

# Front and Rear Bumpers

## Refinishing Procedures (cont'd)

### 8. Drying primer

#### ⚠ WARNING

- Body parts being dried with an industrial dryer can get hot enough to burn.
- Do not touch parts being dried.

Air dry for 5-10 minutes, then force dry with a infrared dryer.

#### NOTE:

- Use constant care when force drying to prevent deformation.
- Follow the paint manufacturer's instructions.
- After drying, wet sand the surface with #600 sandpaper and air blow.

#### ⚠ WARNING

- Do not use high air pressure; use only an approved, 210kPa (2.1 kg/cm<sup>2</sup>, 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.

### 9. Applying the spot filler

Check the surface and apply spot filler to cavities or flaws in the surface.

#### NOTE:

- Apply spot filler evenly.
- Follow the paint manufacturer's instructions.

### 10. Drying and sanding spot filler

- Air dry for 5 minutes, then heat to 140°F (60°C) for 20-30 minutes with a dryer.

#### ⚠ WARNING

- Body parts being dried with an industrial dryer can get not enough to burn.
- Do not touch parts being dried.

NOTE: Use care when heating to prevent deformation.

- After drying, wet sand the surface with #600 sandpaper.
- Wet sand with #400 - #600 to where intermediate coating area.
- Clean, air blow, and degrease thoroughly.

### 11. Intermediate coat

- Use top coat enamel base.

#### ⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store in a safe place, and keep it away from sparks, flames or cigarettes.
- Pour the necessary amount of top coat enamel into a beaker.
- Add additive and hardener to the paint and mix.

NOTE: Follow the paint manufacturer's instructions.

- Adjust viscosity with thinner, then pour into cup after filtering.
- Adjust delivery and pressure, and test spray.
- Clean the surface with tack cloth and air blow.
- Spray until the primer or primer surfacer is completely covered.

#### NOTE:

- Avoid heavy application of paint at one time.
- Allow each coat to flash-off before applying another coat.

### 12. Drying and sanding

#### ⚠ WARNING

- Body parts being dried with an industrial dryer can get hot enough to burn.
- Do not touch parts being dried.
- Air dry for 10-15 minutes before force drying.

#### NOTE:

- Follow the paint manufacturer's instructions.
- Use constant care while force drying to prevent deformation.

- After drying, wet sand the top coating area with #600 - #800 sandpaper.

NOTE: Use a rubber block and sand flat and smooth.

- Clean and air blow

### 13. Masking

Mask the surface around the repair to keep over spray off.

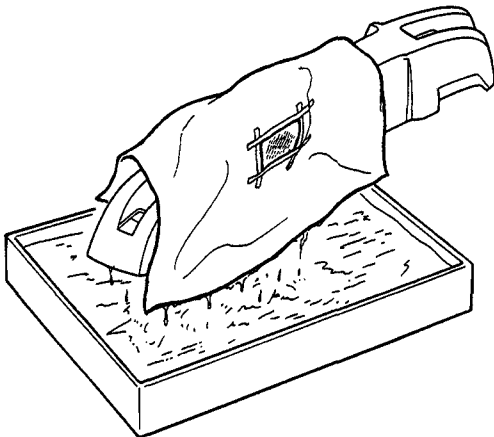
NOTE:

- Mask as much of the surface as possible.
- Use masking paper which is free of fiber dust. Use of polyethylene sheet is recommended.

### 14. Surface discharging

NOTE: Wear safety goggles, rubber gloves and face mask. Follow the manufacturer's instructions.

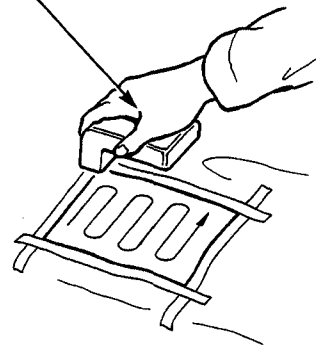
- By alkaline degreasing agent/surface active agent.
- 1. Degrease with alkaline degreasing agent and rinse well with water.  
Degreasing agent: LIDOLIN 24 (Nippon Paint) or equivalent.
  - 2. Treat with surface active agent and rinse well with cold or hot water.  
Surface active agent: LIDOSOLE 501 (Nippon Paint) or equivalent.



