JOINT-STOCK COMPANY «GAZ»

VEHICLE GAZ-3308

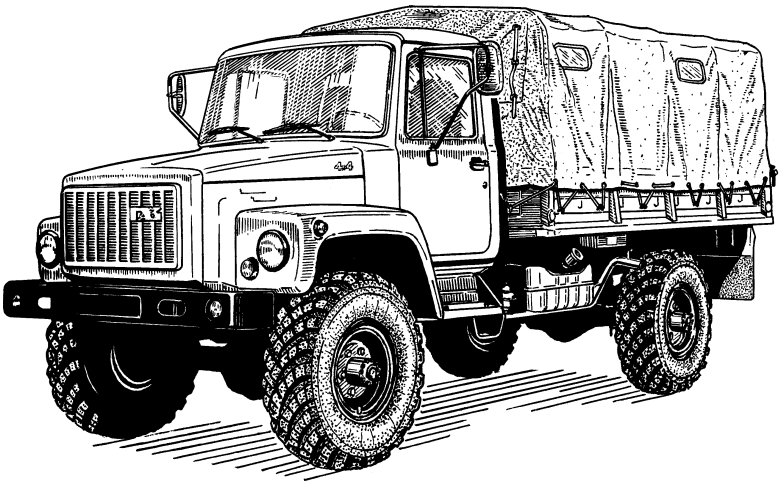
OPERATING INSTRUCTIONS
3308-3902111 ИЭ

RUSSIA
NIZHNY NOVGOROD

To fully benefit from high quality of Your vehicle, ensure its proper operation and good servicing. We recommend you to carry out regular maintenance operations specified in the Service Book at the appropriate intervals.

As vehicle design is constantly being improved some units and parts may slightly differ from those described in this Operating Instructions.

We wish You pleasant voyage!



1. TO YOUR ATTENTION!

When starting from cold, never accelerate the engine abruptly.

Should any red warning light illuminate on the instrument cluster when vehicle is in motion, stop the vehicle, investigate the cause and eliminate the trouble.

When towing a vehicle set transfer case lever to the neutral position to avoid gear box breakdown of towed vehicle.

To prevent power steering system from overheating, do not run the engine at high RPM for more than 30 min when the vehicle is stationary.

To avoid damage to brake master cylinder pistons, it is prohibited to unscrew the stop bolts under cylinder body to drain brake fluid.

To avoid destroying the storage battery it is necessary to carry out timely changing-over of adjusted voltage levels:

— *at the temperature below -2° C* move the voltage regulator switch (installed by vehicle manufacturer) to the extreme left position which corresponds to the maximum value of regulated voltage;

— *at the temperature above -2° C* move the voltage regulator switch (installed by vehicle manufacturer) to the extreme right position which corresponds to the mean value of regulated voltage;

— *in hot climate* move the switch into the middle position which corresponds to the minimum value of the regulated voltage.

➢ Do not operate starting preheater* when heater cock is closed.

➢ Do not operate starting preheater when engine cooling system is not filled up and do not refill the cooling system when preheater is overheated.

➢ At the ambient temperature above –40° C use liquid coolant "ТОСОЛ – А40М" or ОЖ-40 "Лена"; at the ambient temperature below –40° use "ТОСОЛ – А65М" or ОЖ-65 "Лена".

---

* Mounted on some vehicles.

Failure to use recommended coolant with correct viscosity grade may cause breakdown of coolant circulation in preheater hoses and result in preheater overheating and switching off.

The running-in period is 1000 km. In this period the vehicle loading must not exceed 1500 kg and vehicle speed – 60 km/h.

During the first 48 h of engine operation be sure to adjust the tightness of drive belts because in this period the belts stretch more.

2. VEHICLE IDENTIFICATION DATA

Vehicle Identification Data incorporates Vehicle Identification Number (VIN), engine, cabin and chassis numbers.

On the vehicle manufacturer's plate (fig. 2.1) located on the rear pillar of the right side-frame of the cabin the following information is displayed:

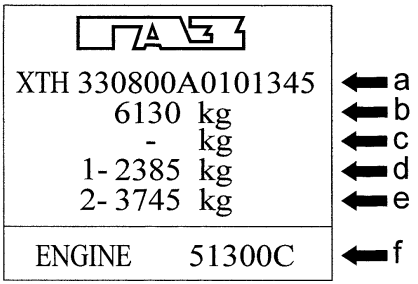


Fig. 2.1. **Example of manufacturer's plate with Vehicle Identification Data**

a – vehicle identification number, where:
XTH – manufacturer international identifying code
330800 – vehicle index
A – year of manufacture code (2 – 2002, 3 - 2003)
0101345 – vehicle serial number
b – maximum permitted gross mass of the vehicle
c – maximum permitted vehicle and trailer gross mass
d – maximum permitted front axle loading
e – maximum permitted rear axle loading
f – engine index

Vehicle Identification Number is also marked on the lower flange of the right side of the cabin.

Example of Vehicle Identification Number:
☆XTH330800☆A0101345☆

Chassis identification number is marked on the right side member of the frame before the front bracket of rear spring.

Example of Chassis Number:

☆330800A0103278☆, where:

330800 — chassis index; A — year of manufacture code; 0103278 — chassis serial number.

Cabin identification number is marked on the rear flange of the right-hand side member of the cabin.

Example of cabin number:

☆330700A0101500☆, where:

330700 — cabin index; A — year of manufacture code; 010500 — cabin serial number.

Engine identification number is punched on the right-hand side of the cylinder block (on the plane in the upper part of the front face).

Example of engine number:

☆51300C☆A1011774☆, where:

51300C — engine index; A — year of manufacture code (2 — 2002, 3 — 2003); 1011774 — engine serial number.

Engine cylinder block number is located on the front face of the block on top plane surface formed by timing gears cover flange lug.

3. VEHICLE SPECIFICATIONS

3.1. General Data

Vehicle type	4×4 biaxial truck
Load-carrying capacity, kg	2000
Maximum vehicle gross mass, kg	5950/6240*
Kerb mass (without additional equipment), kg	3710/3890
Overall dimensions, mm	
length	6250/6450*
width (over platform)	2340
height over cab, unladen	2780
Wheel base, mm	3770
Track front, mm	1820
Track rear, mm	1770
Overhang (fully laden), degree	
front	48
rear	32
Platform loading height, mm	1360
Turning radius (front outer track), m	11
Maximum speed (fully laden, without trailer) on horizontal parts of highway, km/h, not less than	90–95
Maximum climbable gradient (at vehicle gross mass) degree, not less than	31
Maximum fording depth with consideration for waves not caused by vehicle movement (hard bottom, at rated tyre pressure), m	0.8

3.2. Engine

Model	ZMZ-5233, ZMZ-513
Engine type	Carburator, gazoline
Number of cylinders	8

* For vehicle equipped with the winch.

Arrangement of cylinders	V-type, at the angle of 90°
Displacement, l	4.67 4.25
Rated power (governed) at 3200 r.p.m., kW (h.p.)	96.0 (130) 92.0 (125)
Firing order	1, 5, 4, 2, 6, 3, 7, 8
Oil system	Combined: under pressure and spraying, with full-flow filtering, with oil cooler. Renewable filter element-«РЕГОТМАС 440А-1-06»
Cooling system	Liquid, forced, with, rotary pump, expansion tank and thermostat
Air cleaner	Dry, with renewable filtering element 3102-1109013-02 or 31029-1109013 or 3102-1109013-03
Carburator	К - 135
Carburator governor	Pneumatic-centrifugal type

3.3. Transmission

Clutch	Single-plate, dry, with hydraulic drive
Gearbox	Manual, three-way, 5-speed, with synchromesh on all gears or manual three-way, 4-speed
Transfer case	Manual, two-way, front and rear axle drive, two range of gears: high and low; low range gear ratio — 1.982.
Drive axles	Final drive — bevel, hypoid gear type. Differential — cam type. Front axle steering knuckles with constant-velocity joints.

3.4. Running gear

Tyres	Pneumatic, radial 12.00R18 model КИ-115А

Rated tyre pressure, kPa (kgf/cm^2):	
— front wheels	340 (3.5)
— rear wheels	440 (4.5)
Minimum permissible tyre pressure decrease kPa (kgf/cm^2)	90 (0.9)
Front wheel geometry:	Camber – 0°45′ King pin inclination – 9° Caster – 3°30′ Toe-in – 2–5 mm
Springs, front and rear	Longitudinal, semi-elliptic
Shock absorbers of front and rear suspensions	Hydraulic telescopic dual acting

3.5. Steering Gear

Type of steering mechanism	Screw-ball nut
Power steering	Hydraulic

3.6. Brake Systems

Service brake system	Double-circuit with hydraulic drive, hydraulic vacuum servo and vacuum receiver in each circuit. Brake mechanism – shoe, drum type
Emergency brake system	Each circuit of service brake system
Parking brake system	Transmission with mechanical control linkage. Brake mechanism – shoe, drum type

3.7. Electrical Equipment

Wiring system	Single-wire, negative terminals of power sources and power consumers are connected to vehicle body
Voltage, V	12
Alternator	Г-287
Storage battery	6CT-75
Starter	CT230-A1
Ignition system	Battery, breakless

Cooling liquid temperature sensor	402.3828000 or TM100B-3808000
Ignition coil	Б116 or Б116-01, Б116-02, Б-116Н, 3122.3705 or 41.3705
Distributor	24.3706-10
Transistorized switch	131.3734 or 131.3734-01, 90.3734, 94.3734, 94.3734-01
Spark plugs	А11-Р
Emergency ignition system vibrator*	5102.3747
Windshield wiper	71.5205
Headlamp	ФГ122Б or 40.3711*
Front lights	ПФ130А or ПФ133А*
Rear lights	353.3716, 352.3716 or ФП133А*
Backing light	2102.3711
Rear fog light	353.3716, 352.3716

3.8. Special Equipment

Power take-off	Mechanical. Two-speed: for winding and unwinding of winch cable
Winch	Pull-type, single-drum, horizontal. Reduction gear-worm type, with worm in lower position, automatic brake. Gear ratio — 24. Cable length — 50 m. Driven by propeller shaft from power take-off. Maximum pulling force at cable — 29.4 kN (3000 kgf) with fully wound-up cable (last row of winding) and 39–44 kN (4000–4500 kgf) with fully unwound cable (first row of winding)

3.9. Cab and Platform

Cab	Metal, two-seat, two-door. Provided with separated seats,

* Mounted on some of the vehicles.

	heater, windshield demisting system, ventilation system, two sun visors, two rear view mirrors, windshield wiper and washer, floor carpets
Platform	Wood-metal or metal, with removable grids and top bows, paulin, dome light and sound alarm button, with tail gate, lengthwise side fold-back seats and safety belt above the tail gate
Platform dimensions (inner), mm	
length	3390
width	2145
height of drop sides	900

3.10. Main Adjustment and Checking Data

Valve-to-rocker clearance in cold engine, mm	0.25 – 0.30
It is allowed to set the clearance at extreme valves of both lines (intake — 1 and 8, exhaust — 4 and 5 cylinders), mm	0.15–0.20
Spark plug gap, mm	0.85–1.0
Fan and alternator belts sag under 3.4–4.4 daN (3–4 kgf), mm	10–15
Compressor and power steering pump belts sag under 3.4 – 4.4 daN (3 – 4 kgf), mm	15–20
Clutch pedal free travel, mm	40–55
Brake pedal free travel, mm	3–13
Steering wheel felly idle turn with running engine, degree, max	10*–25
Parking brake linkage lever travel under 60 daN (60 kgf)	10–15 teeth

* For the vehicle within warranty period.

