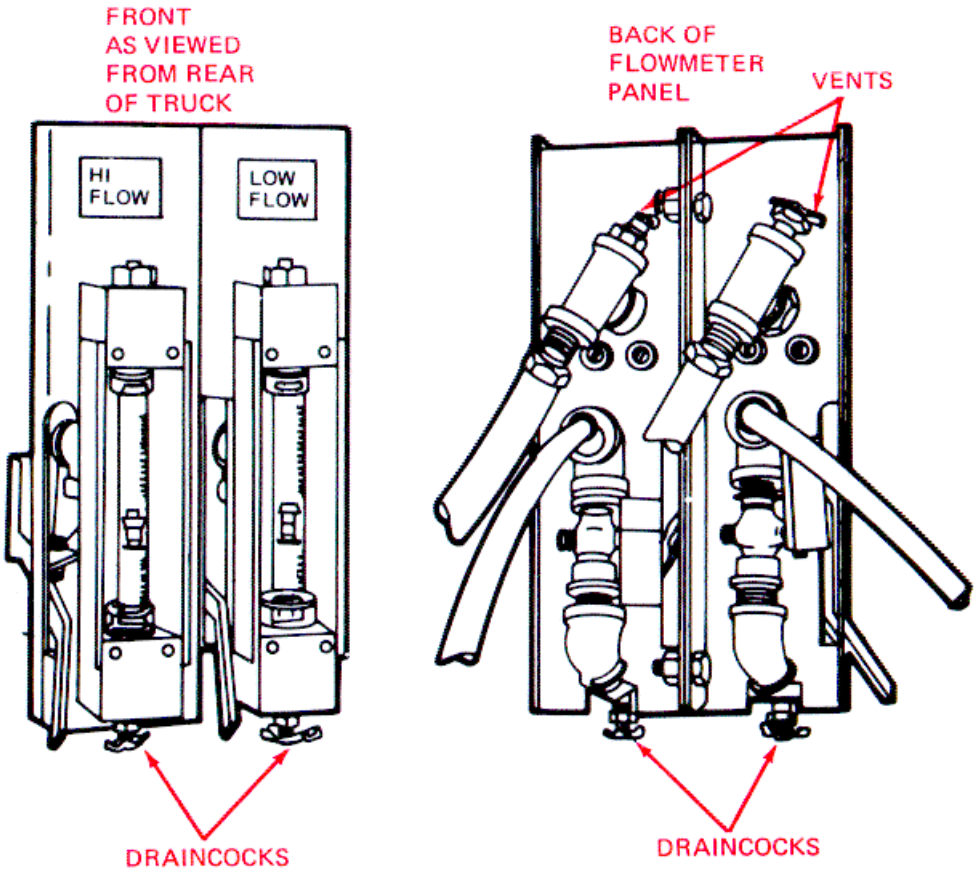

Figure 3-12. Flowmeter Draincocks and Vents.

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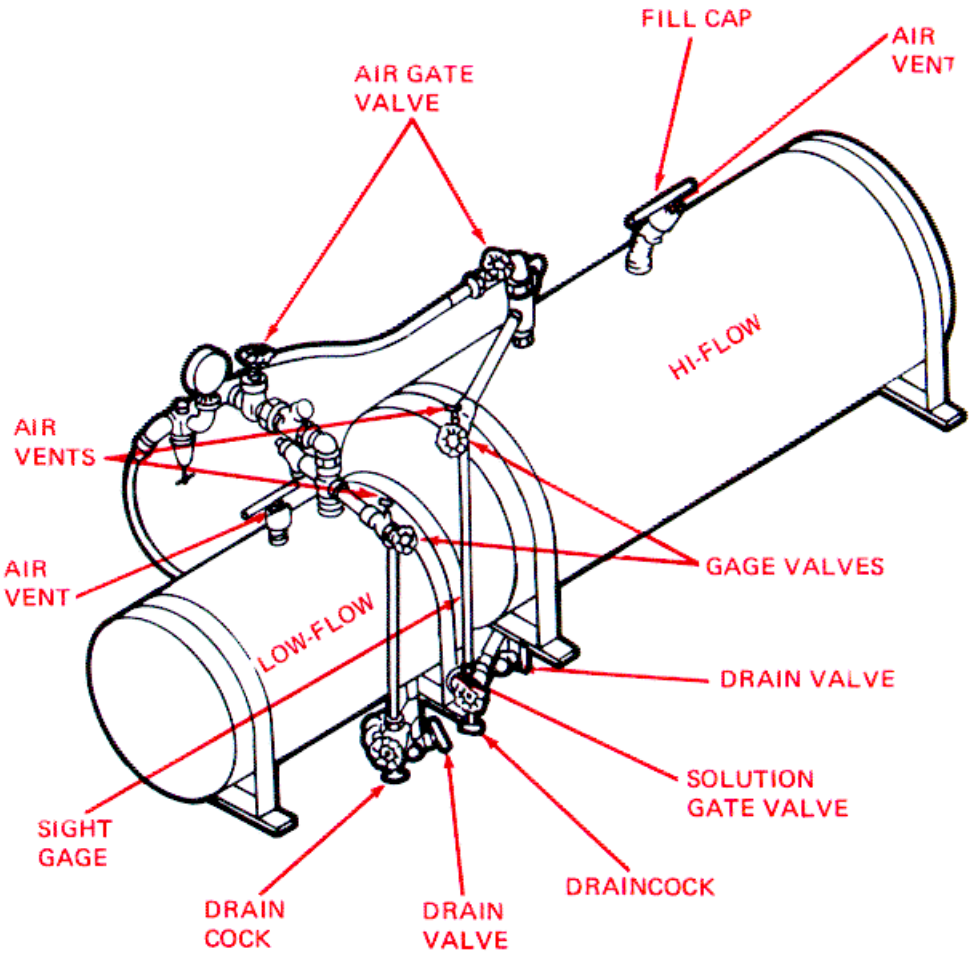

Figure 3-13. Liquid Admix Tanks.

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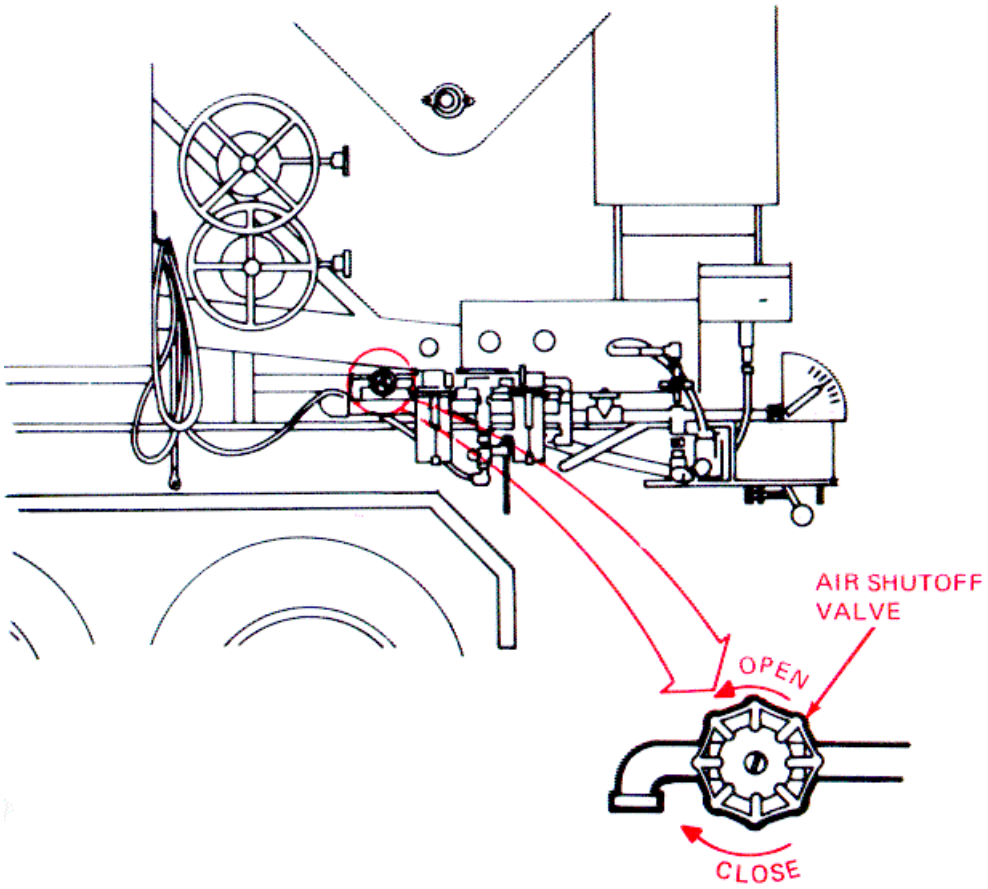

Figure 3-14. Air Shutoff Valve.

(4) Close the four draincocks and four vents, but leave the drain valve open (fig. 3-12 and 3-13).

NOTE

If it is necessary to flush the liquid admix systems, refer to para 3-8 b, then repeat steps 1 thru 4

b. Empty the Aggregate Bins. This prevents moist aggregates from freezing into chunks in the bins.

(1) Lift the locking arm on the cement clutch (fig. 3-15). Pull the clutch lever to the right to disengage the clutch.

(2) Loosen the stopscrews on the sand and stone controls (fig. 3-16). Turn the handwheels clockwise as far as they will go. Tighten the stopscrews.

(3) Turn on the chain oiler (fig. 3-17).

