MORRIS

Customer Clinic 2017


9
SERIES

9 Series Air Cart

General

- Check if assembled correctly
- Proper chain tension
- Check hose connections
- Ensure cleanout door and tank lid are connected correc
- Ensure case drain is hooked to zero pressure return

Lubrication - Grease

- Fan bearing - 17” fan - every 100 hrs
- Drive shaft bearing every 50 hrs
- Transmissions every 50 hrs
- Auger Pivots every 100 hrs

Lubrication - Oil

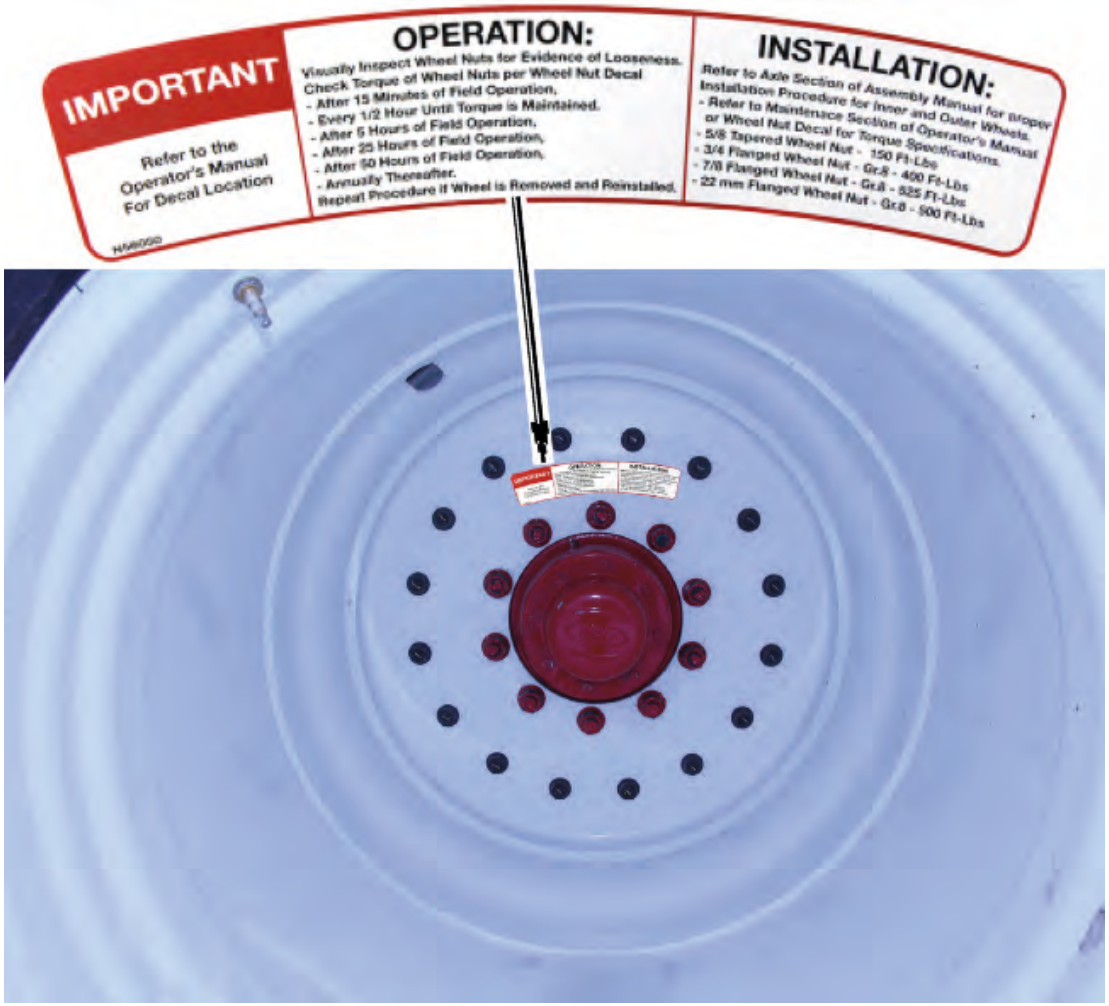
- Drive chains - oil every 50 hrs
- Tire Pressure (ref: sec 7-4 Operator’s Manual)
- Check Tire Pressure

Transport

- Tighten wheel bolts

Wheel Nut Torque Check

Mandatory, check all 9 Series Air Carts to ensure Decal N56050 has been installed onto the rear rims. These decals will be sent directly to Dealers that sold 9 Series Air Carts, as well as to farmers who bought them. This is a duplication, but it is important to have them located on the rims.

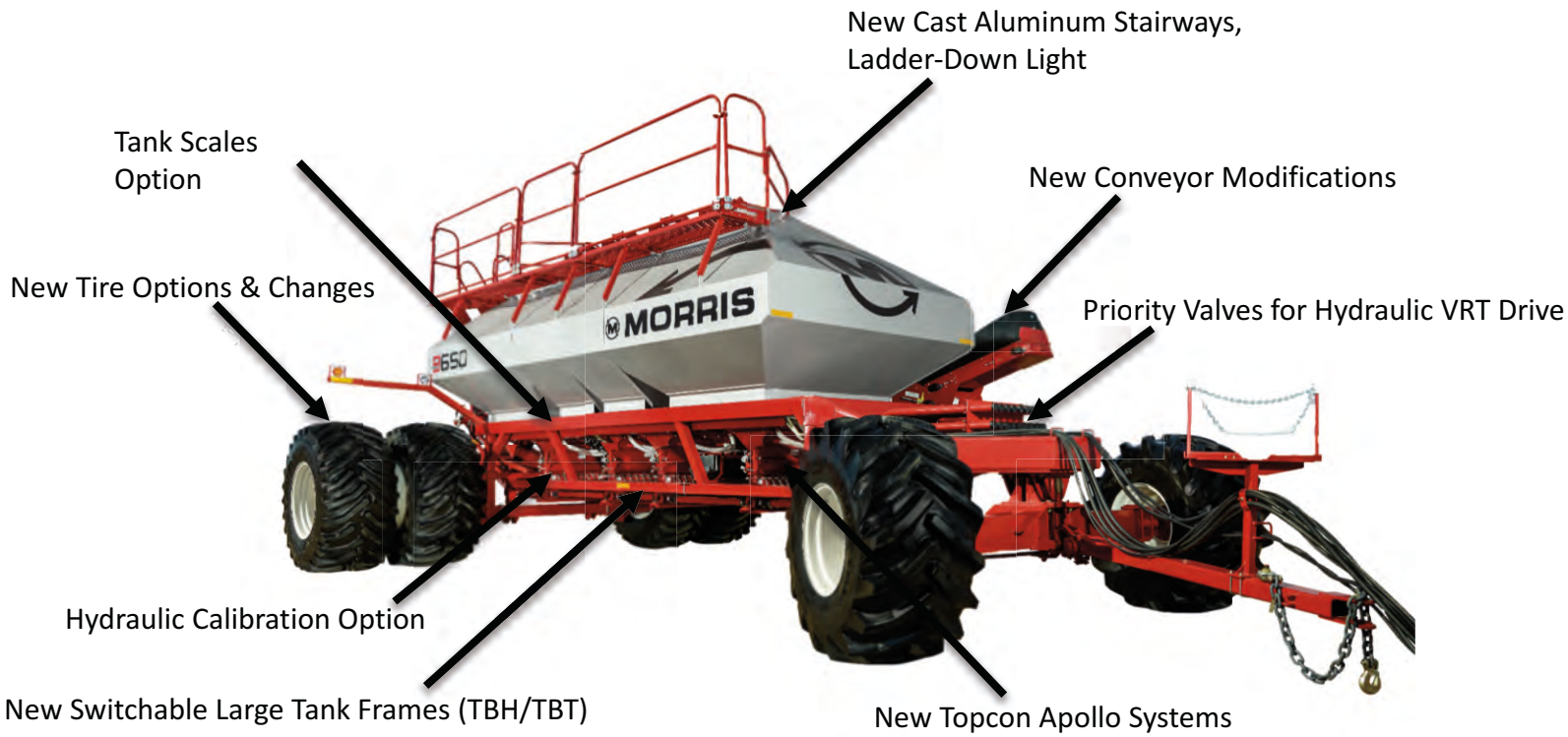


It is **extremely** important that wheel nuts be checked after the first fifteen minutes of field operation and then every 1/2 hour **until torque is maintained**. Then check every 5 hours, 25 hours, 50 hours and annually thereafter. Repeat this procedure if a wheel is removed and re-installed.

For torque specs please refer to the Maintenance section of the Air Cart Operators manual or decal N56050.

Note that once torque is maintained a marker can be used to mark the nut/rim position so that a visual check can be done periodically.

New Updates For 2015/2016



Core Capabilities

Precision Metering

- Spiral-fluted Metering Wheel
- Continuous product flow
- Widened for up to 10 wheels (ICT Only)

Priority Valve for VRT

- New VRT drive carts will have a standard priority valve for the metering drives.
- Allows for a wider range of desired fan speed settings, without losing flow to the transmissions.

Core Capabilities - Hydraulic Requirements

9 Series Hydraulic Oil Requirements			
Type	Consumption (Gal/Min)	Consumption (Litre/Min)	Fan Pressure (PSI)
Hydraulic Drive - Single Fan	21	80	2,750
Hydraulic Drive - Dual Fan	42	160	2,750
*VRT Drive - Single Fan	26.5	101	2,750
*VRT Drive - Dual Fan	47.5	181	2,750

***Note, VRT Drive adds an additional 5.5-6 Gal/Min**

**The need for a dual fan option will depend on a number of variables including the seeding unit width, number of primary runs, working speed and application rates for each tank.