- By surface discharger  
Use a surface discharger to negatively ionize the surface to be painted.

Discharger: ES Gas + Power Unit (Nippon  
Lansbuge)  
Surface discharger (National)

### SURFACE DISCHARGER



### 15. Top coating

#### ⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store in a safe place, and keep it away from sparks, flames or cigarettes.
- Do not use high air pressure; use only an approved, 210kPa (2.1 kg/cm<sup>2</sup>, 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Pour paint into a beaker.
- Add additive and hardener to the paint and mix.

NOTE: Follow the paint manufacturer's instructions.

- Adjust viscosity with thinner, then pour into cup after filtering.
- Adjust delivery and pressure, and test spray pattern.

(cont'd)

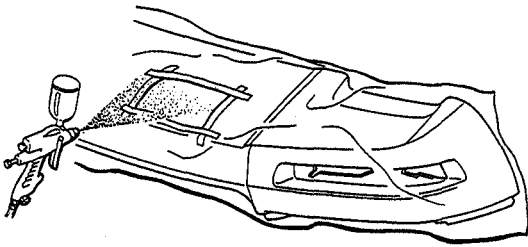
# Front and Rear Bumpers

## Refinishing Procedures (cont'd)

- Clean the surface with tack cloth and air blow.
- Spray until the intermediate coat is completely covered.

### NOTE:

- Avoid heavy application of paint at one time.
- Allow each coat to flash-off before applying another coat.
- With solid color or metallic enamel, allow final coat to flash-off (5-20 minutes) before applying clear coat.



## 16. Drying

### ⚠ WARNING

- Body parts being dried with an industrial dryer can get hot enough to burn.
- Do not touch parts being dried.

Air dry for 10-15 minutes before force drying.

### NOTE:

- Follow the paint manufacturer's instructions.
- Use constant care while force drying to prevent deformation.

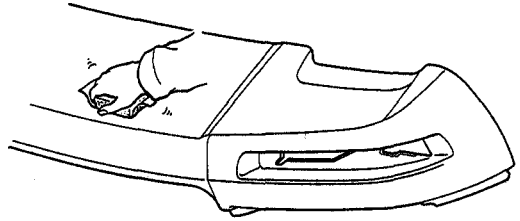
## 17. Polishing and buffing

If dirt, sanding dust, lint or pigment adheres to the surface or becomes embedded, the surface should be treated as follows:

- Lightly sand off with #2000 sandpaper and polish with soapy water.

NOTE: Use a rubber or wooden block and sand the surface evenly. Clean dirt and dust off thoroughly.

- Wipe the surface clean and air blow.
- Polish with a sponge buff using very fine compound. Move the polisher up and down and right and left using light pressure.

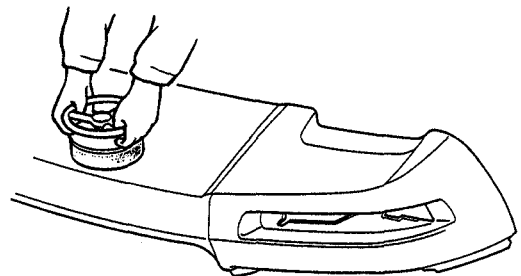


NOTE: To prevent off-color or fading, observe the following:

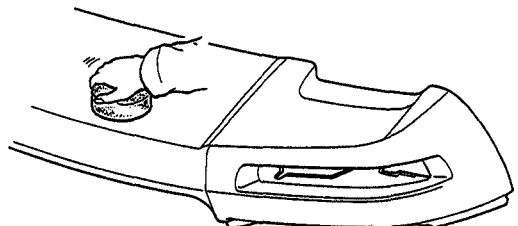
- Do not use air polishers. Use an electric polisher at 1,500 rpm.
- Use a sponge buff to polish the surface. Woolen buffs may cause the surface to become heated and scratches may result.
- Use very fine compound which is soluble in water.
- Polish until sanding marks disappear.
- Polish again with very fine compound.

### NOTE:

- Do not use excessive force to hold the polisher against the surface.
- Do not overheat the surface.



- Apply wax (hard).

