



Marathon Express[®]

Vacuum Transport System for 100mm to 200mm Wafers

AUTOMATION

Advanced Features

- Handles 100 to 200mm size wafers.
- Includes four base models: MX400, MX600, MX700, and MX800.
- Features indexing vacuum load locks for 25 or 26 wafer cassettes with four factory interface options.
- Offers off-the-shelf vacuum configurations from 3 range to 8 range (torr) base pressure.
- Includes Gen 5 Safety Hubb with advanced safety interlocks

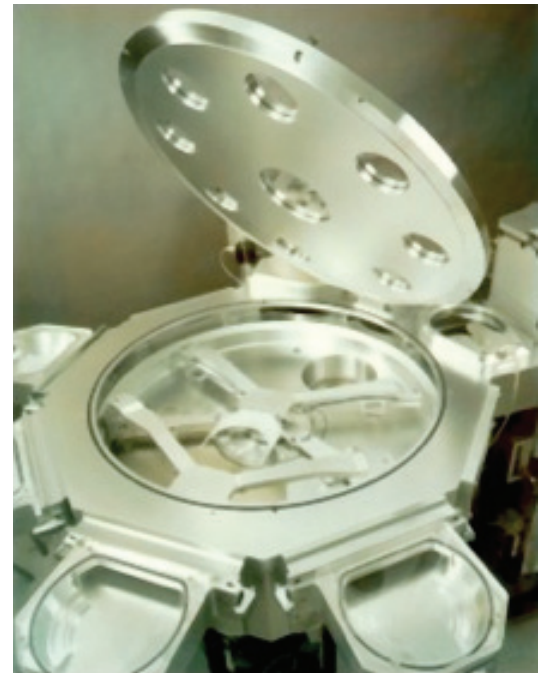
Benefits

- **Configurable:** The modular architecture allows the MX to be tailored to meet the needs of a wide range of process applications.
- **Quick Time to Market:** The MX reduces time to market through its field-proven option offerings.
- **Enhanced Safety Features:** The Gen 5 MX meets the requirements for CE and S2
- **COO:** Ease of service access, high level field replacement unit strategy and high reliability components ensure maximum uptime.

The Marathon Express[®] Vacuum Transport System (VTS) is optimized for superior vacuum performance and high throughput for 100mm, 125mm, 150mm, and 200mm wafer sized applications.

The Marathon Express is the platform of choice for production Fabs in the Magnetic Media, MEMS, and compound semiconductor industries. In addition, Marathon Express platforms are widely used in 200-millimeter wafer production facilities.

The highly configurable Marathon Express typically offers a wide selection of production-proven application-specific options. Typical applications include PVD, CVD, Etch, MR Head Deposition, MEMS, and compound semiconductor applications. The MX is available in large and small footprint versions.



Vacuum Systems Table

Type	LL Base ¹ Pressure (Torr)		Type	TC Base Pressure ² (Torr)		TC Protection Level ³ (Torr)	
Load Lock	MX4/600	MX7/800	Transport Chamber	MX6/400	MX7/800	MX400	MX7/800
Rough	< 1 x 10 ⁻¹	< 1 x 10 ⁻¹	Rough	< 1 x 10 ⁻¹	< 1 x 10 ⁻¹	N/A	N/A
Rough	< 1 x 10 ⁻¹	< 1 x 10 ⁻¹	Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	N/A	N/A
Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	Turbo	< 1 x 10 ⁻⁷ (bake) < 1 x 10 ⁻⁶ (no bake)	< 1 x 10 ⁻⁷ (bake) < 1 x 10 ⁻⁶ (no bake)	N/A	N/A
Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	Turbo/in-line water	< 1 x 10 ⁻⁷ (bake) < 1 x 10 ⁻⁶ (no bake)	< 1 x 10 ⁻⁷ (bake) < 1 x 10 ⁻⁶ (no bake)	< 6 x 10 ⁻⁶	< 6 x 10 ⁻⁶
Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	Turbo/in-situ water panel	N/A	< 1 x 10 ⁻⁷ (bake) < 1 x 10 ⁻⁶ (no bake)	N/A	< 9 x 10 ⁻⁷
Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	Cryo	< 5 x 10 ⁻⁸ (bake) < 5 x 10 ⁻⁷ (no bake)	< 5 x 10 ⁻⁸ (bake) < 5 x 10 ⁻⁷ (no bake)	< 9 x 10 ⁻⁷	< 9 x 10 ⁻⁷
Turbo	< 1 x 10 ⁻⁶	< 1 x 10 ⁻⁶	Cryo/in-situ water panel	N/A	< 5 x 10 ⁻⁷ (no bake)	N/A	< 9 x 10 ⁻⁸

¹Load Lock.

