48 Safety belt anchorage

Refer to: R14 06-C3

48.1 Effective Date and Scope:

48.1.1 As for safety belt anchorage of M and N category symbols of vehicles, the new vehicle variants from 2008/1/1 and all vehicle variants from 2010/1/1, shall comply with this regulation.

48.1.2 With the Regulation except below mentioned items:

48.1.2.1 The lateral facing seats and rearward facing seats.

48.1.2.2 Folding seats (means an auxiliary seat intended for occasional use and normally folded).

48.1.2.3 The seats, for children, of the child-only vehicles.

48.1.3 The applicants applying for low volume safety approval or vehicle-by-vehicle low volume safety approval could exempt from Regulation of “anchorage” except large passenger vehicle and child-only vehicle.

48.2 The applicable variants and scope principles of safety belt anchorage are as below：

48.2.1 From 2008/1/1, it has to comply with this regulation as below:

48.2.1.1 The same vehicle category symbol.

48.2.1.2 The same brand and vehicle type.

48.2.1.3 The same chassis brand.

48.2.1.4 Chassis manufacturers announced that the same chassis vehicle type.

48.2.1.5 If use chassis vehicle instead of completed vehicle for entire or partial testing, which shall according to suitable variants and range of principle are as below：

48.2.1.5.1 The same chassis brand.

48.2.1.5.2 Chassis manufacturers announced that the same chassis vehicle type.

48.2.2 From 2009/1/1, it has to comply with this regulation as below:

48.2.2.1 The same brand.

48.2.2.2 The amount of fixed point is the same.

48.2.2.3 The fixed device’s structures, dimensions and materials are the same.

48.2.2.4 The jointed methods, structures (including the slab thickness of jointed fixed) and materials of the fixed device are the same.

48.3 Location and angles of belt anchorages

48.3.1 Upper Anchorage: The effective upper anchorage of 3-point Safety Belt must be placed on the location within the allowable region shown as figure 1. The effective upper anchorage shall lie below the plane FN, which runs perpendicular to the longitudinal

median plane of the seat and makes an angle of 65 degrees with the torso line. The angle may be reduced to 60 degrees in the case of rear seats. The plane FN shall be so placed as to intersect the torso line at a point D such that DR = 315 mm + 1.8 S. However, when S < 200 mm, then DR = 675 mm. The effective upper anchorage shall lie behind a plane FK running perpendicular to the longitudinal median plane of the seat and intersecting the torso line at an angle of 120 degrees at a point B such that BR = 260 mm + S. When S > 280 mm, the manufacturer may use BR = 260 mm + 0.8 S at his discretion. S is the distance of the effective upper belt anchorages from upper belt anchorages to the longitudinal median plane of the vehicle. The value of S shall not be less than 140 mm, shown as diagram 2.

48.3.1.1 The additional anchorages can be used without the aid of tools, comply with the requirements above mention and are located in one of the areas determined by shifting the area shown in diagram 1, 80 mm upwards or downwards in a vertical direction.

48.3.2 Lower Anchorage

48.3.2.1 Side-view areas of Location (shown as diagram 1),Location of angle requirements only（shown as table 1）

48.3.2.1.1 Vehicles of Category M1

48.3.2.1.1.1 Front Seats:

The angle α_1 (other than buckle side) shall be within the range of 30 to 80 degrees and the angle α_2 (buckle side) shall be within the range of 45 to 80 degrees. Both angle requirements shall be valid for all normal travelling positions of the front seats. Where at least one of the angles α_1 and α_2 is constant (e.g. anchorage fixed at the seat) in all normal positions of use, its value shall be 60 +/- 10 degrees. In the case of adjustable seats with an adjusting device with a seatback angle of less than 20 degrees, the angle α_1 may be below the minimum value (30 degrees) stipulated above, provided it is not less than 20 degrees in any normal position of use.

48.3.2.1.1.2 Rear Seats:

48.3.2.1.1.2.1 The angles α_1 and α_2 shall be within the range of 30 to 80 degrees for all rear seats. If rear seats are adjustable the above angles shall be valid for all normal travelling positions.

48.3.2.1.2 Vehicles of Categories M2, M3 and N

48.3.2.1.2.1 Front Seats

48.3.2.1.2.1.1 The angles α_1 and α_2 must be between 30 and 80 degrees for all normal travelling positions of the front seats. Where in the case of front seats of vehicles having a maximum vehicle mass not exceeding 3.5 tons at least one of the angles α_1 and α_2 is constant in all normal positions of use, its value shall be 60 +/- 10 degrees (e.g. anchorage fixed at the seat).

48.3.2.1.2.1.2 Bench Seats and adjustable seats with an adjusting device with a seatback angle of less than 20 degrees: The angles α_1 and α_2 shall be between 20 degrees and 80 degrees in any normal

position of use. Where in the case of front seats of vehicles having a maximum vehicle mass not exceeding 3.5 tons at least one of the angles α_1 and α_2 is constant in all normal positions of use, its value shall be 60 +/- 10 degrees (e.g. anchorage fixed at the seat).

