



# USA Edition

**Official Installation Competition Manual 2026**

### 3. EMMA rules – Installation Quality

The installation quality judging criteria are formulated to promote system durability and longevity, as well as logical integration and visual impression.

The installation quality judging will be performed according to this official rulebook by one or two installation judges (depending on category). These judges are specially qualified and trained to work with the rulebook to determine the installation quality.

After the installation quality judging, the competitor will receive a qualified and objective feedback about the quality of the installed audio system in regards to the criteria outlined within this rulebook.

EMMA installation has been broken down into sections that can be judged and evaluated within an understandable level of classification. The judges will not tell you “your car has a good or a bad installation or what points you have earned”. Together with their qualified judgement and the help of the score sheet they will explain exactly the quality of the installation in all relevant details. The awarded score will be easy to follow for the competitor, if necessary, with support from the EMMA Rulebook. Furthermore, the competitor can learn the potential of their own system installation. The judges are allowed to give the contestants tips and hints on how to improve the installation of their audio system (without using brand names). This will allow the competitor, a qualified dealer or experienced colleagues in a competition team to help improve the installation and potential use of equipment.

#### Installation rules for: SQ E - Category

To be judged	Content	Points
<b>Presentation to the public</b>	Show off the vehicle & installation to the public during the event time Allow spectators to listen to the system	10

	Will be checked several times a day	
<b>Cleanliness</b>	Vehicle exterior should be "car-wash-clean", interior should be vacuumed (not perfect but reasonably clean) <ul style="list-style-type: none"> <li>● Car Wash clean y/n</li> <li>● Passenger compartment vacuumed y/n</li> <li>● Dedicated components of the system installed in the engine compartment &amp; trunk clean y/n</li> </ul>	6
<b>System/Wiring Diagram present</b>	(deduct 2 points per not cleaned area)  2 points for each Diagram if present	4
<b>Main fuse present y/n</b>	Check, if a main fuse is installed into the main power wire within 40cm from any positive battery post and/or before passing any metal panel. Power diagram is necessary for judging. (if no, 0 points will be awarded)	10
<b>Are all components securely mounted?</b>	Check all components by physical inspection if fixed y/n <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers</li> </ul> (if n/a, points will be awarded, deduct 2 points per not fixed component, minimum 0)	24
<b>Protection of Speakers</b>	A speaker which is not installed completely under the window line (outer frame diameter of speaker) does not need protection speaker protection shall be defined as not flexible.  Check whether the affected speakers in the interior compartment's front doors and in the foot-room are protected from physical damage. Hidden speakers like mounted under the dashboard do not need a protection when they cannot be reached with the foot of driver or passenger. One should not be able to touch the membrane with a cylindrical object with a diameter of 3 cm. There should be at least one protective element per speaker.  (Deduct 2 points for any speaker not protected, minimum 0). All other speakers do not need protection	5
<b>First Optic impression</b>	Check all components if they create the impression of "a finished installation" or "under construction" <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers / Speaker enclosures</li> </ul> (if n/a, points will be awarded, deduct 1 point per "under construction" component, minimum 0)	10

<b>Total Points</b>	<b>69</b>
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## Installation rules for: SQ S – Category

To be judged	Content	Points
<b>Presentation to the public</b>	Show off the vehicle & installation to the public during the event time Allow spectators to listen to the system System diagram on display for spectators Will be checked several times a day	10
<b>Cleanliness</b>	Vehicle exterior should be "car-wash-clean", interior should be vacuumed (not perfect but reasonably clean) <ul style="list-style-type: none"> <li>● Car Wash clean y/n</li> <li>● Passenger compartment vacuumed y/n</li> <li>● Dedicated components of the system installed in the engine compartment &amp; trunk clean y/n</li> </ul> <p>(deduct 2 points per not cleaned area)</p>	6
System/Wiring Diagram present	2 points for each Diagram if present	4
<b>Main fuse present y/n</b>	Check, if a main fuse is installed into the main power wire within 40cm from any positive battery post and/or before passing any metal panel. Power diagram is necessary for judging. (if no, 0 points will be awarded)	10
<b>Are all the wires to the components fused?</b>	Check, if a fuse is installed in the wire for any component belonging to the audio/multi-media system. All these fuses must be visible within three minutes (for all in total, not three minutes for every fuse!!!) <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> </ul> <p>(if n/a or not visible, deduct 2 points per not fused component, minimum 0)</p> <p>Power diagram is necessary for judging. EMMA Back Office will hand out a form at the registration where all components, wire diameters as well as fuses should be filled in by the competitor in case that no wiring diagram is prepared and available for the judging process</p>	15
<b>Is the fuse value appropriate to the wire size?</b>	Check, if any fuse belonging to the audio system is of appropriate size for the wire it is protecting (according to the VW75212 - Dimensionierung von Leitungen und Sicherungen im Kraftfahrzeug):	20

