Blastcrete Model RMX-5000 Mixer/Pump



Blastcrete Equipment Company Anniston, Alabama 1-800-235-4867 Toll Free 1-256-235-2700-Office

TECHNICAL SPECIFICATION

Cylinder stroke 18 inches (457.2 mm)

Cylinder diameter 3 inches (76.2 mm)

Number of strokes per minute 0-36/min.

Differential cylinders 2-1/2 inches (63.5 mm)

Mixer capacity 1000 lb. (453.6 kg)

Spiral Mixer speed 0-56 rpm

Paddle Mixer speed 0-32 rpm

Hopper capacity 9 cubic feet (.2545 cu. meters)

Output/hour 6 cubic yds. (4.6 cu. meters)

Gross weight 6000 lbs. (2722 kg)

Axles Drop 6000 lb. ea. (2722 kg)

Kubota V3600 67 HP (50 kW)

Or

Leeson Electric Motor 50 HP (37.3 kw)

Length 196 inches (4978.4 mm)

Width 88 inches (2235.2 mm)

Height 72 inches (1829 mm)

Hydraulic tank 40 gallon (151.42 liters)

Diesel fuel tank 25 gallon (94.6 liters)

Shipping

When shipping the Blastcrete Model RMX-5000 overseas, the unit should be sent in a 20 ft. (6.1 m) container. All four outriggers should be down and all tires should be chocked. The front and rear of the machine should be strapped to the floor of the container using the "D" Rings that are welded to the frame of the RMX-5000.

SAFETY

The RMX-5000 is a heavy and powerful machine. Any person assigned to operate, troubleshoot, maintain or repair the RMX-5000 must first be thoroughly familiar with the operating instruction manual. Care should be taken to insure your safety and that of others by observing the following safety rules.

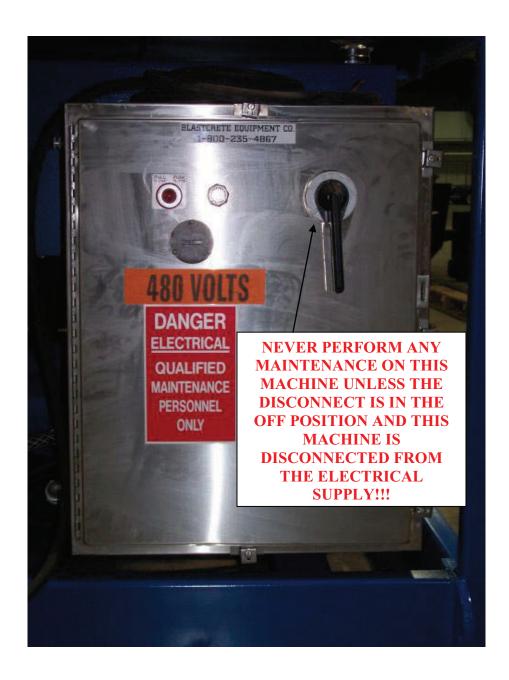
~DO NOT OPERATE THE MACHINE WITHOUT THE PROPER SAFTY EQUIPMENT. OSHA APPROVED RESPIRATOR, HARD HAT, EAR PLUGS, AND EYE PROTECTION MUST BE WORN AT ALL TIMES!

ELECTRIC VERSION ONLY (ELECTRIC RMX-5000 480 V. 3-Phase)

ONLY A CERTIFIED ELECTRICIAN SHOULD CONNECT THIS MACHINE TO AN ELECTRICAL OUTLET. FAILURE TO FOLLOWING THESE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY OR DEATH!!!!!

- ~Before starting the RMX-5000, be sure all is clear around the machine and no one is working on the machine at that time. Make sure all leveling jacks are down and that the machine is as level as possible.
- ~Do not insert hand(s) in the mixer, receiving hopper, or hydraulic cylinder oil box with the engine running.
- ~Do not climb under the RMX-5000 without first installing safety rests on the receiving hopper and mixer tilt hydraulic cylinder.
- ~Observe pinch points; keep hands and feet clear. Keep all personnel clear when loading and unloading material.

