

Hydro-MIX XT Skid Installation Guide

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ERRORS IN DOCUMENTATION

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-Mix XT Skid is a mounting device designed to enable a Hydro-Mix XT 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.

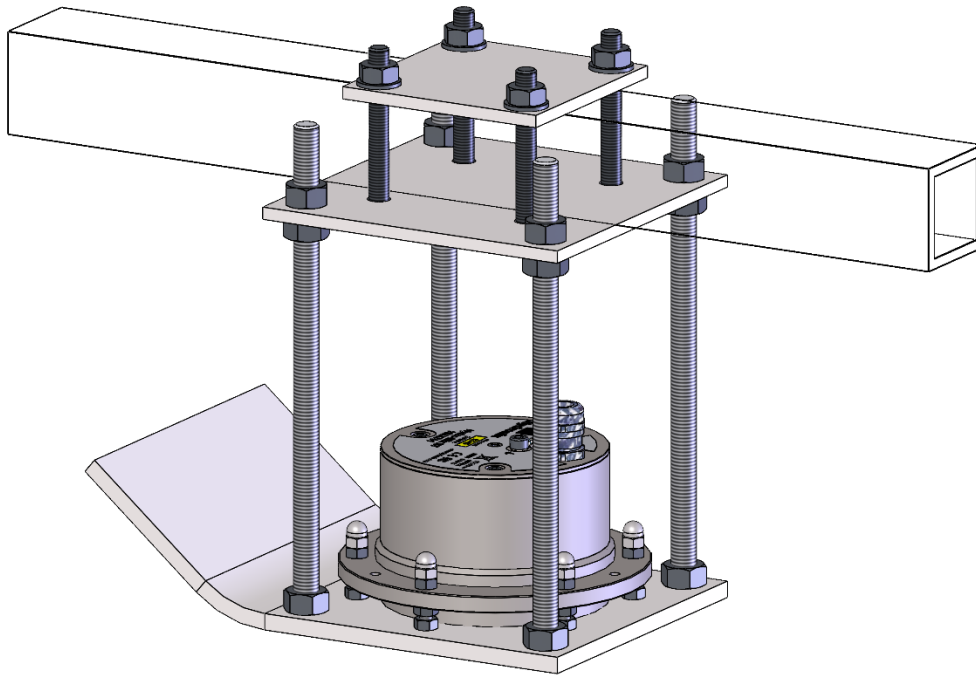


Figure 1: Hydro-Mix XT Skid

1 General to all Applications

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

- The Hydro-Mix XT Skid should be positioned to allow the ceramic face plate of the sensor to be in constant contact with the material.
- Position the Hydro-Mix XT 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-Mix XT Skid will need to be kept free from obstructions to enable samples to be taken (see page 20).

