



Vacuum Load Locks

Wafer Handling Load Locks



SL-200 Vacuum Load Lock

Wafer Handling Load Locks

FEATURES

- ▶ Handles wafer sizes up to 200mm
- ▶ High vacuum compatibility
- ▶ Custom end effectors
- ▶ Linear Motion Mechanism (RS-232, Ethernet, DeviceNet)
- ▶ Wafer and Cassette Sensors
- ▶ CE compliant
- ▶ Plug and Play Vacuum Transport System

OPTIONS

- ▶ Vertical motion – Z lift
- ▶ Vacuum and gas plumbing
- ▶ Integrated transfer control module



Hine Automation's Star Systems are automated load locks compatible with high vacuum environments. Hine's vacuum load locks are designed to eliminate the need to vent and evacuate the OEMs process chamber during every substrate cycle. The SL-200 accommodates substrates up to 200mm in diameter. The load locks offer various levels of functionality and integration that meet technical and budgetary requirements of most OEMs. Vacuum and gas plumbing, slit valve, end effector, and Hine's integrated control module are options available to OEMs. Additionally, Hine's load locks offer the Z-lift mechanism. The Z-lift provides vertical motion to pick-up and drop-off substrates in a process chamber without lift pins. Thanks to its MESC mounting interface and the various options of controller interface, Hine's vacuum load locks can be easily integrated with any thin-film OEM.

SL-300 Vacuum Load Lock

Wafer Handling Load Locks

FEATURES

- ▶ Handles wafer sizes up to 300mm
- ▶ High vacuum compatibility
- ▶ Custom end effectors
- ▶ Linear Motion Mechanism (RS-232, Ethernet, DeviceNet)
- ▶ Wafer and Cassette Sensors
- ▶ CE compliant
- ▶ Plug and Play Vacuum Transport System



OPTIONS

- ▶ Vertical motion – Z lift
- ▶ Vacuum and gas plumbing
- ▶ Integrated transfer control module

Hine Automation's Star Systems are automated load locks compatible with high vacuum environments. Hine's vacuum load locks are designed to eliminate the need to vent and evacuate the OEMs process chamber during every substrate cycle. The SL-300 accommodates substrates up to 300mm in diameter. The load locks offer various levels of functionality and integration that meet technical and budgetary requirements of most OEMs. Vacuum and gas plumbing, slit valve, end effector, and Hine's integrated control module are options available to OEMs. Additionally, Hine's load locks offer the Z-lift mechanism. The Z-lift provides vertical motion to pick-up and drop-off substrates in a process chamber without lift pins. Thanks to its MESC mounting interface and the various options of controller interface, Hine's vacuum load locks can be easily integrated with any thin-film OEM.

SL-450 Vacuum Load Lock

Wafer Handling Load Locks

FEATURES

- ▶ Handles wafer sizes up to 450mm
- ▶ High vacuum compatibility
- ▶ Custom end effectors
- ▶ Linear Motion Mechanism
(RS-232, Ethernet, DeviceNet)
- ▶ Wafer and Cassette Sensors
- ▶ CE compliant
- ▶ Plug and Play Vacuum
Transport System



OPTIONS

- ▶ Vertical motion – Z lift
- ▶ Vacuum and gas plumbing
- ▶ Integrated transfer control module

Hine Automation's Star Systems are automated load locks compatible with high vacuum environments. Hine's vacuum load locks are designed to eliminate the need to vent and evacuate the OEMs process chamber during every substrate cycle. The SL-450 accommodates substrates up to 450mm in diameter. The load locks offer various levels of functionality and integration that meet technical and budgetary requirements of most OEMs. Vacuum and gas plumbing, slit valve, end effector, and Hine's integrated control module are options available to OEMs. Additionally, Hine's load locks offer the Z-lift mechanism. The Z-lift provides vertical motion to pick-up and drop-off substrates in a process chamber without lift pins. Thanks to its MESC mounting interface and the various options of controller interface, Hine's vacuum load locks can be easily integrated with any thin-film OEM.

Vacuum Load Locks Wafer Handling Load Locks

SL-200/300/450 AVAILABLE CONFIGURATIONS

(T) Telescoping	Offers telescoping drive rail with the ability to obtain standard reach requirements in a compact design.
(MW) Multi-Wafer	Offers the ability to process multiple wafers using a single drive rail unit.
(GB) Glove Box	Offers glove box mounting flange with easy access for operators and maintenance door.
(HL) High Load	Offers the ability to process higher loads than standard unit due to the robust drive rail. (Often used for carriers rather than wafers.)

KEY

- † SEMI standard sizes available and custom end effectors available upon request.
- ‡ Measured as three standard deviations (3σ)
- * End effector design may impact max payload capability
- ** Maximum reach measured from the edge of the slit valve
- *** Vertical stroke is optional

Vacuum Load Locks Wafer Handling Load Locks

PRODUCT SPECIFICATIONS

Feature	SL-200	SL-300	SL-450
Pressure	$\leq 1 \times 10^{-3}$ Torr (with mechanical pump)		
Leak Rate	$\leq 1 \times 10^{-6}$ Torr (with high vacuum pump)		
	$\leq 1 \times 10^{-9}$ SCC He/Sec		
Reach*	305mm beyond 50mm thick slit	380mm beyond 60mm thick slit	410mm beyond 60mm thick slit
Standard Drive Chamber	valve	valve	valve
Reach*			410mm beyond 60mm thick slit
Extended Drive Chamber			valve
Reach accuracy	± 0.12 mm		
Placement accuracy	$\leq \pm 0.20$ mm @ Full Extension		
Payload*	2.2Kg [5.0 Lbs.]	2.2Kg [5.0 Lbs.]	5.4Kg [12.0 Lbs.]
Droop*	≤ 2.0 mm (at full extension)	≤ 2.0 mm (at full extension)	≤ 23.0 mm (at full extension)
Z-travel	+20mm (measured at the bellows feedthrough)		
Z-accuracy	± 0.01 mm (measured at the bellows feedthrough)		
Particle performancet	<0.1 particle adders/cm ² /Pass for particles of <0.5 μ m and <0.02 particle adders/cm ² /Pass for particles of >1.0 μ m		

KEY

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** Maximum reach measured from the edge of the slit valve

*** Vertical stroke is optional

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SL-200/300/450 PHYSICAL SPECIFICATIONS

Feature	SL-200	SL-300	SL-450
Main Chamber	381mm x 340mm x 104mm	432mm x 440mm x 104mm	670mm x 622mm x 133mm
Drive Chamber	363mm x 122mm x 87mm	432mm x 122mm x 91mm	425mm x 184mm x 118mm 628mm x 184mm x 118mm (Extended**)
Lid Dimensions	368mm x 340mm x 35mm	418mm x 440mm x 35mm	650mm x 622mm x 36mm
Chamber Volume	~ 12 liters	~ 16 liters	~ 43 liters ~ 46 liters (Extended**)
Weight	~ 34 kilograms	~ 42 kilograms	~ 104 kilograms ~ 111 kilograms (Extended**)
Interface	200mm MESC (46mm x 236mm)	300mm MESC (50mm x 336mm)	450mm MESC (56mm x 496mm)

KEY

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** Maximum reach measured from the edge of the slit valve

*** Vertical stroke is optional



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