SXX 2016 Models
ISOBUS Operator's Manual

www.seedmaster.ca

Date

SeedMaster unit Serial # Size / Spacing / / /

Primary Owner
Last First

Farm name / Corporation

Land Location

Mailing
City P.O. Box

Province / Territory / State Postal / Zip Code

Phone Cell Phone Fax

Email

Dealer purchased from

Dealers for part pick-up

Shipping method to be used for Factory Direct shipments:

Please include a description to your farm from nearest town:

I hereby accept the terms and conditions of the SeedMaster Warranty listed on page 12:

Signature Date

To ensure prompt and organized warranty service, fill out and please submit to: SeedMaster
#1 South Plains Road West, Emerald Park, SK S4L 1C6
E-MAIL: warranty@seedmaster.ca

CUSTOMER WARRANTY REGISTRATION COPY

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INTRODUCTION

Thank you for purchasing a new SeedMaster unit. This manual will assist you in becoming a safe and efficient operator. The crops you grow as a result of the proper use of the unit will be your reward for spending some time studying this manual.

If you encounter any problems, contact your dealer for clarification or correction. It is important to us and to you that all SeedMaster units maintain a solid reputation.

We are building our company's reputation not only on a quality product, but also on providing quality advice and fast response to service requirements. Our objective is to keep a high resale value on used units, so the positive image you pass on to your neighbors is as important to you as it is to us in the long term.

SAFETY

Please be SAFE! Carefully read and understand all safety alerts and warnings in this manual and all safety decals on the SeedMaster drill. Ensure that anyone who is going to use the SeedMaster drill reads and understands the Owner's Manual. We recommend that only mature and well-trained or experienced persons operate this product. We advise that periodic visual checks continue as a mandatory part of the implement operating procedure. Conduct regular maintenance checks on fasteners, hydraulic connections, etc. Always follow safety precautions. Serious INJURY or DEATH can result from improper operating practices

Safety notices are one of the primary ways to call attention to potential hazards.

This Safety Alert Symbol identifies important safety messages in this manual. When you see this symbol, carefully read the message that follows. Be alert to the possibility of personal injury or death.

- Read and understand the Operator's Manual and all safety signs before operation or maintenance.
- Do not allow riders on any part of the equipment.
- Install and properly secure all shields and guards before operating the seeder.
- Keep hands, feet, clothing, and hair away from moving and/or rotating parts.
- Beware of all power lines and other overhead obstructions. Know the transport height and width of your SeedMaster. Ensure that minimum safe working distances are maintained from any obstruction at all times.
- Before servicing, adjusting, repairing, refilling, or unplugging: stop the engine, remove the engine key, set the park brake, disengage the hydraulics and wait for all moving parts to stop.
- Ensure your seeder is properly marked as required by the local highway and transport authorities. Make sure the "Slow Moving Vehicle" sign, lights, and all reflectors are in place, clean, and visible to overtaking or oncoming traffic.
- Store a fully stocked first-aid kit in a visible, accessible place for use in case of an accident.
- Keep a fire extinguisher in an accessible location.
- Be sure that the area is clear of people before starting or moving your machine.
- Do not work around or under the raised wings, unless the wings are securely chained in the transport position.
- In the event that wheel and tire assemblies must be raised off the ground for maintenance, block the implement up securely.
- Use extreme caution when working around or with high-pressure hydraulic systems. Depressurize the system when connecting or disconnecting the hose couplers.
- Wear heavy gloves and eye protection when searching for suspected hydraulic leaks. If an injury occurs, seek immediate medical attention as infection and toxic reaction could develop. Use a piece of cardboard or wood (instead of hands) when searching for such leaks.

- Never wear baggy or frayed clothing, or hanging jewelry when working around or on any of the drive system components.
- When performing a product catch for meter calibration, keep hands and clothes well clear of rotating components. Be aware that when the hydraulics are activated, rotation may start unexpectedly at any time.
- We recommend that all maintenance and adjustments on the seeder be made when the implement wings are lowered.
- Store and transfer gasoline, solvents, cleaners, or any flammable liquids only in safety standard (i.e. CSA) approved containers.
- Clean and inspect all components in the hydraulic system on a regular basis.
- Replace all worn, cut, abraded, flattened, damaged, or crimped hoses and metal lines. Do not repair hydraulic components with tape, clamps, or cements. The system operates under extremely high pressure; such repairs will fail and create hazardous and unsafe conditions.
- Before applying pressure to the hydraulic system, make sure all connections are tight. Ensure lines, hoses, and couplings are not damaged.
- Ensure that the seeder is properly and safely connected to the tractor.
- Transport according to local regulations for width and height.
- Follow all road safety regulations for your state or province.
- Store the seeder on a firm, level surface.
- Store with wings down.
- Have a qualified tire dealer or service person perform tire maintenance. Failure to follow proper procedures when mounting a tire on a wheel or rim can cause an explosion that may result in serious injury or death.
- Keep safety decals and signs clean and legible at all times. Replace safety decals and signs that are missing or have become illegible.
- Ensure proper use of wing lock-up chains in transport.
- Always use hitch safety chain.
- Do not transport at high speeds on loose gravel behind a truck or a tractor.
- Do not transport with product in tanks.
- Ensure proper hook-up of safety lights.
- Maneuver machine to ensure castors are moving freely before going onto roads.
- Do not transport at speeds higher than that recommended on tires (25 mph or 40 kph).
- Check all transport wheel nuts after 100 miles and periodically thereafter. (See Chart below).
- Use proper tire inflation pressures (SEE TIRE TORQUE AND PSI SPECS, PAGE 13).

SEEDMASTER WARRANTY

This limited warranty supersedes all previous SeedMaster Manufacturing warranties and is exclusive with no other guaranties or warranties expressed or implied.

LIMITED Warranty – Subject to the terms and conditions below, SeedMaster Manufacturing Inc., Emerald Park Saskatchewan, warrants to its original retail purchaser that new SeedMaster equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITIES AND FITNESS.

Within the warranty periods listed below, SeedMaster will repair or replace any warranted parts or components that fail due to such defects in material or workmanship.

SeedMaster shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on first of April, or the first of September of the first seeding season, after the original manufacturing date.

1. 2 Years parts replacement

All opener parts except tires and knives All hydraulic components

All electrical components All fasteners

2. 2 Year parts and labor Frame structural components

3. 1 Year (maximum 10000 acres) parts replacement

Seed knife failure Fertilizer knife failure

4. Pumps, motors, fans, tires, frame spindles and hubs and metering components are warranted separately by other original manufacturers.

SeedMaster Limited Warranty shall not apply to:

1. Road or field hazard to tires
2. Knife wear
3. Hub over heating due to high transport speed or poor service maintenance
4. Damage due to under or over inflated tires
5. Damage due to transport at high speeds
6. Damage due to transporting with loaded product tanks
7. Packer or wing wheel hubs and bearings when stored with wings up thru rain or snow events
8. Packer hubs and bearings when twine is allowed to build up on hub
9. Equipment that has been modified by any party other than SeedMaster, or equipment that has been improperly installed, improperly operated or misused based on industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.
10. Items furnished by SeedMaster, but manufactured by others, such as fans, tires, motors. These items are covered by the manufacturer's warranty.
11. Damage due to improper hydraulic hook up
12. Damage due to pulling out of stuck position while product tanks are loaded

SEEDMASTER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY FARMERS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF SEEDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at SeedMaster's option: (1) repair; or (2) replacement; or, where authorized in writing by SeedMaster in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized SeedMaster Dealer. SeedMaster's option of repair or replacement will be F.O.B. SeedMaster at Emerald Park Saskatchewan or F.O.B. at a SeedMaster Authorized SeedMaster Dealer as determined by SeedMaster. Therefore, no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL SEEDMASTER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY SEEDMASTER IS EXCLUDED AND DISCLAIMED BY SEEDMASTER.

TIRE TORQUE AND PSI SPECS

TIRE SIZE	TORQUE REQUIREMENTS (FT. LBS.)	MAXIMUM PRESSURE RATING (PSI)
12.5L15 (8 PLY)	200	35
12.5L15 (12 PLY)	200	44
12.5L15 (Hwy)	200	90
18L26	350	35
380/65-16.5	200	72
750/65R26	450	35
800/65R32	450	35
15/55 - 17	200	90
Dual 710/70R38	750	23

CAMOPLAST TRACKS

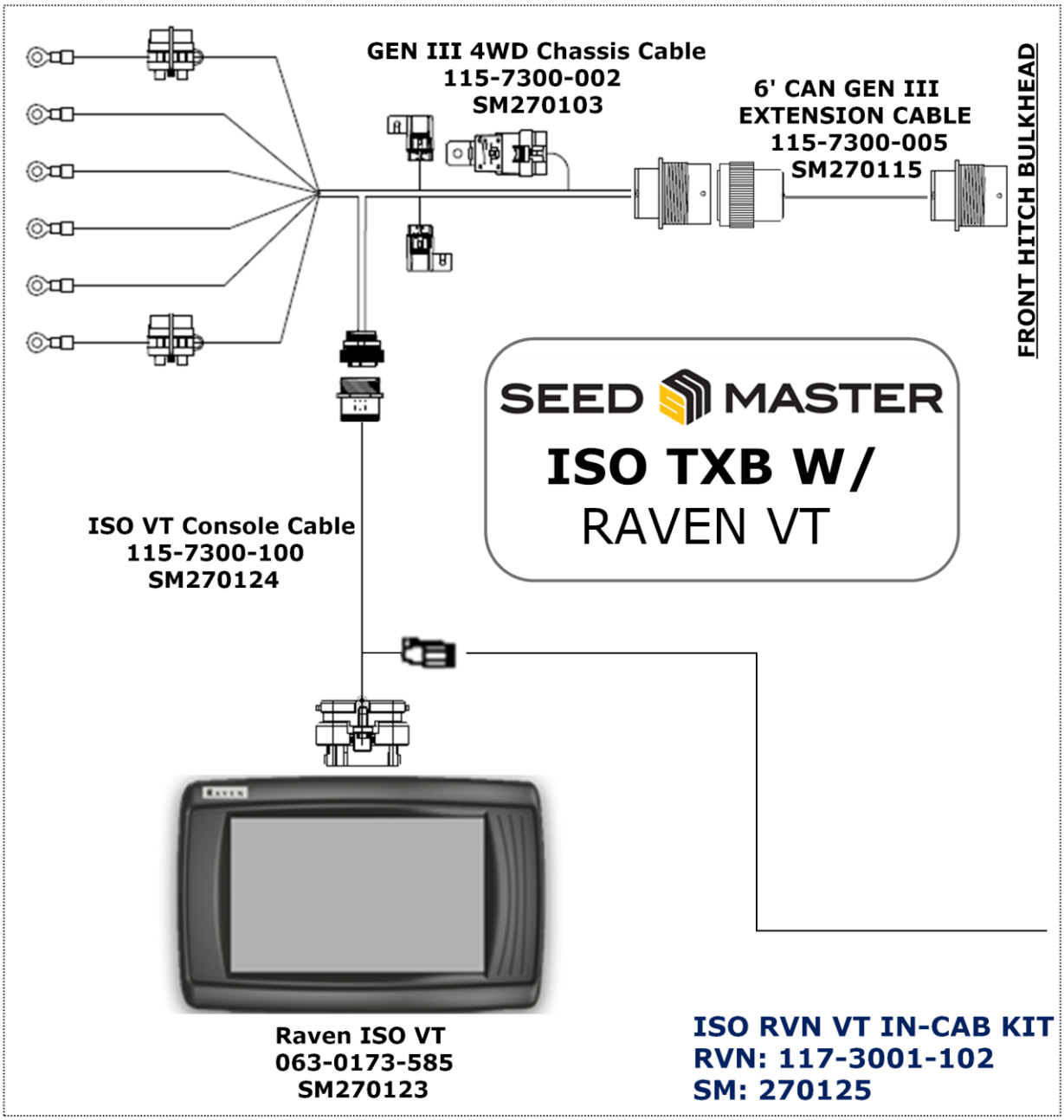
Camoplast tracks are optional for your SeedMaster Machine. Please visit the Camoplast web page to download the CPB-515 Operation and Maintenance Manual – TTS 45, 70, 80, 100 Series. OR click the link below:

CPB-515 Operation and Maintenance Manual:
https://techsupport.camso.co/uploads/publicdocs/CPB-515_Operation_and_Maintenance_Manual_(OMM)_-_TTS_45-70-80-100_Series.pdf

IN-CAB ELECTRICAL HOOKUP

RAVEN VT IN-CAB HOOK UP

The Raven VT In-Cab electrical hook up is only used on ISOBUS TXB ONLY machines. It will be used in the event that the tractor pulling the ISOBUS TXB is not equipped with a Virtual Terminal. If your tractor is equipped with a VT, please ignore this section.



TRACTOR HYDRAULIC HOOKUP'S

SEEDMASTER MACHINE HYDRAULIC HOSES

HOSE MARKING CONVENTION: Hose marking has been changed in the 2016 model year to simplify connection. Each hose pair has been assigned a unique colour. The hose with 1 colour band is pressure, and the hose with 2 colour bands is return.

OPENER RAISE/LOWER HOSES: Direct Opener Lift & Lower Lines - The two 1/2" hydraulic lines with red colour bands are the opener lift and lower lines. The hose with 1 red band is opener down pressure. The hose with 2 red bands and the manual valve attached is the hose that is pressurized to raise the openers. The manual valve is used to lock the openers up for long transport and to facilitate unhooking under lift pressure. Open the valve after hooking hydraulics to tractor. **NOTE**: *Tractor remote returns to neutral after raise / lower unless you are operating with Smart openers or Auto lift.*

SYSTEM PRESSURE HOSES: Green Tagged Lines - The two 1/2" hydraulic lines with the green colour bands are used to activate the block and raise and lower the wings. These lines are connected to one tractor remote. In the field operating position the remote for this set is locked-on to provide continuous pressure to the block via the line with 1 green band. Pressure should be set by using the tractor SCV flow control to adjust the pressure.

SEED AND FERT FAN HOSES ONFRAME: There may be one or two ¾" fan pairs. If you are running a SXX machine the single fan hoses will be tagged with 1x orange (pressure) and 2x orange (return). If you are running a SXG machine the seed fan hoses will be tagged with 1x orange (pressure) and 2x orange (return) and the fertilizer fan will be tagged with 1x purple (pressure) and 2x purple (return). **Ensure that you connect the right pair of hoses together on your tractor.**

CASE DRAIN HOSE: 2016 drill and tanks will be set up with **ONE** 1/2" case drain/return line (zero back pressure). This line has 1/2" NPT full open return coupler, through connections without any restriction or back pressure. Ensure this return line is routed to your tractor properly, without any possibility of back pressure. Improper connection may cause inaccuracies in operation and the possibility for severe damage.

HYDRAULIC CONNECTION REFERENCE CARDS

SeedMaster machines come in several different configurations. Please refer to your configuration below.

ToolBar (TXB ONLY) Hydraulic Hookup

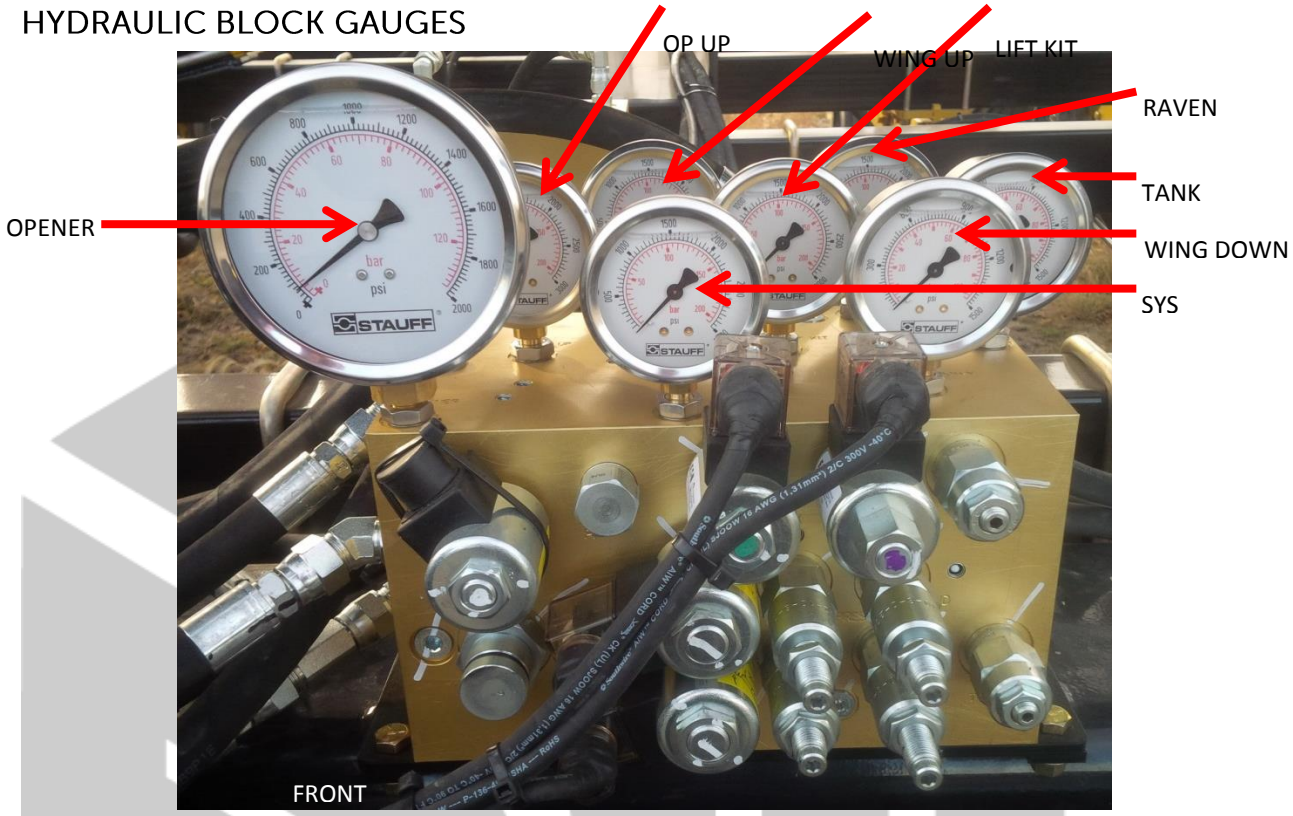
TRACTOR REMOTE	HOSE PAIR PRESSURE	RETURN	HYDRAULIC FUNCTION
SCV 1 SEEDMASTER	1 RED ½" Line	2 RED ½" Line	OPENER PRESSURE
SCV 2 SEEDMASTER	1 GREEN ½" Line	2 GREEN ½" Line	SYSTEM PRESSURE
SCV 3 UNUSED			
SCV 4 UNUSED			
SCV 5 UNUSED			
CASE DRAIN SEEDMASTER	½" CASE DRAIN LINE		

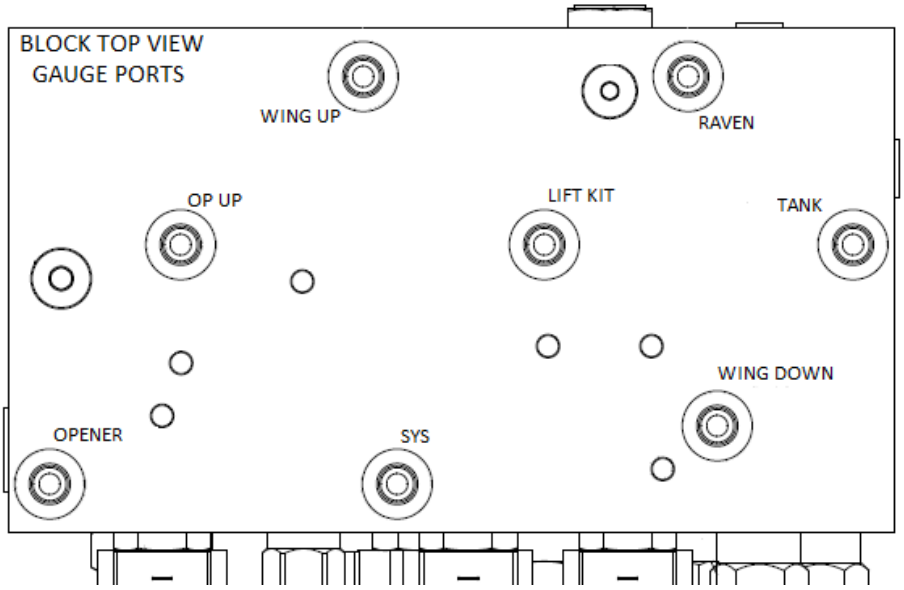
OnFrame SXG Only Hydraulic Hookup

TRACTOR REMOTE	HOSE PAIR PRESSURE	RETURN	HYDRAULIC FUNCTION
SCV 1 SEEDMASTER	1 RED ½" Line	2 RED ½" Line	OPENER PRESSURE
SCV 2 SEEDMASTER	1 GREEN ½" Line	2 GREEN ½" Line	SYSTEM PRESSURE
SCV 3 SEEDMASTER	1 ORANGE ¾" LINE	2 ORANGE ¾" LINE	SEED FAN ONFRAME
SCV 4 SEEDMASTER	1 PURPLE ¾" LINE	2 PURPLE ¾" LINE	FERT FAN ONFRAME
SCV 5 UNUSED			
CASE DRAIN SEEDMASTER	½" CASE DRAIN LINE		

