Detailing (REF04e)

Self-study Narrations

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Module 1 - Inspecting The Finish

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Learning Objectives
Learning objectives for this module include: how to use masking materials to reduce clean-up steps, identifying tools that can be used for inspecting a finish, identifying types of finish damage, detailing chemistry.

Unmask And Rinse
When detailing a vehicle after refinishing, do not remove the masking from adjacent moldings and trim pieces. It's difficult to remove dried polish from these parts during final detailing. Spray-on masking can be rinsed off usually with just plain water. This, again, can be left on until almost all detailing is completed, to make cleanup easier.

Washing
Washing the vehicle with soap and water is done before and after collision repairs. When washing exterior surfaces, use a liquid car wash soap and soft or deionized water. Powdered soap may not completely dissolve. Grains of undissolved powder under a sponge or wash mitt can also scratch a finish. Do NOT use dishwasher or laundry detergent, which are too harsh and can dull a finish.

Use two buckets, one with the soapy water and the other with clear water for rinsing the sponge or wash mitt. Using just one bucket will likely recycle dirt back onto the finish. Start at the top of the vehicle and work down. Rinse using a hose without the nozzle. The soap and water does the cleaning, not pressure from a hose or pressure washer. The rinse water should sheet off the surface, not bead. Beads will leave water spotting.

Cover the metal hose end with tape to make sure it doesn't scratch the surface if it accidentally touches the vehicle. If a sponge wash mitt has a cuff, tuck the cuff in to prevent scratching the surface.

Drying
Do not let the water dry on the surface, which could cause water spotting. Dry by dragging a towel or chamois across the surface. Do not scrub, which isn't productive and may leave marks. Dry using a synthetic chamois, not a natural chamois, which has an uneven nap and is not easily cleaned. Also, a natural chamois becomes abrasive as it ages. Another good drying cloth is a thick, natural 100% cotton terry towel. The thick nap will absorb the water, and also capture and hold any remaining dirt particles. A microfiber, or detailing, towel can be used as a final wipe.

If using a squeegee for initial drying, avoid scratching by only allowing the rubber to contact the surface. Pull the water off in broad, even strokes.

Magnifier
When inspecting the vehicle surface, whether it's just been refinished or not, use a magnifier. A magnifier allows better depth of vision, to determine how deep a scratch

is, and whether a defect has etched into the surface or is just sitting on top. Knowing the depth of a defect will determine the method of detailing that must be done, or if refinishing is needed.

Ensure that tools that come in contact with the finish, such as a magnifier, do not have rough or sharp edges that might scratch the finish. Creating scratches will result in additional detailing work.

Film Thickness Gauge

Film thickness gauges measure finish film thickness on metal in mils or microns. One mil is twenty-five thousandths of a millimeter or one one-thousandth of an inch. One micron is one one-thousandth of one millimeter. Using mils as a measurement is most common in North America, and will be used in this course.

Film thickness gauges are available as electronic with a digital display, or mechanical using a permanent magnet. The electronic type is the only option for detailing, since the finish must be measured in tenths of one mil. A magnetic gauge cannot measure with that accuracy. Digital film thickness gauges are available for measuring a finish on steel or nonferrous metal, such as aluminum. Some gauges can be set for use on both ferrous and nonferrous metals.

Conventional finish film thickness gauges don't work on plastic parts. Determine if the part has been previously refinished. If the part has been refinished, repair technicians should plan to remove a portion of or all of the coatings to prevent excessive film thickness.

Initial Inspection

Do the initial inspection of a refinished vehicle in the spraybooth, if possible. This ensures that any defects found that cannot be removed by detailing can be repaired before the vehicle leaves the spraybooth. Ask the refinish technician how much clearcoat was applied, to help determine the available thickness margin for detailing.

Refinish Defects That Can Be Detailed

The types of defects that might be able to be removed by detailing, without refinishing, include minor runs and sags that did not change the color, overspray, dirt or dust particles, inconsistent orange peel, and sandscratch swelling.

Defects Beyond Detailing

Defects that can't be removed by detailing and must be refinished include fisheyes, pinholes, wrinkling or lifting, solvent popping, and any defect that affects the finish color.

Defects Beyond Detailing (cont'd)

Defects that can't be removed by detailing also include a scratch that can be felt by drawing a fingernail across the surface, color mismatch, bleeding of another color into the topcoat, and insufficient hiding.

Environmental Finish Damage

When inspecting an existing finish, defects may include industrial fallout, chemical spotting, hard water spotting, acid rain, rail dust, and scratches.

