Haas Automation, Inc.

# WIPS

Operator's Manual Supplement
96-10002A
Revision B
December 2018
English
Original Instructions

Haas Automation Inc.
2800 Sturgis Road
Oxnard, CA 93030-8933
U.S.A. | HaasCNC.com


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# LIMITED WARRANTY CERTIFICATE

Haas Automation, Inc.

Covering Haas Automation, Inc. CNC Equipment

Effective September 1, 2010

Haas Automation Inc. (“Haas” or “Manufacturer”) provides a limited warranty on all new mills, turning centers, and rotary machines (collectively, “CNC Machines”) and their components (except those listed below under Limits and Exclusions of Warranty) (“Components”) that are manufactured by Haas and sold by Haas or its authorized distributors as set forth in this Certificate. The warranty set forth in this Certificate is a limited warranty, it is the only warranty by Manufacturer, and is subject to the terms and conditions of this Certificate.

**Limited Warranty Coverage**

Each CNC Machine and its Components (collectively, “Haas Products”) are warranted by Manufacturer against defects in material and workmanship. This warranty is provided only to an end-user of the CNC Machine (a “Customer”). The period of this limited warranty is one (1) year. The warranty period commences on the date the CNC Machine is installed at the Customer’s facility. Customer may purchase an extension of the warranty period from an authorized Haas distributor (a “Warranty Extension”), any time during the first year of ownership.

**Repair or Replacement Only**

Manufacturer’s sole liability, and Customer’s exclusive remedy under this warranty, with respect to any and all Haas products, shall be limited to repairing or replacing, at the discretion of the Manufacturer, the defective Haas product.

**Disclaimer of Warranty**

This warranty is Manufacturer’s sole and exclusive warranty, and is in lieu of all other warranties of whatever kind or nature, express or implied, written or oral, including, but not limited to, any implied warranty of merchantability, implied warranty of fitness for a particular purpose, or other warranty of quality or performance or noninfringement. All such other warranties of whatever kind are hereby disclaimed by Manufacturer and waived by Customer.

## Limits and Exclusions of Warranty

Components subject to wear during normal use and over time, including, but not limited to, paint, window finish and condition, light bulbs, seals, wipers, gaskets, chip removal system (e.g., augers, chip chutes), belts, filters, door rollers, tool changer fingers, etc., are excluded from this warranty. Manufacturer's specified maintenance procedures must be adhered to and recorded in order to maintain this warranty. This warranty is void if Manufacturer determines that (i) any Haas Product was subjected to mishandling, misuse, abuse, neglect, accident, improper installation, improper maintenance, improper storage, or improper operation or application, including the use of improper coolants or other fluids, (ii) any Haas Product was improperly repaired or serviced by Customer, an unauthorized service technician, or other unauthorized person, (iii) Customer or any person makes or attempts to make any modification to any Haas Product without the prior written authorization of Manufacturer, and/or (iv) any Haas Product was used for any non-commercial use (such as personal or household use). This warranty does not cover damage or defect due to an external influence or matters beyond the reasonable control of Manufacturer, including, but not limited to, theft, vandalism, fire, weather condition (such as rain, flood, wind, lightning, or earthquake), or acts of war or terrorism.

Without limiting the generality of any of the exclusions or limitations described in this Certificate, this warranty does not include any warranty that any Haas Product will meet any person's production specifications or other requirements, or that operation of any Haas Product will be uninterrupted or error-free. Manufacturer assumes no responsibility with respect to the use of any Haas Product by any person, and Manufacturer shall not incur any liability to any person for any failure in design, production, operation, performance, or otherwise of any Haas Product, other than repair or replacement of same as set forth in the warranty above.

## Limitation of Liability and Damages

Manufacturer will not be liable to Customer or any other person for any compensatory, incidental, consequential, punitive, special, or other damage or claim, whether in an action in contract, tort, or other legal or equitable theory, arising out of or related to any Haas product, other products or services provided by Manufacturer or an authorized distributor, service technician, or other authorized representative of Manufacturer (collectively, "authorized representative"), or the failure of parts or products made by using any Haas Product, even if Manufacturer or any authorized representative has been advised of the possibility of such damages, which damage or claim includes, but is not limited to, loss of profits, lost data, lost products, loss of revenue, loss of use, cost of down time, business good will, any damage to equipment, premises, or other property of any person, and any damage that may be caused by a malfunction of any Haas product. All such damages and claims are disclaimed by Manufacturer and waived by Customer. Manufacturer's sole liability, and Customer's exclusive remedy, for damages and claims for any cause whatsoever shall be limited to repair or replacement, at the discretion of Manufacturer, of the defective Haas Product as provided in this warranty.

Customer has accepted the limitations and restrictions set forth in this Certificate, including, but not limited to, the restriction on its right to recover damages, as part of its bargain with Manufacturer or its Authorized Representative. Customer realizes and acknowledges that the price of the Haas Products would be higher if Manufacturer were required to be responsible for damages and claims beyond the scope of this warranty.

**Entire Agreement**

This Certificate supersedes any and all other agreements, promises, representations, or warranties, either oral or in writing, between the parties or by Manufacturer with respect to subject matter of this Certificate, and contains all of the covenants and agreements between the parties or by Manufacturer with respect to such subject matter. Manufacturer hereby expressly rejects any other agreements, promises, representations, or warranties, either oral or in writing, that are in addition to or inconsistent with any term or condition of this Certificate. No term or condition set forth in this Certificate may be modified or amended, unless by a written agreement signed by both Manufacturer and Customer. Notwithstanding the foregoing, Manufacturer will honor a Warranty Extension only to the extent that it extends the applicable warranty period.

**Transferability**

This warranty is transferable from the original Customer to another party if the CNC Machine is sold via private sale before the end of the warranty period, provided that written notice thereof is provided to Manufacturer and this warranty is not void at the time of transfer. The transferee of this warranty will be subject to all terms and conditions of this Certificate.

**Miscellaneous**

This warranty shall be governed by the laws of the State of California without application of rules on conflicts of laws. Any and all disputes arising from this warranty shall be resolved in a court of competent jurisdiction located in Ventura County, Los Angeles County, or Orange County, California. Any term or provision of this Certificate that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof, or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction.

# Customer Feedback

If you have concerns or questions regarding this Operator's Manual, please contact us on our website, www.HaasCNC.com. Use the "Contact Us" link and send your comments to the Customer Advocate.

Join Haas owners online and be a part of the greater CNC community at these sites:

haasparts.com
Your Source for Genuine Haas Parts

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Product videos and information

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Product photos and information

# Customer Satisfaction Policy

Dear Haas Customer,

Your complete satisfaction and goodwill are of the utmost importance to both Haas Automation, Inc. and the Haas distributor (HFO) where you purchased your equipment. Normally, your HFO will rapidly resolve any concerns you have about your sales transaction or the operation of your equipment.

However, if your concerns are not resolved to your complete satisfaction, and you have discussed your concerns with a member of the HFO's management, the General Manager, or the HFO's owner directly, please do the following:

Contact Haas Automation's Customer Service Advocate at 805-988-6980. So that we may resolve your concerns as quickly as possible, please have the following information available when you call:

- Your company name, address, and phone number
- The machine model and serial number
- The HFO name, and the name of your latest contact at the HFO
- The nature of your concern

If you wish to write Haas Automation, please use this address:

Haas Automation, Inc. U.S.A.
2800 Sturgis Road
Oxnard CA 93030
Att: Customer Satisfaction Manager
email: customerservice@HaasCNC.com

Once you contact the Haas Automation Customer Service Center, we will make every effort to work directly with you and your HFO to quickly resolve your concerns. At Haas Automation, we know that a good Customer-Distributor-Manufacturer relationship will help ensure continued success for all concerned.

International:

Haas Automation, Europe
Mercuriusstraat 28, B-1930
Zaventem, Belgium
email: customerservice@HaasCNC.com

Haas Automation, Asia
No. 96 Yi Wei Road 67,
Waigaoqiao FTZ
Shanghai 200131 P.R.C.
email: customerservice@HaasCNC.com

# Declaration of Conformity

Product: Mill (Vertical and Horizontal)*

*Including all options factory- or field-installed by a certified Haas Factory Outlet (HFO)

Manufactured By: Haas Automation, Inc.

2800 Sturgis Road, Oxnard, CA 93030

**805-278-1800**

We declare, in sole responsibility, that the above-listed products, to which this declaration refers, comply with the regulations as outlined in the CE directive for Machining Centers:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EU
- Additional Standards:
  - EN 60204-1:2006/A1:2009
  - EN 614-1:2006+A1:2009
  - EN 894-1:1997+A1:2008
  - CEN 13849-1:2015

RoHS2: COMPLIANT (2011/65/EU) by Exemption per producer documentation.

Exempt by:

a) Large scale stationary industrial tool.
b) Lead as an alloying element in steel, aluminum, and copper.
c) Cadmium and its compounds in electrical contacts.

Person authorized to compile technical file:

Jens Thing

Address:

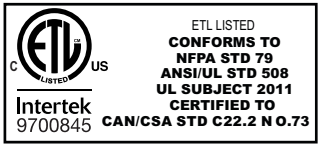
Haas Automation Europe
Mercuriusstraat 28
B-1930 Zaventem
Belgium

USA: Haas Automation certifies this machine to be in compliance with the OSHA and ANSI design and manufacturing standards listed below. Operation of this machine will be compliant with the below-listed standards only as long as the owner and operator continue to follow the operation, maintenance, and training requirements of these standards.

- *OSHA 1910.212 - General Requirements for All Machines*
- *ANSI B11.5-1983 (R1994) Drilling, Milling, and Boring Machines*
- *ANSI B11.19-2003 Performance Criteria for Safeguarding*
- *ANSI B11.23-2002 Safety Requirements for Machining Centers and Automatic Numerically Controlled Milling, Drilling, and Boring Machines*
- *ANSI B11.TR3-2000 Risk Assessment and Risk Reduction - A Guideline to Estimate, Evaluate, and Reduce Risks Associated with Machine Tools*

CANADA: As the original equipment manufacturer, we declare that the listed products comply with regulations as outlined in the Pre-Start Health and Safety Reviews Section 7 of Regulation 851 of the Occupational Health and Safety Act Regulations for Industrial Establishments for machine guarding provisions and standards.

Further, this document satisfies the notice-in-writing provision for exemption from Pre-Start inspection for the listed machinery as outlined in the Ontario Health and Safety Guidelines, PSR Guidelines dated April 2001. The PSR Guidelines allow that notice in writing from the original equipment manufacturer declaring conformity to applicable standards is acceptable for the exemption from Pre-Start Health and Safety Review.




All Haas CNC machine tools carry the ETL Listed mark, certifying that they conform to the NFPA 79 Electrical Standard for Industrial Machinery and the Canadian equivalent, CAN/CSA C22.2 No. 73. The ETL Listed and cETL Listed marks are awarded to products that have successfully undergone testing by Intertek Testing Services (ITS), an alternative to Underwriters' Laboratories.


Haas Automation has been assessed for conformance with the provisions set forth by ISO 9001: 2015. Scope of Registration: Design and Manufacture of CNC Machines Tools and Accessories, Sheet Metal Fabrication. The conditions for maintaining this certificate of registration are set forth in ISA's Registration Policies 5.1. This registration is granted subject to the organization maintaining compliance to the noted stardard. The validity of this certificate is dependent upon ongoing surveillance audits.

**Original Instructions**

# User’s Operator Manual and other Online Resources

This manual is the operation and programming manual that applies to all Haas Mills.

An English language version of this manual is supplied to all customers and is marked **"Original Instructions"**.

For many other areas of the world, there is a translation of this manual marked **"Translation of Original Instructions"**.

This manual contains an unsigned version of the EU required **"Declaration Of Conformity"**. European customers are provided a signed English version of the Declaration of Conformity with Model Name and Serial Number.

Besides this manual, there is a tremendous amount of additional information online at: www.haascnc.com under the OWNERS section.

Both this manual and the translations of this manual are available online for machines up to approximately 15 years old.

The CNC control of your machine also contains all of this manual in many languages and can be found by pressing the **[HELP]** button.

Many machine models come with manual supplement that is also available online.

All machine options also have additional information online.

Maintenance and service information is available online.

The online **"Installation Guide"** contains information and check list for Air & Electrical requirements, Optional Mist Extractor, Shipping Dimensions, weight, Lifting Instructions, foundation and placement, etc.

Guidance on proper coolant and Coolant Maintenance is located in the Operators Manual and Online.

Air and Pneumatic diagrams are located on the inside of the lubrication panel door and CNC control door.

Lubrication, grease, oil and hydraulic fluid types are listed on a decal on the machine's lubrication panel.

# How to Use This Manual

To get the maximum benefit of your new Haas machine, read this manual thoroughly and refer to it often. The content of this manual is also available on your machine control under the HELP function.

**IMPORTANT:** Before you operate the machine, read and understand the Operator's Manual Safety chapter.

## Declaration of Warnings

Throughout this manual, important statements are set off from the main text with an icon and an associated signal word: "Danger," "Warning," "Caution," or "Note." The icon and signal word indicate the severity of the condition or situation. Be sure to read these statements and take special care to follow the instructions.

| Description | Example |
|---|---|
| **Danger** means that there is a condition or situation that **will cause death or severe injury** if you do not follow the instructions given. |  ***DANGER:*** *No step. Risk of electrocution, bodily injury, or machine damage. Do not climb or stand on this area.* |
| **Warning** means that there is a condition or situation that **will cause moderate injury** if you do not follow the instructions given. |  ***WARNING:*** *Never put your hands between the tool changer and the spindle head.* |
| **Caution** means that **minor injury or machine damage could occur** if you do not follow the instructions given. You may also have to start a procedure over if you do not follow the instructions in a caution statement. |  ***CAUTION:*** *Power down the machine before you do maintenance tasks.* |
| **Note** means that the text gives **additional information, clarification, or helpful hints.** |  ***NOTE:*** *Follow these guidelines if the machine is equipped with the optional extended Z-clearance table.* |

## Text Conventions Used in this Manual

| Description | Text Example |
|---|---|
| **Code Block** text gives program examples. | `G00 G90 G54 X0. Y0.;` |
| A **Control Button Reference** gives the name of a control key or button that you are to press. | Press **[CYCLE START]**. |
| A **File Path** describes a sequence of file system directories. | *Service* > *Documents and Software* >... |
| A **Mode Reference** describes a machine mode. | MDI |
| A **Screen Element** describes an object on the machine's display that you interact with. | Select the **SYSTEM** tab. |
| **System Output** describes text that the machine control displays in response to your actions. | `PROGRAM END` |
| **User Input** describes text that you should enter into the machine control. | `G04 P1.;` |
| **Variable** n indicates a range of non-negative integers from 0 to 9. | `Dnn` represents `D00` through `D99`. |

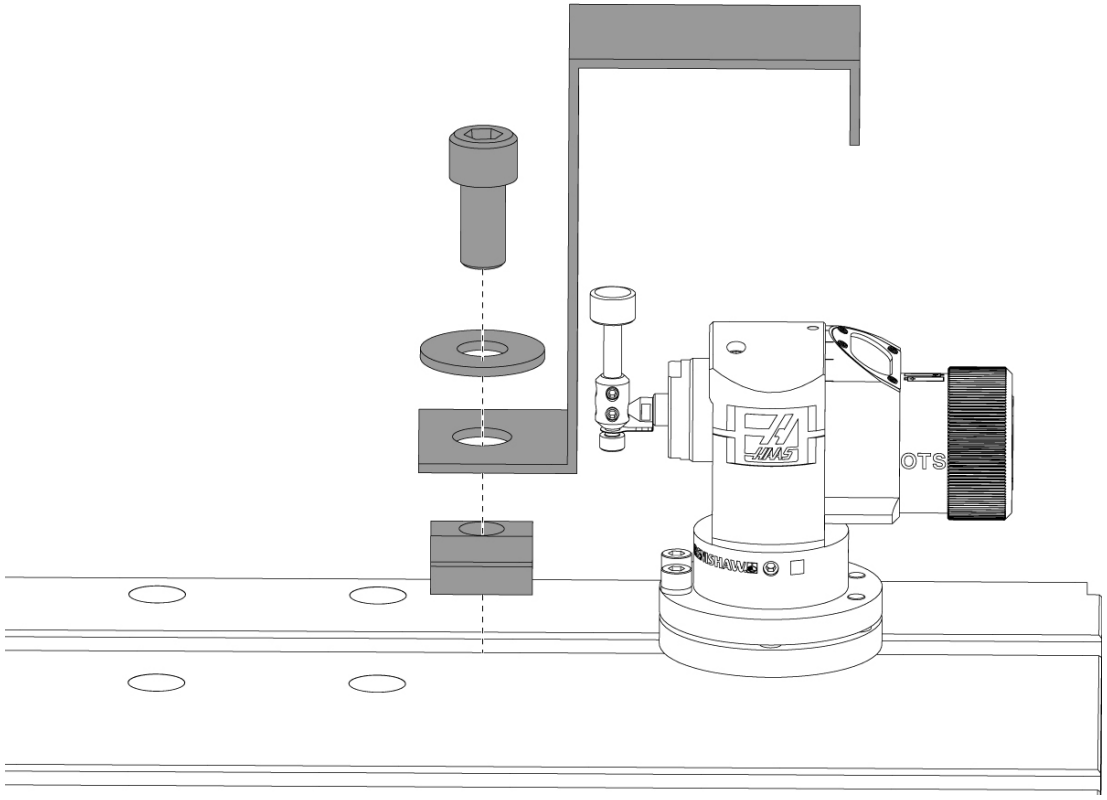
# Contents

# Chapter 1: Set-Up and Operation

## 1.1 Unpacking the Probe

If WIPS came installed on your machine, remove the table probe shipping bracket. If you are installing WIPS, refer to Installation section.

**F1.1:** Shipping Bracket Assembly




Remove the red shipping bracket and associated mounting hardware.

# 1.2 Activating The Probe - NGC

If WIPS did not come installed on your machine a Haas Service tech must download and apply a configuration file patch from https://portal.haascnc.com.

This procedure is used to verify that the spindle probe, table probe, OMI and the system's connection to the control are all functioning correctly.

1. In MDI mode, enter the following program to activate the table probe:

```
M59 P2;

G04 P1.0;

M59 P3;
```

2. Press **CYCLE START**.
3. After this program runs, gently tap the table probe with your finger. The control pendant should beep each time the probe is moved.
4. Press **RESET** to end activation.
5. In MDI mode, enter the following program and press **CYCLE START** to activate the spindle probe:

```
M59 P3;
```

6. After this program runs, gently tap the spindle probe with your finger. The control pendant should beep each time the probe is moved.
7. Press **RESET** to end activation.
8. If the probe fails to cause the pendant to beep, and the probe windows are properly aligned, first try replacing the batteries in the probe before attempting any other troubleshooting or service, as dead batteries are the most likely source of problems. See the battery replacement section for instructions.

***WARNING:*** *DO NOT use WIPS until the probes have been calibrated.*

# 1.3 Activating the Probe - CHC

If WIPS did not come installed on your machine a Haas Service tech must download and apply a configuration file patch from https://portal.haascnc.com.

This procedure is used to verify that the spindle probe, table probe, OMI and the system's connection to the control are all functioning correctly.

1. In MDI mode, enter the following program to activate the table probe:

```
M59 P1133;

G04 P1.0;

M59 P1134;
```

2. Press **CYCLE START**.
3. After this program runs, gently tap the table probe with your finger. The control pendant should beep each time the probe is moved.
4. Press **RESET** to end activation.
5. In MDI mode, enter the following program and press **CYCLE START** to activate the spindle probe:

```
M59 P1134;
```

6. After this program runs, gently tap the spindle probe with your finger. The control pendant should beep each time the probe is moved.
7. Press **RESET** to end activation.
8. If the probe fails to cause the pendant to beep, and the probe windows are properly aligned, first try replacing the batteries in the probe before attempting any other troubleshooting or service, as dead batteries are the most likely source of problems. See the battery replacement section for instructions.

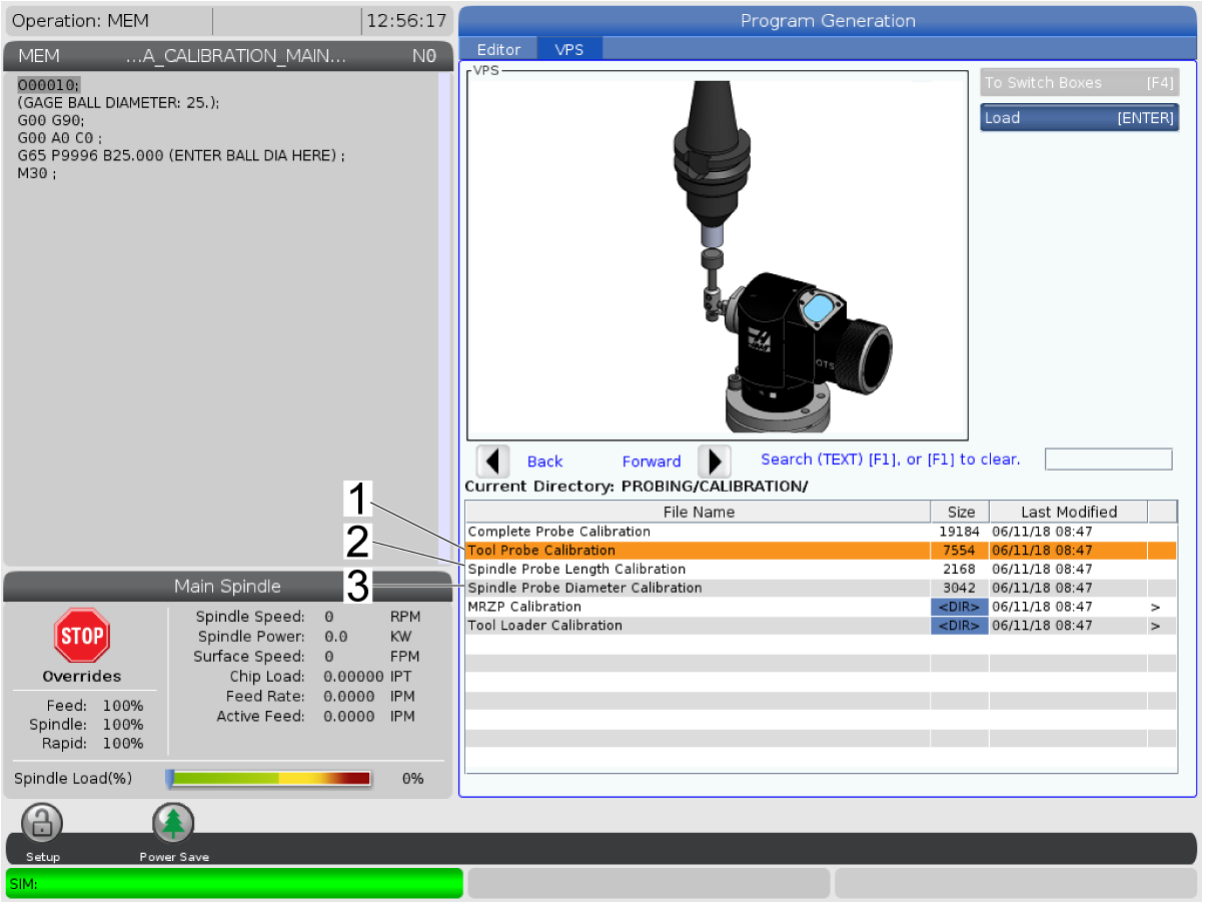
***WARNING:*** *DO NOT use WIPS until the probes have been calibrated.*

# 1.4 Probe Calibration - NGC

Before beginning calibration the tool probe stylus must be indicated for flatness and the work probe ruby tip must be indicated for runout. See the installation section.

Navigate to Edit > VPS > Probing > Calibration.

**F1.2:** Probe Calibration - NGC




Run the three calibration programs in the following order:

1. Tool Probe Calibration.
2. Spindle Probe Length Calibration.
3. Spindle Probe Diameter Calibration.

To run a calibration program highlight it and press **ENTER**.

Follow the onscreen instructions to enter values for each required variable. Then press **CYCLE START** to run the calibration program.

***NOTE:*** *Do not use "Complete Probe Calibration." This is intended for use by the factory to check WIPS functionality before shipping. It does not yield accurate or repeatable results.*

***NOTE:*** *Instead of buying a tool-probe-length-calibration-tool you can inset a worn out carbide endmill into a collet toolholder backwards. Indicate your improvised tool in the spindle to minimize runout. Accurately measure diameter at the tool tip. Engrave the diameter and length on your improvised tool for future reference.*

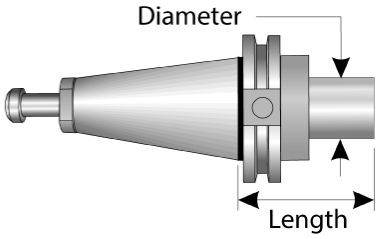
# 1.5 Probe Calibration - CHC

**Tool Probe Calibration:**

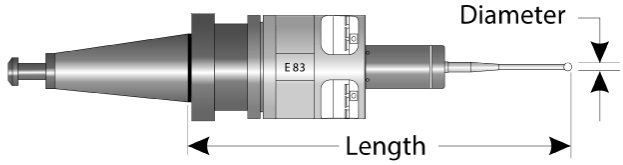
Press **MDI**, then **PRGRM CONVRS**. Navigate to select the "Setup" tab and press **WRITE/ENTER**. Navigate to the Tool Probe Calibration tab and press **WRITE/ENTER**. Step-by-step instructions can be found on the lower right hand side of the machine's screen.

1. Insert calibration bar into spindle. Any bar may be used to calibrate tool probe, if actual length and diameter are known.
2. Jog the Z-axis down to about 0.25" above table probe. Press **F1** to record position.
3. Jog X and Y axis to a center position above table probe. Press **F1** to record positions.
4. Press down arrow and enter the tool offset number or tool number. Press **WRITE/ENTER**.
5. Press down arrow and enter tool length. Must be a positive number. Press **WRITE/ENTER**.
6. Press down arrow and enter tool diameter. Must be positive number. Press **WRITE/ENTER**.
7. Press **CYCLE START**. The machine will execute an automatic calibration routine and display "COMPLETED" in the Calibration status box when the operation is finished.

**F1.3:** Calibration Tool and Probe




*Calibration Bar*




*Work Probe*

**Work Probe Calibration:**

While in the Setup menu, Navigate to the Work Probe Calibration tab and press **WRITE/ENTER**. Step-by-step instructions can be found on the lower right hand side of the machine's screen. The work probe is calibrated using an Inner Diameter (ID) calibration ring. First mount a calibration ring on the table (see figure on next page). A bored hole of known diameter in a fixture can also be used.

1. Put the calibration bar into the spindle (use "Tool Release" to change tools).
2. Place a shim of known thickness on the calibration ring and jog the Z-axis down until the bar just touches the shim. Press **F1** to save the Z-axis position.
3. Enter the exact length of the calibration bar. Press **WRITE/ENTER**.
4. Enter the thickness of the shim. Press **WRITE/ENTER**.

***NOTE:*** *The shim thickness can be left at zero.*

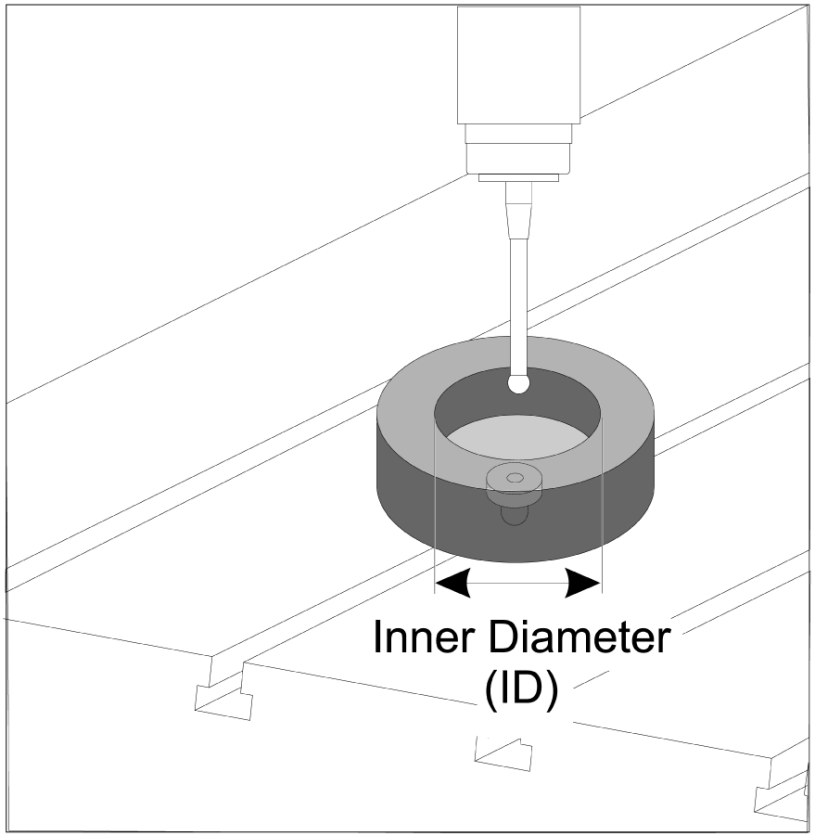
***CAUTION:*** *Change to work probe before continuing.*

5. Put the work probe into the spindle (use "Tool Release" to change tools).
6. Enter the approximate length of the work probe. Press **WRITE/ENTER**.
7. Enter the diameter of the ball on the work probe. Standard Renishaw probes use a 6 mm (0.2362") ball. Press **WRITE/ENTER**.

***NOTE:*** *Any ring or bored hole can be used as long as the diameter is known.*

8. Enter the inner diameter of the calibration ring. Press **WRITE/ENTER**.
9. Handle jog the machine until the work probe tip is in the approximate center of the ring, and approximately 0.30" above the Z surface.
10. Press **CYCLE START** to start calibration. The calibration status box will indicate "COMPLETED" when the process is finished.