Fuse Size Matrix			
	Cable size	AWG	Fuse Rating
	0,5mm <sup>2</sup>	20	10 Ampere
	1,0mm <sup>2</sup>	17	15 Ampere
	1,5mm <sup>2</sup>	15	20 Ampere

	2,5mm <sup>2</sup>	13	20 Ampere
	4,0mm <sup>2</sup>	11	30 Ampere
	6,0mm <sup>2</sup>	9	50 Ampere
	10mm <sup>2</sup>	7	60 Ampere
	16mm <sup>2</sup>	5	100 Ampere
	25mm <sup>2</sup>	4	125 Ampere
	35mm <sup>2</sup>	2	175 Ampere
	50mm <sup>2</sup>	0	250 Ampere
	70mm <sup>2</sup>	2/0	300 Ampere

Alternatively, wire sizes and fuse rates can be calculated with the formulas in the judge book. In this case, the calculations must be documented and handed out to the judges for checking  
Voltage used for calculation is U=12V

This rule applies to all electrical conductors in the power system, power distribution blocks, busbars etc. On multiple battery systems pay close attention to all batteries / fuses feeding current to any distribution block. There can be power sources connected on both sides of a short circuit and the conductor must withstand the combined current of all sources feeding the short circuit.

(if n/a, wrong size or not visible, deduct 2 points per not appropriate fuse, minimum 0)

**Any interior wires visible?**

Check, if any wire of the system installation is visible from the driver's seating position with the doors closed and open.

5

(deduct 2 points for any visible system wire, minimum 0)

Mobile devices such as smartphones that are connected by the cable that goes with the device to the connector of the HU/Car and the device itself will be operated at the head unit, no attention will be paid to this cable.

If the mobile device is used to operate the system (change track would be enough), there should be no wire visible (visible connector is ok)!

Hint: this could also mean that the device has not to be installed - because it streams.

**Are all components securely mounted?**

Check all components by physical inspection if fixed y/n

24

- Head Unit
- Other devices
- Amplifiers
- Speakers

(if n/a, points will be awarded, deduct 2 points per not fixed component, minimum 0)

<b>Protection of Speakers</b>	<p>A speaker which is not installed completely under the window line (outer frame diameter of speaker) does not need protection. Speaker protection shall be defined as not flexible.</p> <p>Check whether the affected speakers in the interior compartment's front doors and in the foot-room are protected from physical damage. Hidden Speakers like mounted under the dashboard do not need a protection when they cannot be reached with the foot of driver or passenger. One should not be able to touch the membrane with a cylindrical object with a diameter of 3 cm. There should be at least one protective element per speaker.</p> <p>(Deduct 2 points for any speaker not protected, minimum 0). All other speakers do not need protection</p>	5
<b>Does the vehicle allow a normal use?</b>	<p>EMMA is allowing modifications to the vehicle's interior (except in OEM) to install audio components.</p> <p>The driver/ passenger should sit comfortably and be able to operate the controls of the car without obstruction (look for sub/speakers up front or too high raised floor).</p> <p>As the OEM has given the most safety and comfort in the limited space of the passenger cabin, EMMA will use the OEM surfaces as references.</p> <p>The passenger foot room must not be smaller than the OEM foot room on the driver side between seat and pedals.</p> <p>Judging will be done in the regular driving position of the vehicles operator.</p>	6
<b>First Optic impression</b>	<p>Check all components if they create the impression of "a finished installation" or "under construction"</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers / Speaker enclosures</li> </ul> <p>(if n/a, points will be awarded, deduct 1 point per "under construction" component, minimum 0)</p>	10
<b>Total Points</b>		<b>115</b>

