

BRDM-2

1. Contents

2. Description.....	1
3. Technical Characteristics.....	9
4. Body	16
5. Armament	29
6. Engine.....	48
7. Fuel Systems	60
8. Lubrication.....	79
9. Coolant	89
10. Heating System.....	100

2. Description

General Description

Armored reconnaissance and patrol vehicle BRDM-2 (Fig. 1, 2) is a combat wheel floating armored vehicle, armed with 14.5-mm heavy machine gun KPVT, coupled with a 7.62-mm machine gun in the tower installation.

BRDM-2 - two-axle, all wheel drive car, has a high dynamic qualities, greater cruising range, increased maneuverability, able to move across water obstacles.

The machine is equipped with additional wheels allow to overcome the trenches and the trenches of the normal profile.

The machine frame is made of armor, closed, sealed, equipped with a supercharger to create back pressure and serves as a foundation on which all units are mounted machines and mechanisms.

In the stern of the hull mounted carburetor V-shaped eight-cylinder engine with 140 hp

Transmission includes a single-plate clutch, manual transmission, transfer case, driveline, and final drives of the two driving axles with differentials.

The drive is a hydraulic clutch control. Transmission, four-, third and fourth gears are equipped with synchronizer. The drive transmission control interlocked with the drive clutch on the first, second gear and reverse gear.

Differentials of both bridges leading self-locking - cam, high friction.

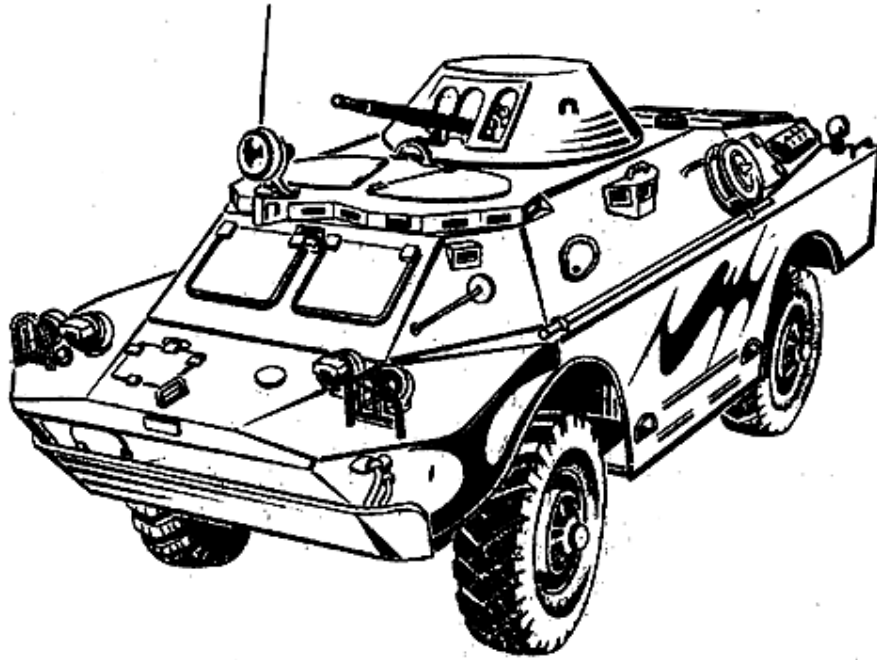


Figure 1. The combat reconnaissance patrol vehicle BRDM-2 (front view)

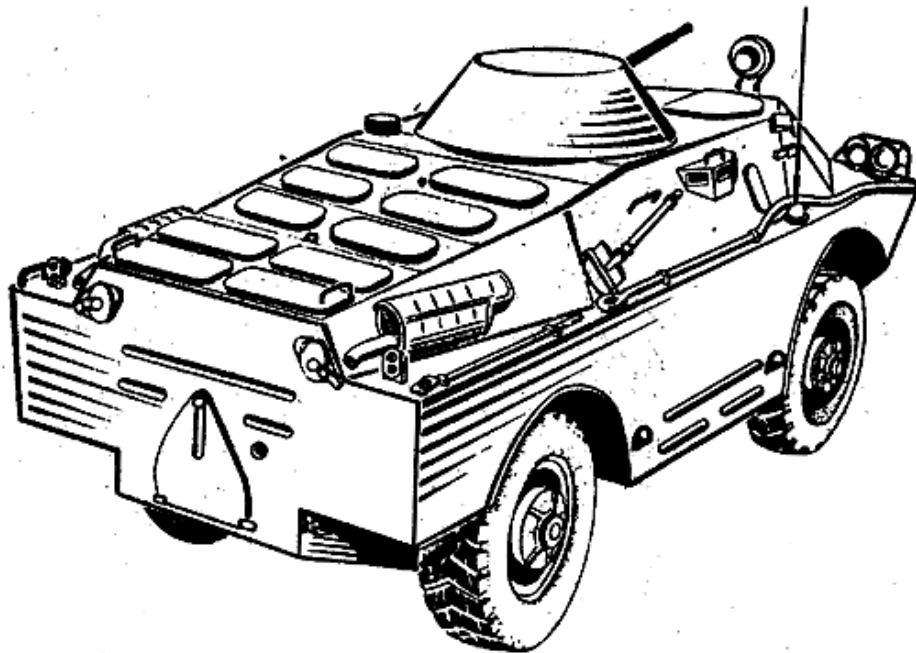


Figure 2. The combat reconnaissance patrol vehicle BRDM-2 (rear view)

Wheels with pneumatic tires in size 13.00-18. "The car is equipped with centralized control of air pressure in tires.

Suspension of the machine consists of four longitudinal semi-elliptic springs and telescopic hydraulic shock absorbers double acting, set two on each bridge.

Wheels front axle operated with the power steering gear. Sealed wheel brakes, hydraulic and pneumatic; parking brake with a mechanical drive.

For the motion of the water jet propelled machine is equipped with a drive from the gearbox through the PTO, driveshaft and gearbox water jet.

The flap water jet and volnootrazhatelny plate driven by a hydraulic actuator. Turn the machine on the water produced by water rudders, interlocked with the steering controls on land.

Additional wheels (two on each side) sinking, drive, mounted on a rocker. They are raised and lowered by hydraulic lifts. Drive on training wheels is provided from a separate transfer case PTO, drive shaft and chain drive.

For self and pulling out of the same type of machines when the machine jams, BRDM-2 in front of the case established a mechanical winch is driven by the shaft of the transfer case through the driveline.

Electric vehicles 24 V

Means of communication is the ultra R-123M radio. In the car navigation equipment installed TNA-3.

For radiation and chemical reconnaissance installed on your machine roentgenometer DP-ST and the military unit chemical reconnaissance (VPHR). The machine is equipped with day and night observation devices. Hull machine is divided into three divisions: power plant, military and government.

Branch of the power plant

Branch of the power plant (Fig. 3) is located in the rear of the hull. It has the engine complete with clutch, gearbox and power takeoff at the fountain, water and oil radiators. heat exchanger, preheater, bilge pump, compressor, electrical machines and apparatus, water-jet propulsion device with the gearbox and propeller-driven PTO, gasoline tanks, battery and air tank.

Branch of the power plant is isolated from the rest of the case sealed partition. To access the bulkhead in the engine are folding doors. On the left side of the filter-set installation.

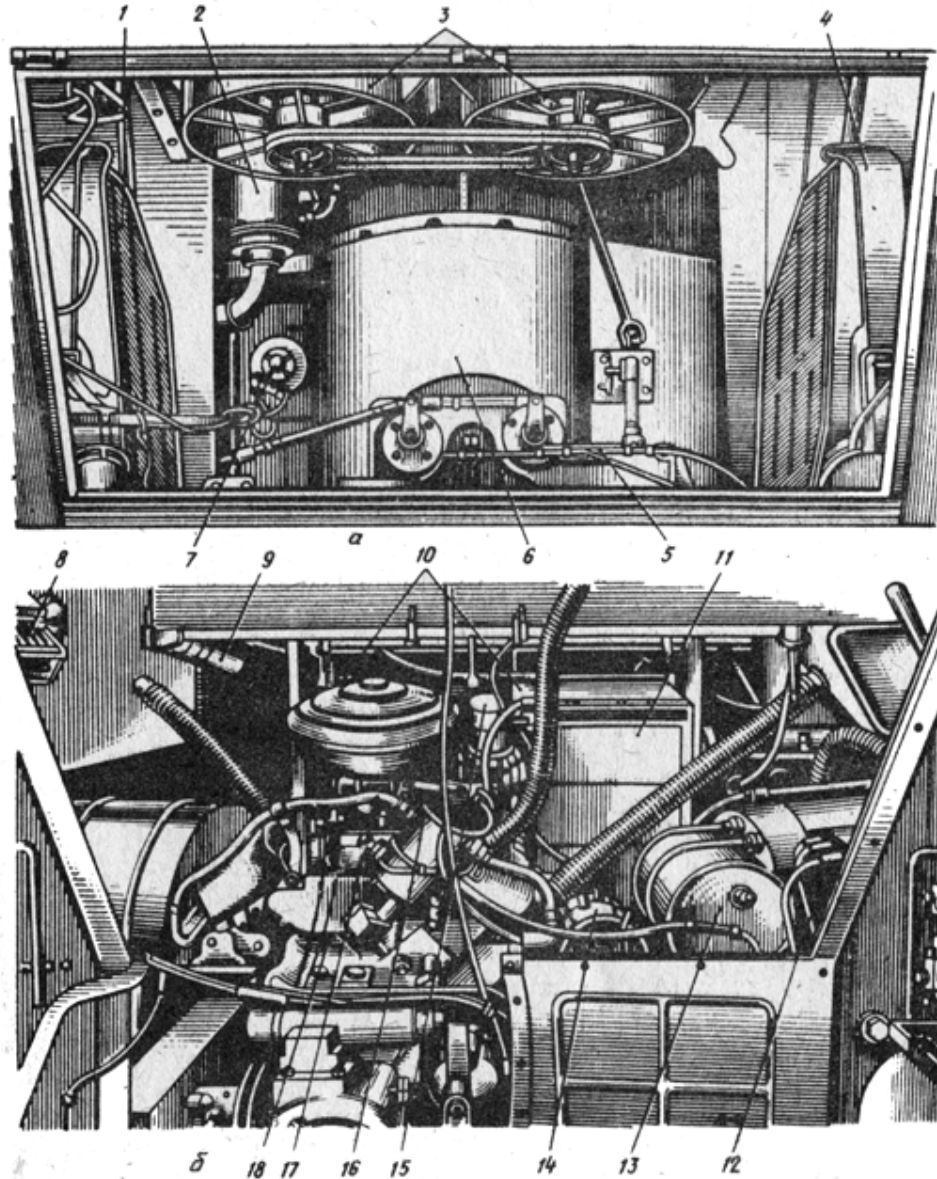


Figure 3. Branch of the power plant:
 and - aft compartment separation, b - a view from the crew compartment, 1 - left fuel tank, 2 - heat exchanger, 3 - fans, 4 - the right fuel tank, 5 - cylinder actuator control valve water jet, 6 - water jet tube, 7 - bilge pump, 8 - Relay controller, 9 - broadly-condensing tank, 10 - radiator cooling system, 11 - oil coolers, 12 - Battery 13 - air balloon, 14 - generator, 15 - compressor, 16 - valve plug, 17 - Carburetor, 18 - the engine with the clutch and gearbox assembly

Department of Combat

The fighting compartment (Fig. 4) is located in the middle of the hull. It has machine gun turret, hydraulic additional wheels, two single seats for the crew, laying ammunition, spare parts of machine guns, cars and radios, first aid kit, fire extinguisher, installation of night vision devices. In the middle part of the crew compartment at the bottom of the posted speed transfer case, complete with gearbox and PTO for additional wheel and winch.

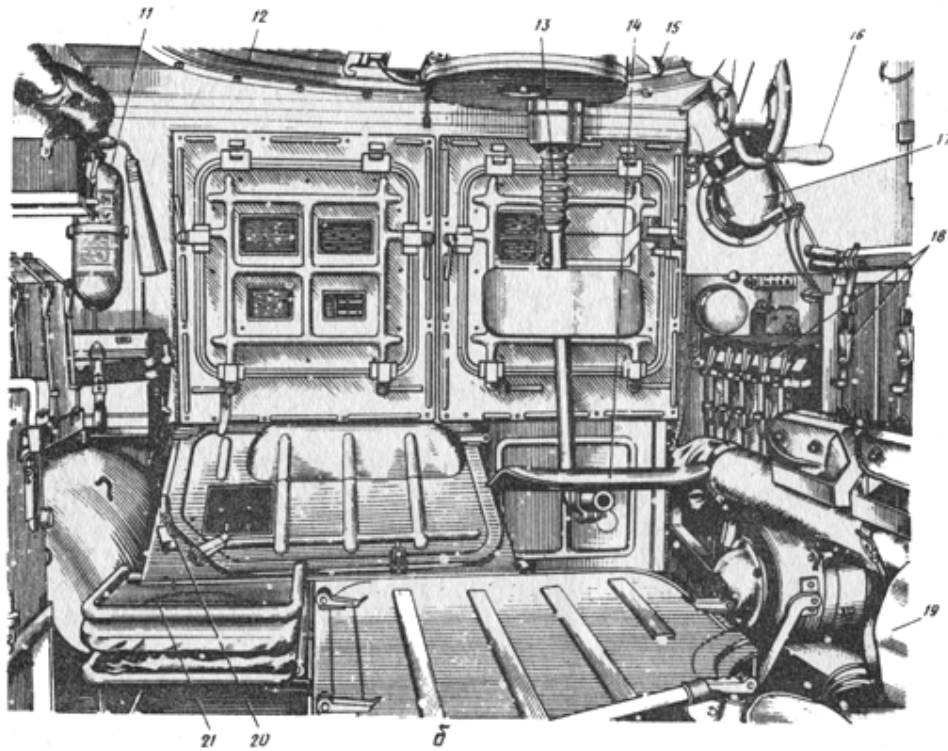


Figure 4. Department of Combat

11 - a fire extinguisher, 12 - turret, 13 - leather swivel mechanism machine gun, 14 - suspension seat machine gun, 15 - Handle retainer tower. 16 - lever hoist machine gun, 17 - Blower, 18 - boeukladki left side, 19, 21 - seat crew members, 20 - handle bilge valve actuator

Department of Management

Management Branch (Fig. 5) is located in front of the case. It has machine controls, monitoring devices, the radio, navigation equipment, winch and its drive roentgenometer DP-ST, a heater, which also provides warm air blowing windshields, seats, the commander and driver.

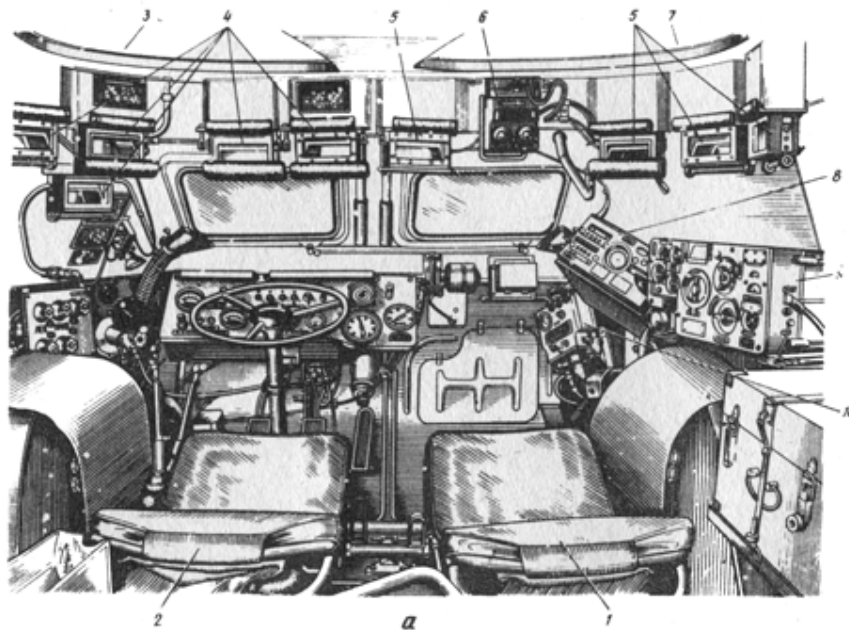


Figure 5. Department of Management

1 - the commander's seat, 2 - the seat of the driver, 3 - driver's hatch, 4 - monitoring devices of the driver (daily), 5 - monitoring devices commander, 6 - the day the commander of the unit of observation TPKU-2B, 7 - commander's hatch 8 - Coordinator of navigational equipment: 9 - radio, 10 - roentgenometer

Between the floor and the bottom of the crew compartment and the separation of control rod drive control are manual transmission, transfer case, power take-off on the water jet propulsion, extra wheels, winch, brake, water controls, piping system of hydraulic additional wheels and steering gain.

Traction control blinds and piping hydraulic control valve water jet pass along the left side of the body through the partition and sealed it.

Pipelines clutch, brake and wheel system of regulation of air pressure in tires are partly underneath and partly along the hull sides. The housings of the transmission and transfer case mounted on rubber seals.

The windows in the first cross member body, through which the traction drive control units power transmission and hydraulic pipes are hermetically sealed.

Location of controls and instrumentation, is shown in Fig. 6.

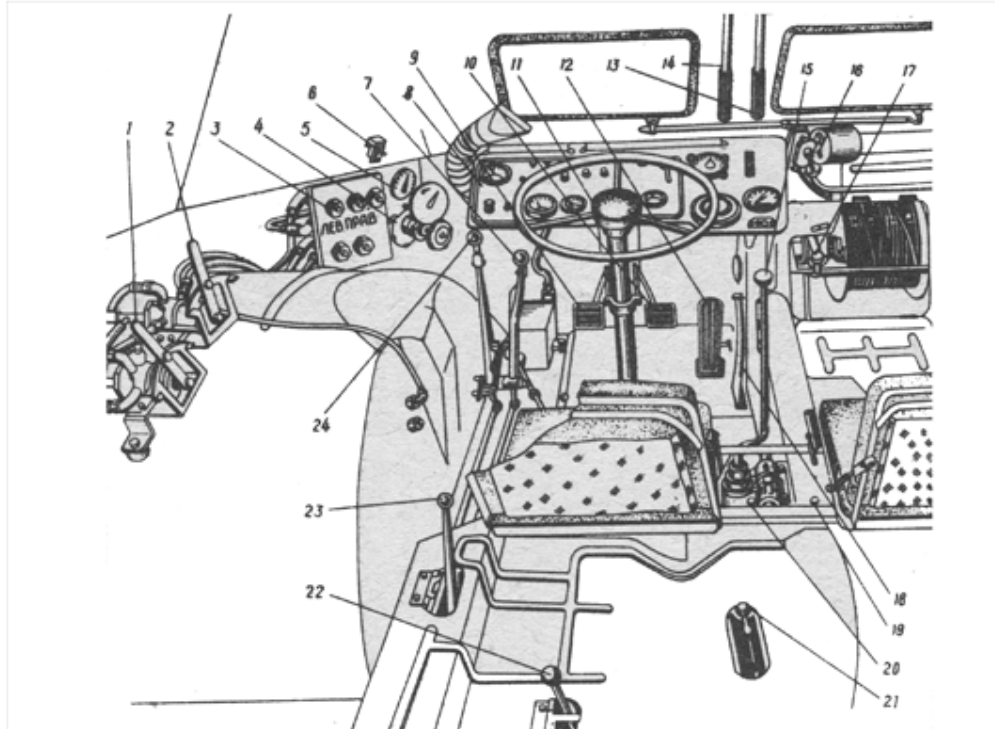


Figure 6. Controls and instrumentation

1 - hydraulic crane handle the additional wheels, 2 - arm crane hydraulic dampers and water jet volnootrazhatelya 3 - unit of tire valves, 4 - air regulator system of regulating the air pressure in tires, 5 - gauge air cylinders, 6 - switch to electric motor and the air outlet covers vozduhopritoka 7 - front axle control arm, 8 - plate instrumentation, 9 - the clutch pedal, 10 - the brake pedal, and 11 - button signal, 12 - the accelerator pedal 13 - Handle bronekryshkoy inspection hatch commander, 14 - Handle bronekryshkoy sight of the driver's hatch, 15 - the shift lever, 16 - switch wiper, 17 - leather clutch drum winch, 18 - lever parking brake system, 19 - button throttle control, 20 - button control choke; 21 - Lever control power takeoff at the fountain; 22 - lever hoist, 23 - lever additional wheels, 24 - reduction gear lever

9 foot clutch pedal 10 brake pedal 12 and accelerator located on the generally accepted scheme for vehicles.

To the right of the driver's seat is the gear lever. Between the seats a driver and a commander in the hatch floor, close the lid, there are 20 button control choke carburetor and the button 19 of the throttle. To the right of the driver placed the drive lever 18 parking brake system for the driver's seat - lever controls 21 power takeoff at the fountain. For the driver's seat in the hatch, close the lid, is the lever 22 controls the winch.

To the left of the driver's seat are the lever 24 and the reduction gear control lever controls the front axle 7 machine, and left rear seat - lever actuator 23 additional wheels.

Layout of controls is shown in Fig. 7.

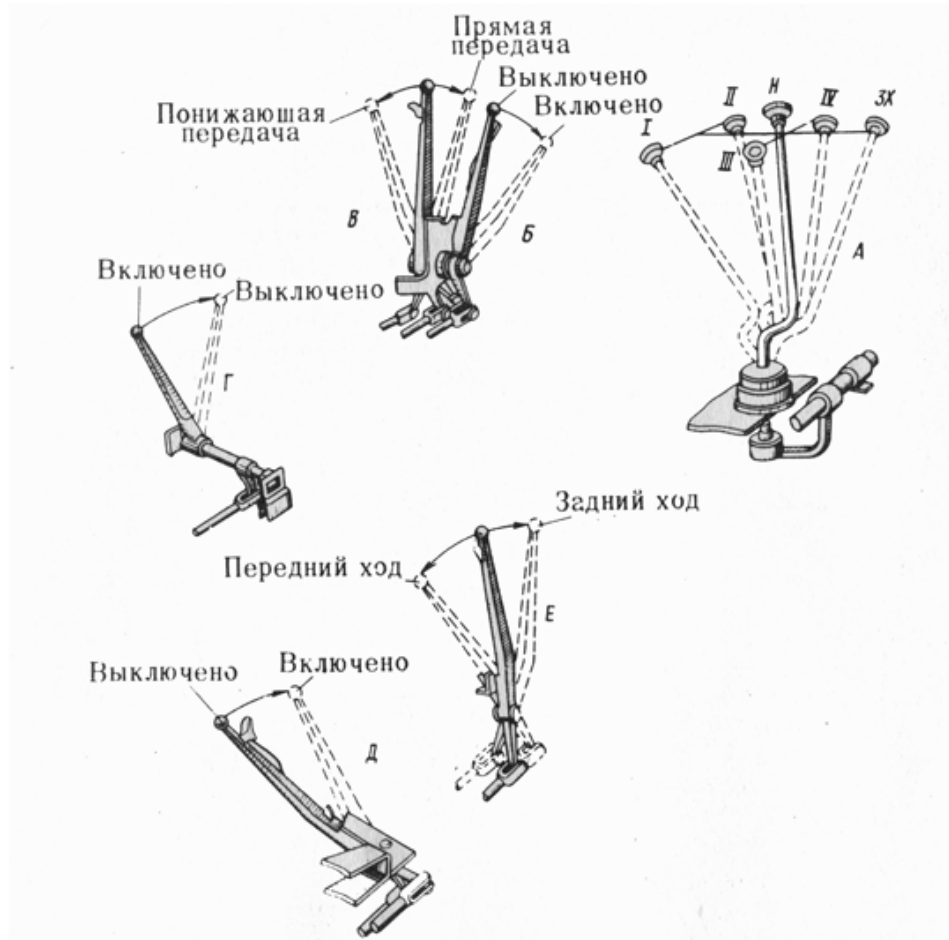


Figure 7. Layout of controls

A - gear lever, B - control arm front axle, B - reduction gear lever, G - lever additional wheels;
D - lever hoist, E - lever power takeoff at the fountain

To the left of the driver's seat at the side of the body are block 3 tire valves (Fig. 6) and four air regulator control system air pressure in tires and a wheel on the handle recess has two valve hydraulic valve and the water jet volnootrazhatelya and handle a crane hydraulic additional wheels

Handles 13 and 14, located on the front hull, used to control bronekryshkami manholes commander and driver. With the handle 17 includes a drum winch. Access to handle possible through a hatch in the bulkhead in front of the commander of the machine, cover with lid.

Before the driver on the front hull plate 8 fastened instrumentation.

All electrical equipment panel (Fig. 8) are mounted on a single removable panel and enclosed in a metal shield to reduce radio interference.

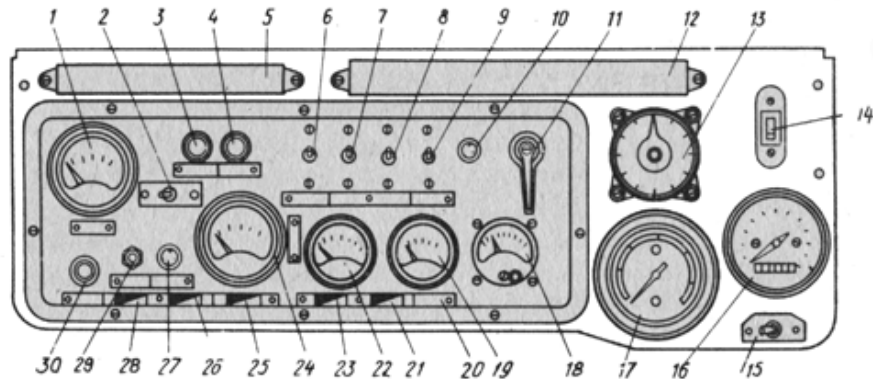


Figure 8. The dashboard

1 - a pointer to the fluid temperature in the cooling system, 2 - switch sensors fuel level indicator, 3 - glass blower switch 4 - switch heater, 5, 12 - light reflectors, 6 - ignition switch, 7 - switch bilge pump, 8 - switch illuminator 9 - headlight switch inspection device TVNO-2B, 10 - warning lamp indicators, 11 - switch of turn indicators, 13 - Index of the course, 14 - SMU switch, 15 - switch front and rear position lamps, 16 - Speedometer 17 - Tire Pressure Gauge, 18 - voltammeter, 19 - fuel gauge, 20 - plate fuse circuit radio station, 21 - plate fuse circuit power supply inspection devices; 22 - oil pressure indicator, 23 - plate fuse circuit navigational device, 24 - pointer to the oil temperature; 25 - sign the fuse circuit signal and wiper, 26 - plate fuse the power supply circuit of the tower, 27 - warning lamp coolant temperature in the radiators, 28 - plate fuse lighting circuit, 29 - starter switch, and 30 - the central light switch

On the panel set a pointer to a temperature of fluid in the engine cooling system, the pointer 24 oil temperature in the engine lubrication system, the pointer 22 oil pressure in the engine lubrication system, fuel level indicator 19 in the fuel tanks; voltammeter 18, switch 11 indicators.

In addition, the panel includes: switch 2 fuel gauge sensors, switches 3 glass blower, a heater 4, 6 plugs, bilge pumps 7, 8 illuminator sight night vision commander, 9 headlight visor apparatus TVNO-2B, 29 starters, pilot lights 27 coolant overheating (red) and 10 of the direction indicators (green) and a central light switch 30.

On the dashboard display is mounted speedometer 16, a tire pressure gauge 17, the pointer 13 of the course and mode switch 14 svetomaskirovochnogo unit (SMU).

Scale devices illuminated lamps arranged above the instruments. The light bulbs directed at the device special reflectors 5 and 12. In addition, thermometers, pressure gauges, speedometer and fuel gauge has its own internal illumination of scales. Brightness scale devices, as well as the panel itself is regulated by rotating the handle of the central light switch 30.

In case the speedometer installed lamp blue headlamp sight night vision device driver (TVNO-2B).

Inside the display panel has two pads, Flasher and six bimetallic fuses that are under the plates 20, 21, 23, 25, 26, 28 and protect the chain of radio stations, power supply inspection devices, navigation equipment, signal, wiper, power towers and lighting.

3. Technical Characteristics

Totals

Type of machine -	Floating, wheel
Housing -	Welded, hermetically sealed
Total weight of the crew, kg -	7000 + 3%

Crew -	4 people
Overall dimensions, mm:	
length -	5750
width -	2350
Height at full mass, mm:	
on the roof -	1945
the tower -	2310
Wheelbase, mm -	3100
Track, mm:	
the front wheels -	1840
the rear wheels -	1790
Clearance (at pres. Tire 2.8 kg/cm ²), mm -	330
Maximum speed, km / h	
on the highway -	95-100
afloat -	8.10
Obstacles:	
the greatest rise on solid ground, degrees. -	30
largest bank angle, deg. -	20
trench without parapet width, mm -	1220
trench with a parapet width, mm -	1100
width between the parapets, mm -	1680
height of the parapet, mm -	400
The angle of entry (in case), deg. :	
front -	43
back -	35
Min. turning radius on the ground, m -	9
The radius of the circulation of the water (6 skor. 7km / h), m -	10
Cruising when driving on highway, km -	750

Armament

Machine gun, the type of -	The tower, machine-gun
Guns:	
magnum -	14.5 mm KPVT
usual -	7.62-mm PKT
Maximum sighting range:	
KPVT, m -	2000
PKT machine gun, m -	1500
Rate of fire, rds / min:	
KPVT -	600
PKT machine gun -	650-700
Power of machine guns -	Tape
The number of cartridges in the tape unit:	
KPVT -	50
PKT machine gun -	250
Werth. angles of attack from the plant, degree. -	-5 To +30
Horiz. angles of attack from the plant, degree. -	360
Sight:	
number, type -	A, PP-61AM
Magnification -	2.6 x
field of view, deg. -	23

Weight of tower installation kit, kg -	405
Hatches for observation and fire -	Two (one on each side)

Observation

Daily monitoring devices commander -	One TPKU-2B One TNPO-115 Three TNP-B
Daily monitoring devices driver -	Two TNPO-115 Four TNP-B
Daily monitoring devices of the crew -	Six TNP-B
Daily surveillance device arrow -	TNPT-1 (located in the roof of the tower)
Night vision device commander -	TKN-1S
Night vision device driver -	TVNO-2B

Power plant

Engine Type -	Four-stroke, gasoline, carburetor
Number of cylinders, their location -	Eight, V-shaped
Bore, mm -	100
Stroke, mm -	88
Cylinder capacity, l -	5.53
Compression ratio (average) -	6.7
Max. power at 3200-3400 r / min, HP -	140
Max. cool. torque at 2000-3000 r / min, kg-m -	36
Firing order -	1-5-4-2-6-3-7-8
Phase gazorapredeleniya (when the gap between the valves and rockers 0.35 mm):	
inlet valves -	The opening 24 ° before TDC Closing 64 ° after TDC
exhaust valves -	The opening 50 ° before BDC Closing 22 ° after TDC

Lubrication system

Type -	Combined: pressure and splash
Full capacity of the system, l -	11
Applicable oil -	M-6z/10V (DV-AS3p-10V)
Oil pump -	Gear type, two-piece. From the top section of the oil goes to lubricate the engine, the lower section gives the oil in the filter centrifugal cleaning
The oil heat exchanger -	Tube, in series with oil radiators and cooled by sea water afloat. Completed in one unit with a water heat exchanger
Oil Filter -	One centrifugal cleaning
Oil heaters -	Three, tubular, mounted on the left the water radiator
Blow -	Open

Supply system

Fuel used -	Gasoline A-76
Fuel tanks -	Two, to 140 liters each
Fuel sump -	With the filter plate
Fine filter -	Reticulated

Fuel pump -	Diaphragm, with an upper sump and an additional manual drive
Carburetor -	K-126m, two-compartment, vertical, Balanced, downdraft
Air -	Inertial-oil contact with the cleaning
Speed Limiter -	Pnevmonsentrobezhnogo type

Cooling system

Type -	Liquid with forced circulation closed
Filling capacity, l -	35, with the boiler and heat exchanger starting preheater
Water heat exchanger -	Tube, in series with the radiator. Completed in one block with an oil heat exchanger. Are cooled with liquid in it afloat seawater
Radiators -	Two bladed, three-row
Water Pump -	Centrifugal type
Fans -	Two, shestilopastnye, stamped. The drive roller with two clutches and two semihard V-belts
Thermostat -	TC-108-01
Preheater -	Fuel, thermosyphon, with fan and spark plug. Located on the left side of the engine. Fuel supply by gravity from the fuel tank heater

Transmission

Clutch -	Dry, single plate, damper, permanently closed
The mechanism of off -	Pedal through the hydraulic
Transmission -	Mechanical, speed, power takeoff on the water-jet propulsion device
Ratios:	
I drive -	6.55
II transmission -	3.09
III transmission -	1.70
IV Transfer -	1.0
Reverse -	7.77
Transfer box, complete with gearbox, power takeoff for additional wheel and power takeoff on the winch -	Located in the gearbox and suspended at four points on rubber podushkah. I meet two programs: direct and down-to peredatosnym number of 1.98. The constant gear ratio transfer box 0.97
Drive shafts -	Shafts front and rear tubular, open type, with sealed joints
Front and rear driving axles -	The beams of bridges stamped, welded, one-piece
The main gear axles -	Hypoid, gear ratio 6.8
Differential -	Increased friction, cam
Knuckles -	Have a constant velocity joints
Billow -	Fully unloaded
Alignment pins and steering angle, deg:	
the slope of the pivot sideways -	9
the slope of the forward pivot -	0
camber -	0 ° 45 '
Toe, mm -	2.5

Chassis

Wheels -	With the detachable rims and inner spacer ring
Wheels -	On the front axle - two in the back - 2

Tires -	With adjustable pressure. The size of 13.00-18."Type - K-58
Tire pressure -	In the range from 0.3 to 2.8 kg/cm ² . Adjusted by the driver's seat
Suspension -	Longitudinal semi-elliptical. The ends of the springs embedded in the rubber pads
Shock absorbers -	Hydraulic, telescopic double-acting
Transfer of effort and reaction torque from the front and rear axles -	Springs

Mechanisms of control

Service brake system -	Brake mechanisms dvuhkolodochnye, closed. Mounted on the front and rear wheels. The brake actuator hydraulic, pneumatic amplifier
Parking brake system -	The brake mechanism of shoe drum. Installed on the secondary shaft of the gearbox. Termoznoy mechanically driven
Steering:	
type -	Globoidalnye worm with a triple pulley, gear ratio 21.3 (average)
steering wheel -	The diameter of 425 mm, three-spoke
power steering -	Hydraulic system of the overall machine
longitudinal tie rod -	Tubular. Has a ball and spring fingers, which are regulated by tightening
Rod -	Rod
The mechanism of rotation of the machine on the water -	Handlebars of the machine on the water in the water jet nozzle. Management rudders locked with relevym wheel car
Reverse on the water -	The integration of reverse power take-off at the fountain in the throttle

The system of the centralized control of pressure in the tires

Air Compressor -	Piston-type, two-cylinder, single-stage compression
The drive compressor -	V-belts from the crankshaft pulley
Normal operating pressure -	6,0-7,7 kg/cm ² , automatically maintained a pressure regulator
Lubrication of the compressor -	Under pressure, connected to the engine lubrication system
Refrigeration compressors -	Liquid, forced from the engine cooling system
Air cylinders -	Two, the total capacity of 14.6 liters
Fuse. valve air cylinder -	Opens under the pressure of 9.0 - 9.5 kg/cm ²
Office of pumping tires -	Air gear and tire valves
Air supply to the wheels -	Internal rubber seal with gland
Air tap -	Installed on all wheels

Water-jet propulsion device

Fountain -	Installed in the rear of the hull, with the abstraction of water from the bottom of the machine
The body water jet -	Aluminum, the inner surface is covered with bakelite varnish
Propeller -	Four-bladed, diameter 500 mm
Propeller thrust at moorings (drawbar pull) -	700 kg at 900 - 1100 r / min rotor

PTO at the fountain -	Mounted on the left side of the gearbox. It has two gears: one for the forward stroke, with a ratio of 2.41, and another for the reverse rotation of the screw, with a ratio of 1.7
Control box -	Lever to the driver's seat
Drive water jet -	A drive shaft from the PTO to the gearbox, located in the body water jet. Gear ratio 1.33
The flap water jet and volnootrazhatelny shield -	Controlled hydraulic
Drainage device -	Powered by a water jet. The valve is located in the department of the power plant on the right side. Submission of 500 l / min at a maximum speed of the crankshaft

Adapting to pass through the trench

Additional wheels -	Pneumatic, size 700x250 mm. Working pressure 5.5-6.0 kgf/cm ² . On two wheels on each side, mounted on a rocker
PTO -	Tapered steam ratio of 1.0, is mounted on the crankcase of the transfer case
Drive shafts -	Left - a short, forged, right - a tubular, open type. Fitted with sealed joints
The chain drive to the additional wheels -	Bush-roller, pitch 25.4 mm
Lift the additional wheels -	Hydraulic, with a ball lock
The diameter of the cylinder lift, mm -	60
Stroke, mm -	276
Number of lifts -	4
Hydraulic pump -	623G1L, gear, left rotation, mounted on the power take-off water-jet propulsion

Electric equipment

Wiring system -	Shielded, single-wire. Negative findings are connected to the machine casing
Rated voltage, V -	24
Generator -	G290-B, works in conjunction with relay control
Relay-regulator -	RR361-A
Battery -	12ST-70M
Circuit breaker -	VC-318B
Ignition Coil -	B102B, shielded
The voltage divider -	SE104-A
Ignition distributor -	P105, shielded, with centrifugal and vacuum controls ignition timing
Spark plugs -	AP (the size of a turnkey 20.8 mm)
Starter -	ST-111
Heater housing -	ME247-A
Electric bilge pump -	IMP-2
Electric Heater -	ME202-In
The motor blowing windshields -	ME205-A
Lights -	FG-125, 2 pcs., With filters, FG-127, 2 pcs. With svetomaskirovochnymi attachments
Lighting Fixtures -	Rear lights OP-101-D, portable lamps, lamps lighting equipment, lamp operator, and ceiling lamps
Beep -	C-314G, electrical, vibration, sealed
Fuses -	Heat, bimetallic
The stoplight switch -	VC-12B
Light switch -	P-312

The switch indicator - P-118

Wiper - Mechanical, driven by a motor (you can switch to manual transmission), SL-224

Gauges (demonstrative)

Speedometer - SP24-G, is the drive to the speedometer flexible shaft

Voltammeter - BA-340T, for measuring voltage and current in the circuit of the charge

Fuel gauge - UB-102BT, with two toplivoreostatami BM-116-A, located in toplivobakah

Switch fuel level indicator - PP-45

A pointer to the oil pressure - CC-140 tons, with a sensor MM-358T

Temperature control of water and oil - CC-114BT, with a sensor TM-100

Air Pressure Gauge - B102B, shielded

The voltage divider - SE104-A

Ignition distributor - Low pressure, the MD-6B

Means of communication

Contact the external - Radio R-123M

Internal Communications - Direct

Navigation Equipment

Navigation equipment - TNA-3

Coordinator - Computing devices, will transform the way in polar coordinates and azimuth angle in rectangular coordinates. Coordinator is installed on board the right of the commander's seat

Encoder - Converts the mechanical rotation of the flexible shaft is proportional to the electrical path to the value passed to the coordinator, secured a niche in the left front wheel

Remote control - Mounted on the starboard side at the Department of Management

Transmitter - PT-200TS-III, established a niche in the right front wheel

Course detector - Mounted on the dashboard

Hordoglomer and the meter - Fit into the bag on the seat back commander

Standards refueling tanks, assemblies and systems

Fuel tanks (2 units), L - 280

Cooling system, l - 35

Engine lubrication system (including centrifugal cleaning filters, oil coolers, heat exchangers), L -

11

Air, l - 0.55

The transmission housing, l - 5

Carter, transfer case, n - 2

Gearbox transfer case, n - 0.6

Carter further gear wheels, l - 1.5

Carter, the front axle, l - 6.8

Carter rear axle, l -	9.8
Carter, steering mechanism, l -	0.67
Carter, winches, l -	0.65
Dampers 4 pcs), L -	2.04
Hydraulic brake actuator, l -	0.5
Wheel hub (4 pcs), kg -	1.68
Bearing the additional wheels, kg -	2.4
Knuckles (2 units), kg -	0.9
Reservoir for the oil (engine), L -	7

Additional equipment and machinery equipment

Winch -	Installed in front of the case. Traction force on a rope - 4400-6000 kg with an average radius of the winding wire
The drive winch -	From the transfer case cardan shafts with intermediate support
Filtering unit (HLF) -	Posted in the department of power plant, on the left side, the motor walls. Electric actuator. Electric CF-67 voltage 27V. Air Supply blowers at work on a bypass line 5 - 6 m3/min, while working through the filter-absorber FPT-100M 1,3-1.6 m3/min. Excessive air pressure in the fighting compartment when operating the blower through the filter-absorber FPT-100M 30-35 mm water column (At least)
Roentgenometer -	DP-ST is installed on the right front wheel recess. Remote power unit mounted on the bottom front page of the machine
Heater -	Installed in front of the case. Kalorifernogo type
Blowing windshields -	Warm air supplied by an electric fan heater
Towing Accessories -	Tow hooks are installed on the front pages reasons behind the first car. Staples for towing afloat installed: one at the bow and two at the rear of the hull
Lifejackets -	GTL-58, for each crew member

4. Body

Device

Body armor is designed to house and protect the crew, assemblies and mechanisms of destruction by fire of the enemy. In addition, the body incorporates the all units and equipment located inside and outside the vehicle and provides vehicle buoyancy.

The body is a rigid box-type boats of welded armor plates. It consists of a bow, sides, stern, roofs, walls and bottom of the power pack.

The nose of the shell (Fig. 9) consists of the top 10, average 12, front 18, bottom 19 of inclined sheets and vertical plates 7. On the sides of the nose part is the upper 33, middle 31, bottom 30 sloping horizontal sheets and sheets of 32.

