Dual Probe Holder
Cat. No. EK-29000-DPH01

This document provides information to install the Allen-Bradley Dual Probe Holder. The Dual Probe Holder is designed to combine a displacement transducer and an Allen-Bradley 9000 series sensor (velocity or accelerometer) into a single housing. The Dual Probe Holder can be used in conjunction with the Allen-Bradley XM®-121 Absolute Shaft module to provide shaft relative, case absolute, and shaft absolute measurements.

Note that the Dual Probe Holder is also functional with either one of the two sensors installed.

For more information on the XM-121 Absolute Shaft module, refer to the XM-121 Absolute Shaft User Guide (publication GMSI10-UM014x-EN-E). Refer to the specific sensor manual for recommended wiring requirements and specifications for that sensor.

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary we use notes to make you aware of safety considerations.

**WARNING**

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

**IMPORTANT**

Identifies information that is critical for successful application and understanding of the product.

**ATTENTION**

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequences.

**SHOCK HAZARD**

Labels may be located on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

**BURN HAZARD**

Labels may be located on or inside the equipment, for example, a drive or motor, to alert people that surfaces may be dangerous temperatures.
About the Dual Probe Holder

The Dual Probe Holder provides a single housing for a non-contact eddy current probe and an Allen-Bradley 9000 series sensor. The Dual Probe Holder allows the eddy current probe and the 9000 sensor to be installed at the same point on the same bearing half. The Dual Probe Holder mounts on the machine casing and the installed sensors connect to a monitoring system such as the XM-121 Absolute Shaft module.

Figure 1 Dual Probe Holder Internal Side View

The Dual Probe Holder consists of a base that threads into the machine case, three conduit ports for wiring connections, a stinger of optional length, o-rings, an eddy current probe, a case vibration sensor, a jam nut, adjusting cage and knurling adjusting knob to secure the stinger to the base to maintain the probe-to-shaft gap. And the Dual Probe Holder cover screws onto the base of the holder. See Figure 2 on page 4.

The location in which the probe and holder is installed determines which stinger you use. Refer to Dual Probe Holder Ordering Information on page 5.
Figure 2 Dual Probe Holder Exploded View

Figure 3 Mounting Requirements
## Dual Probe Holder Ordering Information

The following items are options for the Rockwell Automation Dual Probe Holder, Cat. No. EK-29000-DPH01.

### Table 1 Dual Probe Holder Items

<table>
<thead>
<tr>
<th>Rockwell Automation Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>48772-0200</td>
<td>Stainless steel stinger, 2.00 to 3.00 in. (5.1 to 7.6 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0300</td>
<td>Stainless steel stinger, 3.00 to 4.00 in. (7.6 to 10.2 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0400</td>
<td>Stainless steel stinger, 4.00 to 5.00 in. (7.6 to 12.7 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0500</td>
<td>Stainless steel stinger, 5.00 to 6.00 in. (12.7 to 15.2 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0600</td>
<td>Stainless steel stinger, 6.00 to 7.00 in. (15.2 to 17.8 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0700</td>
<td>Stainless steel stinger, 7.00 to 8.00 in. (17.8 to 20.3 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0800*</td>
<td>Stainless steel stinger, 8.00 to 9.00 in. (20.3 to 22.9 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-0900*</td>
<td>Stainless steel stinger, 9.00 to 10.00 in. (22.9 to 25.4 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-1000*</td>
<td>Stainless steel stinger, 10.00 to 11.00 in. (25.4 to 27.9 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-1100*</td>
<td>Stainless steel stinger, 11.00 to 12.00 in. (27.9 to 30.5 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-1200*</td>
<td>Stainless steel stinger, 12.00 to 13.00 in. (30.5 to 33.0 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-1300*</td>
<td>Stainless steel stinger, 13.00 to 14.00 in. (33.0 to 35.6 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-1400*</td>
<td>Stainless steel stinger, 14.00 to 15.00 in. (35.6 to 38.1 cm) probe adjustment range</td>
</tr>
<tr>
<td>48772-9024*</td>
<td>Stainless steel stinger, 24.00 in. (61.0 cm), for cut-to-length applications. Probe end is not machined. The end must be machined after stinger is cut to length.</td>
</tr>
</tbody>
</table>

* The unsupported length of stinger should not exceed 200 mm (8 in) per API 670.
Installing the Dual Probe Holder

This section describes the installation of the Dual Probe Holder.

Receiving, Unpacking, and Inspection

Unpack the Dual Probe Holder and inspect for possible damage during shipment. Report any damages immediately to the local transportation agent and submit a copy to Rockwell Automation.