- ~Do not work on the undercarriage at any time without first checking the tires and correctly lowering the four jack stands to prevent the unit from moving. Never go under the unit when it is running or in operation.
- ~Keep hands and clothing away from the exhaust system. Do not operate this machine with loose fitting clothing or jewelry.
- ~Always allow this machine to cool down before adding fueling or hydraulic fluids.
- ~Hydraulic systems can be dangerous. The RMX-5000's hydraulic circuit can reach pressure up to 3000 PSI (206.84 bar). Never work on the hydraulic system when the machine is running or in operation.
- ~Never open the concrete delivery line system without reversing the pump and pumping in reverse for a minimum of 5 seconds to remove the pressure in the system.
- ~After many hours of operation and transportation, bolts and hydraulic hose fittings can become loose due to vibration. Before startup, make sure all hydraulic fittings, nuts, and bolts are tight and in good repair.



SAFETY









FAILURE TO FOLLOW THE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY OR DEATH!

ENGINE Kubota V3600 (Diesel Option Only)

SAFETY INSTRUCTIONS

Read the Operation and Maintenance Manual completely, following all safety instructions contained in this publication provided by Kubota. The engine is warranted by Kubota and should be serviced by Kubota to comply with their warranty requirements.

Carefully read all safety messages in this manual and on your machine. Keep safety signs in good condition. Replace missing or damaged safety signs.

OPERATION

Before starting the engine make sure all fluid levels are filled. This will include engine oil, hydraulic oil, diesel fuel, coolant, and battery. Be sure to read the section in the Engine Operating Guidelines for proper starting procedure.

MAINTENANCE

The Engine Operation and Maintenance Manual will provide you with all the recommended service requirements for the Kubota engine. Reading and complying to these sections in the manual will provide you with many years of reliable and trouble free operation of the Kubota engine. This manual provides a section on troubleshooting to answer questions, which may occur.

NOTE:

Be sure to fill out the **KUBOTA ENGINE WARRANTY REGISTRATION FORM** provided along with the Operation and Maintenance Manual.

SOUND POWER LEVEL AND SOUND PRESSURE LEVEL

Sound Power Level-113 dB Sound Pressure Level-93 dB Tested according to ISO 3744 Hemispherical Method

HYDRAULIC SYSTEM

The hydraulic system incorporated into the RMX-5000 has been designed to give the operator many years of trouble-free service, provided the machine is properly maintained. Please read the following sections carefully and follow recommended preventive maintenance procedures as described.

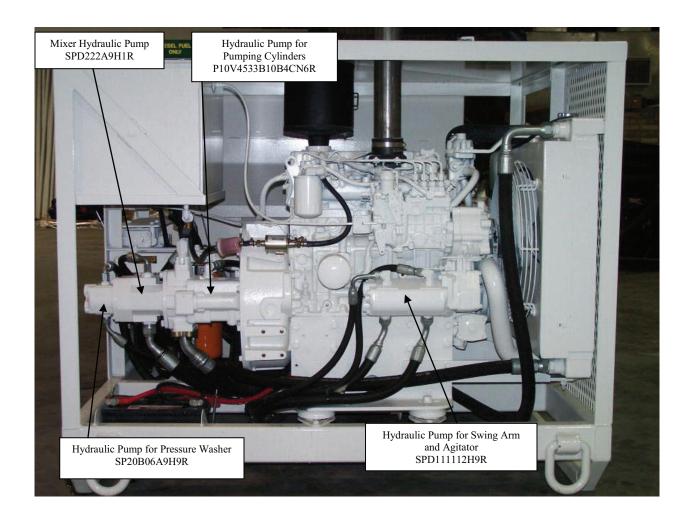
CLEANLINESS

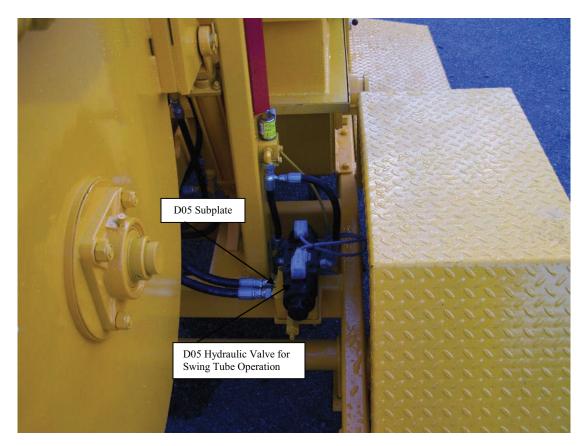
Over 92% of all hydraulic failures are due to contamination in the hydraulic system. To insure your hydraulic system is free of contamination, please follow the recommendations listed below:

