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DLG homologation tests of rear underrun protection devices

Testing to the stricter
UNECE-R 58.03 standards





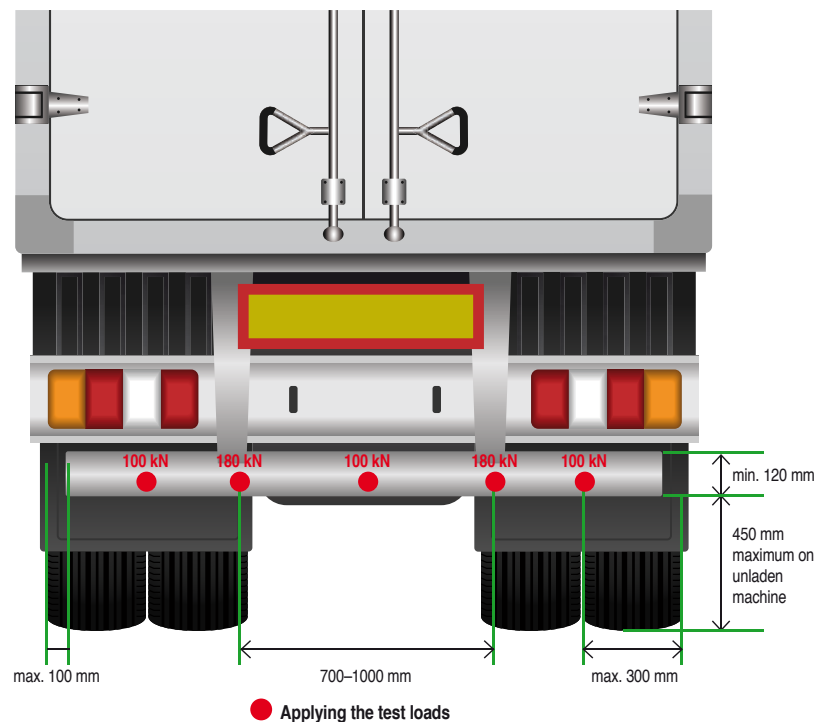
Rear underrun protection (RUP) on heavy trucks and trailers redefined

Designated by the Federal Motor Transport Authority (KBA), the DLG Test Center Technology and Farm Inputs is a Technical Service that possesses state-of-the-art test facilities and builds on the expertise of its experienced staff. We not only conduct RUP strength tests but also offer further services to manufacturers relating to homologation procedures and also all approval application procedures with the Federal Motor Transport Authority.

From 1 September 2021 onwards, any vehicle that is brought to market must have underrun protection devices that has passed a safety test that is carried out to the standards laid down in the 03 series of amendments to the UNECE 58 regulation. However, any new type-approval application for a vehicle or underrun protection to be filed from 1 September 2019 onwards must comply with this 03 series of amendments.

The new series of amendments has significant consequences for manufacturers and the design of trucks, trailers and underrun protection devices, as they call for changes to RUP geometry and the test load to be applied. This has nearly doubled. As a result, trucks and trailers (N2, N3, O3, O4) must now comply with significantly stricter regulatory standards.

Vehicle classification by GVWR	
N (Trucks)	O (Trailers)
N1: up to 3.5t	O1: up to 0.75t
N2: over 3.5t up to 12t	O2: 0.75t to 3.5t
N3: over 12t	O3: 3.5t to 10t
	O4: over 10t



Strength test requirements			
Points where the test load is applied	0.7m - 1m to either side from the middle	300mm from the outer tyre wall	in the middle of the cross tread
Past requirements	100kN or a load equal to 50% of the GVWR	50kN or a load equal to 25% of the GVWR	
03 series of amendments	180kN or a load equal to 85% of the GVWR	100kN or a load equal to 50% of the GVWR	
N2 vehicles of up to 8 tonnes without separate cab	100kN or 50%	50kN or a load equal to 25% of the GVWR	
Trailers or vehicles with tipping body or tail lift	80% of the loads stated above		

Key changes to the geometry of rear underrun protection systems

Future underrun protection crossbars must measure 120 mm instead of 100 mm in height. This does not apply to N2 vehicles of up to 8 tonnes and vehicles with tail lifts. On these vehicles, 100 mm high crossbars continue to be permitted. At the same time, they continue to be exempted from certain requirements on necessary cuts in the crossbar.

