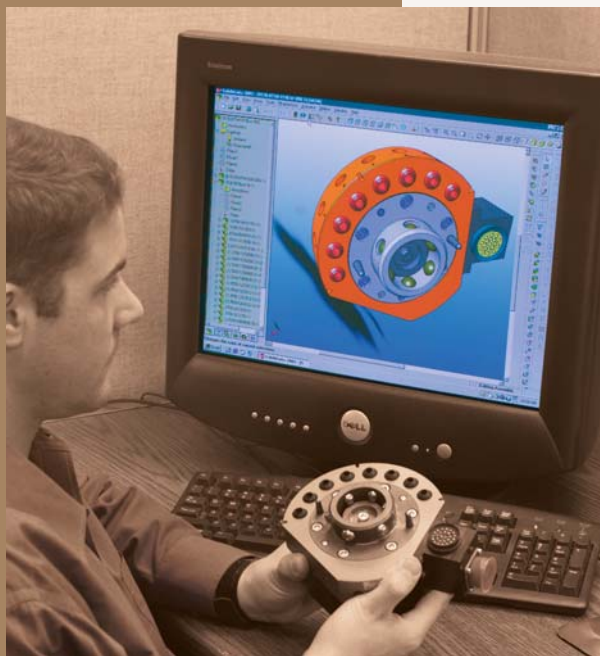


ATI

ROBOTIC END EFFECTORS.

Engineered Products for Robotic Productivity

THE QUEST FOR ROBOTIC



"ATI has proven itself as a first-rate company with first-rate products. They are responsive to the customer's needs. Whether we have called for a quotation, service, or process questions, our request has always been promptly answered."

Mike Olson
Automated Concepts, Inc.

In 1989, ATI set out to produce the best robotic productivity tools available. Our dedication to that quest has resulted in the most reliable and flexible line of Robotic End Effectors in the industry. Today, the mission continues—developing leading-edge products that enhance Robotic Productivity. To that end, every resource at our disposal is devoted to making ATI products into the ultimate productivity tools.

Driven by engineering excellence.

The driving force behind our success is the ATI research and development team, the largest of its kind in the world for Robotic End Effectors. Our accomplished mechanical, electrical and software engineers continue to raise the bar in quality, innovation and productivity. Their dedication to



engineering excellence has resulted in the most flexible and adaptable line of products on the market today for both standard and custom applications.

ATI performs precision manufacturing at its state-of-the-art facility.

PRODUCTIVITY CONTINUES.

A world leader in Robotic End Effectors.

Recognized throughout the world for quality and reliability, ATI products are improving productivity in an array of industries, including Robotics, Aerospace, Biomedical, Automotive, Electronics, Applied Research, Academics, Nuclear and Governmental. Our ISO 9001 registration assures that ATI products meet the most stringent industry standards for quality. Each product is subjected to rigorous quality assurance and inspection procedures before it can leave the factory.

ATI solutions. When nothing less will do.

If the quest for excellence in robotic productivity made us the industry leader, it is our dedication to the customer that has kept us there. Customer satisfaction is priority one at ATI, and it all begins with listening. Experienced ATI Account Managers with the immediate support of our engineering team work closely with your staff to achieve the perfect fit for your specific application. This consultative

sales style, combined with our family of standard and customizable products, ensures that you always get the best product for your application. Your success is our top priority.



The following pages offer a short-form look at the industry's most reliable Robotic End Effector products. But it's just the beginning.

To learn more about how ATI can help you in your quest to improve Robotic Productivity, call **919.772.0115** and ask for an ATI Account Manager or visit **www.ati-ia.com**. It's the first important step toward a more productive future.

"ATI's products and people have been there with answers and the technology to help keep our project moving forward."

