M4K Military Manual

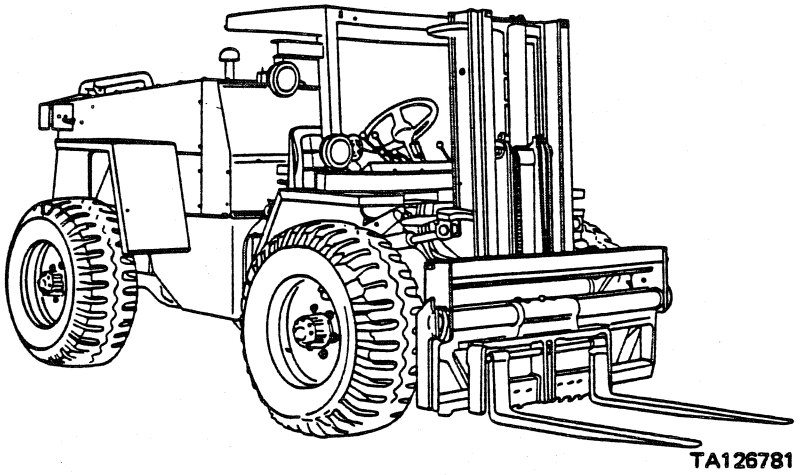
Service Information

3930010764237

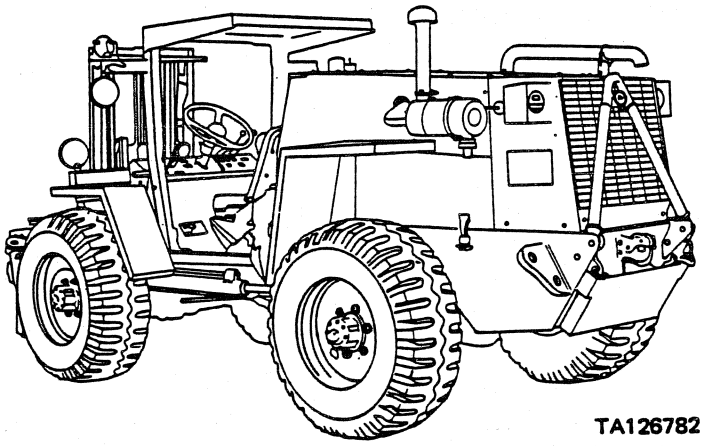
OPERATOR'S MANUAL

TRUCK, FORKLIFT, DED, PNEUMATIC TIRE, ARTICULATED FRAME STEER, 4,000-LB. CAPACITY ROUGH TERRAIN,

(NSN 3930-01-076-4237)



Right Front View



Left Rear View

MHE 237 forklift truck

CHAPTER 1
INTRODUCTION

CHAPTER OVERVIEW

The purpose of this chapter is to acquaint you with the maintenance forms, records, and reports that you must maintain for the forklift truck, to familiarize you with the purpose and capabilities of the forklift truck and to give you a brief description of the different systems and components of the forklift truck.

Index

Section I. GENERAL INFORMATION

1-1. SCOPE

a. Type of Manual. Operator's Technical Manual, including operating and troubleshooting instructions.

NOTE

A waterproof cloth container is attached to the rear of the operator's seat. This container has two compartments: one compartment contains the vehicle log book and the other compartment provides storage for the operator's manual.

b. Model Number and Equipment Name. MHE 237 Rough Terrain 4,000 Pound Capacity, Articulated Frame Steer, Pneumatic Tire, Diesel Engine Driven Forklift Truck.

c. Purpose of Equipment. Handle, transport, and stack materials on various types of terrain. The forklift truck has a capacity of 4,000 pounds at 24-inch load center and can lift the load to a maximum height of 100-inches

1-2. MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's)

EIR's can and must be submitted by anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. EIR's may be submitted on DA Form 2407. Mail directly to Commander, US Army Tank-Automotive Material Readiness Command, ATTN: DRSTA-MT, Warren, MI. 48090. A reply will be furnished to you.

