

MASCOT Loadlock & Transfer System

This high-vacuum compatible, single-substrate loadlock system is designed to manually load wafers or other flat substrates into a SEMI-standard or custom process chamber. The MASCOT can mimic the motions of a complex and costly robot but is convenient to use and significantly less costly.

Typically the MASCOT Loadlock would be mounted to a gate valve attached to a main system chamber. A substrate can then be easily positioned through the large entry door onto the transfer stage in the loadlock chamber. After the loadlock is evacuated to the desired vacuum level, and the gate valve opened, the substrate is transferred into the process chamber by gliding the magnet carriage along the outer tube. This allows repeated substrate loading and unloading without breaking vacuum in the main chamber greatly reducing process time.

Chambers are available for wafers or substrates up to 200mm, 300mm or 450mm. Optional items include vertical lift capability, heavy-duty cart for portability and limit switches. Chambers can be modified or customized for non-standard applications.

A Precision Magnetic Manipulator (PMM) is used as the transfer device on the MASCOT Loadlock system. See PMM description for complete specifications on these manipulators. A MASCOT-LO, with a linear-only PMM will precisely transfer a substrate into a process chamber where the receiving station has vertical lift capability to remove the substrate from a carrier on the end of the PMM. The MASCOT-LR uses a linear-rotary PMM where the rotation is actually used to operate a dynamic end effector with vertical motion capability to lift or lower a substrate during transfer. The PMM with a dynamic end effector can deliver a substrate to the process chamber and lower to set the substrate onto the receiving stage for processing.

The PMM returns to lift the substrate and withdraw it into the loadlock chamber for removal after processing is complete.



CFF-Based Loadlock and Transfer Systems

A high-vacuum compatible loadlock system is an efficient, cost-effective method of loading substrates into a vacuum chamber without breaking vacuum. Loading the substrate into an introduction-chamber (loadlock) and evacuating the loadlock prior to transferring the substrate into the main chamber saves a significant amount of time in reaching the required operating pressure. Without repeated venting to atmospheric pressure, the main chamber remains cleaner and dryer. There are many unique magnetically-coupled transfer devices available for sample introduction.

Loadlock chambers can be constructed to a user-specified size with choices of materials, mounting flanges, pump and auxiliary ports, windows or blank-offs and transporters. Mounting flanges can be standard CFF, ISO or custom. Shown below are examples of a few of the loadlocks provided using various sized CFF mounting flanges. Each system can be ordered as shown or reconfigured to meet your specific requirements.



NW/ISO-Based Loadlock and Transfer Systems

A high-vacuum compatible loadlock system is an efficient, cost-effective method of loading substrates into a vacuum chamber without breaking vacuum. Loading the substrate into an introduction-chamber (loadlock) and evacuating the loadlock prior to transferring the substrate into the main chamber saves a significant amount of time in reaching the required operating pressure. Without repeated venting to atmospheric pressure, the main chamber remains cleaner and dryer. There are many unique magnetically-coupled transfer devices available for sample introduction.

Loadlock chambers can be constructed to a user-specified size with choices of materials, mounting flanges, pump and auxiliary ports, windows or blank-offs and transporters. Mounting flanges can be standard CFF, NW/ISO or custom. Shown below are examples of a few of the loadlocks provided using various sized NW/ISO mounting flanges. Each system can be ordered as shown or reconfigured to meet your specific requirements.



Carousel Loadlock and Transfer Systems

The Carousel-200 is a compact, high-vacuum compatible loadlock and transfer system designed to deliver up to 200mm wafers or other flat substrates from a SEMI-standard cassette into a process chamber. This small footprint system is a clean, cost-effective alternative to other accepted transfer devices.

After a preloaded wafer cassette is inserted into the load chamber, wafers can be repeatedly pulled from the cassette and delivered to the process chamber without breaking vacuum. A unique revolving wafer carrier exchanges wafers between two independently controlled drive mechanisms. These dual drives allow increased throughput as one drive can be removing a wafer from the cassette as the other is delivering a wafer to the process chamber. The load chamber is equipped with an elevator drive assembly. For process chambers without vertical lift, z-lift capability is optional. The Carousel can be configured for SMIF operation.

The Carousel-200 handles up to 200mm wafers, reticles, masks or substrates of varying sizes. Applications include process development, use as a manufacturing tool or for low-volume production.

