

**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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TECHNICAL MANUAL

HEADQUARTERS
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OPERATOR'S MANUAL

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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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).

EIR's will be prepared on DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System (TAMMS). EIR'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 m³). 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

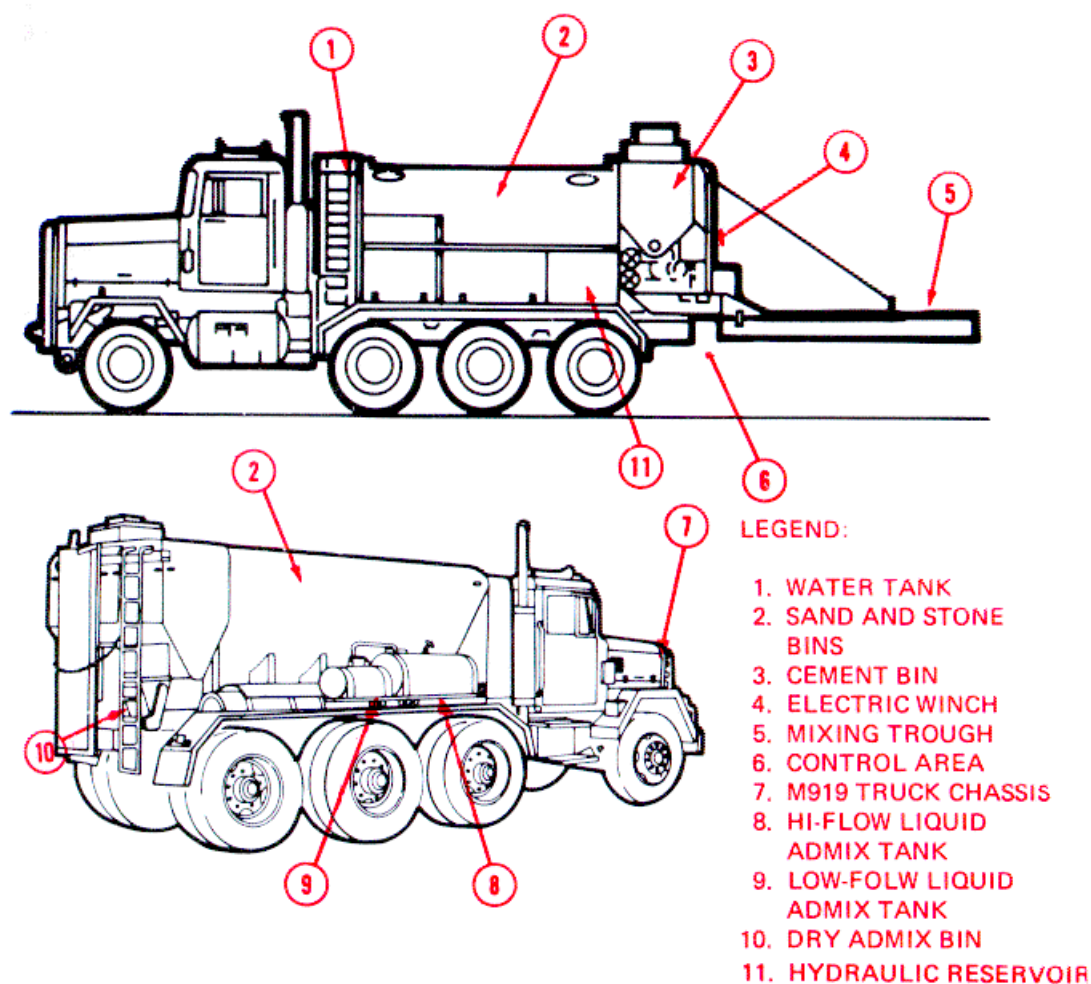


Figure 1-1. Major Components and Their Location

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 m³) of dry cement for mixing up to 8 cubic yards (6.12 m³) 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 l) of admixture solution for injection into the mix.

(9) Low-Flow Liquid Admix Tank- The low-flow admix tank holds 12 gallons (45 l) 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 m³) 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 than 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.

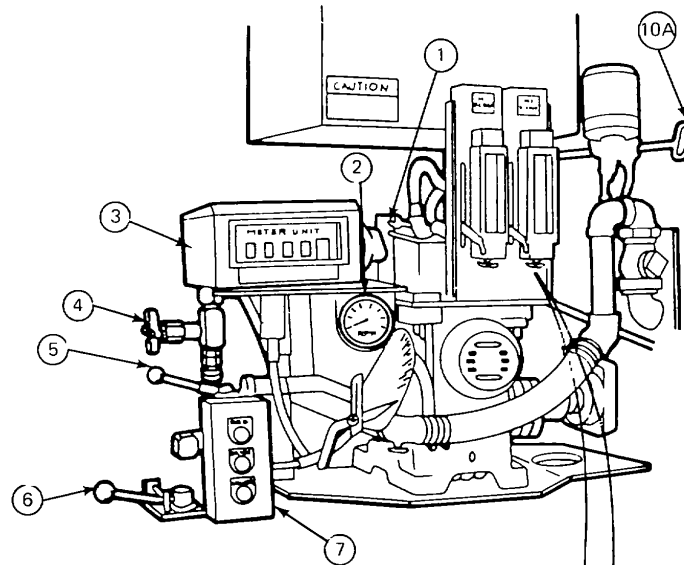
(19) Dry Admix Control Dial (Fig. 1-2, Sheet 2) - The dry admix control dial regulates the amount of dry admix that is added to the mix. Adjustment to the amount of admix can be made by loosening the pointer knob and setting the pointer at the setting specified on the mix settings chart.

