# ProAll Mobile Mixer

Operator's Manual COMMANDER



MX02230

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# 1.01 DISPLAY KEYS / OPERATION



- 1. Display knob is used to adjust values in selected fields, or it may be linked directly to values shown on the display.
- The key can be pressed from any screen to take you back to the "HOME" screen shown above.
- 3. The key is used to go back to the previous screen viewed.
- 4. Front USB port for service updates to display program and for loading mixer files to the display.
- Soft keys are used to perform actions on individual screens or to navigate to other screens. They can be used in conjunction with the touch screen.
- 6. The display is touch sensitive, so certain fields on the screens can be activated or edited by touching the associated field or button.

Keypads are associated with various fields on the display and allow the user to quickly enter string or numeric values.

#### String Keypad



#### Numeric Keypad





- 1. "MENU" screen shortcut.
- 2. "TOTALS" screen shortcut.
- 3. Selected mix design strength.
- 4. Total concrete volume currently produced.
- 5. Selected mix design number.
- 6. Show bar graph gauge for admix 1.
- 7. Show bar graph gauge for admix 3.
- 8. Show bar graph gauge for admix 2.
- 9. Show bar graph gauge for admix 4.
- 10. Admix 1 or 3 gauge. Red bar is calculated flow rate or production rate. Green bar is actual flow rate or production rate.
- 11. Admix 2 or 4 gauge. Red bar is calculated flow rate or production rate. Green bar is actual flow rate or production rate.
- 12. Slump gauge.
  - Water auto mode: gauge shows total W/C ratio desired and percentage of max W/C.
  - Water manual mode: gauge shows real time W/C during operation and percentage of water pump speed.

- 13. Water gauge. Shows total water flow or production rate.
- 14. Production Rate / Belt RPM gauge.
- 15. Belt speed percentage.
- 16. Auger speed percentage.
- 17. Selected mix design gate A position.
- 18. Selected mix design gate B position.
- 19. Mixer diagnostics and information window.



- 1. Mix Entry screen. Mix designs are loaded and entered here.
- 2. Mix Select screen. Customer required mix design is selected here.
- 3. Totals screen. Current mix totals before reset.
- 4. Digital Readouts. Digital display of mix process values such as flow rate and rpm.
- 5. Mixer Control. Redundant mixer control screen plus mixer control settings such as material unload.
- 6. Job Log. Stores the last 25 jobs, so they can be viewed or re-printed.
- 7. Diagnostics. Hydraulic and electrical diagnostics can be viewed here along with an alarm log for trouble shooting purposes.
- 8. Operator Settings. Units can be selected here along with vibrator auto times.
- 9. Sensor Calibration. All analog or frequency sensors such as flow meters and pressure transducers are calibrated here.

- 10. Mixer Calibration. Calibration data for powders and aggregates are entered here.
- 11. Mixer Settings. Configuration values for the mixer are entered here.
- 12. Factory Settings. Password protected screen used for initial factory set-up.
- 13. Total volume of concrete the mixer has produced since in operation. Total is updated after a reset.
- 14. Mixer hours. Total hours the belt has run.

CALC 2 MIX ENTRY GATES MODE 3			MODE 3 H2O		
	MIX #	MIX DESCRIPTION			COUNTS 😣
	1 🚺	3500PSI MIX			1511 <sub>/Yd3</sub>
	GATE A	GATE B	CEMENT 1	7 STONEI	SANDI
	8.3	8.0	564 lb/Yd3	1658 Ib/Yd3	1525 lb/Yd3
	STRENGTH		ADMIX 2		
	3500 PSI	9 5 80 %H20 0Z/Ytl3	24 50 %H20 02/Ytl3		0 %H20 0Z/Yil3
	W/C RATIO	COLOUR	FIBRE		AUX2
	0.45	<b>D.D</b> % lb/Yd3	• 0.0 × lb/Yd3	□ × □.□ × □.□	• 0.0 * lb/Yd3
	ABS GT A	ABS GT B	H20 VOL	MAX PROD	CEMENT 1
	0.8	2.0	30.2 Gal/Yd3	57.2 Yd3/h	100 %
LOAD ODN'T FORGET TO SAVE					

- Mix design number. The mix entry screen can hold up to 50 mix designs. Select the mix number by touching the value until the border is green. Rotate the knob on the display to change the value.
- Calculate mix values. The display can calculate the gate setting values, powder output ratios and the total counts required. How it calculates these values depends on the calculation mode selected (#3 above) and the materials selected in the calibration screens.
- Calculation mode: The display has three modes it uses for calculating the mix design parameters.
  - a. Ratio Auto
  - b. Ratio Manual
  - c. Gates Auto

Ratio Auto: The user enters in values for the mix design as well as the cement ratio. The display calculates the gate settings and total counts. If the cement ratio is too high for the

selected mix design parameters, then 100% will be entered. All other ratio parameters are auto calculated (e.g. Colour).

