

KES

Catalyst Converter

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Remark

1. Scope of Application

This standard specifies the catalyst converter for automobiles hereinafter referred to as the "catalyst converter").

2. Purpose

This standard aims at securing proper quality by standardizing specifications.

Remark : This standard and drawings communicate together our requirements.

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

(1) New catalyst converter

The name of catalyst converter unused(after manufacturing)

(2) Deteriorated catalyst converter

The name of catalyst converter having catalyst deteriorated by an engine or an electric furnace

(3) Monolith

The abbreviation of monolith catalyst(it generally means substrate)

(4) Canning material

If generally means steel net, interam mats, etc. inserted between the monolith and the catalyst converter case to maintain and guard the monolith.

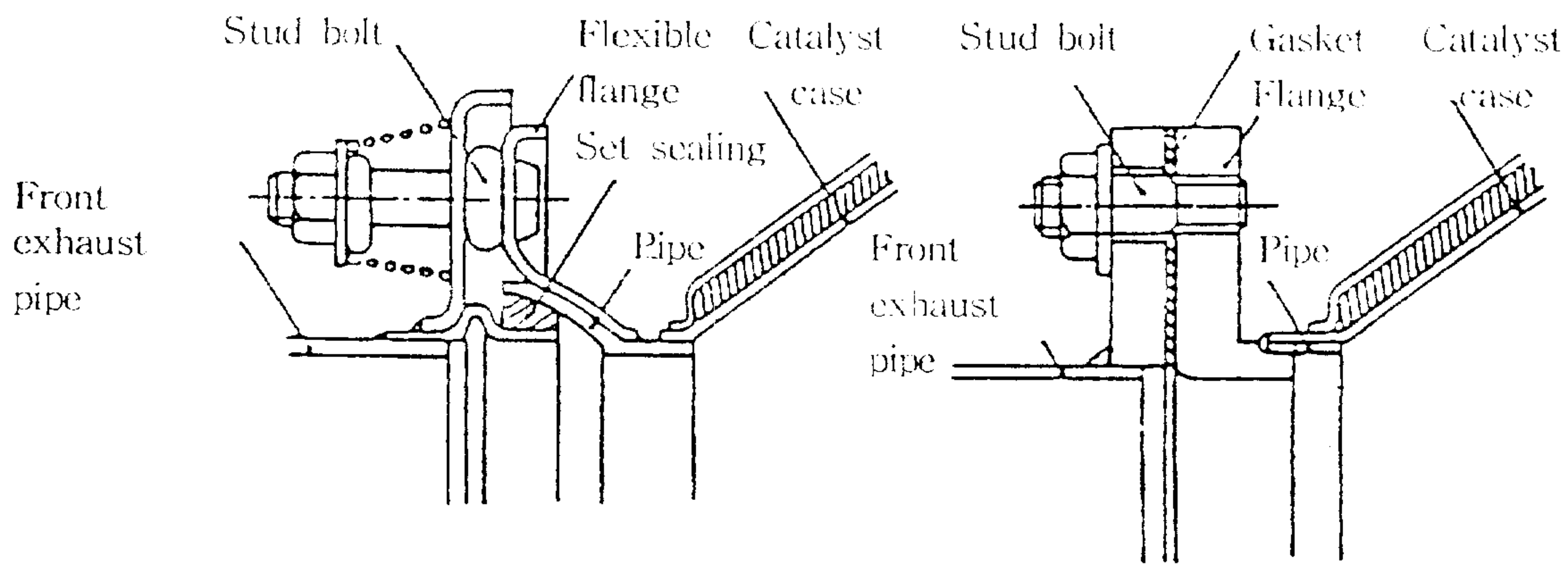
(5) Flexible flange

The name of the catalyst converter side flange which forms the flexible joint(see Fig. A below) (Its part name in the drawing is "flange")

- (6) The structure of the joint between the catalyst converter and an exhaust pipe.

