MAINTENANCE MANUAL

CHEVROLET

1½-TON 4 x 4 TRUCK

(CONVENTIONAL MODELS)

PRICE $1.00

CHEVROLET MOTOR DIVISION
GENERAL MOTORS SALES CORPORATION
GENERAL MOTORS BUILDING • DETROIT, MICHIGAN

MAINTENANCE MANUAL

CHEVROLET 1½ TON 4 x 4 TRUCKS

FOREWORD

This manual contains information covering the Operation, Maintenance and Repair of Chevrolet 1½ Ton — 4 x 4 Trucks.

For the convenience of the user it is arranged in sections. All information pertaining to a given unit will be found in the section devoted to that unit. The manual is written for the guidance of the operator and repair men who are responsible for the vehicle. Keep it handy and refer to it often.

FIRST EDITION

CHEVROLET MOTOR DIVISION
General Motors Sales Corporation
DETROIT, MICHIGAN

SECTION INDEX

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CHEVROLET 1½ TON—4x4 TRUCK

SECTION 0

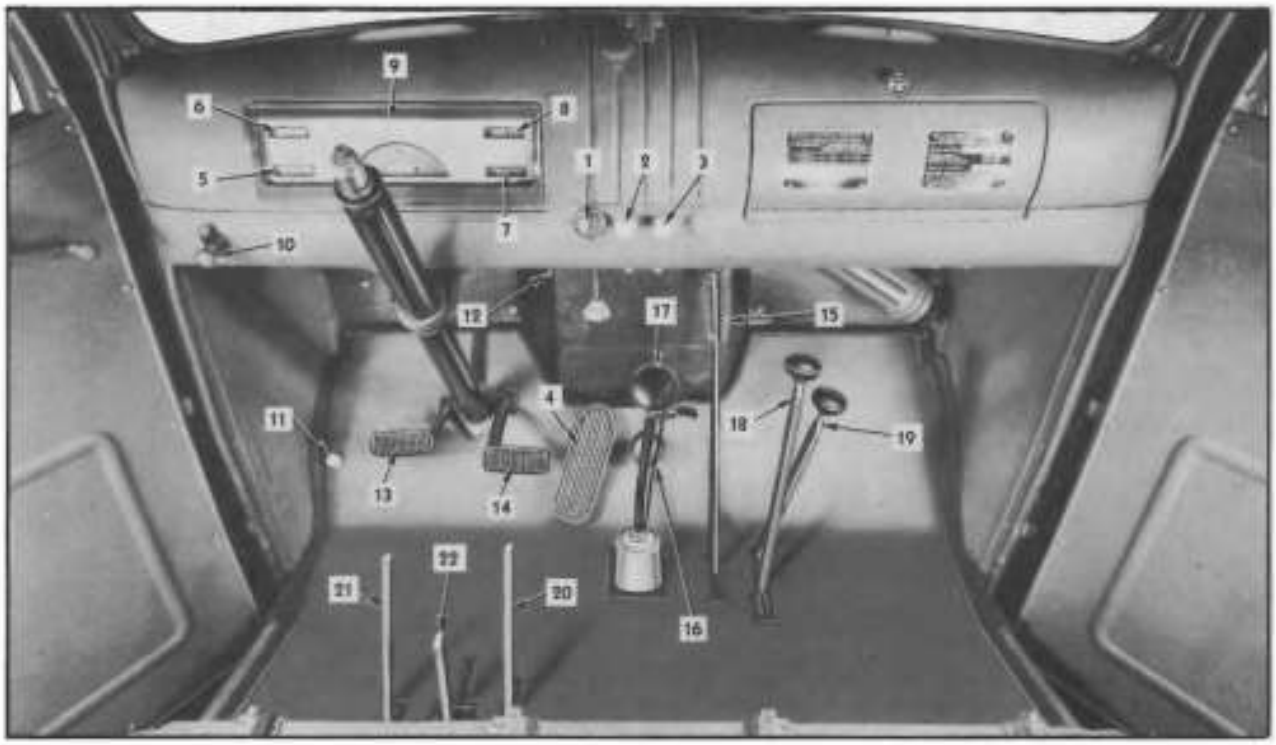


Fig. 1—Interior of cab, showing controls and instruments.

