# Table of Contents

**F. High Current Modules ..... F-2**
**PA22RA—High Current Module ..... F-2**
**1. Product Overview ..... F-2**
**2. Installation ..... F-4**
**2.1 Master Module Cable Installation ..... F-5**
**2.2 Module Installation ..... F-6**
**2.3 Module Removal ..... F-6**
**3. Operation ..... F-7**
**4. Maintenance ..... F-8**
**5. Troubleshooting and Service Procedures ..... F-9**
**5.1 Troubleshooting ..... F-9**
**5.2 Service Procedures ..... F-10**
5.2.1 Master Module Contact Tip Replacement ..... F-10
5.2.2 Tool Module Contact Tip and Wave Spring Replacement ..... F-11
5.2.3 Master Module Contact Base Replacement ..... F-12
5.2.4 Tool Module Contact Base Replacement ..... F-15
5.2.5 Tool Module Pigtail Assembly Replacement ..... F-17
5.2.6 Tubular Seal Replacement ..... F-18
**6. Serviceable Parts and Special Tools ..... F-19**
**7. Specifications ..... F-20**
**8. Drawings ..... F-21**

# F. High Current Modules

# PA22RA—High Current Module

## 1. Product Overview

The PA22RA-M module carries high current from a power supply to customer tooling. The module features (3) plated copper contacts each capable of carrying 180 Amps; the voltage must not exceed 800 Volts. The PA21RAP-T module carries high current from a power supply to customer tooling. The module features (3) plated copper contacts each capable of carrying 150 Amps; the voltage must not exceed 600 Volts. Power must be off when coupling and uncoupling. Over-current protection in the primary power supply circuit is recommended.



**DANGER:** This module has a voltage of 50V or greater; always remove power before contacting the module. Arcing and damage occur if power is not removed from the module during maintenance or service. Always remove power before attaching or disconnecting cables, separating or inserting the mating couplers, or making any contact with the Tool Changer or Utility Coupler.

The PA22RA-M/PA21RAP-T modules use advanced, patented, cone-mating technology to transfer current from the Master to the Tool. The mating conical surfaces provide misalignment capability and a large contact area, allowing efficient coupling/uncoupling without high spring forces or excessive wear. If required, the contact tips on either the Master or Tool can be replaced without removing the wiring. The contact tips on the Master side contain a central insulated post and are recessed below the surface. The Master module's contact pins are designed such that the average adult finger cannot reach the metallic parts.

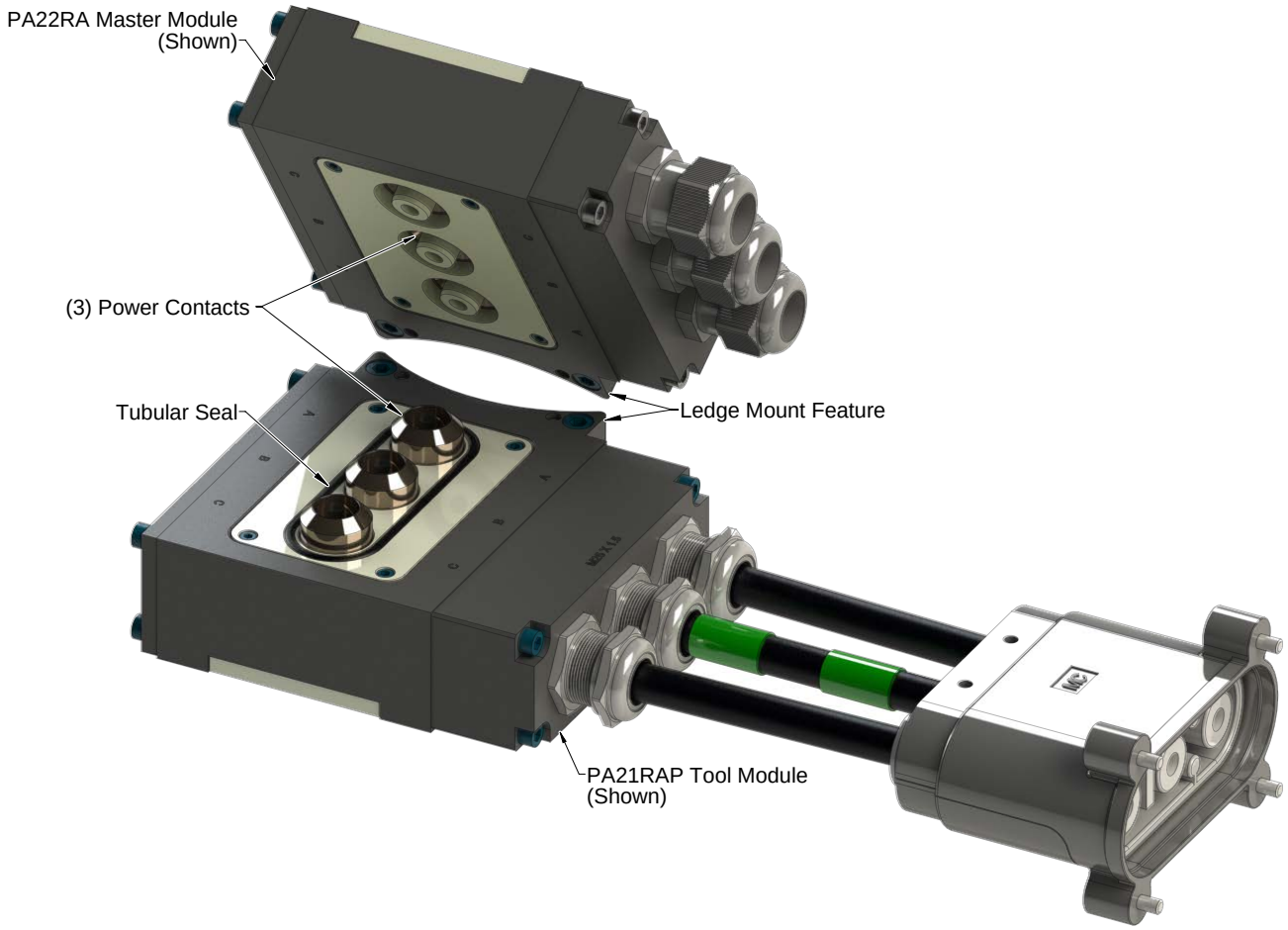
The modules can accept cabling from either side by changing the position of the end cover plate. A "L" or "R" in the part number designates the direction of cable feed. An "A" in the part number designates the module is compatible with a RobiFix™ connector (see following table and *Section 8—Drawings*). The standard model requires a fitting plate with strain reliefs to attach customer cabling; some models utilize fixed connectors. ATI requires the use of high-flex, finely-stranded cables and proper strain relief to allow for motion. The high current tool module provides axially compliant motion in the power contacts (refer to *Section 2.1—Master Module Cable Installation* for instructions).