1-4. WARRANTY INFORMATION

The model MHE 237 forklift truck is warranted by J. I. Case for 12 months or 1500 operating hours, whichever comes first. It starts on the date, found in block 23, DA Form 2408-9 in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action through your organizational maintenance shop.

1-5. ORIENTATION

The lifting forks are mounted on the front of the vehicle and the engine faces the rear. Controls for operating the

1-5. ORIENTATION (cont)

lifting forks (tilting, rotating, lowering, side shifting of the lifting forks) are located to the right when you're sitting in the operator's seat.

1-6. LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
B.O.	Black out
C	Centigrade
CCW	Counterclockwise
CW	Clockwise
DA	Department of the Army
DED	Diesel engine driven
D.C.	District of Columbia
EA	Each
EIR	Equipment improvement recommendations
F	Forward
F	Fahrenheit
FWD	Forward
GAL	Gallon
In.	Inch
LB.	Pound
Lg	Long
MHE	Material handling equipment
MI	Michigan
MPH	Miles per hour
MTOE	Modified table of organization and equipment
N	Neutral
NSN	National stock number
OZ	Ounce
Para	Paragraph
PMCS	Preventive maintenance checks and services
PRESS	Pressure
PSI	Pounds per square inch
QT	Quart
R	Reverse
ROPS	Roll Over Protective Structure
RPM	Revolutions per minute
SAE	Society of Automotive Engineers
SER.	Service
TEMP	Temperature
TRANS	Transmission

Section II. EQUIPMENT DESCRIPTION AND DATA

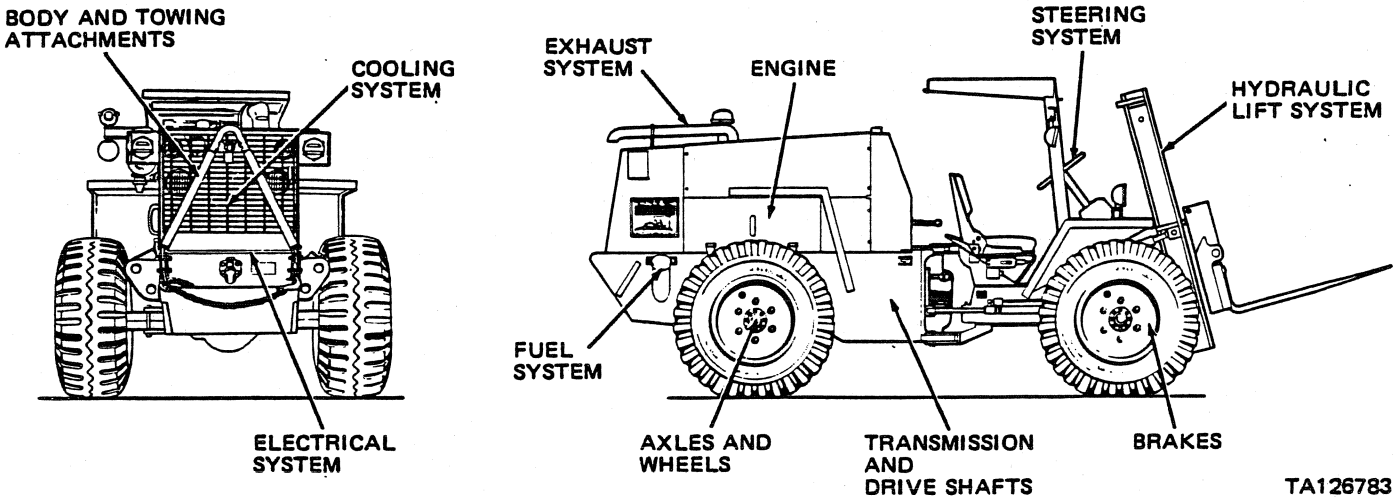
1-7. EQUIPMENT PURPOSE, CAPABILITIES, AND FEATURES

a. Purpose of Forklift Truck. Handle, transport, and stack materials while operating over various types of terrain.

b. Capabilities and Features.

