

## Section VIII BODY

### TROUBLE SHOOTING

Cont'd

Cause	Remedy
<u>Dark Stains Over Entire Body Surface</u>	
1. Car washed with very hot water (over 80 °C)	1. Eliminate minor defects by polishing; repaint body, if heavily damaged
2. Ethylated gasoline and other paint-attacking materials used for removing protective wax coating	2. Polish body or repaint it, if necessary
<u>Pink Stains on Light-Coloured Surfaces</u>	
Coolant spilt on body surfaces	Polish damaged surfaces
<u>Light Stains on Dark-Coloured Surfaces</u>	
Effect of moisture during prolonged storage of car under airtight covers	Polish damaged surfaces or repaint car body, if necessary
<u>Enamel Paint Lost Initial Lustre</u>	
1. Wiping of car with dry rags	1. Polish dull surfaces, repaint body, if necessary
2. Prolonged exposure to sunlight	2. Polish, repaint body, if necessary
3. Employment of paint-attacking materials for washing	3. Polish dull surfaces, repaint body, if necessary
<u>Water Penetrates into Car Body</u>	
1. Clogging of water drain holes in windshield sealing strip	1. Remove windshield, clear up holes or replace sealing strip. When installing sealing strip, align its holes with holes in body

Cause	Remedy
2. Poor tightness of antenna cable seal	2. Replace seal or coat it with nondrying sealing compound
3. Excessively large clearance around door perimeter	3. Adjust position of door and of lock striker plate
4. Crushed metal framework of door sealing strip	4. Replace sealing strip
5. Vacuum booster hose locks valve for draining water from heater air intake box	5. Set vacuum booster hose correctly
<u>Door Opens with Difficulty</u>	
1. Bending of door lock striker plate block axle	1. Replace axle
2. Wear of striker plate block	2. Replace block
3. Wrong door position	3. Adjust door position
<u>Door Lock Cannot be Locked by Button or with Key</u>	
Upper end of outer remote control lever bears against outer handle shoulder	Bend off upper end of lever from handle shoulder to set a clearance of 0.5-2 mm between them
<u>Door Fails to be Opened by Outer Handle</u>	
Excessively large clearance between door outer handle shoulder and upper end of outer lock control lever	Bend upper end of lever to handle shoulder to set a clearance of 0.5 - 2 mm

Cause	Remedy
<u>Door Fails to be Locked</u>	
1. Breaking or weakening of lock central shaft spring or of outer control lever	1. Replace lock
2. Loose staking of outer control lever shaft. Lever tooth fails to engage ratchet due to axial displacement of lever	2. Remove lock and stake axle reliably
3. Outer control lever jamming due to gumming of lubricant and dust	3. Remove lock, wash and lubricate it

Inner Handle Fails to Open Door Completely

Incomplete travel of inner control lever due to insufficient travel of link	Adjust position of inner lock handle
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Hood Lock Cannot be Opened by Handle from Inside the Car

1. Breaking of lock control cable	1. Replace cable
2. Lock control cable too long	2. Adjust cable length by its fastening loop on lock hook

Hood Fails to be Locked

1. Lock spring broken	1. Replace spring
2. Lock control cable too short	2. Adjust cable length by its fastening loop on lock hook
3. Lock displaced on car body	3. Adjust position of lock

Roll-Down Window Glass Cannot be Fixed in Desired Position

Window regulator spring brake broken	Replace window regulator
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Cause	Remedy
<u>On Pulling Rake-Adjusting Handle, Front Seat Back Fails to Return from Reclined Position</u>	
Breaking of mechanism spring	Replace spring, check functioning of mechanism

Front Seat Back Fails to be Fixed in Desired Position

Breaking of back retainer teeth	Replace seat framework
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Difficult Adjustment of Front Seat Position

1. Slides jammed in rail guides due to lack of lubricant	1. Lubricate slides and guides
2. Balls slip out of seat rails over bent edges of slides and guides	2. Disassemble seat rails, insert balls, assemble mechanism and bend guide and slide edges as required. Replace seat rails, if necessary

Hot Air Constantly Supplied into Car Interior

1. Heater cock control mechanism faulty	1. Examine control mechanism, fasten rod casing and replace rod, if necessary
2. Heater cock fails to shut off coolant flow	2. Replace cock

Only Cold Air Supplied into Car Interior

1. Heater cock fails to open due to breaking of cock controls	1. Examine control mechanism, fasten rod casing, replace rod, if necessary
2. Cock faulty	2. Replace cock

Insufficient Air Supply into Body Interior

Faulty control linkage of air intake lid (lid closed)	Examine control linkage, fasten rod casing, replace rod, if necessary
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BODY AND ITS ELEMENTS

The design of the body shell and sheet metal parts is shown in Figs 8-1, 8-2, 8-3.

GAUGING AND STRAIGHTENING

A considerable part of body repairs falls to the cars after collisions which in most cases have to be checked for the geometry of the fastening points of the chassis units and mechanisms (Fig. 8-4).

The equipment designed for checking the datum points is also used for repairs in combination with the fixtures for straightening the body.

Distorted surfaces are repaired by mechanical or thermal treatment of metal and by filling the dents with quick-hardening plastics or solders.

Distorted surfaces are straightened, as a rule, manually with the aid of special tools (metal, plastic and wooden hammers, mallets and various mandrels) and fixtures.

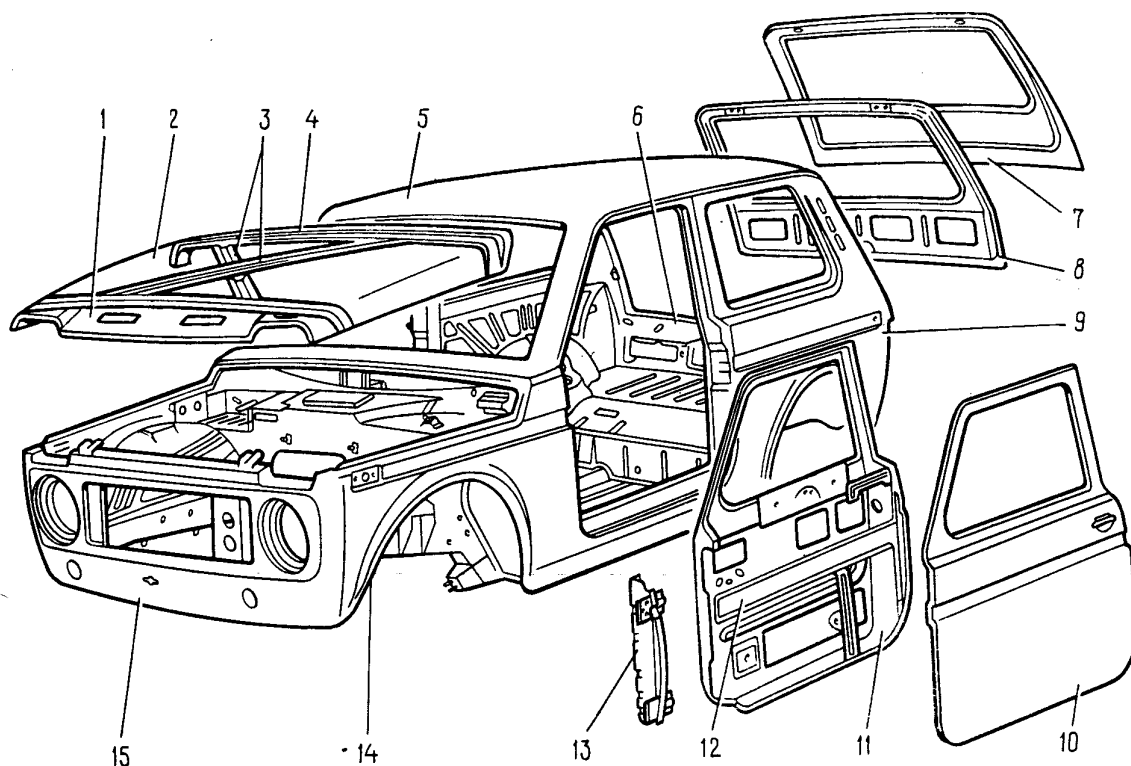


Fig. 8-1. Body:

1 - hood front reinforcement; 2 - hood panel;  
3 - hood diagonal reinforcements; 4 - hood rear reinforcement; 5 - roof panel; 6 - body rear panel;  
7 - tailgate outer panel; 8 - tailgate inner panel;

9 - body side; 10 - front door outer panel;  
11 - front door inner panel; 12 - door rail;  
13 - front door extension; 14 - front fender;  
15 - radiator grille panel

Hot straightening is resorted to for contracting heavily stretched surfaces of panels. To rule out sharp bulging and deterioration of mechanical properties, the panels are heated to cherry red colour (600-650 °C).

The heated spot should not be larger than 20 mm in diameter.

Contract the surface as follows:

- heat metal with a gas burner from the periphery to the centre of the defective spot and flatten the heated surfaces with a wooden maul and hammer on a flat backing or anvil;

- repeat the heating and upsetting operations until the panel surface becomes smooth.

Surface irregularities on the panels can be smoothed out with polyester putties, thermoplastic, cold-setting epoxy cements and solders.

The polyester putties stick reliably to the panels dressed to bright metal. These are bi-component materials: unsaturated polyester resin and a curing agent serving as a catalyst for rapid hardening of the mixture, irrespective of the thickness of the putty layer. The drying time is 15-20 minutes at 20 °C. Therefore, there is no necessity in applying several layers of putty and thus the time of its application is reduced.

Corroded surfaces of the body panels can be repaired with cold-setting epoxy cements which feature good adhesion, sufficient strength and are easy to apply to the damaged spots.

The sealing cements are composed of curing agents, plasticizers (to improve plasticity of resin and impact strength of the hardened epoxy compound), fillers (to diminish shrinkage of resin and to bring nearer the coefficients of thermal expansion of resin and metal).

Solders HOCCy-18 and HOCCy-20 are used to straighten the spots already filled with solder, to build up the edges of parts and to fill up clearances. To prevent corrosion it is better to use the acid-free method of solder application.

Heavily distorted panels should be replaced by new ones installed with the use of resistance welding and gas-shielded arc welding.

#### REPLACEMENT OF FRONT FENDER

If the fender is slightly damaged (shallow dents, scratches, etc.), straighten it out directly on the car and have it painted. After straightening check the condition of the inner anticorrosion coating and restore it, if necessary.