**Table 1.1—High Current Modules**

| Module | Description/Connection |
|---|---|
| 9121-PA22LA-M | PA22-M, Robifix Direct Connection, Left Feed Socket |
| 9121-PA22RA-M | PA22-M, Robifix Direct Connection, Right Feed Socket |
| 9121-PA21LAPX.XX-T | PA21-T, X.XX m Robifix Pigtail, Left Feed |
| 9121-PA21RAPX.XX-T | PA21-T, X.XX m Robifix Pigtail, Right Feed |

Note:
1. X.XX: length of module cable in meters

**Figure 1.1 —Modules**




When no module is used on the Tool side, a PAE-T cover may be supplied (per customer request) to protect the Master side power module from dust, debris, and weld spatter.

**Figure 1.2—Protective Cover for Tool-side (PAE-T)**



## 2. Installation

The following procedure outline installation or removal of the module and also detail connecting cables to the contacts.



**DANGER:** This module has a voltage of 50V or greater; always remove power before contacting the module. Arcing and damage occur if power is not removed from the module during maintenance or service. Always remove power before attaching or disconnecting cables, separating or inserting the mating couplers, or making any contact with the Tool Changer or Utility Coupler.



**WARNING:** Do not perform maintenance or repair(s) on the Tool Changer or modules unless the Tool is safely supported or placed in the tool stand, all energized circuits (for example: electrical, air, water, etc.) are turned off, pressurized connections are purged and power is discharged from circuits in accordance with the customer specific safety practices and policies. Injury or equipment damage can occur with the Tool not placed and energized circuits on. Place the Tool in the tool stand, turn off and discharge all energized circuits, purge all pressurized connections, and verify all circuits are de-energized before performing maintenance or repair(s) on the Tool Changer or modules.



**CAUTION:** Do not use stiff, heavy stranded cables which can inhibit operation of the high current module. Stiff cables can prevent compliant motion of the contacts and cause an intermittent or improper power connection. Operation of the high current module requires the customer supplied cables to be high-flex type with fine stranding and sufficient strain relief to allow free cable motion.



**CAUTION:** Thread locker applied to fasteners must not be used more than once. Fasteners might become loose and cause equipment damage. Always apply new thread locker when reusing fasteners.

## 2.1 Master Module Cable Installation

***Tools required:*** *4 mm and 5 mm hex key, torque wrench, phillips screwdriver, 29 mm wrench*

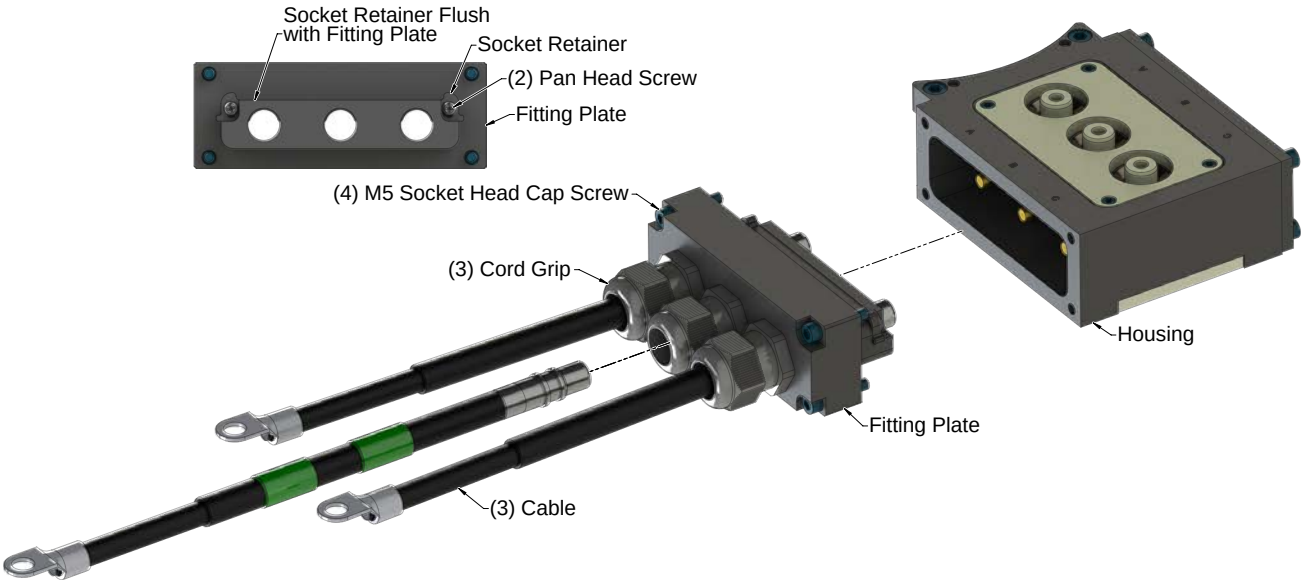
***Supplies required:*** *Loctite® 242*

1. If the module is already installed on the Tool Changer, remove the (2) M6 socket head cap screws that secure the module to the Tool Changer using a 5 mm hex key. Lift the module assembly off the Tool Changer body.
2. Using a 4 mm hex key, remove the (4) M5 socket head cap screws that secure the fitting plate to the housing.
3. Using a phillips screwdriver, loosen the (2) pan head screws on the inside of the fitting plate and slide the socket retainer away from the holes in the fitting plate.
4. Disassemble the Robifix connector to gain access to the (3) cables/contacts.

**NOTICE:** If using larger diameter cables, the inner grommet inside of each cord grip will need to be removed and the outer grommet must remain.

5. Using a 29 mm wrench, loosen the cord grips and route the (3) cables/contacts from the Robifix connector through the (3) cord grips until hard stop.
6. Push down on the socket retainer to secure the (3) cables.
7. Using a phillips screwdriver, tighten the (2) pan head screws on the inside of the fitting plate. Tighten to 48 in-oz (0.34 Nm). Note: Socket retainer must be flush for assembly of fitting plate to housing.
8. Using a 29 mm wrench, tighten the (3) cord grips dome nuts one at a time starting with the middle nut. Tighten to 50 in-lbs (5.65 Nm).
9. Install the fitting plate to the housing.
10. Apply Loctite 242 to the (4) M5 socket flat head cap screws.
11. Using a 4 mm hex key, install the (4) M5 socket head cap screws to secure the fitting plate to the housing. Tighten to 25 in-lbs (2.82 Nm).

**Figure 2.1—Install the Cables**



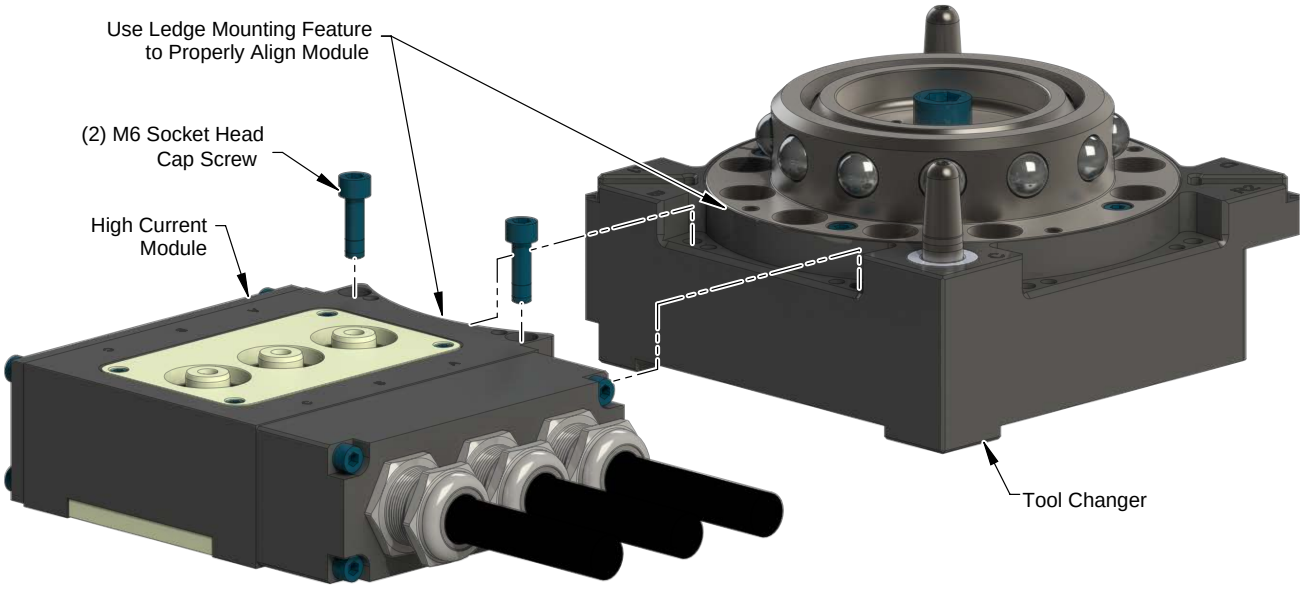
## 2.2 Module Installation

***Tools required:*** *5 mm hex key, torque wrench*

***Supplies required:*** *Clean, lint-free rag, Loctite® 242*

1. Clean the mating surfaces with a clean, lint-free rag.
2. Place the module on the Tool Changer body. Align the module with the Tool Changer using the dowels in the bottom of the ledge feature.
3. If fasteners do not have pre-applied adhesive, apply Loctite 242 to the supplied (2) M6 socket head cap screws.
4. Install the (2) M6 socket head cap screws securing the module to the Tool Changer using a 5 mm hex key. Tighten to 70 in-lbs (7.9 Nm).
5. Safely resume normal operation.

**Figure 2.2—Module Installation**




## 2.3 Module Removal

***Tools required:*** *5 mm hex key*

***Supplies required:*** *marker pen*

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Use a paint marker to indicate where the module is to be re-installed.
5. Disconnect all utility connections.
6. Remove the (2) M6 socket head cap screws using a 5 mm hex key and lift the module from the Tool Changer.

# 3. Operation

The high current 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 must be observed:

**WARNING:** The contacts are not a switch. For safety and to prevent equipment damage, disconnect and drain all power before coupling or uncoupling the Tool Changer or Utility Coupler.

**CAUTION:** Do not couple or uncouple the high-current modules unless electrical power has been disconnected and discharged both upstream and downstream from the modules. Arcing and contact damage will occur. Remove power and discharge both upstream and downstream modules before coupling or uncoupling modules.