Ratio Manual: Same as ratio auto except this mode allows manual control over all powder/aux ratio values.

Gates Auto: The user enters in values for the mix design and the display calculates the gate settings and powder/aux ratios. The gates are calculated based on a maximum gate height parameter set in the Mixer Settings screen.

- Mix designs can be loaded from a USB stick inserted into the display. The mix design file can be created from within Excel or copied from the display and re-loaded any time.
- 5. Save the current mix design.
- 6. Information window for calculation errors and mix design limitations.
- 7. Names are associated with currently selected material types in the calibration screen.

- Calculate only water required. This does not affect gate settings or counts. Typically used to adjust W/C in the mix design without changing the materials.
- 9. A dilution percentage can be entered here. This number represents the water amount as a percentage of the total volume. The Commander computer then adjusts the target flow on the Home screen but separates the water from the admix total on the Totals screen.

MIX SELECT 1:30 PM 6/10/2020					
	MIX #	MIX DESCRIPTION			STRENGTH
	1 (1)	3500 PSI MIX			3500 PSI
	GATE A	GATE B	CEMENT	STONE	SAND
	8.3	8.0	564 lb/Yd3	1658 lb/Yd3	1525 lb/Yd3
	GT A H2O	GT B H2O	SUPPLY H2D	GT A H2O	GT B H20
	2 1.4	<mark>₃</mark> 2.□	32.3 Gal/Yd3	O.OO Gal/Yd3	O.OO Gal/Yd3
	CEMENT	COLOUR		AUX 2	FIBRE
	100	<b>•</b>	<b>D</b> %	<b>•</b>	<b>•</b> % 9
	JOB NAME A NEW CURBI Counts C Yd3				
	SELECT DESIRED MIX. CHECK DATA.				

- 1. Mix design number. Customer required mix design is selected here.
- 2. Gate A moisture percentage can be entered here.
- 3. Gate B moisture percentage can be entered here.
- 4. Job name is entered here. This job name is also printed on the tickets and is not specific to the selected mix.
- 5. A mix volume stop can be entered here that will automatically stop the belt once the desired volume is reached.
- 6. To activate the volume stop feature, this button should be turned on. Touch the button to activate (changes to green).
- Information regarding current selected mix / warnings.
- Pressing Job Start will set the time and date on the top right of the screen. As soon as the belt counts are registered this button is no longer active. Belt counts must be zeroed before a new start time can be set.

 Job information brings up a pop-up window that allows the operator to enter customer information that will be logged and printed (if desired) on the job ticket.



- 1. Totals are calculated using values from the mix entry file or values generated by input devices on the mixer.
- 2. Total volume produced before a reset. This value is the same on the HOME screen.
- 3. Print a ticket by touching icon or pressing the soft key.
- 4. Auto reset if ON will activate a total reset after the ticket print has been completed. The reset screen will still appear if a reset is not desired.
- 5. Reset totals by touching icon or pressing the soft key.



- Digital readouts show a complete grouping of running process data and is a good place to monitor overall mixer performance.
- The values shown on the lower left of the RPM gauges are the calculated RPM set-points. The actual RPM is shown in the center. When in mixing mode these two values should be the same.
- The values shown on the top right of the powder and auxiliary RPM gauges are the actual operating ratios / speeds between the belt and the auger output.
- The values shown on the lower left of the flow gauges are the calculated flow set-points. The actual flow rate is shown in the center. When in mixing mode these two values should be the same.
- 5. The values shown on the top right of the flow gauges are the operating percentages of the pumps (e.g. 100% max speed).
- 6. Weight units can be changed here independent of the overall mix units selected.

7. Flow units can be changed here independent of the overall mix units selected.



- Mixer keypad. This virtual keypad works in parallel with the actual keypad on the mixer. Its intent is for redundant or emergency control should an issue arise with actual keypad. The buttons are labelled 1-20 and their function is shown in the P-Model operator's manual.
- Mixer control knob. Virtual device same as keypad. Touch speed setting button to activate and rotate display knob to change values. The function of this device is shown in the P-Model operator's manual.
- Low level override. If the mixer is equipped with low level monitoring devices such as cement level or aggregate level, then these devices can be overridden to allow remaining material to be used on the belt or in the cement bin before completely empty.
- Cement unload. Cement bin can be emptied independently of the belt or any other powder/aux functions.

- 5. Colour unload. Colour bin can be emptied independently of the belt or any other powder/aux functions.
- 6. Aux1 unload. Aux1 bin can be emptied independently of the belt or any other powder/aux functions.
- Aux2 unload. Aux2 bin can be emptied independently of the belt or any other powder/aux functions.
- Fault Reset. If a fault should occur and there is a triangle warning message shown in the center of the display, then this button can be pressed to reset it. If the fault is the result of a device issue, then it will activate again, and the issue should be resolved.
- Water Manual. This button can be pressed to place the mixer in water manual mode, which allows the operator to manually control the water pump output.
- Vibrate Select. This button can be pressed to allow the operator to select the desired vibrators to be in auto mode when the belt is running. Once vibrator select is activated the

operator can press the desired vibrators on the keypad to place them in auto mode. When the selection is complete vibrate select should be turned off again.

