

ECE-R13 Annex 12 Encl. 4

Test report on the compatibility of the inertia brake control device, the transmission and the brakes on the trailer

Calculation Nr.:

Creator

HAUSER

Date:

29.11.2016

1. Overrun device

Manufacturer AL-KO KOBER  
Type 2.8 VB/1 Ausf. C  
ECE-test-report No. 361-0045-97  
Min. allowed cpl. mass  $G_{Amin}$  2500 kg  
Max. allowed cpl.  $G_{Amax}$  3500 kg  
Perm. vertical state force S 150 kg  
Travel  $s'$  80 mm  
Efficiency  $\eta_{H0}$  0,950  
Reaction Threshold  $K_A$  800 N  
Max. damping force  $D_1$  2100 N  
Max. pulling force  $D_2$  7100 N  
Complementary force K 500 N  
Reduction ratio  $i_{H0}$  = (L1) / (L2)  
= (90) / (32)  
= 2,81

2. Brakes

Manufacturer AL-KO KOBER  
Type 2361 (a)  
ECE-test-report No. 361-0046-97  
Max. permissible mass  $G_{BO}$  900 kg  
Brake torque  $M^*$  2200 Nm  
Min. tyre rolling radius  $R_{Min}$  0,253 m  
Max. tyre rolling radius  $R_{Max}$  0,360 m  
Prescribed lift  $s_B$  1,66 mm  
Reduction ratio  $i_g$  16,4  
Brake retraction force  $P_0$  0 N  
Coefficient  $\rho$  800 mm  
Max. brake torque  $M_r$  20 Nm  
Max. allowed travel  $s_r$  30 mm

3. Transmission Equipment

ECE-test-report No. 361-121-12

Transmission ratio  $i_{H1}$  1,00  
Efficiency  $\eta_{H1}$  1,00

4. Trailer

Manufacturer Uniplast  
Model Uniplast  
Type  
Type of Drawbar connection Trailer with rigid draw-bar  
Number of brakes n 4

Min. total weight  $G_{Amin}$  3500 kg  
Max. total weight  $G_{Amax}$  3500 kg  
Min. tyre rolling radius  $R_{Min}$  0,253 m  
Max. tyre rolling radius  $R_{Max}$  0,360 m

5. Compatibility - Test results

Techn. all. total weight $G_A$	Allowed trust load $D^* = 0,1 \cdot g \cdot G_A$	Brake force $B = 0,49 \cdot g \cdot G_A$	Reaction Threshold $100 \cdot K_A / (G_A \cdot g)$ $2 < X < 4$	Force transmission (with $R_{Max} = 0,360$ m) $i_{HK}$	Max. damping force $100 \cdot D_1 / (G_A \cdot g)$ $X \leq 10$	Max. pulling force $100 \cdot D_2 / (G_A \cdot g)$ $10 < X < 50$
[kg] 3500	[N] 3434	[N] 16824	2,33	2,72	6,12	20,68

Technically permissible maximum mass for inertia control device $G'_A =$	$G_{Amax} =$	3500 kg	( $\geq 3500$ )
Technically permissible maximum mass for all of trailer's brakes $G_B =$	$G_{BO} \cdot n =$	3600 kg	( $\geq 3500$ )
Max. braking torque $M_{BRMax} =$	$M^* \cdot n / (B_{max} \cdot R_{Max}) =$	1,45 Nm	( $\geq 1,00$ )
Braking torque when the trailer moves reward including rolling resistance $MR_{max} =$	$(0,08 \cdot g \cdot G_{Amin} \cdot R_{Min}) / n =$	173,74 Nm	( $\geq 20,00$ )
Total lever transmission $i_H =$	$i_{H0} \cdot i_{H1} =$	2,81	
Total efficiency $\eta_H =$	$\eta_{H0} \cdot \eta_{H1} =$	0,950	
Force transmission $i_{HK} =$	$(B \cdot R_{Max} / \rho + n \cdot P_0) / (D^* - K) / \eta_H =$	see. table	( $\leq 2,81$ )
Travel transmission $i_{HW} =$	$s' / (s_B \cdot i_g) =$	2,94	( $\geq 2,81$ )
Travel ratio for pushing back the trailer =	$s' / i_H =$	28 mm	( $\leq 30$ )

An overload protector within the meaning of paragraph 3.6 of this annex is not fitted on the inertia control device or on the brakes.

6. Differential travel at park brake compensator

Max. permissible compensator travel (forward)	$S_{cf} =$	24 mm
Max. permissible compensator travel (rearward)	$S_{cr} =$	30 mm
Max. permissible differential compensator travel	$S_{cd} =$	36 mm

7. This test has been carried out and the results reported in accordance with relevant provisions of Annex 12 to Regulation No 13 as last amended by the series of amendments No. 11 Add. 7.

Date:

Signature: