



ROCKCRETE

EQUIPMENT (PTY) LTD

Company Reg. No: 1947/024677/07

OPERATORS MANUAL FOR ROCKCRETER OPTIMIX 1.5



SOUTH AFRICAN SHOTCRETE TECHNOLOGY
Designed to perform, the power to succeed!

P. O. Box 18924 Sunward Park 1470 • 361 Crocker Road, Wadeville, Germiston, South Africa
Co. Reg. no: 1947/24677/07

TEL: (+2711) 865 3019
e-mail: information@rockcrete.co.za
www.rockcrete.co.za

As part of our policy of constant product development and improvement information and specifications contained in this document are liable to change.

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1. SAFETY PROCEDURES

Recommended items to keep pumping safe:

- a. Hard hats.
- b. Safety goggles.
- c. Dust masks in confined spaces or unventilated areas.
- d. Good lighting.
- e. Whip check cables and chain safety couplings on air supply hoses.
- f. Rubber gloves to protect workmen with skins sensitive to cement burns (also use barrier cream).
- g. Sturdy and safe lifting devices, platforms and scaffolding for those many pumping operations that are performed off the ground. All platforms should be equipped with safety rails.
- h. A qualified electrician must do all electrical connections.
- i. Do not remove the screen/sieve supplied on the hopper whilst the machine is in operation.
- j. Do not carry out any maintenance whilst the air or electrical connections are connected to the machine.
- k. Do not poke or prod any instrument of any sort into the hopper whilst the machine is in operation.
- l. Use safety straps on all grout hose connections.
- m. Keep arms, hands, fingers etc away from moving parts.
- n. Disconnect power/air before attempting to clean or repair equipment.

2. TECHNICAL SPECIFICATIONS

ROCKCRETER OPTIMIX 1.5	
Dimensions	
Length	1780 mm
Width	580 mm
Loading Height	970 mm
Weight	105 kg
Output	Up to 1,5m ³ /Hr
Aggregate size	Up to 4mm
Outlet	32mm
Conveying Distance	
Horizontally	Up to 30m – material dependant
Vertically	Up to 15m
Electric drive – 3kW. 220V/380V/525V	

3. PRINCIPLES OF OPERATION

NOTE:

The principles of operation offered herein are intended as an aid to help the operator identify some of the factors that need to be taken into consideration when mixing and pumping cementitious grouts. Because wide varieties of materials are available for many different applications, it is important the operator becomes familiar with the specific characteristics of the material he intends using.

3.1 Materials

1. Among the commercially manufactured materials available in today's market are materials for structural repairs, floor toppings, high strength non-shrink grouts, special linings and other specialty materials.
2. Each of these materials has unique characteristics, which must be well understood to insure a successful application.

3.2 Flow

1. In general, most materials need to be a flowable or pourable consistency for successful pumping. This means that if the material can be poured out of a pail or bucket, it can likely be pumped.
2. The exception to this requirement is repair mortars, which tend to be mixed in a thicker consistency and require special pumping techniques.
3. Materials that contain aggregates pump best and perform best when the consistency is kept to the lower range of pourable, that is, not too wet.

3.3 Setting Time

1. Some materials contain accelerating admixtures to reduce the setting time. This is particularly true of repair mortars and other spray applied materials so that strength gain can be fairly rapid. It is important to keep moving when using these types of materials.
2. Once the material is mixed, it must be pumped immediately and kept in motion and subsequent batches must be mixed and pumped as rapidly as possible. Any delays in the application process could result in plugged hoses and equipment.
3. Temperature also has an effect upon these materials to the extent that exposure of the hose to the sun on a hot day will accelerate the set time even more, therefore this should be avoided. It may even be necessary in some cases to cool the material, the mix water, or even the hose itself.