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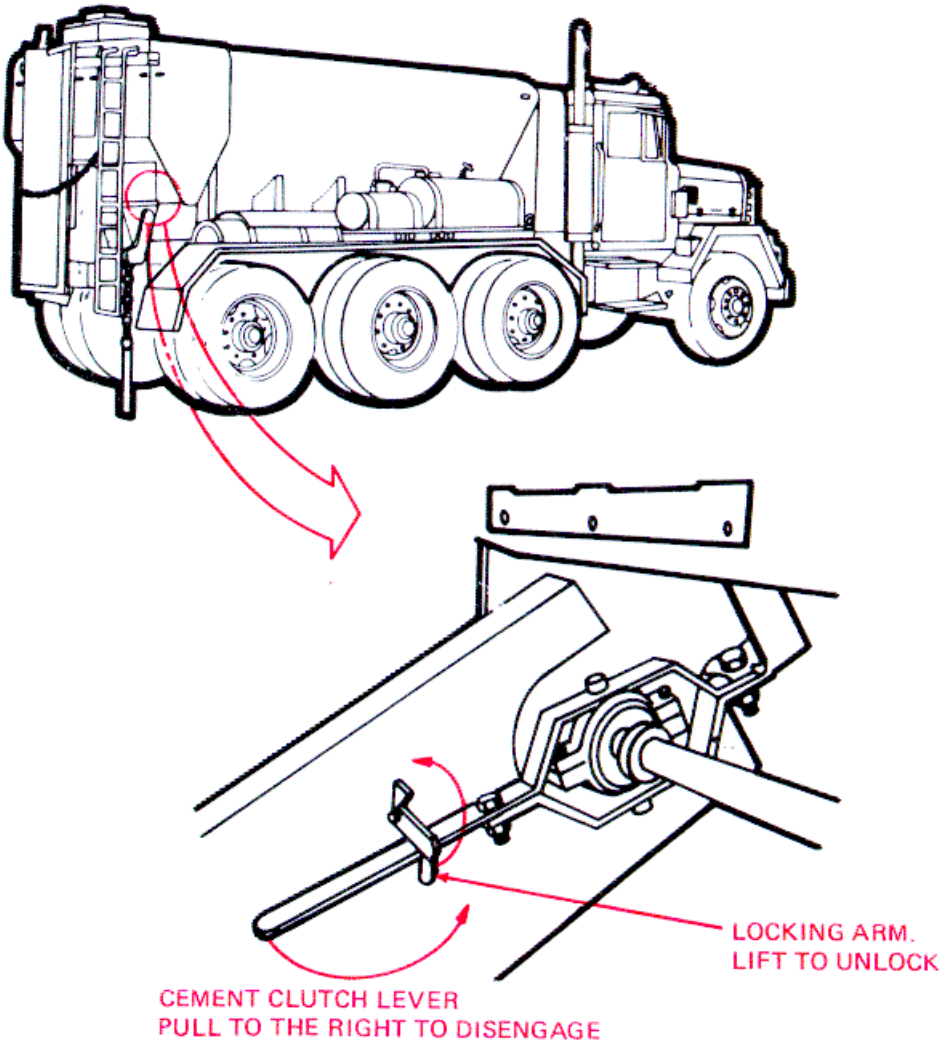

Figure 3-15. Cement Bin Clutch.

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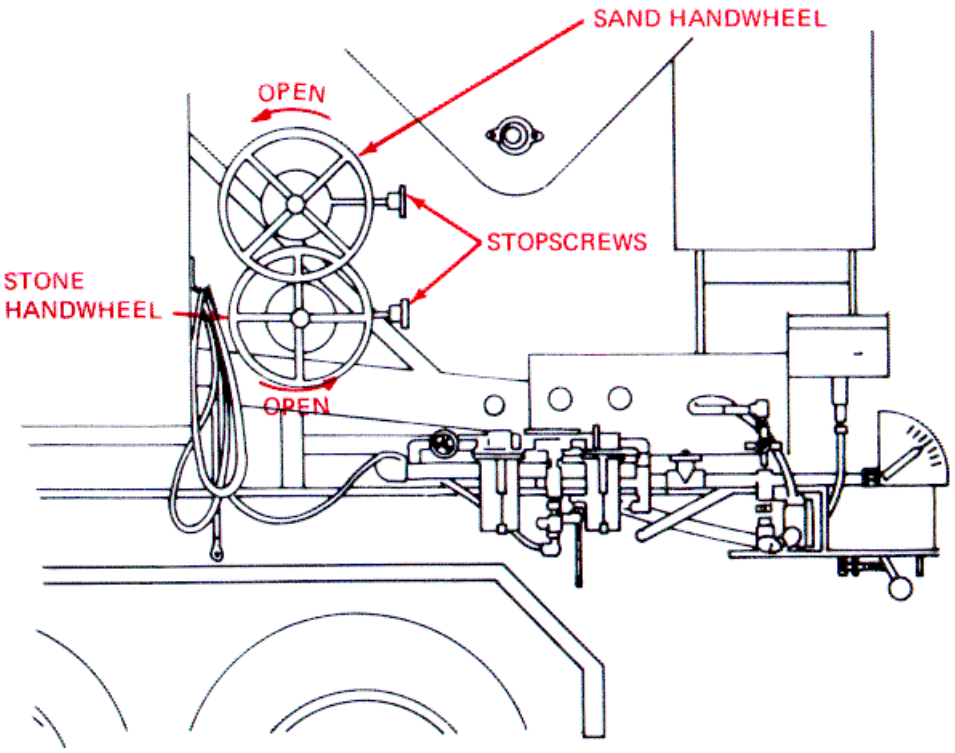

Figure 3-16. Sand and Stone Controls.

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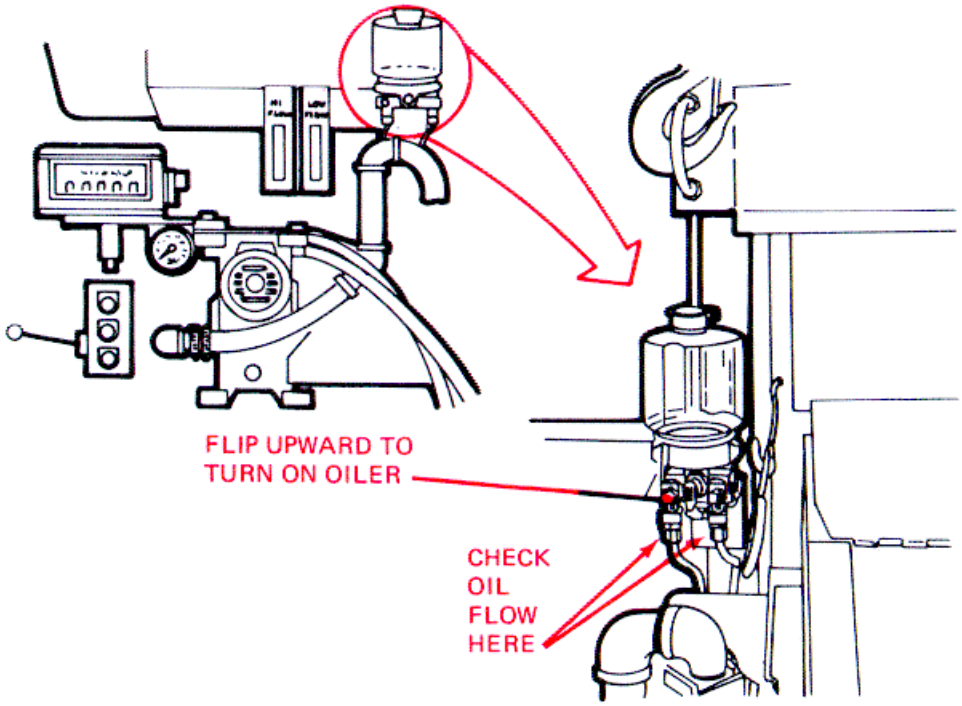

Figure 3-17. Chain Oiler.

CAUTION

Some cement will already be on the belt. However, no new cement should be delivered. If the meter register turns after you engage the main clutch, stop operation. Check that the cement clutch is fully disengaged (fig. 3-15).

(4) Adjust the throttle until the tachometer reads 1620-1720 rpm (fig. 3-18). Open the control valve. Engage the main clutch.

NOTE

Be sure you are in an area suitable for dumping sand and stone. Aggregates will be carried down the main conveyor belt and thought the mixing trough to flow out the motor end.

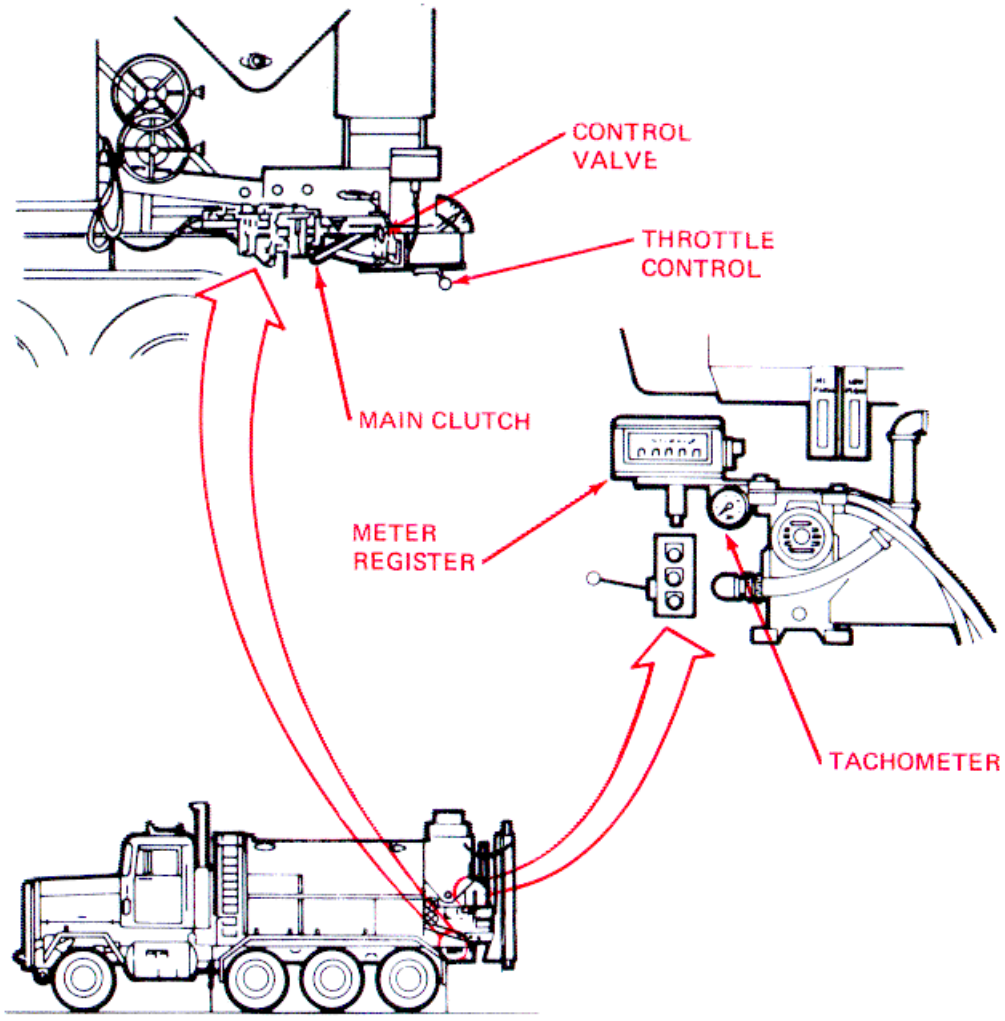

Figure 3-18. Operating Controls.