Environmental Finish Damage (cont'd)

Other existing finish damage includes salt spray, tree sap, bird droppings, insect residue, clearcoat degradation, and single-stage oxidation.

Matte Finish Defects

A matte finish uses a type of coating that diffuses light, providing a flat finish appearance. Special care is required when detailing a vehicle with a matte finish. Damage to a matte finish may require refinishing.

Damage to a matte coating, such as scratches or wear from aggressive cleaning, cannot be polished or buffed out. Also, it is not possible to remove dust inclusions by polishing because polishing changes the gloss level.

It is important to work very carefully during cleaning. This will help to avoid damaging the finish.

Matte Finish Maintenance Tips

It may be a good idea to provide some maintenance tips regarding the care of a matte finish to the customer. Some of these include to avoid fuel spillage on the finish, avoid polishes, avoid automated car washes, remove insect and bird residue immediately, and use a gentle spray on, wipe off technique when cleaning. Never apply pressure or rub the matte finish.

Special products are available for matte finish cleaning and protection.

pH

When assessing damage not only on exterior surfaces, but also interior surfaces, a basic understanding of acids and alkalies is necessary. The difference between the two can most easily be seen by using a pH scale. On the pH scale, the numbers 0 to 14 refer to the concentration of hydrogen and hydroxyl ions in a water solution. Number 7 is neutral. Pure water, such as distilled water, has a pH of 7. Numbers below 7 are acidic. The lower the number, the more acidic the solution is. Common acids are carbonated drinks,

vinegar, and battery acid. Numbers above 7 are alkaline. The higher the number, the more alkaline the solution. Common alkalies are ammonia, baking soda, and lye soap. The numbers increase by a factor of 10 for every whole number progression. For example, a chemical with a pH of 9 is 100 times more alkaline than a chemical with a pH of 8. A chemical with a pH of 10 is 1,000 times more alkaline than a chemical with a pH of 9.

The pH scale is useful when treating finish problems, or stubborn stains on fabrics. Applying a solution that has nearly the opposite pH can neutralize a stain. Once a stain is neutralized, it can be washed away and will not return. An acid rain spot, for example, that is not neutralized will continue to come back.

All-Purpose Cleaners

All-purpose cleaner is a common cleaning material, available from most detailing material suppliers. All-purpose cleaner is slightly alkaline. Most stains and environmental finish defects are slightly acidic, so all-purpose cleaner neutralizes the defects.

Most all-purpose cleaner requires diluting with water for different purposes. Follow the product maker dilution recommendations. A stronger solution is not always a better cleaner. The best way to keep the solutions separate is to store them in spray bottles, properly labeled for the specific uses. Use pH neutral water so the alkalinity of the recommended solution isn't affected.

Label Properly

Most all-purpose cleaners are concentrates that are diluted and dispensed from a spray bottle. A workplace label must be applied to the spray bottle containing an all-purpose cleaner solution to properly identify the contents. Requirements for a workplace label are the product name as stated on the SDS, and any hazardous warnings from the original label.

If the label information washes off, it's the responsibility of the repair facility to replace the label information or the label as soon as possible.

Module Summary

Topics discussed in this module included: using masking materials to reduce clean-up steps, tools that can be used for inspecting a finish, types of finish damage, detailing chemistry.

Module 2 - Finish Defect Removal

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Learning Objectives
Learning objectives for this module include: determining how to monitor film thickness and what to keep in mind on original finish and refinish, using clay and nib sanders for small defect removal, explaining why starting with the least aggressive method is important, using sanding equipment and techniques for removing finish defects, using buffing equipment and techniques for removing finish defects and restoring gloss.

OEM Finish Maximum Removal
OEM basecoat / clearcoat and multi-stage finishes are usually about 4 to 6 mils thick. The clearcoat averages 2 mils thick. Single-stage finishes are 3 to 5 mils thick. Whenever removing a defect from an original OEM finish, the general recommendation is to remove no more than one-half mil of topcoat. Removing excessive film thickness may cause hazing, discoloring, peeling, or even finish failure.

Refinish Maximum Removal
On a refinished surface, how much topcoat can be removed depends on how much was applied. This is why it's important to ask the refinish technician how much clearcoat or single-stage topcoat was applied. It's also important to know the paint maker's recommendations for the minimum clearcoat thickness that should remain after detailing to maintain proper UV protection and warranty preservation. The average is about 2 mils.