**CAUTION:** Improper cable routing can result in wires and cables being pinched in the joint between the Tool Changer plates and premature failure of the electrical connectors. Properly route and secure all cables, particularly on the Master side.

**CAUTION:** Always protect the un-used Tool modules when not coupled to a Master module. Dust, debris, and weld spatter can contaminate the contact tips, which can cause arcing and a significant decrease in contact life.

**CAUTION:** Do not use stiff, heavy stranded cables which can inhibit operation of the high current module. Stiff cables can prevent compliant motion of the contacts and cause an intermittent or improper power connection. Operation of the high current module requires the customer supplied cables to be high-flex type with fine stranding and sufficient strain relief to allow free cable motion.

# 4. Maintenance

The condition of the contacts should be checked periodically. Use a stiff nylon brush to remove contamination from the contacts. During inspection, ensure that the fasteners that attach the modules to the Tool Changer are secure.



**DANGER:** This module has a voltage of 50V or greater; always remove power before contacting the module. Arcing and damage occur if power is not removed from the module during maintenance or service. Always remove power before attaching or disconnecting cables, separating or inserting the mating couplers, or making any contact with the Tool Changer or Utility Coupler.



**WARNING:** Do not perform maintenance or repair(s) on the Tool Changer or modules unless the Tool is safely supported or placed in the tool stand, all energized circuits (for example: electrical, air, water, etc.) are turned off, pressurized connections are purged and power is discharged from circuits in accordance with the customer specific safety practices and policies. Injury or equipment damage can occur with the Tool not placed and energized circuits on. Place the Tool in the tool stand, turn off and discharge all energized circuits, purge all pressurized connections, and verify all circuits are de-energized before performing maintenance or repair(s) on the Tool Changer or modules.

# 5. Troubleshooting and Service Procedures

The following section provides troubleshooting and service information to help diagnose conditions and repair the high current module.

**DANGER:** This module has a voltage of 50V or greater; always remove power before contacting the module. Arcing and damage occur if power is not removed from the module during maintenance or service. Always remove power before attaching or disconnecting cables, separating or inserting the mating couplers, or making any contact with the Tool Changer or Utility Coupler.

**WARNING:** Do not perform maintenance or repair(s) on the Tool Changer or modules unless the Tool is safely supported or placed in the tool stand, all energized circuits (for example: electrical, air, water, etc.) are turned off, pressurized connections are purged and power is discharged from circuits in accordance with the customer specific safety practices and policies. Injury or equipment damage can occur with the Tool not placed and energized circuits on. Place the Tool in the tool stand, turn off and discharge all energized circuits, purge all pressurized connections, and verify all circuits are de-energized before performing maintenance or repair(s) on the Tool Changer or modules.

## 5.1 Troubleshooting

The high current modules provide a separable joint in the cabling between power sources and industrial devices. Failure of the industrial devices to operate for any reason must be diagnosed electrically.

**Table 5.1—Troubleshooting**

| Symptom | Possible Cause | Correction |
|---|---|---|
| Power malfunctioning | Object trapped between modules | Remove object, then attempt coupling. |
| | Contact contamination due to environment | Ensure that the spring loaded contacts on the Tool side can move freely and are not bound by debris. Clean the spring pins to restore free operation. Clean Tool side module contacts (refer to *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement*). Inspect seal and replace if damaged (refer to *Section 5.2.6—Tubular Seal Replacement*). |
| | Contact pin separation | Any contamination on the contacts should be removed using a stiff, nylon brush. |
| | | Air supplied to Tool Changer insufficient. Improper valve used (refer to Tool Changer manual for pneumatic requirements). |
| | Module contact damage due to coupling/ uncoupling under load | Revise operating procedures to only couple/uncouple with power disconnected and discharged. Replace module contacts (refer to *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement* for Tool module). |
| | Connector or cable damage - pinched, torn, or fatigued cables, contact base, or contact wave spring is worn or damaged | Inspect cables and contact base for damage, test cables, test contact wave springs (refer to *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement*). |

## 5.2 Service Procedures

Component replacement procedures are provided in the following section:

> **CAUTION:** Do not use fasteners with pre-applied adhesive more than once. Fasteners might become loose and cause equipment damage. Always apply new thread locker when reusing fasteners.

### 5.2.1 Master Module Contact Tip Replacement

***Parts required:*** *Refer to Section 8—Drawings.*

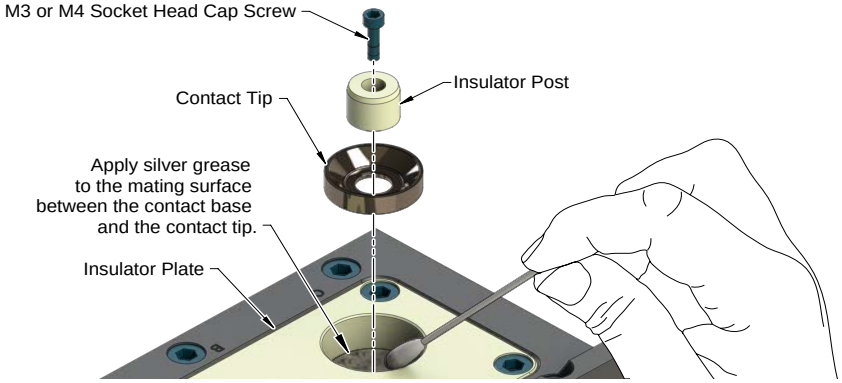
***Tools required:*** *2.5 mm hex key, Torque wrench*

***Supplies required:*** *Non-hardening, conductive silver bearing grease (ATI 0290-70-0000-50-008, McMaster-Carr #1219K57, AI Technology #ELGR8501 or equivalent)*

**Removal:**

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Remove the M3 socket head cap screw from the center of the insulator post using a 2.5 mm hex key.
5. Remove the insulator post and the Master contact tip. Discard the contact tip.

