Body

You can repair most minor auto body damage yourself. Minor damage usually falls into one of several categories: (1) small scratches and dings in the paint that can be repaired without the use of body filler, (2) deep scratches and dents that require body filler, but do not require pulling, or hammering metal back into shape and (3) rust-out repairs. The repair sequences illustrated in this chapter are typical of these types of repairs. If you want to get involved in more complicated repairs including pulling or hammering sheet metal back into shape, you will probably need more detailed instructions. Chilton's *Minor Auto Body Repair, 2nd Edition* is a comprehensive guide to repairing auto body damage yourself.

TOOLS AND SUPPLIES

The list of tools and equipment you may need to fix minor body damage ranges from very basic hand tools to a wide assortment of specialized body tools. Most minor scratches, dings and rust holes can be fixed using an electric drill, wire wheel or grinder attachment, half-round plastic file, sanding block, various grades of sandpaper (#36, which is coarse through #600, which is fine) in both wet and dry types, auto body plastic, primer, touch-up paint, spreaders, newspaper and masking tape.

Most manufacturers of auto body repair products began supplying materials to professionals. Their knowledge of the best, most-used products has been translated into body repair kits for the do-it-yourselfer. Kits are available from a number of manufacturers and contain the necessary materials in the required amounts for the repair identified on the package.

Kits are available for a wide variety of uses, including:

- Rusted out metal
- All purpose kit for dents and holes
- Dents and deep scratches
- Fiberglass repair kit
- Epoxy kit for restyling.

Kits offer the advantage of buying what you need for the job. There is little waste and little chance of materials going bad from not being used. The same manufacturers also merchandise all of the individual products used—spreaders, dent pullers, fiberglass cloth, polyester resin, cream hardener, body filler, body files, sandpaper, sanding discs and holders, primer, spray paint, etc.

CAUTION: ***Most of the products you will be using contain harmful chemicals, so be extremely careful. Always read the complete label before opening the containers. When***

you put them away for future use, be sure they are out of children's reach!

Most auto body repair kits contain all the materials you need to do the job right in the kit. So, if you have a small rust spot or dent you want to fix, check the contents of the kit before you run out and buy any additional tools.

ALIGNING BODY PANELS

Doors

There are several methods of adjusting doors. Your vehicle will probably use one of those illustrated.

Whenever a door is removed and is to be reinstalled, you should matchmark the position of the hinges on the door pillars. The holes of the hinges and/or the hinge attaching points are usually oversize to permit alignment of doors. The striker plate is also moveable, through oversize holes, permitting up-and-down, in-and-out and fore-and-aft movement. Fore-and-aft movement is made by adding or subtracting shims from behind the striker and pillar post. The striker should be adjusted so that the door closes fully and remains closed, yet enters the lock freely.

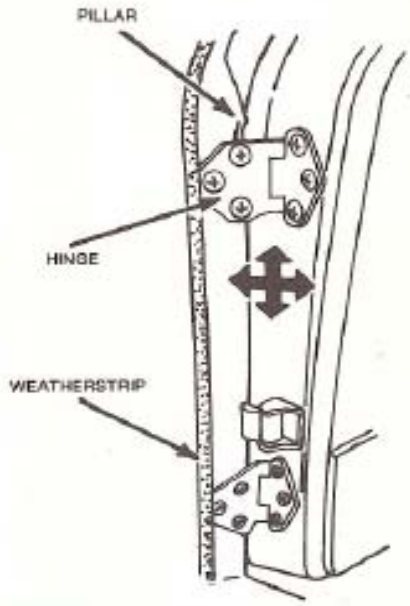
DOOR HINGES

Don't try to cover up poor door adjustment with a striker plate adjustment. The gap on each side of the door should be equal and uniform and there should be no metal-to-metal contact as the door is opened or closed.