MAIN HYDRAULIC BLOCK DETAILS

HYDRAULIC BLOCK GAUGES

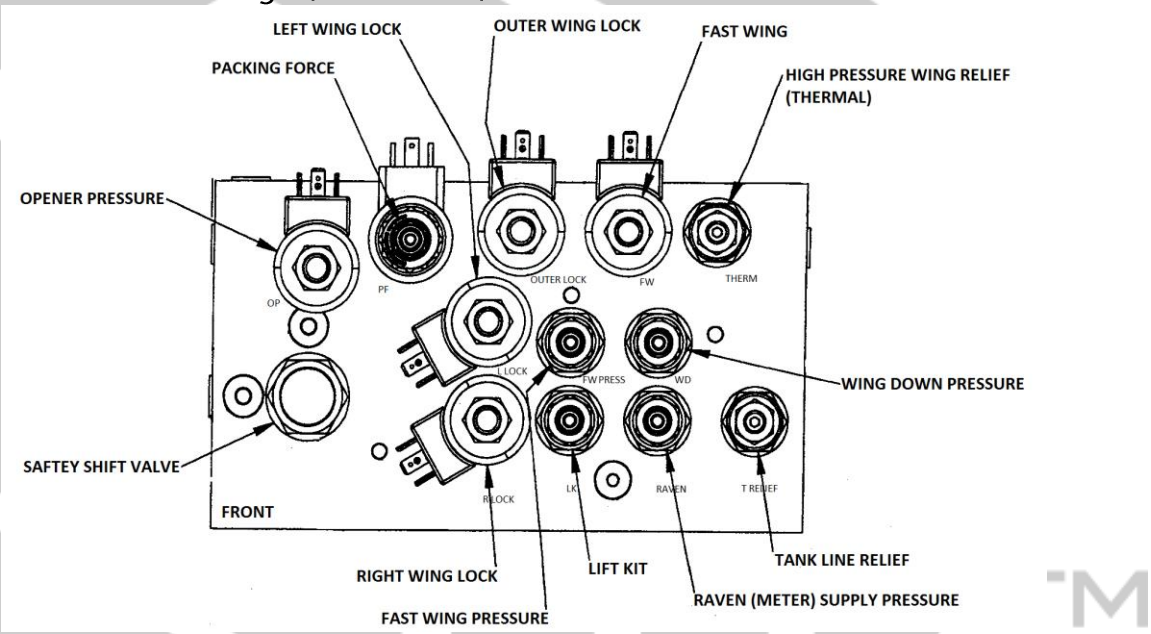




MAIN BLOCK GAUGES

OPENER: The OPENER gauge reads the amount of down pressure being applied to the Openers when they are down. 700-1300 psi; adjusted with in-cab switch; shanks must be pressured down to set. (900 psi is adequate for most fields).
OP UP: The OP UP gauge reads the amount of up pressure being applied to the Openers when they are lifted.
WING UP: The WING UP gauge reads the amount of pressure applied and required for lifting and should read 0 psi until folding up.
LIFT KIT: The LIFT KIT gauge reads the amount of pressure being applied to the lift kit cylinder during field operation.
RAVEN: The RAVEN gauge reads the amount of pressure being supplied to the hydraulic metering motors.
TANK: The TANK gauge reads the amount of pressure being returned to tank
WING DOWN: The WING DOWN gauge reads the amount psi being applied to the wings while they are down and in field operation.
SYS: The SYS gauge reads the amount of system pressure being applied to the system. System Pressure is the main pressure supply for the WING UP/DN, OPENER, LIFT KIT, RAVEN (METERING) circuits. 2500-3000 psi; indicates tractor working pressure to block.

Hydraulic Block Cartridges, Solenoids, and PWMs



MAIN BLOCK CARTRIDGES AND SOLENOIDS

OPENER PRESSURE SOLENOID: This is the main on/off solenoid for opener down pressure it activates opener down top up pressure while seeding; activate with opener UP/DN switch in cab. This solenoid is not applicable when SmartOpeners is present.
PACKING FORCE: This is a PWM valve to control the amount of pressure supplied to the opener down pressure.
LEFT WING LOCK: This on/off solenoid turns the oil flow on/off to the left wing cylinders.
RIGHT WING LOCK: This on/off solenoid turns the oil flow on/off to the right wing cylinders.
OUTER WING LOCK: This on/off solenoid turns the oil flow on/off to the outer wing cylinders.
FAST WING: This on/off solenoid turns the oil flow on/off to the inner wing cylinders.
HIGH PRESSURE WING RELIEF (THERMAL): High tank pressure cut off cartridge is preset set at **2500 PSI**
TANK LINE RELIEF: The tank line relief cartridge is preset at 450PSI. If the cartridge exceeds 450 PSI it will relieve to the atmosphere.
WINGDOWN PRESSURE: 180PSI (NOTE: PRESSURE SETTING MAY VARY TO SPECIFIC TRACTOR AND DRILL COMBINATION)

★Wing down pressure may need to be increased if the wings start to float and not contour correctly while in the seeding position.
★Wing down pressure may need to be decreased if the wings become too ridged while in the seeding position.
RAVEN (METER) SUPPLY PRESSURE: 2000 PSI
LIFT KIT: 500 PSI
FAST WING PRESSURE: 1500PSI
SAFETY SHIFT VALVE: The safety shift valve will shut the hydraulic flow off to the block, if back pressure reaches 80 PSI on tank line.

PRESSURE SETTING PROCEDURES

Setting Lift Kit Procedure (LIFT KIT)

The Lift Kit redistributes weight on the drill to lighten the front end, by transferring weight forward, off of the caster wheels, increasing floatation. It reduces stress on the hitch and frame when seeding in wet conditions. The oil supply for **the lift kit** is supplied from the system pressure.

- To adjust the Lift Kit pressures, loosen the jam nut on cartridge in port **LK** on the main block. Turn the cartridge in to increase the pressure and back out to decrease the pressure. When the desired pressure is set, tighten the jam nut back up

Setting WingDown Procedure (WINGDOWN PRESSURE)

The WingDown pressure is the amount of hydraulic pressure being applied to the inner and outer wing circuits; the oil supply for wing down is supplied from the system pressure. The WingDown Pressure is required so the wings will contour while travelling through the field.

- To adjust the **WINGDOWN PRESSURE**, loosen the jam nut on cartridge in port **WD** on the main block. Turn the cartridge in to increase the pressure and back out to decrease the pressure. When the desired pressure is set, tighten the jam nut back up.

Setting Wing Unfold Procedure (FAST WING PRESSURE)

The wing unfold pressure is the amount of hydraulic pressure being applied to the inner and outer wing circuits while the tool bar is unfolding. This is also known as the Fast Wing Pressure. If the wings are not unfolding the pressure will need to be increased. The oil supply for unfold pressure is supplied from the system pressure.

- To adjust the **FAST WING PRESSURE**, loosen the jam nut on cartridge in port **FW PRESS** on the main block. Turn the cartridge in to increase the pressure and back out to decrease the pressure. When the desired pressure is set, tighten the jam nut back up.

Active Wing Brace Procedure

The Active Wing Brace supports the wing sections of the frame. While in the field, a hydraulic cylinder pulls the rear of the wing section forward. This counteracts the draft while seeding. The hydraulic pressure comes from the opener cylinder hydraulic circuit. The higher the pressure is set to the active wing brace circuit, the more it will pull the rear wing forward. When the packing pressure is increased, so is the amount of pull on the brace.

- **Adjusting the wing brace cylinder**: Start by unfolding the SM drill and activating the system pressure. Next pressure the openers down with the opener pressure switch and adjust the shank down hydraulic pressure to 1000psi, activating the active wing braces. After the system has been completely pressurized, remove the constant pressure from the drill by returning the remote of the tractor to neutral. At this time you will require a tape measure to be able to measure the cylinder rod length of the active wing brace cylinder. Measure the cylinder from the cap face to the rod clevis, when you have the measurement (Subtract ¼") to allow a ¼" of cylinder stroke for tensioning the wing brace. With this measurement please adjust the length to the active wing brace, using the threaded link.

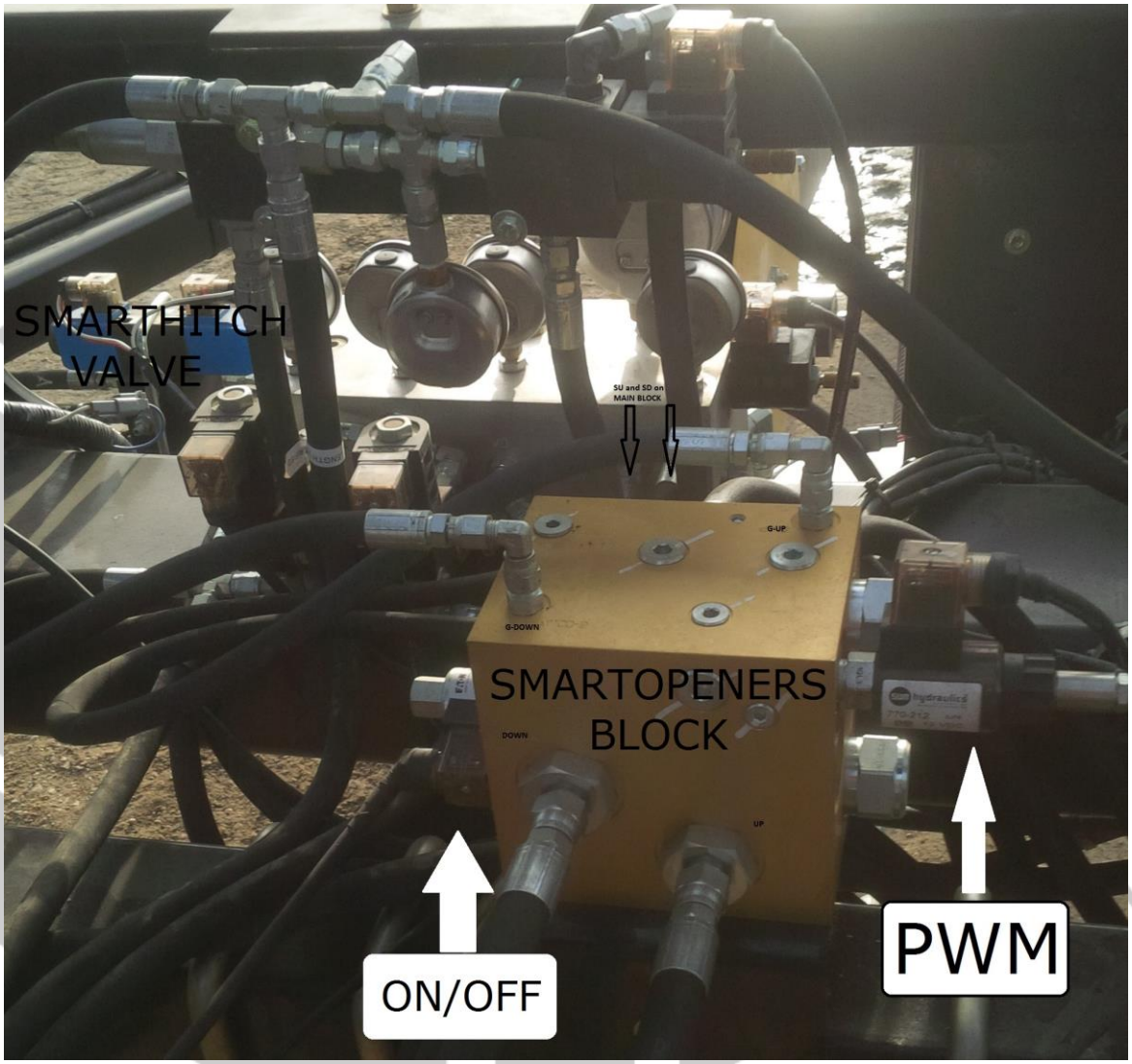
Meter Drive Pressure Setting Procedure (RAVEN (METER) SUPPLY PRESSURE)

The Meter Drive Pressure is the amount of hydraulic pressure allowed to the hydraulic metering drives. The torque to the metering drives increases as the pressure increases. Do not exceed 2200 psi. The oil supply **for RAVEN (METER) SUPPLY PRESSURE** is supplied from the system pressure.

- To adjust the **RAVEN (METER) SUPPLY PRESSURE**, loosen the jam nut on cartridge in port **RAVEN** on the main block. Turn the cartridge in to increase the pressure and back out to decrease the pressure. When the desired pressure is set, tighten the jam nut back up.

SMARTOPENERS HYDRAULIC BLOCK DETAILS

SMARTOPENERS HYDRAULIC BLOCK



If your SeedMaster machine is equipped with a SmartOpeners Block, then your Opener raise and lower functions are controlled VIA the SmartOpeners Block. The Openers PWM valve for controlling the amount of pressure going to the openers is located on the SmartOpeners Block along with the Master ON/OFF solenoid and coil for turning the circuit on and off. The SmartOpeners block is located on the first rank behind the Main Block. With the SmartOpeners block you will leave your tractor's opener hydraulic remote engaged at all times. Recommended flow for this remote is 75% and greater. This is an optional feature for your SeedMaster machine, if it is not equipped with a Smart Openers Block, please contact your SeedMaster dealer for details about upgrading your machine to SMARTOPENERS

TOOLBAR OPENERS OPERATION PROCEDURES

It will need to be determined what your machine setup is before choosing the correct operation for lifting and lowering the openers while making a turn in the field. There are three different options available.

1. **Standard Opener Operation** – Lift/Lower the openers with the tractors remote and the foot switch or remote master switch.

2. **SmartOpener Operation** – Lift/Lower the openers with the foot switch or remote master switch.

STANDARD OPENER OPERATION

LOWER, LIFTING, THEN LOWERING THE OPENERS
LOWER:

1. LOWER OPENERS WITH OPENER LIFT/LOWER TRACTOR REMOTE
2. OPENER LIFT/LOWER TRACTOR HYDRAULIC REMOTE MUST BE "RETURNED TO NEUTRAL" AFTER THE OPENERS HAVE LOWERED. APPROX 10 SECONDS.

LIFT:

3. AFTER THE TOOLBAR IS COMPLETEY OVERLAPPED INTO AN APPLIED AREA
4. SHUT THE MASTER FOOT SWITCH OFF
5. LIFT THE OPENERS WITH OPENER LIFT/LOWER TRACTOR REMOTE (REVERSE THE REMOTE)
6. COMPLETE THE TURN

LOWER:

7. CYCLE MASTER FOOT SWITCH FROM OFF TO ON AND LEAVE THE MASTER SWITCH "ON"
8. LOWER THE OPENERS WITH THE LIFT/LOWER TRACTOR REMOTE
9. WHEN THE OPENERS START PRESSURING UP, RETURN THE OPENER LIFT/LOWER TRACTOR REMOTE TO THE NEUTRAL POSITION

SMARTOPENER OPERATION

LOWER, LIFTING, THEN LOWERING THE OPENERS
LOWER:

1. LOCK ON REMOTE TO SUPPLY OPENERS WITH HYDRAULIC PRESSURE
2. CYCLE MASTER FOOT SWITCH FROM OFF TO ON AND LEAVE THE MASTER SWITCH "ON" OPENERS WILL LOWER.

LIFT:

3. AFTER THE TOOLBAR IS COMPLETEY OVERLAPPED INTO AN APPLIED AREA
4. SHUT THE MASTER FOOT SWITCH OFF, OPENERS WILL LIFT
5. COMPLETE THE TURN

LOWER

6. CYCLE MASTER FOOT SWITCH FROM OFF TO ON AND LEAVE THE MASTER SWITCH "ON" OPENERS WILL LOWER.

OPENER DETAILS

DEPTH

The opener is preset for seed and fertilizer depth. The seed depth is factory set at 3/4" below the packed surface and the fertilizer depth is factory set approximately 3/4" below and 1 ½" to the side of the seed.

It is rare that crop or field conditions warrant a change from these pre-set depths for cereals and oilseeds. We recommend initial seeding at the pre-set depth. The notches on the hub plate correspond to 1/4" changes in depth, with the inverted notch being the factory pre-set depth of 3/4". To change depth, simply loosen the nut on the slotted portion of the hub plate and rotate packer tire upwards to seed deeper or downwards to seed shallower.

Semi-pneumatic packer tires are a standard feature on all SeedMaster drills. There is no internal air pressure that needs to be checked.

The resulting dent the packer wheel leaves behind is dependent on soil type and soil hardness. The variation in dent depth does not affect the crop, since the seed depth is always monitored from the packed surface.

*Avoid temptation to harrow after seeding, as harrowing will reduce the uniformity of crop emergence and reduce yield potential. The dent left by the packer wheel and the loose soil tossed to the side as the openers move through the soil may appear rough at first glance, but you will find the residue and soil settles over time leaving just the ripple of the packer wheel. This dent provides several agronomic benefits.

Warning: Avoid turning your drill very short. The opener is designed to seed primarily in straight lines. A sharp turn will cause the openers to be dragged sideways, resulting in an improper seeding job and undue stress on the openers. Never turn so short that the inside openers move straight sideways or backwards.

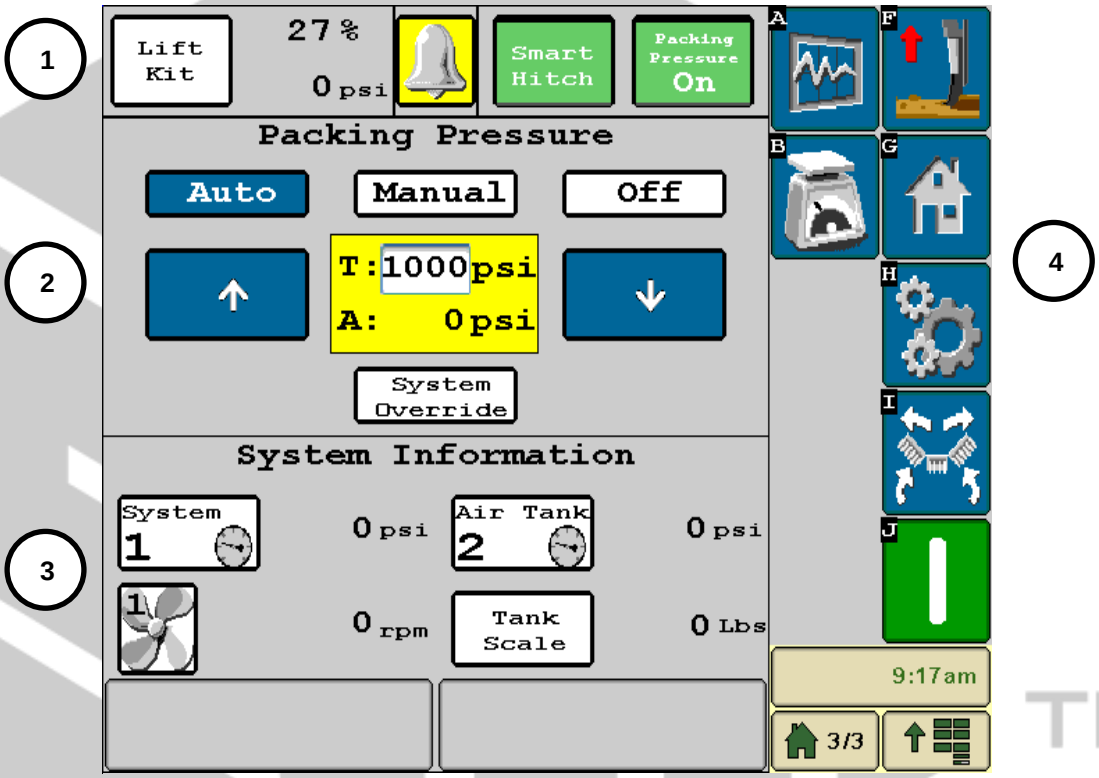
Warning: Always store drill for extended periods of time in the unfolded wing position. This is to avoid water getting into the packer tire and wing wheel bearings. This is very important for winter storage.