TA 075565

(5) When all aggregates are dumped, disengage the main clutch. Close the control valve (fig. 2-41).

(6) Open the washout hose valve and use the washout hose to clean the mixing trough (fig. 2-24).

(7) Loosen the stopscrews (fig. 3-16). Close the aggregates gates by turning the handwheels to the left.

(8) Engage the cement bin clutch (fig. 3-15). Push to the left, then lower the locking arm.

c. Drain and Blow Moisture from the Water System.

(1) Remove one of the water tank fill caps (fig. 2-15).

(2) Be sure you are in an area suitable for draining up to 400 gallons (1514 L) of water. Open the drain valve (fig. 3-19).

(3) Open the left side access panels. Use the props to hold them open (fig. 3-20).

(4) Open the eight draincocks and the vent (fig. 3-19).

(5) Put the fill cap back on Close valve (fig. 3-19).

(6) Be sure the air shutoff valve is open (fig. 3-21). Remove the caps from the air fittings one at a time. Blow air into them with the auxiliary hose until no more water comes from the draincocks.

(7) If available, inject 10-25 drops or a teaspoon of alcohol or other antifreeze into the air fittings and blow compressed air into the water system to prevent frosting and freezing of the water pump and valves. Install the air fitting caps.

(8) Close the eight draincocks and the vent (fig. 3-19).

(9) Close the access panels (fig. 3-20).

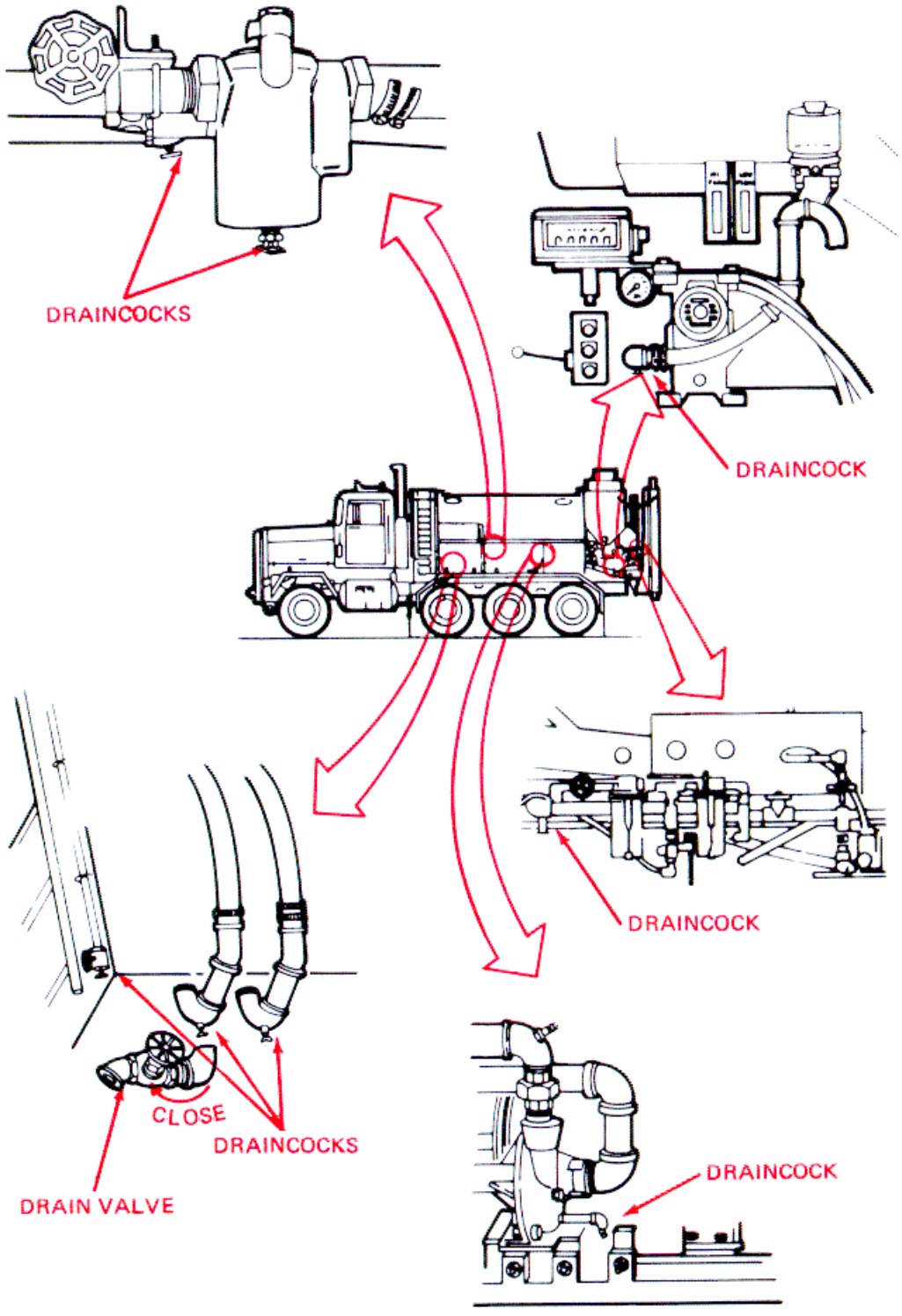

Figure 3-19. Water Drain Valve and Draincocks.

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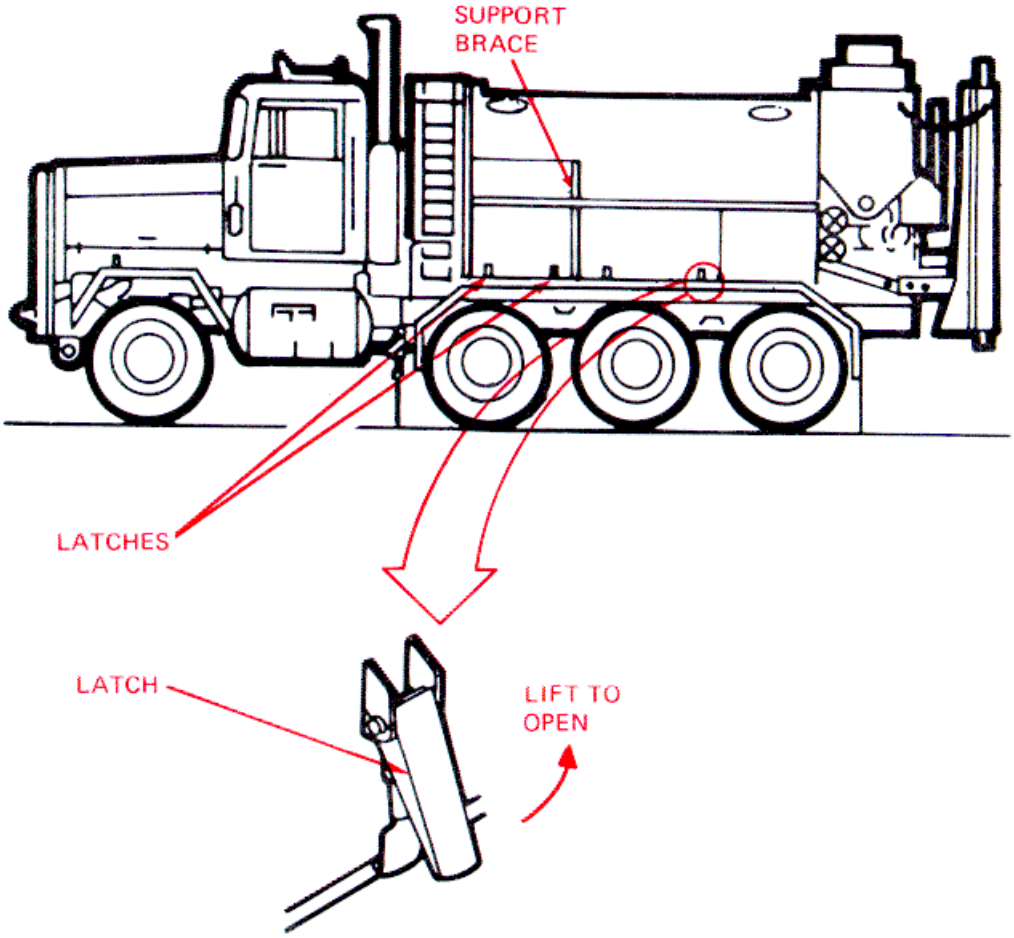

Figure 3-20. Access Panels.

