

# ATI

## ROBOTIC END EFFECTORS.

Engineered Products for Robotic Productivity

# THE QUEST FOR ROBOTIC



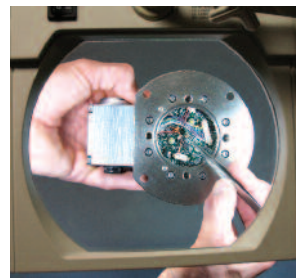
*"ATI has proven itself as a first-rate company with first-rate products. They are responsive to the customer's needs. Whether we have called for a quotation, service, or process questions, our request has always been promptly answered."*

**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](http://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**



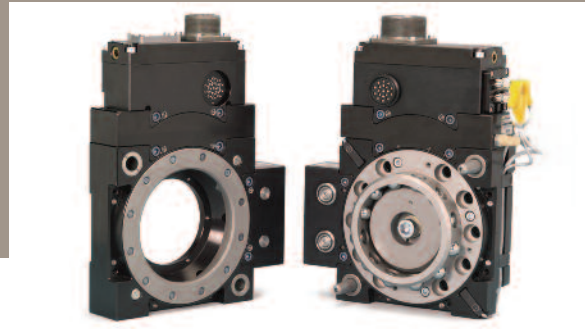


## Robotic/Automatic Tool Changers

ATI Robotic/Automatic Tool Changers provide added flexibility to robot applications by allowing one robot to change end-effectors automatically, such as grippers and vacuum tooling. ATI Tool Changers are pneumatically-operated devices consisting of a Master Plate and Tool Plate using a patented Rc58 stainless steel locking mechanism. Add-on utility modules provide electrical pass-through of discrete lines, DeviceNet™, Ethernet, PROFINET™ or PROFIBUS™ bus network signals, high power and servo signals, as well as air, vacuum, and fluid pass-through. 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—The Tool Changer stays locked even when air pressure is accidentally removed.
- Increased reliability—no spring in locking mechanism ensures that “unlock” occurs.
- Simplified teaching—The Tool Changer 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 ( $F_x$ ,  $F_y$ ,  $F_z$ ,  $T_x$ ,  $T_y$ , and  $T_z$ ). The transducer mounts behind the application tooling and is connected to its support electronics via a small-diameter, high-flex, long-life cable. Environmental protection, Titanium, and custom models available.

### 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. All interface types include tool transformation capability.
  - Ethernet, EtherNet/IP™, DeviceNet™, CAN, PROFINET, EtherCAT, Wireless, and more.
  - DAQ F/T signals can be fed into ATI-supplied or existing data acquisition hardware.
  - 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 was developed 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 ATI Utility Coupler is especially suited for coupling multiple lines simultaneously, saving time over other traditional manual methods of connecting many lines. 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.
- Manual latch models to manually draw in utility connections.
- 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**

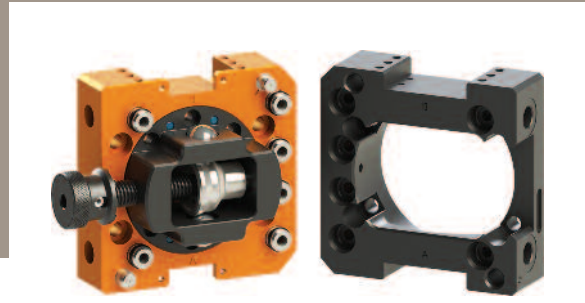


## Compliant Robotic Deburring and Finishing Tools

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. These robust and compact Manual Tool Changers can handle payloads up to 80 pounds (36 kg) and pass pneumatics and electrical signals.

### Product Advantages:

- Fully-threaded all-steel locking mechanism.
- High strength-to-weight ratio.
- Very small package size.
- Integrated air pass-through ports.
- Ratchet knob adds security to the locked position.
- Additional mounting flats for adding ATI utility modules.





## Robotic Collision Sensor

ATI Robotic Collision Sensors prevent costly damage to robotic end-effectors resulting from robot crashes. They are 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 (Rc60+) and bearing bronze in wear and impact areas.

***“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.

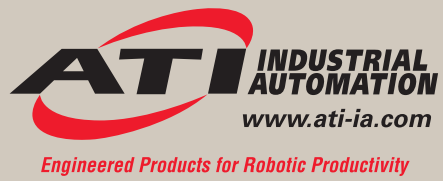


## Compliance Devices

ATI offers three unique compliance compensators that enable greater mobility in applications with tight alignment tolerances. These devices will save money, reduce downtime, and eliminate design complications. The Universal Compliance Compensator (UCC) complies in many directions to overcome misalignment between the tool and the workpiece. The patented mechanism is ideal for demanding high-endurance applications and offers simultaneous X-Y lateral compliance, X-Y-Z axis rotation, and Z compression. Our Lateral Compliance Compensator (LCC) offers X-Y lateral compliance and allows pieces to be gripped or routed reliably even if the workpiece is severely misaligned. Both the UCC and LCC are designed for high repeatability during position compensation, which is ideal for use in automated assembly, bin picking, loading and unloading machines, robotic finishing, and more. Our Remote Center Compensators (RCC) are designed to correct alignment errors for peg-in-hole automated assembly applications. The RCC device is engineered to project a compliance center (also known as center-of-compliance) forward by using three or more elastomer shear pads.

### Product Advantages:

- Reduce scrap, downtime, machine damage.
- Eliminates jamming, wedging, galling.
- Lowers machine and part cost due to relaxed tolerances.



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