<b>Installation rules for: SQ M – Category and Multimedia</b>
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To be judged	Content	Points
<b>Presentation to the public</b>	<p>Show off the vehicle &amp; installation to the public during the event time</p> <p>Allow spectators to listen to the system</p> <p>System diagram on display for spectators</p>	10

	Exception: at the event active judges / back office staff's cars can remain closed due to safety reason	
	Will be checked several times a day	
<b>Bonus Presentation to the public</b>	Some activity by the competitor to promote their car / installation / presentation during a dedicated period of time	5
<b>Cleanliness</b>	Vehicle exterior should be "car-wash-clean", interior should be vacuumed (not perfect but reasonably clean) <ul style="list-style-type: none"> <li>● Car Wash clean y/n</li> <li>● Passenger compartment vacuumed y/n</li> <li>● Dedicated components of the system installed in the engine compartment &amp; trunk clean y/n</li> </ul> (deduct 2 points per not cleaned area)	6
<b>System documentation</b>	Check for: <ul style="list-style-type: none"> <li>● Signal flow-chart</li> <li>● Wire/Fuse Diagram</li> <li>● Documentation (photo-log) of not accessible connections / components</li> </ul> (deduct 1 point per missing element, minimum 0)	10
<b>Explanation of system to the judges</b>	Up to 7 minute explanation of the system to the judges by owner of vehicle / dedicated presenter (no movie)  Hint: Focus on how and why the installation was built, not on brands or the final result.  2 points will be deducted per 30sec. Over time	5
<b>Main fuse present y/n</b>	Check, if a main fuse is installed into the main power wire within 40cm from any positive battery post and/or before passing any metal panel. Power diagram is necessary for judging.  (if no, 0 points will be awarded)	10
<b>Are all the wires to the components fused?</b>	Check if a fuse is installed in the wire for any component belonging to the audio/multi-media system. All these fuses must be visible within three minutes (for all in total, not three minutes for every fuse!!!) <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> </ul> (if n/a or not visible, deduct 2 points per not fused component, minimum 0)  Power diagram is necessary for judging. EMMA Back Office will hand out a form at the registration where all components, wire diameters as well as fuses should be filled in by the	15

competitor in case that no wiring diagram is prepared and available for the judging process

**Is the fuse value appropriate to the wire size?**

Check, if any fuse belonging to the audio system is of appropriate size for the wire it is protecting (according to the VW75212 - Dimensionierung von Leitungen und Sicherungen im Kraftfahrzeug):

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<b>Fuse Size Matrix</b>			
	<b>Cable size</b>	<b>AWG</b>	<b>Fuse Rating</b>
	0,5mm <sup>2</sup>	20	10 Ampere
	1,0mm <sup>2</sup>	17	15 Ampere
	1,5mm <sup>2</sup>	15	20 Ampere
	2,5mm <sup>2</sup>	13	20 Ampere
	4,0mm <sup>2</sup>	11	30 Ampere
	6,0mm <sup>2</sup>	9	50 Ampere
	10mm <sup>2</sup>	7	60 Ampere
	16mm <sup>2</sup>	5	100 Ampere
	25mm <sup>2</sup>	4	125 Ampere
	35mm <sup>2</sup>	2	175 Ampere
	50mm <sup>2</sup>	0	250 Ampere
	70mm <sup>2</sup>	2/0	300 Ampere

Alternatively, wire sizes and fuse rates can be calculated with the formulas in the judge book. In this case, the calculations must be documented and handed out to the judges for checking.

Voltage used for calculation is U=12V

This rule applies to all electrical conductors in the power system, power distribution blocks, busbars etc. On multiple battery systems pay close attention to all batteries / fuses feeding current to any distribution block. There can be power sources connected on both sides of a short circuit and the conductor must withstand the combined current of all sources feeding the short circuit.

(if n/a, wrong size or not visible, deduct 2 points per not appropriate fuse, minimum 0)

**Any interior wires visible?**

Check, if any wire of the system installation is visible from the driver's seating position with the doors closed and open.

5

(deduct 2 points for any visible system wire, minimum 0)

Mobile devices such as smartphones that are connected by the cable that goes with the device to the connector of the HU/Car and the device itself will be operated at the head unit, no attention will be paid to this cable.

If the mobile device is used to operate the system (change track would be enough), there should be no wire visible (visible connector is ok)!

Hint: this could also mean that the device must not be installed - because it streams.