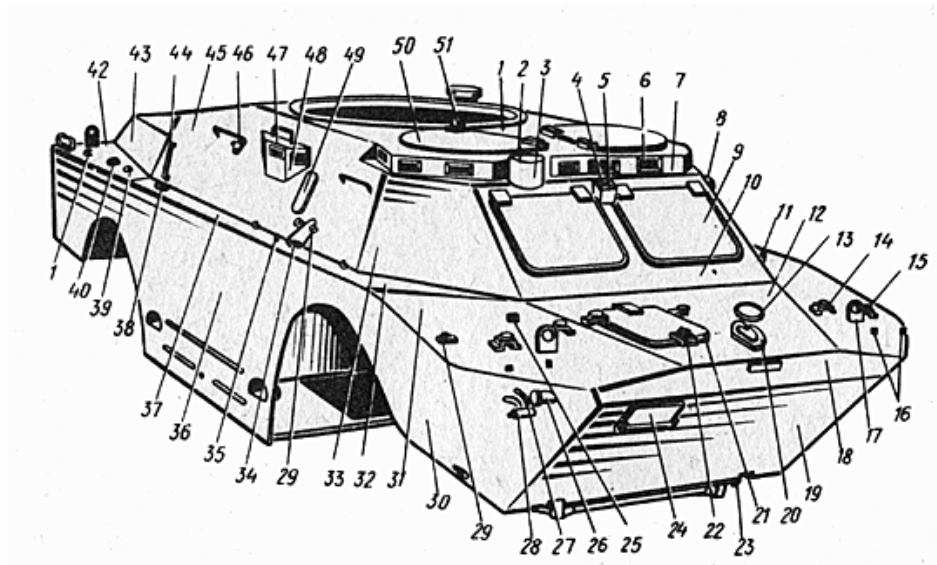


Figure 9. The body (nose and starboard)

1 - front sheet of the roof, and 2 - socket for installing monitoring devices commander of the 3 - vyshtampovka 4 - Bracket handle mechanism for opening covers manholes, 5 - Bracket rubber buffers, 6 - slot install monitoring devices, 7 - vertical sheets of the bow, 8 - set socket device observations of side-view, 9 - the inspection hatch cover, 10 - the top sheet of the inclined bow, 11 - bracket mirrors, 12 - average slope of the nose leaf, 13 - hatch cover for filling in the brake master cylinder actuator and adhesion, 14 - headlamp mounting bracket coverage, 15 - headlamp mounting bracket, night vision device TVNO-2B, 16 - Bonk fixing fences range, 17 - bracket of front, 18 - anterior oblique sheet of the bow, 19 - bottom sheet sloping bow; 20 - Front tow hook in the water; 21 - manhole cover access to the winch, 22 - coupling bolts with wing nuts 23 - Front tow hooks, 24 - manhole cover issue of a cable winch, 25 - mounting bracket of the alarm, 26 - support volnootrazhatelnogo drive shaft shield 27 - emphasis volnootrazhatelnogo drive arm shield; 28 - axis of the driven lever volnootrazhatelnogo shield, 29 - staples laying towline, 30 - sheet bottom side of the bow, 31 - the average lateral oblique leaves the bow, 32 - a horizontal sheet of the nasal part, 33 - upper lateral oblique sheet of the bow, 34 - hole to install the antenna base, 35 - pin, 36 - a vertical sheet of board, 37 - front sheet of the horizontal side; 38 - clip on the towline, 39, 41 - mounting brackets scrap, 40 - clamp scrap, 42 - back side of a horizontal sheet of 43 - back side of the inclined sheet; 44 - mounting brackets, sapper shovels, 45 - anterior oblique side of a sheet; 46 - clamp sapper shovels, 47 - a horizontal sheet of niche-up; 48 - a vertical sheet of niches observation 49 - hatch cover for the firing of personal weapons, 50 - manhole covers for the landing of the crew members, 51 - mounting brackets are rubber buffers manhole covers for the landing crew

In the upper inclined sheet 10 has two inspection hatches, closing armor covers 9. Between them welded bracket arms 4 opening mechanism covers manholes. To him it is installed with screws rubber buffers 5, in which rest against the cover manholes in the open position.

In the upper left lateral oblique sheet 33 at the eye level of the driver (in the position of his car while driving to the open inspection hatches) welded socket 8 for installation of observation TNP-B, lateral view. At the bottom of sheet welded mounting bracket 11 mirrors.

On average, inclined sheet 12 has a hatch for access to the winch and hatch for filling in the master cylinder brake and clutch actuators, closing caps 21 and 13. In front of the sheet 20 is welded with a latch hook, designed to tow a car afloat. At the bottom sheet 19 is inclined to issue the hatch winch cable, which is closed by a cover 24. Under the hatch covers fitted sealing rubber gaskets. Manhole cover for access to the winch in a closed position tightly collar is tightened bolts

22 with wing nuts. Manhole cover for the issuance of a cable winch mounted in the closed position the plate, nut and pressed against a guide roller, opens and closes the hatch cover access to the winch.

In the middle of side plates 31 are welded brackets 14 for the installation of lighting and headlight washers 15 for a night instrument TVNO-2B, position lamps 17 and 16 Bonki fixing fences headlights. On the right bracket 25 welded to the sheet to set the tone.

The lower side plates 30 bent, welded in two parts. They support 26 welded drive shaft volnootrazhatelnogo shield axis 28 and the slave arm rests 27 volnootrazhatelnogo drive arm shield.

In the vertical plates 7 welded socket to install six monitoring devices TNP-B-115 and TNPO TVNO-2B commander and driver. In the right list is vyshtampovka 3, provides installation commanders devices TPKU-2B and TKN-1S

At the bottom of the bow of the hull 23 has two hook with spring latch, designed to tow a vehicle on land.

The sides of the body consist of vertical plates 36, front 45 and rear 43-sheet inclined and horizontal plates 37 and 42, as well as sheets, forming niches for placement of the wheels.

In front of inclined plates 45 are located hatches for the firing of personal weapons, cover with lid 49, and niche observations welded, formed by vertical and horizontal E 48 47 sheets. In the niches of observation welded socket to install monitoring devices TNP-B. In the forward oblique sheet 33 (Fig. 10) the left side there is an opening for discharging the separated dust from the blower cage-protected welded armored visor 32.

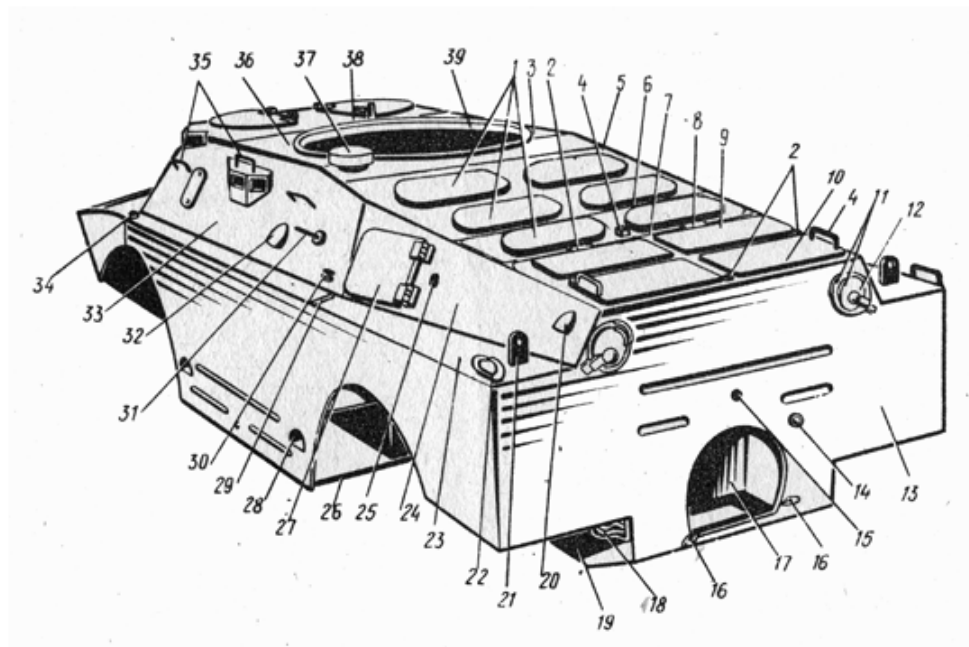


Figure 10. Housing (aft and portside)

1 - manhole covers vozduhopritoka 2 - locks, 3 - turret roof sheet, 4 - pens, 5 - detachable front sheet roof over the power department, 6 - manhole cover over the engine, and 7 - the average sheet roof over the power department, 8 - loop; 9 - Rear folding a sheet roof over the power pack, 10 - manhole covers air outlet, 11 - Brackets, 12 - hatch cover access to the neck of the fuel tank, 13 - a vertical sheet feed, 14 - tube crank the engine hatch, 15 - hole for installation support roller shutter water-jet propulsion, 16 - valve stops water-jet propulsion, 17 - water-jet propulsion to cut, 18 - rear tow hooks, 19 - back page of the seat, 20, 32 - the armored visors; 21 bracket lantern light signaling, 22 - rear tow hooks halter, 23 - back side of a horizontal sheet, 24 - back

side of the inclined sheet 25 - opening for the passage of the exhaust pipe, 26 - power of the housing; 27 - manhole cover for access to the power pack, 28 - step, 29 - Bracket fixing gaff, 30 - clamp thimble additional cable, 31 - pin for attaching the coil with an additional cable, 33 - anterior oblique side of a sheet; 34 - clip on the gaff, 35 - handrails 36 - sleeve stopper towers, 37 - bronekolpak protect the blower pipe separator, 38 - front sheet roof 39 - mounting ring fixed turret

In the rear inclined sheet 24 has openings 25 for passage of exhaust pipes. On the left side is the side door for access to the power pack, cover with lid 27 and a hole for the pipe prints the bilge pumps, protected by welded armored visor 20. Under the cover 27 is installed hatch sealing rubber gasket.

At the rear horizontal plates 23 are welded mounting brackets 21 lights back lights and tow hooks 22 with the latch, designed for towing machine afloat.

On both sides there is the step 28, and on the top sheet welded rails 35.

On the left side plates welded to the pin 31 for fixing the coil with an additional cable, mounting bracket 30 extra rope thimble, hook 29 and bracket 34 mounting gaff. On the right side of the welded bracket 44 (Fig. 9) and clamp mounting sapper spade 46, brackets 41, 39 and 40 clamp mounting scrap, staples 29 laying towline and the clamp 38 of his mount. In addition, the front horizontal sheet 34 has a hole to install the antenna base station, and beside him the pin 35 is welded to place a protective rubber cap, removed from the liner installed in the antenna.

Aft of the body (Fig. 10) consists of a vertical sheet 13 and an inclined bottom sheet 29 (Fig. 11). In the lower inclined sheet provides a door for the removal and replacement of water-jet propulsion and its maintenance. Hatch lid screwed.

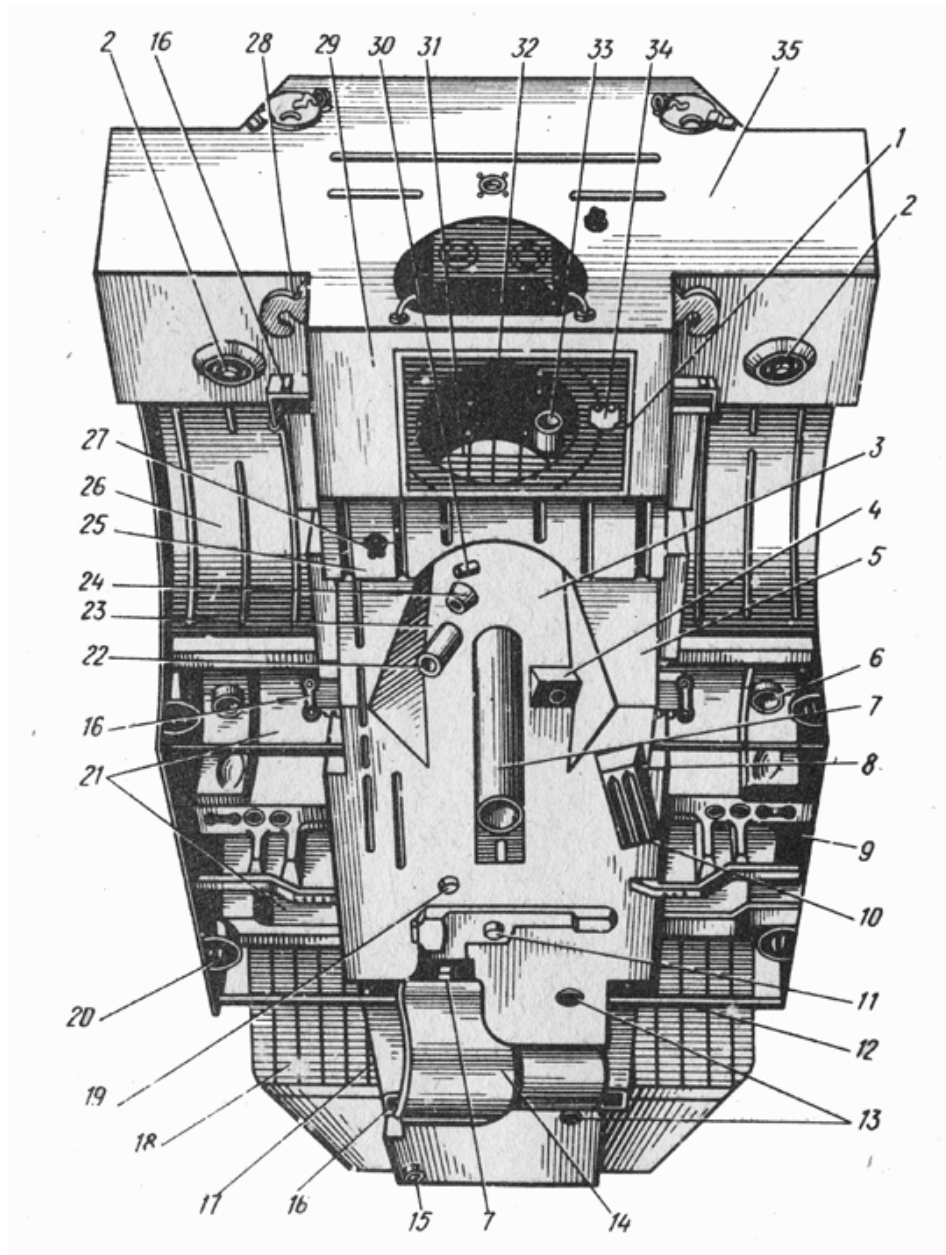


Figure 11. Bottom of the hull

1 - hatch for removal and replacement of water-jet propulsion, 2 - tube hatches drain fuel from the tank, 3 - Niche rear axle, 4 - tube hatch drain the oil from the engine, 5 - opening for the passage of a centralized pipeline control system tire pressure, and b - passage of the cylinder tube hydraulic hoist the additional wheels, 7 - niches for the passage of drive shafts leading to the bridge, 8 - gutter drainage system, 9 - Hanger bracket the additional wheels, 10 - hole drainage of water from the gutter drainage system, 11 - oil drain plug hatch from the transfer boxes, 12 - body enhancers, 13 - hatches drain water from the body with open drain valve, 14 - a niche front axle, 15 - tube nut hatch access to the axis of the pendulum lever steering, 16 - spring brackets, 17 - hole exit tube drainage fluid from the heating system, 18 - a niche front wheel, 19 - oil drain plug hatch out of the box for additional power take-off wheels, 20 - step, 21 - Niche additional wheels, 22 - hole exit tube draining the coolant from the heat exchanger, 23 - hole pass breather tube rear

axle, 24 - hole for passage of the pipeline hydraulic brake actuator, 25 - hole exit tube draining the coolant from the heat exchangers 26 - Niche rear wheel 27 - hatch drain plug, oil and fuel from the rear of the power pack housing , 28 - rear tow hooks, 29 - bottom sloping rear leaf, 30 - outlet pipe from the sea water heat exchangers 31 - protection of water-jet propulsion grille, 32 - water-jet propulsion inlet, 33 - water discharge pipe system of drainage, 34 - hatch install gear water-jet propulsion, 35 - vertical feed sheet

In a vertical sheet of 13 (Fig. 10) made cut-out 17 for water-jet propulsion and a hole 15 for installing roller bearing flaps water-jet propulsion. At the bottom of the sheet are welded to the vertical two stop valves 16 water-jet propulsion. At the top of the vertical sheet has two hatches for access to the neck of the fuel tanks, cover with lid 12 by wedge locks. For sealing hatches are provided bracket 11. In addition, in a vertical sheet of a hatch for the passage of the engine crank, closed with a plug 14.

At the bottom of the aft to the rear of the seat 19 sheets welded two hooks 18 with the spring-loaded latches, designed to tow a vehicle on land.

The roof of the body consists of a front sheet 38, sheet 3 turret, brewed in two parts, and the roof above the power department. The roof over the power department form a detachable front sheet 5, the average sheet 7, sheet folding rear cover 9 and the 6 hatch over the engine.

In a front page (Fig. 9) roof hatches located housing for planting crew, cover with lid 50, and slot 2 for the installation commander's observation devices TPKU-2B and TKN-1S. In the turret sheet 3 (Fig. 10) are cut by the turret, which is welded a ring 39 fixed mount shoulder strap, and a hole in the sleeve 36 which is welded into the stopper of the tower. In the rear of the turret is a sheet bronekolpak 37 protection sleeve supercharger.

Removable front sheet 5 on the roof of the power pack is bolted to the hull and square cross bar welded to the sheets of the hull sides. The rear hinged cover sheet of 9 and 6 hatch over the engine mounted on two hinges, welded to the middle sheet 7 on the power department of the roof, and closed wedge locks 2. Under the removable front plate, rear folding leaf and a hatch above the engine mounted sealing rubber gaskets.

The front page has two removable hatch vozduhopritoka engine cooling system, cover with lid 1. In the back of the sheet folding, there are four air outlet hatch, cover with lid 10. Manhole covers and the air outlet vozduhopritoka opened and closed from the place of the driver's overall drive.

At the hatch over the engine has vyshtampovka to fit inside the power pack in the expansion tank engine cooling system. To open the hatch over the engine and lift the rear folding leaf on them welded handles 4.

Bottom of the hull (Fig. 11) has a complex configuration and formed sheets welded together and the bottoms of recesses 18 front, 26 rear and 21 additional wheels.

Between the niches for additional wheels welded suspension brackets nine additional wheels, and on the edges of the recesses 12 amps case. In the niches themselves welded pipes 6, through which the cylinders of hydraulic additional wheels. Sheets pressed underbody and generally form a niche 3 and 14 to accommodate the rear and front drive axles, as well as niches for the passage of seven propeller shafts leading to the bridges. In the back of the sheets form a bottom inlet water-jet propeller 32, which is to avoid falling into the water jet propulsion foreign objects being protected inlet welded grate 31. In the water-jet propulsion inlet on the right side welded pipe 33 discharge water drainage system. In the middle of the bottom right-hand side is welded gutter drainage system 8. To stiffen the bottom of its pages stamped ribs of varying lengths.

The interior of the housing

The interior of the housing consists of three departments: administration, military and power plant. The fighting compartment of the separation of power plant separate partition.

Department of Management is located in front of the case. It has brackets, and braces Bonki mounting of machine control, instrumentation, monitoring devices, radios, seat of the driver and commander, and the winch.

The fighting compartment is in the middle of the hull. It has brackets, and braces Bonki for mounting two single seats, hydraulic additional wheels, monitoring devices and accessories, as well as racks for ammunition. Above units and units located at the bottom of the hull in the department of management and the fighting compartment, the floor is installed separate from the thin metal sheets flat and curved shapes. Part of the floor plates welded to the bottom, sheets, and niches of the seat and the cross member. Removable floor plates are bolted to the supports, which are the elbows, brackets, welded to the bottom and cross-body and non-removable sheets otburtovkki floor.

Under the removable sheets of the crew compartment (from the first cross body to the wall power pack) installed sealing rubber gaskets.

Branch of the power plant (Fig. 12) is located in the rear of the hull. It has, front 15 and rear engine mounts 13, 11 mounting bracket of the generator, air cylinder 7, 14 radiators and heat exchangers 10, 24 rack mount enclosures heaters, installing 26 slot bracket axle water rudders and six shelves for storage battery. At the bottom of the sheets welded pipes 16 and 18 and the drainage system of pipes 9 and 12 for supplying tap water from seawater heat exchangers. In addition, in the power department welded some brackets bonok, hooks, brackets and bolts, purpose and location of which is shown in Fig. 12.

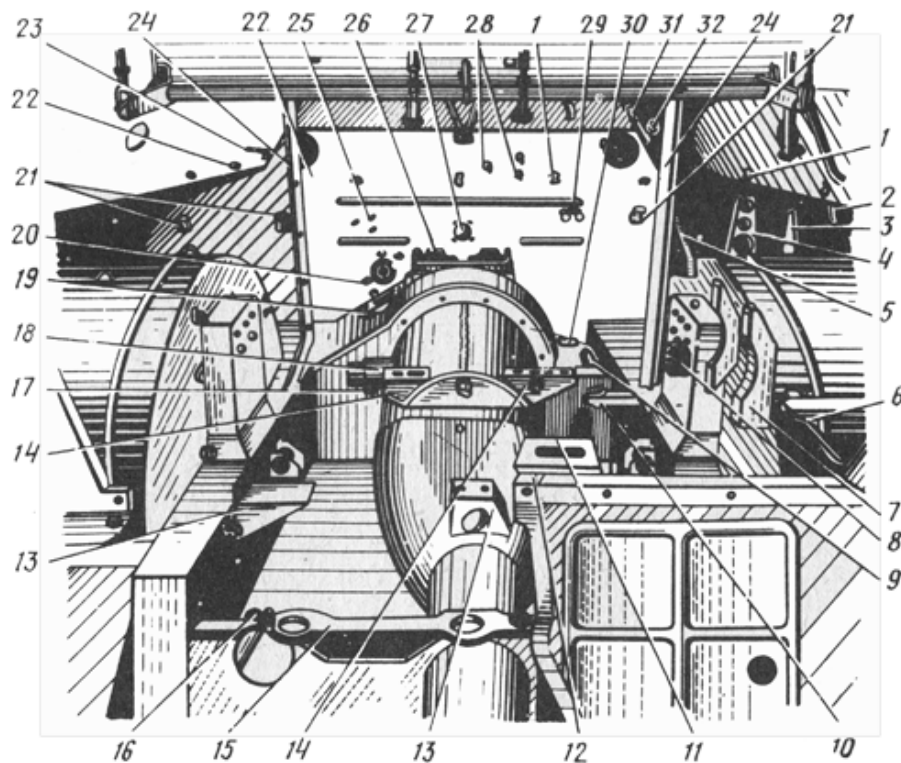


Figure 12. Branch of the power plant

1 - bracket with hydraulic valve piping water-jet propulsion, 2 - stud mount cross roller bearing drive blinds, 3 - bracket housing the worm gear drive shutters, 4 - bracket three-way fuel valve, 5 - an arm of the cross roller bearing drive blinds 6 - rack for the battery, 7 - bracket air cylinder, 8 - clamp mounting bracket adjusting thrust generator 9 - pipe supplying sea water to heat exchangers, 10 - heat exchanger bracket, 11 - Generator bracket, 12 - outlet pipe from the sea water heat exchangers; 13 - rear engine mount support, 14 - radiator mounting brackets, 15 - front engine mount support, 16 - drainage pipe system, 17 - hatch install water-jet propulsion gear, 18 - tube with check valve system of drainage, 19 - back support bracket launcher handle the engine, 20 - Bonk mounting bracket crank engine, 21 - Hook tape mount fuel tanks, 22 - Bonk

fixing wiring, 23 - mounting bracket of the transition block, 24 - rack mount enclosures heaters, 25 - hole to install the bracket hydraulic cylinder valve water-jet mover, 26 - slot bracket axle installation of water rudders, 27 - hole to install the roller bearing flaps water-jet propulsion, 28 - strikers filter mounting the electrical system, 29 - Bonk upper mounting bracket supports a vertical shaft drive control water rudders, 30 - the lower support bracket, Vertical roller drive control water rudders; 31 - mounting bracket fuel tank heater, 32 - outlet water discharge pump vodostkachivayuschim

The partition of the power pack (Fig. 13) consists of the side 20 and 14, top 17 and bottom 11 of attached sheets welded to the metal parts. For non-removable sheets are fastened by bolts removable sheets 19 and 15.

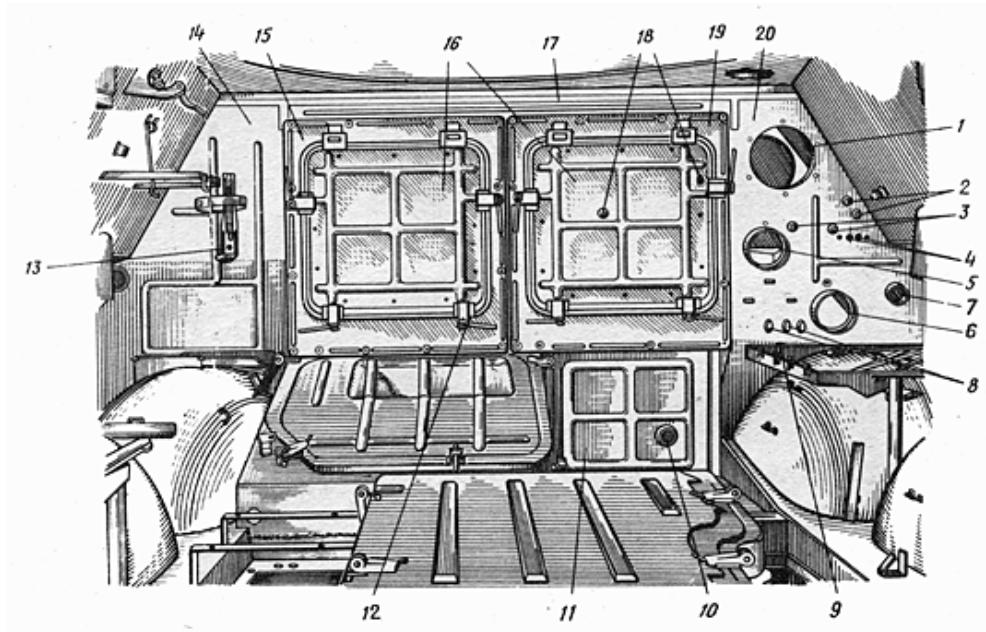


Figure 13. The partition of the power pack

1 - holes for the filter-set, 2 - the tube connecting pipe heating system, 3 - Bonk mount the ballast resistor, 4 - hole for passage of piping water-jet propulsion hydraulic valves, 5 - a hole to install a bypass pipe line filter-set, 6 - hole for installation tube filter-absorber 7 - opening for the passage of electrical wires, 8 - Bonk fixing the battery switch, 9 - hole for the passage of electrical wires from the battery to the battery switch, 10 - manhole air intake for the heater, 11 - the lower sheet of non-removable, 12 - Locks 13 - fire extinguisher bracket, 14 - the right non-removable leaf, 15 - right detachable sheet, 16 - manhole covers for access to the engine, 17 - the top sheet of non-removable, 18 - Bonk mounting kit, 19 - left a removable leaf, 20 - left unremovable list

In the non-removable wall plates have openings in some of them welded tube for the passage of pipes, beads and wiring, installation of which passages are sealed. In the bottom wall sheet 10 has a hatch to the intake air heater. In the pages are removable hatches for access to the engine cover with lid 16.

Lid tightly closed clamp lock 12.

Under the sheets with removable partitions and hatch covers for access to the engine mounted sealing rubber gaskets.

Hatches

Inspection hatches (Fig. 14) of the driver and commander are designed to monitor the underlying terrain in front of a marching motion machine. In the firing position close inspection hatches armor covers. Located inspection hatches in the top sheet of oblique bow of the hull.

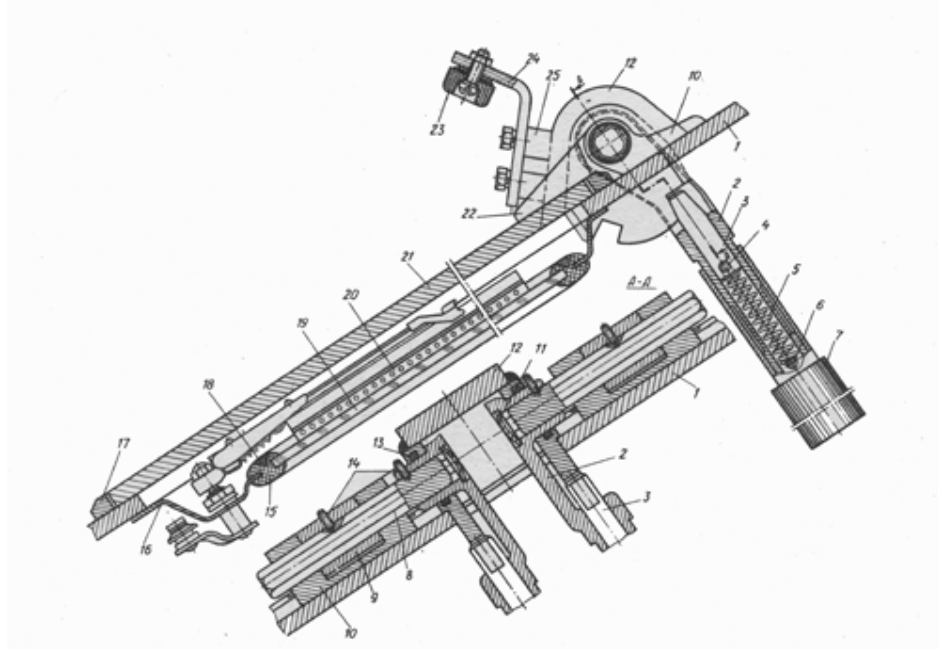


Figure 14. Inspection hatches (in section)

1 - the top sheet of sloping nose, and 2 - handles the base, and 3 - lever latch, 4 - pin 5 - Spring 6 - pin 7 - Handle, 8 - four-sided shaft, 9, 22 - the mobile loop, 10 - fixed loop 11 - stub, 12 - Bracket handle mechanism for opening manholes covers, 13 - sealing O-ring, 14 - the set screws, 15 - seal the windshield, 16 - frame windscreen, 17 - frame inspection hatch cover; 18 - liner seal of the wind glass, 19 - windshield, 20, - wiper, 21 - cover the inspection hatch 23 - rubber buffer, 24 - arm 25 - Bonk

In the inspection hatches within 16 mounted windscreen wipers 19 and 20. Windshields are installed in the rubber seals 15. On top of access hatches are closed armor covers 21, 22 are connected to the loop axes of the hinges 10 welded to the upper sheet of the inclined bow of the hull. To protect the joint from the upper lids inclined sheet bow of the hull around the manholes welded frame 17.

Between hatches in the top sheet of the inclined bow of the hull welded bracket 12, which are inserted into the hole wall base 2 arms open manhole covers and sealing rubber rings 13. Grounds tetrahedral axes handles 8 loops are connected to nine manholes covers. In the fixed hinges 10, with round holes, the axes are rotated freely. From the axial displacement axis and base of arms held by set screws 14.

In the closed position and open the lid latches lock the three arms that are included in the corresponding recesses in the walls of the bracket arms 12. Latches are connected to the handle 7 fingers 4, passing through the oval openings in the bases of the handles, and are clamped by springs 5. The other end of the spring run into the six pins inserted in holes grounds of arms.

To open the hatch cover inspection is necessary to delay the proper handle 7 down with a finger 4, with the ability to move in an oval cut-out base two handles, latch 3 to withdraw from the engagement with a cutout in the wall bracket 12, to failure to file the handle forward and then upward, entering with the latch in the front wall of the recess in the bracket arms. In the open

position the cover manholes rest on rubber buffers 23 are located on a bracket 24 attached by bolts to the bracket arms. Close the cover manholes in the reverse order.

Hatches for landing crew (Fig. 15) are placed on the front sheet of the roof body armor and close lid 2. Manhole covers are attached to the front sheet of the roof shell at two loops, each closed and tightly locks 4. Sealed hatches otburtovkami on the manhole cover and the front sheet of the roof shell, and sealing rubber gaskets 11 placed in special holders 12 which are fastened with screws to Bonk 8, welded to the caps. To protect the joint from the front sheet covers the body from the penetration of the roof of lead spray of bullets around the seat covers are welded frames 3.

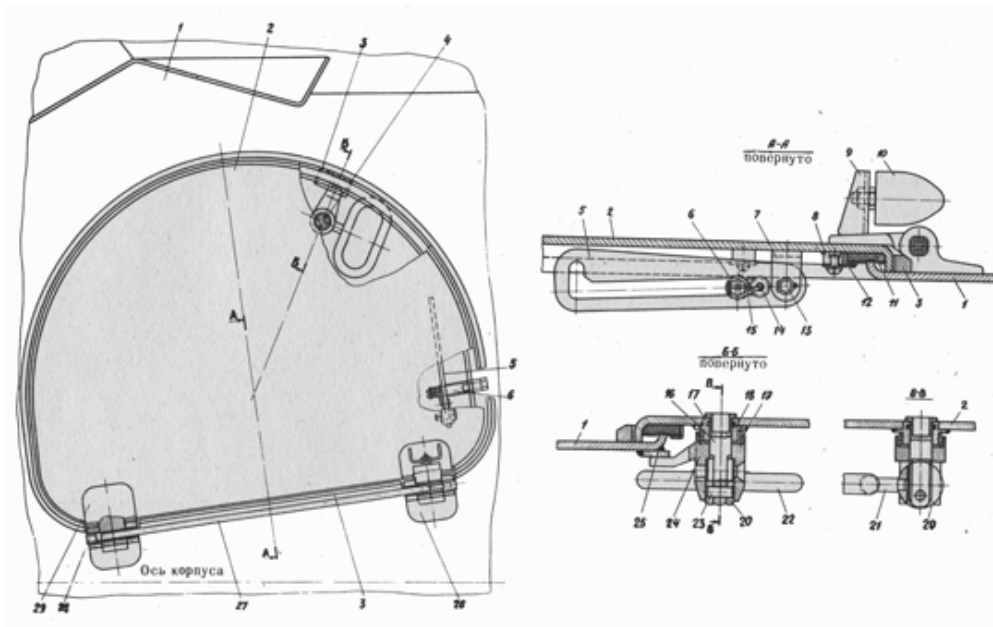


Figure 15. Luke for planting crew

1 - front sheet of the roof of the body, 2 - manhole cover, 3 - hatch frame, 4 - locking lids 5 - focus locking manhole covers, 6 - axis of the stop, and 7 - an arm lock, 8 - Bonk, 9 - an arm of the buffer; 10 - Rubber buffer, 11 - Sealing rubber gaskets, 12 - holder gasket, 13 - pin, 14 - the way movie, 15 - stop the spring, 16 - axis of the castle, 17 - sealing O-ring, 18 - bush axis of the castle, 19 - spacer spring, 20 - eccentric castle, 21 - rod handle 22 - Handle 23 - pin, 24 - lock body 25 - rod, 26 - fixed loop 27 - torsion shaft, 28 - four-sided shaft, 29 - the mobile loop

To facilitate the opening of the manhole covers are installed on the torsion rollers 27, which includes the flat ends of the rectangular axes of the grooves 28. The rear axle is in the tetrahedral holes fixed loop 26 is thus secured one end of the torsion shaft. The front axle is a four-hole slack loop 29 and through a swirling force of torsion shaft, resulting in the closure of the cover is transferred to the lid, thereby facilitating its discovery.

In the closed position, the lid being held by means of locks placed on the lids. When the sleeve 18, welded to the lid 16 is inserted into the axis of the castle, which is sealed with a rubber ring 17. Installed on the axle housing 24 to lock the spacer spring 19 and cam 20 to the handle 22, which through holes in the castle is connected with the axis of the lock pin 23. In the closed position covers the eccentric, acting on the tabs of the lock case, presses it to the clamp plate 25 is welded to the front sheet of the roof shell, and thus firmly closes the hatch.

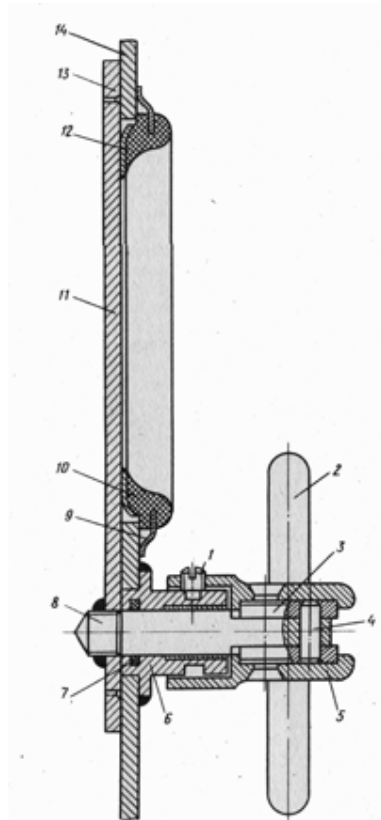
To open the hatch to the lock lever 22 to rotate downward, with the turn associated cam 20 about pin 23 and release the lock housing 24. Under the influence of the spacer spring lock body

19 is moved down and put pressure on the clamp stop bracket 25. Then turn the knob relative to the axis of the castle, and the clamp lock case will come out of engagement with the bar, and open the hatch.

When open, the lid rests on a rubber buffer 10, mounted on a bracket 9 is welded to the hinge cover, in a fixed loop welded to the front sheet of the roof shell, and held this position, the locking device.

The locking device is a focus 5, connected to the bracket 7, welded to the hatch, a finger 13. Emphasis is L-shaped cutout in which the shaft 6 moves the stop welded to the roof of the front sheet of the case, and the roller 14. Clip from the axis of spring 15 is connected, which constantly pushes him, and thus the emphasis on the roof, so when you open the hatch gets in the way the axis of the side of the notch and lock the hatch cover. To close the hatch, you need by clicking on the fence, take the side of the axis of the cutout, then lower the cover.

Hatches for the firing of personal weapons (Fig. 16) located on the front pages of inclined hull sides and close armor cap 11. To protect the joint caps with side plates around the hull hatches are welded frame 13. Seal hatches by rubber sealing rings 10, detaining nine special holders welded to the side sheets of the body, and bryzgoulavlivatelyami 12, welded to the caps.



In Fig. 16. Hatch for the firing of personal weapons

1 - set screw and 2 - handle 3 - cam lock, 4 - pin 5 - housing locking mechanism 6 - axis of the sleeve cap, 7 - O-ring sealing, 8 - axis of the lid, 9 - the holder of the sealing rubber O-ring hatch, 10 - O-ring seal hatch, 11 - armored hatch cover, 12 - bryzgoulavlivatel 13 - hatch cover frame, 14 - front side having an inclined sheet

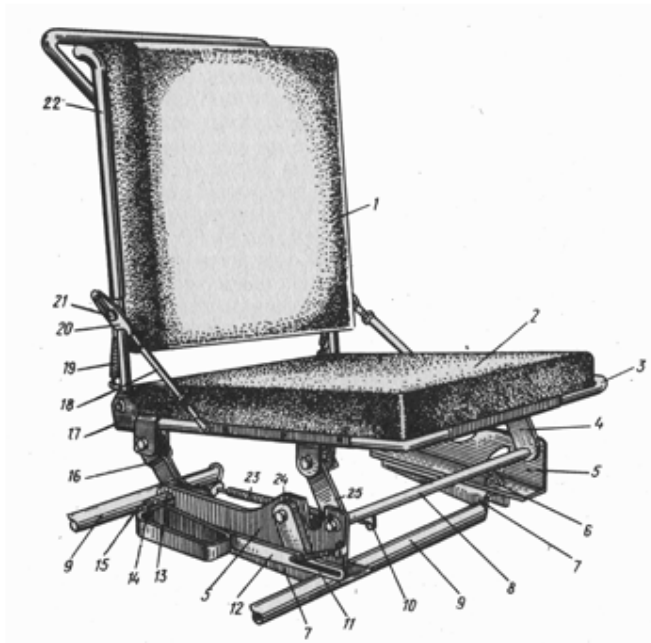
The cover of each hatch a threaded hole into which is screwed axle 8 and scald. The axis of the cover is inserted into the sleeve 6, welded to the front side having an inclined sheet and sealed with a rubber ring 7. Hatch cover is closed and is opened only from inside the machine with, the closing mechanism. Case 5 locking mechanism mounted on the sleeve 6 and the axial movement of the lock the screw 1, within the annular groove of the bushing. In the inner recess housing

eccentric locking mechanism is inserted into the handle 3 with 2, which connects to the axis of the pin cover 4.

To open the hatch, you need two to turn the knob itself, with three eccentric, turning in the housing recess 5 locking mechanism, a four pin pushes the axis 8 and the lid slightly open the hatch. Then turn the knob relative to the locking mechanism, with the hatch cover is moved to the side and open the hatch. Closed hatch cover in reverse order.

Seats

The seats of the driver and the commander (see Figure 17) on the device are the same. They are installed on the bracket 7, welded to the bottom of the details of the case and to the tubular supports 9, which in turn are welded to the bottom of the details of the case.



In Fig. 17. Mechanics driver's seat (the commander)

1 - pillow back, 2 - seat cushion, 3 - the base seat, 4, 25 - front seat levers of the lifting mechanism, 5 - the base mechanism for lifting the seat, six-Nut 7 - install the seat brackets, 8 - roller 9 - bearing seat and 10 - lever spring 11 - spring latch 12 - pull the latch mechanism for lifting the seat, 13 - stop mechanism for lifting the seat with handle, 14 - axis of the stopper, 15 - nut retainer, 16 - rear seat levers of the lifting mechanism, 17 - eye base seats, 18 - threaded sleeve, 19 - spring retainer plate, 20 - Lock seat back bracket, 21 - pin 22 - ground back; 23 - spring mechanism for lifting the seat 24 - Latch

Each seat consists of a tubular base 3, the lugs 17 which is mounted on the axes of the tubular base 22 back. For reasons attached with screws 2 seat cushions and a backrest, which rely on fixed to the bases of the supporting belt. The position of the seat back is determined by the locking bars 20 in the lateral part of the L-shaped cut-outs which in this case consists of the fingers 21, welded at the base of the seat back. Folding seat back, with full Pivoted it must submit a lock bar 20 upward. Tilt the seat back adjustable threaded couplings 18.

Height seat with the help of the lifting mechanism can be identified and blocked, in three positions.

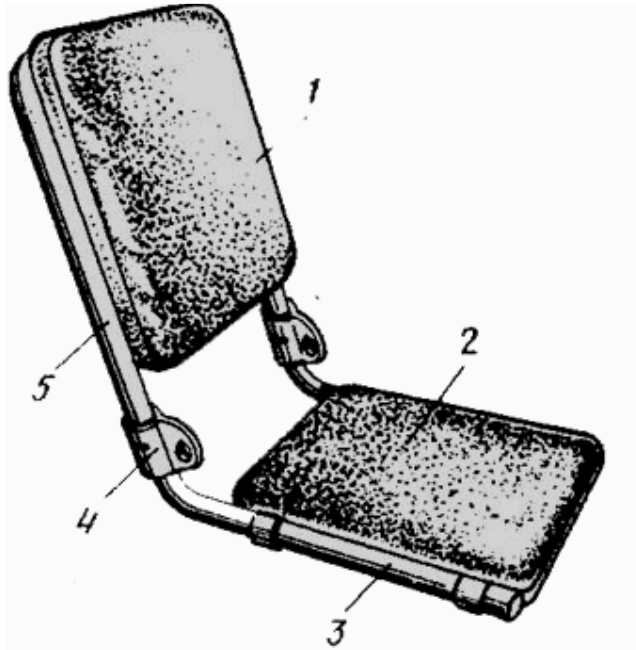
Hoist the seat consists of five bases, which are connected with the base of the levers of the seat 16 and 4, of the latch 24 and the stopper 13. Front levers are connected by a roller 8, which are welded to the lever 10 springs rise 23 seats. A lever 25 has a front tooth, which includes the latch

24 and is held in this position the spring 11. The latch rod 12 is connected to the handle of the stopper 13. The axis of the stopper 14 has a double-start thread, which dimmed the nut retainer 15. On the external splines fits the stopper nut with the handle and secured with a screw.

To raise the seat, turn the knob up stopper, and the lever is released 16. After rasstoporeniya seats with a further rotation of the handle rod 12 will turn the latch lever 24 and will bring it out of engagement with the teeth of the lever 25. The seat under the action of the springs 23 will rise. After installing the seat in position lower the lever stopper, and the latch will go into engagement with the corresponding tooth of the lever 25 and a further press on the handle of the stopper seat will be stalled. Lowered the seat in the same sequence, only under the weight of the driver (the commander) will stretch the spring 23.

The design of the installation's seat provides an opportunity to move it along the machine. To do this, unscrew the nut 6, install the seat in a comfortable position for the driver (the commander) and tighten the nut.

Seats for the crew (Fig. 18), single, semi-rigid. Pillows two seats and backs are made of a foam rubber and covered with leatherette. They are fastened with screws to the base seat 3, and 5 backs. Seat backs with bases connected by loops 4 and can be put back on.



*In Fig. 18. The seat for crew members
1 - pillow back, 2 - seat cushion, 3 - Seat base, 4 - loop 5 - back ground*

Maintenance of body

At the control examination to check:
 - the presence of plugs in the bottom of the machine body,
 - a state of fastening the outer laying APP (visual inspection).

