

OPERATION AND MAINTENANCE MANUAL



INTERNATIONAL

2 $\frac{1}{2}$ -TON 6x6 TRUCK MODEL M-5H-6

**Built to the Specifications of
UNITED STATES MARINE CORPS**

**(Contract NOm. 43833)
and
(United States Navy, Contract NXSA 57539)**

**INTERNATIONAL HARVESTER COMPANY
180 NORTH MICHIGAN AVE. CHICAGO 1, ILLINOIS, U.S.A.**

OPERATION & MAINTENANCE MANUAL

INTERNATIONAL MODEL M-5H-6 6 x 6 TRUCK

This manual is for the use of those who drive and service International M-5H-6 trucks built to the specifications of the United States Marine Corps and United States Navy. For convenience, driving instructions and other general data are at the front of the manual, and are followed by servicing and maintenance sections arranged according to functional groups and numbered consecutively, as shown on the right-hand edge of this sheet. In addition, where advisable, a section is prefaced by specifications and an index of the information in that section.

The first page of each section has a numbered black tab which lines up with the corresponding section name and number on the right-hand edge of this sheet. The black tabs are quickly located by bending this book back.

INTERNATIONAL HARVESTER COMPANY

180 NORTH MICHIGAN AVE.

CHICAGO 1, ILLINOIS, U.S.A.



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Contract Number	Wheel base (Inches)	Type of Body
U. S. Marine Corps NOM 43833	169	Tractor.....
	149	Dump (Anthony).....
	149	Tractor.....
	149	Chassis Only.....
	169	Chassis Only.....
U. S. Navy NXSA-57539	169	Cargo (Anthony).....
	169	Chassis Only.....
	149	Tractor.....
	149	Chassis (Refueler).....



A-7193

Fig. 1, M-5H-6 Cargo Dump Truck, $\frac{3}{4}$ Left side view



A-7194

Fig. 2, M-5H-6 Cargo Dump, $\frac{3}{4}$ Right side view



A-7467

Fig. 3, M-5H-6 Oil Field Type Body With Rear Mounted Winch, $\frac{3}{4}$ Front Right View



A-7466

Fig. 4, M-5H-6 Oil Field Type Body With Rear Mounted Winch, $\frac{3}{4}$ Left Rear View

