surfaces to be repainted should be treated with a solvent to remove grease and dust particles. Either a commercial product or a 50-50 mixture of oleum spirits or gasoline and thinner may be used. This also helps the new paint to adhere. The cleaning agent should be wiped off with a clean dry cloth as it is applied. When using a commercial solvent follow the manufacturer's directions.

PREPARATION FOR PAINT

The primer coat is then sprayed on all bare metal surfaces. Its function is to adhere to the metal and form a base for the surfacer and color coats. Any delay between the completion of the grinding and the application of the primer gives an opportunity for the formation of rust on the bared surfaces. An immediate application of the primer coat also saves the metal from contact with oil, grease, dust and even perspiration from the hands, all of which make for poor adhesion. Lacquer primers merely coat over the oil or perspiration. Oil base primers can absorb a little oil but not sufficient to insure a good, lasting paint job.

Glazing material may then be applied to the sections that have been metal finished. The glaze is worked down into a thin coat with a piece of celluloid. If there are any scratches left by the disc sander the glaze fills them up, but care should be taken not to put the glaze on too thick. A thick glaze will be brittle and will crack easily. After the glaze is thoroughly dry it is sanded smooth. Some shops do not use a glazing coat and depend more or less on the surfacer or undercoat to cover any imperfections.

One or two coats of surfacer are sprayed over the entire area to be repainted. When dry it is either wet- or dry-sanded, thus providing a smooth base for the color coats.

Wet sanding should begin at the top of the car so that dirty water will not drip over the cleaned area. Excess water and grit are removed with a rubber squeegee and the surface dried with a clean cloth.

All surfaces should be completely smooth and dry before the color coats are applied. Special care should be taken to remove any water remaining from wet sanding around the fender body joints and doors and all other cracks and edges.

SPRAYING

Matching color is important when the car is being partially refinished. It is essential that the painter be able to mix

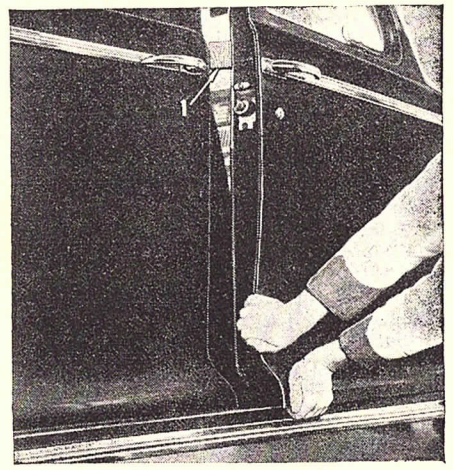


Fig. 17 Adjusting bottom of door

the color, as long exposure to weather sometimes causes original paint to fade. The original prepared paints may have to be blended to suit the job.

When applying color, start at the top and, with a free arm motion, keep the gun moving parallel to the surface of the panel. If the gun is held at an angle or moved in an arc part of the spray will be farther from the surface. The spray that travels the greater distance will be drier than that traveling the shorter distance, thus all of the paint applied will not be of the same texture. In like manner the nozzle of the gun should always be at the same distance from the panel. A good working distance is between 6 and 8 in. The ends of the strokes are feathered out by triggering.

If the panels are large they should be sprayed in sections. The color on each succeeding section must be sprayed on before the previously painted surface has dried. Each new stroke of the gun should overlap the previous stroke. Uniform color thickness is achieved by spraying crosswise and lengthwise. Spraying continues down the side of the car from top to bottom. In spot refinishing the spray should be applied beyond the surfaced area so that the new color will blend with the old paint. Successive color coats are applied in the same manner. Detail finishing touches such as door edges, openings and the like should be carefully checked. When all the color coats have been applied and the paint is throughly dry the surface should be rubbed with a compound and power polished. A few strokes of a clean soft cloth will then bring out the full luster.

