



SLOVENSKI STANDARD
oSIST prEN IEC 63407:2025
01-februar-2025

Konduktivno polnjenje električnih vozil - Kontaktni vmesnik za avtomatsko priključno napravo (ACD)

Conductive charging of electric vehicles - Contact interface for automated connection device (ACD)

Charge conductive des véhicules électriques - Interface de contact pour les dispositifs de connexion automatisés (ACD)

Ta slovenski standard je istoveten z: prEN IEC 63407:2024

<https://standards.iteh.ai/catalog/standards/sist/f7f32778-0d41-47ac-a27c-42a446e04fe9/osist-pren-iec-63407-2025>

ICS:

29.120.30	Vtiči, vtičnice, spojke	Plugs, socket-outlets, couplers
43.120	Električna cestna vozila	Electric road vehicles

oSIST prEN IEC 63407:2025

en,fr,de



23H/561/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 63407 ED1	
DATE OF CIRCULATION: 2024-12-13	CLOSING DATE FOR VOTING: 2025-03-07
SUPERSEDES DOCUMENTS: 23H/528/CD, 23H/539A/CC	

IEC SC 23H : PLUGS, SOCKET-OUTLETS AND COUPLERS FOR INDUSTRIAL AND SIMILAR APPLICATIONS, AND FOR ELECTRIC VEHICLES	
SECRETARIAT: France	SECRETARY: Mrs Anne Le Guennec
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 69	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED: Electricity transmission and distribution,Energy Efficiency,Safety	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p>Attention IEC-CENELEC parallel voting</p> <p>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Conductive charging of electric vehicles - Contact interface for automated connection device (ACD)

PROPOSED STABILITY DATE: 2030

NOTE FROM TC/SC OFFICERS:

Copyright © 2024 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

1	Contents	Page
2		
3	Inhalt	
4	Introduction.....	7
5	1 Scope	8
6	2 Normative references	8
7	3 Terms and definitions	9
8	3.1 working position.....	9
9	3.2 home position	9
10	3.3 keep-out zone.....	9
11	4 Electrical requirements.....	9
12	4.1 Voltage and current requirements.....	9
13	4.1.1 Number of contacts	9
14	4.1.2 Quality of DC charging voltage.....	10
15	4.1.3 Rated continuous current	10
16	4.1.4 Short-circuit current	10
17	4.1.5 Maximum temperature of contacts	10
18	4.2 Signals.....	10
19	5 Safety requirements	10
20	5.1 Malfunction by contaminants.....	11
21	5.2 Contact sequence	11
22	5.3 Return to home position	11
23	6 Mechanical requirements	12
24	6.1 Grid of parallels and meridians.....	12
25	Figure 1 — Grid of parallels and meridians according ISO 8855.....	12
26	6.2 Specific mechanical requirements for busses.....	12
27	6.3 Tolerances of parking position	12
28	6.3.1 General.....	12
29	Figure 2 — Location of a Contact System and Positioning Tolerances.....	13
30	6.3.2 Minimum normative requirement for parking.....	13
31	7 Environmental requirements	14
32	7.1 Degree of pollution	14
33	7.2 Overvoltage category	14
34	7.3 Ambient or operation temperature	14
35	7.4 Noise	14
36	7.5 Wind	14
37	8 Test specification and procedure	15
38	Table 1 — Dimensional inspections.....	15
39	Table 2 — Mechanical movement and operating tests.....	15
40	Table 3 — Current Carrying Capacity Tests / Heating Tests (Type Test)	17
41	Table 4 — Mechanical Endurance Type Test.....	18
42	Table 5 — Electrical Tests	19
43	Table 6 — Salt Spray Test (Type Test).....	20
44	8.1 Special tests	21
45	8.1.1 Breaking capacity for ACD classified as suitable for breaking under load.....	21
46	Figure 3 — Circuit diagram for breaking capacity test.....	22
47	8.1.2 Breaking capacity for ACD classified as not suitable for breaking under load.....	24