- 11. Dry Mix. Dry mix mode is used to run the mixer in auto mode without the need to have the water pump on. The water pump can be on is desired, however the ON/OFF water valve will not be activated in this mode.
- 12. Gates Override. If the mixer has gate height sensors and the operator needs to change the gate height outside of the mix design settings, then this button will over-ride any alarms. Typically, this would be used to clear an obstruction at the gate. If this is left on the Commander computer will log at what belt count value it started and ended with the over ridden gate setting.
- 13. The powder/aux unload speeds can be independently adjusted here regardless of the current mix design speed setting.
- 14. This button can be pressed to activate the auto vibrator function. The auto vibrator function only operates when in mix mode otherwise.



- 1. Selected job log number. Max number of jobs in the log is 25. After 25 the log writes over the first and subsequent jobs.
- 2. Index job log down.
- 3. Index job log up.
- 4. Print currently selected job.
- 5. Reset job numbers to start at 1.
- Mix log data total. The mix log is independent from the job log and stores all jobs completed or reset by the mixer operator. This data is not viewable on the display but can be copied to a USB stick for review in Excel.



- Hydraulic system diagnostics. Typically, diagnostics are oil temperature and charge pump. These indicators should be green if under normal operating conditions. All other indications or pressure readings are for optional or future equipment.
- 2. Belt pressure. Shows current outlet pressure on belt pump.
- 3. Auger pressure. Shows current outlet pressure on auger pump.
- 4. Oil temperature. Shows current hydraulic oil temperature.
- 5. Charge pressure. Show current charge system pressure. This is the pressure at the inlet of the belt and auger pumps.
- 6. Oil temperature units can be changed here.
- 7. Hydraulic pressure units can be changed here.
- 8. Alarm log. Screen showing history of alarms.
- 9. Electrical diagnostics. Screen showing electrical readings and communication diagnostics.

## **1.11. ELECTRICAL DIAGNOSTICS**



- CANBUS device diagnostics. Any device on the CANBUS communication network is monitored to ensure it is sending data to the computer. If the indicator is red, then the device either does not exist (optional component) or there is a fault / disconnect somewhere in the system.
- 2. Voltage at input pin of ECU/computer.
- 3. Total current ECU/computer is using to run and activate outputs.
- 4. Display voltage. Typically, this voltage is slightly less than the ECU but should be within 1V of each other.
- 5. Internal display temperature in degrees Celsius.
- 6. Printer communication diagnostics message.
- The individual function current draw can be read from here. Touch the function name and rotate the knob on the display to select the function you want to view the current draw. Push the knob to select.
- CAN reset will re-initialize all CAN input and output devices. This would typically be pressed if a new power module is added to initialize parameters.

DELETE	ALARM LOG	REFRESH
DATE/TIME	DESCRIPTION	STATE
Fri Apr 26 11:06:53 2019	E-STOP PRESSED	Shown
Fri Apr 26 11:06:59 2019	E-STOP PRESSED	Confirmed
Fri Apr 26 11:07:27 2019	WIRELESS FAULT	Shown
Fri Apr 26 11:07:38 2019	WIRELESS FAULT	Confirmed
Fri Apr 26 11:07:49 2019	MIX AUGER JAM	Shown
Mon Jul 15 15:24:31 2019	E-STOP PRESSED	Shown
1		

- Alarm log table. Table will store up to 100 alarm points. After 100 it writes over the first alarm and continues writing over previous alarms. To scroll through the alarm log, touch the log table. The border will turn green. Rotate the display knob to scroll.
- 2. The alarm log can be deleted and started new by pressing DELETE.
- The alarm log can be refreshed if alarms are occurring while in the alarm log screen. The log is automatically refreshed when alarm log is selected from the diagnostics screen.



- 1. Display and soft key backlighting adjustment percentages can be viewed on the bar graphs.
- 2. Display backlighting UP or DOWN.
- 3. Soft Keys backlighting UP or DOWN.
- 4. Units selection. Values shown are the currently selected units for the mixer. Volume, flow, and weight can be selected independently of the overall mixer units. The units are selected on the soft keys and displayed in the box in yellow.
- 5. Production rate gauges. All gauges on the HOME screen can be changed to show actual production rate per hour or per unit volume.
- Rate per minute gauges. All gauges on the HOME screen can be changed to show actual revolutions per minute or unit flow per minute.
- Auto vibrator set-up times are adjusted here. Total ON time and the OFF time (GAP) between vibrators is adjusted in seconds.
- 8. Three different languages can be selected here. EN (English), FR (French) and ES (Spanish).



