Table of Contents

F. High-Power Modules.....2

MT9 Family—High-Power Module.....2

1. Product Overview 2
2. Installation 3
   - 2.1 Installing.....4
   - 2.2 Removal.....4
3. Operation.....5
4. Maintenance.....5
   - 4.1 Pin Block Inspection and cleaning 6
   - 4.2 Seal Replacement 7
5. Troubleshooting.....7
6. Recommended Spare Parts 9
7. Specifications 10
8. Drawings 11

F. High-Power Modules

MT9 Family—High-Power Module

1. Product Overview

The high-power modules are required to provide a means for the customer to pass high currents through the Tool Changer.

Amphenol MS style connectors are provided for interfacing on the Master and Tool modules. When the Tool Changer is coupled, the Master and Tool modules pass power with each other using a spring loaded pin block. A v-ring surrounds the pin block to seal the connection from moisture and liquid while coupled.

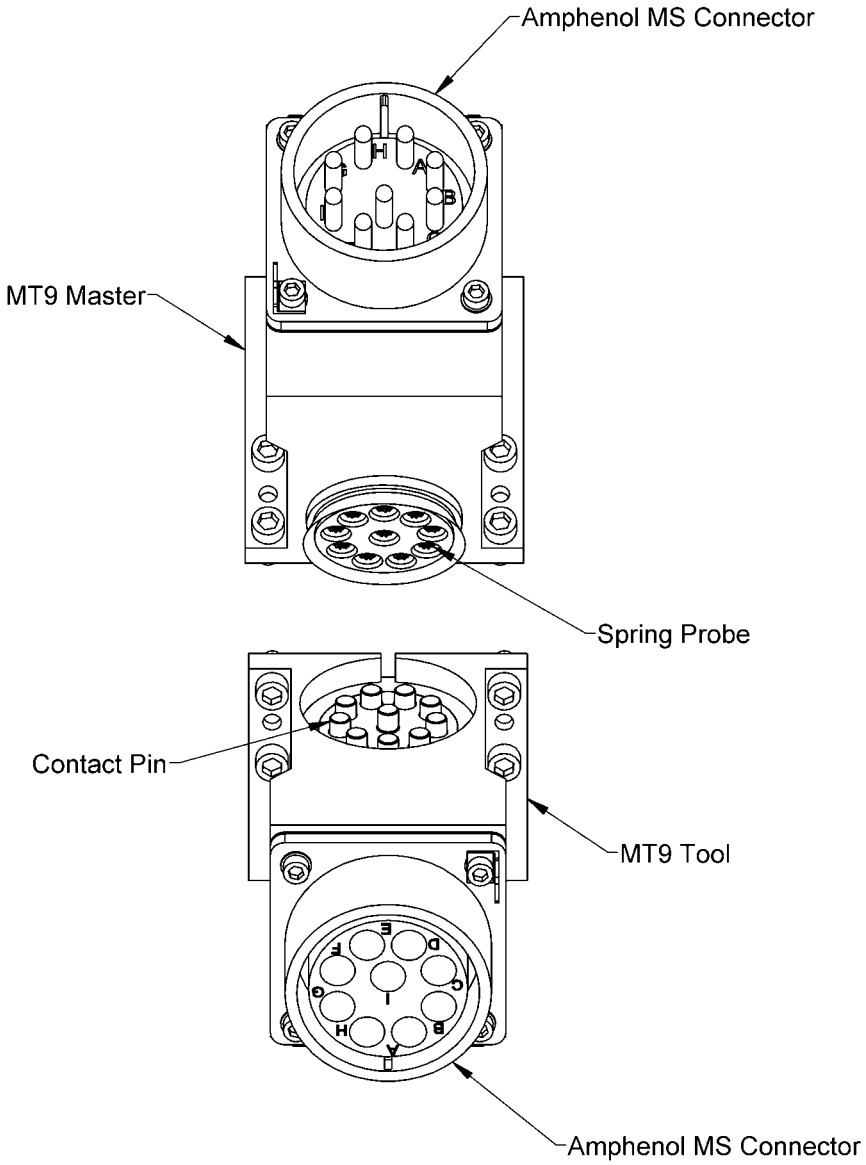


Figure 1.1 – High-Power Modules (MT9 Shown)

2. Installation

The High-Power 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.

2.1 Installing

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. Apply Loctite-222® (or similar) thread locker to the socket head cap screws and tighten using a hex key.

DANGER: If the module will be passing voltage greater than 60VDC or 42VAC, a safety ground must be attached per the following steps.
Grounding leads must be able to carry 1.5 times total current to be passed.