1—Ignition Switch
2—Hand Throttle
3—Carburetor Choke
4—Accelerator
5—Fuel Gauge
6—Temperature Indicator
7—Oil Gauge
8—Ammeter
9—Speedometer
10—Lighting Switch
11—Headlight Dimmer Switch
12—Instrument Light Switch
13—Clutch Pedal
14—Brake Pedal
15—Hand Brake Lever
16—Starter Switch Pedal
17—Transmission Gearshift Lever
18—Transfer Case Shifting Lever
19—Front Axle Control Lever
20—Hoist Valve Control Lever
21—Hoist Power Take-Off Lever
22—Winch Control Lever

DRIVER INSTRUCTIONS

It is of definite importance that the driver of one of these vehicles be thoroughly familiar with the various controls and their proper use. Even the experienced driver should study the controls, as there are a number which are not ordinarily found on standard vehicles.

Figs. 1 and 2 illustrate the controls, instruments and instruction plates; in the following paragraphs, we will refer to these illustrations by the key number of the control or instrument being discussed, so the reader may easily follow the instructions.

IGNITION SWITCH No. 1 is operated by a key, turning the switch to the right closes the ignition, turning the switch to the left turns the switch off.

HAND THROTTLE No. 2 is located on the instrument panel to the right of the ignition switch, pulling this button opens the throttle. This control may be used when starting or, if it is desired, to run the engine at a constant speed.

CARBURETOR CHOKE No. 3 is used when starting a cold engine. Pulling out this control button shuts off the air to the carburetor, providing a rich mixture. The choke button should be pushed in when the engine starts. If the engine is warm, the use of the choke should be unnecessary.

ACCELERATOR No. 4 is used in driving to control the speed of the engine.

FUEL GAUGE No. 5 registers the amount of fuel in the tank when the ignition switch is turned on. The dial has graduations for empty, half full and full.

TEMPERATURE INDICATOR No. 6 indicates the temperature of the liquid in the cooling system at all times. The driver should watch this instrument closely. A red band at the right of the dial is used to indicate excessive temperature. Whenever the indicator hand enters this band, the driver should immediately investigate the cause of the excessive temperature. Continuing to drive an overheated engine may cause permanent damage to its working parts.

OIL GAUGE No. 7 indicates the oil pressure. The dial has three divisions showing 0, 15 and 30. The driver should watch this instrument closely and, if the indicator hand drops to zero, the engine should be stopped immediately and the cause of oil pressure failure investigated and corrected before continuing to run the engine.

AMMETER No. 8 is used to indicate whether the battery is being charged or discharged when the vehicle is in operation. If the ammeter shows dis-

charge at all times, the cause should be investigated and corrected, otherwise the battery will be discharged.

SPEEDOMETER No. 9 indicates the speed at which the vehicle is being driven. The odometer registers the total number of miles the vehicle has been driven.

LIGHTING SWITCH No. 10 controls the lighting circuits. When the control button is pulled out to the first position, it turns on the black-out headlights and tail light and, in addition, this position permits turning on the black-out stop light when the brakes are applied.

NOTE—The regular headlights cannot be turned on accidentally. To turn on the regular headlights, depress the black-out button on the left of the switch and pull the control button out to the second position. In this position, circuits are established for the regular tail and stop lights.

HEADLIGHT DIMMER SWITCH No. 11 is a foot switch used to select the headlight beam (upper or lower) desired after the headlights are turned on, by pressing down on the switch button with the foot. When the upper beam is turned on, the headlight beam indicator is automatically turned on. This is a small red light located below the 50-mile graduation on the speedometer scale. When the lower beam is in use, the beam indicator is turned off. Always use the lower beam when passing approaching vehicles. This is an important highway safety rule in night driving.

INSTRUMENT LIGHT SWITCH No. 12 is used to turn on the instrument and ignition switch light. Moving the switch handle to the right turns on the ignition switch light, while moving it to the left turns on the instrument lights.

NOTE—These lights will not operate with the light switch in the black-out position.