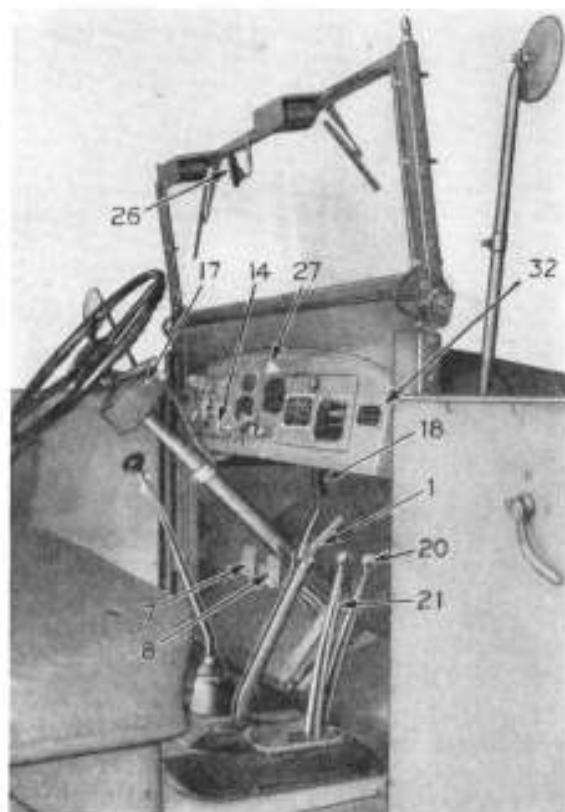


Fig. 1

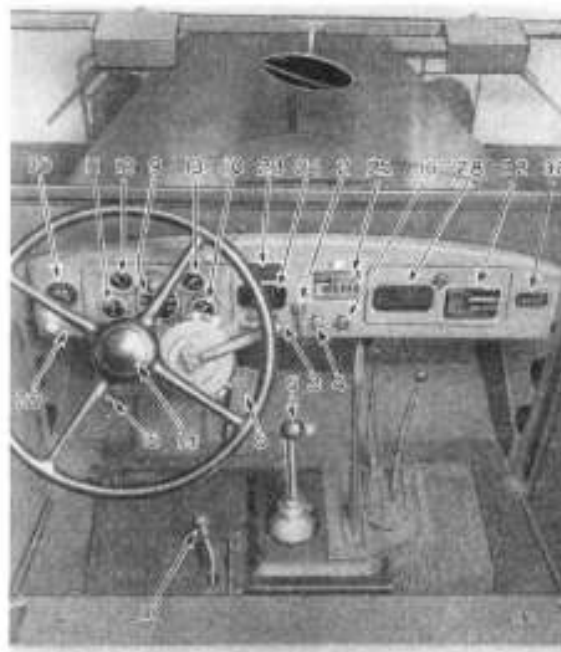


Fig. 2

Instruments

To operate this truck properly it is essential that the driver be thoroughly familiar with the various controls and how to use them. Figures 1 and 2 show the controls and the following paragraphs are numbered to correspond with the numbers in the two pictures.

1. (Fig. 1) **Hand Brake Lever.** Whenever the truck is parked this lever should be pulled to the rear as far as possible. The lever operates an external-contracting type of brake on the propeller shaft to the forward rear axle. Before moving the truck, release the latch on the brake and move the lever forward.

2. (Fig. 2) **Ignition Switch.** Operated by a key. Turning the key to the right turns the switch on. Turning the key to the left turns the switch off. Three ignition switch keys are supplied with truck.

3. (Fig. 2) **Choke Control Button.** Helps start the engine when the engine is cold. Pulling out the button shuts off air to the carburetor,

giving a rich mixture. Push the button in when the engine starts. Do not use the choke if the engine is warm.

4. (Fig. 2) **Throttle Control Button.** Pulling this button opens the throttle. It provides accurate control of the amount of fuel necessary for starting the engine.

5. (Fig. 2) **Accelerator Pedal.** Controls the road speed of the truck by regulating the amount of fuel passing through the carburetor.

6. (Fig. 2) **Transmission Gearshift Lever.** Is used to select the various gear ratios provided in the transmission. There are five forward speeds and one reverse speed. Use of the gears is described on pages 3 and 4.

7. (Fig. 1) **Clutch Pedal.**

The **clutch pedal** is used to disengage the engine from the transmission when shifting gears. Do not release the clutch pedal quickly when the



truck is in gear. Do not drive with your foot resting on the pedal, as doing so causes unnecessary wear on the throwout bearing and excessive wear on the clutch facings. Do not coast vehicle with clutch disengaged and with transmission in gear, particularly in the lower gear ranges.

8. (Fig. 1) **Brake Pedal.** Pressing on this pedal applies the hydraulic brakes on all six wheels. Do not drive with your foot on the pedal as this partially applies the brakes and results in rapid wear of the brake linings.

9. (Fig. 2) **Speedometer.** The dial indicates the speed in miles per hour at which the truck is being driven. The indicator at the bottom (odometer) records the total miles the truck has been driven.

10. (Fig. 2) **Water Temperature Gauge.** Indicates in degrees Fahrenheit the temperature of the liquid in the cooling system. The normal operating temperature is between 160 and 180 degrees. If the temperature approaches the boiling point (212° F.), immediately investigate the cause, as continuing to operate an overheated engine may result in serious damage.

11. (Fig. 2) **Ammeter.** Indicates the battery is being charged or discharged. It is controlled by the voltage regulator. When the indicator is between 0 and 30 + (amperes) the battery is charging. When indicator is between 0 and 30— (amperes) the battery is being discharged. If the ammeter shows discharge continuously the cause should be investigated in order to avoid completely discharging the battery.

12. (Fig. 2) **Fuel Gauge.** Registers the amount of fuel in the tank when the ignition switch is turned on. "F" indicates full, and "E" indicates empty.