For daily maintenance :
 - Clean and wash the exterior body of the car from dust and dirt (in the winter of snow)
 - clear the body of the car inside the dust (dirt)
 - check for oil on the bottom of the machine, when an oil leak to find a place , solve the problem, check the oil level in the node (unit) and refuel when necessary to the normal;
 - check (visual inspection), the state of mounting external stowage of spare parts.

When servicing a number of perform daily maintenance and more:
 - check the hinges, locks and stoppers manhole covers housing, if necessary, wash them and

grease applied to the motor
- Clean and lubricate the used oil, used for the engine mount lambs entrenching tools and tow cables, as well as the axis of the front and rear latches tow hooks.

For **maintenance of number 2** perform maintenance work number 1 and double-check the reliability of fastening items inside the car spare parts.

When **servicing a 6000 km run** to perform maintenance work and an additional number 2:
- free from dirt and grease with tow ropes used oil, used for engine
- test your ram, if necessary, replenish the hydraulic fluid (oil AMG-10) to the norms and eliminate the defects found.

5. Armament

General Description

BRDM-2 armed with 14.5-mm machine gun KPVT and 7.62-mm PKT machine gun, placed in the tower (Fig. 19).

KPVT intended for shooting at lightly armored targets, manpower and fire weapons. Machine gun designed for firing at the enemy's manpower and fire weapons at ranges of up to 1500 m

For machine guns pointing at the target unit has twin periscope sight PP-61AM, lifting mechanism and a mechanism for turning the turret with manual transmission.

Inside the car provides stowage for the AKM, a spare barrel KPVT, ammunition and machine guns, as well as for the flare gun and hand grenades.

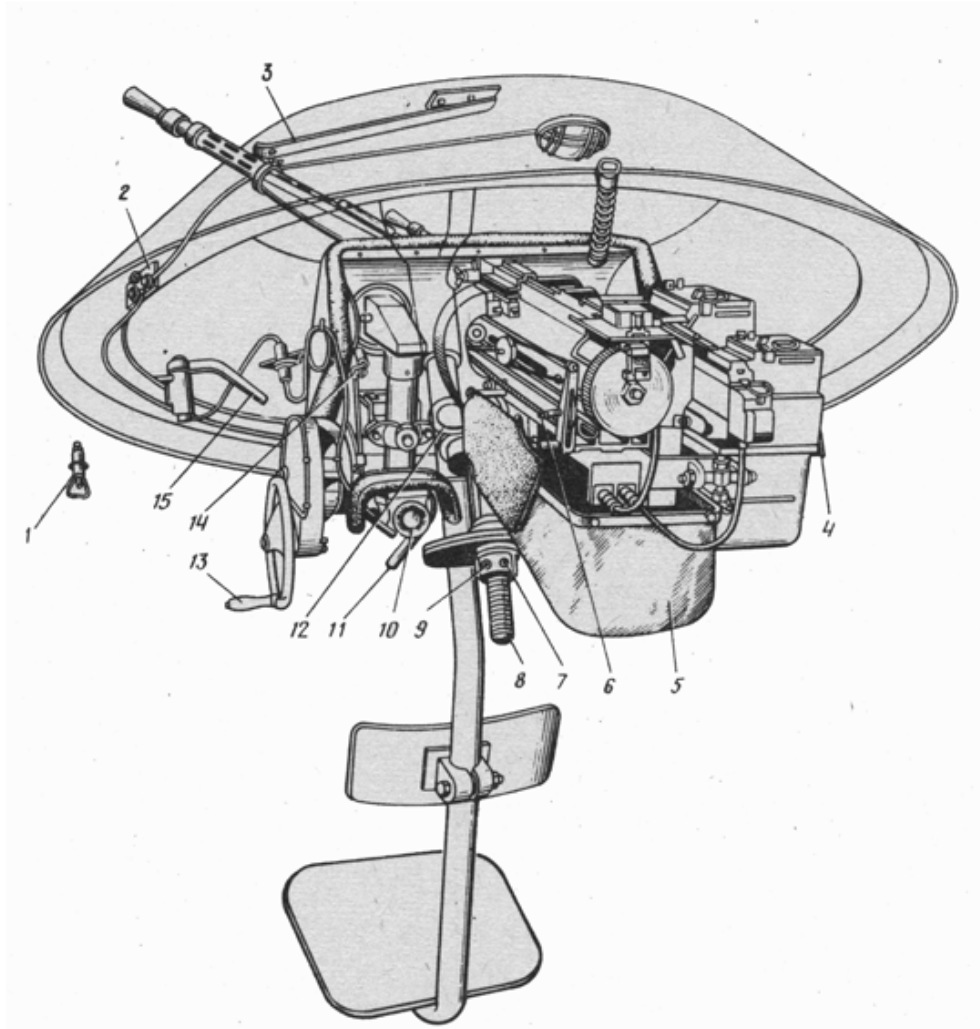


Fig.19. Turret machine gun mount:

1 - stop the tower, 2 - electro Tower 3 - stopper rod cradles, 4 - Latch korobkoderzhatelya 5 - gilzolentosbornik 6 - pin retainer plate cradles, 7 - button electric trigger PBC, 8 - Handle flywheel mechanism for turning the turret, 9 - electric trigger button KPVT, 10 - Sight 6IAM PP-11 - lever hoist brake, 12 - Handle reloading KPVT 13 - lever hoist flywheel, 14 - wiper arm, 15 - brake lever tower

Tower

The tower (Fig. 20) of welded armor plates, has the shape of a truncated cone. The tower is installed on a support ball-chasing, in the turret above the cut-sheet roof of the machine.

Inside the bottom of the tower welded ring with holes for mounting the turret. To increase the rigidity of the ring to him and to the body of the tower are welded stiffeners. Welded to the ring two blocks with cut-out under the stopper pin of the tower in the position to its stowed position and the mounting bracket 5 slewing tower.

The aft between the ring and cone towers welded plate mounting bracket seat shooter, and on the left side of the welded bracket for switch board. For ceiling mounting bracket welded to the ceiling of the tower, Bonk bracket for mounting the cradle stopper in its stowed position and the swinging arm mechanism for balancing the unit.

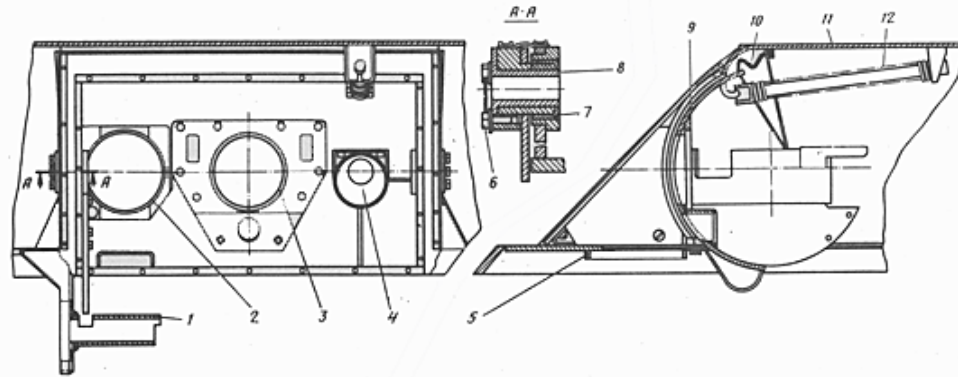


Fig.20. Tower with a mask:

1 - cup hoist brake, 2 - a sight window, 3 - Window Barrel KPVT 4 - FCT trunk box, 5 - bracket mechanism for turning the turret, 6 - Bolt, 7 - Bearing 8 - pin, 9 - Mask, 10 - Seal, 11 - Tower, 12 - a balancing mechanism

Outside the armor plate welded to the tower three staples that are intended to capture the tower cables with hooks when removing and installing it.

The front page of the tower has a rectangular recess, which are welded to the right and the left cheek with a pin bosses 8 masks.

The mask 9 is installed on two pins attached to the cheek bolts 6 and two spherical bearings 7. The mask is the basis for fixing the cradle and the head-protection mechanisms and arrow set from bullets and shell fragments. The gaps between the tower and the closed mask seal 10 made of rubberized fabric.

To drain the water in the sealing mask there is an opening closed by a rubber stopper.

Welded to the body mask amplifiers: one in the middle, the other on the left side. The amplifiers are placed in a special recess sealing rubber rollers. The mask has four windows: the average lot - for KPVT trunk, underneath a small - for pipes gilzootvoda KPVT, the left (in amp) - for the scope of PP-61AM and right - for the barrel machine gun.

On average, the amplifier in case the mask has ten holes for the bolts holding the cradle and the console to the mask. In the left window masks encased safety glass sight.

In the right window to the mask welded pipe bracket and amplifiers, which are attached korobkoderzhatel KPVT tray and ribbon cartridge KPVT.

In the left cheek of the mask has holes for bolts fastening plate sector hoist.

Between the top of the mask and the ceiling of the tower is set counterbalancing mechanism 12 is designed to ensure a smooth (without jerks) rotation of the rocker set in the vertical plane at work lifting mechanism. Counterbalancing mechanism comprises a guide tube and put on her spring. Tube front end rests on the arm mask, and the rear end passes freely through the hole in the bracket that is welded to the roof of the tower.

Ball-bearing towers

Ball-bearing towers (Fig. 21) represents the angular contact ball bearing rings, which are the insignia of the tower. Ball bearing consists of three lower, upper straps 12 and the adjusting ring 5, the four rings of calibrated steel wire, beads 13 and separator 11. Between the roller rings are stacked in the separator beads.

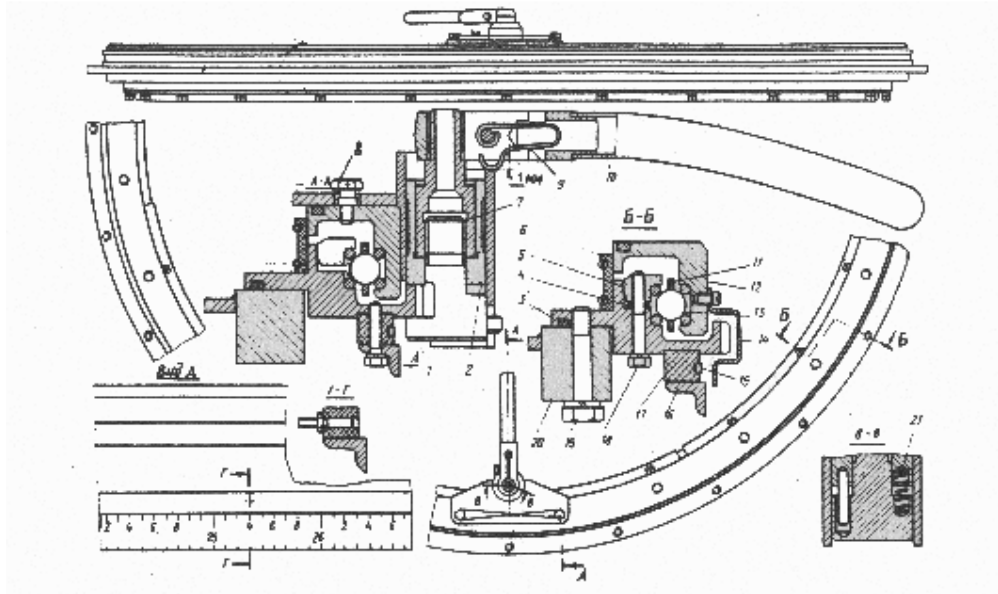


Fig.21. Ball-bearing towers:

1 - brake shoe 2 - hub, 3 - lower shoulder straps, 4 - shims 5 - adjustment ring, 6 - O-ring, 7 - clutch, 8, 18, 19 - bolts, 9 - latch spring, 10 - brake lever Tower, 11 - separator, 12 - overhead 13 - Ball, 14 - fence, 15 - pin ring 16 - azimuth circle, 17 - a plastic ring, 20 - annular recess, and 21 - Spring

The upper strap is bolted to the lower sheet of the tower, the lower one - to an annular recess 20 turret leaves the body.

Adjusting ring gaskets with 4 attached to the bottom of the chase. The lower chase sliced ring gear.

With the ring gear pinion mechanism concatenated turret.

Shoulder strap has a ring gear guard 14 attached to the overhead screws.

Sealed shoulder strap provided with seal consisting of a rubber O-ring 6 with superimposed inside Teflon film and the tightening of the two spring washers.

The film, having a minimum coefficient of friction, ensures ease of rotation of overhead and leakage at a pressure in the tower at least 50 mm of water column.

The lower chase attached plastic ring 17 with an angular range of 16. In the plastic ring inserted and flared pin current collector ring 15, which provides power electric trigger gun, lighting towers and electrical panel and backlight sight.

Brake tower is located on the lower sheet of the tower to the left of the gunner, and serves to prevent the disposal of the tower on the horizon when bringing the plant to a normal fight, and when firing at targets on the move.

The brake consists of glass blocks 1, 2 bushings, springs 21, the coupling 7, 9 spring latch and handle 10.

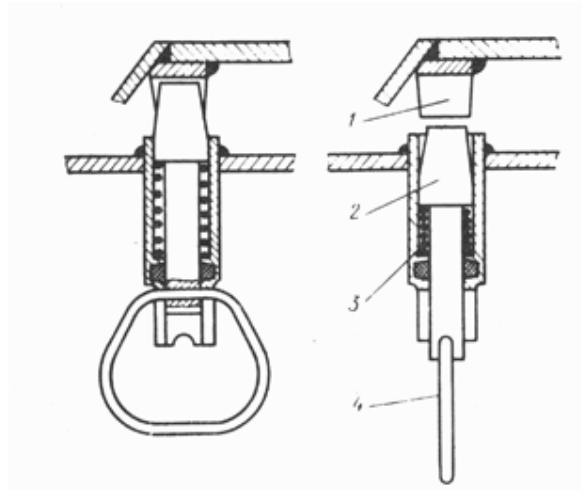
On a glass flange with two holes for the bolts to the bottom of the brake sheet of the tower. The handle is connected to the coupling with slots and held in a certain position lock.

Inhibition of the tower is made by turning the brake itself. In this coupling is screwed onto the shoe. Clutch pressure on the sleeve and ring gear shoulder strap is clamped between the sleeve and the block. When rotating the handle of a spring 21 squeezed from the pad sleeve and disinhibited tower.

Catch of the tower

Catch of the tower is located on the turret hull plates on the left of the gunner and is designed to provide secure tower in the stowed position, relieving the load on the mechanism of rotation.

Stopper (Fig. 22) consists of a body, a pad, stopper 2, 3, and a spring ring 4. Lock the tower in two positions: machine guns, machine guns forward and backward. For locking the turret ring to pull down to release it from the shallow slot and turn the stopper body by 90 ° so that the ring fell into the deep cuts against the body, and release the ring. Slewing tower to turn the stopper into the cut zaskakivaniya respective pads.

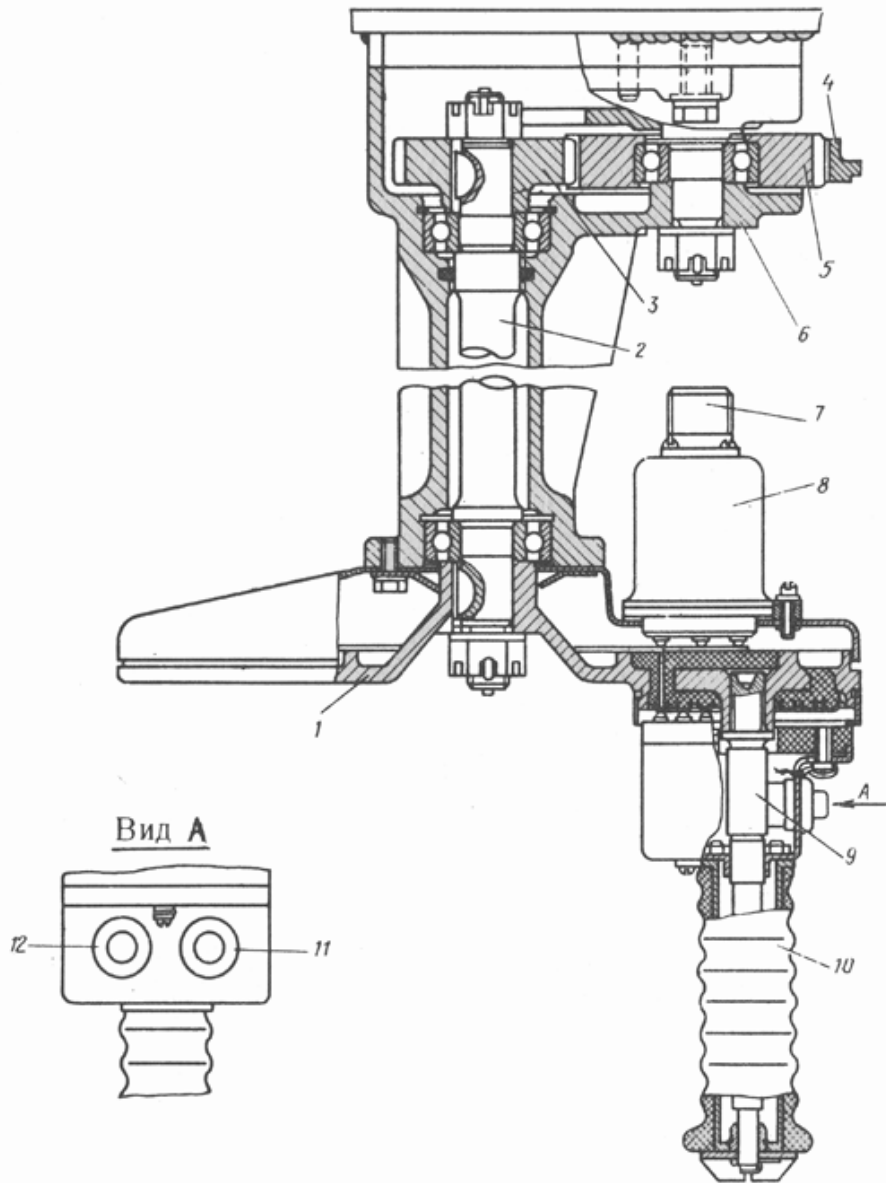


*Ris.22. Stopor tower:
1 - Block 2 - stopper, 3 - Spring, 4 - Ring*

The mechanism of rotation of the tower

The mechanism of rotation of the tower is attached to the bracket 5 (Fig. 20), the tower serves to rotate the turret by hand. The direction of rotation of the flywheel corresponds to the direction of rotation of the tower.

The mechanism of rotation of the tower (Fig. 23) consists of a casing 6, 5, and led the leading three gears, shaft 2 and a flywheel with handle 10.



Ris.23.Mehanizm turret:

1 - flywheel, shaft 2, 3 - pinion gear, 4 - toothed rim of the lower shoulder strap, 5 - driven gear 6 - housing 7 - plug-in connector, 8 - current collector, 9 - the axis of the handle, 10 - Handle 11 - Button electric trigger PBC, 12 - electric trigger button KPVT

Carter is a curly casting of aluminum alloy, which is mounted inside the main part of the mechanism.

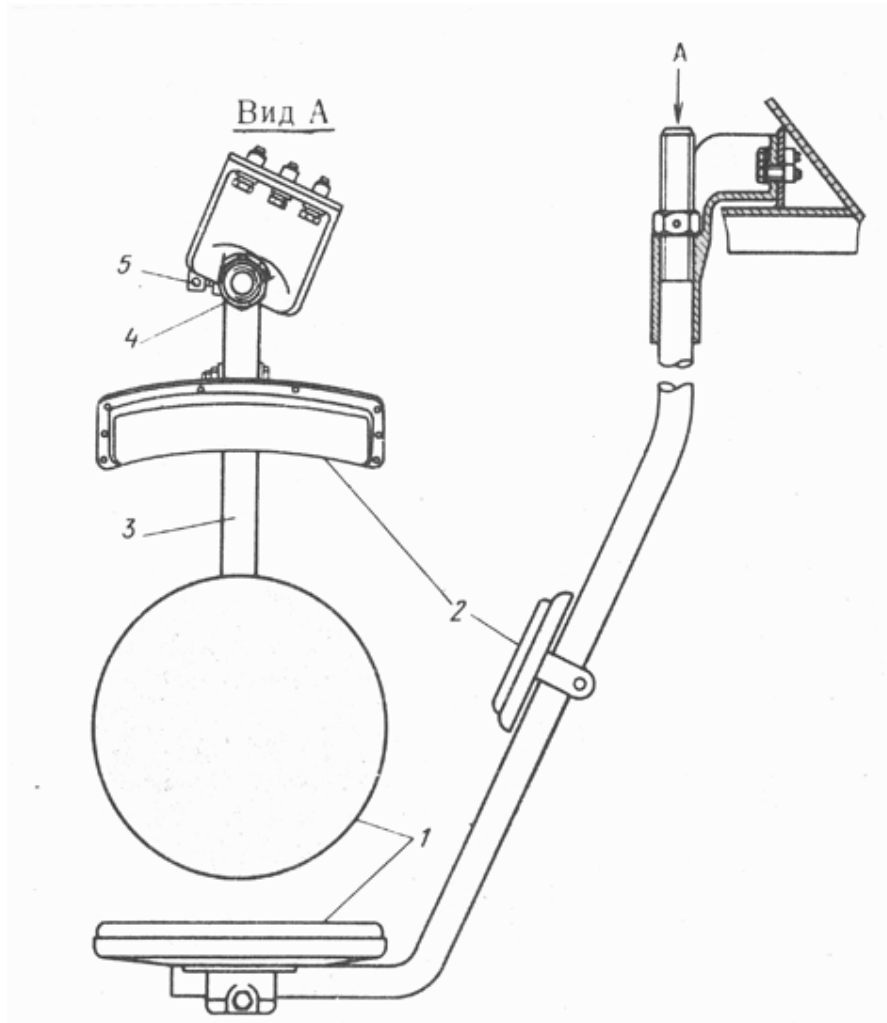
Driven gear rotates on ball bearings, mounted on an axis. Gear is in constant mesh with the ring gear shoulder strap.

Pinion gear mounted on the shaft keyway. The shaft drive gear rotates on two bearings, pressed into the slot housing.

Flywheel with a handle connected to the shaft with pins and fixed nut is screwed onto the shank of the shaft. On the axis of the flywheel 9 is set to handle the buttons 11 and 12 machine guns, electric trigger (left 12 - KPVT, the right 11-DCR). The handle is fixed nut is screwed onto the shaft axis. The body covered with plastic handwheel brass slip rings of electric trigger guns.

The flywheel housing is closed, which is fastened to the crankcase bolt mechanism. Screws attached to the casing 8 with the current collector plug connector 7.

Seat arrow (Fig. 24) consists of a bracket with locking screw 5, nut bars 3 with 4, 2 and back cushions with a panel.



Ris.24.Sidene hand:

1 - a pillow with a panel of 2 - back, 3 - Rod, 4 - Nut, 5 - locking screw

Bracket is bolted to the plate that is welded to the tower. In the opening bracket is inserted rod 3, rod end nut is screwed by means of which the seat is held in limbo and can be adjusted in height. By turning the rod is fixed by a locking screw 5. The back seat is attached to the rod clamp with bolts and can be adjusted by moving up and down.

Cradle

Cradle (Fig. 25) is a rigid welded frame and is part of the carrier machine guns and all the major sites and mechanisms of rocking of the unit: shock absorbers, console, reloading mechanism KPVT, carriage PBC korobkoderzhately, and gilzozveneotvodov gilzozvenesbornika.

Cradle attached to the mask studs with nuts and lock washers. Studs are welded to the bottom of the console 6.

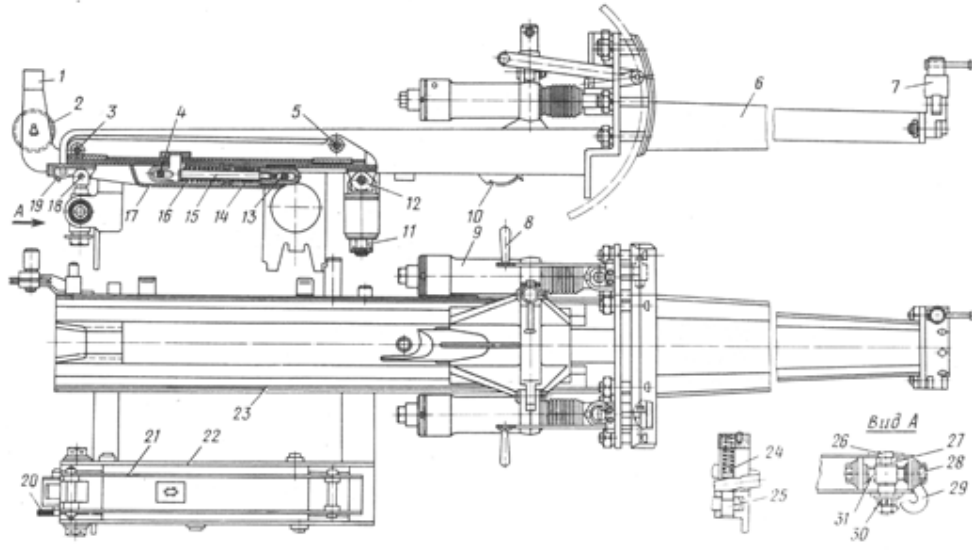


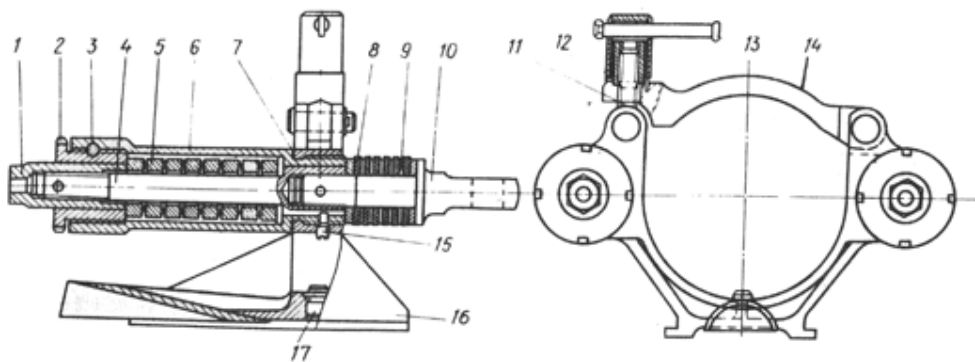
Fig.25. Cradle:

1 - Bracket 2 - rear roller, 3,5 - DCR-axis mounting, 4, 13 - axis of the shock absorber 6 - Management, 7 - clamp with an outline, 8 - handle damper stopper, 9 - shock, 10 - the front clip; 11 - Nut, 12,18 - axis carriage mounting base, 14, 16 - spring shock absorber, 15 - with the tip of the rod, 17 - cover, 19 - catch, 20 - lever latch 21 - Carriage, 22 - base of the carriage, 23 - body carriage; 24 - arm 25 - stop, 26 - Rear Rack, 27, 28, 30 sleeves, 29 - hook attachment gilzolentosbornika; 31 - horizontal screw

KPVT mounted on a cradle at two points in front of the receiver using the clamp with an outline of shock absorbers 9 and in the back of the finger with a beard receiver. Finger cots is included in the guides. Giving KPVT the shot is absorbed by two spring shock absorbers, placed on both sides of the receiver KPVT.

Shock absorbers KPVT

Shock absorbers KPVT (Fig. 26) have a common base 16 and consist of the following parts: stem 4 with earrings 10, 5 springs, adjusting sleeves 1, 2 nuts, rubber buffer rings 8 and washers 9, clamps and pins mounted in the two cases 6 on the collar.



Ris.26.Amortizatory KPVT:

1 - adjusting bushing 2 - Nut 3 - pin 4 - stock; 5 - Spring 6 - housing 7 - adjusting washers, 8 - buffer ring, 9 - Puck, 10, 11 - Earrings, 12 - spring-loaded stopper; 13 - ratchet, 14 - basting, 15 - catch, 16 - base of the clamp, 17 - vertical rod

Housing damper connected to the base with a threaded collar and stopper from turning lock 15.

With the founding of the front mounting clamp is connected to the gun cradle, which consists of a base 16 and clamp 14 blueprints, coupled with the base of the clamp finger. In the working position the other end is attached to the outline of the base clamp 11 with earrings, coupled with the base of the clamp finger and screwed at the end of the spring-loaded stopper rings 12 with knob 13.

Shock absorbers are installed in the front rails cradle the body and connected to the cradle by means of spring-loaded ear-rings 10 and stoppers 25 (Fig. 25).

Stops are placed in the holes of the front wall of the cradle of hot flushes. In front of the tides provided the slot through which the levers 24. The head levers are placed in the nests of the mask. The short end of the lever is slotted stopper, and the long end of the lever handles with eight out inside the tower.

When firing a machine gun recoil propellant gas through the base of the clamp and the case is transferred to the spring shock absorber and is absorbed by them, thus achieving a significant improvement in accuracy of a machine gun fight.

To mitigate the runup to the gun after firing rubber shock absorbers provide a buffer. To reduce the vibration of the barrel, and hence improve the accuracy of a machine gun battle with an automatic fire at the facility there is a point of fastening the barrel jacket, which is located at the front end of the front console, and a clamp 7 (Fig. 25) with a blueprint and a spring-loaded stopper. On the inner surfaces of the clamp, and provided an outline brass sectors. Clamp attached to the rack so that you can adjust its position in the vertical and horizontal planes.

The radial clearance between the outer surface of the barrel jacket and the inner surface of the attachment should be around the circumference of the same. Loading and reloading KPVT manual and by using a mechanism consisting of three rollers (2 rear, front 10 and middle), cable assemblies and braided handle and spring. Reloading mechanism is mounted on a cradle on the left side. Outer diameter rollers are streams for cable. Posterior axis of the roller 2 is fixed in a bracket that is welded to the cradle. The front roller 10 is mounted on the axle, fastened to the cradle. On the axis of the front roller cover is installed, eliminating the cable from the decay of the movie. The axis of the average movie is set in the sectoral slot handles reloading the machine gun. In the middle axis of the roller cover is installed. The average movie is held in its most forward position of the spring, one end fixed to the casing and the other to an arm of the cradle.

For a gun cocking handle to the cable vigorously (without stops) to pull down to setting the shutter cocked, and then, without giving up the handle, quick to let her go. At the same time the average spring clip, compressed, will return the handle reloading the machine gun in forward position.

Machine gun mounted on the carriage 21, consisting of a base 22, housing, casing 17, latches 19, the shock and the adjustment mechanism.

The front and rear of the carriage base has tabs with holes, to which the axes 12 and 18 attached to the rack. The front desk is a vertical hole in the front bracket cradle and is secured with a cotter pin nut 11. Rear rack 26 with a pre-screwed sleeve 27 is installed in a horizontal screw hole 31 and sleeve 30 is attached.

The rear rack, a horizontal screw and bushing from the front desk are a crossbeam mechanism to adjust the position of the carriage with a machine gun in the horizontal and vertical planes.

On the mechanism bushings crossbeam bear risks. Price of a large division corresponds to the change of the axis of the bore to one thousandth of the distance.

At the bottom there is a T-shaped grooves to connect to the carriage. The front and rear of the carriage body has two holes for the tide to the 3 and 5 axis machine gun mount with a carriage.

Go to the bottom of the carriage with the axis 13 is mounted the front end of the housing 17. At the rear end cover bracket with a hole for the axis on which the latch pin 19 is fixed with a spring in which the rear end cover is attached to the bottom of the carriage.

The housing is mounted spring-damper, which serves to absorb the recoil and roll forward during firing and enhances accuracy of a machine gun fight.

Absorber consists of a rod 15 with the tip of springs 14 and 16, and the axes of the coils 4 and 13.

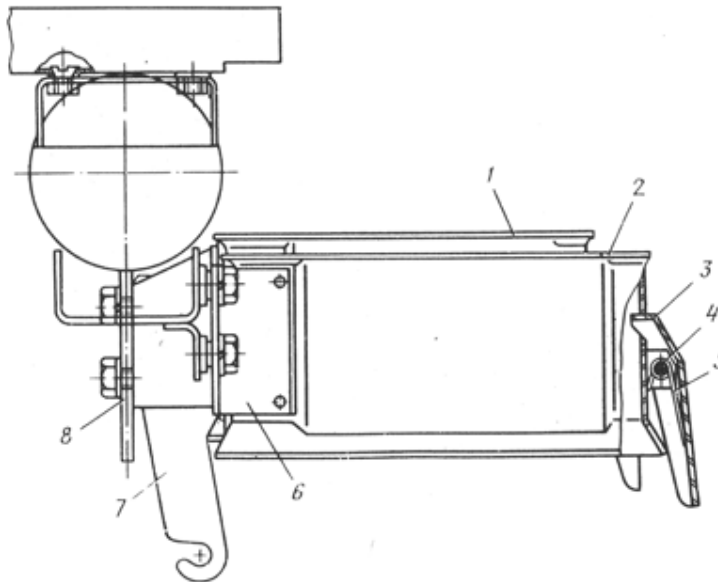
At the rear end of the rod has an oval head with a hole for the axis 4 and the tooth, which enters through the foramen ovale is a hole in the base of the carriage. At the front end of the rod tip is screwed with an oval hole for the axis 13, connecting it with the base of the carriage. At the core of worn two springs, coil springs located between the coil spacing, coupled with persistent carriage base.

When firing the carriage 21 with a machine gun mounted on it is moving in the base rails, and the longitudinal forces are amortized by two springs: a spring 14, perceiving a rollback, and a spring 16, perceptive reel machine gun.

In front of the barrel machine gun, in the location of the gas chamber, the tower is set to seal seal loopholes. To the right of the cradle has korobkoderzhateli cartridge boxes guns. By design, they are identical, but differ in size and method of attachment.

Korobkoderzhateli

Korobkoderzhateli cartridge boxes guns 1 (Fig. 27) and two are located on the right of the cradle. By design, they are identical, but differ in size and method of attachment.



Ris.27. Korobkoderzhateli:

1 - korobkoderzhatel KPVT 2 - korobkoderzhatel PBC, 3 - Latch 4 - Axis 5 - Spring, 6, 7 - mounts, 8 - tube amplifier mask

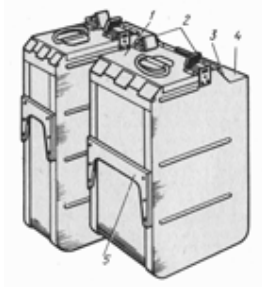
Korobkoderzhateli consist of frames, clips and brackets. By framed korobkoderzhatelya one designed for cartridge boxes KPVT, welded U-shaped bracket with three welded nuts for the bolts fastening the amplifier korobkoderzhatelya masks and 8 pipe bracket 7 frames gilzozvenesbornika bag. By framed korobkoderzhateli 2 PKT two brackets welded to the six holes for bolts to korobkoderzhatelya Bonk base cradle.

Latch 3 is fixed to the frame ushkam axis 4, which is put on a spring 5, the upper part of the latches are clamped to the bottom of the hard strip cartridge boxes and boxes of preventing the loss korobkoderzhatelya.

Power cartridge guns made from the boxes with a capacity of 50 rounds for the machine gun and 250 rounds of ammunition KPVT for PKT machine gun.

Cartridge box

Cartridge boxes consist of shells and caps, with their retainers, and valves (Fig. 28).



Ris.28. Patronnye box:

1 - Cover 2 - fixers, and 3 - the valve cover, 4 - Tray 5 - sliding fence

At the top of the box has a tray for the first four rounds belt. On the cover of a box has two locking 2, latching the lid in the closed position. Drop curb strip out of the box prevents the spring-loaded valve 3 cover.

Go to the back of the box is riveted sliding fence 5, which fixes the position of the box in korobkoderzhatelye.

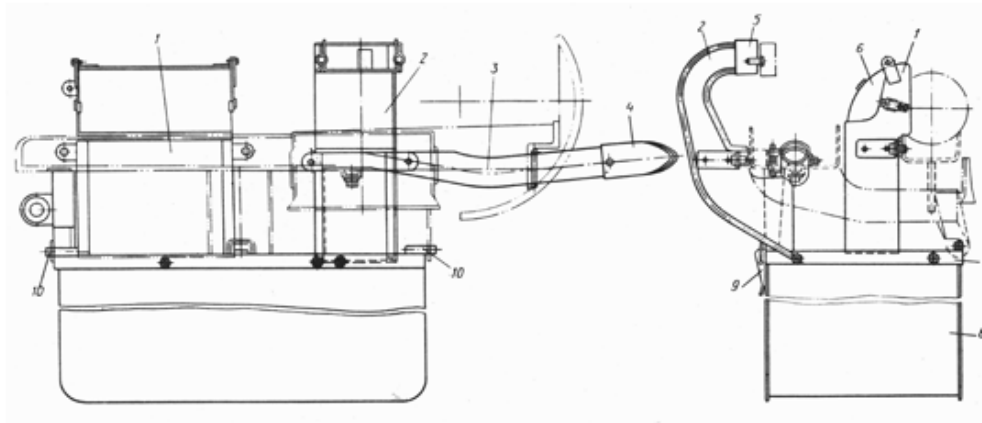
At the bottom of the box body is FCT pan, eliminating the obstruction in the upper ranks of the tape cartridge.

Do not throw the cartridge box, or sit on them. Dents in the box can lead to delays during the shooting.

Capacity cartridge box - 50 rounds for the machine gun and 250 rounds of ammunition KPVT for the machine gun.

Gilzozveneotvody

For the removal of tape cartridges and cartridge is fired from machine guns mounted on the cradle gilzozveneotvody (Fig. 29) on the right side gilzozveneotvod a machine gun on the left side - zveneotvod KPVT 2 and below - 3 gilzootvod KPVT.



Ris.29. Gilzozveneotvody:

1 - gilzozveneotvod PKT 2 - zveneotvod KPVT 3 - gilzootvod KPVT 4 - Tip 5 - Tray 6 - Cap 7 - Frame 8 - bag, 9 - latch, 10 - fingers

Gilzozveneotvod FCT consists of a body with a lid 6, which are welded to the legs with the holes for the bolts to the bottom of the carriage gilzozveneotvoda.

The lid pivotally connected to the body in the position it is a continuation of the rear wall and secured by two spring-loaded latches. Upon removal from the cradle KPVT avoid grazing his successor in gilzozveneotvod cover should be turned into housing.

Zveneotvod KPVT consists of a case and tray 5. On the back wall of the housing has an oblong window, through which pushed the links in the case of tape stuck them in zveneotvode. By the side walls of the housing are welded tabs with holes for bolts gilzootvoda to the cradle.

Between the upper neck and the body zveneotvoda KPVT tray is 5, which is mounted in the receiver and firing a machine gun moves with the gun.

Gilzootvod KPVT consists of a tube and the tip of a flap. The inner end of the pipe is bent and cut so that it forms a horizontal face that is adjacent to gilzootvodu KPVT. At the end of the pipe is welded by Bonk bolt pipe to the cradle. At the outer end of the pipe is put on the tip 4 with spring-loaded valve. To ensure the integrity gilzootvoda on the inside flap of privulkanizirovana rubber gasket. The pipe is sealed with a rubber mask in the ring.

When firing the shutter opens ekstraktiruemyimi sleeves.

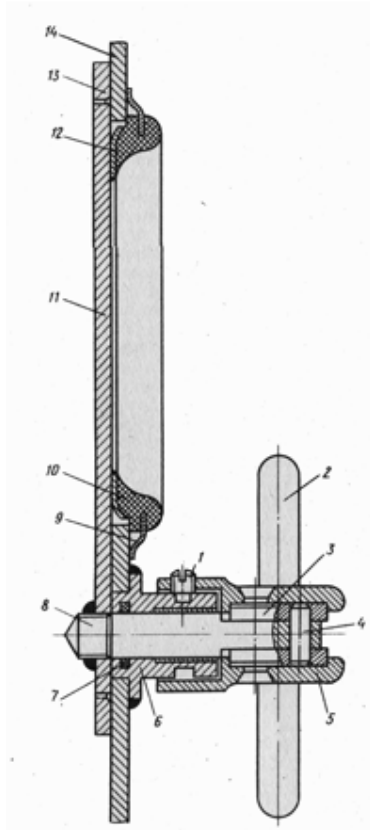
In order to collect shells and machine gun ammunition belts and ammunition belt links at the bottom of the cradle KPVT under zveneotvodom KPVT and gilzozveneotvodom FCT gilzolentosbornik attached.

Gilzolentosbornik consists of a canvas bag 8 and the metal frame 7. The bag is attached to the frame by bolts. By framed welded two-finger latch 10 and 9, by which gilzozvenesbornik attached to the cradle. Gilzolentosbornika volume designed for 250 cartridges, tape cartridges 250 and FCT tape on 50 rounds KPVT.

Hoist

The hoisting mechanism is bolted to the left cheek of the tower and serves as guidance for the installation of machine guns in the vertical plane.

The lifting mechanism (Fig. 30) consists of a casing 1, the three gears 2, 4 and 5, the rollers 3 and the flywheel sector 6.



Ris.30.Podemny mechanism:

1 - Carter, 2, 4, 5, - gears, 3 - Sector 6 - flywheel, 7 - Handle, 8 - Nut

Gear 4, located in engagement with the sector, made in concert with the roller and rotates on two bearings. In the slotted end of the roller 8 is mounted nut driven gear 2. Pinion gear is made in concert with the roller and rotates on two bearings. At the end of the roller with the pie wedges, and tightening the bolt flywheel attached to the handle 6 7.

The sector is a ring gear connected to the base sector bolt and electric welding. The base is attached to the sector bolted the left cheek of the mask and fixed pins.

Set in the vertical plane of rotation of the flywheel is induced by the handle, while the rotation is transmitted through the driving and driven gears in the gear roller 4 which, on the teeth obkatyvayas sector, resulting in a swinging motion of the installation.

The brake lifting mechanism is located on the left cheek of the tower and serves to prevent the disposal of the unit oscillating vertically with bringing guns to a normal fight and shooting at targets on the move.

The design of the brake hoist brake design is similar to the tower.

Inhibition of hoist brakes by turning the handle itself. In this sector, is clamped between the sleeve and the block.

Catch the cradle is located on the inside of the roof of the tower and is designed to provide secure installation of swinging in the stowed position and the release of the load lifting mechanism.

For locking the swinging part of the plant must be spring loaded bar 3 (Fig. 19. Tower machine gun mount), turn down and a hole at its lower end to put on the pin 6.

Combat Service turret machine gun

The duration of the service turret machine gun and the normal operation of its mechanisms depend on the proper handling and maintenance, careful preparation and installation of fire campaign.

Training consists of inspection of machine guns, **general inspection** and testing of mechanisms for setting and **checking alignment of gun** control on the target. The installation should be inspected before leaving to perform military tasks (target practice), and after returning from a mission (target practice), as well as during maintenance.

Inspection of guns before shooting

Inspection before firing machine guns made with prior removal of them from the installation, in disassembled form, which should uncover the installation, disinhibited linkage, remove the stopper from the cradle to make the installation elevation angle 20-30 °, brake linkage, check whether the machine gun not charged, remove the cartridge from the box korobkoderzhately and disconnect plugs electric trigger.

To remove KPVT with installation, you must:

- separate the barrel assembly to the casing of the receiver, which rasstoporit baster and discard the casing clamp mounting hole to the console, cock the gun, push the latch on the barrel jacket and turn left (when facing the outer bronemaski part) by the handle until it stops and remove from the receiver;
- remove the seal from the trunk;
- to release the shutter cocking;
- to separate the average from the movie handles reloading the machine gun;
- turn the cover inside the machine gun PKT gilzozveneotvoda;
- raise both hands and the shock stops promote gun receiver with shock absorbers back to the base of the clamp and release your finger from the beard gun cradle guides;
- remove the receiver from the cradle to the shock absorbers;
- to separate the receiver from the shock gun, which open the receiver cover, and take her away; rasstoporit baster and discard clamp;
- to separate the tray from the machine gun receiver;
- close the cover receiver;
- basting close the damper clamp and install it on the cradle;
- to give the horizontal position of the cradle and put it on the stopper in its stowed position.