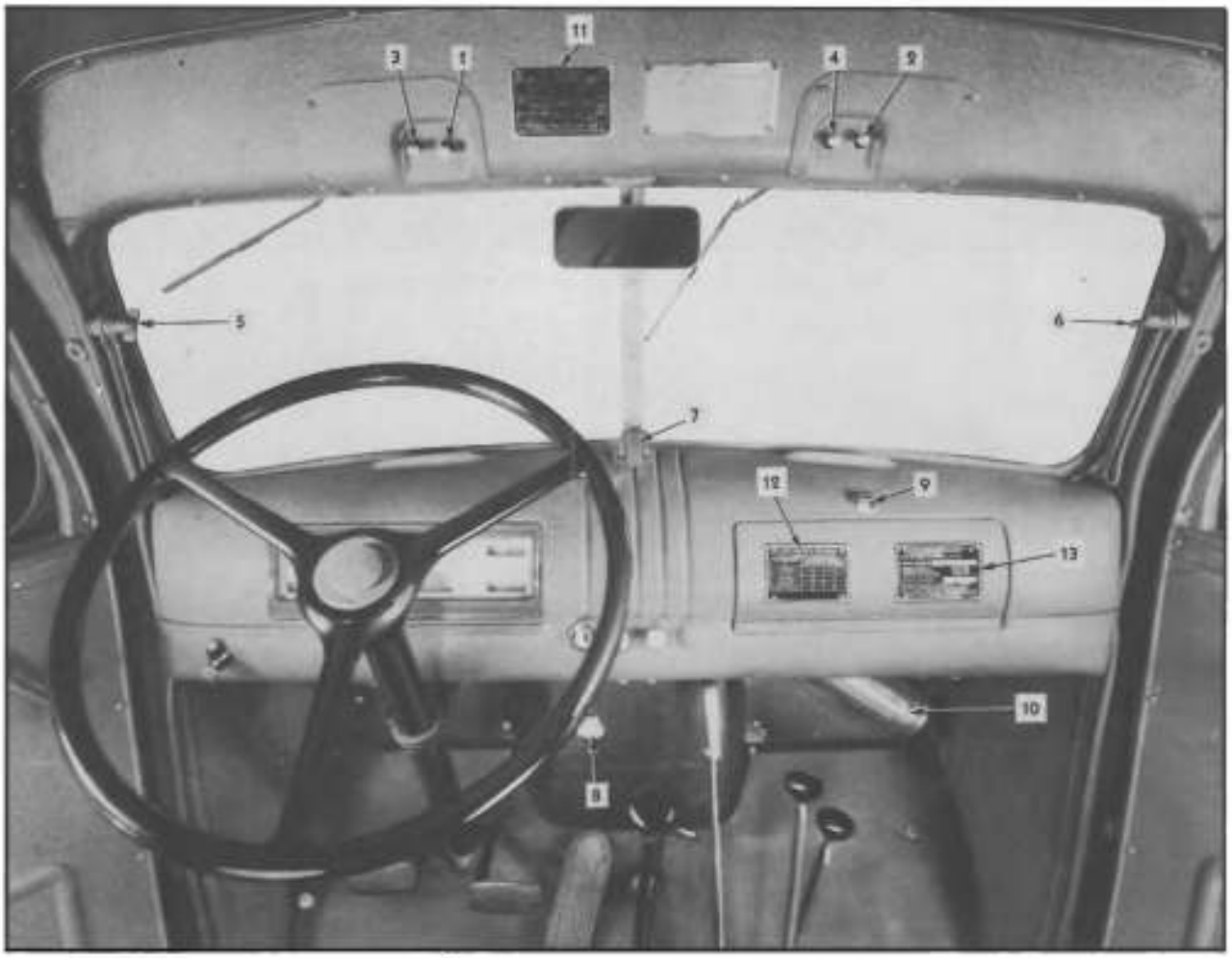


Fig. 2—Interior of cab, showing Driver Instruction plates, etc.

1 and 2—Windshield Wiper Switch
3 and 4—Windshield Wiper Speed Control Buttons
5 and 6—Windshield Quadrant Adjusting Screws
7—Windshield Center Lock
8—Ventilator Control Lever
9—Glove Compartment Lock
10—Fire Extinguisher
11—Shifting Diagram Plate
12—Maximum Permissible Road Speeds Plate
13—Serial Number and Load Data Plate

CLUTCH PEDAL No. 13 is used to disengage the engine from the transmission when shifting gears. The clutch pedal should never be released quickly when the vehicle is in gear. Driving with foot on pedal will cause wear of clutch facings and throw-out bearing. There should be one inch of free travel of the clutch pedal before the clutch starts to disengage.

BRAKE PEDAL No. 14 pressing on the brake pedal applies the Hydraulic brakes at all four wheels. Avoid driving with foot on brake pedal, as brakes will be partially applied and cause rapid wear of lining.

HAND BRAKE LEVER No. 15 operates the brakes on the rear wheels mechanically. Whenever the vehicle is parked, the lever should be pulled toward the rear as far as possible. Before moving the vehicle, lever should be in released position.

