
PROALL Mobile Mixer

Operator's Manual
RANGER



MX02231

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RANGER

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.
2. The “HOME” key can be pressed from any screen to take you back to the “HOME” screen shown above.
3. The “ESC” 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.
5. 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.

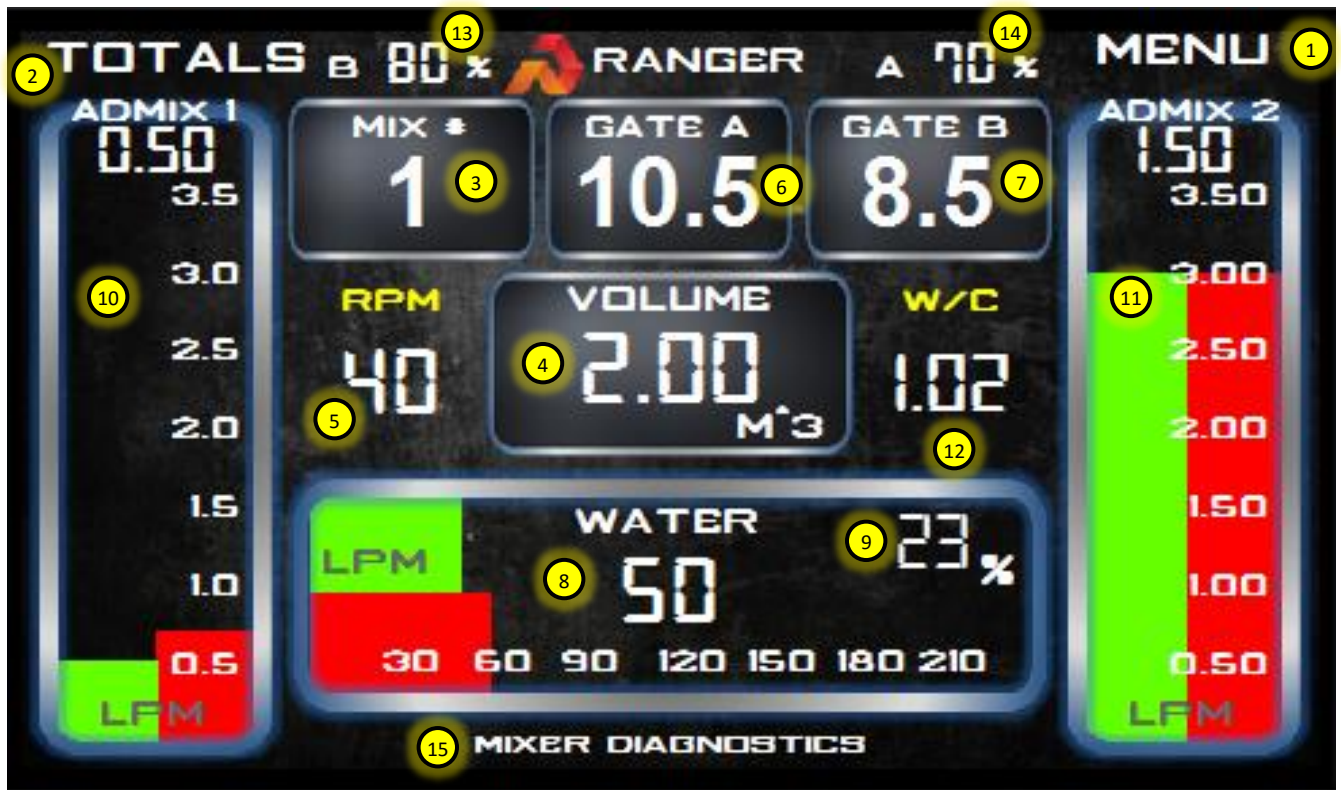
Keypads are associated with various fields on the display and allow the user to quickly enter string or numeric values.

