DIAMOND SERIES

DIAMOND H1 WAFER HANDLING ROBOTS

The Diamond series atmospheric robots represent a significant engineering advancement in the design and reliability of wafer handling equipment.

Benefiting from technologically superior components, the robots utilize ultra low inertia, high-response brushless servomotors coupled with zero-backlash Harmonic Drive® gears to achieve greatly enhanced dexterity and precision.

The innovative, all-in-one, class 1 clean room compatible design incorporates the motion controller, servo amplifiers, and power supply within the robot's industry standard footprint.

High-strength structural members enable top, bottom or side mount configurations without compromising the system rigidity.

A 32-bit, real-time kernel delivers accurate motion profiling along smooth continuous trajectories, while the distributed control architecture allows a seamless integration with linear tracks, pre-aligners, and other sub-components.

Networkable RS-485 and Ethernet interfaces complement the standard RS-232 and teach pendant connections. Powerful native wafer handling and scripting languages facilitate rapid software development for embedding the robots into an OEM application environment. Comprehensive emulation of legacy robot "macro" commands offers a drop-in compatibility with a wide variety of existing semiconductor tools.

FEATURES

- Excellent structural rigidity
- Modular and highly customizable design
- Arm length from 10.50" and 14.40".
- Vertical travel up to 7"
- Fully integrated motion controller, servo amplifiers and power supply
- High response brushless motors and precise zero-backlash Harmonic Drive® gears
- Optional absolute encoders eliminating the initial homing procedure
- Handling radial and in-line equipment placement
- Seamless integration with prealigner, linear track and other peripheral components
- Standard RS-232 interface and Ethernet (Telnet) interfaces to the host computer
- Advance 32-bit real-time motion control kernel
- Powerful wafer handling firmware
- Comprehensive software tools and utilities
- Software emulation for legacy robot macro commands
- Optional teach pendant terminal
- General purpose digital inputs and outputs for custom use
- Class 1 clean-room environment compatibility
- Reliability – MTBF > 60000 hours, (MCBF > 10,000,000 cycles)

DIAMOND SERIES

DIAMOND H1 DATA SHEET

Axis	Motion range	Maximum velocity	Maximum acceleration	Axis Repeatability
T	> 360° (typical +/-230°)	360 °/s	1500 °/s²	±0.01°
R	From ±10.5” Up to ±14.4” (depending on arm)	Up to 35 inch/s (depending on arm size)	300 inch/s²	±0.001” (0.025mm)
Z	7”	18 inch/s	44 inch/s²	±0.001” (0.025mm)

Wafer Size
2”(50mm) to 12”(300mm)

Payload
2.2 lbs(1.0 kg)

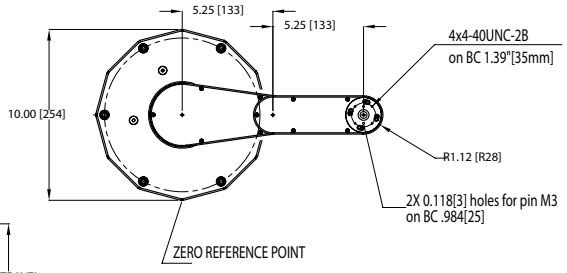
Encoders
Incremental, 10000 pulse/rev

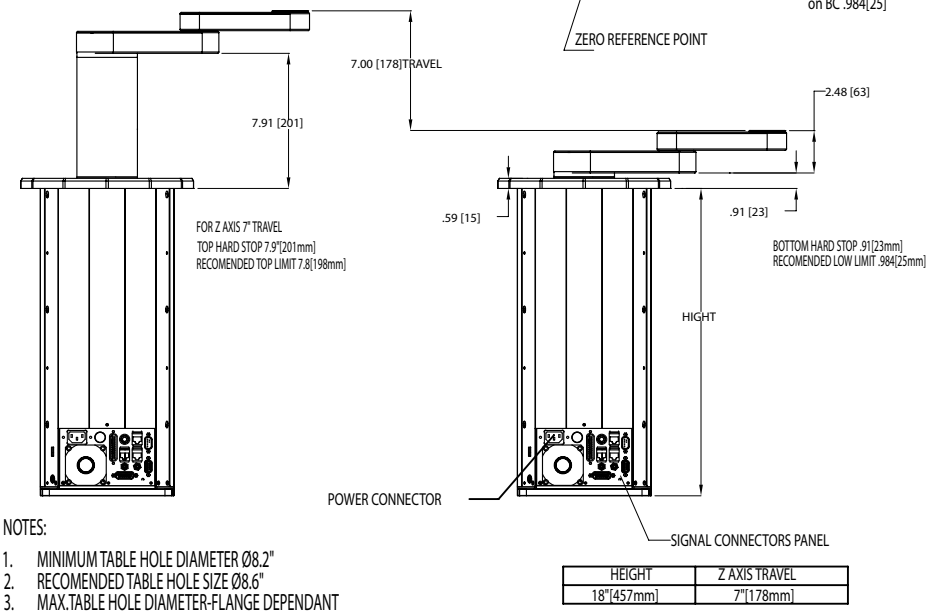
Motor type
Brushless, low inertia high responce

Weight
40.7 lbs(18.5 kg) for 7” vert. travel, and 5.25”x5.25” arm

Operating temperatures
50°F-104°F (10°C to 40°C)

Facility requirements
Voltage range
100-120AVC, 200-240VAC
Vacuum supply
11.8”Hg(-5.8psi) / 0.1CFM airflow

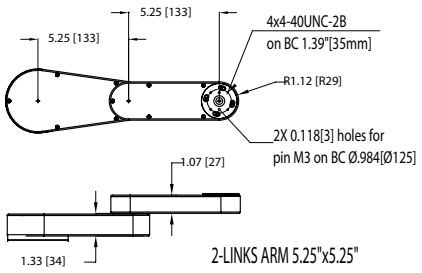




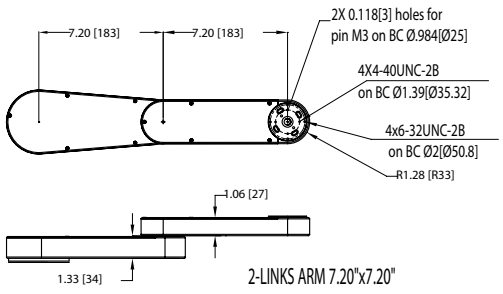
NOTES:
1. MINIMUM TABLE HOLE DIAMETER Ø8.2"
2. RECOMENDED TABLE HOLE SIZE Ø8.6"
3. MAX.TABLE HOLE DIAMETER-FLANGE DEPENDANT

HEIGHT	Z AXIS TRAVEL
18"[457mm]	7"[178mm]

STANDARD ARM CONFIGURATIONS

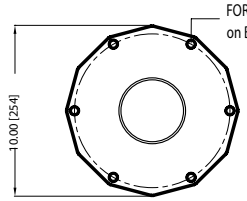


2-LINKS ARM 5.25"x5.25"

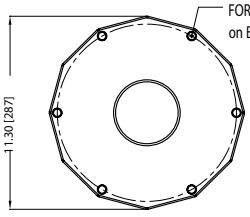


2-LINKS ARM 7.20"x7.20"

FLANGE CONFIGURATIONS



10" FLANGE (STANDARD)



11.3" FLANGE

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