STARTER SWITCH PEDAL No. 16 pressing down on pedal with foot engages the starter and flywheel gears and also closes the starter switch, completing the electrical circuit between battery and starter. Rotation of starter armature through the gears cranks the engine. When the engine starts, foot should be removed from pedal immediately.

TRANSMISSION GEARSHIFT LEVER No. 17 is used to select various gear ratios provided in the transmission. There are four forward speeds and one reverse. Reverse gear can only be engaged when latch on gearshift lever is raised. Lever positions for various gears will be discussed under instruction plates.

TRANSFER CASE SHIFTING LEVER No. 18 is used to select either "high," "low" or "neutral" speed ranges in the transfer case. The shifting lever is linked to the front axle control lever No. 19 in such a way that it is impossible to shift into the low speed in the transfer case without the drive to the front axle being engaged.

FRONT AXLE CONTROL LEVER No. 19 permits engaging or disengaging the front axle drive through the transfer case. When the lever is pushed forward, the front drive is engaged and when it is pulled toward the rear, it is disengaged.

NOTE—The front axle drive should be disengaged when operating on hard-surfaced roads.

THE HOIST VALVE CONTROL LEVER No. 20 is used to control the valve in the hydraulic hoist. When hoist is not being used, the lever should be pulled back toward the seat.

THE HOIST POWER TAKE-OFF LEVER No. 21 is used in connection with the hoist valve lever to operate the hydraulic hoist. When this lever is pulled back toward the seat, it is in neutral position.

WINCH CONTROL LEVER No. 22 is the lever which controls the power winch through the power take-off attached to the transmission. When the winch is not in use, a hinged plate locks the winch control lever in the neutral position.

WINDSHIELD WIPER SWITCH Nos. 1 and 2, Fig. 2, are used to turn the windshield wiper on and off.

WINDSHIELD WIPER SPEED CONTROL BUTTONS Nos. 3 and 4, Fig. 2, are used to control the speed of the windshield wiper motors. Turning the buttons to the left increases the speed, and turning them to the right reduces the speed.

WINDSHIELD QUADRANT ADJUSTING SCREWS Nos. 5 and 6, Fig. 2, are used to lock the windshield at various degrees of opening.

WINDSHIELD CENTER LOCK No. 7, Fig. 2, is a small spring clamp and lever which hooks over catch on windshield frame at the center, pulling it downward locks the windshield in the fully closed position.

VENTILATOR CONTROL LEVER No. 8, Fig. 2, is used to open and close the cowl ventilator.

GLOVE COMPARTMENT LOCK No. 9, Fig. 2, pressing downward on the lock cylinder opens the glove compartment door.

FIRE EXTINGUISHER No. 10, Fig. 2, is mounted on the cowl panel with a positive lock. This lock consists of a spring type clamp which must be opened before fire extinguisher can be removed. After clamp has been sprung open, fire extinguisher can be pulled off the mounting bracket and operated by turning handle to left and then working it up and down like a pump. Best results will be obtained by directing stream of liquid at base of flame unless used on burning liquids — for which stream of liquid should be directed against inside of liquid container above surface of liquid.

Shifting Diagram Plates

Shifting Diagram Plate No. 11, Fig. 2, gives the driver instructions on the various shifting lever positions.

There are four different shifting diagram plates on the series of trucks covered by this manual. These plates differ depending on the special equipment furnished with the individual truck.

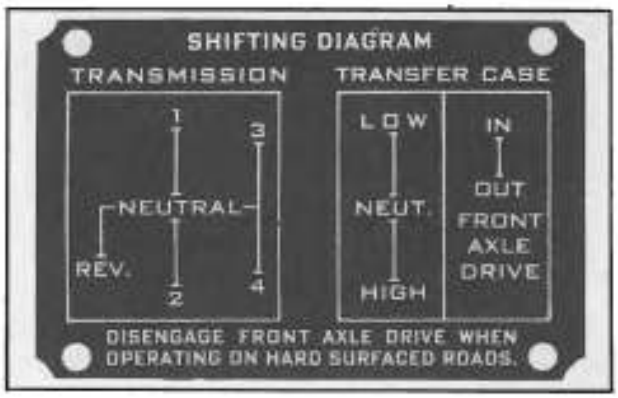


Fig. 3—Shifting diagram plate — four speed transmission and transfer case.

