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Hersteller – *Manufacturer* : Ningbo Yeda Automobile Parts Co., Ltd. .  
Typ - *Type* : YD-1

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## TECHNICAL REPORT

according ro ECE Regulation

### Uniform provisions for the approval of advance-warning triangles

ECE-R27 dated: September 15, 1972  
including all amendments until  
Series of amendments: 03 dated: March 3, 1985  
Supplement 1 to the 03 series of amendments dated: January 18, 1998

Previously granted	
ECE-Certificate	: ---

Structure of report :

1. Test object(s) and general test information
2. Test minutes
3. Remarks concerning tested object(s)
4. Appendices
5. Statement of conformity

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Test object(s) and general test information

1.1. Test object(s)

identification number : YD-1

version : ---

1.2. General test information

1.2.1. Order issued by : ---  
(if different from manufacturer)

1.2.2. Test object / test vehicle received on : Not applicable

1.2.3. Test date : June 2 - 4, 2007

1.2.4. Test site : Xiangfan, China

1.2.5. Remark : The results of the test refer exclusively to the object(s)  
mentioned under point 1.1 of this report.

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## 2. Test minutes

2.1. Test facilities : The test facilities are in compliance with the requirements of the regulation.

2.2. Test results : The type has been examined according to the amendments mentioned in appendix 0.

~~An actual test of the type was not required. The results of the previous tests are still valid.~~

Markings : The trade mark is marked clearly legible and indelible on the rear housing of the warning triangle and protective cover.

Space for the approval mark and for additional symbols is provided on the rear housing of warning triangle and protective cover.

~~Instructions for assembly of use is moulded/labeled on the housing of warning triangle and/or on the protective cover and/or additionally supplied.~~

2.3. General specifications : The advance-warning triangle is designed and made that under normal use their satisfactory operation is ensured and they retain the required characteristics.

The components are not capable of being easily dismantled, and the optical unit is not replaceable.

The test samples have been tested in accordance with the test procedure stated in Annex 5 of the Regulation.

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- Paragraph 6. General requirements  
Paragraph 7. : Advance-warning triangles meets the construction requirements such as open at centre, red border of retro-reflective outer strip, Inner fluorescent strip, bounded by concentric equilateral triangular contour
- The front face of triangle shall be vertical to ground( $< \pm 5^\circ$ )
- The front face of advance-warning triangles shall be easily cleaned
- The advance-warning triangles shall not present sharp edges and corners, and the fluorescent surface shall be contiguous to the retro-reflecting units
- The advance-warning triangles shall have protective covers(if any), ~~or other means of protection from external agents:~~
- In case of retro-reflecting strip is not contiguous, free area of the supporting material must be red
- Paragraph 7.1, Annex 3, Shape and dimension : Test sample's shape and dimensions comply with Annex 3 and verified with dimensional drawing.
- Annex 5, 1.2 Heat and Low-temperature resistance : All four dvance-warning triangles (in the protective cover, if any) kept in the temperature according to Annex 5, paragraph 7.1 and 7.3. Test samples show no crack or distortion and keep normal operational condition.
- Paragraph 7.3.1.2 : ~~Random slices of 50mm length of retro-reflective devices CIE ratio between extremes does not exceed 3~~ or retro-reflective device surface is uniformly constructed and actual test is not required.
- Paragraph 7.3.1.3, 7.3.1.4 : Triangular shape shall be clearly recognized for an angle of divergence  $20^\circ$  and illumination of 1 lux at ( $V=0, H=\pm 30^\circ$ ), ( $V=0, H=\pm 40^\circ$ )
- Annex 5, 1.5.2 Colorimetric specification : Color of retro-refletive devices are compared with standard illuminance source A and it meets the colorimetric requirements ~~or visual comparisons have doubt and Trichromatic coordinate measured.~~
- Annex 5, 1.5.3 Test of clearance to ground : Test sample clearly meets the requirements of this regulation by visual inspection ~~or tested in accordance with the device shown on Annex 3.~~
- Annex 5, 1.5.4 Mechanical solidity test : A test force 2N applied on top side of warning triangle. Triangle top side does not moved more than 5cm and after test it's origin does not moved significantly.