- ~Change the hydraulic filter element after the first 50 hours of operation, then every 250 hours thereafter.
- ~When adding fluid, make sure the container used is clean.

Note: the smallest particle the human eye can see is 40 microns. Your hydraulic filter is rated at 10 microns, which means if you can see particles in the container, they are at the very least 4 times larger than is acceptable in the hydraulic system.

- ~The hydraulic fluid should be changed annually to remove the silt and water that builds up due to condensation. Use a quality 10 weight hydraulic fluid for cooler climates and 20-weight fluid in warmer climates. Remove and replace hydraulic filter element when changing the hydraulic oil.
- ~Do not overfill the hydraulic reservoir. Fill to one inch from the top of the hydraulic tank. The fluid level gauge located on the side of the reservoir will be full, which this is necessary to get an accurate temperature reading. You must leave room for the fluid to expand as it becomes warmer during operation, otherwise the fluid will overflow out the breather cap.
- ~Your hydraulic system is "sealed" to prevent contaminants from entering the hydraulic system. Be sure hydraulic filler cap is in place and secure at all times.









~If it is necessary to remove a hydraulic hose, be sure to keep fittings and hoses closed using plastic plugs or tape. If hoses are replaced, be sure the replacement hose has been flushed out and is clean. REMEMBER, BY KEEPING YOUR HYDRAULIC FLUID CLEAN, YOU CAN REDUCE POTENTIAL HYDRAULIC PROBLEMS BY 92%.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE PERSONAL INJURY OR DEATH!

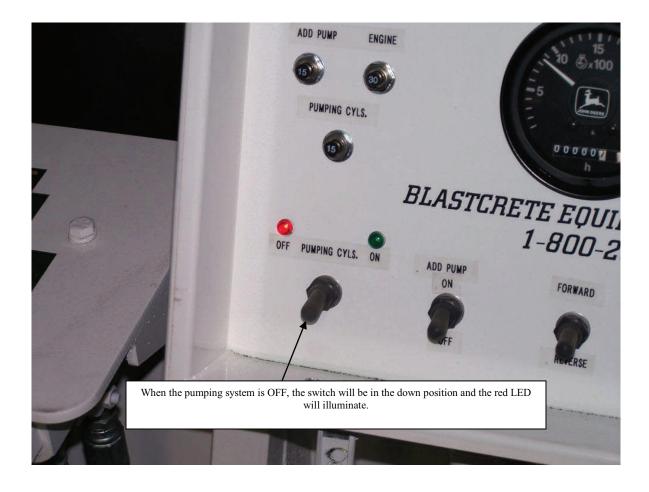
ELECTRICAL SYSTEM

The machine consists of two pumping cylinders, which alternately push material through a swing-tube into a pipe or hose. A double-acting solenoid valve located next to the operator's station activates the cylinders. The double-acting solenoid valve located nearest the rear of the machine controls the swing arm. Both valves are controlled by our "Valve Control" technology. The "Valve Control" samples inputs from the PROXIMITY, ON/OFF, FORWARD/REVERSE, AND JOG (Manual Override A/B) switches to cause the concrete pump to provide the necessary output and function correctly. The solid-state value control box eliminates the need for double-pole/double-throw relays and the inherent failure caused by arcing contacts and poor connection of contact points in the relays. The sealed environment of the box and conformal coating adds to the reliability and moist proof environment. The 12 Volt DC control voltage passes through the ON/OFF switch and feeds the proximity switches and the manual override (AB) switch. The machine runs in automatic mode by triggering the proximity switches located in the rod end of the hydraulic cylinder by means of a metal (dog) attached to the shaft. When a cylinder is in full extension, the proximity switch for that cylinder activates. This causes a pulse that is sent to the "Black Box" which provides a signal to the solenoid valves causing the cylinder to retract and moves the metal dog out from under the proximity switch, which then puts that proximity switch in the ready mode. At the same time, the opposite cylinder begins to extend so that at any time the cylinders are opposite each other. The A/B switch bypasses the proximity switch and the "Valve Control" activates the solenoid valves to position the pumping cylinder in their full extension.



The switch controlling the forward and reverse function informs the "Valve Control" which side of the coil on the swing tube valve to activate. There is no change to the pumping cylinder to accomplish this task. This allows the machine to either pump material out the hose or draw material back through the hose.

The machine can be operated manually by placing the ON/OFF selector switch in the OFF position and activating the spring- loaded A/B selector switch in either the A or the B position. Holding the switch to one side and waiting for the pressure to spike to 3000 PSI (206.84 bar) will cause the cylinders to extend and retract under control of the A/B switch and not the proximity switches. The swing tube solenoid valve will also activate causing the swing arm to move. The machine will operate in this fashion with the proximity switches unplugged from the control cabinet. This can be used to isolate a problem in the control circuit or to empty material out of the machine.





MATERIAL PUMP

SAFETY INSTRUCTIONS

Never perform any maintenance to the material pump with the engine/motor running and make sure the electrical disconnect is in the off position and the machine is disconnected from the electrical supply. This system contains moving parts under high pressure; therefore, make sure the engine/motor is turned OFF and all controls are in their NEUTRAL position before attempting any work on this system. Cup seals on the pumping cylinders should never be changed with the engine/motor running. Proximity switches should never be replaced with the engine running.

FAILURE TO FOLLOW THE INSTRUCTIONS COULD CAUSE PERSONAL INJURY OR DEATH!

OPERATION

The RMX-5000 system is equipped with two, three-inch (76.2 mm) pumping tubes. Each of these tubes has a 2.5-inch (63.50 mm) hydraulic cylinder, which delivers the driving force to push the material mix to the nozzle at the end of a pumping hose. Each one of these cylinders can generate 2200 PSI (151.68 bar) of force to the material being pumped. Due to pressure drop, the final discharge pressure will depend on the distance the material is being pumping the diameter of the delivery line used.

OIL WASH BOX

There is an oil box (wash box) between the hydraulic pumping cylinders and the pumping tubes used to lubricate the seal in the pumping tubes. Never run the pumping system without lubrication in this box as this may result in premature failure of the pumping seals. This lubrication is also used to keep a light film of oil on the hydraulic cylinder shafts and prevents any material from causing excessive wear on the hydraulic cylinder shaft seals. The recommended lubrication to be used is the same or equivalent to that being used in the hydraulic system. When filling, make sure the level is just at the top of the hydraulic cylinder or slightly higher. Too much oil in the box will cause excessive sloshing of oil, and will cause spillage on the ground under the machine.

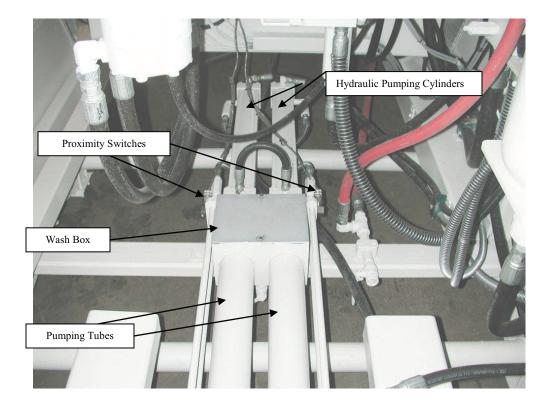
CUP SEALS

The cups seals used in the RMX-5000 are designed for high performance and long life. How long these seals will last depends on the material being pumped and how well the machine is cleaned after being used. Seals are replaced through the lower hopper where the swing tube is located. Each seal is held in place with a ¾-inch (19.05 mm) fine threaded bolt. Removal of these bolts is best accomplished using an impact gun. Be sure to remove the oil in the oil wash box using the plug located at the bottom of the box.