<b>Wires properly terminated?</b>	<p>Check, if all wires are properly terminated - either by physical inspection or by photo log</p> <p>(deduct 2 points per wire not properly terminated wire, minimum 0)</p>	5
<b>Wire terminations protected y/n</b>	<p>Check, if wire terminations are installed in such a way that short circuits are avoided / covered by a non-conductive material in vehicles driving condition (all panels/covers on etc.) and appropriate measures are taken if exposed to moisture (e.g. in the doors) - either by physical inspection or by photo log</p> <p>(deduct 1 point per wire that's not properly terminated, minimum 0)</p>	10
<b>Wires protected from damage y/n</b>	<p>Wires that pass metal (e.g. from engine compartment to interior) should be protected by grommets, rubbers or similar</p> <p>For wires that are mechanically stressed (e.g. into the door) or that are close to moving parts (e.g. engine-belts) protective sleeving should be used if not installed to OEM cable trays.</p> <p>(deduct 2 points per not properly protected wire, minimum 0)</p>	5
<b>Are all components securely mounted?</b>	<p>Check all components by physical inspection if fixed y/n</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers</li> </ul> <p>(if n/a, points will be awarded, deduct 2 points per not fixed component, minimum 0)</p>	24
<b>Protection of Speakers</b>	<p>A speaker which is not installed completely under the window line (outer frame diameter of speaker) does not need protection Speaker protection shall be defined as not flexible.</p> <p>Check whether the affected speakers in the interior compartment's front doors and in the foot-room are protected from physical damage. Hidden Speakers like mounted under the dashboard do not need a protection when they cannot be reached with the foot of driver or passenger. One should not be able to touch the membrane with a cylindrical object with a diameter of 3 cm. There should be at least one protective element per speaker.</p> <p>(Deduct 2 points for any speaker not protected, minimum 0). All other speakers do not need protection</p>	5
<b>Does the vehicle allow a normal use?</b>	<p>EMMA is allowing modifications to the vehicle's interior (except in OEM) to install audio components.</p> <p>The driver/ passenger should sit comfortably and be able to operate the controls of the car without obstruction (look for sub/speakers up front or too high raised floor).</p>	6

As the OEM has given the most safety and comfort in the limited space of the passenger cabin, EMMA will use the OEM surfaces as references.

The passenger foot room must not be smaller than the OEM foot room on the driver side between seat and pedals.

Judging will be done in the regular driving position of the vehicles operator.

<b>First Optic impression</b>	<p>Check all components if they create the impression of "a finished installation" or "under construction"</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers / Speaker enclosures</li> </ul>	10
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(if n/a, points will be awarded, deduct 1 point per "under construction" component, minimum 0)

<b>Craftsmanship</b>	<p>Check wire-routing, terminations, installation of components, installation of panels, surface finishes, equal gaps, etc. for the categories:</p> <ul style="list-style-type: none"> <li>● Wiring</li> <li>● Head Unit</li> <li>● Amplifiers</li> <li>● Speakers</li> <li>● Other components</li> </ul>	10
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(deduct 2 points per element where no effort was taken (to modify it from OEM state), deduct 1 point per element where poor effort was taken, minimum 0 => note on the score sheet for what points are deducted)

<b>Total Points</b>	<b>161</b>
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<b>Installation rules for: SQ X Limited - Category</b>
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<b>To be judged</b>	<b>Content</b>	<b>Points</b>
<b>Presentation to the public</b>	<p>Show off the vehicle &amp; installation to the public during the event time            Allow spectators to listen to the system            System diagram on display for spectators</p> <p>Exception: at the event active judges / back office staff's cars can remain closed due to safety reason</p> <p>Will be checked several times a day</p>	10
<b>Bonus Presentation to the public</b>	<p>Some activity by the competitor to promote their car / installation / presentation during a dedicated period of time</p>	5