Core Capabilities - Horsepower Requirements

9 Series Horsepower Requirements		
Frame Size	For Tank in Normal Field Conditions (Full Cart)	Fan Requirement (hp)
Small (9365-9535)	50	25 (per fan)
Large (9445-9650)	75	25 (per fan)
X-Large (9550-9800)	100	25 (per fan)

Lubrication

Fan Bearings

- Grease every 100 hours

Greasing Pivot Points

- Drive shaft bearings - every 50 hours
- Oil chains every 50 hours

Notes:

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Daily Maintenance

Check for:

- Air leaks using a soapy water solution
- Fan screen and blade are free of debris
- Tank lids are sealing properly
- Chains are lubricated with oil
- Double shoot collector valve moves

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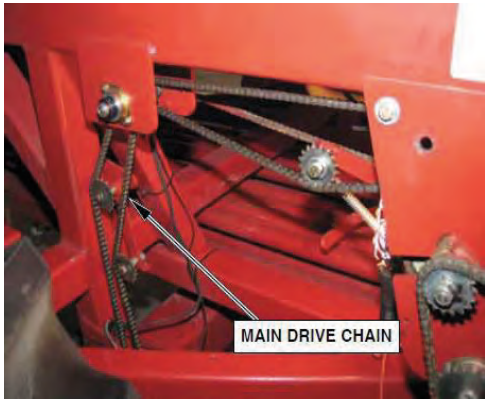
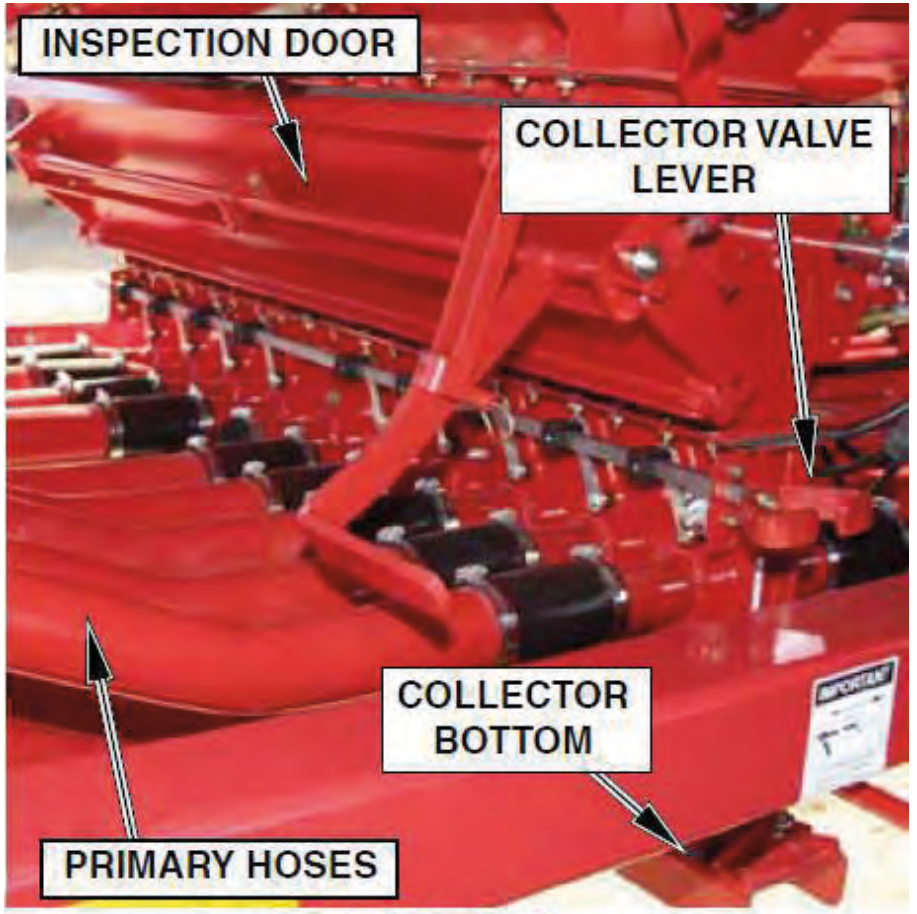


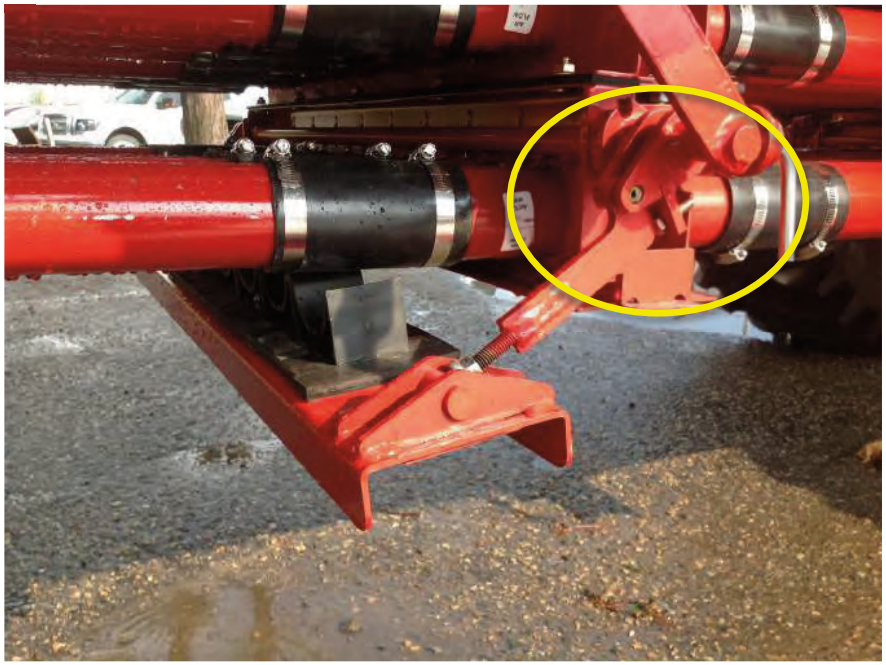


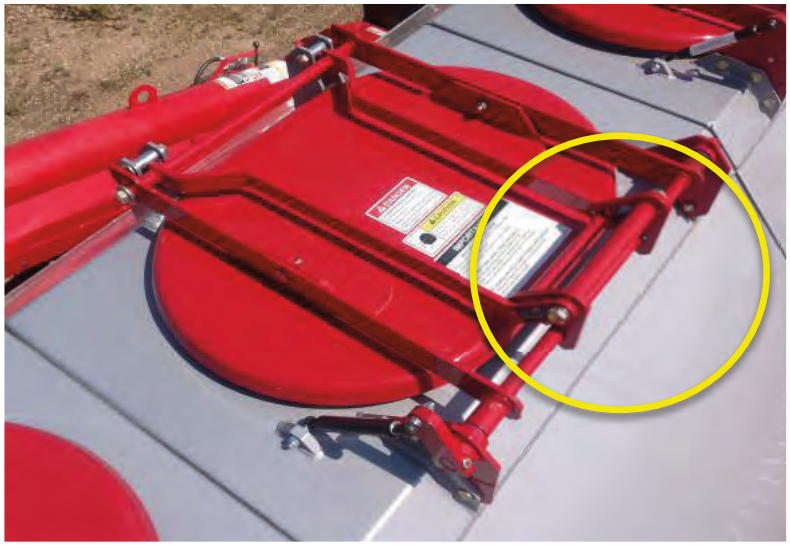
Double Shoot Shown

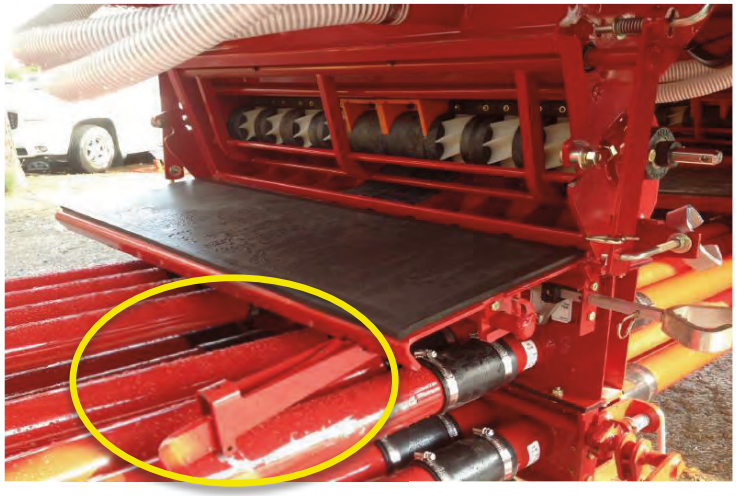
Operator Convenience

All new quick-latch systems on the left-hand side to make operation more convenient and efficient for operators.

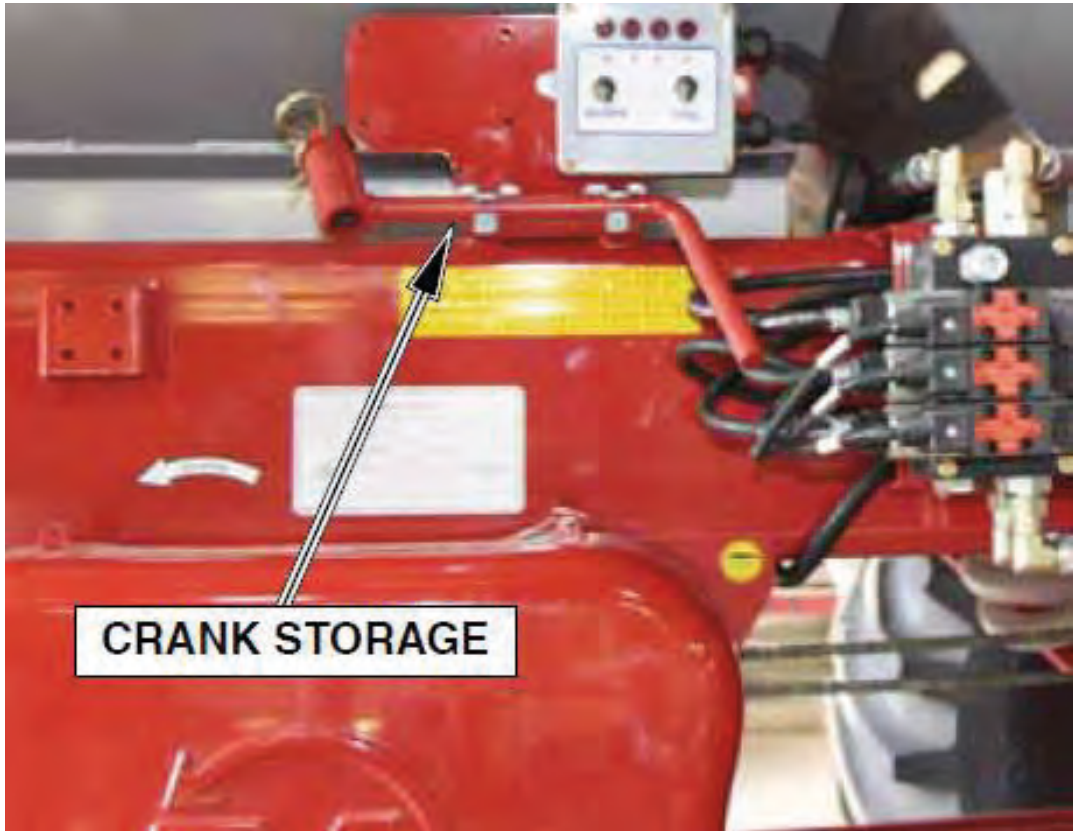
- New seed plate door with one-sided lever
- Quick latch lids with gas shock assisted opening
- New cleanout plate/lever to replace wingnut method