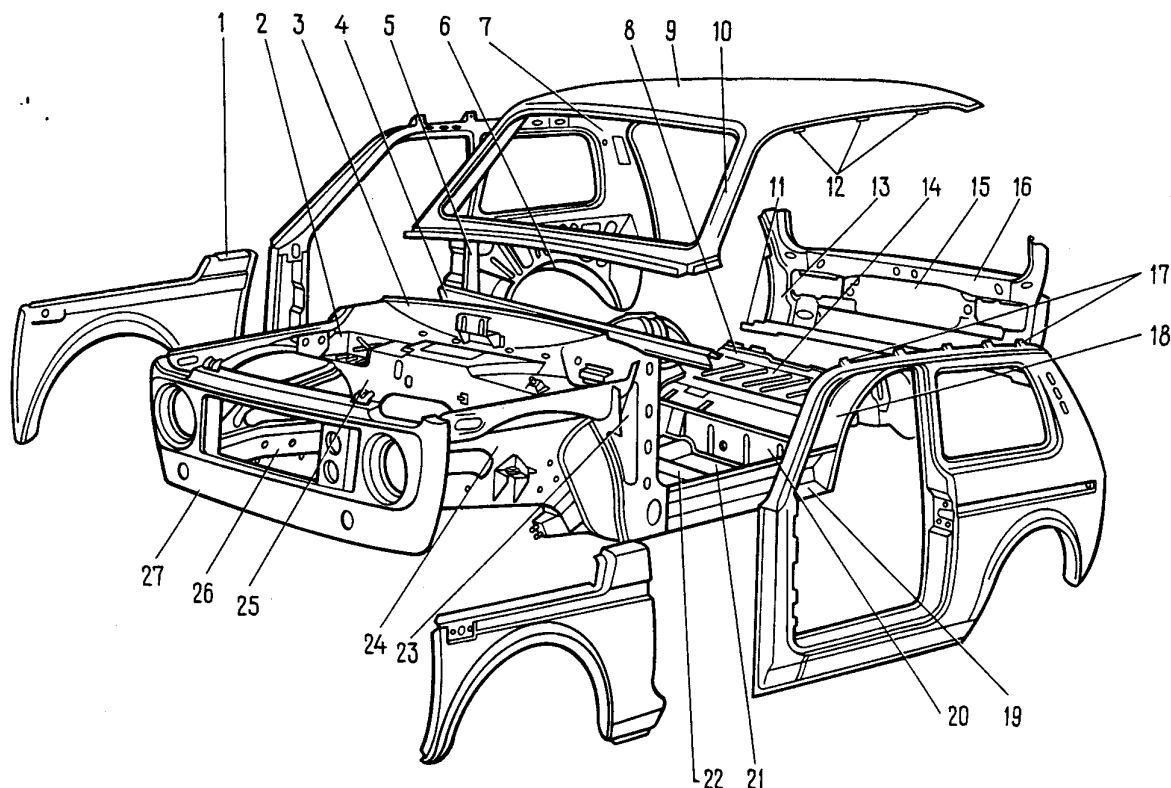


Fig. 8-2. Body Parts:

1 - front fender; 2 - storage battery pan;  
 3 - dash panel upper reinforcement; 4 - instrument  
 panel crossmember; 5 - central pillar; 6 - rear  
 wheel outer arch; 7 - body side inner panel;  
 8 - floor rear crossmember; 9 - roof panel;  
 10 - windshield frame; 11 - wheel splashguard brac-  
 ket; 12 - roof reinforcements; 13 - rear puller;

14 - floor rear panel; 15 - body rear panel;  
 16 - body rear upper crossmember; 17 - roof lining  
 bow brackets; 18 - rear wheel inner arch; 19 - fl  
 and body side connector; 20 - floor crossmember  
 under rear seat; 21 - floor front panel; 22 - flo  
 crossmember under front seat; 23 - body front sid  
 panel; 24 - front fender mudguard; 25 - dash pane  
 26 - front sidemember; 27 - radiator grille panel

In case of serious distortions and fractures,  
 replace the fender.

Remove the bumper, hood and front door.

Using a sharp chisel or a grinder, cut off  
 the fender along the lines shown in Fig. 8-5.

Detach the fender, remove the remaining metal  
 strips, straighten out the distorted edges and  
 dress them with an electric or pneumatic grinder.

Install the front door and a new fender and  
 fasten it with quick-fix clamps.

Gas-weld the fender at the points shown by  
 arrows in the Figure. Use solder bars  $\text{M62}$ ,  $\text{M63}$  of  
 2-3 mm diameter as a filler material.

Install the hood and check the position of the  
 fender. It must protrude or sink relative to the  
 door or hood not in excess of 2 mm; the gaps  
 between the fender and the hood and door over the  
 face surface should not exceed  $(5 \pm 2)$  mm.

Remove the hood and the door.

Weld the fender, using resistance welding with  
 a pitch of 40-50 mm, to the front pillar, mudguard  
 and dash panel. It is also permissible to use gas

Fig. 8-4. Chassis Mounting Points:

0 - datum lines; 1 - steering mechanism centre;  
 2 - axis of brake and clutch pedals; 3 - steerin  
 wheel shaft axis; 4 - rear suspension shock abso  
 ber fastening points; 5 - rear wheel axis; 6 - ma  
 muffler front pipe fastening points; 7 - main mu  
 fler rear fastening points; 8 - radiator lower  
 fastening points; 9 - radiator upper fastening  
 points; 10 - front suspension crossmember fasten  
 ing points; 11 - differential centre; 12 - wheel  
 centre; 13 - sway eliminator fastening points;  
 14 - engine unit rear mount fastening points;  
 15 - transfer case fastening points; 16 - hand  
 brake fastening points; 17 - longitudinal radius  
 rods front fastening points; 18 - longitudinal  
 radius rods rear fastening points; 19 - rear sho  
 absorbers fastening points; 20 - transverse radi  
 rod fastening points; 21 - main muffler front fa  
 stening points; 22 - main muffler tail pipe fast  
 ing points;

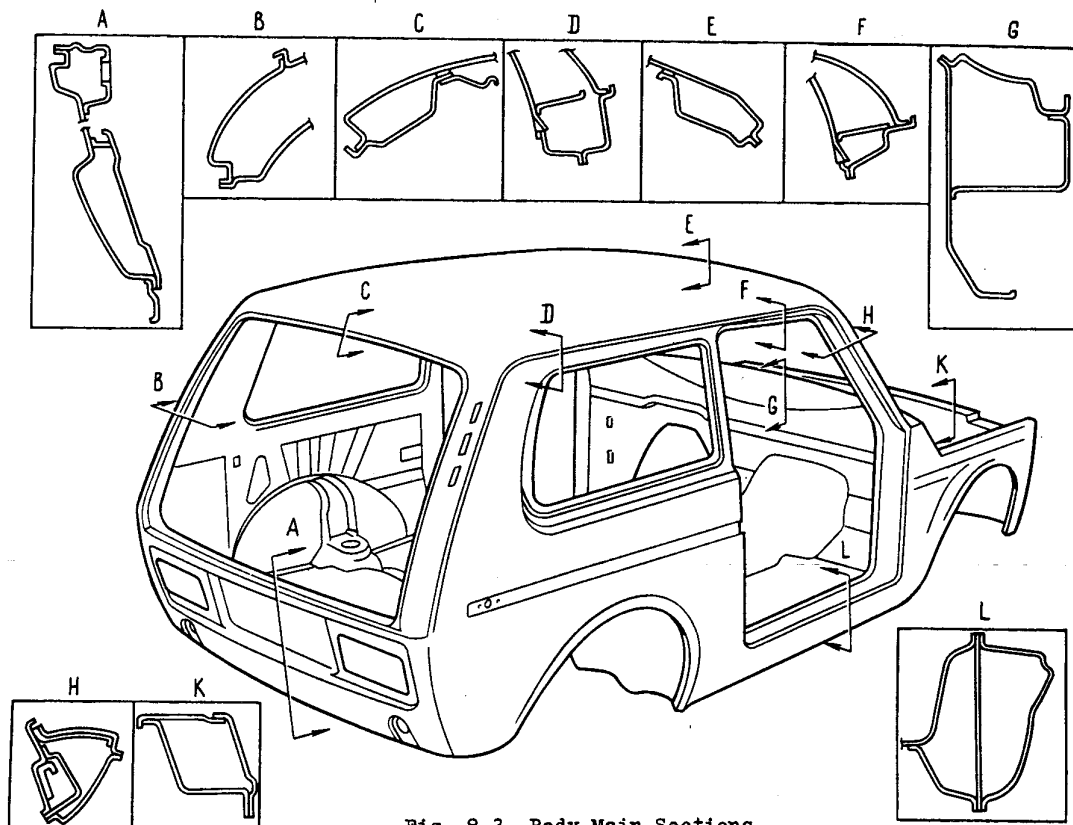
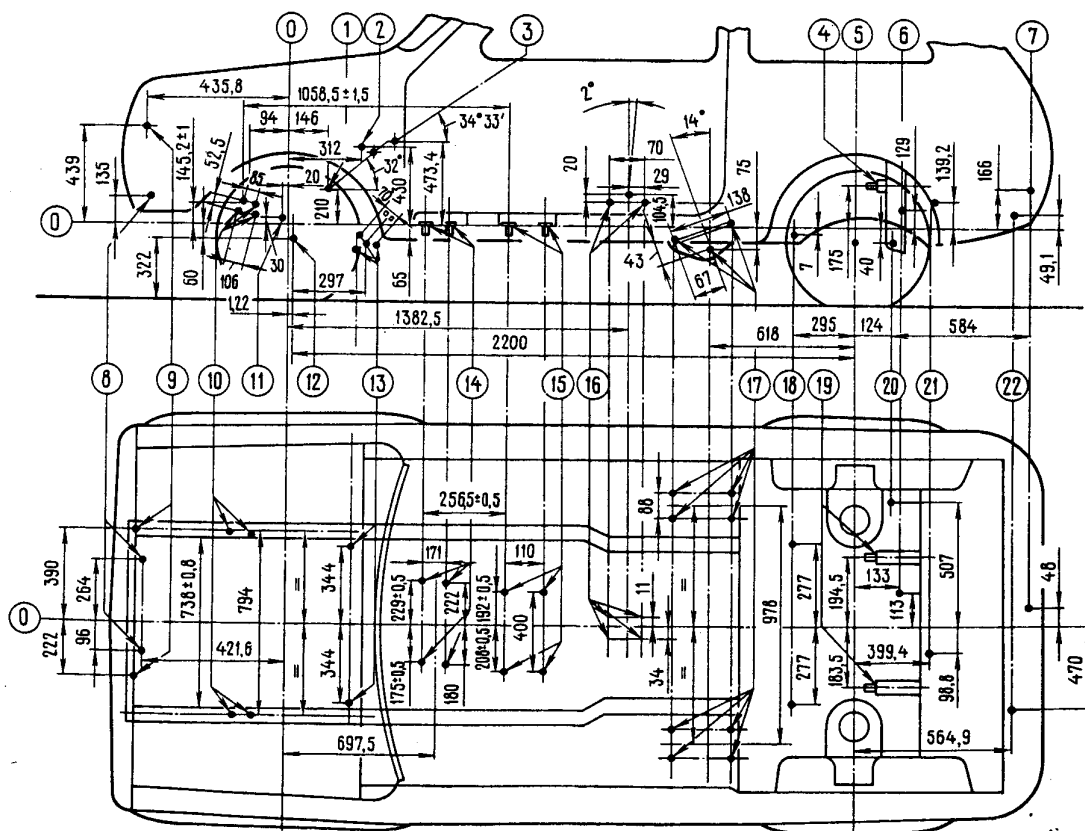