<b>Cleanliness</b>	<p>Vehicle exterior should be "car-wash-clean", interior should be vacuumed (not perfect but reasonably clean)</p> <ul style="list-style-type: none"> <li>● Car Wash clean y/n</li> <li>● Passenger compartment vacuumed y/n</li> <li>● Dedicated components of the system installed in the engine compartment &amp; trunk clean y/n</li> </ul> <p>(deduct 2 points per not cleaned area)</p>	6
<b>System documentation</b>	<p>Check for:</p> <ul style="list-style-type: none"> <li>● Signal flow-chart</li> <li>● Wire/Fuse Diagram</li> <li>● Documentation (photo-log) of not accessible connections / components</li> </ul> <p>(deduct 1 point per missing element, minimum 0)</p>	10
<b>Explanation of system to the judges</b>	<p>Up to 7 minute explanation of the system to the judges by owner of vehicle / dedicated presenter (no movie)</p> <p>Hint: Focus on how and why the installation was built, not on brands or the final result.</p> <p>1 point will be deducted per 30sec. Over time</p>	10
<b>Main fuse present y/n</b>	<p>Check, if a main fuse is installed into the main power wire within 40cm from any positive battery post and/or before passing any metal panel. Power diagram is necessary for judging.</p> <p>(if no, 0 points will be awarded)</p>	10
<b>Are all the wires to the components fused?</b>	<p>Check, if a fuse is installed in the wire for any component belonging to the audio/multi-media system. All these fuses must be visible within three minutes (for all in total, not three minutes for every fuse!!!)</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> </ul> <p>(if n/a or not visible, deduct 2 points per not fused component, minimum 0)</p> <p>Power diagram is necessary for judging. EMMA Back Office will hand out a form at the registration where all components, wire diameters as well as fuses should be filled in by the competitor in case that no wiring diagram is prepared and available for the judging process</p>	15
<b>Is the fuse value appropriate to the wire size?</b>	<p>Check, if any fuse belonging to the audio system is of appropriate size for the wire it is protecting (according to the VW75212 - Dimensionierung von Leitungen und Sicherungen im Kraftfahrzeug):</p>	20

Fuse Size Matrix			
	Cable size	AWG	Fuse Rating
	0,5mm <sup>2</sup>	20	10 Ampere
	1,0mm <sup>2</sup>	17	15 Ampere
	1,5mm <sup>2</sup>	15	20 Ampere
	2,5mm <sup>2</sup>	13	20 Ampere
	4,0mm <sup>2</sup>	11	30 Ampere
	6,0mm <sup>2</sup>	9	50 Ampere
	10mm <sup>2</sup>	7	60 Ampere
	16mm <sup>2</sup>	5	100 Ampere
	25mm <sup>2</sup>	4	125 Ampere
	35mm <sup>2</sup>	2	175 Ampere
	50mm <sup>2</sup>	0	250 Ampere
	70mm <sup>2</sup>	2/0	300 Ampere

Alternatively, wire sizes and fuse rates can be calculated with the formulas in the judge book. In this case, the calculations must be documented and handed out to the judges for checking.

Voltage used for calculation is U=12V

This rule applies to all electrical conductors in the power system, power distribution blocks, busbars etc. On multiple battery systems pay close attention to all batteries / fuses feeding current to any distribution block. There can be power sources connected on both sides of a short circuit and the conductor must withstand the combined current of all sources feeding the short circuit.

(if n/a, wrong size or not visible, deduct 2 points per not appropriate fuse, minimum 0)

**Any interior wires visible?**

Check, if any wire of the system installation is visible from the driver's seating position with the doors closed and open.

5

(Deduct 2 points for any visible system wire, minimum 0)

Mobile devices such as smartphones that are connected by the cable that goes with the device to the connector of the HU/Car and the device itself will be operated at the head unit, no attention will be paid to this cable.

If the mobile device is used to operate the system (change track would be enough), there should be no wire visible (visible connector is ok)!

Hint: this could also mean that the device must not be installed - because it streams.

**Wires properly terminated?**

Check, if all wires are properly terminated - either by physical inspection or by photo log

5

(deduct 2 points per not properly terminated wire, minimum 0)