(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) Inclinator (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 fail.



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

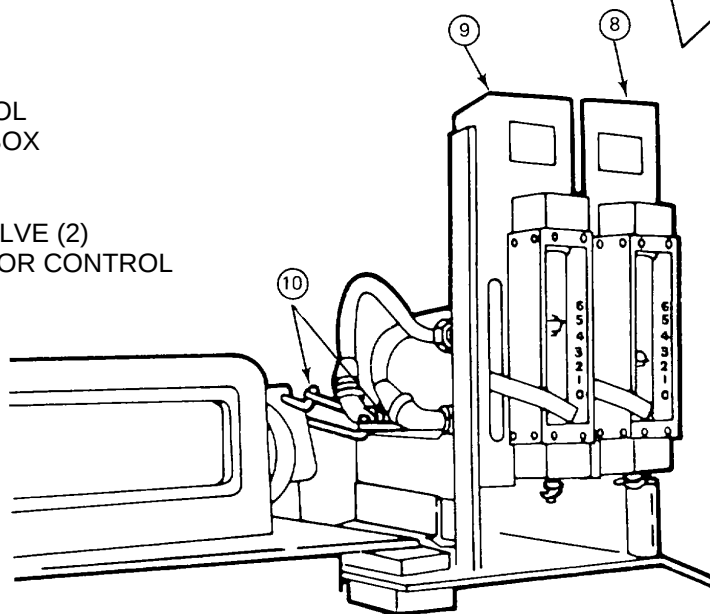


Figure 1-2. Controls and Indicators (Sheet 1 of 3)

