# Bale Pro®

## Grain Tank for BP 660 & BP 661

Operator Manual

www.highlinemfg.com

Highline MANUFACTURING
A DIVISION OF BOURGAULT INDUSTRIES LTD.

E20755_B

# Grain Tank on the BalePro® BP 660 & BP 661

# Operator Manual

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## Highline Team Message

***Congratulations on your purchase of the Grain Tank on the Bale Pro 660/661*** *manufactured by Highline Manufacturing*

*This Operator Manual has been prepared to provide information necessary for safe and efficient operation. In the manual you will find safety procedures, maintenance routines and detailed operational instructions.*

*If you find that you require information not covered in this manual, please feel free to consult your local dealer. Your dealer is always able to contact Highline for this technical information.*

*Highline Manufacturing thanks and congratulates you for selecting the Grain Tank as your machine of choice.*

*Highline Manufacturing*

# Table of Contents

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## GENERAL DESCRIPTION OF THE GRAIN TANK ON THE BP 660/661

The Grain Tank on the BP 660/661 is an attachment to the BP 660/661 Bale Processor. When the bale processor moves forward a sensor sends information to the electronic system which controls a hydraulic motor to turn the auger through a series of chain sprockets. The auger discharges the metered feed directly into the tub of the BP 660/661 Bale Processor.

When the addition of feed into the processed material is desired, the meter system is turned on to deliver product either by the amount of feed per foot or by the amount of feed per minute.

The rate of feed mix is controlled by calibrating the auger discharge per revolution for a particular product and setting the desired rate of feed output.

When the auger drive motor is not turned on, the Bale Processor discharges material without any feed output.

The operator of the Grain Tank is located in the tractor cab where they drive the tractor, control the speed of driving and engaging of the auger drive system.

The Grain Tank is the same for the BP 660 and BP 661. The tank is mounted differently according to the different bale processor tub shape. The grain augers are a different length for the difference in shape of the bale processor tub.

## INTENDED USE OF THE GRAIN TANK ON THE BP 660/661

The Grain Tank is designed to add animal feed materials into materials that have been initially processed by the BP 660/661 Bale Processor.

The Grain Tank is intended for use in conjunction with the Bale Processor.
The Grain Tank is intended for use in farming applications.
The Grain Tank is intended for the mixing of animal feed in farming applications.
The Grain Tank is intended for off road use only.

Any uses of the Grain Tank on the BP 660/661 other than the above stated Intended Uses shall be considered misuse of the Grain Tank . This misuse shall included (but not limited to):

- Using the Grain Tank on public roads.
- Metering of feeds or grains for seeding purposes.
- Metering materials other than animal feed materials.
- Using the auger to move materials when the tank is not connected to the BP 660/661 Bale Processor.

Always use the Grain Tank on the BP 660/661 according to the instructions contained in this Operator Manual and the safety and instruction decals on the machine.

Perform regular maintenance and repair to ensure that the Grain Tank on the BP 660/661 operates safely and efficiently.

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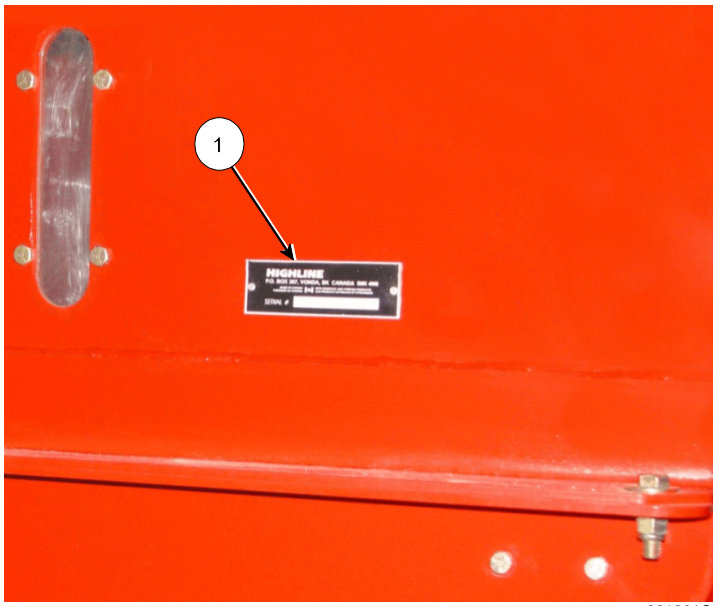
## SERIAL NUMBER

Your serial number is found on the serial number plate (1) attached to the tank.




Serial Plate Location 221261C

It is important to record the serial number for proof of ownership and for any service or maintenance assistance.

**Serial Number** _____

**Owner** _____

**Model** _____

**Date of Purchase** _____

## SAFETY SIGN-OFF FORM

Highline Manufacturing follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the machine should read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow someone to operate this equipment until this information has been reviewed. This information should be reviewed by all operator's before the season start-up.

This sign-off sheet is provided for record keeping to indicate that the person working with the equipment has read and understood the information in the Operator's Manual and has been instructed in the safe operation of the equipment.

| Date | Employee's Signature | Employer's Signature |
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## SAFETY ALERT SYMBOL

**The Safety Alert Symbol means:**

**ATTENTION!**
**BECOME ALERT!**
**YOUR SAFETY IS INVOLVED!**

The Safety Alert Symbol combined with a Signal Word alert to the presence of a hazard and the degree of possible injury.

**DANGER**

**Indicates an imminently hazardous situation that, if not avoided, WILL result in DEATH OR SERIOUS INJURY. The color is Red with White lettering.**

**WARNING**

**Indicates a potentially hazardous situation that, if not avoided, COULD result in DEATH OR SERIOUS INJURY, and includes hazards that are exposed when guards are removed or unsafe practices. The color is Orange with Black lettering.**

**CAUTION**

**Indicates a potentially hazardous situation that, if not avoided, MAY result in MINOR INJURY. The color is Yellow with Black lettering.**

## GENERAL SAFETY

1. Ensure that anyone who is going to operate, maintain or work near the machine is familiar with the recommended operating, maintenance procedures and safety information contained in this manual and follows all the safety precautions.

2. In addition to the design and configuration of the equipment, hazard control and accident prevention are dependant upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.

3. The Grain Tank shall not be operated without all the guards in place.

## SAFETY DECALS

1. Keep the decals and signs clean and legible at all times.
2. Replace decals and signs that are damaged, missing or have become illegible.
3. Parts that have been replaced should display a current decal.
4. Decals are available from the Highline Parts Department.
5. Be familiar with the decals, the type of warning and the area or function(s) related to the area(s) that requires your awareness.


## DO NOT CONTACT THE ROTATING AUGER

Keep fingers and hand out of the auger tube and chamber.
Never attempt to manually remove debris while the auger is rotating.
Contact with the rotating auger will cause serious injury or death.
Keep all auger guards in place.


## DO NOT ENTER THE TANK

The tank is a confined space not meant to be entered.


## DO NOT RIDE ON THE MACHINE

Riders may fall from the machine causing serious injury or death.


## DO NOT PLACE HAND IN THIS AREA WHEN RAISING OR LOWERING THE LID

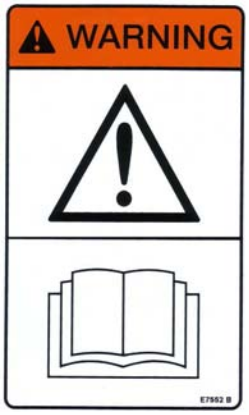
Serious injury could result if hands are placed in this clamping area.


## DO NOT CONTACT MOVING CHAIN

Contacting moving chain or parts could cause serious injury or death.

Disconnect hydraulics motors before servicing the chain.

Always disengage power take off, shut off tractor, remove key, set park brake and wait for all parts to stop turning before servicing.



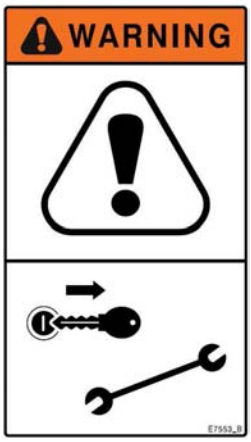

## READ, UNDERSTAND, AND FOLLOW SAFETY INSTRUCTIONS

Read, understand and follow all instructions and safety messages included in this manual and on decals attached to the machine. These instructions and safety messages contain important information.

Allow only responsible, properly instructed individuals to operate and service the machine.

Failure to follow the instructions and safety messages in this manual and on the decals attached to the machine could result in serious injury or death.

Keep all safety and instruction decals in good condition. Replace any missing or damaged decals.

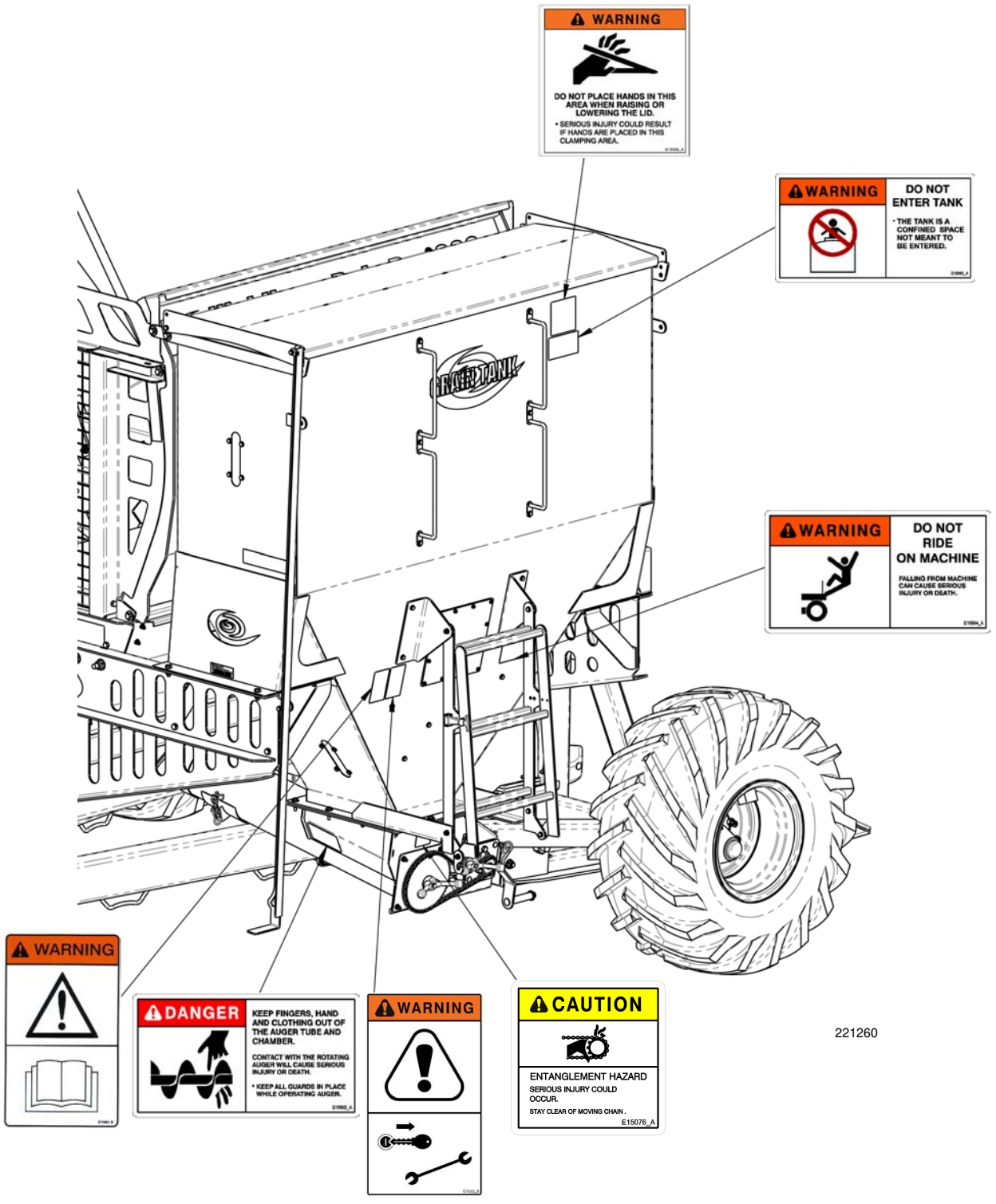



## SHUTDOWN THE TRACTOR BEFORE DISMOUNTING TRACTOR

Shut down the tractor and remove the key before repairing, servicing or adjusting, lubricating or cleaning.
Set the park brake.
Disengage power take off.
Before servicing or adjusting, wait for all parts to stop rotating.
Keep guards in place and in good condition.

Never transport unit on highway with product in tank.

## SAFETY DECAL LOCATIONS



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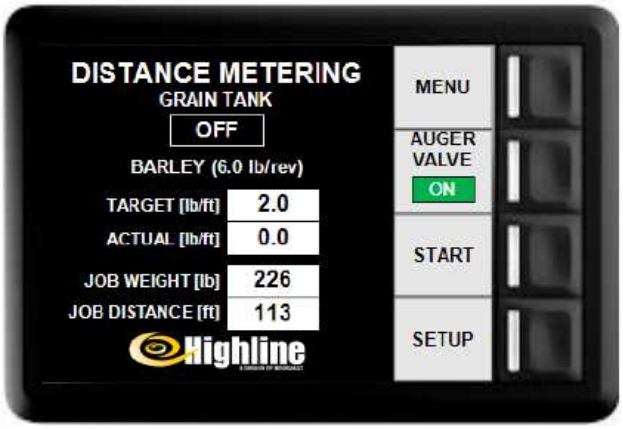
## Grain Tank Display

The Grain Tank display is used in the cab for making operation choices and viewing the status/operation of the machine.

The display has soft key buttons on the side that can be used for making screen choices.

There are screens for Distance Metering or Timed Metering and Priming/Calibrating. In the Settings and Total Output screens the user can adjust machine settings and find operation information.

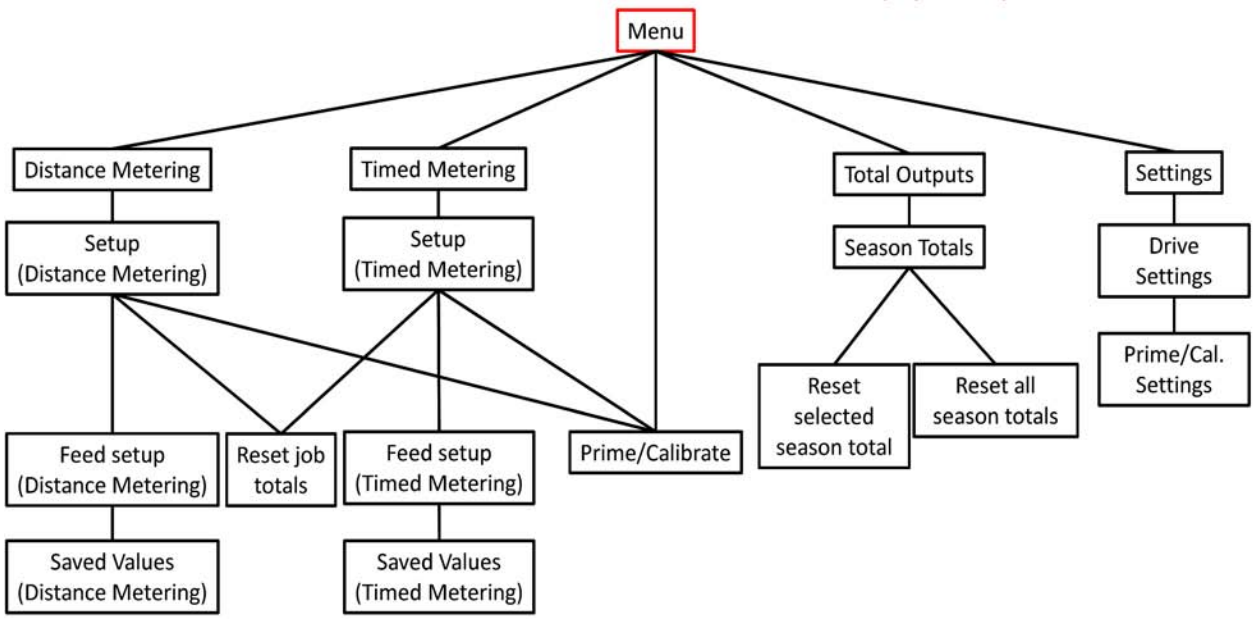



Grain Tank Display 221174-1

## Software Menu Tree

The software is designed to show a number of display screens. The screens offer operational choices and also the option to advance to additional screens.

The software menu tree is a visual representation of the display screens to be used as a reference to navigate to the various screens.



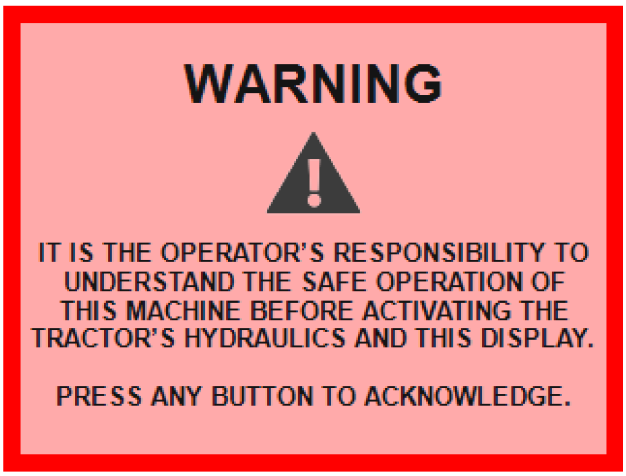

Grain Tank Software Menu Tree 221175

## Startup of the Display

When the display starts up it shows a WARNING screen.

Read the Warning carefully about the Operator's responsibility to understand the safe operation of the machine before activating the hydraulics and enabling the display.

Press any button to acknowledge and enable the control system.

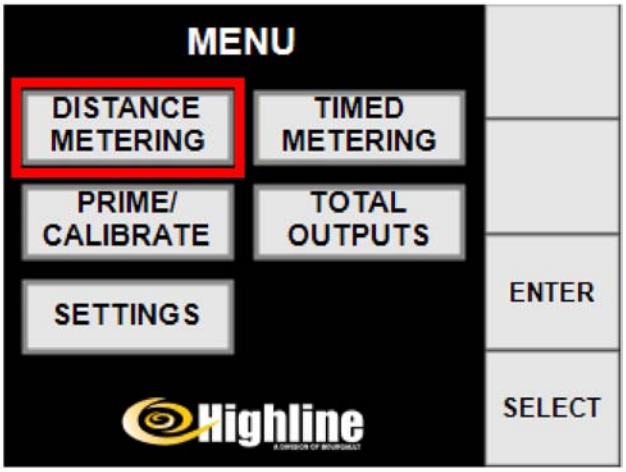



Startup Warning 221266

## Menu Screen

The Menu Screen gives options to choose the type of metering, to prime/calibrate the auger to see total outputs and to adjust the settings.

Use the SELECT button to cycle through the options. The option will have a red box around it to indicate that it can be chosen. Press ENTER to choose that option.




