

# BODY REPAIR MANUAL

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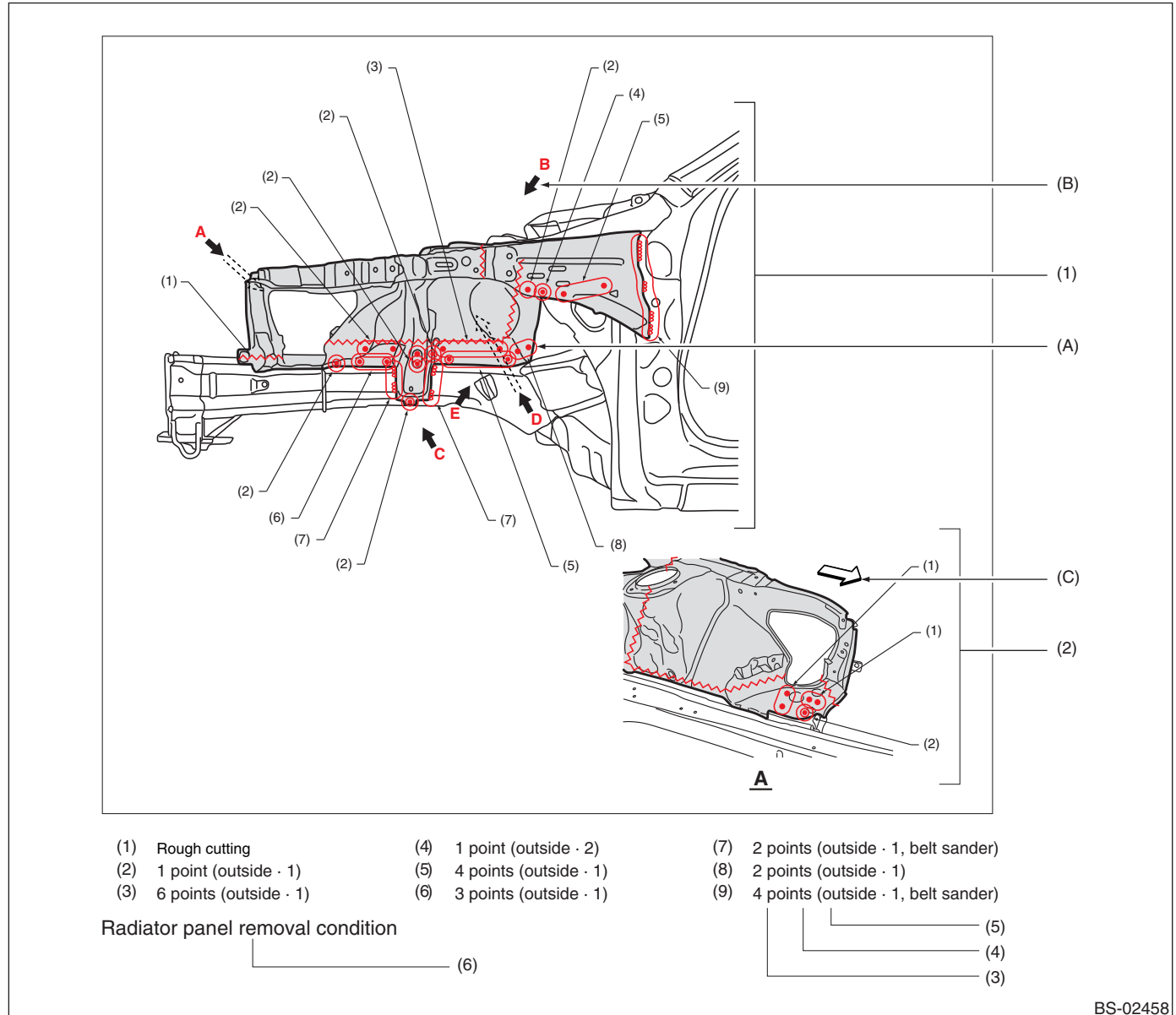
## 1. Foreword

### A: USE OF THIS MANUAL

This manual explains the points to be observed during removal and installation of parts separately by location.

#### 1. ILLUSTRATION EXAMPLE

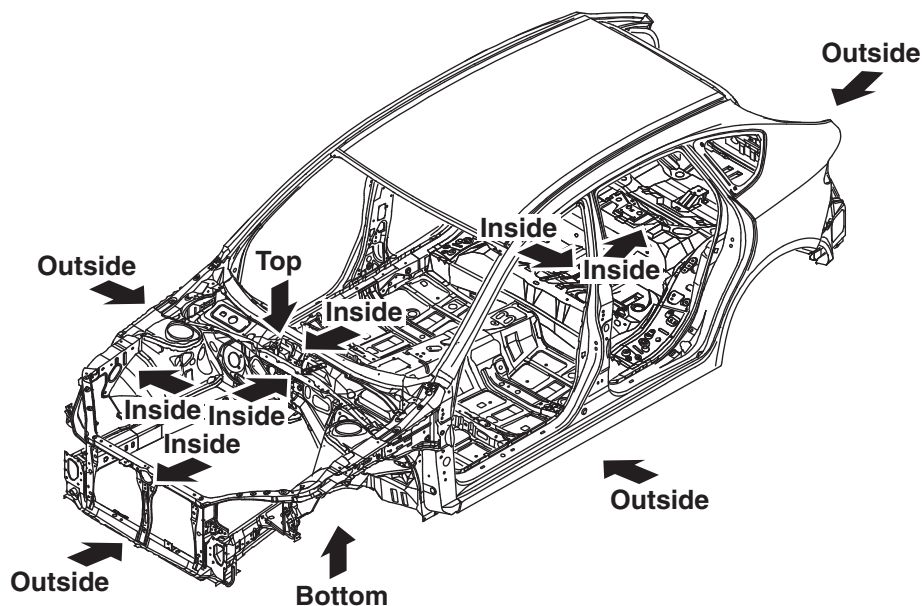
- Symbols and number of points indicate the welding method and the number of welding points. Text in brackets indicates the direction for removal of welded parts, and numbers indicate the number of plates to be drilled in panels of welded parts to be removed.
- An enclosure by a broken line indicates work from the opposite side (rear side).



- |                                    |  |
|------------------------------------|--|
| (1) Overall view                   | (A) Welding method                             |
| (2) View                           | (B) View direction                             |
| (3) Number of welding points etc.  | (C) Direction towards the front of the vehicle |
| (4) Removal direction              |  |
| (5) Number of plates to be drilled |  |
| (6) Cautions for the work etc.     |  |

## 2. REMOVAL DIRECTION

Division is made into the four groups of inside, outside, top, and bottom, and these directions are defined as shown in the following figure.



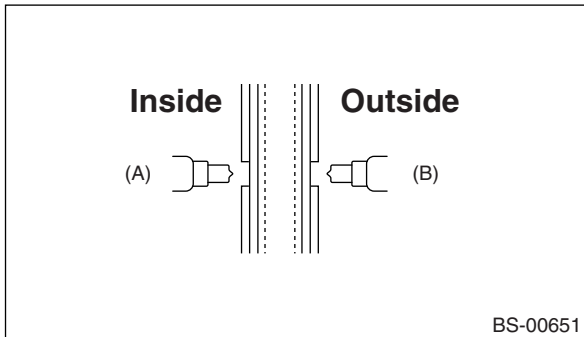
BS-02459



## 3. NUMBER OF PANELS TO BE DRILLED

Depending on the number of panels, drilling is done through one panel or two panels, and this number is listed together with the removal direction.

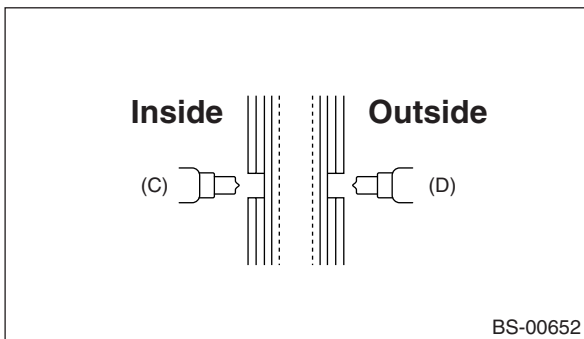
### (1) Drilling through one plate



(A) (Inside · 1)

(B) (Outside · 1)

### (2) Drilling through two plates

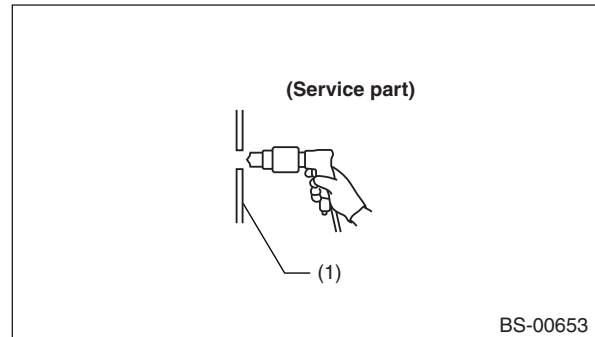


(C) (Inside · 2)

(D) (Outside · 2)

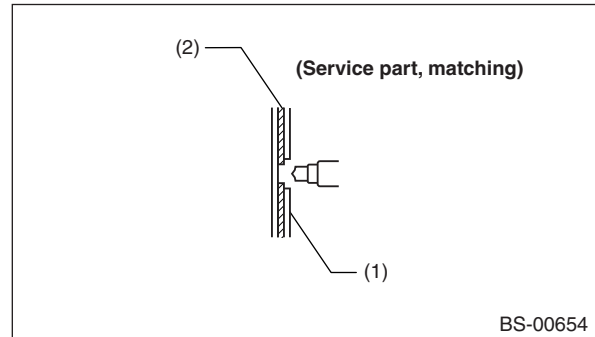
## 4. HOLE DRILLING FOR PLUG WELDING

### (1) Drilling of holes for plug welding in service parts



(1) Service part

### (2) Drilling of holes for plug welding in service parts, matching the holes on the vehicle side




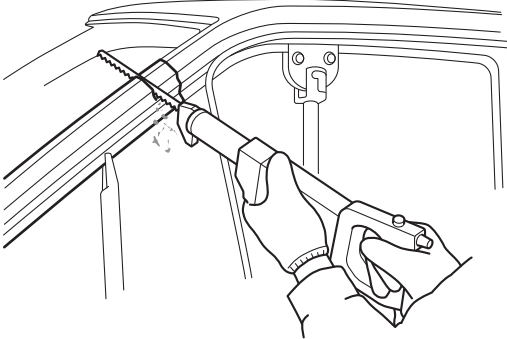
(1) Vehicle side

(2) Service part


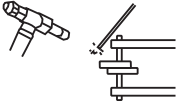
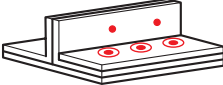
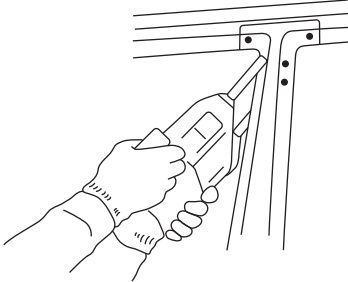


# Foreword

## 5. MEANING OF SYMBOLS



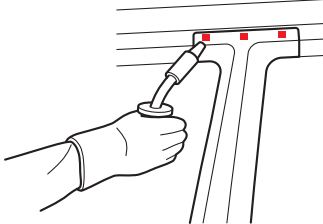


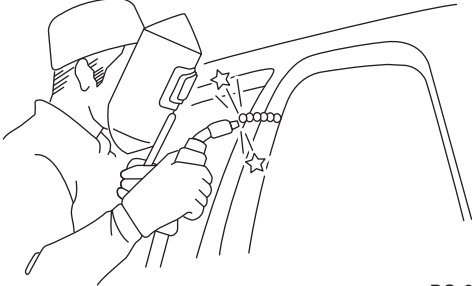
### • Cutting

	
BS-00352	BS-00267

### • Spot welding


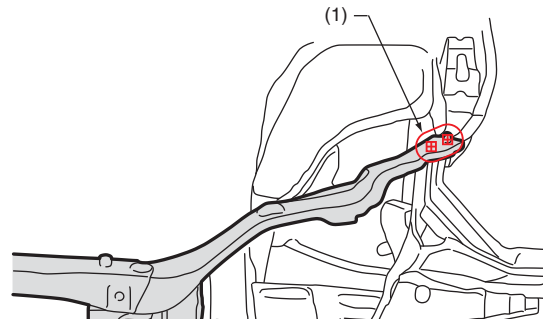

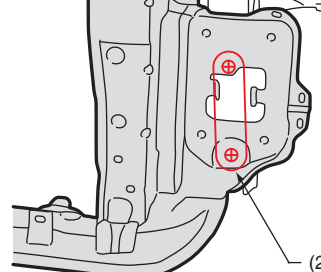
Two over-lapping parts	 BS-00655	 BS-00656	 BS-00657	 BS-00658
Three or more over-lapping parts	 BS-00659	 BS-00660		

### • Carbon dioxide gas arc welding (MIG welding)

Plug welding	 BS-00661	 BS-00662	 BS-00663
Continuous welding	 BS-00664	 BS-00665	 BS-00666

## Foreword

- Bolt, nut tightening portion

<p>Bolt</p>		 <p>(1)</p>
<p>Nut</p>		 <p>(2)</p> <p>(1) Bolt (2) Nut</p>

**B: CAUTION**

Since there is a possibility that the required strength will not be obtained, an inverter welder must be used for spot-welding at locations where high-strength steel is used.

## C: NOTE

### 1. About high-tensile steel sheets of 980 MPa class or more

To drill high-strength steel sheets of 980 MPa class, 1180 MPa class and 1,500 MPa class, use a tool that can machine objects of 500 Hv or more hardness (e.g., C-20VR made by Cyutokenzai).

It is recommended to perform the weldings using 980 MPa class, 1180 MPa class and 1,500 MPa class high-strength steel under the following conditions.

- It is recommended to perform spot welding according to board thickness and number of overlapping sheets under the following conditions ([a] — [e], [g])
- When conditions can't be met, it is recommended to use the plug welding method [f] — A or [f] — B as described below.

Spot welding	[a]	Compression	4.0 kN	Total number of 2 overlapping sheets
		Current	8.5 kA	
		Welding time	20 cyc	
	[b]	Compression	3.0 kN	Total number of 3 overlapping sheets
		Current	8.0 kA	
		Welding time	23 cyc	
	[c]	Compression	4.0 kN	
		Current	7.0 kA	
		Welding time	20 cyc	
	[d]	Compression	4.0 kN	
		Current	8.0 kA	
		Welding time	20 cyc	
	[e]	Compression	4.0 kN	
		Current	8.5 kA	
		Welding time	20 cyc	
	[g]	Compression	4.0 kN	
		Current	8.0 kA	
		Welding time	28 cyc	
Plug welding	[f]	A	Plug diameter	8.5 mm (0.33 in) or more
			Wire	YGW12
			Gas	CO2
		B	Plug diameter	8.5 mm (0.33 in) or more
			Wire	YGW16
			Gas	Gas mixture (argon: 80 %, CO2: 20 %)

### CAUTION:

- For new spot welding, avoid previously welded locations.
- After spot welding, inspect the welding locations, and if the weld appears to be insufficient, perform plug welding.
- Shape correction by heating and splice welding shall not be performed for components using 980 MPa class or more higher-tensile steel; otherwise this may decrease the strength of the material.

### 2. Drill holes for plug welding of steel sheet

At locations where spot welding is not possible, use a punch or a drill to open holes for plug welding according to the following table.

Plate thickness of the welding material	Plug welding hole diameter
Less than 1.0 mm (0.04 in)	φ 5.0 mm (0.20 in) or more
1.0 — 1.6 mm (0.04 — 0.06 in)	φ 6.5 mm (0.26 in) or more
1.7 — 2.3 mm (0.07 — 0.09 in)	φ 8.0 mm (0.31 in) or more
2.4 mm (0.09 in) or more	φ 10.0 mm (0.39 in) or more

## Foreword

### 3. Repair work using foam

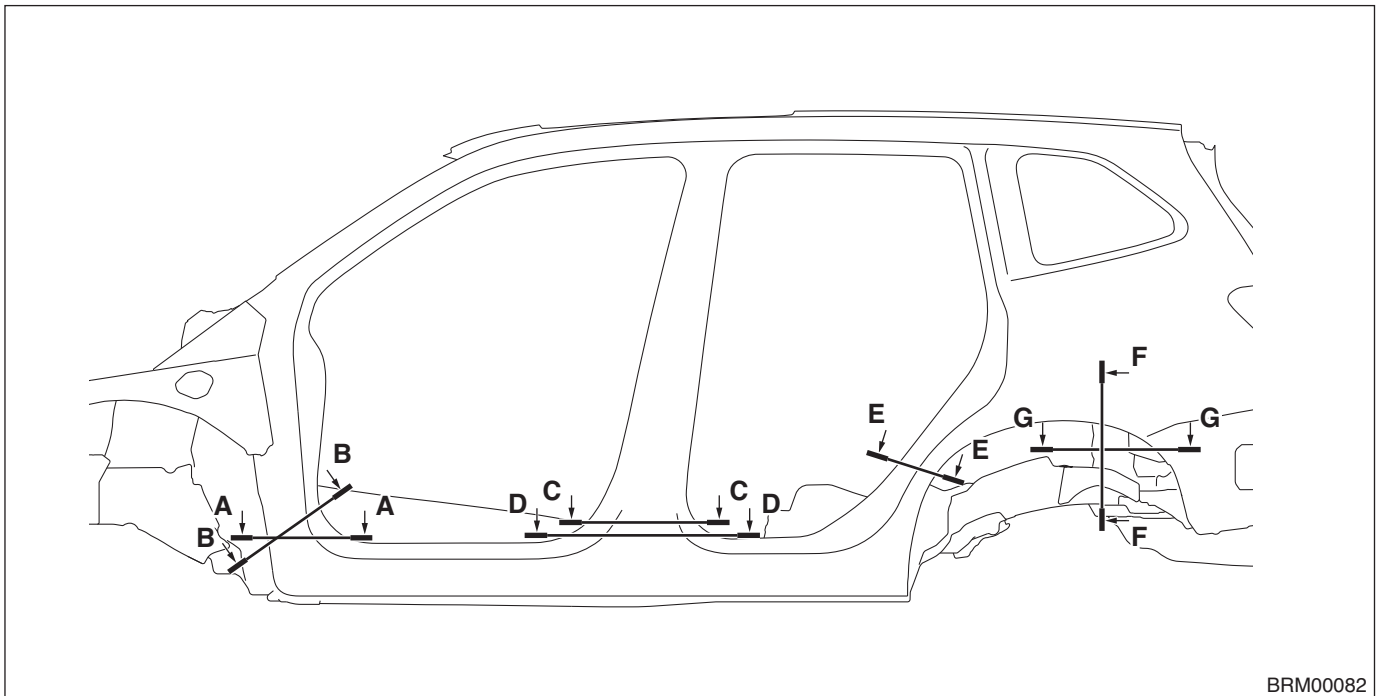
#### CAUTION:

- Do not perform welding or other work involving high temperatures.
- Do not use an open flame at the time of disassembly.
- Remove residual foam before injecting the new material.
- After completion of work, confirm that there is no danger of igniting the material.
- Spray cans that have been used once cannot be used again.
- Use a narrow nozzle.

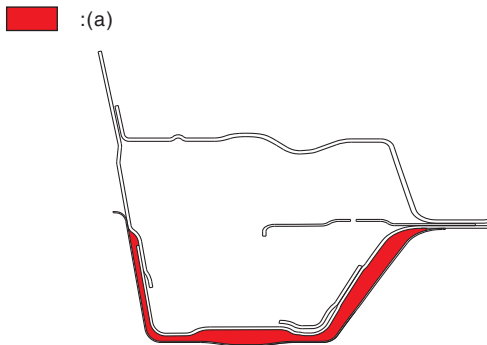
**Recommended materials: Equivalent to High Span Foam made by Cemedine**

For a clip plate, reuse the plate and inject cold-setting foam.

#### • Foam injection locations

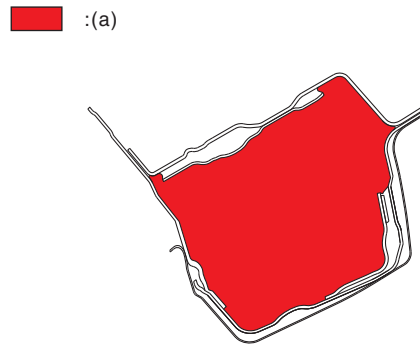


**Cross section A — A**



(a) Urethane foam injection locations

**Cross section B — B**

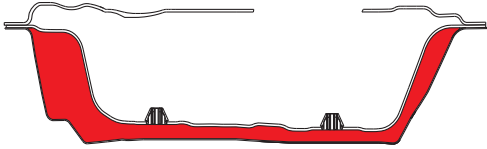


(a) Urethane foam injection locations

# Foreword

**Cross section C — C**

■ : (a)

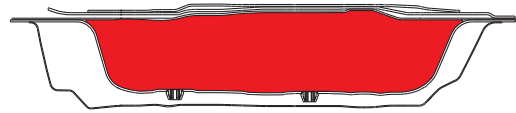


BRM00085

(a) Urethane foam injection locations

**Cross section D — D**

■ : (a)

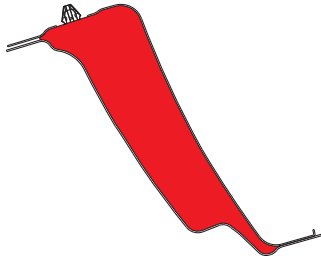


BRM00086

(a) Urethane foam injection locations

**Cross section E — E**

■ : (a)

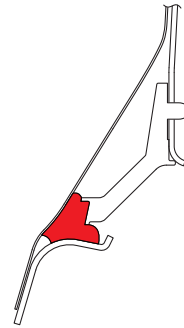


BRM00087

(a) Urethane foam injection locations

**Cross section F — F**

■ : (a)

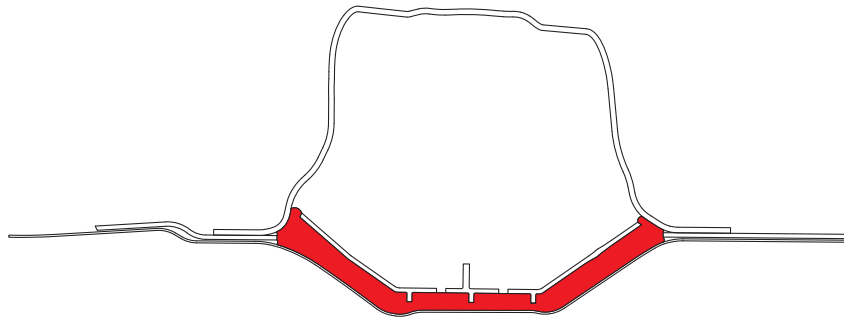


BS-08853

(a) Urethane foam injection locations

**Cross section G — G**

■ : (a)

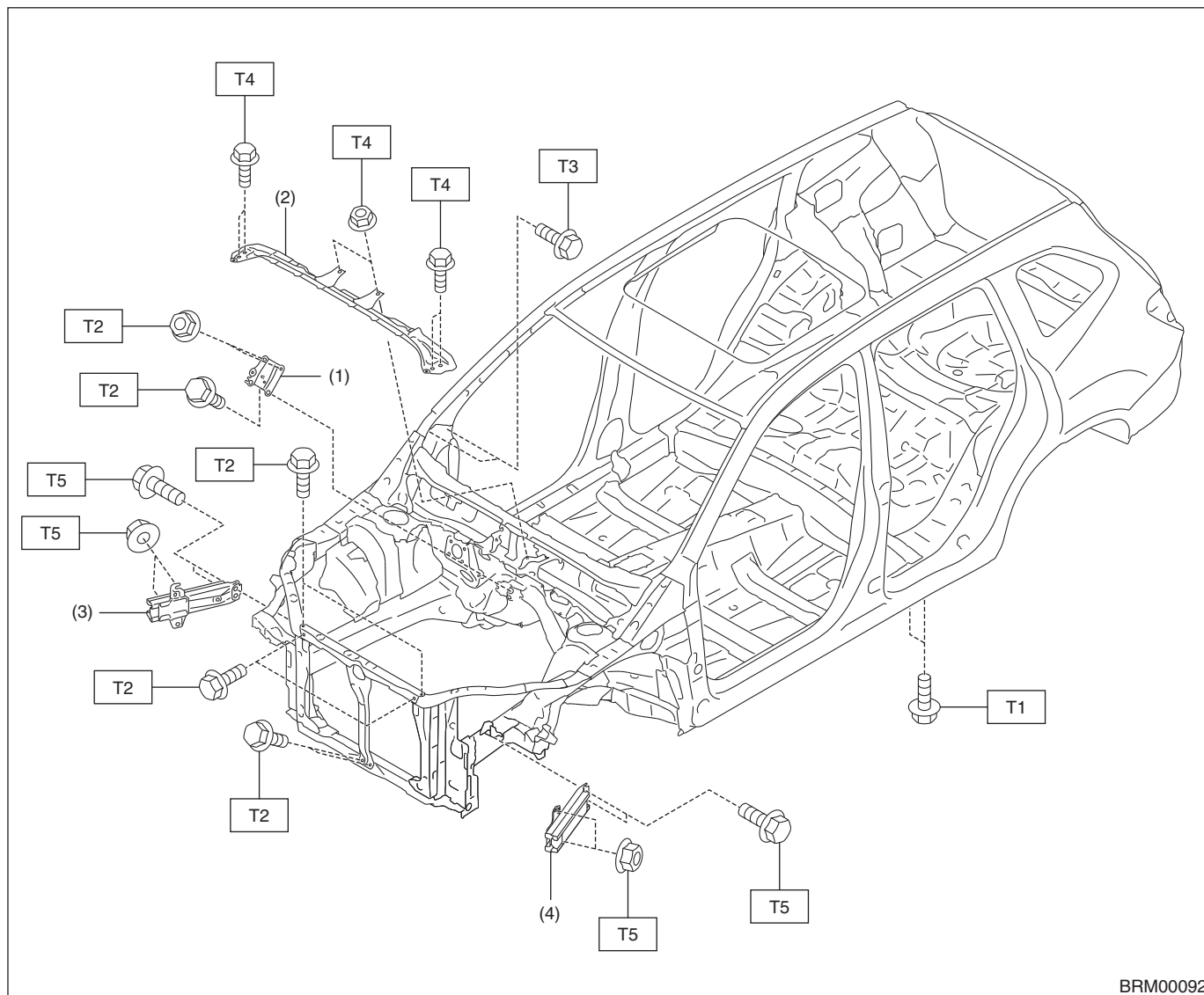


BS-08854

(a) Urethane foam injection locations

## 2. Assembly of Exterior Parts

### A: BODY REINFORCING PARTS



BRM00092

- (1) Plate pitching stopper COMPL
- (2) Panel bulkhead front COMPL
- (3) GUSSET CP FT SD RH
- (4) GUSSET CP FT SD LH

**Tightening torque: N·m (kgf-m, ft-lb)**

**T1: 45 (4.59, 33.19)**

**T2: 18 (1.84, 13.28)**

**T3: Secure 18 (1.84, 13.28) or more.**  
The bolts should be seated and not broken.

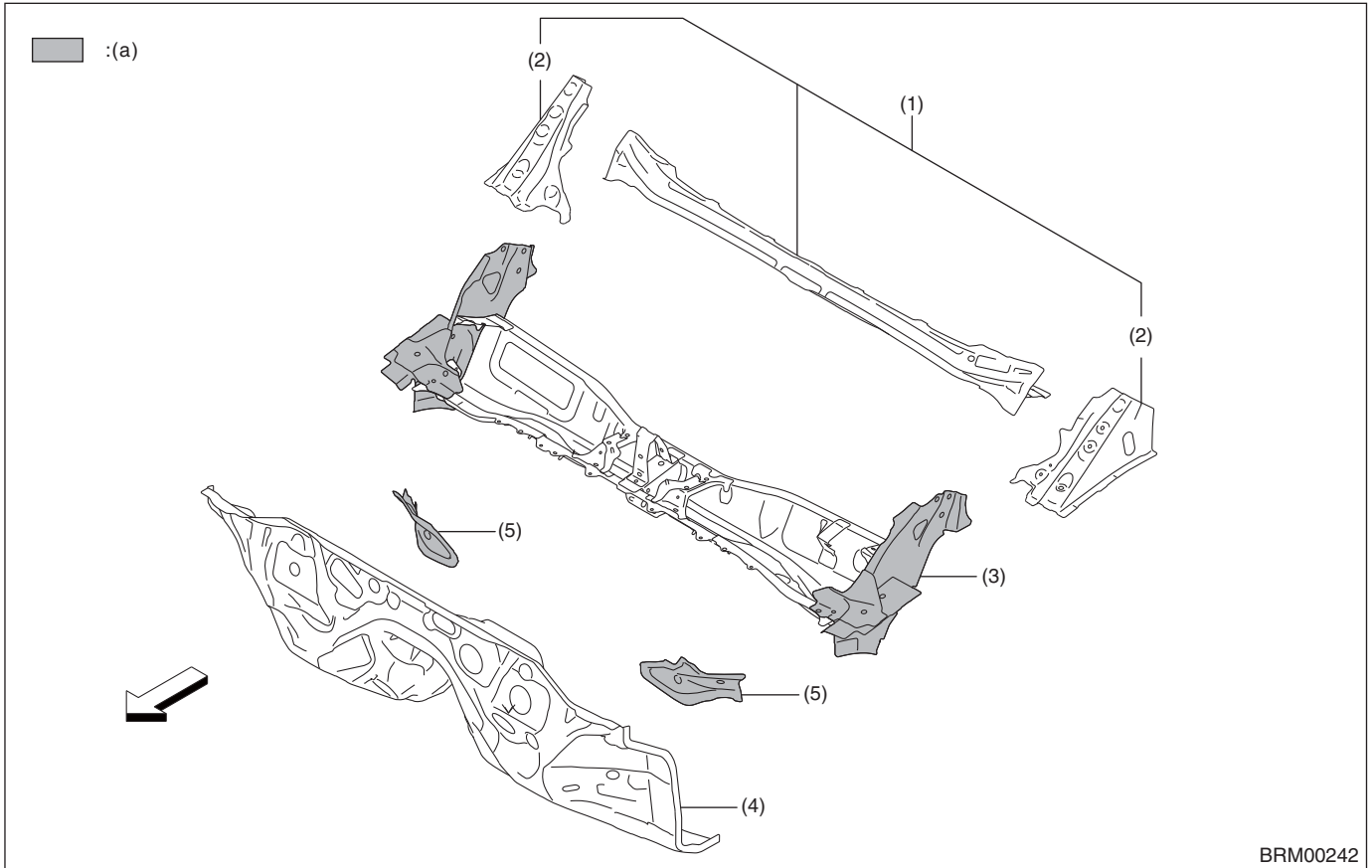
**T4: 7.5 (0.76, 5.53)**

**T5: 37 (3.77, 27.29)**

## 3. Panel Components

### A: COMPONENTS

#### 1. TOE BOARD & FRONT PANEL



(a) High-strength tensile steel  
(440 — 590 MPa class)

(1) Panel complete front

(2) Reinforcement, front panel side

(3) Duct complete, front

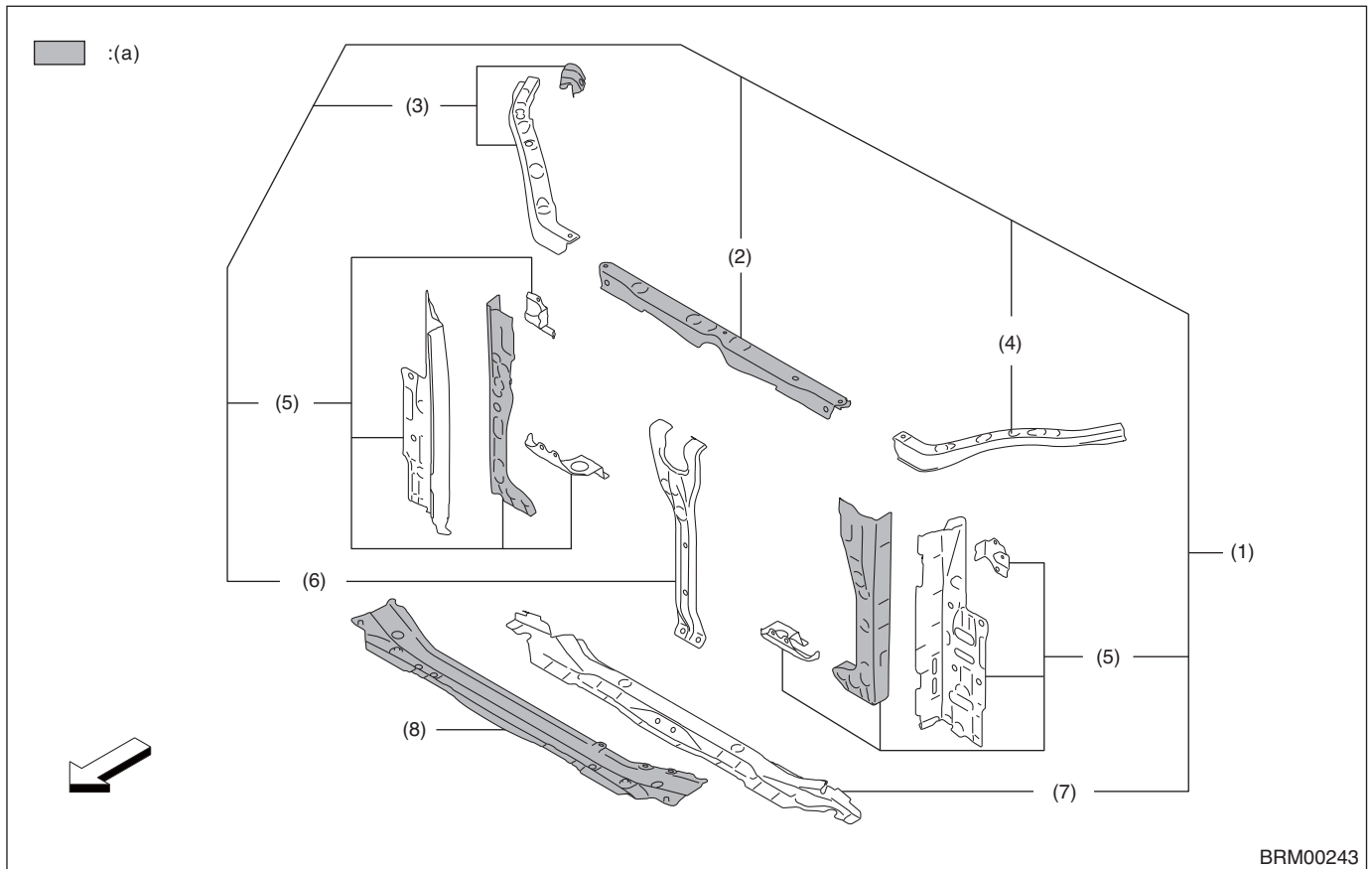
(4) Toe board complete

(5) Crossmember, toe board inner



# Panel Components

## 2. RADIATOR PANEL



(a) High-strength tensile steel  
(440 — 590 MPa class)

(1) Panel complete radiator

(4) Panel complete, radiator upper left

(7) Frame complete radiator panel lower

(2) Panel complete radiator upper

(5) Panel complete, radiator side

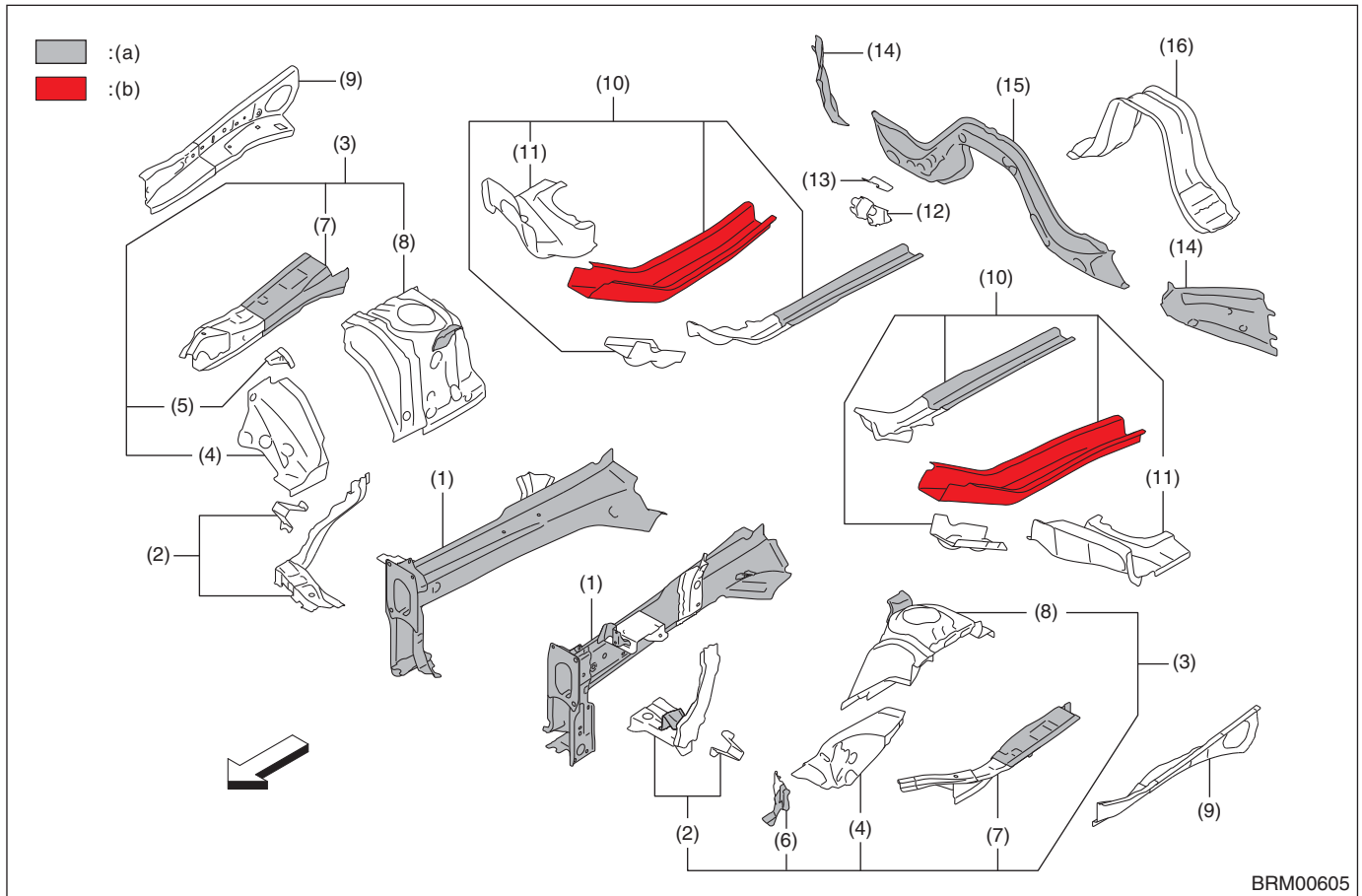
(8) Frame complete radiator lower

(3) Panel complete, radiator upper right

(6) Stay complete hood lock

# Panel Components

## 3. FRONT WHEEL APRON



BRM00605

(a) High-strength tensile steel  
(440 — 590 MPa class)

(b) High-strength tensile steel  
(1,500 MPa class)

(1) Front side frame front

(7) Wheel apron complete, front  
upper

(13) Plate, pitching stopper

(2) Wheel apron, front

(8) Bracket complete, suspension  
front

(14) Frame complete, toe board front

(3) Wheel apron sub complete

(9) Frame side upper

(15) Reinforcement, tunnel toe board

(4) Wheel apron complete front

(10) Frame side front complete, rear

(16) Bracket complete, crossmember  
rear

(5) Bracket complete, VDC

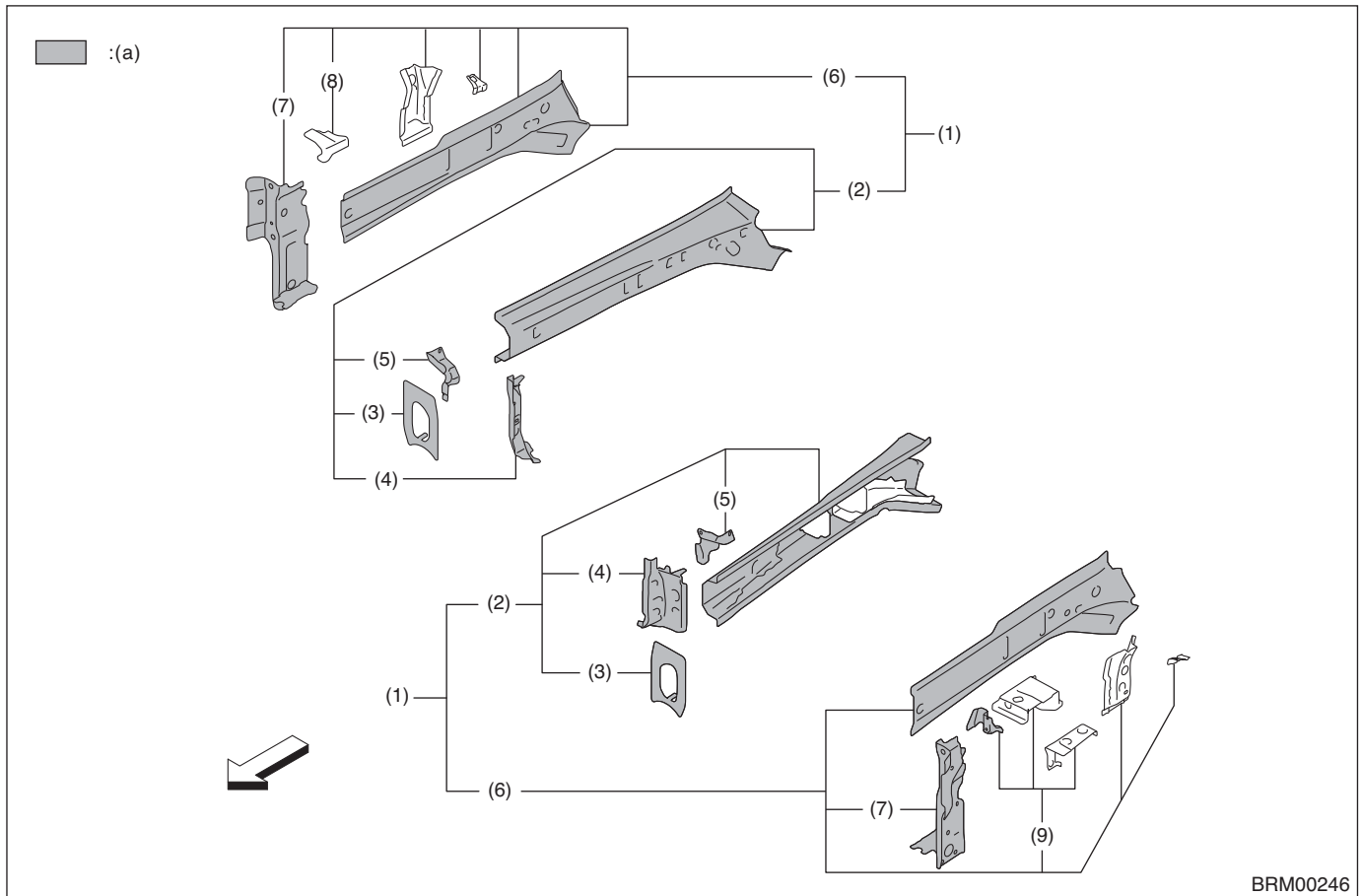
(11) Reinforcement, toe board

(6) Bracket, battery rod

(12) Bracket complete, pitching stopper

# Panel Components

## 4. FRONT SIDE FRAME



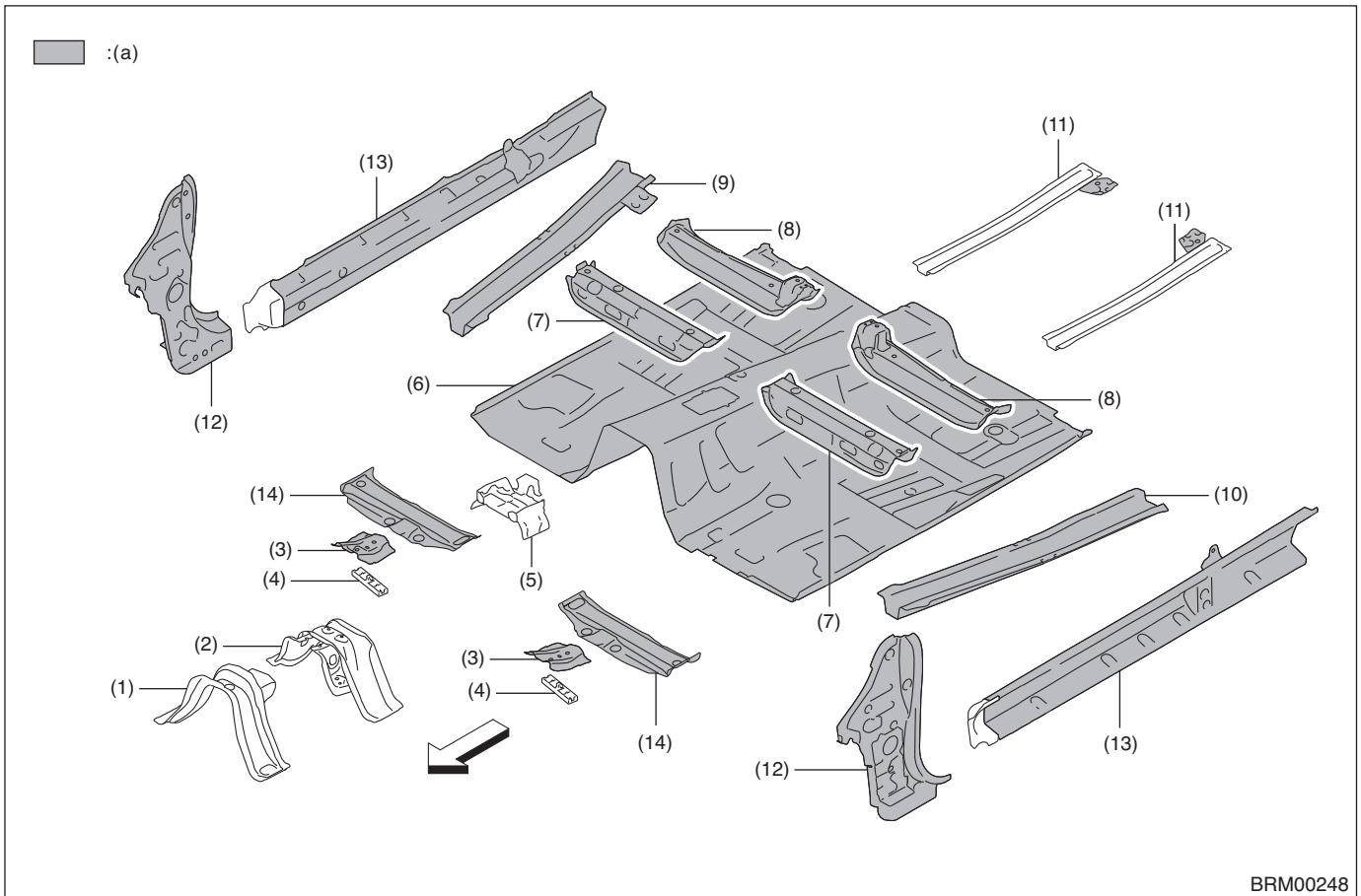
BRM00246

(a) High-strength tensile steel  
(440 — 590 MPa class)

- |                                      |                                  |                                  |
|--------------------------------------|----------------------------------|----------------------------------|
| (1) Frame side complete              | (4) Gusset complete, front frame | (7) Tie down complete front      |
| (2) Frame side front complete, front | (5) Bracket complete, beam       | (8) Wheel apron, extension light |
| (3) Plate, front frame front         | (6) Closing plate                | (9) Bracket complete, battery    |

# Panel Components

## 5. FRONT FLOOR PANEL

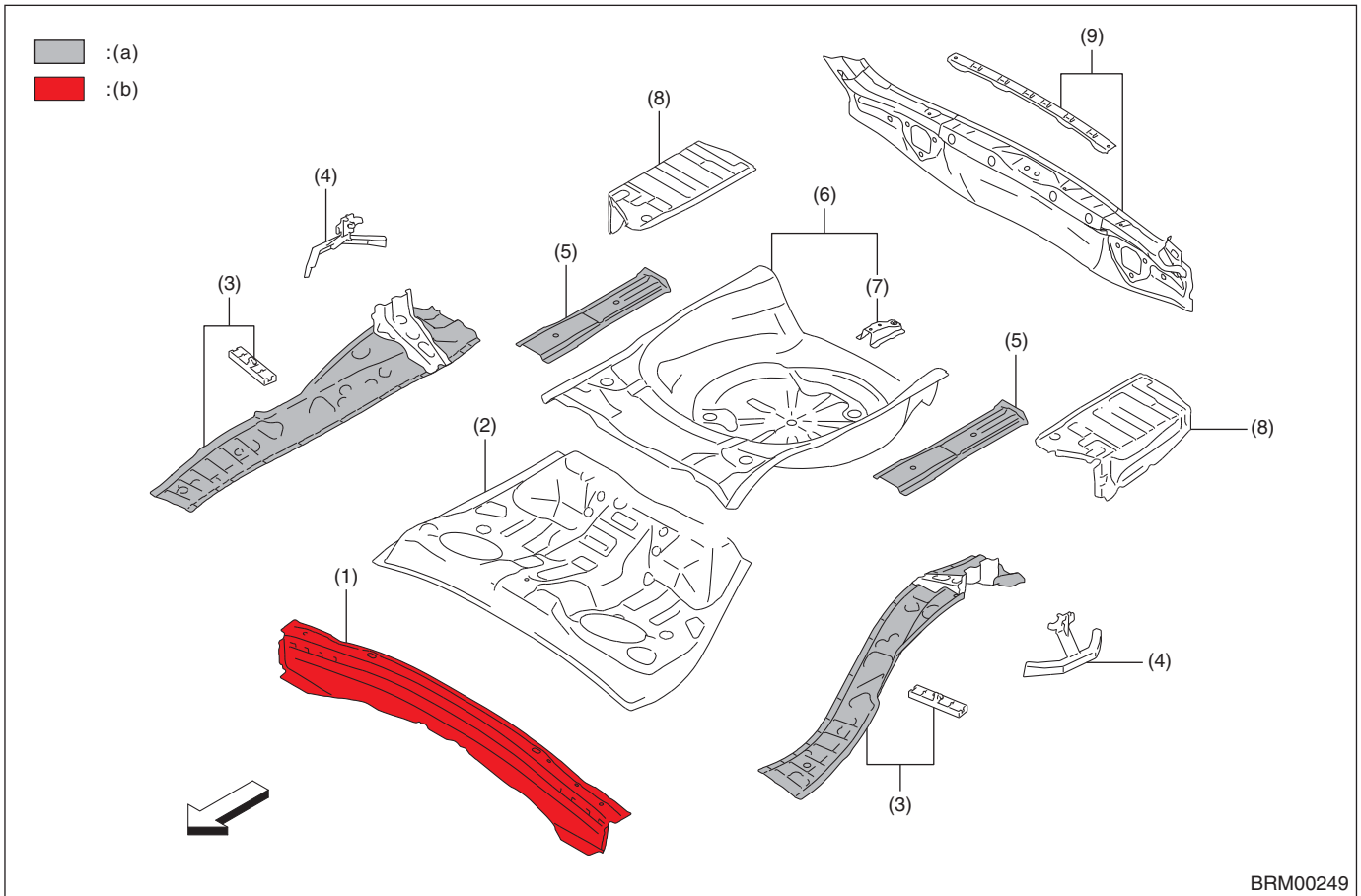


(a) High-strength tensile steel  
(440 — 590 MPa class)

- |  |  |                                     |
|--|--|-------------------------------------|
| (1) Crossmember, center floor          | (6) Floor pan, front                   | (11) Frame, front floor rear        |
| (2) Crossmember complete, A            | (7) Crossmember complete, filler front | (12) Pillar, front inner lower      |
| (3) Frame, front floor front           | (8) Crossmember complete, seat rear    | (13) Side sill complete, inner      |
| (4) Plug, front rear inner             | (9) Frame, front floor rear right      | (14) Crossmember, front floor front |
| (5) Bracket assembly, instrument panel | (10) Frame, front floor rear left      |                                     |

# Panel Components

## 6. REAR FLOOR PANEL & REAR SKIRT



(a) High-strength tensile steel  
(440 — 590 MPa class)

(b) High-strength tensile steel  
(980 MPa class)

(1) Crossmember complete

(2) Floor pan complete, rear

(3) Frame complete, rear upper

(4) Reinforcement, damper

(5) Frame side, rear upper

(6) Floor pan complete, rear rear

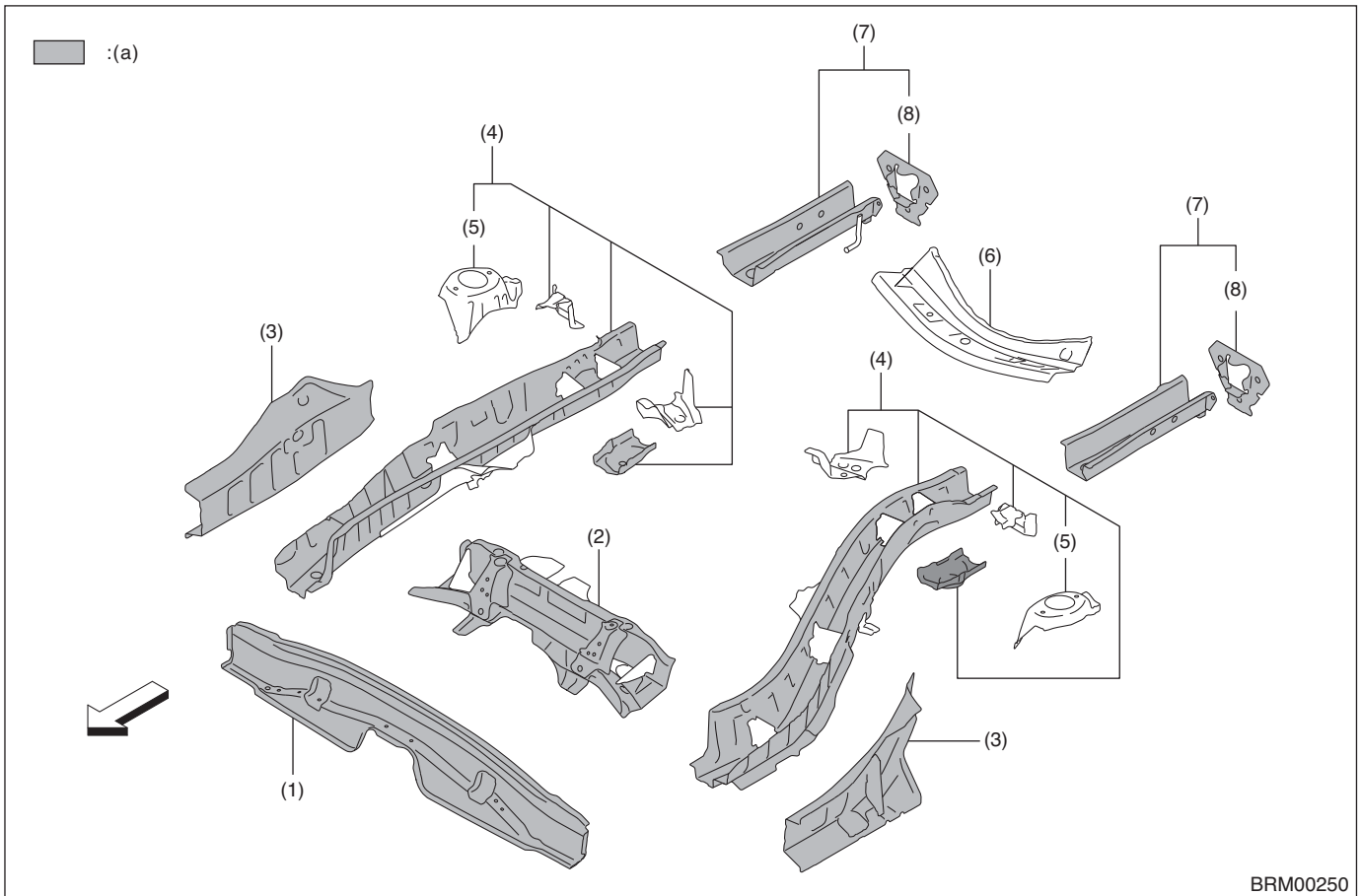
(7) Bracket, spare tire

(8) Floor side, rear

(9) Skirt complete, rear

# Panel Components

## 7. REAR FLOOR SIDE FRAME



(a) High-strength tensile steel  
(440 — 590 MPa class)

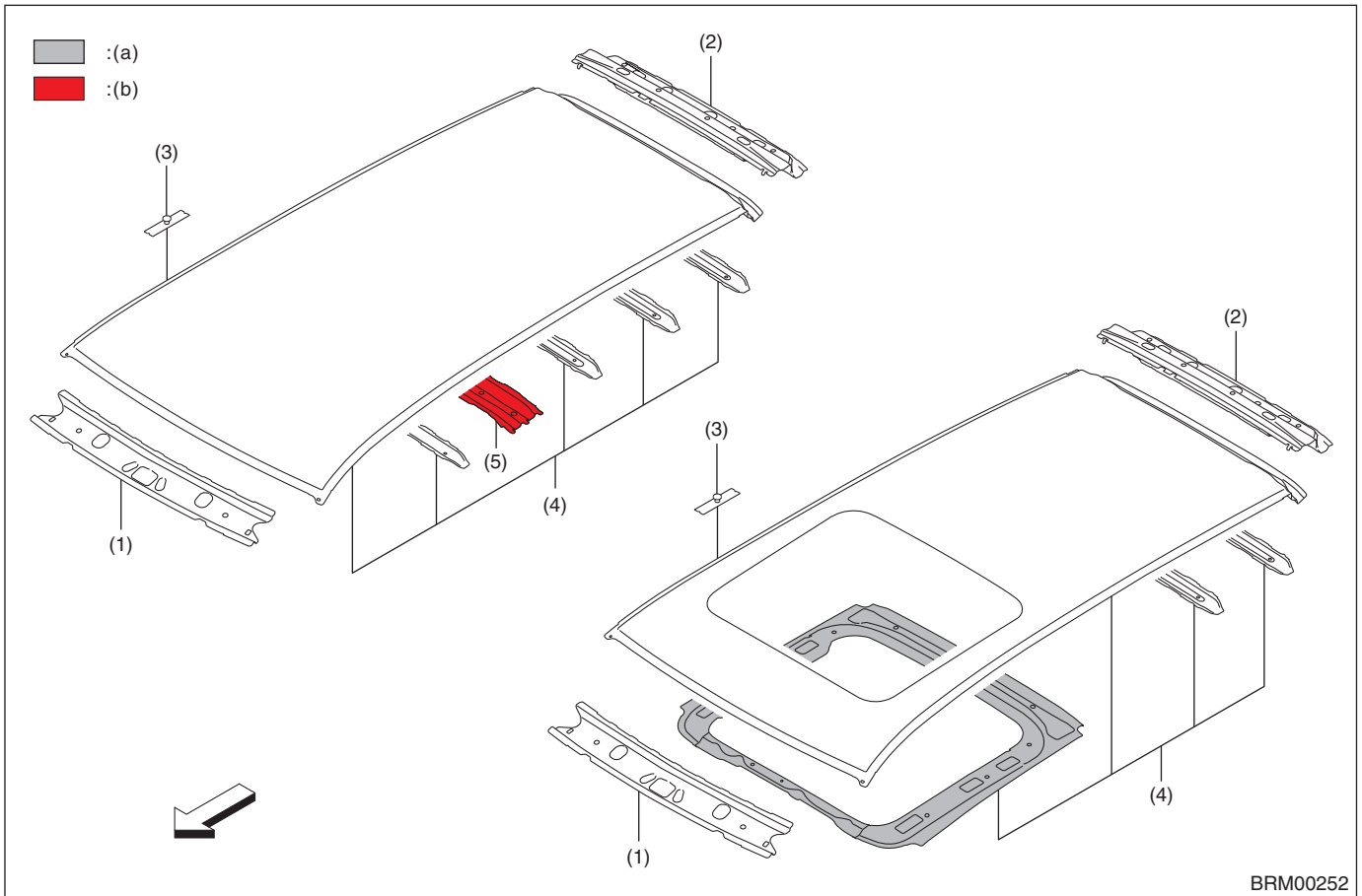
- (1) Crossmember complete, A
- (2) Crossmember B complete, rear floor
- (3) Side sill complete, inner rear

- (4) Frame complete, floor side rear
- (5) Bracket complete, rear suspension
- (6) Crossmember C complete, rear floor

- (7) Frame complete, rear floor rear
- (8) Bracket, bumper rear

# Panel Components

## 8. ROOF



BRM00252

(a) High-strength tensile steel  
(440 — 590 MPa class)

(b) High-strength tensile steel  
(1,180 MPa class)

(1) Rail complete, front roof

(3) Plate complete, T stud

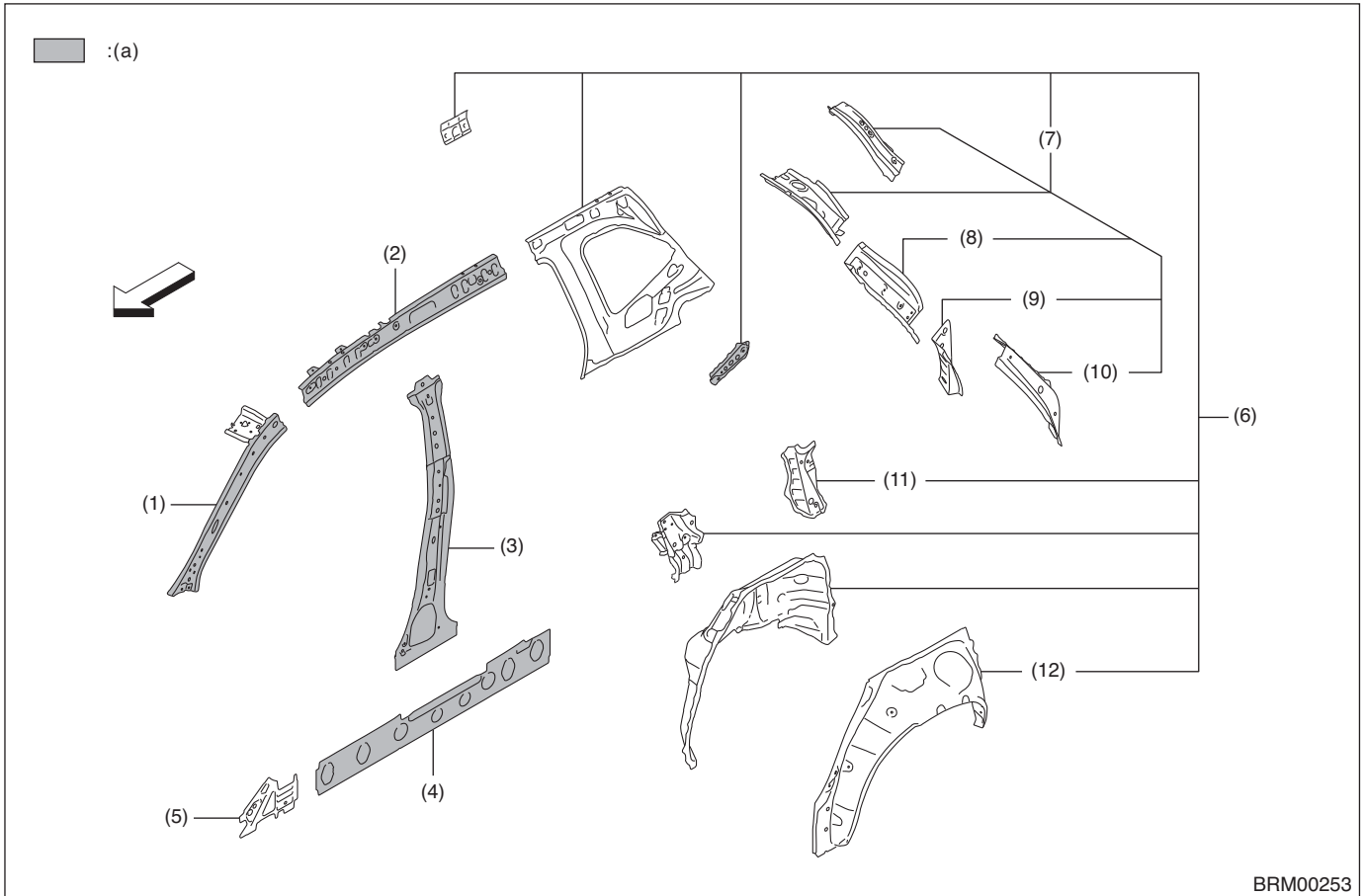
(5) Brace complete, roof center

(2) Rail complete, rear roof

(4) Panel complete, roof

# Panel Components

## 9. SIDE PANEL INNER



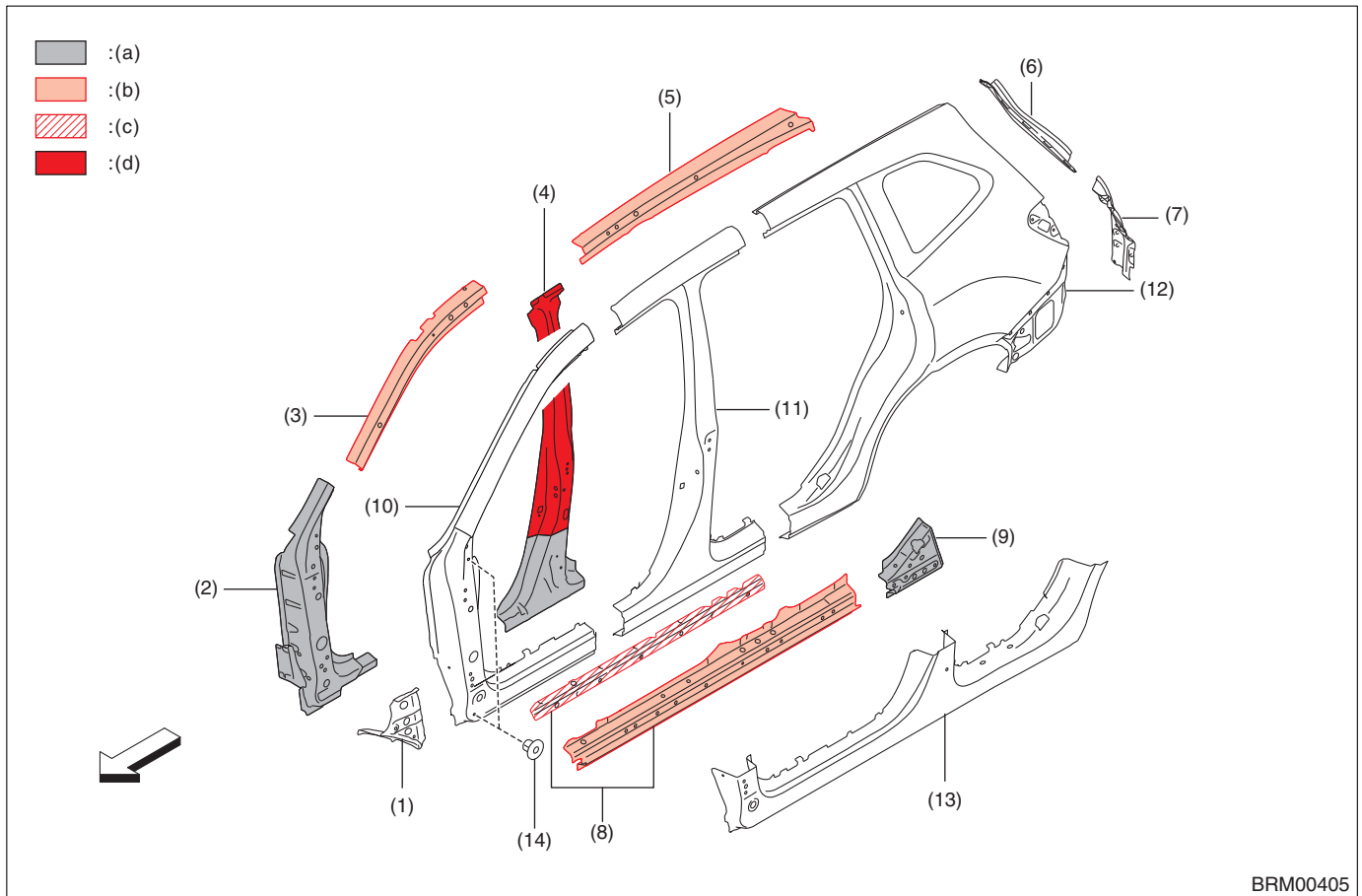
(a) High-strength tensile steel  
(440 — 590 MPa class)

- |  |  |  |
|--|--|--|
| (1) Pillar complete, front inner upper | (5) Reinforcement, side sill front outer | (9) Pillar, D inner lower              |
| (2) Side rail inner                    | (6) Rear quarter complete, inner         | (10) Reinforcement, D pillar           |
| (3) Pillar complete, center inner      | (7) Reinforcement complete, D pillar     | (11) Reinforcement, rear quarter inner |
| (4) Reinforcement, side sill inner     | (8) Pillar, D inner complete             | (12) Rear arch, inner                  |



# Panel Components

## 10.SIDE PANEL OUTER

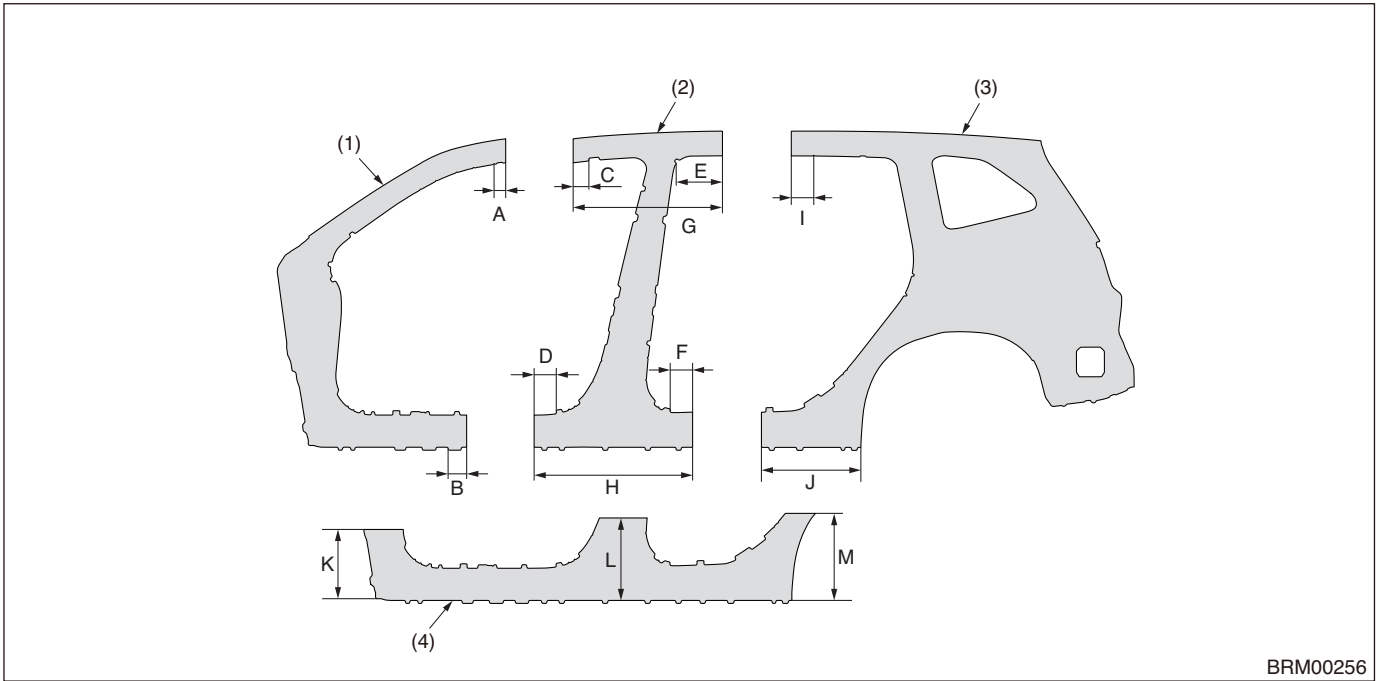


- |  |  |  |
|--|--|--|
| (a) High-strength tensile steel<br>(440 — 590 MPa class) | (c) High-strength tensile steel<br>(1,180 MPa class) | (d) High-strength tensile steel<br>(1,500 MPa class) |
| (b) High-strength tensile steel<br>(980 MPa class)       |  |  |
| (1) Gusset, front pillar                                 | (6) Extension complete, D pillar                     | (11) Pillar complete, center outer                   |
| (2) Reinforcement complete, front pillar lower           | (7) Rear quarter end complete                        | (12) Rear quarter complete, outer                    |
| (3) Reinforcement complete, side rail                    | (8) Reinforcement, side sill outer                   | (13) Side sill complete, outer                       |
| (4) Reinforcement complete, center pillar                | (9) Reinforcement, rear quarter catch                | (14) Nut Sert M6                                     |
| (5) Reinforcement complete, side rail                    | (10) Pillar complete, front outer                    |  |

# Panel Components

## B: REPAIR PART SIZE

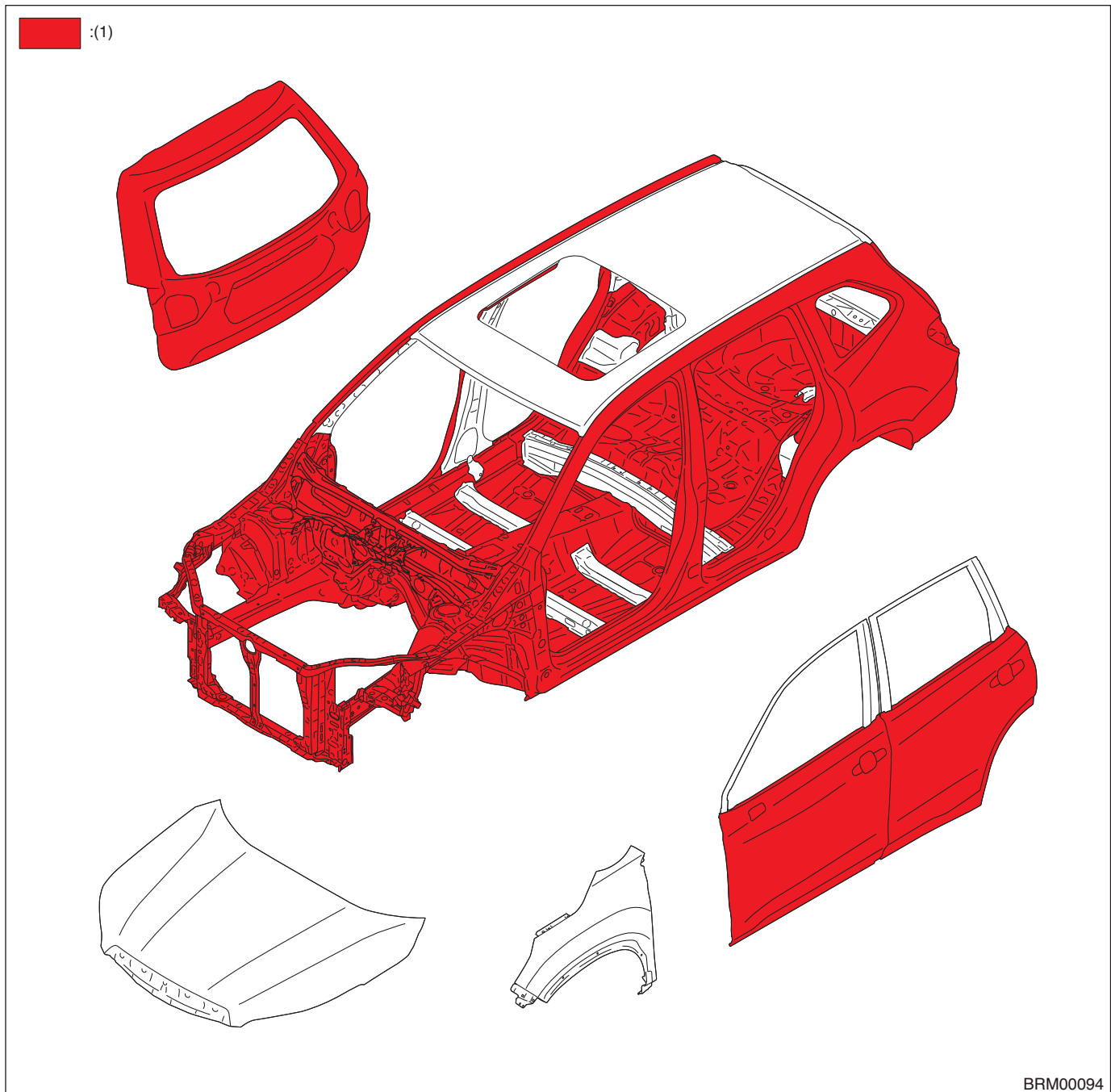
### 1. SIDE PANEL OUTER



No	Part name	Measuring point	Datum dimension mm (In)
(1)	Front pillar outer	A	51 (2.01)
		B	81 (3.19)
(2)	Center pillar outer	C	68 (2.68)
		D	96 (3.78)
		E	201 (7.91)
		F	98 (3.86)
		G	650 (25.59)
		H	690 (27.17)
(3)	Rear quarter outer	I	98 (3.86)
		J	433 (17.05)
(4)	Side sill outer	K	301 (11.85)
		L	359 (14.13)
		M	379 (14.92)

#### 4. Galvanized Sheet Metal

## A: SPECIFICATION

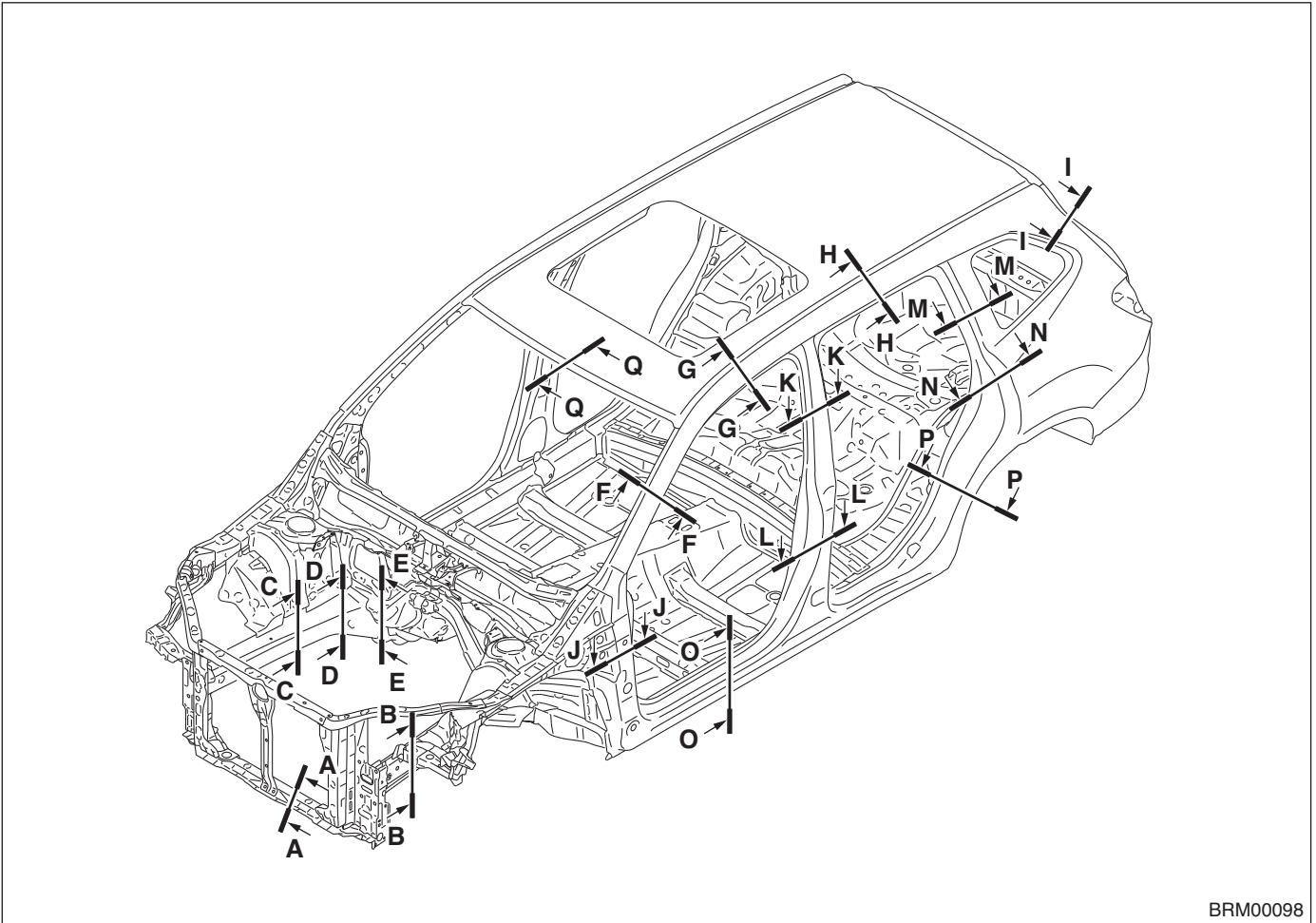


- (1) Galvanized sheet metal  
(both sides)

The fuel flap is made of plastic.

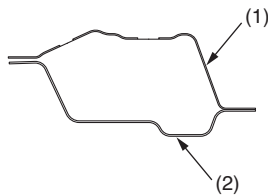
## 5. Body Construction

### A: SPECIFICATIONS



BRM00098

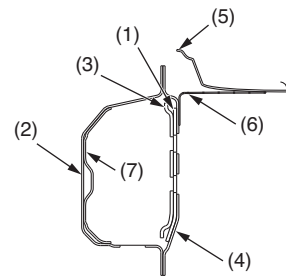
Cross section A — A



BRM00099

- (1) Frame lower A
- (2) Frame lower B

Cross section B — B

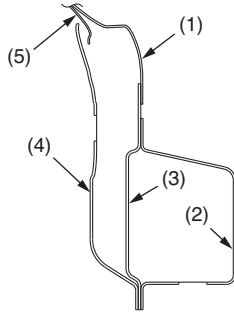


BRM00100

- (1) Plate closing plate FF
- (2) Frame side FF
- (3) Separator FF A
- (4) Closing plate FF
- (5) Gusset battery
- (6) Gusset battery lower
- (7) Doubler FF

# Body Construction

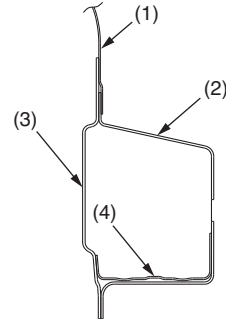
**Cross section C — C**



BRM00101

- (1) Reinforcement front suspension upper
- (2) Frame side FF
- (3) Closing plate FF
- (4) Reinforcement front suspension lower
- (5) Bracket front suspension lower

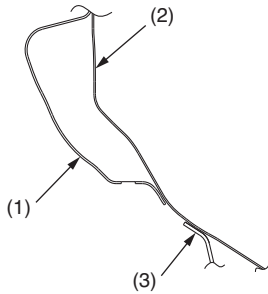
**Cross section D — D**



BRM00102

- (1) Bracket front suspension lower
- (2) Frame side FF
- (3) Closing plate FF
- (4) Reinforcement FF rear

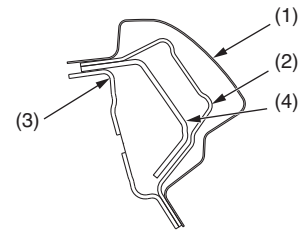
**Cross section E — E**



BRM00103

- (1) Crossmember toe board center
- (2) Toe board
- (3) Frame tunnel front A

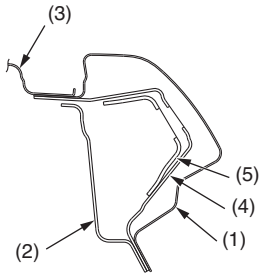
**Cross section F — F**



BRM00173

- (1) Panel side outer
- (2) Reinforcement side rail outer front
- (3) Pillar front inner upper
- (4) Reinforcement rail side outer front A

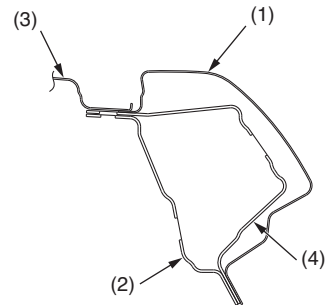
**Cross section G — G**



BRM00174

- (1) Panel side outer
- (2) Rail side inner
- (3) Roof panel
- (4) Reinforcement rail side outer rear
- (5) Reinforcement rail side outer rear A

**Cross section H — H**

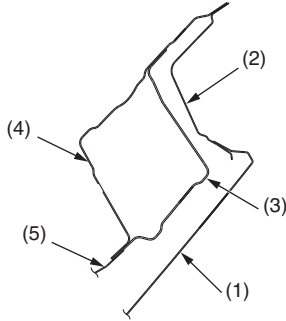


BRM00106

- (1) Panel side outer
- (2) Rail side inner
- (3) Roof panel
- (4) Reinforcement rail side outer rear

# Body Construction

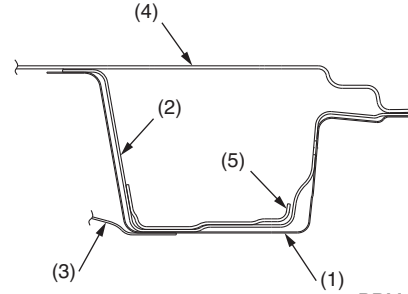
**Cross section I — I**



BRM00107

- (1) Panel side outer
- (2) Extension D pillar
- (3) Reinforcement D pillar lower
- (4) Pillar D inner center
- (5) Quarter panel rear inner

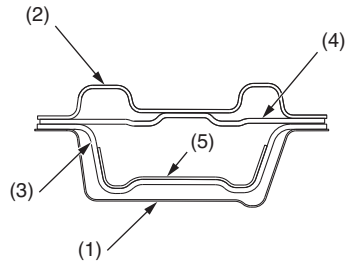
**Cross section J — J**



BRM00175

- (1) Panel side outer
- (2) Reinforcement pillar front outer
- (3) Gusset frame side upper
- (4) Pillar front inner lower
- (5) Reinforcement pillar front outer center

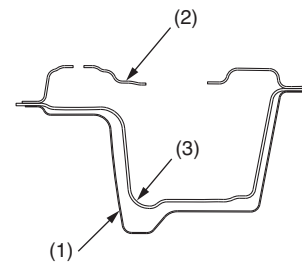
**Cross section K — K**



BRM00176

- (1) Panel side outer
- (2) Pillar center inner
- (3) Reinforcement pillar center outer upper
- (4) Reinforcement pillar center outer A
- (5) Doubler pillar center inner

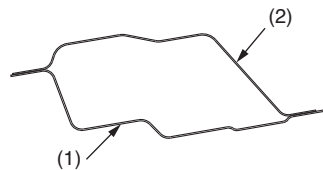
**Cross section L — L**



BRM00110

- (1) Panel side outer
- (2) Pillar center inner
- (3) Reinforcement pillar center outer upper

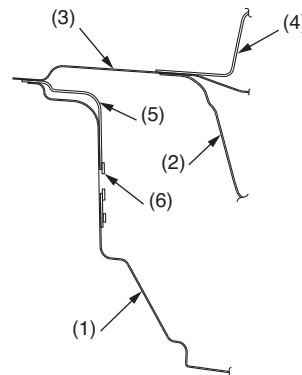
**Cross section M — M**



BRM00111

- (1) Panel side outer
- (2) Quarter panel rear inner

**Cross section N — N**

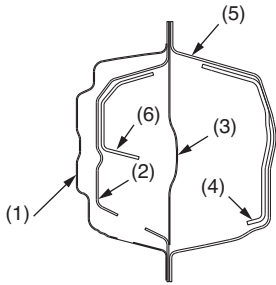


BRM00112

- (1) Panel side outer
- (2) Reinforcement C pillar
- (3) Quarter panel rear inner
- (4) Reinforcement rear apron
- (5) Reinforcement striker
- (6) Plate nut striker

# Body Construction

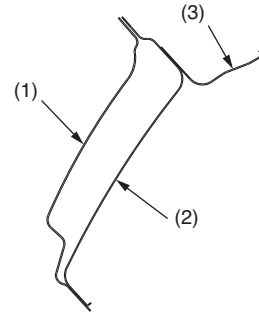
**Cross section O — O**



BRM00177

- (1) Panel side outer
- (2) Reinforcement sill side outer front
- (3) Reinforcement sill side rear
- (4) Reinforcement sill side inner
- (5) Side sill inner front
- (6) Reinforcement sill side outer A

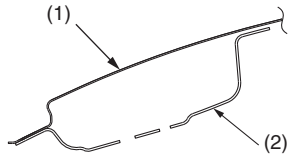
**Cross section P — P**



BRM00114

- (1) Panel side outer
- (2) Arch rear inner
- (3) Wheel apron rear

**Cross section Q — Q**



BRM00115

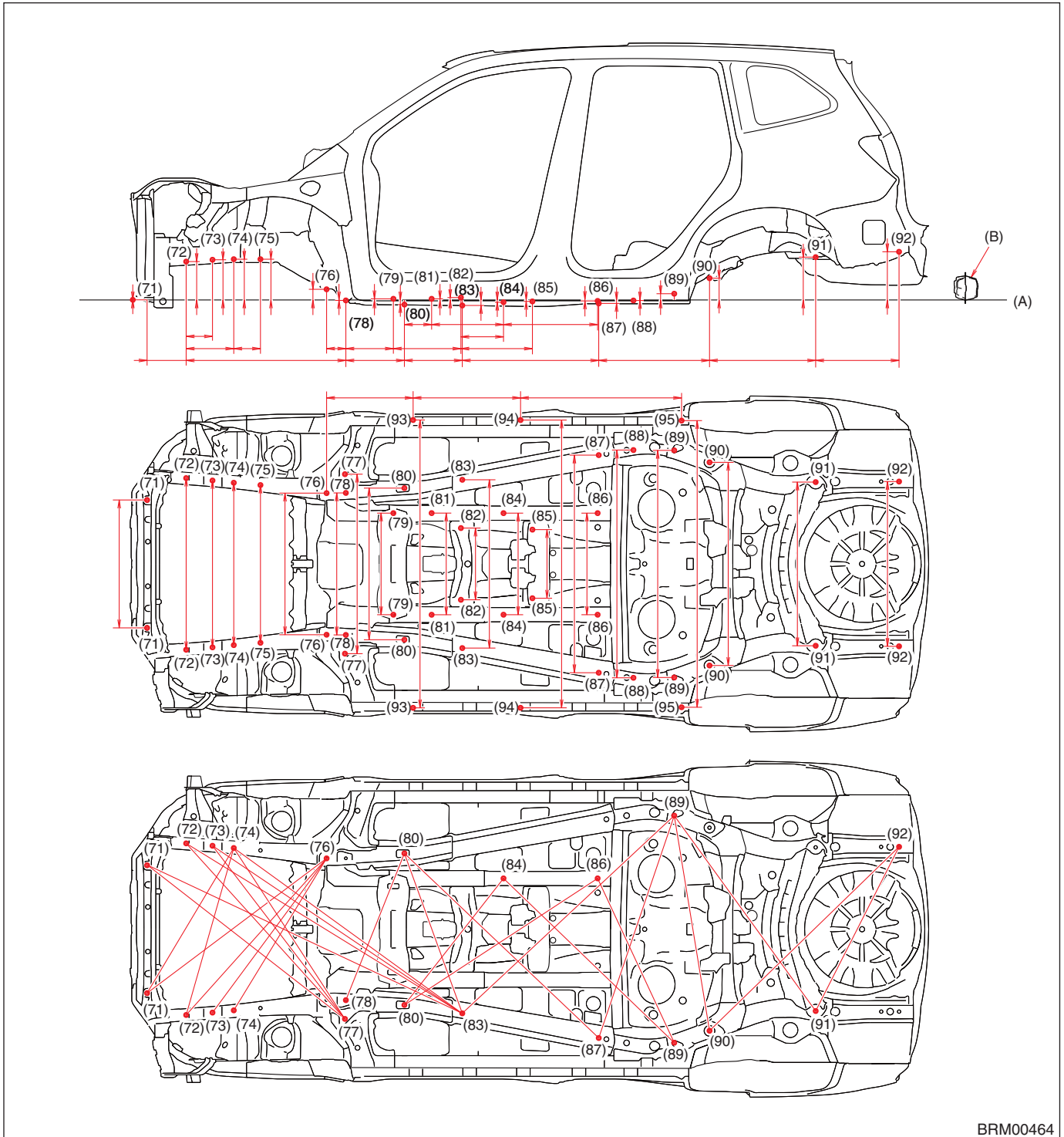
- (1) Roof panel
- (2) Rail front

**SUBARU.**

## 6. Body Reference Points

### A: DIMENSIONS

#### 1. LOWER SURFACE



BRM00464

- The longitudinal dimensions are projected dimensions.
- The height dimensions are the vertical distances from the gauge point on the assumed horizontal line through the side sill flange joint (bending angle point).
- Diagonal dimensions are the actual dimensions between reference points.



## Body Reference Points

(A) Standard line

(B) Side sill outer panel

(71) Under cover front mounting hole (symmetrical)

(80) Under cover rear mounting hole (symmetrical)

(89) Rear suspension support sub frame mounting hole (symmetrical)

(72) Gauge hole (symmetrical)

(81) Under cover rear mounting hole (symmetrical)

(90) Rear suspension crossmember mounting hole (symmetrical), front side

(73) Radio ground mounting hole (symmetrical)

(82) Exhaust cover mounting hole (symmetrical)

(91) Rear suspension crossmember mounting hole (symmetrical), rear side

(74) Front crossmember mounting hole (symmetrical), front side

(83) Under cover rear fixing hole (symmetrical)

(92) Gauge hole (symmetrical)

(75) Front crossmember mounting hole (symmetrical), rear side

(84) Under cover rear fixing hole (symmetrical)

(93) Garnish side mounting hole (symmetrical)

(76) Front suspension arm mounting hole (symmetrical)

(85) Exhaust cover mounting hole (symmetrical)

(94) Garnish side mounting hole (symmetrical)

(77) Front suspension plate mounting hole (symmetrical), outer side

(86) Protector tank mounting hole (symmetrical)

(95) Garnish side mounting hole (symmetrical)

(78) Front suspension plate mounting hole (symmetrical), inner side

(87) Protector tank mounting hole (symmetrical)

(79) Crossmember upper mounting hole (symmetrical)

(88) Harness bracket mounting hole (symmetric)

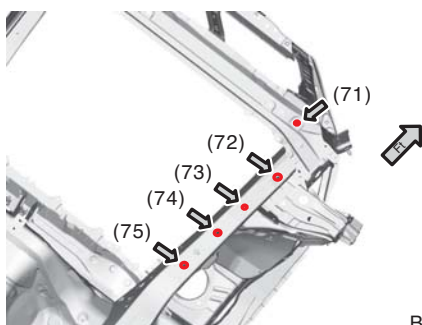
Measuring point	Datum dimension mm (in)	Projected dimensions mm (in)
Datum line — (71)	1 (0.04)	—
Datum line — (72)	207 (8.15)	—
Datum line — (73)	217 (8.54)	—
Datum line — (74)	220 (8.66)	—
Datum line — (75)	220 (8.66)	—
Datum line — (76)	58 (2.28)	—
Datum line — (78)	-2 (-0.08)	—
Datum line — (79)	6 (0.24)	—
Datum line — (80)	-25 (-0.98)	—
Datum line — (81)	6 (0.24)	—
Datum line — (82)	13 (0.51)	—
Datum line — (83)	-30 (-1.18)	—
Datum line — (84)	-12 (-0.47)	—
Datum line — (85)	-8 (-0.31)	—
Datum line — (86)	-5 (-0.20)	—
Datum line — (87)	-19 (-0.75)	—
Datum line — (88)	-3 (-0.12)	—
Datum line — (89)	34 (1.34)	—
Datum line — (90)	118 (4.65)	—
Datum line — (91)	231 (9.09)	—
Datum line — (92)	260 (10.24)	—
(71) — (72)	211 (8.31)	—
(72) — (73)	142 (5.59)	—
(72) — (74)	257 (10.12)	—
(72) — (78)	862 (33.94)	—
(74) — (75)	144 (5.67)	—

Measuring point	Datum dimension mm (in)	Projected dimensions mm (in)
(76) — (78)	104 (4.09)	—
(78) — (79)	257 (10.12)	—
(78) — (80)	316 (12.44)	—
(79) — (82)	365 (14.37)	—
(80) — (81)	147 (5.79)	—
(80) — (83)	313 (12.32)	—
(81) — (84)	388 (15.28)	—
(82) — (84)	230 (9.06)	—
(82) — (85)	386 (15.20)	—
(83) — (87)	737 (29.02)	—
(84) — (86)	508 (20.00)	—
(87) — (90)	598 (23.54)	—
(90) — (91)	573 (22.56)	—
(91) — (92)	450 (17.72)	—
(76) — (93)	467 (18.39)	—
(93) — (94)	580 (22.83)	—
(94) — (95)	869 (34.21)	—
(71)R — (71)L	690 (27.17)	—
(72)R — (72)L	926 (36.46)	—
(73)R — (73)L	900 (35.43)	—
(74)R — (74)L	876 (34.49)	—
(75)R — (75)L	851 (33.50)	—
(76)R — (76)L	764 (30.08)	—
(77)R — (77)L	968 (38.11)	—
(78)R — (78)L	766 (30.16)	—
(79)R — (79)L	548 (21.57)	—

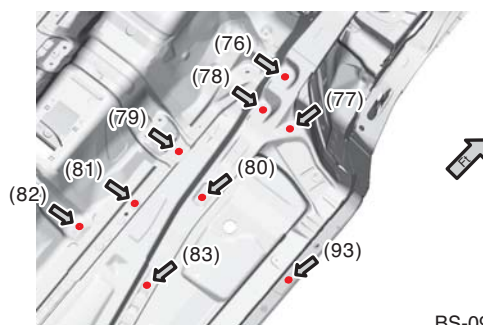
## Body Reference Points

Measuring point	Datum dimension mm (in)	Projected dimensions mm (in)
(80)R — (80)L	818 (32.20)	—
(81)R — (81)L	548 (21.57)	—
(82)R — (82)L	387 (15.24)	—
(83)R — (83)L	908 (35.75)	—
(84)R — (84)L	548 (21.57)	—
(85)R — (85)L	370 (14.57)	—
(86)R — (86)L	548 (21.57)	—
(87)R — (87)L	1,174 (46.22)	—
(88)R — (88)L	1,229 (48.39)	—
(89)R — (89)L	1,225 (48.23)	—
(90)R — (90)L	1,096 (43.15)	—
(91)R — (91)L	883 (34.76)	—
(92)R — (92)L	889 (35.00)	—
(93)R — (93)L	1,553 (61.14)	—
(94)R — (94)L	1,553 (61.14)	—
(95)R — (95)L	1,546 (60.87)	—
(71)R — (74)L	938 (36.93)	912 (35.91)
(71)R — (76)L	1,213 (47.76)	1,211 (47.68)
(71)L — (77)R	1,352 (53.23)	1,352 (53.23)
(71)L — (83)R	1,880 (74.02)	1,880 (74.02)
(72)R — (74)L	937 (36.89)	937 (36.89)
(72)R — (76)L	1,145 (45.08)	1,135 (44.68)
(72)L — (77)R	1,294 (50.94)	1,277 (50.28)
(72)L — (83)R	1,766 (69.53)	1,750 (68.90)

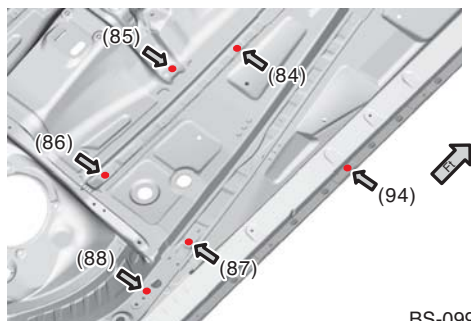
Measuring point	Datum dimension mm (in)	Projected dimensions mm (in)
(73)R — (76)L	1,047 (41.22)	1,035 (40.75)
(73)L — (77)R	1,197 (47.13)	1,176 (46.30)
(73)L — (83)R	1,642 (64.65)	1,623 (63.90)
(74)R — (76)L	975 (38.39)	961 (37.83)
(74)L — (77)R	1,122 (44.17)	1,100 (43.31)
(74)L — (83)R	1,543 (60.75)	1,522 (59.92)
(78)R — (80)L	853 (33.58)	853 (33.58)
(80)R — (84)L	868 (34.17)	868 (34.17)
(80)R — (86)L	1,247 (49.09)	1,247 (49.09)
(80)L — (83)R	918 (36.14)	918 (36.14)
(80)L — (87)R	1,447 (56.97)	1,447 (56.97)
(83)R — (89)L	1,565 (61.61)	1,564 (61.57)
(84)L — (89)R	1,280 (50.39)	1,279 (50.35)
(86)L — (89)R	979 (38.54)	978 (38.50)
(87)R — (89)L	1,268 (49.92)	1,267 (49.88)
(89)L — (90)R	1,179 (46.42)	1,176 (46.30)
(89)L — (91)R	1,316 (51.81)	1,302 (51.26)
(90)R — (92)L	1,432 (56.38)	1,425 (56.10)
(91)R — (92)L	994 (39.13)	994 (39.13)



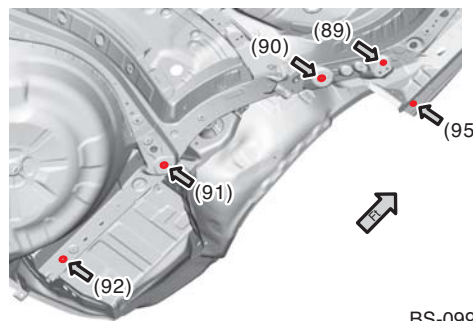
BS-09931



BS-09932



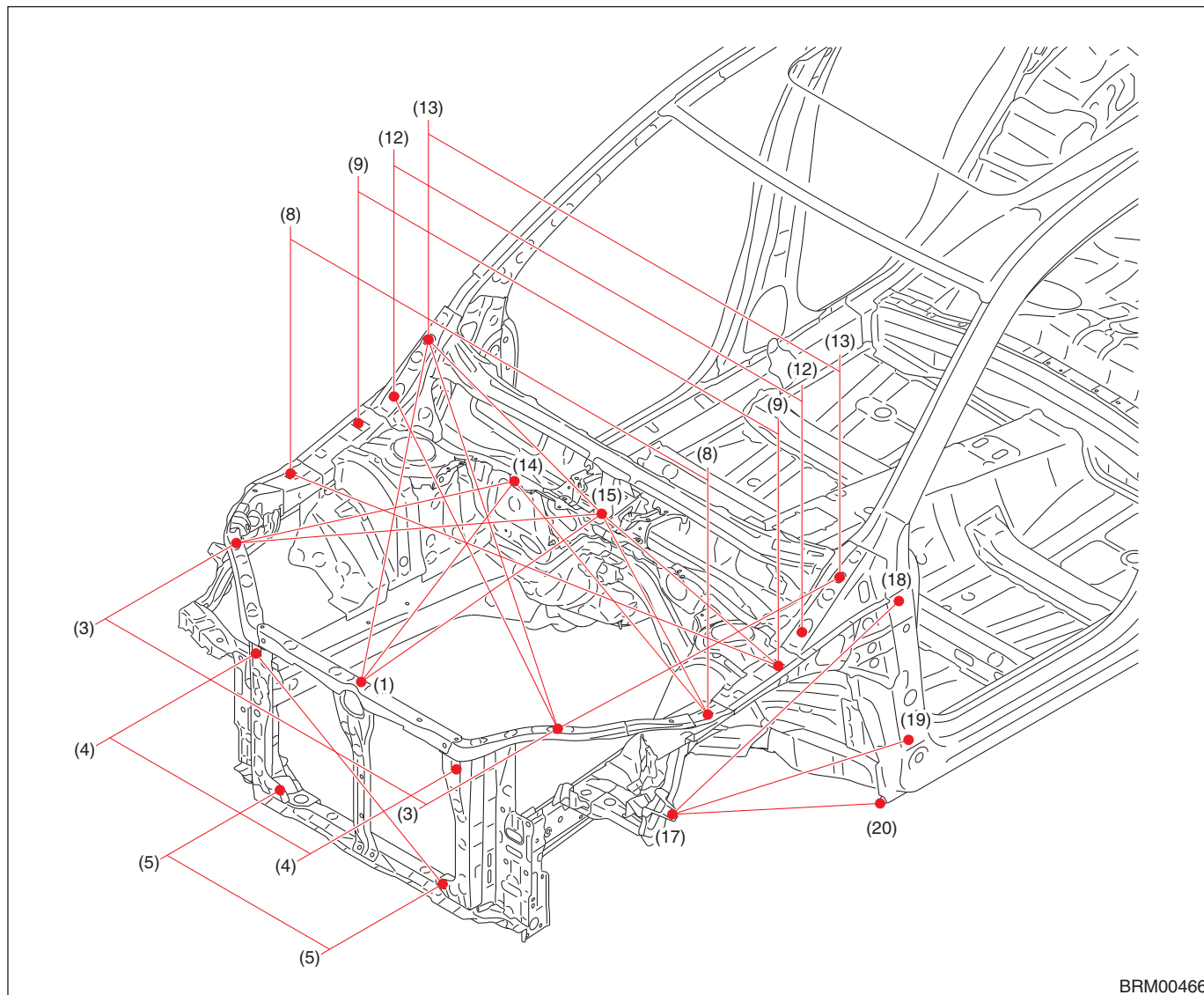
BS-09934



BS-09935

# Body Reference Points

## 2. FRONT 1



BRM00466

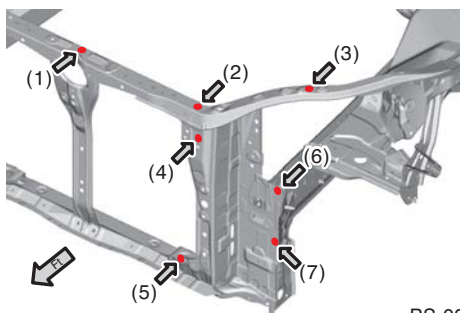
- |  |   |   |
|--|---|---|
| (1) Body repair reference hole                                     | (9) Extension fender front mounting hole (symmetrical), rear side | (17) Gauge hole (symmetrical)                                       |
| (3) Headlight mounting hole (symmetrical)                          | (12) Gauge hole (symmetrical)                                     | (18) Front door hinge upper mounting hole (symmetrical), upper side |
| (4) Headlight mounting hole (symmetrical)                          | (13) Hood hinge mounting hole (symmetrical)                       | (19) Front door hinge lower mounting hole (symmetrical), lower side |
| (5) Gauge hole (symmetrical)                                       | (14) Cowl panel mounting hole (symmetrical)                       | (20) Fender garnish mounting hole (symmetrical)                     |
| (8) Extension fender front mounting hole (symmetrical), front side | (15) Gauge hole (center)  |   |

## Body Reference Points

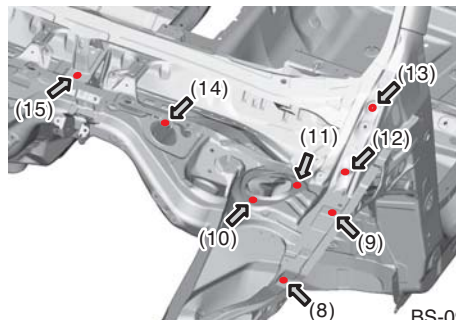
Measuring point	Datum dimension mm (in)
(1) — (13)R	1,267 (49.88)
(1) — (14)R	875 (34.45)
(1) — (15)	884 (34.80)
(3)R — (3)L	1,175 (46.26)
(3)R — (14)R	767 (30.20)
(3)R — (15)	951 (37.44)
(3)L — (12)R	1,522 (59.92)
(3)L — (13)R	1,600 (62.99)
(3)L — (13)L	892 (35.12)
(4)R — (4)L	733 (28.86)
(4)R — (5)L	779 (30.67)
(5)R — (5)L	594 (23.39)

Measuring point	Datum dimension mm (in)
(8)R — (8)L	1,525 (60.04)
(8)R — (9)L	1,551 (61.06)
(8)L — (14)R	1,082 (42.60)
(8)L — (15)	852 (33.54)
(9)R — (9)L	1,535 (60.43)
(9)L — (15)	778 (30.63)
(12)R — (12)L	1,491 (58.70)
(13)R — (13)L	1,503 (59.17)
(13)R — (15)	770 (30.31)
(17)L — (18)L	884 (34.80)
(17)L — (19)L	894 (35.20)
(17)L — (20)L	944 (37.17)

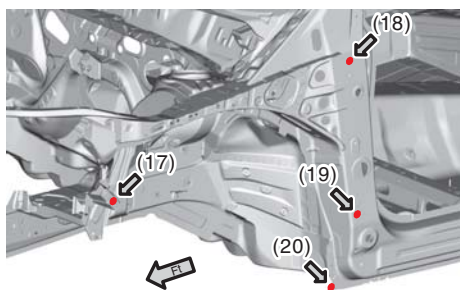
- The reference point of (1) and (15) is the center of the vehicle body, while other reference points are left-right symmetrical.
- The dimensions are the actual dimensions between the reference points.



BS-09937



BS-09939

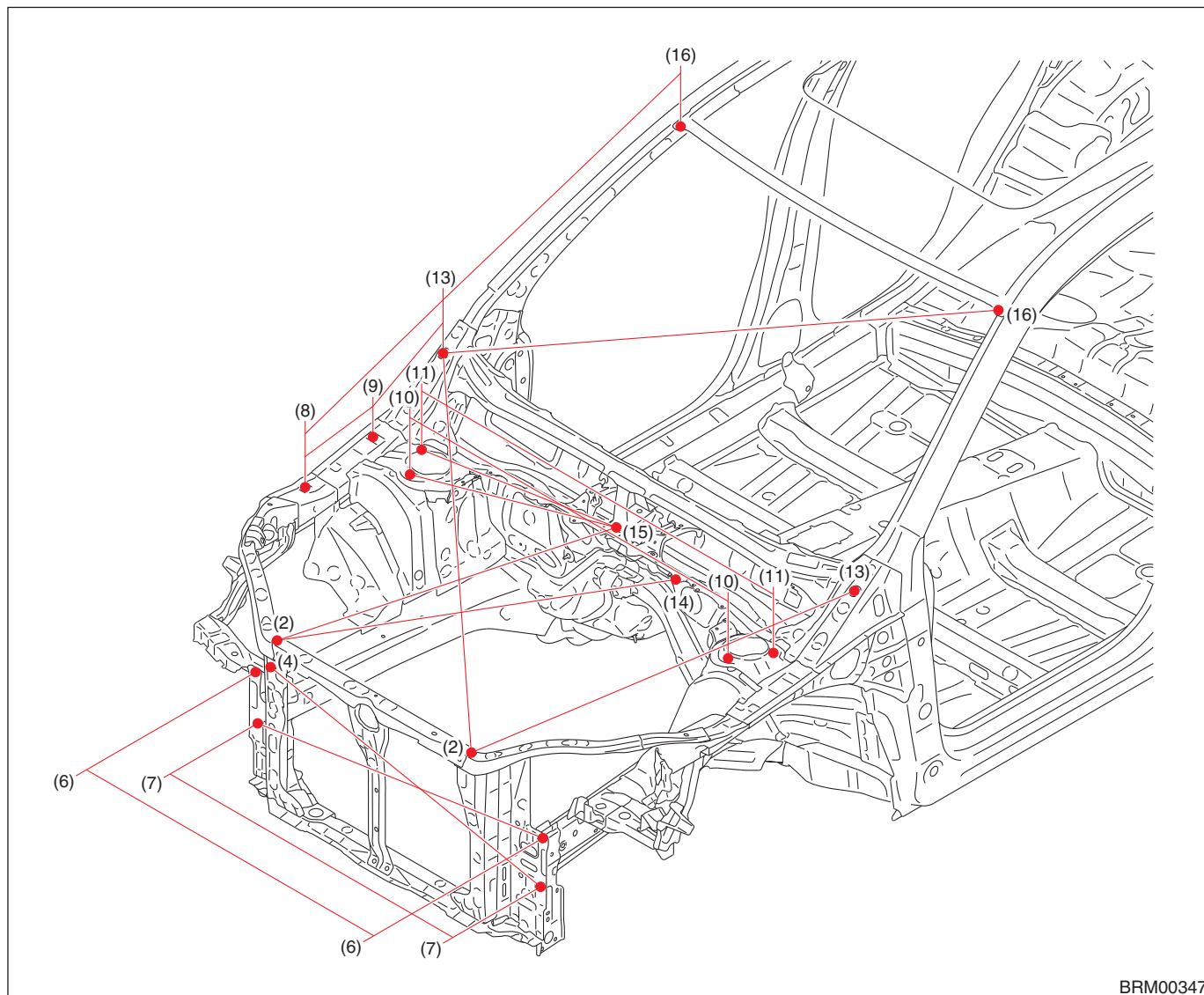


BS-09942

SUBARU.

# Body Reference Points

## 3. FRONT 2



BRM00347

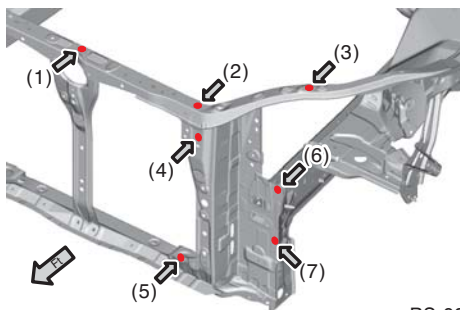
- |  |   |  |
|--|---|--|
| (2) Frame radiator upper side mounting hole (symmetrical)          | (9) Extension fender front mounting hole (symmetrical), rear side | (15) Gauge hole (center)                                   |
| (4) Headlight mounting hole (symmetrical)                          | (10) Front suspension mounting hole (symmetrical), front          | (16) Front glass installation reference hole (symmetrical) |
| (6) Front bumper beam mounting hole (symmetrical), upper side      | (11) Front suspension mounting hole (symmetrical), rear outside   |  |
| (7) Front bumper beam mounting hole (symmetrical), lower side      | (13) Hood hinge mounting hole (symmetrical)                       |  |
| (8) Extension fender front mounting hole (symmetrical), front side | (14) Cowl panel mounting hole (symmetrical)                       |  |

## Body Reference Points

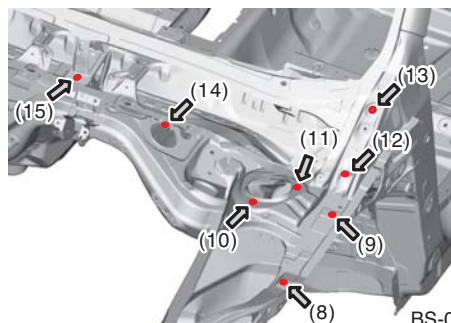
Measuring point	Datum dimension mm (in)
(2)R — (14)L	1,045 (41.14)
(2)R — (15)	958 (37.72)
(2)L — (13)R	1,508 (59.37)
(2)L — (13)L	1,100 (43.31)
(4)R — (7)L	940 (37.01)
(6)R — (6)L	1,050 (41.34)
(6)L — (7)R	1,054 (41.50)
(7)R — (7)L	1,034 (40.71)
(8)R — (9)R	254 (10.00)

Measuring point	Datum dimension mm (in)
(8)R — (13)R	526 (20.71)
(9)R — (13)R	285 (11.22)
(10)R — (10)L	1,163 (45.79)
(10)R — (15)	608 (23.94)
(11)R — (11)L	1,285 (50.59)
(11)R — (15)	648 (25.51)
(13)R — (16)R	849 (33.43)
(13)R — (16)L	1,571 (61.85)

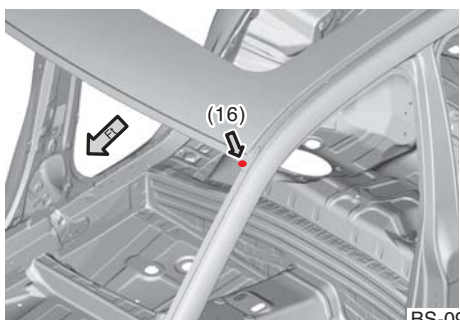
- The reference point of (1) and (15) is the center of the vehicle body, while other reference points are left-right symmetrical.
- The dimensions are the actual dimensions between the reference points.



BS-09937



BS-09939



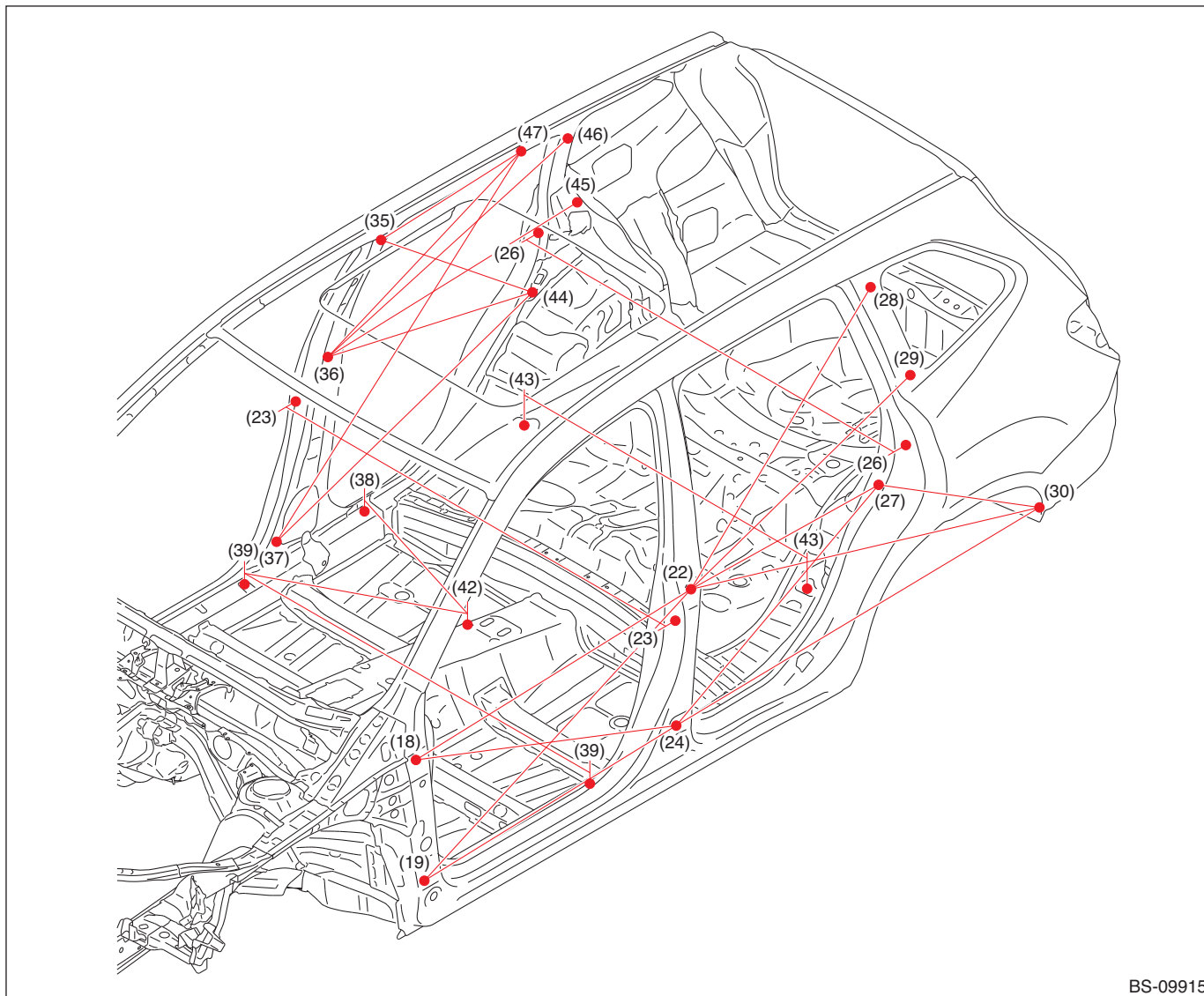
BS-09940

SUBARU.



# Body Reference Points

## 4. INSIDE 1



BS-09915

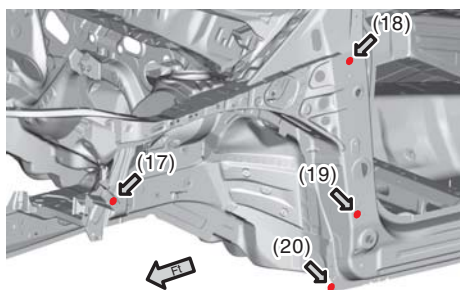
- |   |   |  |
|---|---|--|
| (18) Front door hinge upper mounting hole (symmetrical), upper side   | (29) Rear quarter glass mounting hole (symmetrical), front lower side | (43) Belt anchor mounting hole (symmetrical)   |
| (19) Front door hinge lower mounting hole (symmetrical), lower side   | (30) Cover side lower mounting hole (symmetrical), front side         | (44) Apron trim mounting hole (symmetrical)    |
| (22) Rear door hinge upper mounting hole (symmetrical), upper side    | (35) B pillar trim mounting hole (symmetrical)                        | (45) D pillar trim mounting hole (symmetrical) |
| (23) Front door striker mounting hole (symmetrical), upper side       | (36) B pillar trim mounting hole (symmetrical)                        | (46) C pillar trim mounting hole (symmetrical) |
| (24) Rear door hinge lower mounting hole (symmetrical), front side    | (37) B pillar trim mounting hole (symmetrical)                        | (47) Gauge hole (symmetrical)                  |
| (26) Rear door striker mounting hole (symmetrical), upper side        | (38) Harness clip mounting hole (symmetrical)                         |  |
| (27) Rear door switch mounting hole (symmetrical)                     | (39) Harness clip mounting hole (symmetrical)                         |  |
| (28) Rear quarter glass mounting hole (symmetrical), front upper side | (42) Bracket console mounting hole (symmetrical)                      |  |

## Body Reference Points

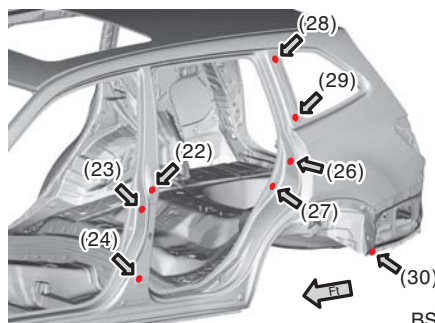
Measuring point	Datum dimension mm (in)
(18)L — (22)L	1,146 (45.12)
(18)L — (24)L	1,146 (45.12)
(19)L — (22)L	1,229 (48.39)
(19)L — (24)L	1,054 (41.50)
(22)L — (27)L	882 (34.72)
(22)L — (28)L	1,097 (43.19)
(22)L — (29)L	1,025 (40.35)
(22)L — (30)L	1,639 (64.53)
(23)R — (23)L	1,593 (62.72)
(24)L — (27)L	1,014 (39.92)
(24)L — (30)L	1,627 (64.05)
(26)R — (26)L	1,542 (60.71)
(27)L — (30)L	799 (31.46)

Measuring point	Datum dimension mm (in)
(35)R — (44)R	994 (39.13)
(35)R — (47)R	554 (21.81)
(36)R — (44)R	866 (34.09)
(36)R — (45)R	1,010 (39.76)
(36)R — (46)R	981 (38.62)
(36)R — (47)R	838 (32.99)
(37)R — (44)R	1,122 (44.17)
(37)R — (47)R	1,391 (54.76)
(38)R — (42)R	707 (27.83)
(39)R — (39)L	1,450 (57.09)
(39)R — (42)R	720 (28.35)
(43)R — (43)L	1,187 (46.73)

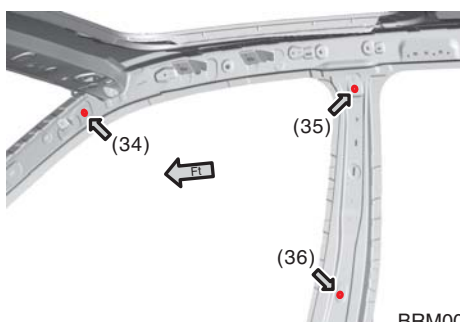
- All reference points are left-right symmetrical.
- The dimensions are the actual dimensions between the reference points.



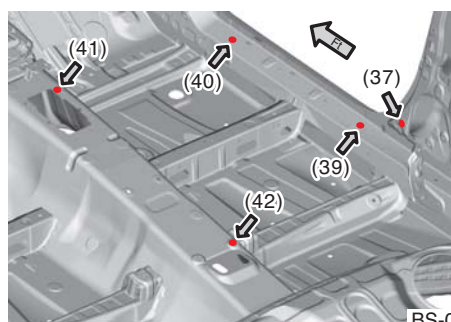
BS-09942



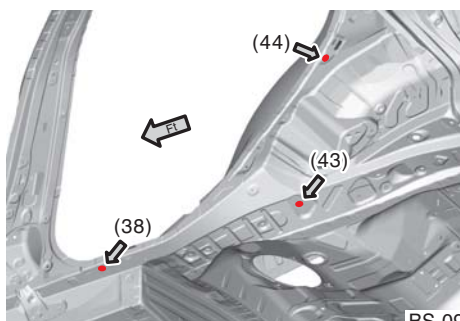
BS-09943



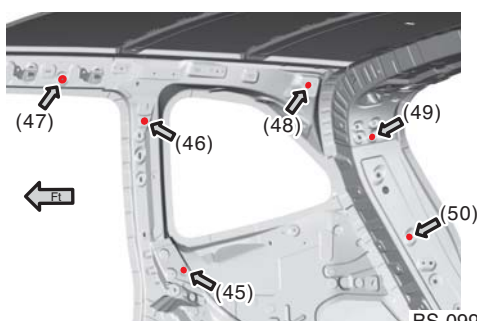
BRM00467



BS-09950



BS-09951

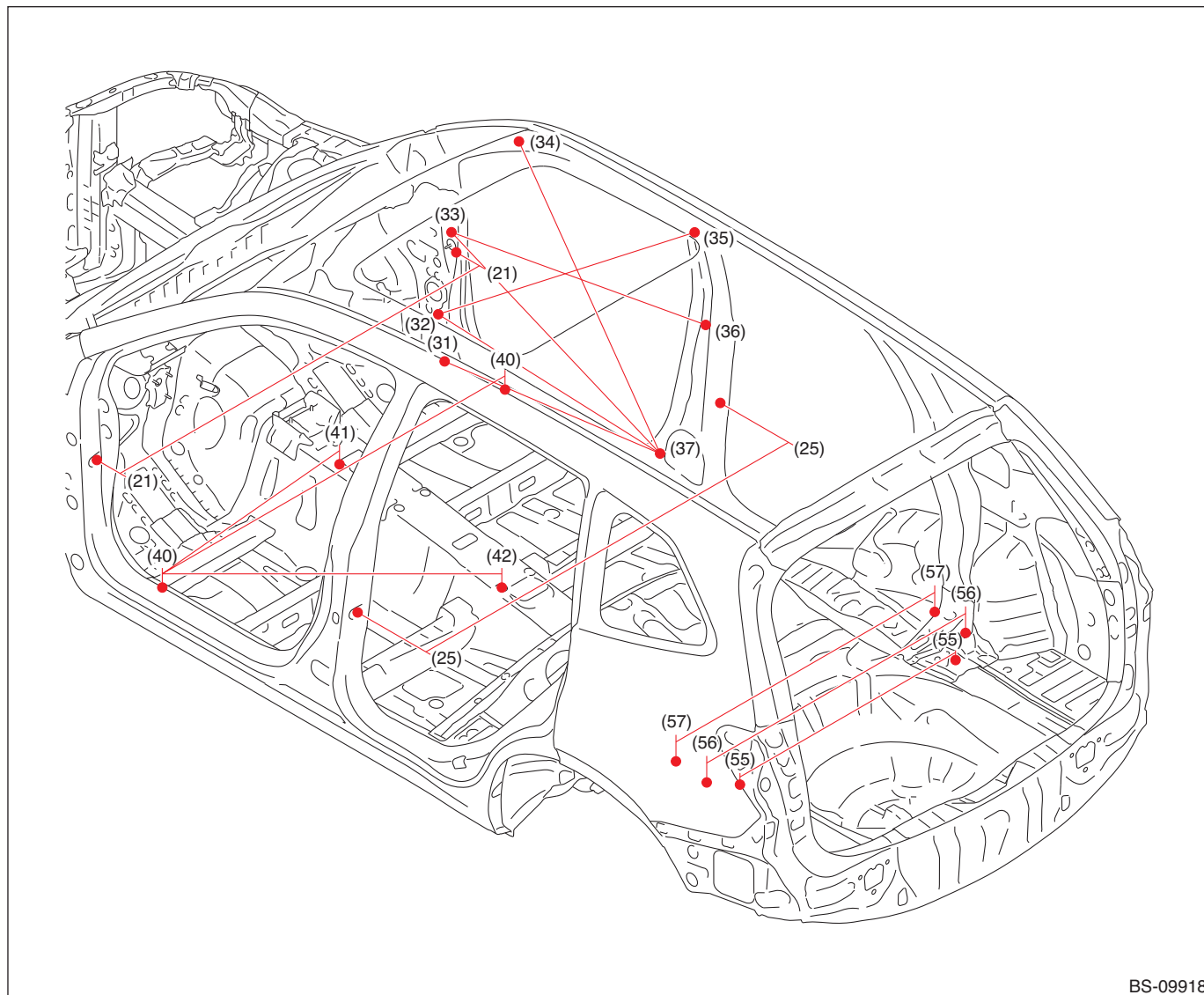


BS-09952



# Body Reference Points

## 5. INSIDE 2



BS-09918

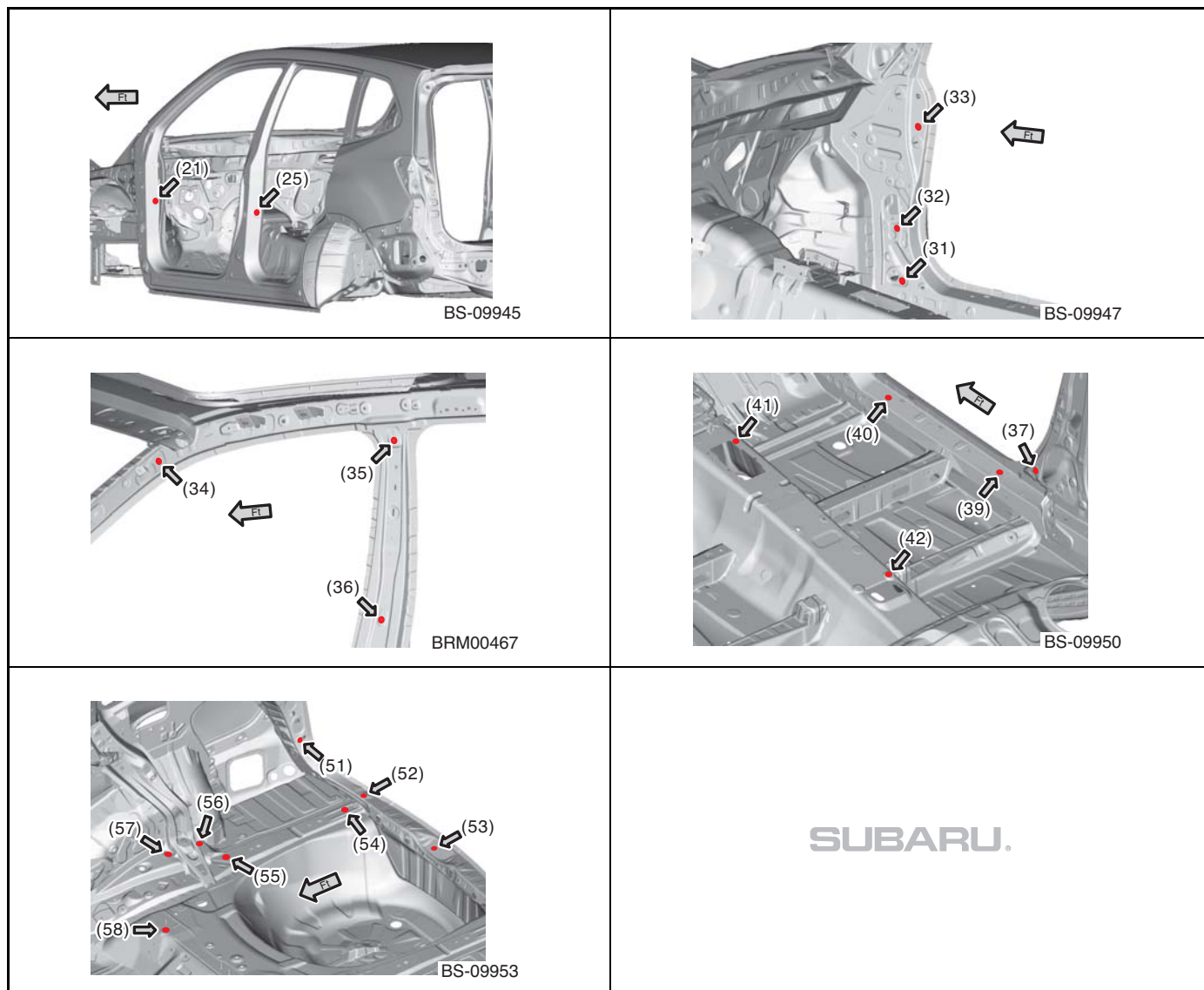
- |  |   |  |
|--|---|--|
| (21) Front door checker mounting hole (symmetrical)                | (35) B pillar trim mounting hole (symmetrical)            | (55) Gauge hole (symmetrical)                                |
| (25) Rear door checker mounting hole (symmetrical)                 | (36) B pillar trim mounting hole (symmetrical)            | (56) Rear suspension mounting hole (symmetrical), rear side  |
| (31) Harness holding clip mounting hole (symmetrical)              | (37) B pillar trim mounting hole (symmetrical)            | (57) Rear suspension mounting hole (symmetrical), front side |
| (32) Ground mounting hole (symmetrical)                            | (40) Harness clip mounting hole (symmetrical)             |  |
| (33) Steering support beam mounting hole (symmetrical), lower side | (41) Shift case installation reference hole (symmetrical) |  |
| (34) Curtain air bag mounting hole (symmetrical)                   | (42) Bracket console mounting hole (symmetrical)          |  |

## Body Reference Points

Measuring point	Datum dimension mm (in)
(21)R — (21)L	1,511 (59.49)
(25)R — (25)L	1,524 (60.00)
(31)R — (37)R	867 (34.13)
(32)R — (35)R	1,527 (60.12)
(32)R — (37)R	902 (35.51)
(33)R — (36)R	1,078 (42.44)
(33)R — (37)R	941 (37.05)

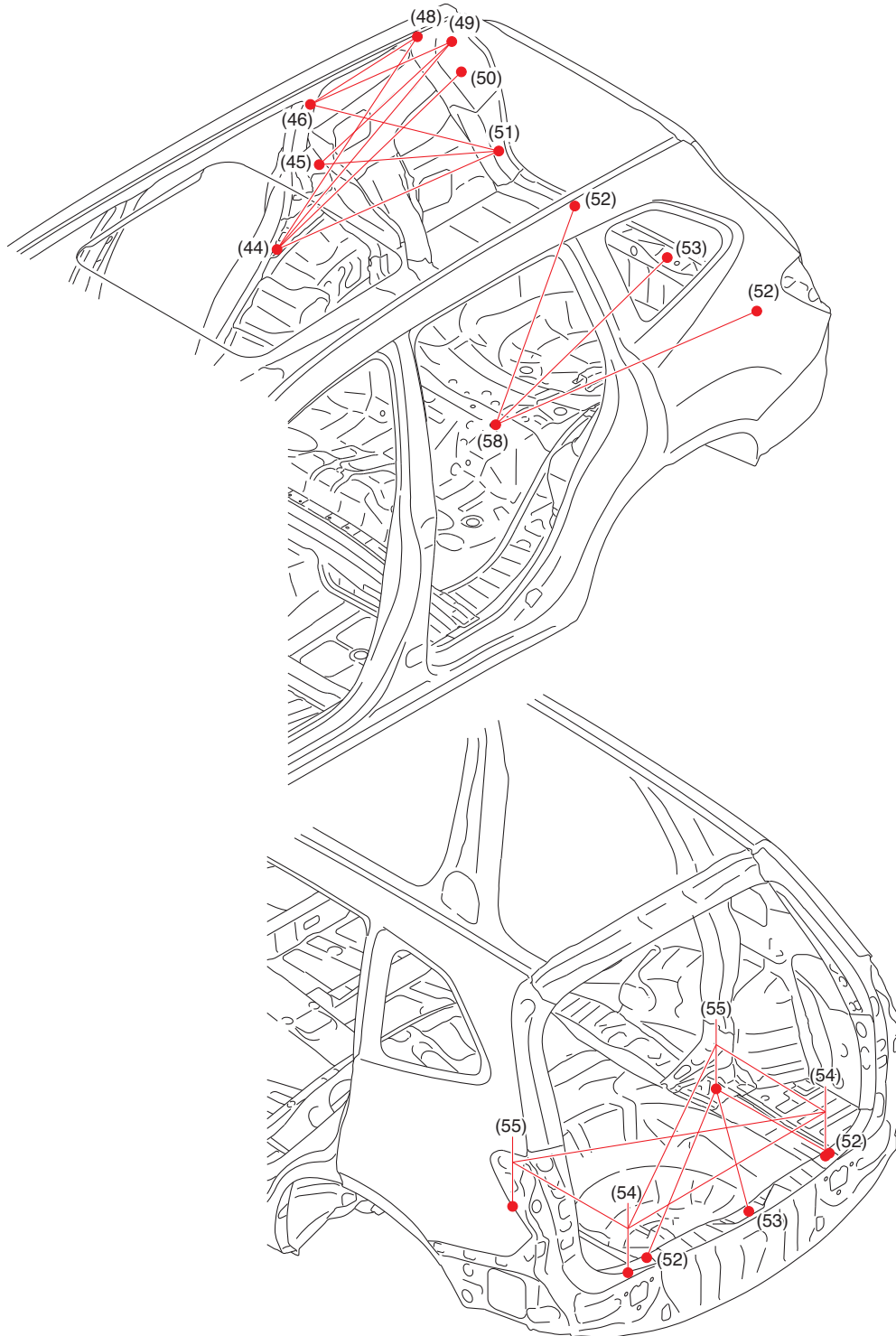
Measuring point	Datum dimension mm (in)
(34)R — (37)R	1,088 (42.83)
(40)R — (40)L	1,441 (56.73)
(40)L — (41)L	689 (27.13)
(40)L — (42)L	1,013 (39.88)
(55)R — (55)L	906 (35.67)
(56)R — (56)L	1,088 (42.83)
(57)R — (57)L	1,087 (42.80)

- All reference points are left-right symmetrical.
- The dimensions are the actual dimensions between the reference points.