- Flow meter scaling (K-factors) are entered here. During the calibration process the total volume shown on the bottom left can be verified with the actual volume of liquid measured. If the volumes are not the same, then the k-factor value can be adjusted until the totals match. If multiple trials are down the totals can be reset by pressing RESET COUNT.
- 2. Sample volume is used to enter the actual sample value collected during calibration. The units depend on the liquid being calibrated. Water and admix4 are in gallons. Admix 1 3 are in oz. Once a sample is taken and the value entered into sample volume the user then presses the appropriate calculate button for the flow meter they are calibrating. This will adjust the K-Factor based on the actual vs. calculated volume total.
- 3. This value shows the analog output from the transducer and the scaled pressure reading.

- 4. Zero transducers can be pressed when PTO or engine is off to zero the pressure readings.
- Swing Rate Min, Stow Lock Off and Swing Position pertain to the Auto Stow Option.
  Please see Auto Stow option supplement manual if this option is on your mixer.
- 6. Gate A and B position and Gate Tolerance are settings for the gates verification option. The small number on the bottom left of the position boxes is the sensor reading in mV. At the zero gate position this number should be between 300-400mV. To adjust the gates turn the hand wheel until the gate is at the belt. Press the Set Gate x MIN button. This will lock in the lower limit reading 300-400mV. Then turn the wheel until the gate is at 18. Press the Set Gate x Max button. The reading shows in the middle and should match the wheel reading. The gate tolerance setting is for allowing a small variance from the mix design value.
- 7. Reset the liquid counts.
- 8. Load cell scales calibration. See load cell supplement manual.



- Powder or auxiliary calibration can be selected from the list using either the soft keys or the touch screen. Once selected the "Name" will change (see item #3) to show the current type.
- Up to 5 different types can be selected per powder/auxiliary. Each type having its own unique set of calibration data. To select the type, touch the value and rotate the display knob until the desired type is shown.
- 3. Name associated with type 1-5. This name can be edited by touching the value and entering the new name on the keyboard. Try not to use special characters (e.g. Use inch instead of ").
- 4. If the mixer is equipped with scales, then the calibration depleting weight values can be used from the scales instead of measured manually.
- Trial load allows the user to quickly load the weight (scales) and counts into the associated trial fields by touching the trail load buttons on the display.
- 6. Value of the weight measured for each trial. By touching the field, the user can manually enter

values using the keyboard. The number on the bottom left is the calculated auger output for each trial. This is used as a reference to ensure trials are consistent and correct values are being entered.

- 7. Value of the counts measured for each trial. By touching the field, the user can manually enter the values using the keyboard.
- 8. Total depleted weight measured by scales if equipped.
- Auger speed setting. The auger calibration trails can be done at various speeds to check linearity. Typically set at 80-100%.
- 10. Auger counts. This is the total counts of the auger in the trial and are not related to the belt counts.
- 11. Calculated average output of auger based on trial data. This value can also be entered manually if the calibration data is stored elsewhere.
- 12. The calculate button should be pressed whenever new data is entered into the trials.

- Data is automatically saved when new values are entered, however it is a good idea to SAVE before a material type is changed or a calculation is done.
- 14. Reset auger counts to zero after trial complete.
- 15. Calibration mode should be set to ON before auger calibrations are started. This ensures all functions are bypassed that do not need to be running when in calibration mode.
- 16. Calibration files can be loaded onto the display using the USB port. Calibration files can be copied to a USB stick and re-loaded at any time or edited in Excel and loaded.
- 17. Navigate to the gates calibration screen by touching the display or pressing the soft key.
- Calibration stop can be activated to stop the metering auger after so many counts. This same button can be activated to stop the belt when calibrating aggregates as well.
- 19. Counts stop value for the metering auger function.



- Select either Gate A or Gate B for calibration. The name will change at the top of the data entry box to show which gate has been selected. Default: Gate A–Stone, Gate B–Sand.
- Up to 10 different aggregates/sand can be selected per gate. Each type having its own unique set of calibration data. To select the type, touch the value and rotate the display knob until the desired type is shown.
- 3. Name associated with type 1-5. This name can be edited by touching the value and entering the new name on the keyboard. Try not to use special characters (e.g. Use inch instead of ").
- 4. Value of the weight measured for each trial. By touching the field, the user can manually enter values using the keyboard. The number on the bottom left is the calculated gate output for each trial. This is used as a reference to ensure trials are consistent and correct values are being entered.

- 5. Value of the counts measured for each trial. By touching the field, the user can manually enter the values using the keyboard.
- Up to 5 different gate settings can be used to calculate the slope of the gate curve. Each gate trial should have a unique gate position associated with it (e.g. Gate trial 1 is set at 4.0, 2 at 6.0 etc.). All five do not need to be used, but you must use at least two for the calculator to work properly.
- 7. Position the gate is set at for calibration trial.
- 8. This is the total counts of the belt in the trial.
- 9. Moisture content of the material during testing.
- 10. Absorption percentage of the material. This value is used to correct for SSD moisture contents if the moisture probe does not have this capability.
- 11. Calculated average weight per count for each gate position in the calibration.
- 12. Calculated inverse slope of the gate A setting curve. The slope is calculated using linear regression/best fit straight line through the points on the graph. This value can also be manually entered from external calibration data for testing.