Menu Screen 221176

DISTANCE METERING is used to meter a certain weight of product over 1 (one) foot (lb/ft).

TIMED METERING is used when metering while the bale processor is operating but it is desired to stationary or if the wheel sensor is damaged. The rate is adjusted to output a certain weight of product per minute (lb/min).

PRIME/CALIBRATE -

- Prime is used to fill the auger before taking a weight sample.
- Calibrate is used to take a weight sample from the auger turning. This weight is to be divided by the number of turns to fill the calibration bucket and then entered into the controller.

TOTAL OUTPUTS allows for viewing the running estimates every time the auger is turned off. The Outputs can also be reset. Season Totals can also be viewed by product. Season Totals can also be reset.

SETTINGS allows control of the Display Brightness, the Drive Settings and the Prime/Calibration Settings.

**Distance Metering**

The DISTANCE METERING Control screen allows the following:

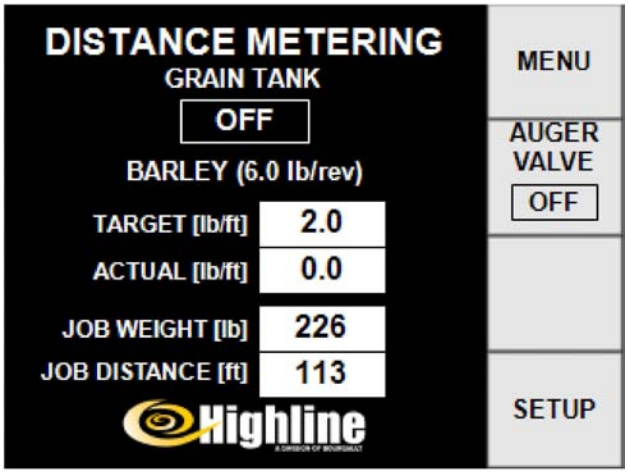
- To return to the MENU screen.
- Turn the AUGER VALVE on or off
- SETUP of the job and feeding scenario.

SETUP screen for DISTANCE METERING.

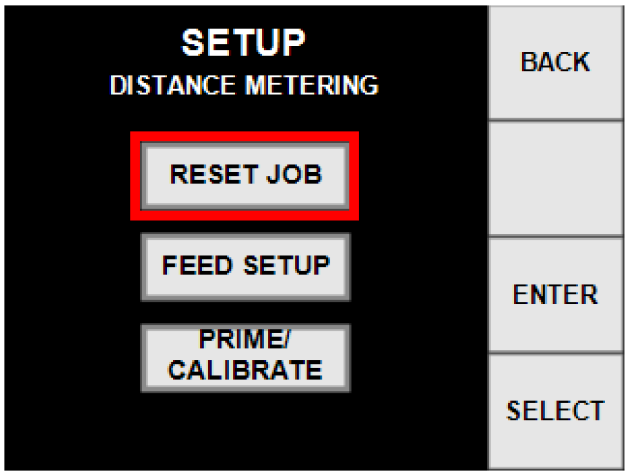
- The selection chosen will be highlighted by a red box.

- RESET JOB will bring up a screen to confirm the resetting of the weight and distance traveled to zero for the present job to be done.

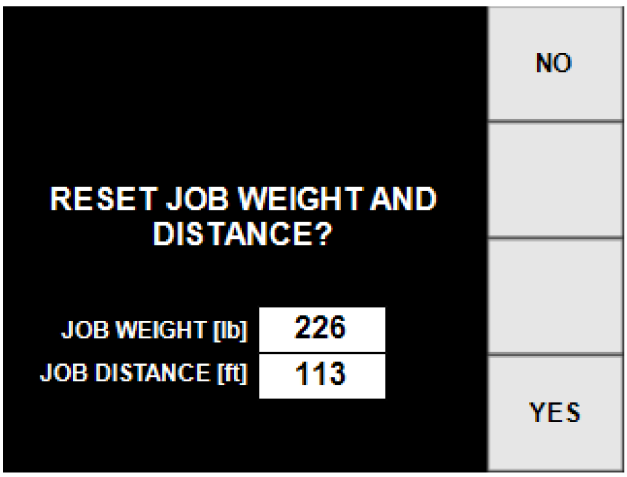
  - Selecting NO will cancel and go back to the previous screen.
  - Selecting YES will move the values to zero and go back to the previous screen.




Distance Metering Control Screen 221187




Distance Metering Setup 221177




Job Reset Confirmation 221178

- Selecting FEED SETUP from the SETUP screen will bring up a screen to enter the following:

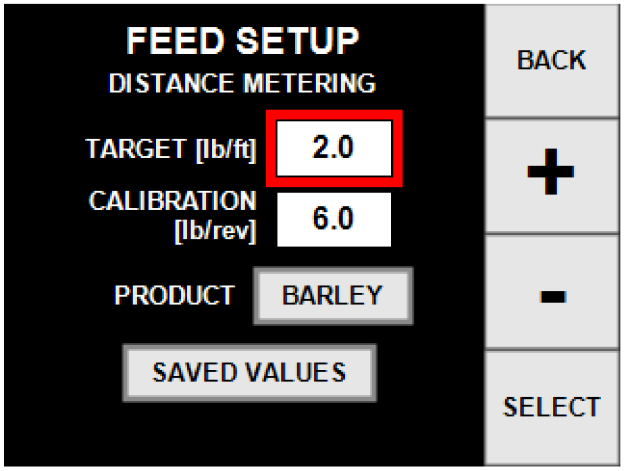
  - The selection chosen will be highlighted by a red box.

  - The TARGET is the weight of feed to be distributed per foot traveled.
    - To adjust the value, press SELECT until it is highlighted. Then press "+" or "-" to enter the desired amount of feed per foot.

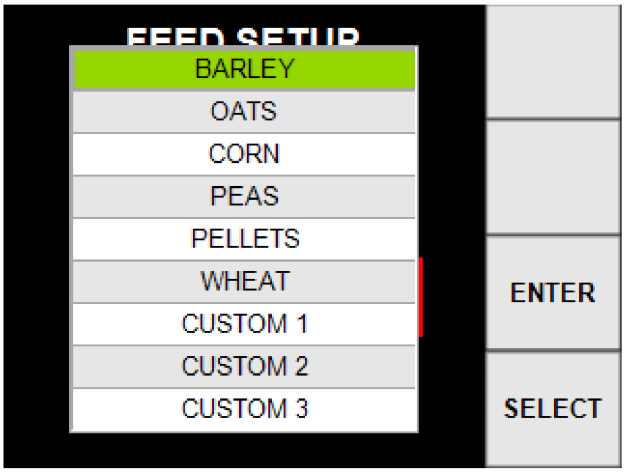
  - CALIBRATION is the weight in pounds of the product moved for each revolution of the auger (lbs/rev).
    - The CALIBRATION number is determined by going through the calibration process described in the "Operating the Grain Tank" section of this manual.

  - PRODUCT is the material that is being metered.
    - Press SELECT to move to the PRODUCT being feed.
    - Press ENTER to choose that product.

    Note: If the product is not listed use one of the Custom values.

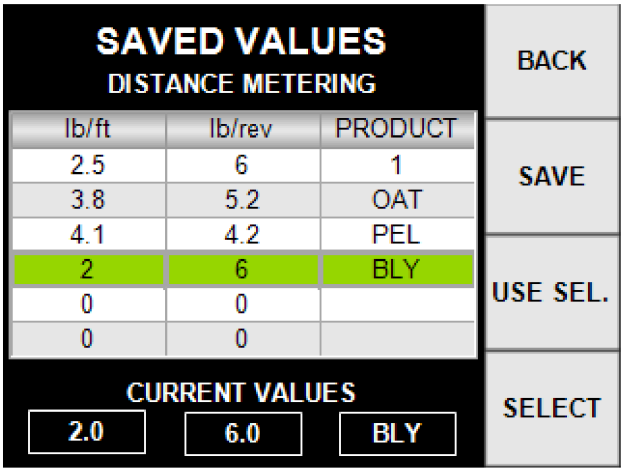



Feed Setup for Distance Metering 221179




Product List Pop-up 221180

- SAVED VALUES will bring up a screen with the most recent saved inputs.
  - Press SELECT to move to the product values.
  - Press USE SEL. To
  - Press USE SEL. to auto-fill the values into the FEED SETUP screen.
  - The current values are indicated at the bottom of the screen.
    - To save the current values to the SAVED VALUES table, press the SAVE button.




Saved Values - Distance Metering 221181

AUGER VALVE ON or OFF

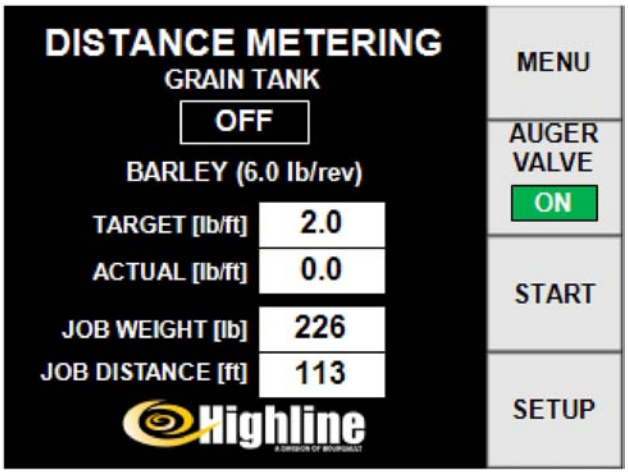
- The auger uses hydraulic power from the bale processor bale lift circuit through a diverter valve.

  - The AUGER VALVE switch acts like a toggle switch to turn ON/OFF the auger diverter valve.

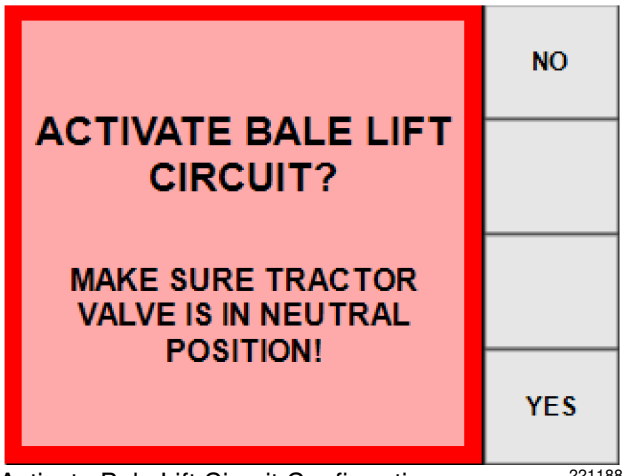
  - After pressing the auger valve to ON, the tractor valve can be safely actuated and will begin turning the auger.

  - When pressing AUGER VALVE to the OFF value a confirmation screen will appear to activate the bale lift circuit.
    - This confirmation screen is to prevent accidentally activating the bale lift.
    - Ensure the bale lift circuit tractor valve is in the neutral position.
    - Pressing YES will turn off the auger and direct the hydraulics to the bale lift.

  - Pressing NO will cancel the operation and keep the hydraulics going to the auger.



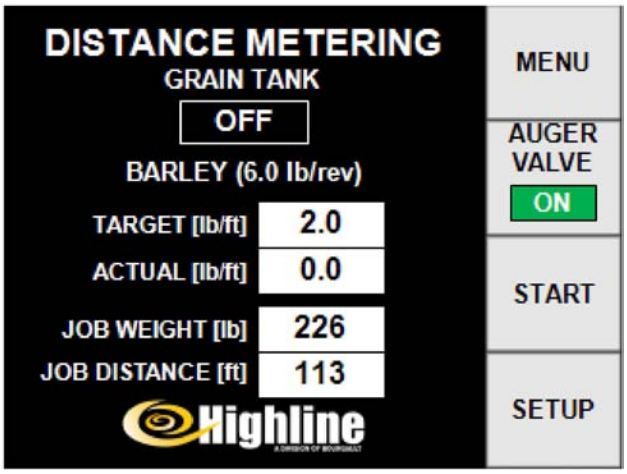

Distance Metering Control Screen 221330




Activate Bale Lift Circuit Confirmation 221188

START the metering

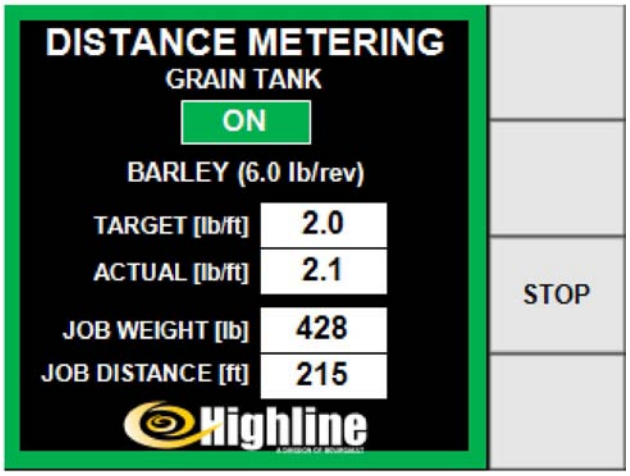
- Press the START button to begin the metering process.




Distance Metering Control Screen 221330

- Once the metering process has begun a screen will show the product, target and actual lb/ft, the job weight and job distance as a running total.
  - The screen will have a green border around it and it will show the that the grain tank auger is ON.

- Press the STOP button to turn off the metering.

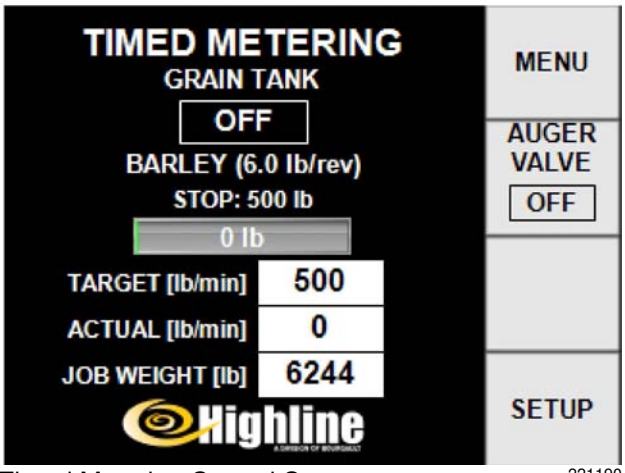



Grain Tank ON 221189

## Timed Metering

The TIMED METERING Control screen allows the following:

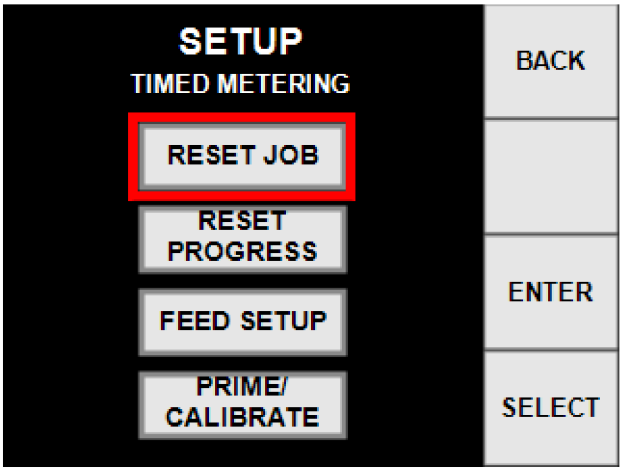
- SETUP of the job and feeding scenario.
- Turn the AUGER VALVE ON or OFF.
- To return to the MENU screen.




Timed Metering Control Screen 221190

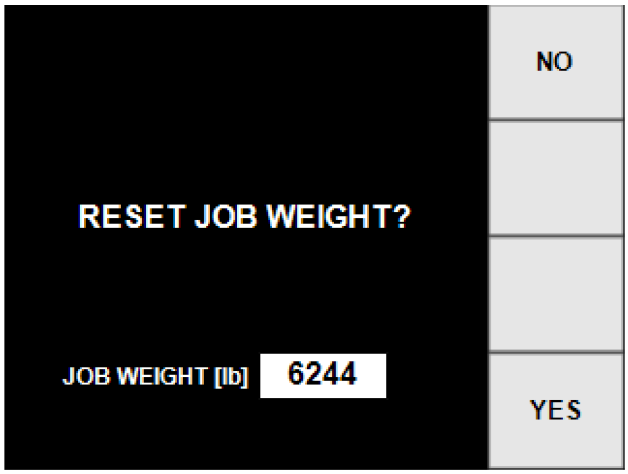
SETUP screen for TIMED METERING.

- The selection chosen will be highlighted by a red box.




Timed Metering Setup 221182

- RESET JOB will bring up a screen to confirm the resetting of the weight to zero for the present job to be done.
- Selecting NO will cancel and go back to the previous screen.
- Selecting YES will move the value to zero and go back to the previous screen.




Job Weight Reset Confirmation 221185

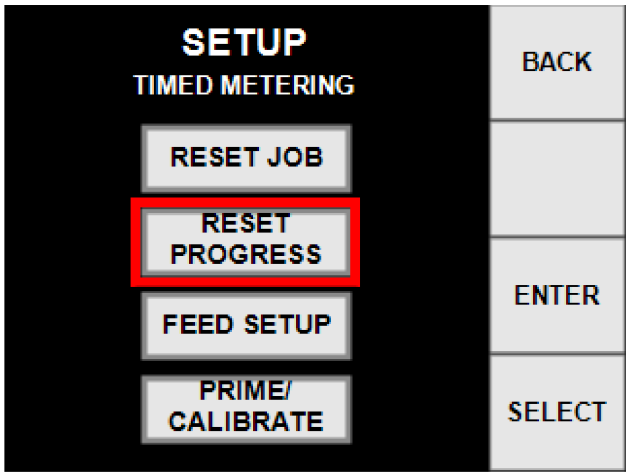
RESET PROGRESS on Timed Metering is an option for those times when the job weight progress is not to be retained.

Note: The weight progress is normally retained if the auger is stopped and the auger valve is turned off to allow another bale to be loaded into the machine. Once the bale is loaded the auger valve turned on and the auger begins to turn again then the weight progress resumes.

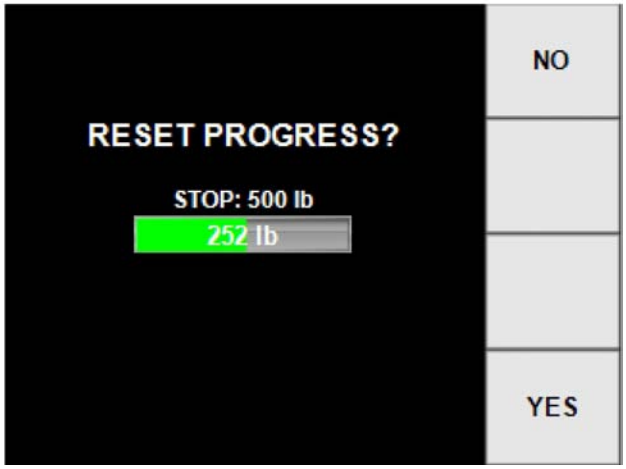
Note: If the stop weight has been reached the progress will set itself to zero (0).

