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Hydro-Probe II Installation Hints

For concrete and aggregates





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Contents

- Introduction
- Cable and Cabling
- Material Flow and positioning
- 'Sticky' Materials
- Neck Mounting
- Sensor protection and positioning
- Bin Wall Mounting
- Large Wall Mounting
- Small Bin Mounting
- Vibratory Feeders
- Conveyor Belts
- Mounting Options



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Introduction

This presentation shows a number of installation diagrams and photographs with recommendations. More detailed information is available in the Hydro-Probe II user guide. The user guide is available in multiple languages and downloadable from www.hydronix.com.

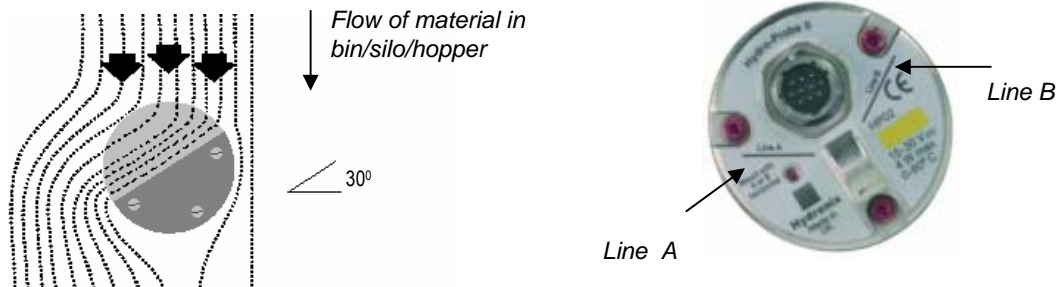
When installing a sensor one of the most important factors to consider is that...

- For precise, accurate and representative moisture measurement, it is imperative that the 'sensing area' of the sensor – the ceramic faceplate – is able to sense a representative sample of the moving stream of material and that no material can build up over the face to obscure the sensor.
- When calibrating or taking measurements it is important to always average the signal.

General Points

Material Flow and positioning

- The sensor should not obstruct the material flow.
- Avoid areas of severe turbulence. The optimal signal will be obtained where there is a smooth flow of material over the sensor.
- Position the sensor so that it may be easily accessible for routine maintenance, adjustment and cleaning.
- To prevent damage from excessive vibration, position the sensor as far as reasonably practical from vibrators.
- The sensor must be angled with the ceramic faceplate initially set to 30° to ensure that none of the material sticks to the ceramic faceplate, as shown below. This is indicated on the label when the A or B line is 90 degrees to the direction of flow of material (parallel to the horizontal for a bin/silo/hopper).



General Points

Cable and Cabling

- Ensure that the cable is of a suitable quality (see user guide HD0127).

- Ensure that the RS485 cable is taken back into the control panel.

This can be used for diagnostic purposes and takes the minimum of effort and cost to connect at the time of installation.

- Route the signal cable away from any power cables.

- The sensor cable should only be grounded near to the sensor.

- Ensure that the cable screen is not connected at the control panel.

- Ensure that there is continuity of the screen through any junction boxes.

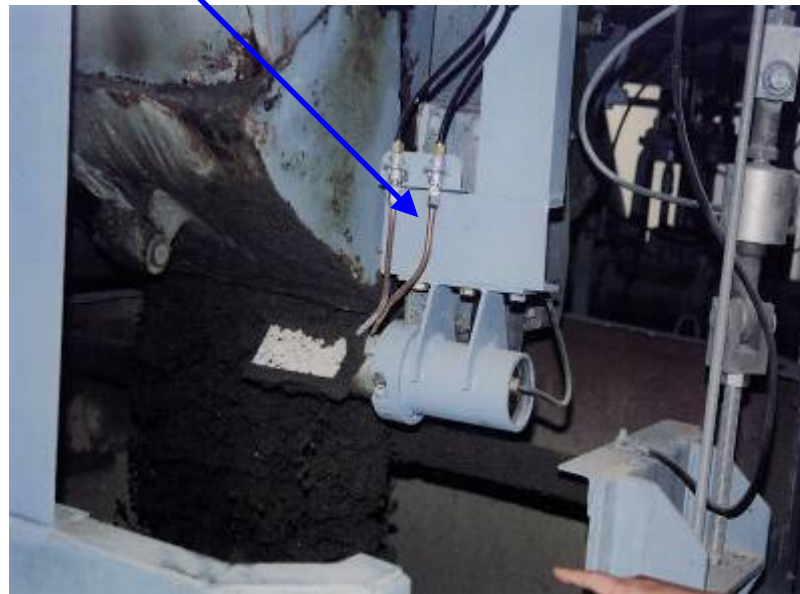
- Keep the number of cable joins to a minimum.

