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ZIS-156A GAS-CYLINDER TRUCK

[Information on graphics material is appended]

The Moscow Motor Vehicle Plant imeni Stalin, aided by NAMI (Scientific Research Motor Vehicle and Motor Institute), has developed the ZIS-156A gas-cylinder truck for operation on liquefied gas. In 1952, an experimental group of these trucks were tested by the plant.

The ZIS-156A is a general-purpose gasoline truck based on the ZIS-150, but equipped with special gas equipment. The truck operates on a mixture of butane and propane, but can also operate on gasoline.

The basic units of the gas equipment are a reducer and a mixing carburetor. These units are almost fully unified [utilize common parts] with the gas units of the ZIS-156 gas-cylinder truck, which operates on compressed gas.

Figure 1 [appended] shows the layout of the gas equipment of the ZIS-156[A]. The cylinder (1), which holds 225 liters of liquid gas, is filled to 90 percent of its capacity. Thus, the cylinder holds gas in liquid and vapor form. The cylinder is filled through filling valve (2). Gas is fed into the fuel system from the liquid (valve 3) and vapor (valve 4) sections of the cylinder. However, it is recommended that the vapor be used only for starting and warming up a cold engine. In ordinary operation, the liquid gas is used as fuel. The maximum fuel capacity indicator (5) is a simple valve which indicates when the tank is 90 percent full of liquid gas. Safety valve (6) opens automatically when the gas pressure in the cylinder exceeds 16 kilograms per square centimeter. In addition, there is a float type liquid fuel indicator (7) on the end of the cylinder. When either of the fuel feed valves (3 or 4) is opened, gas flows to the main valve (8), and manometer (9) starts indicating the gas pressure in the cylinder. When the main valve is opened, gas enters the vaporizer (10), which is located in the cylinder water jacket. The fully vaporized gas then passes through the filter (11)

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and enters the reducer (12). In the reducer, the pressure of the gas is brought down (in two stages) to atmospheric pressure, after which it passes through the low pressure gas line (13) into the mixing carburetor (14). After the gas is mixed with air, the mixture is drawn into the engine's cylinders. Manometer (15) indicates the pressure of the gas in the first stage of reduction and is used to check for proper operation of the reducer.

In the plant tests, the ZIS-156A was driven 10,000 kilometers. The gas equipment proved itself reliable and efficient on this run.

With a pay load of 4 tons, the ZIS-156A truck can attain a speed of 65 kilometers per hour on a paved road, but it has slightly less pickup than the ZIS-150. The tractive power of the ZIS-156A (measured in first gear) is 1.5 percent less when the truck is operated on gas than when it is operated on gasoline. With a pay load of 4 tons, the truck consumes 13-15 cubic meters of gas per 100 kilometers on paved highways, and 14-16 cubic meters of gas per 100 kilometers in city driving. The ZIS-156A consumes as much liquefied gas as the ZIS-150 consumes gasoline. With a pay load of 4 tons, the ZIS-156A can travel 450-500 kilometers on a tank full of gas.

The ZIS-156A truck has been recommended for interdepartmental tests.

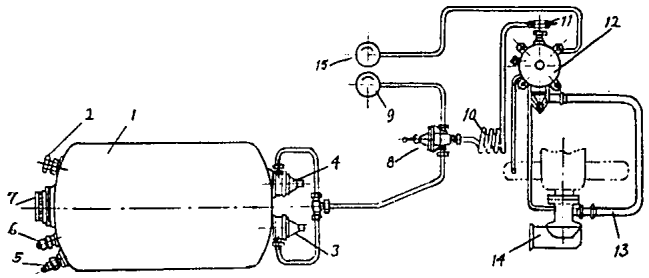

Figure 1. Layout of the Gas Equipment of the ZIS-156A Truck

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