String Keypad

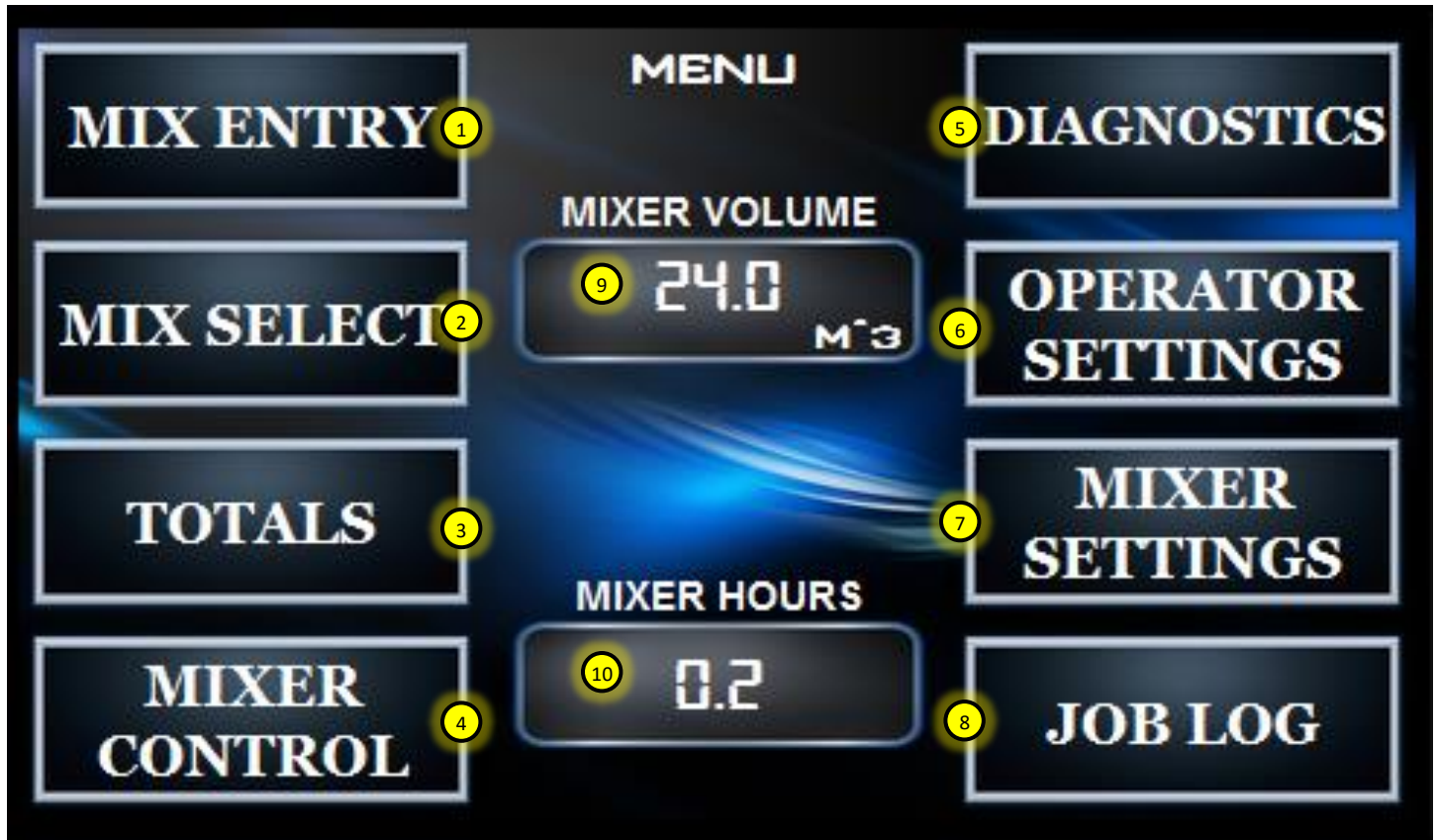


Numeric Keypad





1. "MENU" screen shortcut.
2. "TOTALS" screen shortcut.
3. Selected mix design number.
4. Total concrete volume currently produced.
5. Belt RPM reading.
6. Selected mix design gate A position.
7. Selected mix design gate B position.
8. Water gauge. Red bar is calculated flow rate.
Green bar is actual flow rate.
9. Water pump speed percentage (100% is max)
10. Admix 1 gauge. Red bar is calculated flow rate.
Green bar is actual flow rate.
11. Admix 2 gauge. Red bar is calculated flow rate.
Green bar is actual flow rate.
12. Running W/C ratio.
13. Belt speed percentage.
14. Auger speed percentage.
15. 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. Mixer Control. Digital display of mix process values such as flow rate and rpm. Auxiliary mixer control settings such as material unload.
5. Diagnostics. Hydraulic and electrical diagnostics can be viewed here along with an alarm log for trouble shooting purposes.
6. Operator Settings. Units can be selected here along with vibrator auto times.
7. Mixer Settings. Configuration values for the mixer are entered here.
8. Job Log. Stores the last 25 jobs, so they can be viewed or re-printed.
9. Total volume of concrete the mixer has produced since in operation. Total is updated after a reset.
10. Mixer hours. Total hours the belt has run.

The screenshot shows a 'MIX ENTRY' screen with the following layout:

- Top Bar:** 'CALC' (2) on the left, 'MIX ENTRY' in the center, and 'DFLT NAMES' (3) on the right.
- Mix Selection:** A table with 'MIX #' (1) and 'MIX DESCRIPTION'. The selected mix is '1' and 'TESTER'.
- Material Inputs:**
 - GATE A:** 10.5
 - GATE B:** 9.0
 - COUNTS:** 1000 /M³ (9)
 - STRENGTH:** 20.0 MPA
 - STONE:** 1000 Kg/M³ (4)
 - SAND:** 1050 Kg/M³
 - CEMENT:** 200 Kg/M³
 - CEMENT RATIO:** 75 % (8)
- Bottom Bar:** 'NEXT' (5), a large 'DON'T FORGET TO SAVE!' button (7), and 'SAVE' (6).

1. 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.
2. Calculate mix values, such as water required for current mix design.
3. Load default names for material types.
4. Material names can be changed for each mix by touching the name field. The keyboard will be displayed allowing the user to enter the desired material.
5. Go to next mix entry page.
6. Save the current mix design.
7. Information window for errors and mix design limits.
8. Cement ratio is the speed ratio between the belt and cement metering auger. This ratio is adjustable up to 100% or full cement. If lean mix ratios are desired it is best to run the belt as fast as possible to ensure the cement metering auger is turning greater than minimum speed (approx. 20RPM).
9. Total belt counts required per unit volume. This value is manually calculated based on calibration data.

CALC		MIX ENTRY		DFLT NAMES
ADMIX 1	ADMIX 2	W/C	H2O VOLUME	
500 ml/M ³	1000 ml/M ³	0.57 ②	③ 118.0 L/M ³	
CEMENT COUNT		COLOR ⑤	COLOUR RATIO	
④ 0.200 Kg/Count		7.5 Kg/M ³	⑥ 30 %	
COLOUR COUNT		FIBRE 1	MAX PROD	
0.0075 Kg/Count		50.0 Kg/M ³	⑦ 86.4 M ³ /h	
LOAD ①	DON'T FORGET TO SAVE!			SAVE

