DG534

Operation & Maintenance Manual

170D

DUMP TRUCK

SERIAL NUMBERS

AFE36-A and up
AFE37-E thru AFE37-X
w/ DDC/CUM 776

KOMATSU®

whether the driver of the vehicle is visible or not, give all vehicles a wide berth.

22. Check brake lock periodically for proper operation.

Use brake lock at dump or loading site only. DO NOT use brake lock to park the vehicle with engine shut down or to stop the truck during routine operation.

23. Become familiar with all protective equipment devices on the vehicle and insure that these items (seat belts, grab bars, anti-skid material, canopies, etc.) are securely in place.

24. Always use personal safety equipment such as safety shoes, safety glasses and hard hat. There may be conditions when ear protective devices should be worn for operation and maintenance personnel safety.

25. Make sure all persons are clear of vehicle before starting engine. Always sound the horn as a warning before activating any controls.

26. Insure adequate ventilation before start-up if the vehicle is in an enclosure. Exhaust fumes are dangerous.

27. When servicing air conditioning system with refrigerant (Freon) wear a face shield and cold resistant gloves for protection against freezing.

28. Observe safety and warning decals on the vehicles at all times.

29. Keep all unauthorized reading material out of truck cab.

30. Follow package directions carefully when using solvents around truck.

31. The electrical system of this truck is capable of developing very high voltage. DO NOT open the control cabinet under any circumstances. Only a qualified electrician should service the electrical circuitry of this truck.

LOADING

1. Pull into the loading area with caution. Remain at a safe distance while truck ahead of you is being loaded.

2. Do not drive over unprotected power cables.

3. When approaching or leaving a loading area, watch out for other vehicles and personnel working in the area.

4. When pulling in under shovel, follow "Spotter" or "Shovel Operator" signals. Operator may speed up loading operations by watching truck position ahead of him in order to judge where he is to place his unit.

5. When being loaded, operator should stay in truck or cab, or sufficiently far enough from truck to avoid being struck by flying material. Apply brake lock during loading operation, with engine running and operator in truck cab.

If operator must leave truck cab during loading, engine must be shut down and parking brake applied. DO NOT use brake lock or secondary brake for parking. Air system will bleed down in approximately 15 minutes with engine shutdown, releasing brakes.