48	9	Documentation	24
49	Annex A (normative)	ACD mounted on the infrastructure - ACD counterpart on the roof of the vehicle	
50		25
51	A.1	Generals of infrastructure mounted ACD function	25
52	A.2	ACD mounted on the infrastructure – ACD counterpart on the roof of the vehicle with two in-	
53		line and two parallel contact bars	25
54	A.2.1	ACD counterpart mechanical arrangement	25
55		Figure A.1 — Mechanical arrangement of counter part	27
56		Figure A.2 — Principal proposal roof rail shapes with rounded surfaces	27
57	A.2.2	Keep-out zone	28
58		Figure A.4 — Keep-out zone driving direction	29
59		Figure A.5 — Keep-out zone vertical to driving direction	30
60	A.2.3	Mechanical arrangement moving part	30
61	A.2.4	Connected moving part and counterpart (informative)	31
62		Figure A.6 — Connected mobile assembly automatic coupler	32
63	A.2.5	Specific requirements	32
64	A.2.5.1	Contact force	32
65	A.2.5.2	Specific gauge for testing	32
66	A.2.5.3	Gauge as standard ACD counterpart for testing an ACD	32
67		Figure A.7 — Gauge ACD counterpart	33
68	A.2.5.4	Gauge as standard ACD for testing an ACD counterpart	33
69		Figure A.8 — Gauge ACD	34
70	A.3	ACD mounted on the infrastructure – ACD counterpart on the roof of the vehicle with in-line	
71		roof contact bars	34
72	A.3.1	Additional generals for this application	34
73	A.3.2	ACD counterpart mechanical arrangement	34
74		Figure A.9 — Mechanical arrangement of counter part	36
75		Figure A.10 — Roof rail shapes with rounded surfaces CP and PE	37
76		Figure A.11 — Roof rail shapes with rounded surfaces DC+ and DC-	38
77	A.3.3	Keep-out zone	38
78		Figure A.12 — Keep-out zone	39
79		Figure A.13 — Example of keep-out zone driving direction for a truck	40
80	A.3.4	Mechanical arrangement moving part	40
81	A.3.5	Connected moving part and counterpart (informative)	41
82		Figure A.14 — Illustration of the automatic coupler when connected	42
83	A.3.6	Specific requirements	43
84	A.3.6.1	Contact force	43
85	A.3.6.2	Test specification and procedure	43
86	A.3.6.3	Specific gauge for testing	43
87	A.3.6.4	Gauge as standard ACD counterpart for testing an ACD	43
88		Figure A.15 — Gauge ACD counterpart	44
89	A.3.6.5	Gauge as standard ACD for testing an ACD counterpart	44

90	Figure A.16 — Gauge ACD	44
91	A.4 ACD mounted on the infrastructure – ACD counterpart on the roof of the vehicle with contact	
92	dome	45
93	A.4.1 Additional generals for this application	45
94	A.4.2 ACD counterpart mechanical arrangement	45
95	Figure A.17 — mechanical arrangement of counter part	46
96	Figure A.18 — Mechanical arrangement of counter part	47
97	A.4.3 ACD counterpart keep-out zone	48
98	A.4.3.1 General	48
99	Figure A.19 — Keep-out zone driving direction and vertical to driving direction	48
100	A.4.3.2 Mechanical arrangement moving part	48
101	A.4.4 Specific requirements	48
102	A.4.4.1 Contact force	48
103	A.4.4.2 Specific gauge for testing	49
104	A.4.4.3 Gauge as standard ACD counterpart for testing an ACD	49
105	Figure A.20 — Gauge ACD counterpart	49
106	A.4.4.4 Gauge as standard ACD for testing an ACD counterpart	49
107	Figure A.21 — Gauge ACD	50
108	Annex B (normative) ACD mounted on the roof of the vehicle - ACD counterpart on the infrastructure	
109	51
110	B.1 General	51
111	B.2 Mechanical arrangement ACD counterpart	51
112	Figure B.1 — ACD Counterpart in infrastructure, principle positions of contact strips, dimension of	
113	connection interface	53
114	B.3 ACD counterpart keep-out zone	53
115	Figure B.2 — Side view of ACD counterpart, ACD working range and keep-out zone	53
116	Figure B.3— Front view of ACD counterpart, ACD working range and keep-out zone	54
117	B.4 Mechanical arrangement moving part	54
118	B.5 Specific requirements	55
119	B.5.1 Contact forces	55
120	B.5.2 Specific gauge for testing	55
121	B.5.2.1 General	55
122	B.5.2.2 Gauge as standard ACD counterpart for testing an ACD	55
123	Figure B.4 — Gauge ACD counterpart	56
124	B.5.2.3 Gauge as standard ACD for testing an ACD counterpart	56
125	Figure B.5 — Gauge ACD	57
126	Annex C (normative) ACD mounted underneath the vehicle - ACD counterpart on the ground	58
127	C.1 General	58
128	C.2 ACD mounted underneath the vehicle - ACD counterpart on the infrastructure with three in-line	
129	contact segments	58
130	C.2.1 ACD counterpart mechanical arrangement	58
131	Figure C.1 — Mechanical arrangement of ACD counter part	60