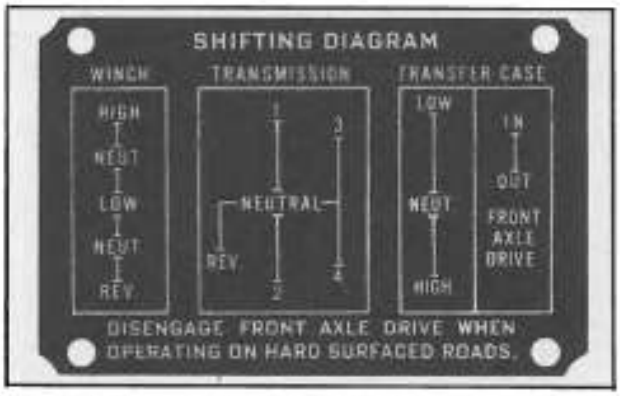


Fig. 4—Shifting diagram plate — four speed transmission, transfer case and winch.

Fig. 3 illustrates the shifting diagram plate for trucks having four speed transmission and transfer case without special equipment.

Fig. 4 illustrates the shifting diagram plate for trucks having a winch in addition to the four speed transmission and transfer case.

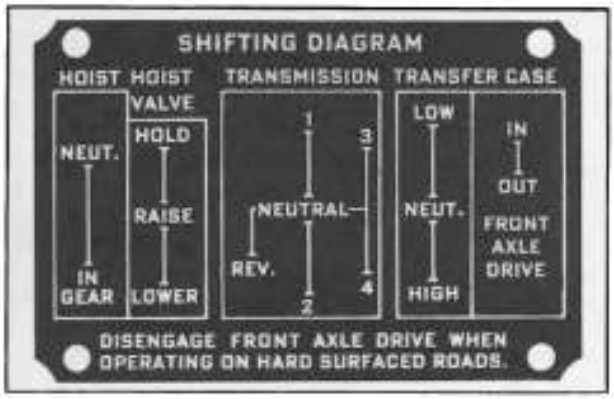


Fig. 5—Shifting diagram plate — four speed transmission, transfer case and hoist plate.

Fig. 5 illustrates the shifting diagram plate for trucks having a hoist in addition to the four speed transmission and transfer case.

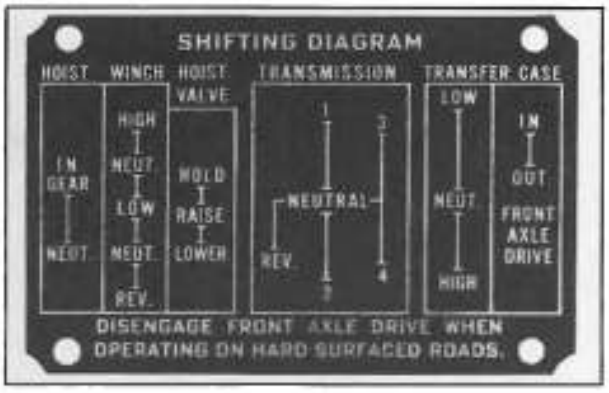
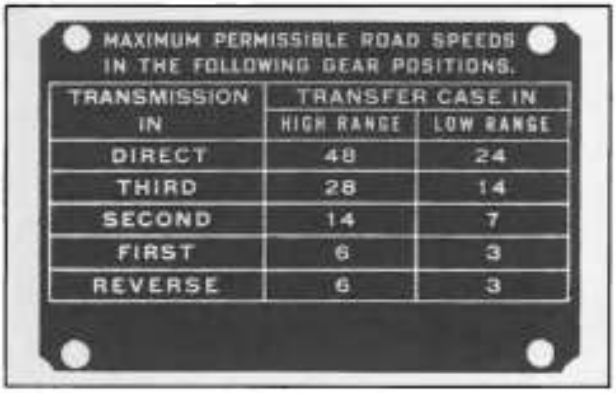


Fig. 6—Shifting diagram plate — four speed transmission, transfer case, winch and hoist.

Fig. 6 illustrates the shifting diagram for trucks having both a winch and hoist in addition to the four speed transmission and transfer case.

Maximum Permissible Road Speeds Plate No. 12, Fig. 2 — This plate gives the maximum permissible speeds at which the vehicle shall be driven in the various gear positions with the transfer case in high or low gear. Fig. 7 shows an enlarged view of this plate.



TRANSMISSION IN	TRANSFER CASE IN	
	HIGH RANGE	LOW RANGE
DIRECT	48	24
THIRD	28	14
SECOND	14	7
FIRST	6	3
REVERSE	6	3

Fig. 7—Maximum permissible road speeds plate.