- Maximum cable run: 200m, separate to any heavy equipment power cables.

General Points

'Sticky' Materials

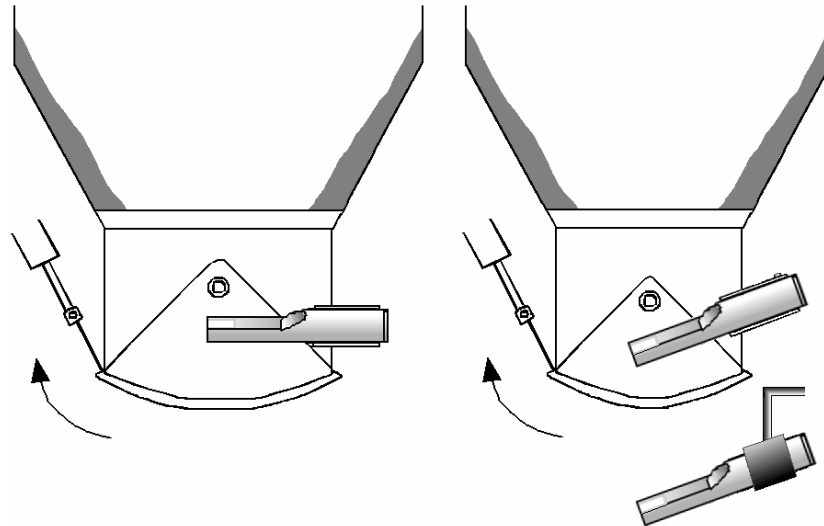
For 'sticky' materials or where the flow may stall an air hose may be fitted to clean the ceramic between batches. Here the sensor has been installed below the gate. This gives easy access for the air hoses, as well as enabling an operator to easily remove any obstruction manually.



General Points

Neck Mounting

- Ensure that the ceramic faceplate is in the main flow of material.
- Locate on the opposite side to the door-opening and centered within the neck.
- To prevent obstruction of the material where space is limited, the sensor can be angled down to a maximum of 45° as shown below.
- The sensor may require cleaning if it is used in sticky materials or if the sensor is fouled by weeds and other foreign bodies contained in the aggregates. In this case, mounting the sensor under the bin can be advantageous for ease of maintenance.





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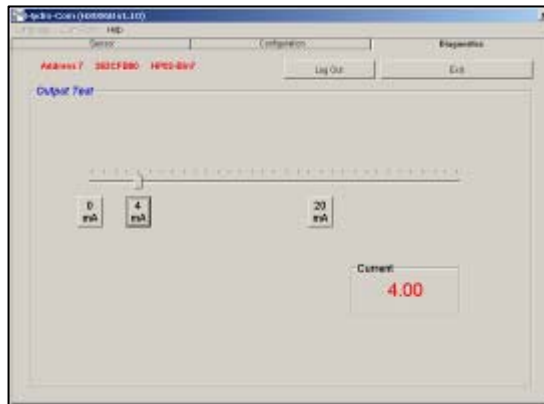
Neck Mounting



