

System Sub-Assemblies & Components

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In the beginning of this section we offer complete sub-assembly packages that consist of a chamber, frame (hoist where applicable), both high vacuum and backing pump, gauging, valves, and load lock assemblies. The technical notes below focus on the individual components offered in the remainder of this section that are not included elsewhere in the catalog. These include both bakeout and sample heaters, load locks, and chamber frames.

Bakeout Heaters

When pumping a high-vacuum chamber, the pressure decreases exponentially. The reason is that the forces binding an adsorbed gas molecule to a surface depend, in part, on how many molecular layers separate that molecule from the surface. Molecules nearer the surface are bound more firmly than outer layers.

In any vacuum system, a molecule cannot be pumped until it enters the pumping mechanism, which only happens if the molecule is in the gas phase. Increasing the desorption rate is a major issue in achieving low chamber pressures in a reasonable time. The common method of increasing desorption rate is to raise the chamber temperature.

The typical bakeout temperature for a high vacuum chamber is between 150° C and near 200° C. However, to reach UHV pressures in the 10⁻¹¹ Torr range, hydrogen diffusing from the stainless steel matrix is the major gas load source and the chamber must be baked to 400° C for many hours to speed up H atom migration through the steel's matrix.

External Bakeout Heaters

These devices are mounted outside the chamber, on a structural worktop below the chamber, and apply heat to the airside surfaces only. They are augmented, as appropriate, by a shaped insulating blanket or tent built around the system. The four heater types used for this application are resistive fin, ceramic, tape, and sleeve.

The resistive fin is, in effect, a normal cartridge heater mated to a number of fins that provide a large surface area for convection-driven heating of the chamber.

The ceramic heater is a serpentine rod heater potted in a ceramic material that relies more on radiation than convection for heat exchange.



Heater tapes are resistance wires enmeshed in highly flexible woven fiberglass. They are wrapped around the chamber surfaces, transferring heat by conduction.

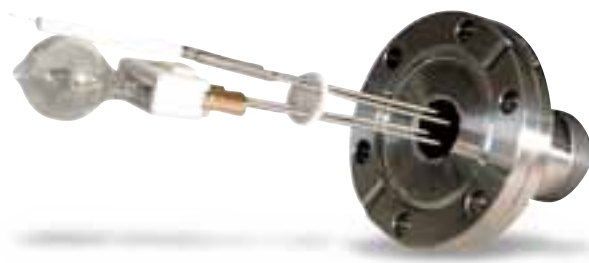
Sleeve heaters have resistance wires in 1/2" thick silicon rubber "boots" or

sleeves that are molded to fit the size and shape of the specific ports and part of the chamber. Heat transfer is mostly conduction.

The highest chamber temperatures are probably obtained using the first two heater types. However, all types will usually give a local chamber surface temperature within the 150° C to 200° C range.

Internal Bakeout

Internal bakeout heaters are mounted inside the chamber but are designed to heat the chamber walls, not specifically a substrate or sample stage. A primary requirement for this type of heater is vacuum compatibility. They must have minimum outgassing when at temperature and cannot have volatile metals, such as cadmium or zinc, used anywhere in the structure or in the braze used to make electrical connections.



The flange mounted stab-in heaters use vacuum-compatible quartz IR lamps supported by the power feedthrough. Using a number of stab-in heaters mounted on 2 3/4" CF ports is an effective way of raising the chamber and contents to high temperatures, particularly if the exterior is well-insulated. Quartz tubular lamps with reflectors (see below) directed at the walls are also used as internal chamber heaters.

Sample Heaters



Quartz Lamp Heaters

The quartz tubular lamps with reflectors are popular sample heaters. Depending on the sample temperature required, two or four lamps are arranged around the sample's back-side, heating it by radiation.

Lamps are 4.75" to 6" long with a wattage from 200 to 1,000 watts, enabling them to heat multiple small samples, or larger single samples from 4" to 12" in diameter. Temperatures are controlled by thermocouple feedback to an SCR controller supplying the power to the lamps. But the actual maximum sample temperature depends on its emissivity, the distance from lamp, the illuminated area, and various geometric considerations, including the angle at which the radiation strikes the sample surface.

Temperature uniformity depends on the sample's thermal conductivity, the illuminated area, and the sample's rotational speed. With some samples, it's possible to reach backside temperatures of 900° C.

■ Button Heaters

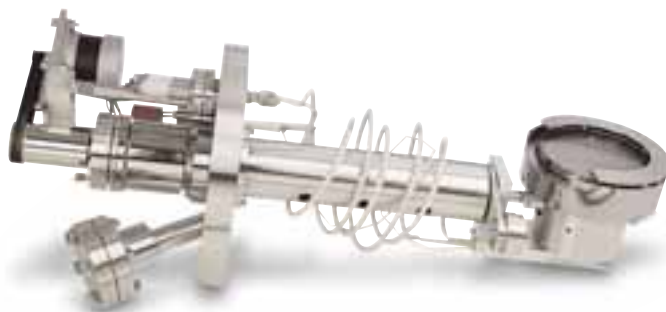


These small cylindrical heaters (up to 2.5 cm diameter) have maximum surface temperatures between 950° C and 1,200° C at UHV pressures. The resistance wire is potted in alumina and sheathed in molybdenum. They are used for contact or radiation heating of small diameter samples.