(1) 4,000 pounds load capacity.
(2) Operates over rough terrain.
(3) Three speed ranges in both forward and reverse.
(4) Declutch pedal to neutralize transmission.
(5) Axle disconnect.
(6) Diesel engine.
(7) Power steering.
(8) Power assisted brakes.
(9) Articulated frame steering for operation within a 20 foot long by 8 foot wide by 8 foot high container.
(10) Forks can be rotated and/or shifted left or right.
(11) Mast can be tilted rearward or forward.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



ENGINE. Four cylinder diesel.

FUEL SYSTEM. Consists of electric fuel pump, air cleaner, fuel tank, fuel filters, quick start kit, fuel injection pump, and fuel injectors.

EXHAUST SYSTEM. Consists of muffler and exhaust pipe; muffler mounted on top of engine and is of the spark arresting type.

COOLING SYSTEM. Includes radiator mounted in rear of truck, thermostat and housing, engine driven water pump, and fan.

ELECTRICAL SYSTEM. 24 Volt, negative ground. Includes engine driven alternator, starter motor, instrument panel, light system, and two 12 Volt batteries connected in series.

TRANSMISSION AND DRIVE SHAFTS. Three speeds in both forward and reverse, has declutch feature which permits neutralizing transmission, equipped with axle disconnect. Three drive shafts used to transmit power to front and rear axles.

AXLES AND WHEELS. Single reduction type axles; pneumatic tires.

BRAKES. Hydraulic operated service brakes and power assisted on all wheels; lever operated parking brake located on transmission output shaft.

STEERING SYSTEM. Consists of steering wheel, steering gear, two steering cylinders, and hydraulic pump driven by transmission.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont)

HYDRAULIC LIFT SYSTEM. Includes control valve, mast column, hydraulic reservoir, and cylinders (tilt, rotation, side shift, and lift).

