

**MVC Informal group - List of open issues – MVC 3<sup>rd</sup> session**

Technical area	Item	Issue / background	Comments / proposals	Decision of the group
General	Scope	Describe the combinations covered in the scope of our group e.g. to limit technical complexity of our task	Take ISO 18868 combinations as a base. Some other “similar” combinations may be added (see NL presentation) Limit number of trailers to [3...5] ?	<b>MVC3:</b> -Weight and dimensions issue is out of our scope (unless impacting technical requirements) -The group focusses on ISO 18868 MVCs -All to check if a MVC combination type should be added in the focus -Should we limit the number of trailers as in ISO 18868? Keep it open until otherwise. -Exclude “hinged dolly” from scope, : tbc.
	Definition of a dolly	What is a dolly: a centre-axle trailer, A device to convert a semi-trailer into a full-trailer (see CLEPA proposed definition GRRF-66-08), a tractor for semi-trailer?  Do we need a definition for B-link trailers?  Where should the definition be (RE3...?)	The definition should be consistent / valid for all regulations in our scope (e.g. from both UN R13 and UN R55 standpoints). For UN R55: 2 types of dollies should be defined: dollies with hinge or fixed drawbar. For UN R13: the need to differentiate these types of dollies is not obvious for UN R13 (e.g. is the load transfer on truck higher than with a CAT?).	Collect definitions available in the different regulations, standards etc. <b>done.</b> <b>MVC3:</b> -Dolly: a dolly is a towing trailer designed to tow a semi-trailer. Wording to be fine-tuned. -Link trailer: confirm if definition is needed (e.g. regarding load transfer from semi-trailer behind) -Definition in RE3 or in individual regs: get guidance from GRRF.
	“Special dollies”: scope and definition	What about other types of “dollies”: are they part of our scope; if so should we define them? -“dolly” coupled via the timber. -“dolly” for heavy transport.	“dolly” for heavy transport: the fifth wheel is ahead of the axles and transfer static and dynamic load to towing vehicles.	<b>MVC3:</b> -“dolly” coupled via the timber: confirm it should be out of scope (we should focus our resources on main MVC configurations) -“dolly” for exceptional transport: get technical information; confirm it should be out of scope (e.g. on a prio 2 waiting list)
	Truck intended for towing multiple trailers	Is it necessary to have special provisions for trucks towing multiple trailers?	No general conclusion; to be discussed case by case	<b>MVC3</b> -The ambition is that the truck only depends on the GCW, not on the number of trailers behind.

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				-The ambition is the same for the last trailer. -The specific requirements should be focussed on the towing trailers.
Braking	Electric and pneumatic control lines	Electric control line mandatory or optional? Compatibility with existing vehicles to be considered.	The answers may be different for truck, towing trailer and towed trailer. CLEPA proposal is to mandate the electric control line on towing trailers only.	<b>MVC3:</b> -The wording 'Electric control line' shall be used vs 'EBS' (which is only one technical solution).
		Electric control line: failure detection and warning to driver.	CLEPA proposal	
		Response time	CLEPA proposal	
		Maximum length of ISO 11992 CAN bus; point to point connection	Point to point connection between two successive vehicles in the combination.	
	Communication between vehicles	Transmission of "pin 5" information from all trailers to the truck	CLEPA proposal	
		Which data shall be transmitted to and from the different trailers?	CLEPA proposal Bus load limitations must be considered.	
	Power supply dimensioning	Air supply: how to make sure the air supply will be sufficient to feed all trailers?	Are there practical problems today? Is UN R13 <a href="#">Annex 17-2.3.3 Annex 7 paragraph 2.</a> sufficient to cover MVC?	
		Electric supply: dimensioning of electric wires in tractor-trailer connector; dimensioning of fuses in truck	Are there any practical issue today?	
Parking brake	Ability of the towing vehicle alone to achieve 12% slope for the whole combination.	Two logics exist today for park brake. What is the intention of actuating the service brake of the trailer via parking brake: is this proposal about "park	<b>MVC3:</b> -To be considered further at next meeting - 12% slope requirement applies to all type of combinations	