# Body Reference Points

## 6. INSIDE of REAR



BS-09919

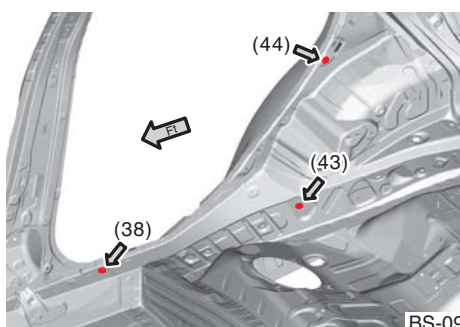
## Body Reference Points

- |  |  |  |
|--|--|--|
| (44) Apron trim mounting hole (symmetrical)      | (50) D pillar trim mounting hole (symmetrical)     | (54)L Gauge hole (left side only)                |
| (45) D pillar trim mounting hole (symmetrical)   | (51) Apron trim mounting hole (symmetrical)        | (55) Gauge hole (symmetrical)                    |
| (46) C pillar trim mounting hole (symmetrical)   | (52) Skirt trim mounting hole (symmetrical)        | (58) Stay rear floor mounting hole (symmetrical) |
| (48) Curtain air bag mounting hole (symmetrical) | (53) Rear gate striker mounting hole (symmetrical) |  |
| (49) D pillar trim mounting hole (symmetrical)   | (54)R Gauge hole (right side only)                 |  |

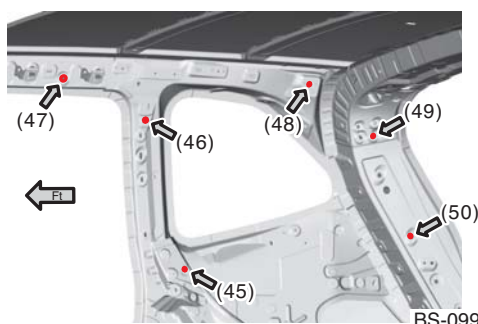
Measuring point	Datum dimension mm (in)
(44)R — (48)R	839 (33.03)
(44)R — (49)R	857 (33.74)
(44)R — (50)R	830 (32.68)
(44)R — (51)R	936 (36.85)
(45)R — (49)R	569 (22.40)
(45)R — (51)R	837 (32.95)
(46)R — (48)R	428 (16.85)
(46)R — (49)R	595 (23.43)
(46)R — (51)R	1,124 (44.25)
(52)R — (55)R	554 (21.81)

Measuring point	Datum dimension mm (in)
(52)R — (58)L	1,151 (45.31)
(52)L — (55)R	1,020 (40.16)
(52)L — (58)L	990 (38.98)
(53)R — (55)R	721 (28.39)
(53)R — (58)L	1,025 (40.35)
(54)R — (54)L	889 (35.00)
(54)R — (55)R	495 (19.49)
(54)R — (55)L	1,025 (40.35)
(54)L — (55)R	1,030 (40.55)
(54)L — (55)L	505 (19.88)

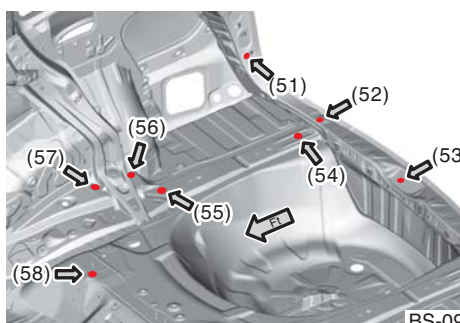
- The reference point (54) is the left-right asymmetry, all other reference points indicate left-right symmetrical parts.
- The dimensions are the actual dimensions between the reference points.



BS-09951



BS-09952

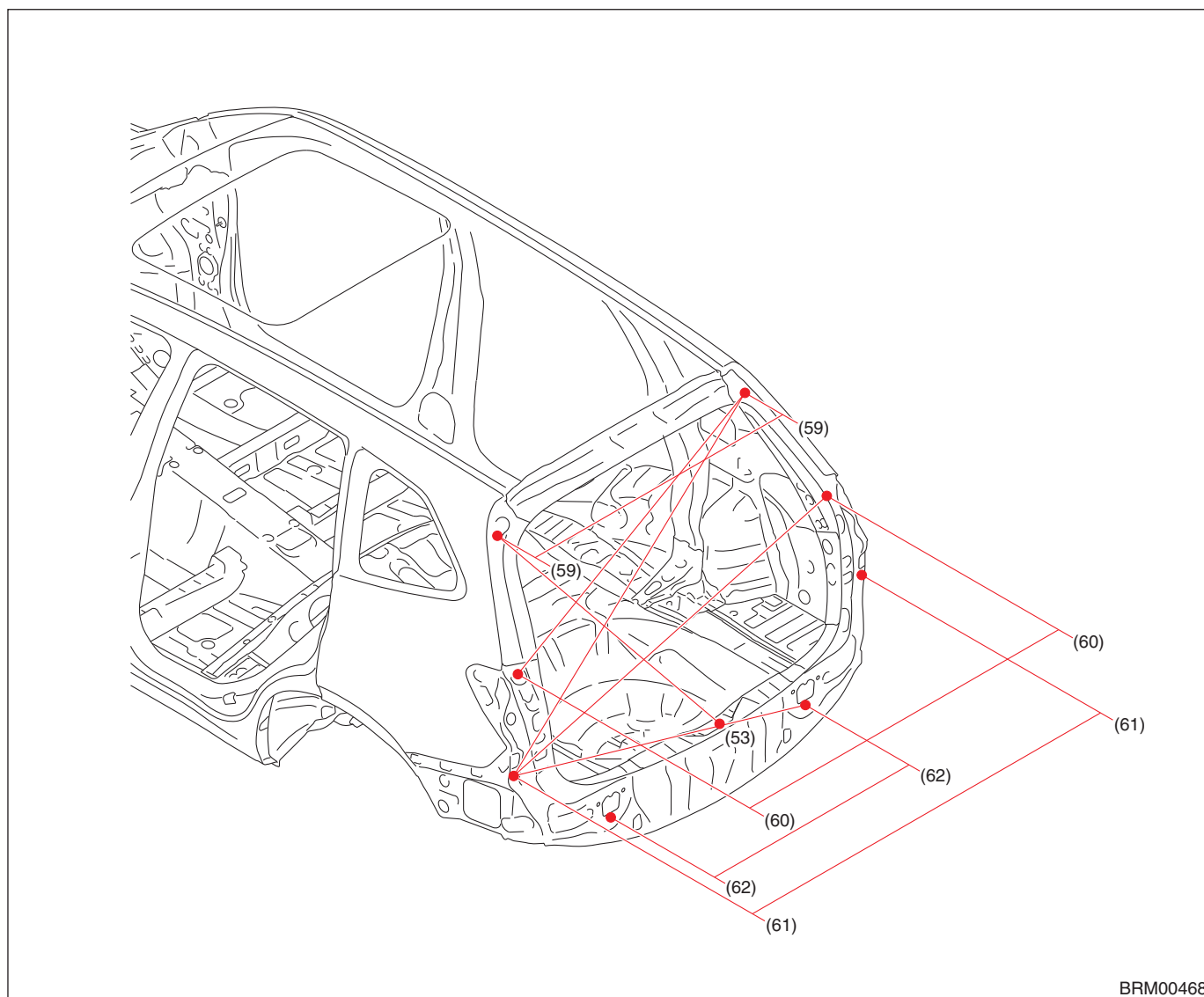


BS-09953

SUBARU.

# Body Reference Points

## 7. REAR



BRM00468

(59) Rear gate stay mounting hole (symmetrical), upper side

(61) Gauge hole (symmetrical)

(62) Rear bumper beam mounting hole (symmetrical)

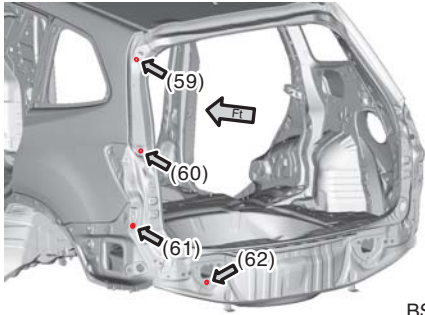
(60) Rear combination light mounting hole (symmetrical), upper side

Measuring point	Datum dimension mm (in)
(53)R — (59)L	1,098 (43.23)
(59)R — (59)L	1,131 (44.53)
(59)R — (60)L	1,342 (52.83)
(59)R — (61)L	1,553 (61.14)
(60)R — (60)L	1,411 (55.55)

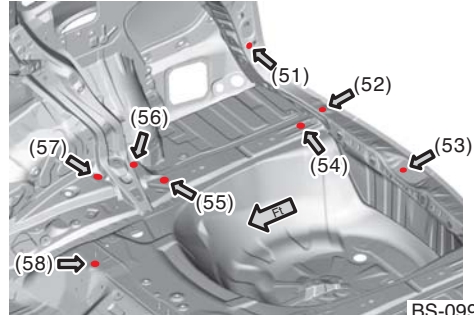
Measuring point	Datum dimension mm (in)
(60)R — (61)L	1,536 (60.47)
(61)R — (61)L	1,590 (62.60)
(61)L — (62)R	1,277 (50.28)
(62)R — (62)L	889 (35.00)

- All reference points are left-right symmetrical.
- The dimensions are the actual dimensions between the reference points.

## Body Reference Points



BS-09955

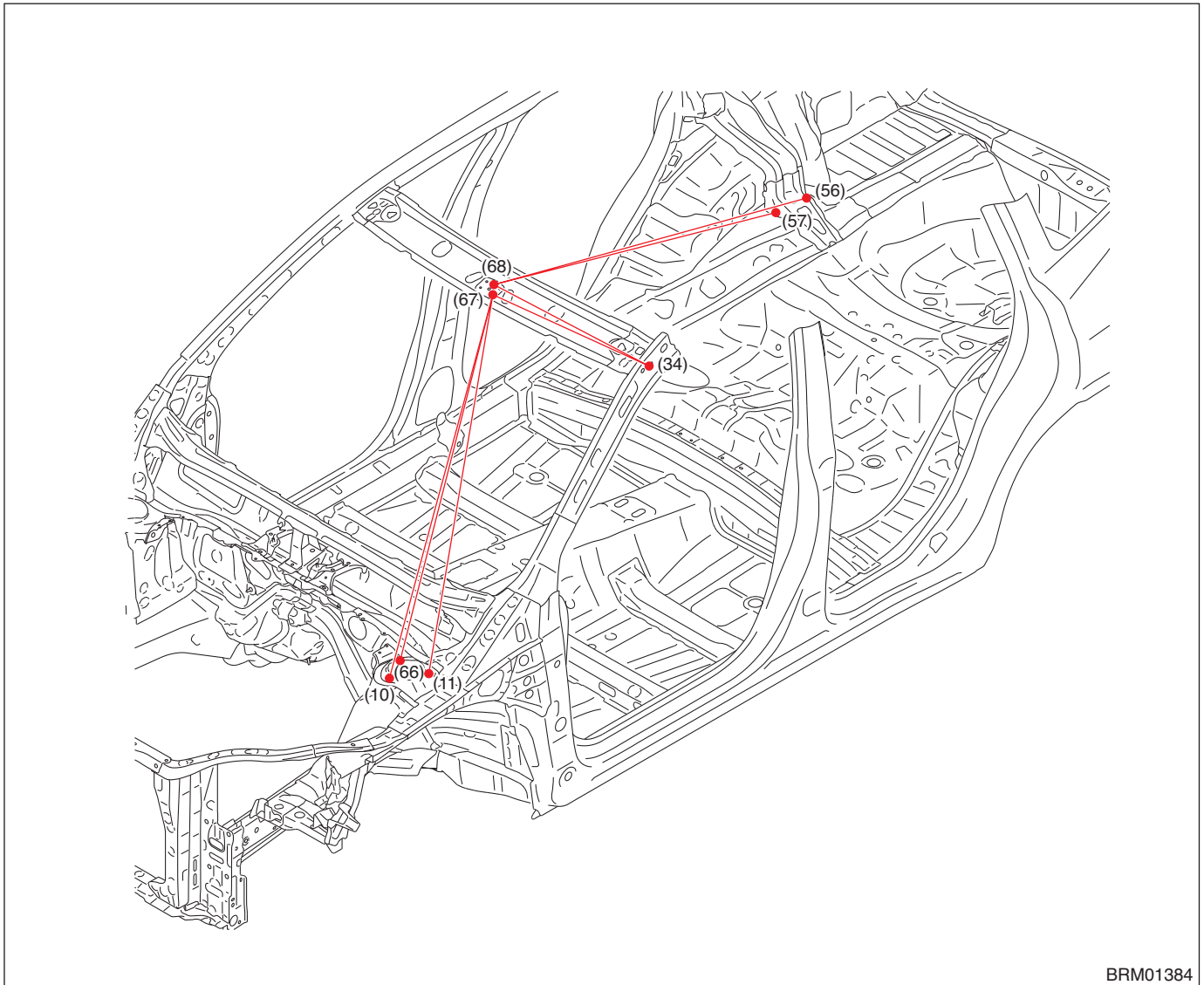


BS-09953



## Body Reference Points

### 8. FRONT ROOF RAIL (CAMERA PLATE)



(10) Front suspension mounting hole (symmetrical), front

(56) Rear suspension mounting hole (symmetrical), rear side

(67) Stereo camera (camera plate) mounting hole (symmetrical), front side

(11) Front suspension mounting hole (symmetrical), rear outside

(57) Rear suspension mounting hole (symmetrical), front side

(68) Stereo camera (camera plate) mounting hole (body center), rear side

(34) Curtain air bag mounting hole (symmetrical)

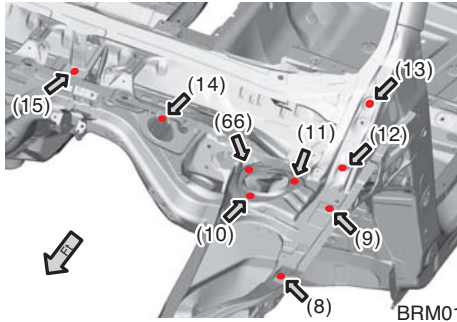
(66) Front suspension mounting hole (symmetrical), rear inside

Measuring point	Datum dimension mm (in)
(10)L — (67)L	1,296 (51.02)
(11)L — (67)L	1,249 (49.17)
(34)L — (67)L	583 (22.95)
(34)L — (68)	610 (24.02)

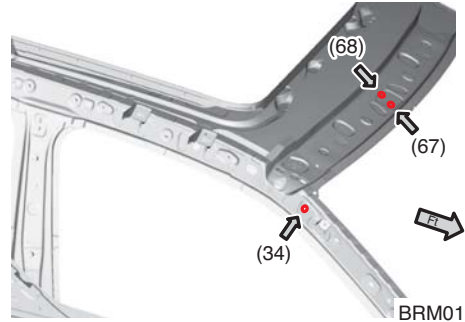
Measuring point	Datum dimension mm (in)
(56)R — (68)	2,129 (83.82)
(57)R — (68)	2,012 (79.21)
(66)L — (67)L	1,201 (47.28)

- Reference point (68) indicates a body center part. All other reference points indicate left-right symmetrical parts.
- The dimensions are the actual dimensions between the reference points.

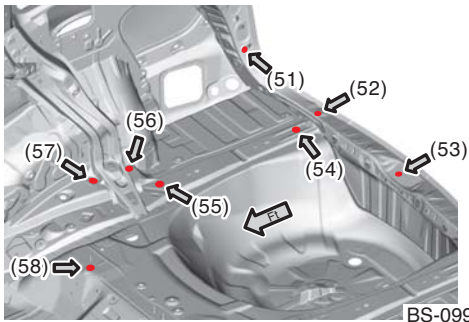
## Body Reference Points



BRM01385



BRM01386



BS-09953

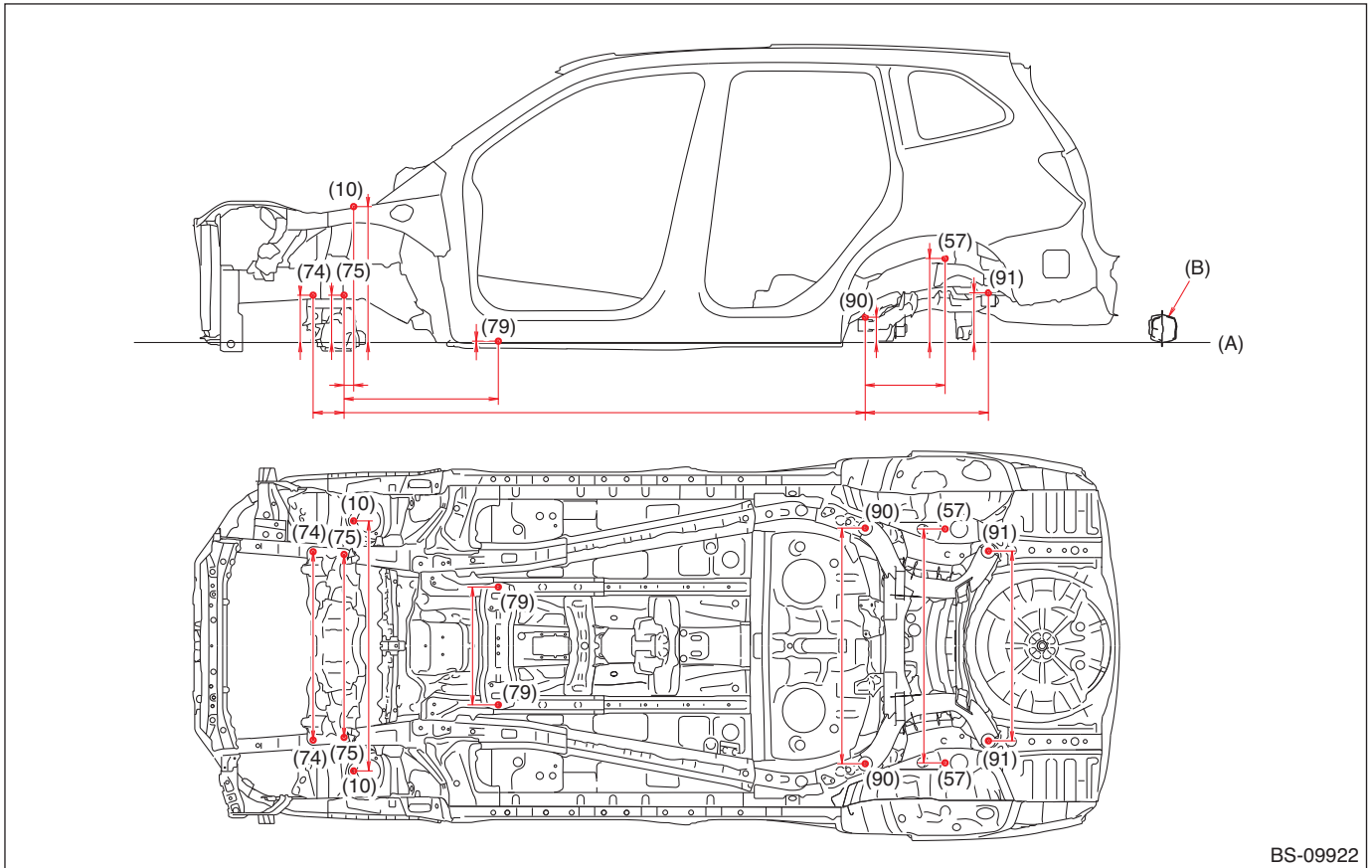
SUBARU.



## 7. Measurement for Combined Parts

### A: DIMENSIONS

#### 1. SUSPENSION MOUNT (SUB FRAME · SUSPENSION MOUNT) & ENGINE MOUNT



BS-09922

- The longitudinal dimensions are projected dimensions.
- The height dimensions are the vertical distances from the gauge point on the assumed horizontal line through the side sill flange joint (bending angle point).

(A) Standard line

(B) Side sill outer panel

(10) Front suspension mounting hole (symmetrical), front

(75) Front crossmember mounting hole (symmetrical), rear side

(91) Rear suspension crossmember mounting hole (symmetrical), rear side

(57) Rear suspension mounting hole (symmetrical), front side

(79) Crossmember upper mounting hole (symmetrical)

(74) Front crossmember mounting hole (symmetrical), front side

(90) Rear suspension crossmember mounting hole (symmetrical), front side

## Measurement for Combined Parts

Measuring point	Datum dimension mm (in)
Datum line — (10)	632 (24.88)
Datum line — (57)	393 (15.47)
Datum line — (74)	220 (8.66)
Datum line — (75)	220 (8.66)
Datum line — (79)	6 (0.24)
Datum line — (90)	118 (4.65)
Datum line — (91)	231 (9.09)
(10) — (75)	45 (1.77)
(57) — (90)	372 (14.65)
(74) — (75)	144 (5.67)

Measuring point	Datum dimension mm (in)
(75) — (79)	718 (28.27)
(75) — (90)	2,424 (95.43)
(90) — (91)	573 (22.56)
(10)R — (10)L	1,163 (45.79)
(57)R — (57)L	1,087 (42.80)
(74)R — (74)L	876 (34.49)
(75)R — (75)L	851 (33.50)
(79)R — (79)L	548 (21.57)
(90)R — (90)L	1,096 (43.15)
(91)R — (91)L	883 (34.76)

**CAUTION:**

For the reference points (10), refer to the figure "FRONT 2, DIMENSIONS, Body Reference Points" on page 33.

For the reference points (57), refer to the figure "INSIDE 2, DIMENSIONS, Body Reference Points" on page 37.

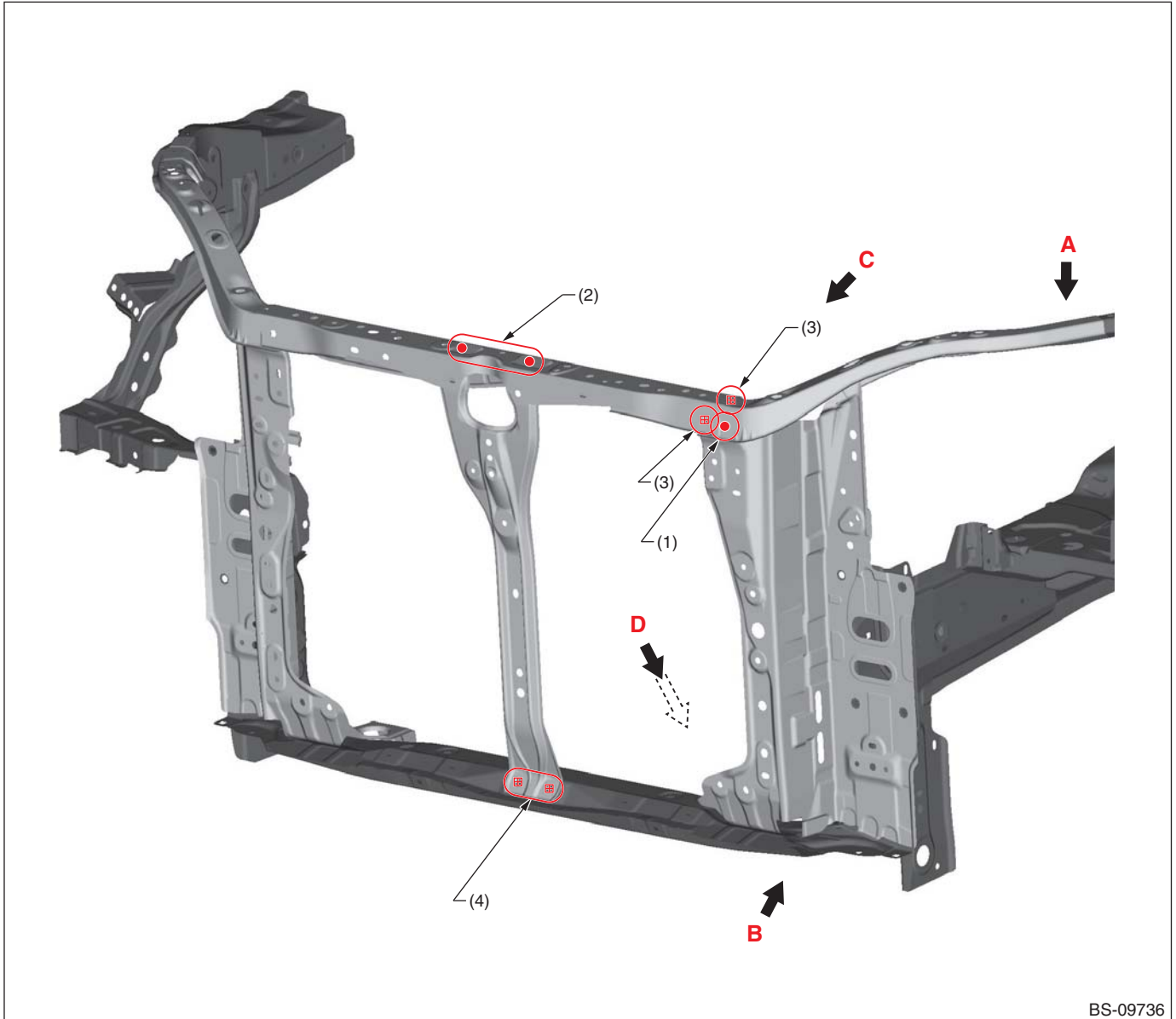
Except the reference points (10) and (57), refer to the figure "LOWER SURFACE, DIMENSIONS, Body Reference Points" on page 28.

### 8. Panel Replacement

#### 8-1. Radiator Panel (total replacement)

##### A: REMOVAL

##### • Overall view



BS-09736

(1) 1 point (outside · 1)

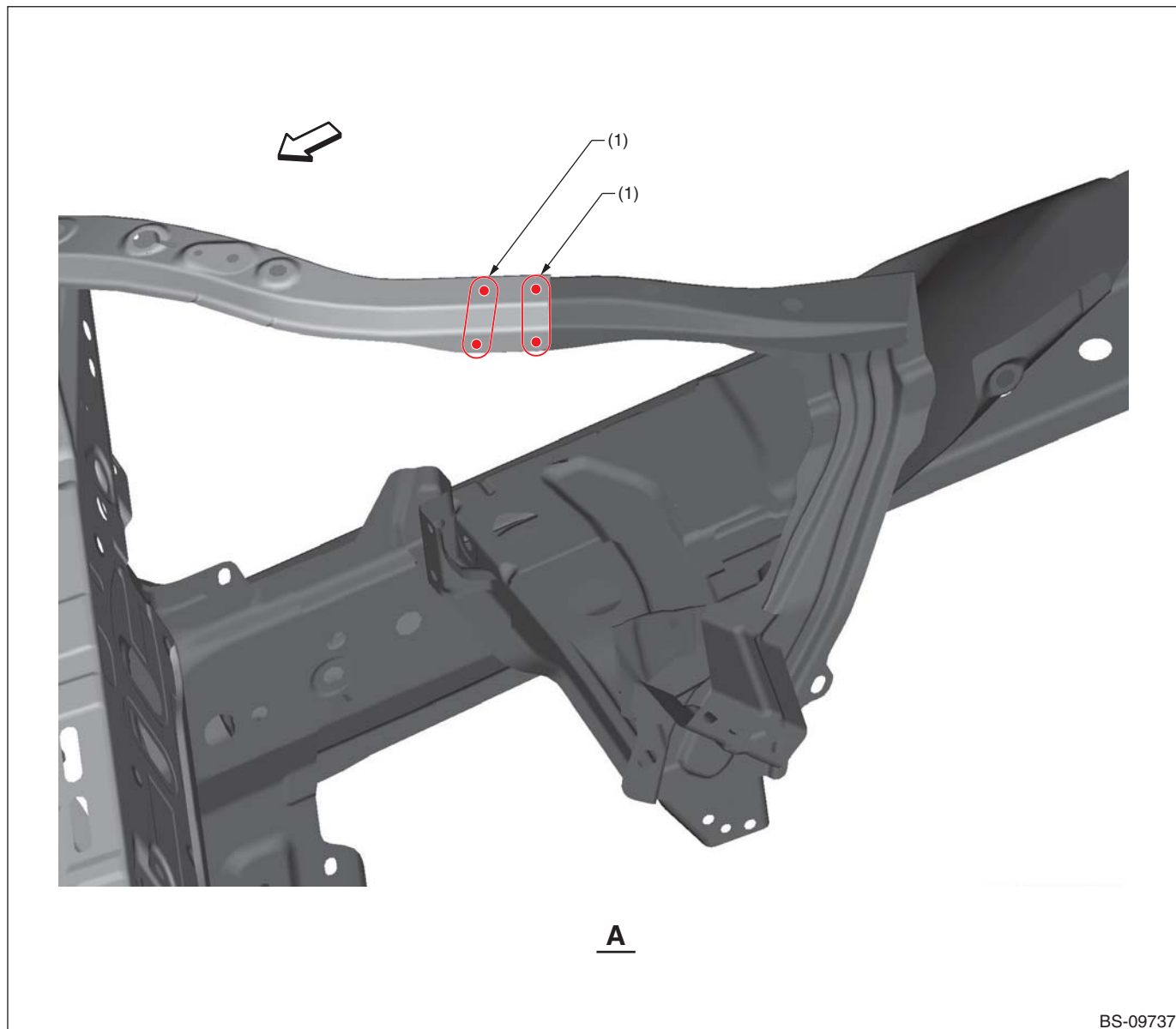
(2) 2 points (top · 1)

(3) 1 point (bolt)

(4) 2 points (bolt)

# Panel Replacement

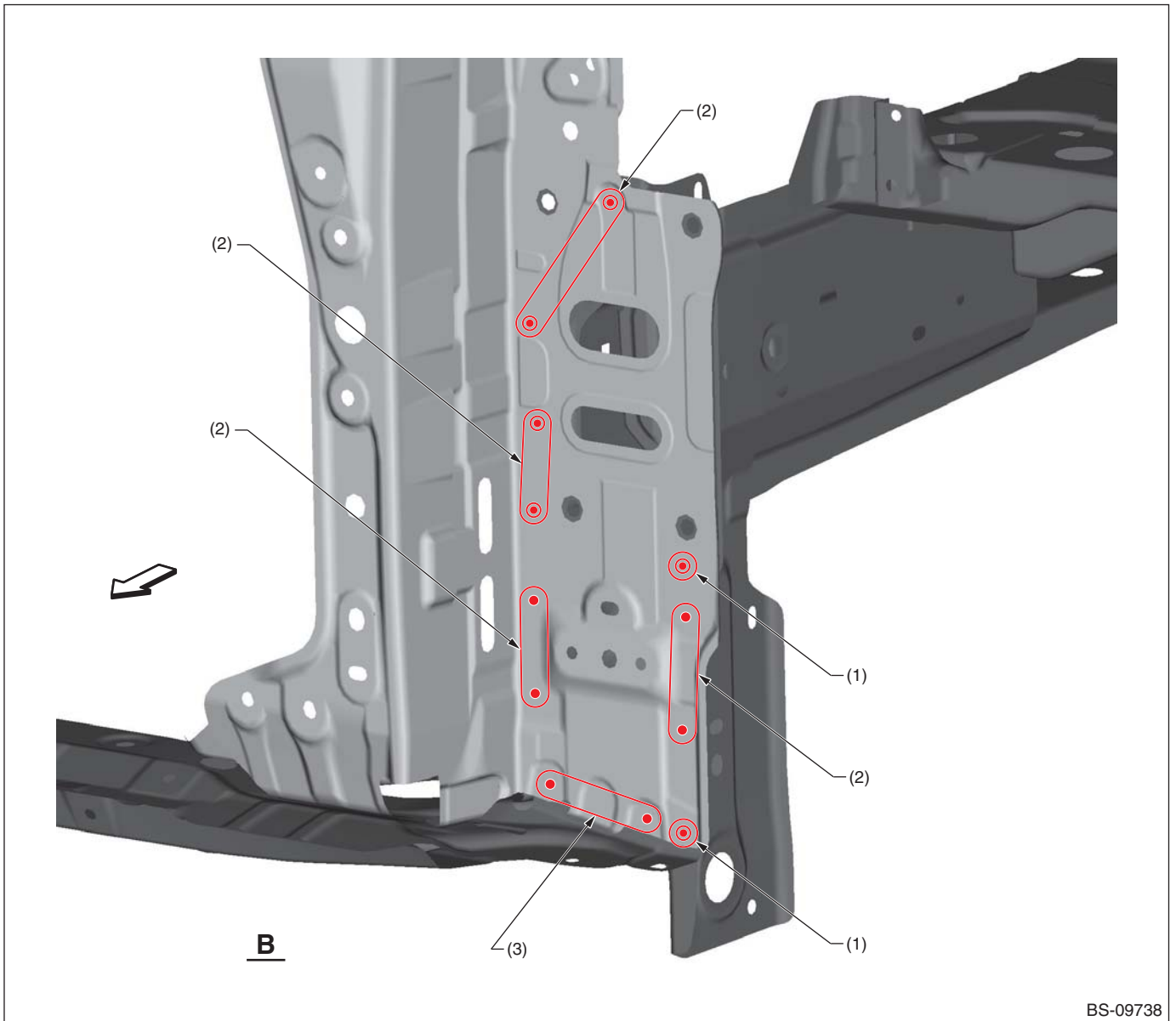
## • Views A



(1) 2 points (top · 1)

# Panel Replacement

## • Views B



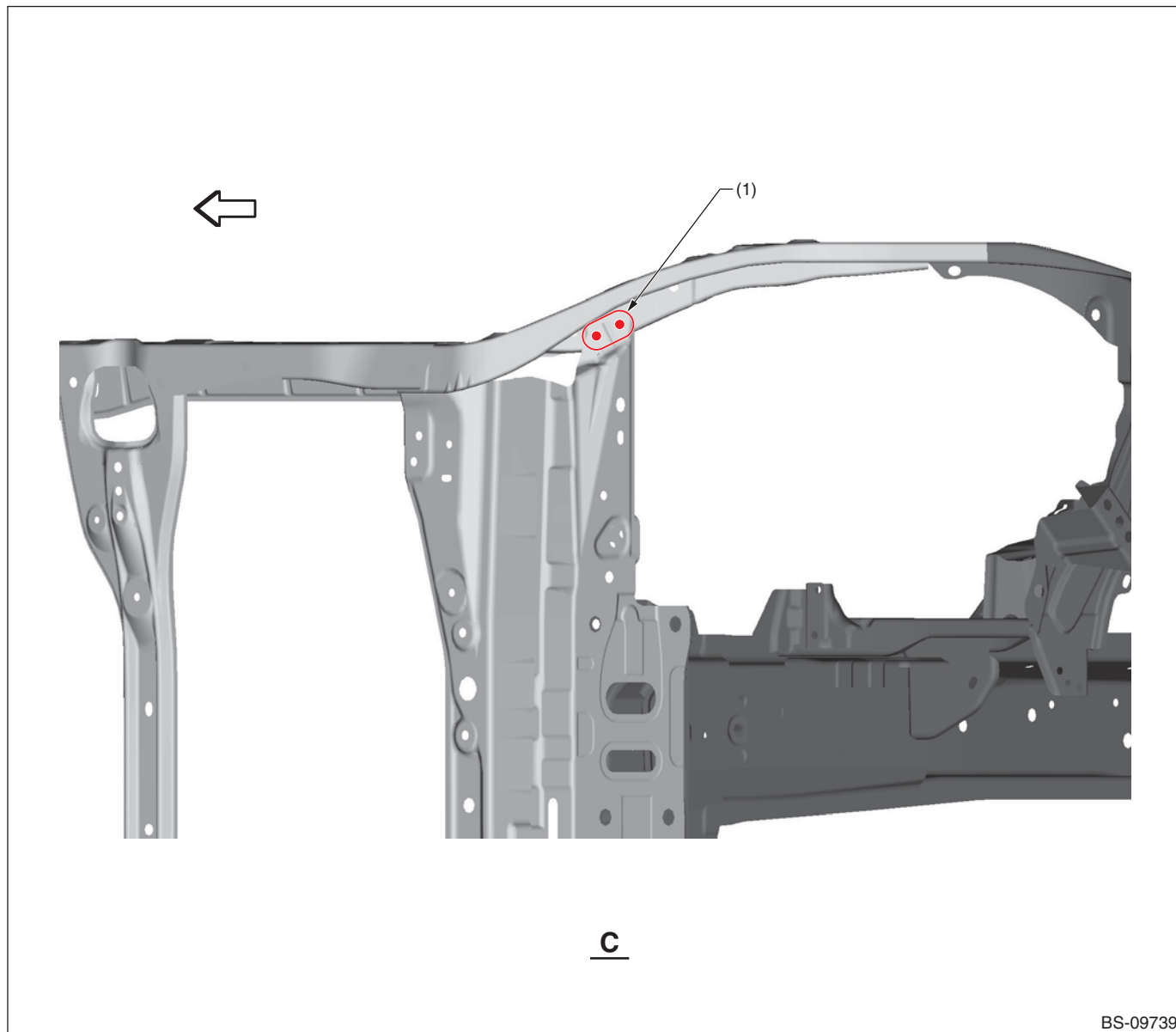
(1) 1 point (outside · 1)

(2) 2 points (outside · 1)

(3) 3 points (outside · 1)

# Panel Replacement

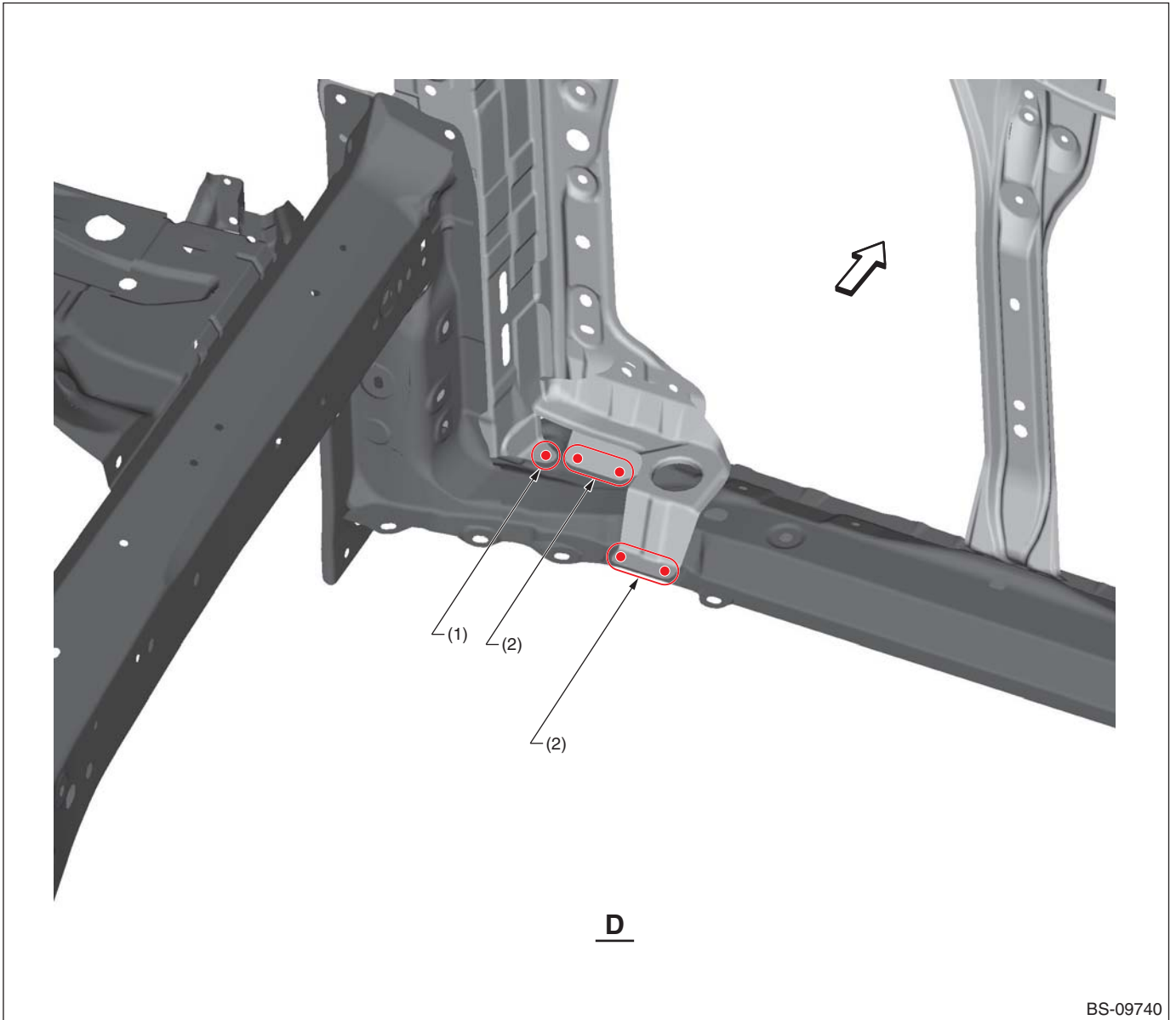
## • Views C



(1) 2 points (inside · 1)

# Panel Replacement

## • Views D



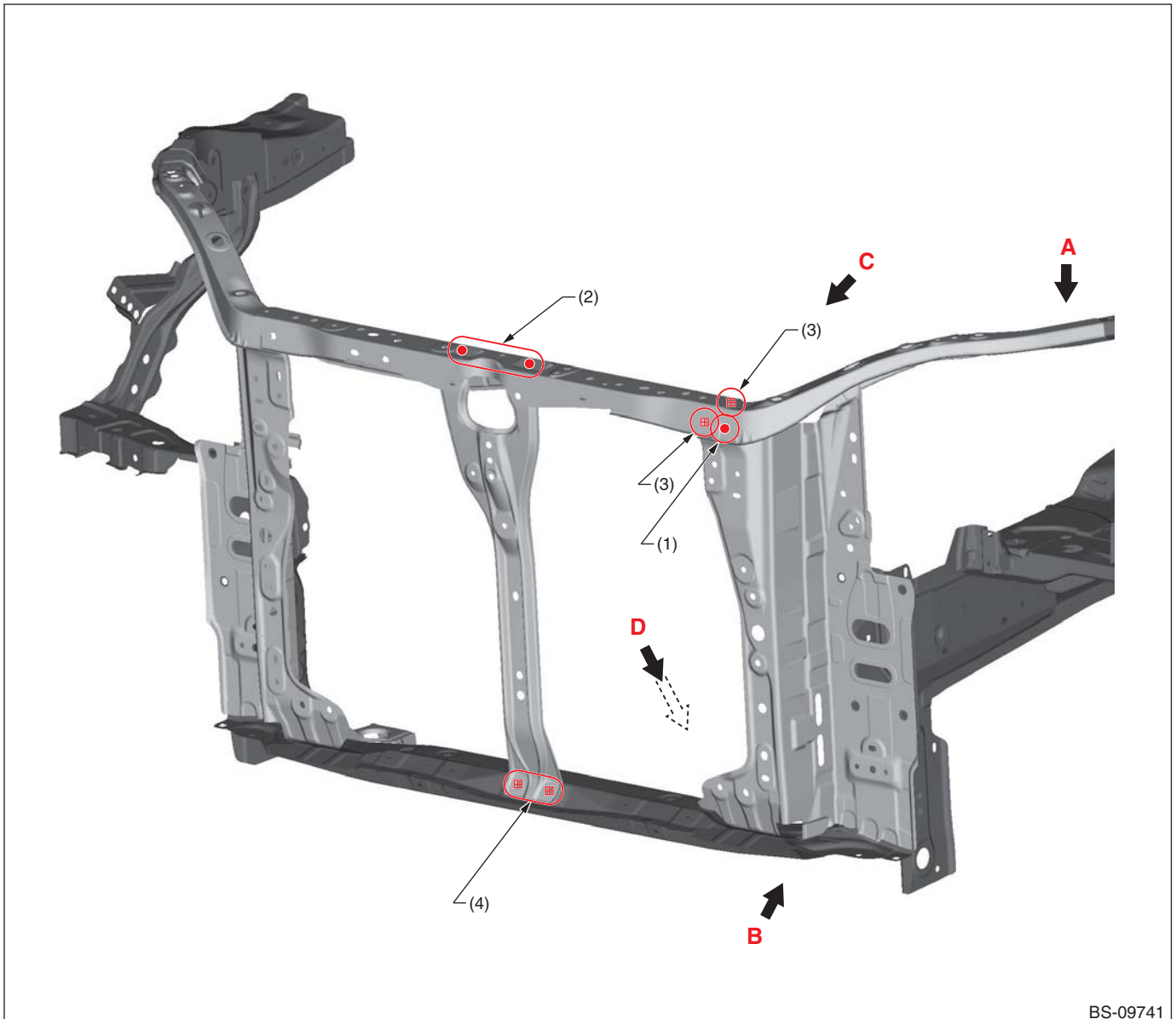
(1) 1 point (outside · 1)

(2) 2 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BS-09741

(1) 1 point  
(2) 2 points

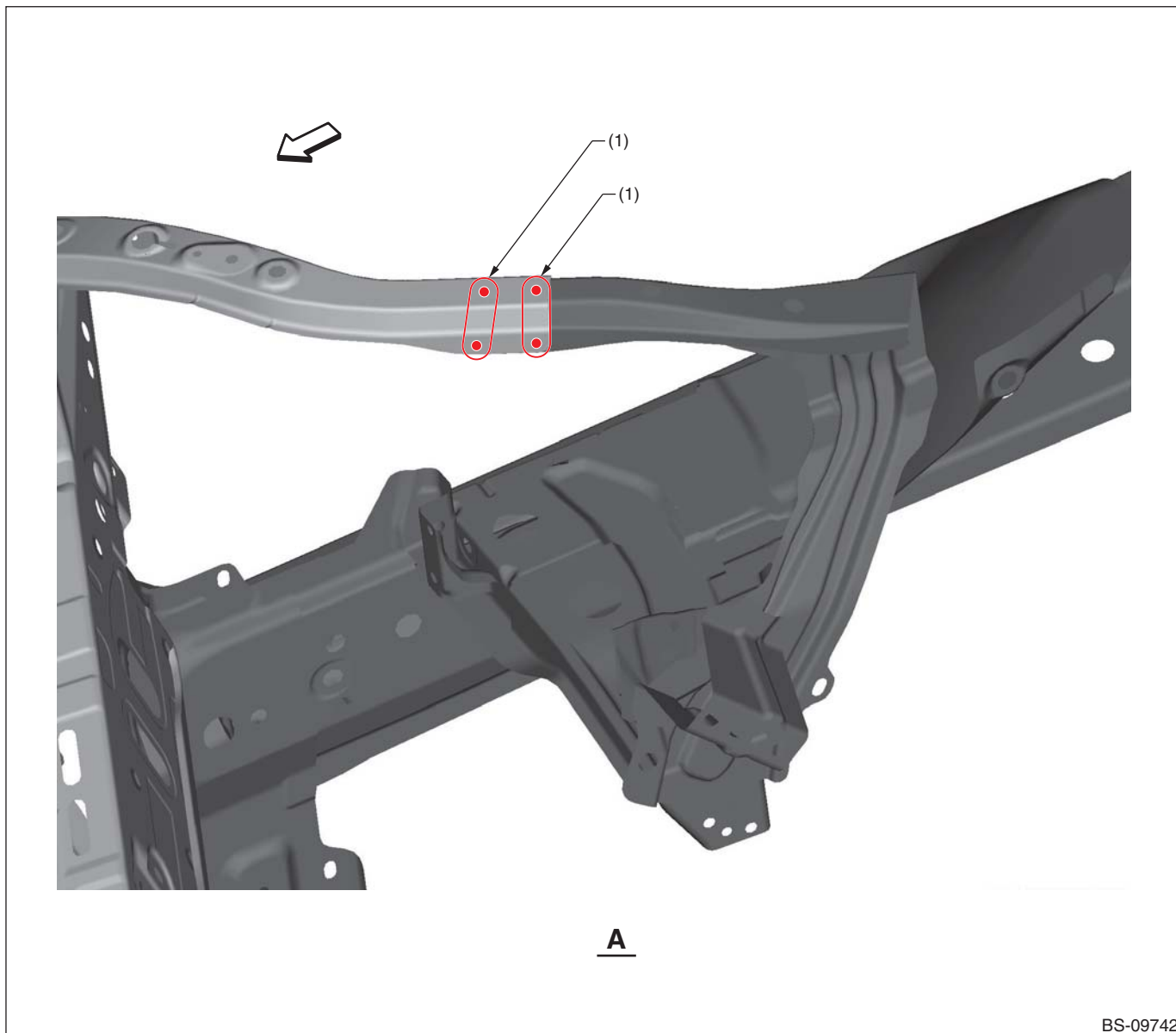
(3) 1 point (bolt)

(4) 2 points (bolt)



## Panel Replacement

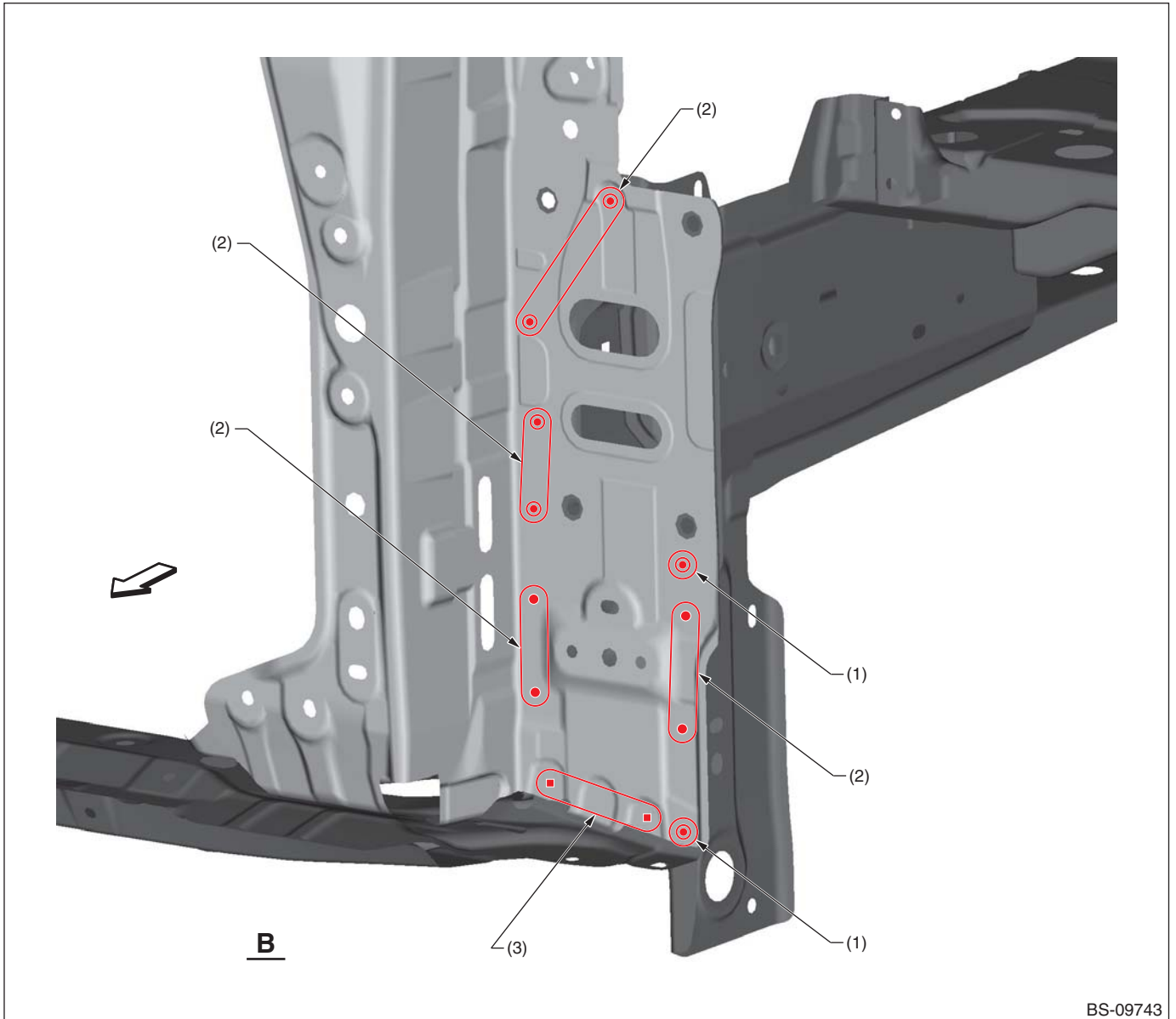
### • Views A



(1) 2 points

# Panel Replacement

## • Views B



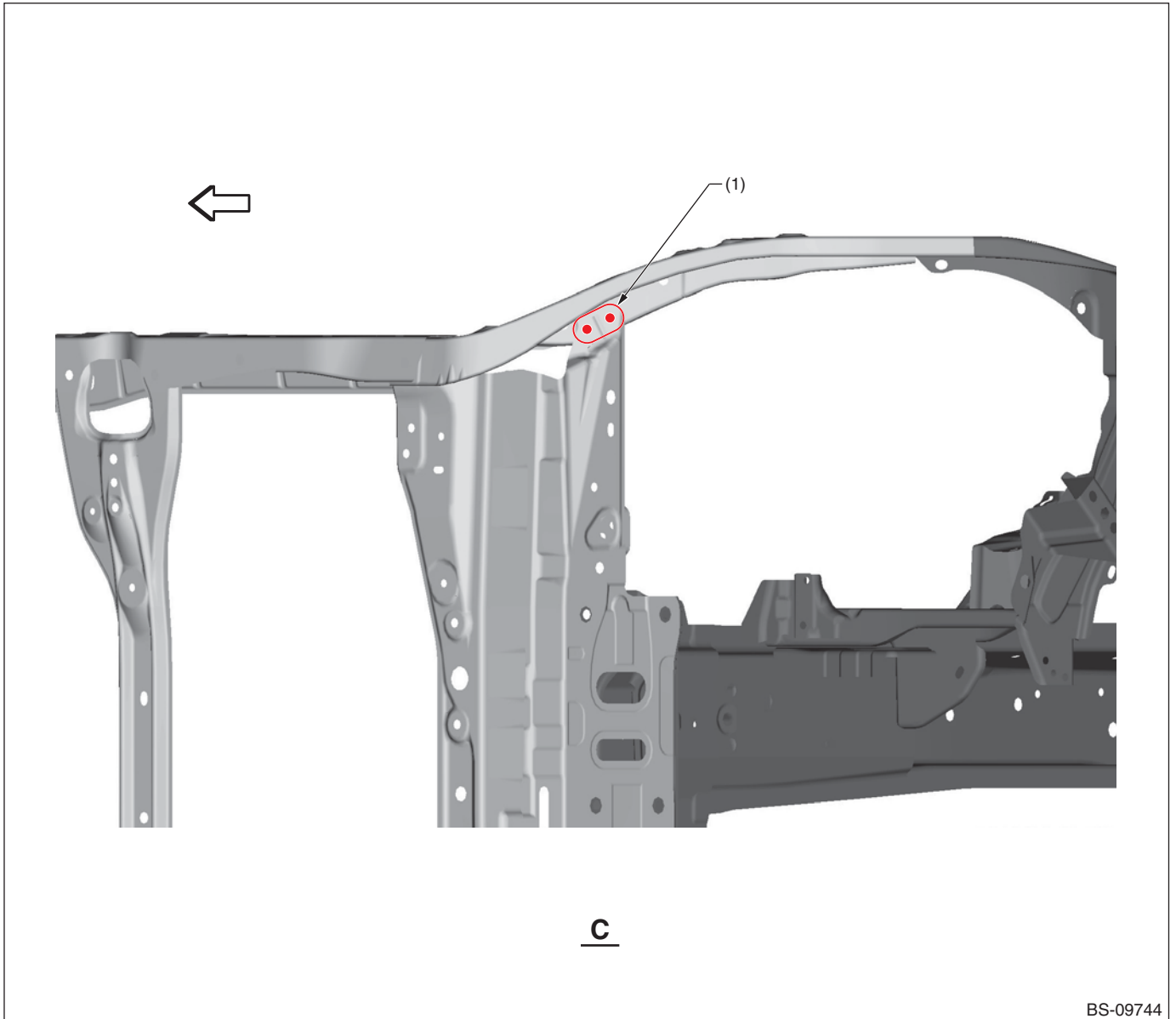
(1) 1 point

(2) 2 points

(3) 3 points (service)

## Panel Replacement

- Views C

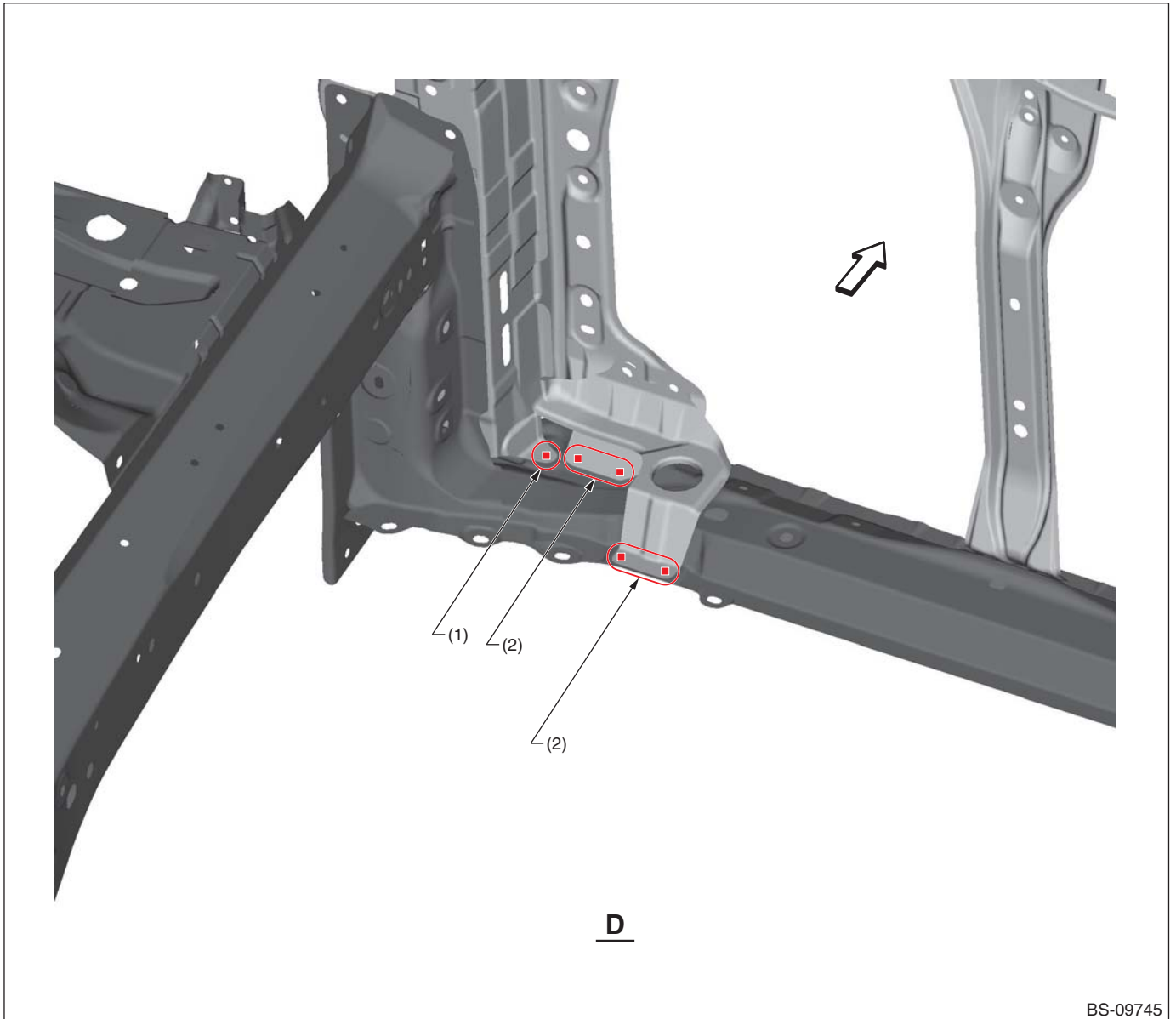


BS-09744

(1) 2 points

# Panel Replacement

## • Views D



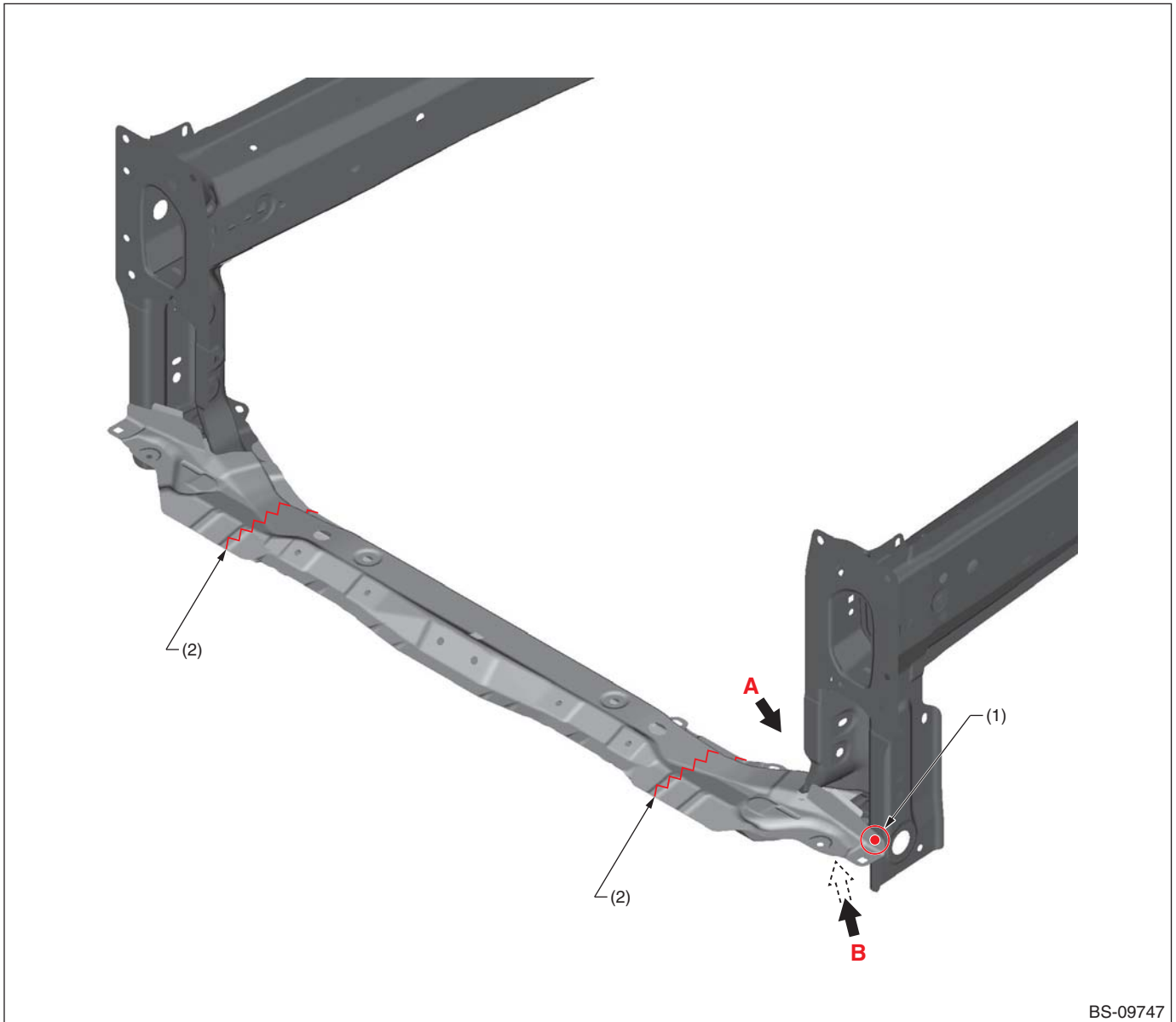
(1) 1 point (service)

(2) 2 points (service)

### 8-2. Radiator Core Support (total replacement)

#### A: REMOVAL

##### • Overall view



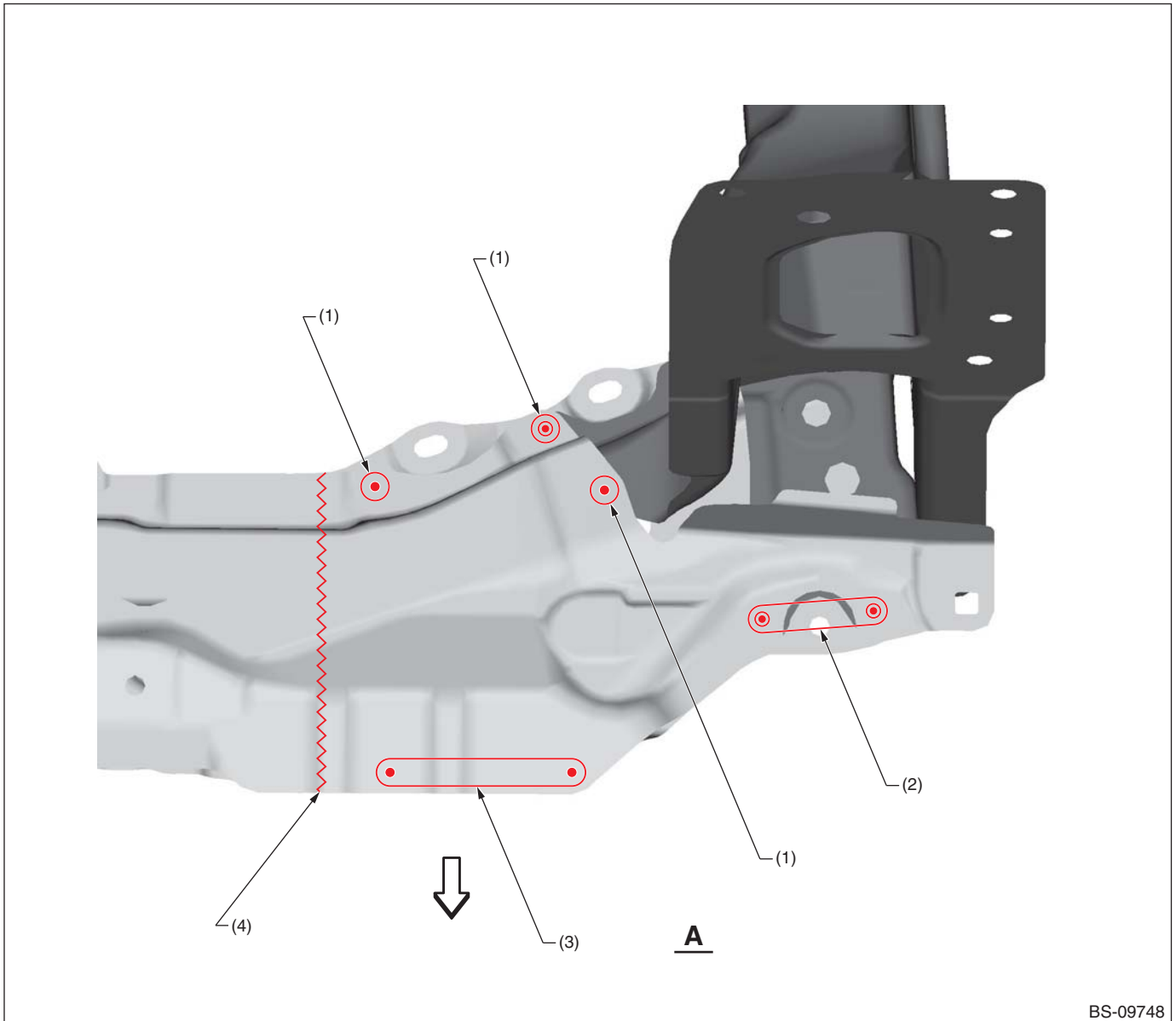
BS-09747

(1) 1 point (outside · 1)

(2) Rough cutting

# Panel Replacement

## • Views A



BS-09748

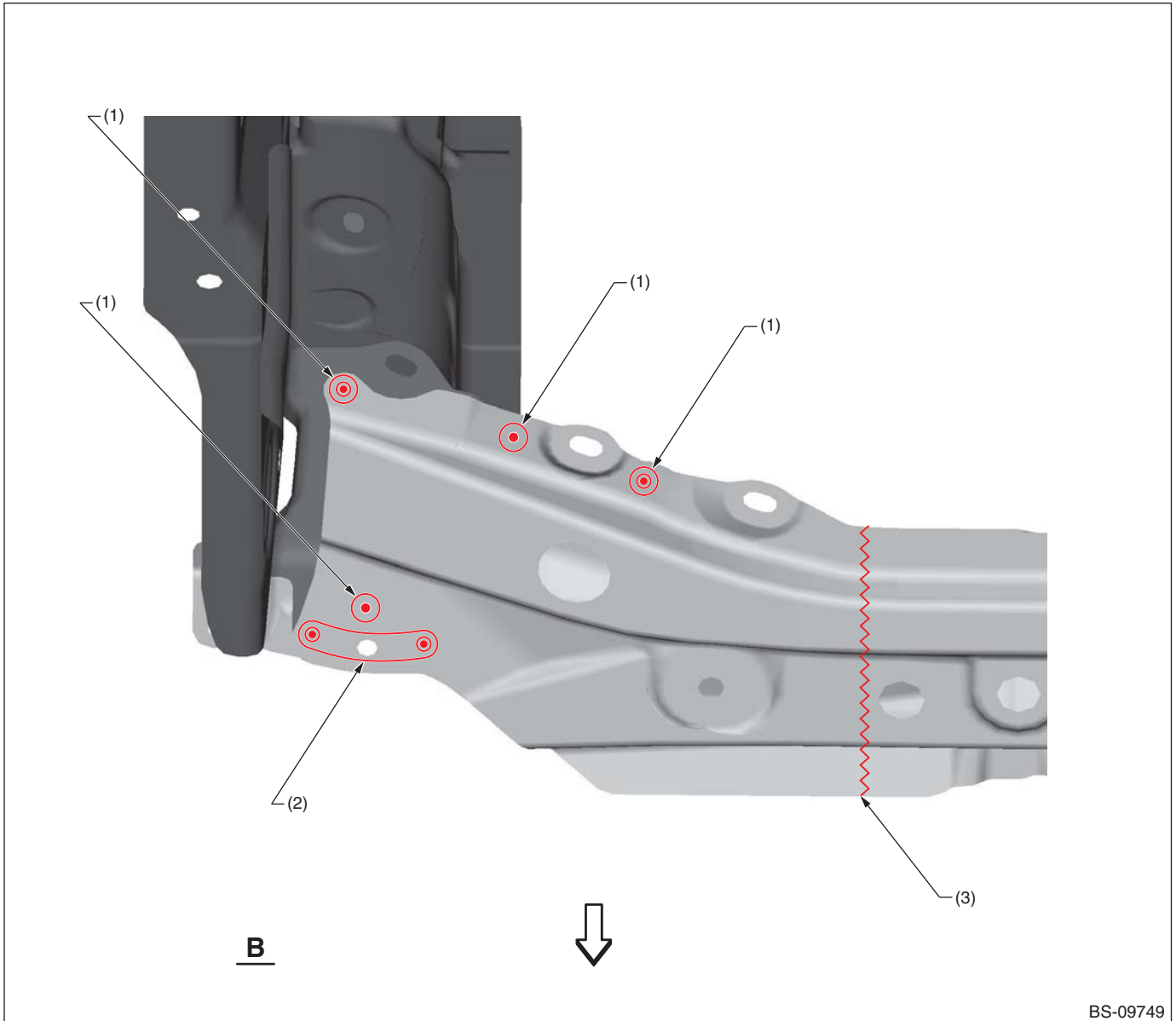
- (1) 1 point (top · 1)
- (2) 2 points (top · 1)

- (3) 3 points (top · 1)

- (4) Rough cutting

# Panel Replacement

## • Views B



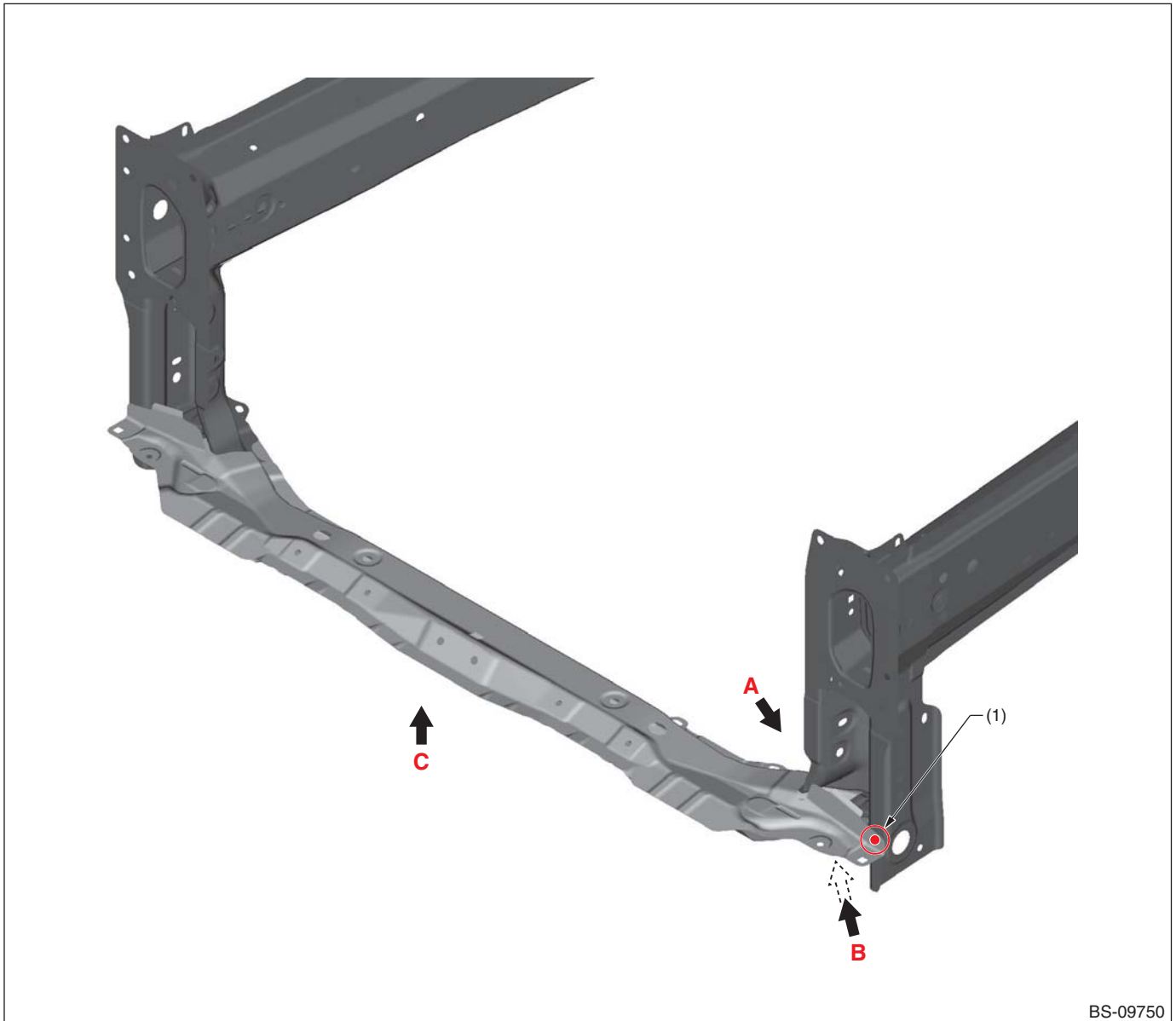
(1) 1 point (bottom · 1)

(2) 2 points (bottom · 1)

(3) Rough cutting

## B: INSTALLATION

### • Overall view



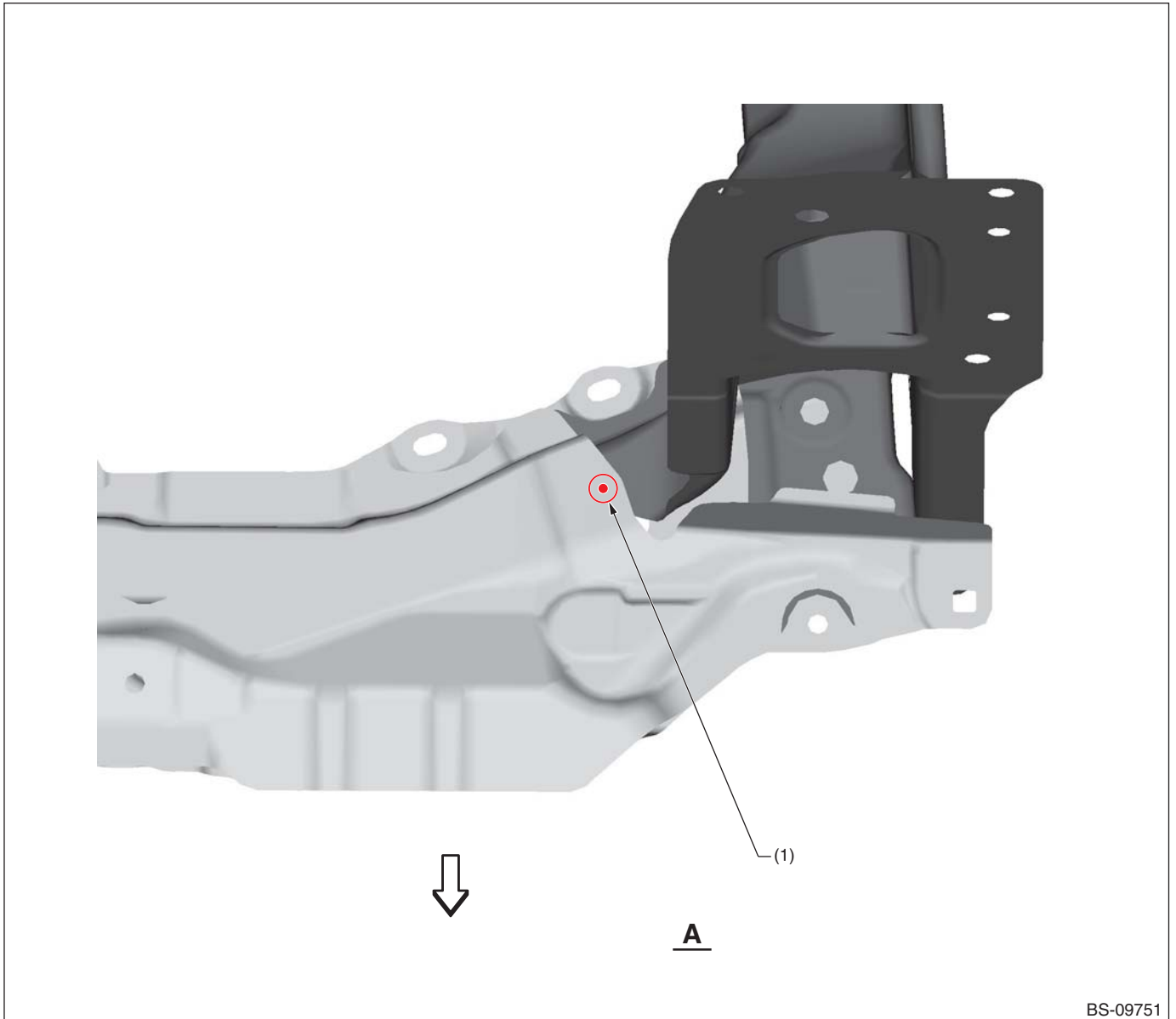
BS-09750

(1) 1 point



## Panel Replacement

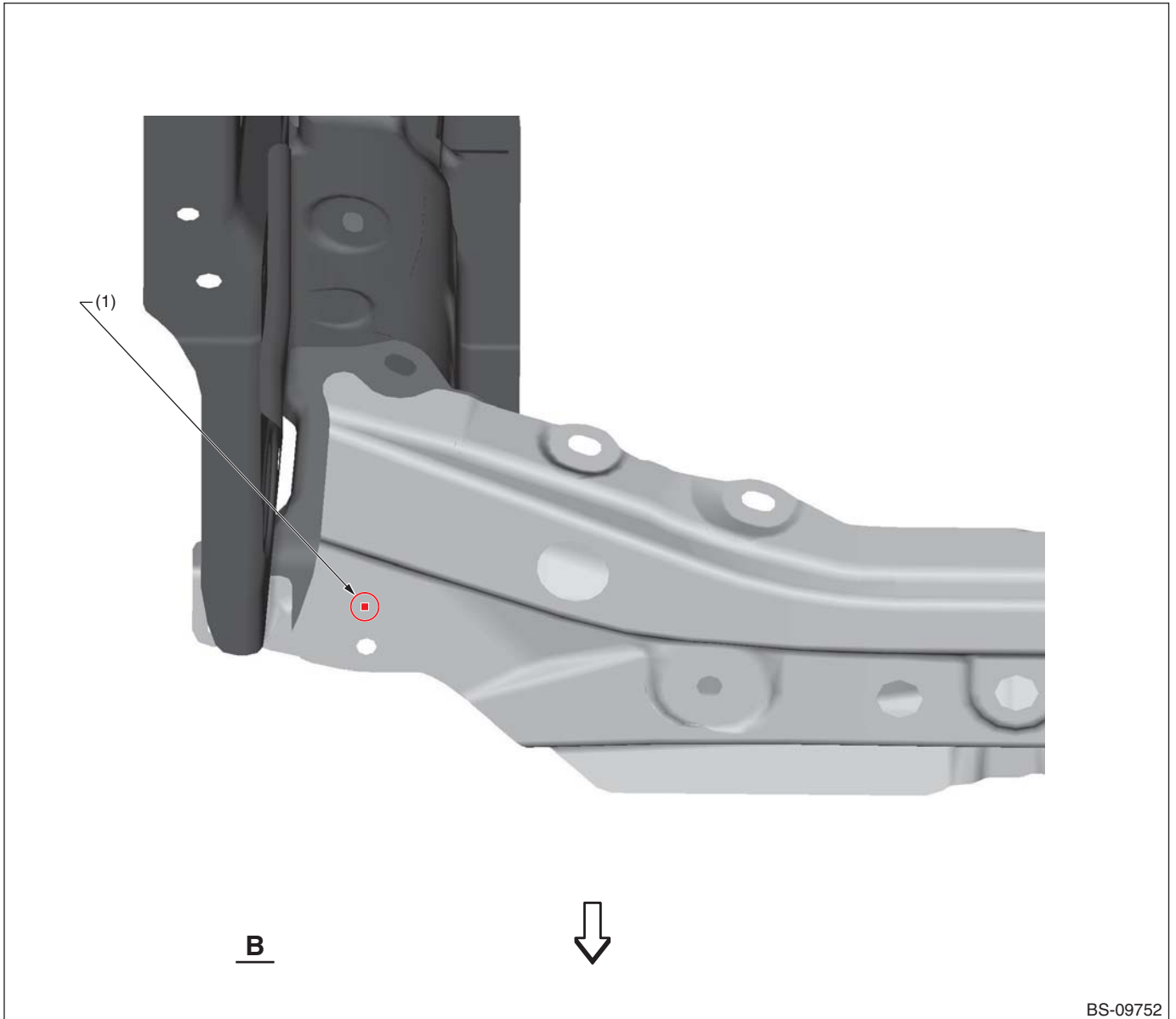
- Views A



(1) 1 point

## Panel Replacement

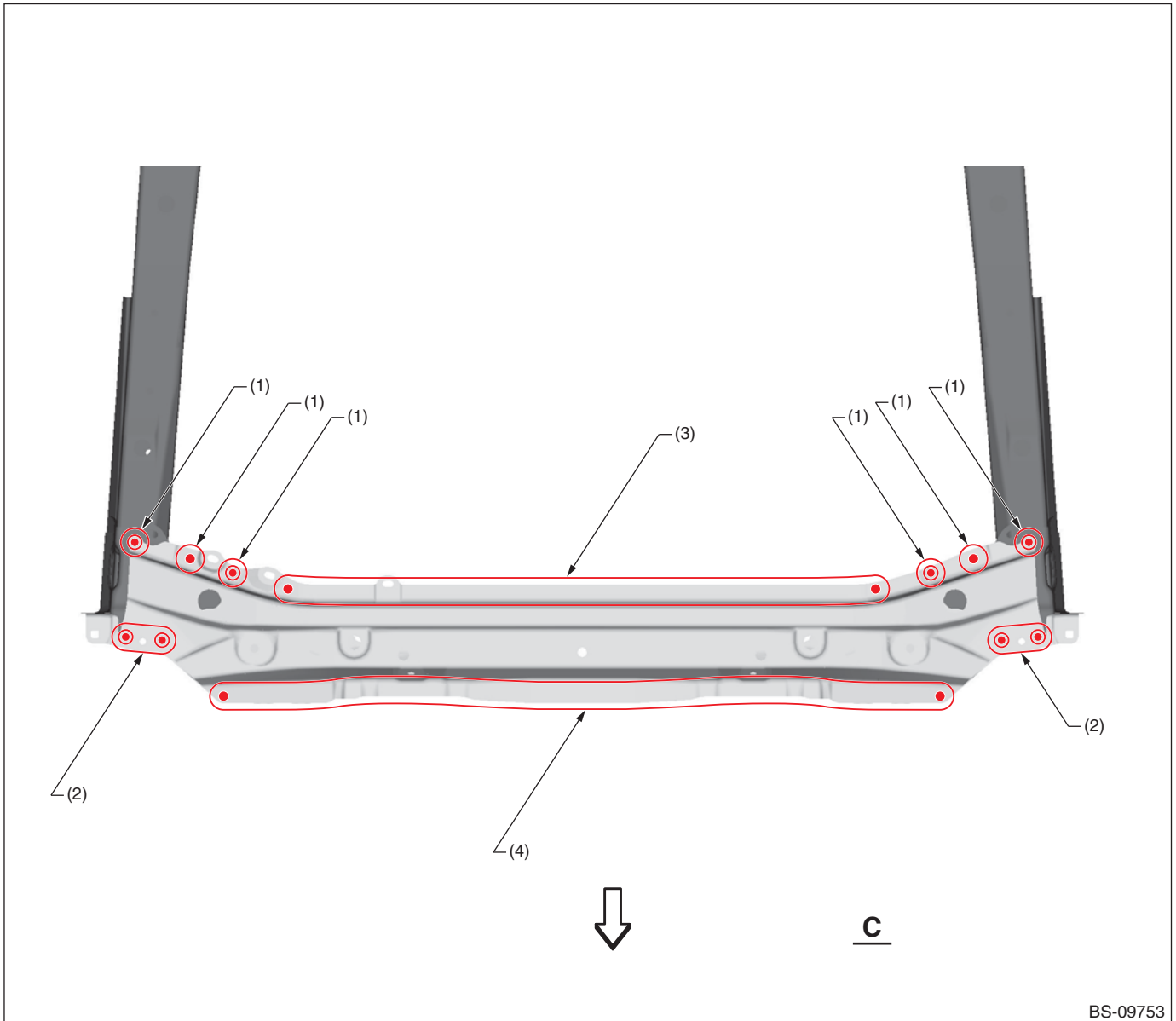
- Views B



(1) 1 point (service)

# Panel Replacement

## • Views C



(1) 1 point  
(2) 2 points

(3) 10 points

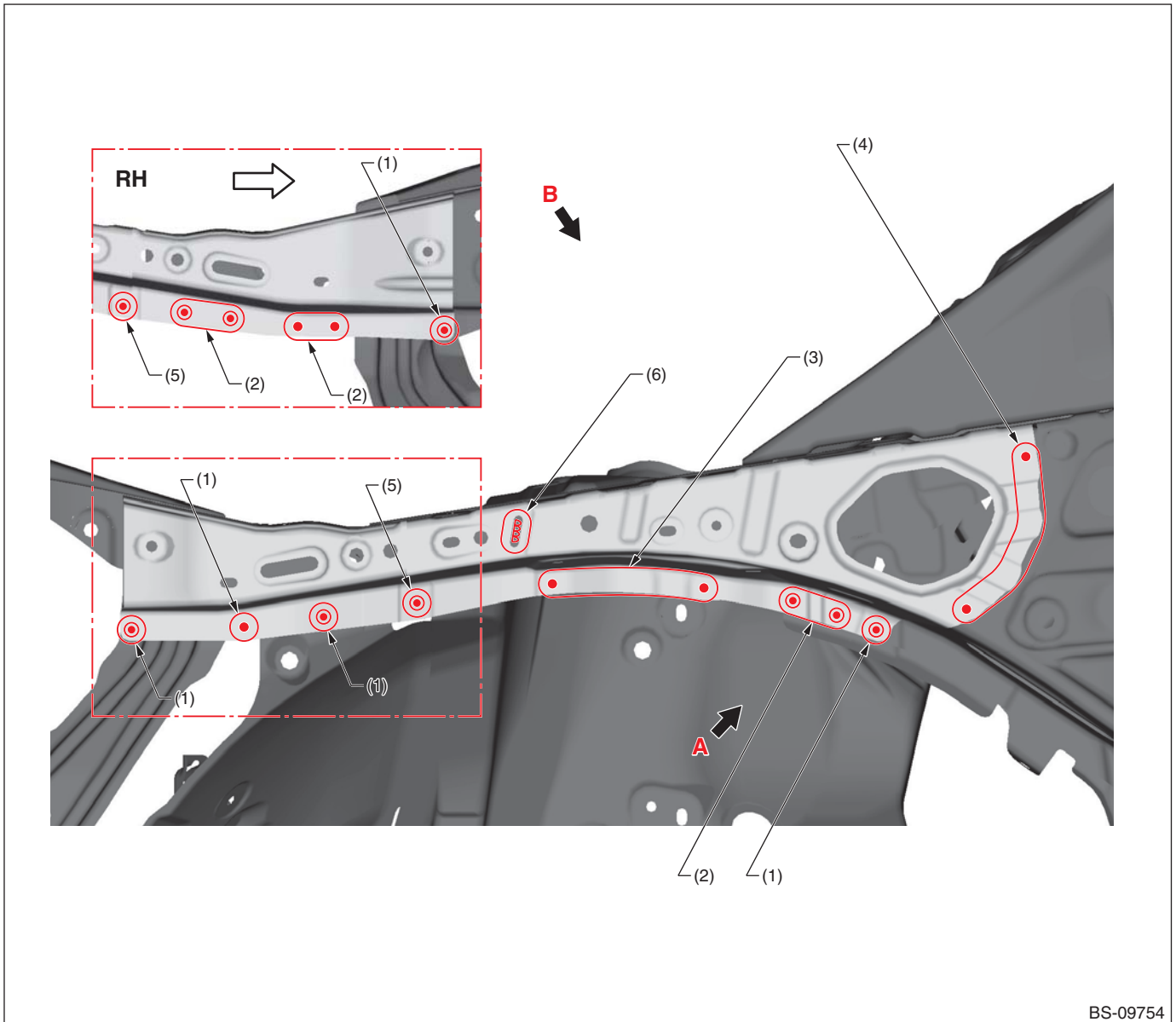
(4) 20 points

## Panel Replacement

### 8-3. Side Upper Frame (total replacement)

#### A: REMOVAL

##### • Overall view



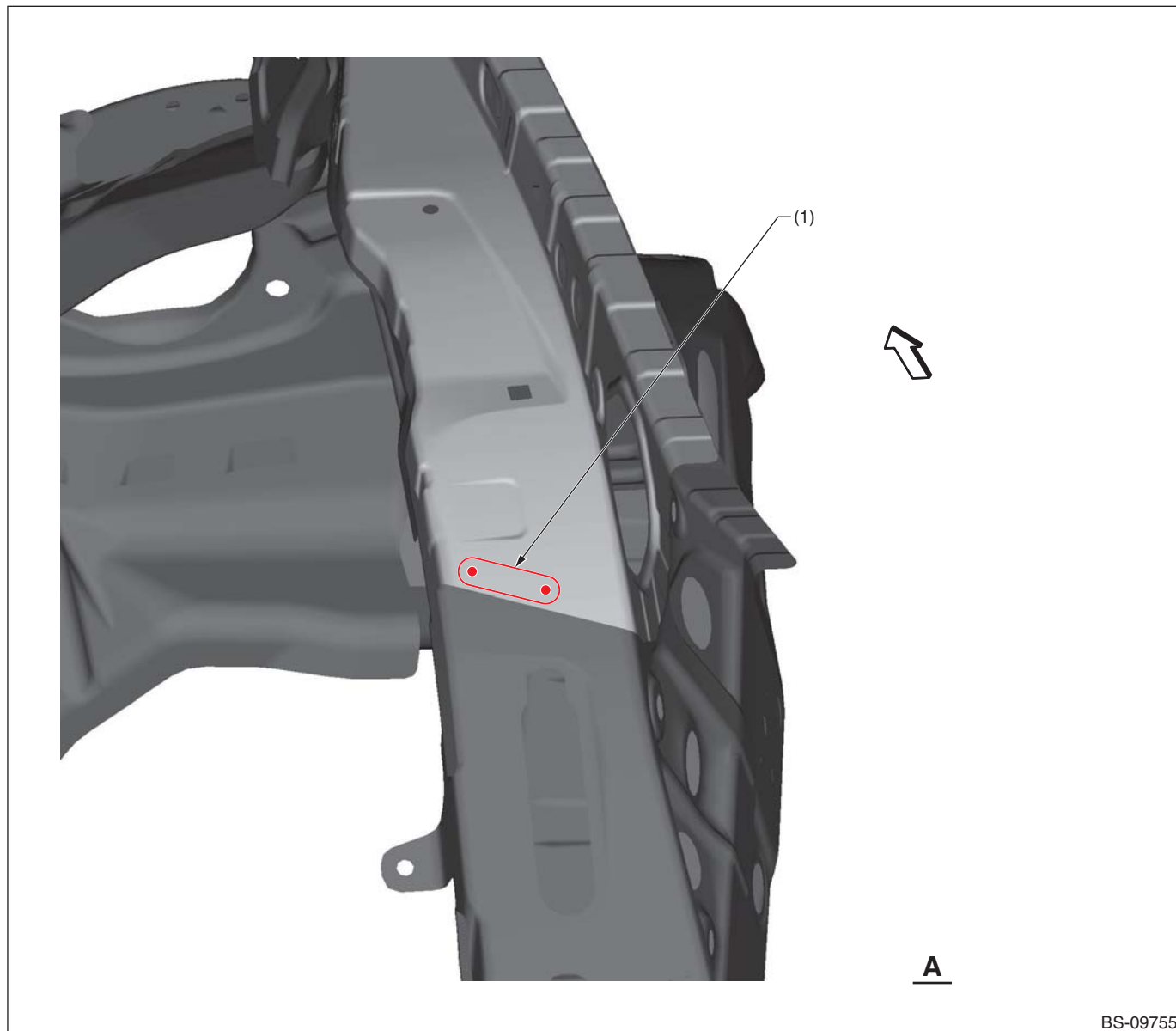
(1) 1 point (outside · 1)  
(2) 2 points (outside · 1)

(3) 3 points (outside · 1)  
(4) 4 points (outside · 1)

(5) 1 point (outside · 2)  
(6) 1 point (outside · 1 belt sander)

# Panel Replacement

## • Views A

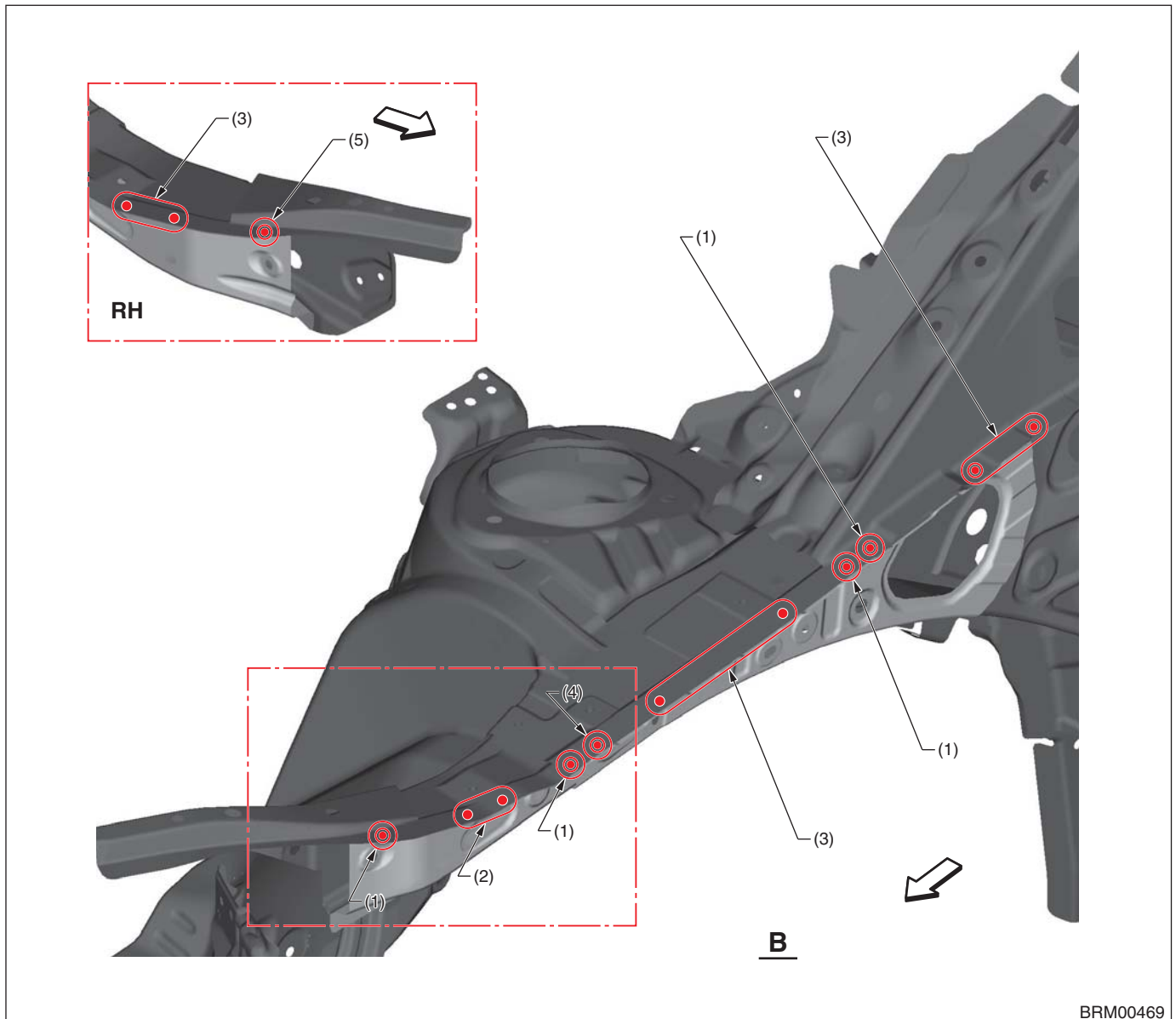


BS-09755

(1) 2 points (outside · 1)

# Panel Replacement

## • Views B



(1) 1 point (bottom · 1)  
(2) 2 points (bottom · 1)

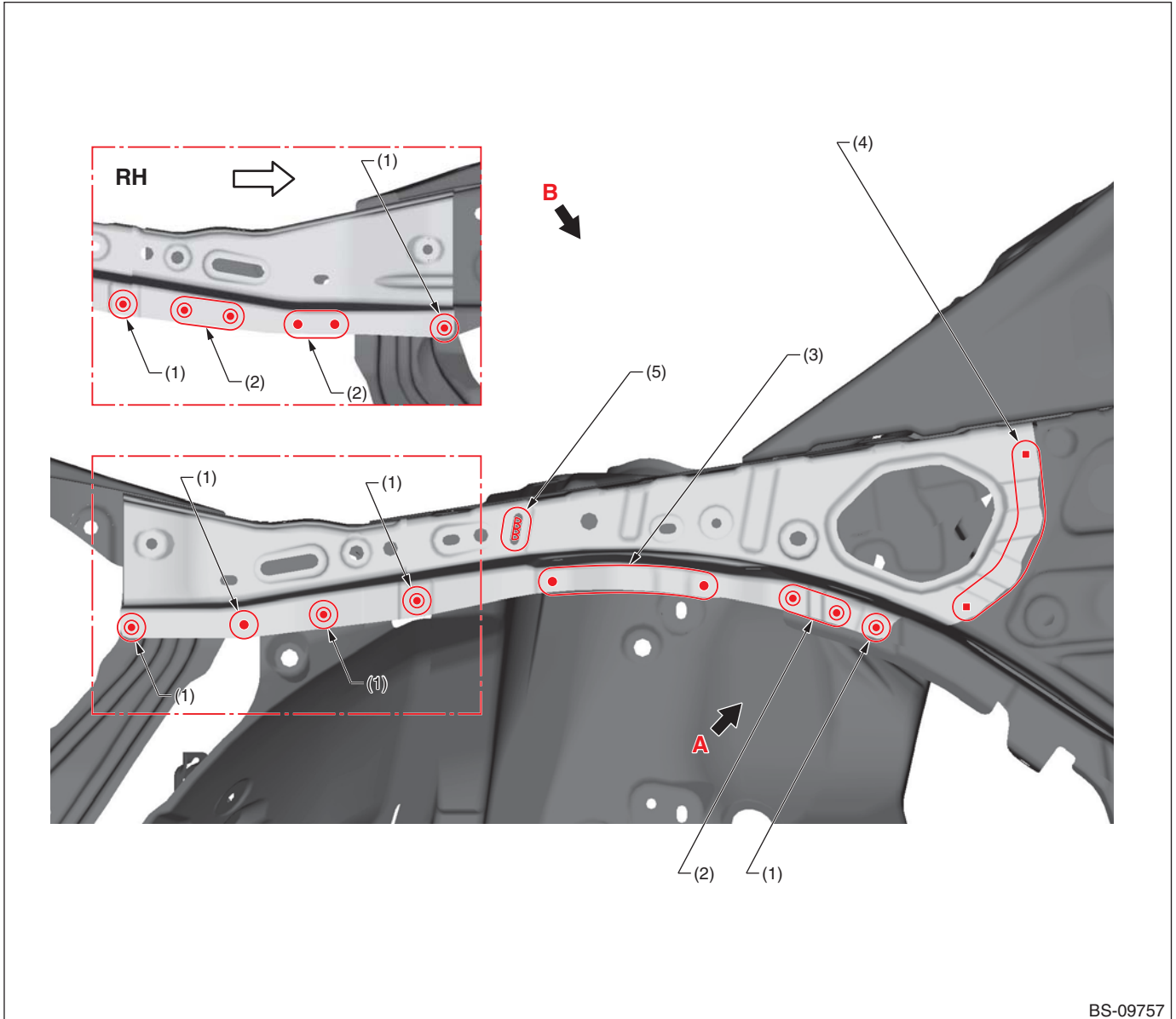
(3) 3 points (bottom · 1)  
(4) 1 point (bottom · 2)

(5) 1 point (bottom · 1 belt sander)

# Panel Replacement

## B: INSTALLATION

### • Overall view



(1) 1 point

(2) 2 points

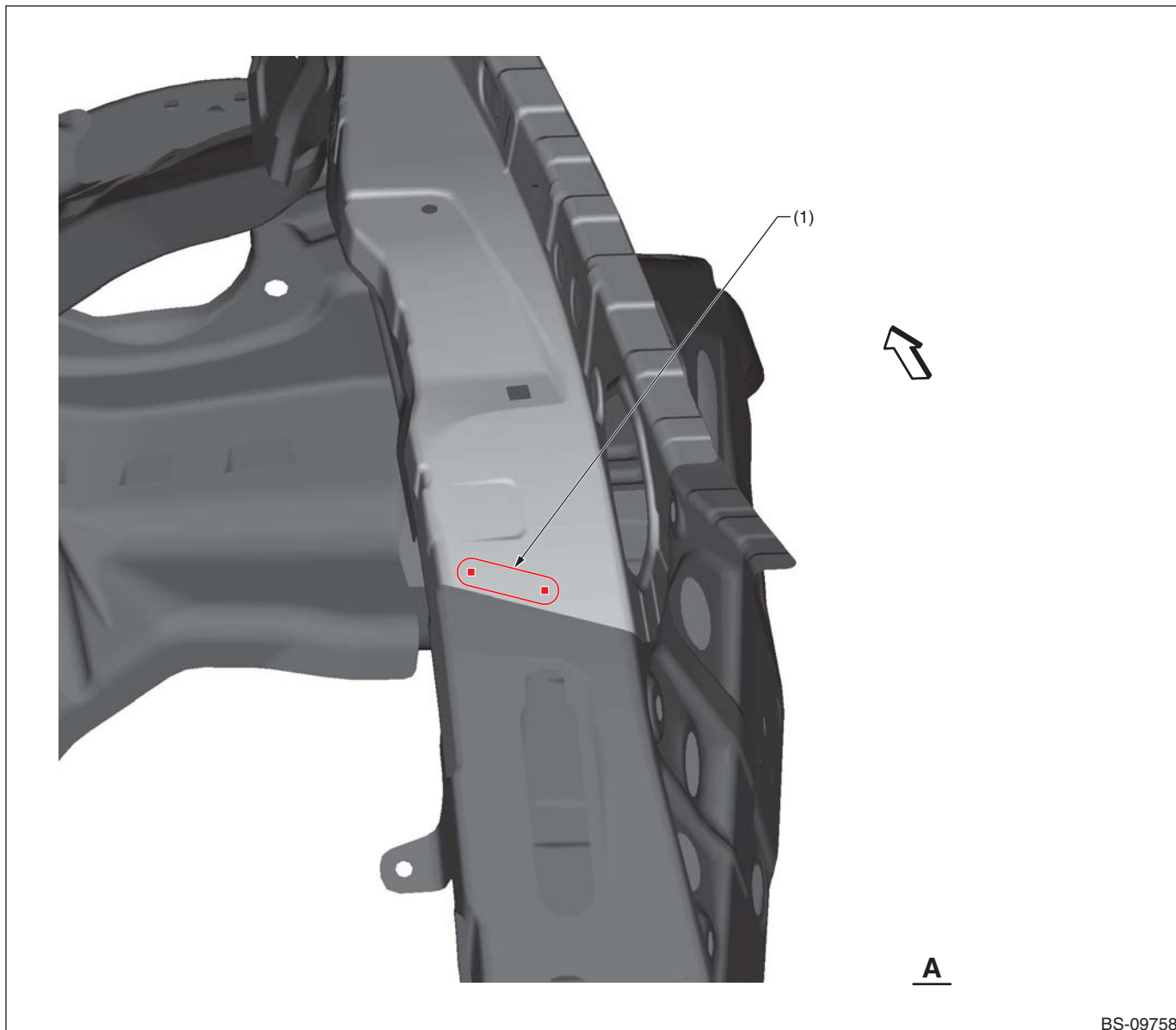
(3) 3 points

(4) 4 points (service)

(5) 1 point (continuous welding)  
[6 mm (0.24 in)]

## Panel Replacement

- Views A

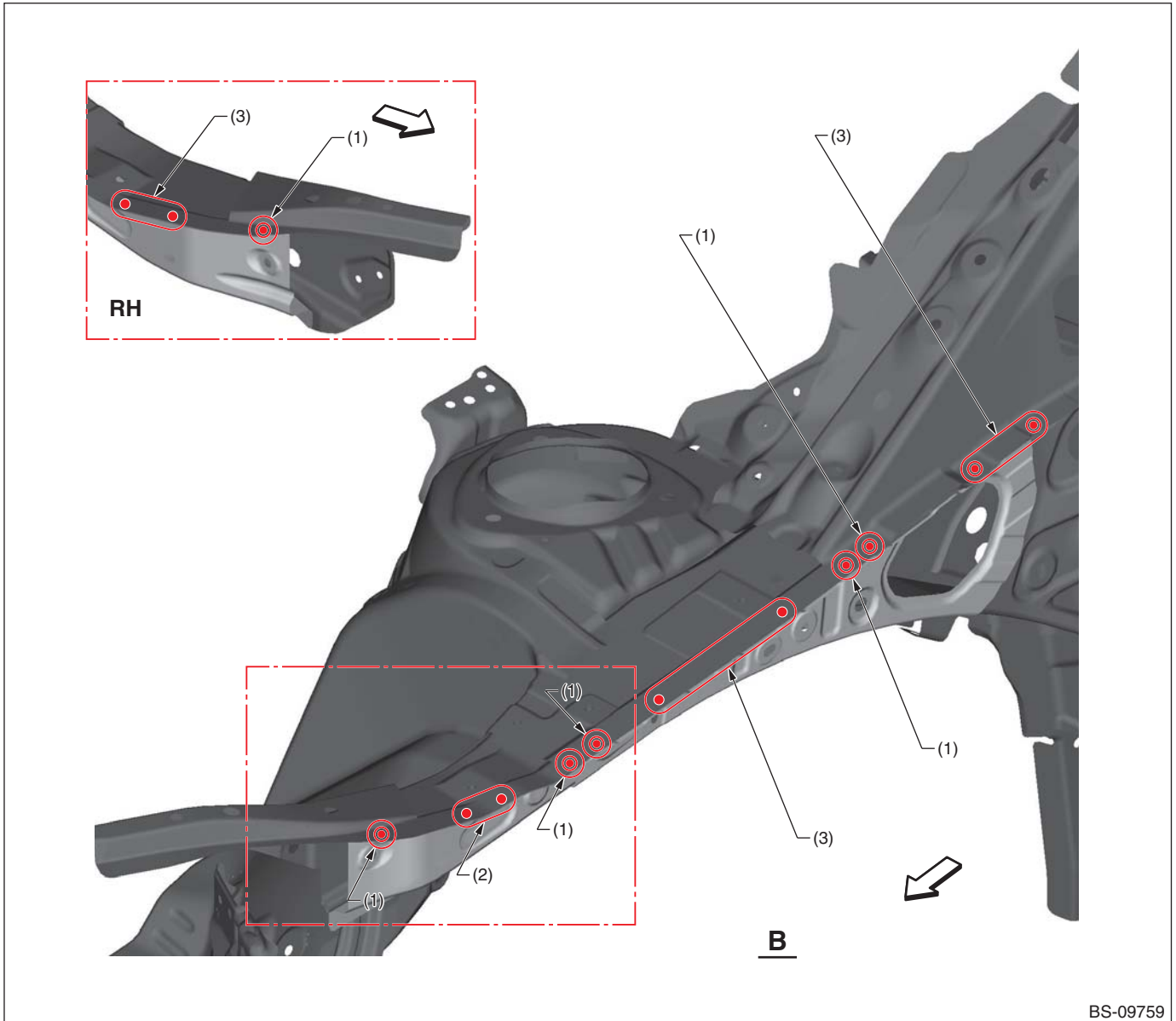


(1) 2 points



# Panel Replacement

## • Views B



BS-09759

(1) 1 point

(2) 2 points

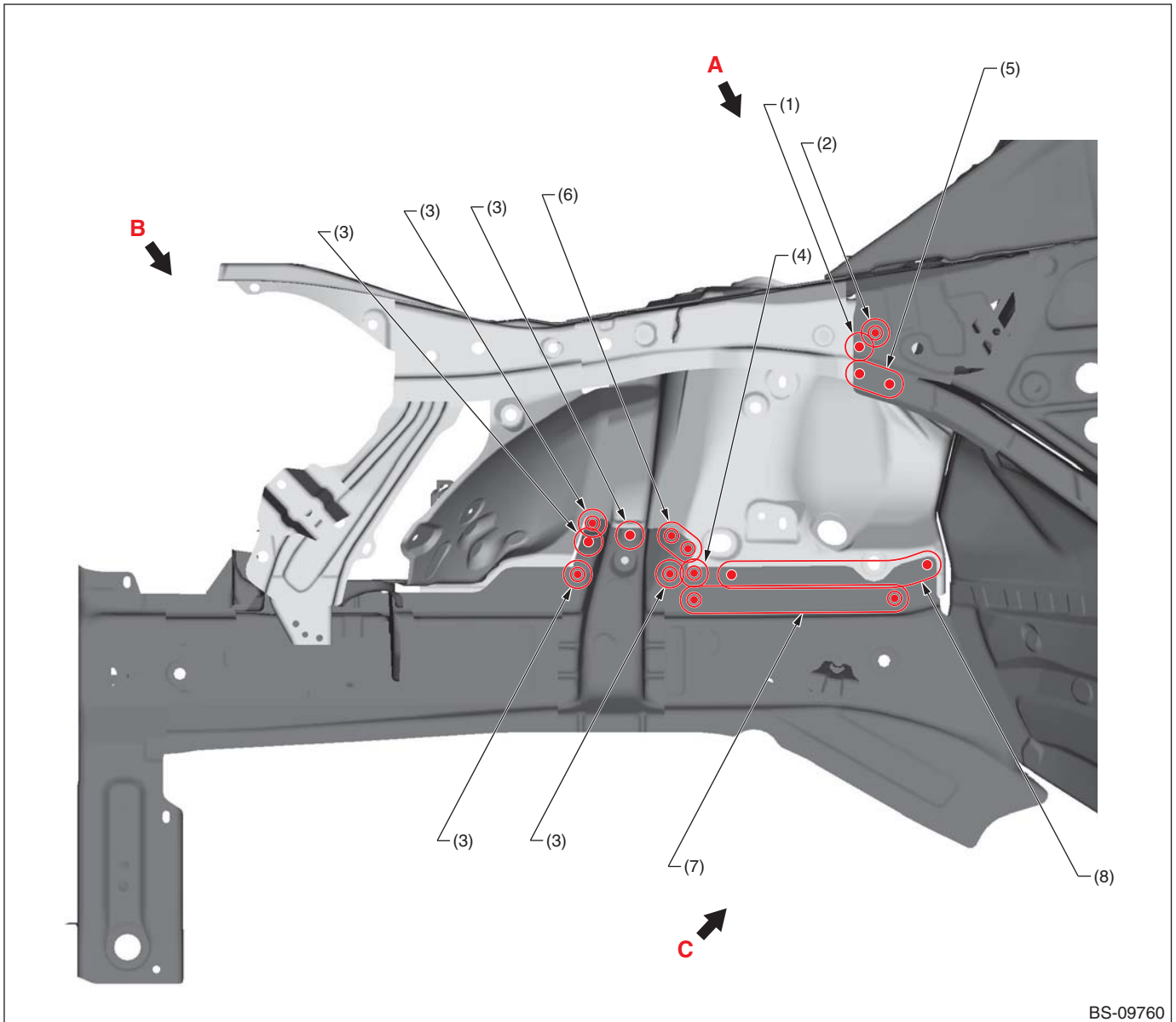
(3) 3 points

## Panel Replacement

### 8-4. Front Wheel Apron (total replacement)

#### A: REMOVAL

##### • Overall view



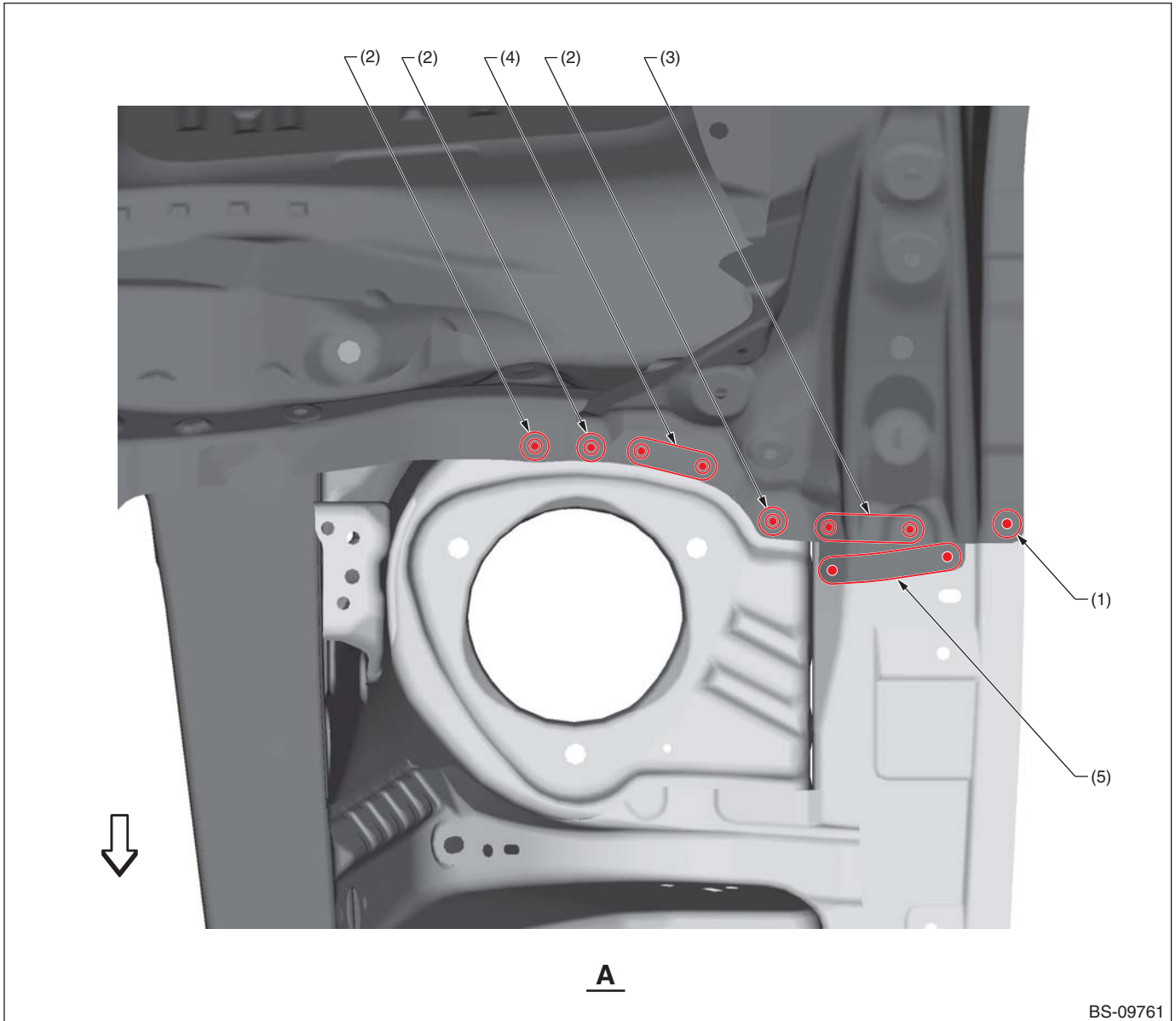
- (1) 1 point (outside - 1)
- (2) 1 point (outside - 2)
- (3) 1 point (inside - 1)

- (4) 1 point (inside - 2)
- (5) 2 points (outside - 1)
- (6) 2 points (inside - 2)

- (7) 4 points (inside - 1)
- (8) 6 points (inside - 1)

# Panel Replacement

## • Views A



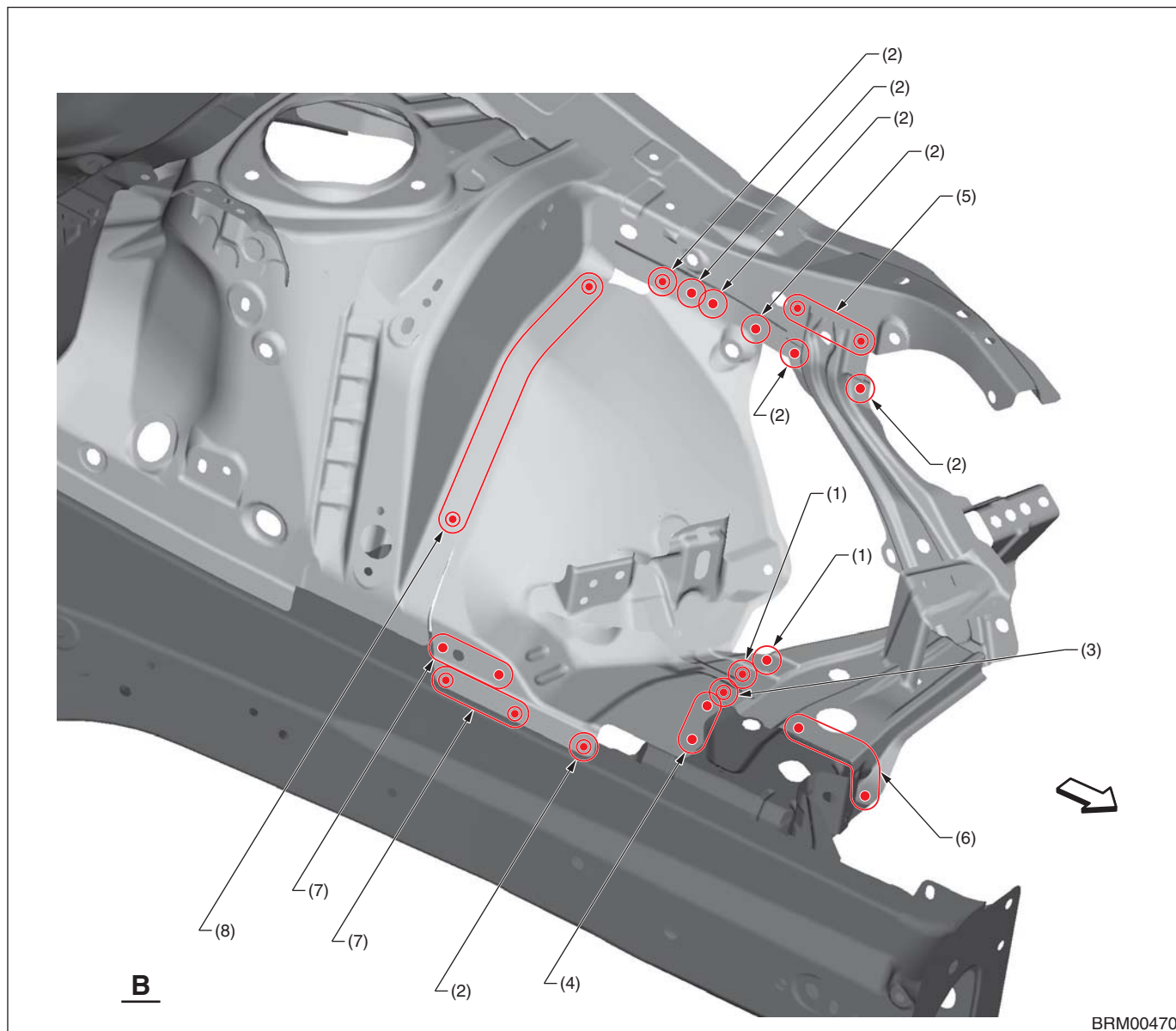
(1) 1 point (bottom · 1)  
(2) 1 point (top · 2)

(3) 2 points (bottom · 1)  
(4) 2 points (top · 2)

(5) 3 points (bottom · 1)

# Panel Replacement

## • Views B (LH)



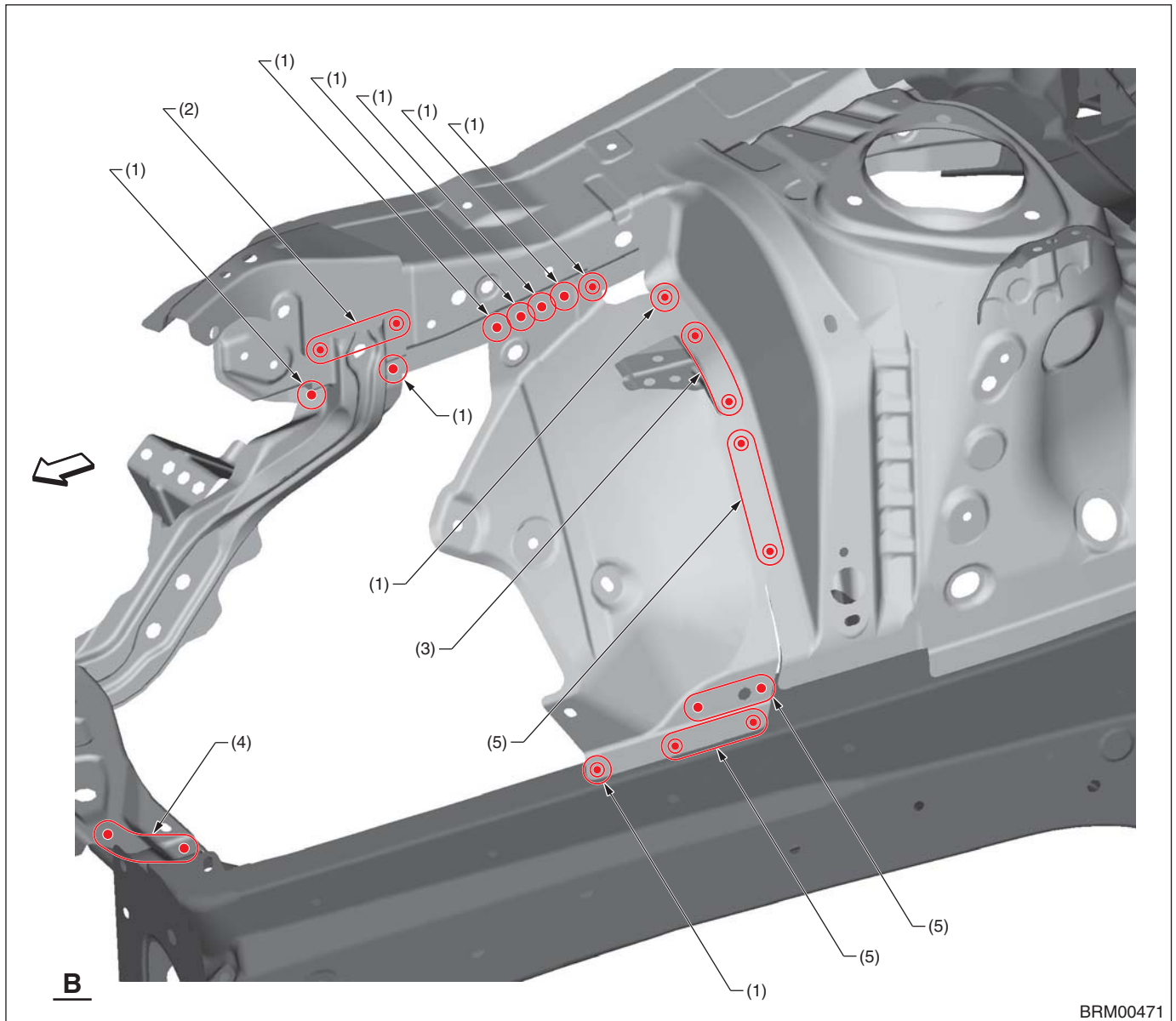
- (1) 1 point (top · 1)
- (2) 1 point (inside · 1)
- (3) 1 point (top · 2)

- (4) 2 points (top · 1)
- (5) 2 points (inside · 1)
- (6) 3 points (top · 1)

- (7) 3 points (inside · 1)
- (8) 5 points (inside · 1)