4. DOORS, HOOD, SEATS

4.1. Doors

To keep cab door in closed position a lock is located on the door and a latch — on the cab pillar.

To open the door from outside outer handle with button is provided. Push the button and pull the door by the handle.

To open the door from inside an inner linkage is provided. Pull the linkage handle and push the door slightly outwards.

The door lock can be blocked only when the door is locked from outside by the key and from inside by the lock release button which is located in the lower part of the window opening.

When the door is locked it can not be opened using either by the outer or by the inner linkages.

4.2. Hood

To open the hood pull lock handle *2* (see fig. 5.1) to release the catch of the lock and open the hood slightly, then push the handle back home.

To open the hood completely move aside the latch and raise the hood.

4.3. Seats

Prior to vehicle operation set the seat so that it will be convenient for You to drive the vehicle.

To adjust the seat in the forward/backward direction raise handle *2* (fig. 4.1) upwards, slide the seat to the required position and release the handle. Carefully rocking the seat to and fro, make sure that the latch teeth are engaged with the teeth of the locking rack.

Seat backrest adjustment is carried out by rotation of knob *5*.

Seat height adjustment is carried out by means of even height changing of front and rear rests. Height adjustment of the front rest is performed by means of nuts *1*, and the rear rest – by means of bolts *11* shifting into holes *A*.

Seat cushion adjustment is carried out by means of height changing of front and rear rests.

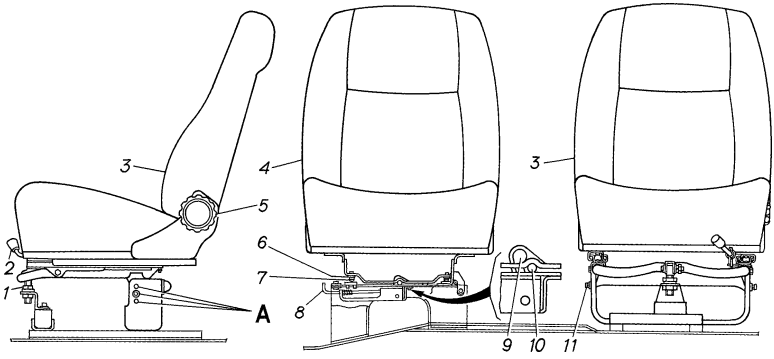


Fig. 4.1. **Seats Adjustment:**

A — holes in driver seat rear rest bracket; 1 — adjusting nut; 2 — seat forward/backward adjustment handle; 3 — driver seat; 4 — passenger seat; 5 — seat backrest adjustment knob; 6 — stopper nut; 7 — stop screw; 8 — passenger seat lock handle; 9 — lock latch; 10 — locking rack; 11 — fastening bolt

Some of the vehicles may be equipped with fold-back passenger seat. Seat folding is carried out in the following way:

— pull handle 8 of seat lock with left hand;

— holding the handle in pulled out position raise slightly the rear part of the seat upwards with the right hand;

— release the handle and holding the seat decline it forward.

To avoid damage to windshield do not let the seat fall under the forces of gravity.

Set the seat to the operating position by its smooth raising from the folded position.

When the gap between lock latch 9 and locking rack 10 is increased the lock should be adjusted in the following way:

— with the seat in operating position loosen nuts 6 of stop screw 7;

— unscrew the screws and eliminate the gap between the latch and the locking rack, the effort on the handle therewith should not exceed 3–4 daN (3–4 kgf);

— as soon as adjustment is completed tighten the nuts of the stop screw.

5. CONTROLS AND INSTRUMENTS

Arrangement of controls is given in fig. 5.1.

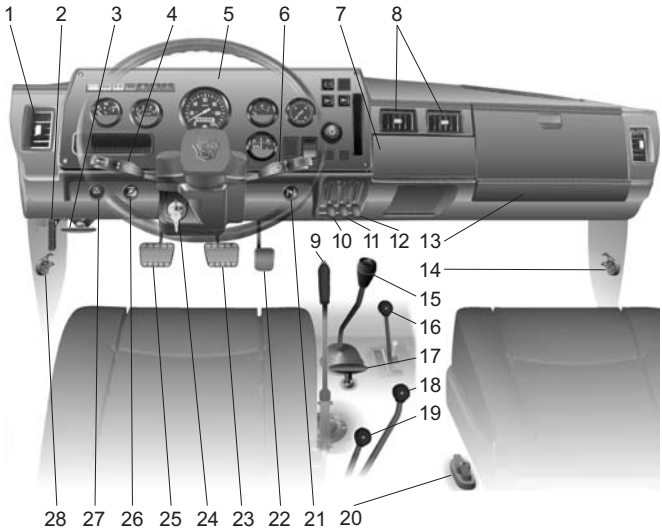


Fig. 5.1. **Controls:**

1 — cab side glass demisting nozzle.
2 — hood lock control handle.
3 — radiator shutters control handle.
4 — turn indicator, headlamp and horn* switch control lever.
5 — instrument cluster.
6 — windshield wiper, washer and horn** control lever.
7 — fuse unit cover.
8 — cab plenum ventilations nozzles.

---

* On some of the vehicles horn is turned on by windshield wiper and washer control lever.

** On some of the vehicles horn is turned on by turn indicator and headlamp switch control lever.

9 — parking brake lever.
10 — heater control cock handle. When the handle is in the upper position, the coolant from the cooling system flows in the cab heater radiator.
11 — control handle of shutter regulating delivery of outside air to heater. When the control handle is in the upper position, only the outside air is admitted in the heater, and when the handle is in the lower position, air from the cab is admitted in the heater. When the control handle is in any intermediate position a mixture of the outside air with air of the cab is admitted in the heater.
12 — cab plenum ventilation shutter control handle. When the handle is in the upper position, no air is admitted in the cab.
13 — glove box.
14, 28 — sockets.*
15 — gearshift lever.
16 — power take off lever.*
17 — tyre inflation control valve handle. The handle has three positions. The left position — tyres are inflated, the right position — air is released from the tyres, the middle position — neutral.

Positions of the handle are shown in the plate on the instrument panel.

18 — front axle engagement lever.
19 — transfer case lever.
20 — storage batteries switch.
21 — carburator throttle control knob.
22 — accelerator pedal.
23 — brake pedal.
24 — ignition and starter switch. The key has three positions.
25 — clutch pedal.
26 — carburator choke control knob.
27 — emergency flasher warning system switch.

* Mounted on some of the vehicles.

Arrangement of instruments is given in fig. 5.2.

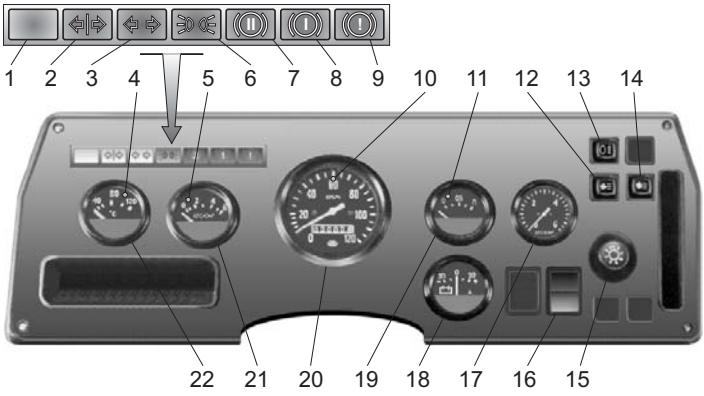


Fig. 5.2. **Instrument Cluster:**

1 — warning lamp unit test push-button. When the push-button is pressed all warning lamps of the unit will light up provided that they are in good condition.

2 — warning lamp (green) starts flickering when trailer turn indicators are switched on (for vehicles with trailer).

3 — warning lamp (green) starts flickering when truck turn indicators are switched on.

4 — warning lamp (red) lights up when coolant temperature is over 105° C.

5 — warning lamp (red) of emergency oil pressure drop and oil filter choking. Lights up at pressure drop up to 40-80 kPa (0.4–0.8 kgf/cm^2).

6 — warning lamp (green) of clearance lights.

7 — warning lamp (red) lights up in case of trouble in the vacuum control of brake rear circuit.

8 — warning lamp (red) lights up in case of trouble in the vacuum control of brake front circuit.

9 — warning lamp (red) lights up when brake fluid level in master cylinder tank is below «MIN» mark or when parking brake is engaged.

10 — warning lamp (blue) lights up when the headlamp upper beam is switched on.

11 — low fuel level warning lamp (orange). Lights up constantly if the reserve of fuel in tank is less than 12 l.

12, 14 — heater switches. When in cut in position the switches are illuminated by built-in bulb with green lens. When switch *12* is turned on the heater motors run at a low speed. When switch *14* is turned on additionally the heater motors run at a fast speed. When only one switch *14* is turned on, the heater motors are not operating.

13 — rear fog lamp switch. Its turning on is possible when head lamp low beam is switched on only.

15 — master light switch.

16 — change-over switch of tanks fuel level gauge sensors.

17 — tyre air control pressure gauge.

18 — ammeter.

19 — tank fuel level gauge.

20 — speedometer with odometer.