2 Dimensions

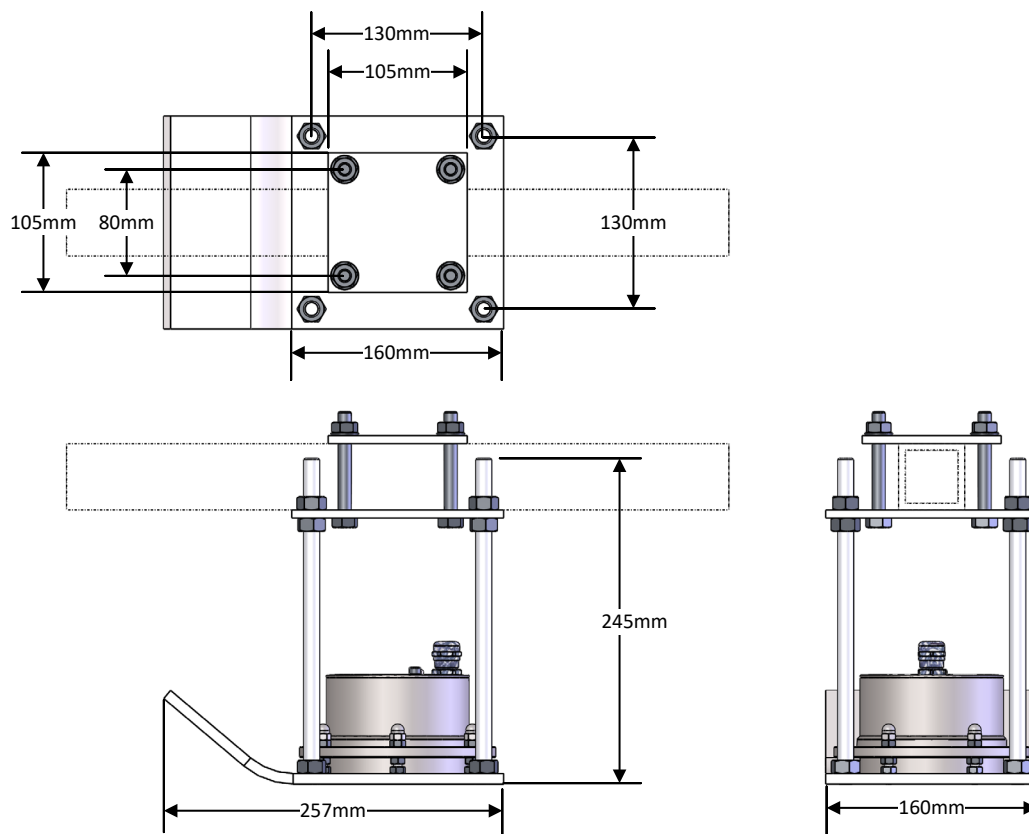


Figure 2: Hydro-Mix XT Skid Dimensions

3 Assembly of the Hydro-Mix XT Skid

The Hydro-Mix XT Skid requires the user to assemble the system to match their requirements.

The HMXT Skid Adjustment bars and the HMXT Skid M6 studs are pre-installed using Loctite 290 to ensure they are flush with the underside of the Sensor Plate. If they are removed Loctite 290 must be reapplied after thorough cleaning of the threads.

The Hydro-Mix XT Skid kit comprises of the following components:

1. HMXT Skid Sensor Plate
2. HMXT Skid Mounting Plate
3. HMXT Skid M12 Adjustment Bars x4
4. HMXT Skid M6 Studs x6
5. HMXT Skid Clamp Plate
6. HMXT Skid Belt Extension Plate (Optional)
7. HMXT Skid Belt Extension Mounting Plate (Optional)
8. HMXT Skid Belt Extension Clamp Plate (Optional)
9. HMXT Skid Belt Extension M12 Adjuster Bars x 2 (Optional)
10. Hydro-Mix XT Skid M12 Nuts x12
11. Hydro-Mix XT Skid Extension Plate M12 Nuts x6 (Optional)
12. M6 Nuts x18
13. M6 end caps x6
14. M10 80mm Bolts x6
15. M10 Spring washers x6
16. M10 Nuts x6

