

Bale Pro[®]

Grain Tank for BP 660 & BP 661
Operator Manual

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E20755_C

Grain Tank on the BalePro® BP 660 & BP 661

Operator Manual

Highline Manufacturing
HWY #27, P.O. Box 307
Vonda, SK S0K 4N0
Canada
Phone: 306.258.2233
Fax: 306.258.2010
Toll Free: 1.800.665.2010

E20755_C

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

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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

Section 1 - Safety

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

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.



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



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.



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.
4. To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.
5. Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

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.

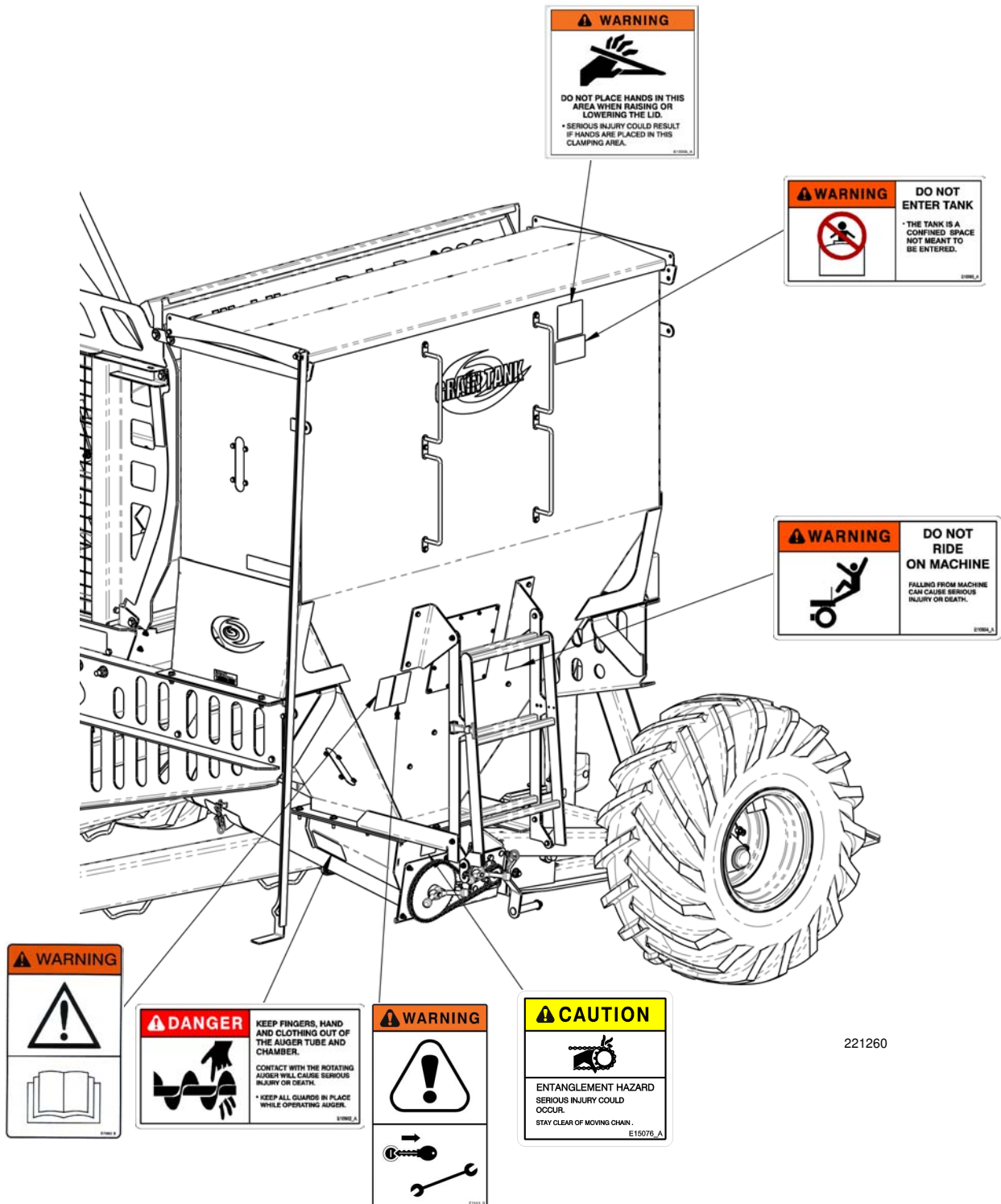
Disengage power take off.

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



221260

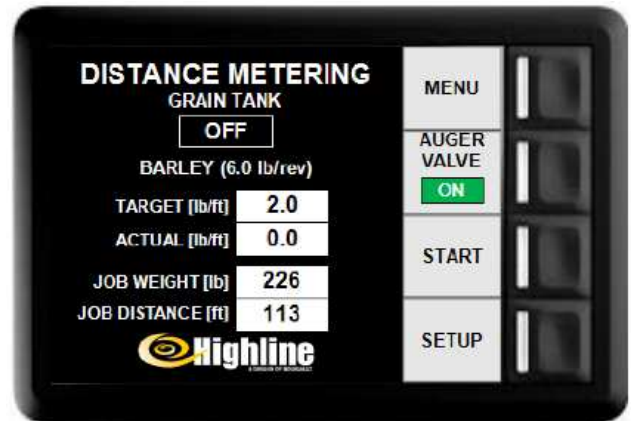
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Grain Tank Display

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.



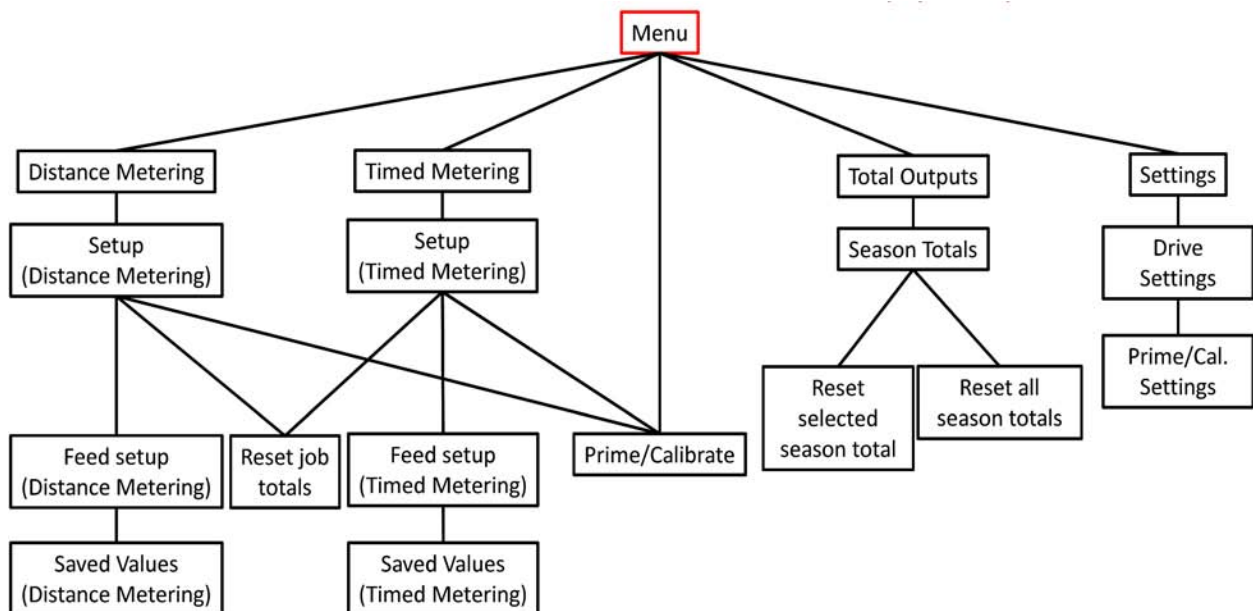
Grain Tank Display

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.

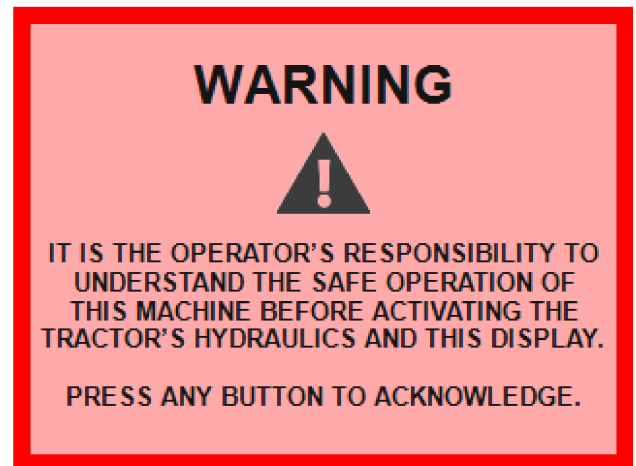
Read the Warning carefully about the Operator's responsibility to understand the safe operation of the machine before activating the hydraulics and enabling the display.

Press any button to acknowledge and enable the control system.



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.



Startup Warning

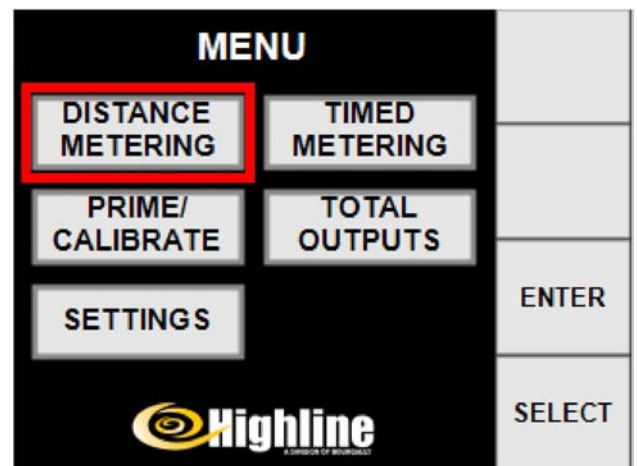
221266

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.

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



Menu Screen

221176

Section 2 - Grain Tank Display

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.

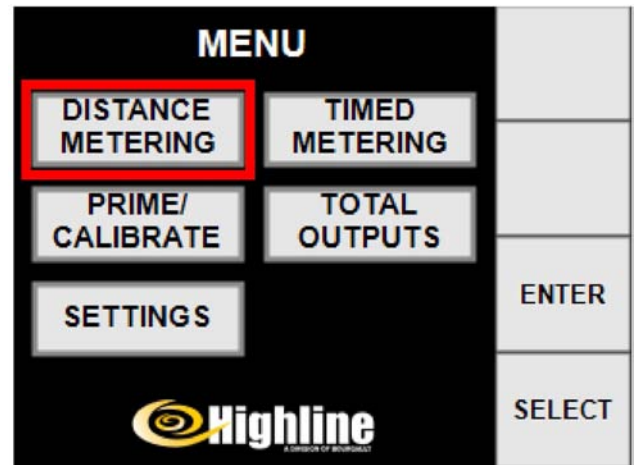
Distance Metering

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.

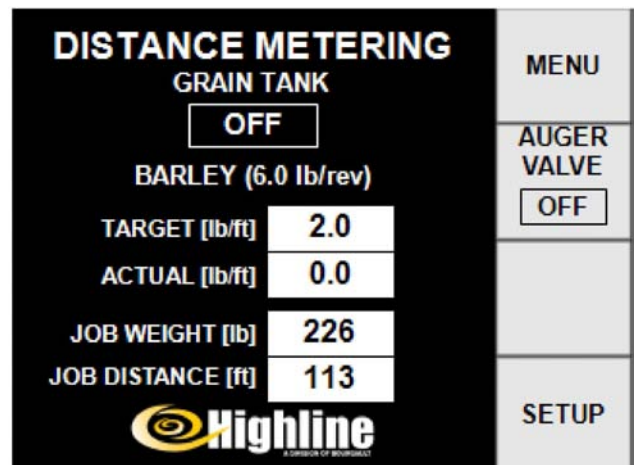
SETUP screen for DISTANCE METERING.

