Table of Contents

1. Product Overview D-2
2. Installation and Removal D-3
2.1 Module Installation D-3
2.2 Module Removal D-4
3. Operation D-4
4. Maintenance D-4
4.1 Rubber Bushing Inspection & Replacement D-5
5. Troubleshooting D-6
6. Serviceable Parts D-6
7. Specifications D-6
8. Drawings D-7

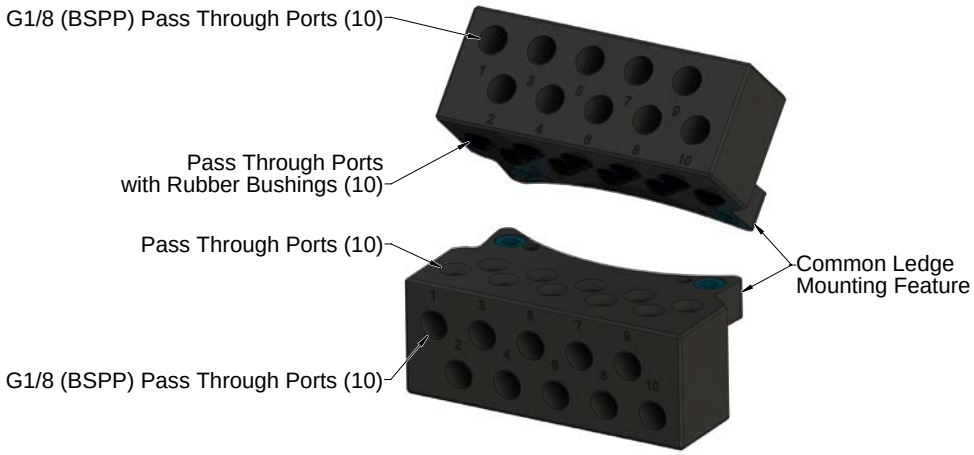
D. Air Modules

AS6—Air Module

1. Product Overview

Modules providing air utility are attached to the Master and Tool plates. When the Tool Changer is coupled, the AS6 Master module passes air supply to AS6 Tool module for customer tooling.

Figure 1.1—AS6 Air Modules



The Master (AS6-M) and Tool (AS6-T) Modules each contain (10) pass through air ports.

2. Installation and Removal

The air modules are typically installed on Tool Changers by ATI prior to shipment. The steps below outline field installation or removal as required. For detail information refer to *Section 8—Drawings*.

WARNING: Do not perform maintenance or repair on Tool Changer or modules unless the Tool is safely supported or docked in the Tool Stand and all energized circuits (e.g., electrical, air, water, etc.) have been turned off. Injury or equipment damage can occur with Tool not docked and energized circuits on. Dock the Tool safely in the Tool Stand and turn off all energized circuits before performing maintenance or repair on Tool Changer or modules.

CAUTION: Air supply should be clean and dry. Supply pressure should not exceed 100 psi and should be filtered 50 micron or better. Connection lines should be properly strain-relieved.

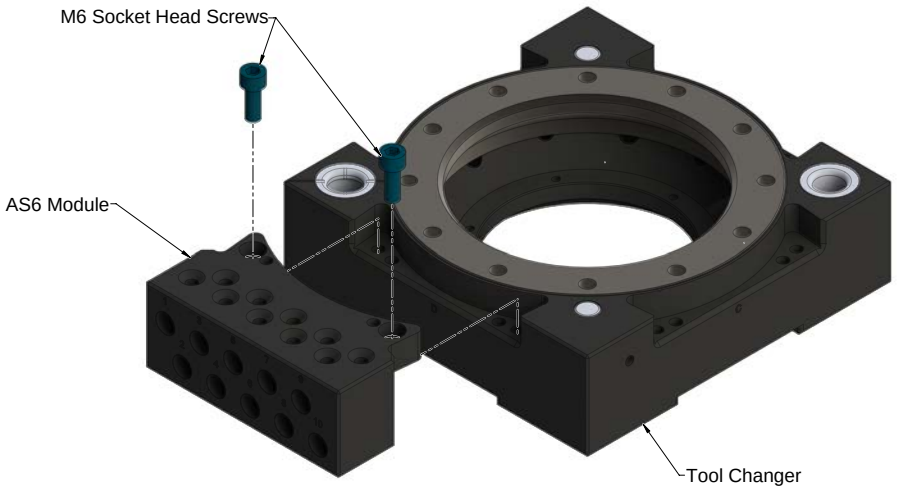
CAUTION: It is recommended, not to use fasteners with pre-applied adhesive more than three times. Fasteners used more than three times may come loose and cause equipment damage. Discard fasteners used more than three times and install new fasteners with pre-applied adhesive.

2.1 Module Installation

To attach air modules to the Tool Changer:

1. It may be necessary to clean the mounting surface on the Tool Changer prior to installing the module in order to remove any debris that may be present.
2. Place the module into the appropriate location on the Tool Changer. Align the dowels on the module with the dowel holes on the Tool Changer mounting ledge. Refer to *Figure 2.1*.
3. If fasteners do not have pre-applied adhesive, apply Loctite 242® to the supplied M6 SHCS fasteners. Install the (2) M6 socket head screws securing the module to the Tool Changer and tighten to 89 in-lbs.
4. Connect customer plumbing to the module.

