# **AFS AccuControl Anhydrous Ammonia AFS Pro 700 Ouick 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<sub>2</sub>) 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.

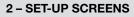
### DANGER!

- 1. Anhydrous Ammonia (NH<sub>2</sub>) 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.

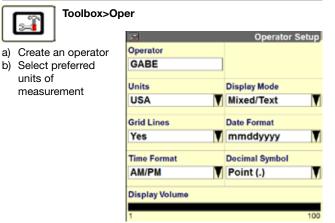
### 1 - GENERAL NAVIGATION

### 1.1 Main Screens

	Status/Warnings	Main screen					
		🗹 Run 1					
	DGPS	<b>NH3 О</b> р	Mode			ccuCtrl	
		Anhyd	rous	V	<u>.</u> 005	.7 mp	h
	5.7 mph	NH	13 Ctrl A	ctual N	n ∎N	НЗ Арр	Rate
		10	60.00 II	o N/ac	1	60.00	lb N/ac
~		NH3 Amt App 820.020 lb		Boundary Ctrl			
_eft Hand Area	Swath Map 45						
ģ	ä	T Overlap Control		Cverlap Ctrl			
Нa			Or	ı		Auto	Manual
-eft		Clutch Control (A)					
		1 (A)	2 (A)	3 (A)	4 (A)	5	6
		7	8	9	10	11	12
	Back Run1	Run2	Run3	Rur	и [ и	Run5	Runő
Navigation Bar							



# 2.1 Operator



# 2.2 GPS Setup

Toolbox>GF	PS	
	2	GPS Setup
a) Verify GPS Location	GPS Location	Connection Type
b) Verify Offsets	Magnum Roof 🛛 🔻	CAN-A
c) Verify DGPS Type	Logging Interval	DGPS Alarm
	1 Second	Yes
		Forward Offset
		50.0 in
		Right Offset
		0.0 in
		Height Offset
		130.0 in

# **3 – ANHYDROUS CONFIGURATION**

### Toolbox>AccuCtrl

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

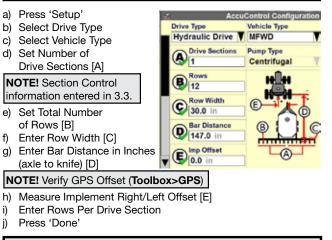
### 3.1 Basic Setup

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

Acci	Control Configuration		
AccuCtrl Installed	AccuCtrl Operation		
Yes	Anhydrous		
Implement	Default Speed		
NH3 Tool	.2.0 0.0 mph		
Implement Type	Imp Config		
Anhydrous Tooll	Setup		
Row Clutch	Row Clutch		
No No	Setup		
NH3 Drive	NH3 Drive		
No No	Setup		
Master Sw Box	Master Sw Box		
No	Setup		

### 3 - ANHYDROUS CONFIGURATION - continued

### **3.2 Implement Configuration**

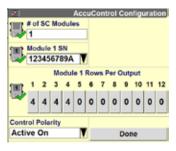


NOTE: The next setup steps may or may not be needed. The configuration of the NH, toolbar determines the need for setup. If the toolbar is not equipped with the capability, leave the setup as 'No'.

# 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'





### 3 – ANHYDROUS CONFIGURATION – continued

### 3.4 NH<sub>3</sub> 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] Select Master Valve Type
- e) Select Pump Disarm
- f)
- fg) Select Sec Off Behavior [Lock at Last or Turn Off] h) Enter Drive Meter Cal

NH3 Master Valve No Pump Disarm Yes Sec Off Behavior Lock At Last -----Drive Type Plumbing Type Servo Inline NH3 Drive R1 SN Drive 1 Meter Cal 123456789A V 743 Pulses/Ga

# of Drive Module

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.

Press 'Done' i)

Number

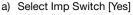
(Pulses/Gal)

### 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)



- 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 – ANHYDROUS CONFIGURATION – continued**

### 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 Config Mode Sw Box 1 SN [Yes] Auto T 123457D3A1 b) Press 'Setup' Sw Box 1 Row Clutch Outputs Per Switch c) Select Config Mode [Auto] 1 2 4 5 6 7 8 9 10 11 12 or [Manual] for custom d) Verify Sw Box Serial Number (if equipped w/ external switchbox) Done 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>Laver



**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



- a) Name the product (ex. NH3)
- b) Select form type for product [Granular]

Toolbox> Product

- Select Usage [Fertilizer] C)
- d) Enter Default Application Rate
- e) Enter Minimum Application Rate & Maximum Application Rate

### 4 - WORK CONDITION - REQUIRED FOR OPERATION (continued)

### 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<sub>a</sub>.

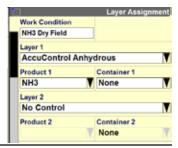


# 4.3 Product Laver Assignment



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

- a) Select/Create a Work Condition
- b) Select Laver 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) Verifv Work Condition
- c) Select Controller [Anhvdrous]
- 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

automatically:



a)

b)

C)

Work Condition		ntrol Valve Cali	bration		
<b>Note:</b> Vehicle & controlling components should be at normal operating temp/ conditions for these calibrations.	Clear Personal from around the toptement, Press Distri Burtion to wither Calibration Press Advance Calibration Burtison to Hamality Enter Values to Pline tone operation Date: Age 03, 2013 2:31 pm Braseria Com 9				
<ul> <li>a) Select Drive Number to Calibrate</li> <li>b) Press 'Start'</li> <li>c) Valve will calibrate the</li> </ul>	Drive Number 123456789A Valve Calibration Start	DeadTone	2		
c) Valve will calibrate the following parameters	Advanced Calibration				

- 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<sub>2</sub> Calibration



# **?**///

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

mplement

a) Verify Implement

- b) Verify Work Condition
- c) Select Anhydrous Op Mode – [Anhydrous] (Accept Safety Warning if agreed)
- Press 'Next' d)
- e) Verify Control Module Serial Number
- f) Verify Flow Meter Cal Value (change in Toolbox>AccuCtrl> NH3 Drive Setup)
- q) Press 'Next'

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

# 5.2 NH<sub>3</sub> Calibration - continued

- h) Prime the system using the [Start] button under Product Control. press reset to zero the Measured Output Measure initial tank i)
- weight i)
- 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'
- Measure the Weight of I) 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<sub>3</sub> = 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		

### AccuControl Anhydrous Cali me the System Prior to performing the Calibration Run. Set Mode librate and be prepared to measure the System output. On mpirton of calibration Run – Enter System Actual Output, Select date Calib on colds. Maler Cali Value. Mode Product Control Calibrate Start Measured Output Actual Output 3569,9 lbs of N 3650.0 lbs of N % Change Motor Cal Value -2 % 71 Pulses/Gal

Reset Measured Opt Update Meter Value Reset Update Back

# 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)

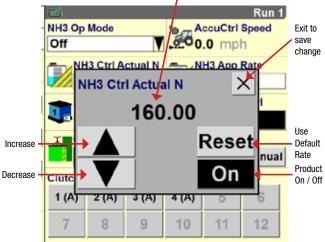
# NH3 Op Mode Anhydrous



# 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

### **Current Rate**



# 6.3 Prime Control (If equipped w/ Anhydrous Ctrl)

Prime is used to fill the San 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

### AccuControl Anhydrous Calibratio Implement and Work Condition should be set before proceeding. Go to Work Condition Screen to set Work Condition. Next for Next Calibration Work Condition NH3 NH3 DRY FIELD NH3 Op Mode



AccuControl Anhydrous Calibratio ert the Neter Cal # from the Tag on Meter or Encoder. Set the Targe In Proceed to Next Page

### Meter Cal Value Serial Number 123456789A 71 Pulses/Gal Back Next



the run screen (Toolbox>Layout)

Note: Most windows will need to be placed on

# 6.1 Enable Application **Run screens**

### 7 - OVERLAP/BOUNDARY CONTROL

Overlap Control

0.00

On

### 7.1 Overlap/Boundary Control

Toolbox>Overlap

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

AccuControl Anhydrous Calibration

Prime the Bysteen Prior to performing the Calibration Run. Set Bode to Calibrate and be prepared to measure the System output. On completion of calibration Run – Enter Bystem Astual Output, Select Update Cali to modely tabear Cali Vacua.

Product Control

Start

Actual Output

3650.0 lbs of N

Meter Cal Value

71 Pulses/Gal

Update Meter Value

Update

### 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<sub>3</sub> 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.

Mode

Calibrate

% Change

-2 %

Measured Output

3569,9 lbs of N

Reset Measured Opt

Reset

Back

- Select Work a) Condition>Liquid Cal
- b Select Liquid Op Mode - [Anhydrous] (Accept Safety Warning if agreed) C) Press Master Control -
- 'Apply' Button
- Press 'Next', twice d) e) Press the Start button once to prime the system,
- Press 'Stop' to stop operation Start the stopwatch and a)
- at the same time Press the 'Start' button
- h) Stop the stopwatch when product is first observed leaving the application point
- The elapsed time displayed on the stopwatch is the Product Delay

### 7 - OVERLAP/BOUNDARY CONTROL - continued

### 7.2 Product Delay Adjustment - continued

- i) Exit the calibration without updating the calibration number by pressing 'Back' k) Press 'Control' Tab 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)
- 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



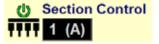
NOTE! The following windows can be located on the Run screens.

complete tractors

Ft. of error

mph X 1.46

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)



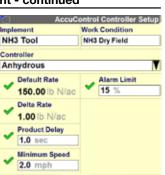
Quickly switch between Auto and Manual section control



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!



= new PD (sec)

Enables/Disables Overlap Control

(disable before backing, enable after

driving forward), except AccuGuide

Enables/Disables Boundary Control

🛪 🗰 Boundary Control

On

**Overlap Control** 

On

# 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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**Overlap Control Setup** 

Boundary Control

V On