Monitor Film Thickness
Start the detailing repair plan by recording an initial film thickness reading. Monitor the film thickness frequently throughout the detailing steps, especially when sanding or buffing. When making the initial film thickness reading, take several readings. Film thickness may differ from panel to panel, and even across one panel. Average the readings to use as a starting point for buffing or sanding. A variable of more than one-half mil on one panel usually indicates a previous repair. An extreme change may indicate a previous repair, such as the presence of plastic body filler. Keep in mind that the film build is usually less on vertical side panels than on horizontal panels.

Time Window
Defect removal from a fresh refinish is best done within a time window. Detailing a new refinish before the time window starts can damage the finish because it's too soft. Detailing a new refinish after the time window ends could result in a finish that's too hard, making defect removal difficult.

The time window varies between 4 and 48 hours after the refinish topcoats have been applied. The length of this time window depends on the method used to cure the finish, either air- or force-drying, the type of refinish material, the paint maker's recommendations, and ambient conditions such as temperature and humidity.

Clay
Overspray is a common defect on a refinished vehicle. One of the most effective methods of removing overspray is the use of a clay bar. Several defects can be removed using clay.

Clay is a nonaggressive material that is specially formulated for defect removal. Modeling clay is NOT a substitute. Clay works on any hard surface. It will not work on soft, porous trim or moldings, especially if contaminants have penetrated the surface.

Clay is effective for removing overspray because the overspray is on a surface that is not prepared for it. There's no chemical or mechanical bond, so the material sticks to the clay when it's rubbed across the surface. Clay can reach areas where buffing or sanding may not, or where solvents may be damaging.

Using Clay
When using clay, always use the recommended lubricant, usually a car wash soap and water solution. Clay should not be used dry.

Contaminants will be loosened and captured in the clay, but the residue will not. The area must be wiped with a thick-napped towel to capture the remaining loose contaminants. Occasionally, fold the clay to form a patty that exposes a new surface. Eventually, the clay bar should be replaced. Discard the clay if it's dropped. Clay will pick up any dirt or dust it falls on, which would likely scratch a surface.

Ensure that the wiping cloth is lint free. Some clay comes with its own wiping cloth as part of the kit.

Ensure that the spray bottle containing the lubricant, even if it's car wash soap and water, is properly labeled to identify the contents.

Other Overspray Removal Methods
Besides clay, other methods for removing overspray include scraping on glass with a plastic razor blade. Metal razor blades can easily scratch glass. A solvent applied from a spray bottle can be used to wipe off the overspray. A sponge pad and an adhesive cleaner may work on fresh overspray. A mild buffing compound may work on dried overspray. In extreme cases, sanding, followed by buffing, can be performed. Do not use steel wool, which is too aggressive and leaves metal fibers in crevices that will corrode.

Proper removal of overspray will enhance customer satisfaction.

Overspray Removal Bulletin
Chrysler bulletin number 31-001-13 includes procedures for removing overspray resulting from industrial fallout and poor refinishing processes.

Depending on the severity and extent of the overspray, the removal process will vary. Always begin by using the least aggressive method. Some of the steps in the removal

process include washing with soap and water, using a detail spray and a microfiber cloth, using clay, using a rotary buffer with a foam pad along with buffing and polishing compound, and wet sanding.

Measure the film thickness before and after buffing and sanding. Do not remove too much of the clearcoat. The bulletin states to not remove more than 0.2 mils of clearcoat when polishing, and not more than 0.5 mils when wet sanding.

Sanding

The sanding process is like planing the surface. The defect, such as excessive orange peel, is brought down to the level of the surrounding surface. Sanding keeps the correction area flat and in a small area. Types of sanding processes include nib sanding, hand wet sanding, and machine dry and wet sanding. What process and tools to use depends on the size of the repair area, the tools available, and personal preference.

Sanding using any process requires starting with the grit that will remove the defect, then progressing to finer grits to remove the previous grit scratches. It is not necessary to step through each grit. One grit can be skipped. As an example, the progression of grits in one system is P one thousand, P twelve hundred, P fifteen hundred, P two thousand, and P three thousand. If starting with P twelve hundred, skip one grit and follow up with P two thousand. Don't skip two grits and go right to P three thousand. That would be counterproductive.

Using Nib Removal Tools

Nib removal sanding tools are for removing small defects in a small area, such as dirt nibs, small runs, etc. These tools may be small sanding blocks or pads, or a denibbing sanding machine.