Table 1 Dual Probe Holder Items

<table>
<thead>
<tr>
<th>Rockwell Automation Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2109/30/05/1/05</td>
<td>2100 Series Reverse Mount 8 mm Probe with 0.5 m cable</td>
</tr>
<tr>
<td>2109/30/05/1/10</td>
<td>2100 Series Reverse Mount 8 mm Probe with 1.0 m cable</td>
</tr>
<tr>
<td>1442-PR-0812E0205N</td>
<td>1442 Series Reverse Mount 8 mm Probe with 0.5 m cable</td>
</tr>
<tr>
<td>1442-PR-0830M0505N</td>
<td>1442 Series Reverse Mount 8 mm Probe, Metric, with 0.5 m cable</td>
</tr>
<tr>
<td>1442-PR-0812E0210N</td>
<td>1442 Series Reverse Mount 8 mm Probe with 1.0 m cable</td>
</tr>
<tr>
<td>1442-PR-0830M0510N</td>
<td>1442 Series Reverse Mount 8 mm Probe, Metric, with 1.0 m cable</td>
</tr>
<tr>
<td>EK-43781I</td>
<td>9000A General Purpose Sensor</td>
</tr>
<tr>
<td>EK-43808I</td>
<td>9100VO Velocity Output Sensor</td>
</tr>
<tr>
<td>EK-43786I</td>
<td>9100CSA General Purpose Sensor</td>
</tr>
<tr>
<td>EK-43805I</td>
<td>9100T High Temperature Sensor</td>
</tr>
</tbody>
</table>

The Dual Probe Holder is also compatible with Bentley Nevada 3300 XL (330105 and 330195) Series Probes.
Installation

Follow the steps below to install the Dual Probe Holder. Refer to Figures on pages 3 and 4 for assistance. Make sure the machine is stopped before installing the Dual Probe Holder.

**TIP**
Follow API 670 requirements for surface finish and flatness, even for non-API installations. If the surface is not properly prepared, it can reduce the detection of higher frequencies.

Prepare Mounting Surface

1. Spot face the surface, then drill and tap a hole in the machine case where you want to install the Dual Probe Holder.

Check Parts and (if necessary) Replace Housing and Stinger O-rings

2. Open the Dual Probe Housing cover and remove plastic bag containing adjusting cage, adjusting knob, jam nut and o-rings.

3. Replace the installed housing and stinger Viton O-rings with Buna O-rings (supplied in plastic bag) to meet low temperature operating conditions (see table below). If you do not need to replace the o-rings, proceed to step 4. Figure 3 on page 8 shows the placement of the o-rings.

The table below shows the required o-rings for the appropriate temperature operating ranges.

<table>
<thead>
<tr>
<th>Temperature Operating Range</th>
<th>Required O-ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10 to 400°F (-23 to 204°C)</td>
<td>Viton O-ring (default)</td>
</tr>
<tr>
<td>-30 to 230°F (-34 to 110°C)</td>
<td>Buna O-ring</td>
</tr>
</tbody>
</table>
4. Install the appropriate base o-ring into the groove in the Dual Probe Holder base. See Figure 3. Use Table 2 on page 7 to determine which o-ring to install.

5. Apply anti-seize compound to the threaded portion of the Dual Probe Holder base and install the base into the machine casing. Tighten to 55 ft-lb (75 N-m) torque.

Install Reverse Mount Probe Stinger

6. Install the appropriate sensor o-ring onto the base of the threaded portion of the probe. Use Table 2 on page 7 to determine which o-ring to install.

7. Apply two drops of thread adhesive, such as Blue Loctite 242 (or greater), to the probe threads.

8. Insert probe cable into the stinger and tighten probe to 66 in-lb (7.5 N-m).
Install Stinger and Assemble Adjustment Mechanism

9. Screw the knurled adjusting knob down to the end of the threaded portion of the stinger.

10. Apply a film of grease to the unthreaded surface of the stinger. Insert the stinger into the base until the knurled adjusting knob contacts the base.

11. Install the adjusting cage and hand tighten.

12. Install the jam nut so flat portion of the stinger is above the jam nut.

Install 9000 Sensor

13. Install the 9000 series sensor into the base. Use stud or bolt (1/4-28 threads x 3/8 inch) and thread locking compound. Socket wrench can be used.

Connect Wiring

14. Connect the non-contact sensor and the 9000 series sensor to the monitoring system. Wiring can pass through any of the three conduit holes. Refer to Wiring Considerations on page 10. For specific wiring connections to the monitor, refer to monitoring system’s manual.

Gap Non-Contact Sensor

15. Gap the probe. Refer to the eddy current probe manual for probe gap procedures and specifications.

\[\text{ATTENTION}\]

Do not scratch sensor tip or target surface.