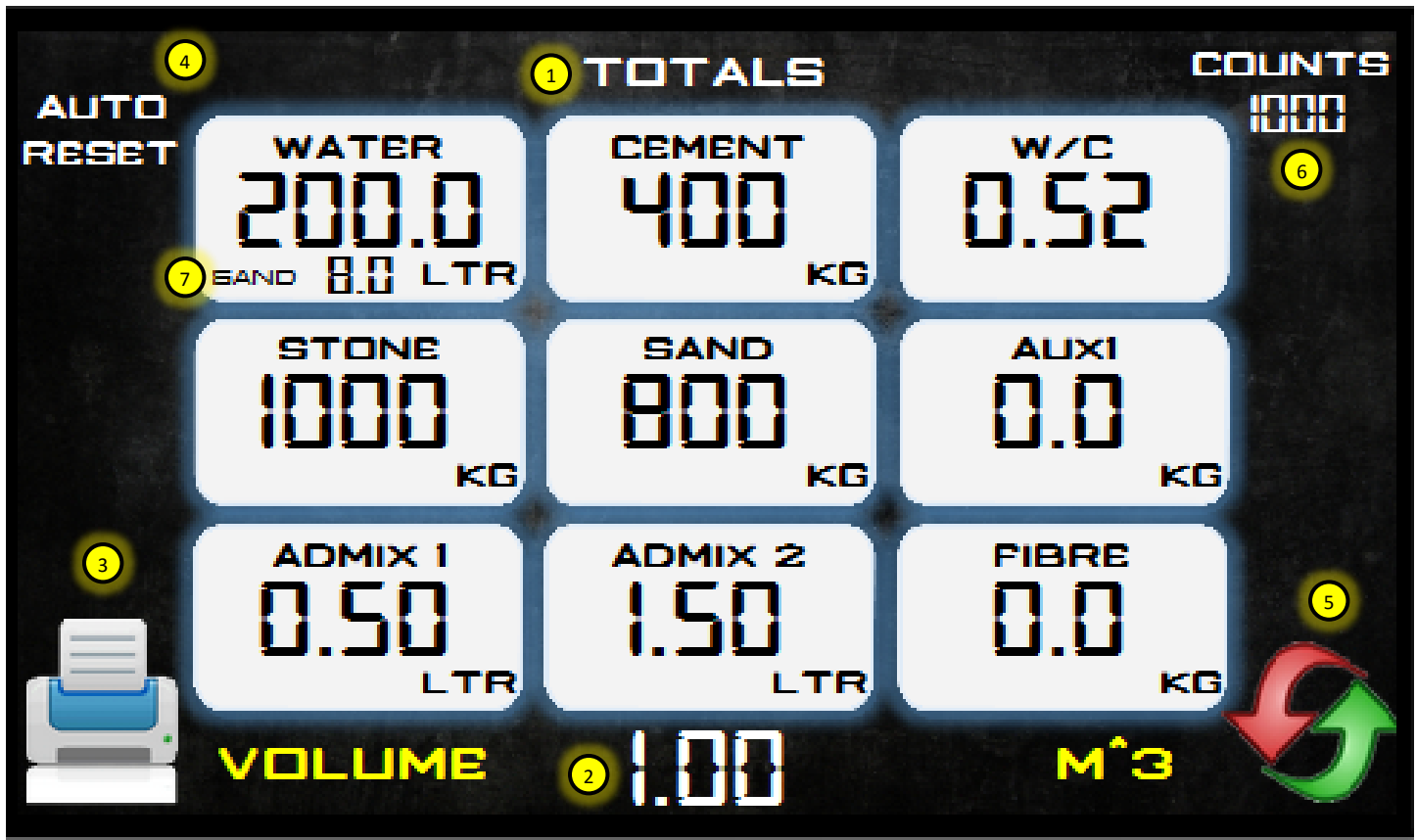
- 1: Mix designs can be loaded from a USB stick inserted into the display. The mix design file can be created from within Excel or copied from the display and re-loaded any time.
- 2: Mix design W/C ratio. This value is required to properly calculate the water volume required per unit volume.
- 3: Total water required per unit volume.
- 4: Powder delivery auger weight per count of the belt.
- 5: Colour /Aux auger name can be changed / modified for each mix by touching name field.
- 6: Colour / Aux ratio is the speed ratio between the belt and the metering auger. This ratio is adjustable up to 100%. If mix ratios are low higher belt speeds are recommend to ensure smooth operation of metering augers.
- 7: Maximum theoretical production rate of the mixer. Based on maximum belt speed.

The screenshot shows the 'MIX SELECT' screen with the following layout and callouts:

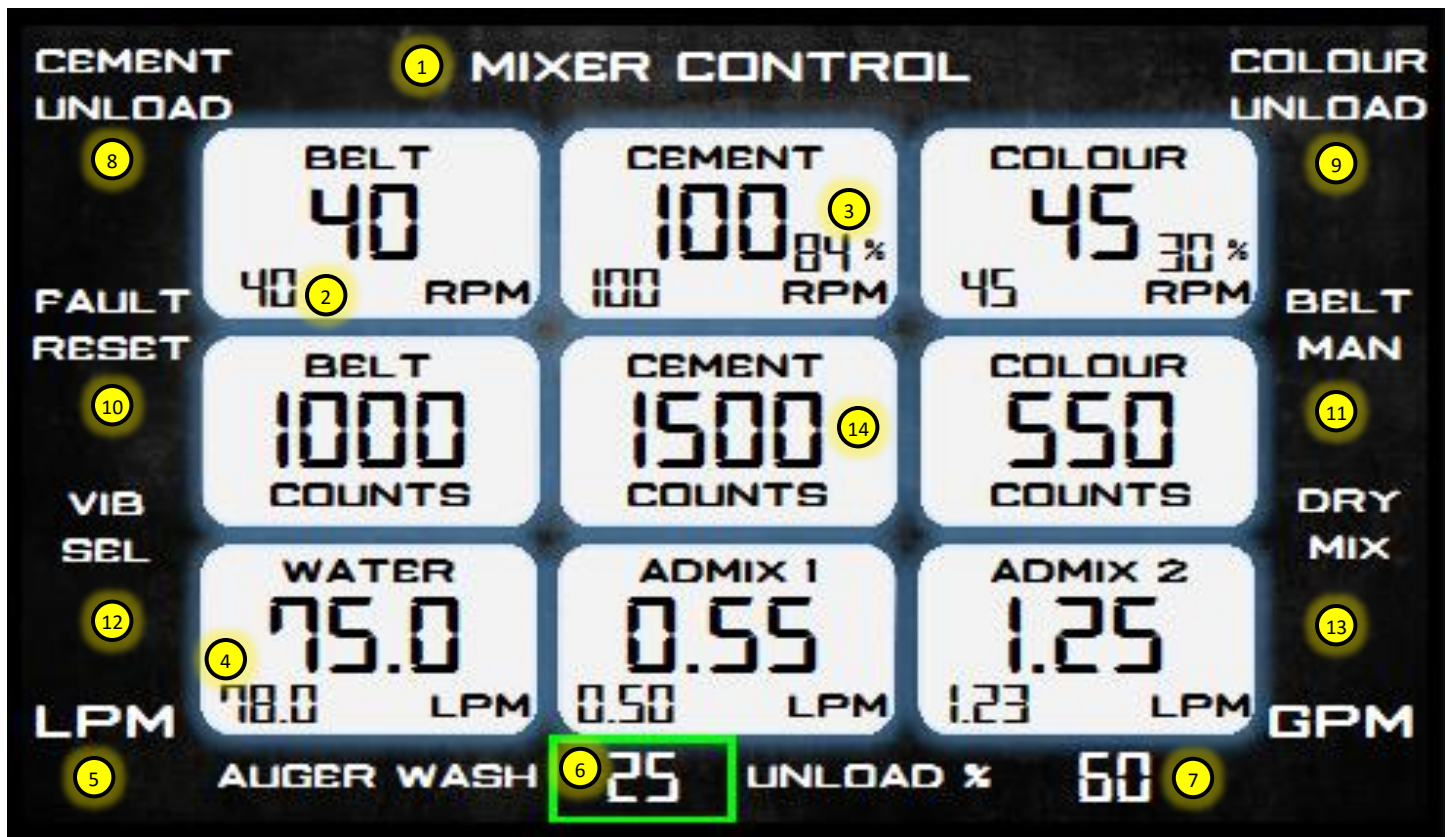
- Top Bar:**
 - Left: **GTA** 0.0% (Callout 2)
 - Center: **MIX SELECT** (Callout 8)
 - Right: **GTB** 4.0% (Callout 3)
- Mix Selection Table:**