ISOBUS TOOLBAR FUNCTIONS

HOME SCREEN LAYOUT

The Drill ECU will monitor and control your SeedMaster ToolBar via the installed Virtual Terminal. To access the ISO ToolBar Functions, touch the ISOBUS TXB soft key on your VT display. See your VT's operator's manual for more information on locating VT soft keys.

TXB SOFT KEY



1.) **Status Area:** This area will show the current status of different components of the machine including the Lift Kit, System Alarms, Smart Hitch, and Packing Pressure.

2.) **Packing Pressure Area:** This area will allow you to toggle the packing pressure from **OFF** to **Manual** or **Auto**. The Packing pressure can also be quickly changed by using the UP arrow to increase and DOWN arrow to decrease or set to a predetermined pressure. The System Override will dump the opener pressure. This target override pressure and override time can be adjusted in the settings page. See page 4 for more info.

3.) **System Information Area:** This area will allow for a quick view of different pressures, weights, and RPM sensors installed on your SeedMaster machine.

4.) **Soft Key Area:** Touch soft keys to access different settings and functions.

ISO TXB QUICK START PROCEDURE

Before you go to the field please review the steps below to ensure your ISO ToolBar is field ready.

Step 1, Turn safety switch ON: Before turning the safety switch on please ensure the toolbar is free of any persons, animals, or objects that could damage your equipment. Touch the RED safety switch in the Soft Key Area. The Safety Switch will turn green indicating that the system is ready.


Step 2, Engage System Pressure: Engage the tractors hydraulic remote for system pressure. The System Pressure will display in the System Information Area. *NOTE: System Pressure operates with a pressure greater than 2600PSI and less than 3000PSI.*

Step 3, Unfold Drill: Start unfolding the drill by touching the Drill Unfold Soft Key.
BEFORE UNFOLDING MAKE SURE THE WINGS ARE FREE AND CLEAR OF ANY OBJECTS THAT COULD CAUSE HARM TO YOU OR ANYONE ELSE.
Start by unfolding the Inner Wings first then the Outer Wings. NOTE: The buttons need to be held down during the unfold process.

Step 4, Set Packing Pressure: Ensure that the packing pressure is set to your desired mode. Recommended mode is AUTO but field conditions may require Manual mode. After setting the mode to Auto the desired packing pressure must be set.
If using a **PFS MODE**, it will be set in LBS. The recommend starting point for the PFS is 150 LBS.
If using **Hydraulic MODE**, it will be set in PSI. The recommended starting point for the Hydraulic Mode is 1000 PSI
NOTE: PACKING PRESSURE NEEDS TO CHANGE WITH FIELD CONDITIONS

Step 5, Engage Opener Pressure: Engage the tractors hydraulic remote for Opener Pressure.

Step 6, Test Openers Function UP/DWN: You will need to note your what your master switch configuration is. The machine comes from factory with a foot switch so the system is set on foot switch.
BEFORE ENGAGING THE OPENERS MAKE SURE THE OPENERS ARE FREE AND CLEAR OF ANY OBJECTS THAT COULD CAUSE HARM TO YOU OR ANYONE ELSE. NOTE: THESE ARE INSTRUCTIONS FOR MACHINES EQUIPPED WITH SMARTOPENERS.
Begin by engaging the Master Switch, IE. Stepping on the foot pedal. After engaging the master, the openers will go to the ground and start building pressure. You will see the Packing Pressure Icon turn green and say on. To lift the openers, step on the foot switch to disengage the packing pressure.

NOTE: if the openers are not going up and down your hydraulic pressure on the tractors remote could be reversed or a hose could have popped out of the tractors remote.

Step 7, Review Lift Kit Mode: For SM16 the Lift Kit will only display the pressure in the cab in the Lift Kit area. The Lift Kit Mode will be run in the **MANUAL** Mode. There will be a PWM upgrade available later in 2016. This will give control of the Lift Kit Pressure from the cab of the tractor.

UNFOLD OPERATION & WING LOCKS

Touch the Fold button soft key located in the soft key area to access the Unfold Operation & Wing Locks. The machines system pressure will need to be engaged before the unfold process can begin. The live system pressure can be viewed in the System Information Area on the Home Page. System pressure must be 2600 psi or greater to unfold.

Wing Unfold Buttons

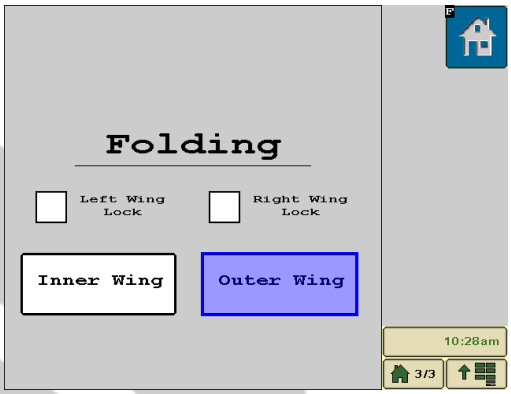
Begin by unfolding the **INNER** Wings first. It is important to unfold the **INNER** wings first as you can damage the **OUTER** wings by unfolding them into each other if the **INNER** wings are not completely unfolded.

- **Touch and hold the INNER Wing Fold button to unfold the INNER wings.**

After the **INNER** wings are completely unfolded then the **OUTER** wings can be unfolded.

- **Touch and hold the OUTER Wing Fold button to unfold the OUTER wings.**

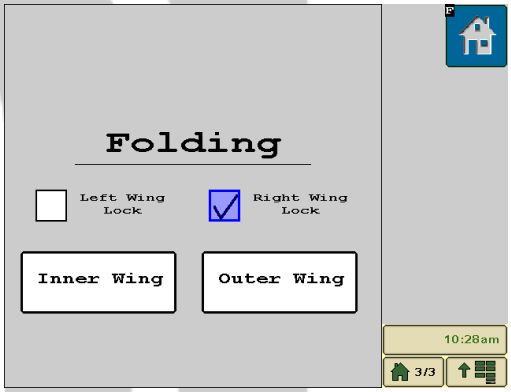
Once the wings are unfolded touch the home button and then touch yes to acknowledge that you are leaving the page to return to the Home screen.



Wing Lock Buttons

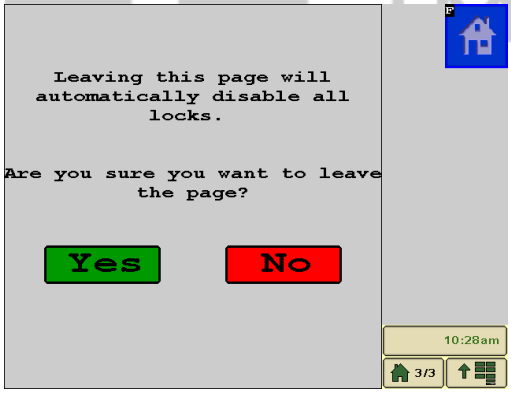
Left Wing Lock Check Box: When the wings are unfolding or folding up, use the check box to lock the left wing into its current position. Uncheck the check box to unlock the wing.

Right Wing Lock Check Box: When the wings are unfolding or folding up, use the check box to lock the right wing into its current position. Uncheck the check box to unlock the wing.



Unfold Operation and Wing Lock Safety Page

After touching the Home soft key, a safety page will be displayed. You must acknowledge the fact that you will be leaving the page and the wing locks will be disabled. Before touching "YES", make sure the machine is free and clear of any persons, animals, or objects. After touching yes, you will return to the home page and wing locks are disabled. If you are not ready to disable the wing locks, simply touch the "NO" button and the wing locks will stay enabled.



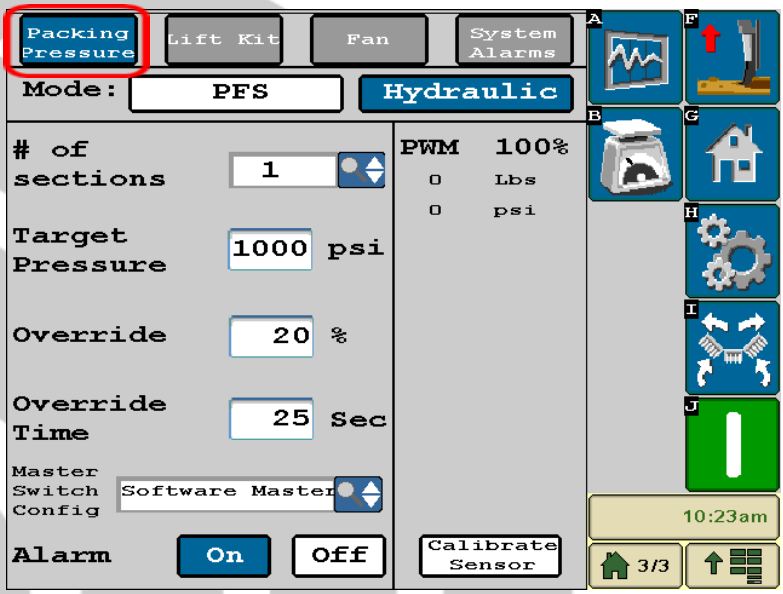
PACKING PRESSURE SETUP & OPERATION

Packing Pressure keeps the openers engaged in the ground while seeding. The "Packing Pressure ON/OFF" icon in the top right corner indicates whether Packing Pressure is engaged or disengaged. The Icon will be green if the packing pressure is ON. The Icon will be red when it's off.

NOTE: The Icon can be red and reads ON. If the Icon is red and reads ON this means the safety switch needs to be toggled to on.

Packing Pressure Setup

To access the packing pressure setup page, touch the Settings Soft key found in the soft key area, then touch the Packing Pressure tab in the top left corner.



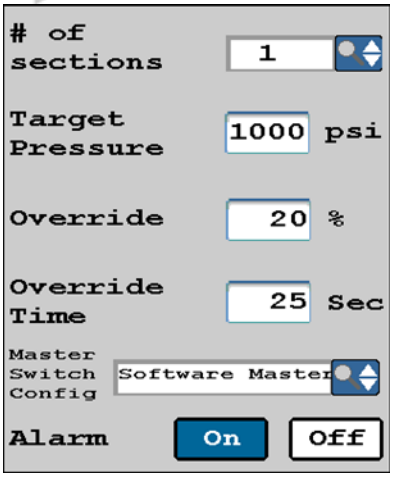
Mode Area – There are two packing pressure options from which to choose. Touch the corresponding option that is equipped on your machine.

Hydraulic Pressure: If there is a hydraulic pressure transducer installed on the main block on the tool bar, you will choose this option. This transducer is plumbed into the opener down circuit to display the toolbar packing pressure.

PFS: Auto Adjust Packing Force Sensor. If there is a PFS installed on one of the openers, you will choose this option. The PFS will be installed on an outside opener located on the main frame of the tool bar. The PFS will determine how much packing force is on the opener.

Settings Area – This area consists of the number of packing sections, opener target pressure, override percentage, override time, Master Switch Configuration, and Packing Pressure Alarm On/Off.

# of Sections: All SM16 machine are equipped with 1 packing pressure section. Multiple packing pressure sections is for future use. Please set this to 1.

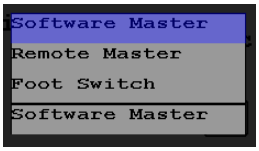


Target Pressure setting: If the machine mode is set to Hydraulic packing pressure, the target pressure will be the desired amount of packing pressure in PSI of down force to the openers. For example, if the desired amount of packing pressure is 1200PSI, touch the white box to the right of Target Pressure and enter 1200. If the machine is equipped with a PFS and the mode is set to PFS, the target pressure will be the desired amount of down force to the openers. For example, if the desired amount of pounds is 150LBS then enter 150.

Pressure Override % setting: This setting will reduce the amount of packing pressure to the openers by a percentage of the set target pressure. Use the System Override button to turn the override function on/off/reset the override time. Use a lower percentage value to reduce the pressure significantly. For example, if the Target Pressure is set at 150LBS, the Override % is set at 10%, and the system override is tripped, it will drop the Target Pressure to 15LBS. To set the Pressure Override %, enter the percentage in the white box to the right of Override.

Pressure Override Time: This setting sets the amount of time that the system will override the packing pressure setting. Enter the desired amount of time in seconds in the white box to the right of Override Time.

Master Switch Configuration: Packing pressure can be enabled by three different methods: Software Master, Remote Master, or Foot Switch. Touch in the white box to choose the method of choice.



Software Master: This setting uses the Soft Key on the Home Page. Simply touch the soft key to enable or disable the packing pressure.

Remote Master: The Packing Pressure can be enabled or disabled by a third party +12v signal. The "Implement Height Connection" found on the ToolBar is used for this function. Pin C or the Black/White wire is the signal wire. This is also a power and ground wire supplied if the use of a relay is needed.

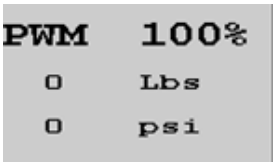
Foot Switch: Your SeedMaster machine comes standard with a Foot Switch to enable and disable the packing pressure. This is the factory default setting. Press the foot switch to enable/disable the packing pressure.

Alarm: If alarm is "On" and the packing pressure is off-rate by 20% for more than 45 seconds, then an Off Rate alarm will be triggered.

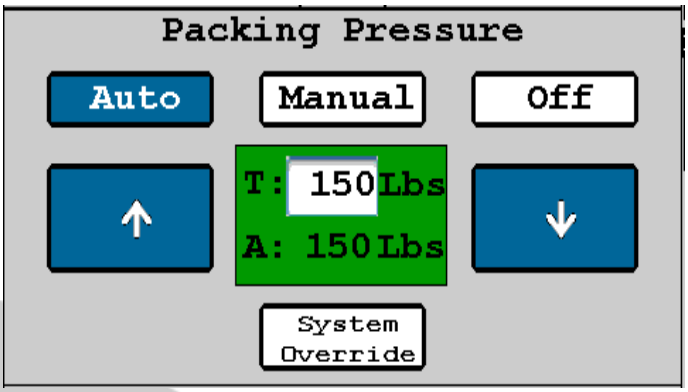
Calibrate Sensor Button: With the openers raised and the hydraulic remotes disengaged, press the "Calibrate Sensor" button to zero out either the hydraulic pressure transducer or the PFS.

Actual Reading: This reading will display the hydraulic pressure transducer's actual PSI reading and how many pounds of force are on the PFS on the opener. It also displays the current PWM percentage.

PWM Reading: This reading will display the current position in percentage of the PWM valve.



Packing Pressure Operation on Home Page: Touch the Home soft key to return to the home page to have access to the Packing Pressure operation settings.



Off/Manual/Auto settings: The system is equipped with a PWM valve for controlling the hydraulic pressure to the openers when they are in the down position.

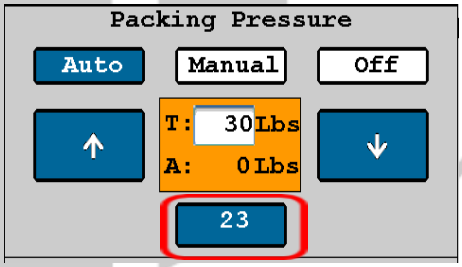
OFF: When the "Off" button is selected, the PWM will not control the packing pressure.

MANUAL: When "Manual" is selected, this puts the packing pressure into manual mode. Use the up and down arrows to increase or decrease the amount of down pressure to the openers.

AUTO: When the button is in the "Auto" position, this puts the packing pressure into an automatic mode. In automatic mode, the system will automatically adjust the packing pressure to keep it at the desired "Target Pressure". When slowing down, speeding up, or changing ground conditions, the system will read the amount of pressure on the openers and adjust up or down as required. This is the recommended setting.

Target and Actual Packing Pressure: The Target Pressure and Actual Pressure are displayed in the middle of the Packing Pressure area. **T: 150 LBS** indicates that the Target pressure is 150LBS. Touch in the white area to easily change the target on the fly. **A: 150 Lbs**. indicates that the Actual Packing Pressure is 150LBS.

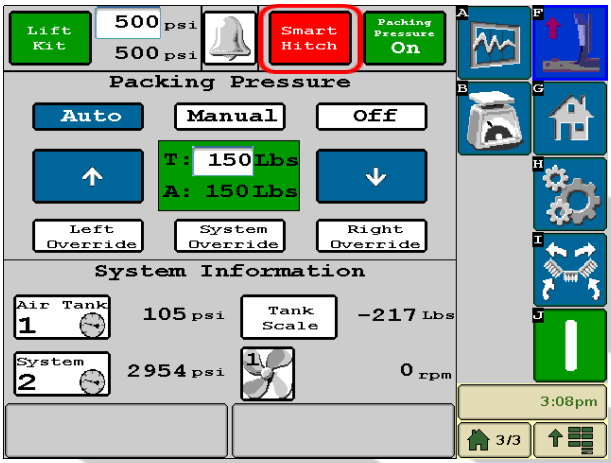
System Override: Touch the System Override button to reduce the amount of packing pressure to the openers by a percentage of the set target pressure. The System Override button will override the packing pressure for the set amount of time (set in the settings page). A timer will be displayed to show the remaining override time. To reset the time simply touch the System Override button again and it will start the timer from the top of the set amount of time.



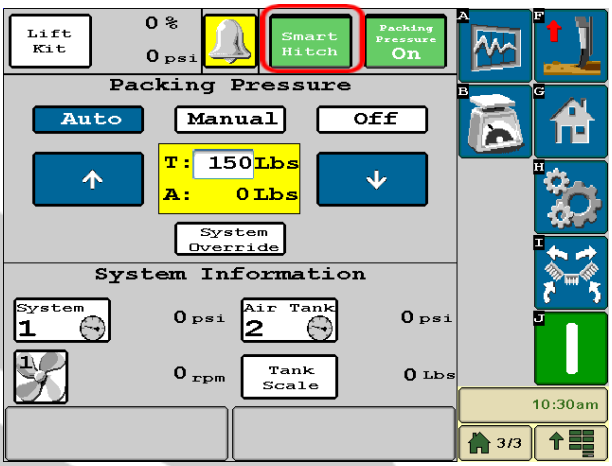
You can also touch the System Override Soft Key in the top right hand corner of the page. Touching this soft key will initiate the System Override. Touching this icon again will cancel the timer and normal packing pressure will resume.

SMARTHITCH OPERATION

The SmartHitch button simply turns the SmartHitch ON or OFF. Touch the SmartHitch Button to turn the SmartHitch ON, when the SmartHitch is ON the button is GREEN. Touch the SmartHitch Button to turn the SmartHitch OFF, when the SmartHitch is OFF the button is RED.