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Annex 5, 1.3 CIL measurement of retro-reflecting devices : All four dvance-warning triangles kept more than one hour at ambient temperature and check photometric at illuminating angle (V=0°, H=±5°) with divergence angle 20'. Two samples showing maximum and minum CIL are subjected photometric distribution test according to Annex 5, 1.5.1.

distribution of the intensity of the retro-reflective devices [mcd/lux]								
		Min CIL Sample						
horizontal angle		L40°	L30°	L5°	V	R5°	R30°	R40°
vertical angle	U20°	-	-	-	6782 (≥ 4000)	-	-	-
α=20'	0°	801	2013	10032	10354	10234	2001	872
	D20°	-	-	-	6598 (≥ 4000)	-	-	-
Requirement		≥ 600	≥ 1750	≥ 8000	≥ 8000	≥ 8000	≥ 1750	≥ 600
vertical angle	U20°	-	-	-	578 (≥ 200)	-	-	-
α=1°30'	0°	84	398	1592	1671	1571	378	91
	D20°	-	-	-	598 (≥ 200)	-	-	-
Requirement		≥ 50	≥ 100	≥ 600	≥ 600	≥ 600	≥ 100	≥ 50

distribution of the intensity of the retro-reflective devices [mcd/lux]								
		Max CIL Sample						
horizontal angle		L40°	L30°	L5°	V	R5°	R30°	R40°
vertical angle	U20°	-	-	-	7813 (≥ 4000)	-	-	-
α=20'	0°	1004	2651	11780	12351	12014	2341	971
	D20°	-	-	-	7561 (≥ 4000)	-	-	-
Requirement		≥ 600	≥ 1750	≥ 8000	≥ 8000	≥ 8000	≥ 1750	≥ 600
vertical angle	U20°	-	-	-	662 (≥ 200)	-	-	-
α=1°30'	0°	96	421	1342	1772	1341	399	98
	D20°	-	-	-	661 (≥ 200)	-	-	-
Requirement		≥ 50	≥ 100	≥ 600	≥ 600	≥ 600	≥ 100	≥ 50

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- Annex 5, 1.6 & 1.7.1 Water test : Advance-warning triangle assembled with manufacturer's instructions and immersed which apex is 20mm below the surface of water at a temperature  $50\pm 5^{\circ}\text{C}$  for 10 minute and immersed  $25\pm 5^{\circ}\text{C}$ . After test advance-warning triangle does not shows presence of water ~~or have probable intrusion of water, verification test for CIL.~~
- Immersed the retro-reflective surface 5cm below the surface of water at a temperature  $25\pm 5^{\circ}\text{C}$  for 2hour. After test advance-warning triangle does not shows presence of water ~~or have probable intrusion of water, verification test for CIL.~~
- Annex 5, 1.7.2 Resistance to fuel : Triangle and protective cover immersed separately in a tank containing mixture of 70% n-heptane and 30% toluene for 60 second. Place the triangle into the protective cover and laid it flat area wait until completely dried. Triangle shows normal operation and no noticeable change which affect it's function.
- Annex 5, 1.7.3 Stability against wind : Triangle assembled and setup on the platform which complying Annex 5, para. 10. Apply wind for 3 min at 180Pa dynamic air pressure (about 60km/h under normal condition) for four direction. During test the triangle shall be no overturn, shift ( $\leq 5\text{cm}$  on ground) and rotation ( $\leq 10^{\circ}$ )
- Annex 5, 1.8.1 & 1.8.3 Color test of fluorescent material : Color of 100mm x 100mm fluorescent materials are compared with standard illuminant source C and it meets the colorimetric requirements ~~or visual comparisons have doubt and Trichromatic coordinate measured.~~
- After exposure to UV-light(weather resistance test) fluorescent materials are compared with standard illuminant source C and it meets the colorimetric requirements ~~or visual comparisons have doubt and Trichromatic coordinate measured.~~
- Annex 5, 3. & 1.8.3 Luminance factor of fluorescent material : With CIE illuminant C and incidence angle of  $45^{\circ}$  and observed at an angle of  $45^{\circ}$ , tristimulus value Y shall not be less than 30%. And after exposure to UV-light the luminance factor will not increased by more than 5% compared to before weather resistance test result.
- Before exposure: 40.0%
- After exposure: 35.6%
- 2.4. Explanatory note : not applicable

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### 3. Remark concerning tested object(s)

All versions of the reflectors as stated in the information document are covered with the tested version(s) and test object(s) respectively.