PUMPING TUBES

The pumping tubes have been plated with hard chrome to increase their life and wear ability. As with the seals, how long these tubes will last depends on the material being pumped and how well the machine is cleaned after being used. Any material left on the end of the pumping cylinders will harden and may cause scratches in the pumping tube when used again. It is very important to clean this area thoroughly after using the RMX-5000. The pumping tubes are designed to be easily replaced by removing the four nuts on the torque rods holding the oil wash box in place. Be sure to support the hydraulic cylinders before sliding the oil box back. Tubes can then be removed from the adapters fitting into the back of the lower hopper. At both ends of the tube, apply silicon sealer around the tube where it fits into the oil wash box and the back of the lower hopper. Then re-tighten the four fine threaded nuts. Using a tape measure make sure

all four corners of the oil wash box are at the same distance from the back of the lower hopper. This will insure proper alignment of the hydraulic cylinders with the pumping tubes.



PRESSURE WASHER

SAFETY INSTRUCTIONS

Water is discharged from this machine at a very high pressure. Never point the spray wand at persons or any part of the human body. High-pressure water may result in severe personal injury.

Never tie open the spray gun trigger or start the machine with the spray gun unattended. Highpressure flow could cause the gun and wand to fly around causing personal injury or property damage.

Do not run acids, petroleum based solvents or highly chlorinated material through this pump. Damage to internal parts could result. Use only detergents formulated for use with pressure washer and follow the manufacturer's instructions.

When using the pressure washer, wear goggles or a face shield to protect eyes from spray, chemicals or back-spattered materials.

OPERATION

Turn on water supply.

Open Hydraulic Sector Valve.

Grasp gun firmly. Point wand at object to be cleaned and squeeze the trigger. Experimenting with the distance the nozzle tip is held from the surface to be cleaned is recommended. The closer the tip, the greater the impact; however, as the tip is moved farther back a larger area can be covered. Avoid opening and closing the trigger gun in rapid succession, as this is hard on the unloader valve.





MAINTENANCE

Before shutdown, wash off the pump and orbit motor to rinse off any material residue.

Wipe down hose and coil for storage. Inspect hose daily for cuts or abrasions.

Change pump oil every 200 hours. Check oil level daily and top off as required. Use 30-weight non-detergent oil.

PROTECT AGAINST FREEZING TEMPERATURES

Remove suction hose from water supply and place hose in a container of ethylene glycol antifreeze.

Start the machine. When you see anti-freeze coming from the nozzle, trigger the gun a couple of times. This will allow the unloading valve to be purged.

Note: After water is purged from the system, anti-freeze can be captured for reuse.



TRAILER

SAFETY INSTRUCTIONS:

Never tow the RMX-5000 without connecting the electrical receptacle to the tow vehicle. Always make sure you are using a 2-5/16-inch (58.73 mm) ball or pintle hitch and that the safety chains are attached to the tow vehicle when towing. For European units, a European approved trailer is to be used for the country in which the unit is towed in.

CONSTRUCTION:

The trailer is constructed of 2" X 4" (50.8 X 152.4 mm) tube steel and is equipped with one 6000 lb. Capacity axle.

The trailer is wired with a 12 V. electrical harness and is connected to the tow vehicle with a plug receptacle.

The trailer is equipped with two marker lights on both sides and two taillights at the back of the machine.

The axle is equipped with electrical braking systems.

MAINTENANCE:

The brakes should be inspected once a year and replaced as needed. While you are inspecting the brakes, repack the wheel bearing and replace if needed.

Lights should be checked before towing the trailer and replaced if needed

9 cu. ft. Hydraulic Paddle Mixer (Recommended for refractory)





LUBRICATION

All bearing on the 1000 lb. Capacity Paddle Mixer are sealed; therefore we do not recommend greasing these bearings.

CAUTION: ALWAYS PLACE THE CYLINDER REST ON THE MIXER TILT CYLINDER WHEN CLEANING THE MIXER OR PERFORMING MAINTENANCE ON THIS MACHINE! NEVER INSERT HAND (S) IN THE MIXER WHEN THE ENGINE/MOTOR IS RUNNING!!

CHANGING WEAR PARTS

TOOLS NEEDED:

Impact gun
1 1/8" impact socket
3/4" impact socket
6" extension
Hammer
9/16" combination wrench
5/8" combination wrench
3/4" combination wrench
Wrench for the 2 1/2" swing tube shaft nut
Grease gun
Cup Seal tool

DISASSEMBLY:

Raise the receiving hopper on the machine and insert the cylinder rest.





Loosen the out-going housing so the swing tube can be moved back.

From the back of the lower hopper remove the nut retainer used to lock the large nut in place using a 5/8" combination wrench.

Loosen the large nut on the end of the swing tube shaft and back it off only about ½" using the wrench provided with your RMX-5000.

Loosen the two-½" bolts on the bottom of the index arm using a ¾" combination wrench. It is not necessary to remove these bolts.

With a hammer and a pry bar, move the swing shaft slightly forward taking the pressure off the wear plate.

Next remove the two $\frac{1}{2}$ " nuts on the back of the lower hopper used to hold the wear plate in place. Use the $\frac{3}{4}$ " impact socket and the impact gun.

Remove the two bolts and the wear plate from the lower hopper.

Make sure all is clear of the machine and start the engine. Put the pump in reverse. Using the manual override, turn the switch to the one side A until the hydraulic cylinder has been fully extended. Shut the engine off.

Remove the first cup seal. Using the impact gun and the 1 1/8" impact socket place the socket on the bolt up in the pumping tube from the inside of lower hopper. Remove the bolt. Using the cup seal tool, insert the large thread end into the cup holder and screw it in. With the cup seal tool in place you can now pull the old cup seal out and the cup holder at the same time. Inspect the cup holder for any signs of wear and clean off any material buildup that may have occurred. Look inside the pumping tubes for any signs of wear. Any large scoring or the loss of the hard chrome surface will cause the seal to fail prematurely.

REASSEMBLY:

If all components are in good repair, replace the cup holder back on the hydraulic cylinder. Using the small end of the cup seal tool, guide the cup holder back on to the hydraulic cylinder. Using the cup seal tool place the cup seal on the small end. Apply a small amount of grease to the outside of the cup seal and guide this back into the pumping tube. When the seal is in place, you can feel it with your finger. Next remove the cup seal tool. Place the lock washer on the bolt and then the cup retainer. Make sure the bolt has been coated with antisize so it will be easier to remove in the future. With your hand, insert the bolt back into the pumping tube. Make sure you tighten it as much as possible by hand before using the impact gun. Tighten until the hydraulic cylinder starts to turn.

With all clear, start the engine and shift the pumping tube from side A to side B using the same method. Then repeat the above process to replace the second pump seal.

If needed, replace the wear plate and wear ring in the lower hopper. Make sure you grease the side of the wear plate that will go against the back of the lower hopper. This will make it easier to remove in the future.

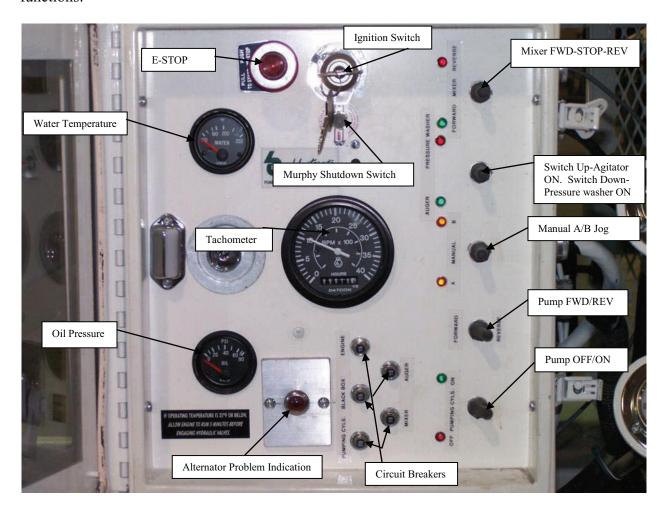
Once the wear plate and the bolts have been put back in place, return to the back of the lower hopper and replace the two lock washers and nuts used to hold the ware plate in place. Start tightening the two ½" bolts on the index arm. Make sure they are tightened evenly and the space between the clamp is equal. You can now tighten the large nut on the swing tube shaft. Tighten until the wear ring and the wear plate have made contact, do not over tighten. Place the nut retainer on the large nut and tighten until the hole in the retainer and the index arm line up. Insert the bolt used to hold the retainer to the index arm and tighten. Tighten the index arm.

