

Informal document GRSP-52-21
(52nd GRSP, 11 – 14 December
2012, agenda item 14)

ECE-R29/02 manikin
update

ECE/TRANS/WP.29/GRSP/2012/24

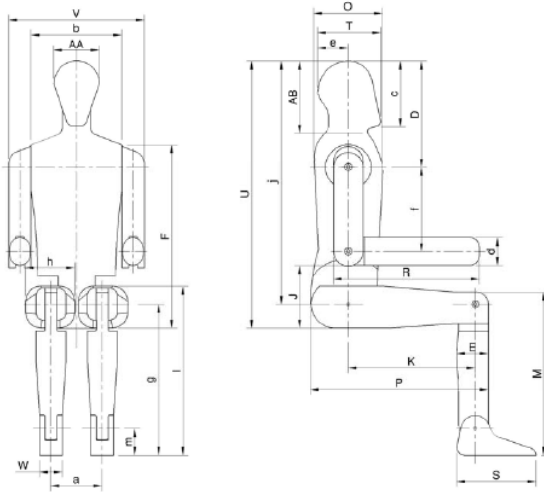
Manikin for regulation ECE-R29/02



A manikin is used to verify survival space after ECE-R29/02 tests

ECE-R29/02 manikin definition

Annex 3 -- Appendix 2
MANIKIN TO BE USED TO VERIFY THE SURVIVAL SPACE



Material: Polystyrene; density 0.0169 g/cm³

Mass: 4.54 kg

Dimensions:	AA	Breadth of head	15.3
	AB	Combined height of head and neck	24.4
	D	Distance from top of head to shoulder pivot	35.9
	E	Calf depth	10.6
	F	Height from seat to top of shoulder	62.0
	J	Height of elbow rest	21.0
	M	Knee height	54.8
	O	Chest depth	23.0
	P	Distance from seat back to knee	59.5
	R	Distance from elbow to fingertip	49.0
	S	Length of foot	26.6
	T	Length of head	21.1
	U	Height from seat to top of head	90.0
	V	Shoulder breadth	45.3
	W	Breadth of foot	7.7
	a	Distance between hip point centres	17.2
	b	Chest breadth	30.5
	c	Height of head and chin	22.1
	d	Forearm thickness	9.4
	e	Distance between vertical centreline of torso and rear of head	10.2
	f	Distance between shoulder pivot and elbow pivot	28.3
	g	Knee pivot, height from ground	50.5
	h	Thigh breadth	16.5
	i	Lap height (sitting)	56.5
	j	Distance from top of head to 'H' point	81.9
	k	Distance between hip pivot and knee pivot	42.6
	m	Ankle pivot, height from ground	8.9

Definition is given by Annex 3 - Appendix 2 of ECE-R29/02 regulation (amendment 02)

→ Main Distances

- Height distances:
 - **seat – top of head dist. (U) = 900mm**
 - **H-point – top of head dist. (j) = 819mm**
- Longitudinal distances:
 - **back seat – knee dist. (P) = 595mm**
 - **H-point – knee pivot dist. (k) = 426mm**

And also

- **material: Polystyrene (0.0169kg/dm³)**
- **mass = 4.54kg**

ECE-R29/02 manikin joints

- The upper legs are not articulated
 - one with the other
 - with his torso
- The head is not articulated with the torso
- Only feet, lower legs & arms are articulated with pivots

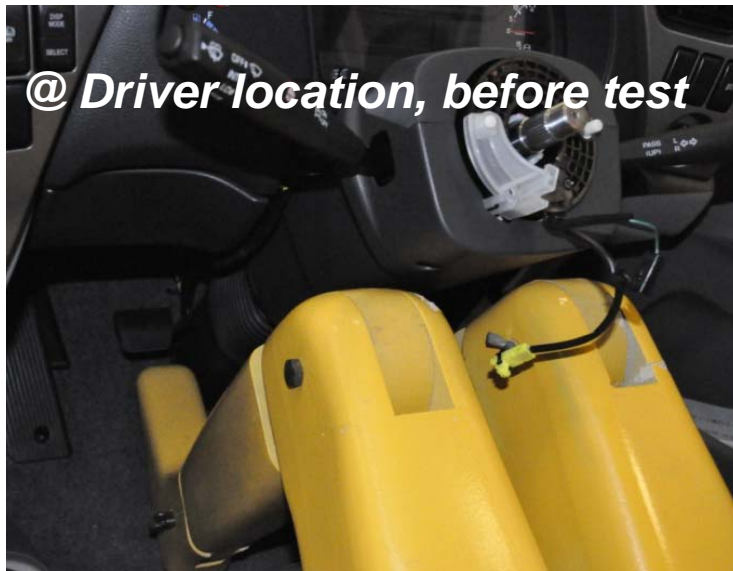


Positioning of ECE-R29/02 manikin

→ ECE-R29/02 Manikin in different configurations, such as:

- Driver location *wrt.* the steering column
- Central location *wrt.* tunnel & dashboard