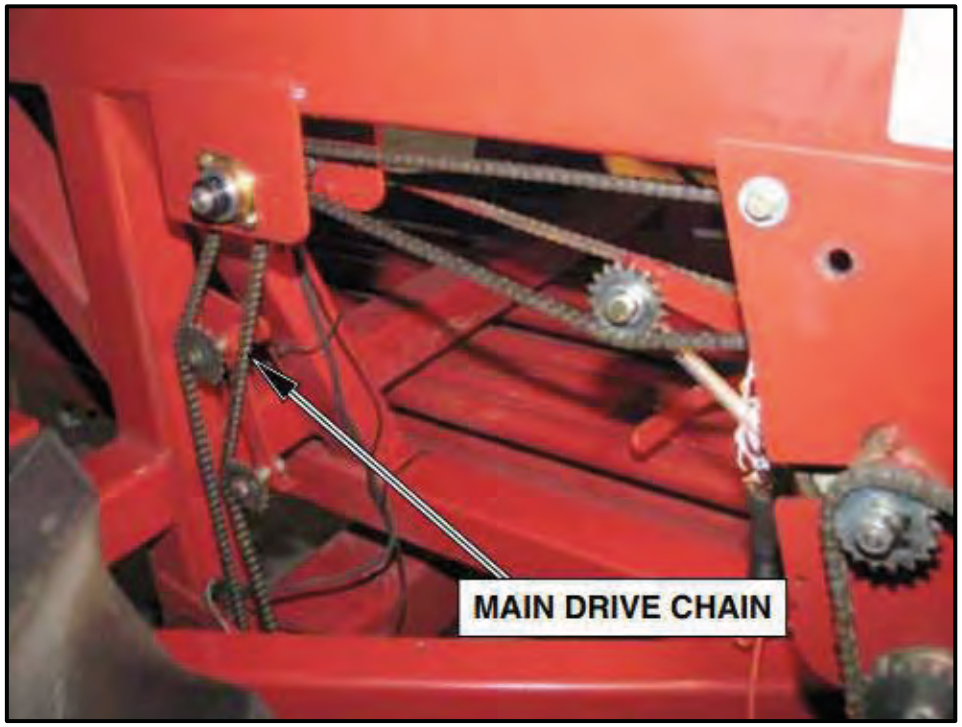


Crank Operation/Storage



Note that the crank for Standard Drive carts is stored right under the full-bin indicators and operates on the 2nd transmission as opposed to previously being attached to the rear transmission on 8 Series Carts.

Main Drive Chain (Transport)



Main drive chain (ref section 5-17 of 9 Series Operator's Manual):

- Disconnect when transporting - this will help prevent premature wear on the drive.

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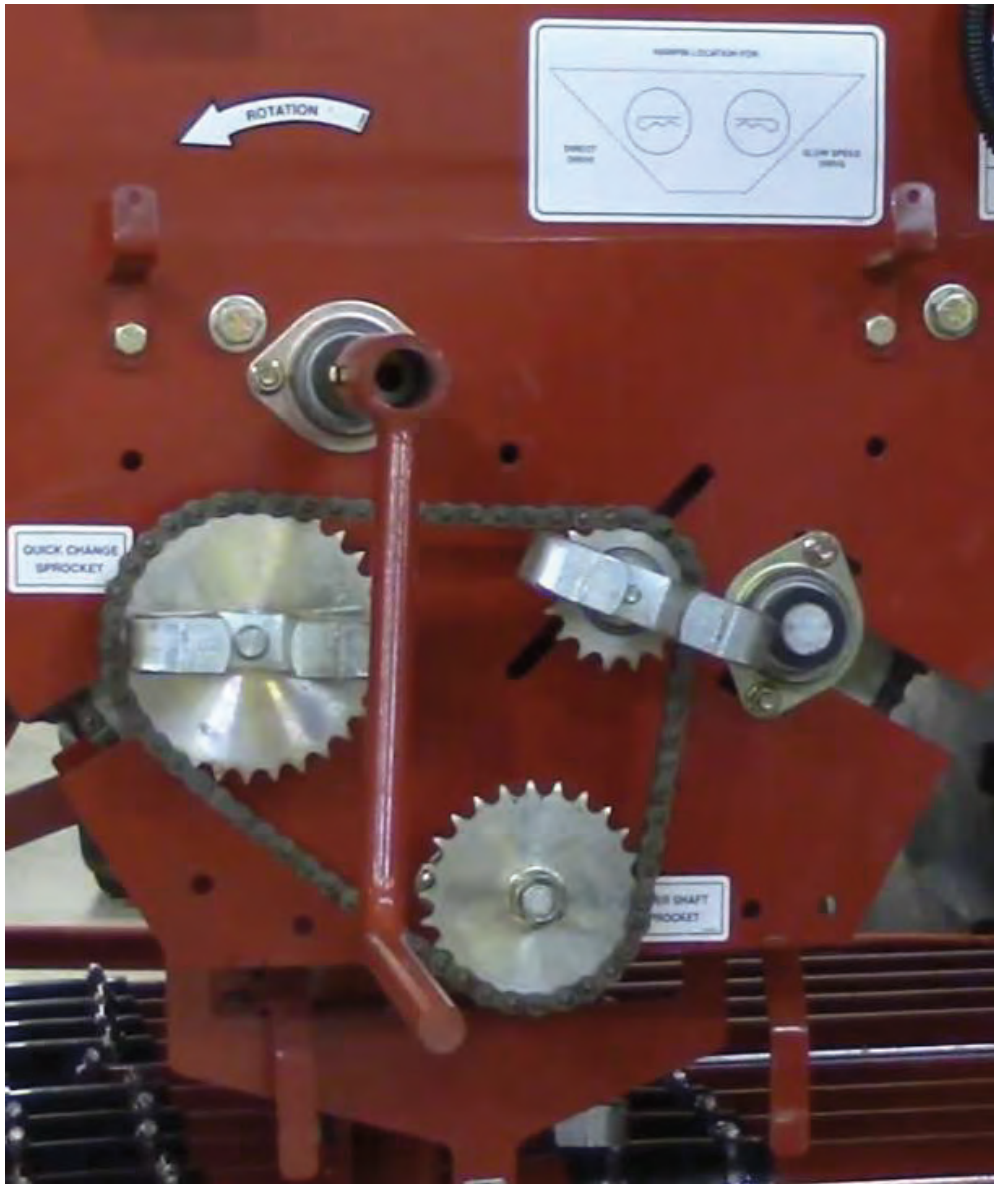
Meter Rate Adjustment

Rate change sprocket

- All transmission on the 9 Series can be direct or slow speed drive

Notes:



Seeding Fine Seeds

Transmission

- When seeding fine seed such as canola or mustard, the slow speed drive on the transmission must be engaged to ensure the low rates required for these types of product

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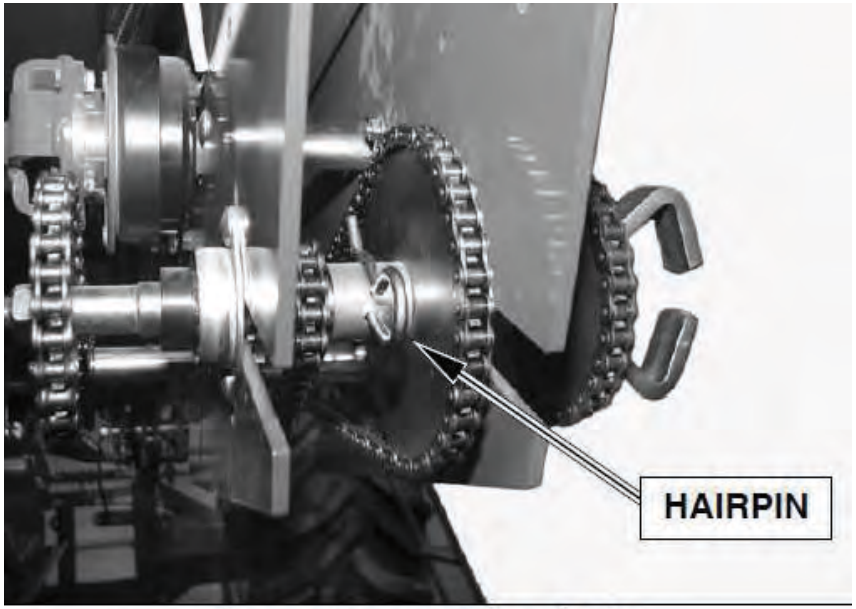

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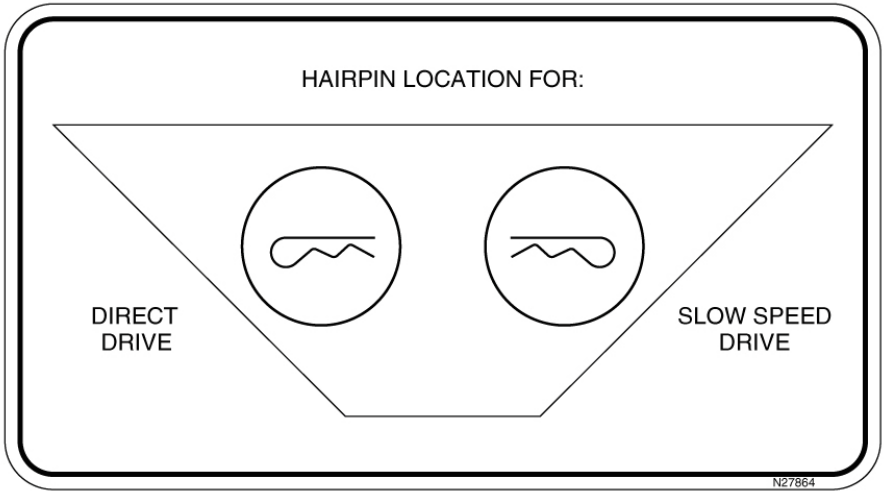
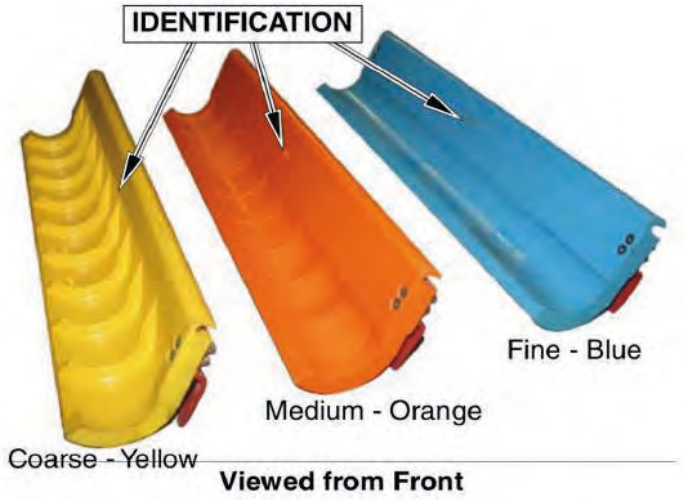


Metering System – Seed Plates

Fine, Medium, Coarse Seed Plates

- Refer to seed charts for product type
- Make sure tank shut-offs are open
- Install seed plate with hook to the top of the metering body.
- Rotate seed plate towards the metershaft with top part of seed plate hooked to the shaft running through the top of the meter body.



