

**DRAFT**

Regulation applicable to Automated Vehicles/driverless vehicles: [] yes [  ] no

UN Regulation No. 13-H (Braking)

UN Group: GRVA

Potential approach for application:  
~~no amendment required~~ | amendment | new Regulation

**Content Summary (existing Regulation)**

- No physical breakage of mechanical components (well dimensioned)
- Operating forces of service braking system, secondary braking system and parking brake system to ensure they can be handled by the driver
- Braking performance in nominal cases (Service and parking brake)
- Braking performance in failure cases (Secondary braking system)
- Warnings to be issued to warn the driver
- ABS requirements
- (ESC regulated in UN R 140)
- (BAS regulated in UN R 139, however not required for vehicles with ADS)

**Summary of required changes**

- Replacing the driver actuating the braking control with the braking demand generated by the ADS
- Testing section to be updated
- Warnings/failure signals to be transmitted to the ADS to ensure adequate response
- Definitions to be reviewed/added/amended e.g. for Automatically Commanded Braking
- Update of Annex 8 as appropriate
- Scope

**Content relevant for FAV's / driverless vehicles**

- System robustness (well dimensioned)
- Braking performance under nominal conditions
- Braking performance under failure conditions
- Braking performance in „maintenance mode“
- Warnings/failure signals to be provided to the ADS (e.g. to ensure ADS algorithm to respond adequately, to warn the operator/control tower/occupants as/if appropriate, etc.)
- Performance considering max design speed of the vehicles, that the ADS is in control of the entire driving dynamics (safety concept incl. transfer to MRC), ...

**Specifics for vehicles that can be driven manually and driverless:**

- Consider that the braking demand can be requested by the actuation of manual controls (driver) or by generation of the ADS
- HMI
- Warning/failure signals (system status/condition)

**Content to be covered by (potential) ADS Regulation**

- Generation of braking demand by the ADS
- Response to warning/failure signals
- HMI intended for communication with driver (control tower, occupants, etc.)

**DRAFT**

Regulation applicable to Automated Vehicles/driverless vehicles: [] yes [  ] no

UN Regulation No. 79 (Steering)

UN Group: GRVA

Potential approach for application:  
~~no amendment required~~ | amendment | new Regulation

**Content Summary (existing Regulation)**

- Ensure that all components of the steering system are designed properly to ensure high level of safety:
- No physical breakage of mechanical components (well dimensioned)
- Steering forces are at level which can be handled by the driver, even in case of failure
- Steering performance in nominal cases
- Steering performance in failure cases
- Warnings to be issued to warn the driver
- ADAS specific requirements

**Summary of required changes**

- Replacing the driver actuating the steering control with the steering demand generated by the ADS
- Testing section to be updated
- Warnings/failure signals to be transmitted to the ADS to ensure adequate response
- Driver assistance content not applicable to ADS vehicles could be deleted for standalone Regulation for AV's
- Definitions reviewed/added/amended
- Scope

**Content relevant for FAV's / driverless vehicles**

- System robustness (well dimensioned)
- Steering performance under nominal conditions
- Steering performance under failure conditions
- Steering performance in „maintenance mode“
- Warnings/failure signals to be provided to the ADS (e.g. to ensure ADS algorithm to respond adequately, to warn the operator/control tower/occupants as/if appropriate, etc.)
- Performance considering max design speed of the vehicles, that the ADS is in control of the entire driving dynamics (safety concept incl. transfer to MRC), ...

**Specifics for vehicles that can be driven manually and driverless:**

- Consider that the steering demand can be requested by the actuation of manual controls (driver) or by generation of the ADS
- HMI
- Warning/failure signals (system status/condition)

**Content to be covered by (potential) ADS Regulation**

- Generation of steering demand by the ADS
- Response to warning/failure signals
- HMI intended for communication with driver (control tower, occupants, etc.)