SPRAYING FAULTS

ORANGE PEEL EFFECT results from (1) holding the gun too close or too far from the surface. When the gun is too close the air ripples the paint surface. If it is too far away the spray has a chance to dry somewhat before it reaches the surface. (2) Insufficient atomization. (3) Incorrect or cheap thinner that contains a high per cent of low boiling or poor solvents. (4) Material not thoroughly dissolved or agitated. (5) Synthetics may be affected by excessively low humidity. Lacquers and synthetics may also be affected by drafts in the finishing room.

STREAKS are caused by (1) tipping the gun. (2) Dirt or burrs on the air cap or fluid tip causing heavy top or bottom pattern. (3) A split spray pattern causing more material to be applied at the top and bottom than in the center.

RUNS AND SAGS are due to (1) too much material applied to the surface or the use of too much thinner. (2) Gun tilted at an angle. (3) Gun held too close.

MIST OR FOG may be caused by (1) over-atomization resulting from too high an atomizing air pressure. (2) Wrong air cap or fluid tip for material being used. (3) Too low a fluid pressure. (4) Improper use of gun, that is, incorrect stroking or the gun being held too far from the surface.

FINISH DEFECTS

Painting should not be done in a shop where grinding, sanding or other dust-forming operations are being carried on. Good refinishing demands a clean, well lighted, well ventilated, dust-free area. A spray booth which may be installed in a shop provides a section free from vapors and dust.

Other factors which may contribute to a faulty finish are (1) failure to completely eradicate rust spots. (2) Imperfect feather edging. (3) Too much time lapse between completion of grinding and application of primer coat. (4) Too thick a coat of glaze or poor quality glaze. (5) Imperfect cleaning when refinishing over old paint. (6) Failure to use an undercoat between old and new coat. (7) Presence of moisture or dampness on the surface when finishing material is applied.

High grade material, care and skill in every phase of the work will insure a job comparable to the original factory finish.

VACUUM TYPE

Convertible coupe tops required a slight modification of linkage to accommodate the vacuum operating mechanism, Fig. 1. Like some windshield wipers they utilize the vacuum created in the engine intake manifold when the power plant is running.

The top is raised and lowered by pistons enclosed in two vacuum cylinders on each side of the car. The cylinders are two-way types with vacuum lines above and below the single piston. Both cylinders are connected to a two-way vacuum control valve on the left or driver's side of the dashboard.

The control valve on the dashboard incorporates 'Up,' 'Down' and 'Neutral' positions. A spring catch or centering device should return the control to neutral position. When the valve is in the 'Up' position it opens the vacuum line to the top connections of the power cylinders, causing the pistons to rise and push up the top. The 'Down' position of the control valves directs vacuum to lower end of power cylinder and draws the top down.

Power tops should not be operated while the car is in motion and their control valves should be held in operating position until the opening or closing cycle is completed. *On vacuum types it is necessary to have the engine running,* preferably at idling speed to develop greatest vacuum.

On lowering all power-operated tops it is necessary to give the top an initial lift after unlocking toggle catches. This releases the top from the windshield header dowels. Similarly it is necessary to pull the top down on the dowels in the last inch or two of the closing operation.

Vacuum Top Service—If the automatic vacuum top fails to operate properly with the engine idling the first thing to do is to check the system for vacuum leaks. The dash control valves should operate freely and without leaks.

Inspect the assembly of valve to determine if vents in the plunger or rotor line up with the holes or orifices leading to intake manifold and power cylinders. Use fiber grease between rotor and valve body when reassembling to provide a good vacuum seal.

The lines from the intake manifold and those going to the power cylinders should then be checked to insure that they are open and free of kinks or leaks. Air pressure can be used to determine whether lines are clear.

Comparison of vacuum gauge readings at the manifold and those at the ends of the lines at the power unit provide another check. Attach the gauge alternately to each of the tubes entering the power cylinders. When each tube is being checked the one on the opposite cylinder should be plugged to minimize leakage.

Each vacuum cylinder should be checked for leaks and binding of the piston rod. The piston rod seal at the top of the cylinder also should be inspected for leaks. When the top is up, operation of the power units can be observed by disconnecting the piston rod from the top bracket. Application of vacuum to the power units then should result in both piston rods moving up and down.

