

Formula Student Netherlands	
2024 Inspection Sheet	
Electrical Inspection	
Car Number	
University	

Failed items	Comments
ESF	
Progress	0.00%

REQUIRED RESOURCES			
No.	Checkpoint	Checkbox	Comment
	- An ESO must attend		
	- LV battery or cell datasheet		
	- Samples of all wire types used for the tractive system		
	- Photographs of all inaccessible TS connections		
	- Fully assembled spare boards of all inaccessible TS boards		
	- For self developed LV battery packs: an opened battery pack, laptop and cables to display data of the AMS		
	- Laptop and cables to display data of the AMS		
	- Power Supply for TSAL test and connectors with shrouded banana jacks as in rule IN 4.2.1		
	- The connector to safely close the SDC while the HVD is removed		
	- Datasheets for used wiring, insulation materials, and TS components NOT ON A CELL PHONE		
	- Print-outs of Rule Requests, if applicable NOT ON A CELL PHONE		
	- At least all non-passed parts of the ESF NOT ON A CELL PHONE		

LV BATTERY			
No.	Checkpoint	Checkbox	Comment
	1 Voltage \leq 60VDC	<input type="checkbox"/>	
	2 Rigid and sturdy casing	<input type="checkbox"/>	
	3 Only for wet-cell batteries: IPX7 rated and acid resistant casing if inside cockpit	<input type="checkbox"/>	
	4 Short circuit protection (e.g. fused)	<input type="checkbox"/>	
	5 Behind Firewall	<input type="checkbox"/>	
	6 Grounded to the chassis	<input type="checkbox"/>	
	7 Proper insulation of internal electrical connections	<input type="checkbox"/>	
	8 Proper mounting of cells	<input type="checkbox"/>	
	9 Complete battery pack inside rollover protection envelope	<input type="checkbox"/>	
	• All following checks only needed for Li-Ion batteries (other than LiFePO4):		
	10 UL94-V0 , FAR25 or equivalent casing	<input type="checkbox"/>	
	11 Overcurrent protection that trips below max. discharge current	<input type="checkbox"/>	
	12 Overtemperature protection of at least 30% of the cells (max. 60 C or datasheet, whichever is lower)	<input type="checkbox"/>	
	13 Voltage protection of all cells	<input type="checkbox"/>	
	14 Signal failures electrically disconnect the LV battery (SCS)	<input type="checkbox"/>	
	▶ Disconnect one SINGLE voltage sense wire, if any wires used		
	15 The LV battery is electrically disconnected	<input type="checkbox"/>	
	▶ Disconnect one SINGLE temperature sense wire, if any wires used		
	16 The LV battery is electrically disconnected	<input type="checkbox"/>	
	▶ Ask the team to connect their laptop to the AMS		
	17 Cell voltages can be displayed	<input type="checkbox"/>	
	18 Cell temperatures can be displayed	<input type="checkbox"/>	

SELF DEVELOPED PCBS			
No.	Checkpoint	Checkbox	Comment
	▶ Ask for spare PCB of self developed PCBs		
	19 Sufficient spacing regarding system voltage and implementation	<input type="checkbox"/>	
	20 All components span the complete required isolation barrier	<input type="checkbox"/>	
	21 Sufficient insulation and temperature rating of coating if used, datasheet available	<input type="checkbox"/>	
	22 Coating process according to datasheet	<input type="checkbox"/>	
	23 The 1 min AC RMS isolation test voltage is \geq 3x max. TS voltage	<input type="checkbox"/>	
	24 The working voltage of the isolation barrier, if specified in the datasheet, is higher than the maximum TS voltage	<input type="checkbox"/>	
	25 BSPD PCB is standalone with only minimum interface	<input type="checkbox"/>	
	26 BSPD PCB(s) are directly supplied from the LVMS	<input type="checkbox"/>	

MASTER SWITCHES			
No.	Checkpoint	Checkbox	Comment

27	TSMS & LVMS installed on the right side of the vehicle and located next to each other	<input type="checkbox"/>	
28	TSMS & LVMS are easily accessible	<input type="checkbox"/>	
29	All master switches are located above 80% of shoulder height of Percy	<input type="checkbox"/>	
30	Rigidly mounted	<input type="checkbox"/>	
31	Not mounted on removable bodywork	<input type="checkbox"/>	
32	Rotary type with removable handle (50mm)	<input type="checkbox"/>	
33	ON position in horizontal	<input type="checkbox"/>	
34	"ON" and "OFF" positions marked	<input type="checkbox"/>	
35	TSMS with locking mechanism for "OFF" position	<input type="checkbox"/>	
36	LVMS marked with "LV" and symbol showing a red spark in a white edged blue triangle	<input type="checkbox"/>	
37	LVMS mounted on an red circular area on high contrast background	<input type="checkbox"/>	
38	Circular area diameter ≥50 mm	<input type="checkbox"/>	
39	TSMS marked with "TS" and triangle with black lightning bolt on yellow background	<input type="checkbox"/>	
40	TSMS mounted on an orange circular area on high contrast background	<input type="checkbox"/>	
41	Circular area diameter ≥50 mm	<input type="checkbox"/>	

MEASURING POINTS

No.	Checkpoint	Checkbox	Comment
42	Two TS voltage measuring points on orange background	<input type="checkbox"/>	
43	A black LV ground measuring point installed	<input type="checkbox"/>	
44	Next to the master switches	<input type="checkbox"/>	
45	4mm shrouded banana jacks	<input type="checkbox"/>	
46	Non conductive cover	<input type="checkbox"/>	
47	Cover removable without tools	<input type="checkbox"/>	
48	Correctly marked (TS+, TS-, GND)	<input type="checkbox"/>	
49	TSMP directly connected according to T 1.3.1	<input type="checkbox"/>	

TS SHUTDOWN DEVICES

No.	Checkpoint	Checkbox	Comment
50	Two shutdown buttons installed next to the main hoop	<input type="checkbox"/>	
51	Right and left on the vehicle at approx. height of drivers head	<input type="checkbox"/>	
52	Push-Pull or Push-Rotate-Pull functionality	<input type="checkbox"/>	
53	Diameter > 39 mm	<input type="checkbox"/>	
54	Marked with red sparked sticker	<input type="checkbox"/>	
55	One cockpit shutdown button installed	<input type="checkbox"/>	
56	Push-Pull or Push-Rotate-Pull functionality	<input type="checkbox"/>	
57	Marked with red sparked sticker	<input type="checkbox"/>	
58	Easy actuation by the driver	<input type="checkbox"/>	
59	Diameter ≥24 mm	<input type="checkbox"/>	
60	All shutdown buttons are red in colour	<input type="checkbox"/>	
61	Inertia switch rigidly mounted to the chassis and can be demounted for functionality test	<input type="checkbox"/>	
62	Inertia switch mounted upright or mounting direction is allowed in the datasheet	<input type="checkbox"/>	
	• Check interlocks on ..		
63	TS accumulator container(s)	<input type="checkbox"/>	
64	Inverters	<input type="checkbox"/>	
65	HVD	<input type="checkbox"/>	
66	Power distribution boxes	<input type="checkbox"/>	
67	Energy meter box	<input type="checkbox"/>	
	• Outboard wheel motors . . .		
68	. . . have a dedicated interlock wire routed along the TS wiring, must act before the TS wiring or its clamping fails	<input type="checkbox"/>	
69	. . . have a dedicated interlock wire routed along a suspension member, must act if the suspension fails	<input type="checkbox"/>	
70	. . . interlock(s) can be opened for demonstration	<input type="checkbox"/>	

COCKPIT INDICATORS

No.	Checkpoint	Checkbox	Comment
71	IMD and AMS indicator light illuminate for 1 to 3 s for visible check	<input type="checkbox"/>	
	• AMS indicator light . . .		
72	. . . is inside the cockpit and marked with "AMS"	<input type="checkbox"/>	
73	. . . is illuminated red and visible in bright sunlight, even from outside	<input type="checkbox"/>	
74	. . . is visible for the driver	<input type="checkbox"/>	
	• IMD indicator light . . .		
75	. . . is inside the cockpit and marked with "IMD"	<input type="checkbox"/>	
76	. . . is illuminated red and visible in bright sunlight, even from outside	<input type="checkbox"/>	
77	. . . is visible for the driver	<input type="checkbox"/>	
	• TS Indicator . . .		
78	. . . is inside the cockpit and marked with "TS off"	<input type="checkbox"/>	
79	. . . is illuminated green and visible in bright sunlight	<input type="checkbox"/>	
80	. . . is visible for the driver	<input type="checkbox"/>	