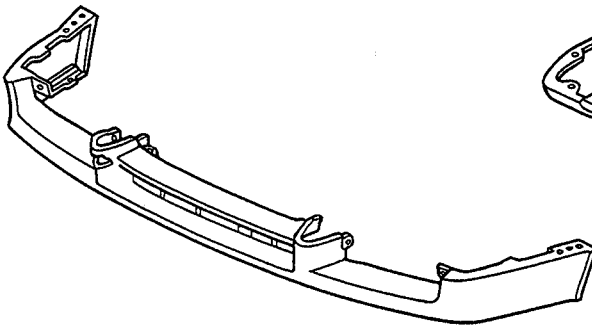


# Front and Rear Skirts

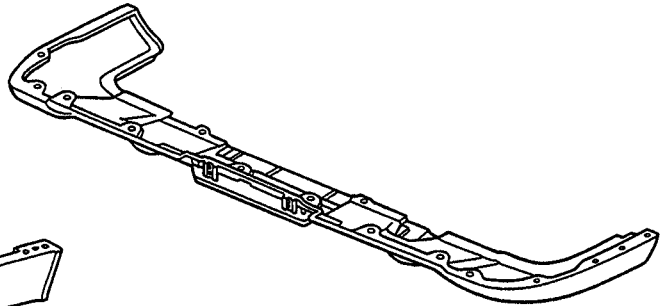
## General

The front and rear skirts are made of polypropylene (PP) resin. They can be repaired if the damage or deformation is minor in nature. This section covers PP repair. Repairing PP is different from other resins such as ABS and urethane.

Front:



Rear:



## Repair Materials and Tools (Example)

The following materials and tools are required to resin skirts

### Adhesive and Filler:

- Bumper primer (clear type)
- Bond quick mender
- High art mat black
- High art thinner
- High art hardener

### Primer surfacer:

- Dual-liquid type bumper primer surfacer (gray) Reference (Isam Paint)
- Pigment: (1kg) (35.3 oz)
- Hardener: (100g) (3.5 oz)
- Thinner: (0.9 liter) (31.7 Imp. oz)

NOTE: Follow the manufacturer's recommendations.

### Tools:

- Putty knife
- Base (putty)
- Sandpaper
- Cutter
- Brush
- Masking tape
- Masking paper

### 1. Bumper Primer (Clear): Premixed type

The primer provides a good support for the filler and primer surfacer. It is applied to the surface of the skirt.

Drying time:

Natural	68°F (20°C)	20 minutes
Baked	140°F (60°C)	10 minutes

### 2. PUTTY BOND QUICK MENDER

After the PP primer has dried thoroughly, apply the PUTTY BOND QUICK MENDER.

- 1. Mix one part of the mender (A) and one part of the hardener (B) and stir thoroughly.

NOTE: Do not mix the mender and hardener in excess of 20g (0.7oz) at a time.

(cont'd)

# Front and Rear Skirts

## Materials and Tools (cont'd)

-2. Hardening starts immediately after mixing.

Practical hardness will be obtained within 60 minutes. The surface will be tacky within 5 minutes and nearly hardened after 15 minutes. It takes 12 hours for the surface to harden thoroughly 68°F (20°C).

-3. Sanding can be done after:

3 hours	68°F (20°C) -natural drying
30 minutes	140°F (60°C) -baked

### 3. Primer Surfacer

NOTE: Use a dual-liquid type bumper primer surfacer (gray).

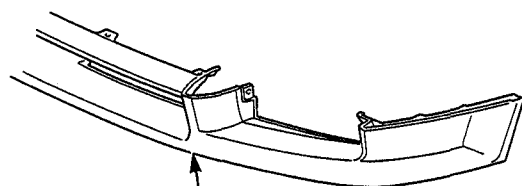
- The primer surface is used to protect the PP resin surface and to fill cavities or flaws in the intermediate and top coats.
- Mix 10 parts of primer surfacer and 1 part of hardener. Add the specific thinner (30-60%) to the mixture of the hardener and primer to attain the proper viscosity for spraying.

### 4. Intermediate and Top Paint Coats (Body color and black paint)

NOTE:

- The paints are the dual liquid type based on the color chart.
- Measure the pigment and hardener as described so they are in correct ratio.

Front:



Rear:

Body color

Black paint  
(NH-86 Gloss 40)

- Use the acrylic urethane paint prepared according to the mixing chart as the intermediate coat.

Mixing Ratio:

Mix 5 parts of body color pigment to 1 part of additive.  
Mix 4 parts of the mixture of the pigment and additive with 1 part of the hardener.