■ Pyrolytic Boron Nitride Heaters

Discs of pyrolytic boron nitride (about 2 mm thick) are coated with a layer of pyrolytic graphite that is then cut in a (continuous) serpentine fashion to give it a long, uniform width path length. Finally, the graphite conductor is coated with a sealing layer of BN to reduce the heater chemical reactivity. The heater is capable of reaching a surface temperature of 1,200° C over disc diameters ranging from 1.8 cm to 5 cm, by applying power to each end of the serpentine.

■ EpiCentre® Heater & Rotator



The EpiCentre is a combined sample heater and rotator. The heater element is a serpentine machined from a graphite disc. While the heater element can reach

2,000° C, the construction of the sample holder and rotating components of the EpiCentre require the maximum operating temperature to be limited to 1,200° C to 1,400° C. The sample is heated from the back-side, and EpiCentres are constructed for sample diameters ranging from 5 cm to 15 cm.

■ Load Locks

The load lock is an intermediate vacuum chamber with its own pumping system and a quick opening door mounted between atmosphere and the entry point to the main chamber. It is connected to the main chamber by a gate valve large enough to allow transport of samples through it.



The load lock allows samples to be placed in the main chamber without breaking its high vacuum condition. With the gate valve closed, the load lock is vented, opened, and the sample placed on a linear motion device (LMD). The load lock's door is closed and its volume evacuated into the high vacuum range. When the gate valve is then opened the sample is moved into the main chamber by the LMD. Since both chambers are in the high vacuum range, only a small quantity of gas is transferred (usually from load lock to main chamber). Once the sample is in its correct position, the LMD is detached and removed from the main chamber. The gate valve is then closed and the main chamber returns to its base pressure.

➤ Spherical Chamber Sub-System

➤ Stainless Bell Jar Sub-System

■ Spherical Chamber Sub-System

Ideal for applications which require radial component placement such as PLD and Surface Science

Features

- 12" or 18" diameter 304 Stainless Steel Spherical Chamber
- Turbomolecular Pumping
- Open Aluminum Framework

Options:

- Electropolished Internal Finish
- Stand-Alone Instrument Racks



■ Stainless Bell Jar Sub-System

Versatile design featuring total baseplate access utilizing KJLC's electric hoist

Features

- 18" or 24" diameter 304 Stainless Steel Bell Jar
- Motorized Hoist Lifts and Rotates Bell Jar
- Turbomolecular Pumping
- Powder Coat Carbon Steel Framework with Door Panels

Options:

- Manual Touch Screen or Computer Controlled Automation
- Cryogenic Pumping
- Service Well
- Water Cooling



➤ D-Shaped Chamber Sub-System

➤ Box Chamber Sub-System

■ D-Shaped Chamber Sub-System

Based on our successful PVD 75 System platform, this open design system can be tailored to fit your application

Features

- 304 Stainless Steel D-Shaped Chamber, available in 14" and 18" diameters
- Aluminum Door with Large Viewport
- Turbomolecular Pumping
- Open Aluminum Framework

Options:

- Manual Touch Screen or Computer Controlled Automation
- Cryogenic Pumping
- Accepts Many Standard Component and Deposition Modules



■ Box Chamber Sub-System

Large front door access makes these systems suited for outgassing large components or multiple components using adjustable shelving

Features

- 16" or 24" Cubed 304 Stainless Steel Chamber
- Aluminum Door with Large Viewport
- Adjustable Internal Shelving
- Turbomolecular Pumping
- Open Aluminum Framework

Options:

- Manual Touch Screen or Computer Controlled Automation
- Cryogenic Pumping
- Water Cooling
- Bakeout and Heating



➤ Quadratic Distribution Vessel

➤ Radial Distribution Centers

■ QDV 450 - Quadratic Distribution Vessel

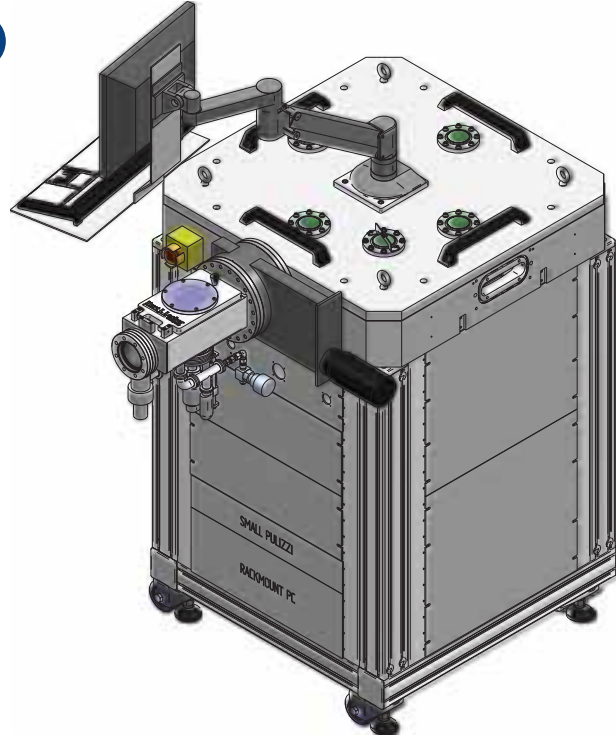
The modular QDV 450 facilitates multi-chamber in-vacuum substrate transfer—ideal for cluster tool environments