TS VOLTAGE

No.	Checkpoint	Checkbox	Comment
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	▶ Measure voltage at TS measuring points.	<input type="checkbox"/>	
81	Equal or less than 60 VDC.	<input type="checkbox"/>	
TS WIRING			
No.	Checkpoint	Checkbox	Comment
82	All TS wiring and components (including the HVD) have to be in the envelope and behind the impact structures	<input type="checkbox"/>	
83	TS cannot be activated if TS connectors outside of enclosures are connected other than the design intent configuration	<input type="checkbox"/>	
84	TS wires of outboard wheel motors must not be able to reach the cockpit opening in case of a wire break	<input type="checkbox"/>	
85	The wiring outside of the impact structure is the shortest possible distance	<input type="checkbox"/>	
86	All TS wires and connectors have proper overcurrent protection	<input type="checkbox"/>	
87	TS wiring channels are orange	<input type="checkbox"/>	
88	No other wires than TS wires are orange	<input type="checkbox"/>	
89	TS wiring outside electrical enclosures in separate non-conductive enclosure or orange shielded cable	<input type="checkbox"/>	
90	Securely anchored to withstand at least 200 N if outside of enclosure	<input type="checkbox"/>	
91	Located out of the way of possible snagging or damage	<input type="checkbox"/>	
92	Shielded against rotating/moving parts	<input type="checkbox"/>	
93	No wire lower than the chassis	<input type="checkbox"/>	
94	TS and LV wires separated (n/a for interlock)	<input type="checkbox"/>	
95	Marked with gauge, temperature rating and voltage rating (max. TS voltage)	<input type="checkbox"/>	
96	Suitable temperature rating of at least 85 degrees	<input type="checkbox"/>	
97	Positive locking mechanism on every screwed connection (Photographs for all inaccessible TS connections)	<input type="checkbox"/>	
98	TSMPs: positive locking mechanism on every connection according to T 10.2 or EV 4.5.16 (Photographs for all inaccessible TS connections)	<input type="checkbox"/>	
99	Insulation is not insulating tape or rubber-like paint	<input type="checkbox"/>	
TS WARNING STICKERS			
No.	Checkpoint	Checkbox	Comment
	▶ Check for warning stickers on TS containing enclosures (triangle with black lightning bolt on yellow background)	<input type="checkbox"/>	
100	Inverter(s)	<input type="checkbox"/>	
101	Motor(s)	<input type="checkbox"/>	
102	Power Distribution box(es)	<input type="checkbox"/>	
103	Energy meter box	<input type="checkbox"/>	
104	HVD	<input type="checkbox"/>	
105	Other TS containing enclosures	<input type="checkbox"/>	
TRACTIVE SYSTEM PROTECTION			
No.	Checkpoint	Checkbox	Comment
	▶ Check opening in TS enclosures, try to reach TS potentials with insulated test probe (100mm length, 6mm diameter)	<input type="checkbox"/>	
106	Not possible to reach any TS potentials	<input type="checkbox"/>	
107	All connections from a TS component to external devices, such as laptops must include galvanic isolation	<input type="checkbox"/>	
108	TS components and containers protected from moisture	<input type="checkbox"/>	
HIGH VOLTAGE DISCONNECT			
No.	Checkpoint	Checkbox	Comment
109	Clearly marked with "HVD"	<input type="checkbox"/>	
110	Distance to ground greater than 350 mm	<input type="checkbox"/>	
111	Inside roll-over protected envelope	<input type="checkbox"/>	
112	Unobstructed and directly accessible	<input type="checkbox"/>	
113	No remote actuation (e.g. through wires)	<input type="checkbox"/>	
114	Integrated interlock	<input type="checkbox"/>	
	▶ Stand next to the vehicle, remove HVD	<input type="checkbox"/>	
115	Removed within 10 s without tools	<input type="checkbox"/>	
116	TS protection still given (insulated test probe)	<input type="checkbox"/>	
117	If a dummy connector for protection is used, it must be stored at the push bar	<input type="checkbox"/>	
TRACTIVE SYSTEM ACTIVE LIGHT			
No.	Checkpoint	Checkbox	Comment
118	Mounted below highest point of the main roll hoop and within the roll-over protected envelope	<input type="checkbox"/>	
119	Fully illuminated surface	<input type="checkbox"/>	
120	Visible by a person standing 3 m away from TSAL (1.6m eye height)	<input type="checkbox"/>	
121	≤10° blocked by main hoop	<input type="checkbox"/>	
122	Check "TSAL green" sign for working on the car	<input type="checkbox"/>	
ENERGY METER			
No.	Checkpoint	Checkbox	Comment
123	Energy meter is fully enclosed in a housing but not in the accumulator	<input type="checkbox"/>	
124	Energy meter is rigidly mounted	<input type="checkbox"/>	
125	All energy from accumulator flows through the energy meter	<input type="checkbox"/>	
FIREWALLS			