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



Menu Screen

221176

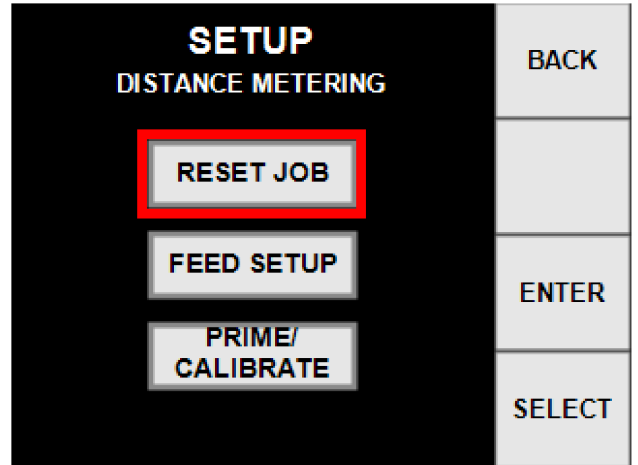


Distance Metering Control Screen

221187

Section 2 - Grain Tank Display

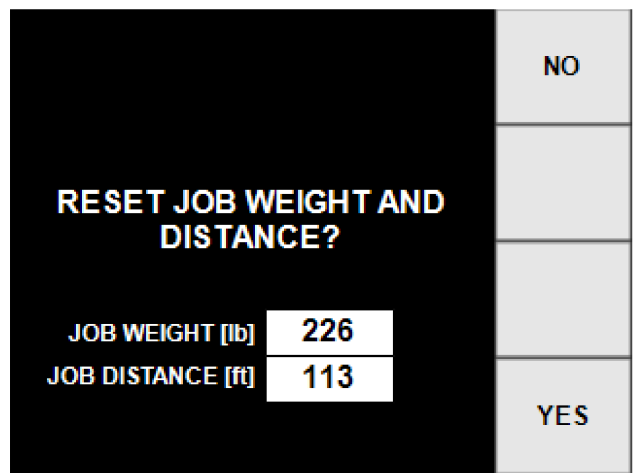
- RESET JOB will bring up a screen to confirm the resetting of the weight and distance traveled to zero for the present job to be done.



Distance Metering Setup

221177

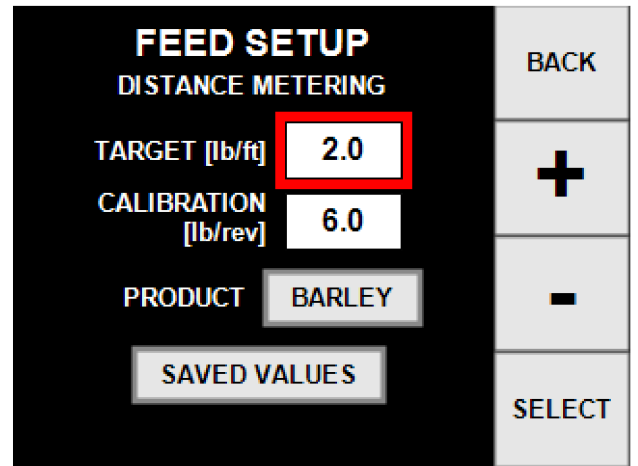
- Selecting NO will cancel and go back to the previous screen.
- Selecting YES:
 - Will store the job values and product name in the "Recent Outputs" table.
 - Will move the values to zero and go back to the previous screen.



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.
 - Press "+" or "-" to enter the desired amount of feed per foot.



Feed Setup for Distance Metering

221179

Section 2 - Grain Tank Display

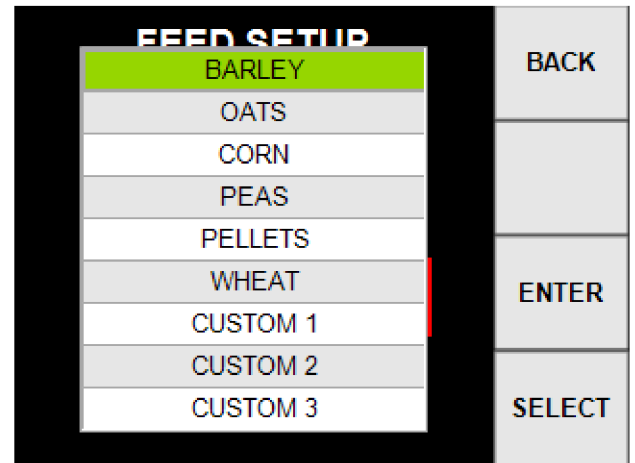
- CALIBRATION is the weight in pounds of the product moved for each revolution of the auger (lbs/rev).
 - The CALIBRATION number is determined by going through the calibration process described in the "Operating the Grain Tank" section of this manual.

- PRODUCT is the material that is being metered.
 - A table of products will come up.
 - Press SELECT to move to the PRODUCT being feed.

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

- Press ENTER to change the active product.
 - If the active product changes and the job weight is more than zero (0), then the display will automatically switch to the Job Reset Confirmation screen

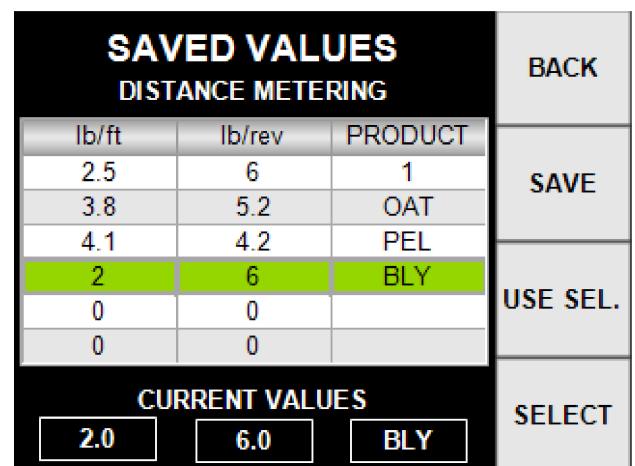
- Press BACK to close this screen without changing the active product.



Product List Pop-up

221411

- On the Feed Setup screen, 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 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 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.



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

DISTANCE METERING GRAIN TANK		MENU
OFF		AUGER VALVE
BARLEY (6.0 lb/rev)		ON
TARGET [lb/ft]	2.0	START
ACTUAL [lb/ft]	0.0	
JOB WEIGHT [lb]	226	
JOB DISTANCE [ft]	113	
		SETUP

Distance Metering Control Screen

221330

ACTIVATE BALE LIFT CIRCUIT? MAKE SURE TRACTOR VALVE IS IN NEUTRAL POSITION!	NO
	YES

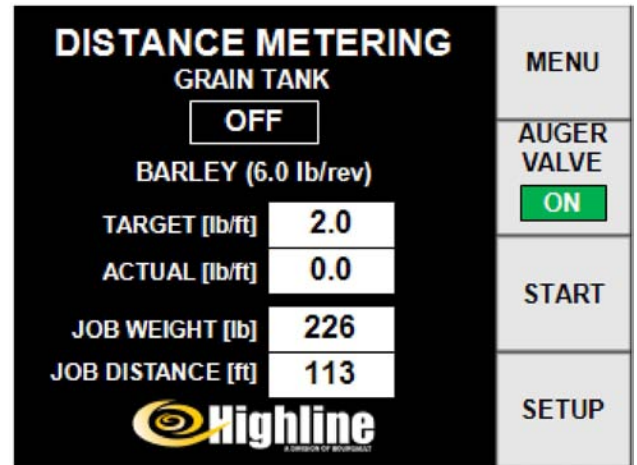
Activate Bale Lift Circuit Confirmation

221188

Section 2 - Grain Tank Display

START the metering

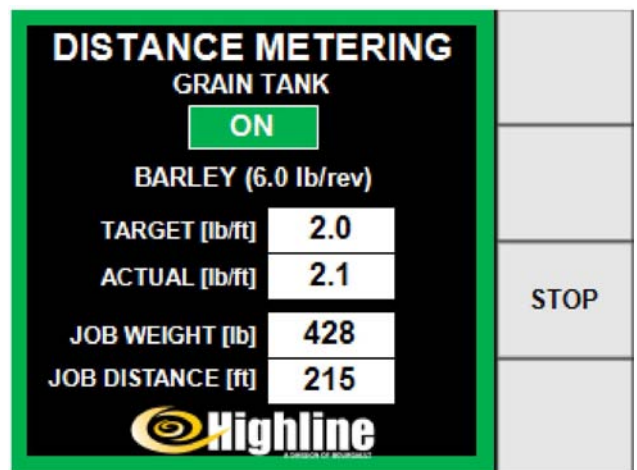
- Press the START button to begin the metering process.



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.



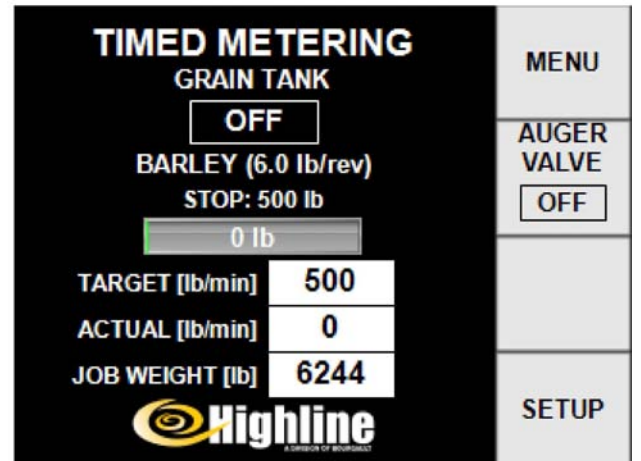
Grain Tank ON

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.

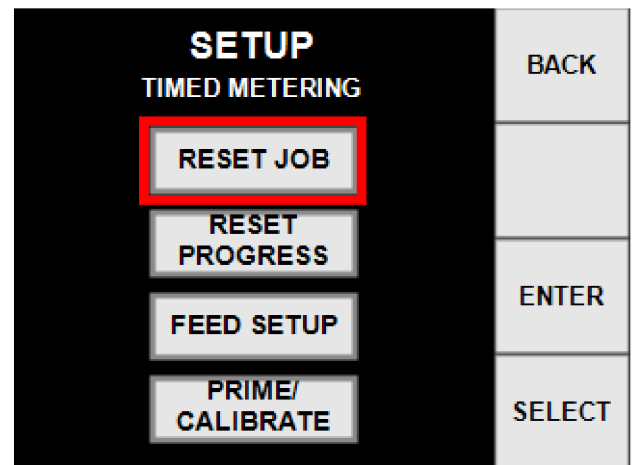


Timed Metering Control Screen

221190

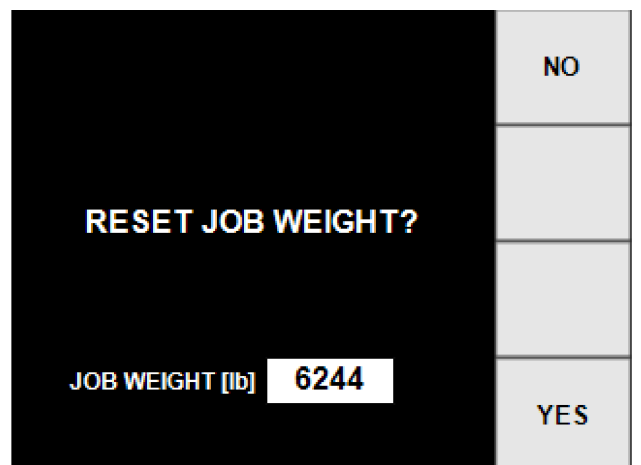
SETUP screen for TIMED METERING.

