AFS AccuControl Anhydrous Ammonia AFS Pro 700 Quick Reference Card (v28.* and after)

REQUIREMENTS

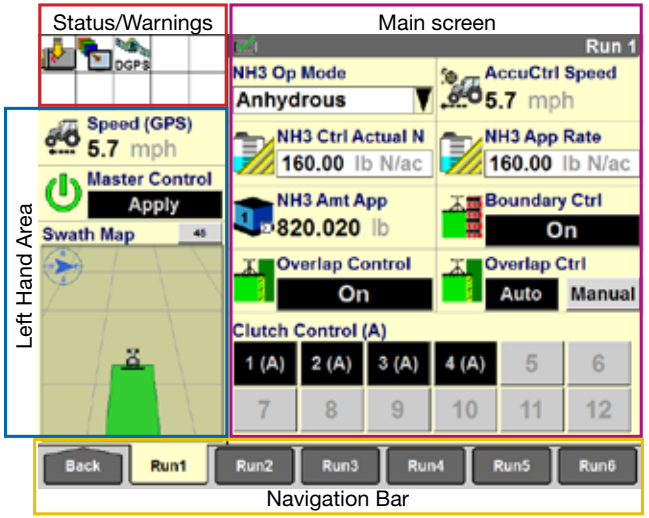
The following actions are required for proper operation. Working through this document in order will properly set up your anhydrous ammonia (NH_3) system for application. This guide is to be used as quick reference only. Insert a data card in the display before turning the display on.

DANGER!

1. Anhydrous Ammonia (NH_3) Under Pressure. Anhydrous ammonia can cause severe burning, blindness, or death. Carefully read and follow all safety instructions and warnings before operating or servicing equipment.
2. Always wear proper personal protective equipment when working with Anyhydrous and anhydrous ammonia.

1 – GENERAL NAVIGATION

1.1 Main Screens

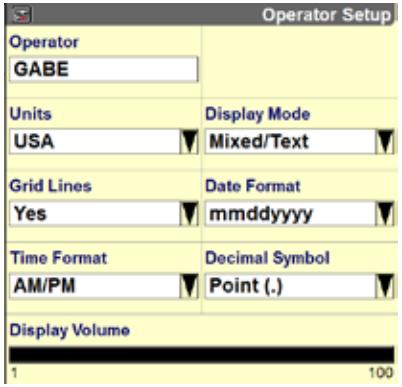


2 – SET-UP SCREENS

2.1 Operator

Toolbox>Oper

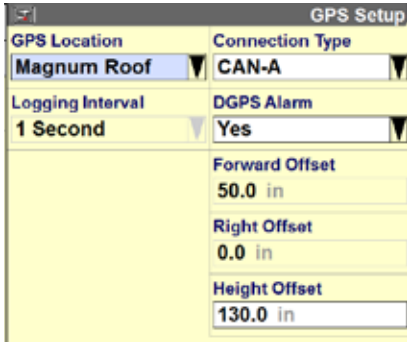
a) Create an operator
b) Select preferred units of measurement



2.2 GPS Setup

Toolbox>GPS

a) Verify GPS Location
b) Verify Offsets
c) Verify DGPS Type



3 – ANHYDROUS CONFIGURATION

Toolbox>AccuCtrl

Note: Activation is required (**Toolbox>Activate**) prior to these steps.

3.1 Basic Setup

a) Select AccuCtrl Operation [Anhydrous]
b) Select AccuCtrl Installed [Yes]
c) Create New Implement
d) Select Implement Type [Anhydrous Toolbar]

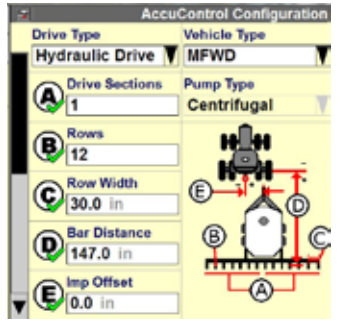
3 – ANHYDROUS CONFIGURATION – continued

3.2 Implement Configuration

a) Press 'Setup'
b) Select Drive Type
c) Select Vehicle Type
d) Set Number of Drive Sections [A]