Fig. 8-3. Body Main Sections



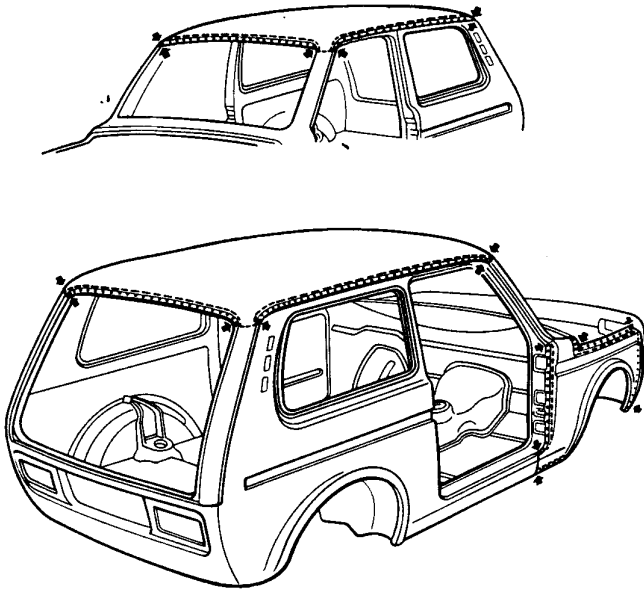


Fig. 8-5. Front Fender and Roof Panel Welding Lines. Dots show resistance welding seams. Arrows show gas-tacking points

welding with brass solder or carbon-dioxide shielded arc welding with intermittent 10 mm welds applied every 50-60 mm. Weld the fender with semiautomatic arc welders using welding wire CB.08 PIC or CB.08 P20, 0.8 mm in diameter.

Gas-weld the fender to the body front panel with intermittent welds by flashing off the edges.

#### REPLACEMENT OF ROOF

As a rule the roof of a crashed car has to be replaced.

Remove the tailgate, drip channel mouldings, windshield, roof lining and accessories.

Place a new roof panel on the body and determine the points where the pillars and roof side panels have to be cut.

Cut off the roof panel along the lines shown in Fig. 8-5.

Detach the roof panel, remove the remaining panel strips and straighten the distorted surfaces.

Remove the paint and prime-coat to bring metal on the edges of the roof panel, windshield frame, body side panels, roof side panels and reinforcements to be welded.

Replace gaskets on the roof reinforcements.

Install the roof panel, fasten it with quick-fix clamps and gas-tack the panel at points shown by arrows in Fig. 8-5.

Weld the roof panel by resistance welding at a pitch of 40-50 mm or by gas welding at points spaced 50-60 mm through the previously drilled holes of 5-6 mm diameter. To rule out distortion of parts, work from the middle of the weld to the right and left.

Dress the welds with an electric or pneumatic grinder.

#### BODY PAINT COATING

##### POLISHING

To preserve the paint coating of the body and provide its attractive appearance for a long period use the polishing compounds which suit the condition of the paint coating and strictly follow the instructions for their use.

During the first 2 - 3 months of service wash the body with cold water. To treat a new coating (of a car up to 3 years in service) use non-abrasive polishes recommended for new coatings.

In the period of 3 to 5 years of service use autopolishes for weather-beaten coatings containing a little amount of abrasives; after 5 years of intensive service use autopolishes for old coatings.

To prevent drying of the polish on the coating, apply it to small areas of the body and polish with a piece of clean flannel cloth by hand.

To eliminate minor defects of the paint coating use polishing pastes BAZ-1, BAZ-2 and a polishing compound BAZ-03. Polishing can be done manually or mechanically, using flannel-cloth or beaver-lamb wheels.

Take care to mix the polishing paste before the application; if it becomes thick, dilute it with water. After polishing wipe the surfaces with clean flannel cloth.

##### REPAINTING WITH SYNTHETIC ENAMELS

Wash the body with water and remove the old flaking paint from the defective surfaces with a putty knife or a brush.

Wet-rub the surfaces to be painted using grinding cloth 55C 4-II. If the coating is thin and bears no mechanical defects dress the surface to the epoxy primer layer applied at the autoplant. If the surfaces are seriously corroded or the body has previously been painted with nitrocellulose enamel, dress it down to bare metal.

Wash the body with water, airblast it and leave to dry.

Degrease the surfaces to be painted with white spirit or BP-1 gasoline-solvent and apply "plastisol (ПЛАСТИЗОЛЬ) Д-4 А" sealant to the welds and joints. Remove surplus sealant with rags soaked in white spirit.

The surfaces not to be painted should be masked with thick paper and adhesive tape.

Using a spray gun apply primer PQ-073 to the surfaces dressed down to bright metal and let it dry for 5 min.

The viscosity of the primer should be 22-24 s at 20 °C, as read by viscometer B3-4. Dilute the primer with xylene.

Using a paint spray gun apply epoxy primer 3Q-083 to the surfaces coated with primer PQ-073 and to the replaced body parts and dry them at 90 °C for 60 minutes. Before applying primer 3Q-083, mix it with 5-7 % of drier HQ-1 (by weight). The primer with catalyst is fit for use in the course of 7 h. The primer viscosity should be 23-25 s at 20 °C, as read by viscometer B3-4. The primer can be diluted with solvent P3-11B or xylene.

Cool down the body, wet-rub it with abrasive c a 55C 4-II, wash with water, airblast and leave to dry.

Fill, if necessary, the rough surfaces with putty MC-00-6, applying a layer not thicker than 0.3 mm. If the putty is found to be thickened, dilute it with xylene to the required condition.

Dry the body for 30 min at 18-20 °C. Flatten the surface again with emery cloth 55C 4-II, wash the body, airblast it and leave to dry.

Mask the not-to-be painted surfaces of the body with thick paper and adhesive tape and place it into the painting chamber.

Degrease the surfaces to be painted with white spirit.

Open the doors, hood and trunk lid and apply two layers of enamel MJ-197 from a spray gun, to the internal painted surfaces of the car interior,

door shuts, door edges, engine compartment and trunk, making an interval of 7-10 minutes between successive applications.

Apply three layers of MJ-197 enamel to the external surfaces of the body, making 7-10 minute intervals between successive applications.

Dry the paint coating at 90 °C in the course of 60 min and cool it down under natural conditions.

Before using the enamel mix it with 4-5 % of catalyst DJY-70 or 10 % solution of maleic anhydride in cellulose acetate. The enamel viscosity should be 20 s as read by viscometer B3-4. Dilute the enamel with solvent P-197 followed by filtering it through screen No.015K.

If the old paint should be removed, use paint remover CII-7. Apply the remover with a brush 2-3 times depending on the thickness of the old paint and primer. The old coating will soften in 30-40 min after which it can be scraped off with a brush or a putty knife.

Wipe the surface with white spirit to take off the remaining paint remover, wash with water abundantly and dry the body.

#### PAINTING OF SEPARATE PARTS

After the replacement of separate parts (fender, door, hood, etc.), as well as after straightening the distorted parts, paint the part in question over the entire external surface.

Before painting the newly installed parts, coat them all over with epoxy primer 3Q-083.

The preparation for painting and for the application of enamel paint should go along the same lines as when repainting the car body.

#### ANTICORROSIVE TREATMENT OF BODY

The elements most likely to be attacked by corrosion include the load-bearing hollow spaces of the body, bottom, lower parts of the doors and pillars, as well as the joints of body parts including the spot-welded seams.

Corrosion is apt to spread intensively in the boxed spaces and lower parts of the body when they get in contact with moisture, dirt, salts and acids.

This calls for an additional protection of the internal surfaces and boxed spaces of the body by applying special anticorrosive compounds and by filling the joints with sealants.

The materials used for anticorrosive treatment are given in Table 8-1.

The autpreservative Movil is recommended for treating the boxed spaces. A good practice is to treat them every 1 - 1.5 years. This autpreservative may be used for application to the surfaces previously coated with nigrol and other oils and to

the rusty surfaces. The required amount of Movil is 3 kg per car.

The protective lubricant HFM-MJ is used for treating the boxed spaces. All new cars are treated with this lubricant.

The protective film coating HP-2I6E is applied to the car parts under the body.

The soundproofing bituminous sealant BNM-1 is used for anticorrosive protection of the body underside and for reducing the noise caused by vibration. The sealant is applied by spraying or by hand in a layer 1.5-2 mm thick.

Plastisol D-11A protects the body underside against corrosion, abrasive wear and ensures soundproofing. The thickness of coating is 1 - 1.5 mm. At room temperature the best adhesion is achieved to primers 3Q-083, QM-093 and BK4-0207.

Plastisol D-4A is used for sealing the welded joints on the external zones of the body.

## Materials for Anticorrosive Treatment of Car Body

Name	Grade	Viscosity, at 20 °C, read by viscometer BB-4, s	Name of thinner or solvent	Drying conditions	
				tempera- ture, °C	time, min
1. Sill preservative	Movil	15-40	White spirit, gasoline	20	20-30
2. Non-drying protective lubricant	HTM-MJ	45	White spirit	20	15
3. Protective film coating	HT-2I6B	18-22	White spirit, gasoline	20	20
4. Soundproofing sealant	БПМ-1	High- viscosity	Xylene, solvent	100-110 (or 24 h at 18-20 °C)	30
5. PVC plastic material	Plastisol Д-11А	Ditto	-	130	30
6. PVC plastic material	Д-4А	Ditto	-	130	30
7. Non-drying sealant	51-П-7	Ditto	-	-	-

The non-drying sealant 51-П-7 seals the body joints.

The internal spaces are coated with anticorrosive materials by air or airless spraying.

Air spraying with compressed air at a pressure of 0.3 - 0.4 MPa is carried out with a spray gun and a reservoir, hoses and spray gun extension nozzles. The best coating is achieved by airless spraying under a pressure up to 16 MPa which makes it possible to spray highly viscous materials.

#### PREPARATION AND ANTICORROSIVE TREATMENT OF BOXED SPACES

Inasmuch as treatment of boxed spaces calls for the use of sophisticated technological equipment and for high quality of work, this treatment should be performed only at service stations.

The procedure is as follows:

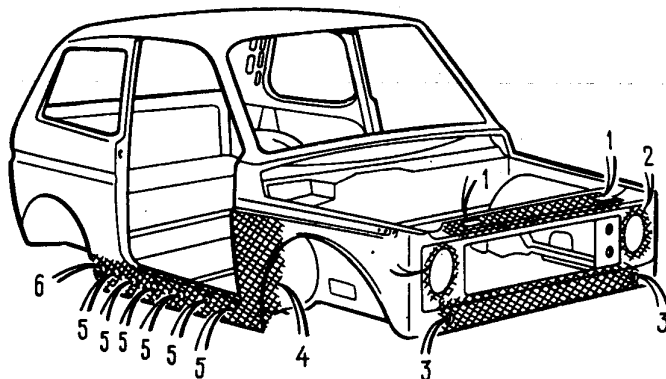


Fig. 8-6. Boxed Spaces (Body Front View):

1 - body front upper crossmember; 2 - headlight housings; 3 - body front lower crossmember; 4 - under front fender; 5 - outer sill; 6 - inner sill

1. Place the car on a lift, remove the parts and upholstery that interfere with access to the boxed spaces.

2. Wash the boxed spaces (Table 8-2), body underside and wheel arches with water at 40-50 °C through auxiliary and drain holes until the water flowing out becomes clean. The vent glasses should be closed and drop windows lifted up all the way.

