
ProAll Mobile Mixer

Operator's Manual
P and L Model



MX01612

20 August 2020
Rev.3



5810 - 47 Avenue, Olds, Alberta, Canada, T4H 1V1
E info@proallinc.com | P 403-335-9500 | F 403-335-9560

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1. Introduction

Congratulations, you have chosen the world's finest and most reliable mobile mixer. You are now part of the world-wide ProAll International family, operating successfully in 36 countries. Your ProAll Mobile Mixer, manufactured by ProAll International Inc. will meet, or exceed your concrete requirements. ProAll International represents over 30 years of experience in mobile, volumetric, continuous batching; both as a concrete supplier and as a mixer manufacturer.

Years of experience have helped us develop and engineer a mobile mixer that will give many years of dependable and profitable service.

This manual provides operating and maintenance procedures that are critical to the profitable and successful operation of your ProAll Mobile Mixer. Operation and maintenance of your new mixer in accordance with this manual will assure you of long and trouble-free service.

Keep this manual handy for frequent reference and pass it on to new operators or owners. Call your local dealer or distributor if you need assistance, information, or additional copies of the manual. Contact your dealer for a complete listing of parts.

OPERATOR ORIENTATION - The directions left, right, front, and rear, as mentioned throughout the manual, are as seen from the direction of travel.

ALWAYS give the SERIAL NUMBER when ordering parts or requesting service or other information.

The serial number plate is located where indicated. Please mark the number in the space provided for easy reference.

Model Number: _____

Serial Number: _____

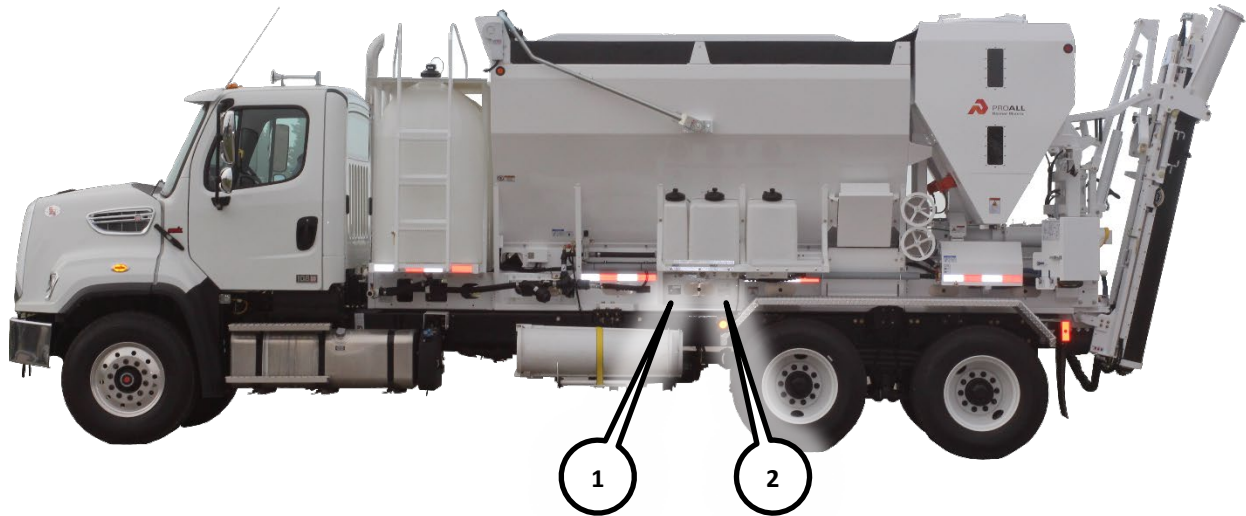


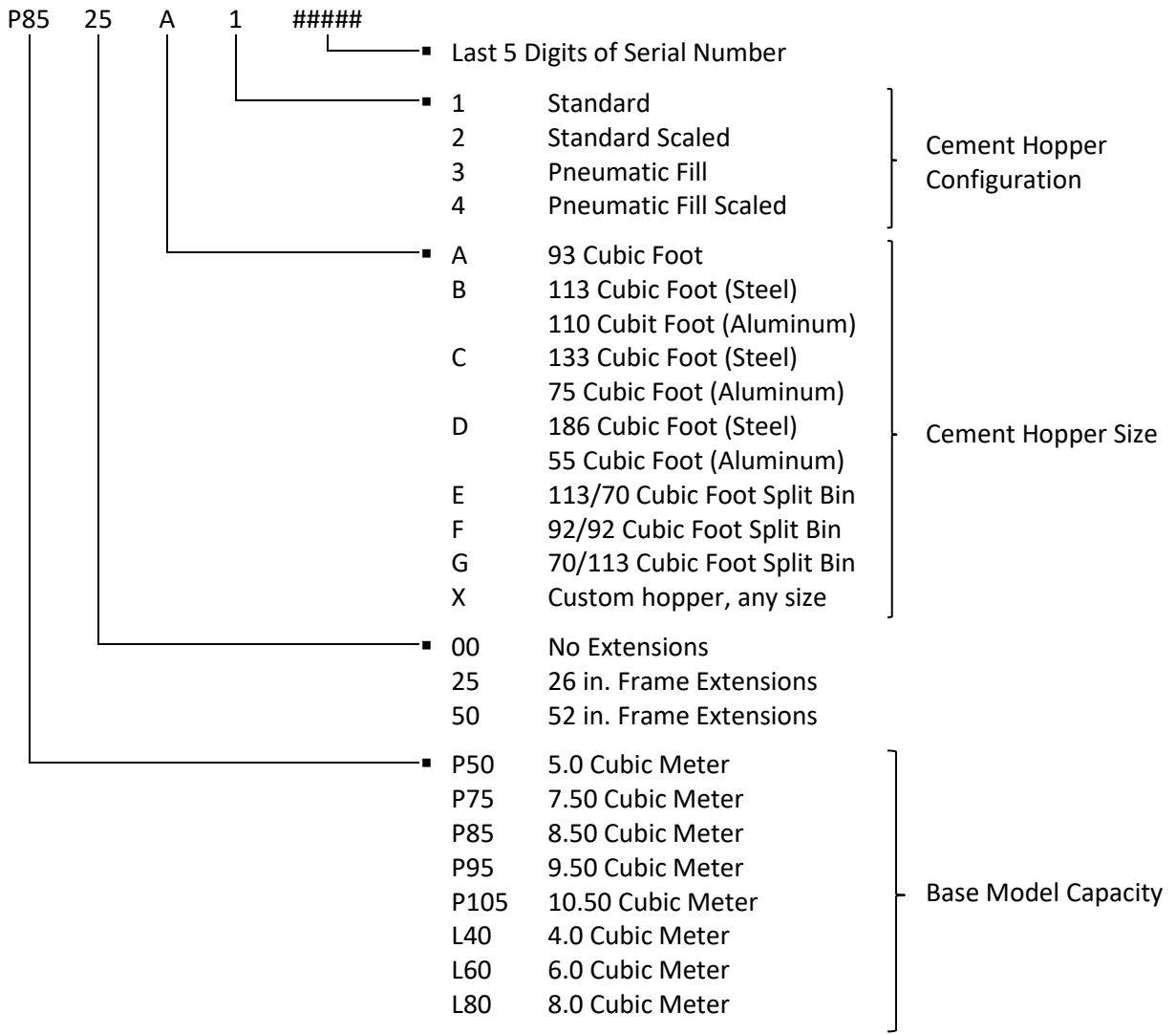
Plate 1. Model and Serial Number Plate



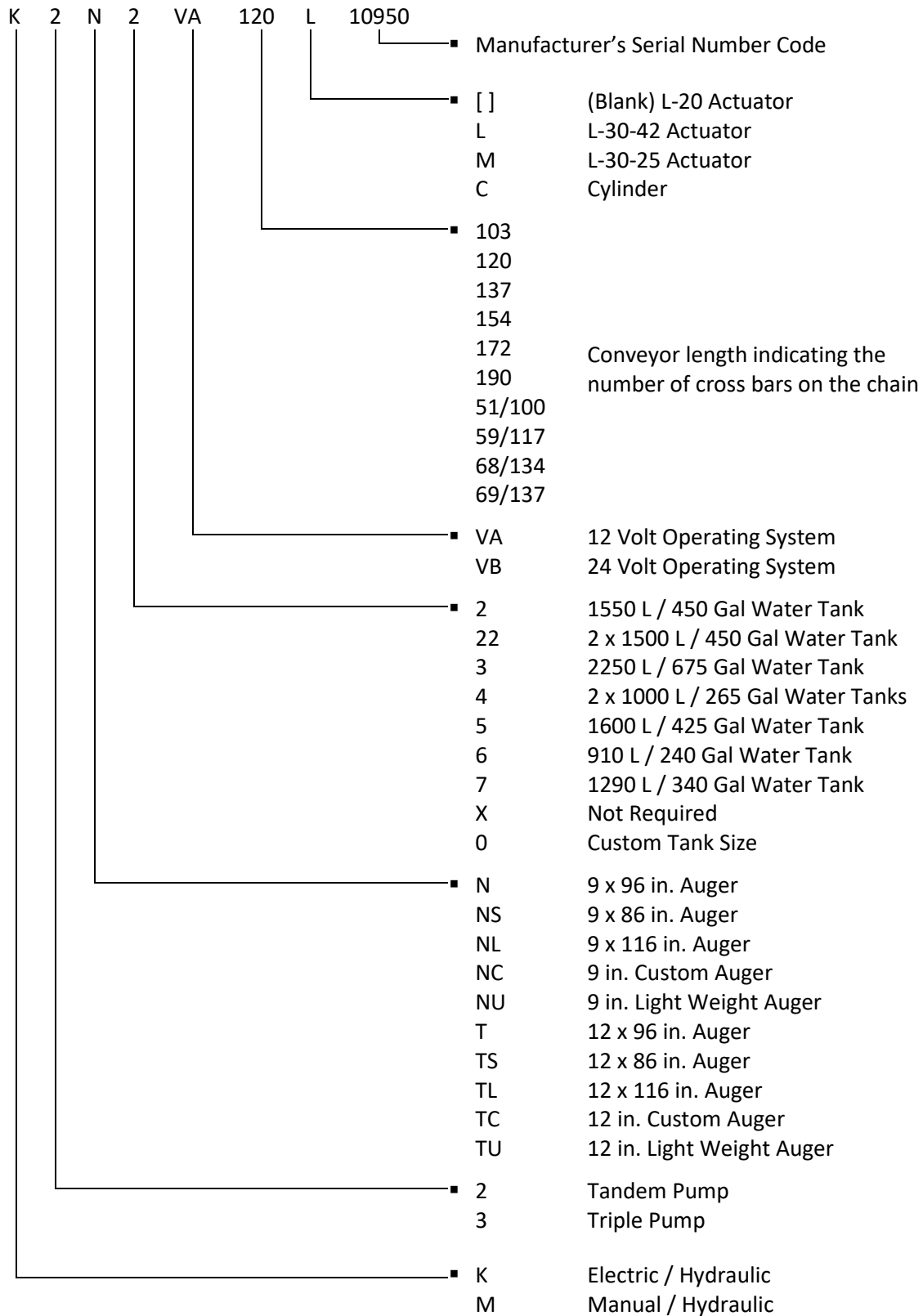
Plate 2. VMMB Plate



Model Number



Serial Number

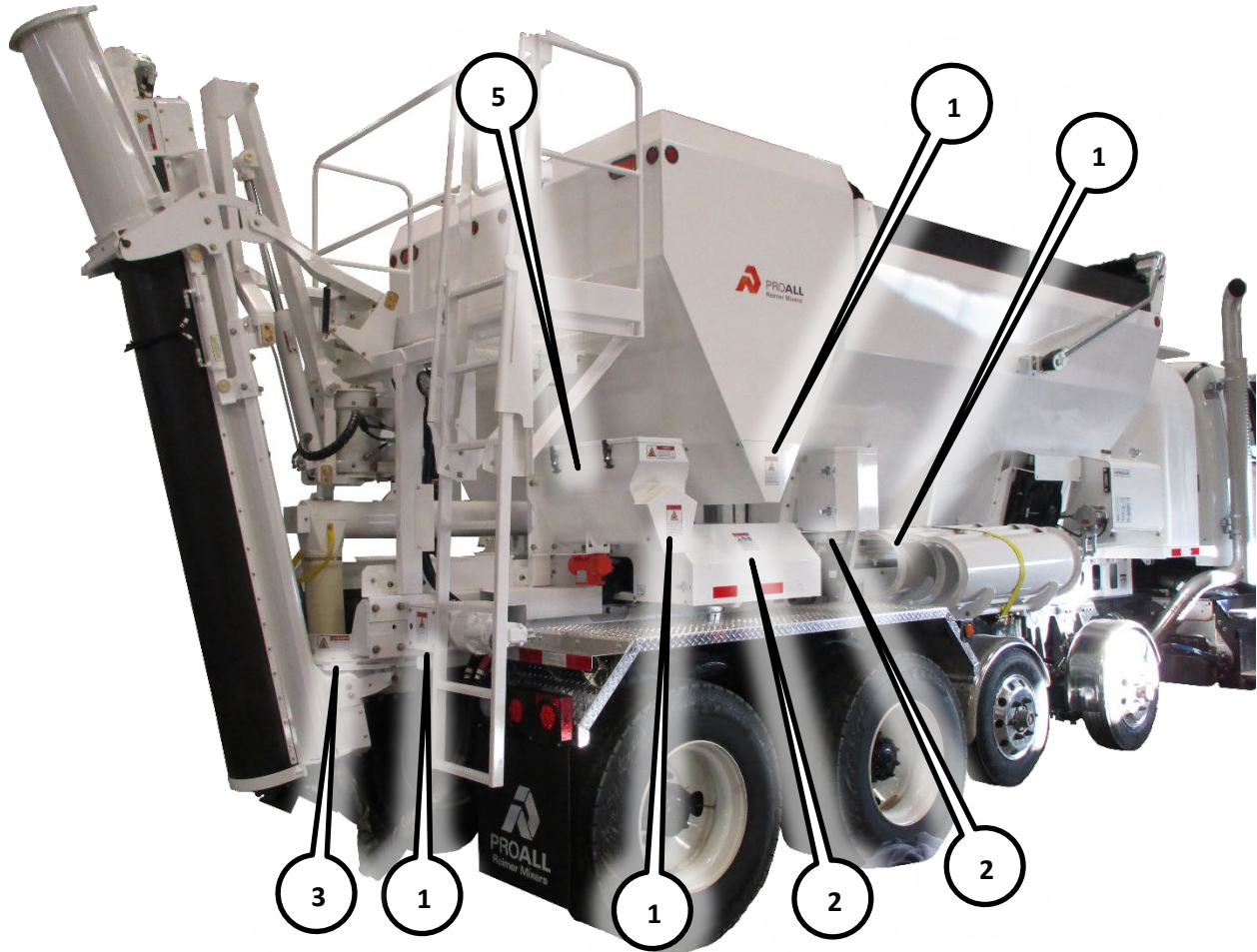


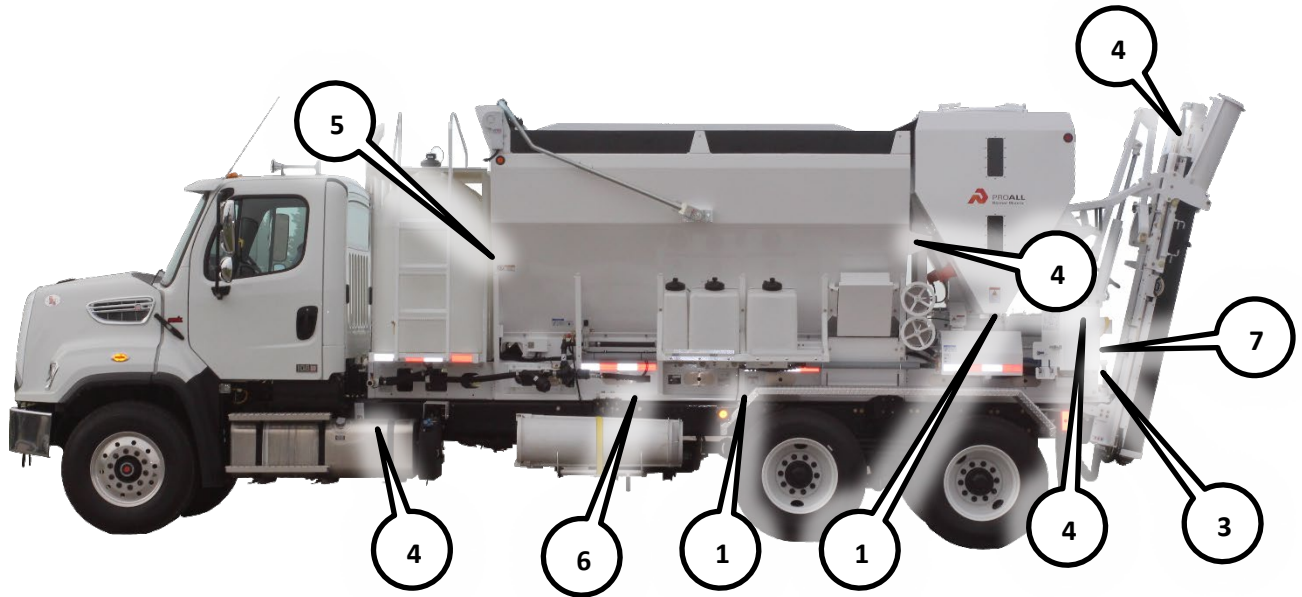
2. Safety

Safety Decals

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you.

Please take this manual and walk around your machine, noting the location of the decals and their significance.





Decal 1



Decal 2



Decal 3



Decal 4



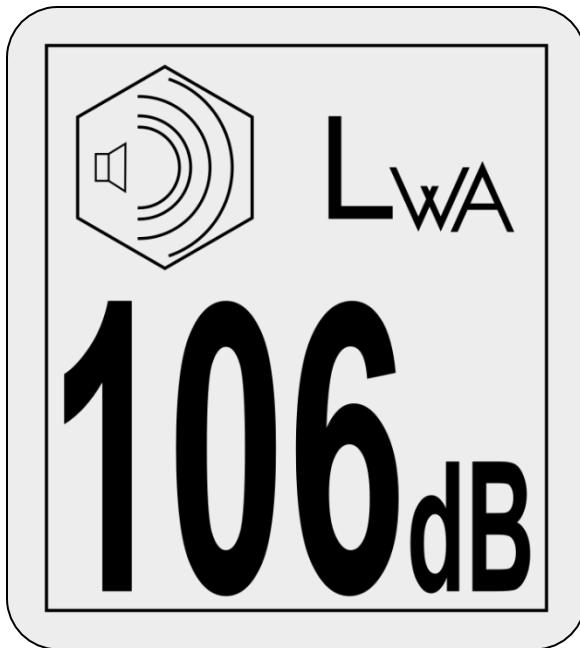
Decal 5



Decal 7



Decal 6



Safety Alert Symbol

This Safety Alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

The Safety Alert symbol identifies important safety messages on the machine and in the

manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instruction in the safety message.



Why is SAFETY important to you?

3 BIG REASONS


Accidents Disable and Kill


Accidents Cost


Accidents Can Be Avoided

Signal Words

Note the use of signal words DANGER, WARNING and CAUTION messages. The appropriate signal word for each message has been selected using the following guidelines:

 Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

 Indicates an imminently hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

 Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

IMPORTANT: *The word "IMPORTANT" is followed by specific instructions. It is intended to prevent minor machine damage if a certain procedure is not followed.*

NOTE: *The word "NOTE" is used to identify and present supplementary information.*

Safety





YOU are responsible for the SAFE operation and maintenance of your equipment. YOU must ensure that you and anyone who is operating, maintaining or working around the equipment are familiar with the operating and maintenance procedures and related SAFETY information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the equipment.

Remember, YOU are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that EVERYONE operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. All accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

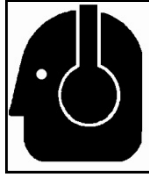
- Equipment owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and operating instructions in the manual and to follow them. All accidents can be avoided.
- We feel that a person who has not read and understood all operating and safety instructions is not qualified to operate this machine. An untrained operator exposes himself and bystanders to possible serious injury or death.

- Do not modify the equipment in any way. Unauthorized modifications may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

General Safety

1. Read and understand the Operator's Manual and all safety signs before operating, servicing, maintaining, adjusting, or unplugging the equipment. 
2. Only trained competent persons shall operate the equipment. An untrained operator is not qualified to operate this machine.
3. Have a first-aid kit available for use should the need arise and know how to use it. 
4. Provide a fire extinguisher for use in case of a fire. Store in a highly visible place. 
5. Do not allow riders.
6. Wear appropriate protective gear. This list includes but is not limited to:
 - A hard hat
 - Protective shoes with slip resistant soles
 - Protective goggles
 - Heavy gloves
 - Hearing protection
7. Place all controls in neutral, stop the engine, turn the master power switch off and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.

8. Wear appropriate hearing protection when operating for long periods of time.
9. Know where overhead electrical lines are located and stay away from them. Electrocutation can occur without direct contact.
10. Review safety related items annually with all personnel who will be operating or maintaining the equipment.



Operating Safety

1. Read and understand the Operator's Manual and all safety signs before using.
2. Place all controls in neutral, stop the engine, turn the master power switch off and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Do not operate when any guards are damaged or removed. Install and secure guards before starting.
4. Keep hands, feet, clothing and hair away from all moving and/or rotating parts.
5. Do not allow riders on the equipment during operation or when transporting.
6. Clear the area of all bystanders, especially small children, before opening or folding equipment.
7. Clean reflectors, signs and lights before transporting.
8. Before applying pressure to the hydraulic system, make sure all components are tight and that steel lines, hoses and couplings are in good condition.
9. Review safety instructions with all personnel annually.

Maintenance Safety

1. Follow ALL the operating, maintenance and safety information in the manual.

2. Support the machine with blocks or safety stands when changing tires or working beneath.

3. Follow good shop practices.
4. Keep service area clean and dry.
5. Be sure electrical outlets and tools are properly grounded.

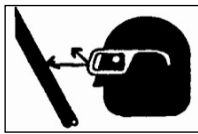


6. Use adequate light for the job at hand.
7. Use only tools, jacks and hoists of sufficient capacity for the job.
8. Place all controls in neutral, stop the engine, turn the master power switch off and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
9. Make sure all guards are in place and properly secured when maintenance work is completed.
10. Before applying pressure to a hydraulic system, make sure all lines, fittings and couplers are tight and in good condition.
11. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
12. Keep hands, feet, hair, and clothing away from all moving and/or rotating parts.
13. Place hydraulic controls in neutral and stop engine before working on equipment.
14. Clear the area of bystanders, especially small children, when carrying out any maintenance and repairs or making any adjustments.

Hydraulic Safety

1. Make sure that all components in the hydraulic system are kept in good condition and are clean.
2. Replace any worn, cut, abraded, flattened or crimped hoses or metal lines immediately.

3. Relieve pressure before working on hydraulic system.
4. Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
5. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.
6. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
7. Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.



3. Make sure all transport safety locks are in place before transporting.
4. Do not allow anyone to ride on the equipment during transport.
5. Add extra lights or use pilot vehicles when transporting during times of limited visibility.

Tire Safety

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.

Storage Safety

1. Store unit in an area away from human activity.
2. Do not permit children to play on or around the stored machine.
3. Store the unit in a dry, level area. Support the base with planks if required.

Transport Safety

1. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
2. Make sure all the lights and reflectors that are required by local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.

Safety Signs

1. Always keep safety signs clean and legible.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your dealer.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C)
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

3. Overall Description

The major mixer system components are shown in the following figures.

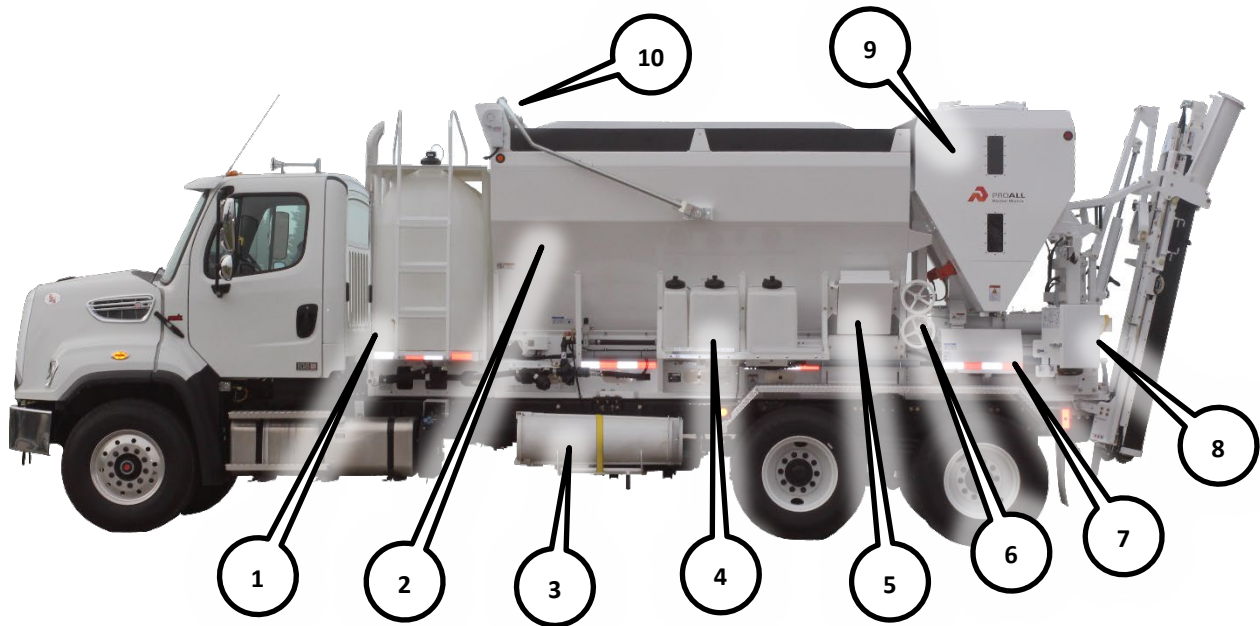


Table 1. Left Side System Components.

- | | |
|----------------------------|-----------------------------------|
| 1. Water Tank | 6. Aggregate Control Gates |
| 2. Aggregate Bin | 7. Water/Admix Controls Enclosure |
| 3. Extension Chutes | 8. Mixer Controls Enclosure |
| 4. Admix Tanks | 9. Cement Bin |
| 5. Electrical Junction Box | 10. Tarp |

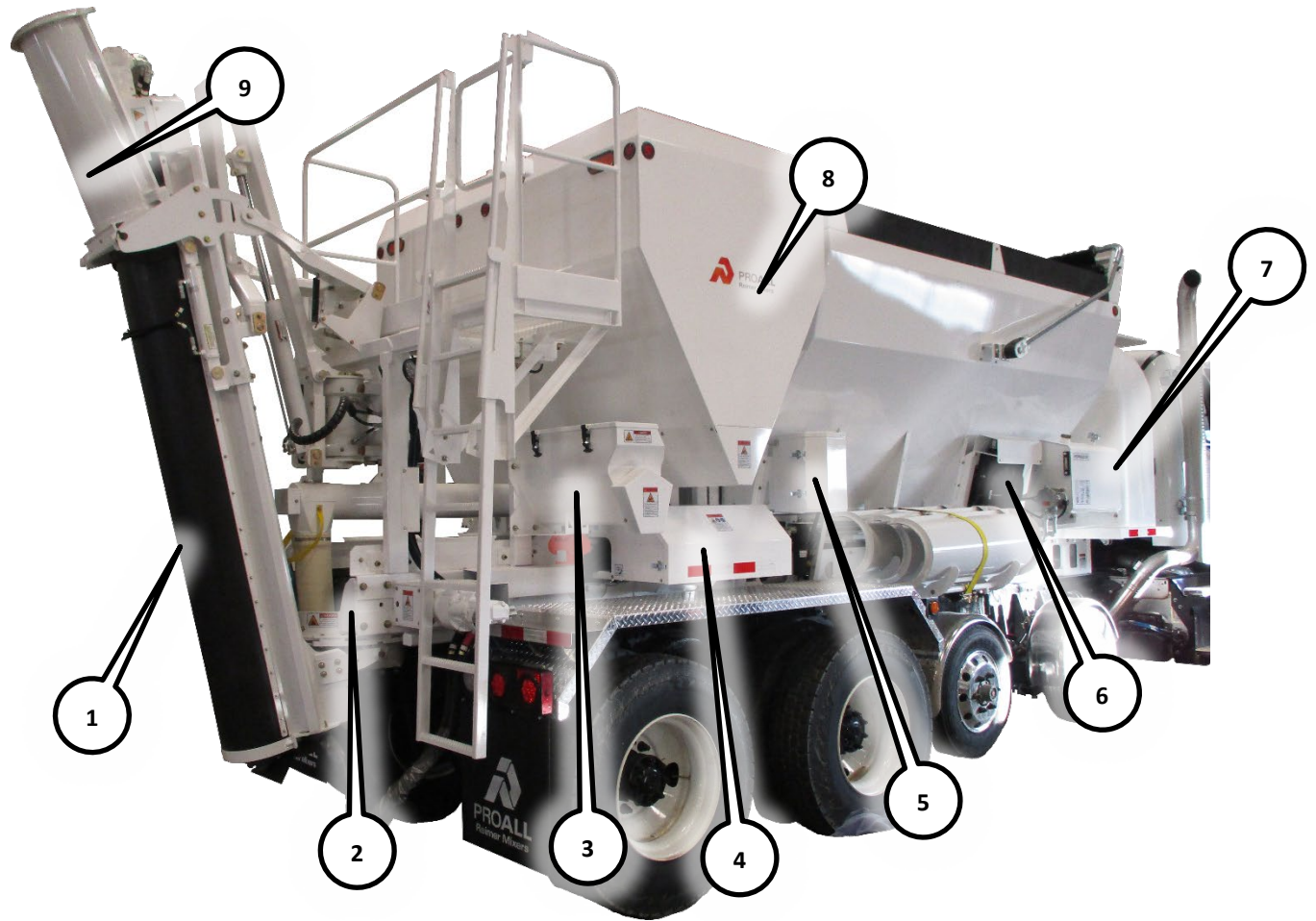


Table 2. Right Side System Components.

- | | |
|------------------------------|---------------------|
| 1. Mixing Auger | 6. Oil Cooler |
| 2. Mixing Bowl | 7. Oil Reservoir |
| 3. Colour Feeder | 8. Cement Bin |
| 4. Hydraulic Valve Enclosure | 9. Transition Chute |
| 5. Fibre Feeder | |

4. Controls, Instruments and Operation

Mixer Controls

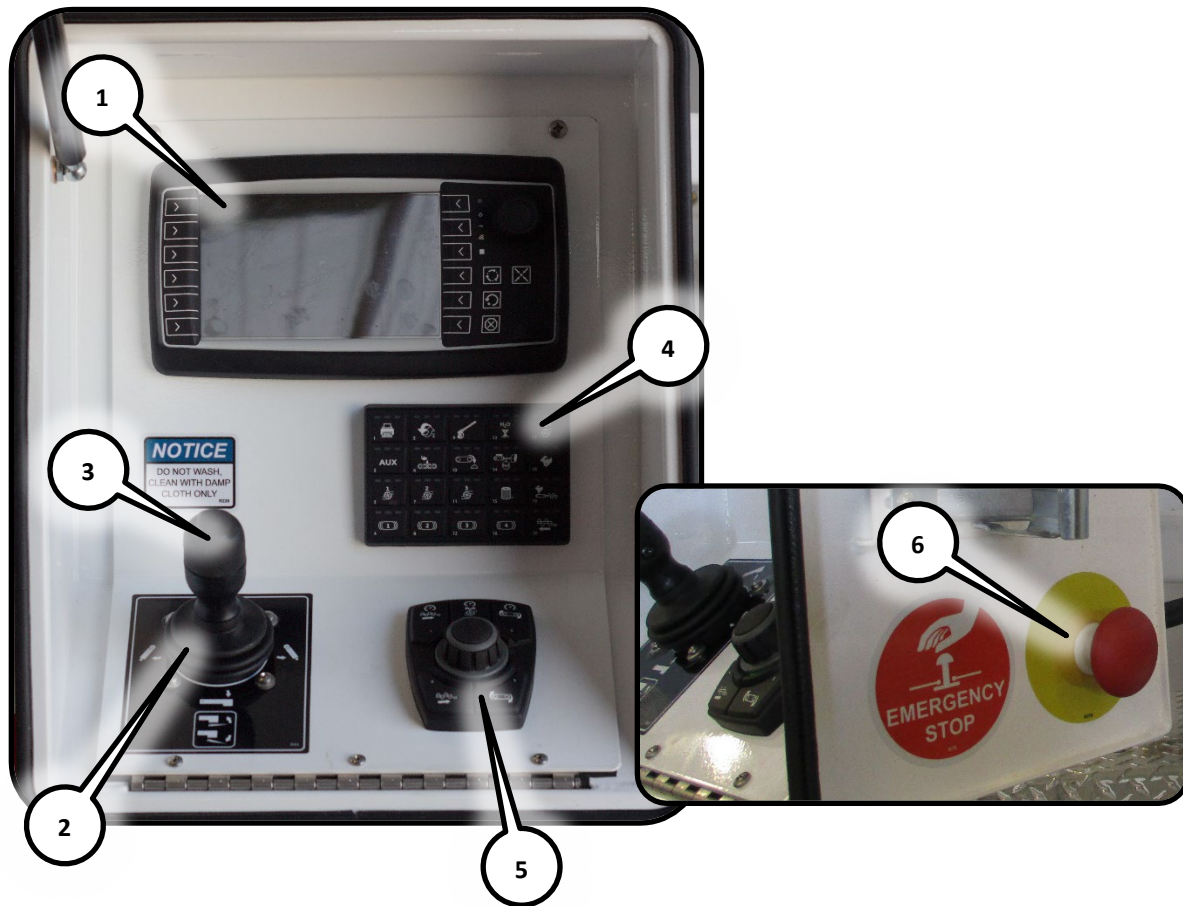


Table 3. Mixer Control Panel Table

1. Mixer Computer
 - CommanderCommander Manual
 - Ranger Ranger Manual
2. Mix Auger Joystick
3. Extension Chute.....Joystick Buttons
4. Operating Keypad..... Push Button
5. Speed Control..... Push Button/Dial Knob
6. Emergency Stop Button
 - InStop
 - TwistReset

Mix Auger Joystick

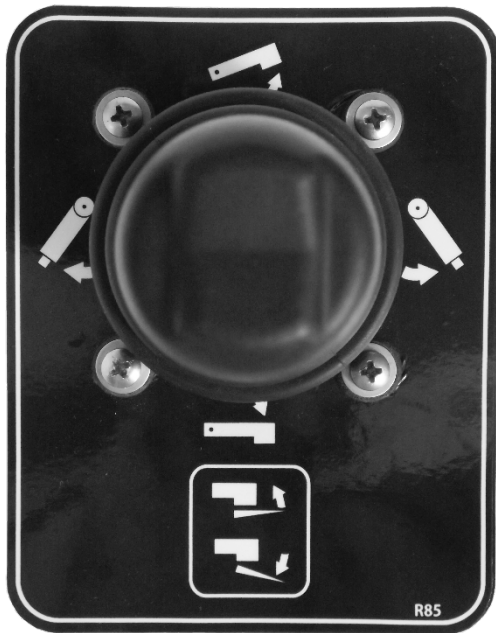


Table 4. Joystick Table

1. Mix Auger ControlJoystick
 - UpAuger Up
 - CenterNo Movement
 - Down Auger Down
 - Left Swing Left
 - Right Swing Right
2. Extension Chute Joystick Buttons
 - Up Chute Up
 - Down Chute Down

Operator Control

Rotate the Selection Knob until the desired speed is shown on the mixing computer (refer to

the mixer computer manual.) Push the Selection Knob to accept the value.

Table 5. Speed Control Table

1. Auger Speed
2. Water Pump Speed
3. Conveyor Speed
4. Auger Forward
5. Conveyor Start
6. Selection Knob
 - PushSelect Current Option
 - Turn Move to Option



Operating Keypad

The keypad operations are selected by pressing the desired function button until the indicator light on the button shows the colour corresponding to the associated mode. Button

functions and status indicator lights are shown in the next section, Operating Keypad Status Indications.





