

TEACHING AID

E125, E160, AND E200

95650, Rev 00

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REVISION

Revision	Date	Author	Description
00	08/05/2019	DS	Initial Release

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1 PRECAUTIONS



READ MANUAL

Do not start, operate or service machine until you read and understand operator's manual. Failure to do so could result in serious injury.



HAND CRUSH NOTICE

Indicates the possibility for a crush force between components during coupling of the Robot and Tool Sides.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Indicates a situation which, if not avoided, could result in equipment damage and voiding the manufacturer's equipment warranty.

IGNORING INFORMATION ABOUT POTENTIAL HAZARDS CAN LEAD TO SERIOUS HARM TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT, AND MAY RESULT IN THE NULLIFICATION OF THE MANUFACTURER'S EQUIPMENT WARRANTY.

HEED ALL PRECAUTION NOTICES

2 KIT DESCRIPTION

The Teaching Aid Kit provides a way to align the robot and tool side in the docking sequence of tool changing. The use of Teach Pins allows the user to have full visibility of the tool changer mating interface without having to reposition themselves around the tool. The Teaching Aid allows the programmer to align the two halves of the tool changer and then simply adjust with a Z-offset.

NOTICE

**ENSURE THAT THE PINS ARE FULLY SEATED.
IT IS NOT NECESSARY TO TORQUE THEM.**

2.1 KIT CONTENTS

The kit contains six (6) Teach Pins which are able to mount directly to the Robot and Tool sides. Two (2) of the Teach Pins have machined grooves, which are there as indicators as to which pins line up with Robot Zero. These two (2) Robot Zero Teach Pins also have M8 mounting threads, while the other four (4) Teach Pins have M6 mounting threads.

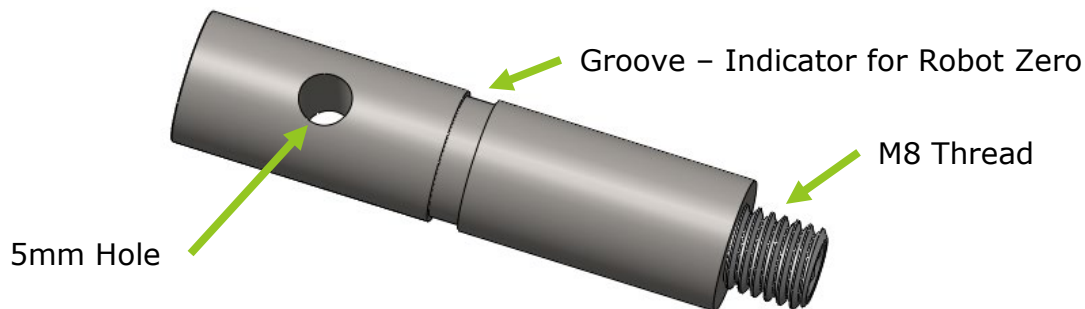


Figure 2.1-1. Robot Zero Teach Pin

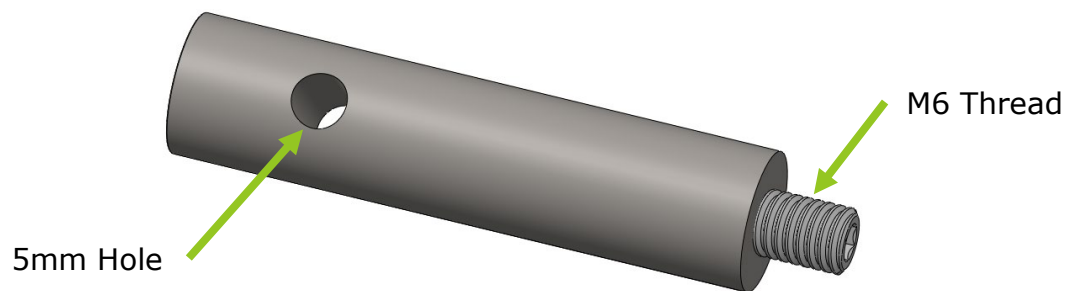


Figure 2.1-2. Teach Pin

KIT, TEACHING AID E125, E160 & E200 DRAWING NUMBER: 1800903A		
DRAWING NUMBER	DESCRIPTION	QUANTITY
1800901A	SUBASSY, TEACH PIN ROBOT ZERO	2