SMARTHITCH OFF



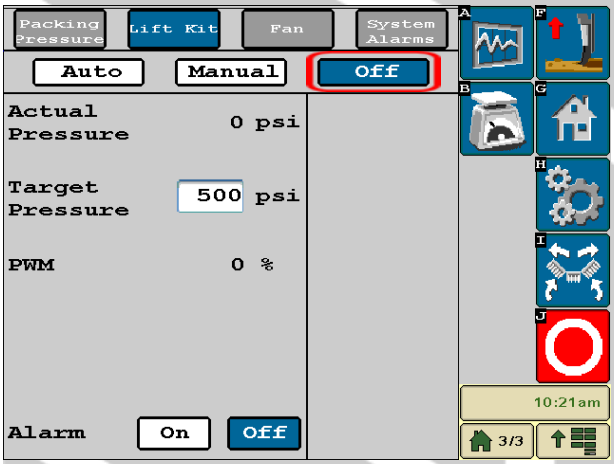
SMARTHITCH ON

LIFT KIT OPERATION

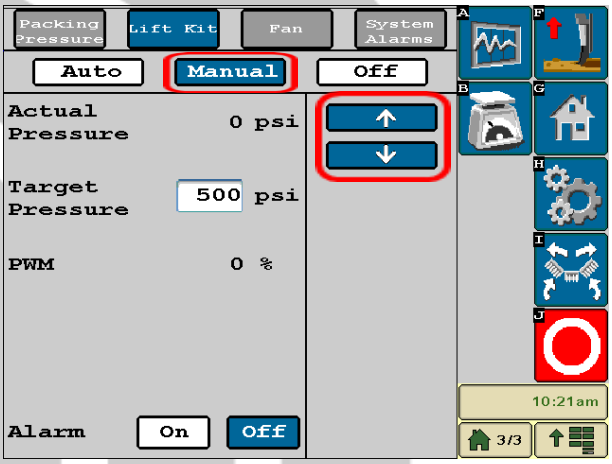
Your SM16 SeedMaster ToolBar comes standard with a hydraulic pressure transducer enabling in-cab viewing of the Lift Kit hydraulic pressure. The Lift Kit pressure can manually be changed by adjusting the hydraulic cartridge found on the main hydraulic block. See Main Hydraulic Block Section for further details. An optional PWM valve can be installed into the Main Hydraulic Block to allow for automatic and manual control of the Lift Kit's hydraulic pressure from the comfort of the cab. Please contact SeedMaster for pricing and availability.

Touch the Lift Kit soft key to access the Lift Kit Settings. The Lift Kit soft key will change color to display its current state. White is DISABLED or MANUAL, Yellow is OFF RATE and Green is ENABLED and on target.

NOTE: When a PWM VALVE is NOT installed the Lift Kit operation will be ran in manual mode. The system will ONLY display the Lift Kit pressure in the cab.



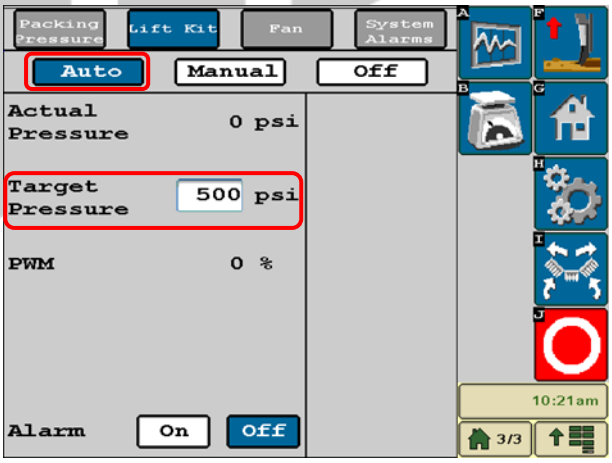
OFF MODE



MANUAL MODE

LIT KIT MODES

1. OFF MODE: When set on OFF mode, the lift kit functions are disabled.
2. MANUAL MODE: When set on MANUAL mode, the lift kit will display the Lift Kit's pressure and is adjusted manually from cab by touching the up or down arrow.
3. AUTO MODE: When set on AUTO mode, the Lift Kit pressure will be adjusted automatically to the users set target pressure. Enter the psi value into the Target Pressure area. Auto mode also features an alarm. If the actual pressure is not on target an alarm will sound.



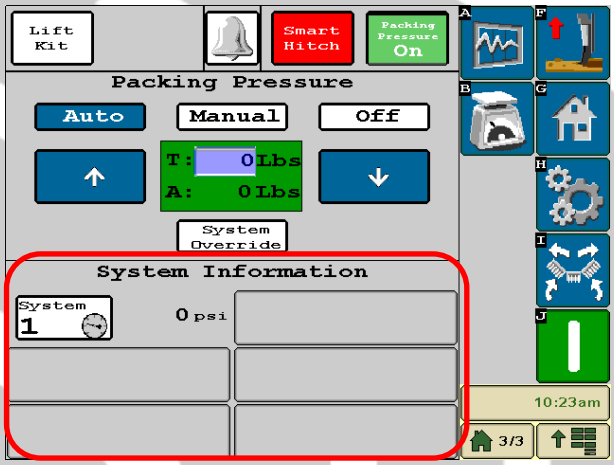
AUTOMATIC MODE

SYSTEM INFORMATION HOME PAGE SETUP

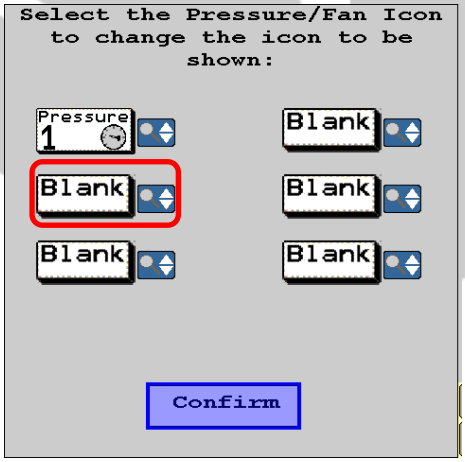
The System Information area on the home page will display up to six different hydraulic or air pressures, Fan RPM's and one Tank Weight icon. The system comes standard with a hydraulic transducer installed in line of the System Pressure. The System Pressure is easily viewed in the System Information Area.

The System Information area layout is customizable to suit your viewing needs. Follow the steps below to add an icon to the System Information area. Please note that your SeedMaster machine will need to be equipped with the corresponding sensor in order to monitor the pressure, RPM or weight.

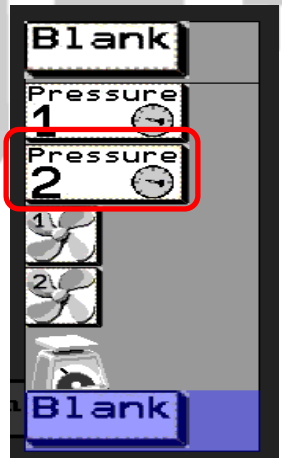
1. **Adding an icon**: Touch in any one of the six icon spots to add an icon. A new page will be displayed showing the icon layout.



2. Choose the icon to change the icon to be shown. After selecting the icon, a drop down list of available icons will be shown. Choose the icon that is being added to the System Information area.



CHOOSE ICON



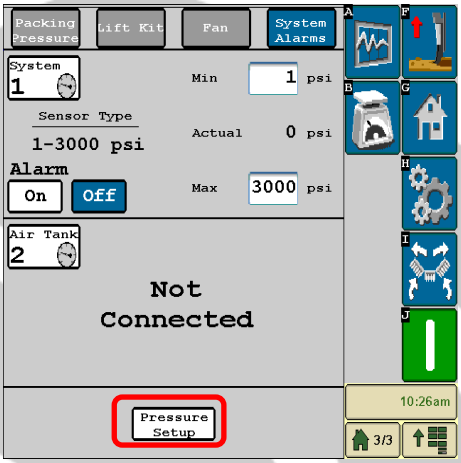
DROP DOWN LIST

3. The selected icon would now be displayed in the top right icon spot. Touch Confirm to save the changes.
   Note: If a pressure icon is selected continue to step 5. If Fan Icon was selected, then go to the settings page then choose the FAN tab, see page 33. If the scale icon is selected, no further setup is required.

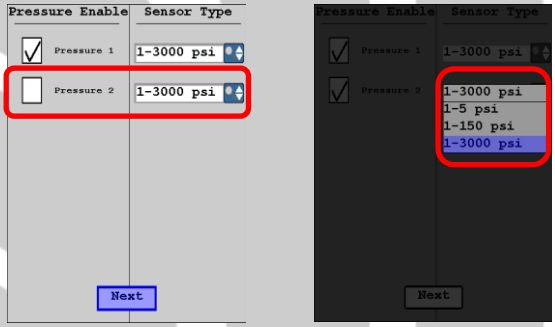
4. After adding a pressure icon to the System Information area the transducer will need to be enabled in the settings page under System Alarms. Touch the Settings Soft Key on the right portion of the screen.

5. After Selecting the settings icon touch the **System Alarms** tab.

6. Once the system alarms page is displayed. Touch the Pressure Setup button on the bottom of the screen.

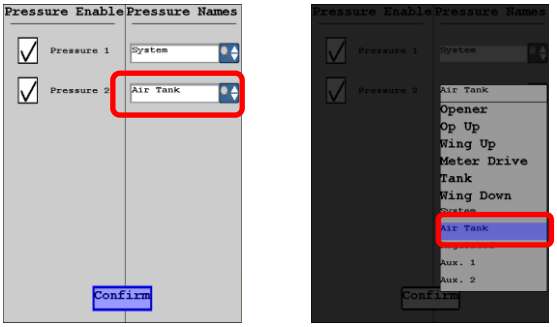


7. Place a check mark to the right of Pressure 2 then select the type of senor that is installed on the machine. Then touch Next.



NOTE: for an Air Sensor choose 1-150 & for a Hydraulic sensor choose 1-3000.

8. After touching Next, you will need to select what text will be displayed on the icon. **Touch** the drop down list to the right of pressure. A list of display items will be display, choose the text that represents the type of sensor installed. Then **touch** confirm to save the settings. Continue to next page to setup the System Alarms.

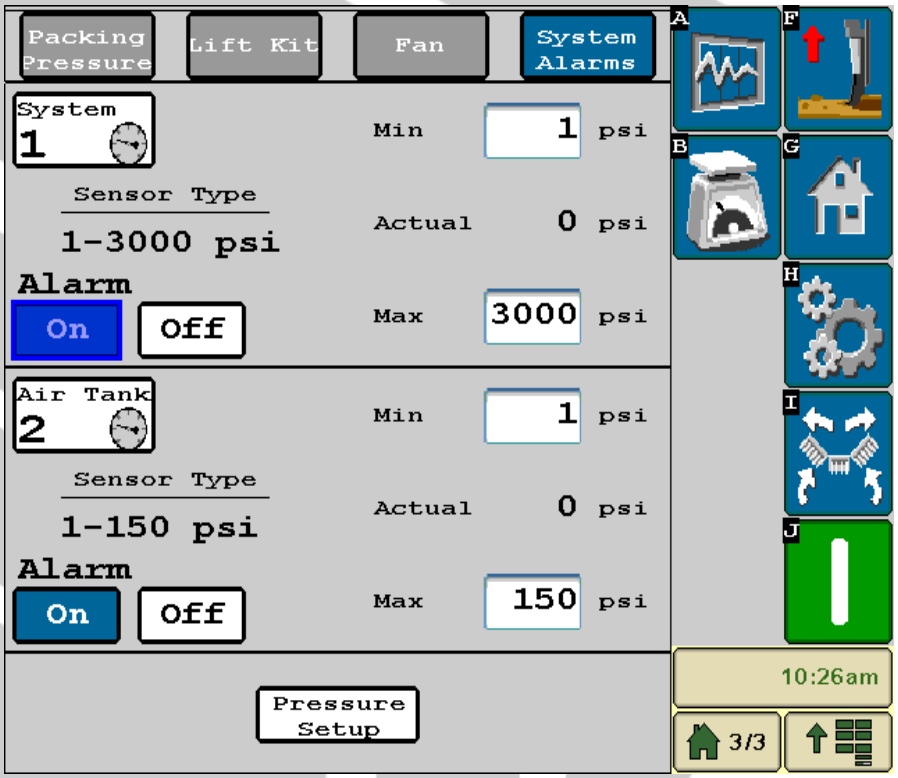


SYSTEM ALARMS

The system is equipped with alarms to warn the operator of any potential issue on the machine. To access the System Alarms settings, touch the Settings Soft Key. After touching the settings soft key, touch the Systems Alarm Tab to access the System Alarm settings.

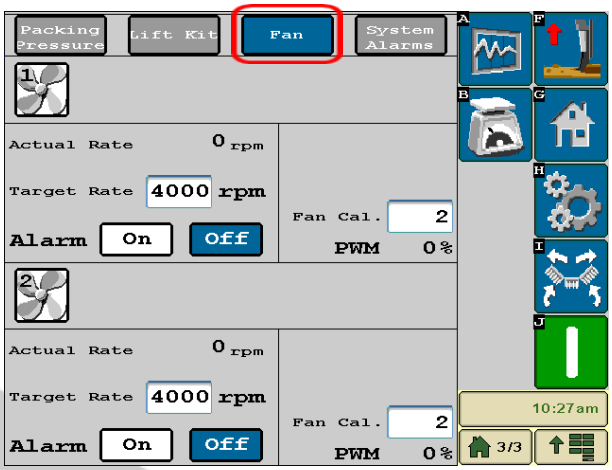
Enabling or Disabling an alarm: To enable an alarm, touch the Alarm On button. To disable an alarm, touch the Off button. If the alarm is enabled, the Min and Max values of the alarm range must be set.

Setting the Min and Max Range: To set the Min alarm value, touch the white area to the right of Min. If the installed sensor drops below this value, the operator will be notified that a System Alarm has been tripped. To set the Max value, touch the white area to the right of Max. If the installed sensor rises above this value, the operator will be notified that a System Alarm has been tripped.



After the alarms have been set touch the home button to return the operating home page.

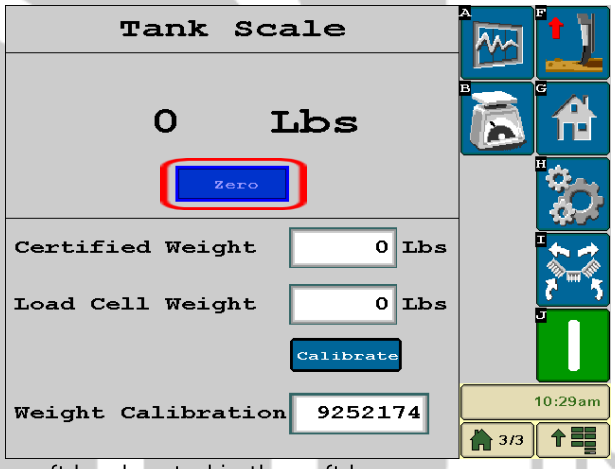
FAN SETUP & OPERATION



If your machine is equipped with a SeedMaster On-Board metering tank, the fan from the On-Board tank will be set up and displayed on the ToolBar function page. To access the Fan Setup page, touch the Settings Soft Key in the Soft Key area, then touch the "Fan" tab located at the top of the page. The Fan Setup comes with a simple alarm setting. Enter the desired fan RPM in the Target Rate, turn the Alarm to On, and the alarm will trigger if the fan is 30% above or below the desired target rate.

Fan Cal. is the calibration number that represents how many targets the Fan Sensor is reading. SeedMaster fans are equipped with 2 targets for the sensor to read. Fan Cal. is always 2 on your SeedMaster machines.

TANK SCALE SETUP

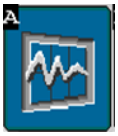


If your machine is equipped with a SeedMaster On-Board metering tank, there will be tank load cells under the tank. The load cells measure how much weight is on the tank or how much the product in the tank weighs. The load cells are calibrated from factory but will require to be calibrated after transport. It is also important to check the accuracy of the Tank Scale on a regular basis. Calibration has never been easier. Please see below for the calibration setups. To access the Tank Scale setup page, touch the Scale soft key located in the soft key area.

Zero Scale: When the tank is empty, the tank scale will need to be zeroed out. Simply touch the "Zero" button in the middle of the page to Zero out the Tank Scale.

Calibration: Before calibration, you will need to know the exact weight of an object that can be placed on the center of the tank. This known weight will be referred to as your Certified Weight. **Step one** is to enter the Certified weight into the Certified weight area. **Step two** is to place the Certified Weight onto the tank. The weight will be displayed above the Zero button. Please enter the weight being displayed into the Load Cell Weight area. **Step three** is to simply touch the calibrate button and the new Weight Calibration value will be calculated. It is important to double check all values inputted and check the certified weight after the calibration.

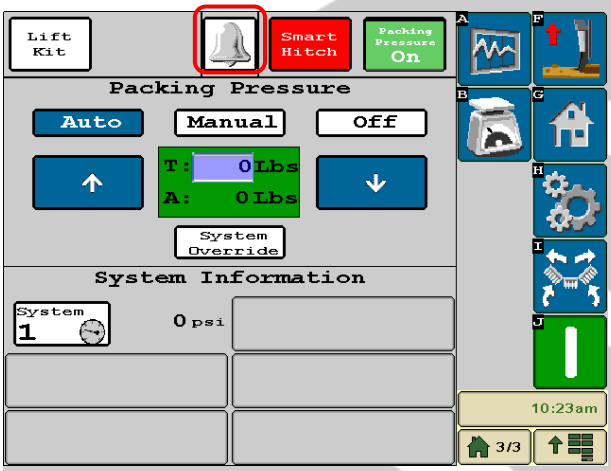
SYSTEM DIAGNOSTICS PAGE



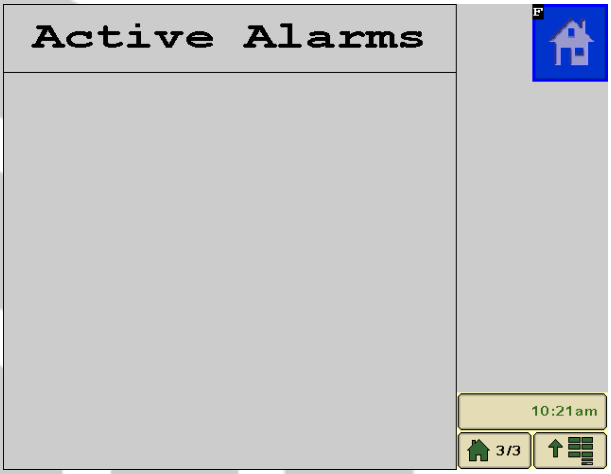
Touch the System Diagnostic Soft Key to access the Diagnostics page. The Diagnostics page will display the ECU Firmware version and also display any installed load cell voltage for diagnosing any potential issue. This page also houses a Factor Cal (Factory Calibration) button for SeedMaster and Dealer use during a service call or visit.

ACTIVE ALARM PAGE

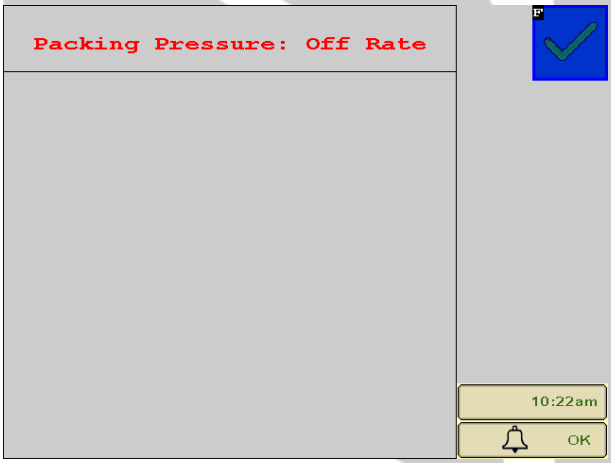
If the color around the bell changes to yellow, this means that there is an active alarm. If you touch in the bell it will display the Active Alarms Page. Touch the Home button to return to the home page after the alarm has been determined.



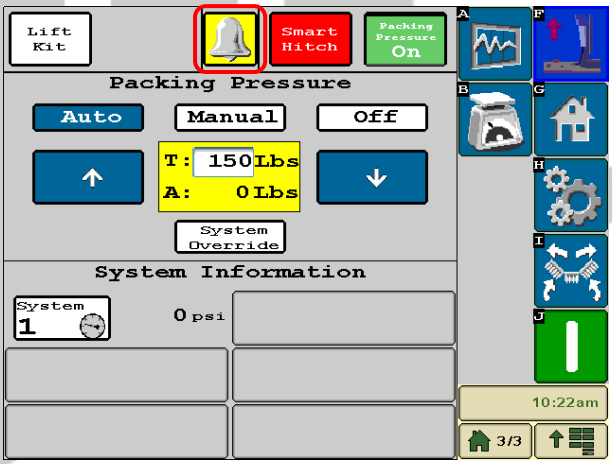
NO ALARM ON HOME PAGE



NO ACTIVE ALARMS ON ALARM PAGE



PACKING PRESSURE ALARM IS TRIPPED



ACTIVE ALARM PRESENT ON HOME PAGE

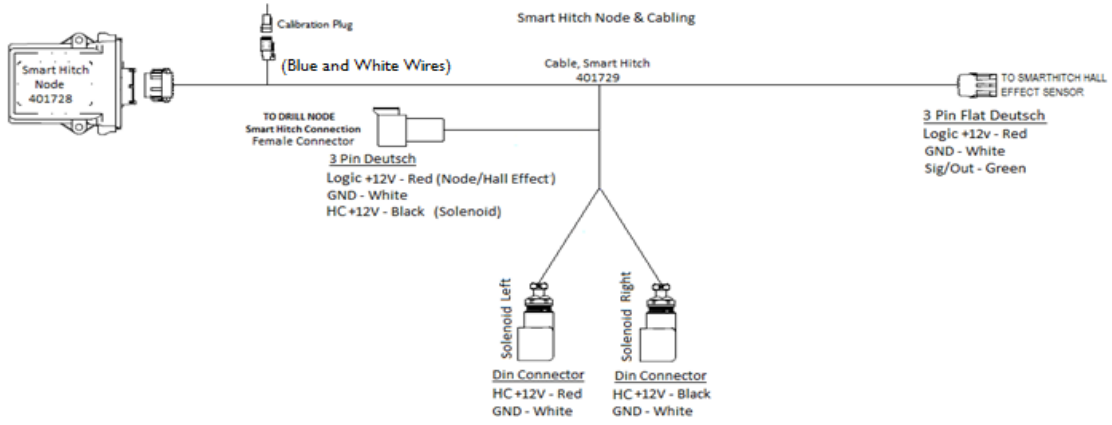
SMARTHITCH CALIBRATION

The SmartHitch raises and lowers with the Openers on your SeedMaster ToolBar. Open the Needle Valve on the Sensor Lift Cylinder ¾ of a turn, the amount you open the valve determines the speed the Smart Hitch raises and lowers at the headlands. Remove the 1" bolt on the hitch tongue before trying to operate the SmartHitch. Follow the steps below to perform a calibration on the SmartHitch.

1. Power up the ISO VT
2. **Lower the Openers and SmartHitch**. Place a level across the SmartHitch disks to ensure the disks are level.
3. When both disks are perfectly level, **unplug High Current (HC) fuse (15AMP/Blue Fuse) at Drill Node**
4. **Unplug the calibration plug** (Blue and White Wire, see drawing below)
5. **Turn SmartHitch on**. (From the ISO TAXB main screen touch the RED SmartHitch Button to turn it on. The button should be green now)
6. **Wait 15 seconds**
7. **Turn off SmartHitch** from the ISO TXB main screen
8. **Plug the calibration plug back in** (Blue and White Wire)
9. **Plug HC fuse back in**
10. **Turn ON SmartHitch** from the ISO TXB main screen
11. Test the operation for left and right and speed.
12. Left disk lifted should move hitch tongue to left side
13. Right disk lifted should move hitch tongue to right side

NOTE: When not in use turn the SmartHitch off, and lock up with Needle Valve on the Lift Cylinder

***Adjusting the speed of the SmartHitch that it will operate while in the field**: If the speed is set to move at a high speed, moving it to quick can shift the tractor causing it to require an auto steer correction. Adjust the hydraulic flow to the SmartHitch directional block by using a 1/2" wrench to loosen the jam nut and a 5/32" Alan wrench to turn the flow needle valve in or out. Turning it out to increase speed and in to decrease speed.*

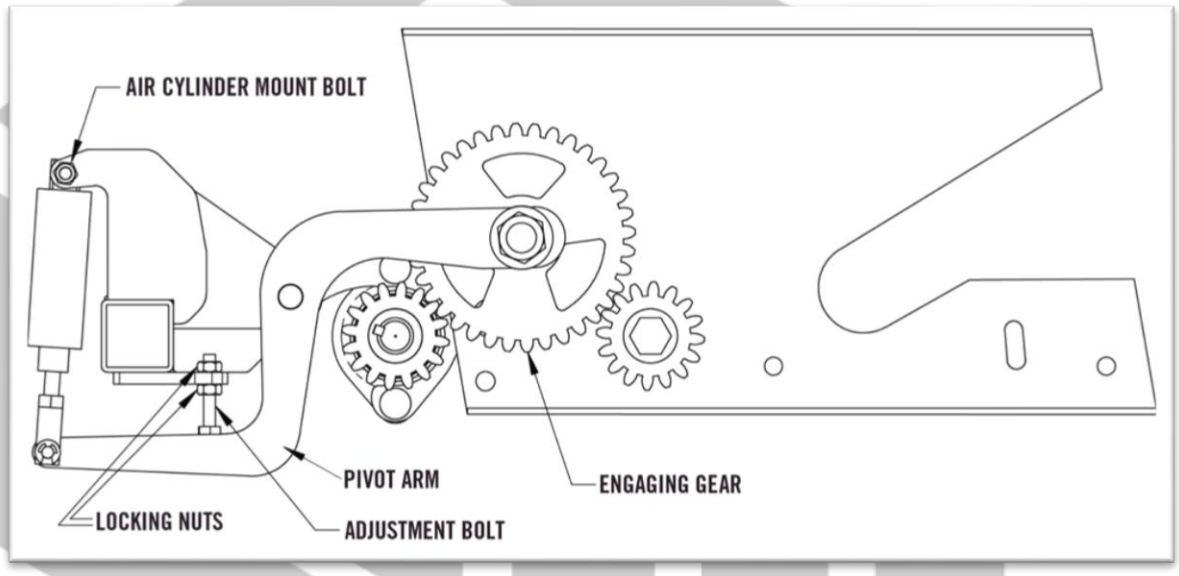


ONFRAME TANK

ZONE COMMAND METER BOX

The mechanical adjustments of the Zone Command Meter Box will be pre-set at the factory. *It is the owner's responsibility to ensure that Zone Command is functioning properly. SeedMaster is not responsible for misses or skips in product application.*
Periodic checks of moving components are necessary to ensure long term trouble-free operation. Please follow the instructions below:

Typical Zone Command mechanical components



Zone Command components also shown in the SeedMaster Tank Parts Manual.

1. Loosen the nut on the engagement gear so that the gear is able to freely slide in the slot holding it.
2. Turn the adjustment bolt until the engaging gear is allowed to fully mesh with both small gears.
3. Tighten the nut on the engaging gear, locking the position of the gear in place. While doing this, ensure that the gear is able to turn freely, while still being held snugly in place.
4. Manually extend air cylinder rod so that engaging gear is disengaged. Ensure gear doesn't have excessive side to side play, but is not so snug that it doesn't turn freely.
5. Turn the adjustment bolt until it is touching the pivot arm, and then give a last half turn to lift the engaging gear slightly off the smaller gears. This will prevent the gears from binding which causes excessive ear to gears.
6. Pull on bottom of air cylinder rod. Let go of the rod and cylinder should retract on its own. If air cylinder mount bolt is too tight, it may cause the pivot arm to not return to the seeding position.

ZONE COMMAND AIR COMPRESSOR

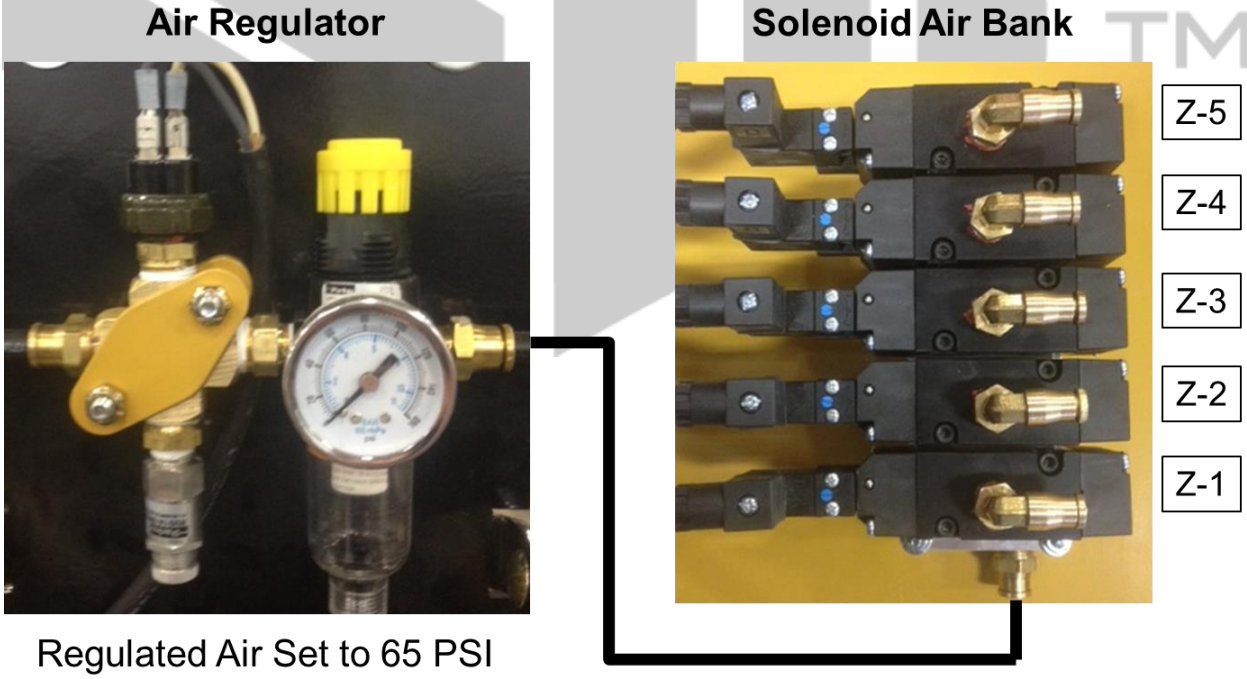
Zone Command is controlled pneumatically. Located on the drill is a compressor and air tank. The compressor is set to turn off when the pressure in the tank reaches 105 psi, and to turn on when the pressure falls below 85 psi. The regulator is used to reduce the tank pressure for the air cylinder. This regulator is factory set to 65 psi.

NOTE: Check and empty the water separator tank daily.

NOTE: Check and replace the air inlet filter on the compressor daily.

Ensure that the air filter is dry and not excessively dirty, or damage to the compressor will result.

Zone Command Air Compressor



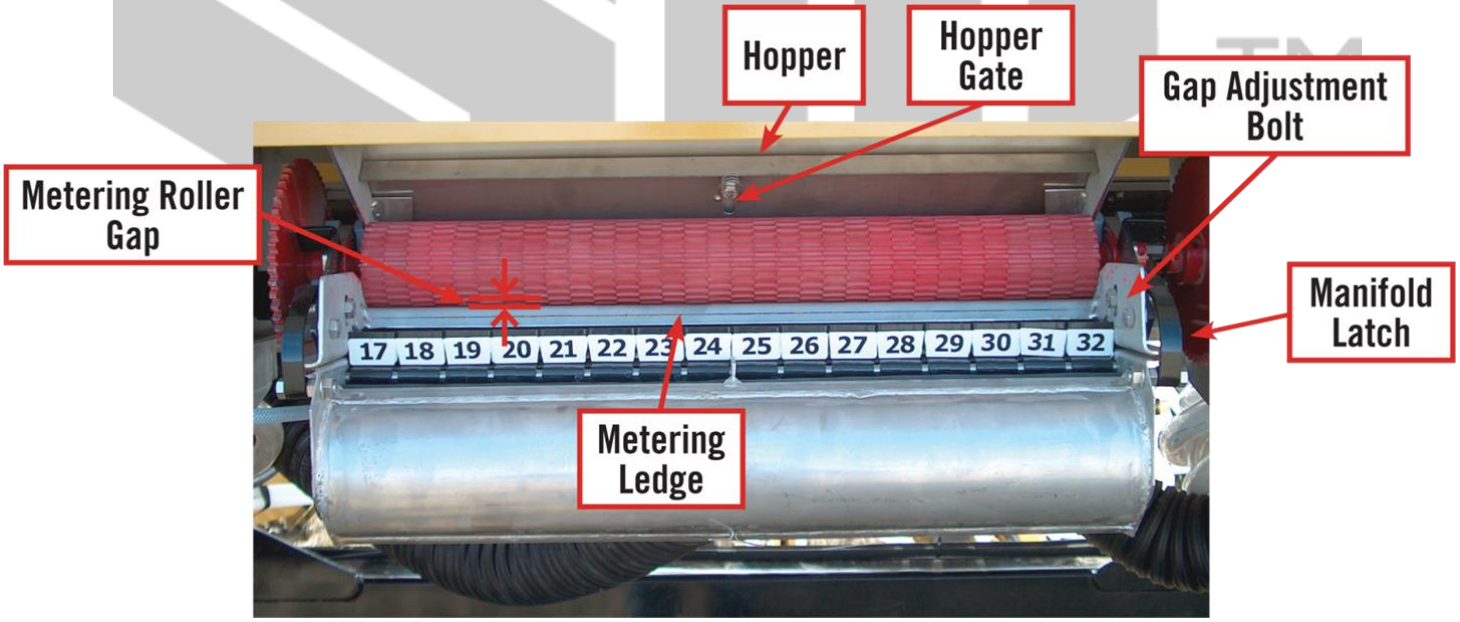
Zone Command Air Components

ONFRAME ROLLER TYPES

Refer to the table below for the type of roller and the gap setting for different types of products.

Roller Size	Gap	Large Seed	Density (lbs/bu)	Flow Rate (lbs/rev/venturi)
Grey Rollers	1/8"	Wheat, Durum	62	.116 (range .10 - .19)
Grey Rollers	1/8"	CPS wheat (Taber)	62	.125 (range .11 - .15)
Grey Rollers	1/8"	HRS wheat (Minto)	62	.141 (range .12 - .16)
Grey Rollers	1/8"	Barley (Manley)	50	.109 (range .10 - .12)
Grey Rollers	1/8"	Oats (Dumont)	40	.072 (range .06 - .085)
Grey Rollers	1/8"	Lentils (Laird)	63	.170 (range .14 - .20)
Black Rollers	3/8"	Peas (Sirius)	60	.140 (range .10 - .19)
Black Rollers	3/8"	Fertilizer	65	.113 (range .10 - .16)
Grey Rollers	1/8"	Fertilizer	65	.110 (range .10 - .13)
Roller Size	**Gap**	**Small Seed**	**Density**	**Flow Rate**
Red Roller	1/8"	Flax (Norman)	56	.045 (range .035 -
UltraPro	N/A	Canola (Sing. Treat)	50	.0057 (range .0035 -
Red Roller	1/8"	Mustard (Brown)	50	.057 (range .045 -

NOTE: *If excess amount of seed is being crushed by roller, increase roller gap. If excess pea kernels are being shot out, increase roller gap.*



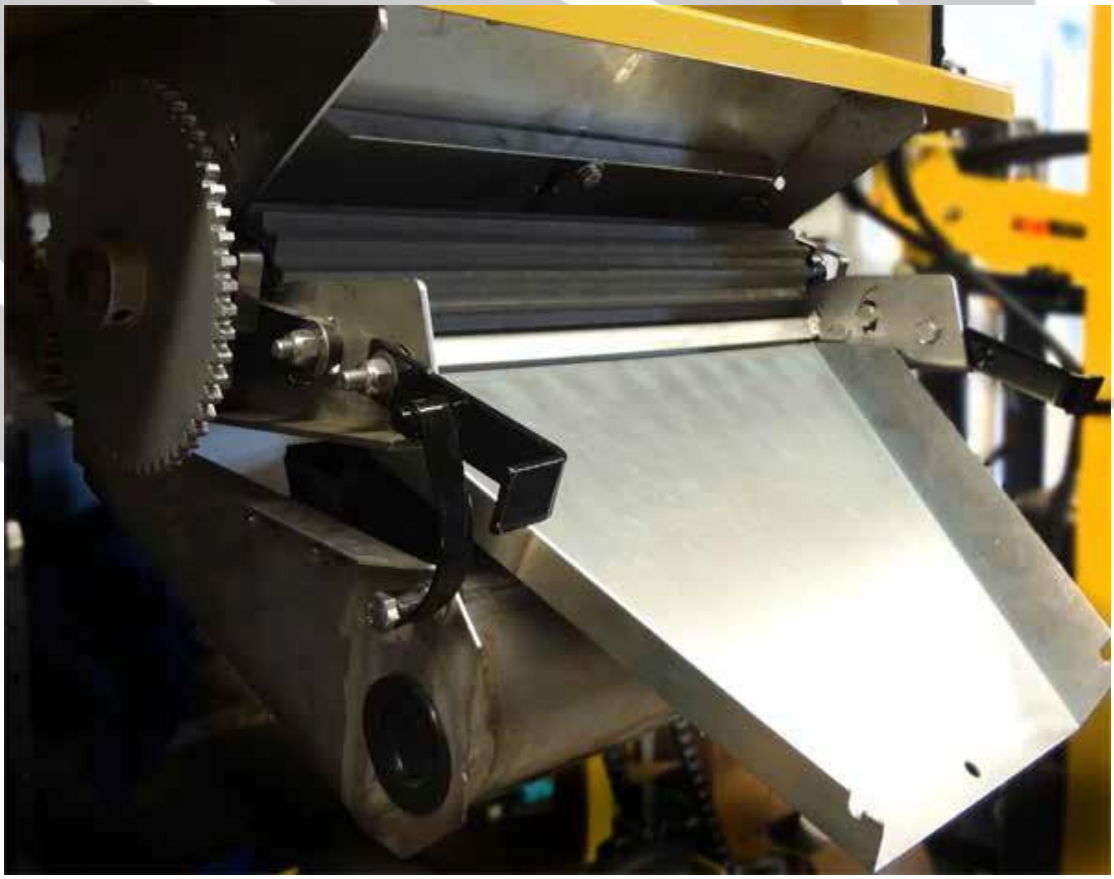
ONFRAME METER REAR VIEW

CALIBRATION PROCEDURE SET- UP (ON-BOARD TANK)

Check the metering rollers. Worn, encrusted, or dirty rollers will not meter accurately.
Check the metering roller gap. Ensure that the metering ledge is free of buildup. Product application rate is affected by the gap between the metering rollers and metering ledge.
Note: *It is crucial that all metering roller gaps be exactly the same for each roller across the full drill width. For large seed use the black, rubber-tipped roller with a roller gap of 3/8" or wider; for all other seed rollers, use a roller gap of 1/8".*
To change roller gap:

- Loosen the gap adjustment bolts on both sides of the metering section.
- Insert appropriate width gauging spacers (e.g. drill bit) between the metering roller and metering ledge.
- Tighten the bolts securing the roller bearing assembly. Remove spacer from between metering roller and metering ledge.

⚠CAUTION Hoppers must contain material. Close all hopper gates except the one hopper bottom being used for calibration or use Zone Command controls to dispense product from the desired metering section. Be prepared to catch the material from one metering section in a container so it can be weighed at the end of the calibration.



Meter ready to collect product with catch tray setup

SEEDMASTER APP

The SeedMaster Seed Rate Calculator is a two-part App, part one of the App will allow a grower too rapidly and effectively calculate a seed rate to achieve a desired plant population within a given field. Part one of the App will also allow a grower to calculate how many pounds of seed that is required and the total cost associated.

Part two of the App is associated with SeedMaster machines that are controlled by the Raven Viper in-cab monitor. A "cal weight" number controls the rate of the granular metering system. Every granular product requires a calibrated cal weight number to allow the product to be metered at the desired rate.

The Cal Weight Estimator will allow a grower to receive an estimated calibration number for a specific product being metered, meter type used, and drill width. SeedMaster recommends that an initial calibration catch test be performed to ensure calibration accuracy. The purpose of providing this tool is to alert a grower of a potential error during the calibration process before unwanted field results can occur. This tool will be especially valuable for new operators or when new products are metered.

The Cal Weight Info Submission will allow growers to very easily and quickly send their calibration information to SeedMaster. This will allow SeedMaster to provide a more accurate estimated calibration number to all users of the App. Not only will yourself benefit in the future, but all users of the App. All submissions are reviewed by SeedMaster to ensure validity before becoming a component of the Cal Weight Estimator.

The Cal Weight Note Book is a grower's own personal notebook with saved calibration values from his or her own specific machine(s). All Cal Weight submissions are automatically stored for the grower for future reference at any time

Part 1: Seed Rate Calculator

Figure 1: **Rate Tab**. Pg1 → Use the slider bars to set the desired values to determine your seed rate in LBS/ACRE.