# Panel Replacement

## • Views B (RH)



BRM00471

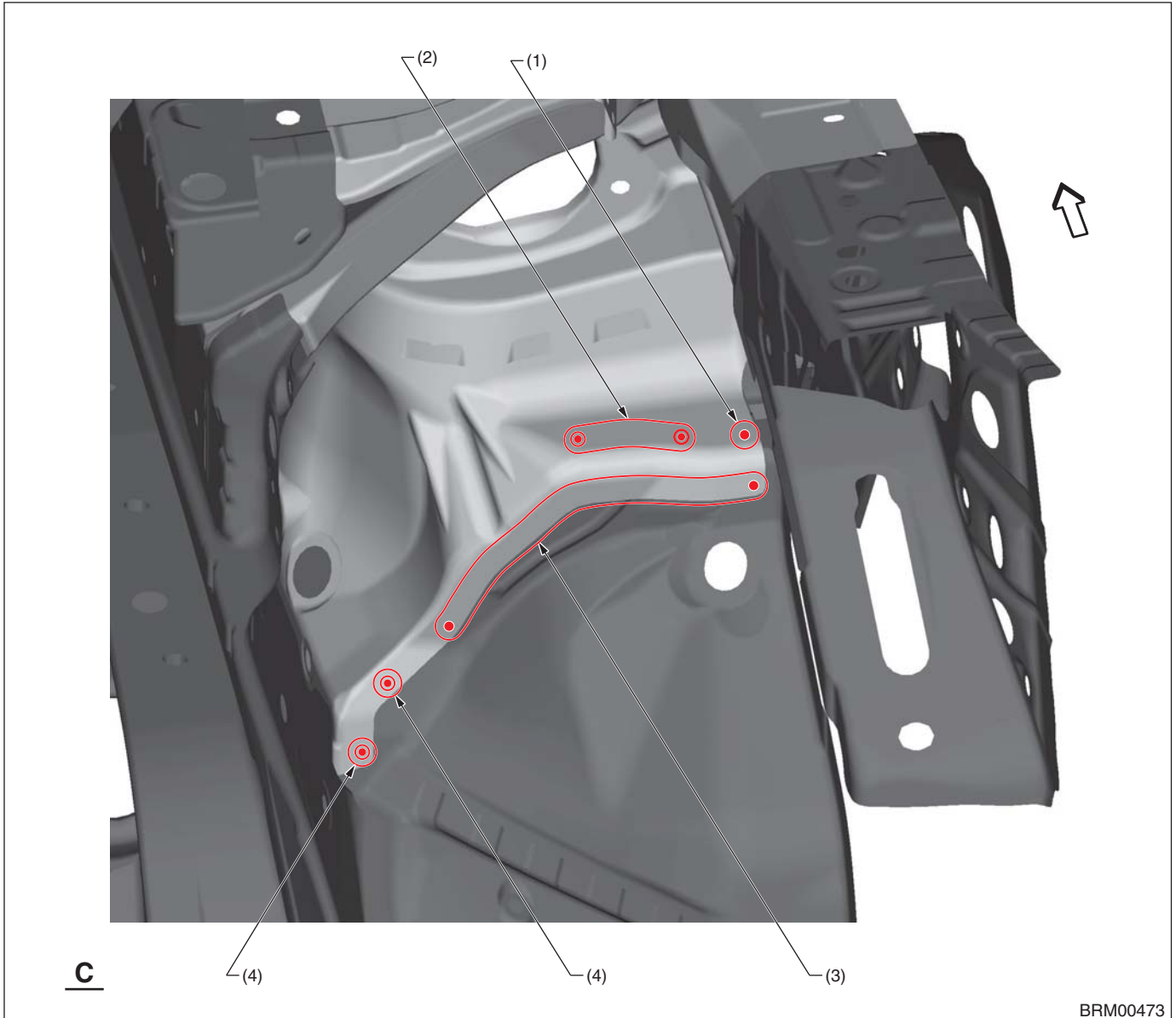
- (1) 1 point (inside · 1)  
(2) 2 points (inside · 1)

- (3) 2 points (inside · 2)  
(4) 3 points (top · 1)

- (5) 3 points (inside · 1)

## Panel Replacement

### • Views C



- (1) 1 point (outside · 1)  
(2) 3 points (outside · 1)

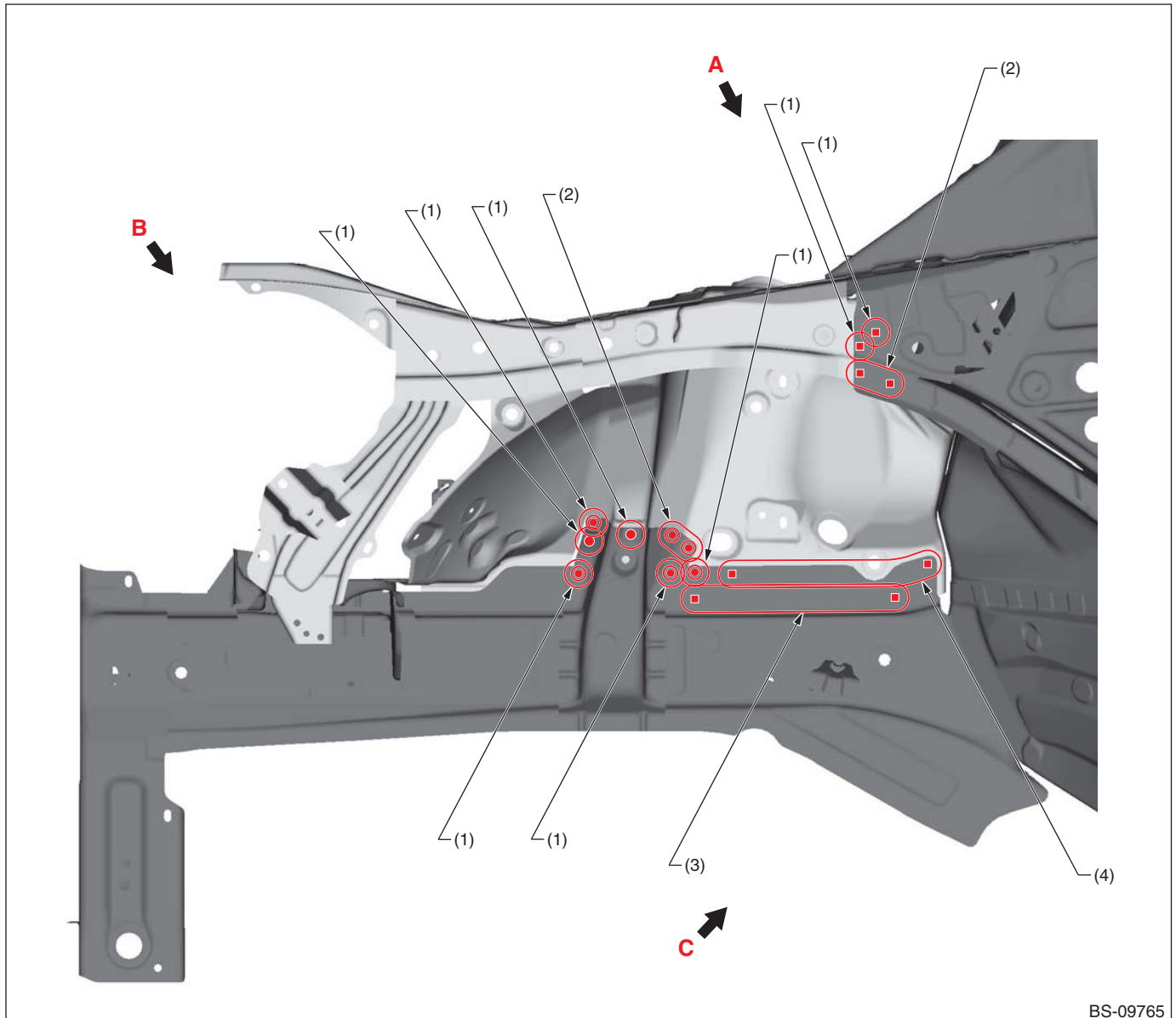
- (3) 7 points (outside · 1)

- (4) 1 point (outside · 1 belt sander)

# Panel Replacement

## B: INSTALLATION

### • Overall view



- (1) 1 point
- (2) 2 points

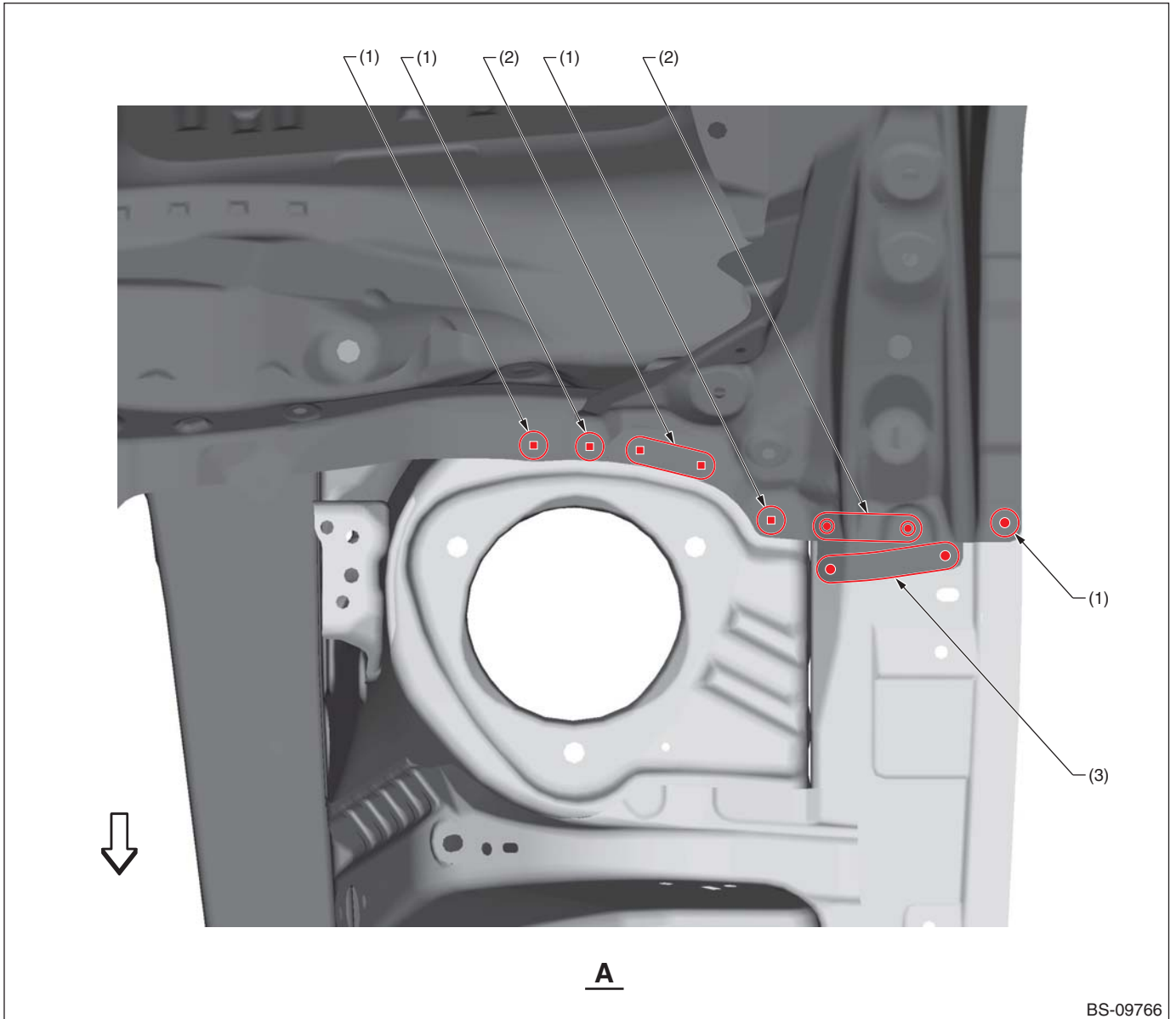
- (3) 4 points (service)

- (4) 6 points (service)



# Panel Replacement

## • Views A



(1) 1 point

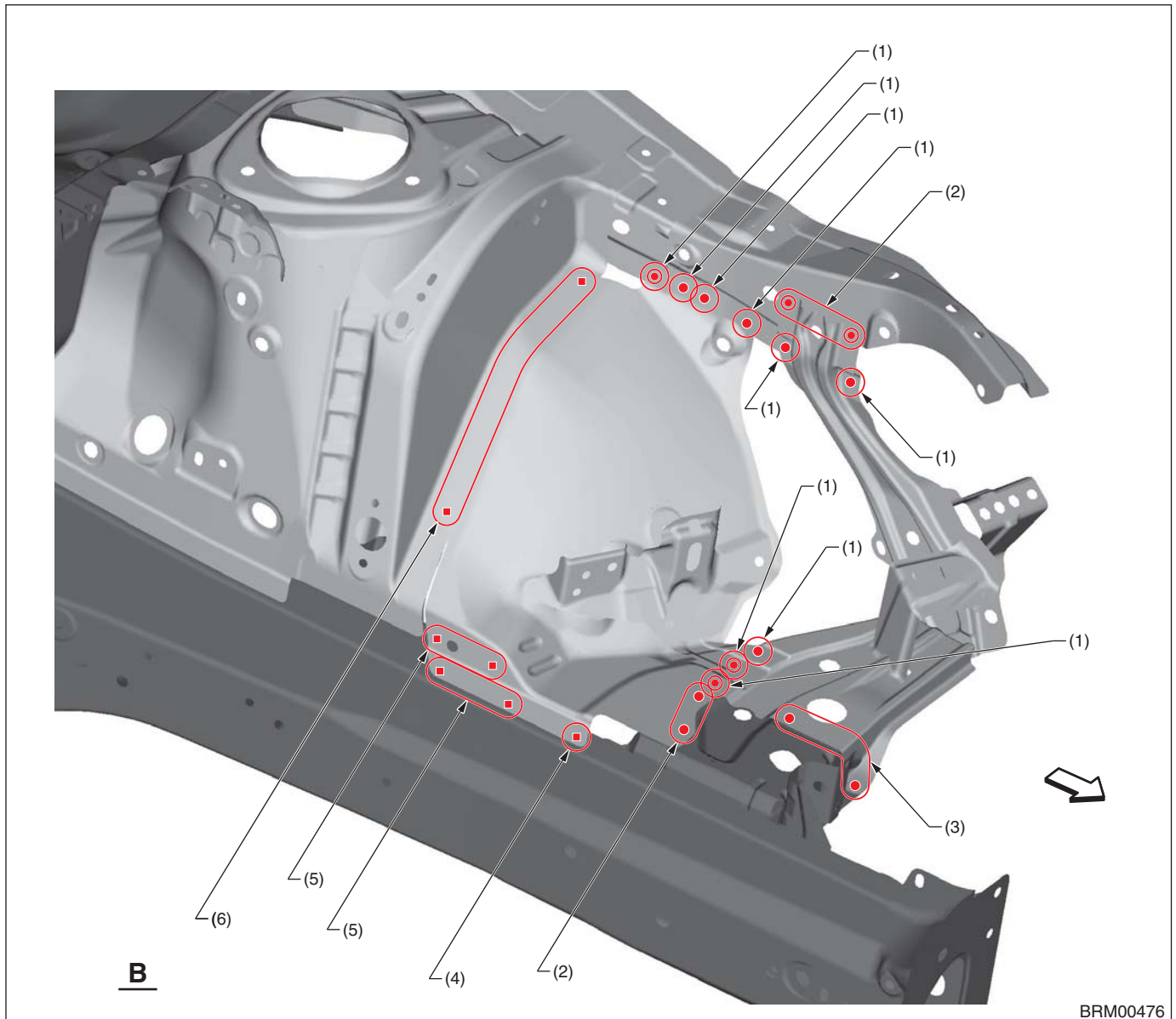
(2) 2 points

(3) 3 points



# Panel Replacement

## • Views B (LH)



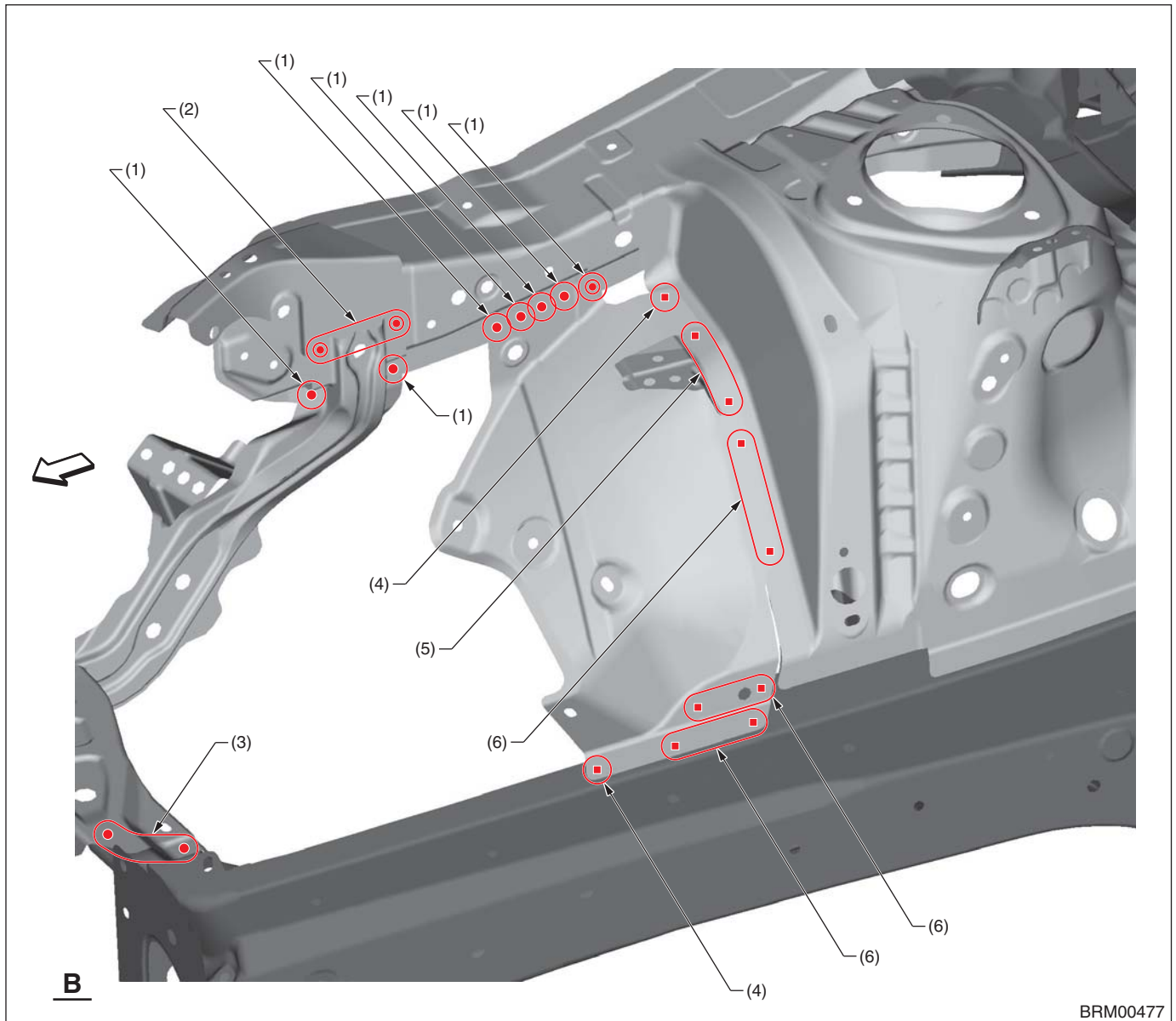
(1) 1 point  
(2) 2 points

(3) 3 points  
(4) 1 point (service)

(5) 3 points (service)  
(6) 5 points (service)

# Panel Replacement

## • Views B (RH)



BRM00477

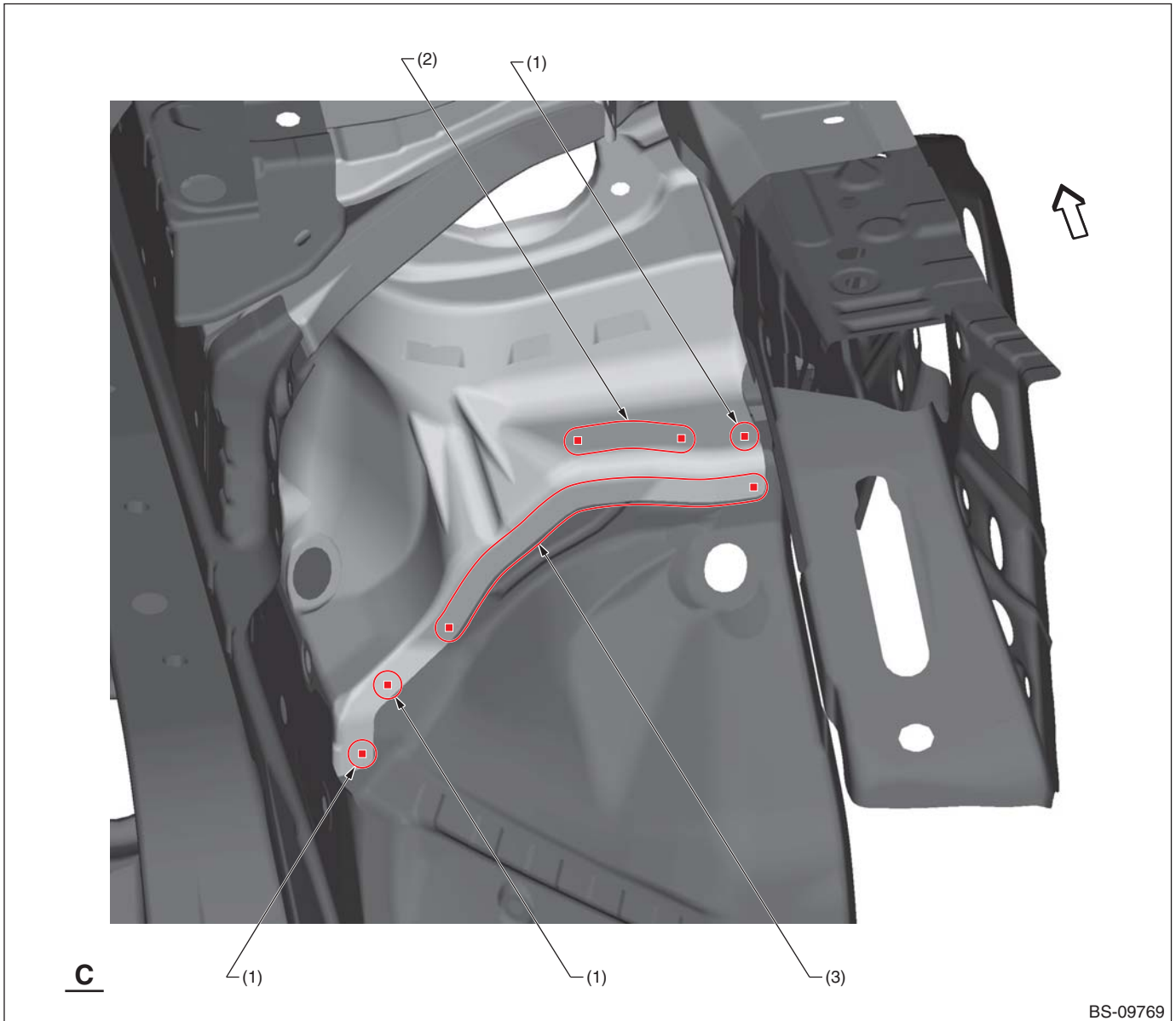
(1) 1 point  
(2) 2 points

(3) 3 points  
(4) 1 point (service)

(5) 2 points (service)  
(6) 3 points (service)

## Panel Replacement

### • Views C



(1) 1 point (service)

(2) 3 points (service)

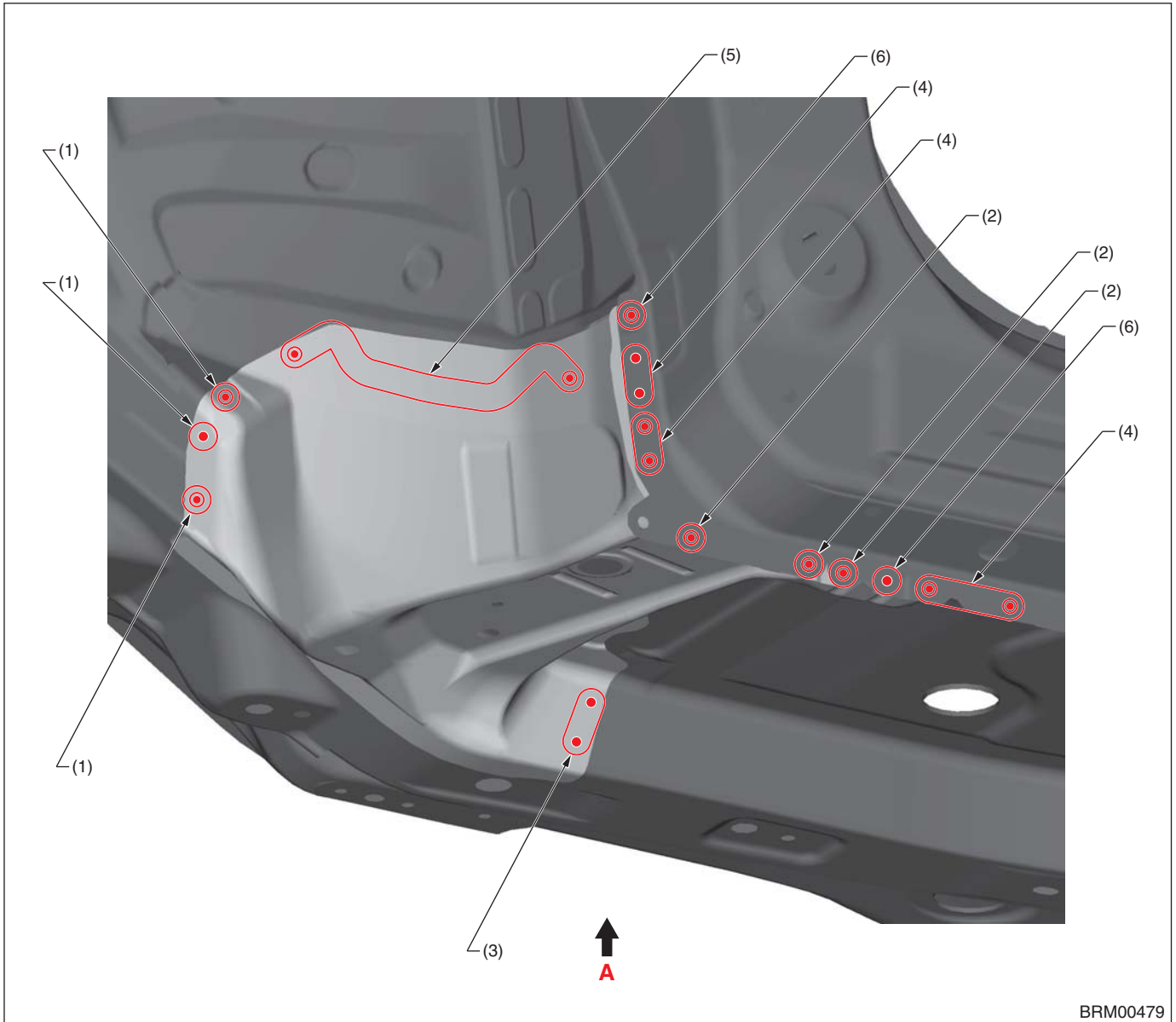
(3) 7 points (service)

## Panel Replacement

### 8-5. Toe Board Reinforcement (total replacement)

#### A: REMOVAL

##### • Overall view



(1) 1 point (outside · 1)

(2) 1 point (inside · 1)

(3) 2 points (outside · 1)

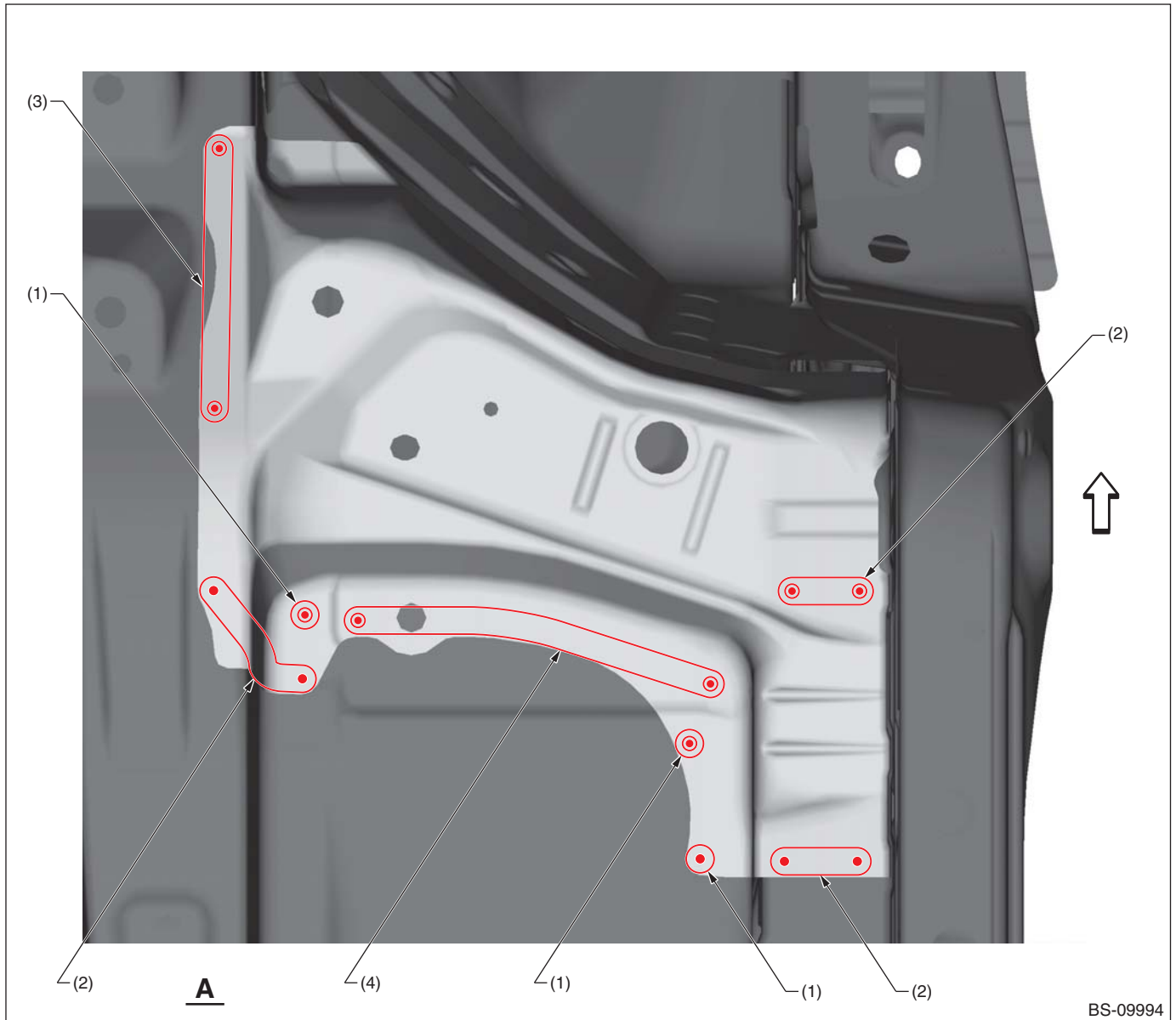
(4) 2 points (inside · 1 belt sander)

(5) 7 points (outside · 1)

(6) 1 point (inside · 1 belt sander)

# Panel Replacement

## • Views A



BS-09994

- (1) 1 point (bottom · 1)  
(2) 2 points (bottom · 1)

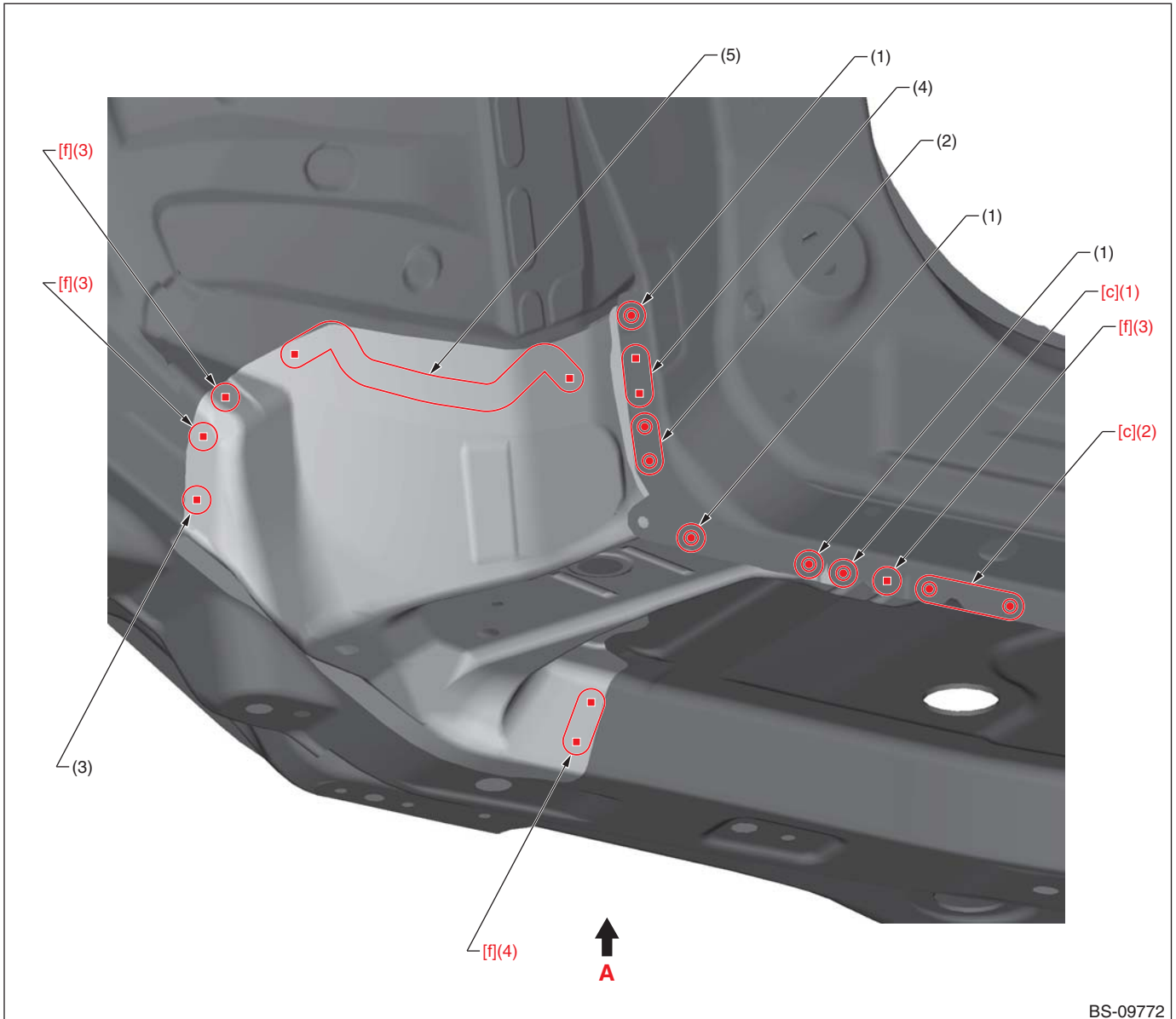
- (3) 4 points (bottom · 1)

- (4) 7 points (bottom · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



(1) 1 point  
(2) 2 points

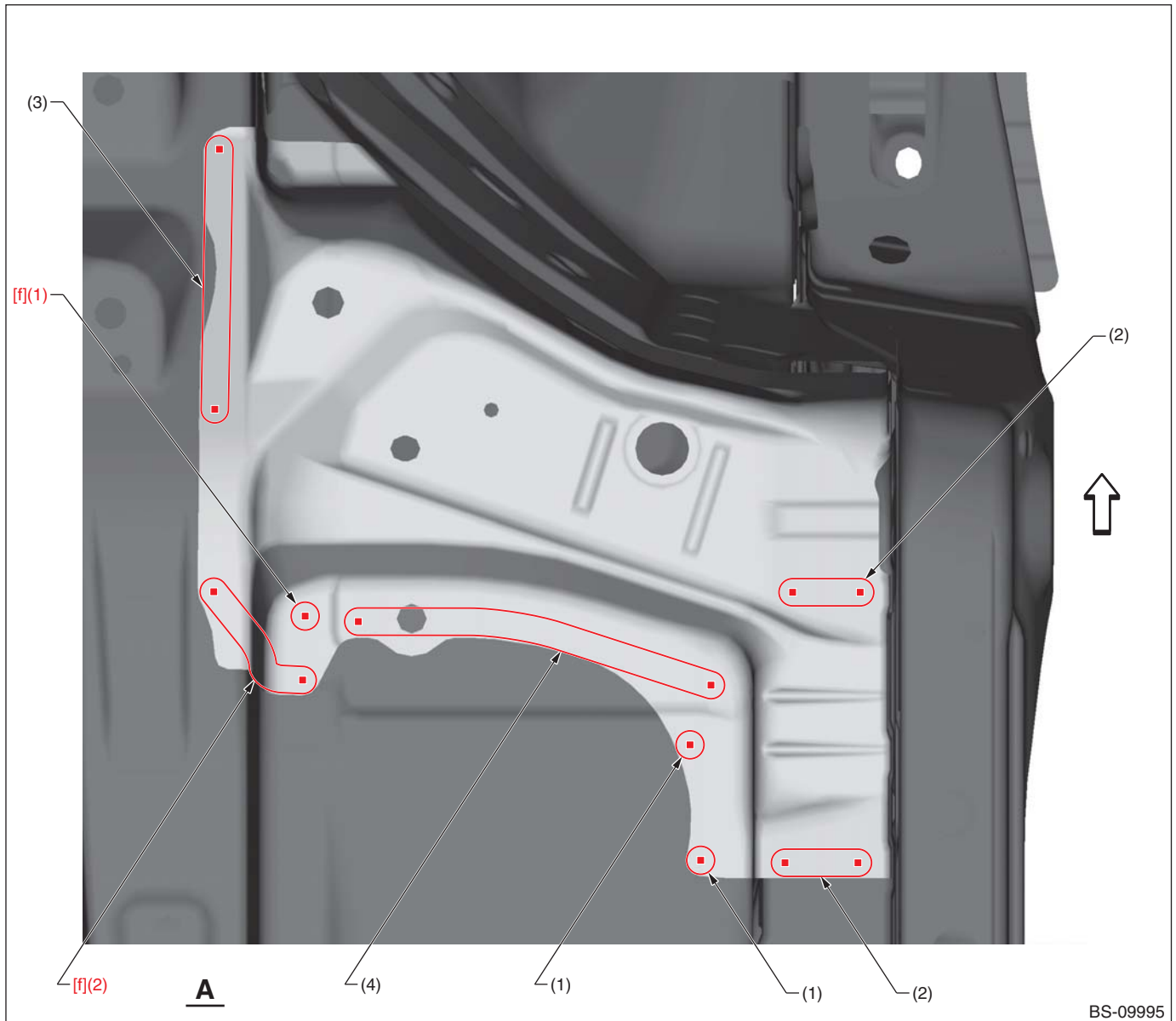
(3) 1 point (service)  
(4) 2 points (service)

(5) 7 points (service)

[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



- (1) 1 point (service)  
(2) 2 points (service)

- (3) 4 points (service)

- (4) 7 points (service)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

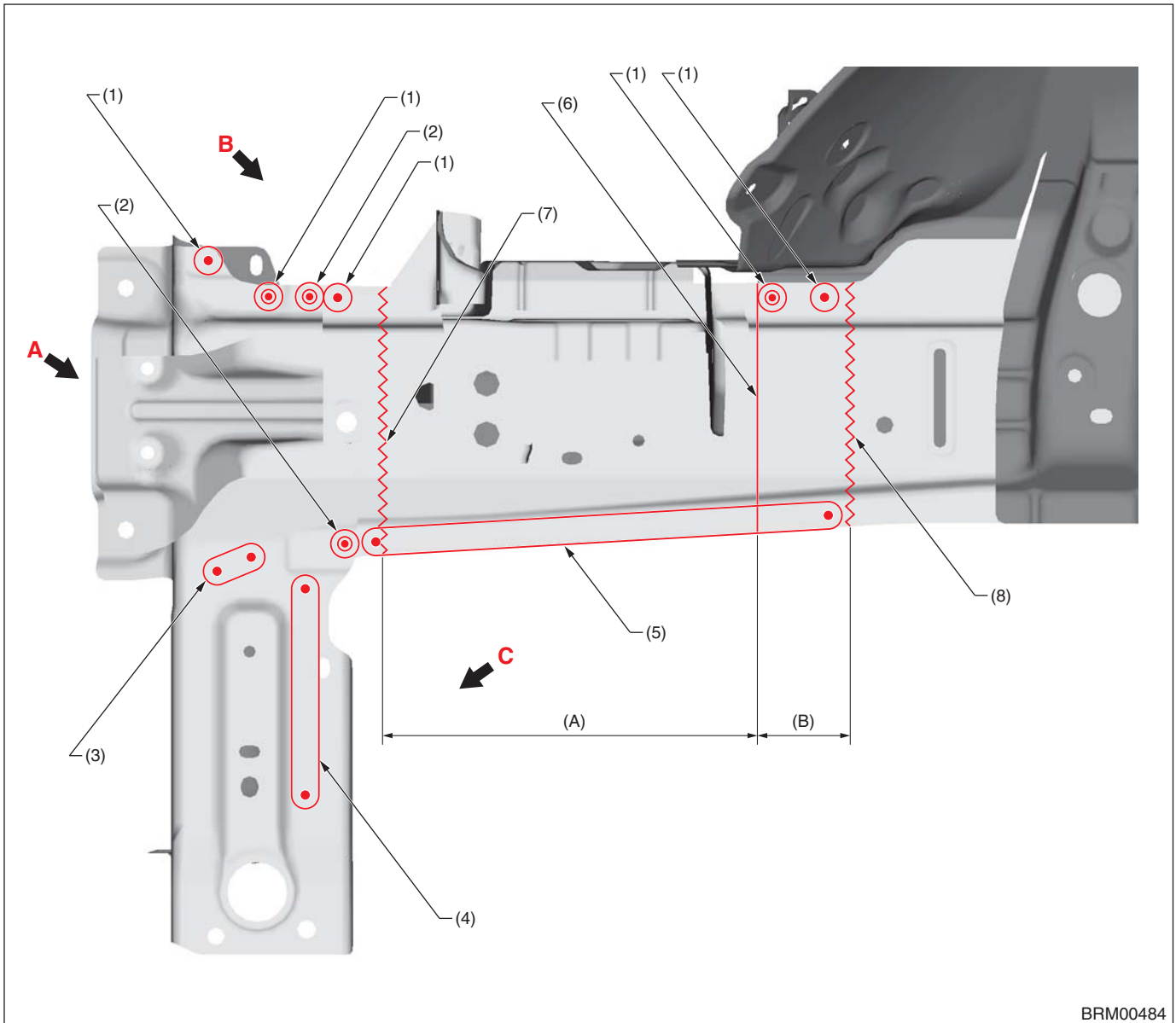
B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)



## 8-6. Closing Plate LH (partial replacement)

### A: REMOVAL

#### • Overall view



BRM00484

(A) 217 mm [8.54 in]

(B) 52 mm [2.05 in]

(1) 1 point (outside · 1)

(4) 5 points (outside · 1)

(7) Cut position where the damage is small

(2) 1 point (outside · 2)

(5) 11 points (outside · 1)

(8) Cut position where the damage is large

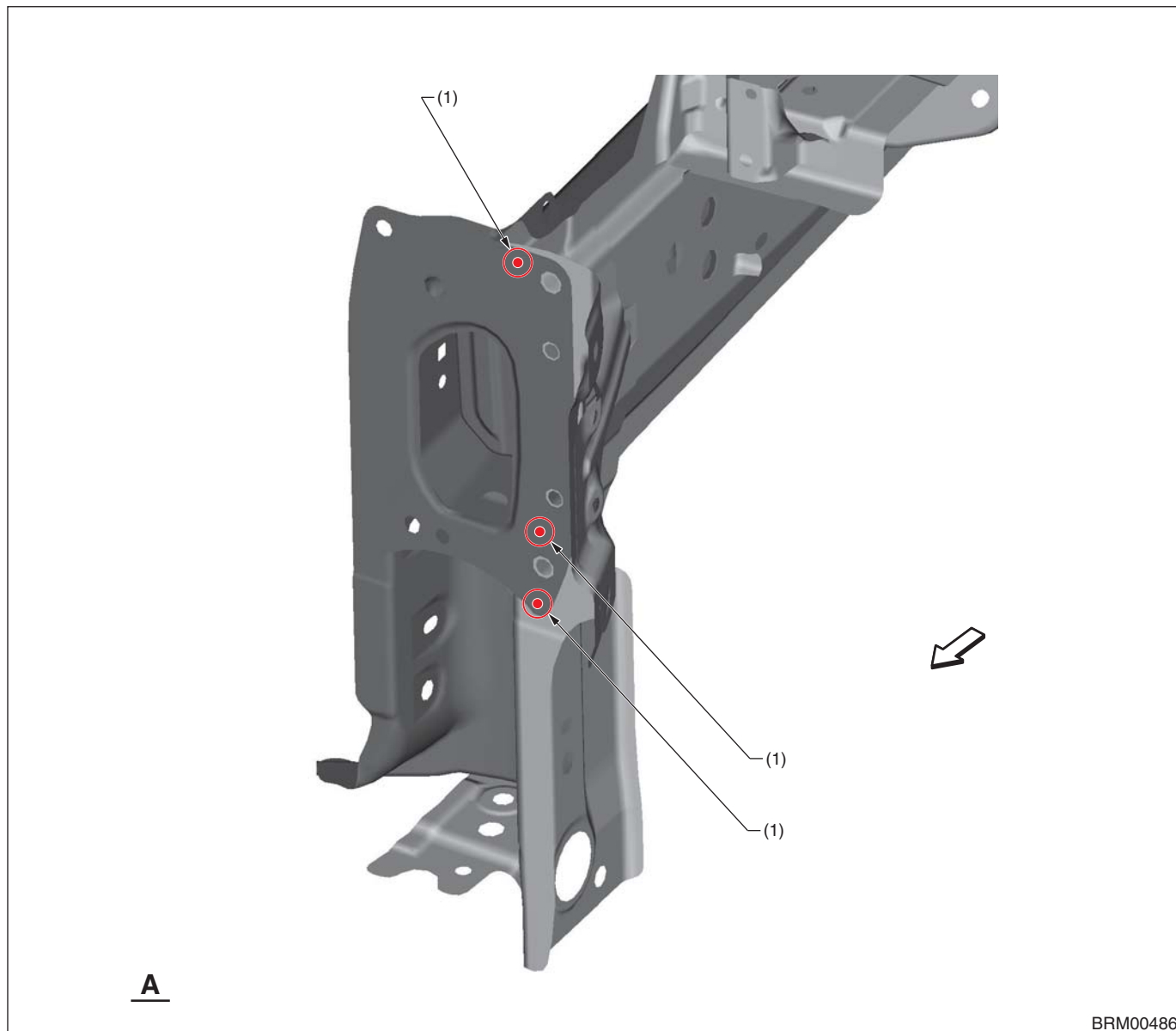
(3) 2 points (outside · 1)

(6) Tailored line



# Panel Replacement

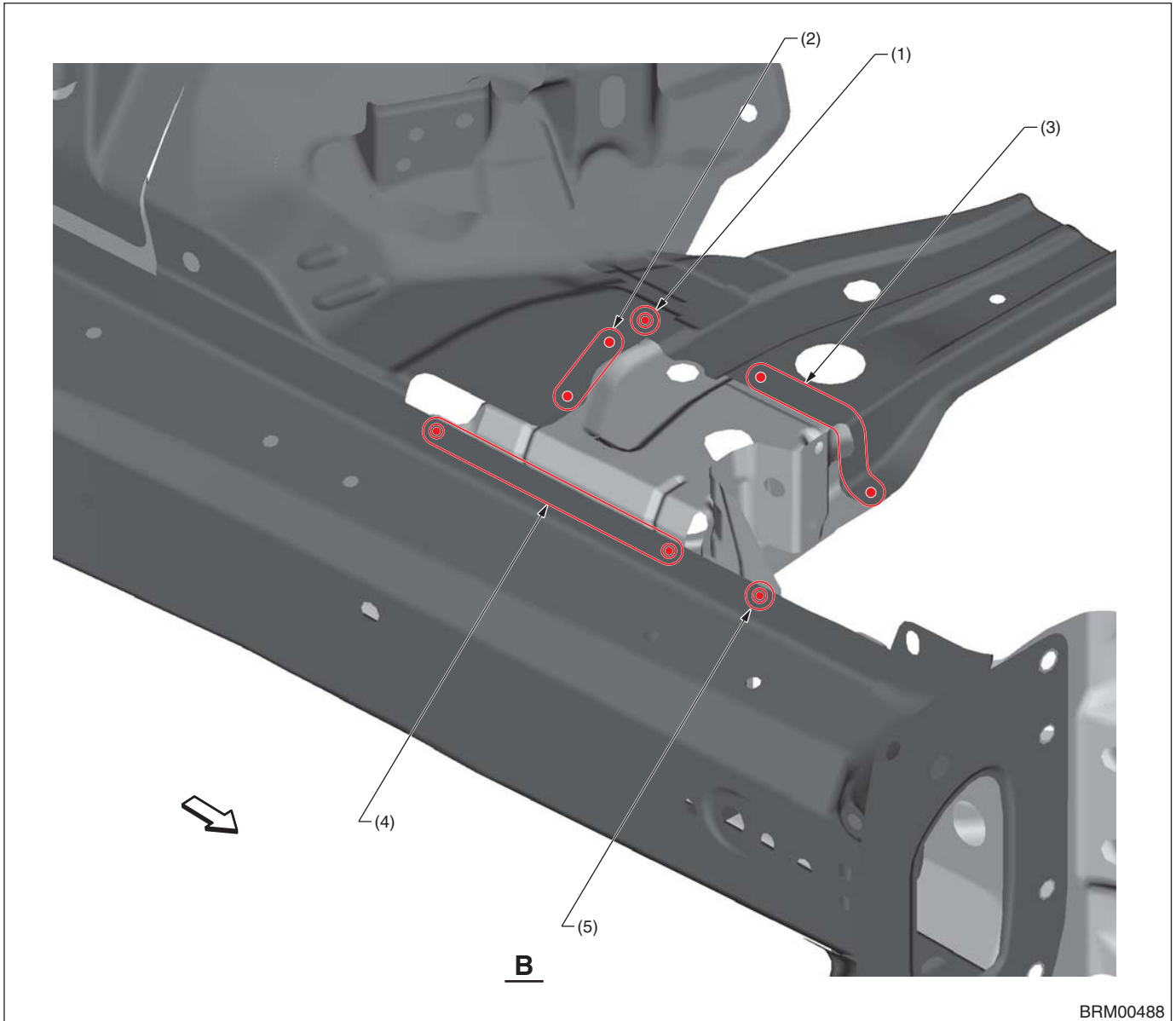
## • Views A



(1) 1 point (outside · 1)

# Panel Replacement

## • Views B



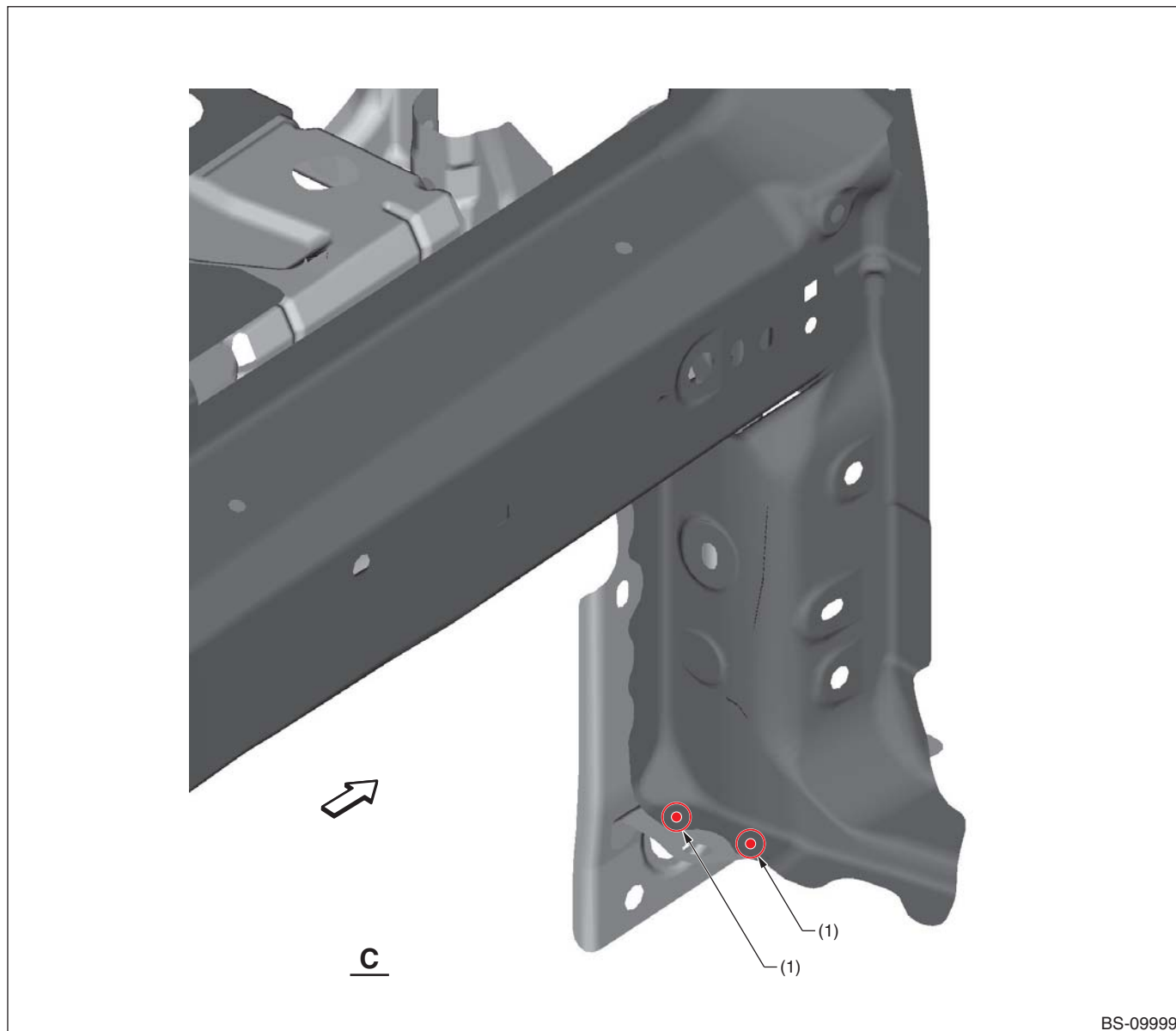
(1) 1 point (top · 2)  
(2) 2 points (top · 1)

(3) 3 points (top · 1)  
(4) 5 points (inside · 1)

(5) 1 point (inside · 1)

## Panel Replacement

### • Views C

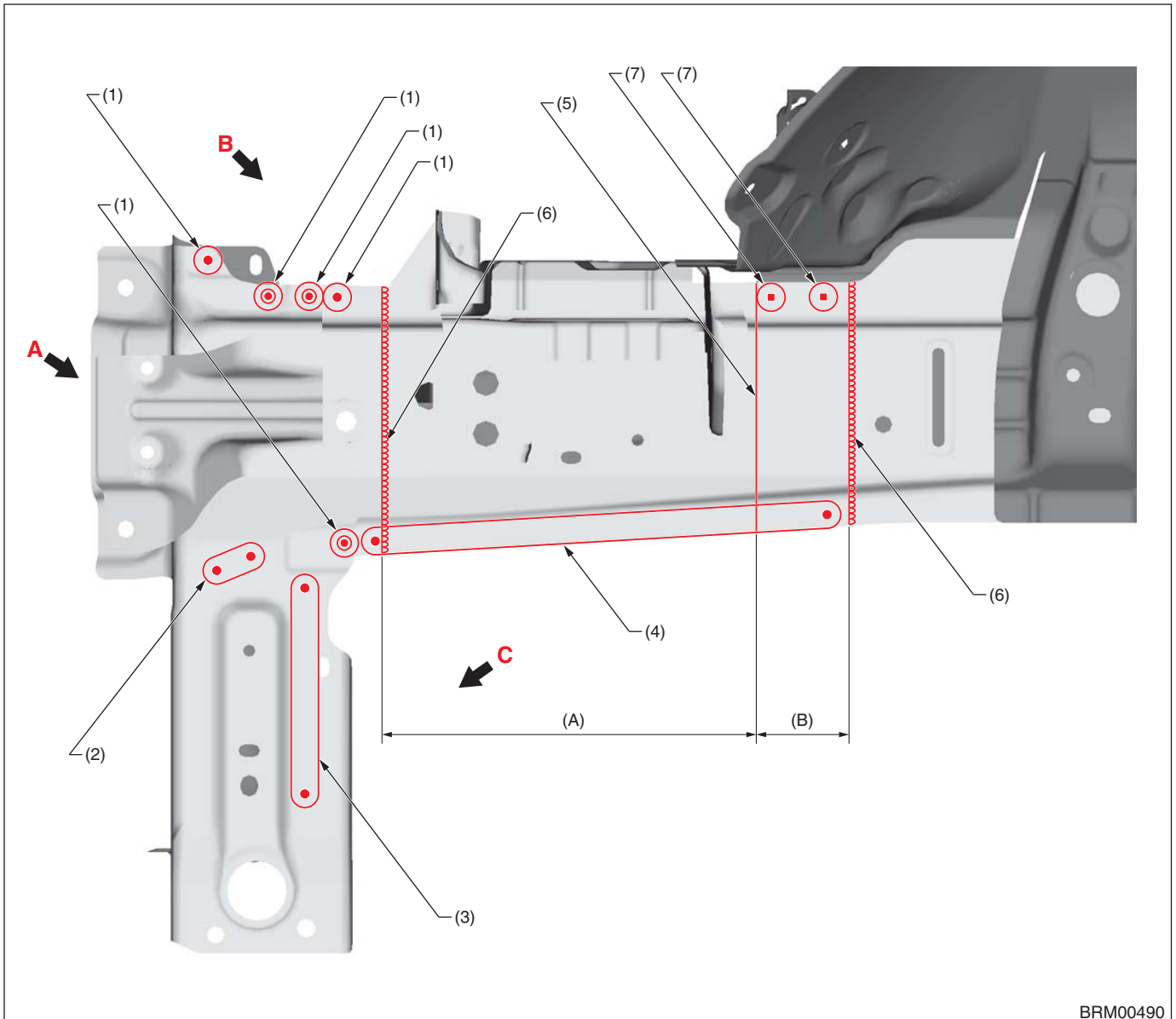


(1) 1 point (bottom · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00490

(A) 217 mm [8.54 in]

(B) 52 mm [2.05 in]

(1) 1 point

(4) 11 points

(7) 1 point (service)

(2) 2 points

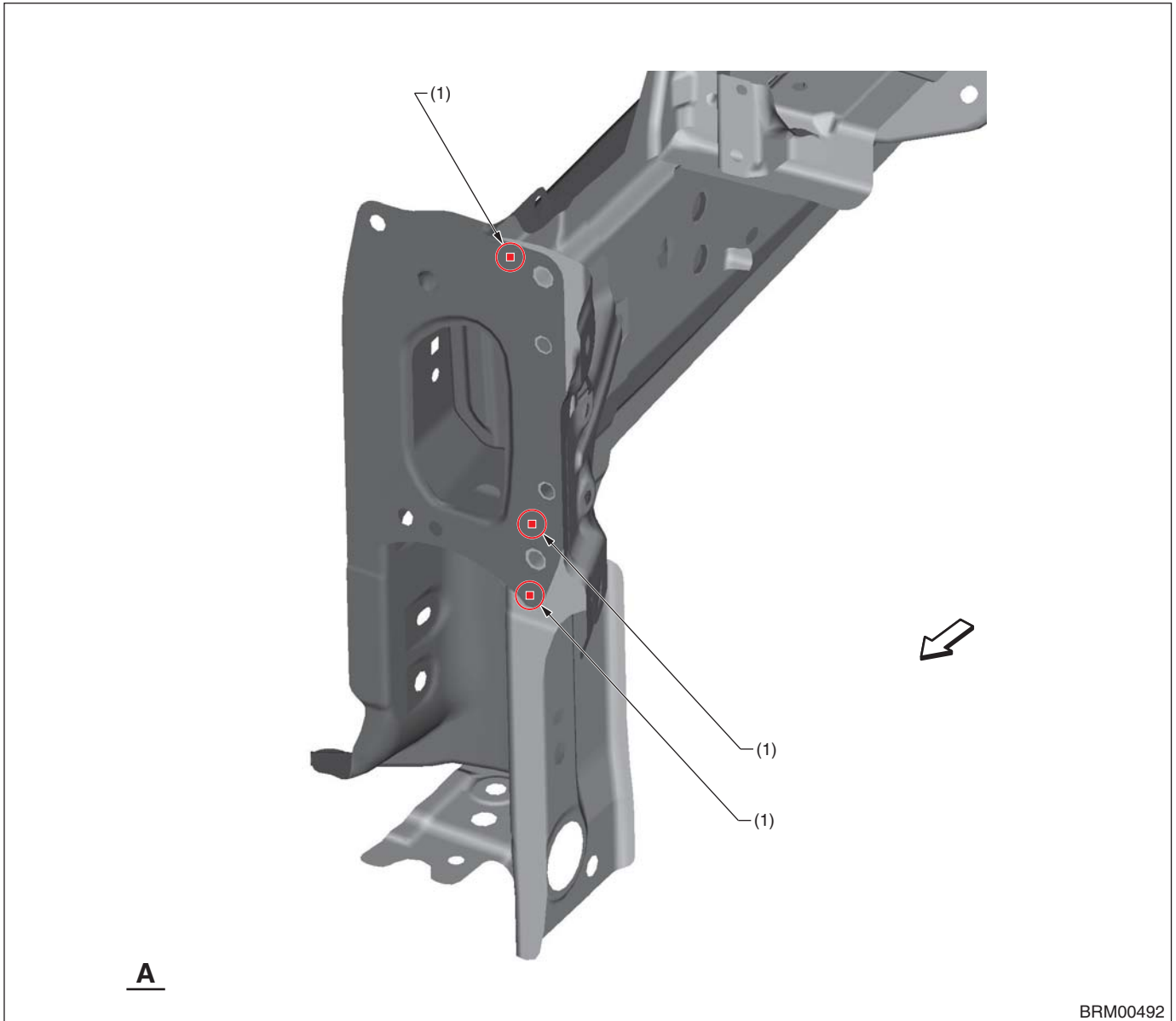
(5) Tailored line

(3) 5 points

(6) 1 point (continuous welding)

## Panel Replacement

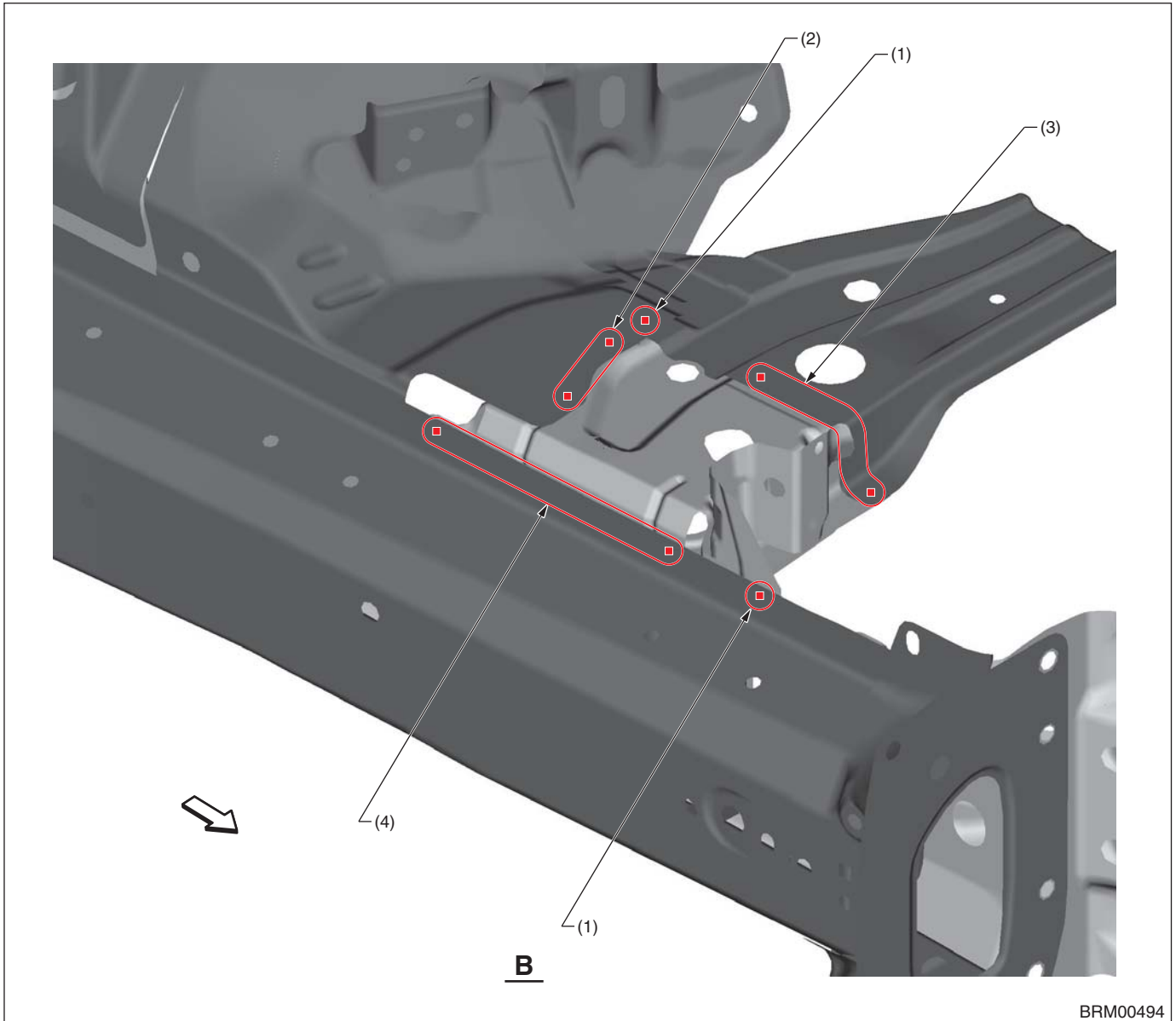
### • Views A



(1) 1 point

# Panel Replacement

## • Views B



BRM00494

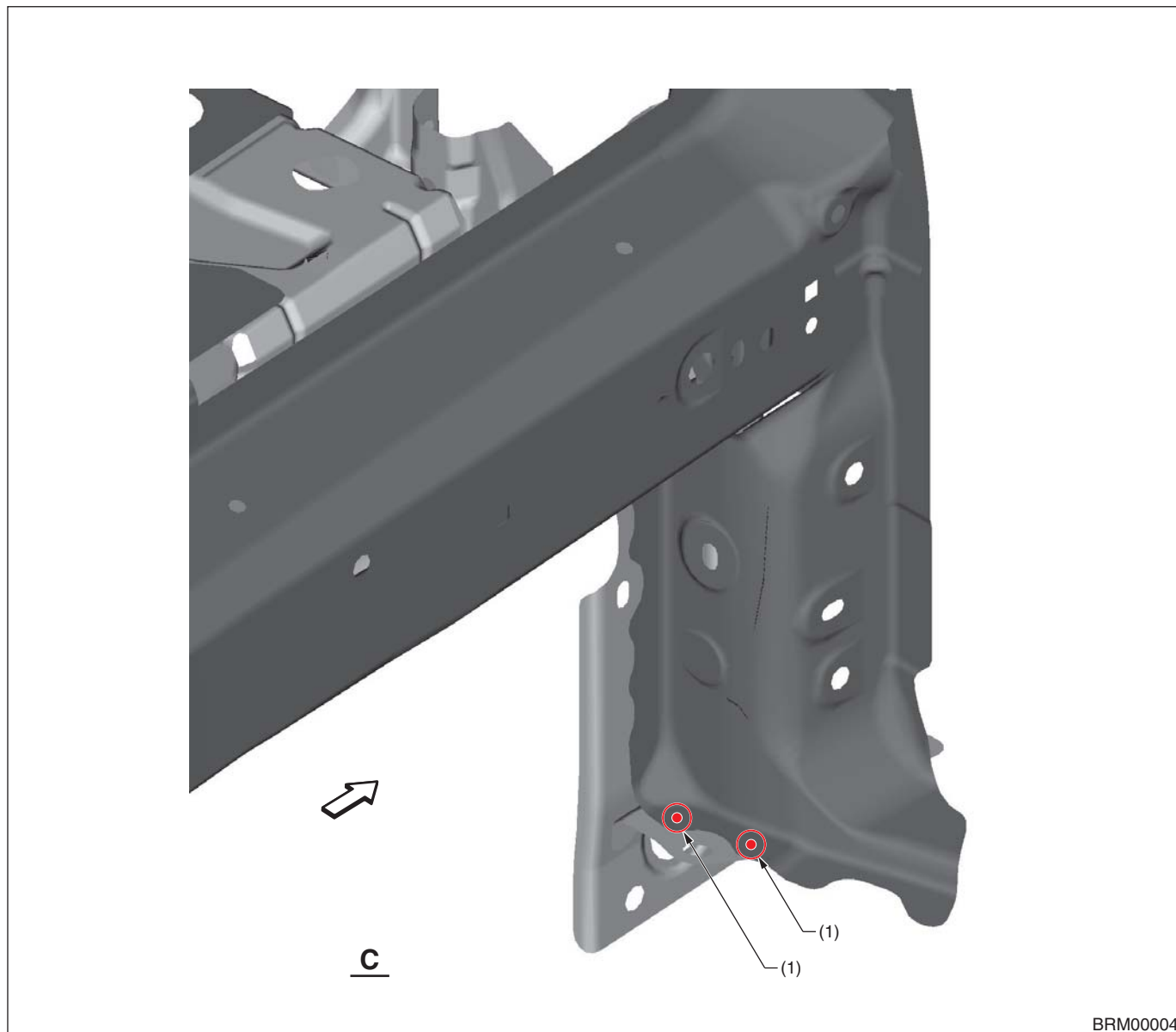
(1) 1 point  
(2) 2 points

(3) 3 points

(4) 5 points

## Panel Replacement

- Views C



BRM00004

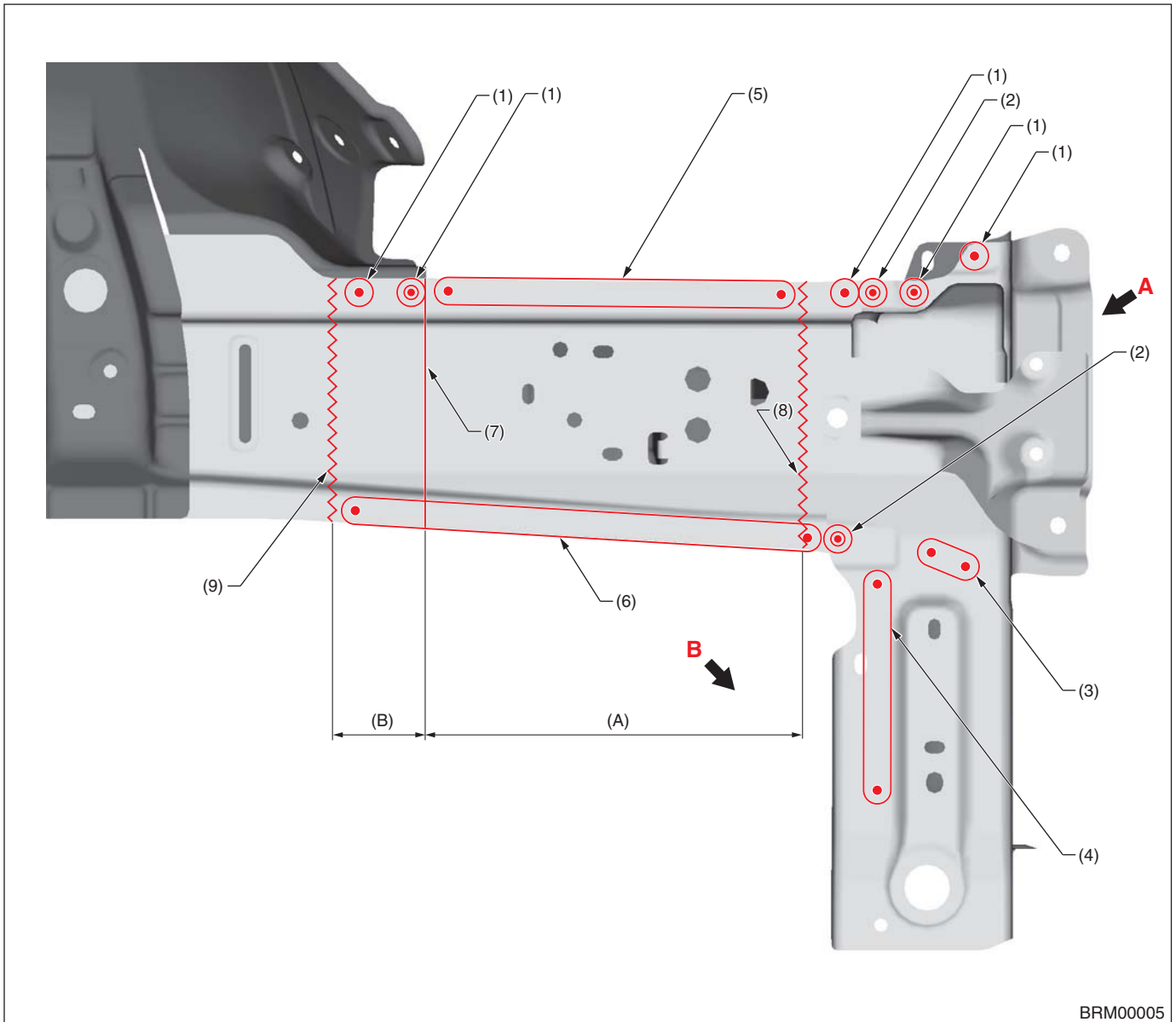
(1) 1 point

## Panel Replacement

### 8-7. Closing Plate RH (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00005

(A) 217 mm [8.54 in]

(B) 52 mm [2.05 in]

(1) 1 point (outside - 1)

(4) 5 points (outside - 1)

(7) Tailored line

(2) 1 point (outside - 2)

(5) 7 points (outside - 1)

(8) Cut position where the damage is small

(3) 2 points (outside - 1)

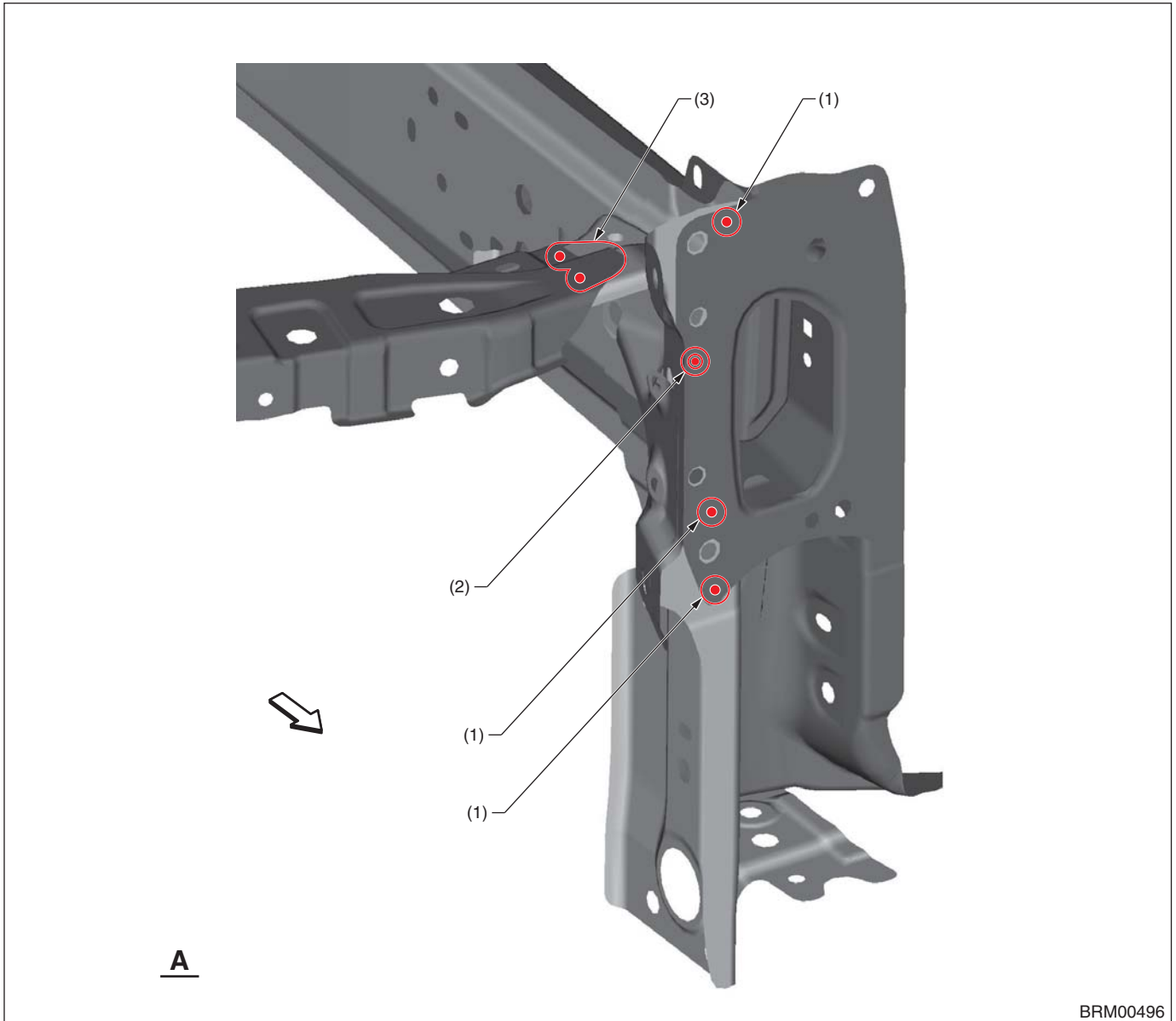
(6) 11 points (outside - 1)

(9) Cut position where the damage is large



# Panel Replacement

## • Views A



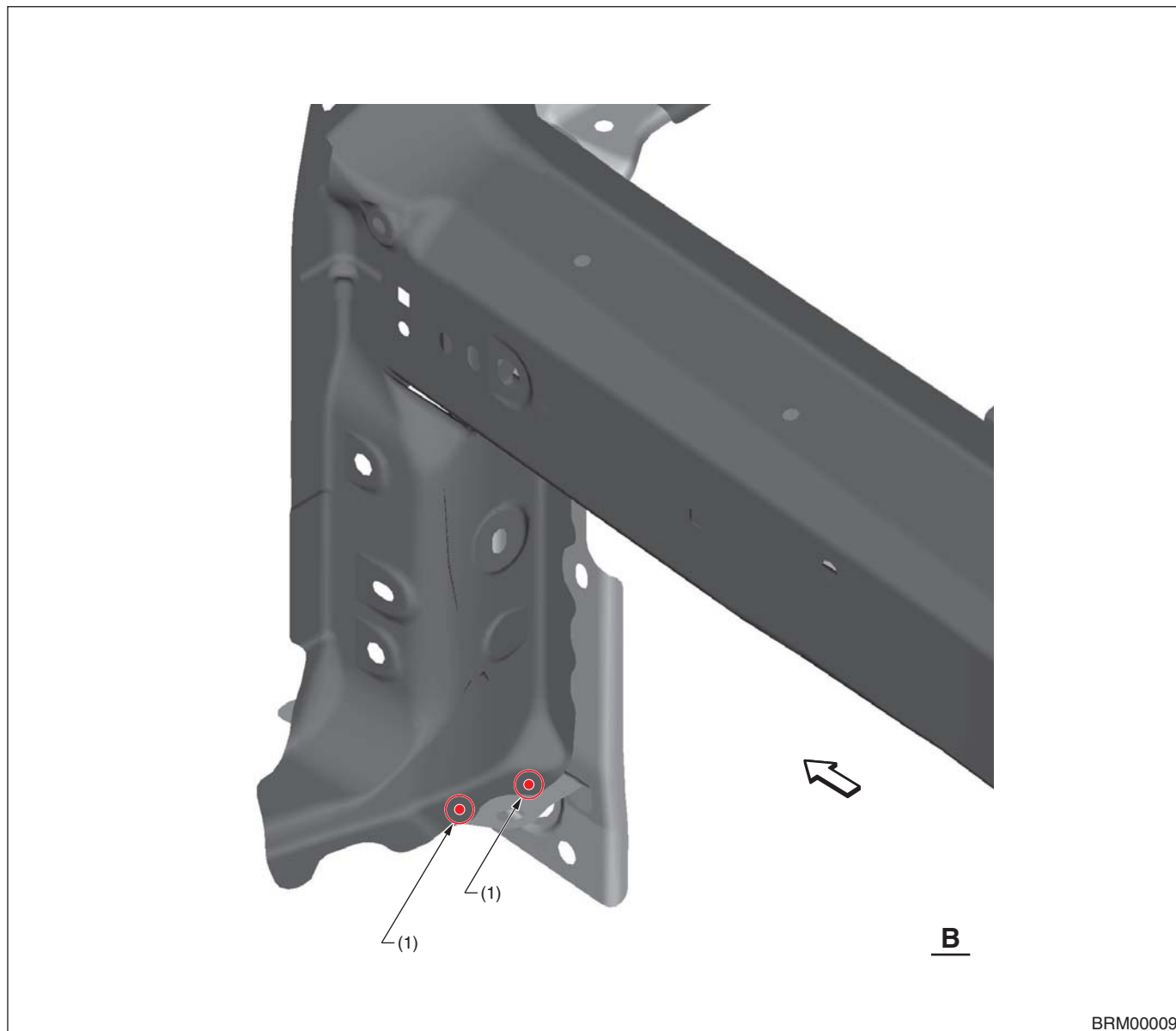
(1) 1 point (outside · 1)

(2) 1 point (outside · 2)

(3) 3 points (top · 1)

## Panel Replacement

- Views B

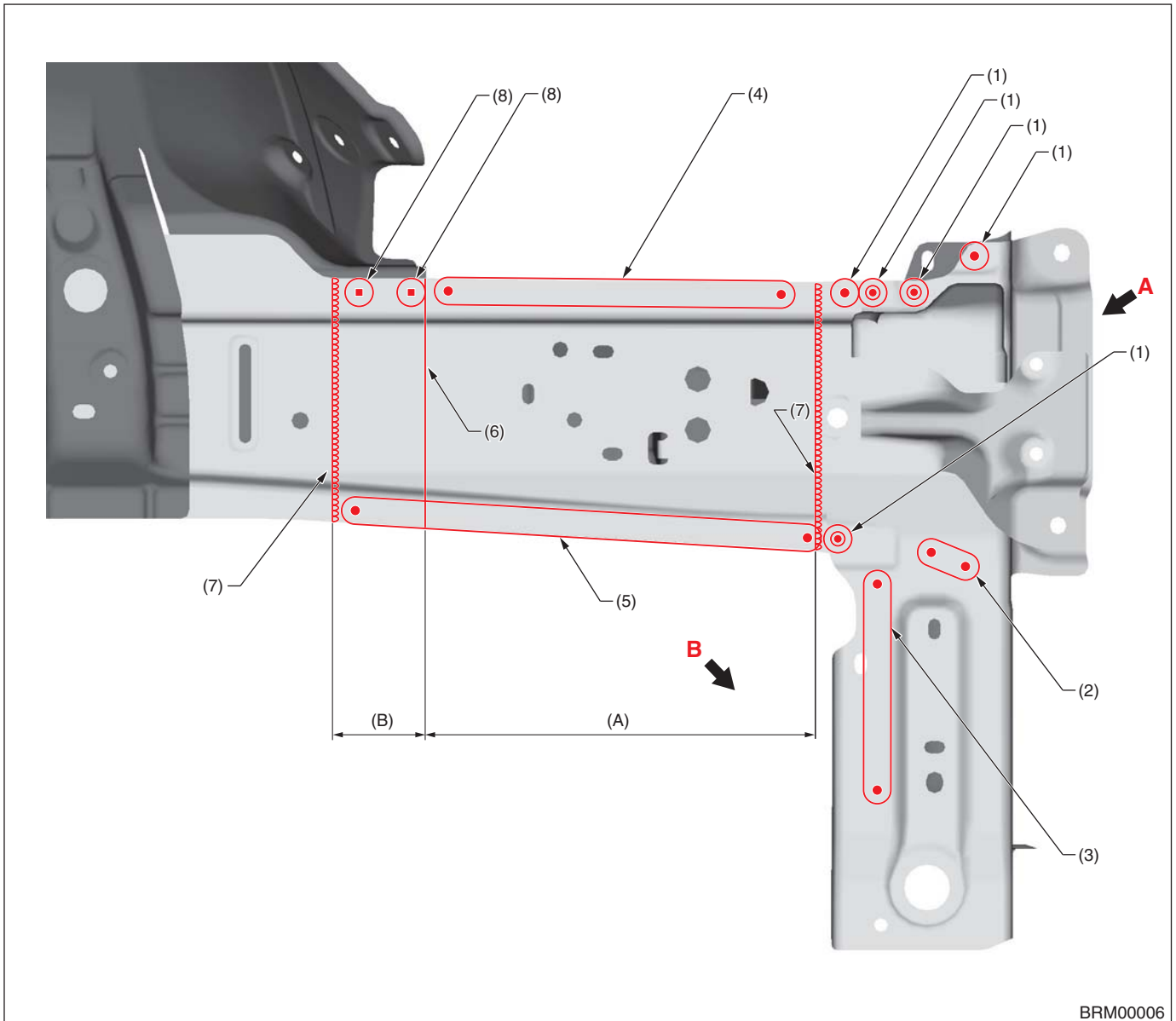


(1) 1 point (bottom · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



(A) 217 mm [8.54 in]

(B) 52 mm [2.05 in]

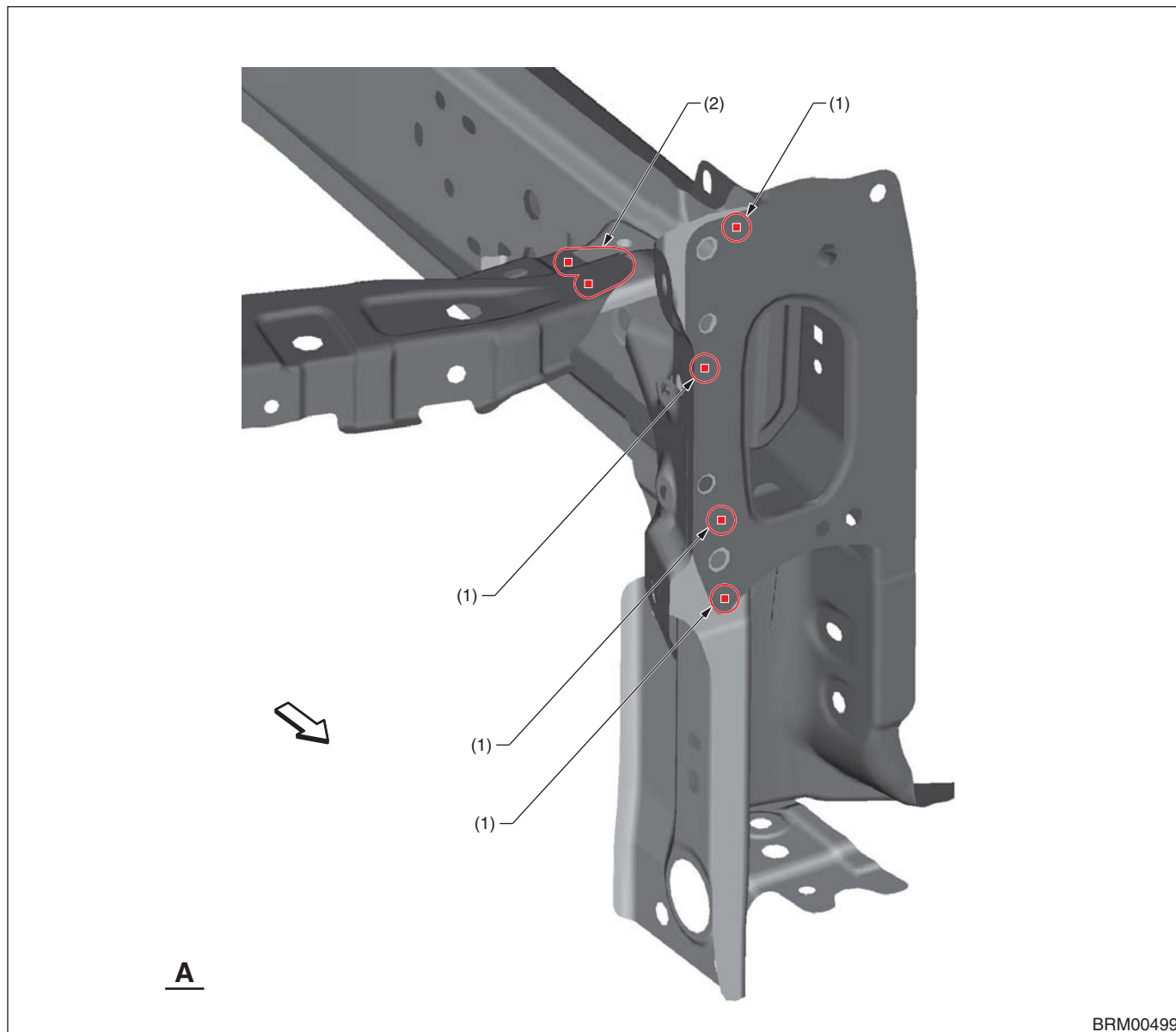
- (1) 1 point
- (2) 2 points
- (3) 5 points

- (4) 7 points
- (5) 11 points
- (6) Tailored line

- (7) 1 point (continuous welding)
- (8) 1 point (service)

# Panel Replacement

## • Views A

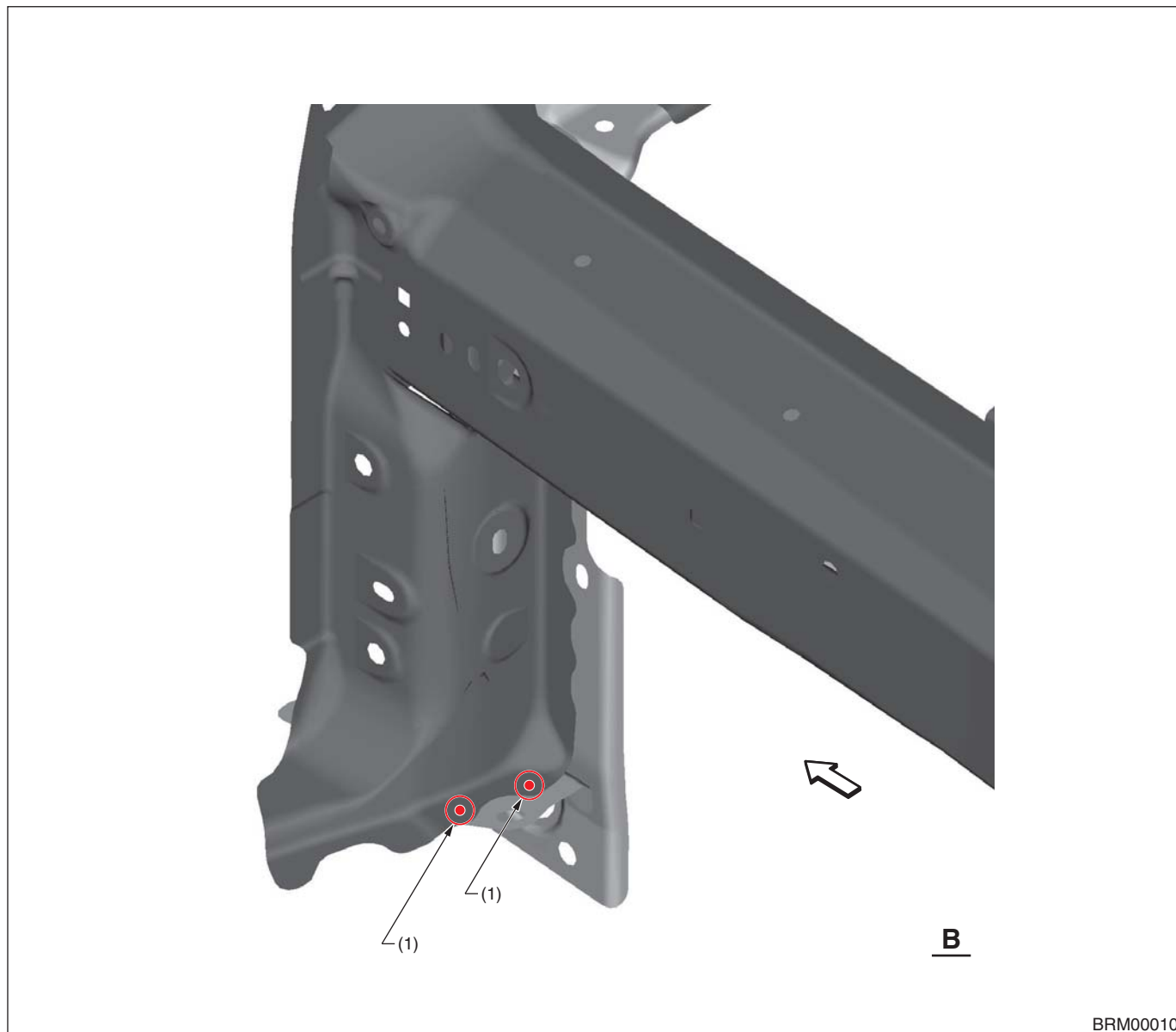


(1) 1 point

(2) 3 points

## Panel Replacement

- Views B



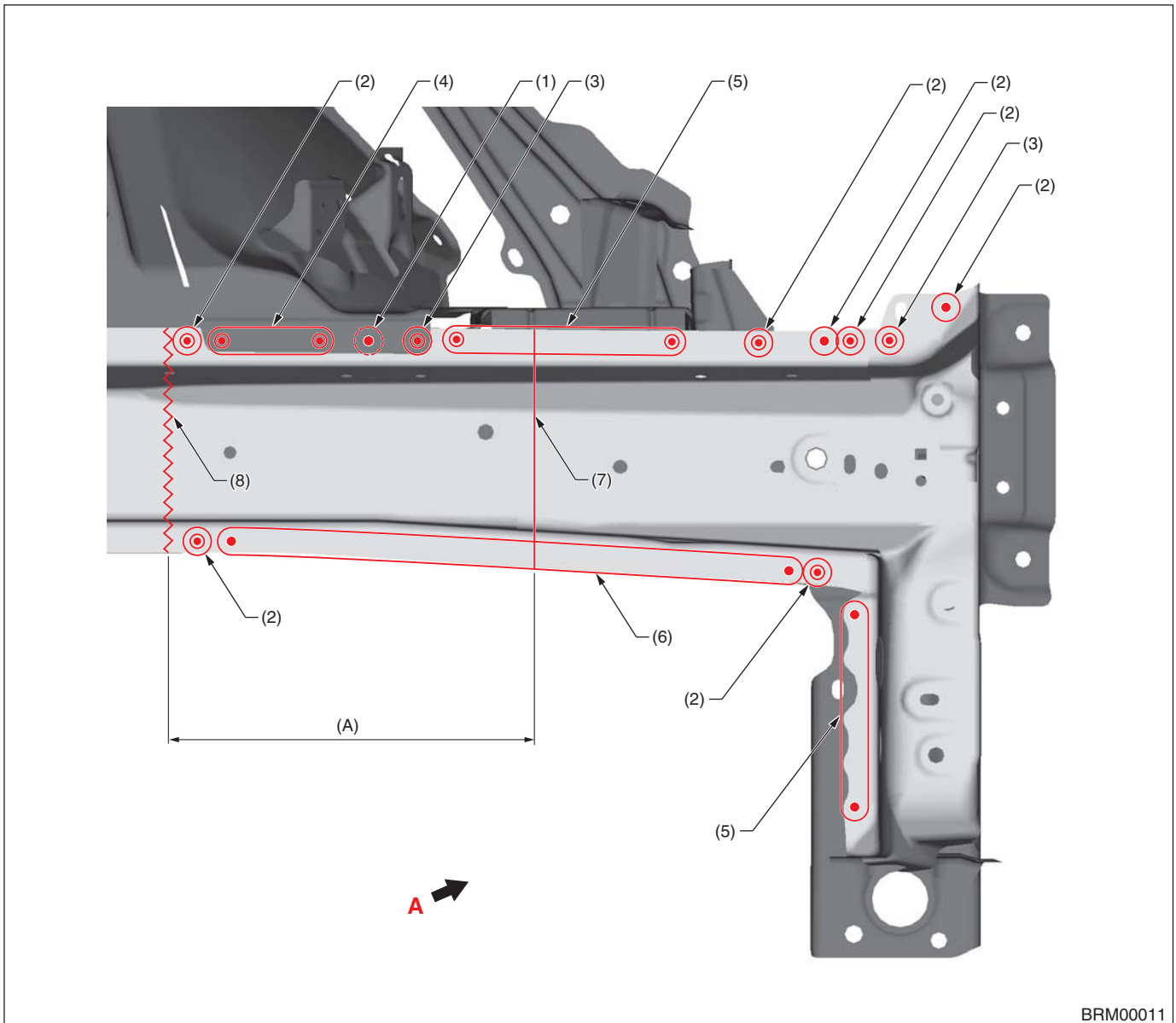
(1) 1 point

## Panel Replacement

### 8-8. Front Side Frame LH (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00011

(A) 225 mm [8.86 in]

(1) 1 point (outside - 1)

(2) 1 point (inside - 1)

(3) 1 point (inside - 2)

(4) 3 points (inside - 2)

(5) 5 points (inside - 1)

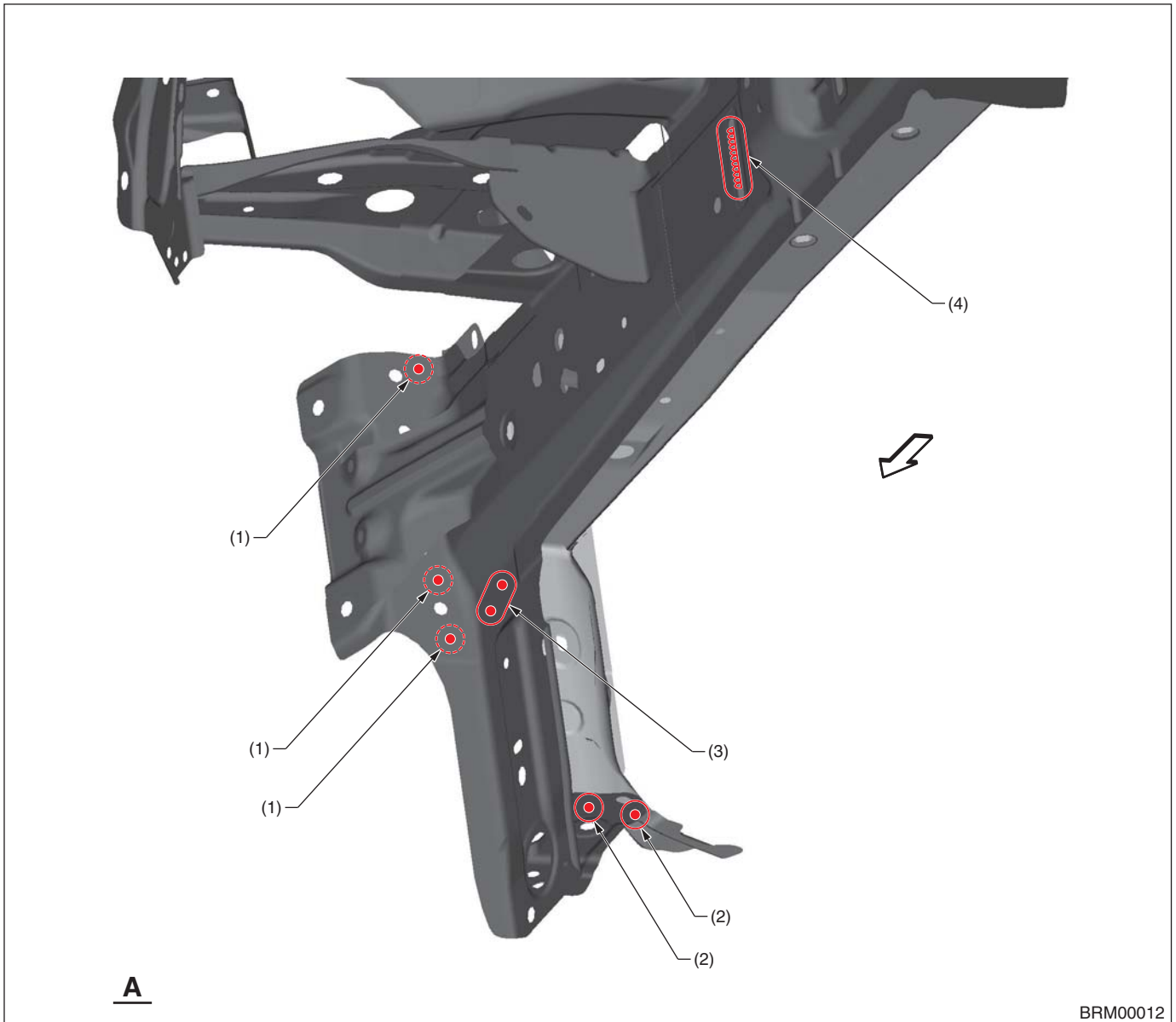
(6) 14 points (inside - 1)

(7) Tailored line

(8) Cut position

# Panel Replacement

## • Views A



- (1) 1 point (outside · 1)
- (2) 1 point (top · 1)

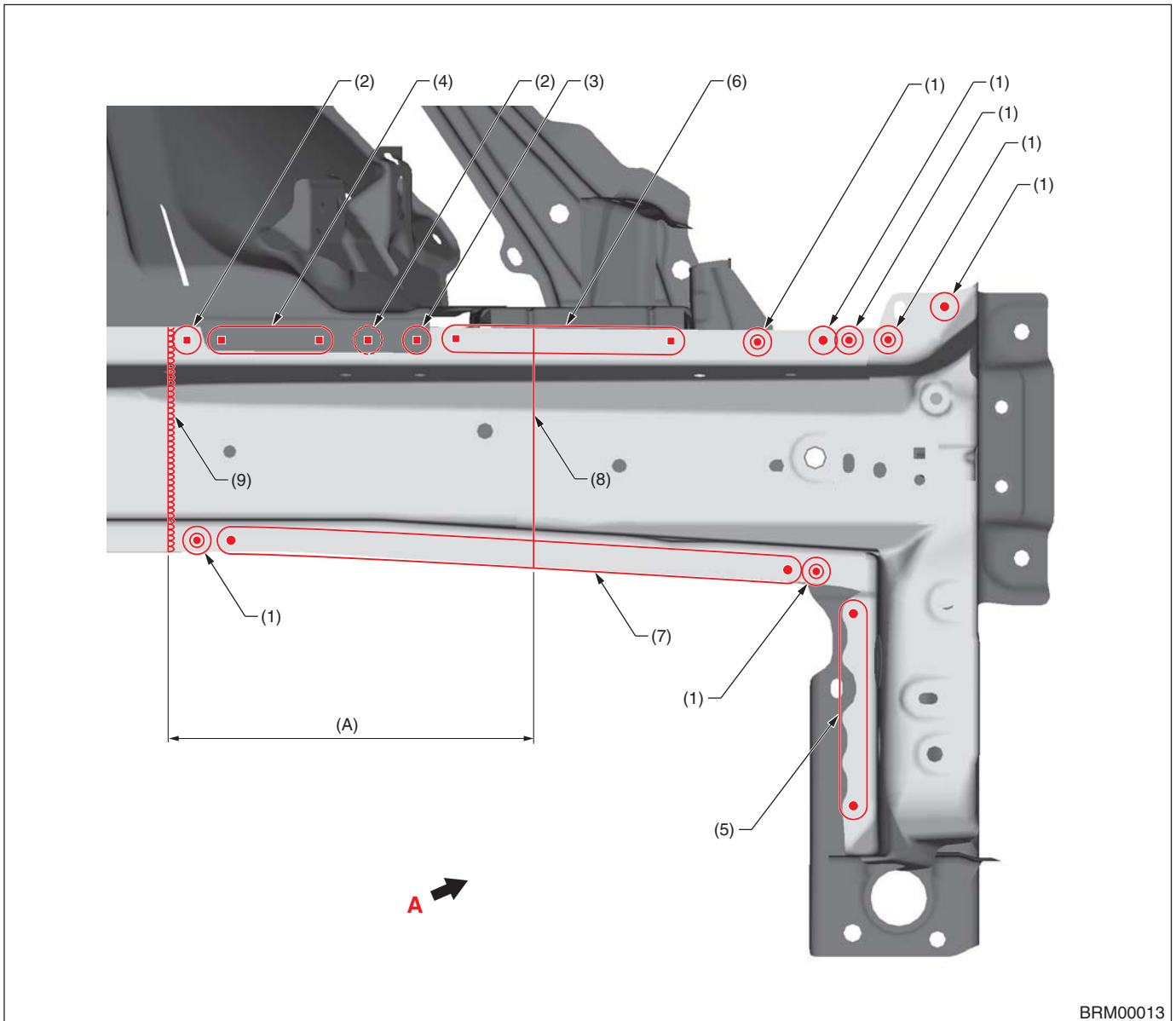
- (3) 2 points (outside · 1)

- (4) 1 point (outside · 1 belt sander)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00013

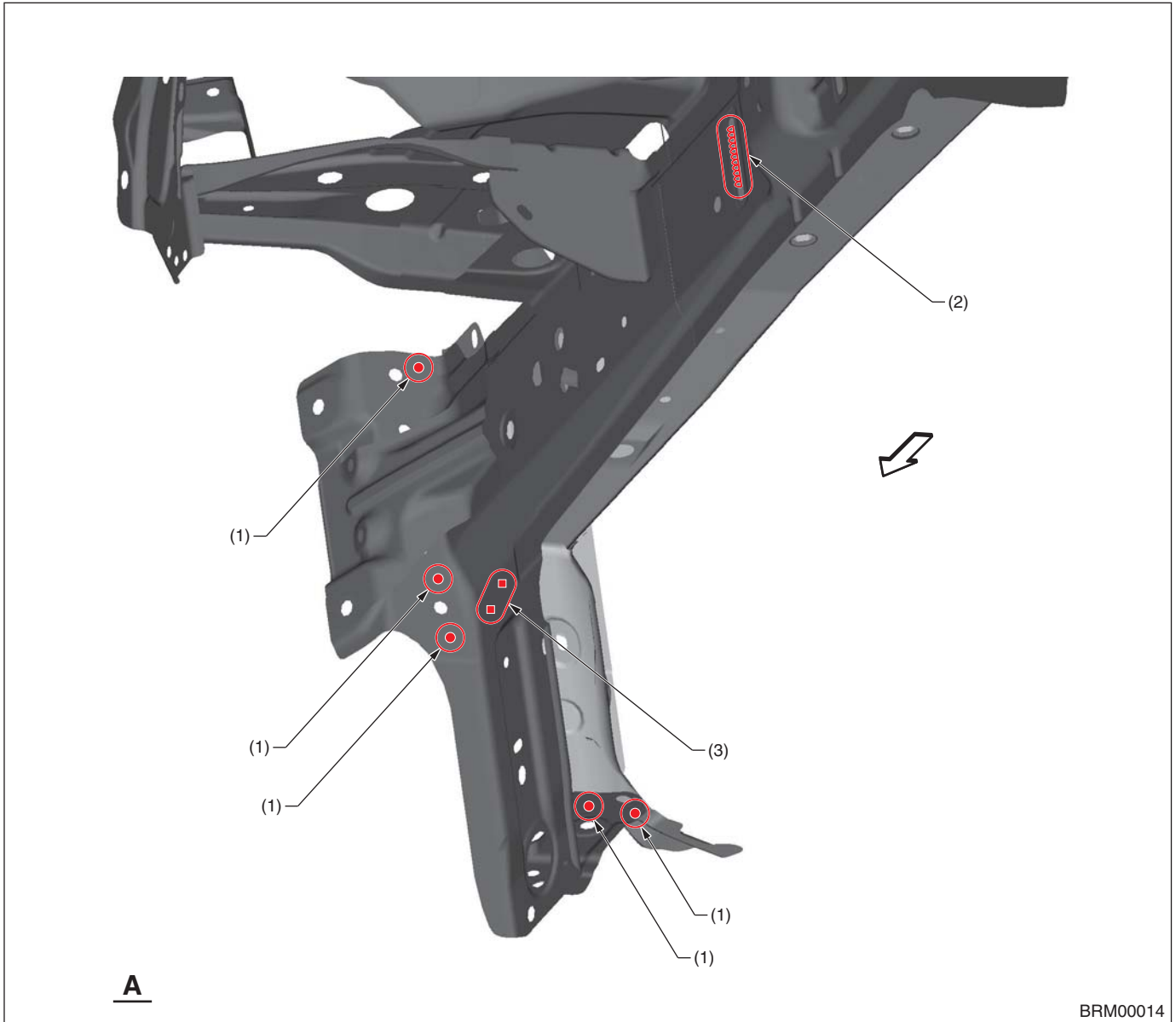
(A) 225 mm [8.86 in]

- |                                 |                                  |                                  |
|---------------------------------|----------------------------------|----------------------------------|
| (1) 1 point                     | (4) 3 points (service · service) | (7) 14 points                    |
| (2) 1 point (service)           | (5) 5 points                     | (8) Tailored line                |
| (3) 1 point (service · service) | (6) 5 points (service)           | (9) 1 point (continuous welding) |



# Panel Replacement

## • Views A



(1) 1 point

(2) 1 point (continuous welding)  
40 mm [1.57 in]

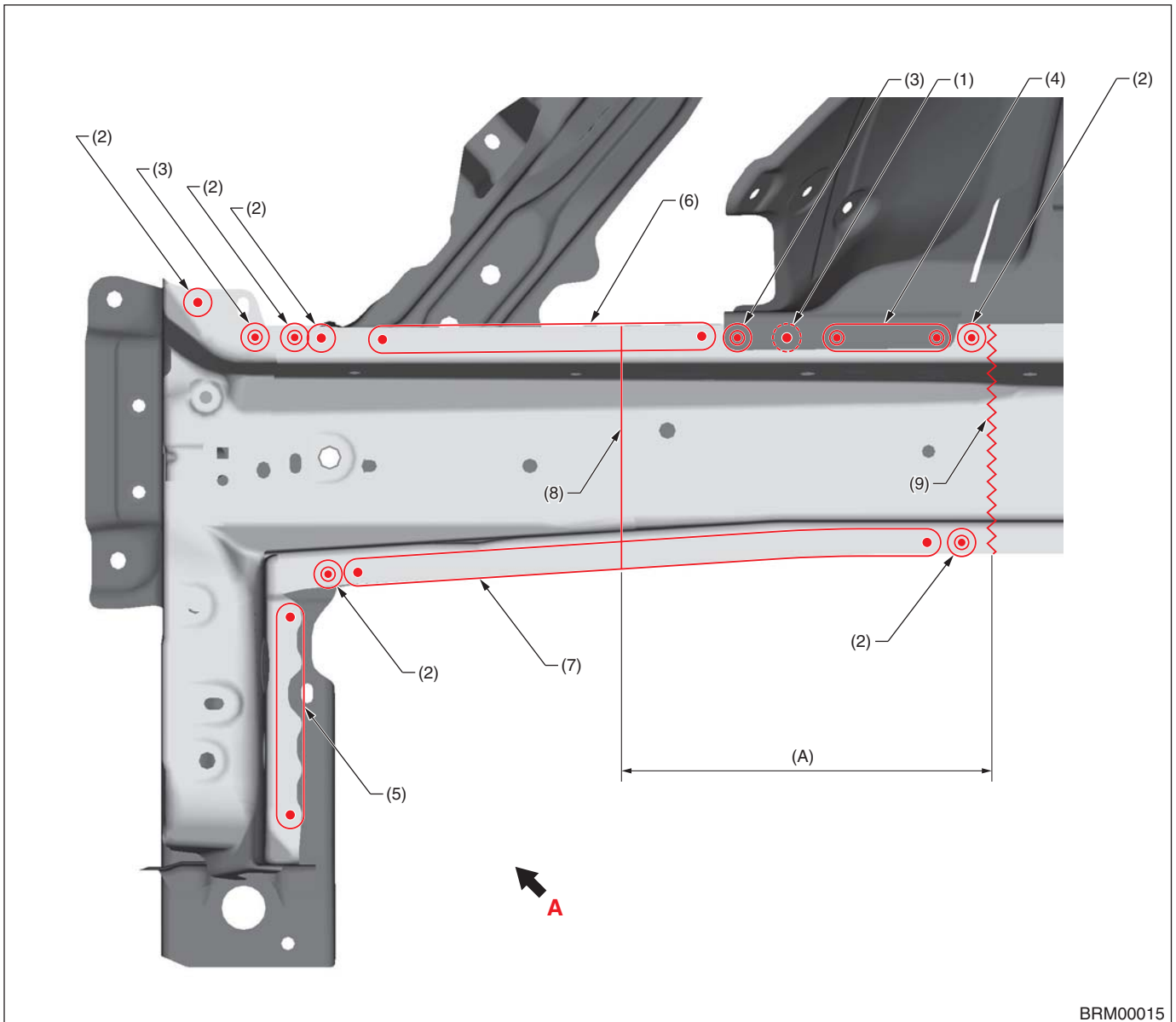
(3) 2 points

## Panel Replacement

### 8-9. Front Side Frame RH (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00015

(A) 225 mm [8.86 in]

(1) 1 point (outside · 1)

(2) 1 point (inside · 1)

(3) 1 point (inside · 2)

(4) 3 points (inside · 2)

(5) 5 points (inside · 1)

(6) 7 points (inside · 1)

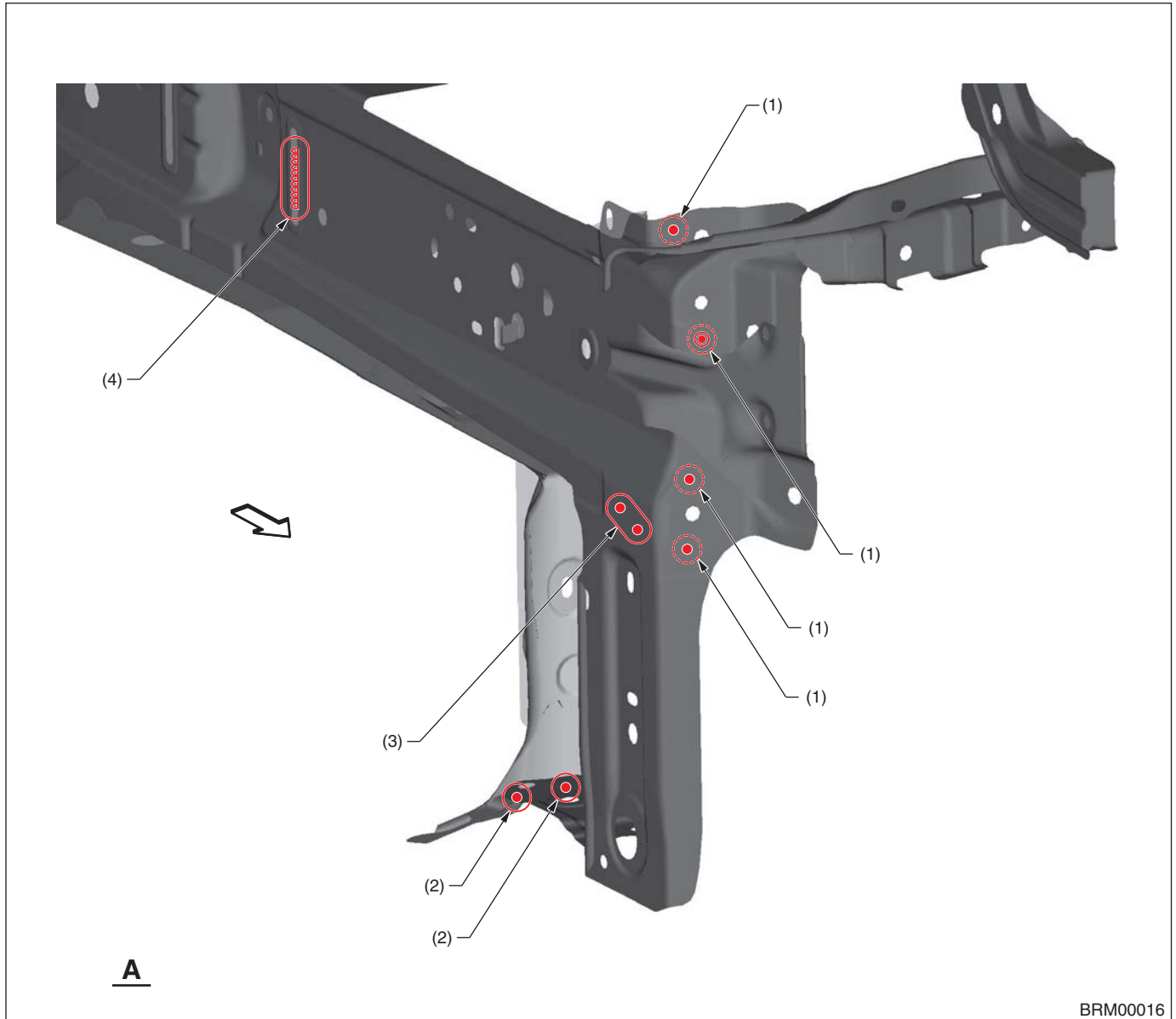
(7) 14 points (inside · 1)

(8) Tailored line

(9) Cut position

# Panel Replacement

## • Views A



(1) 1 point (outside - 1)  
(2) 1 point (top - 1)

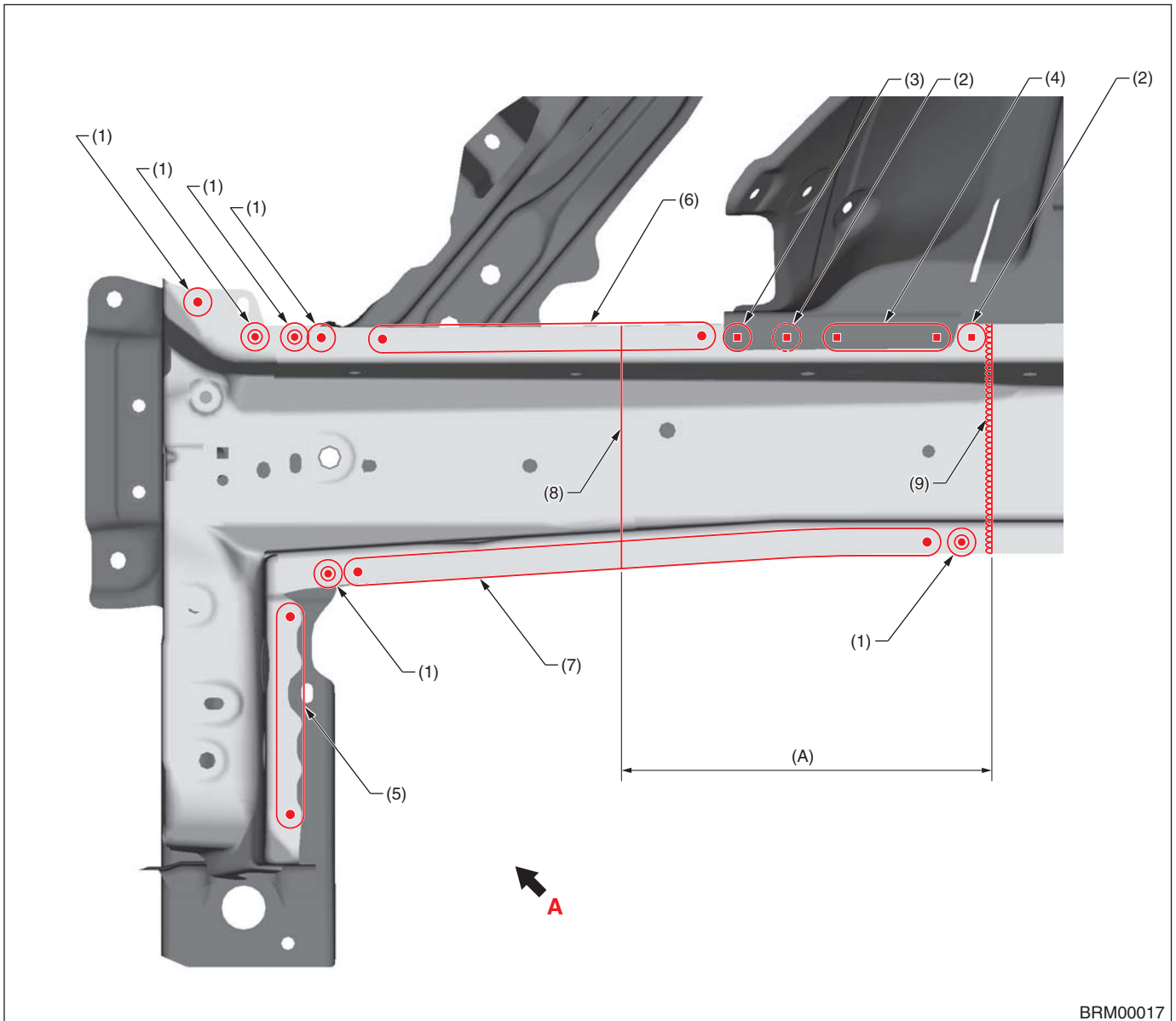
(3) 2 points (outside - 1)

(4) 1 point (outside - 1 belt sander)

# Panel Replacement

## B: INSTALLATION

### • Overall view



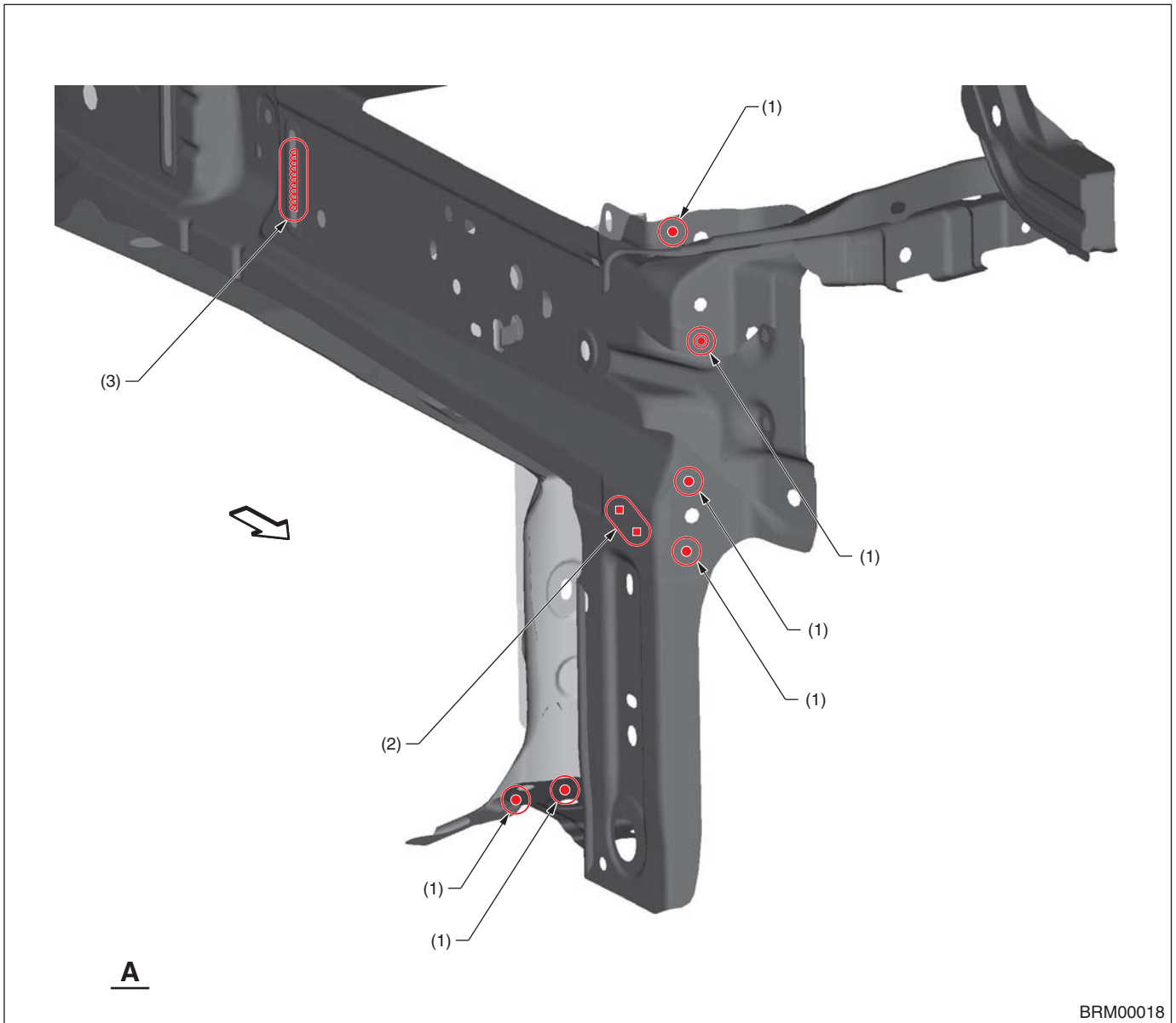
BRM00017

(A) 225 mm [8.86 in]

- |                                 |                                  |                                  |
|---------------------------------|----------------------------------|----------------------------------|
| (1) 1 point                     | (4) 3 points (service · service) | (7) 14 points                    |
| (2) 1 point (service)           | (5) 5 points                     | (8) Tailored line                |
| (3) 1 point (service · service) | (6) 7 points                     | (9) 1 point (continuous welding) |

# Panel Replacement

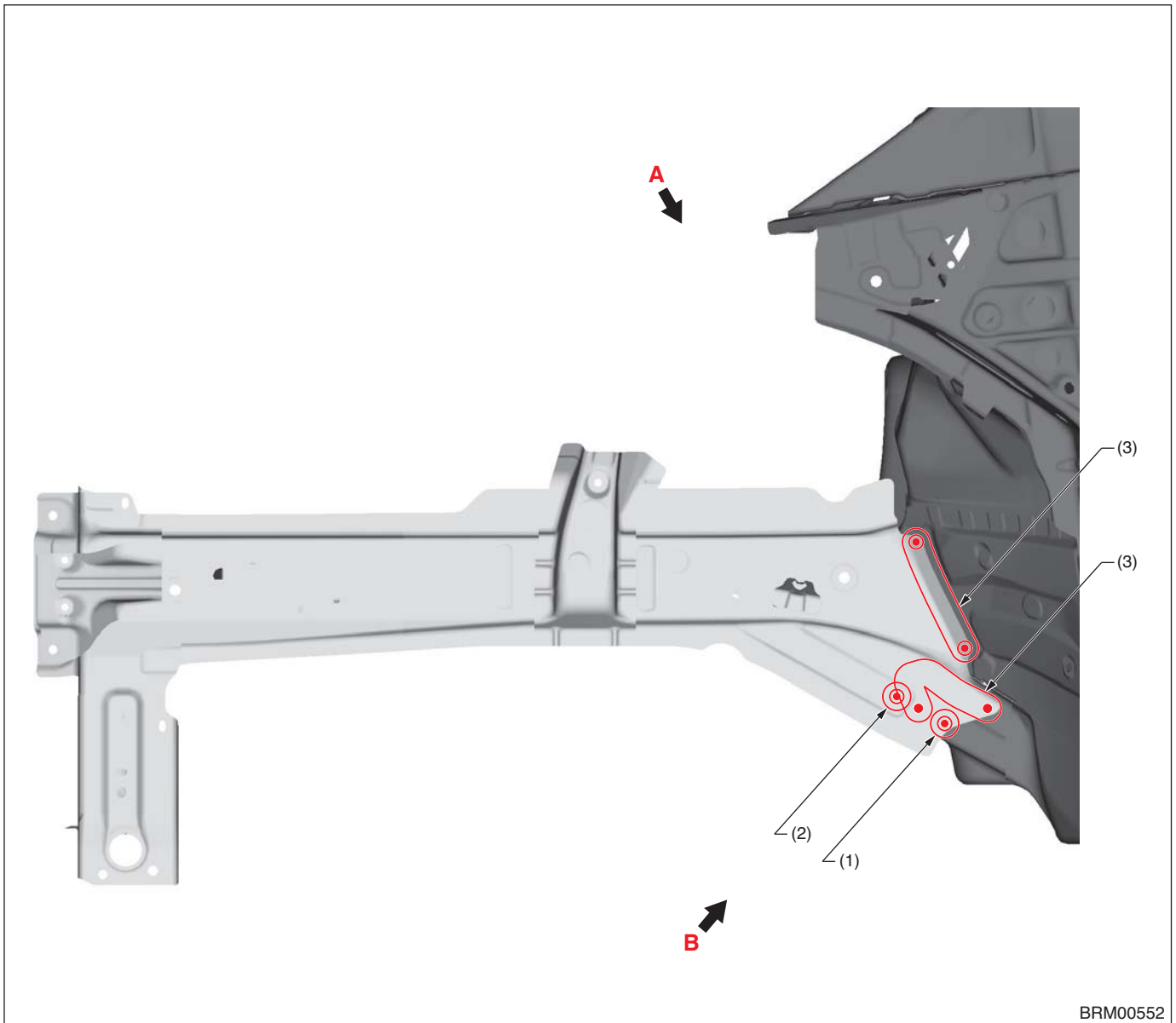
## • Views A



### 8-10. Front Side Frame (total replacement)

#### A: REMOVAL

##### • Overall view



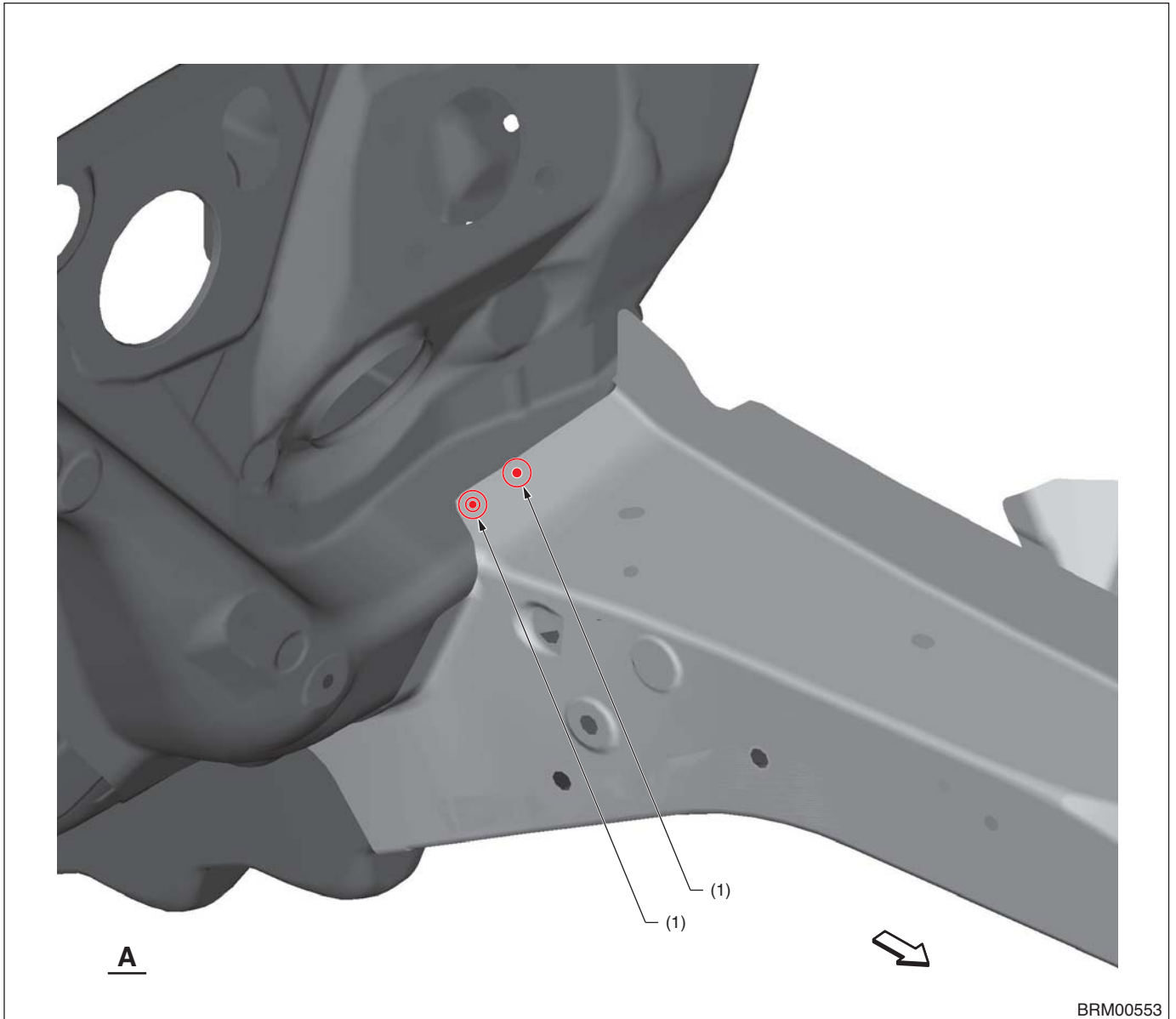
(1) 1 point (outside · 1)

(2) 1 point (outside · 2)

(3) 5 points (outside · 1)