21 — oil pressure gauge.

22 — coolant temperature gauge.

5.1. Ignition Switch

Switch key has four positions:

0 – all OFF

I – ignition ON

II – ignition and starter ON

III – ignition OFF, after withdrawal of the key the anti-theft* device is engaged.

To avoid failure of contact assembly of starter and instruments switch, never leave the key in the intermediate position.

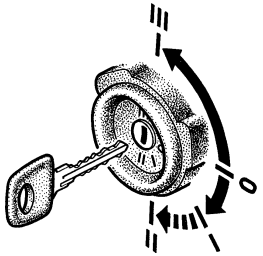


Fig. 5.3. **Ignition, Starter, Anti-Theft Switch Key positions**

* Mounted on some of the vehicles.

5.2. Turn Indicator, Headlamp and Horn Switch*

The switch lever has six fixed positions - I, II, III, IV, V and VI and four non-fixed «A» positions (fig. 5.4 and 5.5).

When the switch lever rests in position I and master light switch is in position II the headlamps turn on at lower beam.

When the switch lever is shifted to position II the headlamp upper beam switches on and a dark blue indicator light illuminates on the instrument cluster.

Pulling the lever repeatedly from position I along the steering column (non-fixed position) results in a short-time signalling with the headlamp upper beam.

Depressing the switch lever button (from any position) turns on the horn* (without fixing).

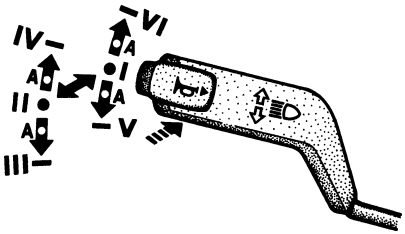


Fig. 5.4. **Turn Indicator and Headlamps Switch Lever positions (with Horn)**

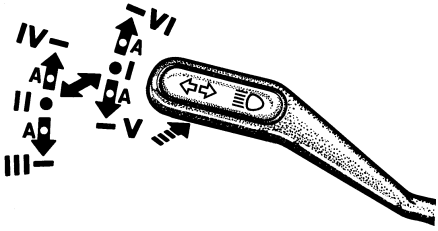


Fig. 5.5. **Turn Indicator and Headlamps Switch Lever positions (without Horn)**

To operate turn indicators move the lever from positions I or II *up* to positions VI or IV (*right turn*) or *down* to positions V or III (*left turn*). A green warning light comes on flashing on the instrument cluster. After turning the switch lever is automatically returned to position I or II. To switch on the turn indicator momentarily shift the switch lever to suitable «A» non-fixed position.

When released, the lever returns to position I or II.

---

* On some of the vehicles the horn is turned on by windshield wiper and washer control level.

5.3. Windshield Wiper, Washer and Horn Switch*

Switch lever positions (fig. 5.6 and 5.7):

0 – windshield wiper is OFF;
I – low speed of windshield wiper;
II – high speed of windshield wiper;
III – intermittent operation of windshield wiper.

In case the control lever is not equipped with horn* switch (fig. 5.6), windshield washer and wiper is turned on momentarily by pulling the lever (in the direction of arrow) from position **0**.

In case the control lever is equipped with horn* switch (fig. 5.7), windshield wiper and washer is turned on momentarily by pushing the lever from position **0** (in the direction of arrow «A»).

To turn on the horn* pull the lever (from any position) in the direction of arrow «B».

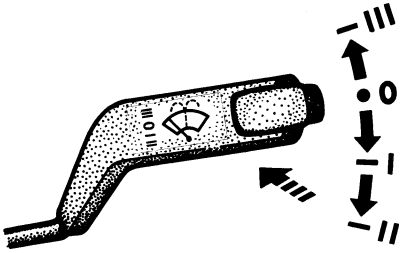


Fig. 5.6. **Windshield Wiper and Washer Switch lever positions (without Horn)**

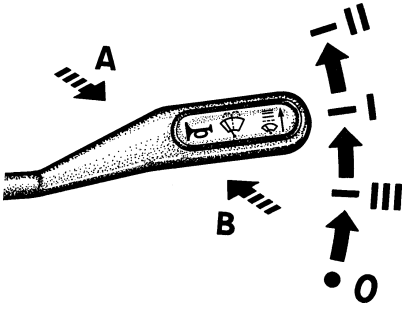


Fig. 5.7. **Windshield Wiper and Washer Switch lever positions (with Horn)**

Windshield washer can be switched on from all lever positions. Windshield wiper operates only when ignition is switched on.

* On some of the vehicles the horn is turned on by turn indicators and headlamp switch lever.

5.4. Changeover Layout:

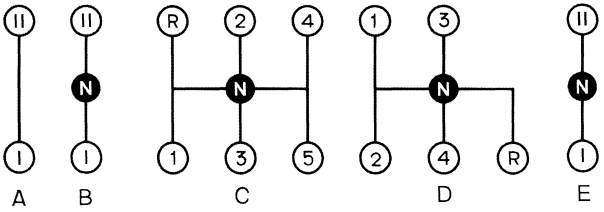


Fig. 5.8. **Changeover Layout:**
A – front axle (I – engaged; II – disengaged); B – transfer case (I – high gear; II – direct drive); C – 5-speed gearbox; D – 4-speed gearbox; E – winch drive power take-off* (I – unwinding; II – winding up).

When reverse gear (R) is engaged the backing lamp lights up.

5.5. Tyre Inflation Control Valve Handle

Positions of the valve handle are given in fig. 5.9.

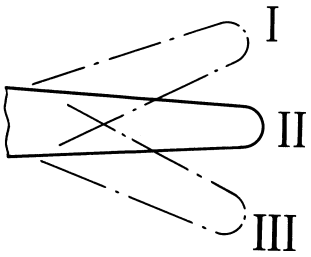


Fig. 5.9. **Positions of tyre inflation control valve handle:**
I – Pressure increase;
II – Valve is closed;
III – Pressure decrease.

5.6. Parking Brake

For braking the vehicle at a parking site pull the brake control lever *9* (fig. 5.1) up. If the ignition switch is ON, a red light is flashing on the instrument cluster. For releasing the brake, depress the grip knob. With the parking brake released the red light goes out.

* Mounted on some of the vehicles.

5.7. Master Light Switch

The switch has three fixed positions:

0 – all OFF

I – clearance lights, licence plate illumination, instruments lighting, button switches on instrument panel are ON

II – clearance lights, licence plate illumination, instruments lighting, button switches on instrument panel, upper or lower beam (depending on Turn indicators, Headlamp and Horn Switch position) are ON

Besides, by turning the switch knob clockwise you can adjust the brightness of instruments lighting.

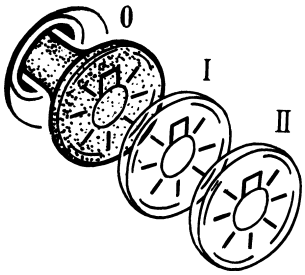


Fig. 5.10. **Position of Master Light Switch knob**

5.8. Emergency Flasher Warning System Button Switch

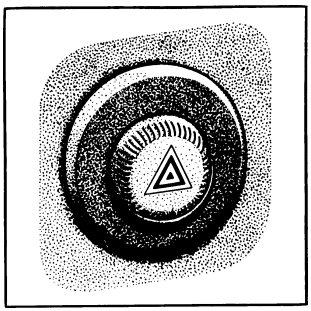


Fig. 5.11. **Button of emergency flasher switch**

When in switched-on position, all turn indicator bulbs and red bulb inside the button switch are flashing simultaneously.

6. VEHICLE PREPARATION FOR A TRIP

When preparing the vehicle for a trip, it is necessary to check:

— *engine oil level*. It must be between «**0**» and «**II**» mark on the oil dipstick. Engine running with oil level below «**0**» mark is not allowed;

— *coolant level in expansion tank*, which must be (at cold engine) at «**MIN**» mark on the expansion tank or above it by 20-40 mm. Add recommended coolant to the expansion tank, if required;

— *brake fluid level in clutch and brake master cylinder reservoir*. Brake fluid warning light should not illuminate on the instrument cluster;

— *fuel in the fuel tank* by the fuel gauge on the instrument cluster;

— *service brake system* for sound condition. With engine running and brake pedal depressed with maximum force, air «hissing» should be heard from the filter of the brake servo unit located on the cab floor behind the driver's seat;

— *parking brake system* for sound condition. When applying maximum force control lever should move within not more then 15–20 clicks;

— *alternator* for sound condition. Ammeter should not read the discharge at medium engine RPM and when upper beam is on;

— *wheels and tyres condition*;

— *tyre inflation pressure*, bring it to specified, if required.

Pressure should be checked on cold tyres by the pressure gauge on the instrument cluster, when control valve handle* 17 (Fig. 5.1) is in neutral position and tyre air valves of front and rear wheels are respectively opened.

Tyre inflation is to be carried out in the following sequence:

— open tyre air valves of all wheels;

---

* Control valve handle positions are indicated in the plate located on the instrument cluster.

— lift up and turn control valve handle (counter-clockwise) into «pressure increase» position;

— start the engine and inflate the wheel tyres up to the nominal pressure;

— close tyre air valves of the wheels;

— return control valve handle into the neutral position.

Inflate rear wheel tyres in the similar way.

It is prohibited to set the pressure control valve in «pressure increase» position when all tyre air valves are closed for it may cause the damage to pressure gauge.

7. ENGINE STARTING AND SHUTTING DOWN

Before starting the engine do the following:

— check if there is cooling liquid in the cooling system;

— when the engine is cold, coolant liquid level should be at mark «**MIN**» or 20-30 mm higher in the expansion tank. If necessary, add the liquid in the expansion tank;

— check oil level in the crankcase using a dipstick. If the level is below «**II**» mark, add some oil. Check oil level again several minutes after topping up, to let oil drip into the crankcase;

— check fuel level in the tank by fuel level gauge switching on the ignition for this purpose. If necessary fuel the vehicle;

— check the position of the gearshift lever. It should be in the neutral position

7.1. Starting a Warm Engine

To start the engine turn the ignition key clockwise to the extreme right position and hold it until the engine starts (but not longer than 10 s). Then release the key.

If a sound engine fails to start after two-three attempts, the cause of trouble in most cases is over-enrichment of mixture. To eliminate it, scavenge the cylinders with compressed air. For this purpose slowly press the accelerator pedal to the stop and then by turning the key switch on the starter.

Do not pump the accelerator pedal, as in this case the accelerating pump will deliver additional portions of fuel into carburator barrel thus over-enriching the mixture. If the engine fails to start with the throttle valves wide opened, proceed to start the engine in the usual way, as indicated above.

7.2. Starting a Cold Engine at Moderate Temperatures

Before starting the engine after a long parking, prime gasoline by means of fuel pump lever.

Engine starting procedure is the following:

Press the accelerator pedal for one-half of its move.

Pull the choke control knob all the way out.

Holding the choke control knob, slowly release the accelerator pedal. Do not sharply release the pedal as this may cause partial opening of the choke valve which is undesirable at this moment.

Depress the clutch pedal to disengage the clutch.

Turn the ignition key to the starting position and keep the starter **ON** for 10 s. maximum. Subsequent attempts to start the engine may be done at the intervals of not less than 15-20 s.

As soon as the engine starts begin pressing the choke control knob to gradually open the choke valve. Simultaneously press the accelerator pedal taking care not to develop too high engine speed. As the engine warms up, increase the opening of the choke valve until it is fully opened.

7.3. Engine Starting by Means of Starting Preheater

Use ТОСОЛ-А40М, ОЖ-40 «Лена» as cooling liquids.

When starting the engine observe the following sequence:

Close radiator shutters and fasten warming jacket on radiator grill.

Open the hood.

Check fuel level in the preheater fuel tank, if necessary, add fuel (use the gasoline recommended for the truck engine). Be careful not to overfill the tank and spill the fuel. Tank capacity is 2 liters.

Open the fuel tank cock.

Clean the preheater drain pipe.

Blow through the preheater by setting switch knob 1 to position I (fig. 7.1) and rheostat knob *2* to the extreme right-hand position (clockwise), that will correspond to fan electric motor maximum speed. The purging lasts for 30–60 s, then the switch knob should be returned to position **0** (all OFF), and the rheostat knob — to the extreme left-hand position. Check the operation of the glow plug by momentary switching on.

Start the preheater. For this purpose it is necessary to switch on the glow plug and after 30–35 s, when the check coil becomes bright

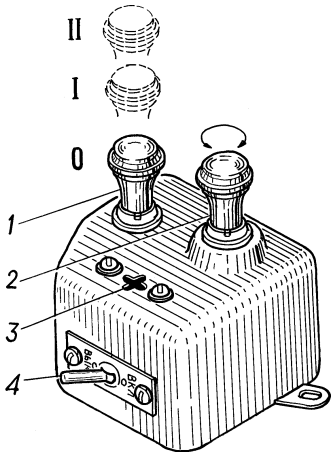


Fig. 7.1. **Starting Preheater Control Box:** 1 — change-over switch of electromagnetic valve and fan electric motor; 2 — rheostat knob for changing preheater fan electric motor speed; 3 — check coil; 4 — glow plug switch; 0 — all OFF; I — fan electric motor is ON (the knob is half-way is pulled out); II — fan electric motor and electromagnetic valve are ON (the knob is fully pulled out).

Rheostat knob *2* rotates about its axis: when clockwise it will increase the speed and when counterclockwise it will decrease the speed of electric motor.

red, set the switch knob to position **II**, in doing so the fan electric motor cuts in and electromagnetic valve opens. For sure starting of the preheater smoothly increase fan electric motor speed by turning rheostat knob clockwise as far as it will go. After that the weak humming will be heard which changes over to the loud humming. When the preheater operation becomes stable **the glow plug is to be switched off!** If the preheater failed to start, repeat the whole procedure, having checked the fuel supply and, if necessary, having increased it by means of valve adjusting needle.

Coolant in the engine will get warmed after 10–30 minutes of preheater operation depending on the ambient air temperature. Crank the engine with the starting handle several times. The crankshaft of the warmed engine turns easily.

Start the engine as indicated in the section «Starting a Warm Engine», but the clutch should be disengaged.

Engage the clutch.

Switch off the preheater by setting the switch knob to position **I** and close the fuel tank cock. After the flame in the preheater ceases to hum, which takes approximately 50–60 s, set the switch knob to position **0**. Violation of the recommended procedure may cause flame burst into the air inlet branch pipe.

Lower the truck hood.

After engine starting let it operate idle for 5–6 minutes or under loading (vehicle movement in the 1st or 2nd gear) at medium engine speed provided that the engine is taking the load (engine speed changes depending on fuel supply) and there is pressure in the engine lubrication system.

After cooling liquid temperature reaches 60° C vehicle operation should be carried out in the usual way depending on the road conditions.

7.4. Engine Shutting Down

To provide gradual and uniform cooling of the engine let it operate for one-two minutes at a low speed and then switch off the ignition.

8. RUNNING-IN

Start driving off after warming up the engine at moderate crankshaft speed when the engine runs steadily.

Watch the front and rear wheel hub temperature during the running-in period. If the bearings overheat, have them properly adjusted at a service station.

Check fan and alternator belts tension, as it is during the running-in period that the belts stretch most. Adjust belts tension, if required.

Conduct maintenance operations in due course following Service Book instructions.

Speed limitations during the running-in are: 20 km/h in first gear, 30 km/h in second gear, 50 km/h in third gear, 70 km/h in forth gear and 90 km/h in fifth gear.

9. VEHICLE DRIVING

When driving the vehicle watch the instruments and warning lights indicating the coolant temperature, oil pressure and battery charging.

When engine oil or coolant temperature warning lights come on, shift immediately to the low gear. If the warning light keeps on glowing, immediately stop the vehicle, shut down the engine, detect and eliminate the trouble.

Prior to driving it is necessary to warm up the engine. When starting the loaded vehicle from halt engage the 1st gear.

Shift the gear lever smoothly and only when the accelerator pedal is released and clutch is fully disengaged. Do not try to change gears if the clutch is not disengaged completely. Do not operate the pedal and lever simultaneously.

When shifting from the low to the high gear smoothly move the lever with a slight delay in the neutral position.

When shifting from the high to the low gear the double clutch method should be used with a momentary pressing of the accelerator pedal. When shifting from the second to the first gear this method should be used by all means.

Engage the reverse gear after full stop only.

Do not engage the clutch until the gear is shifted in completely.

Engage the front axle only when necessary. When driving along coated roads or hard grounds the front axle should be disengaged and the tyre pressure should be maximum (see «Vehicle Specifications»). This will cut down fuel consumption and reduce tyre wear.

Under heavy road conditions - on muddy bumpy roads, swampy or sandy areas or virgin snow — operate the central tyre inflation system to adjust the tyre pressure to the condition of the ground.

A decrease in the tyre inflation pressure increases the wheel-to-road contact and decreases the specific pressure on the ground, the wheels do not sink deeply into mud, sand or snow and do not slip.

However, bear in mind that on slippery roads (ice coated roads or those with a thin wet layer on a hard dry base) a reduction of tyre pressure does not give good results, but, on the contrary, leads to skidding and creeping of the vehicle in the direction of heel and to slipping of the wheels on upgrade slopes. In such cases do not reduce tyre pressure.

When driving with reduced tyre pressure, the vehicle speed should not exceed the values specified in the table below.

Type of road	Permitted air pressure in tyres, kPa (kgf/cm^2)	Maximum permitted speed, km/h
Hard areas of swampy ground, virgin snow and drift sands	90 (0.9) 170 (1.7) 300 (3,0)	15 25 30
Road of all types, only during the period of tyre reinflation after road hard sections negotiation	more than 300 (3.0)	40

Note. When reinflating the tyres from minimum pressure up to 300 kPa (3.0 kgf/cm^2) it is recommended to stop the vehicle.

To negotiate difficult sections of the road, steep upgrades and other obstacles disengage the clutch and engage the front axle. Bear in mind that a higher transmission noise can be heard, when driving the vehicle that is in good condition with the front axle engaged.

Under extremely severe conditions engage the low gear in the transfer case. Engage and disengage the low gear only after full stop of the vehicle with the clutch disengaged.

Approaching a road turn, gradually decrease the driving speed in advance by decreasing engine speed and shift in a low gear, if the turn is sharp.

At sharp turns avoid abrupt braking to prevent skidding.

On a slippery road engage the front axle and drive at a slow speed. Do not change the engine speed sharply. Apply the brakes smoothly in several steps without disengaging the clutch.

Sharp braking on a slippery road with the clutch disengaged may cause skidding and road accidents.

In case of skidding, stop braking and turn the wheels in the direction of skidding. If the vehicle starts skidding at engine braking, press the accelerator pedal (thus stopping the engine braking) until the vehicle ceases to skid.

Driving along steep upgrades and downgrades requires high attention and quick actions.

Steep upgrades should be negotiated at low gear of the transfer case and the first gear of the gearbox. Negotiate upgrades without stopping and, if possible, without turns.

If the road conditions permit, the short upgrades (up to 15–20 m long) can be negotiated by speeding up at direct drive of the transfer case.

Upgrades should be preferably negotiated driving straight because negotiating of upgrades obliquely (with heeling) decreases the maximum traction force.

If the upgrade cannot be negotiated due to some reasons, take all safety measures, shift in the reverse gear and go down slowly. Descend gradually without speeding up and disengaging the clutch.

While negotiating a sharp downgrade it is necessary to take all safety measures as well.

When approaching a long downgrade, a driver should estimate its steepness and engage those gears of the gearbox and transfer case in which he would negotiate an upgrade of the similar steepness. It is prohibited to shut down the engine, since during the long downgrades it is always necessary to use engine braking.

Do not operate the truck on the roads which have steep upgrades and downgrades if the oil level in the crankcase is more than 5 mm below II mark on the oil dipstick.

Swampy areas should be negotiated in the 2nd gear with the low gear in the transfer case engaged. In this case the vehicle tyre air pressure should be decreased to 90–170 kPa (0.9–1.7 kgf/cm^2).

When driving along a swampy section, maintain a constant speed, avoid deceleration, jerking and especially stops. If it is necessary to stop, find a grass-coated hillock or a relatively dry place.

It is very difficult to resume the motion on swampy areas after stopping because on such grounds high tractive force is required, which tears off the upper layer of the ground and the vehicle gets stuck.

Start driving along a swampy section with the low gear in the transfer case and the 2nd gear in the gearbox engaged, slightly pressing upon the clutch pedal to prevent slipping of the wheels. As soon as the wheels start slipping immediately disengage the clutch and shift in the reverse gear. If the slipping persists with the reverse gear shifted in put brushwood, boards or other materials at hand under the wheels to increase the wheel-to-ground contact and make the vehicle move.

Avoid sharp and abrupt turns. Evaluate the necessity of turning beforehand and make a flat turn with a big radius. Such a turn will not decrease the vehicle speed and will prevent stripping off the ground upper layer inevitable at sharp turning.

When driving in a column do not follow the track laid by foregoing vehicle, make a new track, if possible. Having reached dry and hard ground immediately raise the tyre inflation pressure to maximum. (See «Vehicle Specifications»).

Sandy areas should be negotiated with tyres deflated to **170–300 kPa (1.7–3.0 kgf/cm^2)**.

The tyre pressure should be selected depending on the compactness of sand and driving conditions. When driving along sandy areas use the highest gear possible, engage the front axle and negotiate the sand drifts and short sand upgrades on the go.

When crossing extremely heavy areas, prevent slippage of the wheels when the speed drops. If the wheels start slipping, release the clutch, move backward and try to negotiate the area on the go. Maintain a constant driving speed, avoid jerks and stops. Make flat turns with a big radius.

Unlike driving in a column across swampy areas, negotiate sand terrain following the track of the leading vehicle and keeping a distance of 40 - 50 m between the vehicles. This distance is necessary to permit the foregoing vehicle to move backward and speed up to negotiate a heavy section of the road on the go.

Wet **clay and gumbo roads** present danger of skidding and side-slipping. Driving along graded muddy roads is a difficult task. On such roads use the maximum tyre pressure and select horizontal sections of the route, road shoulders, an old track or drive carefully on the road crown.

Fording. The vehicle can overcome up to 1.0 m deep fords, taking into account height of waves and strength of current.

Before crossing a ford, set the tyre pressure depending on the condition of the bank ground. Carefully enter the water trying to avoid forming a high bow-wave in front of the vehicle. Cross the ford in the 1st or 2nd gear with the front axle engaged and transfer case low gear shifted in, avoid manoeuvring or sharp turns. Do not stop when fording, as water will immediately start washing out the ground from under the wheels and the wheels will sink deeper. The length of a ford, in case its bottom has been thoroughly investigated and does not present danger for sticking, is restricted by the time of vehicle's movement in the water which should not exceed 20 minutes. The driving speed when crossing a ford should not exceed 5 km/h.

After crossing a ford check the condition of oil in all units by partial turning out drain plugs. Proceed in this way at first opportunity but not later than on the same day. If water is found in any unit drain oil from it. The presence of water can be judged by the change in oil colour. Lubricate all chassis units through the pressure lubricators until the lubricant is pressed out from the units.

Each time after crossing a ford, apply the service brakes several times to dry the brake shoe linings.

If the vehicle has sunk accidentally to a depth exceeding 1.0 m, drain sediment from the engine crankcase immediately after coming out of water and clean the engine filler neck filter.

If the engine has stopped while crossing a ford, it is allowed to make 2–3 attempts to start the engine by the starter. If the engine fails to start, the vehicle must be immediately taken out of water with the help of the winch of another vehicle or by some other means.

If the vehicle has stuck and water has penetrated into the units, do not drive the vehicle but tow it to the nearest service station,

drain oil from all units, wash the units, inspect them, eliminate troubles and fill the units with fresh oil.

After driving along 0.4–0.8 m — deep thin mud, also check the condition of oil in the units.

When the winch is used for the first time after crossing a ford by the vehicle, attention should be paid to heating the housing of the winch. If the housing of the reduction gear does not get heated, it means that there is water in it.

When backing or towing under heavy road conditions (ploughland, sandy road, virgin snow and rut, steep upgrades), engage low gear in the transfer case.

10. CAB HEATING AND VENTILATION

Cab heater is located under the instrument panel.

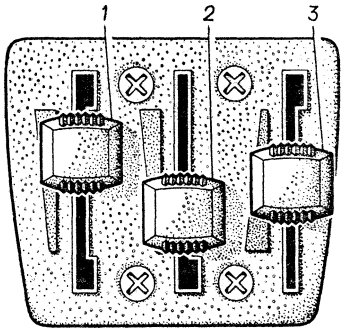
Engine cooling system fluid is used in the heater as a heat-carrying agent.

The heater is equipped with two blowers having low and fast speed of rotation. Push button *12* (see fig. 5.2) to switch on the low speed. Push button *14* additionally to switch on the fast speed. To switch off the heater, push the buttons in the reverse order.

Air is directed by the blowers through the heater radiator, where it is warmed up and distributed for heating the windscreen, door windows and to driver's and passenger's feet.

On the instrument panel (fig. 10.1) there are levers to control the heating and ventilation system.

Fig. 10.1. **Heating and Ventilation System Controls**



— lever *1* is to control the heater cock. In the lower position of the lever the cock is closed, in the upper position it is opened. The intermediate position controls the heat supply into the cab;

— lever *2* is to control the outside air supply to the heater. In the upper position of the lever only the outside air is directed to the heater, in the lower position the air is directed from the cab to the heater. In any intermediate position a mixture of the outside air and the air from the cab enters the heater;

— lever *3* is to control the shutter of plenum ventilation.

To use the heating system more effectively open the cock and switch on the heater blowers after the complete engine warming up only.

Switch on the heater in the following sequence:

— open the cock and heater air intake shutter (set levers *1* and *2* to the extreme top position);

— switch on the heater blowers to low or fast speed.

To increase heating efficiency and to quicken cab warming up after a long parking in cold weather, use air recirculation through the heater radiator system: open the air intake vents (shift lever *2* to the extreme bottom position) and with the blowers switched on, the cab air will pass through radiator repeatedly and it will rapidly warm up.

Plenum ventilation. Outside air is supplied during vehicle movement through the hoses to plenum ventilation ducts located on the instrument panel. Fresh air flow is adjusted by the shutter controlled by lever *3* (see fig. 10.1). In its top position there is no air supply to the cab. In its bottom position the air flow is maximum. Other lever positions correspond to the intermediate air flow.

Plenum ventilation functions during the vehicle movement only.

To operate blower assisted plenum ventilation:

— close the heater cock by means of lever *1*;

— close drop and swivel door windows;

— open the shutter of outside air supply to the heater by means of lever *2*.

Turn on the low or fast speed of the heater blower by means of switches *12* and *14* (see Fig. 5.2).

Use blower assisted plenum ventilation during hot weather when the vehicle moves at slow speed, along dusty roads, when the vehicle is at parking place.

11. ELECTRICAL EQUIPMENT

11.1. Fuses

Under the hood on the front end panel on the right side a block of two fuses of 40A and 60A is located.

60A fuse protects all vehicle's circuits except starter circuit.

40A fuse is a reserve one.

In the centre of the instrument panel two blocks of safety fuses ПР121 (fig. 11.1) are located.

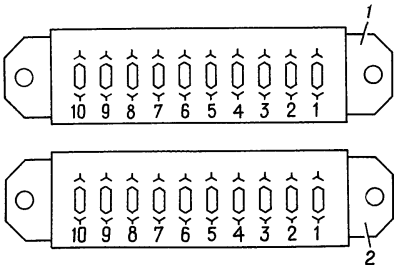


Fig. 11.1. **Safety fuses:**
1 — upper set; 2 — lower set.

Fuse No	Permissible current, A	Protected circuits
		Upper block safety fuses
1	16	Reserve
2	8	Underhood lamp, cab dome lamp
3	8	Lighting of instruments and button switches
4	8	Rear fog lamp
5	8	Right front and left rear clearance lights, clearance lights pilot lamp
6	8	Left front and right rear clearance light, indicator of clearance light
7	8	Left headlamp (lower beam)
8	8	Right headlamp (lower beam)
9	16	Left headlamp upper beam, upper beam pilot lamp
10	16	Right headlamp (upper beam)

Fuse No	Permissible current, A	Protected circuits
	Lower block safety fuses	
1	16	Reserve
2	8	Emergency warning lamp
3	8	Turn indicators
4	8	Reserve
5	8	Horn, inspection lamp socket
6	8	Braking warning lamp
7	8	Reserve
8	8	Windshield wiper, windshield washer
9	16	Backing light lamp, windshield wiper relay
10	16	Heater, instruments, pilot lamps

Heater control circuit 20A fuse is located in control desk housing of the heater.

Windshield wiper is provided with automatic thermobimetallic fuse of vibration type.

11.2. Emergency Ignition System*

Vibrator is a device which provides engine operation with the help of the emergency ignition system when semiconductor switch or distributor itself become inoperative.

Vibrator is located under the hood nearby the semiconductor switch.

To activate the emergency ignition system it is necessary to disconnect the wire from K3 terminal of semiconductor switch and connect it to the vibrator terminal.

The above actions will result in continuous sparking in the ignition system. The speed of engine operation should be chosen up to 2000 r.p.m. In this case a partial engine power loss occurs because the ignition advance angle will not be optimum.

The life of vibrator is 30 hours, therefore it is always necessary to take urgent measures for restoring the operability of the main ignition system.

* Mounted on some of the vehicles.

After the emergency system operation is over, take off the distributor cover, check it and wipe, if necessary.

Attention!

1. Never use the emergency ignition system if the main ignition system is in sound condition.

2. Never do the maintenance of the system when the emergency ignition system is operating.

11.3. Headlamps Adjustment

Headlamps adjustment should be carried out using the screen in the following sequence:

— place the unladen truck at 5 m distance from the screen (fig. 11.2). Vehicle linear plane should be at right angle to the screen plane

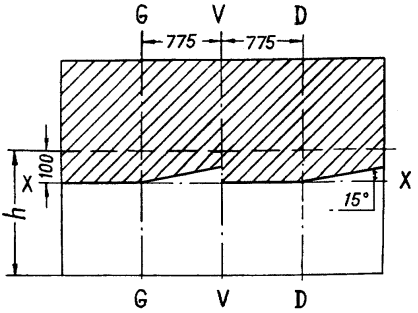


Fig. 11.2. **Screen marking for headlamps adjustment:**
h — height of vehicle lights centre.