If the pistons are found to be tight, detach the upper hose connection and hold a 1-oz. glass full of neatsfoot oil and kerosene (50-50 solution) to that opening of the cylinders. When the piston is operated downward it will draw in the lubricant.

Piston leaks can be checked by disconnecting the piston rod and drawing it up, with the control valve set in the down position, or down with the control set in the up position. The engine should not be running when checking piston leaks.

Other things to be considered in an over-all check are tightness of the vacuum line connection and the ability of the top folding arms and bows to work freely without binding.

One of the most important things to check is the bind-free movement of the piston rods in the power cylinder. The power unit assemblies should be directly in line and able to rock, otherwise a bind may exist at some point of the piston's opening or closing stroke. Lack of free base movement and the possibility of a resulting bind may ruin the piston rod seal and cause a leak.

The power unit removal and replacement procedure are quite evident when the side trim panels in the rumble seat or rear seat of club convertibles are removed. Extreme care should be used in handling vacuum cylinders. Dents, kinks or bends usually result in a binding or inoperative piston.

Other precautionary installation measures include the correct position of the piston rod end to make sure it clears obstructions and to insure a direct action from cylinder mounting bolt to the piston rod to top connection. Upper and lower hoses then can be securely attached to the cylinder. If it is necessary to service the dash control valve it is a good plan to mark one hose to make certain it is reattached to the correct outlet.

BUICK	
1940-41	Vacuum
1942	Electric
1946-52	Hydro-Lectric*
CADILLAC	
1940-41	Vacuum
1942	Electric
1946-52	Hydro-Lectric*
CHEVROLET	
1940-41	Vacuum
1942	Electric
1946-50	Hydro-Lectric*
1951-52	Hydro-Lectric†
CHRYSLER	
1940	Vacuum
1941-48	Electric
1949-52	Hydro-Lectric*
DE SOTO	
1940	Vacuum
1941-48	Electric
1949-52	Hydro-Lectric*
DODGE	
1940	Vacuum
1941-48	Electric
1949-52	Hydro-Lectric*
FORD	
1941-48	Electric
1949-52	Hydro-Lectric*
FRAZER	
1949-51	Hydro-Lectric*
HUDSON	
1941-47	Hudson Hydraulic
1948-52	Hydro-Lectric*
LA SALLE	
1940	Vacuum
LINCOLN	
1940	Vacuum
1941-48	Electric
1949-52	Hydro-Lectric*
MERCURY	
1940	Vacuum
1941-48	Electric
1949-52	Hydro-Lectric*
NASH	
1941	Vacuum
1948	Hydro-Lectric*
1950-52 Rambler	Nash Electric
OLDSMOBILE	
1940-41	Vacuum
1942	Electric
1946-50	Hydro-Lectric*
1951-52 Super 88	Hydro-Lectric†
1951-52 98	Hydro-Lectric*
PACKARD	
1941	Vacuum
1948-52	Hydro-Lectric*
PLYMOUTH	
1939-42	Vacuum
1946-50 Deluxe	Electric
1946-50 Special Deluxe	Hydro-Lectric*
1951-52	Hydro-Lectric*
PONTIAC	
1940-41	Vacuum
1942	Electric
1946-50	Hydro-Lectric*
1951-52	Hydro-Lectric†
STUDEBAKER	
1947-52	Electric

*Type with fluid system vented to the atmosphere.
†Type with "sealed-in" fluid system.

ELECTRIC TYPE

This mechanism consists of two reversible type electric motors driving spiral threaded operating shafts through a worm gear reduction drive, Fig. 2.

An internally threaded sleeve fitted over the upright spiral shaft moves up or down when the motors are started. The sleeve is attached to the folding top levers which in turn prevent their rotation with the spiral.

The electric motors and the direction of their rotation are controlled by push-button switches on the driver's side of the instrument panel. The panel switches are wired to the electric motors. All makes of cars use electric motors with their lift or power screws driven through a reduction gear case.

There are, however, minor differences in wiring circuits or motor drives. Con-