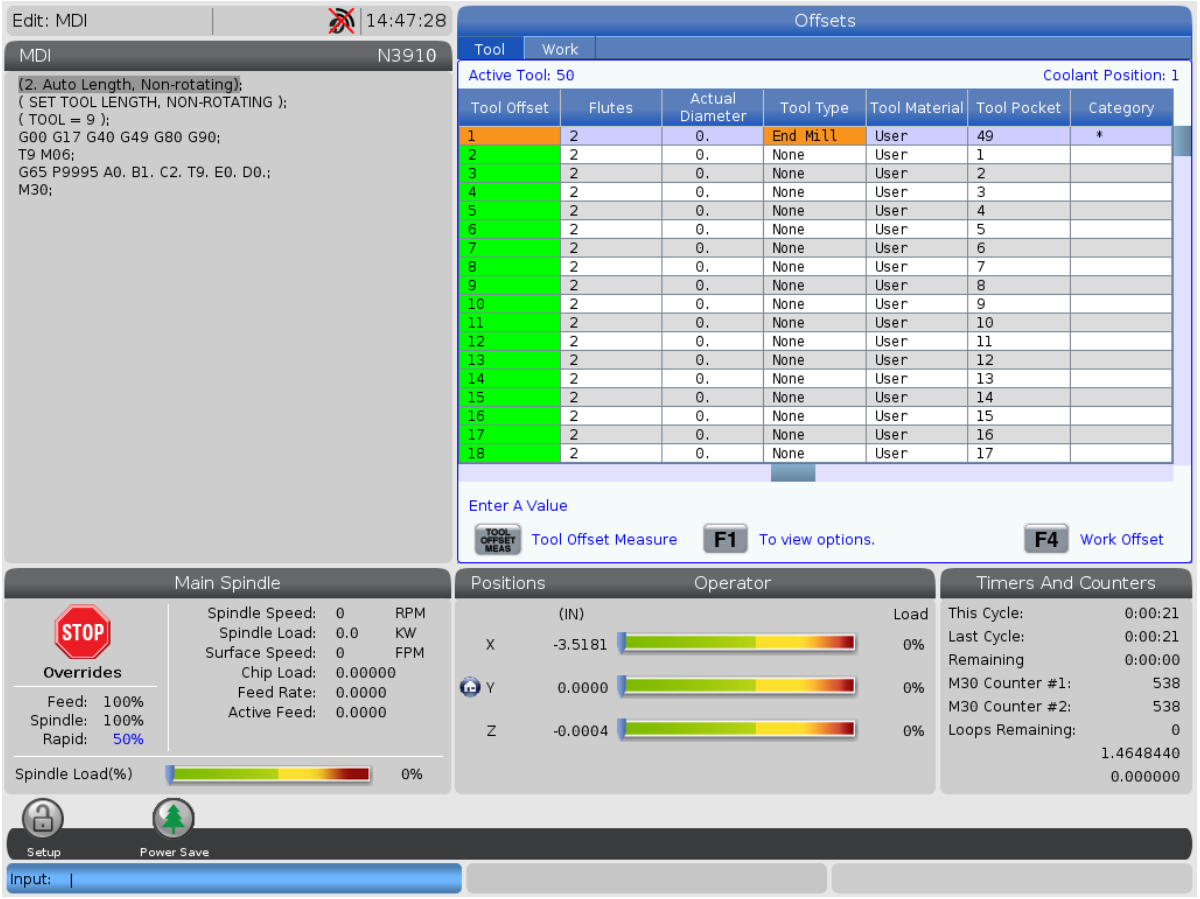
**F1.4:** Ring Gauge Calibration



# 1.6 Operation - NGC

### Tool Probing

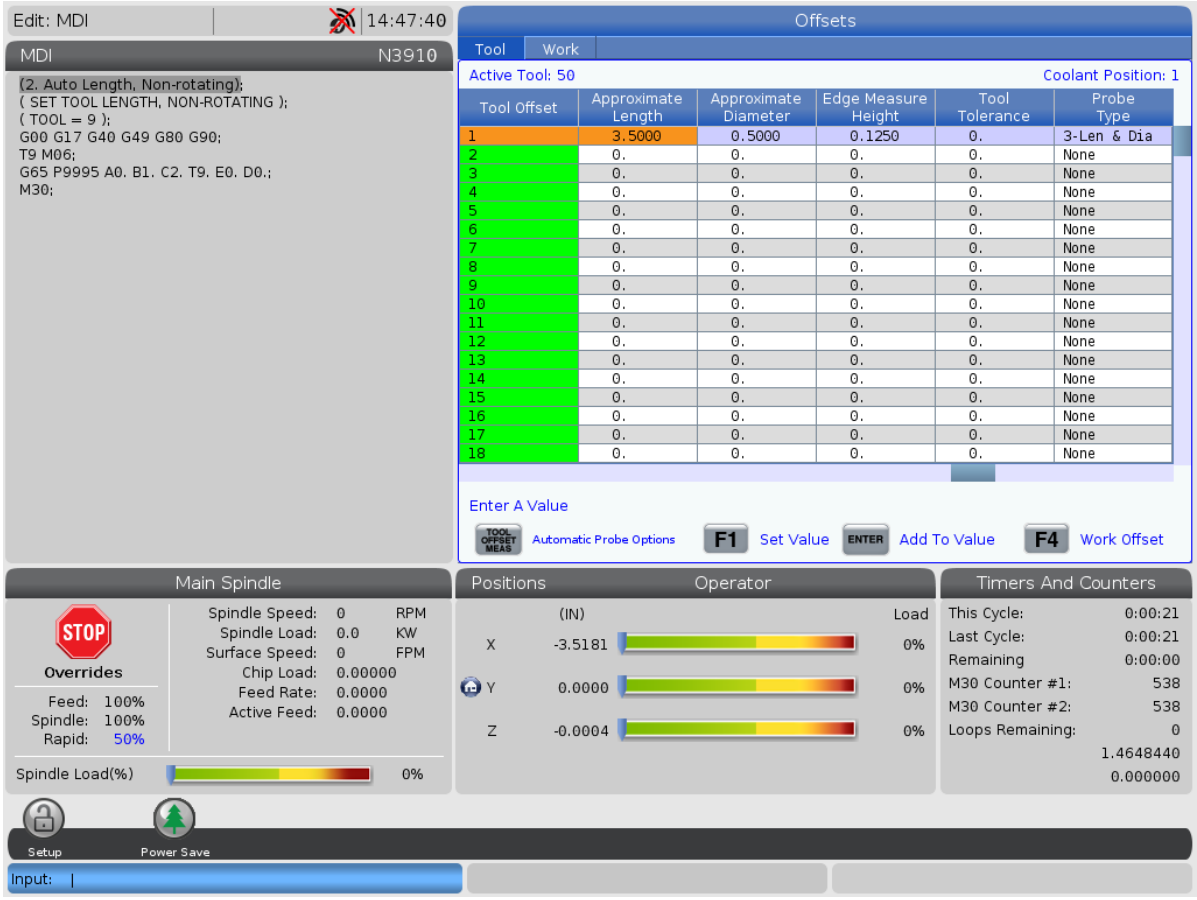
**F1.5:** Tool Offset Table




Navigate to the tool offsets table and highlight the tool you wish to probe.

Navigate to the “tool type” column and press **`F1`** select a tool type: Drill, Tap, Shell Mill, End Mill, Spot Drill, or Ball Nose.

**F1.6:** Tool Probing Variables




Navigate to and fill out the “approximate tool dimension” and “probe type” columns.

Repeat steps 2 and 3 for as many tools as you wish to probe.

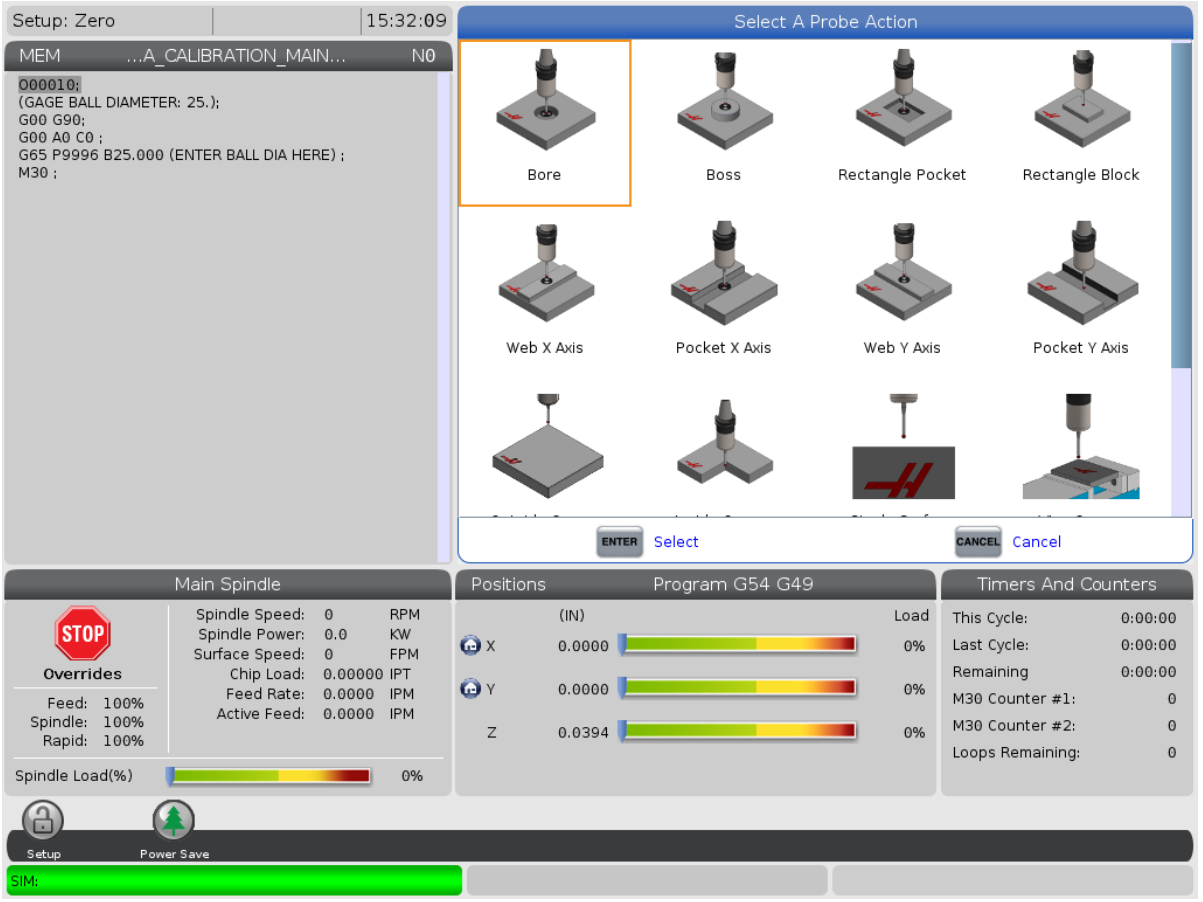
***NOTE:*** *To measure tool length only, leave the value for “edge measure height” at zero and select option 1 or 2 in the “probe type” field. Tool diameters will not be measured.*

Press “tool offset measure” and select an automatic probe option.

Press **`CYCLE START`**.

**Work Probing**

**F1.7:** Work Probing Cycles




Handle Jog the work probe to the feature you wish to measure.

Navigate to work offsets table and select the offset in which you wish to store the measurement.

Press **F3** and select a probing action that matches the feature you wish to measure. Then press **ENTER**.

Fill out the required fields and press **CYCLE START**.

For information and instructions on in process probing refer to the “Inspection Plus software for Haas machining centers" manual.

# 1.7 Operation - CHC

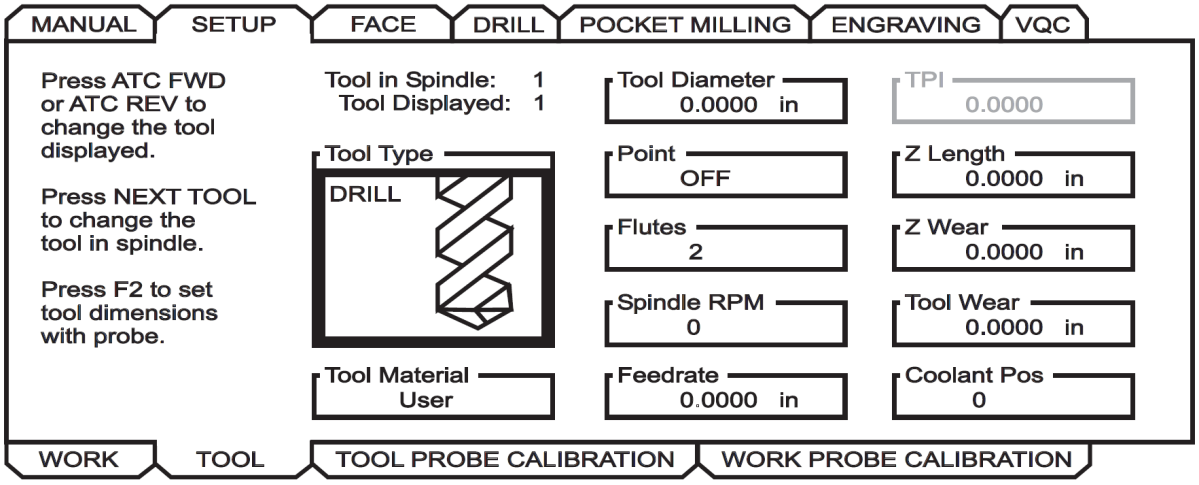
**Tabbed Menus:**

***NOTE:*** *Beginning with software version 16.04A, WIPS functions are also available using the Offsets tables. This is described in the next section.*

**Tool Setup:**

While in the Setup menu, navigate to the "Tool" Mode Option Tab and press **WRITE/ENTER**.

**F1.8:** Tool Probing - Tabbed Menus




1. Select the tool type: Drill, Tap, Shell Mill, End Mill, or Center Drill. Press **WRITE/ENTER**.

***NOTE:*** *Alternate for Tool Offset: Navigate to the Tool Offset number box. Enter the Offset number and press* **WRITE/ENTER**. *Check that the offset is referenced correctly in the part program.*

2. Press **F2** to set tool dimensions using a probe.
   - When **F2** is pressed a Tool Dimensions screen pops up.
   - Enter the approximate tool dimensions.
   - Press **CYCLE START** to automatically set tool length and diameter.

***NOTE:*** *To measure tool length only, leave the value for Z at zero. Tool diameters will not be measured. However, diameter values must be entered to measure length on milling cutters.*

3. To advance to the next tool in the tool changer, press **NEXT TOOL**.

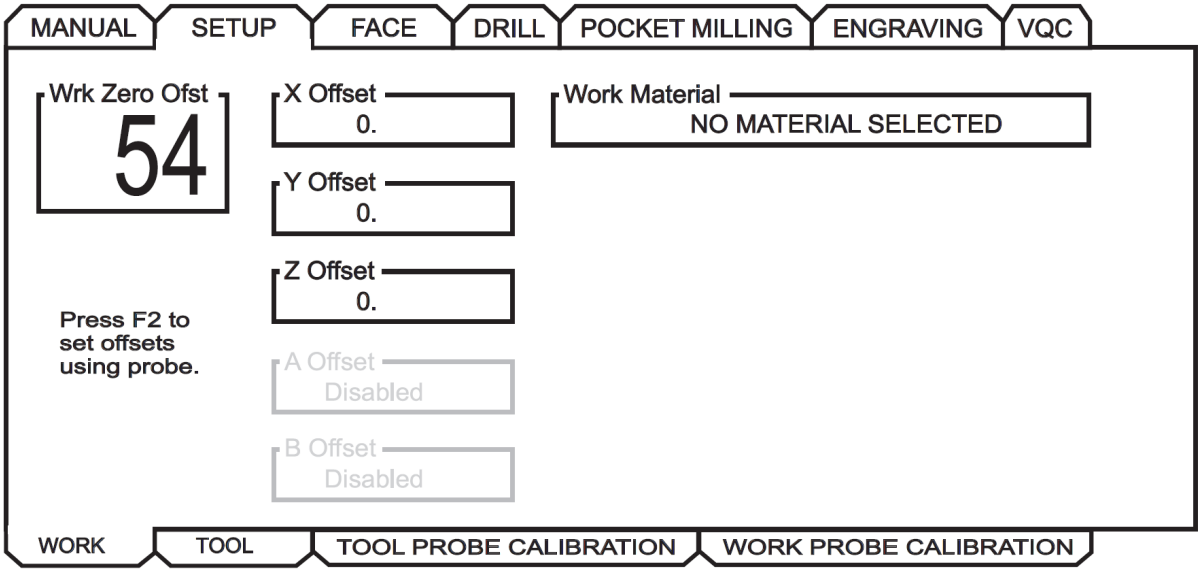
***:*** *Tools can be loaded into the spindle while in Tool Setup by pressing* **TOOL RELEASE**.