3.4 Pumping Distance

1. Pumping distances should always be kept to a minimum, and hoses should run as straight as possible no matter what material is being used.
2. Sometimes circumstances require longer than usual hose lengths, when this occurs, every effort should be made to use every advantage possible to insure a successful application. Some materials simply cannot be pumped for long distances, so it's best to know the

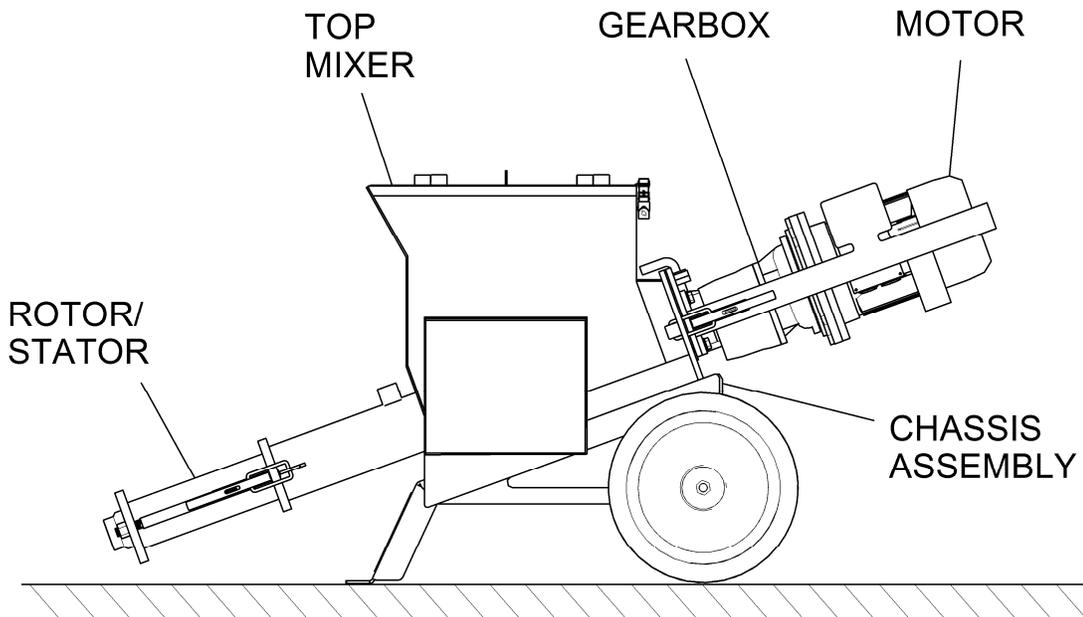
proposed material characteristics before attempting a production procedure.

3.5 General Procedures

1. Before attempting to mix and pump production materials, it is important to rinse and charge the pump hopper with sufficient water to thoroughly flush the pump and all grout lines. This is to purge the grouting system of any residual materials or scale that may exist.
2. Once that is completed, remove the grout hose from the pump and drain out all water by elevating one end, or by progressively elevating the entire hose, at one end and proceeding to the other.
3. Mix slurry composed of Portland cement in approximate proportions of 25 litres of water to $\frac{1}{2}$ a bag of cement, and pump this through the grouting system. This is to remove any residual water from the hose, lubricating it for the production material to follow. Now the production grout may be mixed and pumped immediately behind the slurry mix.
4. The slurry mix may be retrieved in a bucket.

NOTE: DO NOT attempt to pump production material through a dry hose. Occasionally, no matter how conscientious an operator may be, a hose will get plugged. Once this happens, the only sure way to remove the plug is to empty it of material. Beating on it with a hammer or running over it with a vehicle will not usually be successful. A prudent operator will be prepared for such eventuality.

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RE **ROCKCRETER OPTIMIX**

Figure 1

4. OPERATING PROCEDURES

4.1 Set- Up

1. Insert the drive/mix shaft into the hopper and engage the flat end into the slot of the rotor.
2. Slowly swing the motor assembly into the closed position, stopping before the motor shaft adapter and drive/mix shaft touch.
3. Align the shaft adapter and drive/mix slots so that they engage, If they do not align then rotate until correct position is achieved.
4. Swing the motor completely shut and secure in place with motor latch.
5. Secure the hopper gate onto the top of the hopper.
6. Connect the motor cable to the power out connector.
7. Connect the power cable to the main power in connector.
8. Connect the power cable to an appropriate power source.