Serial Number and Load Data Plate No. 13, Fig. 2 — This plate gives the serial number of the truck and the load data. The gross weight and maximum pay load will vary depending on the body type and equipment on the truck. Avoid overloading. Fig. 8 illustrates a sample of the serial number and load data plate.

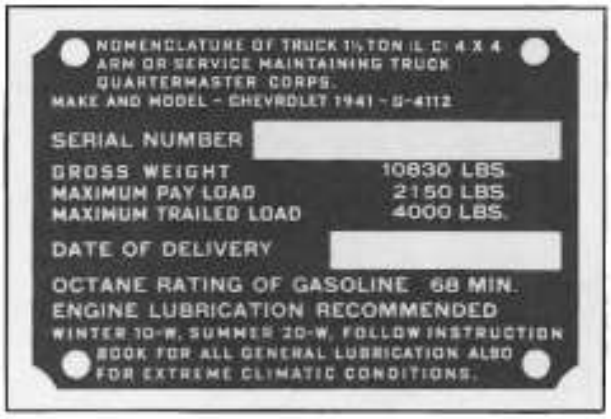


Fig. 8—Serial number and load data plate.

OPERATING INSTRUCTIONS

Each day the following inspections should be made before starting the truck:

1. Check the oil level on the dip stick. If oil is down to the low mark, add oil.
2. Check the water in the radiator, and fill if necessary. Check hose connections for leaks. Check fan belt for looseness.
3. Note condition of tires and see that they are properly inflated.

Starting the Engine

1. Transmission gearshift lever and transfer case shift lever must be in neutral position. See shifting diagram plate.
2. Pull out hand throttle about ⅜ inch. This is not necessary if engine is warm.
3. Pull out on choke button to obtain proper fuel and air mixture for starting. If the engine is warm, choking will be unnecessary.
4. Insert key in ignition switch and turn switch to "On" position.
5. Step on starter pedal to crank the engine. Release pedal as soon as engine starts.
6. Push in on choke button and adjust hand throttle to obtain even idling. When engine is cold, it should be run several minutes before attempting to move the vehicle.

Starting the Truck

1. Push clutch pedal downward to disengage the clutch.
2. Shift transfer lever into either "high" or "low" speed position (see Instruction Plate).

3. Move transmission gearshift lever to the left and forward into first gear position.
4. Release the hand brake lever.
5. Step down on accelerator pedal to speed up the engine. Release clutch pedal slowly and push accelerator pedal down as necessary to pick up the load and prevent stalling the engine as the truck starts to move.
6. As truck speed increases, release accelerator pedal, depress the clutch pedal, move the gearshift lever to neutral and then to the next higher speed. Step down on accelerator and release clutch as explained above. Repeat this operation until transmission is in high gear.

Shifting Gears in Transfer Case

Instructions for shifting gears in transfer case and disengagement of the front axle drive are as follows:

1. The transfer case may be operated in either "high" or "low" speed range when the front axle is engaged.
2. The transfer case can only be operated in "high" (direct drive) when the front axle is disengaged.
3. To engage the front axle, first, shift the transfer case into neutral, then engage the front axle by moving front axle shift lever forward.
4. To disengage the front axle, shift the transfer case into neutral, then disengage the front axle by moving front axle shift lever toward the rear.

Shift from High to Low Speed

This shift should not be attempted except when the vehicle is being operated at low speeds or at a standstill. Front axle must be engaged for this shift.

1. Depress the clutch pedal and move transfer case shift lever to neutral position.
2. Release clutch pedal and accelerate engine to approximately twice that of vehicle speed.
3. Depress clutch pedal again and move shift lever forward (without applying excessive pressure) into low speed position. Then release clutch and accelerate engine.

This method of shifting is termed "Double-Clutching." A little practice will enable driver to make shift smoothly and efficiently.

Shift from Low to High Speed

This shift may be accomplished at any time, regardless of vehicle speed.

1. Release accelerator, depress clutch pedal and move shift lever to neutral position.
2. Release clutch pedal and accelerate engine to synchronize engine speed with that of vehicle.
3. Depress clutch pedal and move shift lever toward rear into high speed position.

Shifting to Lower Speed in Transmission

The transmission should always be shifted to the next lower speed before engine begins to labor or before vehicle speed is reduced appreciably. Shifting to lower speed is accomplished as follows:

1. Depress the clutch pedal quickly, maintaining the same pressure on accelerator. Move gearshift lever to neutral and at the same instant release the clutch.
2. Again depress the clutch pedal and move the gearshift lever to the next lower speed. Release the clutch slowly and at the same time accelerate the engine speed to synchronize it. with that of the vehicle.