NOTE! Section Control information entered in 3.3.

e) Set Total Number of Rows [B]
f) Enter Row Width [C]
g) Enter Bar Distance in Inches (axle to knife) [D]



NOTE! Verify GPS Offset (**Toolbox>GPS**)

h) Measure Implement Right/Left Offset [E]
i) Enter Rows Per Drive Section
j) Press 'Done'

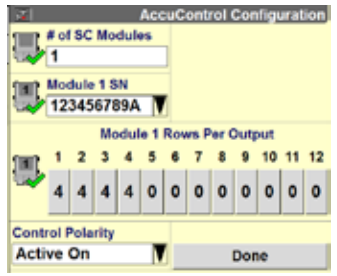
NOTE: The next setup steps may or may not be needed. The configuration of the NH_3 toolbar determines the need for setup. If the toolbar is not equipped with the capability, leave the setup as 'No'.

3.3 Section Control Setup (If equipped with Section Shutoff Valves)

a) Select Row Clutch [Yes]
b) Press 'Setup'
c) Assign Module Serial Numbers (starting w/modules on LH side)
d) Assign Rows Per Output (Number of Rows per Group)
e) Select Control Polarity

Note: Active On is common for Section Control Valves.

f) Select 'Done'



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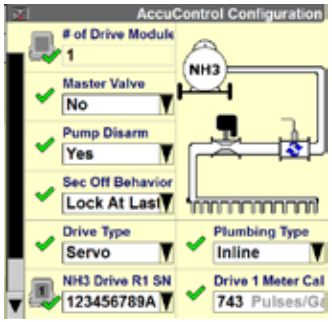
3.4 NH_3 Drive Set-up

a) Select NH3 Drive [Yes]
b) Press 'Setup'
c) Assign NH3 Drive Serial Numbers (starting w/ modules on LH side)
d) Select Drive Type [Servo or PWM]
e) Select Master Valve Type
f) Select Pump Disarm
fg) Select Sec Off Behavior [Lock at Last or Turn Off]
h) Enter Drive Meter Cal Number (Pulses/Gal)

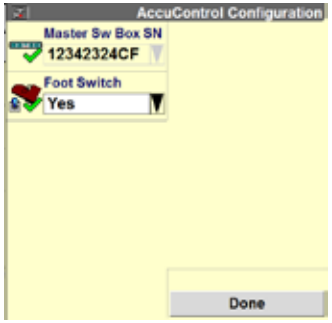


Note: Pulses/gallon will be found on the liquid flow meter. Some flow meters are measure in pulses/10 gallons. If this is the case, divide that value by 10 to find pulses/gallon.

i) Press 'Done'

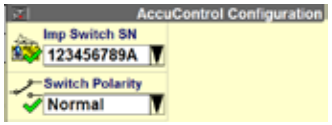
3.5 Master Switch Box (If Equipped with External Switch Box)

a) Select Master Sw Box [Yes]
b) Press 'Setup'
c) Verify Serial Number of Switch Box
d) Select Footswitch (if installed)
e) Press "Done'



3.6 Implement Switch (If equipped with Toolbar Mounted Implement Switch)

a) Select Imp Switch [Yes]
b) Press 'Setup'
c) Select Imp Switch Serial Number
d) Select Switch Polarity



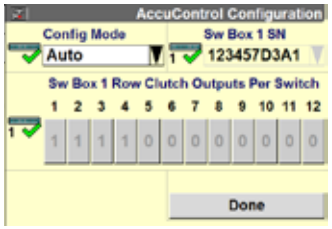
Note: Determine by raising and lowering the implement and watch the Implement Status Arrow in Status/Warning Area for proper operation.

e) Press 'Done'

Note: #1 EHR work switch on Magnum & Steiger tractors can be used as an implement switch (the #1 EHR must be cycled once after each start up to display the status arrow).