- The selection chosen will be highlighted by a red box.
- 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 store the job values and product name in the "Recent Outputs" table.
 - Will move the value to zero and go back to the previous screen.
 - Will reset the auto-stop progress.



Timed Metering Setup

221182



Job Weight Reset Confirmation

221185

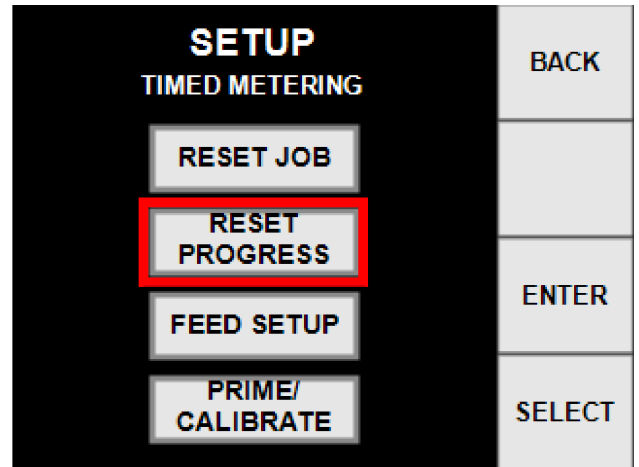
Section 2 - Grain Tank Display

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.

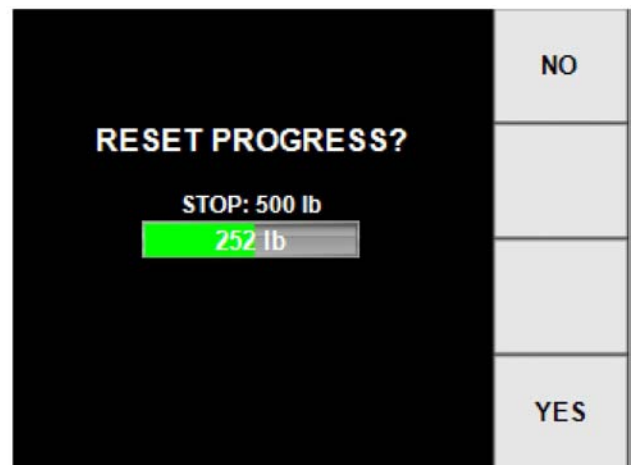
Note: If the stop weight has been reached the progress will set itself to zero (0).

- 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

Section 2 - Grain Tank Display

- 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.

The screen displays the following settings: TARGET [lb/min] is 500 (highlighted with a red box), CALIBRATION [lb/rev] is 6.0, PRODUCT is BARLEY, and STOP WEIGHT [lb] is 500. A 'SAVED VALUES' button is at the bottom left. On the right, there are four buttons: BACK, +, -, and SELECT.

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.

The screen displays the following settings: TARGET [lb/min] is 50 (highlighted with a red box), CALIBRATION [lb/rev] is 6.0, PRODUCT is BARLEY, and STOP WEIGHT [lb] is 500. A 'SAVED VALUES' button is at the bottom left. At the bottom, the text 'TARGET TOO LOW' is displayed in red. On the right, there are four buttons: +, -, and SELECT. The BACK button is missing.

Warning on Target Too Low

221186-1

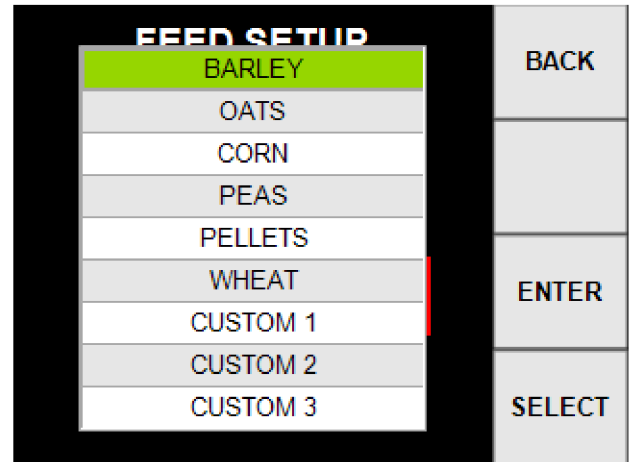
The screen displays the following settings: TARGET [lb/min] is 1330 (highlighted with a red box), CALIBRATION [lb/rev] is 6.0, PRODUCT is BARLEY, and STOP WEIGHT [lb] is 500. A 'SAVED VALUES' button is at the bottom left. At the bottom, the text 'TARGET TOO HIGH' is displayed in red. On the right, there are four buttons: +, -, and SELECT. The BACK button is missing.

Warning on Target Too High

221186-2

Section 2 - Grain Tank Display

- 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.
 - A table of products will come up.
 - Press SELECT to move to the PRODUCT being feed.
Note: If the product is not listed use one of the Custom values.
 - Press ENTER to change the active product.
 - If the active product changes and the job weight is more than to zero (0), then the display will automatically switch to the Job Reset Confirmation screen
 - Press BACK to close this screen without changing the active product.



Product List Pop-up

221411

Section 2 - Grain Tank Display

- 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

TARGET [lb/min] 500

CALIBRATION [lb/rev] 6.0

PRODUCT BARLEY

STOP WEIGHT [lb] **NONE**

SAVED VALUES

BACK

+

-

SELECT

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

lb/min	lb/rev	PRODUCT	STOP lb
265	2.8	CRN	NONE
265	2.8	CRN	620
700	6	BLY	500
0	0		
0	0		
0	0		

CURRENT VALUES

265 2.8 CRN NONE

BACK

SAVE

USE SEL.

SELECT

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
GRAIN TANK

OFF

BARLEY (6.0 lb/rev)

STOP: 500 lb

0 lb

TARGET [lb/min] 500

ACTUAL [lb/min] 0

JOB WEIGHT [lb] 6244

Highline

MENU

AUGER VALVE

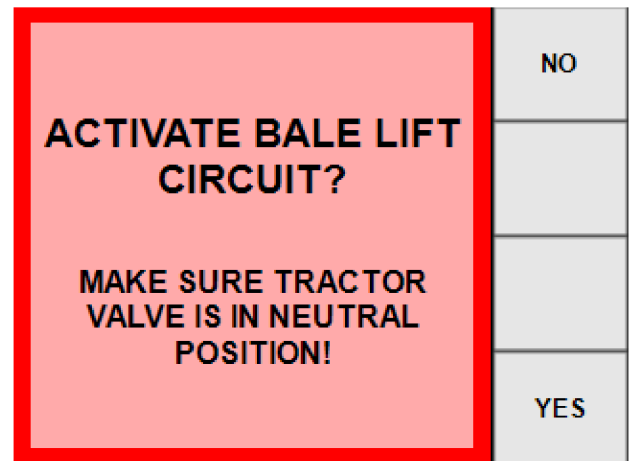
OFF

SETUP

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

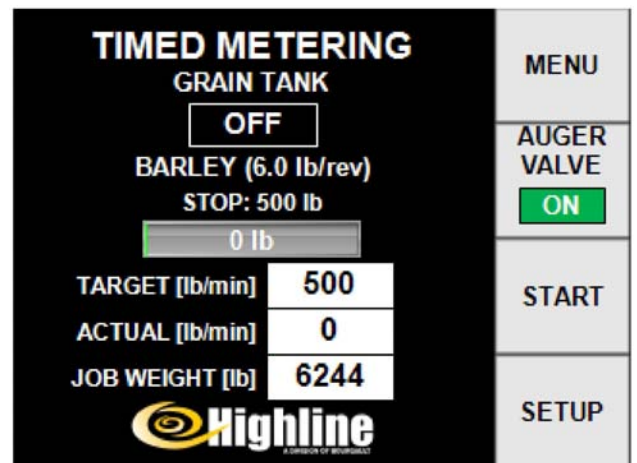


To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

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.



Press START to Begin Metering

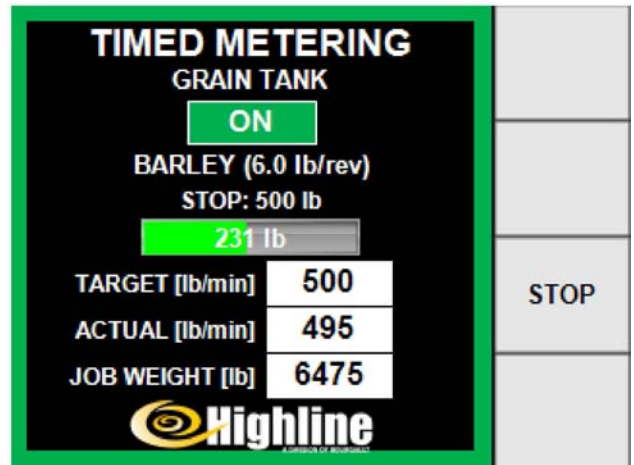
221341

Section 2 - Grain Tank Display

- While metering a progress bar fills and text shows the weight outputted.
 - There are short beeps when $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of the auto-stop weight are reached (if applicable).
- When the 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.

- 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.



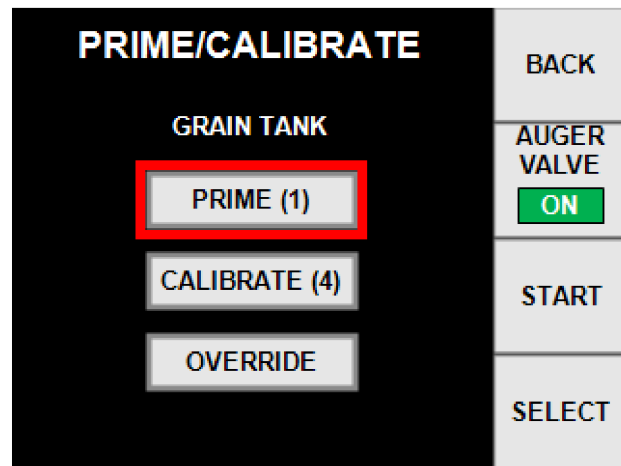
Progress Bar - Auto-Stop Weight

221191

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.