### 4. Appendices

L Technical information about the advance-warning triangle type according to Annex 2 for the communication of the ECE-type approval

0 List of modifications

Information folder no. : YD-1-00

### 5. Statement of conformity

The information folder and the type described there comply with the requirements in the above mentioned directive/ regulation.

The technical report (including appendices L and 0) consists of pages 1 to 8 and shall not be reproduced except in full without the written approval of the testing laboratory.

Essen, den June 4, 2007

IFM/#



Eun-Jeong Hur  
Engineer

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**Technical information about the reflector type according to Annex 2  
for the communication of the ECE-type approval**

**Appendix L**

1. Trade name or mark of the device : **YD**
2. Manufacturer's name for the type of device : YD-1
3. Manufacturer's name and address : Ningbo Yeda Automobile Parts Co., Ltd. ., Huangjiabu Town, Yuyao City, 315464, Ningbo, China
4. If applicable, name and address of the manufacturer's representative : Not applicable
6. Brief description of the advance-warning triangle : Hard retro-reflective outer strip and flexible fluorescent inner strip with four stems of metal support. Four supporting stems are not crossed when extended, retracted position.
7. Submitted for approval on : May 26, 2007
9. Date of test report : June 4, 2007
- Position of the approval mark : on the rear housing of warning triangle and protective cover
- Reason(s) for extension : Not applicable



**THE NETHERLANDS  
(N E D E R L A N D)**



**COMMUNICATION**

Concerning <sup>(1)</sup>

- approval granted
- ~~- approval extended~~
- ~~- approval refused~~
- ~~- approval withdrawn~~
- ~~- production definitely discontinued~~

of a type of advance-warning triangle pursuant to Regulation number 27.

**Approval number: E4-27R-032736**

**Extension number: 00**


*Approval mark:*




- |    |  |   |
|----|--|---|
| 1. | Trade name or mark of the advance-warning triangle                   | : <b>YD</b>   |
| 2. | Manufacturer's name  | : Ningbo Yeda Automobile Parts Co., Ltd. .  |
| 3. | Address  | : Huangjiabu Town, Yuyao City, 315464, Ningbo, China  |
| 4. | If applicable, name and address of the manufacturer's representative | : Not applicable  |
| 5. | Address  | : Not applicable  |
| 6. | Brief description of the advance-warning triangle                    | : Hard retro-reflective outer strip and flexible fluorescent inner strip with four stems of metal support. Four supporting stems are not crossed when extended, retracted position. |
| 7. | Submitted for approval on  | : May 26, 2007  |



8. Technical service conducting approval tests : TÜV NORD Mobilität GmbH & Co. KG  
Institut für Fahrzeugtechnik und Mobilität  
Adlerstrasse 7, D-45307 Essen
9. Date of report issued by that service : June 4, 2007
10. Number of report issued by that service : K127-A0-0507-0749
11. Approval : granted/~~refused/extended/withdrawn~~<sup>(1)</sup>
12. Remarks : None
13. Place : Zoetermeer
14. Date : 20-Jun-2006
15. Signature

  
F.E. Plancius



16. The following documents, bearing the approval number shown above, are annexed to this communication:  
... dimensioned drawings  
... photographs.

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<sup>(1)</sup> Strike out what does not apply.

**First application date: May 26, 2007**

**1. Specification data**

<b>Type</b>		<b>YD-1</b>
<b>Function</b>		<b>Advance-warning triangle</b>
<b>Emitted colour</b>		<b>Red</b>
<b>Applicable Regulation (ECE)</b>		<b>R27.03</b>
<b>Location of marking</b>	<b>Rated voltage &amp; wattage</b>	-
		-
	<b>Trade mark</b>	<b>YD</b>
		<b>Marked on rear housing, Protective cover</b>
<b>Approval Mark</b>	<b>Marked on rear housing, Protective cover</b>	

**2. Construction and material**

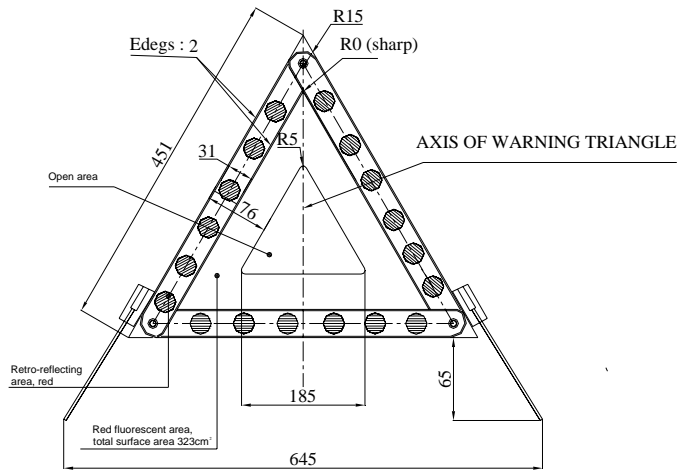
<b>Construction</b>	<b>Material</b>	<b>Remarks</b>
<b>Lens</b>	<b>PMMA POLYESTER</b>	-
<b>Housing</b>	<b>ABS POLYESTER</b>	-
<b>Reflector</b>	<b>PMMA POLYESTER</b>	-
<b>Fluorescent</b>	<b>PVC POLYESTER</b>	-
<b>Protective cover</b>	<b>PP POLYESTER</b>	<b>INSTRUCTIONS OF USE INSCRIBED ON THE COVER</b>

**3. Name and address of manufacturer** : Ningbo Yeda Automobile Parts Co., Ltd.,  
Huangjiabu Town, Yuyao City, 315464, Ningbo,  
China

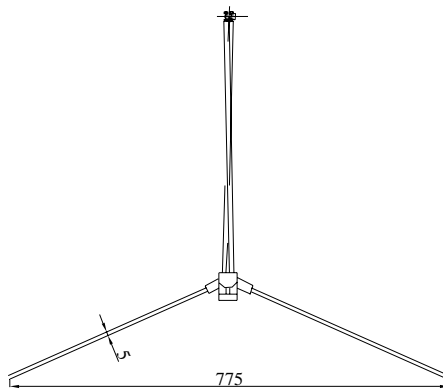
**4. Name and address of representative of manufacturer** : Not applicable

**This information document consists of 4 pages.**

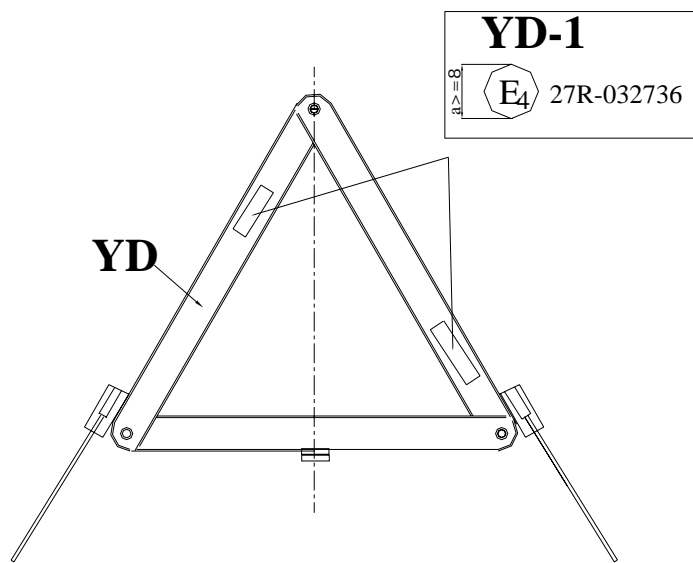




Front view



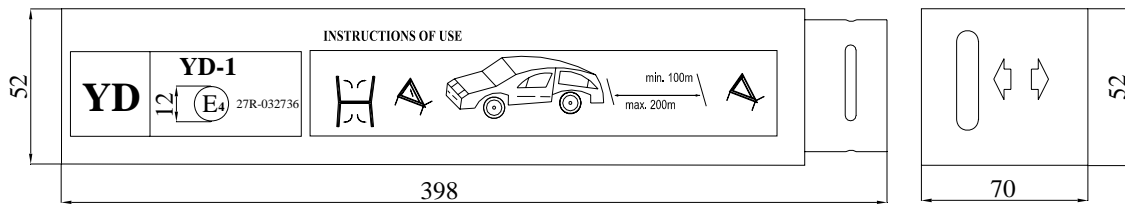
Side view



Rear view



**Protective cover**



Front view



Rear view



