

DIN EN 15734-1:2022-04 (E)

Railway applications - Braking systems of high speed trains - Part 1: Requirements and definitions (includes Amendment A1:2021)

Contents		Page
European foreword		4
1 Scope		5
2 Normative references		5
3 Terms and definitions		7
4 Symbols, units and abbreviations		9
5 Design principles		9
5.1 General requirements		9
5.1.1 Safety		9
5.1.2 Fire protection		11
5.1.3 Reliability and availability		12
5.1.4 Environmental condition		12
5.1.5 Train configuration		12
5.1.6 Maximum speed and line parameters		12
5.1.7 Coupling compatibility/capability		12
5.1.8 Longitudinal track forces		13
5.1.9 EMC		13
5.1.10 Operation in very long tunnels		13
5.2 Applicable brakes		13
5.2.1 Basic architecture for high speed braking		13
5.2.2 Dynamic brakes		14
5.2.3 Friction brakes		14
5.2.4 Magnetic track brakes		14
5.2.5 Non conventional brakes		15
5.3 Dynamic brakes		15
5.3.1 General aspect		15
5.3.2 Electro-dynamic brake (depending on the catenary in function)		16
5.3.3 Rheostatic brake		16
5.3.4 Control Command of the electro-dynamic brakes		16
5.3.5 Brake resistors		17
5.3.6 Hydrodynamic brake		17
5.4 Friction brake		17
5.4.1 General		17
5.4.2 Control command		18
5.4.3 Installation of the brake equipment		19
5.4.4 Leakage		19
5.4.5 Mechanical components/bogie equipment		20
5.5 Eddy current brake		21
5.6 Magnetic track brake		23
5.7 Non conventional brakes		24
5.8 Emergency brake concept		24
5.8.1 General		24
5.8.2 General architecture		24
5.8.3 Demand phase		25
5.8.4 Collecting and distributing brake command signals		27
5.9 Service braking		28
5.9.1 Brake management - Brake blending		28

5.9.2	Brake command	29
5.9.3	Signal processing	31
5.9.4	ATC Automatic train control system (optional)	32
5.9.5	Combined braking with two brake handles	32
5.9.6	Jerk / Ramps	32
5.9.7	Coupling/Decoupling	32
5.10	Wheel slide protection and locked wheel detection	33
5.10.1	General	33
5.10.2	Wheel slide protection	33
5.10.3	Locked wheel monitoring system	34
5.11	Parking brake	34
5.12	Location of the control devices	36
5.12.1	Driver's cab	36
5.12.2	Operating devices others than in the cab	37
5.13	Brake indicators	38
5.14	Fault monitoring and diagnostics	39
5.15	Driver's brake test	41
5.15.1	General	41
5.15.2	Regular basic brake test	41
5.15.3	Full brake test	42
5.15.4	Realization of brake tests	43
5.16	Power supply	43
5.16.1	Air pressure supply	43
5.16.2	Electrical energy supply	44
5.17	Enhancement of wheel-rail adhesion	44
5.18	Maintenance	45
 6	 Brake performance	45
6.1	General	45
6.2	Emergency braking	46
6.2.1	General	46
6.3	Service braking	46
6.4	Thermal requirements	47
6.5	Adhesion values	47
 Annex A (informative)	Passenger alarm system	49
 Annex ZA (informative)	Relationship between this European Standard and the Essential Requirements of Directive (EU) 2016/797 aimed to be covered	51
 Bibliography	53	