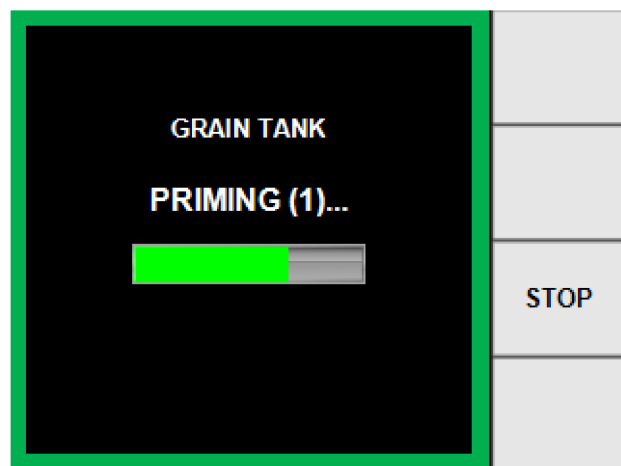


Prime/Calibrate Screen

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

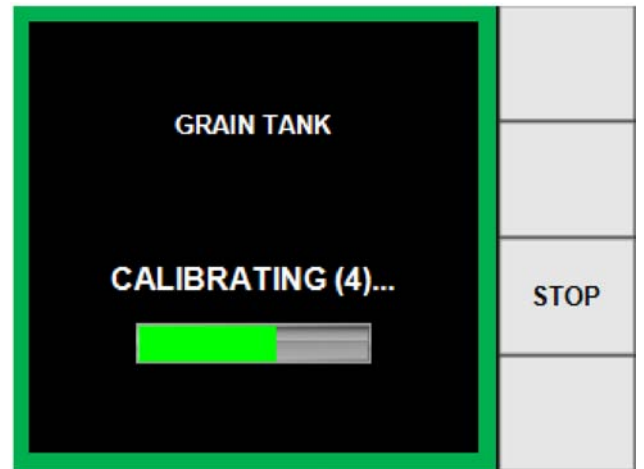
221193

Section 2 - Grain Tank Display

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.



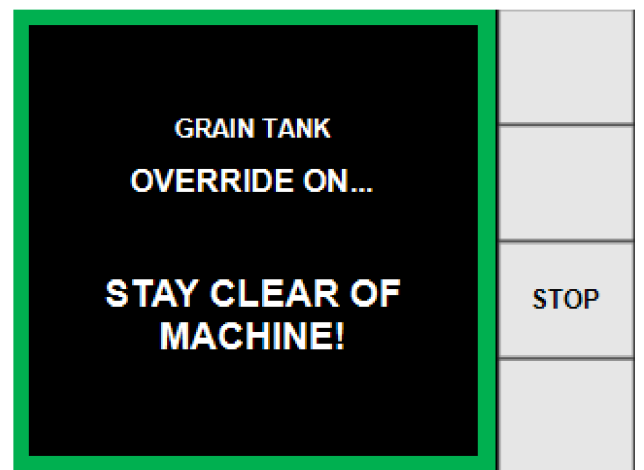
Calibrating Progress

221194

- 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.

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.
- During startup, job values automatically get stored to this table and are reset to zero (0).
- When jobs are manually reset, the values get stored to this table.

TOTAL OUTPUTS			MENU
RECENT OUTPUTS			
WEIGHT [lb]	DIST. [ft]	PRODUCT	
305	153	PEA	SEASON TOTALS
148	0	WHT	
501	0	PEL	
25	13	CRN	
12	0	BLY	
249	125	PEA	

Total Outputs Screen

221412

- 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		BACK
PRODUCT	WEIGHT [lb]	
BARLEY	6497	RESET ALL
OATS	0	
CORN	338	RESET SEL.
PEAS	1010	
PELLETS	0	SELECT
WHEAT	0	
CUSTOM 1	762	
CUSTOM 2	0	
CUSTOM 3	0	

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.

NO
RESET ALL SEASON TOTALS TO 0?
WARNING: THIS CANNOT BE UNDONE.
YES (HOLD)

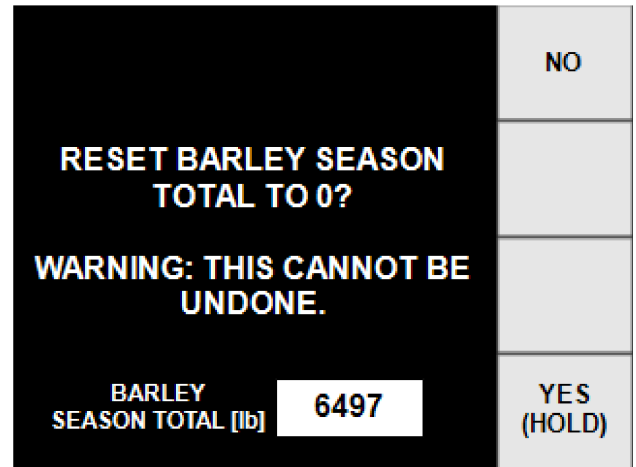
Reset All Confirmation

221202

Section 2 - Grain Tank Display

- Use SELECT to choose the product.
- 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

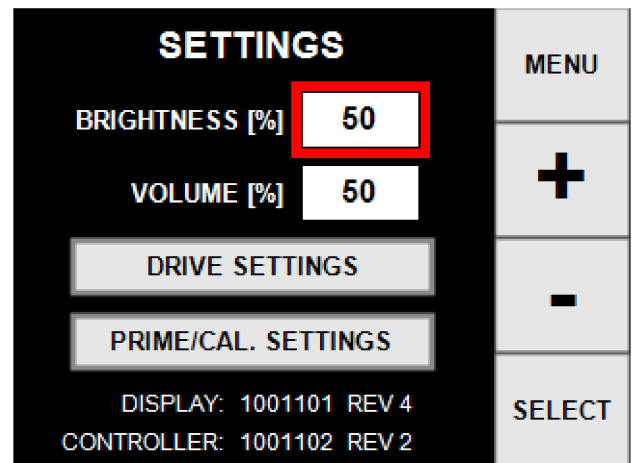
The settings screen gives control of the screen BRIGHTNESS, DRIVE SETTINGS and PRIME/CAL. Settings.

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.



Settings Screen

221196

DRIVE SETTINGS

- The auger and motor teeth are the number of teeth that are sensed at the auger and the motor.
- 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.
- If changes to the settings have been made it is possible to return to the default settings.
 - Press SELECT to choose RESET TO DEFAULTS.
 - Press ENTER and hold for four (4) seconds.

DRIVE SETTINGS		GRAIN TANK	
AUGER TEETH	56		
MOTOR TEETH	16		
MOTOR SPEED [rpm]	30 TO 775		
WHEEL TEETH	100		
WHEEL DIAMETER [in]	40.0		
RESET TO DEFAULTS			

Drive Settings

221413

DRIVE SETTINGS		GRAIN TANK	
AUGER TEETH	56		
MOTOR TEETH	16		
MOTOR SPEED [rpm]	30 TO 775		
WHEEL TEETH	100		
WHEEL DIAMETER [in]	40.0		
RESET TO DEFAULTS			

To Reset Default Drive Settings

221414

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		BACK
GRAIN TANK		
PRIME TURNS	1	+
CAL. TURNS	4	-
SPEED [rpm]	40	SELECT

Prime/Cal. Settings

221198

Section 3 - Sample Feeding Rations

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 -5° C that the temperature is below -20° C at midday. For example, if the afternoon air temperature was -35° C, feed an additional three (3) lb. (1.36 kg) of grain per cow.

Low Quality Forage Example Feeding Rations (Consult a Nutritionist for specific recommendations.) Pounds (kg) per cow per day on an "as fed" basis			
	1,200 lb. (544 kg) Cow Mid-Pregnancy Early Winter Conditions No wind, -10° C Six months pregnant Calving mid March Calf birth weight 80 lbs (36.2 kg)	1,200 lb. (544 kg) Cow Late-Pregnancy Winter Conditions No wind, -20° C Eight months pregnant Calving mid March Calf birth weight 80 lbs (36.2 kg)	1,200 lb. (544 kg) Cow Lactating Early Spring Conditions No wind, -5° C First month lactation Fourth lactation Calf birth weight 80 lbs (36.2 kg)
Cereal Straw + Oats or Barley	17 lbs + 9 lbs (7.7 kg + 4 kg)	17 lbs + 11 lbs (7.7 kg + 5 kg)	15 lbs + 16 lbs (6.8 kg + 7.3 kg)
Pea or Lentil Straw + Oats or Barley	21 lbs + 5 lbs (9.5 kg + 2.3 kg)	24 lbs + 8 lbs (10.9 kg + 3.6 kg)	18 lbs + 15 lbs (8.2 kg + 6.8 kg)
Slough Hay + Oats or Barley	26 lbs + 3 lbs (11.8 kg + 1.4 kg)	29 lbs + 3 lbs (13.1 kg + 1.4 kg)	21 lbs + 12 lbs (9.5 kg + 5.4 kg)
High Quality Forage Example Feeding Rations (Consult a Nutritionist for specific recommendations.) Pounds per cow per day on an "as fed" basis			
	1,200 lb. (544 kg) Cow Lactating Early Spring Conditions No wind, -5° C First month lactation Fourth lactation Calf birth weight 80 lbs (32.6 kg)		
Alfalfa Grass Hay + Oats or Barley	31 lbs + 3 lbs (14 kg + 1.4 kg)		
Canola Hay + Oats or Barley	31 lbs + 9 lbs (14 kg + 4 kg)		
Canola Silage + Oats or Barley	60 lbs + 9 lbs (27.2 kg + 4 kg)		
Cereal Greenfeed + Oats or Barley	31 lbs + 3 lbs (14 kg + 1.4 kg)		
Cereal Silage + Oats or Barley	58 lbs + 7 lbs (26.3 kg + 3.2 kg)		
Clover Silage + Oats or Barley	56 lbs + 9 lbs (25.4 kg + 4 kg)		
Pea or Lentil Hay + Oats or Barley	27 lbs + 7 lbs (12.3 kg + 3.2 kg)		

Section 3 - Sample Feeding Ratios

Feed Name	Dry Matter %	DE Mcal/lb DE(MJ/kg)	TDN %	Protein %	Ca %	P %	Mg %	K %	S %	Salt %	Vit. A KIU/K g	Cu mg/kg	Mn mg/kg	Zn mg/kg	Se mg/kg	I mg/kg
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}

Section 4 - Operating the Grain Tank

- 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

Section 4 - Operating the Grain Tank

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



Fill the Tank

221206



Commodity in the Tank
Only Fill to Top of Braces

215143

Section 4 - Operating the Grain Tank

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).



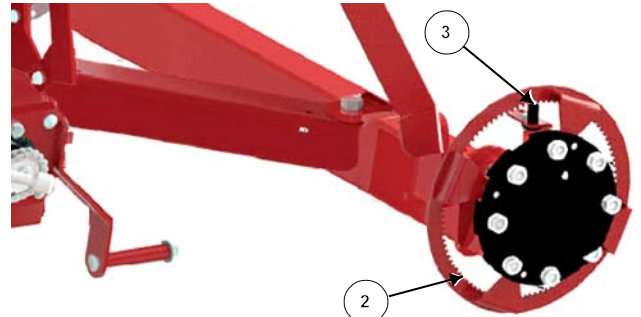
Raise and Secure the Ladder

221369C

Section 4 - Operating the Grain Tank

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.



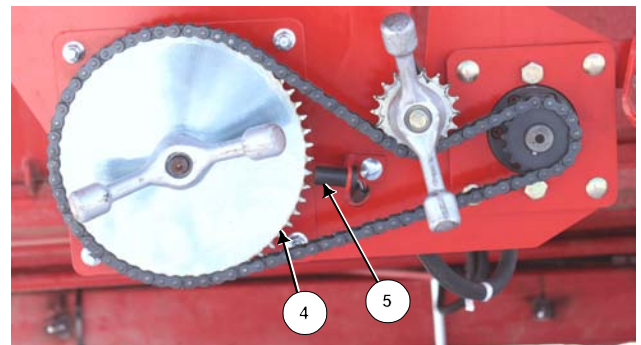
Ensure Wheel Sprocket Teeth and Sensor are Clean
(Wheel Not Shown for Clarity) 221107C

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

Section 4 - Operating the Grain Tank

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

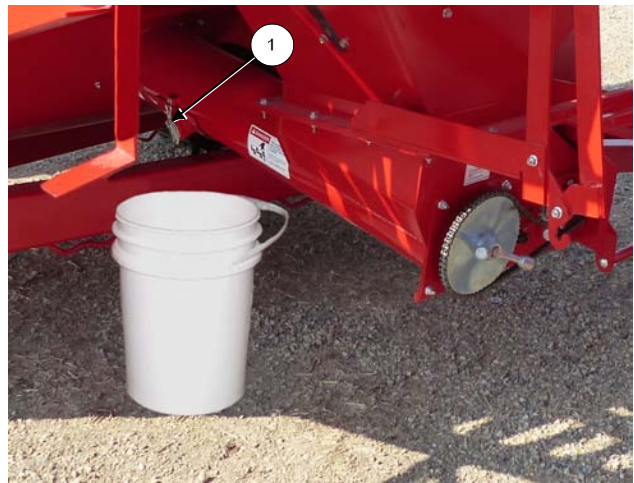
Distance Metering and Timed Metering

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.
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.

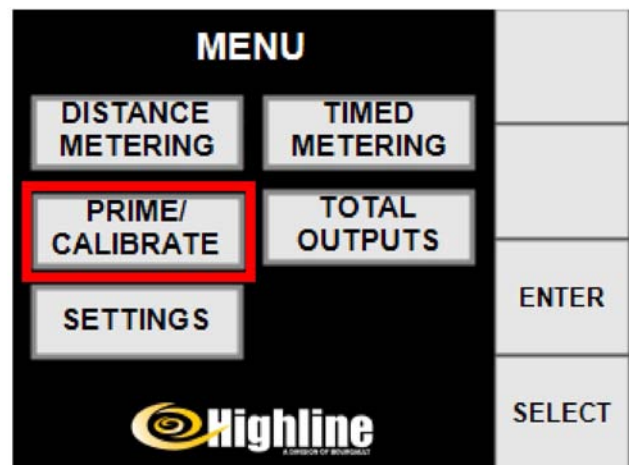


Place Pail Under Auger
Open Calibration Door

221371C



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

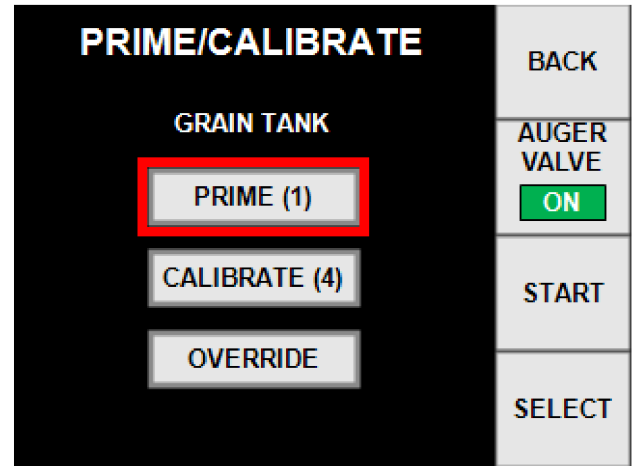
221344

Section 4 - Operating the Grain Tank

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.



Select the Prime Function to Fill the Auger

221192



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

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



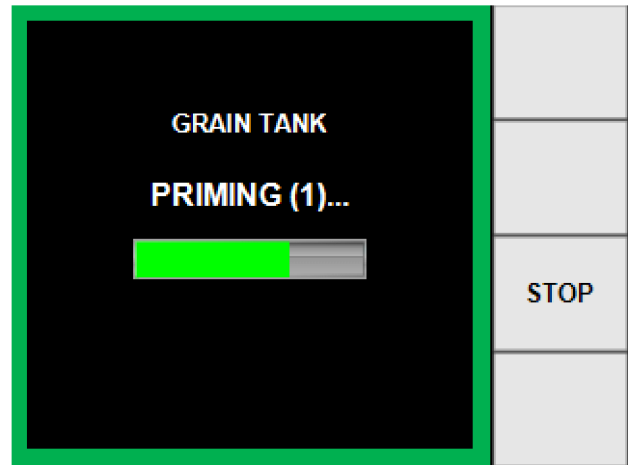
Keep fingers and hand out of the auger tube and chamber. Contact with the rotating auger will cause serious injury or death.

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



Section 4 - Operating the Grain Tank

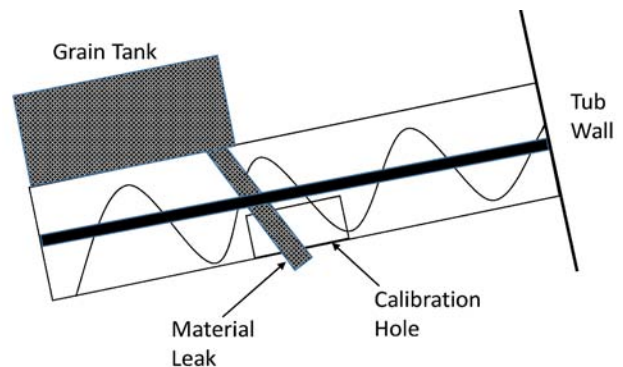
- While PRIMING a progress bar appears and fills to indicate the stage of completion.
 - The screen is also in a green border.
- Press STOP at anytime to stop the priming process.
- When the number of turns is completed, the auger automatically stops and the display goes back to the PRIME/CALIBRATE screen.



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

Section 4 - Operating the Grain Tank

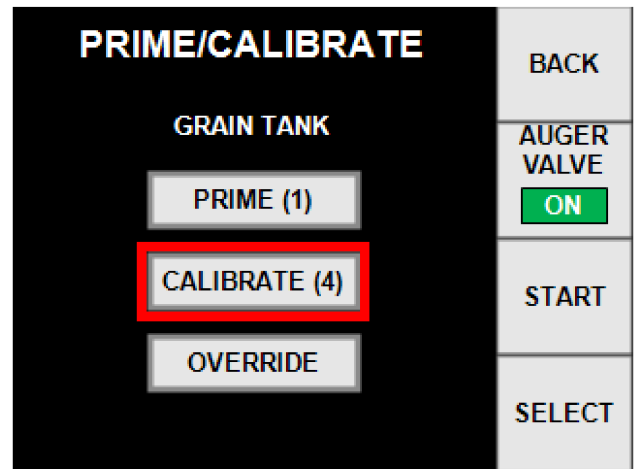
9. Collect the calibration sample.

- 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.



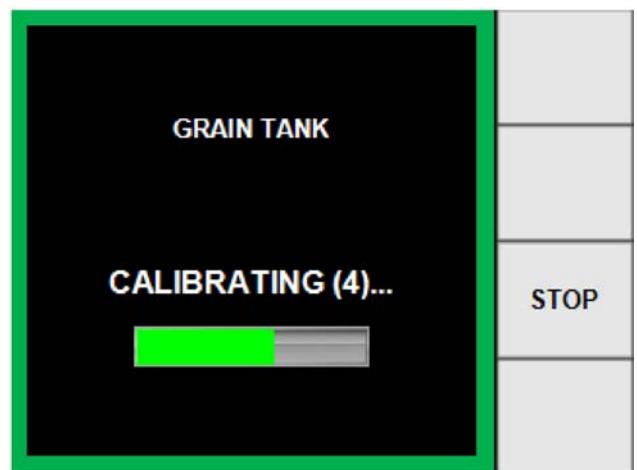
Keep fingers and hand out of the auger tube and chamber. Contact with the rotating auger will cause serious injury or death.

- 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.
- 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.



Select the Calibrate Function

221335



Progress Bar while Calibrating

221194

Section 4 - Operating the Grain Tank

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.



Hand Crank Attached to Auger Flighting

221372

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



Close the Auger Calibration Cover

221415

Section 4 - Operating the Grain Tank

For Distance Metering

- Go to the Feed Setup screen by pressing BACK.
- Select DISTANCE METERING and SETUP and FEED SETUP.
- Enter the TARGET output rate.
 - The selection chosen will be highlighted by a red box.
 - Use the "+" or "-" buttons to enter the value.
- Enter the CALIBRATION calculated weight (lb/rev) into the field.
 - The selection chosen will be highlighted by a red box.
 - Use the "+" or "-" buttons to enter the value.
- Select the PRODUCT field. A PRODUCT pop-up screen will appear.
 - The selection chosen will be highlighted by a red box.
 - Press SELECT to enter the product in the FEED SETUP screen.
- If the active product changes and the job weight is more than zero (0), then the display will automatically switch to the Job Reset Confirmation screen
 - Selecting NO will cancel and go back to the previous screen.
 - Selecting YES:
 - Will store the job values and product name in the "Recent Outputs" table.
 - Will move the values to zero and go back to the previous screen.

The screen displays the following fields and controls:

FEED SETUP		BACK
TARGET [lb/ft]	2.0	+ - SELECT
CALIBRATION [lb/rev]	6.0	
PRODUCT	BARLEY	
SAVED VALUES		

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

221179

The screen displays a list of products for selection:

FEED SETUP		BACK
BARLEY		ENTER SELECT
OATS		
CORN		
PEAS		
PELLETS		
WHEAT		
CUSTOM 1		
CUSTOM 2		
CUSTOM 3		

Product Selection Pop-Up Screen

221411

The screen displays the following fields and controls:

RESET JOB WEIGHT AND DISTANCE?		NO
JOB WEIGHT [lb]	226	YES
JOB DISTANCE [ft]	113	

Job Reset Confirmation

221178

Section 4 - Operating the Grain Tank

- 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			BACK
DISTANCE METERING			
lb/ft	lb/rev	PRODUCT	SAVE
2.5	6	1	
3.8	5.2	OAT	USE SEL.
4.1	4.2	PEL	
2	6	BLY	SELECT
0	0		
0	0		
CURRENT VALUES			
2.0	6.0	BLY	

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.
- Enter the TARGET output rate.
 - The selection chosen will be highlighted by a red box.
 - Press "+" or "-" to enter the desired amount.
- Enter the CALIBRATION calculated weight (lb/rev) into the field.
 - The selection chosen will be highlighted by a red box.
 - Use the "+" or "-" buttons to enter the value.

SETUP		BACK
TIMED METERING		
RESET JOB		
RESET PROGRESS		
FEED SETUP		ENTER
PRIME/ CALIBRATE		SELECT

Select Feed Setup

221346

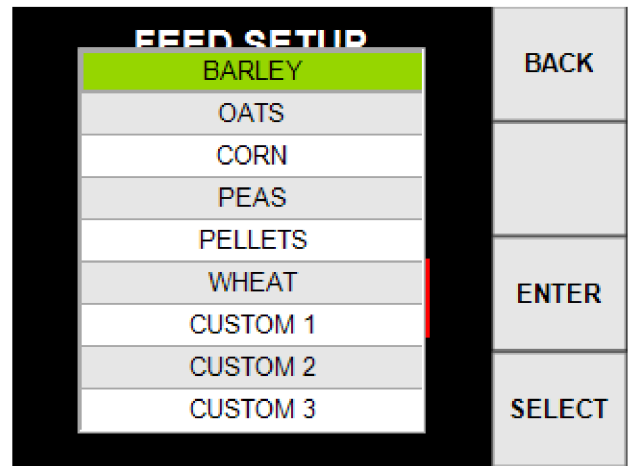
FEED SETUP		BACK
TIMED METERING		
TARGET [lb/min]	500	+
CALIBRATION [lb/rev]	6.0	
PRODUCT	BARLEY	-
STOP WEIGHT [lb]	500	SELECT
SAVED VALUES		

Enter the Target Output Rate

221183

Section 4 - Operating the Grain Tank

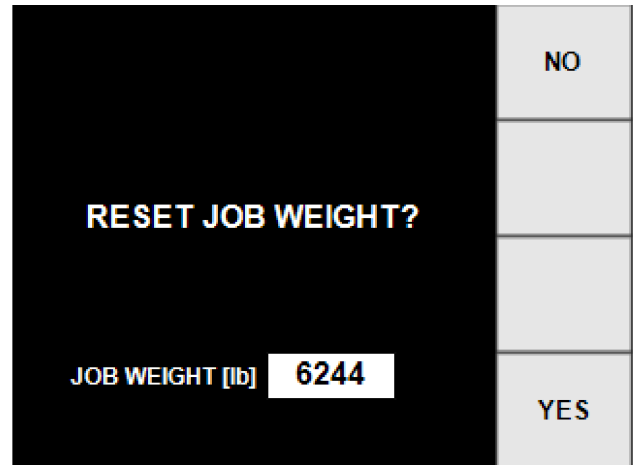
- Select the PRODUCT field. A PRODUCT pop-up screen will appear.
- The selection chosen will be highlighted by a red box.
- Press SELECT to enter the product in the FEED SETUP screen.



Product Selection Pop-Up Screen

221411

- If the active product changes and the job weight is more than zero (0), then the display will automatically switch to the Job Reset Confirmation screen
- Selecting NO will cancel and go back to the previous screen.
- Selecting YES:
 - Will store the job values and product name in the "Recent Outputs" table.
 - Will move the values to zero and go back to the previous screen.
 - Will reset the auto-stop progress.



Job Weight Reset Confirmation

221185

Section 4 - Operating the Grain Tank

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

lb/min	lb/rev	PRODUCT	STOP lb
265	2.8	CRN	NONE
265	2.8	CRN	620
700	6	BLY	500
0	0		
0	0		
0	0		

CURRENT VALUES

265 2.8 CRN NONE

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.

FEED SETUP
TIMED METERING

TARGET [lb/min] 50

CALIBRATION [lb/rev] 6.0

PRODUCT BARLEY

STOP WEIGHT [lb] 500

SAVED VALUES

TARGET TOO LOW

Warning on Target Too Low

221186-1

FEED SETUP
TIMED METERING

TARGET [lb/min] 1330

CALIBRATION [lb/rev] 6.0

PRODUCT BARLEY

STOP WEIGHT [lb] 500

SAVED VALUES

TARGET TOO HIGH

Warning on Target Too High

221186-2

Section 4 - Operating the Grain Tank

- 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.

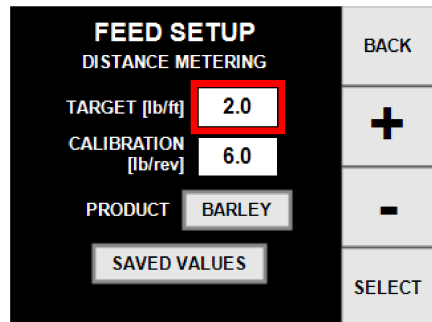
Enter the Stop Weight

221332

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

Instructions:	A Feeding Example:
Step 1 Determine the feed sources that are intended to be used.	- Alfalfa Hay Grass and Barley Grain
Step 2 Determine the required amount of feed sources per cow. Some Sample Rations are included in Section 3 of the manual. 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 : - 1,200 lb (544 kg) Cow - First month lactation - Early Spring Conditions, No wind, -5° C - Fourth lactation - Calf birth weight 80 lbs (36 kg) Use 31 lbs (14 kg) Hay + 3 lbs (1.4 kg) Barley
Step 3 Determine the weight of the bales being used.	Bale weight is 1200 lbs (544 kg)
Step 4 Determine the number of cattle intended to be fed.	Intend to feed 50 cows

Section 4 - Operating the Grain Tank

Step 5 Determine how many bales are required. Multiply number of cows by lbs/cow = lbs. 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). 1550 lbs (703 kg)/ 1200lb (544 kg) per bale = 1.3 bales for 50 cows
Step 6 Determine the travel distance for the number of cattle intended to be fed. Multiply number of cows by 5 ft (1.5 m)/cow spacing. 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. 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. 50 cow x 5 ft (1.5 m) / cow = 250 feet (75 m) Travel how far with a single bale? A 1200 lb single bale at 31 lbs/cow for a cow every 5 feet will go for 194 feet: = 1200 lbs/bale / 31lbs /cow x 5ft/cow = 194 feet A 544 kg single bale at 14 kg/cow for a cow every 1.5 m will go 58.3 m = 544 kg/bale / 31lbs/cow x 5ft /cow =58.3 m)
Step 7 Determine the Target (lb/ft) of grain feed. Divide the pounds of grain by the distance per cow to get the Target pounds/foot. in the Distance Metering Feed Setup Screen	Note: This example will be for windrow feeding at 5 ft/cow. 3 lb of Barley per cow/5 ft per cow 3 lb/5 ft = 0.6 lb/ft Target
Step 8 Enter the Target into the Feed Setup Distance Metering display screen.	

Section 4 - Operating the Grain Tank

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. $48 \text{ lbs/bushel} \times 45 \text{ bushels} = 2,160 \text{ lbs.}$ $2,160 \text{ lbs} / 3 \text{ lbs/cow} = 720 \text{ cows}$ $720 \text{ cows} \times 31 \text{ lb/cow} = 22,320 \text{ lbs}$ $22,320 \text{ lb} / 1,200 \text{ lb/bale} = 18.6 \text{ bales}$

Section 4 - Operating the Grain Tank

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

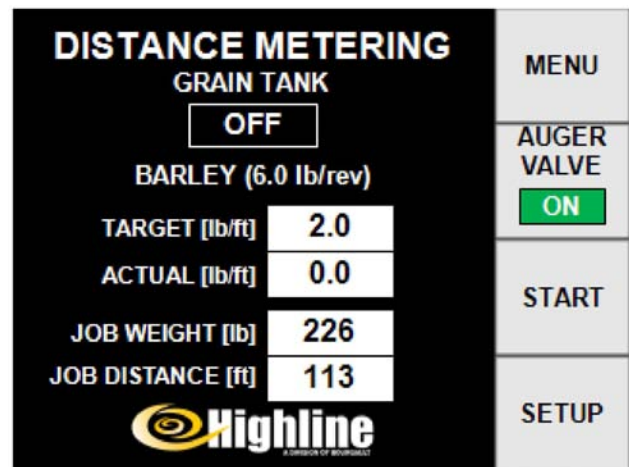
- When at the feeding site:
 - Have a bale loaded in the processor tub.
 - Press the AUGER VALVE to switch the hydraulic flow from the bale lift cylinders to the auger motor.
 - Ensure the AUGER VALVE button shows the word ON in a green box.



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

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

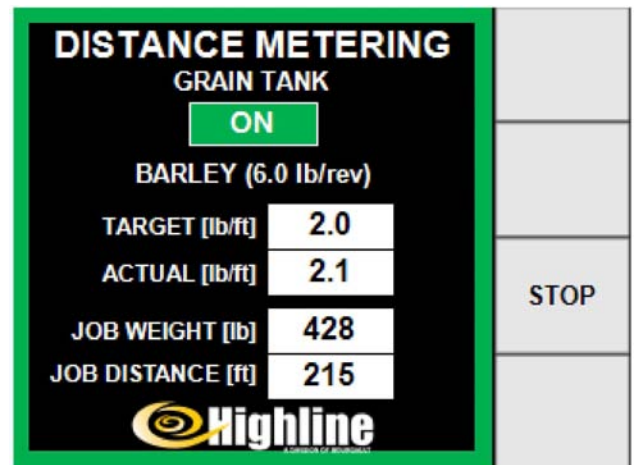


Auger Valve ON
Press START to Begin Metering

221330

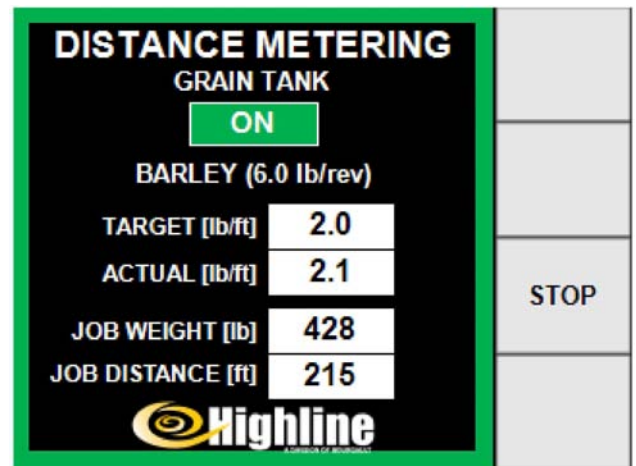
Section 4 - Operating the Grain Tank

- 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.
 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.
 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.



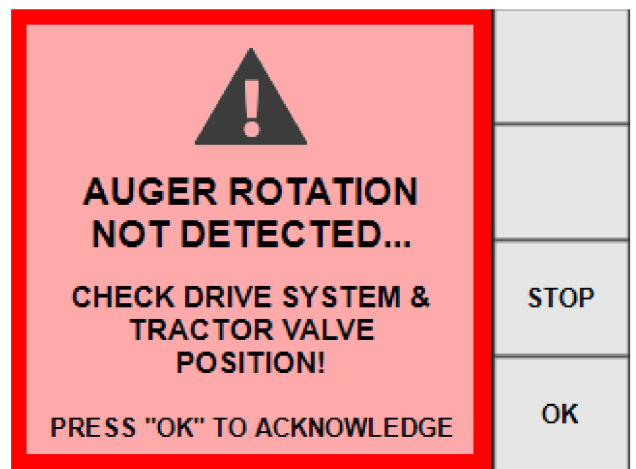
Grain Tank Turned ON - Ready to Meter

221338



Actual and Job Weight/Distance Shown

221338



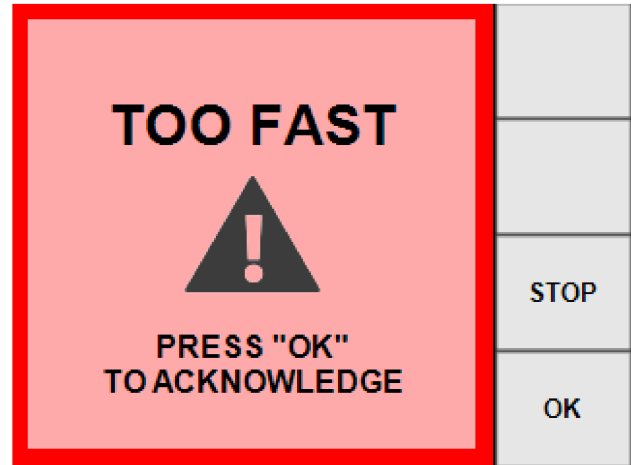
Warning Pop-up if No Auger Rotation Detected

221339

Section 4 - Operating the Grain Tank

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 leaving the auger on.



Warning Pop-up if Driving Too Fast

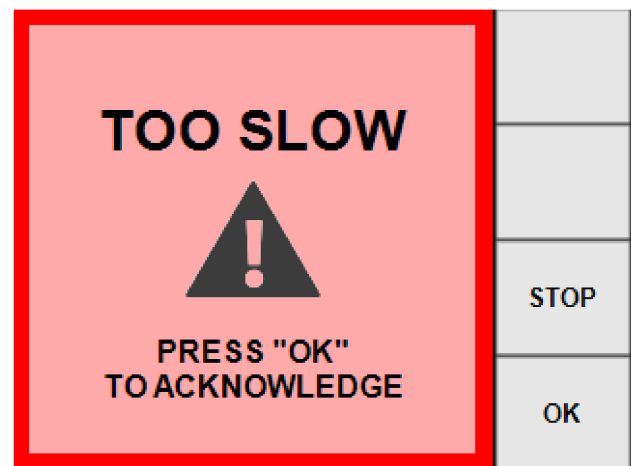
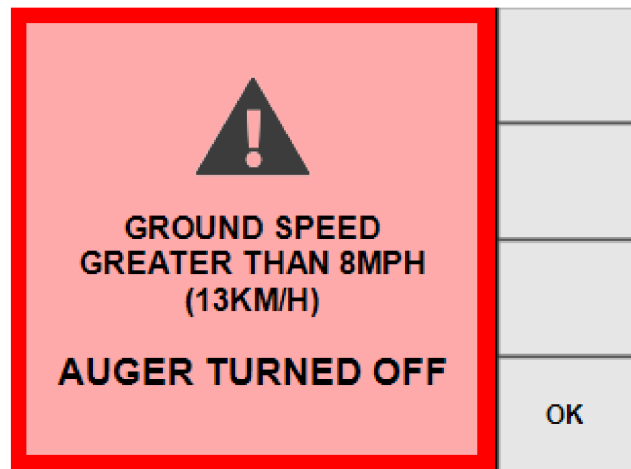
221213

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

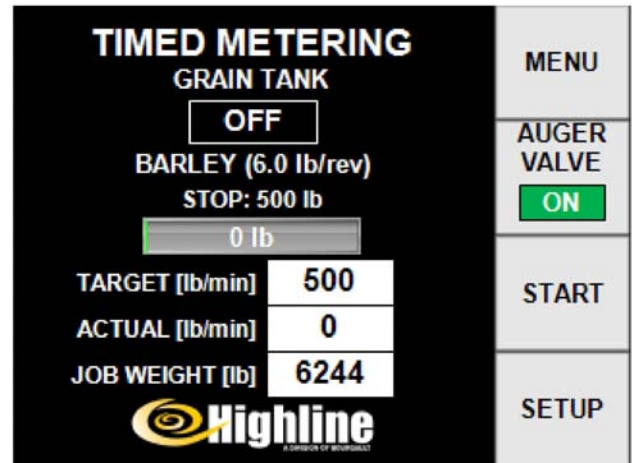
1. When at the feeding site:
 - Have a bale loaded in the processor tub.
2. Press the AUGER VALVE to switch the hydraulic flow from the bale lift cylinders to the auger motor.



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

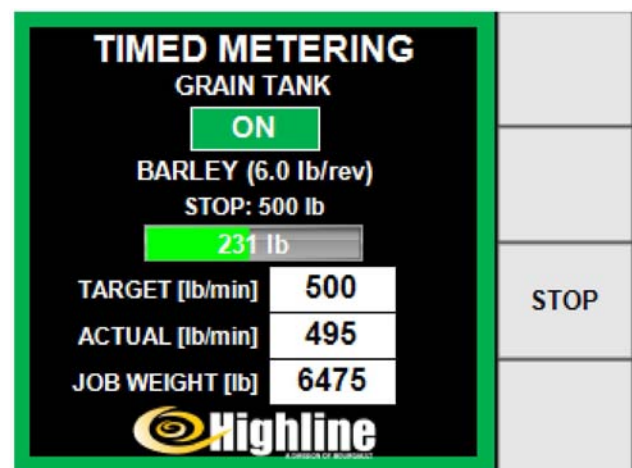
Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

- 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.



Auger Valve ON
Press START to Begin Metering

221341

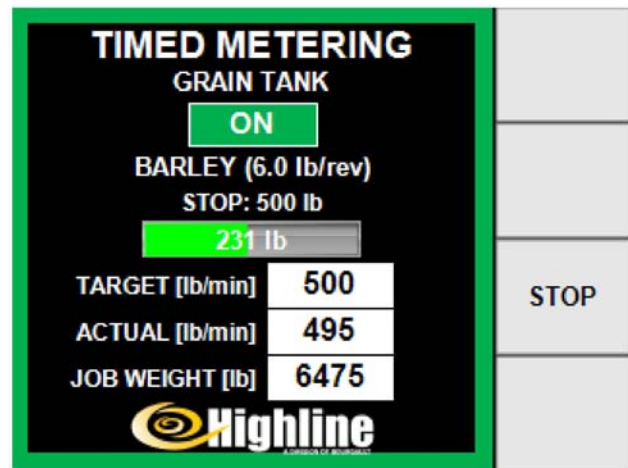


Grain Tank Turned on and Metering.

221191

Section 4 - Operating the Grain Tank

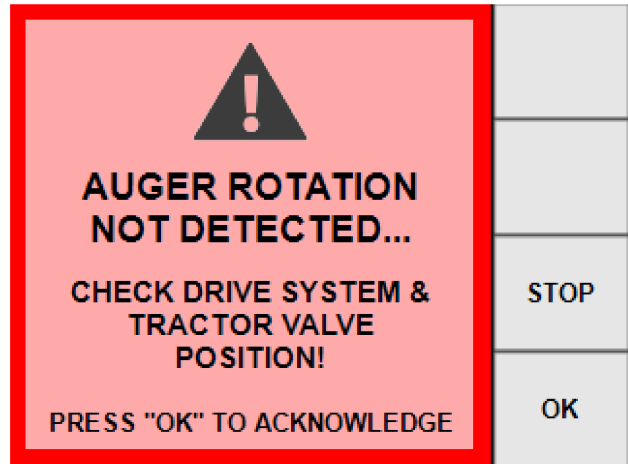
4. Engage the drive to the flail drum to begin processing the bale.
5. The ACTUAL (lb/min) will be shown on the display.
6. To stop the grain tank auger at any time press the STOP button.
7. The grain tank will output grain with a progress bar showing the ACTUAL amount of pounds metered.
8. If the auger is turned ON, but the sensor does not detect that the auger sprocket is rotating:



Progress Bar Showing Amount Metered.

221191

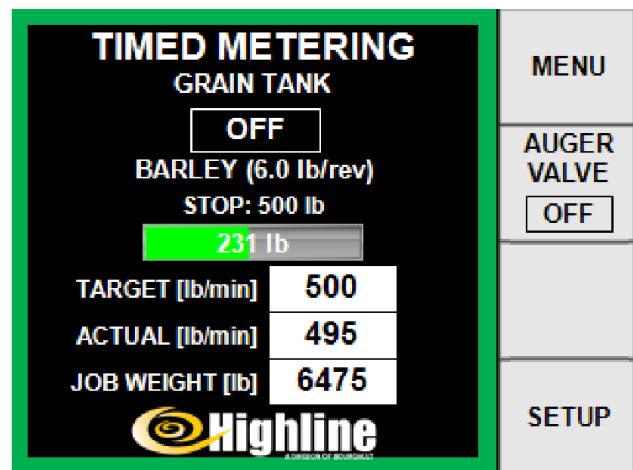
- A warning pop-up screen will show on the display accompanied by an alarm sound.
- Pressing STOP will stop the auger and turns off the warning message.
 - Check the drive system and the tractor selector valve position.
- Pressing OK turns off this warning message but auger is still on.



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



Turn Auger Valve to Off

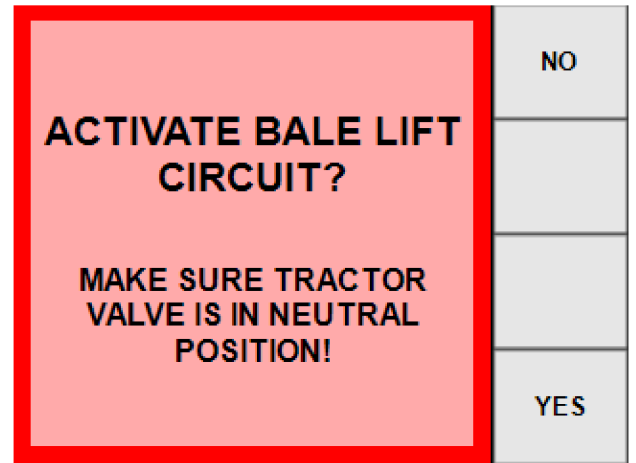
221342

Section 4 - Operating the Grain Tank

- 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.

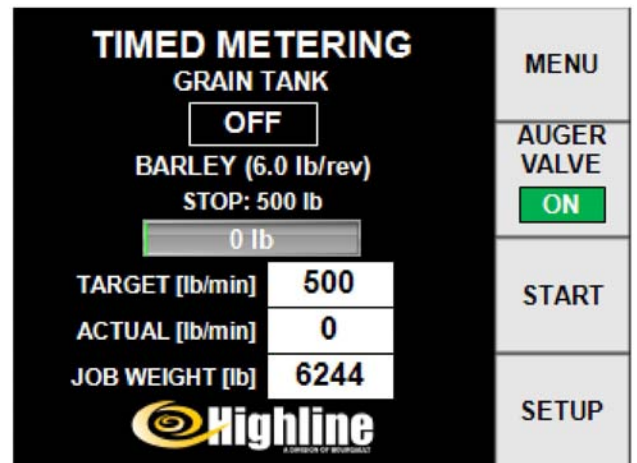
Note: Alternatively a loader may be used to load additional bales into the processor tub. To do this just stop and start the grain tank auger drive. The progress will be saved if the auger is stopped prior to reaching the stop weight (if applicable)

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



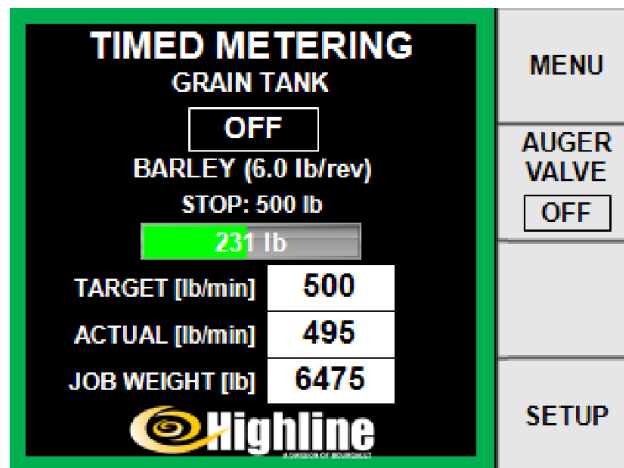
Auger Valve ON
Press START to Begin Metering

221341

Section 4 - Operating the Grain Tank

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

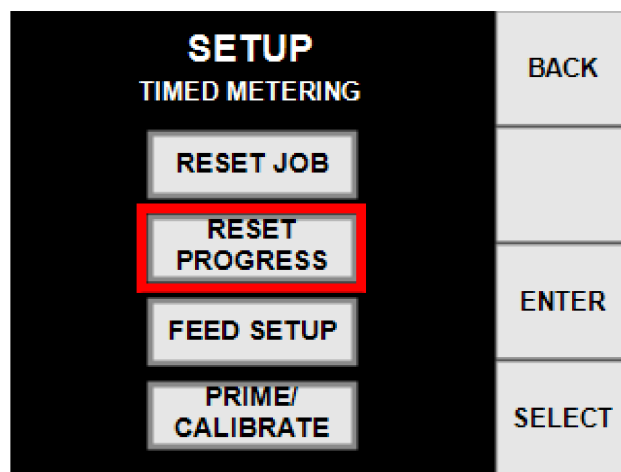
- Press the SETUP button.



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



Choose to Reset Weight Progress

221343

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

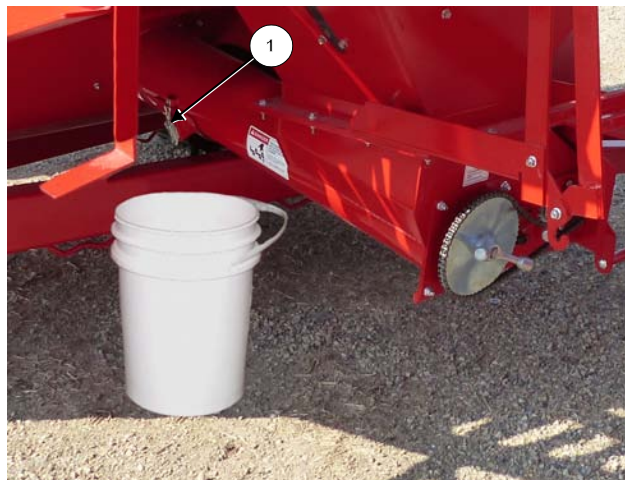
Clearing Blocked Auger Flighting



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



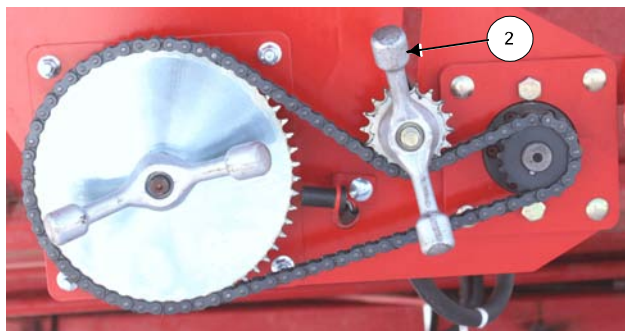
1. Loosen the clamp on the auger calibration door (1).
2. Lower the door from the auger chamber to allow the product to be caught in a pail.



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

Section 5 - Maintaining the Grain Tank

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.



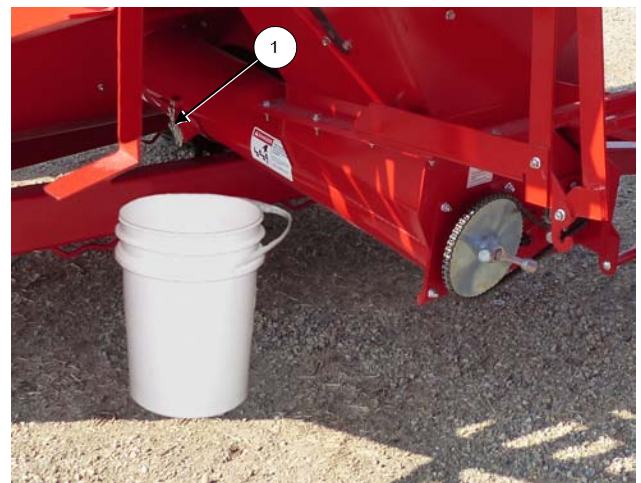
Do not enter the tank. The tank is a confined space not meant to be entered.



Method 1: Auger Override

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.

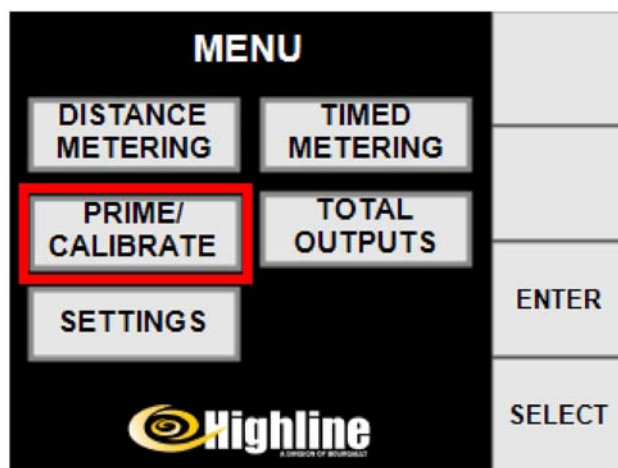
- Unlatch the door keeper.
- Lower the calibration door.



Place Pail Under Auger
Open Calibration Door

221371C

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



Choose Prime/Calibrate

221344

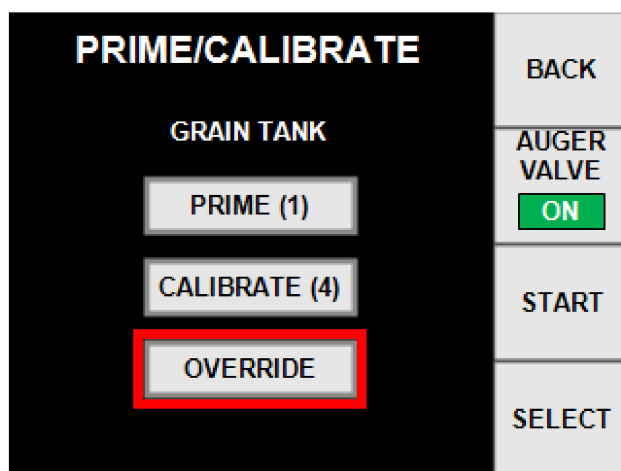
- Press the AUGER VALVE to ON to switch the hydraulic flow from the bale lift cylinders to the auger motor.



To ensure safe operation be certain that the power harness and the monitor are securely connected and that neither are disconnected without first verifying that the tractor valve is in the neutral position. Failure to do so will cause the bale lift to move which could result in injury or death.

Always ensure that the bale lift is up and locked prior to doing any work under or around the rear of the machine.

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



Select OVERRIDE to Empty the Tank

221347

- Move the hydraulic selector in the tractor to the on position.
- Select OVERRIDE from the PRIME/CALIBRATE screen.

Section 5 - Maintaining the Grain Tank

- 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.

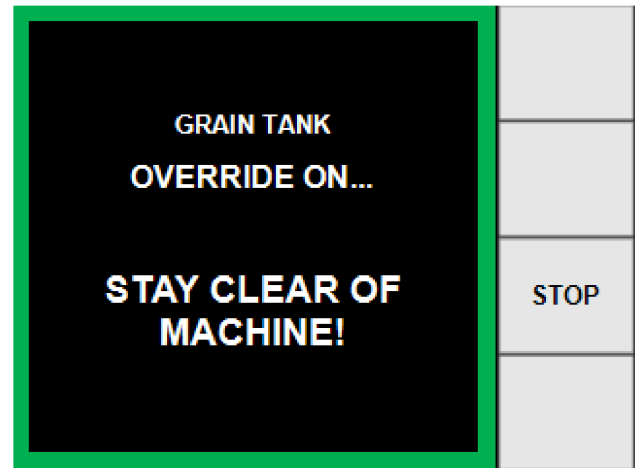
- A warning screen with a flashing green border will come on.
- Stay clear of the machine while the exposed grain tank auger is turning.



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

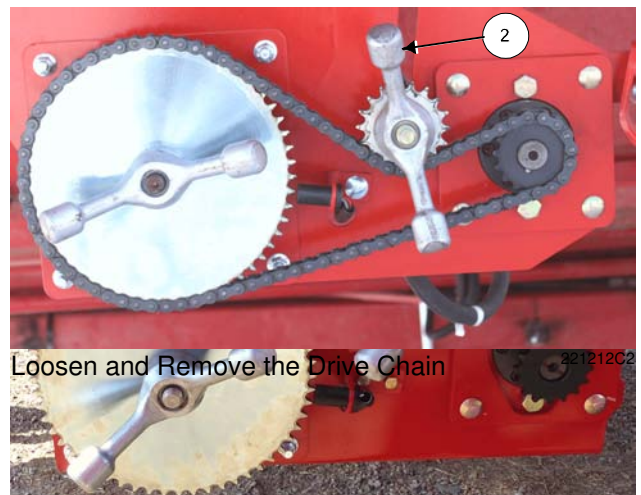
Method 2: Remove the Auger End Plate

- Loosen the chain tightener (2) by turning the quick turn handle.
- Slide the tightener in the slot.
- Remove the drive chain from the auger sprocket.
- Place a collection bucket or transfer device under the auger end plate to collect product.
- Remove the 4 nuts (3) holding the auger end plate.



Warning - Stay Clear of Rotating Auger

221195



Loosen and Remove the Drive Chain

Remove End Plate Nuts

221212C2
221373C

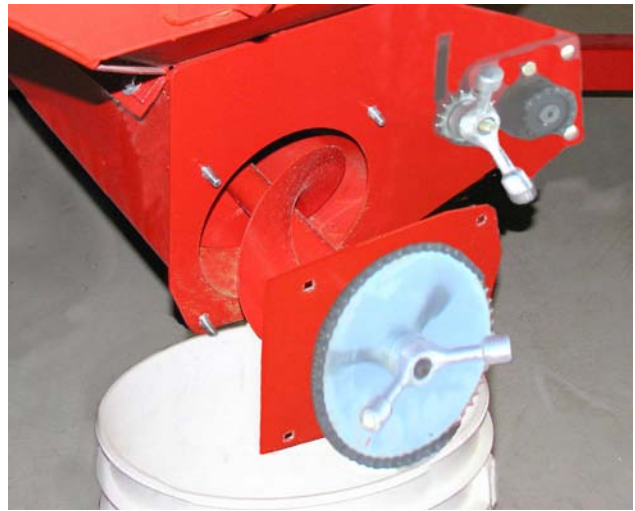
Section 5 - Maintaining the Grain Tank

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

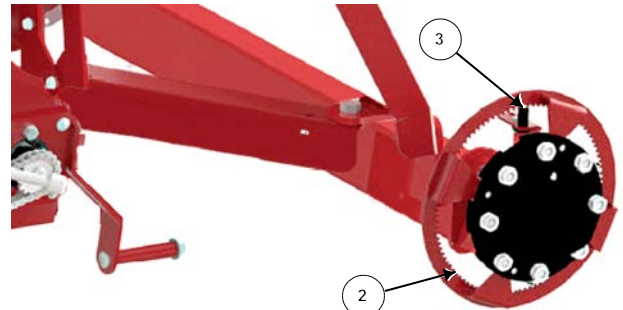
Remove twine that has built up around the spindle, sprocket (2) or sensor (3).

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)

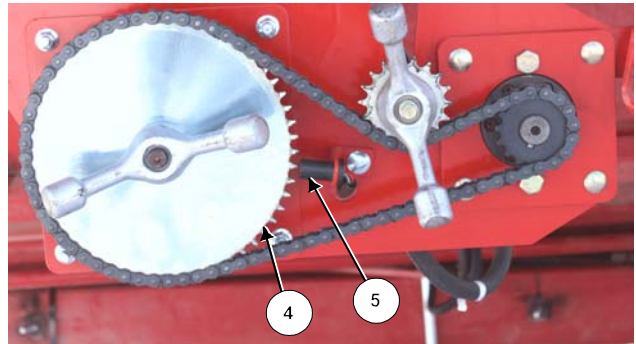
221107C

Section 5 - Maintaining the Grain Tank

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

Section 6 - Troubleshooting

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. 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. 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). 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). Replace the sensor.
	Auger discharge in the tub is blocked	Clear the auger discharge.

Section 6 - Troubleshooting

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. 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." 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." 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. Redo a product calibration.
	Target Rate	Check the Target rate entered into the display.

Section 6 - Troubleshooting

Display Errors

Symptom	Problem	Solution
TOO SLOW	Ground speed too slow	Increase the travel speed. Press OK to acknowledge
TOO FAST	Ground speed too 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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Section 7 - Specifications

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.