- 13. Calculated inverse slope of the gate B setting curve. The slope is calculated using linear regression/best fit straight line through the points on the graph. This value can also be manually entered from external calibration data.
- 14. Calculate the average weight per count for the current trial.
- 15. Data is automatically saved when new values are entered, however it is a good idea to SAVE before the gate is changed or a calculation is done.
- 16. Reset belt counts to zero after trial complete.
- 17. Calibration mode should be set to ON before auger calibrations are started. This ensures all functions are bypassed that do not need to be running when in calibration mode.
- Calibration files can be loaded onto the display using the USB port. Calibration files can be copied to a USB stick and re-loaded at any time or edited in Excel and loaded.
- 19. Trials can be individually set to zero if old data is to be removed quickly. Both weight and counts will be set to zero.
- 20. Calculate the slope of the gate position curve. See #12/13.
- 21. Trial load allows the user to quickly load the weight (scales) and counts into the associated trial fields by touching the trail load buttons on the display.
- 22. Yield correction allows the user to enter a +/value to correct the calibrated curve to match yield test results.
- 23. Counts stop value for the belt. The calibration stop is activated on the previous mixer calibration page.



- 1. Manually turn oil cooler ON. Typically used to verify oil cooler operation.
- 2. Manually run mix auger grease system.
- 3. Manually run chain oiler system. Will automatically shut-off after 60 seconds of continuous belt operation.
- Activate cement full operation. Cement full is typically used in emergency situations to ensure cement output is at max even if there is no signal feedback from the cement RPM sensor.
- CAN reset will re-initialize all CAN input and output devices. This would typically be pressed if a new power module is added to initialize parameters.
- 6. Printer set-up screen.
- 7. Change unique truck number here. Typical value is mixer serial number.
- 8. Change company name.
- 9. Mix entry calculation mode can be changed here. Touch the field and rotate the display knob until the desired mode is selected.

- The maximum W/C ratio allowed can be pre-set here. Controls HOME screen gauge resolution. A percentage can be set that automatically adjusts the resolution when a mix is selected.
  100% would double the resolution of mix design W/C.
- 11. Maximum gate height used in mix entry screen calculation.
- 12. Special functions can be turned OFF or ON by touched the white box and adding a check mark. These options must be installed for these functions to work.
- 13. Set date and time. Should be set to give accurate ticket print outs, alarm log data and job logging.
- 14. Admix manual is used to run the admix system in manual mode instead of automatic. These settings only work if an automatic admix system is installed.
- 15. Mixer settings and maintenance screen.
- 16. Current display OS software versions installed.
- 17. Current ProAll display program and ECU versions installed.



- The ticket printed can include or exclude any of the values with a check box. Some values such as company name and date/time are always printed on the ticket.
- 2. If scales are installed on the mixer then all total weights printed can be actual depleted weights if this option is selected.
- 3. If this option is selected, then all total weights printed will be calculated weights.

#### **1.19. MIXER SETTINGS & MAINTENANCE**

SAVE	EJECT	MIXER SET	TINGS & MAI	NTENANCE	
MIXER		and the second		LEB UNMOUNTE	SET
SETUP	25	MAI	NTENANCE & ALA		12VDC
COPY	UP	RPM DELAY	COOLER ON	COOLER OFF LEFT	
MIXER	80		2 45	<mark>₃ ५</mark> ८ 75	MIXER
SETUP	BOOM	msec	DEGC	SWING	SETUP
	70				22
COPY	DOWN				DELETE
MIX FILE	13				MIX FILE
	UP				
COPY	80	AUGER MIN	AUGER CYCLES		DELETE
GATE FILE	CHUTE	LUBE ON			GAIE
1 1 2 2 1 1	65		😐 С 🗌		TILL
COPY	DOWN	BELT REVS	BELT CYCLES	msec WASH	DELETE
CALIB	-		USER SETTINGS		CALIB
FILE		USER ID	PASSWORD	USER LEVEL	FILE
COPY		20	admin 17	0 (16)	MOVE
LOG		INCEPT LIC			LOG
FILE			S BEFURE CUP		FILE

- RPM delay time. This is the time the control system allows the high idle to get up to speed before it activates the mix mode. This only works when auto-link mode is activated.
- 2. Temperature that the oil cooler will start.
- 3. Temperature that the oil cooler will turn off.
- 4. If mixer equipped with scales the belt will stop automatically when the cement weight reaches this level.
- 5. If mixer equipped with scales the belt will stop automatically when the aux1 weight reaches this level.
- 6. If mixer equipped with scales the belt will stop automatically when the aux2 weight reaches this level.
- Mix auger grease ON time. This is the elapsed time before automatic grease system will start its cycle. Only applies to mixer-controlled grease pumps and not standalone units.
- 8. Mix auger grease cycles. This is the number of pumping cycles that will occur after the cycle time has elapsed.

