

Disc wheel (T-Type for Emergency Use for Passenger Car)

KES

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1. Purpose

This standard aims at securing proper quality by standardizing specifications.

Remark: This standard and a drawing communicate together our requirements.

2. Scope of Application

This standard specifies the T-type wheel for emergency use with wide dropcenter rim(WDC) for passenger cars (hereinafter referred to as the "wheel").

3. Report of Evaluation Result

The quality evaluation results at each stage from development to mass production shall be submitted to Kia according to the Appendix.

4. Definition of Terminology

4.1 Effective surface

This means the visible range which can be seen in the positions of various angles from the tightening side of hub bolt or hub nut with the wheel tire set on.

4.2 Non-effective surface

This means the range other than the surface which the tire is set on and the effective surface.

5. Specification Indicated in Drawings (hereinafter referred to as the Specification)

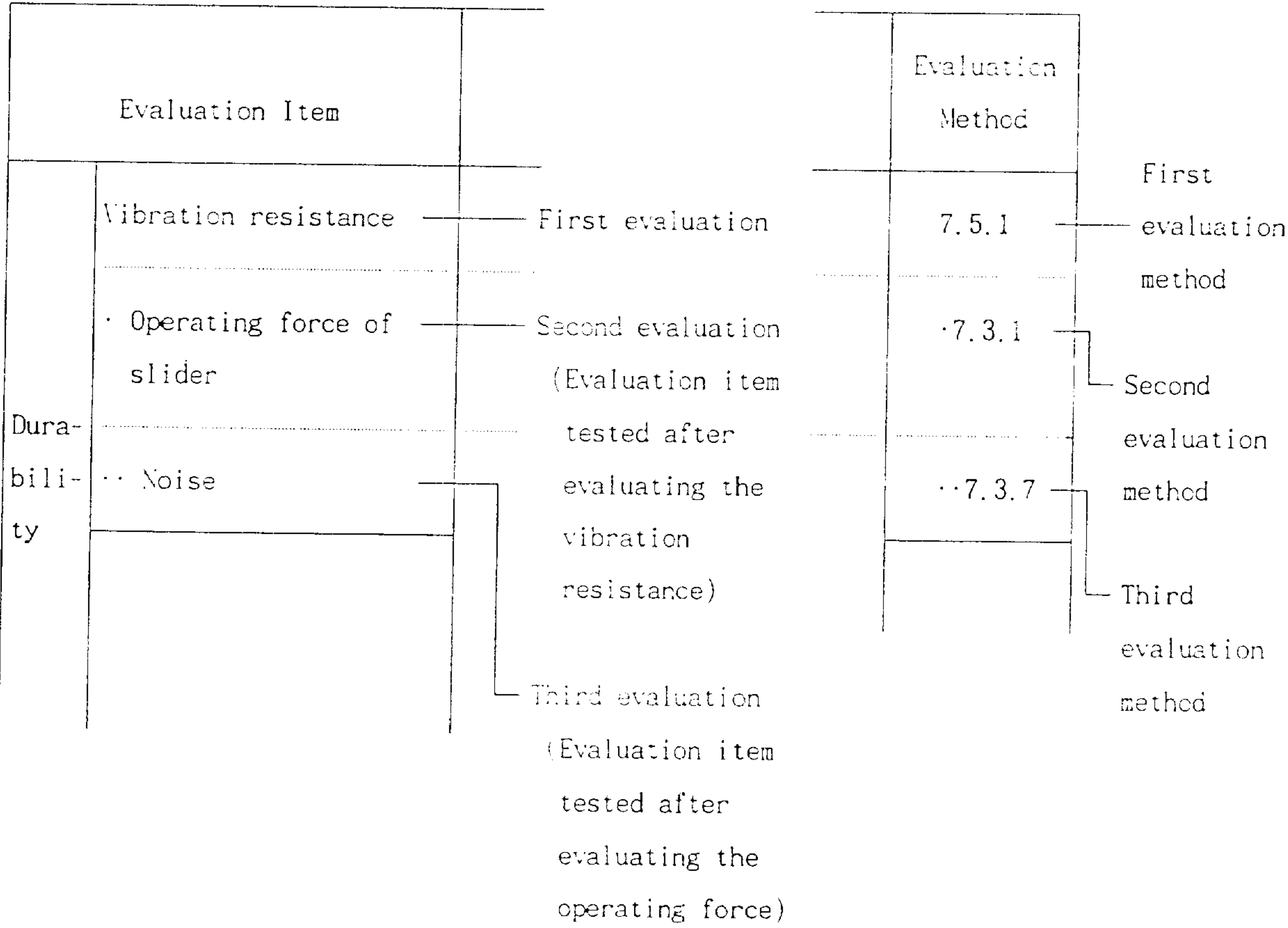
- (1) Basic dimension (design, rim width, rim dimension, offset, PCD x No. of holes)
- (2) Shape & tolerance in the center boss portion
- (3) Conditions of strength and durability
 - Bending moment with rotation M_t , M_b
 - Moment arm length L
 - Load for radius load test and tire size

