Series 9

Bed Height Guide

Publication Reference : 120/16771-01

Issue A

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Nordson
Measurement and Control Solutions
Bates Road,
Maldon, Essex CM9 5FA, UK

Phone +44 (0)1621 852244
Fax +44 (0)1621 856180
www.ndc.com

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Proprietary Notice

Series 9 Bed Height Guide

Part Number: 120/16771-01

Issue: A

Date of Release: November 14, 2022

Last Revised: November 14, 2022

Contact NDC

Online Support

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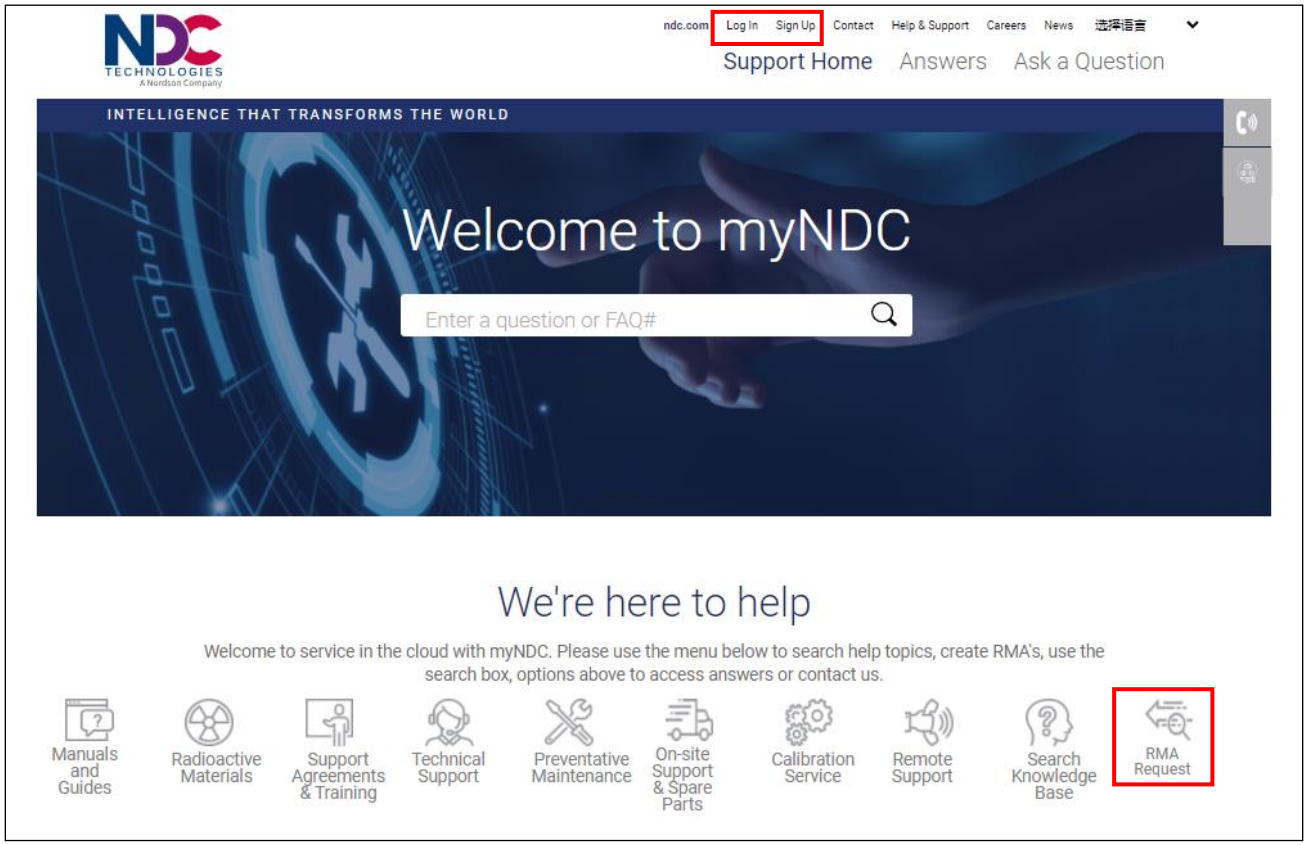
- To create a myNDC account, click **Log In** or **Sign Up**. After creating the account, you will be immediately logged in. To log in on subsequent visits to myNDC, click **Log In**, enter your user name and password, and then click **LOG IN**.

- To submit an RMA, click on **RMA Request** and follow the on-screen instructions.



NDC Contact Numbers

Please have your sales order number at hand before contacting NDC.

Americas	+1 626 939 3855
Asia Pacific	NDC Asia Pacific Customer Service Toll-free contact numbers: • Thailand: 1800 012 048 • Indonesia: 00 1803 016 4969 • Korea: 00 7981 420 30749 • Malaysia: 1800 81 9290 • Taiwan: 00 801 128 027 • India: 000 800 0402 514 Singapore non toll-free number: +65 6579 2411 Email ID: osc-apac@ndc.com
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Warnings

GBR

WARNING! THIS SAMPLER MUST NOT BE USED ON A POSITIVELY PRESSURIZED PROCESS AS IT WILL RESULT IN A SAFETY HAZARD.

DNK

ADVARSEL! DENNE PRØVETAGNINGSENHED MÅ IKKE BRUGES I EN OVERTRYKSPROCES, DA DETTE VIL MEDFØRE EN SIKKERHEDSRISIKO.

DEU

ACHTUNG! DIESER PROBENNEHMER DARF NICHT IN EINEM PROZESS MIT ÜBERDRUCK VERWENDET WERDEN, DA DIES EIN SICHERHEITSRISIKO DARSTELLT.

NLD

WAARSCHUWING! IN VERBAND MET VEILIGHEIDSRISICO'S MAG DIT BEMONSTERINGSAPPARAAT NIET GEBRUIKT WORDEN BIJ PROCESSEN ONDER DRUK.

FRA

ATTENTION! CET ÉCHANTILLONNEUR NE DOIT PAS ÊTRE UTILISÉ DANS UN PROCÉDÉ DE SURPRESSION ÉTANT DONNÉ QU'IL PRÉSENTERAIT UN DANGER POUR LA SÉCURITÉ.

ITA

ATTENZIONE! QUESTO CAMPIONATORE NON DEVE ESSERE USATO ALL'INTERNO DI PROCESSI A PRESSIONE POSITIVA, ALTRIMENTI METTERÀ A RISCHIO LA SICUREZZA.

ESP

¡ATENCIÓN! ESTE MUESTREADOR NO DEBE UTILIZARSE EN UN PROCESO CON PRESIÓN POSITIVA, PUES PODRÍA SUPONER UN PELIGRO PARA LA SEGURIDAD.

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Table of Figures

CHAPTER 1

1 Introduction

Important Note

This is a supplementary document for the Series 9 Gauging System. It is intended to be read in conjunction with the Basic guide supplied and the online material referenced.

The Bed Height option is integrated into the Series 9 sensor to provide a convenient and accurate integrated measurement of the distance from the sensor window to the product plane, while at the same time measuring the height of the product extending above a customer set datum.

Typically, the customer height datum is set at the plane of a conveyor belt, but it can also be used to define a plane in the product height direction that serves to warn or inform if product has moved outside the Series 9 measurement operating range. This is important in installations where the Product height above a conveyor can exceed the operating range of the sensor.

While the Distance measurement measures the distance from the window, from 150 mm up to and beyond the calibrated distance of 450 mm from the sensor window, the Bed height will read 0 if the distance measured to the product extends to the customer set Height datum; for example, in situations where the belt is empty or has a low/intermittent covering, or in deep bed situations when the product plane has moved beyond the set Datum for optimum Moisture and Oil measurement accuracy.

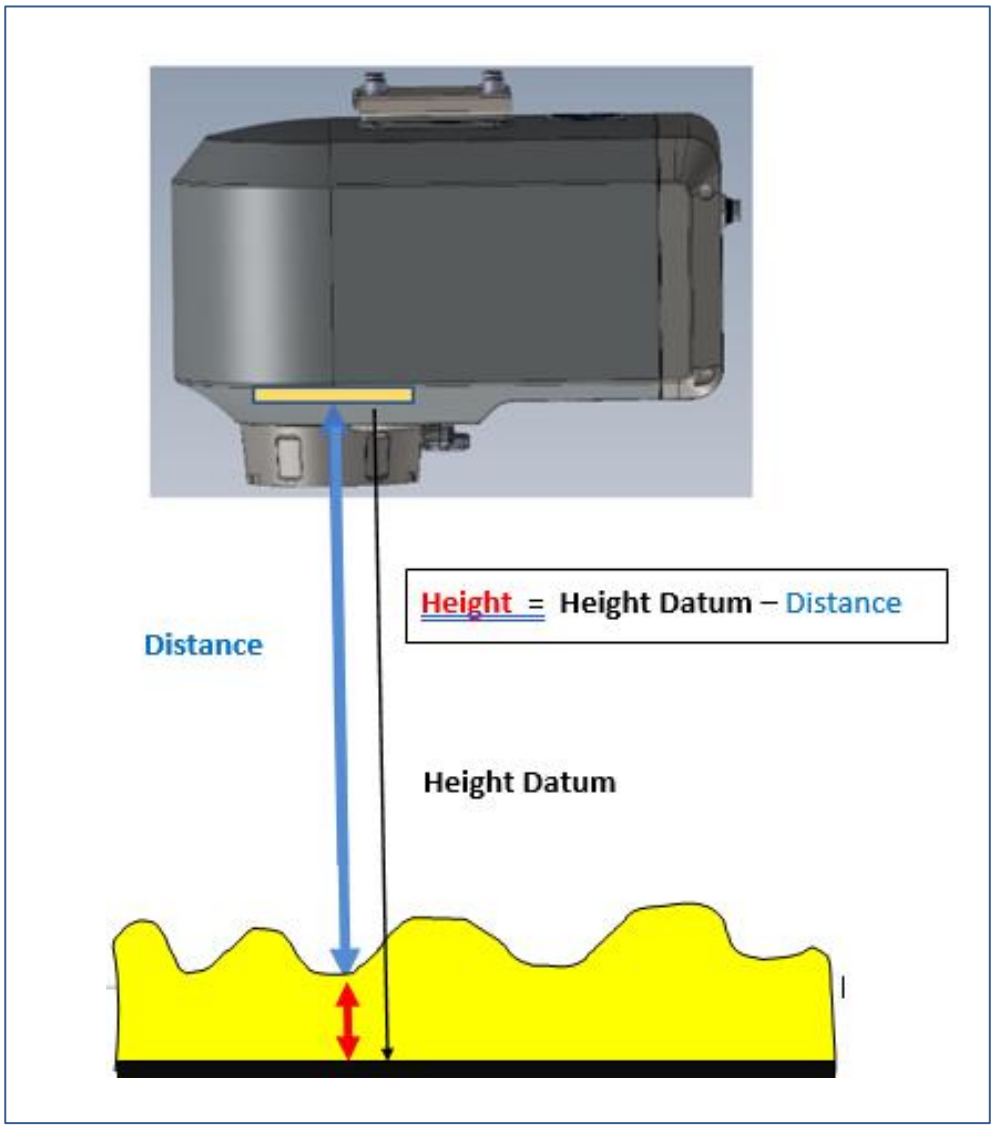


Figure 1-1 Typical Installation, showing definition of terminology

CHAPTER 2

2 Gauge Mounting

Refer to the following figures:

- Figure 2-1 shows the product flow direction.
- Figure 2-2 shows the gauge mounting information for Bed Height enabled gauges.