Features

- All aluminum construction
- Stand-alone framework
- Turbomolecular pumping
- Accommodates up to 8" (200mm) diameter substrates
- Motorized rotary/linear substrate slide mechanism with a high precision guide way system
- MESC-SEMI rectangular ports

Options:

- Multi-substrate cassette
- Computer controlled automation (as shown)
- Load-lockable
- 6-sided vessel for increase transfer capability



■ RDC 36 & RDC 48 - Radial Distribution Centers

Radial Distribution Centers facilitate a substrate transfer between multiple chambers in-vacuum

Features

- Available in 36" and 48" vessel diameters
- 304 Stainless steel construction
- Up to eight 8" CF transfer ports
- Extruded aluminum framework at user-specified height
- Rack and pinion transfer mechanism

Options:

- Various pumping options
- Manual motorization
- Transfer ports and configuration to suit specific applications



► Substrate Fixtures Capabilities

Overview

Our modular substrate fixtures are versatile platens with the necessary ancillaries to hold, rotate, index, heat, cool, and bias a sample or samples. They are designed to easily integrate with our various deposition process modules, shutters, masks, and other periphery to form complete deposition stages for your process requirements.

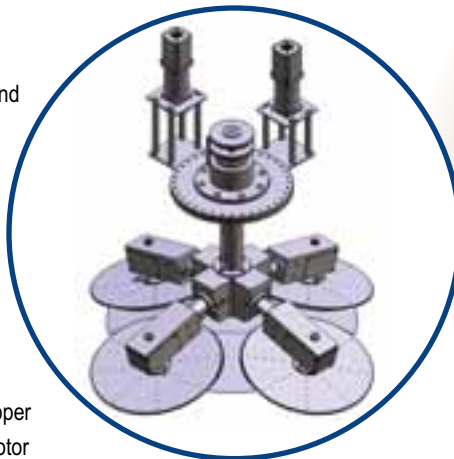
In addition to our standard, modularized substrate fixtures, we also offer custom solutions. Contact our specialists at subassemblies@lesker.com for more information and to discuss your sample handling needs.

Platen

- Standard platen size up to 6" O.D.
- Accommodates single or multiple substrates
- Designed for batch, load, and unload or load lock transfer
- Stainless steel or high-temp alloys

Rotation

- Substrate rotation and indexing
- Single sample or planetary configurations
- Variable speed control to 20 rpm standard
- DC gear motor, stepper motor, and servo motor options



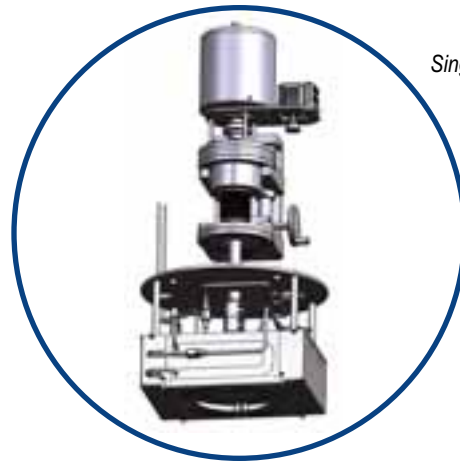
Multiple Sample (Planetary) Fixture

Heating & Cooling

- Accommodates single or multiple substrates
- Standard heating to 800° C
- Resistive button or quartz lamp configurations
- Manual or PID temperature control with thermocouple
- LN₂ or water-cooling available

Bias & Glow Discharge

- Mild substrate cleaning
- RF or DC to 100 W



Single Sample Fixture

VERTICAL SHIFT FOR SAMPLE TRANSFER (MOTORIZED)

RF BIAS CONNECTION

SAMPLE ROTATION (MOTORIZED)

SAMPLE HEATER

SHIELDING

MAGNETIC FIELD (INDEXABLE)

SAMPLE HOLDER



Continuous Sample Fixture

► Bakeout Heater Tape

The metal resistance filaments are woven into a flexible glass fiber “tape” that can be wound around ports, tubes, and parts of a chamber.

Features:

- Feature a unique dual “sine-wave” element—unlike other tape heaters, both power leads emerge from one end of the tape
- 2-ft. power leads are multistranded “A” nickel covered with two layers of AMOX[®] yarn and impregnated with a high-temperature binder
- Element is multistranded resistance wire (35 to 40 swg) covered with a minimum of two layers of braided AMOX yarn
- Tape’s heavy braided outer cover provides good abrasion resistance and insulation for the elements
- Maximum tape temperature—760° C (NOTE: Because the temperature exceeds those used in normal bakeout, we suggest the tape heater be connected to a power outlet via a Variac or other variable transformers.)
- Maximum power density—8.67 Watts/Inch²
- Suitable for most surfaces, including ceramic, glass, and metal surfaces
- Knitted serpentine construction maximizes power density while minimizing watts per inch of heater wire
- High-quality construction

Warnings:

- Do NOT use on plastic/rubber tubes, surfaces, or gaskets
- Do NOT overlap turns when taping a tube

NOTES: Close winding (side-by-side turns) is not often physically possible over the whole chamber. In addition, tapes must not be overlapped. Obtaining a uniform chamber temperature is, therefore, rarely possible with tape heaters. However, as local area heaters—particularly for ports attached to an internally heated chamber—tape heaters are convenient, inexpensive, and easily installed.