4.2 Priming with Water

1. Attach a water feed hose to the water inlet.
2. Attach the main hose to the water system bypass outlet and attach the spray nozzle to the hose outlet.
3. Place the nozzle into a waste container.
4. Turn the main power disconnect switch to the “ON” position.
5. Open the ball valve directly before the water system bypass outlet.
6. Press the water drain button to turn on.
7. Run the water until water flows from the end of the nozzle.
8. Press the water drain button to stop the water and close the ball valve directly before the water pump bypass outlet.

NOTE: Do not run the water pump without water. The water pump will overheat and cause damage.

9. Run clean-out ball(s) to coat the inside of the hoses:
 - a. Remove the nozzle from the end of the hose.
 - b. Remove the hose inlet from the water system bypass outlet and insert a clean-out ball into the hose inlet (The ball must be soaked in water before inserting).
 - c. Attach the hose to the water system bypass outlet, open the ball valve and press the water drain button to resume flushing the hose.
 - d. The clean-out ball will be pushed out of the hose after several minutes.
 - e. When the task is complete, close the ball valve, remove the hose inlet from the water system bypass outlet.

- f. Add dish soap or a slicking agent to the water and pour into the hose using a funnel. Once complete, connect hose to machine outlet.

NOTE: When priming with water, add dish soap or a slicking agent to help lubricate the pump. Priming with water only may cause excessive pump friction, producing a high pitch noise and premature pump wear.

10. Turn the FWD/REV selector knob to FWD. If the pump does not turn within five seconds, press the STOP button.
11. If the pump does not turn within five seconds, perform the steps below
 - a. Press the START button and quickly turn the pump direction switch between forward and reverse.
 - b. If the rotor still does not turn freely in the pump assembly then refer to **Troubleshooting** page.

NOTE: The pump direction switch is normally in the Neutral position. The switch must be held in the REV position to reverse the pump direction. The switch will return to the Neutral position when released.

If the pump has not broken free after five seconds, press the STOP button or the motor could encounter an overload error. After multiple attempts to free the pump, allow the motor to cool for one minute.

4.3 Prime with Material

1. Prime the system with water (Refer to 4.2).
2. Remove the nozzle.
3. Remove the hose inlet from the pump outlet and place a waste tray below the pump outlet.
4. Add dry material:
 - a. Place the bag of material on the center of the hopper grate so the serrated teeth are in the middle of the bag.
 - b. Twist the bag 15 degrees in both directions to tear the bag.
 - c. Lift both ends of the bag so the material falls into the hopper.
 - d. Dispose of the bag.

NOTE: Keep the hopper filled with dry material when priming with material and spraying.

5. Press the START button. Material should start to flow from the pump outlet.

6. Adjust the water flow meter until the desired material consistency is achieved.
7. Press the STOP button and water pump button.
8. Attach the hose to the pump outlet.
9. Press the START button. Pump until any remaining water is purged out of the hose and a steady stream of material flows from the hose outlet.
10. To stop dispensing, press the STOP button.
11. Install the nozzle.

NOTE: For materials prone to packing out, before installing the nozzle, prime the larger ID hose, then install and prime the transition fitting and whip hose

12. Press the START button to start dispensing and pump until material exits the nozzle.
13. Press the water pump button and STOP button to stop dispensing.
14. Install the air line and a tip onto the nozzle. The system is now primed and ready to spray.

4.4 Prevent Blocking

1. To prevent “Blocking” in the pump or hose follow the steps below:
 - a. Use the lowest pressure and largest nozzle size that provides an acceptable spray pattern. This will also result in wear parts lasting longer.
 - b. Do not use any more material hose than is necessary (minimum 15m).

NOTE: Before starting or stopping material flow, always have the atomizing air turned on at the applicator before and after spraying fluid.

4.5 Spraying

1. Prime with material (Refer to 4.3).

NOTE: Failure to flush prior to material curing in the system will result in damage to the system and may require replacement of all system parts in contact with material.

2. Turn on atomizing air and adjust the air output to the required level.
3. Turn the main power disconnect switch to ON and press the water pump button and START button to spray material.
4. If the system is approaching its cure time, or if the system will be idle for enough time for material to begin curing in the system then flush the system.

4.6 Pressure Relief Procedure

NOTE: The equipment stays pressurized until pressure is manually released. To help prevent serious injury from pressurized fluid, such as splashing fluid and moving parts, follow the “Pressure Relief Procedure” when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Push the STOP button.
2. Remove the applicator tip, and hold the applicator firmly against a bucket.
3. Hold the pump direction switch in the REV position.
4. Allow the pump to run in reverse for several seconds while holding the direction switch in the REV position.

NOTE: If the pump is stalled, do not run the pump for more than five seconds at a time or the motor could encounter an overload error. After multiple attempts to free the pump, allow the motor to cool for one minute.

5. Push the STOP button after five seconds and release the pump direction switch. The switch will return to its normal position.
6. Turn the main power disconnect switch to OFF.
7. Allow time for material to drain to relieve any remaining pressure.
8. If you suspect the applicator or hose is still clogged or that pressure has not been fully relieved, proceed with the following steps:
 - a. Starting at the applicator, VERY SLOWLY open the coupling while maintaining control of both the applicator and hose.
 - b. Clear the hose or tip obstruction. If there is still pressure trapped down the line, work your way back to the pump by individually opening each coupling between each hose connection. Maintain control of each hose section and VERY SLOWLY open each coupling until pressure has been fully relieved.

4.7 Flush

NOTE: Failure to flush prior to material curing in the system will result in damage to the system and may require replacement of all system parts in contact with material.

1. Remove the applicator tip and retainer.
 2. Place the applicator outlet in a waste container.
 3. Follow the steps below to flush material from the hopper and mixing chamber:
-

- a. Press the START button to begin flushing out any remaining material until the hopper is empty.
 - b. Once the hopper is empty of all material, press the STOP button to stop the pump.
 - c. Rinse the hopper with the attached water wash-down hose.
 - d. Press the START button and run the pump until no water is left inside the hopper.
4. If there is still material left in the mixing chamber after flushing with water, then use the clean-out shaft as follows:
- a. Turn the main power disconnect switch to OFF.
 - b. Undo the motor latch and swing the motor assembly open.
 - c. Remove the drive/mix shaft and replace with the clean-out shaft.

NOTE: Only use the clean-out shaft if material cannot be cleaned using normal flushing means. Excessive use of the clean-out shaft can cause premature wear to the system.

- d. Slowly swing the motor assembly toward its closed position, stopping before the motor shaft adapter and clean-out shaft touch.
 - e. Make sure the motor shaft adapter and clean-out shaft are aligned so the clean-out shaft slides into the motor shaft adapter slot. If they do not align, rotate them into position.
 - f. Swing the motor completely shut and lock it in place with motor latch.
 - g. Turn the main power disconnect switch to ON and press the drain button.
 - h. Fill the hopper with water and slicking agent or dish soap.
 - i. Press the START button and run the pump until no water is left in the hopper. Press the STOP button to stop the pump.
 - j. Make sure the mixing chamber is clean. If not, repeat steps 5(h) and 5(i) until clean.
 - k. Repeat steps 5(a) to 5(f), but replace the clean-out shaft with the drive/mix shaft.
5. Once the hopper and mixing chamber are clean, remove the hose inlet from pump outlet and attach the hose to the water system bypass outlet.

NOTE: The rotor/stator pump should be used as little as possible when flushing. Once the system is clean, it is important to use the direct output from the water pump during the remaining flushing procedure to increase the life of the rotor and stator.