Figure 2.1—Installation and Removal of the AS6 Module



2.2 Module Removal

To remove air modules from the Tool Changer:

1. All customer plumbing connections to the module need to be purged and disconnected. Once the supply lines have been turned off, the self-sealing valves on the module can be manually actuated to purge the line pressure. Cover the valves with a rag prior to purging in order to keep the air from impinging upon any person.
2. Remove the socket head cap screws and pull the module off the tool changer.

3. Operation

The air modules are designed to pass air utilities from the Master to the Tool for use by the customer's tooling.

4. Maintenance

Once installation is completed, the operation of the air modules is generally trouble free. Periodically, the condition of the ports should be checked. Replace any damaged or degraded components as necessary. Mating surfaces should be keep clean. Use a vacuum to remove any debris and clean in and around the mating surfaces of the modules using a nylon brush (ATI part number 3690-0000064-60). Lubricate seals periodically with NLGI-2 grease. During inspection, ensure that the fasteners attaching the modules to the Tool Changer are secure.

The modules may be field-serviced as needed. The following list describes how to perform various operations.



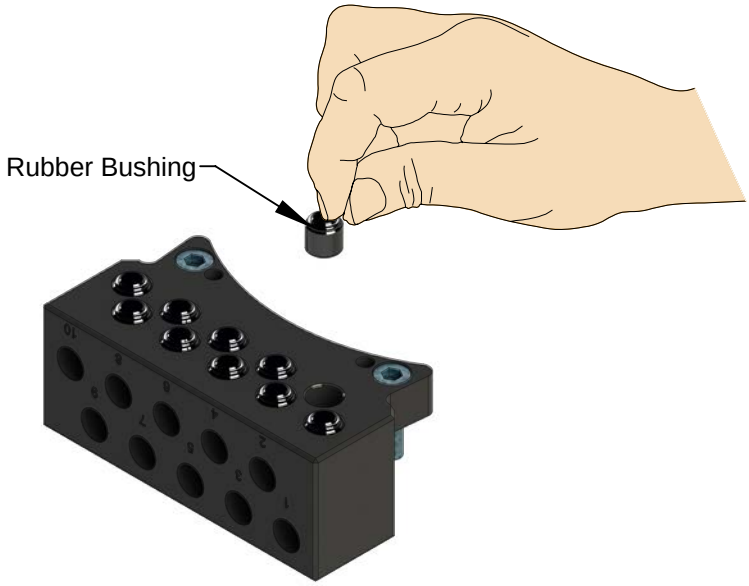
WARNING: Do not perform maintenance or repair on Tool Changer or modules unless the Tool is safely supported or docked in the Tool Stand and all energized circuits (e.g., electrical, air, water, etc.) have been turned off. Injury or equipment damage can occur with Tool not docked and energized circuits on. Dock the Tool safely in the Tool Stand and turn off all energized circuits before performing maintenance or repair on Tool Changer or modules.

4.1 Rubber Bushing Inspection & Replacement

The rubber bushings seal the air passage from the Master to the Tool Module. If the bushing become cut or damaged they need to be replaced.

1. Remove damaged rubber bushing by grasping with fingers and pulling the bushing out of the module.
2. Dip new bushing in water to aid in installation.
3. Insert the beveled (chamfered) end of the rubber bushing into the bore, leaving ribbed end of the bushing facing outward.
4. Press the bushing in by hand until it is seated completely in the bore. If necessary, use a plastic or rubber soft-faced mallet to tap the bushings into place.

Figure 4.1 —Rubber Bushing Replacement



5. Troubleshooting

Refer to the table below for troubleshooting information.

Symptom	Possible Cause	Correction
Air Leakage	Damaged/Worn seals	Replace seals. Refer to *Section 4.1—Rubber Bushing Inspection & Replacement.*
	Corrosion	Consult ATI for assistance.
Poor Flow	Flow path blockage	Inspect valve components and supply/return lines for blockage, clean/repair as necessary.
Modules Won't Couple	Bent dowel pin	Replace dowel pins as necessary. Check module attachment to tool changer. Check robot program and ensure parallel approach trajectory during tool changer coupling.

6. Serviceable Parts

See drawings in *Section 8—Drawings* of this manual.

7. Specifications

Air Module	AS6-M/AS6-T	
Weight	TBD TBD	AS6 Master Module AS6 Tool Module
Materials of Construction	Various	Anodized aluminum housings and Nitrile seals.
Pneumatic Ports (qty) Size Cv	(10) G 1/8 1.6	Maximum pressure of 100psi (6.9bar), Nitrile seals. Nitrile seals on AS6 Master (Cannot operate under a vacuum.)

8. Drawings

Drawings are available on the *ATI website* or by contacting an ATI representative.