1 Cut the hole



2 Fit the sensor



3 Hydro-Com allows you to force the current loop to configure and test the analogue connection if required.



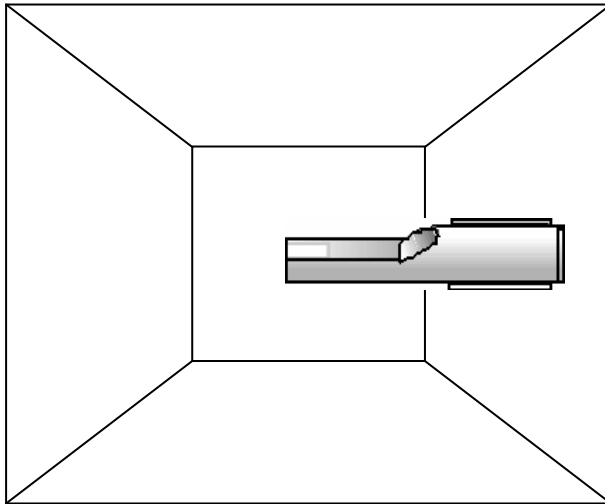
4 Ensure a good flow of material. Here a mesh is fitted for sensor protection



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Neck Mounting

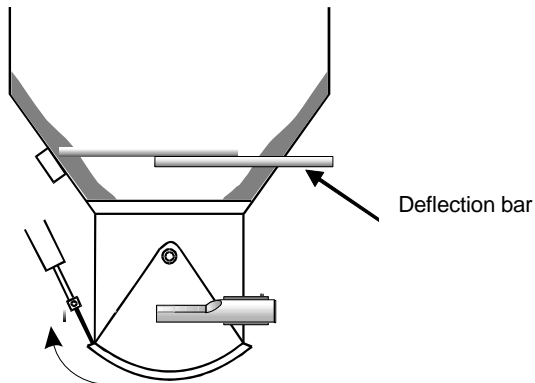


Sensor face mounted at $\approx 30^\circ$ to the horizontal to prevent build up of material and good flow over ceramic

General Points

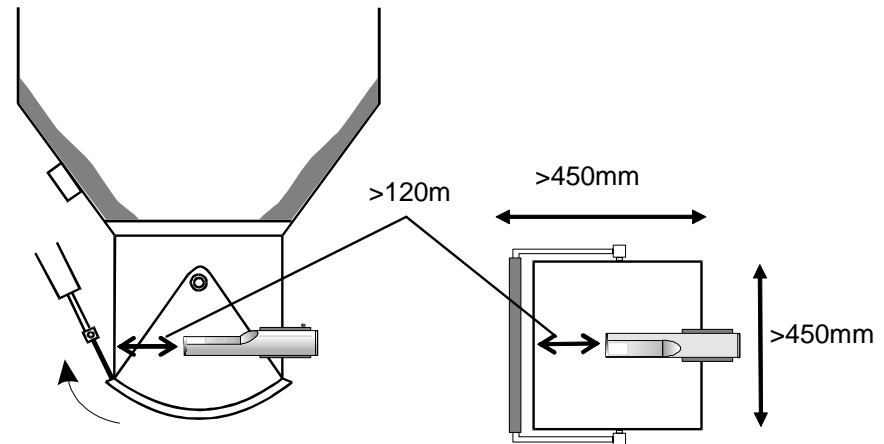
Sensor protection and positioning

Deflector Bar



A deflector bar may be used where there is a risk of large foreign objects falling in the hopper.

General to Neck Mounting



Ideally, the sensor should be positioned taking in consideration the above minimum distances.