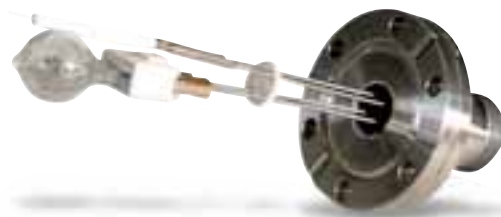
| Description | Dimensions | Total Power (Watts) | Part No. | Price |
|-------------------------------------|----------------------|---------------------|--------------|-------|
| Tape Heater, 120V, 8.67W/sq. in. | 1/2" wide x 2' long | 104 | HTHI05028612 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1/2" wide x 4' long | 208 | HTHI05048612 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1/2" wide x 6' long | 312 | HTHI05068612 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1/2" wide x 8' long | 416 | HTHI05088612 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1/2" wide x 10' long | 520 | HTHI05108612 | Call |
| Tape Heater, 240V, 8.67W/sq. in. | 1/2" wide x 12' long | 624 | HTHI05128624 | Call |
| Tape Heater, 240V, 8.67W/sq. in. | 1/2" wide x 16' long | 832 | HTHI05168624 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1" wide x 2' long | 208 | HTHI10028612 | Call |
| Tape Heater, 120V, 8.67W/sq. in. | 1" wide x 4' long | 416 | HTHI10048612 | Call |
| Tape Heater, 240V, 8.67W/sq. in. | 1" wide x 6' long | 624 | HTHI10068624 | Call |
| Tape Heater, 240V, 8.67W/sq. in. | 1" wide x 8' long | 832 | HTHI10088624 | Call |
| Tape Heater, 240V, 8.67W/sq. in. | 1" wide x 10' long | 986 | HTHI10108624 | Call |
| Plug, Molded 1-piece, for 120V Tape | N/A | N/A | HTHIPLUG120 | Call |

► Bakeout Stab-In Heaters

Our internal bakeout heaters, mounted on ConFlat[®] flanges, work as outgassing units for stainless steel chambers.

- Heat a vacuum system efficiently from the inside out—a method that produces a faster heating response than that produced by external heaters—resulting in a low heating effect outside the chamber
- Bulb and thermocouple extend into the chamber about 5 1/8"
- Standard 2 3/4" CF flange mount
- Type C Thermocouple

NOTE: Though the bulbs are rated for 1,000W on these heaters, we recommend powering them to a maximum of 500W for increased life and to prevent damage resulting from overheating.



| Description | Part No | Price |
|-------------------------|------------|-------|
| Stab-In Heater (115V) | SHLB115 | Call |
| Stab-In Heater (220V) | SHLB220 | Call |
| Replacement Bulb (115V) | SHLB10 | Call |
| Replacement Bulb (220V) | SHLB10-220 | Call |

► Substrate Quartz Lamp Heaters

■ Substrate Quartz Lamp Heaters

Act as both bakeout heaters and sample heaters.

- Mount inside a vacuum chamber to raise the temperature of substrates
- Because they produce infrared radiation and ultraviolet light, they clean nearly all molecules adhering to the substrate's surface through electron excitation and molecular vibration
- Unit can operate safely in an oxygen backfill
- Can be used in place of blanket heaters or panel ovens
- Save time and power—heat radiates directly to the critical surfaces
- Heater can achieve temperature uniformity of better than $\pm 10\%$ across a 4" diameter substrate
- Black box design ensures efficient heat containment, minimizing secondary heating of other components

We offer single lamp assemblies, approximately 4" in length. Each uses a 500W lamp, producing 9,500 lumens. Lamps are mounted in an electropolished stainless steel "V" reflector with a high-temperature, fabric-covered power cable. Our lamps have a heat output of approximately 200° C with an average life of 2,000 hours. Arrays of multiple lamps are also available in triangular and other configurations.



(QLH-ARRAY3 Shown)

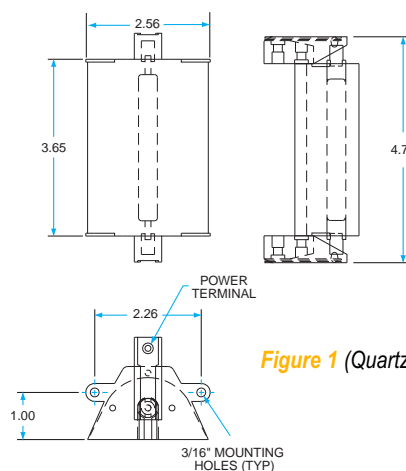


Figure 1 (Quartz Lamp Heater)

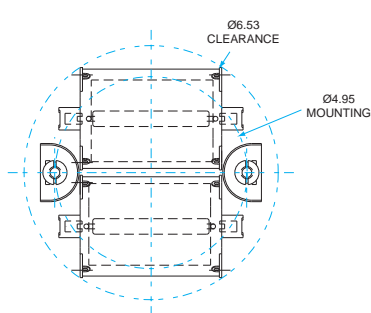


Figure 2 (Dual Quartz Lamp Heater)

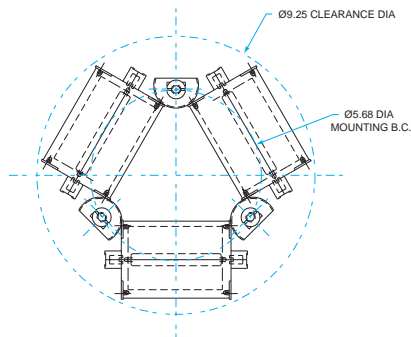


Figure 3 (Delta Quartz Lamp Heater)