— check tyre air pressure. Bring it, if required, to necessary level;

— remove headlamp mouldings, turning off the screw;

— turn on the headlamps and make sure that high beam and lower beam on both headlamps light up simultaneously;

— turn on the lower beam and, in succession, first for the right headlamp (left headlamp is covered) and then for the left headlamp (right headlamp is covered) adjust the light spot as it is shown in the figure by means of side and upper screws;

— turn on high beam and covering the headlamps in succession, make sure that the bright spot of the high beam is arranged in symmetry on centre lines H–H and G–G or D–D. 25 mm deflection in horizontal and vertical planes of points of bends from points of intersection of X–X line with G–G and D–D lines is permissible;

— install and secure the headlamps mouldings.

12. WHEELS AND TYRES

The vehicle is equipped with the wheels having radial-ply tubed tyres 12.00R18.

Contact of tyres with oil, lubricant and fuel is not permissible.

Maintain the required air pressure in tyres.

In case of uneven tyres wear rotate the wheels in sequence shown in figure 12.1.

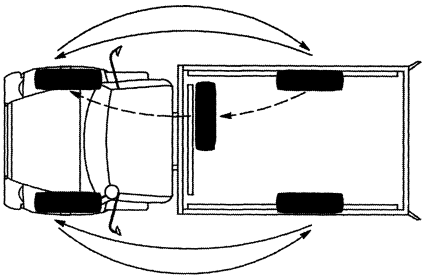


Fig. 12.1. **Wheels Rotation Diagram**

Rotate the wheels taking into account tyre rotation direction marked with arrows on the tyres walls. The reason for wheels rotation may serve uneven or fast wear of tyre tread pattern, installation of more reliable tyres on the front axle of the vehicle.

Spare wheel is included in wheels rotation diagram taking into account tread pattern direction.

12.1. Wheel Replacement

Carry out wheel replacement in the following sequence:

— engage the parking brake;

— place chucks under the wheels at the side opposite to that on which the wheel is to be replaced;

— slacken the nuts of the wheel to be replaced;

— place the jack under front or rear axle girder next to the wheel in question and lift the truck so that the wheel clears the ground by 4–5 cm;

— remove the wheel trim, screw off the wheel nuts, replace the wheel and screw up the nuts;

— lower the vehicle;

— tighten the nuts in the following sequence: top, bottom and the rest in pairs crosswise, then remove the chucks;

— install the wheel rim;

— adjust the tyre pressure up to the specified level.

12.2. Spare Wheel

Spare wheel is mounted on the holder attached to the front side of the platform.

Spare wheel lifting device is located in the right rear part of the platform. The main component of the lifting device is a leg with lifting gear secured on it. Lifted load mass should not exceed 140 kg.

To lift the wheel:

— open platform tail gate and roll the wheel to the vehicle with the web facing the tail gate;

— put the leg of the lifting device in operating position: remove the lockpin from locator; pull the latter out and turn the leg so that the second hole of the leg coincides with the hole in the journal; insert the locator;

— disengage lifting device ratchet pawl from the ratchet pushing the pawl downwards as far as it will go;

— pull the cable with the hook up to the level of the wheel web central hole, catch the edge of the hole with the hook from the side of the tail gate;

— let the pawl and the ratchet be engaged by turning upwards;

— put the compound wrench (fig. 12.2) on the end of the ratchet shaft and lift up the wheel above the platform by turning the shaft clockwise (the wrench is available in driver's tool kit);

— remove locator and bring the leg with the wheel on the platform by turning the leg;

— secure the wheel on the holder.

Turn the leg in the initial position and insert the lockpin into locator.

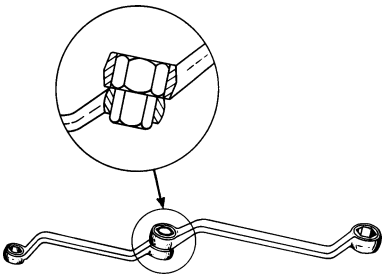


Fig. 12.2. **Joining the wrenches by means of intermediate sliding block**

When lowering the spare wheel from the platform it is necessary to disengage the pawl, catch the wheel with the hook and lower it from the platform.

13. VEHICLE MAINTENANCE

Carry out vehicle maintenance in conformity with Service Book instructions at service station advised by Your dealer.

13.1. Types of Maintenance

Maintenance A — after every 5000 km of run;

Maintenance B — after every 20 000 km of run;

«++» — after every 10 000 km of run (for Maintenance A) or after every 40 000 km of run (for Maintenance B);

«+++» — after every 15 000 km of run (for Maintenance A) or after every 60 000 km of run (for Maintenance B);

Maintenance C — seasonal maintenance (to be combined with scheduled maintenance A or B).

13.2. Vehicle Units Lubrication

Combine vehicle units lubrication with scheduled maintenance as it is specified in the Lubrication Chart (table 1).

Recommended grades of Russian and foreign fuel and lubricants equivalents are listed in Table 2.

Never mix foreign and Russian lubricants.

Prior to application of foreign lubricants be sure to wash oil system or unit thoroughly.

After first 1000 km of run (end of running-in period), lubricate the vehicle units as it is specified in the Service Book (see section «Running-in»).

Using the grease gun, pack grease until it shows up from joints of unit parts subject to lubrication.

Change seasonal lubricants irrespective of vehicle run.

Lubrication Chart

Table 1

Assembly, Unit Description	No. of Points	Q-ty of Lubricant	Lubricant Description	Temperature Condition	Lubrication Schedule			Description of Works
					A	B	C	
1	2	3	4	5	6	7	8	9
Engine crankcase	1	10 l	Oil M8B or M6з/10B (ДВ АСЗп - 10В)	All-season	++	+	—	Change oil and replace oil filter element.
			Oil M4з/6B_1 (АСЗп-6)	For cold climate				During daily maintenance check oil level, add oil if required
Water pump bearing	1	15 g	Litol-24 Lubricant ЛИТА	All-season	—	+	—	Lubricate through grease fitting
Pneumo-centrifugal governor sensor	1		Engine oil		+	+	—	Fill tube with oil
Clutch release sleeve bearing	1	20 g	Litol-24 ЛИТА	All-season	+	+	—	Press out one charge of grease cup
Housings:								
— transmission	1	3l/6 l* 4.2 l**	Transmission oil $ТС_П$-15К or ТАП-15В or «Super Т-3 (ТМ-5)» or “Ufalub Unitrans” or “Devon Super T (ТМ5-18)”	From –30°C up to +50°C	+	—	—	Check oil level, add oil if required. Oil level in gearbox should be within 0–7 mm from the lower edge of the check hole, in transfer case — 0–5 mm
— transfer case		1.6 l						
					—	+++	—	Change oil. Clean magnetic drain plug of transfer case

* For 5-speed gearbox.
** For 4-speed geabox with power take-off.

1	2	3	4	5	6	7	8	9
			Oil $ТС_{П}$-10 or mixture of oils $ТС_{П}$-15К or ТАП-15В or «Super T-3 (TM-5)» or «Ufalub Unitrans» or «Devon Super T(TM5-18)» with 10–15% of arctic or winter grade fuel oil	Below – 30°C	—	—	+	Change oil (in spring)
Propeller shaft universal joints	6	96 g	Lubricant 158	All-season	—	+++	—	Strip, remove old lubricant, wash the parts, pack each bearing with fresh lubricant and assemble the joints. Lubricate minimum once in 5 years.
Propeller shaft splined joints	3	600 g	Solid oil Ж, solid oil С	All-season	++	+	—	Lubricate through grease fitting (20 strokes of grease gun)
Housings:								
— front axle	1	7.7 l	Transmission oils «Super T-3 (TM-5)» or «Ufalub Unitrans» or «Devon Super T (TM5-18)»	Above –25°C	+	—	—	Check oil level and add oil if required. Oil level should be within 0–3 mm from the lower edge of the filling hole
— rear axle	1	6.4 l						
						+++	—	Change oil
			Transmission oil $ТС_{З}$-$9_{ГИП}$ or mixture of oil «Super T-3 (TM-5)» or «Ufalub Unitrans»	Below –25°C	—	—	+	Change oil in spring

1	2	3	4	5	6	7	8	9
			or «Devon Super T (TM5-18)» with 10–15% of arctic or winter grade fuel oil					
Pivot bearings and	2	60 g	Litol-24	All-season	+	+	—	Lubricate through grease fitting (5–6 strokes of grease gun)
steering knuckle joints		1000 g			—	++	—	Rinse the steering knuckles, pack with 500g of lubricant each
Towing device pin	1	10 g	Litol-24, solid oil Ж or solid oil С	All-season	+	+	—	Lubricate through grease fitting
Front and rear wheel hub bearings	4	800 g	Litol-24, ЛИТА	All-season For cold climate	-	++	-	Clean the hubs, rinse the bearings, pack each bearing with 50g and hub cavity with 150g of fresh lubricant
Gland units	4		Litol-24, ЛИТА	All-season	—	++	—	Rinse cavity near glands and between them, pack with fresh lubricant
Steering gear case	1	0.5 l	Transmission oils «Super T-3 (TM-5)» or «Ufalub Unitrans» or «Devon Super T (TM5-18)»	All-season	—	—	+	Check level and add oil if required. Oil level should be within 8–15 mm from the lower edge of the filling hole

1	2	3	4	5	6	7	8	9
Steering gear universal joints	3	15 g	Litol-24, solid oil Ж, solid oil C	All-season	—	—	+	Lubricate through grease fittings
Drag link joints	2	60 g	Litol-24, ЛИТА	All-season	+	+	—	Lubricate through grease fittings (4–5 strokes of grease gun in rear joint and 6–7 strokes — in front joint)
Tie rod joints	2	30 g	Litol-24, solid oil Ж, solid oil C	All-season	+	+	—	Lubricate through grease fittings till fresh lubricant shows up through the hole in the cap
Steering hydraulic booster power cylinder joint	1	15 g	Litol-24, solid oil Ж, solid oil C	All-season	+	+	—	Lubricate through grease fitting (6–7 strokes of grease gun)
Power steering system	1	1.8	Oil for hydromechanic transmission «P»	From –35° C to +45° C	+	+	—	Change oil level in the tank and top up if required
			Oil for hydromechanic transmission «A»	Only in summer	—	—	+	Change oil in autumn
			Oil ВМГЗ	Only in winter (below –35°C)	—	—	+	Change oil in spring
Brakes vacuum servo unit air filter	1	0.05 l	Engine oil		—	+	—	Wash filter element in kerosene, soak it in engine oil, let the oil drip off and fit it back