²Transport Chamber.

³Protection level is defined as the maximum pressure 5 seconds after load lock slot valve closure.

Note: All vacuum performance based on Varian TriScroll 600 backing/roughing pump or equivalent (customer supplied). All pressure based on <24 hours pumping. Please contact your Brooks sales representative for a listing of supported OEM pumps.

Technical Specifications

	MX400	MX600	MX700	MX800
LEVEL 1 - BASE SYSTEM				
Frame	• Two-tone gray color with raised floor style for support of entire Transport System. Welded tubular construction with support for Load Lock(s) and Transport Chamber; includes leveling feet, removable casters (x3), and fork lift tubes.			
Transport Chamber	• Solid aluminum construction. (2) integrated configurable Load Lock chambers			
Lid	• View ports optional at each facet	• Lid Lift mechanism • One central view port	• Lid Lift mechanism • View ports optional at each facet • One central view port	
Wafer Transport Plane	• 1100mm (Per SEMI std. E21-91)			
No. of Process Facets	• Up to Three	• Up to Four	• Up to Five	• Up to Six
Process Module Facet Slot Valves	• 500mm (19.69 inches)		• 575mm (22.64 inches)	
Load Lock Facet Slot Valves	• Vacuum: VAT 02110-BA24: Aluminum • Viton Seal			
Pumping Ports	• One ISO 160, One KF40		• One ISO 200, one ISO 160, One KF40 Built-in recess for in-situ water panel	
Load Lock	• Rectangular aluminum load lock chamber with choice of automatic or manual door		• Orthogonal aluminum load lock(s) chamber with choice of automatic or manual door	
VCE Drive	• AM350 Bellows Isolated Drive			
Factory Interface Station, Cassette Transfer, Door	• Standard: Fixed Platform Manual Door • Optional: Automatic Door, Cassette Transfer Arm		• Standard: Fixed Platform; Manual Door • Optional: Load Arm (for AGV), Automatic	
Vacuum Robot	• MagnaTran 7® high-speed, high-vacuum robot. • Maximum temperature: Exposure - 120°C / operation 50°C			
Transfer Arm	• Standard: FrogLeg™ - Single Arm • Optional: BiSymmetrik™ - Dual Arms (Not available for MX400 200mm wafers)			
End Effector	• Material: Molybdenum or Alumina • Wafer supports: Quartz, Stainless Steel, Kalrez®			
Wafer Sensors	• SICK model 1016080 (or similar). Visible red LED. 650mm or 6500Å			
Aligner Module	• Integrated aligner option with wafer supports choice of: Quartz, Kalrez®, Stainless Steel		• Wafer alignment in vacuum. TopLigner™ internal to Transport Chamber with wafer supports choice of: Quartz, Kalrez®, Stainless Steel	
Cooling Module	• Wafer cooling in vacuum. TopCooler™ mounts onto a process facet. • Cooling gas: Argon or Nitrogen		• Wafer cooling in vacuum. TopCooler™ internal to Transport Chamber. • Cooling gas: Argon or Nitrogen	
Buffer Module/Wafer Cleaning	• Wafer holding 4-shelf module, facet mounted w/choices of Stainless Steel or Quartz shelves. Typically used for cleaning wafers		• Wafer holding 4-shelf module, internal to TC w/choices of Stainless Steel or Quartz shelves. Typically used for cleaning cover wafers	
Power Supply	• 200-240 VZC, 50/60Hz, Single Phase			
	MX400	MX600	MX700	MX800
LEVEL 2 - VACUUM/VENT CAPABILITIES				
Vacuum	• Rough Only to High Vacuum systems available (see Vacuum Systems table) for Transport Chamber and Load Locks.			
Venting	• High speed, soft venting assemblies with multi-rate, fixed-size vent orifices. Stainless Steel, 10 Ra lines.			
Facilities	• Nitrogen, Compressed dry air supply. Cooling water for Turbo pump and/or active TC cooling. Argon or N ₂ facility provided for TopCooler™			
LEVEL 2.5 - COMMUNICATIONS				
Vacuum Gauges	• Granville-Philips DeviceNet Convectron® and Micro Ion Gauges on LL and TC			
TC Heating/TC Cooling	• Active cool down: 120°C to 40°C in 3 hours			

For more information, please contact your local Brooks Automation sales representative or visit www.brooks.com.