Figure 2: **Rate Tab**. Pg2 → Use this page to as a guideline for target plants/ft and TWG.

Figure 3: **Cost Tab** → Use the slider bars to determine how much seed is required and an estimated cost.

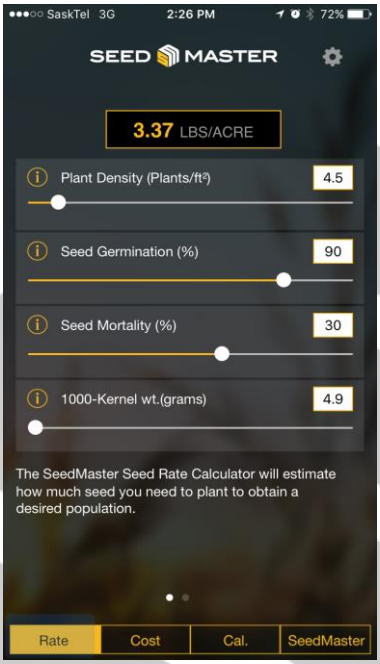


Figure 1

Figure 2

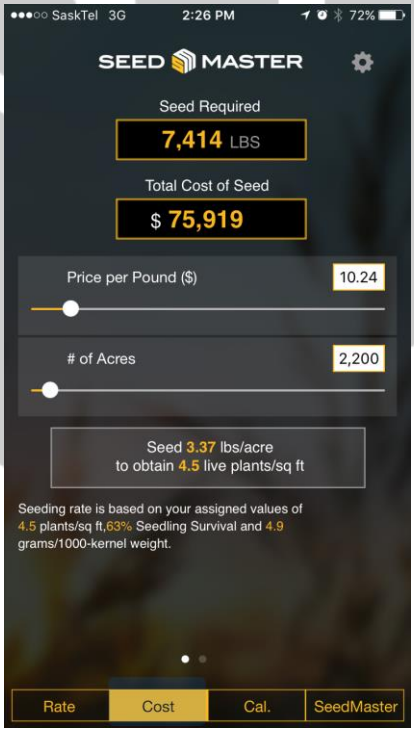


Figure 3

Part 2: Cal Weight Estimator

Figure 4: → Operator Liability Warring

Figure 5: **Cal. Tab.** Pg1 → Choose the product type, meter type and drill width to determine an estimated cal weight.

Figure 6: **Cal. Tab.** Pg2 → this page gives you the ability to submit your cal weights

Figure 7: **Cal. Tab.** Pg3 → Submitted cal weights get stored in the Cal Weight Note Book.

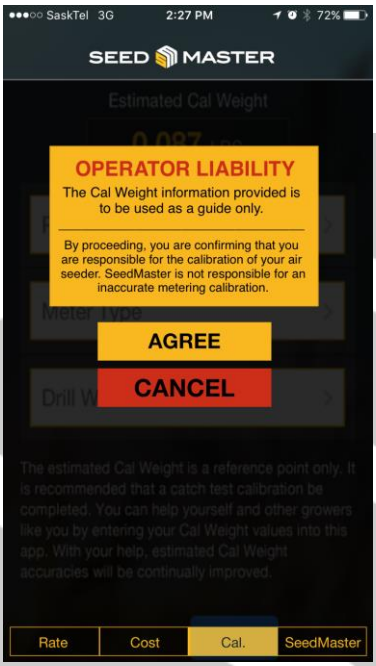


Figure 4

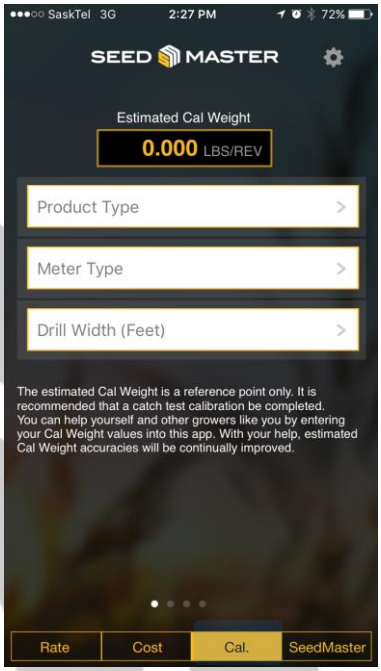


Figure 5

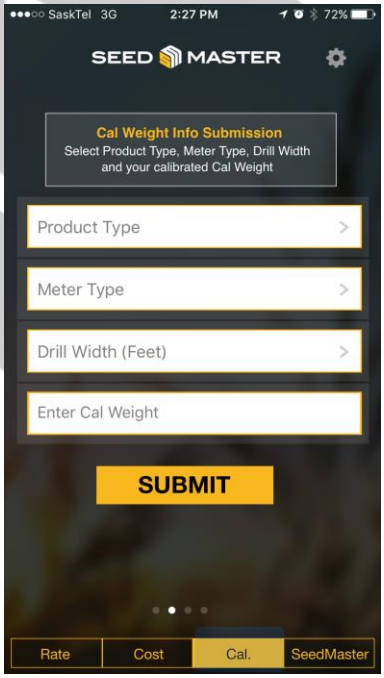


Figure 6

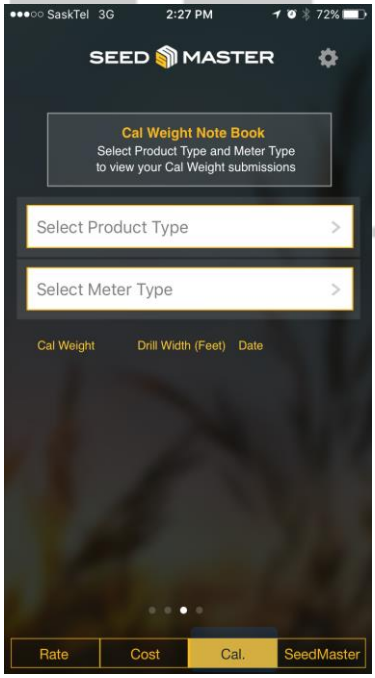


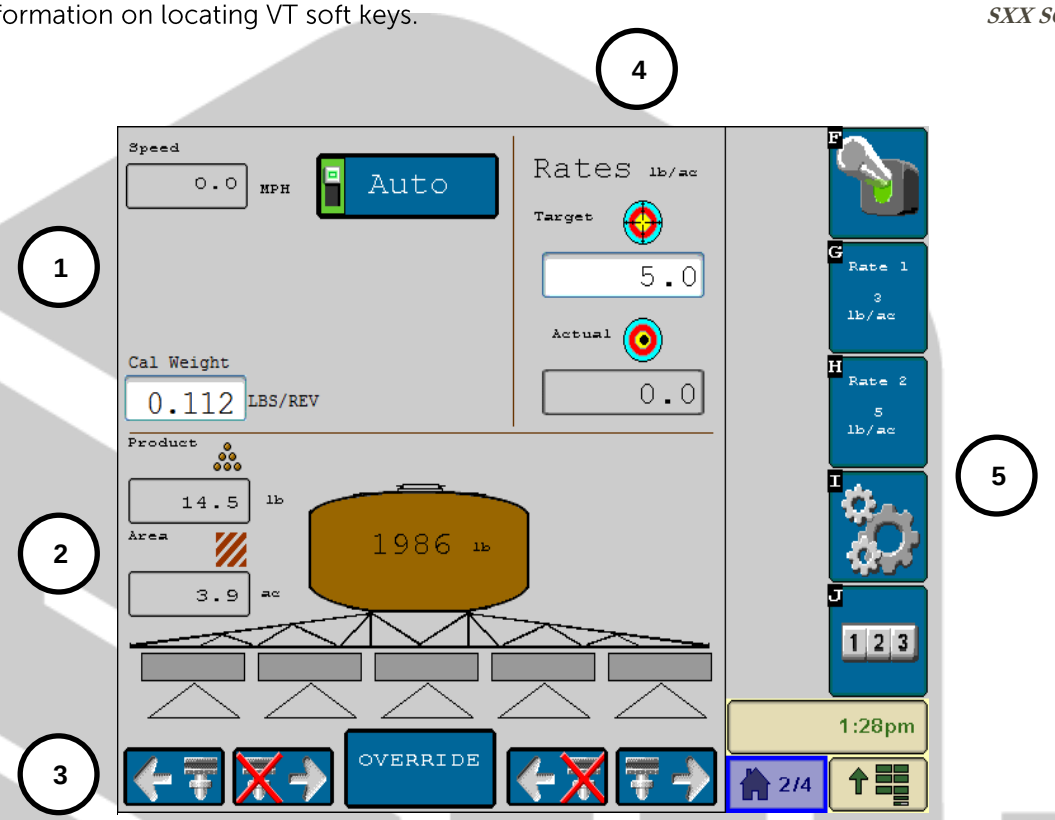
Figure 7

ISOBUS SXX FUNCTIONS

HOME SCREEN LAYOUT

The ISOBUS Single Product ECU will control your SeedMaster single product OnFrame Tank via the installed Virtual Terminal. To access the ISO OnFrame Tank Functions, touch the ISOBUS OnFrame soft key on your VT display. See your VT's operator's manual for more information on locating VT soft keys.

SXX SOFT KEY



1. **Speed/Cal Weight & Auto/Manual Area:** This area will show the current ground speed that the tractor is travelling. This is where you will change the Cal Weight calibration factor for different products. See Catch Calibration section for more information. To change the product control into manual mode simply touch the "Auto" button and it will change to Manual.
2. **Instant Product Information Area:** This area shows how many pounds of product have been applied and the amount of area it has been applied in since the last tally registers. It also displays the computed tank weight remaining.
3. **On-screen Switch Box and Override:** Turn Zones off left to right or right to left by touching the zone switch with the red x. Turn them back on by touch the opposite zone switch. Touch the override button to turn the zones on when sitting stationary and section control is enabled.
4. **Rate Info:** displays Target and Actual Rate. Touch the white box below target to change the target rate.
5. **Soft Key Area:** Touch soft keys to access different settings and functions.

ISO SXX QUICK START PROCEDURE

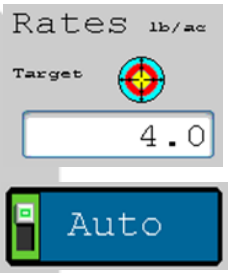
Before you go to the field please review the steps below to ensure your ISO SXX is field ready.

Step 1, Review ISO TXB Quick Start Procedure

Step 2, turn safety switch ON: Before turning the safety switch on please ensure the machine is free of any persons, animals or objects that could damage your equipment. Touch the RED safety switch in the Soft Key Area. The Safety Switch will turn green indicating that the system is ready.

Step 3, Review the Cal Weight: The Cal Weight value indicated the amount of pounds per revolution that the product meter will output. **ALWAYS** ensure that the correct Cal Weight is inputted into Cal Weight area. Refer to the **Calibration Catch Test** Section for instructions to perform a Cal Weight Calibration.

Step 4, Review the Target Rate & Product Control: The target rate is the desired pounds of product that will be applied per acre. Before going to the field ensure the correct pounds per acre is set. Also ensure that the product control is set to Auto. Auto mode will automatically adjust the product rate during seeding to keep the rate the desired target. If set on Manual, it will lock the PWM valve at its current setting and will not adjust for terrain changes and speeds changes. Typically, manual mode is used for troubleshooting or the loss of the rate controllers speed input.



Step 5, Review Tank Weight: The manual inputted tank weight is displayed on the home page in the middle of the screen. Ensure the tank weight is correct before entering the field. The Live tank weight can be viewed on the ISO TXB home page in the System Information Area. To change the tank weight, touch the brown tank. Enter the live tank weigh into the "Current Tank Volume" area.

Step 6, Review Tally Registers: Before starting a new field review and reset the Field Area and Field Product Weight. Touch the reset button in the "Field" Area to reset the Tally Registers to a new field.

Step 7, Review Onscreen Switch Box: Ensure that all Zone sections are enabled. There will be a triangle located below that Zone Sections indicating that the Zone is enabled and will be engage when the product control is turned on. The Triangle will turn blue when zone is engaged.

Step 8, Review Fan RPM: Fan RPM is located on the ISO TXB Home Page under System Information. Go to the ISO TXB Home page to view. Ensure fan hydraulics are enabled.

PRODUCT CONTROL HOME SCREEN

APPLICATION SPEED

The current vehicle speed is displayed on the product control home screen.

CAL WEIGHT

Select the Cal Weight value to enter the product pounds per revolution of the product being applied. For best results, make sure to keep this value updated as the density of the product changes.

CONTROL MODE

The control mode indicator displays the selected mode for product application. Select the "Auto/Manual" button to toggle the application mode between automatic and manual. The active mode displays green in the control mode display area.

- **Manual mode** allows the operator to control the actual application rate directly using the on-screen increase and decrease buttons.
- In **automatic mode**, the product control system automatically adjusts the application rate to an operator set target rate. Using the rate increase or decrease buttons in auto mode adjusts the target application rate.

The Control Mode also displays the current status of the remote master is shown in the top, center of the display. To toggle the remote master, press the foot switch. When it is green the master switch is ON and when it is red the master switch is OFF.

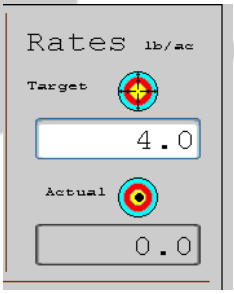
***Note**: Both the remote master (foot switch) and the master switch must be toggled on to apply product.*

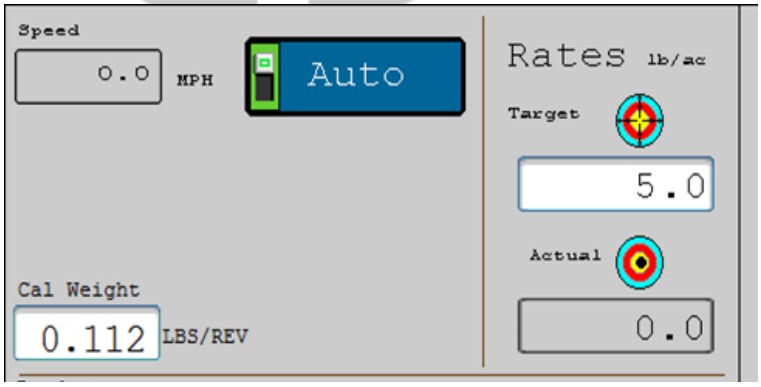
RATES AREA

The application rates area displays the actual and target rate information as well as the currently selected units in which the information is displayed.

Target Rate: Select the target value to enter the target rate for the current application (i.e. 4 pounds per acre).

Actual Rate: The actual rate display shows the operator the actual volume of product being applied.



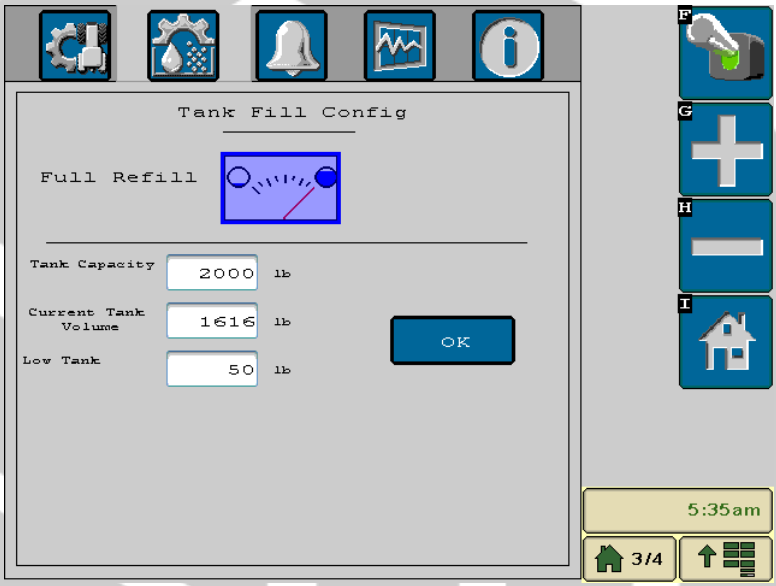


PRODUCT CONTROL HOME SCREEN UPPER HALF

TANK FILL

To quickly access the tank fill settings simply touch on the tank in the middle of the screen. The tank indicator on the product control home screen displays a tally of product remaining based upon the capacity value. The tank volume is the volume of product currently in the tank or bin, not the capacity of the tank or bin. Set this value to the normal volume of product in a full tank.

The calculated volume of product remaining in the tank is displayed in the center of the tank on the home screen. Tank Capacity and Current Tank volume can be entered either through the tank button on
the home screen or through the product control calibration tab, these values will be reflected in the tank icon on
the home screen. The current tank volume value will adjust as product is applied.



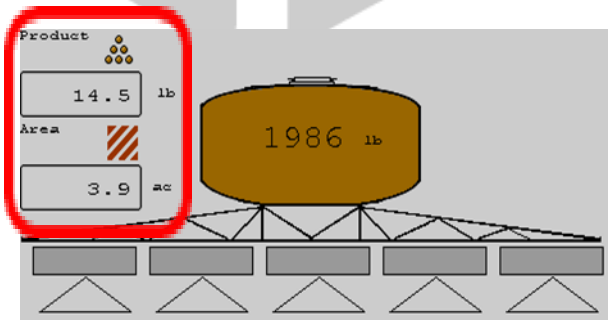
WEIGHT APPLIED

To the left of the tank volume display, the product control home screen displays the weight of product applied.

AREA COVERED

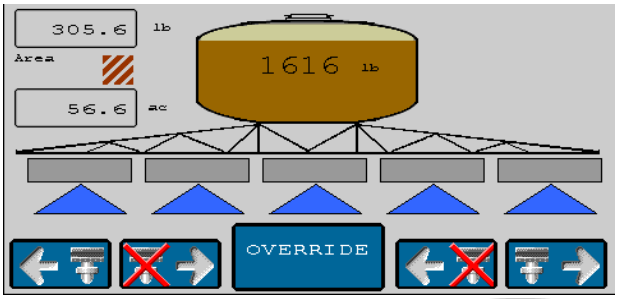
To the right of the tank volume display, the product control home screen displays the area covered.

Note: *To reset the field area, select the tally registers icon on the right side of the screen. For more information on the tally registers screen, see the Tally Registers section.*

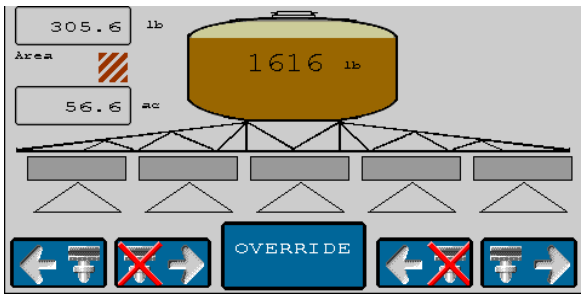


SECTION STATUS DISPLAY

Below the tank volume display, the status of each configured section is displayed.



SEDCTIONS ON



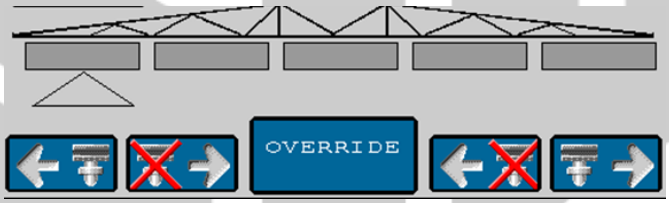
SECTIONS OFF

Manually disabled sections are displayed without a triangle below the section. See the On-Screen Manual Section Controls section for using manual section controls. A triangle will be displayed below sections which are enabled for product application. When the product application is turned off; the section indicators will be empty. When the application system is toggled on, each active section will turn green.

ON-SCREEN MANUAL SECTION CONTROLS

The "ON" and "OFF" buttons at the bottom of the product control home screen may be used to manually enable
or disable sections.

To disable sections from the left or right side of the implement, select the corresponding "OFF" button. Each time the "OFF" button is selected, the furthest enabled section on the corresponding side of the implement will be disabled. To toggle sections back on, select the corresponding "ON" button.



SECTION 1 ENABLED & SECTIONS 2 THRU 5 ARE DISABLED

For Example: Select the "OFF" button on the left side of the screen to disable the far left section. Selecting the "OFF" button repeatedly will continue disabling sections from left to right. Press the "ON" button on the left side of the screen to enable sections from right to left.