# Panel Replacement

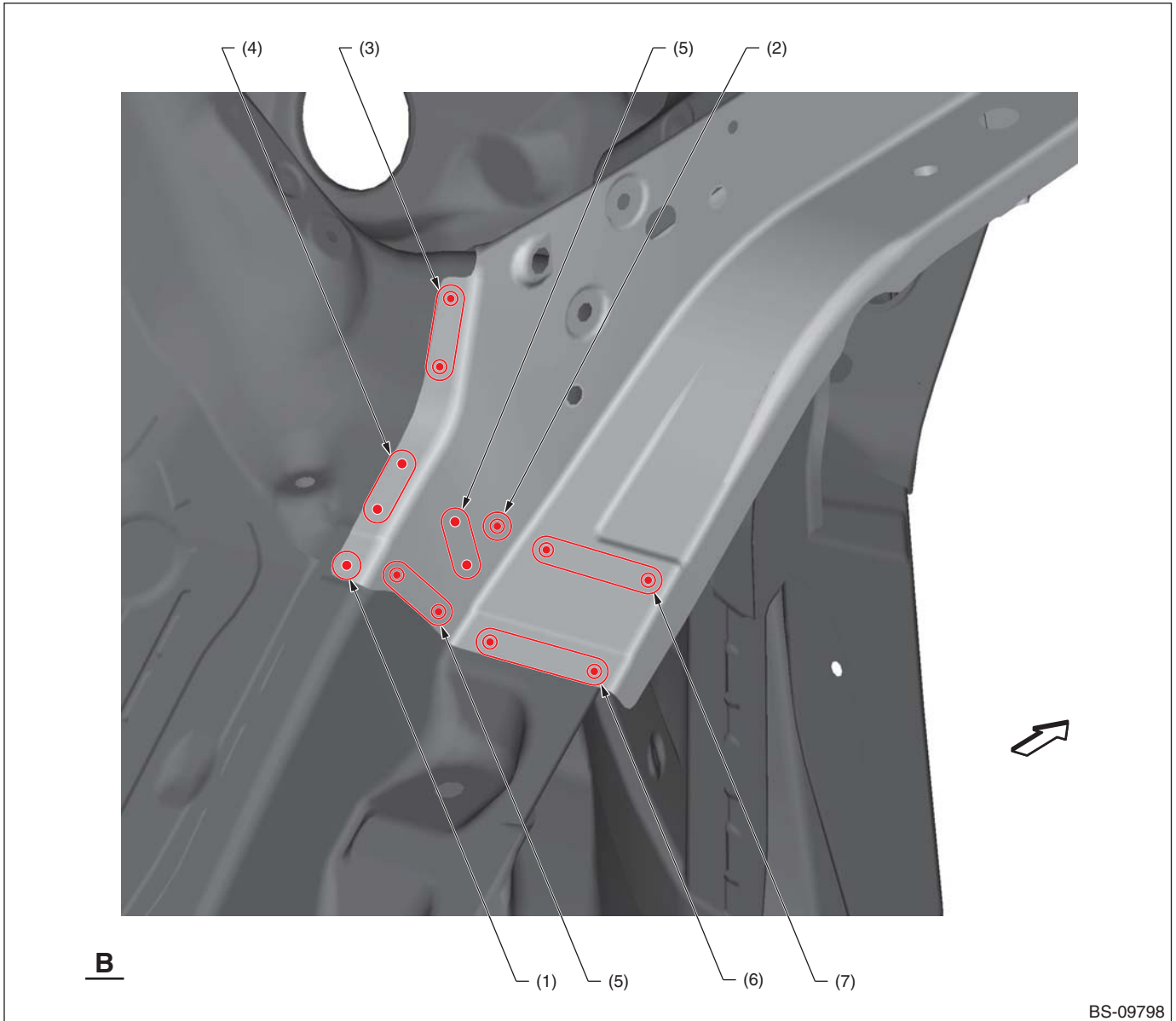
## • Views A



(1) 1 point (top · 1)

# Panel Replacement

## • Views B



- (1) 1 point (bottom · 1)
- (2) 1 point (inside · 2)
- (3) 2 points (outside · 1)

- (4) 2 points (bottom · 1)
- (5) 2 points (inside · 1)
- (6) 3 points (bottom · 1)

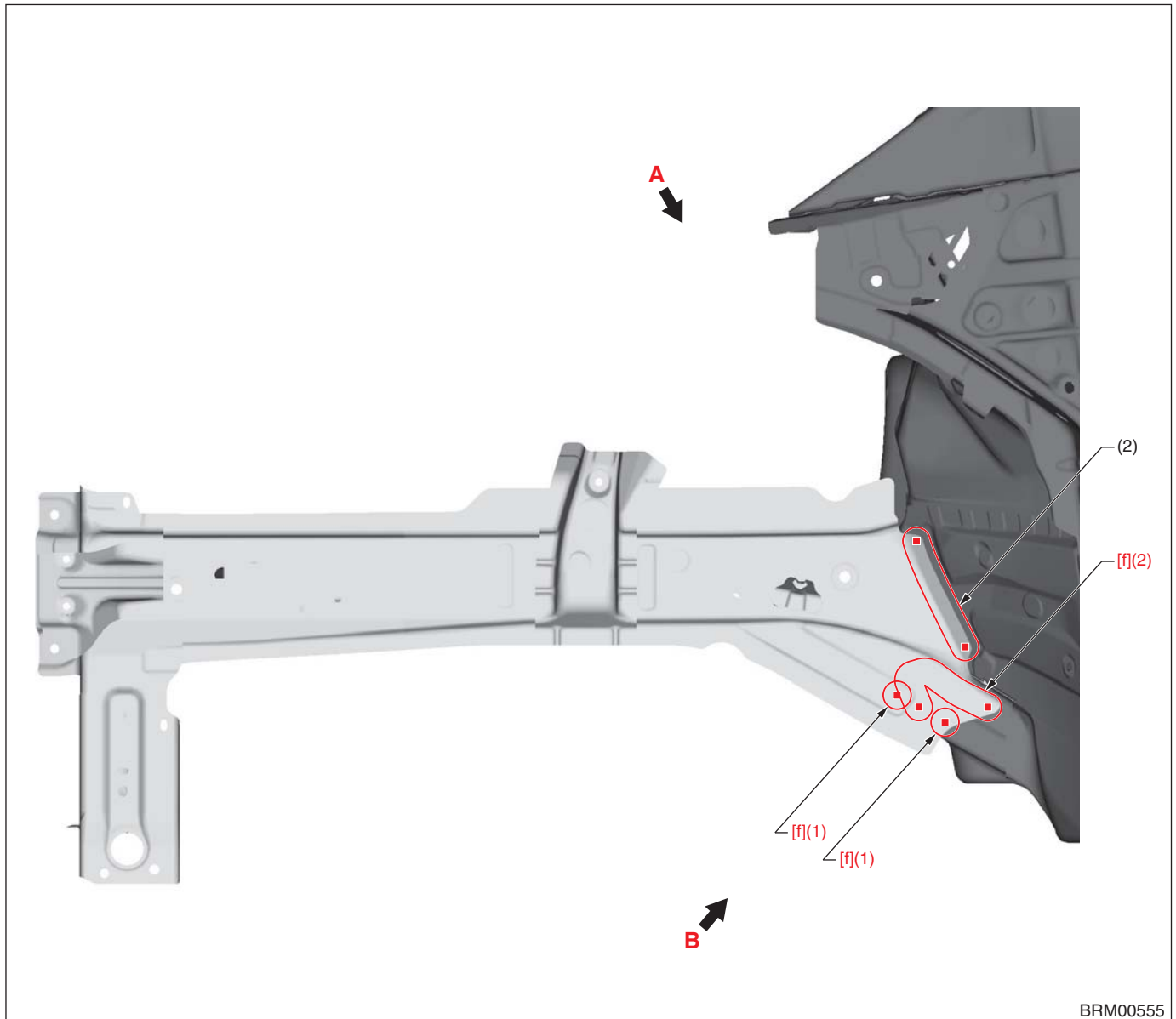
- (7) 3 points (bottom · 2)



# Panel Replacement

## B: INSTALLATION

### • Overall view



(1) 1 point (service)

(2) 5 points (service)

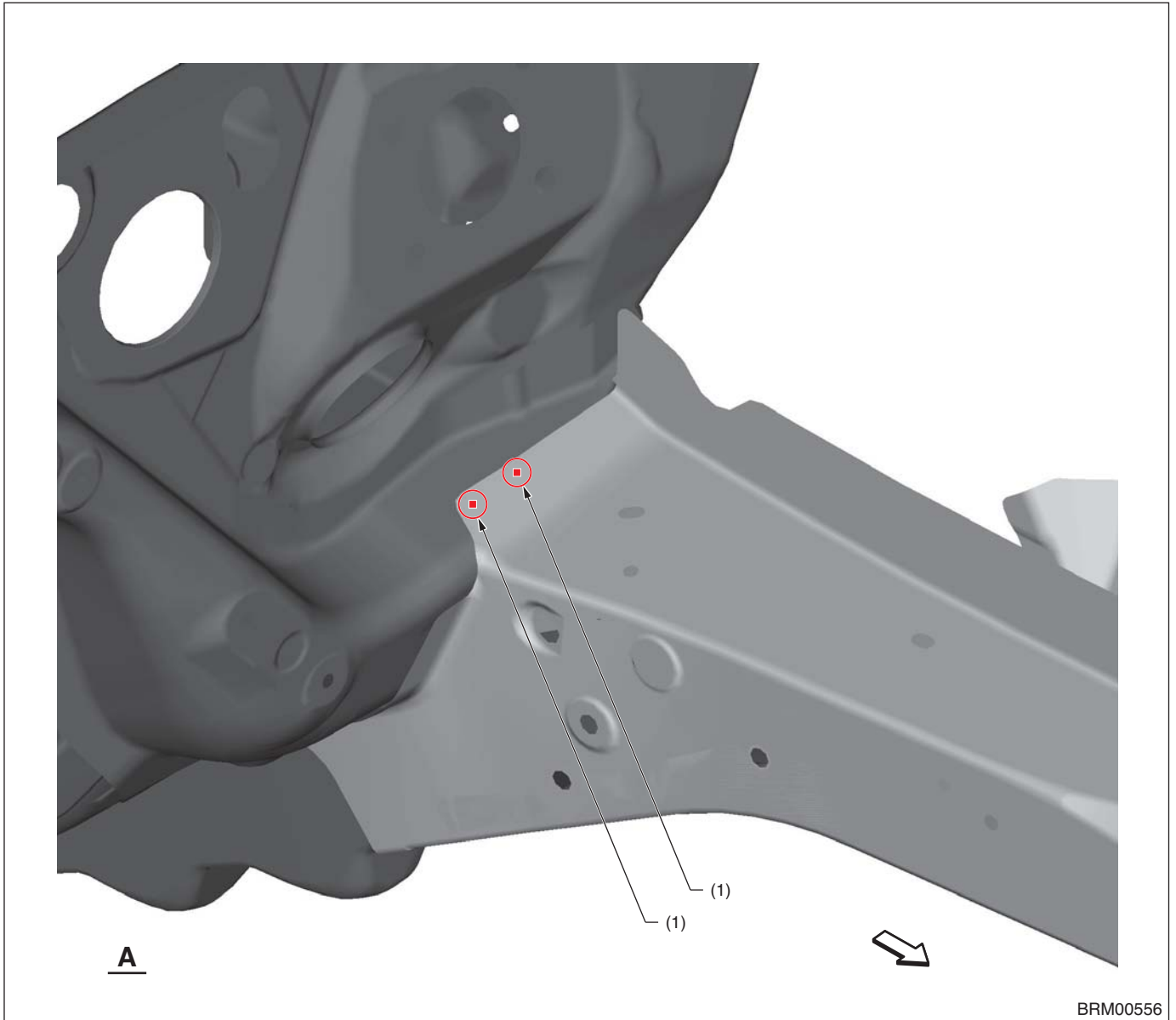
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

## Panel Replacement

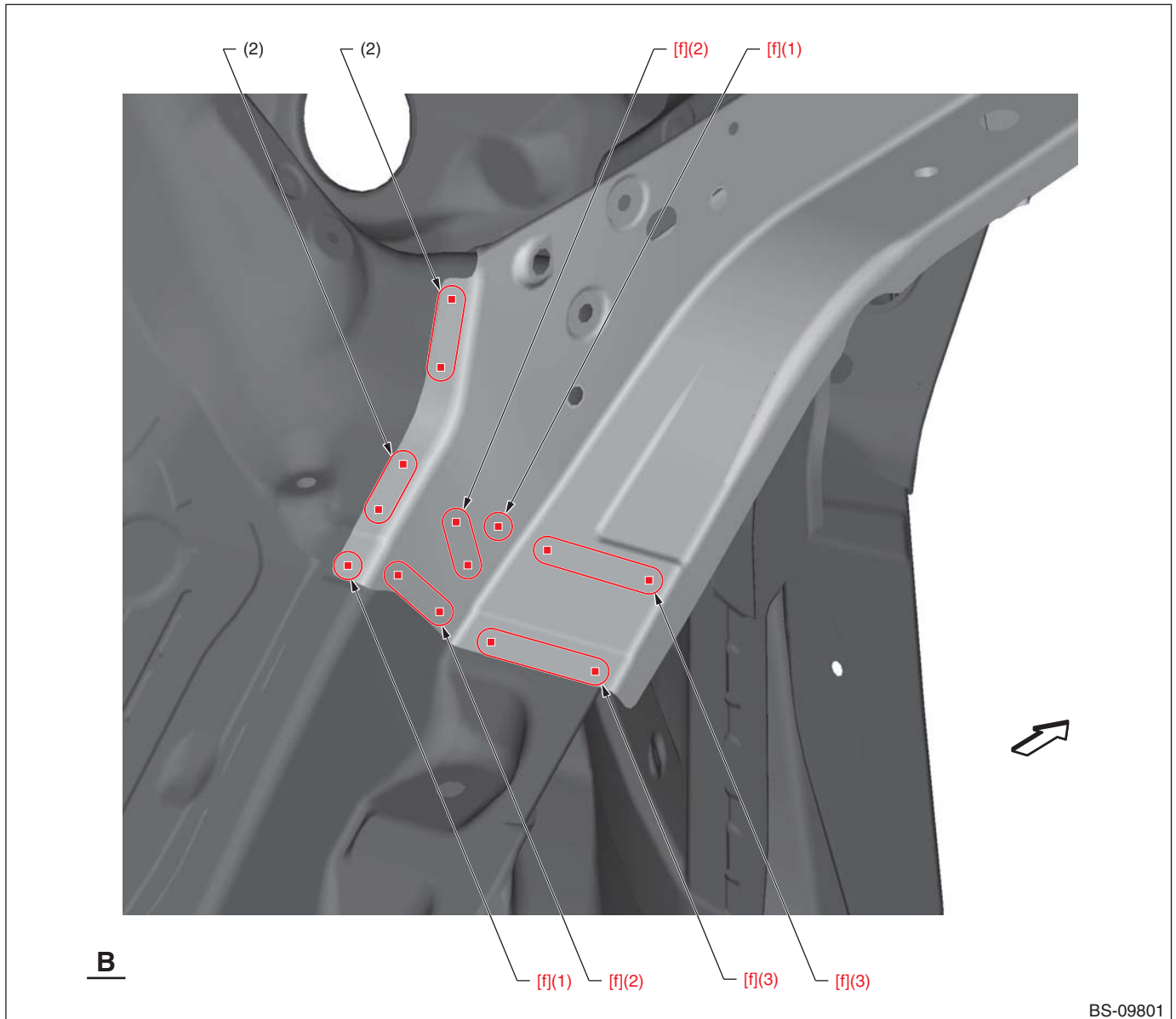
- Views A



(1) 1 point (service)

# Panel Replacement

## • Views B



(1) 1 point (service)

(2) 2 points (service)

(3) 3 points (service)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

## A: REMOVAL

- Overall view 1

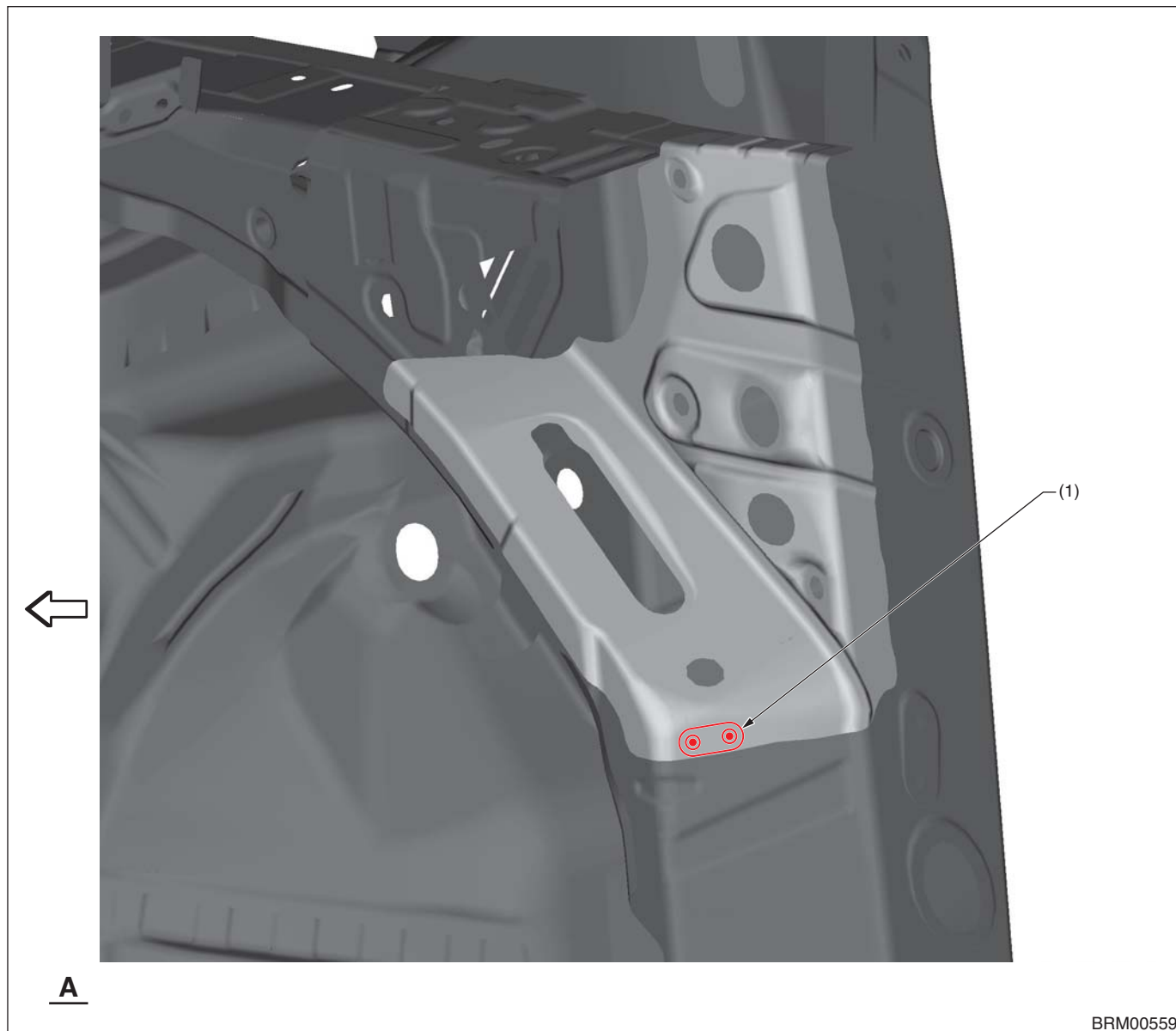
- 



- (2) 3 points (outside · 1)

## Panel Replacement

### • Views A

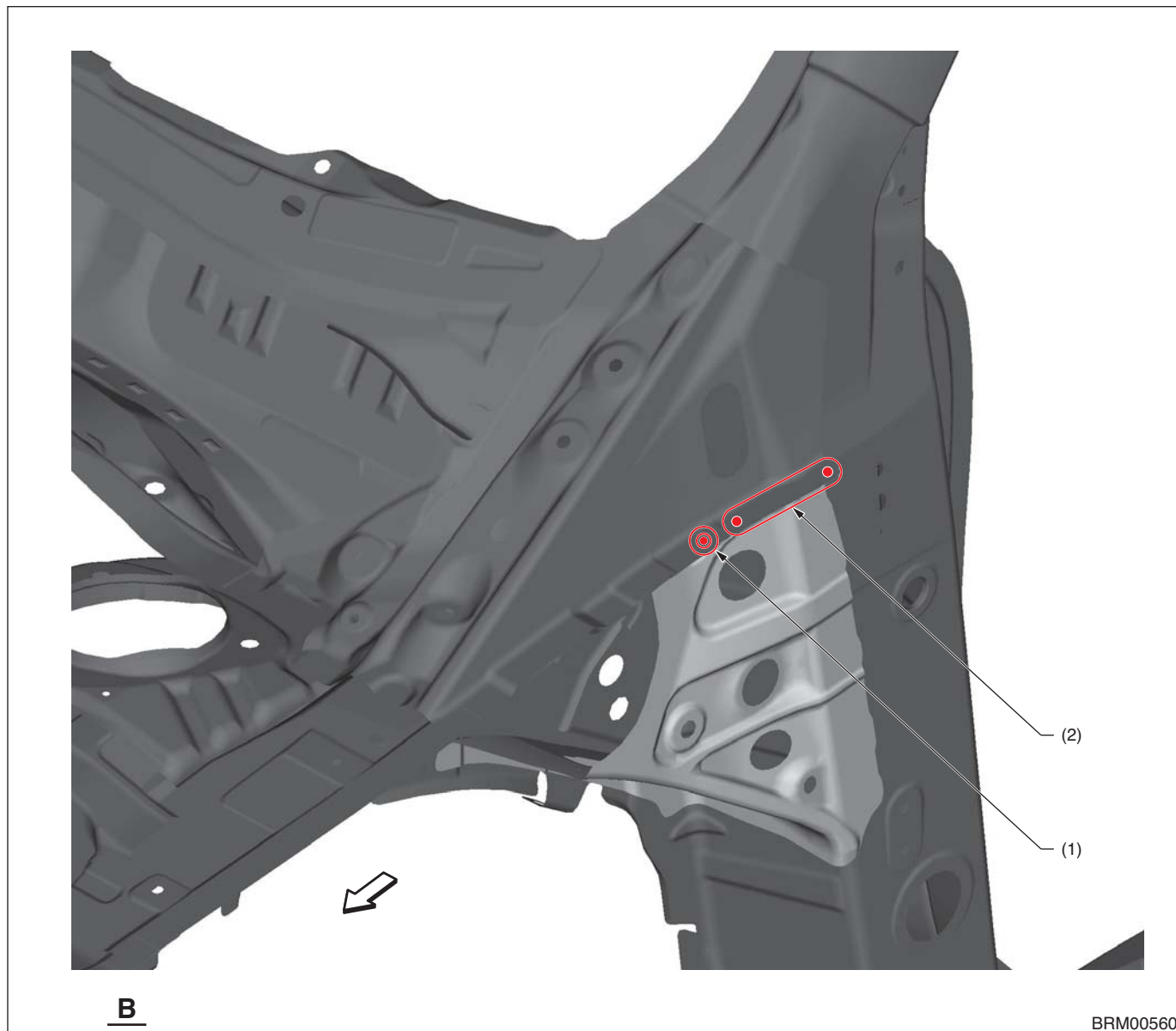


BRM00559

(1) 2 points (outside · 1)

# Panel Replacement

## • Views B

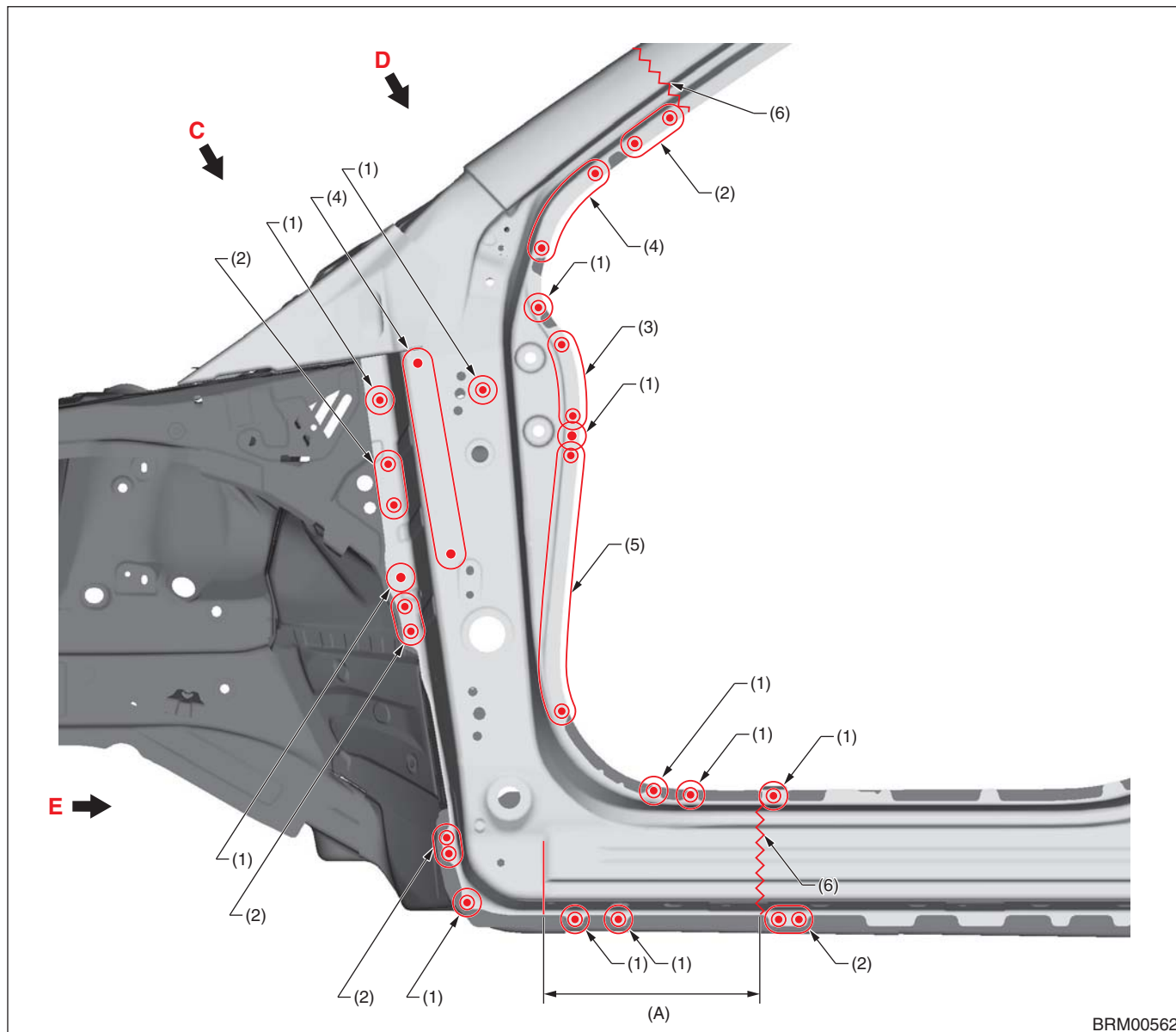


(1) 1 point (top · 2)

(2) 3 points (top · 1)

## Panel Replacement

### • Overall view 2



BRM00562

(A) 270 mm [10.63 in]

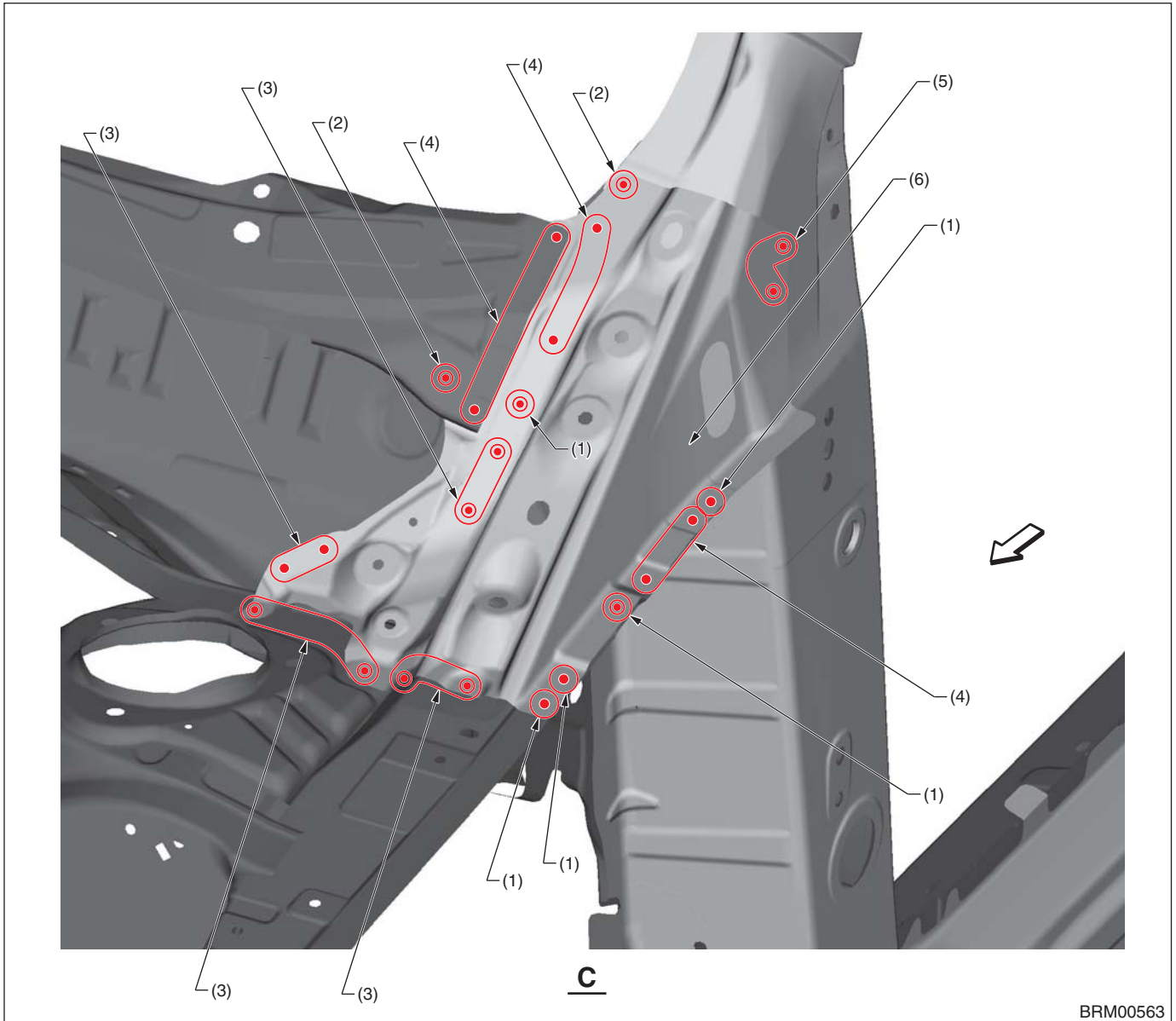
(1) 1 point (outside · 1)  
(2) 2 points (outside · 1)

(3) 3 points (outside · 1)  
(4) 5 points (outside · 1)

(5) 12 points (outside · 1)  
(6) Cut position

# Panel Replacement

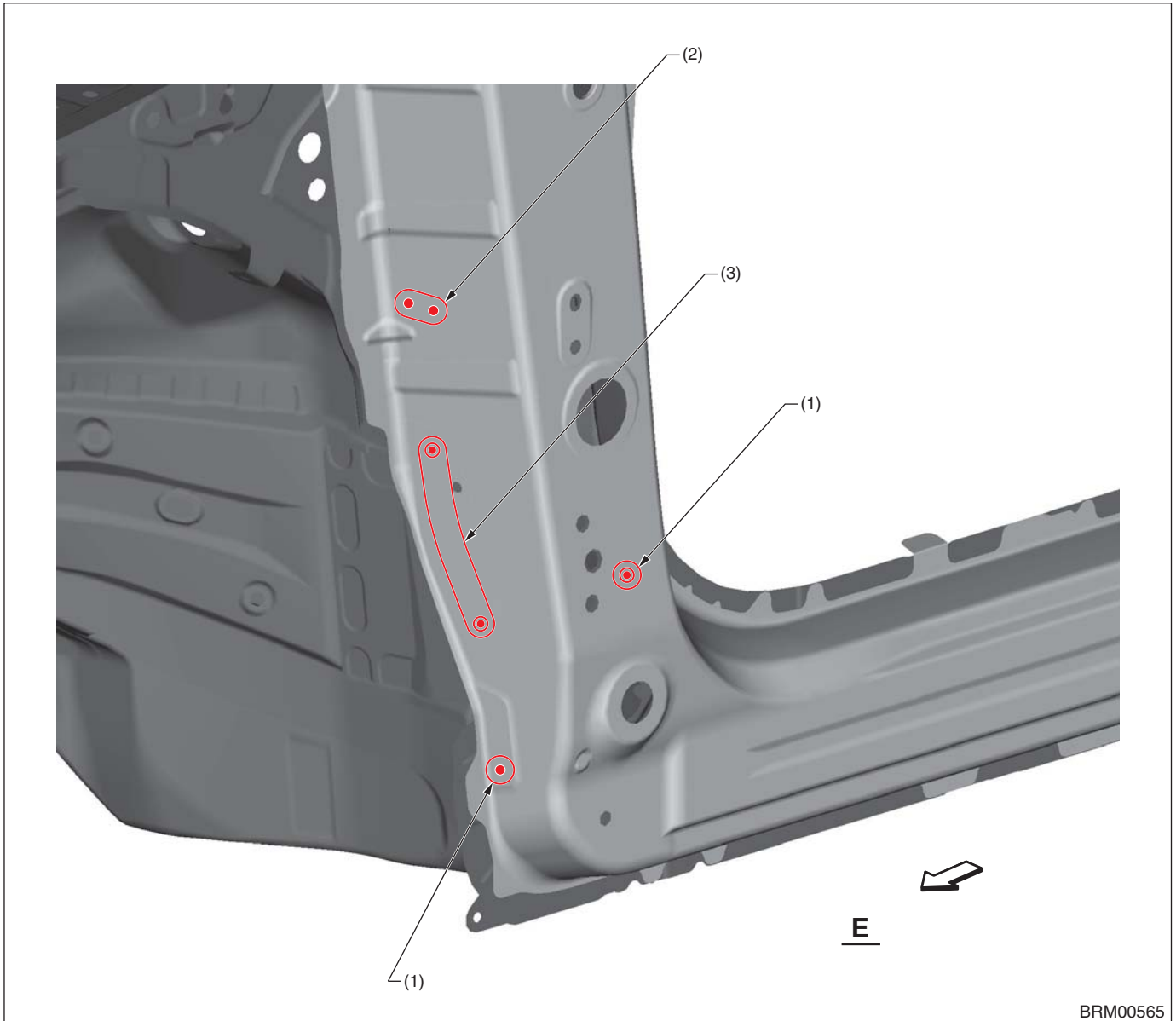
## • Views C







- **Views E**



(1) 1 point (outside · 1)

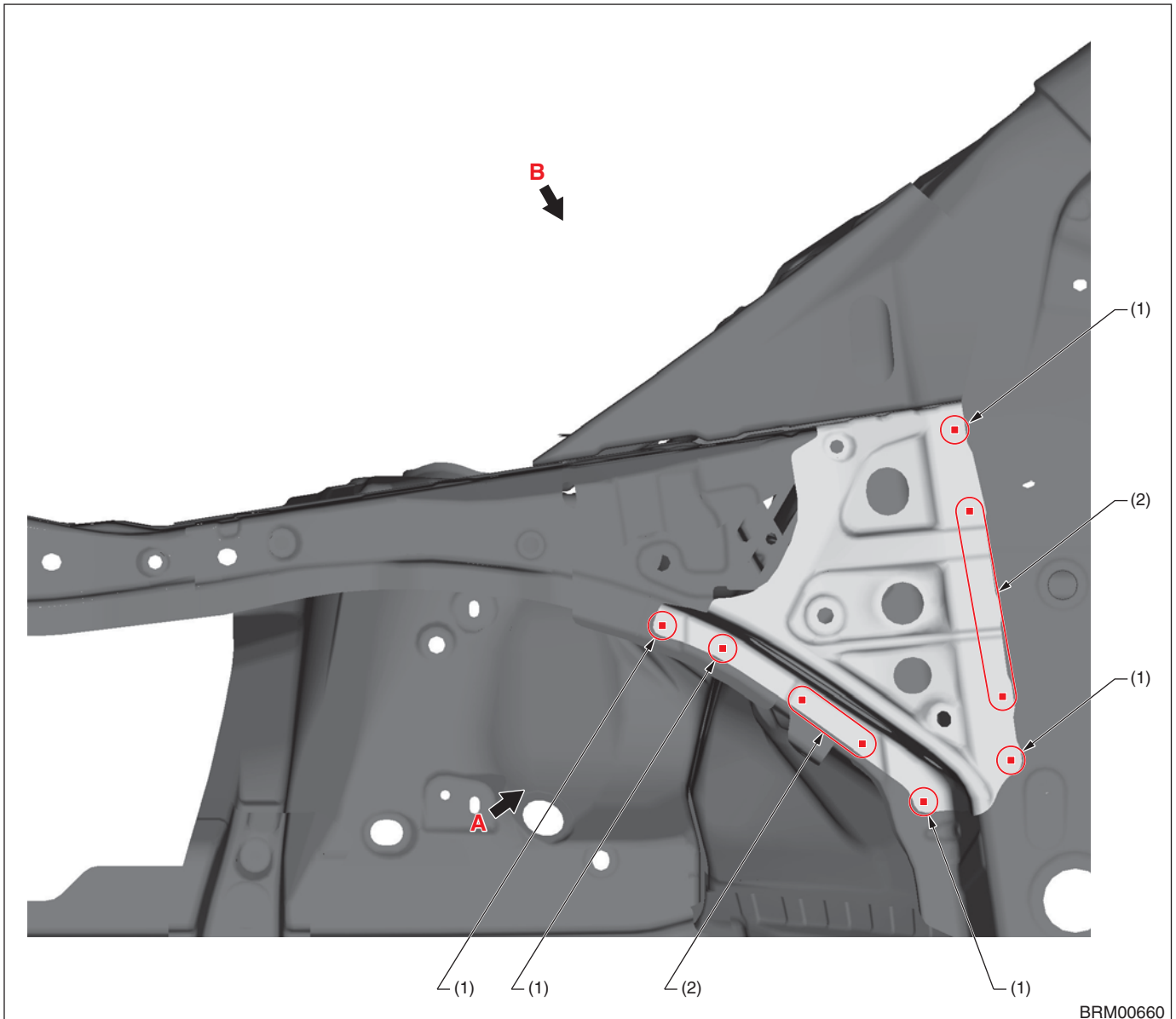
(2) 2 points (outside · 1)

(3) 3 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view 1

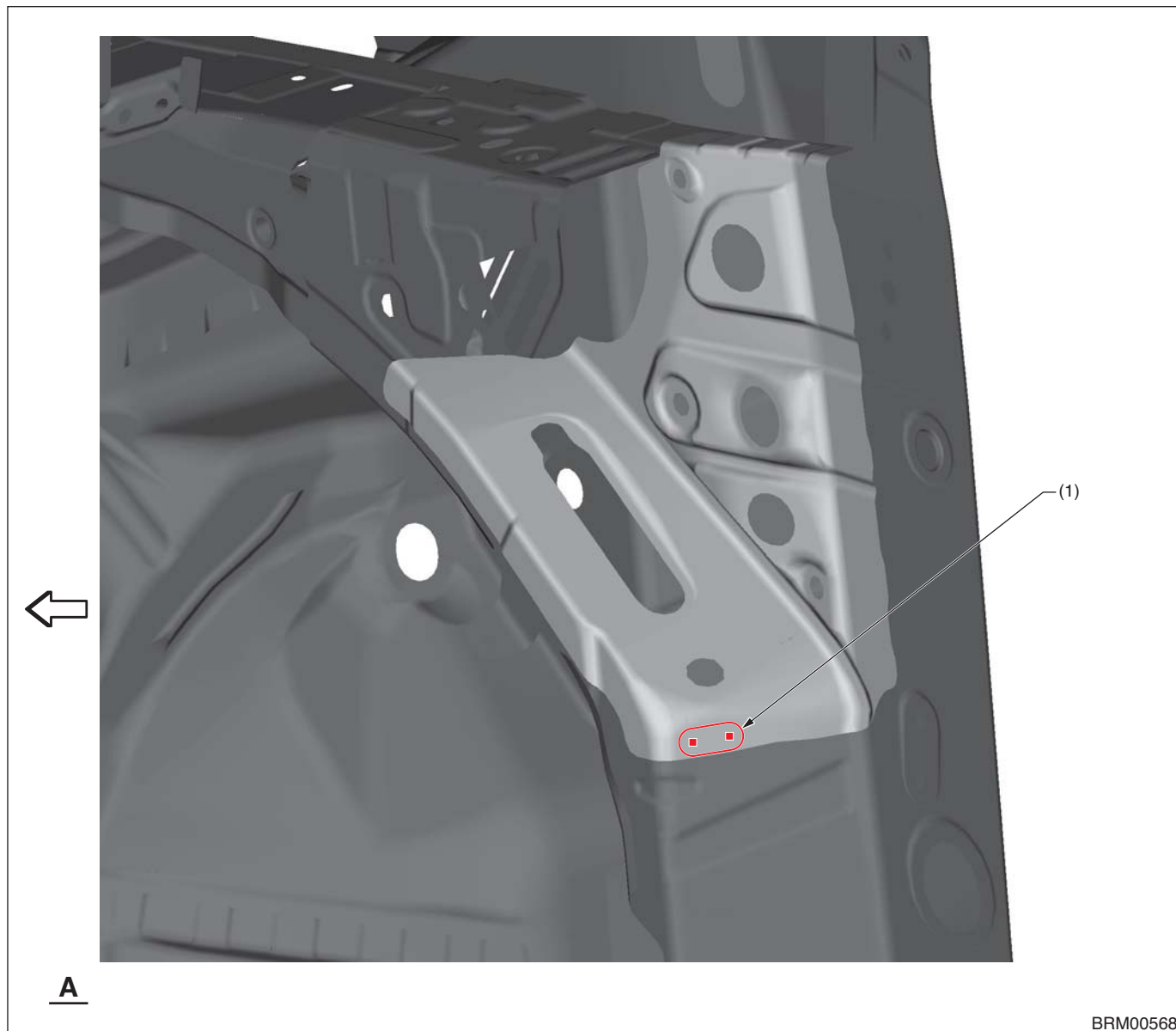


(1) 1 point (service)

(2) 3 points (service)

## Panel Replacement

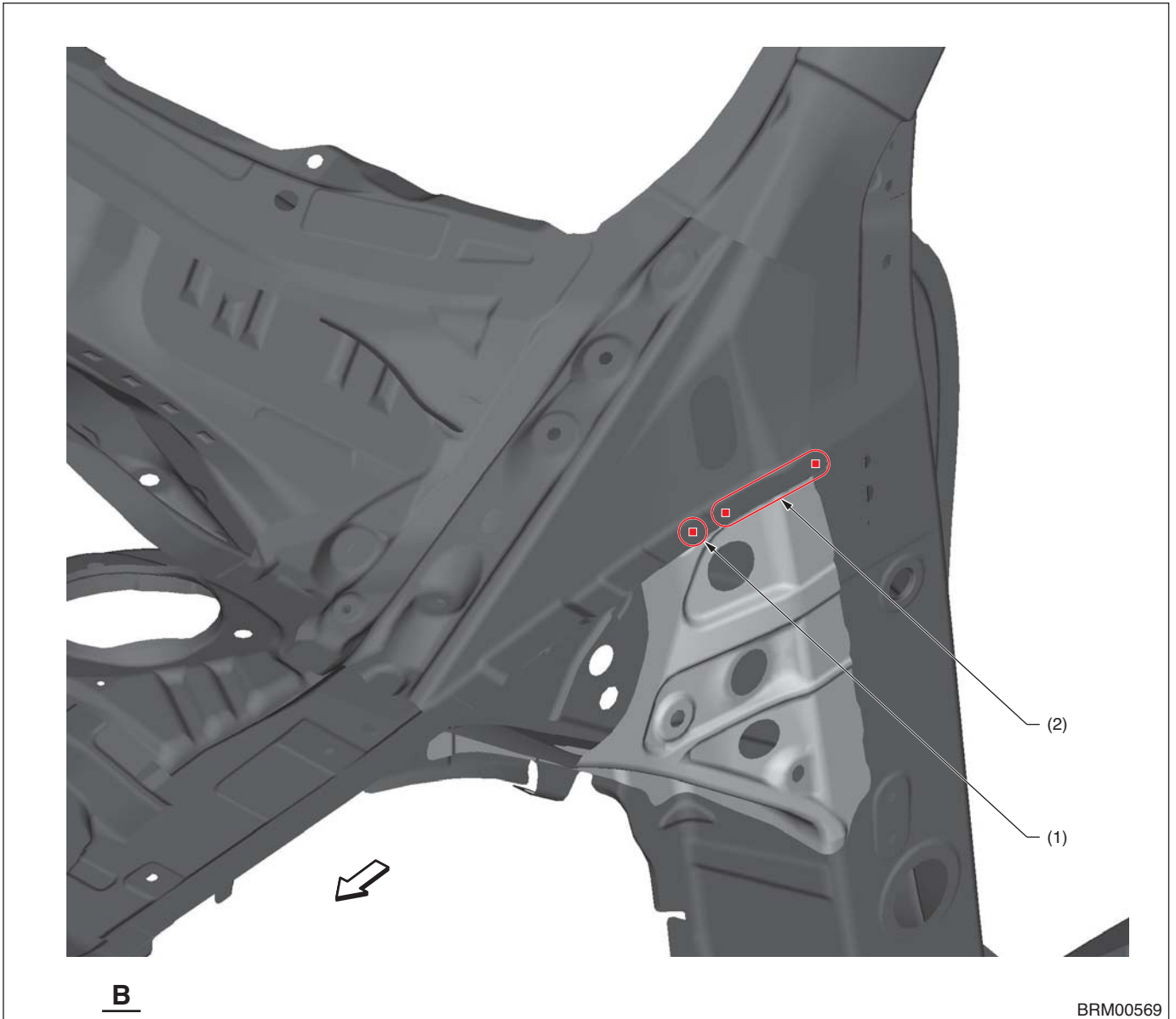
### • Views A



(1) 2 points (service)

# Panel Replacement

## • Views B

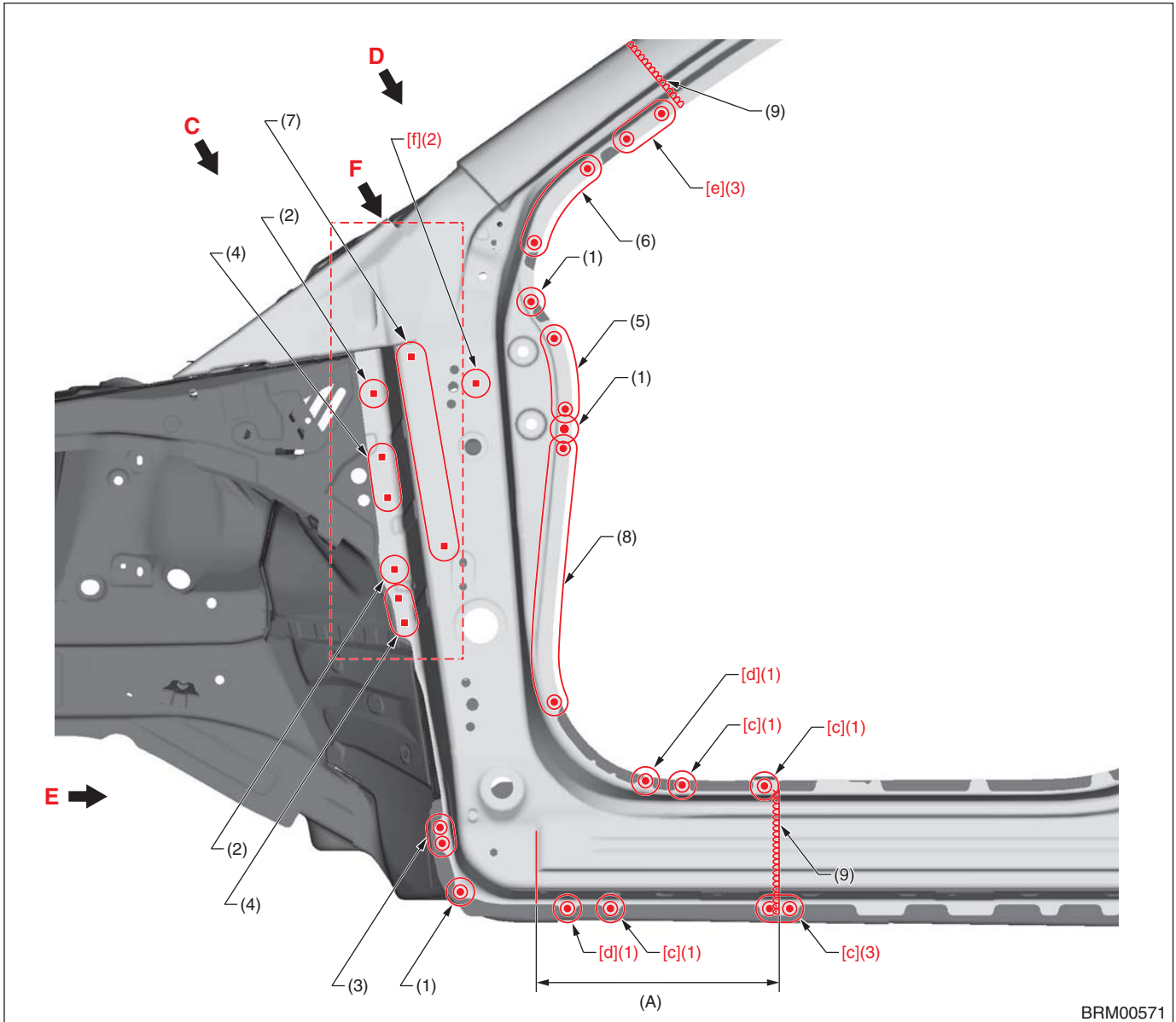


(1) 1 point

(2) 3 points

# Panel Replacement

## • Overall view 2



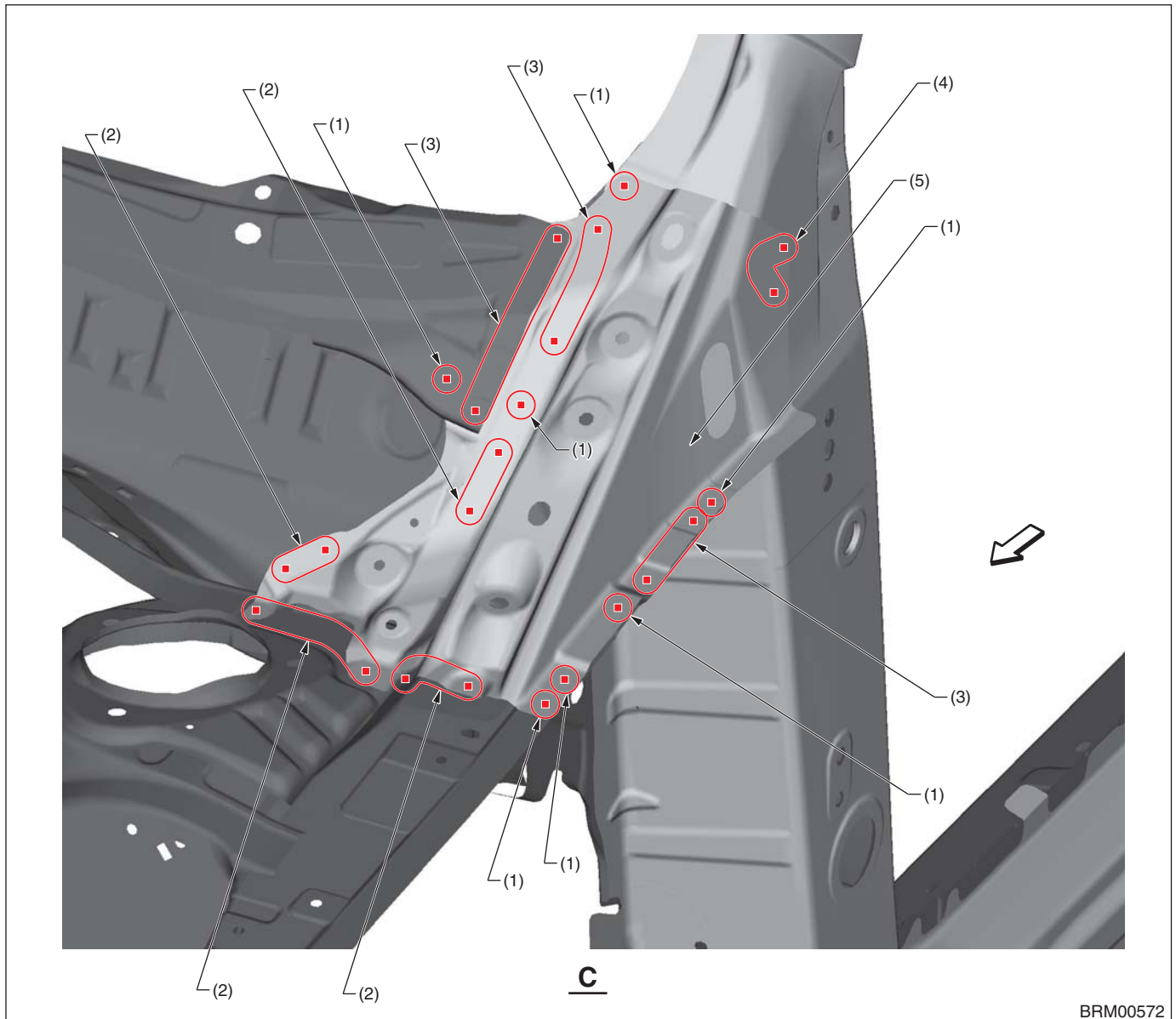
(A) 310 mm [12.20 in]

- |                       |                        |                                  |
|-----------------------|------------------------|----------------------------------|
| (1) 1 point           | (4) 2 points (service) | (7) 5 points (service)           |
| (2) 1 point (service) | (5) 3 points           | (8) 12 points                    |
| (3) 2 points          | (6) 5 points           | (9) 1 point (continuous welding) |

[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[d] Spot welding	Compression: 4.0 kN, Current: 8.0 kA, Welding time: 20 cyc
[e] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views C



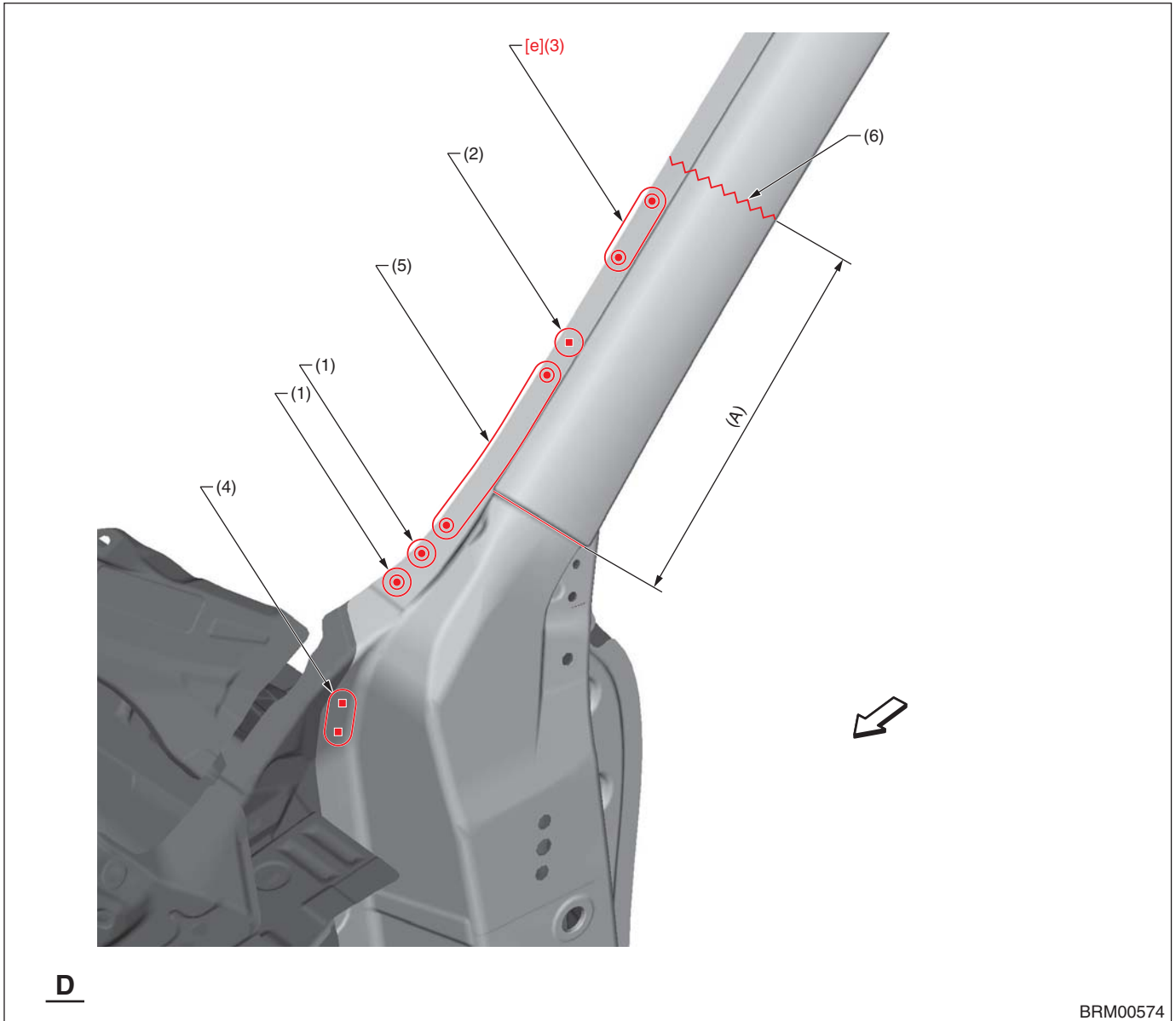
- (1) 1 point
- (2) 2 points

- (3) 3 points
- (4) 3 points (service · matching)

- (5) The part that can be reused.

# Panel Replacement

## • Views D



(A) 260 mm [10.24 in]

(1) 1 point

(2) 1 point (service)

(3) 2 points

(4) 2 points (service)

(5) 3 points

(6) 1 point (continuous welding)

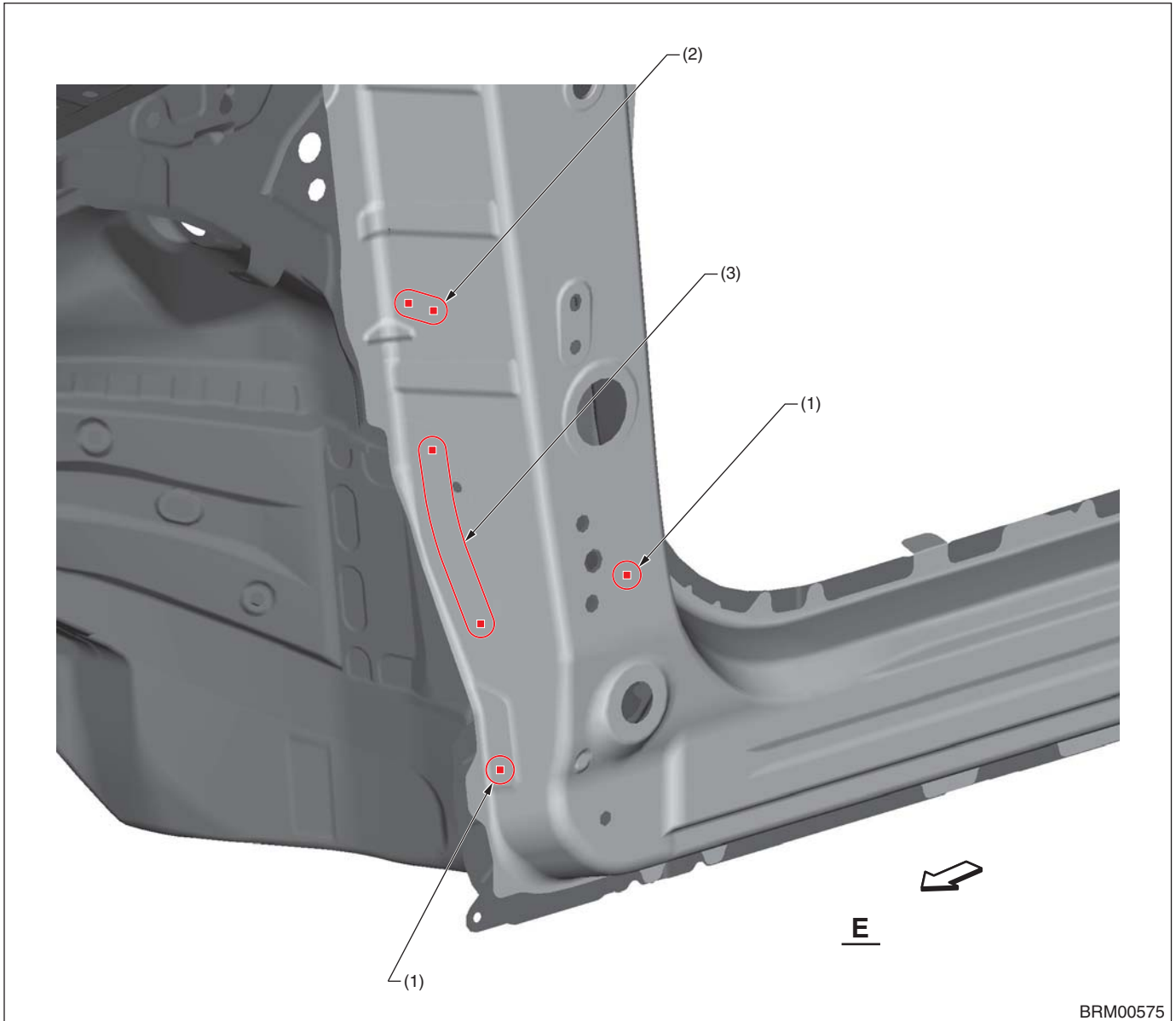
[e] Spot welding

Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc



# Panel Replacement

## • Views E



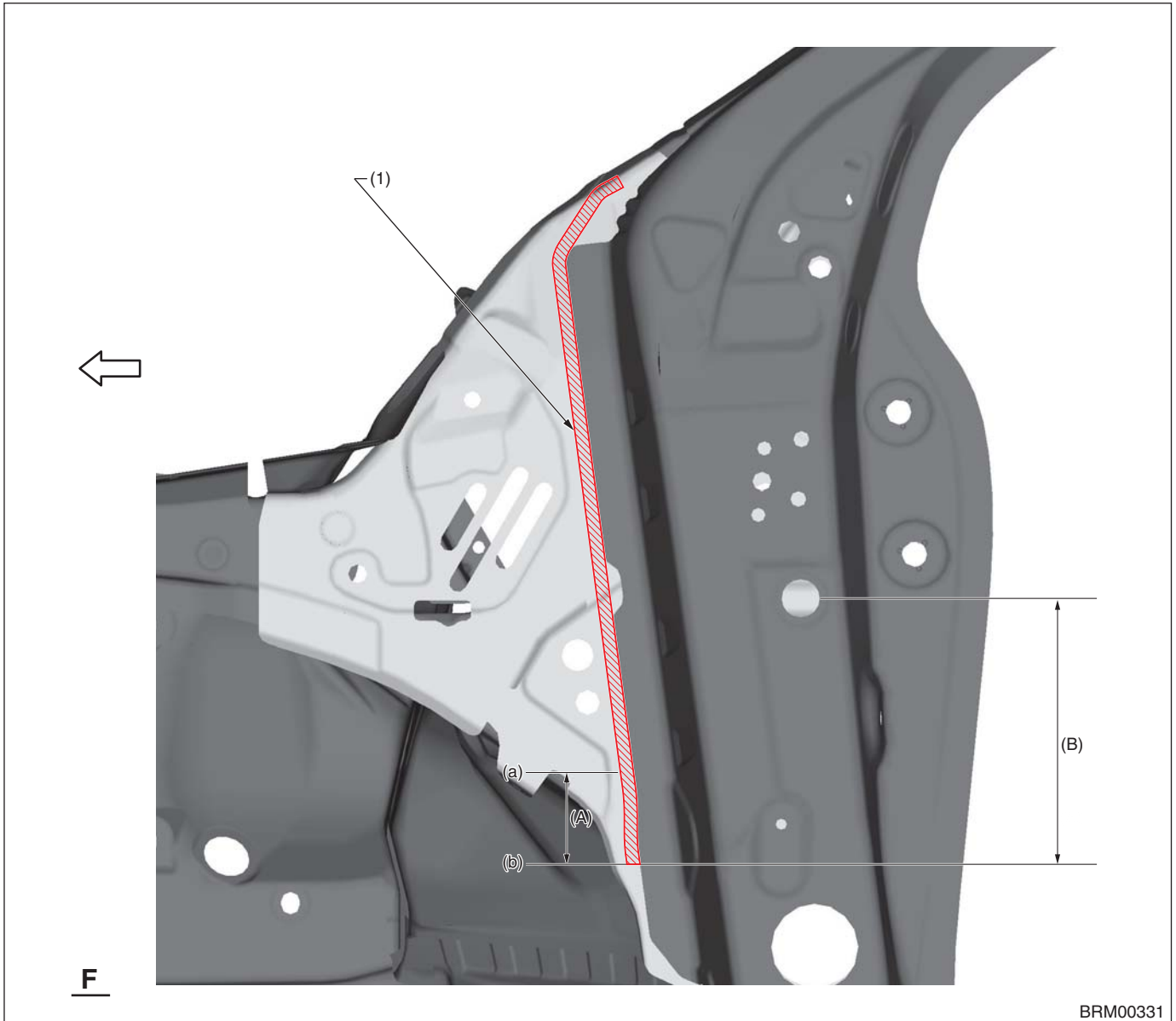
(1) 1 point (service)

(2) 2 points (service)

(3) 3 points (service)

## Panel Replacement

### • Views F




(A) 55 mm [2.17 in]

(B) 169 mm [6.65 in]

(a) A point

(b) B point

(1) Spotting sealer

 : Spotting sealer application location (Spotting sealer or sealing [Three Bond 4101 (004403063)])

Note:

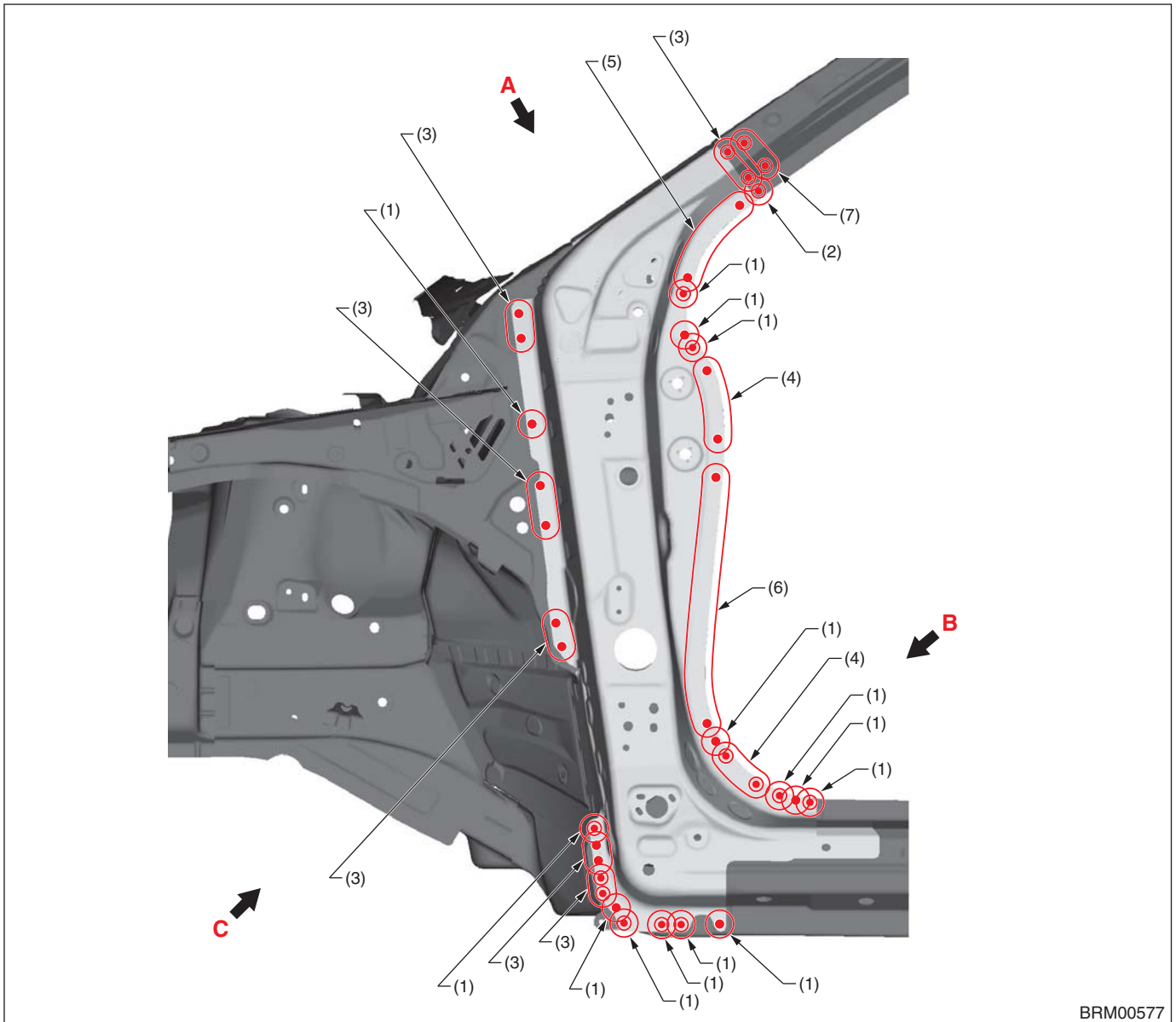
- Check for stray sealer in any point between (a) and (b).

## Panel Replacement

### 8-12. Front Pillar Reinforcement (total replacement)

#### A: REMOVAL

##### • Overall view

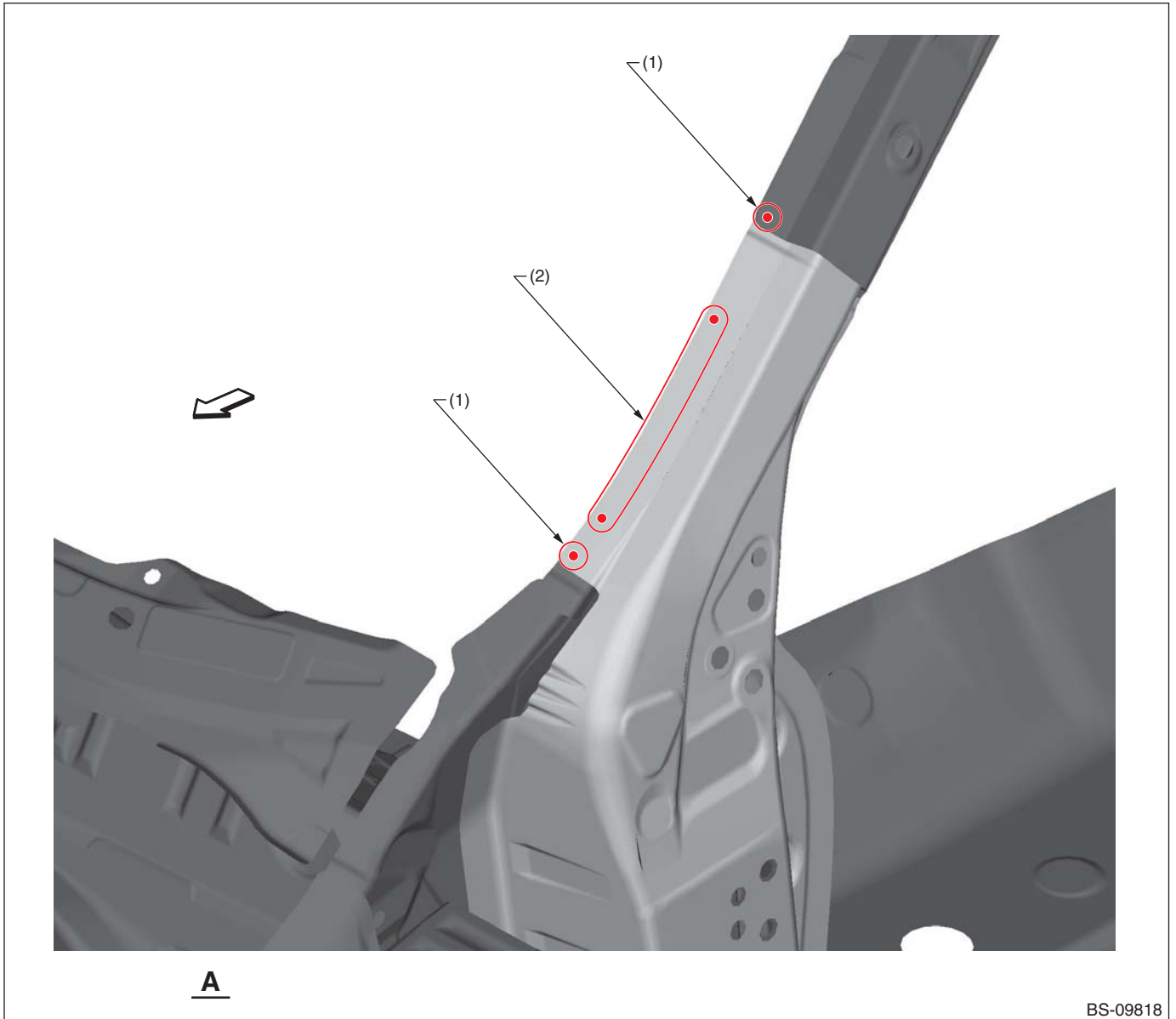


BRM00577

- |                            |                             |                            |
|----------------------------|-----------------------------|----------------------------|
| (1) 1 point (outside · 1)  | (4) 3 points (outside · 1)  | (7) 2 points (outside · 2) |
| (2) 1 point (outside · 2)  | (5) 5 points (outside · 1)  |                            |
| (3) 2 points (outside · 1) | (6) 12 points (outside · 1) |                            |

# Panel Replacement

## • Views A

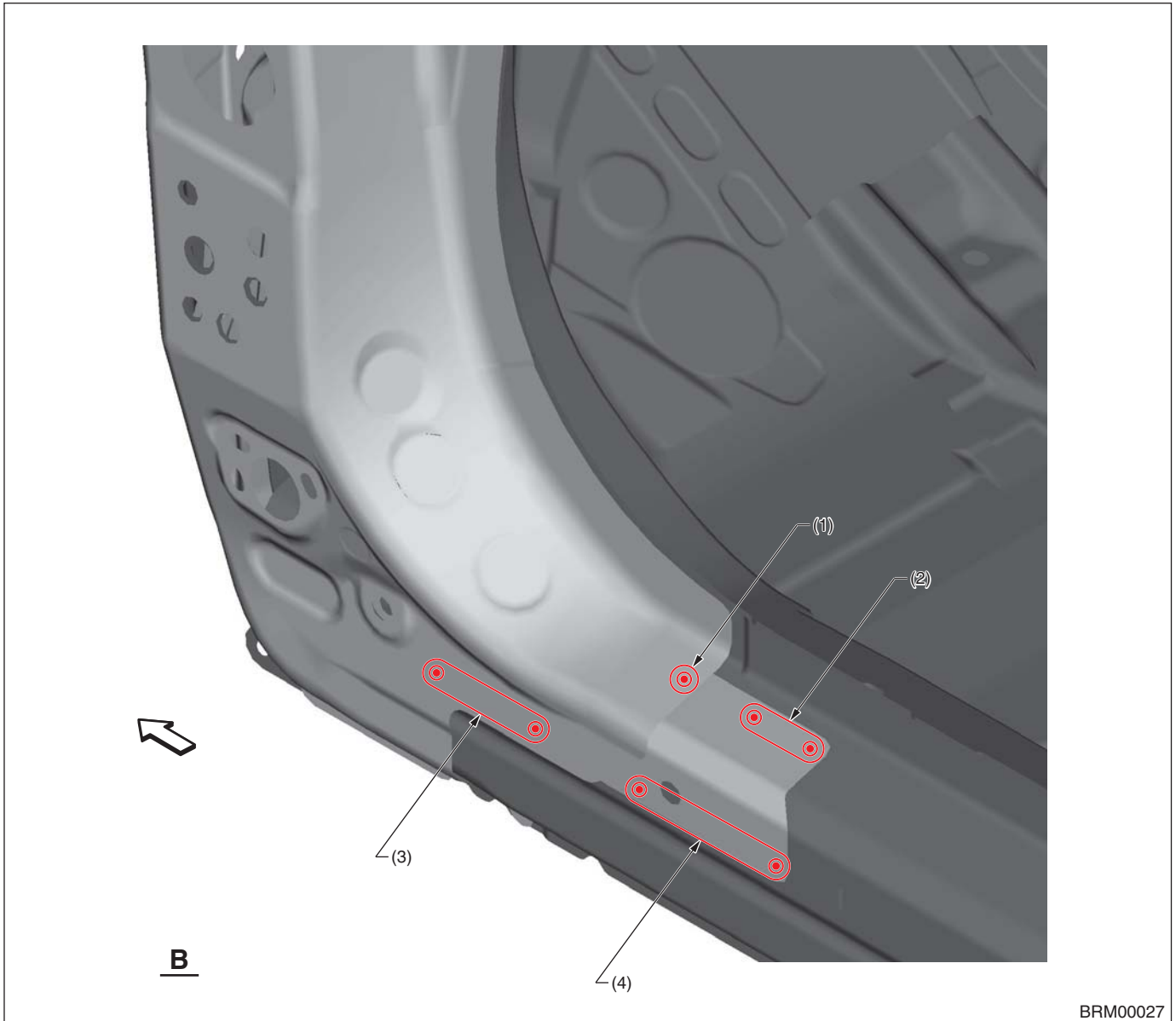


(1) 1 point (top · 1)

(2) 3 points (top · 1)

## Panel Replacement

### • Views B



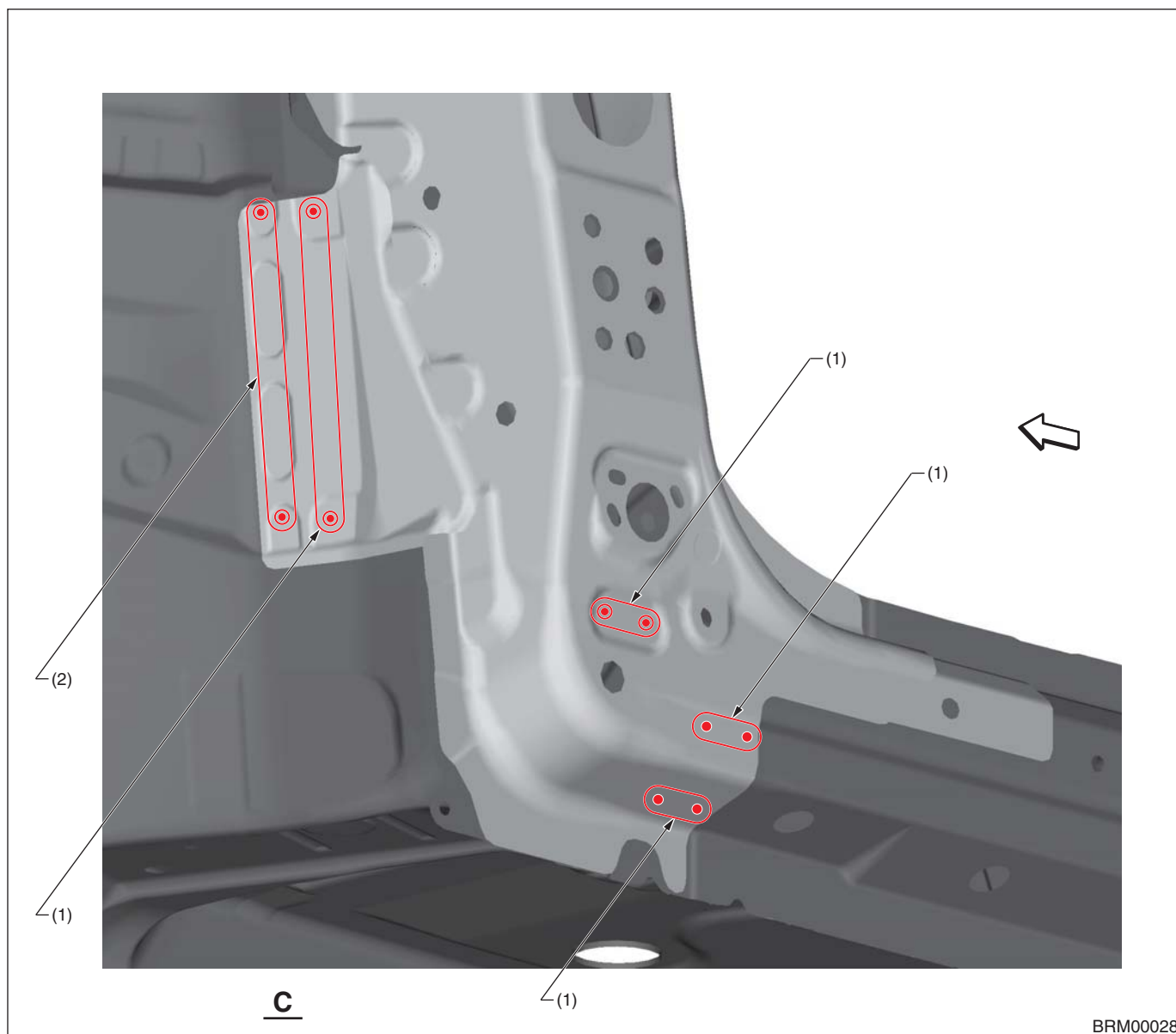
(1) 1 point (top · 2)  
(2) 2 points (top · 1)

(3) 2 points (outside · 2)

(4) 3 points (outside · 1)

# Panel Replacement

## • Views C



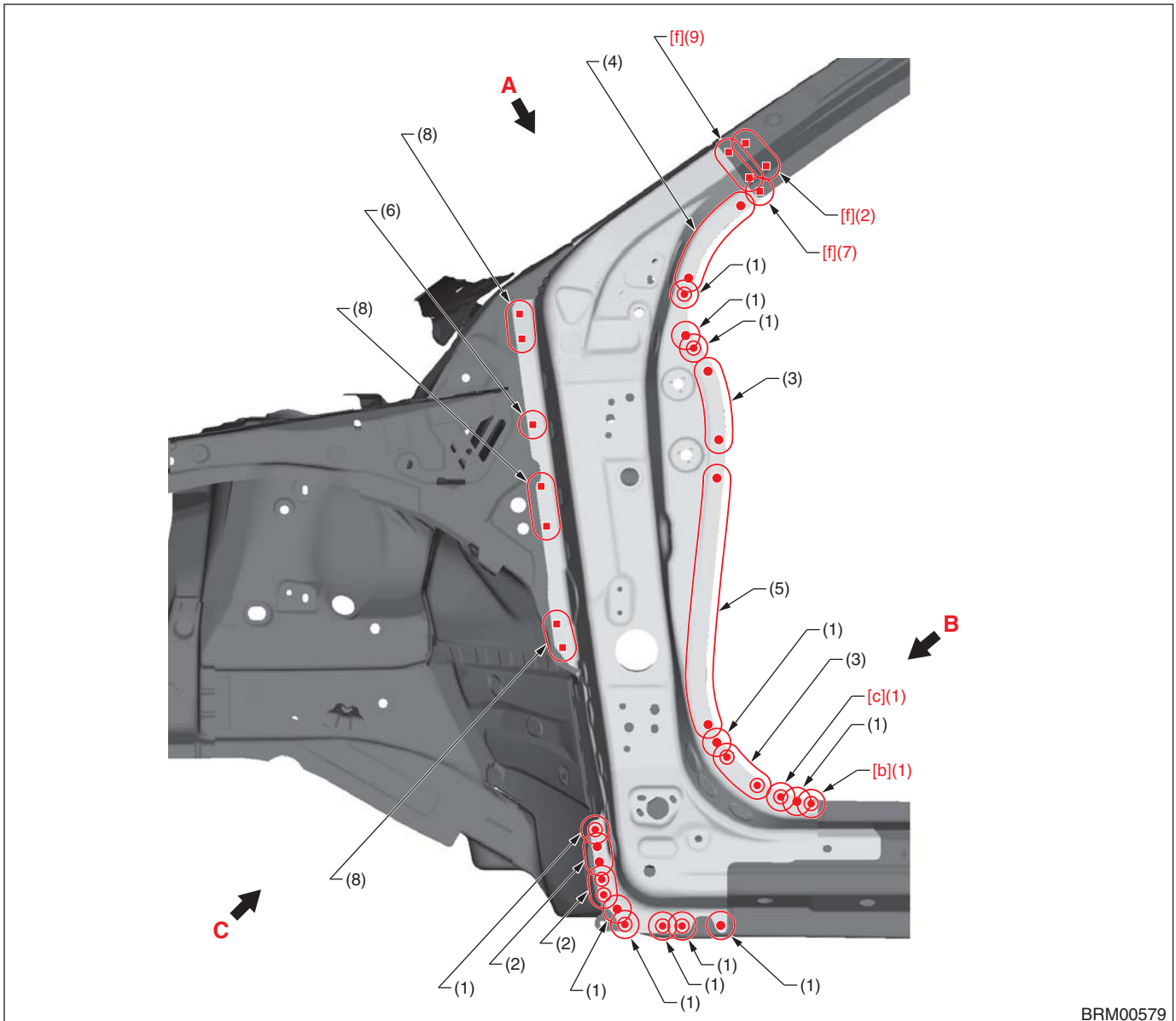
(1) 2 points (outside · 1)

(2) 6 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view

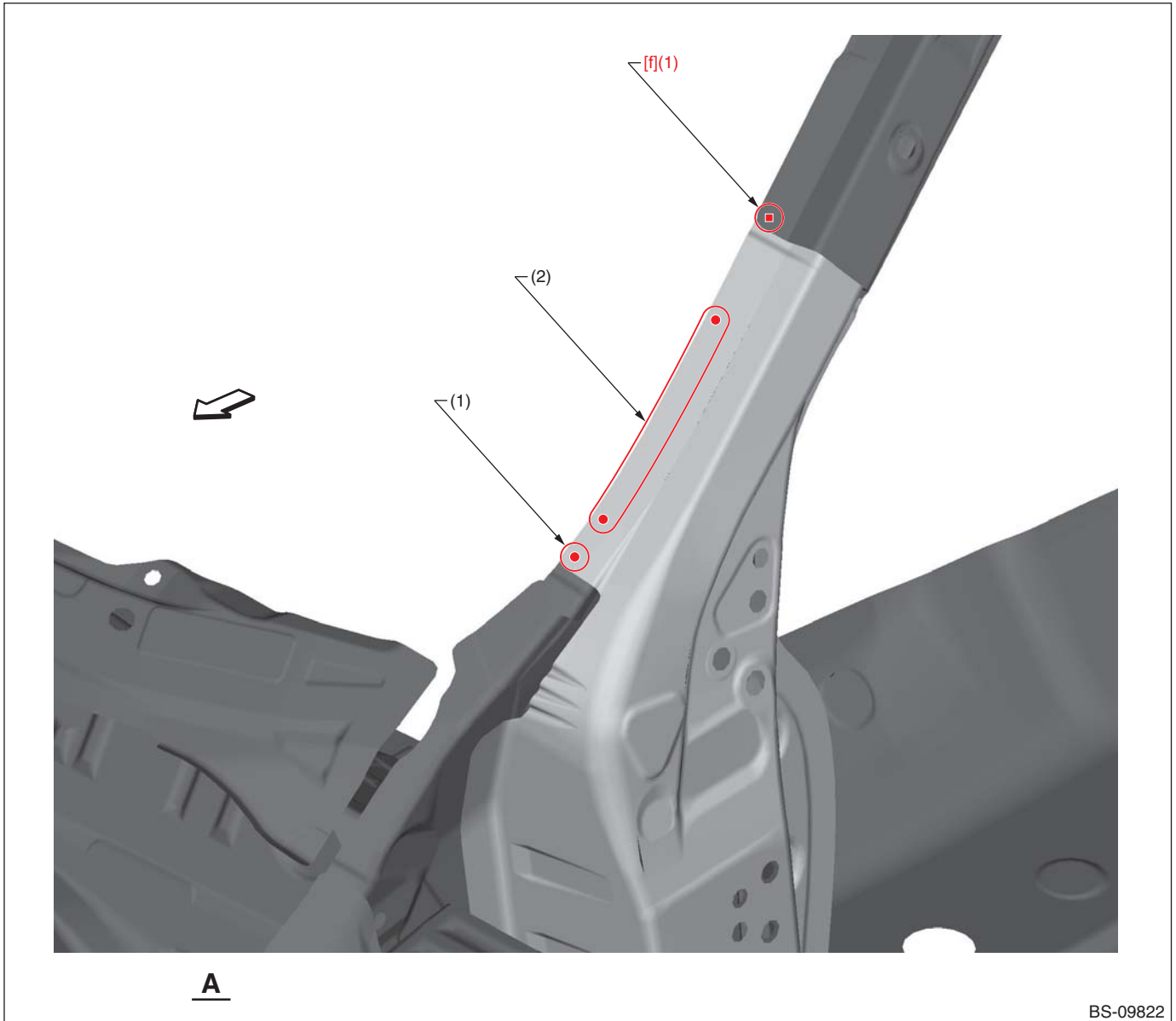


- |              |                       |                                   |
|--------------|-----------------------|-----------------------------------|
| (1) 1 point  | (4) 5 points          | (7) 1 point (service · matching)  |
| (2) 2 points | (5) 12 points         | (8) 2 points (service)            |
| (3) 3 points | (6) 1 point (service) | (9) 2 points (service · matching) |

[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



(1) 1 point

(2) 3 points

[f] Plug welding

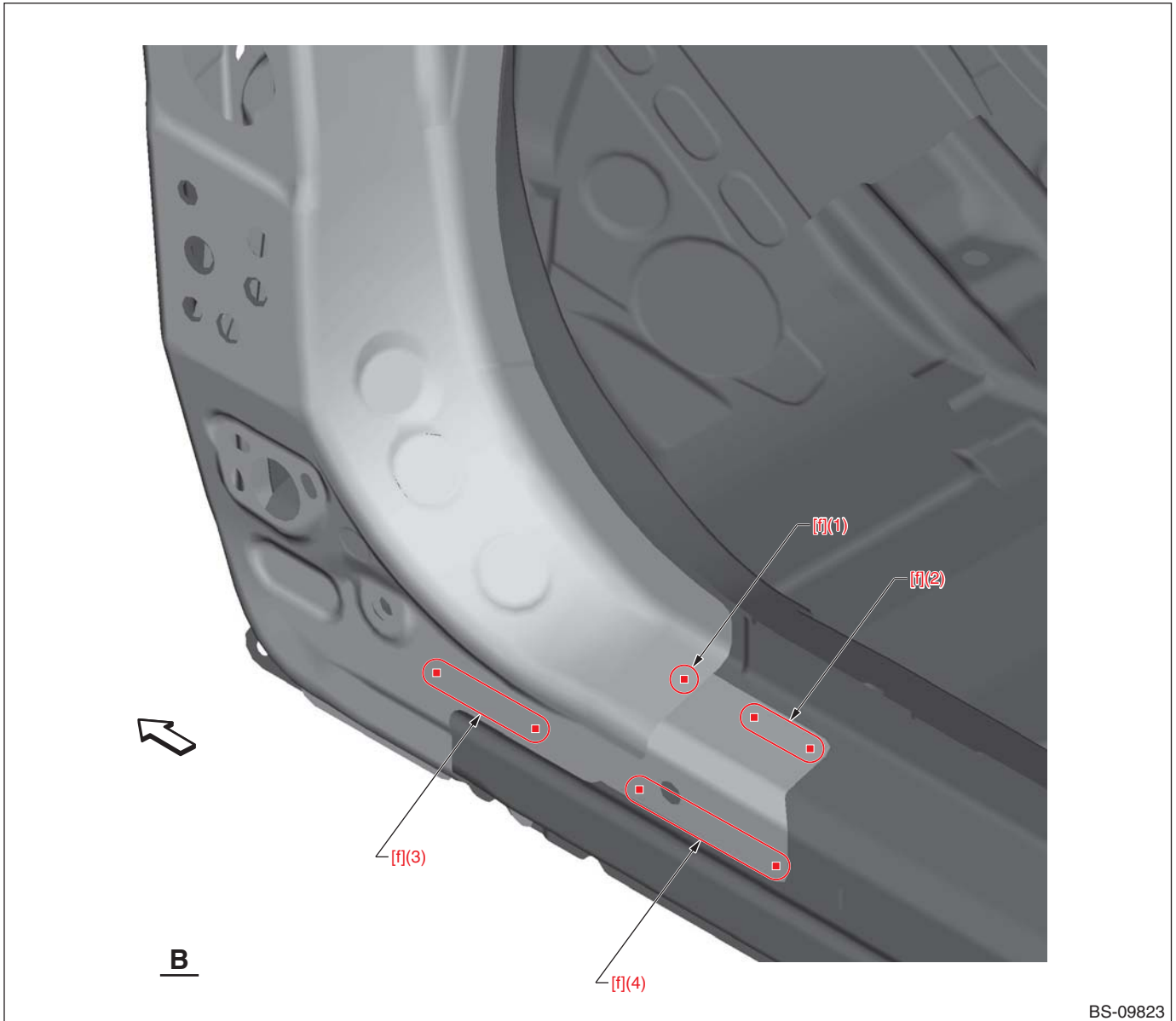
A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)



# Panel Replacement

## • Views B



(1) 1 point (service · matching)  
(2) 2 points (service)

(3) 2 points (service · matching)

(4) 3 points (service)

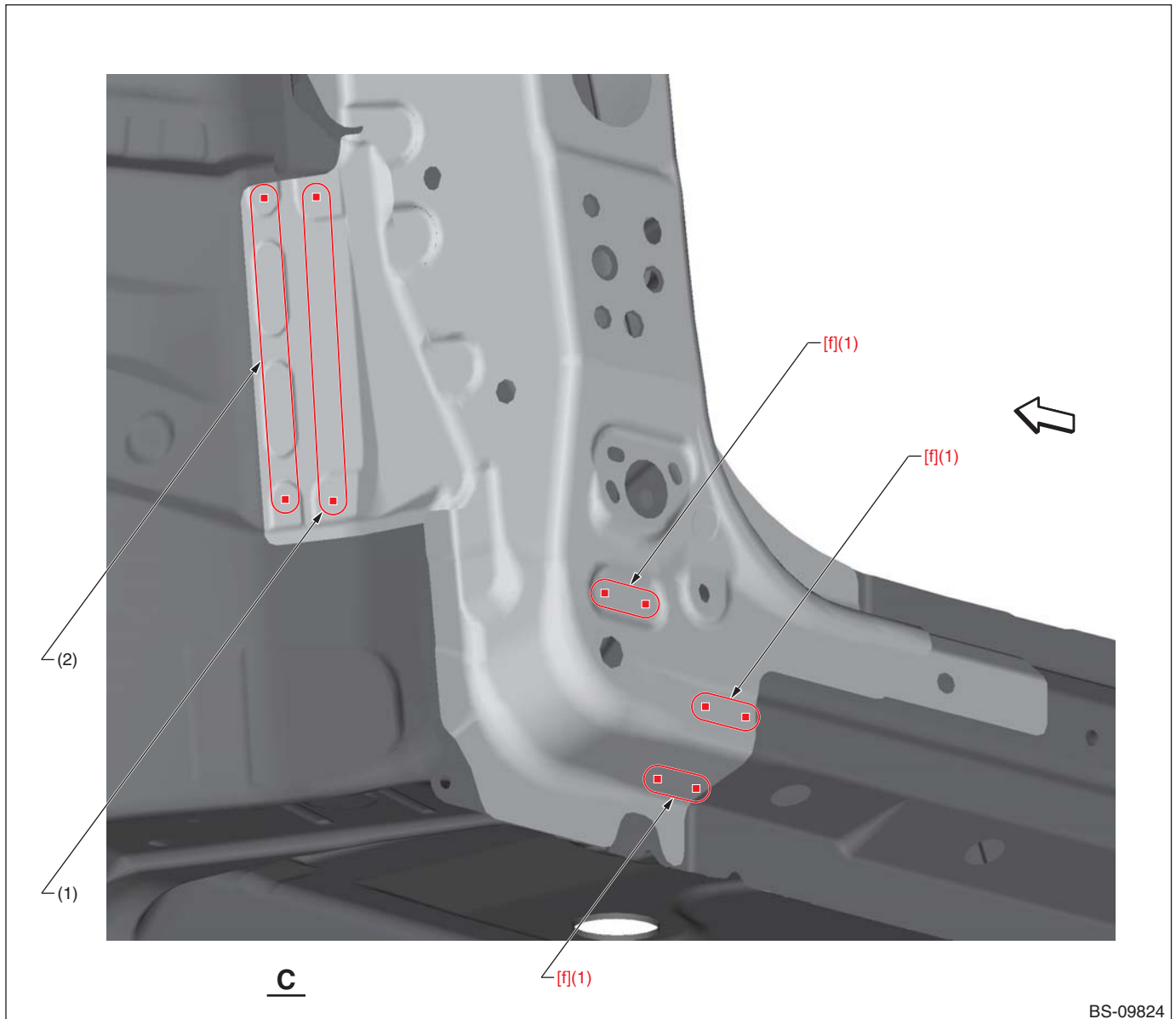
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views C



(1) 2 points (service)

(2) 6 points (service)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

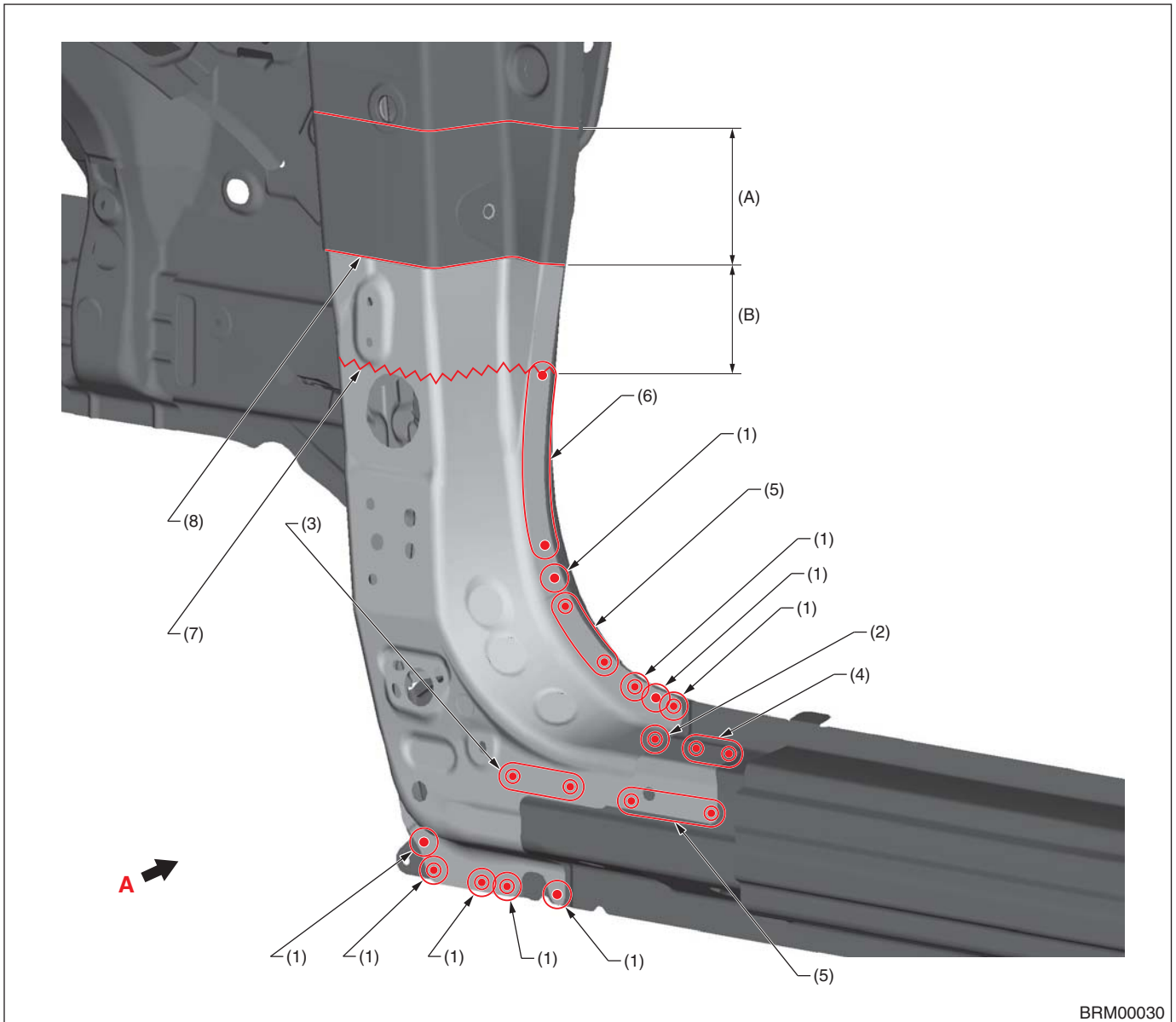
B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

## Panel Replacement

### 8-13. Front Pillar Reinforcement (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00030

(A) 100 mm [3.94 in]

(B) 80 mm [3.15 in]

(1) 1 point (outside · 1)

(4) 2 points (top · 1)

(7) Cut position

(2) 1 point (top · 1)

(5) 3 points (outside · 1)

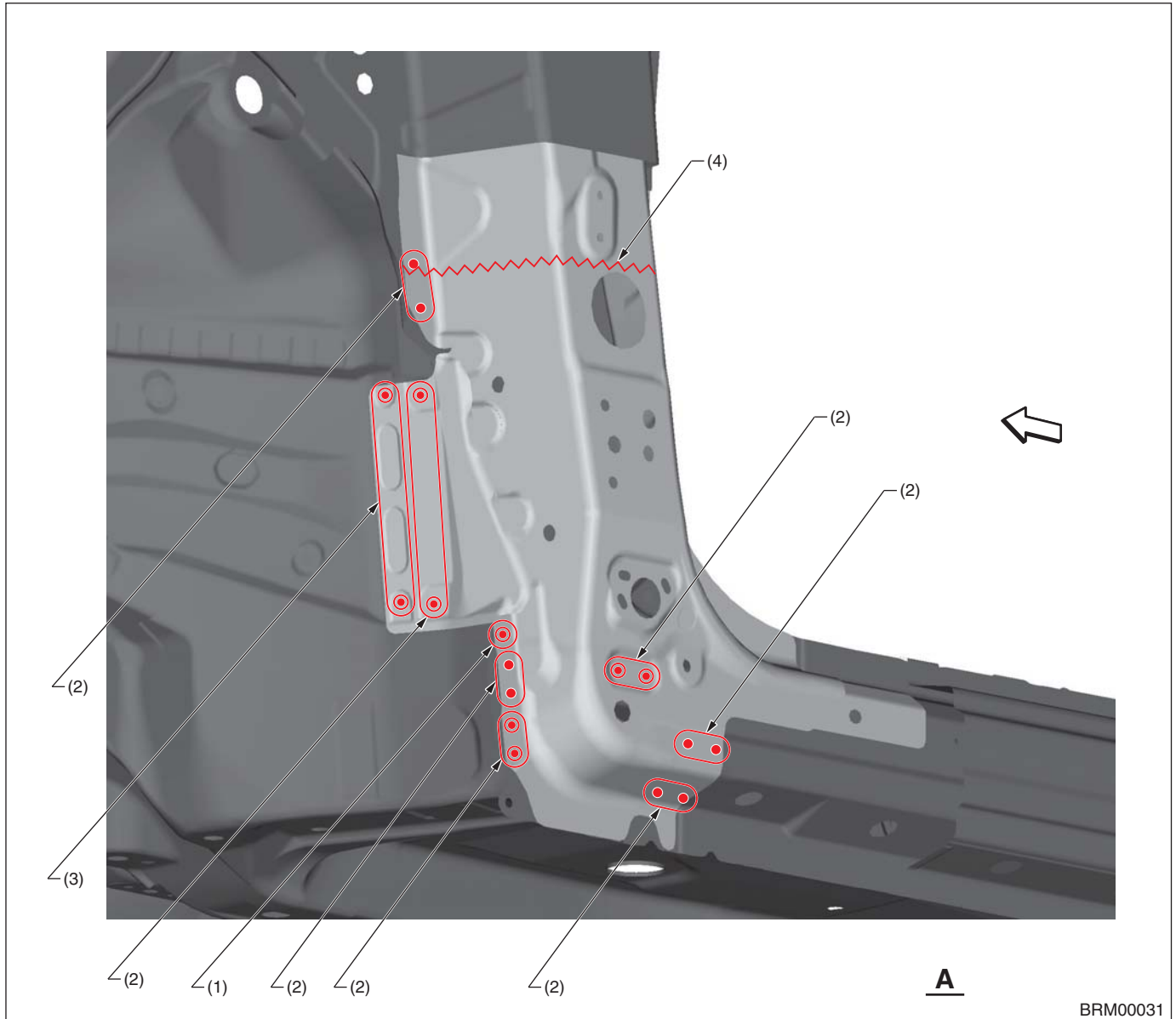
(8) Position where the outer panel is partially cut

(3) 2 points (outside · 2)

(6) 6 points (outside · 1)

# Panel Replacement

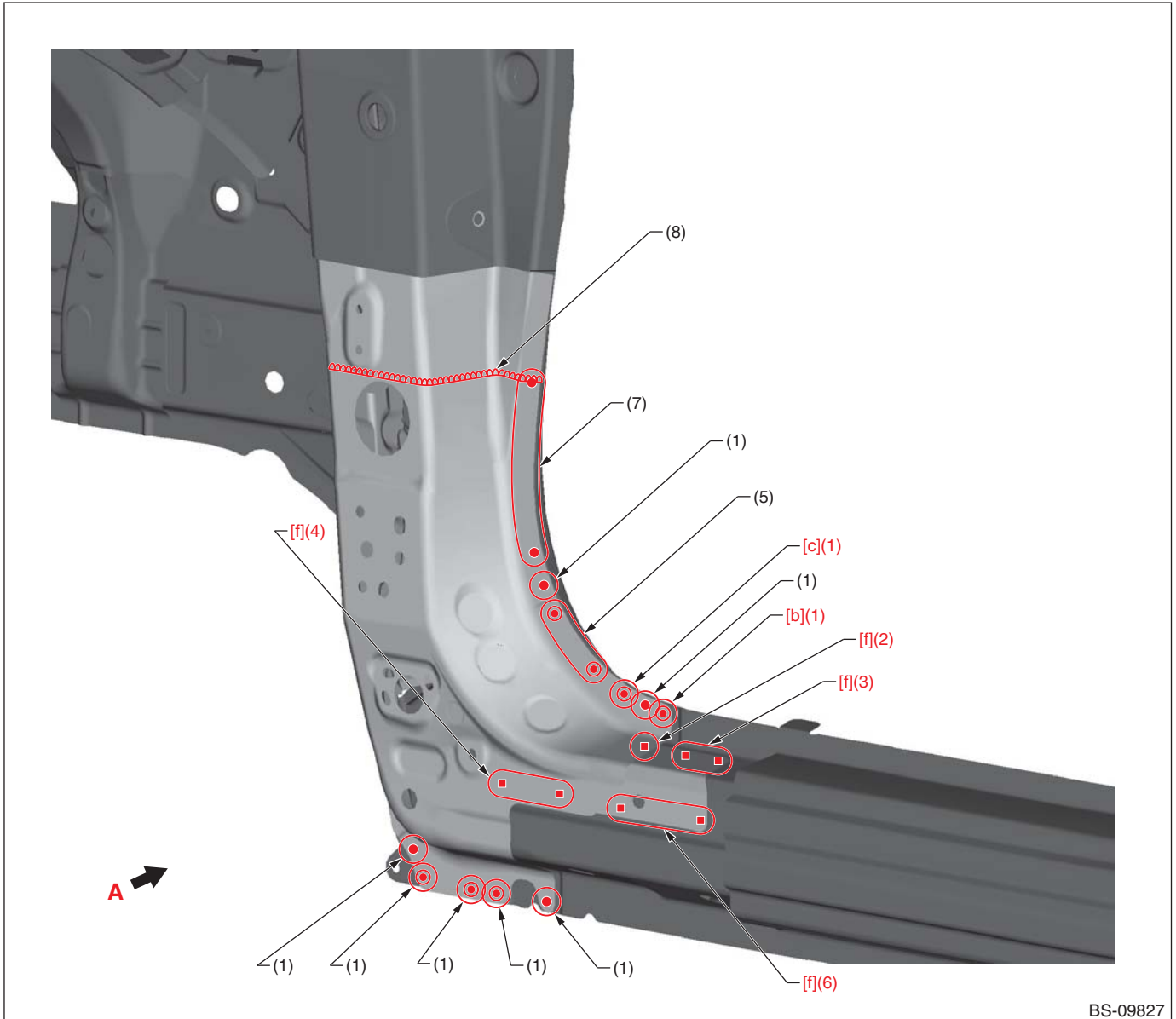
## • Views A



# Panel Replacement

## B: INSTALLATION

### • Overall view

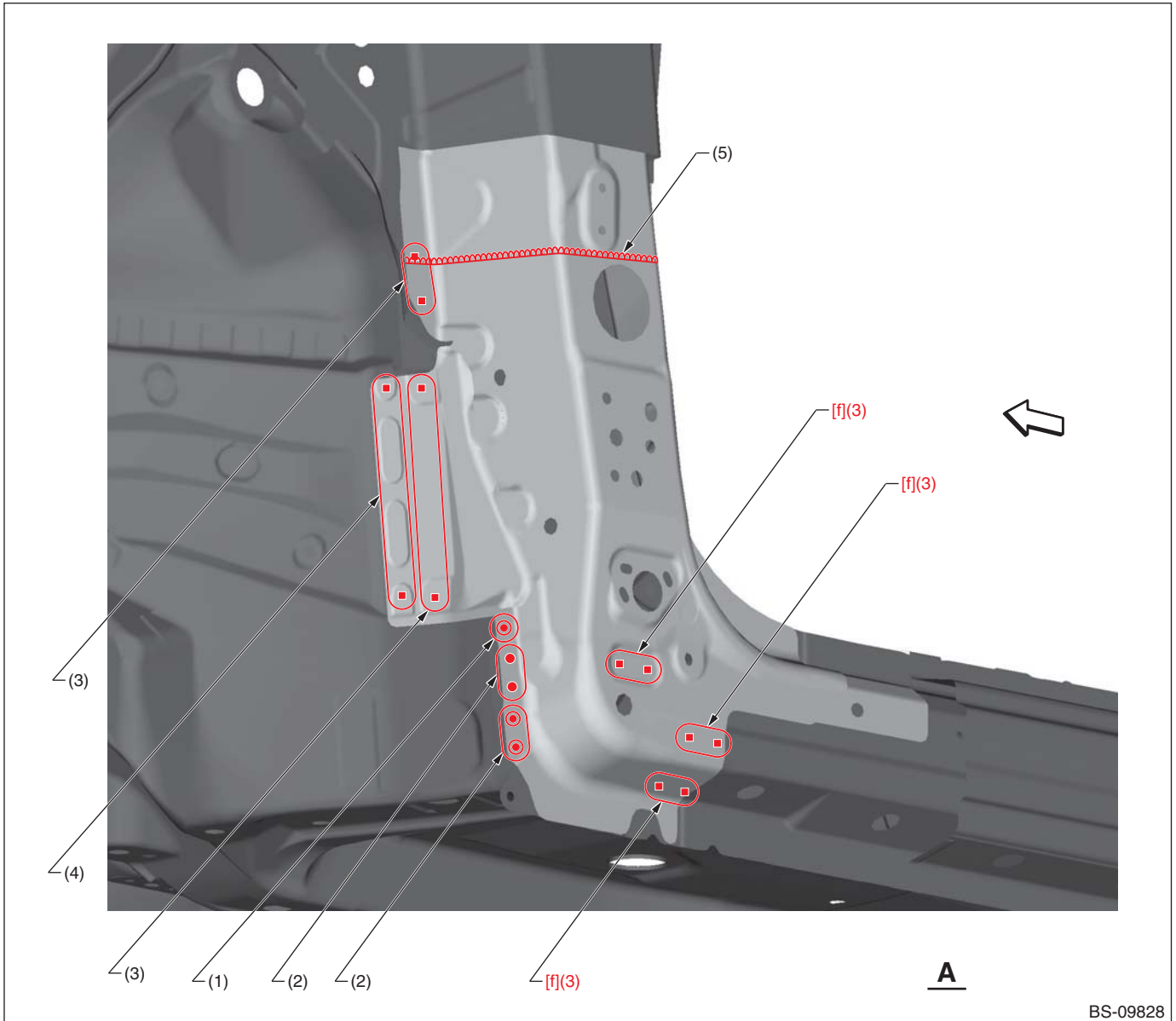


- |                                  |                                   |                                  |
|----------------------------------|-----------------------------------|----------------------------------|
| (1) 1 point                      | (4) 2 points (service · matching) | (7) 6 points                     |
| (2) 1 point (service · matching) | (5) 3 points                      | (8) 1 point (continuous welding) |
| (3) 2 points (service)           | (6) 3 points (service)            |                                  |

[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



BS-09828

- (1) 1 point
- (2) 2 points

- (3) 2 points (service)
- (4) 6 points (service)

- (5) 1 point (continuous welding)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

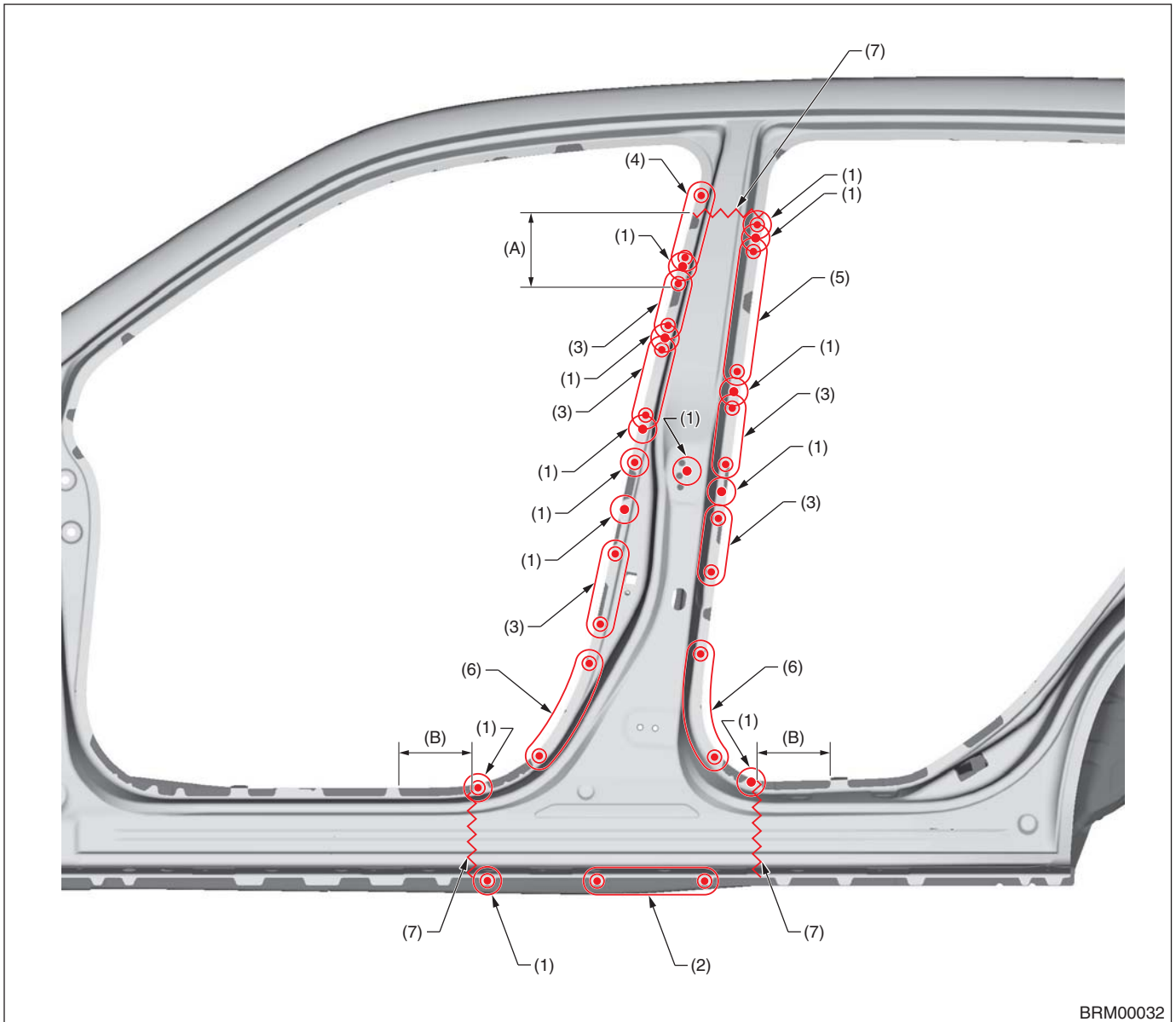
B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

## Panel Replacement

### 8-14. Center Pillar (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00032

(A) 130 mm [5.12 in]

(B) 120 mm [4.72 in]

- (1) 1 point (outside · 1)
- (2) 2 points (outside · 1)
- (3) 3 points (outside · 1)

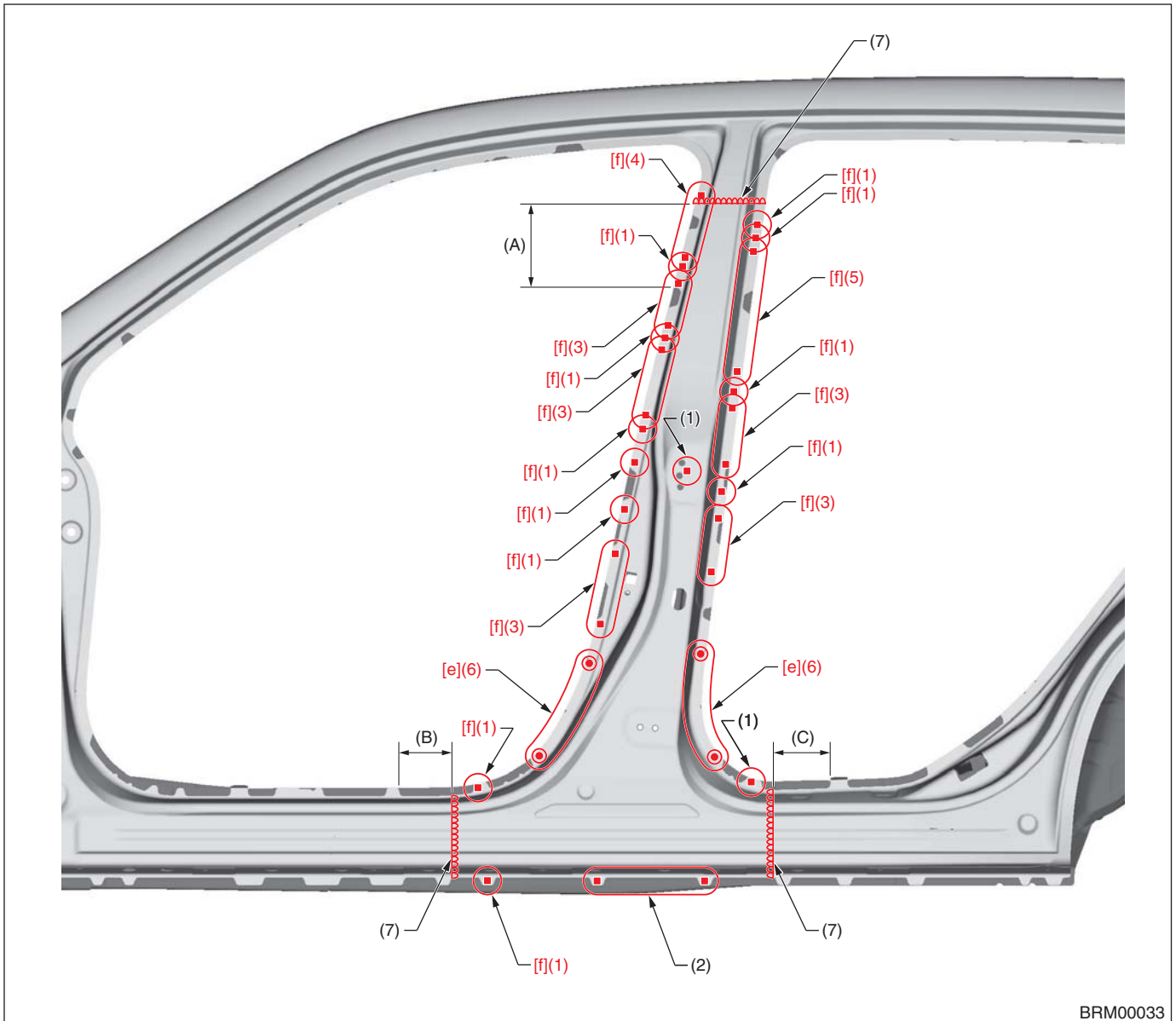
- (4) 4 points (outside · 1)
- (5) 7 points (outside · 1)
- (6) 8 points (outside · 1)

(7) Cut position

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00033

(A) 150 mm [5.91 in]

(B) 95 mm [3.74 in]

(C) 100 mm [3.94 in]

(1) 1 point (service)

(4) 4 points (service)

(7) 1 point (continuous welding)

(2) 2 points (service)

(5) 7 points (service)

(3) 3 points (service)

(6) 8 points

[e] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

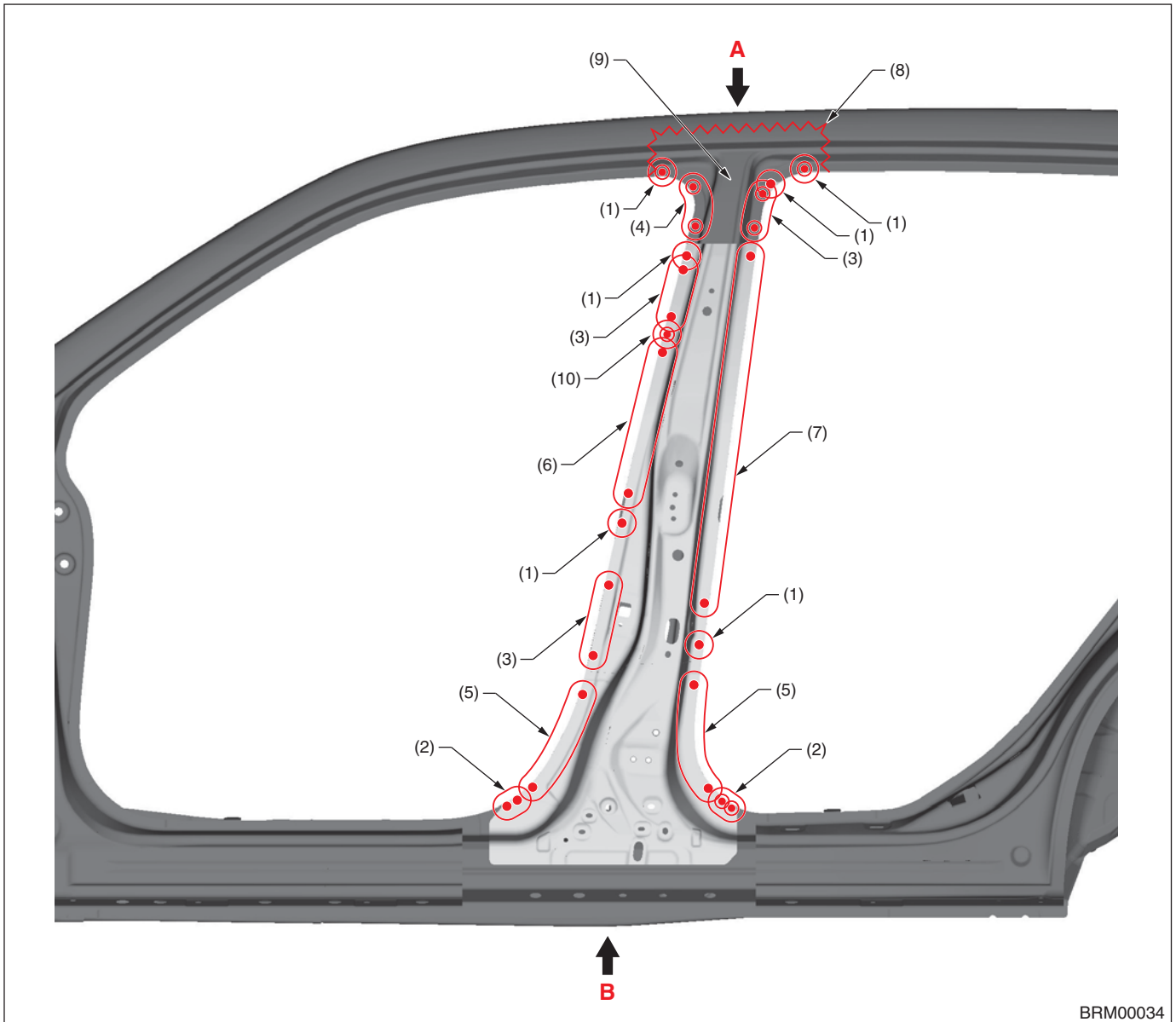


## Panel Replacement

### 8-15. Center Pillar Reinforcement Outer (total replacement)

#### A: REMOVAL

##### • Overall view



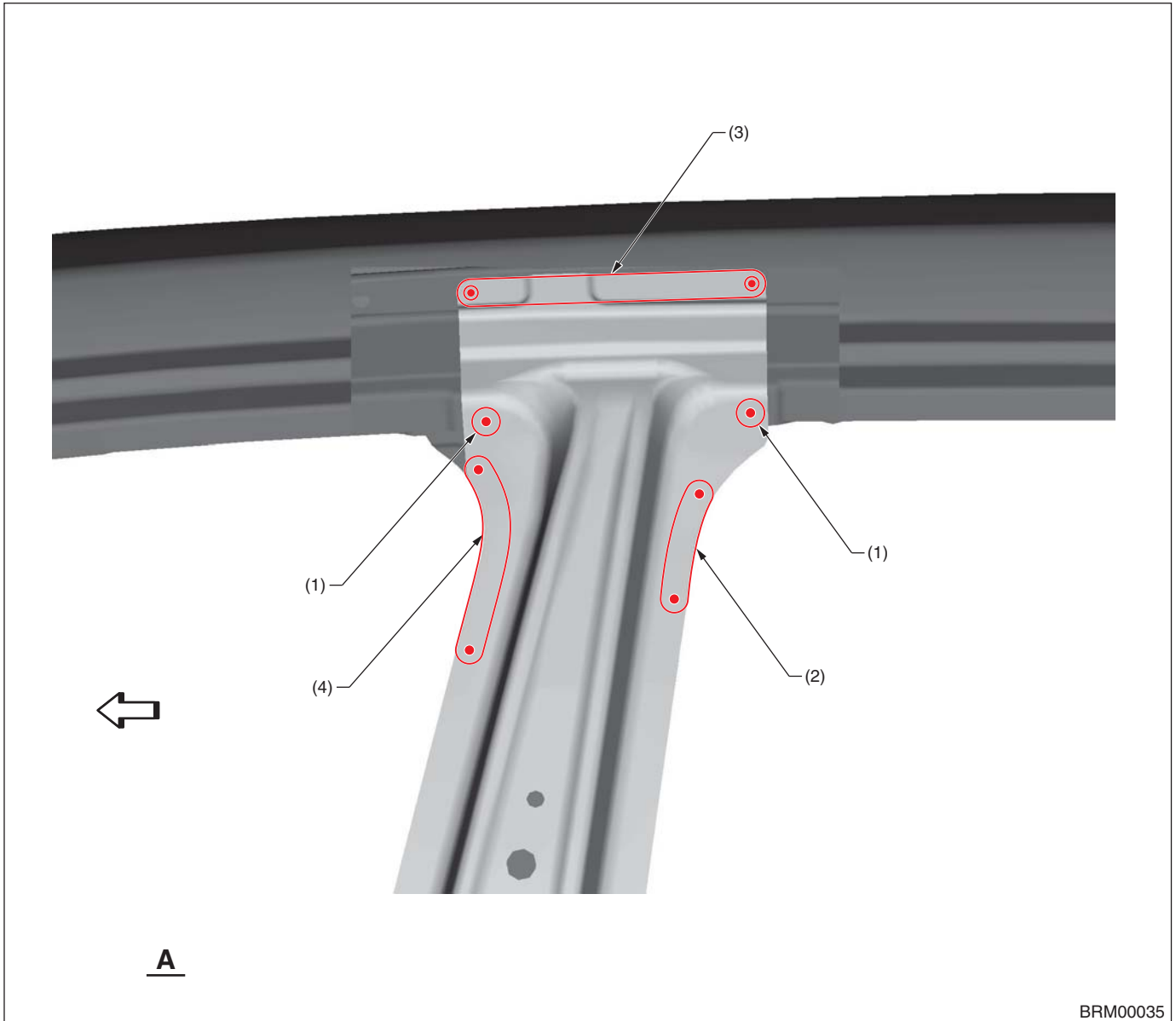
BRM00034

- |                            |                             |                                  |
|----------------------------|-----------------------------|----------------------------------|
| (1) 1 point (outside · 1)  | (5) 8 points (outside · 1)  | (9) The part that can be reused. |
| (2) 2 points (outside · 1) | (6) 6 points (outside · 1)  | (10) 1 point (outside · 2)       |
| (3) 3 points (outside · 1) | (7) 14 points (outside · 1) |                                  |
| (4) 5 points (outside · 1) | (8) Rough cutting           |                                  |

Note: The cut part can be reused depending on level of damage.