132	C.2.2	ACD mechanical arrangement	61
133	Figure C.2	— Mechanical arrangement of ACD.....	62
134	C.3	Connected automatic coupler.....	62
135	Figure C.3	— Automatic coupler (nominal position).....	63
136	Figure C.4	— Automatic coupler (extreme left and front position).....	64
137	C.4	Keep-out-zone	64
138	C.5	Specific requirements.....	65
139	C.5.1	Lateral positioning	65
140	C.5.2	Longitudinal positioning.....	65
141	C.5.3	Vertical positioning	65
142	C.5.4	Reachable contacts.....	65
143	C.5.5	Contact force	65
144	C.5.6	Rated current (short-term current).....	65
145	C.5.7	Curb lateral reference.....	65
146	Figure C.5	— Curb shape boss type	66
147	Figure C.6	— Curb shape recess type.....	66
148	Figure C.7	— ACD counterpart roadway integration (top view) for information only.....	66
149	C.5.8	Protection by obstacle	67
150	C.5.9	Protection by obstacle – Vehicle requirement.....	67
151	Figure C.8	— Maximum vehicle height and barrier close to the vehicle.....	67
152	Figure C.9	— Maximum vehicle height with lowest and safe position detection of the barrier.....	67
153	Figure C.10	— Minimum vehicle height	67
154	C.5.10	Power interface	67
155	C.5.11	Control/command interface	68
156	C.5.11.1.1	Earthing	68
157	C.5.11.1.2	Detection	68
158	Figure C.11	— Signal loop layout.....	68
159	C.6	Specific tests specification and procedure	68
160	Table C.1	— Additional Mechanical Tests	69
161	Table C.2	— Additional Electrical Tests.....	69
162	C.7	Specific gauge for testing	69
163	C.7.1	General.....	69
164	C.7.2	Gauge as standard ACD counterpart for testing an ACD	69
165	Figure C.12	— Mechanical arrangement of ACD counterpart 3D view	70
166	Figure C.13	— Mechanical arrangement of ACD counter part	70
167	C.7.3	Gauge as standard ACD for testing an ACD counterpart	70
168	Annex D (normative)	ACD mounted on the infrastructure and connecting to the side or on the roof of	
169		the vehicle and ACD mounted on the side or on the roof of the vehicle and connecting to the	
170		infrastructure.....	72
171	D.1	General.....	72
172	Table D.1	— ACD Type D Sizes	72
173	Figure D.1	— Overview of case D and case E mounting vehicle and stationary side.....	73

174	D.2	Safety	73
175	D.2.1	General.....	73
176	D.2.2	Degree of protection against hazardous-live-parts	73
177	D.2.3	Contact sequencing.....	73
178	D.2.4	Prevention of damages from unintended movement	73
179	D.3	Mechanical arrangement of the counterpart	74
180	D.3.1	General.....	74
181	D.3.2	Moving pin side	74
182		Figure D.2 — ACD plug side (moving).....	74
183	D.3.3	Dimensional requirements.....	74
184		Figure D.3 — Dimensions of contact arrangement on pin side	75
185	D.3.4	Contact quality and plating	75
186	D.4	Test specification and procedure	76
187	D.5	Mechanical arrangement of the socket side.....	76
188		Figure D.4 — ACD socket side	76
189		Figure D.5 — Example of ACD socket side cone dimension	77
190	D.6	Keep-out zone	77
191		Figure D.6 — Example of Keep-out zone CD socket side dimensions.....	78
192		Bibliography.....	79
193			
194			


 (https://standards.iteh.ai)
 Document Preview

[oSIST prEN IEC 63407:2025](https://standards.iteh.ai/catalog/standards/sist/f7f32778-0d41-47ac-a27c-42a446c04fe9/osist-pren-iec-63407-2025)

<https://standards.iteh.ai/catalog/standards/sist/f7f32778-0d41-47ac-a27c-42a446c04fe9/osist-pren-iec-63407-2025>

195 Introduction

196 The electrical interface for charging electrically propelled vehicles with plugs, socket-outlets, vehicle
197 connectors and vehicle inlets is described in IEC 62196 series and IEC 61851-23. For heavier vehicles such
198 as buses and trucks, requirements of short charging times with high energy present a problem of handling,
199 and safety with hand-held connecting devices. For these high current charging applications, an automated
200 connection device (ACD) is of interest.