- (4) Paint color, color on the effective surface
- (5) Plate thickness and material of rim and disc (for reference)
- (6) Weight of products (target and maximum value)
- (7) Maximum projected dimension of brake parts, shape of air valve
- (8) Hub (shape of hub cap, etc.)
- (9) Weld length and place of rim and disc (for reference)
- (10) Other special specification (identification mark, etc.)

6. Evaluation Standard

The evaluation standard of the wheel shall conform to Table 1.

Remark 1. The way of reading evaluation items and methods in Table 1 shall conform to the following example.



Remark 2. The quality rank shall be represented by A, AR, B or C.

The definitions shall conform to KMS Q 410001 (Determination and Procedure of Quality Ranking).

Table 1

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Regulation	Marking	- The marking which meets JASO C 603 and DIN 7829 shall be easily identified with tire installed. - No defacement, overlap and unclearness of marking.	AR	Visual inspection (Refer to the Appendix 1-Fig. 2)
	Contour of rim	- Meet the Appendix 1-Fig. 1. - Meet ADR NO. 20 and other coming-off performance of rim.	AR	By the Appendix 1-Fig. 1
Strength • Durability	Bending moment durability	No crack after the specified cycles of rotation.	A	7.1.1
	Radial load durability			7.1.2
	• Airtightness of rim portion	- No air leakage. - No sharp edge in the valve hole.	A	• 7.1.3 (Refer to the Appendix 1-Fig. 1)
	Step of welded portion with rim	- The step in the side of the surface which the tire is snapped on shall be max. 0.2 mm. Its change shall be smooth. This step shall not be connected extending to all width on which the tire is snapped. - The distance between the welded portion and the valve hole position shall be min. 50 mm.	A	Visual inspection, etc.
	Weld strength of rim and disc	There shall be the same or more strength as the spot welding load in JASO C 603.	A	By JASO C 603
Looseness of hub nut	Loosening ratio of hub nut	Residual tightening torque after completing the test shall be min. 75% of the initial torque.	A	7.2.1

Table 1 (Continued)