16. Tighten jam nut. Use a wrench on flat portion of the stinger to ensure the stinger does not move while tightening the jam nut. Tighten the jam nut to 35 ft-lb (48 N-m) torque.

17. Verify gap voltage.
Install Cover

18. Apply a film of grease to the exposed surface of the housing o-ring (on base). Place the Dual Probe Holder cover on the base, and hand tighten. Be sure to turn an additional 1/2 turn to seat the enclosure seal.

Wiring Considerations

- There are three wiring holes machined in the base of the Dual Probe Holder to pass cabling through. If a wiring hole is not needed, use a 3/4 inch plug to close the opening. The plug will maintain a NEMA 4X rating for environmental protection.
- The field wiring must be enclosed in 3/4 inch conduit. The conduit must be sealed at the cable entry to maintain a NEMA 4X rating.
- Protect cable ends from debris before pulling through conduit.
- Terminate the shielded wires at the monitor end to prevent ground loops.

Refer to the wiring requirements in the eddy current probe manual and the Allen-Bradley 9000 series sensor manual. In addition, refer to the monitor manual in which the sensors are connected to for requirements specific to the monitor.

Replacing the Sensors in Dual Probe Holder

The Dual Probe Holder allows removing and installing of the sensors without disassembling the machine. Follow the steps below to remove the sensors from the Dual Probe Holder.

Replacing Non-Contact Sensor

*To remove probe from Dual Probe Holder*

1. Remove the Dual Probe Holder cover.
2. Disconnect the probe lead from the extension cable.
3. Tighten the adjusting knob to hold the sensor away from the target.
4. Loosen jam nut and adjusting cage so stinger can be removed from the base. Be careful not to move the knurled adjusting knob.
5. Pull stinger out from base.
6. Unscrew probe and remove.

To install probe

1. Clean the threads of the stinger.
2. Install the appropriate sensor o-ring onto the base of the threaded portion of the probe. Use Table 2 on page 7 to determine which o-ring to install.
3. Apply two drops of thread locking compound, such as Loctite 242 (or greater), to the probe threads.
4. Insert probe cable into the stinger and tighten probe to 66 in-lb (7.5 N-m).

   **TIP**
   To prevent the non-contact sensor from contacting the target surface, it is advisable to rotate the knurled adjusting knob until it bottoms out of threads.

5. Apply a film of grease to the unthreaded surface of the stinger. Insert the stinger into the base until the knurled adjusting knob contacts the base.
6. Install the adjusting cage and hand tighten.
7. Install the jam nut so the flat portion of the stinger is above the jam nut.
8. Connect the non-contact sensor to the monitoring system.

   **ATTENTION**
   Do not scratch sensor tip or target surface.

10. Tighten jam nut and verify gap voltage. Use a wrench on flat portion of the stinger to ensure the stinger does not move while tightening the jam nut. Tighten the jam nut to 35 ft-lb (48 N-m) torque.
11. Apply a film of grease to the exposed surface of the housing o-ring (on base) if needed. Place the Dual Probe Holder cover on the base, and hand tighten. Be sure to turn an additional 1/2 turn to seat the enclosure seal.

**Replacing Series 9000 Sensor**

*To remove 9000 sensor from Dual Probe Holder*

1. Remove Dual Probe Holder cover.
2. Disconnect wiring leads.
3. Remove stud or bolt and remove sensor.

*To install 9000 sensor*

1. Clean housing threads.
2. Install 9000 sensor into the base. Use stud or bolt (1/4-28 threads x 3/8 inch) and thread locking compound. Socket wrench can be used.
3. Apply a film of grease to the exposed surface of the housing o-ring (on base) if needed. Place the Dual Probe Holder cover on the base, and hand tighten. Be sure to turn an additional 1/2 turn to seat the enclosure seal.
## Specifications

### Table 4 Dual Probe Holder Specifications

<table>
<thead>
<tr>
<th>Product Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Dimensions</td>
<td>See Figure 1 (page 3)</td>
</tr>
<tr>
<td>Housing Material</td>
<td>304 stainless steel</td>
</tr>
<tr>
<td>Adjusting Knob &amp; Cage</td>
<td>303 stainless steel</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-51...177 °C (-60...351 °F)</td>
</tr>
<tr>
<td>Rating</td>
<td>NEMA 4X</td>
</tr>
<tr>
<td>Weight</td>
<td>6.5 lb</td>
</tr>
</tbody>
</table>
Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

<table>
<thead>
<tr>
<th>United States</th>
<th>1.440.646.3223</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monday – Friday, 8am – 5pm EST</td>
</tr>
</tbody>
</table>

Outside United States

Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

<table>
<thead>
<tr>
<th>United States</th>
<th>Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.</th>
</tr>
</thead>
</table>

Outside United States

Please contact your local Rockwell Automation representative for return procedure.

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