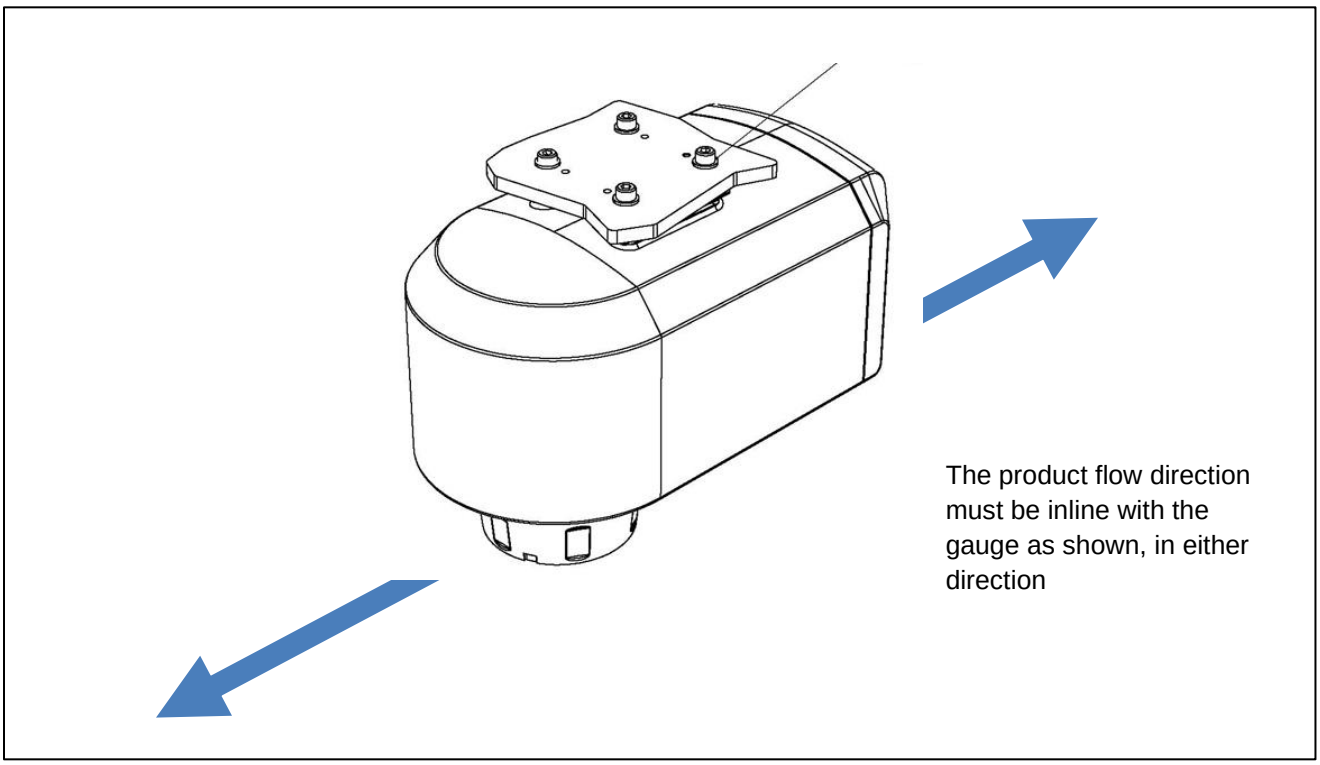


Figure 2-1 Product flow direction

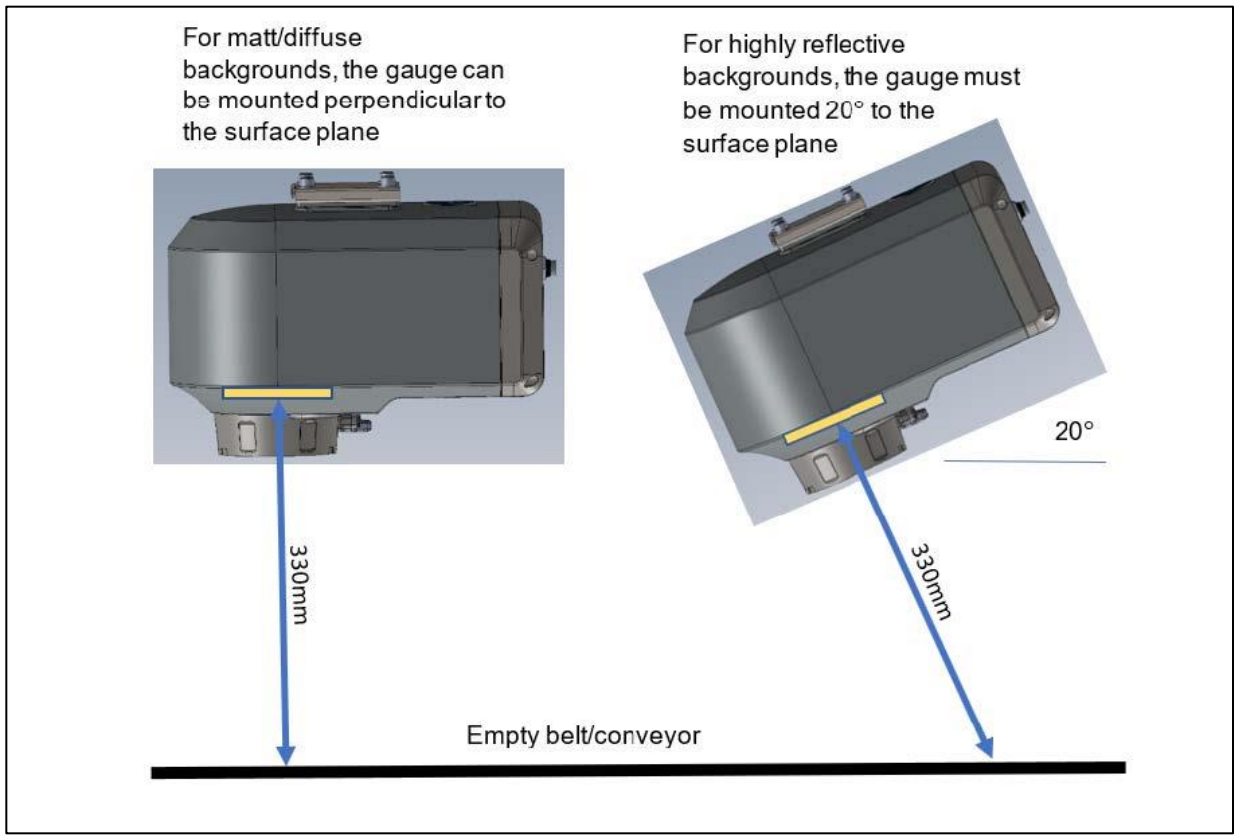


Figure 2-2 Gauge Mounting information for Bed Height enabled gauges

CHAPTER
3

3 Location of Bed Height Measurement Zone

The Bed Height measurement zone spot size – 10 mm diameter is projected vertically out the sensor window to lie on the edge of the measurement spot at 330 mm distance.

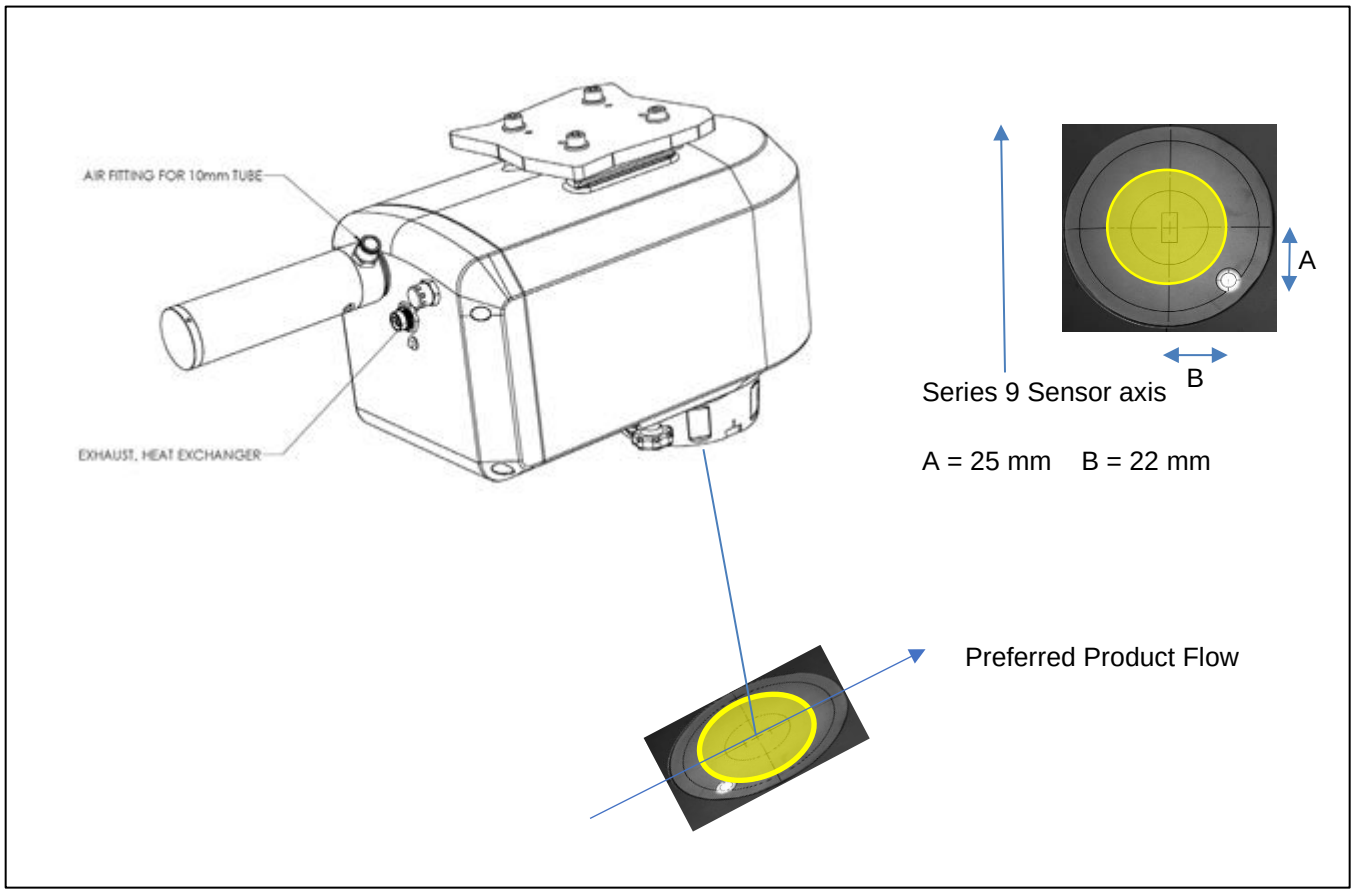


Figure 3-1 Bed Height Measurement Zone

The height measurement spot lies within the coverage of the Moisture and Oil measurement zone.

The preferred orientation is for the height spot to see the product slightly before the Moisture and Oil measurement zone, as shown in Figure 3-1.

CHAPTER 4

4 Accessing Bed Height Data

Bed Height data may be viewed on the following pages:

- **Home page**
- **Gauge Diagnostics page**

Bed Height is not a product constituent-based measurement like Moisture or Oil, and as such, configuration and calibration adjustment of Bed Height is carried out via the Gauge Settings – Height page.
See Chapter 6 - Height Setup and Chapter 7 - Calibrating the Bed Height Measurement.