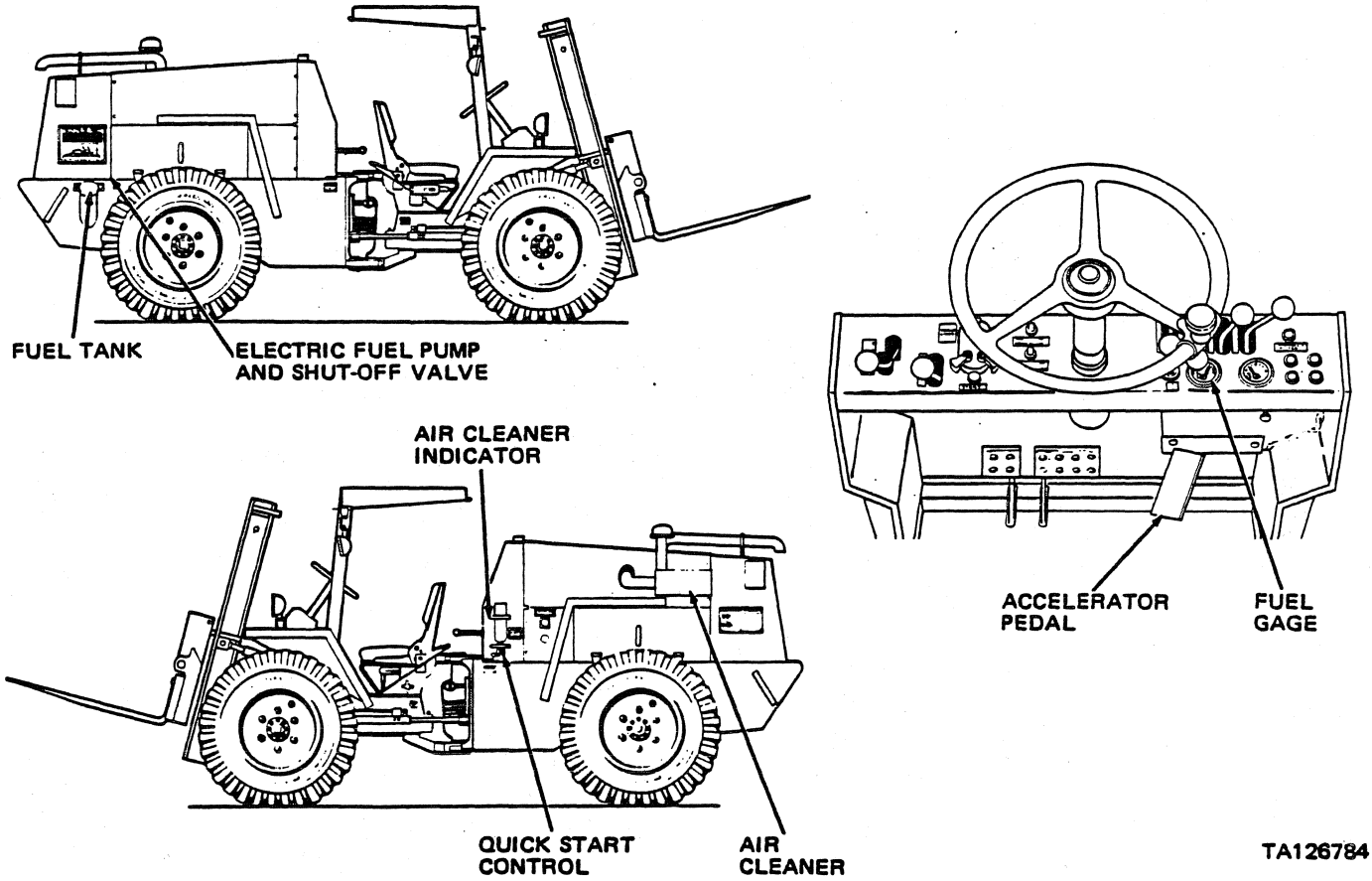
BODY AND TOWING ATTACHMENTS. Two section body consisting of front and rear chassis; towing attachments include pintle hook, tow bar and two chains all located at rear of truck.

1-9. EQUIPMENT DATA

Manufacturer	J. I. Case
Model	M4K
Dimensions and Weight	
Length (overall, mast vertical)	205 inches
Length (overall, forks removed)	165 inches
Height (overall, mast raised)	129.5 inches
Height (overall, mast lowered, no ROPS)	78 inches
Maximum height for shipping	80 inches
Height to top of exhaust	71 inches
Height to top of ROPS	80 inches
Height to top of steering wheel	62 inches
Ground clearance at mast (loaded)	10 inches
Ground clearance at center	13.5 inches
Wheelbase	92 inches
Tire Tread	63 inches
Width over tires	79 inches
Angle of approach (forks raised and mast tilted back)	26 degrees
Angle of Departure	34 degrees
Pintle hook height (center)	31.8 inches
Rear axle oscillation — total	25 degrees
Turning Radius (outside of tires)	26 feet, 8 inches
Turning angle from center (left and right)	43 degrees
Rear load retaining surface (including load backrest)	17.0 inches high x 36 inches wide
Weight	
No load weight, less operator, with full tank	9725 pounds
Front axle load	4685 pounds
Rear axle load	5040 pounds
Weight with 4000 pound load	13725 pounds
Front axle load	10810 pounds
Rear axle load	2915 pounds
Performance	
Speeds (MPH)	
1st	3.3
2nd	7.2
3rd	20.2
Lift capacity rated (at 24 inch center)	4000 pounds
Maximum lift height (to bottom of forks; empty)	100 inches
Drop below ground (bottom of forks)	4.0 inches
Minimum lateral fork adjustment (on centers)	8 inches
Maximum lateral fork adjustment	30 inches
Rate of lift at rated load	62 FPM
Rate of lift empty	88 FPM
Rate of drop at rated load	80 FPM
Rate of drop empty	68 FPM
Reach from centerline of drive wheels	31.75 inches
Degrees tilt (mast centered)	
Forward	11 degrees
Rearward	22 degrees
Mast sideshift (right or left from center)	22 inches
Rotation angle	22 degrees total
Capacities	
Fuel tank	27 gallons
Cooling system	4 gallons
Hydraulic system	65 quarts
Transmission, torque converter	22 quarts
Engine crankcase	7 quarts
Axles (each)	14 quarts