# Panel Replacement

## • Views A



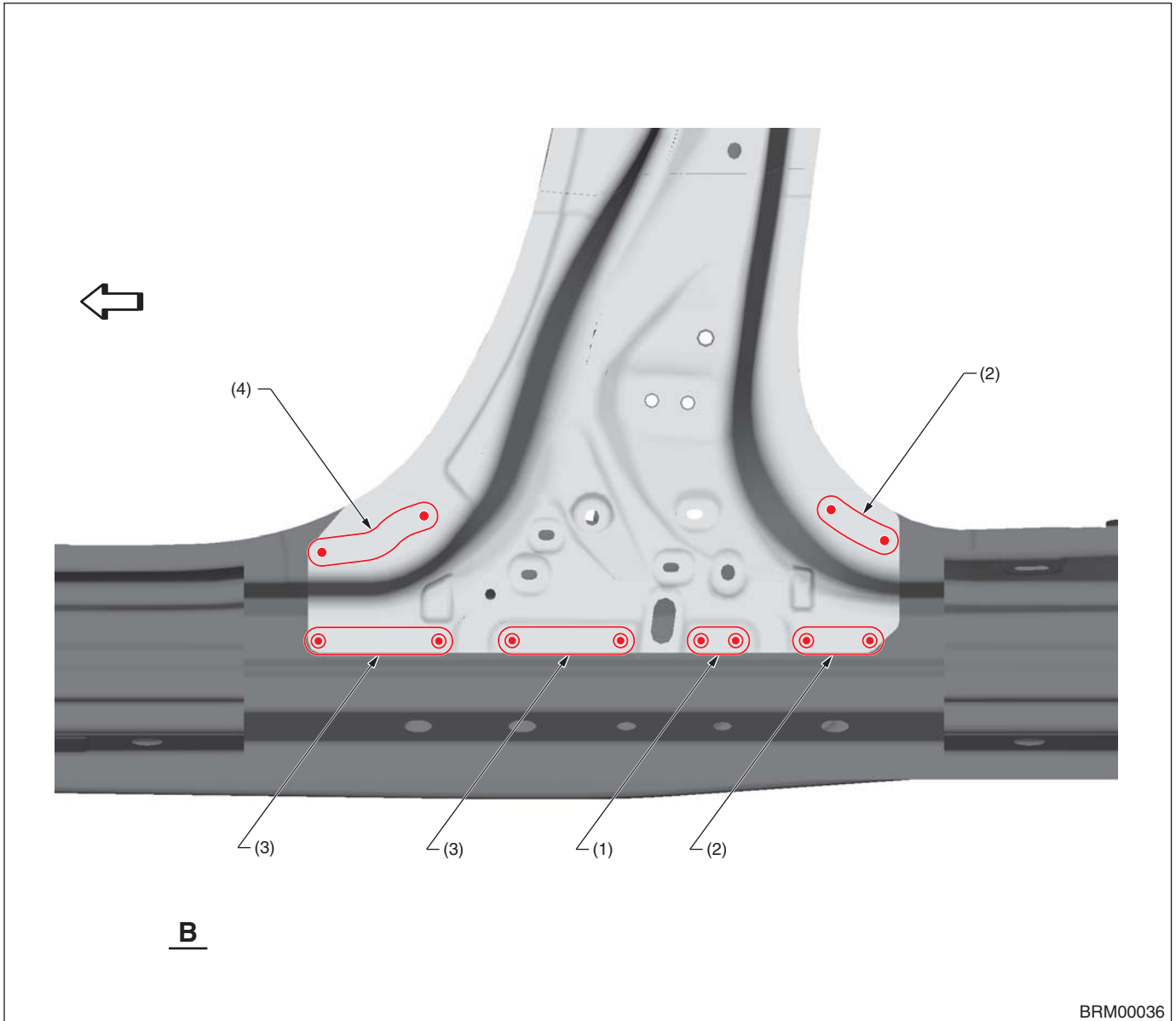
(1) 1 point (outside · 1)  
(2) 3 points (outside · 1)

(3) 5 points (outside · 1)

(4) 6 points (outside · 1)

# Panel Replacement

## • Views B



(1) 2 points (outside · 1)  
(2) 3 points (outside · 1)

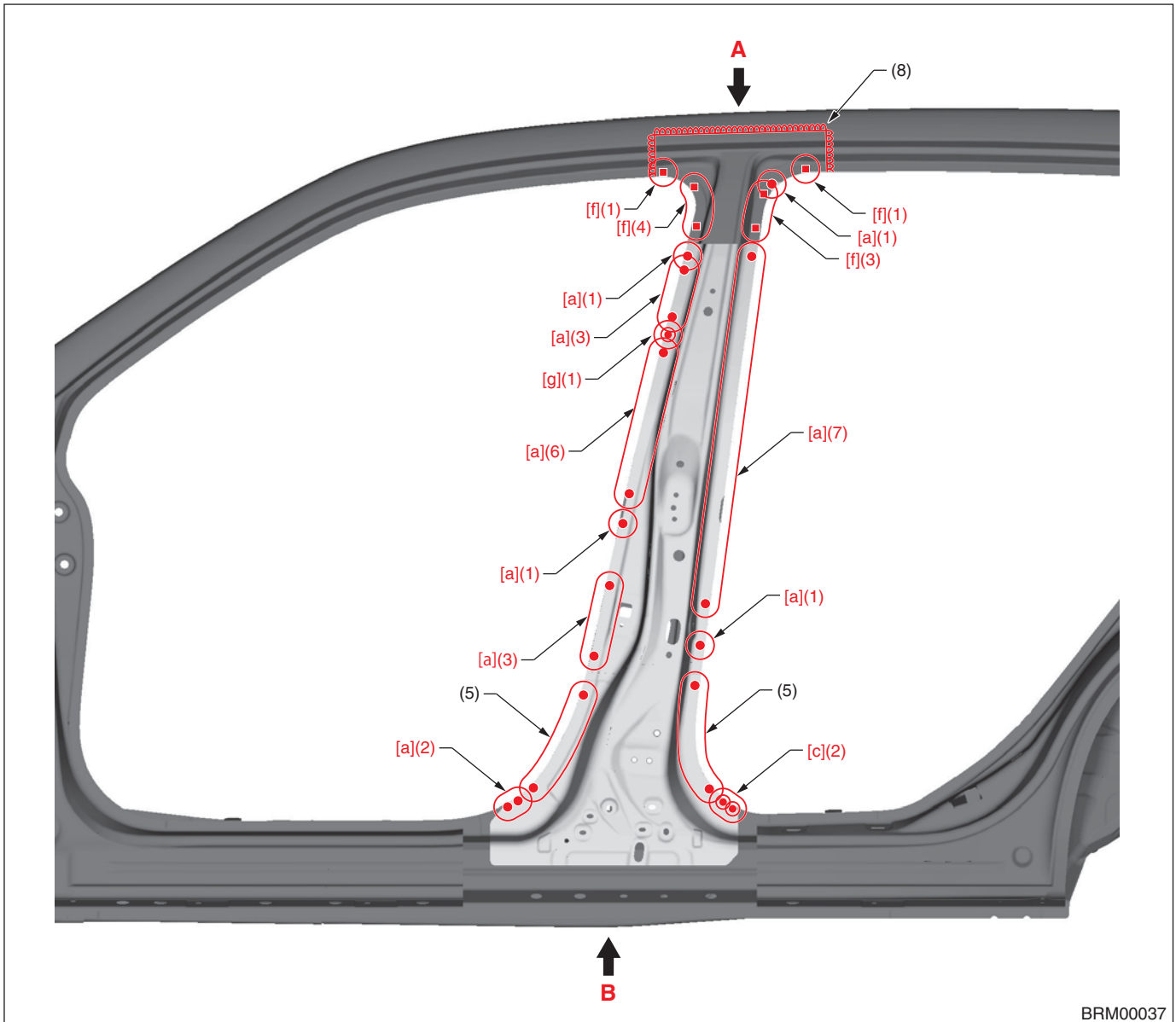
(3) 4 points (outside · 1)

(4) 5 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view

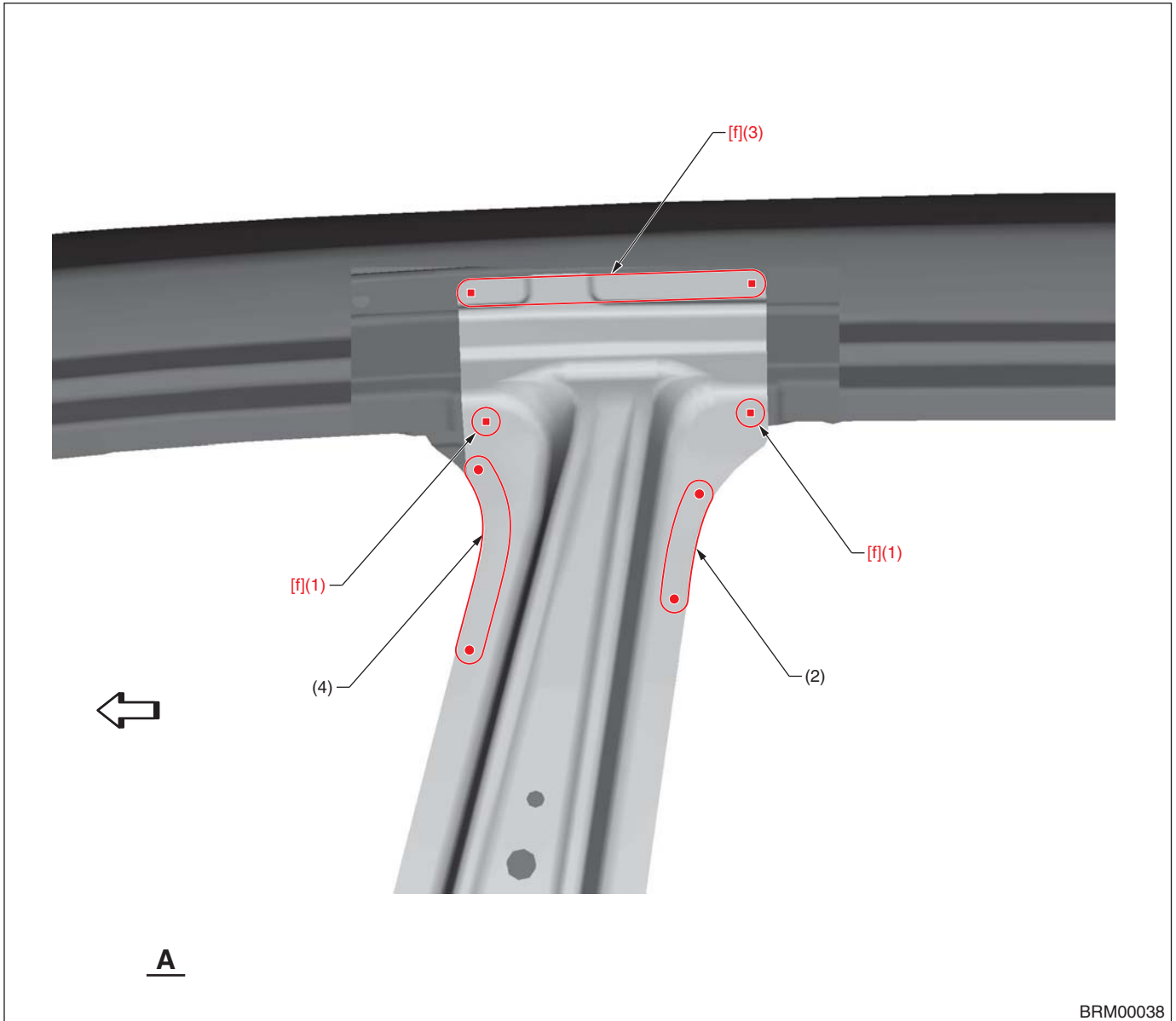


- |              |              |                                  |
|--------------|--------------|----------------------------------|
| (1) 1 point  | (4) 5 points | (7) 14 points                    |
| (2) 2 points | (5) 8 points | (8) 1 point (continuous welding) |
| (3) 3 points | (6) 6 points |                                  |

[a] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[g] Spot welding	Compression: 4.0 kN, Current: 8.0 kA, Welding time: 28 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



(1) 1 point (service)  
(2) 3 points

(3) 5 points (service)

(4) 6 points

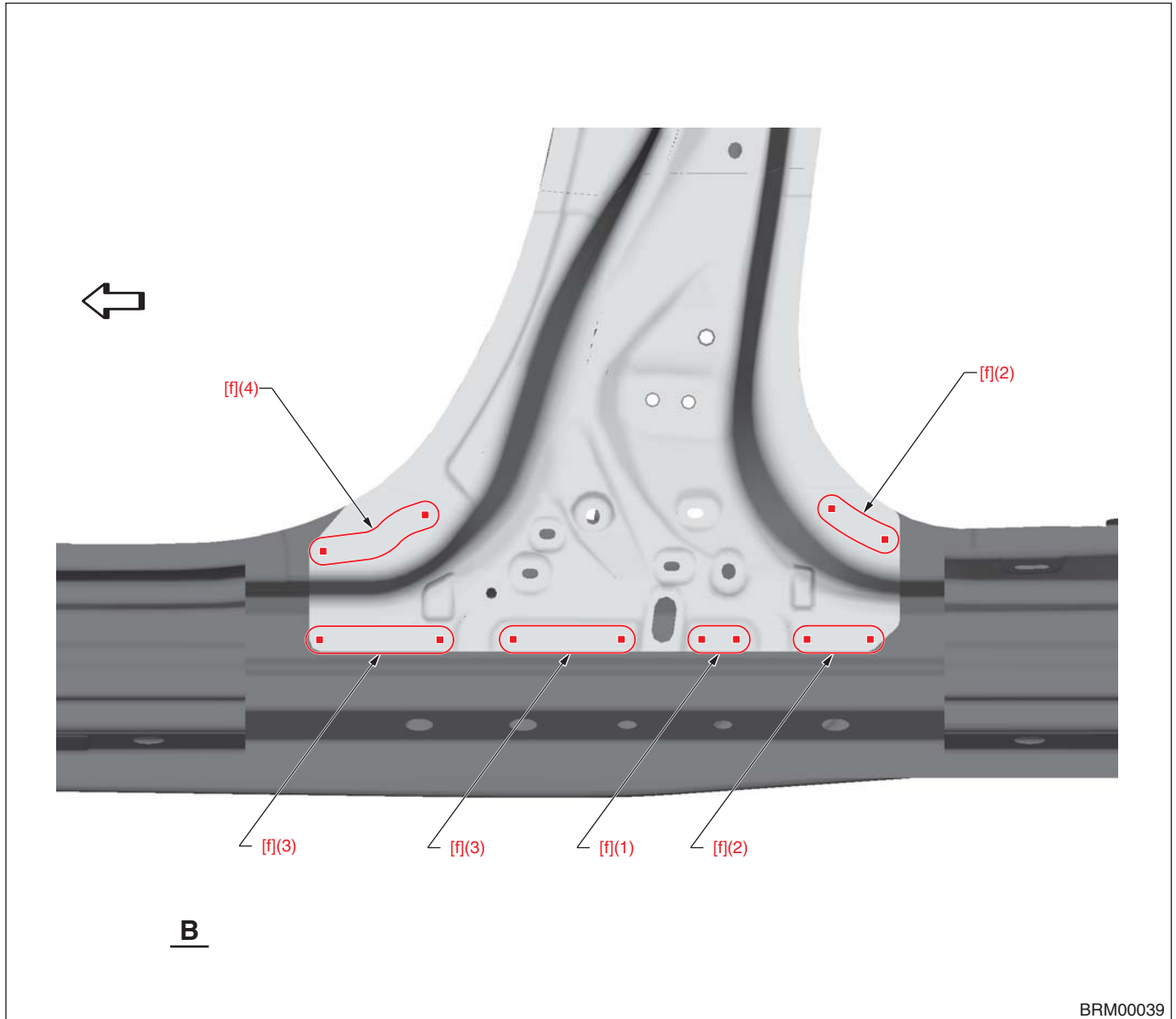
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views B



(1) 2 points (service)  
(2) 3 points (service)

(3) 4 points (service)

(4) 5 points (service)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

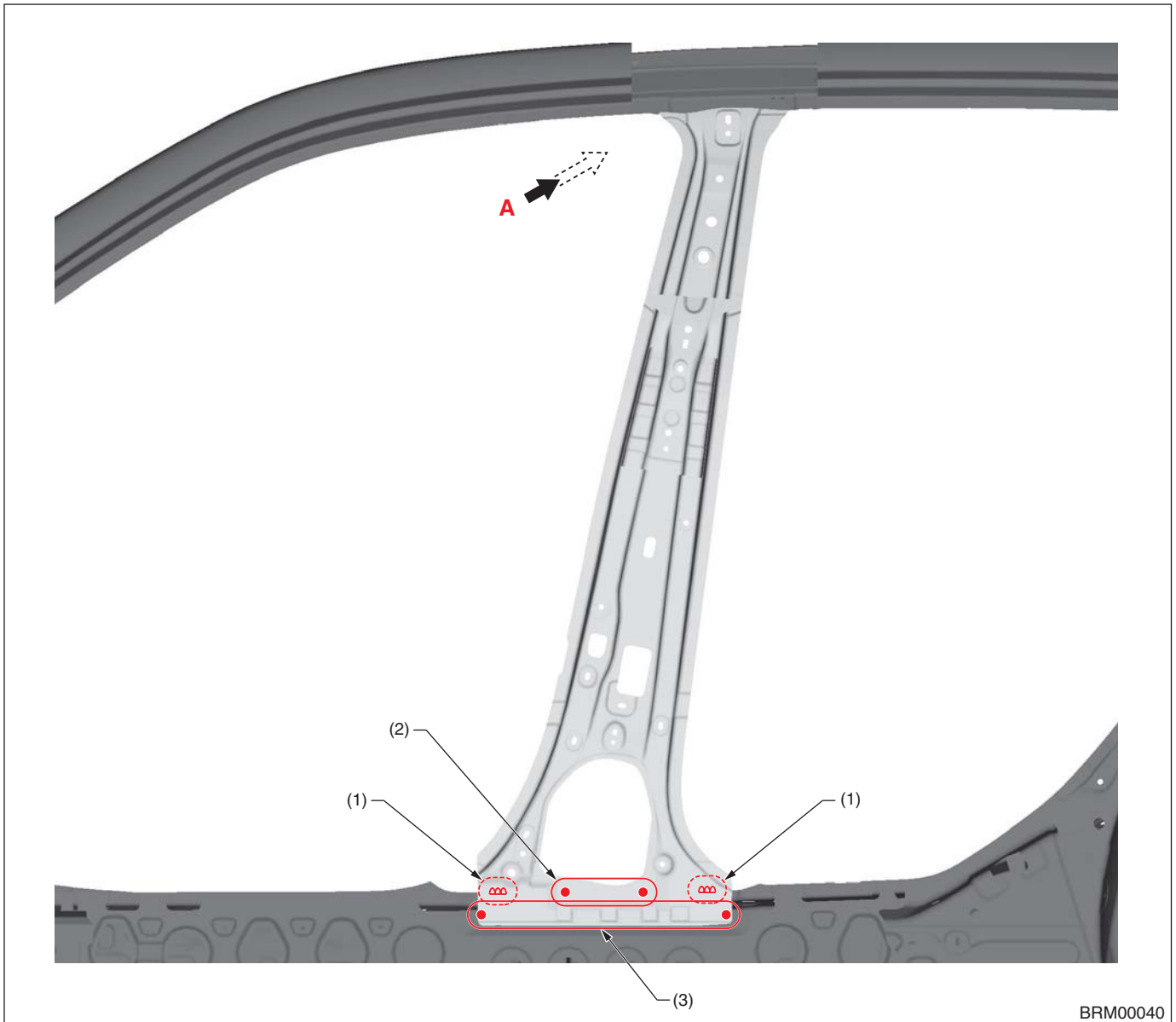
B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

## Panel Replacement

### 8-16. Center Pillar Inner (total replacement)

#### A: REMOVAL

##### • Overall view



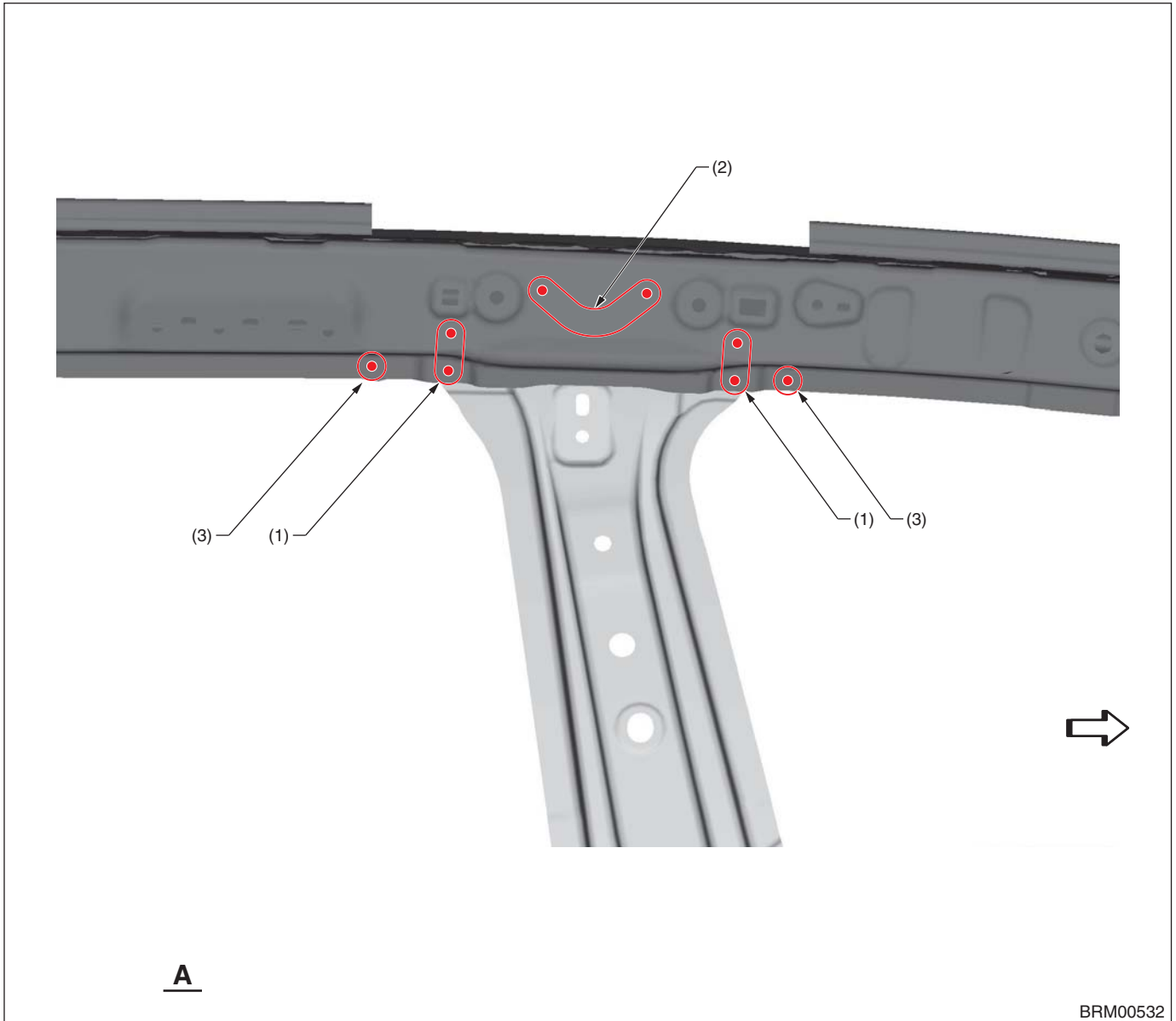
(1) 1 point (inside · 1 belt sander)

(2) 2 points (outside · 1)

(3) 9 points (outside · 1)

# Panel Replacement

## • Views A



(1) 2 points (inside · 1)

(2) 3 points (inside · 1)

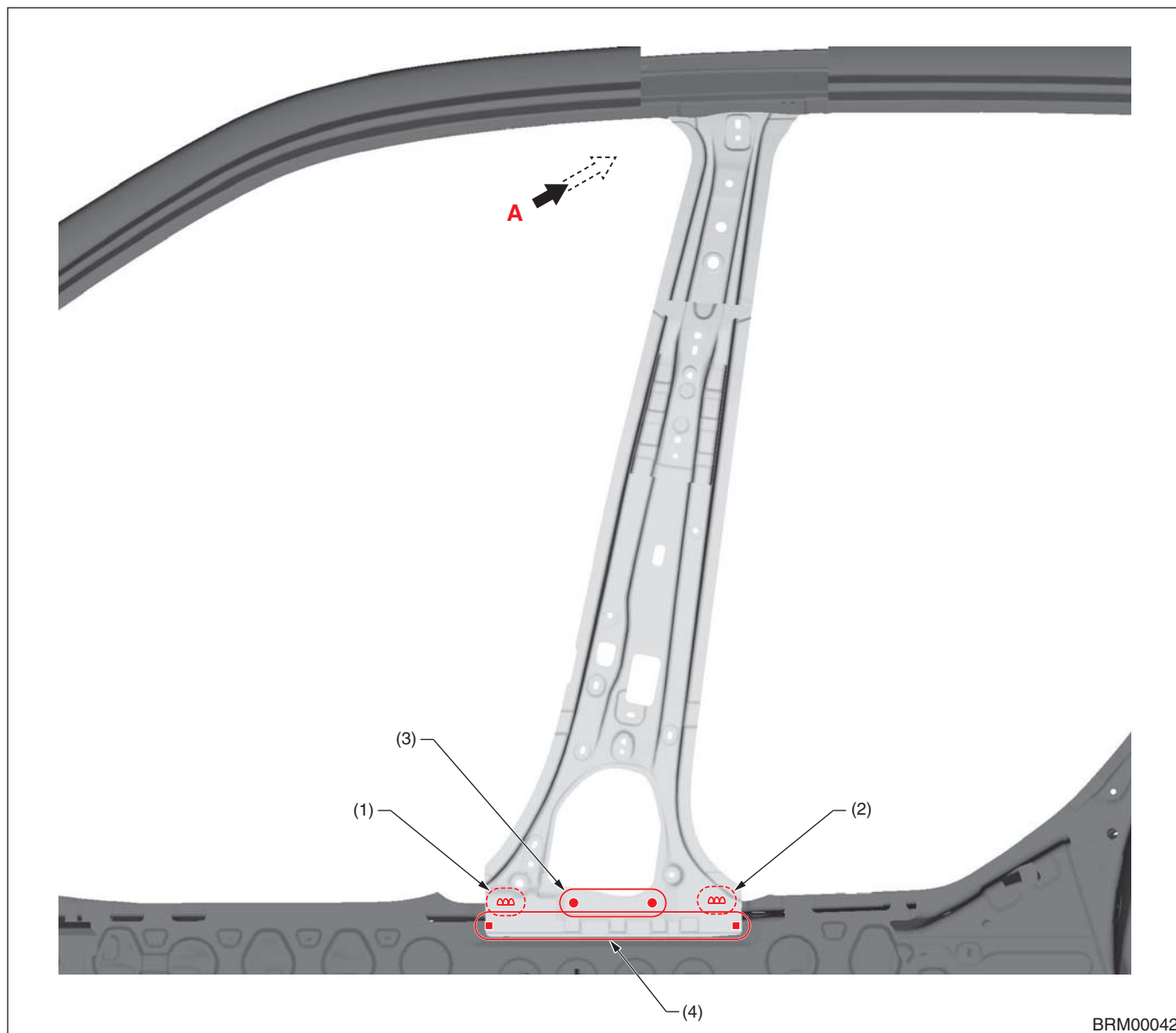
(3) 1 point (inside · 1)



# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00042

(1) 1 point (continuous welding)  
(41 mm [1.61 in])

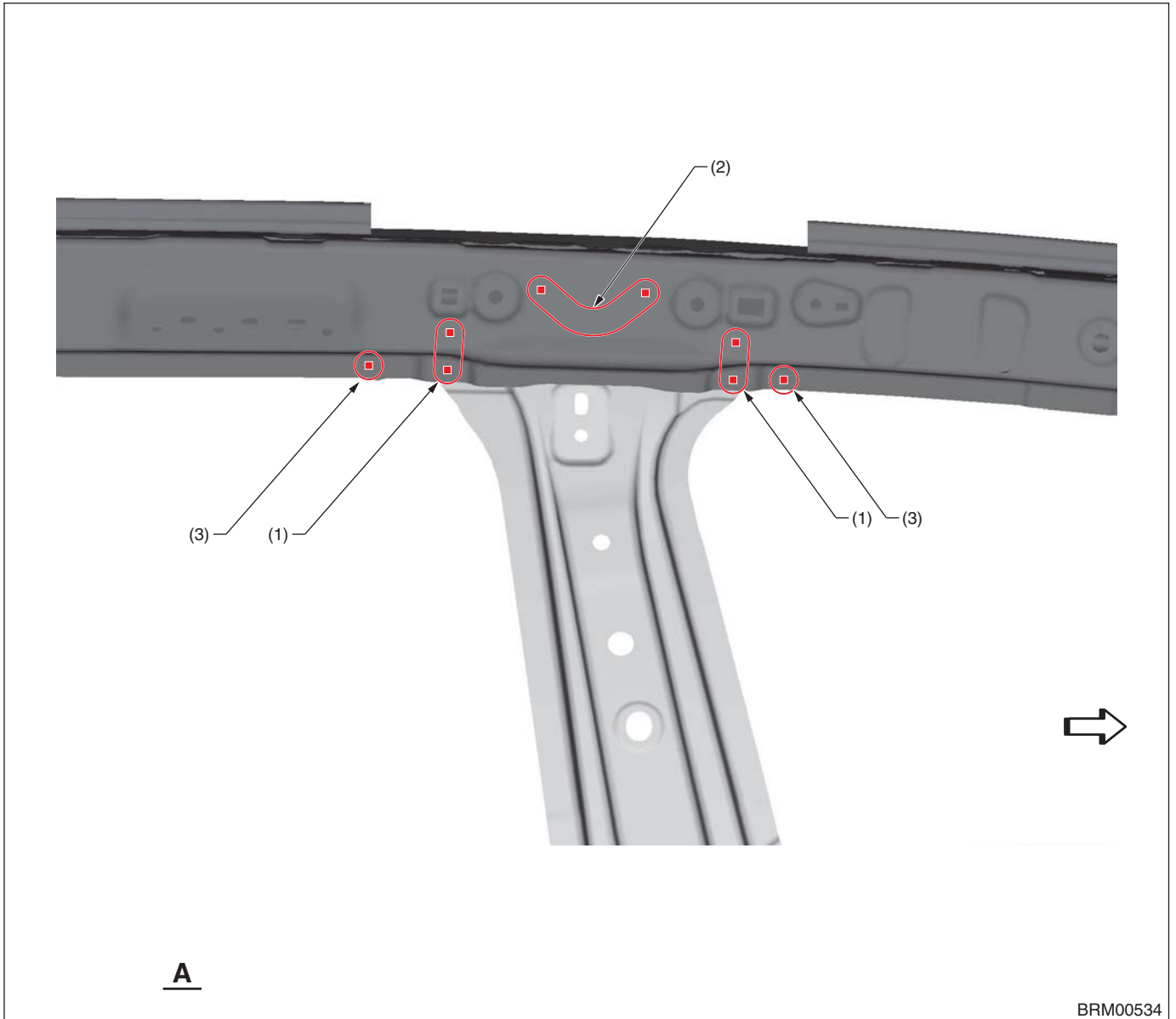
(2) 1 point (continuous welding)  
(15 mm [0.59 in])

(3) 2 points

(4) 9 points (service)

# Panel Replacement

## • Views A

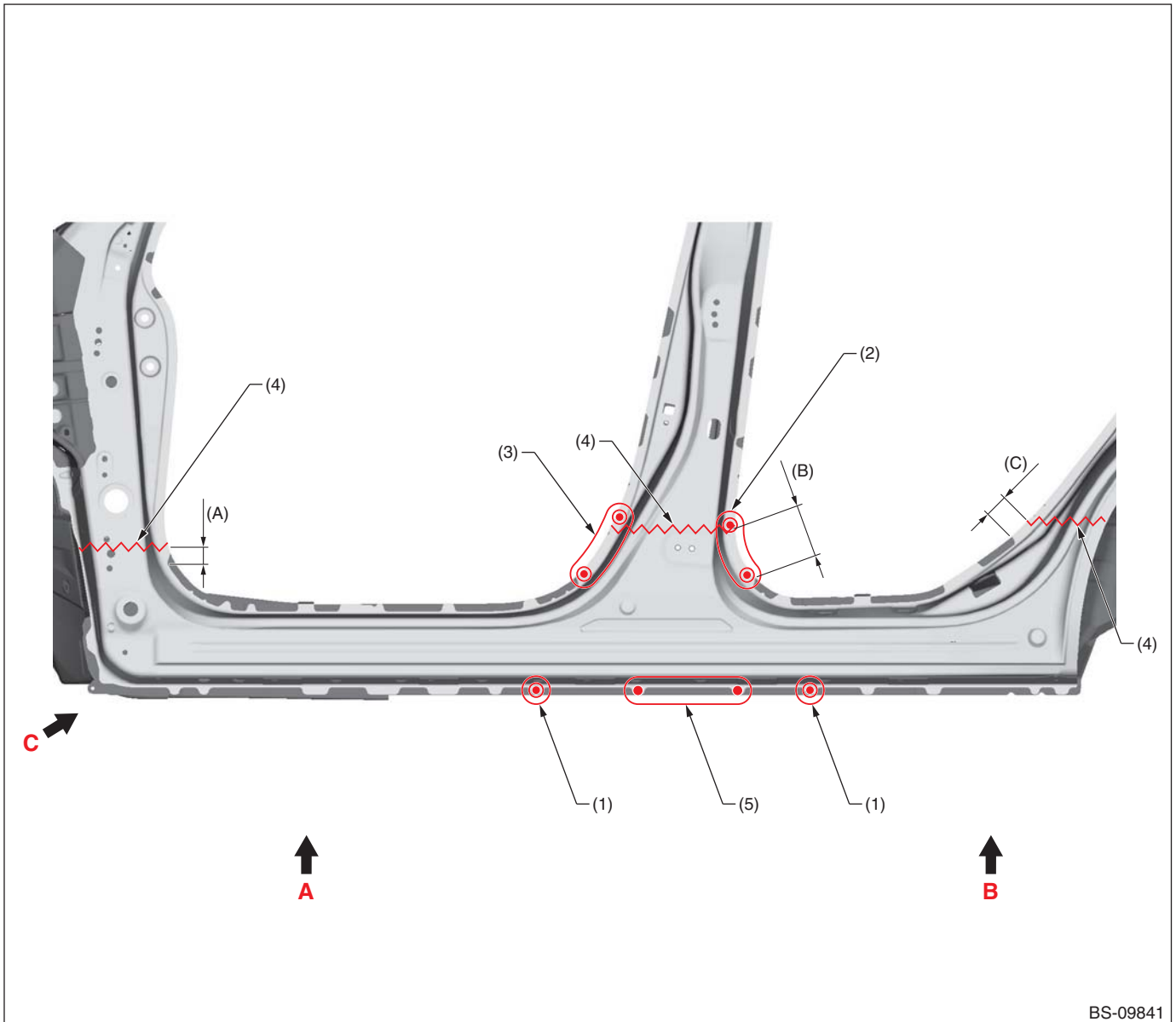


## Panel Replacement

### 8-17. Side Sill Outer Panel (partial replacement)

#### A: REMOVAL

##### • Overall view



(A) 30 mm [1.18 in]

(B) 90 mm [3.54 in]

(C) 55 mm [2.17 in]

(1) 1 point (outside · 1)

(3) 6 points (outside · 1)

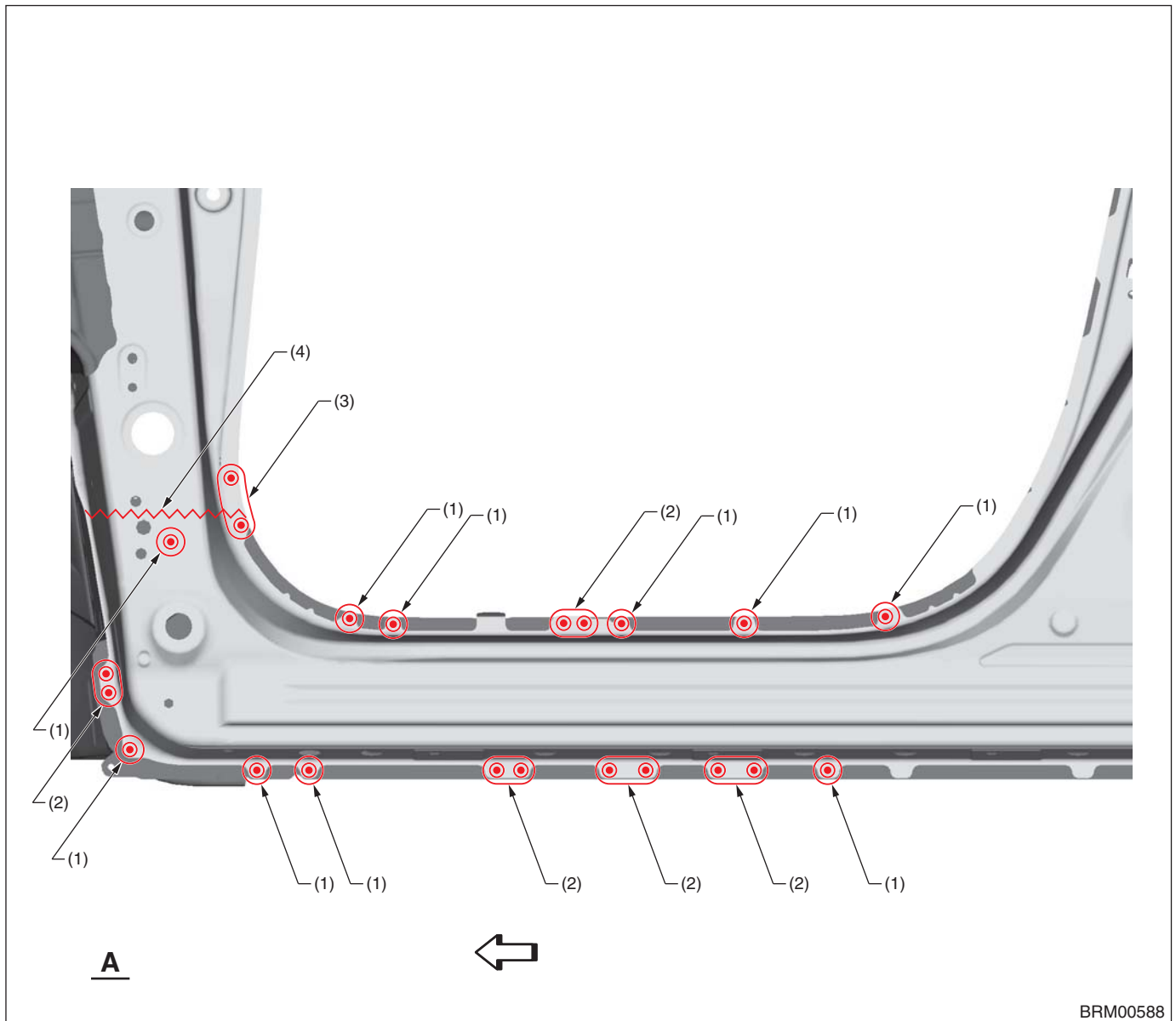
(5) 2 points (outside · 1)

(2) 5 points (outside · 1)

(4) Cut position

# Panel Replacement

## • Views A



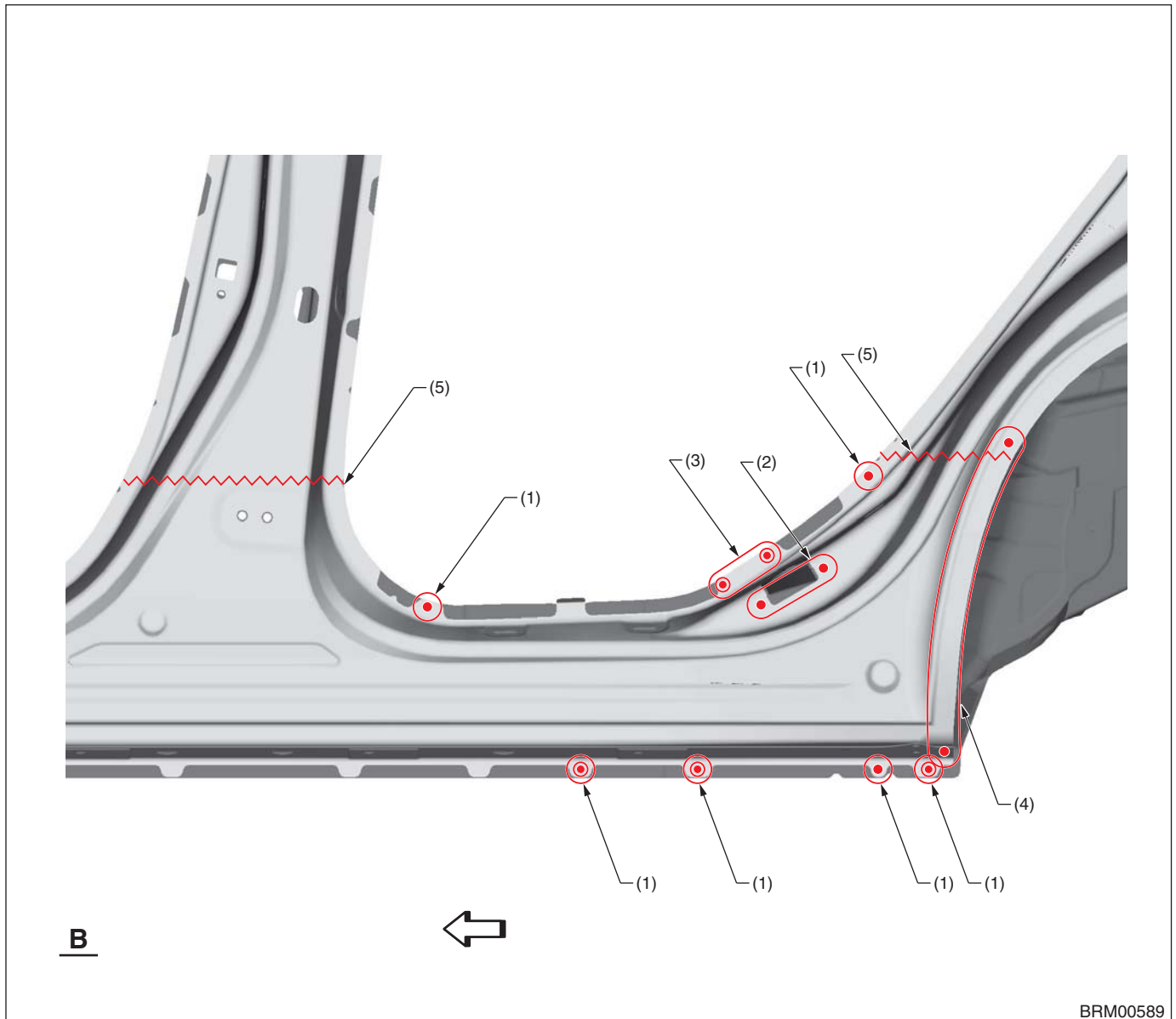
- (1) 1 point (outside · 1)  
(2) 2 points (outside · 1)

- (3) 3 points (outside · 1)

- (4) Cut position

# Panel Replacement

## • Views B



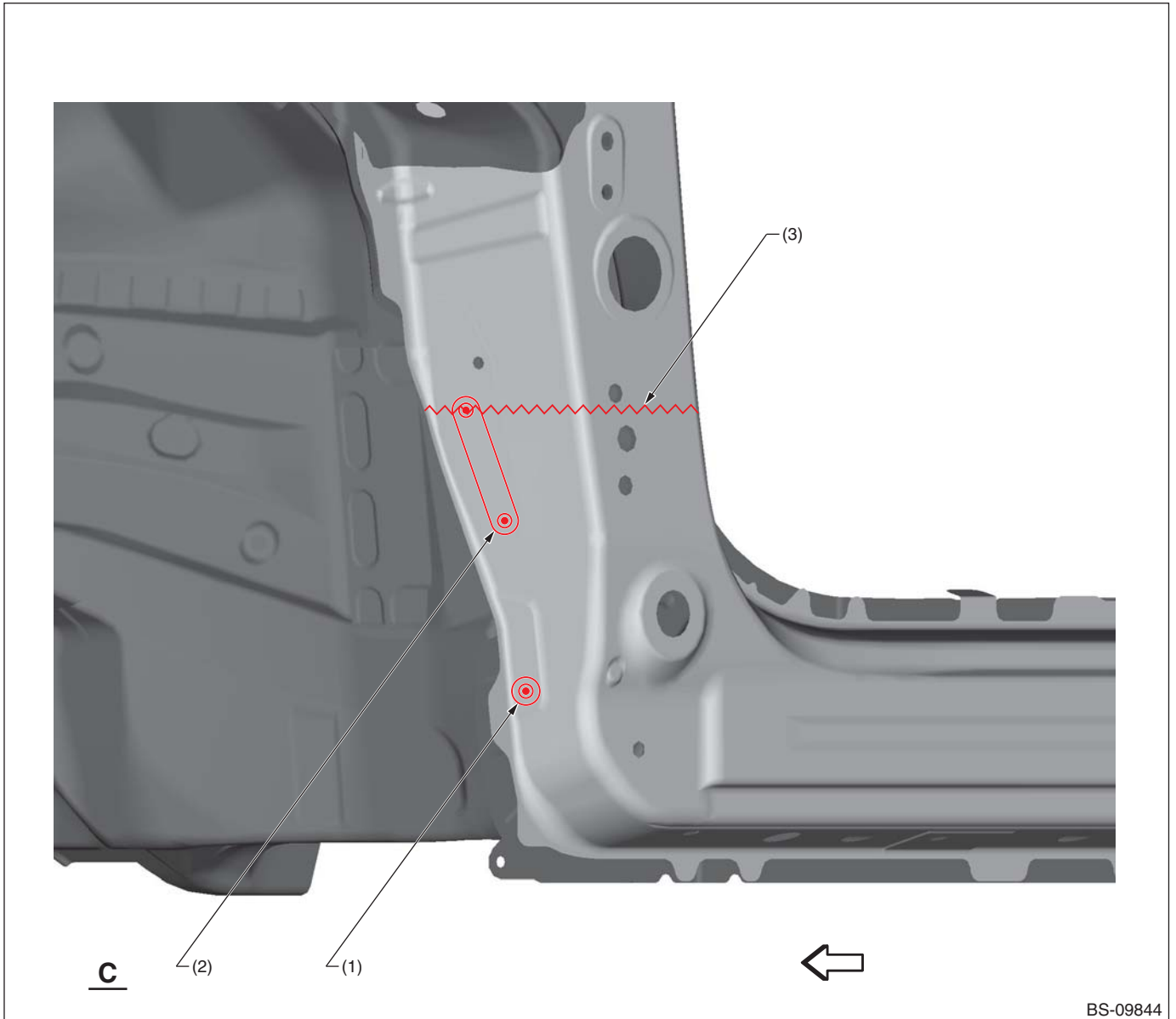
(1) 1 point (outside · 1)  
(2) 2 points (outside · 1)

(3) 3 points (outside · 1)  
(4) 6 points (outside · 1)

(5) Cut position

# Panel Replacement

## • Views C



(1) 1 point (outside · 1)

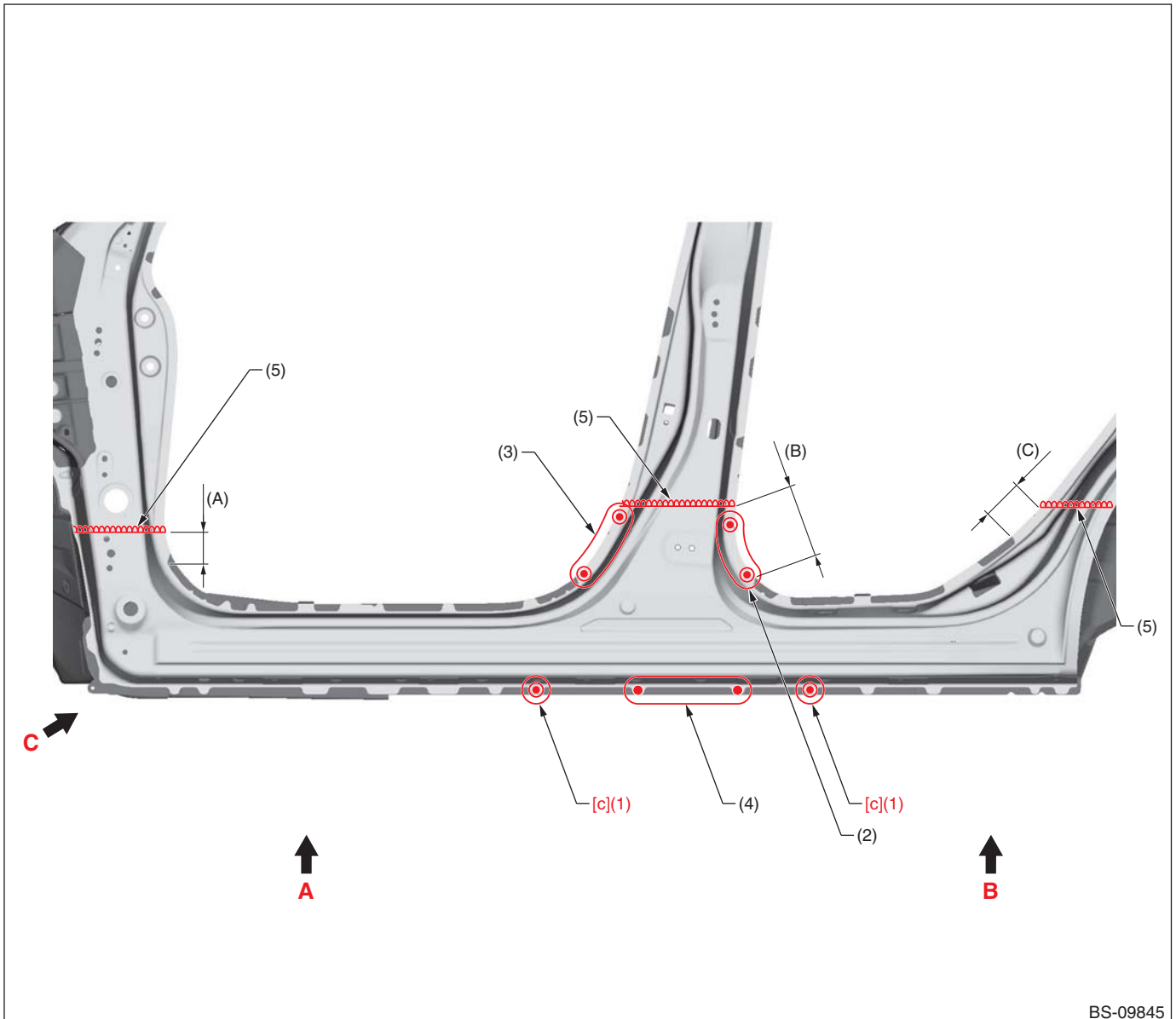
(2) 2 points (outside · 1)

(3) Cut position

# Panel Replacement

## B: INSTALLATION

### • Overall view



(A) 60 mm [2.36 in]

(B) 120 mm [4.72 in]

(C) 85 mm [3.35 in]

(1) 1 point

(3) 6 points

(5) 1 point (continuous welding)

(2) 5 points

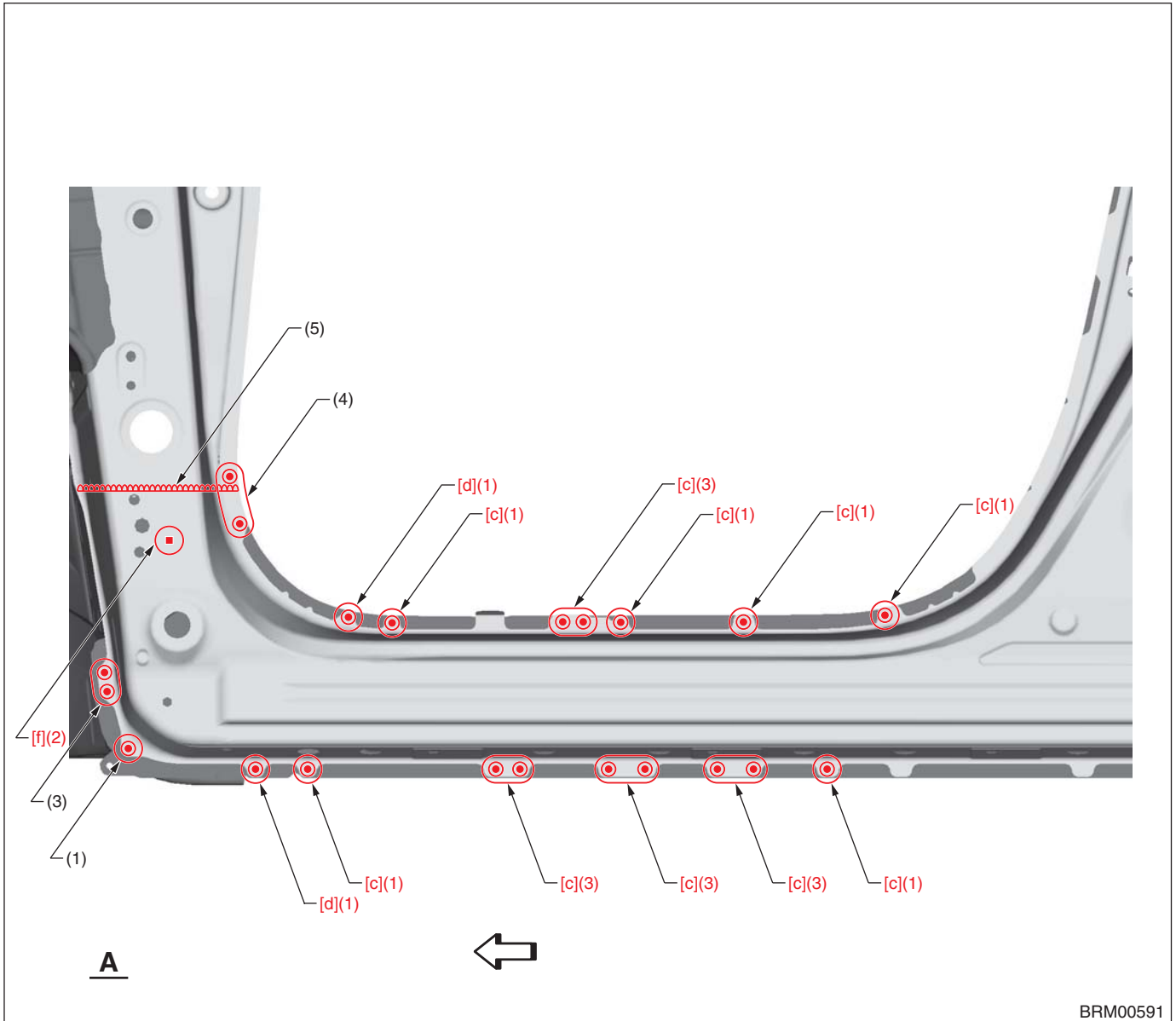
(4) 2 points

[c] Spot welding

Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc

# Panel Replacement

## • Views A



BRM00591

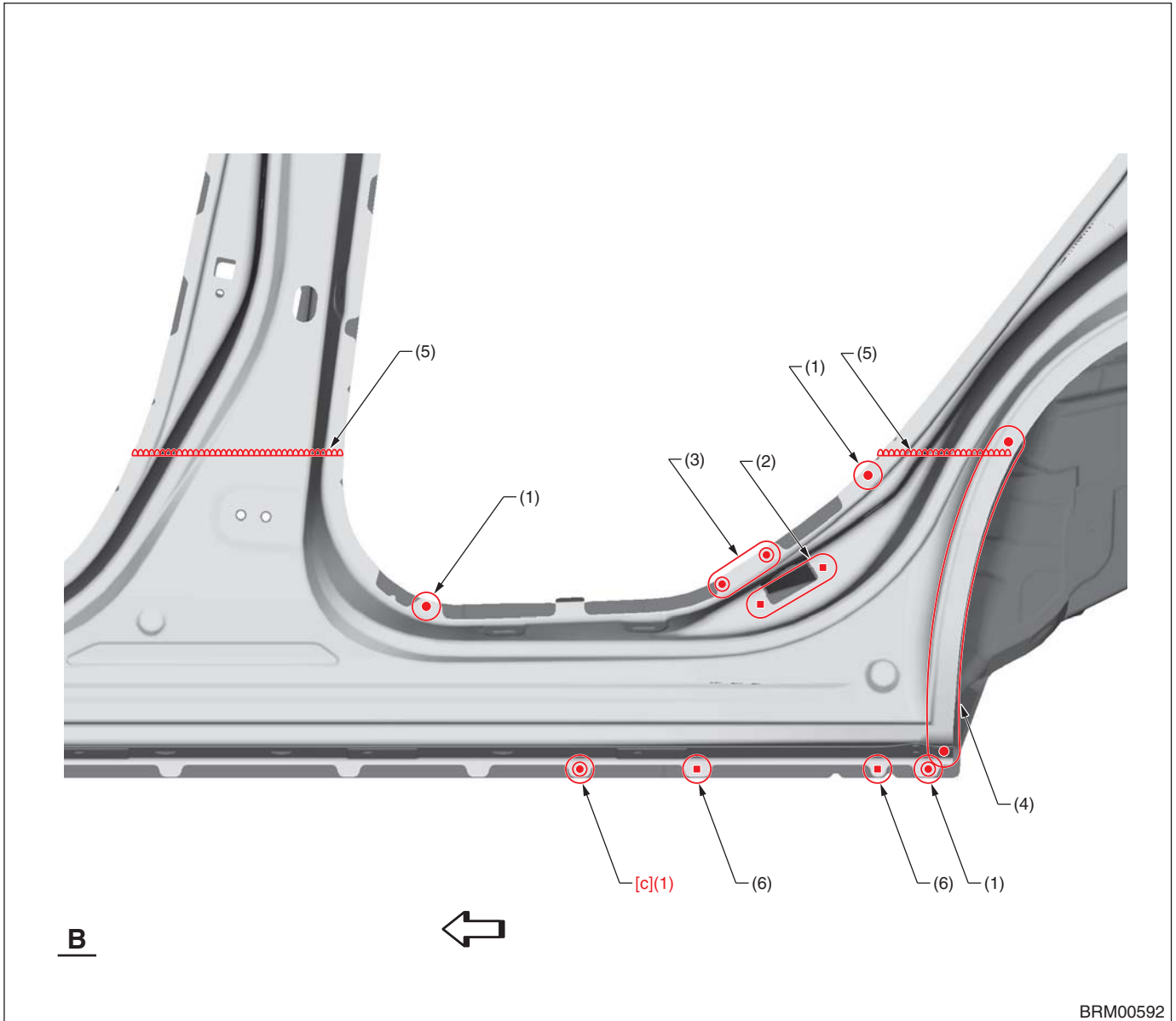
- |                       |              |                                  |
|-----------------------|--------------|----------------------------------|
| (1) 1 point           | (3) 2 points | (5) 1 point (continuous welding) |
| (2) 1 point (service) | (4) 3 points |                                  |

[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[d] Spot welding	Compression: 4.0 kN, Current: 8.0 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)



# Panel Replacement

## • Views B

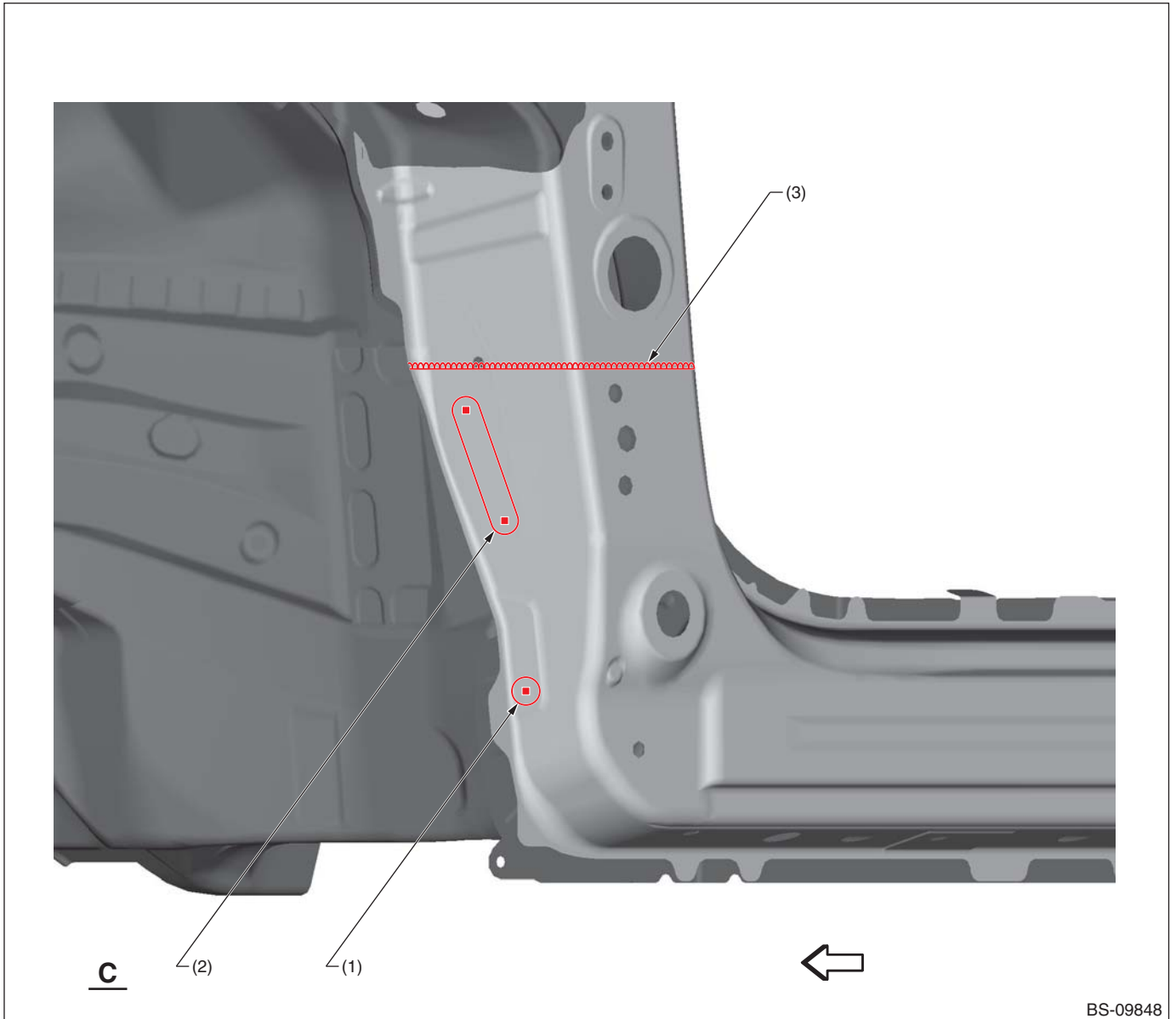


- |                        |              |                                  |
|------------------------|--------------|----------------------------------|
| (1) 1 point            | (3) 3 points | (5) 1 point (continuous welding) |
| (2) 2 points (service) | (4) 6 points | (6) 1 point (service)            |

[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
------------------	--

## Panel Replacement

### • Views C



BS-09848

(1) 1 point (service)

(2) 2 points (service)

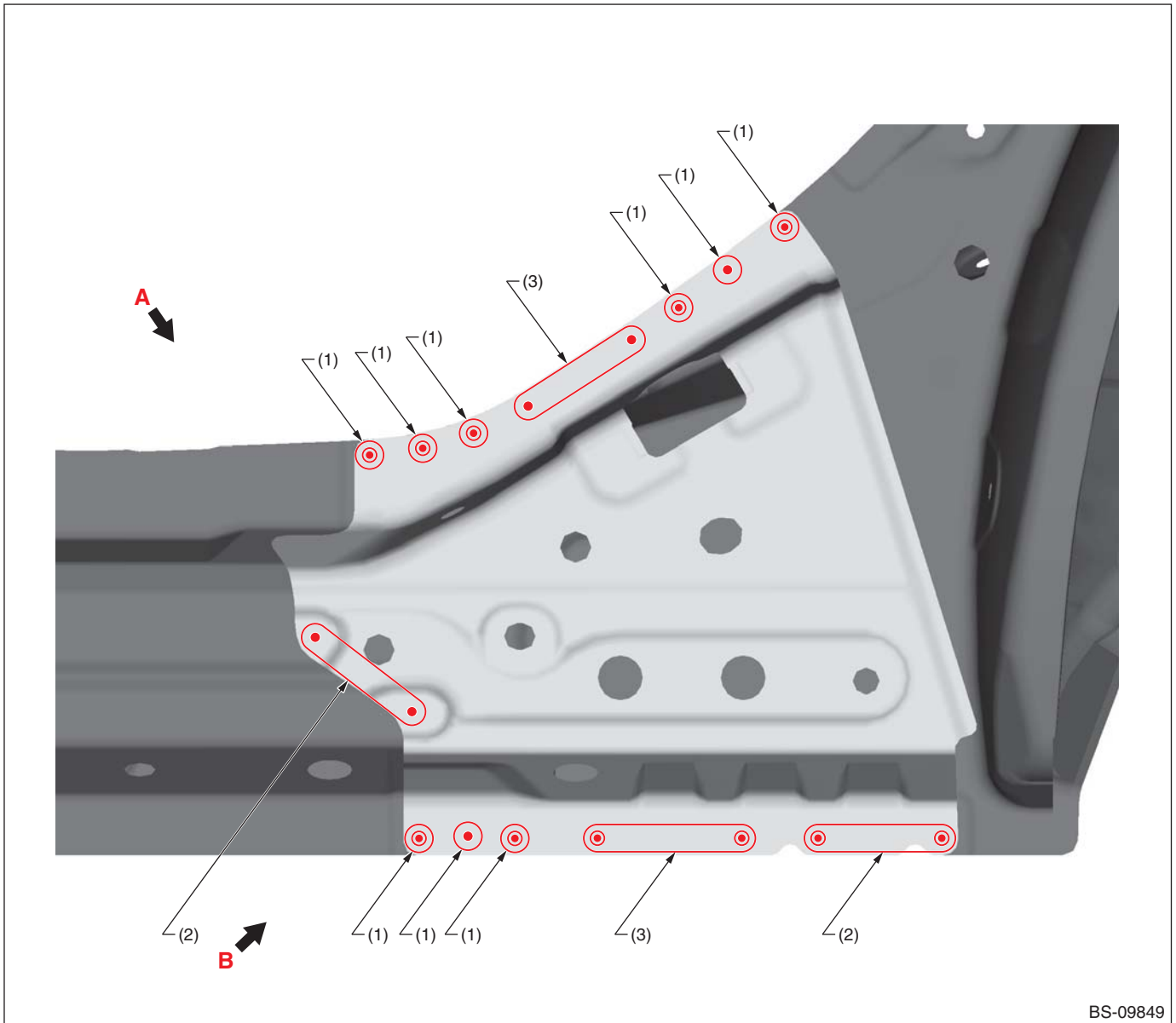
(3) 1 point (continuous welding)

## Panel Replacement

### 8-18. Side Sill Reinforcement Outer Rear (total replacement)

#### A: REMOVAL

##### • Overall view



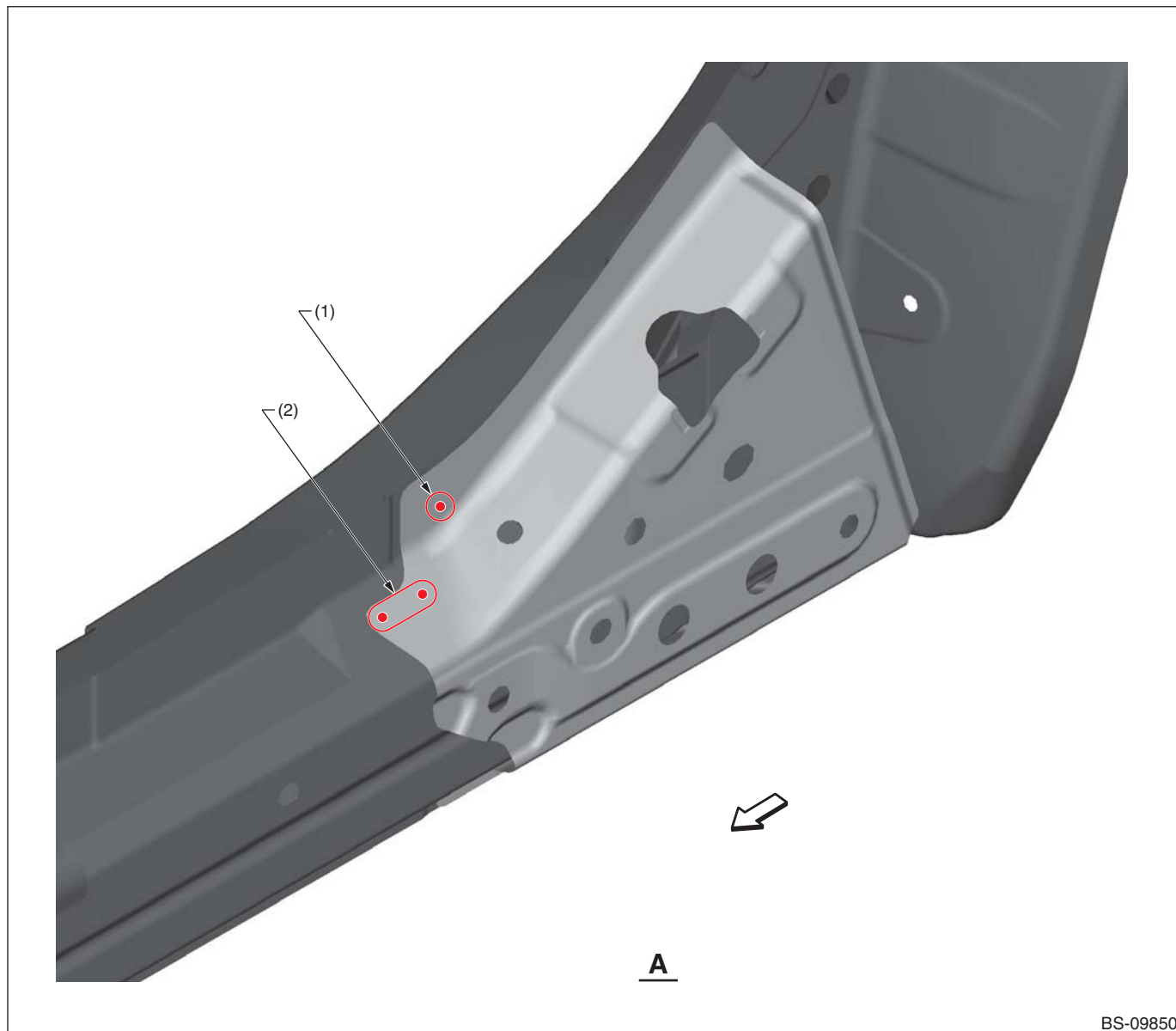
(1) 1 point (outside · 1)

(2) 2 points (outside · 1)

(3) 3 points (outside · 1)

# Panel Replacement

## • Views A



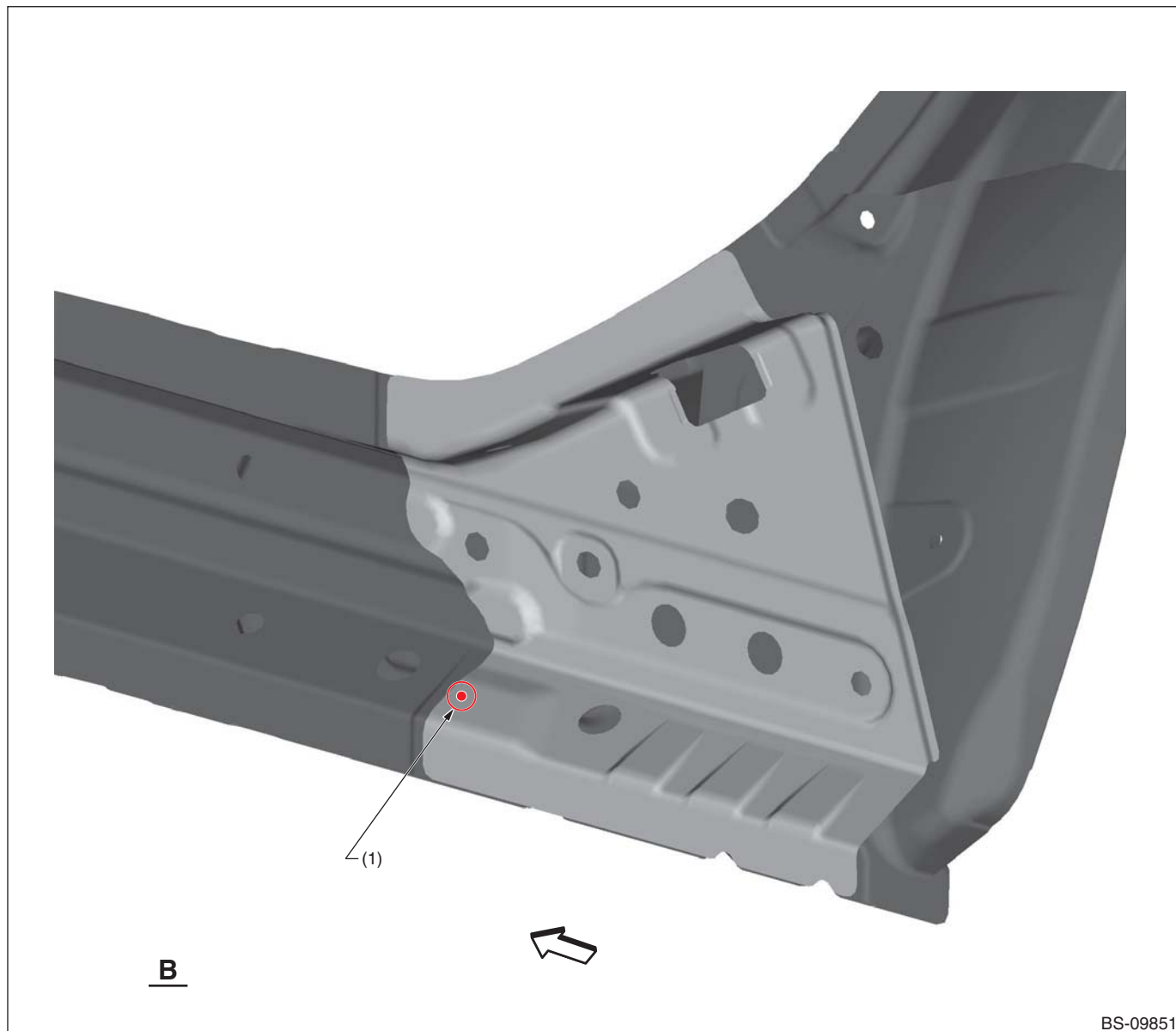
BS-09850

(1) 1 point (outside · 1)

(2) 2 points (top · 1)

## Panel Replacement

- Views B

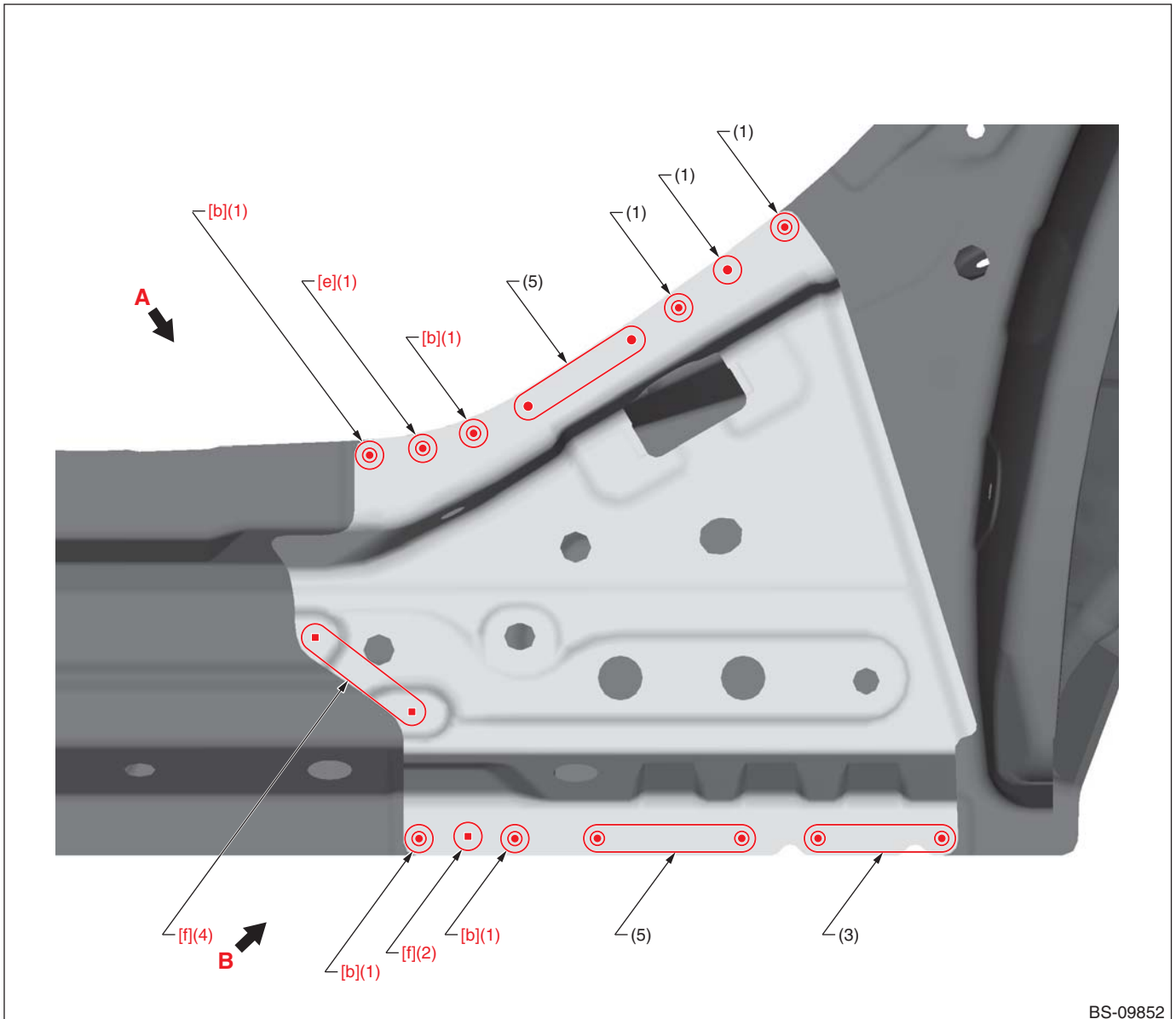


(1) 1 point (bottom · 1)

## Panel Replacement

## B: INSTALLATION

- **Overall view**

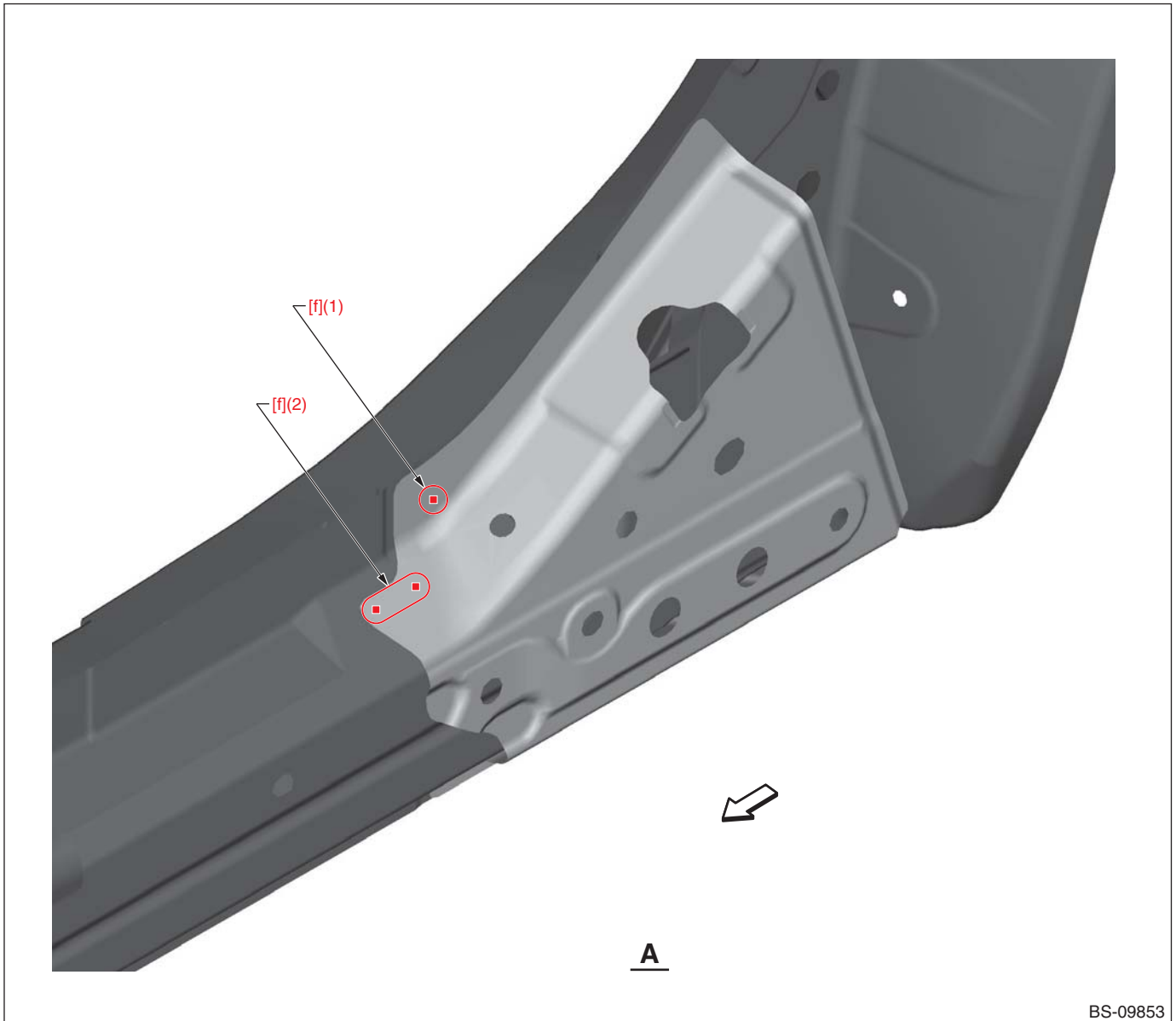


- (1) 1 point                      (3) 2 points                      (5) 3 points  
 (2) 1 point (service)        (4) 2 points (service)

[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[e] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



BS-09853

(1) 1 point (service)

(2) 2 points (service)

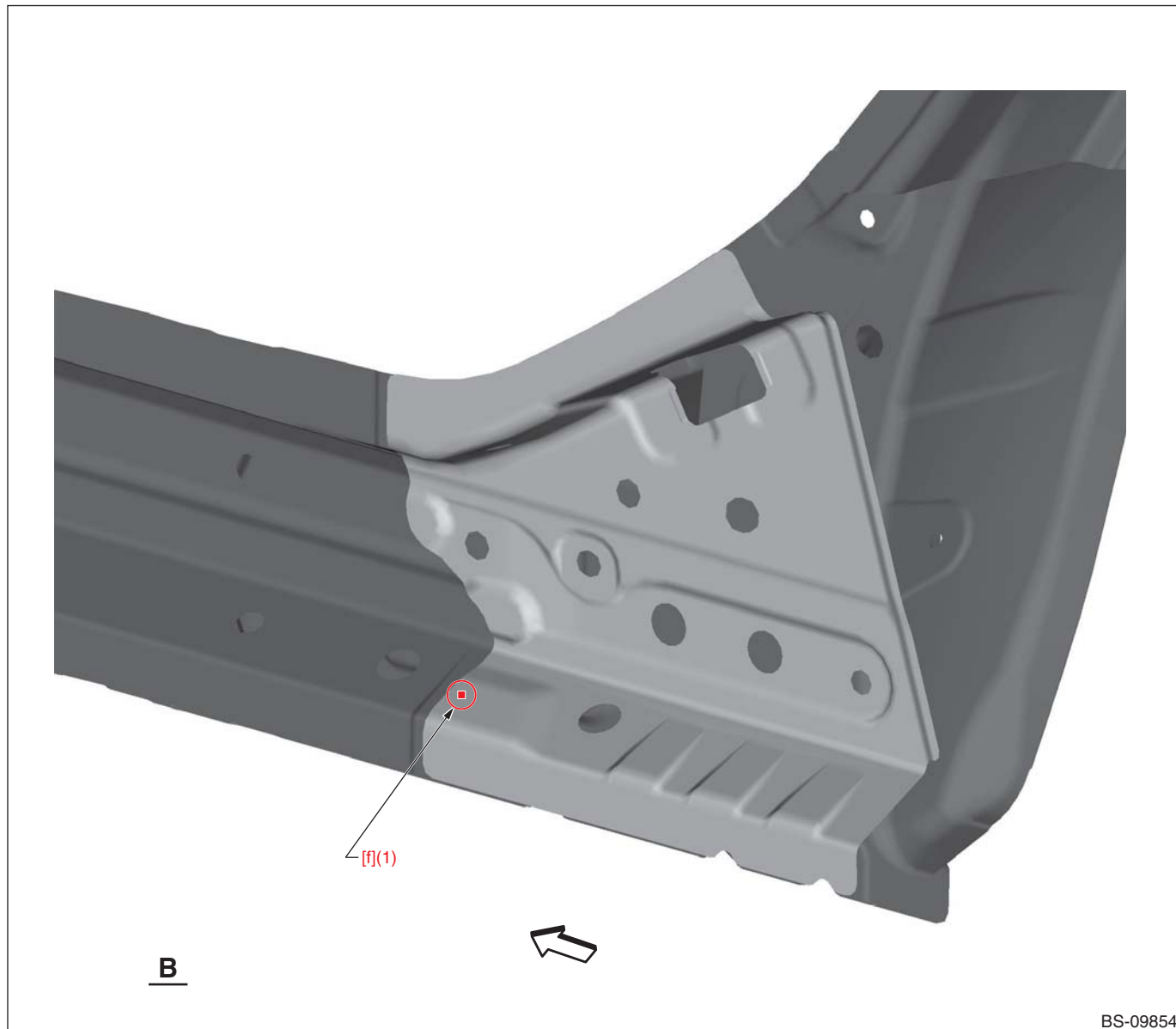
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views B



BS-09854

(1) 1 point (service)

[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

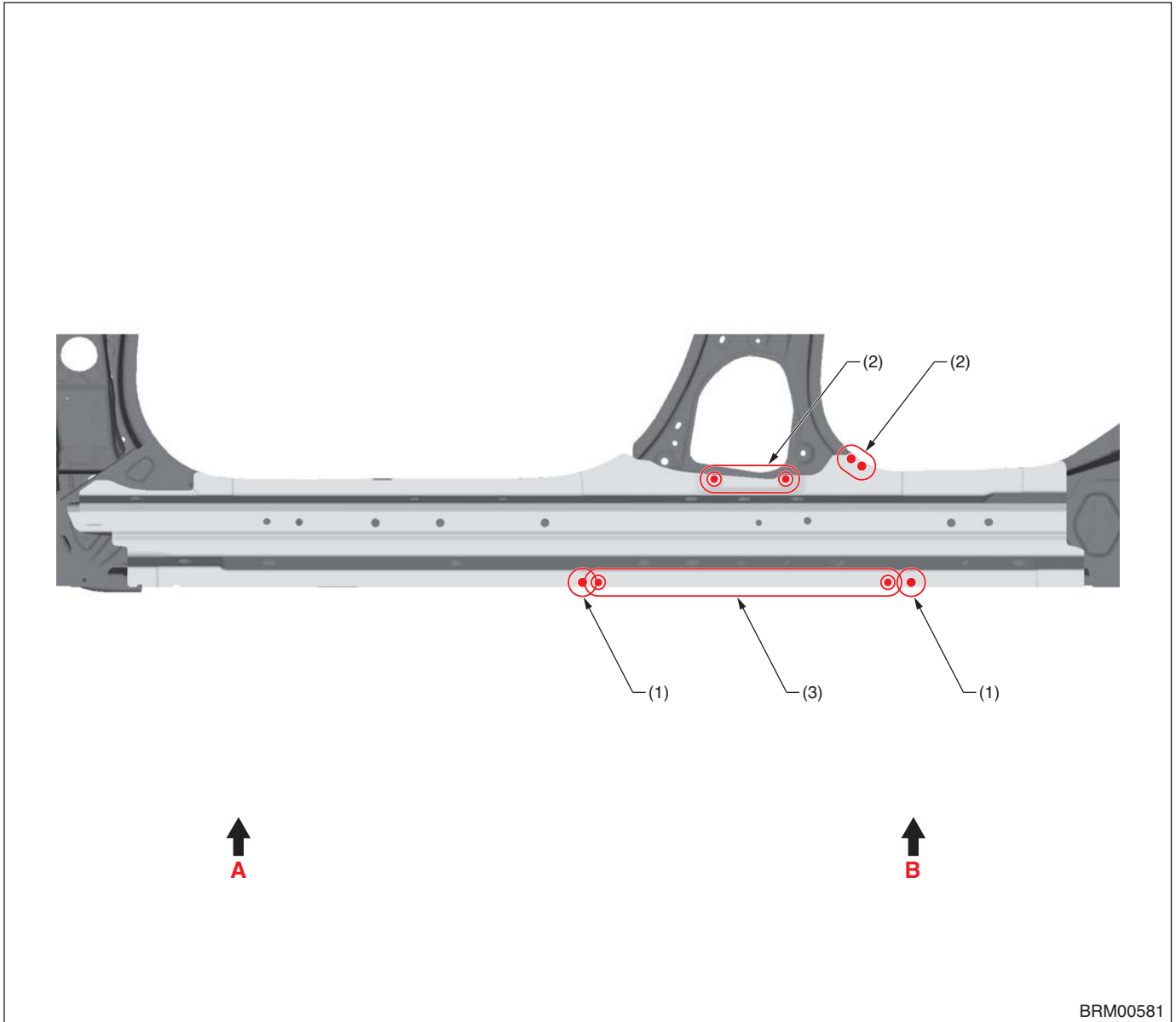


## Panel Replacement

### 8-19. Side Sill Reinforcement Outer (total replacement)

#### A: REMOVAL

##### • Overall view



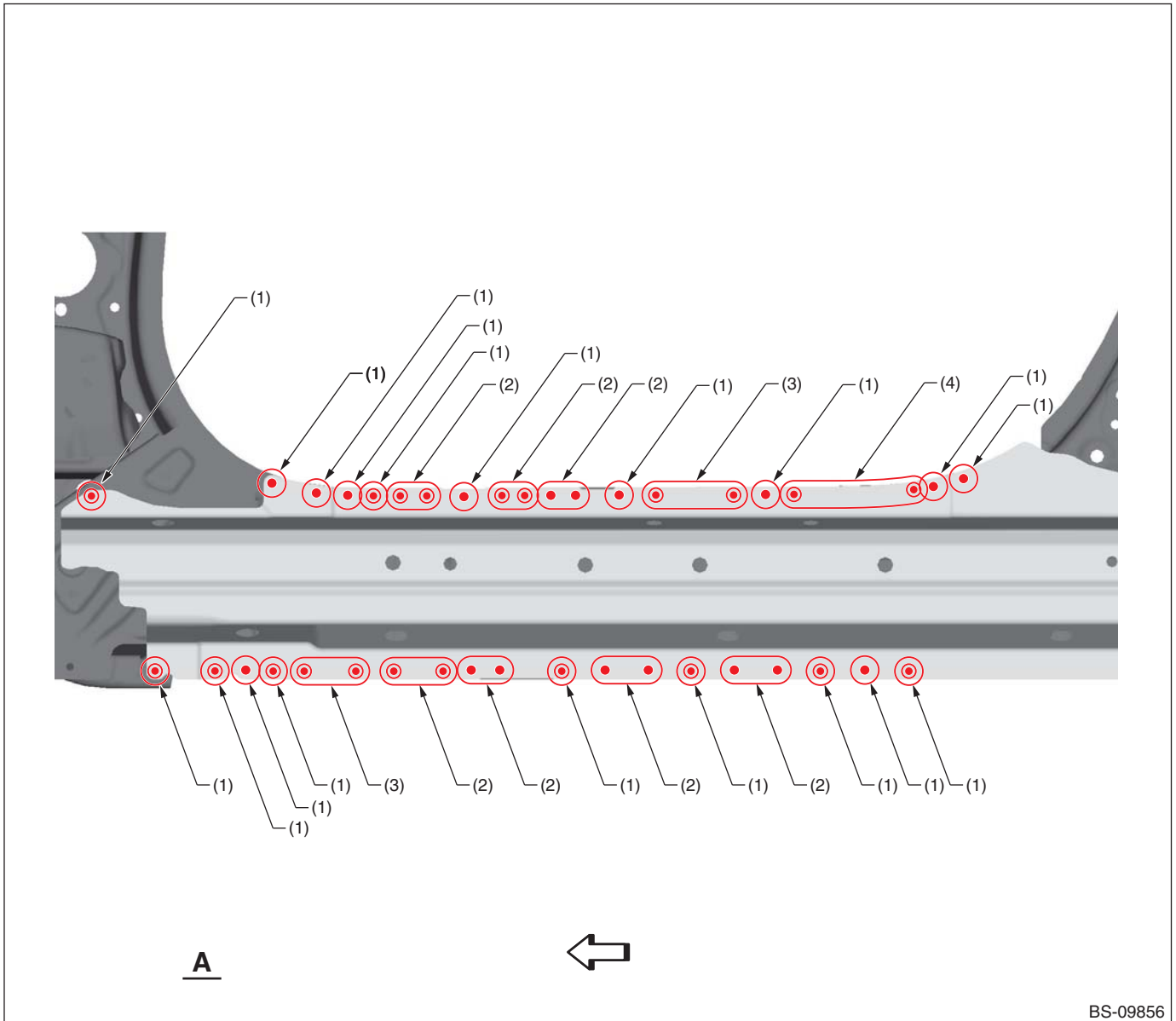
(1) 1 point (outside · 1)

(2) 2 points (outside · 1)

(3) 12 points (outside · 1)

# Panel Replacement

## • Views A



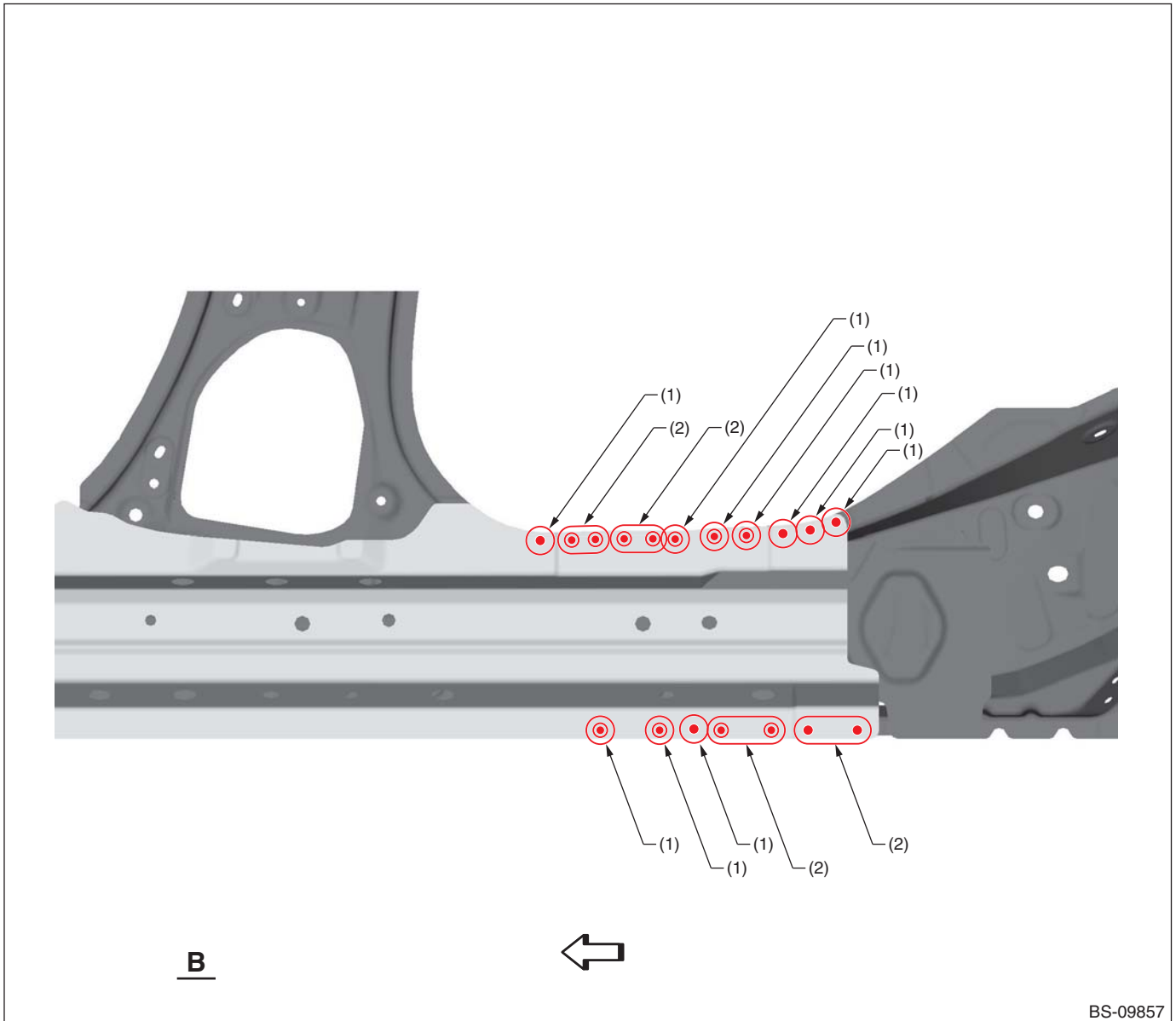
(1) 1 point (outside · 1)  
(2) 2 points (outside · 1)

(3) 3 points (outside · 1)

(4) 7 points (outside · 1)

# Panel Replacement

## • Views B



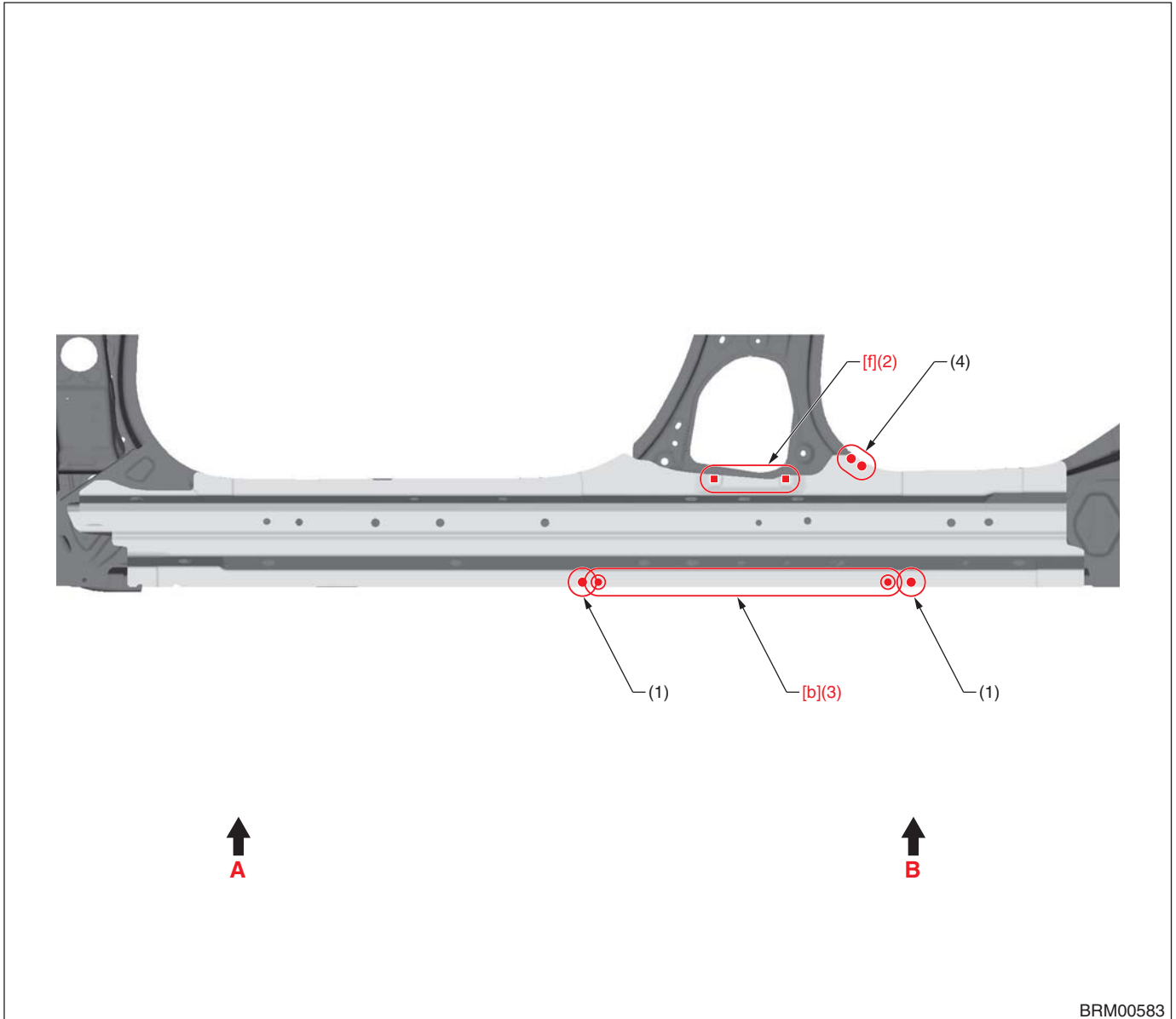
(1) 1 point (outside · 1)

(2) 2 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



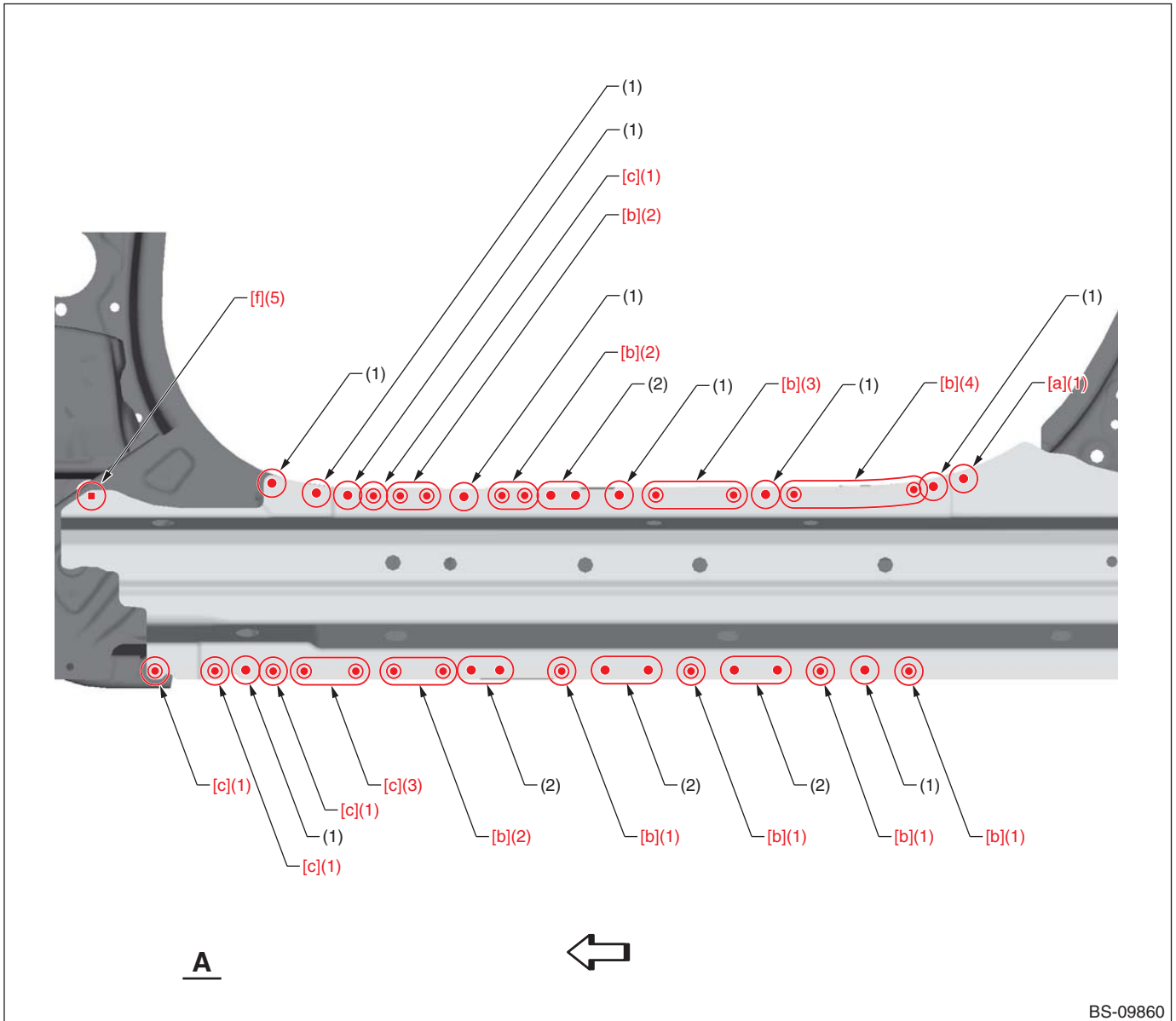
- (1) 1 point  
(2) 2 points (service)

- (3) 12 points

- (4) 2 points

[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

- **Views A**

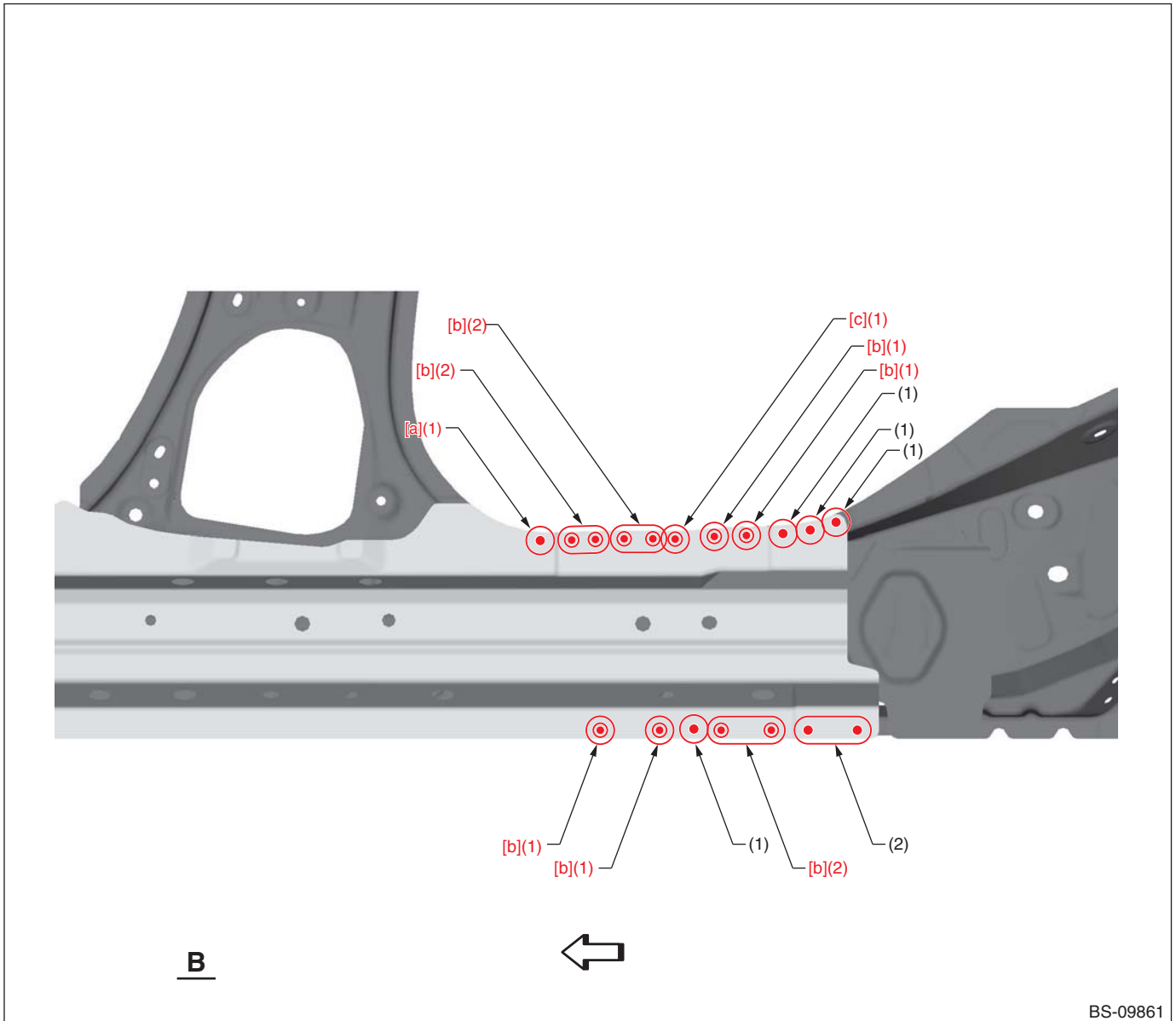


- (1) 1 point                      (3) 3 points                      (5) 1 point (service)  
 (2) 2 points                    (4) 7 points

[a] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc
[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views B



(1) 1 point

(2) 2 points

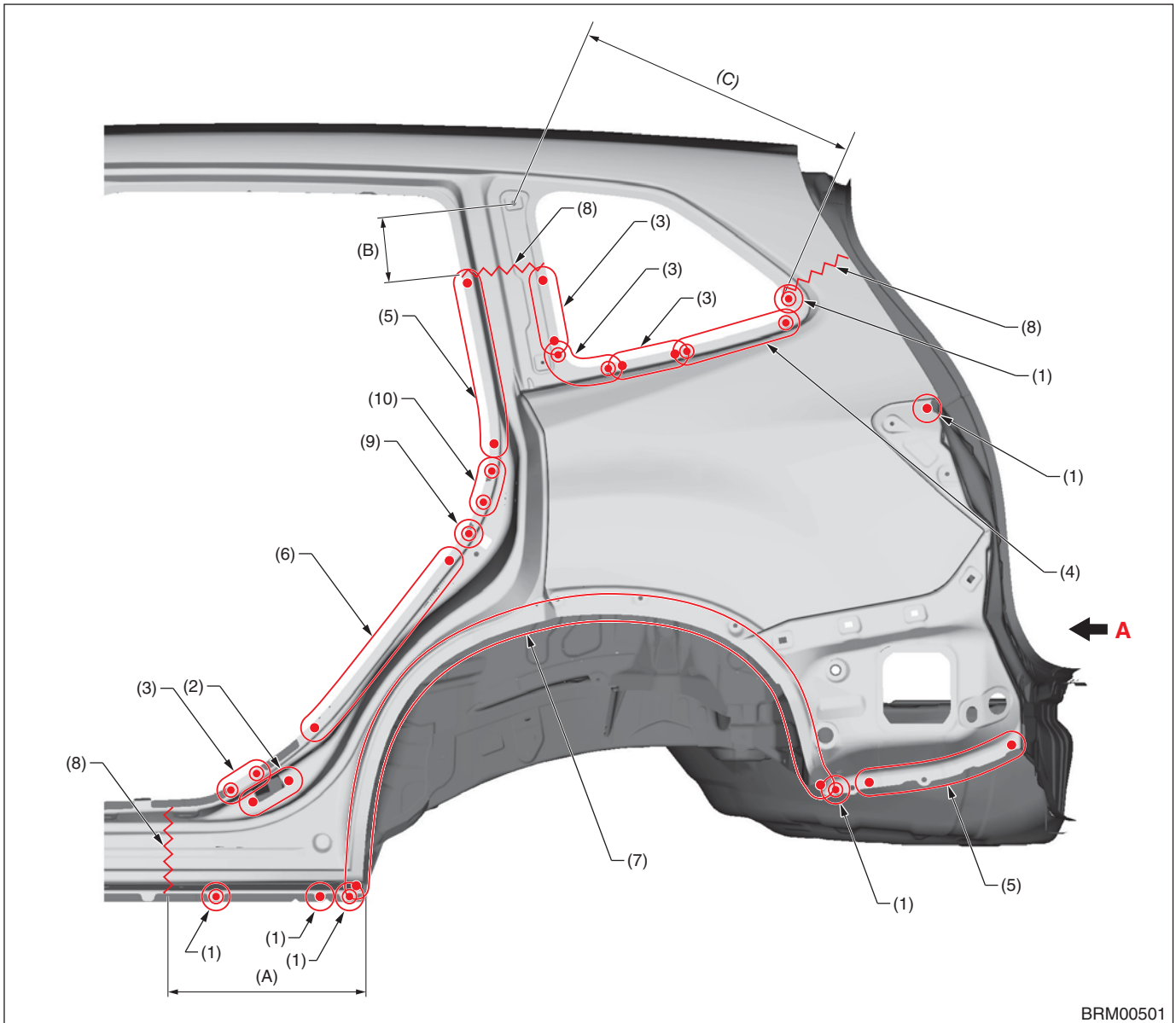
[a] Spot welding	Compression: 4.0 kN, Current: 8.5 kA, Welding time: 20 cyc
[b] Spot welding	Compression: 3.0 kN, Current: 8.0 kA, Welding time: 23 cyc
[c] Spot welding	Compression: 4.0 kN, Current: 7.0 kA, Welding time: 20 cyc

## Panel Replacement

### 8-20. Rear Quarter Panel (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00501

(A) 360 mm [14.17 in]

(B) 13.5 mm [5.31 in]

(C) 510 mm [20.08 in]

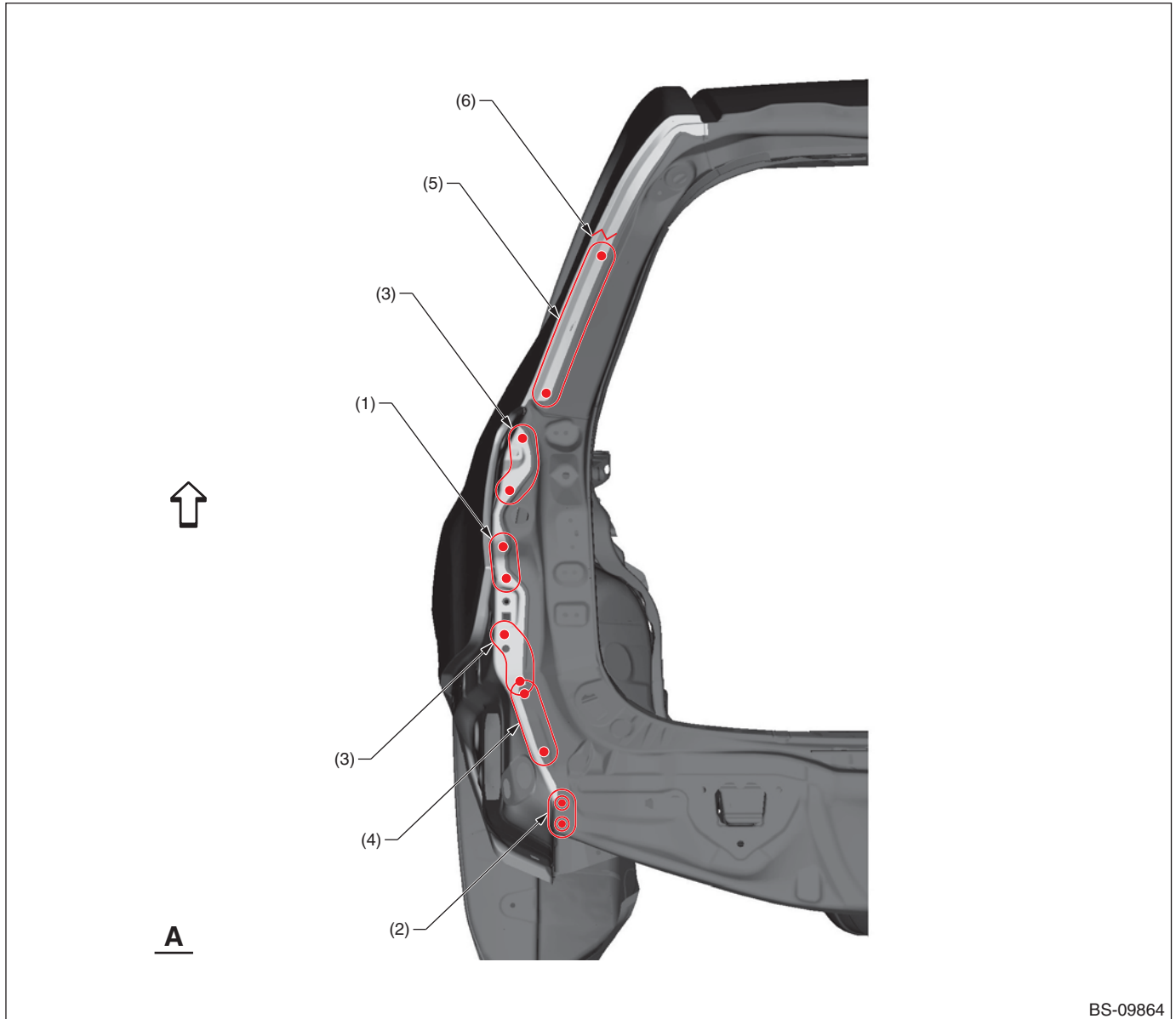
- (1) 1 point (outside · 1)
- (2) 2 points (outside · 1)
- (3) 3 points (outside · 1)
- (4) 4 points (outside · 1)

- (5) 6 points (outside · 1)
- (6) 7 points (outside · 1)
- (7) 22 points (outside · 1)
- (8) Cut position

- (9) 1 point (outside · 2)
- (10) 3 points (outside · 2)

# Panel Replacement

## • Views A

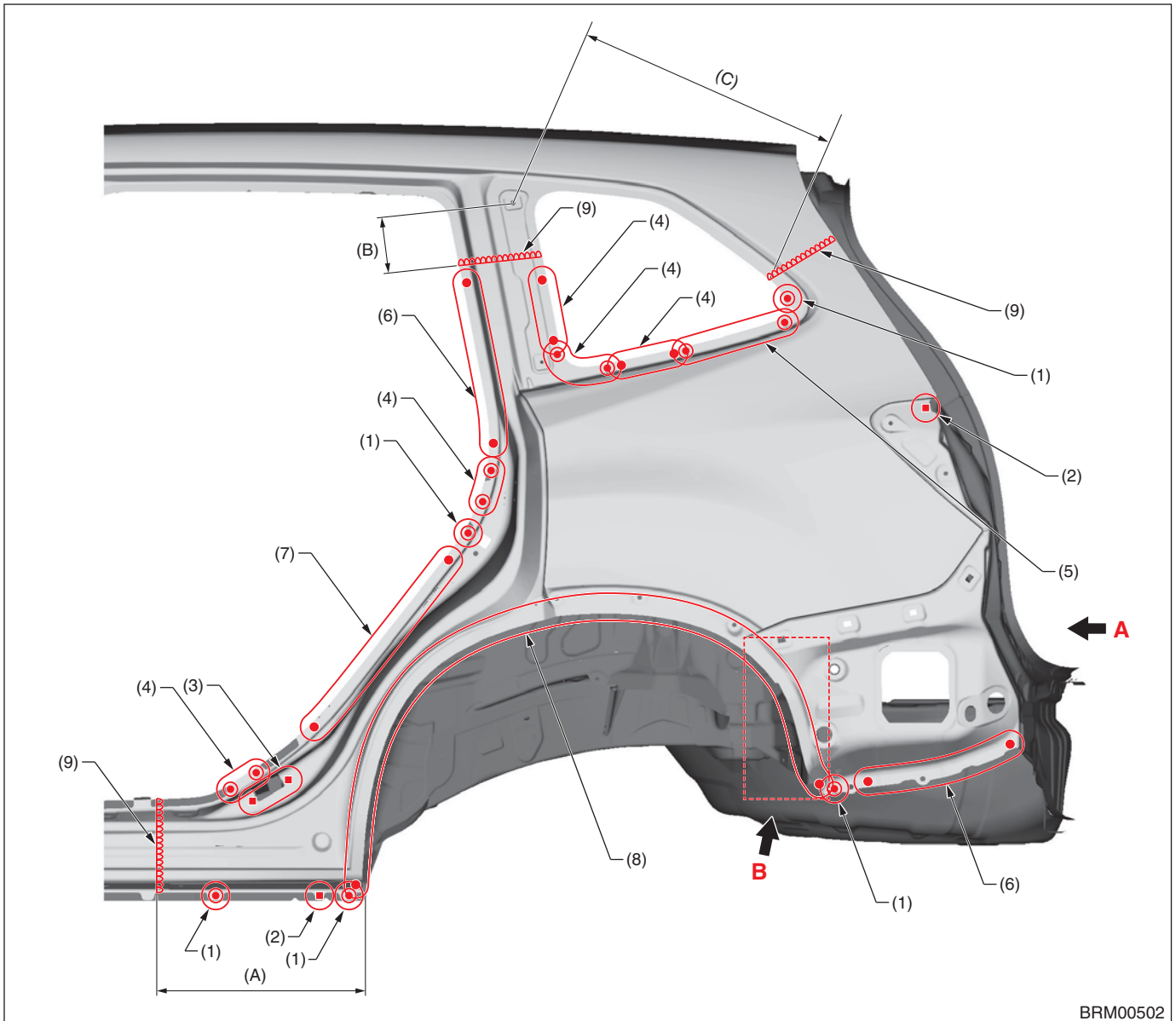




# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00502

(A) 380 mm [14.96 in]

(B) 115 mm [4.53 in]

(C) 490 mm [19.29 in]

(1) 1 point

(4) 3 points

(7) 7 points

(2) 1 point (service)

(5) 4 points

(8) 22 points

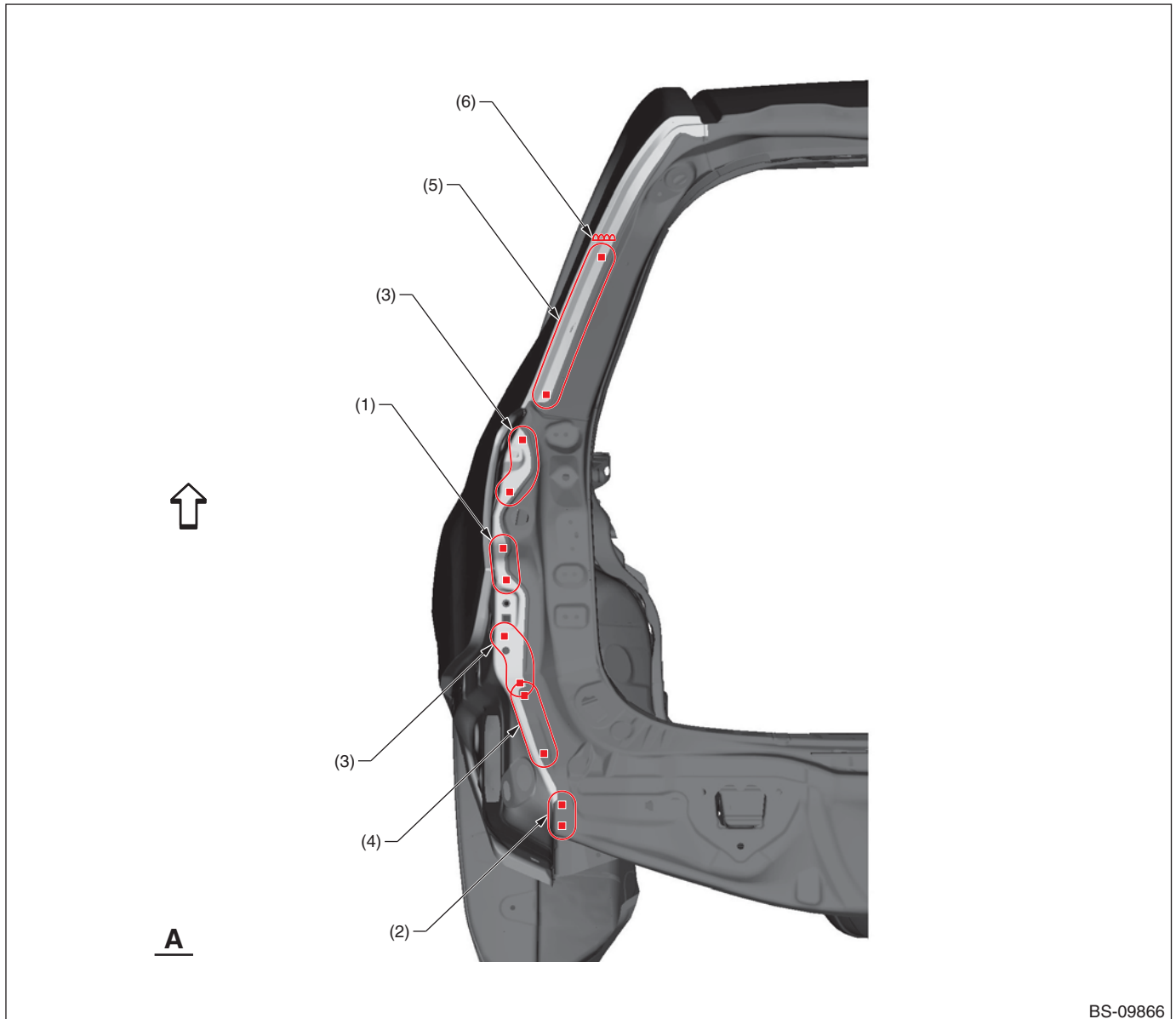
(3) 2 points (service)

(6) 6 points

(9) 1 point (continuous welding)

# Panel Replacement

## • Views A



BS-09866

(1) 2 points (service)

(2) 2 points (service · matching)

(3) 3 points (service)

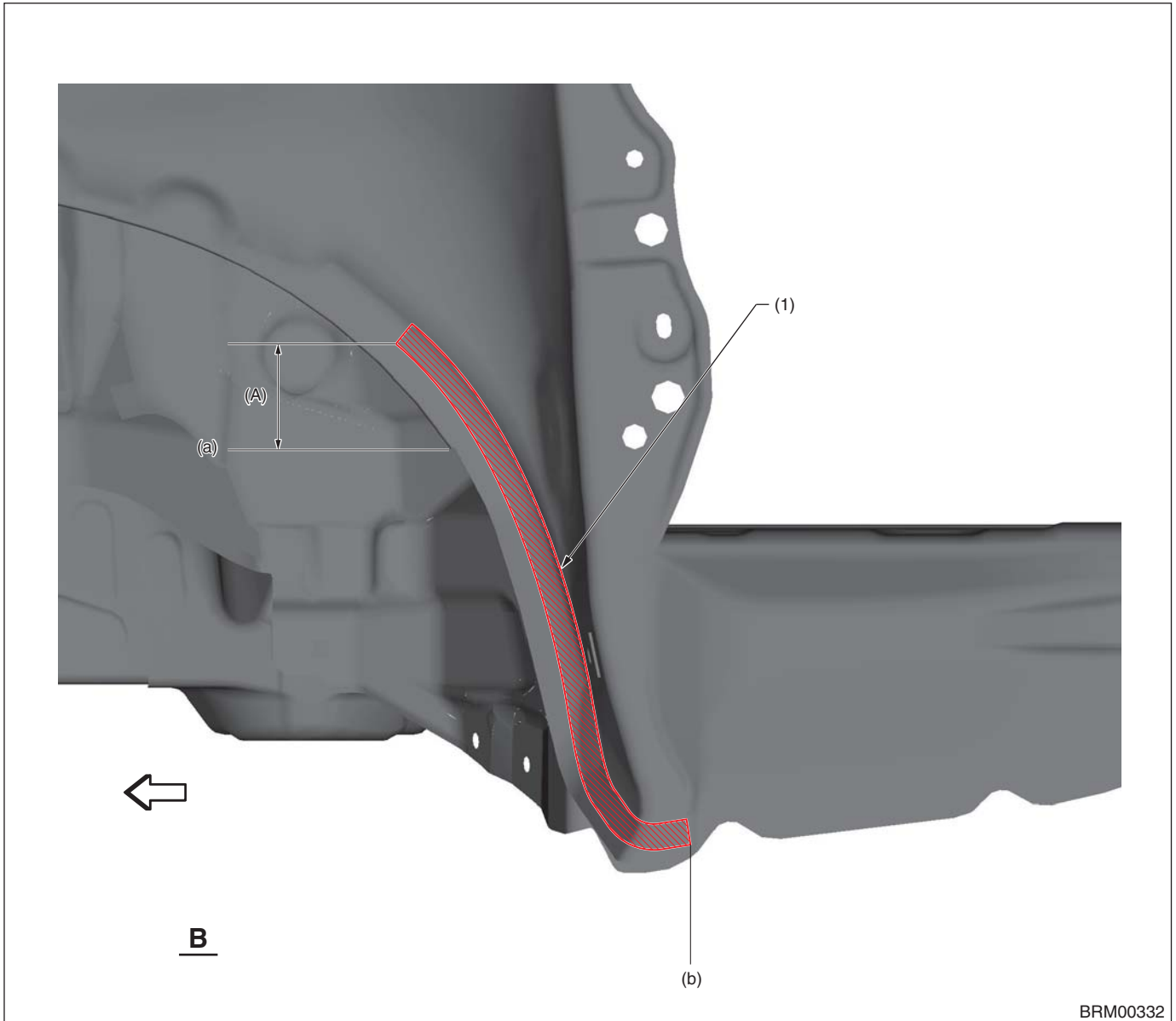
(4) 3 points (service · matching)

(5) 5 points (service)

(6) 1 point (continuous welding)

## Panel Replacement

### • Views B




(A) 53.2 mm [2.09 in]

(a) A point

(b) B point

(1) Spotting sealer

 : Spotting sealer application location (spotting sealer or sealing [Three Bond 4101 (004403063)])

Note: Fill spotting sealer between the panel side out and arch rear inner.

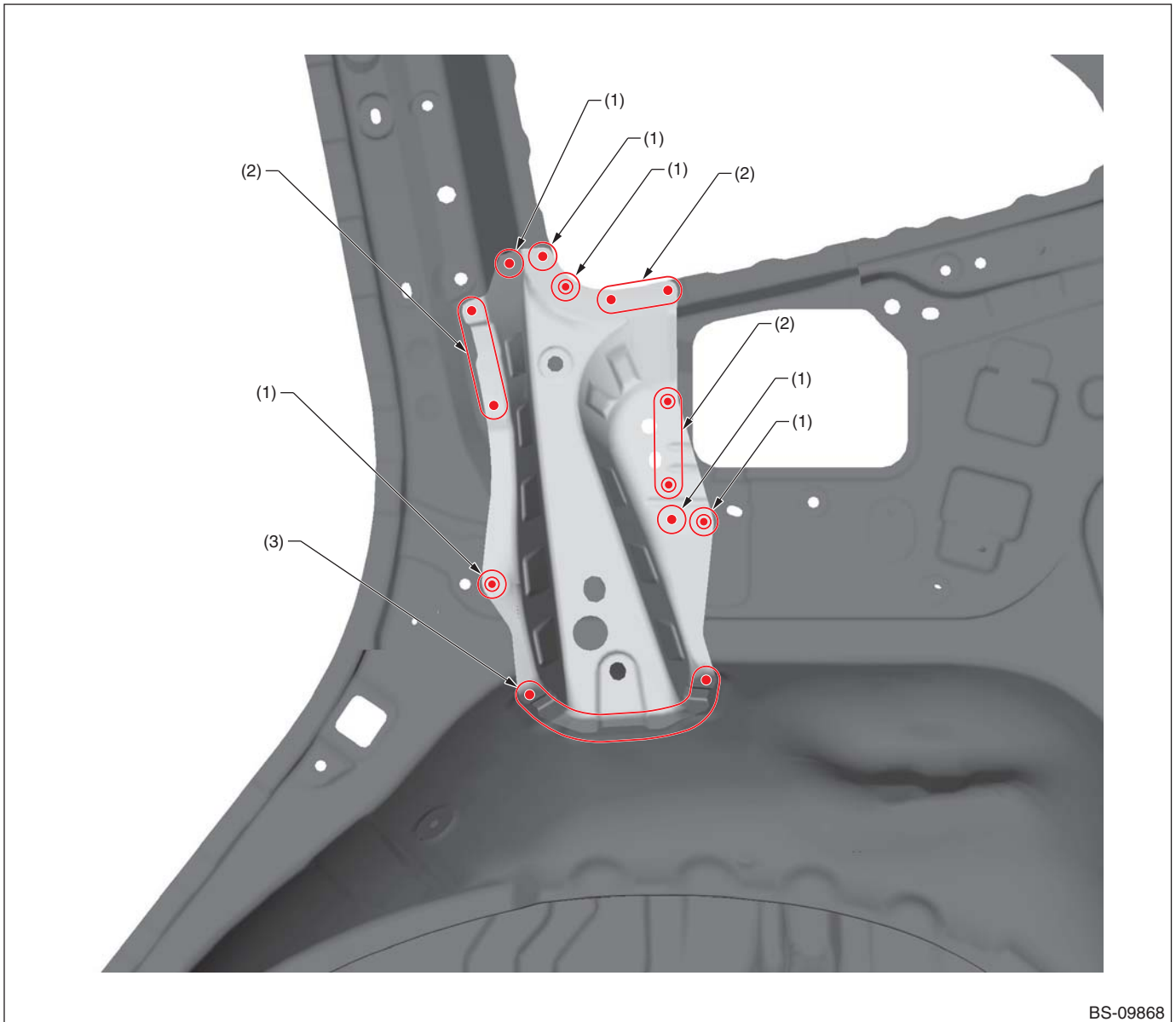
- (a) shows the radius curve end at the vehicle front of ARCH R IN.
- (b) shows the flange end of ARCH R IN.