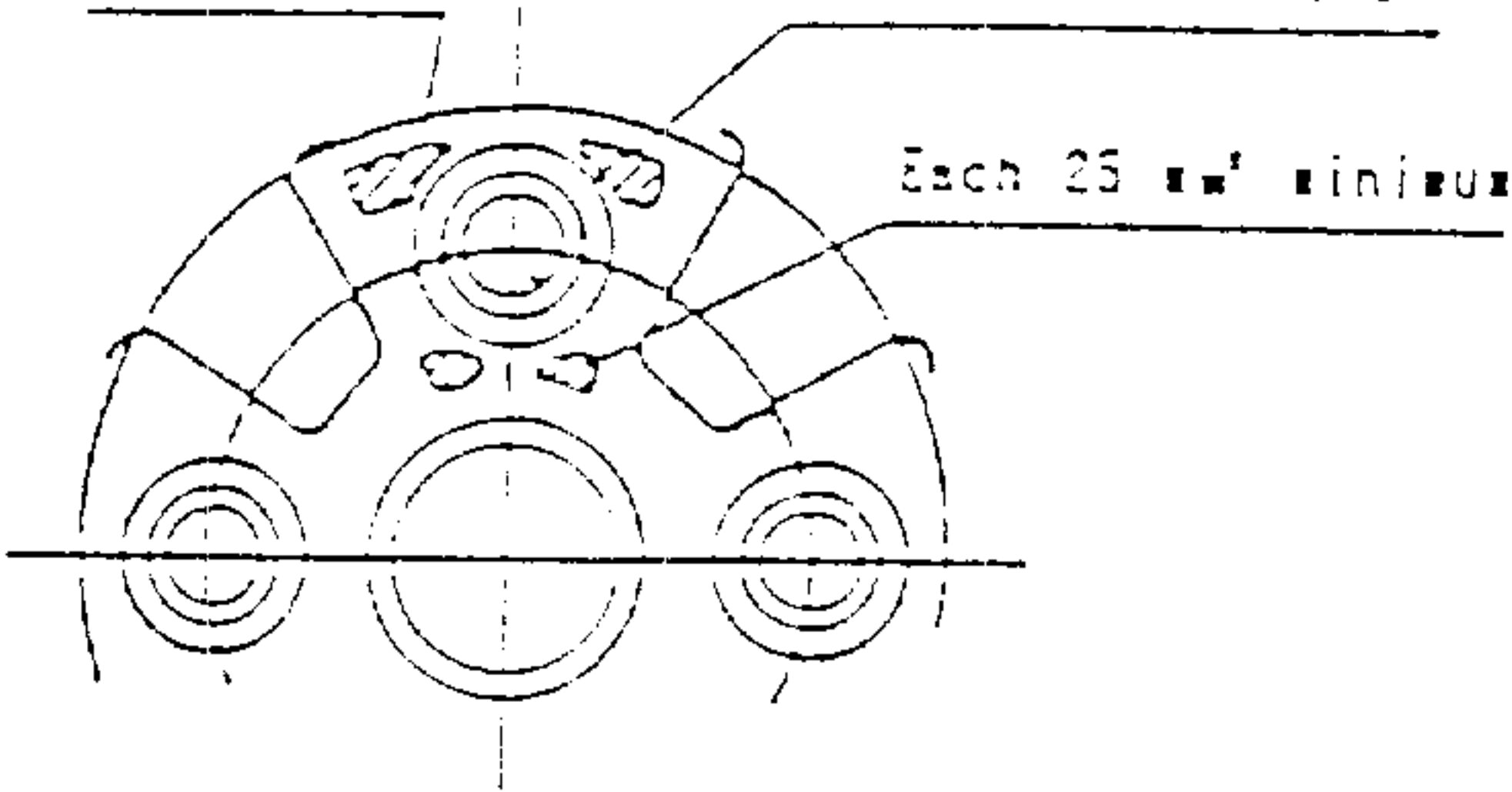
Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Loos- eness of hub nut	Strength of hub nut seat	① No scuffing nor deformation in the hub nut (or hub bolt) portion. ② No crack at the top of nut seat. ③ The deformation (sink) at nut seat shall be max. 0.3 mm. ④ Angle of rotation of hub nut shall be max. 100°.	A	7.2.2
	Seating around hub nut seat	① Seating area shall be 150 mm²/1 hole minimum, and its contact surface pressure shall be uniform. This pressure shall act more strongly at the outer circumference side of the wheel hub. There shall not be a place where the pressure acts partially more strongly than other places. (Other circumference side)  ② As for seating around a hub nut seat (attaching surface), the number of contact surfaces shall be four places per one seat. The order of seating ( part) in tightening a nut is outside two points → inside two points. When tightening torque reaches 4 - 5 kgf·cm (39.2 - 49.0 N·m), the seat begins to contact at the inside (the specified tightening torque shall be 9 - 12 kgf·m {88.2 - 117.6 N·m}).	A	7.2.3

Table 1 (Continued)