MIX #	MIX DESCRIPTION			
1 (Callout 1)	DEMO			
GATE A	GATE B	CEMENT	RATIO	STRENGTH
10.5	8.5	200 Kg/M ³	75	0.0 MPA
STONE	SAND	COLOUR	RATIO	SUPPLY H2O
1000 Kg/M ³	800 Kg/M ³	7.5 Kg/M ³	30 (Callout 7)	59.0 L/M ³
- Bottom Section:**
 - Left: **JOB NAME** TEST JOB (Callout 4)
 - Center: **VOLUME STOP** 1.00 (Callout 5)
COUNTS 1000 M³
 - Right: **VOLUME STOP** (Callout 6)

1. Mix design number. Customer required mix design is selected here. This selection will not be available if current mixer volume is not zero.
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).
7. Cement and auxiliary ratios can be adjusted from the mix select screen if this option is activated (see mixer display settings).
8. Information regarding current selected mix / warnings.



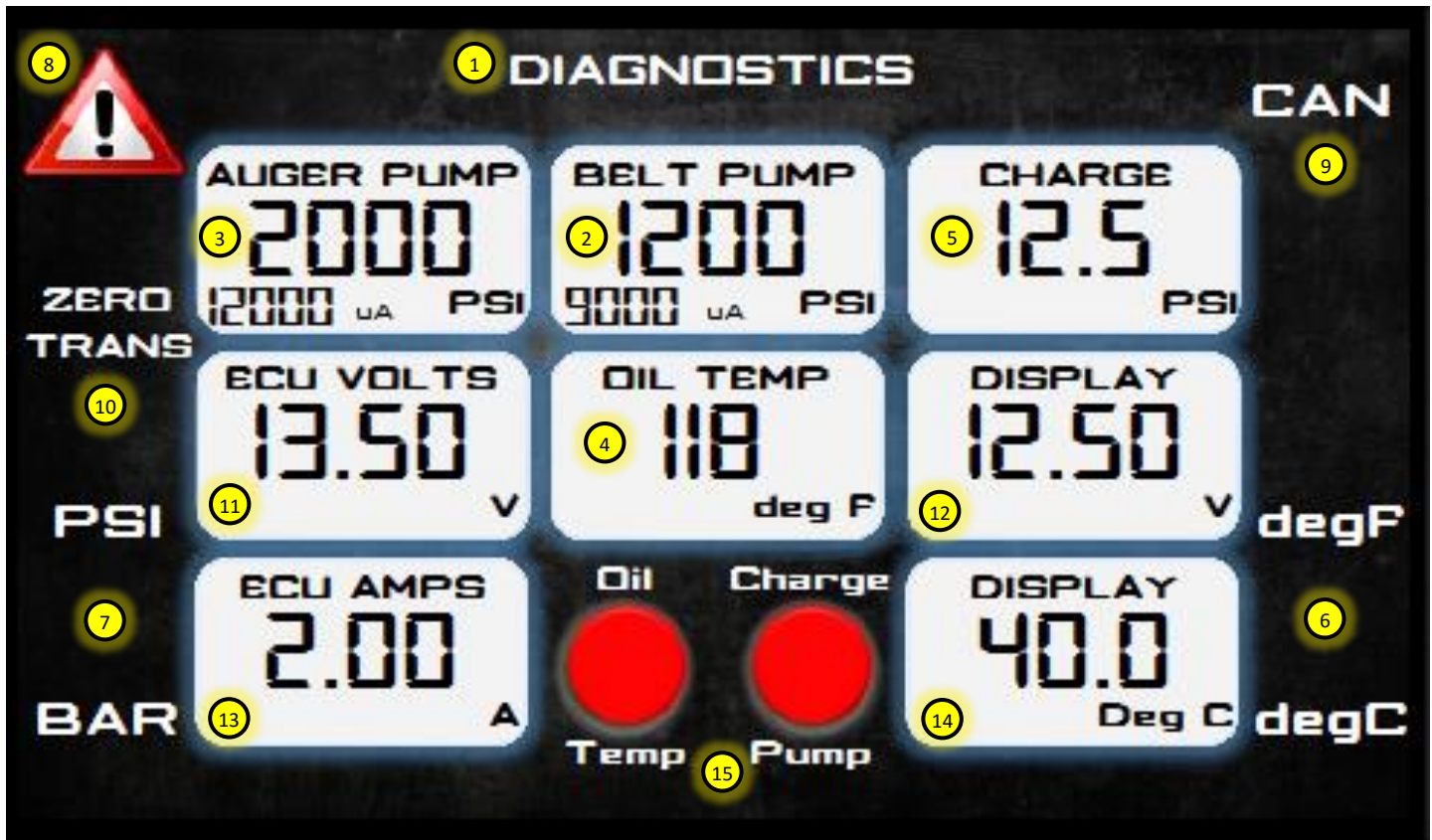
1. Totals are calculated using values from the mix entry file or values generated by input devices on the mixer.
2. Total volume produced before a reset. This value is the same on the HOME screen.
3. Print a ticket by touching icon or pressing the soft key.
4. Auto reset if ON will activate a totals 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.
6. Total belt counts for current operation.
7. Total sand moisture water content.



- Mixer control shows 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.
- Flow units can be changed here independent of the overall mix units selected.
- 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.
- The powder/aux unload speeds can be independently adjusted here regardless of the current mix design speed setting.
- Cement unload. Cement bin can be emptied independently of the belt or any other powder/aux functions.
- Colour / Aux unload. Colour / Aux 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.
- Belt Manual. The belt can be run in manual mode, which disregards the calculated belt

speed targets. This is typically only used for diagnostics or emergency situations.