48.3.2.2 Top-view areas of location (shown as diagram 2): The distance between the two vertical planes parallel to the median longitudinal plane of the vehicle shall not be less than 350 mm. In the case of any central seating positions in rear rows of seats of vehicles of categories M1 and N1, the above-mentioned distance shall be not less than 240 mm, provided that it is not possible to exchange the centre rear seat with any of the other seats of the vehicle. The median longitudinal plane of the seat shall be at least 120 mm from these points.

48.4 Performance Requirements for Anchorage: The seats shall be fitted and placed in the position for driving or use chosen by the technical service responsible for conducting approval tests to give the most adverse conditions with respect to the strength of the system. The position of the seats shall be stated in the report. The seat-back shall, if its inclination is adjustable, be locked as specified by the manufacturer or, in the absence of any such specification, in a position corresponding to an effective seat-back angle as close as possible to 25 degrees for vehicles of categories M1 and N1 and to 15 degrees for vehicles of all other categories.

48.4.1 Anchorages fitted to the body of vehicle: The tractive force shall be applied in a direction corresponding to the seating position at an angle of 10 degrees +/- 5 degrees above the horizontal in a plane parallel to the median longitudinal plane of the vehicle. A preload of 10 per cent with a tolerance of +/- 30 per cent of the target load shall be applied; the load shall be increased to 100 per cent of the relevant target load. Full application of the load shall be achieved as rapidly as possible, and within a maximum load application time of 60 seconds. However, the manufacturer may request the application of the load to be achieved within 4 seconds. The belt anchorages must withstand the specified load for not less than 0.2 second.

48.4.1.1 3-Point Safety Belt(shown as diagram 3)

48.4.1.1.1 Vehicles of categories M1 and N1: A test load of 13500 N +/- 200 N shall be applied to a traction device attached to the belt anchorages of the same belt, At the same time a tractive force of 13500 N +/- 200 N shall be applied to a traction device attached to the two lower belt anchorages.

48.4.1.1.2 Vehicles of categories M2 and N2: the test load shall be 6750 N +/- 200 N.

48.4.1.1.3 Vehicles of categories M3 and N3: the test load shall be 4500 N +/- 200 N.

48.4.1.2 2-Point Safety Belt(shown as diagram 4)

48.4.1.2.1 Vehicles of categories M1 and N1: A test load of 22250 N +/- 200 N shall be applied to a traction device attached to the two lower belt anchorages.

48.4.1.2.2 Vehicles of categories M2 and N2: the test load shall be 11100 N +/- 200 N.

48.4.1.2.3 Vehicles of categories M3 and N3: the test load shall be 7400 N +/- 200 N.

48.4.2 Anchorages located wholly within the seat structure or dispersed between the vehicle structure and the seat structure. The test specified in paragraphs 1. above shall be performed, as appropriate, at the same time superimposing for each seat and for each group of seats a force as stated below:

48.4.2.1 Vehicles of categories M1 and N1: The loads indicated in paragraphs 1. above shall be supplemented by a force equal to 20 times the mass of the complete seat.

48.4.2.2 Vehicles of categories M2 and N2: The loads indicated in paragraphs 1. above shall be supplemented by a force equal to 10 times the mass of the complete seat;

48.4.2.3 Vehicles of categories M3 and N3: The loads indicated in paragraphs 1. above shall be supplemented by a force equal to 6.6 times the mass of the complete seat.