3.7 Section Switch Box (If equipped with External Section Switch Box or Desire Manual Valve Section Control through Run Screens)

a) Select Section Switch Box [Yes]
b) Press 'Setup'
c) Select Config Mode [Auto] or [Manual] for custom
d) Verify Sw Box Serial Number (if equipped w/ external switchbox)



Note: If no external switchbox is installed, User Defined Windows can be assigned to a Run Screen (**Toolbox>Layout**)

4 – WORK CONDITION – REQUIRED FOR OPERATION

Work Condition>Layer

IMPORTANT! The settings below are linked to a work condition. These must be selected or checked whenever a work condition is created/changed: product type, application rate, drive settings, product delay, product layer control and product control.

NOTE! A work condition name could be for a crop type, field condition, or weather condition, etc.

NOTE! This setup is required for logging/ mapping data and using Overlap & Boundary Control.

4.1 Preparation

a) Insert a data card in the display
b) Create/select a Grower/Farm/Field/Task and Crop Type (**Performance > Profile**)

4.2 Product Setup

Toolbox> Product

a) Name the product (ex. NH3)
b) Select form type for product [Granular]
c) Select Usage [Fertilizer]
d) Enter Default Application Rate
e) Enter Minimum Application Rate & Maximum Application Rate

4.2 Product Setup - continued

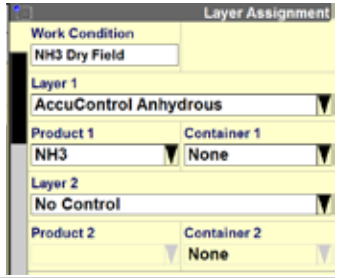
NOTE! App Rate will not be able to be adjusted outside of this range

NOTE! App Rates are measured in pounds of actual Nitrogen, NOT pounds of NH_3.

4.3 Product Layer Assignment

Work Condition> Layer
Assign a product to a control section of the Applicator.

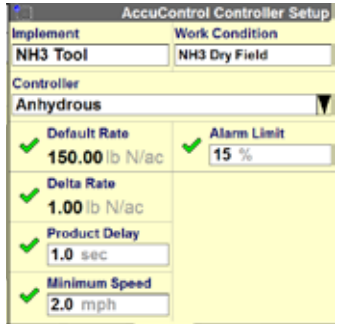
a) Select/Create a Work Condition
b) Select Layer 1 Control Type [AccuControl Anhydrous]
c) Select Product for Layer 1 Control
d) Assign Additional Layers as needed



4.4 Controller Setup – Anhydrous (if equipped)

Work Condition>Control

a) Verify Implement
b) Verify Work Condition
c) Select Controller [Anhydrous]
d) Product Delay – Default 1.0 sec. (see section 7 for Product Delay Measurement procedure)
e) Enter the Minimum Speed (if ground speed drops below this speed, applicator will apply at this set speed)
f) Enter value for Off-target Alarm Limit



5 – CALIBRATIONS
(If equipped with Anhydrous Rate Control)

5.1 Valve Calibration

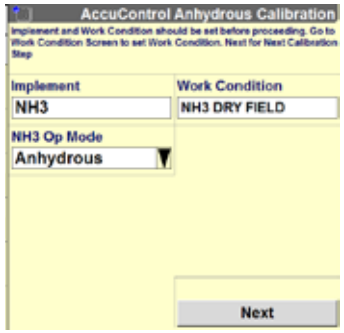
Work Condition>Valve Cal

Note: Vehicle & controlling components should be at normal operating temp/ conditions for these calibrations.

a) Select Drive Number to Calibrate
b) Press 'Start'
c) Valve will calibrate the following parameters automatically:
   – Breakout (Minimum response of valve)
   – Gain (Increase for more aggressiveness)
   – Deadzone (% Error before flow adjustment is made)
d) Repeat any other Drives

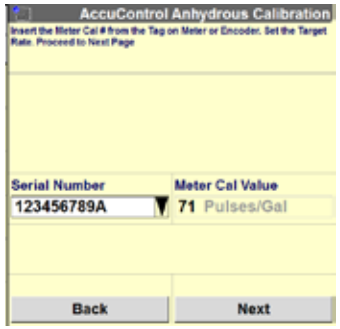
5.2 NH_3 Calibration

Work Condition>NH_3 Cal



Note: The initial & final nurse tank weight is required for this calibration.