12. 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.
13. 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.
14. Cement / Aux Counts. The values shown are the total counts of the delivery auger.



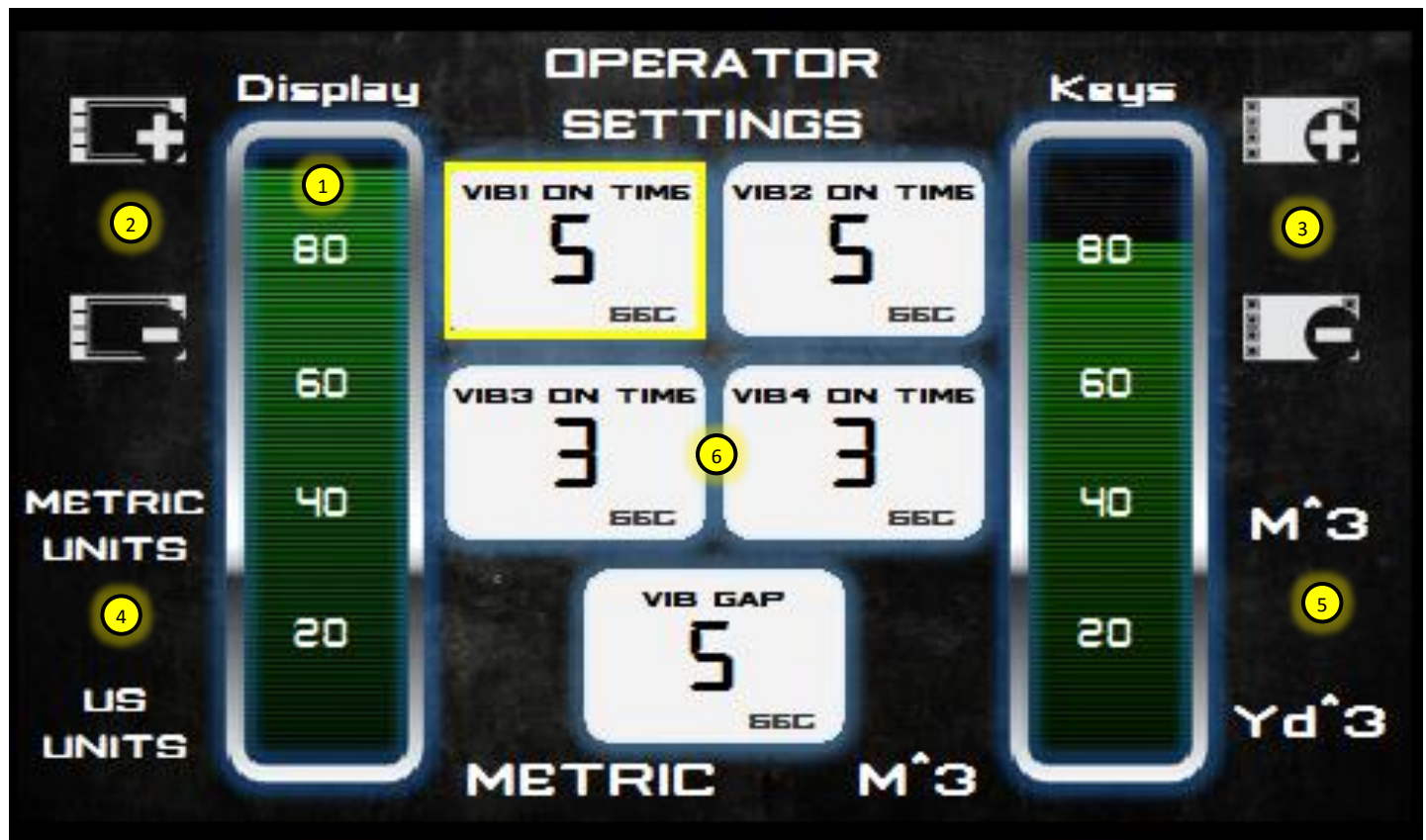
1. System diagnostics. Hydraulic and electrical diagnostics can be viewed here. Used for set-up and trouble-shooting purposes.
2. Belt pressure. Shows current outlet pressure on belt pump.
3. Auger pressure. Shows current outlet pressure on auger pump.
4. Oil temperature. Shows current hydraulic oil 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. CANBUS diagnostics. Screen showing communication diagnostics.
10. If the hydraulic system is off and a pressure reading is showing on the belt and auger gauges this button can be pressed to zero the values.
11. Voltage at input pin of ECU/computer.
12. Display voltage. This voltage is typically slightly less than the ECU, but should typically be within 1V of each other.
13. Total current ECU/computer is using to run and activate outputs.
14. Internal display temperature in degrees Celsius.
15. Alarm indication of oil temperature and charge pressure. Green lights indicate everything functioning okay.