- Press No to retain the weight progress.

- Press Yes to Reset the weight progress to zero.




Select Reset Progress 221334

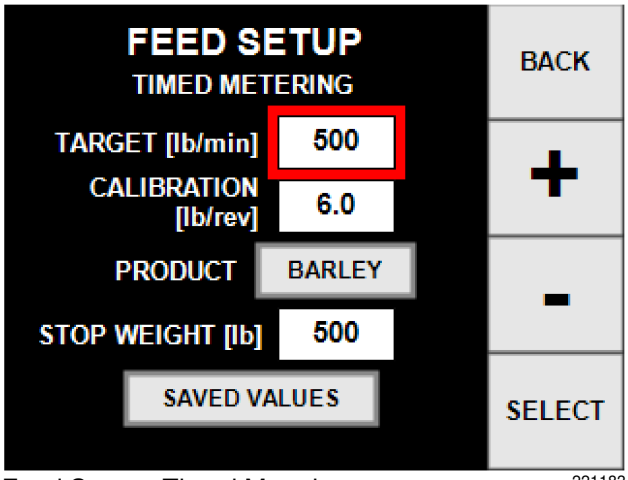



Option to Reset Weight Progress
(On Timed Metering) 221331

- Selecting FEED SETUP from the SETUP screen will bring up a screen to enter the following:

  - The TARGET is the weight of feed to be distributed per minute.
    - To adjust the value, press SELECT until it is highlighted.

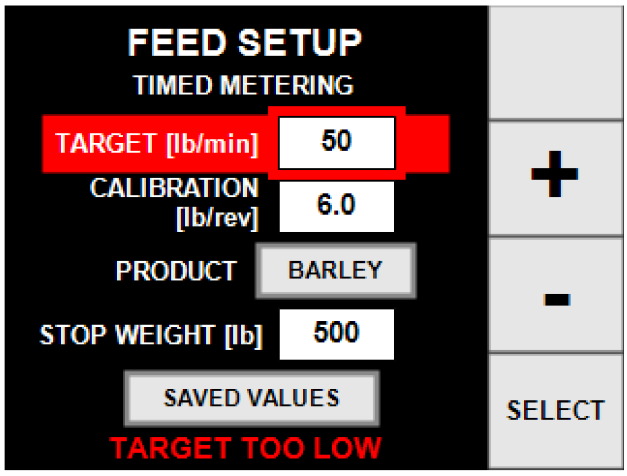
  - Press "+" or "-" to enter the desired amount.



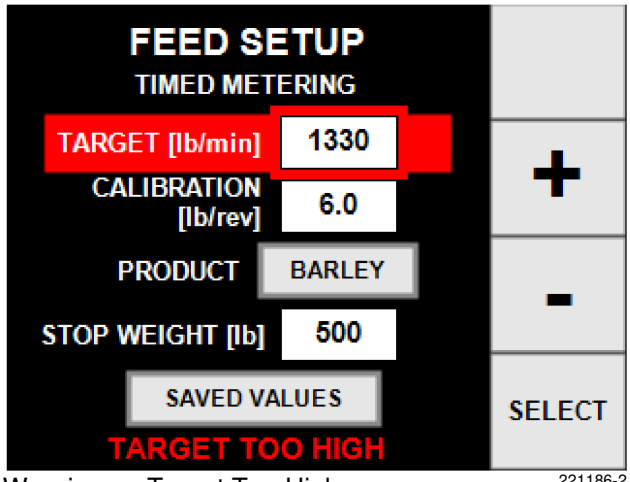

Feed Setup - Timed Metering 221183

Note: If the target lb/min is too low or too high, then a red background will appear, and a message on the bottom will say “TARGET TOO LOW” or “TARGET TOO HIGH”.

  - Adjust the value to within range for that product.
    - It will not be possible to go back to another screen until the value is valid.



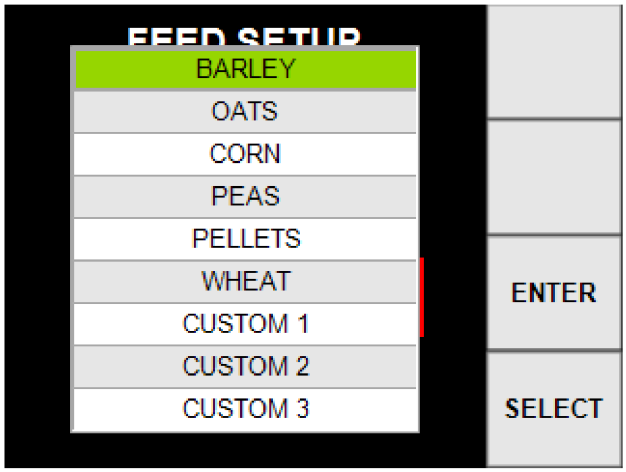

Warning on Target Too Low 221186-1




Warning on Target Too High 221186-2

- CALIBRATION is the weight in pounds of product for each revolution of the auger (lbs/rev).
  - The CALIBRATION number is determined by going through the calibration process described in the "Operating the Grain Tank" section of this manual.

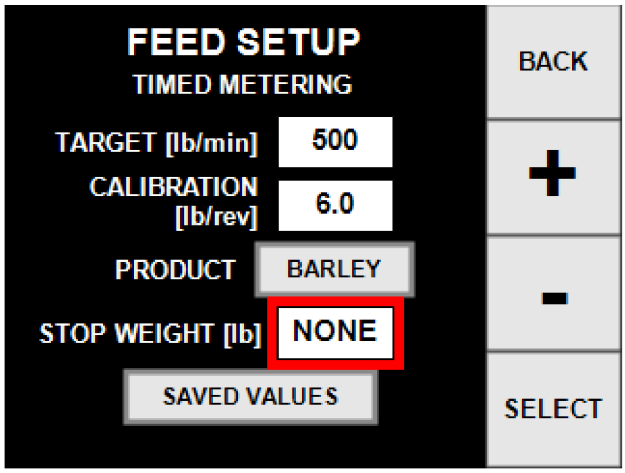
- PRODUCT is the material that is being metered.
  - Selecting the PRODUCT box will bring up a pop-up menu from which the product can be selected.
    - If the product is not listed in the pop-up box, use one of the Custom values.




Product List Pop-up 221180

- STOP WEIGHT is the number of pounds (lbs) to be discharged at which point the auger will auto-stop.

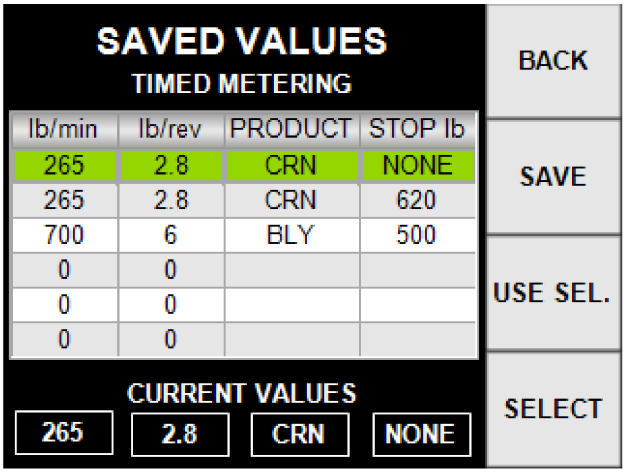
  - If no stop weight is desired, hold either "+" or "-" until the value changes to read "None".
    - The auger will have to be turned off manually in this case.




Feed Setup - Timed Metering 221332

- SAVED VALUES will bring up a screen with the most recent saved inputs.
  - The current values are indicated at the bottom of the screen.
    - To save the current values to the SAVED VALUES table, press the SAVE button.

  - Press the SELECT button to choose the values.
    - Press USE SEL. to auto-fill the selected values into the Feed Setup screen.



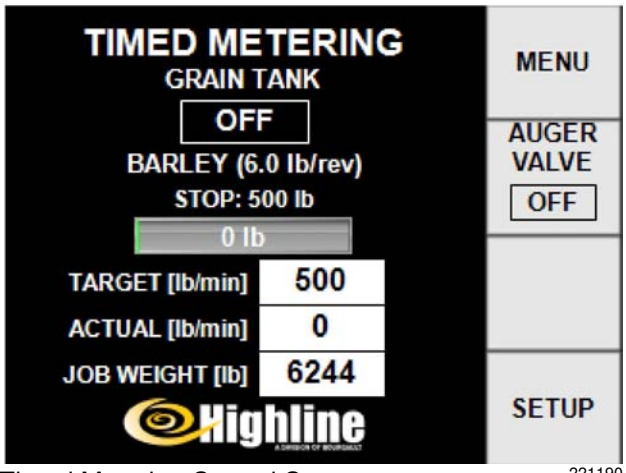

Saved Values - Timed Metering 221333

AUGER VALVE ON or OFF

- The auger uses hydraulic power from the bale processor bale lift circuit through a diverter valve.

  - The AUGER VALVE switch acts like a toggle switch to turn on/off the auger diverter valve.

  - After turning the auger valve to ON, the tractor valve can be safely actuated and allow the auger to turn as instructed.

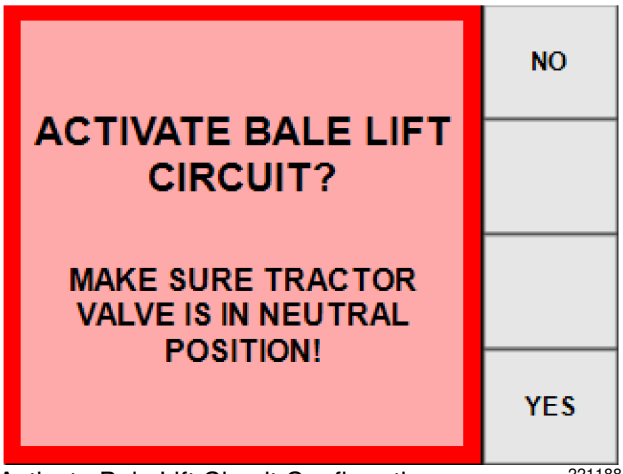



Timed Metering Control Screen 221190

- When pressing AUGER VALVE to the OFF value the display will beep and will bring up a confirmation screen to activate the bale lift circuit.
  - This confirmation screen is to prevent accidentally activating the bale lift.
  - Ensure the bale lift circuit tractor valve is in the neutral position.

  - Pressing YES will also turn off the auger and direct the hydraulic flow to the bale lift.

  - Pressing the NO will cancel the operation and keep the hydraulics going to the auger.



Activate Bale Lift Circuit Confirmation 221188

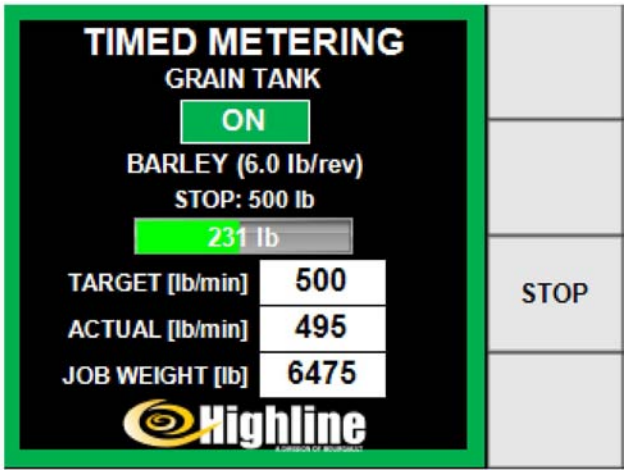
START the metering

- Press the START button to begin the metering process.
  - The screen will have a green border around it and it will show that the grain tank auger is ON.

- While metering a progress bar fills and text shows the weight outputted.
  - There are short beeps when ¼, ½ and ¾ of the auto-stop weight are reached (if applicable).

- When Stop WEIGHT is reached, the auger automatically stops and the progress bar resets.
  - The display will output a long beep.

  Note: If the STOP WEIGHT has been set to None, the display will not show a fill progress bar. The auger will not auto-stop requiring the manual stopping of the auger.



Progress Bar - Auto-Stop Weight 221191

- The display will show the TARGET lb/min and ACTUAL lb/min, the JOB WEIGHT as a running total.

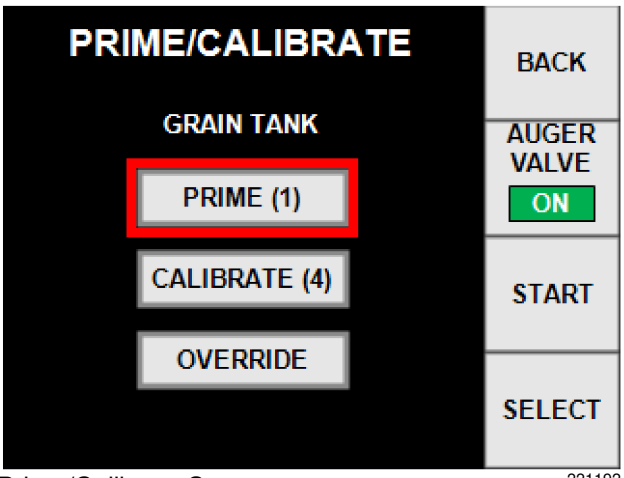
- Press the STOP button to turn off the grain tank auger.

**Prime/Calibrate**

This screen can be accessed through the Main Menu or by pressing and holding the START button on the DISTANCE/TIMED METERING screens.

- SELECT which function to be performed.
  - The selection chosen will be highlighted by a red box.

- Ensure the AUGER VALVE is turned ON.
  - Activate the tractor hydraulic valve.
- Press START to begin the function.



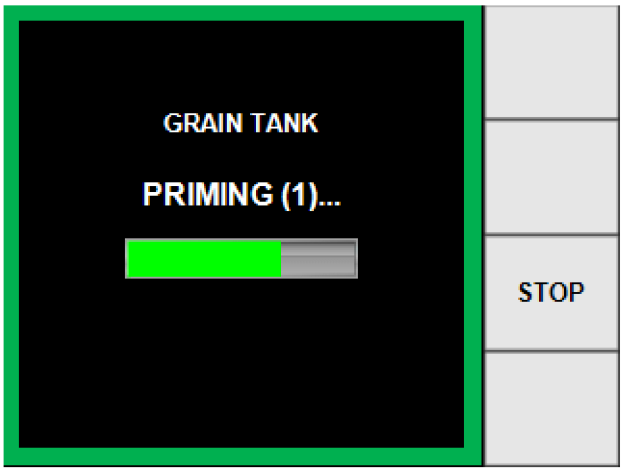
Prime/Calibrate Screen 221192

The PRIME function is to load the auger so that the auger flighting is full when a calibration procedure is done.

- The number indicates the number of auger turns to prime the flighting.
  - The number of turns is set in the PRIME/CAL. SETTINGS screen.

- While PRIMING a progress bar appears and fills.
  - The screen is also in a green border.

- When the number of turns is completed, the auger automatically stops and the display goes back to the PRIME/CALIBRATE screen.



Priming Progress 221193

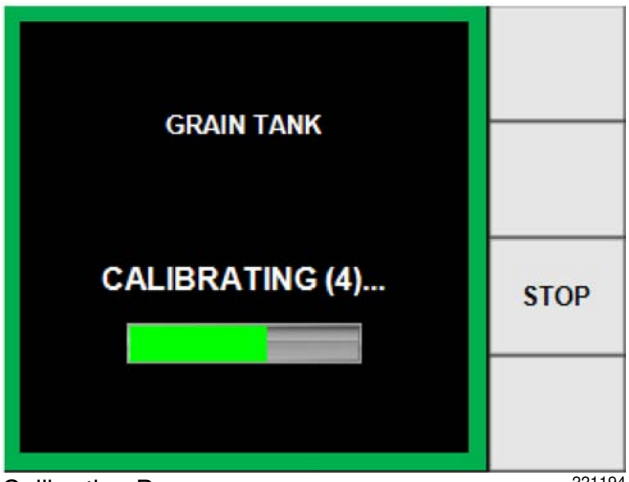
CALIBRATE is to determine the product weight that is output for each auger revolution.

- The number indicates the auger turns to collect the sample weight.
  - The number of turns is set in the PRIME/CAL. SETTINGS screen.

Note: The calibration procedure is outlined in the "Operating the Grain Tank" section of this manual.

- While CALIBRATING a progress bar appears and fills
  - The screen is also in a green border.

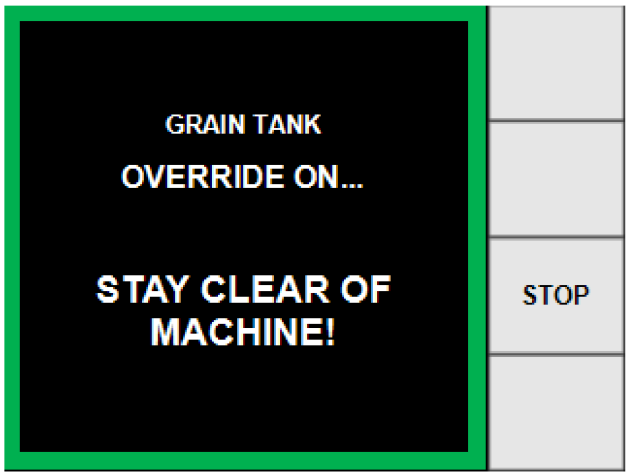
- When the number of turns is reached, the auger automatically stops and the display goes back to PRIME/CALIBRATE screen.



Calibrating Progress 221194

OVERRIDE can be used to manually control the auger to remove product from the grain tank or ensuring the auger is empty when changing product in the grain tank.

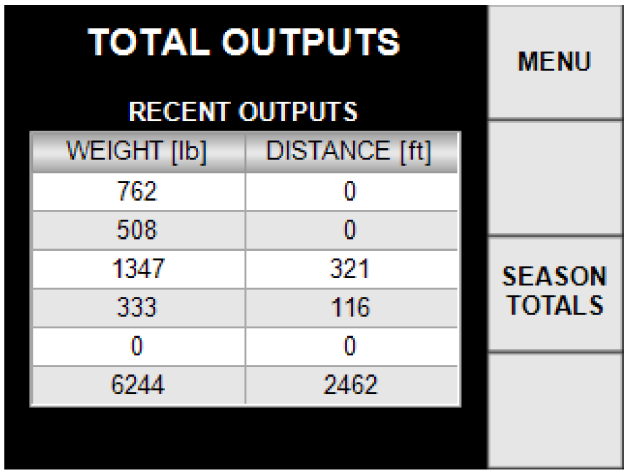
- While the auger OVERRIDE is on a warning to stay clear of the machine is displayed because the calibration door is open exposing the turning auger.
  - The screen also has a flashing green border.