3. Remove any moisture that could have penetrated into the body and trunk, airblast all the boxed spaces and the surfaces to which the anticorrosive compounds will be applied.

4. Drive the car to the anticorrosion-treatment chamber and put it on a lift. Spray the anticorrosive compound onto the surfaces shown in Figs 8-6, 8-7 and 8-8. The treatment should be performed at a temperature not below 15 °C.

5. Lower the car from the lift and clean the external surfaces of the body with rags soaked in white spirit.

#### RESTORATION OF ANTICORROSIVE AND SOUNDPROOFING COATINGS OF BODY UNDERSIDE AND WHEEL ARCHES

In the course of service, the coatings on the body bottom suffer from gravel, sand, salt and moisture. As a result the sealant and primer are damaged and abraded. The bare metal is attacked by corrosion.

With a view to soundproofing and anticorrosive treatment, the lower part of the body base and sidemembers are protected at the autoplant with a layer of PVC plastic Plastisol Д-11А, 1 - 1.5 mm thick, on top of epoxy primer 3С-083.

If the bottom coating is damaged but the layer of primer remains intact, clean the damaged surfaces of dirt, degrease them with waste cloth wetted with white spirit and apply a 1.5 mm layer



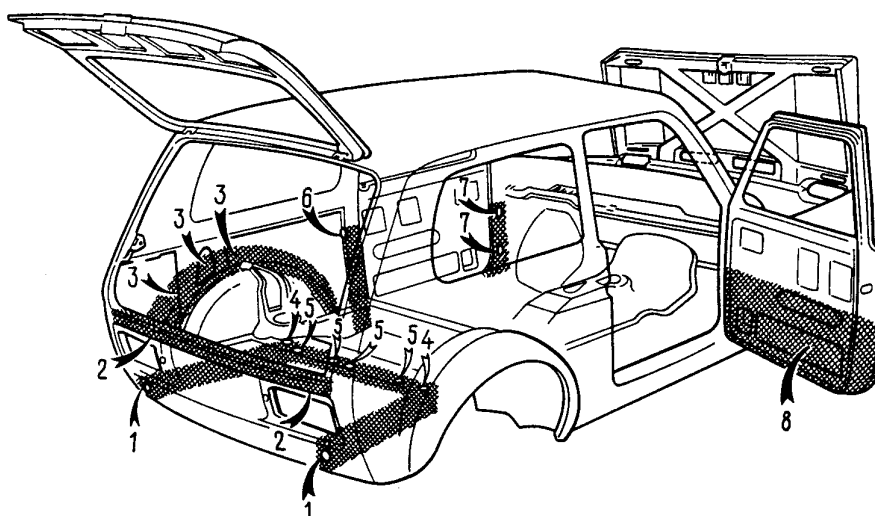


Fig. 8-7. Boxed Spaces (Body Rear View):

1 - rear sidemembers; 2 - rear upper crossmember (in slot with tail lights removed); 3 - between

rear wheel arches and body sides; 4 - rear sidemembers; 5 - rear floor crossmember; 6 - door rear pillars; 7 - door front pillars; 8 - door pocket

Boxed Spaces Treated with Anticorrosive Compounds

Table 8-2

Name of space	Where injected	Direction of injection	Additional instructions
1. Body front upper crossmember	Through two upper holes	Right and left	Open engine hood
2. Headlight housings	In front (from outside)	All over	Remove headlights
3. Body front lower crossmember	Through two holes for installation of bumper	Right and left	Remove front bumper
4. Under front fenders	Through opening closed with shield	All over	Remove sealing shield
5. Door outer sills	Through six side holes	Forward and back	Remove mouldings and fasteners
6. Door inner sills	Through rear hole in sill end	Along sill	
7. Front sidemembers	Through bumper installation holes	Along sidemember	Remove front bumper
8. Front sidemember connectors	Through holes on body underside	Right and left	Put car on lift
9. Middle and rear sidemembers	Through seven holes in body underside	Forward and back	Put car on lift
10. Middle sidemember connectors	Through holes in body underside	Right and left	Put car on lift
11. Rear floor crossmember	Through holes in trunk and body underside	Right and left	Remove trunk lining
12. Body rear lower crossmember	Through two holes in body underside	Right and left	Put car on lift
13. Body rear upper crossmember	Through openings under tail lights	Right and upward, left	Remove tail lights
14. Between rear wheel arches and body sides	Into openings in trunk	All over	Remove trunk lining
15. Door rear pillars	Through hole behind pillar	Downward	Remove lining
16. Door front pillars	Through two holes from interior side	Downward	Remove lining
17. Door pockets	Through openings in door inner panel	All over internal surface	Remove door trim panels

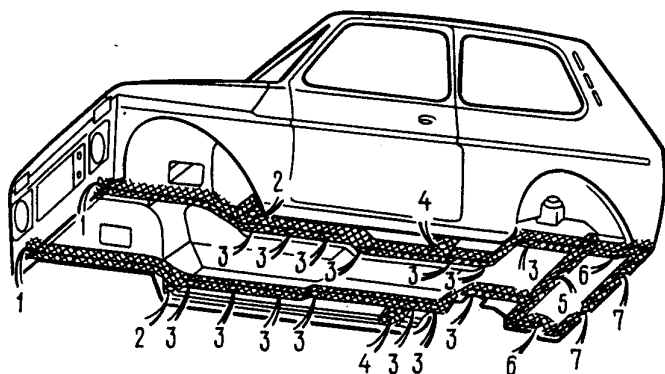


Fig. 8-8. Boxed Spaces (Body Bottom View):

1 - front sidemembers; 2 - front sidemember connectors; 3 - middle sidemembers; 4 - middle sidemember connectors; 5 - rear floor crossmembers; 6 - rear sidemembers; 7 - body rear lower crossmember

of sealant БПМ-1 to the dry surface. Let the coating dry under natural conditions for 24 h, or dry it for 30 min at 90 °C.

If the coating layer and even the primer are damaged, clean the affected spots from dirt and rust to metal, degrease them, let dry and apply ПҚ-073 primer to the surface with subsequent application of sealant БПМ-1 to the prime-coated surfaces. Use a brush for this purpose.

If the car has been operated for a period not exceeding 1.5 years see to it that the new layer of the sealant overlaps the old one to a minimum. After a longer service apply the sealant all over the bottom and wheel arches.

Clean the paint coating of the body from sealant stains with waste cloth wetted with white spirit.

In cold season keep the sealant before application in a warm room at a temperature not below 20 °C. If the sealant gets thick, dilute it with up to 3 % of xylene.

Clean the paint coating of the body from stains of sealant with waste cloth wetted with white spirit. Dry the sealant at a temperature of 100 - 110 °C for 30 min or for not less than 24 h at 18 - 20 °C.

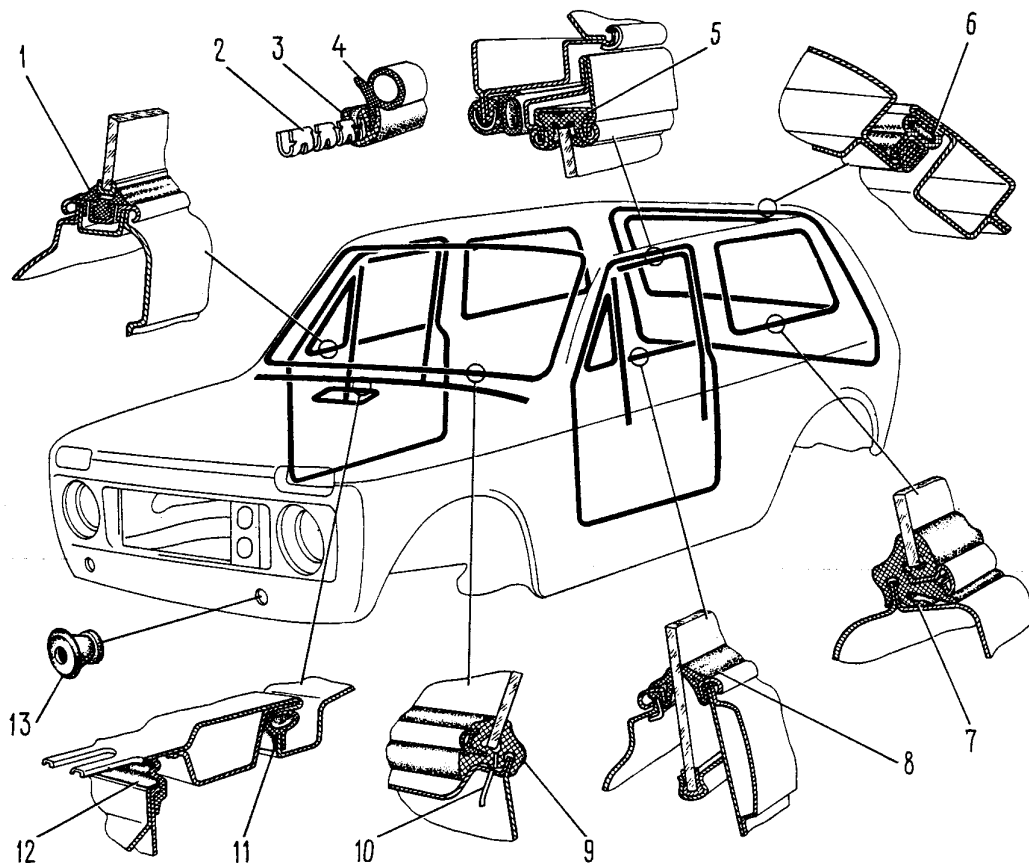


Fig. 8-9. Rubber Sealing Strips:

1 - vent window glass; 2 - front door sealing strip reinforcement; 3 - sealing strip edging; 4 - front door shut sealing strip; 5 - drop window glass sealing strip; 6 - tailgate shut sealing strip;

7 - side window sealing strip; 8 - drop window glass lower sealing strip; 9 - windshield sealing strip; 10 - drain pipe; 11 - hood sealing strip; 12 - air intake box sealing strip; 13 - front bumper connector bushes

## SEALING OF BODY WITH RUBBER SEALING STRIPS AND SEALANTS

The body is sealed by various sealing strips (Fig. 8-9), sealing compounds, rubber plugs installed in auxiliary holes, and by carefully fitting the mating parts.

When removing and installing the sealing strips, avoid crushing their metal reinforcements and corrugating the strips.