201 An automatic coupler consists out of a mobile assembly with electrical contacts, called ACD and fixed
202 electrical contacts, called ACD counterpart. Automatic couplers allow an unmanned connection of high-
203 current contacts and signal/control contacts.

204 This document contains requirements for all type of ACDs. Its annexes describe specific implementations
205 and specific requirements. This document is expected to be read in conjunction with IEC 61851-23-1:—¹.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN IEC 63407:2025](https://standards.iteh.ai/catalog/standards/sist/f7f32778-0d41-47ac-a27c-42a446e04fe9/osist-pren-iec-63407-2025)

<https://standards.iteh.ai/catalog/standards/sist/f7f32778-0d41-47ac-a27c-42a446e04fe9/osist-pren-iec-63407-2025>

¹ Under preparation. Stage at time of publication: IEC CDV 61851-23-1:2020.

206 **1 Scope**

207 This document is applicable to automatic couplers of standardized configuration, intended for use in electric
208 vehicle conductive charging systems which incorporate control means, with rated operating voltage up to 1
209 500 V DC.

210 This document applies to high power DC interfaces intended for use in isolated conductive charging systems,
211 for circuits specified in IEC 61851-23-1:—¹.

212 The requirements of this standard applies only to automatic couplers defined in the annexes A, B, C and D
213 of this document.

214 The ACDs covered by this document are used only in charging mode 4, according to IEC 61851-23-1:—¹,
215 3.1.201 Case D or 3.1.202 Case E.

216 This document describes the requirements for an automatic couplers in regard of safety, function and testing.
217 This document describes basic parameters that can be standardized for different automatic couplers s.
218 Automatic couplers s following these standardized parameters will have the benefit of being compatible,
219 even if they are based on different technologies.

220 This document does not apply to solutions based on a vehicle connector described in IEC 62196-3 and IEC
221 TS63379 driven by an automatic mechanism, as, for instance, a robotic arm.

222 This document does not apply to systems described in IEC 61851-26.

223 This document does not cover all safety aspects related to maintenance.

224 **2 Normative references**

225 The following documents are referred to in the text in such a way that some or all of their content constitutes
226 requirements of this document. For dated references, only the edition cited applies. For undated references,
227 the latest edition of the referenced document (including any amendments) applies.

228 EN 1652, *Copper and copper alloys - Plate, sheet, strip and circles for general purposes*

229 EN 12163, *Copper and copper alloys - Rod for general purposes*

230 EN 12167, *Copper and copper alloys - Profiles and bars for general purposes*

231 IEC 60068-2-11, *Environmental testing - Part 2: Tests - Test Ka: Salt mist*

232 IEC 60204-1: 2016, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

233 IEC 60309-1, *Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes – Part 1:*
234 *General requirements*

235 IEC 60512-2-2, *Connectors for electronic equipment - Tests and measurements – Part 2-2: Electrical*
236 *continuity and contact resistance tests - Test 2b: Contact resistance – Specified test current method*

237 IEC 60512-5-1, *Connectors for electronic equipment - Tests and measurements - Part 5-1: Current-carrying*
238 *capacity tests - Test 5a: Temperature rise (IEC 60512-5-1)*

239 IEC 60512-5-2, *Connectors for electronic equipment - Tests and measurements - Part 5-2: Current-carrying*
240 *capacity tests - Test 5b: Current-temperature derating (IEC 60512-5-2)*

241 IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

242 IEC 61851-1:2019, *Electric vehicle conductive charging system - Part 1: General requirements*

243 IEC 61984:2008, *Connectors - Safety requirements and tests*

- 244 IEC 61851-23-1:—,² *Electric vehicle conductive charging system – Part 23-1: DC charging with an automatic*
245 *connection system*
- 246 IEC 62196-1:2014, *Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of*
247 *electric vehicles - Part 1: General requirements*
- 248 IEC 62497-1, *Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and*
249 *creepage distances for all electrical and electronic equipment*
- 250 ISO/DIS 5474-3, *Electrically propelled road vehicles - Functional requirements and safety requirements for*
251 *power transfer - Part 3: DC power transfer*
- 252 IEC 62477-1:2016, *Safety requirements for power electronic converter systems and equipment – Part 1:*
253 *General*
- 254 IEC TS 63379, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – conductive charging of electric*
255 *vehicles - Vehicle connector, vehicle inlet and cable assembly for Megawatt DC charging—²*