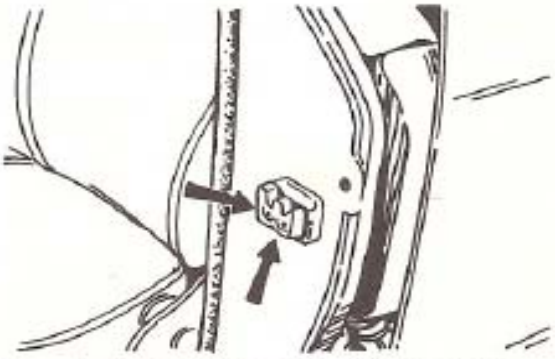
1. Determine which hinge bolts must be loosened to move the door in the desired direction.
2. Loosen the hinge bolt(s) just enough to allow the door to be moved with a padded pry bar.
3. Move the door a small amount and check the fit, after tightening the bolts. Be sure that there is no bind or interference with adjacent panels.
4. Repeat this until the door is properly positioned, and tighten all the bolts securely.

Hood, Trunk or Tailgate

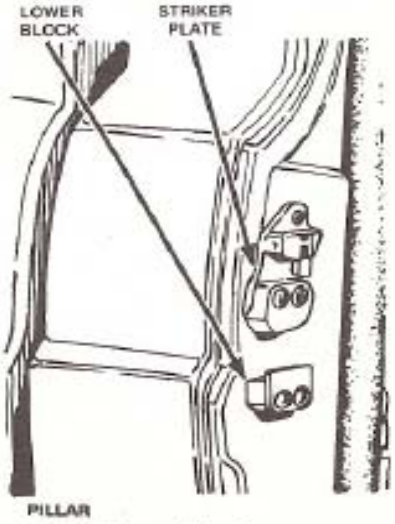
As with doors, the outline of hinges should be scribed before removal. The hood and trunk can be aligned by loosening the hinge bolts in their slotted mounting holes and moving the hood or trunk lid as necessary.



Door hinge adjustment

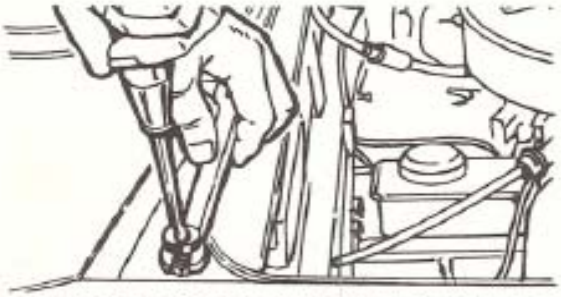


Move the door striker as indicated by arrows



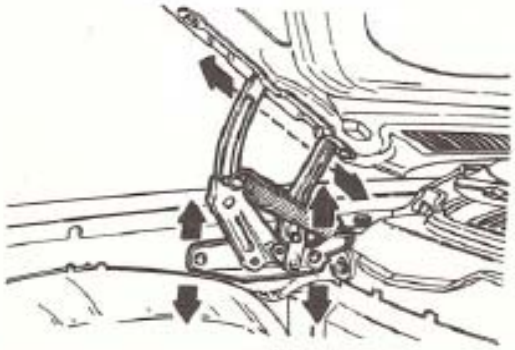
Striker plate and lower block

Loosen the hinge boots to permit fore-and-aft and horizontal adjustment



The hood is adjusted vertically by stop-screws at the front and/or rear

The hood pin can be adjusted for proper lock engagement



The height of the hood at the rear is adjusted by loosening the bolts that attach the hinge to the body and moving the hood up or down

The base of the hood lock can also be repositioned slightly to give more positive lock engagement

The hood and trunk have adjustable catch locations to regulate lock engagement. Bumpers at the front and/or rear of the hood provide a vertical adjustment and the hood lockpin can be adjusted for proper engagement.

The tailgate on the station wagon can be adjusted by loosening the hinge bolts in their slotted mounting holes and moving the tailgate on its hinges. The latchplate and latch striker at the bottom of the tailgate opening can be adjusted to stop rattle. An adjustable bumper is located on each side.