1	2	3	4	5	6	7	8	9
Parking brake release fork spherical bearing	1	5 g	Litol-24, solid oil Ж or solid oil С	All-season	—	—	+	Lubricate through grease fitting till fresh lubricant shows up out of the gap
Brake and clutch hydraulic drive refilling tank	1	1.35 l	Brake fluid «РОСДОТ» or «Томь»	All-season	+	+	—	Check level, add to the required level, if necessary
					—	—	+	Change fluid (in spring)
Ignition distributor rotor hub	1		Engine oil	All-season	—	+	—	Oil the hub with 4–5 drops
Door hinges	4	80g	Litol-24, ЛИТА	All-season				Lubricate when squeak appears
Engine cooling system:	1		Coolants ТОСОЛ-А40М, ОЖ-40 «Лена»	Above –40°C	—	—	+	Check density at seasonal maintenanance (in autumn)
— with starting preheater		25.5 l	ТОСОЛ-А65М, ОЖ-65 «Лена»	For cold climate				
— without starting preheater		24.0 l						
Winch reduction gear	1	0,8 l	Transmission oils «Super Т (ТМ-5)», МТ-16П	All-season	—	+	—	Check oil level and top up to the level of the check plug, if required
						+++		Change oil
Winch drive universal joint bearings	4		Transmission oils ТСп-15К, ТАП-15В, «Super Т (ТМ-5)»	Above –30°C	—	++	—	Lubricate through grease fittings till fresh lubricant shows up through all centre cross glands
			Oil Тсп-10	Below – 25°C				

1	2	3	4	5	6	7	8	9
Winch barrel shaft	1	50 g	Litol-24, solid oil Ж, solid oil C	All-season	+	+	—	Lubricate through grease fitting till fresh lubricant shows up. When using winch, lubricate in 10 pullings
Winch cable guide rollers	2	25 g	Litol-24, solid oil Ж, solid oil C	All-season	+	+	—	Lubricate through grease fitting till fresh lubricant shows up When using winch, lubricate in 10 pullings
Winch barrel shaft splines	1	0.04 l	Engine oil	All-season	+	+	—	Oil from oil cup

Equivalents of Home and Foreign Make Fuels, Oils, Lubricants and Fluids

Table 2

Home make	Foreign make t°	Recommended ranges, °C (ambient)
1	2	3
Gasoline A-76	Gasoline 80	Research Octane Number
Engine oils	API SF/CC	
	For tropic climate	
	SAE 50	Above +45°C
	SAE 40	from 0 up to +45° C
	SAE 30	from –5 up to +45° C
	For moderate climate	
M-8B, M-6з/10B	SAE 20W-40	from –10 up to +45° C
	SAE 20W-30	
	SAE 15W-40	from –15 up to +45° C
	SAE 15W-30	from –15 up to +35° C
	SAE 10W-40	from –20 up to +35° C
	For cold climatic zone	
M-5з/10A, M-4з/6B1	SAE 5W-40	from –25 up to +35° C
Transmission oils		
ТСп-15К, Тап-15В	API GL-4 SAE 85W90 Mil-L-2105	from –25 up to +35° C
ТСп-10	API GL-4 SAE 80W Mil-L-2105	For cold climatic zone
«Super T-3 (TM-5)» or «Ufalub Unitrans» or» Devon Super T (TM5-18)»	API GL-5 SAE 85W90 Mil-L-2105B	from –25 up to +50° C
ТСз-9гип	API GL-4 Mil-L-46167	For cold climatic zone
Lubricants		
Litol-24	Mil-G-18709A, Mil-G-10924C	from –40 up to +60° C
Fat or synthetic solid oil	Mil-G-10924C	from –40 up to +50° C

1	2	3
Lubricant (ПВК) ЛИТА No. 158 Graphite grease УСс-А	Mil-C-11796B SM-1C-4515A (Ford) Nico Crease 57 «Nico International Inc.» or Alvania Grease 2 (MoS_2) «Shell International Petroleum Co.Ltd» VV-G-671d 078.01 (RFA)	from –40 up to +50° C For cold climatic zone
Power steering oil Oil grade «А» Oil grade «Р» Spindle oil АУ Oil ВМГЗ	 ATF ISO-6074-HM-22 ISO-6074-HH-22 ISO-6074-HV-15	 For tropic climate from –45 up to +45 C° from –25 up to +45° C For cold climatic zone
Fluid for shock absorbers Fluid АЖ-12т Oil МГЕ-10А	 VTL9150-33 ISO-6079-HV-15	 Above -45°C For cold climatic zone
Brake fluids «РОСДОТ» «Томь»	 Brake fluid of type DOT-4 SAE J1703 FMVSS 116 Brake fluid of type DOT-3 SAE J1703 FMVSS 116	 For all climatic zones For moderate climatic zone
Coolants ТОСОЛ-А40М ОЖ-40 «Лена» ТОСОЛ-А65М ОЖ-65 «Лена»	 Antifrizing agent with inhibitor corrosion complex and foam quencher	 from –40 up to +50° C For cold climatic zone

While choosing the lubricant or fluid give preference to the following firms: Shell, Mobil, Castrol, British Petroleum, Agip, Gulf.

13.3. Fuel Filters

Coarse fuel filter (fig 13.1) is installed on the left side member of the frame in front of the fuel tank.

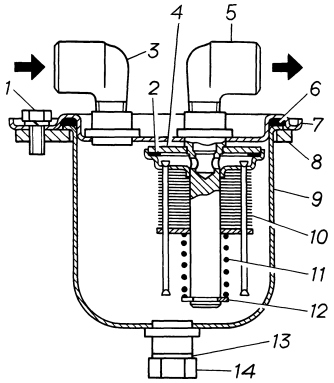


Fig. 13.1. **Coarse fuel filter:**
1 — cover bolt; 2 — filtering element gasket; 3, 5 — pipe connections; 4 — washer; 6 — cover gasket; 7 — cover; 8 — bracket; 9 – filter body; 10 – filtering element; 11 — spring; 12 – spring washer; 13 – drain plug seal; 14 – drain plug.

Coarse fuel filter care includes draining of sediment in regular intervals through drain plug *14* (fig. 13.1) and also washing with clear gasoline and blowing through with compressed air filter body *9*, filtering element 10 and filter parts.

To remove filtering element it is necessary to disconnect the pipelines from pipe connections *3* and *5* of filter body *9*, srew off bolt *1*, remove filter body *9* with bracket *8*, remove washer *12* and spring *11*.

Assemble the filter in reverse order.

Fine fuel filter (fig. 13.2) is installed before the carburator.

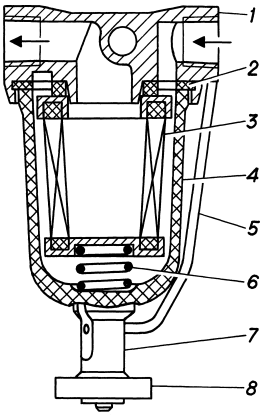


Fig. 13.2. **Fine fuel filter:**
1 — body; 2 — gasket; 3 — paper filtering element; 4 — bowl; 5 — rocker; 6 — spring; 7 — bowl holder; 8 — fly nut.

Fine fuel filter care includes washing of bowl *4* at regular intervals and replacement of filter element.

When installing the filter be careful that the arrows on the top of the body should correspond to the direction of fuel flowing.

13.4. Oil System Servicing

Check engine oil level daily before engine starting. When doing so park the vehicle on the level ground. The oil level must be between marks «**0**» and «**П**» on the oil dipstick. It is prohibited to run the engine when the oil level is below lower and above upper marks. Check the oil level not earlier than in 5 minutes after the engine stopping. Oil changing should be carried out when the engine is hot, not less than 10 minutes will be required to drain the oil completely.

13.5. Engine Oil and Oil Filter Element Changing

The engine is equipped with full-flow oil filter (fig. 13.3) with detachable filtering element «РЕГОТМАС 440А-1-06».

When changing engine oil, use the oil specified in this Operating Instructions only. In case You substitute one oil grade for the other, engine rinsing should be carried out by all means.

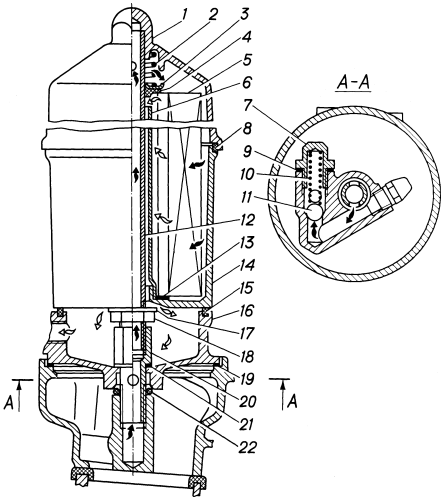


Fig. 13.3. **Oil filter:**

1 — filter body (upper part); 2 — spring; 3 — thrust washer; 4 — sealing ring; 5 — reinforcing ring; 6 — filtering element; 7 — filter body pipe; 8 — safety valve plug; 9 — safety valve gasket; 10 — filter body gasket; 11 — safety valve ball; 12 — oil filter tube; 13 — filtering element gasket; 14 — filter body (lower part); 15 — filter gasket; 16 — filter body (middle part); 17 — washer; 18 — connecting nut; 19 — body middle part gasket; 20 — pipe connection; 21 — sealing gasket; 22 — sealing ring.

Renew the filtering element every time when oil changing is carried out.

For this purpose:

1. Grasp the upper part of the filter body and screw the filter off. If sticking occurs, apply 30-mm wrench to the hexahedron on the upper part of body *1*.

2. Carefully unscrew nut *18*, located on the connecting oil supply tube *12* and drain oil from the filter body.

3. Disconnect sections *1* and *14* and renew filtering element *6*.

4. Check the availability and correct mounting of sealing parts *2*, *3*, *4*, *5*, *10*, *13* and washer *17*. Connect the sections and fix them with the help of nut *18*.

5. Lubricate gasket *15* with engine oil, install the filter onto the engine, screw the filter in by hand till gasket *15* begins to compress and additionally add 0.5 – 1 turn.

6. Start the engine. If the oil leakage is noticeable after engine operation for several minutes at increased speed, screw the filter in additionally by hand.