4. Successive tools can be set up with the probe by repeating Steps 1 to 3.

**Work Setup:**

While in the Setup menu, navigate to the Work tab and press **WRITE/ENTER**. This menu allows the user to select the desired surface to be probed. Step-by-step instructions can be found on the lower right hand side of the machine's screen.

**F1.9:** Work Probing - Tabbed Menus

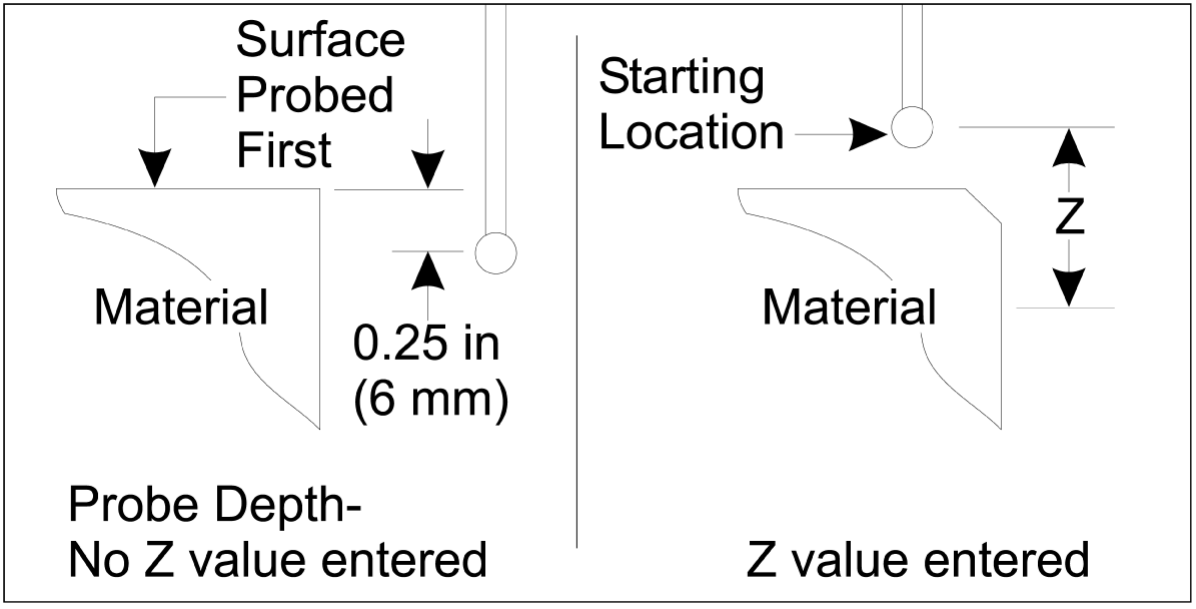



1. Select a Work Coordinate System. Press **WRITE/ENTER**.
2. Press **F2** to set offsets using a probe.
3. A pop-up screen is displayed. Navigate through the probing functions. Select a function by pressing **WRITE/ENTER**.
4. Follow the directions on the selected pop-up screen, then press **CYCLE START**.

***NOTE:*** *User-entered increment measurements are sign dependent; to command the probe down to your specified Z increment, the value you enter must be negative.*

***:*** *If incremental Z measurement is left at zero for most work probing routines that use it (Boss, Rectangular Block, Web X, Web Y, Inside Corner, Outside Corner), a default value is used, The probe first moves down to find the material surface, then moves out to prescribed X and Y increments, probing the corner at a default depth (around 1/4" (6mm)). If no surface is found within a short distance from the probe's starting location, the operation alarms out. If the workpiece has feature such as a chamfer or radius, enter a Z increment large enough for probing the surface below the feature. The Z increment begins at the starting location of probe, not the surface of the workpiece.*

**F1.10:** Z Value




For probing routines more advanced than those available in WIPS, consult the probe manufacturer's documentation or website.

**Offset Tables:**

This operation mode is available in mill software version 16.04A and later.

**Tool Setup:**

**F1.11:** Tool Probing - Offset Tables

<< TOOL INFO | PROBING | TOOL OFFSET >>

| TOOL | APPROXIMATE LENGTH | APPROXIMATE DIAMETER | EDGE MEASURE HEIGHT | TOOL TOLERANCE | PROBE TYPE |
|---|---|---|---|---|---|
| 1 | 1.3750 | 0.2500 | 0.2500 | 0. | 3-LEN & DIA |
| 2 | 1.7500 | 0.3750 | 0.2500 | 0.0500 | 1-L ROTATNG |
| 3 | 0. | 0. | 0. | 0. | 0-NONE |
| 4 | 0. | 0. | 0. | 0. | 0-NONE |
| 5 | 0. | 0. | 0. | 0. | 0-NONE |
| 6 | 0. | 0. | 0. | 0. | 0-NONE |
| 7 | 0. | 0. | 0. | 0. | 0-NONE |
| 8 | 0. | 0. | 0. | 0. | 0-NONE |
| 9 | 0. | 0. | 0. | 0. | 0-NONE |

ENTER A VALUE. PRESS [WRITE] TO ADD OR [F1] TO SET THE VALUE.

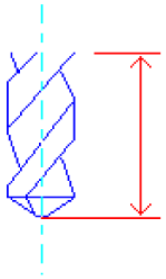
TOOL PROBE HELP

Enter the approximate length of the tool to be measured.

(Enter a positive number only).

Press the [TOOL OFFSET MEASUR] key to start the Automatic Probing Options.

Tool Type: DRILL



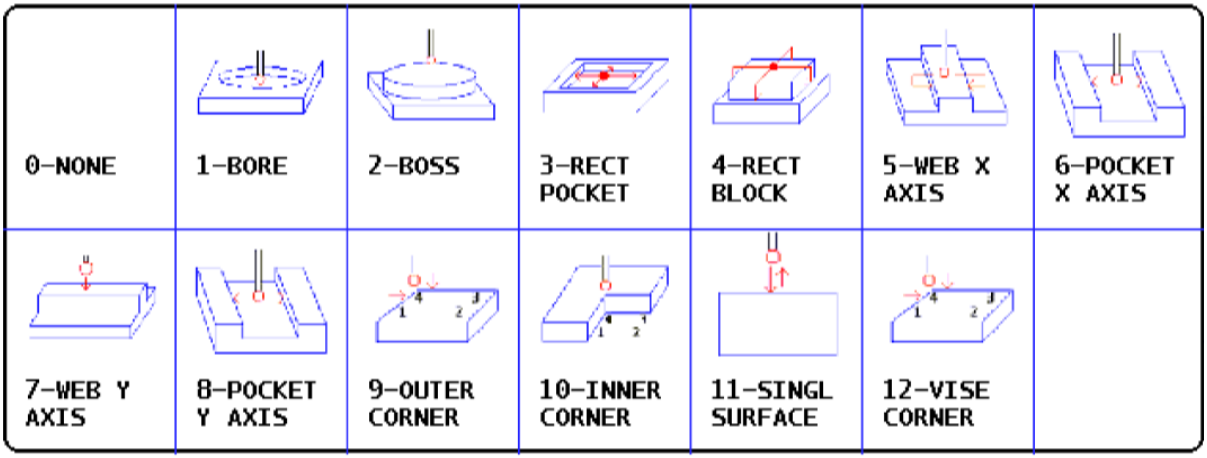
1. Press **MDI**, then **OFFSET** until the tool offset table is active.
2. Navigate the columns on the table. Moving past the extreme left or right column of a table moves to the next table. Three tables are available: Tool Offset, Tool Info, and Probing. The display pane directly underneath the tool offset tables will display relevant help information as the cursor is moved.
3. Set up each tool to be probed in the table as follows:
   - In the “Tool Info” table, enter the tool type.
   - In the “Probing” table, enter the approximate length of the tool. If diameter is to be probed as well, enter an approximate value for the tool diameter, and the distance from the tool tip where diameter will be measured. Enter a wear tolerance value in the appropriate column (optional).
   - Select the probe type. If enough information is entered to allow WIPS to successfully perform the selected probe operation on the tool, this value will appear with a green background. If the background is red or white, the probe

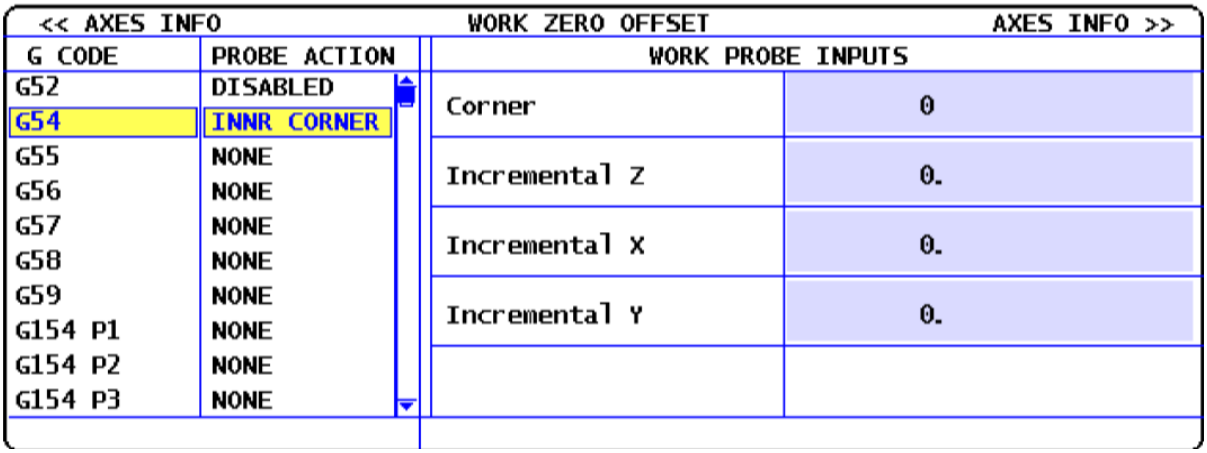
operation will fail for that tool. The comment “Tool # does not have all of its inputs” will appear in the program generated.

4. Press the **TOOL OFFSET MEASUR** key. Select one of the probe options and press **CYCLE START** to generate the program in **MDI** and run it, or press **INSERT** to copy the program to the clipboard.

**Work Setup:**

**F1.12:** Work Probing - Offset Tables




1. Press **MDI**, then **OFFSET** until the Work Offset table is active.
2. Navigate the columns on the table. Moving past the extreme left or right column of a table moves to the next table. This mode features two tables: “Axes Info” and “Work Probe”. Navigate to the “Work Probe” table is active.
3. Select a work offset value. Enter the number from the table above corresponding to the probing operation to be performed and press **WRITE/ENTER**.
4. Press the **RIGHT CURSOR** arrow key to enter work probe inputs. Help information appears in the pane above the work offset table for the selected operation.

5. Position the probe as directed and fill in the inputs as needed. **`CYCLE START`** to generate the program in **`MDI`** and run it, or press **`INSERT`** to copy the program to the clipboard.

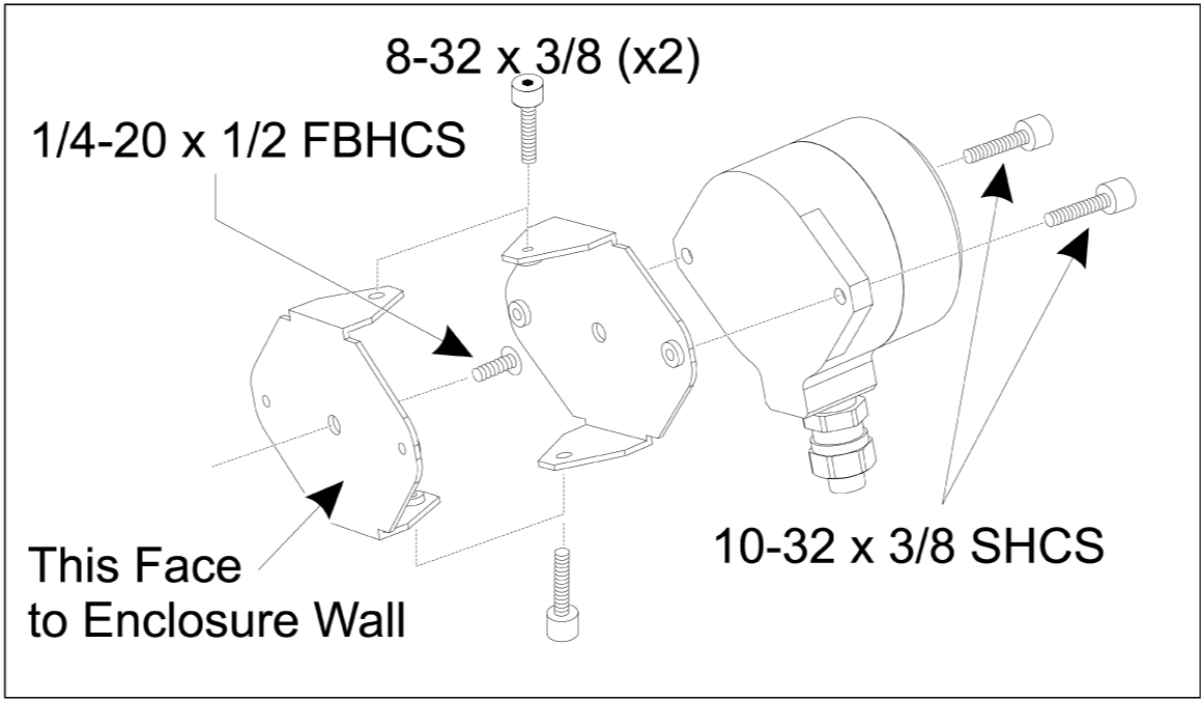
# Chapter 2: Installation

## 2.1 OMI Installation - NGC

If WIPS did not come installed on your machine a Haas Service tech must download and apply a configuration file patch from https://portal.haascnc.com.

The OMI detects probe signals within a 60° “cone” from the OMI window. Position the OMI such that it receives a line of sight signal from both the tool probe and the work probe over the entire machine travel range. If a rotary, fixture, or workpiece occludes line of between either probe and the OMI during a probing cycle connection will be lost and the system will alarm out. Plan your machine setup to avoid this. On some large machines it may be necessary to elevate the tool probe off the table using a riser.