Replace the four nuts located in the front of the lower hopper on the out-going housing and tighten with a ³/₄" wrench.

With all clear, lower the receiving hopper. Before starting the pump, make sure that the oil has been replaced in the oil wash box using a light viscosity oil.

PUMPING INSTRUCTIONS

The RMX-5000 has been designed with the operator in mind. All controls and gauges are conveniently located in one place, making it easy for the operator to monitor all of the operating functions.



In preparation for pumping, locate the machine as close to the target area as possible. The machine should be positioned so that the operator has a clear field of vision around the machine. Next, make sure there is a smooth and level area for the forklift to maneuver the material bags over the mixer. Level the machine using the four jack-stands if the machine is not skid mounted. The jacks can easily raise the machine to a level position.

Attach the water line to the machine.

If you are using a material supply hose less than three inches, it will be necessary to attach a reducing adapter to the outgoing housing at the rear of the machine. However, do not attach the hose or adapter at this time. You must first prepare your hose lubricant and have it standing by when you are ready to start pumping. The hose lubricant will vary depending on the material manufacturer recommendation.

Check all fluid levels in the engine to insure the engine is ready to start and check the hydraulic fluid level. The hydraulic fluid should always be at the top of the sight gauge mounted on the side of the hydraulic tank in front of the engine. See that there is oil in the oil wash box and that it is not over-filled.

Before starting the engine or motor, make sure all control valves are in the OFF or NEUTRAL position. Make sure the mixer is in the down position and all switches are in the OFF or NEUTRAL position. Check to see that all safety gratings are in the proper position and that the machine is not positioned around any pooling water. You are now ready to connect the machine to the electrical power supply; however, only a certified electrician should connect this machine to the power supply.

ELECTRIC VERSION ONLY (ELECTRIC RMX-5000 480 V. 3-Phase)

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Once the machine has been connected to the electrical power supply by a certified electrician, you can now start the machine by turning the disconnect to the ON position. With the disconnect ON and all clear, push the green start button mounted on the electrical enclosure. Allow the machine to run idle for 10 minutes to insure the hydraulic oil is warm.

Engage the auger in the receiving hopper. Make sure it is rotating so that the material will be conveyed to the lower hopper. **KEEP HANDS CLEAR OF HOPPER WHEN ENGINE/MOTOR IS RUNNING.**

Check the switches on the electrical control panel to make certain that the selector switch is set for FORWARD. Turn the pump switch to the ON position and the pump should start pumping. Let the pump cycle momentarily to insure it is operating properly. Engage the mixer in FORWARD then REVERSE to insure all is operating properly. Raise the mixer in the dump position then lower the mixer to insure all is operating properly. Will all operating properly, pour your prepared hose lubricant into the receiving hopper and begin pumping the hose lube. Once the hose lube has pumped into the hose, stop the pump.

Check to see that the pump switch is in the OFF position. Engage the mixer in the FORWARD position. Make sure the agitator in the receiving hopper in the FORWARD position.

You are now ready to mix a batch of material. Add no more than 1000 lbs. of material into the mixer (This mixer was designed for materials weighing 165 lbs. per cubic ft.). Once the dry material has been added, begin adding the appropriate amount of water to the batch by carefully reading the water meter on your machine. The material should blend in 2 to 3 minutes. Once the material is blended, slowly dump the batch into the receiving hopper. The hopper is designed to hold 12 cubic feet of material – this will depend on the density of the material being mixed. Less dense material with the same weight will require more hopper capacity than heavier materials.