**Kerry T. Pokorny
Project Engineer
AB&I Foundry**



Quick-Change – Robotic/ Automatic Tool Changers

Quick-Change Automatic Tool Changers provide added flexibility to robot applications by allowing one robot to change end-effectors automatically, such as grippers and vacuum tooling. The Quick-Change products are pneumatically operated devices consisting of a Master Plate and Tool Plate using a patented R_C58 stainless steel locking mechanism. Add-on utility modules provide electrical pass-through of up to 74 discrete lines and DeviceNet™, Ethernet, PROFINET™ or PROFIBUS™ bus network signals, up to 11,000 amps, as well as air, vacuum and fluid pass-through of up to 24 ports, from #10-32 to 2.0" NPT or G fittings and up to 7200 psi pressure. Additional options include a Sensor Interface Plate, basic interface plates and modular, highly-customizable Tool Storage Stand arrangements.

Product Advantages:

- Reduced time for tool changes—only seconds for maintenance or repair.
- Enhanced operator safety by changing tools automatically.
- Superior fail-safe—Quick-Change stays locked even when air pressure is accidentally removed.
- Increased reliability—no spring in locking mechanism ensures that “unlock” occurs.
- Simplified teaching—Quick-Change can lock securely with a gap of up to 0.1".
- High moment capacity—the strongest Tool Changers on the market.
- Unmatched repeatability—Tool Changer of choice for high-repeatability needs.



Robotic Tool Changers for Heavy Automation

The Heavy Automation Robotic Tool Changer line has been developed for resistance welding and medium- to heavy-duty material handling. Because this Tool Changer uses modules to pass utilities such as water, electrical and pneumatics, it can be configured to handle numerous applications by simply selecting the desired utility modules. A highly-customizable selection of Tool Stands is available that includes compliant drop-off points, Tool Shields and more.

Product Advantages:

- High moment capacity—many tool changers with high moment loads will “gap”, or separate, between the master and tool plates during high-acceleration moves, causing disruption to utilities such as servo and bus network signals. The Heavy Automation line can take on dynamic moment loads and maintain utility functions during high-acceleration moves.
- Increased Strength—the Heavy Automation line’s locking mechanism exceeds robot load specifications. Weight and size are kept as small as possible without reducing reliability or performance.
- Modularity—power, coolant, air, servo, and bus network signal features are built into separate modules that use a common mounting pattern, allowing easy maintenance. The modules’ robust design includes aluminum housings to withstand the abuse of harsh environments.



F/T – Multi-Axis Force/Torque Sensors

F/T Six-axis Force and Torque Sensors give robot and research applications the ability to sense forces and moments applied in six degrees of freedom (Fx, Fy, Fz, Tx, Ty, and Tz). The transducer mounts behind the application tooling and is connected to its support electronics via a small-diameter, high-flex, long-life cable.

Applications:

Product testing, biomechanical research, biomedical research, polishing, remote manipulators, automated assembly, wind tunnels

Product Advantages:

- Extremely robust—Transducers have large factors of safety.
- Silicon strain gage sensing elements allow for small size, high overload protection, and low-noise output.
- A variety of system interfaces are available, easing integration into most projects. All interface types include tool transformation capability.
 - Ethernet, EtherNet/IP™, a DeviceNet™ compatible interface and a discrete thresholding signal are provided on the Net F/T interface.
 - Analog outputs from DAQ F/T systems can be fed into ATI supplied or existing data acquisition hardware. ATI-supplied software performs calculations and tool transformations for easy integration.
 - RS-232 serial output, resolved analog output, and discrete I/O thresholding are available on the F/T Controller interface.



Utility Couplers

The Utility Coupler from ATI (patents pending) was designed for heavy-duty industrial applications where there is a need to change tools that pass utilities such as air and electrical signals in automated applications. The modular body design is capable of mounting any of ATI's standard add-on utility modules and is designed to improve cycle time and add flexibility to any production cell. The Master-side connection can feature a unique compliance mechanism that allows for large tooling misalignments. A Utility Coupler can be provided with an ATI locking mechanism or a drive cylinder.

Product Advantages:

- Common mounting flats attach standard ATI utility modules.
- Integrated fluid/air ports are available.
- Engineered compliance to ensure flush mating.
- Optional drive cylinders.
- Low-cost design.

"We have been using the ATI F/T for automotive seat testing since 1998. We are impressed with its ruggedness and reliability."