4.1 Home page

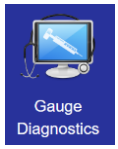
The Bed Height Measurement is displayed on the Home page (Figure 4-1).

Figure 4-1 Bed Height Measurement on Home page

4.2 Gauge Diagnostics page

The Gauge Diagnostics page allows all user levels to view (but not edit) the Bed Height and Distance data.

1. Select the  **Configuration** button to bring up the Settings page.

2. Select 

Gauge Diagnostics to bring up the Gauge Diagnostics page (Figure 4-2).

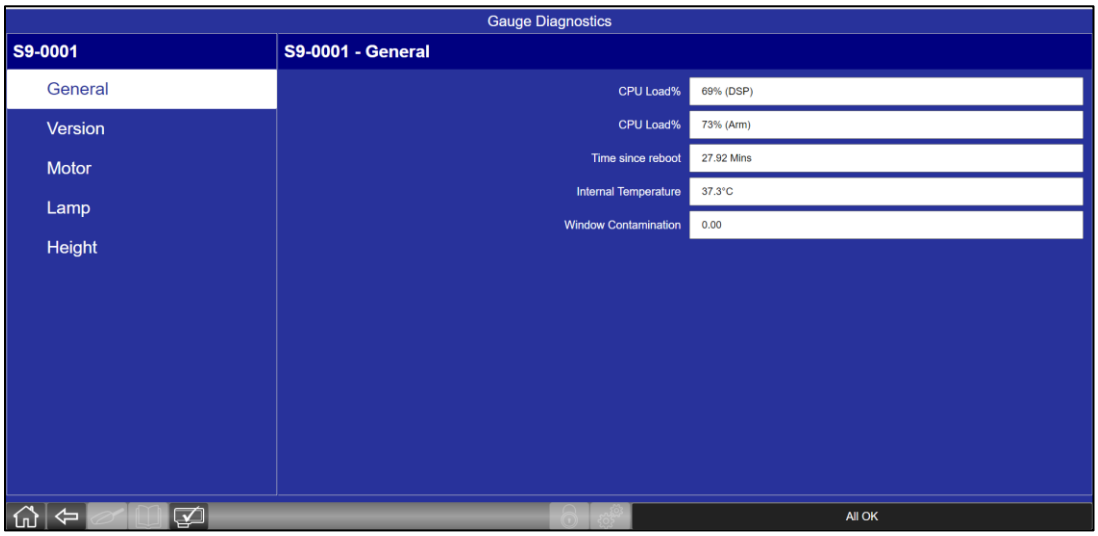


Figure 4-2 Gauge Diagnostics – General page

3. Select **Height** from the left pane to view **Bed height** and **Distance** data (Figure 4-3).

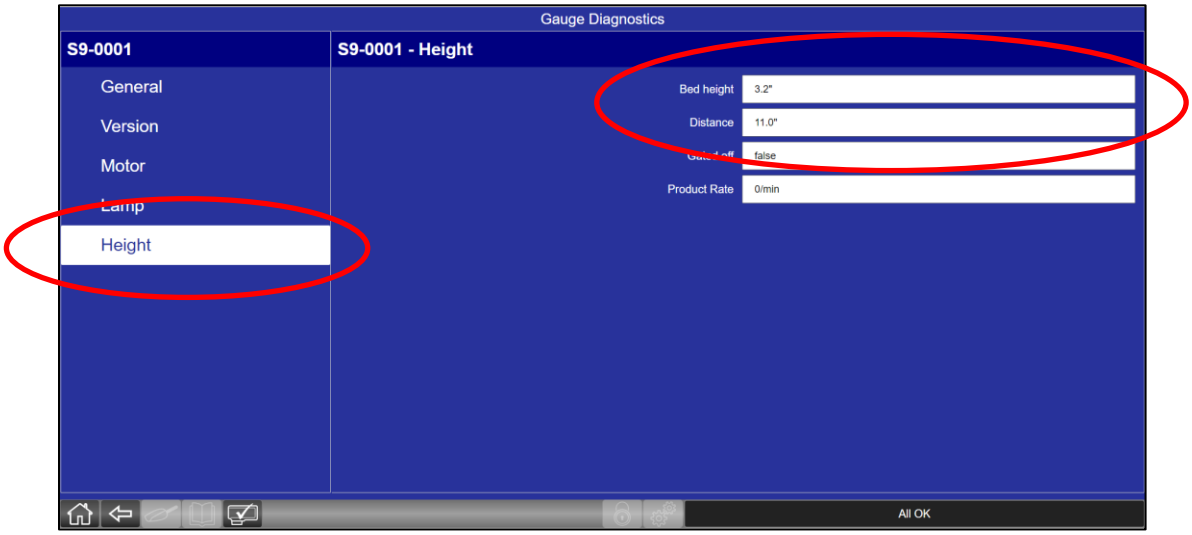


Figure 4-3 Gauge Diagnostics – Height page

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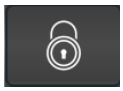
CHAPTER 5

5 Viewing / Adjusting the Bed Height

The Gauge Settings – Height page allows configuration and calibration of Bed Height. This page is accessible only to a Supervisor or Engineer.

1. Select the  **Security** button to bring up the User Login page (Figure 5-1).

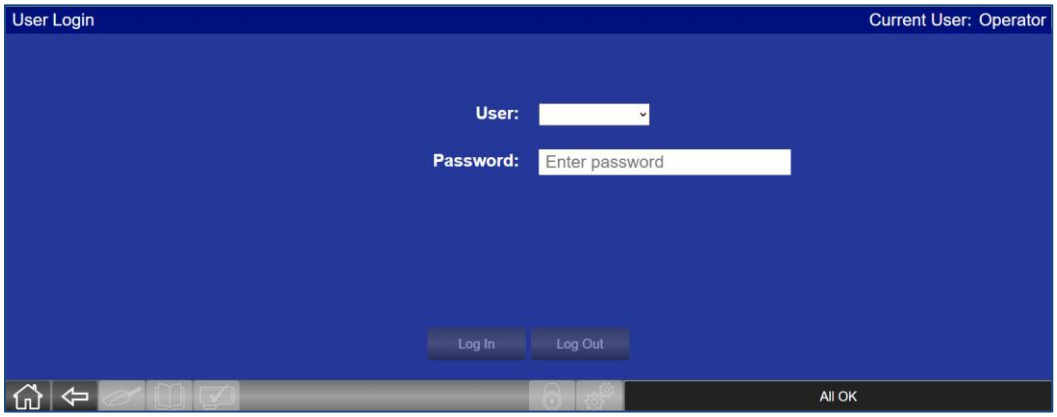


Figure 5-1 User Login page

2. Select Supervisor or Engineer from the **User** dropdown box.
3. Enter the password for Supervisor or Engineer in the **Password** box.
4. Select **Log In**.
5. Select the  **Configuration** button to bring up the Settings page (Figure 5-2).