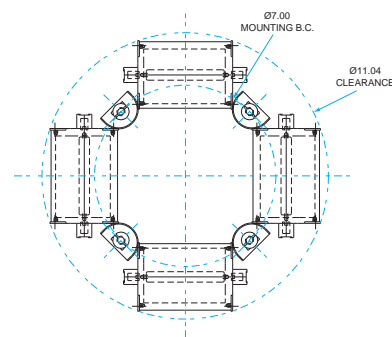


Figure 4 (Quadrate Quartz Lamp Heater)

| Figure | Description | Total Power (Watts) | Number of Lamps | Part No. | Price |
|--------------------|---|---------------------|-----------------|--------------|-------|
| 1 | 110 VAC Quartz Lamp Heater | 500 | 1 | QLH0500 | Call |
| 1 | 220 VAC Quartz Lamp Heater | 500 | 1 | QLH0500-220 | Call |
| 2 | 110 VAC Dual Quartz Lamp Heater Array | 1,000 | 2 | QLH-ARRAY2 | Call |
| 2 | 220 VAC Dual Quartz Lamp Heater Array | 1,000 | 2 | QLH-ARRAY2-2 | Call |
| 3 | 110 VAC Delta Quartz Lamp Heater Array | 1,500 | 3 | QLH-ARRAY3 | Call |
| 3 | 220 VAC Delta Quartz Lamp Heater Array | 1,500 | 3 | QLH-ARRAY3-2 | Call |
| 4 | 110 VAC Quadrate Quartz Lamp Heater Array | 2,000 | 4 | QLH-ARRAY4 | Call |
| 4 | 220 VAC Quadrate Quartz Lamp Heater Array | 2,000 | 4 | QLH-ARRAY4-2 | Call |
| Accessories | | | | | |
| | Single Quartz Lamp Mounting Bracket | — | — | QLH-SMTBKT | Call |
| | Array Quartz Lamp Mounting Bracket | — | — | QLH-SPLBKT | Call |

► Load Lock Overview and Stealth Series LLV

■ Overview

A load lock system can be an integral part of your process or research vacuum system. A convenient method for transferring samples, its volume can be pumped and vented without disturbing the main chamber pressure. This can result in keeping your chamber clean from water vapor or other contaminant's, as well as increased sample throughput. All load locks incorporate a viewport and o-ringed door for quick access once the vessel is vented to atmosphere. They contain the necessary ports for pumping and gauging.

We offer the following four standard load lock vessels to fit a wide variety of applications:

- Stealth Series
- Planar Series
- Cylindrical Series
- Utility Series

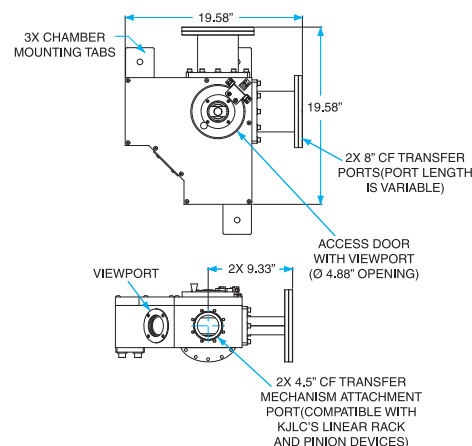
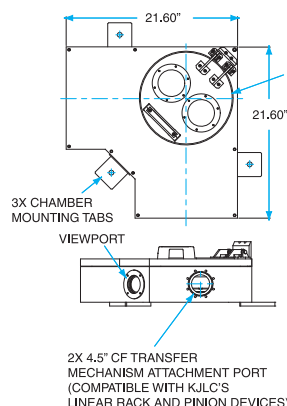
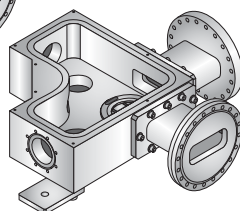
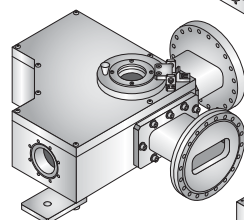
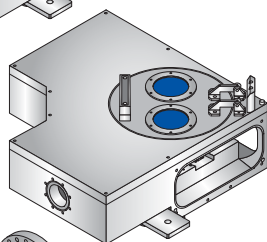
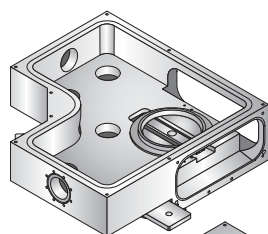
In addition to the individual load lock vessels, we offer pre-engineered kits that include manual or pneumatic isolation valves, a rack-and-pinion or Elevation Power Probe transfer device, transfer forks, turbomolecular pumping, and hardware kit.

Contact subassemblies@lesker.com for more information.

■ Stealth Series Load Lock Vessels

A cost-effective solution for transferring a sample between two separate chambers.