Seed Plate Assembly complete with clips:

9 SERIES Air Cart

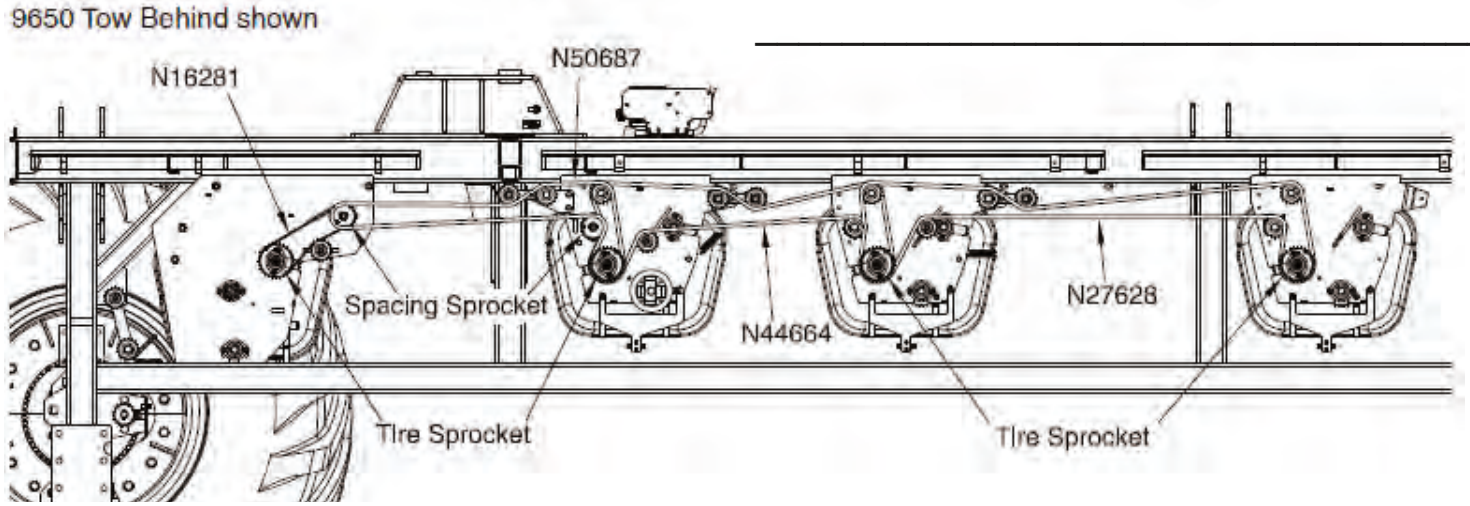
Rate	Metershaft Sprocket Size	Maximum Size of Quick Change Sprocket	Minimum Size of Quick Change Sprocket
Standard	25 Tooth	45 Tooth	12 Tooth
Low Rate (1)	35 Tooth	33 Tooth	12 Tooth
Low Rate (2)	40 Tooth	26 Tooth	12 Tooth
High Rate	15 Tooth	45 Tooth	18 Tooth

Rate Charts

Rate change sprocket

- Make sure you have the correct spacing sprocket installed - ref: sec 5-54 Operator's Manual
- Check tire sprocket - ref: sec 5-56 Operator's Manual

Notes:



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Rate Calibration

Double shoot

- Cycle the double shoot collector valve daily
- Always use the calibration insert when conducting a product calibration
- Ensure flappers move freely and are seated tight at either side to prevent air imbalances within the pipes

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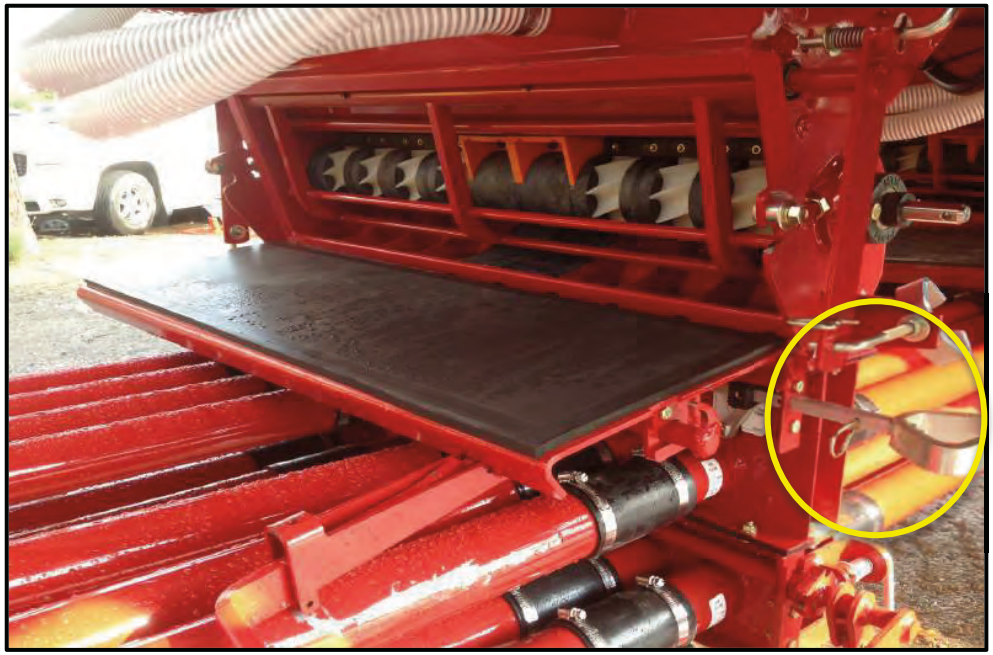

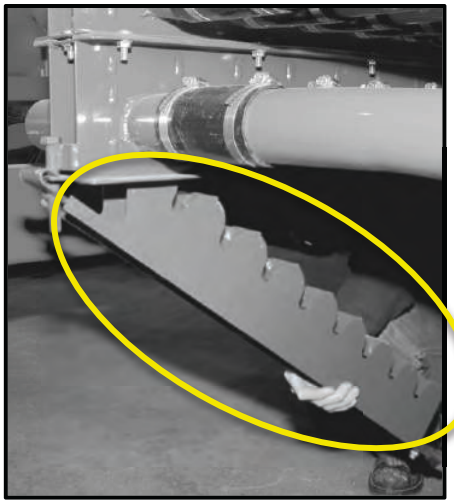

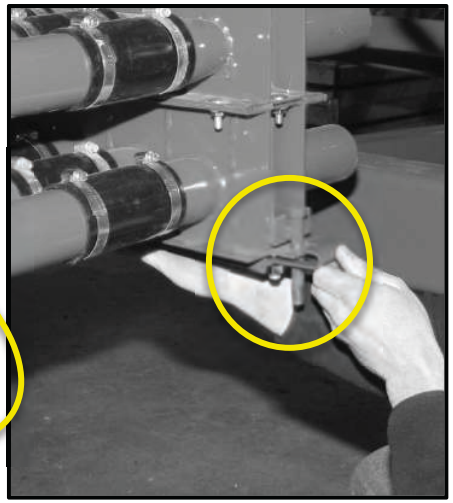

Rate Calibration

Turning the Crank

- Refer to the Operator's Manual for # of crank revolutions for the model of air cart and tire size for 1/10 acre
- Always turn crank proper # of revolutions for 1 acre when seeding canola

Example: For a 9450 with 800/65 R32 Tires and a 51ft wide seeding tool (W) width: The measured Tire Circumference (Tc) was 211.6 inches.

For 32" Rim

Crank Rotations (R) = (82328.4/W)/Tc

= (82328.4/51)/211.6

= 7.63

Notes:

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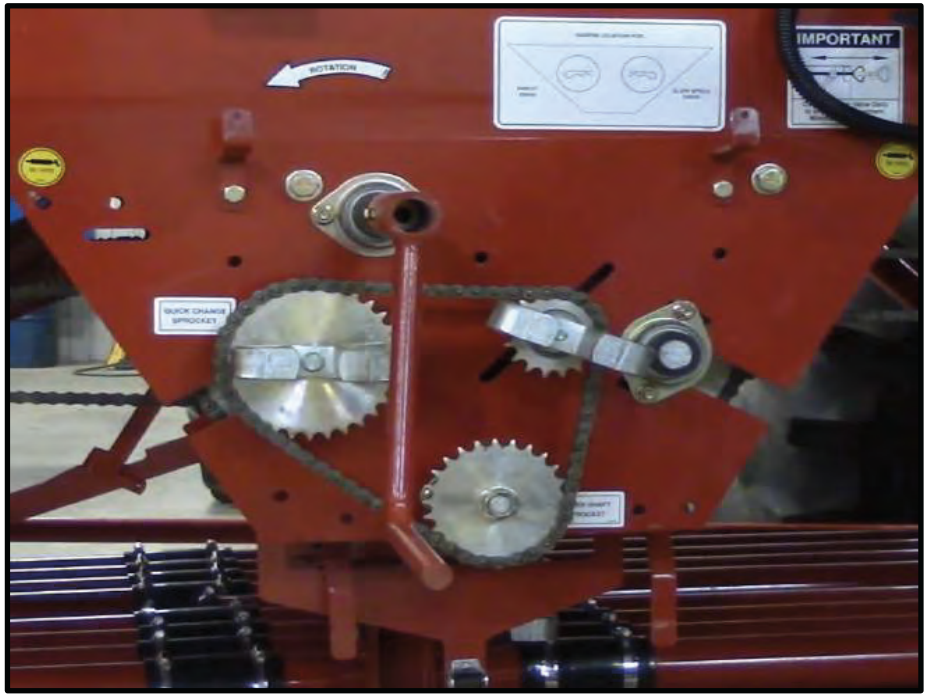
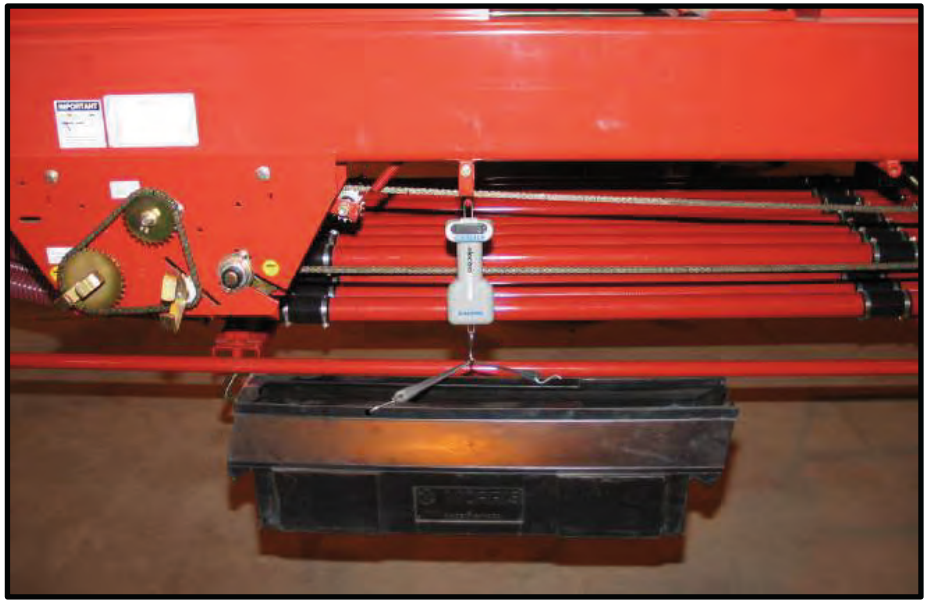