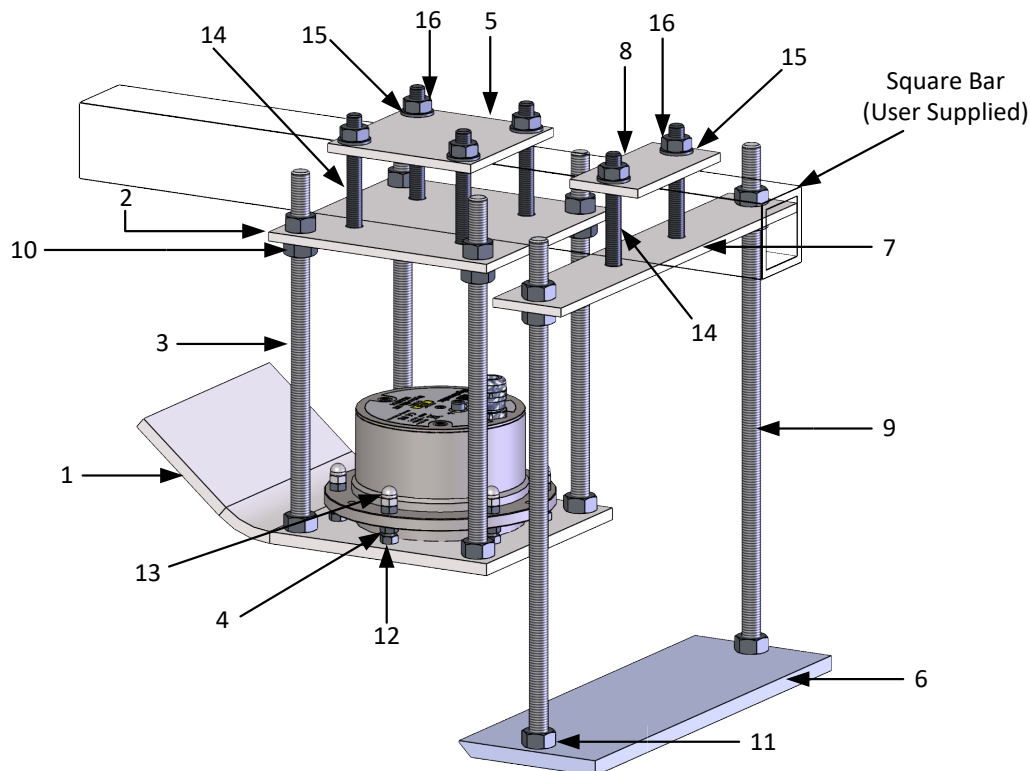


Figure 3: Hydro-Mix XT Parts

3.1 Setup of the Sensor Plate

The sensor plate is designed to hold the sensor in position to ensure the ceramic face plate is in contact with the material. The sensor is attached using the supplied M6 studs, Nuts, and End caps (Figure 4). The M6 studs are pre-installed with Loctite 290 applied to ensure they are flush with the underside of the Sensor Plate. If the studs are removed, Loctite 290 must be reapplied.

It is recommended to install the sensor to the sensor plate before fully assembling the Hydro-Mix XT Skid.

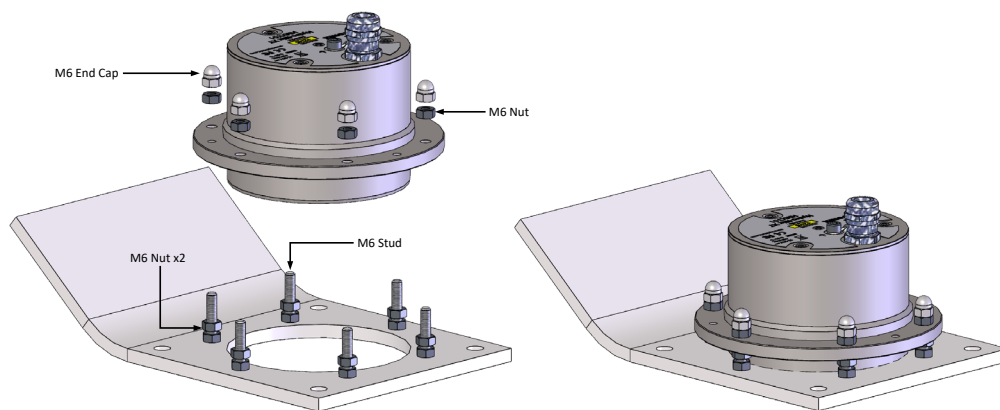


Figure 4: Sensor Plate Setup

3.2 Adjusting the Sensor

Once the Hydro-Mix XT has been attached to the sensor plate, the sensor positioning will need to be adjusted.