- Unique criss-cross vessel design enables transferring into two separate vacuum systems
- Removable top lid for complete vessel access



| LL Series | Actual Wafer Size | Reference Wafer Size | Mounting Flange | Vessel I.D.* | Pumping Port | Linear Motion Translator Port | Utility Ports | Part No. | Price |
|-----------|-------------------|----------------------|-----------------|----------------|--------------|-------------------------------|---------------|-----------|-------|
| Stealth | 200 mm | 8" | MESC | 12.00" x 4.76" | ISO63-K | (2) 4 1/2" CF | (5) ISO63-K | LLC-STLH8 | Call |
| Stealth | 76.2 mm | 3" | 8" CF | 4.38" x 1.88" | ISO63-K | (2) 4 1/2" CF | (3) ISO63-K | LLC-STLH3 | Call |

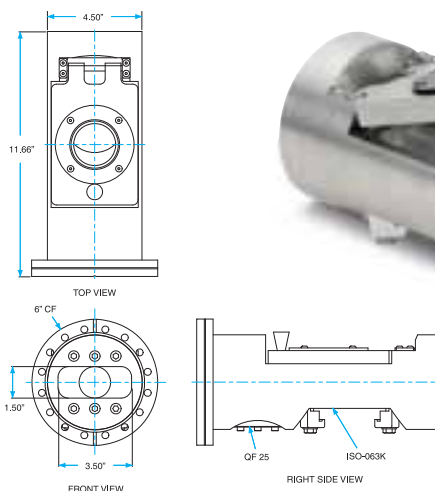
* Vessel I.D. does not include gate valve.

► Cylindrical Series LLV and Planar Series LLV

■ Cylindrical Series Load Lock Vessels

Available in stainless steel or aluminum.

- Machined from bar stock
- Weld-Free Construction



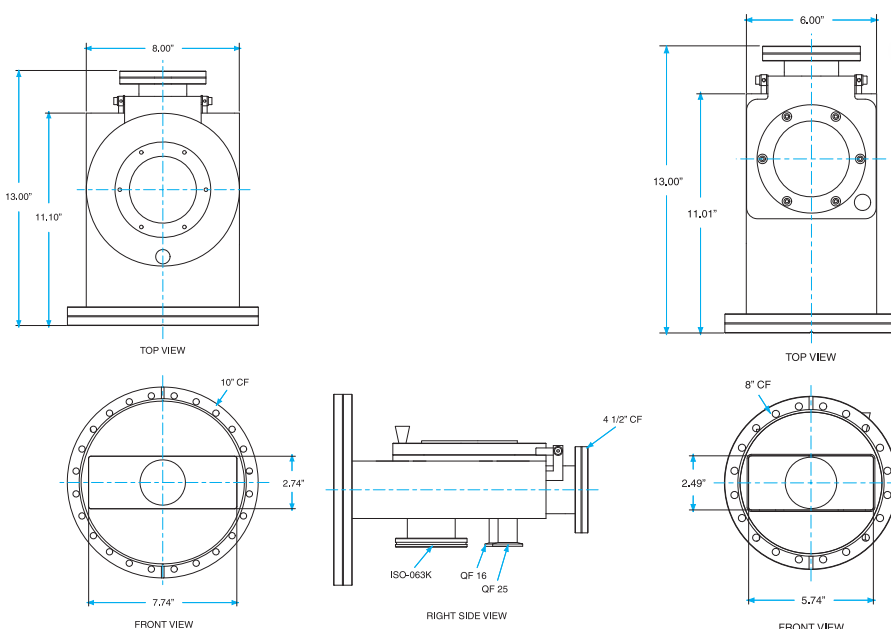
| Cylindrical LL Series | Actual Wafer Size | Reference Wafer Size | Mounting Flange | Vessel I.D.* | Pumping Port | Linear Motion Translator Port | Utility Ports | Part No. | Price |
|-----------------------|-------------------|----------------------|-----------------|---------------|--------------|-------------------------------|---------------|------------|-------|
| Stainless | 76.2 mm | 3" | 6" CF | 3.50" x 1.50" | ISO63-K | 4 1/2" CF | KF25 | LLC-CYLD3S | Call |
| Aluminum | 76.2 mm | 3" | 6" CF | 3.50" x 1.50" | ISO63-K | 4 1/2" CF | KF25 | LLC-CYLD3A | Call |

* Vessel I.D. does not include gate valve.

■ Planar Series Load Lock Vessels

Ideally suited for single substrate transfer.

- Rectangular, low-profile design
- Can transfer wafers up to 150mm



LLC-PLNR6

LLC-PLNR4

| LL Series | Actual Wafer Size | Reference Wafer Size | Mounting Flange | Vessel I.D.* | Pumping Port | Linear Motion Translator Port | Utility Ports | Part No. | Price |
|-----------|-------------------|----------------------|-----------------|---------------|--------------|-------------------------------|---------------|-----------|-------|
| Planar | 150 mm | 6" | 10" CF | 7.75" x 2.75" | ISO63-K | 4 1/2" CF | KF25, KF16 | LLC-PLNR6 | Call |
| Planar | 100 mm | 4" | 8" CF | 5.88" x 2.63" | ISO63-K | 4 1/2" CF | KF25, KF16 | LLC-PLNR4 | Call |

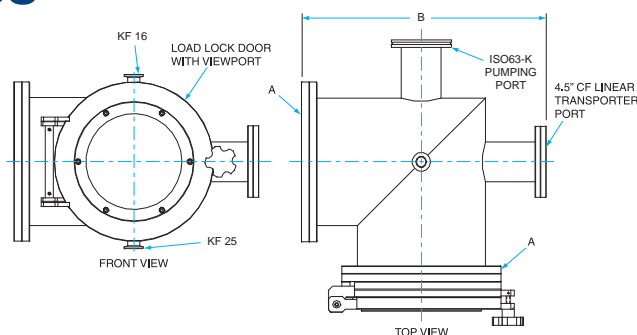
* Vessel I.D. does not include gate valve.