The blocks come in five grits ranging from P four hundred to P three thousand. The mid-range grit, P fifteen hundred is good to start with for most defects. The sanding pads accept specially sized, adhesive-backed sandpaper, also in progressively fine grits. Use the pads similar to the blocks, following with buffing.

Generally when using nib removal tools, keep the surface wet with a spray water bottle, move in a small, circular motion with little pressure, and check the progress often.

One example of a denibbing sanding machine is part of the 3M Perfect-It™ denibbing system. This system includes a 3-speed machine with 1000 grit and 1500 grit abrasive bits. The abrasive is attached to a small circular foam pad at the end of the bits. A polishing machine is also part of this denibbing system.

Using the appropriate bit and denibbing machine speed setting, sanding is done using a light pressure, trying not to collapse the foam and keeping the abrasive moving. Using water may be necessary when denibbing some clearcoats. The machine speed settings include slow, for soft or uncured paints, fast for hard or cured paints, and medium. Medium speed is recommended as a starting point.

Ensure that the spray bottle, even if it's plain water, is properly labeled to identify the contents.

Wet Sanding

Wet sanding by hand is done using wet / dry sandpaper on a sponge-backing pad. The sandpaper may need presoaking. When hand wet sanding, keep the surface wet with a water spray bottle or a running hose. Do not use a sponge dipped in a bucket, which makes it too easy to recycle the sanding sludge back onto the surface.

Wet Sanding (cont'd)

When hand wet sanding, listen and feel for dirt between the pad and the surface. One speck of dirt can scratch a surface beyond a detailing repair. Generally start with P fifteen hundred. If there's no progress, start with the next aggressive grit, P twelve hundred. When the defect is removed, switch to a finer grit to remove the previous grit scratches, not skipping more than one grit. Cross the previous grit scratches with the finer grit, ending with the finest grit along body lines. It's easier to remove cross sandscratches than all parallel scratches. After wet sanding with the finest grit, follow with buffing to remove sandscratches and restore the gloss.

Machine Sanding

The machine finish sanding process includes machine dry and wet sanding. The machine finish sanding process uses a finishing sander. A finishing sander has a shorter stroke, and is therefore less aggressive, than a regular dual-action, or DA, sander. There's usually a soft interface pad, especially when dry sanding, to make the process even less aggressive than sanding with a regular DA. Grit selection varies with the system being used.

Buffing Materials

Three basic types of buffing materials are referenced in this course for detailing. They include compounds for removing defects, polishes for restoring gloss and removing very minor defects, and waxes and sealants for extended protection.

Product makers use different names to describe these materials. For example, compounds may be called a polishing, finishing, or rubbing compound, or a heavy-cut cleaner. Look at the recommended use and ingredients of the material, not the name.

Stay With One System

When detailing, and especially with the buffing process, stay with one system of materials and equipment. This ensures that the materials are compatible, the proper steps are used in the right order, and the proper application tools and materials are used.

Rotary Buffers

Machine compounds and polishes are best applied with a rotary buffer. Rotary buffers are either electric or pneumatic. Buffers may be variable or at two fixed levels. Variable speed at the trigger with a range of 0 to 1,800 rpm is best. The speed should never exceed 2,000 rpm. Slower buffer speeds are recommended on bumper covers and other flexible plastic parts to minimize the generated heat.

Start a rotary buffer when it's on the panel. The speed is higher when the buffer is freewheeling off the panel. The more speed, the harder the buffer is to control and the more heat is generated from friction. Allow the weight of the buffer to do the work. Don't apply excess pressure, or too much heat will be generated.

When using a buffer, drape the electric cord or air hose over a shoulder to prevent it from contacting the vehicle finish and causing scratches.

Buffing Pad Types

Buffing pads are available in wool or foam. Foam buffing pads don't give off lint, and generally will generate more heat than wool because there's more contact with the surface. Wool buffing pads are usually a wool / synthetic blend. Wool buffing pads are naturally more aggressive than foam. For this reason, wool pads are more likely to leave swirl marks.

Wool pads, for both compounding and polishing, may have twisted or untwisted strands. Generally, twisted strand pads are more aggressive. This may require more skill to prevent swirl marks, especially with pads designed for use with compound. Two advantages of a twisted wool pad are that there's slower product buildup, and there's less lint released.

Whether to use wool or foam, and what type of wool or foam, is based mostly on the product maker's recommendation. The decision is also based on the condition of the surface, how fresh the refinish is, the skill level of the technician, and personal preference.