256 **3 Terms and definitions**

257 For the purposes of this document, the terms and definitions given in IEC 61851-23-1:—¹ and the following
258 apply.

259 ISO and IEC maintain terminological databases for use in standardization at the following addresses:

260 — ISO Online browsing platform: available at <https://www.iso.org/obp>

261 — IEC Electropedia: available at <http://www.electropedia.org/>

262 **3.1 working position**

263 position reached when the ACD and the fixed ACD counterpart have mated and when the physical contact
264 is established, and energy transfer is allowed

265 **3.2 home position**

266 position where the ACD is not engaged with its counterpart and where safe clearance is present with street
267 and infrastructure

268 **3.3 keep-out zone**

269 Space around automatic coupler, where no items shall be installed to avoid collision with any moving part of
270 the ACD or ACD counterpart.

271 **4 Electrical requirements**

272 **4.1 Voltage and current requirements**

273 **4.1.1 Number of contacts**

274 For systems described in IEC 61851-23-1:—¹, Annexes AA, BB and CC:

275 Four contacts: DC+, DC-, PE and CP (IEC 61851-23-1:—¹, Figure AA.1, IEC 61851-23-1:—¹, Figure BB.1
276 and IEC 61851-23-1:—¹, Figure CC.14)

277 For systems described in IEC 61851-23-1:—¹, Annex KK:

278 three contacts: DC+, DC-, PE (IEC 61851-23-1:—¹, Figure KK.14)

¹ Under preparation. Stage at time of publication: IEC CDV 61851-23-1:2020.

² Under preparation.

279 4.1.2 Quality of DC charging voltage

280 Since the ACD is part of the power transmitting system, its influence on the quality of DC charging voltage
281 shall be considered, to not exceed the levels indicated in IEC 61851-23-1: Chapter 101.1.2 —¹.

282 4.1.3 Rated continuous current

283 The rated current can be a continuous current or the average of an intermittent current.

284 The rated current is defined by the vehicle and the application. The manufacturer of the ACD shall guarantee
285 that his system is sized and safe for this current by confirming the physical values described in this document.

286 In the case of an automatic coupler consisting of an ACD and an ACD counterpart from different or unknown
287 manufacturers, the minimum current requirements that fulfil the requirements for a particular annex of this
288 document shall be assumed unless there are sensing devices that can reliably determine if the ACD is
289 operating within the defined limits of this document. However, if the ACD and the ACD counterpart can be
290 definitively determined to be of a particular type and manufacturer, higher currents with or without sensing
291 devices can be used, according to manufacturer's specifications.

292 4.1.4 Short-circuit current

293 In case of short circuit, the ACD shall not cause dangerous situation such as an explosion or a fire. After
294 such a short circuit, the ACD shall be checked for proper function prior further service. The procedure for
295 checking proper function shall be part of the maintenance manual.

296

297 For the values of short circuit current please reference to IEC 61851-23-1 chapter 13.101 (69/943/NP).

298 For the actual values of short circuit current please refer to IEC61851-23-1 chapter 13.101.

299 4.1.5 Maximum temperature of contacts

300 The contacts of the automatic coupler have a temperature rise depending on the charging current
301 (rated continuous current or intermitted current). This temperature rise shall be considered by the
302 system integrator, so that it has no damaging influence on materials or devices in the surrounding
303 of the automatic coupler at vehicle side and infrastructure side.

304 The ACD manufacturer shall indicate this maximum temperature rise for a rated current and the ambient
305 temperature at which it is reached in their documentation.

306 1 IEC 61851-23-1 under development, all references are to IEC 69/943/NP version.

307

308 Compliance is checked by test in Clause 8, Table 3.

309 4.2 Signals

310 The minimum signals required are the status (the position) of the ACD. All other signalling necessary for
311 pairing or charging are described in IEC 61851-23-1:—¹ or in ISO 15118.

312 Signal 1: ACD is in home position.

313 Signal 2: ACD has reached working position (see annexes for specific implementation).

314 The home position signal is a "safety-related part of a control system (SRP/CS)" in regard of ISO 13849-1; chapter 3.1.1.

315 NOTE: There may be a timeout if ACD is moved but the working position has not been reached in a specific time frame.
316 This time frame has to be defined by the ACD manufacturer. This time out functionally is described in IEC 61851-23-1:—.