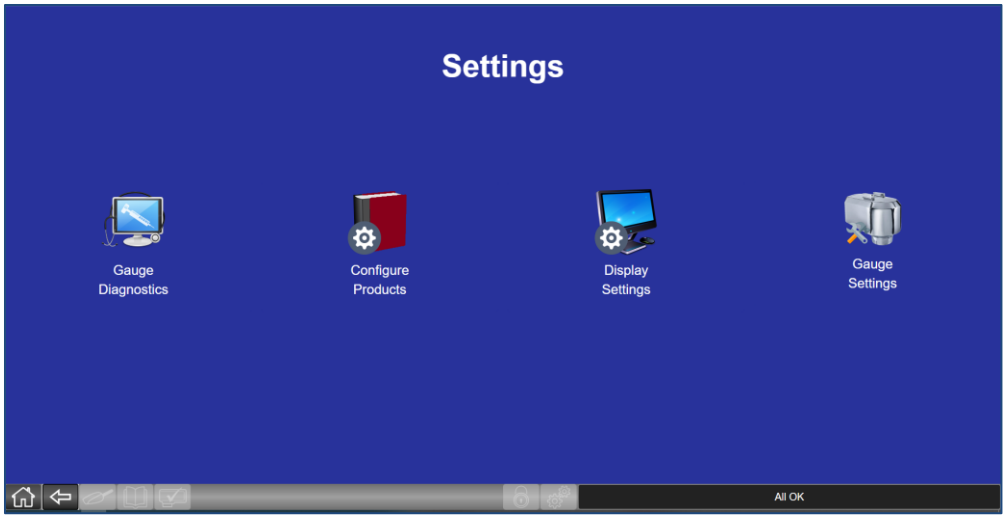


Figure 5-2 Settings page

6. Select 

Gauge Settings to bring up the Gauge Settings page (Figure 5-3).

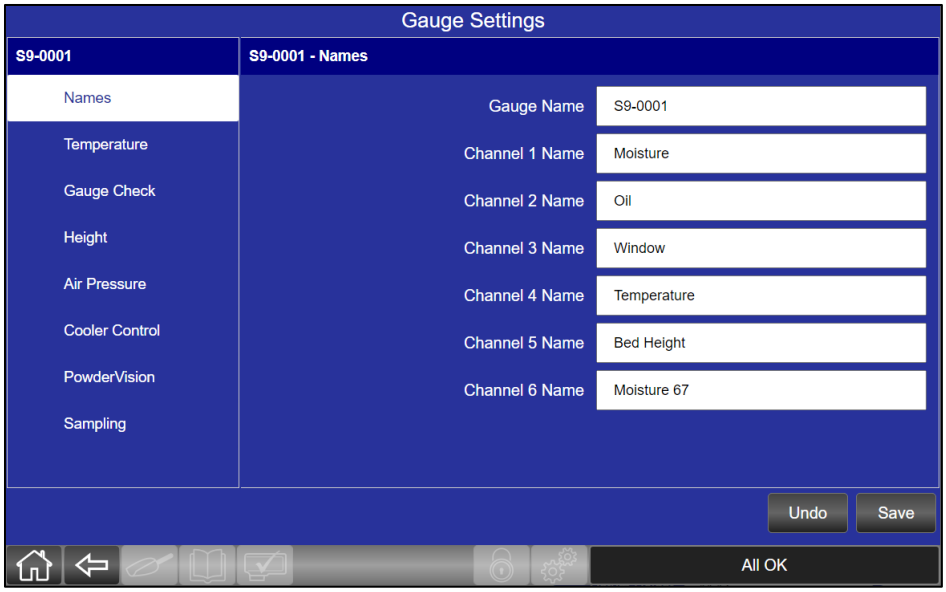


Figure 5-3 Gauge Settings page

7. Select **Height** from the left pane (Figure 5-4).

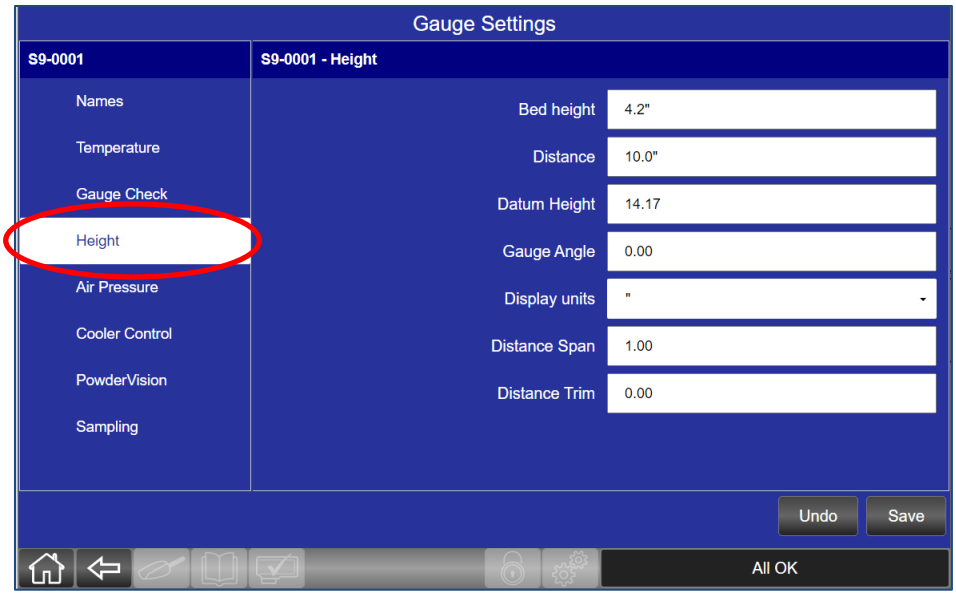


Figure 5-4 Gauge Settings – Height page

8. Note the **Bed height** and **Distance** readings updating in real time (Figure 5-5).

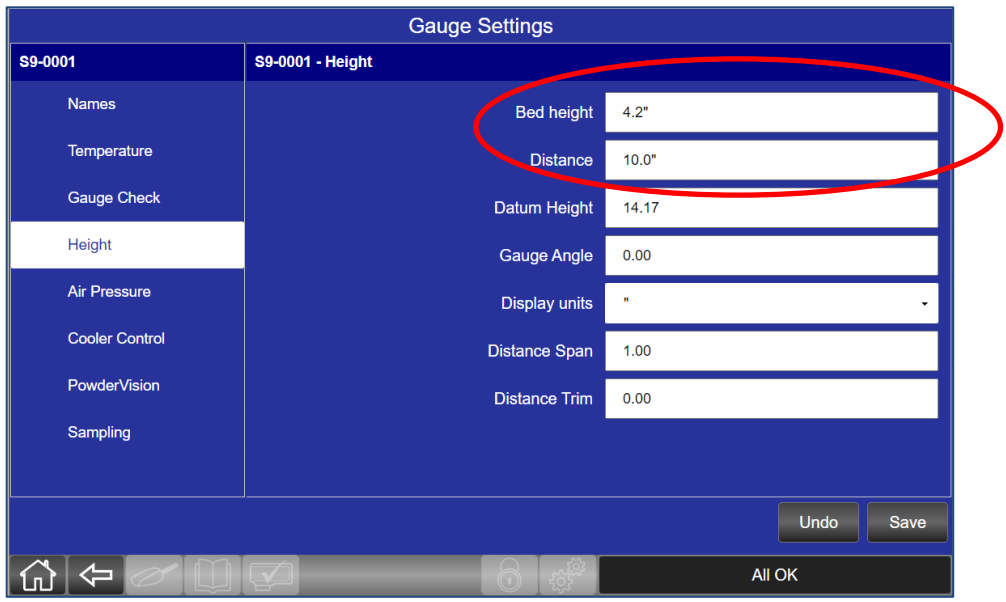


Figure 5-5 Bed height and Distance readings

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CHAPTER
6

6 Height Setup

This chapter discusses how to set up the following parameters on the Gauge Settings – Height page:

- **Display Units**
- **Gauge Angle**
- **Height Datum**

Bring up this page by following steps 1 to 7 in Chapter 5 - Viewing / Adjusting the Bed Height.

6.1 Setting the Display Units

Set the **Display units** on the Gauge Settings – Height page (Figure 6-1) to the desired units by selecting **“** (inches) or **mm** from the dropdown menu.