- Max pressure setting of mix auger that will trigger a mix stop. Used to stop conveyor if mix auger is jammed to ensure material build up in mix bowl.
- 10. Chain lube ON trigger. This value indicates how many revolutions of the conveyor need to occur before a chain lube cycle is started.
- 11. This value indicates how many cycles of the chain lube pump will occur of one revolution of the chain.
- 12. Mix auger ramp controls how fast the auger starts from a stopped state. Used to stabilize auger windup.
- Maximum speed settings for boom/chute up and down. Touch the value and rotate the display knob until desired max speed is reached (100% is max).
- 14. Maximum speed setting for swing left/right. Touch the value and rotate the display knob until desired max speed is reached. Ensure the area is clear before testing speed settings.

- 15. Auger wash speed. When wash out mode is selected the mix auger speed will be adjusted to this value. This allows the operator to do a wash out without having to manually turn the mix auger speed down.
- 16. Basic user level control can be set here. There are 4 different levels of password protection for the screens. Each level is shown below.

Level 0: All menu screens are accessible without password protection.

Level 1: Mix Entry, Mix Calibration and Mixer Settings (2) are password protected.

Level 2: Same as level 1 plus Sensor Calibration, Mixer Settings (main) are password protected.

Level 3: Same as level 2 plus Job Log is password protected.

- 17. The password required to enter level protected screens.
- The mixer settings can be saved to a file. Mixer settings include all scaling factors, speed and maintenance settings.
- 19. Mixer settings file can be copied to a USB stick.
- 20. Touching this function will load all default control curves and settings for either 12VDC or 24VDC systems.
- 21. Mixer settings can be loaded onto the display. This is useful if a display is replaced and settings need to be changed from the defaults.
- 22. Delete "file" will remove it from the display. A USB stick needs to be inserted into the display to perform this action. This ensures a backup copy is created in case the button is pressed by mistake.
- 23. Move log file to a USB stick. If the mix log file is getting too large or the user wants to start new, then the file can be transferred from the display to a USB stick. Once the file is moved it cannot be re-loaded onto the display.
- 24. Admix1 bar graph scaling can be changed here from low flow to medium flow depending on the application.

25. The EJECT button must be pressed before removing the USB after a file copy. The user can see if the USB stick is mounted on top right side. After EJECT is pressed it will say USB unmounted.



Alarm messages, when activated, show on the screen in the form of a triangle or circle with a brief description of the alarm. If more then one alarm is active, they cycle through every few seconds depending on their priority and then repeat. Once an alarm is reset if will disappear from the display. An alarm log on the display stores up to 100 alarm messages for reference. Below is a summary of all alarms that are possible on the display. Alarms can be acknowledged by pressing the key but does not remove the alarm if still active. Below is a summary of all alarms that are possible on the display.



Emergency Stop (E-Stop) pressed on the wireless remote (RED button). The mixer will stop when this alarm is activated. The alarm cannot be removed until the wireless E-Stop is reset.



Belt auto alarm. This alarm indicates the control system cannot reach the RPM set point. This alarm will stop the mixer. The operator must acknowledge the alarm by pressing the belt button on the control knob (#5). This will place the belt in open loop mode and the control system will ignore belt speed set points; however, the unit will continue to function. Downstream automatic functions such as cement and water metering will continue to follow the belt speed as long as the speed sensor is working. Typically causes for this alarm are:

- The hydraulic system has not had sufficient time to become warm for high belt speeds. Slow the belt until operating temperature is achieved. Typically, above 90°F/32°C.
- 2. The engine RPM is below high idle. If the pump is turning too slow, the oil flow rate required for the belt RPM setting may not be achievable. Increase engine RPM.

- There may be a problem with the RPM sensor. The control system requires feedback from the RPM sensor to maintain the desired belt speed. Check the sensor gap or replace the RPM encoder.
- The coil on the belt hydraulic valve may be faulty or the valve may be sticking reducing the required oil flow rate to the motor.



Cement auto alarm. This alarm indicates the control system cannot reach the set point. This alarm will shut off the mixer operation. The cement motor speed is based on the mix design ratio and on the belt motor output flow. For this reason, the cement motor may be unable to reach its required speed if the belt speed is very slow and the cement ratio is also very low. Other causes for this alarm unrelated to belt speed are:

- There may be a problem with the RPM sensor. The control system requires feedback from the RPM sensor to maintain the desired cement speed. Check the sensor gap or replace the RPM encoder. The operator can manually over-ride the cement control valve to a "full" or 100% open position. More cement powder will be consumed if the mix design is a lean mix.
- 2. The coil on the cement hydraulic valve may be faulty or the valve may be sticking reducing the required oil flow rate to the motor. If the problem is a faulty coil, the operator can manually over-ride the valve and set the desired cement ratio on the mixer control screen using the "Actual" value shown in the rpm field. This is a temporary solution and should be done with a fixed belt speed.