RUST, UNDERCOATING, AND RUSTPROOFING

Rust

Rust is an electrochemical process. It works on ferrous metals (iron and steel) from the inside out due to exposure of unprotected surfaces to air and moisture. The possibility of rust exists practically nationwide—anywhere humidity, industrial pollution or chemical salts are present, rust can form. In coastal areas, the problem is high humidity and salt air; in snowy areas, the problem is chemical salt (de-icer) used to keep the roads clear, and in industrial areas, sulphur dioxide is present in the air from industrial pollution and is changed to sulphuric acid when it rains. The rusting process is accelerated by high temperatures, especially in snowy areas, when vehicles are driven over slushy roads and then left overnight in a heated garage.

Automotive styling also can be a contributor to rust formation. Spot welding of panels

creates small pockets that trap moisture and form an environment for rust formation. Fortunately, auto manufacturers have been working hard to increase the corrosion protection of their products. Galvanized sheet metal enjoys much wider use, along with the increased use of plastic and various rust retardant coatings. Manufacturers are also designing out areas in the body where rust-forming moisture can collect.

To prevent rust, you must stop it before it gets started. On new vehicles, there are two ways to accomplish this.

First, the car or truck should be treated with a commercial rustproofing compound. There are many different brands of franchised rustproofers, but most processes involve spraying a waxy "self-healing" compound under the chassis, inside rocker panels, inside doors and fender liners and similar places where rust is likely to form. Prices for a quality rustproofing job range from $100–$250, depending on the area, the brand name and the size of the vehicle.

Ideally, the vehicle should be rustproofed as soon as possible following the purchase. The surfaces of the car or truck have begun to oxidize and deteriorate during shipping. In addition, the car may have sat on a dealer's lot or on a lot at the factory, and once the rust has progressed past the stage of light, powdery surface oxidation rustproofing is not likely to be worthwhile. Professional rustproofers feel that once rust has formed, rustproofing will simply seal in moisture already present. Most franchised rustproofing operations offer a 3–5 year warranty against rust-through, but will not support that warranty if the rustproofing is not applied within three months of the date of manufacture.

Undercoating should not be mistaken for rustproofing. Undercoating is a black, tar-like substance that is applied to the underside of a vehicle. Its basic function is to deaden noises that are transmitted from under the car. It simply cannot get into the crevices and seams where moisture tends to collect. In fact, it may clog up drainage holes and ventilation passages. Some undercoatings also tend to crack or peel with age and only create more moisture and corrosion attracting pockets.

The second thing you should do immediately after purchasing the car is apply a paint sealant. A sealant is a petroleum based product marketed under a wide variety of brand names. It has the same protective properties as a good wax, but bonds to the paint with a chemically inert layer that seals it from the air. If air can't get at the surface, oxidation cannot start.

The paint sealant kit consists of a base coat and a conditioning coat that should be applied every 6–8 months, depending on the manufacturer. The base coat must be applied before waxing, or the wax must first be removed.

Third, keep a garden hose handy for your car in winter. Use it a few times on nice days during the winter for underneath areas, and it will pay big dividends when spring arrives. Spraying under the fenders and other areas which even car washes don't reach will help remove road salt, dirt and other build-ups which help breed rust. Adjust the nozzle to a high-force spray. An old brush will help break up residue, permitting it to be washed away more easily.

It's a somewhat messy job, but worth it in the long run because rust often starts in those hidden areas.

At the same time, wash grime off the door sills and, more importantly, the under portions of the doors, plus the tailgate if you have a station wagon or truck. Applying a coat of wax to those areas at least once before and once during winter will help fend off rust.

When applying the wax to the under parts of the doors, you will note small drain holes. These holes often are plugged with undercoating or dirt. Make sure they are cleaned out to prevent water build-up inside the doors. A small punch or penknife will do the job.

Water from the high-pressure sprays in car washes sometimes can get into the housings for parking and taillights, so take a close look. If they contain water merely loosen the retaining screws and the water should run out.