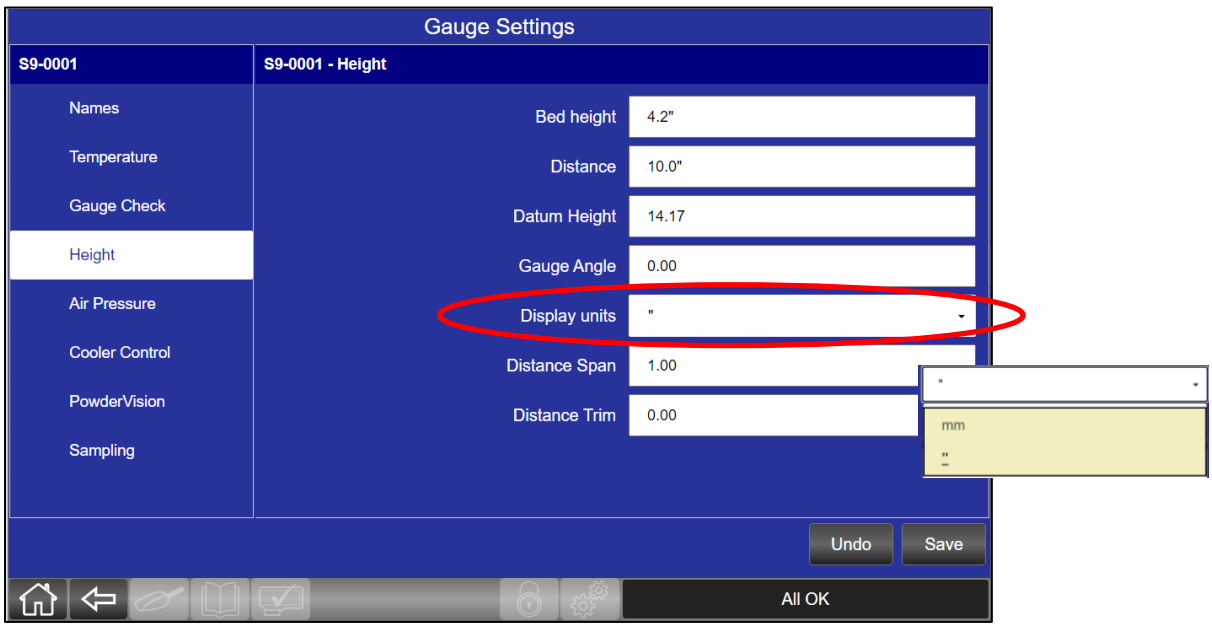

Figure 6-1 Display units on Gauge Settings – Height page

6.2 Setting the Gauge Angle

The product distance is dependent on the mounting angle of the head (Figure 6-2).

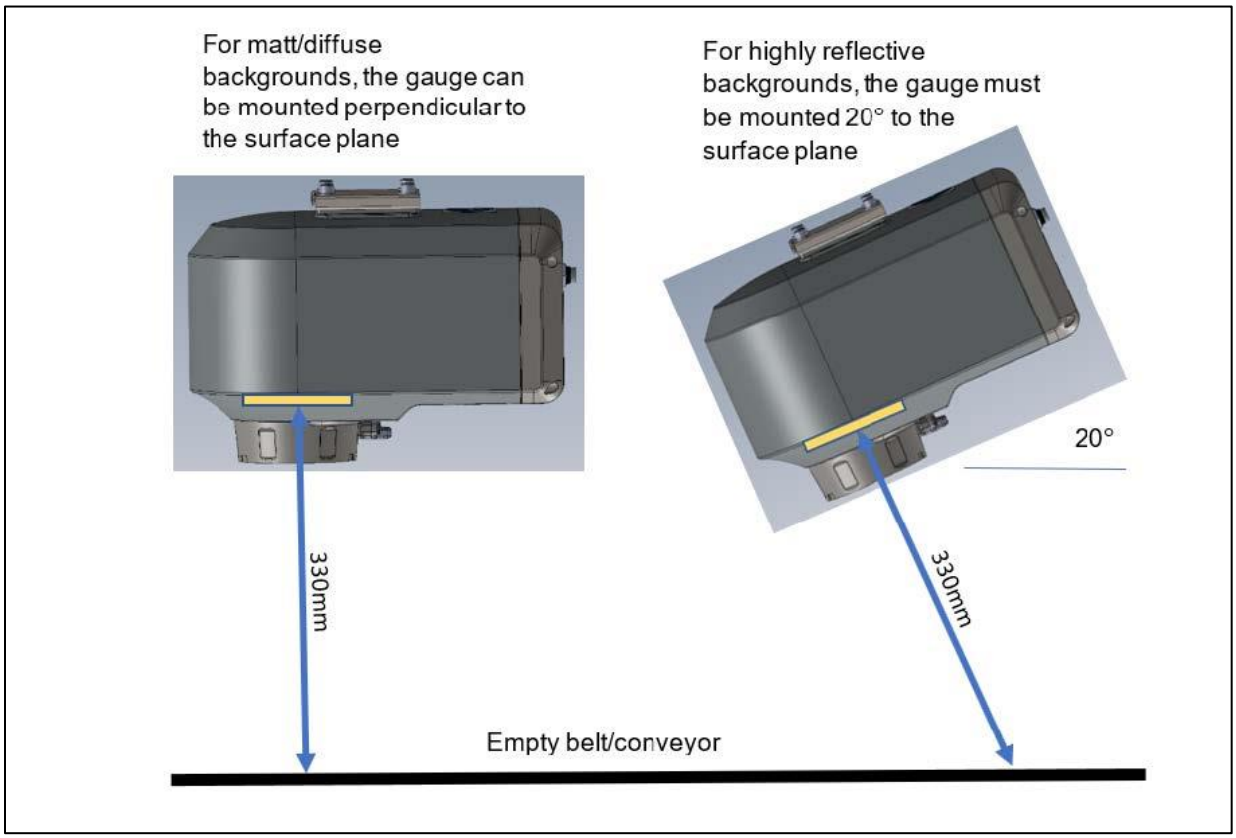

Figure 6-2 Mounting angle of the head

Depending on the mounting angle of the head, set the **Gauge Angle** on the Gauge Settings – Height page (Figure 6-3) as follows:

- Enter **0.00** for the 0 degrees (Normal incidence) installation
- Enter **20.00** for the 20 degrees angle installation

Figure 6-3 Gauge Angle on Gauge Settings – Height page

6.3 Setting the Height Datum

The key control parameter on the Gauge Settings - Height page is the **Datum Height** (Figure 6-5)**.** This is the Height of the Belt from the sensor window (Figure 6-4).

The **Height Datum** can be entered in either inches or mm, depending on the selected **Display units**. Set the **Datum Height** to the distance from the sensor window to the Belt.