The resistance spot welds joining the stamped parts of the body fail to provide a tight joint. They are subjected to heavy corrosion, particularly at the bends of sheets with small rounding radiuses and at overstrained points.

The welded seams are protected at the Auto-plant against ingress of moisture and dirt with Plastisol A-4A.

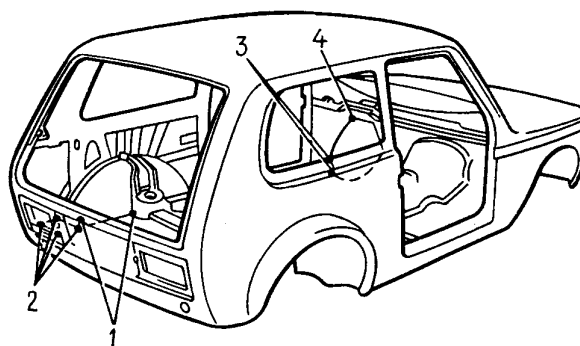


Fig. 8-11. Points of 51-P-7 Sealant Application (Rear View of Body):

1 - rear floor to rear wheel arch joints; 2 - slots in corner joints of rear floor extensions with rear wheel arches, body sides and body rear panel; 3 - corner joints of dash panel with floor sill; 4 - dash panel corner with body side front pillar panel

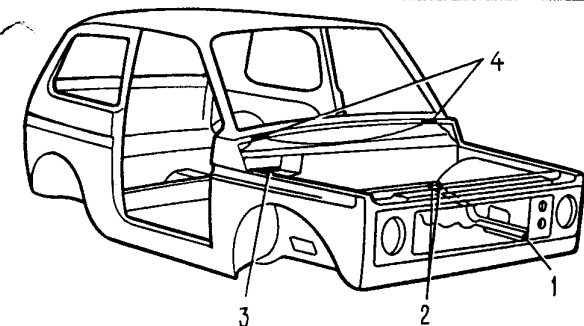


Fig. 8-10. Points of 51-P-7 Sealant Application (Front View of Body):

1 - front sidemember-to-radiator frame joint; 2 - front sidemember to dash panel joints; 3 - storage battery pan to dash panel joint (at body interior side); 4 - dash panel to body front strip joints (under the hood)

When replacing body parts, after welding and prime-coating operations, coat the welds on both sides with Plastisol A-4A and apply the non-drying sealant 51-P-7 (Figs 8-10, 8-11) at the corners, between the following parts:

- door sills and the dash panel (at the body interior side);
- dash panel and the front pillar panel and the storage battery pan;
- front sidemember joints with radiator frame and dash panel;
- dash panel joints with body front cover plate;
- rear floor and its extensions with rear wheel arches, body sides and rear panel.

## DOORS

### REMOVAL AND INSTALLATION OF FRONT DOOR

Open the door all the way and detach the door check, driving out the pin which fastens the check to the body front pillar.

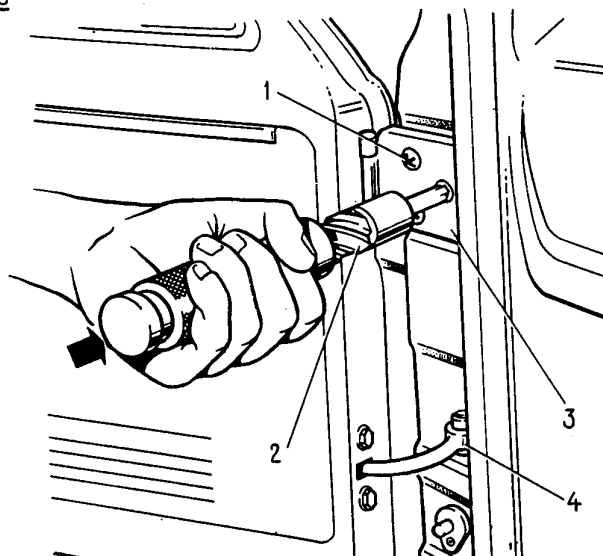


Fig. 8-12. Removing Front Door:

1 - hinge screw; 2 - impact screwdriver; 3 - hinge; 4 - door check. Arrow shows direction of blow

Holding the door open and using impact screwdriver 2 (Fig. 8-12) turn out screws 1 which fasten the door hinges to the body pillar and remove the door.

To install the door, reverse the removal operations.

Before final tightening of the screws, adjust the gaps between the door and the car body.

#### DISASSEMBLY AND ASSEMBLY OF FRONT DOOR

Disassemble the door, if some of its parts and mechanisms have to be repaired or replaced.

Turn off the armrest screws, first taking off plastic decorative plug 2 (Fig. 8-13) of the upper screw and remove the armrest.

Force off excutcheon 20 (Fig. 8-14), take out circlip 1 with A.78034 remover tool 2 and take off window regulator handle 22. Take off the facing of the inner lock handle with a screwdriver.

Override the resistance of the plastic spring holders (shown by arrows in Fig. 8-13) and remove the door trim panels.

Lift the drop window glass, turn out the fastening screws and remove the front and rear glass guide runs.

Lower the glass, loosen the nut of the window regulator tension roller, disconnect the cable from the drop-window glass channel, slip the cable off the rollers and take out the glass through the lower opening of the door. Unscrew the nuts and remove the window regulator mechanism.

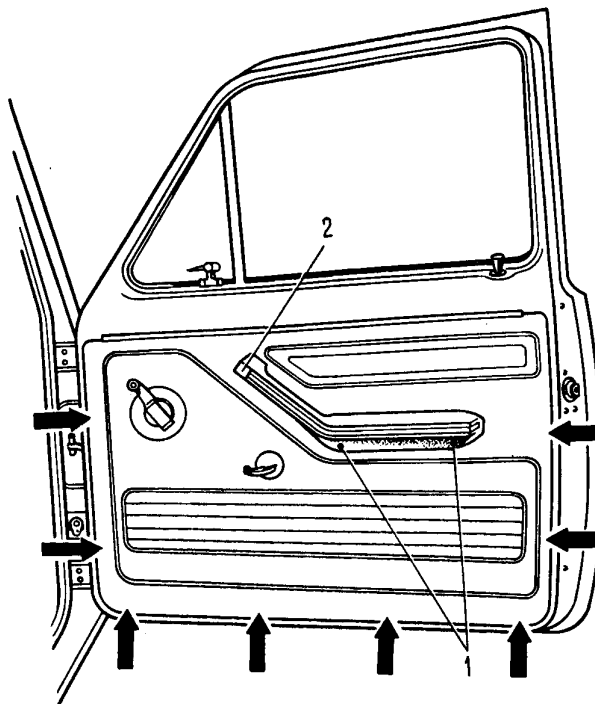


Fig. 8-13. Front Door, Inside View:  
1 - armrest lower screws; 2 - armrest upper screw plug. Arrows show location of door trim panel holders

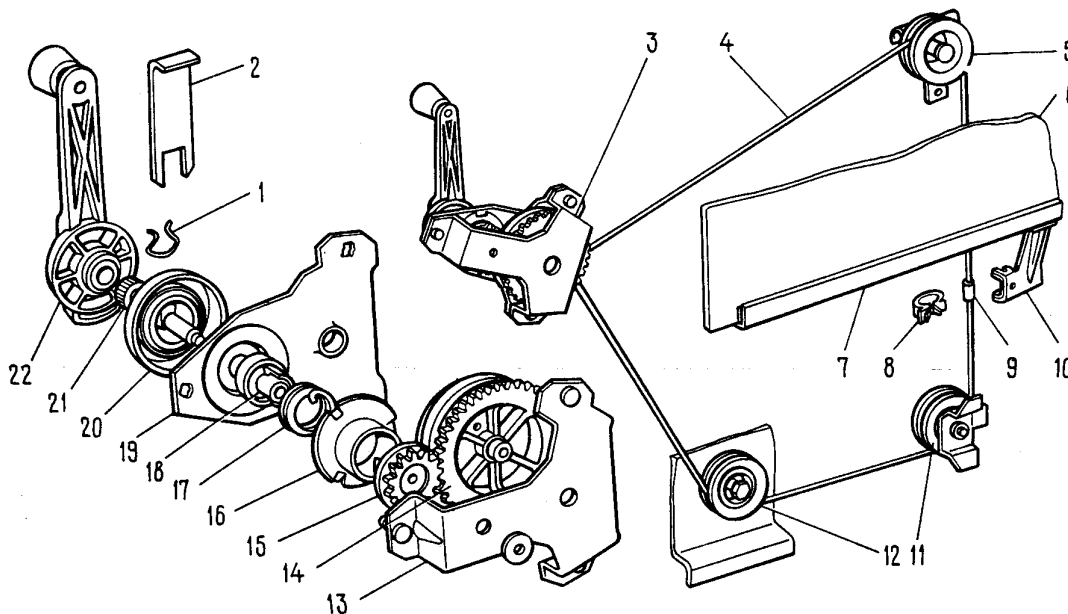


Fig. 8-14. Drop Window Regulator:

1 - circlip; 2 - circlip remover tool A.78034;  
3 - regulator mechanism; 4 - cable; 5 - upper roller;  
6 - drop window glass; 7 - drop window glass channel;  
8 - cable holder; 9 - cable coupling;  
10 - glass channel bracket; 11 - lower roller;

12 - tension roller; 13 - regulator mechanism body;  
14 - drum with driven gear; 15 - drive gear;  
16 - drive shaft support; 17 - brake spring;  
18 - spring brake carrier; 19 - body cover;  
20 - escutcheon; 21 - drive shaft; 22 - regulator handle

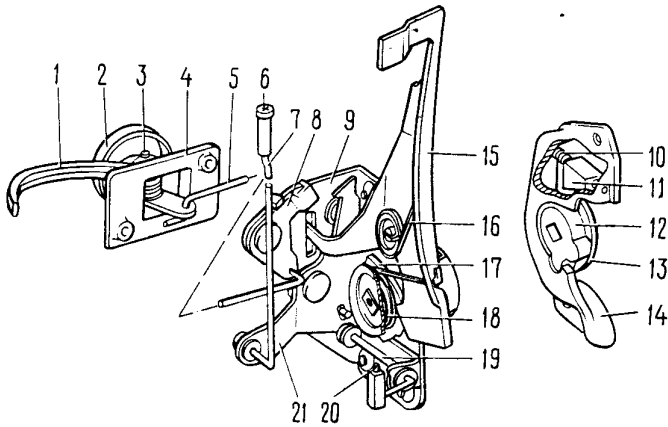


Fig. 8-15. L.H. Front Door Lock:

1 - lock inner handle; 2 - inner handle facing; 3 - axle; 4 - inner handle bracket; 5 - inner handle rod; 6 - door lock button; 7 - door lock button rod; 8 - inner lock release lever; 9 - lock body; 10 - block spring; 11 - striker plate block; 12 - rotor; 13 - central shaft support; 14 - striker plate body; 15 - outer lock release lever; 16 - outer lock release lever spring; 17 - ratchet; 18 - ratchet spring; 19 - lock release shaft; 20 - lock release link; 21 - door lock lever

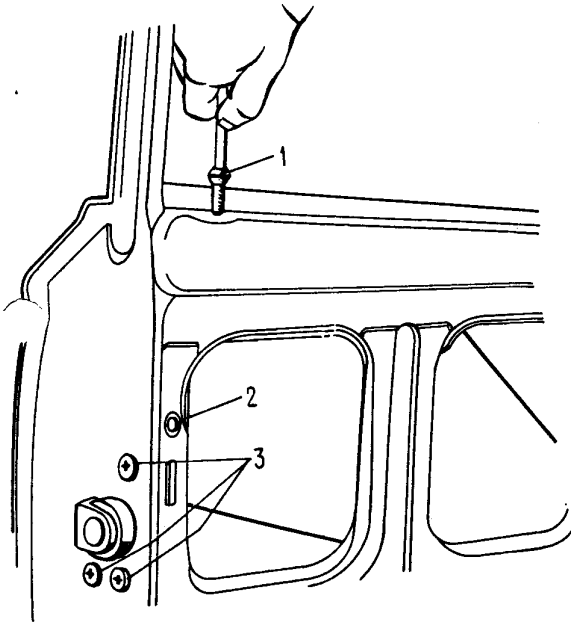


Fig. 8-16. Front Door Lock Fastenings:

1 - door lock button; 2 - lock button rod; 3 - lock fastening screws

Remove the drop-window glass sealing strip and the vent glass assembly by turning off its screws.