3. On master module, connect safety ground lead to connector mate shell. From connector mate shell, connect safety ground head to spade terminal.
   NOTE: Star washers or other method required to pass safety ground through connector mate shell coating to provide safety ground for connector mate.
4. Ensure continuity between connection point on connector mate shell and spade terminal.
5. On tool side, connect safety ground lead from connector mate shell to spade terminal.
   NOTE: Star washers or other method required to pass safety ground through connector mate shell coating to provide safety ground for the connector mate.
6. Ensure continuity from spade terminal to connection point on connector mate shell.

Safety ground is passed from master module to tool module only when modules are coupled.

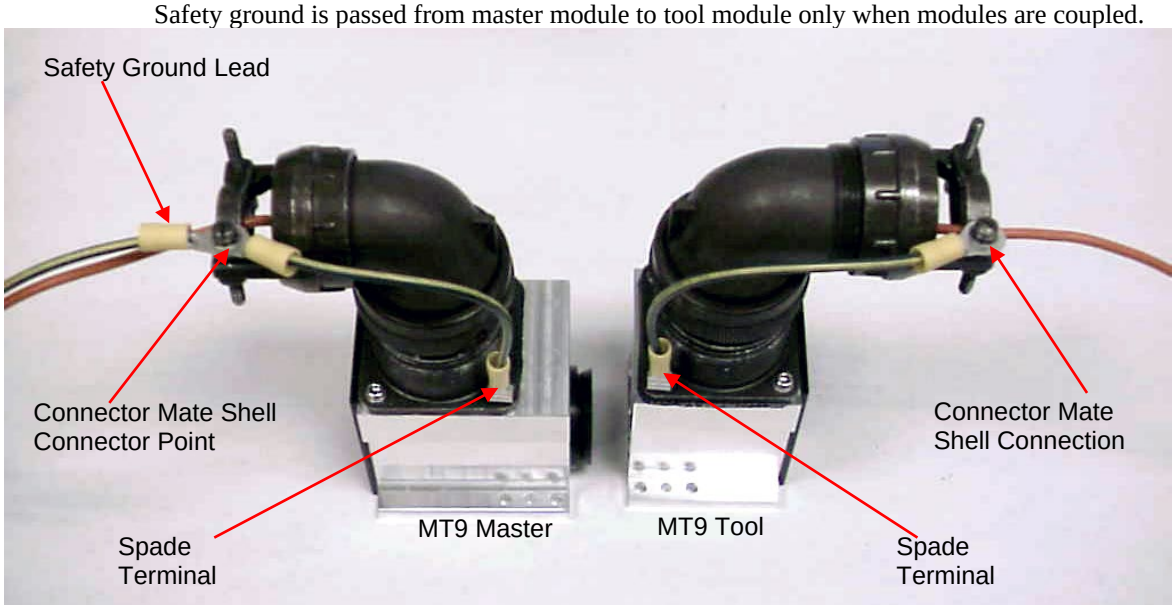


Figure 2.1—Safety Ground Connections
(Tool Changer bodies and wiring removed for clarity)

2.2 Removal

1. All customer connections up to the module need to be disconnected.
2. Remove the socket head cap screws and pull the module off the Tool Changer.

3. Operation

The power modules are designed to carry large currents to various industrial devices, providing a separable joint in the power wiring. To maximize the service life of these components the following points should be observed:

1. Do not couple or uncouple the modules unless electrical power has been disconnected and discharged both upstream and downstream from the modules. Arcing and contact damage will occur if this is not observed.
2. Properly route and secure all cables, particularly on the Master. Failure to observe this point may result in premature failure of the industrial electrical connectors. Poor cable routing can also result in wires and cable being pinched in the joint between the Tool Changer halves.
3. Always protect the un-used Tool modules when not coupled to a Master module. Dust, debris, and weld spatter can contaminate the contact tips resulting in arcing and a significant decrease in contact life.
4. Modules must be mounted to Tool Changer to handle maximum rated current without overheating.

4. Maintenance

Once installed the operation of the high-power modules is generally trouble free. The modules are not designed to be field serviced as all point-to-point wiring connections are soldered. Component replacement is limited to the V-Ring seal on the Master.



DANGER: For electrical modules using > 60VDC or 42VAC, NO contact should be attempted before removing power. This includes attaching and disconnecting cables or any contact with the Tool Changer or its components. Arcing and damage will occur if this is not observed. Remove power before attaching, disconnecting any cables or attempting any maintenance of Tool Changer.



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.

If the Tool Changer is being used in dirty environments (e.g., welding or deburring applications), care should be taken to limit the exposure of the Tool Changer. Idle Tool assemblies should be covered to prevent debris from settling on the mating surface. Also, the Master assembly should be exposed for only a short period of time during Tool change and down time.