No.	Checkpoint	Checkbox	Comment
	<ul style="list-style-type: none"> Separates any point of the driver (less than 100mm above the bottom of the helmet of the tallest driver) from any TS component (including TS wiring) . . . 	<input checked="" type="checkbox"/>	
126	. . . behind the driver's back	<input type="checkbox"/>	
127	. . . at the sides of the driver	<input type="checkbox"/>	
128	. . . at the front of the vehicle	<input type="checkbox"/>	
129	. . . HVD must be behind firewall or firewall must be integrated, also for the connector	<input type="checkbox"/>	
130	First layer, facing TS must be made of Aluminum with a thickness of at least 0.5mm	<input type="checkbox"/>	
131	Second layer, facing driver must be made of electrically insulated material (no CFRP)	<input type="checkbox"/>	
132	Material meets UL94-V0, FAR25 or equivalent	<input type="checkbox"/>	
133	TSAC cooling duct openings do not point towards the driver, although if behind a firewall	<input type="checkbox"/>	
ACCELERATION PEDAL POSITION SENSOR (APPS)			
No.	Checkpoint	Checkbox	Comment
134	Returns to original position if not actuated	<input type="checkbox"/>	
135	At least two sensors with different, non-intersecting transfer functions, with either different gradients and/or offsets to the other(s) are installed. (For digital sensors, a checksum is necessary)	<input type="checkbox"/>	
136	Sensors are protected from being mechanically over-stressed (positive stop of pedal)	<input type="checkbox"/>	
137	Minimum two springs installed to return pedal	<input type="checkbox"/>	
138	Each spring still returns pedal with the second one disconnected (springs in the torque encoders not counted)	<input type="checkbox"/>	
BRAKE LIGHT			
No.	Checkpoint	Checkbox	Comment
139	Only one brake light in red color	<input type="checkbox"/>	
140	Clearly visible from behind the vehicle	<input type="checkbox"/>	
141	Located on vehicle centerline	<input type="checkbox"/>	
142	Height between wheel centerline and drivers shoulder	<input type="checkbox"/>	
143	Round, triangle, or rectangular on black background	<input type="checkbox"/>	
144	15 cm ² minimum illuminated area OR LED strips with a total length greater than 150mm with elements closer than 20 mm apart	<input type="checkbox"/>	
145	Sufficient brightness of the brake light even in bright sunlight	<input type="checkbox"/>	
ACCUMULATOR MANAGEMENT SYSTEM			
No.	Checkpoint	Checkbox	Comment
	▶ Disconnect TS accumulator	<input checked="" type="checkbox"/>	
146	AMS indicator light is illuminated red	<input type="checkbox"/>	
	▶ Ask the team to connect their laptop to the AMS	<input checked="" type="checkbox"/>	
147	AMS data can be displayed	<input type="checkbox"/>	
DISCHARGE CIRCUIT AND BODY PROTECTION RESISTORS			
No.	Checkpoint	Checkbox	Comment
	▶ Switch off LV	<input checked="" type="checkbox"/>	
	▶ Measure resistance between TS+ and TS- Measuring Points	<input checked="" type="checkbox"/>	
148	Resistance is 30 kΩ + discharge resistor	<input type="checkbox"/>	
149	Body protection resistor power and voltage rating is sufficient	<input type="checkbox"/>	
150	Dis-charge power rating is sufficient for continuous dis-charge	<input type="checkbox"/>	
INSULATION MEASUREMENT TEST			
No.	Checkpoint	Checkbox	Comment
	▶ Choose test voltage to 500V	<input checked="" type="checkbox"/>	
	▶ Connect insulation tester to TS+ and LV ground	<input checked="" type="checkbox"/>	
	▶ Measure resistance: Riso+ = MΩ	<input checked="" type="checkbox"/>	
151	Resistance is much higher than (min. 500Ω/V*Umax)	<input type="checkbox"/>	
	▶ Connect insulation tester to TS- and LVMP	<input checked="" type="checkbox"/>	
	▶ Measure resistance: Riso- = MΩ	<input checked="" type="checkbox"/>	
152	Resistance is much higher than (min. 500Ω/V*Umax)	<input type="checkbox"/>	
153	Resistances are nearly equal	<input type="checkbox"/>	
154	IMD chassis ground measurement line from TSAC connected to the main hoop by a separate wire	<input type="checkbox"/>	
GROUNDING CHECKS			
No.	Checkpoint	Checkbox	Comment
	Each TS enclosure must either contain a ≥0.5 mm properly grounded conductive layer or all materials must be electrically isolating for each own. Conductive seat, driver harness, and firewall mountings, as well as TS firewalls and conductive parts protruding through TS enclosures, must be properly grounded. A conductive part having ≤300 mΩ measured at 1 A and being able to continuously carry ≥10 % of the TS main fuse to LVS ground is properly grounded. Other conductive parts within 100 mm of any TS component must be ≤100 Ω to LVS ground.	<input checked="" type="checkbox"/>	If the team has no current rating for used cables regarding rule EV 3.1.2, use following table as reference: https://www.engineeringtoolbox.com/wire-gauges-d_419.html
	• It is possible to join two TS enclosures one following EV 3.1.1 point 1 and the other one following EV 3.1.1 point 2 if each individual TS enclosure is fully closed.	<input checked="" type="checkbox"/>	
	▶ Check for each TS enclosure . . .	<input checked="" type="checkbox"/>	
155	. . . all materials used to build a TS enclosure separately have a resistance ≥2 MΩ @ 500 V ⇒ fully isolated TS enclose, no grounded layer needed	<input type="checkbox"/>	
156	. . . expect e.g. screws, (shielded) connectors, backing plates isolating materials used ⇒fully isolated TS enclose, no grounded layer needed but protruding elements must be properly grounded	<input type="checkbox"/>	