To ensure the Hydro-Mix XT can accurately detect the moisture, and to avoid damaged, the ceramic face plate must be flush with the underside of the Hydro-Mix XT Skid. To adjust the sensor, place the Hydro-Mix XT onto the mounting studs. Adjust the nuts on the mounting studs until the ceramic face is completely flush with the underside of the Sensor Plate. A steel ruler, placed across the underside of the Sensor Plate, can be used to ensure the sensor is correctly installed. Tighten all fixings to ensure the sensor is fully secured.

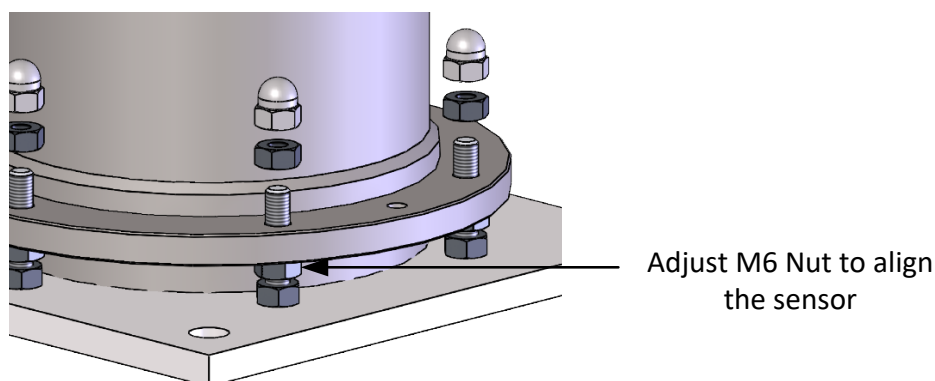


Figure 5: Sensor Adjustment

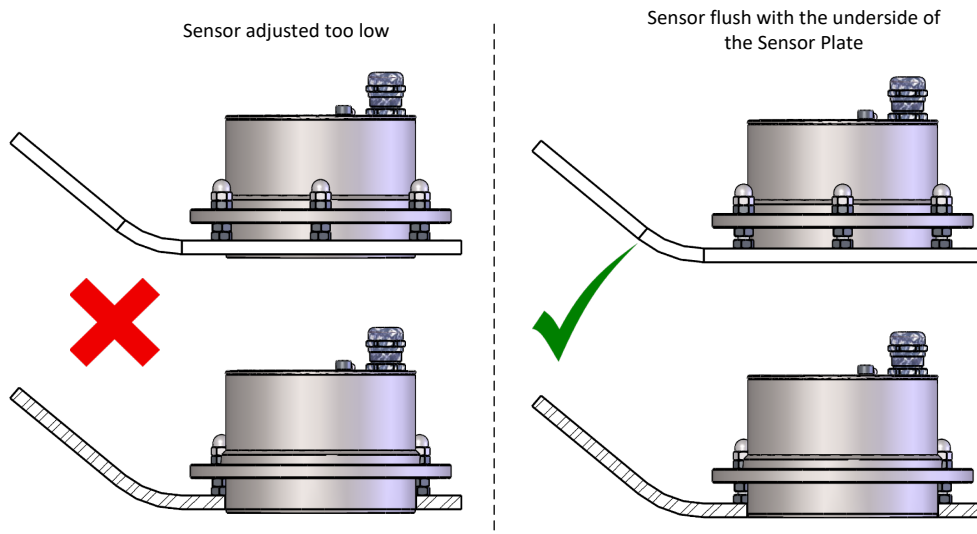


Figure 6: Correct Sensor Adjustment

3.3 Installing the Hydro-Mix XT Skid on a Conveyor Belt

The Hydro-Mix XT Skid should be installed above the conveyor attached firmly to a user supplied suitable square bar (recommended size: 50mm x 50mm). The Hydro-Mix XT Skid is attached to the square bar using the Mounting plate and Clamp Plate. The Hydro-Mix XT Skid must be installed so it faces the material flow. For correct operation, the Hydro-Mix XT Skid must be installed parallel to the conveyor belt. The square bar can be installed so it is parallel to the belt or perpendicular.