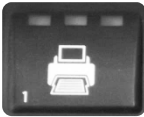

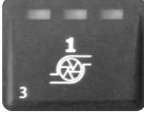
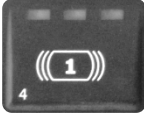

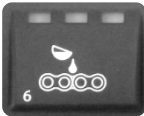
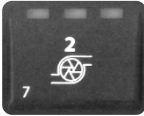
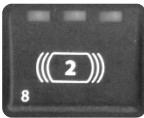
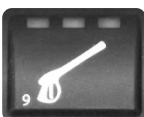
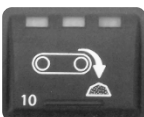
Figure 1. Operating Keypad


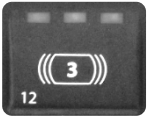

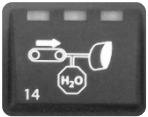
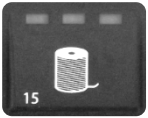

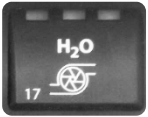
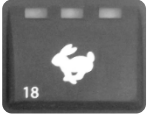

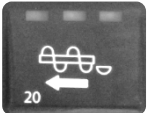
Table 6. Operating Keypad Table

1. Print	11. Admix 3
2. Auxiliary	12. Vibrator 3
3. Admix 1	13. Mix Water
4. Vibrator 1	14. Dry Material Feed
5. Reset	15. Fibre Feeder
6. Chain Oiler	16. Vibrator 4
7. Admix 2	17. Water Pump
8. Vibrator 2	18. Engine High Idle
9. Washout	19. Automatic Link
10. Conveyor Unload Mode	20. Mix Auger Reverse

Operating Keypad Status Indications

Amber	Green	Red	
			Solid
			Flashing

Switch	Indication			Description
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (prints current job ticket)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (used for latex, admix 4 or other auxiliary functions)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (intended for priming the pump)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (the admix pump is running)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (pump turns on with conveyor)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (intended for priming the admix pump)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Indicates a selectable vibrator, see computer manual for further details
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (holding this button will manually vibrate)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic (vibrator will engage at intervals set on the computer)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reset current job totals to zero
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF (chain oiler is in the OFF part of the cycle during conveyor operation)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (chain oiler is in the ON part of the cycle during conveyor operation)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (chain oiler is activated)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (chain oiler will cycle ON/OFF during conveyor operation for maximum 60 seconds)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (the admix pump is running)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (pump turns on with conveyor)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (intended for priming the admix pump)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Indicates a selectable vibrator, see computer manual for further details
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (holding this button will manually vibrate)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic (vibrator will engage at intervals set on the computer)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (DO NOT activate washout mode when in mixing operation)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (only the conveyor will run when button 14 – Conveyor – is pressed)

	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (the admix pump is operating)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (pump turns on with conveyor)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (intended for priming the admix pump)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Indicates a selectable vibrator, see computer manual for further details
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (holding this button will manually vibrate)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic (vibrator will engage at intervals set on the computer)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (the water valve is opened)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (indicates that the water is operating)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mixer fault (indicator only, refer to the computer manual for further details)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (all selected functions engaged with conveyor EXCEPT water)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (indicates that this function is operating)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mixer fault (indicator only, refer to the computer manual for further details)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (conveyor speed sensor is ignored)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Automatic (cutter turns on with conveyor)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (intended for loading the cutter with fibre, cutter is operating)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Indicates a selectable vibrator, see computer manual for further details
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (holding this button will manually vibrate)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic (vibrator will engage at intervals set on the computer)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	OFF (no water, mixer in dry mix mode)
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Indicates that the conveyor has been activated while the water pump is off
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual (water is not controlled by the computer)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (engine high idle)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (ramps up engine, mix auger and conveyor begin running when button 5- Conveyor Start- on page 4-2 is pressed)
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ON (momentary reverse)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indicator, mix auger forward activated

MX01612

Engine Control Panel

UNDER DEVELOPMENT

Remote Control Transmitter

The remote transmitter is a wireless handheld control device used to duplicate the operation of the main control panel. Please refer to the Wireless T110c Transmitter R260 Receiver Reimer Volumetric Mixer III mixer manual for specific information regarding the wireless transmitter/receiver.

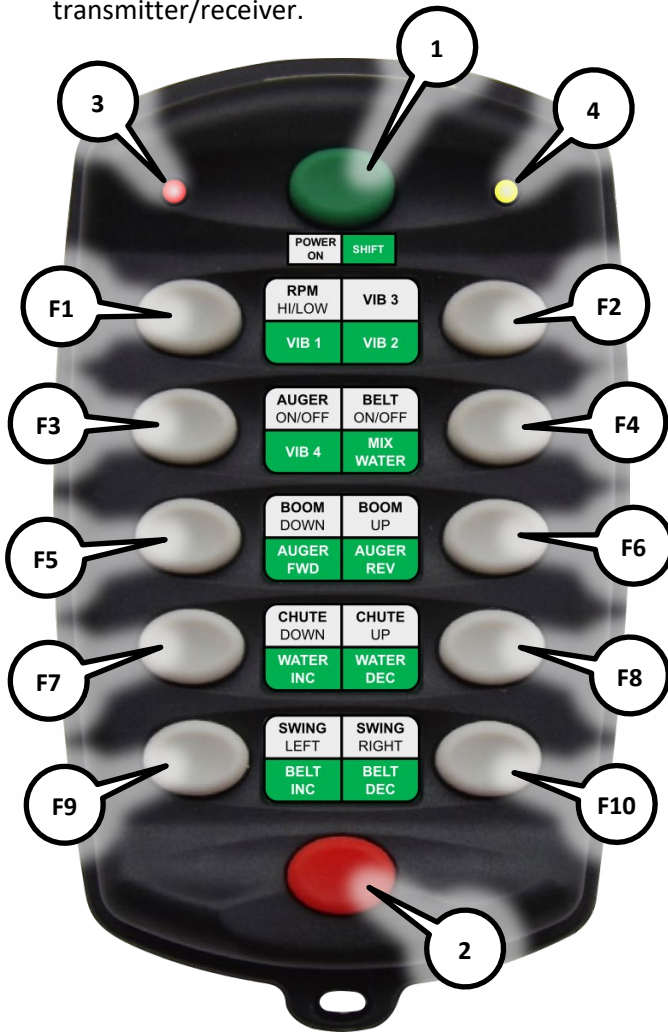


Figure 2. Remote Control Transmitter

Table 7. Remote Transmitter Buttons/Indicators

1. Power/Shift Button
 - Push Remote Transmitter Power ON
 - HoldShift
2. Remote Transmitter Power OFF
3. Battery Low Indicator Light
4. Active Indicator Light

Table 8. Function Buttons Table

- F1. RPM High/Low
- F2. Vibrator 3 ON
- F3. Mix Auger ON/OFF
- F4. Conveyor Belt ON/OFF
- F5. Mix Auger Boom Down
- F6. Mix Auger Boom Up
- F7. Extension Chute Down
- F8. Extension Chute Up
- F9. Swing Left
- F10. Swing Right

NOTE: Hold the shift button while pushing the following buttons to perform the associated functions.

Table 9. SHIFT Function Buttons Table

- F1. Vibrator 1 ON
- F2. Vibrator 2 ON
- F3. Vibrator 4 ON
- F4. Mix Water Pump ON
- F5. Mix Auger Forward
- F6. Mix Auger Reverse
- F7. Water Flow Increase
- F8. Water Flow Decrease
- F9. Conveyor Speed Increase
- F10. Conveyor Speed Decrease

Water/Admix Controls

The water and admix control cabinet houses the flow meters and solenoids to control the water/admix flow. The devices in this cabinet are connected to the computer for water/admix and if equipped, fibre feeder control.

The admix flow control is achieved using valves attached to the control cabinet, see Valve Location 6 on page 4-11.

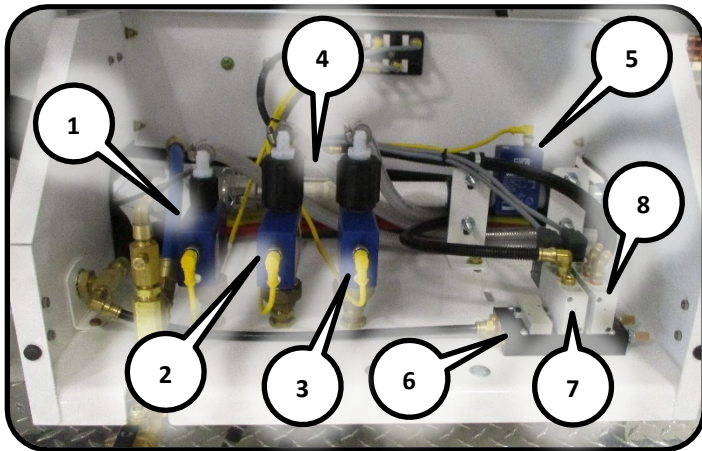


Figure 3. Water/admix control cabinet. (1) admix 1 flow meter, (2) admix 2 flow meter, (3) admix 3 flow meter – if installed, (4) pneumatically controlled water valve, (5) water flow meter, (6) auxiliary pneumatic valve, (7) fibre feeder pneumatic valve, (8) water pneumatic valve.

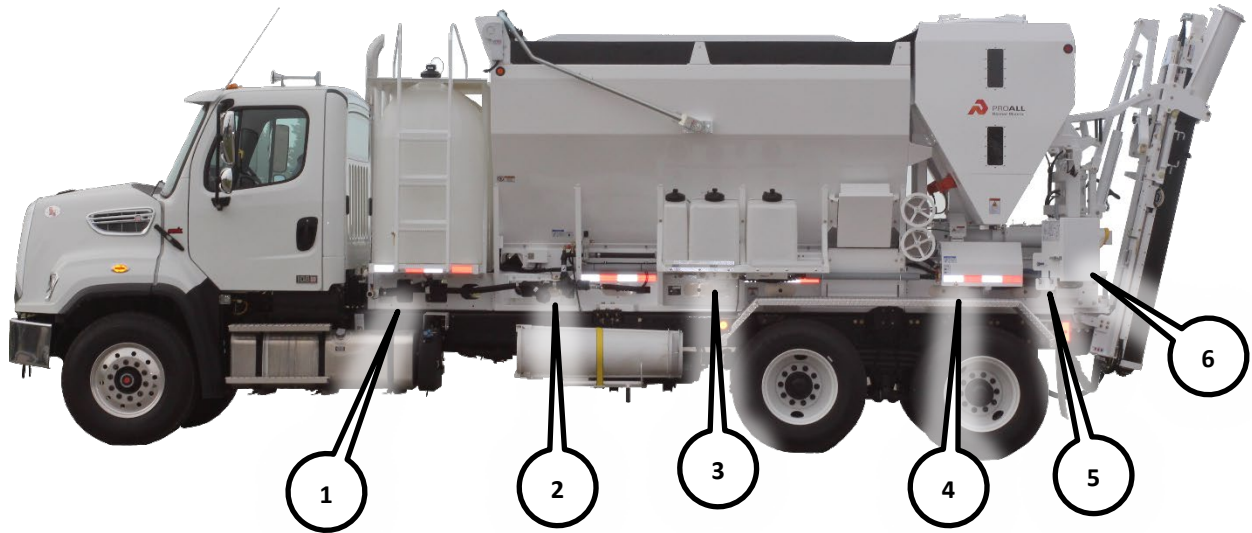
Fibre Feeder Control

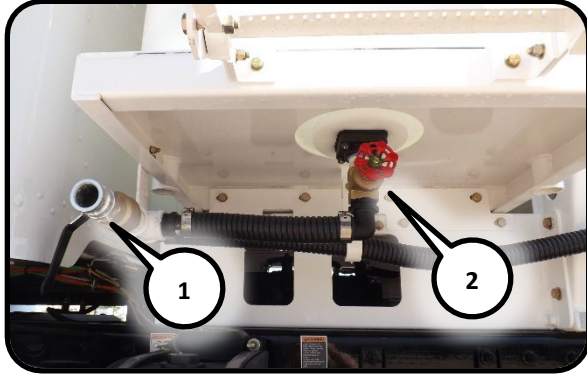
The fibre feeder control is a pneumatic valve located behind the mixer control panel at the rear left of the machine. Approximate output for the feeder is shown and corresponds to the pressure gauge attached to the valve, see Valve Location 7 on page 4-11.

Valve Locations

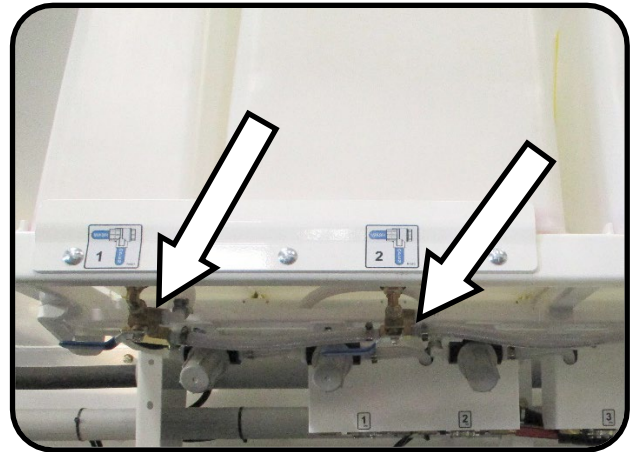
The following identifies valve locations for water and hydraulic oil. Numbers in the following

figures correspond to the following valve locations.

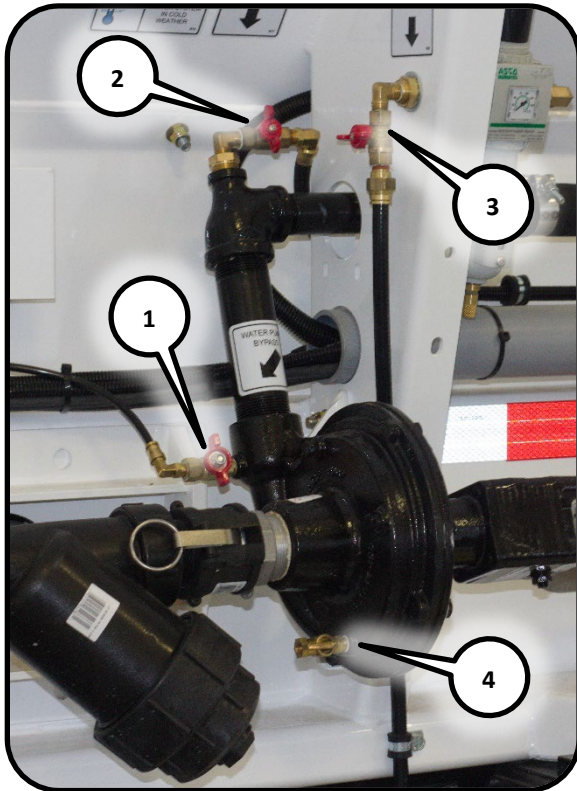




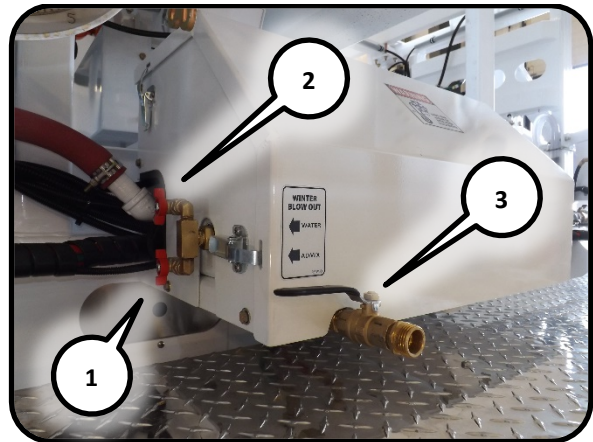
Valve Location 1. Water tank fill valve. (1) fill port valve, (2) tank valve.



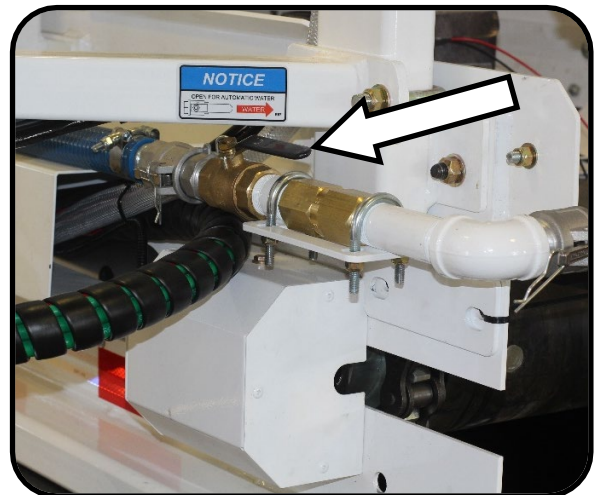
Valve Location 3. Admix tank valves.



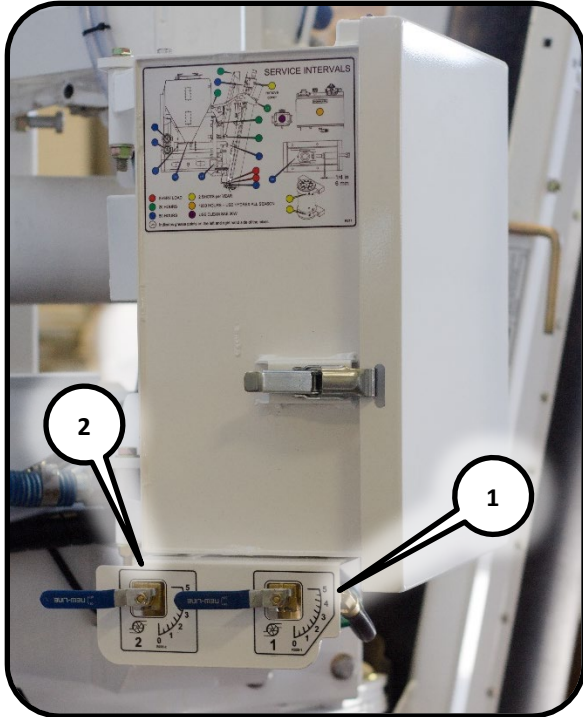
Valve Location 2. Water pump valves. (1) return valve to water tank, (2) admix washout valve, (3) air supply valve, (4) pump drain.



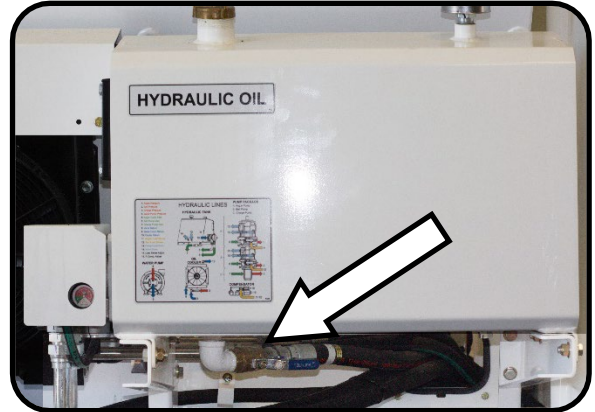
Valve Location 4. Rear water control valves. (1) admix blowout valve, (2) water blowout valve, (3) manual washout water valve.



Valve Location 5. Mix water valve.



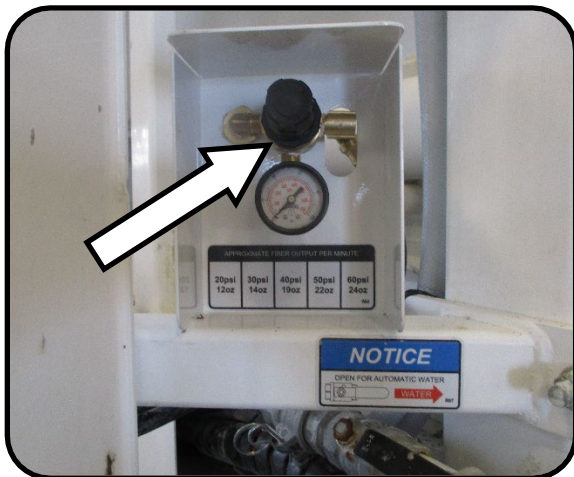
Valve Location 6. Admix control valves. (1) admix 1, (2) admix 2.



Valve Location 8. Hydraulic oil control valve.



Valve Location 9. Free swing selector valve.



Valve Location 7. Fibre feeder control valve.

5. Calibration

The calibration of the mixer is the process which determines the control gate settings and the meter count required to produce concrete of a certain specification. A predetermined “mix design” is used as the guide for the calibration procedure.

NOTE: *The volume is shown in the following sections as “unit volume” and refers to the volume in the standard units of measurement for the region and may refer to cubic meters, cubic yards or other units of measurement being used.*

Traditional Concrete Production Calibration Procedure

Step 1: Cement Output per Conveyor Count

Determine the ‘cement output per count of the conveyor.’ Each count is registered and displayed on the mixer computer (refer to mixer computer manual.)

NOTE: *The larger the sample you are able to measure, the lower the error will be.*

NOTE: *Samples taken from a newly filled cement bin should not be used to calibrate the cement because its bulk density does not reflect real working conditions where cement has been allowed to settle and compact. Ensure the cement is settled by driving the mixer or vibrating before samples are taken.*

NOTE: *On a new mixer, cement calibration should be confirmed after 500-unit volumes of concrete have been produced.*

1. Empty material from the sand and stone bins, the cement bin should be at least 1/2 full.

2. Discharge an adequate amount of cement to ensure that the cement metering system is full by pressing button 14 - Dry Material Feed - on the Operating Keypad (refer to page 4-3.)
3. Determine the empty weight of the container being used to collect the cement sample.
4. Zero the meter and place the container under the auger swivel ring.
5. Run the conveyor until the sample container is full, ensuring that all material being discharged is collected.
6. Weigh the container and sample together for a total weight.
7. Subtract the container weight from the total weight to obtain the sample weight. Record the sample weight.
8. Divide the sample weight by the number of counts shown on the meter to determine the **cement output per count.**

Equation 1. Cement Formula

$$\frac{\text{Sample Weight}}{\text{Count}} = \text{Cement Output per Count}$$

NOTE: *Collect and weight a minimum of (3) three samples to ensure they are consistent.*

Step 2: Counts per Unit Volume of Concrete

Determine the number of counts required to deliver the specified weight of cement powder per cubic meter or cubic yard of concrete as needed in your mix design.

Equation 2. Count Formula

$$\frac{\text{Pounds of Cement per Unit Volume}}{\text{Cement Output per Count (from Step 1)}} = \text{Counts per Unit Volume}$$

Step 3: Stone Weight per Count

Determine the weight of stone that must be released per count. Using your mix design, establish the required weight of stone to produce one unit volume of concrete.

1. Turn the cement motor off by pressing button 10 - Conveyor Unload Mode, on the Operating Keypad (refer to page 4-3) or set the cement ratio to zero (refer to the computer manual.)
2. Fill stone bin at least ¼ full.
3. Determine the empty weight of the container being used to collect the stone sample.
4. Adjust control gate to the setting taken from the ‘Sample Data Chart’ Found at the end of the calibration section.
5. Run the conveyor belt by pressing button 14 - Dry Material Feed – (refer to page 4-3) until stone is being discharged off the end of the conveyor.
6. Zero the counter and place the sample container under the discharge ring.
7. Run the conveyor until the sample container is full, ensuring that all material being discharged is collected.
8. Read the meter and record the value.
9. Weigh the container and sample together for a total weight.
10. Subtract the container weight from the total weight to obtain the sample weight. Record the sample weight.
11. Divide the sample weight by the meter reading to calculate the **weight of stone per count** that has been discharged.

12. Adjust the control gate and re-sample until the **weight of stone per count** is equal to the amount established in the stone formula.

NOTE: After the control gate has been adjusted, the conveyor must be run until the adjusted material flow is past the discharge point. Disregard the material released during this operation and re-zero the meter.

Equation 3. Stone Formula

$$\frac{\text{Mix Design Weight of Stone per Unit Volume}}{\text{Counts per Unit Volume (from Step 2:)}} = \text{Weight of Stone per Count}$$

NOTE: Once a gate setting is established, check it by taking a minimum of (3) three samples.

Step 4: Sand Weight per Count

Determine the weight of sand that must be released per count.

1. Empty the stone bin and fill the sand bin ¼ full.
2. Repeat Step 3. replacing stone with sand in all references.
3. Record sand gate control setting.

Equation 4. Sand Formula

$$\frac{\text{Mix Design Weight of Sand per Unit Volume}}{\text{Counts per Unit Volume (from Step 2:)}} = \text{Weight of Sand per Count}$$

Summary

Mix # (Operator’s Reference)	_____
Strength Required	_____
Counts per Unit Volume	_____
Stone Gate Setting	_____
Sand Gate Setting	_____

Sample Data Chart – SAMPLE ONLY!

Cement Output per Count
(0.478 lbs. or 0.218 kgs)

Strength	Counts Required per		Gate Setting	
	yd ³	m ³	Stone	Sand
3000 psi (20 MPa)	872	1147	11.2	10
3500 psi (25 MPa)	1008	1326	9.5	8
4000 psi (27.5 MPa)	1150	1513	8.5	7
4500 psi (30 MPa)	1238	1628	8.2	6.7

After calibrating using weight it is recommended that the yield of each mix be verified by batching concrete into a yield box (container of known volume) and comparing the result with that displayed by the meter. Small adjustments in the gate settings may be necessary to produce the desired yield.

Computer Concrete Production Calibration Procedure

Step 1: Cement Output per Auger Count

Determine the 'cement output per count of the cement auger.' Each count is registered and displayed on the mixer computer (refer to mixer computer manual.)

Cement calibration using this method no longer requires bin materials to be emptied as the conveyor is not required to run when calibrating. Cement is calibrated based on the output of the cement auger only. This value should be linear at normal operating speeds.

NOTE: The larger the sample you are able to measure, the lower the error will be.

NOTE: Samples taken from a newly filled cement bin should not be used to calibrate the cement because its bulk density does not reflect real working conditions where cement has been allowed to settle and compact. Ensure the cement is settled by driving the mixer or vibrating before samples are taken.

NOTE: On a new mixer, cement calibration should be confirmed after 500 unit volumes of concrete have been produced.

1. The cement bin should be no less than 1/2 full.
2. Place the mixer in cement calibration mode (see computer manual).
3. Discharge an adequate amount of cement to ensure the cement metering system is full by pressing button 14 - Dry Material Feed – (refer to page 4-3.)
4. Determine the empty weight of the container being used to collect the cement sample.
5. Zero the meter and place the container under the auger swivel ring.
6. Run the cement auger until the sample container is full, ensuring that all material being discharged is collected.
7. Weigh the container and sample together for a total weight.
8. Subtract the container weight from the total weight to obtain the sample weight.
9. Enter the weight and count values into the computer.

Equation 5. Cement Formula

$$\frac{\text{Sample Weight}}{\text{Auger Meter Count}} = \text{Cement Auger Output per Count}$$

NOTE: Collect and weight a minimum of (3) three samples.

Step 2: Counts per Unit Volume of Concrete

The computer will calculate the required counts per unit volume based on the calibration data entered. This is done in the mix entry screen after calibration (see computer manual.)

Step 3: Gate Calibration

Determine the weight of aggregate that is released per count of the conveyor. The computer will generate the curve for gate height (wheel position) vs. weight per count based on the data entered. Gate calibrations can be done at various gate heights up to a total of 5. The calibration data should be entered at progressively higher gate heights (ie. 6, 8, 10 etc.). You must have at least two gate heights in the calibration data for the computer to calculate the curve.

Equation 6. Aggregate Formula

$$\frac{\text{Sample Weight}}{\text{Conveyor Count}} = \text{Gate Output per Count}$$

1. Place the mixer in gate calibration mode (see computer manual).
2. Fill aggregate bin at least ¼ full. Only the bin (A or B) being calibrated should be filled.
3. Determine the empty weight of the container being used to collect the stone sample.
4. Adjust control gate to the calibration height being sampled.
5. Run the conveyor by pressing button 14 - Dry Material Feed – (refer to page 4-3) until aggregate is being discharged off the end of the conveyor.
6. Zero the counter and place the sample container under the discharge ring.
7. Run the conveyor until the sample container is full, ensuring that all material being discharged is collected.
8. Read the meter and record the value.
9. Weigh the container and sample together for a total weight.
10. Subtract the container weight from the total weight to obtain the sample weight.

11. Enter the weight and count values into the computer for up to three samples per gate height.

NOTE: After the control gate has been reset, the conveyor must be run until the adjusted material flow is past the discharge point. Disregard the material released during this operation and re-zero the meter.

After calibrating using weight it is recommended that the yield of each mix be verified by batching concrete into a yield box (container of known volume) and comparing the results with that displayed by the meter. Small adjustments in the gate settings may be necessary to produce the desired yield. A yield correction factor can be entered into the computer that will adjust the gate heights accordingly in the mix entry screen (see computer manual) or the adjusted heights can be entered and saved manually.

Water and Admix Calibration

NOTE: Water and admix calibration involves the use of the mixer computer. Please refer to the mixer computer manual to locate the functions required in the following procedure.

1. On the mixer computer, locate the flow meter k-factor (pulses per unit volume) display.
2. Dispense water or admix into a container of known volume.
3. Compare the volume gathered with that shown on the display.
 - a. If the volume displayed is **lower** than the volume gathered, **decrease** the number of pulse counts required per unit volume on the computer.
 - b. If the volume displayed is **higher** than the volume gathered, **increase** the number of pulse counts required per unit volume on the computer.

- Repeat from step 2 above until the desired accuracy is achieved.

Gate Setting Calibration

The gate setting may be calibrated manually by opening the gate to two different known values as shown on the gate dial then determining the weight per count for each gate height. A formula for the desired gate height for a given weight per count can then be calculated for all weight per count values.

Using the stone gate as an example – both sand and stone gate calibration procedures are the same – determine the weight of stone that is released per count for a given gate height according to the gate dial indicator.

- Turn the cement motor off by pressing button 10 - Conveyor Unload Mode – (refer to page 4-3) or set the cement ratio to zero (refer to the computer manual.).
- Fully close the stone gate and adjust the gate pointer – if not already set – to point to zero on the gate dial.
- Fill stone bin at least ¼ full.
- Determine the empty weight of the container being used to collect the stone sample.
- Adjust control gate to 4, lock gate handle into place.
- Run the conveyor belt by pressing button 14 - Dry Material Feed – (refer to page 4-3) until stone is being discharged off the end of the conveyor.
- Zero the counter and place the sample container under the discharge ring.
- Run the conveyor until the sample container is full, ensuring that all material being discharged is collected.
- Read the meter and record the value.
- Weigh the container and sample together for a total weight.
- Subtract the container weight from the total weight to obtain the sample weight. Record the sample weight.
- Divide the sample weight by the meter reading to calculate the **weight of stone per count (WoSpC)** that has been discharged for that gate height.
- Adjust the control gate to 12, lock into place and re-sample using steps 6 to 12 above.

NOTE: Collect and weigh a minimum of (3) three samples for each gate height to ensure they are consistent.

NOTE: After the control gate has been adjusted, the conveyor must be run until the adjusted material flow is past the discharge point. Disregard the material released during this operation and re-zero the meter.

- Using the data gathered, calibrate the stone gate using the following formulas.

Equation 7. Stone Gate Slope Formula

$$\frac{(12 - 4)}{(WoSpC \text{ for gate height } 12 - WoSpC \text{ for gate height } 4)} = \text{Stone Gate Slope}$$

Equation 8. Stone Gate Intercept Formula

$$12 - (WoSpC \text{ for gate height } 12 \times \text{Stone Gate Slope}) = \text{Stone Gate Intercept}$$

Equation 9. Stone Gate Formula

$$\text{Stone Gate Slope} \times \text{Desired Weight of Stone per Count} + \text{Stone Gate Intercept} = \text{Expected Stone Gate Height}$$

The above values for Stone Gate Slope Formula and Stone Gate Intercept Formula may be compared against the values in the mix computer and adjusted in the computer as

necessary. Please refer to the mix computer manual to locate and change the sand and stone gate values.

Colour and Auxiliary Feeder Calibration

NOTE: Please refer to the mixer computer manual for details on calibration entry.

The calibration procedure for colour and auxiliary feeders are the same as those for the *Computer Concrete Production Calibration Procedure* (refer to page 5-3.)

Fibre Feeder Calibration

NOTE: There is a flow rate chart inside the front cover of the fibre feeder for reference

1. Determine the amount of fibre required in kg per minute according to the mix design (refer to the Calibration Sheets)
2. Set the fibre feeder air pressure with the air pressure control valve (refer to Fibre feeder control valve. on page 4-11) and the fibre feeder flow rate chart located on the valve bracket.
3. Press button 15 - Fibre Feeder - on the Operating Keypad (refer to page 4-3) to prime, collect and weight the fibre. Compare the amount discharged with the amount required and make adjustments using the air pressure control valve as in step 2 above.
4. Place the fibre feeder in the Automatic position to dispense fibre when the conveyor belt is running by pressing button 15 on the Operating Keypad.

6. Field Operation

Principle of Operation

The ProAll Mobile Mixer is uniquely designed to allow for the supply of freshly mixed concrete, regardless of delivery times, the elimination of wasted product, and flexibility of delivery that is not available with conventional transit mix operations. All the components of concrete, stone, sand, cement and water are transported to the site in separate compartments on one truck mounted unit. Dry ingredients are accurately proportioned and delivered to the mixing auger as they are being discharged. A controlled flow of water is added and the concrete is then blended as it is being discharged from a special mixing auger at the rear of the unit.

The mixing action is continuous until the bins are empty or indefinitely if the bins are being refilled as the unit is producing concrete. On the other hand, the mixing action (and delivery of concrete through the chute) may be stopped and then started again by the operator to facilitate the loading of wheelbarrows or any application where small amounts of product are required. The discharge rate is infinitely variable from maximum, 25+ cubic meters per hour down to zero.

Concrete Batching

Ingredient proportioning is based on the known dry weight of each ingredient and the requirements for each as specified in the mix design. The calibration procedure translates these weights into volume settings.

Cement is fed into the mix at a constant rate that is proportional to the movement of the conveyor belt. The control gates allow the operator to change the proportional flow of both sand and course aggregate in relation to the movement of

the conveyor belt and therefore, to the flow of cement. Because the cement and aggregate feeders are mechanically synchronized, the proportions of each of the dry ingredients are constant, once the proportioning controls are set and locked.

An electronic counter allows the operator to determine the accumulated amount of cement discharged and, based on the calibration, the amount of concrete produced.

Water

Water may be loaded through the top of the water tank or bottom loaded at the cam lock fitting.

IMPORTANT: *In the bottom load procedure, air is vented through the mix water tank lid; however, damage to the tank and frame will result if the tank is overfilled using a high pressure water supply.*

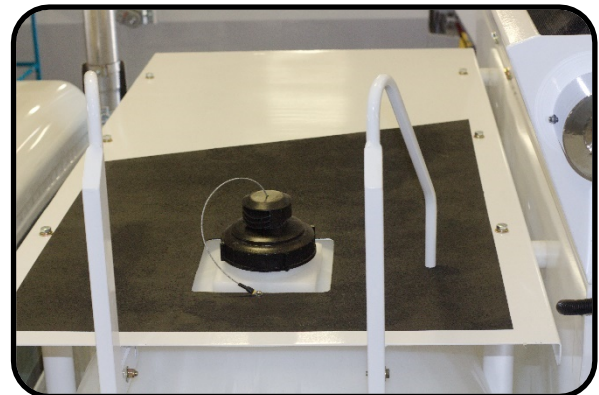


Figure 4. Water tank top fill port.



Figure 5. Water tank bottom load cam lock fitting.

NOTE: When filling the water tank, ensure to close all drain valves. These valves are on the mix water pump (Valve Location 2) and the washout water (Valve Location 4) as shown in Valve Locations section starting on page 4-10.

Water Auto Mode

Water flow is monitored by the computer and will automatically adjust with changes in the belt speed.

Two options are available to adjust water in the mix on the computer in auto mode:

- Adjust the water requirement in the mix design.
- Adjust the aggregate moisture content.