1800902A	SUBASSY, TEACH PIN	4
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3 INSTALLATION

For each Robot and Tool Side, one (1) Robot Zero Teach Pin (with groove) and two (2) Teach Pins (no groove) are used. Threaded mounting holes are provided for the Teach Pins on the face of the Robot and Tool Sides (E125, E160, and E200). Each Teach Pin has a 5mm hole, which is to be used for mounting/removing. Insert a screw driver shaft or hex key shaft smaller than 5mm into the hole and rotate to mount/remove each Teach Pin. Installation tools are not provided.

NOTICE

ENSURE THAT THE PINS ARE SEATED. IT IS NOT NECESSARY TO TORQUE THEM; ONLY HAND TIGHTEN.

3.1 TEACH PIN MOUNTING – E125

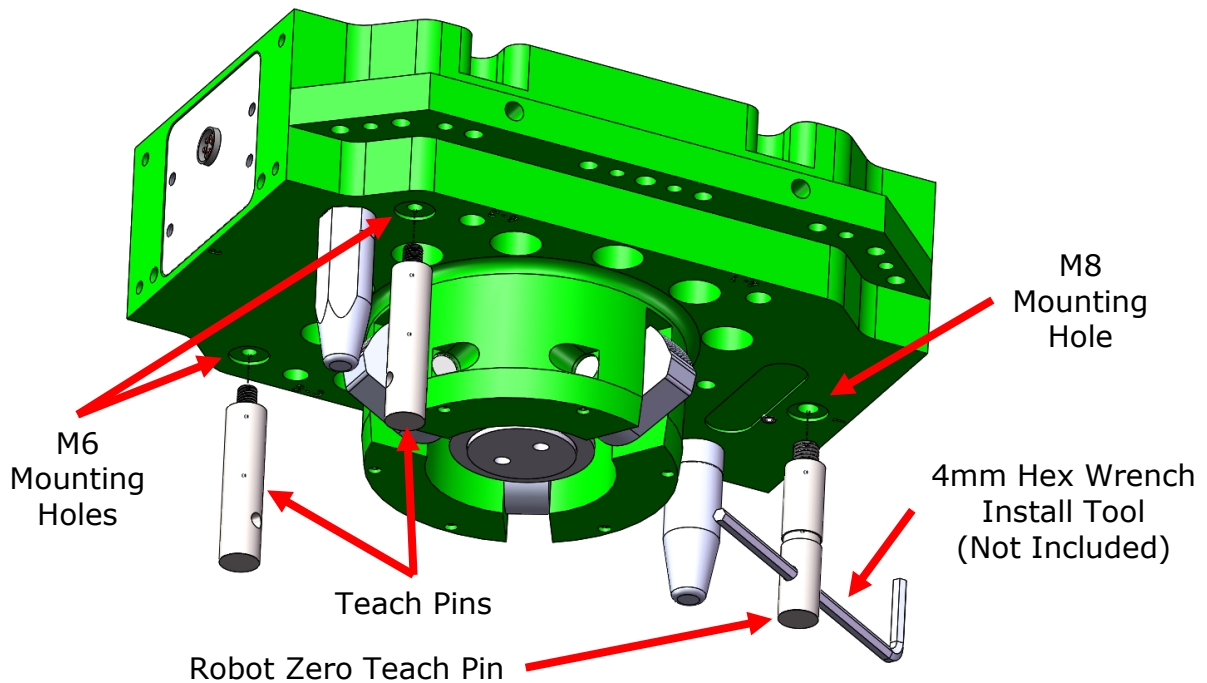


Figure 3.1-1. Teach Pin Mounting – E125 Robot Side

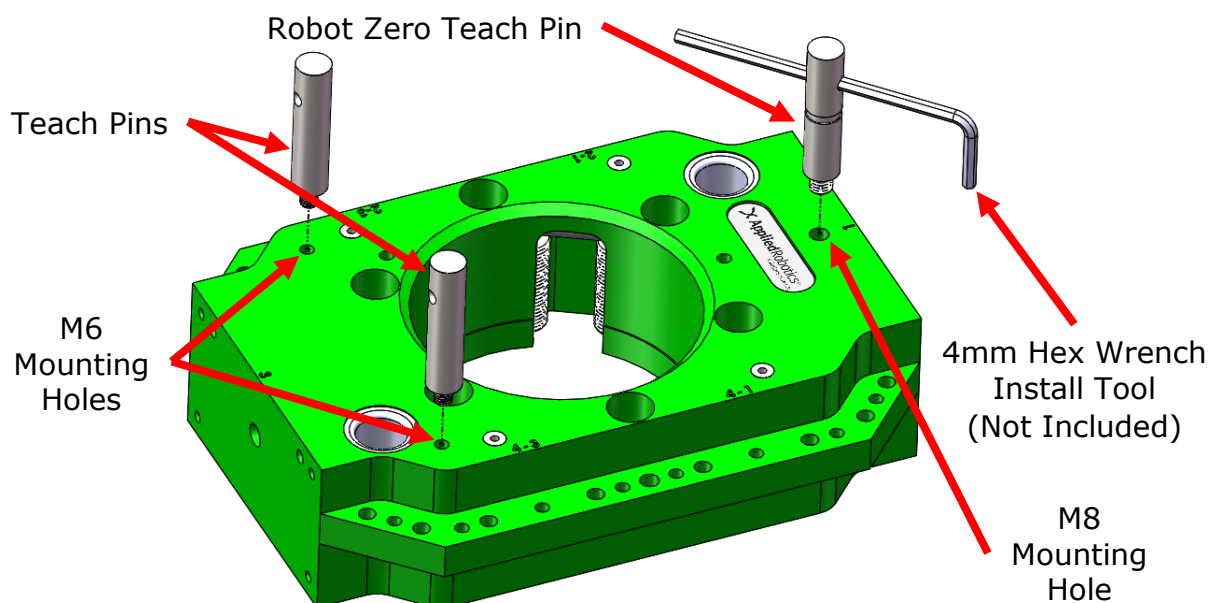


Figure 3.1-2. Teach Pin Mounting – E125 Tool Side

3.2 TEACH PIN MOUNTING – E160

This section depicts both the E160 (Aluminum) and ES160 (Steel) versions.