6. When loaded, pull away from shovel as quickly as possible but with extreme caution.

HAULING

1. Govern your speed by the road conditions, weather and visibility.

2. Always operate truck so it is under control at all times.

3. Use extreme caution when approaching a haul road intersection. Give a wide berth to on-coming vehicles.

4. Obey all road signs.

5. If unfamiliar with the road, stay alert and drive with extreme caution.

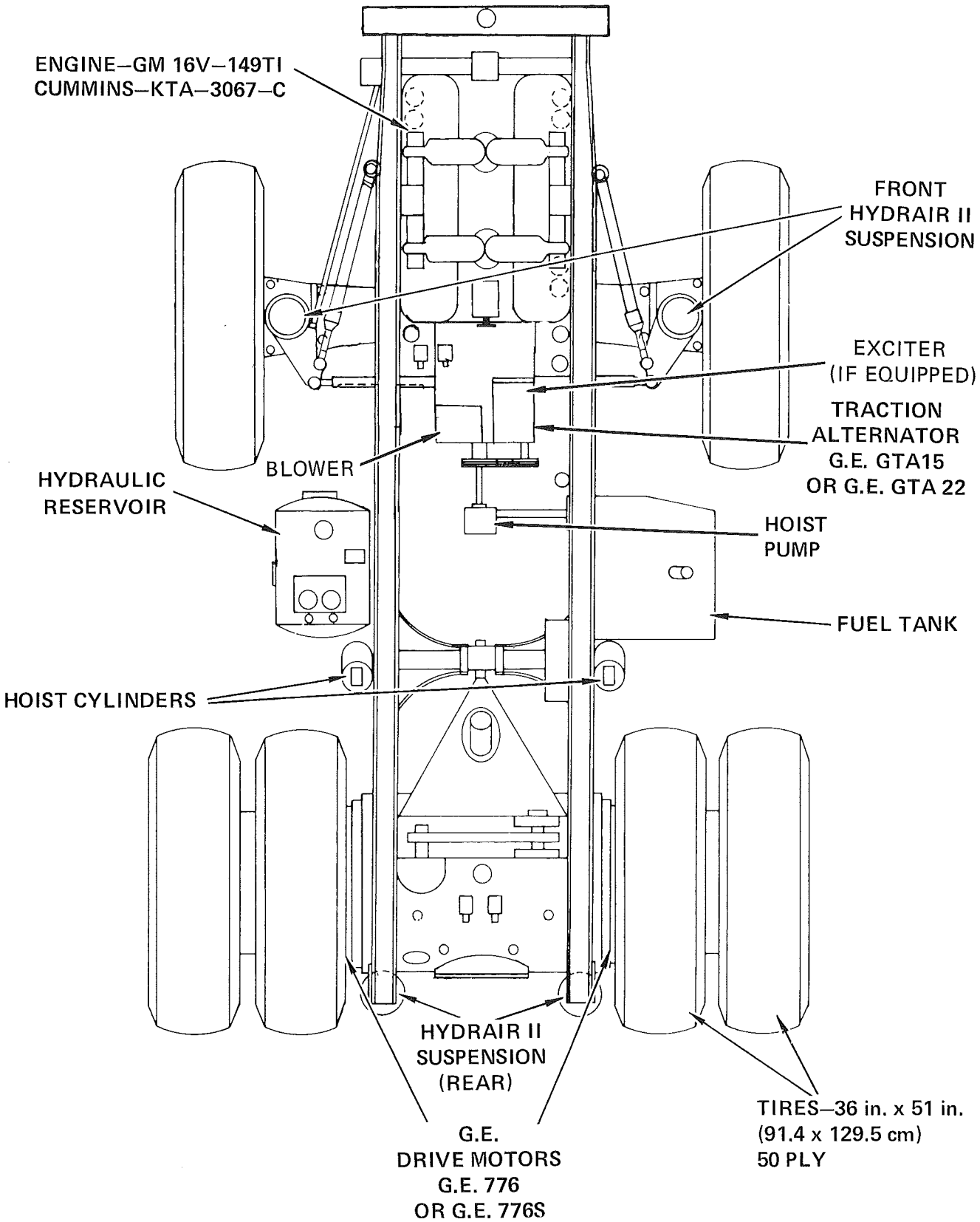

FIG. 1. 170D MAJOR COMPONENTS

ting, stop the truck, shut-down the engine and alert maintenance personnel.

GROUND RELAY WARNING LIGHT (37)

The ground relay warning light will flash on and off when a malfunction occurs in the electrical system. The warning horn will also signal intermittently. Stop the truck immediately as serious damage to the electrical control system and components may result.

MOTOR BLOWER WARNING LIGHT (38)

The motor blower warning light will flash on and off when a malfunction occurs in the air cooling system for the alternator and motorized wheels. Stop the truck immediately if warning light glows as damage may result without proper ventilation of rotating equipment.

HIGH ENGINE TEMPERATURE WARNING LIGHT (39)

Shut down the engine immediately if the high engine temperature warning light glows as serious damage may result to engine and cooling system components.

This warning light will flash on and off when the engine's cooling system temperature is higher than recommended.

LAMP TEST SWITCH (40)

The lamp test switch is provided for the operator to test the warning and indicator lights before engine startup. The key switch is turned to the run position and the lamp test switch is moved to the 'On" position. This action will complete a circuit to the warning and indicator lights. The warning horn will also sound.

TEMPERATURE CONTROL LEVER (41)

The temperature control lever is provided for the operator to select a climate condition within the cab for his comfort. Moving the control lever to the right permits engine coolant to be circulated through the heater core. The amount of engine coolant can be regulated by the operator.

DEFROSTER, HEAT CONTROL LEVER (42)

The defroster, heater control lever permits the operator to select either defroster, or heater. Moving the lever to the left controls the defroster function. This action permits heated air to be directed to the windshield. Moving the control lever to the "heat" position permits heated air to be circulated throughout the operator's cab.

INSIDE, OUTSIDE AIR CONTROL LEVER (43)

The inside, outside air control lever is connected to a vent, which allows, either outside or inside air to be circulated through the heater assembly. Moving the lever to the left permits inside air to be circulated through the heater. Moving the lever to the right permits outside air to be circulated through the heater assembly.

AIR CONDITIONING CONTROL LEVER (44) OPTIONAL

The air conditioning control lever is provided so the operator can select a climate condition within the cab for his comfort. Moving the lever to the right lowers the air temperature entering the cab.

HEATER CONTROL KNOB (45)

The heater control knob is provided to control the heater fan motor. The heater fan motor is a 3–speed motor, low, medium and high, which is indicated on the instrument panel by numbers 1, 2 and 3.