Unscrew door lock button 6 (Fig. 8-15), turn out the screws of bracket 4 of lock inner handle 1, turn out screws 3 (Fig. 8-16) of the lock body and take off the lock complete with the links, first

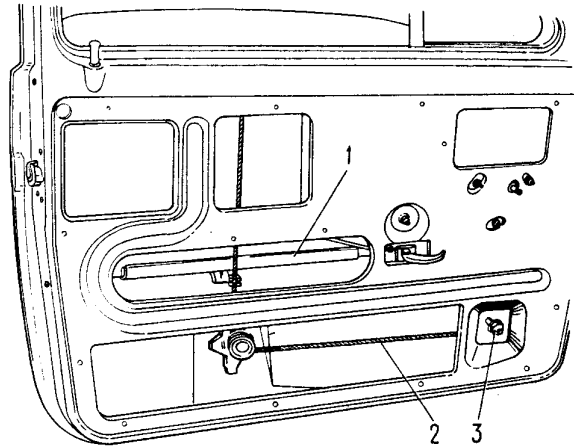


Fig. 8-17. Adjusting Window Regulator Cable Tension:

1 - drop window glass channel; 2 - cable; 3 - tension roller bolt nut

disconnecting link 20 (Fig. 8-15) from the lock release carrier.

Unscrew two nuts and remove the outer handle of the door.

Remove two fastening bolts and take off the door check.

Assemble the front doors in the reverse sequence of disassembly operations.

When installing the window regulator, see that the cable coils are not laid one on another on the drum. Adjust the tension of cable 2 (Fig. 8-17) and smooth functioning of the window regulator by shifting the tension roller; for this purpose loosen nut 3.

Before installing the door trim panels examine the plastic holders.

#### ADJUSTMENT OF FRONT DOOR POSITION

Before adjustment mark out the contours of the hinges on the body pillar. Using impact screwdriver 2 (Fig. 8-12) loosen hinge screws 1.

Set the required external clearances by displacing the hinges relative to the marked-out contour and turn in the screws.

#### ADJUSTMENT OF DOOR LOCKS

To ensure trouble-free operation of the door lock adjust the position of striker plate body 14 (Fig. 8-15) first loosening its fastening bolts.

Before adjustment it is practicable to mark out the outline of the striker plate on the body pillar.

If the door closes too tightly, shift the striker plate outward and tighten the bolts.

If the door closes loosely, shift the thrust block inward.

If the door sags after closing, move the striker plate upward; if it rises after closing (sagging when open), shift the striker plate down.

If it is difficult to open the door by inner handle 1, adjust the handle position. For this purpose loosen the fastening screws and shift the handle with the bracket as required.

Tighten the fastening screws after adjustment.

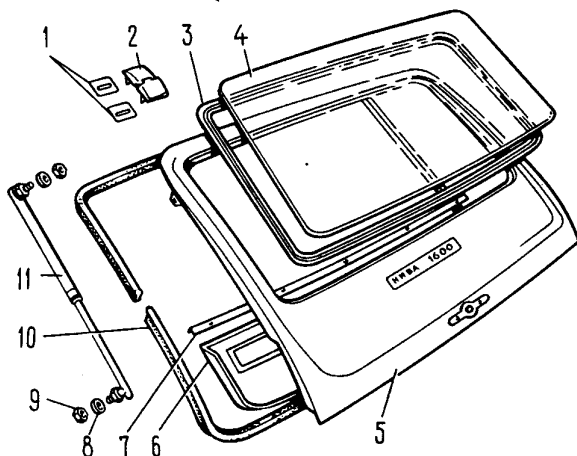


Fig. 8-18. Tailgate with Prop:

1 - gasket; 2 - hinge; 3 - glass sealing strip; 4 - glass; 5 - door; 6 - door trim panel; 7 - strip; 8 - washer; 9 - prop nut; 10 - body shut sealing strip; 11 - tailgate gas-filled hydraulic prop

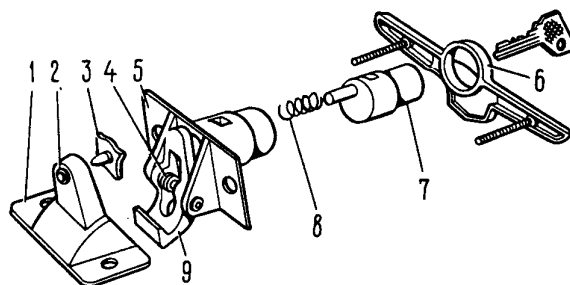


Fig. 8-19. Tailgate Lock:

1 - striker plate; 2 - striker plate socket; 3 - lock tenon; 4 - hook spring; 5 - lock body; 6 - tailgate lock handle; 7 - button; 8 - button spring; 9 - hook

#### REMOVAL, INSTALLATION AND ADJUSTMENT OF TAILGATE

The tailgate is mounted on the body on two hinges 2 (Fig. 8-18) and closed by a lock. When open, it is held by two gas-filled hydraulic props 11 which are not subject to disassembly.

Detach the props from the tailgate, unscrew the door-to-hinge nuts and remove the tailgate.

When installing, adjust the position of the tailgate in the body shut with the aid of the oval holes for the hinge studs, then tighten the nuts home.

If the tailgate lock closes with difficulty, adjust it by shifting its body 5 (Fig. 8-19) or striker plate 1 as required.

Replace the gas-filled props by new ones, if they fail to hold the door open.

#### HOOD, BUMPERS

##### Removal, Installation and Adjustment of Position of Hood

Open hood 3 (Fig. 8-20), uncotter axle 1 of prop 2 and detach the latter from the hood.

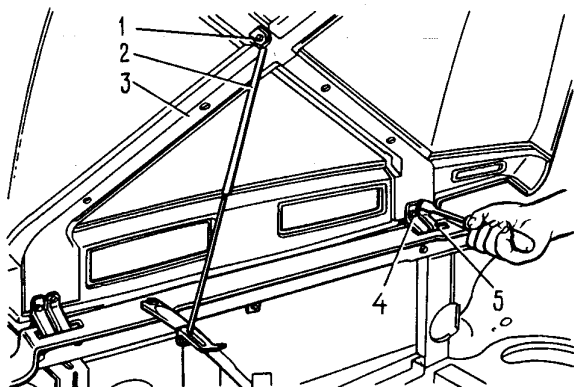


Fig. 8-20. Removing Hood:

1 - prop axle; 2 - prop; 3 - hood; 4 - hood bolt; 5 - hinge

Supporting the hood, unscrew bolts 4 of the upper plates of hinges 5 and take off the hood.

Install the hood in the reverse order of operations.

Adjust the position of the hood by the use of enlarged holes in the hinges.

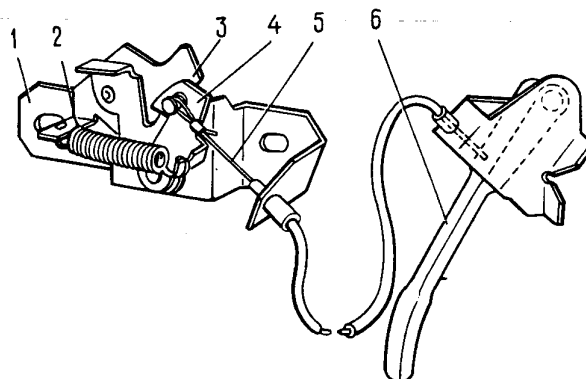


Fig. 8-21. Hood Lock:

1 - lock body; 2 - spring; 3 - pusher; 4 - hook; 5 - control cable; 6 - control handle

### ADJUSTMENT OF HOOD LOCK

If the lock is not reliable in closing the hood or opens with difficulty, adjust its position (Fig. 8-21).

Open the hood, mark out the contours of lock body 1, loosen the fastening nuts and shift the lock body in the required direction, using the enlarged holes.

Tighten the fastening nuts and check functioning of the lock.

### REMOVAL AND INSTALLATION OF BUMPERS

The bumpers are made of aluminium shapes whose face wall is provided throughout the length of the bumper with black rubber strip 9 (Fig. 8-22) and the ends of the bumpers are fitted with black plastic side covers 6.

Each bumper is held to the body by two bolts; to remove the bumper, these bolts must be unscrewed.

Install the bumpers in the reverse order of operations.

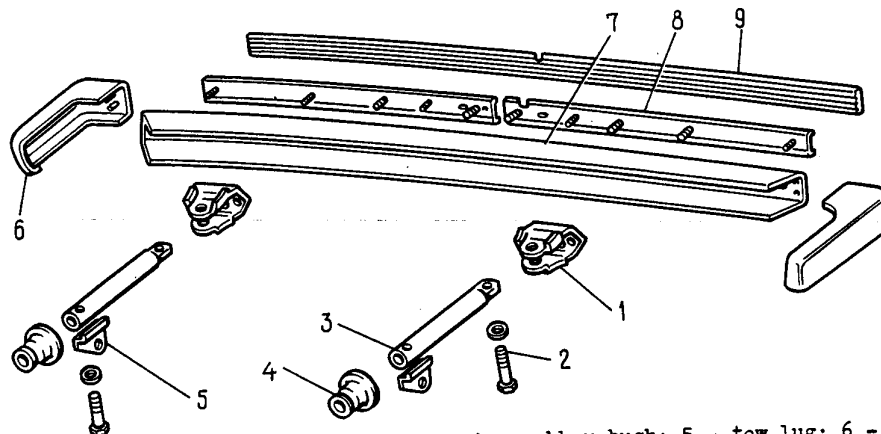


Fig. 8-22. Front Bumper Assembly:

1 - bracket; 2 - fastening bolt; 3 - connector;

4 - rubber bush; 5 - tow lug; 6 - plastic side cover; 7 - bumper; 8 - rubber strip holder; 9 - rubber strip

### WINDOW GLASSES, WINDSHIELD AND HEADLIGHT WASHERS

#### REPLACEMENT OF WINDSHIELD GLASS

To take out the damaged glass, remove the wiper arms, sealing strip edging and, pressing on upper corners of the glass, push it outward. An assistant should support the glass from the outside (Fig. 8-23).

