



## **Robotic Collision Sensor**

U.S. Patent Nos. 6069415 and 6690208

**SR-48, 61, 81, 101, 131, 176, and 221**

### **Installation Instructions for Coolant Protection Boot**



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*Engineered Products for Robotic Productivity*

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## Foreword

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## Glossary

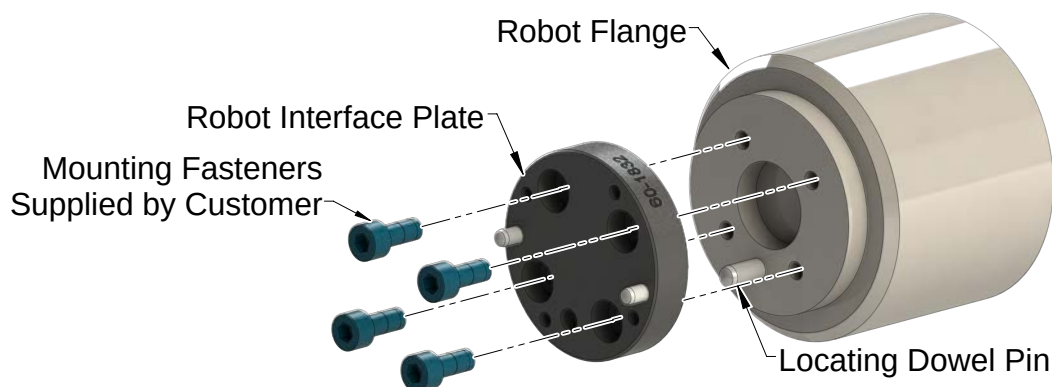
| Term            | Definitions                                                                                                                                                |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Body            | Cylindrical aluminum housing and air pressure chamber. An interface plate to the user's robot is usually attached here.                                    |
| Collision       | The accidental impact between the end of arm tooling and some obstruction in its path.                                                                     |
| Cover Plate     | Disk-shaped aluminum cover for Collision Sensor body.                                                                                                      |
| Crash           | The result of a disturbance that displaces the Collision Sensor components from their standard, working position.                                          |
| Interface Plate | Optional component used to adapt the Collision Sensor body or stem to the user's robot or tooling.                                                         |
| Piston          | The component which, together with the Body, creates a pressure chamber. Varying the pressure in this chamber varies the load required to move the piston. |
| Stem            | Round tapered post containing tapped holes and a dowel pin hole. An interface plate to the user's tooling is usually attached here.                        |

## 1. Installation of Coolant Protection Boot

Prior to installing the Coolant Protection Boot, the Collision Sensor must be installed to the robot flange. The tooling interface plate must be attached to the Collision Sensor and pneumatic pressure or spring pressure must be supplied to the Collision Sensor.

1. Attach the robot interface plate to the robot flange, it is recommended to use thread- locking compound on all mounting fasteners.

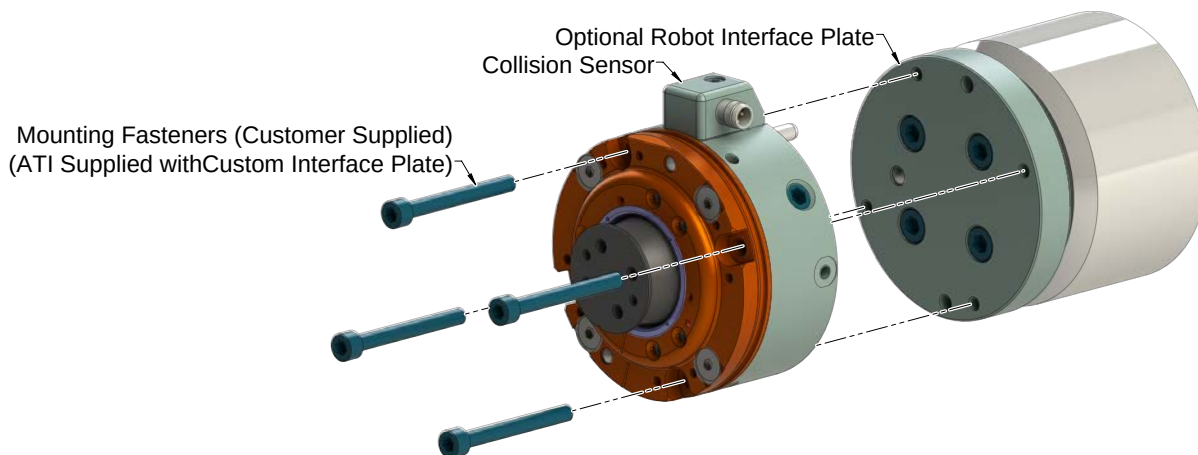
**Figure 1.1—Install Robot Interface Plate**



**NOTICE:** A robot interface plate is required. The robot interface plate can be purchased from ATI or manufactured by the customer using ATI approved drawings. The use of a robot interface plate supplied by ATI is strongly recommended.

