

Development of a miniaturized fast tool servo

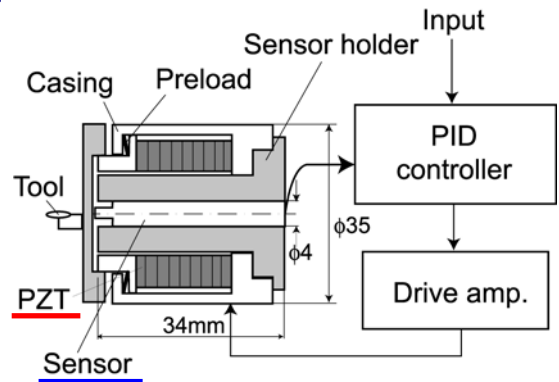
Miniaturized Fast Tool Servo

Fast Tool Servo

Positioning tool with **high frequency response** and **high accuracy**

PZT → High frequency response

Capacitance probe → High accuracy



Specification

Miniaturize

A small capacitance sensor ($\phi 4 \text{ mm} \times 34 \text{ mm}$) is mounted in the hollow-type PZT actuator ($\phi 35 \text{ mm} \times 34 \text{ mm}$)

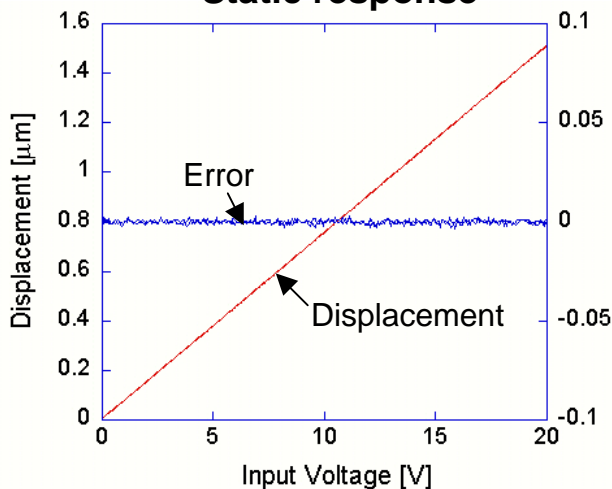
PZT size \approx FTS size

$\phi 35 \text{ mm} \times 43 \text{ mm}$, 270g



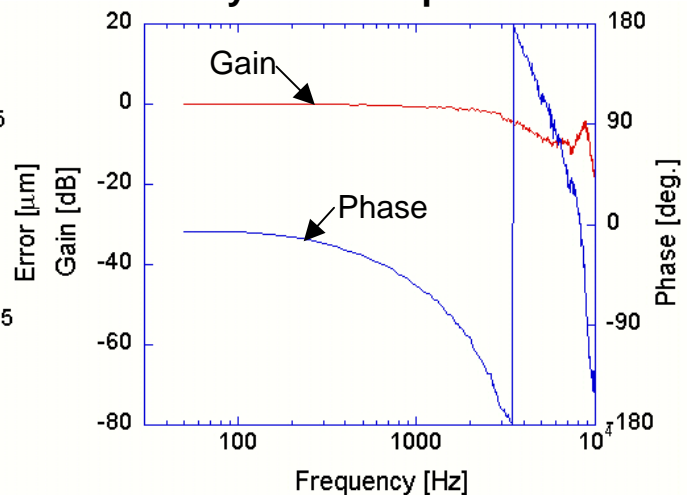
Performance of Mini-FTS

Static response



Positioning accuracy: 5 nm

Dynamic response



Frequency response: 3 kHz