The ground clearance of the crossbar has been reduced from 550 mm to 450 mm for most vehicles. The amendment also requires the crossbar to not move more than 60 mm upwards during the strength test.

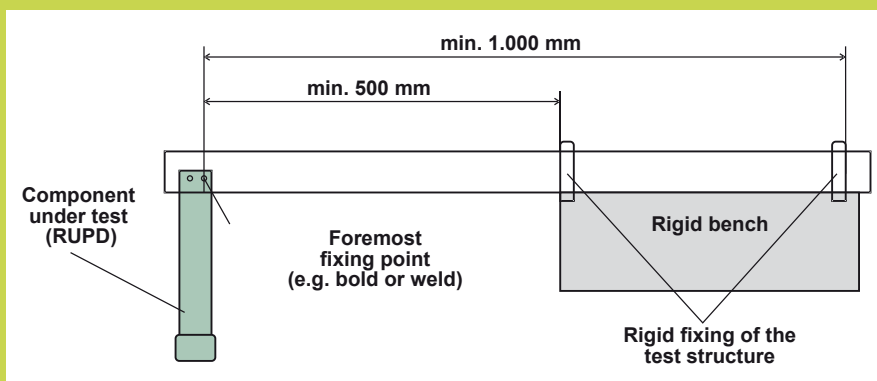
Additionally the maximum permissible distance of the RUPD to the rear of the vehicle was reduced. On trailers of classes O3 and O4 the distance was reduced to 200 mm.

Requirements on RUP crossbar ground clearance		
N2 vehicles exceeding 8 tonnes, N3, O3, O4 vehicles or trailers with hydro-pneumatic, hydraulic or pneumatic suspension or levelling system	N2 of up to 8 tonnes N2 vehicles exceeding 8 tonnes, N3, O3, O4 with other types of suspension	Vehicles with a less than 8 degree departure angle
max. 450 mm	max. 500 mm	max. 550 mm (departure angle not larger than 8 degree)

Horizontal gap between the crossbar and the rear end			
	N2 vehicles over 8 tonnes N3	O3 and O4	O3 and O4 with tail lift or tipper body
Maximum distance to the rear end also in deformed condition	max. 400 mm	max. 300 mm	max. 400 mm
Maximum distance to the rear end	max. 300 mm	max. 200 mm	max. 300 mm

Requirements concerning the test stands

The O3 series of amendments introduces detailed requirements for the test procedures for rear underrun protection systems. An underrun protection that is tested while mounted on a chassis must provide a minimum distance of 500 mm between its mounting and the fixing device on the test stand.



Further homologation tests available from the DLG Test Center

The DLG Test Center and its partner labs offer manufacturers a wide range of tests

- Mechanical coupling devices – UNECE-R 55
- Underrun protection on agricultural and forestry trailers – EU 2015/208
- Occupant protection in truck cabs – UNECE-R 29
- Roll-over protection structures (ROPS) and falling object protection structures (FOPS) – Regulation (EU) 1322/2014
- Lateral protection devices (LPD) – UNECE-R 73
- Seat belt anchorages – UNECE-R 14
- Front-end underrun protection – UNECE-R 93
- Towing devices – Regulation (EU) 1005/2010
- Tie-down rings and strap mounting strength tests

Further information: www.DLG.org · Contact: Tech@DLG.org

DLG Test Center Technology and Farm Inputs

DLG has been testing and awarding certifications to agricultural machinery and farm inputs for over 130 years. In fact, we are one of the leading agricultural institutes to test and certify tractors, machines and utility vehicles for field and on-farm use, including farm inputs as well as forestry, municipal and garden equipment. As such, the Test Center at Groß-Umstadt generates valid information for machine users helping them to make knowledgeable purchase decisions and good use of the product. Up to now, this information has been made available to the public in more than 4,000 test reports that give farmers clear guidance on tractors and implements, livestock housing installations and udder hygiene products.

At the same time, DLG tests offer manufacturers the opportunity to view their products through the critical eye of their users: DLG tested products comply with stringent, up-to-date standards that meet user demands and take into account the manufacturers' production standards. The test methods, test profiles and standards are developed by unbiased and independent test commissions and are based on the application of state-of-the-art test techniques and facilities.

Apart from applying DLG standards in its tests, the DLG Test Center also offers extensive testing services as a part of test approval seeking procedures in compliance with relevant standards and regulations, but also with individual quality assessment programmes and customer-specific R&D requirements.



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