Kevin Moore
Automotive Testing Technologies

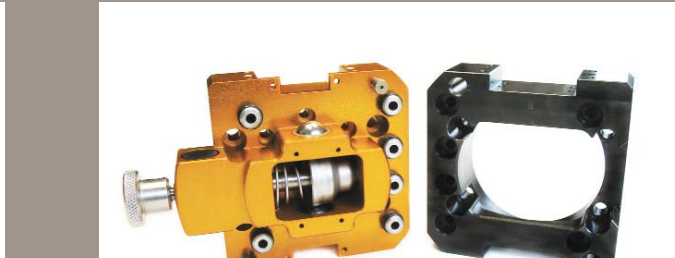


Compliant Robotic Deburring and Finishing Tools

ATI's line of Compliant Robotic Deburring and Finishing Tools are a patented family of robust products designed for a multitude of robotic and non-robotic operations on many materials. These versatile tools utilize air driven motors and air actuated compliance mechanisms for constant contact and cutting forces that comply with changing part profiles. Our Axially-Compliant Material Finishing Tools, also known as VersaFinish™, are robust, low-speed, high-torque tools with an axially floating spindle suitable for use with many types of finishing media. Our Axially-Compliant Deburring Tools, also known as Speedeburr™, utilize a lightweight rotary tungsten-carbide cutting file suitable for edge finishing and deburring. Our Radially-Compliant Deburring Tools, also known as Flexdeburr™, are high-speed, lightweight, devices that offer radial compliance to compensate for surface irregularities on part edges and to remove casting and parting lines.

Product Advantages:

- Provides a consistent deburring and finishing result from part to part.
- Reduces cycle time—compliance allows the tool to quickly react to any variances in part position or robot path.



Manually Actuated Tool Changers

ATI's Manual Tool Changers provide a cost-effective solution for quickly changing tools by hand. They feature a unique design that combines high strength, excellent repeatability and a patent-pending screw-cam locking mechanism with multiple fail-safe features, which resists vibration and prevents loosening. The Manual Tool Changers also feature quick-action locking for one-handed manual operation. These robust and compact Manual Tool Changers can handle payloads up to 80 pounds (36 kg) and pass pneumatics and electrical signals.

Product Advantages:

- Manual one-handed actuation.
- High strength-to-weight ratio.
- Very small package size.
- Integrated air pass-through ports.
- Screw-cam results in high locking force.
- Additional mounting flats for adding standard ATI utility modules.



Protector – Robotic Collision Sensor

The Protector prevents costly damage to robotic end-effectors resulting from robot crashes. The Protector is designed to comply with the collision while sending a signal to the robot to perform an emergency stop, minimizing damage to the tooling.

Product Advantages:

- Complete tool and robot protection—axial compression, as well as torsional and moment loading.
- Customizable units provide dynamically variable trip points.
- Time savings—automatic reset option eliminates entering the robot cell.
- Options—both spring and air trip points. Use only the spring for low-inertia motion and supply air for high-inertia motion.
- High repeatability and quick crash detection.
- Durability—rugged construction of units with generous use of tool steel (R_C60+) and bearing bronze in wear and impact areas.



Compensator – Alignment Device for Automated Assembly

The Compensator allows a robot or assembly machine to compensate for positioning errors due to machine inaccuracy, vibration, and tolerances—thereby lowering contact forces and avoiding part and tool damage. The Compensator is a mechanical device that uses elastomer shear pads to control compliance necessary to allow easy assembly of misaligned parts in peg-in-hole applications. A lead-in chamfer/radius is needed on the one or both parts, and misalignment cannot exceed the size of the lead-in.

Applications:

Dowel pin insertion, assembly of misaligned parts, assembly of close-fit parts

Product Advantages:

- Reduces scrap, downtime, and machine damage.
- Eliminates jamming, wedging, and galling.
- Allows faster throughput—no need to slow down when assembling.
- Accepts relaxed part tolerances.

“The ATI Collision Sensor has proven to be an invaluable addition to our automated equipment. The savings on down time and repairs is immeasurable.”

Daniel K. DiAndrea
Project Engineer
National Manufacturing Co., Inc.



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