## Panel Replacement

### 8-21. Rear Pillar Reinforcement Outer (total replacement)

#### A: REMOVAL

##### • Overall view



BS-09868

(1) 1 point (outside · 1)

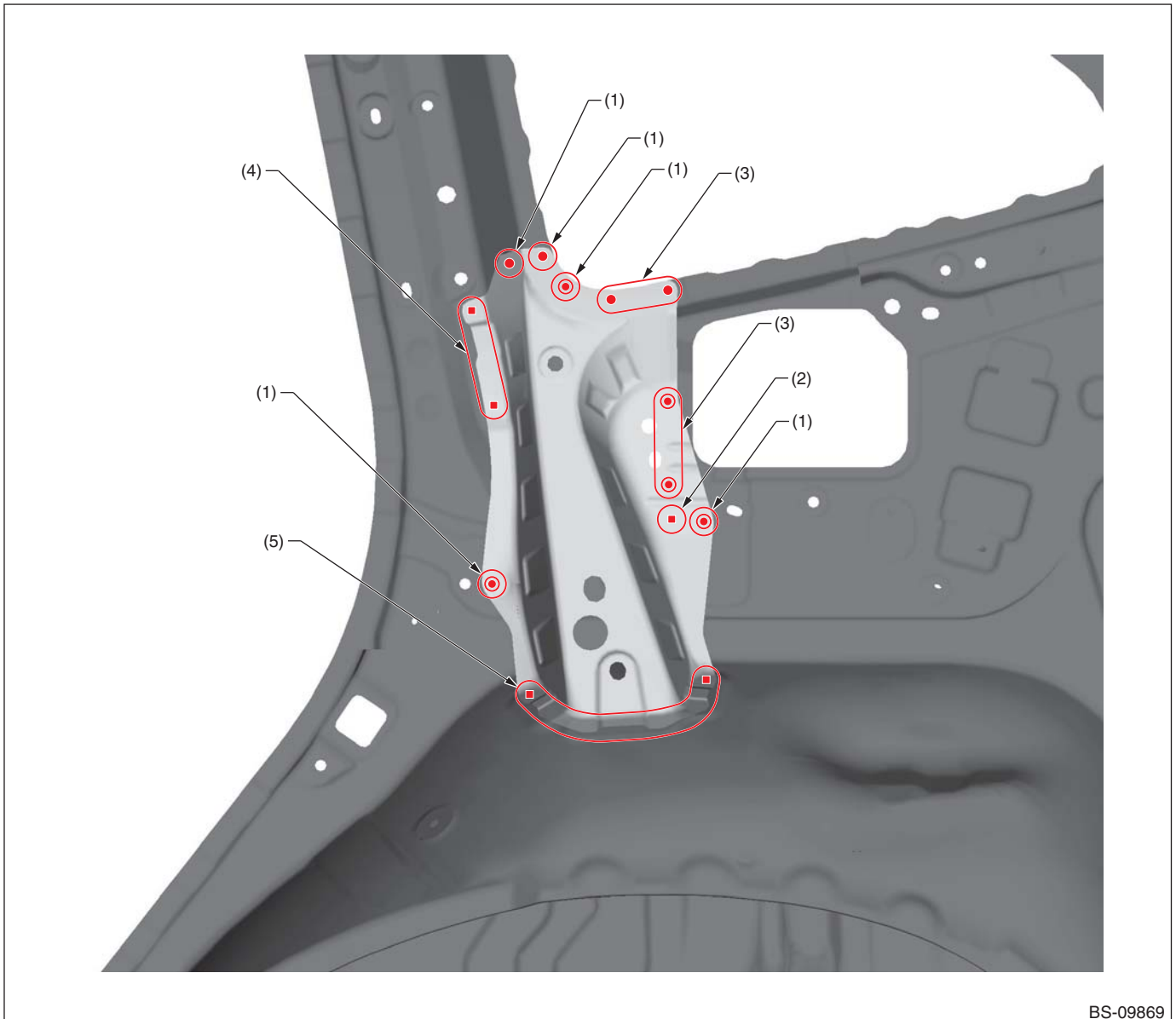
(2) 2 points (outside · 1)

(3) 6 points (top · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



(1) 1 point  
(2) 1 point (service)

(3) 2 points  
(4) 2 points (service)

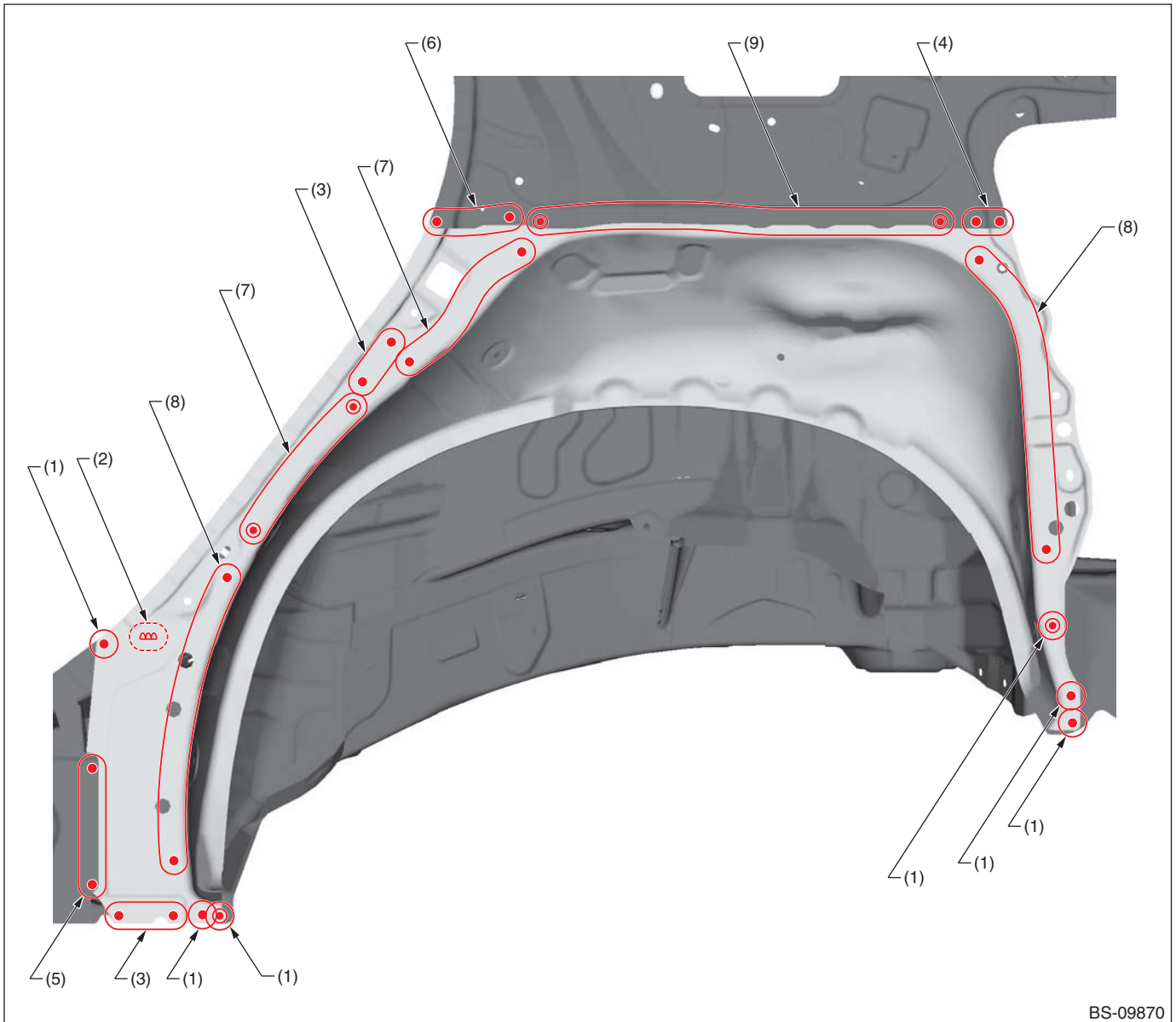
(5) 6 points (service)

## Panel Replacement

### 8-22. Arch Rear Inner LH (total replacement)

#### A: REMOVAL

##### • Overall view



- (1) 1 point (outside · 1)
- (2) 1 point (inside · 1 belt sander)
- (3) 2 points (outside · 1)

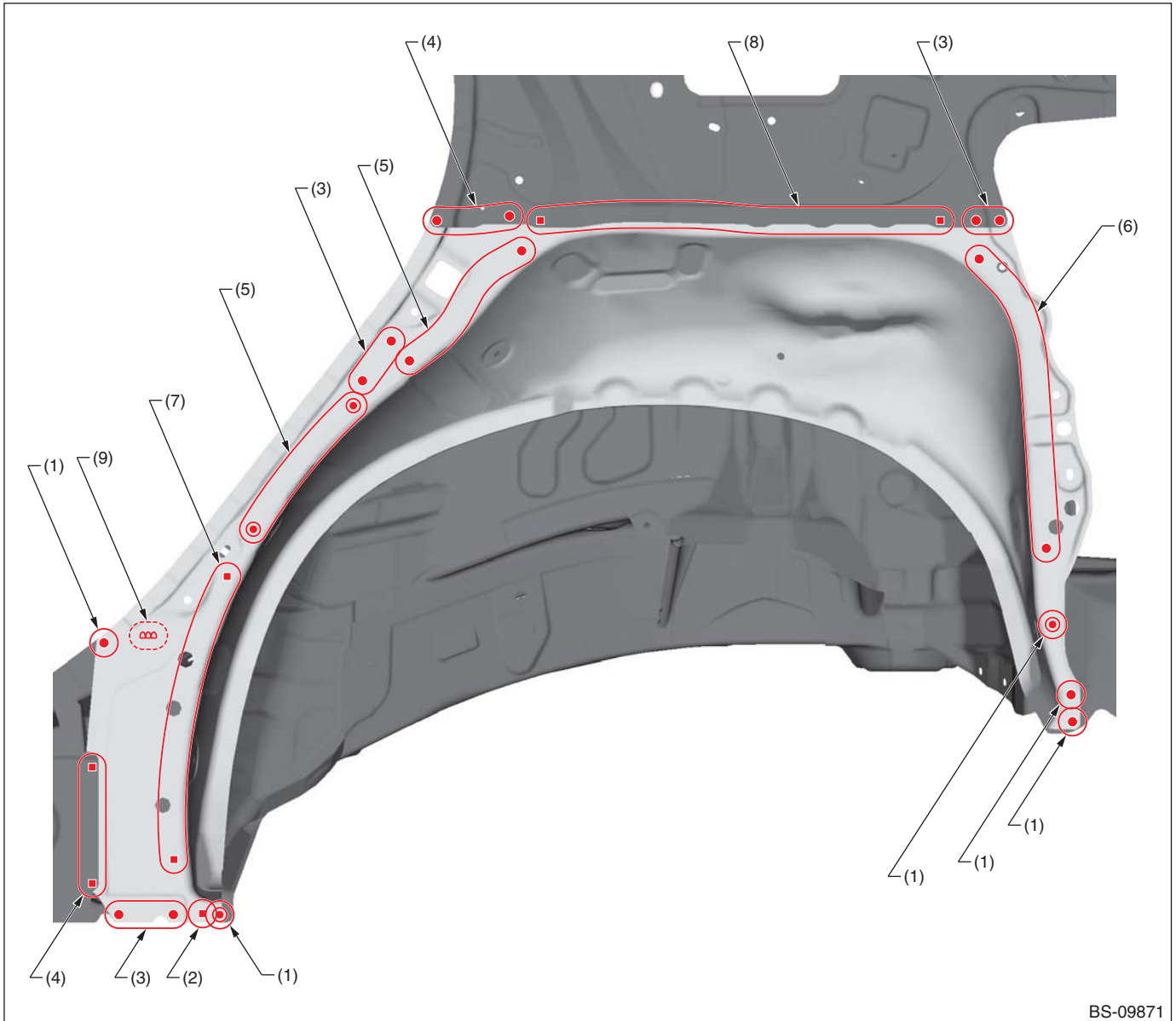
- (4) 2 points (inside · 1)
- (5) 3 points (outside · 1)
- (6) 3 points (inside · 1)

- (7) 4 points (outside · 1)
- (8) 6 points (outside · 1)
- (9) 7 points (outside · 2)

# Panel Replacement

## B: INSTALLATION

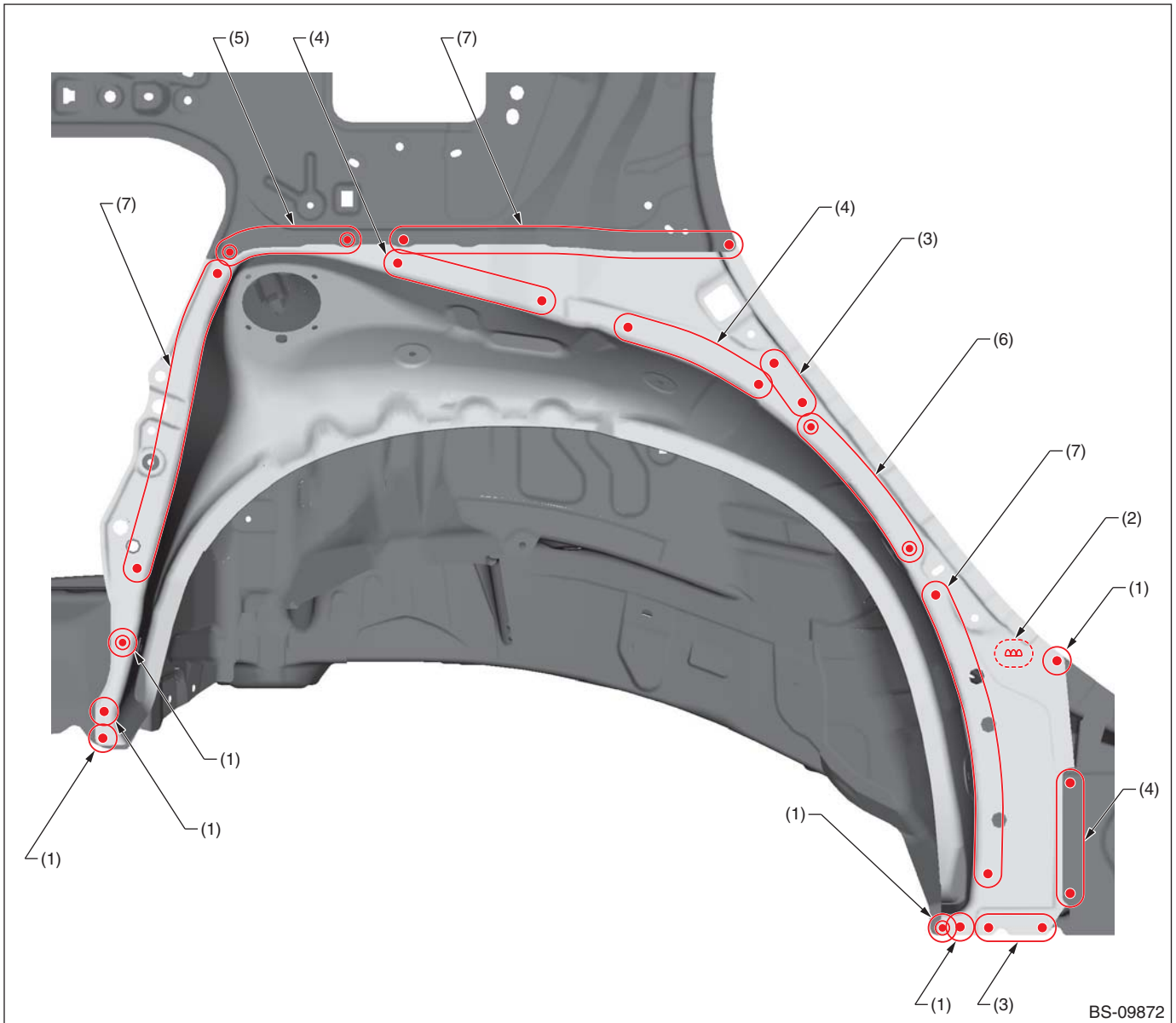
### • Overall view



### 8-23. Arch Rear Inner RH (total replacement)

#### A: REMOVAL

##### • Overall view



BS-09872

- (1) 1 point (outside · 1)
- (2) 1 point (inside · 1 belt sander)
- (3) 2 points (outside · 1)

- (4) 3 points (outside · 1)
- (5) 3 points (outside · 2)
- (6) 4 points (outside · 1)

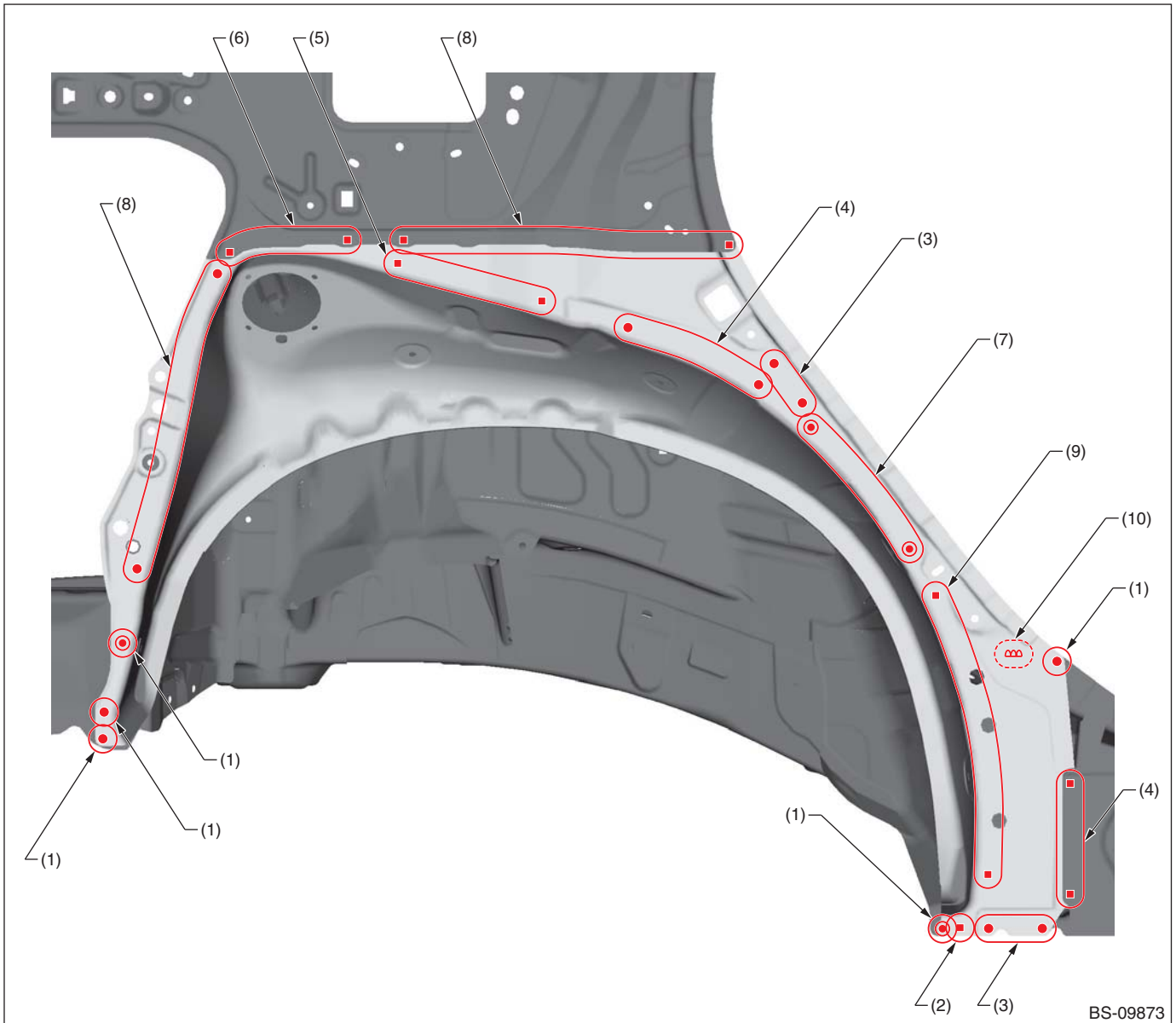
- (7) 6 points (outside · 1)



# Panel Replacement

## B: INSTALLATION

### • Overall view



(1) 1 point  
(2) 1 point (service)

(3) 2 points  
(4) 3 points

(5) 3 points (service)  
(6) 3 points (service · matching)  
(7) 4 points  
(8) 6 points

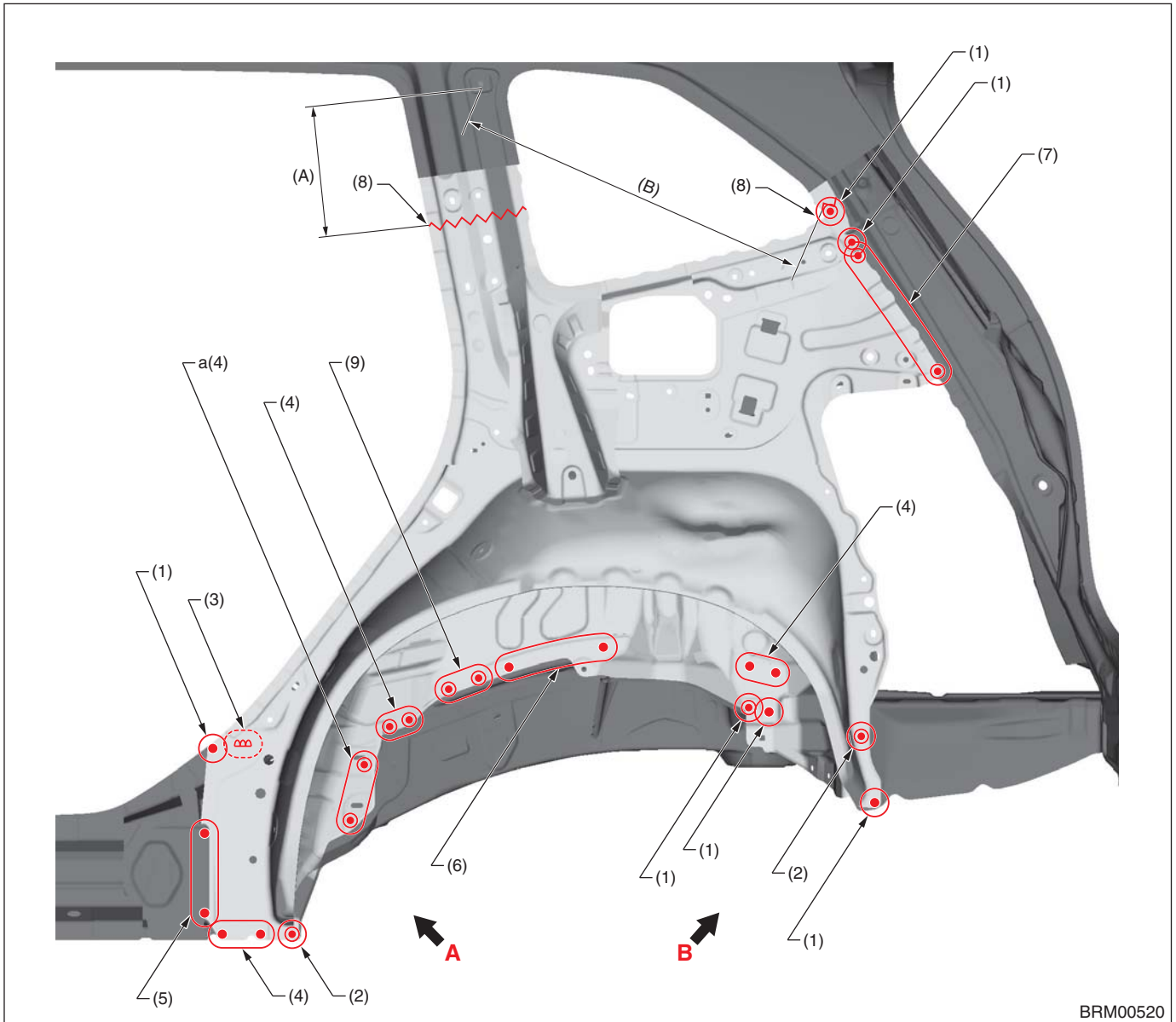
(9) 6 points (service)  
(10) 1 point (continuous welding)  
[22 mm (0.87 in)]

## Panel Replacement

### 8-24. Rear Quarter Inner LH (partial replacement)

#### A: REMOVAL

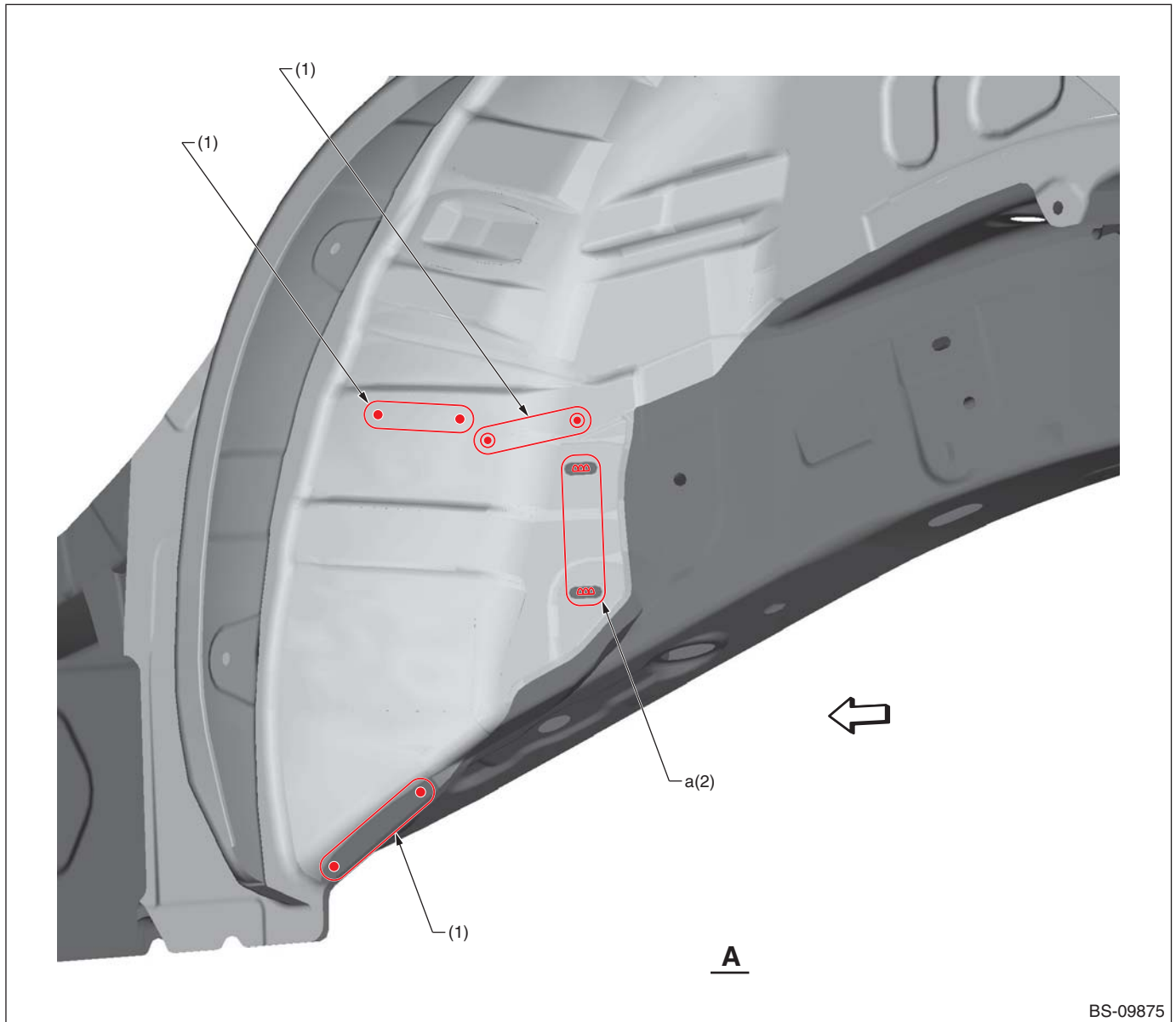
##### • Overall view



BRM00520

## Panel Replacement

### • Views A



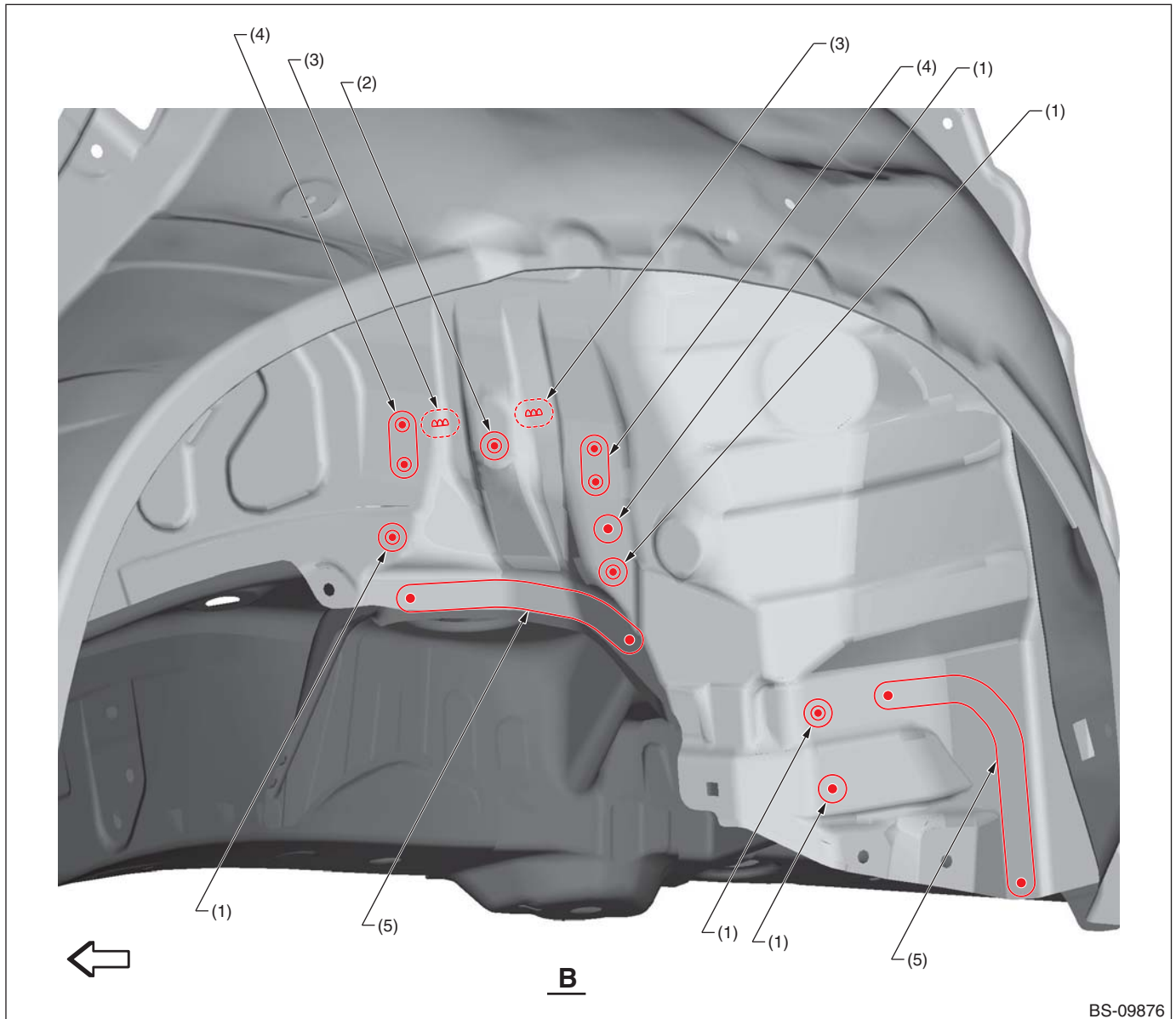
(1) 2 points (outside · 1)

(2) 2 points (outside · 1 belt sander)

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views B



(1) 1 point (outside - 1)  
(2) 1 point (outside - 2)

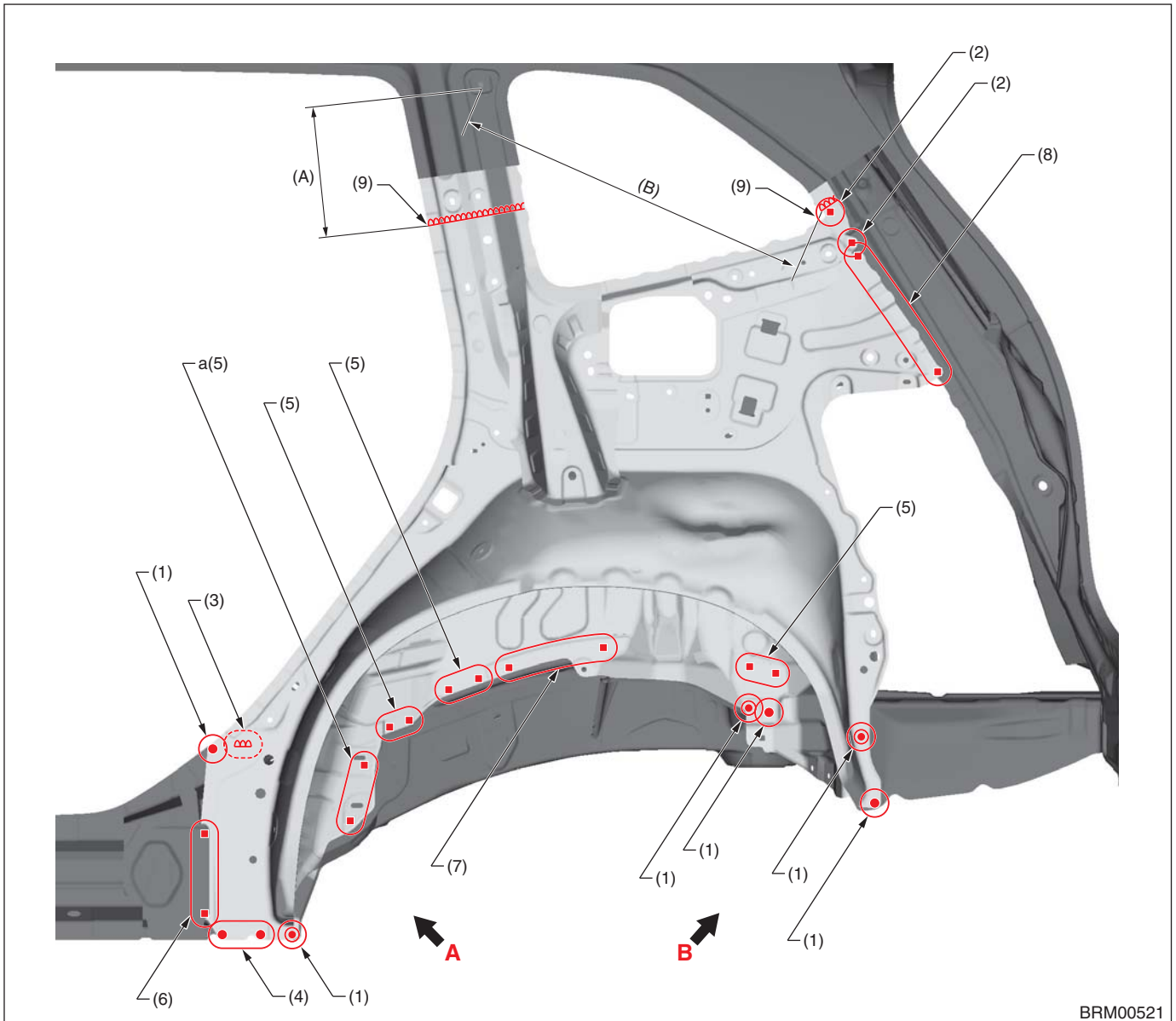
(3) 1 point (inside - 1 belt sander)  
(4) 2 points (outside - 2)

(5) 5 points (outside - 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00521

(A) 200 mm [7.87 in]

(B) 530 mm [20.87 in]

(1) 1 point

(4) 2 points

(7) 4 points (service)

(2) 1 point (service)

(5) 2 points (service)

(8) 5 points (service)

(3) 1 point (continuous welding)  
(22 mm [0.87 in])

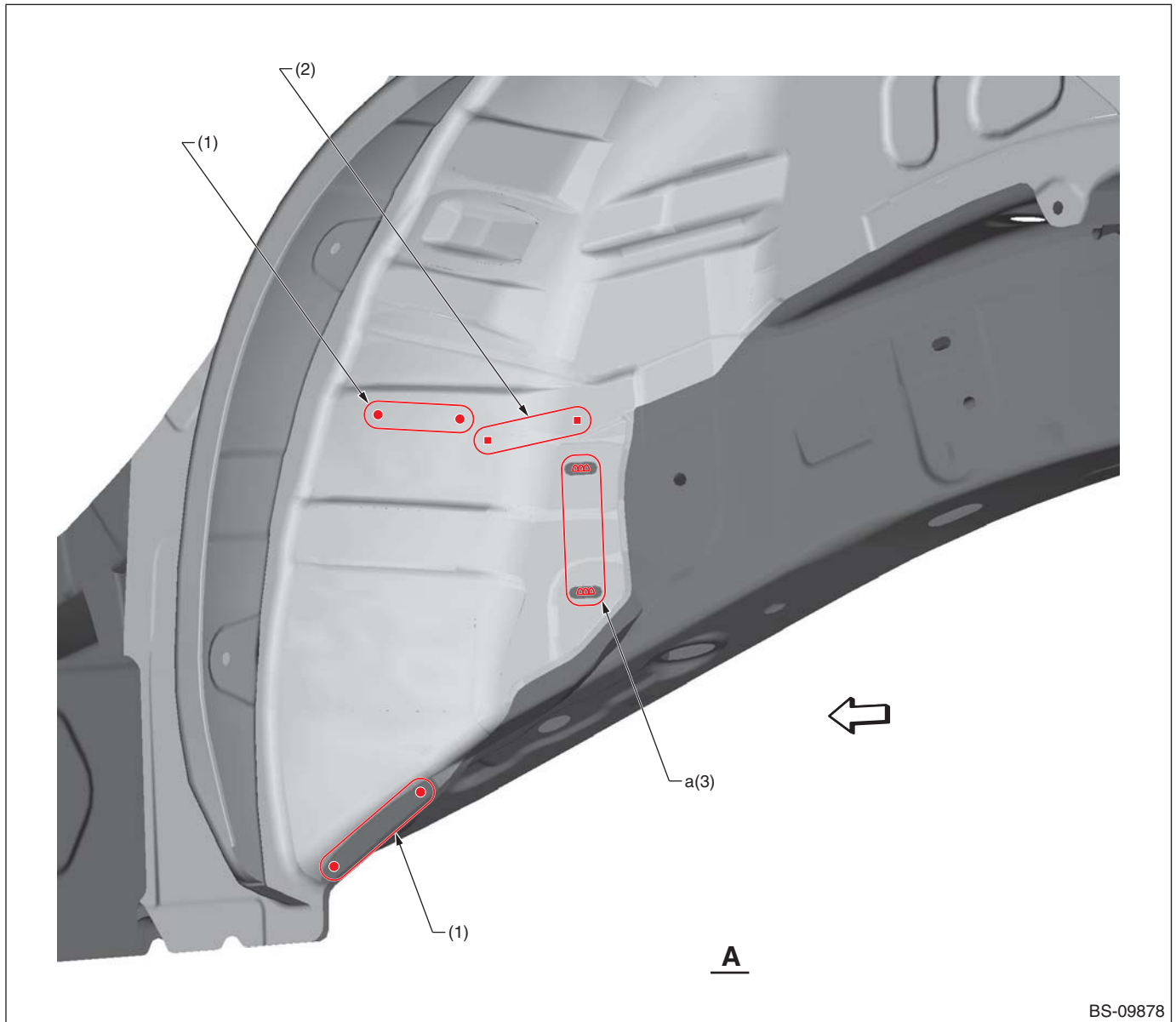
(6) 3 points (service)

(9) 1 point (continuous welding)

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views A



BS-09878

(1) 2 points

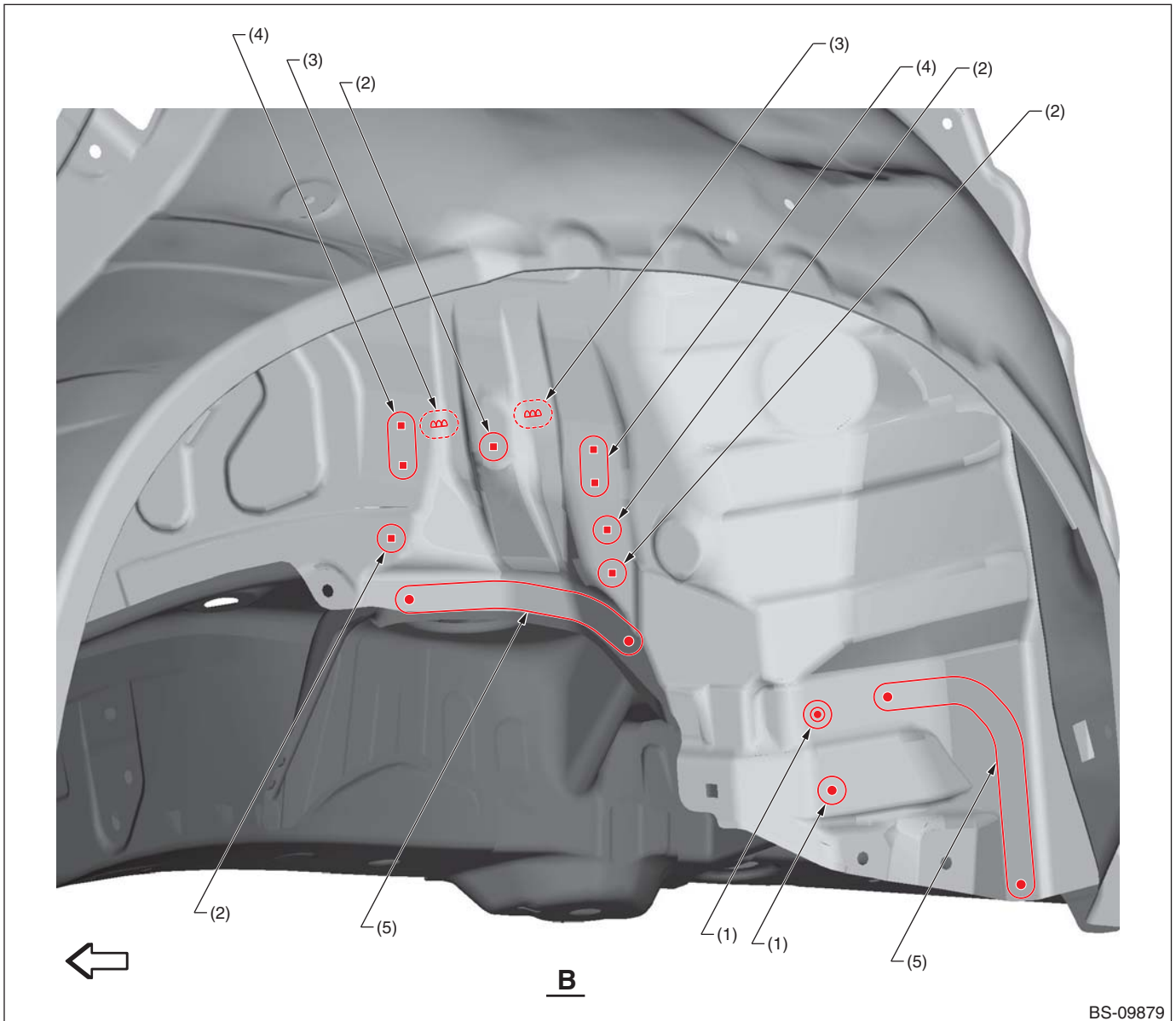
(2) 2 points (service)

(3) 3 points (continuous welding)  
(5 mm [0.20 in])

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views B



(1) 1 point

(3) 1 point (continuous welding)  
(5 mm [0.20 in])

(5) 5 points

(2) 1 point (service)

(4) 2 points (service)

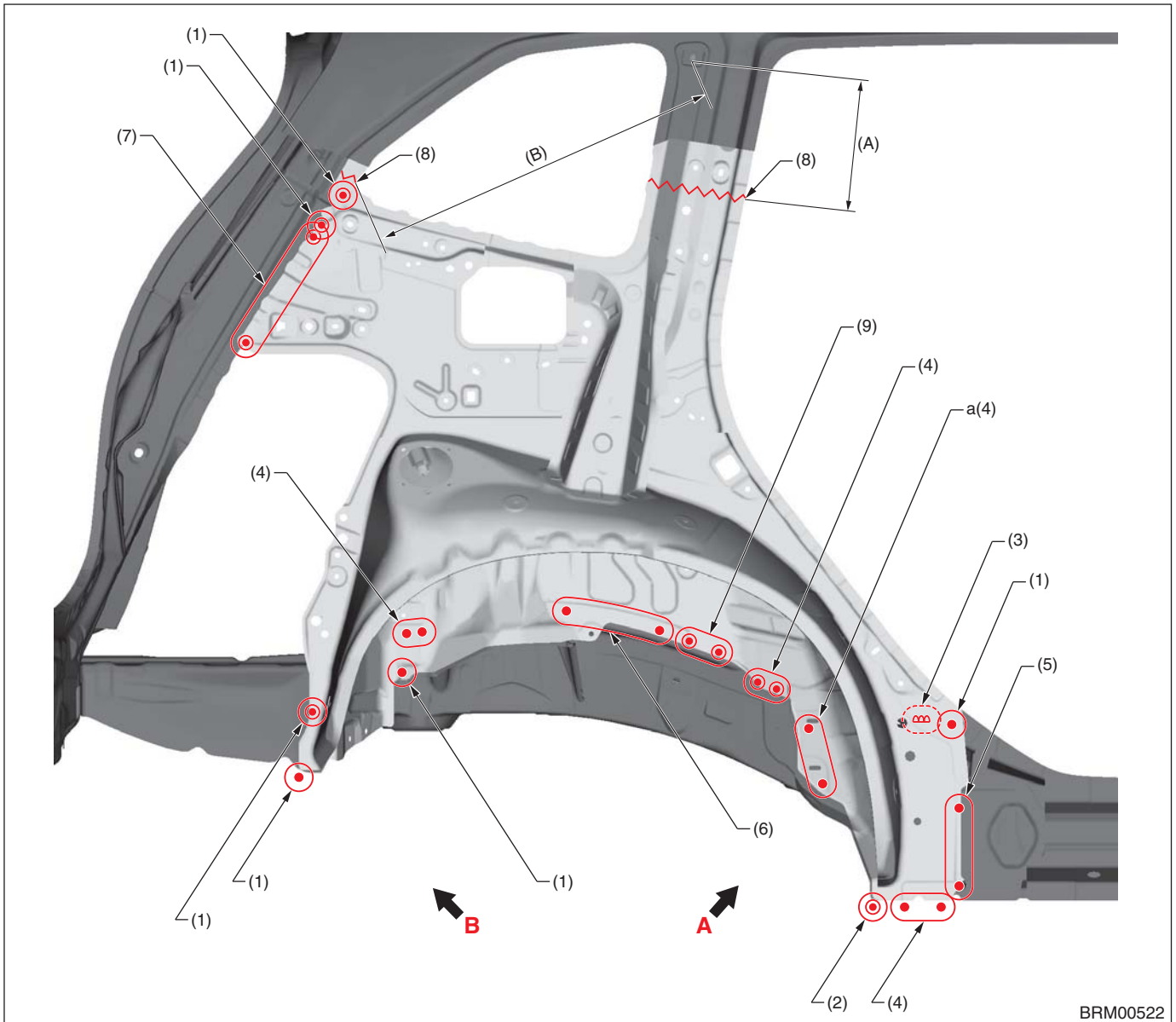


## Panel Replacement

### 8-25. Rear Quarter Inner RH (partial replacement)

#### A: REMOVAL

##### • Overall view



BRM00522

(A) 200 mm [7.87 in]

(B) 530 mm [20.87 in]

(1) 1 point (outside · 1)

(4) 2 points (outside · 1)

(7) 5 points (outside · 1)

(2) 1 point (outside · 2)

(5) 3 points (outside · 1)

(8) Rough cutting

(3) 1 point (inside · 1 belt sander)

(6) 4 points (outside · 1)

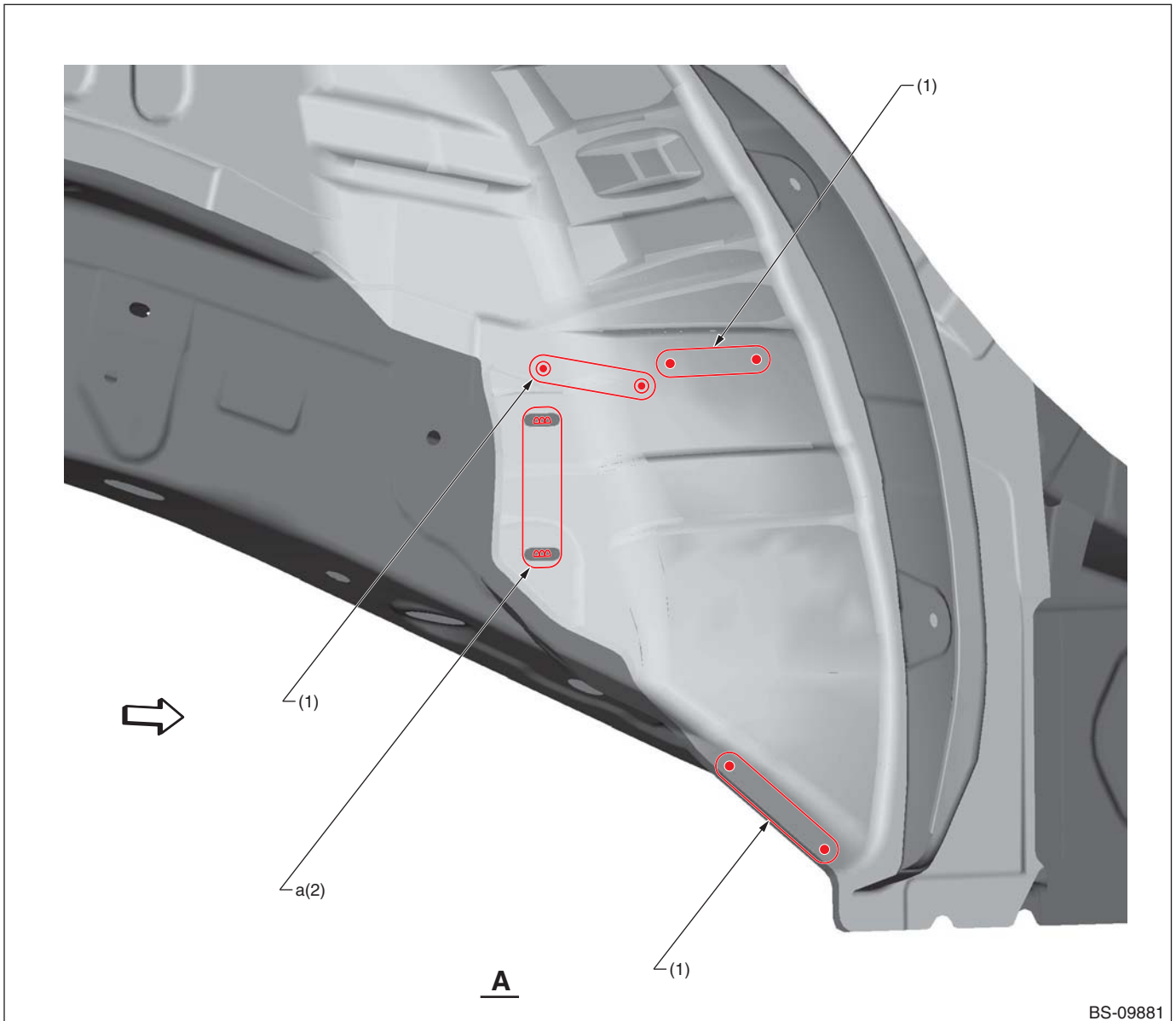
(9) 2 points (outside · 2)

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).



# Panel Replacement

## • Views A



BS-09881

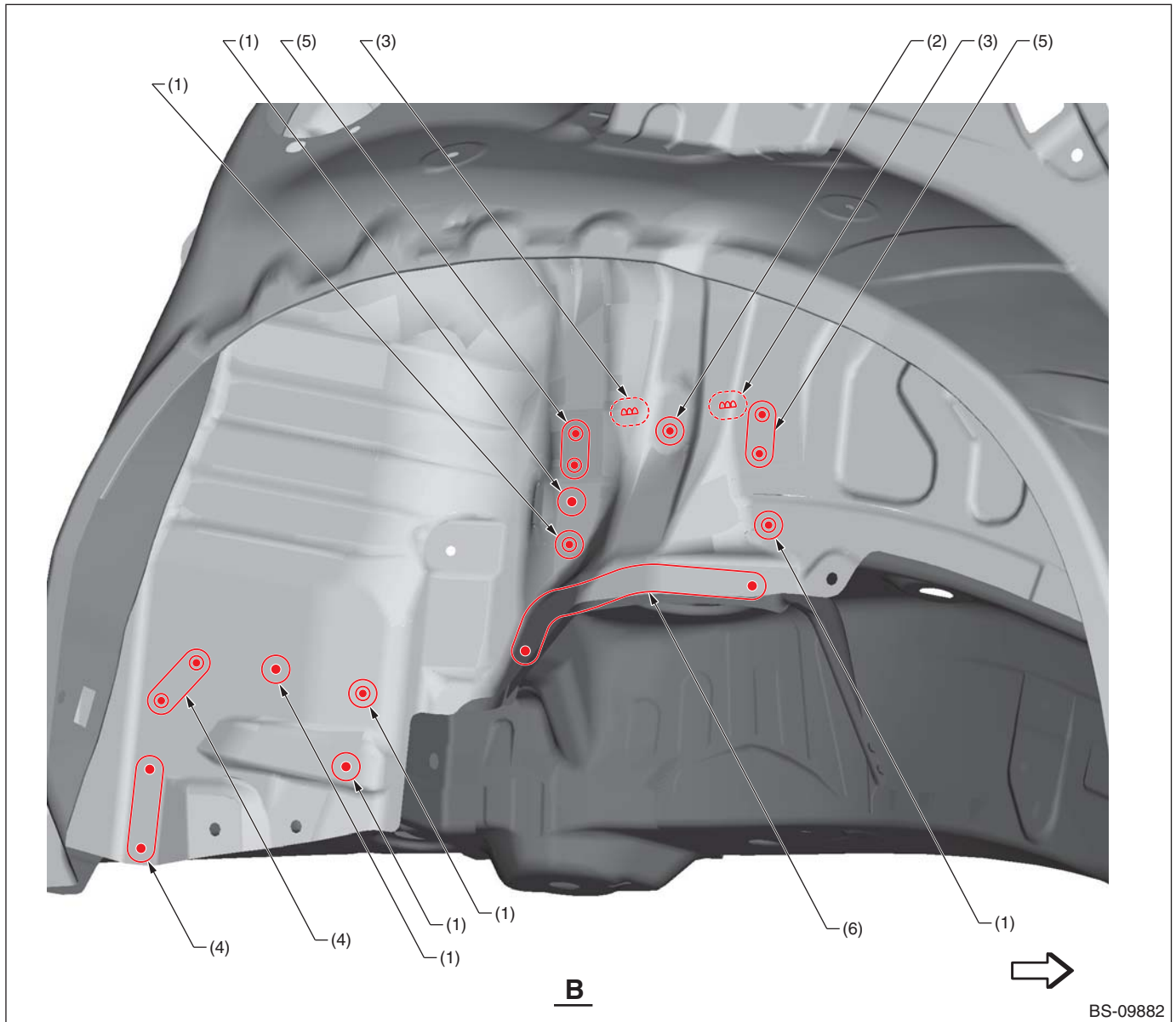
(1) 2 points (outside · 1)

(2) 2 points (outside · 1 belt sander)

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views B



(1) 1 point (outside · 1)  
 (2) 1 point (outside · 2)

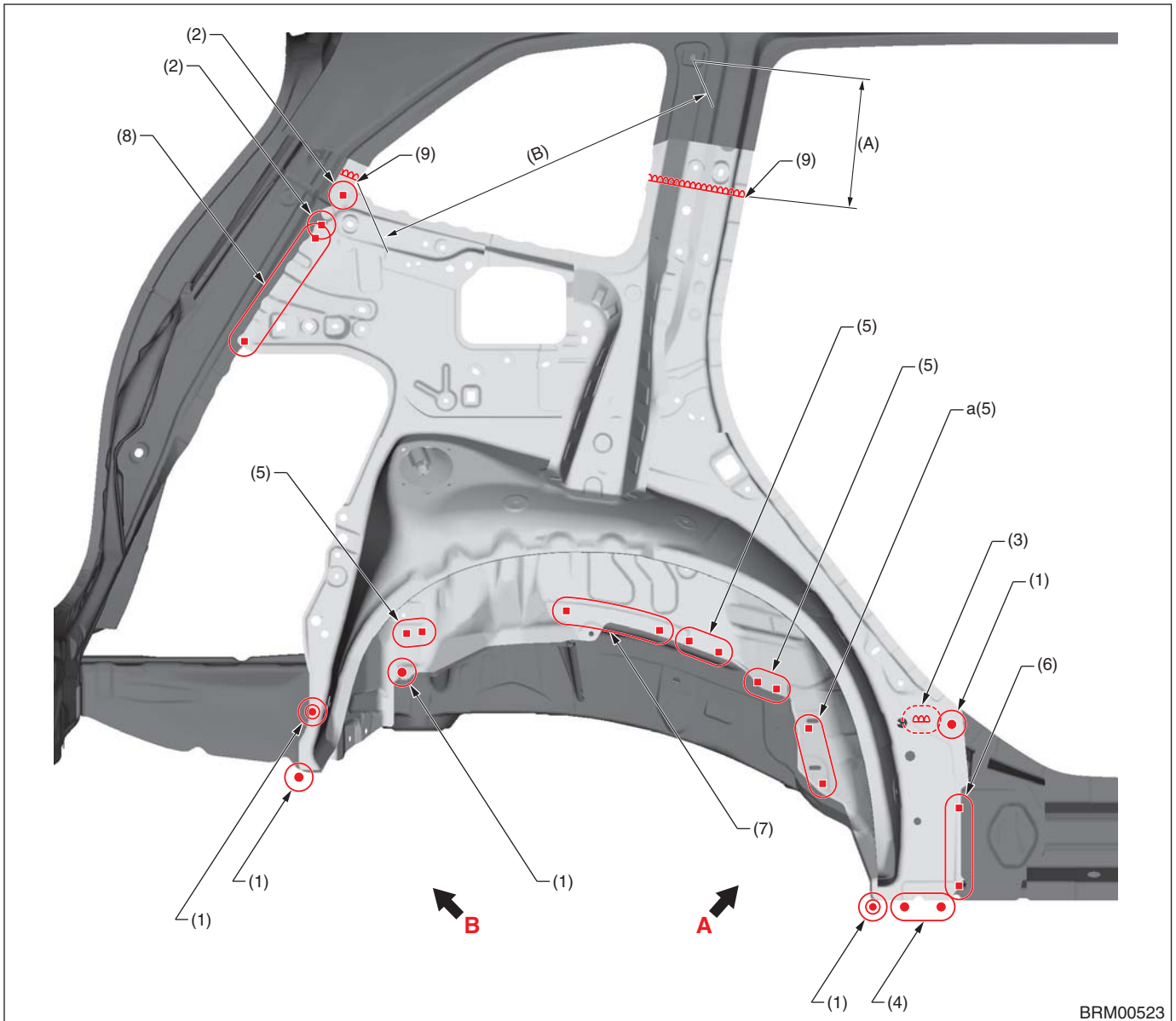
(3) 1 point (inside · 1 belt sander)  
 (4) 2 points (outside · 1)

(5) 2 points (outside · 2)  
 (6) 6 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



(A) 200 mm [7.87 in]

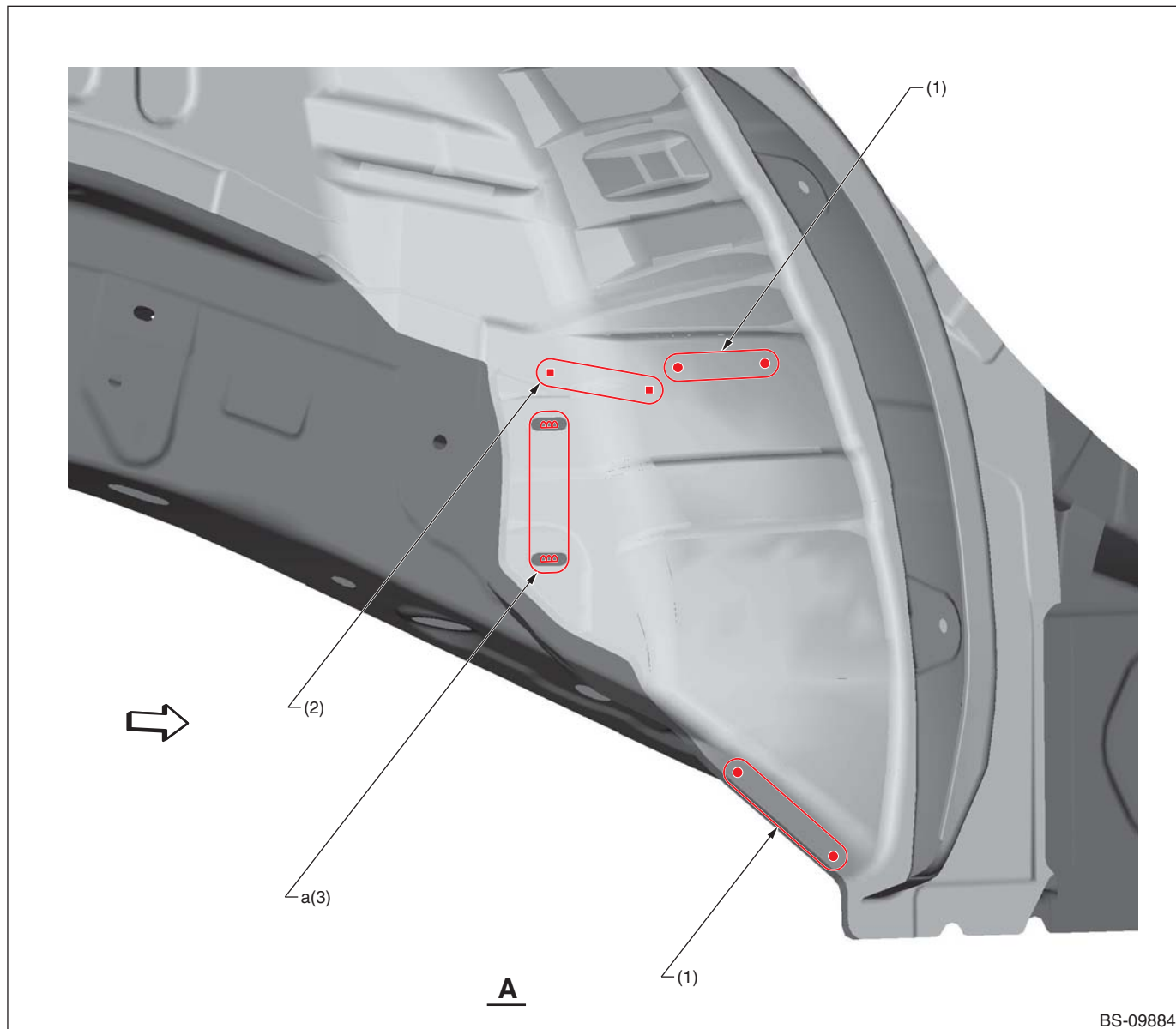
(B) 530 mm [20.87 in]

- |   |                        |                                  |
|---|------------------------|----------------------------------|
| (1) 1 point   | (4) 2 points           | (7) 4 points (service)           |
| (2) 1 point (service)                                 | (5) 2 points (service) | (8) 5 points (service)           |
| (3) 1 point (continuous welding)<br>(22 mm [0.87 in]) | (6) 3 points (service) | (9) 1 point (continuous welding) |

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views A



BS-09884

(1) 2 points

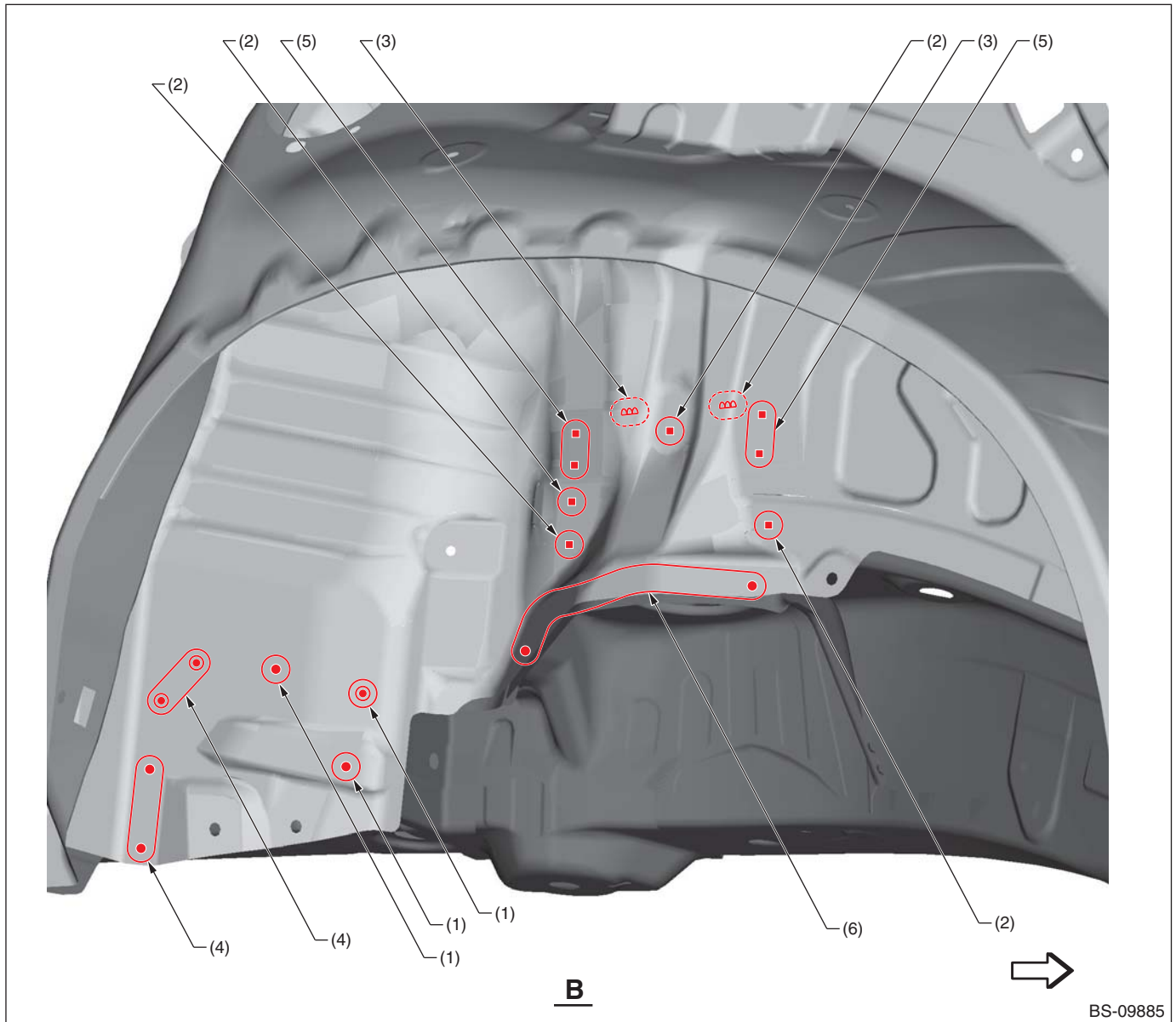
(2) 2 points (service)

(3) 2 points (continuous welding)  
(5 mm [0.20 in])

Note: Welding points in part "a" vary depending on each vehicle model (spot or arc welding).

# Panel Replacement

## • Views B



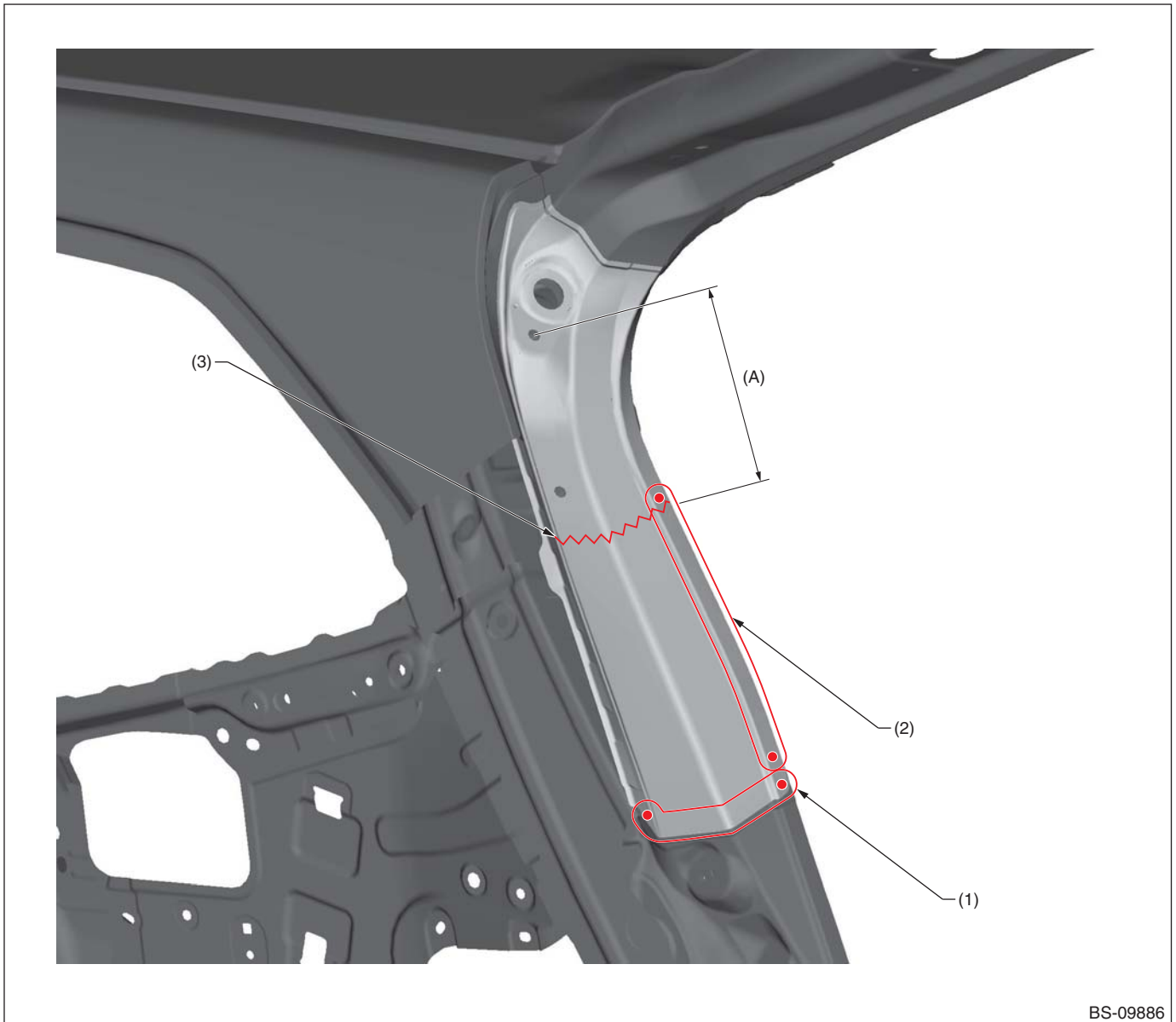
BS-09885

- |                       |  |                        |
|-----------------------|--|------------------------|
| (1) 1 point           | (3) 1 point (continuous welding)<br>(5 mm [0.20 in]) | (5) 2 points (service) |
| (2) 1 point (service) | (4) 2 points   | (6) 6 points           |

### 8-26. D Pillar Extension (partial replacement)

#### A: REMOVAL

##### • Overall view



(A) 160 mm [6.30 in]

(1) 5 points (outside · 1)

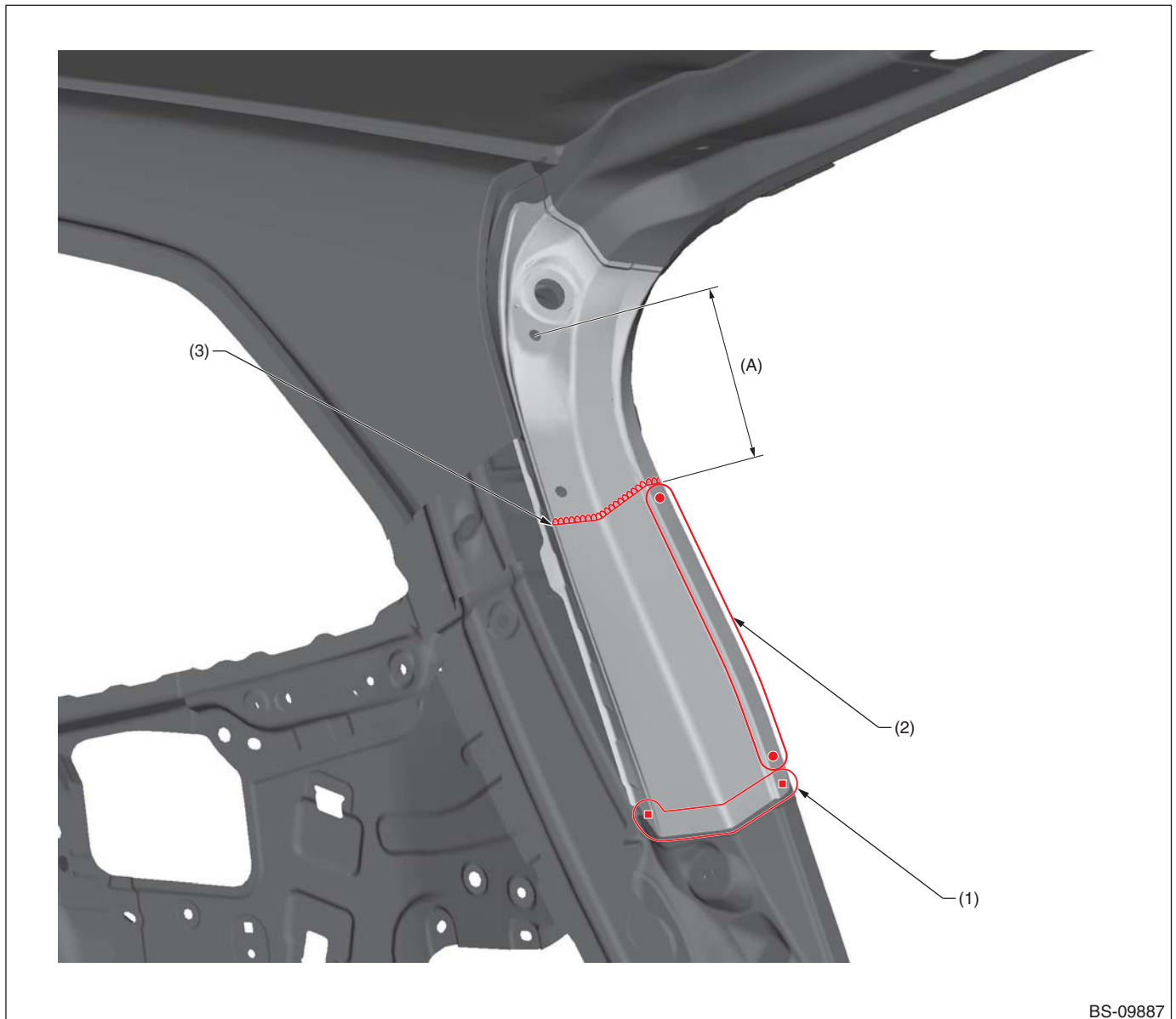
(2) 6 points (outside · 1)

(3) Cut position

# Panel Replacement

## B: INSTALLATION

### • Overall view



(A) 140 mm [5.51 in]

(1) 5 points (service)

(2) 6 points

(3) 1 point (continuous welding)

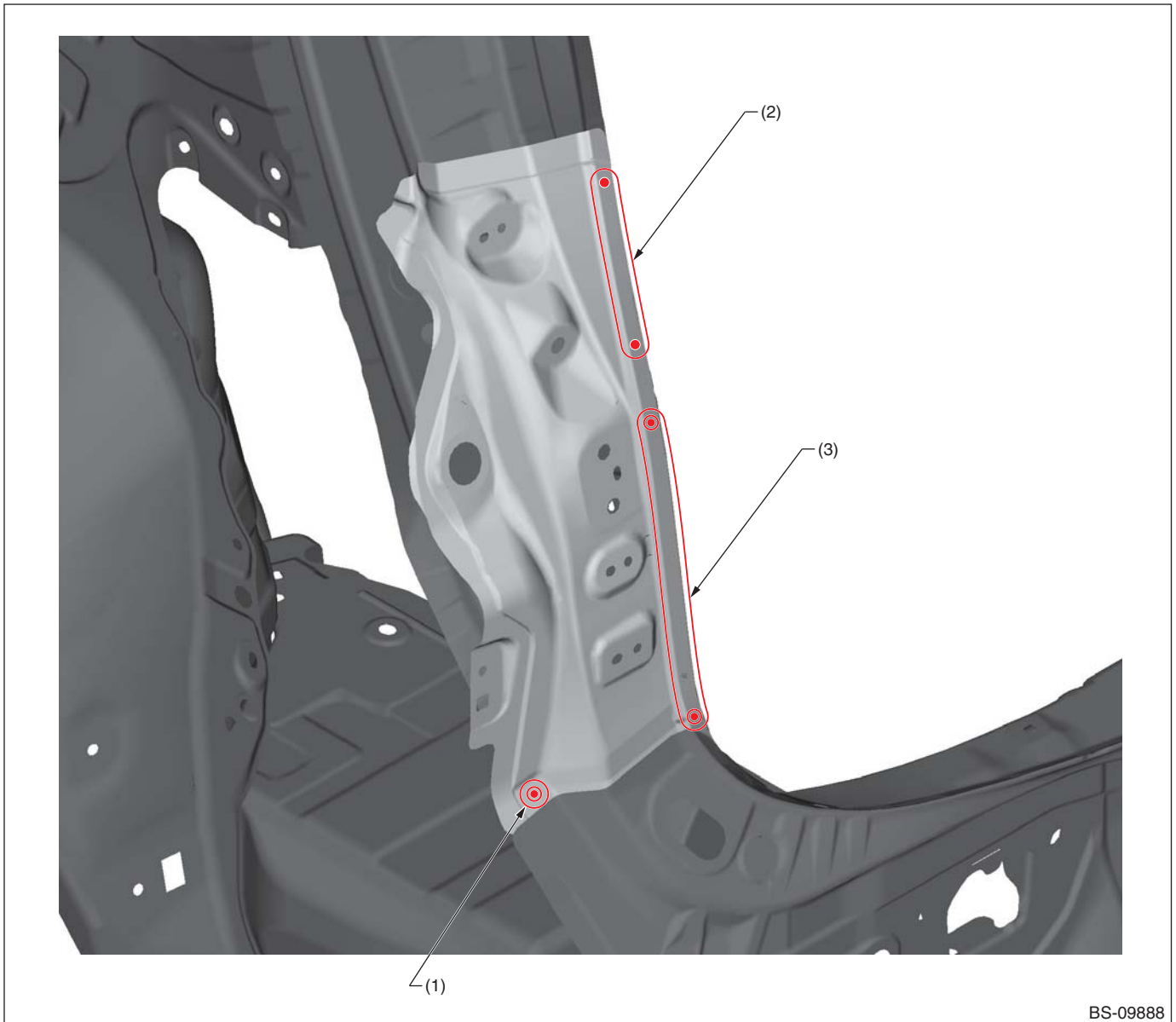


## Panel Replacement

### 8-27. Rear Quarter End Panel (total replacement)

#### A: REMOVAL

##### • Overall view



(1) 1 point (outside · 1)

(2) 4 points (outside · 1)

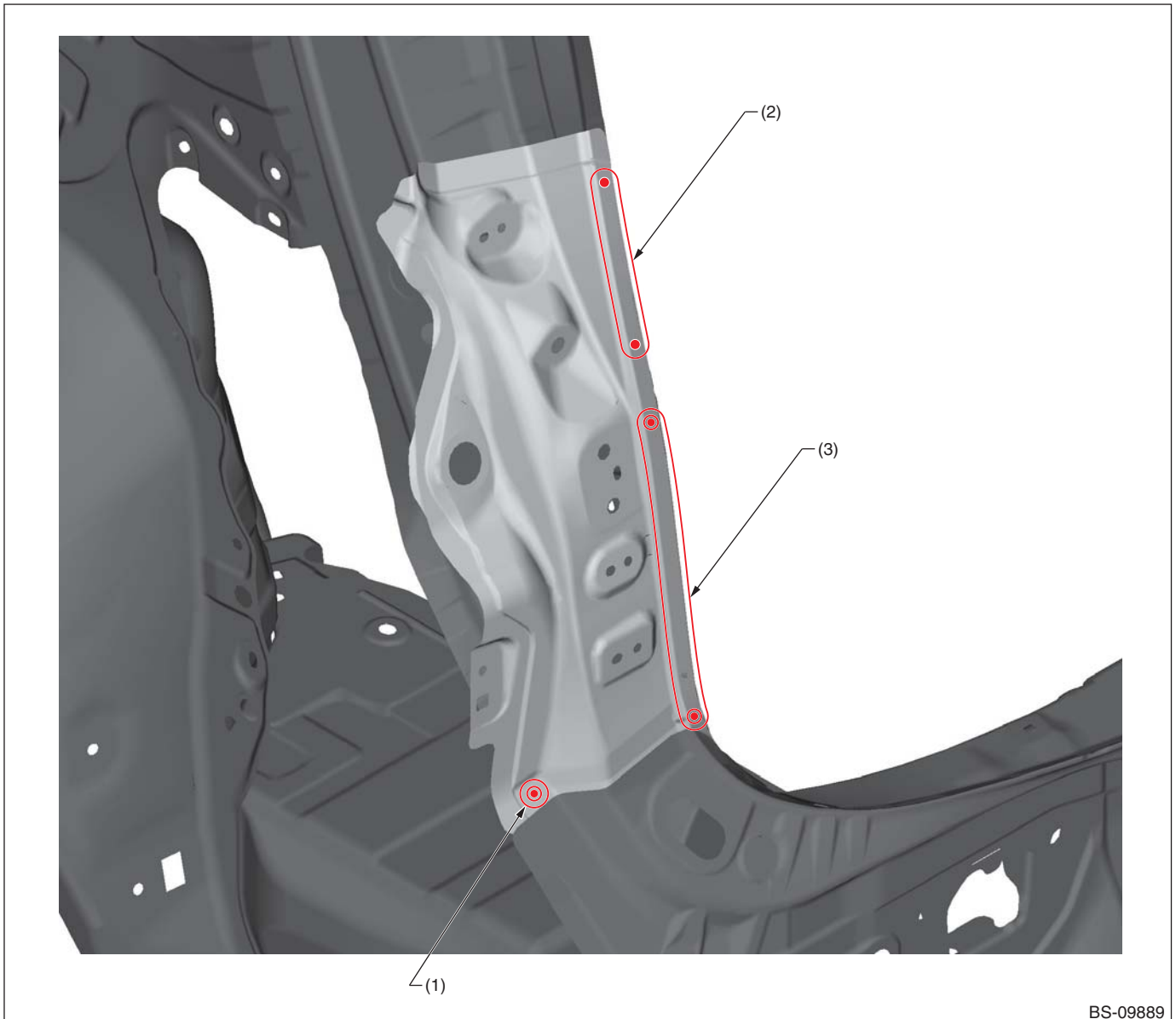
(3) 6 points (outside · 1)



## Panel Replacement

### B: INSTALLATION

#### • Overall view



(1) 1 point

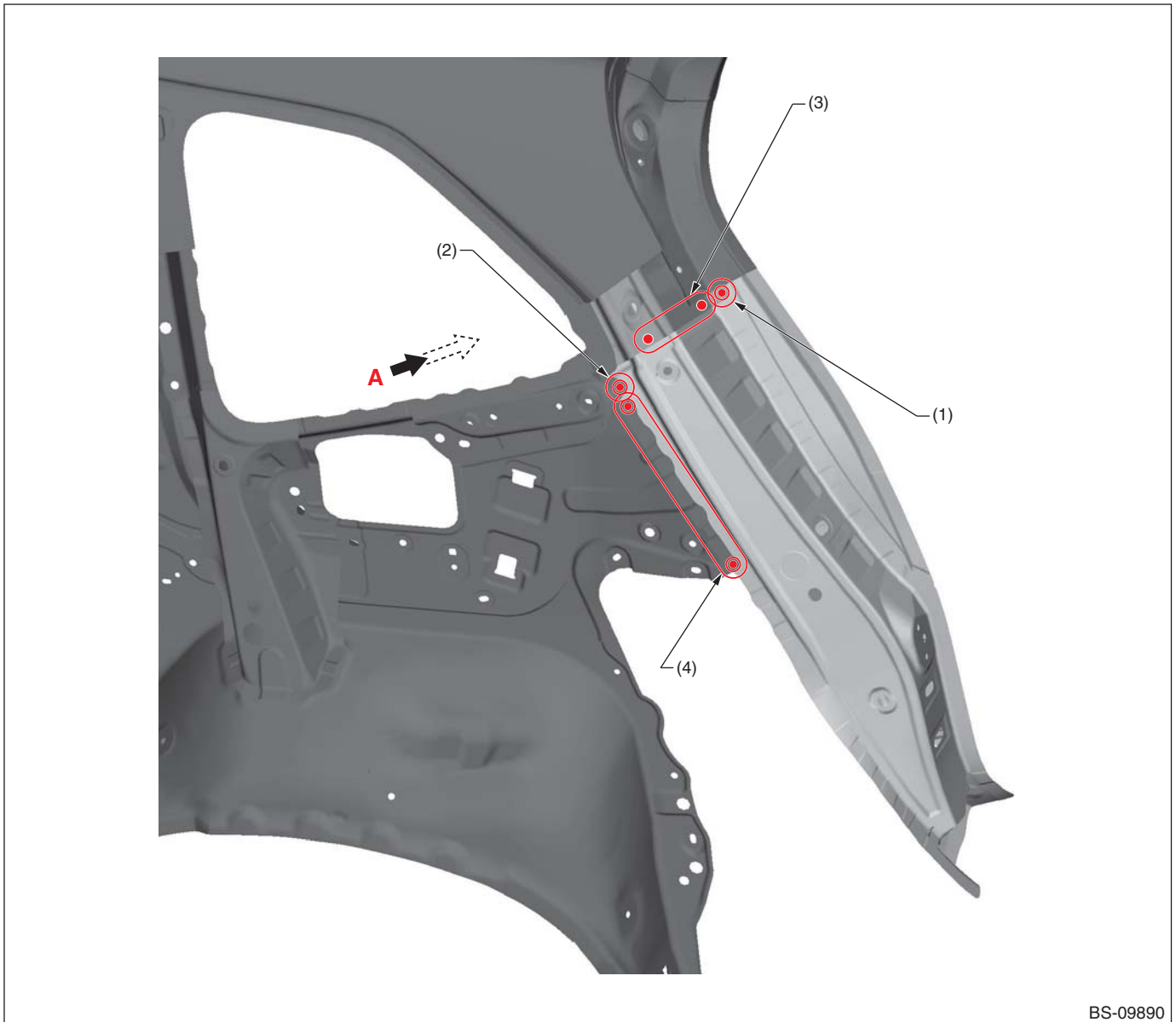
(2) 4 points

(3) 6 points

### 8-28. D Pillar Reinforcement (partial replacement)

#### A: REMOVAL

##### • Overall view



BS-09890

(1) 1 point (outside · 1)

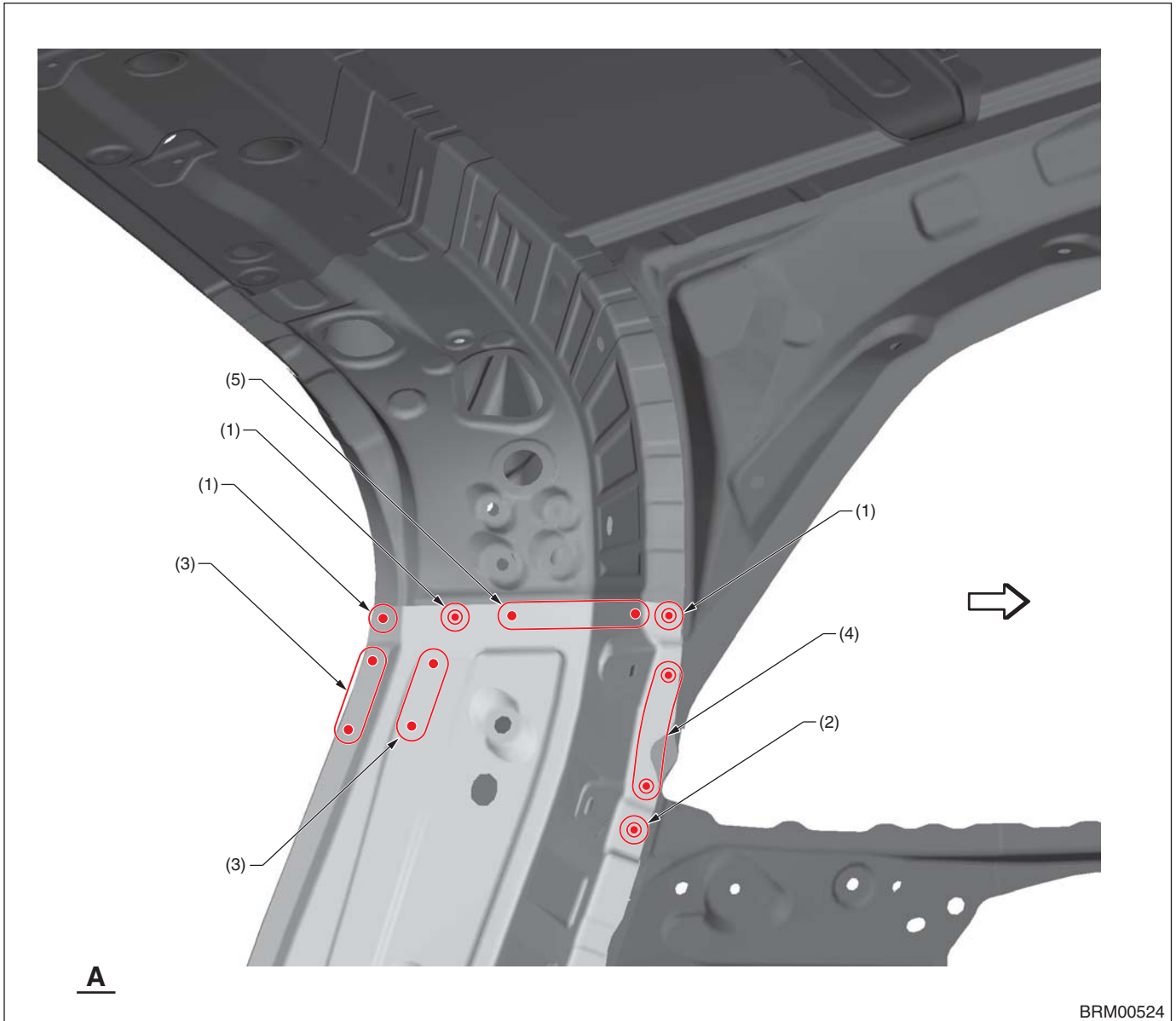
(2) 1 point (inside · 2)

(3) 3 points (outside · 1)

(4) 5 points (inside · 2)

# Panel Replacement

## • Views A



(1) 1 point (inside · 1)  
(2) 1 point (inside · 2)

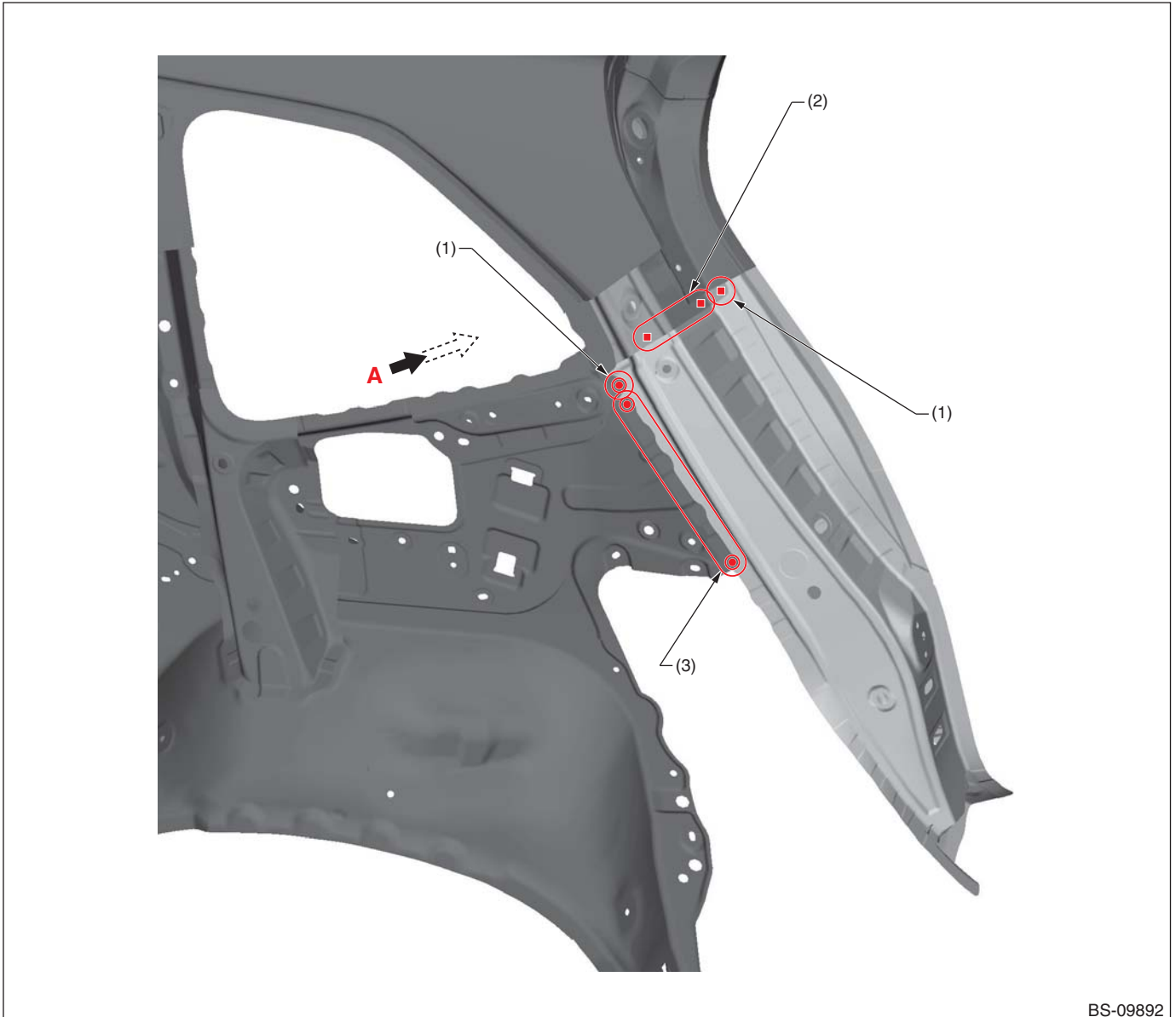
(3) 2 points (inside · 1)  
(4) 3 points (inside · 1)

(5) 4 points (inside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BS-09892

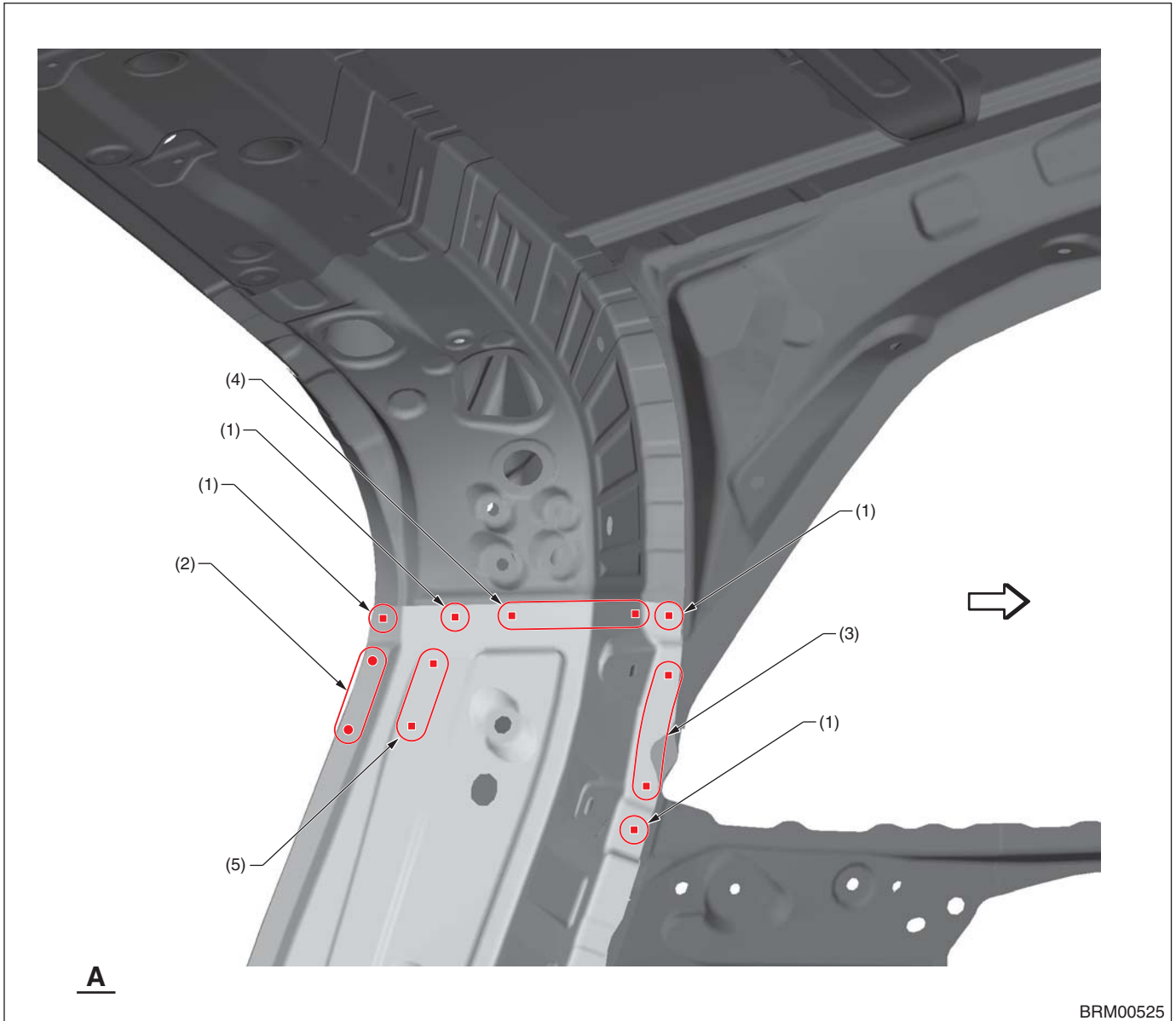
(1) 1 point

(2) 3 points

(3) 5 points

# Panel Replacement

## • Views A



(1) 1 point (service)  
(2) 2 points

(3) 3 points (service)  
(4) 4 points (service)

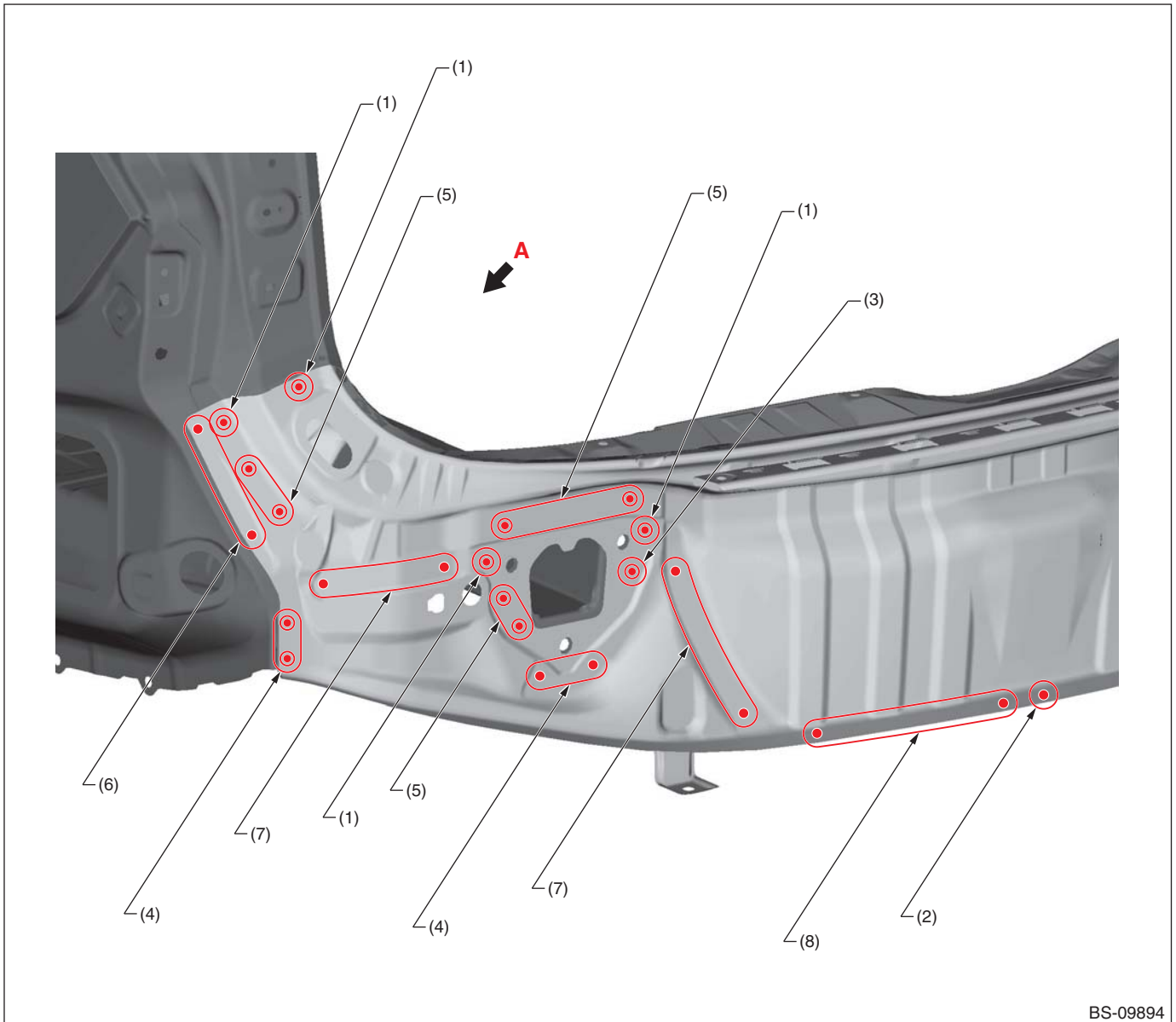
(5) 2 points (service)

## Panel Replacement

### 8-29. Rear Skirt (total replacement)

#### A: REMOVAL

##### • Overall view



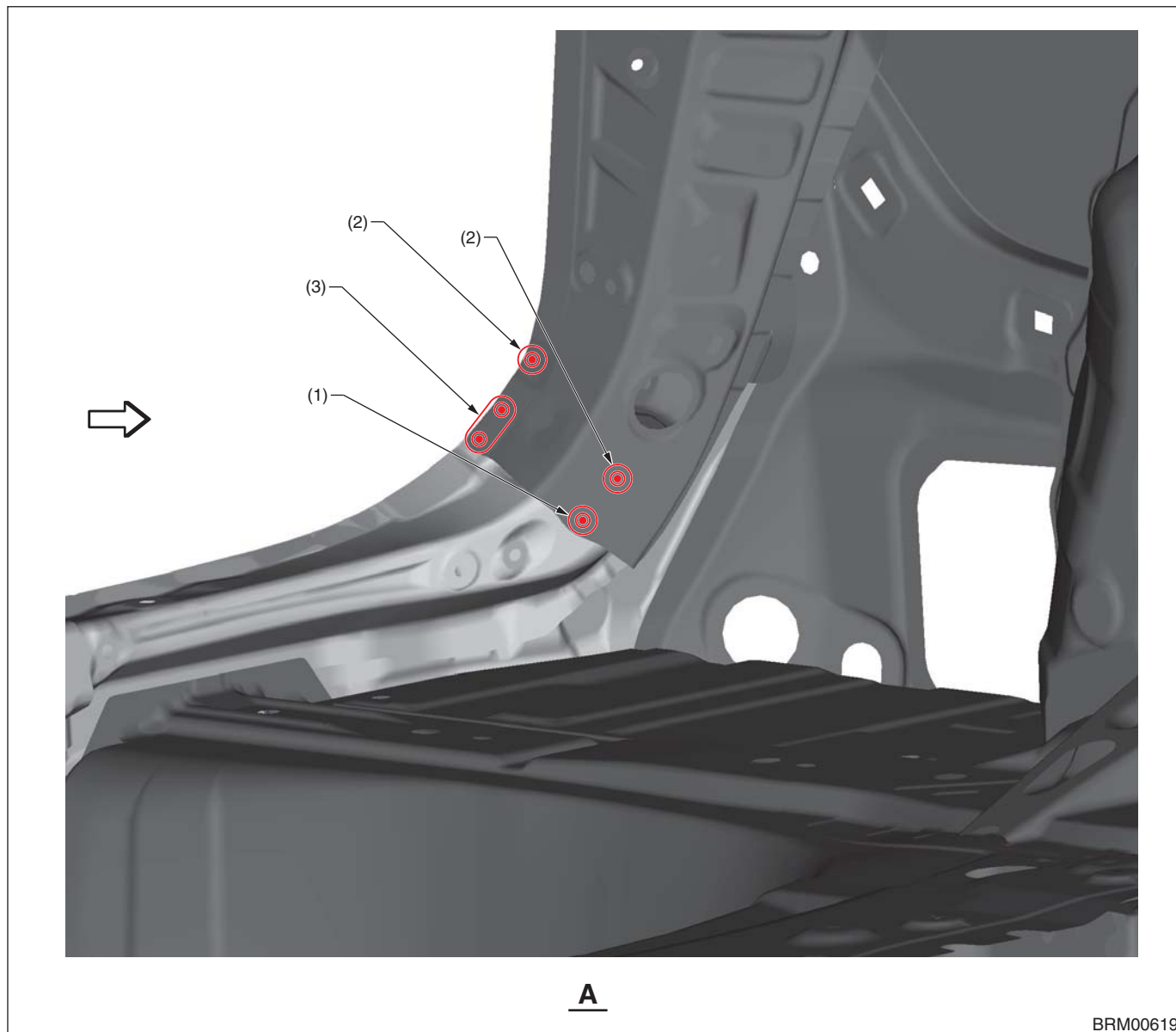
- (1) 1 point (outside - 1)
- (2) 1 point (top - 1)
- (3) 1 point (outside - 2)

- (4) 2 points (outside - 1)
- (5) 2 points (outside - 2)
- (6) 3 points (outside - 1)

- (7) 4 points (outside - 1)
- (8) 5 points (top - 1)

# Panel Replacement

## • Views A



(1) 1 point (outside · 2)

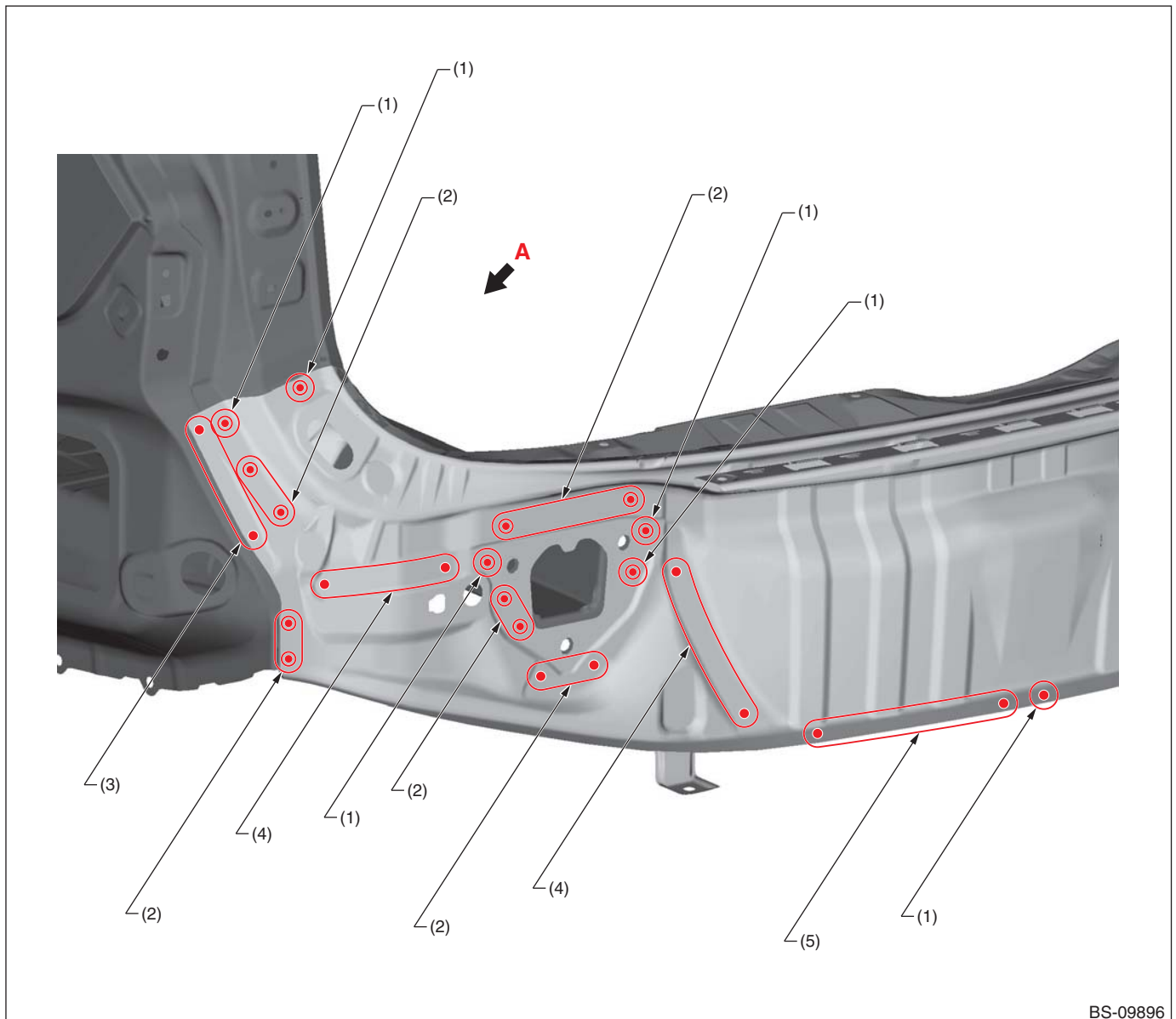
(2) 1 point (outside · 1)

(3) 2 points (outside · 2)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BS-09896

(1) 1 point  
(2) 2 points

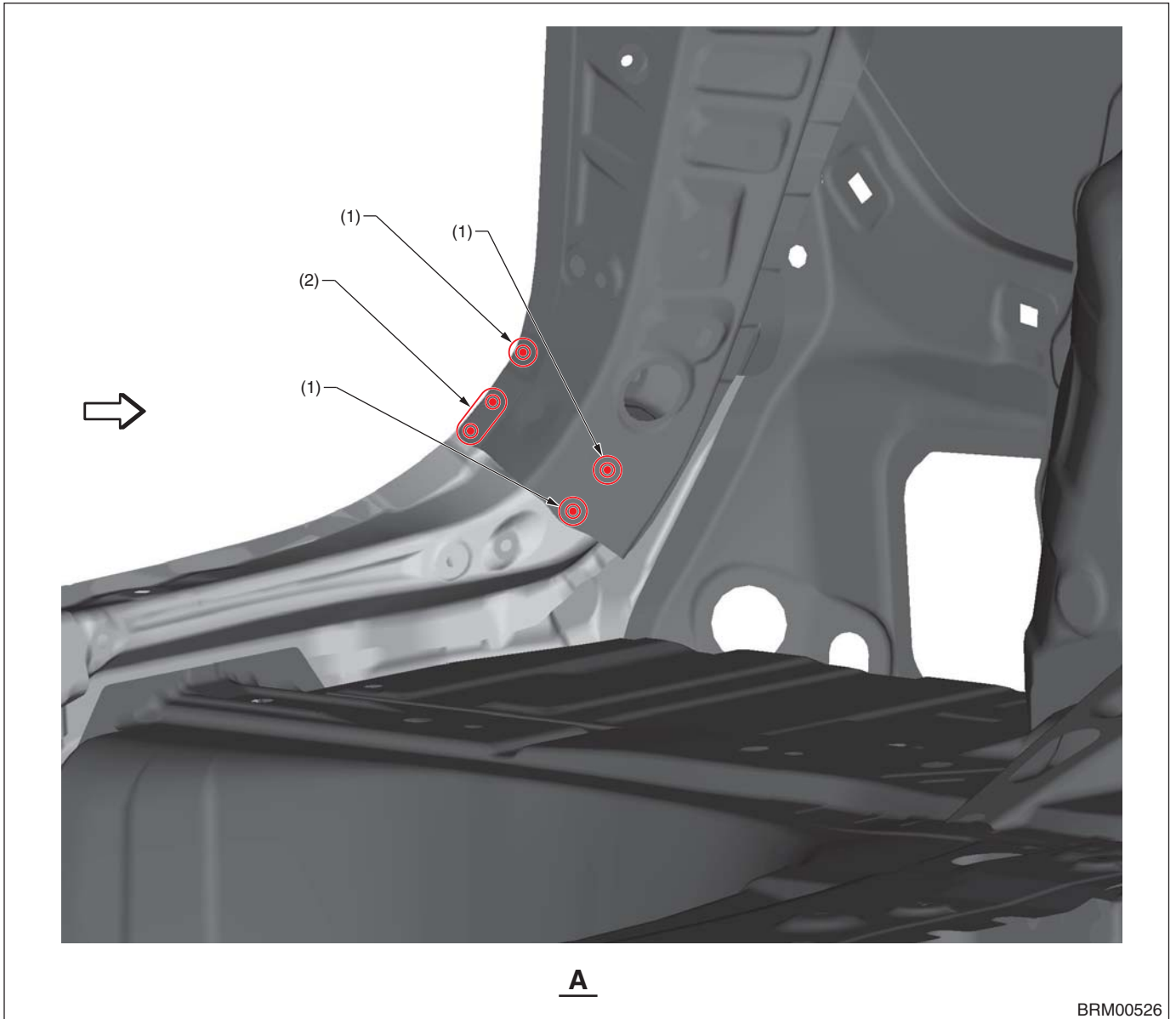
(3) 3 points  
(4) 4 points

(5) 5 points



## Panel Replacement

### • Views A



(1) 1 point

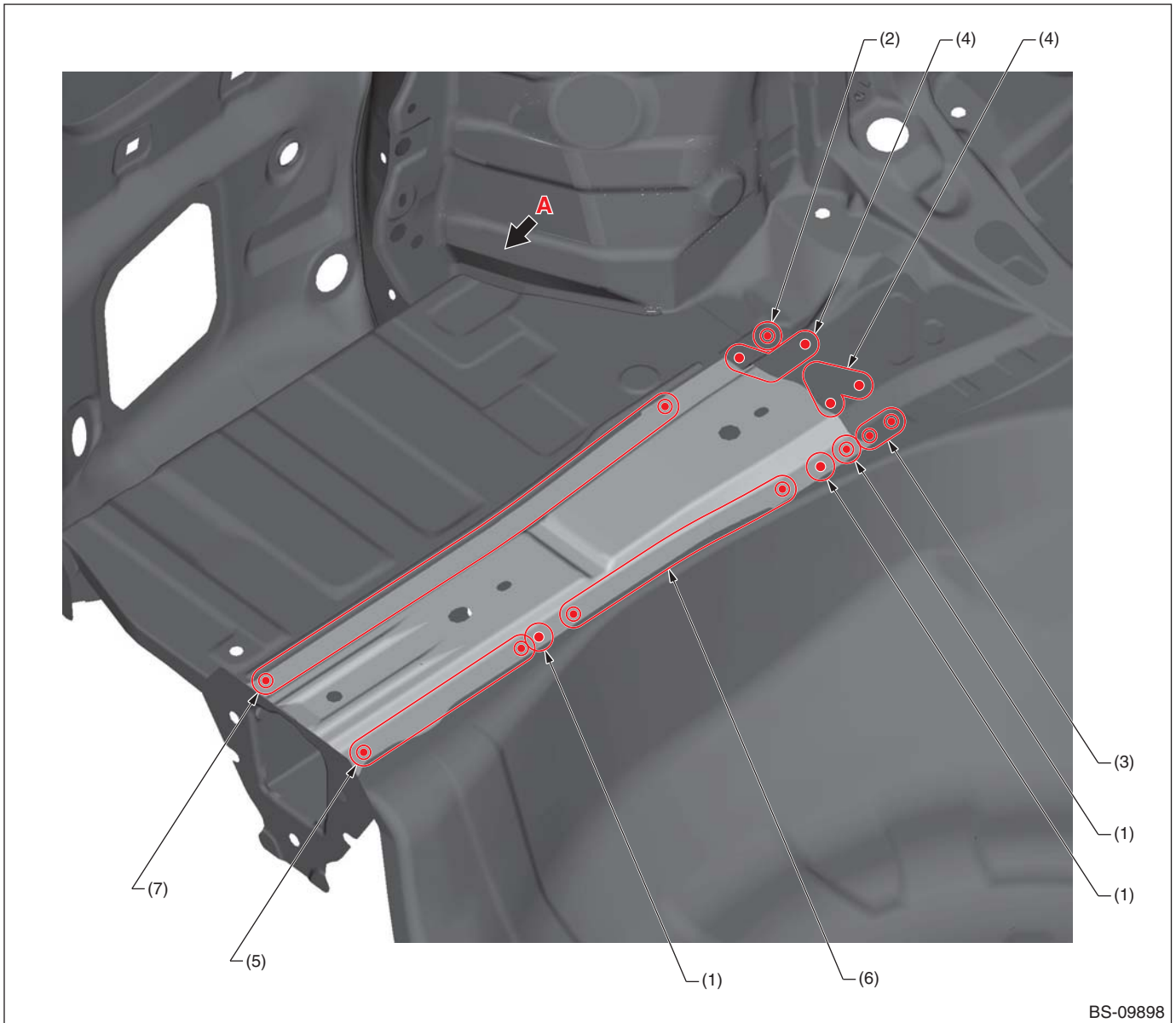
(2) 2 points

## Panel Replacement

### 8-30. Rear Side Frame Upper Rear LH (total replacement)

#### A: REMOVAL

##### • Overall view



BS-09898

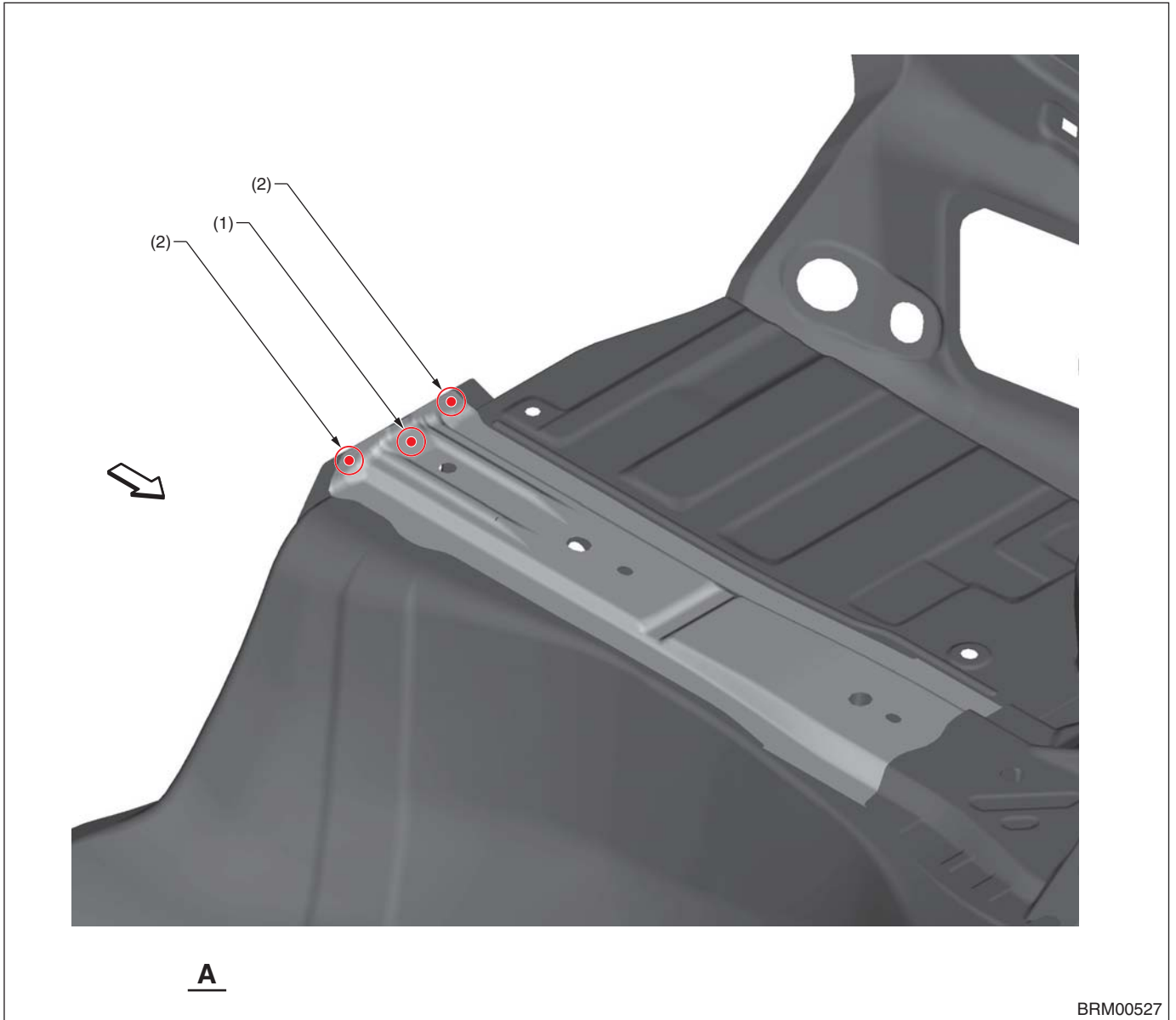
- (1) 1 point (top · 1)
- (2) 1 point (top · 2)
- (3) 2 points (top · 2)

- (4) 3 points (top · 1)
- (5) 4 points (top · 1)
- (6) 5 points (top · 1)

- (7) 9 points (top · 1)

# Panel Replacement

## • Views A



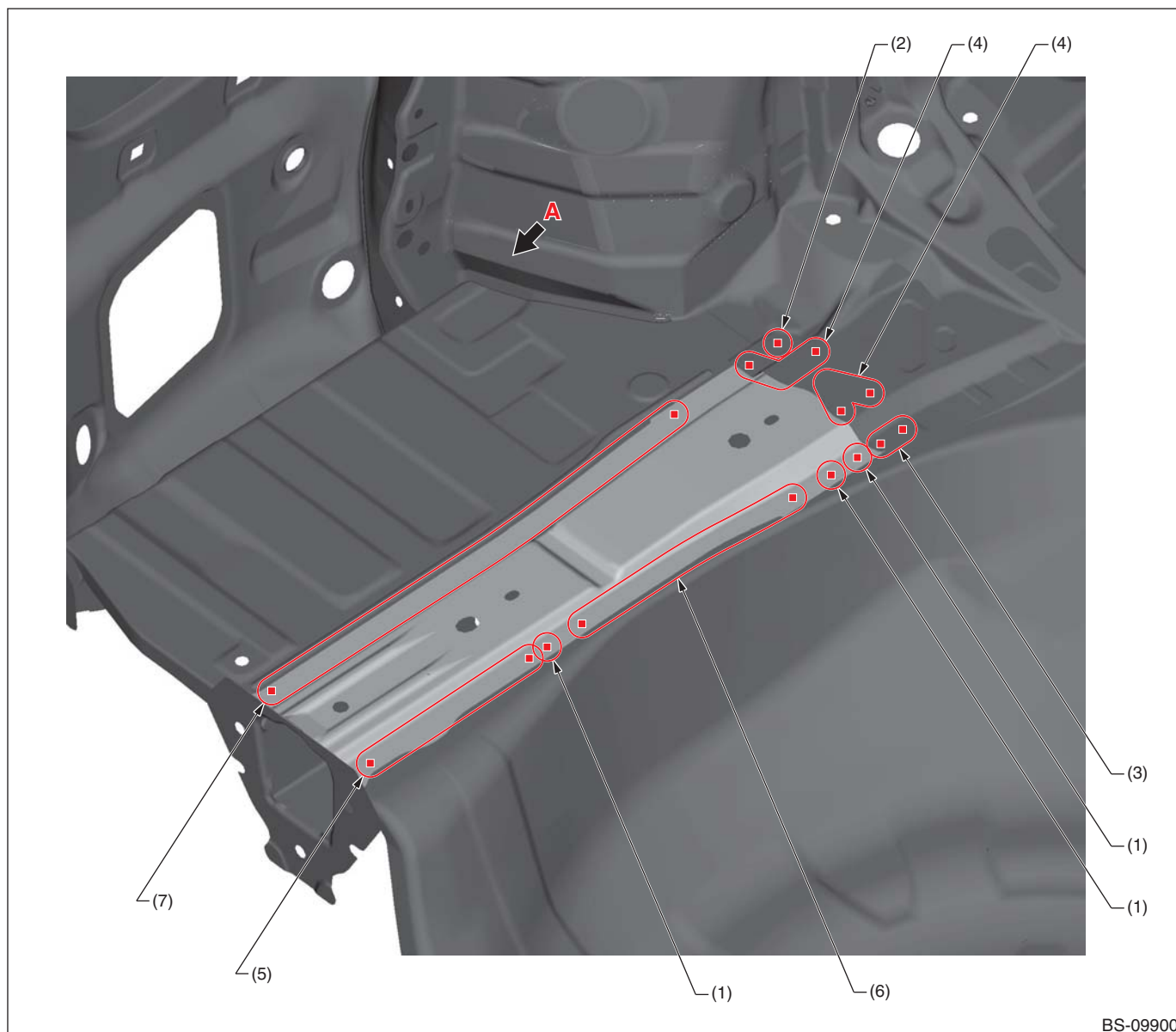
(1) 1 point (top · 1)

(2) 1 point (inside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



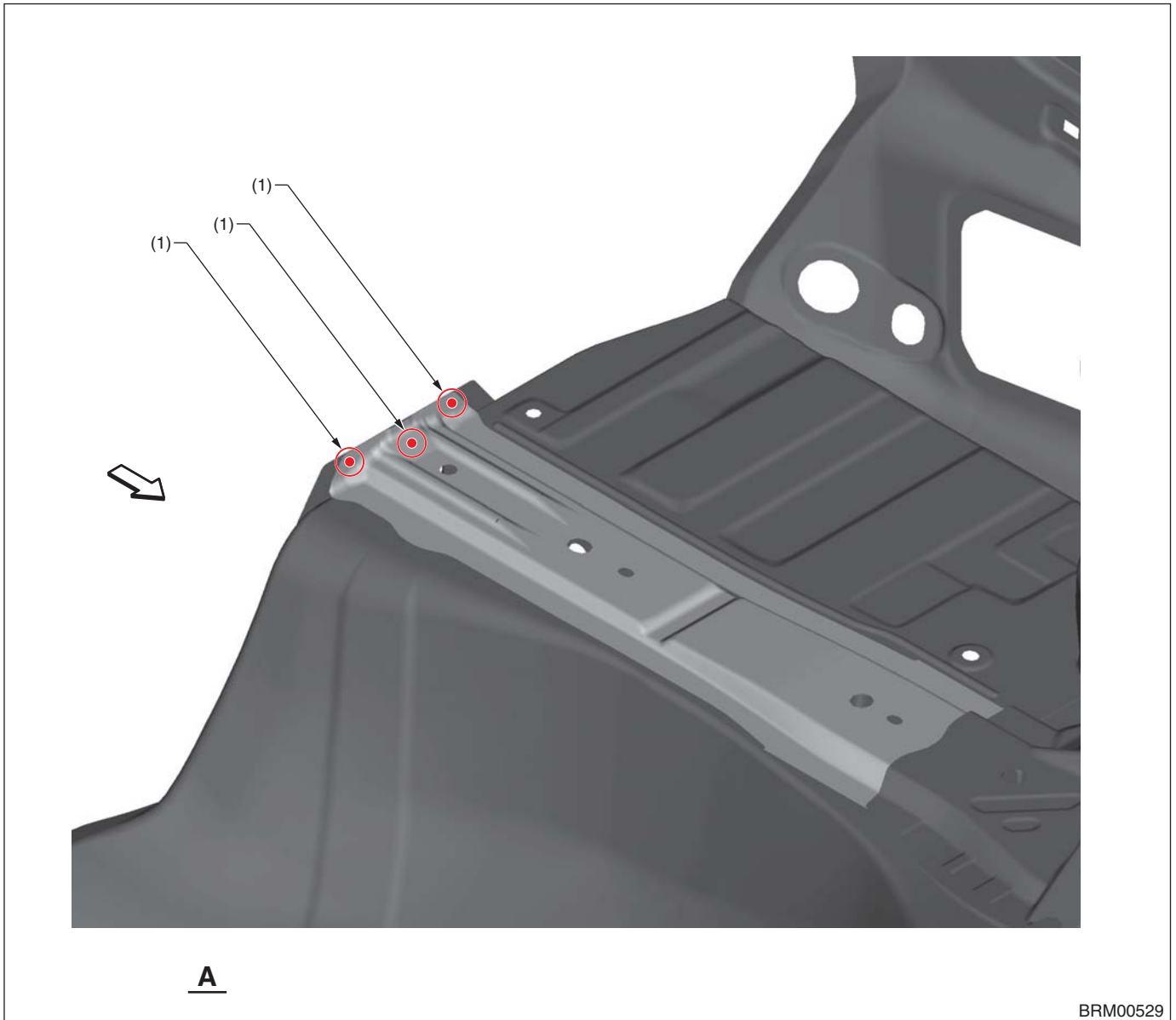
- (1) 1 point (service)
- (2) 1 point (service · matching)
- (3) 2 points (service · matching)

- (4) 3 points
- (5) 4 points (service)
- (6) 5 points (service)

- (7) 9 points (service)

# Panel Replacement

## • Views A



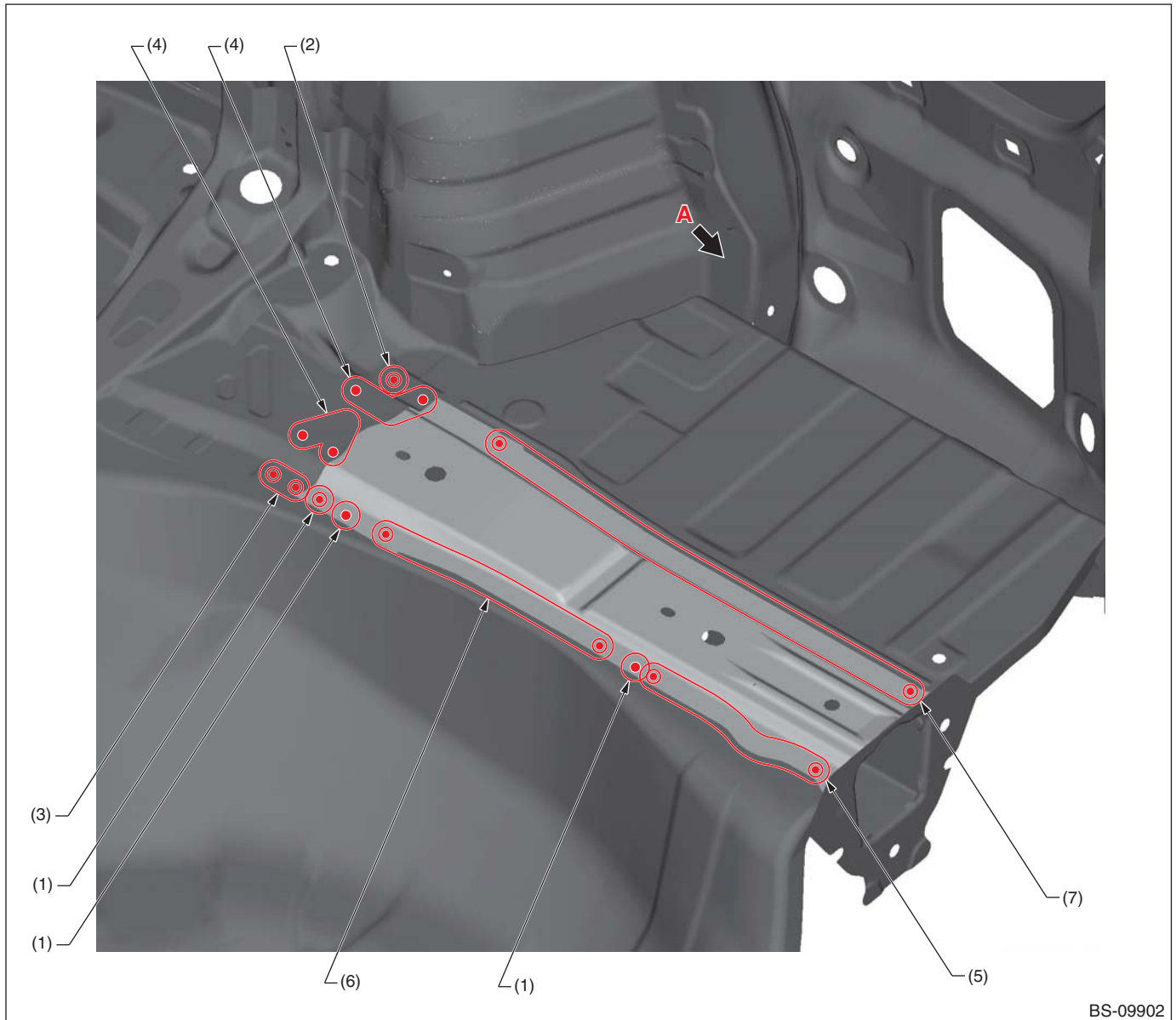
(1) 1 point

## Panel Replacement

### 8-31. Rear Side Frame Upper Rear RH (total replacement)

#### A: REMOVAL

##### • Overall view



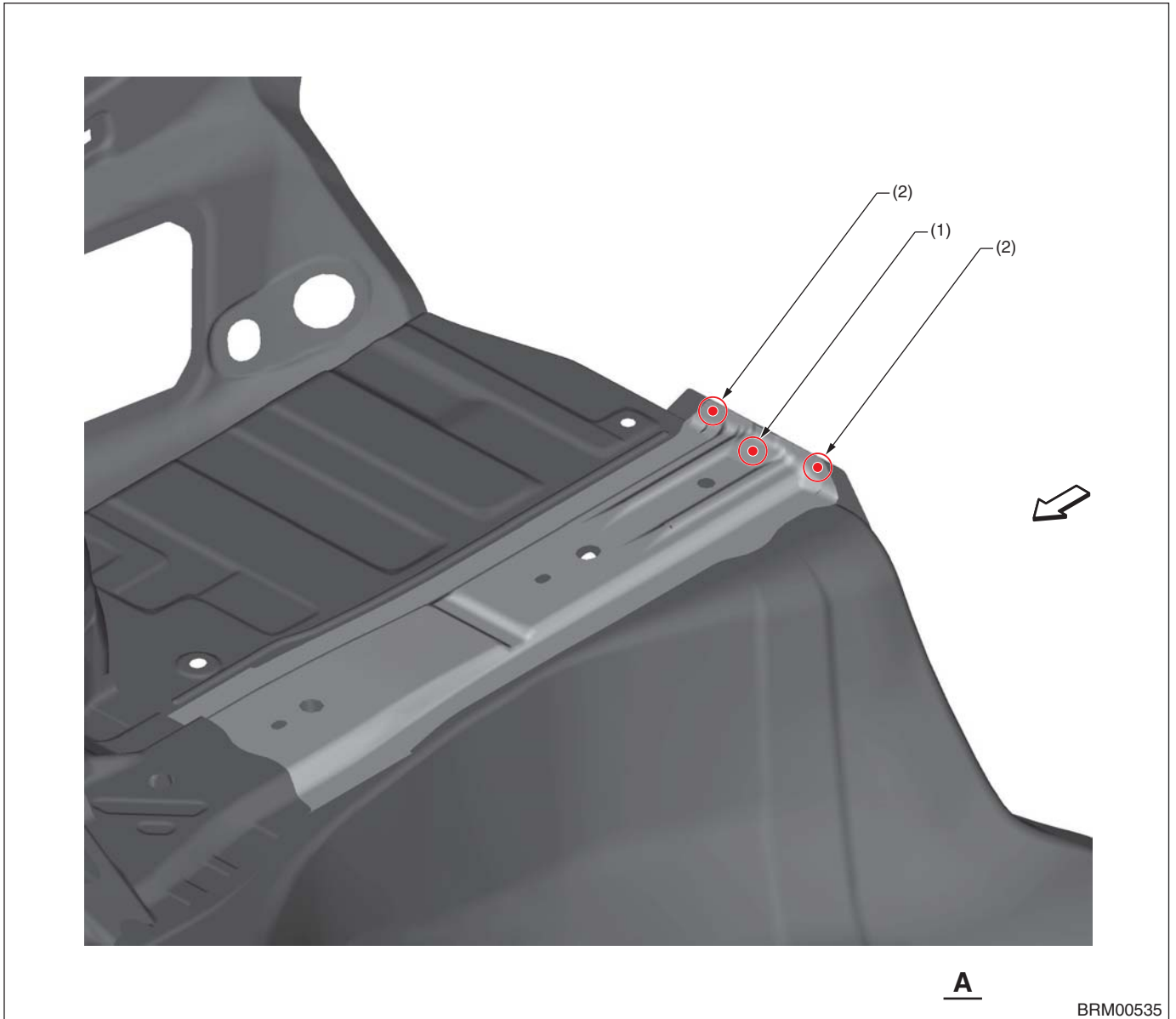
- (1) 1 point (top - 1)
- (2) 1 point (top - 2)
- (3) 2 points (top - 2)

- (4) 3 points (top - 1)
- (5) 4 points (top - 1)
- (6) 5 points (top - 1)

- (7) 9 points (top - 1)

# Panel Replacement

## • Views A



(1) 1 point (top · 1)

(2) 1 point (inside · 1)

## B: INSTALLATION

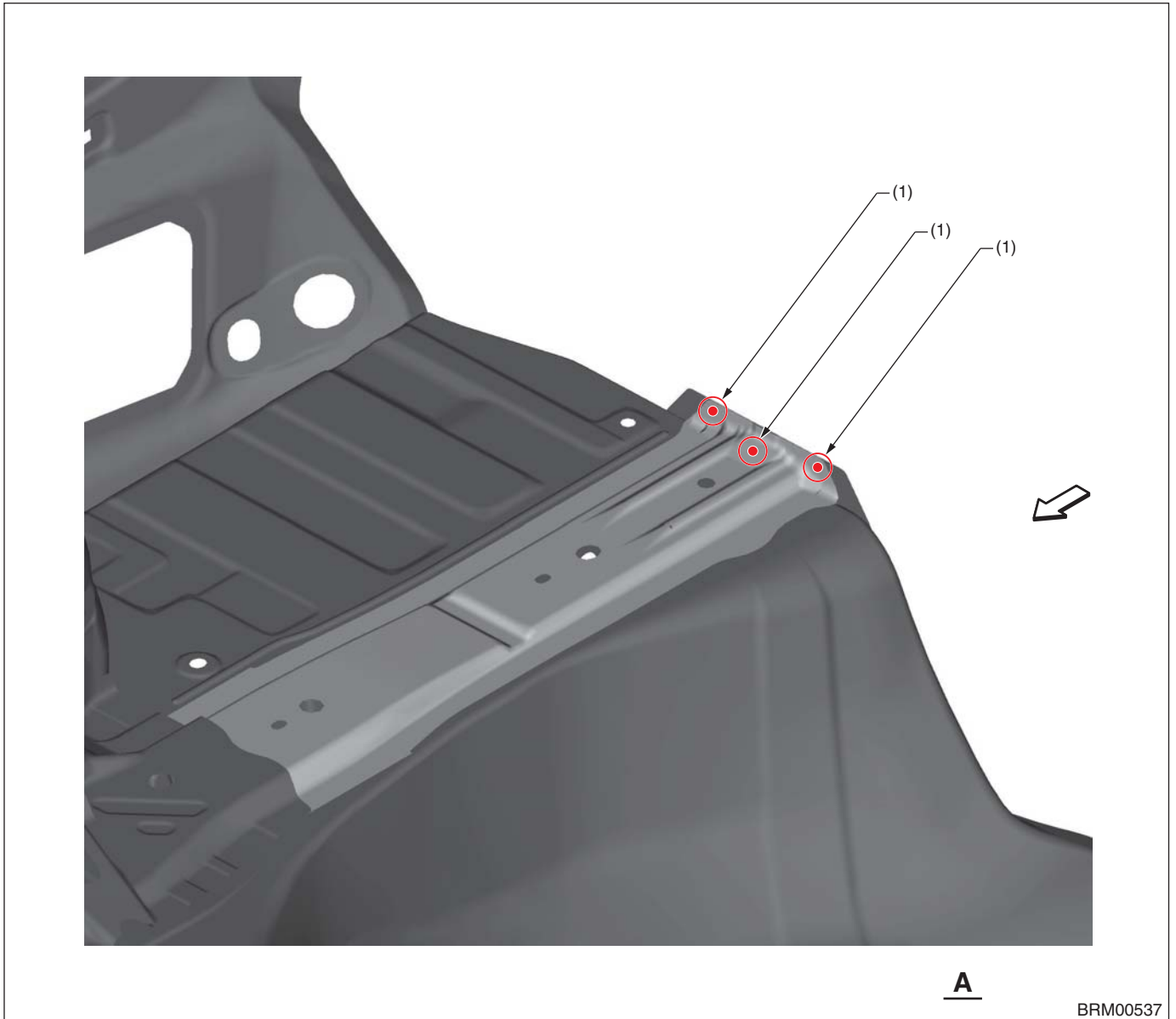
Diagram illustrating the installation of a component (likely a battery or power source) into a vehicle chassis. The diagram shows the component being installed into a designated slot. Callouts (1) through (7) indicate specific mounting points or fasteners. A red 'A' with an arrow points to a specific area on the component, likely indicating a warning or a critical installation point.