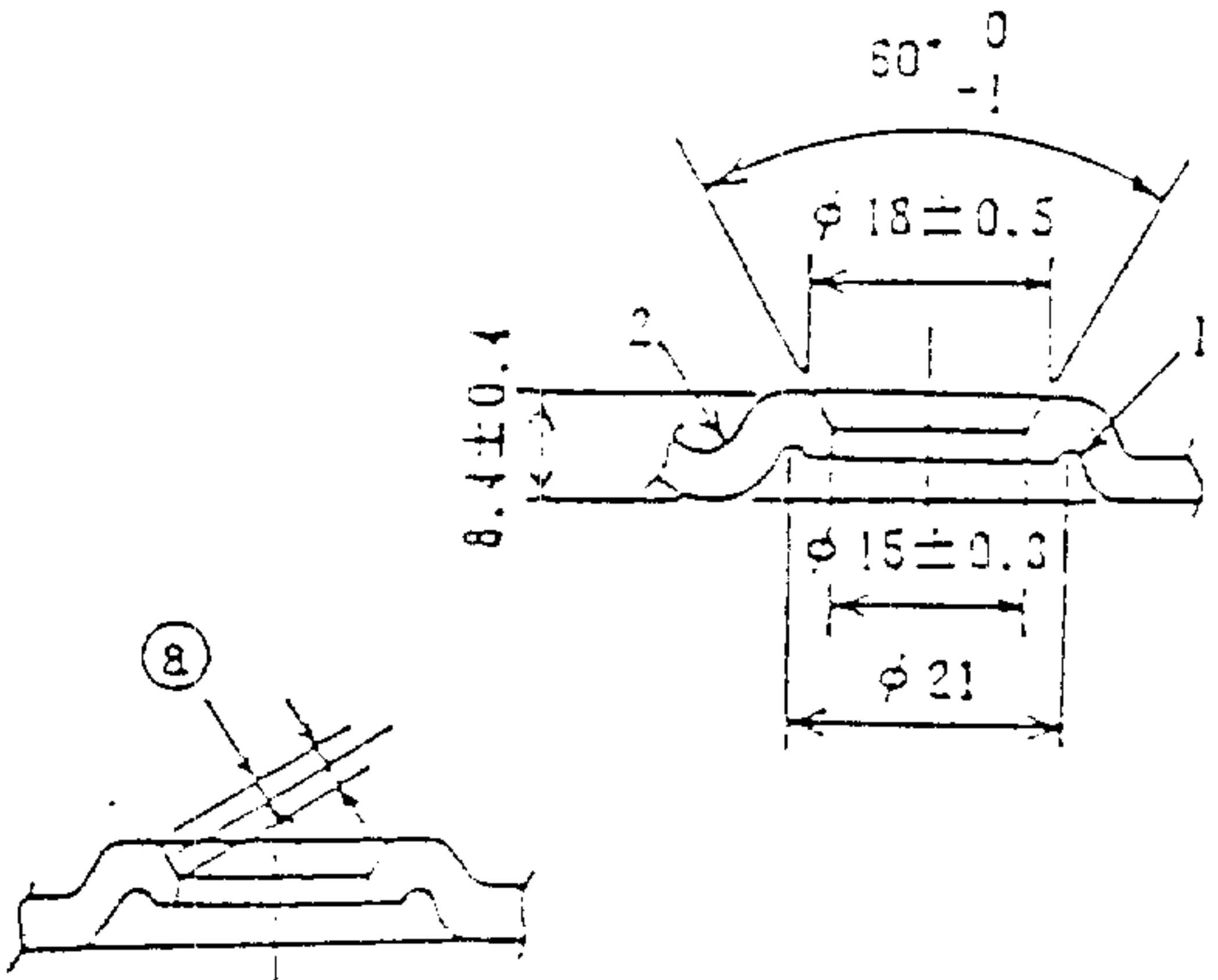
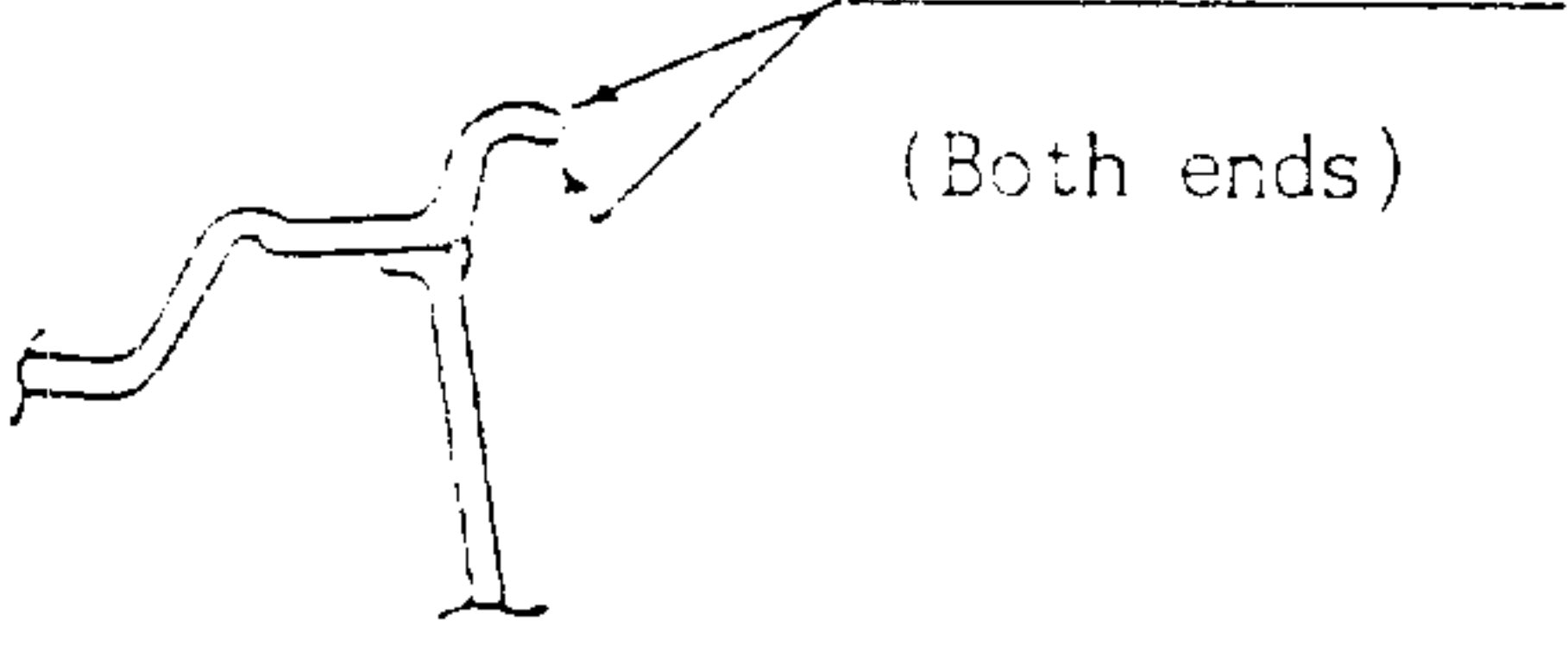
Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Loos- eness of hub nut	Structure of hub nut seat	 Seating between a hub nut and a hub nut seat aims at seating on all over the surface, it is standard that the range marked with ② should contact more strongly than other part.	A	- Slide calipers - angle gauge - and etc. (Refer to the Appendix 1 -Fig.2,3 and 4)
Inter- ference	Clearance between the wheel and the brake	Clearance between the wheel and the brake (maximum configuration), which is indicated in a drawing shall be 3 mm minimum.	A	7.3.1
Serv- icea- bili- ty	The configuration on the rim flange	No sharp edge.  (Both ends)	C	Visual inspection or other means.