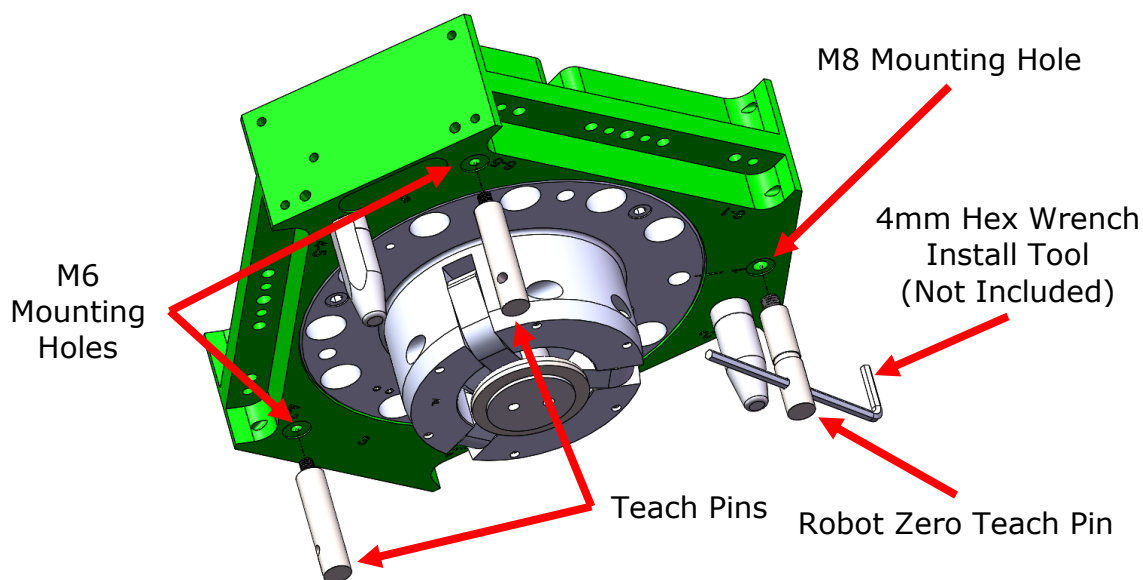


Figure 3.2-1. Teach Pin Mounting – E160 Robot Side

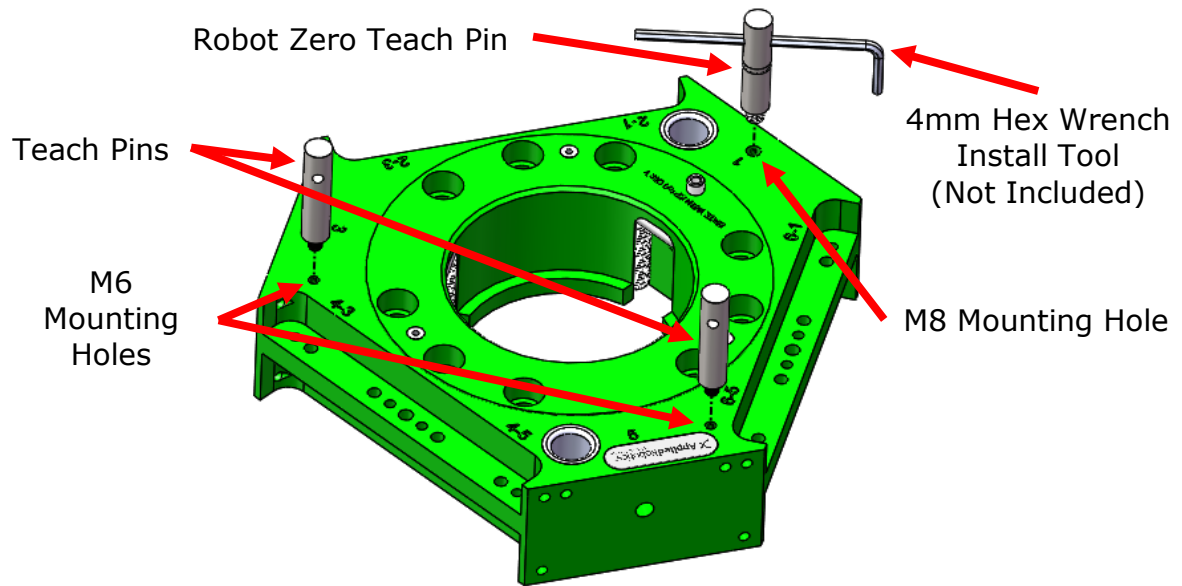


Figure 3.2-2. Teach Pin Mounting – E160 Tool Side

3.3 TEACH PIN MOUNTING – E200

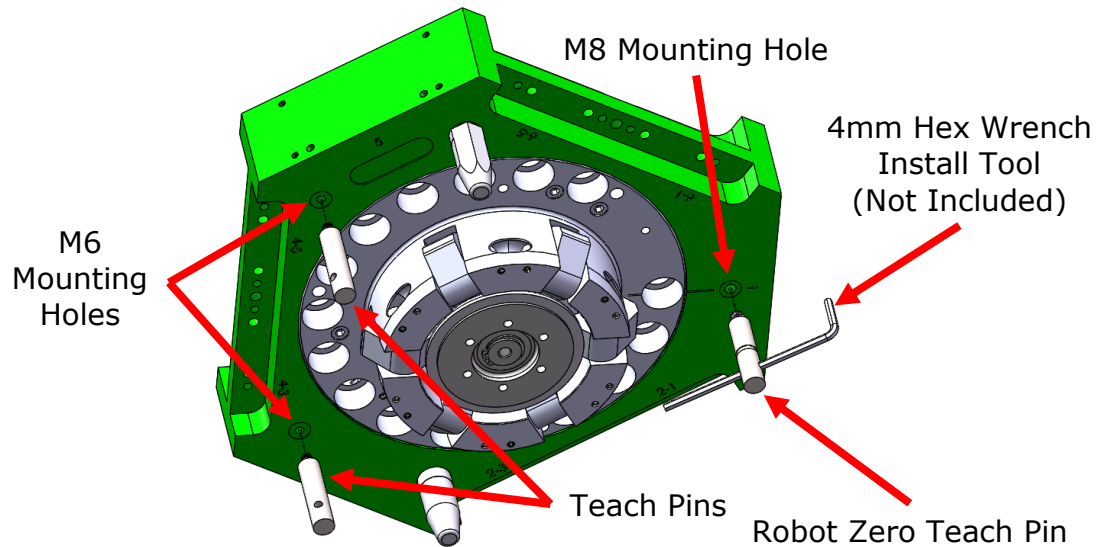


Figure 3.3-1. Teach Pin Mounting – E200 Robot Side

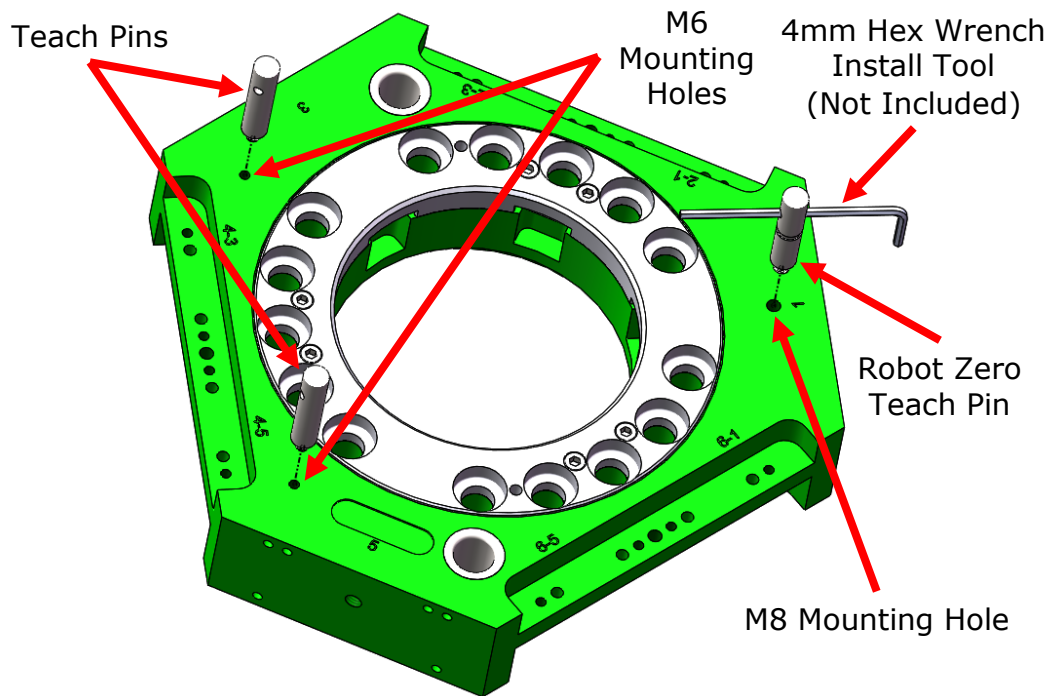


Figure 3.3-2. Teach Pin Mounting – E200 Tool Side

4 GUIDE TO OPERATION



KEEP HANDS CLEAR OF THE ROBOT AND TOOL SIDE MATING INTERFACES.

4.1 PROGRAMMING PICKUP POINT (DOCKING)

Prior to programming, the Robot Side should be installed on the robot and the Tool Side should be mounted on the tool and stored in the Tool Stand.

1. After the Teach Pins are installed on the Robot Side and Tool Side, move the Robot Side over the Tool Side, orienting the Teach Pins correctly by matching the Robot Zero Teach Pins (Figure 4.1-1).

