

Risk analysis automatic service door operation in case of detection of a fire in the engine compartment or separate heater compartment

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Risk analysis to evaluate proposal below

- Reference: Document-No. 06-11
- **UN Regulation No. 107 (Uniform provisions concerning the approval of category M₂ or M₃ vehicles with regard to their general construction)**
- Draft proposal for amendments of UN Regulation No. 107
- **I Proposal**
- *UN R107, Annex 3*
- *Insert a new paragraph 7.5.1.6., to read:*
- **“7.5.1.6. In the case of vehicles of Classes II, III and B, having the engine located to the rear of the driver’s compartment, and in the event of excess temperature in the engine compartment or in any compartment where a combustion heater is located the emergency lighting system according to paragraph 7.8.3. shall automatically activate, and the power-operated exits situated on the side of the vehicle that is nearer of the side of the road corresponding to the direction of traffic for which the vehicle is designed shall open automatically when the vehicle is stationary or driving at a speed less than or equal to 3 km/h.”**
- **II Justifications**
- Automatic exits opening
- BMFE undertook the task to construct a proposal mandating automatic opening of the power-operated exits in the case of excessive temperature.
- The relevant criteria for capturing this new requirement are as follows:
- Position of the engine to the rear of the driver’s compartment
- Type of power operating door (see paragraph 7.6.7.2.) : restrict the requirement only to power operated service doors.
- Restrict the requirement only to service doors
- Speed < 3 km/h or vehicle is stationary
- Proper side of the vehicle (according to the direction of traffic)

	Identified risk	Current legislation			Proposed legislation		
		Probability	Consequences	P*C	Probability	Consequences	P*C
	Motorway 100km/h						
R1	Door opening takes long time	3	5	15	2	5	10
R2	Hard to find stop area for vehicle	3	2	6	3	2	6
R3	Passenger falling out from service door <3km/h	1	2	2	2	2	4
R4	Low visibility and smoke in passenger compartment	1	4	4	1	4	4
R5	Passenger gangway blocked	1	4	4	1	4	4
R6	Limited passenger space outside vehicle	3	2	6	3	2	6
R7	Opening of doors in traffic jam(low speed <3 km/h)	0	3	0	1	3	3
R8	Error signals from heat sensor/unintended operation	2	2	4	2	2	4
R9	Error signals from speed sensors together with fire alarm	1	0	0	1	2	2
R10	Vehicle immobilised by starting prevention device (if fitted)	0	2	0	1	2	2
	Total			41			45
	Two-way road 80km/h						
		Probability	Consequences	P*C	Probability	Consequences	P*C
R1	Door opening takes long time	3	5	15	2	5	10
R2	Hard to find stop area for vehicle	3	2	6	3	2	6
R3	Passenger falling out from service door <3km/h	1	2	2	2	2	4
R4	Low visibility and smoke in passenger compartment	1	4	4	1	4	4
R5	Passenger gangway blocked	1	4	4	1	4	4
R6	Limited passenger space outside vehicle	3	2	6	3	2	6
R7	Opening of doors in traffic jam(low speed <3 km/h)	0	4	0	1	4	4
R8	Error signals from heat sensor/unintended operation	2	2	4	2	2	4
R9	Error signals from speed sensors together with fire alarm	1	0	0	1	2	2
R10	Vehicle immobilised by starting prevention device (if fitted)	0	2	0	1	2	2
	Total			41			46
	Road tunnel 70km/h						
		Probability	Consequences	P*C	Probability	Consequences	P*C
R1	Door opening takes long time	3	5	15	2	5	10
R2	Hard to find stop area for vehicle	4	2	8	4	2	8
R3	Passenger falling out from service door <3km/h	1	2	2	2	2	4
R4	Low visibility and smoke in passenger compartment	3	4	12	3	4	12
R5	Passenger gangway blocked	1	4	4	1	4	4
R6	Limited passenger space outside vehicle	3	4	12	3	4	12
R7	Opening of doors in traffic jam(low speed <3 km/h)	0	3	0	4	3	12
R8	Error signals from heat sensor/unintended operation	2	2	4	2	2	4
R9	Error signals from speed sensors together with fire alarm	1	0	0	1	2	2
R10	Vehicle immobilised by starting prevention device (if fitted)	0	2	0	1	5	5
	Total			57			73

	Identified risk	Current legislation			Proposed legislation		
		Probability	Consequences	P*C	Probability	Consequences	P*C
	Crossing						
R1	Door opening takes long time	3	5	15	2	5	10
R2	Hard to find stop area for vehicle	4	2	8	4	2	8
R3	Passenger falling out from service door <3 km/h	1	2	2	1	2	2
R4	Low visibility and smoke in passenger compartment	1	4	4	1	4	4
R5	Passenger gangway blocked	1	4	4	1	4	4
R6	Limited passenger space outside vehicle	4	2	8	4	2	8
R7	Opening of doors in traffic jam(low speed <3 km/h)	0	2	0	4	2	8
R8	Error signals from heat sensor/unintended operation	2	2	4	2	2	4
R9	Error signals from speed sensors together with fire alarm	1	0	0	1	2	2
R10	Vehicle immobilised by starting prevention device (if fitted)	0	2	0	1	5	5
	Total			45			55
	City traffic 25km/h						
		Probability	Consequences	P*C	Probability	Consequences	P*C
R1	Door opening takes long time	1	5	5	1	5	5
R2	Hard to find stop area for vehicle	1	2	2	1	2	2
R3	Passenger falling out from service door <3km/h	1	2	2	1	2	2
R4	Low visibility and smoke in passenger tuber	1	4	4	1	4	4
R5	Passenger gangway blocked	1	4	4	1	4	4
R6	Limited passenger space outside vehicle	1	2	2	1	2	2
R7	Opening of doors in traffic jam(low speed <3 km/h)	0	2	0	4	2	8
R8	Error signals from heat sensor/unintended operation	2	2	4	2	2	4
R9	Error signals from speed sensors together with fire alarm	1	0	0	1	2	2
R10	Vehicle immobilised by starting prevention device (if fitted)	0	3	0	4	3	12
	Total			23			45
	Probability to happen. Scale 0-5, Consequences it it happen. Scale 0-5						

Conclusion

- Pre req. Fire alarm on when bus is driving.
 - 1 Driver need to find a stopping place as quick as possible.
 - 2 Open door as quick as possible.
- Total risk scoring in relation to traffic type
 - Motor way road speed up to 100 km/h, risk scoring increased from 41 to 45
 - Two-way road speed up to 80km/h risk, scoring increased 41 to 46
 - Road tunnel speed about 70 km/h, risk scoring increased 57 to 73
 - Crossing risk scoring increased 45 to 55
 - City traffic speed 25-30km/h, risk scoring increased 23 to 45
- Distance to find a stopping position depending on traffic type (assuming 30s stopping time)

• Motor way (100/3,6x30=833)	800 meters
• Two-way road (80/3,6x30=667)	600 meters
• Road tunnel (70/3,6X30=583)	500 meters
• Crossing	<100 meters
• City traffic (25/3,6x30=208)	200 meters
- Conclusion
 - Proposed legislation will increase risk level for passengers in all traffic types looked at.
 - If service doors are opened automatically in case of detection of a fire in the engine compartment or separate heater compartment at a speed <3km/h the risk is higher that the vehicle can't be moved to a safe place to stop for evacuation by the driver.
- Recommendation
 - **No change of legislation**