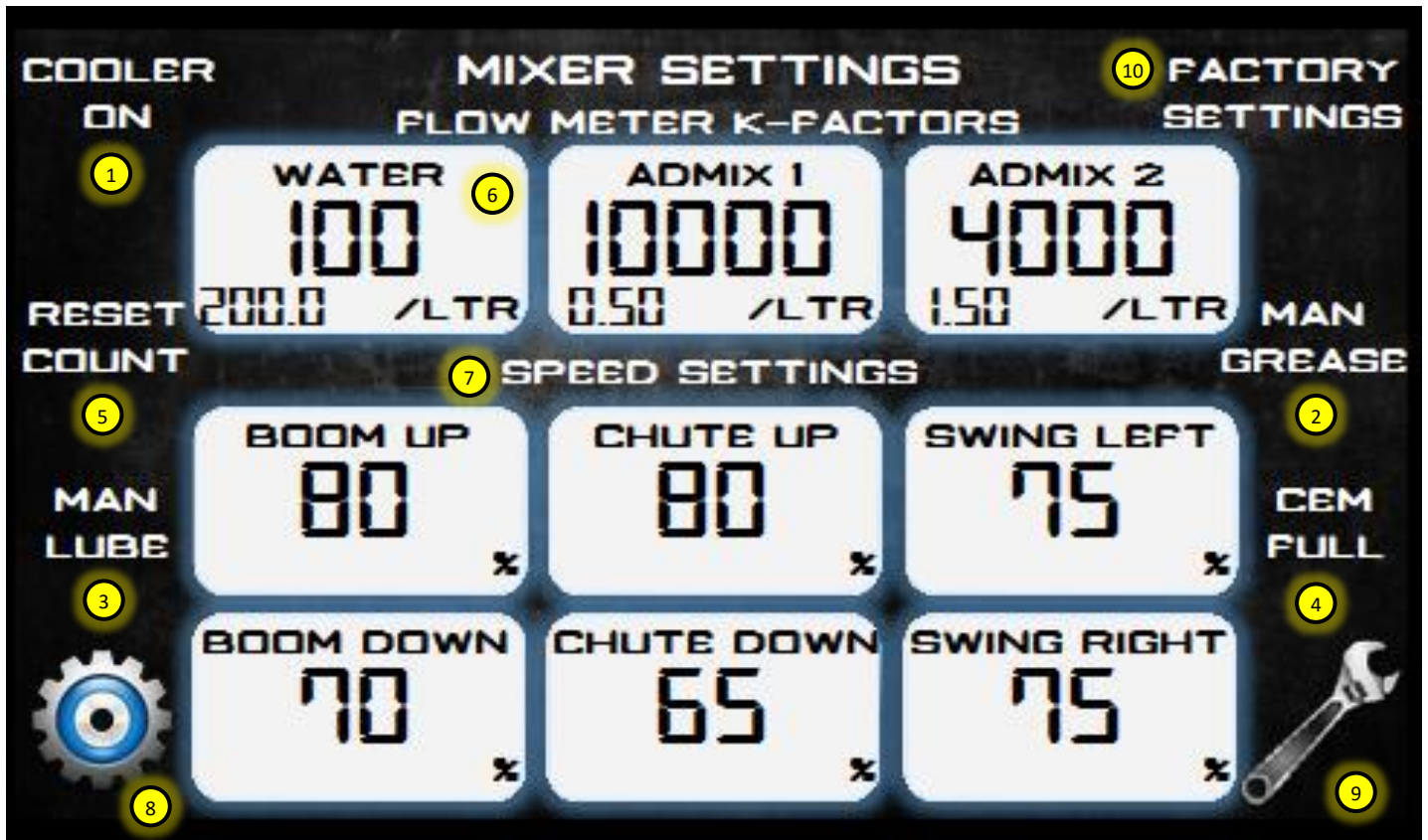
1. CANBUS device diagnostics. Any device on the CANBUS communication network is monitored to ensure it is sending data to the computer. If the indicator is red then the device either does not exist (optional component) or there is a fault / disconnect somewhere in the system.
2. CAN reset will re-initialize all CAN input and output devices. This would typically be pressed if a new power module is added to initialize parameters.
3. Printer communication diagnostics message.

ALARM LOG		
DELETE	2	3 REFRESH
DATE/ TIME	DESCRIPTION	STATE
Mon Aug 08 13:06:12 2016	CEMENT WEIGHT LOW	Shown
Mon Aug 08 13:06:23 2016	CEMENT WEIGHT LOW	Confirmed
1		

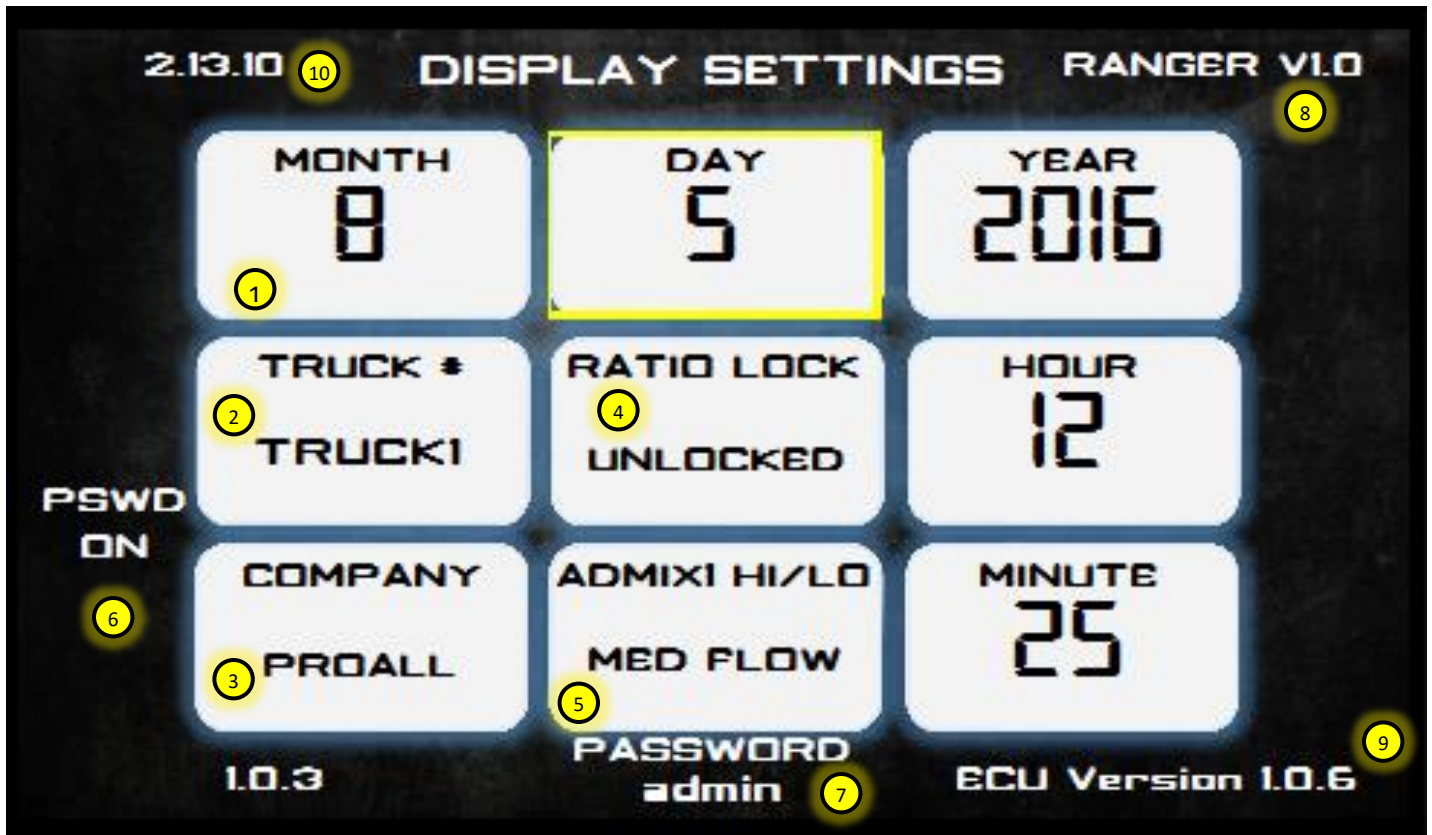
1. Alarm log table. Table will store up to 100 alarm points. After 100 it writes over the first alarm and continues writing over previous alarms. To scroll through the alarm log touch the log table. The border will turn green. Rotate the display knob to scroll.
2. The alarm log can be deleted and started new by pressing DELETE.
3. 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.