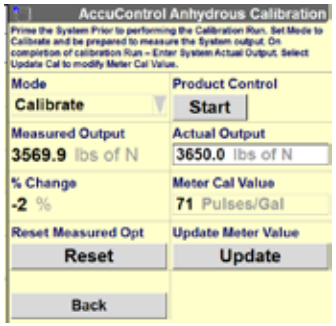
a) Verify Implement
b) Verify Work Condition
c) Select Anhydrous Op Mode – [Anhydrous] (Accept Safety Warning if agreed)
d) Press 'Next'



e) Verify Control Module Serial Number
f) Verify Flow Meter Cal Value (change in **Toolbox>AccuCtrl> NH3 Drive Setup**)
g) Press 'Next'

5 – CALIBRATIONS
(If equipped with Anhydrous Rate Control) – continued

5.2 NH_3 Calibration - continued



h) Prime the system using the [Start] button under Product Control, press reset to zero the Measured Output
i) Measure initial tank weight
j) Press the 'Start' button to begin Application

NOTE! The operator can exit the Cal screen during application and the Measured Output will continue to measure the amount applied.

k) After application has completed press 'Stop'
l) Measure the Weight of Nurse Tank again
m) Calculate amount of acutal Nitrogen applied

NOTE! ***MUST BE LBS. (or KG) of NITROGEN***, not total weight of product applied! **1 lb. of NH_3 = 0.82 lbs. of actual N**

n) Enter in lbs (or kg) value in Actual Output
o) Press 'Update' to update the Meter Cal Value
p) Repeat if needed

Record calibration values here, if desired

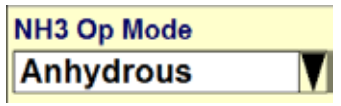
USAGE	CAL VALUE

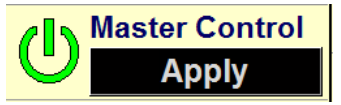
6 – OPERATION

6.1 Enable Application

Run screens
Note: Most windows will need to be placed on the run screen (**Toolbox>Layout**)

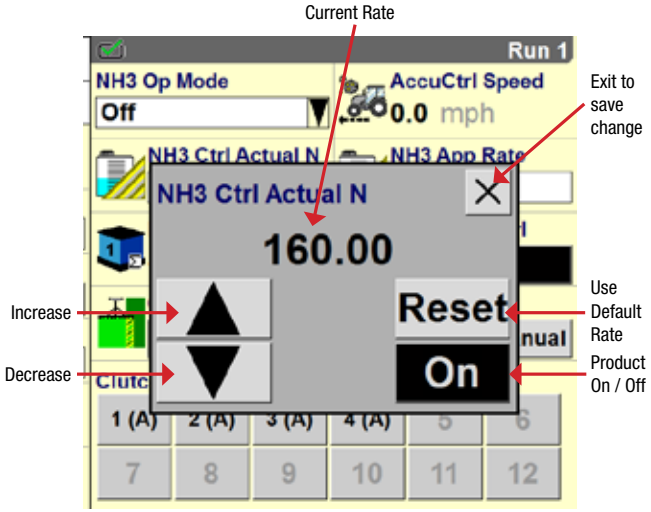
a) Liquid Op Mode - Select [Anhydrous]
b) Read Safety message & press 'Accept' if agreed
c) Master Control – Press 'Apply' on display or switch on master switch on switchbox (if equipped)





6.2 Anhydrous Rate Control (If equipped)

a) 'NH3 Ctrl' Defaulted to 'On'
b) Increase or decrease rate, if needed
c) Automatic rate control (prescription) assigned in **Performance>Rx Setup**



6.3 Prime Control (If equipped w/ Anhydrous Ctrl)

Prime is used to fill the system so no gap is left in the field when starting

Note: Window may not be available in v28.* software versions. If not available, use the start button found in **Toolbox>NH3 Cal** to prime.

a) Press the Prime button for 3 sec.
b) Wait for prime icon in warning area to stop flashing
c) System is primed

7 - OVERLAP/BOUNDARY CONTROL

7.1 Overlap/Boundary Control

Toolbox>Overlap

a) Turn overlap control on
b) Turn boundary control on (requires a created boundary)
c) Set % for out of bounds
d) Set % of overlap for shutoff
e) Set start early distance to **0 ft.**
f) Set stop late distance to **0 ft.**

IMPORTANT! Product delay must be measured and set correctly before adjusting start early/stop late values.