Small Pad Diameters

Buffing pads are available in different sizes, both in diameter and thickness. Generally, the smaller the pad, the lower the edge speed. The outer edge of any pad, whether it's large or small, does most of the work, and therefore dries quicker. A slower edge speed will allow

the material to stay wet longer than a faster edge speed on larger diameter pads. Small pads are also easier to control and easier to follow panel contours than larger pads.

Buffing Methods
Generally, when using a power rotary buffer, always use a clean pad. Clean the pad before and during buffing to minimize swirl marks. Change pads when switching to a different material. This applies to not only when switching between a compound and a polish, but also between compounds and between polishes. Most product makers have at least a two-step compound process, and different grades of polishes. Each of these products may require a different type of pad. Buff away from a raised body line rather than into it. The finish is thinner along body lines. One option is to avoid body lines when machine buffing, or apply a strip of masking tape on the body line, to avoid cutting through. Later, work the body line by hand. If there are different contours on a panel, buff from a high to a low area. Do not buff from a low to a high area, such as between a hood and a fender. This may put too much pressure on the high area.

Using the proper buffing materials and methods will ensure a timely delivery and reduce rework.

Removing Scratches
Scratches in a finish include swirl marks and sandscratches. Removing a scratch requires bringing the surrounding finish to the deepest depth of the scratch.

Scratches That Cannot Be Removed
Generally, if a scratch can be felt when drawing a fingernail backwards across it, it's at least 2 mils deep and cannot be removed by detailing. A scratch can also not be removed if the primer is visible or it requires removing too much topcoat.

Use a low-power magnifier or magnifying glass to determine the depth of a scratch that can't be felt.

Hard Water Spotting
Hard water spotting, also called alkaline rain, is usually caused by evaporation of hard water, leaving mineral deposits on the finish. Hard water spotting is usually just on top of the surface, removable by a good car washing. If the problem is more severe, try a clay bar. As a last resort, use an acid solution of vinegar and water. Mix one part white vinegar to two parts water. Follow with a clean water rinse. This cannot be done on a fresh refinish.

Acid Rain
Acid rain is rain contaminated with pollutants in the atmosphere. Acid rain is weak when it first falls, but becomes more active when the water evaporates, because the acid is less diluted. If left on the surface, the acid can etch into or dull a finish. Finish color has no effect on how much acid rain will etch into a finish.

Acid Rain Treatment

Treat acid rain damage by assessing the damage. Determine whether the drops have etched into the finish. Neutralize the acid by washing and repeatedly rinsing. Use car wash soap or a slightly alkaline solution of all-purpose cleaner. Polish to restore the gloss, if needed.

If the damage is deep enough to be felt, it may require sanding to level the defect and possibly refinishing. It's still necessary, however, to first neutralize the acid or the problem will reappear.

If acid rain spots reappear after repeated rinses, apply a baking soda solution. Dilute 16 milliliters of baking soda per liter of water, or one tablespoon per quart. Apply the solution with a spray bottle and rinse after no more than a few minutes.

Industrial Fallout

Industrial fallout is anything man-made that falls from the air. This includes tiny particles from smokestacks, splatter from fresh asphalt roads, and jet fuel contamination. The fallout can be identified by a rough finish texture. Correcting the problem may require a direct application of all-purpose cleaner, if the defects are just on the surface. A clay bar may work, if there are particles or an overspray of a material. If defects remain after removing the rough material, buff with a compound followed by a polish.

Rail Dust

Rail or metal dust is iron particles that settle into finished surfaces. Rail dust can come from several sources, including railroad tracks. This usually occurs when vehicles are being transported on rail from the vehicle maker. Most, if not all, of this rail dust is removed during the predelivery inspection process. Iron filings from semimetallic brake pads as the brakes and rotors wear down can also cause rail dust. Also, fallout from manufacturing plants that use steel such as foundries, fabrication shops, and stamping plants. Finally, if metal grinding or welding is done close to a fresh refinish, the result can be rail dust in the refinish.

Inspect for rail dust by feeling for a rough finish. On dark colors, the particles may be more easily felt than seen. Lightly rub with a cotton cloth. The imbedded particles may snag some lint off the cloth, which is easily seen. You can also use a magnifier to look for small, sharp-edged, dark spots sticking up from the surface. There may be staining around the particles as corrosion forms, blue on dark colors and orange on light colors.

Removing Rail Dust

To remove rail dust, do not sand or buff. The particles will likely break off at the top and scratch the surface beyond a detailing repair. Assess the problem and remove by

starting with the least aggressive method. Try a clay bar first. A clay bar will usually work, especially on brake dust. If clay does not work, there are at least three acid solution systems available, including a three-step system.