14. SUPPLEMENTS

Supplement 1

Service Brake System Drive Diagram

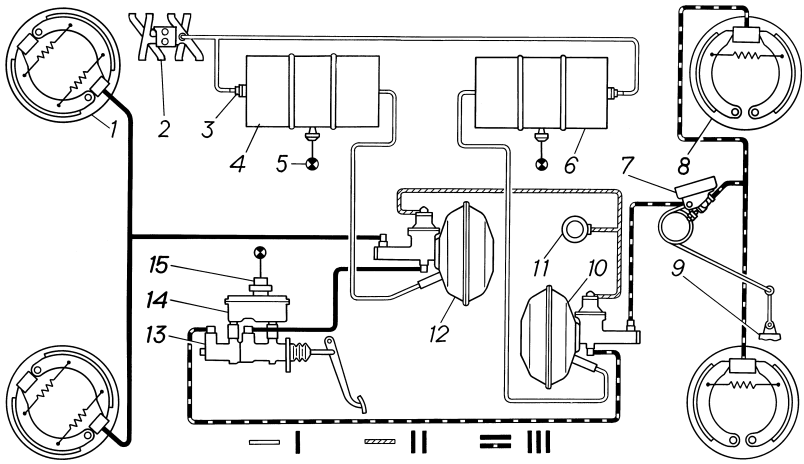


Fig. 14.1. **Service Brake System Drive Diagram:**

I — vacuum; II — air; III — brake fluid

1 — front wheel braking gear; 2 — vacuum pump; 3 — shut-off valve; 4 and 6 — air bottles; 5 — bottle air low level warning lamp; 7 — pressure regulator; 8 — rear wheel braking gear; 9 — rear axle; 10 and 12 — vacuum servo units; 11 — air filter; 13 — master cylinder; 14 — refilling tank; 15 — brake fluid low level sensor.

Special Features of Vehicle Front Suspension

Vehicle suspension is mounted on the longitudinal half elliptical springs with hydraulic shock absorbers.

To avoid vehicle skidding in emergency braking special linings *2* with a rib are installed on the front springs (fig. 14.2), and buffer-brackets *1* are mounted on the frame side members.

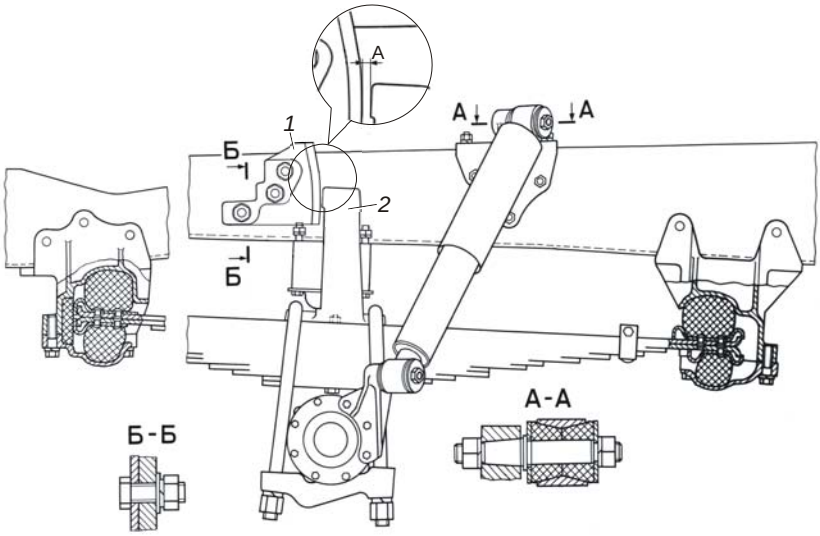


Fig. 14.2. **Front suspension:**
A — gap between lining rib and buffer bracket.
1 — buffer-bracket; 2 — lining.

The gap between the lining rib and buffer bracket should be 1–3 mm. To adjust the gap the holes in the buffer bracket are made oval.

Tightening torque of buffer-bracket attachment to the frame are given in supplement 3.

Supplement 3.

Filling Capacities

Fuel tank (two), l	210
Engine oil system (without oil cooler capacity), l	10
Engine cooling system, l:	
— with starting preheater	25.5
— without starting preheater	24
Gearbox case, l	3 (6)*
Gearbox case with power take-off, l	4.2
Transfer case, l	1.6
Rear axle housing, l	6.4
Front axle housing, l	7.7
Steering gear case, l	0.6
Shock absorber (each), l	0.4
Power steering, l	1.8
Front axle steering knuckles, g	1000
Brake and clutch hydraulic system, l	1.35
Windscreen washer tank, l	1.5
Starting preheater tank, l	3

Supplement 4

Weights of Main Parts and Units, kg

Engine (with clutch and gearbox)	335 (356)*
Gearbox	54 (75)*
Power take-off**	14
Transfer case (with parking brake)	82
Rear axle (with brake hubs)	280
Front axle (with brake hubs)	354
Frame	300
Winch**	120
Platform	480

* The data for 5-speed gearbox are given in brackets.
** Mounted on some of the vehicles.

Tightening Torques of Important Threaded Junctions

Junction	Tightening torques daN·m (kgf·m)
1	2
Nuts, fastening:	
cylinder heads	7.7 – 8.2
rocker arm covers	1.0 – 1.5
exhaust manifolds	4.4 – 5.6
silencer pipes receiver	2.5 – 3.2
connecting rod bolts	6.8 – 7.5
main bearings caps	10 – 11
flywheel to the crankshaft flange	7.6 – 8.3
clutch housing to the cylinder block	4.4 – 5.6
gearbox to clutch housing	8 – 10
gearbox output shaft flange	28 – 36
transfer case primary shaft flange and front axle drive flange	25 – 30
transfer case secondary shaft flange	24 – 36
axle shaft	12 – 14
steering wheel	6.5 – 8
steering pump pulley	6.0 – 6.5
compressor pulley	11 – 14
spring U-bolts	20 – 22
wheels	40 – 50
front and rear wheel hub bearings	25 – 31
shock absorber reservoir	9 – 15
front suspension buffer-brackets:	
M10	5 – 7
M14	14 – 20
steering gear bracket to side member and steering gear to bracket	4.4 – 6.2
drag link pins	11 – 14
drag link to valve	5 – 6.2
tip for drag link length adjustment	5 – 6.2
Nut of main drive driving gear flange fastening	28 – 40
Nut of steering arm fastening	10 – 14

1	2
Fastening nut of gearbox* lever housing	2.8 – 3.6
Crankpin threaded cap	3.8 – 4.2
Bolts, fastening	
Steering pump cover	2.1 – 2.8
power steering tank	0.6 – 08
spring bracket cover	8 – 11
reducer and driving gear bearings coupling	9 – 11
crankshaft pulley	1.4 – 1.6
transfer case covers	2.4 – 3.6
transfer gear engagement forks	2.8 – 3.6
gearbox primary shaft cover	1.4 – 1.8
gearbox other covers	2.4 – 3.6
Bolts and nuts of propeller shafts fastening	8 – 10

Supplement 6

Electric Bulbs Used

Location	Type
Head lamp	A12-45+40
Front lamp:	
clearance	A12-5
turn indicator	A12-21-3
Reversing lamp	A12-21-3
Rear fog lamp	A12-21-3
Turn indicator repeater	A12-5
Cab dome lamp	A12-21-3
Rear lamp:	
clearance, licence plate	A12-5
turn indicator and stop light	A-12-21-3
Under-hood lamp	A12-10
Inspection lamp	A12-21-3
Instruments illumination lamps	AMH12-3-1
Warning lamps	A12-1,2
Button switches lighting lamps	A12-1,2
Pilot lamp of emergency flasher warning system button switch	A12-1,2

* for 5-speed gearbox.

ROLLING BEARINGS USED IN THE VEHICLE

Type of bearing	Bearing No.	Q-ty per assembly	Location
1	2	3	4
Needle bearing with one outer stamped race	942/8	1	Carburator
Single-row radial ball bearing	20703K or 20703A1, 20803КУ or 20803АК1У	1	Water pump
Single-row thrust ball bearing	588911	1	Clutch
Single-row radial ball bearing	80203АСУ	1	Front bearing of gearbox primary shaft
Single-row radial ball bearing	50209A2 В6-213АКУШ*	1	Rear bearing of gearbox primary shaft
Single-row radial ball bearing	50307A1 6-311АКУ*	1	Rear bearing of gearbox output shaft
Radial roller bearing	60-42207КМ	1	Gearbox layshaft
Single-row radial ball bearing	50307A1	1	Gearbox layshaft
Single-row taper roller bearing	7207A*	2	Gearbox layshaft
Raceless radial roller bearing	864904 64706*	2 1	Shaft of gearbox reverse gear
Raceless radial roller bearing	264706*	1	Front bearing of gearbox output shaft
Raceless double-row needle radial roller bearing	664910E*	5	Gears of gearbox output shaft

* For 5-speed gearbox.

1	2	3	4
Roller 7×17		14	Front support of gearbox output shaft
Single-row radial ball bearing	208A	1	Rear bearing of gearbox output shaft
Radial roller bearing	12304M	1	Rear bearing of transfer case primary shaft
Radial roller bearing	12309KM	1	Bearing of transfer case secondary shaft
Single-row taper bearing	7307A	4	Intermediate shaft and front axle drive shaft of transfer case
Single-row radial ball bearing	50407	1	Front bearing of transfer case primary shaft
Radial needle bearing without inner race	804704K5	24	Cardan drive
Single-row radial-thrust taper roller bearing	27307	4	Steering knuckles of front driving axle
Radial-thrust roller bearing	27709У4III2	2	Rear bearing of front and rear axle driving gear
Single-row taper bearing	27308AK-У	2	Front bearing of front and rear axle driving gear
Single-row radial-thrust taper roller bearing	У-807813A	4	Differential of front and rear axles
Radial roller bearing	20-102605M	2	Driving gear of front and rear axles – rear end

1	2	3	4
Single-row roller radial-thrust taper bearing	6-7515A	4	Front and rear wheel hubs
	У-807813а	4	Front and rear wheel hubs
Single-row radial-thrust ball bearing	916904Е	2	Steering gear
Roller needle universal joint bearing without inner race	904700УС17	12	Steering shaft universal joints
Single-row radial ball bearing with two-way sealing	180204С17	1	Steering shaft support
Single-row radial thrust ball bearing	636905	2	Steering column
Single-row radial ball bearing	207	2	Compressor

CONTENTS

Инструкция по эксплуатации автомобилей ГАЗ-3308
на английском языке.

Отпечатано в ООО «Печать НН», з. 5521.