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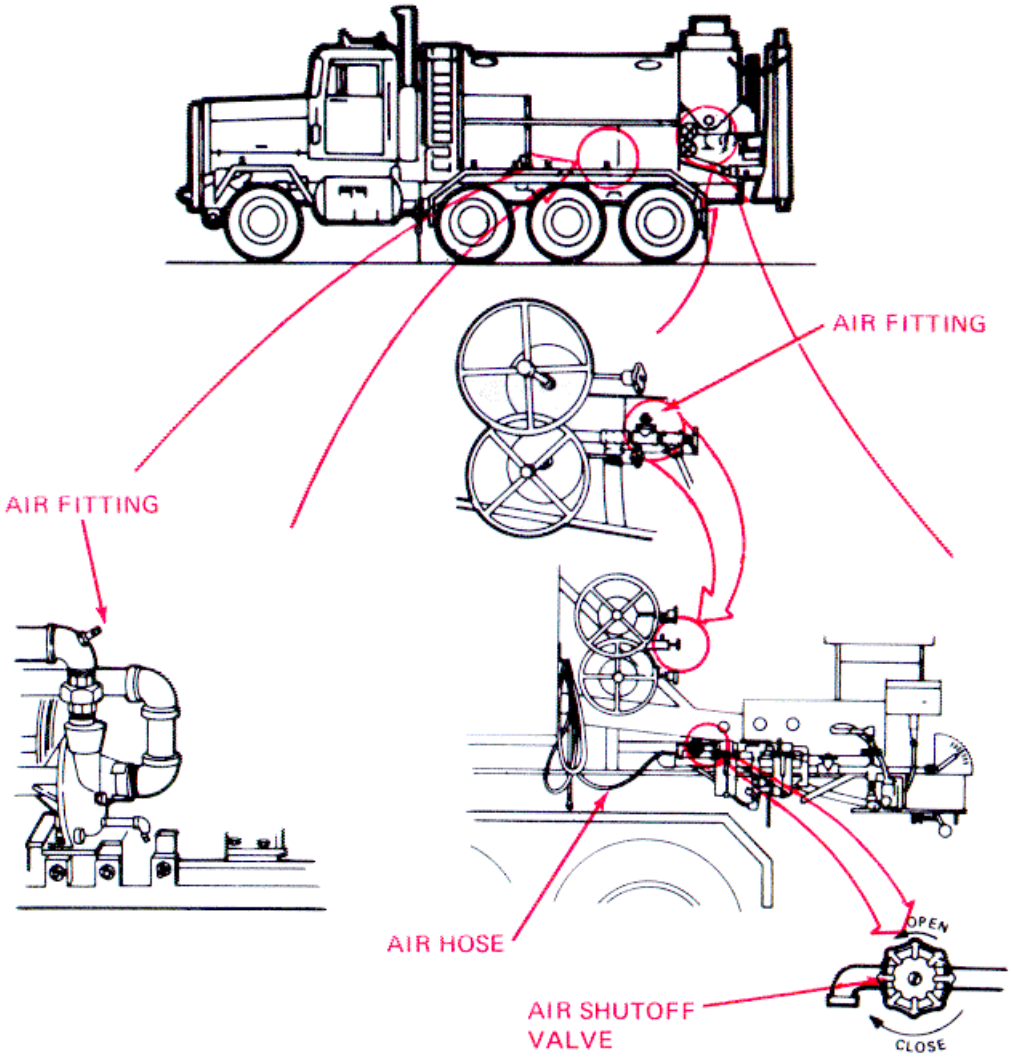

Figure 3-21. Air Hose and Fittings.

3-12. Angle Drive Gear Box Service.

a. Drain

(1) Remove fill plug (1, fig. 3-22).

(2) Remove drain plug (3) and drain oil using a suitable container.

b. Flush

(1) Reinstall drain plug (3).

(2) Using a funnel pour in one gallon of SD-2 solvent and allow it to set for five minutes.

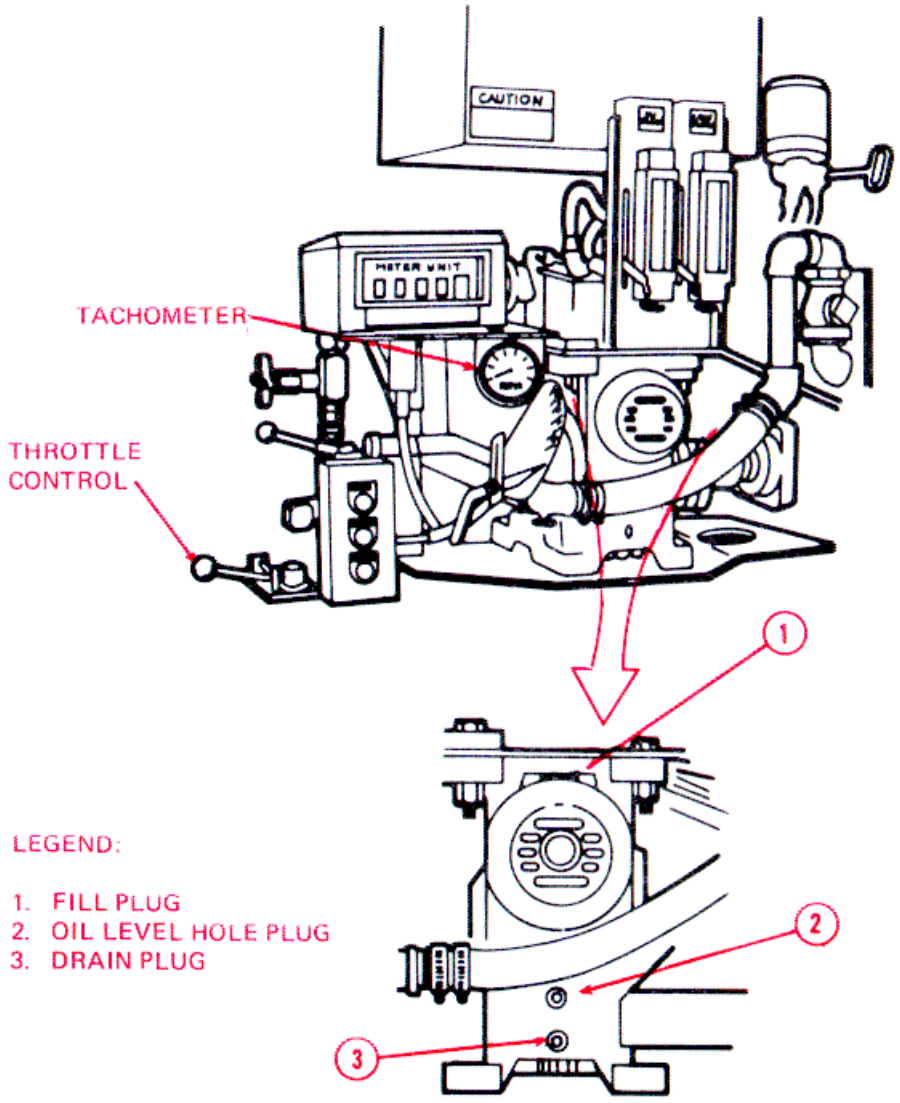

Figure 3-22. Angle Drive Gear Box Service.

(3) Remove drain plug and drain SD-2 solvent using a suitable container. Let the SD-2 solvent drain for at least five minutes.

(4) Clean drain plug (3) and reinstall.

c. Fill.

(1) Remove oil level hole plug (2).

(2) Refer to LO 3895-372-12 for correct oil and fill unit until oil reaches the bottom of the oil level hole.

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(3) Install oil level hole plug (2) and tighten.

(4) Clean fill plug (1) making sure the breather hole is not clogged. Open using a wire if required.

(5) Install fill plug (1).

(6) Start engine and engage PTO (refer to TM 9-2320-273-10).

(7) Set mixer tachometer to 1620-1720 rpm.

(8) Engage main clutch and operate the conveyor (sand and stone bins empty) and check for leaks.

(9) Disengage main clutch.

(10) Return mixer tachometer to idle.

(11) Shut down engine and disengage PTO (refer to TM 9-2320-273-10).

(12) Remove oil level hole plug (2) and recheck oil level. Add as required.

3-13. Water System Strainer Service.

a. Preparation

(1) Close water valve (6, fig. 3-23).

(2) Open draincock (5) and drain strainer into a suitable container.

b. Remove

(1) Turn T-handle (3) counterclockwise to loosen clamp (4) and then swing clamp to the side.

(2) Remove cap (1).

(3) Lift out strainer (2).

c. Clean and Inspect

(1) Clean strainer (2) with soap and water using a stiff bristle brush.

(2) If there is a calcium buildup on the strainer that cannot be removed by cleaning with soap and water, the strainer should be soaked in a mixture of five parts water to one part acetic acid for one to two hours then recleaned. If deposits cannot be removed, strainer must be replaced.

(3) Inspect strainer for enlarged holes, punctures or cracks. Replace if any are found.

(4) Slightly open water valve (6) and flush strainer housing.