Table 1 (Continued)

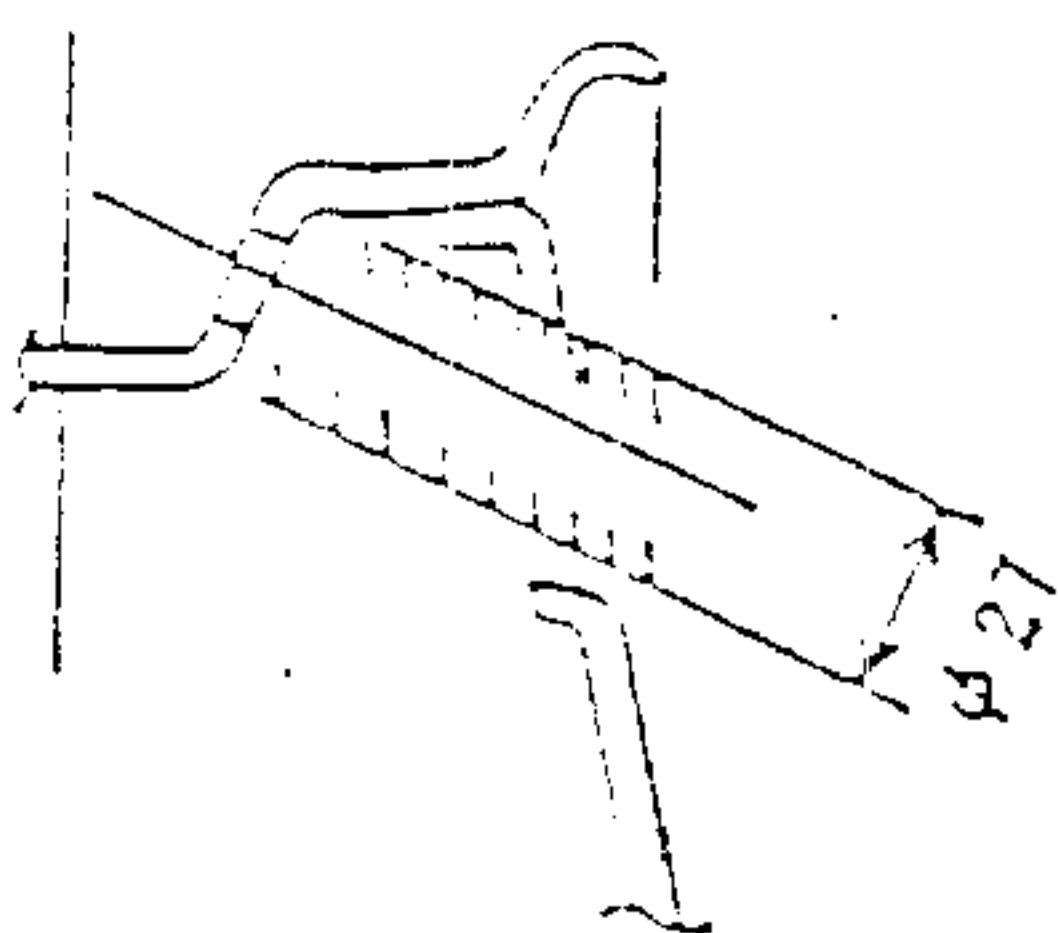
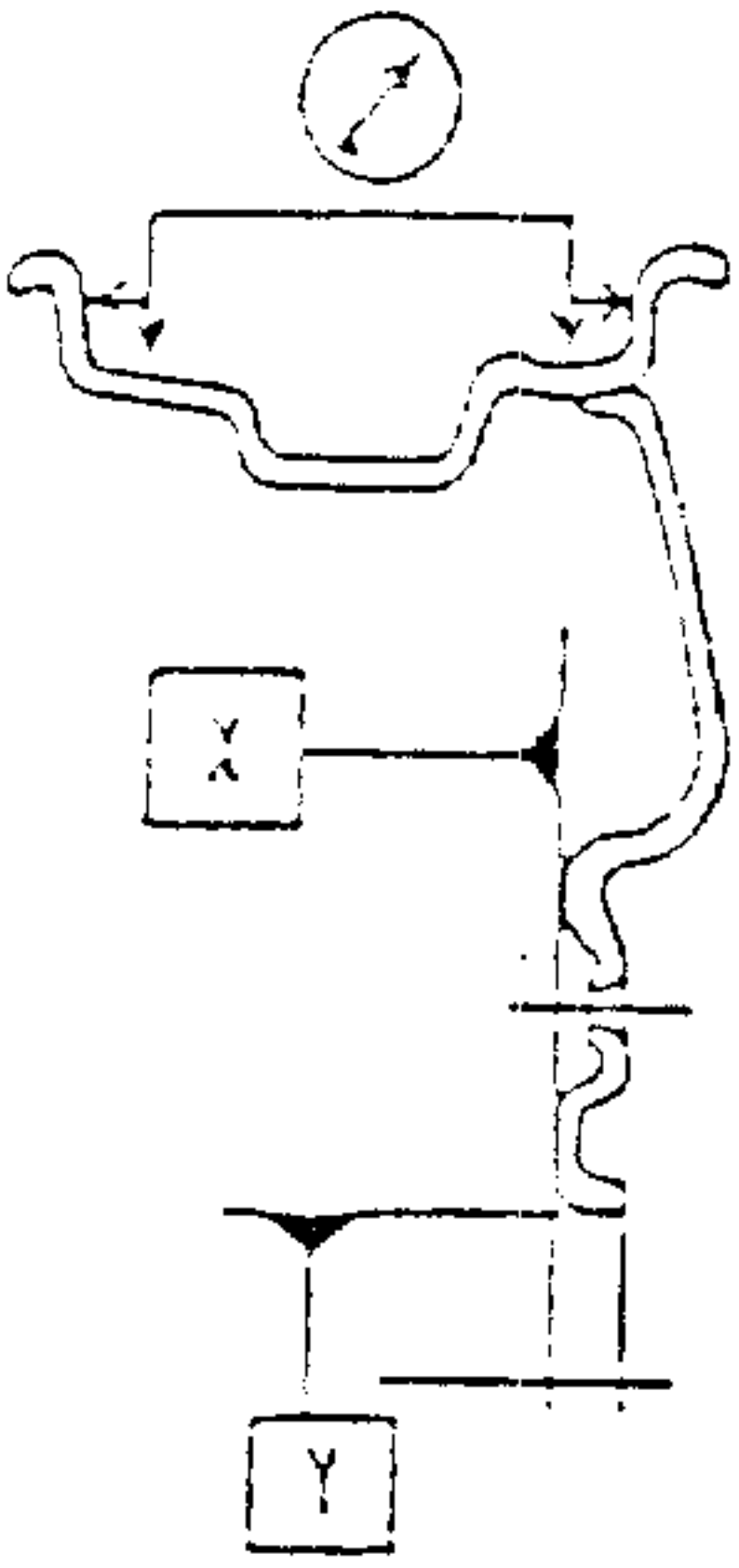
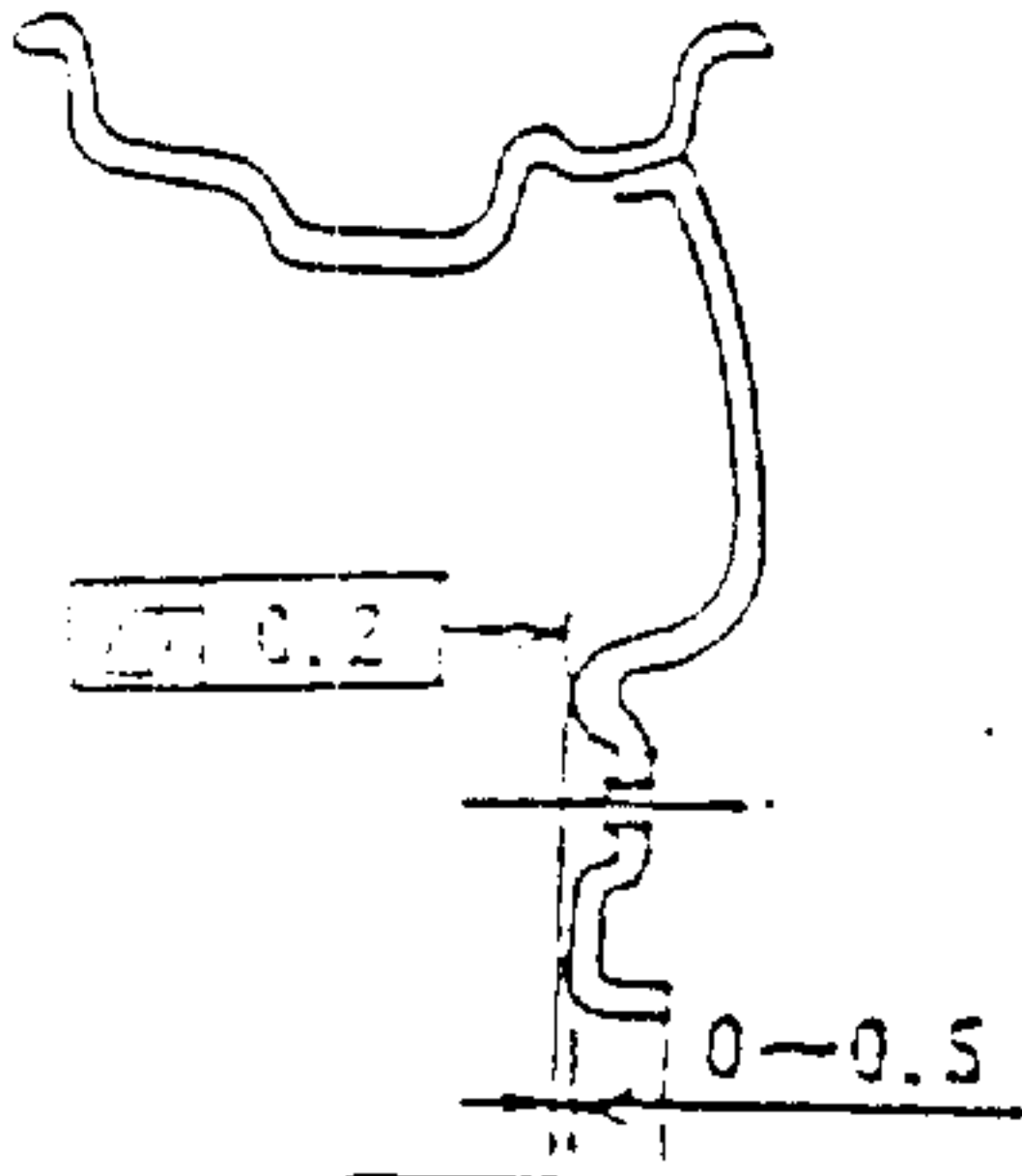
Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Serviceability	Serviceability of air valves	There shall be the following space at least around a valve hole. When a configuration which can not satisfy the above-mentioned standards is adopted unavoidably from the viewpoint of design or strength, make a mediation among the departments concerned. 	C	Slide calipers, etc.
	Application to tire assembly, tire mounter, balancing machine and others	- The distance between the attaching surface of hub and the upper surface of hub nut seat shall be 8.4 ± 0.4 mm. - The tolerance of parallel degree of the hub nut seat to the attaching surface of the hub shall be within 0.5 mm on the same wheel. - The tolerance of parallel degree of the upper surface of the hub hole to the attaching surface of the hub shall be within 1.0 mm. - The tolerance of concentricity of the PCD for the hub nut hole (60° tapered face) to the hub hole shall be within 0.3 mm	C	Position angle gauge, etc. (Refer to the Appendix 1 -Fig.2)
Mark- etab- ility	External appearance (Outward appearance)	- The effective surface is to be smooth as much as possible, and there shall be no scuffing and flaw. - Pockmark, pin hole, etc. due to thick film of painting (consideration of non-corrosive) shall conform to the acceptance sample.	C	Visual inspection and other means.