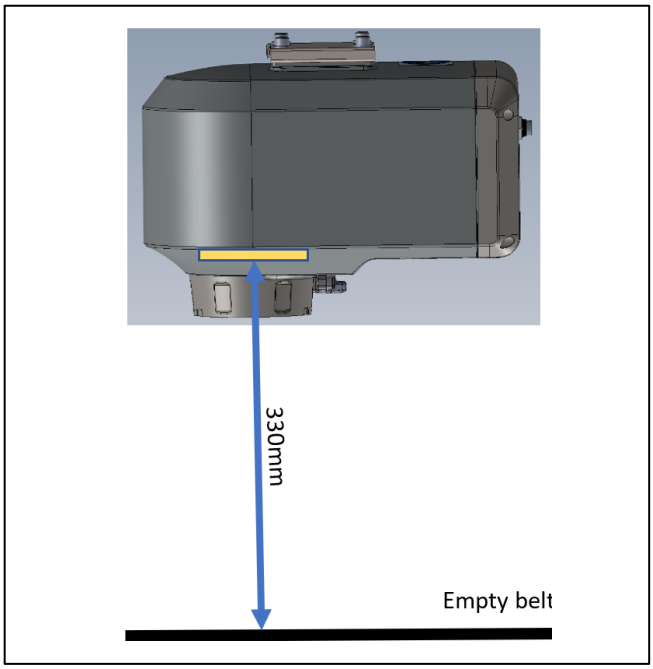

Figure 6-4 Distance from sensor window to belt

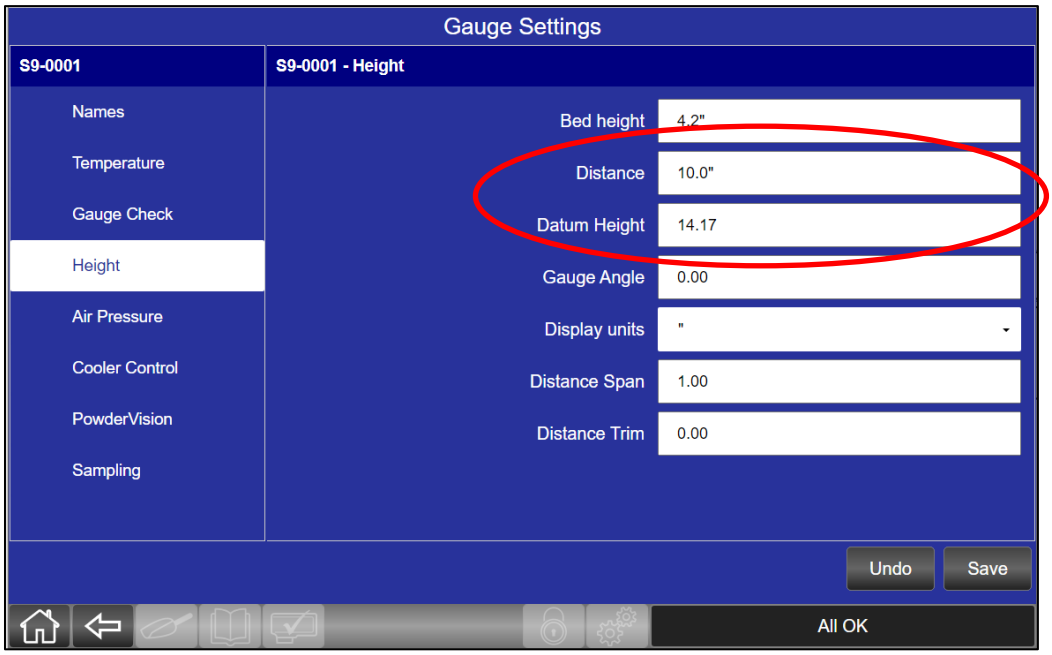

Figure 6-5 Datum Height and live Distance value on Gauge Settings – Height page

The Series 9 sensor measures the Distance from the sensor window to the product plane. This **Distance** is then converted to the required **Bed height** measurement, the Height of the product above the belt, and displayed in the Gauge Settings – Height page as a live value (Figure 6-5).

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CHAPTER 7

7 Calibrating the Bed Height Measurement

The procedures in this chapter involve the Gauge Settings – Height page. Bring up this page by following steps 1 to 7 in Chapter 5 - Viewing / Adjusting the Bed Height.

7.1 Simple Adjustment (Trim Only)

Fine-tuning of the Calibration to match the actual bed height on a moving product can be performed by adjusting the **Distance Trim** value on the Gauge Settings – Height page (Figure 7-1).

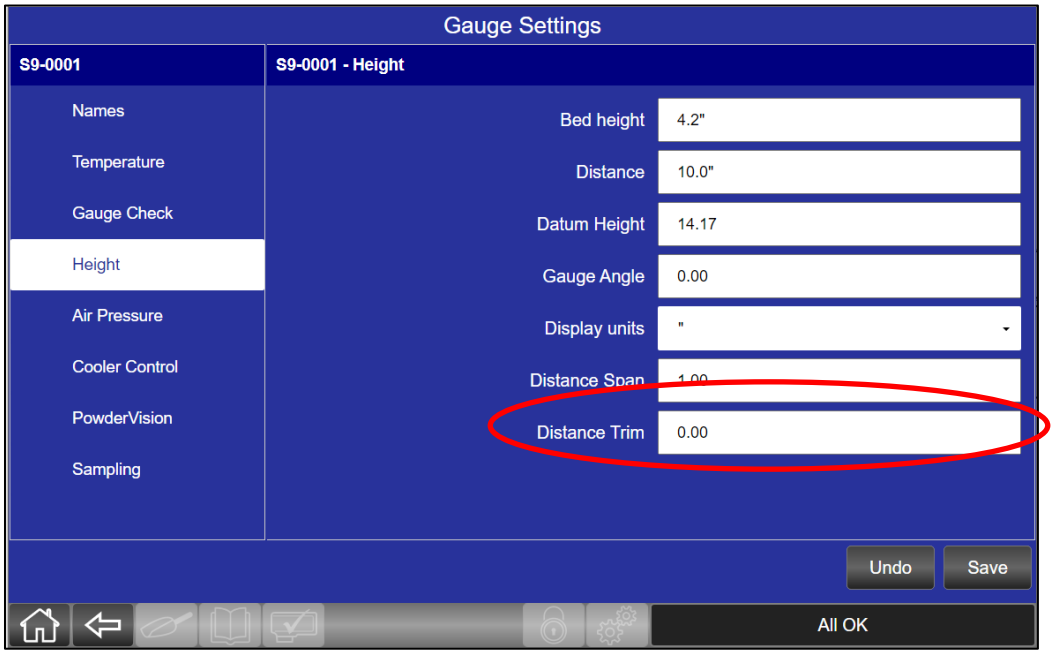

Figure 7-1 Distance Trim on Gauge Settings – Height page

1. Place a sheet of tan/brown paper or other flat product at the required product plane, ensuring that the target material is sufficiently large or precisely located to include the bed height measurement zone location (Figure 3-1).

2. Adjust the **Distance Trim** value so that the **Distance** shown on the Gauge Settings – Height page matches the measured Distance to the product plane.

   Only small **Distance Trim** values of up to < ±12mm or 0.5” are expected.

Note: It is the **Distance** from the sensor window that is being calibrated. The **Bed height** is calculated from this calibrated value using the user-configured **Datum Height** value.

7.2 Full Calibration Adjustment (Distance Span & Trim)

For greater accuracy, the internal factory calibration may be further optimized by carrying out a full calibration, where both the **Distance Span** and **Distance Trim** are refined. This involves precise measurement of actual product **Distance**, and utilizing the GaugeToolsXL software, as described below.

Figure 7-2 Distance value on Gauge Settings – Height page

1. Place the product/target material at 10 different **Distances** in operating range in uniform step separation (10 points required as a default minimum for both Span and Trim adjustment). Ensure that the target material is sufficiently large or precisely located to include the bed height measurement zone location, and that the same area of product/target is being seen by the bed height measurement spot at each height.

2. At each target position, record the measured Product distance from the sensor window to the target plane and the **Distance** value reported on the Gauge Settings – Height page (Figure 7-2).

3. At each height, using the GaugeToolsXL Calibration Tool manual tab, enter the **Distance** data from the Gauge Settings – Height page and the measured distance (10 points required as a default minimum for both Span and Trim adjustment) to derive the optimum Span and Trim (Figure 7-3).