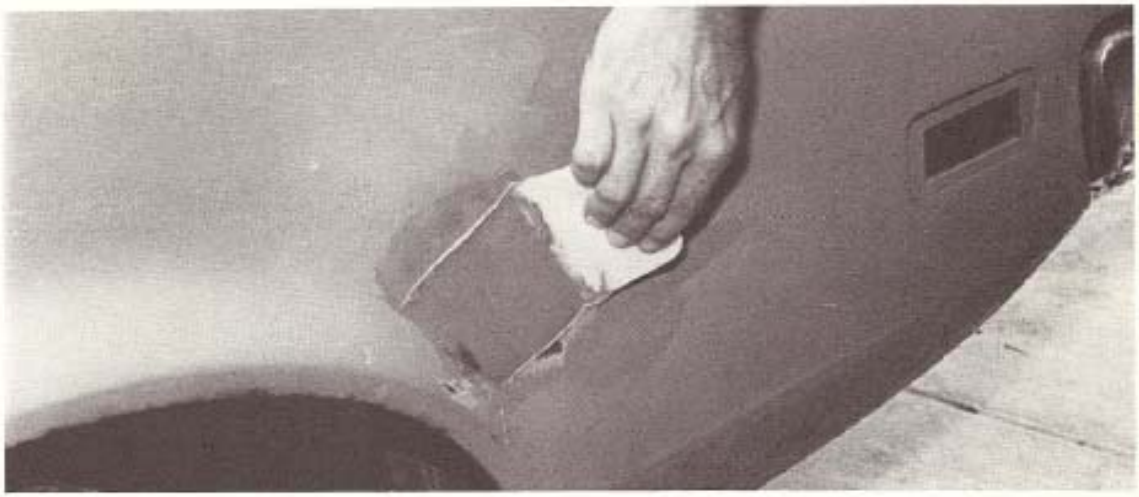
Repairing Scratches and Small Dents

Step 1. This dent (arrow) is typical of a deep scratch or minor dent. If deep enough, the dent or scratch can be pulled out or hammered out from behind. In this case no straightening is necessary

Step 2. Using an 80-grit grinding disc on an electric drill grind the paint from the surrounding area down to bare metal. This will provide a rough surface for the body filler to grab

Step 3. The area should look like this when you're finished grinding

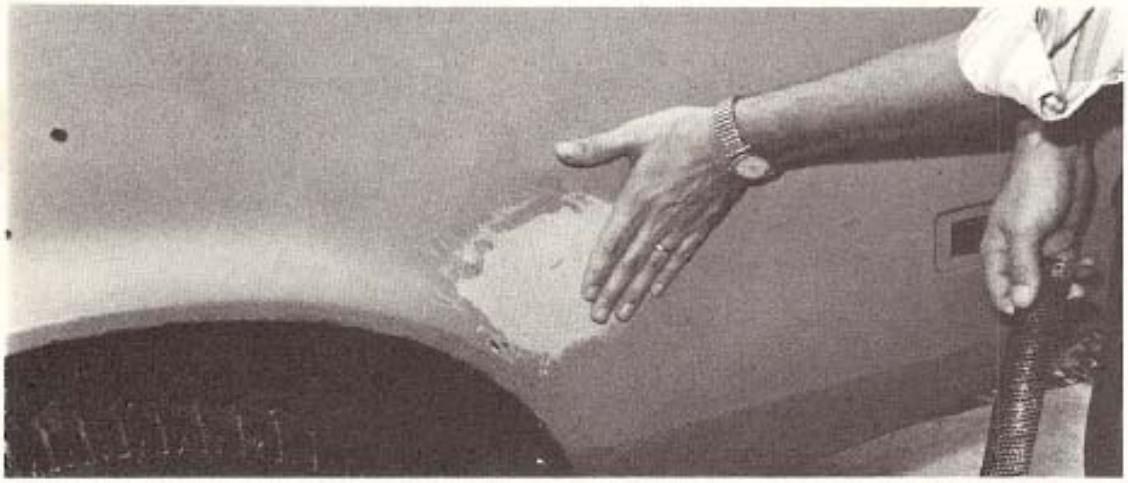
Step 4. Mix the body filler and cream hardener according to the directions



Step 5. Spread the body filler evenly over the entire area. Be sure to cover the area completely