CIRCUIT BREAKERS (46)

The circuit breakers are provided to protect the various circuits identified on the instrument panel from an over current condition. If a malfunction in the circuitry occurs, the appropriate circuit breaker will open the circuit. The circuit breaker is of the reset type.

Report a faulty circuit that is protected by a circuit breaker, as serious damage may result from over current conditions.

ALARM HORN (47)

The alarm horn is a signaling device used to alert the operator of the following conditions:

1. Low oil pressure.
2. Low coolant level.
3. High engine temperature.

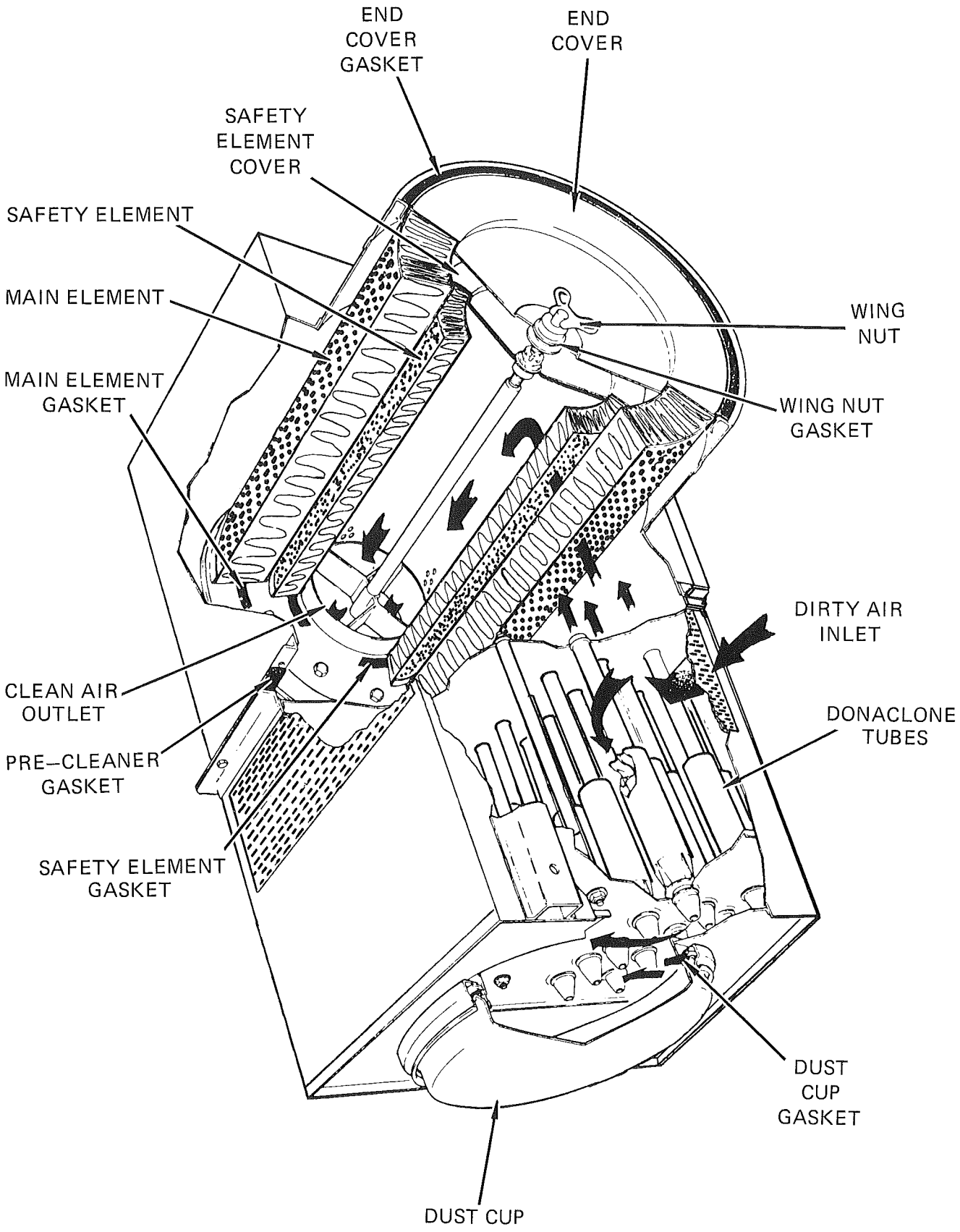

FIG. 8. AIR CLEANER (Cummins Engine)