13. (Fig. 2) **Oil Pressure Gauge.** Indicates the pounds of pressure of the oil circulating through the engine. The pressure on the gauge at engine idling speed (200 to 300 R.P.M.) should read between 10 to 15 pounds, when the oil is hot. Maximum pressure is set at the factory to read between 40 to 45 pounds (at 1500 to 1800 R.P.M.). The oil pressure is controlled by a relief valve, but is not adjustable. If the indicator drops to zero, stop the engine immediately and investigate the cause of the oil pressure failure.

14. (Fig. 1) **Lighting Switch.** Controls head lamps, front and rear "black-out" lamps, stop lights and tail lamps. When the button is pulled out part way (without depressing a latch pin on the under side of the button), the "black-out" lamps (front and rear) are lighted. When the latch pin is depressed and the switch button is pulled farther out, the head lamps, tail lamp and stop light operate. Pulling the button all the way out permits only the stop lights to operate. For further details, see Section 6, page 16.

15. (Fig. 2) **Dimmer Switch.** Operated by the left foot. Switches the head lamp beams from the "traffic" or lower beam to the "country" or upper beam after the headlights are turned on. Use the "traffic" or lower beam when approaching and passing other vehicles at night on country roads.

16. (Fig. 2) **Panel Light Switch.** A push-and-pull switch for lighting the instrument panel lamp.

17. (Fig. 1) **Electric Trailer Brake Control.**

18. (Fig. 1) **Cowl Ventilator Handle.** Opens and closes the cowl ventilator.

19. (Fig. 2) **Horn.** A good driver uses the horn only in emergencies.

20. (Fig. 1) **Transfer Case Shift Lever.** Placing lever in forward position places the transfer case in high range. When pulled toward the rear the lever places the gears in low range. Mid-position between the two extremes is neutral.

21. (Fig. 1) **Front Axle Shifter Lever.** In the forward position—engages the front axle drive. In the rearward position—disengages the front axle.

22. (Fig. 2) **Name Plate.** This plate gives technical data and chassis serial number.

23. (Fig. 2) **Cooling System Caution Plate.** This plate advises proper cooling system draining procedure. (Item 23 on Cargo, Dump and Refueler Item 32 on Wrecker.)

24. (Fig. 2) **Shifting Diagram Plate.** This plate gives the shifting diagram of transmission and transfer case and front axle.

25. (Fig. 2) **Maximum Road Speed Caution Plate.** This plate lists maximum road speeds for the operation of this vehicle.

26. (Fig. 1) **Rear-Vision Mirror.** Adjustable on a swivel ball to suit the driver's comfort. Another rear-vision mirror, mounted on the right-hand door hinge, outside the cab, is especially useful when the truck body or load obstructs the view.

27. (Fig. 1) **Windshield Wiper Control Button.**

28. (Fig. 2) **Winch Caution Plate.**

29. (Fig. 2) **Starter Switch Button.**

30. (Fig. 2) **Electric Brake Load Control.**

31. (Fig. 2) **Winch Operating Lever.**

32. (Fig. 2) **Cooling Caution Plate.** (Wrecker Unit only).



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Driving Instructions

MAXIMUM PERMISSIBLE ROAD SPEEDS IN THE FOLLOWING GEAR POSITIONS		
TRANSMISSION IN	TRANSFER CASE IN	
	HIGH RANGE	LOW RANGE
OVER DRIVE	46	21
DIRECT	38	17
THIRD	20	9
SECOND	11	5
FIRST	5	2
REVERSE	5	2
BASED ON 2650 R.P.M. MAXIMUM SPEED 7.16-1 AXLE RATIO & 8.25-20 TIRES		

Fig. 3, Reproduction of typical plate in driver's compartment which shows maximum road speeds of this truck in the various transmission gears.

