Table of Contents

D. Air Modules 2

1. Product Overview 2
2. Installation 3
   - 2.1 Installation 3
   - 2.2 Removal 3
3. Operation 3
4. Maintenance 4
   - 4.1 Master-Side Self-Sealing Valve 4
   - 4.2 Tool-Side Self-Sealing Valve (Not Applicable for AN2AU-T) 4
5. Troubleshooting 5
6. Recommended Spare Parts 5
7. Specifications 5
8. Drawings 6

D. Air Modules

AN2A

1. Product Overview

There are several air modules available for the use with the Tool Changer as described in the table below. The AN2A modules are shown in Figure 1.1.

AN2A-M	(2) 3/8” NPT, self-sealing ports
AN2AU-T	(2) 3/8” NPT, pass-through ports

Table 1.1—Air Modules

NOTE: Self-sealing ports are not to be used for vacuum service.

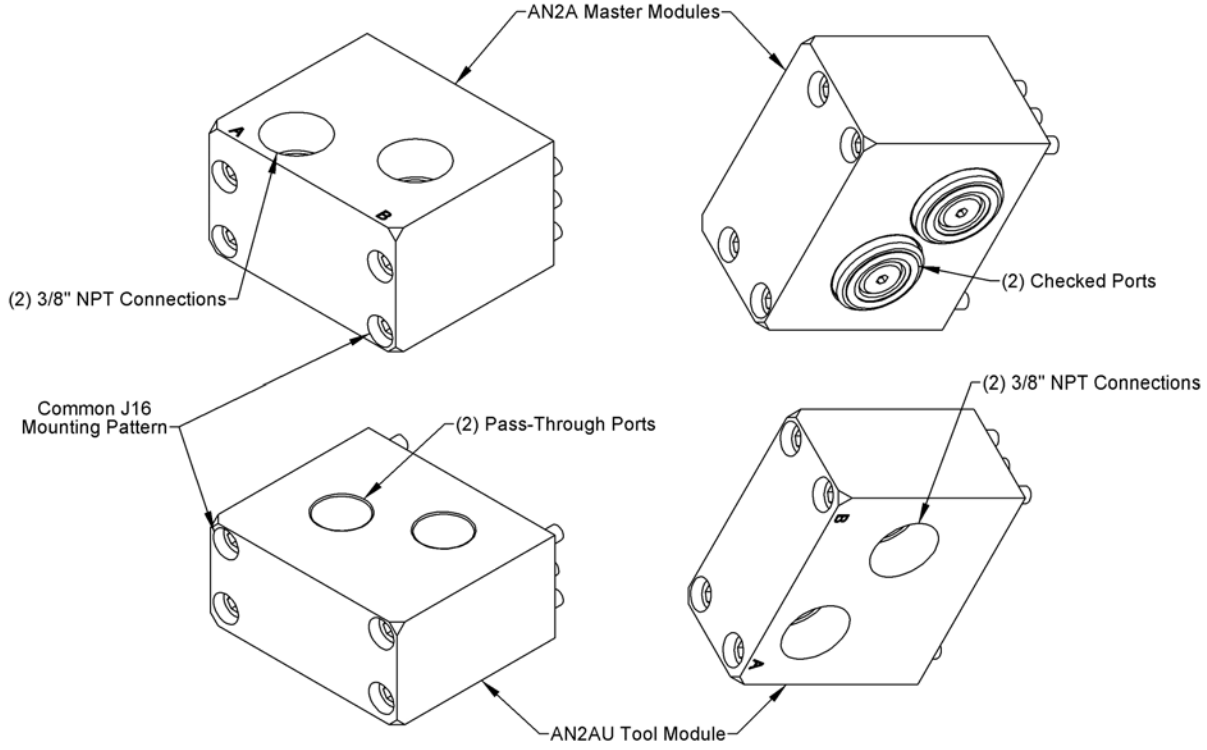

Figure 1.1—AN2A-M with AN2AU-T Air Module

2. Installation

The air modules are typically installed by ATI prior to shipment. The steps below outline the field installation or removal as required.