Oxalic acid, in gel or liquid form, should only be used as a last resort. When using oxalic acid, lay a wet towel on the vehicle surface for a few minutes to loosen the rail dust particles. A terry cloth towel should be used that has enough nap to allow the particles to embed in the napping.

Clearcoat Degradation

Clearcoat degradation is the result of a clearcoat being exposed to the ultraviolet (UV) rays of the sun for a long time. On single-stage finishes, the result is oxidation. Clearcoat degradation is most severe on dark colors exposed to heat. Clearcoat degradation looks dull, or whitish. It can usually be corrected by buffing with a polish to restore the gloss. In extreme cases, refinishing may be required.

Organic Fallout

Organic fallout is contamination from natural sources. The fallout is almost all mildly acidic, which can etch a finish if the contaminant isn't removed in a short time. Types of organic fallout include insect residue. This is most easily removed with a clay bar.

Tree sap is usually water soluble. Terpenes from some pine trees will etch a finish. Use turpentine to remove tree sap that won't wash off with car wash soap and water.

Bird droppings are usually acidic, but may be alkaline depending on the bird's diet. The easiest repair is to remove the droppings as soon as possible.

Salt spray can get behind moldings and trim and speed up the corrosion process. Rinsing with a pressure washer may be needed to force water into hidden areas. It may be necessary to remove trim pieces to make sure the salt is rinsed off.

After removing organic fallout, buffing with a polish or even a compound may be necessary to remove shallow craters and restore the gloss.

Module Summary

Topics discussed in this module included: monitoring film thickness and what to keep in mind on original finish and refinish, using clay and nib sanders for small defect removal, starting with the least aggressive method, sanding equipment and techniques for removing finish defects, buffing equipment and techniques for removing finish defects and restoring gloss.

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Module 3 - Final Detailing

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Learning Objectives

Learning objectives for this module include: defining a detailer's checklist and why a checklist is important, defining materials for final exterior and interior detailing, removing a stain using the pH scale, removing odors, defining the final exterior touch-up steps.

Checklist

The best way to ensure that a final detail is done right is to use a checklist. A checklist ensures that all steps are done, without repetition, in the proper order. And it keeps the detailing process consistent from one vehicle to the next, and one detailing technician to the next. When the vehicle is delivered, the checklist can be signed and given to the vehicle owner.

Vacuuming

Begin the interior detailing by vacuuming vents and other tight areas. A soft detailing brush, ahead of the vacuum nozzle, will help work dirt off the surface. A simple detailing brush can be made for this purpose by cutting off a paintbrush. Tape the metal band to protect surfaces. When vacuuming carpets and seats, use a stiff bristle brush in the same manner to pick up the nap and work the dirt or salt out of the fabric.

Fabric Carpet And Seat Shampooing

After vacuuming, the next step is to shampoo the carpet and upholstery. When shampooing fabric carpet and upholstery, test colorfastness in a hidden area. If the color doesn't come off when blotting with a cloth soaked in the shampoo, it's colorfast. Use a soft-bristled brush or coarse sponge to gently work the shampoo. A bristle brush will pick up the nap on fabric carpets and upholstery. Allow the material to do the work. Clean the surface. Do not try and work the cleaner into the backing. Use as little water as possible. If water soaks into the seat or carpet, it may cause flame-retardant material to come to the surface. It may also cause mildew. Consider a wet / dry vacuum to remove excess water. Also consider an extractor as an option. An extractor applies the water and shampoo and removes the solution in one step.

Only use a mild shampoo, close to pH 7, on seat belt fabric. Avoid chemical cleaners, especially petroleum-based cleaners, which will deteriorate the webbing.

Cleaning Fabric Headliners

Fabric headliners are more delicate than seat fabric. To clean fabric headliners, use a slightly damp, folded towel, such as a microfiber towel. Wet the towel with all-purpose cleaner and wring it out. Move in one direction, front to back, to keep the nap looking the same. Clean fabric sun visors the same way. Do not vacuum, scrub, or brush heavily.

pH Of Stains

Common stains in carpets and seats are mostly acidic, or below 7 on the pH scale. Stains can usually be neutralized with an alkaline solution, such as all-purpose cleaner. Alkaline

stains, such as fresh eggs or water spots, can be neutralized with a mild acid solution, such as vinegar and water. Stains enter in a liquid, which then evaporates leaving only the pigments. The stain must be made into a liquid again so it can be easily removed.

