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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



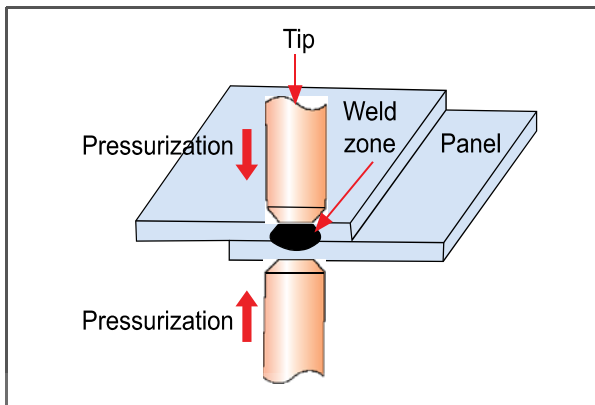
BODY WELDING

0000-00

GENERAL INFORMATION

1. SPOT WELD

1) Overview



Spot welding is a process in which panels are welded by being melted by the heat obtained from causing high current flow on an excessively small area.

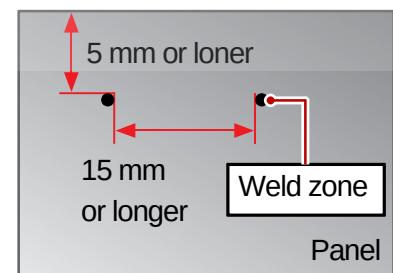
Electricity flows intensively on the area contacted with the electrode as pressure is exerted on the panel placed between the electrodes of the spot welder. When high current is caused to flow through the panel, the spots where the pressure is applied from the heat by the resistance are melted and joined together.

Because only a small area is heated during spot welding, the area surrounding the weld will not be affected.

2) Cautions For Spot Welding

⚠ CAUTION

- Disconnect the battery cable for both (+), (-).
- Remove coating from the weld zone both front and back.
- Precisely conduct welding after grasping the numbers and the positions of welds.
- Minimum distance between two welds should be 15 mm.
- Minimum distance between the weld zone and the tip of the panel should be 5 mm.
- Instead of welding in order from the end, start welding with leaving the wide space between welds and then narrow the space while welding.
- If the number of weld zone is many, allow 2 to 3 minutes of intervals for every 5 to 6 of welding works.



3) Removing Spot Welds

To cut the spot weld, use a spot weld drill on the welded area. (However, pay attention not to damage the inner panel.)

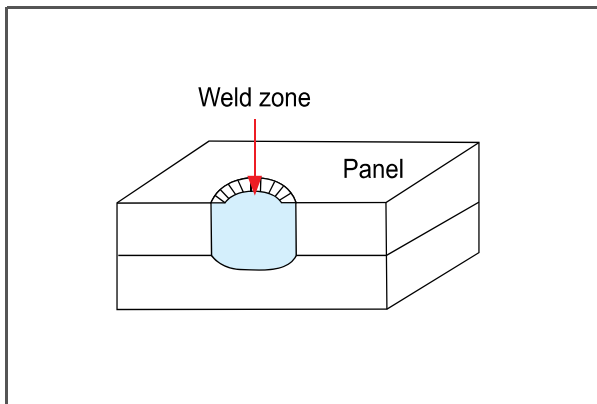
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

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2. PLUG WELD

1) Overview



When spot welding is unable to be conducted, plug welding is performed with using MAG welding machine. This is called MAG plug welding.

2) Welding Procedure

- Drill a 6~8mm hole on the upper panel of overlapped panels.
- Fix the stacked panels by completely contacting each other.
- Perform welding with the torch of the MAG welding machine facing the hole.

3) Cautions For Plug Welding

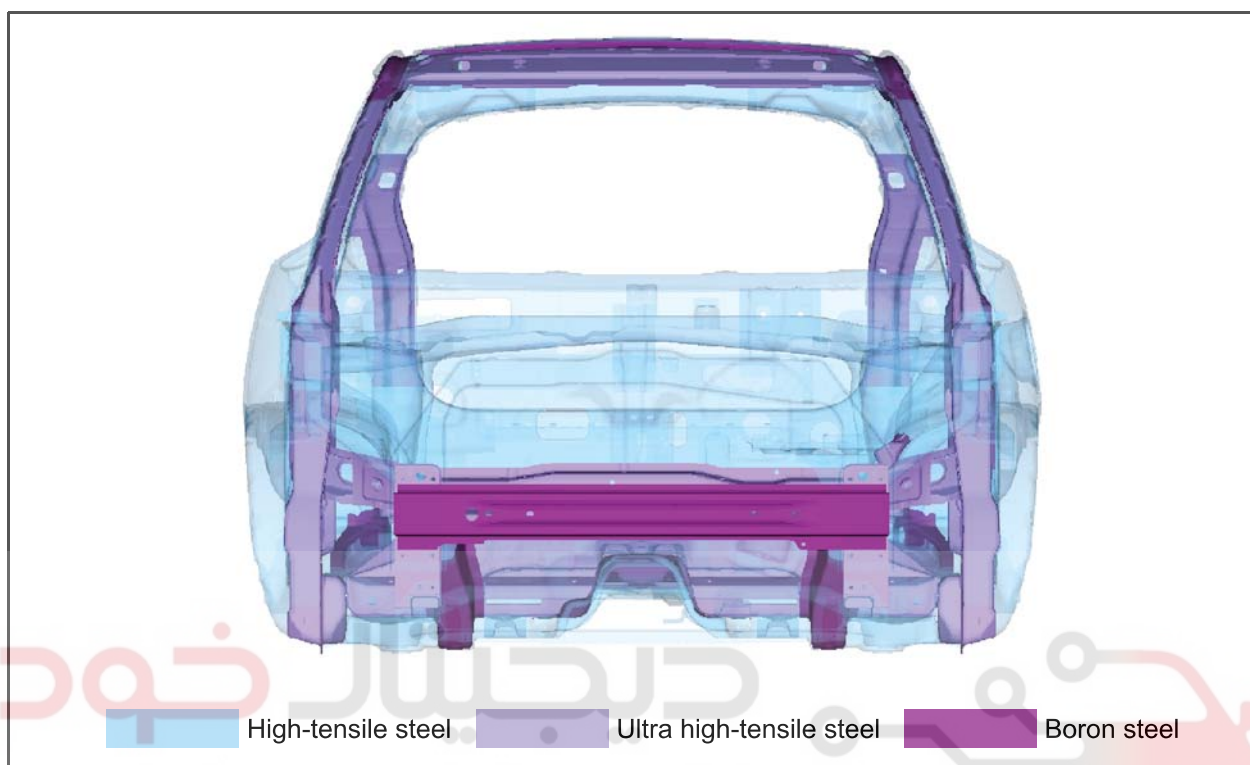
- Disconnect the battery cable for both (+), (-).
- Remove coating from the weld zone.
- Precisely conduct welding after grasping the numbers and the positions of welds.
- Minimize the distance between the weld zone and the ground clamp.
- Make sure to wear a welding helmet equipped with dark tinted glass.
- Maintain the close distance between the torch and the weld zone so that faulty welds (e.g. overlapping) do not occur.
- Instead of welding in order from the end, start welding with leaving the wide space between welds and then narrow the space while welding.

3. Ultra high-tensile steel

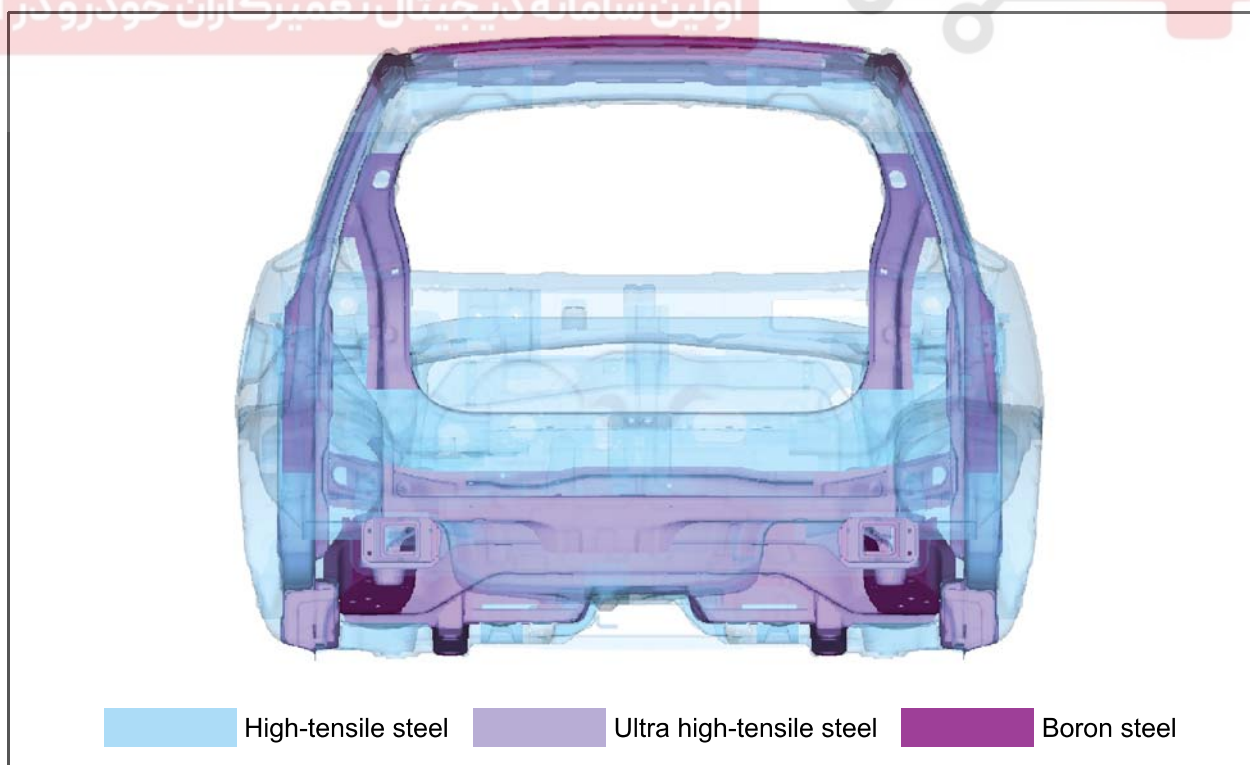
The body of TIVOLI is made of high-tensile steels by 71.4% and 40% of ultra high-tensile steels among them. Especially the main 10 parts of the body are built with boron steels using Hot Press Forming method in order to minimize the distortion of the vehicle body during collision.

4. ULTRA HIGH TENSILE STEEL APPLICATION AREA

► Front view



► Rear view

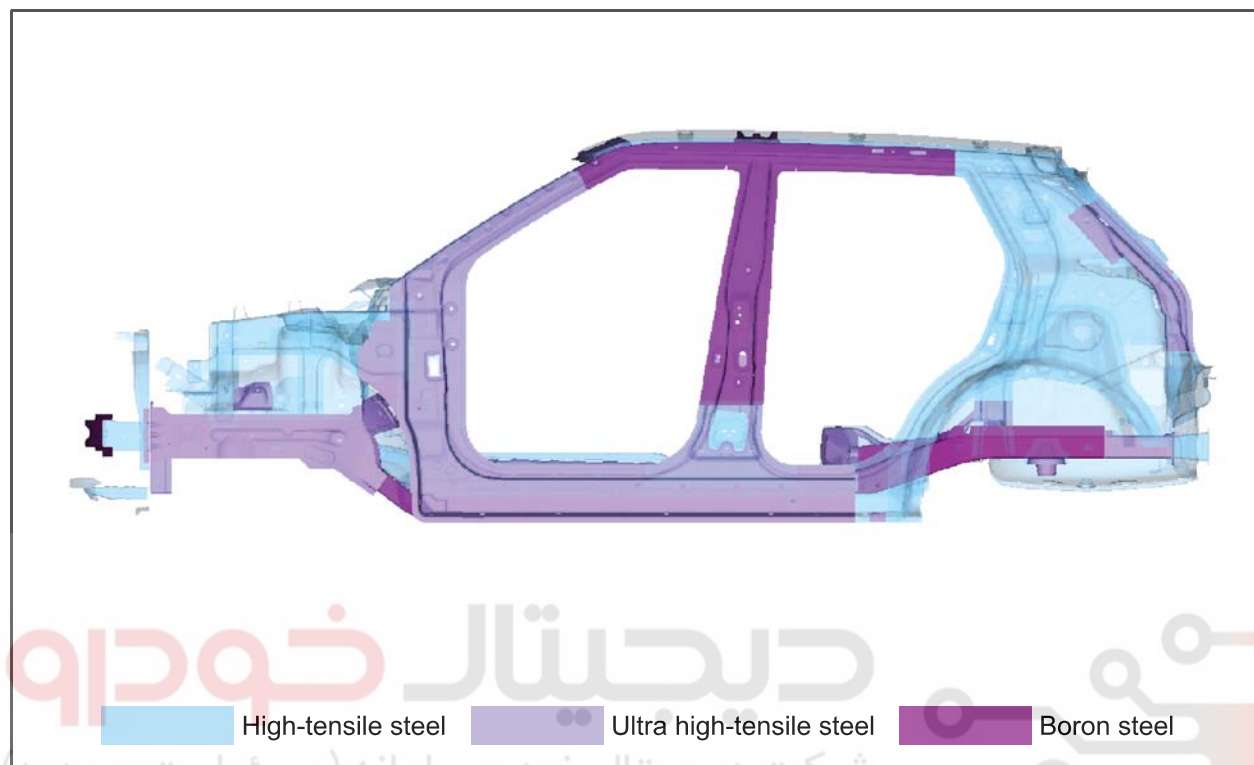


Modification basis	
Application basis	
Affected VIN	

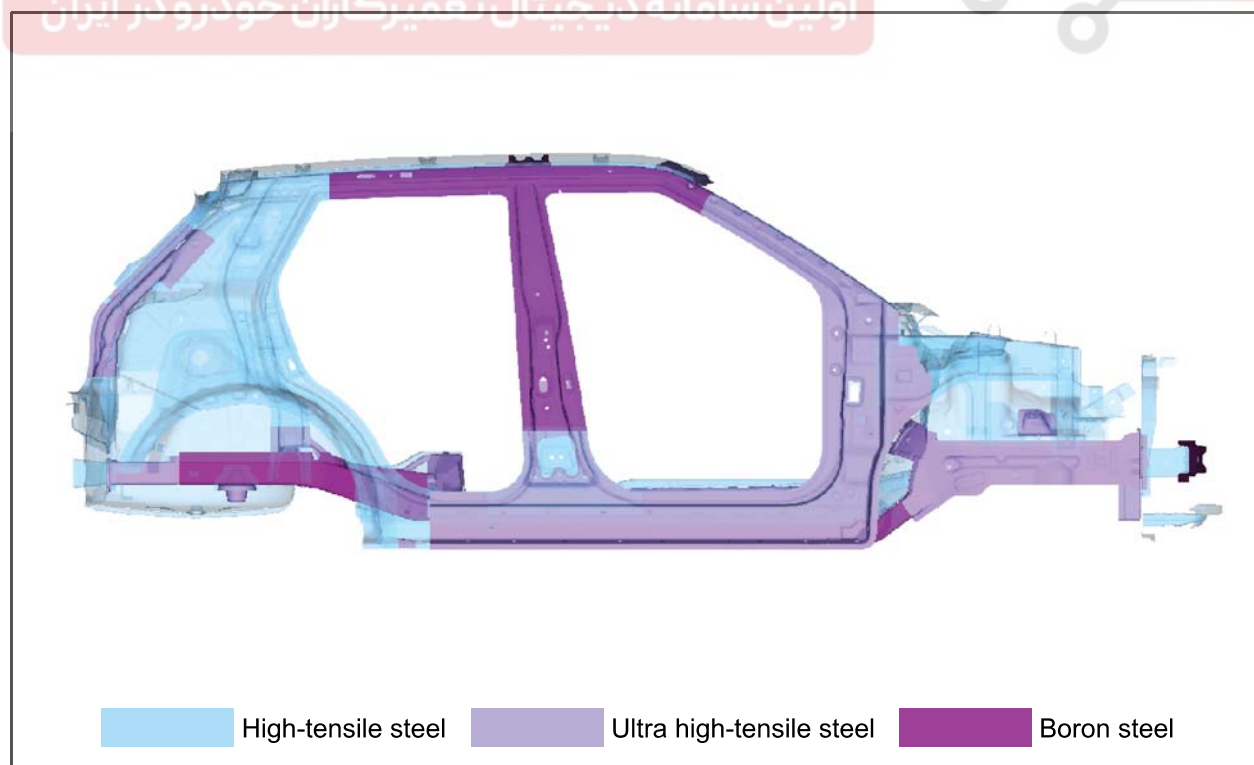
BODY WELDING

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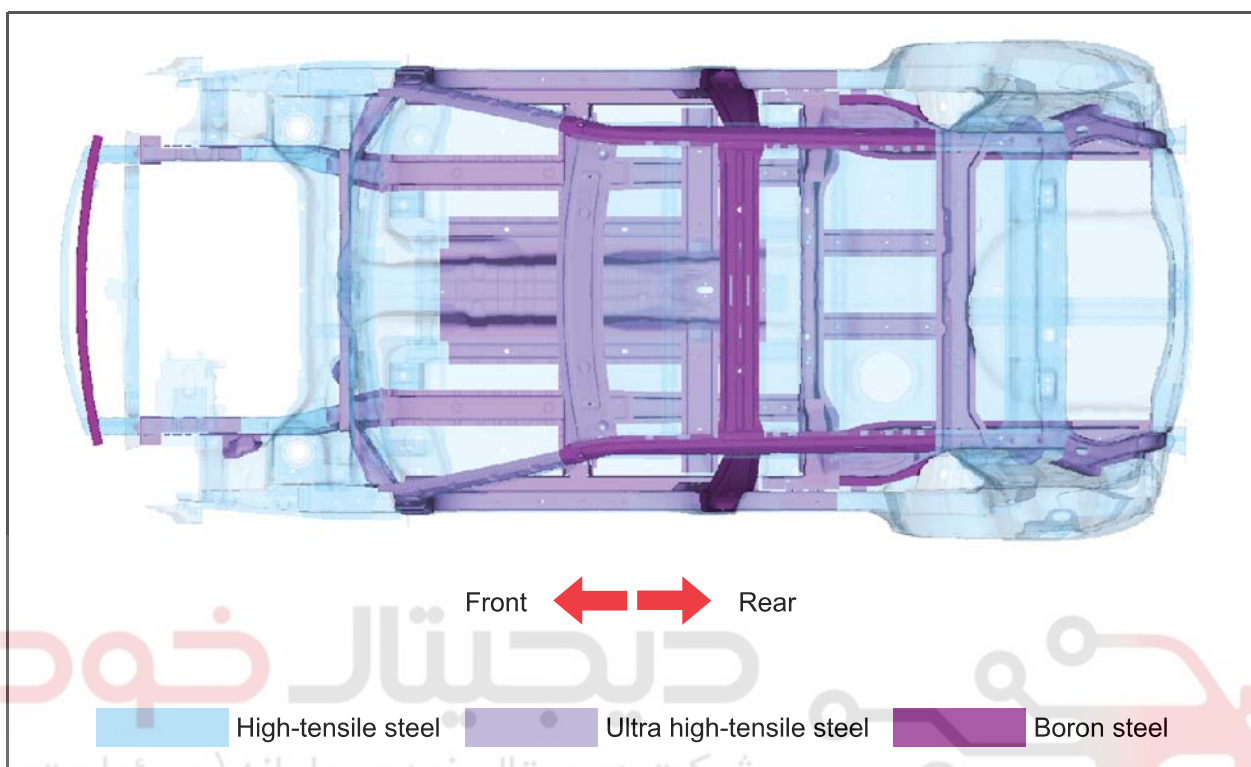
► Left side



