

# CRAE

## Connector Robotic Assembly Equipment

P/N: 01-03-0006



### Applications:

Assembly of individual components into connectors



### Technical Features:

- ▶ 3 loading areas with rotating trays, to ensure non-stop production;
- ▶ All components and assemblies done by a single robot with a clamp;
- ▶ Clamp equipped with a load cell to monitor insertion force;
- ▶ Automatic detection of component's presence and position, using a vision system;
- ▶ Vision system to perform final visual inspection, to mark OK and NOK parts;
- ▶ NOK parts automatically segregated;
- ▶ Constant monitoring of vision system;
- ▶ Controlled assembly depth and position;
- ▶ Maintenance free machine, since it doesn't use jigs or pins to detect presence, position and accuracy of components and assemblies;
- ▶ Trays can be replaced to perform other assemblies;
- ▶ Selection of production orders using barcode readers or remotely by KSK servers, via OPC-UA protocol;
- ▶ Configuration and maintenance mode password protected;
- ▶ Partial and global connector's counters, including down-counter associated to the production: batch production. Working time counter;

### Industry 4.0 Features:

- ▶ Analysis of production data and statistics via dashboard (local or remote);
- ▶ Remote assistance and troubleshooting;
- ▶ Network connectivity and remote configuration;
- ▶ Saving of KPIs to USB and/or remote location;
- ▶ Automatic and immediate error reporting.



#### Flexibility:

Handling, insertion and assembly of different parts (rubber, plastic, etc), sub-assemblies and complete assemblies using always the same hardware



#### Productivity:

Assembly of 3 complete sets in one cycle  
Rotating trays for non-stop production



#### Error-Proof:

Vision system to validate components' position, orientation and assembly accuracy, identifying OK and NOK assemblies



#### Connectivity and Traceability:

Network connection via OPC-UA to KSK servers  
Batch production  
Production reports and dash board analysis  
Interface with touchscreen and barcode



#### Controlled Process:

Load cell to monitor insertion force  
Controlled assembly depth and position  
Protocol to discard NOK parts  
Calibration of vision system

The CRAE - Connector Robotic Assembly Equipment, is a semi-automatic robotic system designed to assemble connector parts.

It has the capacity to assemble 3 different sets and it handles all its distinct components (rubber, plastic, etc), using always the same hardware.

It has rotating trays in order to ensure nonstop production, allowing the machine to operate in one side of the trays, while the operator is loading or unloading components on the other side.

A vision system is used to detect the components, their orientation and to perform the final visual inspection; an electric clamp with force sensor is used to pick up the components and a load cell is used to measure the insertion force.

The system is a perfect example of combining robotics with vision systems in order to automate delicate and complex tasks, providing flexibility and ensuring 100% quality.

By using vision systems and components with high flexibility, instead of the traditional probes and pins used in tight tolerance jigs, a practically maintenance free machine is obtained and ready to be adapted to other assemblies without the need of reworking the entire machine.

### Technical Data:

#### Dimensions:

Length: 1350 mm  
Width: 1820 mm  
Height: 1900 mm  
Weight: 600 kg

#### Connections:

Electrical: 230 VAC @ 50 Hz - 1 IEC standard male socket  
Consumption: 1.5 kW (peak)  
Air pressure: 5 to 7 Bar - quick-coupler socket - Ø 8 mm  
Interface: Touchscreen, barcode, 2x USB, Ethernet and tower light.

### Options: