

# Hydro-Skid User Guide

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The customer in applying the product described in this documentation accepts that the product is a programmable electronic system which is inherently complex and which may not be completely free of errors. In doing so the customer therefore undertakes responsibility to ensure that the product is properly installed commissioned operated and maintained by competent and suitably trained persons and in accordance with any instructions or safety precautions made available or good engineering practice and to thoroughly verify the use of the product in the particular application.

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The product described in this documentation is subject to continuous development and improvement. All information of a technical nature and particulars of the product and its use including the information and particulars contained in this documentation are given by Hydronix in good faith.

Hydronix welcomes comments and suggestions relating to the product and this documentation

## ACKNOWLEDGEMENTS

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The Hydro-Skid is a mounting device designed to enable a Hydronix Hydro-Mix moisture sensor to ride over the surface of flowing material on a belt conveyor. Measurements are then taken by the flush mounted sensor as the material passes underneath.



Figure 1: Hydro-Skid

## 1 Part numbers

Part No	Description
HS02	Hydro-Skid and pantograph arm
0033	Adjustable Clamp Ring (Supplied with the Hydro-Mix)

## 2 Safety

This product should only be used in accordance with the recommendations made in this document. Consult the Hydro-Mix user guide for safe installation, use and maintenance of the sensor.

## 3 Specification

Hydro-Skid Weight: 12.5 kg (including Hydro-Mix Adjustable Clamp Ring and Fixing Plate).

Sensor: All Hydronix Hydro-Mix sensor variants.



## 1 General to all applications

The Hydro-Skid is designed to allow a Hydronix Hydro-Mix sensor to measure the moisture contained in flowing material on a belt conveyor. The following is recommended when installing the Hydro-Skid:

- The Hydro-Skid should be positioned to allow the ceramic face plate of the sensor to be in constant contact with the material.
- Position the Hydro-Skid so it is easily accessible to allow routine maintenance, adjustment and cleaning.
- Avoid areas of severe turbulence. The optimal signal will be obtained where there is a smooth flow of material across the sensor ceramic face plate.
- In order to calibrate the sensor to output a moisture percentage value it is necessary to take a sample of the material soon after it has passed beneath the sensor. An area to the trailing edge of the Hydro-Skid will need to be kept free from obstructions to enable samples to be taken (see Section 6 Calibration).

## 2 Dimensions

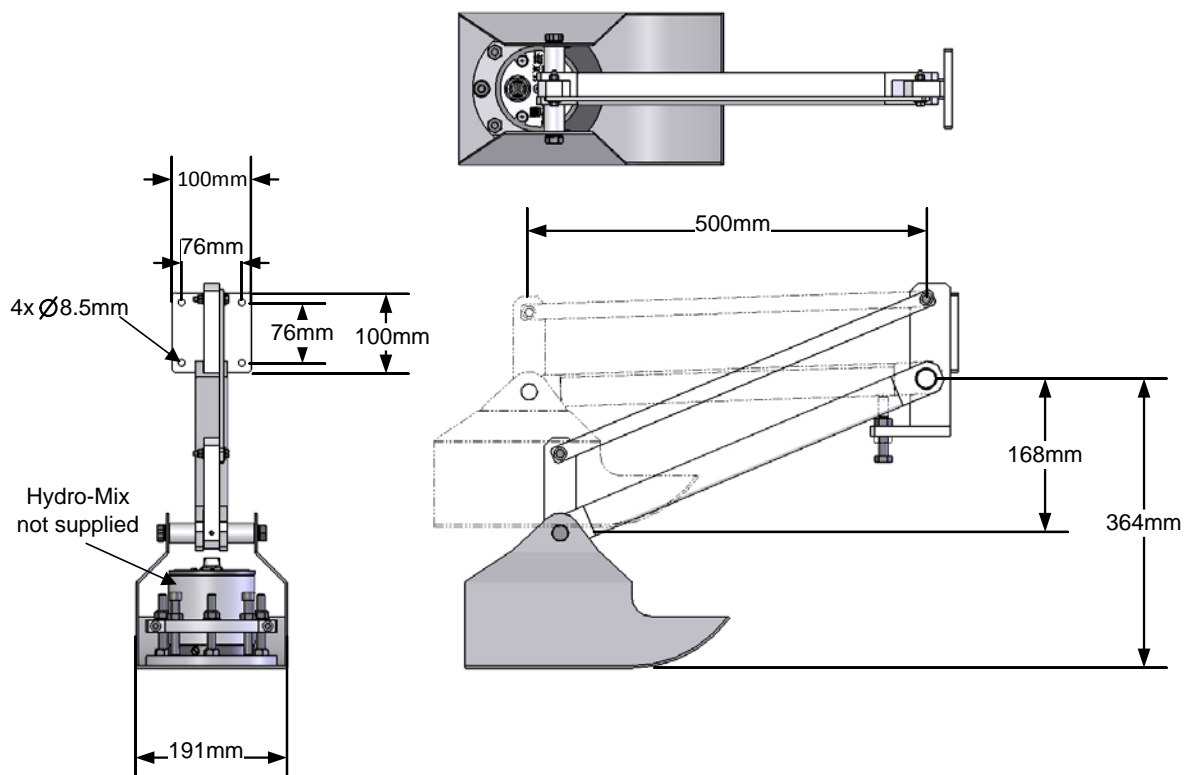


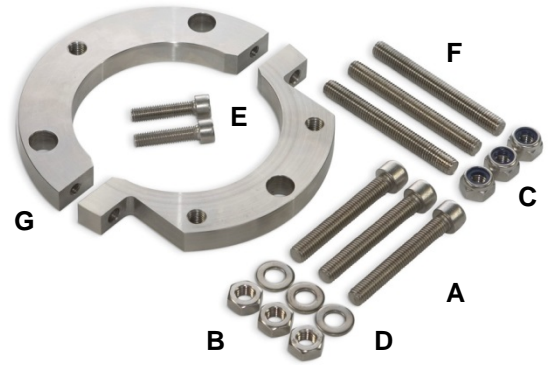
Figure 2: Hydro-Skid dimensions

## 2.1 Installing the sensor into the Hydro-Skid

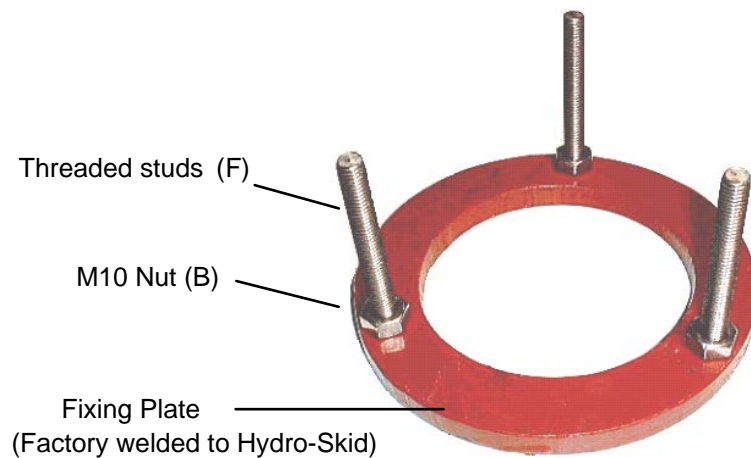
The Hydronix Hydro-Mix sensor is installed into the Hydro-Skid using the Adjustable Clamp Ring, which is supplied with the sensor (Figure 3).

The Adjustable Clamp Ring comprises of the following components:

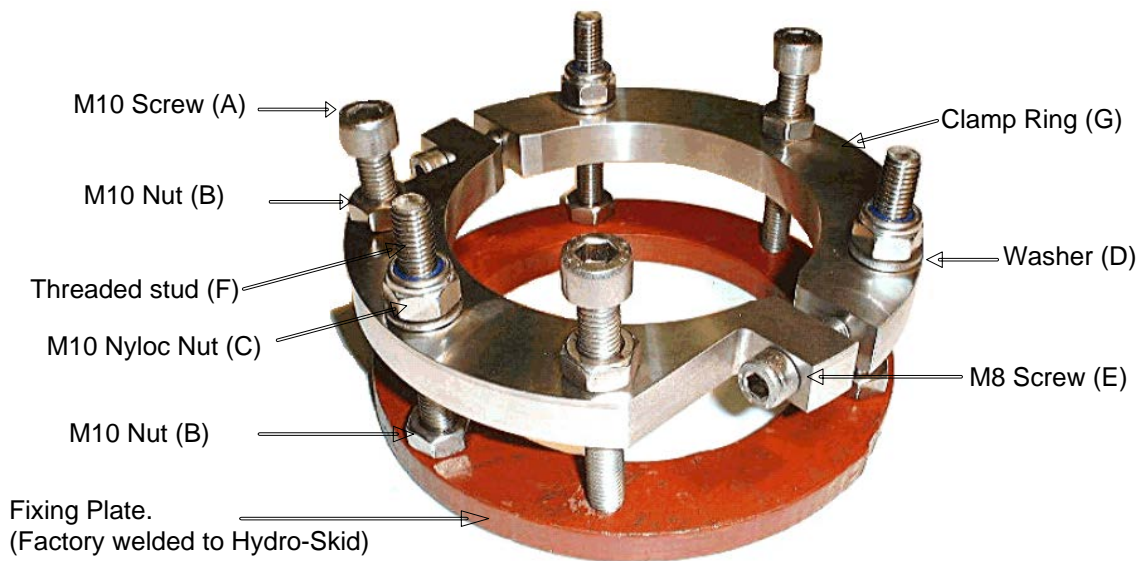
- A. 3 x M10 screws
- B. 6 x M10 nuts (Three shown)
- C. 3 x M10 Nyloc nuts
- D. 3 x washers
- E. 2 x M8 screws
- F. 3 x M10 threaded stud
- G. Clamp Ring



**Figure 3: Adjustable Clamp Ring components**



**Figure 4: Fixing Plate prepared for attaching Clamp Ring**



**Figure 5: Adjustable Clamp Ring assembled and fitted to Fixing Plate**

The following method should be followed to install the Hydro-Mix into the Hydro-Skid:

1. Screw the 3 threaded studs (F) to the Fixing Plate (This is delivered pre-welded to the Hydro-Skid), and tighten securely using 3 x M10 nuts (B) Figure 4
2. Fit the Adjustable Clamp Ring (G) onto the sensor using the 2 x M8 screws (E). Position the clamp ring 50mm from the ceramic end of the sensor. This can be adjusted later if required.
3. Fit the Adjustable Clamp Ring and sensor assembly over the threaded studs of the Fixing Plate and use the Nyloc nuts (C) and washers (D) to position the sensor with the ceramic level with the underside of the Hydro-Skid
4. Fit the 3 screws (A) along with the 3 remaining M10 nuts (B) to the Adjustable Clamp Ring to push against the Fixing Plate.
5. Using a steel rule ensure that the Hydro-Mix ceramic face plate is flush with the underside of the Hydro-Skid.
6. Fully tighten the complete assembly including the lock nuts.

***For further details on the Adjustable Clamp Ring and the sensor please refer to the relevant Hydro-Mix user guide. Adjustable Clamp Rings are available separately from Hydronix, item code 0033.***

### 3 Attaching the pantograph arm

Assembly of the pantograph arm to the Skid is achieved using the M12 hex bolts and lock washers (supplied). Insert the M12 hex bolts, along with the lock washers, through the attachment holes on both sides of the Hydro-Skid into the pantograph arm and tighten (Figure 6).