Engage the pump in the ON position and slowly begin pumping the material watching the pumping pressure gauge. It is ideal to keep the pumping pressure as low as possible during startup and operation. Pumping at higher pressures will cause premature wear on the wear parts and the hydraulic circuit. Pump the material until it is discharging from the end of the hose. Once uncontaminated material is flowing out of the discharge hose you should stop the pump and attach the shotcrete nozzle if you plan to shotcrete. Once the nozzle is secure, turn on the air. Start the pump and adjust the air until you have your desired shotcrete pattern.

If a plug occurs during startup or operation, the pumping system should be engaged into the reverse position for 5 seconds to relieve the pressure on your pumping lines. Keep in mind that most plugs occur at reducing adapters or at the shotcrete nozzle.

Once all systems are operating, the mixing and dumping process is repeated until the job has been completed.

CLEAN UP INSTRUCTIONS

We recommend using a pressure washer to clean this machine if one is not supplied on the RMX-5000.

When using the pressure washer for cleaning, avoid over-spraying the electrical control boxes, electric motor, hydraulic tank lid, or the oil wash box. These areas are protected but can be damaged due to over-spraying. It is also important to note that it is possible to remove paint if the pressure washer nozzle is held too close to the surface of the machine. Always hold the nozzle at least 18 to 20 inches (.45 to .50 meters) from what you are cleaning.

When cleaning the RMX-5000 always start with the mixer and work your way down the machine. This will insure the removal of all material that has been spilled or any dust that has been collected on the machine during operation.

The RMX-5000 has been designed so that the mixer and receiving hopper can be tilted for easy clean out. When tilting the mixer or receiving hopper always be sure the safety stop is put into place. This will prevent the mixer from falling due to hydraulic hose failure or the control lever being pushed by mistake.

Before opening the lower hopper door, flood this area with water and pump out any material left in the hose. With the pump in the off position, open the lower hopper door and wash out any material left. Engage the pump in reverse. Using a water hose, spray water into the outlet of the pump. This process should continue until the water discharging from the tubes is clean and free of debris. Be sure to clean the ends of the pumping cylinders. This will insure long life of the pumping tubes and the cup seals.

START UP CHECK LIST

- 1. Level RMX-5000 Using the four jacks, level the machine where it can be operated safely at high elevation it may be necessary to raise the front end higher than the back.
- 2. Check Fluids Engine oil, Hydraulic oil, Diesel fuel, and Radiator Coolant
- 3. Check Filters Air filter on engine and water filter
- 4. Grease Out going housing on swing tube

Auger on re-mixer Swing arm shaft Clevis pin on index arm Mixer bearing cap

- 5. Lubricate Material hose, nozzle, reducing Pipes, pumping tubes, & swing tube.
- 6. Supply lines -Connect water line to machine. Connect additive pump line if to be used.
- 7. Start the engine When starting the diesel engine, make sure all controls are in their off or neutral positions and that all persons are clear of the machine.
- 8. Operation check Turn on mixer which should rotate in the Forward direction

Turn on re-mixer in upper hopper. This should rotate so that the material feeds to the lower hopper.

Turn on the material pump and make sure it is operating and that the swing tube is shifting back and forth.

Turn the speed control knob and see if the pump speeds up and slows down.

Turn on water to mixer and spray nozzle see that the water meter is working. Turn on air supply line and check airflow.

Check to see that all safety pins are in place on all hose and pipe connections.

TROUBLE SHOOTING

The control circuit can be isolated with a DC voltmeter and the LEDs located in the caps on each coil on the solenoid valve and the proximity switches.

PROBLEM

Engine will not start and the lights on the control panel will not light.

- 1. Check fuse on the engine panel and replace if blown.
- 2. Check the battery connections and clean if necessary, then charge battery.

Engine will not start but will turn over.

- 1. Check the oil level.
- 2. Check for fuel

Cylinders will not pump on auto but will pump using the manual override.

- 1. Verify that proximity switches are operating look to see if the LEDS are illuminated. Even if they are the switch could still be bad, try another switch.
- 2. If proximity switches have been removed swap positions in control cabinet. The switches could be reversed.

Cylinders will not pump on auto or with the manual override.

- 1. Check to see if the speed control on the dash has been turned all the way down.
- 2. Check for bad coil on the solenoid valve. See if you have a magnetic pull at the coil when activated.
- 3. Check for bad connector going to the solenoid valve.