Section III. PRINCIPLES OF OPERATION

1-10. FUEL SYSTEM



FUEL GAGE. Electrically operated meter type; calibrated in six gallon increments. With ignition switch key turned to ON position, fuel gage indicates quantity of fuel remaining in fuel tank.

ACCELERATOR PEDAL. Depressing pedal with foot increases fuel flow and engine speed; releasing pedal decreases fuel flow and engine speed. Pedal is spring loaded to return to low speed position when released.

FUEL TANK. Holds approximately 27 gallons of diesel fuel; constructed as part of rear chassis. Fuel filler neck and removable cap located at right rear of vehicle. A drain plug is located at the bottom of the tank.

ELECTRIC FUEL PUMP. Pumps diesel fuel from tank to engine. With ignition switch key turned to ON position, electric fuel pump will emit a slight buzz sound indicating proper operation.

SHUT-OFF VALVE. Located in right side of engine compartment above fuel filler neck. With valve handle in vertical position, blocks passage of diesel fuel from fuel tank to electric fuel pump. Valve handle must be in horizontal position to start and operate engine.

AIR CLEANER. Removes dust and dirt from air before air is applied to engine. Metal shell houses replaceable paper-type filter element.

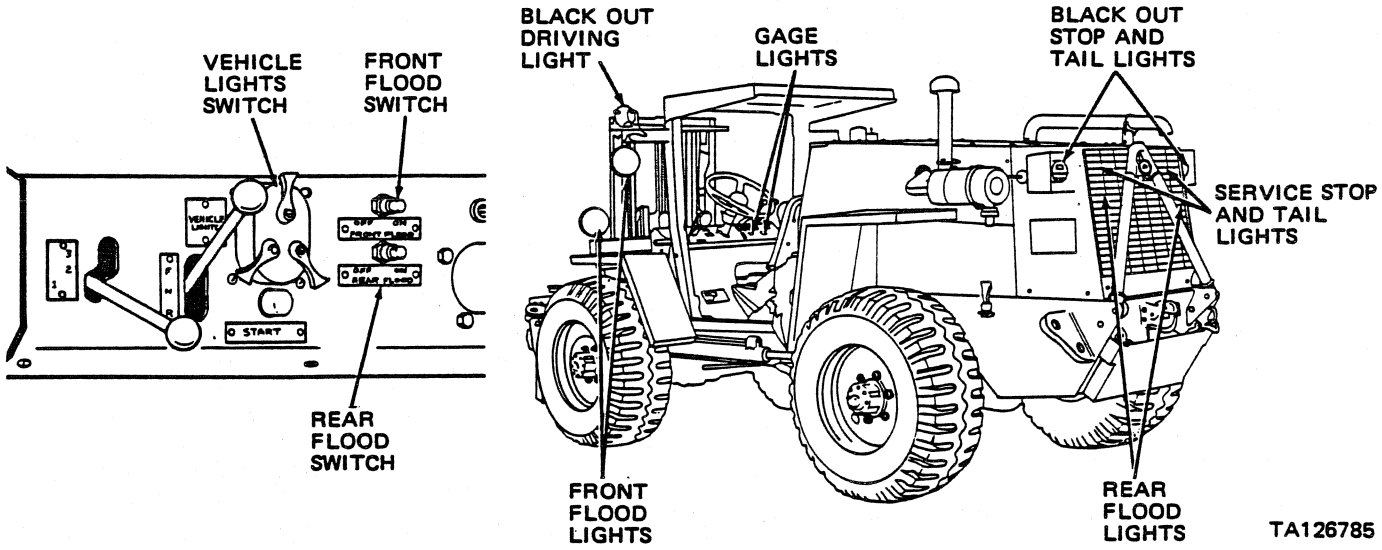
1-10. FUEL SYSTEM (cont)