► Utility Series LLV & Planar LLV Assemblies

■ Utility Series Load Lock Vessels

Economical, entry-level design.

- Manufactured utilizing standard component building blocks
- Includes fast entry door



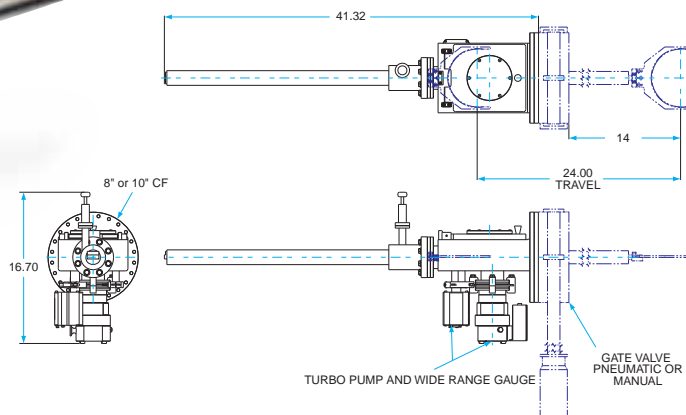
| LL Series | Actual Wafer Size | Reference Wafer Size | A Mounting Flange | B | Vessel I.D.* | Pumping Port | Linear Motion Translator Port | Utility Ports | Part No. | Price |
|-----------|-------------------|----------------------|-------------------|-------|----------------|--------------|-------------------------------|---------------|-----------|-------|
| Utility | 150 mm | 6" | 10" CF | 15.29 | 7.75" Diameter | ISO63-K | 4½" CF | KF25, KF16 | LLC-UTIL6 | Call |
| Utility | 100 mm | 4" | 8" CF | 12.26 | 5.75" Diameter | ISO63-K | 4½" CF | KF25, KF16 | LLC-UTIL4 | Call |
| Utility | 76.2 mm | 3" | 6" CF | 9.89 | 3.75" Diameter | ISO63-K | 4½" CF | KF25, KF16 | LLC-UTIL3 | Call |

* Vessel I.D. does not include gate valve.

■ Planar Load Lock Vessel Assemblies

Kurt J. Lesker Company pre-engineered load lock system kits include our Planer Series quick-entry load lock vessel, available in 10"CF or 8"CF interface flanges. System kits include a manual or pneumatic isolation valve, rack-and-pinion transfer device, transfer forks and hardware pack.

Vacuum pumping includes a turbo molecular pumping with dry roughing pump connected via a stainless steel bellows. A wide-range vacuum gauge is read through the turbo controller.



| Load Lock Vessel | Interface Flange | Transfer Fork Size | Hi-Vacuum Pumping | Rough Pumping | Transfer Device | Isolation Gate Valve | Part No. | Price |
|------------------|------------------|--------------------|-------------------------------|----------------------------|---------------------------|---------------------------------|-----------------|-------|
| LLC-PLNR6 | 10" CF | 6" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Linear Rack & Pinion | 8" Manual, 10" CF Flanged | LLC-P6-ASSYTSMR | Call |
| LLC-PLNR6 | 10" CF | 6" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Linear Rack & Pinion | 8" Pneumatic, 10" CF Flanged | LLC-P6-ASSYTSPR | Call |
| LLC-PLNR6 | 10" CF | 6" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Elevating Power Probe | 8" Manual, 10" CF Flanged | LLC-P6-ASSYTSPM | Call |
| LLC-PLNR6 | 10" CF | 6" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Elevating Power Probe | 8" Pneumatic, 10" CF Flanged | LLC-P6-ASSYTSPR | Call |
| LLC-PLNR4 | 8" CF | 4" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Linear Rack & Pinion | 6" Manual, 8" CF Flanged | LLC-P4-ASSYTSMR | Call |
| LLC-PLNR4 | 8" CF | 4" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Linear Rack & Pinion | 6" Pneumatic, 8" CF Flanged | LLC-P4-ASSYTSPR | Call |
| LLC-PLNR4 | 8" CF | 4" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Elevating Power Probe | 6" Manual, 8" CF Flanged | LLC-P4-ASSYTSPM | Call |
| LLC-PLNR4 | 8" CF | 4" | 59 l/sec Turbo-Drag Hybrid | 3.5 CFM Standard Scroll | 24" Elevating Power Probe | 6" Pneumatic, 8" CF Flanged | LLC-P4-ASSYTSPR | Call |

► Fast-Entry LLV Doors

■ Fast-Entry Doors

Enable quick and convenient access into vacuum vessels, such as process chambers and load locks.

