SUMITOMO ELECTRIC INDUSTRIES, LTD.

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Head Office :Osaka
International Div :Tokyo

Date : 29. March, 1984

Report No. : RA 83098A

RESULTS OF FATIGUE TESTS FOR 1B600 AIR SPRING OF TRENSURB EMPRESA DE TRENS URBANOS DE PORTO ALEGRE S. A.

RESULTS OF FATIGUE TESTS FOR 1B600 AIR SPRING OF TRENSURB

1. Vertical Fatigue Test

-1. Test Coudition

Vertical Deflection : ±30mm

Internal Pressure : 5Kgf/cm²

Frequency : 1Hz

Numbers of Cycle : 1×10^6

-2. Result

Stick is slightly found in diaphragm on its cotact portion with upper seat and under seat, but no wear detected. And stick is slightly found in upper seat and under seat.

2. Lateral Fatigue Test

-1. Test Coudition

Lateral Displacement : ±30mm

Internal Pressure : 5Kgf/cm²

Frequency : 1Hz

Numbers of Cycle : 2×10^5

-2. Result

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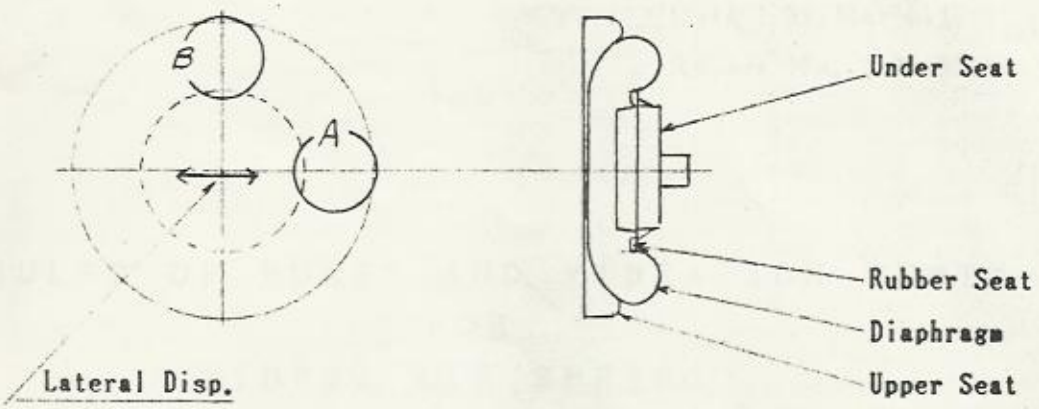

	RESULTS
Diaphragm	Portion A : Upper Seat Slight wear and stick of 40mm width are found. Under Seat Slight stick is found,not problem. Portion B : Upper Seat Lorcal wear of 0.1~0.2mm depth is found. Under Seat Lorcal wear of 0.5~0.7mm depth and 7mm width is found.
Upper Seat	Stick is slightly detected in both A and B portions, but it's no problem.
Rubber Seat	Good.
Under Seat	Good.

Refer next photos

3. General Judgement

This Air Spring is good,for inportant problems are not detevted in diaphragm and others.

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Head Office :Osaka
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Date : 30. March, 1984

Report No. : RA 83119

RESULTS OF BURST AND VIBRATION TESTS FOR 1B600 AIR SPRING OF TRENSURB EMPRESA DE TRENS URBANOS DE PORTO ALEGRE S. A.

－2 Test result

As per attached graphs, orifice φ15 is over-damping and φ22 is slightly under-damping.

－3 Considerations

From our past experimental results, it is recommended to use the larger orifice for larger load and also larger orifice for wider exciting amplitude.

However it is already known that, even if load is increased from 7-ton to 14-ton and furthermore exciting amplitude is widened from ±2.5mm to ±5mm, only 10% increase of orifice diameter is sufficient.

Accordingly, in the case of TRENSURB φ19 orifice is recommended.

1B600 AIR SPRING (M-27052C)
VIBRATION TEST