It is advisable to use the same transmission gear going downhill as would be required to climb the same hill. This is a safety rule followed by all good drivers in hilly territory.

Shifting into Reverse

Before attempting to shift into reverse, the truck must be brought to a complete stop.

1. Push clutch pedal downward to disengage clutch.
2. Raise latch on gearshift lever and move lever to left as far as possible, then toward the rear — see Shifting Diagram.
3. Release clutch and accelerate the engine in the same manner as previously explained under the heading "Starting the Truck."

Stopping the Truck

1. Remove foot from accelerator pedal and apply brakes by pressing down on foot pedal.
2. When speed of truck has been reduced to idling speed of engine, disengage the clutch and move transmission gearshift lever into neutral position.
3. When truck has come to a complete stop, release clutch pedal and apply hand brake.

GENERAL LUBRICATION

Lubrication of an automobile is important to prevent damage to moving parts due to friction, heat or foreign material. As all moving parts are not subjected to the same type of operating conditions the lubricant to be used is that which most nearly meets the requirements of the part involved. In some places excessive heat or cold is the problem to overcome, in others it is extreme pressure, water, sand or grit. The type of operating surface must also be taken into consideration as certain parts rotate or oscillate on bronze bushings, roller bearings, ball bearings or cast iron bearings. Each of the above conditions or constructions make necessary the application of a specialized lubricant.

Lubricants are much cheaper than repair bills and should be applied regularly to secure a maximum of useful service from a truck. Consequently, it is of equal importance that not only the proper grade of lubricant be used but that it be applied in accordance with a definite schedule.

The chart at the end of this section should be referred to for instructions on the mileage of application and the grade and quantity of lubricant required for all parts of the automobile. A more detailed account of certain phases of lubrication is given in the following paragraphs.

ENGINE

Oil Gauge

When starting a cold engine, it will be noted that the oil gauge on the instrument panel will register a high oil pressure. As the engine warms up, the pressure will drop until it reaches a point where changes to higher speeds will raise the pressure very little, if at all.

If the oil pressure registers abnormally high after the engine is thoroughly warmed up, an inspection should be made to ascertain if the oil lines and passages are "plugged."

Lubrication

First 500 Miles

Proper selection of the oil to be used will add much to the performance, reliability, economy and long life of an engine.

It is important that the recommended light oils be used in the engine during the "breaking-in" period as they assure ease of starting the engine; prompt flow of a sufficient quantity of oil to the bearings; less friction between moving parts; less wear of moving parts, etc.

The crankcase of the engine, as delivered from the factory, is filled with 10-W oil. This should be left in during the first 500 miles and then the crankcase should be drained (while hot) and refilled to the proper level.

After 500 Miles

After the first 500 miles the crankcase oil should be selected to give the best performance for the climatic and driving conditions under which the truck is being operated.

Climatic Conditions

During the colder months of the year, an oil which will permit easy starting at the lowest atmospheric temperature likely to be encountered should be used.

When the crankcase is drained and refilled, the crankcase oil should be selected not on the basis of the existing temperature at the time of the change, but on the lowest temperature anticipated for the period during which the oil is to be used.

If oil is selected for existing temperatures, starting trouble may be encountered due to slower cranking speeds caused by too heavy an oil.

The viscosity grade of crankcase oil will, therefore, depend upon the climatic conditions under which the truck is operated.

Fall — Winter — Spring

The viscosity grade best suited for use in the engine at the various temperatures is given under reference Note 5 at the end of this section. Use the grade indicated for the lowest temperature expected. Always use the lighter grade oil when in doubt.

10-W oil plus 10% kerosene is recommended only for those territories where the temperature falls below 10 degrees below zero for protracted periods.

Summer

The use of 20-W or SAE 20 oils during the summer months will permit better all around performance than will the heavier body oils, with no appreciable increase in oil consumption.

If SAE 20 or 20-W oil is not available, SAE 30 oil may be used if it is expected that the average prevailing daylight temperature will consistently be above 90° F.

Maintaining Oil Level

The Oil Gauge Rod (Fig. 1) is marked "Full" or "Add Oil." These notations have broad arrows pointing to the level lines.

The oil level should be maintained between the two lines; neither going above the "Full" line nor under the "Add Oil" line.

Check the oil level frequently and add oil when necessary. Always be sure the crankcase is full before starting on a long drive.