**F2.1:** OMI Bracket Assembly




Secure one bracket to the OMI using two 10-32 x 3/8 SHCS.

Secure the other bracket to the machine enclosure wall using one 1/4-20 x 1/2 FBHCS.

Attach the wall bracket to the OMI/bracket assembly using two 8-32 x 3/8 SHCS.

Route the OMI cable out of the work envelope and into the control cabinet. Plug the extension cable into the plug labeled "plug probe I/F" on the I/O PCB and plug the OMI cable into the extension cable. Make sure all cables are routed through the wiring ducts in the control cabinet.

## 2.2 OMI Installation - CHC

If WIPS did not come installed on your machine a Haas Service tech must download and apply a configuration file patch from https://portal.haascnc.com.

The OMI detects probe signals within a 60° “cone” from the OMI window. Position the OMI such that it receives a line of sight signal from both the tool probe and the work probe over the entire machine travel range. If a rotary, fixture, or workpiece occludes line of between either probe and the OMI during a probing cycle connection will be lost and the system will alarm out. Plan your machine setup to avoid this. On some large machines it may be necessary to elevate the tool probe off the table using a riser.

***NOTE:*** *For VF, EC, GR, MDC and Super Mini Mill machines, I/O board 3080U or 3083U or later is required to install WIPS. For Mini Mills and all TM machines, I/O board 3082V or later is required.*

**WIPS Software Installation:**

WIPS requires software versions M14.05A (Coldfire I / II processor and 10” LCD), or M15.04E (Coldfire II processor and 15” LCD) or later. Install WIPS macros into program memory. Contact your dealer to obtain latest WIPS macros. Six parameters must be set:

Parameter 57, bit 17 “Enable Rot & Scaling” set to “1”

Parameter 57, bit 21 “M19 Spindle Orientation” set to “1”

Parameter 57, bit 22 “Enable Macro” set to “1”

Parameter 57, bit 23 “Invert Skip” set to “0” (Renishaw)

Parameter 315, bit 31 “Intuitive Programming System” set to “1” (16.03 and earlier)

Parameter 732 “IPS Probe” set to “2”

**OMI Bracket Assembly:**

See the OMI Installation NGC Section.

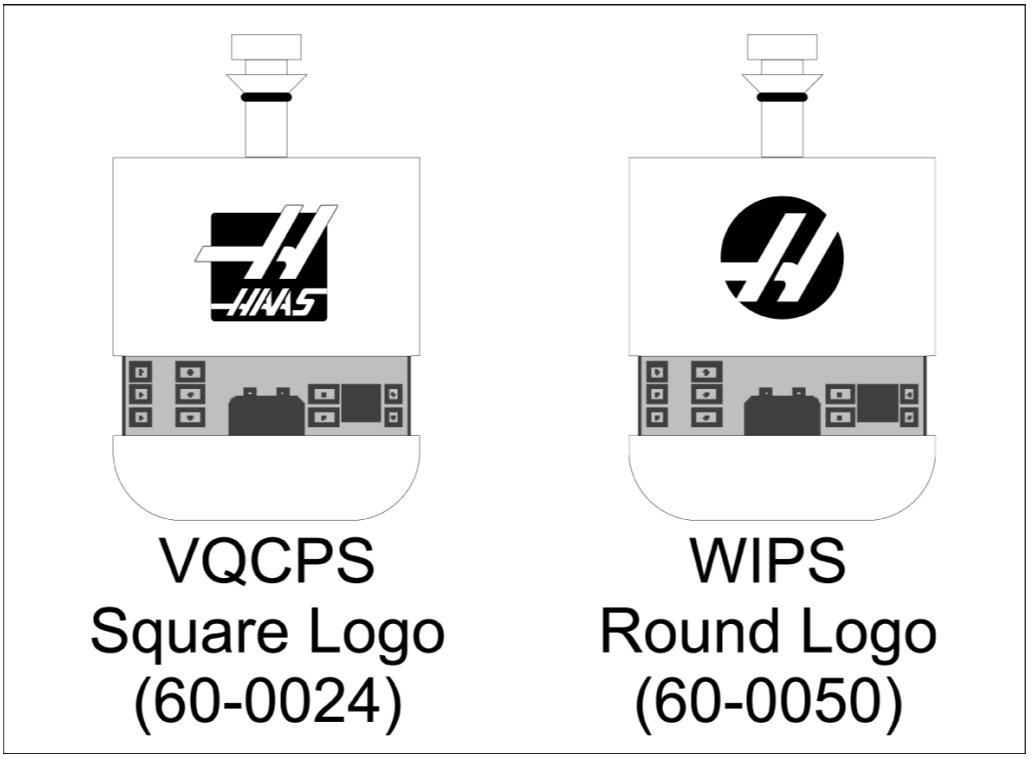
**Renishaw Spindle Probe Identification:**

The OMP40 for WIPS will not work with VQCPS.

The OMP40 for VQCPS will not work with WIPS.

The two probes can be differentiated by the Haas logo on the probe, as shown:

**F2.2:** Probe Identification

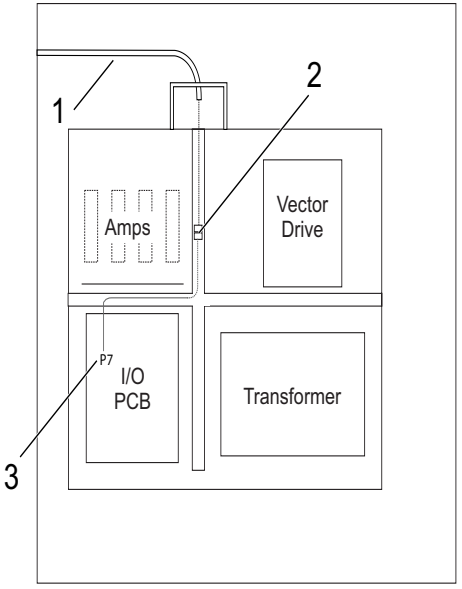



## 2.3 Electrical Installation - NGC

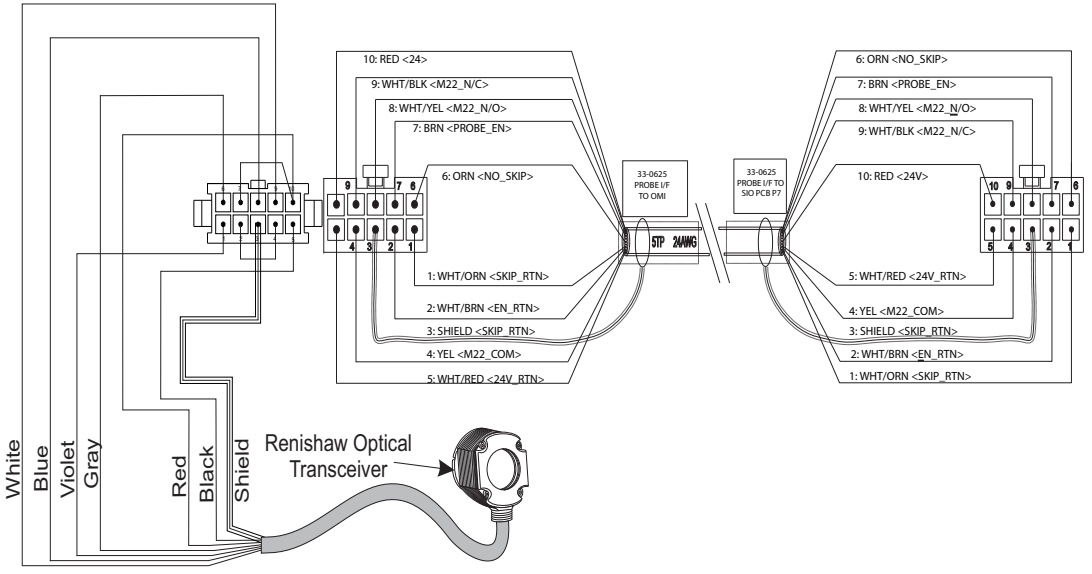
**Renishaw Electrical Installation**

1. Route the OMI cable through the top of the control cabinet as shown, depending on the installation performed [1].
2. Join the OMI cable and 33-0625 cable plugs [2].
3. Plug the Haas probe cable 33-0625 into P7 on the I/O PCB board [3].

**F2.3:** Cable Connections - 33-0625



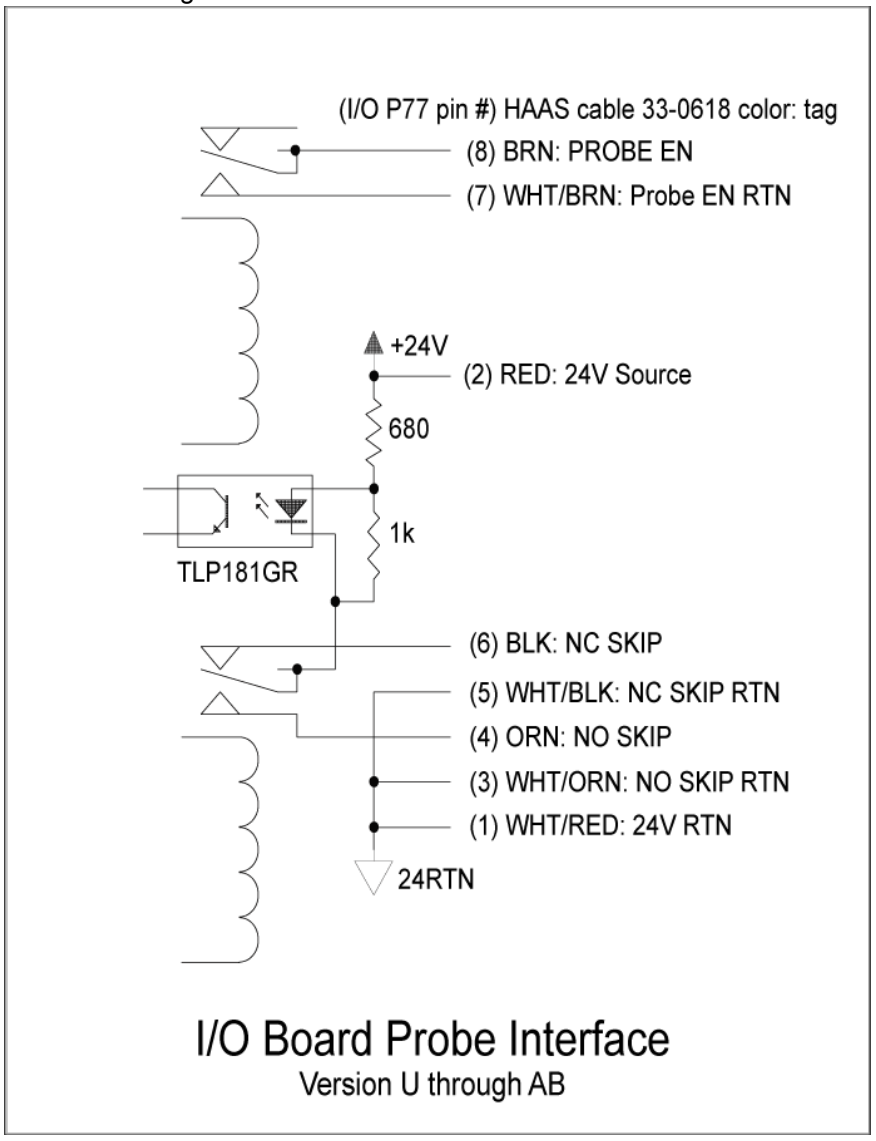

**F2.4:** OMI Pinout - 33-0625



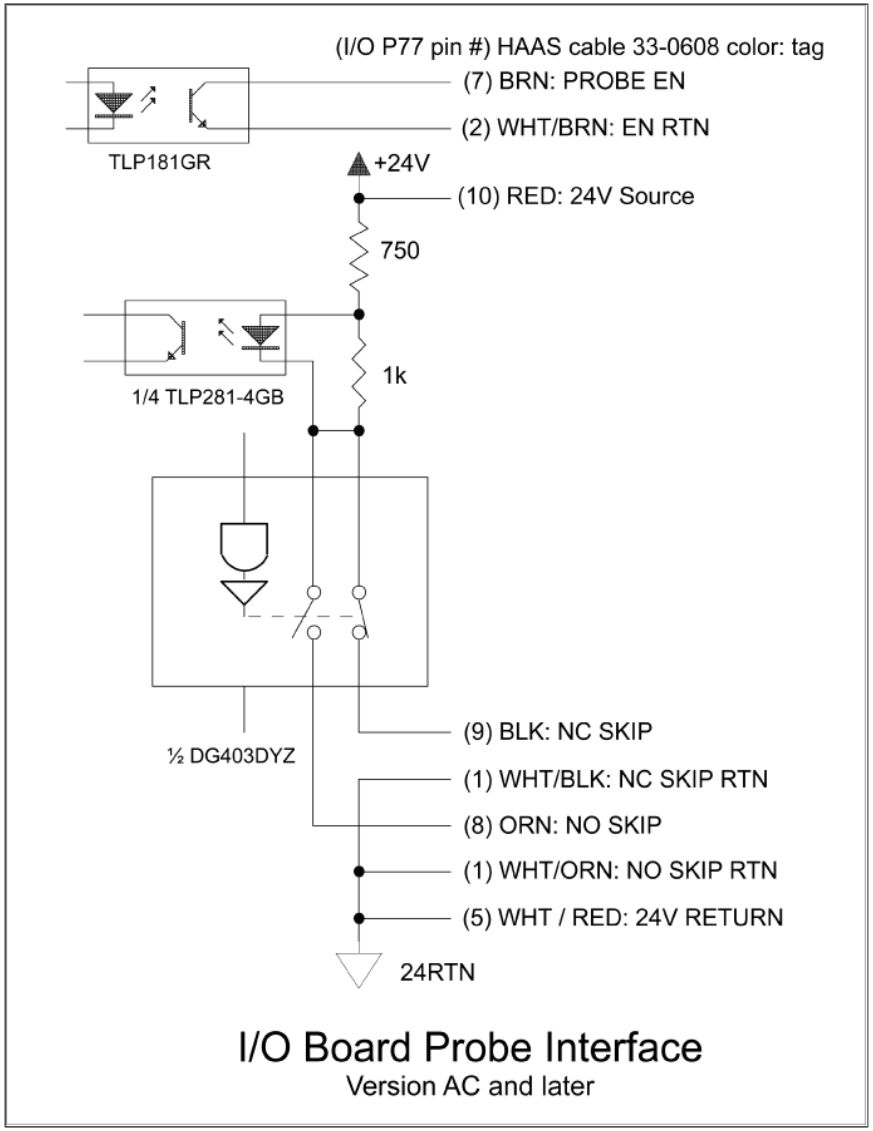
# 2.4 Electrical Installation - CHC

### Electrical Diagrams

**F2.5:** I/O Electrical Diagram - U-AB



**F2.6:** I/O Electrical Diagram - AC and later



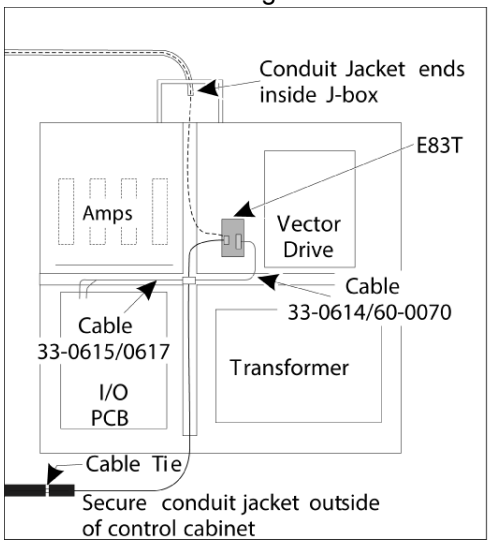

**Cable Routing:**

**Upper Entry Into Control Cabinet:** Route the cable conduit into the J-box at the top of the control cabinet. Pull the cable down through the center vertical wire channel and route to the E83T unit. Connect the OMI cable to the 6-pin plug on the E83T.