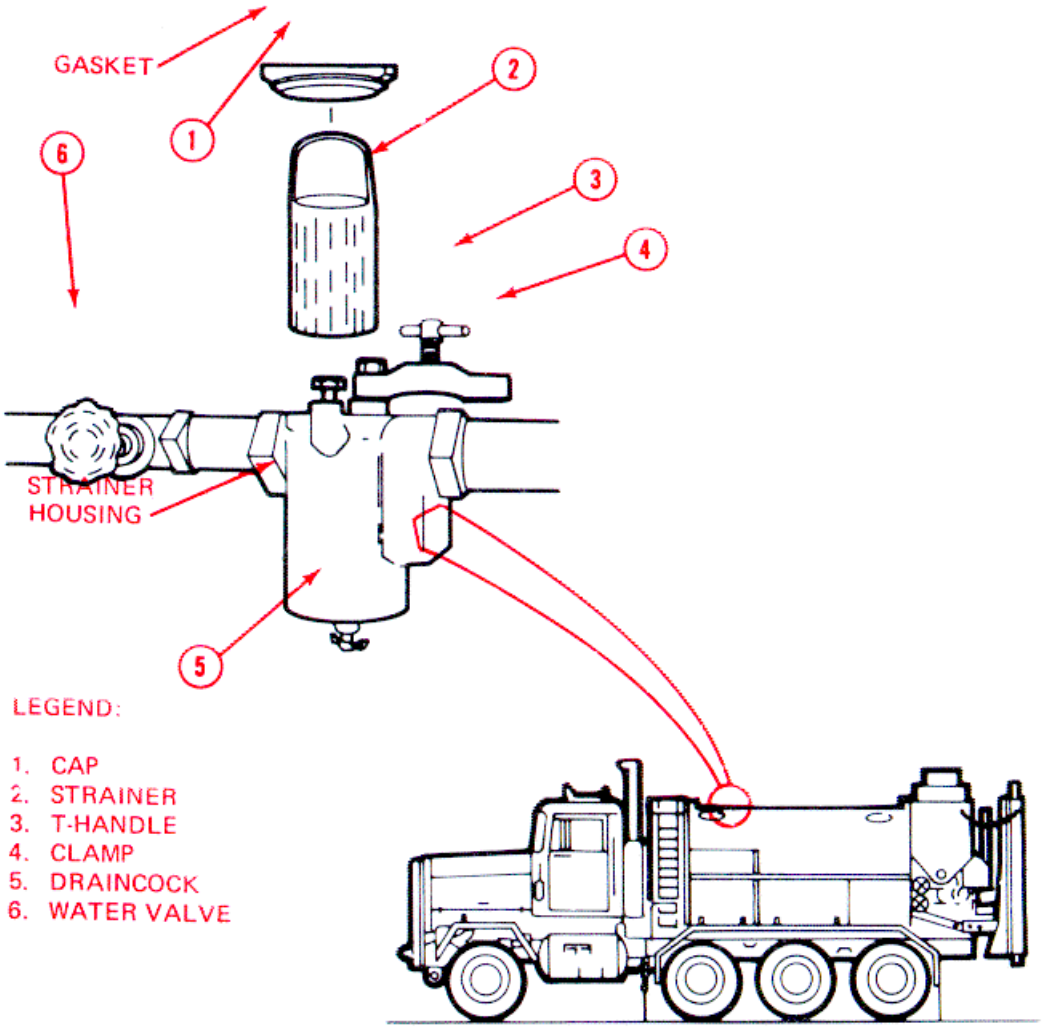

Figure 3-23. Water System Strainer Service

(5) Close water valve (6) allow housing to drain and close draincock.

d. Install

(1) Install strainer (2).

(2) Install cap (1) Replace gasket If required.

(3) Swing clamp (4) In place and tighten T-handle (3).

(4) Fully open water valve (6) and check for leaks.

3-14. Air Filter Service.

a. Preparation

(1) Turn off air shut-off valve (1, fig. 3-24).

(2) Open drain valve (3).

b. Remove.

(1) Unlock lockring (5) by pressing on locking lever (2) and rotating lockring to the left.

(2) Remove filter cannister (4) and lockring (5).

(3) Remove (unscrew) filter (6).

(4) Remove (unscrew) centrifuge vane (7).

c. Cleaning and Inspection.

(1) Clean filter cannister (4) If required.

(2) Wash filter (6) in dry cleaning solvent and blow dry.

(3) Inspect filter for punctures and damage. Replace if puncture or damage is found.

(4) Inspect O-ring (8). Replace If damaged or cut.

d. Install.

(1) Install centrifuge vane (7).

(2) Install filter (6).

(3) Install filter cannister (4) and lockring (5).

(4) Position lockring (5) in place and lock by rotating it to the right.

(5) Turn air shut off valve (1) on and check for leaks.

(6) Turn air shut off valve (1) off.

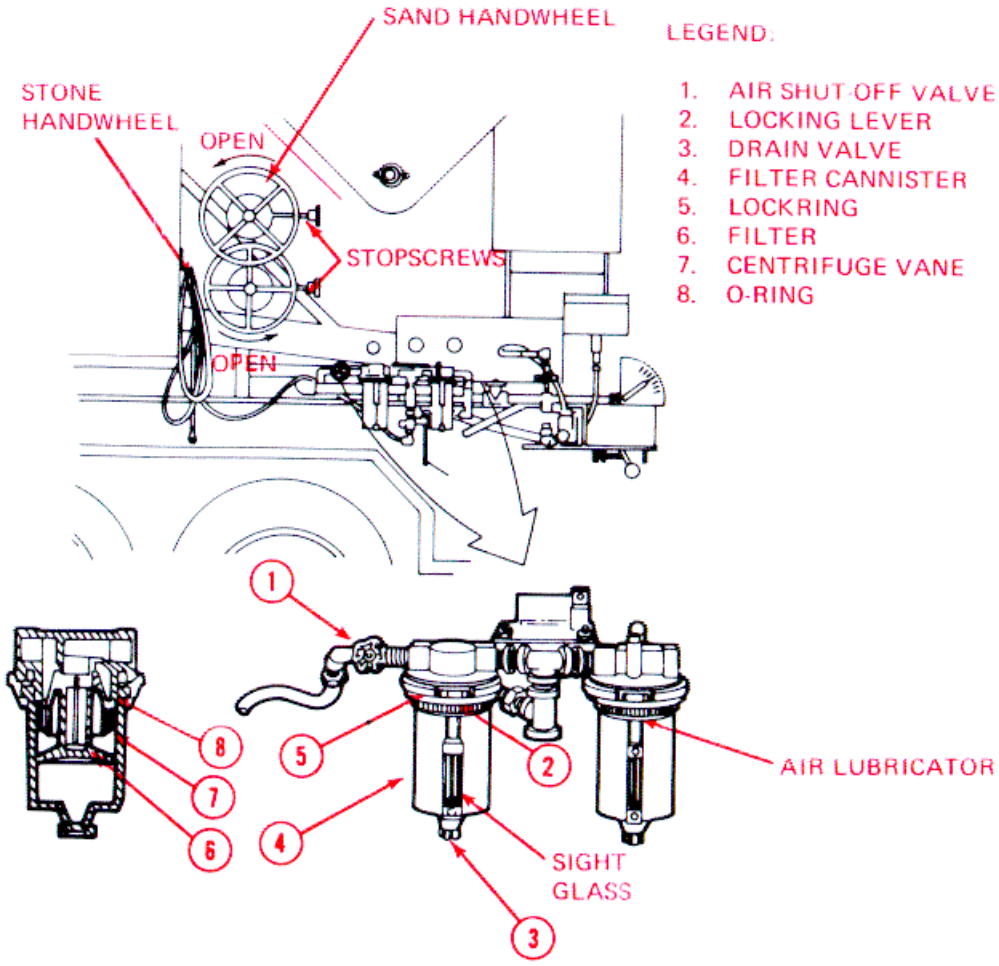

Figure 3-24. Air Filter Service.

3-15. Air Lubricator Service.

a. Preparation

(1) Turn air shut-off valve off (para 3-14 a (1)).

(2) Release air pressure by opening air filter draincock (para 3-14 a (2)).

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b. Remove.

(1) Remove cannister (3, fig. 3-25).

(2) Empty oil from cannister (3).

(3) Remove filter (2) from tube (1).

c. Cleaning and Inspection.

(1) Clean filter and cannister In dry cleaning solvent and blow dry.

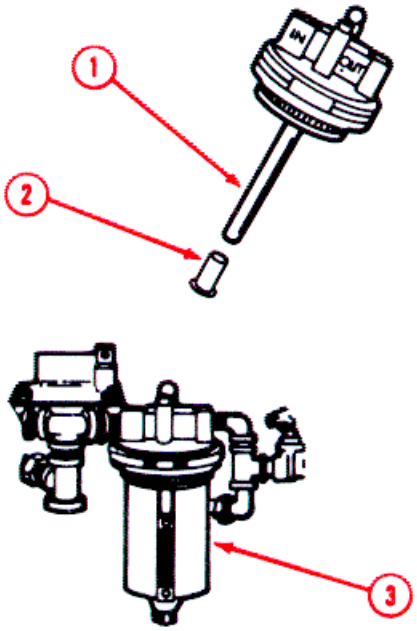
(2) Inspect filter for damage, replace if required.

d. Install.

(1) Install filter (2, fig. 3-25) into tube (1).

(2) Install cannister (3).

(3) Fill lubricator with oil (para 3-2 c).



1. TUBE
2. FILTER
3. CANNISTER

Figure 3-25. Air Lubricator Service.

3-16. Hydraulic Oil Filter Service.

NOTE

Before servicing the oil filter the hydraulic oil tank must be drained to below the level of the bottom of the filter. About ten gallons must be drained.

a. Remove.

(1) Unscrew and remove centerpost (10, fig. 3-26).

(2) Remove center post gasket (9).

(3) Remove cannister (8).

(4) Remove the following parts from cannister (8).

(a) Filter element (4).

(b) O-rings (3) and (5).

(c) Steel washer (6).

(d) Spring (7).

(5) Remove O-ring (2) from filter head (1).

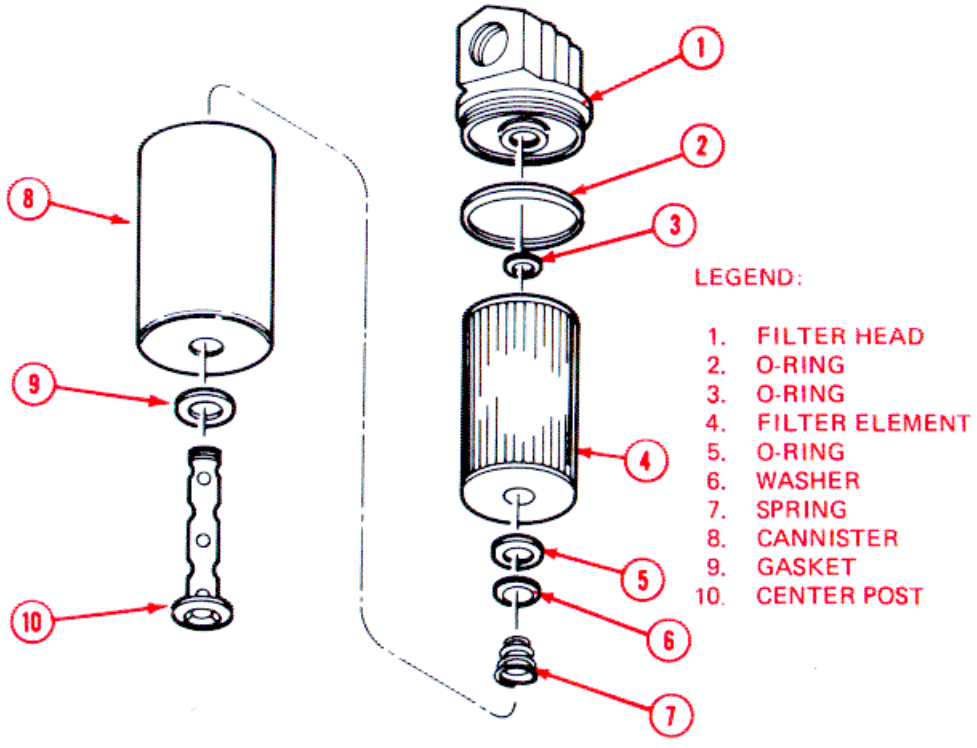


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Figure 3-26. Hydraulic Oil Filter Service.

b. Cleaning. Clean centerpost and cannister In dry cleaning solvent and blow dry.

c. Installation

(1) Replace O-ring (2) on filter head (1).