<b>Wire terminations protected y/n</b>	<p>Check, if wire terminations are installed in such a way that short circuits are avoided / covered by a non-conductive material in vehicles driving condition (all panels/covers on etc.) and appropriate measures are taken if expressed to moisture (e.g. in the doors) - either by physical inspection or by photo log</p> <p>(deduct 1 point per not properly protected wire termination, minimum 0)</p>	10
<b>Wires protected from damage y/n</b>	<p>Wires that pass metal (e.g. from engine compartment to interior) should be protected by grommets, rubbers or similar</p> <p>For wires that are mechanically stressed (e.g. into the door) or that are close to moving parts (e.g. engine-belts) protective sleeving should be used if not installed to OEM cable trays.</p> <p>(deduct 2 points per not properly protected wire, minimum 0)</p>	5
<b>Are all components securely mounted?</b>	<p>Check all components by physical inspection if fixed y/n</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers</li> </ul> <p>(if n/a, points will be awarded, deduct 2 points per not fixed component, minimum 0)</p>	24
<b>Protection of Speakers</b>	<p>A speaker which is not installed completely under the window line (outer frame diameter of speaker) does not need protection. Speaker protection shall be defined as not flexible.</p> <p>Check whether the affected speakers in the interior compartment's front doors and in the foot-room are protected from physical damage. Hidden Speakers like mounted under the dashboard do not need a protection when they cannot be reached with the foot of driver or passenger. One should not be able to touch the membrane with a cylindrical object with a diameter of 3 cm. There should be at least one protective element per speaker.</p> <p>(Deduct 2 points for any speaker not protected, minimum 0). All other speakers do not need protection</p>	5
<b>Does the vehicle allow a normal use?</b>	<p>EMMA is allowing modifications to the vehicle's interior (except in OEM) to install audio components.</p> <p>The driver/ passenger should sit comfortably and be able to operate the controls of the car without obstruction (look for sub/speakers up front or too high raised floor).</p> <p>As the OEM has given the most safety and comfort in the limited space of the passenger cabin, EMMA will use the OEM surfaces as references.</p>	6

The passenger foot room must not be smaller than the OEM foot room on the driver side between seat and pedals.

Judging will be done in the regular driving position of the vehicles operator.

<b>First Optic impression</b>	<p>Check all components if they create the impression of "a finished installation" or "under construction"</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers / Speaker enclosures</li> </ul> <p>(if n/a, points will be awarded, deduct 1 point per "under construction" component, minimum 0)</p>	10
<b>Craftsmanship</b>	<p>Check wire-routing, terminations, installation of components, installation of panels, surface finishes, equal gaps, etc. for the categories:</p> <ul style="list-style-type: none"> <li>● Wiring</li> <li>● Head Unit</li> <li>● Amplifiers</li> <li>● Speakers</li> <li>● Other components</li> </ul> <p>(deduct 2 points per element where no effort was taken (to modify it from OEM state), deduct 1 point per element where poor effort was taken, minimum 0 =&gt; note on the score sheet for what points are deducted)</p>	50
<b>Design of interior</b>	<p>components installed to the interior follow a clear design idea y/n</p> <p>(deduct 1 point per element not following the design idea, minimum 0)</p>	5
<b>Design of trunk</b>	<p>components installed to the trunk follow a clear design idea y/n</p> <p>(deduct 1 point per element not following the design idea, minimum 0)</p>	5
<b>Bonus points</b>	<p>Award bonus points for elements that belong to the installation and</p> <ul style="list-style-type: none"> <li>● That promote components in an extraordinary way,</li> <li>● Attract spectators (no noise accepted!!!),</li> <li>● Allow normal use of the vehicle without sacrifice though a system is installed,</li> <li>● That make it a creative system presentation</li> </ul> <p>The competitor must submit their requests (max. 20) for bonus points together with their presentation</p> <p>(up to 3 bonus points possible per request - 1 for the idea itself, 1 if average realization, 2 if good realization)</p>	15

**Total Points 231**

<b>Installation rules for: SQ X Unlimited - Category</b>
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<b>To be judged</b>	<b>Content</b>	<b>Points</b>
<b>Presentation to the public</b>	<p>Show off the vehicle &amp; installation to the public during the event time            Allow spectators to listen to the system            System diagram on display for spectators</p> <p>Exception: at the event active judges / back office staff's cars can remain closed due to safety reason.            Will be checked several times a day</p>	10
<b>Bonus Presentation to the public</b>	<p>Some activity by the competitor to promote their car / installation / presentation during a dedicated period of time</p>	5
<b>Cleanliness</b>	<p>Vehicle exterior should be "car-wash-clean", interior should be vacuumed (not perfect but reasonably clean)</p> <ul style="list-style-type: none"> <li>● Exterior clean y/n</li> <li>● Passenger compartment clean y/n</li> <li>● Dedicated components of the system installed in the engine compartment &amp; trunk clean y/n</li> </ul> <p>(deduct 2 points per not cleaned area)</p>	6
<b>System documentation</b>	<p>Check for:</p> <ul style="list-style-type: none"> <li>● Signal flow-chart</li> <li>● Wire/Fuse Diagram</li> <li>● Documentation (photo-log) of not accessible connections / components</li> </ul> <p>(deduct 1 point per missing element, minimum 0)</p>	10
<b>Explanation of system to the judges</b>	<p>Up to 15 minute explanation of the system to the judges by owner of vehicle / dedicated presenter (no movie)</p> <p>Hint: Focus on how and why the installation was built, not on brands or the final result.</p> <p>1 point will be deducted per 30sec. Over time</p>	10
<b>Main fuse present y/n</b>	<p>Check, if a main fuse is installed into the main power wire within 40cm from any positive battery post and/or before passing any metal panel. Power diagram is necessary for judging.</p> <p>(if no, 0 points will be awarded)</p>	10

**Are all the wires to the components fused?**

Check if a fuse is installed in the wire for any component belonging to the audio/multi-media system. All these fuses must be visible within three minutes (for all in total, not three minutes for every fuse!!!)

15

- Head Unit
- Other devices
- Amplifiers

(if n/a or not visible, deduct 2 points per not fused component, minimum 0)

Power diagram is necessary for judging.

EMMA Back Office will hand out a form at the registration where all components, wire diameters as well as fuses should be filled in by the competitor in case that no wiring diagram is prepared and available for the judging process

**Is the fuse value appropriate to the wire size?**

Check, if any fuse belonging to the audio system is of appropriate size for the wire it is protecting (according to the VW75212 - Dimensionierung von Leitungen und Sicherungen im Kraftfahrzeug):

20

Fuse Size Matrix			
	Cable size	AWG	Fuse Rating
	0,5mm <sup>2</sup>	20	10 Ampere
	1,0mm <sup>2</sup>	17	15 Ampere
	1,5mm <sup>2</sup>	15	20 Ampere
	2,5mm <sup>2</sup>	13	20 Ampere
	4,0mm <sup>2</sup>	11	30 Ampere
	6,0mm <sup>2</sup>	9	50 Ampere
	10mm <sup>2</sup>	7	60 Ampere
	16mm <sup>2</sup>	5	100 Ampere
	25mm <sup>2</sup>	4	125 Ampere
	35mm <sup>2</sup>	2	175 Ampere
	50mm <sup>2</sup>	0	250 Ampere
	70mm <sup>2</sup>	2/0	300 Ampere

Alternatively, wire sizes and fuse rates can be calculated with the formulas in the judge book. In this case, the calculations must be documented and handed out to the judges for checking.

Voltage used for calculation is U=12V

This rule applies to all electrical conductors in the power system, power distribution blocks, busbars etc. On multiple battery systems pay close attention to all batteries / fuses feeding current to any distribution block. There can be power sources connected on both sides of a short circuit and the conductor must withstand the combined current of all sources feeding the short circuit.

(if n/a, wrong size or not visible, deduct 2 points per not appropriate fuse, minimum 0)

<b>Any interior wires visible?</b>	<p>Check, if any wire of the system installation is visible from the driver's seating position with the doors closed and open.</p> <p>(deduct 2 points for any visible system wire, minimum 0)</p> <p>Mobile devices such as smartphones that are connected by the cable that goes with the device to the connector of the HU/Car and the device itself will be operated at the head unit, no attention will be paid to this cable.</p> <p>If the mobile device is used to operate the system (change track would be enough), there should be no wire visible (visible connector is ok)!</p> <p>Hint: this could also mean that the device must not be installed - because it streams.</p>	5
<b>Wires properly terminated?</b>	<p>Check, if all wires are properly terminated - either by physical inspection or by photo log</p> <p>(deduct 2 points per not properly terminated, minimum 0)</p>	5
<b>Wire terminations protected y/n</b>	<p>Check, if wire terminations are installed in such a way that short circuits are avoided / covered by a non-conductive material in vehicles driving condition (all panels/covers on etc.) and appropriate measures are taken if exposed to moisture (e.g. in the doors) - either by physical inspection or by photo log</p> <p>(deduct 1 point per not properly protected wire termination, minimum 0)</p>	10
<b>Wires protected from damage y/n</b>	<p>Wires that pass metal (e.g. from engine compartment to interior) should be protected by grommets, rubbers or similar</p> <p>For wires that are mechanically stressed (e.g. into the door) or that are close to moving parts (e.g. engine-belts) protective sleeving should be used if not installed to OEM cable trays.</p> <p>(deduct 2 points per not properly protected wire, minimum 0)</p>	5
<b>Are all components securely mounted?</b>	<p>Check all components by physical inspection if fixed y/n</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers</li> </ul> <p>(if n/a, points will be awarded, deduct 2 points per not fixed component, minimum 0)</p>	24
<b>Protection of Speakers</b>	<p>Protection of speakers is not required in X Unlimited category.</p>	