Radio remote has lost link to the receiver. This is typically caused when batteries need to be replaced or the remote is too far away from the receiver. If this alarm is activated the machine will stop. The operator must acknowledge the alarm by pressing the belt button on the mixer control knob (#5). The machine can then be run without the wireless.



Colour auto alarm. This alarm indicates the control system cannot reach the set point. This alarm will shut off the mixer operation. The colour motor speed is based on the mix design ratio and on the belt motor output flow. For this reason, the colour motor may be unable to reach its required speed if the belt speed is very slow and the colour ratio is also very low. Other causes for this alarm unrelated to belt speed are:

- There may be a problem with the RPM sensor. The control system requires feedback from the RPM sensor to maintain the desired colour speed. Check the sensor gap or replace the RPM encoder. If manual operation is desired, then the operator will need to confirm the correct ratio by visual inspection of the product colour. A fixed belt speed will help achieve this.
- 2. The coil on the colour hydraulic valve may be faulty or the valve may be sticking reducing the required oil flow rate to the motor. If the problem is a faulty coil, the operator can manually over-ride the valve and set the desired colour ratio on the mixer control screen using the "Actual" value shown in the rpm field. This is a temporary solution and should be done with a fixed belt speed.



Aux1 or Aux2 auto alarm. This alarm indicates the control system cannot reach the set point. This alarm will shut off the mixer operation. The aux motor speed is based on the mix design ratio and on the belt motor output flow. For this reason, the aux motor may be unable to reach its required speed if the belt speed is very slow and the aux ratio is also very low. Other causes for this alarm unrelated to belt speed are:

1. There may be a problem with the RPM sensor. The control system requires feedback from the RPM sensor to maintain the desired aux speed. Check the sensor gap or replace the RPM encoder. If manual operation is desired, then the operator can over-ride the aux control valve to "full" or 100% open. More product will be consumed if the desired ratio is smaller.

2. The coil on the aux hydraulic valve may be faulty or the valve may be sticking reducing the required oil flow rate to the motor. If the problem is a faulty coil, the operator can manually over-ride the valve and set the desired aux ratio on the mixer control screen using the "Actual" value shown in the rpm field. This is a temporary solution and should be done with a fixed belt speed.



Water PID alarm. This alarm indicates that the desired water flow rate cannot be achieved when the control system is in automatic water mode. This alarm will shut off the mixing operation. The operator must acknowledge the alarm by pressing the belt button on the keypad. The mixing operation may be continued by performing the following operations.

If there is a problem with the automatic mode, the water control can be placed in manual water mode (see Mixer Control). Water control is in manual mode when the yellow light flashes on the Water ON button on the keypad (#17). Manual mode allows the operator to control the water pump or water valve manually using the Water to Cement (W/C) ratio dial on the HOME PAGE. The W/C ratio is no longer a real time value. It is simply a percentage out of 100. If the problem is with the water valve controls, then the operator can manually over-ride the hydraulic valve and control the water flow using the manual water control valve at the back of the mixer. Typical causes for this alarm are:

- The hydraulic system has not had sufficient time to become warm before high water flows can be achieved. Reduce water flow requirement until operating temperature is achieved, typically above 90°F/32.2°C. Water flow required is reduced by lowering the belt speed.
- The engine RPM is not at high idle. If the pump is not turning fast enough the oil flow rate required for the water pump and the belt circuit may not be achievable. Increase engine RPM.
- There may be a problem with the water flow meter. The control system requires feedback from the water flow meter to maintain the desired water flow rate. Check the water flow on the display to see if a reading is showing.

4. The coil on the water hydraulic valve may be faulty or the valve may be sticking reducing the required oil flow rate to the water pump motor.



The charge pressure feeding the main pumps is low. Check charge pump operation ensuring the charge pump suction valve is open. If oil is really cold, allow the system to warm up before running belt or mix auger at high speed.



The hydraulic oil temperature is reaching a critical limit and should be monitored. Check to ensure cooler is running and oil levels are sufficient.



Auger jam alarm. The mix auger pressure has reached the pressure limit as entered in the mixer settings screen and the belt stops. Check to see why pressure max has been reached (auger jammed) or increase pressure limit if need be.



Cement low level sensor activated. Must override to continue (see Mixer Control).





Water ON is a warning message indicating that the operator has not turned the water on (keypad button) before running the belt in auto mode.



The mixer has been placed in belt unload mode by the operator. Turn off by pressing button 10 on the keypad.



## **1.21. HOME SCREEN DIAGNOSTICS TABLE**

On the HOME PAGE of the COMMANDER display there is a diagnostic message window showing currently activated functions and alarm notifications. If more than one message is active, they are cycled through every couple second and then repeat. These messages are intended to give the operator an indication of what controls are selected and if there are any warning items that should be addressed.