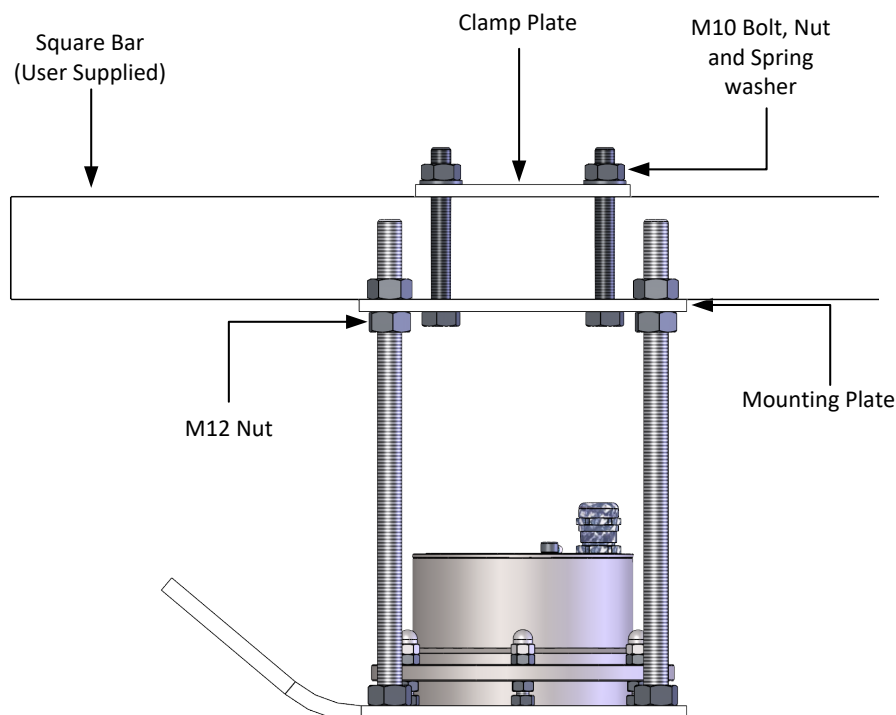


Figure 7: Correct Installation of the Hydro-Mix XT Skid

Once mechanically installed as shown in Figure 7, the height of the Hydro-Skid should be adjusted so that the underside of the Hydro-Mix XT Skid is at least 50mm from the conveyor, this is achieved by adjusting the position of the mounting plate (Figure 8). The height adjustment range is shown in Figure 8.

