

DIN SPEC 91533:2026-04 (E)

Battery swapping systems for electric heavy-duty vehicles for range extension; Text in English

Contents

	Page
Foreword	5
Introduction.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions.....	9
4 Abbreviations	10
5 General information	10
5.1 General.....	10
5.2 System components' nomenclatura	10
5.3 Depth of standardization	12
5.4 Full and partial battery swap	13
5.5 Targeted vehicles	13
5.6 Battery position	13
5.7 Drive position	14
5.8 Vehicle Coordinate System.....	14
5.9 Battery swapping station coordinate system.....	14
6 Specific requirements	15
6.1 Standard Infrastructure Interface (SII) only vehicles	15
6.1.1 General.....	15
6.1.2 Package.....	15
6.1.3 Modularity	16
6.1.4 Access	16
6.1.5 Centering system	17
6.1.6 Fastening system	17
6.1.7 Contacting system	18
6.1.8 Thermal management.....	19
6.1.9 Safety/security.....	19
6.2 Standard Battery Housing (SBH).....	20
6.2.1 General.....	20
6.2.2 Package.....	20
6.2.3 Modularity	21
6.2.4 Access	21
6.2.5 Centering system	21
6.2.6 Fastening system	22
6.2.7 Contacting system	22
6.2.8 Thermal management system.....	22
6.2.9 Safety/security	23
Annex A (informative) Exemplary Implementation	24
A.1 UniSwapHD implementation	24
A.1.1 General.....	24
A.1.2 Modularity	24
A.1.3 Centering system	24
A.1.4 Fastening system	25

A.1.5	Definitions for contacting interface between each swappable battery system and the vehicle.....	25
A.1.6	Design and centering system for contacting interface.....	25
A.1.7	Thermal management system.....	26
A.2	Qiji Solution.....	27
A.2.1	General	27
A.2.2	Package.....	27
A.2.3	Modularity	27
A.2.4	Fastening system	28
A.2.5	Definitions for contacting interface between each swappable battery system and the vehicle.....	29
A.2.6	Design and centering system for contacting interface.....	30
	Bibliography.....	31

Figures

Figure 1	— Nomenclatura, battery swapping ecosystem.....	11
Figure 2	— Nomenclatura, vehicle-sided systems.....	12
Figure 3	— Overview over different depth of standardization for swappable battery system and BSU	13
Figure 4	— Vehicle coordinate system.....	14
Figure 5	— Swapping station coordinate system	15
Figure 6	— Vehicle swapping unit dimensions	16
Figure 7	— Exemplary layout definition of screwhead position (bottom view)	18
Figure A.1	— Example of two module configuration.....	24
Figure A.2	— Exemplary layout definition (bottom view).....	25
Figure A.3	— Concept contacting design	26
Figure A.4	— Basic structure of cooling system.....	27
Figure A.5	— Example of three module configuration.....	28
Figure A.6	— Exemplary layout definition (bottom view).....	29
Figure A.7	— Connector Interface design.....	30

Tables

Table 1	— Technical parameters of the vehicle swapping unit for SII	16
Table 2	— Technical parameters of the vehicle swapping unit for SBH	21
Table A.1	— Overview of tolerances in the vehicle to station positioning system	24
Table A.2	— Technical parameters of the vehicle swapping unit	27