Override Caution 221195

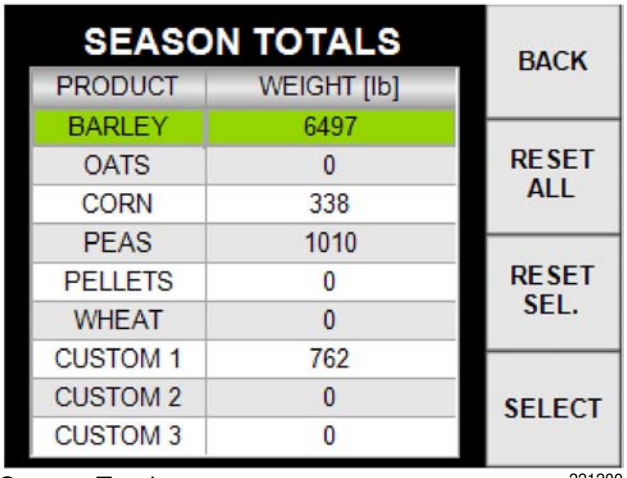
## Total Outputs

- The TOTAL OUTPUTS screen shows a table with the most recent running estimates that is saved each time the auger turns off.




Total Outputs Screen 221199

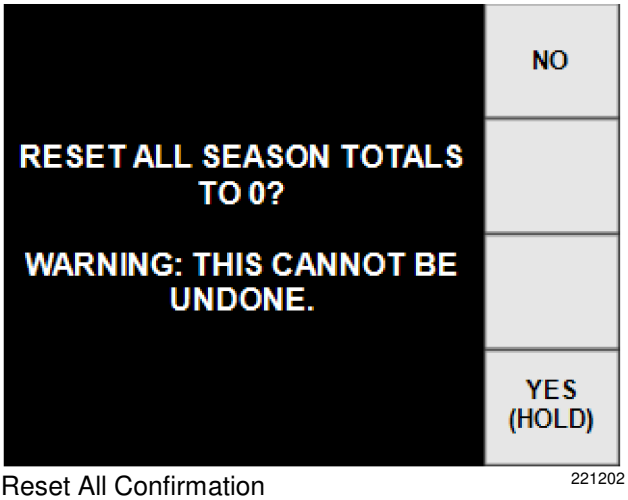
- The SEASON TOTALS screen shows the total accumulated weights for each product.
  - The number of pounds is calculated from the auger rotations & calibration values while the auger is ON in both DISTANCE METERING and TIMED METERING.




Season Totals 221200

- RESET ALL - will reset the seasonal weights for all products to zero (0) and then go back to the SEASON TOTALS screen.
  - Press YES and hold to reset the season weight totals and then go back to the SEASON TOTALS screen.

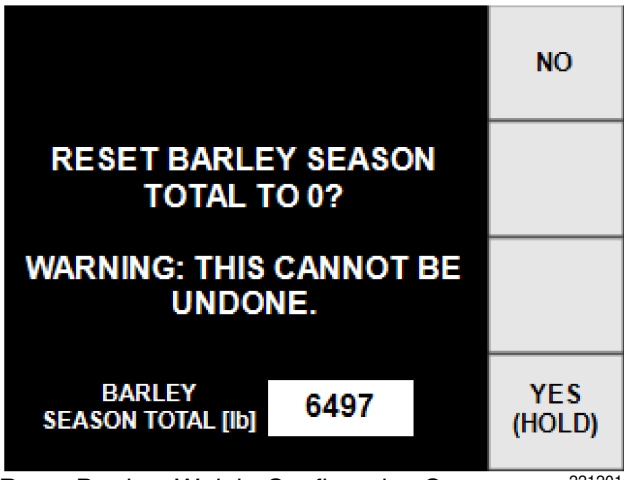
Note: Once the product weights are reset it cannot be undone to recover the weights.




Reset All Confirmation 221202

- RESET SEL. will reset to zero (0) the seasonal total weight for the highlighted product row.
  - Hold YES to reset the seasonal weight and then go back to the SEASON TOTALS screen.

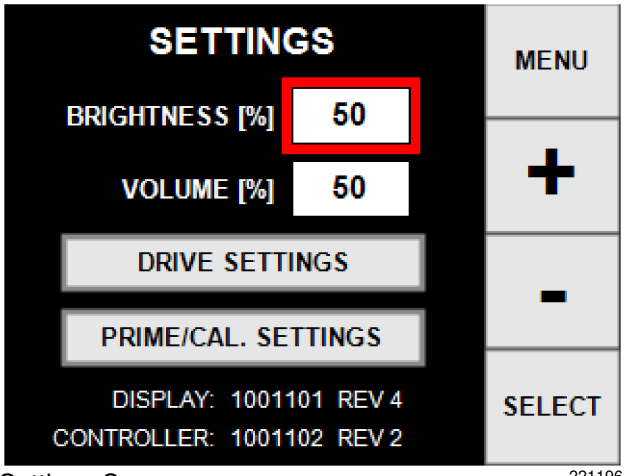
  Note: Once the product weight is reset it cannot be undone to recover that weight.




Reset Product Weight Confirmation Screen 221201

**Settings**

The settings screen gives control of the screen BRIGHTNESS, DRIVE SETTINGS and PRIME/CAL. Settings.




Settings Screen 221196

Screen Brightness

- To adjust the screen brightness select the brightness box.
  - Press "+" or "-" to adjust.

- The brightness is adjusted according to a percentage (%) of full brightness.

Display Volume

- To adjust the volume of the alert beep alarms select the volume box.

  - Press "+" or "-" to adjust.

- The volume is adjusted according to a percentage (%) of full volume.

DRIVE SETTINGS

- The values entered reflect the number of teeth that are sensed at the auger and the wheel.

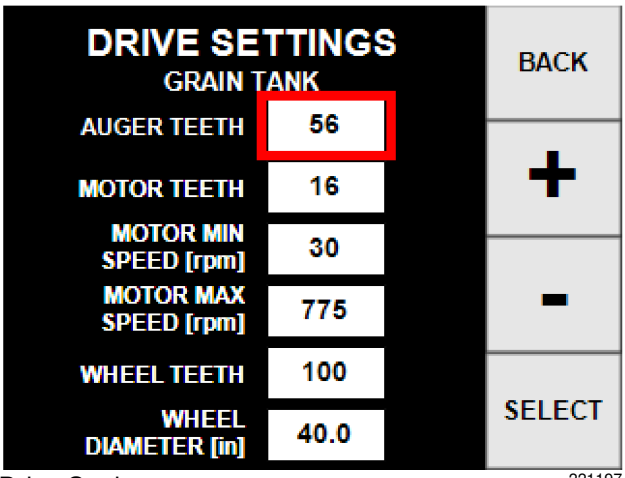
- The motor minimum and maximum speed are for the motor that drives the auger.

- The wheel teeth is the number of teeth on the sprocket mounted to the wheel.

- The wheel diameter is determined by measuring the outermost horizontal distance across the centerline of the wheel.

Note: The values shown in the diagram are the default values.

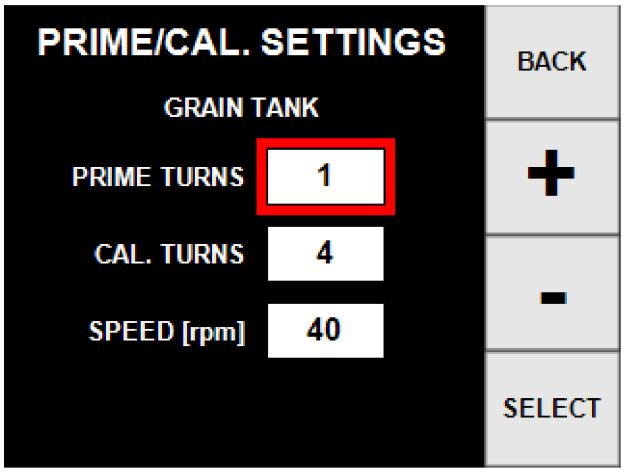
Note: Any changes to the drive settings will alter the performance of this machine. Changes should only be done under the direction of Highline Manufacturing.
  - If changes to the drive settings are made without the direction of Highline Manufacturing then the user is doing so at their own risk.



Drive Settings 221197

PRIME/CAL. SETTINGS

- PRIME TURNS is the number of turns of the auger to ensure that it is full of product before doing a calibration procedure.
- CAL. TURNS is the number of turns of the auger while collecting the product sample for weighing.
- SPEED (rpm) is the speed the auger rotates while priming, calibrating or overriding.




Prime/Cal. Settings

The following are Sample Feeding Rations for feeding with the Bale Pro and Grain Tank.
Adapted from www.agriculture.gov.sk.ca/livestock

**Note: Consult a Nutritionist for specific recommendations.**

Note: During periods of cold temperatures, increase feeding with additional grain at a rate of one (1) lb. (0.45 kg) per cow per day for every -5º C that the temperature is below -20º C at midday. For example, if the afternoon air temperature was -35º C, feed an additional three (3) lb. (1.36 kg) of grain per cow.

| **Low Quality Forage**<br>**Example Feeding Rations (Consult a Nutritionist for specific recommendations.)**<br>Pounds (kg) per cow per day on an "as fed" basis | | | |
|---|---|---|---|
| | 1,200 lb. (544 kg) Cow<br>Mid-Pregnancy<br>Early Winter Conditions<br>No wind, -10º C<br>Six months pregnant<br>Calving mid March<br>Calf birth weight 80 lbs (36.2 kg) | 1,200 lb. (544 kg) Cow<br>Late-Pregnancy<br>Winter Conditions<br>No wind, -20º C<br>Eight months pregnant<br>Calving mid March<br>Calf birth weight 80 lbs (36.2 kg) | 1,200 lb. (544 kg) Cow<br>Lactating<br>Early Spring Conditions<br>No wind, -5º C<br>First month lactation<br>Fourth lactation<br>Calf birth weight 80 lbs (36.2 kg) |
| Cereal Straw + Oats or Barley | 17 lbs + 9 lbs<br>(7.7 kg + 4 kg) | 17 lbs + 11 lbs<br>(7.7 kg + 5 kg) | 15 lbs + 16 lbs<br>(6.8 kg + 7.3 kg) |
| Pea or Lentil Straw + Oats or Barley | 21 lbs + 5 lbs<br>(9.5 kg + 2.3 kg) | 24 lbs + 8 lbs<br>(10.9 kg + 3.6 kg) | 18 lbs + 15 lbs<br>(8.2 kg + 6.8 kg) |
| Slough Hay + Oats or Barley | 26 lbs + 3 lbs<br>(11.8 kg + 1.4 kg) | 29 lbs + 3 lbs<br>13.1 kg + 1.4 kg) | 21 lbs + 12 lbs<br>(9.5 kg + 5.4 kg) |

| **High Quality Forage**<br>**Example Feeding Rations (Consult a Nutritionist for specific recommendations.)**<br>Pounds per cow per day on an "as fed" basis | |
|---|---|
| | 1,200 lb. (544 kg) Cow<br>Lactating<br>Early Spring Conditions<br>No wind, -5º C<br>First month lactation<br>Fourth lactation<br>Calf birth weight 80 lbs (32.6 kg) |
| Alfalfa Grass Hay + Oats or Barley | 31 lbs + 3 lbs<br>(14 kg + 1.4 kg) |
| Canola Hay + Oats or Barley | 31 lbs + 9 lbs<br>(14 kg + 4 kg) |
| Canola Silage + Oats or Barley | 60 lbs + 9 lbs<br>(27.2 kg + 4 kg) |
| Cereal Greenfeed + Oats or Barley | 31 lbs + 3 lbs<br>(14 kg + 1.4 kg) |
| Cereal Silage + Oats or Barley | 58 lbs + 7 lbs<br>(26.3 kg + 3.2 kg) |
| Clover Silage + Oats or Barley | 56 lbs + 9 lbs<br>(25.4 kg + 4 kg) |
| Pea or Lentil Hay + Oats or Barley | 27 lbs + 7 lbs<br>(12.3 kg + 3.2 kg) |

| | Dry Matter % | DE Mcal/lb DE(MJ/kg) | TDN % | Protein % | Ca % | P % | Mg % | K % | S % | S alt % | Vit. A KIU/K g | Cu mg/kg | Mn mg/kg | Zn mg/kg | Se mg/kg | I mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Feed Name** | | | | | | | | | | | | | | | | |
| ALF-GRASS HAY | 87% | 1.22 (11.3) | 61.04 | 14.00 | 1.2 | 0.19 | 0.26 | 1.65 | 0.17 | 0.00 | 0 | 6 | 40 | 23 | 0.23 | 0.00 |
| CANOLA HAY | 85% | 1.13 (10.4) | 56.62 | 13.20 | 1.2 | 0.32 | 0.39 | 1.90 | 0.51 | 0.00 | 0 | 8 | 30 | 20 | 0.12 | 0.00 |
| GRASS HAY | 90% | 1.24 (11.4) | 62.26 | 10.70 | 0.5 | 0.17 | 0.17 | 1.32 | 0.18 | 0.00 | 0 | 6 | 75 | 24 | 0.21 | 0.00 |
| GREENFEED | 86% | 1.20 (11.0) | 60.13 | 10.90 | 0.5 | 0.17 | 0.17 | 1.50 | 0.14 | 0.00 | 6 | 45 | 20 | 0.13 | 0.00 | 0.00 |
| LENTPEA HAY | 86% | 1.16 (10.7) | 58.00 | 14.10 | 1.3 | 0.24 | 0.36 | 1.28 | 0.14 | 0.00 | 0 | 7 | 46 | 29 | 0.15 | 0.00 |
| SLOUGH HAY | 88% | 1.06 (9.7) | 53.00 | 7.80 | 0.4 | 0.12 | 0.14 | 1.27 | 0.19 | 0.00 | 0 | 5 | 33 | 20 | 0.11 | 0.00 |
| CANOLA SILAGE | 35% | 1.18 (10.8) | 59.00 | 14.00 | 1.1 | 0.32 | 0.21 | 1.90 | 0.51 | 0.00 | 0 | 5 | 33 | 27 | 0.12 | 0.00 |
| CEREAL SILAGE | 37% | 1.23 (11.3) | 61.50 | 11.10 | 0.5 | 0.27 | 0.27 | 1.60 | 0.22 | 0.00 | 0 | 5 | 33 | 27 | 0.08 | 0.00 |
| CLOVER SILAGE | 37% | 1.15 (10.6) | 57.74 | 14.80 | 1.4 | 0.22 | 0.27 | 1.59 | 0.19 | 0.00 | 0 | 8 | 27 | 27 | 0.11 | 0.00 |
| CEREAL STRAW | 89% | 0.89 (8.2) | 44.57 | 4.50 | 0.1 | 0.08 | 0.13 | 1.40 | 0.12 | 0.00 | 0 | 3 | 3 | 16 | 0.13 | 0.00 |
| LENTPEA STRAW | 89% | 0.96 (8.8) | 48.00 | 7.20 | 0.9 | 0.08 | 0.23 | 1.30 | 1.50 | 0.00 | 0 | 4 | 41 | 18 | 0.20 | 0.00 |
| GRAIN BRLYOAT | 89% | 1.59 (14.6) | 79.59 | 11.90 | 0.1 | 0.36 | 0.14 | 0.54 | 0.14 | 0.00 | 0 | 6 | 17 | 40 | 0.11 | 0.00 |
| 11% SCR PELL | 90% | 1.43 (13.1) | 71.65 | 12.20 | 0.2 | 0.78 | 0.17 | 0.33 | 0.14 | 0.00 | 0 | 6 | 17 | 40 | 0.11 | 0.00 |
| 14%VMR PELLET | 89% | 1.47 (13.5) | 73.65 | 15.50 | 0.9 | 0.33 | 0.22 | 0.82 | 0.13 | 0.28 | 22 | 39 | 89 | 172 | 0.33 | 3.30 |
| 32%PROT SUPP | 90% | 1.22 (11.2) | 61.13 | 35.60 | 5.9 | 0.67 | 0.33 | 1.00 | 0.33 | 5.00 | 100 | 222 | 378 | 1667 | 1.67 | 13.30 |
| ALFA SUNCURE | 90% | 1.24 (11.4) | 62.13 | 16.60 | 1.7 | 0.20 | 0.29 | 1.62 | 0.21 | 0.00 | 0 | 5 | 37 | 21 | 0.21 | 0.00 |
| CANOLA MEAL | 92% | 1.40 (12.9) | 70.03 | 39.20 | 0.8 | 1.26 | 0.62 | 1.31 | 1.16 | 0.00 | 0 | 9 | 58 | 97 | 0.60 | 0.00 |
| 18:18 MINERAL | 99% | 0.00 | 0.00 | 0.00 | 18.2 | 18.18 | 0.00 | 0.00 | 0.00 | 0.00 | 505 | 3182 | 5303 | 10227 | 30.30 | 90.90 |
| 19:9 MINERAL | 99% | 0.00 | 0.00 | 0.00 | 19.2 | 9.09 | 0.00 | 0.00 | 0.00 | 0.00 | 202 | 505 | 1515 | 3030 | 10.10 | 90.90 |
| LIMESTONE 1 | 99% | 0.00 | 0.00 | 0.00 | 38.4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 | 0 | 0.00 | 0.00 |
| TM SALT+SE | 99% | 0.00 | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 97.47 | 0 | 2525 | 5050 | 7575 | 121.20 | 70.70 |
| ADE 10 M | 99% | 0.00 | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10101 | 5 | 20 | 20 | 0.01 | 0.00 |

Adapted from www.agriculture.gov.sk.ca

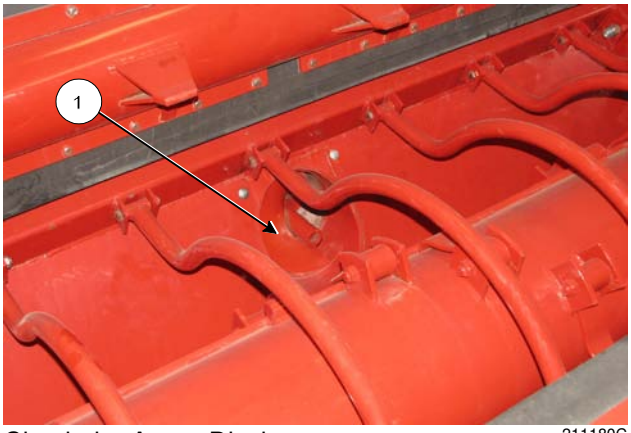
## OPERATING THE GRAIN TANK

### Check the Auger Discharge in the Processor Tub

1. Ensure the Grain Tank auger discharge (1) inside the processor tank is clear of any material that would block commodity from entering the processor.

2. Clear any blockages.

3. Check that the auger can rotate.



Check the Auger Discharge 211180C

### Filling the Tank

Do not enter the tank.
The tank is a confined space not meant to be entered.


1. Lower the tank access ladder.

   - Remove the rubber latch from the ladder.

Remove the Rubber Latch to Lower Ladder 221369C

- Lower the ladder.

Ladder Lowered 221370

2. Lift the lid of the tank.

   - Use the handle (2) to lift the lid up.


Use Handle to Lift Lid 221205C

3. Fill the tank with the desired commodity.
   - The Grain Tank holds approximately 45 bushels (1587 liters).

   - The tank can be filled with an auger or with bags of commodity.

   - The filling progress can be viewed through the sight view glass on the side of the tank.