- BS - 212**



## Panel Replacement

### • Views A



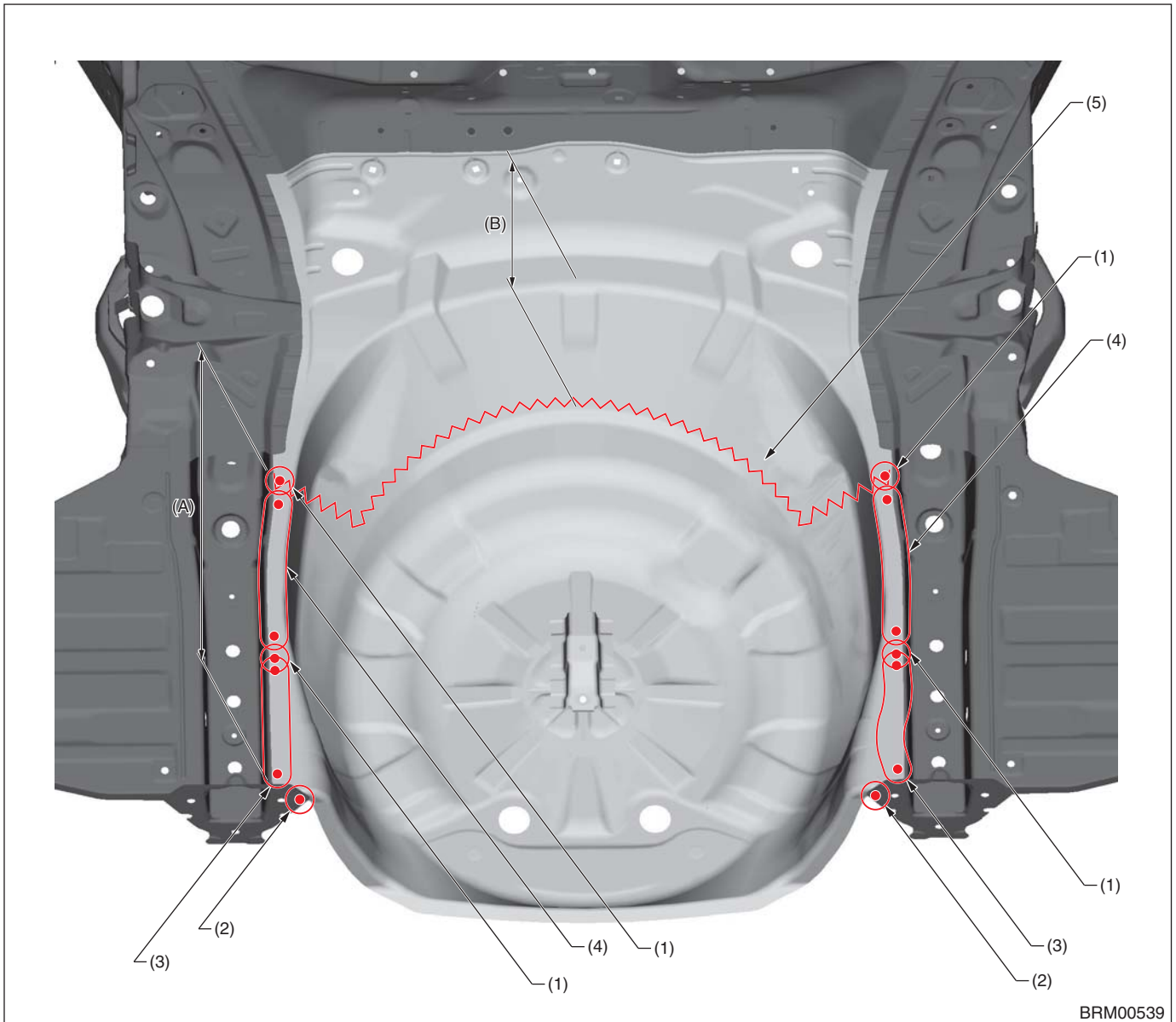
(1) 1 point

## Panel Replacement

### 8-32. Rear Floor Pan (partial replacement)

#### A: REMOVAL

##### • Overall view



(A) 455 mm [17.91 in]

(B) 170 mm [6.69 in]

(1) 1 point (top · 1)

(3) 4 points (top · 1)

(5) Cut position

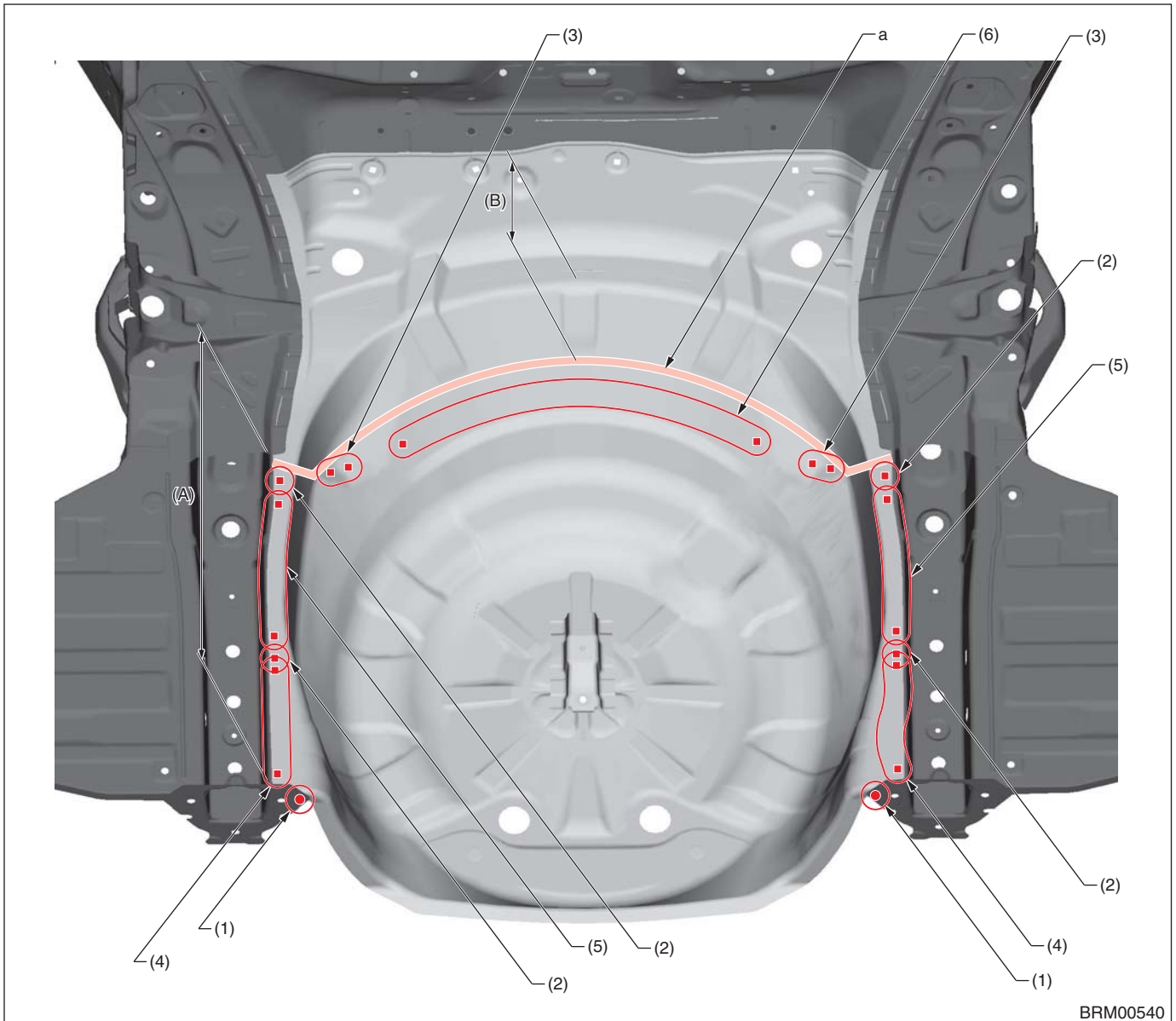
(2) 1 point (inside · 1 belt sander)

(4) 5 points (top · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view

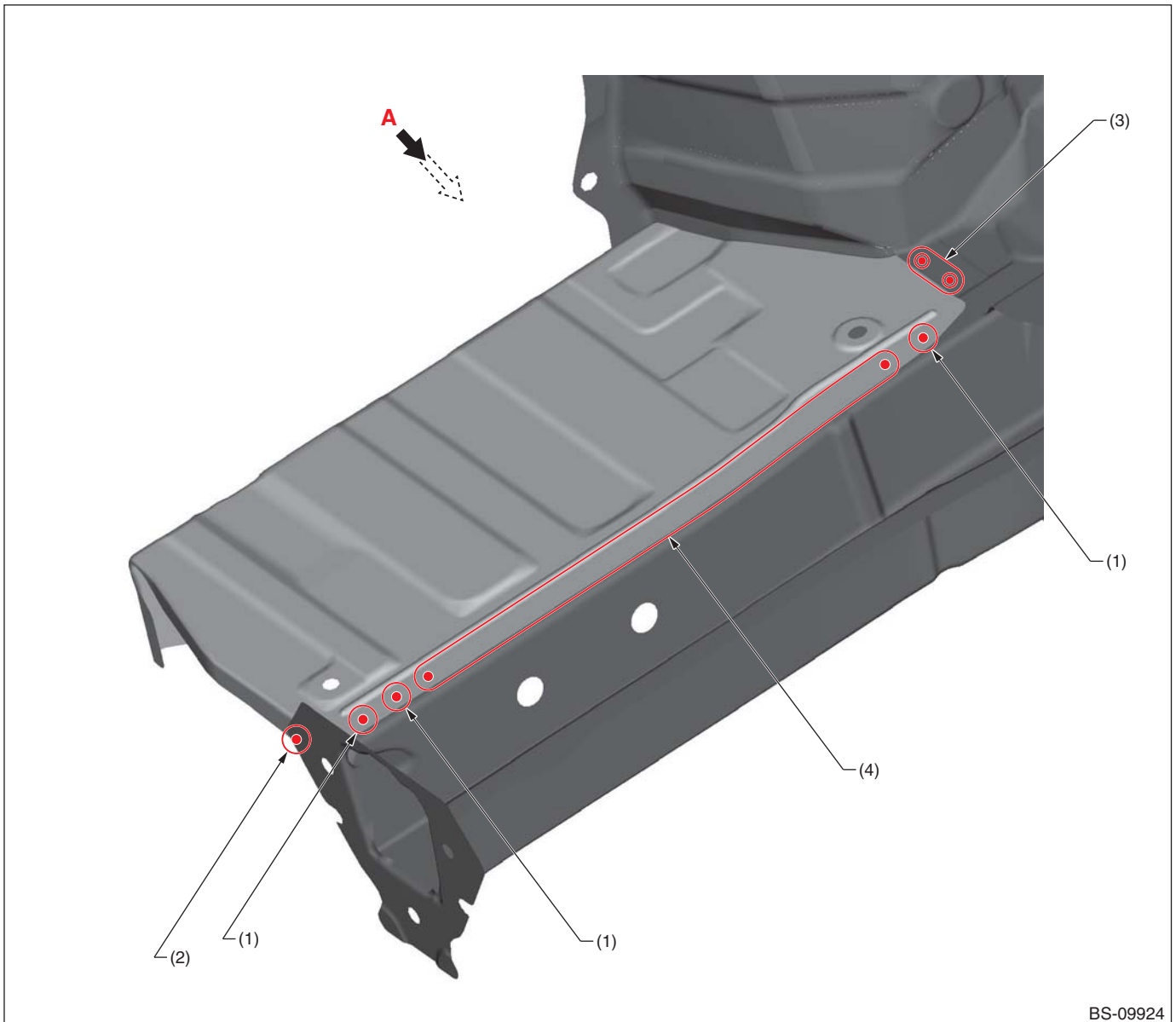


## Panel Replacement

### 8-33. Rear Floor Side (total replacement)

#### A: REMOVAL

##### • Overall view



BS-09924

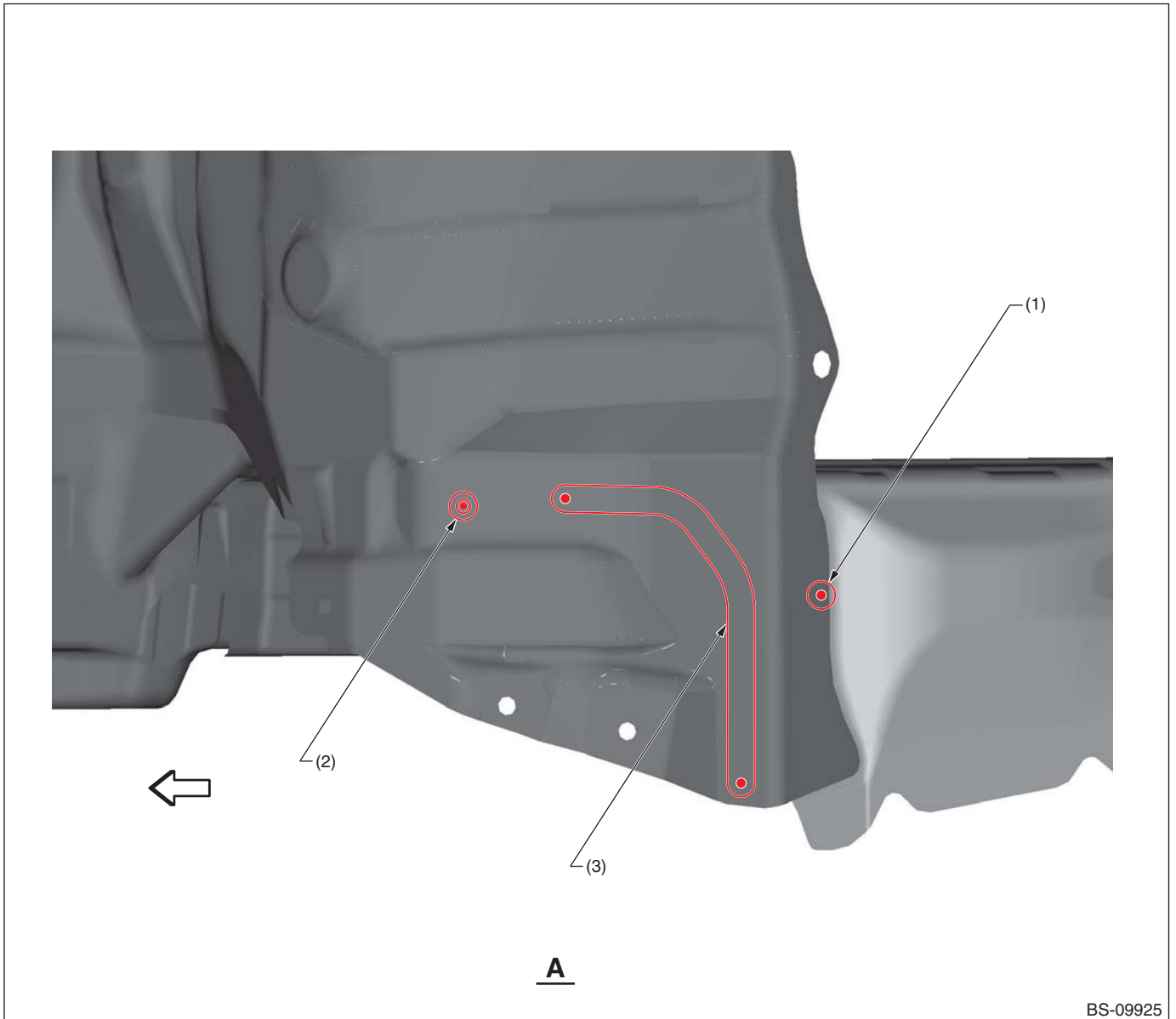
(1) 1 point (top · 1)  
(2) 1 point (inside · 1)

(3) LH: 2 points (top · 2)  
RH: 1 point (top · 2)

(4) 8 points (top · 1)

# Panel Replacement

## • Views A (LH)



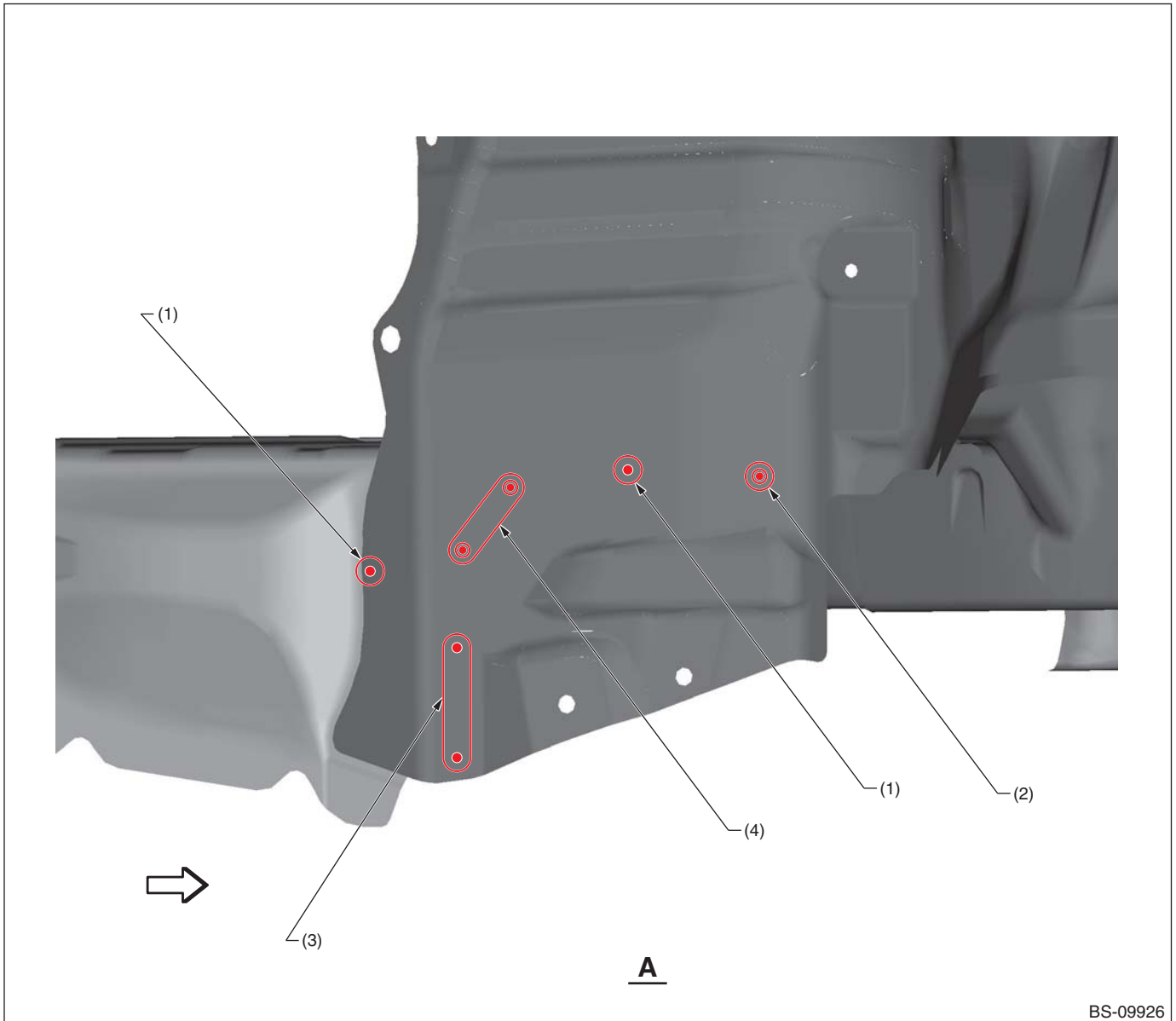
(1) 1 point (inside · 1)

(2) 1 point (outside · 2)

(3) 5 points (inside · 1)

## Panel Replacement

### • Views A (RH)



BS-09926

(1) 1 point (inside · 1)  
(2) 1 point (outside · 2)

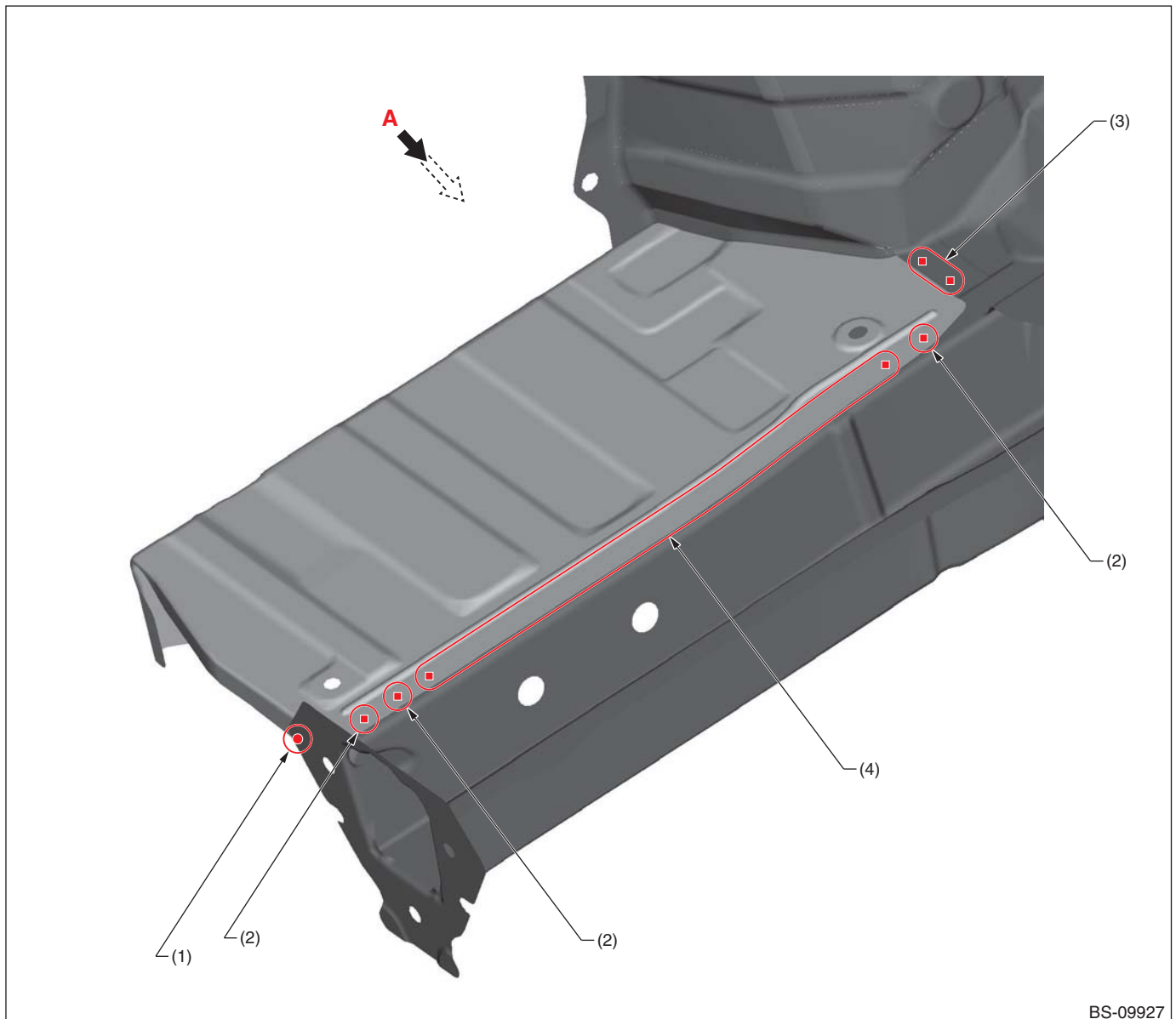
(3) 2 points (inside · 1)

(4) 2 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BS-09927

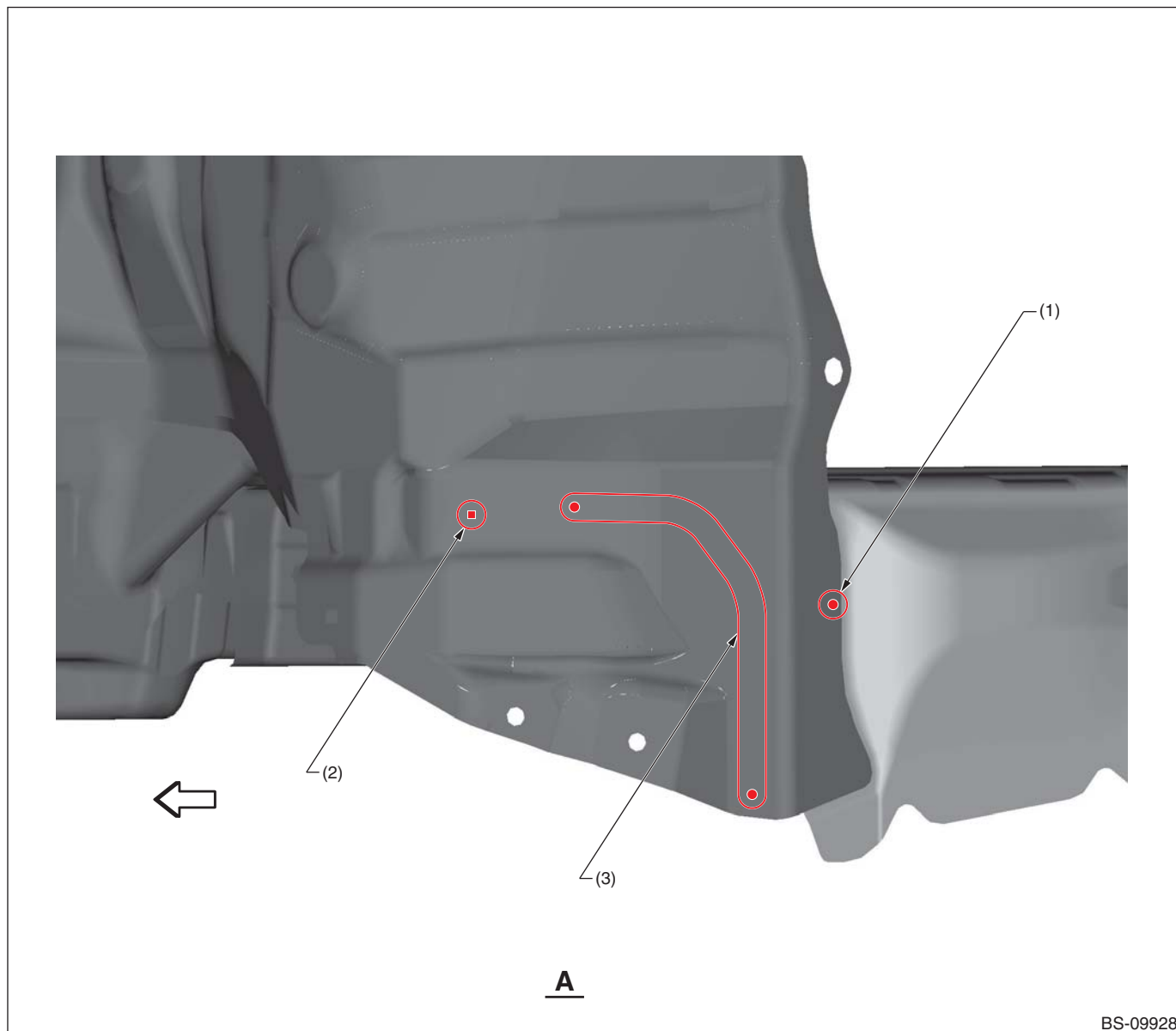
- (1) 1 point
- (2) 1 point (service)

- (3) LH: 2 points (service · matching)  
RH: 1 point (service · matching)

- (4) 8 points (service)

# Panel Replacement

## • Views A (LH)



BS-09928

(1) 1 point

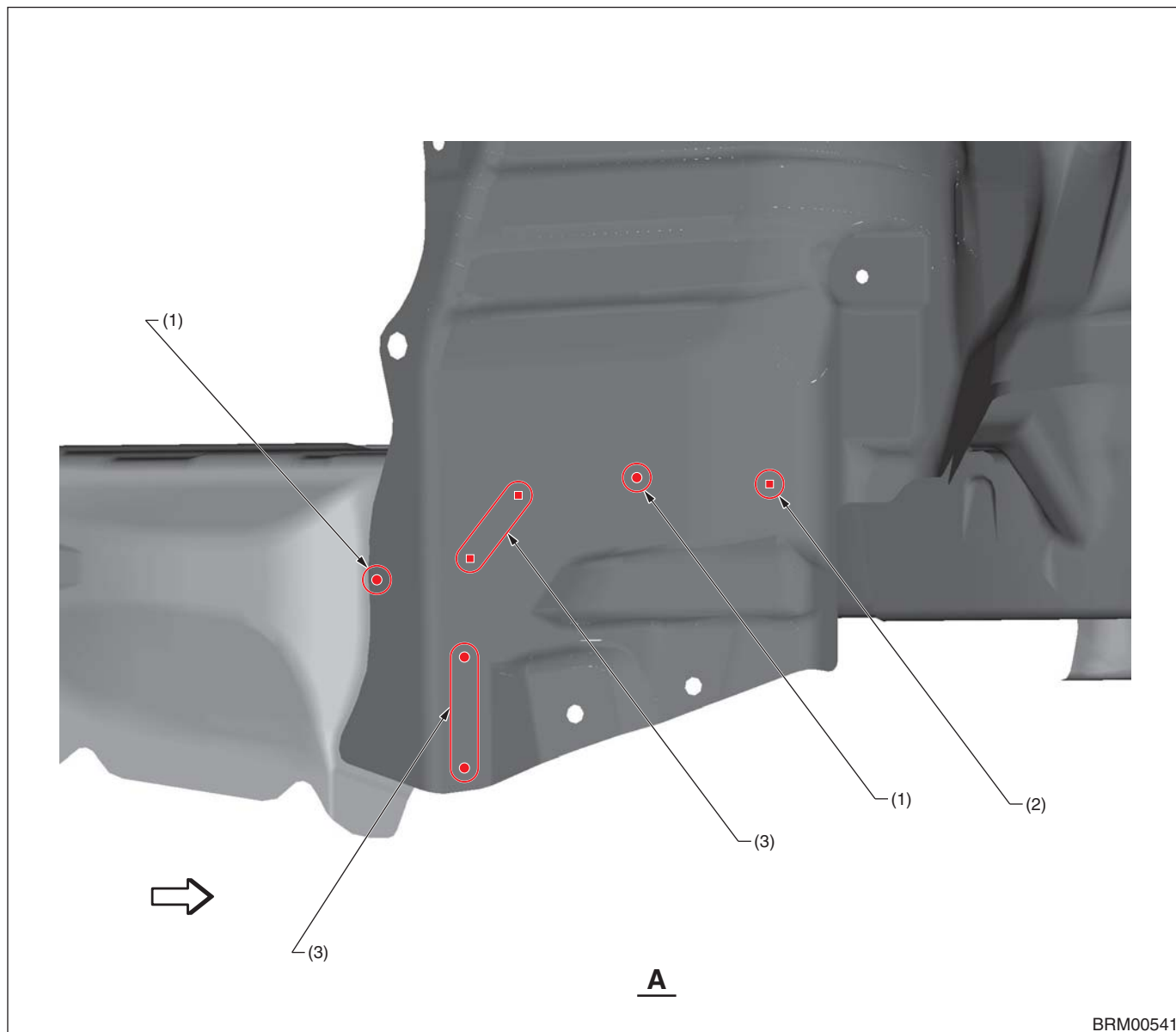
(2) 1 point (service · matching)

(3) 5 points



## Panel Replacement

### • Views A (RH)



(1) 1 point

(2) 1 point (service · matching)

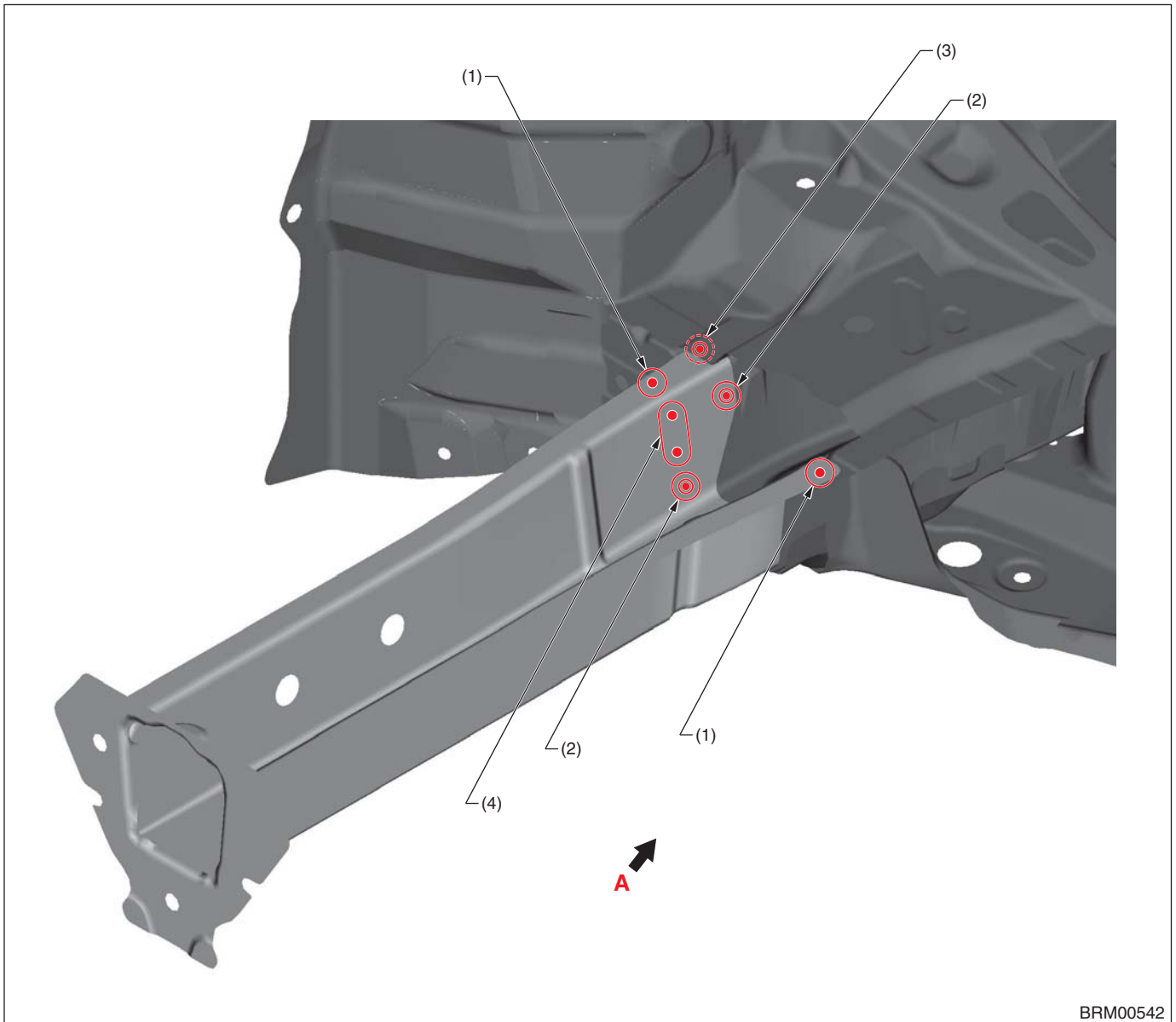
(3) 2 points

## Panel Replacement

### 8-34. Rear Side Frame Lower Rear (total replacement)

#### A: REMOVAL

##### • Overall view



BRM00542

(1) 1 point (top · 1)

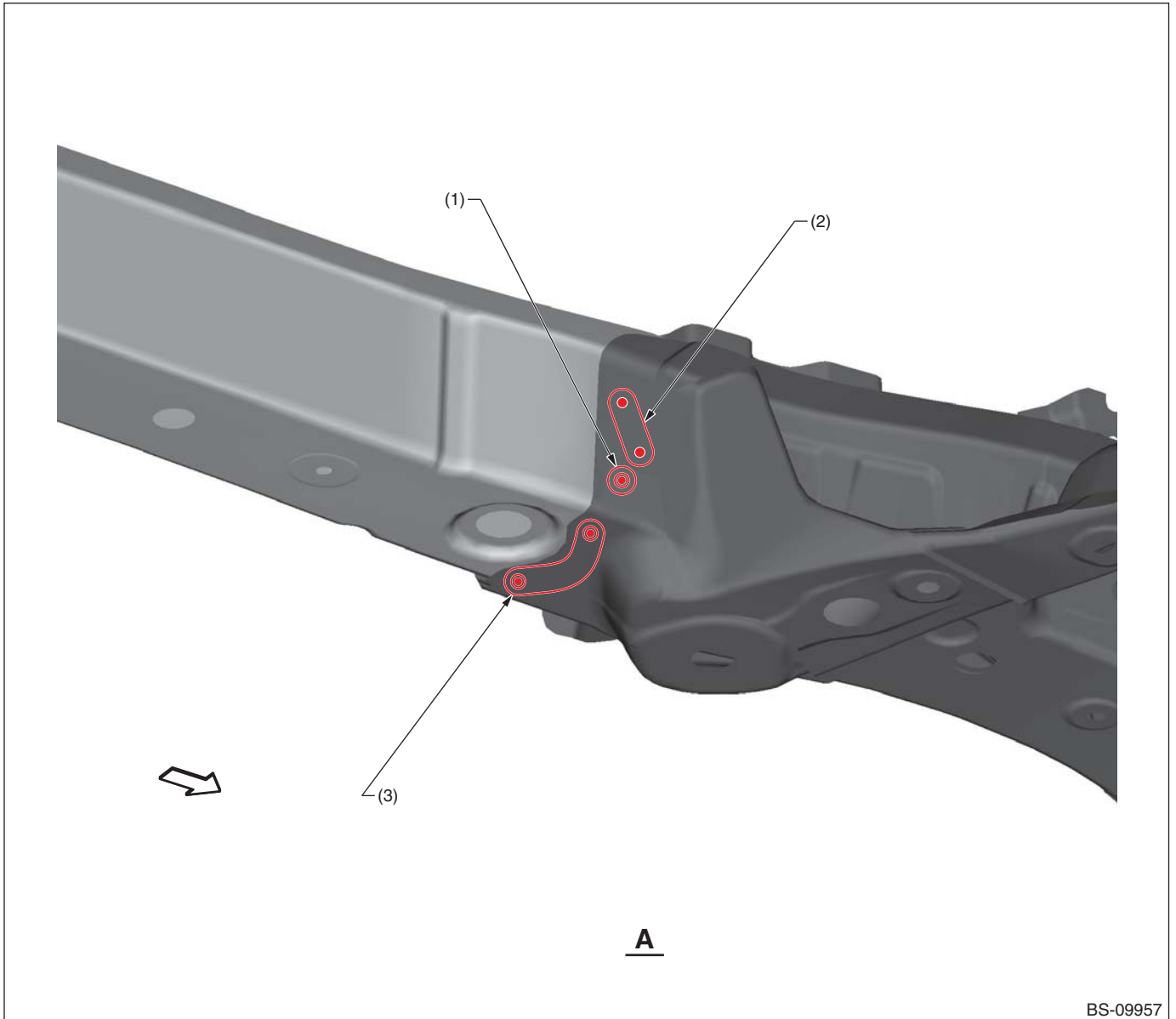
(2) 1 point (inside · 1 belt sander)

(3) 1 point (bottom · 2)

(4) 2 points (inside · 1 belt sander)

# Panel Replacement

## • Views A



(1) 1 point (inside · 1 belt sander)

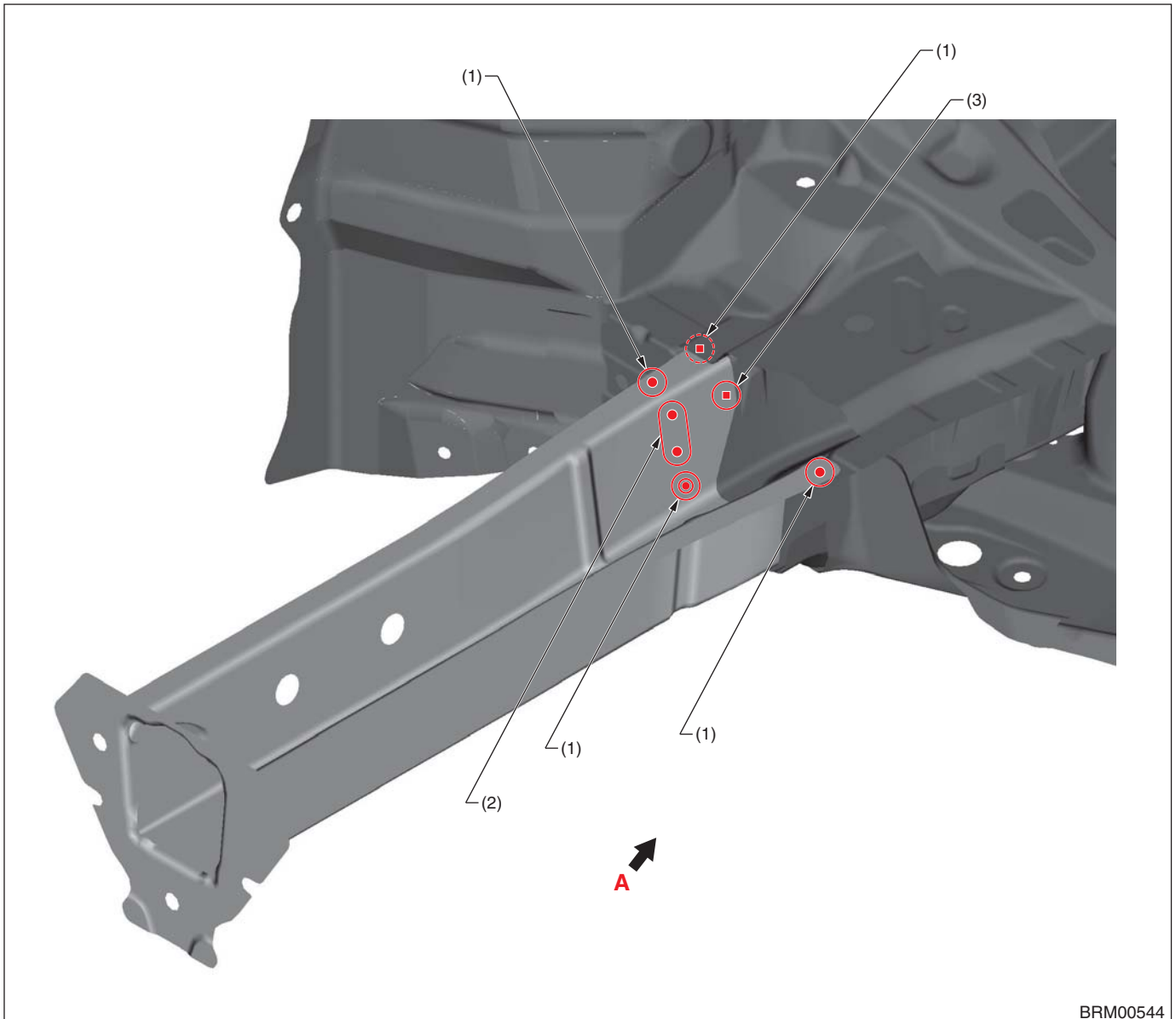
(2) 2 points (inside · 1 belt sander)

(3) 3 points (inside · 1 belt sander)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00544

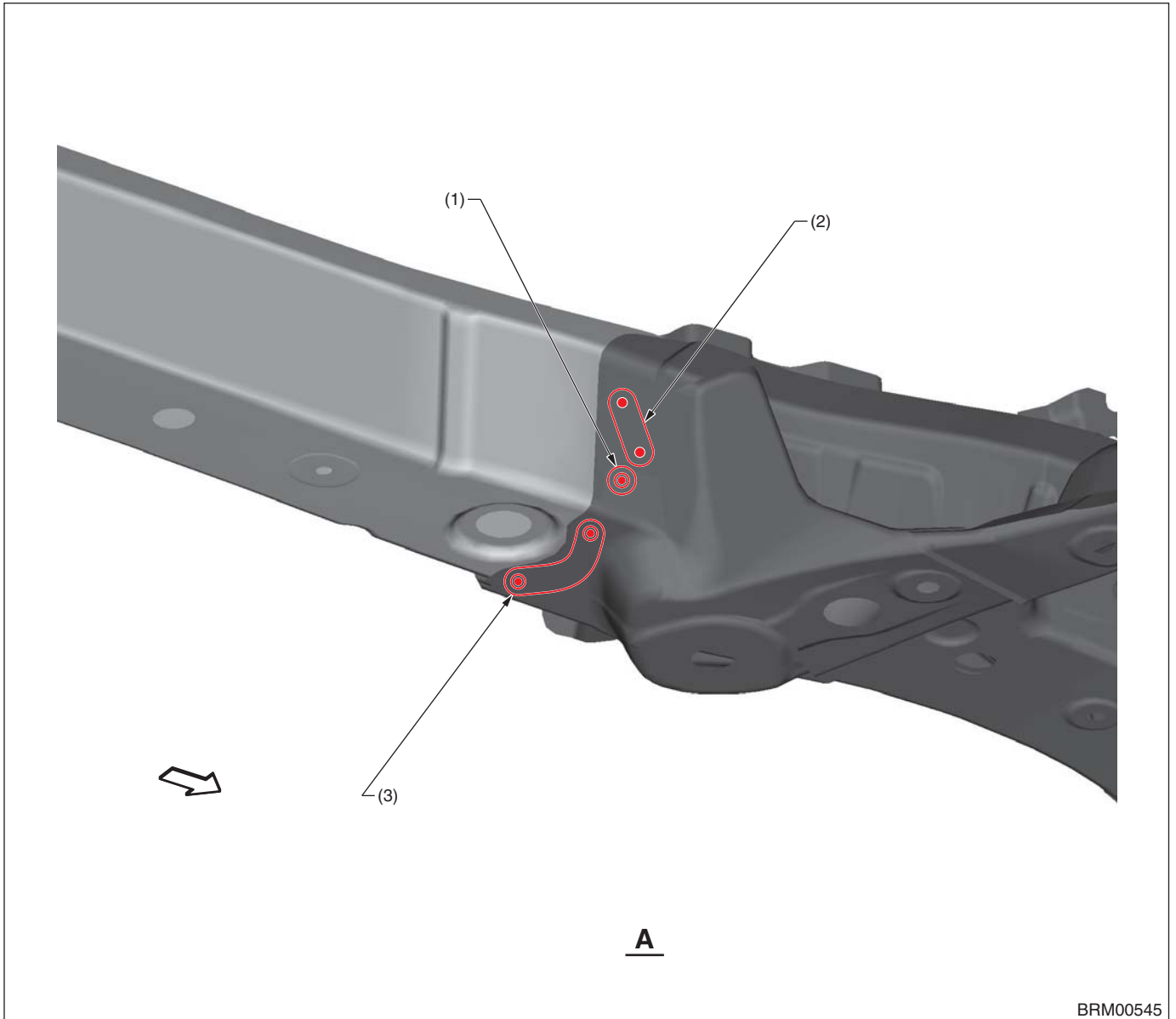
(1) 1 point

(2) 2 points

(3) 1 point (service)

# Panel Replacement

## • Views A



(1) 1 point

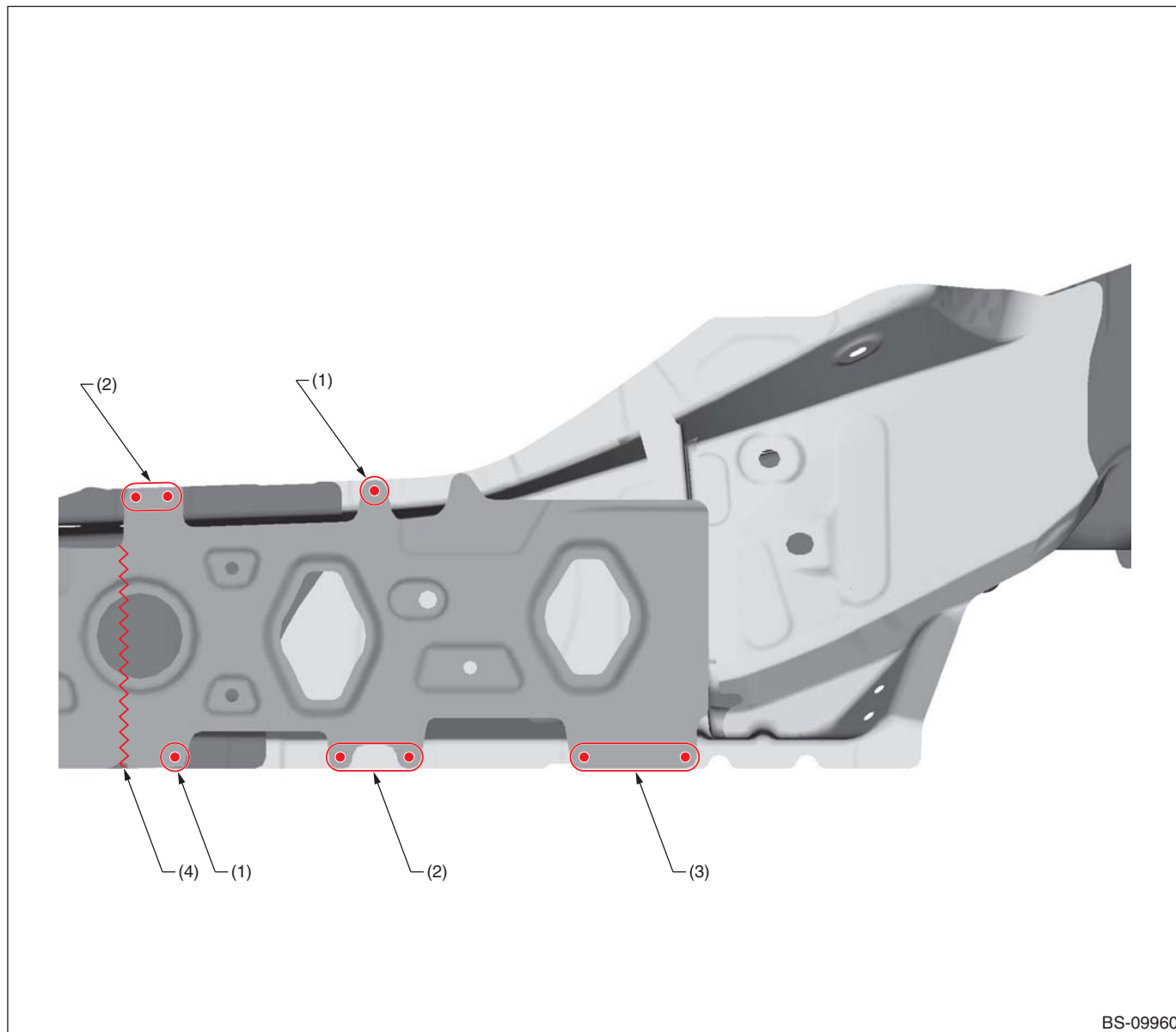
(2) 2 points

(3) 3 points

### 8-35. Side Sill Inner Rear (total replacement)

#### A: REMOVAL

##### • Overall view 1



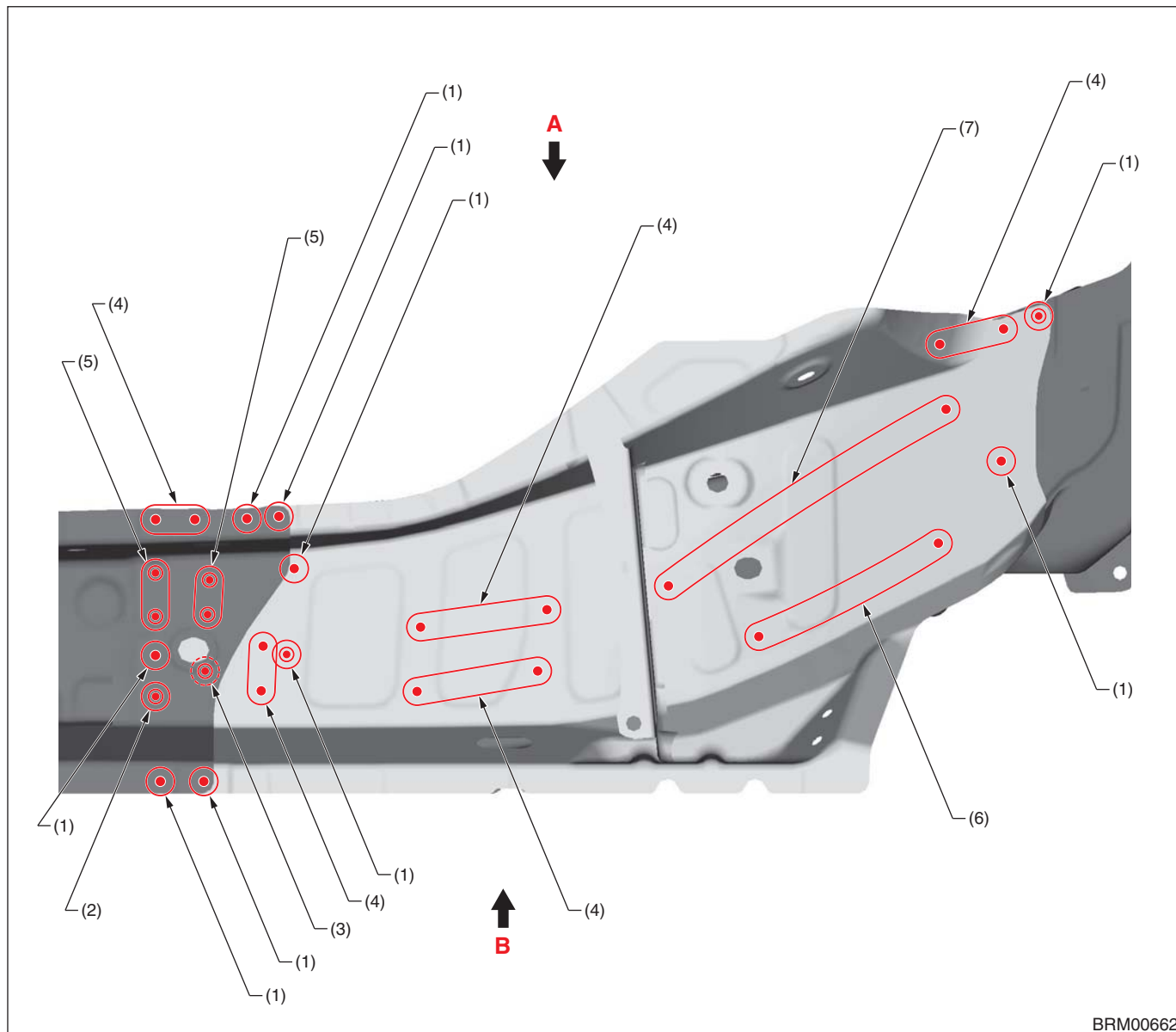
(1) 1 point (outside - 1)  
(2) 2 points (outside - 1)

(3) 3 points (outside - 1)

(4) Rough cutting

# Panel Replacement

## • Overall view 2



BRM00662

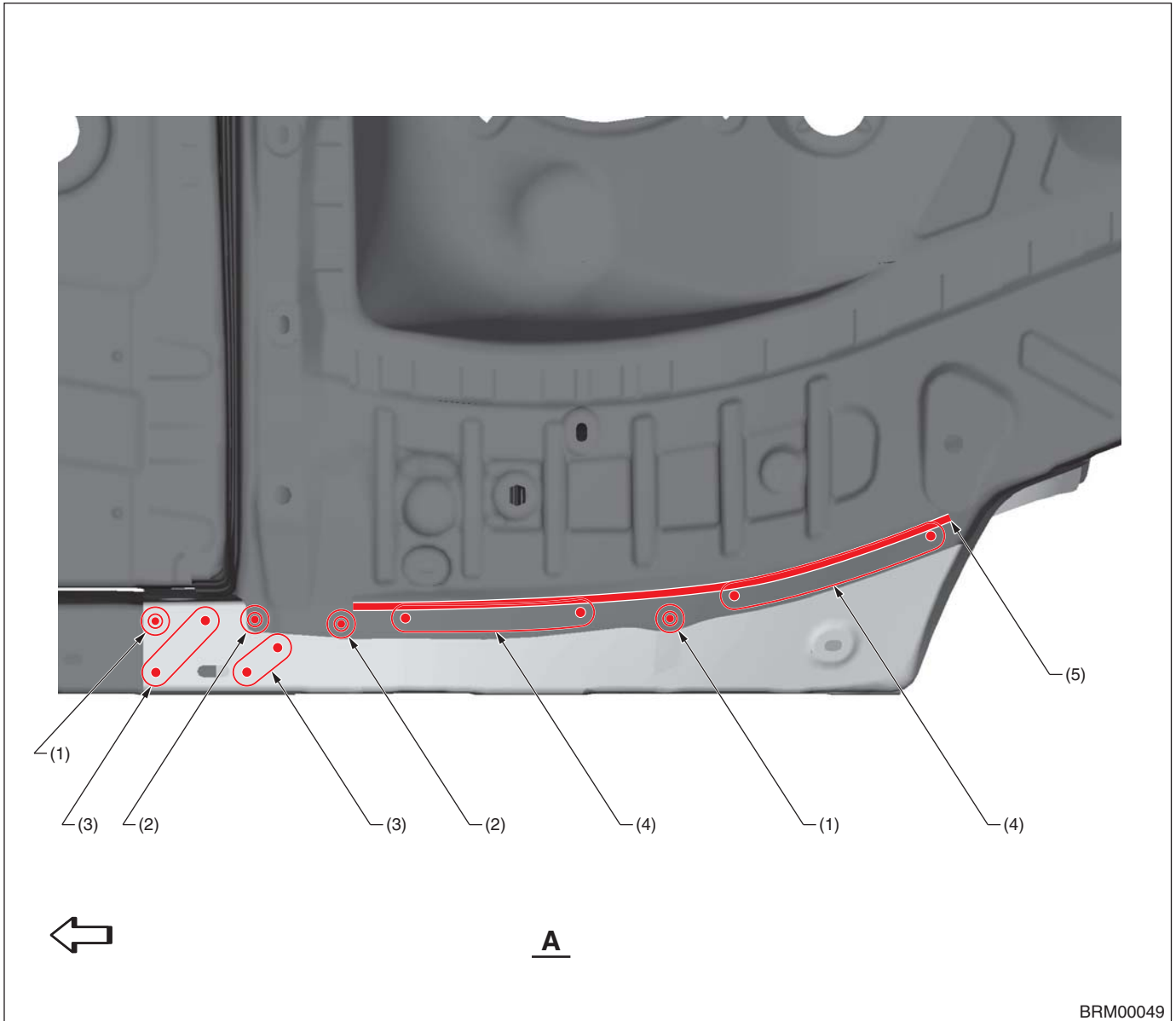
- (1) 1 point (outside · 1)
- (2) 1 point (outside · 2)
- (3) 1 point (inside · 2)

- (4) 2 points (outside · 1)
- (5) 2 points (outside · 2)
- (6) 3 points (outside · 1)

- (7) 4 points (outside · 1)

# Panel Replacement

## • Views A



(1) 1 point (top · 1)  
(2) 1 point (top · 2)

(3) 2 points (top · 1)  
(4) 4 points (top · 1)

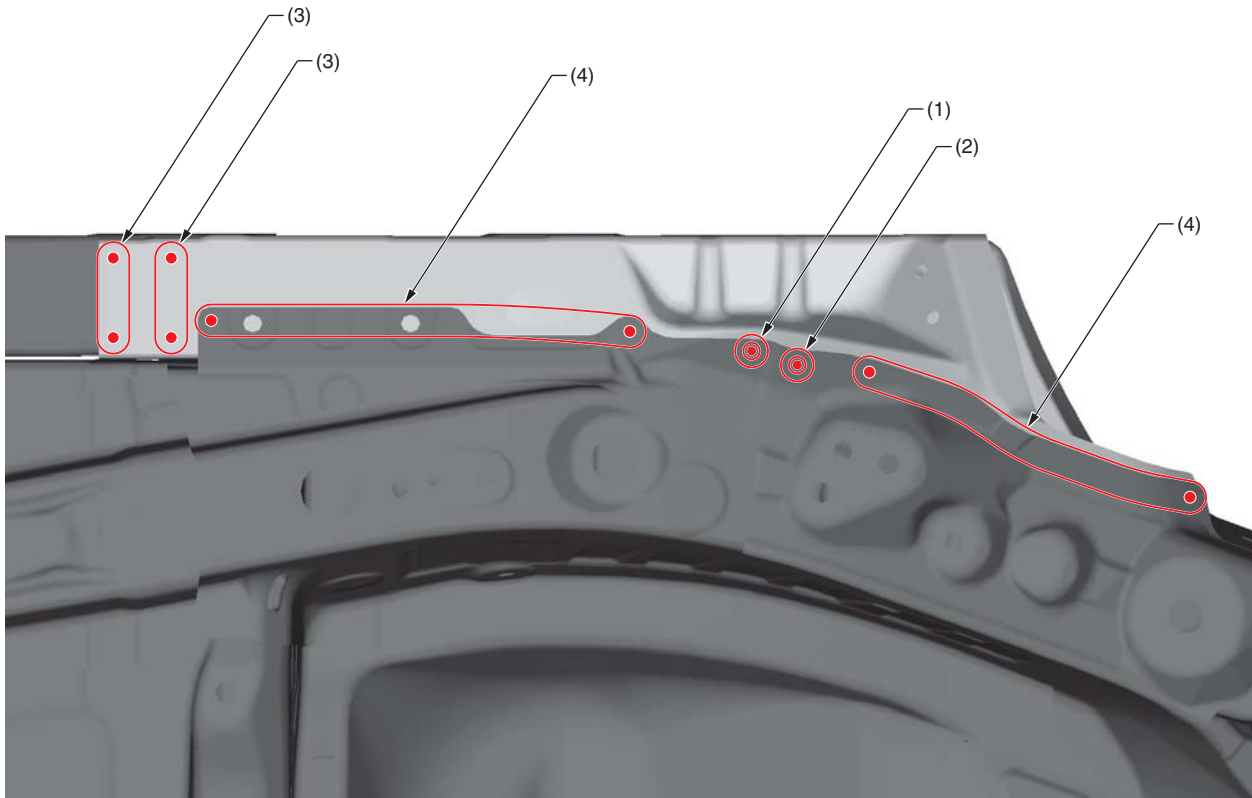
(5) Structural adhesive

— : Structural adhesive application location



# Panel Replacement

## • Views B



B

BS-09963

(1) 1 point (bottom · 1)  
(2) 1 point (bottom · 2)

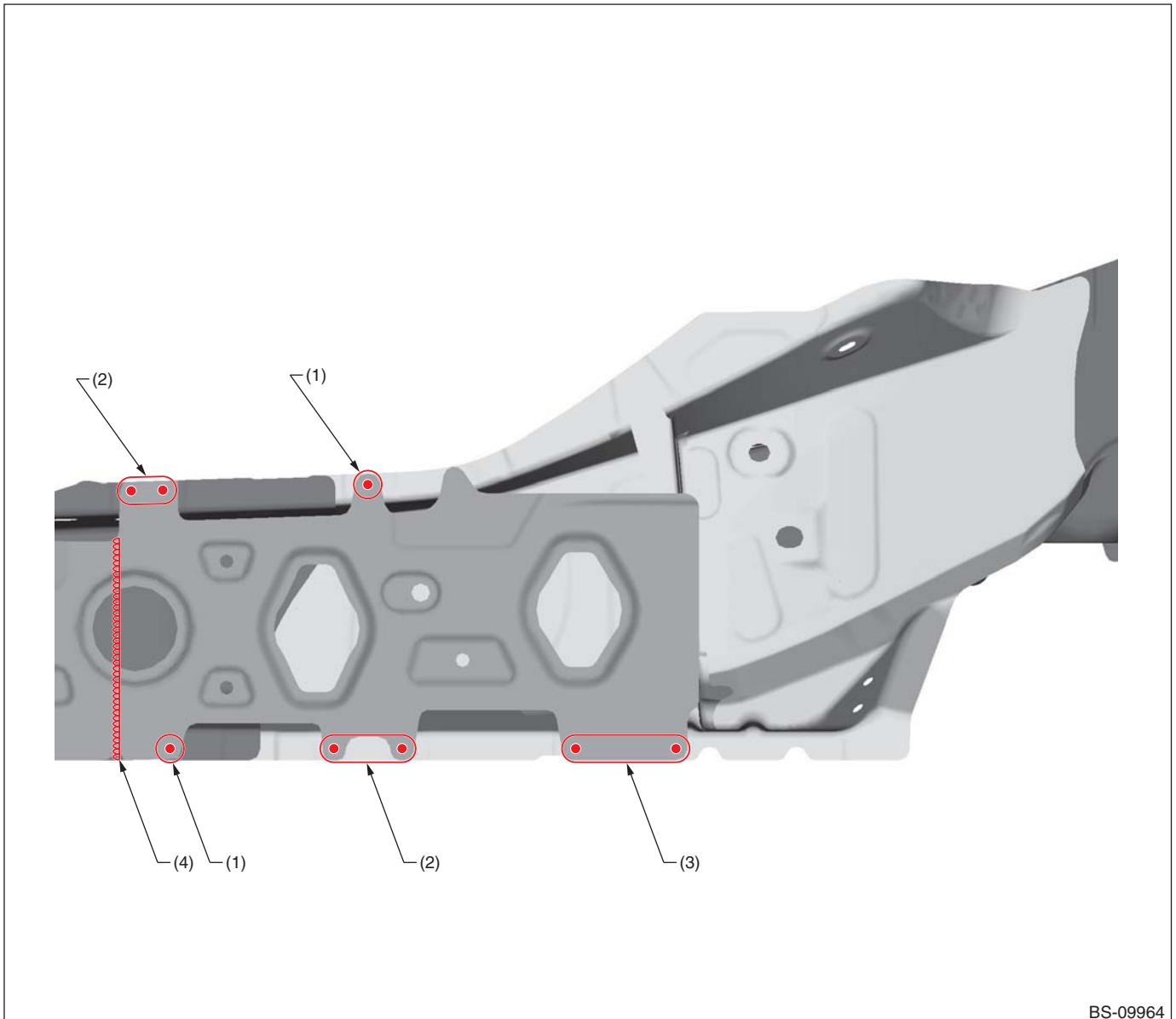
(3) 2 points (bottom · 1)

(4) 5 points (bottom · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view 1



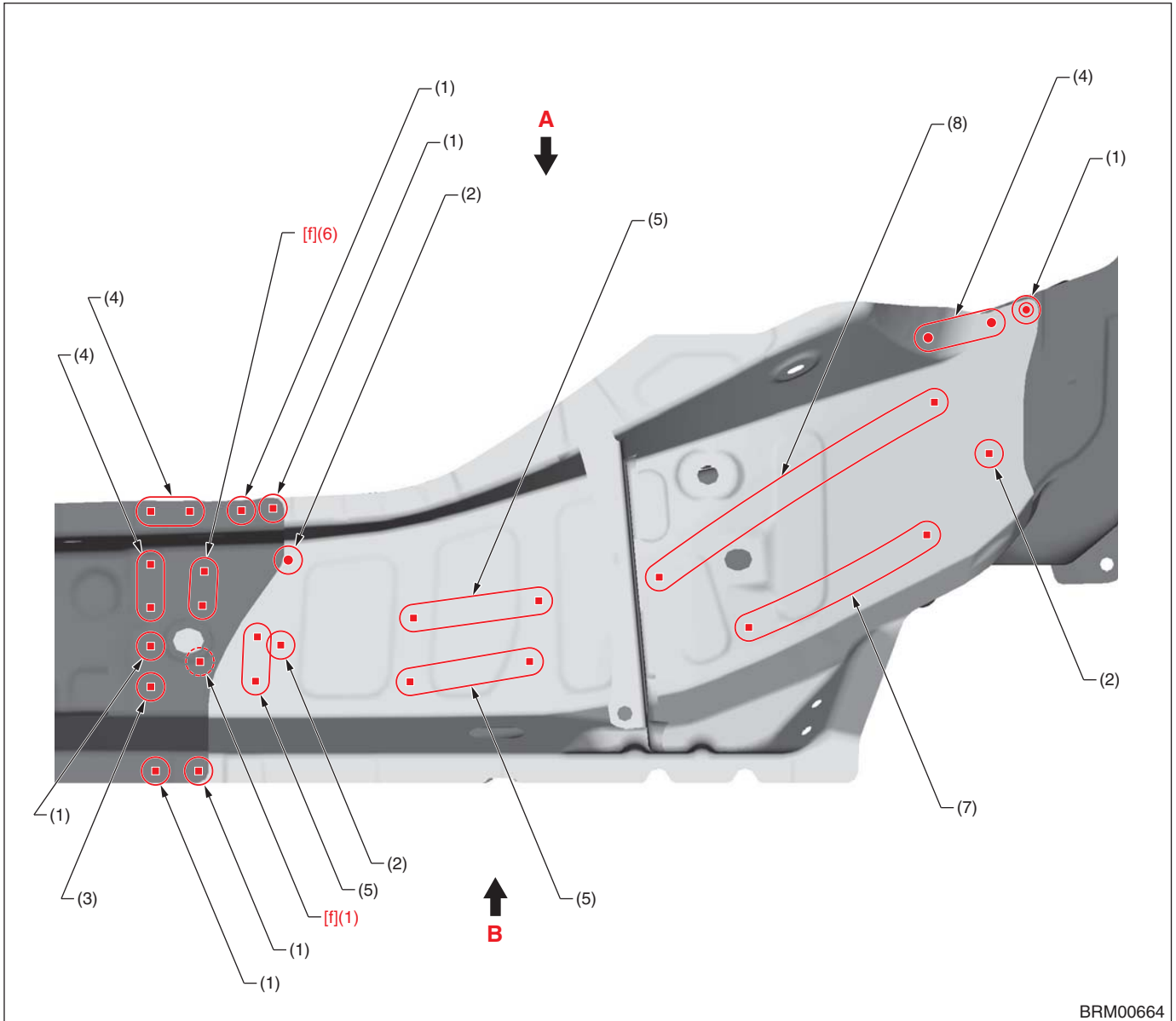
(1) 1 point  
(2) 2 points

(3) 3 points

(4) 1 point (continuous welding)

# Panel Replacement

## • Overall view 2



- |                                  |                                   |                        |
|----------------------------------|-----------------------------------|------------------------|
| (1) 1 point                      | (4) 2 points                      | (7) 3 points (service) |
| (2) 1 point (service)            | (5) 2 points (service)            | (8) 4 points (service) |
| (3) 1 point (service · matching) | (6) 2 points (service · matching) |                        |

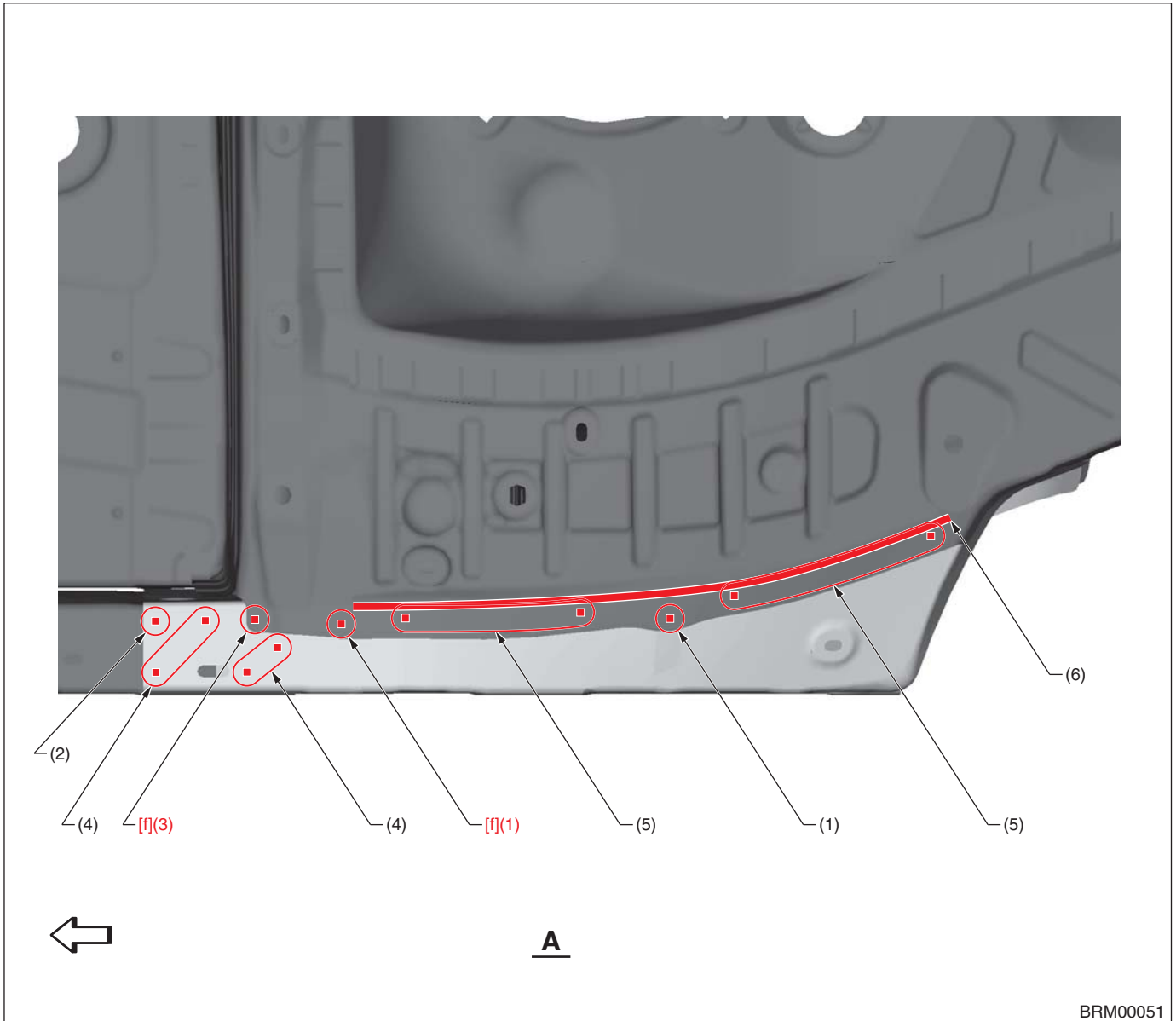
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Views A



BRM00051

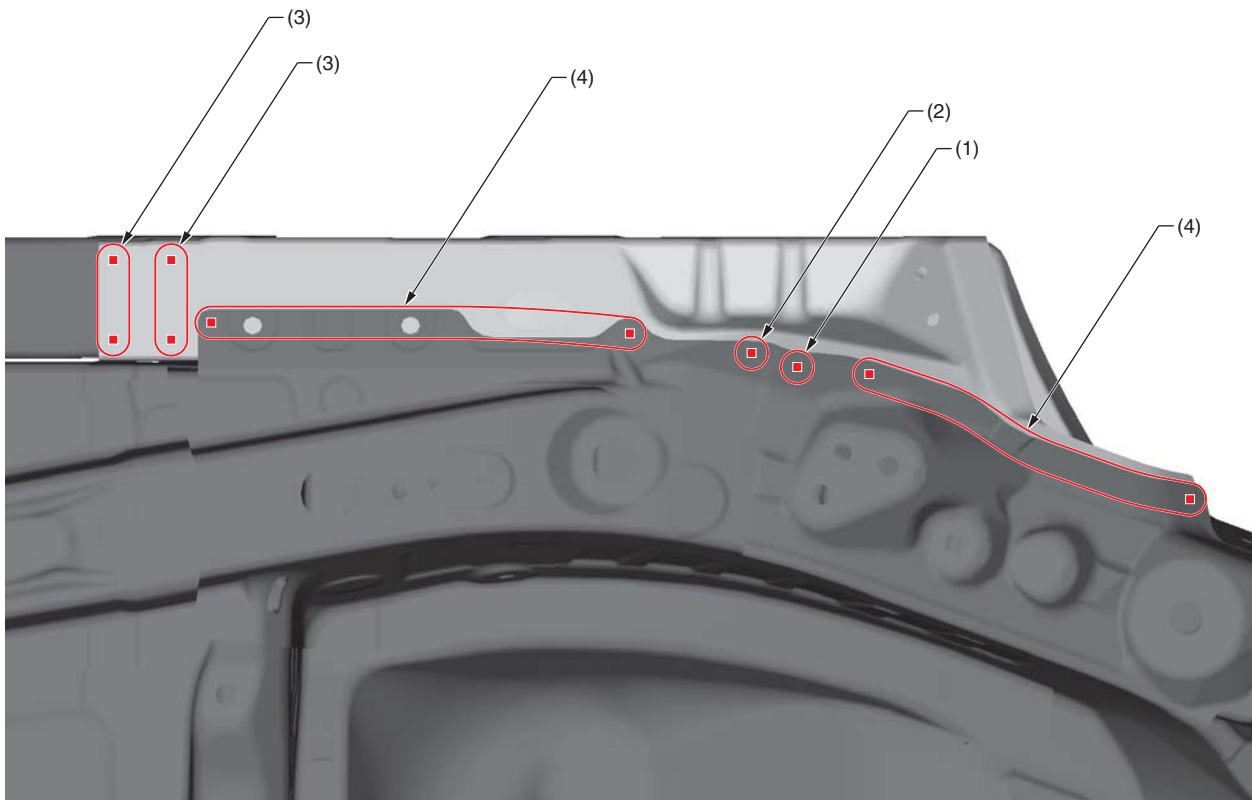
- |                       |                                  |                         |
|-----------------------|----------------------------------|-------------------------|
| (1) 1 point           | (3) 1 point (service · matching) | (5) 4 points            |
| (2) 1 point (service) | (4) 2 points (service)           | (6) Structural adhesive |

— : Structural adhesive application location

[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)
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# Panel Replacement

## • Views B



BS-09967

(1) 1 point

(2) 1 point (service · matching)

(3) 2 points (service)

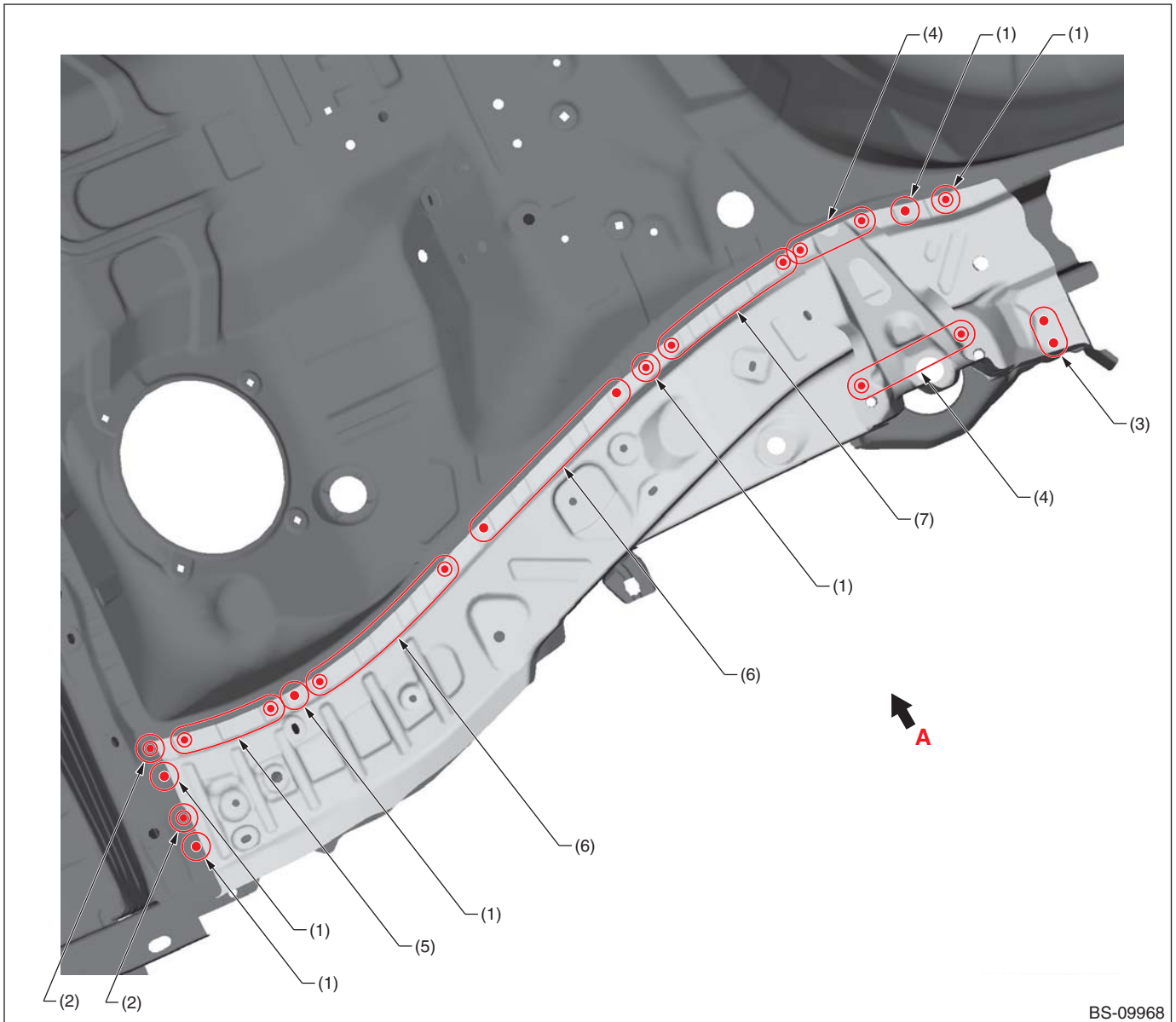
(4) 5 points

## Panel Replacement

### 8-36. Rear Side Frame Upper (total replacement)

#### A: REMOVAL

##### • Overall view



BS-09968

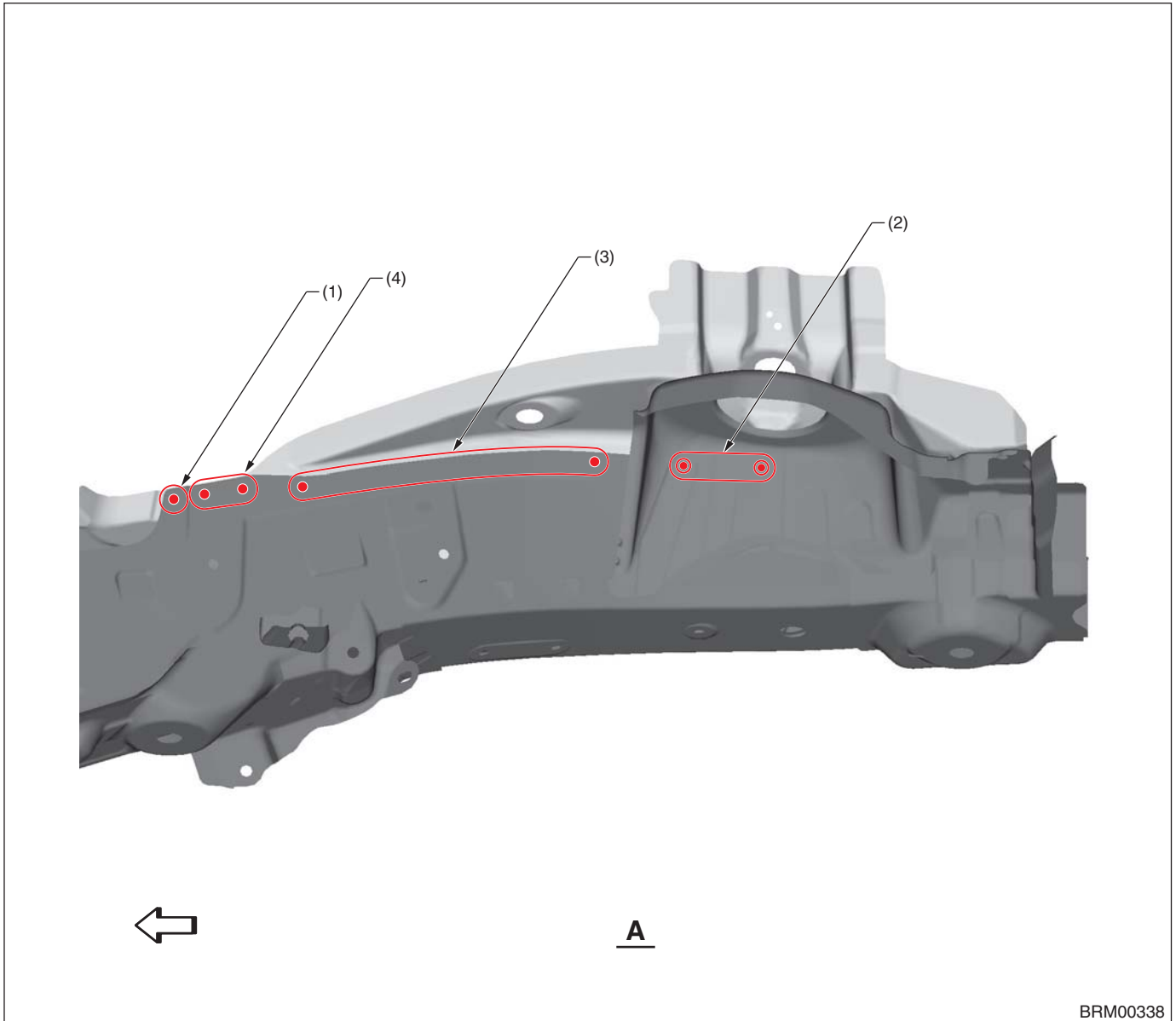
- (1) 1 point (top · 1)
- (2) 1 point (top · 2)
- (3) LH: 2 points (top · 1)  
RH: 1 point (top · 1)

- (4) 2 points (top · 2)
- (5) 3 points (top · 1)
- (6) 4 points (top · 1)

- (7) 5 points (top · 1)

# Panel Replacement

## • Views A



BRM00338

(1) 1 point (inside · 1)  
(2) 2 points (outside · 2)

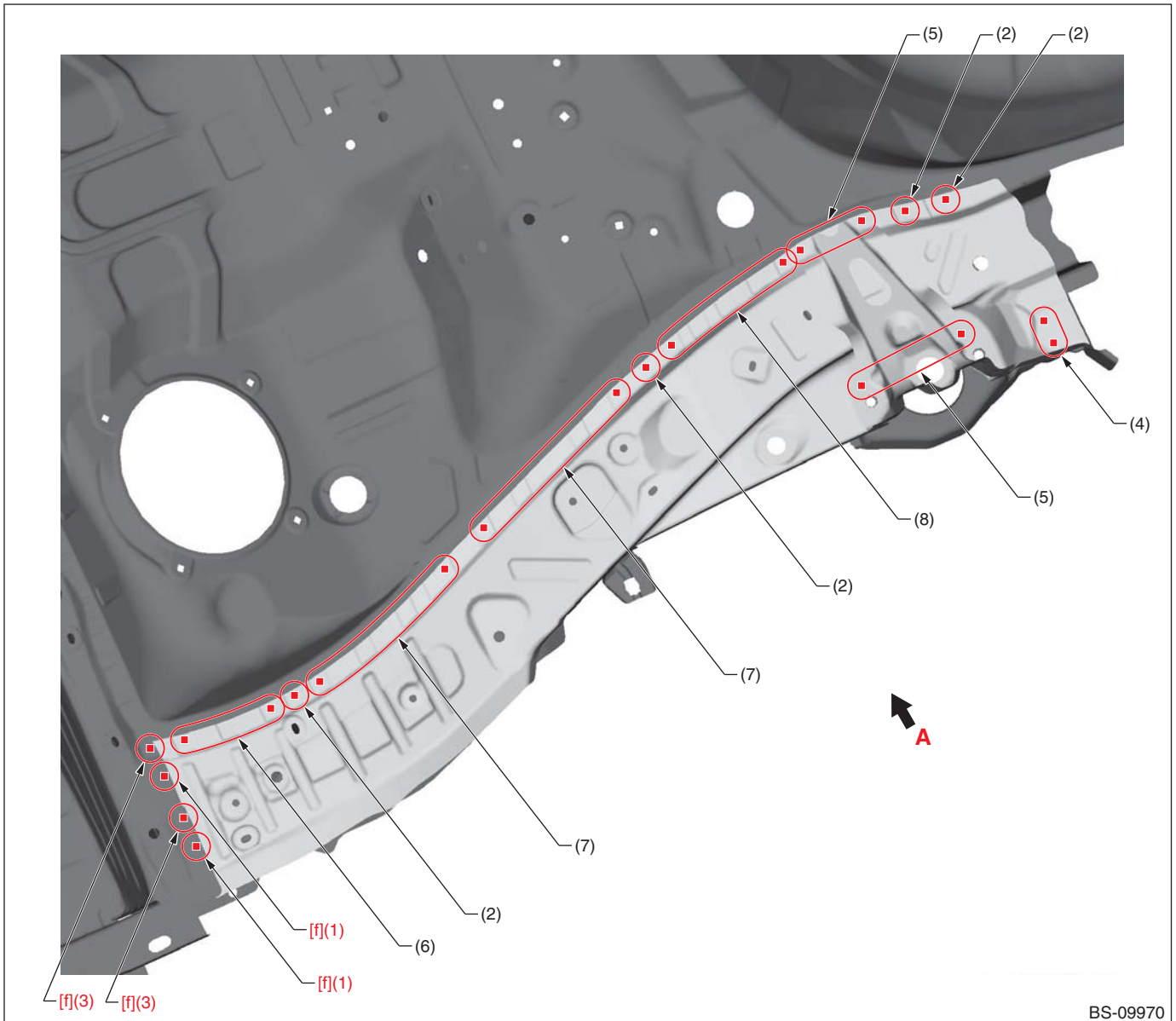
(3) 6 points (outside · 1)

(4) 2 points (inside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BS-09970

- |                                  |   |                        |
|----------------------------------|---|------------------------|
| (1) 1 point                      | (4) LH: 2 points (service)<br>RH: 1 point (service) | (7) 4 points (service) |
| (2) 1 point (service)            | (5) 2 points (service)                              | (8) 5 points (service) |
| (3) 1 point (service · matching) | (6) 3 points (service)                              |                        |

[f] Plug welding

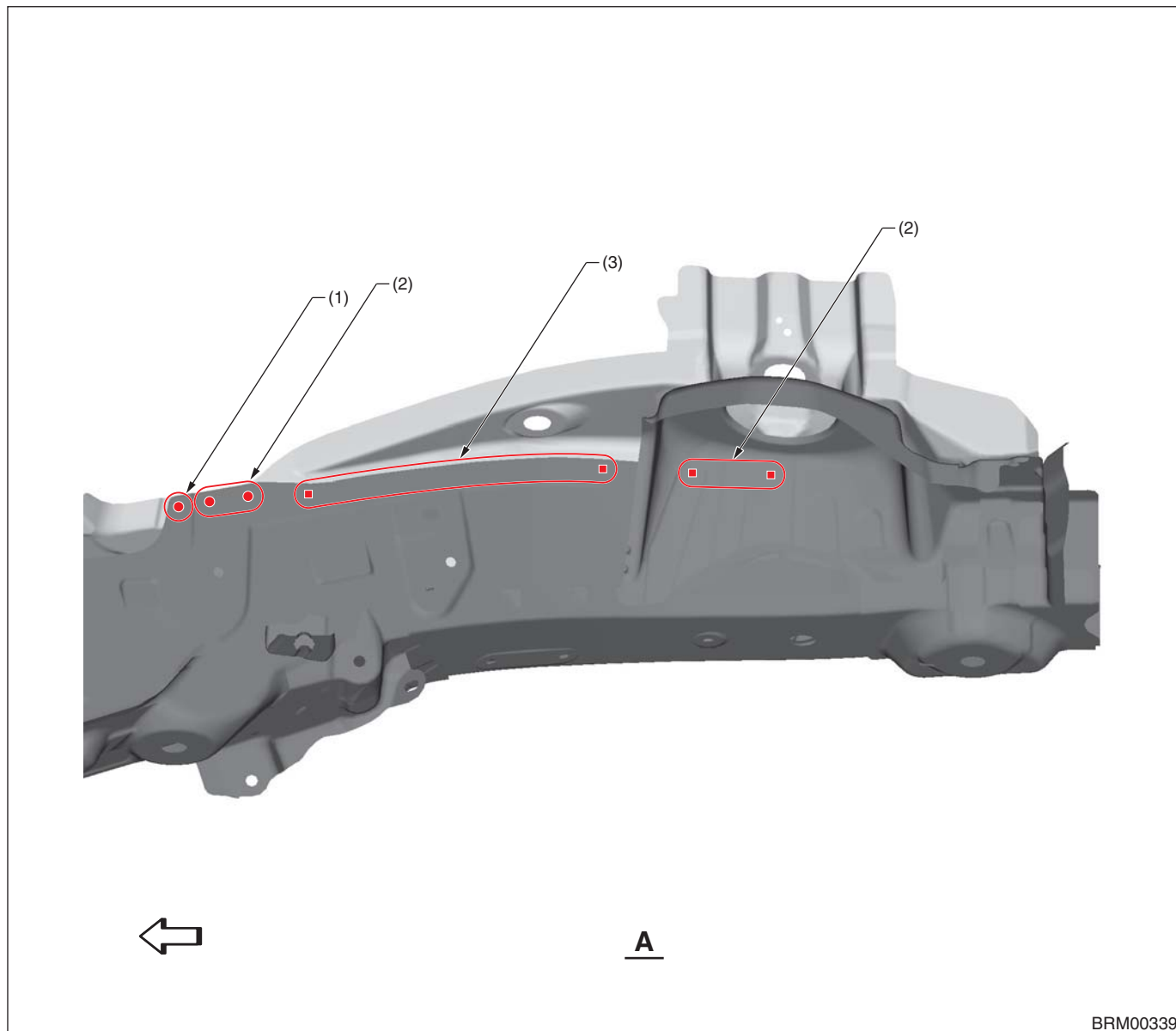
A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)



# Panel Replacement

## • Views A



(1) 1 point

(2) 2 points

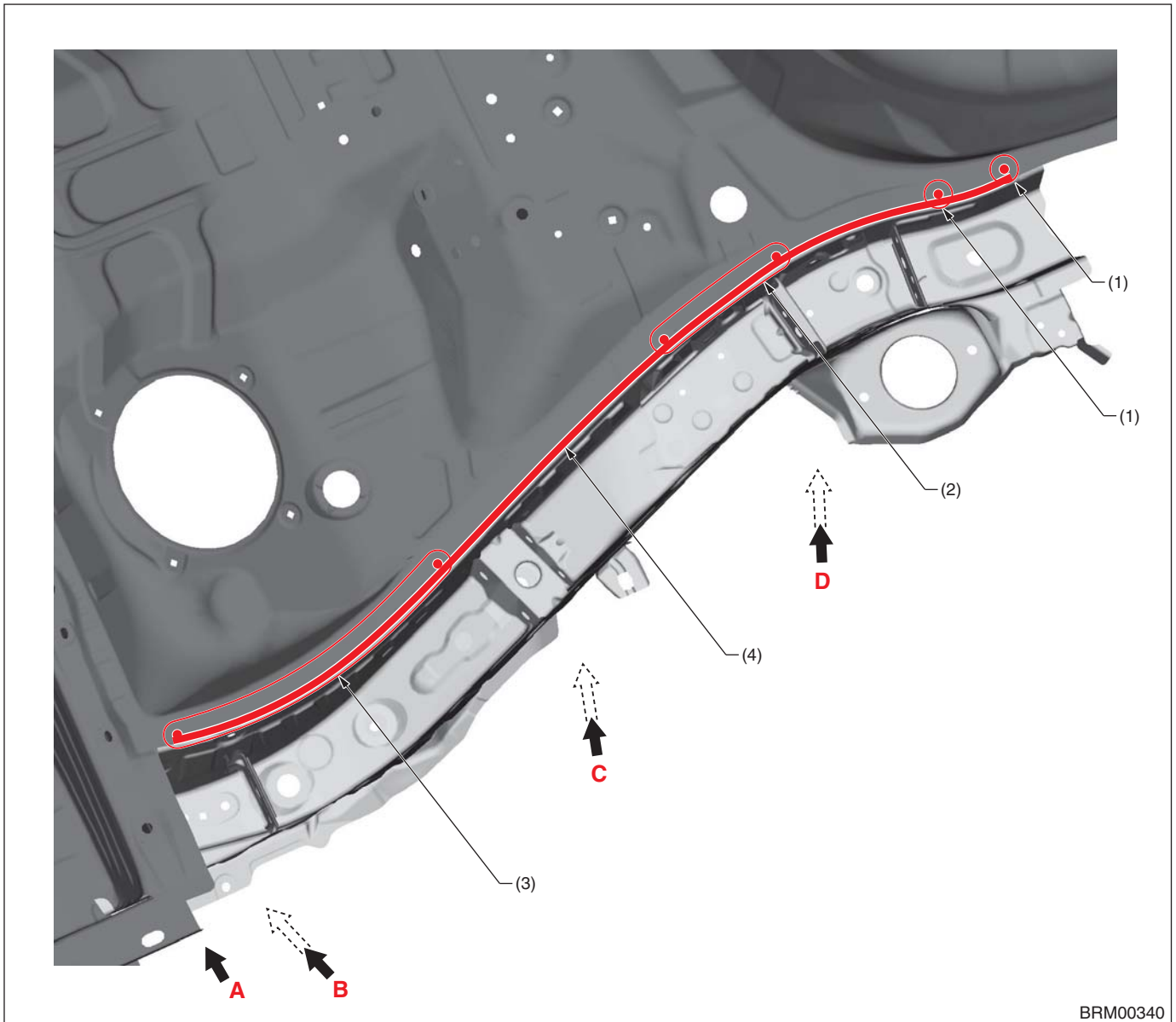
(3) 6 points

## Panel Replacement

### 8-37. Rear Side Frame (total replacement)

#### A: REMOVAL

##### • Overall view



BRM00340

(1) 1 point (top · 1)

(2) 5 points (top · 1)

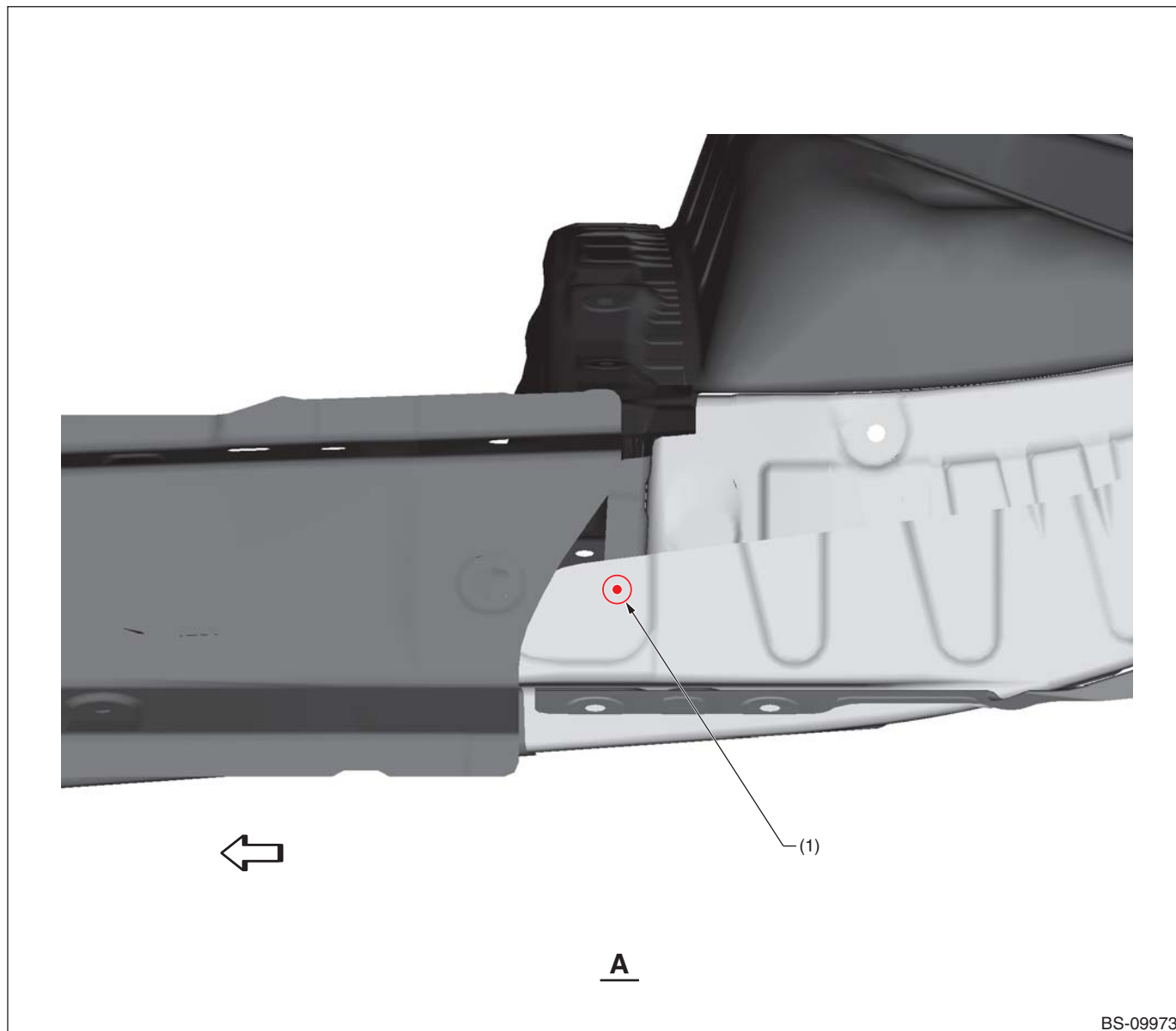
(3) 7 points (top · 1)

(4) Structural adhesive

— : Structural adhesive application location

## Panel Replacement

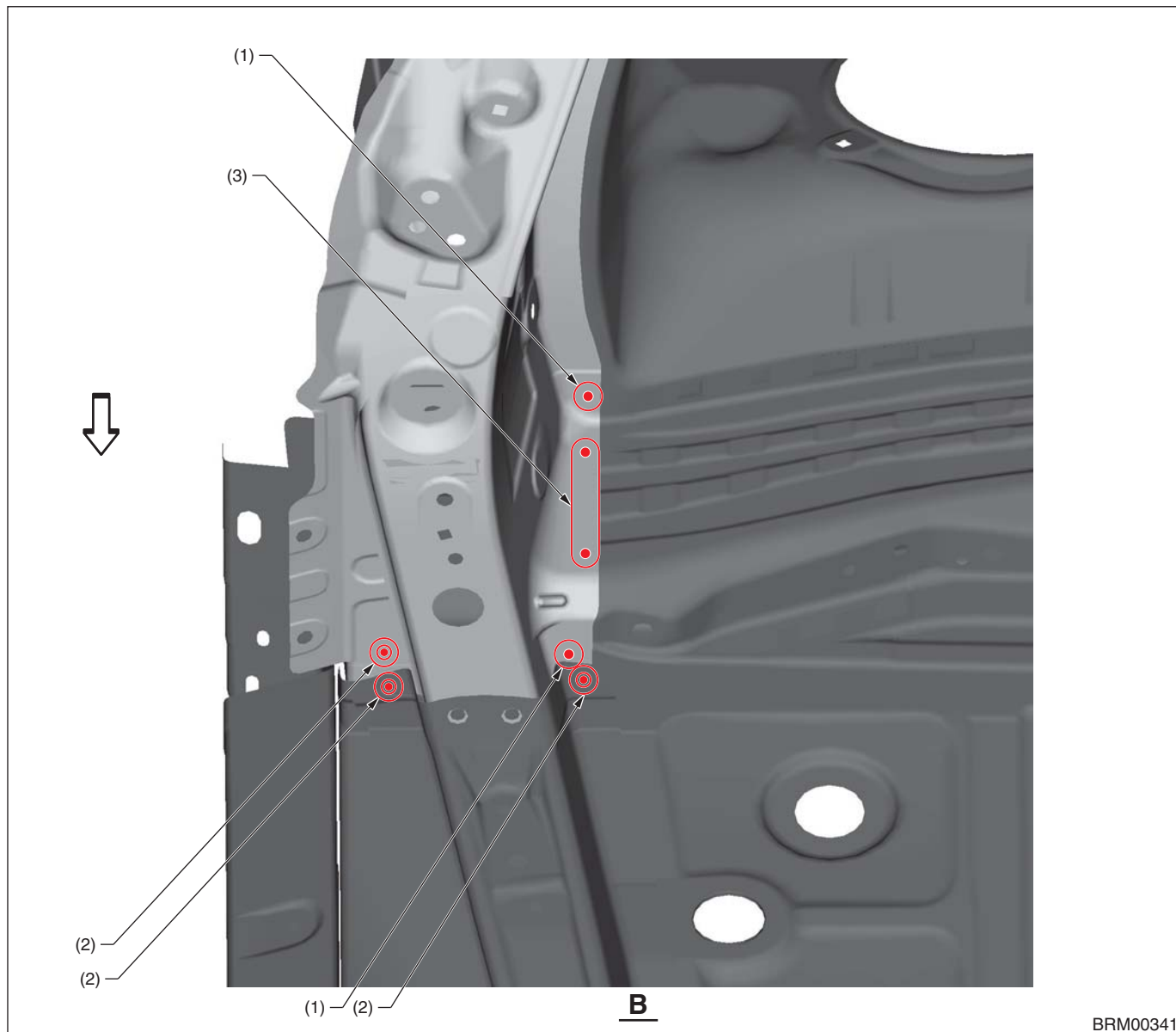
### • Views A



(1) 1 point (outside · 1)

# Panel Replacement

## • Views B



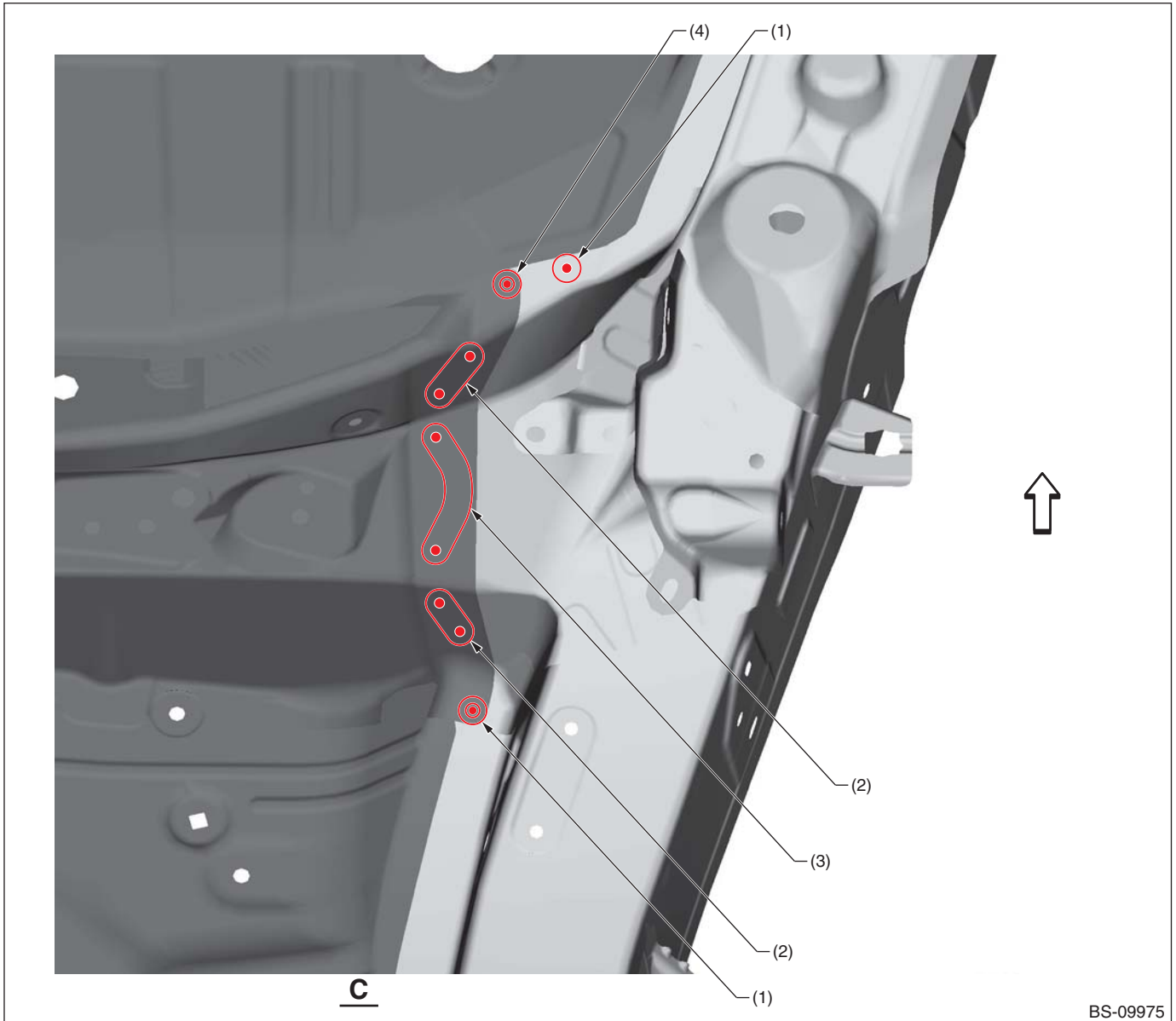
(1) 1 point (bottom · 1)

(2) 1 point (bottom · 2)

(3) 3 points (outside · 1)

# Panel Replacement

## • Views C



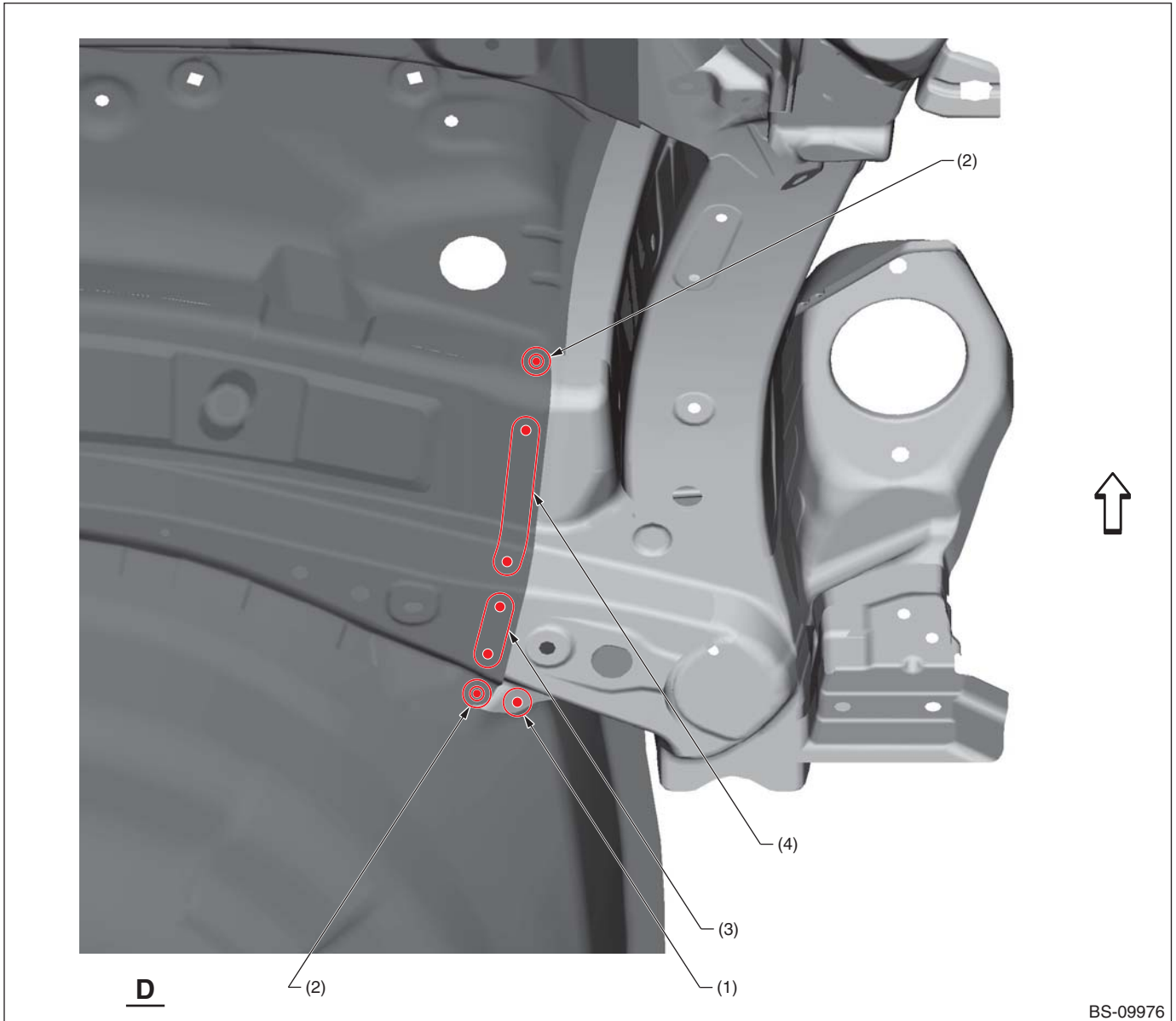
(1) 1 point (bottom · 1)  
(2) 2 points (outside · 1)

(3) 3 points (bottom · 1)

(4) 1 point (bottom · 2)

# Panel Replacement

## • Views D



BS-09976

- (1) 1 point (bottom · 1)  
(2) 1 point (bottom · 2)

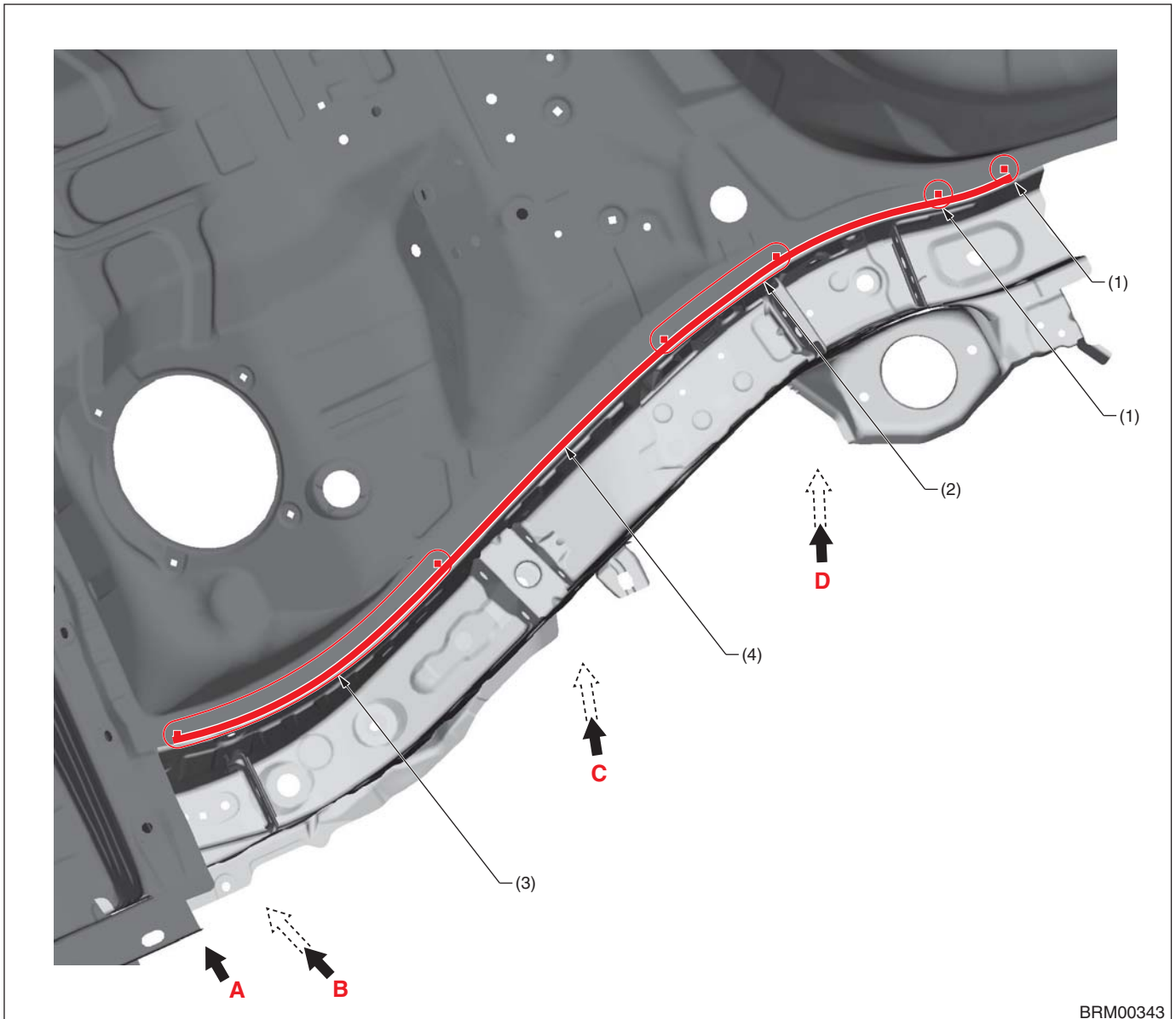
- (3) 2 points (bottom · 1)

- (4) 3 points (outside · 1)

# Panel Replacement

## B: INSTALLATION

### • Overall view



BRM00343

- (1) 1 point  
(2) 5 points

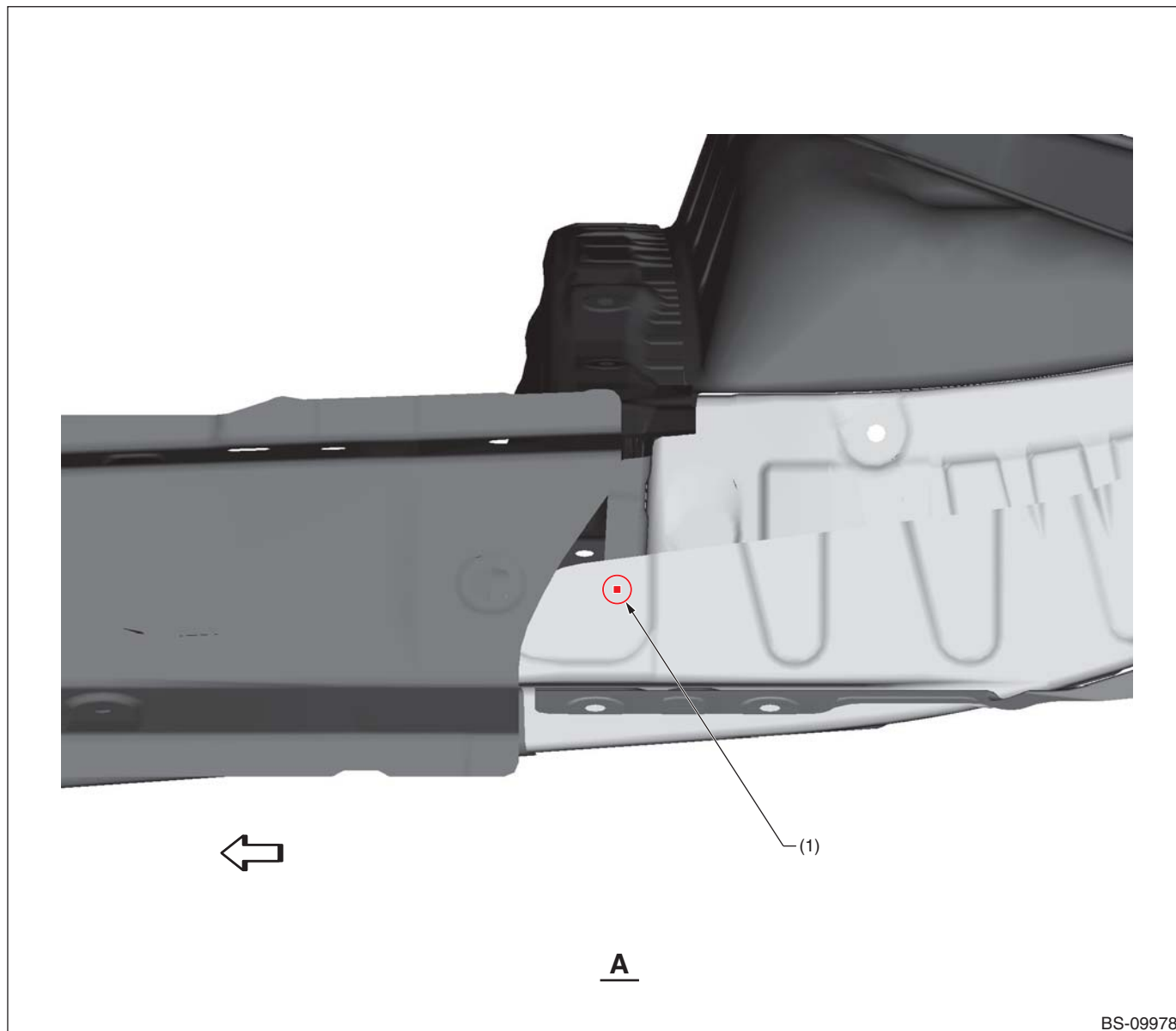
- (3) 7 points

- (4) Structural adhesive

— : Structural adhesive application location

## Panel Replacement

- Views A

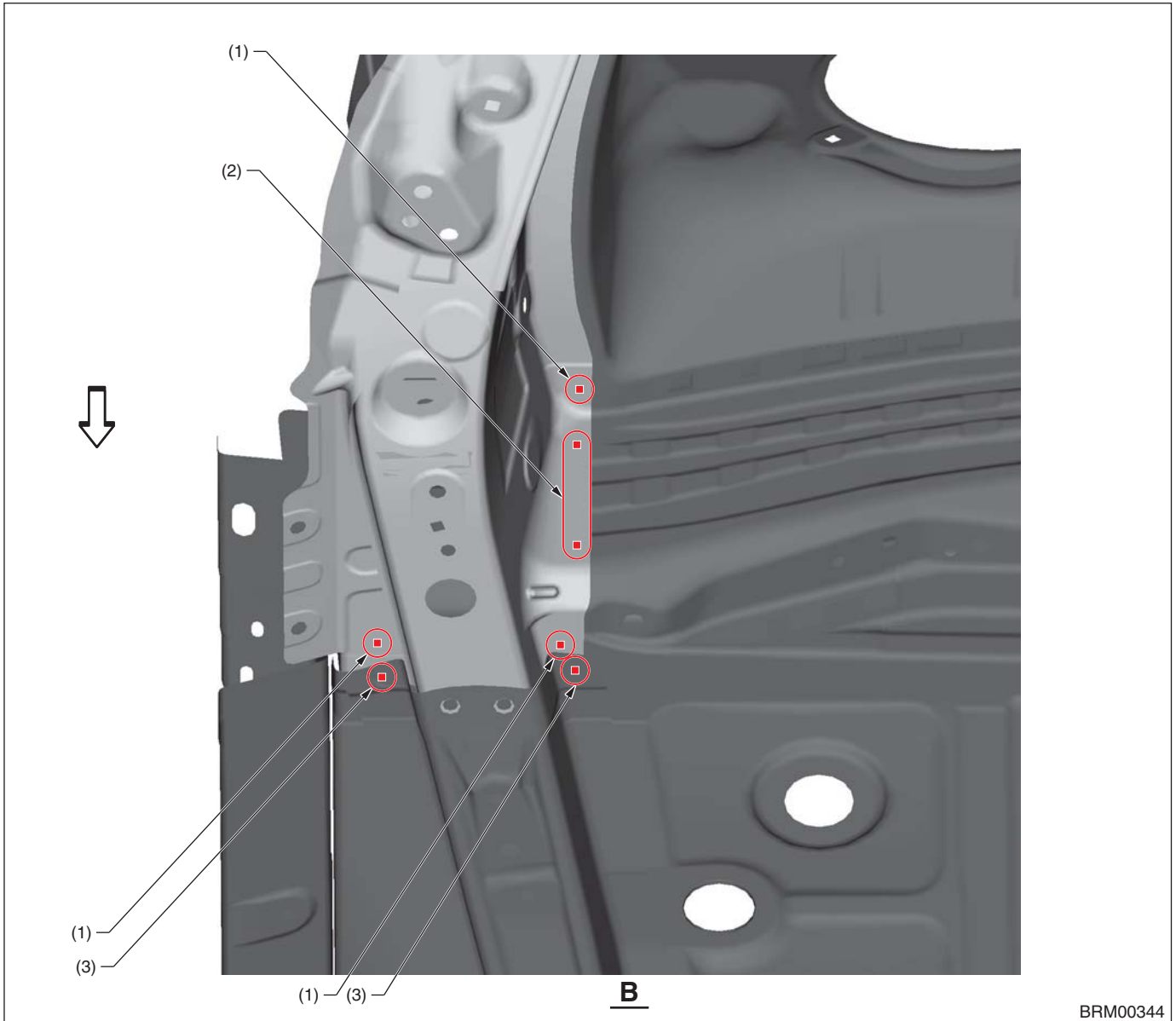


(1) 1 point (service)