To remove the machine gun PKT with installation, you must:

- turn the latch mounting enclosure to the bottom of the carriage and drop down the hood carriage;
- move back to the gun out of the carriage guide carriage base;
- to raise the gun with the slide and pull them back,
- to remove the axis and separate carriage from a machine gun;
- insert the axis of the carriage and set the slider to the base of the carriage rails, with the end of the housing and fix up,
- to remove from the trunk seal.

After removal from the installation machine guns to disassemble, clean the parts and mechanisms, see (in parts), then lubricate the moving parts and chambers gun grease and assemble.

Guns in the collection set to be installed in reverse order.

To inspect and verify the installation of the mechanisms necessary to:

- ensure the reliability of attachment: machine guns at the facility, housing the barrel to the receiver KPVT, flame arresters with barrel machine guns, shoulder strap, lifting and rotating mechanism, brakes tower gilzozveneotvodov, korobkoderzhately;
- check out the action of moving systems and triggers of machine guns, reloading mechanism KPVT, turning and lifting mechanisms;
- check the purity of brake friction surfaces of the tower and the hoisting mechanism, as well as the surface of the slip ring current collector, in contact with oil on the surface of these should be

removed;

- see the tape cartridge, tape with crumpled or broken sockets removed; in preparation for firing guns to remove all excess grease from the cartridge belts and moving parts of machine guns, as it may cause a delay in shooting, especially at low temperatures and dusty conditions.

Bringing plant to the normal battle

Bringing the unit to a normal battle in the following cases the replacement of both or one of the guns, the sight, elektroobogrevnogo glass tube cold zeroing, making control of the target crossbeam, and the apparent deterioration of the accuracy of hit of battle, as well as installation or replacement after repair of its mechanisms.

Before checking the combat guns should be carefully examined and all detected faults are eliminated. Checking the battle is set in favorable weather conditions and lighting of one party ammunition for each gun.

Before bringing the set to normal battle to reduce the time and expense of ammunition necessary to check the relative position of axes bores gun sight with the optical axis.

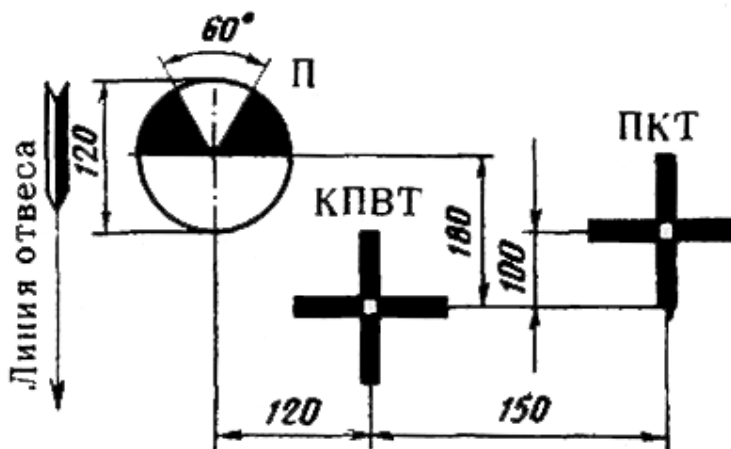
Check the following method:

to set the car on level ground with a solid ground and orient toward the bow of the shooting, tire pressure should be equal in all wheels and equal to 2.8 kgf/cm², stop the engine, turn the first gear in the gearbox and tighten the lever parking brake system of the machine ;

uncover the installation;

send machine guns forward, in the course of the machine;

establish a panel at 100 m from the flame arrester KPVT; on the shield to secure the crossbeam plumb target (Fig. 31), placing it on the middle level of the horizontal axis of the gun barrel; target should be well lit with the light source must not interfere with machine guns and a tip sight of the crosses mark the target and the sighting;



Ris.31. Vyverochnaya target

inserted into the barrel KPVT cold zeroing tube (Tx) 14.5mm all the way to the collar so that the thread was parallel to the vertical plumb line on the target, select Tx should be raised up;

bring with lifting and bending mechanisms Tx cross in the center of the target of a cross with the mark "KPVT"; In that situation the brakes to slow down the rotating and swinging of the installation for the use of zeroing in the cold pipe should be borne in mind that the image seen through a tube in the direction of back real;

removed from the machine gun flash hider (thread left) and insert the tube into the barrel of cold zeroing 7.62 mm all the way to the collar so that the thread was parallel to the vertical plumb line on the target, select Tx should be raised up; cross Tx must coincide with the cross "PBC" target;

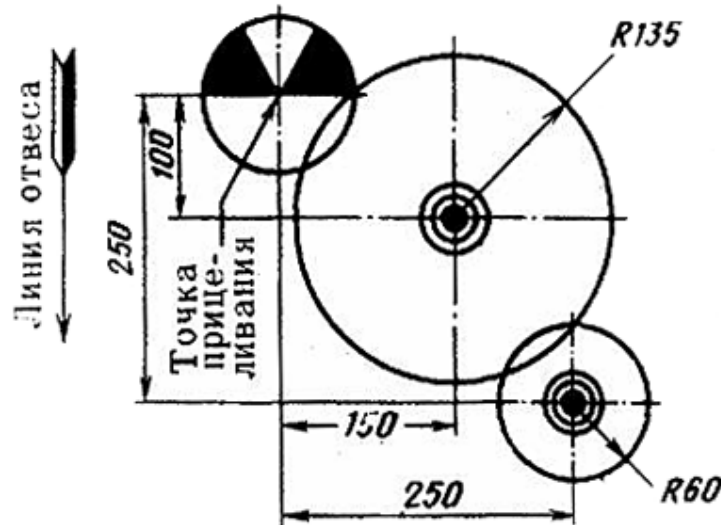
If the crosshairs do not coincide with the cross of the target, it is necessary to change the position of machine gun, after adjusting mechanism rasshplintovav sleeve carriage base, then with

the help of the adjusting mechanism of the base machine gun carriage to put a crosshair in the center of the cross Tx target marked "PBC", pointing a machine gun through the Tx is a triple sight;

after the gun barrels are induced in the corresponding cross-hairs on a target, an examination of sight, the point of intersection of vertical and horizontal axes of the grid sight (top gun) must coincide with the center of the aiming mark "P" of the target;

remove the tube from the cold zeroing bores KPVT and FCT, put them in boxes, drawers mounted on full-time places in the car, screwed on the barrel machine gun flash suppressor.

After graduating from the relative positions of the axes alignment bores gun sight with the optical axis to produce test accuracy and accuracy firing guns battle for sighting the target (Fig. 32).



Ris.32. Pristrelchnaya target

Check accuracy and accuracy in the battle to make the following order:

replace the crossbeam on sighting the target;

insert the cartridge in the box korobkoderzhateli;

start a first tape cartridges with a machine gun receivers locking fingers and put locks on the guns cocked;

turn on the shield tower installation electric trigger switch, and if necessary switch heating safety glass;

click on the handle of the rotary electric trigger mechanism of the buttons and make five "sedimentary" shots in the sector of fire of KPVT and FCT (past the target);

turn off the switch on the panel installation electric trigger and discharge the guns;

bring the rotating and lifting mechanisms aiming point target with a mark of "P" and put a rotating and rocking of the unit on the brakes;

charge the machine guns and turn the switch on the electric trigger plate tower installation;

press the left button of the electric trigger and make a continuous fire 10 rounds from a machine gun KPVT, then make 10 shots from a machine gun, firing a machine gun being out of each eye separately with "O";

after firing to produce two-time shutter guns to give the maximum angle of elevation, electric trigger switch off and slow down the installation;

identify a target average point of impact (STP) queue for each gun (see Instruction Manual BRDM-2).

From the mid-point of the queue to enter the circle radius of 350 mm for KPVT and 180 mm PKT machine gun. Within each circle must be at least 8 holes (P-80). If the weapon is obtained

poor accuracy KPVT battle, it should be more reliably slow down the installation or to replace the barrel of a machine gun and then shooting again. Accuracy of the battle KPVT deemed unsatisfactory and the vitality of its trunk depleted with increasing radius of the dispersion of more than 2.5 times as against the original (350 mm) or in the presence of more than 50% of the oval and lateral holes.

When poor accuracy battlefield machine gun is required to produce verification and validation puff sleeves adjusting mechanism for the carriage base and repeat shooting.

If this is an unsatisfactory accuracy of the fight, then replace the machine gun. Accuracy of a machine gun fight PKK is considered unsatisfactory and vitality of his exhausted hole dispersion with increasing radius of more than 2.5 times as against the original (180 mm).

Upon receipt of a satisfactory accuracy of the fight to make two more turns with 10 rounds from each gun. For the three queues defined patterning battle each turn, hit the midpoint of each line and the actual center of impact of each of the three gun bursts at a time.

Hit the battle is considered satisfactory if the mean point of contact with the three bursts is within the circle of radius not exceeding 135 mm KPVT and not more than 60 mm machine gun PKT. If the firing will be given an unsatisfactory accuracy of battlefield setting, it is necessary to make the necessary adjustments PKT machine gun and scope.

When adjusting the machine gun should tighten the sleeve that the adjustment mechanism, in which direction deviated from the reference point of STF, pre-removing the sleeve from the other side. Rotate the hub by one division moves the TCB on 100 mm, ie at 0-01 thousand

After this fix the machine gun and the sight and firing to obtain a satisfactory result, then zashplintovat wire sleeve adjustment mechanism base cradle.

After doing all the work to bring the tower set to normal battle, give it a maximum angle of elevation, machine guns, unload, carry out two-time individual controlling the descent, turn off the electric trigger switches and heating of glass. The barrels of machine guns and wipe the grease gun grease. Cartridge boxes removed from korobkoderzhateley and put in shelves, gilzozvenesbornik removed and freed from shells and cartridge tape units, tape lay in the free cartridge boxes, gilzozvenesbornik set to the workplace, tower installation put the stoppers in its stowed position and sheathed.

Preparation of control and target crossbeam

After bringing the plant to the normal check-drawn battle crossbeam target for each individual installation. Preparation of control and crossbeam of the target to produce in the following order:

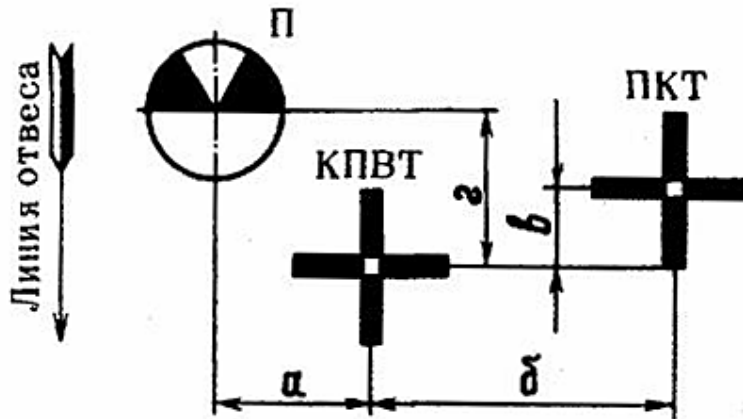
to establish the position of the car as well as checking the location of barrels of machine guns and axes sight (see Section 4.3.2);

give the guns a horizontal position along the machine, and then slow down the installation;

establish a panel at a distance of 20 m from the flame arrester KPVT; on the shield along a plumb line, at the line of fire of machine guns, to fix a piece of paper;

Tx with a piece of paper put the point coinciding with the axes of the barrels of machine guns, make three times the sight of a Tx; mark as applied to the top of the polygon mesh of sight, in sight points to draw a crosshair for aiming guns and barrel mark for the sight (Figure 33).

For ease of viewing for applying marks are useful pointer to the hole in the center of a pencil. Focusing is performed in the center pointer, which moves hand over a sheet of paper until its center not be combined with the corresponding axis of the gun barrel or the apex polygon mesh sight. After applying the crosshairs and aiming mark to produce the final validation of their fixation.



Ris.32. Shema control crossbeam of the target at a distance of 20 m

Once the control and measure the crossbeam of the target values of the coordinates a , b , c , d (Fig. 33). The values obtained in the scheme to control the target crossbeam, and then paste it into the form on the machine.

Checking the installation on the tower control crossbeam of the target is in front of each fire or in case of severe disruption of the battle of installation. With the scope set (after removal or replacement) should make its alignment.

The order of adjustment is as follows:

- to establish the position of the car as well as checking the location of barrels of machine guns and axes sight (see Section 4.3.2);

- check the mounting of machine guns and sight;

- set to plumb the shield at a distance of 20 m from the flame arrester KPVT; on board to consolidate control and target crossbeam at the axes of machine guns;

- using the lift and swivel mechanisms and Tx, KPVT put on the cross with the mark "KPVT" crossbeam control target;

- installation on the tower to put the brakes;

- put Tx into the barrel machine gun PKT and to verify that the crosshairs Tx with a cross "PCT" control crossbeam of the target, if the Tx cross coincides with the cross on the target, the position of machine gun is not broken, do not coincide with the cross Tx with a cross, "PBC" to target rasshplintovat sleeve adjustment mechanism and to make adjustment of the gun, so to achieve this match.

After adjustment zashplintovat wire sleeve adjustment mechanism.

The top polygon mesh sight should coincide with the center of the aiming mark "P" control crossbeam of the target. If the mark match, the position of the sight is not disrupted. If you do not match marks to adjust the sights (see Instruction Manual BRDM-2).

Cold zeroing tube removed from the bores of machine guns, put them in boxes. Boxes mounted on full-time places in the car. Screw flash suppressor on the barrel machine gun.

Maintenance of machine gun turret

For trouble-free operation machine gun to her to be technically sound and properly prepared for firing.

When handling a machine gun mount (inspection of parts and components and the elimination of delays) do not apply excessive force.

If you find jamming or delays should first determine the cause, they have caused, and then removed.

Must be protected from contamination guns, because dirt may cause delays, damage or cause premature wear of parts.

In the stowed position of machine gun should be sheathed and stalled.

Before opening fire, after moving the machine to install uncovered to make sure that the barrels of machine guns is not contaminated.

At the control examination before leaving the machine to ensure readiness for firing machine gun, which should be checked:

- mount machine guns on the installation of flame arresters, and trunks with guns;
- fixing the sight,
- whether there is dust in the barrel machine guns, and their moving parts, if necessary clear;
- work moving parts guns and serviceability of their electric trigger;
- the work of lifting and rotating machinery installation, brakes and it stops;
- stowage and securing of ammunition boxes;
- the presence of a protective cover.

At the control examination in small halts to check:

- whether there is dust in the barrel machine guns, and their moving parts, if necessary, clean,
- the work of moving parts, machine guns, and serviceability of their electric trigger;
- Mount cartridge boxes in korobkoderzhatelyah.

When servicing a number to check:

- mount machine guns on the installation of flame arresters, and trunks with guns, mount the sight,
- whether there is dust in the barrel machine guns on their mobile radar units and, if necessary, clean the barrels of liquid and grease gun with grease, and after shooting guns clean and lubricate according to the guidelines of the service guns,
- the work of moving parts, machine guns, and serviceability of their electric trigger,
- serviceability of the circuit electric trigger gun, which during the rotation of the tower at 360 ° occasionally at 10 - 15 ° rotation to click on one of the buttons electric trigger gun;
- the work of lifting and rotating machinery installation, it stops and the brakes
- the serviceability of rope mechanism for recharging KPVT, which put the moving parts of machine guns cocked and make the descent - the serviceability gilzozveneotvodov and seal mask,
- stacking and securing of ammunition boxes.

During maintenance, number 2, and a 6000 km run to perform maintenance work number 1 and in addition:

- Check the mounting shoulder strap, lifting and rotating machinery installation
- check the alignment of machine guns installed on the control of the target;
- lubricate the roller axis, the mechanism of recharge cable, guide shock absorbers, carriage FCT and rear attachment point KPVT.

Placement of weapons and ammunition

Machine gun Ammunition: 500 rounds of 14.5-mm machine gun and 2,000 rounds of ammunition KPVT a 7.62-mm PKT machine gun - fused to the tape and stacked in the cartridge box.

Cartridge box KPVT includes: six - on the left niches additional wheels and four - on the right niches extra wheels.

Cartridge box PCT has - three on the right niches additional wheels, five - on the left wheel of additional niches.

ZIP installation is laid in a box and placed in the doorway between the niches of the right front wheel and optional wheels.

Spare parts of machine guns in two canvas bags placed on the recess of the left front wheel.

Tx to KPVT in a box mounted on the front right wheel recess.

Tx to the PCT is packed in a box sight-2B TVNO device driver.

Balancer belt in the bag is placed on the second extra wheel niche left.

Spare barrel KPVT mounted on the starboard side.

AKS-74U in the bag is secured with two clips on the left side. Cartridges to the machine (120 pcs.) In the four sectoral stores fit in the bag.

Signal pistol in a holster and 12 rounds of ammunition into his two bags attached to the wall hooks, right niche the first wheel.

Hand grenades (9 pcs.) In three bags placed in metal cassettes, which are placed on the left shelf cartridge boxes.

6. Engine

Engine

The machine is equipped carburetor, four-, eight-cylinder, in-line cylinder engine with 140 hpat 3200 rev / min (Fig. 33, 34).

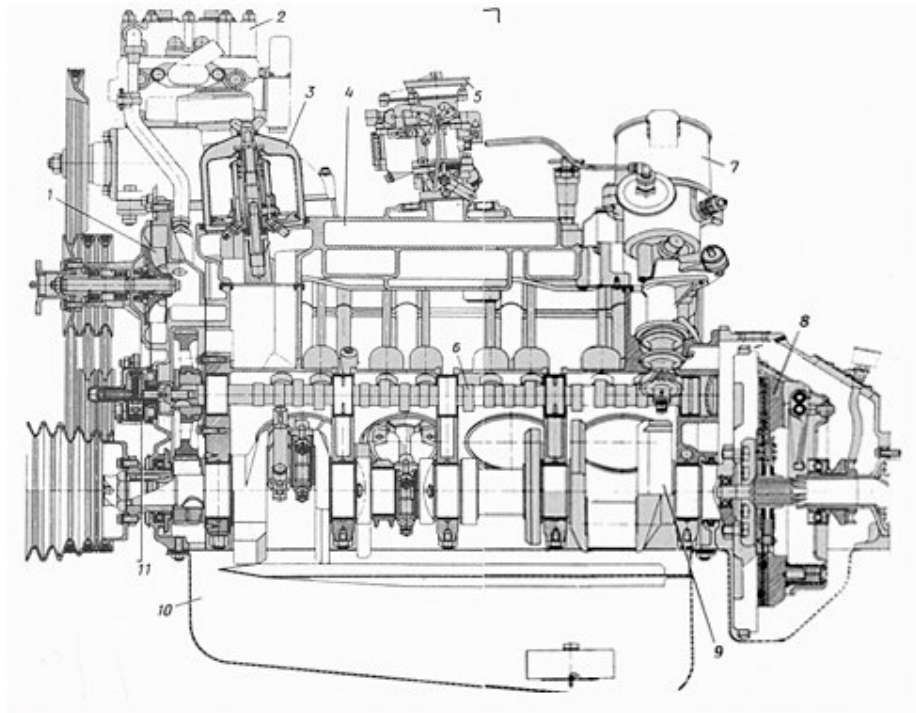


Fig.33. Engine (longitudinal section): 1 - the water pump impeller, 2 - Compressor 3 - a centrifugal oil filter, 4 - manifold, 5 - Carburetor, 6 - Camshaft, 7 - distributor, 8 - clutch, 9 - crankshaft; 10 - lower part of the crankcase (sump), 11 - gauge of the maximum speed limiter

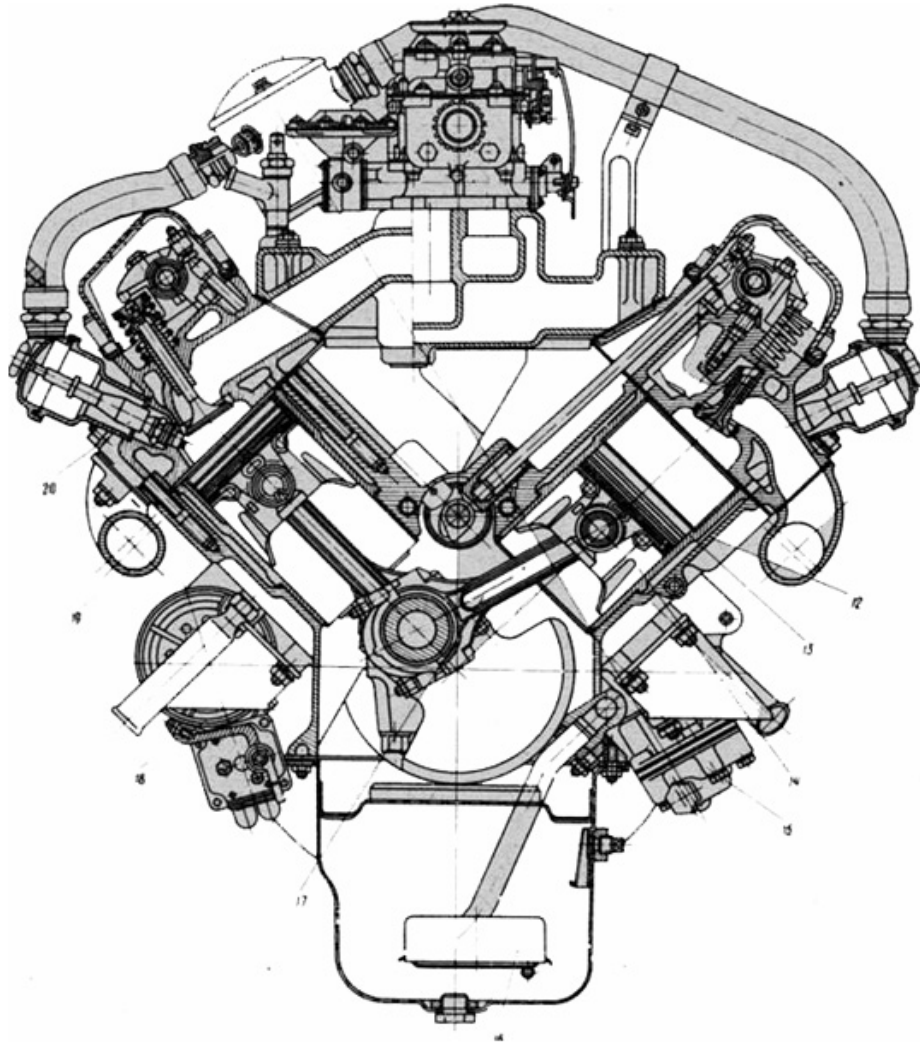


Fig.34. Engine (cross section): 12 - cylinder block, 13 - Sleeve: 14 - piston, 15 - oil pump, 16 - the oil receiver 17 - rod, 18 - a starter, 19 - the exhaust manifold; 20 - candle

The front of the engine is called a side where the timing gears are installed. Right and left side of the engine (which is conditional) are determined, if you look at it from the flywheel. According to the 1, 2, 3 and 4 cylinders are located in the right block, 5, 6, 7 and 8 - in the left (Fig. 35).

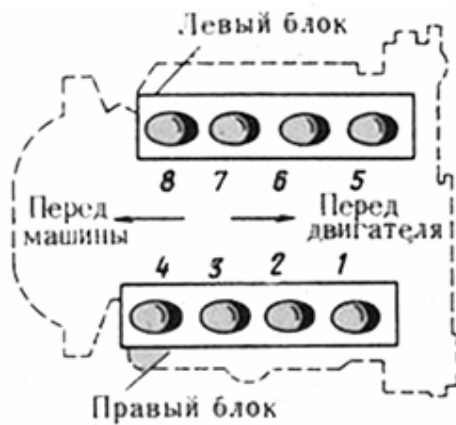


Figure 35. The order of numbering cylinders

Engine complete with clutch, the gearbox, power takeoff on the water jet propulsion pump and hydraulic lifts additional wheels form a single unit which is installed in the rear of the car on four pillars.

The two pillars 3 (Fig. 36) mounted on the cylinder block and bearing two 2 - to the clutch housing. Supports for attachment have rubber cushions to soften the shock load on the engine, resulting in the movement of vehicles, as well as reduce the vibration transmitted to the machine frame of the engine. In order to prevent longitudinal movement of the engine due to the deformation of the rubber cushions during acceleration, braking and vehicle clutch crankcase with a rod connected to the machine casing.

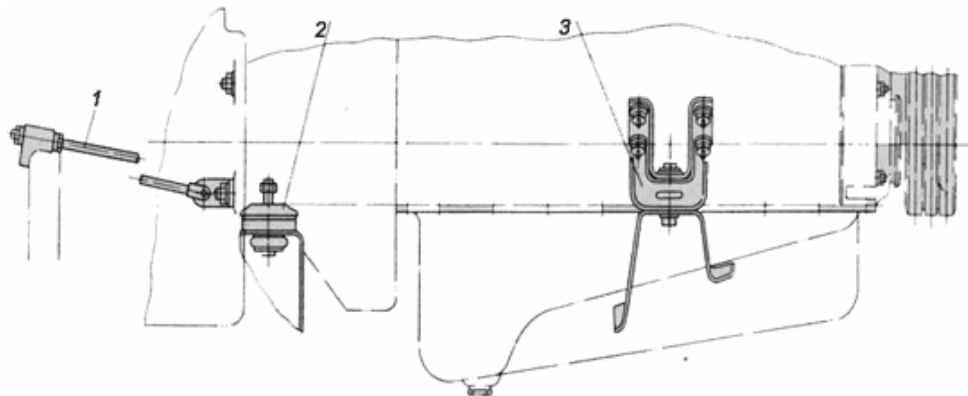


Fig.36. Details of the engine mounting: 1 - rod, 2 - bearing clutch housing, and 3 - a support cylinder

In Fig. 37 shows the external characteristics of the engine.

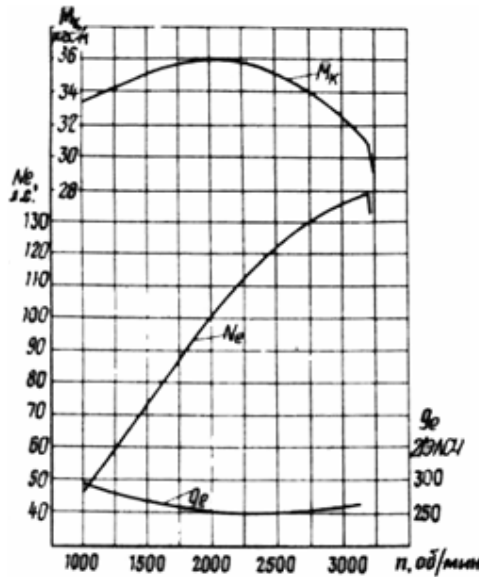
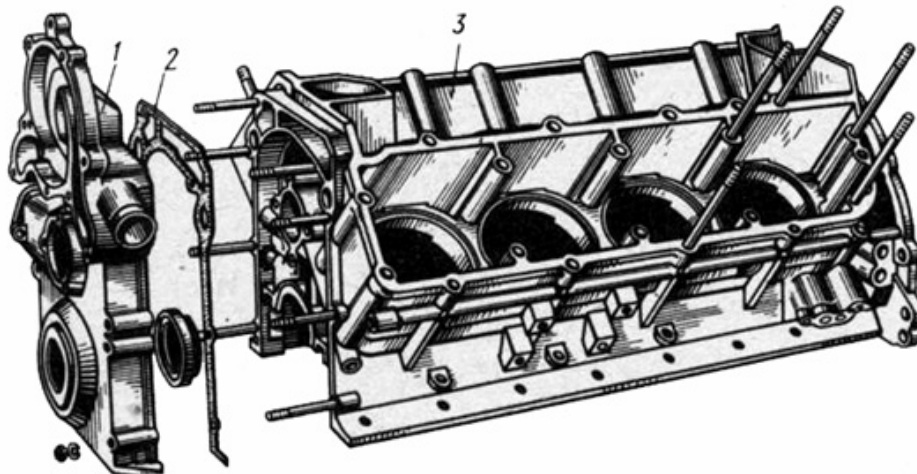


Fig.37. The external characteristics of the engine

Crank mechanism

Crank mechanism engine is used to convert the reciprocating motion of pistons into rotary motion of the crankshaft. Crank mechanism consists of a cylinder block, connecting rods pistons and crankshaft.

The cylinder block is cast from aluminum alloy together with the upper part of the casing (Fig. 38). Cylinders arranged in two rows (V-shaped), with the collapse of 90 °. In the cylinder block mounted "wet" easily removable sleeves in the upper parts of which are sealed and corrosion-resistant cast iron inserts with high durability. At the bottom of the sleeve is sealed with copper washers in the upper part - head gaskets asbostalnymi blocks. Head of the block (Fig. 39) are common to the four cylinders of each cylinder row, removable, made of aluminum alloy and are attached to the power pins.



In Fig. 38. The cylinder block and cover the distribution of gears: 1 - cover distribution gear; 2 - laying of 3 - cylinder block

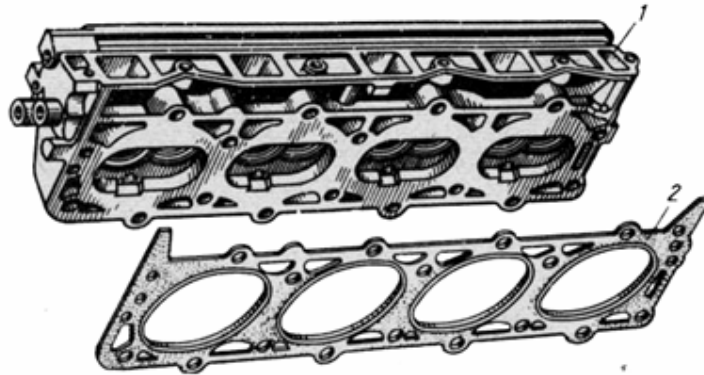
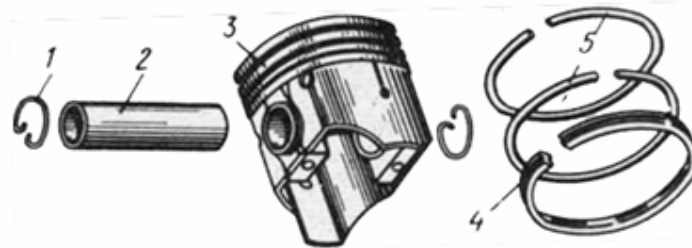


Fig.39. The cylinder head and gasket: 1 - head unit, 2 - laying

Pistons (Fig.40) are made of high-silicon aluminum alloy, tin-plated, with a flat bottom. Skirt has an oval shape, which contributes to maintaining a constant gap between the skirt and the cylinder piston when heated. In a longitudinal section of the skirt has a truncated cone shape.



In Fig. 40. Piston with rings and finger: 1 - locking ring, 2 - piston pin, 3 - piston, 4 - scraper ring, 5 - compression ring

Pistons are on the side of the inscription BEFORE. This shall be towards the front of the engine. On the piston ring are three: two compression and one oil scraper 5 4. Piston rings, cast iron, chrome top compression ring, the second tin (for faster break-in.) The compression ring installed in the cylinder so that the recess on the inner surface was directed to the bottom of the piston (Fig. 41). Scraper ring has circumferential grooves and slots to drain oil from the cylinder.

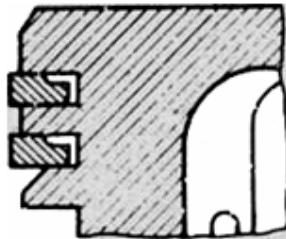


Figure 41. Installation of compression rings

Thermal clearance in the lock piston rings when installing the cylinder is in the range 0.2 - 0.4 mm. To reduce the breakthrough of the working mixture of gases or from the combustion chamber into the crankcase of the engine locks the piston rings on the piston are shifted relative to one another by 90 °.

Piston pin 2 (Fig. 40) stainless steel, hollow, floating type. To improve the wear resistance of the finger surface subjected to quenching. From the axial displacement of the finger is held by two retaining rings 1, installed in the piston bosses. Connecting rods (Fig. 42), steel, wrought iron, I-section. At the top of the head pressed into the connecting rod bronze bushing. At the head of the rod into the sleeve and drilled holes for supplying lubricant to the piston pin.

The lower end of connecting rod is made with a removable lid, fastened to the connecting rod with two bolts with nuts and lock nuts. At the bottom of the head of the connecting rod has a hole 3 to yield oil.

Connecting rods with the pistons in the collection are set in pairs on each neck crank of the crankshaft. On the crank shaft stamped part number, and the removable bottom cover connecting rod made ledge (the label). The number on the rod and the protrusion on the lid should be. Pointing in one direction. Cranks right number of cylinders (1, 2, 3 and 4) are collected from the piston so that the number on the rod facing the back of the engine, and left a number of cylinders (5b, 7 and 8) - to the front of the engine. The pistons of the cylinders, as mentioned above, the words are addressed BEFORE the front of the engine.

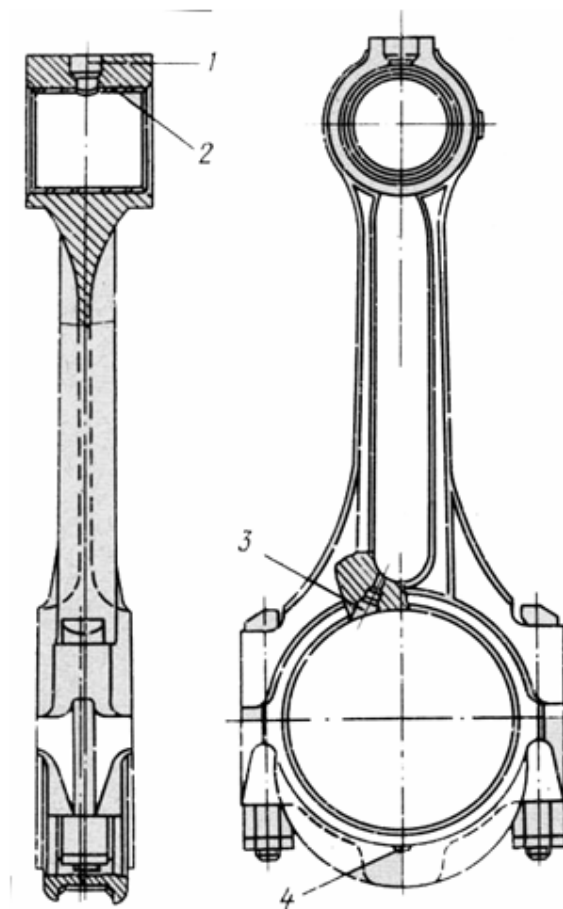


Fig.42. Connecting rod: 1 - an opening for the supply of oil, 2 - bronze bushing 3 - opening for oil, 4 - projection

The crankshaft (Fig. 43) cast, ductile iron, with five native and four connecting rod journals. The cheeks of the crankshaft with counterweights at the same time made to dynamically balance the steadily moving and rotating mass and unload main bearings.

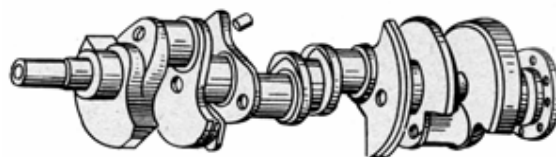


Fig.43. Crankshaft

In her cheeks shaft drilled channels for supplying lubricant from the main bearings to the crank. Each crank the neck has a cavity (gryazeulavlivatel) and two drilling for oil supply to the connecting rod inserts. When the shaft rotates particles suspended in the oil are separated and deposited on the wall of the cavity, and a connecting rod bearing goes clarified butter.

To prevent oil leakage at the front end of the crankshaft of a rubber sleeve featuring self-17 (Fig. 44), mounted in the lid of distribution gears at the rear end - seal consisting of two pieces of 3 (Fig. 45) and 11 with asbestos cord impregnated, one of which is laid in a recess in the block, the other in the holder. The holder is attached to the block by two bolts. In the lateral grooves of the holder shall be established by rubber seals.

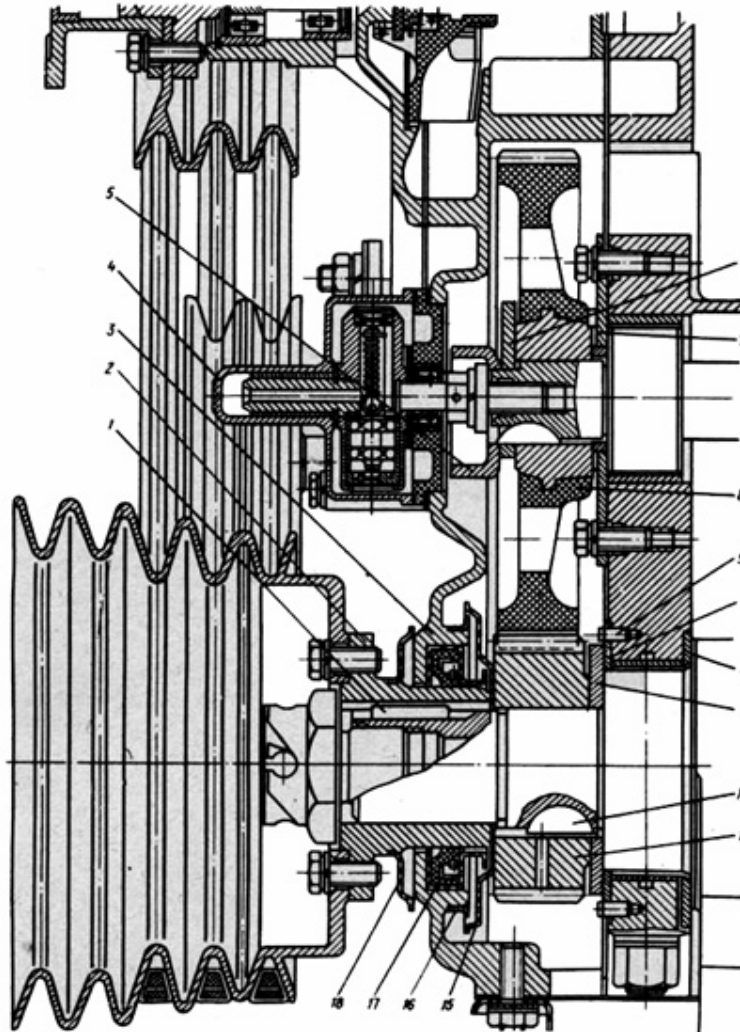


Fig.44. Sealing of the front end of the crankshaft and the camshaft drive: 1 key 2 - the hub 3 - cover distribution gears, 4-sensor speed limiter, 5 - jaw, 6 - contrast, 7-thrust washer, 8 - gear camshaft; 9-pin, 10, 11 - thrust bearing washers, 12 - thrust washer 13 - key, and 14 - crankshaft gear, 15, 16 - slinger, 17 - featuring self-cuff, 18 - Reflector

Axial movement of the crankshaft thrust washers is limited to 10 (Fig. 44) and 11, located on either side of the first main bearing. The axial thrust bearing clearance in the 0,075-0,175 mm.At

the front end of the crankshaft gear mounted distribution mechanism and a pulley, and the end of the shaft is screwed ratchet to start the engine with a crank. The rear end of the shaft ends with a flange for mounting the flywheel and ported to the shaft end slot bearing shaft gearbox. The crankshaft is balanced, complete with flywheel and clutch.

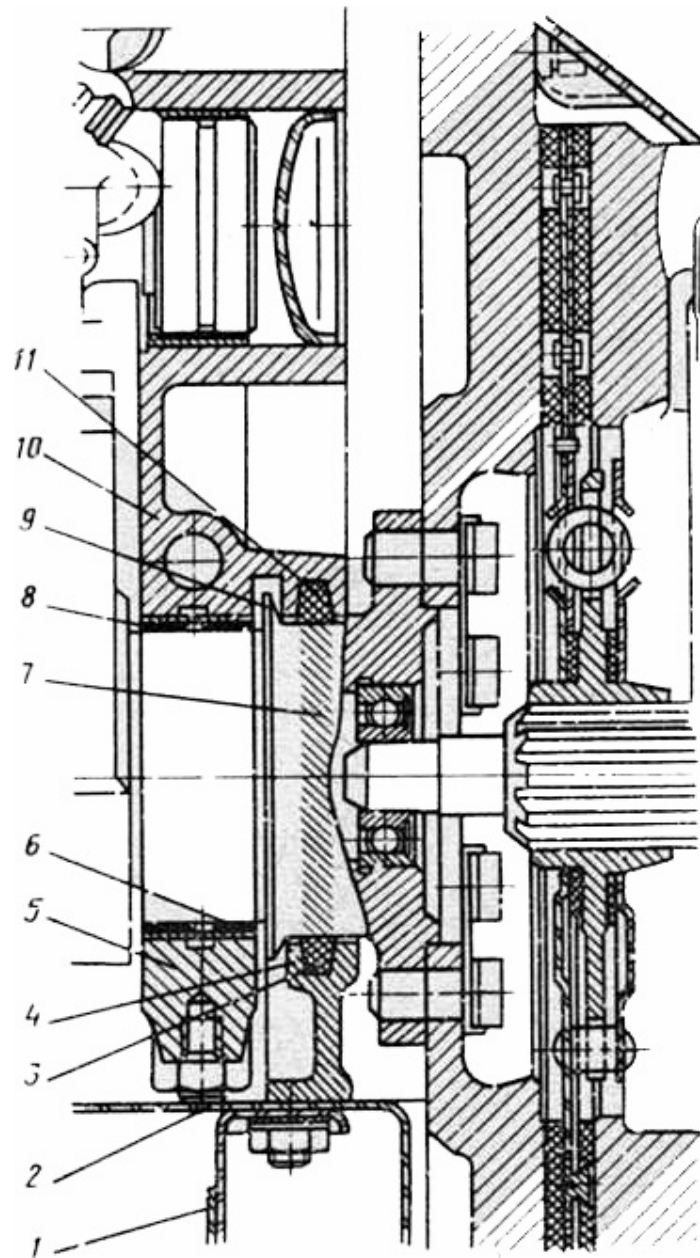


Fig.45. Seal the rear end of crankshaft: 1 - the lower part of the crankcase; 2 - laying of the crankcase, and 3 - the lower half of the asbestos cord, 4 - salnikoderzhatel 5 - main bearing cap, 6, 8 - Ear, 7 - rolling on the crankshaft, 9 - maslootrazhatelny Burt, 10 - the upper half of the crankcase, 11 - the upper half of asbestos cord

Indigenous and connecting rod bearings of the crankshaft has a thin liners (Fig. 46) and 2, made of steel strip with an antifriction layer of aluminum alloy. Both the insert rod bearings are the same (interchangeable). The top and bottom of each main bearing inserts interchangeable, as in the upper leaflet, in contrast to a lower opening for the supply of oil.

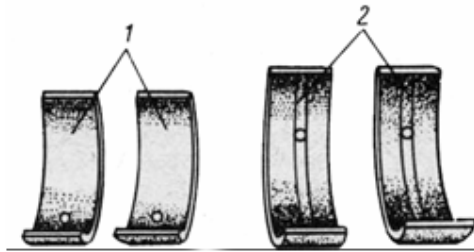


Fig.46. Crankshaft bearing shells: 1 - connecting rod bearing inserts, 2 - crankshaft bearing inserts

From the axial displacement and provertyvaniya liners are protected projections included in the corresponding slots in the nests of the block and crank. The flywheel is attached by bolts to the flange of the crankshaft. At the rim of the flywheel is pressed the ball, showing the top dead center (TDC) of the first cylinder. On both sides of the ball marked divisions, each of which corresponds to one degree of rotation of the crankshaft. The ball and the scale used for the installation and testing of ignition, so that the flywheel is relative to the crankshaft in a certain position.