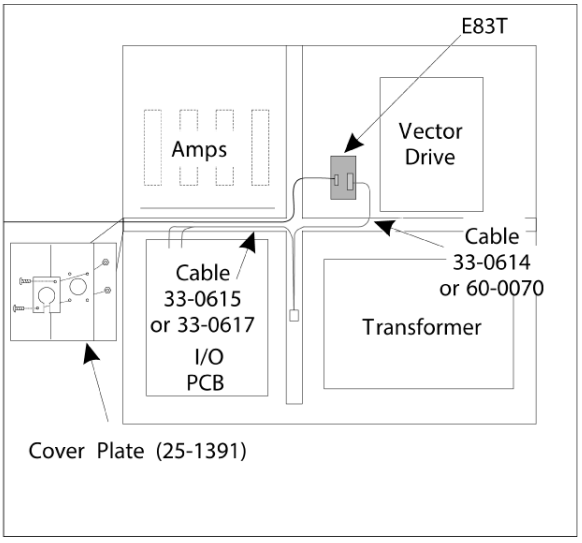
**Lower Entry Into Control Cabinet:** Route the cable conduit to the bottom of the control cabinet. Secure the conduit jacket to the outside of the control cabinet with a cable tie. Route the cable up through the center vertical wire channel and connect to the 6-pin plug on the E83T plug.

**Side Entry into Control Cabinet:** Use the vacant hole in the side of the cabinet nearest to the wire channel above the I/O PCB. Slide the cover plate (25- 1391) over the conduit and secure to the cabinet using two PPHS 8-32 x 3/8" and two 8-32 hex nuts with lock washers. Fasten the end of the conduit to the cover plate with the conduit nut. Route the OMI cable along the center horizontal wire channel and connect to the 15-pin plug on the E83T unit.

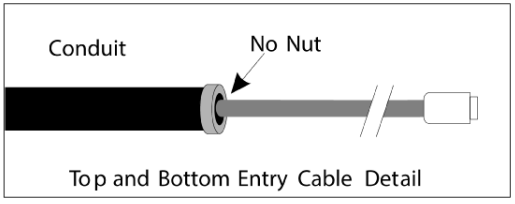
**F2.7:** Cable Routing



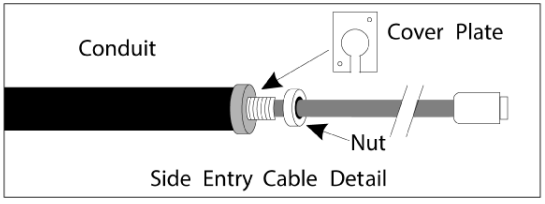

Upper / Lower entry into Control Cabinet




Side Entry Connection




Top and Bottom Entry Cable Detail



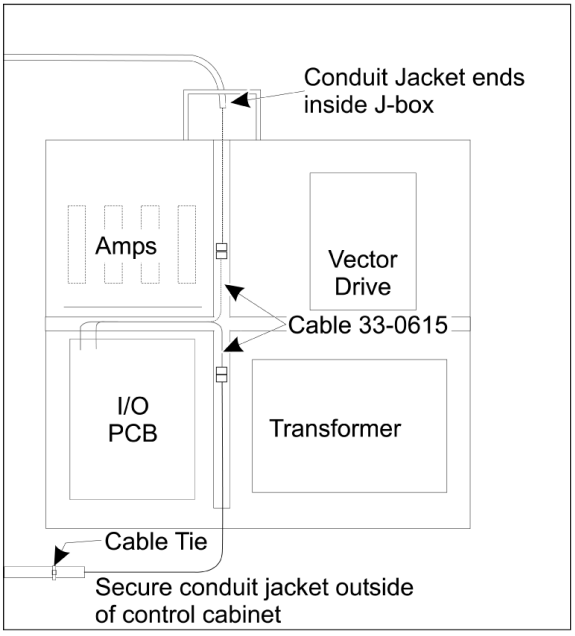

Side Entry Cable Detail

**CABLE CONNECTIONS:**

**Renishaw Electrical Installation - up to I/O Version AB:**

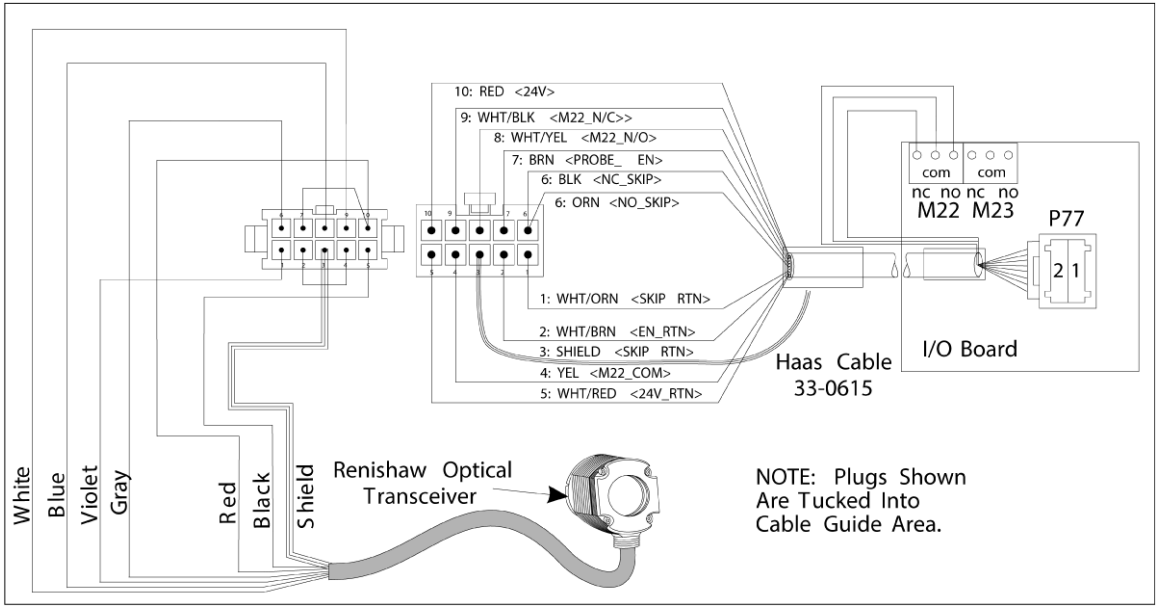
1. Route the OMI cable through the top or bottom of the control cabinet as shown, depending on the installation performed.
2. Join the OMI cable and 33-0615 cable plugs. Plug the Haas probe cable 33-0615 into P77 on the I/O board. Plug the jumper from the probe cable into M22.

**F2.8:** Cable Connections - 33-0615




Upper / Lower entry into Control Cabinet

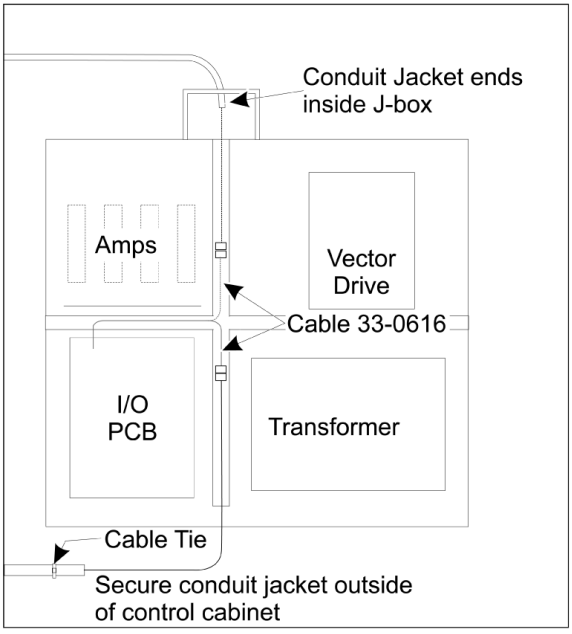
**F2.9:** OMI Pinout - 33-0615



**Renishaw Electrical Installation I/O Version AC and later:**

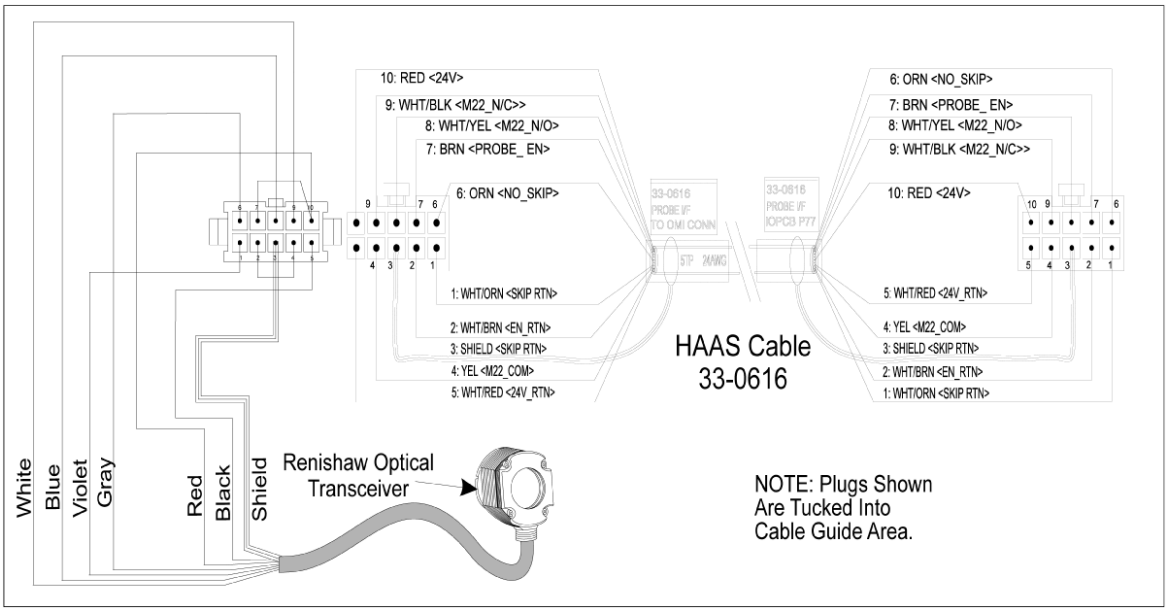
1. Route the OMI cable through the top or bottom of the control cabinet as shown, depending on the installation performed.
2. Join the OMI cable and 33-0616 cable plugs. Plug the Haas probe cable 33-0616 into P77 on the I/O board.

**F2.10:** Cable Connections - 33-0616



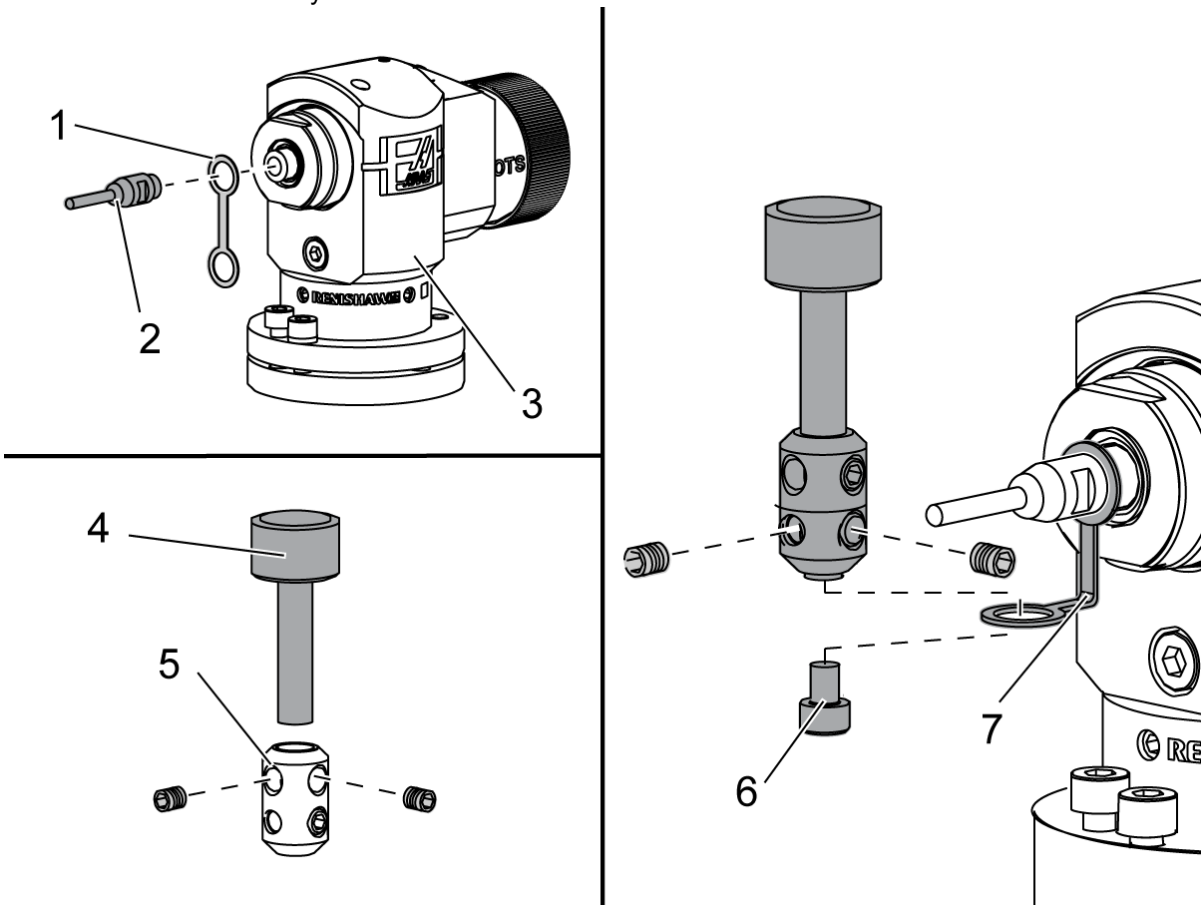

Upper / Lower entry into Control Cabinet

**F2.11:** OMI Pinout - 33-0616



# 2.5 Tool Probe Installation

**F2.12:** Tool Probe Stylus Installation




Place the retainer strap [1] over the shaft mount on the probe body [3].

Install the shaft [2] into the shaft mount. Snug the shaft with the open-end wrench.