Fill the Tank 221206

   - Only fill the tank to the top of the internal support braces.

Commodity in the Tank
Only Fill to Top of Braces 215143

4. Close the tank lid.

   - Use the handle to lower the lid.

Close the Tank Lid 221205

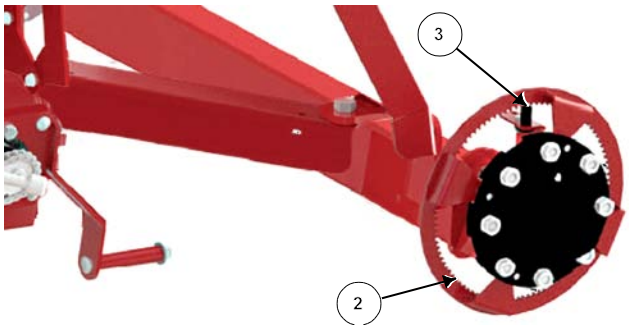
5. Raise the ladder.

   - Raise the ladder and secure it with the rubber latch (1).


Raise and Secure the Ladder 221369C

6. Check the speed sensor sprocket (3) and sensor (2).

   - Check that the sprocket (3) mounted on the back of the left wheel hub is clear of mud, twine or other materials.
     - The teeth of the sprocket need to be clean so the sensor is not damaged and can detect the wheel rotation.
   - Check that the sensor (2) is clean and mounted securely.
     - The sensor picks up the movement of the sprocket teeth to detect wheel rotation.
     - The end of the sensor is to be 0.078" (2mm) from the tip of the sprocket teeth.
   - Check that the sensor wiring is securely connected to the harness.

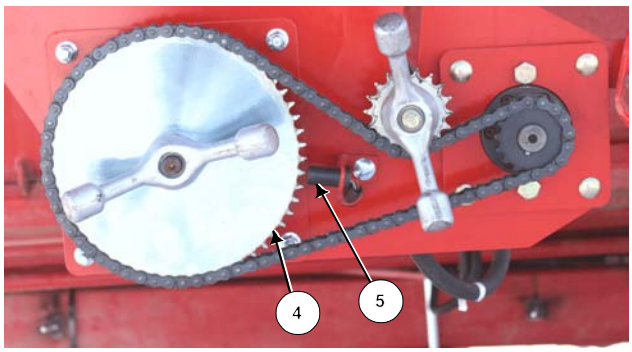


Ensure Wheel Sprocket Teeth and Sensor are Clean
(Wheel Not Shown for Clarity)
221107C

7. Ensure the auger sprocket (4) and sensor (5) are clean.

Do not contact moving chain
Contacting moving chain or parts could cause serious injury or death.

   - Check that the sprocket (4) mounted on the auger shaft is clear of mud.
     - The teeth of the sprocket need to be clean so the sensor is not damaged and can detect rotation.
   - Check that the sensor is clean and mounted securely.
     - The sensor picks up the movement of the sprocket teeth to detect rotation.
     - The end of the sensor is to be 0.078" (2mm) from the tip of the sprocket teeth.
   - Check that the sensor wiring is securely connected to the harness.

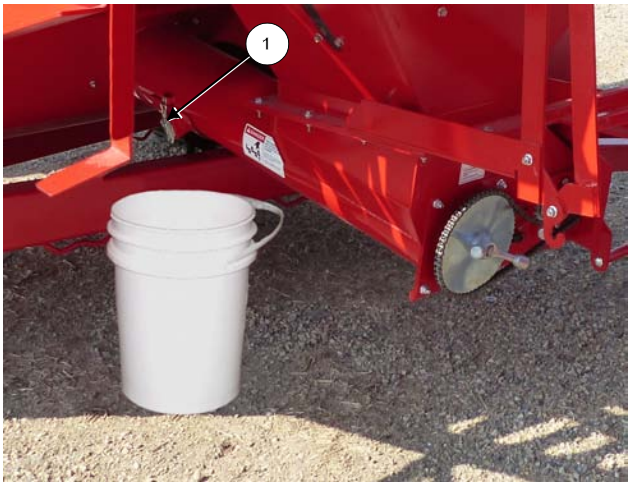
Ensure Auger Teeth and Sensor are Clean
221212C4

8. Ensure the chain around the motor sprocket and auger shaft sprocket (4) is tight.
   - Tighten the chain with the chain idler sprocket (6).
   - Loosen the handle (7) and move the sprocket in the slot and tighten.

**Calibration Procedure**
**Distance Metering and Timed Metering**

1. Ensure the Grain Tank contains a sufficient amount of product.

2. Weigh and record the weight of the empty collection bucket using the provided scale.



Place Pail Under Auger
Open Calibration Door
221371C

3. Place the collection bucket under the auger calibration door.

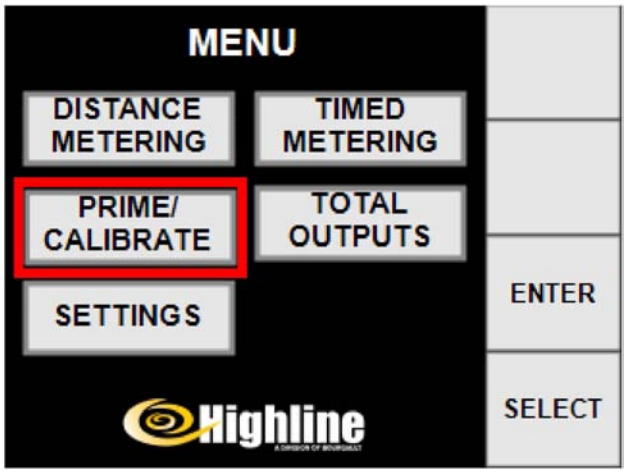
4. Open the calibration door (1) located at the bottom of the auger.

   - Unlatch the door keeper.
   - Lower the calibration door.


Keep fingers and hand out of the auger tube and chamber. Contact with the rotating auger will cause serious injury or death.

5. On the Display Main Menu use the SELECT button to choose PRIME/ CALIBRATE.
   - The selection chosen will be highlighted by a red box.

   - Press ENTER



Choose Prime/Calibrate
221344

6. Prime the auger.

Note: The auger can also be primed by hand by removing the auger chain, attaching the hand crank and turning the auger.

- Use the SELECT button to chose PRIME.
  - The selection chosen will be highlighted by a red box.

- Ensure the AUGER VALVE is turned ON.
  - Activate the tractor hydraulic valve.

- Press the START button to start the hydraulic motor to turn the auger.

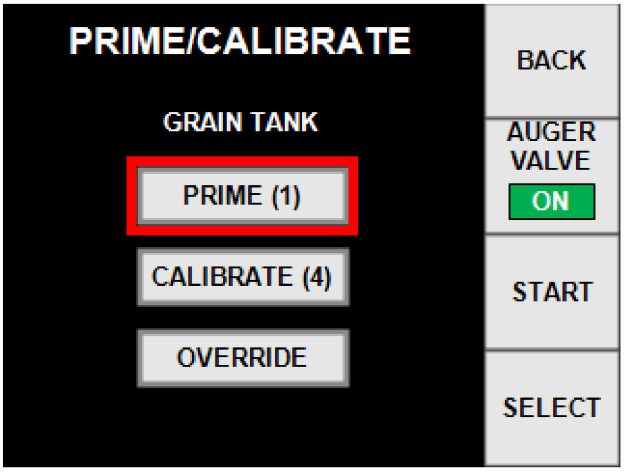
Keep fingers and hand out of the auger tube and chamber. Contact with the rotating auger will cause serious injury or death.

- The number of turns of the auger is shown in parentheses.
  - The number of turns can be changed in the PRIME/ CAL. SETTINGS screen.

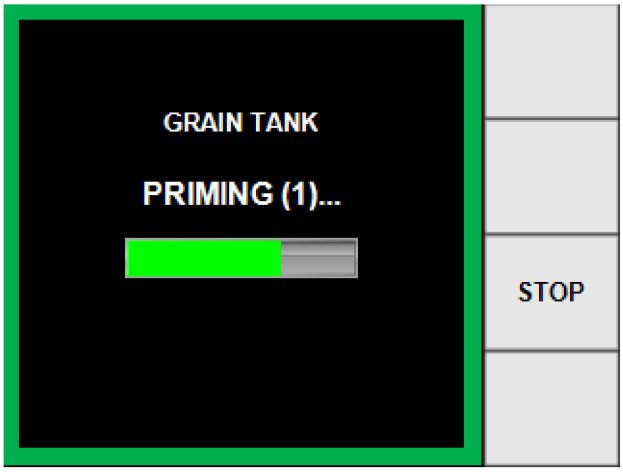
- While PRIMING a progress bar appears and fills to indicate the stage of completion.
  - The screen is also in a green border.

- Press STOP at anytime to stop the priming process.

- When the number of turns is completed, the auger automatically stops and the display goes back to the PRIME/CALIBRATE screen.

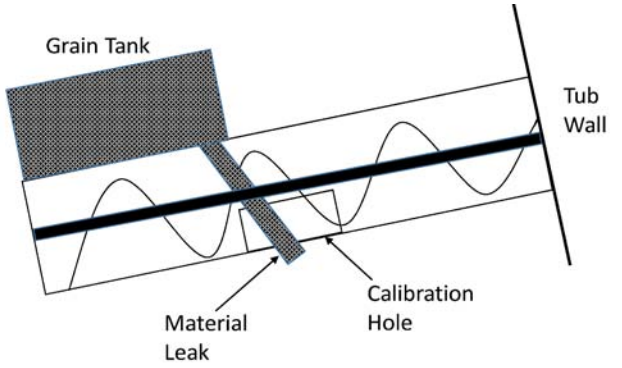



Select the Prime Function to Fill the Auger 221192


Priming Progress 221193

Note: Before calibrating check that the auger flighting is positioned so that it blocks the calibration hole and no product can leak out of the Grain Tank.




Position Auger to Prevent Material Leak 221210

- If the auger flighting needs to be moved, remove the large sprocket on the auger, attach the hand crank and turn the auger.

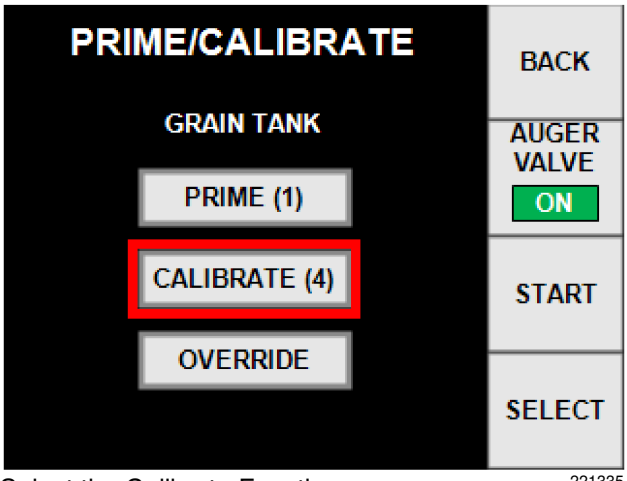
7. Empty the collection pail from any product that came out of the auger while priming.

8. Place the collection pail under the auger.

Hand Crank Attached to Auger Flighting 221372

9. Collect the calibration sample.

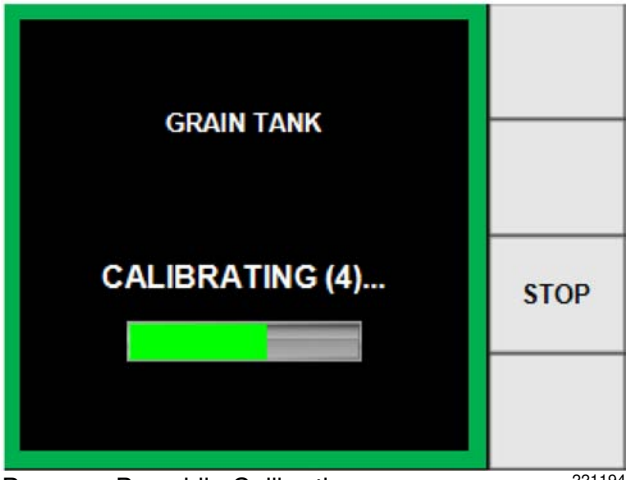
- Use the SELECT button to chose CALIBRATE.
  - The selection chosen will be highlighted by a red box.
- Ensure the AUGER VALVE is turned ON.
  - Activate the tractor hydraulic valve.
- Press the START button to have the Display start the hydraulic motor to turn the auger.




Select the Calibrate Function 221335

Keep fingers and hand out of the auger tube and chamber.
Contact with the rotating auger will cause serious injury or death.

- The number of turns to collect the product sample is shown in parentheses.
  - The number of calibration turns can be changed in the PRIME/ CALIBRATE SETTINGS screen.
- While collecting the sample a progress bar appears and fills to indicate the stage of completion.
  - The screen is also in a green border.



Progress Bar while Calibrating 221194

- Press STOP at anytime to stop the calibrating process.

- When the number of turns is completed, the auger automatically stops and the display goes back to the PRIME/CALIBRATE screen.

10. Weigh the collected product sample using the provided scale.

11. Subtract the weight of the empty pail.

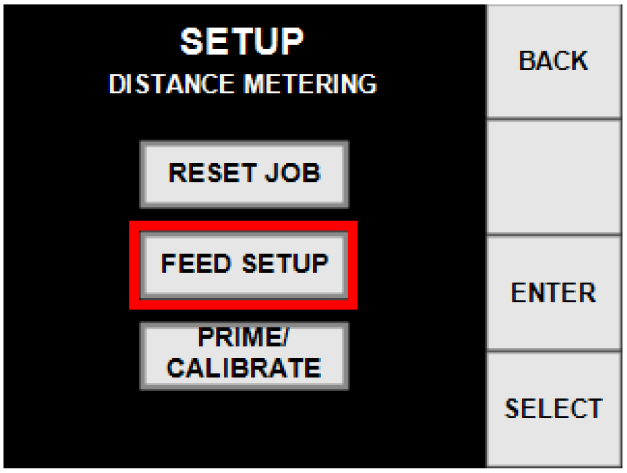
12. Divide the weight (minus the empty pail) by the number of turns of the auger (indicated by the number after the word CALIBRATING).

Note: The calibration procedure may also be done manually.
- To calibrate manually replace the auger sprocket with the hand crank.
- Rotate the auger counterclockwise until the pail is almost full.
  - Count the number of turns of the hand crank.
- Weigh the sample using the provided scale.
- Subtract the weight of the empty pail.
- Divide the weight by the number of turns of the hand crank.

For Distance Metering

- Go to the Feed Setup screen by pressing BACK.

- Select DISTANCE METERING and SETUP and FEED SETUP.

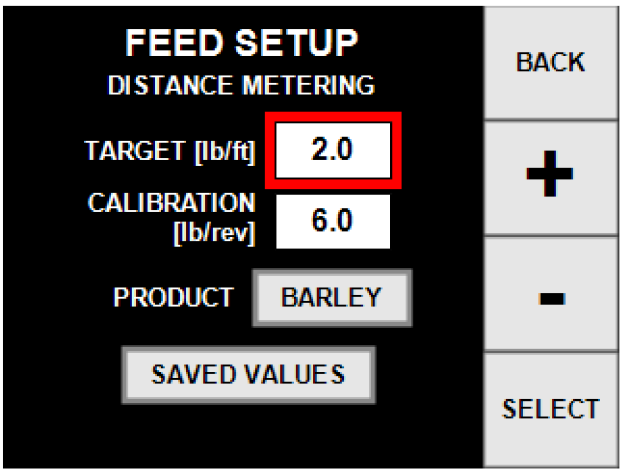



Select Feed Setup 221345

- Enter the TARGET output rate.
  - The selection chosen will be highlighted by a red box.

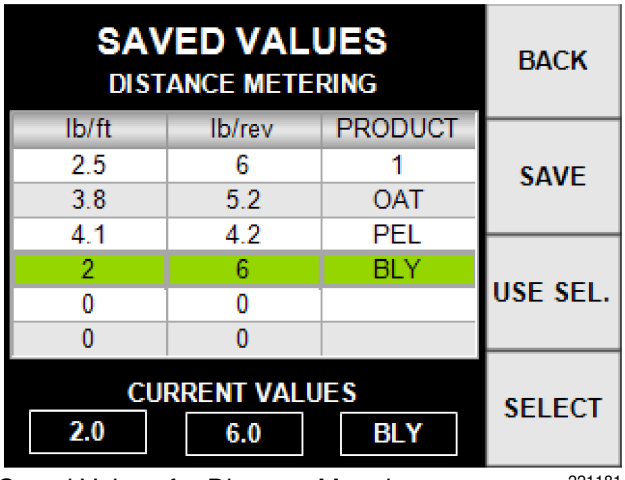
- Enter the calculated weight (lb/rev) into the CALIBRATION field.
  - The selection chosen will be highlighted by a red box.

- Enter the product in the PRODUCT field.
  - The selection chosen will be highlighted by a red box.




Enter the Target
Enter the Weight of the Calibration Sample
Enter the Product 221179

Option: Select Saved Values to bring up the Saved Values table.
  - Choose one of the saved values to auto-fill Target, Calibration and Product.

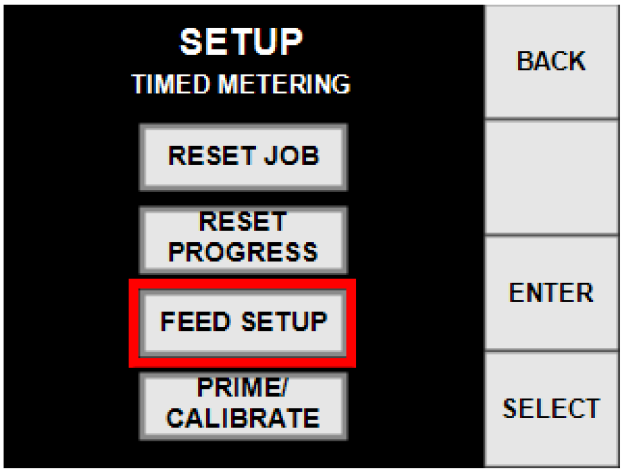



Saved Values for Distance Metering 221181

For Timed Metering

- Go to the FEED SETUP screen by pressing BACK.

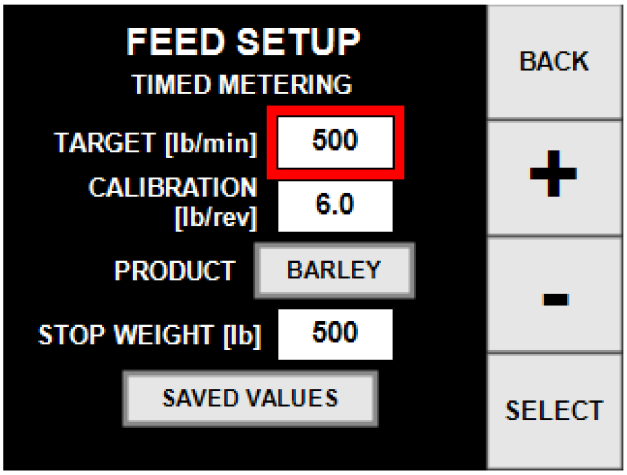
- Select TIMED METERING and SETUP and FEED SETUP.