Pressed to the flywheel ring gear for starting the engine starter.

Crankcase is made up of two parts: the upper, molded integral with the cylinder block and the bottom, stamped from sheet steel.

Behind the engine is attached to the crankcase sump flywheel consists of two parts. The upper part of the cast, attached a bolt to the cylinder. The lower part of the crankcase stamped, bolted to the top. At the bottom of the crankcase flywheel has a small hole to drain the oil, penetrating into the crankcase through the oil seal bearing crankshaft.

Carter flywheel is centered on the cylinder block mounting studs and should not be disconnected from the cylinder.

At the top of the flywheel housing, there are two hatches - one to test the installation of ignition, the other - for the clutch bearing grease fitting.

Valve gear

Engine Timing (Figure 47) provides timely admission of the combustible mixture in the cylinders and exhaust system and includes valves, tappets, camshaft and gear drive from the crankshaft. OHV engine has created a compact combustion chamber, ensuring a good flow of the workflow. In the combustion chamber of each cylinder has two valves, one intake and one exhaust.

For a better cylinder filling gas mixture inlet valve head diameter is greater than the diameter of the exhaust valve head. In contrast to the intake valve support surface of the head exhaust valve naplavlena superalloys. Hollow exhaust valve, but its interior volume is filled with sodium. This contributes to a better cooling of the valve.

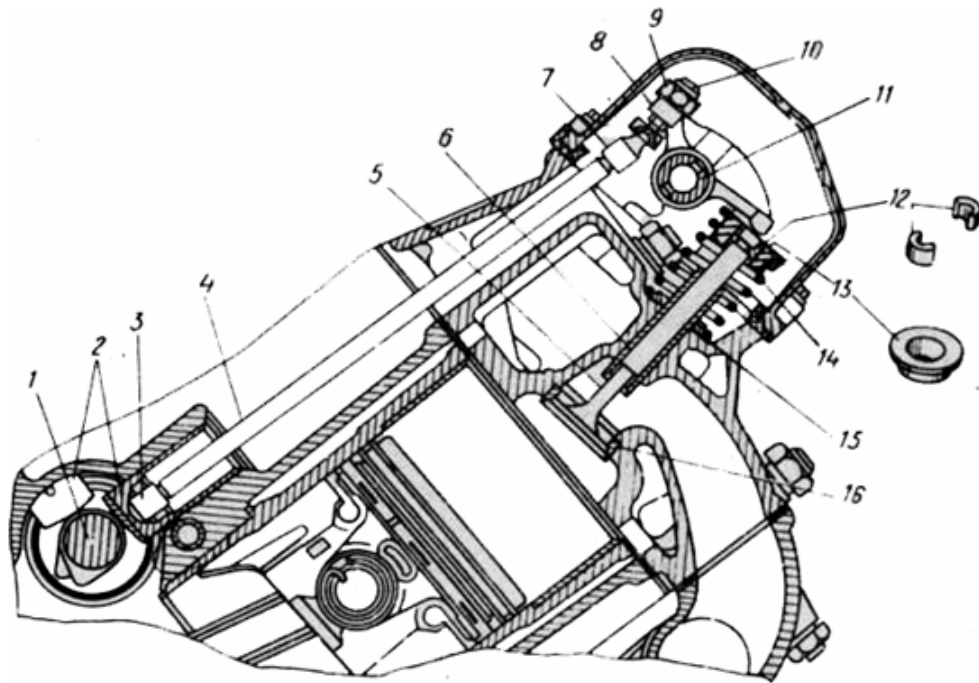


Fig.47. Engine Timing: 1 - opening for the oil, 2 - pusher, 3, 7 - tip rod, 4 - Rod, 5 - Valve 6 - guide bush, 8 - arm, 9 - locknut, 10 - the adjustment screw 11 - axis of rocker, 12 - crackers, 13 - plate, 14 - Spring, 15 - bearing washer, 16 - seat

Valve 5 at the time of the move in the guide sleeve 6, pressed into the cylinder head. The valve seat is pressed against the spring 14, the lower end of the spring is supported by a support washer 15 on the head unit, and the upper end rests on a plate 13 held by the valve on the rod with split crackers 12. At the inlet valve stem further set maslootrazhatelny cap.

Valve springs have a variable pitch coils and coils are placed in the assembly with a smaller step up.

The valves are driven by the camshaft through rocker arm 8 and the rod 4.

8 rocker sit on axles 11 which are mounted in racks, Screw to the head unit.

In the yoke with the side facing the bar, there is the adjustment screw 10 with nut 9 for adjusting the clearance between the rocker and the valve. This gap in the engine is cold (at 15 - 20 ° C) should be 0.25 - 0.30 mm for both inlet and exhaust valves for.

The camshaft (fig. 48) is set on five pillars 6 in the collapse of the cylinder. Each support shaft rotates in the bimetallic bushings 8, pressed into a block. On the camshaft cams are sixteen five, two cams for each cylinder, and the oblique tooth gear I have 7 to drive the oil pump and distributor.

The size and shape of the cams of a camshaft valve timing determined necessary, the location of the cams of a camshaft is determined by the order of the cylinders of the engine 1, 5, 4, 2, 6, 3, 7, 8.

At the front end of the camshaft gear is sitting, and to the end of the shaft is mounted a cam pin brace 5 (Fig. 44), drive a petrol pump with counterweight 6. Figured stud on the front end has a projection for the drive speed limiter sensor.

Camshaft drive by a pair of gears 14 and 8, and the camshaft rotates at half the speed than the crankshaft, as the four-engine.

Helical gears, the driven gear is made of the PCB, but has a metal hub.

Axial forces are perceived by the camshaft thrust washer 7, Screw bolts to the cylinder block. In this puck with one hand can rest against the front end face of the shaft, on the other - end of the distribution hub gears. To provide the required axial clearance (0.10 - 0.20 mm) is set adjustment ring.

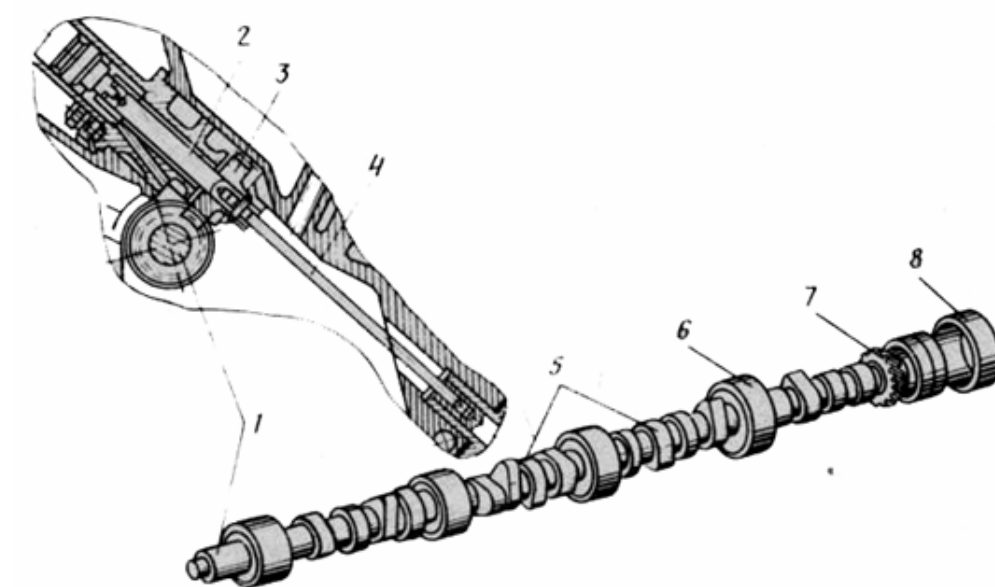


Fig.48. Camshaft and drive the oil pump and distributor: 1 - camshaft, 2 - distributor drive shaft, 3 - driven gear drive, 4 - the oil pump drive shaft, 5 - Cams, 6 - bearing camshaft, 7 - pinion gear drive 8 - bush

When assembling the engine timing gears placed so that the gear teeth of the crankshaft, at the base of which is stamped "0", included in the cavity between the teeth of the camshaft gear that has risk. This is a necessary condition for correct installation timing.

The engine has the following phase distribution (Fig. 49): the inlet valve opens 24° before TDC, and closes by 64° after TDC, the exhaust valve opens 50° before BDC and closes at 22° after TDC.

It should be borne in mind that the phase distribution depends on the gap between the end of the valve stem and rocker arm.

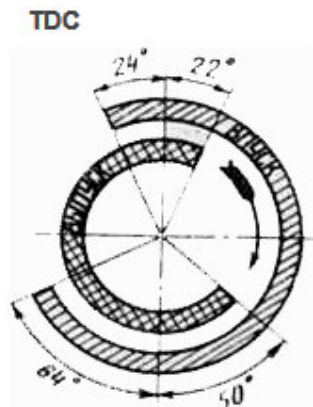


Fig.49. Valve timing

Maintenance of motor

At the control examination before entering the engine to prepare for the launch, let it warm up and check the work in different modes, as well as the work of instrumentation.

With daily maintenance :

clean up the engine from dust and dirt;

let the engine and listen to his work in different modes at the hearing and check the readings of the control devices.

Warmed up engine (coolant temperature 80 - 90 ° C) should work steadily without knocking and smoke.

In the case of knocking valves checked and if necessary, adjust the clearance between the rockers and valves, as described below in this section.

During maintenance, number 1 and 2 perform daily maintenance work and check the tightness of fastening bolts nuts cylinder head. The operation was carried out regularly every 1,000 miles for the first 6000 kilometers. In the future, the nuts should be tightened only in case of missing or coolant gases.

Nuts to pull just the engine is cold in the sequence shown in Fig. 50, a special wrench, which allows to control the torque, which should be 7,3-7,8 kgs.m, or a special key from the SPTA force of one arm, without jerks. On the hot engine nuts bolts tightened impossible, since the coefficient of linear expansion of aluminum alloy, of which the head of the block, more than the steel studs, so when the engine cooling pads can be squeezed slightly, which can cause penetration seals during a cold start.

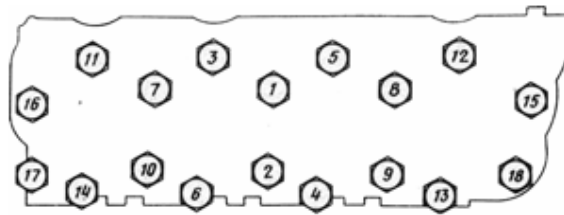


Fig.50. Tightening the screws of power pins

Before tightening the screws to drain the coolant from the system and loosen the nuts fastening the intake manifold. After tightening the screws tighten the nut of the intake manifold, then check the clearance between the valves and rockers and adjust them if necessary.

When servicing a 6000 km run of the service number 1 and 2 and check the engine mounts to the body and the state of the rubber cushions.

For the verification of clearance between the valves and rockers should:

open manhole covers office partitions and fix the power plant covers in the top position with special belts;

unscrew the mounting knob covers access to the spark left block and remove the cover;

remove the spark plug wire and turn the first cylinder engine (back in the course of the machine);

set the start of the compression stroke in the first cylinder engine, which close the finger hole for the candle and rotate the crankshaft of the engine at start-up assistance to handle before the release of compressed air from under the thumb;

put the candle of the first cylinder engine in place and tighten to failure, when setting a candle to draw attention to the availability and serviceability of the seal;

put in place the access cover to the spark left block and secure it with screws, lams;

remove the cover hatch on the clutch housing and install the piston of the first cylinder of the engine in TDC compression stroke, which gently rotate the crankshaft to the TDC mark on the match with an arrow on the flywheel casing;

unscrew and remove the nut of the screening of high voltage cables at the left block of the distributor;

unscrew the nut of valve covers both blocks and turn off the lid, remove the lid carefully so as not to damage the valve covers gaskets and bolts fastening the covers;

remove the valve covers gaskets;

check the value of the gaps between the rockers and valves of the first cylinder engine, the clearance between the rockers and the valves on the engine is cold (at 15 - 20 ° C) should be 0.25 - 0.30 mm for both inlet and exhaust valves for. On running the engine is hot due to the temperature difference between the different parts clearance may vary slightly. Therefore, in some modes of operation of the engine can sometimes knock bugged valves, which over time may then disappear, then appear again. This beat is not dangerous and reduce the gap between the valves and compensator in this case should not be. If you knock on the hot engine valve can be heard continuously, which is more common in valves located on the edges of the head, in this case, these valves are allowed to reduce the gap to 0.15 - 0.20 mm;

check the clearance between the rockers and the rest of the engine cylinder valves in a sequence corresponding to, the order of (1, 5, 4, 2, 6, 3, 7, 8), turning the crankshaft of the engine at the transition from cylinder to cylinder by 90 °. If the scan is detected deviation of the gap, it is necessary to immediately adjust the valve, as described below.

To adjust the clearance between the rocker and the valve must be:

loosen the locknut on the rocker arm adjusting screw 8 (Fig.47);

set to the desired size of the gap dipstick by turning the adjustment screw with a screwdriver rocker, with a gap vverytvanii screw will decrease with increasing screwing out;

tighten the locknut to failure, while holding the adjusting screw with a screwdriver balance arm;

after adjusting the re-check the clearance between the rocker and the valve.

After checking and adjusting valve clearance all put in place the previously removed parts in the reverse disassembly. When assembling to pay attention to the integrity and accuracy of placing spacers.

7. Fuel Systems

Appointment and composition

The power supply system is designed to store and transport fuel in the car, fuel and air cleaning, cooking, heating and supply of the combustible mixture in the engine cylinders.

To supply the motor fuels should be used with an octane number 76 (A-76). Allowed to use fuel with an octane number 72 (A-72). Filling capacity of 280 liters of food.

The power supply system (Fig. 62) consists of a fuel tank 5, a filter tank, fuel pump, fine filter, carburetor to-126m, the drive control carburetor, air cleaner, intake manifold, fuel gauge, fuel lines and fittings.

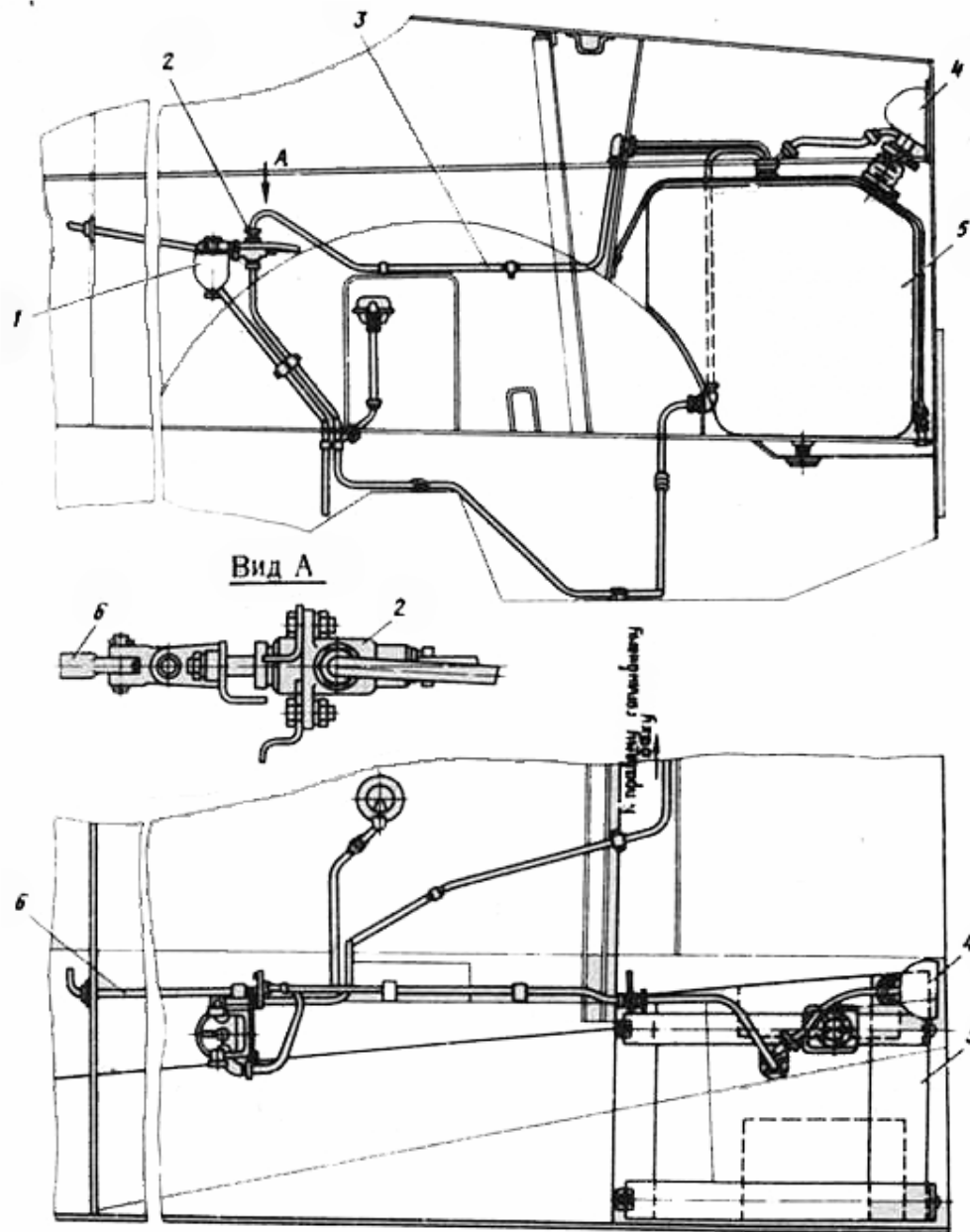


Fig.62. The power supply system: 1 - filter sump, 2 - three-way cock 3 - fuel lines, 4 - housing with a flange 5 - fuel tank, 6 - three-way valve control lever switch tanks

Fuel tanks

Fuel tanks are used for storing and transporting in a car fuel required for engine operation.

By car, there are two tanks with a capacity of 140 liters each.

Fuel tanks are installed through openings in the stern, closed the lid on hinges. Filling is done through hatches in the stern. Special enclosures with fill pipes, closable threaded plugs, a rubber gasket mounted on the aft body and connected to the tanks, corrugated rubber hoses. Such a device prevents fuel in the refueling bays.

The tanks are welded from sheet steel. To protect against corrosion of internal surfaces of the walls of the tanks are covered with enamel toplivostoykoy and external - of synthetic

enamel. Inside the tank there is one transverse bulkhead to increase strength and reduce the sloshing tank of fuel when driving the car.

On the upper wall of each tank (Fig. 63) are fixed choke suction tube 12, tube filling cap sensor and fuel level indicator 17.

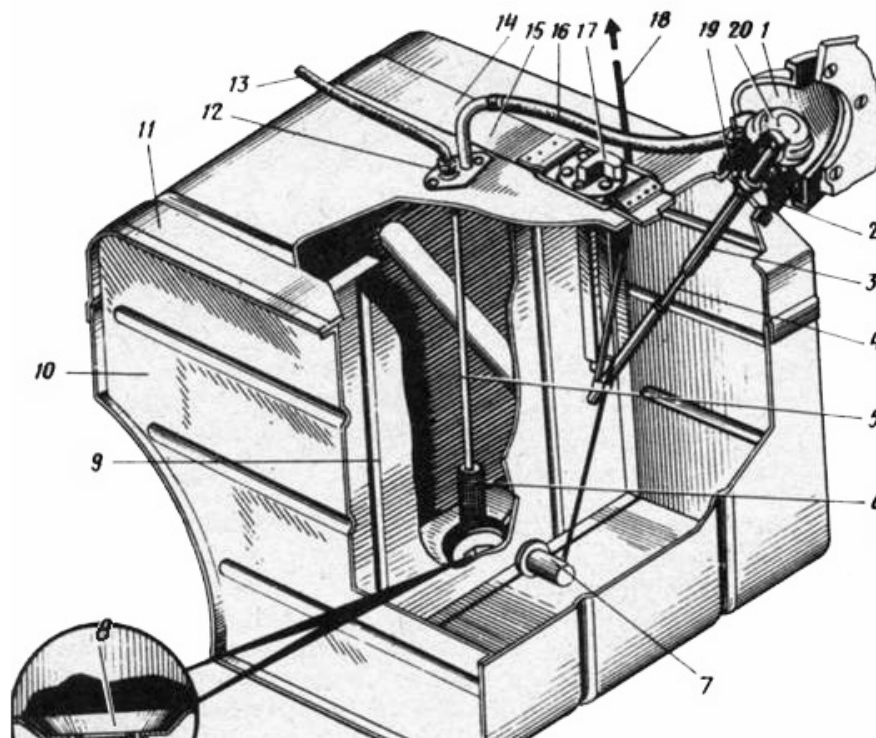
In the vertical screw feed nozzle 12 is screwed suction tube with strainer 5 6.

The lower part of the strainer does not reach some of the bottom tank, which prevents the fence from the tank sludge accumulated in the lower part of it.

By the suction tube connected the fuel line 13, in which fuel is supplied from the fuel tank to the filter sump. For the outer tube fitting 12 joins rubber-canvas hose 16, through which the air is removed from the tank (during refueling) to the filling neck. In a horizontal channel threaded nipple suction tube of the left tank fitting 15 is screwed rubber-canvas hose, joined by a tube for draining fuel from the fuel tank heater. On the right tank, this channel is muted.

Branch pipe to a gas cap holder 19 is soldered guide tube 3, in which the rod 4 is set to measure the fuel level. Tube with a filling orifice is connected to a rubber corrugated hose 2. Filling hole is welded to the casing 1, which bolts to pitsya credit to the aft leaf of the machine. Filling hole is sealed by a stopper 20.

Gauge fuel level indicator consists of a float 7, and the rheostat lever system, concluded that joins electrical 18, coming from the switch.

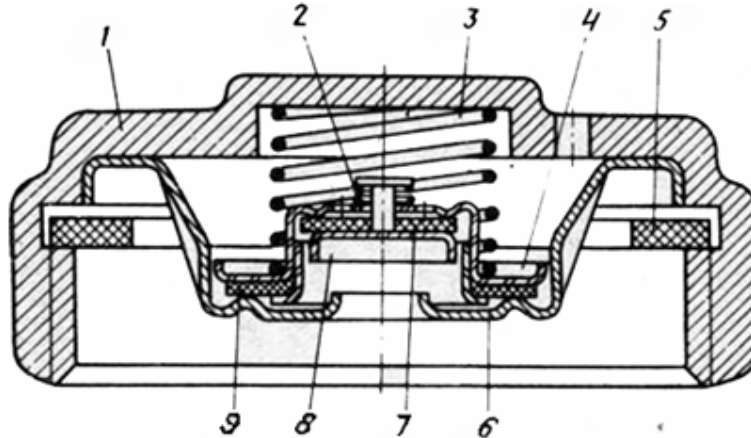


Ris.63. Fuel tank capacity: 1 - cover the filling neck, 2 - rubber corrugated hose, 3 - guide tube 4 - rod to measure the fuel level, 5 - suction tube; 6 - strainer, 7 - float gauge fuel level indicator, 8 - plug the drain holes, 9 - vnutennaya wall tank, 10 - building the tank, 11, 14 - clamp bands, 12 - nipple suction tubes 13 - a fuel line, 15 - fitting rubber-canvas hose, 16 - rubber-canvas hose, 17 - gauge fuel level indicator, 18 - electrical conductivity, 19 - the holder of the guide tube, 20 - fuel tank cap

The unit fuel level indicator mounted on the dashboard and connected to a sensor with a switch, which can take one of two positions: left - when measuring the level of fuel in the tank left and right - when measuring the fuel level in the right tank. Fuel gauge works only when the ignition.

At the bottom of the tank has a hole closed by a stopper 8 for draining fuel from the tank. Access to the drain holes in the tanks through special hatches in the bottom of the machine.

Plug the fuel tank (Fig. 64) is used for communication with the interior of the tank atmosphere. It consists of a housing, an inlet 7 and the exhaust valve 9, valve body 6 and the seal 5. Spring 3 is adjusted to open the exhaust valve at a pressure in the fuel tank of 300-430 mm of water. of Art. and two springs adjusted to open the inlet valve for dilution 45 - 350 mm of water. of Art.



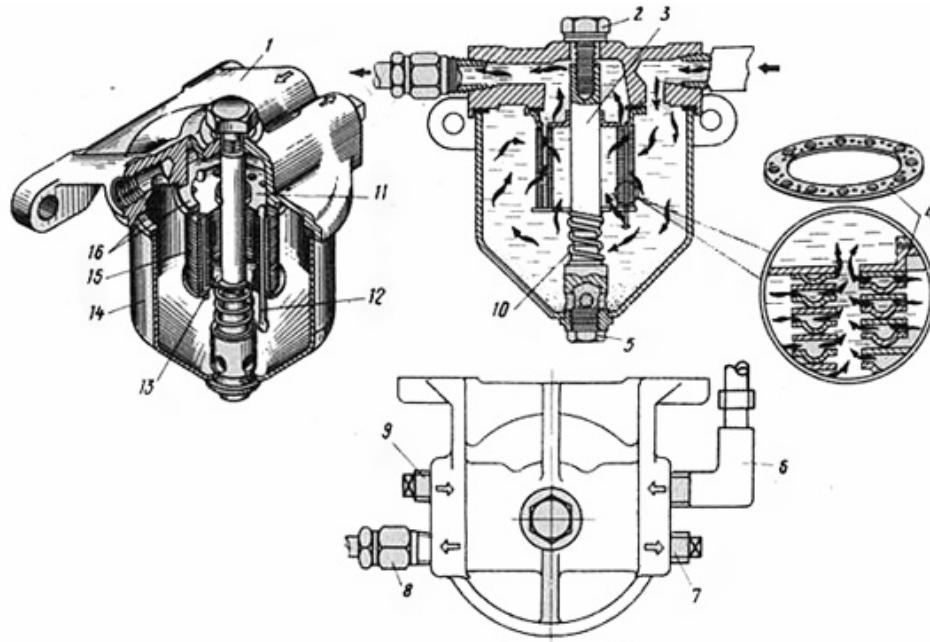
Ris.64. Plug the fuel tank: 1 - body tube, 2 - inlet valve springs, 3 - spring exhaust valve, 4 - cap 5 - gasket, 6 - body valve, 7 - the inlet valve, 8 - Puck, 9 - the exhaust valve

As the temperature of fuel in the tank increases vapor pressure. If the pressure exceeds the resistance of the spring 3 valve, valve 9 is opened, steam will come out and pressure will drop. With the development of fuel or cooling in a vacuum tank. The outer (atmospheric) pressure overcomes the resistance of the spring 2, the inlet valve 7 is opened, the tank will penetrate the air and vacuum decreases.

Fuel filter sediment bowl

Fuel filter sediment bowl is used for pre-cleaning of fuel coming from the tank to the fuel pump.

The filter sump (fig. 65) consists of a casing 14, a lid and filter element 15. By housing the filter tank is welded rod 3 by means of which the bolt body 2 tightly drawn to cover. Joints in the filter housing and filter element with the lid sealed with rubber gaskets 16. At the bottom of the rod 3 are channels to drain the sludge out of the case. The vertical threaded cap closes the channel bottom 5. Inside the filter housing to the rod set the filter element consisting of four filter plates 0.15 mm thick, plate 11, bearing washer 13 and two legs 12.



Ris.65. Fuel filter sediment bowl: 1 - filter cover 2 - Bolt 3 - rod, 4 - filter plate 5 - tube to drain the sludge; 6,8 - fitting, 7,9 - stub, 10 - Spring 11 - the filter plate element, 12 - Stand 13 - bearing washer, 14 - the filter housing, 15 - the filter element, 16 - rubber gaskets

Filter plates are made of aluminum alloy, are collected on two racks and a spring washer 10 through the bearing 13 are clamped tightly to one another, and the entire filter element to the filter cover. On the plates there are two rows of molded protrusions 0.05 mm in height, through which the gaps are formed between the plates equal to the height of the projections. Thus, the filter element can delay the mechanical particles larger than 0.05 mm.

In the filtering plates have holes that form vertical channels communicating through holes 11 a plate with a cavity in the filter cover. The bottom of these channels are closed washer 13. In addition, the filter plates have two holes for the installation of larger diameter wafers in the rack 12. In the lid of the filter tank has two input and two output channels. To a single output channel joins choke tube 8, the fuel outlet to the fuel pump and the other (spare) is muted.

Fuel input channels through the filter in the lid, tank comes from the fuel tank through a three-way valve in the filter housing and through openings in the bearing washer into the internal cavity of the filter element. Here, due to the fall velocity of the large fuel contaminating the fuel particles are deposited on the bottom, which is a cesspool. To drain the sludge to unscrew the plug 5.

Passing through the gaps between the plates 4, the fuel is cleaned by a small mechanical particles and enters the vertical channels formed by openings in the plates. Through the peeled fuel enters the cavity of the caps on the filter element and then through the outlet channel is sent by pipeline to the fuel pump.

Secondary filter

The fine filter is used for a more complete cleaning of the fuel from the solids before entering it into the carburetor. The filter is fastened to the clamping bolt to a special bracket installed on the engine intake manifold.

Filter (Fig. 66) consists of a shell, glass 5, the filter element, the spring 7 and the beam.

The filter housing is cast from zinc alloy. It drilled channels for the supply and removal of fuel, as well as a channel for the two retaining bolts attaching the filter. By using the filter housing is mounted rocker arm cup 5 made of steklovoloknita. Inside the glass installed filter element, which is firmly tightened spring 7 to the filter housing. The joints between the filter housing, filter element and the glass are sealed with a rubber gasket 3. The filter element consists of a frame 4,

manufactured from aluminum alloy, or press powder, grid 6 and the spring 11, whereby the grid is attached to the frame.

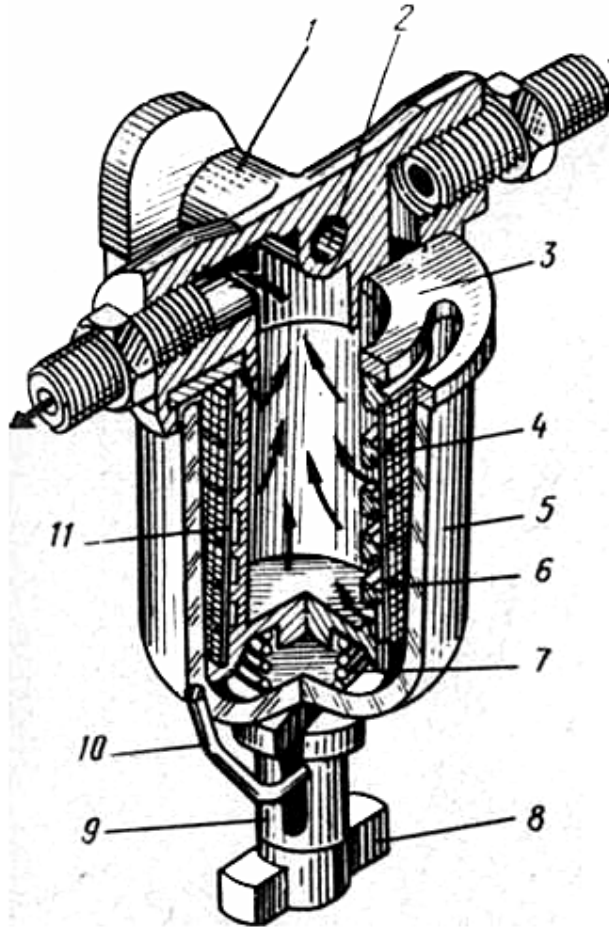


Fig.66. Fine filter: 1 - filter housing, 2 - channel filter mounting bolts, and 3 - rubber gasket, 4 - skeleton of the filter element 5 - a glass, 6 - Grid 7 - Spring 8 - butterfly nut, 9 - the holder beam, 10 - rocker 11 - Spring

Fuel through the inlet of the filter enters the cavity between the wall of glass and filter element, and then passes through the mesh into the internal cavity of the carcass and cleaned from mechanical impurities by-pass channel is sent to the pipeline, summing the fuel to the carburetor.

Fuel pump

The fuel pump diaphragm type is used to supply fuel from the tank to the carburetor. It is installed on the right side of the engine. The pump (Fig. 67) consists of a housing 4, 6, and the head cover 9. The head 6 mounted two intake valve 7 and an exhaust valve 11. Between the pump body and the head clamped diaphragm 5, associated with the middle part of the core 2. Aperture is composed of four layers of cotton fabric impregnated with a special varnish toplivostoykim. The pump is equipped with a strainer 8, made of brass wire.

The pump is driven by a cam of a camshaft. With clash of the cam at the end of the last double-arm lever 13 causes the rod 2, and with it, and the diaphragm to move downward. Due to vacuum above the diaphragm opens the intake valves 7 and the fuel passing through the strainer 8, fills the cavity above the diaphragm pump. When escaping from the cam lever 13 under the action of the

diaphragm spring 3 is moved upward, while the intake valves 7 are closed and the exhaust valve 11 opens and the pressurized fuel is fed through the filter in the carburetor float chamber.

Spring 3 is chosen so that it can not overcome the pressure on the float shut-off needle in the float chamber at a normal level of fuel in it. In this case, the diaphragm pump will be wrung down and the lever 13 will swing to the no load until the fuel level in the float chamber is decreased, and the needle valves will not open the inlet. The lever 13 is constantly pressed by a spring 12 to the cam of a camshaft.

The pump is equipped with a lever for manual pumping fuel into the carburetor. With the help of a spring lever is held in the lowest position and does not prevent the pump from the main drive.

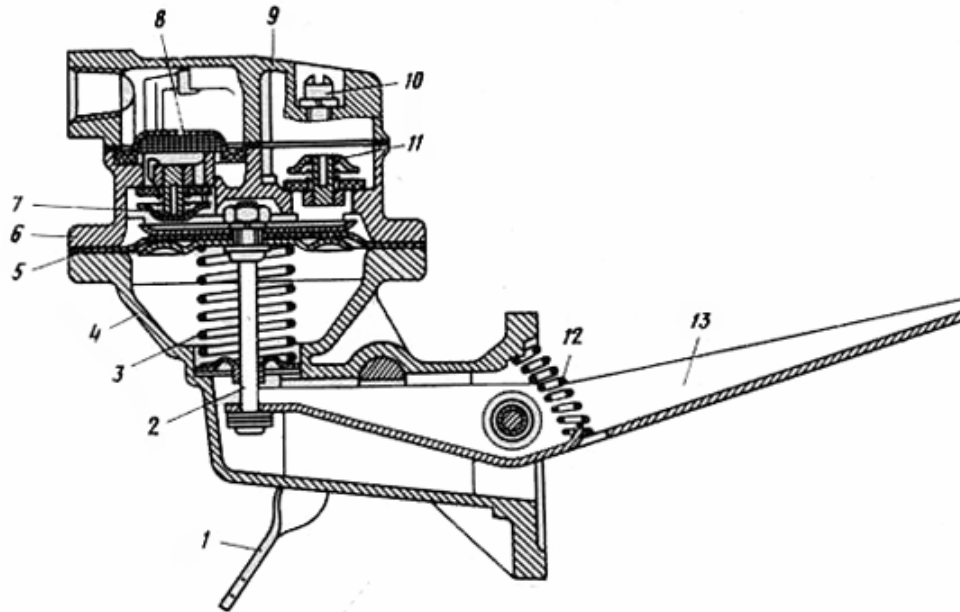


Fig. 67. Fuel pump: 1 - manual pumping lever, 2 - core, 3 - diaphragm spring 4 - Body 5 - diaphragm, 6 - Head 7 - the inlet valve, 8 - strainer, 9 - Cover, 10 - screw cap; 11 - the exhaust valve, 12 - lever return spring 13 - lever

Carburetor

The carburetor is designed for making fuel-air mixture entering the cylinders, and to provide qualitative and quantitative adjustment of the mixture depending on the mode of operation.

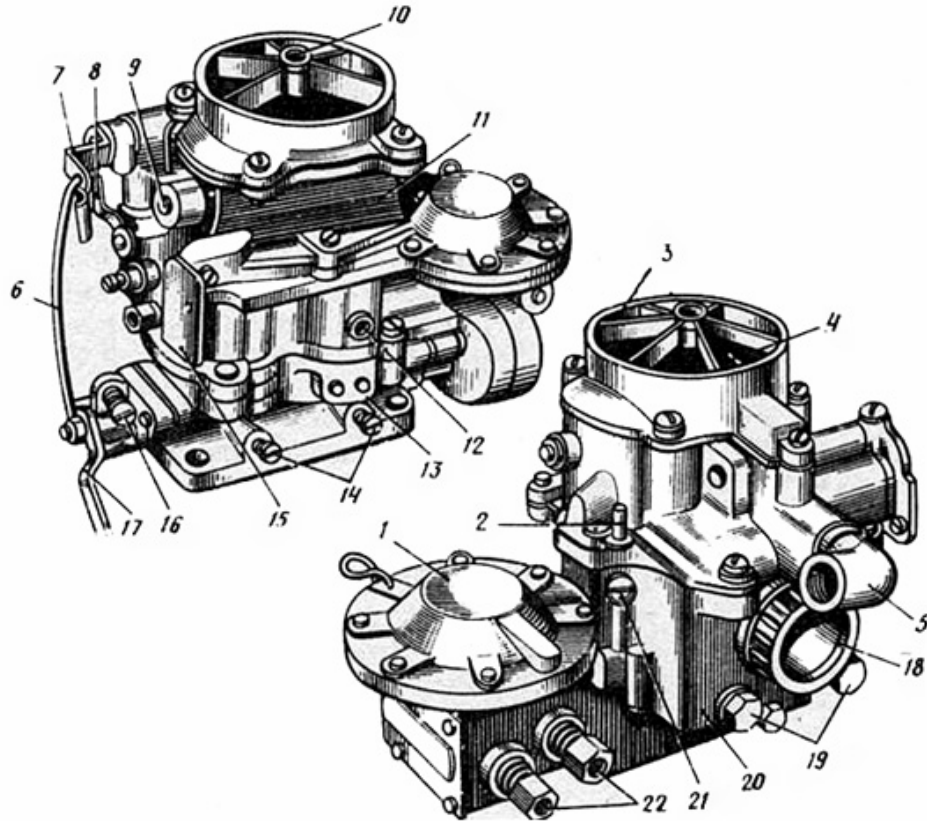
By car, the carburetor is set to brand-126m, two-chamber with downdraft. Cameras carburetor work independently of each other and feed on the four-cylinder: right - 1, 4, 6 and 7, the left - 2, 3, 5 and 8.

The carburetor is attached with bolts to the intake manifold.

The carburetor (Fig. 68) consists of a housing 11 air cap with a removable nozzle 3, the float chamber body 20 and housing 13 mixing chambers. Between themselves, they are joined with screws and gasket to seal the set. Case mixing chambers cast iron, the rest of the zinc alloy.

To ensure proper engine operation in all modes of the carburetor has a system of idling, the main metering system, economizer system, accelerator pump system, a system cold start.

The first three systems are available in each chamber of the carburetor, and the rest of the system are common to both chambers.



In Fig. 68. Carburetor to-126m: 1 - actuator speed limiter, 2 - jet idling, 3 - tube, 4 - Balancing the channel 5 - fitting the fuel pipe, 6 - thrust, 7 - lever economizer and the accelerator pump, 8 - Lever 9 - axle damper, 10 - Bracket for mounting air cleaner, 11 - Air Corps cap, 12 - hole to nozzle tube vacuum distributor corrector 13 - Corps of mixing chambers, 14 - the quality of the mixture adjustment screws idle, 15 - Bracket attaching the shell choke actuator cable, 16 - stop screw throttle bodies, 17 - lever throttle axis, 18 - viewing window, 19 - screws, closing the access openings to the main jet, 20 - body float chamber, 21 - screw closing blowing a hole for the idle channel, 22 - pipeline fitting speed limiter

The **idling** carburetor consists of a fuel nozzle 10 (Fig. 69), an air nozzle 16, with openings of channels 40 and 41. To control the air-fuel mixture in the hole 40 has a screw 37. Position throttle at idle speed adjustment screw 16 (Fig. 68).

Main metering system consists of a large 42 (Fig. 69) and eight small diffusers, the main fuel 34 and the seven main air jet, emulsion tube 35. The main air jet with emulsion tube is used to control the air-fuel mixture.

Economizer system consists of a valve orifice 48, a rod, channel 45, calibrated nozzles 15, structurally integrated with the accelerator pump nozzles 13. The economizer is designed for automatic submission of additional fuel at full load.

Adjustment of the moment when the economizer valve 48 is achieved by increasing or decreasing the length of a rod with an adjusting nut.

Accelerator pump system consists of a spring-loaded piston 3 4, 47, and reverse the discharge valve 14 and nozzle 13. The accelerator pump and economizer have a common drive lever 44 of the throttle.

Cold start system includes an air valve 12 with valve 11 and the lever 8 (Fig. 68), which is intended to partially open the throttle in the fully closed choke.

The power developed by the engine during steady state operation, determined by the position (opening degree) dampers in the mixing chamber.

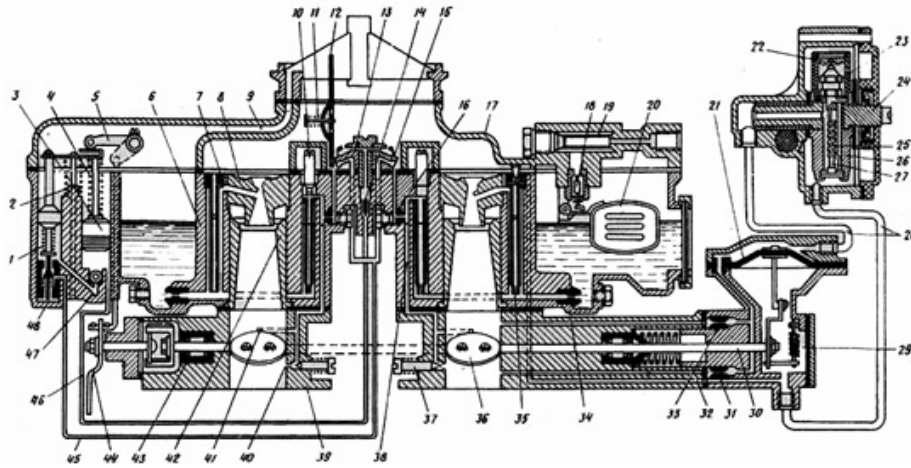


Fig.69. (Click on photo to enlarge) Schematic of the carburetor to-126m and the speed limiter: 1 - Stem ECO 2 - spring return, 3 - plunger accelerator pump, 4 - spring, 5 - lever accelerator pump, 6 - building the float chamber; 7 - the main air jet dosing system, 8 - a small cone, 9 - balancing the channel, 10 - fuel jet of idling, 11 - the choke valve, 12 - choke 13 - gun the accelerator pump, 14 - outlet valve, 15 - gun economizer, 16 - air jet idling, 17 - Air Corps cap, 18 - the needle valve, 19 - fuel filter, 20 - float, 21 - diaphragm actuator speed limiter, 22 - seat 23 - gauge valve speed limiter ; 24 - rotor shaft sensor, 25 - Spring, 26 - rotor gauge, 27 - valve spring adjustment screw, 28 - Pipelines, 29 - Spring, 30 - throttle shaft, 31 - vacuum nozzle, 32 - air channel, 33 - air nozzle, 34 - smooth fuel jet, 35 - Emulsion tube, throttle 36, 37 - the adjustment screw, 38 - fuel channel, 39 - body mixing chambers; 40.41-hole, 42 - a large cone, 43 - Bearing, 44 - axis lever throttle, 45 - fuel economizer channel, 46 - fuel channel of the accelerator pump, 47 - non-return valve, 48 - valve economizer

The work of the carburetor

Idling . The carburetor has two independent systems of idling, the same for each of the mixing chamber.