<b>First Optic impression</b>	<p>Check all components if they create the impression of "a finished installation" or "under construction"</p> <ul style="list-style-type: none"> <li>● Head Unit</li> <li>● Other devices</li> <li>● Amplifiers</li> <li>● Speakers / Speaker enclosures</li> </ul> <p>(if n/a, points will be awarded, deduct 1 point per "under construction" component, minimum 0)</p>	10
<b>Craftsmanship</b>	<p>Check wire-routing, terminations, installation of components, installation of panels, surface finishes, equal gaps, etc. for the categories:</p> <ul style="list-style-type: none"> <li>● Wiring</li> <li>● Head Unit</li> <li>● Amplifiers</li> <li>● Speakers</li> <li>● Other components</li> </ul> <p>(deduct 2 points per element where no effort was taken (to modify it from OEM state), deduct 1 point per element where poor effort was taken, minimum 0 =&gt; note on the score sheet for what points are deducted)</p>	50
<b>Design of interior</b>	<p>components installed to the interior follow a clear design idea y/n</p> <p>(deduct 1 point per element not following the design idea, minimum 0)</p>	10
<b>Design of trunk</b>	<p>components installed to the trunk follow a clear design idea y/n</p> <p>(deduct 1 point per element not following the design idea, minimum 0)</p>	10
<b>Overall design of the vehicle</b>	<p>To score full points, the car itself and the components installed in it must show a design theme that was followed, throughout the car; inside, outside and to the trunk compartment. It should be immediately clear that the car was designed as a project from beginning, with a clear statement to the judges and the viewers.</p> <p>The kind of design theme is of no matter; but the competitor should be aware that an original looking car is not able to score any points on the areas where no effort for design was taken.</p> <p>(deduct 1 point per element not following the design idea, minimum 0)</p>	10

**Bonus points**

Award bonus points for elements that belong to the installation and

100

- That promote components in an extraordinary way,
- Attract spectators (no noise accepted!!!),
- Allow normal use of the vehicle without sacrifice though a system is installed,
- That make it a creative system presentation

The competitor must submit their requests (max. 50) for bonus points together with their presentation

(up to 3 bonus points possible per request - 1 for the idea itself, 1 if average realization, 2 if good realization)

<b>Installation Matrix</b>					
	<b>E</b>	<b>S</b>	<b>M</b>	<b>X</b>	<b>X Unl</b>
Max. points	<b>69</b>	<b>115</b>	<b>161</b>	<b>231</b>	<b>325</b>
Presentation to the public	10	10	10	10	10
Bonus Presentation to the public			5	5	5
Cleanliness	6	6	6	6	6
System/Wiring Diagram	4	4			
System documentation			10	10	10
Explanation of system to the judges			5	10	10
Main fuse(s) present y/n	10	10	10	10	10
Are all wires to the components fused?		15	15	15	15
Is the fuse value appropriate to the wire size?		20	20	20	20
Any interior wires visible?		5	5	5	5
Wires properly terminated?			5	5	5
Wire terminations protected y/n			10	10	10
Wires protected from damage y/n			5	5	5
Are all components securely mounted?	24	24	24	24	24
Protection of speakers	5	5	5	5	
Does the vehicle allow a normal use?		6	6	6	
First Optic impression	10	10	10	10	10
Craftsmanship			10	50	50
Design of interior				5	10
Design of trunk				5	10
Overall design of vehicle					10
Bonus points				15	100

<b>Fuse Size Matrix</b>			
	<b>Cable size</b>	<b>AWG</b>	<b>Fuse Rating</b>
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	50mm <sup>2</sup>	0	250 Ampere
	70mm <sup>2</sup>	2/0	300 Ampere