NOTE: The manual water valve cannot be used for slump control in auto mode. The valve may be used to increase resistance to the water flow in very low water requirement mix designs (when the water pump speed is below 20%.)

Water Manual Mode

Water flow is not monitored by the computer and is independent of the conveyor speed.

Two options are available for controlling the water manually:

- Adjust the water pump speed on the computer – this is the normal control option.
- Adjust the water with the manual water valve as long as the pump speed setting is high enough to allow water to be restricted by the valve.

NOTE: The water is set as a percentage of the maximum amount of water to be used in the mix design.

Aggregate

Materials loaded into the aggregate bin must be free of any foreign matter that may affect the quality of the concrete being produced or cause a partial or complete blockage in the control gates.

Aggregate Control Gates

The aggregate bin discharge gates control the amount of material that exits the aggregate bin. The upper gate hand wheel labelled 'GATE A' controls the opening for the right hand side of the aggregate bin and 'GATE B' the left hand opening. Typically, stone is placed in the right hand – GATE A – compartment and sand in the left hand – GATE B – compartment.

NOTE: Once the gate height is set, ensure the gates are locked into place using the gate handle lock to prevent the gate height from changing while in operation.

NOTE: The numbers on the dial indicate the increase of height only, not the actual measurement of the height, and are for the operator's reference.

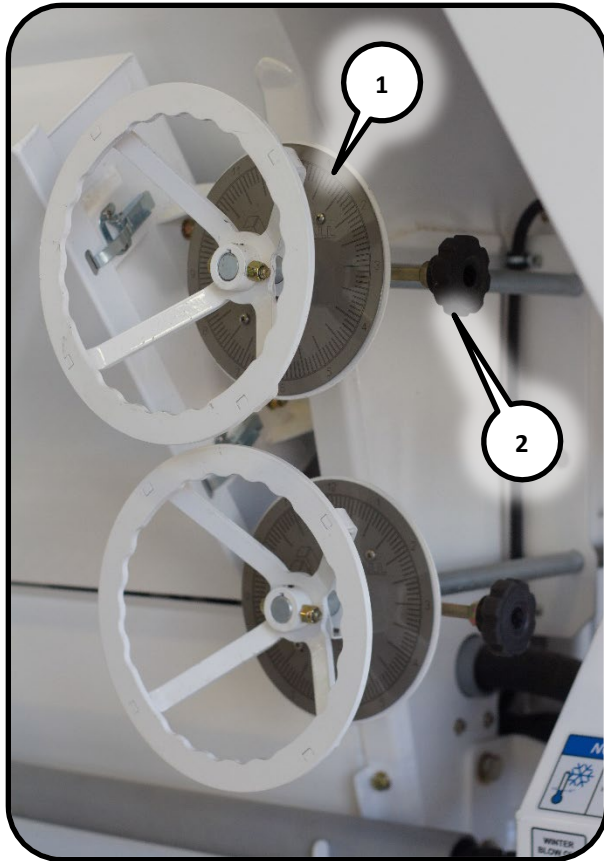


Figure 6. Aggregate bin control gates. (1) gate handle lock, (2) gate handle.

Cement Powder

IMPORTANT: Care must be taken that no stone, water or other foreign material enters the cement bin. A serious malfunction of the cement feeding system may result.

The flow of cement powder is computer controlled and set by the mix design. Please refer to the computer manual for information on setting the cement powder flow rate.

Mix Auger

The mix auger contains many sub-systems that work together in the mixing process. The following figure displays the major components of the mix auger system.

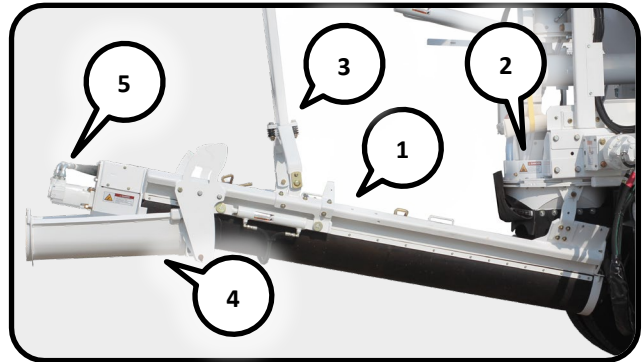


Figure 7. Installed mix auger. (1) mix auger, (2) mix bowl, (3) lower link arm, (4) transition chute, (5) auger top drive.

The mix auger receives the concrete materials through the mi bowl, mixing throughout its length and discharging the mixed concrete through the top of the auger and into the transition chute. The auger position is controlled through the Mix Auger Joystick and its speed and direction controlled using the Operator Control (refer to page 4-2.) Most of these functions are duplicated on the Remote Control Transmitter (refer to page 4-7.)

WARNING

The exposed mixing auger is extremely dangerous. The auger safety switch prevents the auger from turning while the cover is open. DO NOT DISABLE OR TAMPER WITH THE SAFETY SWITCH.

The auger cover is latched and may be opened for cleaning. A cover catch holds the cover open while cleaning by catching the cover handle. The mix auger safety switch stops the auger when the cover is open as a safety precaution.

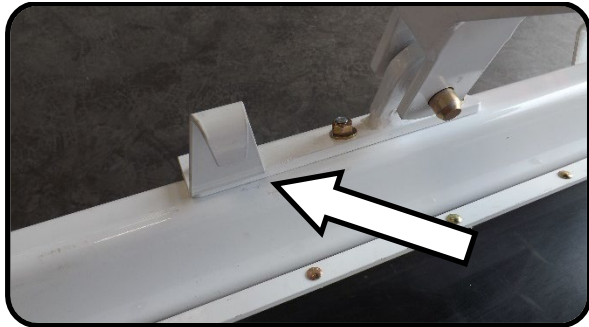


Figure 8. Cover catch.



Figure 9. Auger cover open for cleaning.

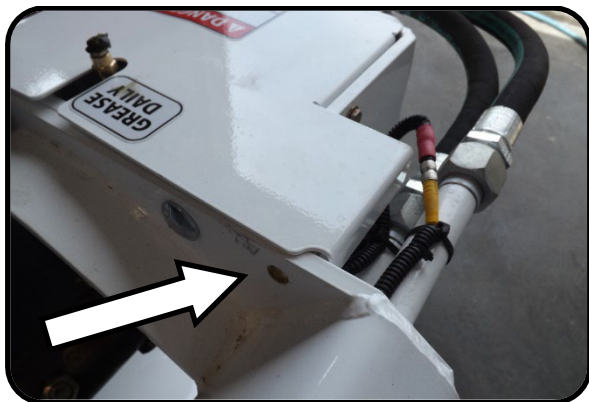


Figure 10. Auger cover safety switch.

Auger Bearing

IMPORTANT: The mix auger seal must be greased regularly for lubrication and to keep contaminants from wearing on the bearing and shaft components. Refer to Lubrication and Maintenance Frequency on page 7-11 for lubrication maintenance.

The lower bearing supports the auger shaft and includes seals that help to keep materials from exiting the mix auger.

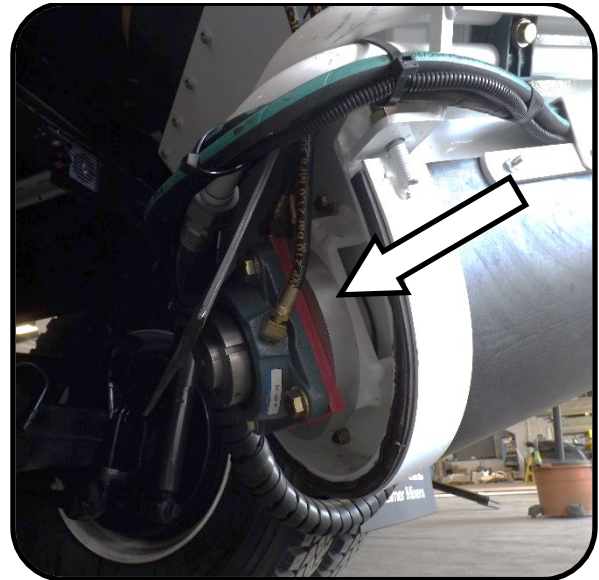


Figure 11. Mix auger bearing and seals.

Mix Bowl

The mix auger attaches to the mix bowl by way of two removable mounts that enable the mix auger to pivot up and down on the mix bowl. A rubber shroud surrounds the interface between the mix bowl and the auger in order to keep materials from leaking out of the auger. The shroud may be unhooked from the cover for cleaning.

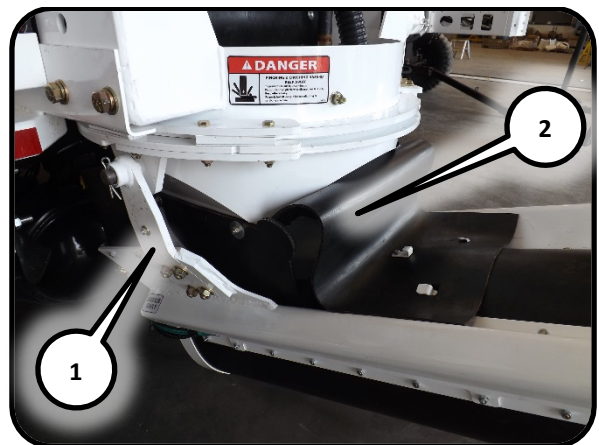


Figure 12. Mix bowl. (1) mix bowl mount, (2) rubber shroud.

Lower Lift Link

The lower lift link attaches to the auger through self-aligning ball-type pivot points. The pivot pins on the lower link arm make it possible to remove the mix auger for maintenance.



Figure 13. Lower link auger pivot.

The lower link arm is designed to swivel in order to assist in maintenance and cleaning. Two bolts hold the swivel in place and need to be removed in order to use the link swivel.

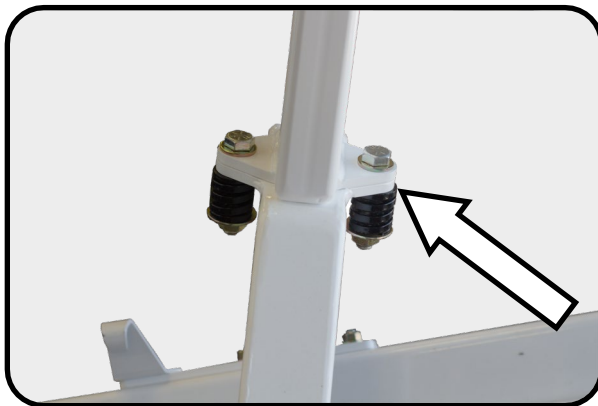


Figure 14. Lower link swivel.

Transition Chute

The hydraulically controlled transition chute allows the operator to change the angle of concrete delivery using the Mix Auger Joystick (refer to page 4-2) or the Remote Control Transmitter (refer to page 4-7.)

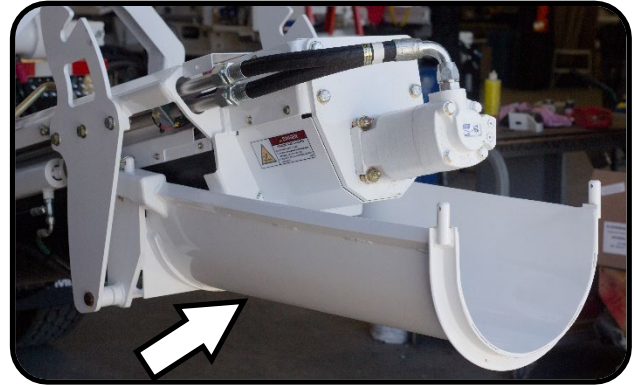


Figure 15. Mix auger transition chute.

The transition chute has been designed to be removed from the mix auger to facilitate cleaning and maintenance by rotating the chute off the two retaining pins at the top of the transition chute.

Auger Top Drive

WARNING

The mixing auger drive contains rotating components. Always keep the cover on the top drive while the mix auger is in use.

IMPORTANT: The mix auger top drive must be greased regularly. Refer to *Lubrication and Maintenance Frequency* on page 7-11 for lubrication maintenance.

The hydraulically driven top drive holds and drives the auger. Refer to the Operator Control section on page 4-2 for information on auger drive control.



Figure 16. Mix auger top drive.

Admixture

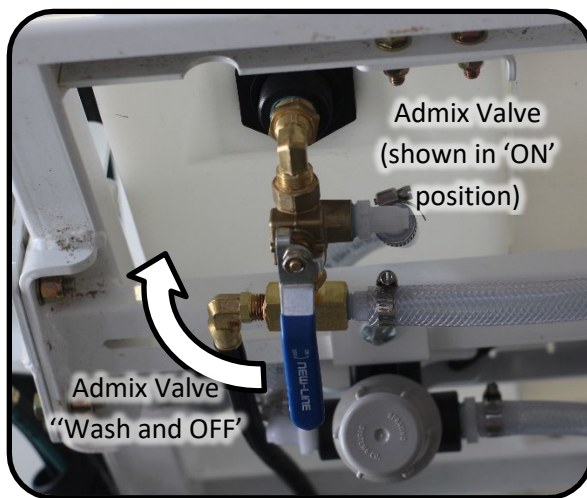


Figure 17. Admix valves located under admix tanks.

The mixer computer will indicate the appropriate flow rate needed for the rate at which concrete is being produced. Refer to the mixer computer manual for further information on computer-controlled flow rate settings.

NOTE: The computer does NOT control the admix, it only displays the amount of admixture that is required using the information that has been entered. The operator must MANUALLY adjust the admix flow control.

When controlling the admix manually, the flow rates can be preadjusted. Prime the admix pump and set the flow rate using the following procedure.

1. Prime the desired admix pump by pressing the corresponding admix button on the operating keypad – buttons 3, 7, and 11 for admix 1, 2 and 3 respectively and button 2 if auxiliary is set to a fourth admix option.
2. Adjust the manual admix control valves (refer to Valve Location 6 on page 4-11) until the actual and calculated flow rates on the mixer computer are the same (please refer to the mixer computer manual for information on the computer.)
3. Push the admix button to OFF to stop the admix pump.
4. Push the admix button to set the admix to automatic. The admix will be added to the mixture when the conveyor is running.
5. The admix flow rate may be adjusted while mixing. Make the necessary changes on the mixer computer and adjust the admix valves to match the calculated admix flow rate.

NOTE: If the conveyor speed is changed, the admix flow must be changed manually to dispense the correct amount of admixture. The display in the mixer computer is to be used for reference only when making these adjustments.

Colour Feeder

The ProAll colour feeder is designed to supply a controlled flow of powdered colour to the concrete mix. The dispersion of colour and unloading of the colour feeder is controlled by the mixer computer. Please refer to the mixer computer manual for further information.

NOTE: The colour feeder discharge rate changes proportionally with changes in the conveyor speed.

Fibre Feeder

The ProAll fibre feeder is designed to supply a controlled flow of fibre strands to the concrete mix.

NOTE: The fibre feeder discharge rate does not change proportionally with changes in the conveyor speed. Record the conveyor speed setting when calibrating the fibre feeder and use that conveyor speed whenever the fibre feeder is used.

To adjust the fibre flow rate, increase or decrease the air pressure with the air pressure control valve (refer to Valve Location 7 on page 4-11.)

Load the fibre feeder by placing the fibre spool into the fibre feeder cabinet. Fibre from the center of the spool is fed into the tubing at the top corner of the cabinet. The fibre is then passed through the top hole of the fibre cutter and fed through the rubber wheel and cutter as shown in Figure 20.



Figure 18A & 19B. Fibre feeder.



Figure 19A & 20B. Fibre cutter.

WARNING

The fibre feeder cutter contains a cutting wheel with very sharp knives. Care must be taken when loading the cutter to prevent being cut by the cutting wheel.



Setting up to Pour

Upon arrival at the pour site, confirm the specifications of the concrete to be poured. Using the following sequence, set up the mixer in preparation for pouring.

NOTE: The following section refers to the Operating Keypad on page 4-3. Please refer to this page for further information on keypad buttons.

NOTE: The following section refers to the Mixer Computer on page 4-1. Please refer to the mixer computer manual for further information on the computer.

1. Ensure wash out mode is OFF – operating keypad button 9.
2. Reset Emergency Stop Button, refer to page 4-1.
3. Open water return valve and close admix flush valve – Valve Location 2, page 4-10.
4. If equipped, start external engine (Refer to Starting Engine section on page 6-13) or start truck engine.
5. Set the master electrical switch to ON. This switch is on the remote receiver/printer stand.



Figure 20. Remote receiver / printer stand master electrical switch

6. Reset the job volume to zero by pressing the reset button on the operating keypad – button 5.

7. Select the mix required by the customer – please refer to the Mixer Computer manual for information on setting the mix values.
8. Set the aggregate bin discharge gate height according to the desired mix design. SET AND LOCK THE CONTROL GATE. Refer to the Aggregate Control Gates section on page 6-2 for specific information concerning the control gates.
9. Turn each admix valve to 'OPEN'.
10. Adjust the admix flow rates (refer to the Admixture section on page 6-3 for information on priming and adjusting admix flow rates.)
11. Adjust the colour feeder flow rates (refer to the Colour Feeder section on page 6-6.)
12. Adjust the fibre feeder flow rates (refer to the Fibre Feeder section on page 6-7.)
13. Pre-adjust conveyor and mix auger speeds. Set speeds using the Operator Control (refer to page 4-2.)
 - a. Adjust conveyor speed using the Selection Knob and Conveyor Speed button – button 3. Typical conveyor speed is 65-75%
 - b. Adjust the mix auger speed using the Selection Knob and Auger Speed button – button 1. Typical mix auger speed is 80%.
14. Turn the water pump ON – Operating Keypad button 17.
15. Position aggregate materials to point of discharge into the mixing bowl.
 - a. Turn the Conveyor Unload Mode button – button 10 on the Operating Keypad – to ON.
 - b. Push the Dry Material Feed button – button 14 on the Operating Keypad – to ON to start the conveyor bringing the material to the discharge point of the conveyor.

- c. Push the Conveyor Unload Mode button – button 10 on the Operating Keypad – to turn the conveyor unload mode off.