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		Proposal to actuate service brake of the trailer via parking brake of the truck.	brake functionality” or about feature for truck owners (e.g. the ability to keep vehicle standstill in slopes)?	-Trailer braking with truck park brake is rather a “feature to fulfil a specific usage” than a real safety matter. -
	Warning to driver	Any specific requirements needed? E.g. to identify which trailer is failing or performing EVSC intervention		<b>MVC3:</b> -Driver only needs to know that one trailer is intervening (EVSC) and that one trailer is failing; no need to know which trailer (this is a diagnostic matter for workshops)
	Brake performance for dollies	Type 0 requirements (value of deceleration)	2 approaches: - Dolly is a “tractor-like” towing trailer, thus 50% for type 0 - Dolly+semi-trailer should brake as good as a full trailer (50%), thus dolly should brake ~55% since semi-trailer is only 45%	<b>MVC3:</b> -See document XXX
		Which compatibility bands for dollies?	Center-axle trailer for front yellow coupling? Tractor bands for rear yellow coupling? In practice today, the yellow coupling pressure output is identical to the input.	<b>MVC3:</b> -See document XXX -Consider the use of tractors formula in Annex 10 - 3.1.6.2: $P_s = P_{s0} (1 + 0.45z)$ .
Stability	EVSC	In case of EVSC intervention on a towing trailer, should trailer behind be automatically be braked (via pneumatic and electric control)?	It looks better to brake following trailers to avoid jack-knifing risk and stretch the rear part of the combination. Wabco will check this internally CLEPA.	<b>MVC3:</b> -EVSC intervention on a towing trailer shall activate brakes of following trailers, e.g. to prevent creating jackknifing situations.
		EVSC directional control on trailers with steered axles involved in MVC		<b>MVC3:</b> -Trailer EVSC systems senses lateral acceleration to prevent roll-over. -Directional control technology not available

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		EVSC Mandatory or optional? Compatibility with existing vehicles should also be considered.		
		EVSC for dollies?		<p><b>MVC3:</b></p> <ul style="list-style-type: none"> <li>-EVSC needed on dollies</li> <li>-EVSC shall brake semi-trailer and trailer behind</li> <li>-Jackknifing risk if dolly over-braked: should be managed by dolly braking system (similar situation as on a full-trailer)</li> </ul>
Coupling	Link with R55 Informal group	Avoid redundant work. Avoid amending R55 at the same time in two different groups.	Coordinate with IG R55. Extract from TOR: The first step in the group will be to amend UN R13 and identify what changes are needed in UN R55, which are not addressed in the on-going Informal Group on UN R55. In a second step, the group will address these missing items in UN R55.	
	identify what is missing in UN R55 IG to fully address MVC in R55		Coordinate with IG R55	
	In-use calculation for multiple trailers	These formulas exist for single trailer combinations. They should be updated / added for MVC. This is dealt in item 21 of the IG R55 (“D-value calculation for multiple trailers”)	ISO 18868 is proposed as a base. Coordinate with IG R55.	
	Remote indication	There may be an issue for MVC if the proposal from the IF R55 to allow remote indication on other places than	Coordinate with IG R55	

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		in the cab (e.g. on chassis side) is not accepted by GRRF		
Steering	Steered axle on a dolly	Do we need requirements in UN R79?		
	Steering table	Is this steering equipment?	The purpose is for winter time in Nordic countries, when ice can increase friction on the fifth wheel to a point where it locks. The primary intention is not for steering the vehicle.	
Misc.	Towing capacity of the truck	Issue raised by Norway on lack of towing capacity of 4x2 trucks involved in MVC during winter time	The total weight should not be more than what the tractor towing capacity, but can we do anything in UNECE regulations to help fixing this issue? This is rather a matter for national regulations?	
	Trailer identification	Is there a need to be able to identify if a vehicle can be used in an MVC?		