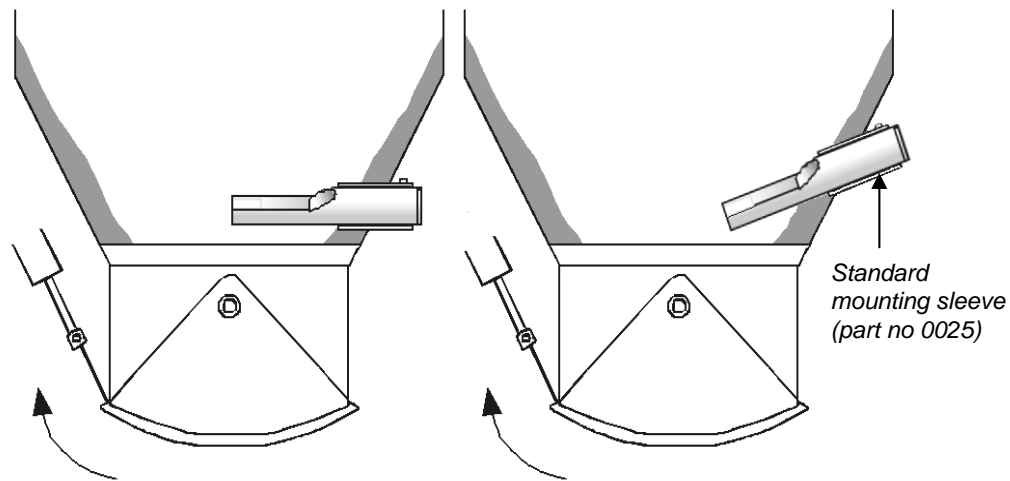


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General Points

Bin Wall Mounting



The sensor should be located on the opposite side to the door-opening ram and centred within the neck.

Ensure the sensor does not obstruct the door-opening.

Ensure the ceramic face-plate is in the main flow – observe a test batch to identify the best position.

The sensor may be angled downward in small bins OR in larger bins to aid the flow of a 'sticky' material.

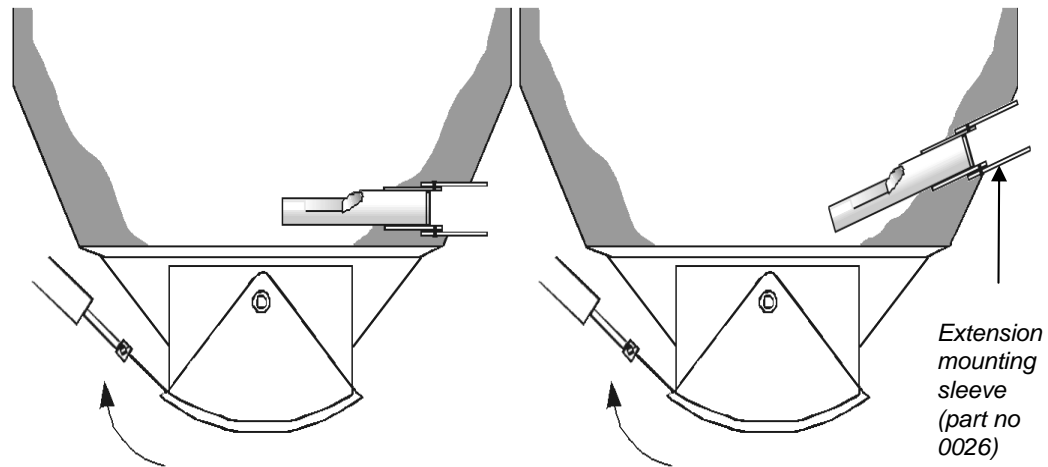


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Large Wall Mounting

If the sensor does not reach the main flow of material, then an extension mounting sleeve (part no 0026) should be used, as shown below.