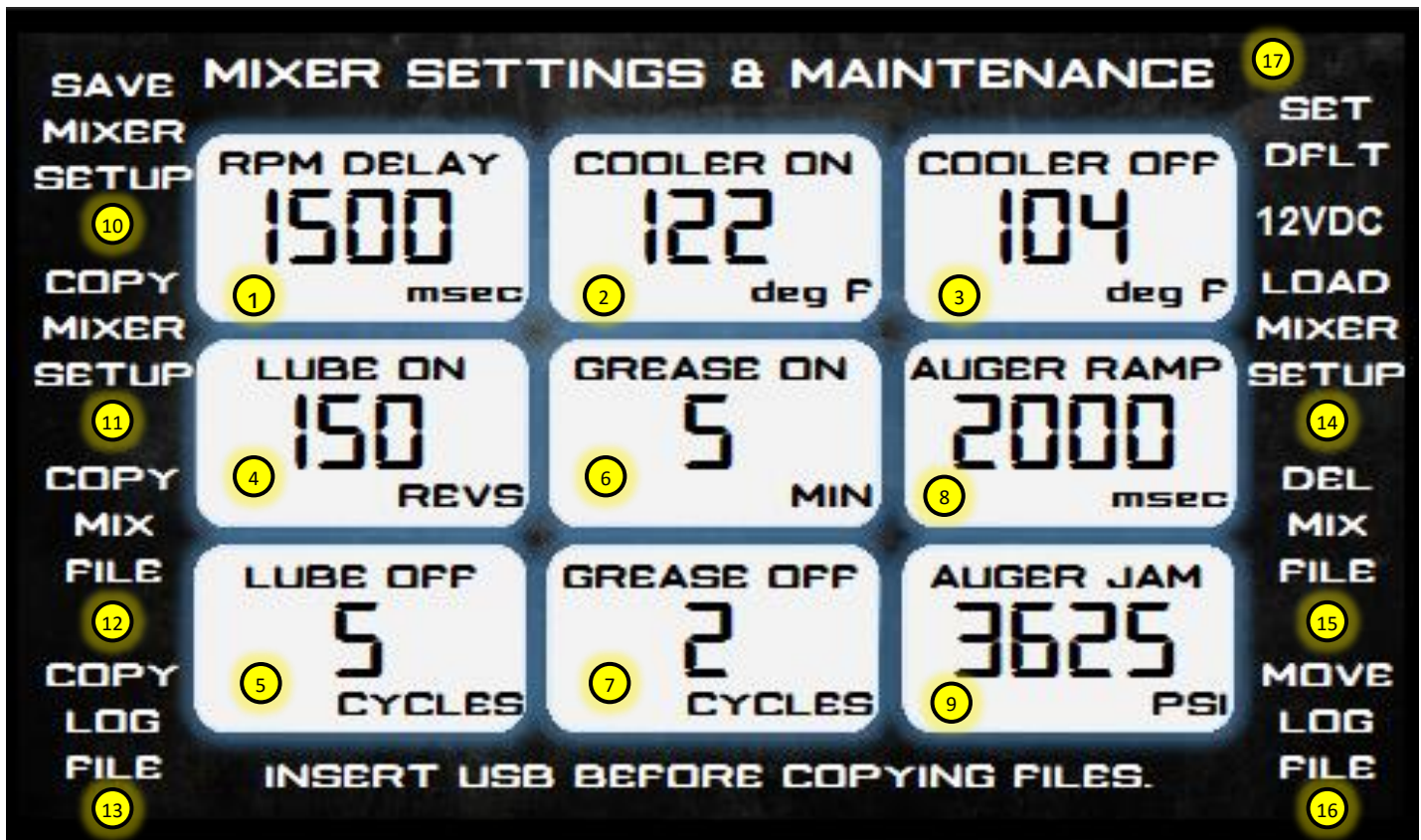
1. Display and soft key backlighting adjustment percentages can be viewed on the bar graphs.
2. Display backlighting UP or DOWN.
3. Soft Keys backlighting UP or DOWN.
4. Units selection. Values can be in metric or US units. The units are selected using the soft keys or touch screen and displayed at the bottom of the screen.
5. Volume units can be selected independently of the mixer units selected.
6. Auto vibrator set-up times are adjusted here. Total ON time and the OFF time (GAP) between vibrators is adjusted in seconds.



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.
4. 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.
5. Reset the liquid counts. Used for calibration.
6. 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.
7. Maximum speed settings for boom, chute and swing. Touch the value and rotate the display knob until desired max speed is reached (100% is max).
8. Mixer display settings screen.
9. Mixer settings and maintenance screen.
10. Factory settings screen. Password protected.



1. Set date and time. Should be set to give accurate ticket print outs, alarm log data and job logging.
2. Change unique truck number here. Typical value is mixer serial number.
3. Change company name.
4. Ratio Lock. Lock out the ability to change the ratio values on the mix select screen. Three modes are available.
 - 1: Locked
 - 2: Colour / Aux Unlocked
 - 3: Unlocked
5. Admix1 flow meter on the Home screen can be scaled for low flow or medium flow.
6. Activate the Password ON function to password protect the mix entry screen and display settings screen.
7. Current password for Password ON function.
8. Current display program version.
9. Current ECU (computer) program version.
10. Current display software / OS.