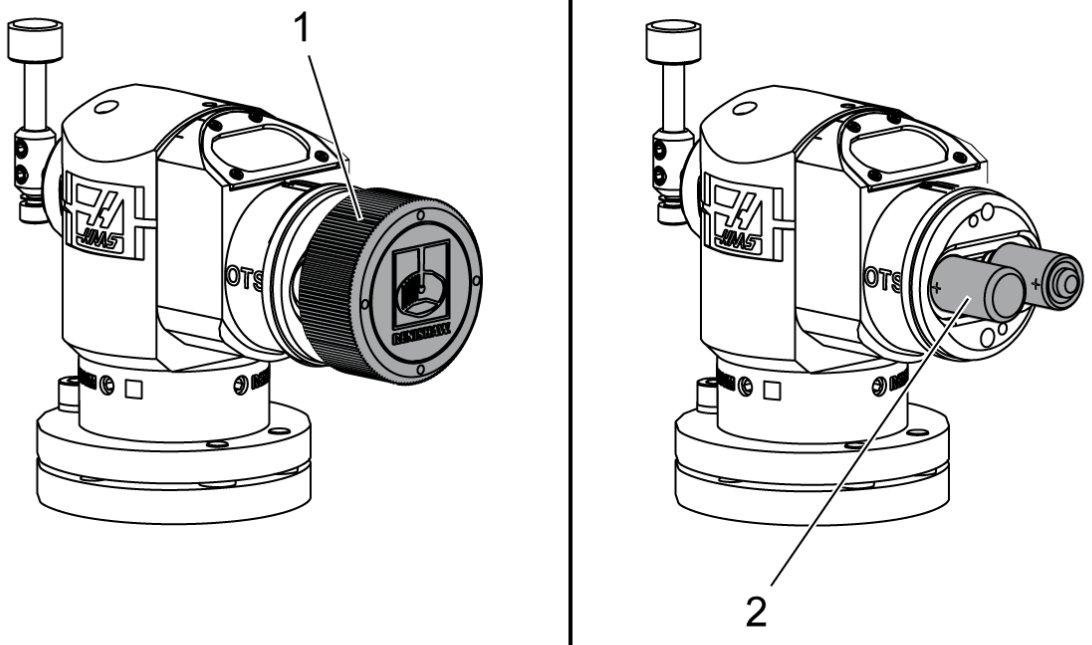
Place the stylus [4] into the stylus mount [5]. Snug the set screws with the screwdriver.

Bend the retainer strap 90 degrees as shown [7].

Place the stylus assembly onto the probe shaft. Snug the set screws with the screwdriver.

Attach the retainer strap to the bottom of the stylus assembly using included screw [6].

**F2.13:** Tool Probe Battery Installation



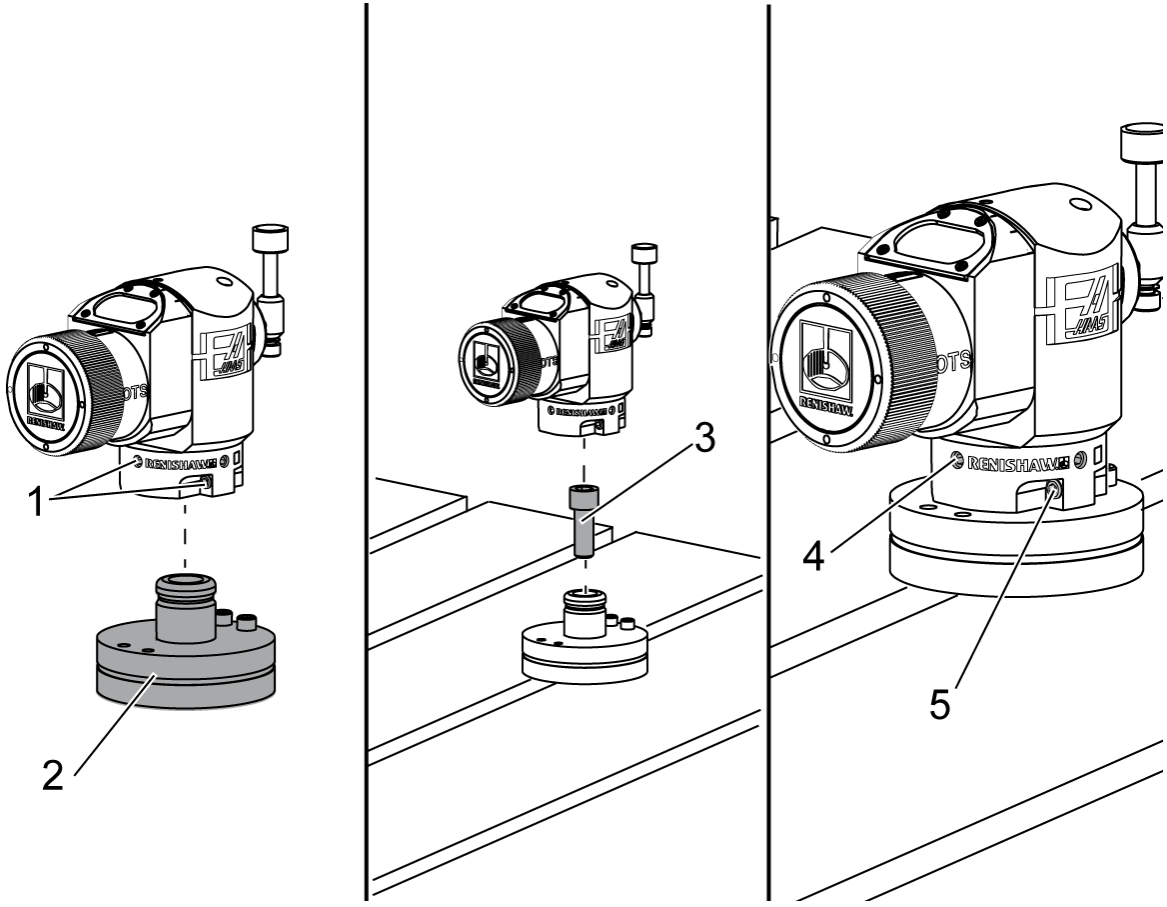

***NOTE:*** *Do not touch the stylus when you install the batteries. This can change the settings.*

Remove the battery cover [1].

On new probes, make sure to remove the plastic shield between the batteries [2] and the contacts.

Install the batteries and battery cover.

**F2.14:** Tool Probe Installation




The recommended tool probe location is on the right side of the table, away from the tool changer. This position also allows the probe window to face away from flying chips, prolonging probe life. The spindle must have enough travel to reach all four sides of the probe stylus. Allow 2” of travel on all four sides of the probe stylus, for calibration.

Renishaw probes measure tool diameters using (+Y) and (-Y) travel. Ensure that table probe mounting allows enough Y-travel for tool diameter measurement; for example, allow at least 5” of total travel around the table probe to measure tool diameters up to 6”. Allow 3” of travel to measure tool diameters up to 3”.

Loosen the (6) set screws [1] around the probe body.

Remove the base [2] from the probe body.

Use a 3/8" - 16 x 1 socket head cap screw [3] to anchor the base to the machine table.

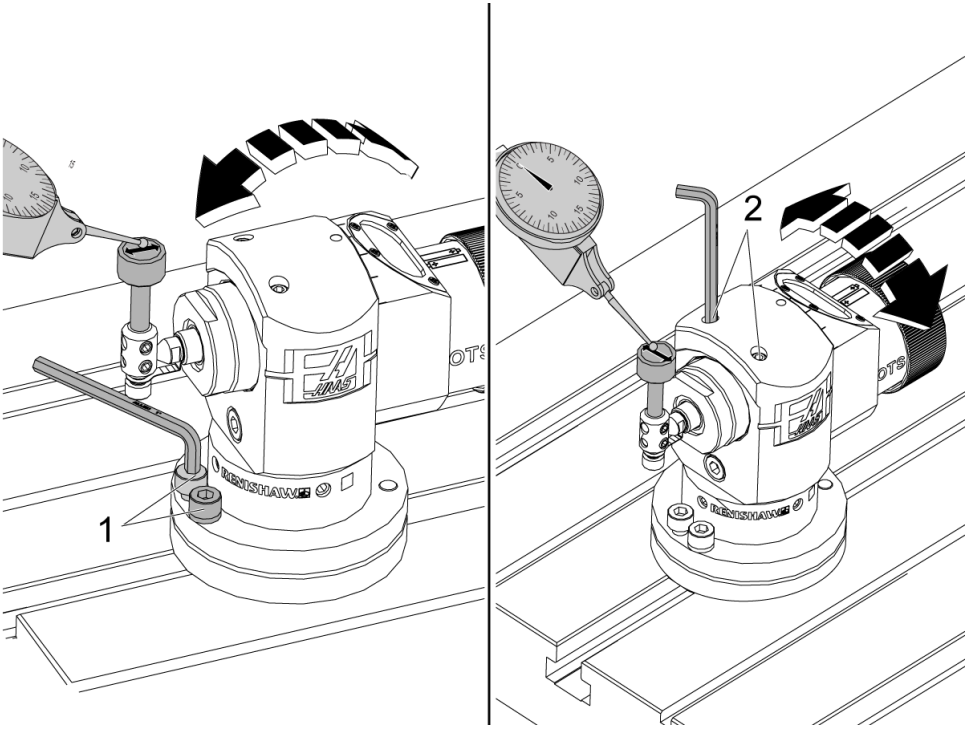
Place the probe body on the base.

Snug the (4) base mount set screws [4].

Snug the (2) base rotation set screws [5].

Using handle jog carefully check that the tool probe will not collide with any part of the machine.

**F2.15:** Tool Probe Stylus Indication

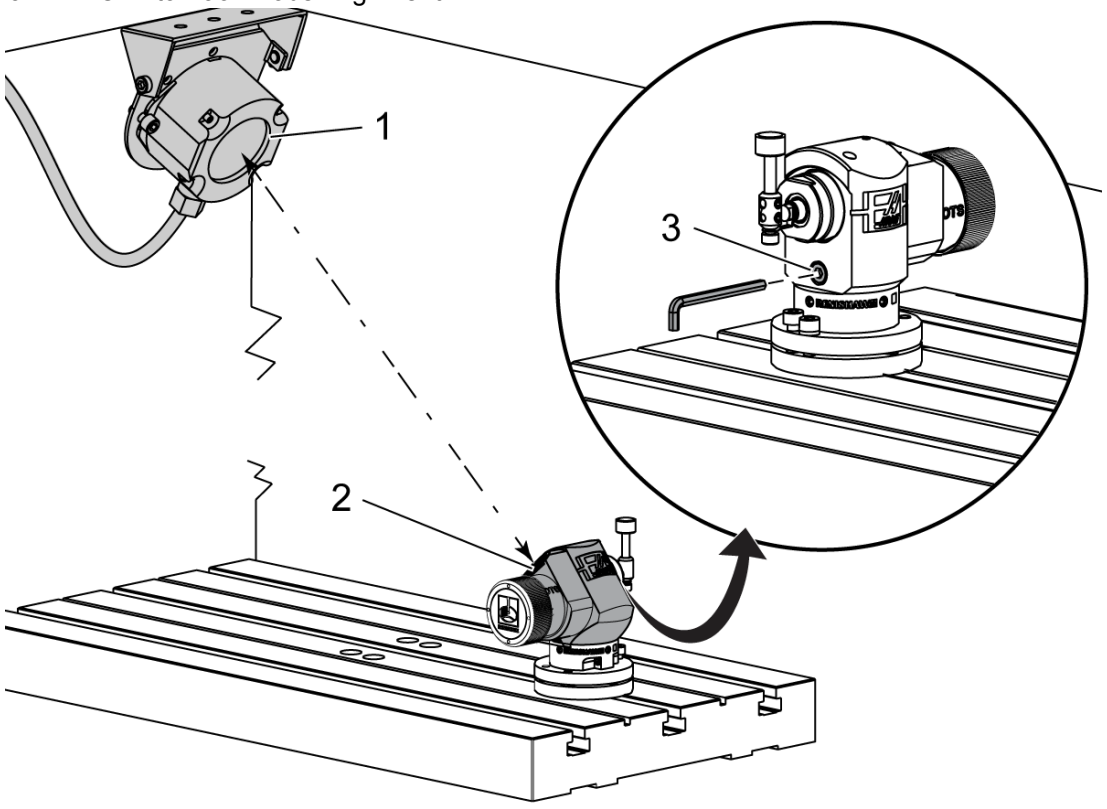



Attach the base of your dial indicator to the spindle and place the indicator tip on the tool probe stylus.

Using handle jog sweep the indicator across the stylus in the X axis. Adjust the (2) screws [1] at the probe base to align the stylus side-to-side not to exceed +/- 0.0001" (0.003 mm).

Using handle jog sweep the indicator across the stylus in the Y axis. Adjust the (2) screws [2] on the probe body to align the stylus front-to back not to exceed +/- 0.0001" (0.003 mm).

**F2.16:** OMI to Tool Probe Alignment



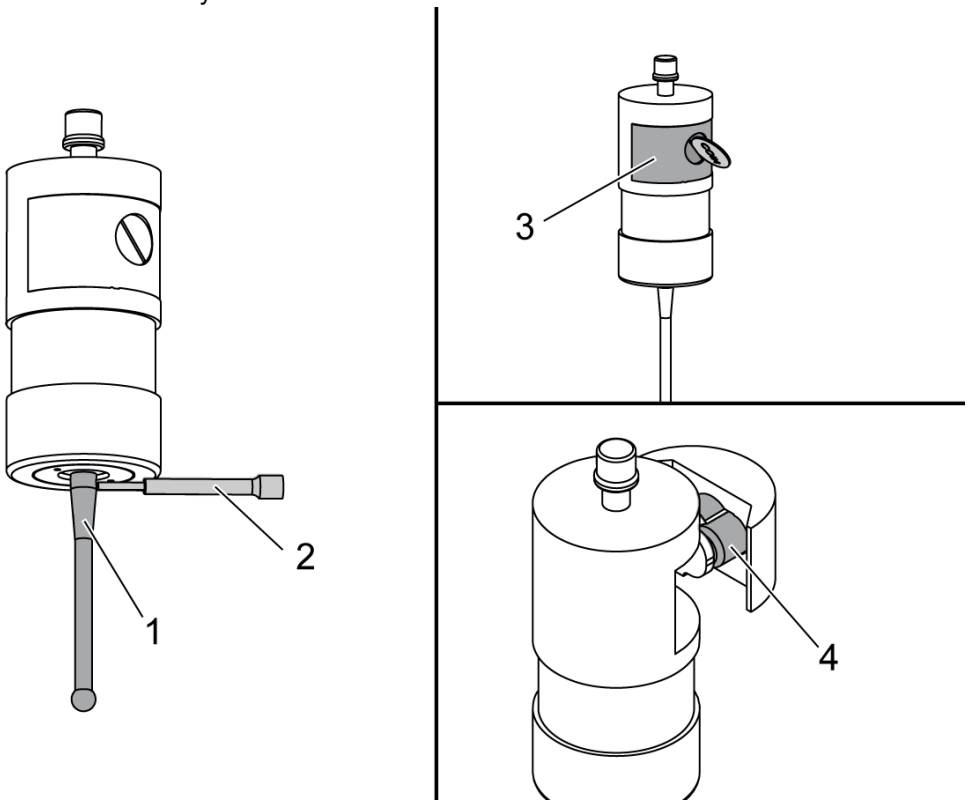

Loosen the set screw [3] beneath the stylus.

Turn the probe body so that the data transmission window [2] points at the OMI receiver [1].