At low speeds the engine idling, when the throttle valve closed, negative pressure of the intake manifold is passed through the holes 40 (Fig. 69) in the channel 38. Under the influence of vacuum fuel from the carburetor float chamber through the main jets 34 supplied to the nozzle 10 of idling. To obtain the composition of the mixture to the fuel is mixed into the air, entering through the nozzle 16. The resulting emulsion with the channels 38 is supplied to the openings 40 and through them into the mixing chamber. In this case, through the upper opening 41 sucked the air, mixing with the emulsion when it comes to the mixing chamber. This reduces the air in the vacuum channel 38 and inhibits the flow of fuel.

As the throttle opening, a vacuum in the mixing chamber is passed through the holes 41. When a vacuum of about two holes equalize, the flow of air through the holes 41 and, respectively, inhibition of the fuel stops. With further opening of the throttle vacuum in the holes increases so that the emulsion is beginning to emerge from both holes. Such a device is idle system provides a smooth transition to the small loads and does not cause misfire.

The regime of partial loads. As the throttle opening 36 the amount of air entering the engine cylinders is increased, resulting in a depression in the diffusers is sufficient for entry into the work of the main metering system of carburetor. Fuel from the float chamber passes through the nozzles 34 to the diffuser 8. When moving the fuel to it is mixed into a small amount of air passing through the air jet, thus achieving the required efficiency of work.

The regime of full load on the engine is provided, first, the full opening of the throttle and secondly, the inclusion in the job ECO carburetor.

If the economizer is not included (as in the partial load), the economizer valve 48 is closed. When the throttle is in a position close to its full opening, with the help of a mechanical drive from the lever throttle rod 1 moves down and opens the valve 48. In this case, the fuel enters the channel 45 to a calibrated sprayer 15 and the dispersed state to the diffuser. By including the economizer to the engine will be supplied extra fuel, the basic amount of fuel is supplied through the main jets.

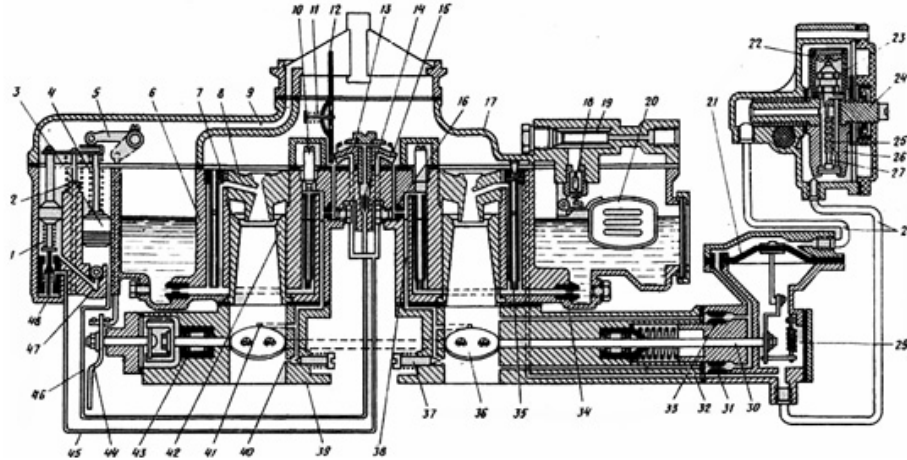


Fig.69. The scheme of the carburetor to-126m and the speed limiter: 1 - Stem ECO 2 - spring return, 3 - piston accelerator pump, 4 - spring, 5 - lever accelerator pump, 6 - building the float chamber, 7 - the main air jet dosing system 8 - a small cone, 9 - balancing the channel, 10 - fuel jet of idling, 11 - the choke valve, 12 - choke 13 - gun the accelerator pump, 14 - outlet valve, 15 - economizer dispenser, 16 - idle air jet stroke, 17 - Air Corps cap, 18 - the needle valve, 19 - fuel filter, 20 - float, 21 - diaphragm actuator speed limiter, 22 - seat 23 - gauge valve limiter speed, 24 - rotor shaft encoder; 25 - Spring, 26 - rotor gauge, 27 - valve spring adjustment screw, 28 - Pipelines, 29 - Spring, 30 - axis of the throttle bodies, 31 - vacuum nozzle, 32 - air channel, 33 - air jet, 34 - a smooth fuel jet , 35 - Emulsion tube, throttle 36, 37 - the adjustment screw, 38 - fuel channel, 39 - body mixing chambers; 40.41 - hole, 42 - a large cone, 43 - Bearing, 44 - lever throttle axis; 45 - fuel economizer channel, 46 - fuel channel of the accelerator pump, 47 - non-return valve, 48 - valve economizer

Mode acceleration machine . In the dispersal of the machine temporarily enriching fuel-air mixture occurs by means of the accelerator pump. When the piston 3 of the accelerator pump is located in the upper position, ie in the time prior to acceleration, the cavity under the piston is filled with fuel, reports from the float chamber through a check valve 47.

With the dramatic opening of the throttle the accelerator pump piston moves rapidly down the check valve 47 is closed and the fuel through the channel 46, opening the path of the discharge valve 14, supplied to the gun 13.

Coming out of the nozzle holes 13, the fuel mixes with air and enters the engine intake manifold.

The elastic connection of the accelerator piston pump with a throttle valve with a spring 4 makes it possible to obtain a prolonged injection and, in addition, the pump will not interfere with the free opening of the throttle.

Cold start mode . To start a cold engine to enrich the mixture, for starting speed if the mixture becomes very poor and can not ignite.

In order to enrich the mixture of air damper 12 is closed to failure, at the same time with a lever 8 (Fig. 68), butterfly valves are opened at a small angle. This state of the air and the throttle provides the necessary composition of the mixture.

To avoid pereobogascheniya combustible mixture in the air damper has a valve 11 (Fig. 69), which opens after starting the engine under the influence of dilution. As the engine warms up the choke should be gradually opened. By the end of warm-up damper must be fully disclosed.

Warmed the engine is started with an open choke.

Adjusting the carburetor

When operating the machine there is a need to adjust the carburetor and the fuel level in the float chamber.

Idling is to warm the engine to normal clearances between the valves and pushrods, in the absence of air leaks through cracks and joints with an intact carburetor ignition system. Particular attention is drawn to the serviceability of candles and the magnitude of the gap between the electrodes.

It should be borne in mind that the two-chamber carburetor and the mixture is regulated in each chamber with axial screw 16 (Fig. 68) throttle bodies and two screws 14.

Since adjustment is necessary to tighten the screws 14 out, and then unscrew each at 2.5 turns. Let the engine and set the stop screw 16 the minimum speed at which the engine is running quite stable.

Turn the adjustment screws 14 (alternate) in either direction, they find a situation in which the engine speed will be maximum.

Vyvertivaya screw 16, to establish a minimum speed. Said adjustment must be repeated, ie, rotation of the screw 14 to achieve maximum speed, and screwing out screws 16 - minimum.

To verify that the adjustment should be to press the throttle pedal and quickly let it go. The engine in this case should not stall. Otherwise, the idle speed should be increased and re-check the results of adjustment.

When properly adjusted carburetor engine must be warmed steadily working at 475 - 525 rev / min crankshaft.

Check the fuel level

Is increased or decreased level of fuel in the float chamber is increased fuel consumption.

Before adjusting the fuel level, it is necessary to ensure tightness of the float in the density of needle valves and fitting the float chamber to the saddle and check for jamming.

Sealed float checked dipping eros hot water with a temperature of not lower than 80 ° C. The yield of air bubbles indicates the need for soldering float (after removing it from the fuel). After soldering, to re-check the tightness and the weight of the float. The mass of the float assembly with the lever must be 12.6 - 14 In case of excess weight to remove the excess solder.

Fuel level in carburetor float chamber must be below the plane of the connector body float chamber at 18.5 - 21.5 mm. Check the fuel level should be through the observation window 18 (Fig. 68), the float chamber. To adjust the level of fuel allowed to bend the float tab.

If after adjusting the level of fuel in the float chamber there are shortcomings in the carburetor, please check valve leak economizer; fit to the saddles of ball and needle valves, accelerator pump, drive to the serviceability of the accelerator pump, air and the throttle valve.

Speed limiter

To limit the maximum speed of the engine crankshaft, the excess of which can lead to increased wear or damage to them, is limiting.

Speed limiter pnevmotsentrobezhnogo type consists of a sensor placed on the lid and having a distribution gear driven by the camshaft, and an actuator, structurally integrated with the carburetor mixing chamber.

Diaphragm actuator has a mechanical drive to the axis 30 (Fig. 69) throttle bodies.

Sensor and actuator are connected by two pipelines 28. In addition, the cavity above the diaphragm is connected to the mixing chamber channels having nozzles 31 and 33, the cavity under the diaphragm is connected to channel 32 with an air nozzle carburetor.

If the engine speed does not exceed the maximum allowable, the sensor valve 23 is open the speed limiter, resulting in a vacuum above the diaphragm and below the offset, so the diaphragm does not affect the axis of the throttle.

If you exceed the permissible speed valve 23 closes and the aperture 21 under the action of the rarefaction moves up and closes the throttle.

Speed limiter prevents excess load 3200-3400 / min at idle 3450-3650 rev / min. Speed limiter sealed.

The drive control carburetor

The drive controls the carburetor to change the quality and quantity of the combustible mixture entering the engine cylinders, by acting on the valve mechanism and the carburetor.

Carburetor throttle control is carried out by a foot pedal (Fig. 70) and the handle 8 (GAS), installed on the right rear seat of the driver. Office of the choke arm carried by the handle 35 (leak), installed next to the handle GAS.

Foot throttle control actuator consists of a pedal with a focus 2, rollers 3, 6, 9 and 17, the bracket 4, 10, 18, 19 and 21, the rod 5, 7, 11, 16 and 24, roller 20 and lever 25, spring 22 and a sealing device with a protective rubber cover 13.

When you click on a pedal shaft 3 rotates and moves the rod 5 back. This movement through the rollers and the drive rod is transferred to the axis of the throttle, which is turning around, opens the valve. When you release the pedal spring 22, operating in tension at the opening of the carburetor throttle bodies, acts on the roller 20, which, turning the whole system returns to its original position and closes the throttle valve carburetor.

Manual transmission throttle carburetor consists of a handle 8 (GAS), a flexible cable PG, the lever 26 and rod 24.

The flexible cable consists of an inner movable cable whose ends are attached to the lever arm 26 and 8, a metal outer shell, still fastened to the brackets 28 clamps 29, 33 and 19.

To set the throttle in any permanent position with the pedal is released to a pull forward handle 8. In this case, the lever 26 is connected to the handle GAS Cable, turning on the shaft 20, arm rests on the ledge 25, which, moving the rod 24, opens the throttle valve carburetor. When the lever 25, mounted on the stationary platen 20, the system moves the foot pedal actuator and 1. Pulling the handle on the magnitude depends on the value of opening the throttle and, therefore, the engine speed. When the handle retracts 8, the lever 26 moves away from the ledge lever all the details of the foot drive carburetor throttle back to its original position by the spring 22.

Use a pen GAS is recommended only when the engine warms up. For normal operation of the carburetor between the projections of levers 25 and 26 should be a gap of no more than 1 mm.

Air damper opens and closes the carburetor through the handle 35 (choke). When pulling the pen gate is closed, to open the valve, the handle should be pushed into 35 to failure. To fully close the choke during cold start, you must first press the pedal a roughly one-third of its course, then close the choke, and only then release the pedal.

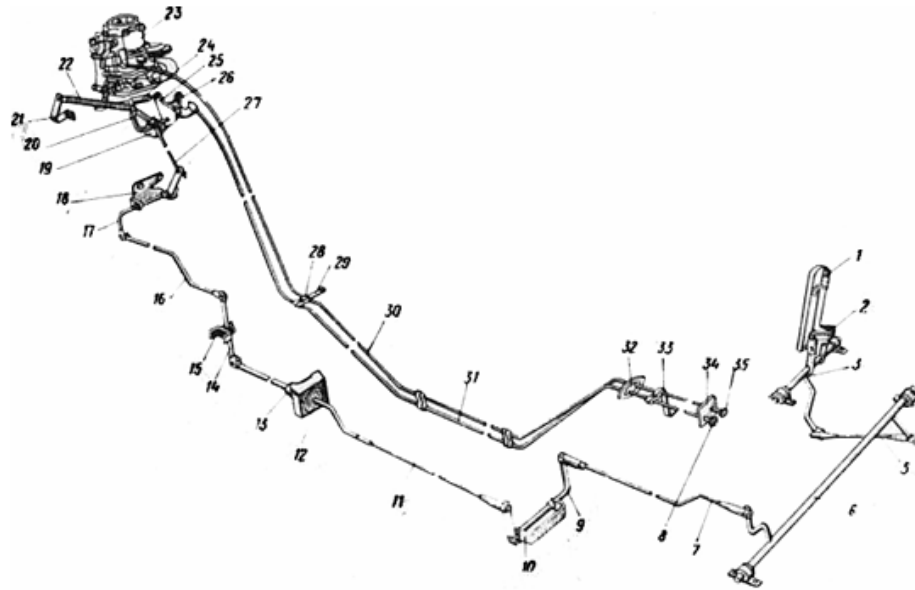


Fig.70. (Click on photo to enlarge) The drive control carburetor: 1 - Pedal 2 - stop the pedals, and 3 - roller pedal, 4, 10, 18, 19, 21, 29, 33, 34 - mounting brackets, 5, 7, 11, 16, 24, 27 - rod, 6 - cylinder front-wheel, 8 - GAS to handle the throttle carburetor, 9 - Intermediate shaft, 12 - cover gasket, 13 - a protective cover gasket, 14 - the lever, 15 - Bracket, 17, 20 - cylinders, 22 - Spring 23 - Carburetor, 25 - roller lever, 26 - lever cable, 28 - Clamp, 30 - cable manual drive control choke; 31 - manual drive cable throttle control, 32 - Seal, 35 - handle leak to control the choke carburetor

Air cleaner

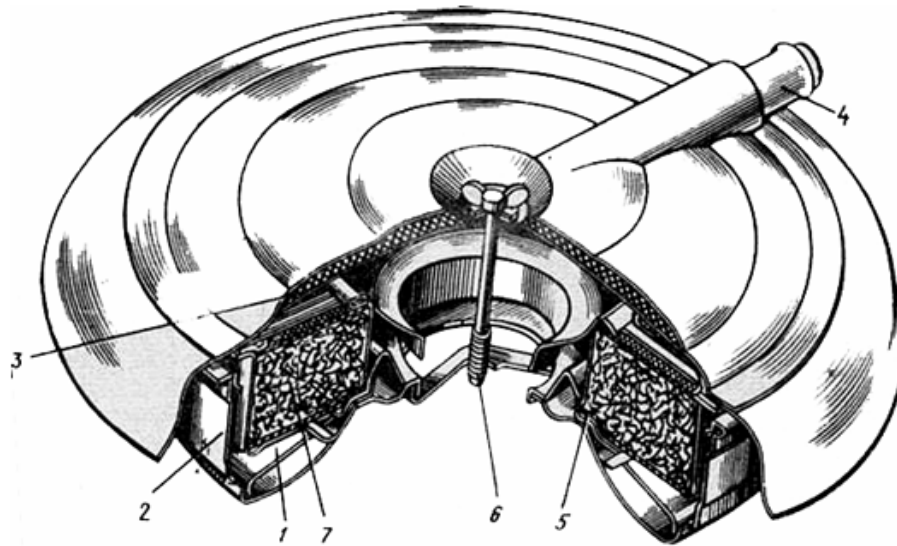
For cleaning of the air entering the carburetor, the engine is installed on each two-stage air cleaner. The first stage of air purification is an oil bath, the second - the filter element of the contact type.

Air consists of three main parts: the body 2 (Fig. 71) oil bath filter element 7 and a slinger.

The filter element is made in concert with a lid, which is mounted on the pipe 4, and is a non-separable unit.

As the printing filter element used tangled Nylon thread bounded by upper and lower sides of a metal grid. The connection between the air cleaner parts are performed with a clamp bolt 6. The connections the main parts are sealed with gaskets 5.

When the engine air enters the annular gap formed by shell oil bath and the outer wall of the filter element, falls and hits the surface of the oil, leaving it the largest mechanical impurities. Then the flow of air rises, pulling the oil particles and the wetting of the filter element. When passing through the filter element remaining in the air, fine particles of dust stick to the filter gasket, and clean air enters the carburetor and fitting through a 4 - to the crankcase ventilation.



In Fig. 71. Air 1 - slinger, 2 - body oil bath, 3 - antinoise pad, 4 - fitting, 5 - gasket, 6 - Turnbuckle Screw, 7 - the filtering element

Intake Manifold

Intake manifold (Fig. 72) is used for heating and supplying a combustible mixture in the engine cylinders.

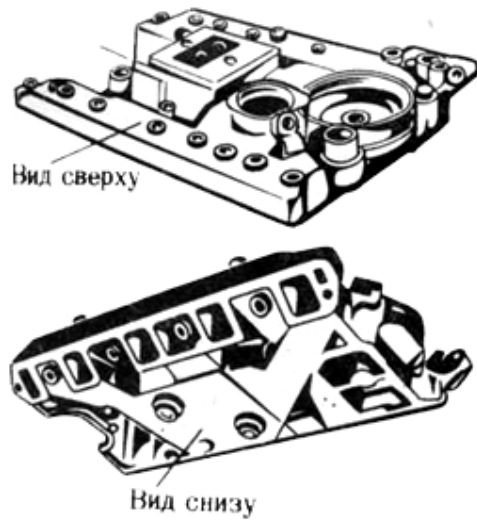
Intake manifold is a complex casting, in which the intake ports are made for the supply of combustible mixture from the carburetor mixing chamber in the engine cylinders and channels for the passage of hot fluid coming out of the heads of the blocks. Intake manifold is placed in the collapse of the cylinder.

In order to improve cylinder filling gas mixture in the intake manifold walls are made so that 1, 4, 6 and 7 cylinders are fed from the right chamber of carburetor, and 2, 3, 5 and 8 cylinder from the left camera.

Channels in the intake manifold, which circulates hot fluid, help to improve mixing by heating the mixture.

To the cylinder head manifold is attached with bolts. In the field connector between the intake manifold and head gaskets are installed units.

On top of the collector is hot flashes with holes for mounting in front of the centrifugal oil filter, nozzle exit coolant and crankcase breather filter, in the middle part - the carburettor at the rear - the ventilation pipe.



Ris.72. Intake Manifold

The system power supply

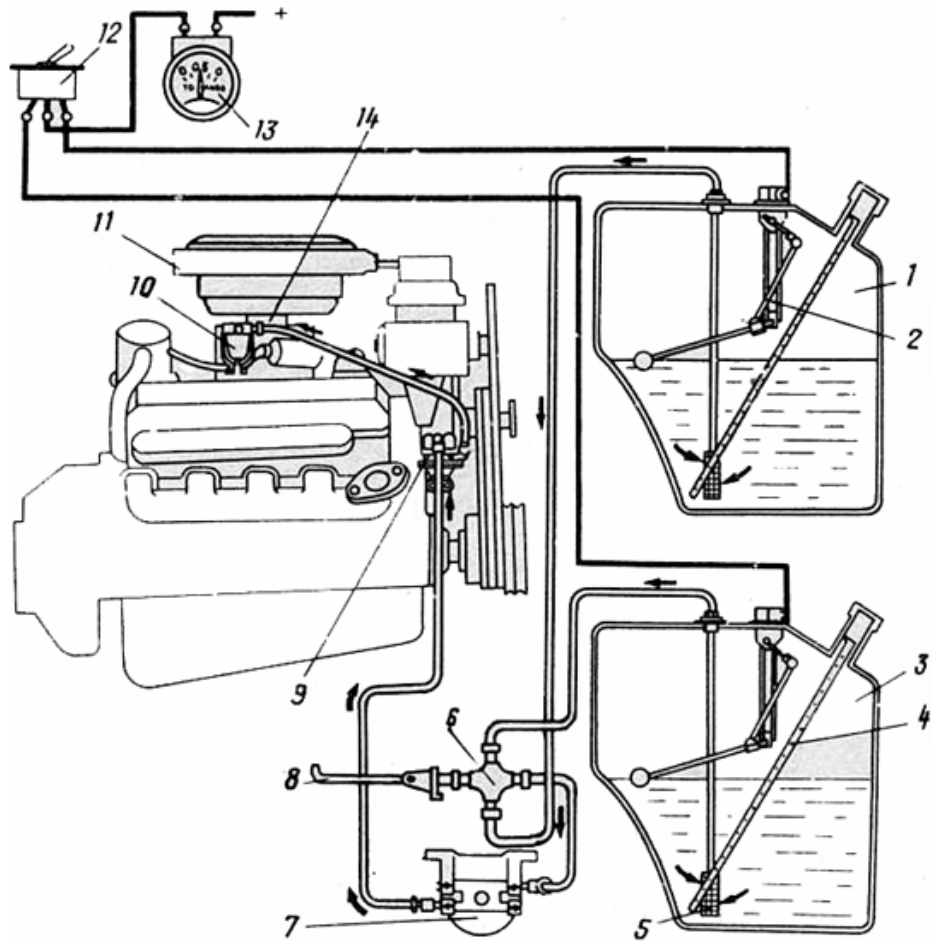
When the engine fuel pump 9 (Fig. 73) creates a vacuum in the suction line, which is under the influence of the fuel from the fuel tank through the strainers 5 goes to the fence and out of the tube on the fuel line goes to the three-way fuel cock 6, mounted on the left front fan housing .

The handle 8 crane control switch tanks bred in the fighting compartment. Switching is performed in accordance with the instructions of instructional signs.

Treated in a filter-sump oil on the fuel line goes to the fuel pump 9, and from it the pressure 150-210 mm Hg supplied to the filter 10 polishing.

From the fine filter finally cleared the fuel supplied to the carburetor, which mixes with fresh air coming from the air cleaner, forms a flammable mixture that goes into the intake manifold to heat the hot fluid circulating in the water jacket of the collector. The heated intake manifold fuel-air mixture is distributed on an engine cylinder, where a spark ignites and burns.

As the production of fuel in the fuel tanks through the inlet valves congestion comes air.



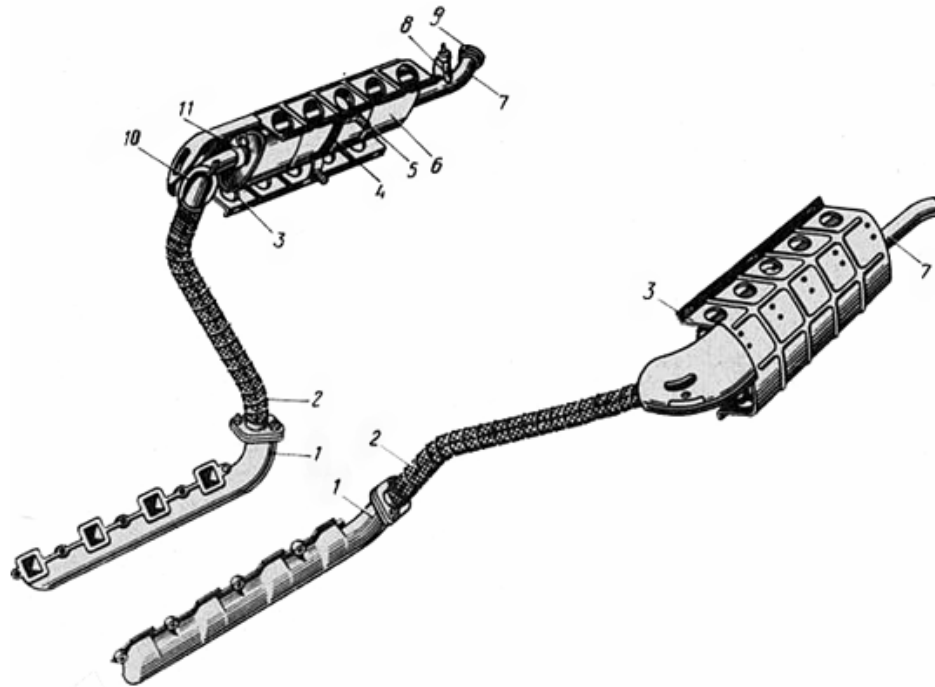
In Fig. 90. The power supply system. Scheme of work: 1, 3 - fuel tanks, 2 - fuel gauge sensor 4 - rod to measure the fuel level, 5 - strainer receiving tube, 6 - Three-way fuel valve, 7 - Fuel filter sediment bowl, 8 - handle control valve switching tanks, 9 - fuel pump, 10 - a fine filter, 11 - air cleaner, 12 - Switch 13 - Receiver fuel gauge, 14 - K-carb I26M

Gas Exhaust System

The system is designed for venting exhaust from the engine into the atmosphere.

Venting system (Figure 74) consists of an exhaust manifolds, intake pipe 2, 6 and silencing fences 3.

Engine exhaust manifolds are cast from gray cast iron. They are mounted on the heels of the engine block heads. Between the heads of units and the collectors are placed zhelezoasbestovye gaskets. By the flanges are mounted exhaust manifolds bolted flange pipe receiving two silencers. Junction between the flange and sealed with gaskets zhelezoasbestovymi. Receiving tubes are made of heat resistant steel. The outer surface of pipes insulated with asbestos cardboard, soaked to the elasticity of a 1% solution of soda ash. Above the layer of asbestos wrapped pipe steel mesh, which is fixed with wire knitting.

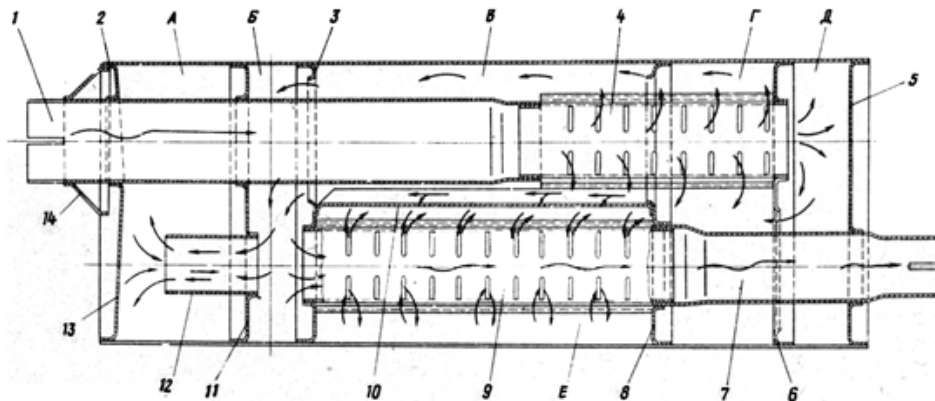


Ris.74. Gas Exhaust System: 1 - engine exhaust manifolds, 2 - receiving pipe mufflers, 3 - Fence mufflers, and 4 - support silencer, 5 - Spring ladders muffler, 6 - Muffler 7 - exhaust pipe mufflers, 8 - gazootbornik to connect the gas-liquid ejector device DK-4K, 10 - flange seal intake pipe muffler, 11 - clip on the intake pipe muffler

Receiving tube through the hole in the side armor plates of the machine brought out, where with the help of clamps 11 and ladders attached to the suction intake silencers.

On a machine equipped with two muffler combined type, volume expansion, with the acoustic resonator filters and camera.

Silencers are for noise reduction of the gases. They are mounted on supports 4 using ladders to the rear upper sloping armor plate of the machine. Both mufflers are identical and represent capacity, divided by partitions into several cells. Silencers made molded: stamping parts of welded together. Each muffler (Fig. 75) consists of a housing 2, a receiver and exhaust pipes 7 with perforated pipes 4 and 9, the longitudinal and transverse 10 3, 6 and 8 partitions, cavity wall 11 with a diffuser 12, the two bottoms 5 and 13 and the amplifier 14 receiving socket.



In Fig. 75. Muffler: 1 - receiving pipe, 2 - body silencer, 3, 6, 8 - lateral septum, 4, 9 - perforated pipe, 5, 13 - bottoms, 7 - outlet, 10 - a longitudinal septum, 12 - Diffuser, 14 - amplifier, A, B, C, D, E - cameras, E - cavity

Outside the mufflers closed fences, which are bolted to the armored hull of the machine lists. Fences installed to protect the muffler from damage when moving the machine, and protect the crew from the burns on the hot outer surface of the muffler housing for servicing the machine.

Spent gases exit at the time of the engine cylinders are more than 3 kg/cm² pressure and temperature over 500 ° C. With a large reserve of energy in and out of the engine pulsating flow, the exhaust gases creates a loud noise, which decreases silencers. Exhaust gases from the cylinder through the exhaust manifolds and receiving tube come to the mufflers. Inside the exhaust gases pass through the suction intake, and a perforated pipe through the holes 4 arrive in the chamber B, D and E, which growing. Hence the gases are fed into the chamber B, and partly through small openings in the longitudinal partition 10 into the cavity of E. From the chamber B, where there is a further expansion of gases, most of them directed to the perforated pipe 9 and through the diffuser portion 12 is sent to the resonator chamber A, if at this point the pressure in the lower than in the chamber B. If the pressure in chamber A than in B cell, the gases out of the resonator chamber in chamber B, leveling and softening of the jet gas. Of the nine pipes exhaust gases through the exhaust pipe 7 silently out into the atmosphere. Passing through the pipe 9, the exhaust gases carry away the particles of the gas chamber E through the slits pipe.

Maintenance of power system

At the **control examination** before **leaving** the **machine** check: refueling systems, fuel and refuel when necessary, whether the fuel leak in the joints of the system, leak detection to eliminate.

For **daily maintenance** is necessary to: replenish power system to normal, check for leaks in the fuel system of the joints, check the tightness of the connection to the carburetor air cleaner.

To check, remove the air cleaner housing cover, opening three tabs, and check the torque arm tightening knob air cleaner.

When operating the machine in dusty air wash air filter and replace the oil in his bath.

When **servicing a number** of perform daily maintenance and further: Wash air filter and replace the oil in the bath, the operation of the machine in terms of snow cover air filter cleaned after 4000 km run, check the carburetor mount to the intake manifold, nuts should be tightened as the key to failure from the efforts of the hands, lubricated probe pnevmotsengrobezhnogo limiter speed.

For **maintenance of number 2** do the work of maintenance № I, and in addition:

drain sediment from the fuel tank filter, which put a rag under the chassis and unscrew the sump drain plug;

Rinse the fuel fine filter.

When **servicing a 6000 km run** to perform maintenance work and an additional number 2:

blow compressed air jets carburetor;

Wash fuel filter sump.

Fueling defueling

To fill the power system to use fuel with an octane number of 76 (A-76). Allowed to use fuel with an octane number 72 (A-72). Fuel must be clean, free of mechanical impurities and water.

Fuel tanks in the absence of special means of filling and fill the field with a bucket and a funnel with a mesh.

For refueling is necessary :
to dust (dirt) manhole covers on the fuel tanks fill pipes and open the lid,

remove dust (dirt) Tube fill pipes and fuel tank caps unscrew from the necks, measure the amount of fuel in the tanks with the help of rods to measure the level of fuel, and measure the amount of fuel tanks must be refilled on a flat horizontal surface, inserted into a petrol tank nozzle throat (funnel with mesh) and refuel the fuel from the fuel supply to the normal speakers (buckets, cans) before filling it into the neck of the tank, removed from neck tank nozzle (funnel with mesh) to measure the amount of fuel in the tank, install a gas cap in place and close the mouth of the hatch.

The sequence of filling both tanks of the same. In setting up traffic jams fill pipes to pay attention to the availability and serviceability of gaskets under them.

To drain the fuel necessary to :
 remove dust (dirt) and open the hatch covers over the tanks, fill pipes, fill pipes to clear jams from the dust (dirt) and unscrew the plug from the openings for fast draining fuel, cleaned of dust (dirt) tube hatches for access to drain fuel tank vents and turn caps hatches, hatches substitute a previously prepared a clean container, alternately unscrew the drain plug the left and right tanks and drain the fuel into the outstretched containers, fuel discharge is considered complete when a drop leaks, put in place and turn to failure tube drains, tanks and hatches in the bottom of the machine body and fuel tank filler neck, close the hatches on the tank fill pipes, remove containers from the fusion fuel.

To wash the air cleaner should be :
 open the hatch cover over the power plant compartment, loosen swivel clamp and disconnect the hose from the pipe for air intake to the compressor, unscrew the nut of the bolt attaching the air cleaner housing to the bracket and pull the bracket to the side, loosen the thumbscrew mount air cleaner, air purifier to remove , remove the filter element and drain the oil from the oil bath air cleaner, rinse in clean fuel (unleaded), the filter element and air cleaner housing, to drain excessive fuel blow compressed air or a dry filter element, filter element promaslit pure oil, used for the engine, and give drain off excessive oil, fill in an oil bath air cleaner with fresh oil, used for the engine to the mark in the bath (0.55 liters) to collect air cleaner, put it into place and secure it knob by tightening it to failure, to put in place the bracket fixing case and secure it by tightening the nut to the bolt out, put the hose over the air intake tube and secure it with clamping collar, close the hatch over the separation of power plant.

To flush the fuel fine filter should be :
 open and lock the door of the hatch of the left wall separation of power plant, loosen the nut, remove the lamb rocker and a glass filter element, wash in a clean fuel filter element and blow compressed air by directing a jet of air into the interior of the element. If you are installing a ceramic filter element for dismantling and washing it must be treated with caution, since it can be broken, clogged with a ceramic element must be replaced by a new, put a glass filter element in place and fix it, when you build a filter to ensure the correct formulation of laying and a spring, which supports the filter element, a glass filter clamping wing nuts moderately by hand; otstoporit door and close the hatch of the left wall separation power plant.

To flush the fuel tank filter must :
 close the locking tap on the fuel filter, clarifier, open the blinds off, disconnect the longitudinal rod to the lever actuator output blinds, open the hatch locks off the blinds and the hatch cover, remove the box from the body; unscrew the bolt to the filter housing cover and remove the casing from the filter element, filter element is removed from the body, wash it and the filter housing in a clean fuel;

assemble filter, set it into place and tighten bolt to failure of the filter, wash, disassemble and assemble the filter sump should be carefully so as not to mash the plate filter element and bend the edges, using brushes and scrapers, are prohibited.

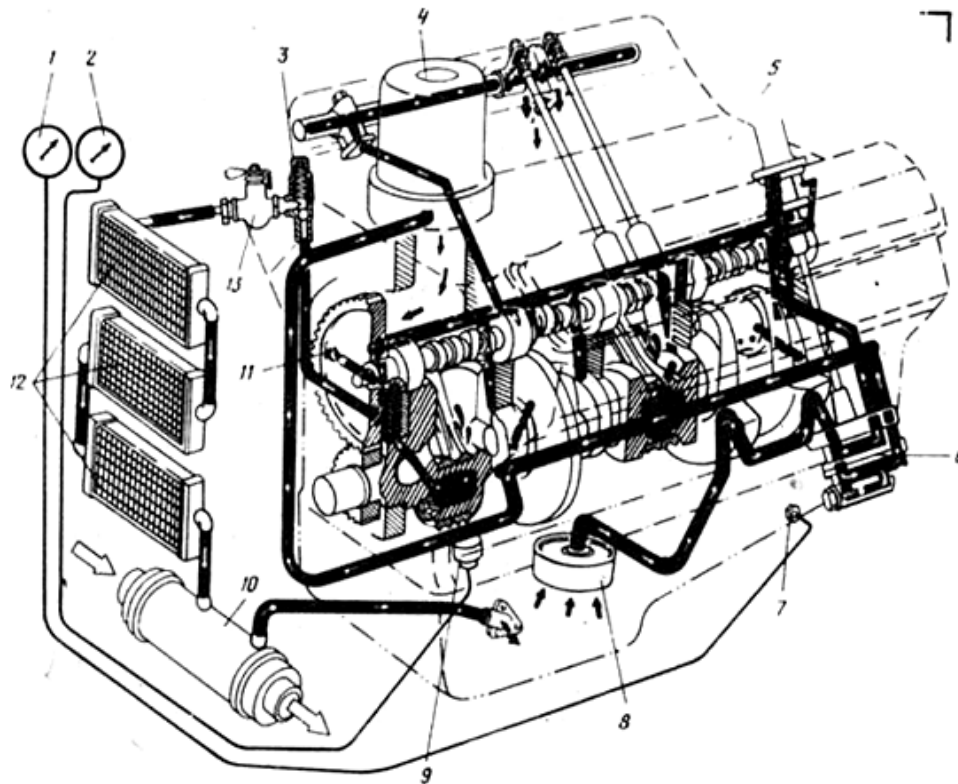
When assembling, check availability and serviceability of the filter element and gasket body. Damage to the gasket leads to loss of containment and leak fuel compounds.

8. Lubrication

Description of the lubrication system

The lubrication system is designed for cleaning, cooling, and oil supply for lubrication of rubbing parts of the engine.

Engine lubrication system (fig. 51), circulation, combined. In the system of engine lubrication oil used M-6z/10V (DV-ASZp-10V). The lubrication system consists of six oil pump, oil receiver 8, a centrifugal oil filter 4, 11 and pressure reducing valves, pressure relief 3, three 12 oil coolers, oil heat exchanger 10, closing faucet 13, a pointer to the oil temperature, oil pressure indicator 2, the engine oil lines , piping and fittings.



Ris.51. Crankcase: 1 - pointer to the oil temperature, 2 - the oil pressure indicator, 3 - pressure relief valve, 4 - centrifugal oil filter, 5 - Engine 6 - the oil pump, 7 - Pointer oil temperature sensor, 8 - Oil Receiver, 9 - indicator oil pressure sensor, 10 - heat exchanger 11 - pressure reducing valve, 12 - oil radiators, 13 - stop tap

Oil pump

The oil pump (Fig. 52) gear type, two-piece, used for supplying oil under pressure to the moving parts of the engine and the centrifugal oil filter.

The oil pump is mounted on the left side of the engine and bolted to the upper half of the crankcase. It consists of two gear sections (top and bottom) collected in buildings made of aluminum alloy.

In sections of the pump housings drilled channels for communicating with the cavity section inlet and outlet channels of the upper half of the oil crankcase. Pinion 7 of the upper section of the pump pressed to a leading roller 8 and is held in its axial movement of the pin. Pinion lower section 3 is also installed on the shaft 8 and is connected to it with a key. Driven gears rotate on axes of sections 12 and 16, pressed in the case of sections 9 and 15. Between the sections of the pump is installed baffle plate 5. The joints between the bulkhead and the five sections of the buildings are sealed paronit spacers 0.4 mm thick, which provides the necessary clearance between the ends of the gears and the septum. In the lower section of the housing is installed pressure reducing valve, which serves to limit the oil pressure supplied to the centrifugal oil filter. The valve consists of a plunger 17, spring 2 and a cork. Spring 2 is adjusted to the fully open valve at a pressure of oil on the highway forcing 3,6-4,0 kgf/cm².

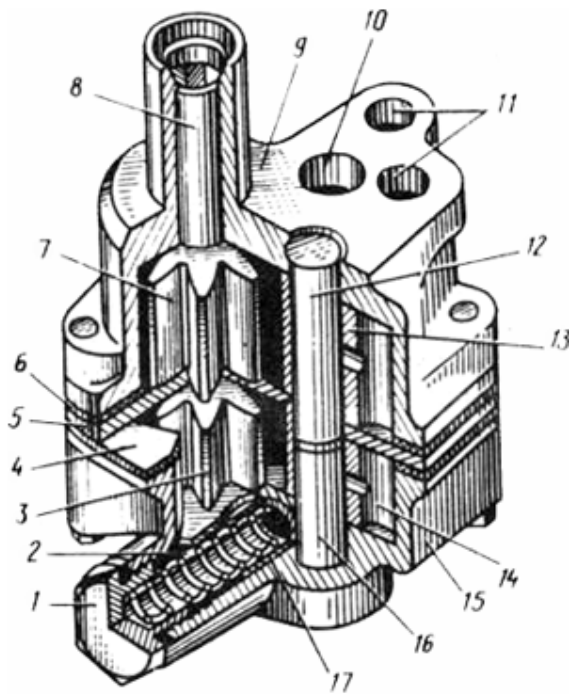


Fig.52. Oil pump: 1 - tube, 2 - Spring 3, 7 - pinion sections, 4,6 - installation 5 - baffle plate, 8 - the leading roller 9 - upper body section, 10 - the entrance channel, 11 - output channels, 12, 16 - slave axis gears, 13, 14 - gear driven, 15 - building the lower section, 17 - plunger

Pressure reducing valve of the upper section of the oil pump is used to limit the pressure oil in the main oil line. It is installed on the engine block on the right side below the gasoline pump and the device is the same as the lower section of the discharge valve of oil pump.

Valve spring is adjusted to the fully open valve at a pressure of oil in the main oil line 5.0 kgf/cm².

At the upper end of the leading roller 8 has a hole hex form to connect to the drive shaft of the distributor.

When the engine oil through the channel 10 through the oil enters the receiver from the lower crankcase (sump) engine in the suction cavity of the two sections of the oil pump. From the top section of the cavity forcing the oil pump oil under pressure is directed to discharge canals into the main body section of an oil pipeline engine, and from it comes to lubricate moving parts. By increasing the oil pressure in the main oil line engine of more than 5 kg/cm² pressure reducing valve is fully opened, some of the oil discharged into the sump and the engine oil pressure in the main oil line is reduced.

From the lower section of the cavity forcing the oil pump oil under pressure is directed to the centrifugal oil filter for cleaning. Upon reaching the oil pressure in the cavity forcing the lower section of the pump 3.6 - 4.0 kg/cm² of pressure reducing valve is opened completely and forcing some of the oil from the cavity flows into the suction chamber, which ensures normal oil pressure at the inlet of the centrifugal oil filter.

The oil receiver (Fig. 53) is used for sampling oil from the bottom half of the crankcase (sump) and clean it from large solids.

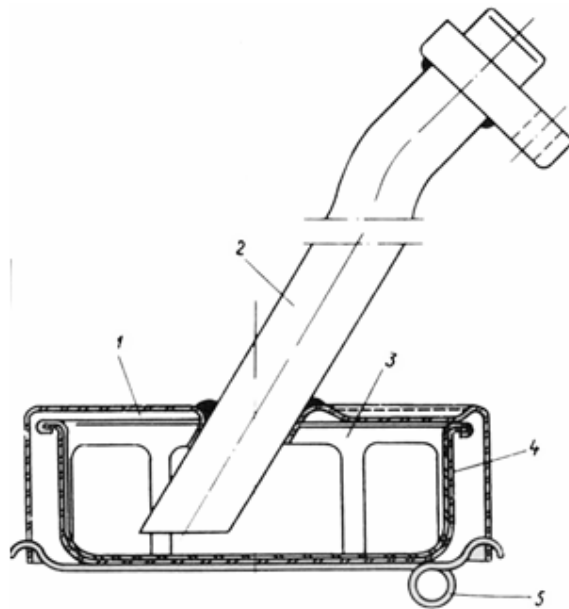


Fig.53. The oil receiver: 1 - case 2 - Reception tube, 3 - frame 4 - strainer, 5 - Spring

It is installed in the sump and the engine is out of the housing 1, the receiving tube 2, frame 3, the strainer 4 and spring 5. Go to the top of the receiver tube welded on the flange, through which the oil receiver is a bolt attached to the upper half of the crankcase. Go to the bottom of the receiver tube welded to the housing 1, which set a strainer, held by a spring 5. Under the influence of depression formed in the cavity of an oil pump oil receiver, the oil sump of the engine passes through a strainer to the receiver tube 2, up through and along the channel in the upper half of the crankcase is directed to the suction chamber sections of the oil pump.

