

# FRONT BUMPER

EXTERIOR/INTERIOR TRIM

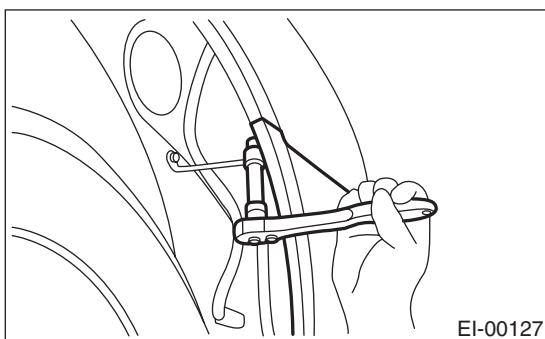
## 5. Front Bumper

### A: REMOVAL

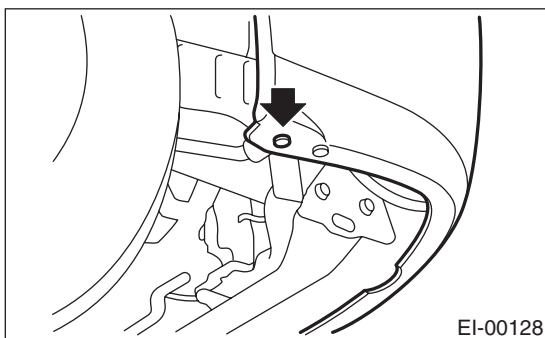
#### CAUTION:

- Handle bumper carefully to avoid damage to bumper face.
- Do not damage body during removal or installation of bumper.
- To avoid damage to bumper, lay removed bumper on sheet spread on the floor. Do not lay it directly on the floor.

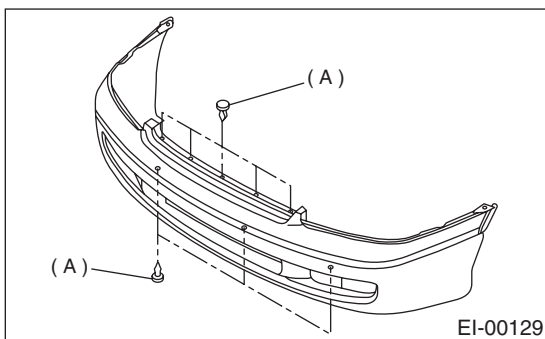
- 1) Open hood.
- 2) Disconnect ground cable from battery.
- 3) Pull off front side of front mat guard to remove bolts.



- 4) Remove clip at bottom of bumper.



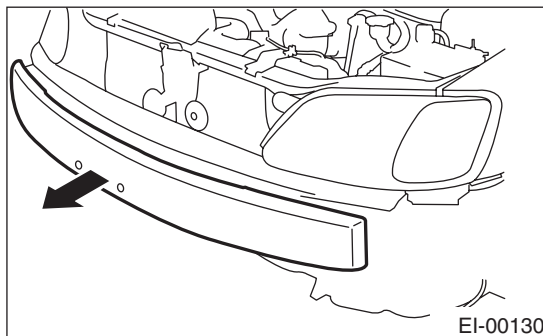
- 5) Remove clip (A), and pull out bumper slightly.
- 6) Disconnect harness connector of fog light to remove bumper.



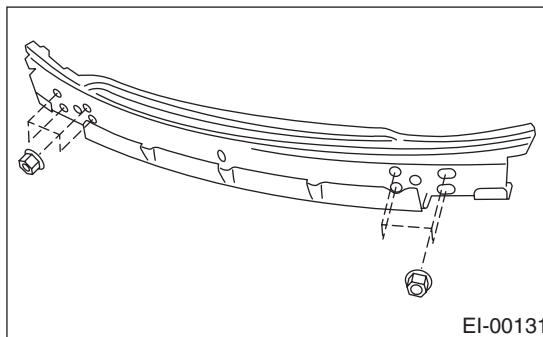
- 7) Remove Bumper energy absorber form from bumper beam.

