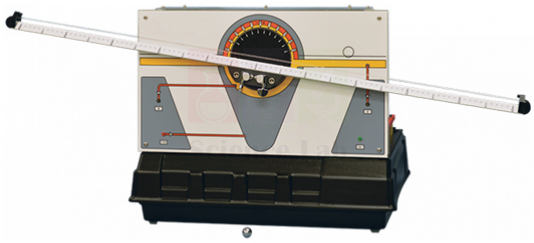
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Product Name :

Ball and Beam Apparatus

Product Code :

SLE/ETC/03



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Description :

Ball and Beam Apparatus (Product Code: SLE/ETC/03) is an unstable-system control trainer used to teach active feedback control of a naturally unstable double integrator in control engineering laboratories. A steel ball rolls on two parallel tensioned wires carried by a centre-pivoted beam, while a servo motor tilts the beam and sensors report beam angle and ballposition. The apparatus comes from **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, anOEM manufacturer, and is made at its own factory in Ambala, India.

Key Details

Parameter	Detail
Ball	Steel ball, free to roll on two parallel tensioned wires
Beam	Carries the wires and pivots at its centre
Actuator	Servo motor controlling the beam angle
Sensors	Measure the beam angle and the ball position
System type	Double integrator — naturally unstable
Control method	Active feedback control using phase-advance methods
Real-world analogy	A rocket or missile during launch, which needs active control to prevent it going unstable and toppling over
Product code	SLE/ETC/03
Manufacturer	Jain Scientific Equipments Pvt Ltd (ScienceLab) — OEM
Country of origin	India (made in Ambala, Haryana)

What Is the Ball and Beam Apparatus Used For?

The basic control problem is to vary the beam angle so the ball stays at, or moves to, a chosen position. Left alone, the ball simply rolls to one end — which is exactly why the apparatus is valuable: students must design a controller that actively stabilises the system rather than merely speeding up one that is already stable.

A common teaching sequence starts with an inner loop on beam angle through the servo motor, followed by an outer ball-position loop using phase-advance (lead) compensation. The comparison with launch-vehicle stability makes the theory memorable for aerospace, mechatronics and electrical students, and gives engineering lab equipment collections a very visible demonstration of instability.

OEM Manufacturer

ScienceLab is the brand under which Jain Scientific Equipments Private Limited sells its own laboratory equipment, and the company is the OEM for the Ball and Beam Apparatus. The unit is fabricated and assembled at its licensed factory in Saha, Ambala, Haryana, India. Because buyer
spare

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