Select Feed Setup 221346

- Enter the TARGET output rate.
  - The selection chosen will be highlighted by a red box.

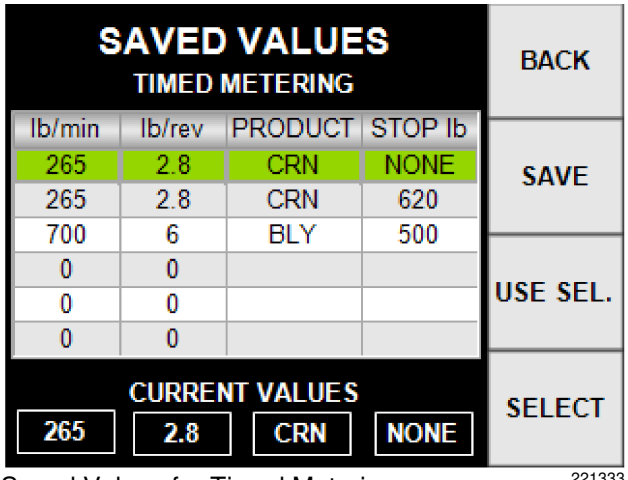
- Press "+" or "-" to enter the desired amount.




Enter the Target Output Rate 221183

Option: Select Saved Values to bring up the Saved Values table.

- Choose one of the saved values to auto-fill Target, Calibration and Product.

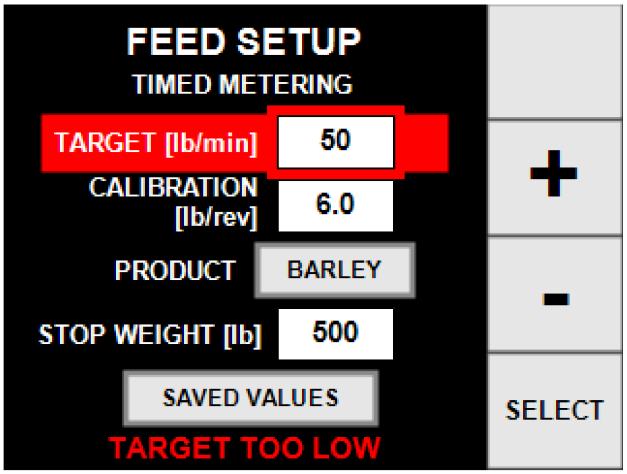



Saved Values for Timed Metering 221333

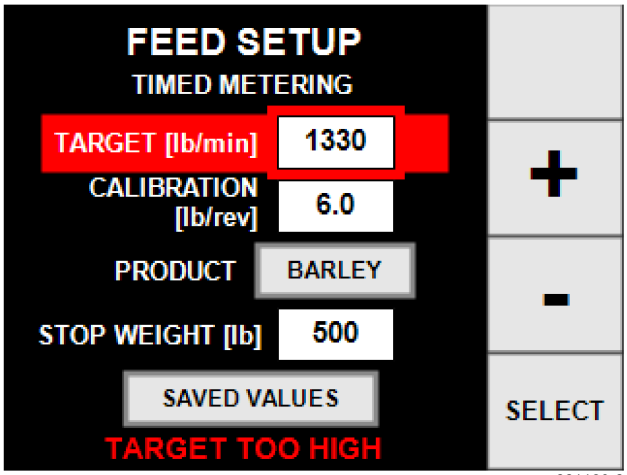
Note: If the target lb/min is too low or too high, then a red background will appear, and a message on the bottom will say “TARGET TOO LOW” or “TARGET TOO HIGH”.

Adjust the value to within range for that product.

- It will not be possible to go back to a previous screen until the value is valid.




Warning on Target Too Low 221186-1

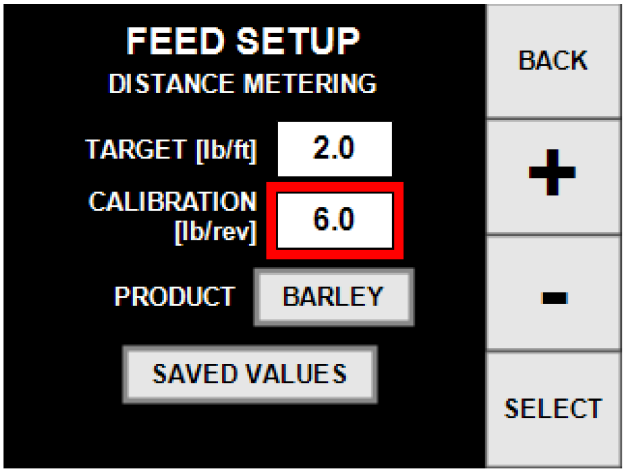



Warning on Target Too High 221186-2

<u>For both Distance Metering and Timed Metering</u>:

- Enter the calibration calculated weight (lb/rev) into the CALIBRATION field.
  - The selection chosen will be highlighted by a red box.

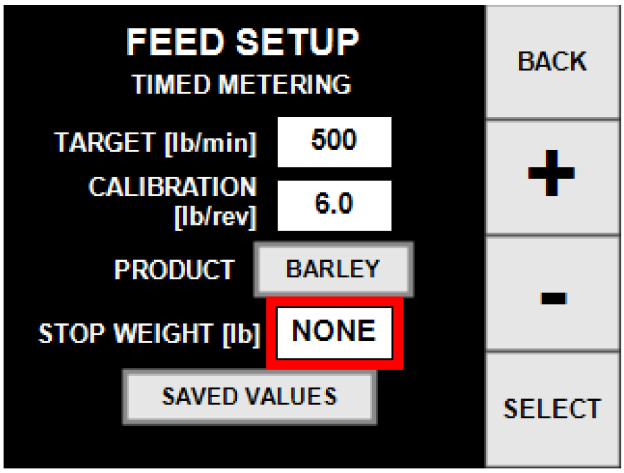
- Select PRODUCT to bring up the product table.
  - The selection chosen will be highlighted by a red box.




Enter the Weight of the Calibration Sample
Enter the Product 221183

For Timed Metering:

- Enter the STOP WEIGHT which will stop the auger once the weight of product is metered out based on the pounds per revolution of the auger entered as the calibration number.
  - If no stop weight is desired, hold either "+" or "-" until the value changes to read NONE.
    - The auger will have to be turned off manually in this case.



Enter the Stop Weight

221332

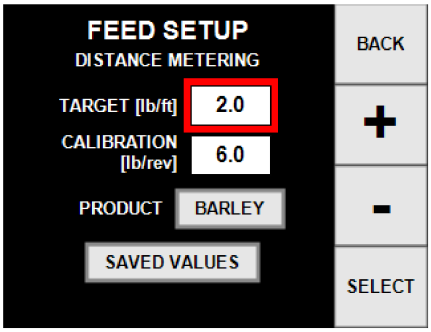
13. Close the calibration cover on the auger.
    - Fasten in place with the clamp on the cover.

**Feeding with the Processor and the Grain Tank in Distance Metering Mode with Example**

| **Instructions:** | **A Feeding Example:** |
|---|---|
| **Step 1**<br>Determine the feed sources that are intended to be used. | - Alfalfa Hay Grass and Barley Grain |
| **Step 2**<br>Determine the required amount of feed sources per cow.<br>Some Sample Rations are included in Section 3 of the manual.<br><br>Note: Waste is not accounted for in the sample rations. Make adjustments to account for waste. | From the sample ration chart for Alfalfa Hay Grass + Barley Grain :<br>- 1,200 lb (544 kg) Cow<br>- First month lactation<br>- Early Spring Conditions, No wind, -5º C<br>- Fourth lactation<br>- Calf birth weight 80 lbs (36 kg)<br><br>Use 31 lbs (14 kg) Hay + 3 lbs (1.4 kg) Barley |

| | |
|---|---|
| **Step 3**<br>Determine the weight of the bales being used. | Bale weight is 1200 lbs (544 kg) |
| **Step 4**<br>Determine the number of cattle intended to be fed. | Intend to feed 50 cows |
| **Step 5**<br>Determine how many bales are required.<br><br>Multiply number of cows by lbs/cow = lbs.<br><br>Divide lbs. by weight per bale = number of bales to feed number of cattle. | 50 cows x 31 lbs (14kg) / cow = 1550 lbs (703 kg).<br><br>1550 lbs (703 kg)/ 1200lb (544 kg) per bale = 1.3 bales for 50 cows |
| **Step 6**<br>Determine the travel distance for the number of cattle intended to be fed.<br><br>Multiply number of cows by 5 ft (1.5 m)/cow spacing.<br><br>Note: Travel distance will vary with bale type, processor guard rod aggression setting and feed roller speed. Adjust these settings to achieve the desired output and travel distance.<br><br>Divide the lbs/bale by the lbs/cow. Multiply by distance between cows. | Note: There may be slight variations between the Imperial Units and the Metric units and the calculations because of the rounding of the decimal points.<br><br>50 cow x 5 ft (1.5 m) / cow = 250 feet (75 m)<br><br>Travel how far with a single bale?<br><br>A 1200 lb single bale at 31 lbs/cow for a cow every 5 feet will go for 194 feet:<br>= 1200 lbs/bale / 31lbs /cow x 5ft/cow = 194 feet<br><br>A 544 kg single bale at 14 kg/cow for a cow every 1.5 m will go 58.3 m<br>= 544 kg/bale / 31lbs/cow x 5ft /cow =58.3 m) |
| **Step 7**<br>Determine the Target (lb/ft) of grain feed.<br><br>Divide the pounds of grain by the distance per cow to get the Target pounds/foot.<br>in the Distance Metering Feed Setup Screen | Note: This example will be for windrow feeding at 5 ft/cow.<br><br>3 lb of Barley per cow/5 ft per cow<br>3 lb/5 ft = 0.6 lb/ft Target |

**Step 8**
Enter the Target into the Feed Setup Distance Metering display screen.




**Step 9**
Enter the Calibration (lb/rev)

- Complete the Calibration Procedure outlined earlier in this section.

**Step 10**
Determine the Number of Bales that can be processed with a full Grain Tank.

- The Grain Tank holds 45 bushels (1587 liters).

Multiply average bushel weight of product by 45 bushels (1587 L) = lbs. commodity (See Average Weight per Bushel chart below.)

Divide the pounds of product in the tank by the lbs/cow = number of cows for the tank.

Multiply the number of cows by the lb/cow of hay.

Divide the number of pounds of hay by the weight of the bale = number of bales for the Grain Tank with 45 bushels of barley at the grain feed TARGET value.

Barley
Note: In this example the average density for barley is taken from the chart below.

48 lbs/bushel x 45 bushels = 2,160 lbs.

2,160 lbs / 3 lbs/cow = 720 cows

720 cows x 31 lb/cow = 22,320 lbs

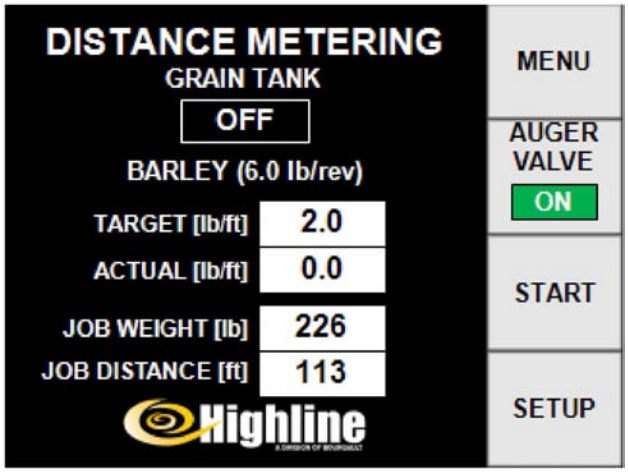
22,320 lb / 1,200 lb/bale = 18.6 bales

**Product Average Weight per Bushel** - It is recommended to test and adjust for the density of the commodity.

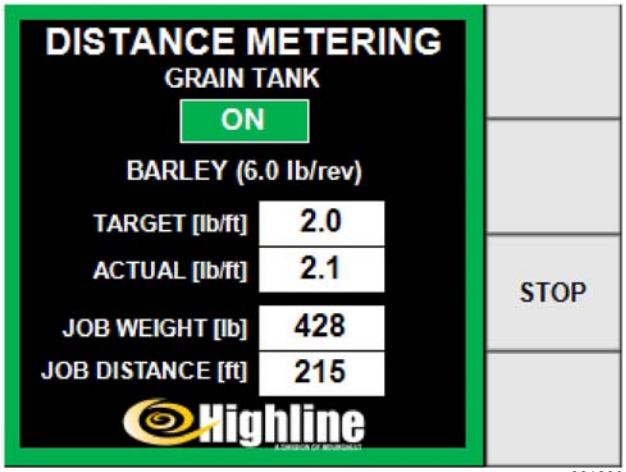
| Product | |
|---|---|
| Barley | 48 lbs / bushel |
| Oats | 32 lbs / bushel |
| Peas | 60 lbs / bushel |
| Wheat | 60 lbs / bushel |
| Corn | 56 lbs / bushel |

### Distance Metering With the Grain Tank

1. When at the feeding site:
   - Have a bale loaded in the processor tub.
   - Press the AUGER VALVE to switch the hydraulic flow from the bale lift cylinders to the auger motor.
     - Ensure the AUGER VALVE button shows the word ON in a green box.
   - Move the hydraulic selector in the tractor to the on position.
   - Press the START button on the display to start the auger hydraulic motor.
     - The tank light turns to ON and a green box is around the screen.
2. Engage the drive to the flail drum to begin processing the bale.
3. Begin driving forward.
4. As the processor moves forward the Grain Tank will meter out the product into the processor tub based on the wheel speed and the values entered in the FEED SETUP screen.



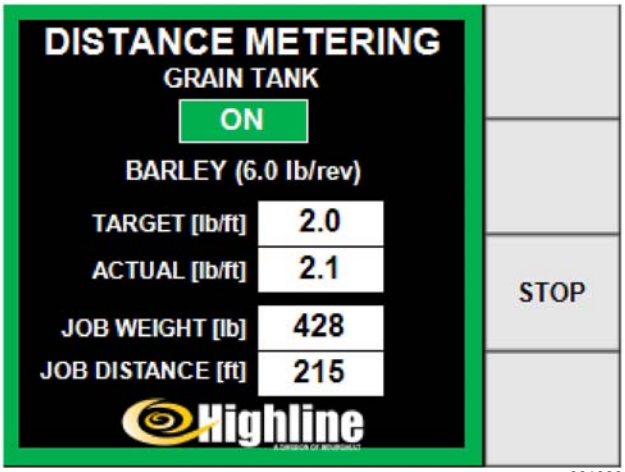

Auger Valve ON
Press START to Begin Metering 221330




Grain Tank Turned ON - Ready to Meter 221338

5. The ACTUAL output rate (lb/ft) will be shown on the display.

6. To stop the grain tank auger at any time press the STOP button.



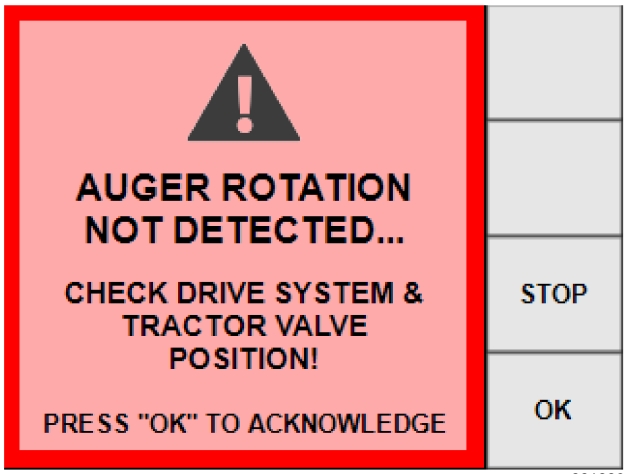

Actual and Job Weight/Distance Shown 221338

7. If the auger is turned ON, but the sensor does not detect that the auger sprocket is rotating:

   - A warning pop-up screen will show on the display accompanied by an alarm sound.

   - Pressing STOP will stop the auger and turns off the warning message.
     - Check the drive system and the tractor selector valve position.

   - Pressing OK turns off this warning message but auger is still on.




Warning Pop-up if No Auger Rotation Detected 221339

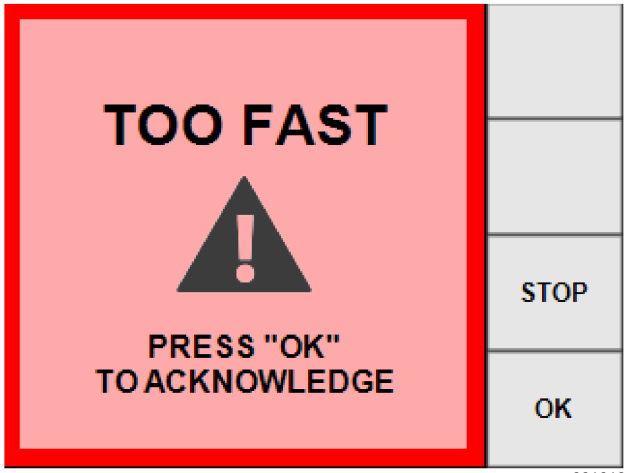
8. If the ground speed is too fast while the Grain Tank is turned on (the auger is unable to meter to the target):

    - A warning pop-up screen will show on the display accompanied by an alarm sound.

    - Decreasing the travel speed will cause the alarm to go away once the travel speed is appropriate.

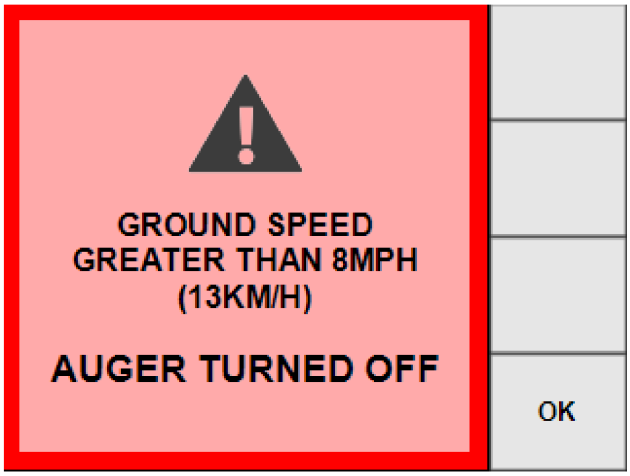
    - Pressing STOP will stop the auger and turn off the warning message.

    - Pressing OK turns off the warning message but the auger is still on.



Warning Pop-up if Driving Too Fast 221213

Note: Driving faster than 8 mph with the Grain Tank turned on will automatically stop the auger.
- The warning message will display for 3 seconds and a long beep alarm is sounded.
- Pressing the OK button will immediately turn off the warning message and silence the beep ala.