#### CAUTION:

E/A FOAM is easy to brak. Do not apply excessive force to it during removal.



- 8) Remove bumper beam.



### B: INSTALLATION

Install in the reverse order of removal.

#### CAUTION:

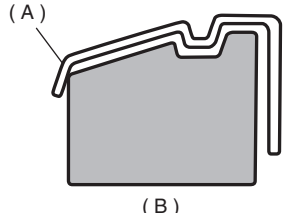
- Handle bumper carefully to avoid damage to bumper face.
- Do not damage body during removal or installation of bumper.

#### Tightening torque:

Refer to **COMPONENT** in *General Description*. <Ref. to EI-2, **FRONT BUMPER, COMPONENT, General Description.**>

## C: REPAIR

### 1. COATING METHOD FOR PP BUMPER

Process No.	Process name	Job contents	
1	Bumper mounting	Set bumper (A) on paint worktable if required. Use paint worktable conforming to inner shape of bumper when possible (B).	 <p style="text-align: right;">EI-00132</p>
2	Masking	Mask specified part (black base) with masking tape. Use masking tape for PP (example, Nichiban No. 533, etc.).	
3	Degreasing, cleaning	Clean all parts to be painted with white gasoline, normal alcohol, etc. to remove dirt, oil, fat, etc.	
4	Primer paint	Apply primer one to all parts to be painted, using air gun. Use primer (clear).	
5	Drying	Dry at normal temperature [10 to 15 min. at 20°C (68°F)]. In half-dried condition, PP primer paint is dissolved by solvent, e.g. thinner, etc. Therefore, if dust or dirt must be removed, use ordinary alcohol, etc.	
6	Top coat paint (I)	Solid color	Metallic color
		Use section (block) paint for top coat. <ul style="list-style-type: none"> <li>• Paint in use (for each color): Solid paint Hardener PB Thinner T-301</li> <li>• Mixing ratio: Main agent vs. hardener = 4:1</li> <li>• Viscosity: 10 — 13 sec/20°C (68°F)</li> <li>• Film thickness: 35 — 45μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>	Use section (block) paint for top coat. <ul style="list-style-type: none"> <li>• Paint in use (for each color): Metallic paint Hardener PB Thinner T-306</li> <li>• Mixing ratio: Main agent vs. hardener = 10 : 1</li> <li>• Viscosity: 10 — 13 sec/20°C (68°F)</li> <li>• Film thickness: 15 — 20μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>
7	Drying	Not required.	Dry at normal temperature [10 min. or more at 20°C (68°F)]. In half-dried condition, avoid dust, dirt.
8	Top coat paint (II)	Not required.	Apply a clear coat to parts with top coat paint (I), three times, at 5 — 7 minutes intervals. <ul style="list-style-type: none"> <li>• Paint in use: Metallic paint Hardener PB Thinner T-301</li> <li>• Mixing ratio: Clear vs. hardener = 6 : 1</li> <li>• Viscosity: 14 — 16 sec/20°C (68°F)</li> <li>• Film thickness: 25 — 30μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>
9	Drying	60°C (140°F), 60 min. or 80°C (176°F), 30 min. If higher than 80°C (176°F), PP may be deformed. Keep maximum temperature of 80°C (176°F).	
10	Inspection	Paint check.	
11	Masking removal	Remove masking in process No. 2.	

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## 2. REPAIR INSTRUCTIONS FOR COLORED PP BUMPER

**NOTE:**

All PP bumpers are provided with a grained surface, and if the surface is damaged, it cannot normally be restored to its former condition. Damage limited to shallow scratches that cause only a change in the lustre of the base material or coating, can be almost fully restored. Before repairing a damaged area, explain this point to the customer and get an understanding about the matter. Repair methods are outlined below, based on a classification of the extent of damage.

**• Minor damage causing only a change in the lustre of the bumper due to a light touch**

Almost restorable.

