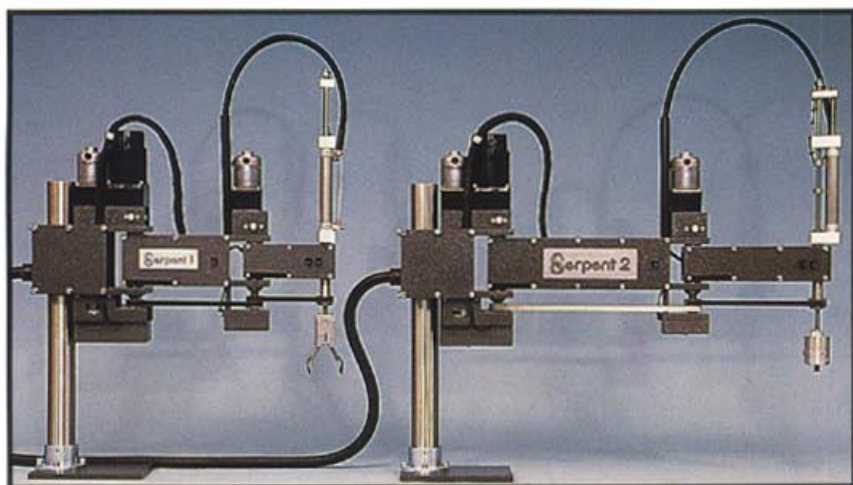


# Serpent EC

## SCARA ROBOTS

35-004



### 4 AXES + GRIPPER

With each of the major axes driven by servo motor under closed loop control.

### SHAFT ENCODER FEEDBACK

12,000 counts/revolution on major axes.

### ARM LENGTH CHOICE

Serpent I 400mm arm for highest accuracy  
Serpent II 650mm arm for furthest reach.

SCARA robots are one of the most popular in industry and the Serpent ECs are typical of this class of machine.

The movement of a SCARA is simple but entirely adequate for a vast number of assembly and pick-and-place applications.

SCARA is an acronym for Selectively Compliant Articulated Robot Arm which means there is a small amount of springiness in the plane of operation.

Providing there is a small lead-in, on the component, the compliance allows placement of a part even where there is some misalignment.

The two joints of the Serpent EC arms and the wrist are driven by DC servo motors with

encoder feedback to achieve accurate closed-loop control.

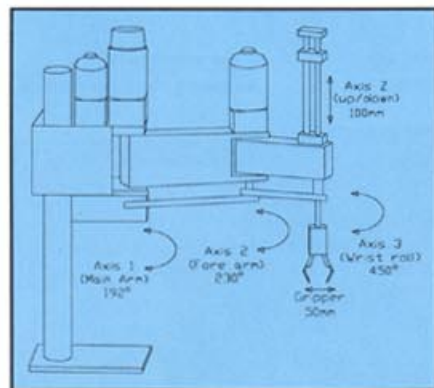
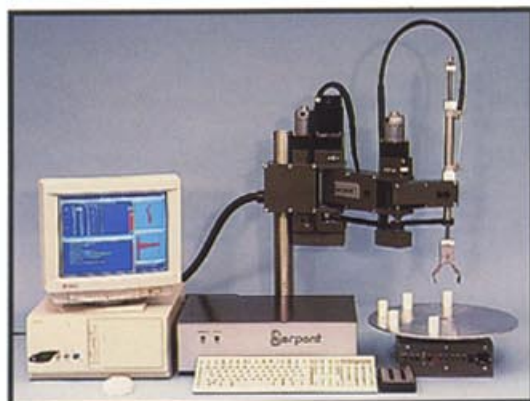
As is usual for SCARAs, the wrist motor is situated back at the column and connected by belts to the end of the arm. This arrangement maintains a constant wrist angle relative to the bench when the arm moves.

The vertical movement is by pneumatic cylinder, operating at adjustable speed between moveable end stops.

The Serpents may be programmed from the computer either by setting the data for each axis or by steering the arm by hand using the lead-by-

the-nose buttons. Alternatively the Serpent EC will follow the hand-held control pendant or simulator.

Grippers are readily interchangeable.



## SPECIFICATION

### SERPENT I

**AXIS 1 (main arm)** Angular movement 192°  
Arm length between axle centres 250mm

**AXIS 2 (fore arm)** Angular movement 230°  
Arm length between axle centres 150mm

**REACH** 552mm from column centre

**SPEED** Max 300mm/sec

**REPEATABILITY** 1.0mm

### SERPENT II

**AXIS 1 (main arm)** Angular movement 192°  
Arm length between axle centres 400mm

**AXIS 2 (fore arm)** Angular movement 230°  
Arm length between axle centres 250mm

**REACH** 802mm from column centre

**SPEED** Max 500mm/sec

**REPEATABILITY** 1.5mm

### SERPENT I & II

**AXIS 3 (wrist roll)** Angular movement 450°

**AXIS Z (up/down)** 100mm travel between adjustable end stops

**LIFTING** 1500gm at full reach

**CONTROL BOX** 475x330x135mm

**CONTROL SYSTEM** Digital with Incremental encoders, Axis 1, 2 - 12,000 counts/rev, Wrist 1000 - counts/rev.

**WORKCELL** Digital outputs 8

**INTERFACE** Digital inputs 8

Analogue inputs 2 (12bit)



### SERPENT TEACH PENDANT

Supplied with the Serpent EC is the pendant. With this, each of the arms may be controlled even without a computer connected.

When connected to the computer, the moves may be recorded and played back either as a stand-alone robot or as part of a multi-device work-cell.

### SERPENT SIMULATOR

The Serpent simulator is an optional small scale model of the robot which is operated by hand.

Every movement is copied by the robot. These moves can then become part of the program of the robot.