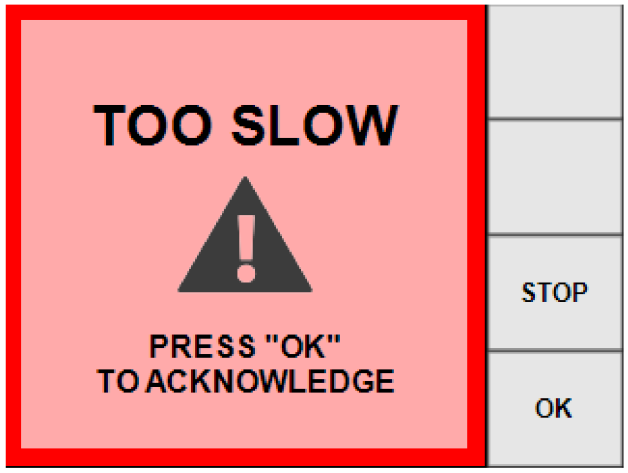



9. If the ground speed is too slow (the auger is unable to meter to the target):
    - A warning pop-up screen will show on the display accompanied by an alarm sound.

    - Increasing the travel speed will cause the alarm to go away once the travel speed is appropriate.

    - Pressing STOP will stop the auger and turn off the warning message.

    - Pressing OK turns off the warning message but the auger is still on.




10. When the bale is finished, press STOP to stop the auger from metering.

## Timed Metering With the Grain Tank

1. When at the feeding site:

   - Have a bale loaded in the processor tub.

2. Press the AUGER VALVE to switch the hydraulic flow from the bale lift cylinders to the auger motor.

   - Ensure the AUGER VALVE button shows the word ON in a green box.

   - Move the hydraulic selector in the tractor to the on position to supply power to the auger motor.

3. Press the START button on the display to start the auger hydraulic motor.

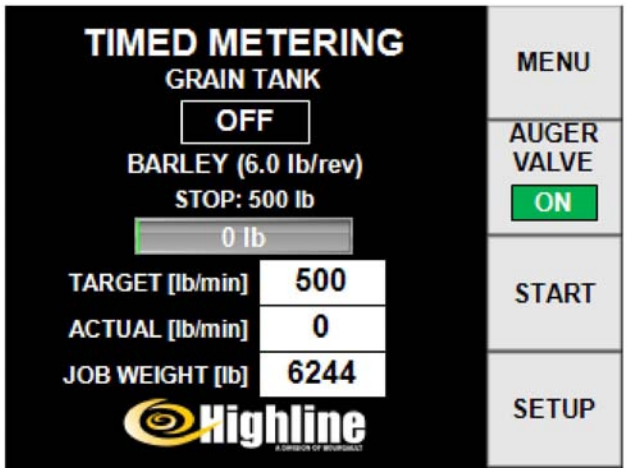
   - The green ON will indicate the Grain Tank is metering and a green border will be on the display.

4. Engage the drive to the flail drum to begin processing the bale.

5. The ACTUAL (lb/min) will be shown on the display.

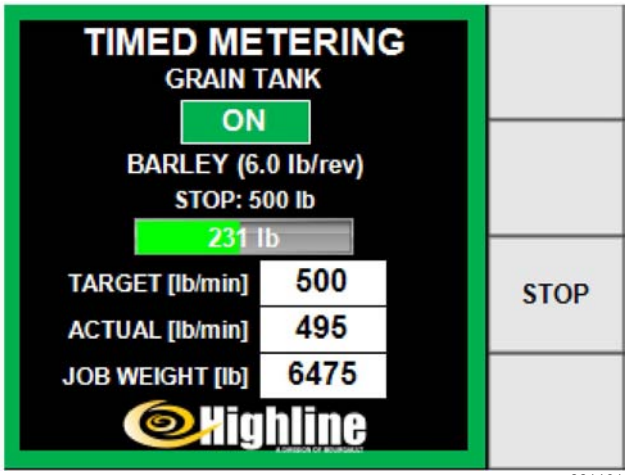
6. To stop the grain tank auger at any time press the STOP button.

7. The grain tank will output grain with a progress bar showing the ACTUAL amount of pounds metered.




Auger Valve ON
Press START to Begin Metering

221341




Progress Bar Showing Amount Metered.

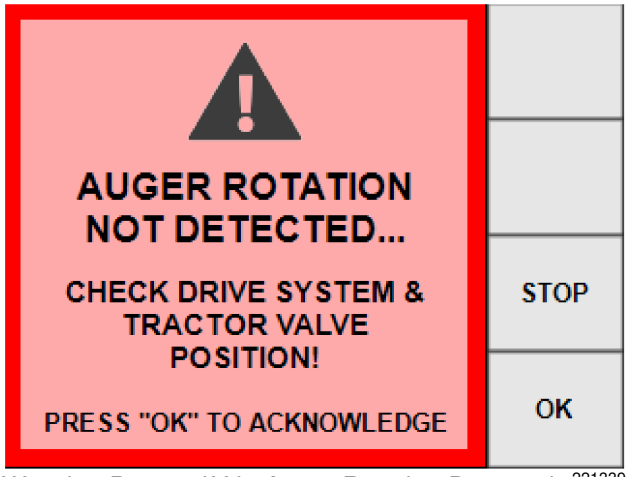
221191

8. If the auger is turned ON, but the sensor does not detect that the auger sprocket is rotating:

   - A warning pop-up screen will show on the display accompanied by an alarm sound.

   - Pressing STOP will stop the auger and turns off the warning message.
     - Check the drive system and the tractor selector valve position.

   - Pressing OK turns off this warning message but auger is still on.

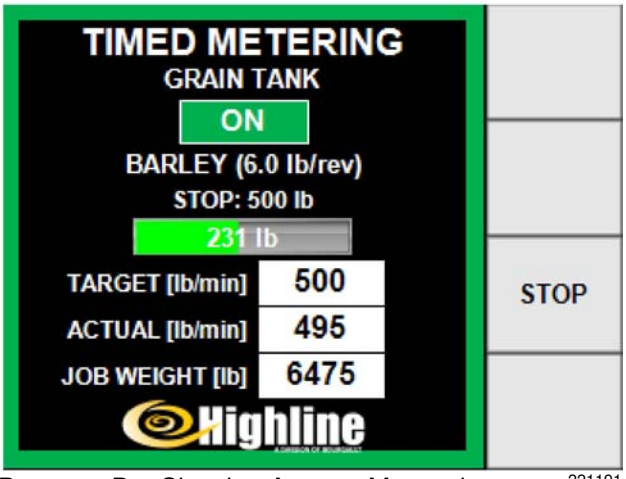



Warning Pop-up if No Auger Rotation Detected 221339

9. When the bale is done processing but the stop weight has not been reached, load another bale to continue processing to reach the stop weight.

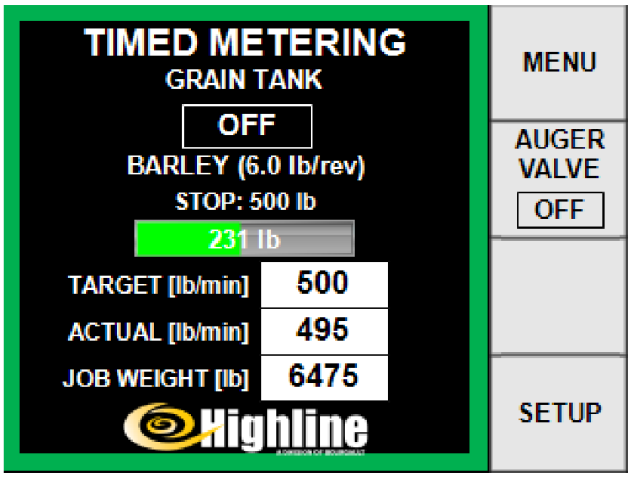
   - STOP the grain tank auger.

   - Move the hydraulic selector in the tractor to the off position.




Progress Bar Showing Amount Metered. 221191

   - Switch the AUGER VALVE to OFF to activate the bale lift.




Turn Auger Valve to Off 221342

- The display will beep and will bring up a confirmation screen to activate the bale lift circuit.
  - This confirmation screen is to prevent accidentally activating the bale lift.

- Ensure the bale lift circuit tractor valve is in the neutral position.

- Pressing YES will also turn off the auger and direct the hydraulic flow to the bale lift.

- Pressing the NO will cancel the operation and keep the hydraulics going to the auger.

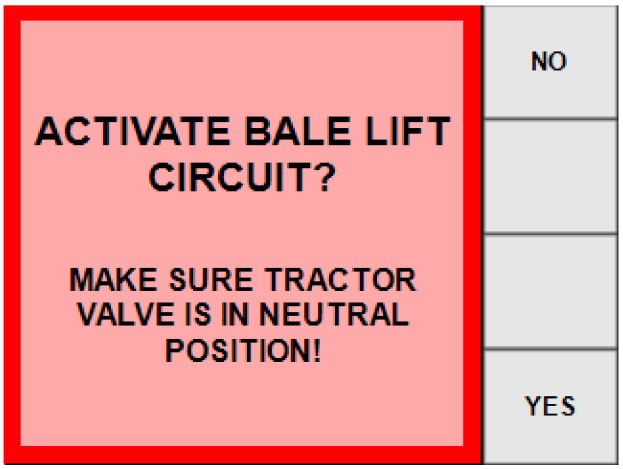
- Load the bale.

- Turn the AUGER VALVE ON.

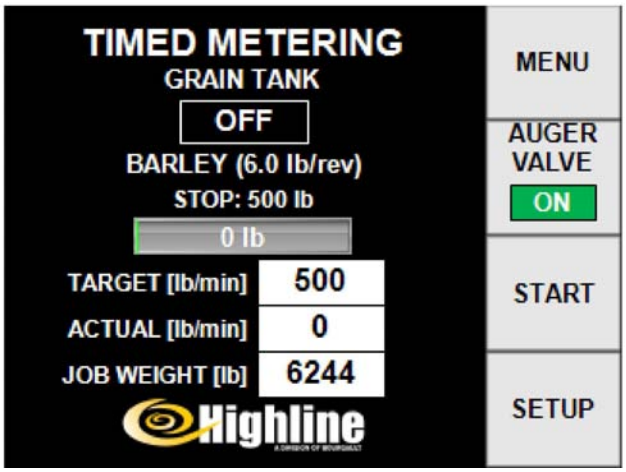
- Press the START button to begin metering.

Note: Alternatively a loader may be used to load additional bales into the processor tub. To do this just stop and start the grain tank auger drive. The progress will be saved if the auger is stopped prior to reaching the stop weight (if applicable)

Note: The weight progress is retained if the auger is stopped and the auger valve is turned off to allow another bale to be loaded into the machine. Once the bale is loaded, the auger valve turned on and the auger begins to turn the weight progress resumes.
If the stop weight has been reached the progress will set itself to zero (0).



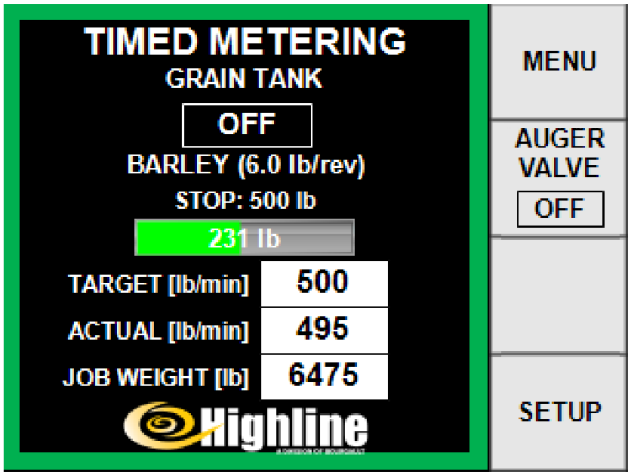

Activate Bale Lift Circuit Confirmation 221342




Auger Valve ON
Press START to Begin Metering 221341

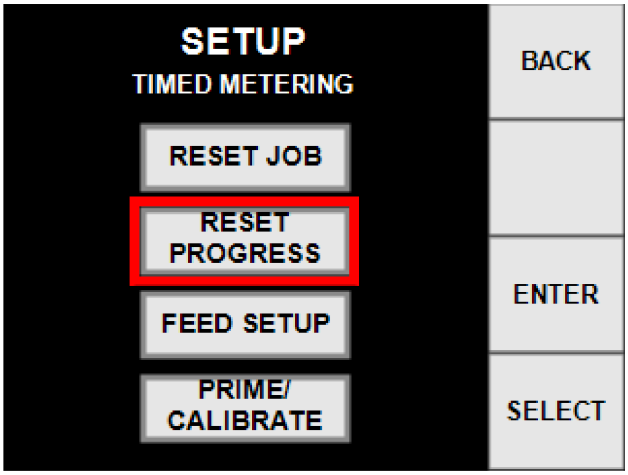
- If the Weight Progress is not to be retained once the auger has been turned off :

  - Press the SETUP button.




Weight Progress Retained 221342

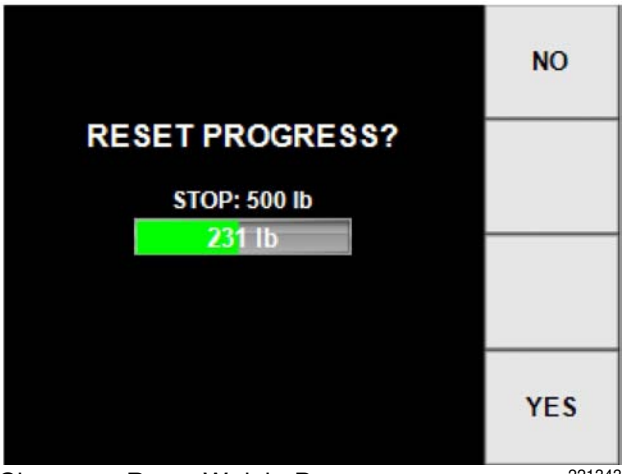
  - Select RESET PROGRESS




Select Reset Progress 221334

  - Press Yes to Reset the weight progress to zero.

  - Press No to retain the weight progress.




Choose to Reset Weight Progress 221343

  - On the SETUP screen select BACK to return to the TIMED METERING screen.

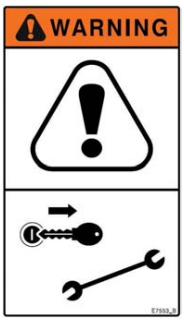
10. The grain tank will auto stop when the STOP weight has been metered.

11. To Stop the grain tank auger at any time press the STOP button.

## MAINTAINING THE GRAIN TANK

Shut down the tractor and remove the key before repairing, servicing, adjusting, lubricating or cleaning.

Wait for all parts to stop rotating.
Disengage the PTO and driveline.




Do not enter the tank or allow anyone to enter the tank. The tank is a confined space not meant to be entered.


Do not contact the rotating auger. Keep fingers and hand out of the auger tube and chamber.


Do not contact the moving auger chain.
Contacting the moving chain or parts could cause serious injury or death.


### Clear The Auger Discharge In The Tub

1. Ensure the Grain Tank auger discharge (1) inside the processor tank is clear of any material that would block product from entering the processor.
2. Clear any blockages.
3. Check that the auger can rotate.

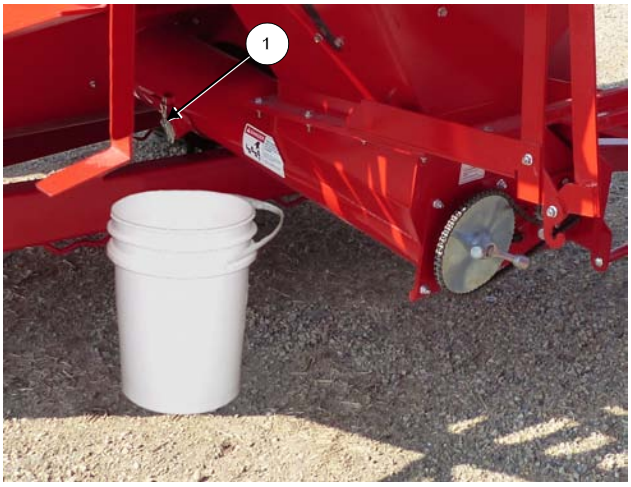
Clear Auger Discharge Inside Tub 211180

## Clearing Blocked Auger Flighting


Keep fingers and hand out of the auger tube and chamber. Contact with the rotating auger will cause serious injury or death.

1. Loosen the clamp on the auger calibration door (1).

2. Lower the door from the auger chamber to allow the product to be caught in a pail.

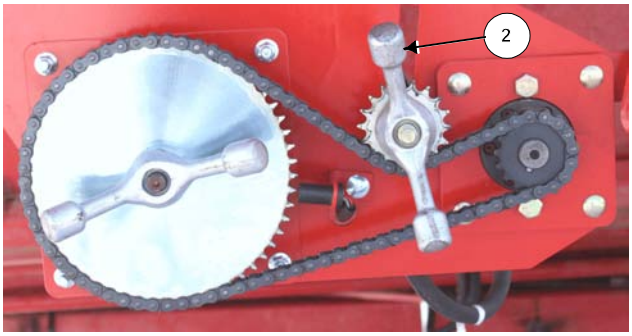



Place Pail Under Auger
Open Calibration Door

221371C

3. Place the hand crank onto the auger sprocket.

   - Loosen the chain tensioner (2) by turning the quick turn handle.
   - Slide the tensioner sprocket in the slot.
   - Remove the drive chain from the auger sprocket.
   - Remove the auger sprocket.
   - Place hand crank assembly onto the auger shaft.




Loosen and Remove the Drive Chain

221212C2

Hand Crank Onto Auger Shaft

221372

4. Rotate the auger clockwise and counter-clockwise to move product out of the auger flighting.

   - Clean out any product put into the tub by rotating the auger.

5. Use compressed air to blow out the auger if necessary.

Use appropriate personal safety equipment if using compressed air.

6. Raise the auger calibration door and fasten in place with the clamp.

7. Fasten the clamp on the auger calibration door (1).

Rotate Auger to Remove Product 221372

**Removing Product from the Tank**

Product remaining in the tank can be removed using one of two methods:

- Auger Override to rotate the auger to move product out the calibration hole.
- By removing the auger end plate.

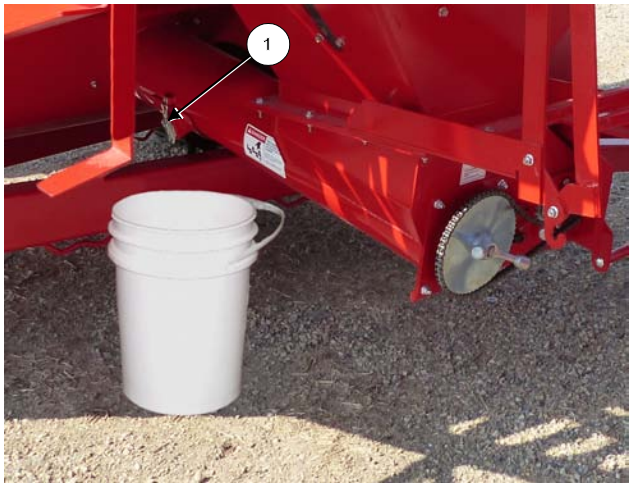

Do not enter the tank. The tank is a confined space not meant to be entered.