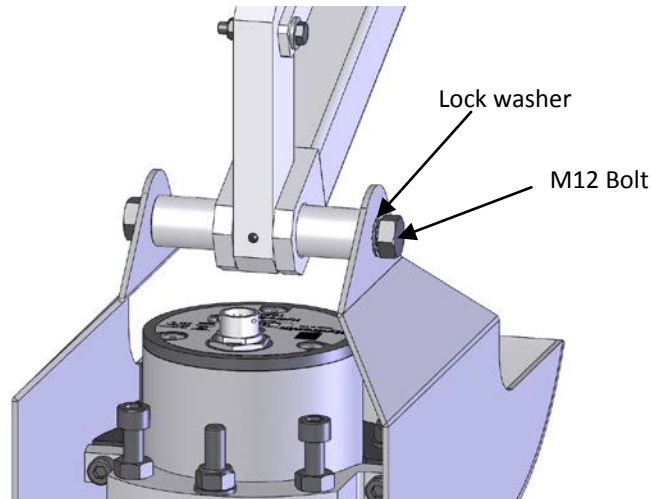


Figure 6: Attaching the pantograph arm

#### 3.1 Installing the Hydro-Skid on a conveyor belt

The Hydro-Skid should be installed above the conveyor belt using suitable fixings to keep the unit stable during operation. The arm must be installed so that the Hydro-Skid faces towards the pantograph arm fixings (Figure 7). For correct operation the Hydro-Skid must be installed parallel to the conveyor belt.

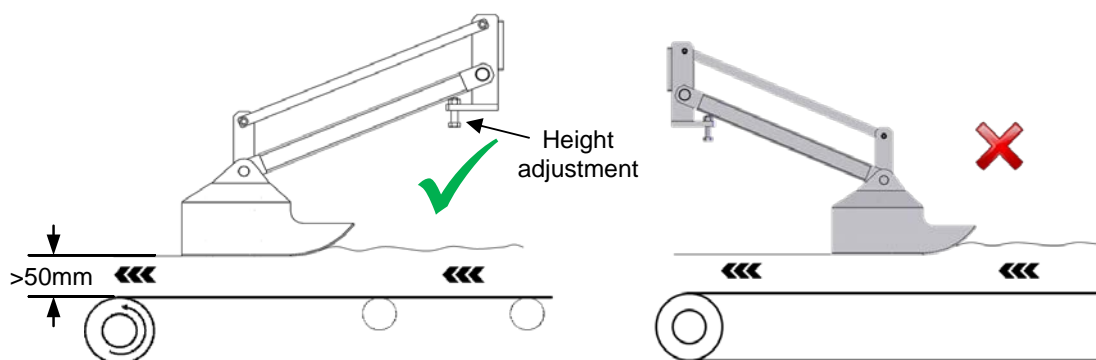


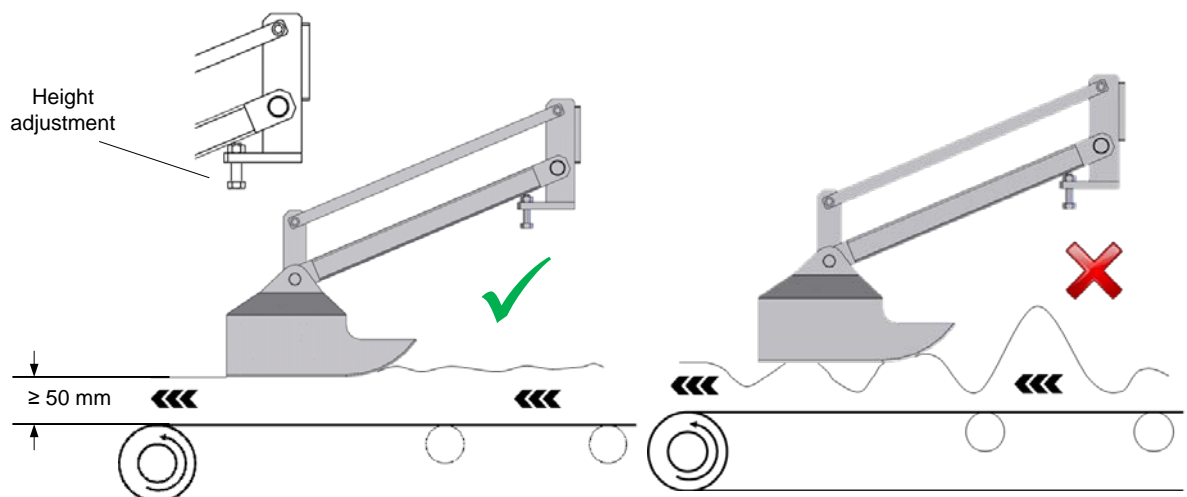
Figure 7: Correct and Incorrect installation of the pantograph arm



Once mechanically installed as shown in Figure 7 the height of the Hydro-Skid should be adjusted so that the underside of the Hydro-Skid is at least 50mm from the conveyor belt using the adjustment screw (Figure 8).

If the Hydro-Skid is positioned too close to the conveyor this can result in erratic sensor readings (conveyor belt interference). As part of the installation it is important to check that the sensor signal is stable while the belt is running as detailed below.

1. Install the Hydro-Skid and sensor as described.
2. Connect the sensor to a suitable computer running Hydro-Com software, available free from [www.hydronix.com](http://www.hydronix.com). A USB Sensor Interface (SIM01) or RS485/232 adapter will be required.
3. Using the height adjustment screw adjust the height of the Hydro-Skid so that the minimum distance between the empty conveyor belt and the underside of the Hydro-Skid is at least 50mm.
4. The Unscaled Output of the sensor should be checked to ensure that it is as close to zero as possible. The Unscaled Output will increase if the sensor is too close to the conveyor. Increase the height of the sensor to reduce the Unscaled output of the sensor.
5. Once the belt is running with material the Hydro-Skid should be adjusted to allow the Hydro-Skid to ride on the surface of the material on the belt so it removes any air gaps between the sensor and the material, retaining the 50mm gap to the belt (Figure 8).
6. Ensure a consistent material flow beneath the sensor (Figure 8)



**Figure 8: Adjusting the height of the Hydro-Skid**

## 4 Installing the Hydro-Skid on an angled conveyor belt

The hydro-Skid can be installed on a conveyor belt that is running at an angle. It is advised that the Hydro-Skid is only operated at a maximum of 30°. See Figure 9 for the correct installation method.

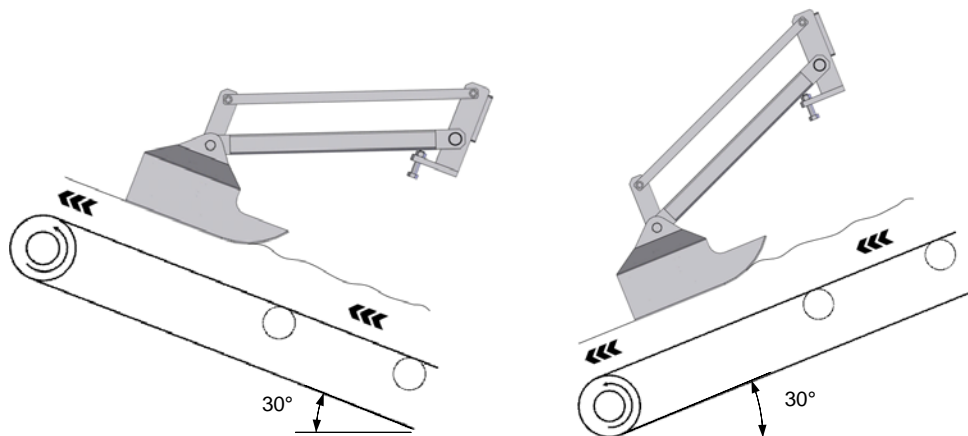


Figure 9: Hydro-Skid installed on a conveyor running at an angle

## 5 Improving material flow

### 5.1 Diverters

Maintaining a minimum material depth on the conveyor belt is vital to ensure that the sensor is in contact with the material and to remove the possibility of conveyor belt interference. Adjustments to the flow will be required if the minimum depth is not achievable. Installation of diverters to restrict the flow and, as a result increase the depth, can be used to maintain the correct material flow. (Figure 10)