NOTE:

- Dilute the mixture with 40-50% of the specified thinner (Highart Thinner).
- Be sure to mix the correct amount of the additive.
- Use a spray gun to apply the paint. Do not use a brush.

#### ⚠ WARNING

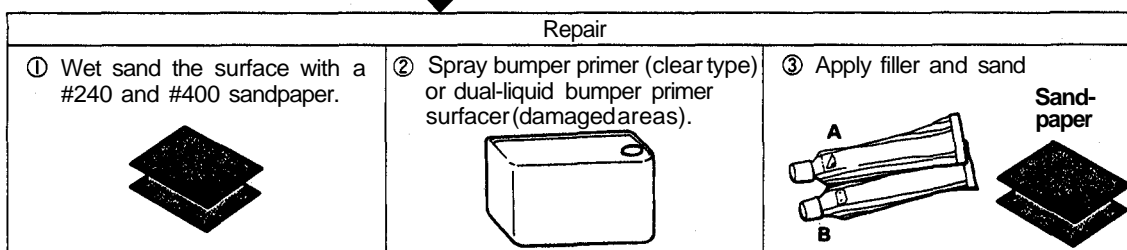
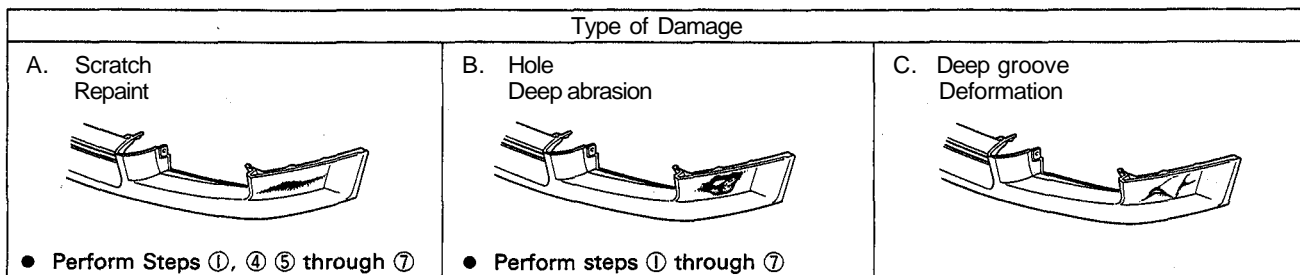
- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

Drying time:

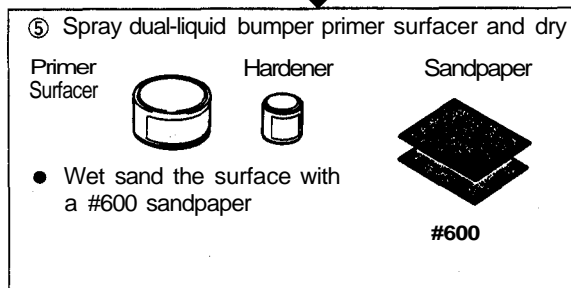
Natural	68°F (20°C)
Surface only	20 minutes
Almost hardened	4 hours
Thoroughly hardened	96 hours

NOTE: The HIGH ART MAT BLACK SURFACER is a dual liquid type. If mixed, it will harden in a matter of hours.

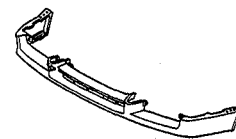
## Refinishing Processes



④ Degrease, and Air blow



Replacement  
(New part)



⑦ Top coat {  
Solid color  
Metallic color  
Pearl color

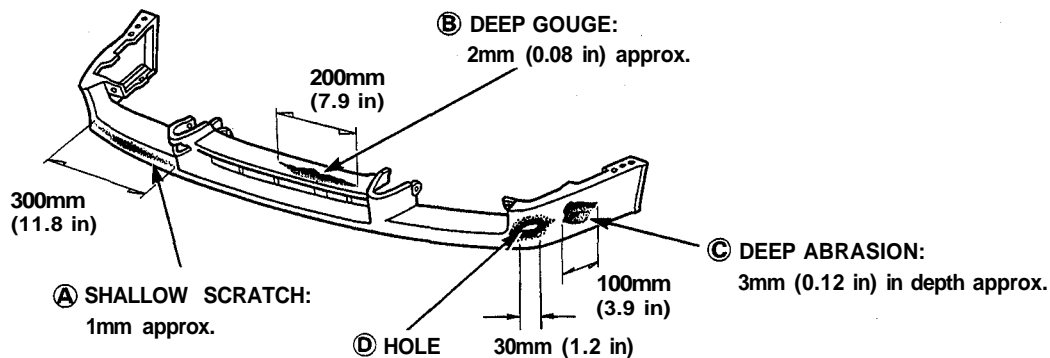
⑥ Mask and intermediate coat

- Air blow and degrease the sanded surface.
- Spray paint and dry.