7.2 Product Delay Adjustment

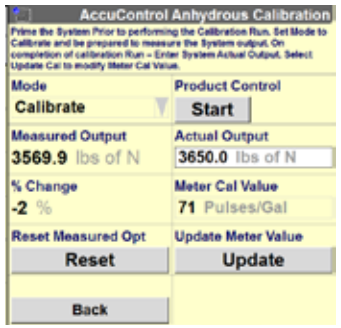
Work Condition>Control>Liquid

Before making any adjustments to the Product Delay, make sure GPS offsets & Bar Distance are entered correctly.

To check performance:

Note: Prime can be used to perform this calibration (start at step g), but may not be available on the run screens. The NH_3 calibration screen will be used to check the product delay in this case. Instructions below are for using the liquid calibration method to check product delay.

a) Select Work Condition>Liquid Cal
b Select Liquid Op Mode – [Anhydrous] (Accept Safety Warning if agreed)
c) Press Master Control – 'Apply' Button
d) Press 'Next', twice
e) Press the Start button once to prime the system, Press 'Stop' to stop operation
g) Start the stopwatch and at the same time Press the 'Start' button

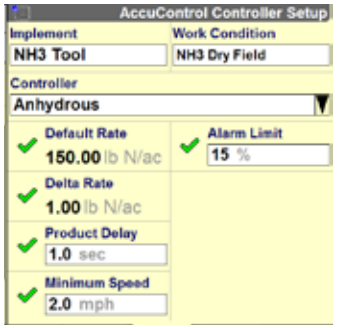


h) Stop the stopwatch when product is first observed leaving the application point
i) The elapsed time displayed on the stopwatch is the Product Delay

7 - OVERLAP/BOUNDARY CONTROL – continued

7.2 Product Delay Adjustment - continued

j) Exit the calibration without updating the calibration number by pressing 'Back'
k) Press 'Control' Tab
l) Enter the measured time as the Product Delay figure
m) Throughout the season check for proper overlap operation especially when experiencing different ambient temps
n) If exact measurement of error is determined use this formula to convert this distance to a new Product Delay (PD)



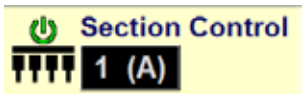
$$\frac{\text{Ft. of error}}{\text{mph X 1.46}} = \text{new PD (sec)}$$

o) Adjust Start Early/Stop Late distance for intentional overlap. If a negative number seems to be required for SE/SL, re-measure & adjust Product Delay

7.3 Running Overlap/Boundary Ctrl

NOTE! The following windows can be located on the Run screens.

Disengages drive section master valve and/or all boom valves for that drive section. "On" when the button is black (1), and "Off" when the button is grey (2)

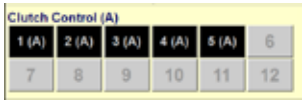


Enables/Disables Overlap Control (disable before backing, enable after driving forward), except AccuGuide complete tractors

Quickly switch between Auto and Manual section control

Enables/Disables Boundary Control

Disengage individual section valves



NOTE! (A) must be present for Auto Overlap and Boundary Control to function. If (M) is present, Auto Overlap and Boundary control will not work!

TIPS

1. A data card must be inserted in to the display.
2. Check GPS Offset, Bar Distance, Product Delay, and check that a product is assigned to a layer for Overlap & Boundary control to function properly.
3. "(A)" must be present in a window for Auto mode.
4. Disable Overlap Ctrl before backing into corners, etc. Re-enable after moving forward (not required for AccuGuide Equipped Tractors).

AFS-8036-13e *Replaces: None*

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