I-CAR®

Uniform Procedures For Collision Repair UPCR

CP01S Corrosion Protection

 v.4.0

1. Description

This procedure describes repair methods and inspection requirements for the application of corrosion protection materials to steel parts.

2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality corrosion protection of steel. This procedure is intended for use by professionals who are qualified through training and experience.

3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

HM01 Hazardous Materials
PS01 Personnel Safety
RF21 Finish Removal
RF41 Finish Application

3.2 Other Information

Equipment-specific information
Product-specific information
Vehicle-specific repair information

4. Equipment And Material Requirements

4.1 Corrosion-Resistant Coatings

The use of these types of corrosion-resistant coatings is included in this procedure:

- ❏ corrosion-resistant primer systems
- ❏ anti-corrosion compounds

The coatings must be designed for automotive use, and comply with all VOC regulations.

The use of these types of primer systems is included in this procedure:

- ❏ epoxy primer
- ❏ self-etching primer
- ❏ wash primer
- ❏ weld-through primer

Use one paint system throughout the repair. Do not intermix products from more than one paint maker during the repair process.

The use of these anti-corrosion compounds is included in this procedure:

- ❏ wax-based coatings
- ❏ petroleum-based coatings

Anti-corrosion compounds must have these characteristics:

- ❏ proper viscosity to form a spray fog when applied at 16° C (60° F) or higher
- ❏ ability to penetrate pinchwelds
- ❏ ability to flow to completely coat hard-to-reach areas
- ❏ no lingering odor
- ❏ ability to bond to bare metal, primer, and painted surfaces
- ❏ resistant to damage by water, oil, fuel, stone chips, road salt, and chemicals
- ❏ remains flexible with age

4.2 Spray Equipment

The application system required under this procedure must have these capabilities:

- ❏ spray wands of various lengths
- ❏ fan-shaped spray patterns covering 360°

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4. Equipment And Material Requirements (cont'd)

4.3 Seam Sealers

The use of these seam sealers is included in this procedure:

- ❏ self-leveling
- ❏ thin-bodied
- ❏ heavy-bodied
- ❏ solid
- ❏ brushable
- ❏ sprayable

Seam sealers, depending on the application, must have these characteristics:

- ❏ bond well to primed or painted surfaces
- ❏ remain flexible
- ❏ paintable
- ❏ resistant to oil, fuel, and other fluids
- ❏ resistant to heat from engine and exhaust system

All seam sealers used must match the function and appearance of the vehicle maker's assembly process.

5. Damage Analysis

Does not apply.

6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Spraying Safety

To prevent injury during spraying operations, wear these protective items:

- ❏ NIOSH-approved fume respirator or fresh-air system
- ❏ protective clothing
- ❏ rubber gloves
- ❏ face shield or safety glasses

Do not spray near welding operations or open flames. Spray only in a well-ventilated area.

7. Environmental Safety

7.1 Hazardous Materials

Hazardous materials safety information is in **HM01**.

7.2 Spray Equipment And Materials

To protect the environment when applying anti-corrosion materials:

- ❏ Make sure products meet VOC regulations.
- ❏ Make sure equipment meets VOC regulations.

8. Vehicle Protection

8.1 Existing Corrosion Protection

To preserve existing corrosion protection while making repairs:

- ❏ Remove only a minimum amount of paint film from damaged areas.
- ❏ Avoid removing any zinc coating.
- ❏ Do not remove E-coat unless directed by the vehicle maker.
- ❏ Avoid scratching any part. If there is an accidental scratch, restore corrosion protection to the area.

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- ❏ Protect undamaged areas from grinding, cutting, and welding.
- ❏ Cover openings in the body to prevent metal chips from entering during grinding, cutting, or welding.
- ❏ Vacuum metal chips from inside body cavities and crevices. Do not use compressed air, which may force the chips into corners.
- ❏ Keep moisture and metal-treatment chemicals out of closed body sections and crevices. Dry thoroughly.

Plan to replace any anti-corrosion materials damaged by the collision or repairs.

8.2 Galvanic Corrosion

To avoid galvanic corrosion:

- ❏ Use proper insulators and clips when installing metal fasteners and trim.
- ❏ Drill trim-mounting holes before applying any coatings. Coat inside edges of holes completely.
- ❏ Use the same type of fasteners as the original assembly.

8.3 Protection Of Mechanical And Electrical Parts

Do not apply anti-corrosion compounds to these mechanical and electrical parts:

- ❏ seat belt retractors and seat belt guide rails
- ❏ hidden headlamp assemblies
- ❏ window regulators, motors, speakers, and wiring
- ❏ drain holes
- ❏ engine and related parts
- ❏ air filter and intake tube
- ❏ shock absorbers
- ❏ transmission parts
- ❏ shift linkages
- ❏ speedometer cables
- ❏ brake and suspension parts
- ❏ locks, key cylinders, and door latches
- ❏ power antenna
- ❏ driveshafts, drive axles, and CV boots
- ❏ exhaust system parts

8.4 Protection Of Vehicle Labels

Protect vehicle labels and identification numbers, such as anti-theft labels, when applying corrosion-resistant coatings.