**Figure 5.1—Master Module Contact Tip Replacement**




**Installation:**

> **NOTICE:** Always replace Master and Tool contact tips at the same time (as pairs). Failure to change both halves of a mating pair will result in decreased life of the new component.

6. Apply a thin film of non-hardening, conductive silver bearing grease (ATI 0290-70-0000-50-008, McMaster-Carr #1219K57, AI Technology #ELGR8501 or equivalent) with a volume resistivity of 0.001 ohm-cm minimum to the mating surface between the contact base and the new contact tip. Insert the new contact tip into the insulator plate and reinstall the center insulator post.
7. For an M3 socket head cap screw, insert the screw into the insulator post and secure using a 2.5 mm hex key. Tighten to 10 in-lbs (1.1 Nm).
8. Safely resume normal operation.

### 5.2.2 Tool Module Contact Tip and Wave Spring Replacement

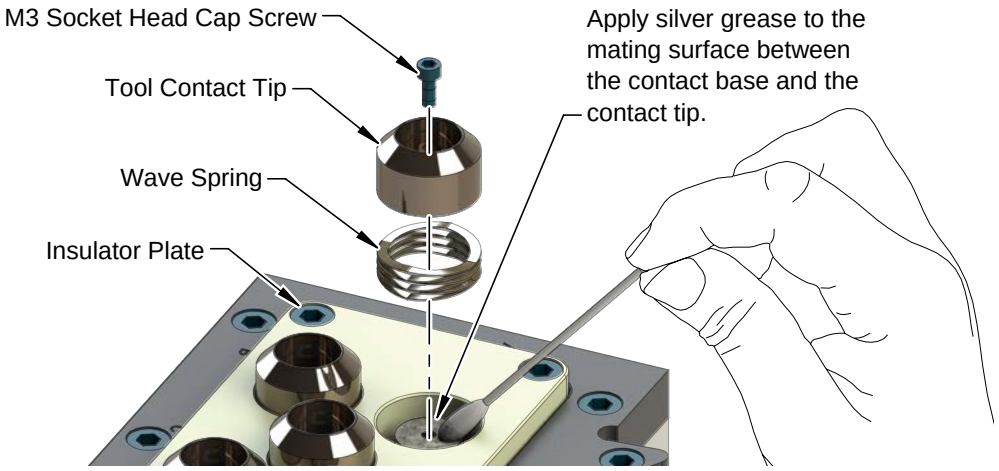
***Tools required:*** *2.5 mm hex key, torque wrench*

***Supplies required:*** *Non-hardening, conductive silver bearing grease (ATI #0290-70-0000-50-008, McMaster-Carr #1219K57, AI Technology #ELGR8501 or equivalent)*

**Removal:**

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Remove the M3 socket head cap screw from the center of the Tool contact tip using a 2.5 mm hex key.
5. Remove the Tool contact tip and wave spring from the insulator plate and discard.

**Figure 5.2—Tool Module Contact Tip and Wave Spring Replacement**




**Installation:**

**NOTICE:** Always replace Master and Tool contact tips at the same time (as pairs). Failure to change both halves of a mating pair will result in decreased life of the new component.

6. Apply a liberal amount of non-hardening, conductive silver bearing grease (ATI #0290-70-0000-50-008, McMaster-Carr #1219K57, AI Technology #ELGR8501 or equivalent) with a volume resistivity of 0.001 ohm-cm minimum to the mounting surface between the contact tip and the contact base.
7. Insert the new wave spring and contact tip into the insulator plate.
8. Insert the M3 socket head cap screw into the Tool contact tip and secure using a 2.5 mm hex key. Tighten to 10 in-lbs (1.1 Nm).
9. Safely resume normal operation.

### 5.2.3 Master Module Contact Base Replacement

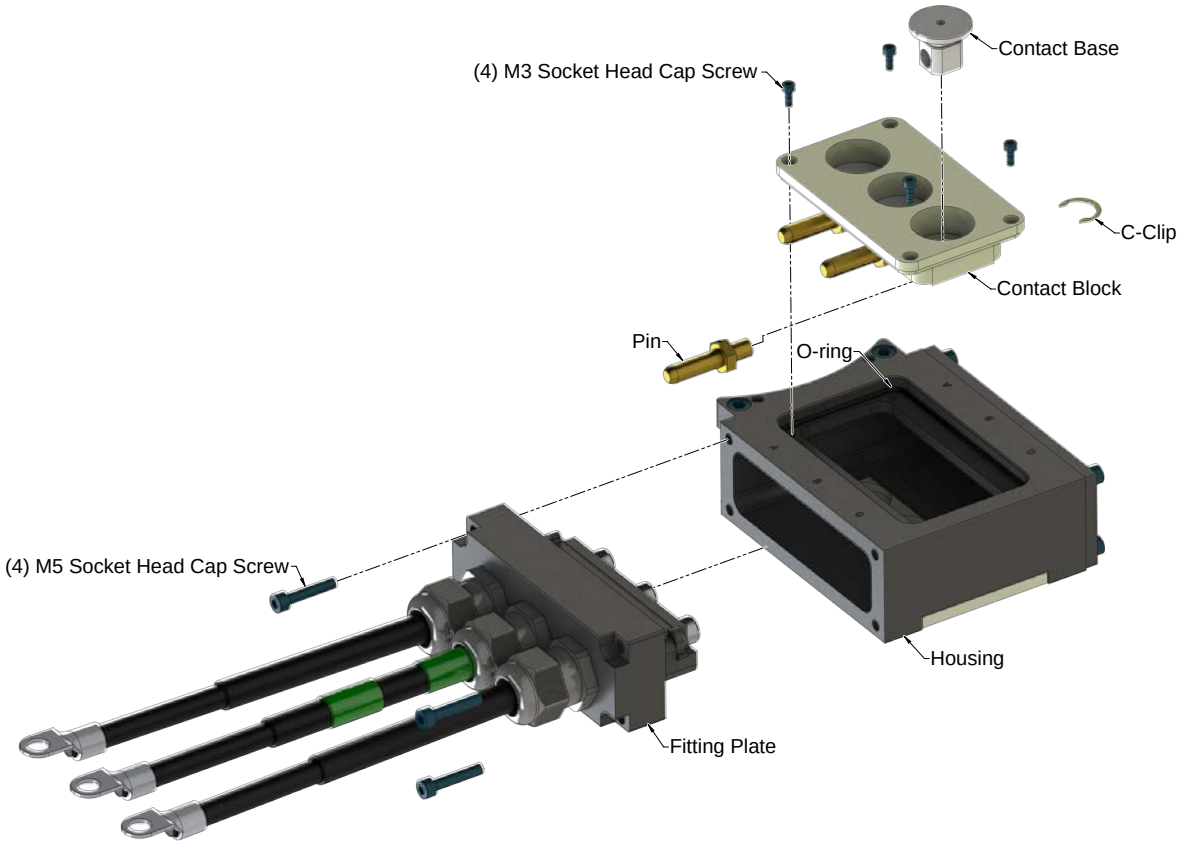
***Parts required:*** *Refer to Section 8—Drawings.*