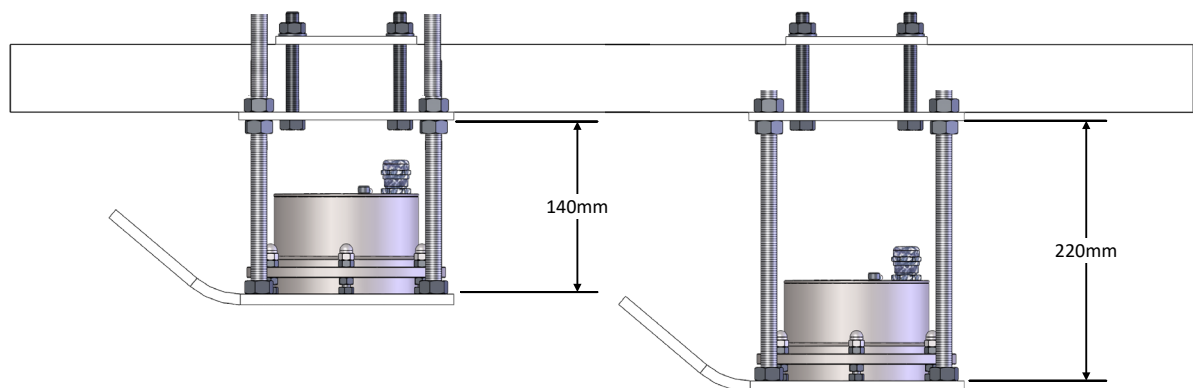


Figure 8: Height Adjustment Range

Positioning the Hydro-Skid too close to the conveyor 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-Mix XT Skid and sensor as described.
2. Connect the sensor to a suitable computer running Hydro-Com software, available free from www.hydronix.com. A USB Sensor Interface (SIM01) or RS485/232 adapter will be required. See the Hydro-Com user guide HD0682 for details.
3. Adjust the height of the Hydro-Mix XT 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-Mix XT Skid should be adjusted to allow it 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 9).
6. Ensure a consistent material flow beneath the sensor (Figure 9)

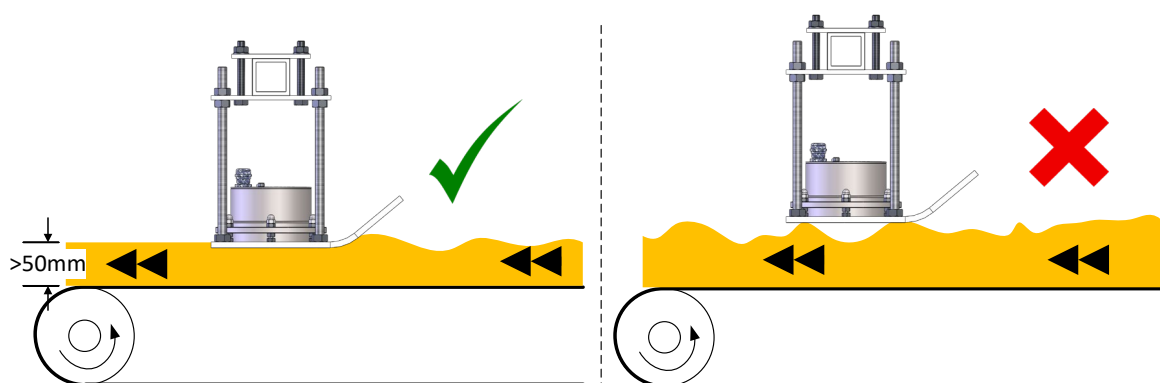


Figure 9: Adjusting the Height of the Hydro-Mix XT Skid

3.4 Installing the Hydro-Mix XT Skid on an Angled Conveyor Belt

The Hydro-Mix XT Skid can be installed on a conveyor belt that is running at an angle. It is recommended that the Hydro-Mix XT Skid is only operated at a maximum of 30°.

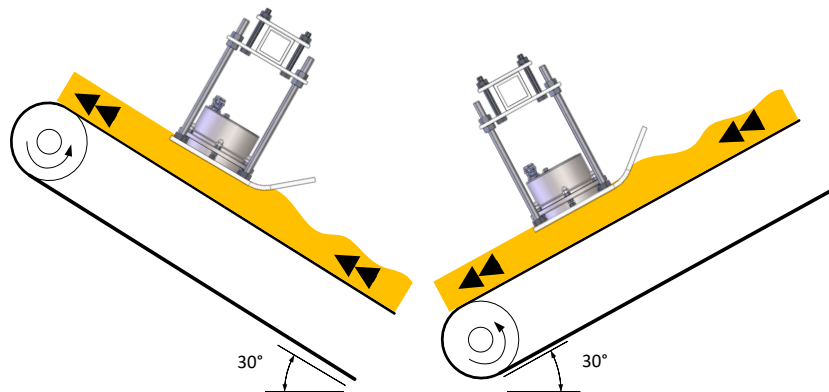


Figure 10: Angled Conveyor Installation

4 Improving the Material Flow

4.1 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 11)