11. 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.
12. Temperature that the oil cooler will turn on.
13. Temperature that the oil cooler will turn off.
14. Chain lube ON trigger. This value indicates how many revolutions of the conveyor need to occur before a chain lube cycle is started.
15. This value indicates how many cycles of the chain lube pump will occur of one revolution of the chain.
16. 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 stand-alone units.
17. Mix auger grease cycles. This is the number of pumping cycles that will occur after the cycle time has elapsed.
18. Mix auger ramp controls how fast the auger starts from a stopped state. Used to stabilize auger windup.
19. Max pressure setting of mix auger that will trigger a mix stop. Used to stop conveyor if mix auger is jammed to prevent material build up in mix bowl.
20. The mixer settings can be saved to a file. Mixer settings include all scaling factors, speed and maintenance settings.
21. Mixer settings file can be copied to a USB stick.
22. Mix design file can be copied to a USB stick.
23. Mix log file can be copied to a USB stick.
24. 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.
25. Delete mix design 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.
26. 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 can't be re-loaded onto the display.

27. Touching this function will load all default control curves and settings for either 12VDC or 24VDC systems.

DEMO MIX **JOB LOG** **MIX # 1**

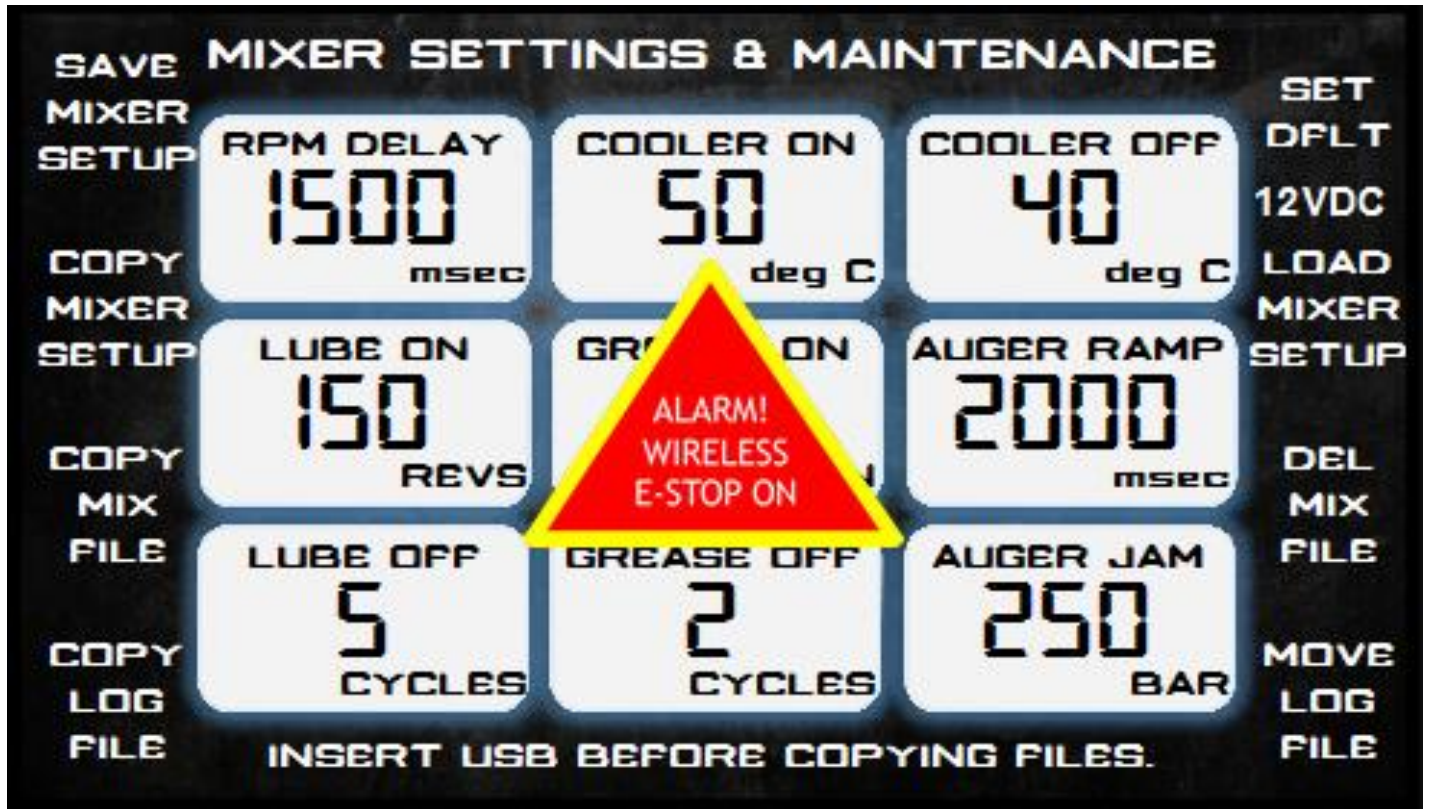
JOB # 0

JOB NUMBER 3 08/01/2016	JOB NAME TEST JOB 10:52 AM	VOLUME 1.50 M ³	STRENGTH 0.0 MPA
NO VALUE 1500 KG	NO VALUE 1200 KG	NO VALUE 300 KG	W/C 0.41
WATER 120.0 LTR	ADMIX 1 1.00 LTR	ADMIX 2 0.00 LTR	COLOUR 0.0 KG

MIX LOG DATA
LOG TOTAL 10

LOG SIZE 1 KB

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.
6. 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.
7. Current mix log file size. Maximum size is 8000kB.



Alarm messages, when activated, show on the screen in the form of a triangle or circle with a brief description of the alarm. Depending on the alarm priority the alarm message may stay on the screen until the alarm is acknowledged by the operator. Lower priority alarms will show a blinking alarm message. Alarms can be acknowledged by pressing the ESC 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:

1. 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.

3. 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.
4. 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:

1. 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:

1. 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 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.



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.



Vibrator pulse select indicates the operator has placed the system in automatic vibrator select mode. Any of the four vibrators may be selected to automatically turn on with the belt.



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.



The mixer has been placed in cement unload mode by the operator. Go to mixer control screen to turn off.



The mixer has been placed in colour unload mode by the operator. Go to mixer control screen to turn off.



The mixer has been placed in Aux1 unload mode by the operator. Go to mixer control screen to turn off.