<u>Method 1: Auger Override</u>

1. Place a collection bucket or a transfer device (such as an auger) under the grain tank auger calibration door.

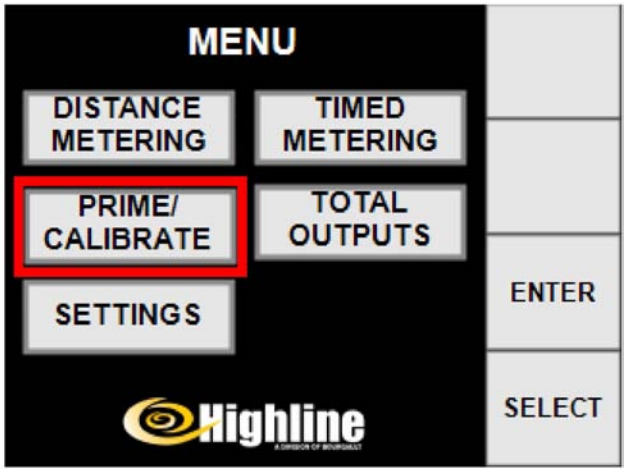
2. Open the calibration door (1) located at the bottom of the auger.

   - Unlatch the door keeper.
   - Lower the calibration door.




Place Pail Under Auger
Open Calibration Door 221371C

3. On the Display choose PRIME/CALIBRATE from the Main Menu.

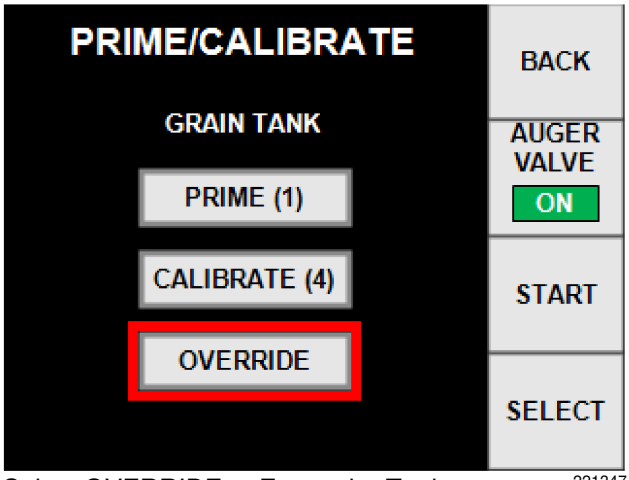



Choose Prime/Calibrate 221344

4. Press the AUGER VALVE to ON to switch the hydraulic flow from the bale lift cylinders to the auger motor.
   - Ensure the AUGER VALVE button shows the word ON in a green box.

5. Move the hydraulic selector in the tractor to the on position.

6. Select OVERRIDE from the PRIME/CALIBRATE screen.



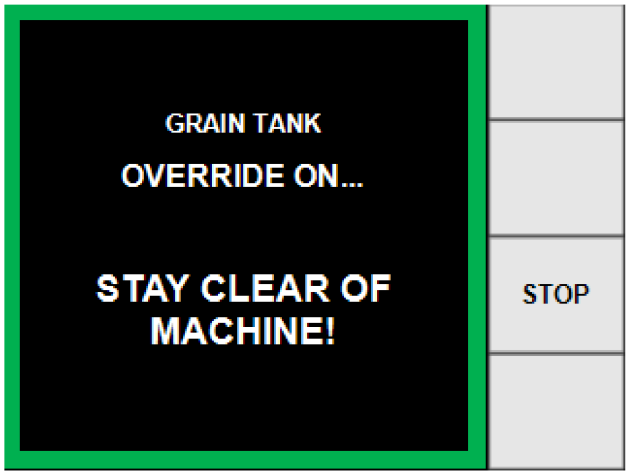

Select OVERRIDE to Empty the Tank 221347

7. Press the START button on the display to start the auger hydraulic motor.

Keep fingers and hand out of the auger tube and chamber. Never attempt to manually remove debris while the auger is rotating. Contact with the rotating auger will cause serious injury or death.

- A warning screen with a flashing green border will come on.

- Stay clear of the machine while the exposed grain tank auger is turning.




Warning - Stay Clear of Rotating Auger 221195

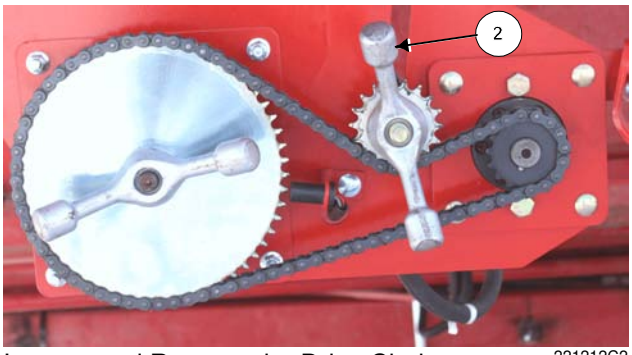
Do not contact the moving chain. Contacting moving chain or parts could cause serious injury or death.


Method 2: Remove the Auger End Plate

1. Loosen the chain tightener (2) by turning the quick turn handle.

2. Slide the tightener in the slot.

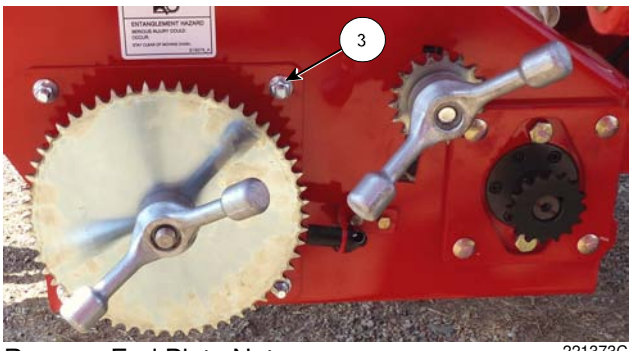
3. Remove the drive chain from the auger sprocket.




Loosen and Remove the Drive Chain 221212C2

4. Place a collection bucket or transfer device under the auger end plate to collect product.

5. Remove the 4 nuts (3) holding the auger end plate.




Remove End Plate Nuts 221373C

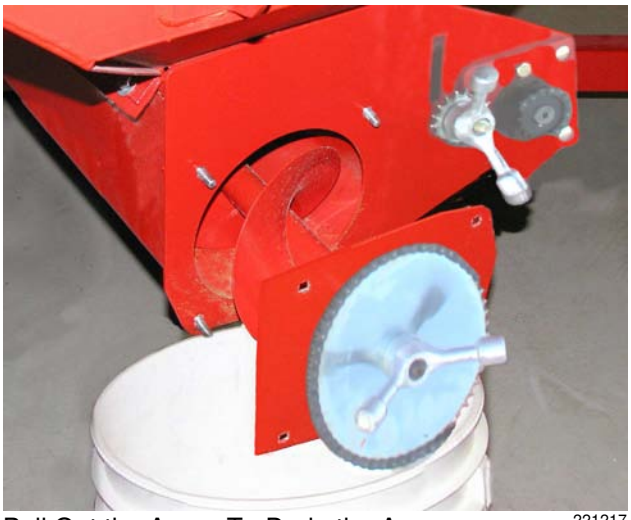
6. Pull the auger flighting out of the auger tube to allow the product to empty into the collection bucket or hopper.

7. A compressed air supply can be used to blow out product from the cavities if necessary.

Use appropriate personal safety equipment if using compressed air.

8. Slide the auger into the auger tube.

9. Fasten the auger end plate to the auger chamber with the 4 nuts.



Pull Out the Auger To Drain the Auger 221217

## Remove Wheel Twine Buildup
## Clean the Wheel Sprocket and Sensor

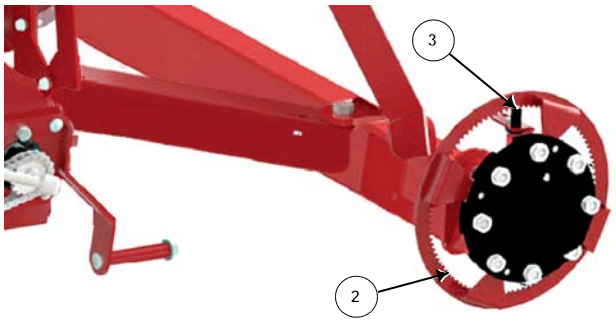
Remove twine that has built up around the spindle, sprocket (2) or sensor (3).

Twine build up can cause wheel bearing failure. It can also interfere with the operation of the tank drive system.

- Use a sharp knife to cut the twine.
  - Be careful to not damage the seals of the bearing.
- Remove the twine.

Ensure the wheel drive sprocket and sensor are clear of mud and twine.

- Check that the sprocket (3) mounted on the back of the left wheel hub is clear of mud, twine or other materials.
  - The teeth of the sprocket need to be clean so the sensor is not damaged and can detect the wheel rotation.
- Check that the sensor (2) is clean and mounted securely.
  - The sensor picks up the movement of the sprocket teeth to detect wheel rotation.
  - The end of the sensor is to be 0.078" (2mm) from the tip of the sprocket teeth.
- Check that the sensor wiring is securely connected to the harness.

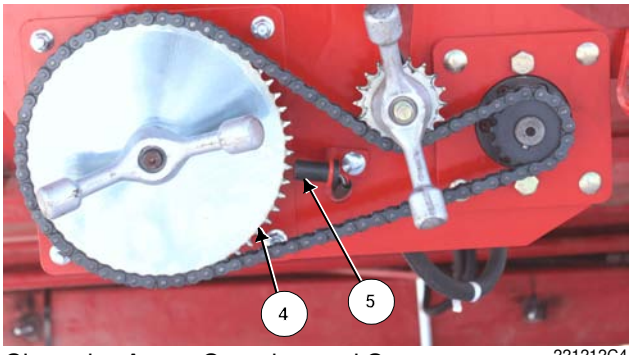



Remove Twine and Ensure Wheel Sprocket Teeth and Sensor are Clean
(Wheel Shown Removed for Clarity) 221107C

### Clean the Auger Sprocket and Sensor

Ensure the auger sprocket (4) and sensor (5) are clean.

- Check that the sprocket (4) mounted on the auger shaft is clear of mud.
  - The teeth of the sprocket need to be clean so the sensor is not damaged and can detect rotation.
- Check that the sensor is clean and mounted securely.
  - The sensor picks up the movement of the sprocket teeth to detect rotation.
  - The end of the sensor is to be 0.078" (2mm) from the tip of the sprocket teeth.
- Check that the sensor wiring is securely connected to the harness.



Clean the Auger Sprocket and Sensor 221212C4

### Lubrication - Oil

### Every 10 Hours

- **Lubricate the Auger Drive Chain**

  Lubricate the auger drive chain every 10 hours. Use a quality chain oil.


Lubricate the Auger Drive Chain 221212

## Troubleshooting

| Symptom | Problem | Solution |
|---|---|---|
| Not Metering/Auger Rotation Not Detected - Error Message on Display | Auger Valve Not Activated | Activate the Auger Valve on the display. |
| | Tractor Selector Valve | Activate the tractor selector valve for hydraulic flow to the metering motor. |
| | Hydraulics to the tractor not connected properly or connected backwards | Ensure the hydraulic couplers are properly installed.<br>Lock the tractor valve lever in opposite direction. |
| | Metering Not Started | Press START in the metering screen. |
| | Auger drive chain is loose or not engaging the sprockets | Tighten the auger chain.<br>Move the auger chain tensioner and fasten. |
| | Auger packed solid with product | Remove the packed product from the tank and auger. |
| | Auger sprocket sensor is too far from the sprocket or not working | Adjust the sensor to sprocket distance to 0.078" (2mm).<br>Replace the sensor. |
| | Wheel speed sensor is too far from the sprocket or not working | Adjust the sensor to sprocket distance to 0.078" (2mm).<br>Replace the sensor. |
| | Auger discharge in the tub is blocked | Clear the auger discharge. |

| Symptom | Problem | Solution |
|---|---|---|
| Auger chain falls off | Chain tensioner not fastened securely to tensioner in slot | Slide the chain tensioner and tighten with the quick turn handle. |
| Product left over | Product Calibration | Check the product calibration numbers entered into the display.<br>Redo a product calibration. |
| | Target Rate | Check the Target rate entered into the display. |
| | Low metering rates | Refer to Section 4 - "Feeding With The Processor and The Grain Tank in Distance Metering Mode.<br>Calculate Step 10 "Determine the Number of Bales that can be processed with a full Grain Tank." |
| Product Runs Out Before Expected | High metering rates | Refer to Section 4 - "Feeding With The Processor and The Grain Tank in Distance Metering Mode.<br>Calculate Step 10 "Determine the Number of Bales that can be processed with a full Grain Tank." |
| | Product Calibration | Check the product calibration numbers entered into the display.<br>Redo a product calibration. |
| | Target Rate | Check the Target rate entered into the display. |

**Display Errors**

| Symptom | Problem | Solution |
|---|---|---|
| TOO SLOW | Ground speed to slow | Increase the travel speed. Press OK to acknowledge |
| TOO FAST | Ground speed to fast | Decrease the travel speed. Press OK to acknowledge |
| TARGET TOO LOW (Timed Metering) | Lb/min too low for the product | Adjust the target to within range for that product. |
| TARGET TOO HIGH (Timed Metering) | Lb/min too high for the product | Adjust the target to within range for that product. |
| AUGER TURNED OFF | Ground speed greater than 8 mph | Drive slower. Pressing OK will immediately turn off the message and alarm sound. |

Note: Any changes to the drive settings will alter the performance of this machine. Changes should only be done under the direction of Highline Manufacturing.

- If changes to the drive settings are made without the direction of Highline Manufacturing then the user is doing so at their own risk.

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## Specifications

| | |
|---|---|
| **Total Width Mounted:** | |
| On BP660 | 144" (3.66 m) |
| On BP661 | 149" (3.78 m) |
| **Total Height Mounted:** | |
| On BP660 | 115 ½" (2.93 m) |
| On BP661 | 121" (3.07 m) |
| **Maximum Capacity:** | 45 bushels (1587 liters) |

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# Highline New Equipment Limited Warranty Policy

One (1) Year / 12 Months - Parts and Labour

Highline Mfg. (hereinafter "Highline") warrants this new product of Highline's manufacturer to be free from defects in material and workmanship, under normal use and service for one (1) full year after initial purchase/retail sale. Highline will warrant its product for one (1) year parts and labour, if performed by a qualified Dealer. This Limited Warranty shall apply only to complete machines of Highline's manufacture. Parts are covered by a separate Limited Warranty.

**EQUIPMENT AND ACCESSORIES NOT OF HIGHLINE'S MANUFACTURE ARE WARRANTED ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY AND SUBJECT TO THEIR ALLOWANCE TO HIGHLINE ONLY IF FOUND DEFECTIVE BY SUCH MANUFACTURER.**

During the Limited Warranty period specified above, any defect in material or workmanship in any warranted item of Highline Equipment not excluded below shall be repaired or replaced at Highline's option without charge by any authorized independent Highline Dealer. An authorized Dealer must make the warranty repair or replacement. Labour in accordance with Highline's labour reimbursement policy. Highline reserves the right to supply remanufactured replacement parts as it deems appropriate.

## RETAIL PURCHASER RESPONSIBILITY

This Limited Warranty requires proper maintenance and periodic inspections of the Equipment as indicated in the Operator's Manual furnished with each new Equipment. The cost of routine or required maintenance and services is the responsibility of the retail purchaser. The retail purchaser is required to keep documented evidence that these services were performed. This Highline New Equipment Limited Warranty may be subject to cancellation if the above requirements are not performed.

## EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall NOT APPLY TO:

1. Any defect which was caused (in Highline's sole judgement) by other than normal use and service of the Equipment, or by any of the following:
    a. accident
    b. misuse or negligence
    c. overloading
    d. of reasonable and proper maintenance
    e. improper repair or installation
    f. unsuitable storage
    g. non-Highline approved alteration or modification
    h. natural calamities
    i. vandalism
    j. parts or accessories installed on Equipment which were not manufactured or installed by Highline authorized Dealers
    k. the elements
    l. collision or other accident
2. Any Equipment whose identification numbers or marks have been altered or removed.
3. Any Equipment which any of the required or recommended periodic inspection or services have been performed using parts not manufactured or supplied by Highline or meeting Highline Specifications including, but without limitation, lubricants (oil, grease), belt lacings, and hydraulic fluids.
4. Any Equipment used in demonstrations not performed by a Highline Dealer. Warranty will be at the discretion of Highline for all other demonstration warranty.
5. New Equipment delivered to the retail purchaser in which the warranty registration has not been completed and returned to Highline within thirty (30) days from the date of purchase.
6. Any defect that was caused (in Highline's sole judgement) by operation of the Equipment not abiding by standard operating procedures outlined in the Operator's Manual.
7. Tire Limited Warranties and support are the responsibility of the respective product's manufacturer.
8. Transportation costs, if any, of transporting to the Highline Dealer.
9. In no event shall Highline's liability exceed the purchase price of the product.
10. Highline shall not be liable to any person under any circumstances for any incidental or consequential damages (including but not limited to, loss of profits, out of service time and damage to equipment which this equipment may be attached) occurring for any reason at any time.

11. Diagnostic and overtime labour premiums are not covered under this Limited Warranty Policy.
12. Depreciation damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, and/or lack of proper protection during storage.
13. Accessory systems and electronics not of Highline's manufacture are warranted only to the extent of such manufacturer's respective Limited Warranty if any.
14. Wear items which are listed by product group below:

**COMMON WEAR ITEMS**

Roller chain, sprockets, clutches, shear bolts, clutch components, chains, gearbox housings bolts/torqued parts, flails, feed roller belting, coupler chain, DRV couplers, bogie wheels, apron tines and hoses, blades and blade pans, blade bolts and nuts, skid shoes, chain guards, clutches and clutch components.

**PARTS WARRANTY**

Parts replaced in the warranty period will receive the balance of the one year New Equipment Limited Warranty. Replacement parts after the original machine warranty are warranted to be free from defects of material for ninety (90) days or the part will be repaired or replaced, without labour coverage for removal and reinstallation.

**EXCLUSION OF WARRANTIES**

UNLESS OTHERWISE REQUIRED BY LAW, AND EXCEPT FOR THE WARRANTIES EXPRESSLY AND SPECIFICALLY MADE HEREIN, HIGHLINE MAKES NO OTHER WARRANTIES, AND ANY POSSIBLE LIABILITY OF HIGHLINE HEREIN UNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HIGHLINE RESERVES THE RIGHT TO MODIFY, ALTER AND IMPROVE ANY PRODUCT WITHOUT INCURRING ANY OBLIGATION TO REPLACE ANY PRODUCT PREVIOUSLY SOLD WITH SUCH MODIFICATION. NO PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY, OR TO ASSUME ANY ADDITIONAL OBLIGATION ON HIGHLINE'S BEHALF.