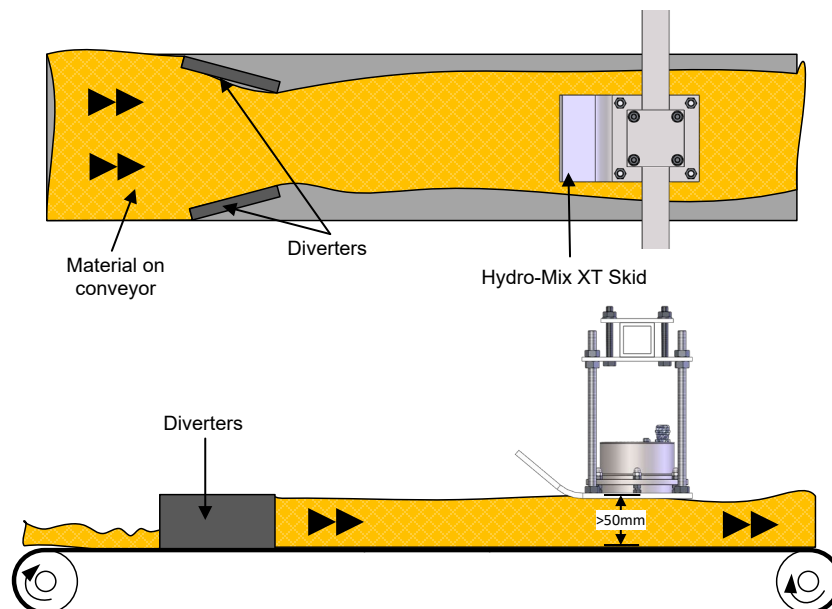


Figure 11: Material Depth Increased Using Diverters

4.2 Levellers

Inconsistent material flow beneath the Hydro-Mix XT 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 12).

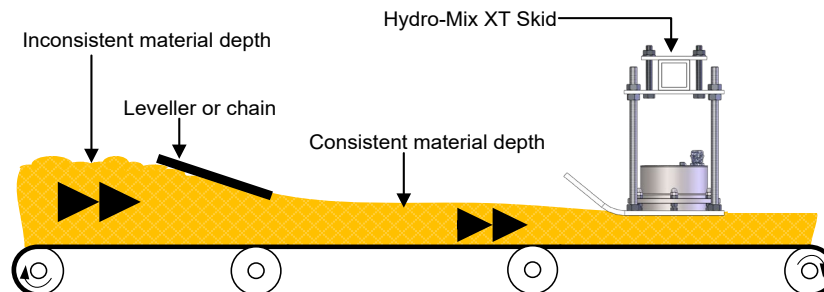


Figure 12: Material Levelling

4.3 Belt Extension Plate (Part number 5125)

The Belt Extension Plate is designed to enable the Hydro-Mix XT Skid to be installed at the end of the conveyor belt (Figure 13). This type of installation is common at the output of a horizontal dryer where the length of the belt is very short. It is utilised to ensure the Hydro-Mix XT sensor is always in contact with material. If the Skid is installed at the end of the belt the material will fall away from the sensor, this will result in erroneous readings. The ceramic face of the sensor must be fully covered to achieve accurate results. The Belt Extension Plate effectively extends the length of the conveyor belt.

The Belt Extension Plate is installed in the same way as the Hydro-Mix XT Skid by clamping it to a suitable square bar above the conveyor belt. The Belt Extension Plate must be installed so it is very close to the conveyor belt but not touching. The height is adjusted using the Adjustment bars until the Belt Extension Plate creates a level extension to the belt. The material flow over this plate must be smooth so adjustments after installation may be required.

If the sensor is not installed at the end of the belt the Belt Extension Plate is not required.

Note: Routine checks on the Belt Extension Plate must be performed to ensure the plate does not touch the conveyor belt. Contact between the belt and the Belt Extension Plate could result in damage to the conveyor belt or the extension plate.