6. Open the water outlet ball valve and press the drain button. Run until heavy sediment has been flushed and clean water begins to exit the applicator outlet.
7. Press the water drain button to stop dispensing and close the ball valve.
8. Remove the applicator and clean/flush separately as follows:
9. Make sure all parts are free of residual material.
10. Turn on air to make sure air lines are free of obstructions.
11. Remove the remaining material in the hoses with a clean-out ball as follows:
 - a. Place the hose outlet into a waste container.
 - b. Remove the hose inlet from the water outlet and place a hose clean-out ball within the hose inlet. The ball must be wetted down before inserting. If using a 1 in. (25 mm) whip hose, begin with the smallest clean-out ball.
 - c. Attach the hose to the water system bypass outlet, open the ball valve and press the drain button to resume flushing the hose.
 - d. The hose clean-out ball will be pushed out of the hose after several minutes. Once the ball is pushed through the hose, press the water pump button. Repeat until all sediment is removed from the hose.
 - e. If using a 1 in.(25 mm) whip hose, remove the hose and transition fitting and repeat the process using the large clean-out ball on the remaining hoses. Once the ball is pushed out, stop the water pump and attach the fitting and whip hose.
12. Turn the main power disconnect switch to OFF.
13. Dispose of all waste material in accordance with local rules and regulations.

4.8 Shutdown

1. To shutdown, flush the system (Refer to 4.7).
2. Disconnect from the power supply.

NOTE: In cold environments, water left in the pump system could freeze and damage the equipment. When working in cold environments, drain all water from the pump system to avoid damage.

5. TROUBLESHOOTING

Fault	Cause	Solution
The rotor/stator pump operates, but output is low.	Pump pressure is too low, stator is too loose.	Tighten stator to achieve suitable pumping pressure.
	Pump pressure is too high, Stator is too tight.	Loosen stator to achieve suitable pumping pressure.
	Stator is worn or damaged.	Tighten stator. If low output continues, replace stator.
	Rotor is worn or damaged.	Tighten rotor. If low output continues, replace rotor.
	Material hose is clogged.	Clean or replace the material hose.
	Applicator or tip is dirty or clogged.	Clean or replace the applicator or tip.
	Large pressure drop in material hose.	Reduce hose length and/or increase diameter.
Pump does not operate.	Material hose or applicator is obstructed.	Clean or replace the hose or applicator.
	Dried material in pump assembly.	Clean or replace the pump assembly.
Poor finish or irregular spray pattern.	Inadequate air assist air pressure	Adjust the air assist air pressure output on the applicator.
Pump is noisy when pumping.	Pumping water without dish soap or a slick agent.	Add dish soap or a slicking agent to the water.
	Pump is running with no material or fluid in the hopper.	Add material to hopper or shut off pump.
Erratic accelerated speed.	Material supply exhausted.	Refill the hopper and prime pump with material.
Motor is powered but nothing comes out of the hose.	Pump is packed out with dry or cured material.	Disassemble and clean the pump.
	Hose is packed out with dry or cured material.	Clean or replace the material hose.
Material is too thick to push through the hose without packing out.	Hose is too restrictive.	Thin the mix material thoroughly to a lower viscosity if material supplier allows.
		Use a pump system priming fluid (dish soap or slicking agent) to wet out the system.
		Reduce length and/or increase diameter of hose.

Fault	Cause	Solution
Electric motor will not start or stops during operation.	Loose connections.	Check connections in electrical enclosure. Check for correct voltage supply at the disconnect voltage supply at the disconnect and VFD terminals L1, L2 and L3.
	Motor overload relay trips.	Turn power disconnect switch to OFF and wait one minute for the VFD to reset. Allow the motor to cool if conditions occur frequently.