317 5 Safety requirements

318 Relevant safety requirements in regard of the system are given by the IEC 61851-23-1.

319 **5.1 Malfunction by contaminants**

320 In case of blocking contaminants, the ACD might not reach the home position. There shall be an installed
321 system that monitors the ACD to reach the home position (see 4.2). This shall be realized by the ACD itself
322 and communicated to the overall system (EV or EVSE).

323 NOTE: For reaction of this missing home position signal, refer to IEC 61851-23-1:—¹, CC.5.201, KK.5.201 or
324 ISO 5474-:7.6.5.

325 **5.2 Contact sequence**

326 According to IEC 61851-23-1:—¹, the connection and disconnection of the ACD shall be done without
327 current under normal operation. It is not necessary to have a contact sequence. But if a contact sequence is
328 applied, the order of disconnection shall be one of:

329
330 – CP contact,
331 – DC power contacts,
332 – PE contact.

333
334 Or

335
336 – PE contact,
337 – DC power contacts,
338 – CP contact.

339
340 Or

341
342 – CP and PE contacts,
343 – DC power contacts.

344

345 The ACD shall be classified by the manufacturer as either suitable or not suitable to break under load
346 depending on whether or not breaking under load is possible under normal operation.

347 Compliance is checked by test in clause 8.1 breaking capacity.

348 NOTE: Under fault emergency disconnection situation during power transfer without a first disconnecting CP or PE,
349 arcing cannot be avoided. It is recommended to have a first disconnecting CP/PE or a guaranteed arc resistive system,
350 so that no danger situation due to that arc can occur (i. e. fire). Scope is safety and not contact degradation.

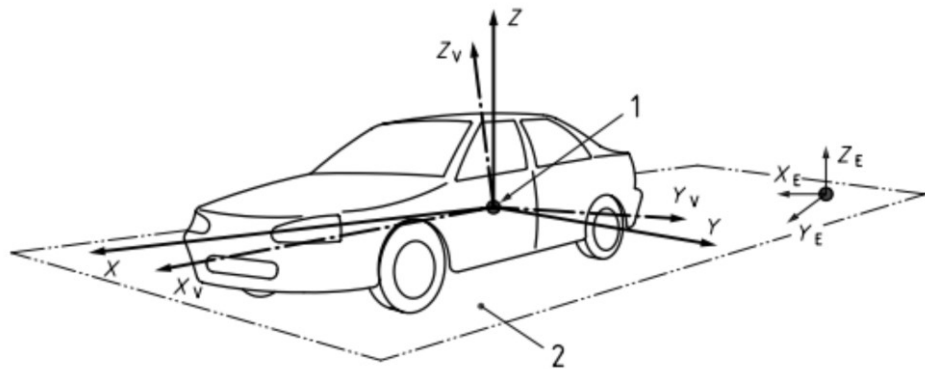
351 **5.3 Return to home position**

352 In case of an intentional or unintentional loss of supply power for the actuator of the ACD, the ACD shall
353 return to its home position. For details refer to IEC 61851-23-1:—¹, Clause 201.3 “Loss of power”

354 *Compliance is checked by test in Clause 8, Table 1 Test Number B3.*

355 6 Mechanical requirements

356 6.1 Grid of parallels and meridians



357

358 Key

No	Part
1	Reference point – axle A as explained in 6.2
2	Ground level

359

Figure 1 — Grid of parallels and meridians according ISO 8855

360 6.2 Specific mechanical requirements for busses

361 Distinction shall be made with regards to the several vehicle dimensions, for instance double/single deck
362 buses, resulting in several distances between the ACD and the ACD counterpart.

363 The centre of the nominal working position of the automatic coupler is over the axle A of the electrical vehicle
364 and the centre line from front to back.

365 The system integrator shall ensure the correct position of the ACD or ACD counterpart on the electric vehicle
366 and infrastructure.

367 NOTE: The position of the ACD or ACD counterpart on the EV depends on e.g. the installation height on the EV, the
368 installation height in the infrastructure, the curve of horizontal displacement over the working height of the ACD system
369 and vehicle height. Care should be taken to interoperability of different EVs and infrastructure situations.

370 Axle A is defined as the first front axle in regard of the driving direction of the vehicle.

371 This is the reference point for the parking tolerances during charging: x-centre, y-centre, z-centre of axle A

372 6.3 Tolerances of parking position

373 6.3.1 General

374 Figure 2 shows the location of contact systems and positioning tolerances.