There may be traces of sodium hydroxide powder left after an airbag deployment. If mixed with water, sodium hydroxide becomes a strong alkaline. This is why it's very important to vacuum all traces of powder left after an airbag deployment, before the powder comes in contact with water.

Stain Removal Materials

Materials and tools for removing stains include a clean, absorbent cloth, a dull knife for scraping up solid materials, cleaning solutions, and a spray bottle with clean water for rinsing.

Ensure that the spray bottle, even if it's plain water or a solution of all-purpose cleaner, is properly labeled to identify the contents.

Stain Removal Methods

The best way to remove a stain is by applying the cleaning solution around the stain. This allows the solution to wick into the stain. If the solution is applied directly to the stain, the stain could spread. Then use a clean, dry cloth and blot the stain. Follow with a water rinse and blot again. If the stain doesn't come out, repeat the process.

Remove Odor Source

Most odors are a by-product of bacteria. The first step in removing odors is to identify and remove the source. If the source is spilled food, for example, the first step is removing any remains of the spill, then cleaning the area.

A musty odor from the air conditioning system, most noticeable when starting the vehicle, is usually from bacteria growing on the evaporator core. This odor may be beyond a detailing repair. Depending on the air conditioning system, removing the source of that odor could mean turning the defroster on and spraying an odor eliminator in the air intake vent. It could also mean replacing an air filter. What might be beyond a detailing repair is a recommendation to disassemble part of the system, clean out any debris on the evaporator core, and apply a disinfectant.

Be careful and wear hand protection when reaching under seats.

Customers will be more satisfied with the repair if there is no evidence of the odor in the vehicle. Bacteria as well as chemical products leave odors and have to be removed in order to eliminate the odor. This will enhance the customer satisfaction experience.

Odor Eliminator

After removing the odor source, spray a chemical neutralizer or an odor remover, if this is needed. Do not spray or hang a deodorizer, which only masks an odor.

Conditioners Or Dressings

Conditioners or dressings help prevent fading and drying. They should be silicone-free for collision repair facilities. Silicone-free materials work just as well as materials that contain silicone. If the conditioner is high gloss, there's usually another material in the same product line that's low gloss for the tops of instrument panels. Conditioners should not be applied on pedals or the steering wheel, because conditioners may make these surfaces slippery.

Use of silicone products on any part of the vehicle causes significant refinish issues, such as fisheyes, and can be a source of rework that will lengthen the repair process.

Cleaning Leather

Leather interior surfaces may be natural or artificial hide. Leather must be cleaned with a cleaner designed for leather, not vinyl, and conditioned with a leather dressing or oil.

To avoid possible discoloration, test cleaners and dressings in a hidden area first.

Other Interior Surfaces

Treatments for some other interior surfaces include using a cotton swab dipped in all-purpose cleaner for dirt on vents, radio controls, etc., and removing window tinting film or decal remnants on glass with a plastic razor blade.

Exterior Touchups

The checklist for final exterior detailing includes conditioning weatherstripping and other rubber and plastic, and applying touch-up paint to nicks, if the vehicle was refinished and there's a sample bottle of the exact finish available. Remove masking from moldings that was left on for polishing. Also reapply trim pieces that were removed for polishing. Use products that will remove compounds and polishes from grain textures.

Clean Glass

When cleaning glass, use a glass cleaner that does not contain ammonia on applied window tinting. Ammonia-based cleaners can damage applied tinting. Make sure to clean the top edge of the door glass. This means lowering door glass or opening the door after cleaning the rest of the glass. Wipe in only one direction, either just horizontally or just vertically. When wiping the other side of the glass, go the opposite direction. This makes it easy to see what side of the glass a missed spot or streak is on.

Waxes Or Sealants

Waxes and sealants form a thin barrier coating, and help protect the finish from UV rays, acid rain, bird droppings, and minor abrasions. Waxes enhance finish gloss. They may also be considered a sacrificial coating.

Follow the paint maker's recommendation for when to apply wax on refinishes. Some paint makers say to wait up to 120 days. Other paint makers say if the vehicle can be buffed with polish, it can be waxed. Only use waxes in a collision repair facility that do not contain silicone.

Excess Polish Or Wax

When doing a final exterior check, look for excess polish or wax in hidden areas such as around jambs, behind moldings, in emblems, and key holes. Remove the polish or wax with a small brush. A clay bar may work on trim and moldings. A microfiber towel may also work.

Care Tip Sheet

The checklist can be signed and given to the customer along with a care tip sheet. A care tip sheet explains how to take care of a newly refinished and detailed vehicle.