157	... at least one material has $<2\text{ M}\Omega \Rightarrow \geq 0.5\text{ mm}$ thick solid grounded layer made of aluminum or better required and properly grounded	<input type="checkbox"/>	
158	... a $\geq 0.9\text{ mm}$ thick steal layer might be used for TSAC as the grounded layer	<input type="checkbox"/>	
	▶ Measure resistance of conductive parts to LVS ground(max. 300 m Ω @ 1 A) ...		
159	... next to TSMPs	<input type="checkbox"/>	
160	... main hoop	<input type="checkbox"/>	
161	... seat mounting points	<input type="checkbox"/>	
162	... driver harness mounting points	<input type="checkbox"/>	
163	... firewall mounting points, also if not protruding through the firewall	<input type="checkbox"/>	
164	... TS firewall	<input type="checkbox"/>	
165	... TS accumulator container	<input type="checkbox"/>	
166	... TS enclosures if applicable	<input type="checkbox"/>	
167	... TS enclosure protruding parts if applicable	<input type="checkbox"/>	
168	Each grounding is able to carry $\geq 10\%$ of TS main fuse	<input type="checkbox"/>	
	▶ Measure resistance of conductive parts to LVS ground (max. 100 Ω @ 0 A) ...		
169	... carbon fiber part within 10 cm around TS part	<input type="checkbox"/>	
170	... suspension front left or right if applicable	<input type="checkbox"/>	
171	... suspension rear left or right if applicable	<input type="checkbox"/>	