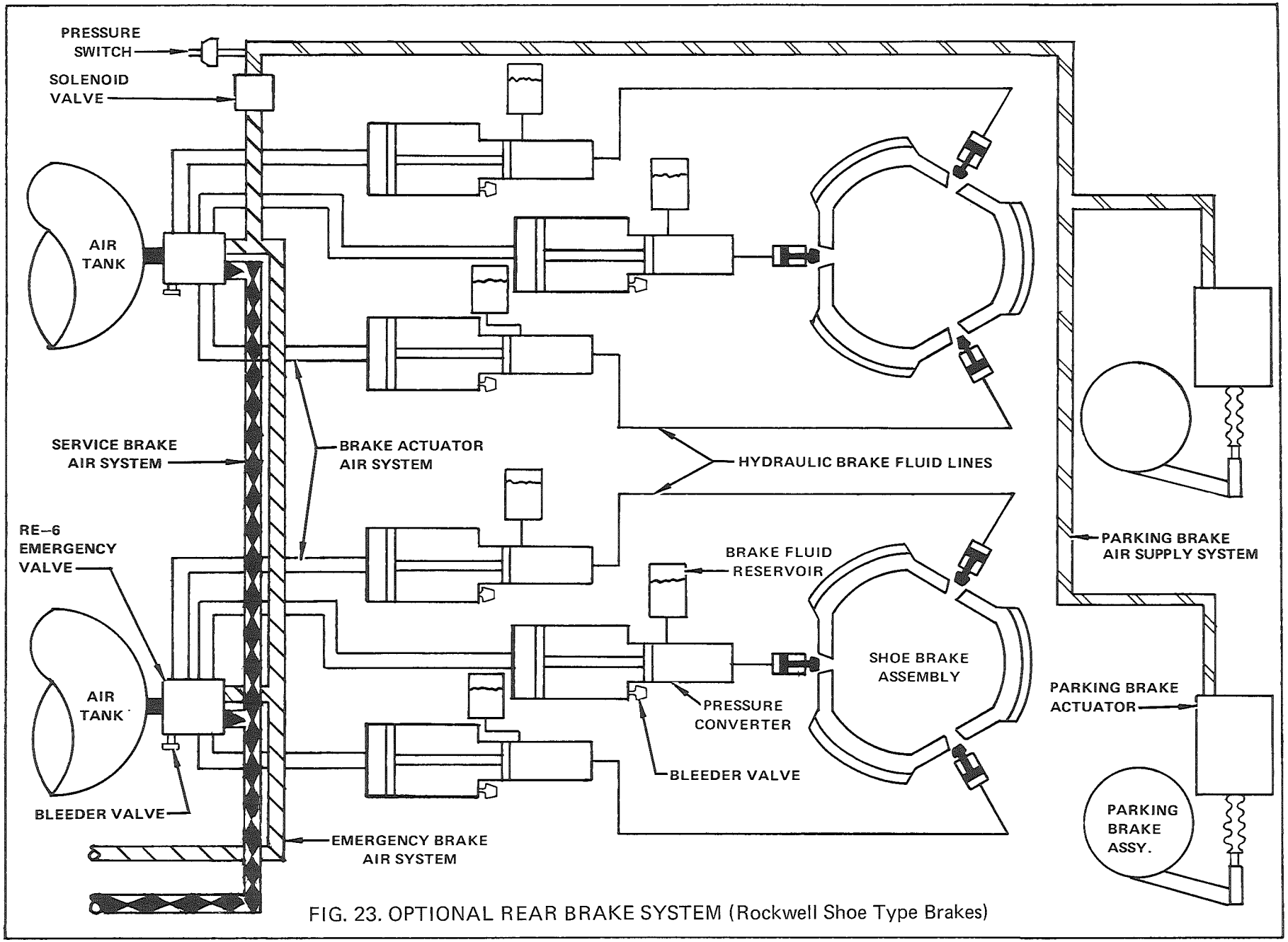

FIG. 23. OPTIONAL REAR BRAKE SYSTEM (Rockwell Shoe Type Brakes)

10. Simultaneously charge suspensions at front with nitrogen until one suspension lifts off blocks or supports. Follow same procedure for rear suspensions. Remove all blocks or supports.

11. Charging pressures shown in Fig. 32 are approximate only and may be varied slightly to maintain rod extension within 0.5 in. (12.7 mm) of specified distance shown in Fig. 32.