Snug the set screw.

# 2.6 Work Probe Installation

**F2.17:** Work Probe Battery Installation




Install the stylus [1] into the probe body.

Use the stylus installation tool [2] to tighten the stylus [1] into the probe body [3].

Turn the tool until the stylus is snug.

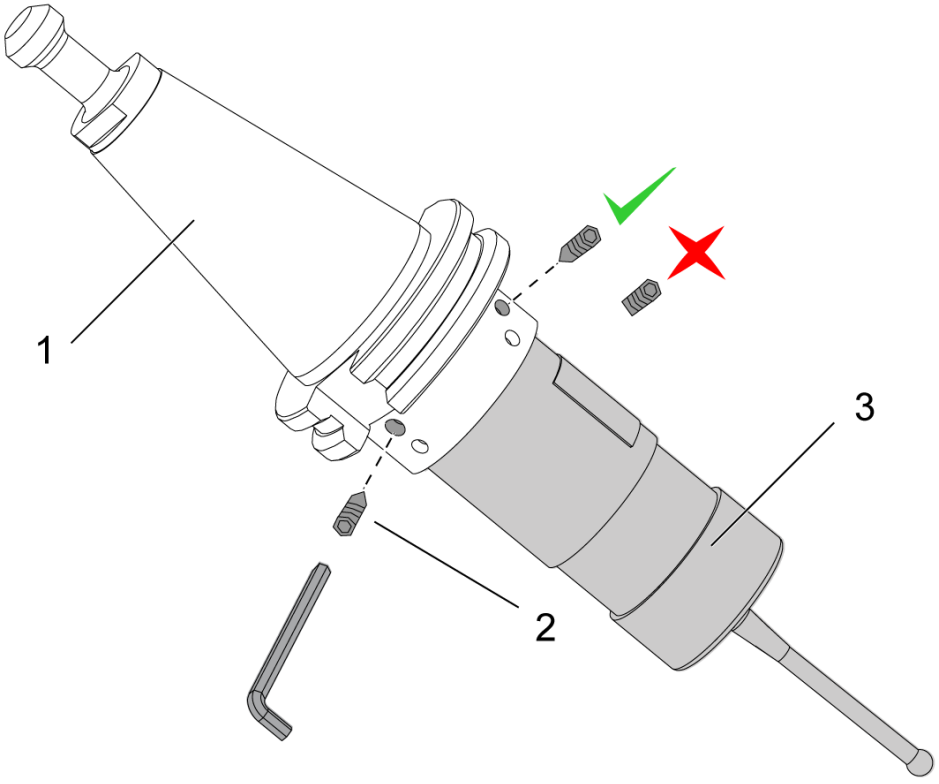
Use a coin or at-head screwdriver to remove the battery compartment cover [3].

***NOTE:*** *Do not touch the stylus after installing the batteries. Touching the stylus can change the settings.*

Install batteries [4] into the battery compartment.

Install the battery compartment and tighten the cover.

**F2.18:** Tool Probe - Probe Body Installation




If the probe is not yet installed to the toolholder, follow the below steps, otherwise skip to Step 3:

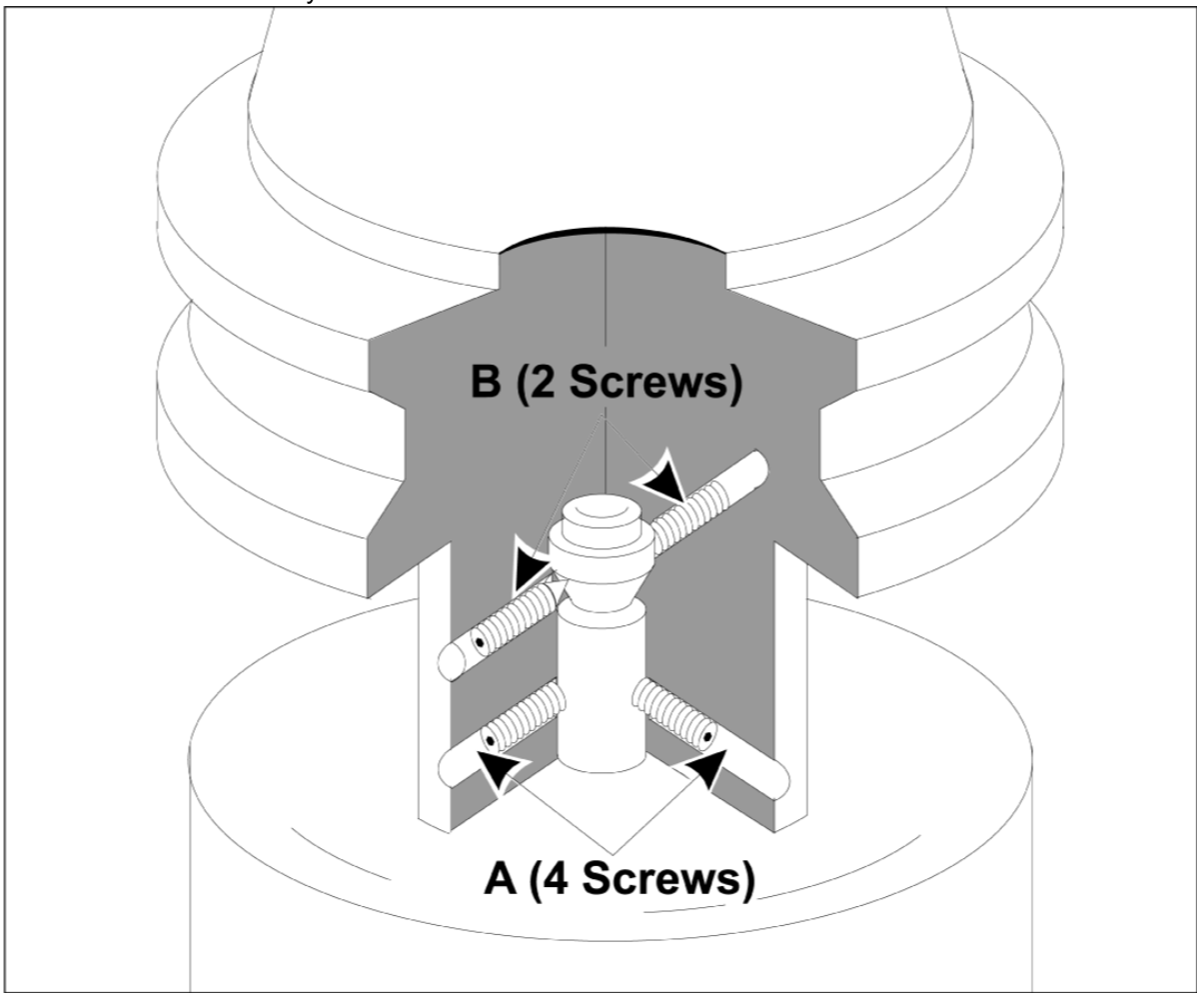
Loosen the all the set screws in the probe toolholder [1].

***NOTE:*** *The (2) top set screws hold the probe body into place. Make sure the (2) top set screws in the probe toolholder are conical.*

Insert the probe body [3] into the toolholder [1].

Use the hex wrench [2] to snug the (2) top set screws.

**F2.19:** Tool Probe Stylus Indication




Insert the OMP40-2 probe into the spindle.

With the work probe assembly installed in the machine spindle, set a dial indicator against stylus ball and rotate the work probe to check runout. It should not exceed 0.0002”.

If adjustment is required, slightly loosen the two upper set screws (“B”). Slightly loosen the lower set of set screws (screw set “A”).

Progressively adjust the “A” screws in sequence and monitor alignment, loosening on one side and tightening on the other, bringing the probe into alignment.

When probe is aligned to within 0.0002”, tighten each “B” screw while tightening opposing “A” screw, each to no more than 0.5 ft-lb. Re-verify alignment and tighten the remaining “A” screws.

When installation of the OMI, tool probe, and work probe is complete perform 3 step calibration. See the Calibration section.

# Chapter 3: Troubleshooting

## 3.1 Troubleshooting

Most communications problems in the WIPS system are caused by either dead/low batteries, or an accumulation of chips on probe windows. If chips tend to collect on the table probe window, consider programming a coolant washdown of the probe before carrying out tool probe operations. For assistance with this, please contact your dealer.

***NOTE:*** *Measuring the voltage of probe batteries with a multi meter will yield false results.*

If any component of the WIPS system is moved, recheck alignment and recalibrate before using the system.

**WIPS Alarm Reference**

| Alarm# | Alarm Title | Notes | Troubleshooting |
|---|---|---|---|
| 1086 | Path Obstructed | Protected Positioning Cycle only. | Clear the obstruction and start again from a safe position. |
| 1088 | No Feed Rate | Protected Positioning Cycle only. | Insert the F code input and start again from a safe position. Recommended protected positioning feed rate is 120 in/min. |
| 1089 | No Tool Length Active | G43 or G44 must be active before the cycle is called. | Edit the program and start again from a safe position. |
| 1091 | Format Error | Inputs are mixed, missing, or incorrectly formatted. | Edit the program and start again from a safe position. |

| Alarm# | Alarm Title | Notes | Troubleshooting |
|---|---|---|---|
| 1092 | Unexpected Surface Found | This alarm occurs if the probe is already triggered before a move or if the probe is triggered while roughly positioning the probe or tool. | Clear fault and start from a safe position. Chips may be trapped around the probe eyelid. Adjust work lights so they are not shinning directly into probe or receiver windows. The settings in the work probe may not be correct. See the Work Probe Settings section. |
| 1093 | Surface Not Found | This alarm occurs if the probe did not trigger during the probing cycle. | Edit the program and start from a safe position. Adjust work lights so they are not shinning directly into probe or receiver windows. The settings in the work probe may not be correct. |
| 1099 | Broken Tool | This alarm occurs if a tool is out of user defined tolerance. | Replace defective tool and establish correct tool offset value. |
| 1101 | Probe Startup Failure or OTS Start Up Failure | During probe start-up, the spindle must reach a speed of 500 RPM. | Check that the spindle speed override is not active. Possible faulty probe. |
| 1011 | OMP40 Not Calibrated | The work probe is not calibrated. | Perform 3 step calibration. See the Calibration section. |
| 1106 or 1107 | OMP40 Needs Calibration | The work probe is not calibrated. | Perform 3 step calibration. See the Calibration section. |
| 1010 | OTS Not Calibrated | The tool probe is not calibrated. | Perform 3 step calibration. See the Calibration section. |
| 1104 | OTS Needs Calibration | The tool probe is not calibrated. | Perform 3 step calibration. See the Calibration section. |

***NOTE:*** *For more information of Work and Table Probe settings see the WIPS troubleshooting guide located under the service tab at haascnc.com.*

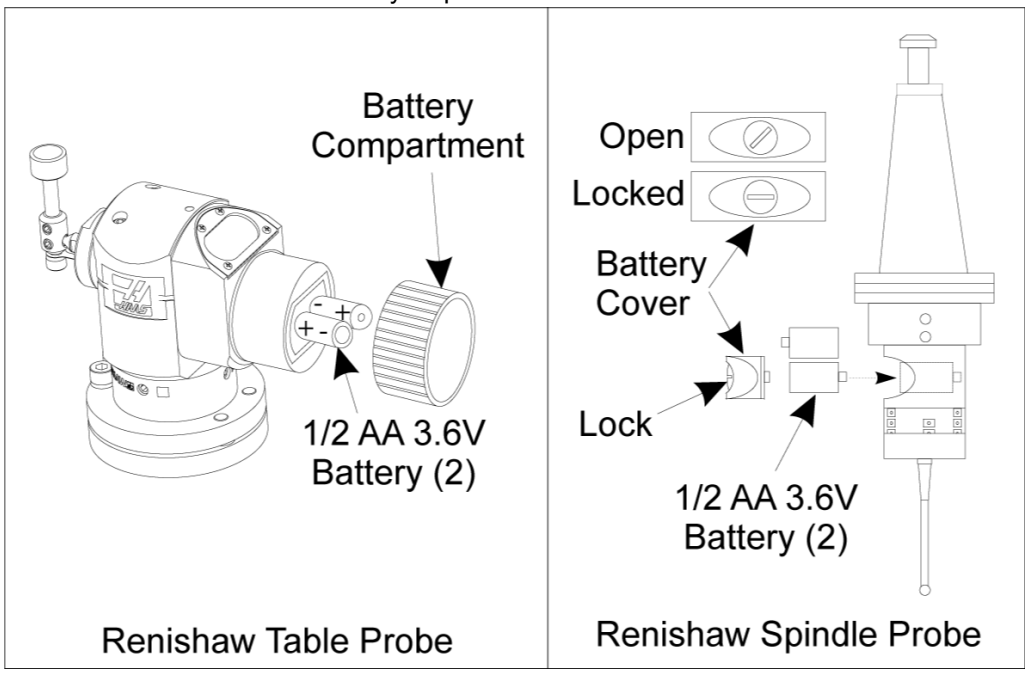
| Symptom | Possible Cause | Corrective Action |
|---|---|---|
| Incorrect measurements. The probe does not give repeatable location results. | The probe is not calibrated. | Perform 3 step calibration. See the Calibration section. |
| Incorrect measurements. The probe does not give repeatable location results. | The probe stylus is loose. | Recenter the probe stylus with the spindle centerline. See the Installation section. |
| Incorrect measurements. The probe does not give repeatable location results. | The probe stylus is not concentric to the spindle centerline (runout). | Recenter the probe stylus with the spindle centerline. See the Installation section. |
| Incorrect measurements. The probe does not give repeatable location results. | The WIPS programs or macro variables are corrupted. | Load the latest Renishaw macro programs. Make sure to overwrite the current macro programs. |

# Chapter 4: Maintenance

## 4.1 Battery Replacement

**Probe Battery Replacement**

**F4.1:** Tool and Work Probe Battery Replacement




If the batteries are low, the work probe's green and blue LEDs may flash. If the batteries are completely dead, the red LED may constantly be on.

Always replace both batteries at the same time.

Do not rely on a multimeter for testing the batteries. The lithium batteries in the probe may read 3.6 Volts from a multimeter, even though they are low.

**Renishaw Spindle Probe - Renishaw Spindle Probe contains two 1/2 AA 3.6V batteries.**

Use a coin to unlock and remove the battery cover located on the side of the probe. Remove both 3.6V batteries, insert new ones and replace the battery cover.

**Renishaw Table Probe - Renishaw Table Probe contains two 1/2 AA 3.6V batteries.**

Unscrew the battery cover/holder from the battery compartment located on the side of the probe. Remove both 3.6V batteries, insert new ones and replace cover/holder.

***NOTE:*** *For future reference, write the date on new batteries before installing them. Batteries in the work probe have a life span of about 8 months and batteries in the table probe have a life span of about 10 months.*

***NOTE:*** *Do not touch the stylus after installing the batteries. Touching the stylus can change the settings.*

***NOTE:*** *On new probes, make sure to remove the plastic shield between the batteries and the contacts.*

## 4.2 Replacement Parts

**T4.1:** Probe Replacement Parts

| Haas Part# | Description | Probe Type |
|---|---|---|
| 60-0026 | Ceramic Stylus | Spindle |
| 93-2770 | Disk Stylus | Table |
| 60-0029 | Stylus Holder | Table |
| 60-0030 | Link Break Protect | Table |
| 60-0034 | Extension | Table |

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