KODIAK M2 OPERATING MANUAL 2015



www.sprayrig.com
Toll Free 877-833-4342
Fax 253-833-4329
Email: info@sprayrig.com



AMERICAN SPRAY TECHNOLOGIES

CONTENTS

Warnings & Precautions 2	Parts List & Diagrams6 thru 9
Technical Support2	Tools & Maintenance 10
Getting Started 3	Troubleshooting11
Electronics Detail 5	Terms & Warranty12

WARNINGS AND PRECAUTIONS

High Pressure

The Kodiak is capable of very high pressure. Extreme caution must be used in its operation. Pressure increases as resistance in the material line increases. Longer hose lengths will increase pressure as will a kink in the line. The Kodiak will build pressure to overcome the resistance and move the material through the line. This machine is designed for high pressure. Lack of caution for it's high pressure capabilities may result in serious injury to the operator or anyone close by.

Make sure the material line is free of restrictions and is not kinked before use. Valves are not standard equipment on the spray line, to insure that a valve is not inadvertently closed while the pump is on. Since there is no valve there will be some dripping from the gun after the switch is turned off while the pressure is relieved from the material line. You can continue to spray as the material begins to slow down or point the gun into the hopper until the material stops flowing.

Extension Cord Use

The Kodiak is a powerful pump and requires a good power source. It will draw from 5 to 15 amps depending on the type of material being sprayed. The choice of extension cord is critical. An improperly sized extension cord can cause the control box to sense an under voltage condition and stop. This is a safety feature to protect the electric motor and control box. Use this chart to select the right cord for your use:

Extension Cord	Recommended
Wire Size	Maximum Length
14 ga	25 feet
12 ga	50 feet
10 ga	75 feet

Note: These figures apply to the Kodiak in normal temperatures under 100 degrees. Demanding conditions such as pumping a thick knockdown mud in very high temperatures may require shorter extension cords or larger wire size.

Electric Shock

This machine is designed to be operated in a dry environment. **Do not expose control box to rain, mist or streams of water.** Direct stream of water from a high pressure washer will overcome the control box seal and cause a control box failure, creating a hazard. To clean control box, wipe down with damp cloth only.

The Kodiak uses a lower voltage line to the gun to operate the on/ off switch. This is to reduce the hazard associated with shock. This safety feature does not reduce the risk of an electrical spark igniting flammable materials. Use caution at all times when operating the machine and do not expose the switch at the gun to flammable materials.

Explosion

This machine operates on 110 VAC and is equipped with a three-prong plug for grounding. Do not operate without the grounding terminal on the plug. Use only properly grounded 110 VAC, 15 Amp outlets to reduce the risk of static sparking. Only use extension cords that accept a grounding wire. Static sparking can cause explosion of flammable materials. Do not operate this machine in an enclosed area that contains flammable materials or within 30 feet of any flammable or explosive materials.

Moving Parts

The pump uses a connecting rod in the pump body to turn the rotor. This drive system is exposed to the top of the pump body to allow the free flow of material. Keep all foreign objects, hands, loose clothing or any other item from the pump cavity. Only put material that you want to pump into the hopper or pump housing. Foreign objects such as loose clothing can get caught in the drive system and pull the object into the pump housing. Exercise extreme caution around the pump.

On Site

This system uses two hoses to deliver the material and air to the gun. Hoses on the ground can present a hazard. This hazard can be compounded by a sometimes slippery environment when spraying material. Go slow and use caution when walking around the hoses and cords. Do not try to move the Kodiak once material has been added to the hopper, the increased weight and higher center of gravity could result in dangerous instability.

Damaged or Modified Equipment

Keep the machine in good repair. Replace damaged parts and in particular, inspect and replace the power cord and plug if damaged. Do not operate the machine with the control box cover removed, electrical shock, or damage could result. Do not modify machine, it will result in voiding the warranty and could cause machine failure or create a hazard for the operator or bystanders.

TECHNICAL SUPPORT

Contact our factory by phone at **877-833-4342** or Fax 253-833-4329. Phone support hours are 8:00am-4:00pm PST, Mon. to Fri. Messages can be left after hours with the message center. Please have your Kodiak serial number ready.

MY SERIAL NUMBER IS	

GETTING STARTED

Uncrate the Kodiak and inspect all parts for any shipping damage.