NOTE: *When the conveyor belt is engaged, mix water flow is immediately activated. If the conveyor belt is not fully charged with materials to the discharge point, water will accumulate in the mix auger before the aggregate flow begins. This will cause a very wet slump in the initial flow of concrete.*

16. Extend the cement delivery tube.
17. Lower the Mix Auger using the Mix Auger Joystick (refer to page 4-2) or the Remote Control Transmitter (refer to page 4-7.) The transport lock will automatically disengage when the boom is lowered.

NOTE: *DO NOT ALLOW the angle of the mix auger to become too low as this will limit the ability of the auger to mix thoroughly. An angle of no less than 25 degrees should be used on the mixing auger.*

18. Set the Free swing selector valve to desired function. (Refer to Valve Location 9 on page 4-11.)

NOTE: *The free swing selector valve allows the operator to bypass the hydraulic control for the rotary actuator making it possible to swing the auger and attached chutes by hand. This can be advantageous when fine adjustment for material placement is required.*

19. Apply any release agent at this time, if desired.

Pouring

WARNING

- Never run the mix auger with the top cover open. Do not allow anyone unfamiliar or untrained to operate the ProAll Mixer.
- Never allow anyone directly under the chutes or mix auger.

CAUTION

- Keep hands, feet and loose clothing away from rotating shafts, gears, chains, belts and other moving parts.
- When operating and moving about job sites, realize that the driver/operator holds the final responsibility for the safe operation of the mobile mixer. Be constantly aware of the location of open excavations, other workers, pilings, or anything else that could be a hazard.
- When operating the power swing, chute, or boom functions, be aware of the location of workers.
- While everything has been done to ensure their reliability, do not trust hydraulic cylinders, hoses or fittings.

As with any machine, the operator of the ProAll Mobile Mixer must understand and become confident in the operating procedures through training and experience. The following details the steps to be taken to deliver a quality product.

1. Activate high idle function using the speed control switch, refer to Operating Keypad - Engine High Idle button 18 on page 4-3. (If an

engine is equipped, refer to Throttle Engine section on page 6-13.)

2. Activate mix auger by pressing the Auger Forward button on the Operator Control (refer to page 4-2.)
3. Activate conveyor belt switch by pressing the Conveyor Start button on the Operator Control (refer to page 4-2.)
4. Monitor mix consistency and adjust the slump by adjusting the water. Push the Selection Knob on the Operator Control (refer to page 4-2). Adjust the water output by rotating the knob then push the knob to accept the value.

NOTE: The operator *MUST* guard against ‘chasing’ the slump by over adjustment of the mix water control. It takes several seconds for any changes in water flow to be noticed at the discharge end of the mix auger.

5. Vibrate the bins to ensure initial flow of material to conveyor belt.

NOTE: The frequency and duration of vibrating depends upon the distance travelled while loaded, road conditions, and the condition of the sand. The operator must judge, based on experience, the amount of vibration required. Insufficient vibration may allow the material to bridge in certain conditions, thereby affecting the quality and consistency of the concrete produced.

6. Make frequent visual checks of aggregate flows as well as the flow of concrete to ensure that the customer is receiving a concrete product that is true to the desired specifications.

Wash Down and Preparation for Transport

When the pour is complete or the mixer is empty, it is important that the mix auger be properly

washed out to prevent an excessive concrete buildup which could interfere with the operation of the mixer on subsequent loads. The operator should take this opportunity to inspect the wear plates and make a general visual check of the mix auger and other components which may require maintenance or repair.

The following steps act as a guideline for washing out the mix auger and preparing the mobile mixer for road transport:

1. Using a scraper, remove any excess material from the discharge end of the conveyor belt.
2. Roll up the cement drop tube.



Figure 21. Cement drop tube.

3. Run the mix auger until it is empty.
4. Adjust the mix auger speed control to reduce the auger speed as required.
5. Wash out swivel ring and area directly around discharge end of conveyor belt.

6. With the mix auger still elevated, ensure that back plate and sides of the auger trough are free of buildup. If desired, a rapid flow of water can be added to the mix auger by placing the conveyor function switch into the **water position**. If equipped, the pressure washer may be used manually with the pressure washer gun to assist in washout. Often the mix auger will be run in either forward or reverse to facilitate cleaning of the auger hopper area.
7. Switch the mix auger control to 'OFF'.
8. Open the mix auger cover and lower the auger as far as possible.

WARNING

Never run the mix auger with the top cover open.

9. Wash until the mix auger and trough are free of any material buildup.
10. Elevate mix auger to transport position. The retaining lock will automatically engage.

IMPORTANT: Check for proper alignment as the auger is being raised

11. Water pump – OFF

IMPORTANT: DO NOT ALLOW the water pump to operate without a water supply. Seal damage will result.

12. Master switch in cab, or if equipped with an engine, in the engine enclosure - OFF

Purging

Purging the mixer water and admix lines is used in preparation for winterizing or used to clean out the admix lines to remove old admix and in preparation for new admix.

Purging the Water Lines

This section explains purging the water lines with air.

CAUTION

Keep clear of the valve being purged with compressed air as high velocity debris may exit the valve along with the water.

IMPORTANT: Open a water drain valve before adding compressed air to the water system. The water system hoses are not rated for high pressure and may be damaged by the high air pressure.

1. Close all drain valves including – but not limited to – the manual washout water drain (Valve Location 4 page 4-10) and the water pump drain valve (Valve Location 2 page 4-10.)
2. If emptying the water tank – for example, in preparation for winterizing – continue reading, otherwise skip to the next step. Drain the water tank by opening both the the water tank fill port and tank valves (Valve Location 1 page 4-10.)
3. Close the tank valve and open the water tank fill port valve (Valve Location 1 page 4-10.)
4. Open the water blowout air valve (Valve Location 4 page 4-10) and wait until all water is purged from the water tank fill port valve.
5. Close the water blowout air valve.
6. If blowing out admix for winterizing, perform the admix water purge (refer to Purging the Admix System with Water on page 6-12) at this time, leaving open the admix washout valve (Valve Location 2 page 4-10). Next perform the admix air purge procedure then close the admix washout valve.
7. Close the water tank fill port valve.

8. Open the pump drain valve (Valve Location 2 page 4-10.)
9. Open the water blowout air valve and wait until all water is purged from the pump drain valve.
10. Close the water blowout air valve.
11. Close the pump drain valve.
12. Open the manual washout water valve (Valve Location 4 page 4-10.)
13. Open the water blowout air valve and wait until all water is purged from the manual washout water valve.
14. Close the water blowout air valve.
15. Close the manual washout water valve.
16. Open the manual mix water valve (Valve Location 5 page 4-10.)
17. Open the water valve on the Operating Keypad by pressing the Mix Water button, (button 13 on page 4-5) to ON.
18. Open the water blowout air valve and wait until all water is purged from the water valve into the mix bowl.
19. Close the water blowout air valve.
20. Close the water valve on the Operating Keypad by pressing the Mix Water button, (button 13 on page 4-5) to OFF.

Purging the Admix System with Water

Purge the admix system with water when removing old admix, changing types of admix, cleaning the admix lines or in preparation for winterizing.

1. Turn each admix valve to 'WASH' as shown in Figure 23.

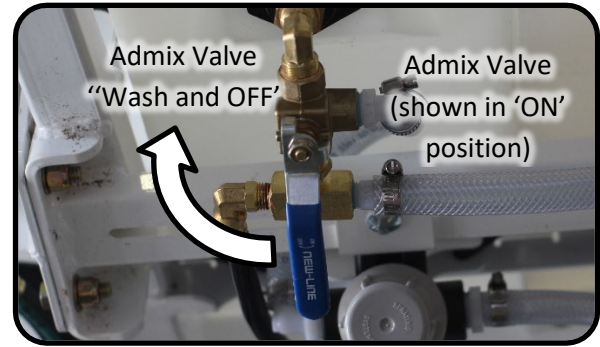


Figure 22. Admix tank valves shown in 'WASH' position.

2. Open all admix control valves (Valve Location 6 page 4-11) to their max maximum settings (fully open.)
3. Open the admix washout valve (Valve Location 2 page 4-10.)
4. Set all admix pumps to manual on the Operating Keypad (includes buttons 3, 7, 11 and Auxiliary – button 2 – if used as admix 4, page 4-3.)
5. Start the washout on the Operating Keypad, by pressing the Washout button (button 9 on page 4-4) to ON.
6. Rinse the admix lines until the lines are clear of admixture.
7. Stop the washout by pressing the Washout button to OFF (no lights on.)
8. Stop all admix pumps by pressing the Admix 1, Admix 2, Admix 3 and if necessary Auxiliary buttons to OFF.
9. Close all admix control valves.
10. Turn each admix valve to 'OPEN'.
11. Close the admix washout valve.

Purging the Admix System with Air

The admix system is purged with air primarily in preparation for winterizing.

1. Turn each admix valve to 'WASH' as shown in Figure 23.
2. Open all admix control valves (Valve Location 6 page 4-11) to their maximum settings (fully open.)

3. Open the admix blowout air valve (Valve Location 4 page 4-10) and wait until all water is purged from the water tank fill port valve.
4. Close the admix blowout air valve.
5. Close all admix control valves.

Engine

The engine has been factory set and will not require adjustment. Engine pressures and limits can be referenced in the supplied engine manual.

Starting Engine

The following procedure describes starting the engine.

NOTE: *Ensure the pressure washer is in the off position before starting the engine. The pressure washer loads the engine considerably at low rpm and must be off for the engine to start properly.*

1. Turn the master switch inside the engine compartment to the “On” position.
2. Push and hold the Glow Plug button for approximately 15- 20 seconds. The glow plug lamp will light on the front of the main engine control panel.
3. Push and hold the Safety Override Switch then push the Engine Start button, the engine will start within a few seconds of pressing the button.
4. Once the engine is started, release the Engine Start button while continuing to press the Safety Override Switch for approximately 10 seconds.

NOTE: *The oil pressure gauge should show approximately 25 psi once the engine is started.*

Throttle Engine

Throttle the engine to high idle before starting to mix or to use the pressure washer. Pull the throttle handle to its maximum extension. The RPM Gauge will show approximately 2300 to 2400 rpm.

Stopping Engine

Stop the engine with the following procedure.

1. Throttle the engine down by pushing the throttle handle in as far as it will go.
2. Push the Engine Stop button until the engine stops running.
3. Turn off the Power On switch.
4. Turn off the Master Switch.

Chain Oiler

The chain oiler consists of the chain oil reservoir and lubrication solenoid valve and is located between the gussets on the right hand side of the mixer at the rear of the aggregate bin. The chain oiler keeps the conveyor and cement bin sump auger chains lubricated and runs automatically when the chain oiler switch is on. The chain oiler does not require adjustment but should be inspected periodically to ensure the reservoir has oil.

NOTE: *Use SAE 30 W oil or similar when filling the reservoir.*

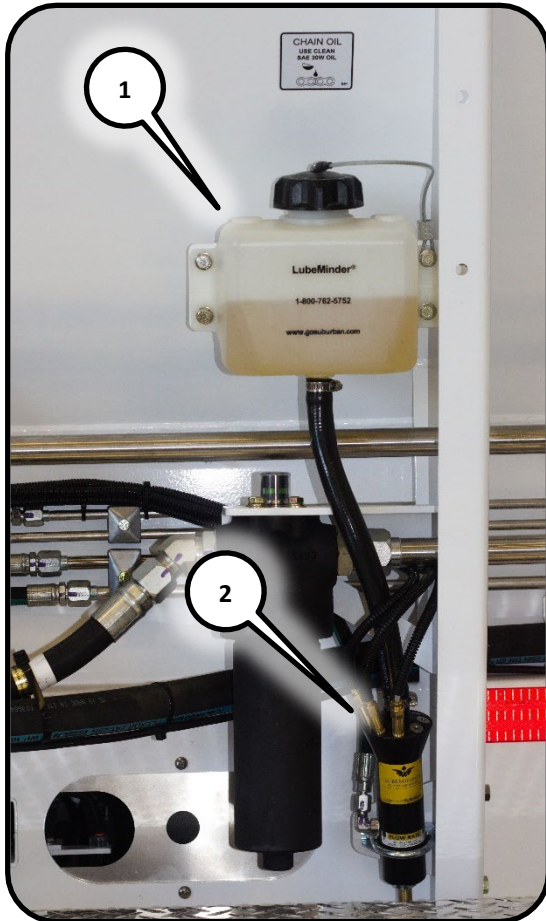


Figure 23. Chain oiler reservoir. (1) oil reservoir, (2) oil solenoid valve.



Figure 24. Chain oiler brushes.

Inspect the chain oil brushes periodically for debris and to ensure they are not clogged. Replace as necessary.

Tarp

The tarp is used to cover the aggregate bin. To extend and collapse the tarp use the tarp control toggle switch located on the front, left hand side of the machine.



Figure 25. Tarp mechanism.

Tarp Control

The tarp control is a single toggle switch located on the left hand side of the aggregate bin rear of the water tank.



Figure 26. Tarp control switch.

Extension Chutes

Extension chutes are usually mounted on the left-hand side of the mixer as shown in the following figure.



Figure 27. Extension chute carrier and chutes.

The extension chutes extend the reach of the mix auger transition chute, increasing the chute range by the length of each chute.

The chute carrier has spaces for three extension chutes and includes a spring loaded hooked strap that wraps around all three extension chutes to hook onto the innermost chute's top edge.

Cold Weather Working

IMPORTANT: *When working in weather in which the water system has the potential to freeze, always drain and blow out the water system using pressurized air. Follow the blowout procedure as outlined in the Purging section on page 6-11.*

7. Lubrication and Maintenance

Maintenance

Regular maintenance and inspection will help ensure trouble free operation, eliminate unnecessary down time, and extend the life of your ProAll Mobile Mixer. Keeping your mixer clean and free from cement build-up helps to maintain a good image to your customers. The operator should perform a daily pre-operation check, inspecting the truck and mixer for any mechanical defects.

Proximity Sensor

Ensure the GAP SPACE between the speed sensors and shafts are set to 0.1 inch (2.5mm). This may be conveniently done using a gap tool as shown in the following figure. Speed sensors are located on the left hand side conveyor shaft at the rear of the machine, on the cement auger drive shaft and the colour feeder if equipped.

NOTE: *The sensor must align with the center of the shaft. Misalignment will result in sensor reading errors.*



Figure 28. Speed sensor gap on conveyor drive shaft shown using a gap tool.

Take Up Bearing

Ensure the take up bearing has a ¼ inch gap between the washer and tubing as shown in Figure 18.

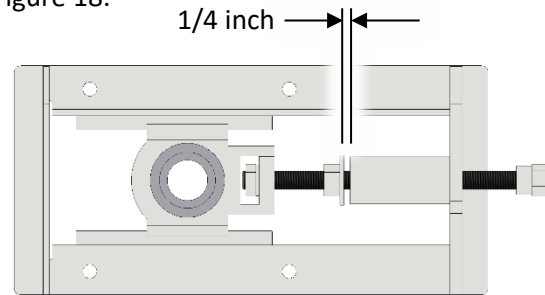


Figure 29. Take-up bearing gap

Oil Specifications

Cleanliness

The hydraulic fluid must be maintained at ISO Cleanliness Code 20/18/15 or better.

Hydraulic System

Your ProAll Mobile Mixer has been filled with Petro Canada HYDREX™ XV to give you best all season performance, plus longer lasting protection against wear

HYDREX™ XV is recommended for use in equipment manufactured by **Eaton (Vickers), Cincinnati Machine, Denison, Racine, Sauer-Danfoss** and others

Minimum Requirements for Replacement Oil

In this hydraulic, the optimum viscosity range is 16 – 36 cSt (75 – 168 SUS), at normal operation temperatures. Viscosity should never fall below 10 cSt (47 SUS.) At the lowest expected start-up temperature, the viscosity – less than one minute – should not exceed 1600 cSt (7500 SUS.)

Hydraulic Oil Filters

High pressure hydraulic oil filters are included with the machine for both the mix auger and the conveyor belt.

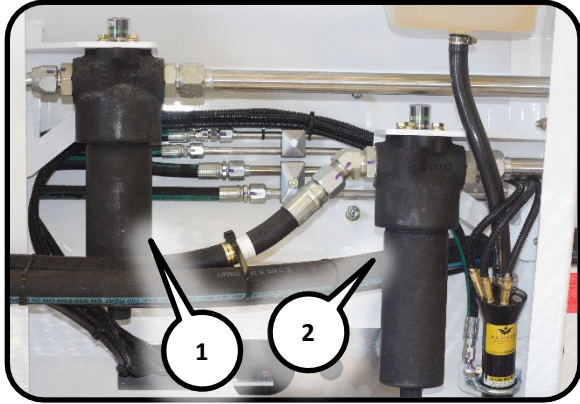


Figure 30. High pressure hydraulic oil filters. (1) auger oil filter, (2) conveyor oil filter.

The filters are equipped with indicator showing the status of the filter. Green indicates the filter is working properly. Red indicates flow through the filter is restricted requiring maintenance.

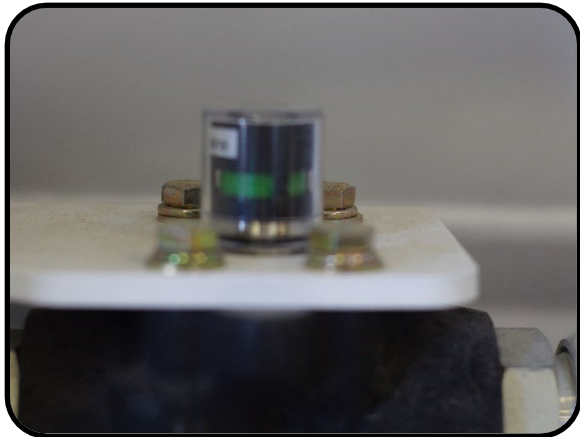


Figure 31. High pressure filter indicator.

Particulate Air Filter/Regulator

The particulate air filter/regulator removes water droplets and has a 40 micron filter for particulate separation in the air line.

Pressure Regulator

To set the pressure, pull the regulator set knob up, rotate left while looking at the pressure

gauge to increase pressure, right to decrease pressure. Pressure should be between 75 and 80 psi. Once the regulator pressure has been set, push the regulator knob back down.

Water Purge Valve

The water purge valve is a **semi-automatic** valve as shown in Figure 33 and is designed to purge the regulator bowl of water. The valve has three positions:

- automatic – the valve is rotated to the left
- locked – the valve is rotated fully to the right and “clicked” into place
- **manual – the valve is pushed up from the bottom.**

NOTE: The purge valve must be in automatic to use the manual purge.