ROCKCRETER OPTIMIX 1.5 – PRE USE CHECK LIST

Checked by: _____
 Date: _____
 Time: _____
 Section: _____
 Comments: _____

WARNING: REPORT DAMAGE, DEFECTS OR FAULTY OPERATION IMMEDIATELY. DO NOT OPERATE ROCKCRETE PUMP UNTIL CORRECTED

	Checked and in order
	Checked and found defective

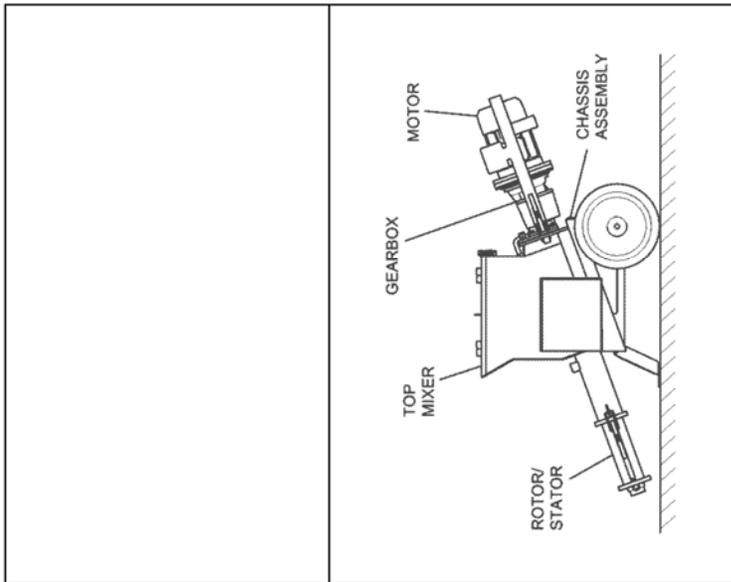
SAFETY PRECAUTIONS

1. Isolate all air & electrics during inspection and maintenance.
2. Keep hands away from moving parts.
3. Wear all necessary safety gear.

BEFORE STARTING THE ROCKCRETER OPTIMIX

1. Check that air and water pressure is sufficient.