DANGER: Power and air should always be removed prior to maintenance or repair.

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

2.1 Installation

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. Align the module to the holes in the tool changer mounting surface using the dowels that are pressed into the module housing. Push the module up flush with the mounting surface. Apply Loctite-222® (or similar) thread locker to the socket head cap screws and tighten to 25 in-lbs. using a hex key.
3. Connect customer plumbing to the module.

2.2 Removal

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.

Self-sealing valves are provided so that the air circuits do not discharge during tool change and also so that the circuits upstream of the tool changer do not have to be closed down prior to tool change.

4. Maintenance

Once installed the operation of the air modules is generally trouble free. Periodically the condition of the self-sealing valves should be checked. Replace any damaged or degraded components as necessary. Any contamination in or around the mating surfaces of the modules should be removed with industrial contact cleaner. 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.



DANGER: Power and air should always be removed prior to maintenance or repair.

4.1 Master-Side Self-Sealing Valve

1. The self-sealing valve assembly (stem, check valve, spring and seals) can be inspected by removing the stem using a 2.5mm hex key. Be careful not to strip the hex on the stem during removal.
2. Once the stem is removed all seals can be inspected and replaced as required.
3. The spring in the assembly should be inspected and replaced as required.
4. The stem should be inspected for straightness and replaced if bent.
5. To re-install the valve assembly, all components should be arranged in order as they were removed. (See drawings in Section 8.)
6. Loctite-222 (or similar) thread locker should be applied to the threaded end of the stem and tighten to 10 in-lbs. and the stem re-installed. The piston will have to be pushed down flush with the mating surface in order to get the stem thread started. It is important that the U-cup seal around the check valve is not damaged during this step. A small, flat-head screwdriver can be used to ensure that the U-cup seal is fully located in the recess and not folded over itself prior to screwing in the stem.

4.2 Tool-Side Self-Sealing Valve (Not Applicable for AN2AU-T)

1. The self-sealing valve assembly (plug, spring, piston and seals) can be inspected by removing the plug on the bottom of the air module using either a spanner wrench or 8mm hex key. It may be necessary to remove the tool-side air module to have access to the plug. (Refer to the *Section 2—Installation* for instructions for module removal.)
2. Once the plug is removed all seals can be inspected and replaced as required.
3. The spring in the assembly should be inspected and replaced as required.
4. The plug may contain a dowel pin. The pin should be inspected for straightness and replaced if bent.
5. To re-install the valve assembly, all components should be arranged in order as they were removed. (See drawings in *Section 8*.)
6. Care should be taken not to damage the O-ring around the plug base during installation. Apply Magnalube to the o-ring and torque the plug to 20 in-lbs.

5. Troubleshooting

Problem	Cause	Remedy
Air Leakage	Damaged/Worn seals	Replace seals.
	Debris blocking valve seal	Clean in and around valve components. Ensure air stream is free of large particulates, filter as necessary.
	Bent stem	Replace stem. Check module attachment to tool changer. Check robot program and ensure parallel approach trajectory during tool changer coupling.
	Corrosion	Consult ATI for assistance.
Poor Flow	Flow path blockage	Inspect valve components and supply/return lines for blockage, clean/repair as necessary.
	Debris blocking valve seal	Clean in and around valve components. Ensure air stream is free of large particulates, filter as necessary.
Modules Won't Couple	Bent stem, dowel pin	Replace stem, dowels as necessary. Check module attachment to tool changer. Check robot program and ensure parallel approach trajectory during tool changer coupling.

6. Recommended Spare Parts

See Drawings in *Section 8* of this manual.

7. Specifications

Part Number	# Ports	Port Size	Cv	
AN2A-M/AN2AU-T	2	3/8” NPT	1.4	Maximum pressure of 100psi (6.9bar), Nitrile seals, Self-sealing on Master and Pass-through on Tool (cannot operate under a vacuum).
Weight		0.60 lbs (0.27 kg)		Master
		0.45 lbs (0.20 kg)		Tool

8. Drawings

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