Process No.	Process name	Job contents	
1	Cleaning	Clean the area to be repaired using water.	
2	Sanding	Grind the repairing area with #500 sand paper in a "feathering" motion.	
3	Finish	Resin section	Coated section
		Repeatedly apply wax to the affected area using a soft cloth (such as flannel). Recommended wax: NITTO KASEI Soft 99 TIRE WAX BLACK, or equivalent.	
		Polish the waxed area with a clean cloth after 5 to 10 minutes.	
		Perform either the same operation as for the resin section or process No. 18 and subsequent operations in the "(3)" section, depending on the degree and nature of damage.	

**• Deep damage caused by scratching fences, etc.**

A dent cannot be repaired but a whitened or swelled part can be removed.

Process No.	Process name	Job contents	
1	Cleaning	Clean damaged area with water.	
2	Removal of damaged area	Cut off protruding area, if any, due to collision, using a putty knife.	
3	Sanding	Grind the affected area with #100 to #500 sand paper.	
4	Finish	Resin section	Coated section
		Same as Process No. 3 in the "(1)" section.	
		Perform Process No. 12 and subsequent operations in the "(3)" section.	

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• **Deep damage such as a break or hole that requires filling**

Much of the peripheral grained surface must be sacrificed for repair, and the degree of restoration is not really worth the expense. (The surface, however, will become almost flush with adjacent areas.)

Recommended repair kit: PP Part Repair Kit (NRM)

Process No.	Process name	Job contents	
1	Bumper removal	Remove bumper as required.	
2	Part removal	Remove parts built into bumper as required.	
3	Bumper placement	Place bumper (A) on a paint worktable as required. It is recommended that contour of worktable accommodate internal shape of bumper (B).	<p style="text-align: right;">EI-00132</p>
4	Surface preparation	Remove dust, oil, etc. from areas to be repaired and surrounding areas, using a suitable solvent (NRM No. 900 Precleno, white gasoline, or alcohol).	
5	Cutting	If nature of damage are cracks or holes, cut a guide slit of 20 to 30 mm (0.79 to 1.18 in) in length along the crack or hole up to the bumper's base surface. Then, bevel or "vee-out" the affected area using a knife or grinder.	<p style="text-align: right;">Unit: mm (in)</p> <p style="text-align: right;">EI-00134</p> <p>(1) Paint surface (2) PP base surface</p>
6	Sanding (I)	Grind beveled surface with sand paper (#40 to #60) to smooth finish.	
7	Cleaning	Clean the sanded surface with the same solvent as used in Process No. 4.	
8	Temporary welding	Grind the side just opposite the beveled area with sand paper (#40 to #60) and clean using a solvent. Temporarily spot-weld the side, using a PP welding rod and heater gun.	<p style="text-align: right;">EI-00135</p> <p>(1) Welded spot (Use heater gun and PP welding rod) (2) PP base surface (3) Beveled section</p> <p>NOTE:</p> <ul style="list-style-type: none"> <li>Do not melt welding rod until it flows out. This results in reduced strength.</li> <li>Leave the welded spot unattended until it cools completely.</li> </ul>