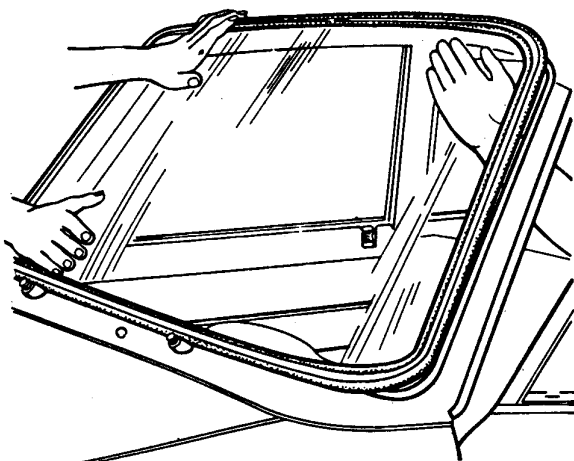


Fig. 8-23. Removing Windshield

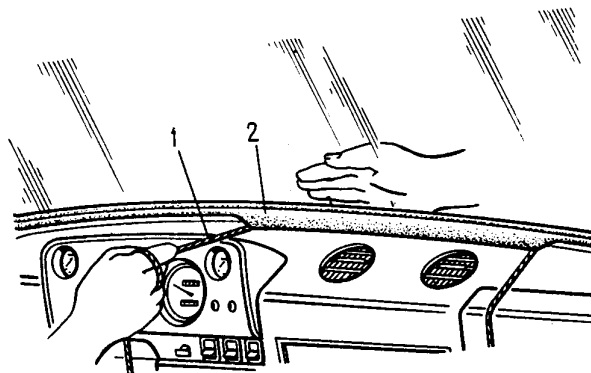


Fig. 8-24. Installing Windshield:

1 - installation cord; 2 - windshield sealing strip

To install the windshield:

- wash the recesses of sealing strip 9 (Fig. 8-9) with gasoline;
- slip the sealing strip with the edging on the glass;
- using a screwdriver, insert installation cord 1 (Fig. 8-24) into the recess by which sealing strip 2 is slipped on the body opening flange;

- fit the glass into the body opening and pull at the ends of the cord from inside the body until the sealing strip snaps in position. The assistant should press the glass gently from the outside.

#### REPLACEMENT OF SIDE AND TAILGATE GLASSES

To remove the glasses take off the sealing strip edging and, pressing on the lower corners of the glass, push it outward. An assistant should support the glass from the outside.

Installation of the glasses is similar to that of the windshield.

#### WINDSHIELD AND HEADLIGHT WASHERS

A schematic diagram of the windshield and headlight washers is shown in Fig. 8-25.

The headlight washer is provided with non-return valve 8 between the pumps and nozzles; it rules out leaks of the fluid after the washer has been stopped; this saves time for filling the pipes when the pump is restarted.

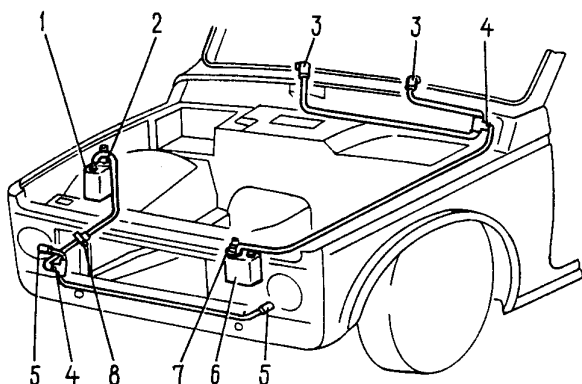


Fig. 8-25. Windshield and Headlight Washers, Diagrammatic:

1 - fluid tank; 2 - headlight washer pump; 3 - windshield washer pump; 4 - windshield washer nozzles; 5 - headlight washer nozzles; 6 - nozzle Tee pipes; 7 - non-return valve; 8 - Tee pipes assembled with flow restrictors

#### REMOVAL AND INSTALLATION OF WASHER PUMP

Disconnect the electric wires from motor 1 (Fig. 8-26) and take the pipe from the union of the washer pump.

Turn cover 2 with the electric motor counter-clockwise and take them off complete with the pump from the tank.

To install reverse the removal operations.

#### DISASSEMBLY AND ASSEMBLY OF WASHER PUMP

The pump and electric motor (Fig. 8-26) are fastened by screws and nuts to cover 2.

To disassemble the pump turn out the screws, remove the motor and cover, detaching fluid feed pipe 4.

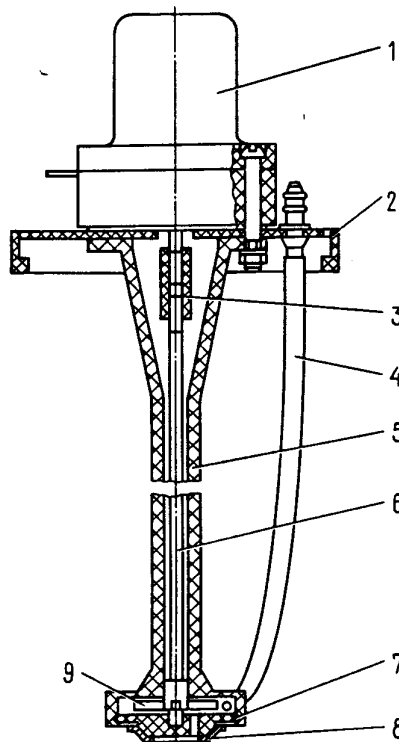


Fig. 8-26. Washer Pump:

1 - electric motor; 2 - tank cover; 3 - coupling; 4 - fluid feed pipe; 5 - pump casing; 6 - rotor shaft; 7 - rotor shaft support; 8 - rim with filter screen; 9 - rotor

Insert a pointed tool under the edge of rim 8 and take it off complete with the filter screen.

Remove coupling 3 and, tapping gently at shaft 6 of rotor 9, push out support 7 and take out the shaft with the rotor.

To assemble, proceed in the reverse sequence of operations.

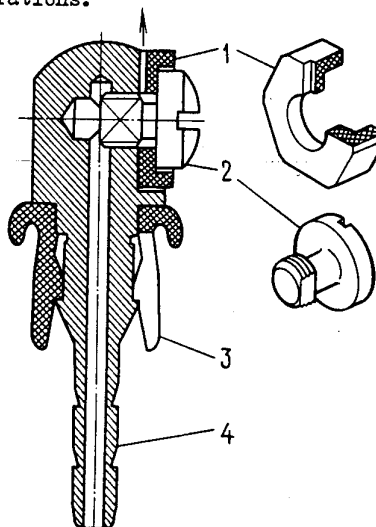


Fig. 8-27. Windshield Washer Nozzle:

1 - atomizer; 2 - screw; 3 - bushing; 4 - nozzle body with union



## REMOVAL AND INSTALLATION OF WINDSHIELD WASHER NOZZLES

If the nozzles become clogged, remove and disassemble them.

Squeeze lightly plastic bushing 3 (Fig. 8-27) at the side of the air intake box, then pry the bushing from above with a screwdriver and, applying a certain force to overcome resistance take out the nozzle complete with the bushing.

Turn out screw 2, clean all parts thoroughly and airblast body 4 and atomizer 1.

Insert bushing 3 into the hole in the car body. Then insert smartly the nozzle into the bushing so that the slot of body 4 engages the bushing edges.

Check the functioning of the nozzle.

Adjust the direction of fluid spray by turning the body in the bushing and turning atomizer 1 with screw 2 loosened.

## INSTRUMENT PANEL

### REMOVAL AND INSTALLATION

Disconnect the "ground" wire from the storage battery.

Pull out the knob of the instrument lighting switch, unscrew the nut and take off the switch.

Remove shelf 6 (Fig. 8-28) and radio set panel 7, first turning out their screws; disconnect the wires from the radio set, cigarette lighter,

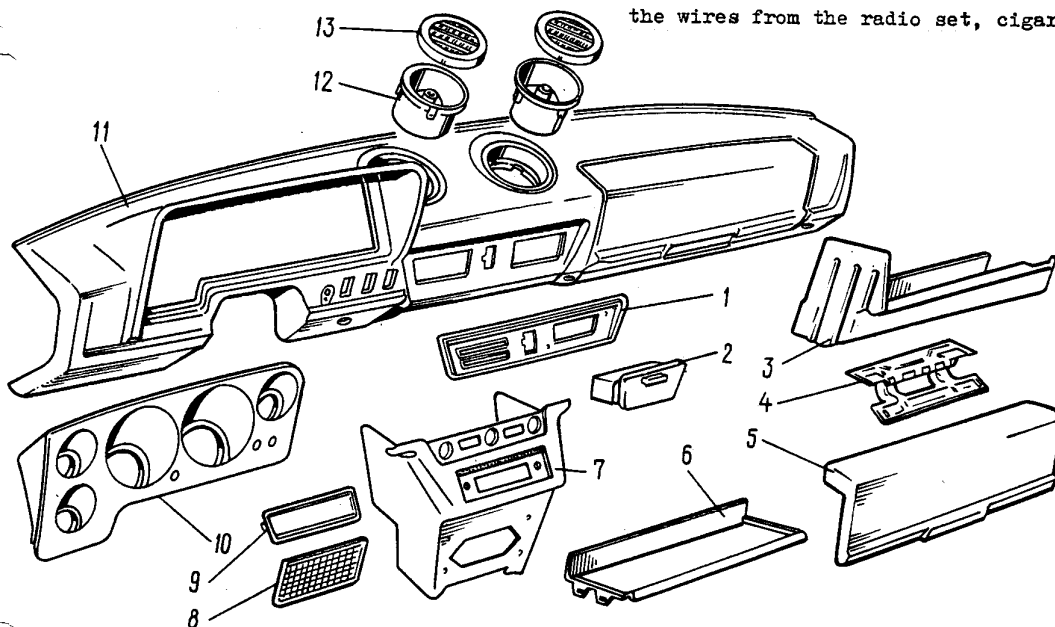


Fig. 8-28. Instrument Panel and its Accessories:  
1 - ash tray and heater lever facing; 2 - ash tray;  
3 - glove box body; 4 - glove box lid hinge;

5 - glove box lid; 6 - shelf; 7 - radio set panel;  
8 - loudspeaker facing; 9 - radio set panel facing;  
10 - instrument board; 11 - instrument panel;  
12 - deflector pipe; 13 - deflector

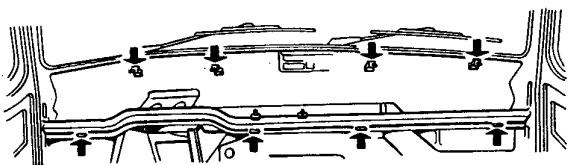


Fig. 8-29. Instrument Panel Fastening Points:  
(Shown by arrows)

Remove the lining of the windshield pillars, the steering column casing and the instrument board (see "Electrical Equipment") and disconnect the plugs and sockets of the wire harness.

headlight wiper and washer switch, and from the distress light switch.