A type flexible joint

B type flexible joint



5. Specification Indicated in Drawings

- (1) Evaluation standard for the outer dimensions(whole length, height and width) of catalyst converter
- (2) Evaluation standard for parallelism between flange
- (3) Evaluation standard for flatness of the flange
- (4) Evaluation standard for bracket mounting dimensions
- (5) Evaluation standard for the clearance between the monolith and the case
- (6) Evaluation standard for the distance between studs
- (7) Evaluation standard for the thread and tightening torque of the stud
- (8) Evaluation standard for airtightness of the catalyst converter
- (9) Marking and projection mark
- (10) Evaluation standard for air flow resistance

6. Evaluation Standard

The evaluation standard of the catalyst converter Assy shall conform to Table 1.

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

Evaluation Item		Evaluation Method	
Du- ra- bi- li- ty	Vibration resistance	First evaluation	7.5.1 First evaluation method
	• Operating force of slider	Second evaluation (Evaluation item tested after evaluating the vibration resistance)	• 7.3.1 Second evaluation method
	•• Noise	Third evaluation (Evaluation item tested after evaluating the operating force)	•• 7.3.7 Third evaluation method

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	Evaluation Rank	Evaluation Method
Dimension and tolerance	Outer dimension(whole length, height and width)	Satisfy the standard indicated in the drawing	C	7.2.1
	Parallelism between flanges	Satisfy the standard indicated in the drawing	B	7.2.2
	Flatness of flange	Satisfy the standard indicated in the drawing	B	7.2.3
	Seating of flexible flange	60% of circumferential length or more	B	7.2.4
	Bracket mounting dimension	(1) Satisfy the standard indicated in the drawing (2) The tolerance of the hole pitch of the bracket shall be within $\pm 0.1\text{mm}$	B	7.2.5
	Distance between studs	(1) Satisfy the standard indicated in the drawing (2) The tolerance on the distance between stud bolts shall be within $\pm 0.1\text{mm}$	C	7.2.6
Appearance	Initial rust	(1) No occurrence of rust (2) Within minimum-acceptable sample when it occurs	C	7.3.1
	Deformation, flaw	(1) No deformation nor flaw (2) Within minimum-acceptable sample when it occurs	C	7.3.2
	Extrusion of insulator	No extrusion of insulator	B	7.3.3
	Marking, projection mark, tag stamp	The indication shall be read visually	AR	7.3.4
Performance	Airflow resistance	(1) Pass Kia evaluation standard for prototype (2) Satisfy the standard indicated in the drawing on and after S-1	B	7.4.1
	Airtightness	Satisfy the standard indicated in the drawing	AR	7.4.2
	EM conversion Performance(A)	Pass Kia evaluation standard	AR	7.4.3
	EM conversion Performance(B)	Pass Kia evaluation standard	AR	7.4.4
	Radiation noise	Pass Kia evaluation standard	B	7.4.5
	Noise	Pass Kia evaluation standard	B	7.4.6

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Evaluation Rank	Evaluation Method
Durability	Clearance between monolith and case	Satisfy the standard indicated in the drawing	AR	7.5.1
	Tightening torque of stud bolt	Satisfy the standard indicated in the drawing	B	7.5.2
	Crack of monolith	No crack	AR	7.5.3
	Clearance in arc welded part	0.5mm or less	B	7.5.4
	Welding accuracy	Satisfy the standard indicated in the drawing	AR	7.5.5
	Heat fatigue durability	Pass Kia evaluation standard	AR	7.5.6
	High temperature vibration durability		AR	7.5.7
	Rust durability		AR	7.5.8
Characteristics	Characteristics of iterim mat	Satisfy the characteristics indicated in Appendix 3	AR	7.6.1
	Characteristics of steel net		AR	7.6.2
Strength	Rupture strength of stud	(1) Thread size M 10: 500kg · m or less (2) Thread size M 12: 850kg · m	B	7.7.1
Others	Entering of foreign materials	No entering of foreign material	AR	7.8.1

7. Evaluation Method

7.1 Common evaluation condition

7.1.1 Standard atmospheric conditions for testing

Unless otherwise specified, the standard atmospheric condition shall be a standard temperature condition of 20°C, class 15(20±15°C) and a standard humidity condition of 65%, class 20(65±20%) specified in KS A 0006(Standard Atmospheric Conditions for Testing).