To Start Engine

1. Set the hand brake lever (pull back).
2. Put the transmission gear shifting lever into "neutral" position.
3. Pull the throttle button open or depress the accelerator pedal sufficiently to "crack" the throttle; the engine will then run at "fast idle" speed and the throttle button must be gradually pushed in until the proper idling speed is obtained.
4. Insert the ignition switch key and turn it to "ON" position.
5. Pull the choke button part way out. Do not use the choke when the engine is warm. In extremely cold weather, the choke button may be pulled out the full distance but should immediately be pushed part way in when the engine starts.
6. Push the clutch pedal forward and keep it there until the engine is running.
7. When the engine starts, push the choke button in to its best running position, and then all the way in as soon as the engine is warm enough to permit it.

To Start Truck

1. Push the clutch pedal forward to disengage the clutch.
2. Move the transfer case speed shift lever from "neutral" (N) to "high" (H) or "low" (L) speed. (See Figures 4 and 5.)

NOTE: If you shift to "low" (L) position of the transfer case gears, you must first engage the front axle by moving the front axle shifting lever forward to "IN" position, as the transfer case can be operated only in "high" (H) speed when the front axle is disengaged. (See instructions under heading "To Engage or Disengage Front Axle".)

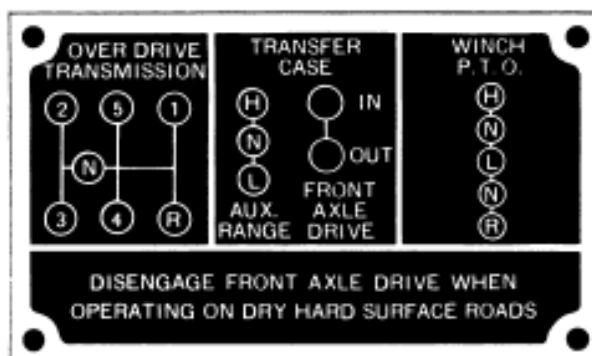


Fig. 4, Typical shifting diagrams for transmission, transfer case, and power take-off for operating winch. A plate reproducing these diagrams is mounted in the driver's compartment.

3. Move the transmission gearshift lever from neutral into either first or second gear position, as the conditions require.
4. Release the hand brake lever.
5. Depress the accelerator pedal to speed up the engine sufficiently to pick up the load. Engage the clutch smoothly and further depress the accelerator pedal to prevent the engine from stalling when the truck starts forward.
6. As the truck speed increases, release the accelerator and at the same time push the clutch pedal forward. Then move the gearshift lever through the neutral position to the next higher transmission gear. Engage the clutch and step on the accelerator as described above. Repeat this procedure as you shift from third to fourth speed, and finally into fifth.

To Engage or Disengage Front Axle

When the front axle is engaged, this truck can be operated with the transfer case gears in either "high" (H) or "low" (L) speed position, but when the front axle is disengaged, the truck can be operated only with the transfer case gears in "high" speed. This is because the transfer case is so designed that it cannot be shifted into low speed range unless the front axle is engaged. This distributes the additional transfer case reduction between three axles instead of two, thereby preventing the possibility of overloading the gears of the two rear axles.

The front axle can be engaged or disengaged at any road speed—and it is not necessary to disengage the clutch when engaging or disengaging the front axle. Usually it is easier to engage or disengage the front axle when the truck is in motion.

To engage the front axle, first move the transfer case speed shift lever into "neutral" (N) position and then move the front axle shifting lever forward from disengaged (OUT) position to engaged (IN)