NOTE: Use the paint for top coat enamel.

# Front and Rear Skirts

## Repair Procedures



**NOTE:** (---): Indicates steps which may be required according to the degree of damage.

Damage	A	B	C	D	Repaint	Replacement
Work Steps						
1. Sanding	↑	↑	↑	↑		
2. Degreasing/Cleaning (damaged areas)						
3. Spraying primer or primer						
4. Drying surfacer						
5. Applying filler	---					
6. Drying filler						
7. Sanding filler						
8. Degreasing/Cleaning (filled area)						
9. Spraying primer surfacer						
10. Polishing (Air blowing/ Degreasing)						
11. Intermediate coating						
12. Degreasing/Cleaning						
13. Masking						
14. Top coating						
15. Drying top coat						
16. Polishing/Buffering						

**NOTE:** Intermediate coating is recommended bright colors.

## Refinishing Procedures

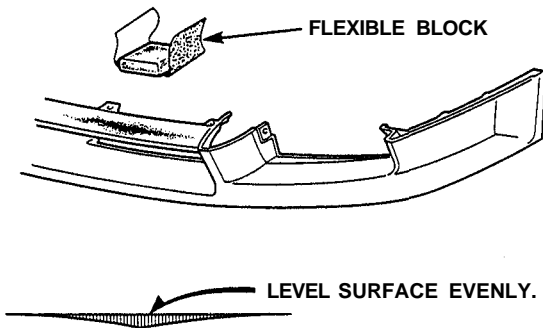
### 1. Sanding damaged areas

Shallow scratch:

- Level and finish damaged areas with #240-#400 sandpaper.
- Polish the leveled area with #400 sandpaper.

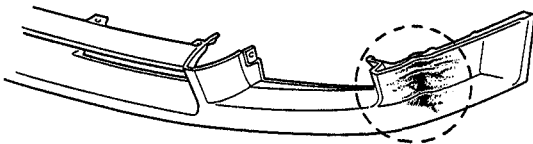
NOTE:

- Use a flexible block to sand the surface evenly.
- Do not remove too much material.



Deep groove/tear:

- Level and finish burrs and other irregularities with #240 sandpaper. Keep the surface as even as possible.



### 2. Degreasing/Cleaning

#### ⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kg/cm<sup>2</sup>, 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Clean with wax and grease "remover and dry with compressed air.
- Wipe off all lint and other foreign particles from the surface with a tack cloth.

NOTE: Be sure to use a tack cloth. Dust and dirt are electrostatically drawn to the surface.

### 3. Applying bumper primer (clear type).

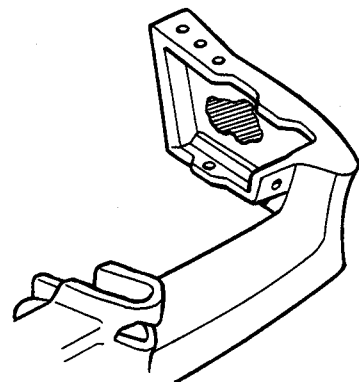
- Stir thoroughly before applying the primer. Use a spray gun or brush depending on working conditions.

#### ⚠ WARNING

- Ventilate when spraying, paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.
- Cover as wide an area as possible, except for shallow grooves (2-3 coats).

NOTE:

- Do not dilute the primer with thinner.
- Warm the primer if the outside temperature is below 50°F (10°C).
- Apply the primer to the back of the skirt if the damage is a tear or hole.



### 4. Drying bumper primer.

#### ⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- Dry the primer thoroughly with an infrared dryer or other dryer suitable for the purpose.