7.2 Dimension and tolerance

7.2.1 Outer dimensions

Measure the dimensions shown in Fig. 1(A, B, C) with a pair of calipers or a scale.

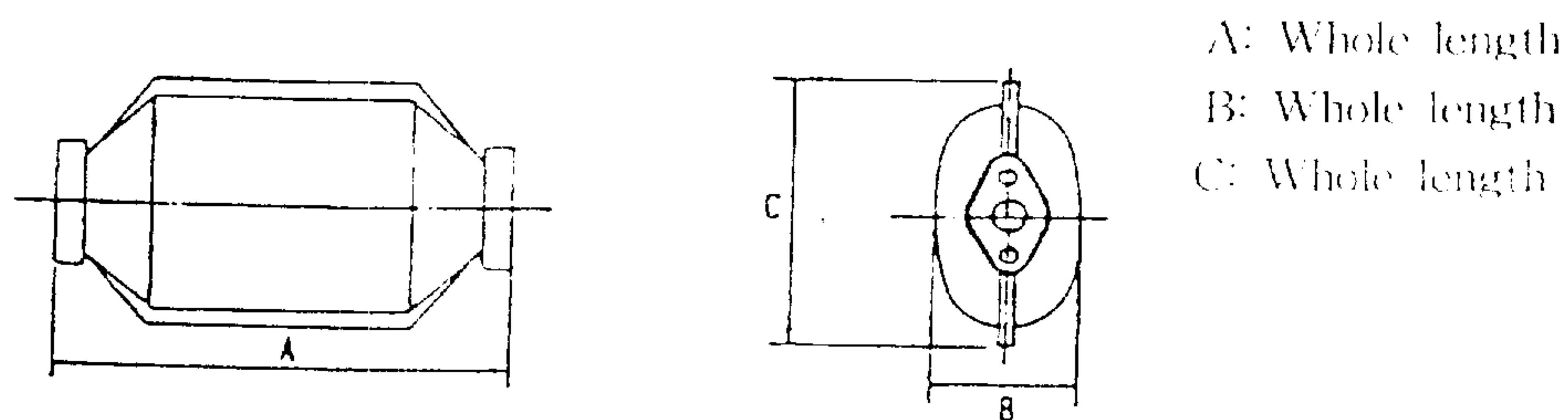


Fig. 1

7.2.2 Parallelism between flanges

When the catalyst has flanges on both ends, fix one flange surface of the catalyst converter after welding as the datum surface and measure the inclination of the other flange surface