NOTE: The valve should always be placed in automatic.

When water is visible in the sight glass, either purge manually by pushing the bottom of the purge valve up or by lowering the source air pressure to below 20 psi.

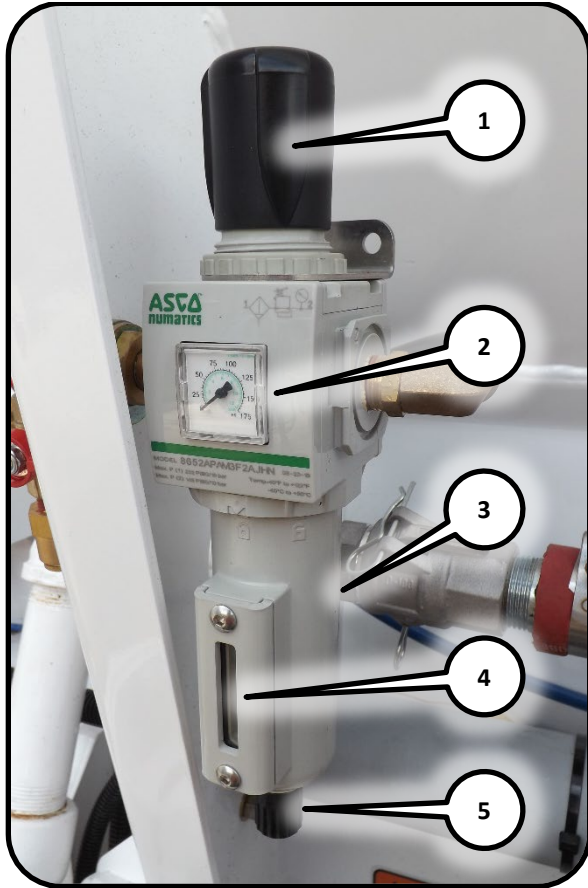


Figure 32. Particulate air filter/regulator. (1) regulator set knob, (2) pressure gauge, (3) regulator bowl, (4) water sight glass, (5) water purge valve.

Wear Plates

The mix auger is equipped with replaceable wear plates, designed to protect the auger from premature wear. The wear plates must be inspected frequently and replaced when they wear down to the auger flighting.

IMPORTANT: *Never allow the plates to wear into the mounting holes drilled into the flighting. The complete auger or portion of it will have to be replaced if this occurs.*

Inspect the wear plates during washout and monitor their condition. Also, be aware of the nature of upcoming pours, this will help prevent a wear plate failure part way through a large, remote pour.

Remove the old wear plates by cutting the nuts off with a chisel or cutting torch, being careful not to damage the auger flighting. When using a torch, be careful not to scorch the rubber portions of the auger trough.

IMPORTANT: *When attaching the new wear plates, it is important that they are against a firm, even surface at the bolting area. Excessive pressure on an uneven surface may cause breakage.*

Engine

Refer to engine manual for maintenance items and schedules.

Water Pump

Refer to the water pump manual for water pump maintenance items and schedules.

Service

The ProAll Mobile Mixer has been designed and tested to allow for a minimum number of adjustments and service items. The following sections describe adjustments and service that may be required.

- Conveyor chain: The take-ups on the front shaft of the conveyor must be adjusted to provide for proper tension on the conveyor chain. Proper adjustment is attained when the chain rollers are held about 1/8" above the ends (front or back) of the chain return support bars. Be sure to check both sides of the conveyor chain, ensuring that the front shaft remains square to the main frame of the mixer.
- Mix auger lift cylinder: The lift cylinder is provided with an adjustable clevis to allow the proper engagement of the transport position locking hook. If the lock does not fully engage, lower the mix auger and support it with blocking to allow for the

removal of the cylinder pin (clevis end.)
Loosen the tightening bolt to turn the clevis.
Replace the pin and test for proper lock
engagement. Repeat this procedure as
necessary.

IMPORTANT: *Over adjustment puts undue stress on the swivel ring and support pins. When turning the clevis, do not hold the cylinder rod with a pipe wrench or other tool - seal damage will result. If necessary, extend the cylinder rod until it bottoms out. This will prevent it from turning easily. It may also be necessary to slightly spread the clevis with a chisel to loosen the threads.*

- Control gate position pointers: The pointers are set at the factory to indicate 0 or 12 on the dial when the control gates are in the lowest position (resting on the conveyor belt.) If a service function requires that the pointer setting relative to the gate position be changed, return it to the original factory setting. It is a good practice to check this setting during regular maintenance.
- Mix auger swing and boom speed: Adjustment for these directional functions is provided by flow controls under the main control panel.

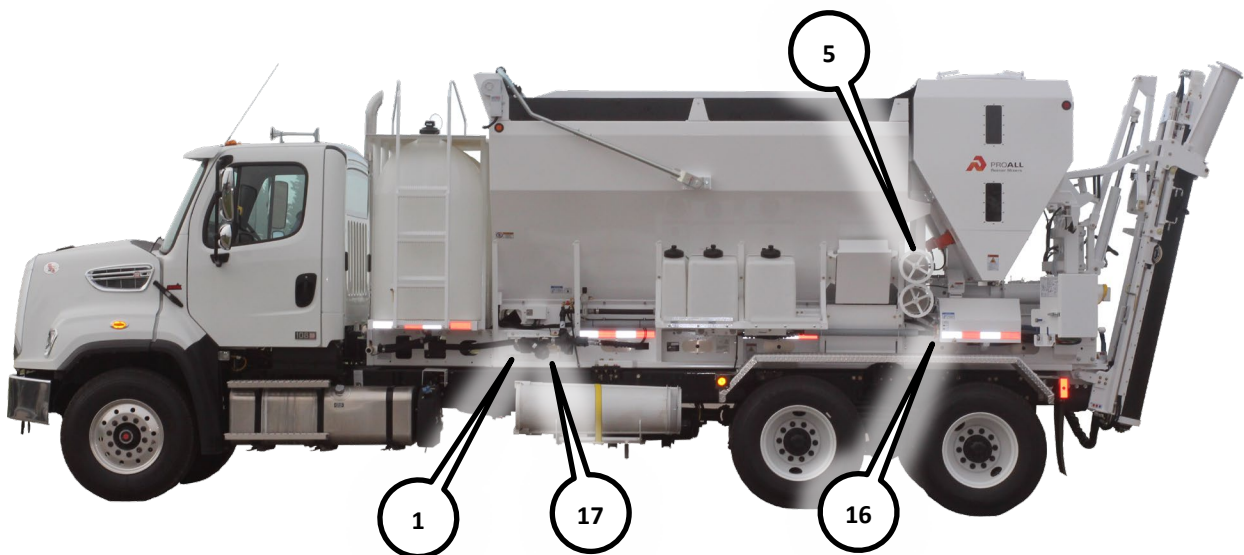
Winterizing

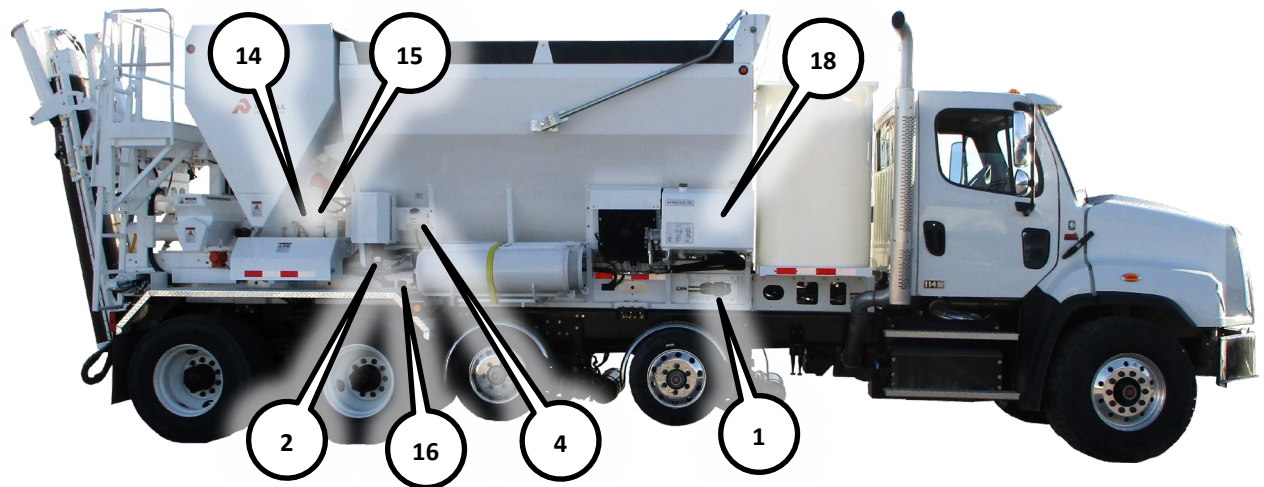
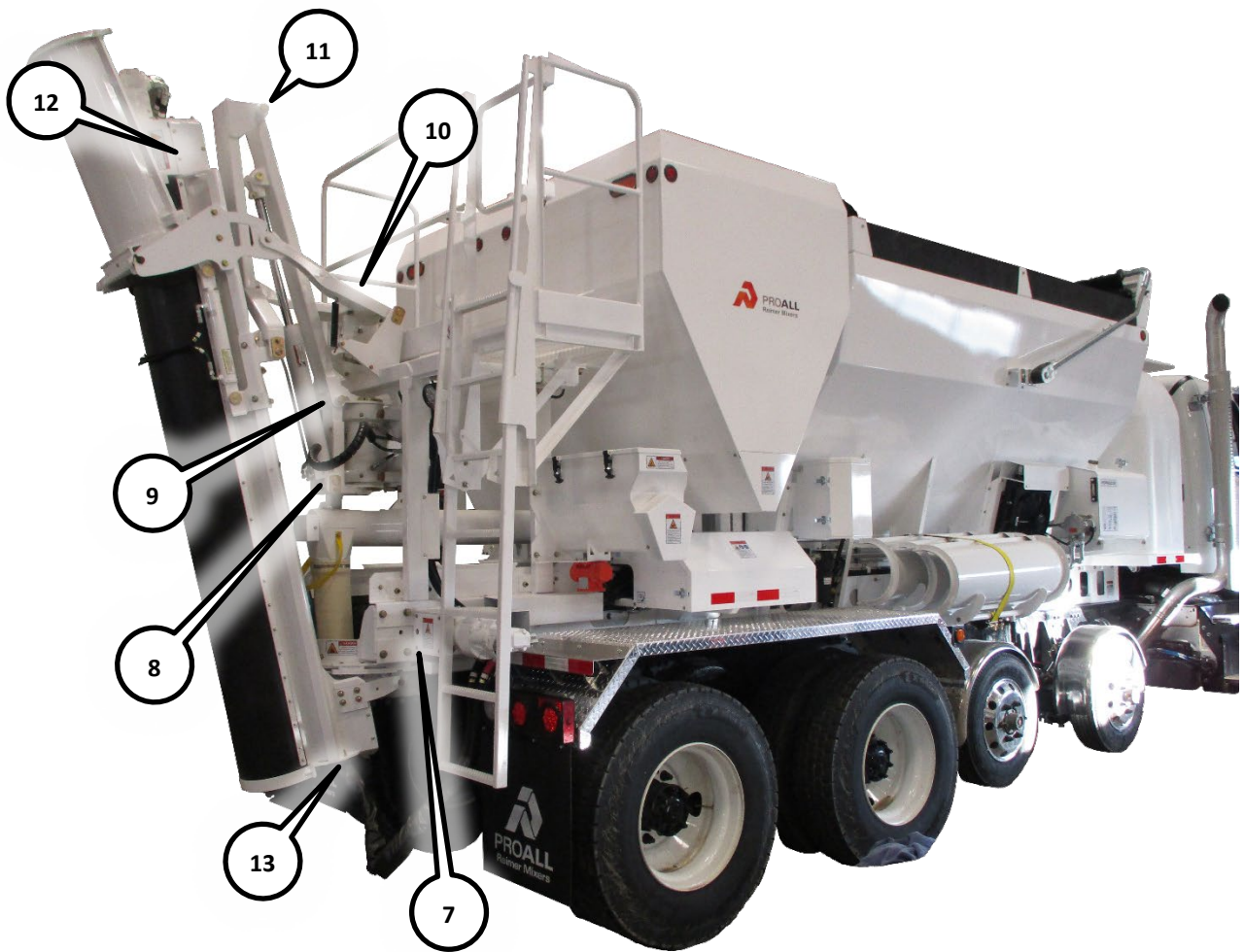
For storage in locations where freezing is expected, empty the water tanks and flush the water system including the water pump, hoses and pressure washer system with a 50/50 mixture of water and antifreeze.

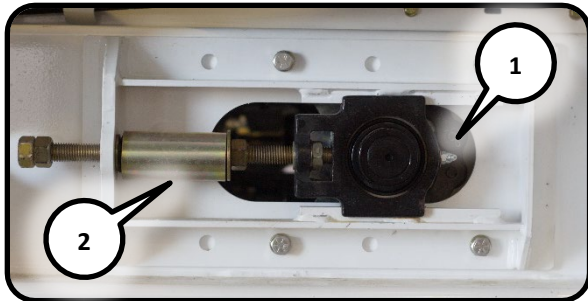
Lubrication and Maintenance Points

The following inspection and maintenance schedule acts as a guideline only. It should be noted that extreme weather conditions, aggressive aggregates, the nature of the

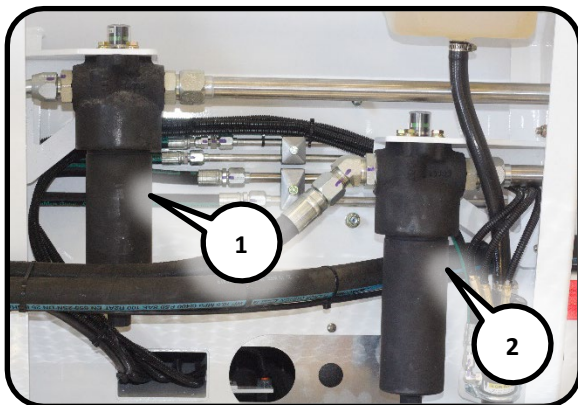
concrete being produced (for example, low slump, high density) and other factors will affect the frequency of service required.







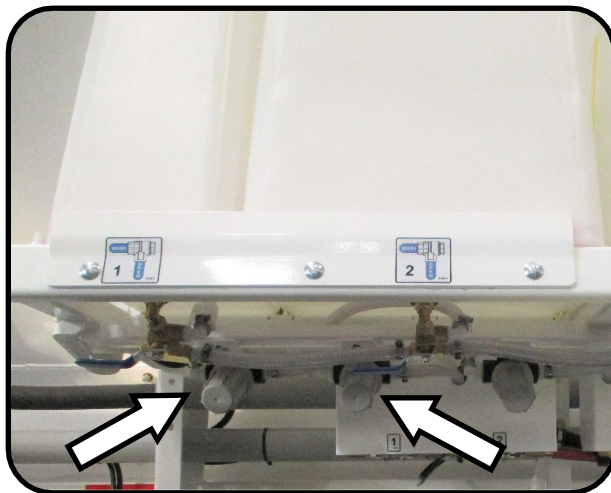
Maintenance 1. Front conveyor shaft, right and left. (1) bearing grease, (2) tension adjust



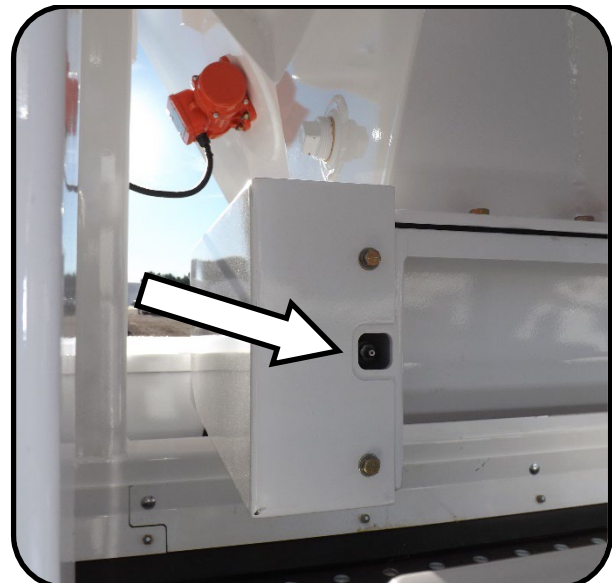
Maintenance 2. High pressure hydraulic oil filters. (1) auger oil filter, (2) conveyor oil filter.



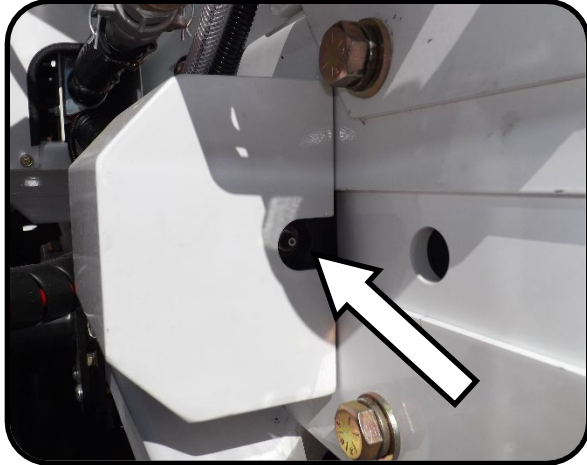
Maintenance 4. Chain oil level check.



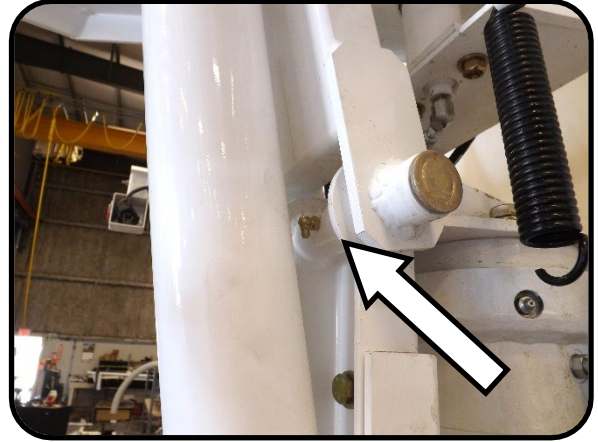
Maintenance 3. Admix tank filter check.