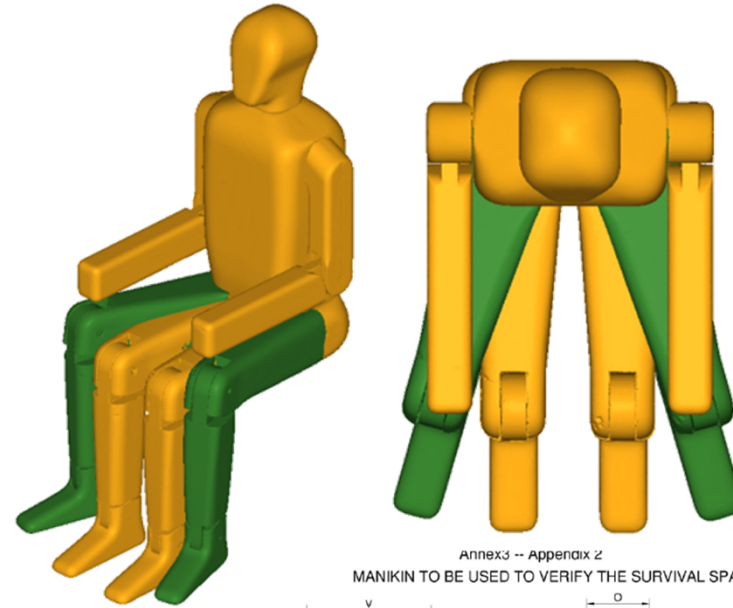
with positioning is not realistic!



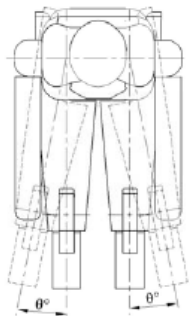
Modifications proposed to ECE-R29/02 manikin

Without changing manikin's dimensions (fixed by ECE-R29/02 regulation), **it is possible to**

1. **add hip joints** to enable upper legs rotation about the vertical axis [20°]

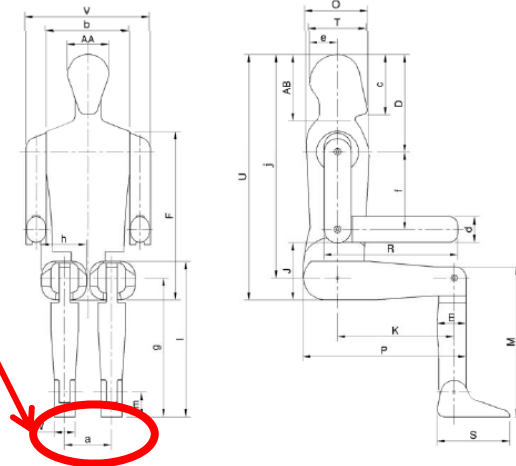


Annex 3 -- Appendix 2
MANIKIN TO BE USED TO VERIFY THE SURVIVAL SPACE



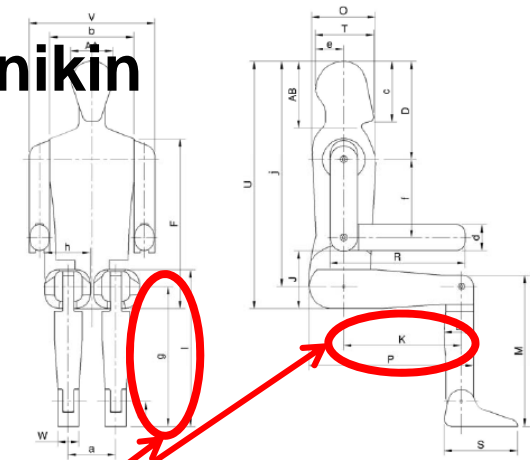
Same definition as ECE-R29/03

Distance a (distance between hip point centers) is still valid



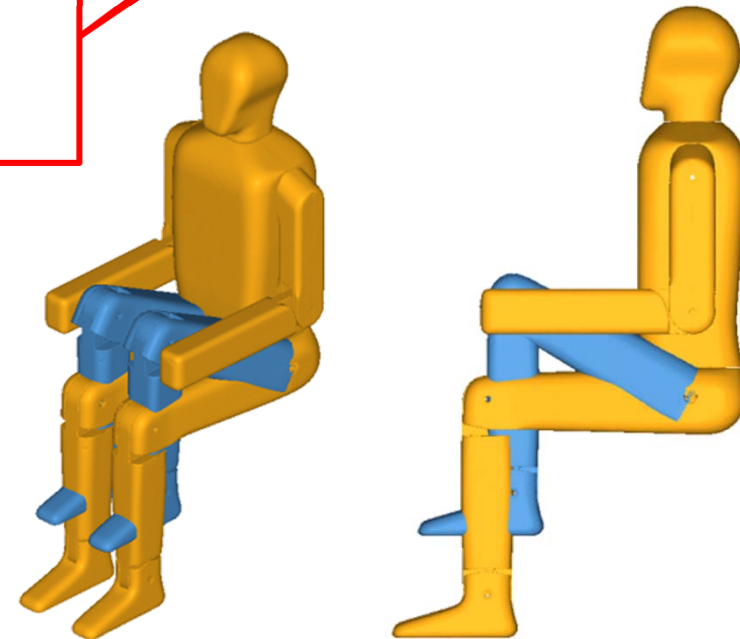
Modifications proposed to ECE-R29/02 manikin

Without changing manikin's dimensions (fixed by ECE-R29/02 regulation), ***it is possible to***



Distance K and g (distance between hip pivot and knee pivot and knee pivot height from ground) is still valid

1. **add joints between upper legs to enable rotation about the vertical axis**
2. **add joints between upper legs and torso to enable rotation about the transverse axis**



Modifications proposed to ECE-R29/02 manikin

Without changing manikin's dimensions (fixed by ECE-R29/02 regulation), ***it is possible to***

- 3. delete the mass limitation of the dummy**