***Tools required:*** *2.5 mm and 3 mm hex key, 13 mm wrench, Torque wrench, marker pen*

***Supplies required:*** *Loctite 222*

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Remove module from the Tool Changer (refer to *Section 2.3—Module Removal*).
5. Remove the contact tip from the contact base to be replaced (refer to *Section 5.2.1—Master Module Contact Tip Replacement*).
6. Using a marker pen, mark the orientation of the fitting plate to the module housing.
7. Remove the (4) M5 socket head cap screws that secure the fitting plate to the housing using a 4 mm hex key.
8. Remove the fitting plate from the housing.
9. Using a 2.5 mm hex key, remove the (4) M3 socket head cap screws that secure the contact block to the module housing.
10. Remove the contact block, tilt the contact block as you remove it to allow the contact bases to clear the housing (Note: the contact block may also be referred to as an insulator plate).
11. Using a 13 mm wrench, remove the pin from the contact base being replaced.
12. Remove the C-clip from the contact base being replaced.
13. Remove the contact base by sliding it out of the contact block.

**Figure 5.3—Replace Contact Base**



14. Install the new contact base into the contact block in the correct orientation.
15. Install the C-clip onto the new contact base.
16. Using a 13 mm wrench, install the pin to the contact base. Tighten to 90 in-lbs (10 Nm).
17. Make sure O-ring is properly seated in housing.
18. Install the contact block in the housing using the (4) M3 socket head cap screws and a 2.5 mm hex key. Tighten the screws to 10 in-lb (1.1 Nm).
19. Attach the ring terminals to the contact bases and secure with (3) M8 external tooth washers and (3) M8 hex head cap screws. Using a 13 mm socket wrench, tighten the screws to 90 in-lbs (10 Nm).
20. Apply Loctite 222 to the cover plate assembly's (4) M5 socket head cap screws. Use a 4 mm hex key to install and secure the fitting plate to the housing. Tighten the screws to 25 in-lb (2.8 Nm).
21. Install the contact tip to the contact base to be replaced (refer to *Section 5.2.1—Master Module Contact Tip Replacement* and *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement*).
22. Install the module onto the Tool Changer (refer to *Section 2.2—Module Installation*).
23. Safely resume normal operation.

### 5.2.4 Tool Module Contact Base Replacement

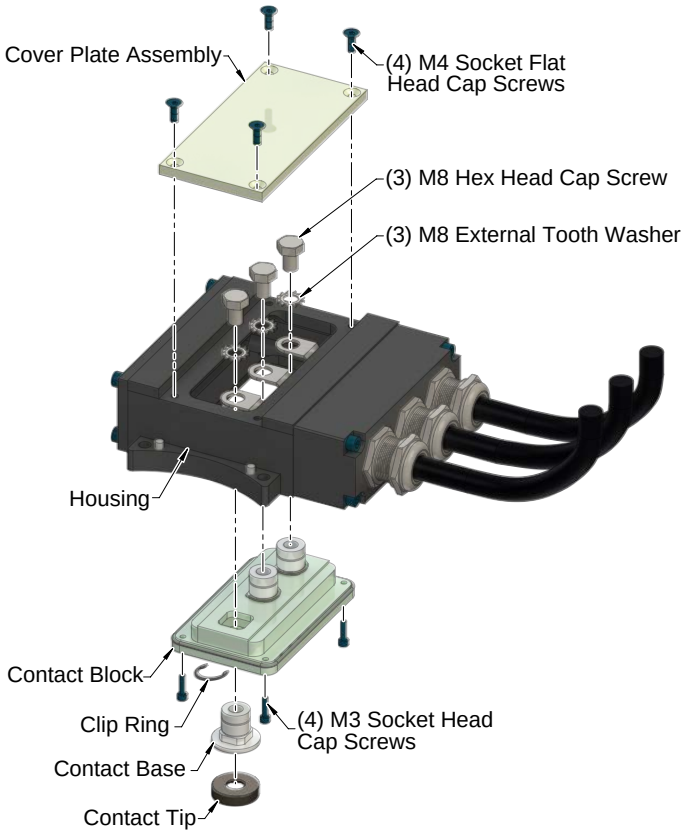
***Parts required:*** *Refer to Section 8—Drawings.*

