



TEST REPORT



Concerning mechanical coupling components of combinations of vehicles in accordance with ECE Regulation number 55.01. up to and incl. suppl. 03.

- Test report number** : RDW-55R-0054416
- 1. **Make** : Monoflex
- 2. **Type** : 09.0212
- 3. **Name and address of the manufacturer** : Monoflex Nordic AB  
Nibblegatan 21, Box 14  
734 21 Hallstahammar Sweden
- 9.1. **Type and class of device or component** : Towing bracket , F

**General** : The type of mechanical coupling device ~~does~~ / does not\* comply with the requirements laid down in paragraph 4 of above mentioned Regulation.

**Tests** : The tests have been carried out in accordance with annexes 5 and 6 of the above-mentioned Regulation.  
See page 2 to 5.

**Conclusion** : The type of mechanical coupling device ~~does~~ / does not\* comply with the requirements and there are / ~~are no~~\* objections to granting an approval under the above mentioned Regulation.

**Tests conducted on** : 08-11-2016 / 11-11-2016

**By** : X. van den Berg

Lelystad, 24-05-2017  
The test engineer,

X. van den Berg



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Vehicle Approval and Information

**List of contents**

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**Annexed to this testreport are**

- Data concerning the installation requirements acc. to annex 7 : Has not been checked.
- Calculation(s) regarding the attachment point for secondary coupling and/or breakaway cable : Has not been checked.

- **Technical drawings of the coupling device,**
- **installation and operating instructions and**
- **example of the markings:**

Please see document FBA 6140EU (15 pages)

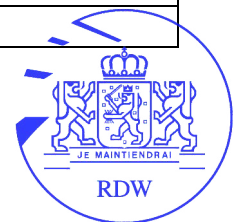
**Reason for testing**

~~Application for a new type approval.~~

~~Extension of type approval no.~~

REQUIRED TEST EQUIPMENT		USED TEST EQUIPMENT
Discription / measurement	Accuracy	Registration number
Angle	$\pm 0,5^\circ$	MF01
Torque wrench	$\pm 12 \%$	472.473
Pulsator	$\pm 3 \%$ of fs	475 or monoflex 1
Length meas. eq.	Class II	klasse II rolmaat
Scale (vehicle weight)	$\pm 10 \text{ kg}$	-
Masses of 68 kg	$\pm 1 \text{ kg}$	-
Masses of 7 kg	$\pm 0,5 \text{ kg}$	-
Tyre pressure meter	$\pm 0,2 \text{ bar.}$	-

**Remarks:**



#### 4. General requirements for mechanical coupling devices or components

(For the exact text, please refer to the Regulation)

- |     |   |  |
|-----|---|--|
| 4.2 | All parts made of steel   | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 4.3 | - Safe to operate.<br>- Coupling & Un-coupling possible by one person without the use of tools.   | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 4.4 | Designed and manufactured such they will continue to function satisfactorily  | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 4.5 | - Positive mechanical engagement<br>- The closed position shall be locked at least once by further positive mechanical engagement<br>- Spring forces may be used only to close the device and to prevent the effects of vibration from causing component parts of the device to move to positions where it may open or disengage.<br>- The failure or omission of any one single spring shall not allow the complete device to open or disengage. | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 4.6 | - Installation and operating instructions<br>- The instructions shall be in at least the language of the country in which it will be offered for sale.  | <del>Pass</del> / Fail / <del>N/A</del> <sup>(1)</sup> |
| 4.7 | The height and other installation features of the coupling checked in accordance with annex 7, paragraph 1.   | <del>Pass</del> / Fail / <del>N/A</del> <sup>(1)</sup> |

#### 7. Markings

(For the exact text, please refer to the Regulation)

- |     |   |  |
|-----|---|--|
| 7.1 | Coupling devices and components shall bear the trade name or mark of the manufacturer, supplier or applicant.   | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 7.2 | Approval mark referred to par. 8.5. and shown in annex 3.   | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 7.3 | - class of coupling, as defined in par. 2.6<br>- relevant characteristic values as defined in par. 2.11.<br>- The position for these markings shall be shown on the drawings referred to in par. 3.2.2. | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |
| 7.5 | If the application of the mechanical coupling device or component is restricted in any way then that restriction shall be marked on the device or component.  | Pass / <del>Fail</del> / <del>N/A</del> <sup>(4)</sup> |
| 7.6 | All markings shall be permanent and legible when the device or component is installed on the vehicle.   | Pass / <del>Fail</del> / <del>N/A</del> <sup>(1)</sup> |

## Annex 5 Requirements for mechanical coupling devices or components

(For the exact text, please refer to the Regulation)