Rate Calibration - Using Rotation Value Formula

- Ensure tires are at correct pressure.
- Determine Tire Circumference (Tc) as follows:
  - Check under normal field conditions with tanks half full.
  - Mark tire and starting point.
  - Drive air cart 10 revolutions of tire in a straight line.
  - Mark ending point.
  - Measure distance from starting point to ending point and divide by 10 to get the rolling circumference of the tire (Tc).

- Calculate the number of rotations (R) of the calibration crank for 1/10 Acre. Record value below for future reference.

  Note: For reference nominal (R) values are listed in Section 12 of the manual.

- Calculate required tire sprocket size (Ts) and to ensure correct sprockets are installed on the Air Cart. Record value below for future reference.

Note: Due to ratios the value may not be a whole number and should be rounded to nearest value.

- Calculate the monitor PP400 setting. Record value below for future reference. Change monitor to new PP400 value as outlined under *"Changing Monitor Settings"* under Monitor Section.

Example:

For a 9450 with 800/65 R32 Tires and a 51ft wide seeding tool (W) with:

The measured Tire Circumference (Tc) was 211.6 inches.

For 32" Rim

Crank Rotations (R) = (82328.4/W)/Tc

= (82328.4/51)/211.6

= 7.63

Monitor PP400 = 80640/Tc

= 80640/211.6

= 381

Calibration Formulas - Imperial

Rotations of Crank for 1/10 Acre:

For 32" Rim = (82328.4/W)/Tc

For 38" Rim = (82328.4/W)/Tc **R =** _____

Tire Sprocket Size:

For 32" Rim = 5992/Tc

For 38" Rim = 5992/Tc **Ts =** _____

Monitor PP400 Setting:

For 32" Rim = 80640/Tc

For 38" Rim = 80640/Tc **PP400 =** _____

Tc = Tire Circumference measured in inches

W = Working Width measured in feet

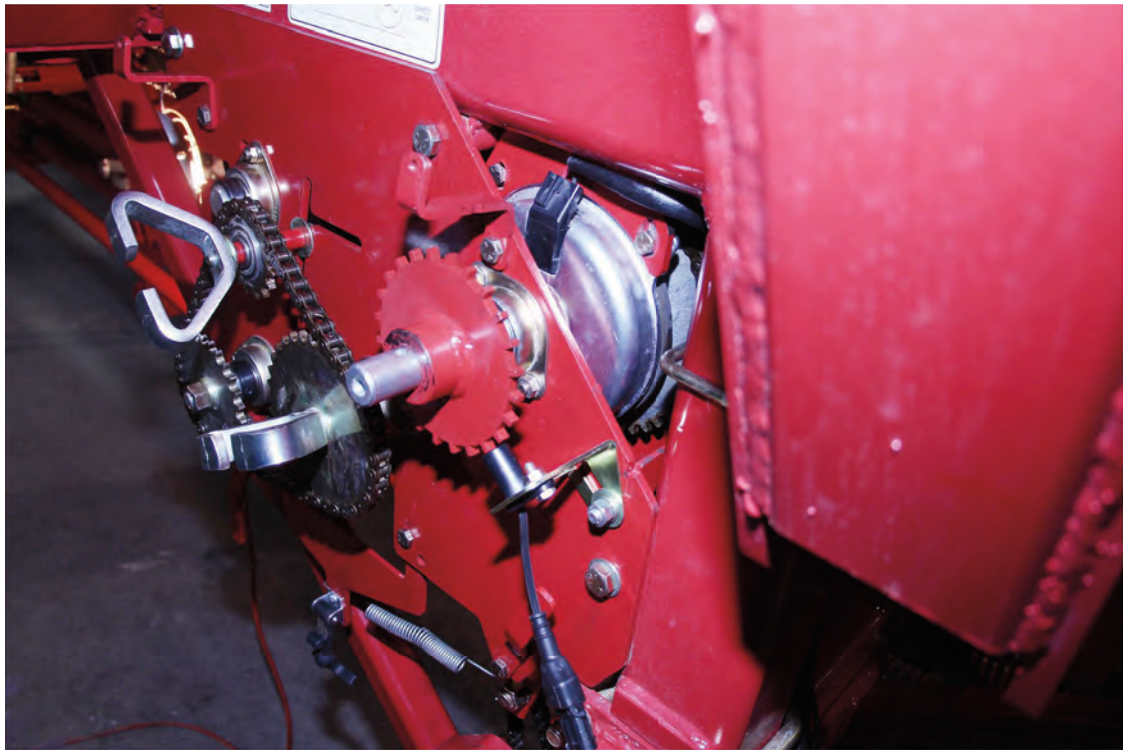
Optional Acre Tally Factor:

F = 56/R **F =** _____

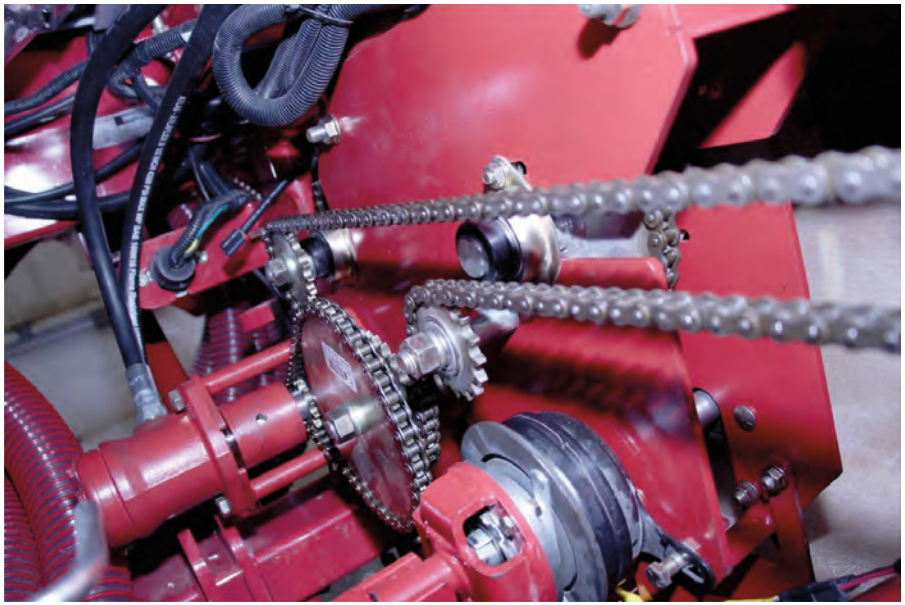
Hydraulic Calibration Option

- New hydraulic calibration option available for standard drive model carts.

- Allows for a faster and more simplified calibration process, removing unnecessary physical demand.



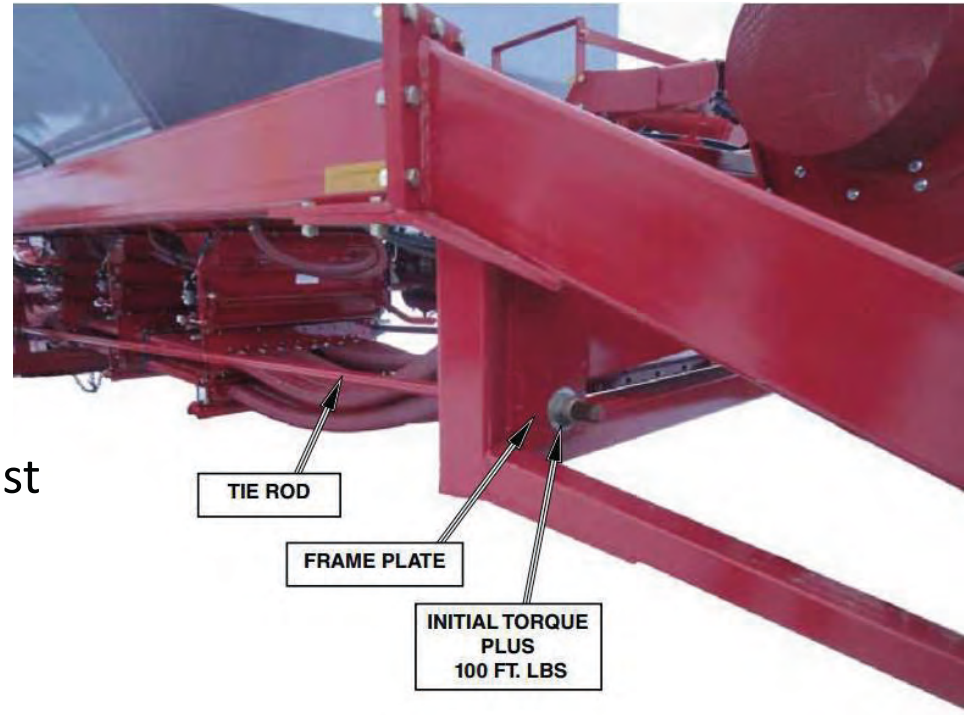
Hydraulic Calibration Option



Tie-Rod Torquing

On the 9365 and 9450 Tow-Between Carts the Tie Rod torque procedure has changed as follows:

1. Tighten the nut up to the frame plate.
2. Record the torque just before contacting the plate. (Initial Torque)
3. Add 100 ft-lbs to the recorded torque and tighten the nut against the plate at this torque.