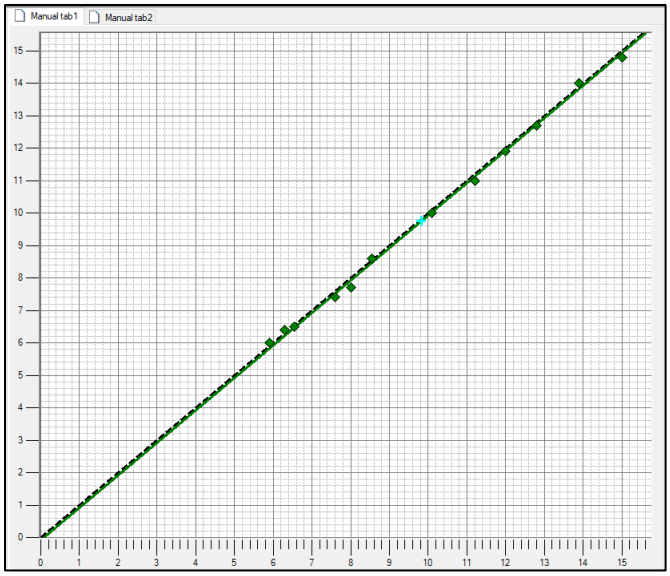

Figure 7-3 GaugeToolsXL Calibration Tool

4. Enter these values as the new **Distance Span** and **Distance Trim** values on the Gauge Settings – Height page and press **Save**.

CHAPTER
8

8 Servicing, Returns and Recycling

8.1 Servicing and Returning your Equipment

Your instrument was carefully inspected electrically and mechanically prior to shipment. It should be free of surface defects and scratches, and it should be in perfect working order upon receipt. If any indication of damage is found, file a claim with the carrier immediately, prior to using the instrument. If no damage is apparent, proceed by using this manual to install and setup this instrument.

Save the shipping carton and packing material for future storing or shipment of the instrument. If, at some future time, the instrument must be returned to the factory for service, include a full description of the instrument failure and the mode of operation the instrument was in at the time of failure. Also include a contact person to discuss the instrument failure.

When returning equipment for service, it is important to first obtain a Return Material Authorization (RMA) number. The RMA number is needed for proper handling of returned equipment.

- To obtain an RMA, go to https://ndc.custhelp.com/.
- To create a myNDC account, click the **Log in or Sign up** button. After creating the account, you will be immediately logged in. To log in on subsequent visits to myNDC, click the **Log in or Sign up** button, enter your username and password, and then click **Log in**.
- To submit an RMA, click on the **RMA Request** link and follow the on-screen instructions.

Ship the instrument in the original carton, or, if the original carton is unavailable, ship in a carton providing sufficient protection. Send the instrument to the Asia, Europe, or USA office, whichever is closest to you or to the office indicated by your sales engineer. Place the RMA number on the outside of the carton and include a purchase order number and any other information specific to your instrument. Field warranty service is available if the customer pays travel expenses by advance purchase order. All service operations should be performed by skilled electronics technicians, who have been trained by NDC Technologies.

8.2 Recycling, Disposal and Sustainability

NDC Technologies provides intelligent measurement and control solutions to help you focus on your unique mission in a more sustainable way. Better for your people. Better for your bottom line. Better for the planet. For this reason, NDC Technologies encourages its customers to recycle and dispose of equipment in a way which is responsible and encourages sustainability.

Please check the following before disposing of your equipment:

- Is the equipment worth repairing? If in doubt, contact NDC Service.
- If you are aware of any hazardous materials in your equipment, ensure qualified personnel take responsibility for its disposal. Some examples of hazardous substances include lead, mercury, cadmium, chromium VI, flame retardants, plasticizers, fluorescent tubes, monitors containing cathode ray tubes and products containing capacitors. NDC is compliant with the European WEEE and the most current RoHS Directive.
- Can you re-use or recycle any constituent parts? For example, if the housing/chassis is made of metal, it can be recycled by your local authority. Ensure qualified personnel take responsibility for dismantling the equipment.

If the equipment does need to be disposed of, please dispose of it in a way that does not harm the environment.

Warranty

1. All sales of NDC Technologies products are subject to the contractual terms and conditions of the Order pursuant to which they were sold to Buyer, including Warranty terms. The following terms are a general summary of the contractual Warranty terms, NOT a revision or alternative to the contractual terms, and are presented as merely a point of reference for your information. The contractual Warranty is the complete and exclusive statement of all NDC Technologies warranties to Buyer. In the event the following terms are in conflict with any of the contractual Warranty terms, the contractual Warranty terms shall be deemed to control.

   The warranty terms contained herein are expressly in lieu of any and all other warranties, expressed or implied, including any warranty of merchantability or fitness for a particular purpose. In no event shall NDC Technologies be liable for any incidental, consequential or special damages, including but not limited to, any loss of business, income or profits, expenses incurred for time when the system is not in operation, and any labor costs relating to or arising out of the performance, functioning or use of the system.

   Purchaser assumes the risk for use of this product and agrees to indemnify and hold NDC Technologies harmless for any and all damage to person or to property resulting therefrom.

   NDC Technologies grants no license under any patent rights except the right, under only such patents as may be owned or acquired by NDC Technologies, to use the product sold hereby for the purpose for which it is sold. NDC Technologies does not warrant that the product or its use does not infringe any patent owned by persons other than NDC Technologies.

2. NDC Technologies guarantees all products to be free from defects in material and workmanship for the following periods[1]:

   - Product and peripherals – 2 years from shipment
   - Source lamp – 5 years from shipment
   - Filter wheel motor – 5 years from shipment
   - Spare parts – 1 year from shipment
   - Replacement lamps and motors supplied under warranty – 1 year or up to the original 5 year warranty from shipment of the sensor, whichever is longer

   [1] Refer to the contractual terms and conditions of the Order for usage of the warranty.

   During this period, NDC Technologies will repair or at its option replace, free of all charges for parts and labor, any NDC Technologies parts determined by it to have been broken or damaged due to causes other than improper application, abuse or negligence. NDC Technologies' obligation to repair or replace shall not extend to expendable parts which are subject to normal operating wear.

   Nothing in this paragraph 2 will require NDC Technologies to make repairs or replacements where:

A. The product has been repaired, other than by an authorized NDC Technologies dealer or an NDC Technologies employee, or altered in any way without the prior written consent of NDC Technologies; or

B. The product has not been properly maintained in accordance with any operating and maintenance manual supplied therewith; or

C. The product has been damaged as a result of fire, flood, war, insurrection, civil commotion, acts of God or any other cause beyond the control of NDC Technologies or Buyer.

3. NDC Technologies' liability shall be limited to the obligations set forth in Paragraph 2. These shall be the Buyer's sole and exclusive remedies, whether in contract, tort or otherwise, provided, however, that in lieu thereof, NDC Technologies at its option may replace the entire product on an exchange basis or refund the purchase price against the return of the defective product.

4. NDC Technologies will not be responsible for failure to provide service or parts due to shortage of materials, labor or transportation strikes or delays, or any causes beyond NDC Technologies' control.

5. Unless otherwise specified by NDC Technologies, all warranty repairs will be made at NDC Technologies' facility. The customer shall be responsible for all expenses of packing, freight and insurance in connection with the shipment of products to NDC Technologies for repair. NDC Technologies will pay the cost of returning the equipment to customer.

   If it is mutually determined by the buyer and NDC Technologies that the examination, replacement or repair takes place at the buyer's facility, then the buyer will be responsible for NDC Technologies' travel and living expenses incurred in traveling to and from the buyer's facility, and during the time of the visit, as well as the cost of field labor and replacement parts unless the parts being repaired or replaced are determined to have been defective, in which event the cost of said repaired or replacement parts shall be borne by NDC Technologies. These travel and living expenses will be billed to the buyer at actual cost to NDC Technologies.

6. No person, including any NDC Technologies distributor, agent or representative, is authorized to assume any liability on behalf or in the name of NDC Technologies, and NDC Technologies shall not be bound to any understandings, representations, or agreements with respect to warranties except as set forth in this policy.

7. NDC Technologies requests immediate notification of any claims arising from damage in transit in order to determine if carrier responsibility exists. If damaged equipment arrives, save the shipping container for inspection by the carrier and telephone NDC Technologies as soon as possible.