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method															
Mark- etab- ility	External appearance (Outward appearance)	• There shall be no edge on all over the surface (effective surface, non-effective surface). (From the viewpoints of handling, assembling accuracy and others) • There shall be surface for fixing a temper caution label.	C	Visual inspection and other means.															
	Runout of rim	Vertical runout shall be measured with the basis of X Y Lateral runout shall be measured with the basis of Y X  (mm) <table><tr><td>Nominal diameter of rim</td><td>13</td><td>14</td><td>15</td><td>16</td></tr><tr><td>Max. vertical runout</td><td>1.2</td><td>1.2</td><td>1.3</td><td>1.5</td></tr><tr><td>Max. lateral runout</td><td>1.2</td><td>1.2</td><td>1.3</td><td>1.5</td></tr></table>	Nominal diameter of rim	13	14	15	16	Max. vertical runout	1.2	1.2	1.3	1.5	Max. lateral runout	1.2	1.2	1.3	1.5	B	JASO C 603 (Measure with runout measuring apparatus)
	Nominal diameter of rim	13	14	15	16														
Max. vertical runout	1.2	1.2	1.3	1.5															
Max. lateral runout	1.2	1.2	1.3	1.5															
Flatness of attaching surface of hub	On the same circumference of the cycle. No local projection shall not be admitted. 	B	Measuring apparatus for flatness																