TEST AT HIGH VOLTAGE

TRACTIVE SYSTEM POWER UP

No.	Checkpoint	Checkbox	Comment
	▶ All driven wheels are off the ground, driven wheels removed		
	▶ Connect multimeter between TS+ and TS-		
	▶ Switch on TSMS with LVMS deactivated		
172	Voltage at TS measurement points less or equal 60VDC	<input type="checkbox"/>	
	▶ Switch on LVMS with TSMS deactivated		
173	Voltage at TS measurement points less or equal 60VDC	<input type="checkbox"/>	
	▶ Switch on TSMS and all shutdown buttons		
	▶ Reset any IMD or AMS errors		
174	TS still deactivated	<input type="checkbox"/>	
	▶ Activate TS, measure TS voltage during TS power-up. Use the team's multimeter and test leads from the push bar.		
175	System is precharged before second AIR closes	<input type="checkbox"/>	
	▶ Switch off TSMS		
176	TS voltage decreases below 60VDC within 5 s	<input type="checkbox"/>	
	▶ Try to power-up TS with switched off TSMS		
177	TS still deactivated	<input type="checkbox"/>	
	▶ Switch on TSMS		
178	TS still deactivated	<input type="checkbox"/>	

TRACTIVE SYSTEM SHUTDOWN

No.	Checkpoint	Checkbox	Comment
	▶ Connect multimeter between TS+ and TS-		
	▶ For every of the following switches, deactivation leads to TS shutdown, voltage decreases below 60VDC within 5 s		
179	LVMS	<input type="checkbox"/>	
180	Shutdown button left	<input type="checkbox"/>	
181	Shutdown button right	<input type="checkbox"/>	
182	Cockpit shutdown button	<input type="checkbox"/>	
183	Inertia switch (may be demounted for test)	<input type="checkbox"/>	
184	Brake-over-travel switch	<input type="checkbox"/>	
	▶ Show schematic of TS with all interlocks (ESF)		
185	Interlocks	<input type="checkbox"/>	

TRACTIVE SYSTEM INDICATORS

No.	Checkpoint	Checkbox	Comment
	▶ Activate LV system		
186	TSAL and Cockpit Indicator(CI) is green only	<input type="checkbox"/>	
	▶ Activate TS		
187	TSAL flashes red with freq 2 Hz - 5 Hz and CI is off	<input type="checkbox"/>	
188	TSAL is clearly visible (horizontal position, entire illuminated surface)	<input type="checkbox"/>	
	▶ Deactivate TS, disconnect AIR state detection circuitry, activate LV If activation of LV system is not possible skip test		
189	TSAL not illuminated and CI is off	<input type="checkbox"/>	
	▶ If previous test succeeded, activate TS. If TS activation is not possible, skip test		
190	TSAL flashes red and CI is off	<input type="checkbox"/>	
	▶ Deactivate TS, reconnect TSAC state detection, connect power supply $>60\text{ VDC}$ to TS via dedicated connector but NOT TSMP, activate LVS		
191	TSAL is both green and red flashing simultaneously and CI is on	<input type="checkbox"/>	
	▶ Disconnect power supply, remove HVD, override HVD interlock (!! cover HV potentials !!), activate LV and TS		