For example polish occasionally to protect the finish, (waiting time is only needed before waxing). The more routinely this is done, the least amount of work is involved.

Clean off bird droppings and tree sap quickly. These are acidic and can damage the finish.

Do not allow rain drops to dry on the surface. One of the best times to wash a vehicle is after a light rain or heavy dew. Do not wash the vehicle in direct sunlight. Be aware that some commercial car washes may damage a fresh refinish.

Care tip sheets are available for vehicle owners from paint makers as part of a lifetime warranty program.

Cleaning Vinyl Tops

Cleaning vinyl tops, such as convertible tops, requires special procedures. Vinyl top surfaces are especially porous and attract dirt into the pores and between the textured grains. Cleaning vinyl tops may require brushing to work the cleaner into the surface. Brush or wipe in a circular pattern, occasionally reversing direction. The brush should not leave scratches when rubbed on skin. Treat the entire top equally to obtain a match. If only one area is cleaned, it'll be obvious.

Cleaning Convertible Windows

Convertible windows are usually clear plastic. Do not use glass cleaners on clear plastic. There are special clear plastic cleaners and polishes available. These materials remove fine scratches and swirls from clear plastic. The special cleaners can also be used on tail lamp lenses, instrument gauge lenses, and other clear plastic surfaces.

Cleaning Wheels

Wheels are the most often damaged part on a vehicle when detailing. The damage usually results from using too aggressive of a wheel cleaner, or scratching the surface with a wheel brush. When cleaning wheels, use the least aggressive method that'll do the job. Painted or clearcoated wheels may only require a mild all-purpose cleaner solution. Wait until the wheel is cool. Washing wheels when the wheels are hot from driving affects chemical reactions of the cleaner being used. This may cause streaks or spots on the wheels that can't be removed. Clean one wheel at a time. This assures the cleaner will not dry on the surface, which lessens the cleaning action and makes it difficult to rinse clean. Follow the wheel cleaner maker's recommendations for the amount of time that the cleaner should be allowed to soak before rinsing.

Some wheels may not come clean. Brake dust or corrosion may be imbedded into the surface. If unrepairable damage is suspected, try applying a small amount of aggressive buffing compound to a hidden spot on the wheel with a cloth. If the brake dust or corrosion doesn't come off, even an acid cleaner will likely not remove it.

If there's an acid wheel cleaner available in the product line the facility is using, use extreme care when using it. Acid wheel cleaners may contain hydrofluoric acid, which can damage a wheel quickly and be hazardous to the technician. These cleaners are designed to remove imbedded brake dust on aluminum or wire wheels. The cleaners are not designed for clearcoated, painted, or polished wheels.

Tire Dressings

After washing the wheels and tires, apply a tire dressing that's specifically made for external rubber surfaces. Tire dressings give tires a new-like black appearance. These dressings may also be used on black bumper surfaces. If used in a collision repair facility, tire dressings should be silicone-free.

Some foam tire dressings, generally those that are high-silicone, contain Hexane which can react with the black coloring of the tire and cause black particles to spin off the tire when the wheel is in motion. The spotting that results on porous, flexible fascia parts cannot be removed. Ford Motor Company has published a Technical Service bulletin on this subject.

Engine Cleaning

If engine cleaning will be part of the detailing steps, it should be done first because the engine is often the dirtiest part of the vehicle. Park the vehicle in a wet bay where there is a drain and access to water.

The first step is to check under the hood for exposed electrical terminals that shouldn't get wet. Plastic wrap or bags are used to wrap around the electrical terminals and the terminal side of computer modules. Tape can be used to keep the plastic in place during the cleaning. Many terminals are watertight and don't need protection. Other terminals are vulnerable to water or degreaser penetration, especially those that face up or to the front where the water will be directed. Water or degreaser can easily short out a computer module. The saying, better safe than sorry, really applies here.

Next, apply a mild degreaser solution using a spray bottle to the entire engine compartment. Use a brush to work the degreaser where the dirt or grease is built up. Most degreasers work best if allowed to sit for a few minutes.

A water hose without a nozzle may be used to rinse off the engine. Rinse off the engine from the top down. Allow the engine a few minutes to dry, then remove the plastic coverings. A silicone-free dressing can be applied to complete the cleaning process.

Module Summary

Topics discussed in this module included: a detailer's checklist and why a checklist is important, materials for final exterior and interior detailing, removing a stain using the pH scale, removing odors, final exterior touch-up steps.