***Tools required:*** *2.5 mm and 3 mm hex key, 13 mm socket wrench, Torque wrench*

***Supplies required:*** *Loctite 222*

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Remove module from the Tool Changer (refer to *Section 2.3—Module Removal*).
5. Remove the contact tip from the contact base to be replaced (refer to *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement*).
6. Remove the (4) M5 socket flat head cap screws that secure the adapter to the housing using a 3 mm hex key.
7. Using a 2.5 mm hex key, remove the (4) M4 socket flat head screws that secure the cover plate assembly to the housing and remove the cover plate assembly.
8. Using a 13 mm socket wrench, remove the (3) M8 hex head cap screws and (3) M8 external tooth washers securing the ring terminals to each contact base.
9. Using a 2.5 mm hex key, remove the (4) M3 socket head cap screws that secure the contact block to the module housing. Remove the contact block (Note: the contact block may also be referred to as an insulator plate).
10. Remove the C-clip from the contact base being replaced.
11. Remove the contact base by sliding it out of the contact block.

**Figure 5.4—Remove Old Contact Base**



12. Install the new contact base into the contact block in the correct orientation.
13. Install the C-clip onto the new contact base.
14. Install the contact block in the housing using the (4) M3 socket head cap screws and a 2.5 mm hex key. Tighten the screws to 10 in-lb (1.1 Nm).
15. Attach the ring terminals to the contact bases and secure with (3) M8 external tooth washers and (3) M8 hex head cap screws. Using a 13 mm socket wrench, tighten the screws to 90 in-lbs (10 Nm).
16. Apply Loctite 222 to the cover plate assembly's (4) M4 socket flat head cap screws. Use a 2.5 mm hex key to install and secure the cover plate assembly to the housing; tighten the screws to 12 in-lb (1.4 Nm).
17. Install the contact tip to the contact base to be replaced (refer to *Section 5.2.2—Tool Module Contact Tip and Wave Spring Replacement*).
18. Install the module onto the Tool Changer (refer to *Section 2.2—Module Installation*).
19. Safely resume normal operation.

### 5.2.5 Tool Module Pigtail Assembly Replacement

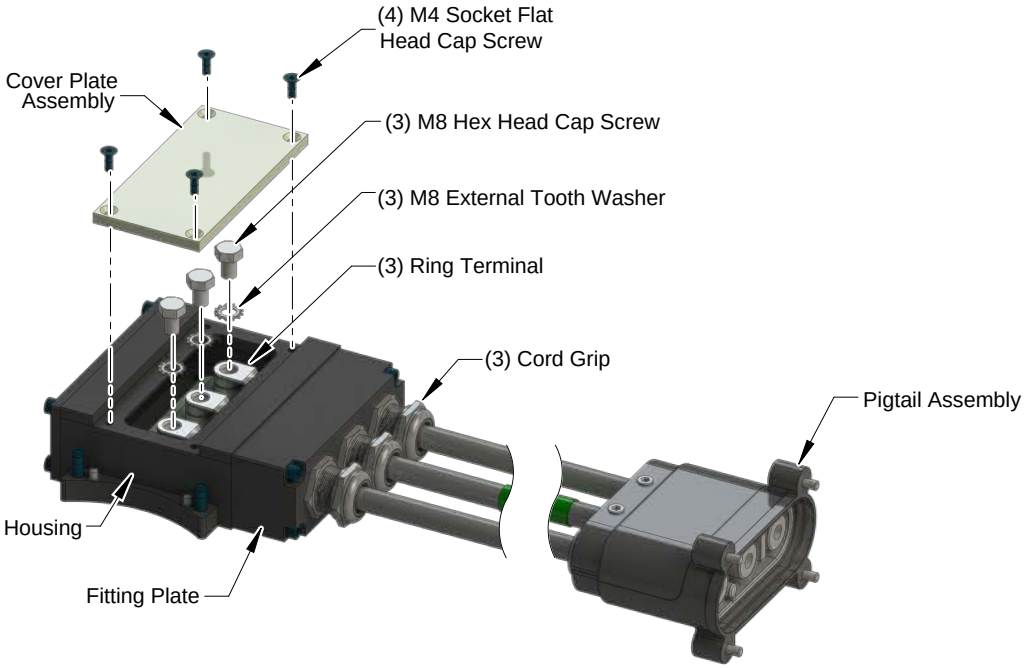
***Parts required:*** *Refer to Section 8—Drawings.*

***Tools required:*** *2.5 mm hex key, 13 mm socket wrench, 30 mm wrench, Torque wrench*

***Supplies required:*** *Loctite 222*

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. Remove the module from the Tool Changer (refer to *Section 2.3—Module Removal*).
5. Using a 2.5 mm hex key, remove the (4) M4 socket flat head cap screws that secure the cover plate assembly to the housing. Remove the cover plate assembly.
6. Using a 13 mm socket wrench, remove the (3) M8 hex head cap screws and (3) M8 external tooth washers that secure the ring terminals to the contact bases. Remove the old pigtail assembly.
7. If needed, use a 30 mm wrench to loosen the cord grips and route the cable through the cord grips and fitting plate.
8. Attach each of the ring terminals to the appropriate contact base and secure with the M8 external tooth washer and M8 hex head cap screw. Tighten to 90 in-lb (10 Nm) using a 13 mm socket wrench.
9. Tighten the cord grip dome nut finger-tight. Starting with the middle fitting, tighten an additional 1-1/2 turns using a 30 mm wrench.
10. Apply Loctite 222 to the cover plate assembly's (4) M4 socket flat head cap screws. Use a 2.5 mm hex key to install and secure the cover plate assembly to the housing; tighten the screws to 12 in-lb (1.4 Nm).
11. Install the module onto the Tool Changer (refer to *Section 2.2—Module Installation*).
12. When the above procedure is complete, resume normal operation.