Check at 10 and 50 hours and periodically afterwards.

Filling Tanks

2,3 or 4 Tanks

- Always screen your product for foreign material - tank screens are standard on 9 Series Air Carts
- **T**ank lids should be adjusted to between 25-30lbs, which is recommended for opening/closing them.
- When storing reduce the amount of torque to preserve tank seals

Important: Before Filling Tank

- Correct seed plate is installed
- Clean out doors are fully sealed
- Run auger before placing downspout into the tank - this will ensure auger is free of debris

Notes:

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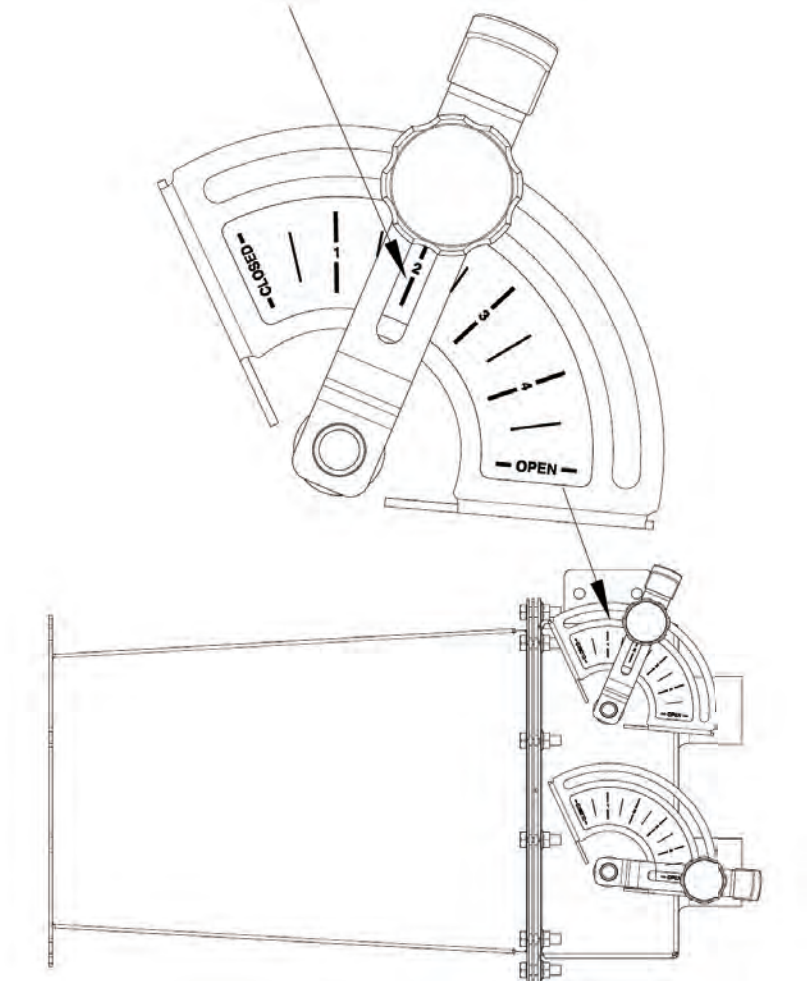
Plenum Settings



Plenum Damper Settings

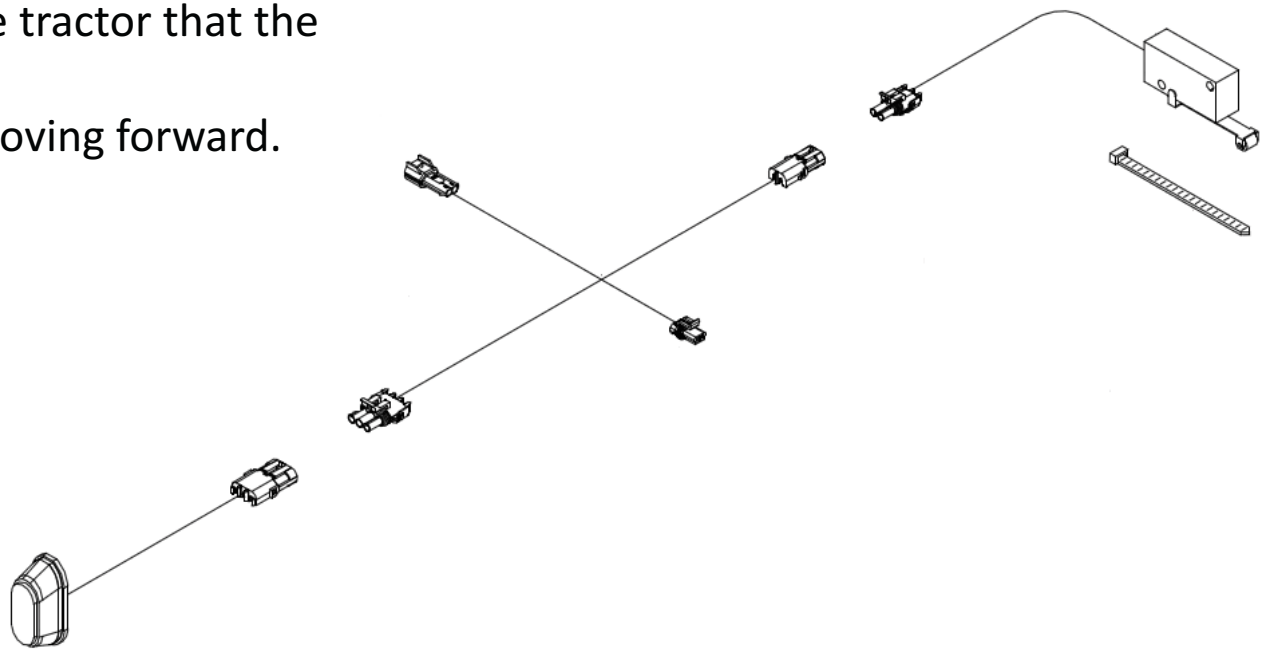
- Set plenum damper so that setting is in the middle of slot.
- This damper is set at the 2 position.

Suggested Plenum Settings				
Product	Seed		Fertilizer	
	Rate lb/acre	Damper Setting	Rate lb/acre	Damper Setting
Fine Seeds	All Rates	1	All Rates	Open
Coarse Grains	90 lb (100 kg/ha)	Open	50 lb (56 kg/ha)	2
	90 lb (100 kg/ha)	4	100 lb (112 kg/lb)	Open
	90 lb (100 kg/ha)	3	150 + lb (168 kg/ha	Open
Large Seeds	180 lb (200 kg/ha)	Open	40 lb (45 kg/ha)	2
Single Shoot	Lower Pipes - Top Damper Closed - Bottom Damper Open			
	Upper Pipes - Top Damper Open - Bottom Damper Closed			

Operator Convenience

Ladder Down Light

- Strobe light that sits at the front end of the cart, connected to cart harness.
- Notifies operator in the tractor that the ladder is down.
- Standard on all carts moving forward.



Fan Speed Recommendations

Air Delivery System

- Remove inspection doors and check for debris prior to seeding
- Turning your primary hoses (2.5”) ¼ turn will help extend the life of the hoses

Check for air leaks prior to and during seeding

- Put off plates between the drill and tank before starting
- Use a soap and water solution in a spray bottle with the fan running
- Tank lids, metering body shaft seals
- Metering bodies to tank seals
- Collector to metering body seals
- Fan to plenum
- Inspection doors
- Collector door seals
- Couplers
- Access doors on Flat

17 inch Diameter Impeller Suggested Fan RPM 4.5 mph (7.2 kph) on a 71 ft unit		
Combined Application Rate	Fan Speed Setting	
	Single Shoot	Double Shoot
3 - 50 lbs/acre 3 - 56 kg/ha	3250 - 3500 RPM	3000 - 3250 RPM
50 - 100 lbs/acre 56 112 kg/ha	3500 - 3750 RPM	3250 - 3500 RPM
100 - 150 lbs/acre 112 - 168 kg/ha	3750 - 4000 RPM	3500 - 3750 RPM
150 - 200 lbs/acre 168 - 224 kg/ha	4000 - 4250 RPM	3750 - 4000 RPM
200 - 250 lbs/acre 224 - 280 kg/ha	4250 - 4500 RPM	4000 - 4250 RPM
250 - 300 lbs/acre 280 - 336 kg/ha	4500 - 4750 RPM	4250 - 4500 RPM
300 - 350 lbs/acre 336 - 392 kg/ha	4750 - 5000 RPM	4500 - 4750 RPM
> 350 lbs/acre > 392 kg/ha	-	4750 - 5000 RPM
Note: Fan Speeds given are when applying product. It is normal for fan speed to drop when not applying product.		

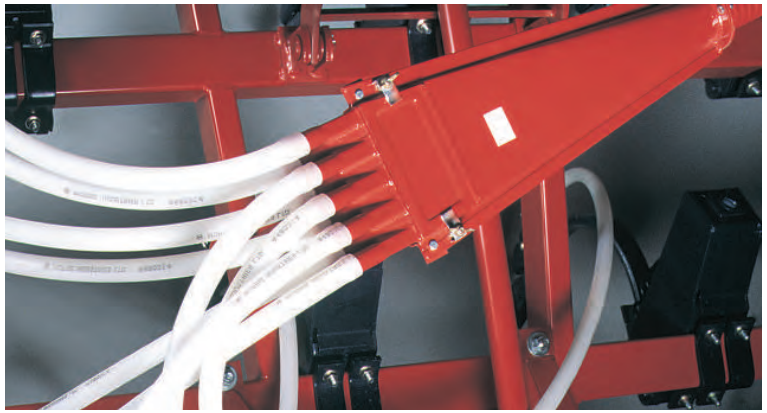


Chart is based on a 71 foot machine traveling at 4.5 mph

RPM = Product(lbs) x Speed x Width(ft)