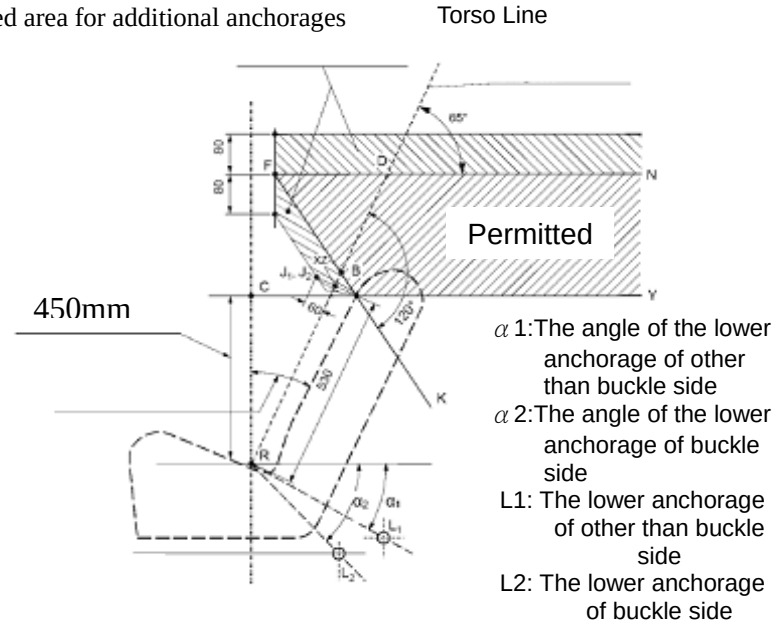


Diagram 1: Side-view Areas Of Location Of Effective Belt Anchorages

SEAT		M_1	OTHER THAN M_1
Front */	buckle side ($alpha_2$)	45 degrees - 80 degrees	30 degrees - 80 degrees
	other than buckle side ($alpha_1$)	30 degrees - 80 degrees	30 degrees - 80 degrees
	angle constant	50 degrees - 70 degrees	50 degrees - 70 degrees
	bench - buckle side ($alpha_2$)	45 degrees - 80 degrees	20 degrees - 80 degrees
	bench - other than buckle side ($alpha_1$)	30 degrees - 80 degrees	20 degrees - 80 degrees
	adjustable seat with seat back angle < 20 degrees	45 degrees - 80 degrees ($alpha_2$) */ 20 degrees - 80 degrees($alpha_1$) */	20 degrees - 80 degrees
Rear ≠		30 degrees - 80 degrees	20 degrees - 80 degrees Ψ
Folding	No belt anchorage required. If anchorage fitted: see angle requirements Front and Rear.		

Notes:

≠:

outboard and centre.

*/: if angle is not constant see paragraph 5.4.2.1.

Ψ:

45 degrees - 90 degrees in the case of seats on M_2 and M_3 vehicles.

Table 1: Location of lower anchorages-angle requirements only

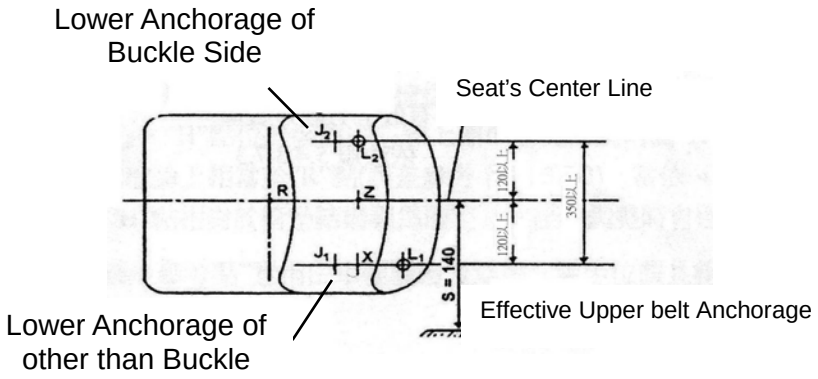


Diagram 2:Top-view Areas Of Location Of Effective Belt Anchorages

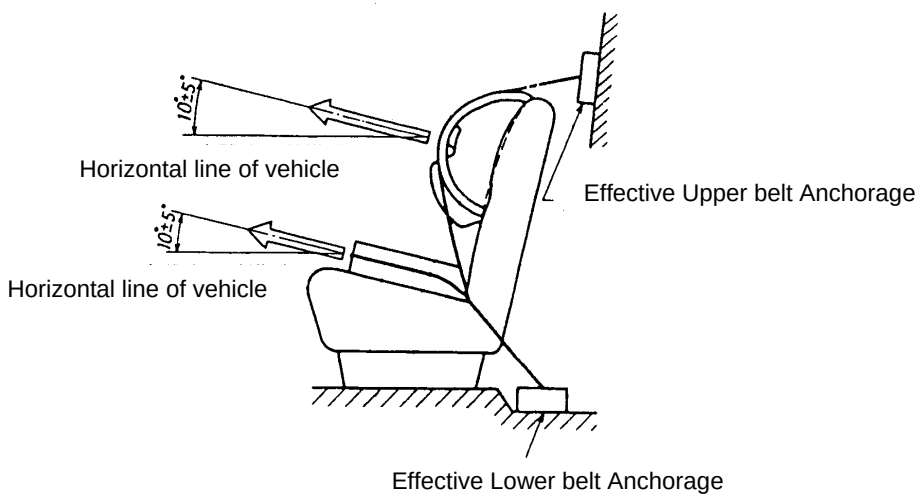


Diagram 3: Performance Test of 3-Point Safety Belt Anchorage

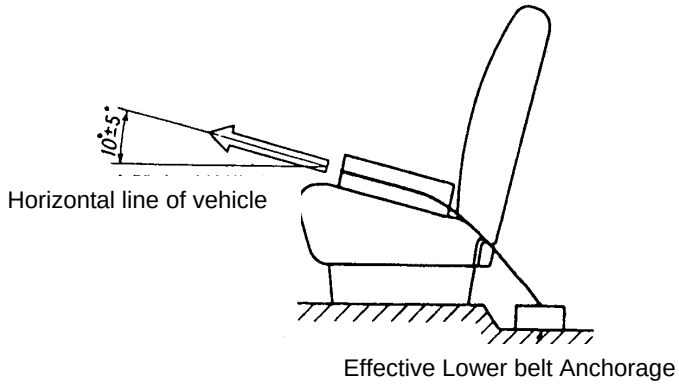


Diagram 4: Performance Test of 2-Point Safety Belt Anchorage