QUICK START CONTROL. Used to start engine in cold weather. When lever is pressed against valve, injects volatile starting fuel from steel cylinder to engine. Removable clip attaches to lever to prevent accidental discharge.

AIR CLEANER INDICATOR. Indicates restriction of air flow through air cleaner due to dirty or clogged filter element. Filter element service is required when red signal within indicator is in full view. After servicing filter element, indicator is reset by depressing button on top of indicator.

1-11. ELECTRICAL SYSTEM

a. Vehicle Lights.



VEHICLE LIGHTS SWITCH. Contains three separate switch sections used to control all vehicle lights. Also has internal resistance to provide selection of dim illumination of gage lights. Ignition switch must be turned to extreme left or ON position for VEHICLE LIGHTS switch to operate.

FRONT FLOOD AND REAR FLOOD SWITCHES. Used to independently turn front and rear flood lights on and off. VEHICLE LIGHTS main switch section must be in SER. DRIVE position for these switches to operate.

BLACK OUT DRIVING LIGHTS. Mounted at left side of roll over protective structure. Provides forward black out illumination during tactical operations. Controlled by VEHICLE LIGHTS switch.

GAGE LIGHTS. Internal lights illuminate meter face and pointer of FUEL and OIL PRESS gages. Bright, dim and off settings controlled by VEHICLE LIGHTS switch.

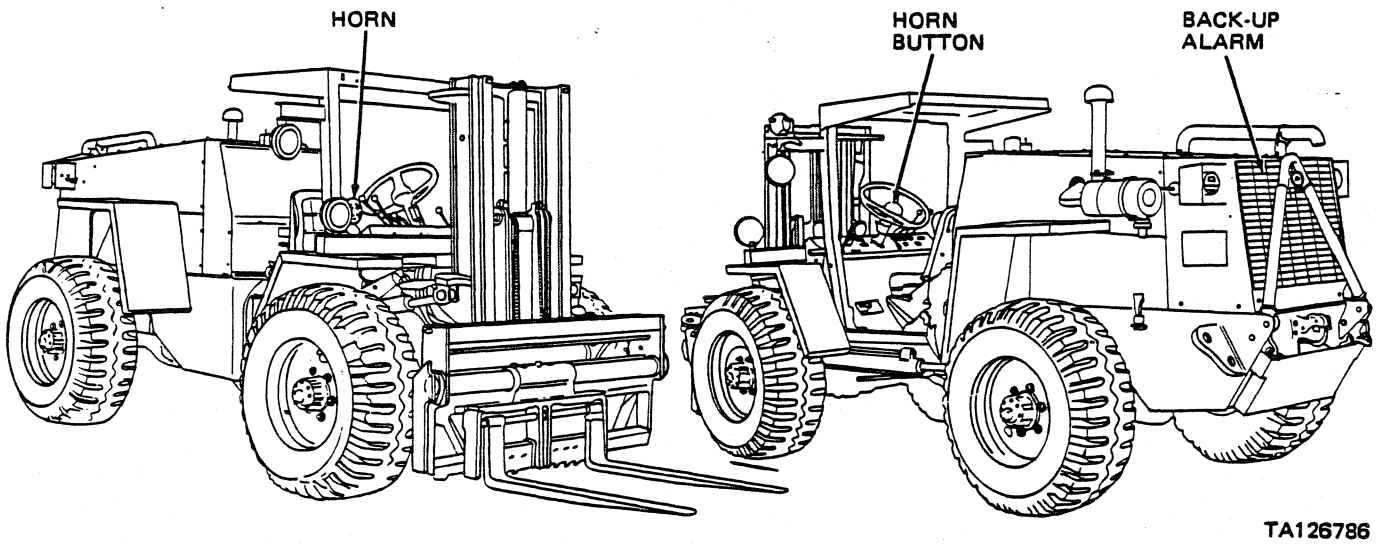
FRONT FLOOD LIGHTS. Four sealed-beam type lamps mounted on roll over protective structure and steel channel extension of instrument panel. Illuminate area in front of vehicle for driving forward and material handling. Turned on and off with FRONT FLOOD switch.