# Panel Replacement

## • Views B



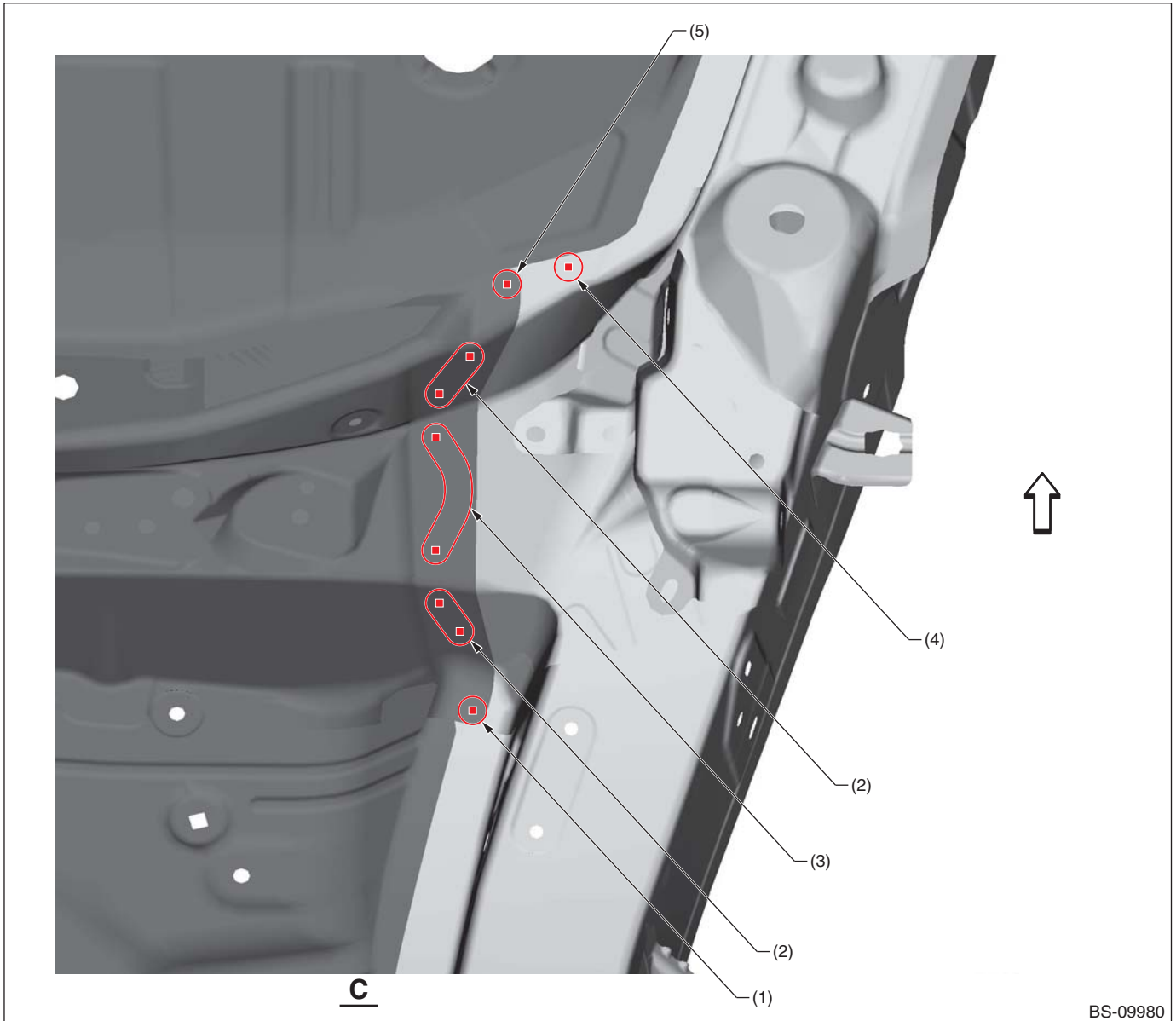
(1) 1 point (service)

(2) 3 points (service)

(3) 1 point (service - matching)

# Panel Replacement

## • Views C



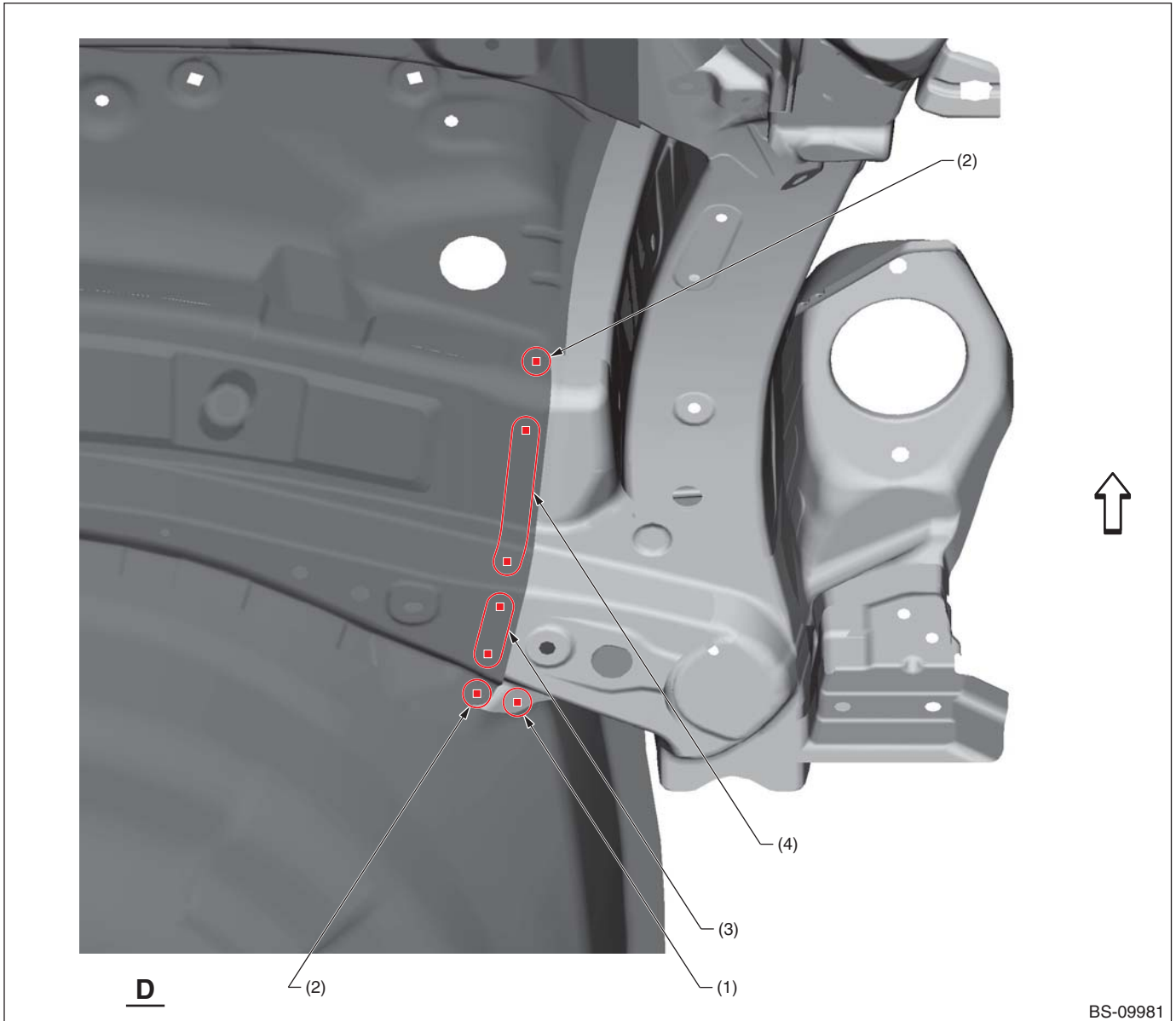
(1) 1 point  
(2) 2 points

(3) 3 points  
(4) 1 point (service)

(5) 1 point (service · matching)

# Panel Replacement

## • Views D



(1) 1 point (service)

(2) 1 point (service · matching)

(3) 2 points

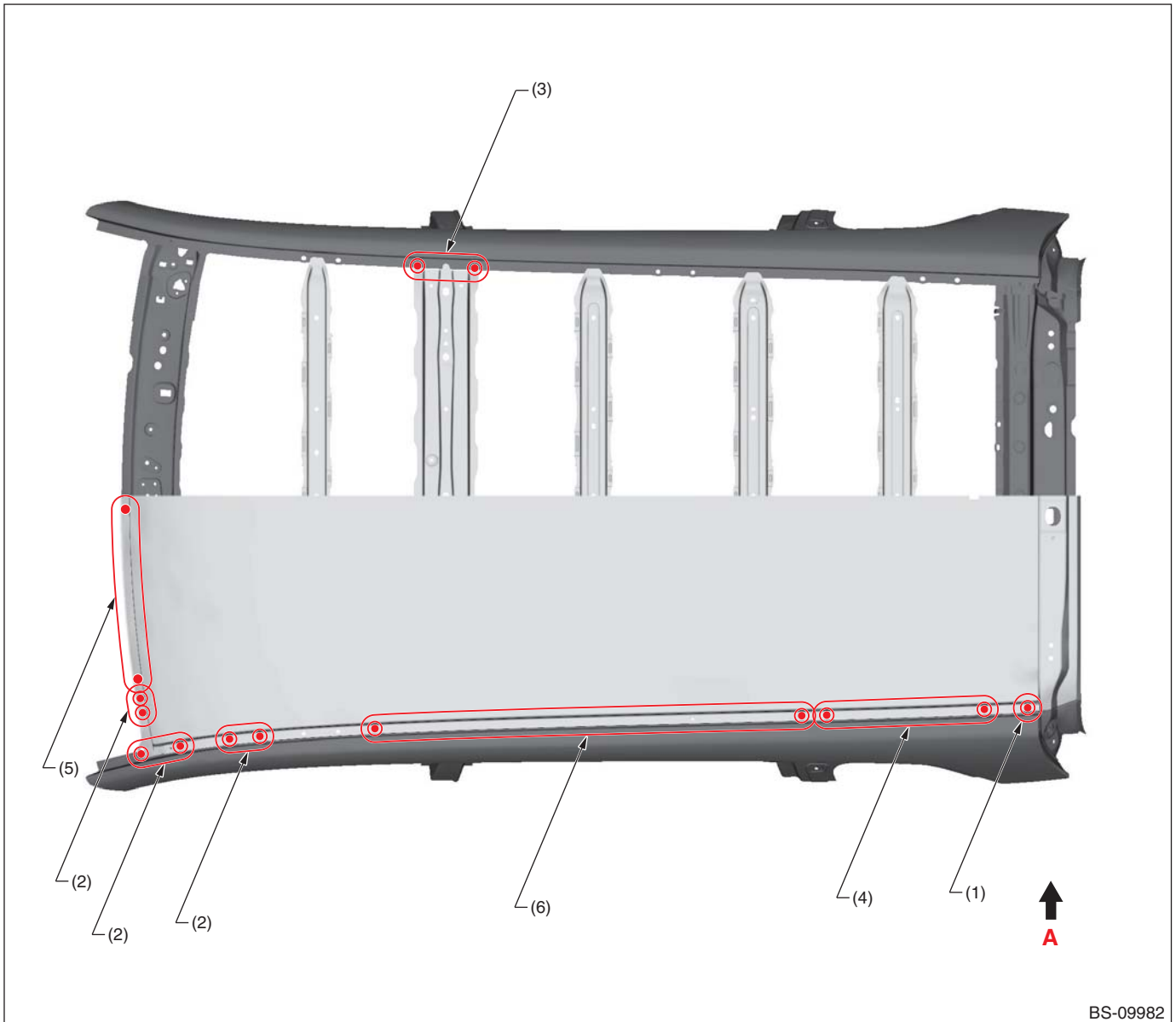
(4) 3 points

## Panel Replacement

### 8-38. Roof Panel (total replacement)

#### A: REMOVAL

- Overall view (model without Sunroof)



BS-09982

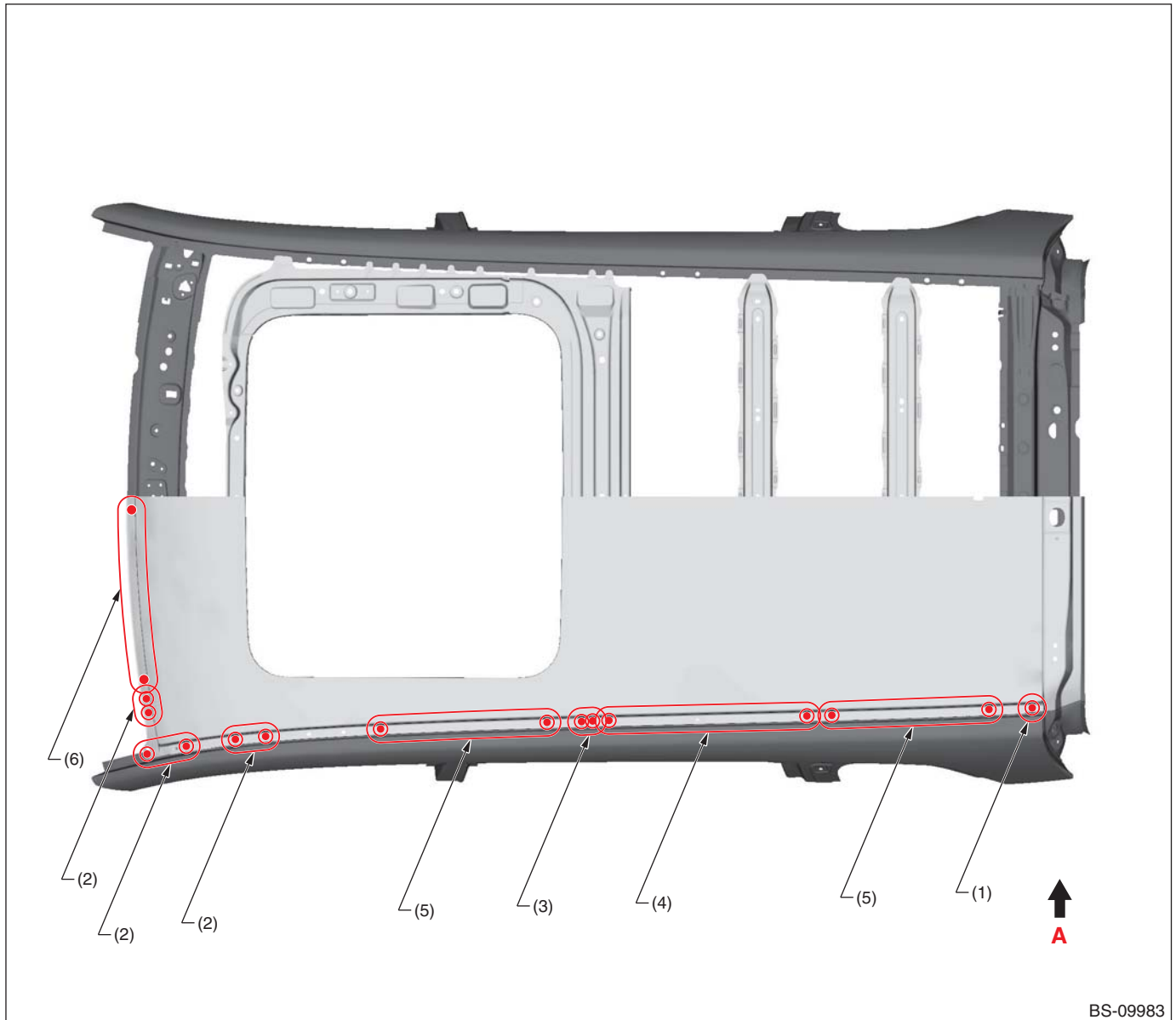
- (1) 1 point (top · 1)
- (2) 2 points (top · 1)

- (3) 3 points (top · 1)
- (4) 7 points (top · 1)

- (5) 8 points (top · 1)
- (6) 12 points (top · 1)

# Panel Replacement

## • Overall view (model with Sunroof)



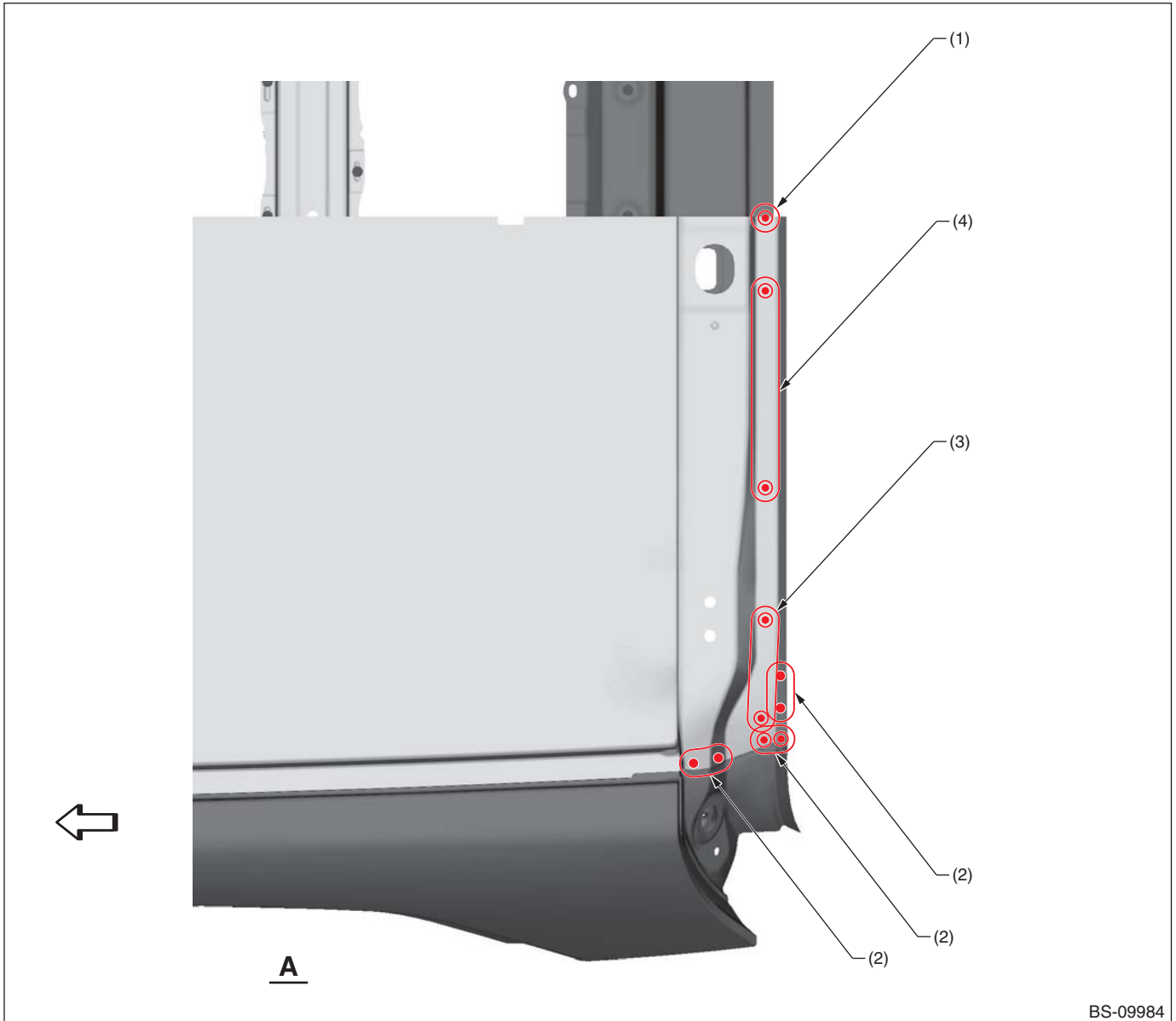
(1) 1 point (top · 1)  
(2) 2 points (top · 1)

(3) 2 points (top · 2)  
(4) 5 points (top · 1)

(5) 7 points (top · 1)  
(6) 8 points (top · 1)

# Panel Replacement

## • Views A



BS-09984

(1) 1 point (top · 1)

(3) 3 points (top · 1)

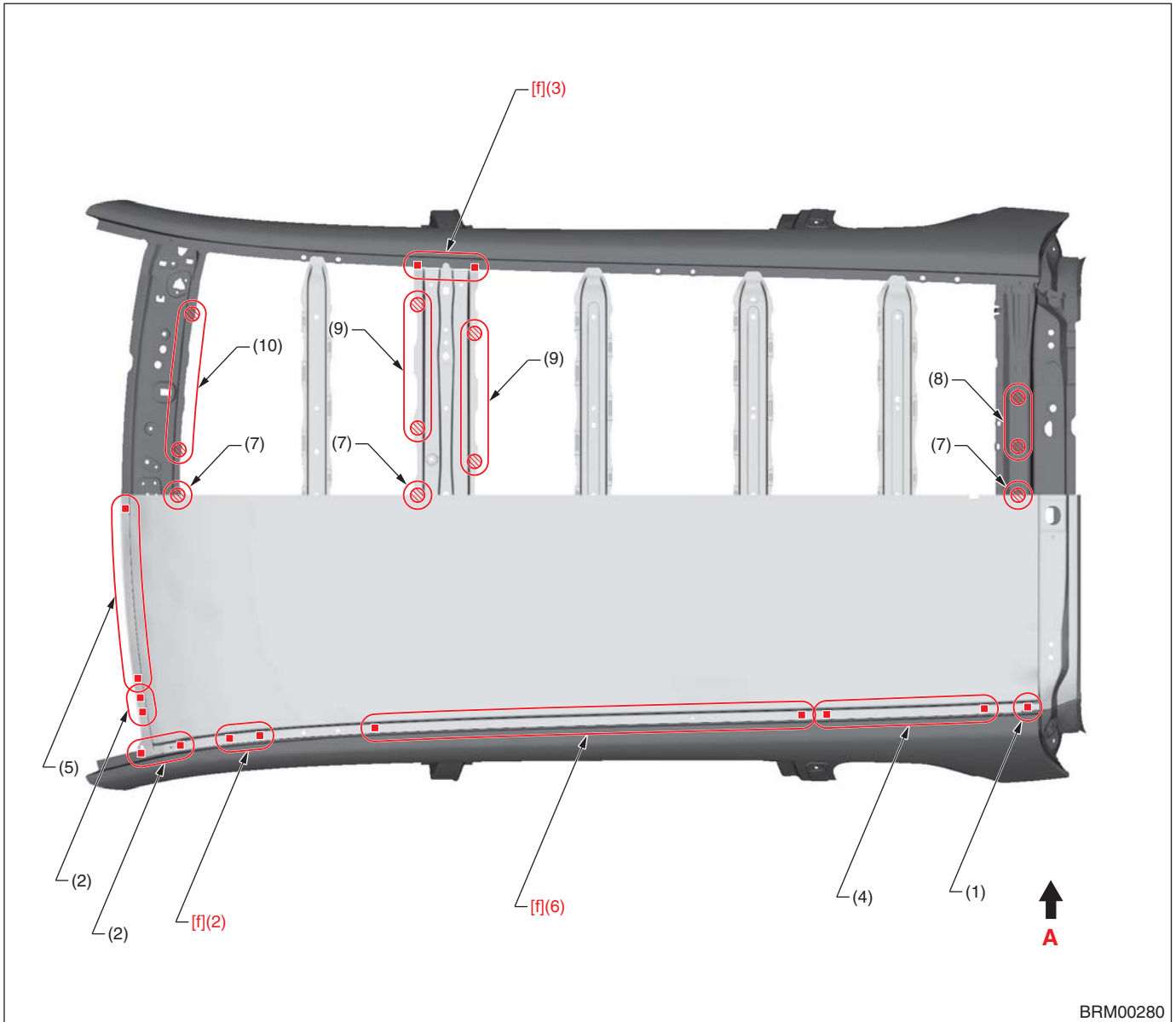
(4) 4 points (top · 1)

(2) 2 points (outside · 1 belt sander)


# Panel Replacement

## B: INSTALLATION

### • Overall view (model without Sunroof)



- |                        |                         |               |
|------------------------|-------------------------|---------------|
| (1) 1 point (service)  | (5) 8 points (service)  | (9) 3 points  |
| (2) 2 points (service) | (6) 12 points (service) | (10) 4 points |
| (3) 3 points (service) | (7) 1 point             |               |
| (4) 7 points (service) | (8) 2 points            |               |

 : Application of adhesive

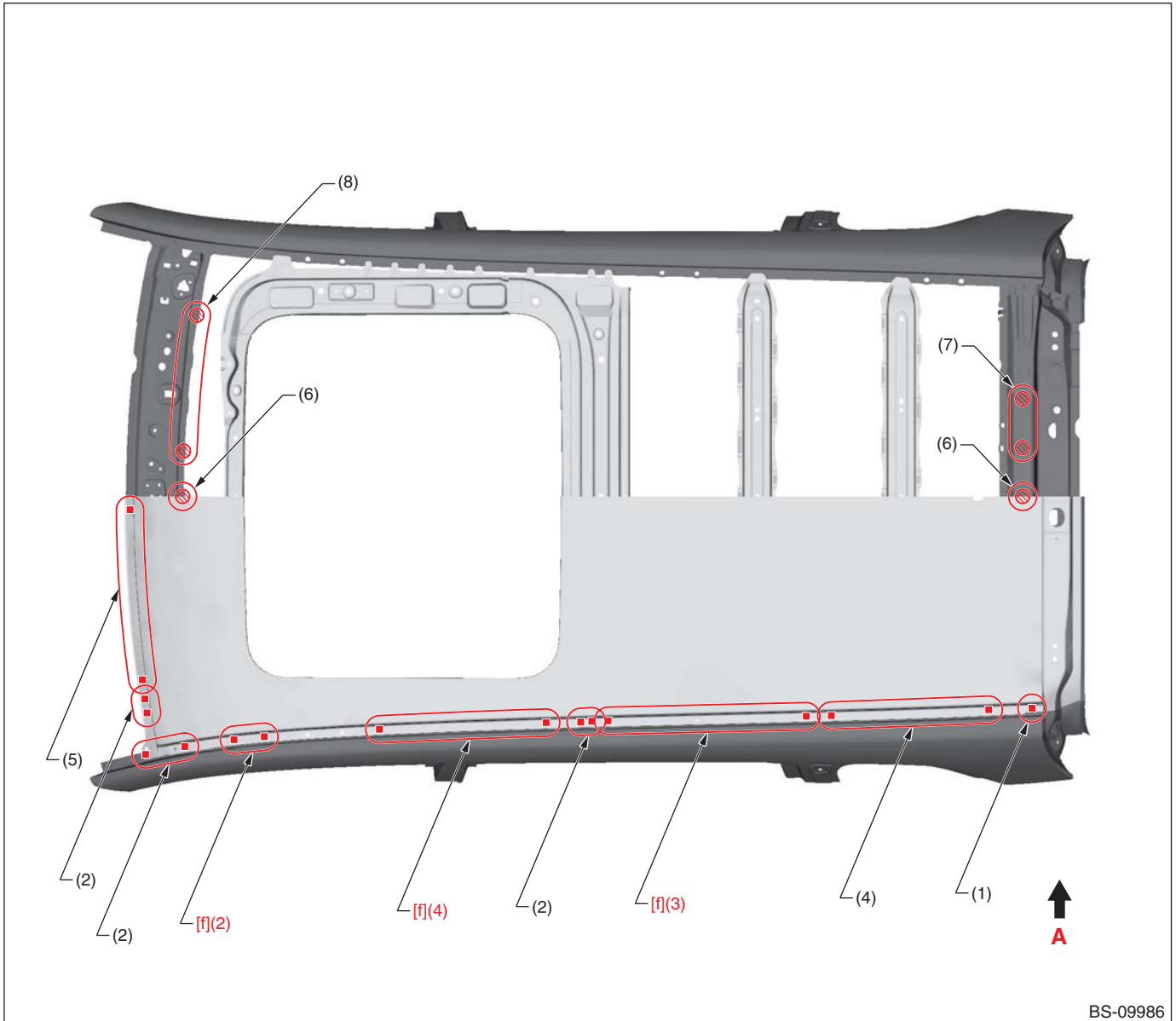
[f] Plug welding

A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2

B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)

# Panel Replacement

## • Overall view (model with Sunroof)



BS-09986

- |                        |                        |              |
|------------------------|------------------------|--------------|
| (1) 1 point (service)  | (4) 7 points (service) | (7) 2 points |
| (2) 2 points (service) | (5) 8 points (service) | (8) 4 points |
| (3) 5 points (service) | (6) 1 point            |              |

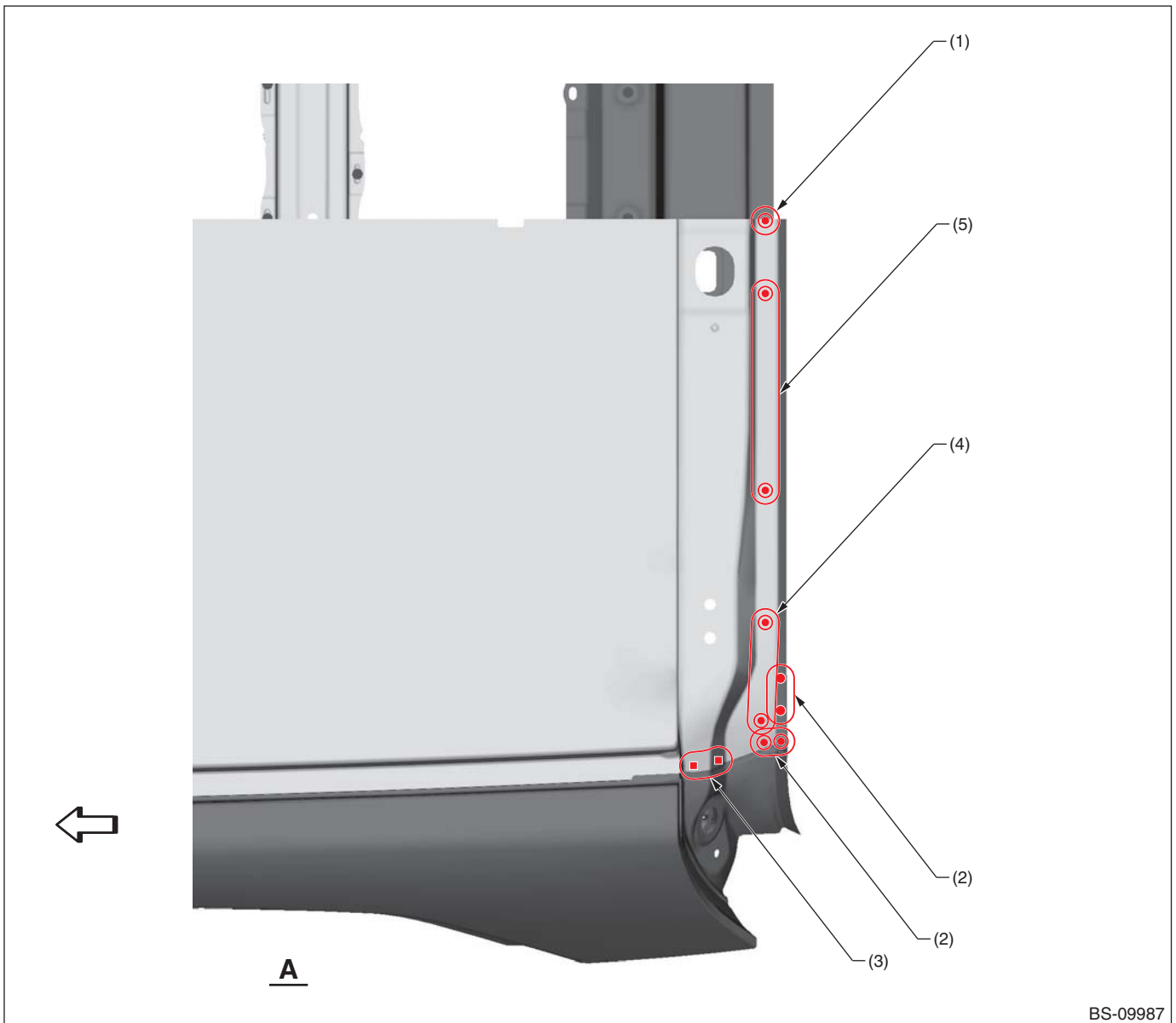
 : Application of adhesive

[f] Plug welding	A Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW12, Gas: CO2 B Plug diameter: 8.5 mm (0.33 in) or more, Wire: YGW16, Gas: Gas mixture (argon: 80 %, CO2: 20 %)
------------------	---



# Panel Replacement

## • Views A



(1) 1 point  
(2) 2 points

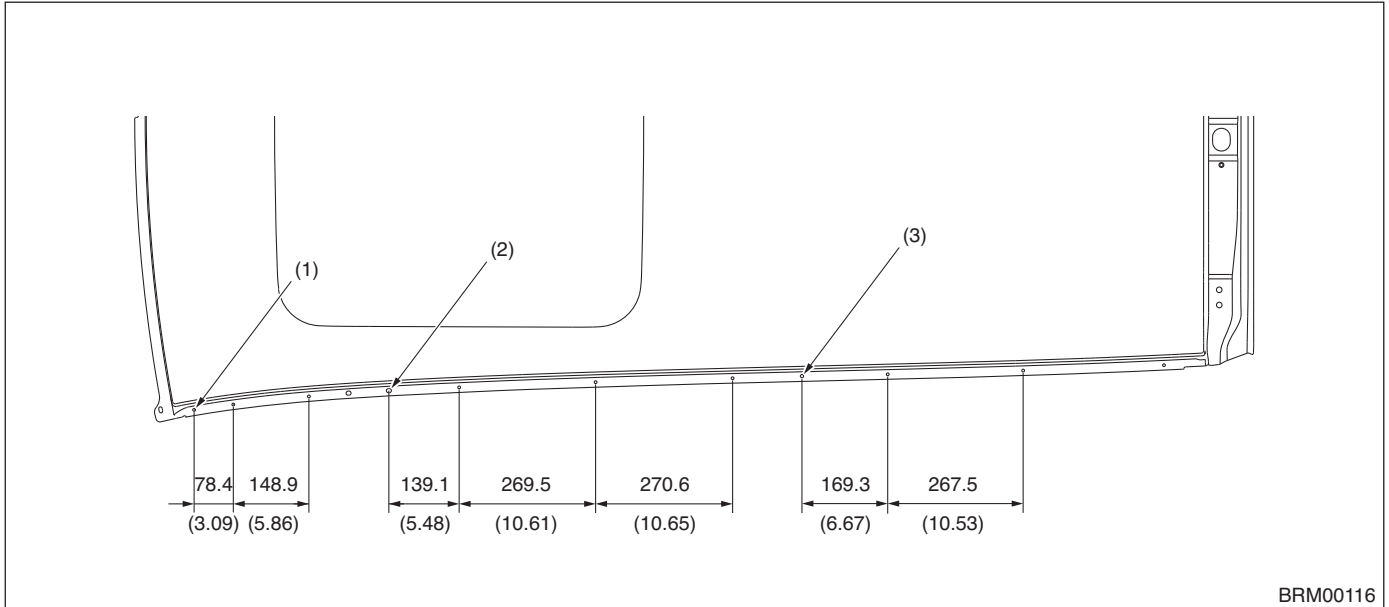
(3) 2 points (service)  
(4) 3 points

(5) 4 points

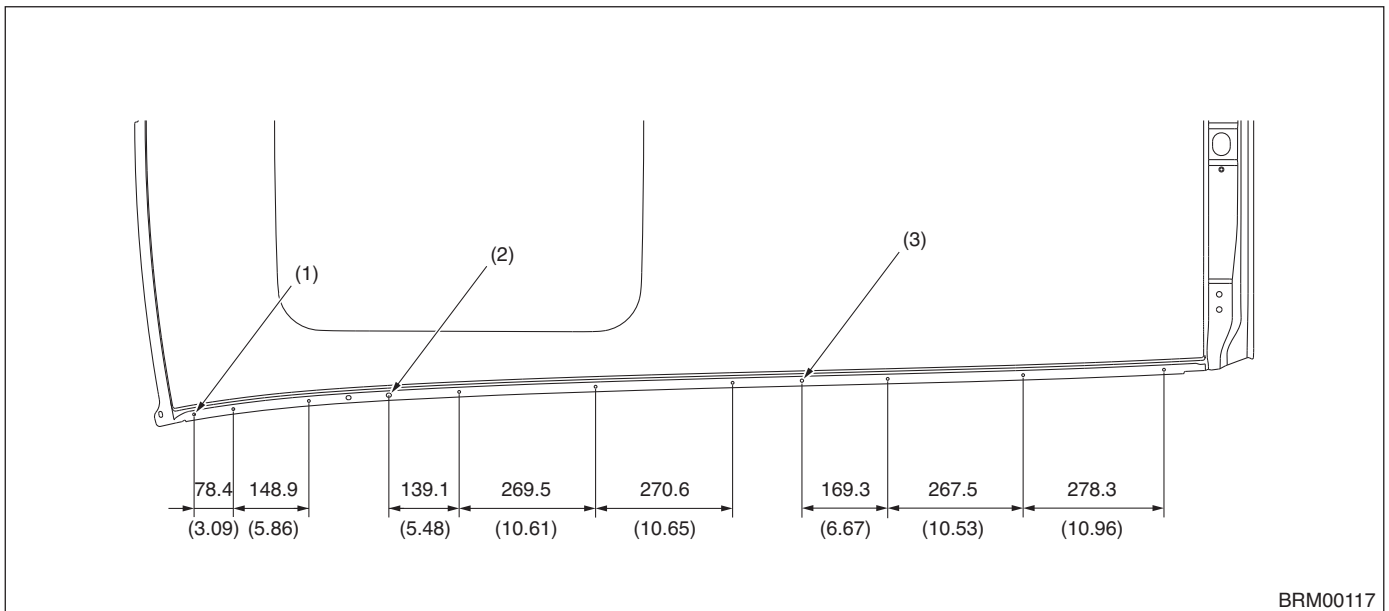
# Panel Replacement

## 8-39. T Stud Installation

### • Model with Roof Rail

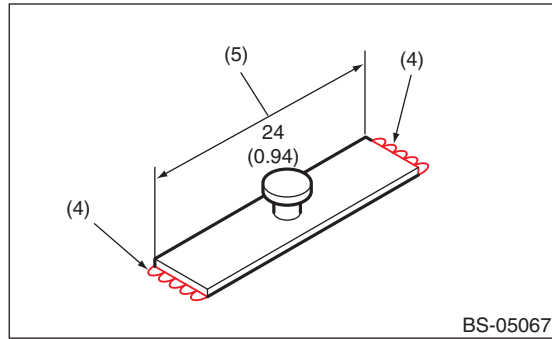


### • Model without Roof Rail

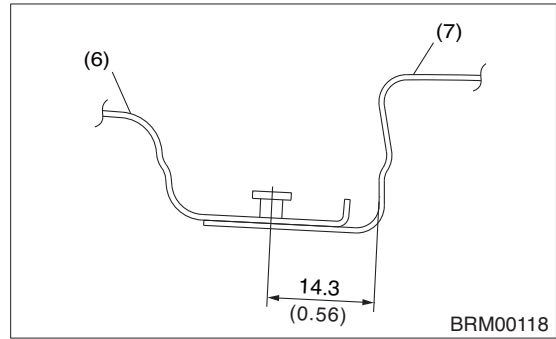


# Panel Replacement

- T stud welding



- T stud basic cross section



- |   |  |                      |
|---|--|----------------------|
| (1) $\phi 5.2$ mm (0.20 in) hole<br>(for roof mole pop rivet mounting hole)   | (4) Arc welding for both plate ends  | (7) Panel side outer |
| (2) $8.1 \times 10$ mm ( $0.32 \times 0.39$ in) elongated hole (for carrier bracket mounting hole or roof rail mounting hole) | (5) This surface shall be kept flat as it becomes the mating face with the clip. |                      |
| (3) $\phi 6.5$ mm (0.26 in) hole<br>(for carrier bracket mounting hole or roof rail mounting hole)                            | (6) Roof panel   |                      |

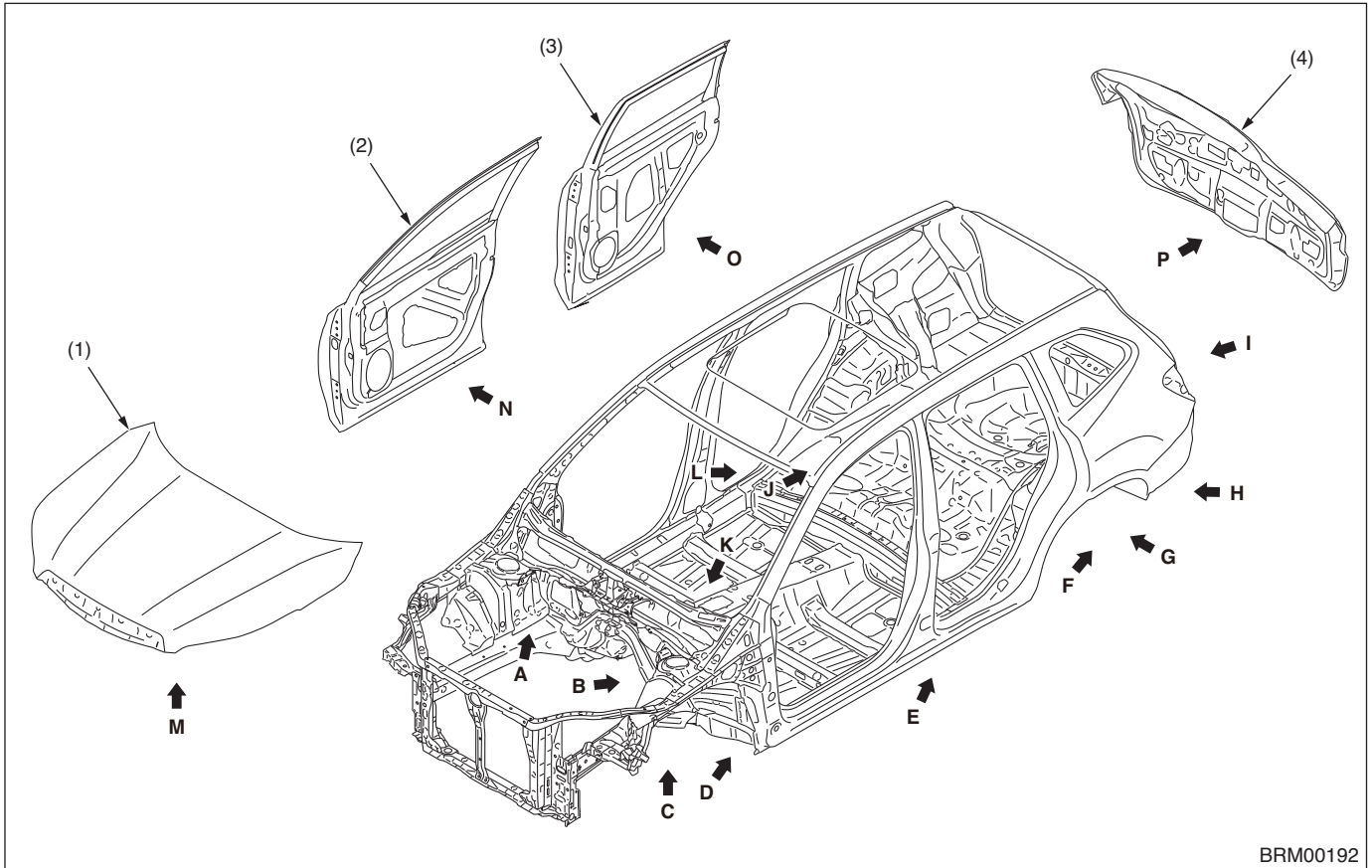
## 9. Body Sealing

### A: SPECIFICATIONS

Used material: Three Bond 4101 (004403063)

— : Sealer application location

▨ : Sealer application location (Application of 50 μm thick wax is allowable.)



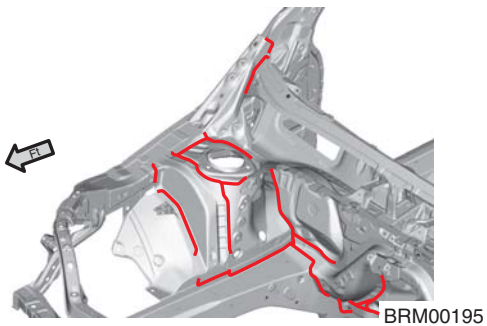
BRM00192

- (1) Front hood
- (2) Front door

- (3) Rear door

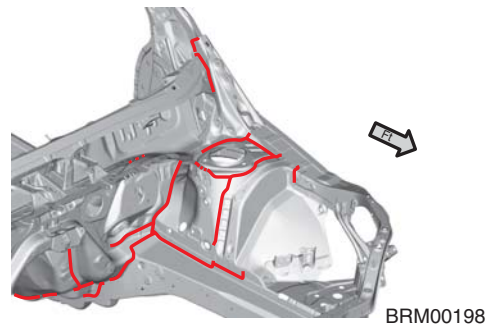
- (4) Rear gate

View A



BRM00195

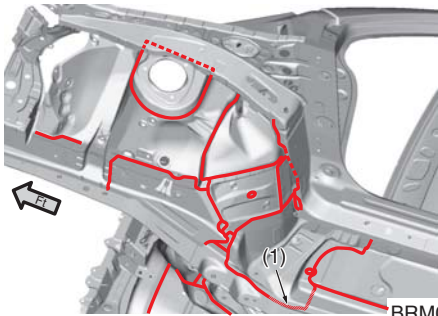
View B



BRM00198

# Body Sealing

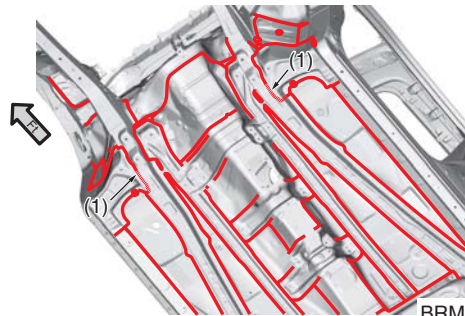
**View C**



BRM00201

(1) Wax is allowable

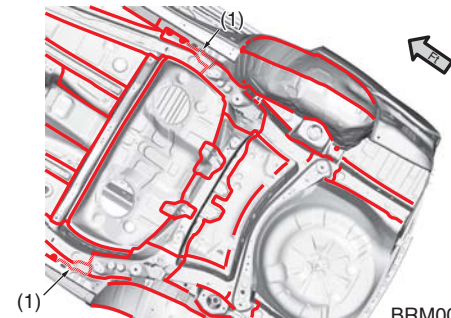
**View D**



BRM00205

(1) Wax is allowable

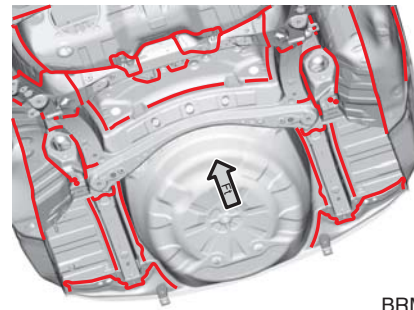
**View E**



BRM00210

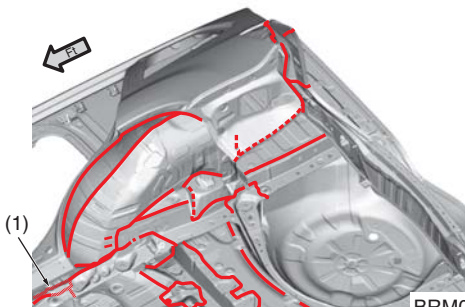
(1) Wax is allowable

**View F**



BRM00215

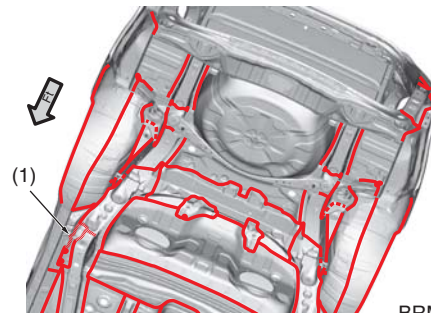
**View G**



BRM00220

(1) Wax is allowable

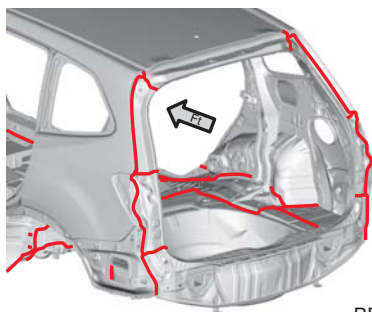
**View H**



BRM00225

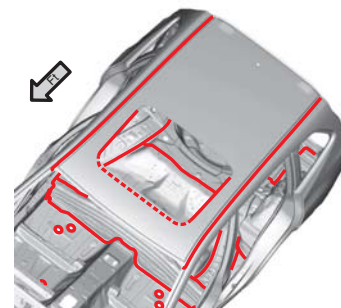
(1) Wax is allowable

**View I**



BRM00227

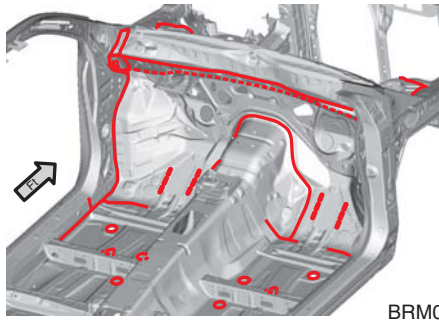
**View J**



BRM00228

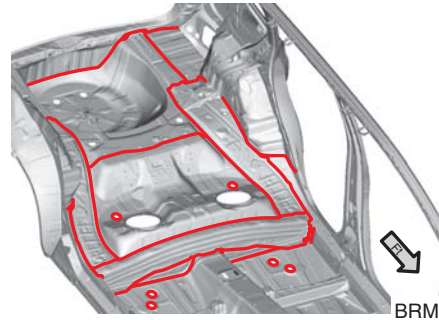
# Body Sealing

View K



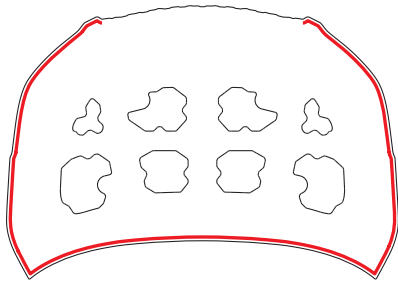
BRM00231

View L



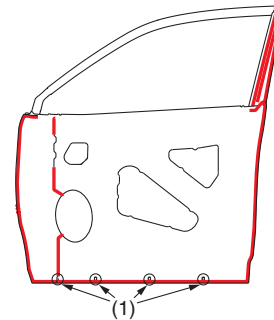
BRM00232

View M



BRM00234

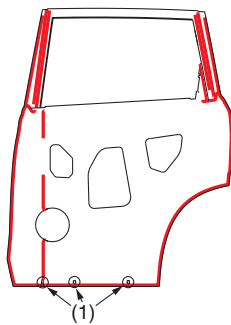
View N



BRM00235

(1) Do not block the water drain holes.

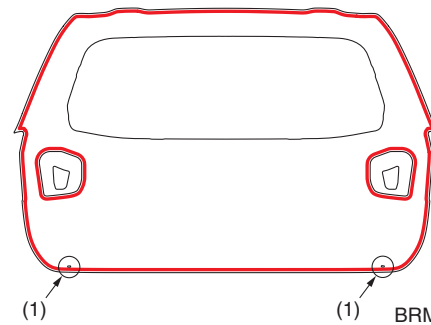
View O



BRM00236

(1) Do not block the water drain holes.

View P



BRM00237

(1) Do not block the water drain holes.

## CAUTION:

Sealer has already been applied to hood, door and rear gate that are in replacement condition.

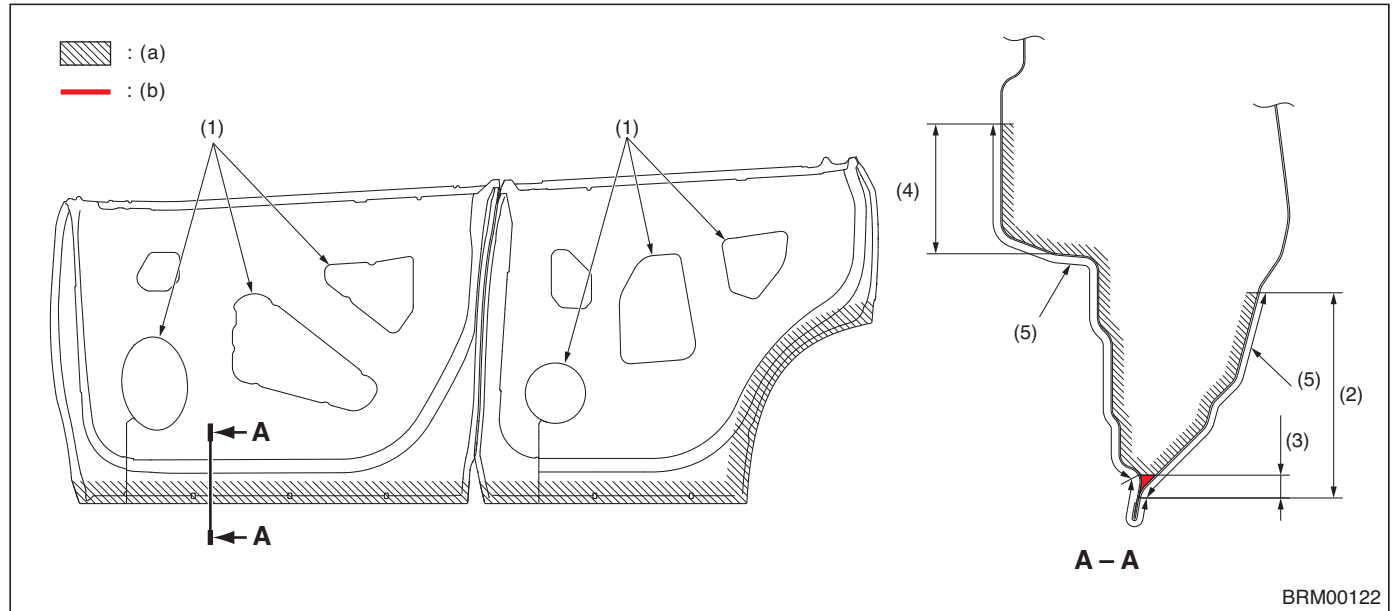
## 10. Anticorrosion Wax

### A: SPECIFICATIONS

Used material: Rust-stop aerosol (K0877YA015)

— and : Application area

- **Door** (Application thickness = 50  $\mu\text{m}$  or more)



(a) Rust-stop aerosol

(b) To be filled into the plate joint

(1) Wax application work openings

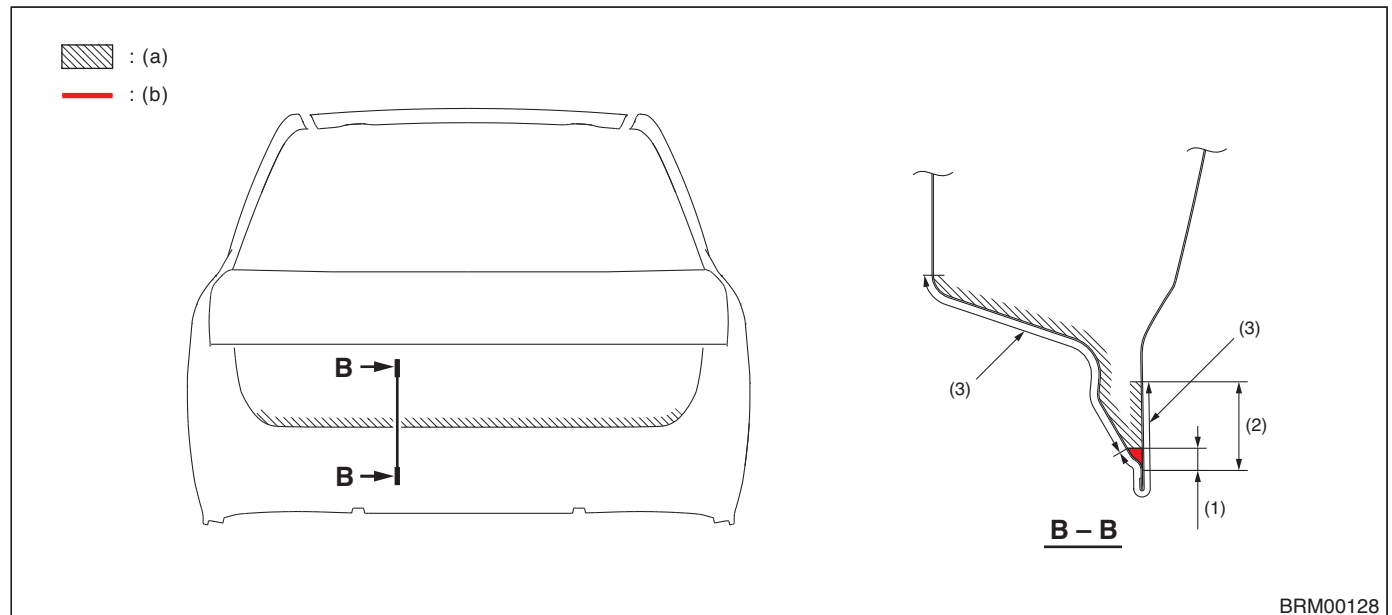
(3) 10 mm (0.39 in)

(5) Adherence of mist is allowable

(2) 90 mm (3.54 in)

(4) 57 mm (2.24 in)

- **Rear gate** (Application thickness = 50  $\mu\text{m}$  or more)



(a) Rust-stop aerosol

(b) To be filled into the plate joint

(1) 10 mm (0.39 in)

(2) 40 mm (1.57 in)

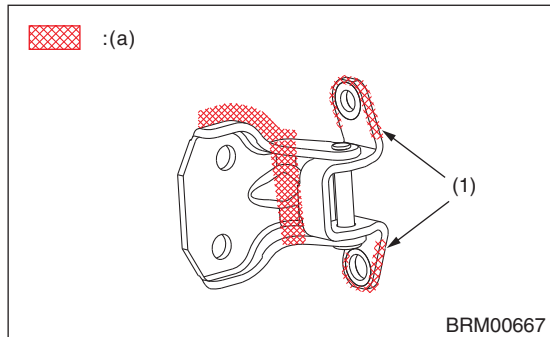
(3) Adherence of mist is allowable

# Anticorrosion Wax

- Front door hinge upper side

(Application thickness = 15  $\mu\text{m}$  or more)

Apply to the contact surface (indicated area) on the body side in two locations on the left and right.



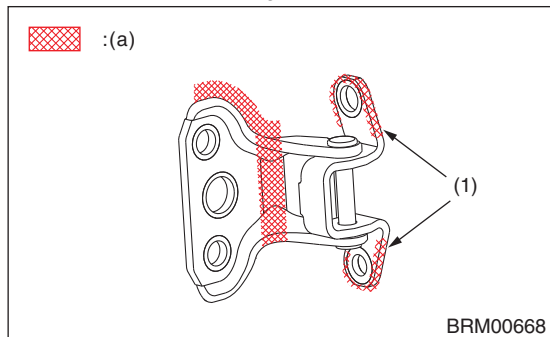
(a) Rust-stop aerosol

(1) Cover the touch surface of the hinge plate, bolt head and plate edges completely. A small amount of mist to the circumference is allowable.

- Front door hinge lower side

(Application thickness = 15  $\mu\text{m}$  or more)

Apply to the contact surface (indicated area) on the body side in two locations on the left and right.



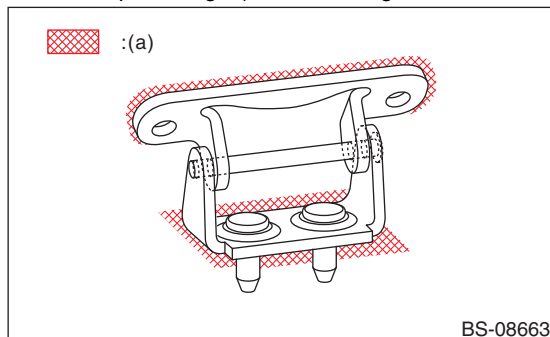
(a) Rust-stop aerosol

(1) Cover the touch surface of the hinge plate, bolt head and plate edges completely. A small amount of mist to the circumference is allowable.

- Rear gate hinge

(Application thickness = 15  $\mu\text{m}$  or more)

Apply to the contact surface on the body side in two locations on the left and right, and to the installation outer circumference (indicated area: plate edges) on the rear gate side.

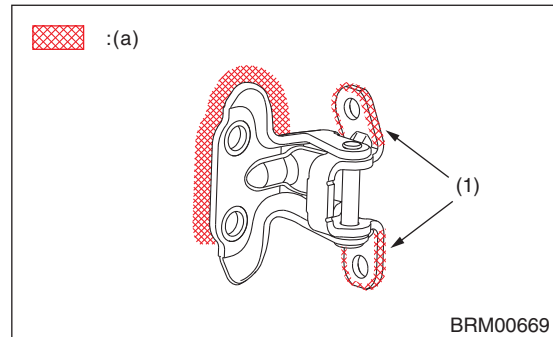


(a) Rust-stop aerosol

- Rear door hinge upper side

(Application thickness = 15  $\mu\text{m}$  or more)

Apply to the contact surface (indicated area) on the body side in two locations on the left and right.



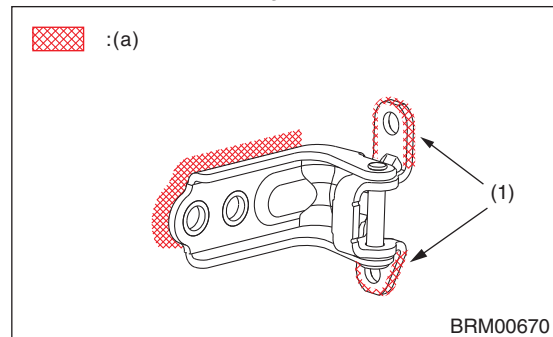
(a) Rust-stop aerosol

(1) Cover the touch surface of the hinge plate, bolt head and plate edges completely. A small amount of mist to the circumference is allowable.

- Rear door hinge lower side

(Application thickness = 15  $\mu\text{m}$  or more)

Apply to the contact surface (indicated area) on the body side in two locations on the left and right.



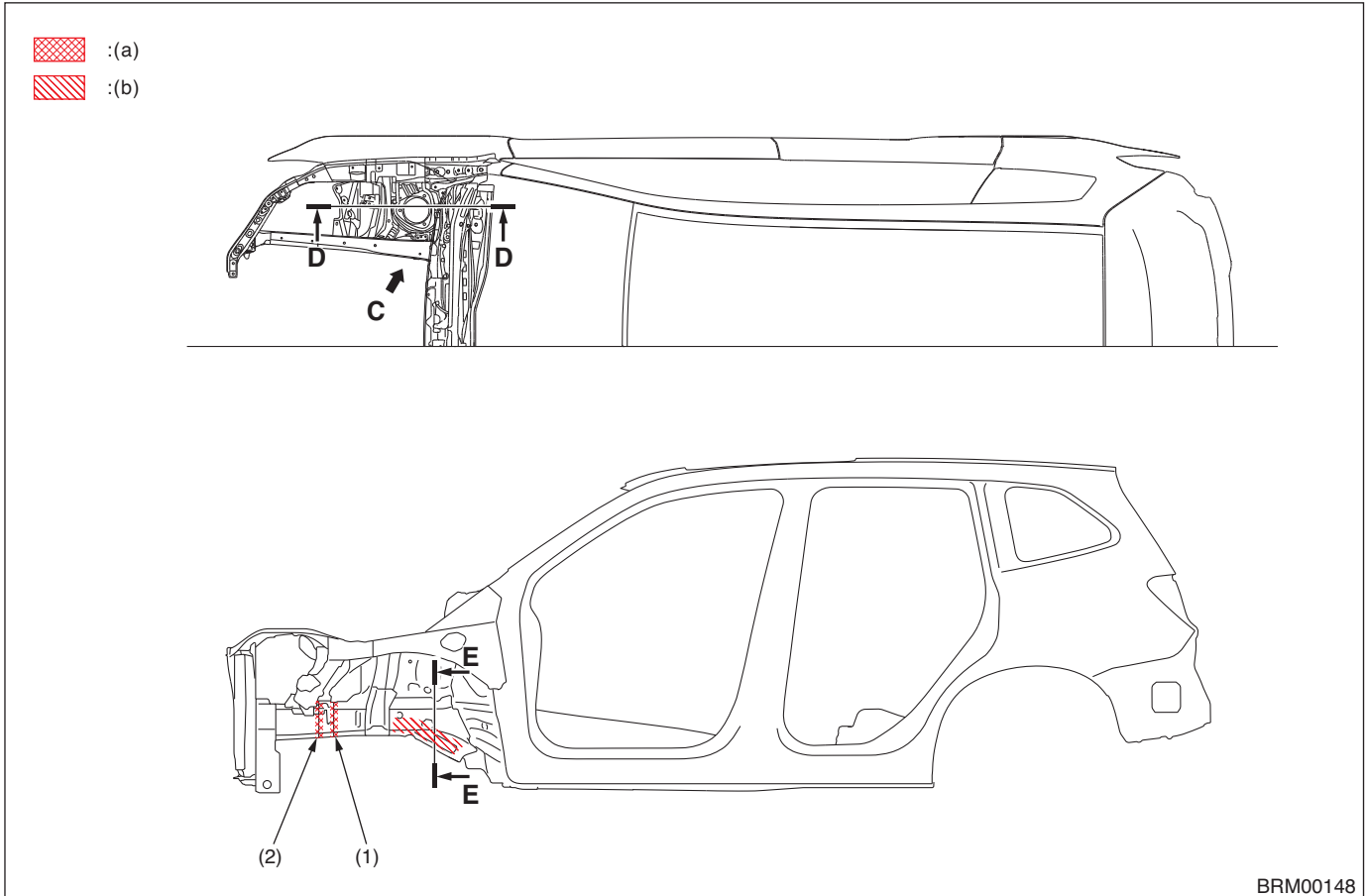
(a) Rust-stop aerosol

(1) Cover the touch surface of the hinge plate, bolt head and plate edges completely. A small amount of mist to the circumference is allowable.



# Anticorrosion Wax

- Overall view



BRM00148

(a) Rust-stop aerosol  
(Application thickness = 15  $\mu\text{m}$  or more)

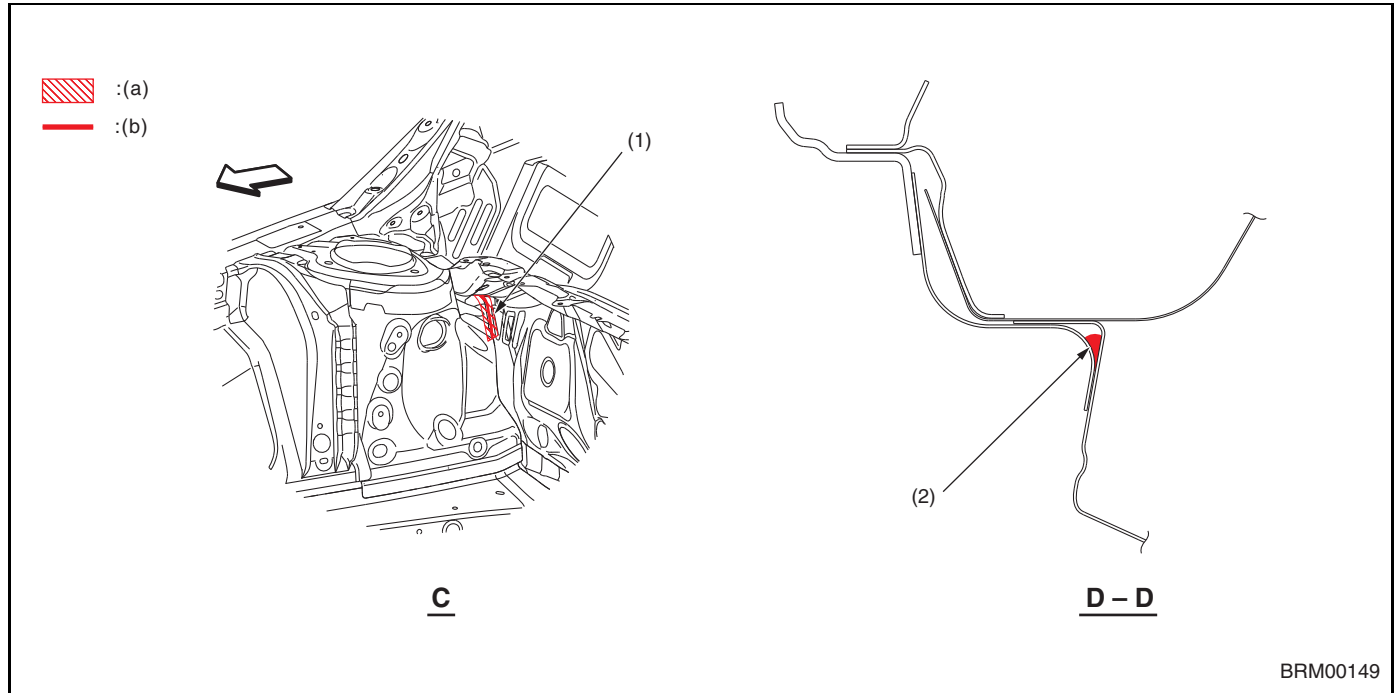
(b) Rust-stop aerosol  
(Application thickness = 50  $\mu\text{m}$  or more)

(1) The panel joints shall be covered

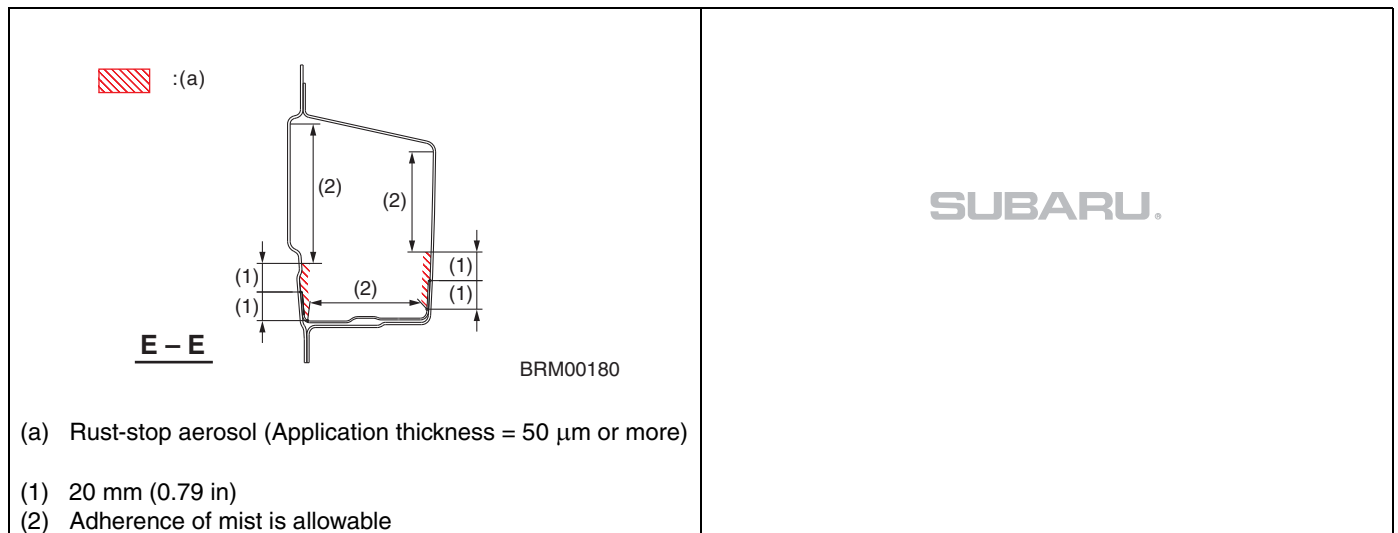
(2) The panel joints on the inside of the engine compartment shall be covered

# Anticorrosion Wax

## • View / Cross section

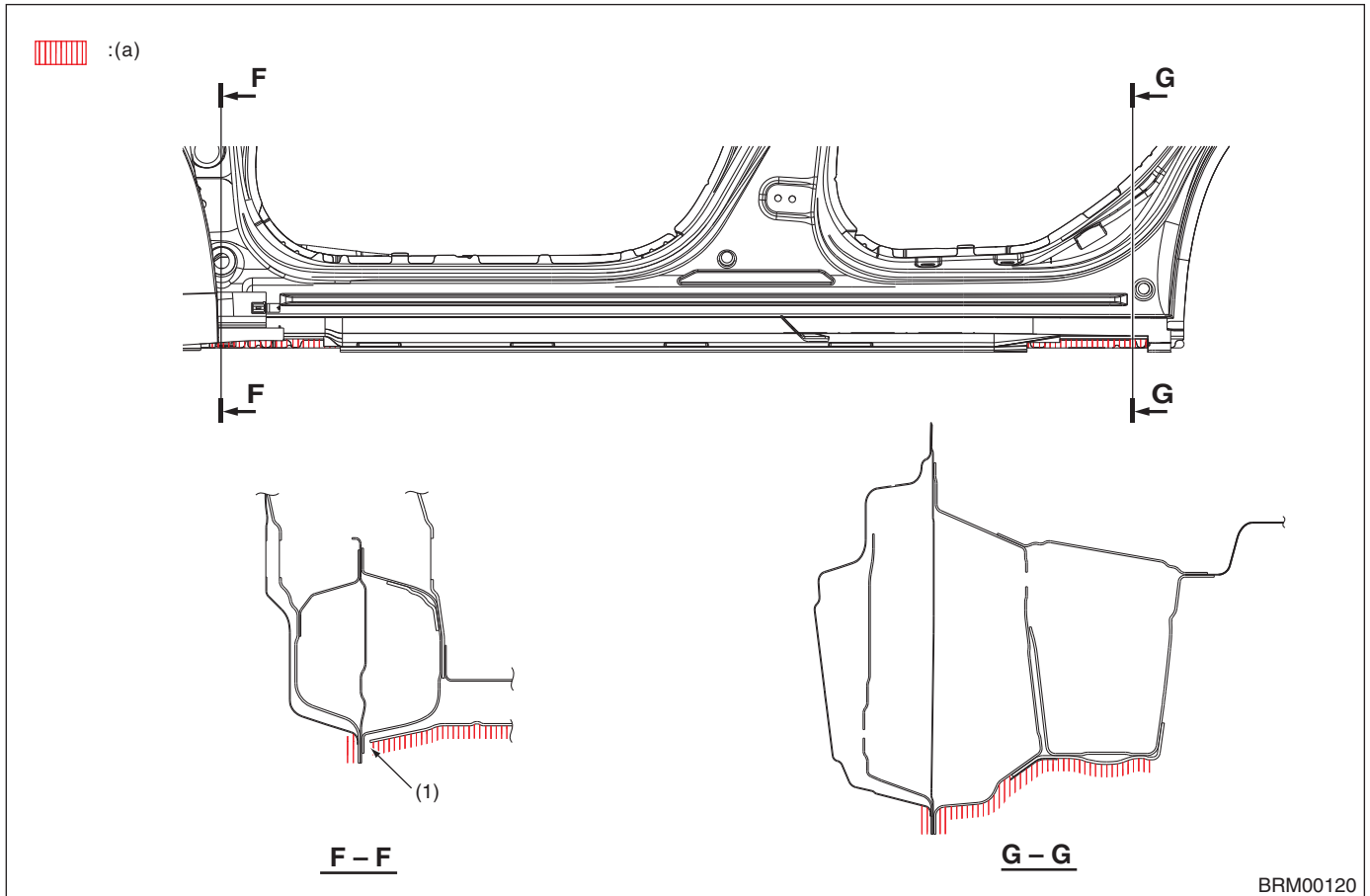


- (a) Rust-stop aerosol (Application thickness = 50  $\mu\text{m}$  or more)
- (b) To be filled into the plate joint
- (1) Securely cover the contact surface of the toe board, front suspension bracket(Sealing is allowable),Wrap the sealing and wax securely.
- (2) Sealing is allowable



## Anticorrosion Wax

- **Jack-up point area** (Application thickness = 150  $\mu\text{m}$  or more)

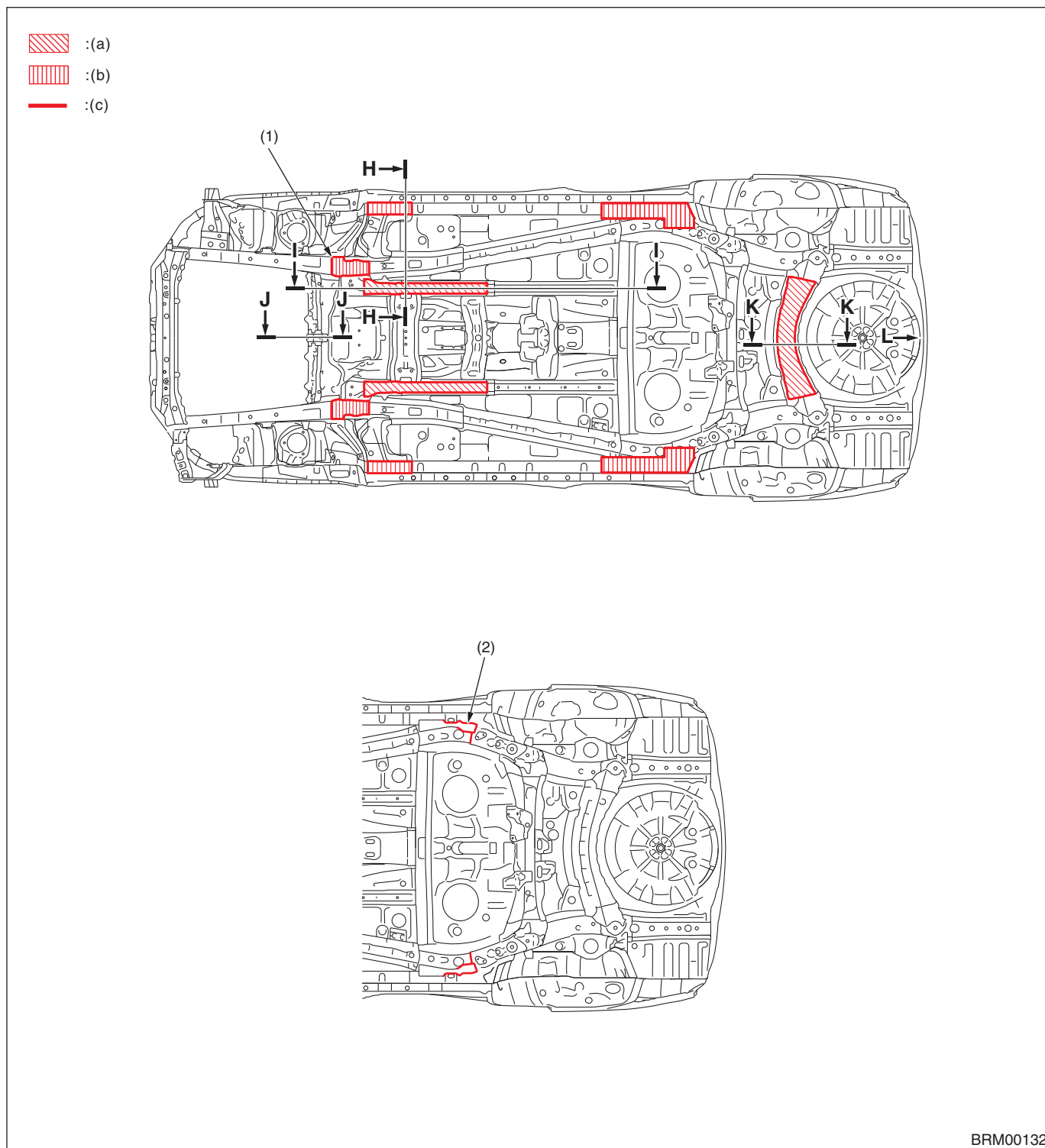


(a) Rust-stop aerosol

(1) Do not block the water drain holes. (right and left)

# Anticorrosion Wax

## • Bottom view



(a) Rust-stop aerosol  
(Application thickness = 50  $\mu\text{m}$  or more)

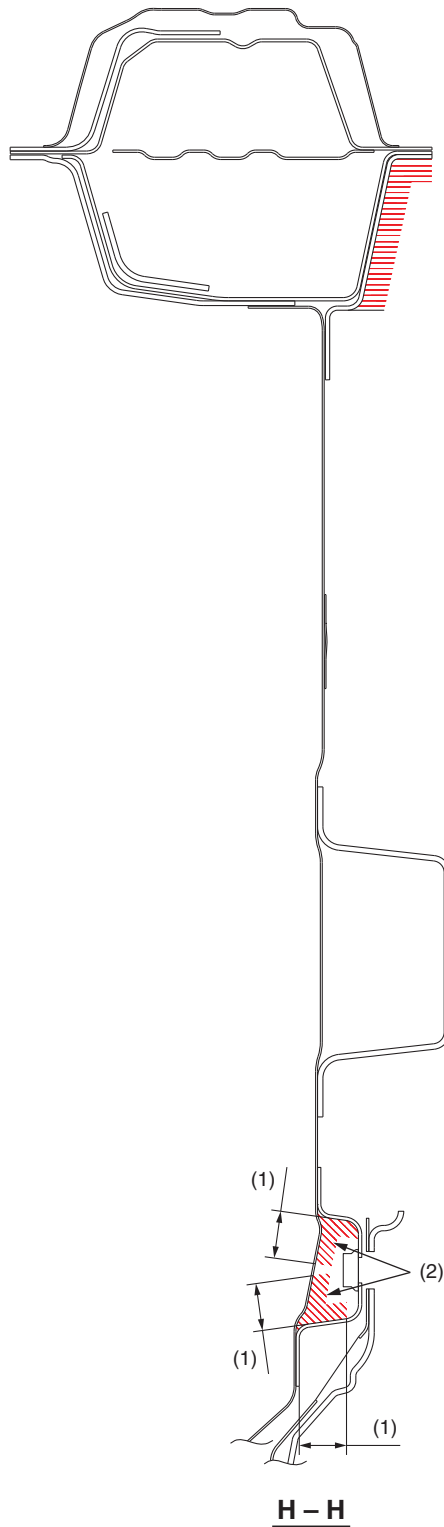
(b) Rust-stop aerosol  
(Application thickness = 150  $\mu\text{m}$  or more)

(c) Rust-stop aerosol  
(Application thickness = 50  $\mu\text{m}$  or more)

- (1) Apply wax so that the suspension arm bush and exhaust pipe are not waxed.  
(2) Sealing is allowable

# Anticorrosion Wax

-  : (a)  
 : (b)

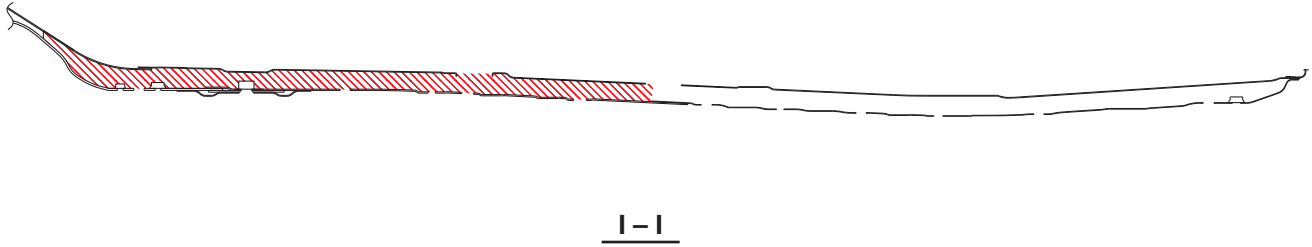


BRM00137

- (a) Rust-stop aerosol (Application thickness = 50 µm or more)  
(b) Rust-stop aerosol (Application thickness = 150 µm or more)  
(1) 20 mm (0.79 in)  
(2) The wax application thickness should be 50 µm or more

# Anticorrosion Wax

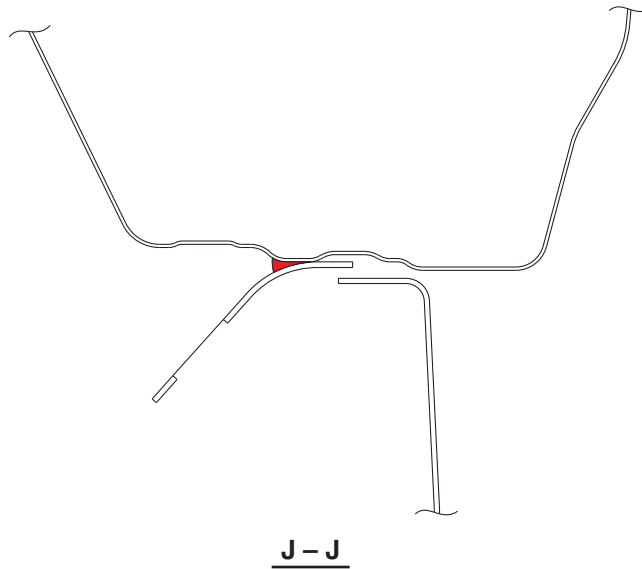
 : (a)



BRM00123

(a) Rust-stop aerosol (Application thickness = 50 µm or more)

 : (a)

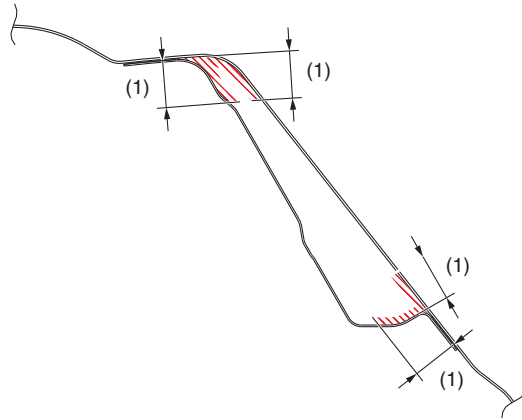


BRM00129

(a) Rust-stop aerosol (Application thickness = 50 µm or more)

# Anticorrosion Wax

 : (a)



K - K

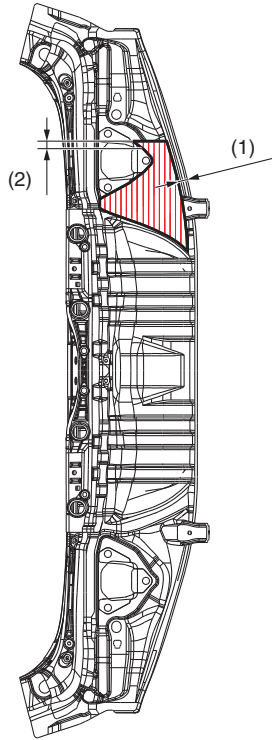
BRM00178

(a) Rust-stop aerosol (Application thickness = 50  $\mu\text{m}$  or more)

(1) 20 mm (0.79 in)

## Anticorrosion Wax

 : (a)



L

BRM00179

(a) Rust-stop aerosol (Application thickness = 150  $\mu\text{m}$  or more)

(1) 20 mm (0.79 in)

(2) 22 mm (0.87 in)



## 11.Undercoat

### A: SPECIFICATIONS




Repair material: PVC (NT guardcoat 5900FL)

#### CAUTION:

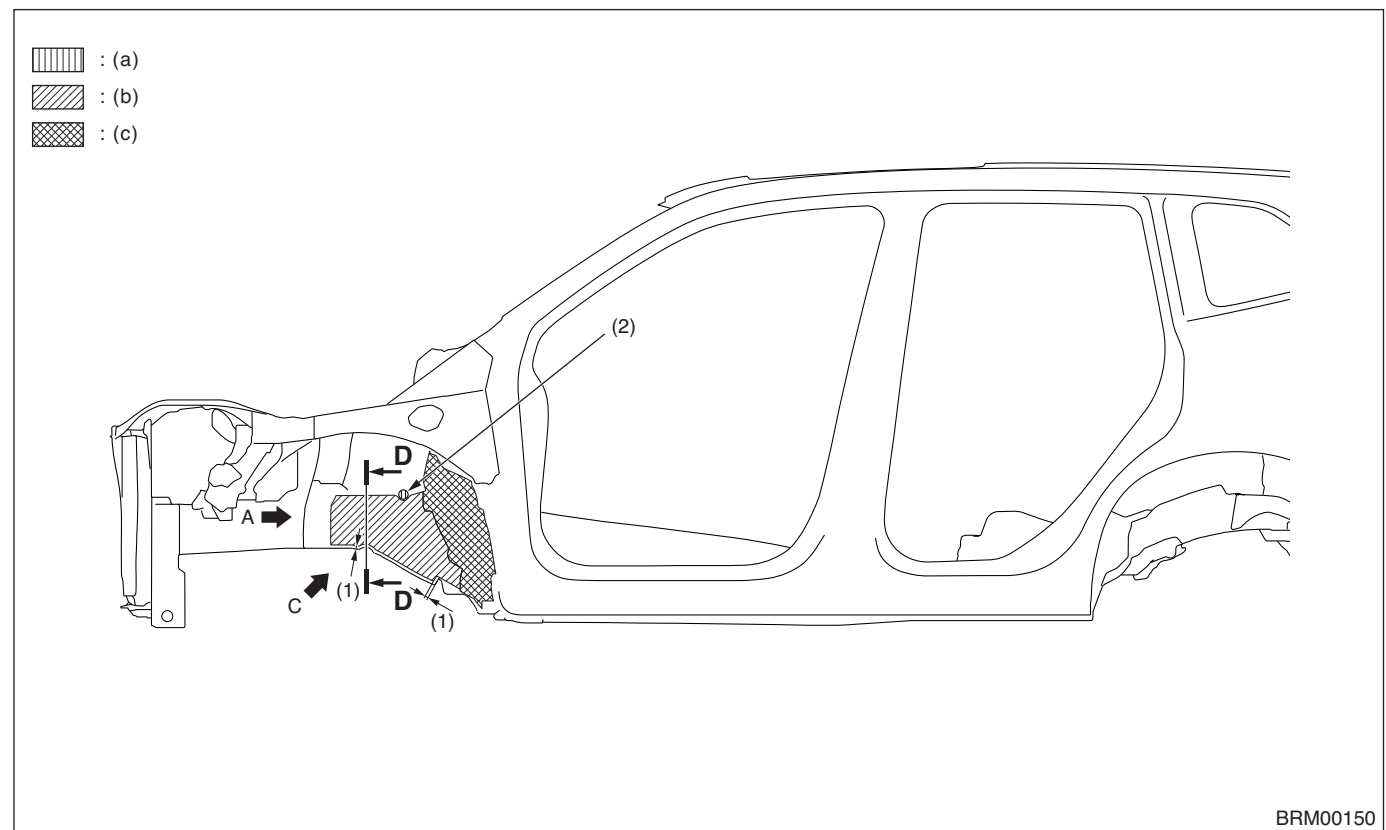
**Be careful not to let the PVC be attached to any parts not indicated below and to the following locations.**

- High-temperature parts related to the exhaust pipe
- Hoses, tubes and harness parts
- Installation surfaces of rear suspension, transmission, subframe, etc

1) Application area and application thickness

	200 $\mu\text{m}$ or more
	300 $\mu\text{m}$ — 500 $\mu\text{m}$
	600 $\mu\text{m}$ — 800 $\mu\text{m}$

#### • Side view



BRM00150

(a) 200  $\mu\text{m}$  or more

(b) 300  $\mu\text{m}$  — 500  $\mu\text{m}$

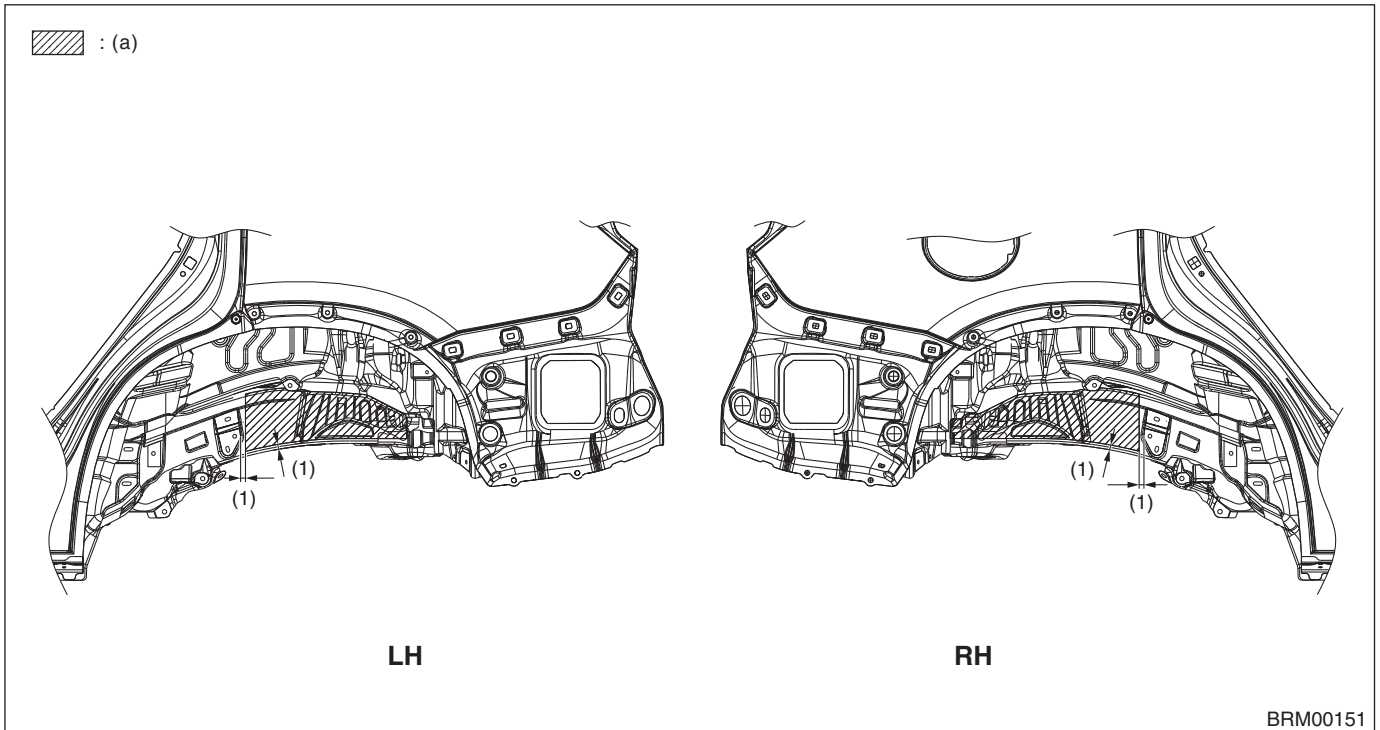
(c) 600  $\mu\text{m}$  — 800  $\mu\text{m}$

(1) 10 mm (0.39 in) (Adherence of mist is allowable)

(2) Cover the grommet seat with the PVC.

# Undercoat

- Rear wheel apron side view

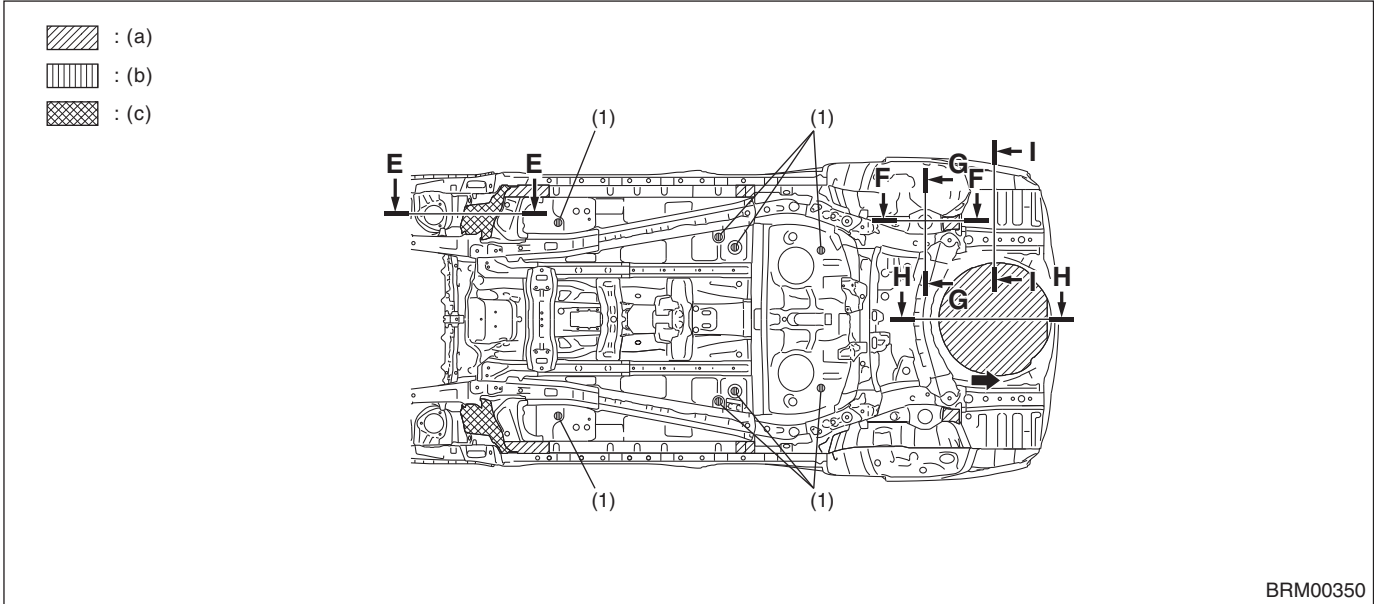


(a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$

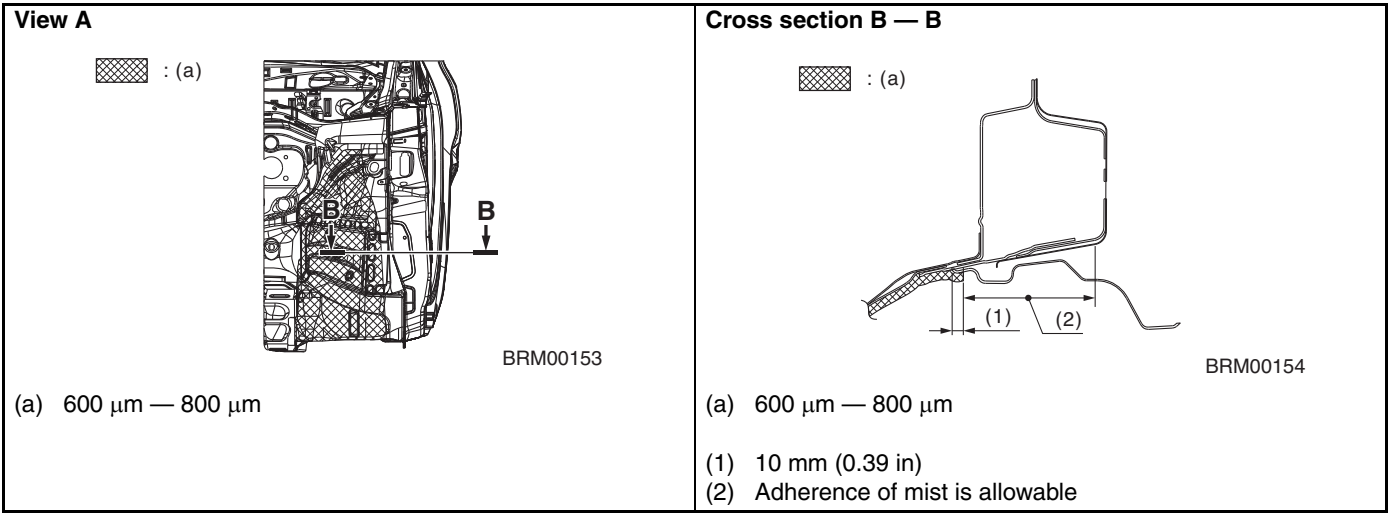
(1) 10 mm (0.39 in)

# Undercoat

- Bottom view

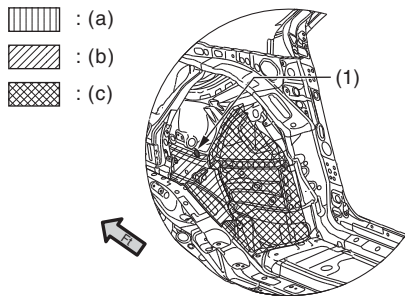


- (a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$       (b) 200  $\mu\text{m}$  or more      (c) 600  $\mu\text{m}$  — 800  $\mu\text{m}$
- (1) Cover the plug with the PVC



# Undercoat

View C

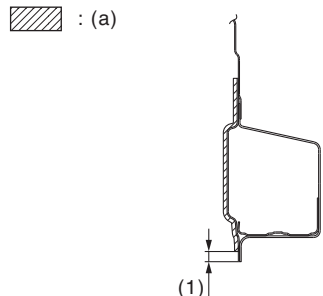


BRM00156

- (a) 200  $\mu\text{m}$  or more
- (b) 300  $\mu\text{m}$  — 500  $\mu\text{m}$
- (c) 600  $\mu\text{m}$  — 800  $\mu\text{m}$

(1) Cover the grommet seat with the PVC.

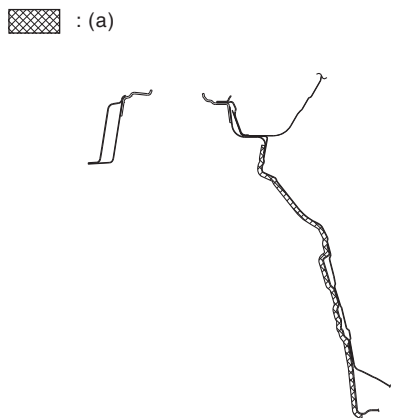
Cross section D — D



BRM00157

- (a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$
- (1) 10 mm (0.39 in) (Adherence of mist is allowable)

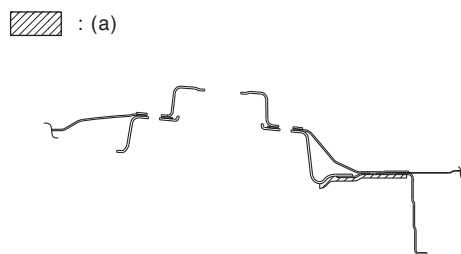
Cross section E — E



BRM00158

- (a) 600  $\mu\text{m}$  — 800  $\mu\text{m}$

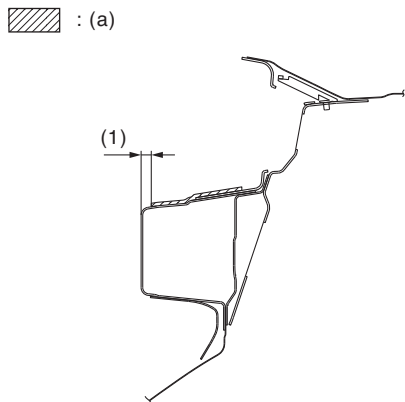
Cross section F — F



BRM00159

- (a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$

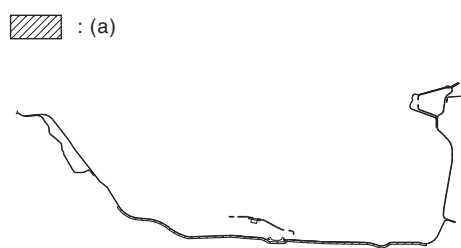
Cross section G — G



BRM00160

- (a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$
- (1) 10 mm (0.39 in) (Adherence of mist is allowable)

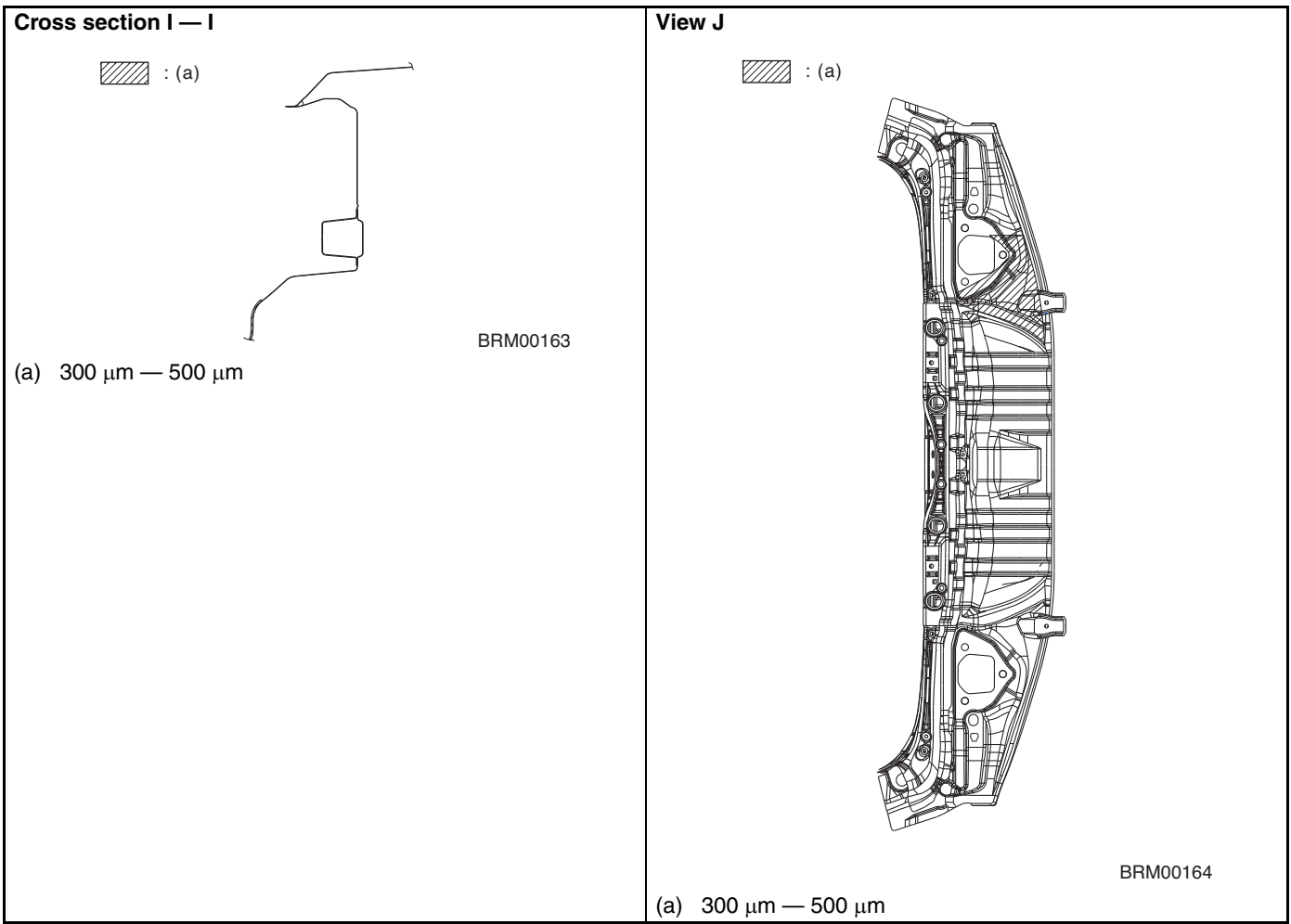
Cross section H — H



BRM00161

- (a) 300  $\mu\text{m}$  — 500  $\mu\text{m}$

Undercoat



## 12.Damping Seat

### A: SPECIFICATIONS

#### CAUTION:

- Use an adhesive agent to paste the silencer. Apply an adhesive agent to whole surface of the silencer.
- When the silencer thickness does not meet the standard value, laminate the silencer until its thickness meets the standard.

Recommended adhesive agent: EC847 glue made by 3M or equivalent

#### • Upper view 1



(a) Thickness of the silencer:  
3.0 mm (0.12 in)

(b) Thickness of the silencer:  
4.5 mm (0.18 in)

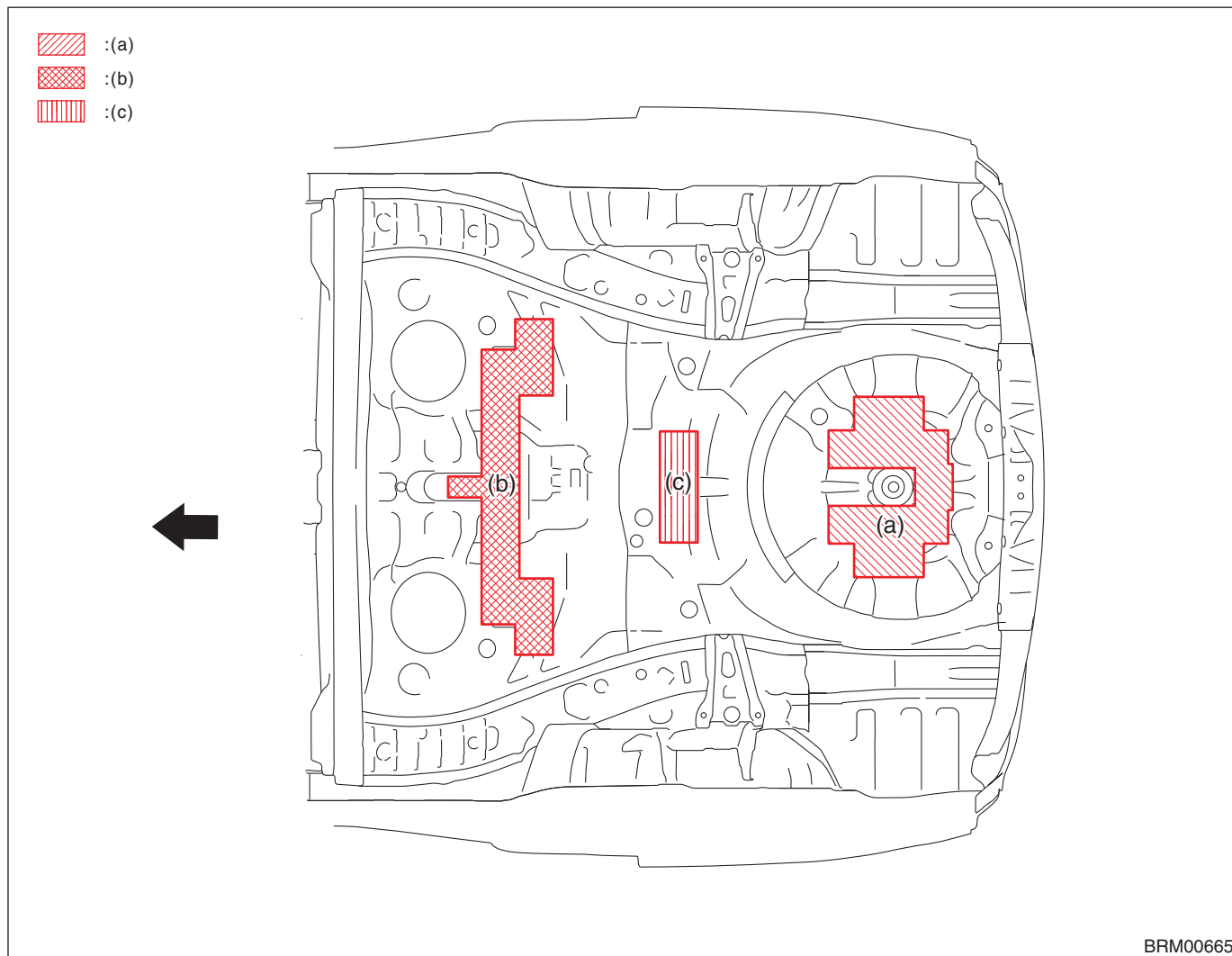
(c) Thickness of the silencer:  
5.5 mm (0.22 in)

(d) Thickness of the silencer:  
6.0 mm (0.24 in)

(e) Thickness of the silencer:  
7.5 mm (0.30 in)

# Damping Seat

## • Upper view 2



(a) Thickness of the silencer:  
3.0 mm (0.12 in)

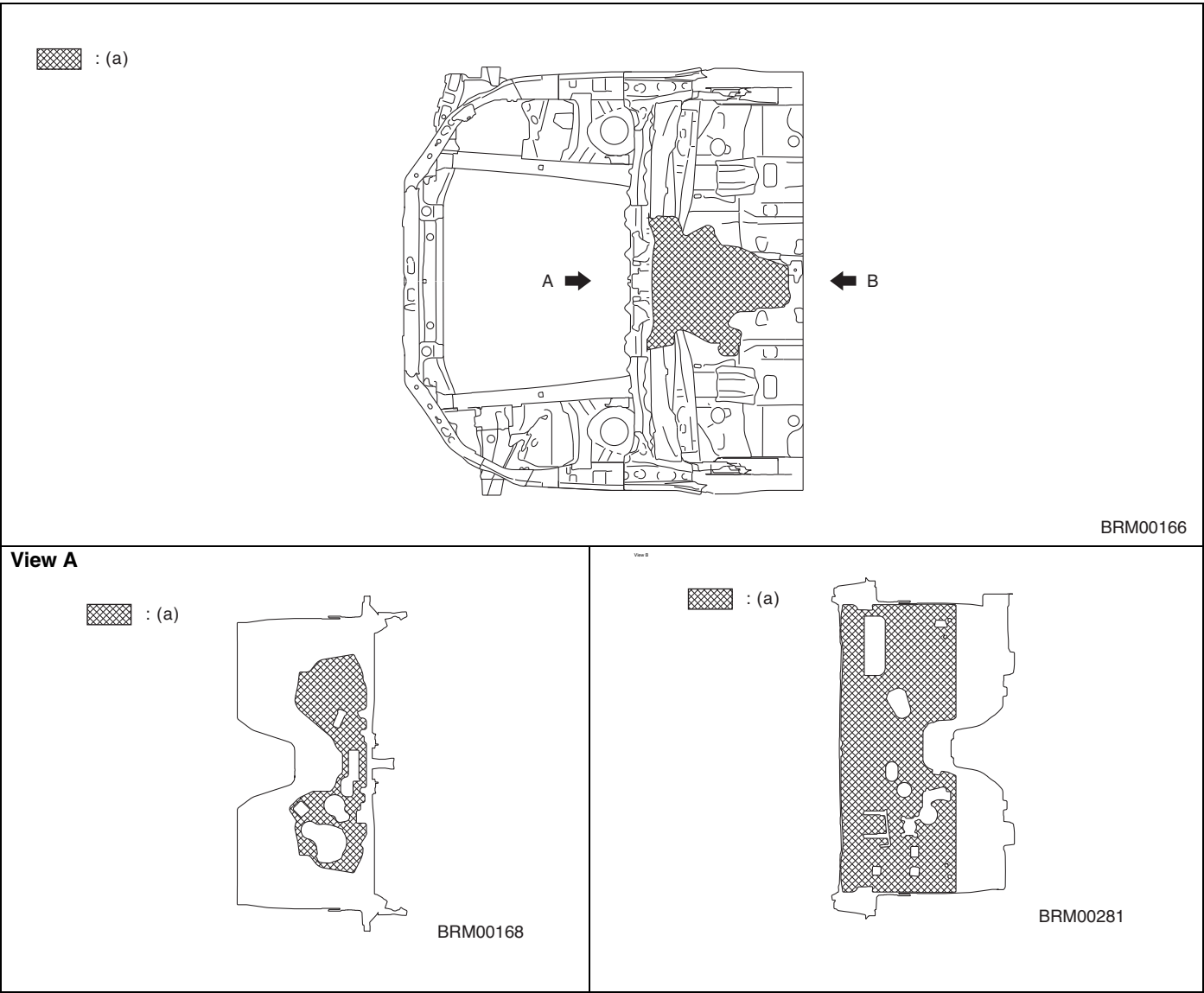
(b) Thickness of the silencer:  
4.5 mm (0.18 in)

(c) Thickness of the silencer:  
5.5 mm (0.22 in)

13.Insulator

A: SPECIFICATIONS

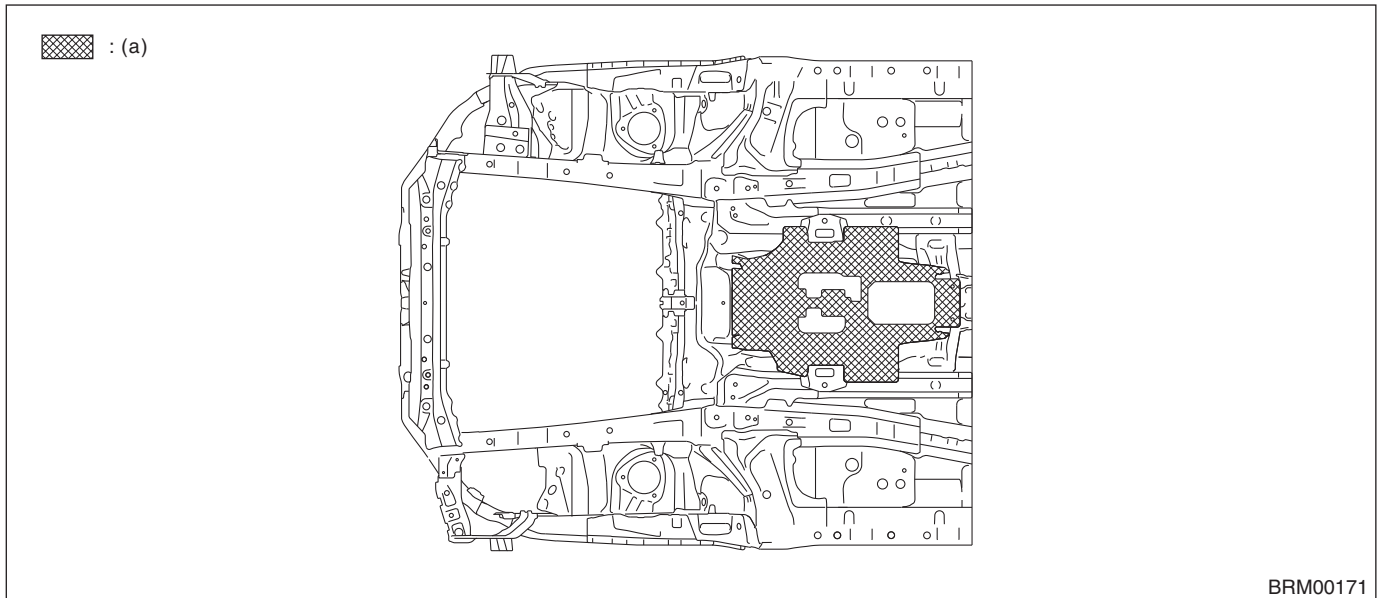
1. UPPER VIEW





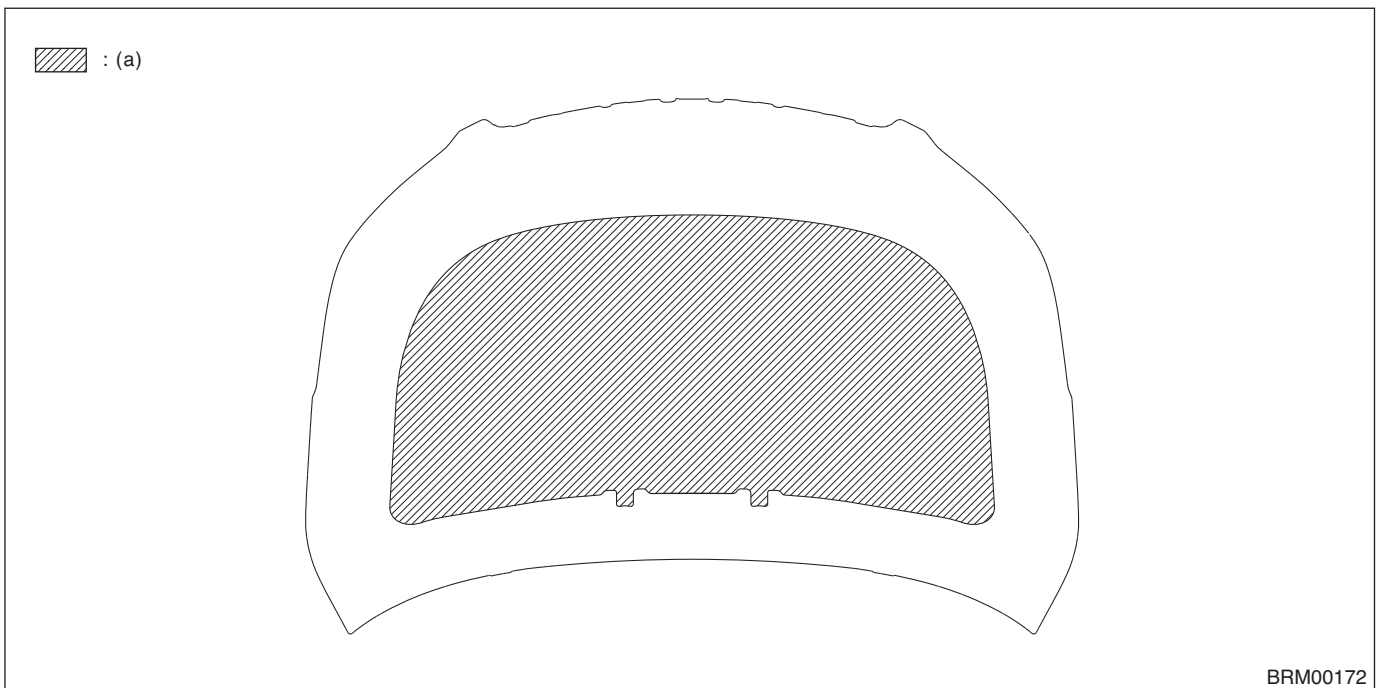
# Insulator

## 2. BOTTOM VIEW



(a) Insulator

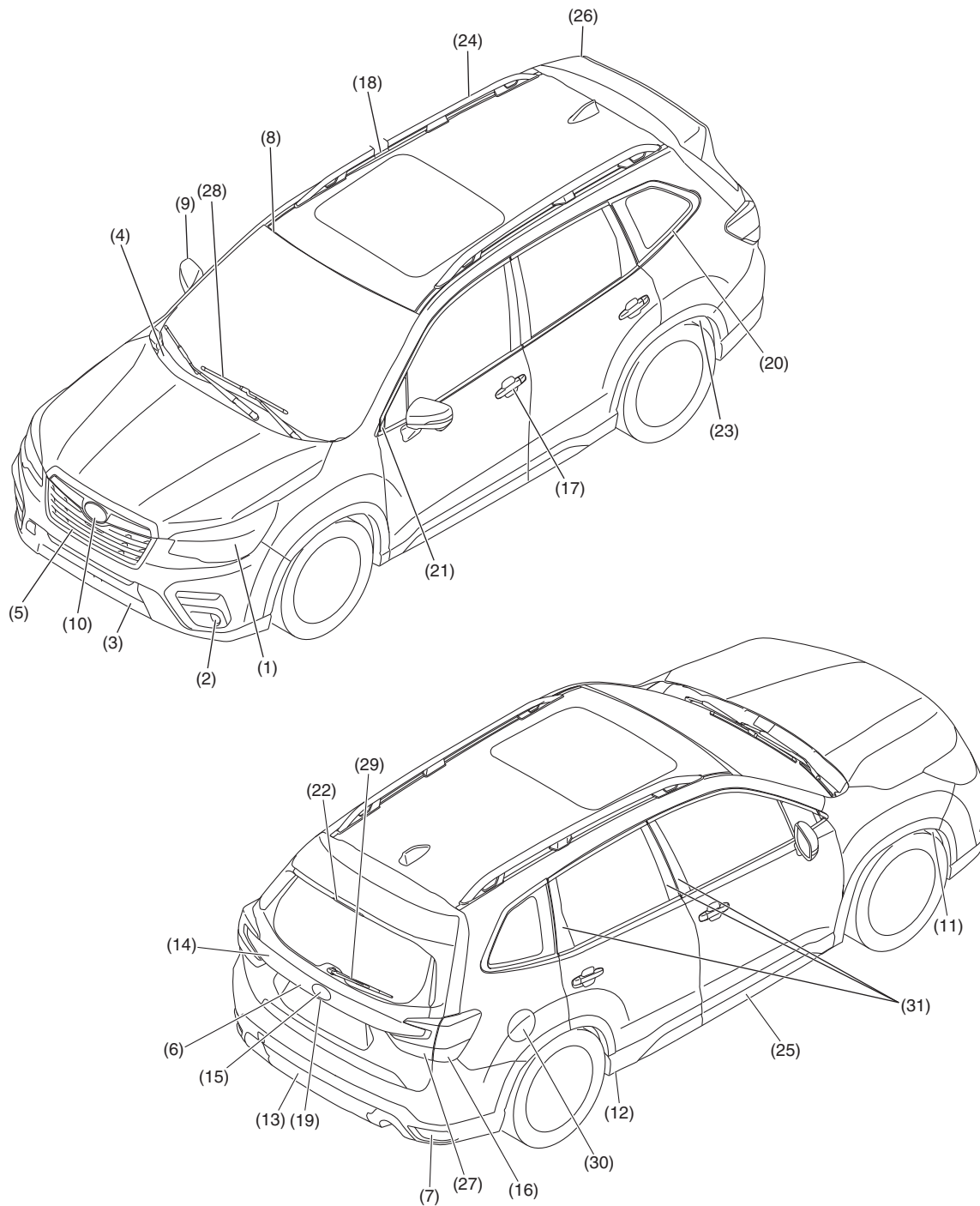
## 3. FRONT HOOD



(a) Insulator

## 14. Plastic Parts and Materials

### A: SPECIFICATIONS



BRM00673

## Plastic Parts and Materials

(1) Headlight (LED)	(12) Air flap Rear	(23) Rear mudguard
(2) Front fog light	(13) Rear bumper	(24) Roof rail
(3) Front bumper	(14) Rear gate garnish	(25) Side garnish
(4) Cowl panel	(15) Ornament rear	(26) Roof spoiler
(5) Front grill	(16) Rear combination light	(27) Rear finisher light
(6) License light	(17) Door handle	(28) Front wiper
(7) Reflex reflector	(18) Roof moulding	(29) Rear wiper
(8) Front window moulding	(19) Rear gate opener switch	(30) Fuel flap
(9) Door mirror	(20) Rear quarter molding	(31) Cover pillar outer
(10) Ornament front	(21) A pillar cover	
(11) Front mudguard	(22) High mount stop light	

No	Part name			Material
(1)	Headlight (LED)	Model without SRH	Lens	PC
			Body	PP-TD30
			Extension	PBT
			Reflector (turn light)	PPS-MD20
			Inner lens D	PC
			Reflex reflector	PMMA
			Cover	PC
			Base B	PP-TD20
			Bracket	PA-GF50
			End rubber	EPDM
		Model with SRH	Lens	PC
			Body	PP-TD30
			Extension A	PBT
			Extension B	PBT
			Reflector (turn light)	PPS-MD20
			Inner lens A	PC
			Inner lens B	PC
			Inner lens C	PC
			Inner lens D	PC
			Reflex reflector	PMMA
			Cover	PC
			Base A	PC
			Base B	PP-TD20
			Bracket	PA-GF50
			End rubber	EPDM
(2)	Front fog light	FOG (bulb)	Lens	PC
			Reflector	PC
			Bracket (housing)	PP-TD30
		FOG (LED)	Housing	PP-TD30
			Reflector	PC
			Bracket	PC
			Lens	PC

## Plastic Parts and Materials

No	Part name			Material
(3)	Front bumper	Face		PP
		Cover bumper cap		PP
		Cover front fog lamp	Base	PP
			Mole	ABS
		Bumper guard front		PP
		Energy absorb form		PP
		Corner bracket		PP-GF30
		Side bracket		POM
(4)	Cowl panel	Active grille air shutter bracket		PP
		Cowl panel		PP
		Cover joint		PBT
		Cap clip		POM
		Cowl panel side		PP
(5)	Front grill	Protector		TPO
		Upper	Center base	ASA
			Moulding upper PT	ASA
			Moulding upper PLT	ABS
			Moulding center PT	ASA
			Moulding center PLT	ABS
		Lower	Base lower	ASA
			Moulding STD/HG	ASA
			Moulding 6KA/3KA	ABS
		Cover		ASA
(6)	License light	Bracket lower		PP
		Lens		PC
(7)	Reflex reflector	Housing		PC
		Lens		PMMA
(8)	Front window moulding	Housing		ABS
		Moulding		PVC
		DAM rubber		EPDM
		Seal upper side		EPDM
(9)	Door mirror	Seal A		EPDM
		Body		ASA
		Unit bracket		PBT
		Cover stay A		ASA
		Cover stay B		ASA
		Packing stay		TPO
		Indicator lamp		ASA
		Side turn light	Housing	ABS
			Lens	PMMA
			Inner lens	PMMA
		Body cover		ASA
		Cover cap, outside	Painted	ABS
			No painting	ASA
		Hook body		ABS
(10)	Ornament front	Side view camera packing		TPO
		Base		ABS
(11)	Front mudguard	Ornament		PMMA
		Mud guard		PE
		Plate air flap, front		PP+EPDM
		Cover mudguard		PE

## Plastic Parts and Materials

No	Part name		Material	
(12)	Air flap Rear	Plate air flap, rear	PP+EPDM	
(13)	Rear bumper	Face	PP	
		Cover rear bumper	PP	
		Guard rear	PP	
		Bracket corner rear	PP-GF30	
		Bracket side rear	POM	
		Cover hook rear	PP	
		Corner side lower	PP	
(14)	Rear gate garnish	Garnish outer	PC+ABS	
		Garnish lower	ASA	
		Garnish inner	PC+ABS	
		Cover camera	ASA	
		Protector upper center	EPDM	
		Protector upper side	EPDM	
		Protector lower center	TPO	
		Bracket upper	PC+PET	
		Garnish bracket side	POM	
(15)	Ornament rear	Ornament rear	PMMA	
		Base	ABS	
(16)	Rear combination light	Outer lens	PMMA	
		Inner lens A	PC	
		Inner lens B	PMMA	
		Turn light reflector	PBT	
		Extension	PC	
		Housing	ASA	
		Packing	EPDM	
(17)	Door handle	Frame handle bar, outer	PA6-GF30	
		Handle bar, outer	PC+PBT-MD10	
		Cover handle bar, outer	PP	
(18)	Roof moulding	Moulding	PVC	
		Clip	POM	
		E-cap, front	PVC	
		E-cap, rear	PVC	
		Moulding cover	PBT	
		Zipper	POM	
(19)	Rear gate opener switch	Plastic part of Request switch	PP-F35	
(20)	Rear quarter molding	Moulding front	PVC	
		Molding lower	PVC	
		Locator pin glass side	TPE	
		Dam rubber	EPDM	
(21)	A pillar cover	Body	AES	
		Protector	TPO	
(22)	High mount stop light	Roof spoiler type	Lens	PMMA
			Housing	ABS
		Rear gate type	Lens	PMMA
			Housing	ABS
(23)	Rear mudguard	Body	PET+PP	
		Protector	PP	

## Plastic Parts and Materials

No	Part name			Material
(24)	Roof rail	Cover front		ASA
		Cover center		ASA
		Cover rear		ASA
		Leg, front		PA66-GF50
		Leg, center		PA66-GF50
		Leg, rear		PA66-GF50
		Protector front		TPO
		Protector center		TPO
		Protector rear		TPO
(25)	Side garnish	Fender garnish		PP
		Front door garnish		PP
		Rear door garnish		PP
		Side sill garnish		PP
		Rear quarter garnish		PP
(26)	Roof spoiler	Roof spoiler center		PC+ASA
		Roof spoiler side		PC+ASA
		Protector		EPDM
(27)	Rear finisher light	Outer lens		PMMA
		Sealing pad		SUPER SHEET
		Housing		ASA
		Extension		PC
		Reflector		PBT
		Bracket		PC
		Inner lens A		PC
		Inner lens B		PC
Round packing		EPDM		
(28)	Front wiper	Wiper	Sleeve (drain)	PP
			Sleeve (rubber)	EPDM
			Sleeve (pivot)	POM
		Arm	Arm joint	PBT
			Blade	PP+ELASTOMER
		Cover wiper arm F		PC
(29)	Rear wiper	Wiper arm		PET-GF45
		Blade		PBT-GF30
		Cover		PBT
(30)	Fuel flap			PPE+PA
(31)	Cover pillar outer			AES
	Undercover	Undercover COM F	Undercover front	PP
			Cover engine oil DR	PP
		Undercover R		PP
	Splash board			PP

## List of Plastic Material Notations

### 15. List of Plastic Material Notations

#### A: SPECIFICATIONS

Notation symbol	Material name	Notation symbol	Material name
ABS	ABS resin (acrylonitrile/butadiene/styrene resin)	PET	Polyethylene terephthalate
AES	Acrylonitrile/ethylene/styrene	PET-GF45	Polyethylene terephthalate (45 % glass fiber content)
ASA	Acrylonitrile/styrene/acrylate	PMMA	Polymethyl methacrylate
ELASTOMER	Elastomer	POM	Polyacetal
EPDM	Ethylene/propylene/dien rubber	PP	Polypropylene
NBR	Nitrile rubber	PP-F35	Polypropylene (inorganic filler 35 %)
PA	Polyamide (nylon)	PP-GF30	Polypropylene (30 % glass fiber content)
PA-GF50	Polyamide (nylon) (50 % glass fiber content)	PP-TD20	Polypropylene (20 % talc content)
PA6-GF30	Polyamide (nylon) (glass fiber 30%)	PP-TD30	Polypropylene (30 % talc content)
PA66	Polyamide (nylon)	PPE	Polyphenylene ether
PA66-GF50	Polyamide (nylon) (50 % glass fiber content)	PPS	Polyphenylene sulfide
PBT	Polybutylene terephthalate	PPS-MD20	Polyphenylene sulfide (mineral powder 20%)
PBT-GF30	Polybutylene terephthalate (30 % glass fiber content)	PVC	Polyvinyl chloride
PBT-MD10	Polybutylene terephthalate (10 % mineral powder)	SUPER SHEET	Super sheet
PC	Polycarbonate	TPE	Thermoplastic elastomer
PCB	Polychlorinated biphenyl	TPO	Thermo polyolefin
PE	Polyethylene		