(2) Replace centerpost gasket (9).

(3) Install centerpost (10) with gasket (9) in cannister (8).

(4) Install the following parts into the cannister and centerpost.

(a) Spring (7) (Small end toward filter element).

(b) Steel washer (6).

(c) New O-ring (5).

(d) New oil filter (4).

(e) New O-ring (3).

(5) Install cannister (8) with assembled parts to filter head (1).

(6) Torque centerpost to 18 Ib-ft (24 N•m).

(7) Fill hydraulic oil tank (refer to LO 5-3895-372-12).

(8) Start engine and engage PTO (refer to TM 9-2320-273-10).

(9) Check for leaks.

(10) Shut down engine and disengage PTO (refer to TM 9-2320-273-10).

(11) Recheck hydraulic oil tank level Add oil if required.

3-17. Liquid Admix Strainer Service.

NOTE

The strainer screen for the hi-flow and low-flow systems are the same and are serviced in the same manner

a. Remove.

(1) Close solution gate valve (fig. 3-13).

(2) Open draincock (4, fig. 3-27) and drain strainer.

(3) Remove draincock (4).

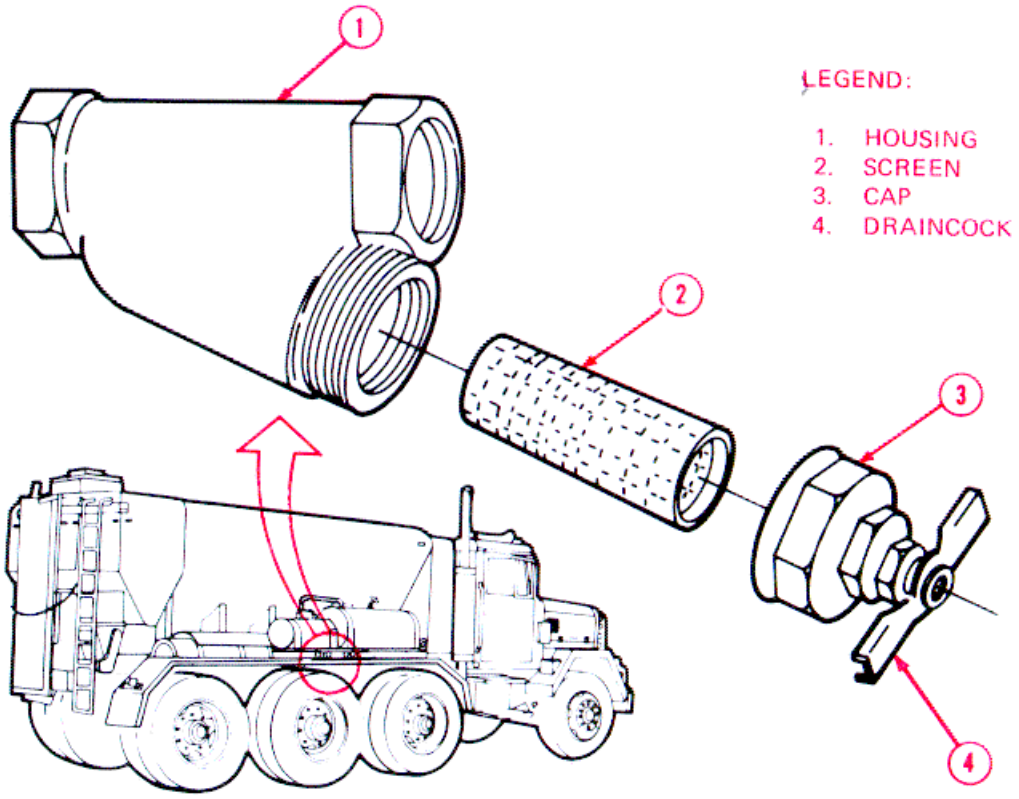

Figure 3-27. Liquid Admix Strainer Service

(4) Using a wrench, remove cap (3).

(5) Remove strainer screen (2) from housing (1).

b. Cleaning and Inspection.

(1) Clean filter using cleaning agent recommended by admixture manufacturer. Then use water.

(2) Clean out housing (1).

(3) Inspect strainer screen for corrosion, rust and punctures. Replace if there are punctures or indications that the screen is clogged.

c. Installation.

(1) Install screen (2) into housing (1).

(2) Install cap (3) and tighten using a wrench.

(3) Install draincock (4).

(4) Close draincock (4).

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3-18. Mixing Auger Wear Blade Check.

NOTE

The mixing auger has three types of wear blades. The procedure for checking wear is the same for all the wear blades. The number and types of wear blades are as follows.

(1) 26 wear paddles (1, fig. 3-28).

(2) 10 sectional blades (2).

(3) 7 blades (3).

a. Preparation

(1) Lower mixing trough (para 3-7 b (2)).

(2) Raise trough guards (para 3-7 b (6)).

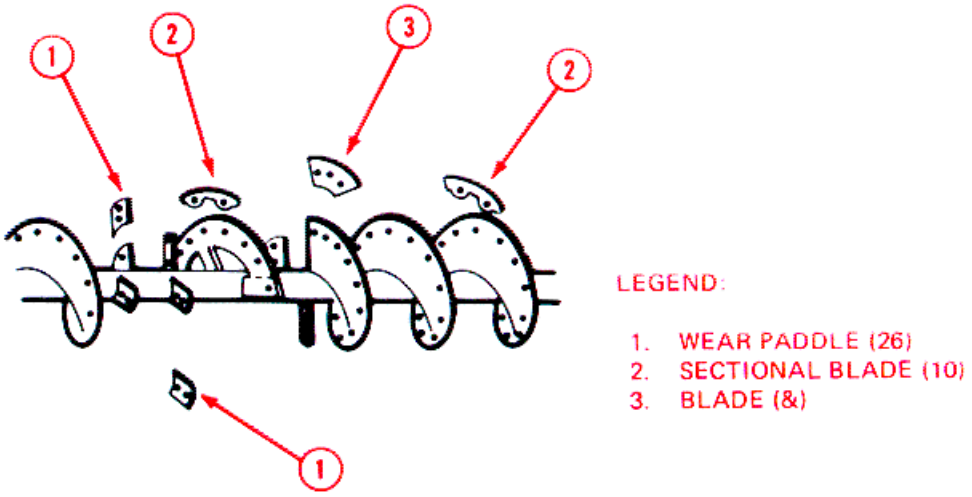

Figure 3-28. Mixing Auger Wear Blades.

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NOTE

Blade wear is dependent upon hardness and abrasivesness of materials used. Blades are cast from the hardest steel practical to use. Only experience will determine life expectancy. The best maintenance is to clean the mixing trough thoroughly after each use and to replace blades before wear becomes excessive.

b. Check Wear

(1) Using wear gage (fig. 3-29) place bottom edge of the long leg against the auger shaft and the end of the short leg against the wear blade, (fig. 3-30).

(2) If the blade is worn below the lower edge of the short leg, the blade must be replaced. Report It to Organizational Maintenance.

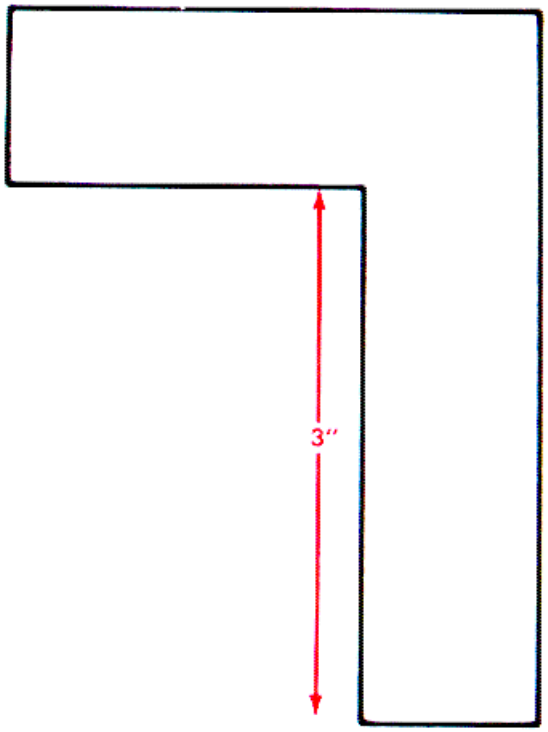

Figure 3-29. Wear Gage

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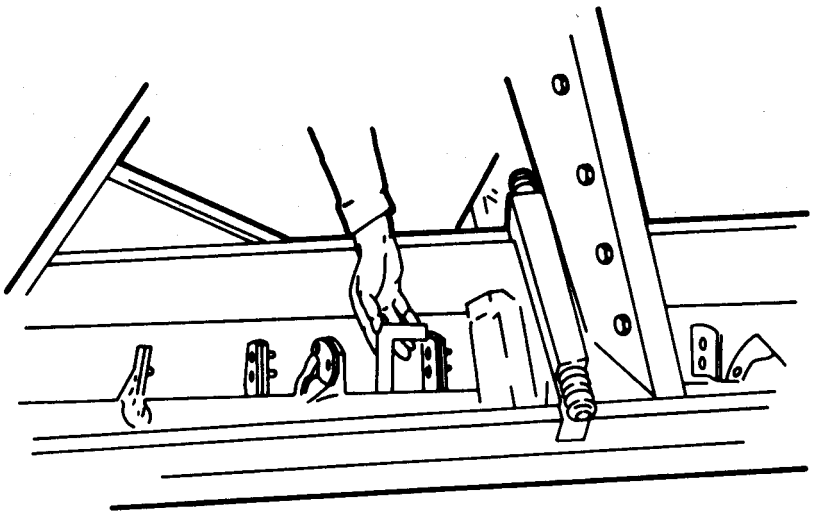

Figure 3-30. Check Wear Blade Wear.