Fig. 1—Oil Gauge Rod

When to Change Crankcase Oil

Some oils have been greatly improved, driving conditions have changed, and improvements in en-

gines, such as the crankcase ventilating system, have greatly lengthened the life of good lubricating oils. However, to insure continuation of best performance, low maintenance cost and long engine life, it is necessary to change the crankcase oil whenever it becomes contaminated with harmful foreign materials. Under normal driving conditions draining the crankcase and replacing with fresh oil every 2000 or 3000 miles is recommended. Under the adverse driving conditions described in the following paragraphs, it may become necessary to drain the crankcase oil more frequently.

Driving over dusty roads or through dust storms introduces abrasive material into the engine. Carburetor Air Cleaners decrease the amount of dust that may enter the crankcase. The frequency of draining depends upon severity of dust conditions and no definite draining periods can be recommended.

Short runs in cold weather, such as city driving, do not permit thorough warming up of the engine and water may accumulate in the crankcase from condensation of moisture produced by the burning of the fuel. Water in the crankcase may freeze and interfere with proper oil circulation. It also promotes rusting and may cause clogging of oil screens and passages. Under normal driving conditions this water is removed by the crankcase ventilator. But if water accumulates it should be removed by draining the crankcase as frequently as may be required.

It is always advisable to let the engine reach normal operating temperature before draining the crankcase. The benefit of draining is, to a large extent, lost if the crankcase is drained when the engine is cold as some of the suspended foreign material will cling to the sides of the oil pan and will not drain out readily with the slower moving oil.

Crankcase Dilution

Probably the most serious phase of engine oil deterioration is that of crankcase dilution, which is the thinning of the oil by fuel vapors leaking by the pistons and rings and mixing with the oil.

Leakage of fuel, or fuel vapors, into the oil pan mostly occurs during the "warming-up" period, when the fuel is not thoroughly vaporized and burned.

Automatic Control

The Chevrolet engine is equipped with automatic devices which aid greatly in minimizing the danger of crankcase dilution.

Rapid warming up of the engine is aided by the thermostatic water temperature control, which automatically prevents circulation of the water in the cooling system until it reaches a predetermined temperature.

Thermostatic heat control on the exhaust manifold, during the "warming-up" period, automatically directs the hot exhaust gases against the center of the intake manifold, greatly aiding the proper vaporization of the fuel.

The down-draft carburetor is an aid to easy starting, thereby minimizing the use of the choke. Sparing use of the choke reduces danger of raw, or vaporized, fuel entering the combustion chamber and leaking into the oil reservoir.

An efficient crankcase ventilating system drives off fuel vapors and aids in the evaporization of the raw fuel and water which may find its way into the oil reservoir.

Control by Truck Operator

Ordinarily the above automatic control devices will minimize, or eliminate, the danger of crankcase dilution.

However, there are abnormal conditions of service when the truck operator must aid in the control of crankcase dilution.

Short runs in cold weather, such as city driving, do not permit the thorough warming up of the engine nor the efficient operation of automatic control devices. It is recommended that the oil be changed more often when the truck is subject to this type of operation.

Poor mechanical condition of the engine, such as scored cylinders, poor ring fit, "sloppy" or loose pistons, faulty valves, poor ignition, will increase crankcase dilution. Keep the truck in good mechanical condition.

Poor fuels which contain portions hard to ignite and slow to burn will increase crankcase dilution. Use good fuel.

Water in Crankcase

Serious lubrication troubles may result in cold weather by an accumulation of water in the oil pan. This condition is, as a rule, little understood by the truck operator. To demonstrate the chief cause of water in the oil pan, hold a piece of cold metal near the end of the exhaust pipe of the engine and note the rapid condensation and collection of drops of water on it. The exhaust gases are charged with water vapor and the moment these gases strike a cold surface, they will condense, forming drops of water.

A slight amount of these gases pass the pistons and rings, even under the most favorable conditions, and cause the formation of water in the oil pan, in a greater or less degree, until the engine becomes warm. When the engine becomes thoroughly warm, the crankcase will no longer act as a condenser and all of these gases will pass out through the crankcase ventilator system.

Short runs in cold weather, such as city driving, will aggravate this condition.

Corrosion

Practically all present-day engine fuel contains a small amount of sulphur which, in the state in which it is found, is harmless; but this sulphur on burning, forms certain gases, a small portion of which is likely to leak past the pistons and rings and reacting with water, when present in the crankcase, form very corrosive acids. The more sulphur in the fuel, the greater the danger from this type of corrosion. This