



# Vacuum Robots

Wafer Handling Robotic Components

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# HA-3.2 Vacuum Robots

## Wafer Handling Robotic Components

### FEATURES

- ▶ High reliability of > 3 million MCBF
- ▶ 2-axis or 3-axis motion control
- ▶ Pay load up to 4.5kg
- ▶ Standard and custom size arm segments
- ▶ Standard and custom end effectors (single or dual)
- ▶ Compact design including integrated controller
- ▶ RS-232 / Ethernet control interface
- ▶ CE/S2 compliant
- ▶ HA-5.0V is the best replacement available for the Hine Design 4.5V
- ▶ High vacuum compatible
- ▶ Class 1 cleanroom compatible



### OPTIONS

- ▶ Arm Segments Sizes
- ▶ Custom substrate sizes
- ▶ Single and Dual End Effectors
- ▶ Custom Payloads above 4.5kg.
- ▶ Ethernet Communication

Designed as the central handling robot for the Constellation Systems, Hine Vacuum Robotic Arms can be integrated with any vacuum transfer system. The HA-3.0 is the perfect fit for budget sensitive projects where no vertical travel is required. When substrate transfer with verified precision and repeatability within high vacuum environments is required, Hine HA-5.0 Vacuum Robotic Arm is the best solution.

# HA-5.0 Vacuum Robots

## Wafer Handling Robotic Components

### FEATURES

- ▶ High reliability of > 3 million MCBF
- ▶ 2-axis or 3-axis motion control
- ▶ Pay load up to 4.5kg
- ▶ Standard and custom size arm segments
- ▶ Standard and custom end effectors (single or dual)
- ▶ Compact design including integrated controller
- ▶ RS-232 / Ethernet control interface
- ▶ CE/S2 compliant
- ▶ HA-5.0V is the best replacement available for the Hine Design 4.5V
- ▶ High vacuum compatible
- ▶ Class 1 cleanroom compatible



### OPTIONS

- ▶ Arm Segments Sizes
- ▶ Custom substrate sizes
- ▶ Single and Dual End Effectors
- ▶ Custom Payloads above 4.5kg.
- ▶ Ethernet Communication
- ▶ Teach Pendant (HA-5.0V only)

Designed as the central handling robot for the Constellation Systems, Hine Vacuum Robotic Arms can be integrated with any vacuum transfer system. The HA-3.0 is the perfect fit for budget sensitive projects where no vertical travel is required. When substrate transfer with verified precision and repeatability within high vacuum environments is required, Hine HA-5.0 Vacuum Robotic Arm is the best solution.

# Vacuum Robots

## Wafer Handling Robotic Components

| Specifications  | HA-3.2   | HA-5.0                        |
|---|--|-------------------------------|
| Wafer Sizes   | Up to 300mm  |                               |
| Maximum Payload   | 2.5Kg / 4.5Kg (standard / high load)   |                               |
| Mounting Configuration  | Top  |                               |
| Axes of Motion  | R, $\theta$  | R, $\theta$ , Z               |
| "Z" Travel<br>"Z" Repeatability<br>Vertical Stroke                                    | N/A  | 35mm<br>$\pm 0.05$ mm<br>35mm |
| Vacuum Performance<br>· Base Operating Pressure<br>· Leak Rate<br>Vacuum Feedthroughs | <1 x 10 <sup>-9</sup> Torr Base Pressure<br><1 x 10 <sup>-9</sup> scc He/sec<br>Coaxial Ferrofluidic Rotary Seal |                               |
| Reach Repeatability<br>Rotation $\theta$ Repeatability                                | $\pm 0.05$ mm<br>$\pm 0.05^\circ$  |                               |
| Rotation  | 365 ° from "home" position   |                               |
| Weight  | 30 kg  | 35 kg                         |
| Power   | 24VDC @ 3.0 Amps   |                               |
| Temperature Limit   | 100°C Max  |                               |
| MCBF  | >3 x 10 <sup>6</sup> Cycles  |                               |
| Control Interface   | RS-232 and Ethernet  |                               |
| Safety Features   | Mechanical & Electrical Over travel  |                               |



## About Hine Automation

Hine Automation, LLC is a designer and manufacturer of automation systems and robotic components. We serve Original Equipment Manufacturers (OEMs) in the semiconductor, solar, flat panel display and related industries across the globe. Our robotic components satisfy a wide range of needs; from flexible research and development environments to stringent manufacturing environments. Combining our unsurpassed quality and reliability with modular and versatile designs to meet today's automation challenges, our products provide functional and economical solutions.

### OUR MISSION

Our goal is to design and manufacture the most cost effective automation solutions and deliver unparalleled customer service and support

### OUR STRENGTHS

- ▶ Demonstrated Reliability
- ▶ Cost Effective Solutions
- ▶ Custom Solutions
- ▶ Lightning Speed Response and Turn-around Times
- ▶ Knowledge, Experience-driven Designs.

### OUR PRODUCTS

- ▶ **Integrated Wafer Handling Systems:**
  - Atmospheric Systems
  - Vacuum Systems
- ▶ **Wafer Handling Load Locks:**
  - Vacuum Load Locks
  - Custom Load Locks
- ▶ **Wafer Handling Robotic Components:**
  - Atmospheric Elevators
  - Atmospheric Aligners
  - Atmospheric Robots
  - Atmospheric Cassette Load Ports
  - Vacuum Elevators
  - Vacuum Aligners
  - Vacuum Robots
  - Vacuum Cassette Load Ports