Note: *Any combination of manual on or off section controls may be used to toggle all but one section off. To turn off the last section, the remote master or master switch softkey must be toggled to the off position. When the remote master or master switch softkey is toggled back on, any sections manually disabled will still be disabled. Use the "ON" buttons to enable sections as necessary.*

SECTION OVERRIDE

Use the override button at the bottom of the Product Control Home screen to override all sections on for 5 seconds. After five seconds, the system will resume automatic control operations based upon previous coverage.

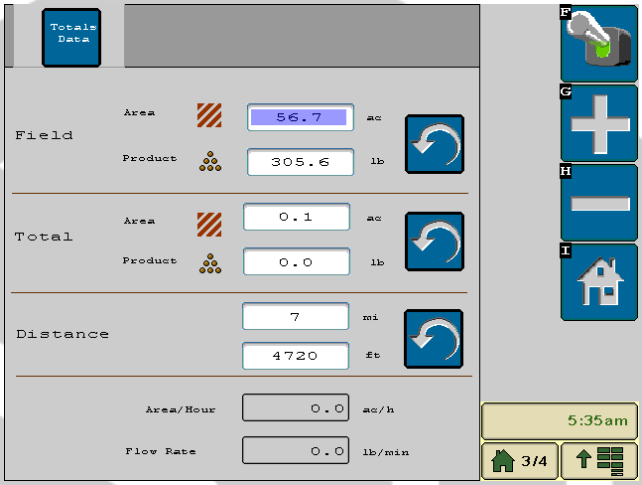
TALLY REGISTER

To access the tally register page touch, the Tally Resister soft key located in the soft key area.

The Raven ISOBUS system is capable of tracking two separate registers to keep records for the area covered and volume applied to a field or over a period of time. The following tallies may be reset or recalibrated by the operator at any time:

- Field Area, Field Volume/Weight, Total Area & Total Volume/Weight

In addition to the area and volume tallies, the tally registers screen also displays the distance traveled and the current volume per minute and area per hour.



TALLY REGISTERS PAGE

FIELD AREA AND VOLUME

The field area and volume totals may be used to keep records of product application in a field or throughout a day's operation. Select the zero button next to the desired setting to reset the register to zero.

TOTAL AREA AND VOLUME

The area and volume totals may be used to keep record of long term area and volume information (i.e. product application over a week or month). Select the zero button next to the desired setting to reset the register to zero.

DISTANCE

The distance reading displays the distance traveled since the last time the distance register was cleared. Select the zero button to reset the distance register to zero. This display may also be helpful when troubleshooting the product control system.

VOLUME PER MINUTE DISPLAY

During product application, the current volume of product applied per minute rate is displayed in this area. This value may be helpful when troubleshooting the product control system.

AREA PER HOUR DISPLAY

During product application, the current area covered per hour is displayed in this area. This value may be helpful when troubleshooting the product control system.

QUICK ACCESS SOFT KEYS (SOFT KEY AREA)

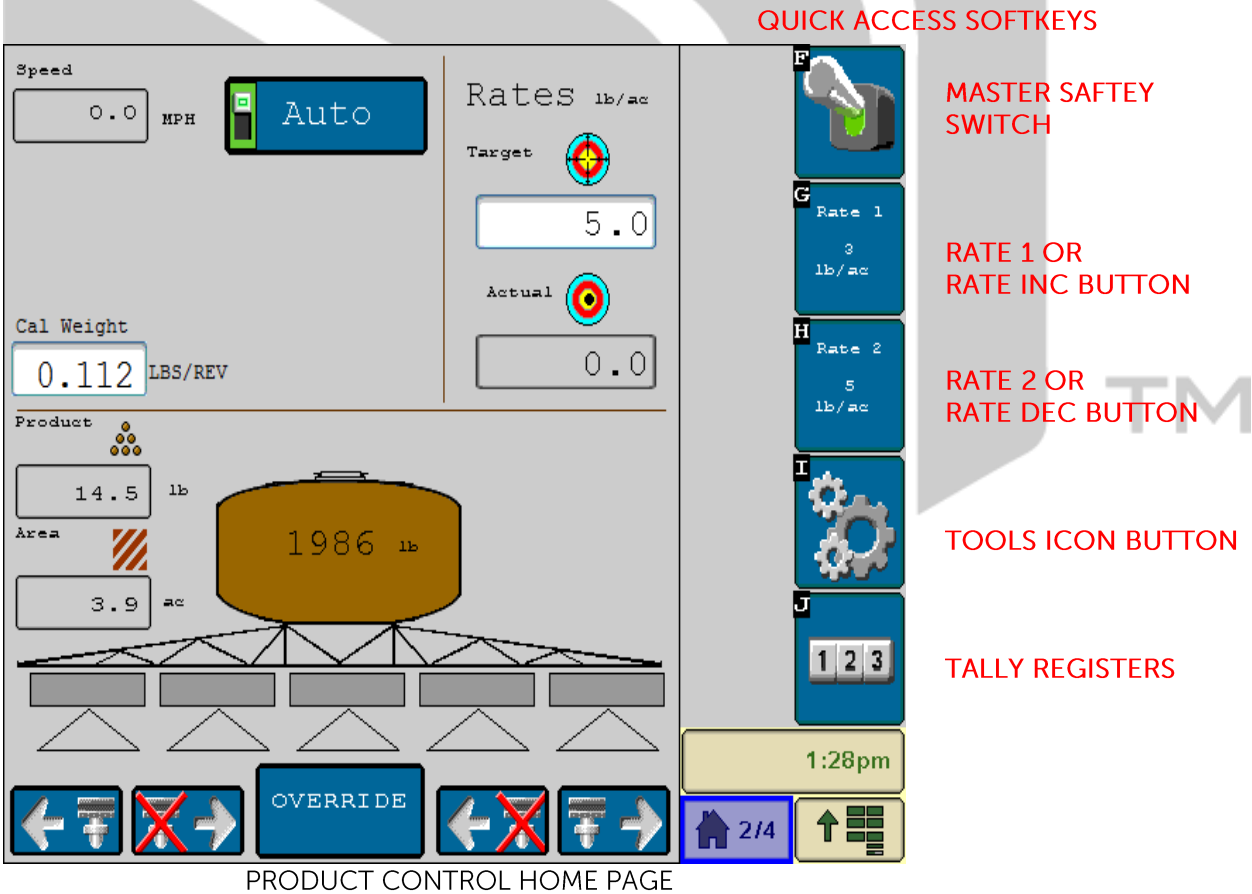
The quick access softkeys allows the operator to quickly access frequently used functions as well as the calibration and configuration screens.

MASTER SWITCH: The status of the master switch is displayed in the quick access bar. Select the switch status indicator to toggle the master switch.
Note: *Both the remote master (foot switch) and the master switch indicator must be toggled on to apply product. See the Remote Master Status section on page 39 for more information on the remote master switch.*

RATE INCREASE/DECREASE BUTTONS: Use the rate increase and decrease buttons to adjust the target or actual application rate based on the control mode (auto/manual) currently selected.
Note: *When Rate 1 and Rate 2 are set as described in Rate Bump (+/-) section on page 48, the increase/decrease (+/-) buttons are replaced with Rate 1/Rate 2 buttons.*

TOOLS ICON: Select the tools icon to access the calibration screens.

TALLY REGISTERS: Select the tally registers icon to view the volume and area registers. See the *Tally Registers* section on page 47 for more information on the tally registers.



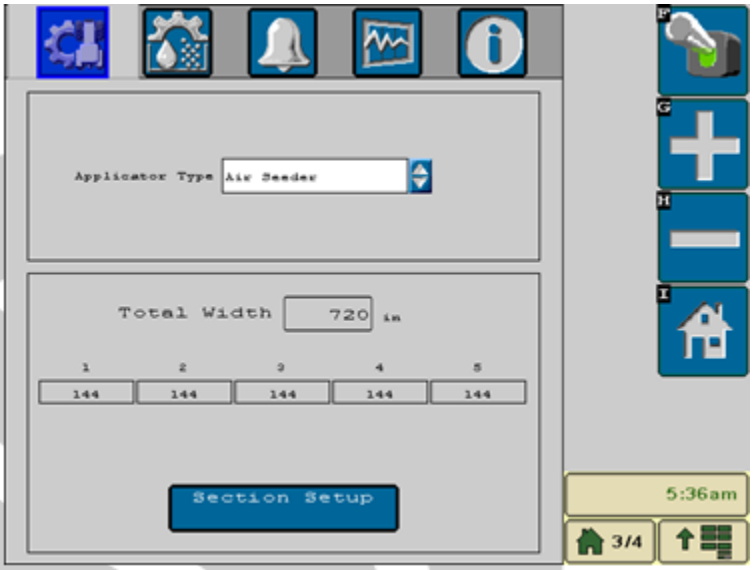
PRODUCT CONTROL HOME PAGE

IMPLEMENT CALIBRATION TAB

Implement Calibration - Access the implement settings to adjust the total width, number of sections, and the section width.

The following settings may be viewed or modified when the implement category is selected:

- Applicator type
- Total width
- Number of sections
- Section widths



Applicator Type

Select the "Applicator Type" drop down menu to change the type of applicator being used with the ISOBUS product control system. For your SeedMaster OnFrame Tank you will choose Air Seeder.

Total Width Display

The total width value displays the sum of the currently programmed section widths. Select the "Section Setup" button to edit section widths and change the total width for a specific implement.

Section Setup

Select the "Section Setup" button to reconfigure the number and width of programmed sections.

Number of Sections: The first screen displayed in the section setup displays the current number of sections. Select the value displayed in the box and enter the number of sections configured on the implement or select Next >> to proceed.

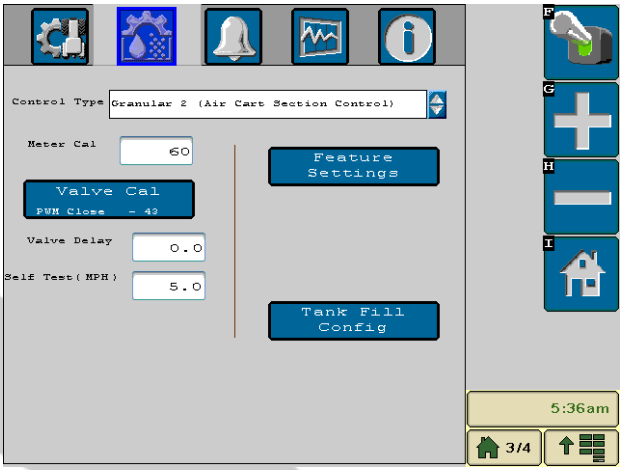
Section Widths: The next screen in the section setup displays the current section widths for each section. Select the section width value to enter the section width.

***Note**: Section measurements should be programmed into the VT display using the same units (e.g. inches, centimeters) selected in the options or settings on the VT display. Refer to the operation manual for the specific VT display to configure the display units.*

When finished programming section widths, select the "OK" button to return to the Implement settings display.

PRODUCT CONTROL SETTINGS TAB

Product Control Settings - Access the product control settings to adjust settings such as the meter or valve cals or adjust the rate +/- or product control home screen display.



The following settings may be viewed or modified when the implement category is selected:

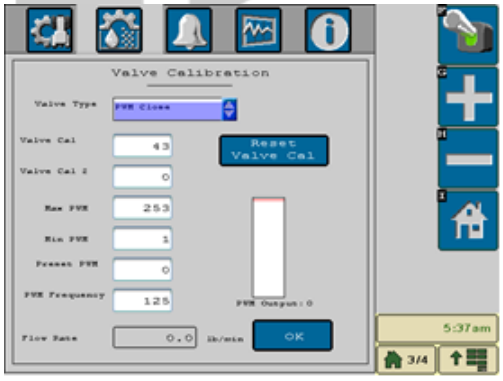
- Control Type
- Meter Cal
- Valve Cal
- Valve Delay
- Tank Capacity
- Self Test Speed
- Feature Settings

Control Type: Select the "Control Type" drop down menu to change the type of product to be controlled by the ISOBUS node. For your SeedMaster OnFrame Tank you will choose Granular 2 (Air Cart Section Control).

Meter Cal: The Hydraulic motor encoder calibration, or **meter cal**, value is set at **60** for your SeedMaster machine.

Valve Delay: Your SeedMaster OnFrame Tank is equipped with a PWM Close valve that controls the hydraulic oil flow to the Hydraulic Motor. When operating a PWM Close valve the Valve Delay value must remain at 0 as this turns the feature off. The PWM Close valve performs the best when the value delay is 0, this is the recommend setting.

Self-Test Speed: Enter a value approximately equal to normal application speeds to allow the system to control product application functions while the vehicle remains stationary. The test speed is useful for checking or troubleshooting the product control system. The currently set self test speed is displayed in this area. Select this value to enter a test speed. The test speed will clear if the field computer receives a pulse from the actual speed sensor. ***Note**: This is only used internally on the Product Controller. This is not sent to any other ECUs.*



Valve Cal: Select the "Valve Cal" button on the Product Control Calibration screen to display the valve calibration screen for the hydraulic control valve controlling the speed of the hydraulic motor.

Valve Type: Your SeedMaster Machine is equipped with a **PWM CLOSE** valve. Choose PWM Close.

Valve Cal: The valve cal value sets the responsive characteristics of the control valve and is required for product control. The recommended value is automatically entered when the valve type is selected

Valve Cal 2: The valve cal 2 value can fine tune control valve response and help control application rate oscillations when the console is programmed in PWM mode.

Reset Valve Cal Button: Select "Reset Valve Cal" button to reset the recommended value for the selected valve type.

PWM Output Display: The PWM output display represents the currently programmed min and max PWM values as well as the current PWM output of the valve.

Max PWM: Enter a maximum PWM value to set the maximum desired output for a pulse width modulated (PWM) hydraulic control valve. This setting limits how far the PWM valve will open. With the machine's master switch in the on position, increase this value until the maximum desired motor speed is achieved in a granular system.
Note: The maximum value for the Max PWM setting is 253.

Min PWM: If a PWM type valve is selected as the valve type, enter a minimum PWM value to set the minimum desired output (zero point or shutoff point) for a pulse width modulated (PWM) hydraulic control valve. With the machine's master switch in the on position, decrease this value until the minimum desired motor speed is achieved in a granular system.
Note: The minimum value for the Min PWM setting is 0.

Preset PWM: When operating in PWM mode, the preset PWM value sets how far the valve will open to maintain pressure in the system. When the machine's master switch is off, the PWM pulse width will remain at the existing value or go to the preset PWM value, whichever is lower. In PWM close mode, the preset PWM setting is the initial
target pulse width when the nodes are turned on. If this value is set to zero, the pulse width will return to the last value when the master switch is turned on.

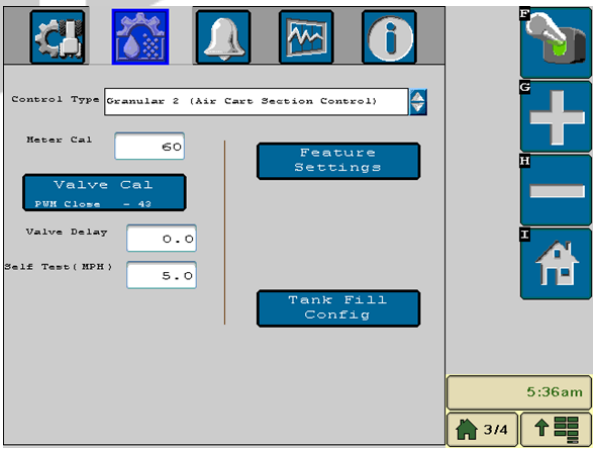
PWM Frequency: This value sets the frequency of the pulses which are sent to the PWM valve. The default value is 122 Hz for Raven valves, or a value specified by the valve manufacturer.

PWM Output Display: The PWM output display represents the currently programmed min and max PWM values as well as the current PWM output of the valve.

***Note**: To accept the currently displayed settings, or once settings have been adjusted properly, select the "OK" button in the lower right corner of the display to return to the Product Calibration display.*

Feature Settings: The current status of the following product control home screen settings is displayed to the right side of the Product Control Calibration settings display:

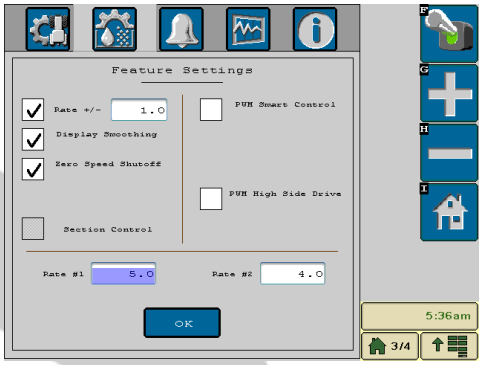
- Rate Bump (+/-)
- Display Smoothing
- Zero Speed Shutoff
- Section Control
- PWM Smart Control
- Dual Loop Control
- Standby Pressure
- High Side Drive



Rate Bump (+/-): If this feature is enabled, the rate bump value sets the increment by which the target rate will increase or decrease when using the rate bump buttons at the right side of the display.

Display Smoothing: Toggle the display smoothing feature to smooth the rate displayed on the product control home screen. With the feature enabled, as long as the actual rate is within 10% of the actual application rate, the target rate will display as the actual rate on the display. The actual rate will be displayed if the actual rate does not reach the target rate dead band (+/-10%) within 10 seconds.

Zero Speed Shutoff: The zero speed shutoff feature will automatically turn off product application if the vehicle speed drops below 0.7 mph [1.1 km/h] while in automatic mode. To restart the system, cycle the master switch 'Off' then back 'On.' A speed of 0.7 mph [1.1 km/h] must be maintained for more than 10 seconds or the zero speed shutoff feature will shut down product application.
Note: To utilize the zero speed shutoff feature, a fast close or PWM close valve must be used to control product flow.



Section Control: The section control feature allows the Raven ISOBUS product control node to automatically control sections in reference to coverage maps. When enabled, section control will automatically turn off an active section as it enters an area where product has been previously applied. As the section leaves the previously applied area, the section control feature turns the section back on. The VT display must be capable of automatic section control to enable the feature. Check the manufacturer operation guides and materials for information on utilizing this feature.

- If the VT is capable of automatic section control and the section control feature is available in the Raven ISOBUS product control screen, select the feature to place a check mark in the corresponding box to enable the feature.
- If the VT display is capable of automatic section control, but the section control feature is not available in the Raven ISOBUS product control screen, the feature must be enabled from a different VT display menu.
- If the VT display is not capable of automatic section control, the Raven ISOBUS product control node will not automatically control sections regardless of the section control selection on the Raven ISOBUS product control screen. It is recommended to deselect or disable this feature when operating the ISOBUS product control system.

PWM Smart Control: The PWM smart control feature may be enabled to allow the control system to estimate the required PWM duty cycle for changes in vehicle speed or target rate, or when the hydraulic valve is toggled on. When this feature is enabled, control response will be much more aggressive.

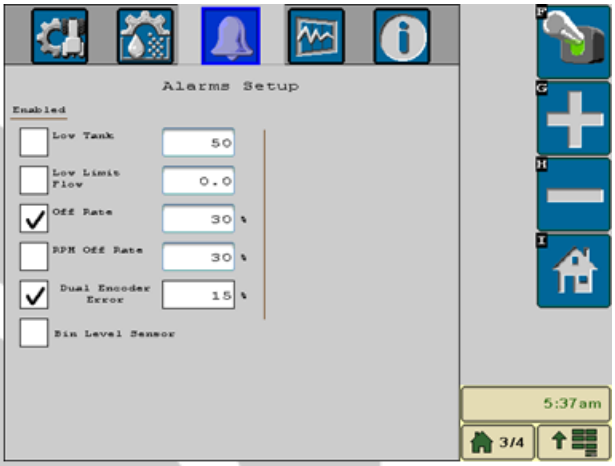
Rate 1/Rate 2: Rate 1 and Rate 2 values allow the increase and decrease buttons (+/-) on the Home screen to be replaced with Rate 1 and Rate 2 buttons, allowing the operator to quickly change between two set rates. To make Rate 1 and Rate 2 buttons available, the following conditions must be met: Desired rates for Rate 1 and Rate 2 must be entered (non-zero values) and control mode must be set to Auto.

ALARM SETUP TAB

Alarms Setup - Access the alarms setup screen to modify the conditions of which the machine operator
should be aware during product control applications.

