The dual arm MagnaTran® 8 Radius™ robot extends the benefits of MagnaTran field-proven direct drive technology to a tri-axial drive. In addition, the MagnaTran leverages proven SCARA arm technology to provide sub 4 second fast swaps within a small containment diameter. Both the tri-axial drive and the arm have been designed to accommodate heavier payloads.

The direct magnetic drive technology improves reliability by reducing the number of parts and eliminating the need for a dynamic seal for vacuum isolation. Elimination of the dynamic seal reduces friction, wear, tear and torque resulting in fewer failures. Elimination of stepper motors and/or transmission coupling mechanisms reduces vibration, particles, backlash and increases positional repeatability.

The fast swap arm, Time Optimal Trajectory™, continuous rotation and direct drive servo, with Brooks proprietary DSP controller provides higher throughput.

A user-programmable safety zones prevent possible collision during manual operation thus ensuring the safety of high-value wafers and process equipment. Comprehensive diagnostics are accomplished via a graphical user interface at a remote, modem linked service terminal. Error logging with prior events is time and date stamped.

Cycle counters are stored in non-volatile memory and critical performance characteristics are monitored and reported graphically. Multi-Sensor interfacing is accomplished via high speed PIO that enables direct interface to substrate sensors and other peripheral modules such as as valves. Real-time information allows position referencing by edge sensing of moving components. The wafer presence may be referenced in macro sequences for safety purposes.
Wafer Sizes
200, 300 and 450mm wafers (end-effectors available for each size)

Capacity
3.0 kg (6.6 lbs) *Per end-effector, pan offset dependent
10 Nm movement load at wrist plate (including end effector)

Mounting Configuration
Top or Mount (top or bottom bolt)

Range of Motion
Radial: up to 1144mm (extension including End Effectors)
Z: 90mm + 135mm
Theta: Infinite

Weight
Drive assembly: 65 kg (144.4 lbs)
Butterfly Arm: 5.5 kg (12.2 lbs)

Vacuum performance
Leak rate: < 5 x 10E-9 std. cc/sec He
Base operating pressure: 3x10^-8 Torr

Maximum Temperatures
Continuous Operation: Arm Linkage 90°C, Motor Assembly 60°C maximum exposure
8 Hour Bake Out: Arm Linkage 110°C, Motor Assembly 120°C maximum exposure

Exposed Materials
Aluminum (6061, 7075), Stainless steel (416, 301, 316), AM350 (Bellows), Molybdenum, Nickel, Eligiloy, Magnetic materials, Quartz, Glass, Viton, Perfluoroelastomer

Control Interfaces
Ethernet or RS-232/RS-422 switch selectable serial interface control (or remote linked service terminal)
Dedicated RS-232 serial interface for the Control Display Module (CDM)
Additional RS-232 serial interface for peripheral devices
Miscellaneous I/O (22 inputs, 20 outputs) for wafer sensing and safety interlocks.
Wafer sensing, control I/O may be either low- or high-side edge triggered.

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

Input Power
110/220 VAC

Repeatability
Total Placement: 0.15mm TIR (in horizontal plan, at appropriate speeds)
R (Radial): 0.1mm (3σ)
θ (Rotational): 0.006° (3σ)
Z (vertical): 0.05mm (3σ)

Wafer Exchange Time
> 350°C Process Temperature: < 8 seconds
< 350°C Process Temperature: < 4 seconds
* Exchange = pick, place
*Actual times will depend on arm extension, payload and substrate contact material.

Configuration Options & Accessories
Spacing between end-effectors
10mm: Reduces required chamber depth
35mm: Compatible with MESC valve openings

CDM – Handheld terminal for operation, position teaching and standard diagnostics
Fixtures – For precision mounting of the arm assembly (standard), teaching (optional)
Custom designed end-effectors (optional)
Operating manuals on CD (standard)
FRUs (Field Replaceable Units) – Individually tested spare components (optional)