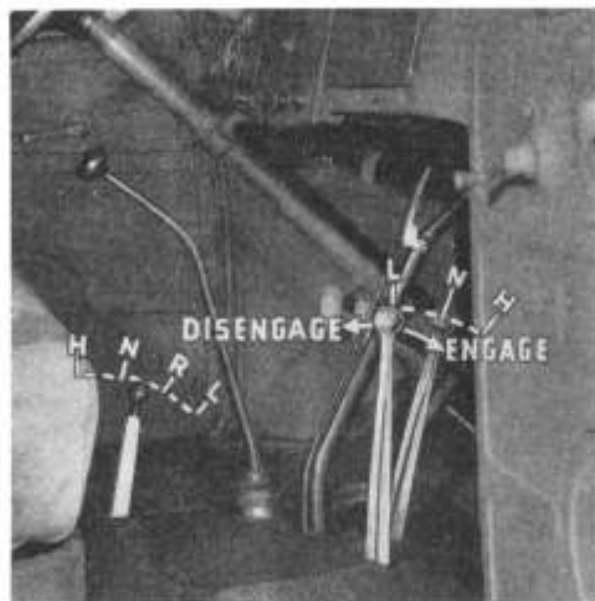


Fig. 5. Driver's compartment, showing, at left, power take-off lever for operating winch, and, at right, transfer case levers. There are four positions of the power take-off lever, as indicated: (H) "high" speed, (N) "neutral," (R) "reverse," and (L) "low" speed. Moving the right-hand transfer case lever forward engages the front axle; pulling it back disengages the front axle. The left-hand transfer case lever controls the speed ratio of the transfer case: (L) indicates "low" speed position, (N) "neutral," and (H) "high" speed. Do not use the right-hand lever for a foot-rest when the front axle is disengaged, as this will cause the lever to move forward into engaged position of the front axle.

position. Then move the transfer case speed shift lever into "high" or "low" speed range as desired.

To disengage the front axle, move the transfer case speed shift lever into "neutral" (N) position, and then move the front axle shifting lever back to disengaged (OUT) position. Then move the transfer case speed shift lever into "high" or "low" speed range as desired.

To Shift from High to Low Speed in Transfer Case

"High" speed of the transfer case gears is preferable for most driving on hard-surface roads. The "low" speed, however, should be used when driving over extreme grades or uneven terrain where high traction is essential.

The shift from "high" to "low" speed of the transfer case should be made only when the truck is operating at a low road speed or when it is at a standstill. The front axle must be engaged before this shift can be made. If the shift is made while the truck is moving, it is necessary to "double-clutch" as follows, observing the maximum road speeds for shifting, as shown in Figure 3.

1. Push the clutch pedal down and move the transfer case speed shift lever to "neutral" (N) position.
2. Release the clutch and step on the accelerator to increase the engine speed to approximately

twice that required for the speed of the truck when the transfer case is in the high speed range.

3. Disengage the clutch again and (without applying excessive pressure) move the transfer case speed shift lever forward to "low" (L) speed position. Then engage the clutch and depress the accelerator sufficiently to pick up the load.

With practice, you will be able to "double-clutch" in the above manner quickly and smoothly—without clashing gears.

To Shift from Low to High Speed in Transfer Case

Shifting from "low" to "high" speed of the transfer case can be done at any time, regardless of the truck speed.

1. Release the accelerator, step on the clutch pedal, and move the transfer case speed shift lever to "high" (H) speed position.
2. Depress the accelerator.

To Shift to Lower Transmission Speed

Probably the most distinguishing characteristic of a good truck driver is the way he shifts gears from a high to a lower transmission speed.

A metal plate showing the maximum obtainable road speeds in the various gears is located on the instrument panel of this truck (see Figure 3), and will be helpful in determining the maximum road speed at which a shift from a higher to a lower gear can be made. These maximum road speeds are as follows:

	Maximum Road Speed (Miles per Hour) with Transfer Case in	
	High	Low
5th Speed (Overdrive)	46	21
4th Speed (Direct)	38	17
3rd Speed	20	9
2nd Speed	11	5
1st Speed (Low)	5	2

For example, in shifting from fifth speed to fourth, the maximum road speed at which this change can be made is at approximately 38 miles per hour, when the transfer case is in the high speed range, since that is the maximum available road speed for fourth gear.

Gear changes from a higher to a lower gear at the above road speeds should be made as follows:

1. Ease off on accelerator and disengage clutch.
2. Move gearshift lever to neutral position and engage clutch. At the same time, accelerate engine to governed speed.
3. Disengage clutch, ease off on accelerator, and move gearshift lever to the next lower transmission gear position.
4. Engage clutch and depress accelerator sufficiently to pick up load.

The above procedure, known as "double-clutching," is necessary to bring about an equalization or synchronization of engine speed and transmission gear speed and thereby prevent clashing the gears.