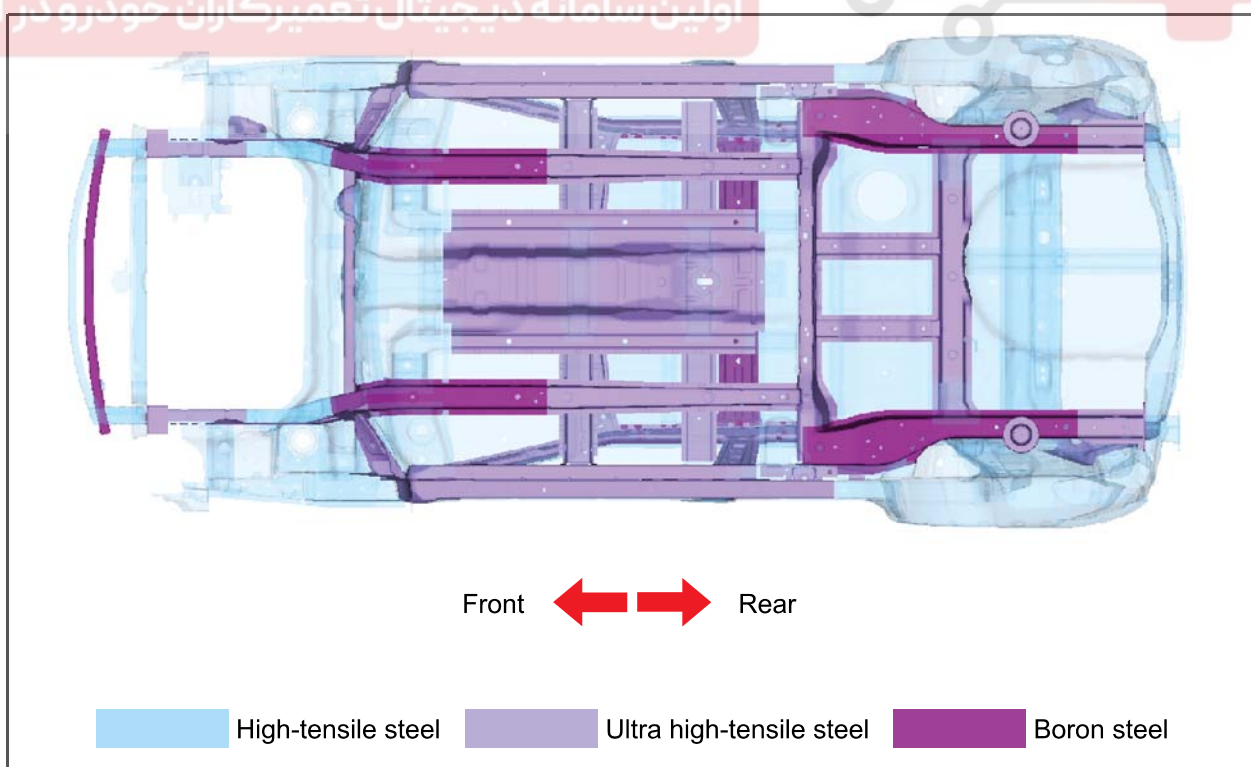
► Right side



► Upper side



► Lower side

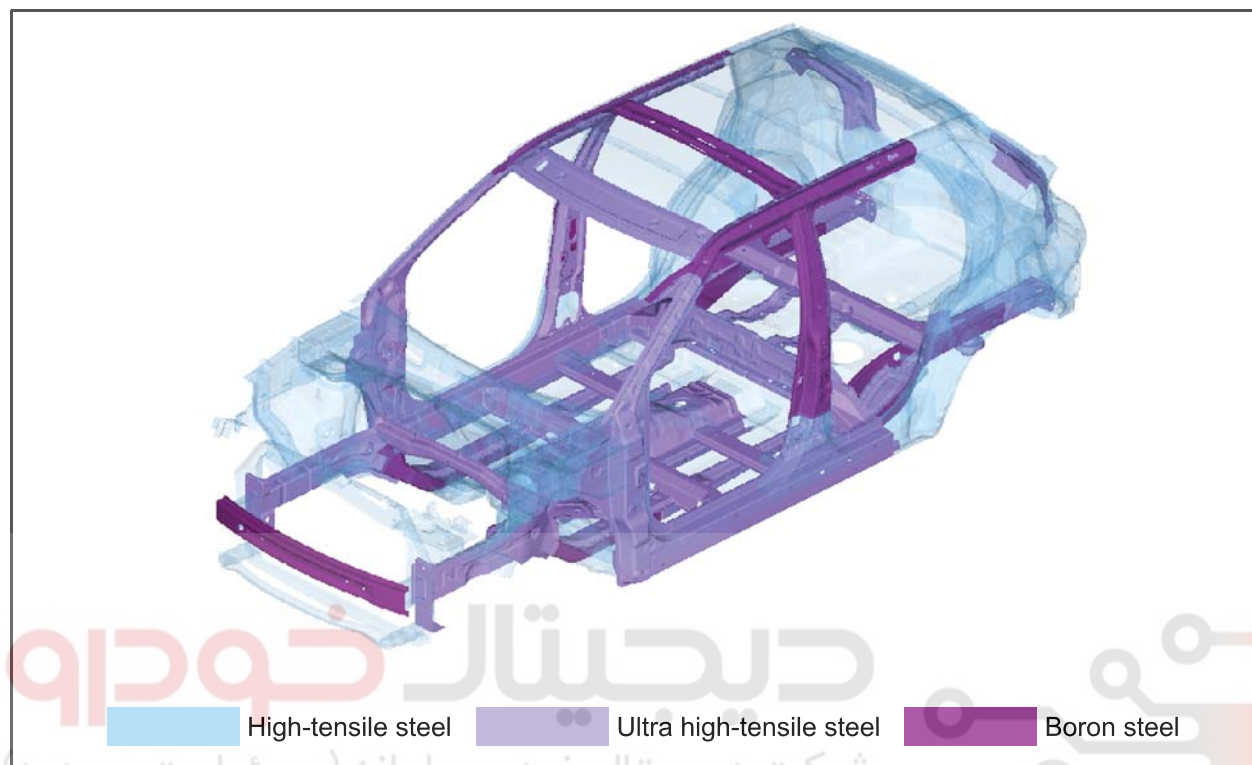


Modification basis	
Application basis	
Affected VIN	

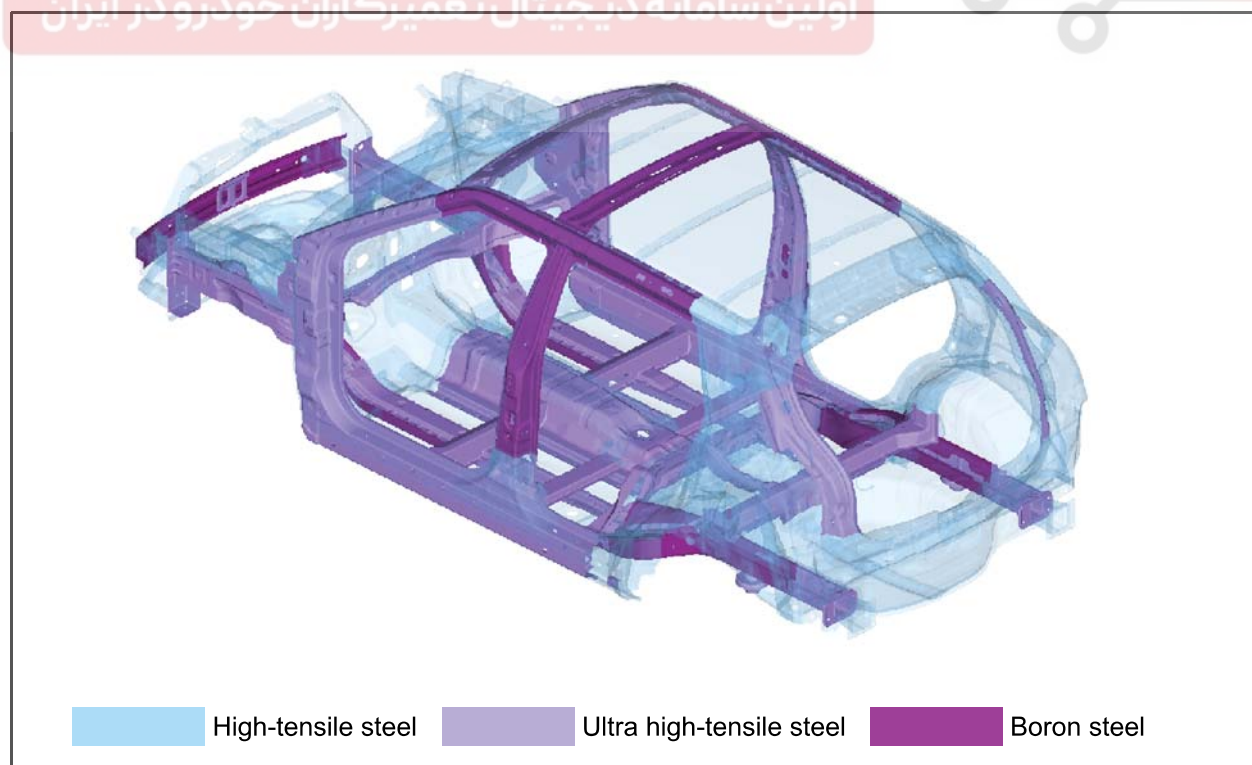
BODY WELDING

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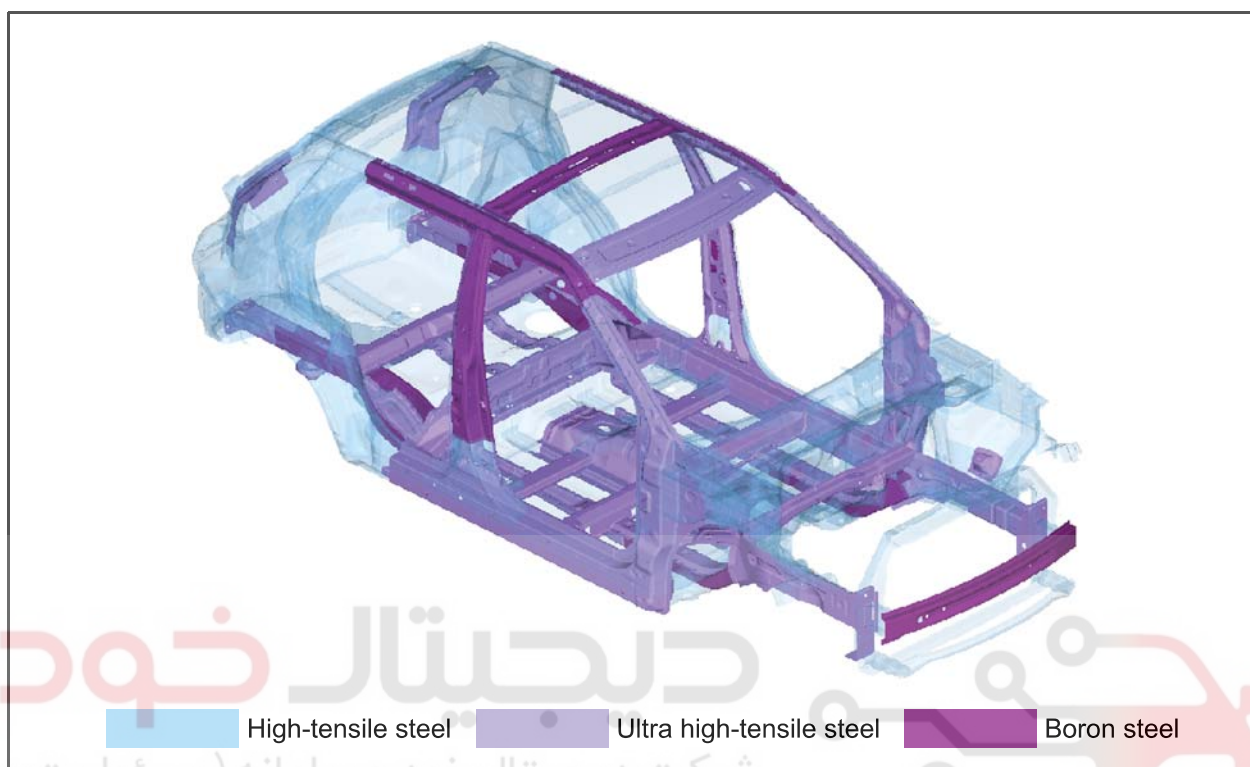
► Frontal side (LH)



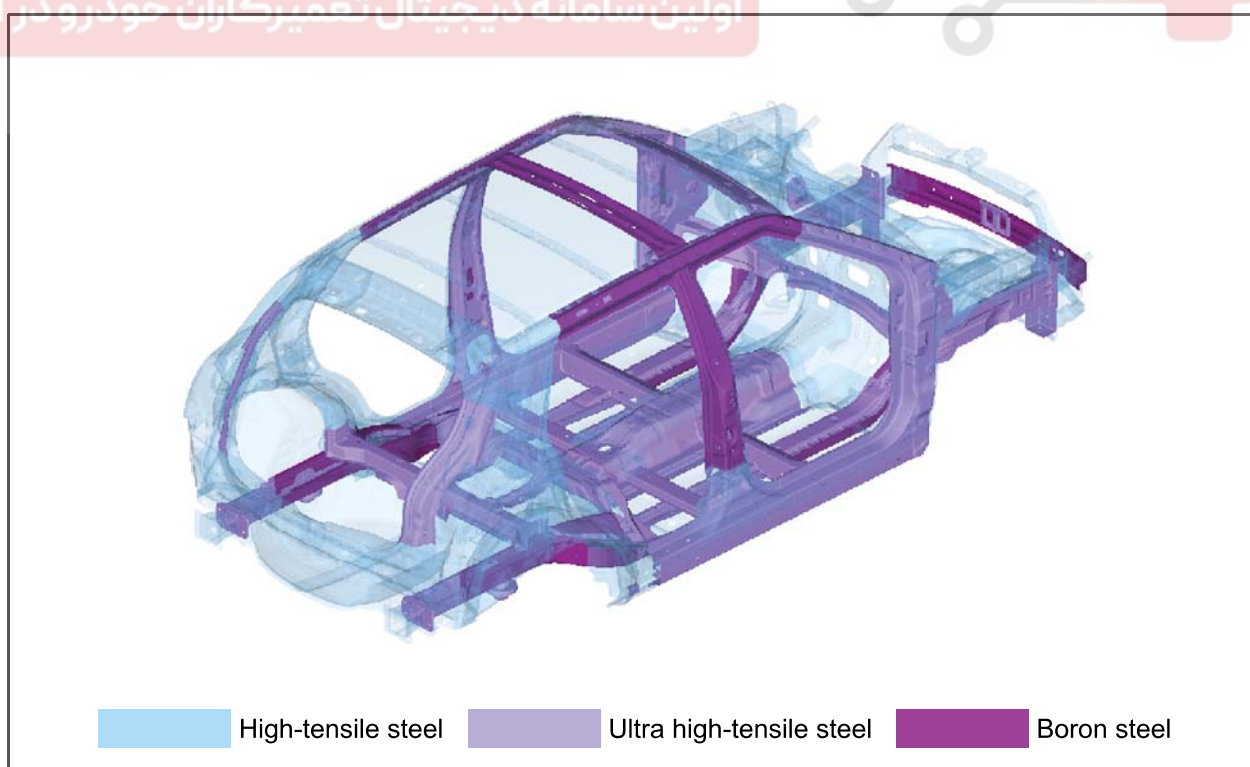
► Rear side (LH)



► Frontal side (RH)



► Rear side (RH)

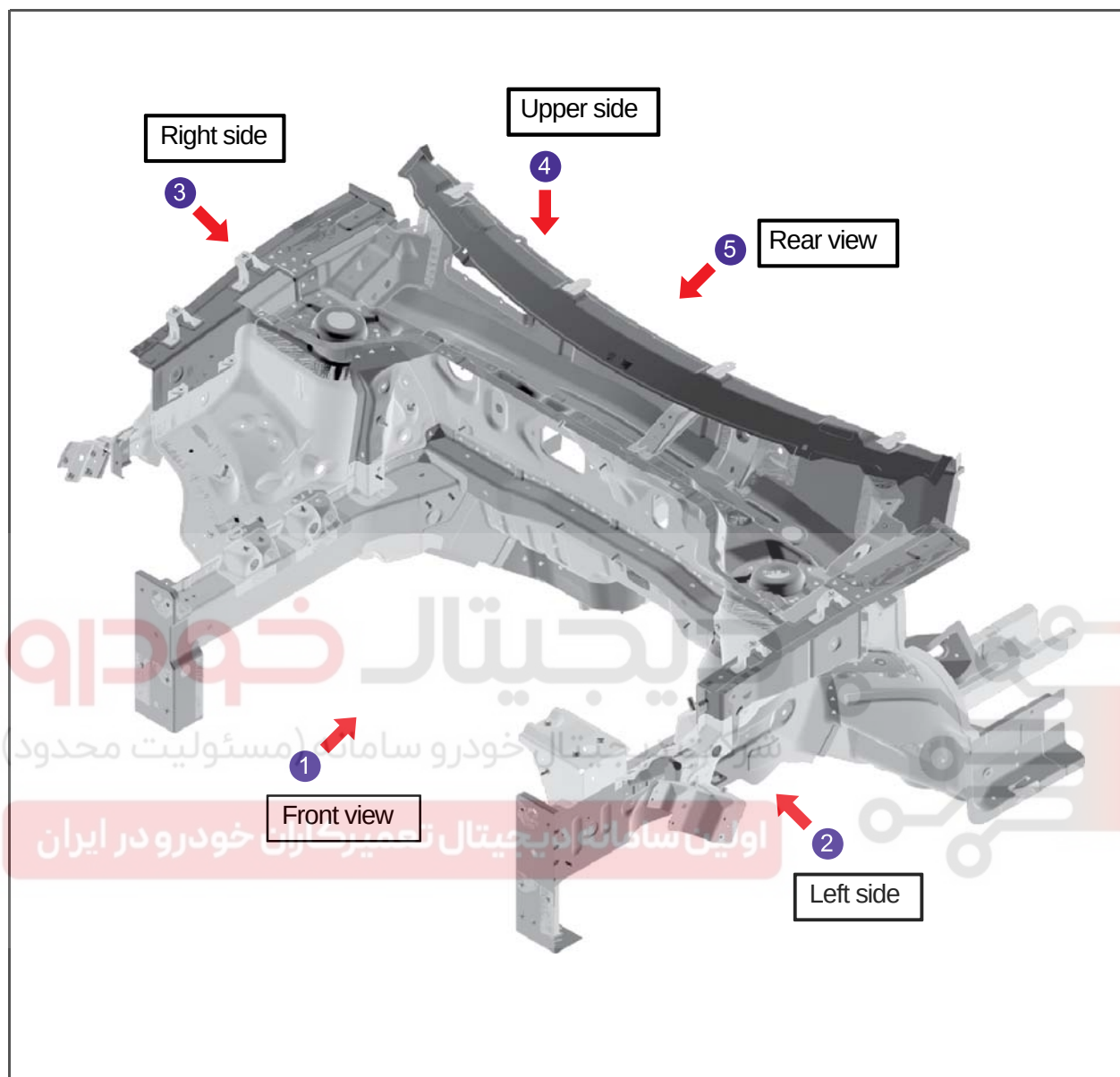


Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

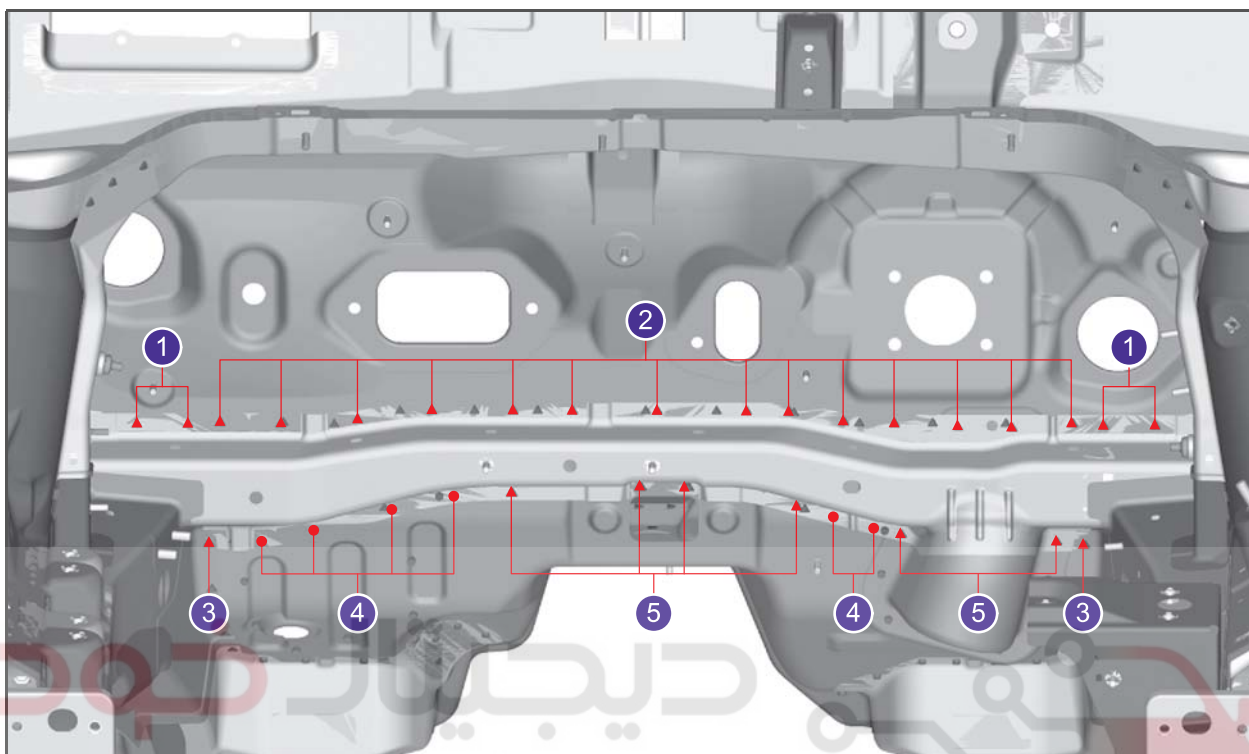
ENGINE COMPARTMENT



1. Front view (Dash panel assembly)
2. Left side (Front H-frame member assembly)
3. Right side (Front H-frame member assembly)
4. Upper side (Cowl panel assembly, Dash panel assembly)
5. Rear view (Dash panel assembly)

1. FRONT VIEW

► Dash panel assembly



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.4	14	10	-	-	-	350	-
2	3	2.9	14	10	-	-	-	350	-
3	3	3.6	14	10	-	-	-	350	-
4	2	2.2	14	10	-	-	-	350	-
5	3	3.1	14	10	-	-	-	350	-
6	3	3.2	14	10	-	-	-	350	-

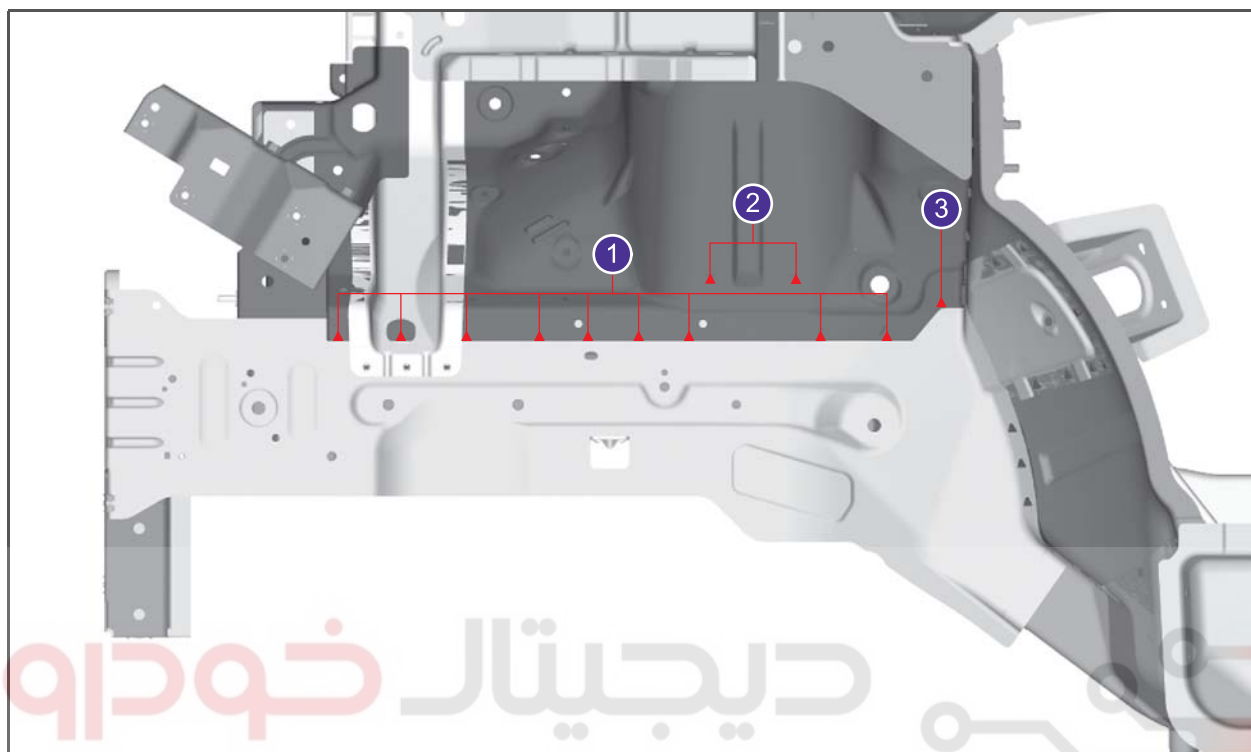
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

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2. LEFT SIDE

► Front H-frame member assembly

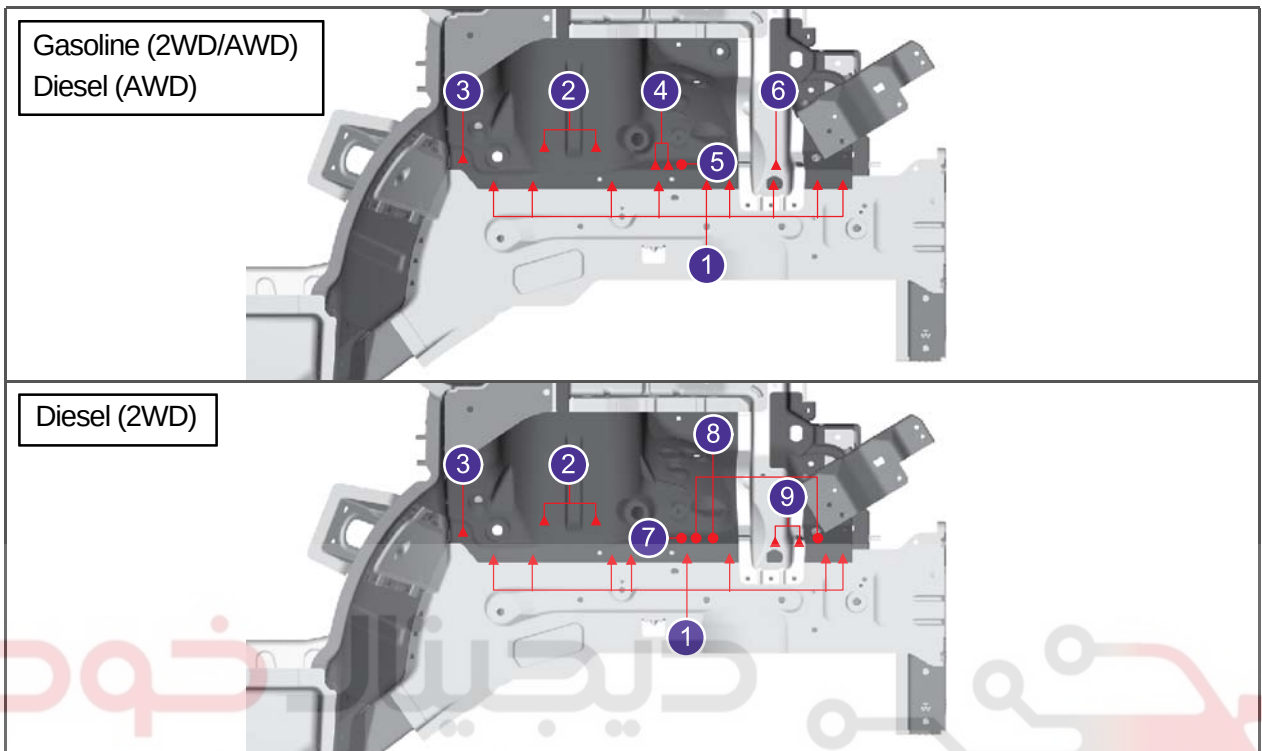


Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.7	14	10	-	-	-	350	-
2	3	3.0	14	10	-	-	-	350	-
3	3	3.5	14	10	-	-	-	350	-

3. RIGHT SIDE

► Front H-frame member assembly



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.7	14	10	-	-	-	350	-
2	3	3.0	14	10	-	-	-	350	-
3	3	3.5	14	10	-	-	-	350	-
4	3	4.9	14	10	-	-	-	350	-
5	2	2.9	14	10	-	-	-	350	-
6	3	4.7	14	10	-	-	-	350	-
7	2	4.0	14	10	-	-	-	350	-
8	2	2.9	14	10	-	-	-	350	-
9	3	4.1	14	10	-	-	-	350	-

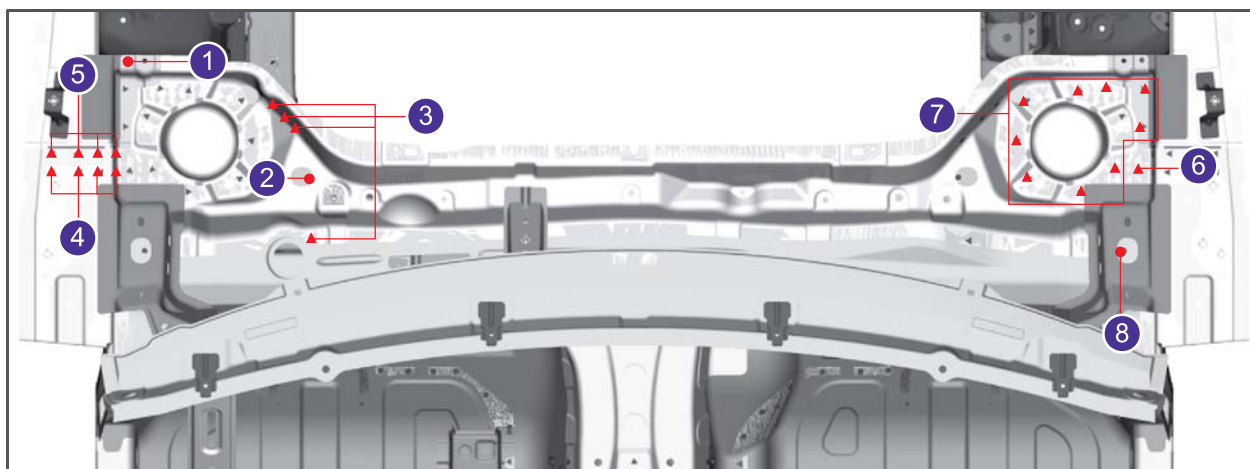
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

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4. UPPER SIDE

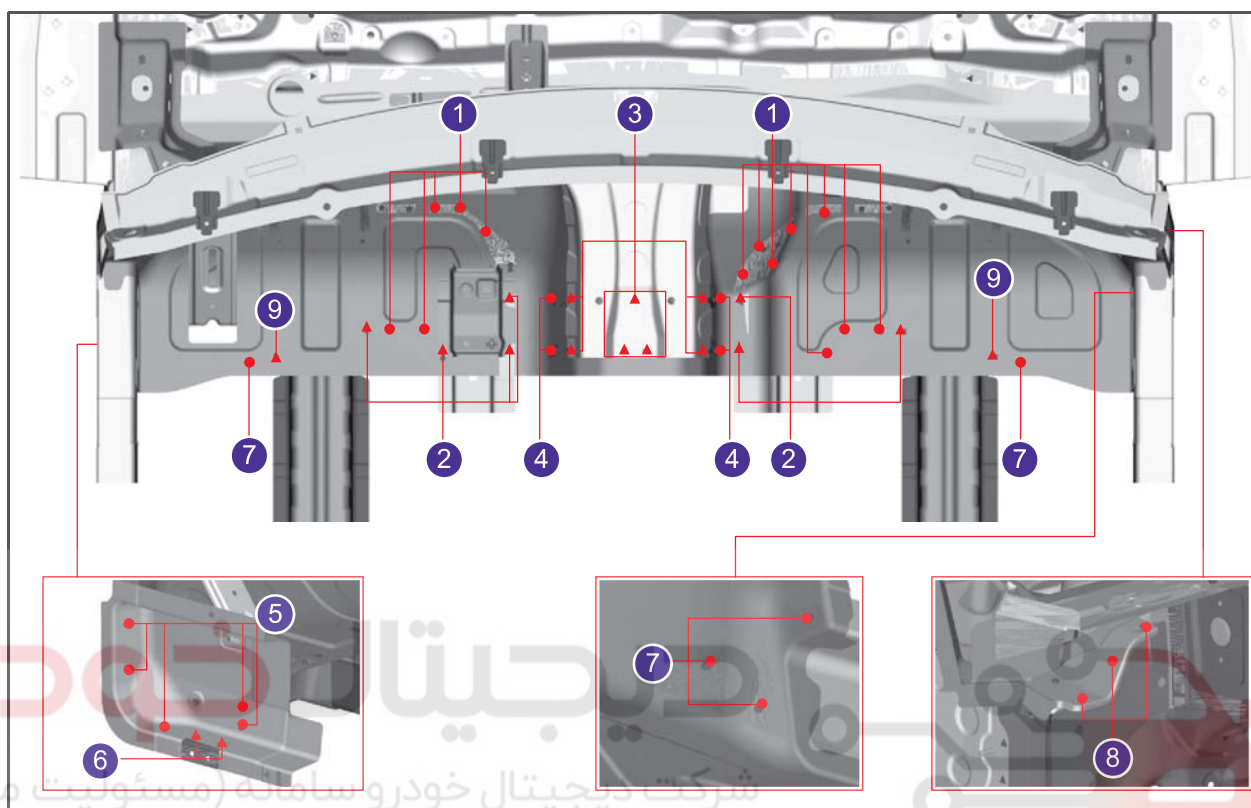
► Cowl panel assembly



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	2.3	14	10	-	-	-	350	-
2	2	1.6	14	10	-	-	-	350	-
3	3	2.3	14	10	-	-	-	350	-
4	3	3.2	14	10	-	-	-	350	-
5	3	2.7	14	10	-	-	-	350	-
6	3	4.2	14	10	-	-	-	350	-
7	3	3.7	14	10	-	-	-	350	-
8	2	3	14	10	-	-	-	350	-

► Dash panel assembly



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	2.8	14	10	-	-	-	350	-
2	3	4.0	14	10	-	-	-	350	-
3	3	3.1	14	10	-	-	-	350	-
4	2	2.2	14	10	-	-	-	350	-
5	2	2.6	14	10	-	-	-	350	-
6	3	4.5	14	10	-	-	-	350	-
7	2	2.4	14	10	-	-	-	350	-
8	2	1.5	14	10	-	-	-	350	-
9	3	3.6	14	10	-	-	-	350	-

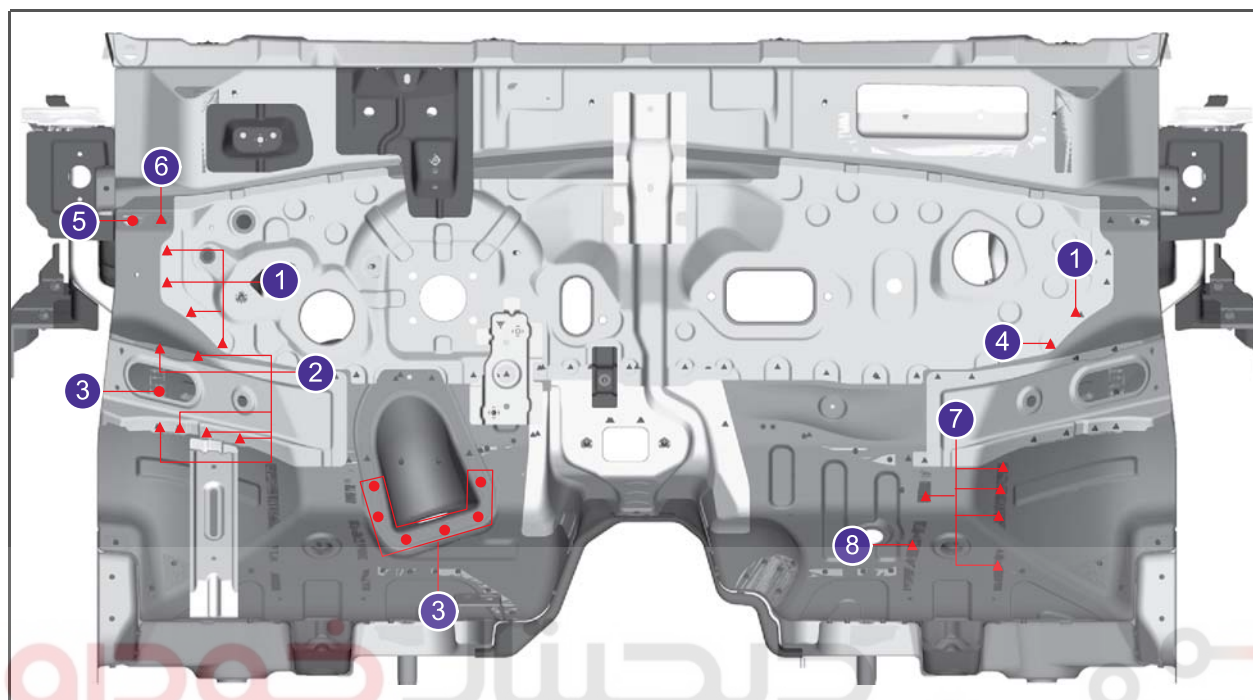
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

5. REAR VIEW

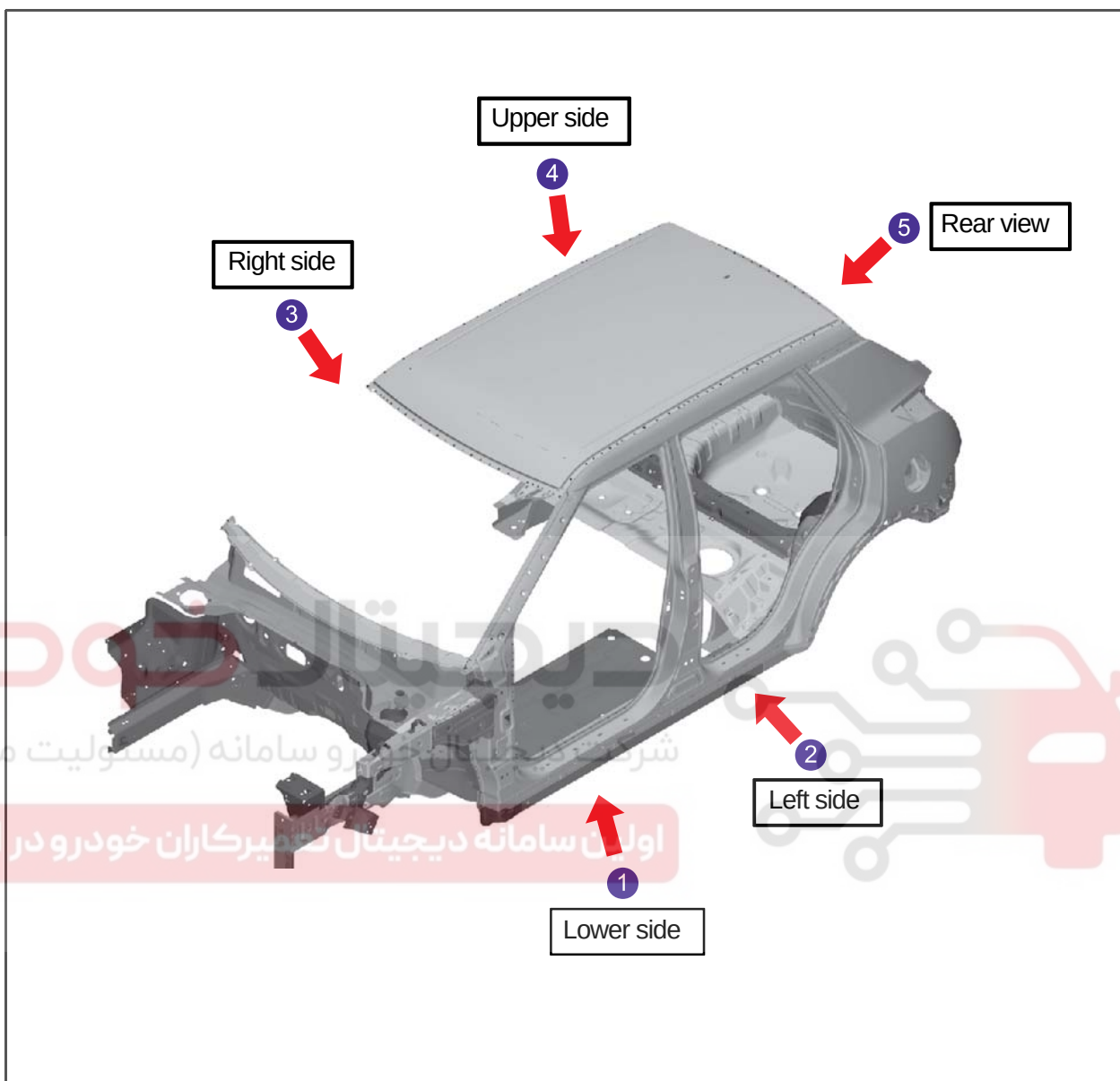
► Dash panel assembly



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.6	14	9.5	-	-	-	350	-
2	3	3.2	14	9.5	-	-	-	350	-
3	2	2.0	14	9.5	-	-	-	350	-
4	3	3.1	14	9.5	-	-	-	350	-
5	2	3.3	14	10	-	-	-	350	-
6	3	4.2	14	10	-	-	-	350	-
7	3	3.6	14	10	-	-	-	350	-
8	3	4.0	14	10	-	-	-	350	-

MAIN BODY



1. Lower side (Front roof rail, roof panel)
2. Left side (lower part of A-pillar, fender apron panel, lower part of side seal, quarter panel)
3. Right side (cowl side panel, upper part of side seal, upper part of cowl side panel, quarter inner & wheelhouse panel)
4. Upper side (rear roof rail, rear roof panel)
5. Rear side (D-pillar, outer pillar complete)

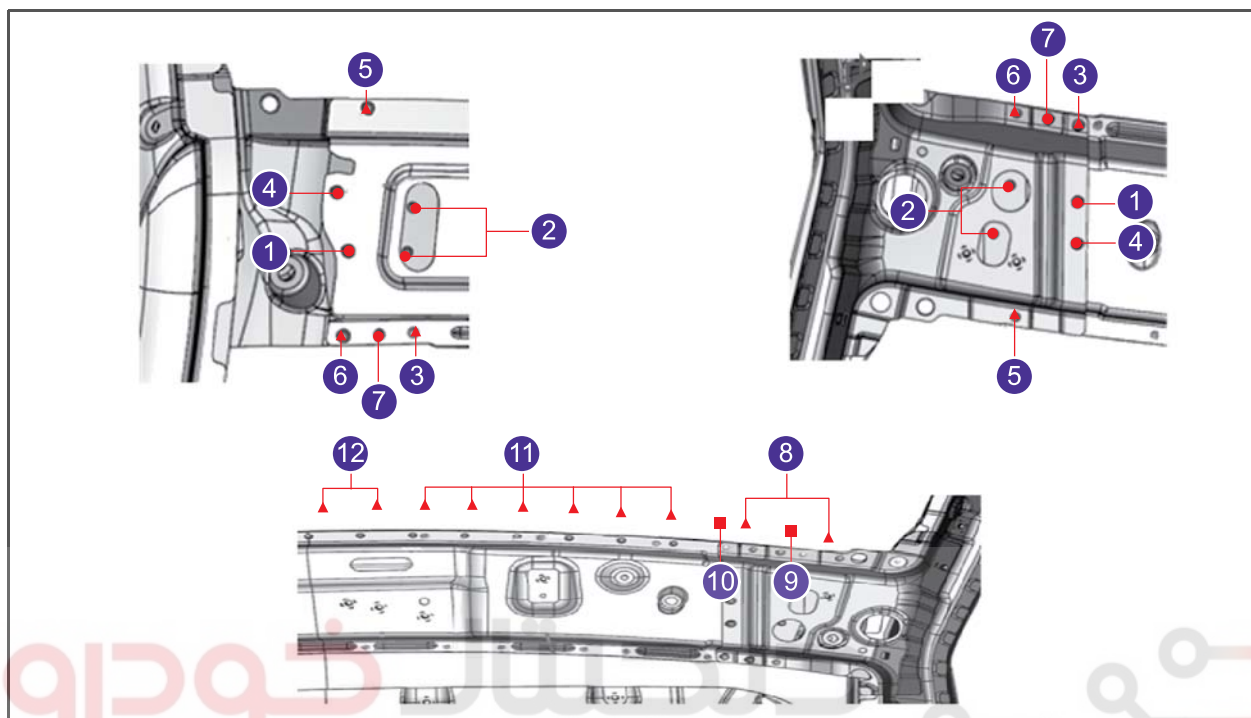
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

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1. LOWER SIDE

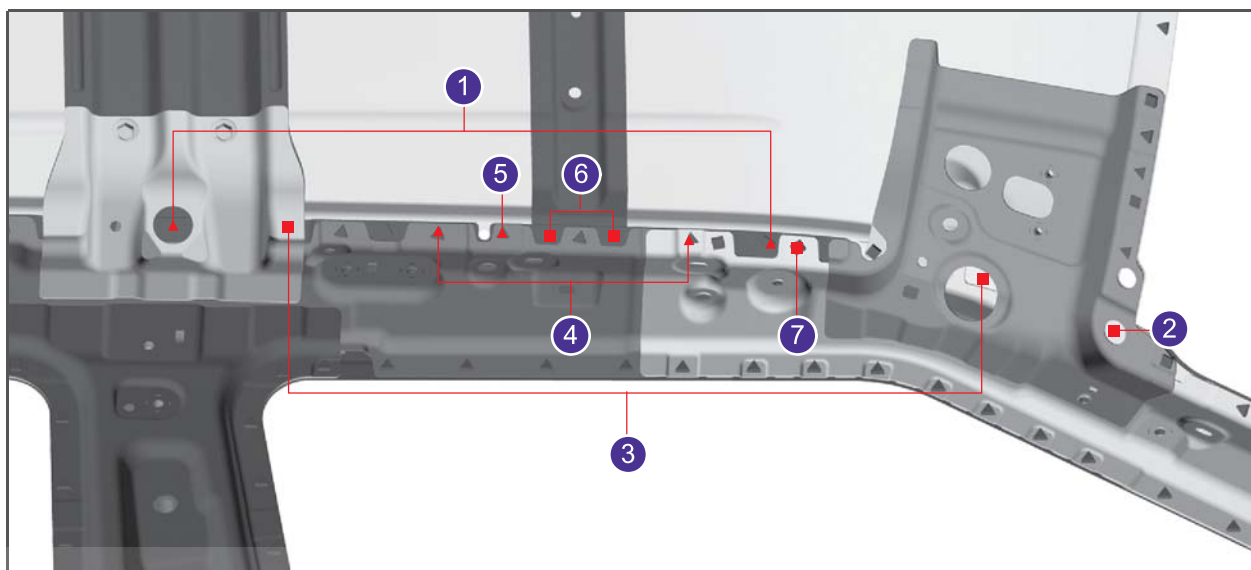
► Front roof rail



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.4	6	5.5	8	12	7.2	350	-
2	2	1.8	6	5.5	8	12	7.2	350	-
3	3	2.5	6	5.5	8	12	7.2	350	-
4	2	1.4	6	5.8	8	12	7.8	280	-
5	3	2.4	6	5.8	8	12	7.8	280	-
6	3	2.4	20	7	-	-	-	250	-
7	2	1.7	20	7	-	-	-	250	-
8	3	2.45	6	6	8	12	8	290	-
9	4	3.15	6	6	8	12	9	320	-
10	4	3.25	6	6	8	12	8	290	-
11	3	2.25	6	6	8	12	8	290	-
12	3	2.25	20	7.3	-	-	-	250	-

► Front roof panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.65	20	7.3	-	-	-	250	-
2	4	3.85	21	7.8	-	-	-	250	-
3	4	3.85	21	8	-	-	-	320	-
4	3	2.65	21	8	-	-	-	320	-
5	3	2.45	21	8	-	-	-	320	-
6	4	3.35	21	8	-	-	-	320	-
7	4	3.65	21	8	-	-	-	320	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

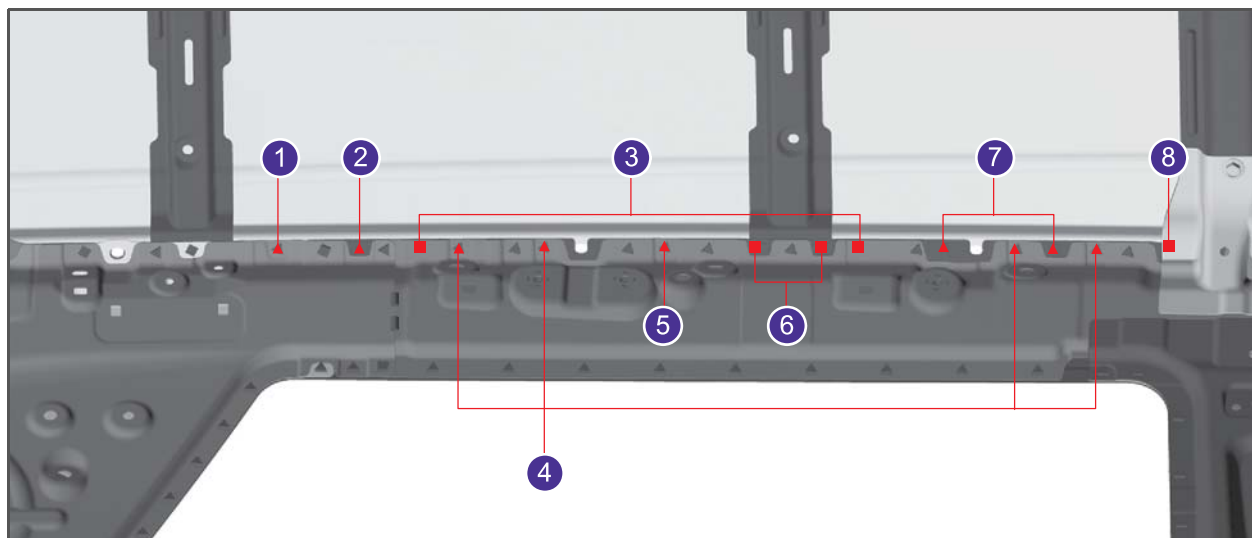
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T I V O L I

► Center roof panel



Panel layers: ● double, ▲ triple, ■ quadruple

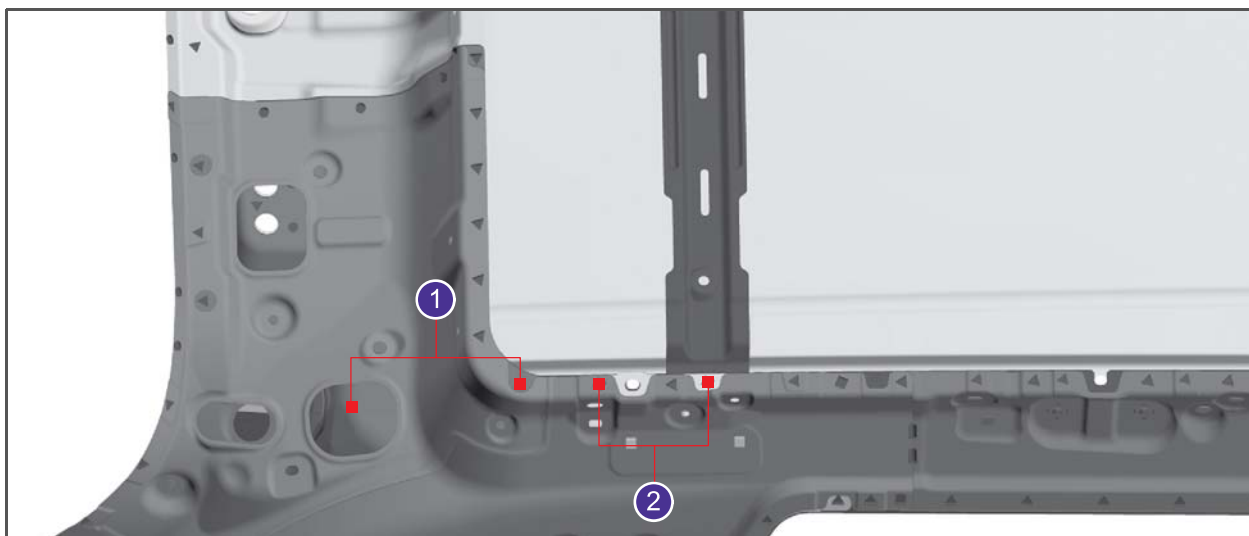
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	21.5	21	8	-	-	-	290	-
2	3	2.65	20	7.3	-	-	-	250	-
3	4	3.65	21	8	-	-	-	320	-
4	3	2.45	21	8	-	-	-	320	-
5	3	2.95	20	7.3	-	-	-	3250	-
6	4	3.35	21	8	-	-	-	320	-
7	3	2.65	21	8	-	-	-	320	-
8	4	3.85	21	8	-	-	-	320	-

BODY WELDING

TIVOLI 2015.03

Modification basis	
Application basis	
Affected VIN	

► Rear roof panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	4	3.35	22	8	-	-	-	320	-
2	4	2.85	22	8	-	-	-	320	-

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

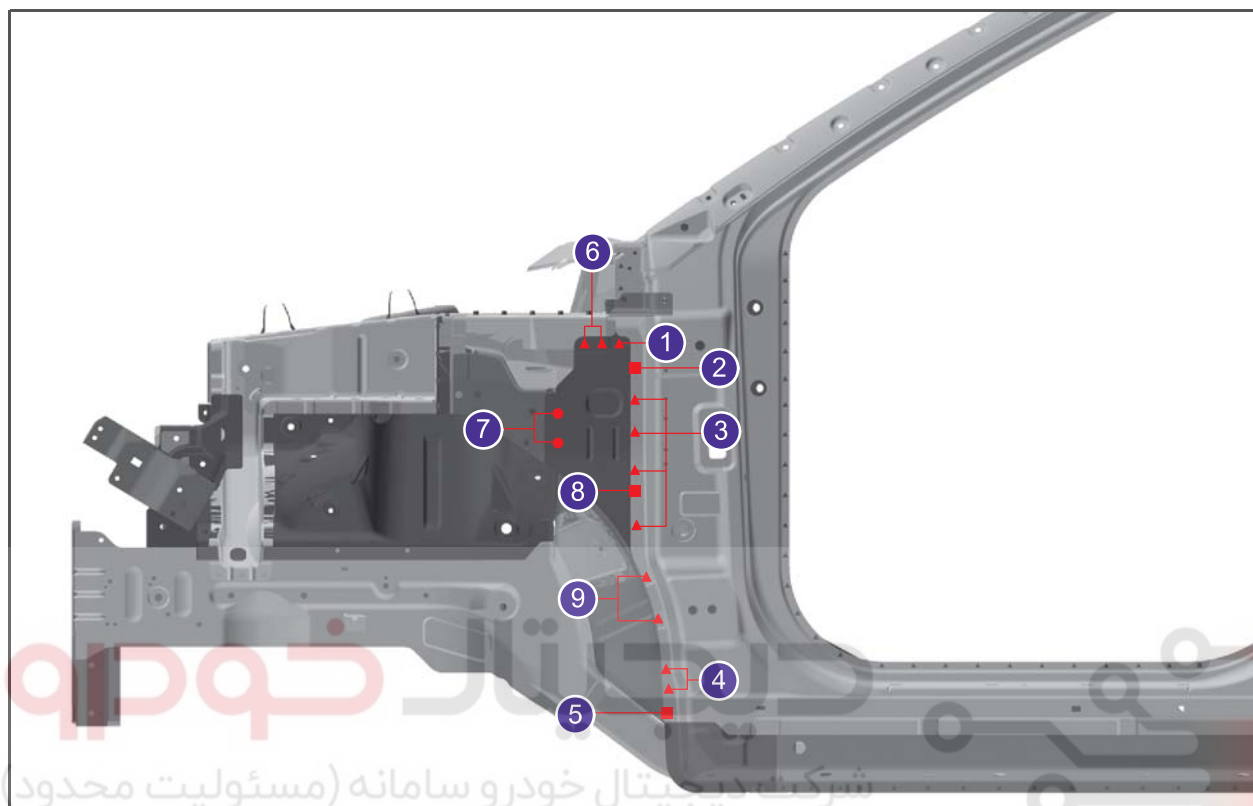
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

2. LEFT SIDE

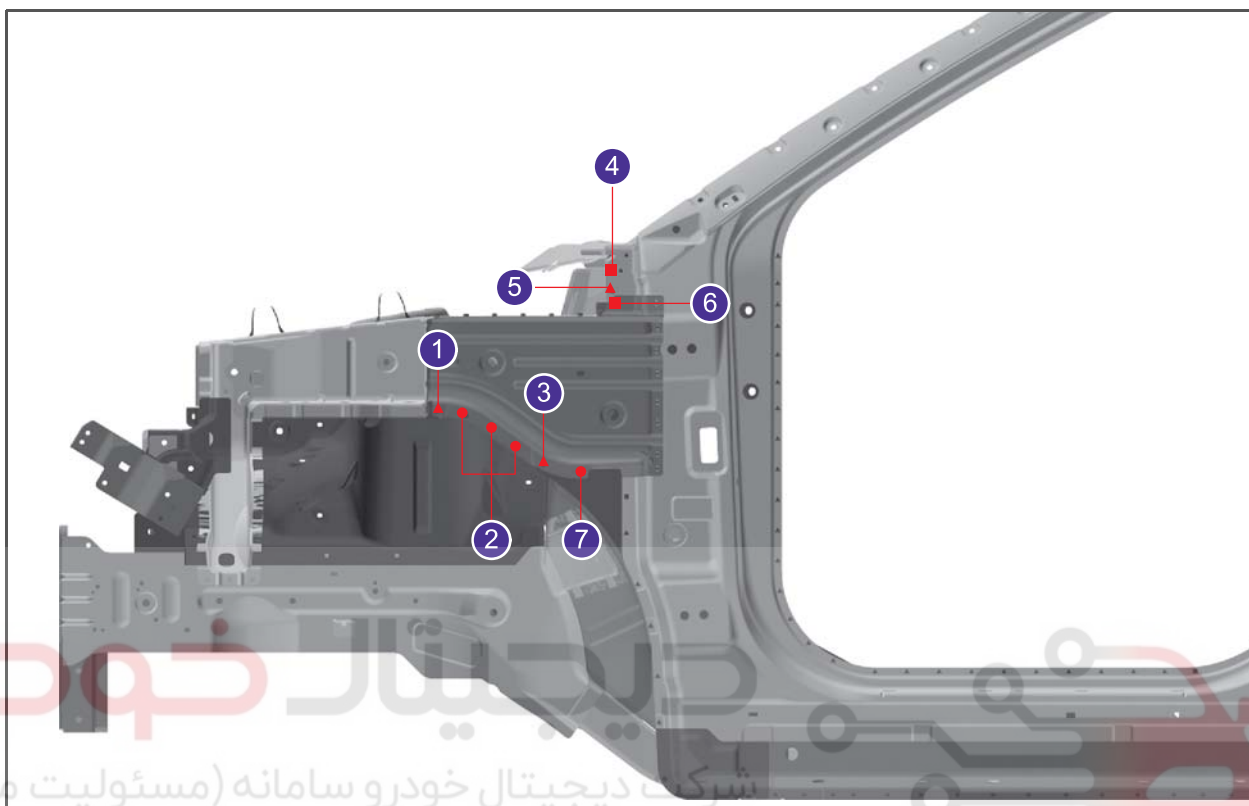
► Lower side of A-pillar (Before cowl upper member assembly)



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.6	6	6	8	12	8	280	-
2	4	3.8	7	8	8	14	10	300	-
3	3	3.1	7	8	8	14	10	300	-
4	3	3.1	6	8	8	14	10	300	-
5	4	4.3	6	8	8	14	10	300	-
6	3	3.6	6	6	8	12	8	260	-
7	2	2.0	6	6	8	12	8	260	-
8	4	4.1	20	7.3	-	-	-	200	-
9	3	2.9	22	7.8	-	-	-	200	-

► Lower side of A-pillar (After cowl upper member assembly)



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.7	6	5.8	8	12	8	260	-
2	2	2.0	6	5.5	8	12	7.5	260	-
3	3	3.2	6	5.8	8	12	8	260	-
4	4	4.1	6	5.8	8	12	8.8	260	-
5	3	3.1	6	5.8	8	12	8.8	260	-
6	4	4.7	6	5.8	8	12	8.8	260	-
7	2	2.4	20	7.3	-	-	-	200	-

Modification basis	
Application basis	
Affected VIN	

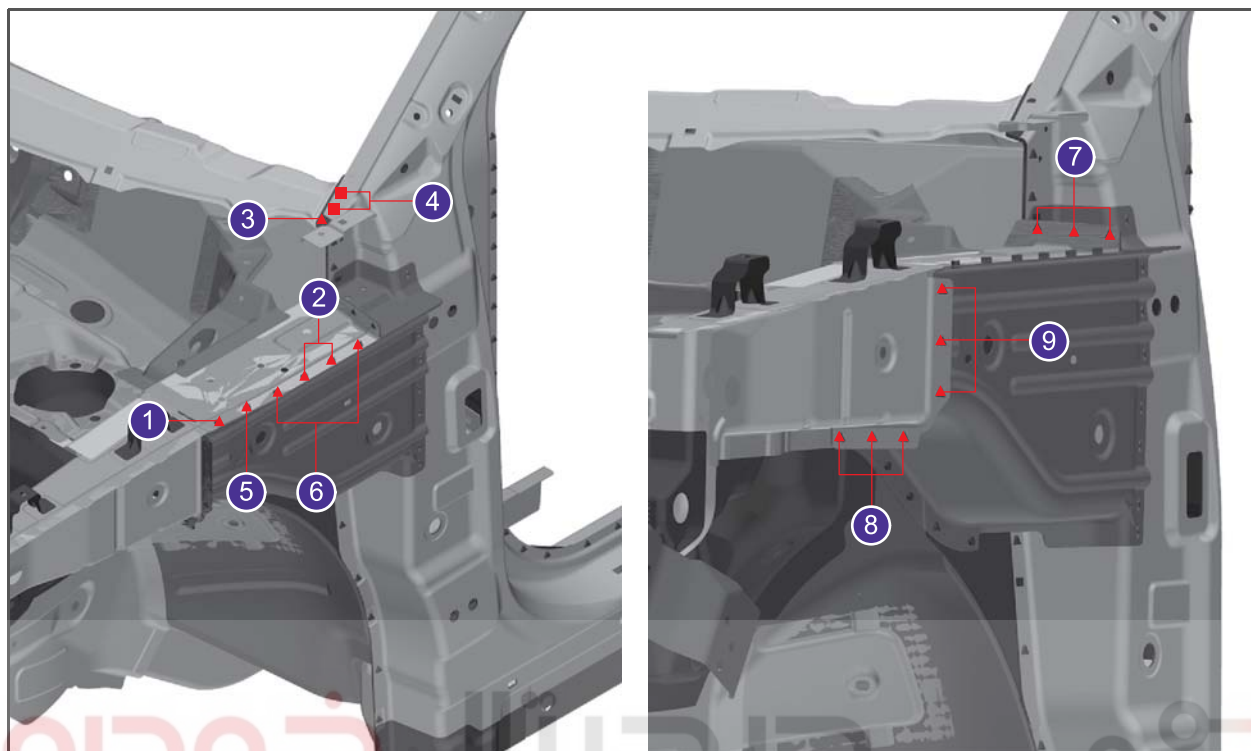
BODY WELDING

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08-24 0000-00

T I V O L I

► Fender apron panel



Panel layers: ● double, ▲ triple, ■ quadruple

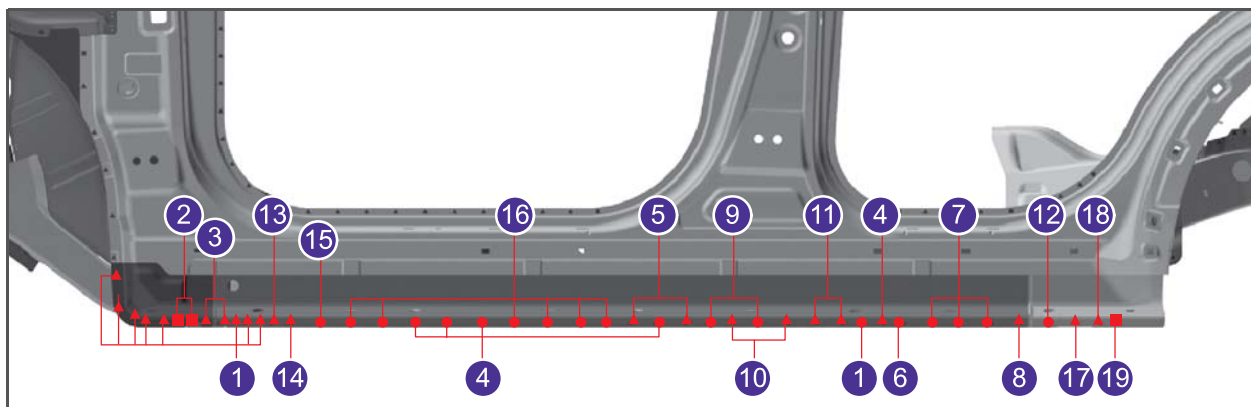
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.2	6	6	8	12	8	260	-
2	3	3.6	6	6	8	12	8	260	-
3	3	3.1	6	6	8	12	8	260	-
4	4	3.8	6	6	8	12	8	260	-
5	3	3.6	8	6	8	14	11	320	-
6	3	3.6	8	6	3	8	8	290	-
7	3	4.0	22	7.5	-	-	-	250	-
8	3	2.8	22	7.5	-	-	-	250	-
9	3	2.7	22	7.5	-	-	-	250	-

BODY WELDING

TIVOLI 2015.03

Modification basis	
Application basis	
Affected VIN	

► Lower side of side seal



Panel layers: ● double, ▲ triple, ■ quadruple

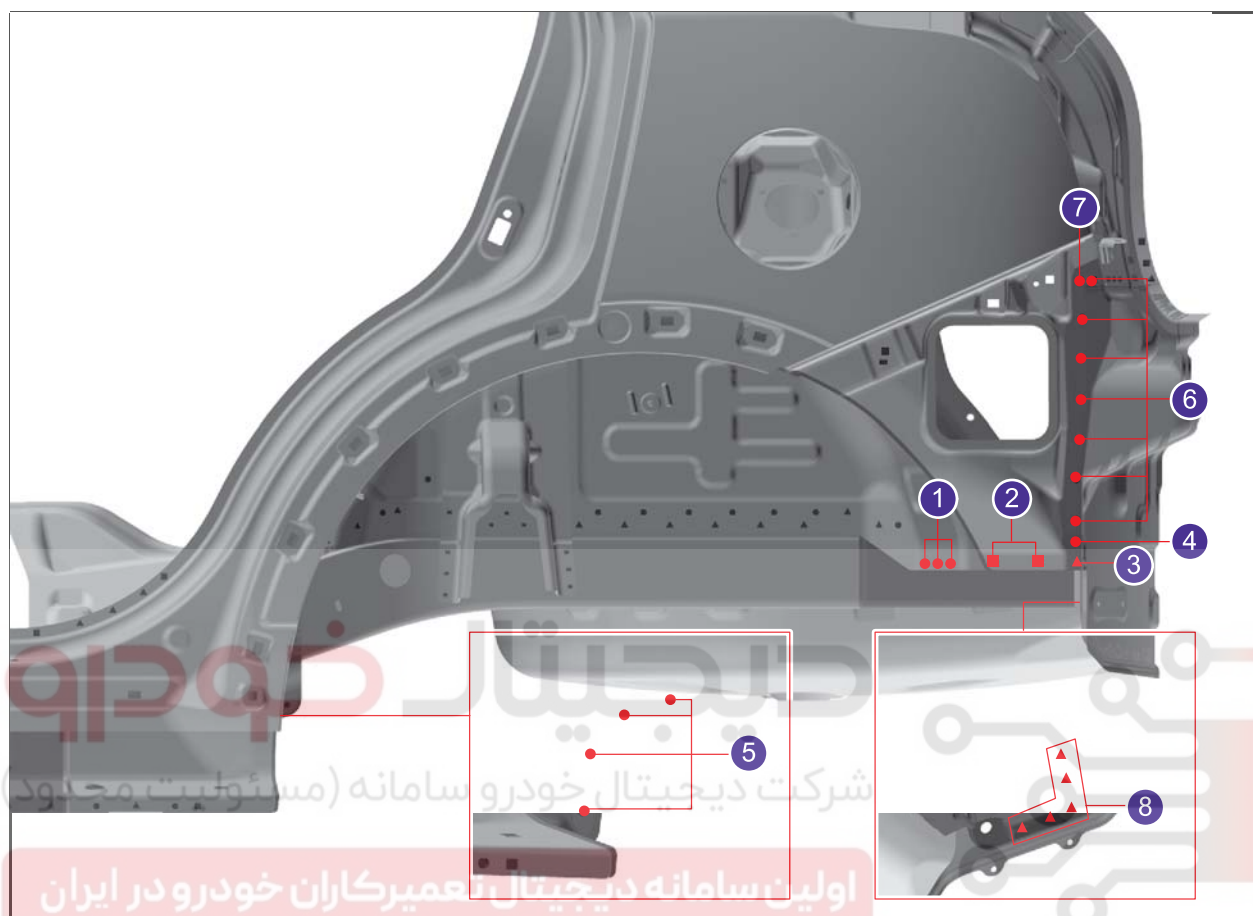
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.6	14	11	-	-	-	350	-
2	4	4.8	7	8	5	12	10	350	-
3	3	4.0	14	11	-	-	-	350	-
4	3	2.4	14	10	-	-	-	350	-
5	3	3.4	14	11	-	-	-	350	-
6	2	2.2	14	10	-	-	-	350	-
7	2	2.6	14	10	-	-	-	350	-
8	3	3.8	14	11	-	-	-	350	-
9	2	2.4	6	4	8	10	7.2	280	-
10	3	3.4	6	5.8	8	14	9	280	-
11	3	3.6	6	5.8	8	14	9	280	-
12	2	2.6	6	4	8	10	7.2	280	-
13	3	3.6	22	7.7	-	-	-	250	-
14	3	3.6	22	7.5	-	-	-	250	-
15	2	2.4	22	7.5	-	-	-	250	-
16	2	2.4	22	7.3	-	-	-	200	-
17	3	4.2	14	11	-	-	-	350	-
18	3	3.25	14	10	-	-	-	350	-
19	4	4.25	7	8	5	14	10	350	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

► Quarter side panel

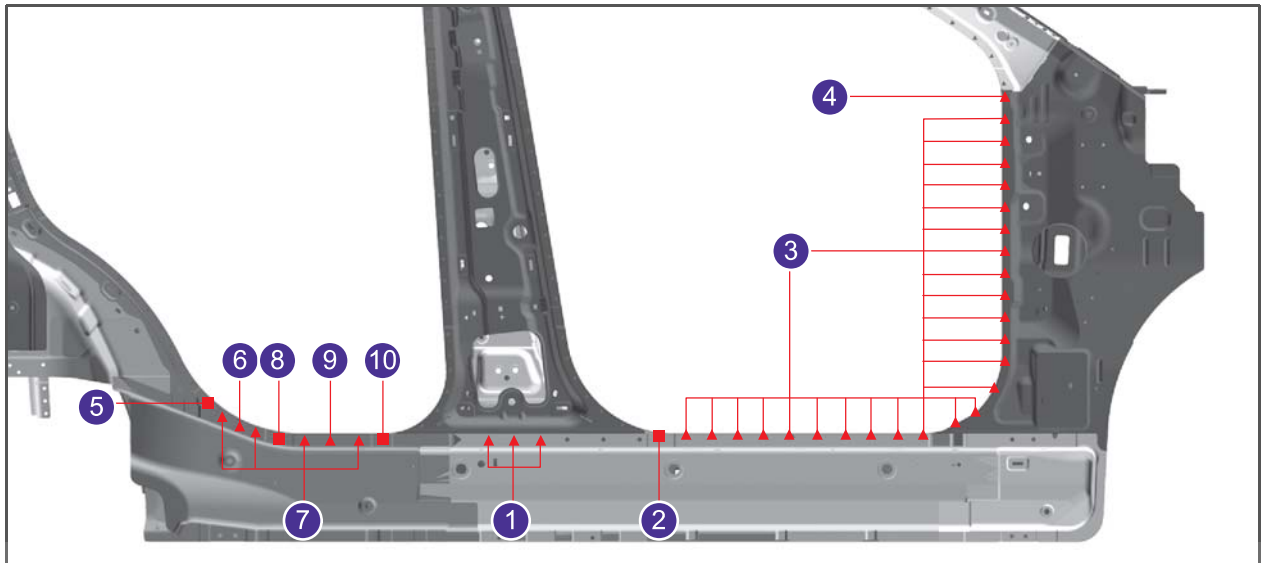


Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.45	14	10	-	-	-	350	-
2	4	2.8	7	8	5	14	10	350	-
3	3	2.0	14	10	-	-	-	350	-
4	2	1.35	14	10	-	-	-	350	-
5	2	2.4	14	11	-	-	-	350	-
6	2	1.35	22	7.7	-	-	-	320	-
7	3	2.05	22	7.7	-	-	-	320	-
8	3	3.25	14	11	-	-	-	350	-

3. RIGHT SIDE

► Upper part of cowl side panel & side seal



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.6	6	5.8	8	12	7.8	280	-
2	4	4.3	6	6	8	12	9	320	-
3	3	3.1	6	6	8	12	8	290	-
4	3	3.1	6	5.8	8	12	7.8	350	-
5	4	3.95	22	8	-	-	-	320	-
6	3	3.3	22	8	-	-	-	260	-
7	3	3.3	6	6	8	10	8	350	-
8	4	5.2	6	7	8	12	9	300	-
9	3	3.3	6	7	8	12	9	300	-
10	4	4.7	6	7	8	12	9	300	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

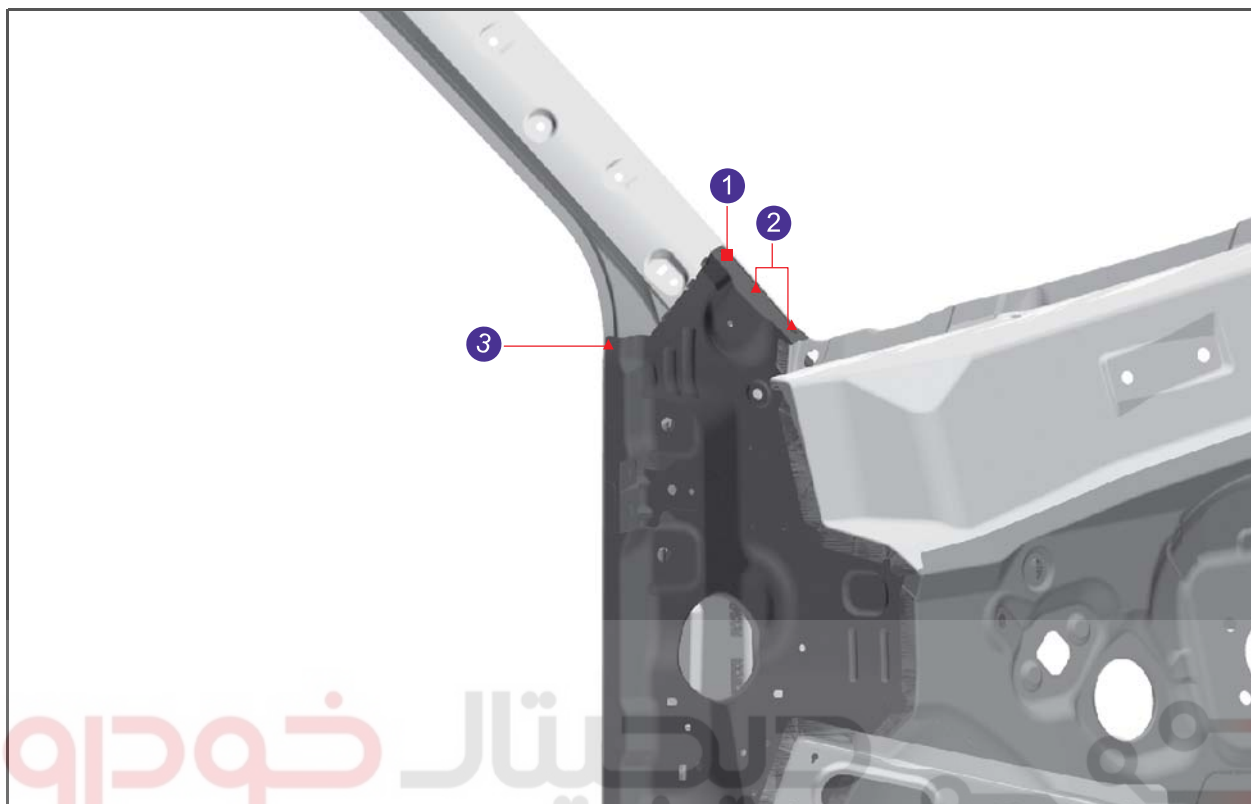
TIVOLI 2015.03

08-28

0000-00

T I V O L I

► Upper part of cowl side panel



(Panel layers: ● double, ▲ triple, ■ quadruple)

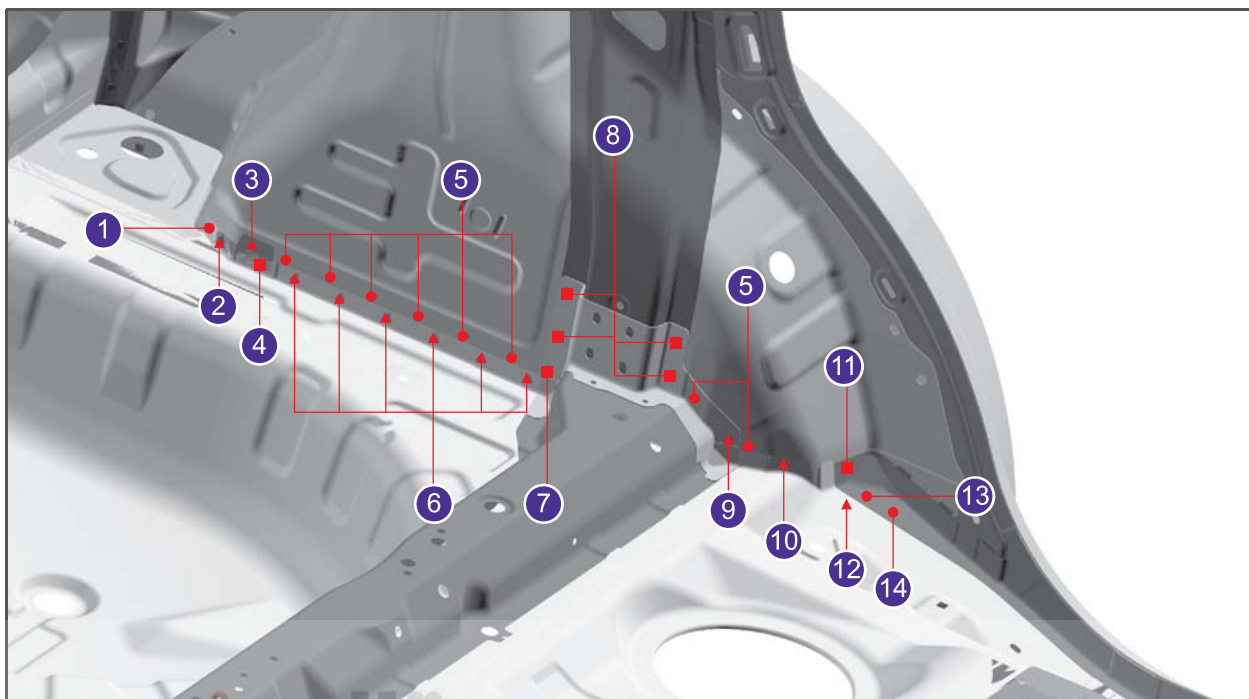
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	4	4.3	6	6	8	14	10	350	-
2	3	3.1	6	6	8	14	10	350	-
3	3	3.1	6	6	8	12	8	350	-

BODY WELDING

TIVOLI 2015.03

Modification basis	
Application basis	
Affected VIN	

► Quarter inner & wheelhouse panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.5	21	7.8	-	-	-	340	-
2	3	2.9	21	7.8	-	-	-	340	-
3	3	3.4	21	7.8	-	-	-	340	-
4	4	4.1	21	7.8	-	-	-	340	-
5	2	2.0	21	7.8	-	-	-	340	-
6	3	2.7	21	7.8	-	-	-	340	-
7	5	5.9	21	7.8	-	-	-	340	-
8	4	5.2	21	7.8	-	-	-	340	-
9	3	3.2	21	7.8	-	-	-	340	-
10	3	2.65	21	7.8	-	-	-	340	-
11	4	4.25	22	7.7	-	-	-	320	-
12	3	3.2	22	7.7	-	-	-	320	-
13	2	2.4	22	7.7	-	-	-	320	-
14	2	2.4	22	7.8	-	-	-	300	-

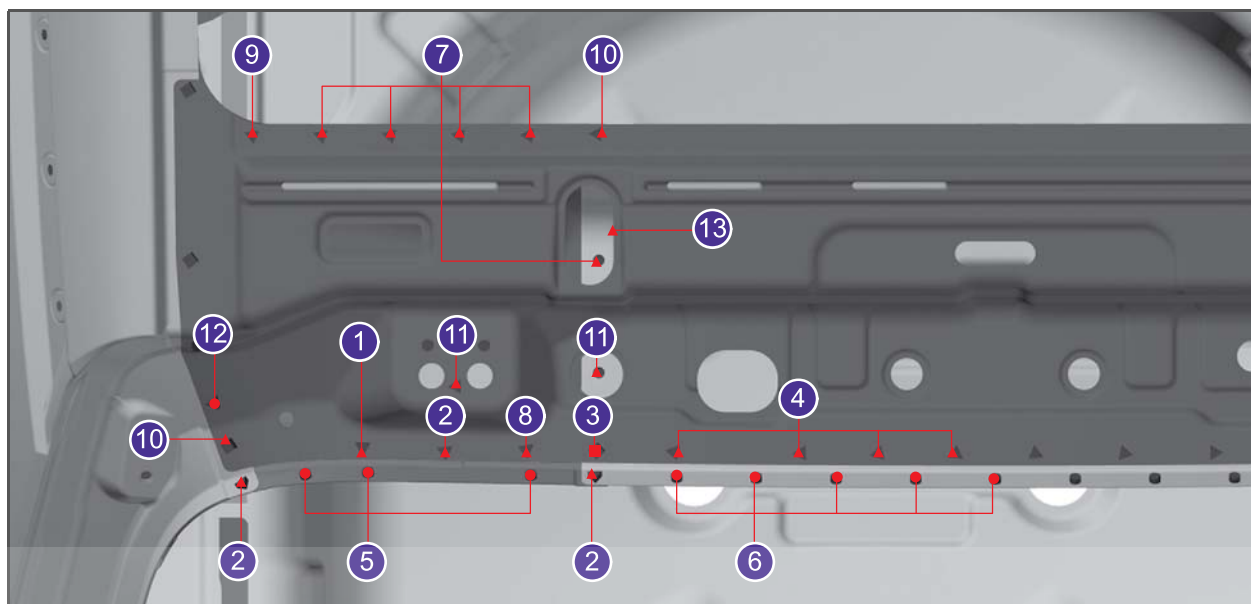
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

4. UPPER SIDE

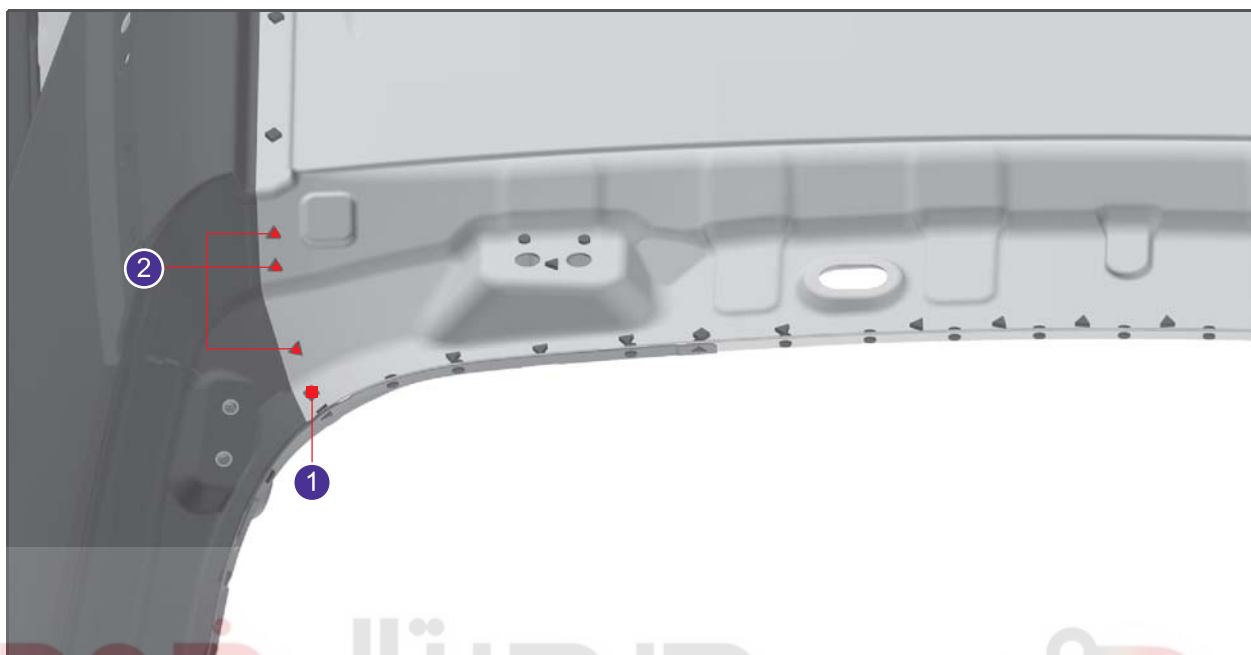
► Rear roof rail



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.65	6	6	8	10	8	350	-
2	3	2.25	6	6	8	10	8	350	-
3	4	2.95	6	5	8	10	9	350	-
4	3	2.15	6	5	8	10	9	350	-
5	2	1.55	6	6	8	12	8	350	-
6	2	1.45	6	6	8	12	8	350	-
7	3	2.7	20	7.3	-	-	-	250	-
8	3	2.65	20	7.3	-	-	-	250	-
9	3	2.7	6	6	8	12	10	350	-
10	3	2.6	6	6	8	12	10	350	-
11	3	2.7	6	6	8	10	9	350	-
12	2	1.9	6	6	8	12	10	350	-
13	3	2.7	6	6	8	12	8	280	-
14	3	2.65	22	7.8	-	-	-	320	-

► Rear roof panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	4	3.35	22	7.8	-	-	-	300	-
2	3	2.15	22	7.8	-	-	-	300	-

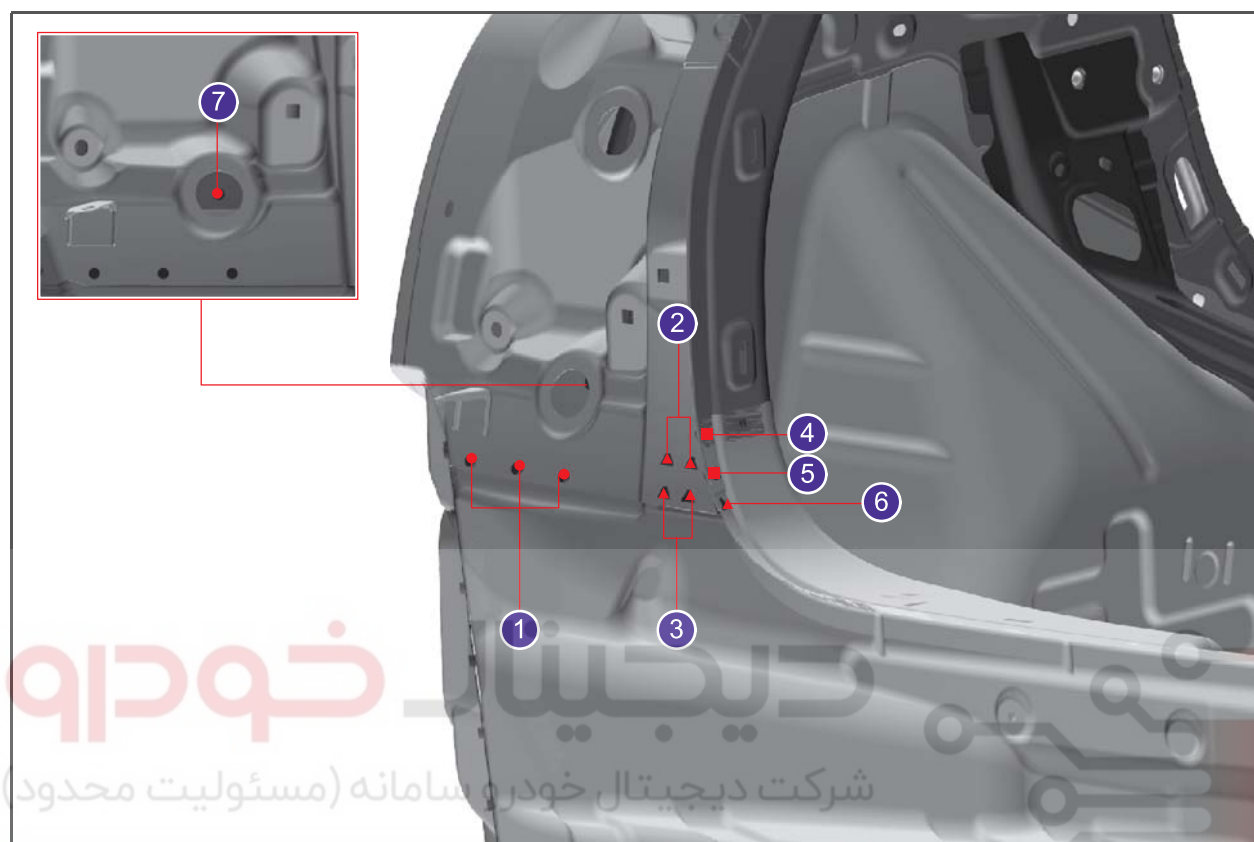
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

5. REAR VIEW

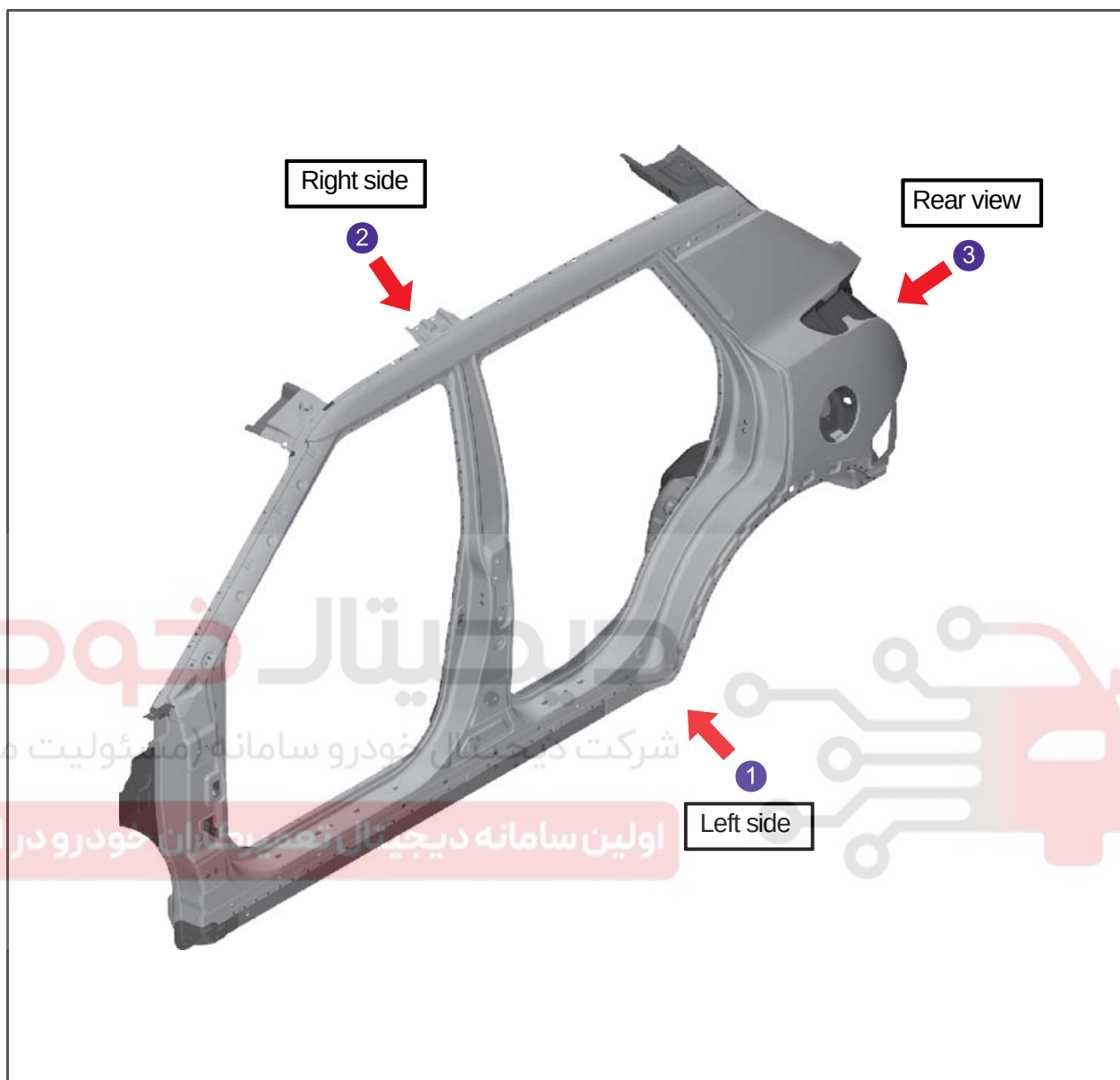
► D-pillar, outer pillar complete



اولین سامانه دیجیتال تعمیرکاران خودرو در ایران
 Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.35	6	6	8	12	10	350	-
2	3	2.05	21	8	-	-	-	320	-
3	3	2.0	21	8	-	-	-	320	-
4	4	3.1	6	6	8	12	10	350	-
5	4	3.1	6	7	8	12	9	300	-
6	3	2.35	6	7	8	12	9	300	-
7	2	1.7	20	7	-	-	-	290	-

SIDE BODY



1. Left side (rear wheelhouse side panel, tail lamp side panel)
2. Right side (lower part of A-pillar, side seal, A-pillar side panel, front side panel, rear door side panel, rear side panel)
3. Rear view (tailgate side panel)

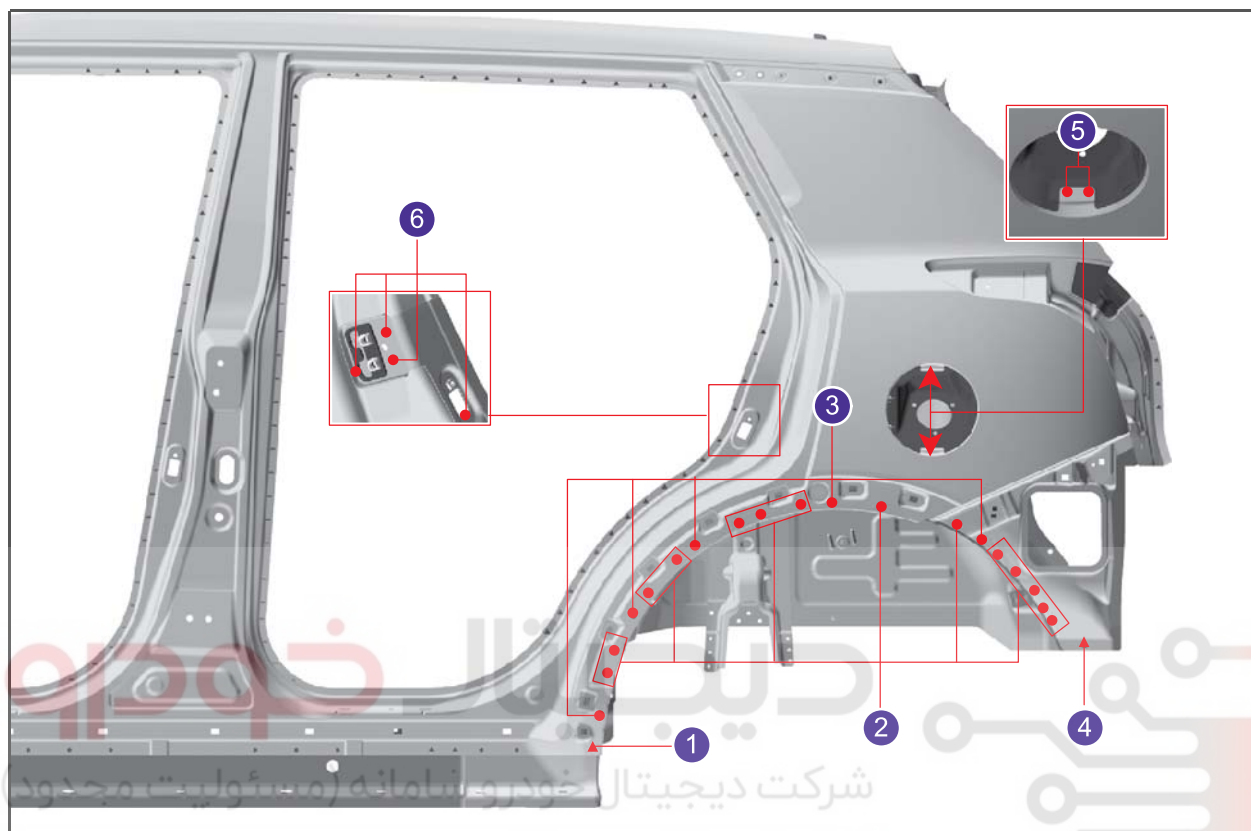
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

1. LEFT SIDE

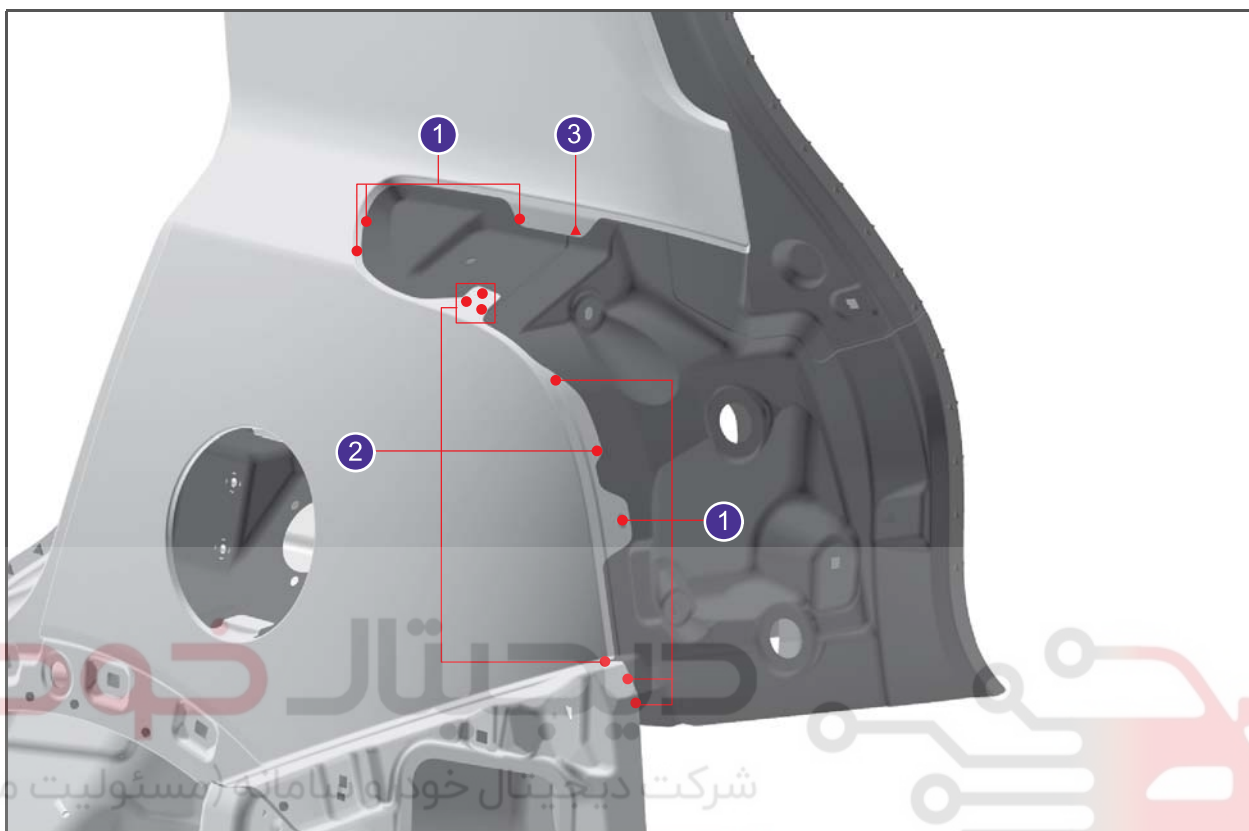
► Rear wheelhouse side panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.55	7	6.5	8	16	8.9	280	-
2	2	1.35	7	6.5	8	16	8.9	280	-
3	2	1.35	7	6.8	2	16	8.9	280	-
4	3	2.15	7	6.8	2	16	8.9	280	-
5	2	1.4	7	6.8	2	16	8.9	250	-
6	2	1.7	6	6.5	2	16	8.7	280	-

► Tail lamp side panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.4	7	6.8	2	16	8.9	280	-
2	2	1.4	7	6.8	2	16	8.9	250	-
3	3	2.1	7	6.8	2	16	8.9	280	-

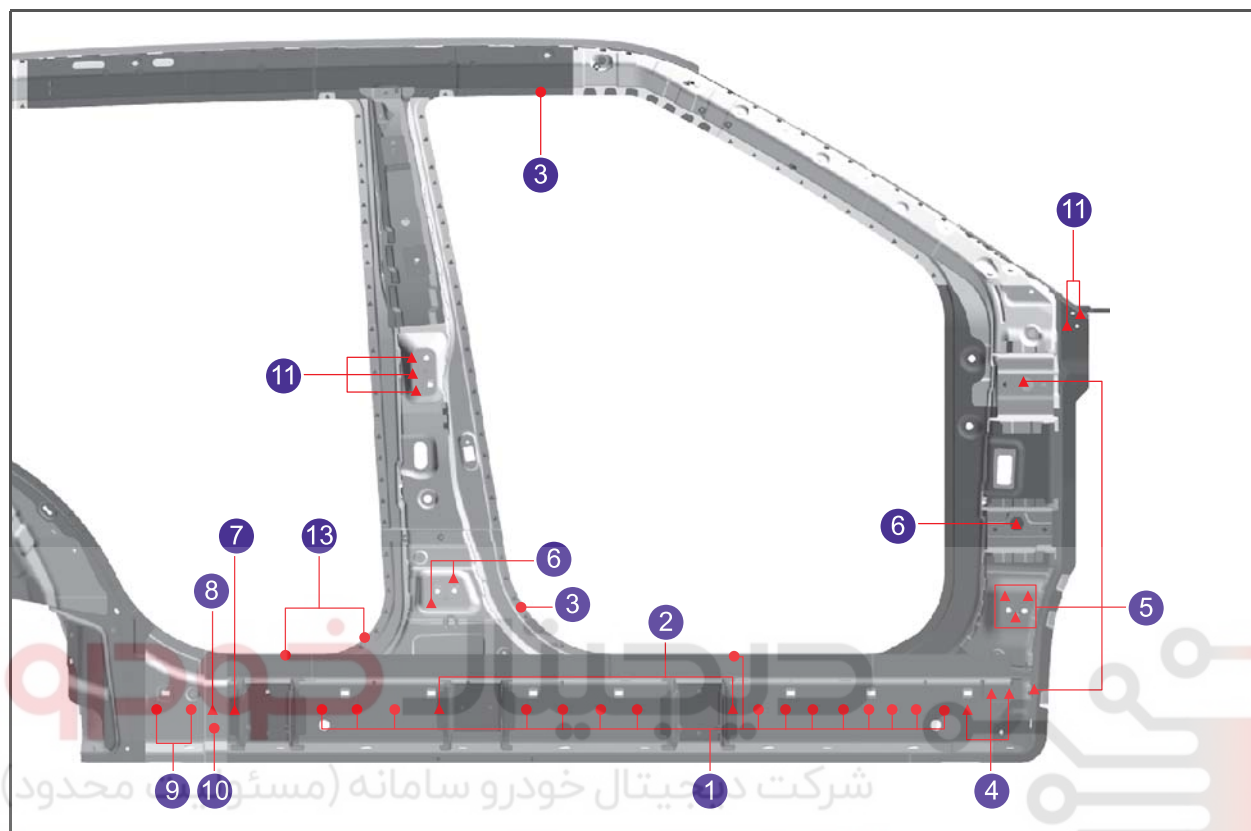
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

2. RIGHT SIDE

► Lower part of A-pillar on side panel, side seal



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.9	7	6.8	2	16	8.9	280	-
2	3	2.6	7	6.8	2	16	8.9	280	-
3	2	1.9	7	7	3	17	9.1	280	-
4	3	2.1	7	6.8	2	16	8.9	280	-
5	3	3.1	7	6.8	2	16	8.9	280	-
6	3	2.9	7	6.8	2	16	8.9	280	-
7	3	2.6	7	6.5	8	14	8.9	326	-

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
8	3	3.1	7	6.5	8	14	8.9	326	-
9	2	1.9	7	6.5	8	14	8.9	326	-
10	2	2.4	7	6.5	8	14	8.9	326	-
11	3	2.9	7	7	3	17	9.1	280	-
12	3	2.9	6	6.5	2	16	8.7	280	-
13	3	1.9	7	7	3	17	9.1	280	-

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

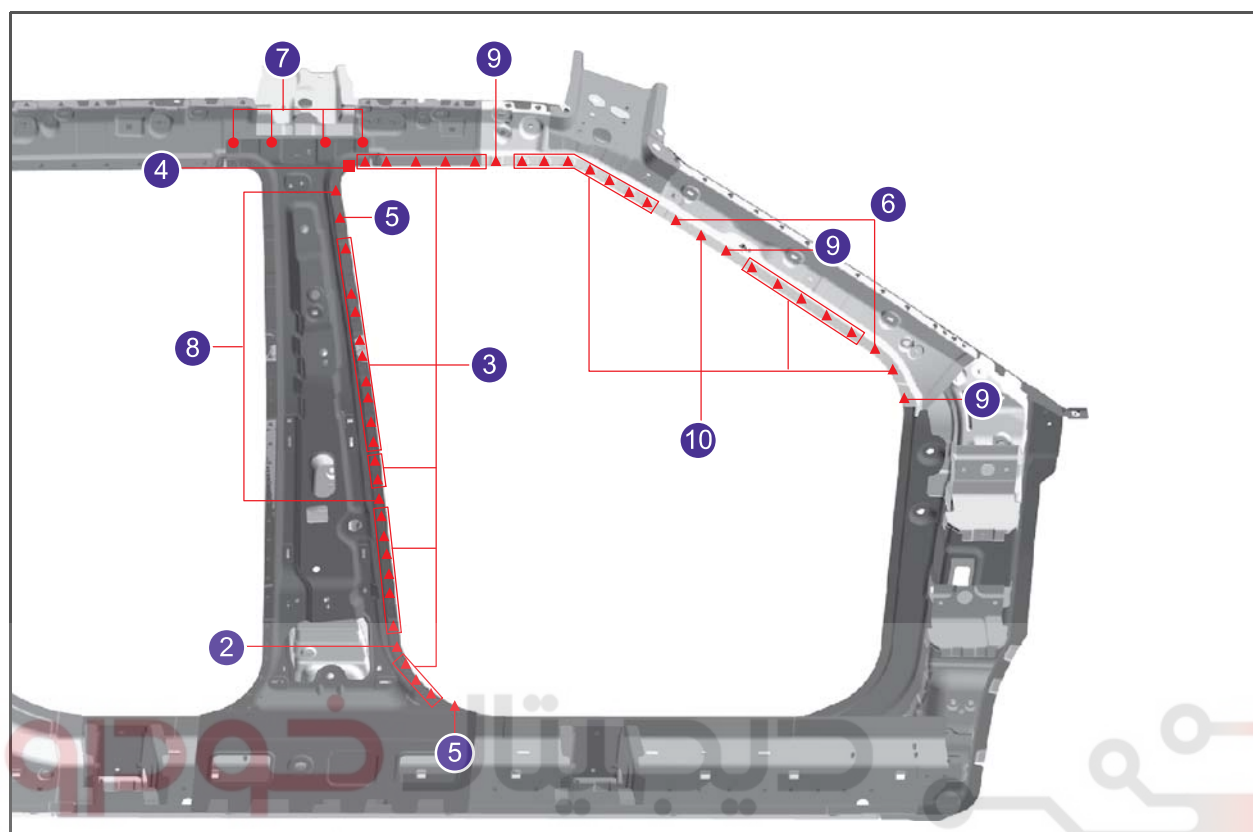


Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

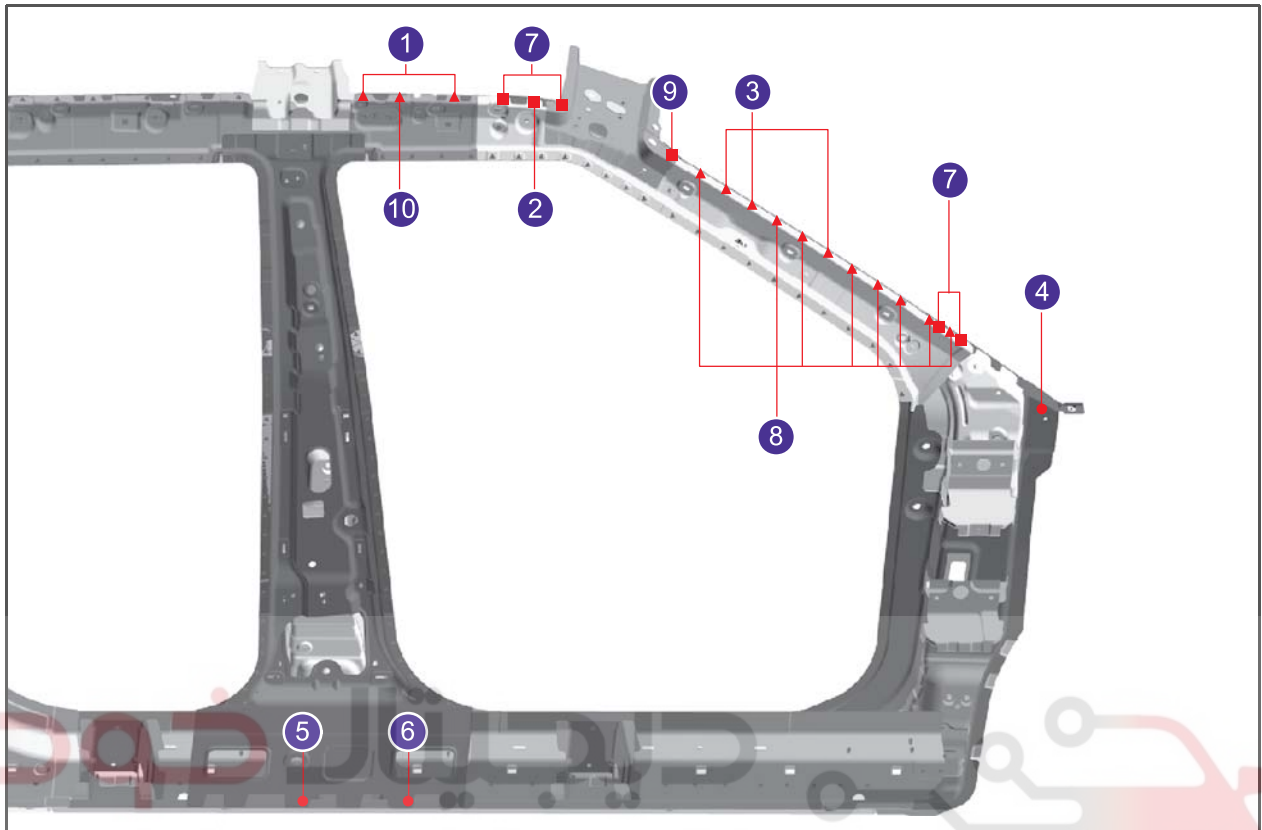
► Front side panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.9	7	7	3	17	9.1	250	-
2	3	2.9	7	7.5	8	14	8.9	326	-
3	3	2.9	7	7.5	8	14	9.1	326	-
4	4	4.1	7	7.5	8	14	9.1	326	-
5	3	2.9	7	6.5	2	16	8.9	280	-
6	3	3.1	7	6.5	2	16	8.9	280	-
7	2	2.0	6	6.5	2	16	8.7	320	-
8	3	2.9	7	6.8	2	16	8.9	250	-
9	3	3.1	7	7	3	17	9.1	280	-
10	3	3.1	7	7.5	8	14	9.1	326	-

► A-pillar side panel



Panel layers: ● double, ▲ triple, ■ quadruple

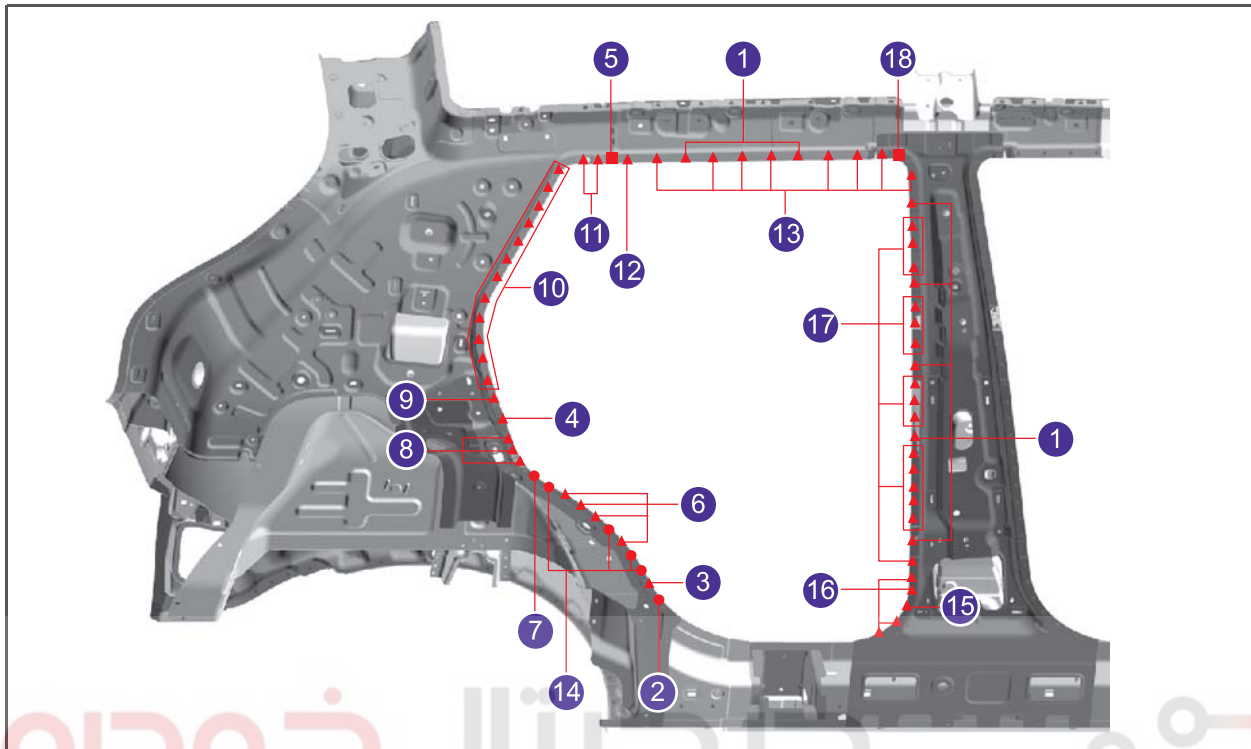
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.9	7	7	3	17	9.1	250	-
2	4	4.3	7	7	3	17	9.1	250	-
3	3	3.1	7	7	3	17	9.1	250	-
4	2	1.9	7	6.8	2	16	8.9	280	-
5	2	2.2	7	7	3	17	9.1	280	-
6	2	2.2	7	6.8	2	16	8.9	280	-
7	4	4.3	7	6.5	2	16	8.9	280	-
8	3	3.1	7	6.5	2	16	8.9	280	-
9	4	4.1	7	6.5	2	16	8.9	280	-
10	3	2.9	7	6.5	2	16	8.9	280	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

► Rear door side panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.9	7	7	3	17	9.1	250	-
2	2	1.35	7	6.8	2	16	8.9	280	-
3	3	1.35	7	6.8	2	16	8.9	280	-
4	3	2.8	7	6.8	2	16	8.9	280	-
5	4	3.6	7	6.8	2	16	8.9	280	-
6	3	1.35	7	6.5	8	14	8.9	326	-
7	2	1.35	7	6.5	8	14	8.9	326	-
8	3	2.4	7	6.5	8	14	8.9	326	-
9	3	2.8	7	6.5	8	14	8.9	326	-
10	3	2.1	7	6.5	8	14	8.9	326	-

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
11	3	2.6	7	6.5	8	14	8.9	326	-
12	3	2.9	7	6.5	8	14	8.9	326	-
13	3	2.9	7	6.5	8	14	9.1	326	-
14	2	1.35	7	7.5	8	14	8.9	326	-
15	3	2.9	7	6.8	2	16	8.9	250	-
16	3	2.9	7	7.5	8	14	8.9	326	-
17	3	2.9	7	7.5	8	14	9.1	326	-
18	4	4.1	7	7.5	8	14	9.1	326	-

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

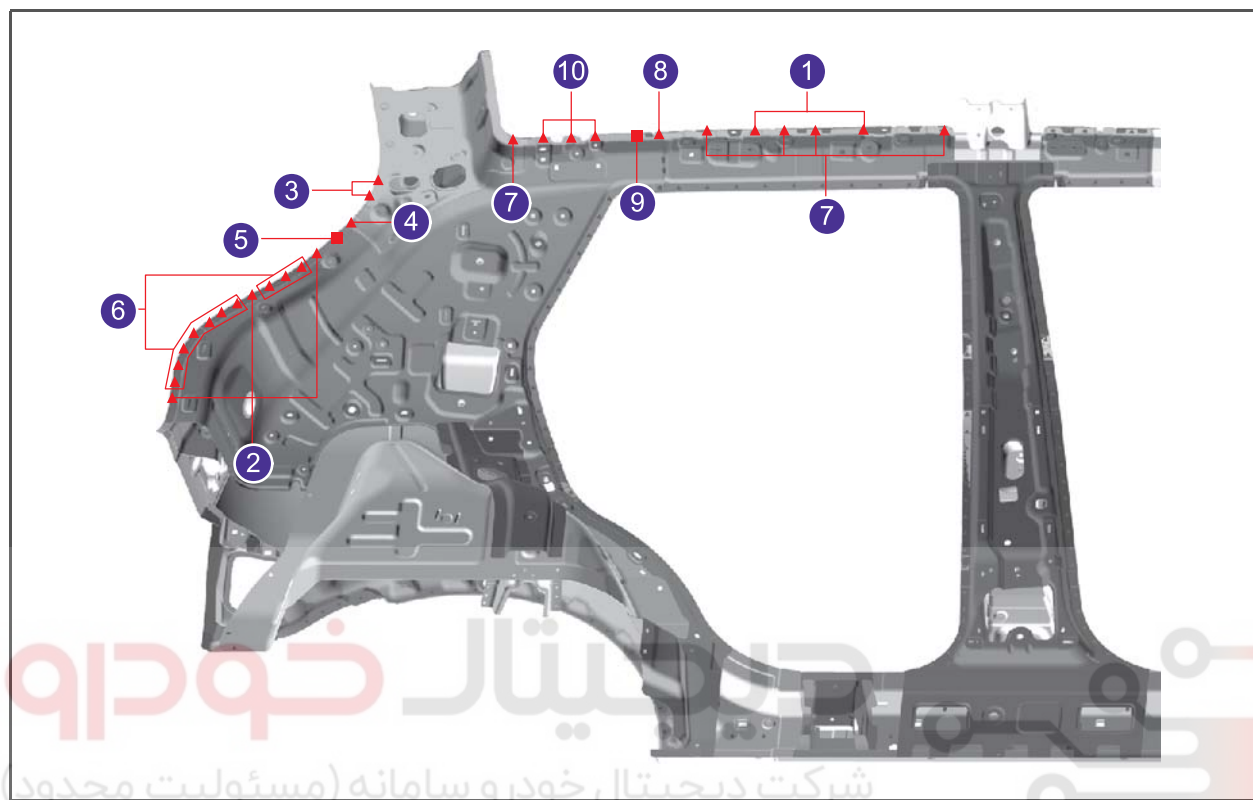


Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

► Rear side panel

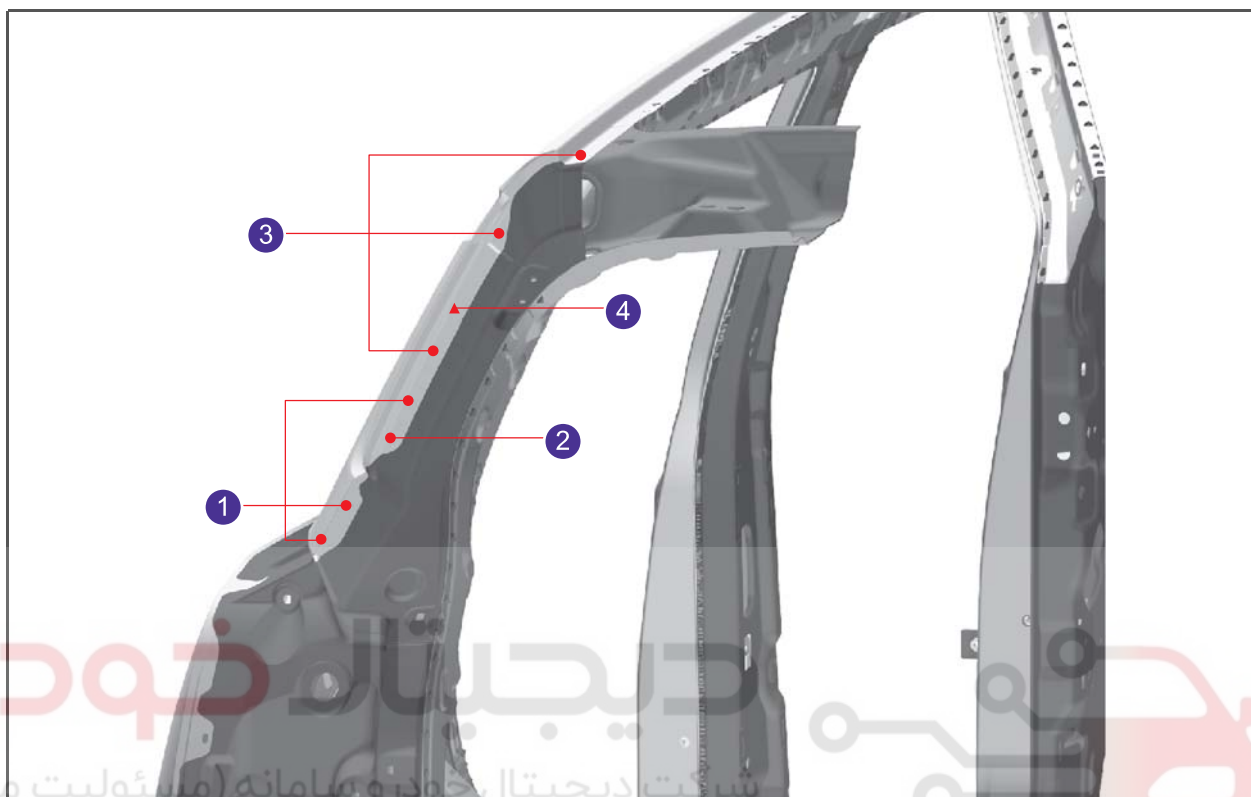


Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.9	7	7	3	17	9.1	250	-
2	3	2.1	7	6.8	2	16	8.9	280	-
3	3	2.7	7	6.5	8	16	8.9	280	-
4	3	2.2	7	6.5	8	16	8.9	280	-
5	4	2.8	7	6.8	8	16	8.9	280	-
6	3	2.1	7	6.8	8	16	8.9	280	-
7	3	2.9	7	6.5	2	16	8.9	280	-
8	3	2.4	7	6.5	2	16	8.9	280	-
9	4	3.3	7	6.5	2	16	8.9	280	-
10	3	2.1	7	6.5	2	16	8.9	280	-

3. REAR VIEW

► Tailgate side panel



Panel layers: ● double, ▲ triple, ■ quadruple

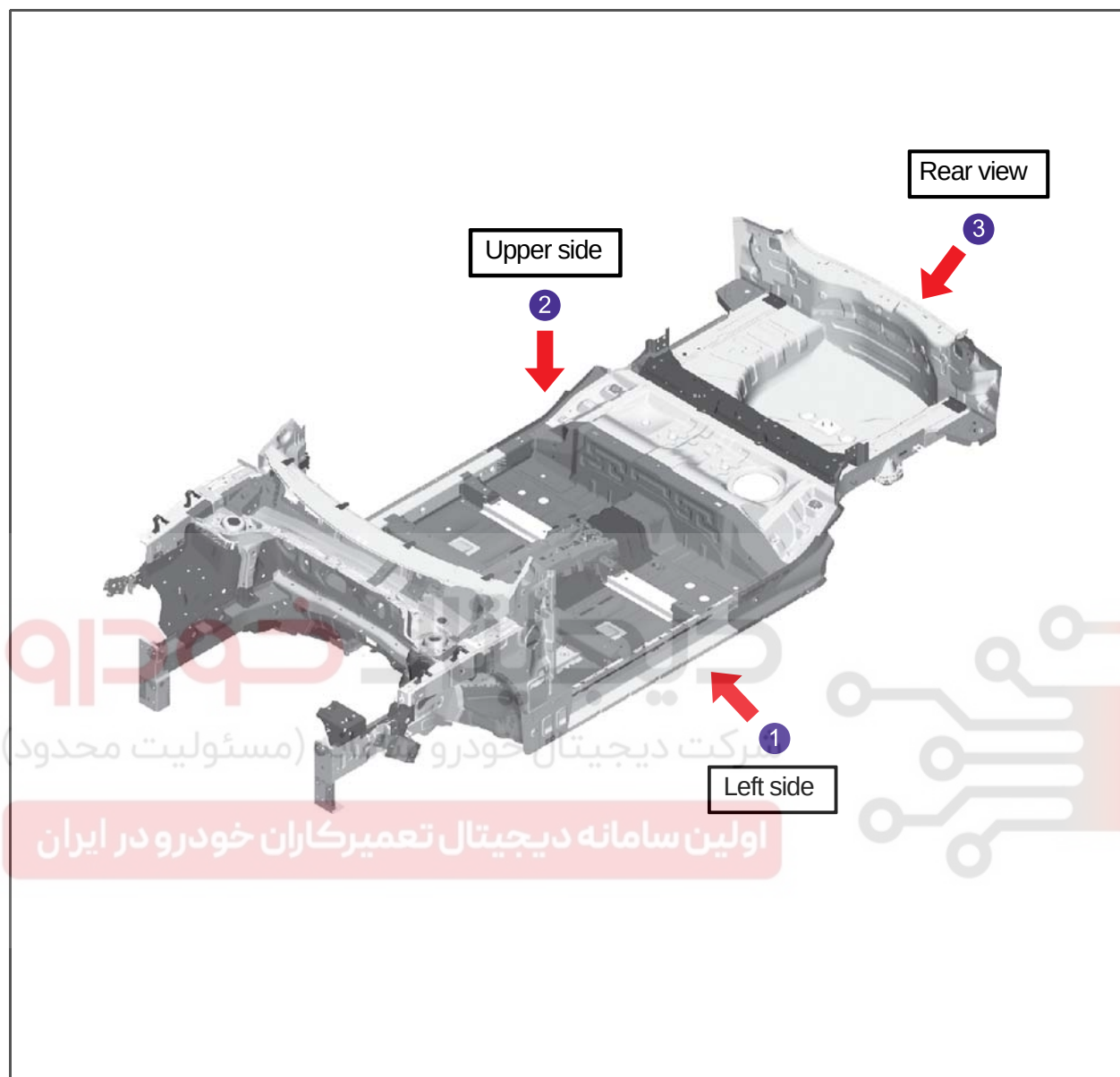
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.4	7	6.8	2	16	8.9	230	-
2	2	1.4	7	6.8	2	16	8.9	250	-
3	2	1.4	7	6.8	2	16	8.9	280	-
4	3	2.4	7	6.8	2	16	8.9	280	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