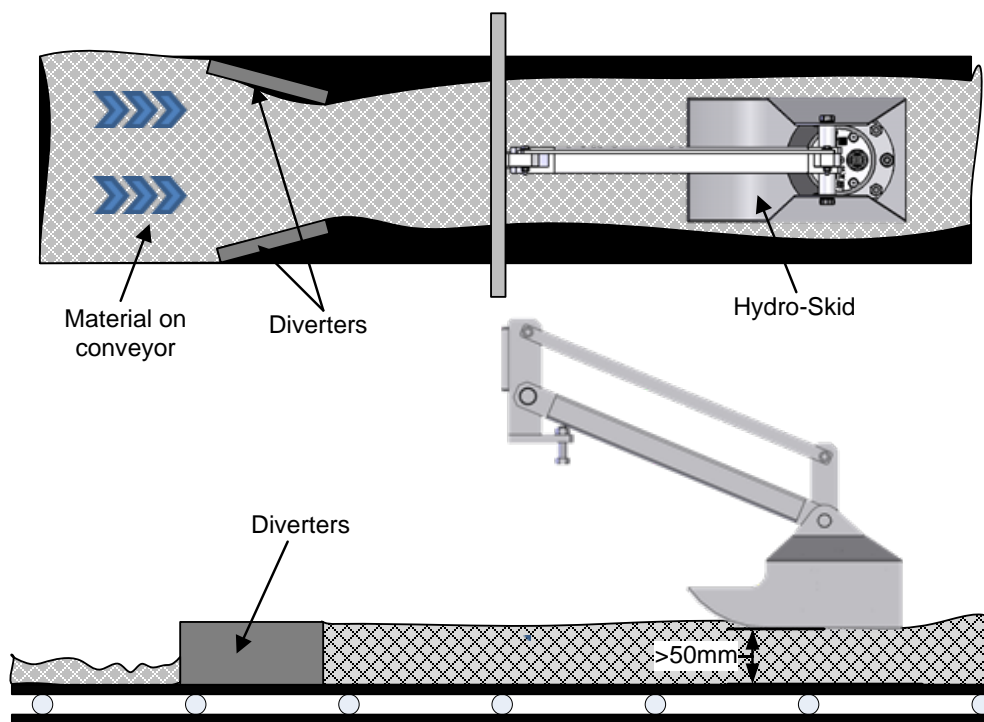


Figure 10: Material depth increased using diverters

## 5.2 Levellers

Inconsistent material flow beneath the Hydro-Skid will reduce the sensor's ability to measure the moisture in a particular batch. To reduce the variations in the flow levellers or chains can be installed above the conveyor belt (Figure 11).

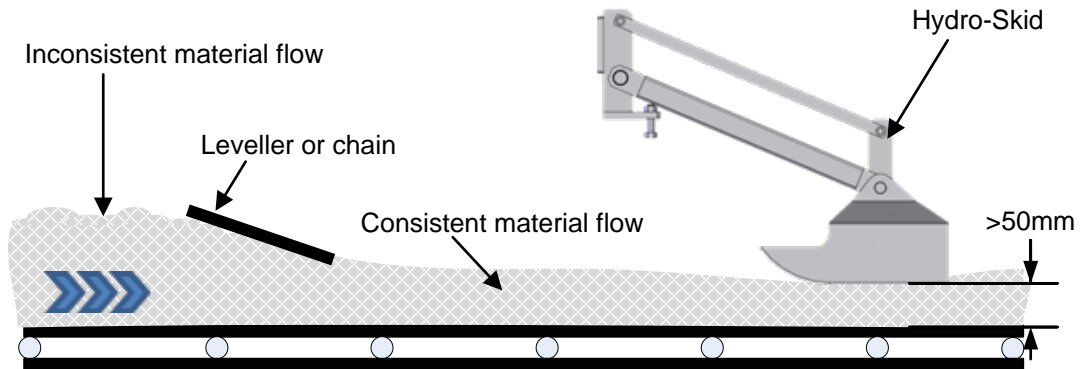


Figure 11: Maintaining material flow using a Leveller or Chain

## 6 Calibration of the sensor

On completion of the installation the Hydro-Mix moisture sensor will need to be calibrated to the material. This calibration will enable the sensor to output a moisture %. To calibrate the sensor refer to the appropriate sensors user guide.