192	TSAL and CI is off	<input type="checkbox"/>	
INSULATION MONITORING DEVICE			
No.	Checkpoint	Checkbox	Comment
	▶ Determine Rtest = (max TS voltage * 250 Ω/V) - BPR	<input type="checkbox"/>	
	▶ Activate TS, connect RTest between TS+ and LV GND	<input type="checkbox"/>	
193	Shutdown circuits opens within 30 s	<input type="checkbox"/>	
194	IMD indicator light illuminates	<input type="checkbox"/>	
195	TS voltage decreases below 60VDC within 5 s after shutdown circuit opens	<input type="checkbox"/>	
	▶ Try to activate the TS by the required additional action (EV5.11.2)	<input type="checkbox"/>	
196	Reactivation of TS is not possible	<input type="checkbox"/>	
	▶ Push the reset button which is not accessible to the driver, if any	<input type="checkbox"/>	
197	Reactivation of TS is not possible	<input type="checkbox"/>	
	▶ Remove RTest. Wait 40 s until IMD resets status output	<input type="checkbox"/>	
198	Reactivation of TS is not possible	<input type="checkbox"/>	
	▶ Push all reset buttons in the cockpit, if any	<input type="checkbox"/>	
199	Reactivation of TS is not possible	<input type="checkbox"/>	
	▶ Push the IMD reset button which is not accessible to the driver, if any	<input type="checkbox"/>	
200	Reactivation of TS is possible	<input type="checkbox"/>	
	▶ Reset vehicle and activate TS. Push and hold the reset button which is not accessible to the driver, if any. Connect RTest between TS+ and LV GND	<input type="checkbox"/>	
201	Shutdown circuits opens within 30 s	<input type="checkbox"/>	
202	IMD indicator light illuminates	<input type="checkbox"/>	
	▶ Activate TS, connect RTest between TS- and LV GND	<input type="checkbox"/>	
203	Shutdown circuits opens within 30 s	<input type="checkbox"/>	
READY TO DRIVE ACTIVATION SEQUENCE			
No.	Checkpoint	Checkbox	Comment
	▶ Activate TS, press torque pedal	<input type="checkbox"/>	
204	No turning of motors	<input type="checkbox"/>	
	▶ Let the team set the vehicle to ready to drive mode	<input type="checkbox"/>	
205	Pressing brake pedal WHILE activating is necessary	<input type="checkbox"/>	
206	Ready to drive sound duration is 1 s to 3 s	<input type="checkbox"/>	
207	Ready to drive sound is min 80 dBA (2m around the vehicle)	<input type="checkbox"/>	
208	Ready to drive sound is easy recognizable and no animal sound or song part	<input type="checkbox"/>	
	▶ Repeat the activation sequence, but push the brake pedal only once before finally pushing the activation button	<input type="checkbox"/>	
209	No ready to drive mode possible	<input type="checkbox"/>	
	▶ Disconnect the brake sensor	<input type="checkbox"/>	
210	No ready to drive mode possible	<input type="checkbox"/>	
	▶ Disconnect the second brake sensor if applicable	<input type="checkbox"/>	
211	No ready to drive mode possible	<input type="checkbox"/>	
APPS AND BSPD			
No.	Checkpoint	Checkbox	Comment
	▶ Set vehicle in ready to drive state	<input type="checkbox"/>	
212	Motors are able to turn	<input type="checkbox"/>	
	▶ Disconnect ≥50% of APPS	<input type="checkbox"/>	
213	Motors do not turn	<input type="checkbox"/>	
	▶ Disconnect all APPS	<input type="checkbox"/>	
214	Motors do not turn	<input type="checkbox"/>	
	▶ Reconnect all APPS, disconnect any communication connection between APPS and inverter while motors turn	<input type="checkbox"/>	
215	Motors stop turning	<input type="checkbox"/>	
	▶ Disconnect Brake Pressure sensor	<input type="checkbox"/>	
216	Motors stop turning	<input type="checkbox"/>	
	▶ Team simulates 5kW power, press brake representing hard braking (>0.5 s)	<input type="checkbox"/>	
217	TS shuts down	<input type="checkbox"/>	
	▶ Reactivate TS, disconnect BSPD current sensor	<input type="checkbox"/>	
218	TS shuts down	<input type="checkbox"/>	
	• Automatic BSPD reset installed?	<input type="checkbox"/>	
219	Reactivation of TS is only possible after 10 s without implausibility	<input type="checkbox"/>	
220	Wire ends of auxiliary winding for current simulation are insulated (no tape)	<input type="checkbox"/>	
SEALING OF COMPONENTS			
No.	Checkpoint	Checkbox	Comment
	▶ After all tests have been passed successfully seal the inspected TS housings:	<input type="checkbox"/>	
221	Motor Controller housing	<input type="checkbox"/>	
222	Energy Meter housing	<input type="checkbox"/>	
223	IMD housing	<input type="checkbox"/>	
224	TSAL circuitry housing	<input type="checkbox"/>	
225	BSPD casing /BSPD calibration	<input type="checkbox"/>	
226	Additional Part:	<input type="checkbox"/>	

227	Additional Part:	<input type="checkbox"/>	
OTHER COMMENTS			