3-19. Mix Auger Test.

NOTE

Up and down movement of hydraulic motor is usually caused by a bent auger shaft. The operator can visually check for a bent shaft by following these steps:

a. Operate the mixer auger (empty) at a low RPM.

b. Closely watch the hydraulic motor (fig. 3-31).

c. If the movement of the motor, up and down or side to side exceeds one-eighth inch, notify Organizational Maintenance.

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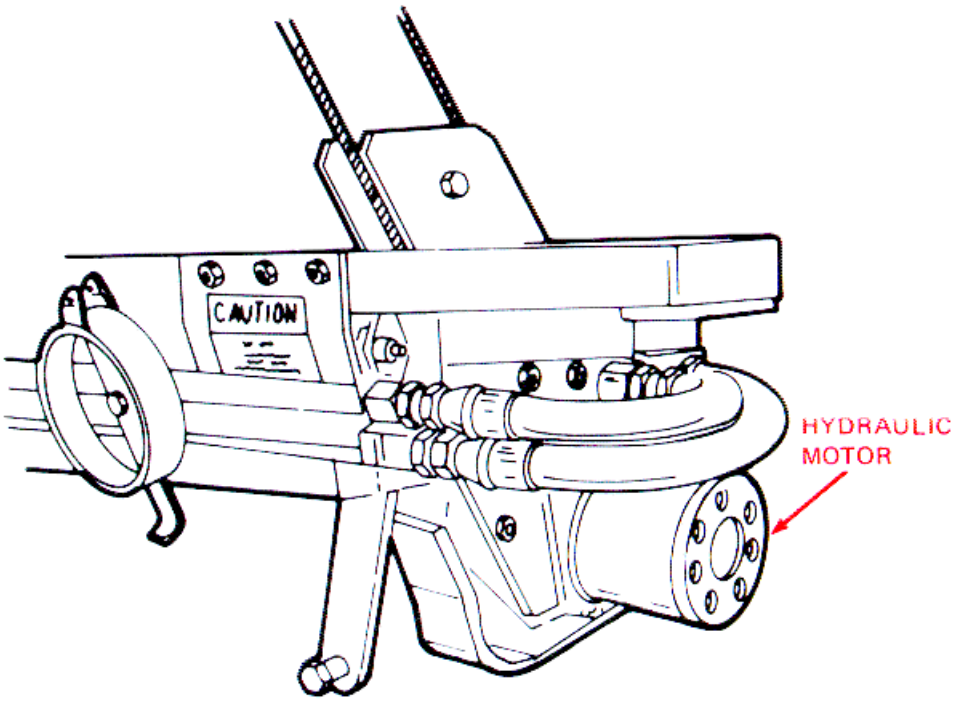

Figure 3-31. Check Auger Shaft

3-20. Stone and Sand Gate Adjustment.

a. Preparation.

(1) Empty stone and sand bins (para 3-11 b).

(2) Clean the conveyor belt area under the gates thoroughly.

b. Adjustment.

CAUTION
Any aggregate between gate opening gage and belt will result in a wrong adjustment.

(1) Raise gate to full open position.

(2) Place gage (3, fig. 3-32) on the conveyor belt directly below gate, in a horizontal position.

(3) Lower the gate (2, fig. 3-32) to rest firmly on the gage.

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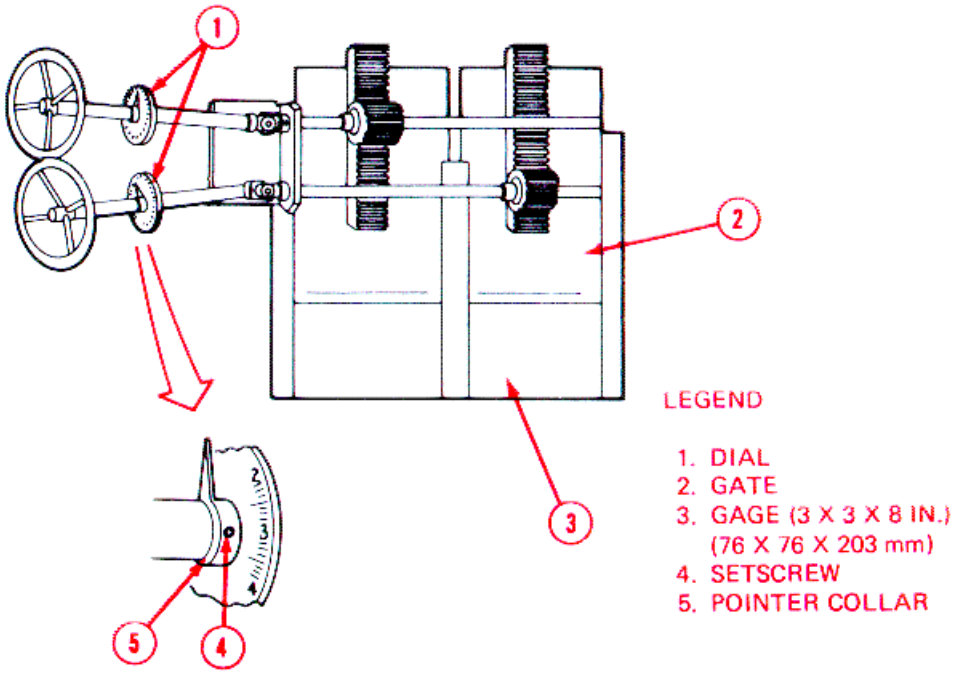

Figure 3-32. Stone and Sand Gate Adjustment.

(4) Observe reading on dial (1) then lower the gate one graduation (0.1).

(5) The reading on dial (1) should be 6 2-6 6.

(6) If reading is not within specification, loosen the setscrew (4) on the pointer collar (5) and set pointer to 6 4. Tighten setscrew (4).

(7) Raise gate (2) and remove gage (3).

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APPENDIX A

REFERENCES

A-1. Publication Indexes.

The following indexes should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

Index of Administrative Publication	DA PAM 310-1
Index of Doctrinal, Training, and Organizational Publications	DA PAM 310-3
Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins and Lubrication Orders	DA PAM 310-4
Index of Graphic Training Aids and Devices	DA PAM 310-5
U.S. Army Equipment Index of Modification Work Orders	DA PAM 310-7

A-2. Forms.

The following forms pertain to this material. (Refer to DA Pamphlet 310-2 for Index of blank forms.)

Standard Form 46, U.S. Government Motor Vehicle Operator's Identification Card.
Standard Form 91, Operator's Report of Motor Vehicle Accident.
Recommended Changes to DA Publications, DA Form 2028.

Refer to TM 38-750, The Army Maintenance Management Systems (TAMMS), for instructions on the use of maintenance forms pertaining to this material.

A-3. Other Publications.

The following publications contain Information pertinent to the major item of material and associated equipment.

a. Operating Vehicle.

Operator's Manual for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919	TM 9-2320-273-10
Driver Selection and Training (Wheeled Vehicles)	TM 21-300
Manual for the Wheeled Vehicle Driver	FM 21-305

b. Maintenance and Repair.

Lubrication Order for M919 Concrete Mobile Mixer Truck Body	LO 5-3895-372-12
Organizational Maintenance for M915, M916, M920 Truck Tractors and Chassis for M917, M918, and M919	TM 9-2320-273-20
Organizational Maintenance Repair Parts and Special Tools List for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919	TM 9-2320-273-20P
Organizational Maintenance Manual for M919 Concrete Mobile Mixer Truck Body	TM 5-3895-372-20

Organizational Maintenance Repair Parts and Special Tools List for M919 Concrete-Mobile® Mixer Truck Body	TM 5-3895-372-20P
Direct and General Support Maintenance Manual for M919 Concrete-Mobile® Mixer Truck Body	TM 5-3895372-34
Direct and General Support Repair Parts and Special Tools List for M919 Concrete-Mobile® Mixer Truck Body	TM 5-3895-372-34P
Direct and General Support Repair Parts and Special Tools List for M915, M916, M920 Truck Tractors and Chassis for M917, M918, and M919	TM 9-2320-273-34P
Direct and General Support Maintenance Manual (including Repair Parts and Special Tools Lists) for Engine, Diesel: 6 cylinder, In-Line, Turbo-Charger, Cummins Model NTC - 400	TM 9-2815-222-34&P
Lubrication Order for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919	LO 9-2320-273-12
Metal Body Repair and Related Operations	TM 9-450
Welding Theory and Application	TM 9-237
Painting Instructions for Field Use	TM 9-213

c. Cold Weather Operation and Maintenance.

Basic Cold Weather Manual	FM 31-70
Northern Operations,	FM 31-71
Operation and Maintenance of Ordnance Material in Extreme Cold Weather (0° to - 65°F)	TM 9-207

d. Decontamination.

Chemical, Biological, and Radiological (CBR) Decontamination	TM 3-220
Chemical, Biological, Radiological, and Nuclear Defense	FM 21-40

e. General

Principles of Automotive Vehicles	TM 9-8000
Camouflage	FM 5-20
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use	TM 750-244-6
Administrative Storage of Equipment	TM 740-90-1

f. Warranty (chassis and body) ..... TB 9-2300-295-15/17

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope.

This appendix lists integral components of and basic issue items for the M919 Trucks to help you inventory items required for safe and efficient operation.

B-2. General.