Turn out the fastening screws and remove glove box body 3.

Remove the knobs from the heater control levers; for this purpose bend off the lower part of the upper knob and the upper part of the lower knob, using a flat sharp tool.

Remove four lower screws (Fig. 8-29) that fasten the instrument panel to the body front crossmember, then turn off four upper nuts which hold the panel to the dash panel, reaching through the openings of the glove box, and take off the instrument panel.

To install, reverse the removal operations.

## SEATS

### REMOVAL AND INSTALLATION

**Front seats.** To take out the seat (Fig. 8-30) tilt it forward and unscrew the bolts holding it to the framework.

Remove the seat with the adjuster mechanisms.

Install the seat in the reverse order of operations.

**Rear seat.** Force off seat back retainers 9 (Fig. 8-30) and secure the back with the strap located under the cushion. Unscrew the bolts that fasten the cushion hinges to the floor crossmember and take out the seat.

Install the seat in the reverse sequence of steps.

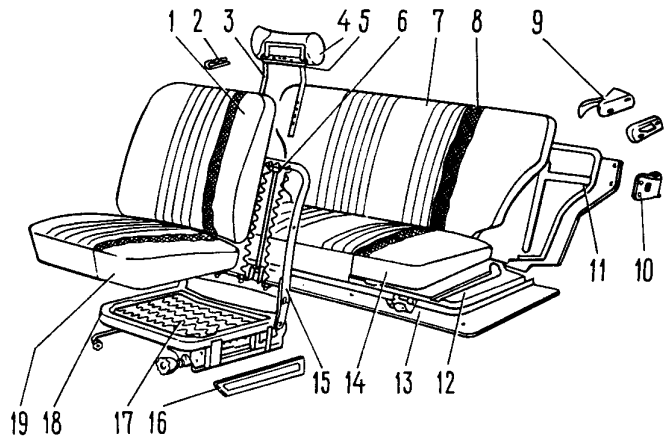


Fig. 8-30. Seats:

1 - front seat back padding; 2 - head rest lock; 3 - head rest support; 4 - head rest padding; 5 - head rest support strip; 6 - guide pipe; 7 - seat upholstery; 8 - seat upholstery backing; 9 - seat back retainer; 10 - rear seat back shackle; 11 - seat back base; 12 - seat cushion base; 13 - mat; 14 - rear seat cushion padding; 15 - back frame; 16 - front seat facing; 17 - seat cushion spring; 18 - front seat frame; 19 - front seat cushion padding

### DISASSEMBLY AND ASSEMBLY OF FRONT SEAT ADJUSTERS

Perform disassembly and assembly work on the removed seats.

**Fore-and-aft adjuster.** Unbend the edges of rail slides 14 (Fig. 8-31) and of rail guides 12, take out all balls 10 and shift the guides over the slides until rollers 13 come out.

To assemble put the rollers into the slot of the slide and slip on the guide. Then insert the balls and bend the edges.

**Seat back rake adjuster.** Disconnect spring 5 from the rod and knock out the pin which connects rod 6 with the seat back reinforcement. Pull out cotter pin 7 and remove the rod from back rake adjuster lock 4.

Assemble the adjuster in the reverse order of steps.

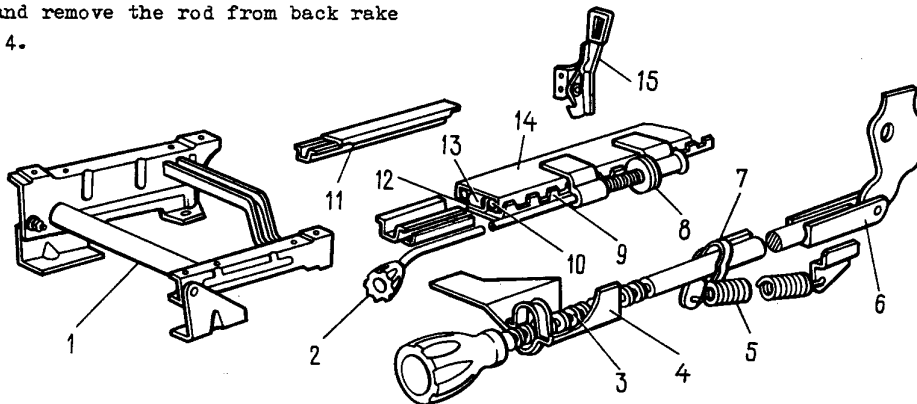


Fig. 8-31. Front Seat Adjusters:

1 - front seat support; 2 - fore-and-aft adjuster handle; 3 - back rake adjuster threaded rod; 4 - back rake adjuster lock; 5 - spring; 6 - rod;

7 - cotter pin; 8 - fore-and-aft adjuster catch; 9 - fore-and-aft adjuster lock; 10 - ball; 11 - seat rails; 12 - rail guide; 13 - roller; 14 - rail slide; 15 - seat catch

## HEATER

### REMOVAL AND INSTALLATION

To remove the body heater:

- shift control lever 6 (Fig. 8-32) of heater cock 14 all the way to the right and drain the engine cooling system;
- detach the "ground" wire from the storage battery;

- turn out the fastening screws, remove the instrument panel shelf and radio set panel, disconnecting the wires;

- remove internal ventilation air duct 1 by turning out its screws;

- loosen the clamps and disconnect the coolant inlet and outlet rubber hoses from heater pipes 13;

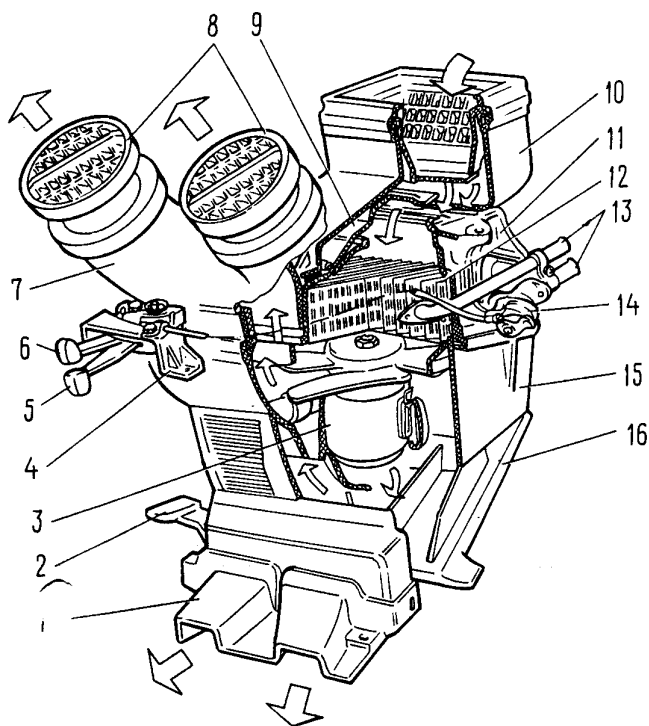


Fig. 8-32. Body Heater:

1 - internal ventilation air duct; 2 - air distributing cover lever; 3 - electric fan; 4 - control lever bracket; 5 - air intake lid control lever; 6 - heater cock control lever; 7 - rotatable deflector air duct; 8 - rotatable deflectors; 9 - air intake lid; 10 - air intake box; 11 - radiator housing; 12 - radiator; 13 - fluid inlet and outlet pipes; 14 - cock; 15 - fan housing; 16 - air distributing cover

- unscrew two fastening bolts in the engine compartment and take off the seal of the heater radiator pipes;
- loosen the bolt of the flexible rod casing clip on the cock and take the link off the cock;
- remove the switch of the heater fan motor and disconnect its wires;
- remove four spring holders and heater fan housing 15 assembly;
- take off the instrument board, through a special opening for the board in the instrument panel loosen the screw of the flexible rod of air intake lid 9 and take the rod off the lever;
- unscrew the nuts of housing 11, radiator 12 and air intake box 10, disconnect the "ground" wire from under one of the nuts, remove the housing and the air intake box;
- if necessary, remove air duct 7 which is connected with deflectors 8 by two rubber seals.

Install the heater in the reverse order of steps. Be careful to provide a correct position of the sealing gasket between the radiator housing and the car body and see that the hose clamps are properly tightened.

Having installed the heater on the car and connected all the hoses to the engine, fill the cooling system and check the heater connections for leaks.

#### DISASSEMBLY AND ASSEMBLY

Take off two spring clips 15 (Fig. 8-33) and take the electric fan out of housing 2. Unscrew the nut of impeller 13 and take it off electric motor 14.

Unscrew the nut of inlet and outlet pipe clip 8, remove the clip and take radiator 11 out of housing 5.

Unscrew the clip nuts and take off air intake lid 7.

Unscrew the nuts of clips 17 and remove air-distributing cover 1 of the fan housing.

Assemble the heater in the reverse sequence of operations, taking care to install radiator sealing gasket 10 properly.

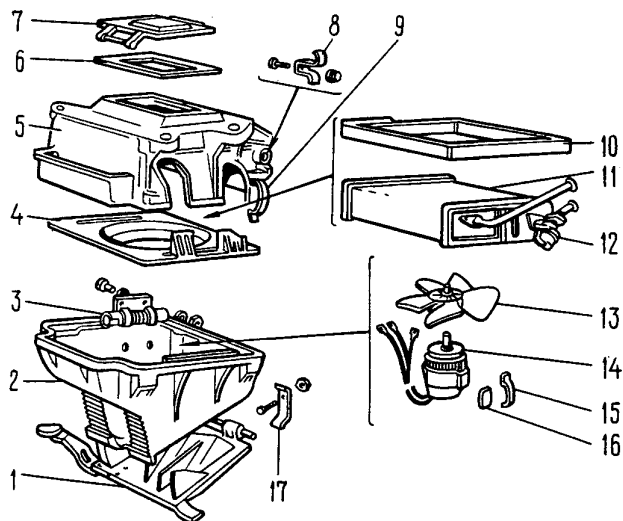


Fig. 8-33. Heater Parts:

1 - air distributing cover; 2 - fan housing; 3 - series resistor; 4 - fan guide housing; 5 - radiator housing; 6 - gasket; 7 - air intake lid; 8 - inlet and outlet pipe clip; 9 - fan housing spring holder; 10 - radiator gasket; 11 - radiator; 12 - cock; 13 - impeller; 14 - electric motor; 15 - spring clip; 16 - electric motor pad; 17 - air distributing cover clip