DISPLAY MESSAGE	EXPLANATION
BELT AUTO OFF. MANUAL CONTROL.	Belt has been placed in manual mode. Used typically for diagnostic purposes and if running in limp mode.
AUTO BELT OFF. RPM SENSOR / OIL TEMP?	Belt auto alarm has been activated. Belt is not meeting the RPM setpoint. Is there an RPM reading? Belt pressure? Is the hydraulic oil temperature cold?
AUTO CEMENT OFF. RPM SENSOR?	Cement auto alarm has been activated. Cement is not meeting the RPM setpoint. Is there an RPM reading? Belt pressure?
AUTO COLOUR OFF. RPM SENSOR?	Colour auto alarm has been activated. Colour is not meeting the RPM setpoint. Is there an RPM reading? Belt pressure?
AUTO AUX1 OFF. RPM SENSOR?	Aux1 auto alarm has been activated. Aux1 is not meeting the RPM setpoint. Is there an RPM reading? Belt pressure?
AUTO AUX2 OFF. RPM SENSOR?	Aux2 auto alarm has been activated. Aux2 is not meeting the RPM setpoint. Is there an RPM reading? Belt pressure?
AUTO WATER OFF. FLOW? BLOCKAGE?	Water auto alarm has been activated. Water is not meeting the flow setpoint. Is there a flow reading? Is water going into mix bowl?
AUTO ADMIX1 OFF. FLOW? BLOCKAGE?	Admix1 auto alarm has been activated. Admix1 is not meeting the flow setpoint. Is there a flow reading? Is Admix1 going into mix bowl?
AUTO ADMIX2 OFF. FLOW? BLOCKAGE?	Admix2 auto alarm has been activated. Admix2 is not meeting the flow setpoint. Is there a flow reading? Is admix2 going into mix bowl?
AUTO ADMIX3 OFF. FLOW? BLOCKAGE?	Admix3 auto alarm has been activated. Admix3 is not meeting the flow setpoint. Is there a flow reading? Is Admix3 going into mix bowl?
AUTO ADMIX4 OFF. FLOW? BLOCKAGE?	Admix4 auto alarm has been activated. Also applies to Latex mixer. Admix4 is not meeting the flow setpoint. Is there a flow reading? Is Admix4 going into mix bowl?
LOW VOLTAGE. CHECK BATTERY/CONNECTION.	Low voltage. Check battery and/or alternator output. Check to make sure mixer is set-up for correct voltage input.

MAX WATER FLOW, BELT SPEED LIMITED.	Belt speed is automatically limited if mixer operation is demanding more water than water pump can deliver.
WATER IN MANUAL MODE.	Water has been placed in manual mode (see Mixer Control).
DRY MIX OVERRIDE ON.	Mixer is in dry mix mode. Water pump not required to run when mixing. Water ON/OFF valve will not open in this mode, but wash hose is still available.
LEVEL OVERRIDE ON.	Low level override has been activated. Used to override cement bin low level, water low level and gate material sensors to finish job.
POWDER CALIBRATION ON.	Reminder that powder calibration mode is active. Belt will not run in the mode.
GATES CALIBRATION ON.	Reminder that gates calibration mode is active. Cement will not run in this mode.
RPM HIGH ON FOR MIXING!	The high idle must be activated before mixing.
AUGER LIMIT SWITCH OPEN!	Auger safety limit switch is triggered. Ensure lid is closed.
CEMENT FULL MODE IS ON!	Cement full mode has been activated. Used for emergencies to set cement control to full. Overrides cement valve to full open.
MIX VOLUME STOP ACTIVATED.	Indicates mixing has stopped due to volume stop being reached.
NO BELT FEEDBACK. IS BELT TURNING?	A speed command is given to the belt to run and no feedback rpm is detected. Check to ensure belt rpm sensor is working and PTO is engaged.
ADMIX4 PUMP ON? FLASHING GREEN TO ARM.	Mix design calls for Admix4 and pump is not ON.
MAX ADMIX4 FLOW, BELT SPEED LIMITED.	Belt speed is automatically limited if mixer operation is demanding more admix4 then the pump can deliver.
ADMIX3 PUMP ON? FLASHING GREEN TO ARM.	Mix design calls for Admix3 and pump is not ON.
MAX ADMIX3 FLOW, BELT SPEED LIMITED.	Belt speed is automatically limited if mixer operation is demanding more admix3 then the pump can deliver.
ADMIX2 PUMP ON? FLASHING GREEN TO ARM.	Mix design calls for Admix2 and pump is not ON.
MAX ADMIX2 FLOW, BELT SPEED LIMITED.	Belt speed is automatically limited if mixer operation is demanding more admix2 then the pump can deliver.
ADMIX1 PUMP ON? FLASHING GREEN TO ARM.	Mix design calls for Admix1 and pump is not ON.
MAX ADMIX1 FLOW, BELT SPEED LIMITED.	Belt speed is automatically limited if mixer operation is demanding more admix1 then the pump can deliver.