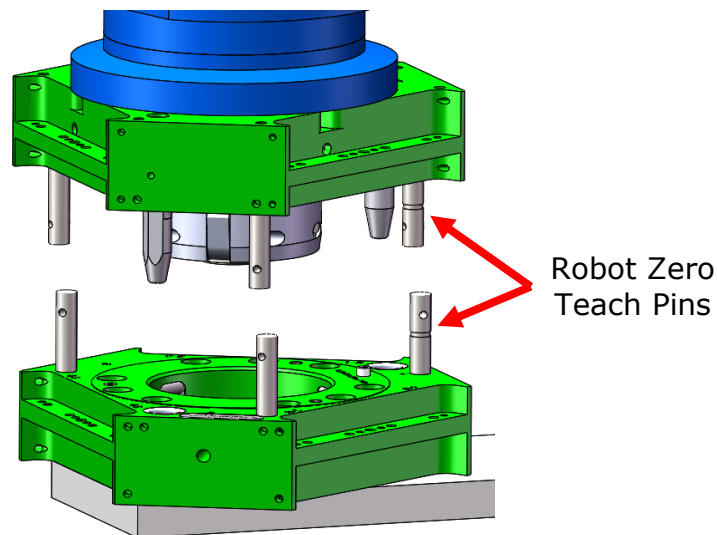


Figure 4.1-1. Orientation of Teach Pins

2. Continue to jog/move the robot to close the gap between the Teach Pins, making them more concentric and parallel. Move until the Teach Pins are touching and concentric.
3. Stop the robot and release the Deadman Switch.
4. Feel the concentricity of each of the Teach Pins, repeating Steps 2 and 3 until all Teach Pins are concentric (See Figure 4.1-2).



Figure 4.1-2. Concentricity of Teach Pins

5. Once all Teach Pins are concentric, teach the robot this point, referred to as the Start Position. The Start Position will be 105.00mm away from the proper docking position (See Figure 4.1-3).

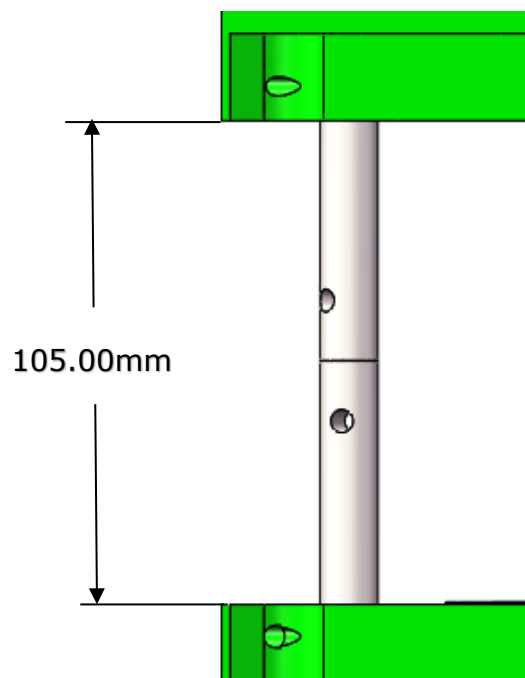


Figure 4.1-3. Start Position

6. Back the robot away in order to remove the Teach Pins (See Section 3).
7. Docking/Pickup Point can be attained by implementing a 105.00mm Z-offset.