The centrifugal oil filter

The centrifugal oil filter is used for fine cleaning of oil from the solids. It is installed on the intake manifold in front of the engine. Filter (Fig. 54) consists of the following parts: a housing, the housing 12, the pallet 16, the rotor and the rotor axis 2.

The filter housing is cast integral with the engine intake manifold. In the central axis of the boss screwed casing 2 at the bottom of which there are channels for the passage of oil. On the upper part of the axis of the threaded nut-shedding sheep 9, tight attractive casing 12 to the filter housing. Joint of wing nuts with a casing sealed copper ring, and the filter cover with a rubber gasket body 15.

On the axis of the rotor 2 is set, which consists of a housing 3, 4 cap, cup 13 and filter grid 6. On the surface treated cylindrical rotor housing installed and secured with a nut 13 with 8 glass filter 6 and mesh cap 4. Retaining ring 11 facilitates disassembly of the rotor loosen the nut 8.

At the bottom of the rotor housing screwed nozzle 17. The rotor is supported on the lower part of the thrust bearing 18, and moving it up is limited to the nut 10.

The filter is based on the principle of centrifugal force to separate oil and solids due to the difference between their densities.

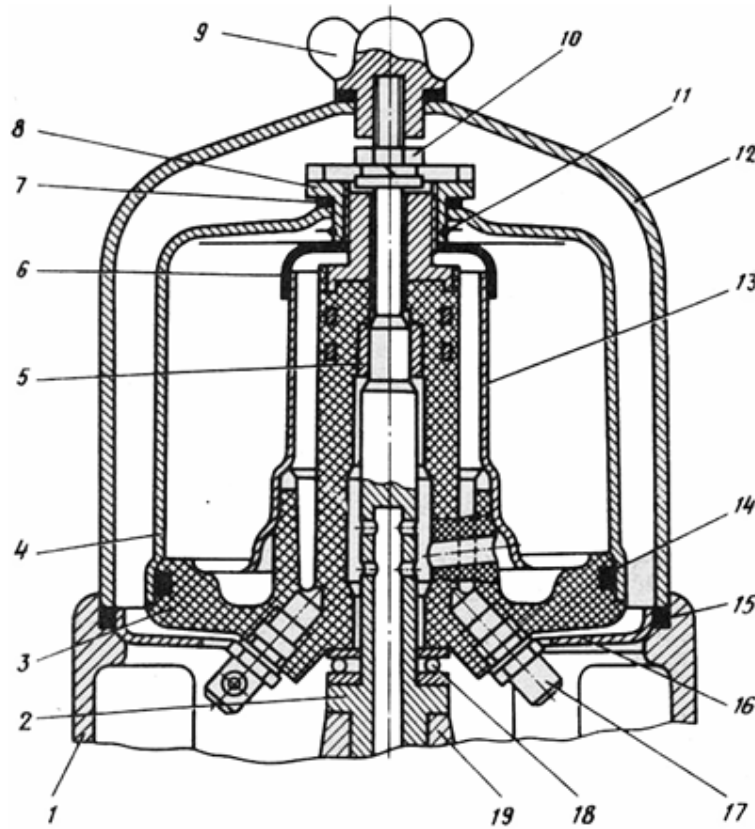


Fig.54. The centrifugal oil filter: 1 - filter housing 2 - axis of the rotor 3 - housing of the rotor, 4 - cap rotor, 5 - Bushing, 6 - filtering mesh, 7 - Laying 8 - Nut, 9 - butterfly nut fastening the casing, 10 - nut of fastening of the rotor, 11 - retaining rings, 12 - filter cover, 13 - a glass rotor, 14 - O-ring, 15 - Gasket 16 - sump, 17 - nozzle, 18 - thrust bearing, 19 - boss of the filter

When the engine oil from the lower section of the oil pump via the pressure in the cylinder block engine and the intake manifold goes to the boss 19 of the filter, passes through the axis of the rotor 2 and the body and fills the inner cavity of the hood 4. From this cavity the oil through the filter mesh 6 and a cylindrical passageway formed by the cup 13 and the rotor housing is sent to the nozzles of the rotor. The oil flowing from the nozzle in the form of two oppositely directed jets, jet creates a torque that rotates the rotor together with the oil contained in it. As a result of rotation of the centrifugal forces arise, which are under the influence of mechanical impurities in

oil and having a high density, dropped to the side and deposited on the walls of the rotor cap dense layer. Refined oil, resulting from the nozzles, drains into the crankcase.

Under normal temperature conditions of the engine and oil pressure at the inlet of a centrifugal filter 2.5 kgf/cm² rotor rotates with the frequency of the filter at least 5000 r / min.

Oil Coolers

Oil heaters are used to cool the oil coming from the engine.

The power unit equipped with three machine oil cooler, which are fastened with screws to the left of a water cooling system radiator.

Radiators of tubular type. Each of them consists of a core 2 (Fig. 55) and two tanks 5 and 11, held together by a longitudinal bars. The core of the radiator consists of eight oval brass tubes 9 and ninety tinned steel plates of thickness 0.15 - 0.18 mm, soldered to the tubes to increase the cooling surface. The ends of the tube 9 welded to the covers of seven tanks. Cistern attached to the radiator on the rivets and welded flanges 8 terminals supplying and carrying away the oil pipes and legs 3 and 12 radiator mounting.

All (three) oil heaters are included with each series. When the engine of the oil from the main oil line goes to the upper engine oil cooler, and from there goes to the middle and then the radiator to the bottom. Passing through the tubes of radiators, oil is cooled by the air flow blowing tube and plate heat sinks.

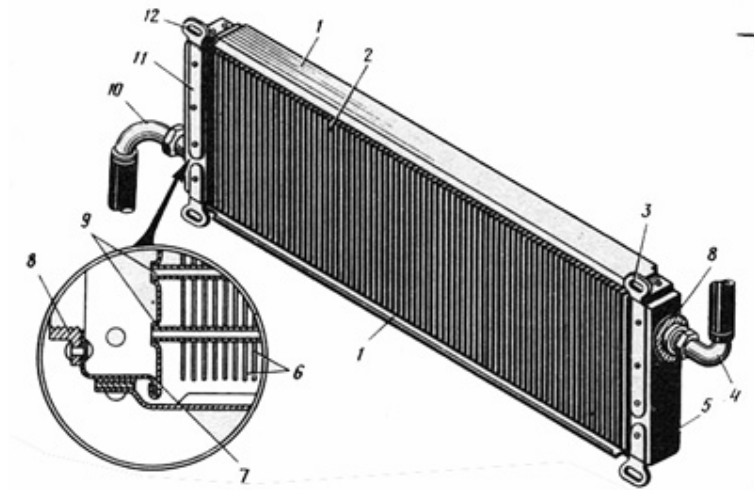
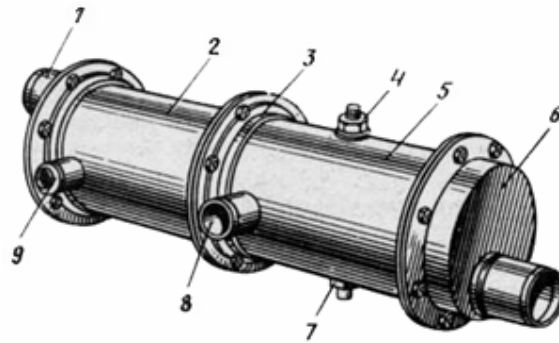


Fig.55. Oil cooler: 1 - longitudinal rod, 2 - core radiator, 3, 12 - foot mount radiator, 4 - the oil supply pipe, 5, 11 - flushing the radiator, 6 - Plate 7 - tank cover, 8 - Flange, 9 - the tube , 10 - oil drain tube

Oil heat exchanger

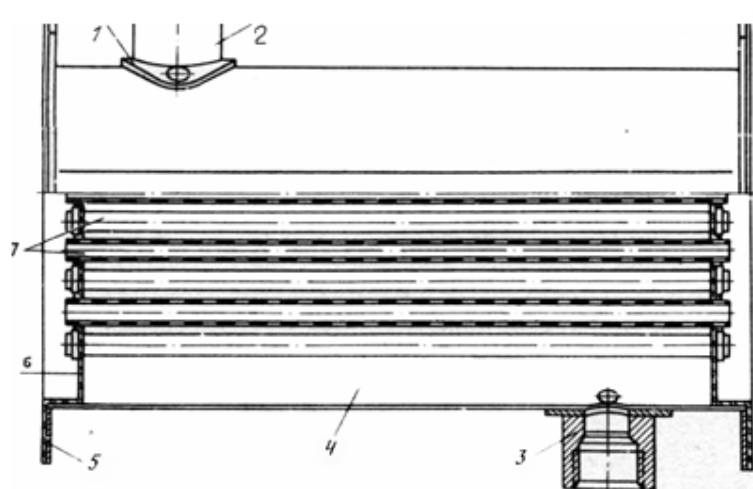
Oil heat exchanger serves to cool the oil when driving cars on water. The block oil and water heat exchangers (Fig. 56) is mounted under the radiator and the water is fixed by two clamp ring to the bracket that is welded to the left rear leaf base of the machine.



Ris.56. The block oil and water heat exchangers: 1 - oil heat exchanger tube caps, 2 - oil heat exchanger, 3 - rubber gasket, 4 - cap 5 - water heat exchanger, 6 - cover water heat exchanger, 7 - flange

The oil heat exchanger (Fig. 57) tubular, cylindrical, made of sheet brass. Outside on the case, there are two fitting 2 and 3, joined by a tube for the supply and discharge of oil.

Inside the case are two latticed partition 6, which are soldered cylindrical brass tube 7. By housing the oil heat exchanger on one side attached by bolts body water heat exchanger, and the other cover. The joints between the flanges and the heat exchanger housing covers are sealed with rubber gaskets.



Ris.57. Oil heat exchanger: 1 - flange fitting, 2, 3 - bean oil pipes, and 4 - body, 5 - flange 6 - grid wall, 7 - tube cooling

When moving the machine sea water flows through a pipe (Fig. 56) covers the oil inside the heat exchanger, passes through the tubes and cools the oil, washing the exterior walls of the tubes. Chilled oil is drained from the heat exchanger in the bottom half of the crankcase.

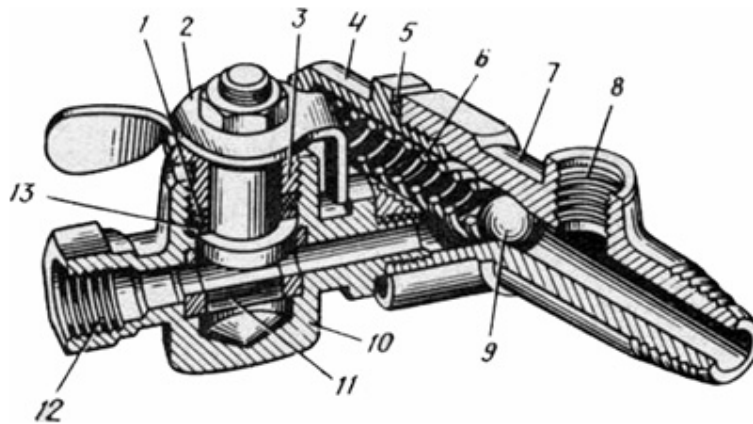
Since the oil heat exchanger connected in series with oil radiators, then the motion of vehicles on land in the heat exchanger is a partial oil cooling air flowing in the internal cavities of the tubes.

The overflow valve and shut-off tap

Pressure relief valve is used to maintain a constant oil pressure at the inlet to the compressor and circulating oil through the oil cooler and heat exchanger.

Bypass valve (Fig. 58) is mounted on the right side of the upper half of the crankcase at the petrol pump. It consists of a housing 7, the cap 4, 9 ball, springs and gaskets 6 5. The main body of the valve has two threaded side channels. On channel 8 oil from the valve body is given to lubricate the moving parts of the compressor, and on another channel through the stop cock to the oil cooler and heat exchanger for cooling.

The spring 6 is adjusted to the pressure of the valve that provides a kgs/sm²u uninterrupted supply of oil to the compressor. When oil pressure in the main oil line engine 1 kg/cm² and above the bypass valve opens and the part of the oil supplied to the radiators for cooling.



Ris.58. Pressure relief valve with shut-off tap oil coolers: 1 - seal, and 2 - handle 3 - nut 4 - cap 5 - gasket, 6 - Spring 7 - housing relief valve, 8 - channel to drain the oil to the compressor, 9 - Ball, 10 - closing faucet body; 11 - Tube, 12 - channel to drain the oil to the radiator 13 - Puck

Shut off the tap used for oil coolers and heat exchanger for subcooling the oil. It consists of a housing 10, tube 11, a seal, 3 nuts, washers 13 and the handle 2.

The body is screwed into the threaded faucet channel relief valve lubrication system, and the threaded faucet body channel vertyvaetsya tip oil line, feeding oil to the upper oil cooler. When included oil coolers handle faucet faucet is located along the hull. Oil heaters are usually turned off during the winter. However, when moving the machine in the most severe conditions it is necessary to include oil coolers, regardless of ambient temperature.

Operation of lubrication system

When the engine oil is abstracted from the bottom half of the crankcase, through maslopriemnik 15 (Fig. 59) is supplied to the oil pump section. From the top (main) section of a drilling unit in the engine oil pressure is fed into the main oil pipeline. From the main road most of the oil goes to lubricate the moving parts of the engine.

By drilling in the block the oil from the main oil line goes to the main bearings of the crankshaft 17 and camshaft bushings 2: From the root necks through the pipes and drilling in the crankshaft oil is sent to the cavity of the connecting rod journals, and from them to the connecting rod bearings.

From the second and fourth liners on the camshaft grooves on the neck of the shaft of the oil from time to time (the coincidence cross-section grooves on the neck and drilling in the block) via drilling in the block and cylinder head fed into the cavity axis and then to the rocker by the rocker arm 6 and the upper rod handpieces . Thrust bearing camshaft is lubricated with oil from time to time coming from the first shaft journal. Thus, all of the above parts are lubricated under pressure. Oil pressure in the lubrication system is controlled by an electric gauge, sensor 10 is mounted on the cylinder block engine, and a pointer to the plate 5 control devices of the driver.

The remaining parts that need lubrication, oil is applied by spraying and by gravity.

Resulting from the clearance of bearings of the crankshaft in the crankcase oil is sprayed to form an oil mist, which are lubricated cylinder walls, pistons and piston pins 8. Tappets and a valve rod 7 oiled, flowing down from the rocker. The gears are lubricated with oil distribution, tapped from the filter 3 centrifugal cleaning. Part of the oil from the main oil line enters the internal cavity pressure relief valve, which is divided into two parallel tracks. One flow of oil from oil line goes to lubricate moving parts of the compressor. From the compressor oil to the oil pipe 18 is discharged into the crankcase. Another stream of oil at a pressure of oil in the piping greater than 1 kg/cm², opens the bypass valve and through the open shut-off tap 20 is sent to the oil cooler 24 and the heat exchanger 23 for cooling. Passing successively through three oil cooler and oil heat exchanger, oil cooling and oil pipe 22 is discharged into the crankcase.

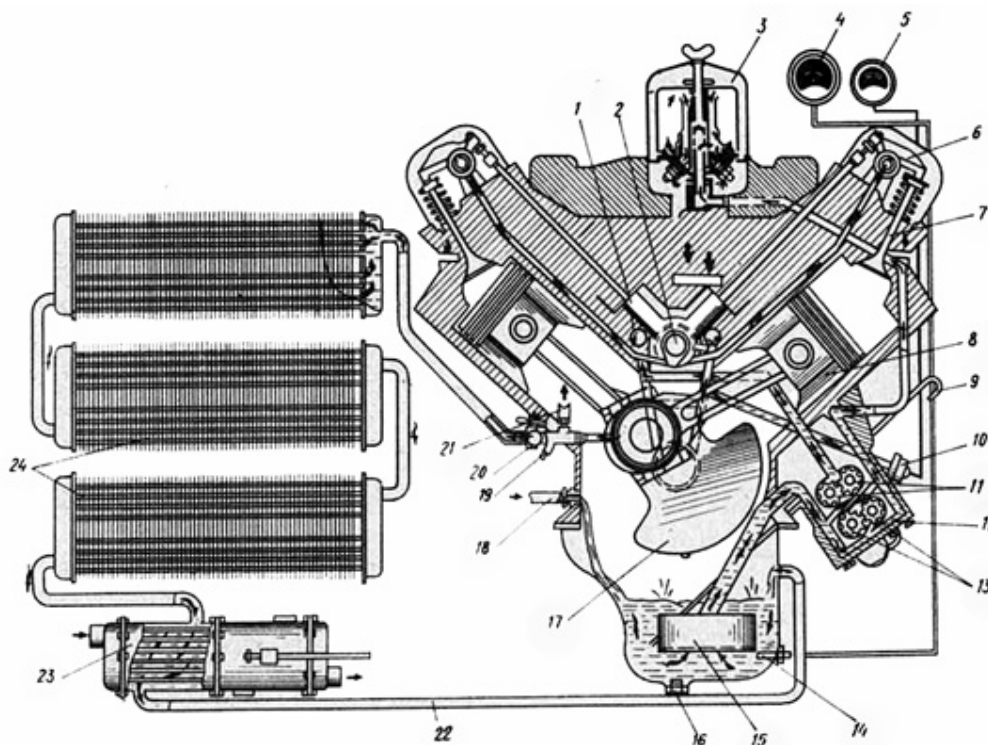


Fig.59. The lubrication system. Scheme of work: 1 - Pusher 2 - Camshaft, 3 - centrifugal oil filter, 4 - Oil temperature gauge, 5 - the oil pressure indicator, 6 - beam, 7 - Valve, 8 - piston 9 - masloizmeritelny rod, 10 - gauge oil pressure; 11 - the top section of gear oil pump, 12 - Reducing Valve lower section 13 - the lower section of gear oil pump, 14 - oil temperature gauge, 15 - maslopriemnik: 16 - the drain plug, 17 - Crankshaft, 18 - oil pipe to drain the oil from the compressor, 19 - by-pass valve, 20 - stop-tap oil coolers, 21 - oil pipe for supplying oil to the

compressor, 22 - oil pipe to drain the oil from the oil coolers and heat exchangers, 23 - oil heat exchanger, 24 - oil radiators

Oil temperature is controlled by an electric thermometer, the sensor 14 is installed in the sump crankcase, and a pointer to the plate four control devices of the driver.

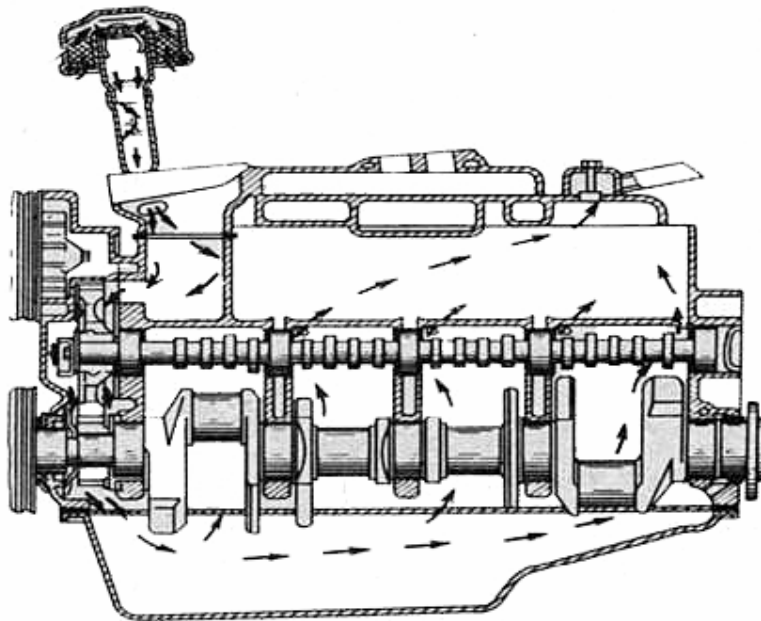
The lower (more) sections of oil pump oil goes to the centrifugal oil filter 3, where it is cleaned from mechanical impurities and then poured into the crankcase.

In operation, the engine reducing valves maintain certain sections of the pump oil pressure in the arteries of the oil. The excess oil from the main road at a pressure in it poured through the pressure reducing valve in the crankcase. When the pressure in the line filter, centrifugal cleaning excess oil relief valve 12 is bypassed to the suction cavity of the lower sections, and thus circulates inside the oil pump.

In the operation of the machine periodically to monitor the level of oil in the crankcase markings on masloizmeritelnom rod 9. For the engine is equally harmful as raising the oil level above the label "P" and drop it below the label "O". In the first case can be increased oil consumption, the formation of coke, coking piston rings, engine lubrication Smoke candles. In the second case may stop supply of oil to moving parts, which usually causes an accident the engine.

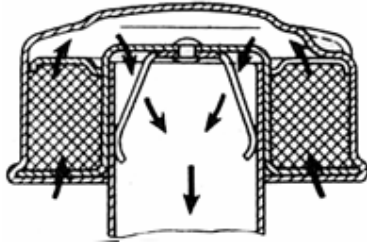
Blow

Crankcase ventilation (Fig. 60) prevents the possibility of increasing the pressure in the crankcase and prevents oil from thinning due to condensation of fuel vapors and prevents aging of the oil and metal corrosion under the action of exhaust gases, penetrating into the crankcase.



Ris.60. The scheme of the crankcase ventilation

Blow open. Fresh air enters through the pipe, which serves as both a filling neck. To avoid ingestion of dust filling spout is equipped with a filter (Fig. 61). In the fueling neck pressed oil seals, preventing vybryzgivaniyu oil.



Ris.61. Crankcase ventilation filter

Maintenance of the lubrication system

At the control examination before leaving the machine to check:

refueling the lubrication system, if necessary to the normal refuel oil M-6z/10V (DV-ASZp-10B);

there are no leaks of oil from the lubrication system at the idle and the engine is running;

effect of the oil pressure gauge and thermometer (to check when starting and warming up the engine).

During maintenance, number 1 should be:

refuel the lubrication system to normal;

check for leaks of oil from the lubrication system.

During maintenance, number 2, and a 6000 km run to perform maintenance work number 1 and additionally:

replace the oil in the engine lubrication system;

Rinse the centrifugal oil filter.

Filling and draining of oil

Oil fueled M-6z/10V (DV-ASZp-10B) should be clean, free of mechanical impurities and meet the requirements of GOST. Refilled the oil in the crankcase to a fueling neck (pipe), setting a pre-funnel into it with a grid. During the operation it is necessary to maintain the oil level on the label of "P" masloizmeritelnogo rod.

Do not let the engine and operate the machine if the oil level below the label "O", as this will lead to motor failure.

Do not break the seal joints crankcase ventilation and operate a gas engine with an open mouth.

For filling oil must:

open the hatch above the branch of power plant;

clean the outside of the dust (dirt), fueling the neck and filter;

remove the filter with a gas cap;

measure the level of oil in the crankcase masloizmeritelnym rod and fill to the mark "P";

filter is put in place a filling neck;

close the hatch over the department the power plant.

To drain the oil must be:

unscrew the plug hatch in the bottom of the machine under the engine;

install a sump drain hole to drain the oil dish;

open the hatch above the branch of power plant;

remove the filter with a gas cap, pre-clearing of the dust (dirt);

unscrew the plug from the drain hole in the crankcase of the engine and drain the oil in a bowl;

drain oil is considered complete as soon as oil starts to flow drops;

and tighten up the drain plug out and plug hatch in the bottom of the hull;

a filter to the gas filler neck and close the hatch over the department the power plant.

For an oil change is necessary:
 drain oil from the crankcase (oil drained immediately after the run machine until it has cooled down);
 removed, rinsed and put in place a centrifugal oil filter;
 refill with fresh oil in the crankcase to the mark "P" masloizmeritelnogo rod;
 let the engine and work on medium speed 2 - 3 min, while the engine to check whether there is oil leakage from the connection points;
 check the oil level in 5 - 10 minutes after stopping the engine and refuel if necessary, up to the mark "P" masloizmeritelnogo rod.

To wash the centrifugal oil filter (Fig. 54) must:
 open the hatch above the branch of power plant;
 unscrew the nut-nine sheep and remove the casing 12;
 unscrew the mounting nut 10 and remove the rotor centrifugal oil filter. Before removing the rotor, remove the spring and flat washers, and a centrifugal filter when removing it from the bottom to support hand to cage fell into the crankcase;
 unscrew the nut 8, holding the filter cover from the rotation, and carefully remove the cap. If you can not unscrew the nut by hand is allowed to shift eight of its sites with a screwdriver inserted into one of the slots nuts. Do not keep the cap from turning by jamming a screwdriver or other tool inserted between the bottom of the rotor and the filter housing;
 mesh filter to remove the rotor 6;
 clear the cap 4 and cap and rinse the grid in pure gasoline. Do not clean the cap with metal objects. To clean use wooden scrapers;
 net and put the cap back on and tighten nut cap. In setting up the hood to take care not to damage the O-ring 14 to the rotor and cap sat on his seat, without distortions. Cap nut roll is not tight,
 put the centrifugal filter in place and secure it with a nut 10, after placing a flat, and then the spring washer, nut to tighten the key to failure; deliver housing 12 in place and secure it with wing nuts;
 close the hatch over the department the power plant.

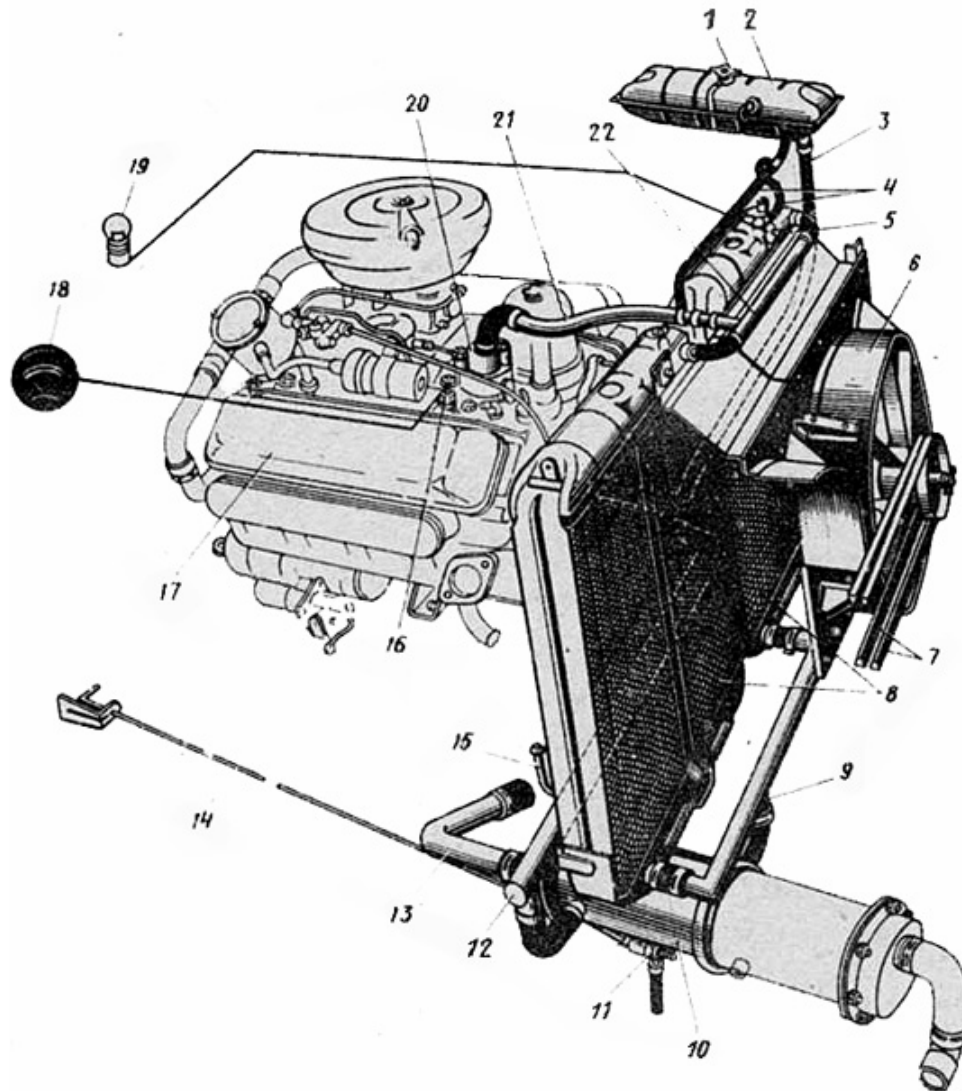
9. Coolant

Appointment

The cooling system is designed to remove heat from the engine to maintain the temperature of its components within acceptable limits.

Engine cooling liquid, forced, closed. As a coolant in the system must use water in the summer, winter, low-freezing coolant grade 40 or 65. Filling capacity of the cooling system with heat exchanger and the heater 35 liters.

The cooling system (Fig. 76) consists of a water pump, water blocks and heads shirts cylinder engine, the thermostat 20, the water radiator 8, the water heat exchanger 10, the expansion tank 2, air fans, blinds, drain cock 11 pipe and fittings.

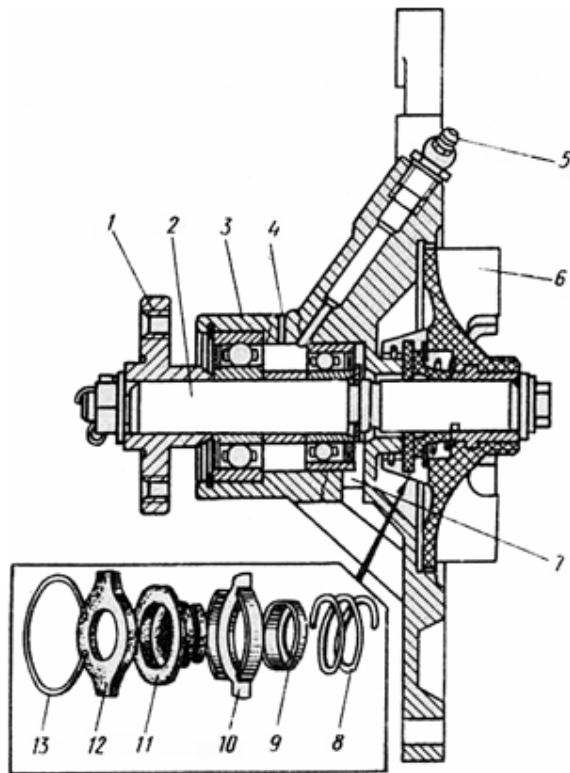


In Fig. 76. BRDM-2. Cooling System: 1 - tube filling neck of expansion tank, 2 - expansion tank, 3 - a hose to fill the coolant system, 4 - a couple of hoses to drain from the radiator to the expansion tank, 5 - coolant overheating sensor, 6 - right guard fan; 7 - Left fan belts, 8 - water radiators, 9 - outlet pipe outlet coolant from the radiator to the heat exchanger, 10 - water heat exchanger, 11 - tap to drain the coolant, 12 - pipeline supplying coolant from the heat exchanger to the water pump motor 13 - tap the pipeline from the sea water heat exchanger unit, 14 - traction control tap, 15 - tube drainage of fluid from the crew compartment heating system, 16 - probe thermometer, 17 - engine, 18 - engine coolant temperature indicator, 19 - Coolant overheat warning light fluid, 20 - thermostat, 21, 22 - Pipelines supplying coolant from the engine to the radiator

Water pump

Water pump (Fig. 77) serves to create a forced circulation of coolant in the cooling system. It is installed in front of the engine and bolts attached to the cover distribution gear.

The pump consists of a cast iron casing 3, the roller 2, installed on two ball bearings, the impeller 6, a seal and hub.



*In Fig. Of 77. BRDM-2. Water pump:
 1 - the hub 2 - shaft, 3 - body, 4 - check out the hole for lubrication, 5 - oiler, 6 - Vane, 7 - check out the hole for water, 8 - Spring, 9, 10 - clip seal; 11 - Cuff, 12 - packing washer 13 - locking ring*

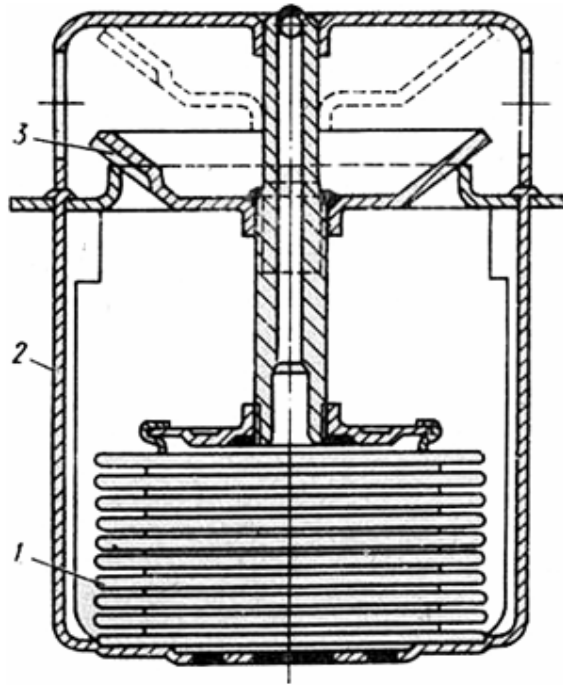
Gland is designed for sealing the shaft 2 in order to prevent leakage of fluid from the pump. It consists of textolite washer 12, a rubber sleeve 11 and the spring 8. When using seal rotates with the impeller. Gland self-limiting and does not require braces. Water leaks through the hole 7 of the control points to seal failure.

- For the lubrication of bearings installed in the housing nipple 5.
- For a hub bolts attached pulley water pump and fan drive flange.

Thermostat

To speed up the warming up a cold engine and protect it from exposure to the nozzle exit coolant from the intake manifold mounted thermostat, regulating the circulation of fluid through the radiator. The thermostat consists of a body 2 (Fig. 78), a corrugated cylinder and valve 3.

Go to the top of the corrugated cylinder welded to the valve stem 3 and the lower part of the cylinder is soldered to the body. Corrugated tank filled with volatile liquid and sealed. The flange is sandwiched between the thermostat housing pipe and flow to the intake manifold.



In
 1 - corrugated cylinder, 2 - housing 3 - Valve

Fig. 78. BRDM-2. Thermostat:

Between the valve and seat in the housing has an opening for the exit of air when filling the cooling system fluid.

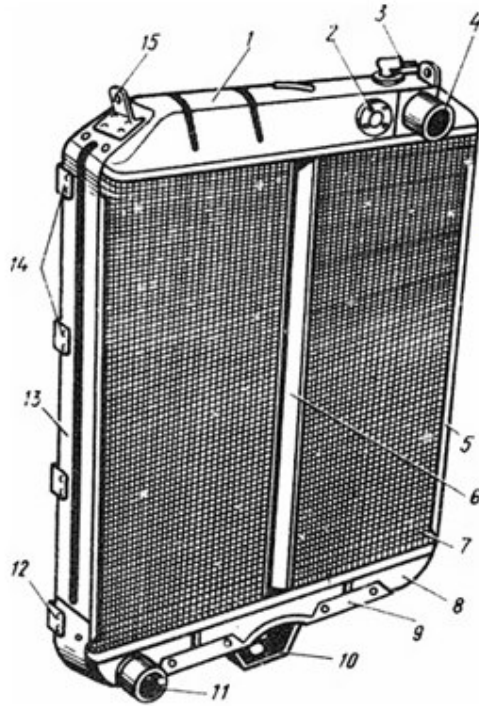
As the temperature of the liquid in the cooling system (above a certain limit), the vapor pressure inside the cylinder increases, allowing container decompressed and opens the valve thermostat. The degree of the thermostat valve opening determines the amount of fluid circulating through the radiators, which depends on the thermal regime of the engine.

Thermostat valve begins to open when the coolant temperature 76-82 ° C and is completely open at 88-94 ° C.

Water heaters and heat exchanger

Water heaters are used to cool the liquid coming out of the engine. On a machine equipped with two plate-and-tube water cooler, connected to each other in parallel. Radiators are available in the power department of the engine and bolted to brackets welded to the underside of the body, and by linkage to the roof of the machine. Both the radiator of the same design. Water radiator (Fig. 79) consists of a core 7 (skeleton), an upper and lower eight tanks, two lateral 5 and 13 and the bottom plate 9 fences, fastening components cooler. The core of the radiator consists of 138 brass oval pipe, 382 copper plates and beams 6, increasing the rigidity of the radiator. The ends of the cooling tubes soldered to the walls of the upper and lower radiator tanks. Fins are soldered to the tubes to increase surface cooling radiator. In the middle of the beam radiator has a hole through which the drive is missing zalik right fan. On the upper radiator tank has four pipe through which coolant is supplied from the engine to the radiator, Vapour pipe 3 and the flange 2 of the sensor overheating of the coolant. On the left radiator screw hole flange 2 is muted. At the lower radiator tank imeemsya pipe 11 through which cooling fluid is discharged from the radiator to the heat exchanger. The bottom plate welded fence bracket 10, which is the lower radiator support mounting, and two mounting brackets 12 of the lower oil cooler. The side plates are

welded to the fence top radiator cistern. Each side plate fence welded lug 15 rod radiator mounting bracket 14 and three for fixing oil radiators.

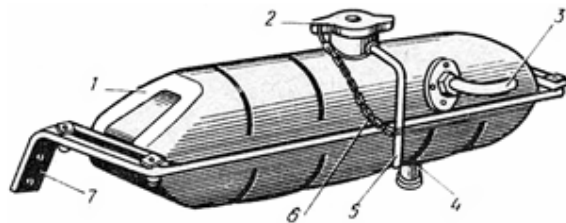


In Fig. 79. BRDM-2. Water heater: 1, 8 - radiator tanks, 2 - flange coolant heat sensor, 3 - Vapour tube, 4, 11 - tubes, 5, 13 - lateral plate radiator guards, 6 - beam, 7 - the core of the radiator, 9 - lower plate radiator guards, 10 - Bracket, 12, 14 - mounting brackets oil coolers, 15 - ear

Water heat exchanger serves to cool the liquid coming out of the engine when driving cars on water. Design and operation of a water heat exchanger is the same as the oil heat exchanger (Figure 57). The bottom of the flange joins the tap water heat exchanger 11 (Fig. 76), which serves to drain the coolant from the cooling system. Control by means of a tap rod 14.

Expansion tank

Expansion tank (Fig. 80) serves as a compensator for the coolant, increasing in volume when heated, and steam chest, in which when the engine is collected and condensed steam. In addition, the presence of the tank provides a constant fluid pressure at the inlet of water pump cavitation weakens it.



In Fig. 80. BRDM-2. Expansion Tanks: 1 - body tank, 2 - Filling tube filler, 3, 5 - vapor-tube, 4 - fitting, 6 - chain, 7 - Bracket

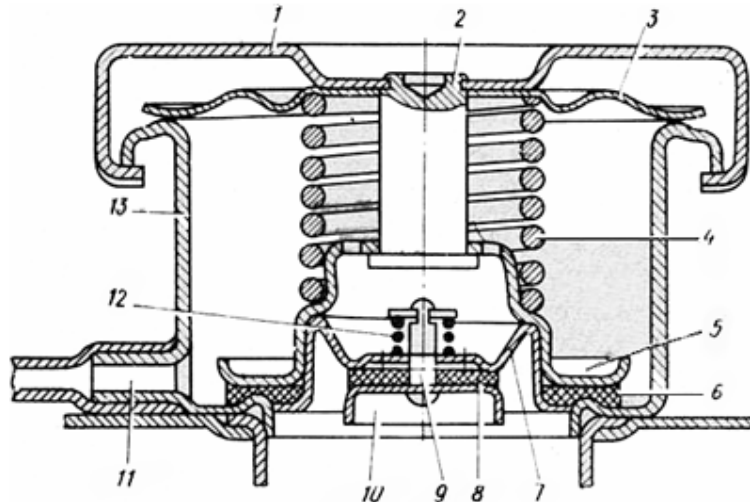
Expansion tank with brackets bolted to 7 Bonk, welded to the inclined sheet-board right of the machine. Housing tank welded from two halves, which are stamped from sheet brass. Go to the top half of the body are soldered to the filling spout steam pipe 5 and the flange of the tube 3, through which steam from the radiator is given to the internal cavity of the tank. The bottom half of the body tube is soldered to connect the four tank system.

Tube filling the expansion tank cap (Fig. 81) serves to maintain the pressure in the cooling system in the optimal range. It consists of a cap, belleville spring 3, the intake and exhaust valves. The inlet valve consists of a cup 7, spring 12, 8 pads, washers 10 and the connecting pin. Exhaust valve consists of a cup 5, 4, and spring pads 6.

Exhaust valve is used to produce steam from the closed cooling system, when the vapor pressure in the system exceeds 0.45-0.55 kg/cm², in order to protect the radiator and dyuritovyh compounds from being destroyed.

As the temperature of coolant in the system increases its vapor pressure. If the force of the vapor pressure exceeds the resistance force spring 4, the valve opens, the steam will be released through the tube 11 into the atmosphere and the pressure in the system decreases.

The inlet valve is the inlet air cooling system, when it reaches the vacuum 0,01-0,10 kg/cm².



In Fig. 81. BRDM-2. Tube filling the expansion tank cap: 1 - Cover 2 - Stand 3 - Bevel washer, 4, 12 - valve springs, 5, 7 - cup valves, 6, 8 - rubber gaskets valve, 9 - pin, 10 - Puck, 11 - pipe-steam, 13 - expansion tank filling neck

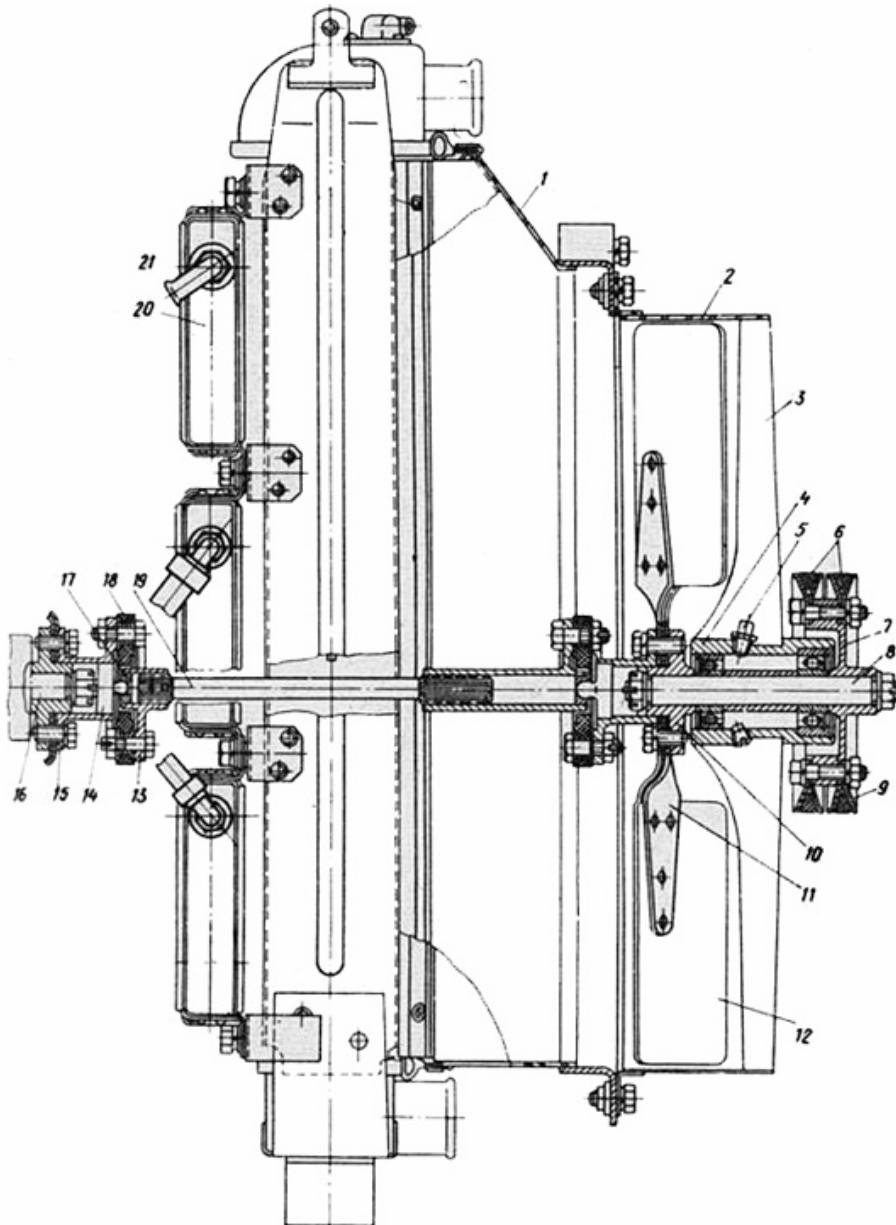
When cooling the coolant in a closed cooling system creates a vacuum. The strength of external atmospheric pressure overcomes the resistance of the spring 12, the intake valve opens, the cooling system gets air and vacuum decreases.

