

POWER RACE

THE
AEROSPACE
ROBOT

COMPOSED TO COMPETE

- Robotic Flexibility on High Accuracy Operations (e.g. Drilling, Milling etc.)
- 3 Times Stiffer than a Standard Robot
- Highest Accuracy and Repeatability
- Extreme Reliability and Availability

POWER RACE - TECHNICAL INFORMATION

Area of Application

The POWER RACE (Robot Assembly Cell) is a highly flexible robotic system specifically designed for the needs of the aerospace industry. It functions as an automated positioning system to perform multiple processes in one machine such as drilling, riveting, milling and other high precision, high-force applications.

Components such as wing box, stabilizers, fuselage etc. can be automated drilled and riveted by the mobile robot. The system is highly standardised and relies on proven technologies with long term spare part availability. With up to 50% reduced drill times and 40% higher overall performance, the PowerRACE is the ideal system to automate complex industrial manufacturing processes - suitable even on lower rate programs.

Technical Data

Drill end-effector	Positioning system
Drill speed: max. 24.000 rpm	Positioning accuracy linear axis: $\pm 0,004"$ / $\pm 0,1$ mm
Drill spindle feed: up to 197 "/min / 5.000 mm/min	Positioning repeatability linear axis: $\pm 0,002"$ / $\pm 0,05$ mm
Drill torque: max. 20 Nm	Positioning accuracy 3D: $\pm 0,012"$ / $\pm 0,3$ mm
Drill diameter: up to 5/8" / 15,90 mm	Positioning repeatability 3D: ISO9283 Value $\pm 0,002"$ / $\pm 0,06$ mm
Countersink diameter: max. 1,10" / 28 mm	Positioning speed : 3D Overall step X,Y,Z (1 inch) ; A , B (1°) $\leq 1,3$ sec.
Countersink repeatability: $\pm 0,0006"$ / $\pm 0,015$ mm	Work travel (linear axis): Z-axis: 79 inch / 2.000 mm
Clamping force: 110 - 600 lbs / 50 - 270 daN	Work envelope : 4m x 5m x 1,5m
Stack: max. 3" / 76,2 mm	Double bearing and master slave drive trains for highest stiffness and minimum backlash
Hole quality : up to H7	

Special Features

- Standardized drive train and controls
- Extremely high clamp force
- Higher stiffness based on optimized machine design
- Higher accelerations and throughput
- Maximum flexibility, no limitation to only one workpiece or workplace
- High speed precision drill spindle and tool changer (up to 30 places)
- Optional Movable platform with self-driven omni-directional wheels, stationary design or rail system
- Small footprint
- Integrated automatic lifting, test piece holder and sensor calibration function
- Sensor Systems for Distance, Normality, Workpiece Zero Point, Tack Rivet Detection, Countersink Depth, Fastener Head Height, Hole Diameter, Sealant
- Observation of cartesian safety zones
- Closed loop position control with direct measurement systems
- BA Lube advanced lubrication system
- Video surveillance system
- Vibration Drilling



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