**Concept 1:**

Hydraulic cylinder

Steel plate/Strip

Output

Sensor Assembly

Supporting Steel Rod

Sensor Coil

Piston movement

Internal Bus

Piston

D

d

Play Wire

The Idea is, d varies linearly with respect to D.

D – Length of the piston movement.

d – Distance between steel rod and sensor coil.

For example d max – 2cm and d min – 0.05mm, D – 7cm. As piston moves from 0 to 7cm the d varies between 0.05mm to 2cm. The resolution of the sensor is 20um.

Concept 2:

The distance between Sensor and Steel metal plate varies as piston moves. D – The total distance moved by piston. d - The distance between sensor and Metal plate.

For better result, the distance between Metal plate and sensor should be less than or equal to 5cm. The resolution is 20-50um.

Output

Steel Plate

Play Wire

Piston Movement

Internal bus

Sensor

d

D

Concept 3: I will update after some experiments.

Concept 4: I will update after some experiments.