Fans

Fans are used to create air flow in the cooling system.

In the power pack machine for radiators in special housings are two shestilopastnyh axial air fan. Both fans and their installation details of the design are the same.

Fan (Fig. 82) consists of six blades 12 and cross 11, which is bolted to the hub 10, planted on the shaft 8. Roller bearings on the two set to guide the housing body 4. At the other end of the roller nut planted and fixed pulley hub 7.



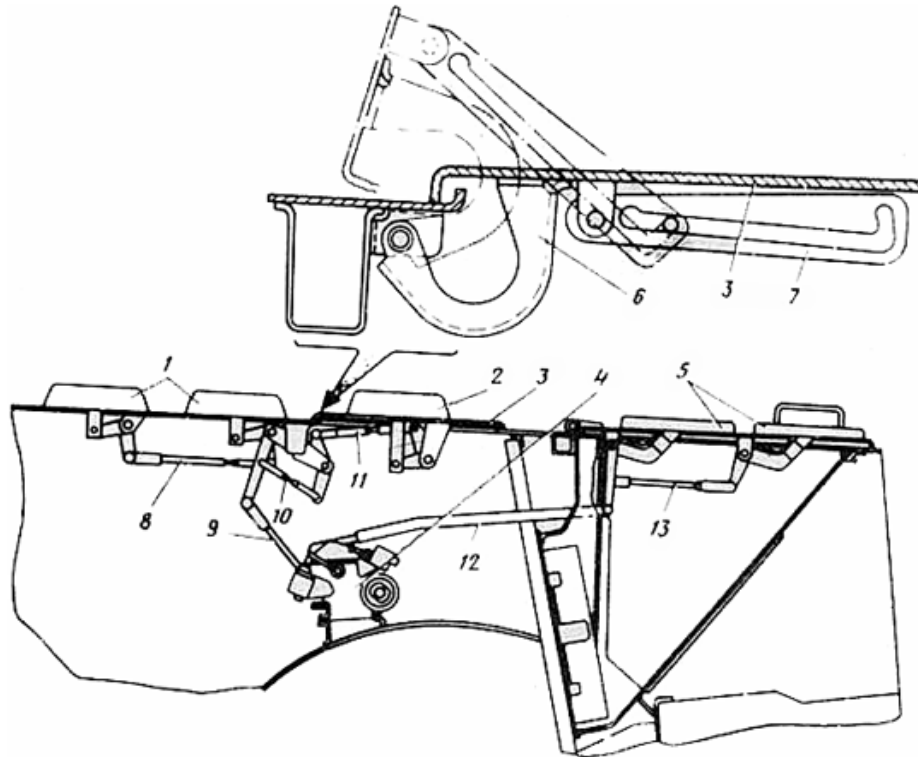
In Fig. 82. BRDM-2. Right fan drive: 1 - frame rail covers, 2 - a ring of guide casing 3 - needle housing 4 - housing guide cover, 5 - Grease 6 - V-belts, 7 - fan pulley hub, 8 - roll fan; 9 - Pulley, 10 - the fan hub 11 - the fan-pad, 12 - the fan blade 13 - clutch fork, 14 - ball bearing, 15 - flange joints, 16 - water pump shaft, 17 - Ball Bushing bearings, 18 - Rubber Drive couplings, 19 - drive shaft, 10 - oil cooler, 21 - the water cooler

The right fan is connected to a water pump roller 16 by means of two semi-rigid couplings and shaft 19 of the drive. Semi-rigid coupling consists of a plug 13, the rubber disc 18 and flange 15, connected together by bolts. Inside the sleeve mounted ball bearing 14 and sleeve 17 of ball bearings. The presence of semi-rigid couplings with ball bearings in the drive allows for some misalignment of rollers water pump and the right fan. Right fan and water pump are rotated V-belts from the pulley of the motor shaft. The left fan is driven by V-belts pulleys 6 of 9 of the right fan.

Venetian blinds

Shutters are used to control air flow rate, power plant cooling, and protection of its units from bullets and shrapnel.

Cover 1 (Fig. 83) and 2 vozduhopritoka located on a removable cover sheet (four sections) and three hatch cover over the engine (two sections).



In Fig. 83. BRDM-2. Covers vozduhopritoka and air outlet: 1.2 - Cover vozduhopritoka 3 - manhole covers, 4 - electric, 5 - air outlet cover, 6 - Loop 7 - focusing cap, 8, 9, 10, 11, 12, 13 - draft

Four covers five air outlet located on the rear fold-out sheet roof. Opening and closing the lid by means of the actuator 4, mounted on a bracket welded to the recess of the left rear wheel. Drive control is performed using a special switch places with the driver.

Full opening and closing of the lids in their assembly is regulated by varying the length of the rods 8, 9, 10, 11, 12, 13. In normal use, the machine further adjustment of drive control covers are required.

3 hatch cover over the engine mounted on the two inner loops 6 and locked with two locks on the rear edge of the hatch. Open the hatch cover over the engine can only be fully open lids vozduhopritoka. When open, the cover 3 is fixed at two stops 7, located on the hinge 6. When you close the lid, remove it from the stops.

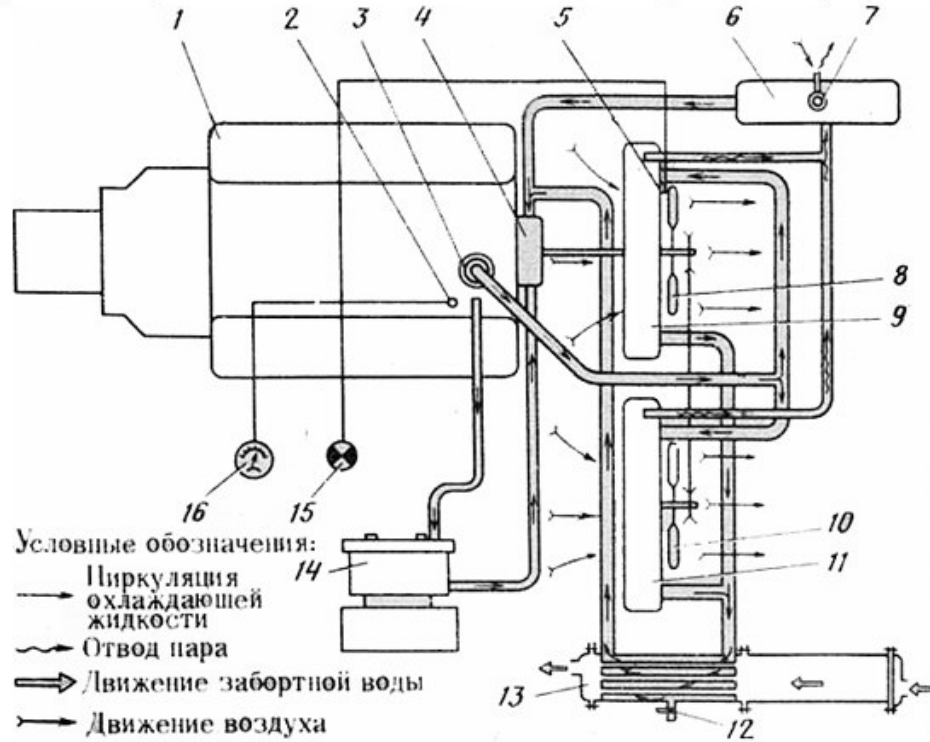
The work of the cooling system

With the engine water pump 4 (Fig. 84) creates a circulation of cooling liquid cooling system on highways. Forcing fluid from the cavity of the water pump goes to the bottom of the shirt blocks the engine passes through the internal cavities, and shirts washed cylinder liners. From shirts blocks fluid flows into the water jacket heads, blocks, washed arches combustion chamber cylinder heads and exhaust channels.

From the right cylinder head fluid flows into the right longitudinal canal water jacket intake manifold and out of the nest thermostat. From the left cylinder head fluid flows into the left and the central longitudinal channel the water jacket intake manifold, washed, and warms the channels through which the fuel-air mixture enters the engine cylinders, and then sent to the socket thermostat. When the thermostat is fully open valve 3 the bulk fluid is directed through outlet thermostat and rubber-canvas hose to the radiator 9 and 11.

From the lower radiator fluid cisterns via directed to water heat exchanger 13, and from there into the suction cavity of the engine water pump, which pumps its water back liners, so is the circulation of fluid in the main loop cooling system.

Part of the liquid (extra circulation circuit) from the water jacket intake manifold enters the water jacket 14 compressor, cools it and returns to the suction cavity of the water pump.



In Fig. 84. BRDM-2. Cooling system. Scheme of work: 1 - Engine 2 - probe thermometer and 3 - the thermostat, 4 - water pump, 5 - sensor warning light coolant overheat, 6 - expansion tank, 7 - cork filling the expansion tank cap, 8, 10 - Fans, 9 11 - radiators, 12 - krainik to drain the water, 13 - water heat exchanger, 14 - compressor, 15 - warning lamp overheating coolant, 16 - a pointer to the thermometer

When the coolant temperature is below 78 ° C, the thermostat is closed. In this case, the liquid is not cooled, circulating in the small loop through the compressor and only a small amount of fluid (about 2 l / min) is fed to the radiators through a calibrated orifice between the valve and thermostat neck. With the engine warm up the thermostat valve opens and the hot liquid, while continuing to circulate through the additional circuit, simultaneously supplied to the radiators for cooling. The liquid in the radiator is cooled by air flow created by fans, 8 and 10. Fans suck through hatches vozduhopritokov air, which, passing through the air path of the cooling system, engine blows, water and oil radiators and air outlet through the hatches thrown out. The intensity of the airflow that cools the power plant regulated by the value of opening the blinds.

When moving the machine on the water, when the shutters are closed and there is no flow of air through the radiator, the fluid is cooled in a water heat exchanger seawater.

Formed in the cooling system of the upper pair is removed from the tanks on the radiator pipes Vapour in the surge tank 6, where it condenses. When excess vapor pressure of the liquid in the cooling system over 0,45-0.55 kgf/cm² opens the exhaust valve in the tube filling the expansion tank cap and steam to the atmosphere.

Coolant temperature is controlled by an electric thermometer, sensor 2 is installed in the water jacket of the engine intake manifold, and the pointer 16 on the dashboard control devices of the driver. In addition, on the same plate is installed lamp 15, warn against overheating of the liquid in the cooling system. Sensor 5 bulbs installed in the upper right-hand radiator tank.

The coolant from the cooling system drained through three taps installed in the water heat exchanger, heater, and heater. When draining the water necessary to open the expansion tank cap.

Maintenance of cooling system

At the control examination to check:
- filling the cooling system and refuel if necessary to the normal;
- there are no leaks from the connection points of the system, check with the engine running and not running.

With daily maintenance check:
- filling the cooling system and refuel when necessary to the normal;
- there are no leaks from the connection system
- condition and tension of fan belt, if necessary, adjust the belt tension.

When servicing a number of perform daily maintenance and further grease the axle bearings of fans and water pump lubricant Lithol-24.

Bearings lubricated with a syringe, through the press before the release of fresh oil can lubricate the control of the holes. Grease, emerged from the test holes must be removed to avoid lubricating the fan belt.

During maintenance, number 2, and a 6000 km run to perform maintenance work № 1 and double-check:

- fixing radiators and the purity of their outer surface, if necessary, wash the outside of the radiator with water and blow compressed air
- the serviceability of cork filling the expansion tank cap, action of its valves, and the state seal. When pressed with your finger valves must move freely without jamming. In the case of sticking valves, wash in hot water while moving them.

Filling and draining the coolant

To fill the cooling system used in the summer of clean fresh water (rain or river) without impurities, the winter low-freezing coolant grade 40 (at temperatures down to -35 ° C) and grade 65 (at an ambient temperature below -35 ° C).

Mechanical impurities contained in water, clog radiators, cylinder jacket and lead to local overheating.

The impurities themselves contribute to the formation of scale, degrade the thermal conductivity and cause overheating.

To protect the cooling system from corrosion and scale formation in water must be added to a three-component additive, consisting of potassium bichromate, sodium nitrite, and trisodium phosphate. At 100 liters of water should be added to 50 g of each component, or 0.05% (by weight) of each component of the additive quantity of the charged water. Weighted components backfilled boiled in small portions, heated to 60-80 ° C water and thoroughly mixed. After dissolution, the liquid additive is put into the system.

The additive is allowed to enter directly into the system via a petrol surge tank filler neck. In this case, the additive is filled with the engine running when the water temperature in the system will reach 40-60 ° C.

For a complete dissolution of the additive is sufficient to work for 10-15 minutes. In the operation of the cooling system must be refilled with water and three-component additive initial concentration (0.05% by weight).

Three-component additive and its solution is poisonous.

To fill the cooling system is necessary to:

- check whether the closed drain tap water heat exchanger, boiler heater and heater;
- remove the cork filling the expansion tank cap;
- insert into a petrol tank filler neck funnel with mesh and fill the coolant back to normal, the level of water with a three-component additive should be 65-85 mm, and low-freezing cold fluid at 110-120 mm below the upper edge of the filling neck of the tank;
- remove the vortex from the neck of the tank and close the cap,
- check for leakage of coolant in the joints or drain taps.

In the initial charging of the cooling system after refilling the coolant should let the engine and work 3-5 minutes, stop the engine and refuel in the coolant expansion tank until the norm. This is necessary to fill the cooling system compressor.

To drain the coolant should be:

- to open a petrol surge tank filler neck;
- to prepare a dish to collect drained coolant
- open three faucet to drain the fluid turns and drain the coolant into a clean container and stored for subsequent filling, draining the coolant goes through the drain valve heater or heat exchanger, after the main flush of the coolant to drain out of a rotating heat exchanger (heater) and a heater (about niches left front wheel)
- after a full discharge of the coolant drain tap to close and replace the cork filling the expansion tank cap.

Open the cork filling the expansion tank cap on the hot engine must be cautious, since the increased pressure in the liquid and vapor can be thrown out and cause burns.

In the case of setting the machine for a long time in cold ambient temperatures drained the water from the system immediately after stopping the engine. After draining the neck of fueling the surge tank to close the stopper and drain tap left open.

To tension the belt drive water pump and fan the right to:

- open the left cover wall separation of power plant;
- loosen the nuts of the two bolts holding the idler arm belt water pump and the right fan
- adjust the tension of drive belts moving the lever arm tensioner upwards; deflection belts should be 10-15 mm in the central part thereof between the pulley and water pump idler pulley with a force of 4 kg;
- tighten the nut mounting bracket, the bracket holding the handle in a staged position to consolidate.

To replace the belt drive water pump and fan to the right rasshplintovat and move toward the radiator fan drive shaft spline and loosen the tensioner pulley.

To tension the belt drive of the left fan needed:

- Open weekends blinds
- disconnect from the longitudinal thrust lever blinds, take out box from the car, loosen bolts, cover the left fan
- adjust the tension of the belt drive fans left, moving the casing with the adjusting screw; deflection of the belt should be 15-22 mm in the central parts of the force between the pulleys 4 kg;
- tighten the cover bolts to the frame of the left fan. When all stock adjustment (tension), provided by oblong holes in the casing, will be used to turn the casing at 180 °. It should be moved to the other side of the tensioning screw and swap the plug and press-fitting of bearings in the hub of the fan. Failure of a belt should be replaced two belts simultaneously.

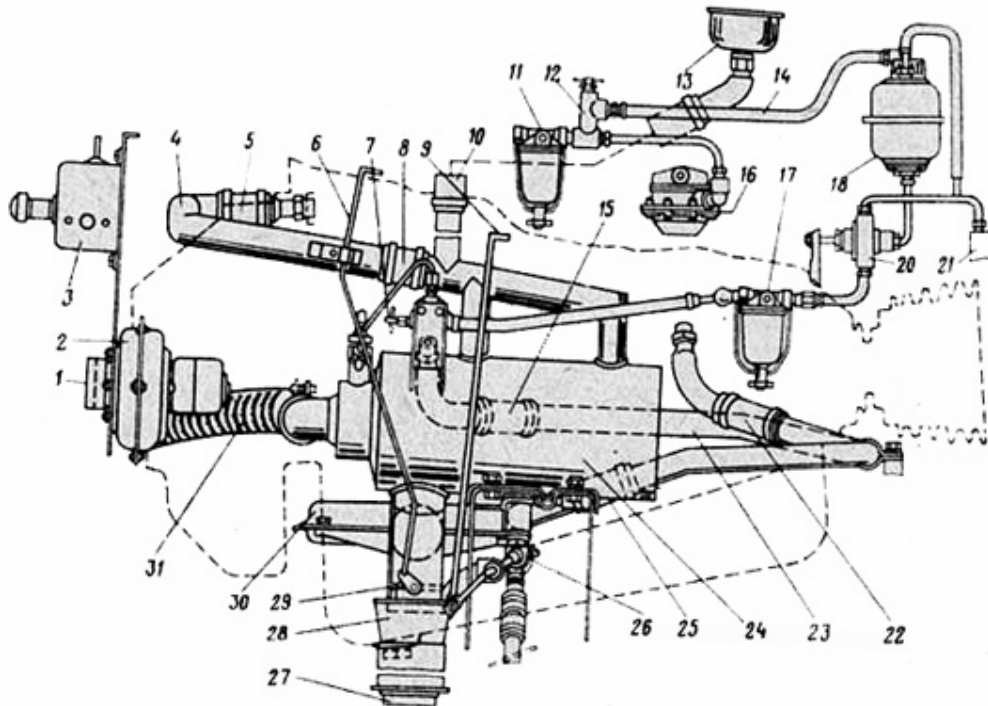
10. Heating System

Appointment

The heating system is designed to raise the temperature of coolant, oil, and major parts of the engine to facilitate starting the engine at low temperatures, as well as to keep it in constant readiness for launch.

On the machine heating system installed single family in which the fluid circulates under the influence of different densities the heated and cooled liquid. The oil in the crankcase sump heater heated gases.

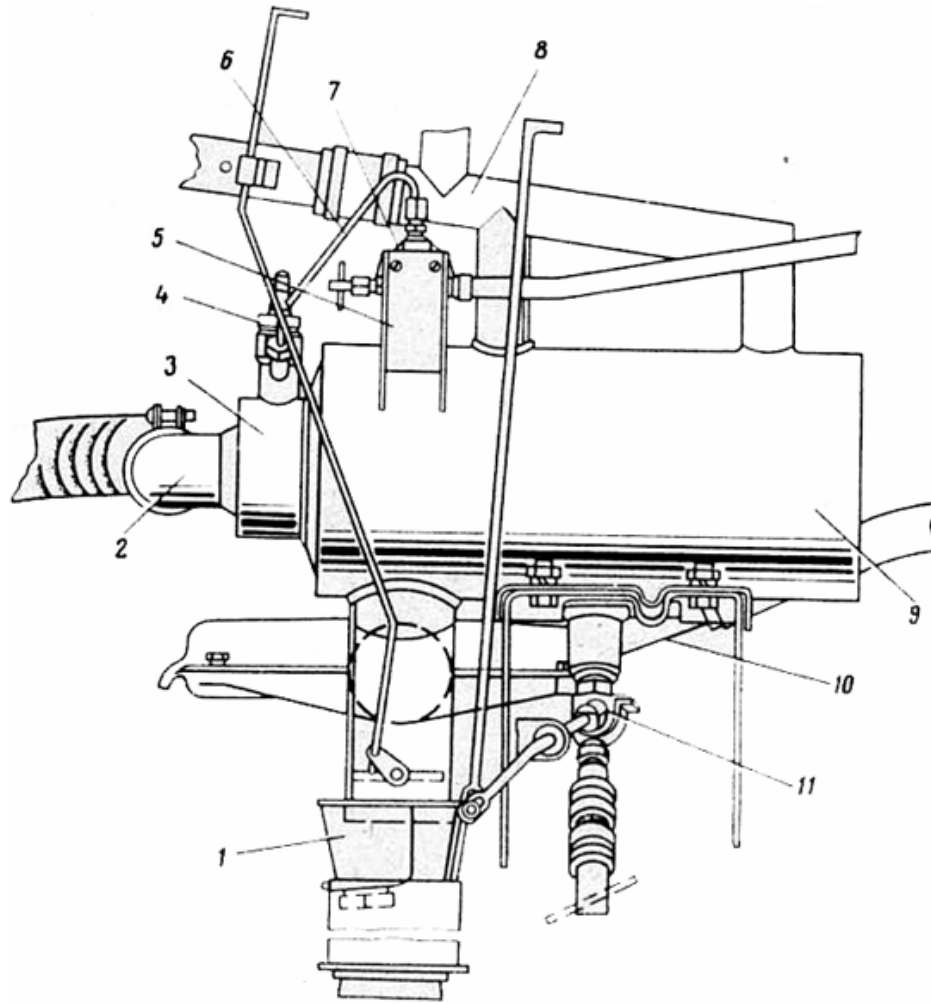
The heating system (Fig. 85) includes 24 boiler heater, water jacket engine, pipelines, gas exhaust pipe 28, fuel and electrical equipment.



In Fig. 85. BRDM-2. The heating system output:
 1 - cap 2 - Fan 3 - remote control, 4 - the feed tube, 5, 8, 10, 14, 15, 19, 22, 25 - Hose, 6 - draft venting valve, 7 - adjusting Needle, 9 - handle lever drain valves, 11 - a fine filter, 12 - shut-off valve, 13 - filling funnel, 16 - fuel pump, 17 - filter, 18 - fuel tank, 20 - threeway valve, 21 - left fuel tank 23 - Abductor tube, 24 - the boiler heater, 26 - the drain valve, 27 - cork bottom, 28 - gas exhaust pipe, 29 - valve venting, 30 - gas exhaust hood; 31 - vozduhopodvodyaschy pipe

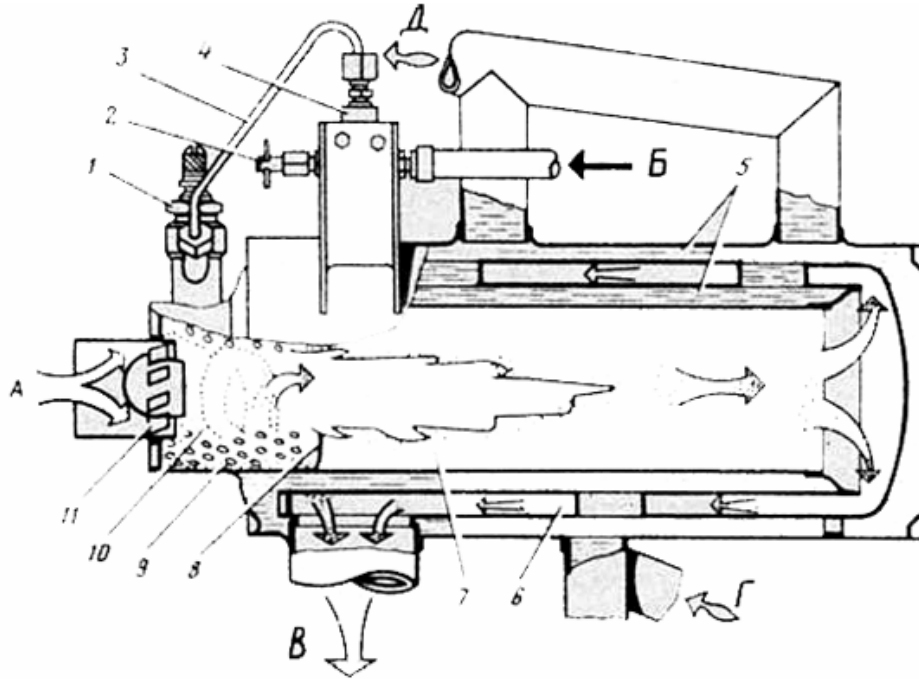
Heater

Heater P-100 is used for heating the coolant in the heating and oil pan crankcase before starting. It consists of a boiler and an air fan.



In *Fig. 86. BRDM-2. Boiler* *heater:*
1 - gas exhaust pipe, 2 - vozduhopodvodyaschy tube, 3 - the combustion chamber, 4 - glow plug, 5
- Bracket 6 - fuel tube, 7 - solenoid valve, 8 - tube to drain hot liquids, 9 - the boiler body; 10 -
tube to drain fluid cold, 11 - drain valve

Boiler heater (Fig. 86) molded, welded sheet steel. It consists of a combustion chamber and four-cylinder, forming two water jacket 5 (Fig. 87), flame tube 7 and the gas duct 6. Water shirts are interconnected slots. For the outer cylinder (shell) boiler heater welded pipes 10 and 8 (Fig. 86) for the supply and removal of fluid, an outlet for removal of gases and the bracket 5.



In Fig. 87. BRDM-2. Boiler start-up heater and the scheme of his work: 1 - glow plug, 2 - adjusting the needle solenoid valve, 3 - fuel, 4 - solenoid valve, 5 - water-shirts, 6 - flue, 7 - flue pipe, 8 - Cone, 9 - asbestos Lining, 10 - combustion chamber, 11 - swirl, A - air supply B - fuel supply; In - outlet gases G - Cold water, D - the hot water outlet

The combustion chamber evaporation-vortex type, has asbestos lining 9 (Fig. 87), held by a grid of the combustion chamber 10, swirler 11, 8, and a diffuser nozzle to install spark plugs and a fuel supply. The fuel in the combustion chamber flows by gravity from the fuel tank heater. Asbestos linings, as heat-insulating material, reduces heat loss.

The fuel coming into contact with hot lining and impregnating her, intensely evaporates with a large surface.

The air in the combustion chamber is pumped by centrifugal veins - тилатором through an axial vane swirler 11. With the swirler airflow attached rotary motion, thus ensuring good mixing of fuel vapor with air. In addition, mixing is improved diffuser 8, which on the one hand, it creates a back pressure in the combustion chamber and on the other - a vacuum in the throat of the diffuser, which speeds up the evaporation of fuel droplets.

The initial ignition of the mixture of fuel and air in the combustion chamber by means of glow plugs, after installing the steady burning glow plug is switched off and the fuel combustion is maintained automatically by the hot gases.

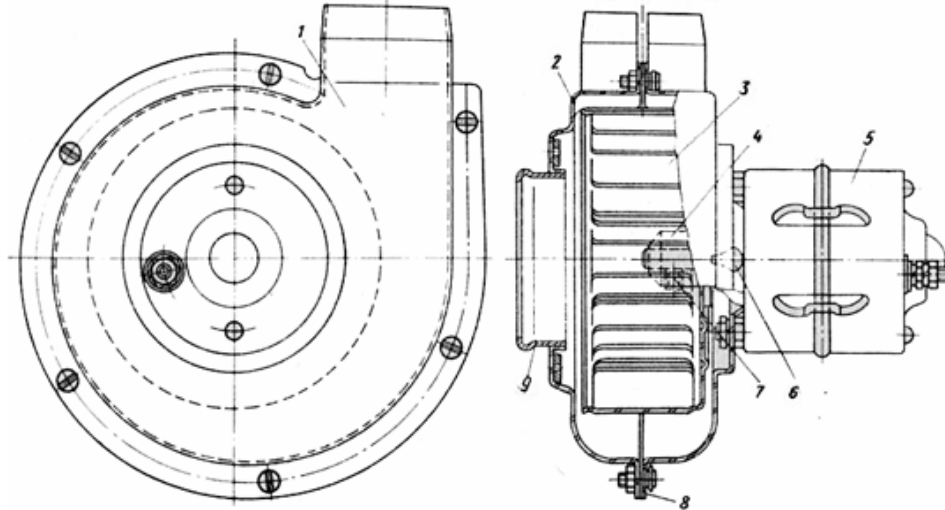
Hot gases from the combustion chamber are held in the flame tube 7, and then after a rotation of 180° are sent to the gas duct 6 to the outlet, heating the liquid in the boiler water jacket heater 5.

Fan Heater

Fan (Fig. 88) of the centrifugal type, is used to supply air under pressure into a combustion chamber heater. It is installed in the power unit and is attached with four screws to the partition of the power pack.

The fan consists of a casing with a lid 2, 3, and fan motor 5. The fan is mounted with two screws to the motor. Between housing and cover a rubber sealing gasket 8. Fan impeller mounted on the rotor shaft of the motor and attached thereto by a nut 4, which lock the screw 7.

When working through the fan impeller suction pipe 9 sucks air from the crew compartment of his car and pumps on the corrugated hose to a combustion chamber heater. At idle suction tube heater fan cover to cover the flap.



In *Fig. 88. BRDM-2. Fan heater:*
1 - the fan, and 2 - the cover of the fan casing 3 - Impeller, 4 - Nut, 5 - electric fan ME-202B, 6 -
buffer: 7 - Screw 8 - Gasket 9 - suction tube

Fuel system for heating equipment

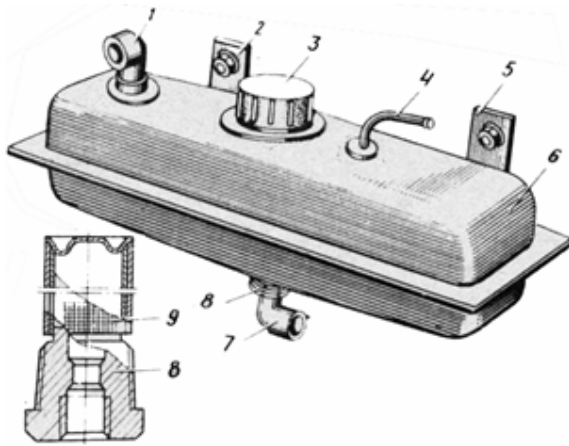
Fuel injection equipment used for cleaning and fuel supply to the heater. It consists of a fuel tank 18 (Fig. 85), filter, fine filter 11, a three-way fuel shut-off 20 and 12 valves, solenoid valve 7 (Fig. 86), and pipelines.

Fuel tank (Fig. 89) serves as a reservoir for the fuel, providing a one-time heating of the heater power plant.

Fuel tank with five brackets bolted to the legs welded to the roof of the power pack.

Housing tank welded from two halves, which are stamped from sheet steel. Go to the top half of the tank filling neck welded, closed with a plug 3, 4 and pipe flange with a threaded socket for a fitting.

To seal the tank at a gas filler cap is installed rubber gasket. By fitting a fuel line attached to fuel tank with fuel fuel pump motor. To tube 4 joins the fuel on which the excess fuel discharged directly into the left fuel tank, and thus prevents the overflow tank when filling the fuel pump. The bottom half of the tank is welded flange into the threaded hole which is screwed into the strainer. By fitting 7 is screwed into the threaded channel of the strainer body, attached fuel tube, through which fuel is supplied from the tank to the three-way fuel cock.



In Fig. 89. BRDM-2. The fuel tank heater:
 1 - fitting for the supply of fuel from the fuel pump motor, 2, 5 - tank mounting brackets, 3 - Tube,
 4 - tube to drain excess fuel, 6 - building a tank: 7 - fitting for removal of fuel from the tank to the
 three-way fuel cock, 8 - building a strainer, 9 - mesh filter

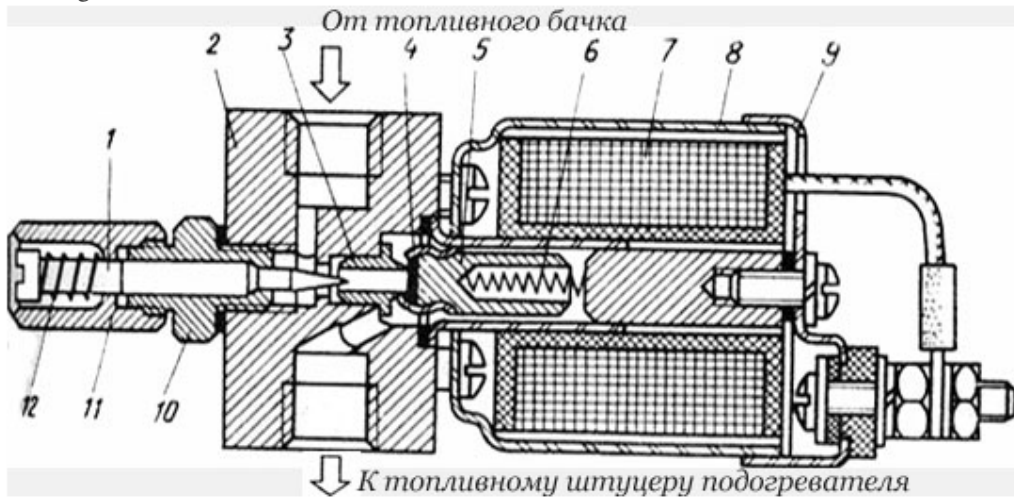
Refuels the tank before starting the heater with the fuel pump motor, or a special device (rubber bulb) transfusion of fuel. After the end of the heater remaining fuel from the tank is discharged into the fuel tank.

The fine filter is used to clean the fuel from the solids before entering it into a combustion chamber heater. He lurches to the clamping bolt Bonk, welded to the vertical sheet of niches left rear wheels of the car.

Filter is constructed and works well as a fine filter output (Fig. 66).

The solenoid valve (Fig. 90) to activate the fuel into the combustion heater. It is fastened with screws to a special bracket heater. The solenoid valve comprises a body 2, the valve spring 5 with 6, 3 saddle valve, adjusting the winding 7 and a needle.

In the valve body has a number of bores through which fuel flows in the open valve of the approach channel to averting. To the valve body with four screws attached housing 8, which set the winding 7.



In Fig. 90. BRDM-2. Diagram of the electromagnetic valve:
 1 - adjusting the needle, 2 - valve body, and 3 - the valve seat 4 - rubber gasket 5 - Valve 6 - valve

spring 7 - winding, 8 - coil casing, 9 - housing cover, 10 - the union adjusting needle, 11 - cap, 12 - Spring

On top of the lid cover 9, which is fastened with screws to the central rod cover. In the central part of the hollow shaft 5 is fitted, which is firmly tightened spring 6 to the saddle 3. In this case, the rubber gasket 4 valve closes the fuel channel of the saddle and the fuel supply is stopped. When you turn on the solenoid valve coil 7 generates an electromagnetic field, which is under the influence of the valve 5, acting as the core of the solenoid coil is drawn into the fuel channel and opens the valve seat.

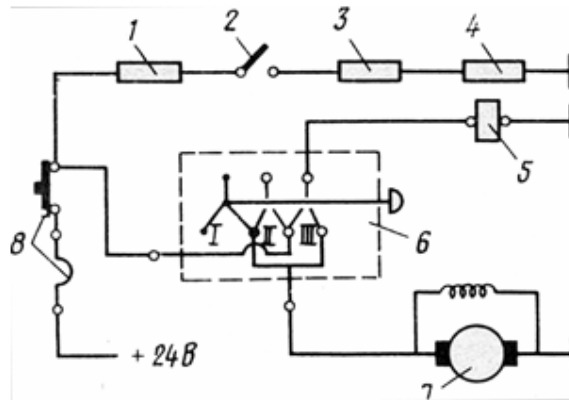
Fuel consumption is controlled by adjusting the needle I at maximum flow, in which there is no flame at the outlet of the boiler heater. When the needle vertyvanii the annular gap between the walls of the fuel channel and the needle seat is reduced and, consequently, decreases fuel consumption. When screwing out the needle orifice in the fuel channel of the saddle increases and increased fuel consumption. Samoovorachivanie needle prevents the spring 12.

Three-way fuel valve 20 (Fig. 85) cork type, installed in the power department on a special bracket that is welded to the recess rear left wheel cars. Tap handle is fixed in three positions: I - shut valve (handle faucet is directed vertically downward); II - the work of the heater (the tap handle is pointing towards the right side of the machine); III - drain fuel from the fuel tank heater in the tank car (handle faucet is directed to the left side of Matica).

Shut-off valve installed before the fine filter and the engine is fuel for the message ma - gistrali engine with a fuel tank heater when refueling.

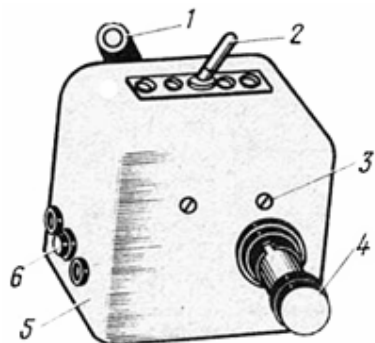
Valve opens only during filling the fuel tank heater with fuel pump motor. Strictly prohibited and start operation of the engine shut-off valve in an open heating system.

Electrical equipment of heating system (Fig. 91) consists of three control (Fig. 85) controls the fan motor 2, four candles (Fig. 86) filament coils of the electromagnetic valve 7 and the ballast resistor. Electric heating systems consumers are fed by direct current from batteries that are included in the on-board network of machines.



In Fig. 91. BRDM-2. The heating system. Scheme of the electrical schematic: 1 - ballast resistor, and 2 - the switch of glow plugs, 3 - the control coil, 4 - glow plug, 5 - a winding of the electromagnetic valve 6 - three-way switch, 7 - fan motor, 8 - thermal fuse

Motor ME-202B 5 (Fig. 88), a DC voltage of 24 V is used to activate the fan heater. The control panel (Figure 92) is used to control heating system units. It is a box mounted on the partition of the power department, in which there are six three-way switch (Fig. 91), switch 2-45M glow plugs, the control coil 3 and the thermal fuse 8.



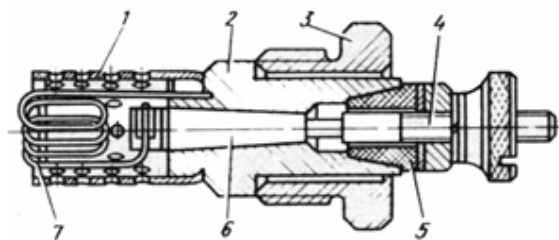
In *Fig. 92. Control panel:*
 1 - eyelet for attaching the console, 2 - switch B-45M, 3 - a slot to monitor the control coil, 4 - handle three-position switch, 5 - body panel 6 - Button thermal fuse

Three-way switch -type P-305 is fixed in one of three positions: Position I - everything is turned off (the handle is pressed against the stop) position II - is on the fan motor (handle pulled out half a turn) position III - includes the fan motor and the solenoid coil (the handle is extended all the way).

The control coil filament connected in series as an additional resistance in the circuit and the glow plug is used for visual observation of the work of the candles, as well as to reduce the voltage applied to the candle. The resistance value of the control coil 0.35 ohms. The intensity of the control coil to light red color, visible through the slot on the front wall of the control panel shows the willingness of the candle to go.

Bimetallic Thermal fuse type np2-B is used to protect electrical equipment against overload and short circuits. With the passage of a bimetallic plate fuse current force of more than 20 A caused damage to electrical circuits, or consumers, the plate heats up and bends, breaking the circuit. After troubleshooting the circuit fuse is activated by briefly pressing the button on the fuse.

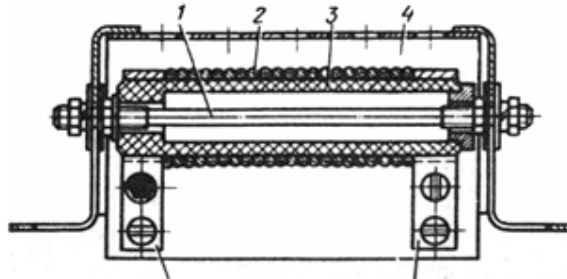
Glow plug type SR-65A (Fig. 93) is used for the initial ignition of the mixture of fuel and air in a combustion chamber heater. It consists of a housing 2, the center electrode 4, 7 spiral bulbs, screen I, insulators 5 and 6 and the nut 3.



In *Fig. 93. BRDM-2. Glow plug CP-65A:*
 1 - Screen 2 - spark plug housing, 3 - nut 4 - the central electrode, 5, 6 - insulators, 7 - glow plug

Go to the center electrode spark welded end of the spiral filament; the other end is welded to the hull. Spiral candles surrounded by a metal screen, which contributes to better fuel ignition. The candle is held by nut socket 3 in the combustion chamber. To seal the hull under the tab candles set a copper gasket. Glow plug is working at a voltage of 4 V and consumes a current of 16 A.

Ballast resistor (Figure 94) serves to reduce the voltage applied to the control coil and the spark plug. It is a special wire coil 2 wound around the insulator 3. The ends of the wire attached to the excretory clamp 5 and 6. Insulator with a central rod and nut attached to the casing 4, which covers the ballast resistor. For cooling in the housing drilled holes. The resistance value of 0.65 BM concertina wire.



In *Fig. 94. BRDM-2. Ballast* *Resistor:*
1 - central stem, 2 - wire helix and 3 - insulator, 4 - housing, 5, 6 - output clamp

The system is heated

Before starting the heater fuel tank to fill 18 (Fig. 85) with fuel, then open the outlet cover and the fan to blow the boiler heater, including a 30-60 with a fan heater 2. After this three-way fuel valve lever 20 to position II (the heater) and insert the candle bulbs. With glowing reference to a spiral of bright red color to include a solenoid valve and a fan heater. In this case, the fuel from the fuel tank heater goes through a three-way fuel valve, a filter 11 fine filter, solenoid valve 7 (Fig. 86) and enters the combustion chamber of the heater, where it mixed with air supplied fan, forms a flammable mixture that ignites a candle bulbs. Once established sustained combustion in the boiler heater, glow plug is switched off.

The hot gases passing through the gas duct heater boiler, heat the liquid in the boiler water jacket and through the gas exhaust pipe 28 (Fig. 85) are sent to the pallet crankcase, heat oil in it and then go outside the car. The circulation of fluid in the system of heating single family. The heated liquid in the boiler with the steam rises to the top of the boiler water jacket heater and then through the tube 4 is directed to a water jacket cylinder engine. Going through the internal cavities shirts blocks and heads units, liquid and vapor heat engine parts. By heating the engine parts, the liquid is cooled and the branch pipe 10 (Fig. 86) is sent to the boiler heater for heating. In addition to the hot liquid is heated by the engine air compressor motor.

After warming up the engine off solenoid valve and the boiler is blown. The balance of the fuel discharged from the fuel tank heater in the tank car.

Maintenance of heating system

At the control examination before going to check whether there is a leak of coolant and fuel through the connection piping, hoses and taps. If necessary, tighten the fasteners.

- With daily maintenance check:**
- Is there a leak of coolant and fuel through the connection piping, hoses and taps heating system, if necessary, tighten the mounting;
 - tightening of cables lugs on the findings of electrical heating systems.

During maintenance, number 1, 2, and a 6000 km run to perform the daily maintenance work and further check the tightness of bolts and nuts of the boiler heater, fuel tank, gas exhaust nozzle and fan heater.

REF: <http://ak-inzt.net/tech-opis-brdm-2-part9#88>