9. Repair Procedure

9.1 Exterior Surface Preparation

If a primer will be used that does not require metal conditioner and conversion coating, apply undercoats following the paint maker's recommendations.

To treat bare metal surfaces:

- ❏ 1. Clean the repair area with the proper wax and grease remover and wipe dry.
- ❏ 2. Apply metal conditioner and conversion coating, as required. Follow the paint maker's recommendations.
- ❏ 3. Apply undercoats.

Metal conditioners and conversion coatings are not recommended for weld areas. See **9.2**.

Metal conditioners and conversion coatings are not recommended for application inside enclosed areas after assembly. See **9.3**.

9.2 Treatment Of Weld Areas

To treat weld areas:

- ❏ 1. Before welding, clean the mating surfaces. Avoid removing any zinc coating.
- ❏ 2. Clean mating surfaces and inside sections of enclosed parts with the proper wax and grease remover.
- ❏ 3. Apply weld-through primer to all mating surfaces that do not have zinc coating or where the zinc coating was removed. Follow the vehicle maker's recommendations. Due to the poor adhesion property of some weld-through primers, it may have to be removed from all exposed surfaces after welding, before applying other coatings and sealants.
- ❏ 4. After welding, remove all welding residue. A plastic abrasive or captive sandblaster is recommended for cleaning weld areas.
- ❏ 5. Dress exposed welds on cosmetic surfaces. Do not thin the surrounding sheet metal or remove the zinc coating.
- ❏ 6. Apply a self-etching, wash, or epoxy primer.
- ❏ 7. Treat exposed seams. See **9.4**.
- ❏ 8. Apply topcoat to cosmetic areas.

9.3 Treatment Of Enclosed Parts

To treat enclosed parts, such as rails, rocker panels, and pillars:

- ❏ 1. Clean the panels with the proper wax and grease remover before assembly.
- ❏ 2. Apply metal conditioner and conversion coating before assembly. Do not use these materials in weld areas or areas where acids cannot be rinsed away or neutralized. Metal conditioner and conversion coating may not be necessary with some primers. Follow the paint maker's recommendations.

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9. Repair Procedure (cont'd)

❑ 3. Prepare the weld surfaces. See **9.2**.
❑ 4. Set the spray pattern for the primer by adjusting the pressure. The spray pattern must be able to reach the entire length of the enclosed part.
❑ 5. Apply corrosion-resistant primer inside the enclosed area. Use a wand to cover all areas completely.
❑ 6. Clear all drain holes after application.
❑ 7. Treat exposed seams. See **9.4**.
❑ 8. Apply an anti-corrosion compound. See **9.5**.

9.4 Treatment Of Exposed Seams

To treat exposed seams:

❑ 1. Thoroughly clean the joint areas.
❑ 2. Apply corrosion-resistant primer to the joint areas and allow to dry. Follow the product maker's recommendations.
❑ 3. Apply an appropriate seam sealer to the exposed seams. See **4.3**. Follow the vehicle maker's recommendations.
❑ 4. Apply primer over the seam sealer, if required by the product maker.
❑ 5. Apply topcoat to the exposed areas.

9.5 Application Of Anti-Corrosion Compounds

To apply anti-corrosion compounds:

❑ 1. Adjust the pressure on the spray system for the anti-corrosion compound.
❑ 2. Apply anti-corrosion compound to enclosed interior surfaces and underbody areas. Apply the material by making slow, even passes along the surface. Use the same access locations to enclosed interior surfaces used for applying primer. The entire surface must be covered with a continuous film.
❑ 3. Apply sound-deadening materials to the underbody areas and inside the trunk. Refer to the vehicle body repair manual for specific recommendations.
❑ 4. Repair any other damage to the existing corrosion-protection coatings.

10. Use Of Recycled (Salvage) Parts

Does not apply.

11. Inspection And Testing

11.1 Inspection Of Repaired Areas

Inspect repaired areas for these conditions:

- ❏ restoration of corrosion protection in areas where clamping and anchoring devices were installed, and where metal working was performed
- ❏ no signs of corrosion
- ❏ complete and even coverage of coatings
- ❏ no dissimilar metals in contact, such as aluminum trim parts contacting a steel panel at the edge of a mounting hole
- ❏ no overspray on mechanical or electrical parts, or cosmetic surfaces
- ❏ proper application of sound-deadening materials to underbody surfaces and inside the trunk
- ❏ proper dressing of welds
- ❏ complete sealing
- ❏ coated wand-access holes
- ❏ open drain holes

Correct any defects.