This Components of End Item List Is divided Into the following sections:

a. Section II. Integral Components of the End Item. These Items, when assembled, comprise the mixer and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the mixer in operation, to operate it, and to perform emergency repairs. Although shipped separately packed, they must accompany the mixer during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns.

a. Illustration. This column is divided as follows:

(1) Figure Number. Indicates the figure number of the illustration on which the item is shown.

(2) Item Number. The number used to identify Item called out in the illustration.

b. National Stock Number. Indicates the National Stock Number assigned to the Item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given In this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Useable on Code. Not applicable.

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major Item at a later date; such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USUABLE ON CODE	QTY REQD	RCV'D	DATE	DATE	DATE
2-47			NS 3011000	Aux. Cement Bin							
2-31			NP 2030000	Delivery Chute							
2-31			NP 2030001	Delivery Chute							
3-11			NP 2124000	Tarpaulin							

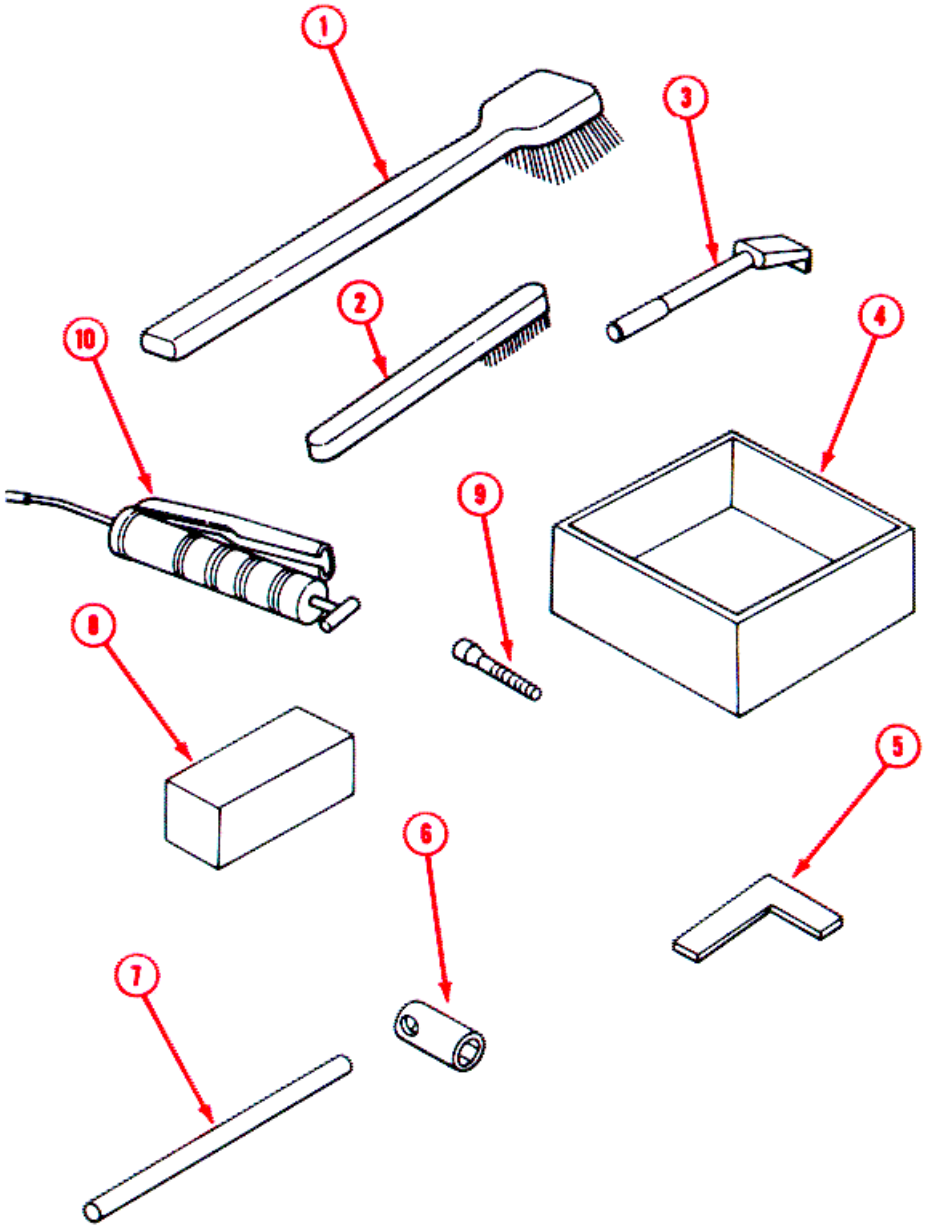

Figure B-1. Basic Issue Items.

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Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USUABLE ON CODE	QTY REQD	RCV'D	DATE	DATE	DATE
B-1	1		NP 5039001	Brush, Long Handle							
B-1	2		NP 5039002	Brush, Wire, Long Handle							
B-1	3		NP 5039003	Scraper							
B-1	4		NP 5039004	Box, Measuring, 1/4 Yd							
B-1	5		NS 2727000	Gage, Wear							
B-1	6		NP 2628000	Crank, Cement							
B-1	7		NP 2628001	Bar, Crank							
B-1	8		NP3628000	Block, Test							
B-1	9		NP 3817116	Auger, Holding Tool							
B-1	10	4930-00-253 2478		Lubrication Gun, Hand							

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. Scope.

This appendix lists additional Items you are authorized for the support of the mixer.

C-2. General.

This list identifies items that do not have to accompany the mixer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. Explanation of Listing.

National stock numbers, descriptions, and quantities are provided to help you identify a request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION		(3) U/M	(4) QTY AUTH
	PART NUMBER & FSCM	USUABLE ON CODE		
6635-00-641-3489	CT69 (98773)	Mold, Concrete Testing (Slump Cone)	PC	1
6635-00-641-3492	CT22 (98773)	Tamping Rod, Soil	PC	1
4930-00-985-2604	50-564 (77335)	Oiler, Hand	PC	1
5120-00-293-3330	GGGS326 (81348)	Shovel, Square Point, Long Handle	PC	1
7920-00-291-8305	HB51 (81348)	Broom, Upright, Corn Straw	PC	1

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the mixer. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. Explanation of Column.

a. Column 1 - Item number. This number Is assigned to the entry in the listing and Is referenced in the narrative instructions to identify the material (eg, "Use cleaning compound, item 5, App D").

b. Column 2 - Level. This column identifies the lowest level of maintenance that require the listed item.

C - Operator/Crew

c. Column 3 - National Stock Number. This is the National Stock Number assigned to the item, use It to request or requisition the Item.

d. Column 4 - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) In parentheses, if applicable.

e. Column 5 - Unit of Measure (U/M). Indicates the measure used In performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (eg, ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C		Grease, Automotive Artillery, GAA (MIL-G-10924C)	
		9150-00-015-0029	2-1/4-oz tube	OZ
		9150-00-935-1017	14 oz cartridge	OZ
		9150-00-190-0904	1-lb can	LB
		9150-00-190-0905	5-lb can	LB
		9150-00-190-0907	35-lb can	LB
2	C		Oil, Lubricating, Exposed Gear, CW(VV-L-751)	
		9150-00-234-5197	5-lb can	LB
		9150-00-261-7891	35-lb pad	LB
3	C		Oil, Lubricating, OE/HDO-10 (MIL-L-2104C)	
		9150-00-265-9425	1-qt can	QT
		9150-00-265-9428	5-gal drum	GAL
		9150-00-265-9429	55-gal drum, 16 ga.	GAL
		9150-00-265-9430	55-gal drum, 18 ga.	GAL
4	C		Oil, Lubricating, OE/HDO-30 (MIL-L-2104C)	
		9150-00-265-9433	1-qt can	QT
		9150-00-265-9435	5-gal drum	GAL
		9150-00-265-9436	55-gal drum, 16 ga.	GAL
		9150-00-265-9437	55-gal drum, 18 ga.	GAL
5	C		Oil, Lubricating, OE/HDO-50 (MIL-L-2104C)	
		9150-00-265-9440	1-qt can	QT
		9150-00-265-9442	5-gal drum	GAL
		9150-00-265-9441	55-gal drum, 16 ga.	GAL
6	C		Oil, Lubricating, Sub-Zero OEA (MIL-L46167)	
		9150-00-4024478	1-qt can	QT
		9150-00-402-2372	5-gal can	GAL
		9150-00-491-7197	55-gal drum	GAL
7	C		Lubricant, Gear, Universal (MIL-L-2105C) 75W	
		91 50-01-035-5390	1-qt. can	QT
		9150-01-035-5391	5-gal	GAL
		9150-01-0484594	55-gal	GAL

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
8	C		Lubricant, gear, universal (MIL-L-2105C) 80W/90	
		9150-01-035-5392	1-qt can	QT
		9150-01-035-5393	5-gal can	GAL
		9150-01-035-5394	55-gal can	GAL
9	C		Lubricant, Gear, Universal (MIL-L-2105C) 85W/140	
		9150-01-0484591	1-qt can	QT
		9150-01-035-5395	5-gal can	GAL
		9150-01-035-5396	55-gal drum	GAL
10	C		Oil, Hydraulic (MIL-H-46001B)	
11	C		Acid, Glacial Acetic (OA76)	
		6810-00-275-1215	5-lb bottle LB	
12	C		Solvent, Dry Cleaning SD-2 (P-D-680)	
		6850-00-664-5685	1-qt can	QT
		6850-00-281-1985	1-gal can	GAL

ALPHABETICAL INDEX

Subject — **Page, Figure, Table, Number**

G

H

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Subject — **Page, Figure, Table, Number**

S

T

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X

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Z

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

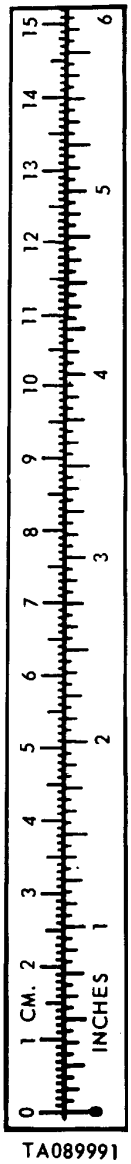
TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 (°C + 32) = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ▸ ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

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