- 1.1 Coupling balls of Class A shall conform to Figure 2 in external shape and external dimensions. Pass / ~~Fail~~ / N/A <sup>(1)</sup>
- 1.2 The shape and dimensions of towing brackets shall meet the requirements of the vehicle manufacturer concerning the attachment points and additional mounting devices or components if necessary. Pass / ~~Fail~~ / N/A <sup>(1)</sup>
- 1.3 Removable coupling balls:
- 1.3.1 In the case of removable coupling balls or components which are not fixed by bolts, the point of connection and the locking arrangement shall be designed for positive mechanical engagement. Pass / ~~Fail~~ / N/A <sup>(1)</sup>
- 1.3.2 In the case of a removable coupling ball or component which may be separately approved for use with a variety of towing brackets for different vehicle applications, the clearance space when such a coupling ball is fitted to the towing bracket shall be that prescribed in annex 7, Figure 25. Pass / ~~Fail~~ / N/A <sup>(1)</sup>
- 1.4 Coupling balls and towing devices shall be able to satisfy the tests given in annex 6, paragraph 3.1. See page 5
- 1.5 The attachment points for a secondary coupling and/or breakaway cable
- 1.5.1 The attachment points shall be positioned such that when in use, the secondary coupling or breakaway cable does not restrict the normal articulation of the coupling or interfere with the normal inertia braking system operation. A single attachment point shall be positioned within 100 mm of a vertical plane passing through the centre of articulation of the coupling. If this is not practicable, two attachment points shall be provided, one on each side of the vertical centre line and equidistant from the centre line by a maximum of 250 mm. The attachment point(s) shall be as rearward and as high as practicable. Pass / ~~Fail~~ / N/A <sup>(1)</sup>
- 1.7 Manufacturers of coupling balls and towing brackets intended for fitment in the after-market and which do not have any association with the relevant vehicle manufacturer shall be aware of the requirements for articulation of the coupling given in paragraph 2 of this annex and shall comply with the appropriate requirements in annex 7 to this Regulation. Pass / ~~Fail~~ / N/A <sup>(1)</sup>

**Vehicle data**, in case the coupling device is designed for a specific vehicle type(s):

Make(s): Mercedes	Type(s): E-class W212
Bodyshape(s):	Modelyear(s): 2009 - ....
Vehicle manufacturer's maximum permissible vehicle mass (T): 2600 kg Distribution of this mass between the axles: axle 1: See remark. / axle 2: See remark.	
Vehicle manufacturer's maximum permissible towable trailer mass(R or C): 2100 kg	
Vehicle manufacturer's maximum permissible static mass on coupling ball: 84 kg	
Maximum mass of the vehicle, with bodywork, in running order, including coolant, oils, fuel, tools and spare wheel (if supplied) but not including driver: See remark.	



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## Annex 6 Testing of mechanical coupling devices or components

(For the exact text, please refer to the Regulation)

### Par. 3.1 Specific testing requirements for coupling balls and towing brackets

The coupling device is to be tested for the following relevant characteristic values	
D = 11.4kN	S = 84 kg

**Dynamic endurance test.** Test procedure according to par. 3.1.1 - 3.1.6

The sample mounted on the test rig has been subjected to the following alternating stress test

Test force $F_{HS\ RES} = 6.84\ kN$	Frequency = 7 Hz
Direction of test angle $\alpha = +15^\circ$	Identification of test sample: 8414
Result of crack investigation after this dynamic endurance test:	Pass / <del>Fail</del> <sup>(1)</sup>

**Additional static tests** according to par. 3.1.7.

- 3.1.7. Additional static tests for detachable ball units using fixing arrangements other than screwed fittings Pass / ~~Fail~~ / N/A<sup>(1)</sup>  
*The positive mechanical engagement aspect of the arrangement has been tested during the dynamic test*

**Strength of attachment points** according to par. 3.1.8.

- 3.1.8. The attachment points for the secondary coupling referred to in annex 5, paragraph 1.5 shall withstand a horizontal static force equivalent to 2D with a maximum of 15 kN. Pass / ~~Fail~~ / N/A<sup>(1)</sup>  
Where there is a separate attachment point for a breakaway cable this shall withstand a horizontal static force equivalent to D.

*Note: The manufacturer of the coupling device has submitted a calculation, which shows that the attachment point fulfills the above mentioned requirements.*

**End result for all of the above mentioned tests:**

**Pass / ~~Fail~~<sup>(1)</sup>**

#### Remarks:

This test is executed with the following dimensions: e = 212 mm & f = 120mm. The height of the coupling ball is not verified on the vehicle.