12. Upon completeion of charging suspensions remove Hydrair Service Kit. Turn small hex swivel nut on inflation valve clockwise. Tighten nut to **10.5 ft. lbs. (14.2 N-m)** torque; release, retighten to **10.5 ft. lbs. (14.2 N-m)**; release and retighten to a final torque of **4 ft. lbs. (5.4 N-m)**. Install valve cap and tighten to **2.5 ft. lbs. (3.3 N-m)** torque. Install inflation valve cover and tighten to **45 ft. lbs. (61 N-m)** torque.

13. Install piston protective cover if removed. Operate truck and check rod extension. Adjust if necessary.

14. Check rod extension of all suspensions every 500 hours or as necessary if rod extension falls below the nitrogen charge limit during operation (empty truck).

signs of leakage. Check battery hold down connections to make sure the tension is not great enough to crack the battery, or loose enough to allow vibration to open the seams. A badly leaking battery should be replaced.

TO REMOVE CORROSION, clean the battery with a solution of ordinary baking soda and a stiff wire brush and flush with clear water. Make sure none of the soda solution is introduced into the electrolyte as it is highly injurious. Be sure terminals are clean and tight. A light coating of petrolatum will prevent corrosion at the terminals. Clean terminals are very important in a voltage regulated system becuase corrosion creates resistance in the charging circuit which causes undercharging and gradual starvation of the battery.

NOTE: When washing batteries, make sure cell caps are tight to prevent cleaning solution from entering the cells.

ADDITION OF ACID will be necessary if considerable electrolyte has been lost through leakage. Before adding acid, make sure battery is fully charged. This is accomplished by putting the battery on charge and taking hourly specific gravity readings on each cell. When all the cells are gassing freely and three successive hourly readings show no rise in specific gravity, the battery is considered charged. Additional acid may now be added. Continue charging for another hour and again check specific gravity. Repeat the above procedure until all cells indicate a specific gravity of 1.260 to 1.265 corrected to 80°F (27°C).

NOTE: Use 1.400 strength acid when making gravity adjustments. Acid of higher strength will attack the plates and separators before it has a chance to diffuse into the solution.

If the temperature of the electrolyte is not reasonably close to 80°F (27°C) when the specific gravity is taken, it should be corrected to 80°F (27°C). For every 10°F (5°C) BELOW 80°F (27°C), 0.004 should be SUBTRACTED from the specific gravity reading. For every 10°F ABOVE 80°F (27°C), 0.004 should be ADDED to the reading.

IDLE BATTERIES should not be allowed to stand unattended. If equipment is to stand unused for more than two weeks, the batteries should be removed and placed in a cool, dry place where they may be checked periodically and charged when necessary. Remember, all lead-acid batteries discharge slowly when not in use. This self discharge takes place even though the battery is not hooked up in a circuit and is more pronounced in warm weather than in cold. The rate of self discharge of a battery kept at 100°F (38°C) is about six times that of a battery kept at 50°F (19°C) and self discharge of a battery kept at 80°F (27°) is about four times that one at 50°F (10°C). Over a thirty day period, the average self discharge runs about 0.002 Sp. Gr. per day at 80°F(27°C). To offset the results of self discharge, idle batteries should receive a booster charge (not a quick charge) at least once every thirty days. Batteries allowed to stand for long periods in a discharged condition are attacked by a crystallization of the lead sulphate on the plates. Such batteries are called sulphated and are, in the majority of cases, irreparably damaged. In less severe cases, the sulphated battery may be restored to limited service by prolonged charging at a low rate (approximately 1/2 normal rate).

An undercharged battery is extremely susceptible to freezing when allowed to stand in cold weather.

The electrolyte of a battery in various stages of charge will start to freeze at temperatures indicated in the table below.

Specific Gravity Corrected to 80°F (27°C)	Freezing Temperature Degrees Fahrenheit
1.280	−90°F (−70°C)
1.250	−60°F (−54°C)
1.200	−16°F (−27°C)
1.150	+ 5°F (−15°C)
1.100	+ 19°F (− 7°C)

The above temperatures indicate the points at which the first ice crystals appear. Lower temperatures must be reached for a solid freeze. Solid freezing of the electrolyte may crack the container and damage the positive plates. As will be noted a 3/4 charged battery is in no danger of freezing. Therefore, a 3/4 charge or better is desirable, especially during winter weather.

GREASE

1. 90°F (32°C) and above use NLGI No. 1.
2. −25° to 90°F (−32° to 32°C) use NLGI No. 2.
3. −25°F (−32°C) and below refer to your local lubrication supplier for recommendation for extreme cold weather application.

TO PRIME SYSTEM

The system is normally fully primed at the factory. The system must be properly primed and purged of air to work properly. If main lines or feed lines are replaced in the field, go through proper priming procedure listed below.

To operate pump when priming, short across the ignition and solenoid posts.

1. After pump reservoir has been filled with recommended lubricant, remove all plugs in dead ends of the injector manifolds and supply lines.

2. Turn vent plug in pump counterclockwise one complete turn. Operate pump until lubricant flows freely from vent plug opening to expel air pockets trapped between the pump and the supply line connection.
3. Tighten vent plug. Continue operating pump until lubricant flows from any plug opening. Close opening with plug.
4. Repeat this procedure until all plug openings are closed and supply lines are primed.

   NOTE: Fill each feed line with lubricant before connecting lines to outlet of injectors and bearings. This will prevent having to cycle each injector for every inch of feed line between injector and bearing. Also check each injector for proper installation.

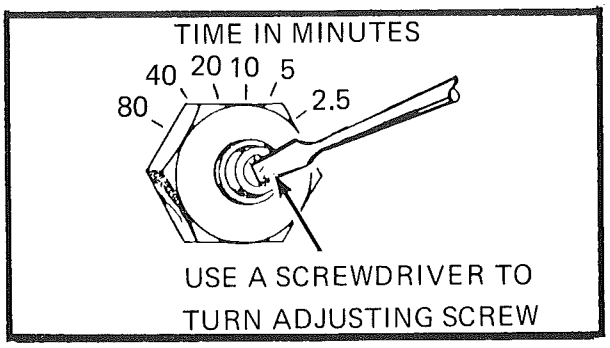

FIG. 46. TIMER ADJUSTMENT

INJECTOR ADJUSTMENT

The injector can be adjusted to supply from a 0.008 cu. in. (0.13 cu. cm) to 0.8 cu. in. (13 cu. cm) of lubricant per cycle of the injector. The length of travel of the injector piston regulates the amount of lubricant supplied. The injector piston travel is in turn controlled by the adjusting screw on top of the injector.

To increase injected volume of lubricant, back out the adjusting screw counterclockwise. To reduce the amount, turn the adjusting screw in clockwise. Refer to Fig. 45.

To obtain maximum injected volume the adjusting screw should be backed out so the top of the indicating pin just touches the adjusting screw when the injector is not pressurized. At this time the adjusting screw will show about 0.375 in. (9.5 mm) of thread. When decreasing the injected volume, turn the adjusting screw in a proportionate amount to limit injector piston travel. For instance, if only half as much lubricant is needed, turn the adjusting screw in halfway or until only 0.187 in. (4.7 mm) of thread shows. The injector is supposed to be adjusted to its minimum with approximately 0.094 in. (2.4 mm) of threads showing.

50 HOURS

1. MOTORIZED WHEEL GEAR CASE
   Check level at sump inside center axle case. Maintain level at full mark on dipstick. Check oil overfill protection.

   NOTE: To assure obtaining a true reading, permit 20 minutes for oil to drain down into case.

   Type of lubricant – Summer No. 140 gear oil, Winter No. 90 gear oil,Sub-zero temperature No. 80 gear oil. Gear oil must meet military specification MIL–L–2105B, 4 1/2 gal. (19 liters).

2. HYDRAULIC OIL RESERVOIR
   Check level at top sight glass-body in down position.
   Type of lubricant – Type C–3 hydraulic fluid. Sub-zero temperatures use oil meeting military specifications MIL–L–10295. Refer to 1000 hour interval for filling procedure. Service Capacity – 105 gal. (397 liters).

3. FINAL DRIVE PIVOT PIN, AND ANTI–SWAY BAR (3 Places)
   Type of lubricant – Multi-purpose grease No. 2 w/3% Molybdenum Disulphide.
   Amount – one or two applications with hand gun at grease fitting.

4. REAR SUSPENSION BALL RETAINER
   Re-torque ball retainer after the initial 50 hours of operation. Tighten locking nut to **500 ft. lbs. (678 N-m)**.

5. BATTERY
   Fill cells to level with distilled water. A hydrometer reading of 1.270–1.215 @ 80°F (27°C) – indicates satisfactory condition.

6. REAR AXLE BREATHER: (Final Drive Case)
   Clean element and clean housing.