(cont'd)



# Front and Rear Skirts

## Refinishing Procedures (cont'd)

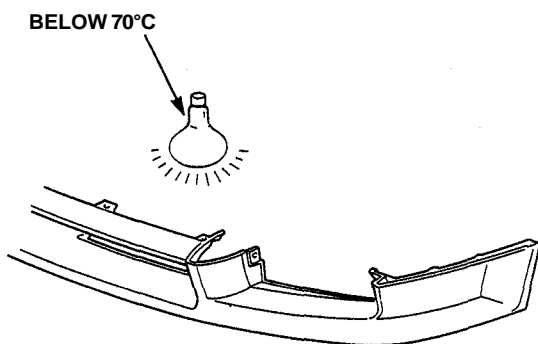
- If the damage or groove is shallow, heat the entire surface evenly. Apply heat locally if the skirt is gouged or torn open.

Drying time:

Dryer	10 minutes 140°F (60°C)
Natural	20 minutes 68°F (20°C)

NOTE:

- Use a dryer whenever possible.
- Do not allow temperature to exceed 158°F (70°C) or the skirt will deform.



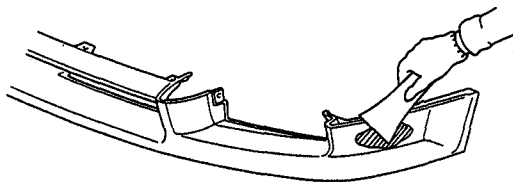
### 5. Apply filler (BOND QUICK MENDER.)

Mix the mender (A) into the hardener (B) in the ratio of 1 to 1, and stir until they are thoroughly mixed.

- 1. Apply the mixture over the damaged area with a putty knife using light pressure.
- 2. Even out the surface to match the contour of the skirt.
- 3. If there is a hole, cover it with a masking tape from the back, and apply the filler over the outside surface.

After the filler has been dried, remove the tape and apply filler to the side that was taped.

NOTE: Apply filler so it extends over more than the damaged area.



### 6. Drying filler

Drying time:

Almost hardened	5 minutes
Initial hardness	15 minutes
Practical hardness	60 minutes
Sanding 68°F (20°C) 140°F (60°C)	After 3 hours After 30 minutes

### 7. Sanding filler

**⚠ WARNING** To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

Wet sand first with #240 sandpaper then with #400 sandpaper.

NOTE: Sand the surface evenly, particularly at the area where the PP resin and mender meet.

### 8. Degreasing/Cleaning

- Blow off the sanded surface, then clean with wax and grease remover.

**⚠ WARNING**

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kg/cm<sup>2</sup>, 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Remove all dust and dirt with a tack cloth.

## 9. Spraying dual-liquid bumper primer surfacer (gray)

NOTE: Use the urethane bumper primer.

### ⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

Spray the primer surfacer over a wider area than the filler and the exposed surfaces of bumper primer.

NOTE: Spray 2-3 coats to get 20-25 microns of thickness.

Mixing Ratio: (Reference)

Urethane bumper primer	10
Hardener	1
Thinner	30-60%

## 10. Drying and polishing

Force dry the primer surfacer with infrared lamps or other industrial dryer.

### ⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

Drying temperature:

Force drying	140°F (60°C) 20 minutes
Natural drying	68°F (20°C) 2 hours min

NOTE:

- Use a dryer whenever possible.
  - Do not allow the temperature to exceed 158°F (70°C).
- 1. After force drying, wet sand the primer surface with #600 sandpaper.

NOTE: Use #600 or finer sandpaper as any paper coarser than this might scratch the surface.

### ⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kg/cm<sup>2</sup>, 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.

-2. Air blow the surface to be repaired, then degrease with a wax and grease remover.

-3. Also clean and degrease where masking tape will be attached.

## 11. Intermediate coating

NOTE: Intermediate coating is recommended for bright colors.

- Use the top coat enamel.

### ⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.
- Mix the additive into the solid enamel color, metallic enamel or pearl enamel color in the ratio of 1 to 5 (by weight).
- Mix the hardener into the mixture of pigment and additive described above in the ratio of 1 to 4 (by weight).

NOTE: Keep the correct ratio, especially of the additive. Excessive additive takes longer to dry.

- Adjust to the proper viscosity for spray by adding the thinner specified for the primer into the mixture of primer additive and hardener.

Viscosity: 68°F (20°C) 11-13 sec.

(cont'd)