REAR FLOOD LIGHTS. Two sealed-beam type lamps mounted on bottom of steel plates behind radiator grille. Illuminate area behind vehicle for backing up, connecting tow bar, or connecting towed load. Turned on and off with REAR FLOOD switch.

SERVICE STOP AND TAIL LIGHTS. Two light assemblies mounted on top of steel plates behind radiator grille. Assembly includes incandescent lamp and red plastic lens. Tail lights turned on and off with VEHICLE LIGHTS switch. Stop lights are normally off; turned on by depressing service brake pedal.

BLACK OUT STOP AND TAIL LIGHTS. Two light assemblies mounted in protective metal housings at rear of vehicle. Each assembly contains two incandescent lamps. Provides stop light and tail light illumination during tactical operations. Tail lights turned on and off with VEHICLE LIGHTS switch. Stop lights are normally off; turned on by depressing service brake pedal.

b. Horn and Back-Up Alarm.

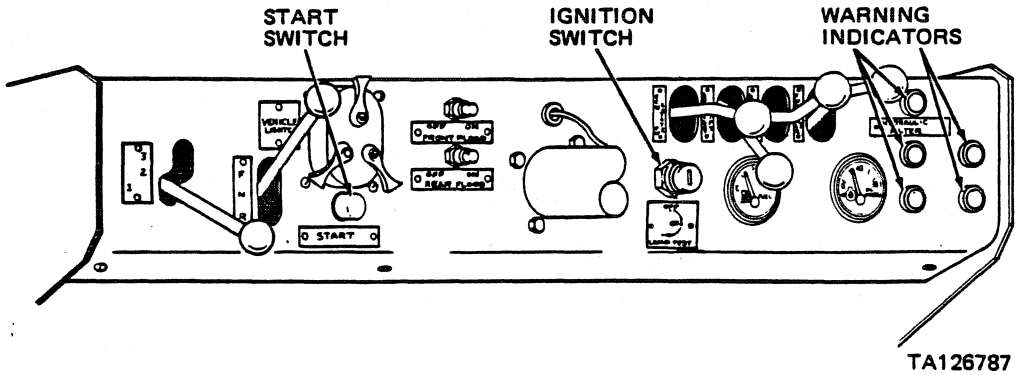


HORN. Electrically operated by depressing horn button located on steering wheel. Located next to front flood light, on right side extension of instrument panel.

HORN BUTTON. Spring loaded button located at center of steering wheel. Horn sounds when button is depressed, and turns off when button is released. Horn and horn button operate at any position of the ignition switch, including OFF.

BACK-UP ALARM. Electrically operated alarm module located at rear of vehicle behind radiator grille. Sounds distinctive warning whenever transmission direction selector is in reverse (R) position. Ignition switch must be turned to ON position before back-up alarm will sound.

c. Switches and Warning Indicators.



IGNITION SWITCH. Four position key switch controls power to all vehicle electrical circuits except horn.

START SWITCH. Spring loaded pushbutton switch. When depressed, starter motor cranks to start engine. Ignition switch must be in ON position before START switch will crank starter motor.

WARNING INDICATORS. Five light assemblies; each contains incandescent lamp and red lens. With engine running, warning indicator illuminates to indicate malfunction (see chapter 2).

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