

Installation of *DEUBLIN* Bearingless Sensor Unions

This installation sheet has been written for operating and maintenance personnel who, by order of the owner, have been trained to work with *DEUBLIN* Bearingless Unions and authorized to carry out the owner's tasks. It gives directions for correct installation of a *DEUBLIN* Bearingless Union.

This installation sheet should not be used as a replacement for the instruction manual but in addition to it.



DEUBLIN Bearingless Unions are precision parts with very close manufacturing tolerances which allow exact, vibration-free running. To guarantee this, all work must be carried out with the utmost care and cleanliness.

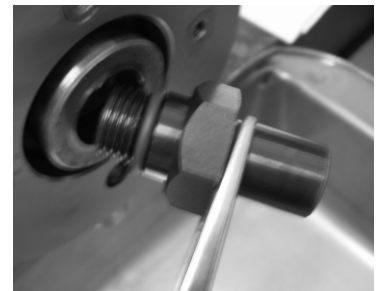
1. Preparation



- Check filtering system media for contamination as per cleanliness level DIN ISO 4406 Class 17/15/12.
- Ensure that the following dimensions conform to *DEUBLIN* specifications: concentricity and axial run-out of the bore in the spindle end, pilot diameter and pilot diameter depth of the machine frame, and lockup distance between rotor shoulder and mounting surface of housing. Drawings are available upon request.
- Ensure that the spindle bore and all mounting surfaces are free of burrs, shavings, and other debris.
- Ensure that the *DEUBLIN* Bearingless Union is suitable for the intended application.
- You will need the following tools: Makino tool for rotating the spindle, 15/16" hex wrench, M5 Allen wrench (preferably ball-end), M4 Allen wrench (preferably ball-end), and other hex wrenches to fit hose connections in the machine.

2.1. Rotor Installation

- Prior to installing the rotor in the spindle end, make sure that all threads, pilot diameters, and mating surfaces are clean and free of damage.
- Using a 15/16" hex wrench and the Makino tool to prevent spindle rotation, install the rotor in the spindle end. Tighten to a torque of 15 Nm to 50 Nm.
- Gently clean the ceramic sealing surface and moisten with some water soluble oil.



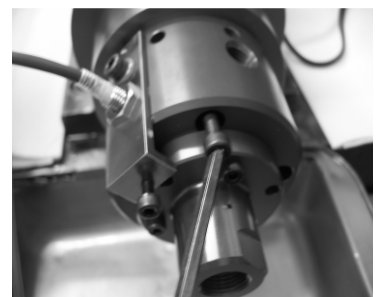
2.2. Fittings Assembly

- Remove the solenoid assembly from the bottom of the old union.
- Remove the larger elbow fitting (closer to the spindle) from the top of the old union. The smaller elbow (closer to the coolant hose connection) is not needed.
- Thread the solenoid assembly into the bottom of the *DEUBLIN* union.
- Thread the larger elbow into the top of the *DEUBLIN* union. When everything is correctly assembled, the sensor should be at 10 o'clock, the elbow should be at 12 o'clock and the solenoid assembly should be at 6 o'clock. See photograph at right.
- Do NOT install at this time the compression fitting or check valve for the coolant supply. It will be installed after sensor position has been adjusted in step 2.4.



2.3. Housing Installation

- Using the eraser end of a pencil, or similar soft-tipped tool, reach into opening on the machine side of the housing and GENTLY push the ceramic "floating seal" assembly as far back as possible. This is required for correct seal operation.
- Install union housing with factory-attached sensor and tighten the (4) M5x40 mounting bolts supplied. Viewed from the back of the union, sensor should be located approximately at 11 o'clock.
- Do NOT install the coolant check valve or supply hose until after sensor position has been adjusted as described in step 2.4.

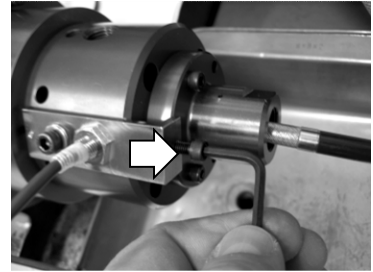
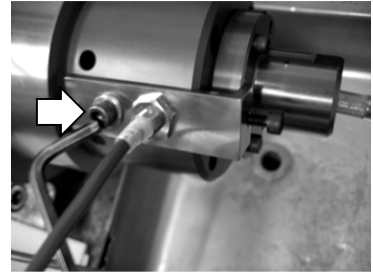


2.4. Sensor Adjustment

- Fish the new sensor wires through the machine to the electrical panel. The old sensor wires are a convenient way to do this.
- Connect sensor wires to the machine, making sure that the blue wire is connected to the “L1340” (limit switch) terminal and the brown wire is connected to the “C24HC” (ground) terminal.
- Turn the power ON. The red LED on the sensor should illuminate, indicating that sensor is active and ready to detect excessive seal wear.
- Insert a pencil or similar tool into the coolant supply port. GENTLY push the floating seal forward until you feel full contact with the rotor seal. At this point it will not be possible to push the floating seal any farther. The LED should remain illuminated.
- Loosen slightly the M5 bracket retaining bolt, located next to the sensor (top arrow).
- While continuing to push forward the floating seal, turn the M4 sensor adjustment screw in a CLOCKWISE direction until the LED turns OFF (bottom arrow).
- Now rotate the adjustment screw COUNTERCLOCKWISE by a one-half revolution. The LED should turn ON.
- Retighten the M5 bracket retaining bolt located next to the sensor. Make sure that the LED remains ON.

NOTE: The sensor comes from **DEUBLIN** with the correct radial (depth) setting. If necessary, however, the sensor may be adjusted radially as follows:

- Loosen the lock nut on the sensor with an M14 hex wrench.
- Use a pencil or similar tool to GENTLY push the floating seal forward as far as possible.
- GENTLY turn the sensor CLOCKWISE until you feel it contact the floating seal.
- Turn the sensor COUNTERCLOCKWISE by one-half revolution, to set the proper sensing gap.
- Tighten the lock nut, making sure that position of sensor does not change



2.5. Hose Installation

- Insert a pencil or similar tool into the axial coolant supply port. GENTLY push the floating seal forward until you feel full contact with the rotor seal. When you release the floating seal, it should spring back a few millimeters.
- Thread the compression fitting or check valve into the appropriate supply connection on the rear of the union, and tighten. **NOTE:** Some Makino machines require an axial coolant supply connection (Makino union part numbers beginning 7S10A) and some require a radial supply connection (part numbers beginning 7S11B). **DEUBLIN** 1123-001-301 has both axial and radial supply connections.
- Connect the coolant supply hose to the compression fitting or check valve.
- Block the unused coolant supply connection using the plug supplied by Deublin.
- Reconnect the air lines to the solenoid assembly hanging under the union.
- Reconnect the air line to the larger elbow on top of the union.

NOTE: The air line that originally connected to the smaller elbow should be capped. This is best done at the top of the machine where the air line originates.



3. Final Check

- Make sure the machine has an adequate supply of coolant.
- Turn on coolant pressure and check for leaks. At first, you may see a few drops of coolant coming from the holes on the bottom of the union near the spindle. Once the spindle has started rotating, however, there should be NO leakage.
- Observe the **DEUBLIN** Bearingless Union for a few minutes with the machine running at its maximum speed and coolant pressure. Make sure that you see no coolant leakage and hear no unexpected air leakage.
- Confirm that all bolts, fittings and connections remain tight.