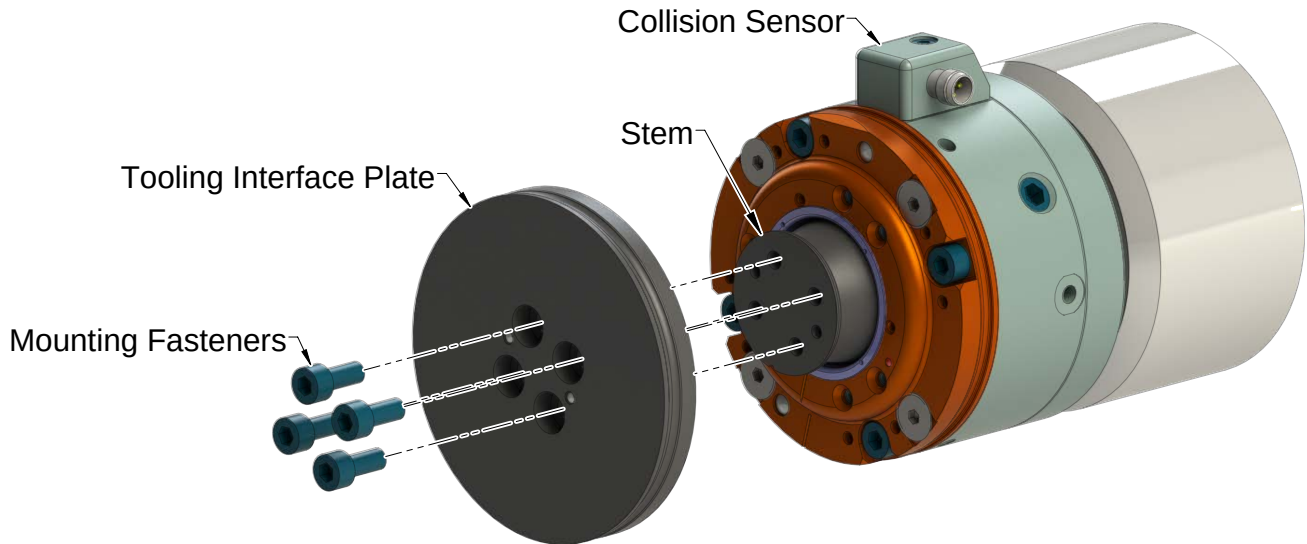
2. Attach the Collision Sensor to the robot interface plate using the fasteners supplied with ATI interface plate. Refer to the Installation and Operation manual for Collision Sensor being installed for specific mounting fastener torque and thread-locking compound requirements.

**Figure 1.2—Install the Collision Sensor to the Robot Interface Plate**



3. Attach the tooling interface plate to the Collision Sensor using the fasteners supplied. Refer to the Installation and Operation manual for Collision Sensor being installed for specific mounting fastener torque and thread-locking compound requirements.

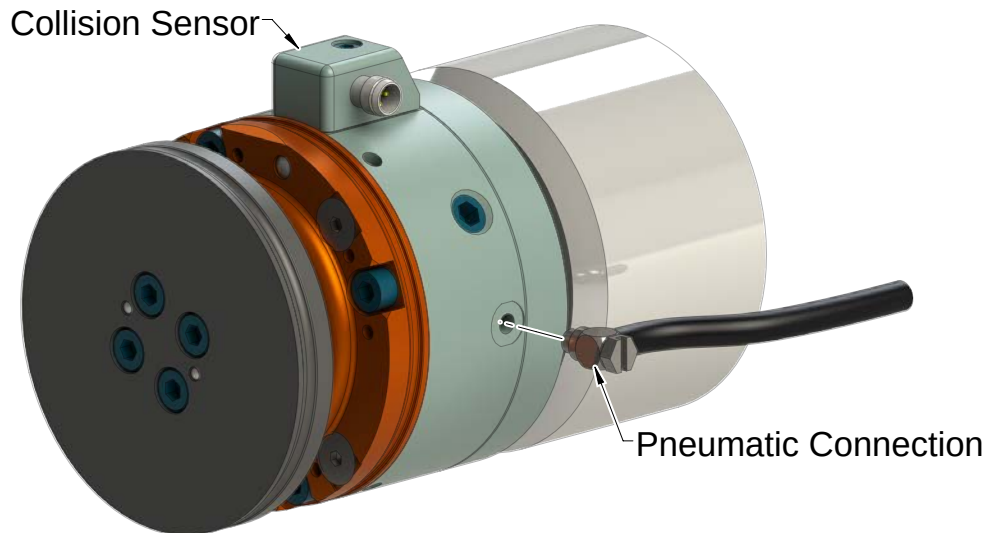
**Figure 1.3—Install the Tooling Interface Plate to the Collision Sensor Stem**



4. Connect the pneumatic air hose to the Collision Sensor and apply 10-20 psi (0.69-1.38 bar) to raise the stem.  
Note: This step is not required for Collision Sensors that are spring loaded. Refer to the Installation and Operation manual for Collision Sensor being installed for specific pneumatic requirements.