2. Check all air, electrical & water connections are in safe working order.
3. Check rotor and stator, if worn, replace. Apply grease before reassembling.
4. Check discharge, clean & replace if worn
5. Check hoses for any material or blockages before turning on the machine.
6. Check and make sure the sieve is in place and secure.
7. Check nozzle tip for any blockages, if blocked clean. Check o-rings. Apply grease on o-rings.
8. Check auger for wear.
9. Check clamps & gaskets are in place and secure to all fittings.

ROCKCRETER OPTIMIX



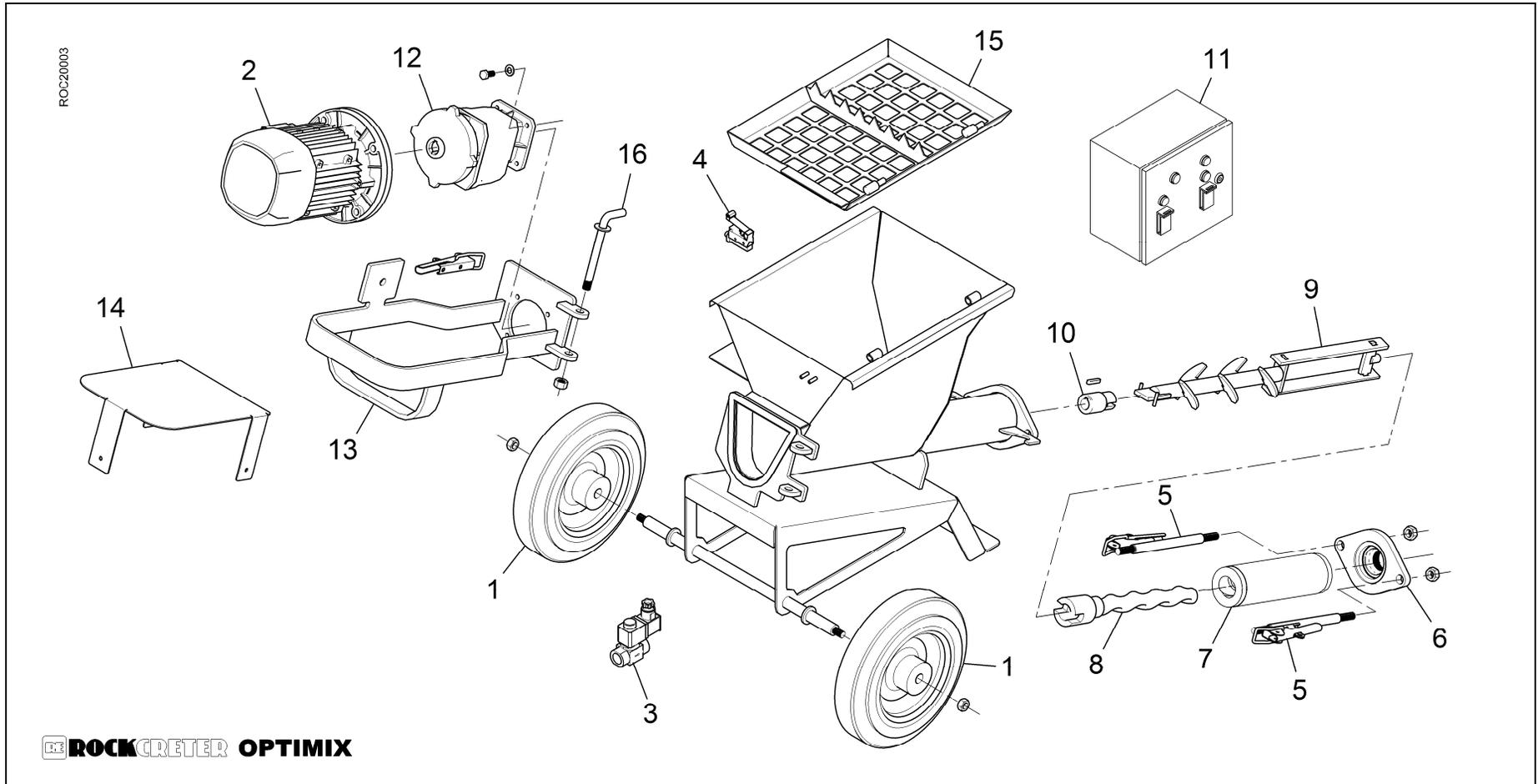
CHECK	GO	NO GO
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