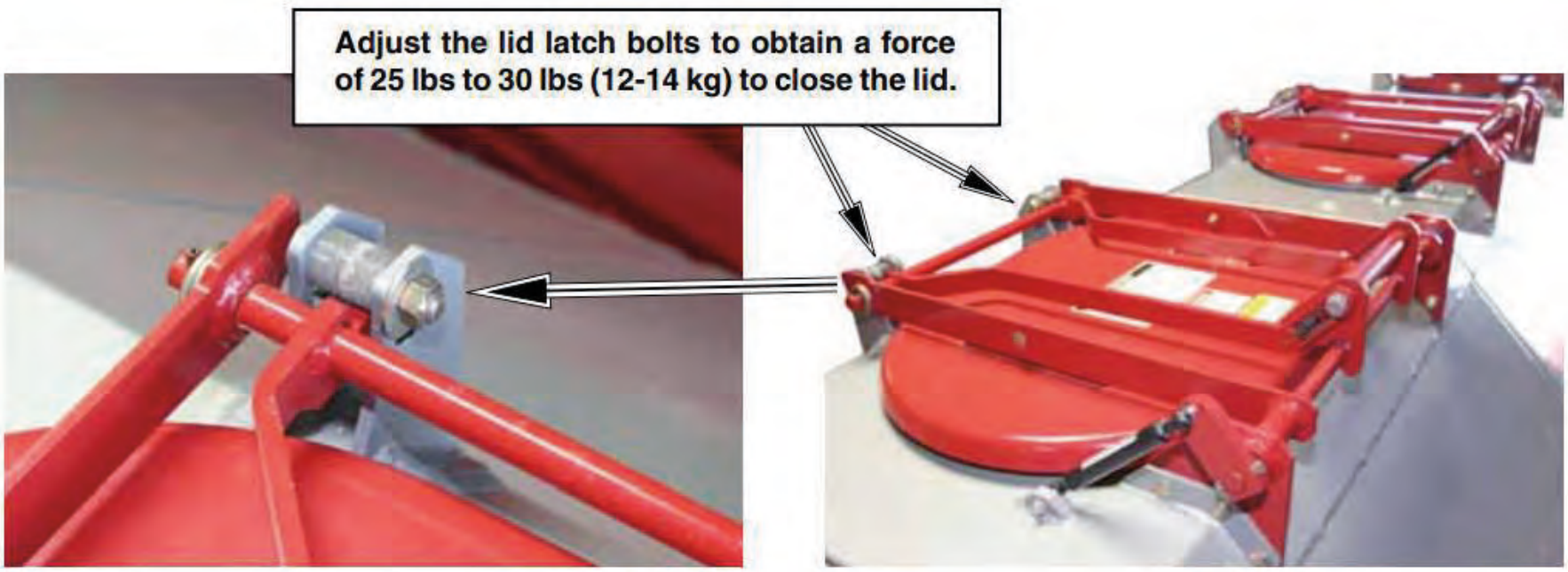
Tank Lid Adjustment

Check Tank Lid tension on *all tanks* at beginning of each season and periodically during season for air leaks. The following checks and adjustments must be made to prevent air leaks from occurring:

- Check for any foreign material embedded into seal. Clean out foreign material from seal surface.
- Check seal for cuts and abrasions. If seal is cut or severely worn, then replace seal.
- Ensure seal is positioned properly on steel rim around tank opening.
- Use a 0-100 lb. (0-45 kg) spring scale to check the tank lid closing force. With the lid near the closed position, place one end of the scale *on* the tank lid handle. Pull down on the scale and note the maximum force it takes to hold the lid. The force needed to close the lid **must be 25 lbs to 30 lbs (12-14 kg).**
- Adjust the lid latch adjusting bolts as necessary. This will ensure that the lid is sufficiently tight and prevent any leaks.
- Re-check for leaks. If Lids still leak re-adjust latch bolts. Re-check for leaks.

Note: When air cart is not in use, leave lid latches loose to help maintain resilience of the seals.

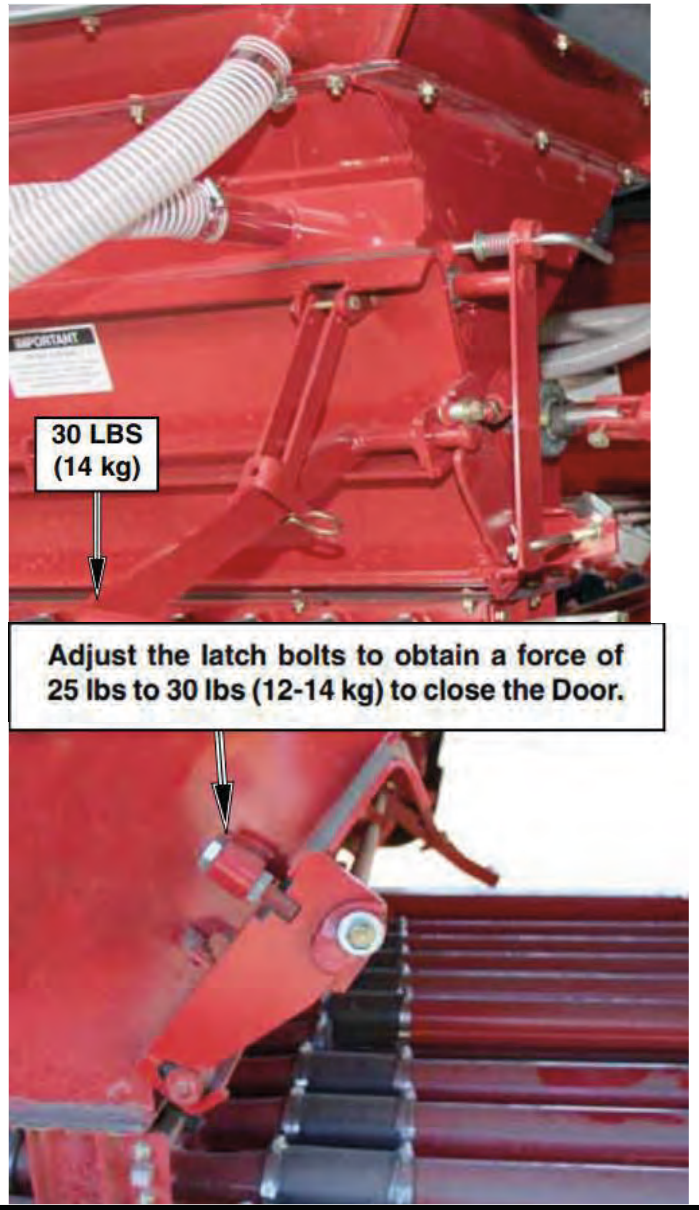
Tank Lid Adjustment



Inspection Door Adjustment

Check Inspection Door on all *metering bodies* at beginning of each season and periodically during season for air leaks. The following checks and adjustments must be made to prevent air leaks from occurring:

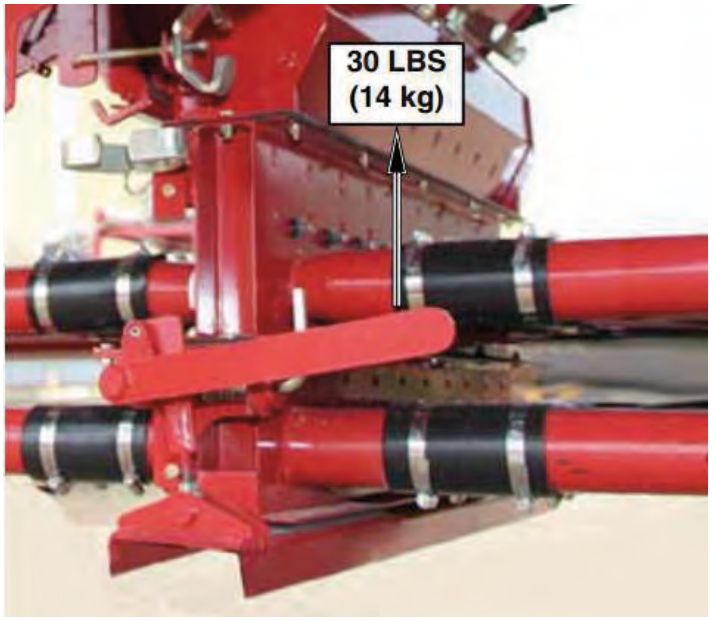
- Check for any foreign material embedded into seal. Clean out foreign material from seal surface.
- Check seal for cuts and abrasions. If seal is cut or severely worn, then replace seal.
- Ensure seal is positioned properly on steel rim around tank opening.
- Use a 1-100 lb. (0-45 kg) spring scale to check the tank lid closing force. With the Door near the closed position, place one end of the scale on the Door handle. Pull down on the scale and note the maximum force it takes to latch handle lock. The force needed to latch handle lock must be **25 lbs to 30 lbs (12-14 kg).**
- Adjust the door latch adjusting bolts as necessary. This will ensure that the lid is sufficiently tight and prevent any leaks.
- Re-check for leaks. If Doors still leak adjust latch bolts one or two more turns. Re-check for leaks.



9 SERIES Cleanout Door Adjustment

Check Clean Out Door on *all metering bodies* at beginning of each season and periodically during season for air leaks. The following checks and adjustments must be made to prevent air leaks from occurring:

- Check for any foreign material embedded into seal. Clean out foreign material from seal surface.
- Check seal for cuts and abrasions. If seal is cut or severely worn, then replace seal.
- Ensure seal is positioned properly on steel rim around tank opening.
- Use a 0-100 lb. (0-45 kg) spring scale to check the tank lid closing force. With the Door near the closed position, place one end of the scale *on* the Door handle. Pull down on the scale and note the maximum force it takes to latch handle lock. The force needed to latch handle lock **must be 25 lbs to 30 lbs (12-14 kg).**
- Adjust the door latch adjusting bolts as necessary. This will ensure that the lid is sufficiently tight and prevent any leaks.
- Re-check for leaks. If Doors still leak adjust latch bolts one or two more turns. Re-check for leaks.



Adjust the latch bolts to obtain a force of 25 lbs to 30 lbs (12-14 kg) to close the Door.

Dual Fans - Hydraulics

- For large frame drills (71’ and up)and/or very high product rates
- Each fan is dedicated to one product stream
- Each fan will have separate hydraulic remotes
- **21 gpm hydraulic flow required per fan. Extra 6.5 gpm required if VRT Drive**
- If running a dual fan, each product stream is considered to be a single-shoot system

Notes:

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Auger/Conveyor Hydraulics

FM Series - Effective working range up to a distance of 60 metres (200 feet).
Narrow Band FM Series - Effective working range up to a distance of 300 metres (1000 feet)

STOP Button switches off the Receiver and the keypad function buttons

L.E.D. Blinks when Transmitter and Receiver are active.

L.E.D. ON when a Transmitter Button is pressed.

L.E.D. FLASHES when batteries are low an a Button is pressed

4 Release Screws for Battery Compartment at rear.

4 x AAA batteries

RESET Button activates the Receiver and the keypad function buttons

Function Buttons

SAFETY FEATURE

The Transmitter automatically transmits a **STOP** signal after 30 minutes; this de-activates the Receiver and the Transmitter keypad.