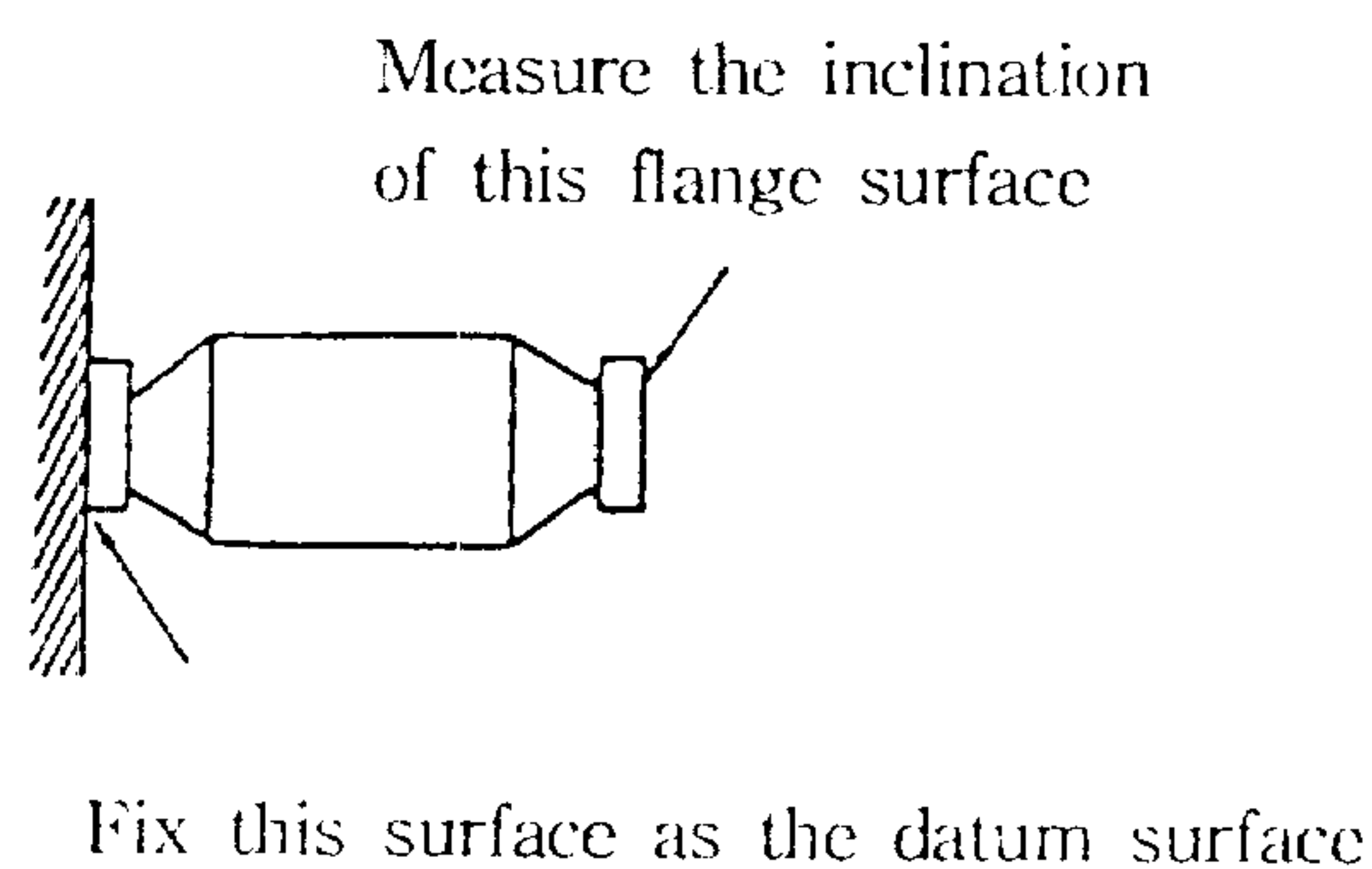


Fig. 2

7.2.3 Flatness of flange

Measure and evaluate the flatness of the flange sealing surface.

Range of flatness measuring

- (1) For a machined flange, measure the whole surface of sealing side
- (2) For a formed flange, measure the sealing surface except the reduction part (shaded area) by blanking shown in Fig. 3.

The area of thickness multiplied by 0.35mm in the outer circumference of the sealing surface (shaded area in Fig. 3) is excepted from evaluation.