In addition to the product control capabilities of the Raven ISOBUS product control system, the ISOBUS communication protocol offers excellent error detection capabilities, making it very suitable and reliable for agricultural applications. Access the Alarms Setup screen to configure the following alert conditions which may
be displayed during ISOBUS product control operation:

- Low Tank/Bin
- Low Limit
- Off Rate Percent
- RPM Off Rate Percent (Granular applications only)
- Dual Encoder Error Percent (Granular applications only)
- Bin Level Sensor (Granular applications only)



If any of these alarm conditions is detected by the product control node, the corresponding alert will be displayed on the VT display and allow the operator to respond to the condition before resuming application.

***Note**: Select the "OK" button on the alarm prompt to clear the alarm and return to the previous screen. The alarm condition may still be present after the alarm prompt is cleared. The product control home screen will continue to display an alarm condition indicator until the issue is resolved.*

Low Tank: Enable the low tank alarm to display an alert when the calculated volume of product remaining in the tank drops below the desired value.

Low Limit: The low limit value sets the minimum volume per minute which a product will be applied. If the flow meter drops below this setting, the VT terminal will display an alert.
Note: The product control valve will stop closing when the low limit setting is reached.

Off Rate Percent: Enter the percent at which the off rate alarm will activate. The off rate alarm activates when the actual rate differs from the target rate by the programmed value for longer than five seconds.

RPM Off Rate: Not applicable to this setup. Use ISO TXB RPM Alarms.

Dual Encoder Error Percent: Not applicable to this setup. Not equipped.

Bin Level Sensor: Not applicable to this setup. Load Cells are in place of Bin Level Sensors.

SYSTEM DIAGNOSTICS TAB

The System Diagnostics page will display the installed Virtual Terminals Task Controller Status. It is also useful to see what the High Current power voltage and current draw is at along with Logic Power voltage.

Control direction indicators are displayed for installed valves and pumps.

An optional check box that simulate flow is included. If the simulate flow box is checked, the actual rate will

report the entered target flow rate on the front screen and the flow rate on the totals screen will adjust with

speed and operating section width. When simulation mode is engaged, a “Demo Mode” warning will display on the product control home screen.

SYSTEM INFORMATION TAB

Information - Select the information icon to view the ISOBUS product control node hardware and software version numbers.

CALIBRATION CATCH TEST

Your SeedMaster tank will need to be calibrated for the specific product you are using. The calibration procedure will require two 5 gallon pails, a catch tray and a digital scale. Before calibration please be sure that the meter roller is set to the correct gap for the product being used, see page 36 for more details. After setting the gap you will need to setup the catch tray, see page 37 for more details.

CALIBRATION PROCEDURE

1. Zero the digital scale

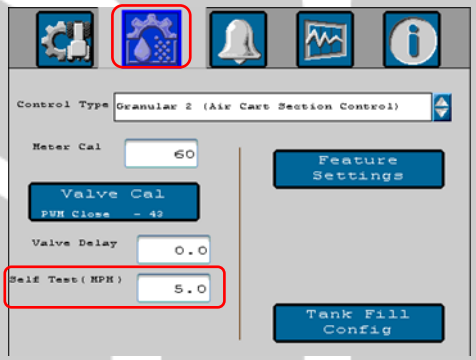
2. Prepare the meter that you will be catching out of by placing the pail underneath the catch tray.

3. On Screen Switch Box Setup: Shut the **MASTER SWITCH OFF**.

NOTE: Ensure that the safety switch is on and product control is set to Auto.

Turn off all zones except for the one zone that you are catching from. For example, if you are catching from Zone 1, touch the Zone off button pointing to the left on the onscreen switch box until zones 2 thru 5 are off. It will now show that all the zones are off except for Zone 1.

4. **Enter a self-test speed**: Touch the **Settings** button on the right hand side of the screen then touch the **Product Control Settings** tab.
Now **enter 5** MPH into the Self Test (MPH). After entering 5 MPH touch the **Home button**.



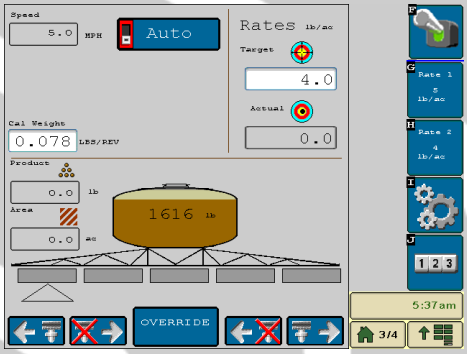
5. **Set your desired Rate Cal application in the Target Rate area.**
NOTE: FOR HIGHER RATE APPLICATIONS SET THE TARGET TO 25LBS AND FOR CANOLA SET TARGET RATE TO 4LBS. YOU WILL ALSO NEED TO BE SURE THAT YOU HAVE SET THE CORRECT CAL WEIGHT. USE THE SEEDMASTER CALIBRATION ESTIMATOR APP TO GET A STARTING CAL WEIGHT.

6. **Set the Cal Weight value for the product you are catching.**
NOTE: The last decimal place may round up or down from what you input, this is normal.

7. **Go to Tally Register Page**: Touch the Tally Register button on the right side. From here you will need to zero out the product weight and field area.

8. Zero out the weight and field area for the product: Touch the reset buttons for both Field and Total then touch Home button.

9. You will now ready to catch product. Please review your screen before turning the master switch on. See screen below for an example it should look very similar.



10. When you are ready to catch product **TURN THE MASTER SWTICH ON**.
NOTE: Ensure that you have system pressure before turning the master switch on. Product will be expelled when you turn the master switch on.

11. At the moment the **Field Area reaches 1 acre** turn the Master Switch **OFF immediately**.

12. Take note of your Product Weight, and your Cal Weight

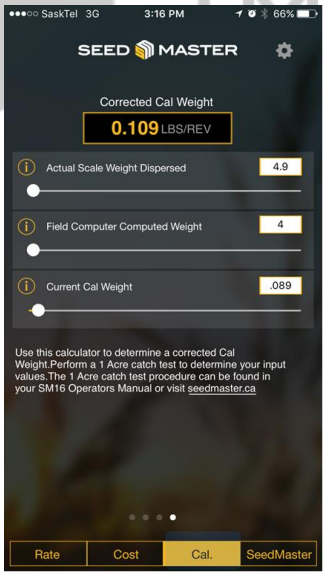
13. Go and weigh the amount of product, in LBS that was dispersed from the meter.

14. Using the SeedMaster APP go to the Corrected Cal Weight Page (PAGE 4) under the Cal. tab of the app.

15. Enter the Actual Scale Weight Dispersed (Digital Scale reading)

16. Enter the Field Computer Computed Weight (Product Weight)

17. Enter Current Cal Weight (On Home Page)

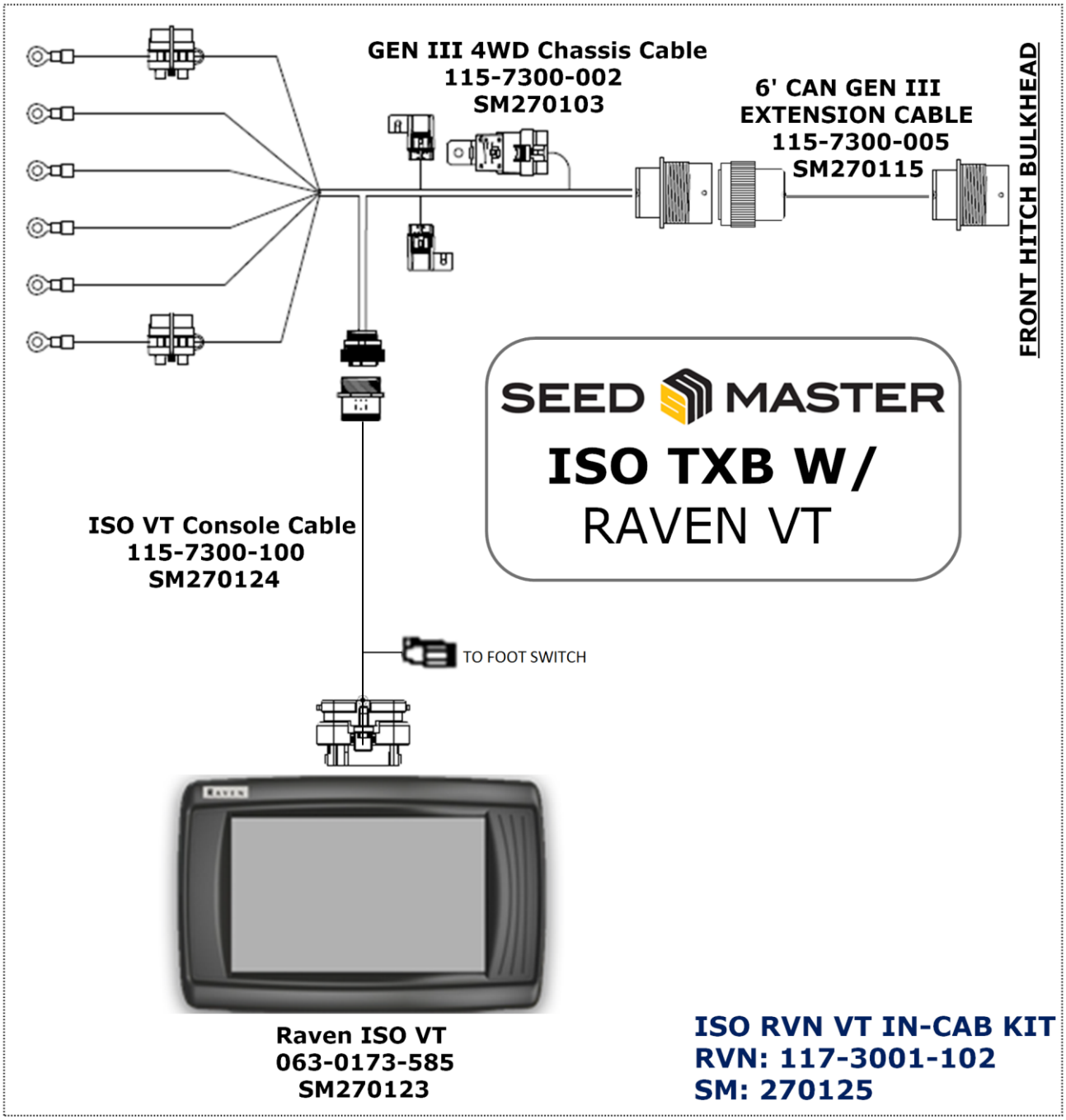


18. The calculator will display a Corrected Cal Weight. On the Home page you will manually enter this cal weight in the cal weight area.

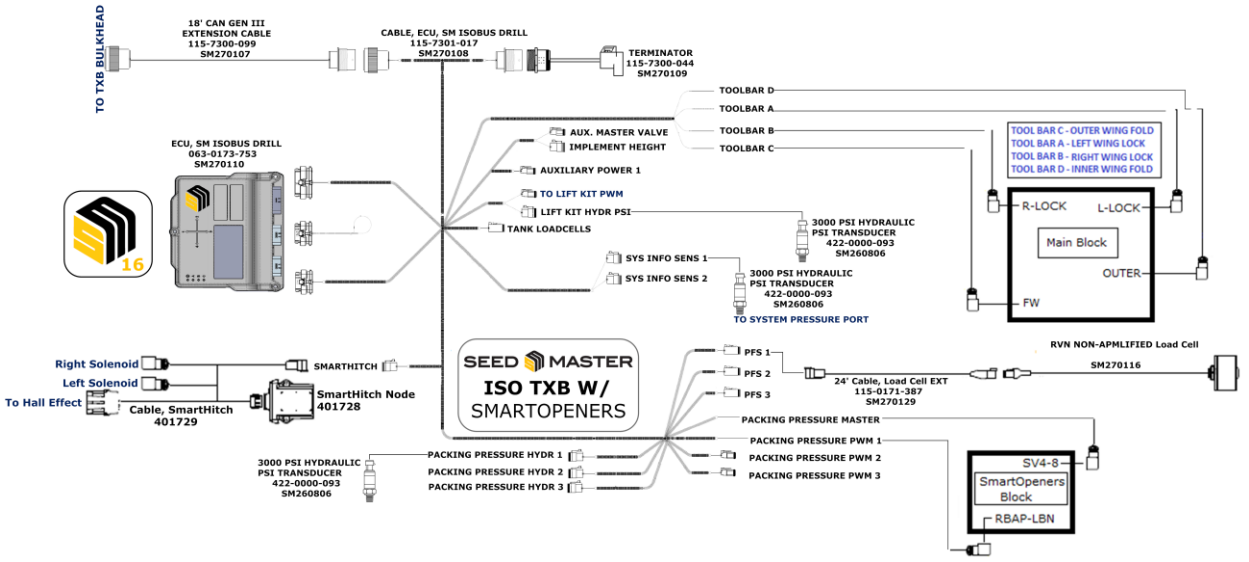
NOTE: For best results repeat this process 2 to 3 more times.

SYSTEM ELECTRICAL DRAWINGS

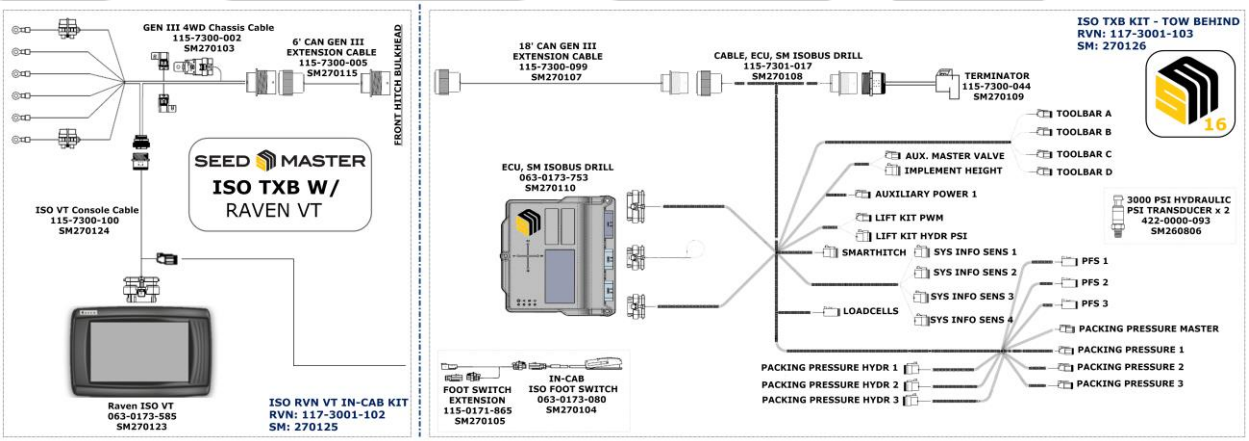
IN-CAB RAVEN VT



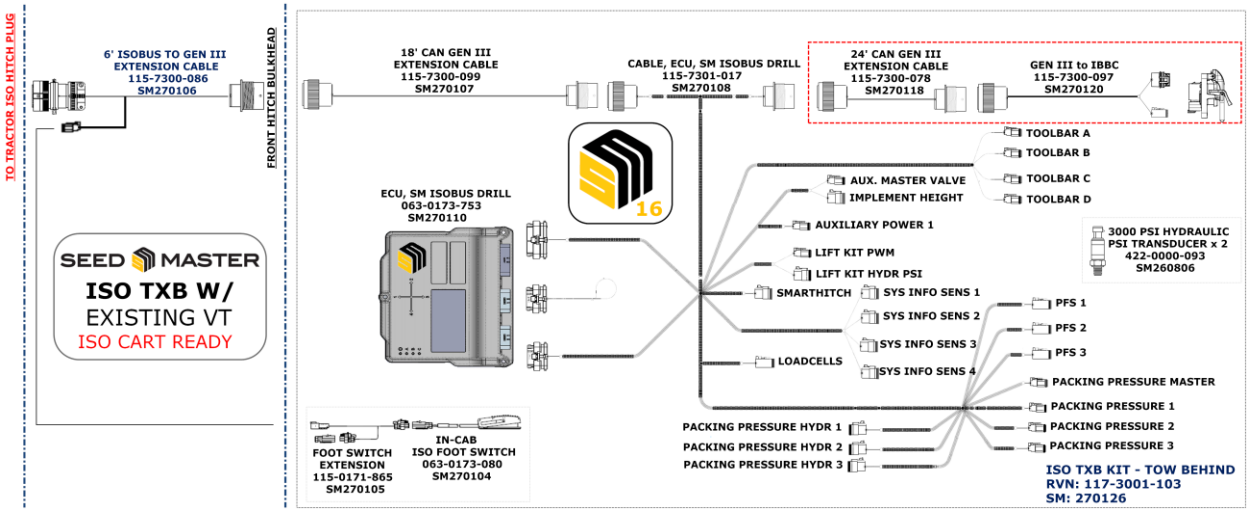
ISO TXB ONLY



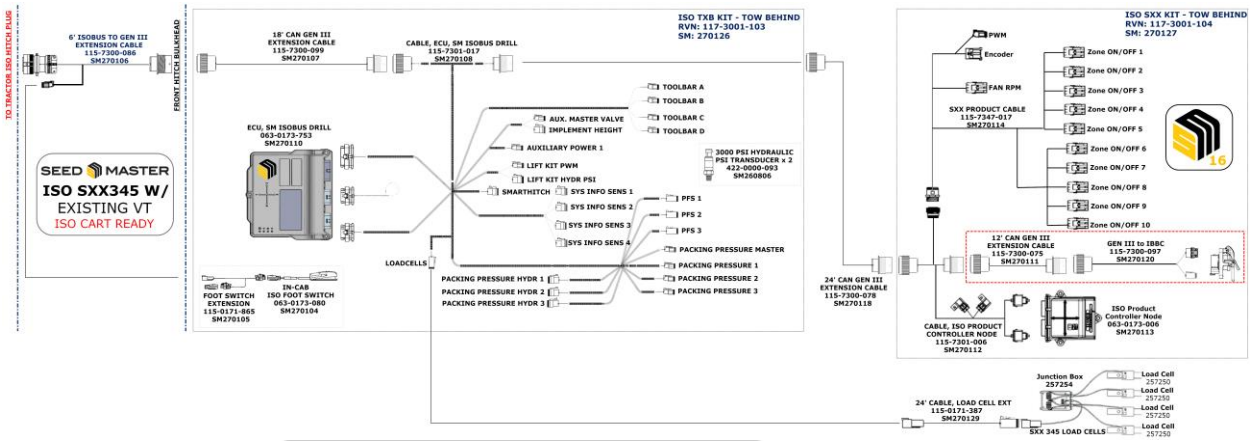
ISO TXB WITH RAVEN VT



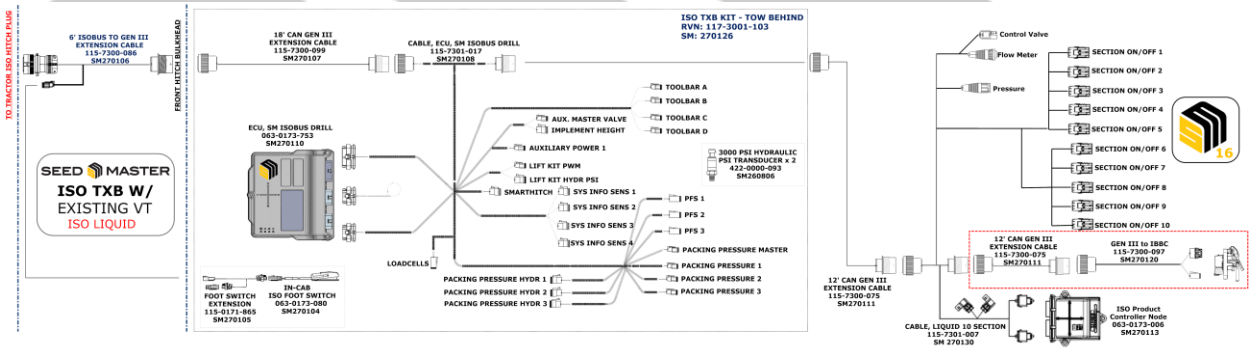
ISO TXB WITH EXISTING VT & ISO CART READY



ISO SXX345



ISO TXB with ISO LIQUID



NOTES