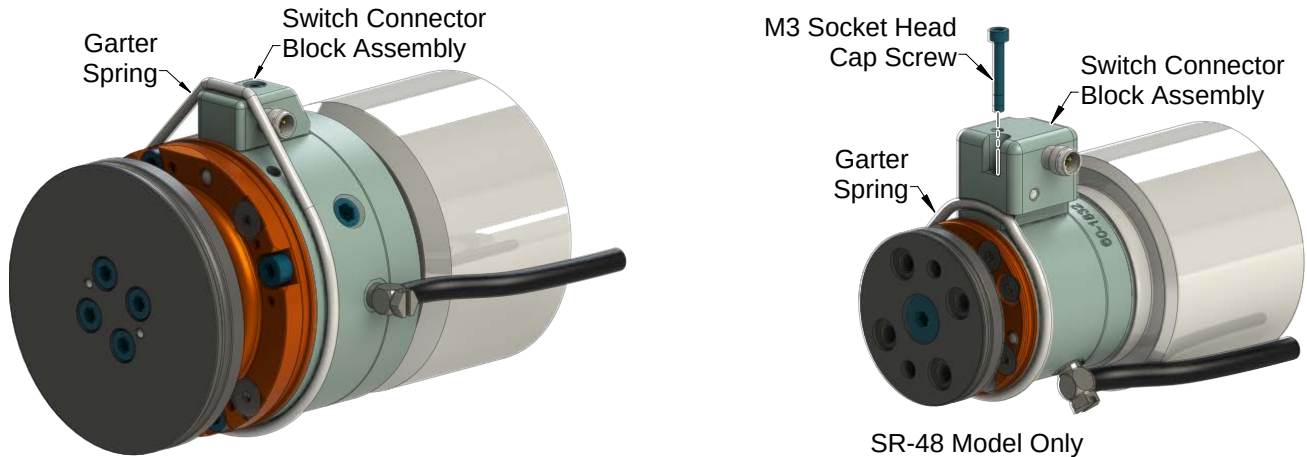
**NOTICE:** SR-48, SR-61, SR-81, and SR-101 models are equipped with a #10-32 or M5 x 0.8 air port connection. SR-131, SR-176, and SR-221 models are equipped with a 1/8" NPT air port connection

**Figure 1.4—Install the Collision Sensor to the Robot Interface Plate**



5. For SR-48 model remove M3 socket head cap screw shown in [Figure 1.5](#).
6. Temporarily stretch one of the garter springs over the Collision Sensor body and over switch connector block assembly as shown in [Figure 1.5](#). For the SR-48 model stretch garter spring over Collision Sensor body and into groove in switch connector block assembly.

**Figure 1.5—Stretch the Garter Spring over the Collision Sensor**



7. Slide the coolant protection boot over the Tooling interface plate and onto the Collision Sensor cover. Make sure the grooves in the boot are seated into the grooves in the Tooling interface plate and Collision Sensor cover.

**Figure 1.6—Install the Coolant Protection Boot**



8. Stretch the first garter spring off the switch connector block assembly and into the groove in the boot and Collision Sensor cover to secure the boot.
9. Stretch the second garter spring over the end of the coolant protection boot and into the first groove in the boot and tooling interface plate.
10. For SR-48, install the M3 socket head cap screw. Tighten to 12 in-lbs.(1.36 Nm)

## 2. Design/Procurement of Interface Plates

This sealing system utilizes a bellows style boot attached to the cover and stem side interface plate and a molded wire channel gasket. In order to insure proper sealing the following items are necessary:

1. The unit must have been purchased from the factory with the coolant protection boot. (This is necessary since the cover must contain the groove for the garter spring and be sealed to the body.)
2. Purchase custom collision sensor interface plates from ATI. Provide the robot and tooling interface patterns to ATI and we will design and manufacture custom interface plates for your application.

or

Purchase blank collision sensor interface plates and modify them as follows:

### Tooling to Collision Sensor Stem Interface Plate

- a) The tooling mounting holes in the collision sensor stem to tooling interface plate must be surrounded with o-rings installed in properly sized counterbores.

### Robot to Collision Sensor Body Interface Plate

- a) The robot mounting holes and dowel hole(s) in the collision sensor body to robot interface plate must be oriented so that they do not cross the molded wire channel gasket.

Refer to [Section 3—Drawings for Replacement Parts & Interface Plates](#) for interface plate part numbers and examples of properly modified interface plates.

### **3. Drawings for Replacement Parts & Interface Plates**

Drawings are available on the [ATI website](#) or by contacting an ATI representative.