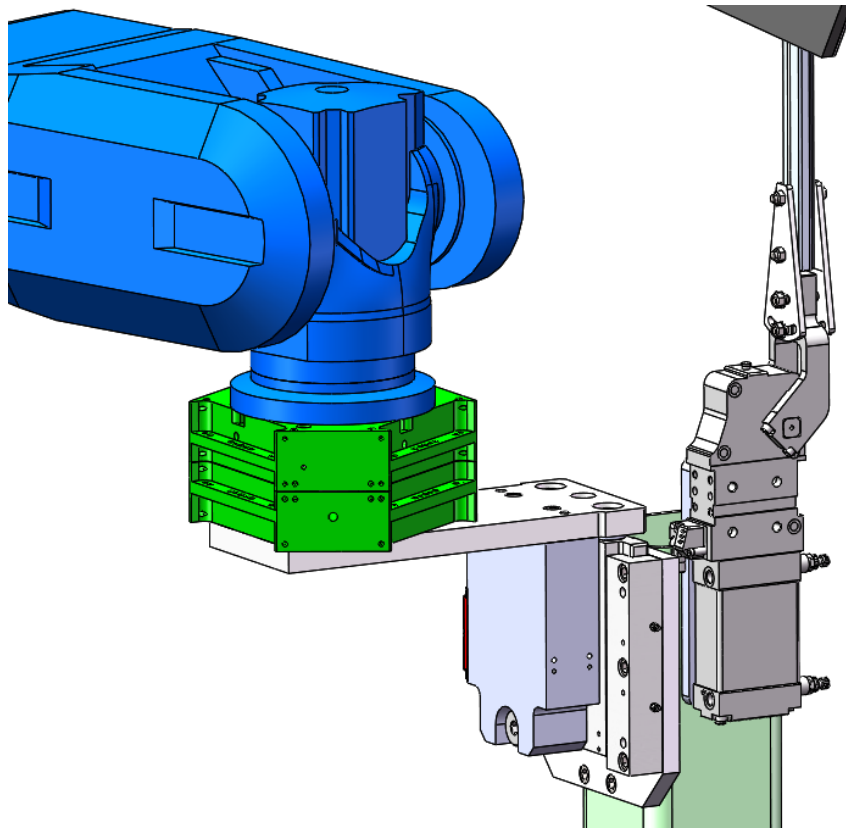


Figure 4.1-4. Dock/Pickup Point

5 TROUBLESHOOTING

5.1 TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Resolution
Tool Changer Does Not Couple/Uncouple or Align Correctly	Bad Offset	Verify Teach Pins are installed and seated correctly (See Section 3).

5.2 TECHNICAL SUPPORT

If you require assistance, contact APPLIED ROBOTICS Technical Support Department at:

Phone: +1 518 384 1000

E-mail: techsupport@appliedrobotics.com

6 INFORMATIONAL DOCUMENTS

The documents in this section can assist with installation, use, and identification of replacement parts for the Teaching Aid. Please contact **APPLIED ROBOTICS Technical Support** if you have any questions.

DECLARATIONS	
Declaration of Incorporation for Partly Completed Machinery	

DRAWINGS	
DRAWING NUMBER	DESCRIPTION
1800903A	KIT, TEACHING AID E125, E160 & E200

Declaration of Incorporation of Partly Completed Machinery (Annex II 1 B of EC Machinery Directive 2006/42/EC)

Description and identification of the partly completed machinery:

XChange – EPSILON Series Tool Changers & Utility Modules

Fulfills the following function:

Allows industrial robots (and other automated equipment) to automatically change their end of arm tooling under programmed control without the need of human intervention. These products are intended to be incorporated into machinery supplied by others.

The following essential requirements of EC Machinery Directive 2006/42/EC (Annex I) have been applied and fulfilled:

Section 1.1.2.	Principles of safety integration
Section 1.1.3.	Materials and products
Section 1.1.5.	Design of machinery to facilitate its handling
Section 1.2.1.	Safety and reliability of control systems
Section 1.2.6.	Failure of the power supply
Section 1.3.2	Risk of break-up during operation
Section 1.3.3.	Risks due to falling or ejected objects
Section 1.3.4.	Risks due to surfaces, edges or angles
Section 1.3.7.	Risks related to moving parts
Section 1.3.9.	Risks of uncontrolled movements
Section 1.5.1.	Risks due to electricity supply
Section 1.5.3.	Risks due to energy supply other than electricity (air pressure)
Section 1.5.8.	Risks due to noise
Section 1.5.10.	Risks due to non-ionizing radiation
Section 1.6.4.	Operator intervention
Section 1.7.1.	Information and warnings on the machinery
Section 1.7.2.	Warning of residual risks
Section 1.7.3.	Marking of machinery
Section 1.7.4.	Instructions.

The partly completed machinery has been designed and manufactured according to the following harmonized standards:

EN ISO 12100-1	Safety of machinery - Basic concepts, general principles for design Part 1: Basic terminology, methodology
EN ISO 12100-2	Safety of machinery - Basic concepts, general principles for design Part 2: technical principles

EN ISO 10218-2	Robots and robotic devices — Safety requirements for industrial robots — Part 2: Robot systems and integration
EN ISO 60204-1	Safety of machinery. Electrical equipment of machines. General requirements
EN 61000-6-2	Electromagnetic compatibility (EMC) - Generic standards. Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) - Generic standards. Emission standard for industrial environments
EN 61000-4-2	Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test
EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements

The relevant technical documentation has been compiled in accordance with Annex VII, Part B of EC Machinery Directive 2006/42/EC. We undertake, in response to a reasoned request, to supply it in electronic form to the market surveillance authorities within a reasonable period.

The party authorized to compile the technical documentation is:

Giovanni Patrini, at Effecto Group SpA

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive.


Stefan Casey
Vice President, Engineering

APRIL 20, 2018
Date