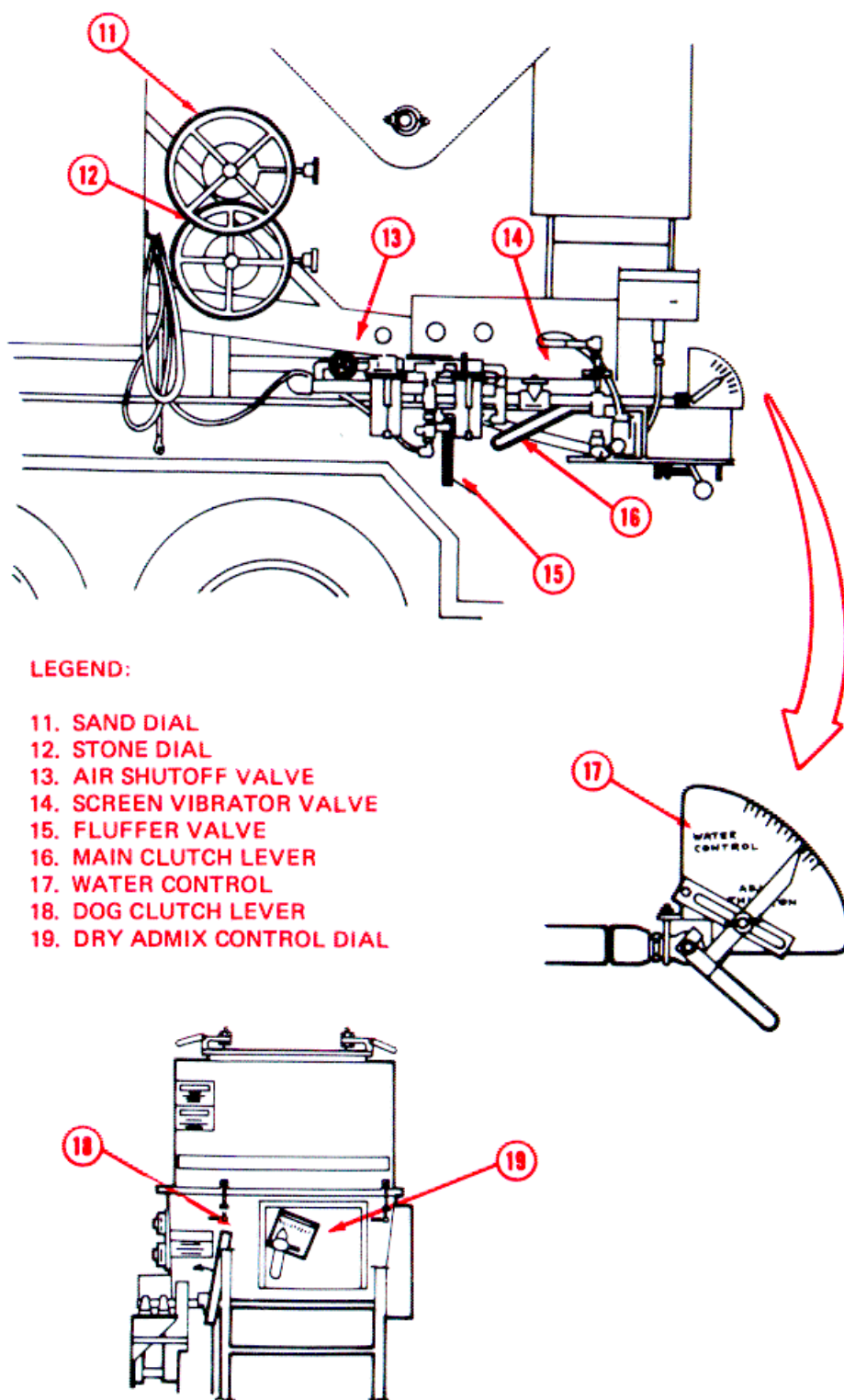


Figure 1-2. Controls and Indicators (Sheet 2 of 3).

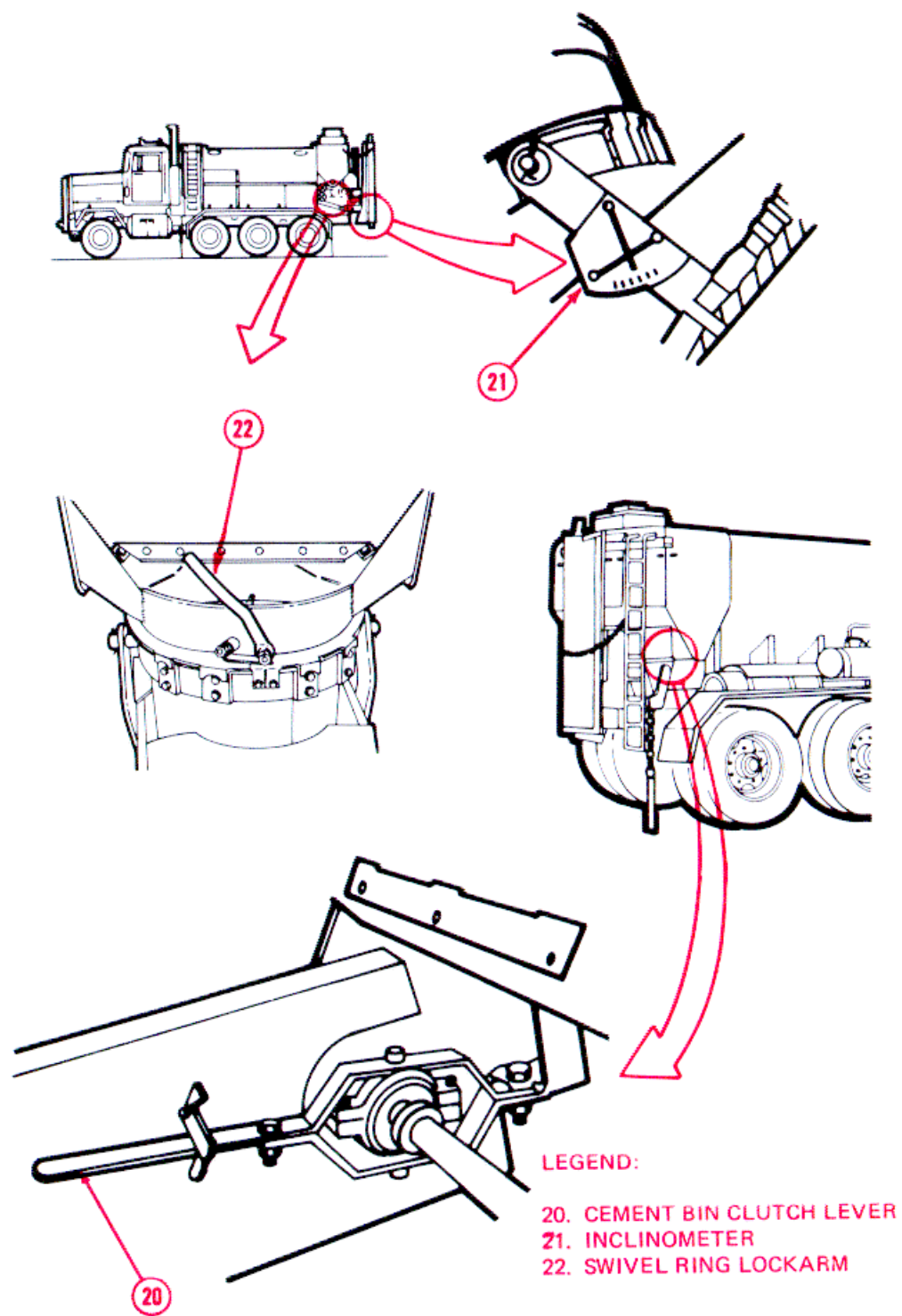


Figure 1-2. Controls and Indicators (Sheet 3 of 3).