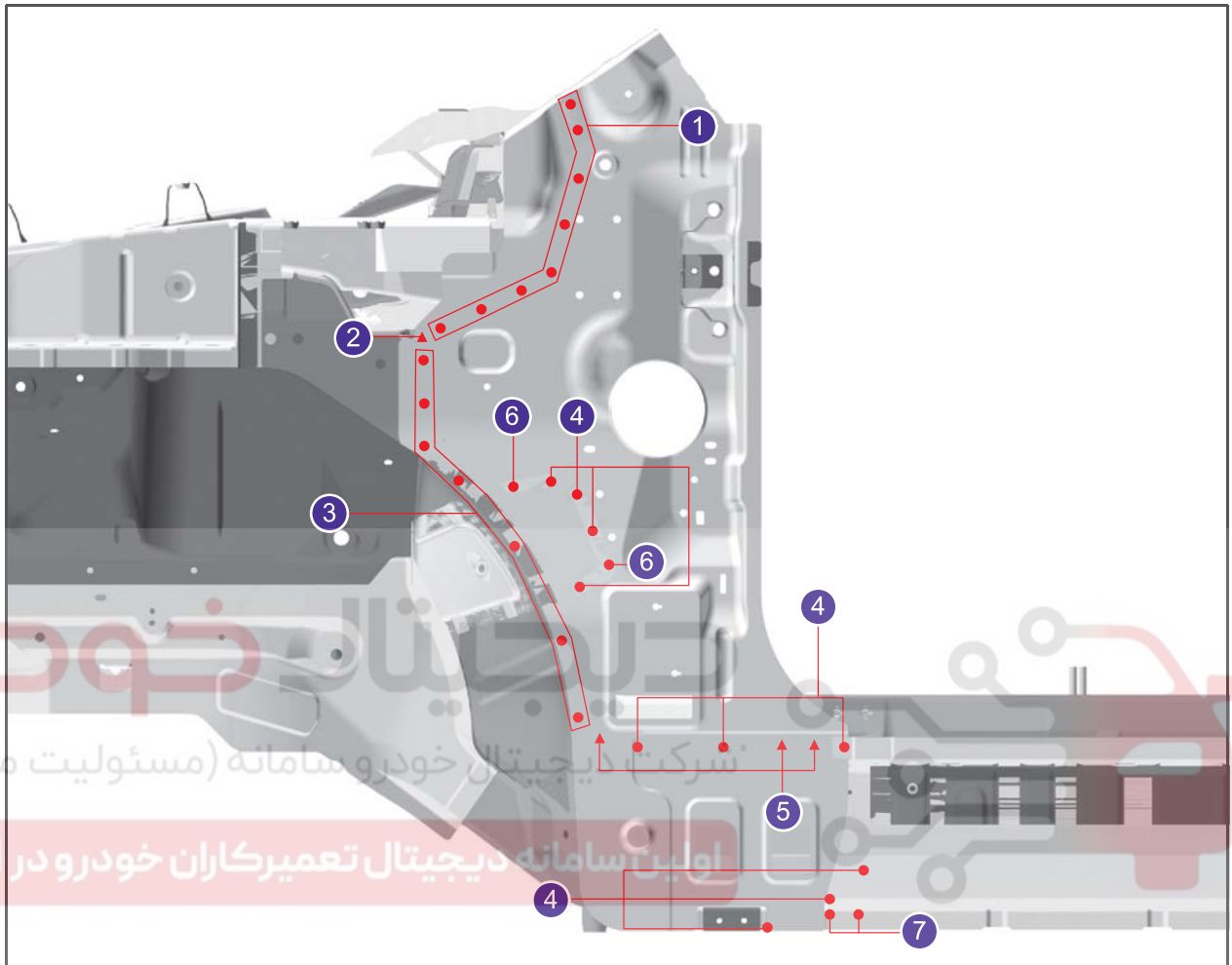
UNDER BODY



1. Left side (cowl side inner panel, side seal)
2. Upper side (front floor panel, front floor panel upper member, rear floor panel)
3. Rear view (rear-end panel)

1. LEFT SIDE

► Cowl side inner panel



Panel layers: ● double, ▲ triple, ■ quadruple

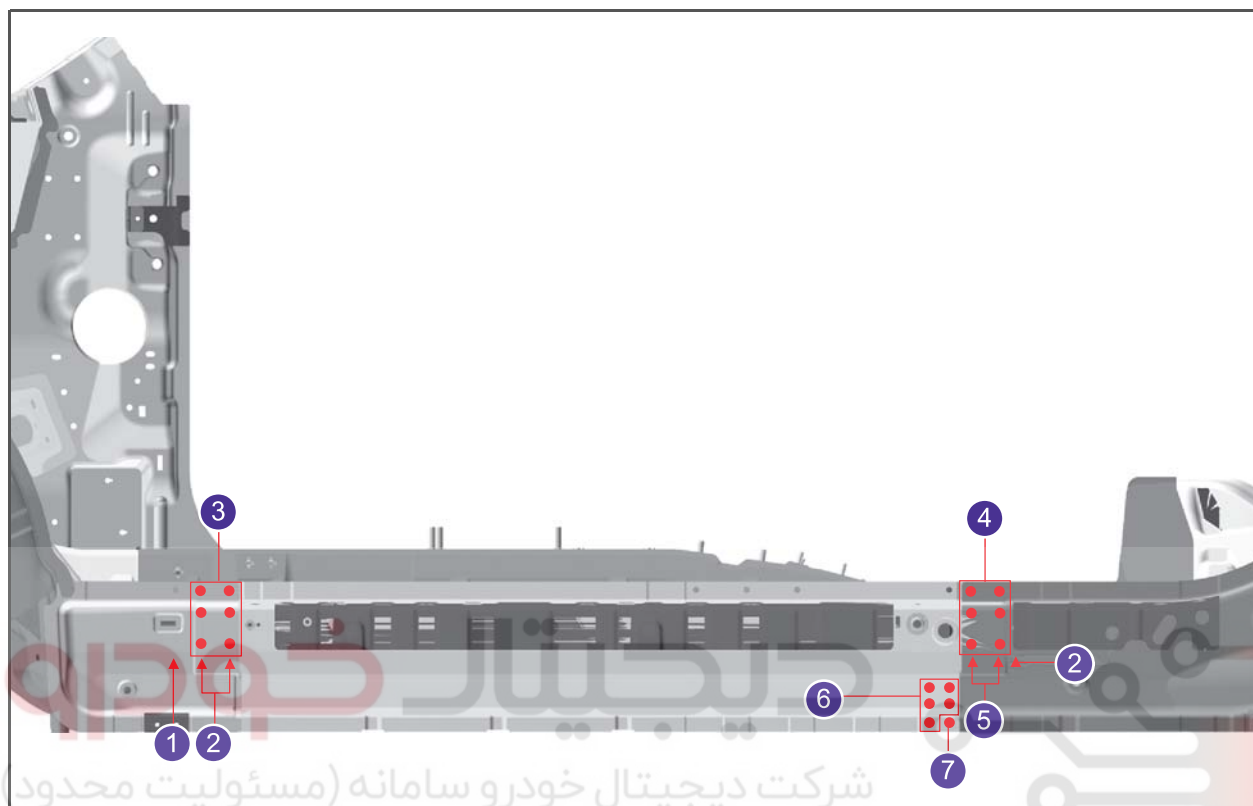
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.9	12	9	-	-	-	350	-
2	3	2.9	12	9	-	-	-	350	-
3	2	2.2	12	9	-	-	-	350	-
4	2	2.4	12	9	-	-	-	350	-
5	3	3.6	12	9	-	-	-	350	-
6	2	2.4	7	8	5	12	8.5	350	-
7	2	2.4	12	10	-	-	-	350	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

► Side seal

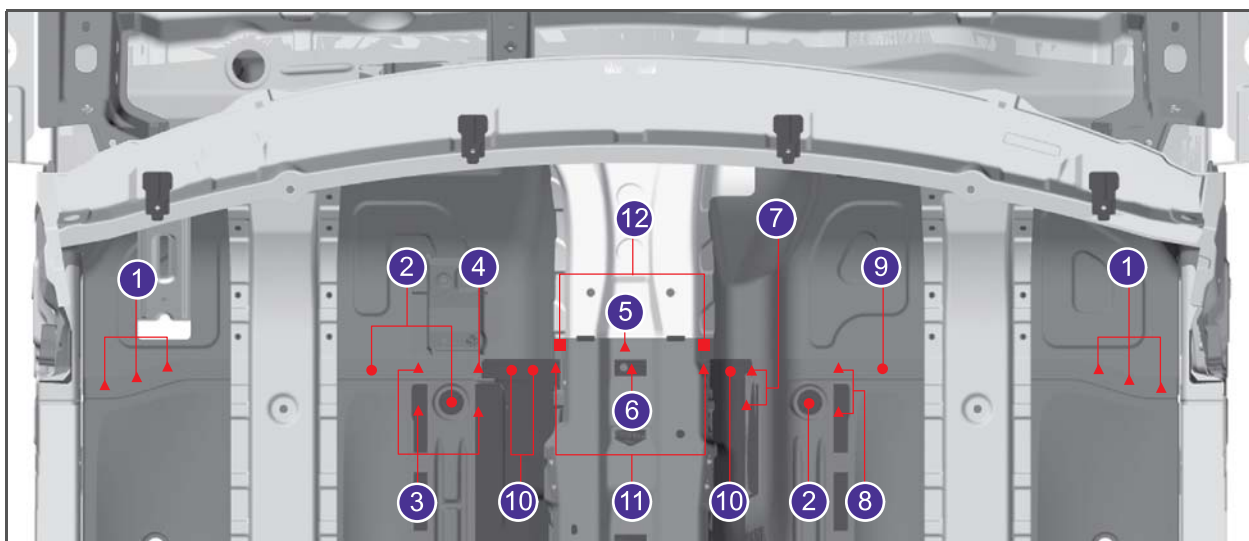


Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	2.85	14	10	-	-	-	350	-
2	3	3.05	14	10	-	-	-	350	-
3	2	2.4	14	10	-	-	-	350	-
4	2	2.6	14	10	-	-	-	350	-
5	3	3.25	14	10	-	-	-	350	-
6	2	2.6	14	11	-	-	-	350	-
7	2	1.8	14	11	-	-	-	350	-

2. UPPER SIDE

► Front floor panel



Panel layers: ● double, ▲ triple, ■ quadruple

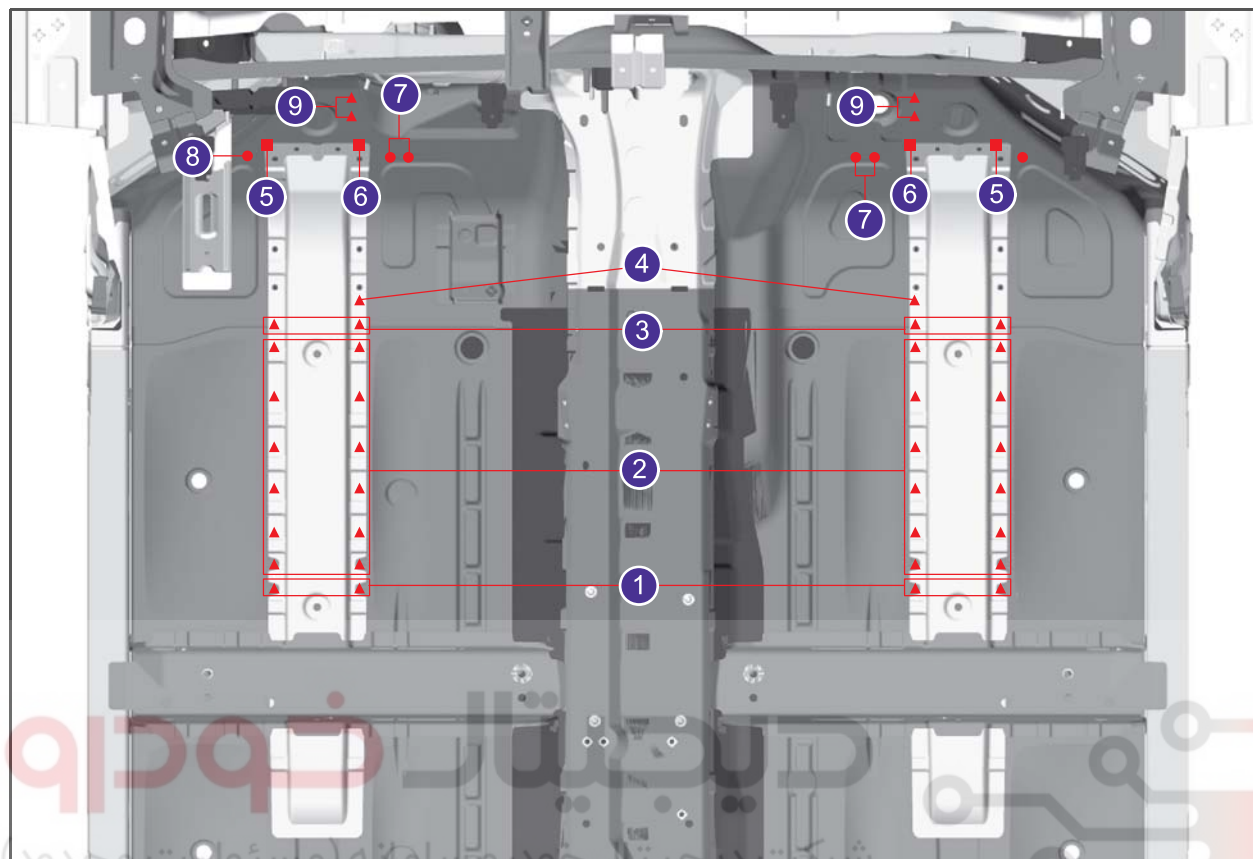
No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.05	14	10	-	-	-	350	-
2	2	1.6	14	10	-	-	-	350	-
3	3	2.25	14	10	-	-	-	350	-
4	3	2.45	14	10	-	-	-	350	-
5	3	2.7	14	10	-	-	-	350	-
6	3	2.6	14	10	-	-	-	350	-
7	3	2.45	14	11	-	-	-	350	-
8	3	2.25	14	11	-	-	-	350	-
9	2	1.65	14	11	-	-	-	350	-
10	2	1.8	14	11	-	-	-	350	-
11	3	2.6	14	11	-	-	-	350	-
12	4	5.2	14	11	-	-	-	350	-

Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

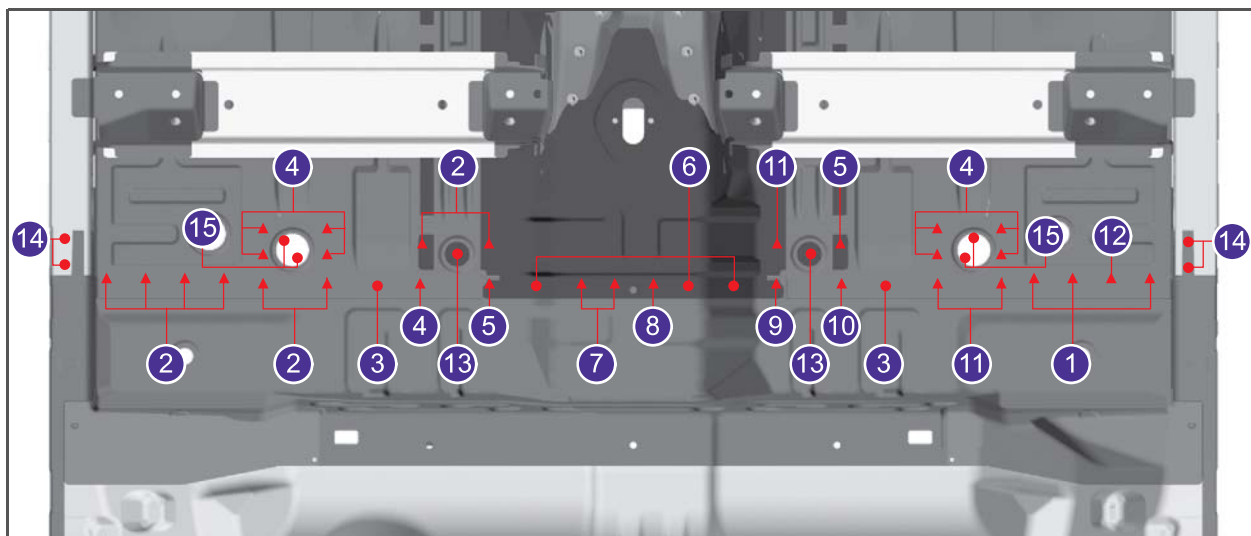
► Front floor upper member



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.05	14	10	-	-	-	350	-
2	3	3.05	14	11	-	-	-	350	-
3	3	2.85	14	11	-	-	-	350	-
4	3	3.4	14	11	-	-	-	350	-
5	4	5.2	14	11	-	-	-	350	-
6	4	4.8	14	11	-	-	-	350	-
7	2	1.8	14	11	-	-	-	350	-
8	2	1.4	14	11	-	-	-	350	-
9	3	3.6	14	11	-	-	-	350	-

► Rear floor panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	3	3.25	14	10	-	-	-	350	-
2	3	2.35	14	10	-	-	-	350	-
3	2	1.65	14	10	-	-	-	350	-
4	3	2.55	14	10	-	-	-	350	-
5	3	2.7	14	10	-	-	-	350	-
6	2	1.8	14	11	-	-	-	350	-
7	3	2.8	14	10	-	-	-	350	-
8	3	2.8	14	11	-	-	-	350	-
9	3	2.7	14	11	-	-	-	350	-
10	2	2.55	14	11	-	-	-	350	-
11	3	2.35	14	11	-	-	-	350	-
12	3	3.25	14	11	-	-	-	350	-
13	2	1.7	14	10	-	-	-	350	-
14	2	2.6	14	10	-	-	-	350	-
15	2	1.9	14	10.5	-	-	-	350	-

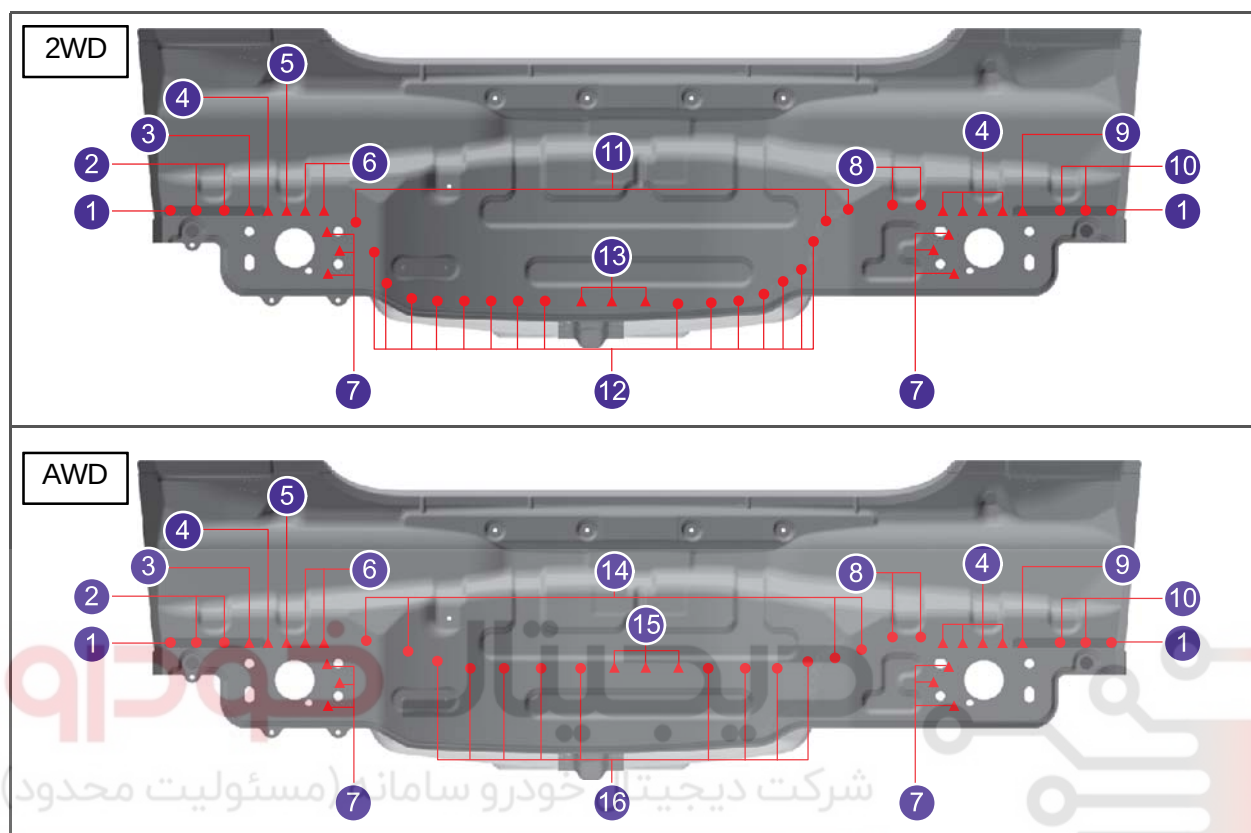
Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

3. REAR SIDE

► Rear-end panel



Panel layers: ● double, ▲ triple, ■ quadruple

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
1	2	1.3	14	10	-	-	-	350	-
2	2	1.3	12	9	-	-	-	350	-
3	3	2.75	14	9.5	-	-	-	350	-
4	3	2.75	14	10	-	-	-	350	-
5	3	2.8	14	10	-	-	-	350	-
6	3	2.75	14	11	-	-	-	350	-
7	3	3.25	14	10	-	-	-	350	-
8	2	1.35	14	10	-	-	-	350	-
9	3	2.0	14	9.5	-	-	-	350	-
10	2	1.3	14	9.5	-	-	-	350	-

No.	Panel layers	Panel thickness (mm)	First welding		Cooling time (1/60 sec.)	Second welding		Welding force (Kgf)	Remarks
			Duration (1/60 sec.)	Current (KA)		Duration (1/60 sec.)	Current (KA)		
11	2	1.35	14	10	-	-	-	350	2WD
12	2	1.35	14	9.5	-	-	-	350	2WD
13	3	2.15	14	9.5	-	-	-	350	2WD
14	2	1.35	14	9.5	-	-	-	350	AWD
15	3	2.15	14	9.5	-	-	-	350	AWD
16	2	1.35	14	10	-	-	-	350	AWD

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Modification basis	
Application basis	
Affected VIN	

BODY WELDING

TIVOLI 2015.03

Memo

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

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