### 6.1 Sampling point

A sampling point close to the sensor is required to facilitate the collection of material that represents the particular batch passing the sensor. If the sampling point is not close or is not in line with the sensor the calibration process may not be accurate (Figure 12).

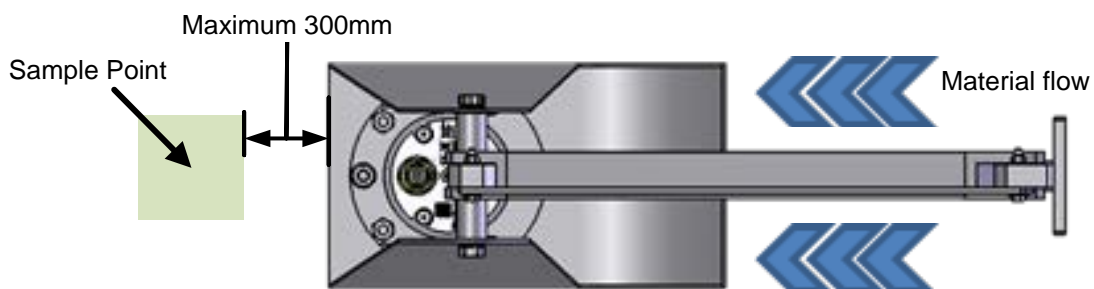


Figure 12: Sampling point

### 6.2 Average/Hold switch

To aid calibration of the sensor it is recommended that an Average/Hold switch is installed close to the sampling point. The Average/Hold switch will set the sensor's input to high when a sample is taken. The sensor will now take an average of the material passing the sensor until the input goes low. The average from the sensor can be viewed using Hydro-Com/ Hydro-View IV or directly by the control system. The switch should be located as close to the sampling point as possible. For instructions on how to wire up the Average/ Hold switch and the configuration of the sensor see the Hydro-Mix user guide.

## 7 Maintenance

The following are recommended to help maintain the Hydro-Skid:

- To prolong the service life all Hydro-Skid moving parts should be regularly greased, especially in areas of high humidity or corrosive environments.
- Visually inspect to confirm that the Hydro-Skid is operating at the correct height, especially if the material on the conveyor belt has changed. Never allow the Hydro-Skid to come into contact with the conveyor belt, as this will increase the wear on the underside.
- Some materials can cause a build-up on the surface of the Hydro-Skid, especially if it is sticky; this will need to be monitored after installation to confirm that it does not interfere with the sensor contact with the material.

The following table list some common issues encountered with the Hydro-Skid. If you are unable to diagnose the problem from the information, please contact your local distributor or the Hydronix technical support team on: +44(0)1483 468900 or by e-mail: [support@hydronix.com](mailto:support@hydronix.com).

Symptom	Possible cause	Action required
<b>No change in sensor reading during operation.</b>	Sensor not in contact with the material.	Adjust height using bolt under the pantograph arm. Maintain minimum gap of 50mm.
<b>Material build-up on the sensor under the Hydro-Skid.</b>	Sensor not installed flush with the underside of the Hydro-Skid.	Adjust the position using the Hydro-Mix clamp ring.
<b>Unable to connect the cable to the sensor.</b>	Pantograph arm is installed in the wrong direction.	Remove the Hydro-Skid and re-install as show in Figure 7.
<b>Sensor reading is not close to zero when the belt is empty.</b>	Hydro-Skid is too close to the belt.	Adjust the Height until the reading is close to zero. See section 3.1.



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