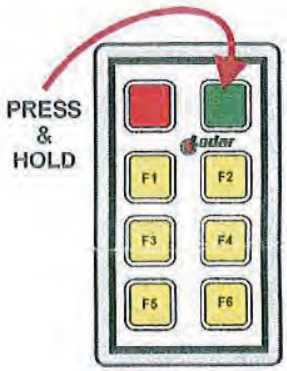
Auger/Conveyor Hydraulics

To register Transmitters to the Receiver.

Switch OFF or DISCONNECT the power to the Receiver.

Switch ON or Reconnect the power to the Receiver.
This opens a 20 second registration window in the Receiver processor.
If you are looking at the Receiver PCB the Fault LED Flashes.

Immediately PRESS and HOLD the Transmitter Reset Button (Indicated)
for 5 seconds during this 20 second window.
When the Transmitter is Registered the Fault LED lights continuously



IF YOU ARE REGISTERING TWO TRANSMITTERS THEN WITHIN 2 SECONDS

PRESS and then HOLD the second Transmitter Reset Button (indicated)
for 5 seconds all during the 20 second window.

When the second Transmitter is Registered the Fault LED goes out and the Set LED comes on.
Both your Transmitters are now operating the Receiver.

Monitoring

Monitor can display the status of the following functions

- Fan speed
- Ground speed
- Shaft speed (up to 4 tanks)
- Bin levels (up to 4 tanks)
- Flow blockage (up to 192 runs)
- Field area
- Total area

Monitor allows the following settings to be changed

- High and low fan speed alarm point
- Low shaft speed alarm point for 3 meter shafts
- Ground speed pulses per 400 ft and pulses per revolution
- Pulses per revolution of fan and 3 meter shafts
- Low bin alarm for 3 bins
- The number of Blockage Modules that are connected to the monitor
- Width of the implement
- Imperial or metric units
- English or Russian language

Monitoring – Variable Rate

Topcon X20 System

Simple to work with, easy to set, and GPS ready with large multi-read out screen. Full color touch screen allows for excellent visibility and ease of use. Provides you with on-the-go rate read outs, field mapping capabilities, and prescription seeding and fertilizing.

Benefit: While using prescription mapping, savings can be realized on input cost or better returns on input by putting product where it is needed.

Benefit: The ability to control a liquid or NH3 cart with the same controller.

Monitoring – Variable Rate & Input Control Technology

Topcon X30 System

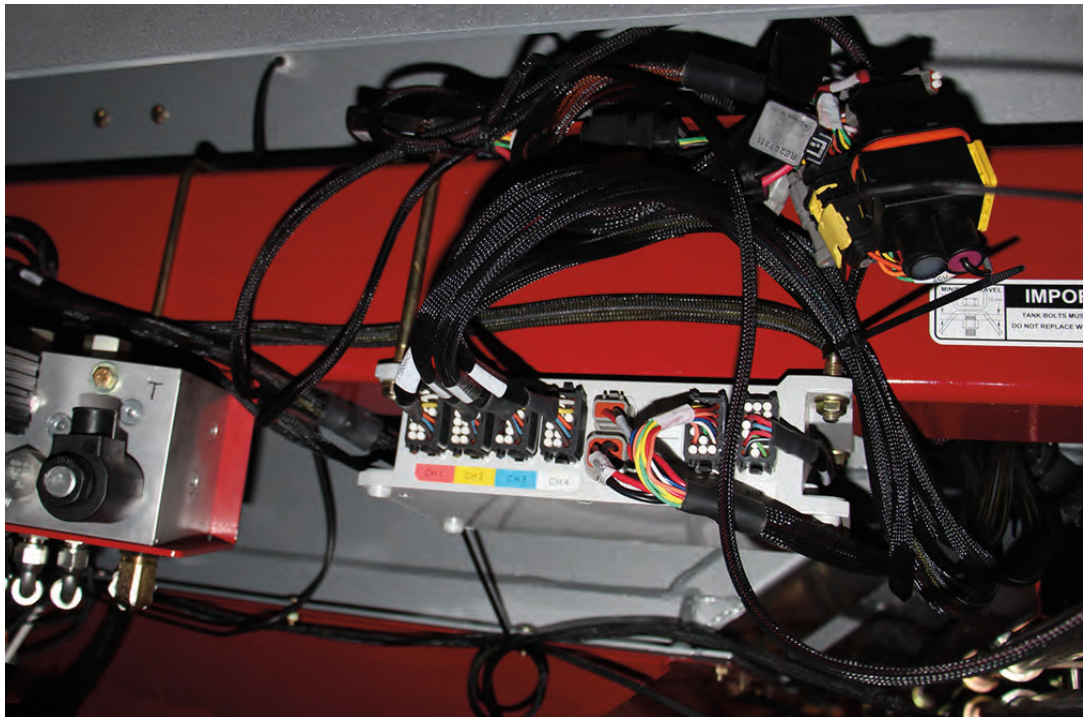
Newest monitoring system that has a wealth of capabilities for precision ag activities. Full touch-screen navigation built for fast and efficient movement

through the system.

Key capabilities include full variable rate monitoring readouts (customizable), **full operation for overlap control**, full field mapping capabilities (prescription), specific job monitoring, implement-specific presets and full interface screen view customization.

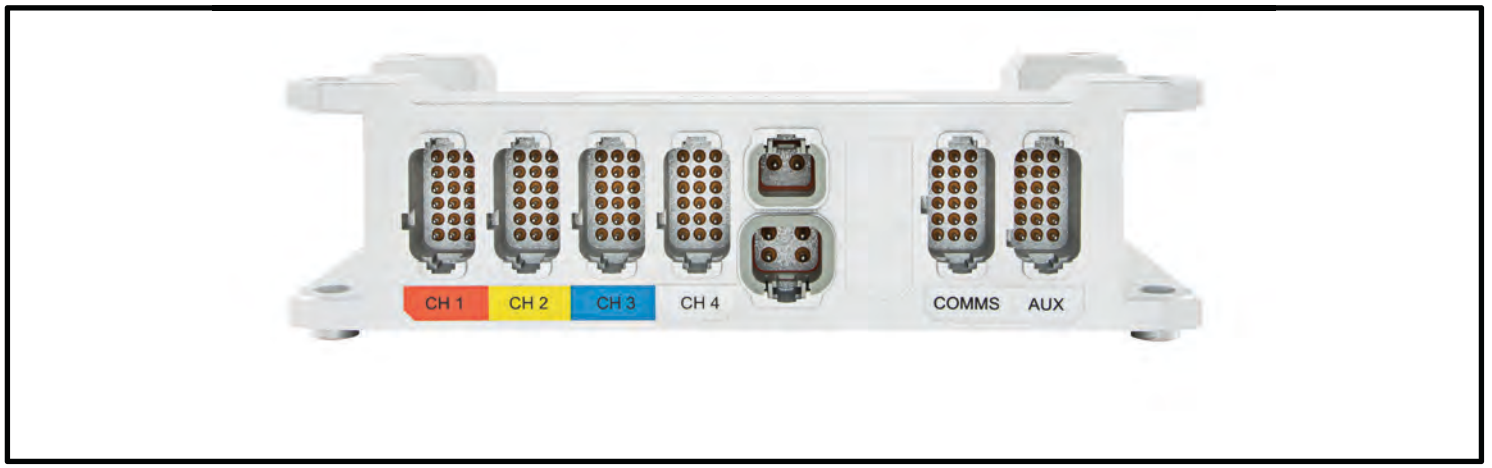
This monitor perform many functions, most importantly, it can fully operate the overlap control that will give you a realtime field view of your cost savings.

Topcon Apollo System



- ISO Compatible with X30 & OEM Monitors
- Can work with ground drive or variable rate.
- Can run 8 products simultaneously.
- Able to control 10 granular/10 liquid sections.
- Eliminates gray ISO bridge box in tractor cab.
- Pattison Liquid compatible for Morris.
- Simplified wiring/ECU schematics.

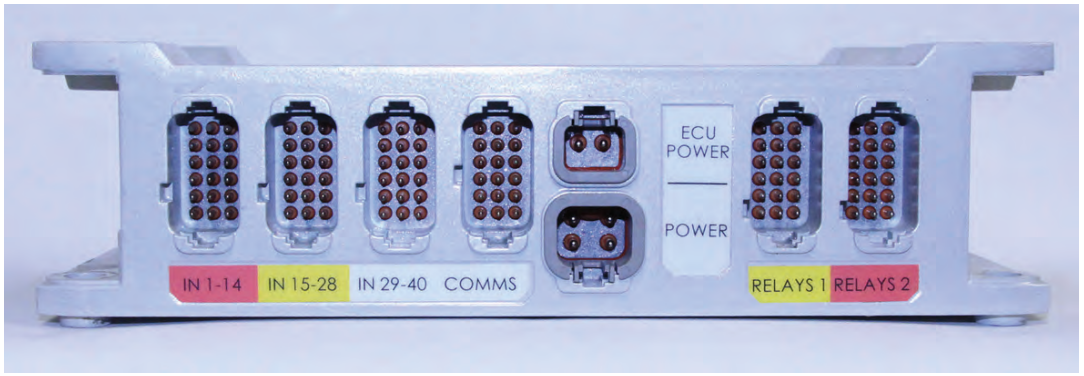
Apollo CM-40 Master Module



Features:
4 Channel Rate Control / PWM Drives

Monitoring of:
- Motor Encoders Feedback Sensors
- Tank Shaft Sensors
- Fan Shaft Speeds Sensors
- Low Bin Levels
- Implement Accumulator Pressure
- Case Drain Pressure

Apollo EM-24 I/O Module



Features:

- ASC Auto section control
- 10 Granular Sections + 10 Liquid Sections Simultaneously
- 40 section sensing inputs
- Blocked Head Monitoring [40 sensors per EM-24 ecu]

Apollo CM-40 Master Module

Apollo CM-40 replaces:

- MD-ECU
- IB-1 [ISO BRIDGE]

Input Accessories

Apollo Chassis mounted Key Pad- Replaces calibration Switch box.

- Key pad is used during calibration procedure, LED lights change color when Tank is On/Off.
- Play/Stop button - Starts/Stop calibration
- Reset – zeros calibration estimated weight
- Buttons 1 - 4 are used to turn tanks off during a multi-tank calibration*
- Calibrations follow the same procedure across all models

Note: Keypad cannot be used to entering actual weights into calibration wizard.

Input Control Technology (Overlap Control)

Electronic, Hydraulic & Mechanical system engineered to eliminate input overlap using a simple method.

Signal from X30 monitor either engages or disengages the gear drive system for each primary
run, starting or stopping the flow of product.

Simple sprocket driven system that is intuitive to understand and incredibly accurate to provide maximum cost savings.