**Figure 5.5—Pigtail Assembly Installation**



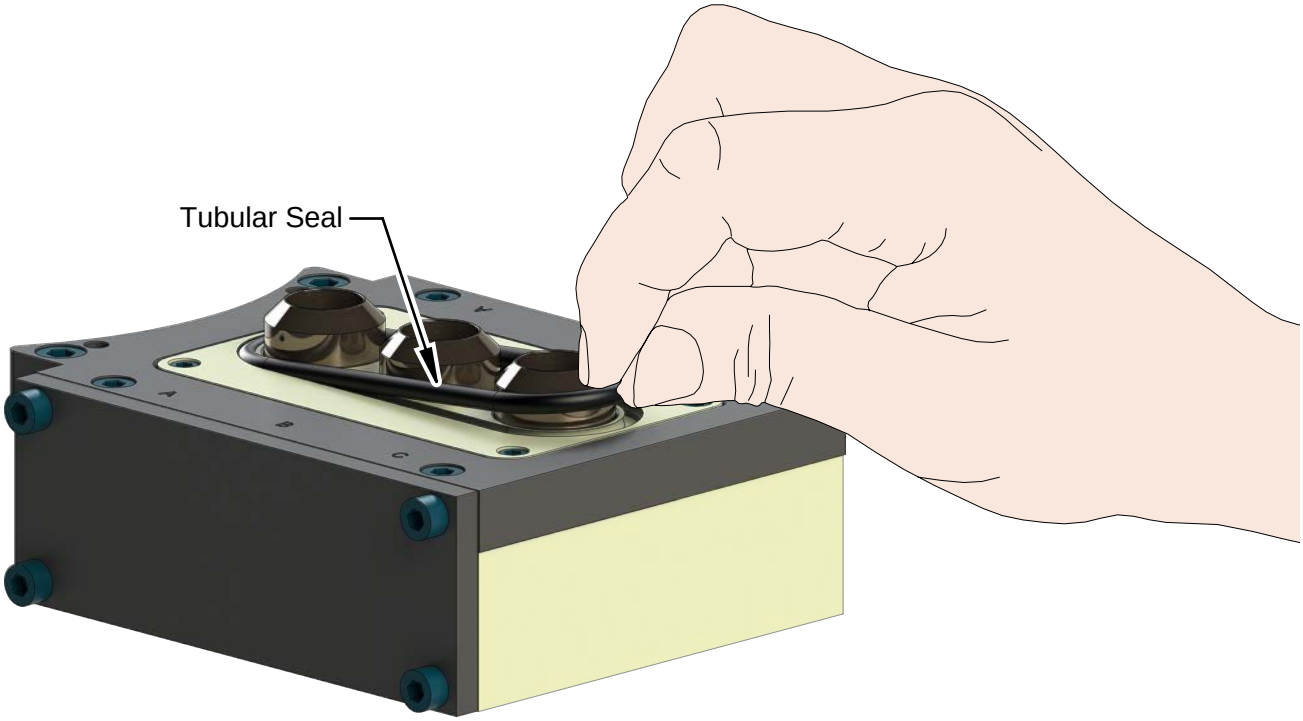
### 5.2.6 Tubular Seal Replacement

The tubular seal protects the electrical connection between the Master and Tool module. If the seal becomes worn or damaged, it needs to be replaced.

***Parts required:*** *Refer to Section 8—Drawings.*

1. Place the Tool in a secure location.
2. Uncouple the Master and Tool plates.
3. Turn off and de-energize all energized circuits (for example: electrical, pneumatic, and hydraulic circuits).
4. To replace the tubular seal on the Tool module, use a small screwdriver to gently pry the seal out of its retention groove.
5. To install a new seal, place it over the empty groove in the Tool side insulator plate and press the seal in place.
6. Safely resume normal operation.

**Figure 5.6—Tubular Seal Replacement**




**NOTICE:** Individual parts may differ slightly in appearance from what is shown in the figure above.

# 6. Serviceable Parts and Special Tools

Refer to *Section 8—Drawings.*

| Table 6.1—Master Module Mounting Fasteners | | |
|---|---|---|
| **Part Number** | **Qty** | **Description** |
| 3500-1066020-21A | 2 | M6 x 20 Socket Head Cap Screw, SS, ND Microspheres. |

| Table 6.2—Tool Module Mounting Fasteners | | |
|---|---|---|
| **Part Number** | **Qty** | **Description** |
| 3500-1066016-21A | 2 | M6 x 16 Socket Head Cap Screw, ND, Microspheres. |

| Table 6.3—Special Tools | |
|---|---|
| **Part Number** | **Description** |
| 3690-0000064-60 | Brush, Blue Nylon All Purpose (Contact Pin Cleaning) |

# 7. Specifications

| Table 7.1—Master Module | |
|---|---|
| **9121-PA22R(L)A-M** | 180A Compact Power Module, Master |
| Interface Connections | (3) Power Contacts |
| Electrical Rating | 180A, 800V Max. |
| Cable Sizes Supported | Cable OD 8-17 mm, Robifix Socket Connection Only. |
| Weight | TBD |

| Table 7.2—Tool Module | |
|---|---|
| **9121-PA21R(L)APX.XX-T** | 150A Compact Power Module, Tool |
| Interface Connections | Straight RobiFix pigtail |
| Electrical Rating | 150A, 600V Max. Current limited by connector. |
| Cable Sizes Supported | #2 AWG High-flex type with fine stranding (for other options, Contact ATI)<br>Ring terminals are used to attach the conductor to the contact base. |
| Weight | TBD |

| Table 7.3—Tool Side Cover | |
|---|---|
| **9121-PAE-T** | Protective cover when tool side module is not installed. |
| Weight | 0.44 lbs (0.2 kg) |

# 8. Drawings

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