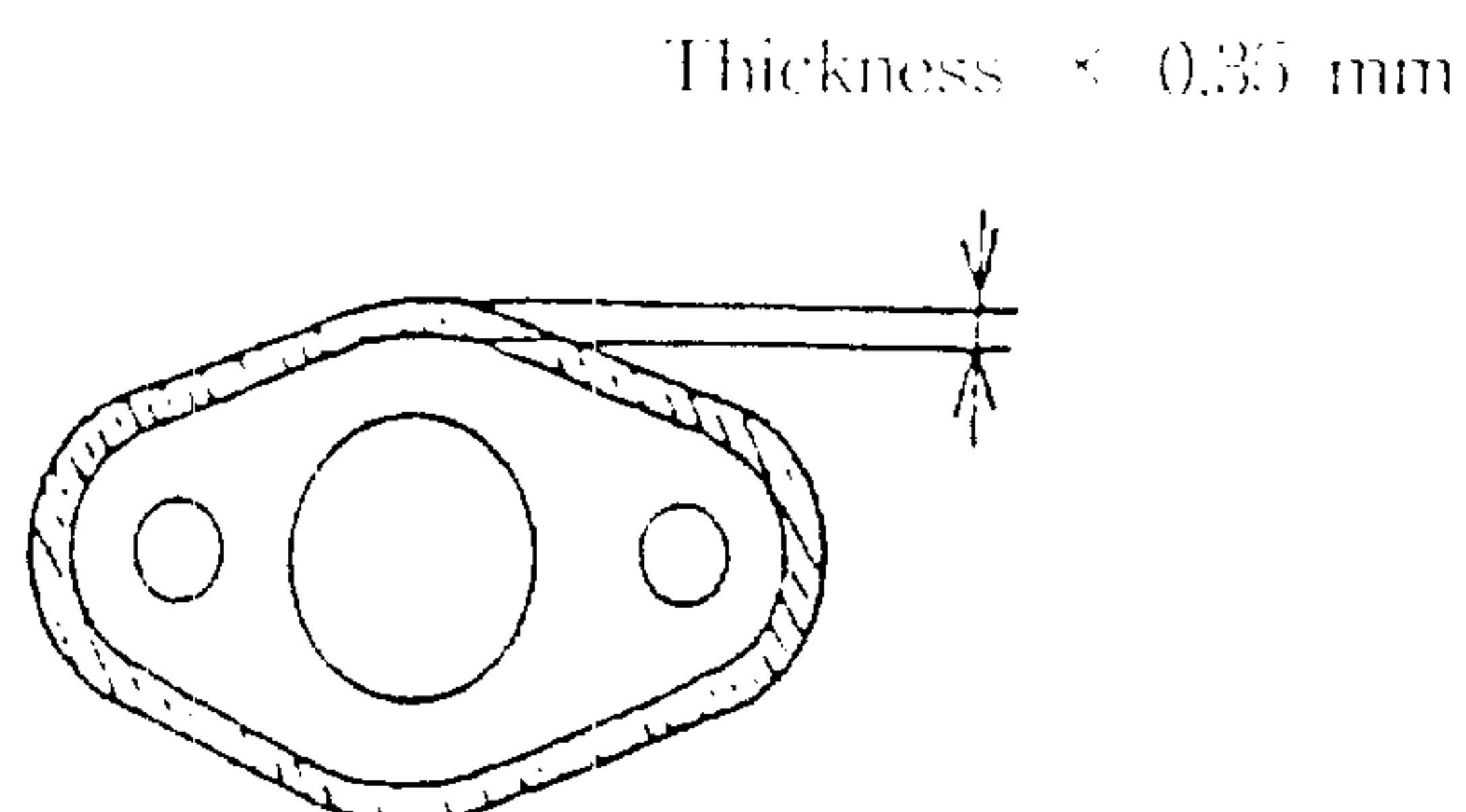


Fig. 3

7.2.4 Seating of flexible flange

- (1) Apply red iron oxide or the equivalent to the whole surface of sealing ring attached to a jig, and push the sealing ring against the flexible flange with a load of 50kgf.
- (2) Measure the circumferential length of the area of the red iron oxide and calculate the ratio of the length to whole length of the flange inside surface.