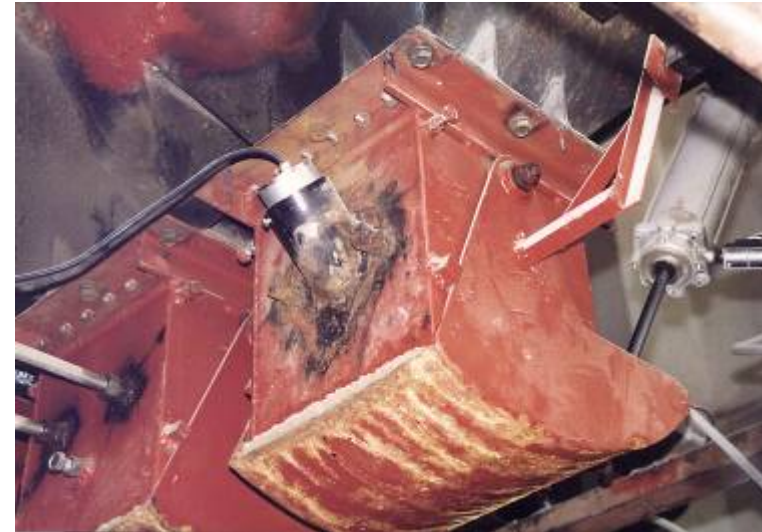
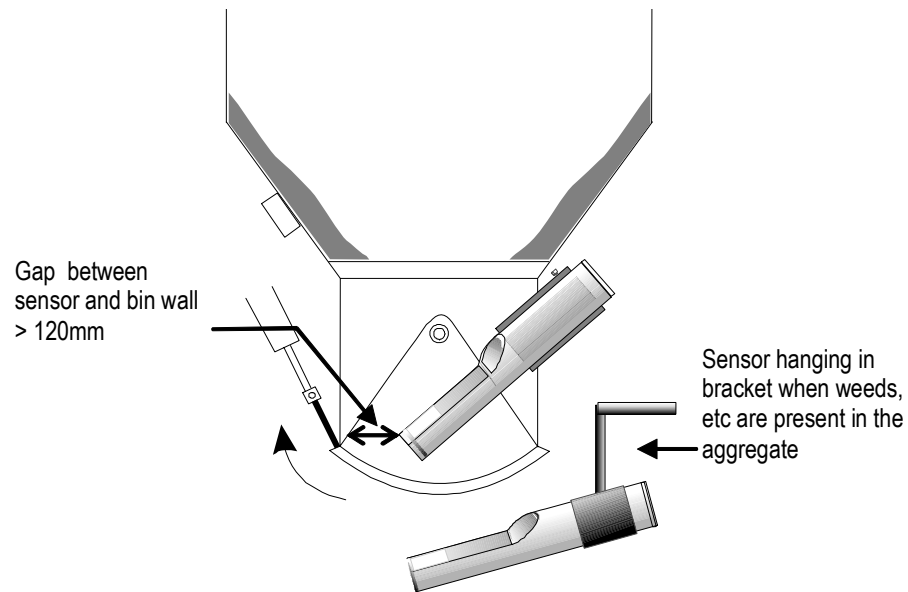




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Small Bin Mounting



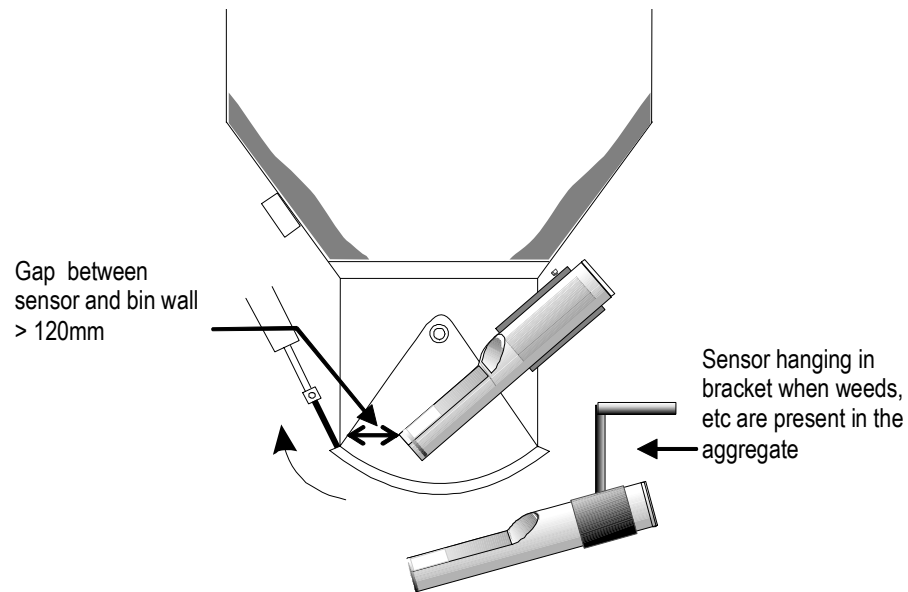
The sensor may be angled downward in small bins OR in larger bins to aid the flow of a 'sticky' material.