Under normal conditions, no special maintenance is necessary, however it is recommended that periodic inspections be performed to assure long-lasting performance and to assure that unexpected damage has not occurred. Perform the following visual inspection monthly:

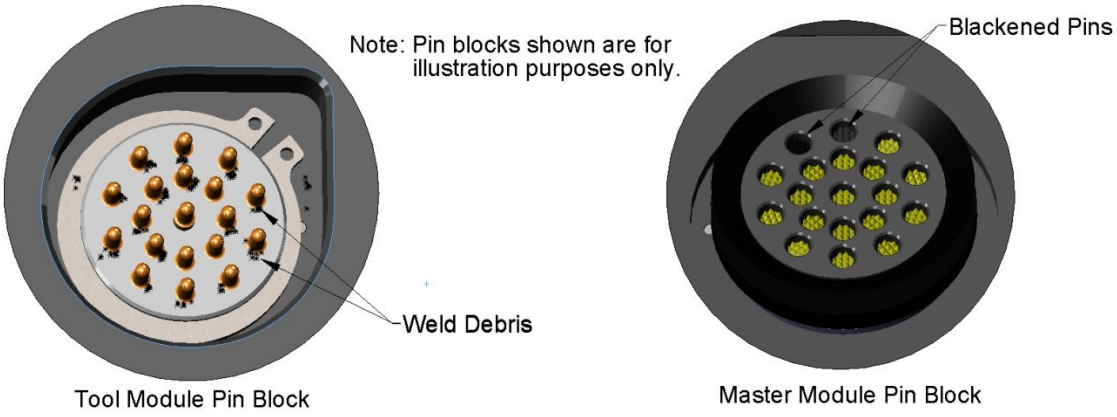
- Inspect mounting fasteners to verify they are tight and if loose, then tighten to the proper torque.
- Cable connections should be inspected during maintenance periods to ensure they are secure. Loose connections should be cleaned and re-tightened as appropriate. Inspect cable sheathing for damage, repair or replace damaged cabling. Loose connections or damaged cabling are not expected and may indicate improper routing and/or strain relieving.

- Inspect the Master and Tool pin blocks for any pin damage, debris or darkened pins. Refer *to Section 4.1—Pin Block Inspection and cleaning.*
- Inspect V-Ring seals for wear, abrasion, and cuts. If worn or damaged, replace. Refer to *Section 4.2—Seal Replacement.*

4.1 Pin Block Inspection and cleaning

1. Inspect the Master and Tool pin blocks for any debris or darkened pins.

Figure 4.1 —Inspect Master and Tool Pin Blocks

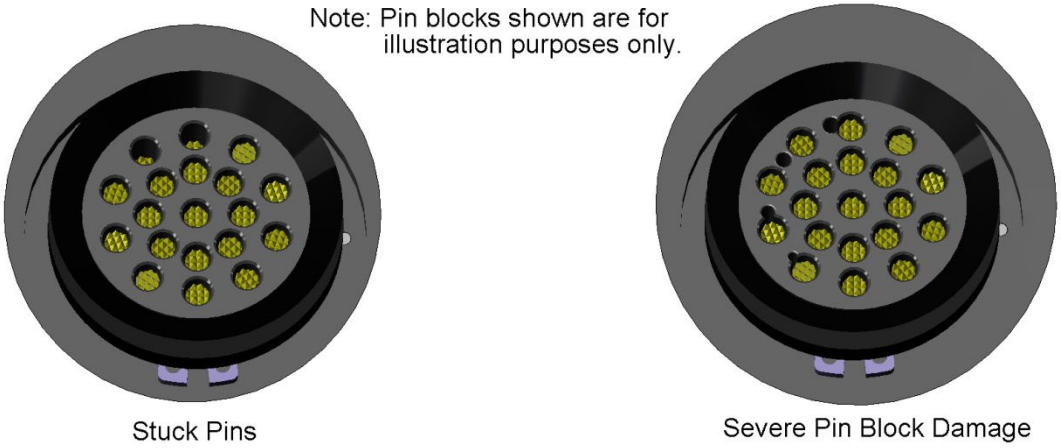


2. If debris or darkened pins exist, remove debris using a vacuum, and clean using a nylon brush (ATI part number 3690-0000064-60).

> **NOTICE:** Do not use an abrasive media, cleaners, or solvents to clean the contact pins. Using abrasive media, cleaners, or solvents will cause erosion to the contact surface. Clean contact surfaces with a vacuum or non-abrasive media such as a nylon brush (ATI part number 3690-0000064-60).