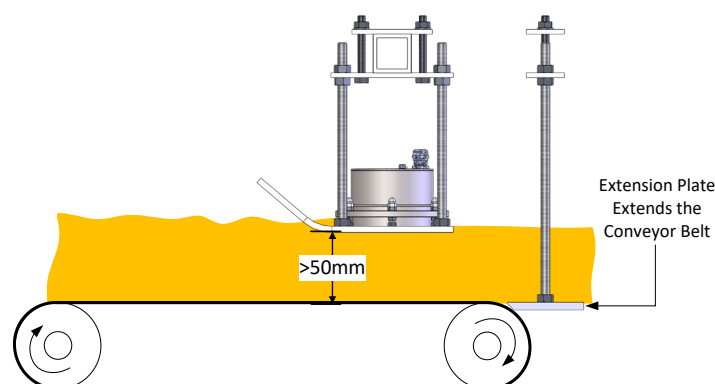


Figure 13: Flow Extension Plate

5 Calibration of the Sensor

On completion of the installation the Hydro-Mix XT 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 Sensor Configuration and Calibration Guide HD0679

5.1 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 14)

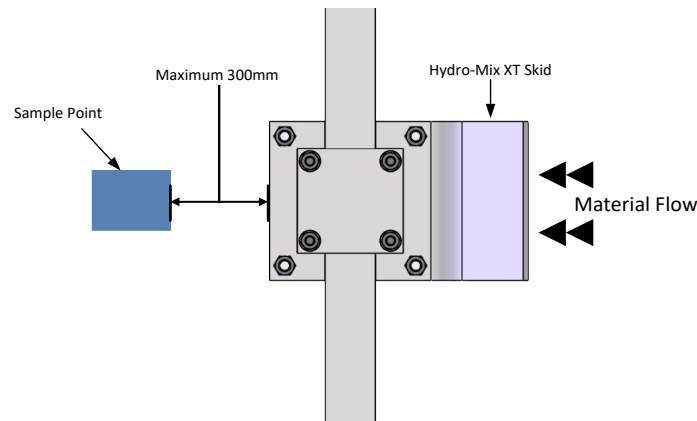


Figure 14: Sampling Point

6 Maintenance

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

- Visually inspect to confirm that the Hydro-Mix XT Skid is operating at the correct height, especially if the material on the conveyor belt has changed. Never allow the Hydro-Mix XT Skid to come into contact with the conveyor belt, as this will increase the wear on the underside. Damage to the sensor caused by an incorrectly adjusted Hydro-Mix Skid will not be covered by the warranty.
- Some materials can cause a build-up on the surface of the Hydro-Mix XT Skid, especially if it is sticky; this will need to be monitored after installation to confirm that it does not interfere with the sensors 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.

Symptom	Possible cause	Action required
No change in sensor reading during operation.	Sensor not in contact with the material.	Adjust the height of the Hydro-Mix XT Skid. Maintain minimum gap of 50mm from the conveyor belt.
Sensor signal is unstable	Sensor not fully in contact with the material	Adjust the height of the Hydro-Mix XT Skid. Maintain minimum gap of 50mm from the conveyor belt.
Material build-up on the sensor under the Hydro-Mix XT Skid.	Sensor not installed flush with the underside of the Hydro-Mix XT Skid.	Adjust the position of the sensor.
Material flows over the top of the Hydro-Mix XT Skid covering the sensor	Material level in front of the Hydro-Mix XT Skid is too high	Adjust the Hydro-Mix XT Skid away from the conveyor, ensuring the sensor is in contact with the material. Alternatively, install levelling plates/chains to reduce the height
Sensor reading is not close to zero when the belt is empty.	Hydro-Mix XT Skid is too close to the belt.	Adjust the Height until the reading is close to zero. See section 3.3.

1 Document Cross Reference

This section lists all of the other documents that are referred to in this User Guide. You may find it beneficial to have a copy available when reading to this guide.

Document Number	Title
HD0682	Hydro-Com User Guide
HD0679	Sensor Configuration and Calibration Guide
HD0773	HMXT Mechanical Installation Guide
HD0678	Sensor Electrical Installation Guide

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