AFTER STARTING THE ROCKCRETER OPTIMIX

10. Check rotation of auger – anti clockwise
11. Check smooth operation of ROCKCRETER OPTIMIX 1.5

NOTE: ALWAYS KEEP ENOUGH WATER ON SITE OF CLEANING

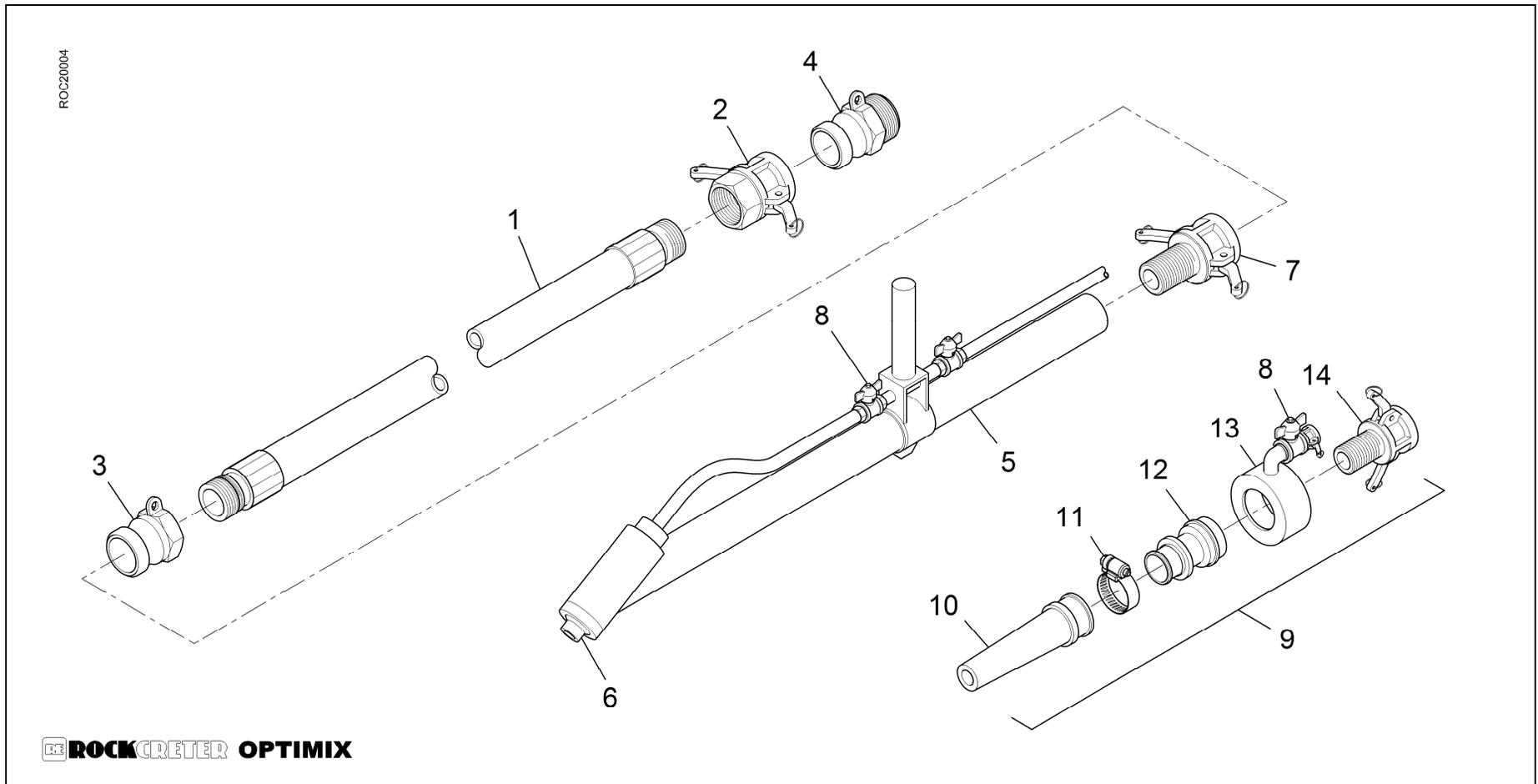
1. BODY ASSEMBLY



1. BODY ASSEMBLY

ITEM NO	DESCRIPTION	PART NO	QTY	COMMENTS
1	MEDIUM DUTY WHEEL	EA006-1	2	
2	380V 3KW MOTOR	EA027A	1	
3	24V AC SOLENOID	EA070	1	
4	LIMIT SWITCH	EA071	1	
5	STATOR RETAINING BOLTS	KGPF017-320	2	
6	DISCHARGE OUTLET 32MM	KGPF005	1	
7	TSL STATOR	KGPF004A-1	1	
8	TSL ROTOR	KGPF004A-2	1	
9	OPTIMIX AUGER	KGPF003B	1	
10	OPTIMIX DRIVESHAFT	KGPF007B	1	
11	OPTIMIX 380V CONTROL PANEL	KGPF037OP	1	
12	OPTIMIX GEARBOX	KGPF205	1	
13	OPTIMIX MOTOR COVER	KGPF009OP	1	
14	OPTIMIX GEARBOX FRAME	KGPF 024OP	1	
15	OPTIMIX SIEVE	KGPF012OP	1	
16	OPTIMIX PIN SET	KGPF012OPA	1	

4. HOSE AND NOZZLE ASSEMBLY



2. HOSE AND NOZZLE ASSEMBLY

ITEM NO	DESCRIPTION	PART NO	QTY	COMMENTS
1	85 BAR GROUT AND PLASTER HOSE WITH FITTINGS	EA049A	1	
2	1/4" D CAMLOCK S/STEEL	W006J-75I	1	
3	1/4" A CAMLOCK S/STEEL	W005A-75I	2	
4	1/4" F CAMLOCK S/STEEL	EA050A	1	
5	NOZZLE WITH EXTENSION	KGPF021	1	
6	PLASTER NOZZLE TIP	KGPF021A	1	
7	1/4" B CAMLOCK S/STEEL	W006O	1	
8	NOZZLEBODY TAP	PV18	1	
9	TSL WETCRETE NOZZLE COMPLETE	W001F	1	
10	TSL WETCRETE NOZZLE TIP	W001D	1	
11	CLAMP S45	E033F	1	
12	TSL INJECTOR HOUSING	W001C-4	1	
13	TSL OUTER HOUSING	W001C-4	1	
14	1" B CAMLOCK	W006J	1	