Maintenance 5. Cement bin sump bearing grease.



Maintenance 6. Rear conveyor shaft grease and sensor gap check, left.



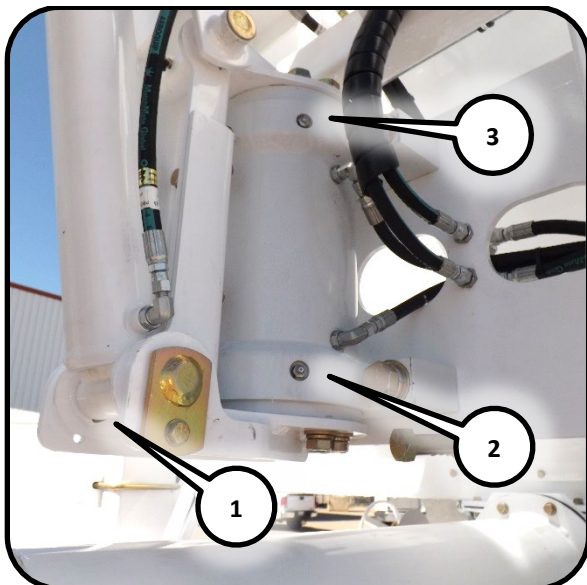
Maintenance 9. Lower lift link grease.



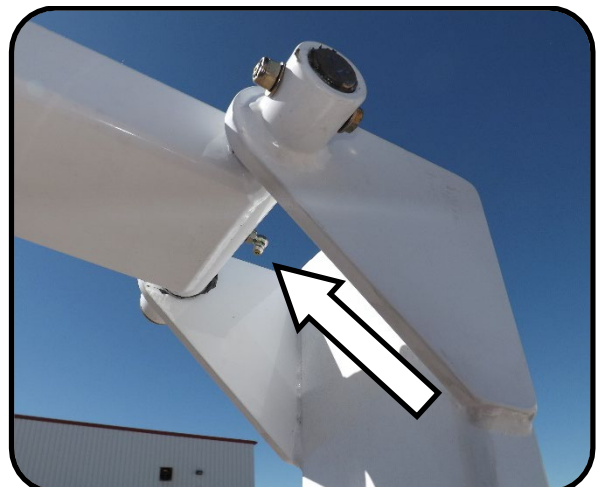
Maintenance 7. Rear conveyor shaft grease, right.



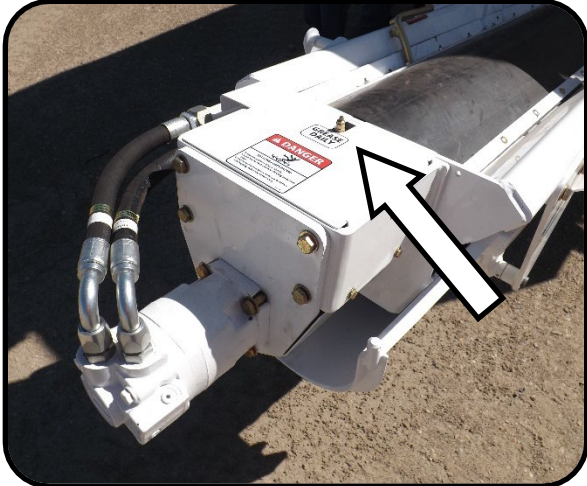
Maintenance 10. Lock arm grease.



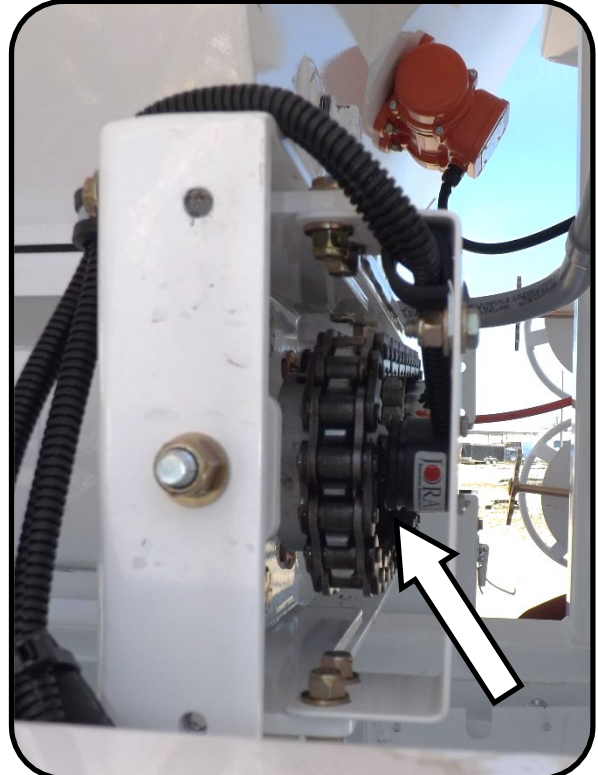
Maintenance 8. Zerk grease. (1) boom cylinder, (2) rotary actuator, lower, (3) rotary actuator, upper.



Maintenance 11. Upper lift link grease.



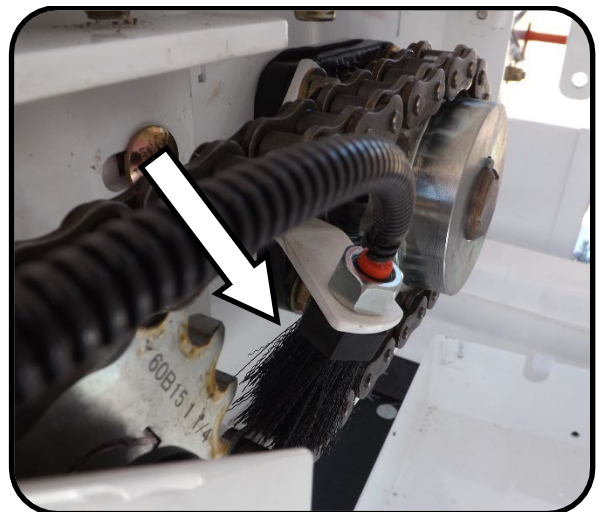
Maintenance 12. Mix auger top bearing grease.



Maintenance 14. Cement bin sump sensor gap check.



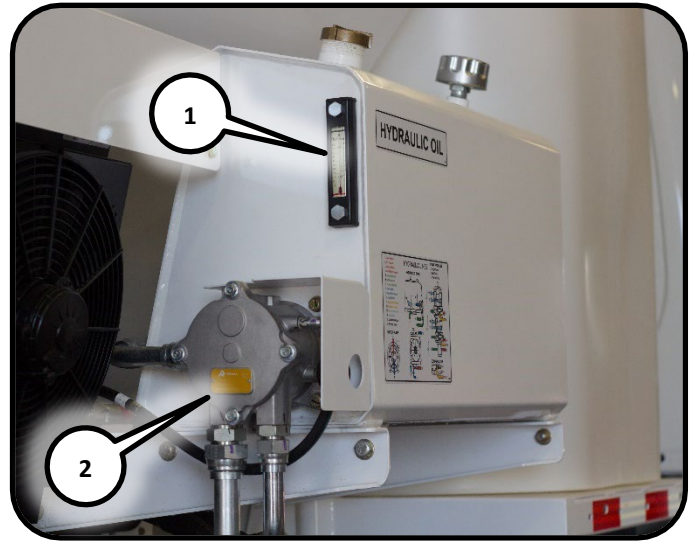
Maintenance 13. Mix auger bottom grease



Maintenance 15. Cement bin sump brush check.



Maintenance 16. Conveyor chain brush check.



Maintenance 18. Hydraulic reservoir check. (1) check oil level, (2) check return & suction filter.



Maintenance 17. Clean water Y strainer.

Lubrication and Maintenance Frequency

Table 10. Frequency Table

Maint. Item Number	No. Points		Every 1 Load	Every 20 Hrs	Every 50 Hrs	Every 500 Hrs
1	2	Front conveyor shaft grease, right and left			•	
1	2	^A Check conveyor tension adjust			•	
2	2	^B High pressure hydraulic oil filter check				•
3	2	Admix tank filter check			•	
4	1	^C Maintain conveyor chain oil level		•		
5	1	Cement bin sump bearing grease			•	
6	1	Rear conveyor shaft grease, left			•	
6	1	^D Rear conveyor shaft sensor gap check			•	
7	1	Rear conveyor shaft grease, right			•	
8	1	Boom cylinder grease		•		
8	2	^E Rotary actuator grease. SEE NOTE				
9	1	Lower rear link grease		•		
10	1	Lock arm grease		•		
11	1	Upper rear link grease		•		
12	1	Mix auger top bearing grease			•	
13	1	Auger bottom bearing grease			•	
13	2	^F Auger bottom seal grease	•			
14	1	^D Cement bin sump sensor gap check			•	
15	1	^G Cement bin sump brush check			•	
16	2	^G Chain brush check, left and right			•	
17	1	Clean Water Y Strainer	•			
18	1	^H Hydraulic oil level check	•			
18	1	^I Hydraulic return filter check				•
18	1	^I Hydraulic suction filter check				•
	1	Hydraulic Oil Replace				•

Notes:

- A. Refer to the Take Up Bearing section on page 7-1 for the correct gap setting.
- B. Check the return filter gauge at this location. Ensure the indicator shows green while the mix auger is running. Refer to the Hydraulic Oil Filters section on page 7-2.
- C. Use SAE 30 weight oil or similar. For chain oiler reservoir, fill chain oil to the base of the filler neck. Fill as needed.
- D. Use the supplied gap tool to maintain the correct gap of 0.1 inch (2.5mm.)

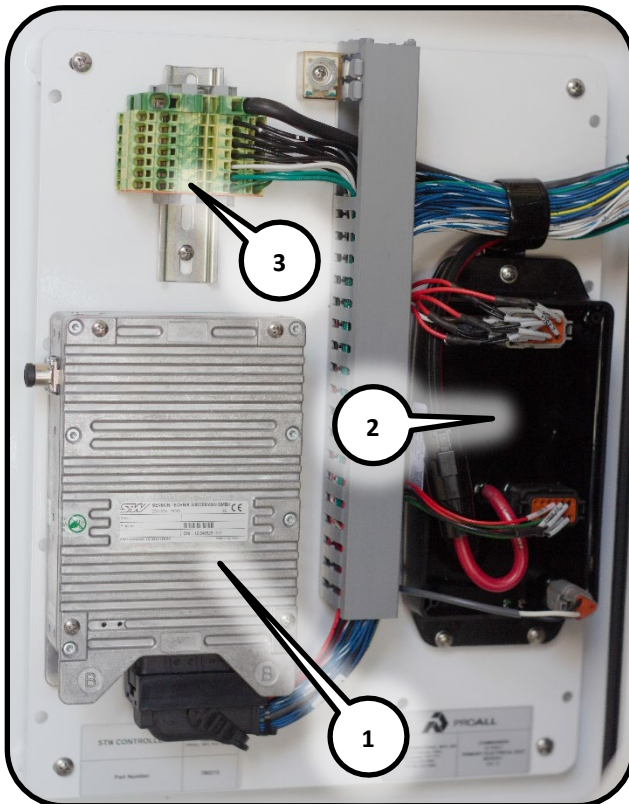
- E. The rotary actuator is sensitive to frequent greasing. GREASE ONLY ONE TIME A YEAR WITH TWO SHOTS OF GREASE ON EACH GREASE POINT.
- F. Purge the seal of concrete paste immediately after washout. Ensure the auger is running while applying grease.
- G. Clear brush of debris and replace if worn.
- H. Check that the oil level is showing in the sight glass. Refer to Oil Specifications section on page 7-1 for correct hydraulic oil.
- I. The filter is located within the tank. A visual inspection of the filter will be required to ensure the filter is not clogged.

Electrical Distribution Box

The electrical timer, fuse and relay cabinet is located above the engine control panel on the left-hand side of the machine.

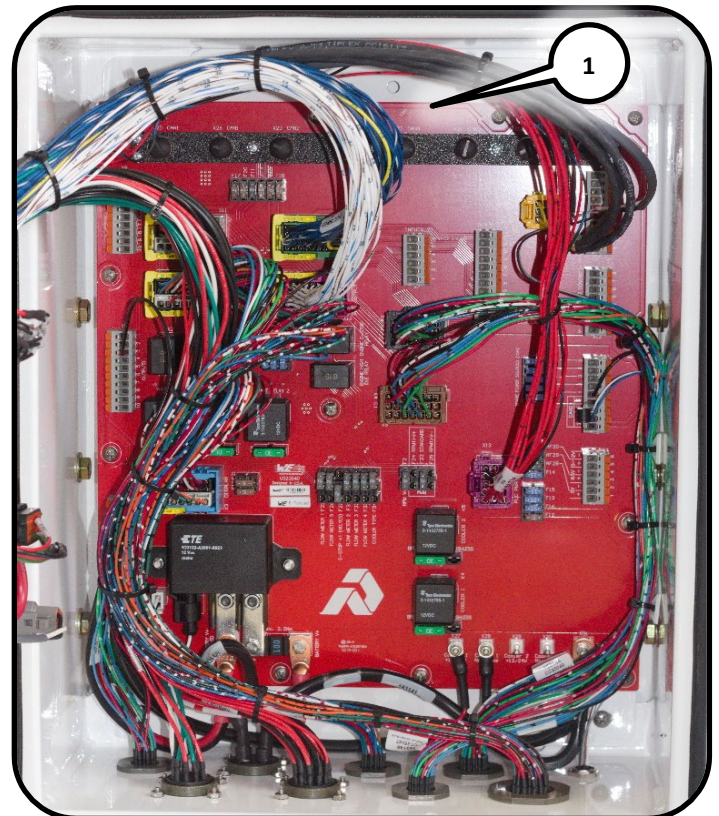
NOTE: The electrical panel is enabled through the Remote receiver / printer stand master electrical switch (refer to page 6-8) or if equipped, the

engine control panel power on switch (Refer to Panel on page 4-6.) The electrical functions – including lights and vibrators – will not work unless the power switch is set to ON.



Electrical 1. Cabinet door mounted electrical

1. PLC
2. Power module, vibrator and admix
3. Ground terminals



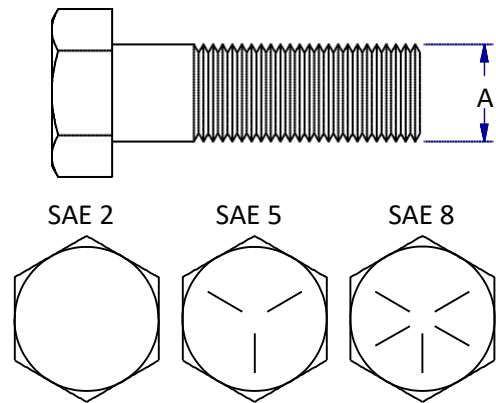
Electrical 2. Inside cabinet mounted electrical

1. Circuit Board
Refer to Service Manual, item 13. Electrical (page 82) for more details.

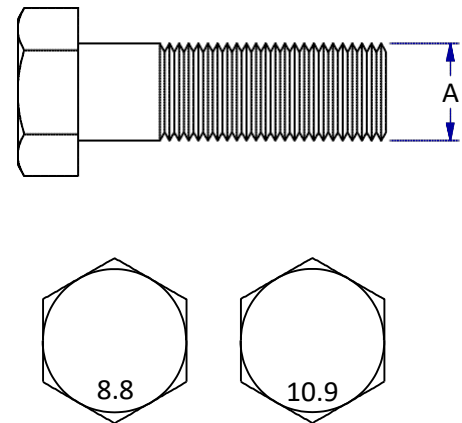
Bolt Torque

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torque specified in chart unless otherwise noted. When assembling equipment, use bolt torque chart as a guide.

Bolt Diameter "A"	Bolt Torque *					
	SAE 2		SAE 5		SAE 8	
	(N-m)	(ft-lbs)	(N-m)	(ft-lbs)	(N-m)	(ft-lbs)
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



Bolt Diameter "A"	Bolt Torque *			
	8.8		10.9	
	(N-m)	(ft-lbs)	(N-m)	(ft-lbs)
M3	0.5	0.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



Torque figures indicated above are valid for non-greased or non-oiled threads and heads. Therefore, do not grease or oil bolts or capscrews unless otherwise specified. When using locking nuts, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

8. Fault Finding

Problem	Cause	Solution
No electrical power	Master switch not active	Locate and ensure that the cab master switch is turned on.
	Electrical failure	Check main circuit fuse/breaker located at the battery. If a short circuit is indicated, find the short and repair.
No water	Water pump not running	Check water pump activation switch on rear panel.
	Water tank is empty	Fill
	Water pump has lost its prime	Ensure that no pressurized air is being allowed into the water system though the blow-down valve or a faulty diaphragm in the automatic water valve.
	Water suction screen plugged	Remove and clean or replace.
No mix water	Air supply to mixer is off	Open air supply valve
	Air supply pressure low	Increase pressure at regulator
Water leaking from pump	Mechanical seal has failed	Replace seal, ensuring that seal components are properly installed. DO NOT RUN DRY!
Inconsistent slump	Moisture content of aggregates not consistent	Load materials of consistent moisture content. When this is not possible, the operator must compensate for moisture variations by making minor adjustments to added water.
	Restriction in water supply line	Remove Y-strainer plug and screen. Check for contamination and clean if necessary.
	Air in water causing pump cavitation	Check blow down air valve if so equipped. Valve must be fully closed.
	Over adjustment of water control	The operator MUST guard against 'chasing' the slump by over adjustment of the mix water control. It takes several seconds for any changes in water flow to be noticed at the discharge end of the mix auger.

9. 1st 50 Hour Service

CHECK AND ADJUST AS REQUIRED

1. Check mixer tie down bolts are the proper torque, refer to Bolt Torque section on page 7-14.
2. It is important to check the clean water Y strainer, ensure that this is monitored during the first 50 days according to Table 8. Frequency Table on page 7-11.

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MX01612



5810 - 47 Avenue, Olds, Alberta, Canada, T4H 1V1
E info@proallinc.com | P 403-335-9500 | F 403-335-9560