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Small Bin Mounting



Hanging Bracket



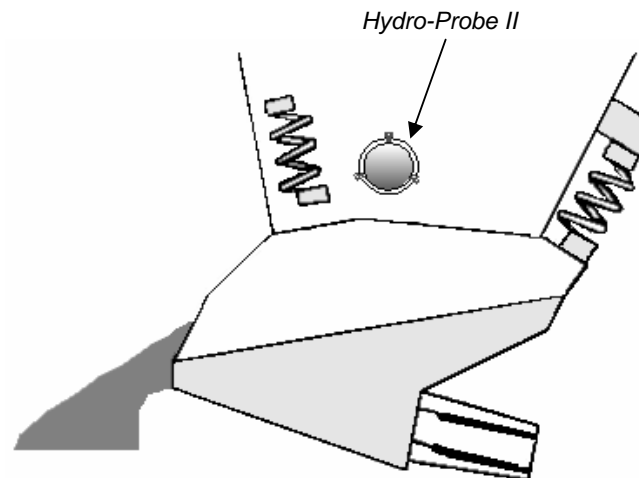
The sensor may also be installed below the bin gate.

Vibratory Feeders

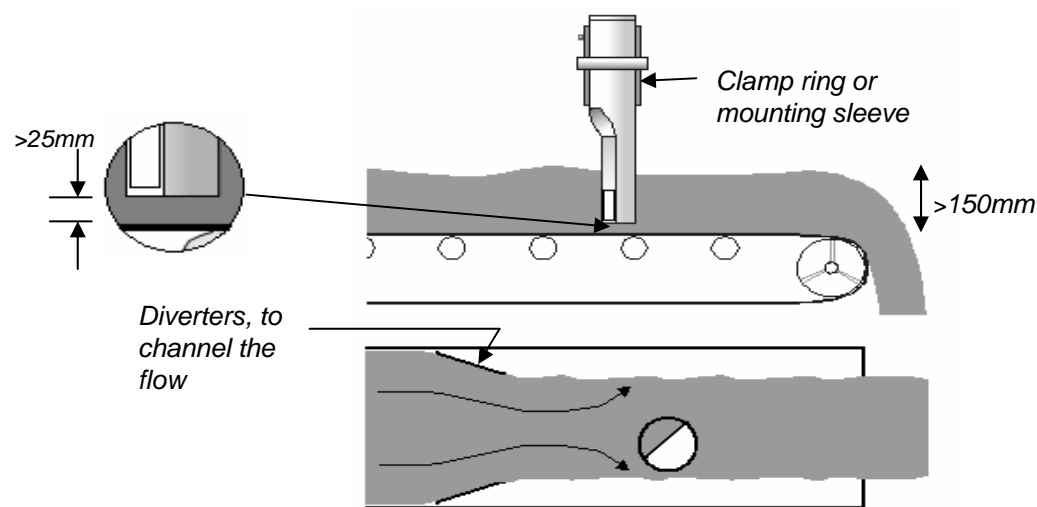
With vibratory feeders, the sensor is normally fitted by the manufacturer.

It is difficult to predict where the flow of material occurs, but the location shown below is recommended.

Excessive vibration may damage the sensor.



Conveyor Belts



The sensor is secured with a standard mounting sleeve or clamp ring, welded to a suitable fixing bar.

- Allow a 25mm gap between the sensor and the conveyor belt.
- Angle the ceramic faceplate 45° to the flow. This may need to be altered depending on the flow characteristics.
- The minimum depth of material on the conveyor belt must be 150mm to cover the ceramic.
- The sensor must always be covered in material.
- To improve the flow characteristics and depth of material on the belt, it may be beneficial to fit diverters.

Conveyor Belts



Aggregate



Cement



Sand

Conveyor Belts



A sensor will wear prematurely if mounted too close to belt.



Recommend gap, >25mm

Conveyor Belts

The preferable method is to install the sensor vertically however, at a angle may considered if required.

Wear will be greater if installed as shown below.

Ensure that the sensor is always in the flow of material (☺/☹)





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Mounting Options

0025,
Standard
Mounting
Sleeve



0026,
Extension
Mounting
Sleeve

0023, Clamp Ring (not
required if using a
mounting sleeves)