3. Inspect the Master and Tool pin blocks for stuck pins or severe pin block damage.

Figure 4.2 —Stuck Pin and Pin Block Damage



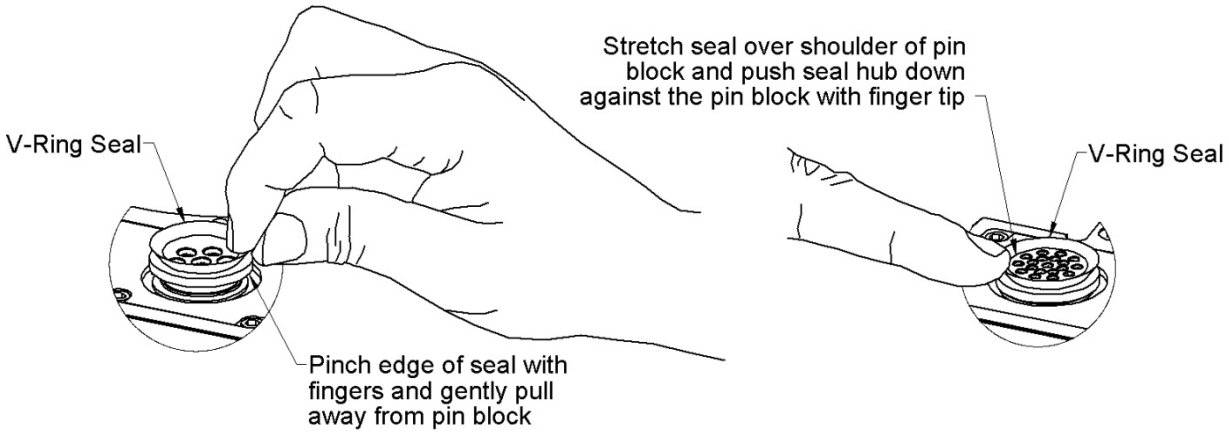
4. If stuck pins or severe pin block damage exists, contact ATI for possible pin replacement procedures or module replacement.

4.2 Seal Replacement

Replace the V-Ring seal:

1. To remove the existing seal, pinch edge of seal with fingers and gently pull the seal away from the pin block on the Master.
2. Pull the seal off the pin block.
3. To install a new seal, stretch the new seal over the shoulder of the pin block.
4. Push the seal's hub down against the pin block using finger tip.

Figure 4.3 —V-Ring seal Replacement



5. Troubleshooting

Symptom	Possible Cause / Correction
Loss of Power Pass-through	Check/Replace cabling up- and down-stream of the Tool Changer modules. Inspect module contact pins for debris/wear.

6. Recommended Spare Parts

Assembly	Part Number	Description
MT9 High Power Master Module	9120-MT9-M	28 Amp,9-pin electrical module 500VAC/700VDC – Master side
	4010-0000041-01	V-Ring Seal V-28A used in master module
MT9 High Power Tool Module	9120-MT9-T	28 Amp, 9-pin electrical module 500VAC/700VDC – Tool side
MTS9 High Power Master Module	9120-MTS9-M	28 Amp, 9-pin electrical axial module 500VAC/700VDC – Master side
	4010-0000041-01	V-Ring Seal V-28A used in master module
MTS9 High Power Tool Module	9120-MTS9-T	28 Amp, 9-pin electrical axial module 500VAC/700VDC – Tool side
MT9VL High Power Master Module, Viton seals	9120-MT9-M-VL	28 Amp, 9-pin electrical module 500VAC/700VDC - Viton Seals – Master side
	4010-0000051-01	Viton V-Ring Seal V-28A used in master module
MT9VL High Power Tool Module, Viton seals	9120-MT9-T-VL	28 Amp, 9-pin electrical module 500VAC/700VDC - Viton Seals – Tool side
MT9A High Power Master Module	9120-MT9A-M	30 Amp, 9-pin electrical module 500VAC/700VDC - MS receptacle and 10AWG wires – Master side
	4010-0000041-01	V-Ring Seal V-28A used in master module
MT9A High Power Tool Module	9120-MT9A-T	30 Amp, 9-pin electrical module 500VAC/700VDC - MS receptacle and 10AWG wires – Tool side

7. Specifications

High Power Module	MT9-M/MT9-T MTS9-M/MTS9-T MT9-M-VL/MT9-T-VL MT9A-M/MT9A-T	High Power Module w/ -- signal pass-through for customer use (available with Viton seals).
Weight (coupled)	2.3 lbs. (1.04 kg)	MT9-M/T MTS9-M/T MT9-M-VL/MT9-T-VL MT9A-M/MT9A-T
Pass-Through Signals	9 pins @ 28 amp 500VAC/700VDC	Master-side Customer interface connector, SG3102E28-84P. Tool-side Customer Interface connector, SG3102E28-84S. Rhodium-plated contacts with first mate ground pin.
Duty Cycle	100% @ 100ºF ambient temperature	

8. Drawings

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