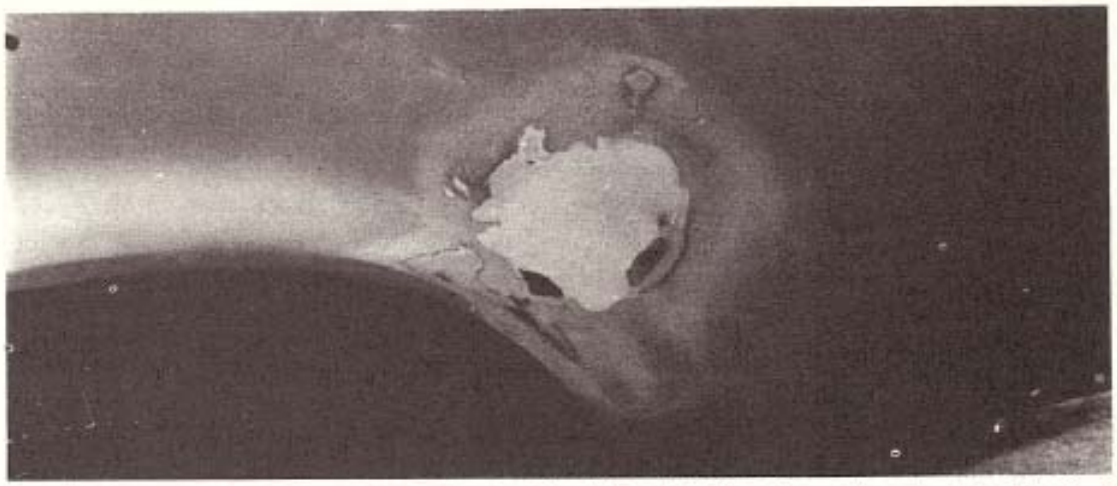
Step 6. Let the body filler dry until the surface can just be scratched with your fingernail

Step 7. Knock the high spots from the body filler with a body file

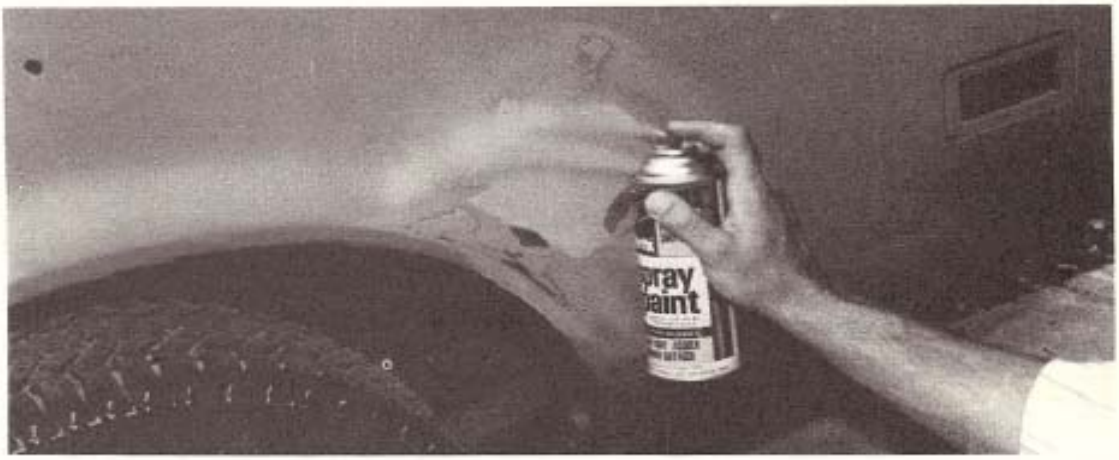


Step 8. Check frequently with the palm of your hand for high and low spots. If you wind up with low spots, you may have to apply another layer of filler

Step 9. Block sand the entire area with 320 grit paper



Step 10. When you're finished, the repair should look like this. Note the sand marks extending 2—3 inches out from the repaired area



Step 11. Prime the entire area with automotive primer

Step 12. The finished repair ready for the final paint coat. Note that the primer has covered the sanding marks (see Step 10). A repair of this size should be able to be spotpainted with good results