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Process No.	Process name	Job contents
9	Welding	Using a heater gun and PP welding rod, weld the beveled spot while melting the rod and damaged area.
		<div style="text-align: center;"> </div> <p style="text-align: right;">EI-00136</p> <p>(1) Melt hatched area            (2) Welding rod            (3) Section</p> <p>NOTE:</p> <ul style="list-style-type: none"> <li>• Melt the sections indicated by hatched area.</li> <li>• Do not melt welding rod until it flows out, in order to provide strength.</li> <li>• Always keep the heater gun 1 to 2 cm (0.4 to 0.8 in) away from the welding spot.</li> <li>• Leave the welded spot unattended until it cools completely.</li> </ul>
10	Sanding (II)	Remove excess part of weld with a putty knife. If a drill or disc wheel is used instead of the knife, operate it at a rate lower than 1,500 rpm and grind the excess part little by little. A higher rpm will cause the PP substrate to melt from the heat.
		<div style="text-align: center;"> </div> <p style="text-align: right;">EI-00042</p> <p>Sand the welded spot smooth with #240 sand paper.</p>
11	Masking	Mask the black substrate section using masking tape. Recommended masking tape: Nichiban No. 533 or equivalent
12	Cleaning/ degreasing	Completely clean the entire coated area, using solvent similar to that used in Process No. 4.
13	Primer coating	Apply a coat of primer to the repaired surface and its surrounding areas. Mask these areas, if necessary. Recommended primer: Mp/ 364 PP Primer NOTE: Be sure to apply one coat of primer at a spraying pressure of 245 to 343 kPa (2.5 to 3.5 kg/cm <sup>2</sup> , 36 to 50 psi) with a spray gun.
14	Leave unattended.	Leave the repaired area unattended at 20°C (68°F) for 10 to 15 minutes until primer is half-dry. NOTE: If dirt or dust comes in contact with the coated area, wipe it off with a cloth dampened with alcohol. (Do not use thinner since the coated area tends to melt.)
15	Primer surfacer coating	Apply a coat of primer surfacer to the repaired area two or three times at an interval of 3 to 5 minutes. Recommended surfacer: <ul style="list-style-type: none"> <li>• UPS 300 Flex Primer</li> <li>• No. 303 UPS 300 Exclusive hardener</li> <li>• NPS 725 Exclusive Reducer (thinner)</li> <li>• Mixing ratio: 2 : 1 (UPS 300: No. 303)</li> <li>• Viscosity: 12 — 14 sec/20°C (68°F)</li> <li>• Coated film thickness: 40 — 50μ</li> </ul>
16	Drying	Allow the coated surface to dry for 60 minutes at 20°C (68°F) [or 30 minutes at 60°C (140°F)].
17	Sanding (III)	Sand the coated surface and its surrounding areas using #400 sand paper and water.

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Process No.	Process name	Job contents	
18	Cleaning/ degreasing	Same as Process No. 12.	
19	Top coat (I)	Solid color	Metallic color
		Use a "block" coating method. <ul style="list-style-type: none"> <li>• Recommended paint: Suncryl (SC) No. 307 Flex Hardener SC Reducer (thinner)</li> <li>• Mixing ratio: 3 : 1 Suncryl (SC) vs. No. 307 Flex Hardener</li> <li>• Viscosity: 11 — 13 sec/20°C (68°F)</li> <li>• Coated film thickness: 40 — 50μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>	Use a "block" coating method. <ul style="list-style-type: none"> <li>• Recommended paint: Suncryl (SC) No. 307 Flex Hardener SC Reducer (thinner)</li> <li>• Mixing ratio: 3 : 1 Suncryl (SC) vs. No. 307 Flex Hardener</li> <li>• Viscosity: 11 — 13 sec/20°C (68°F)</li> <li>• Coated film thickness: 20 — 30μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>
20	Leave unat- tended.	Not required.	Leave unattended at 20°C (68°F) for at least 10 minutes until the topcoated area is half-dry. NOTE: Be careful to keep dust or dirt from coming in contact with the affected area.
21	Top coat (II)	Not required.	Apply a clear coat three times at an interval of 3 to 5 minutes. <ul style="list-style-type: none"> <li>• Recommended paint: SC710 Overlay Clear No. 307 Flex Hardener SC Reducer (thinner)</li> <li>• Mixing ratio: 3 : 1 Suncryl (SC) vs. No. 307 Flex Hardener</li> <li>• Viscosity: 10 — 13 sec/20°C (68°F)</li> <li>• Coated film thickness: 20 — 30μ</li> <li>• Spraying pressure: 245 — 343 kPa (2.5 — 3.5 kg/cm<sup>2</sup>, 36 — 50 psi)</li> </ul>
22	Drying	Allow the coated surface to dry at 20°C (68°F) for two hours or 60°C (140°F) for 30 minutes. NOTE: Do not allow the temperature to exceed 80°C (176°F) since this will deform the PP substrate.	
23	Inspection	Carefully check the condition of the repaired area.	
24	Masking removal	Remove masking tape applied in Process No. 11 and 13.	
25	Parts installation	Install parts on bumper in reverse order of removal.	
26	Bumper installa- tion	Install bumper.	