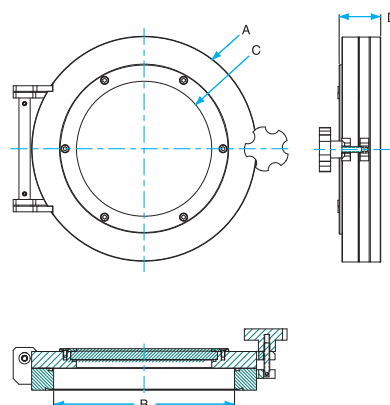
- Offered in a wide range of UHV flange sizes, with or without viewport glass
- Precision-hinged doors seal with a fluorocarbon o-ring
- KJLC's® unique counterbored mounting bolt design enables a maximum diameter opening through the door (order appropriate bolt sets and kits **below**)
- Viewport glass is sealed with an o-ring and is easily removed for cleaning or replacement
- Threaded knob is engaged to keep door closed during pumpdown
- Comes standard with Borosilicate viewport glass. Replacement Quartz glass available.



NOTE: It is recommended the knob be disengaged during the vent cycle to prevent overpressurization of the vessel.

Fast-Entry Doors

| A Flange Size | B Door Opening | C Viewport Diameter | D Thickness | Part No. | Price |
|---------------------|----------------------|---------------------------|----------------|-------------|-------|
| 4½" CF | 2.51" | N/A | 1.42" | DS-LL0450 | Call |
| 4½" CF | 2.51" | 2.50" | 1.42" | DS-LL0450VP | Call |
| 6" CF | 4.01" | N/A | 1.54" | DS-LL0600 | Call |
| 6" CF | 4.01" | 4.00" | 1.54" | DS-LL0600VP | Call |
| 8" CF | 6.02" | N/A | 1.54" | DS-LL0800 | Call |
| 8" CF | 6.02" | 6.00" | 1.54" | DS-LL0800VP | Call |
| 10" CF | 8.02" | N/A | 1.84" | DS-LL1000 | Call |
| 10" CF | 8.02" | 6.00" | 1.84" | DS-LL1000VP | Call |
| 12" CF | 10.02" | N/A | 1.92" | DS-LL1200 | Call |
| 12" CF | 10.02" | 6.00" | 1.92" | DS-LL1200VP | Call |
| 13¼" CF | 10.02" | N/A | 1.97" | DS-LL1325 | Call |
| 13¼" CF | 10.02" | 6.00" | 1.97" | DS-LL1325VP | Call |
| 14" CF | 11.47" | N/A | 1.97" | DS-LL1400 | Call |
| 14" CF | 11.47" | 6.00" | 1.97" | DS-LL1400VP | Call |



Replacement Viewport Glass and O-Rings

| LL Door Part No. | Replacement O-ring for Viewport | Price | Replacement Borosilicate Viewport Glass | Price | Replacement Quartz Viewport Glass | Price |
|---------------------|------------------------------------|-------|--|-------|--------------------------------------|-------|
| DS-LL0450VP | O-V147 | Call | VPW31TPYR037 | Call | VPW31QRT037 | Call |
| DS-LL0600VP | O-V155 | Call | VPW45TPYR037 | Call | VPW45QRT037 | Call |
| DS-LL0800VP | O-V163 | Call | VPW65TPYR037 | Call | VPW65QRT037 | Call |
| DS-LL1000VP | O-V163 | Call | VPW65TPYR037 | Call | VPW65QRT037 | Call |
| DS-LL1200VP | O-V163 | Call | VPW65TPYR037 | Call | VPW65QRT037 | Call |
| DS-LL1325VP | O-V163 | Call | VPW65TPYR037 | Call | VPW65QRT037 | Call |
| DS-LL1400VP | O-V163 | Call | VPW65TPYR037 | Call | VPW65QRT037 | Call |

Mounting Bolt Sets, Bolt Kits, and Door O-Rings

| LL Door Part No. | Bolt Sets for Standard Mating Flange | Price | Bolt Kits for Tapped Mating Flange | Price | Replacement O-ring for Door | Price |
|---------------------|---|-------|---------------------------------------|-------|--------------------------------|-------|
| DS-LL0450 | SBS31224150A | Call | SBK31224075A | Call | O-V231 | Call |
| DS-LL0450VP | SBS31224150A | Call | SBK31224075A | Call | O-V231 | Call |
| DS-LL0600 | SBS31224150B | Call | SBK31224100A | Call | O-V243 | Call |
| DS-LL0600VP | SBS31224150B | Call | SBK31224100A | Call | O-V243 | Call |
| DS-LL0800 | SBS31224175A | Call | SBK31224100B | Call | O-V258 | Call |
| DS-LL0800VP | SBS31224175A | Call | SBK31224100B | Call | O-V258 | Call |
| DS-LL1000 | SBS31224200A | Call | SBK31224100C | Call | O-V266 | Call |
| DS-LL1000VP | SBS31224200A | Call | SBK31224100C | Call | O-V266 | Call |
| DS-LL1200 | SBS31224200B | Call | SBK31224100D | Call | O-V274 | Call |
| DS-LL1200VP | SBS31224200B | Call | SBK31224100D | Call | O-V274 | Call |
| DS-LL1325 | SBS37524225A | Call | SBK37524125A | Call | O-V274 | Call |
| DS-LL1325VP | SBS37524225A | Call | SBK37524125A | Call | O-V274 | Call |
| DS-LL1400 | SBS37524225A | Call | SBK37524125A | Call | O-V277 | Call |
| DS-LL1400VP | SBS37524225A | Call | SBK37524125A | Call | O-V277 | Call |

Please contact us at subassemblies@lesker.com for custom load lock applications.

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