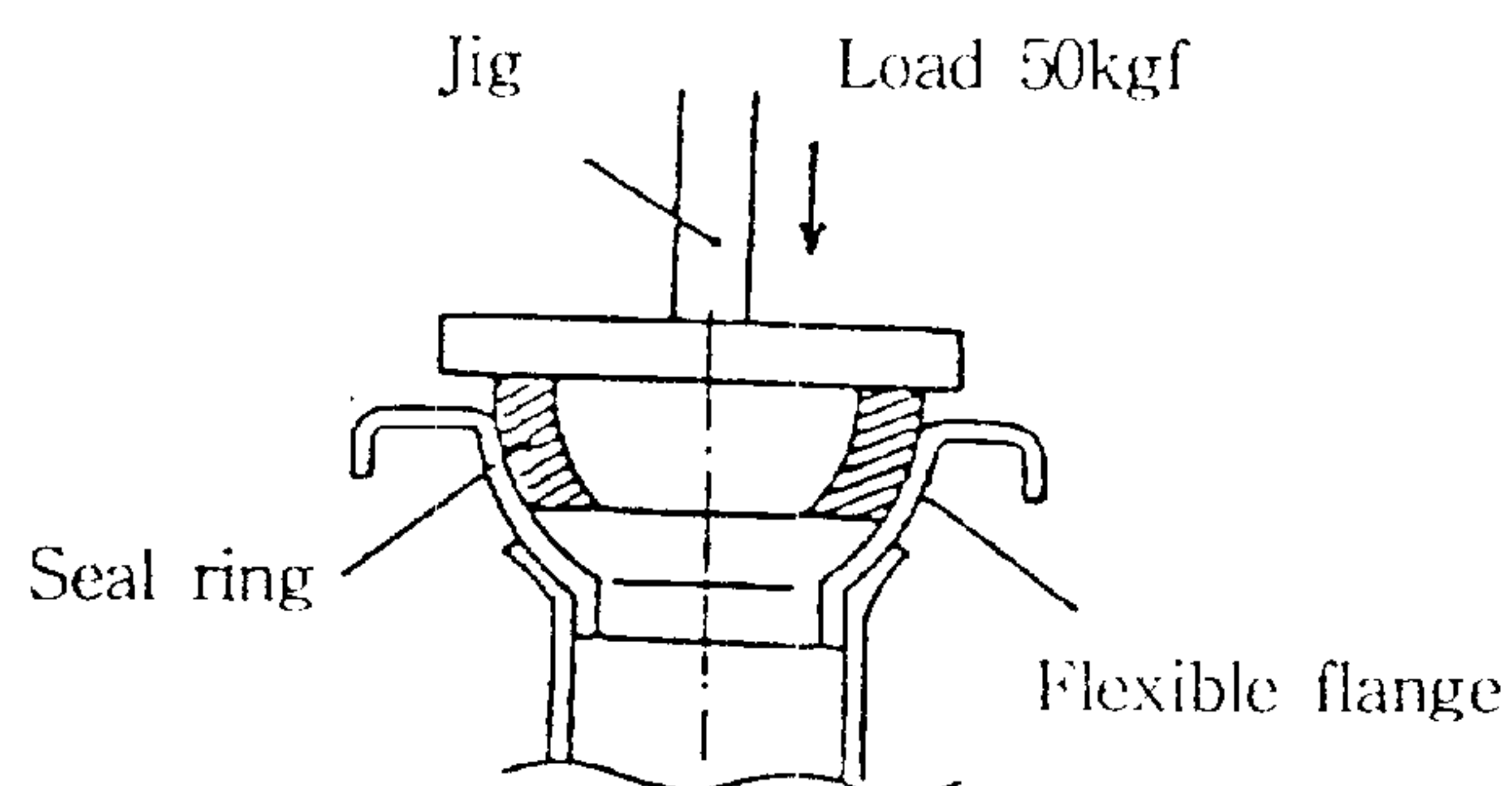


Fig. 4

7.2.5 Bracket mounting dimension

Measure the dimension of the bracket mounting position indicated in the drawing with a pair of calipers or a scale.

7.2.6 Distance between studs

Measure the distance between studs(A, B, C) shown in Fig. 5 with a pair of calipers or a scale.