Remove the rotor and connecting driveshaft from the hopper and follow the Rotor-Stator Assembly Instructions below:

Rotor—Stator Assembly Instructions



Unwrap rotor and connecting driveshaft.



Release locking cam ears on the pump housing base.



Slide out the stator tube & pump housing retainer assembly.



Thoroughly lubricate the inside of the stator tube with liquid dish soap.



Apply a liberal amount of liquid dish soap to the outside of the rotor.



Screw and push the rotor into the stator tube, counter-clockwise.



The rotor should stick out approx. 2" as shown above, making sure the gasket in the brass retainer stays in place.



Slide the rotor-stator assembly into the pump housing base. If the assembly does not go all the way back, check the connecting drive shaft alignment.



The connecting drive shaft must align with the square receiver on the rigid coupling.



If the rotor is inserted far enough and the connecting drive shaft is aligned, the assembly will connect back into it's original position and can be locked back in place. The Rotor-Stator Assembly is complete.

Reinstall the hopper.

If it will be more than a week between use, it is best to disassemble these parts and reassemble when needed.

- NOTE BEFORE PROCEEDING: Never pump the Kodiak without material running through the pump system - <u>Do not run the pump</u> <u>dry</u> - this may result in pump failure. Progressive cavity pumps like the Kodiak use the material being pumped as the pump lubricant.
- 2. PROVIDE POWER by plugging the Kodiak into a dedicated 15 amp circuit. Shared circuits may deliver less than 15 amps resulting in safety shutdown of the Kodiak pump. If using an extension cord, you must meet the extension cord requirements shown on Page 2. If the power source is not adequate or you do not have the correct gauge cord, the unit may stop pumping and show a failure status light. You will need to correct this condition before proceeding with your spray job.
- 3. FILL HOPPER with a wetting solution to prime the material hose. This is done by pumping a watered down slurry through the hose like a soupy drywall mud. You can also use water and dish detergent soap to wet the inside of the hose if that is all that is available. If using soapy water, pour about a 1/4 cup of DawnTM liquid soap (or similar clear liquid dish soap) into the hopper. Then fill the hopper 1/2 way up with water. If you use dish soap, you will need to add your slurry soon after to replace the soapy solution as it will tend to cause the rubber stator tube to become squeaky clean and stick to the rotor.
- 4. PREPARE SPRAY GUN FOR USE. Insert a spray tip into the end of the pole gun by removing the retaining nut at the gun head, then replace the retaining nut to hold the spray tip in place. The gun head and retaining nut are both aluminum for light weight, so take care that there is no debris caught in the threads this may result in cross threading.
- PREPARE the Kodiak controls and start pump. Initially, put all controls to the OFF position.
 - Put the push/pull switch at the gun to the OFF position (pulled in).
 - Put the toggle switch on the control box to OFF.
 - Turn speed knob (located on the black control box) to 0.
 - With all the controls set to OFF, move the speed setting to 50.
 - Point the gun into the hopper so that when you turn on the pump, you cycle/pump the material back into the hopper.
 - Flip the control box toggle switch to ON.
 - Activate pump body by pulling the push/pull switch out. You will hear the electric motor turning the pump and the soapy water will be pumped through the hose, back into the hopper.

M2 KODIAK SAFETY FEATURE: If the operator plugs the Kodiak into a power source or flips the toggle switch to the ON position when the push/pull switch is on, then the system goes to sleep mode. This safety feature prevents the operator from accidentally starting the pump. If this happens, then cycle the push/pull switch to start the pump.

7. WETTING THE HOSE. Pump the slurry (from Step 4) into the hopper for a minute or two, creating a lubricated slick

- environment for the material to pass through the lines easily. This helps to prevent a dry pack condition that can happen if you pump thick material into a dry hose. The head of the material sees only the dry inside of the hose and as it moves along continues to dry out, causing a dry pack condition.
- 8. CLEAR THE HOSE of wetting solution. After wetting the hose, you will pump almost all of the wet slurry out of the hopper as you get ready pour the material in. When you are running the water out of the Kodiak, do not drain the bottom pump cavity out, making sure there is a little water left in the pump before you add the material.
- 9. ADD TEXTURE MATERIAL. You are now ready to add the material to spray. The first material coming out the tip will be diluted with your wetting solution. Let that portion pass until you see a steady flow of properly mixed spray material.
- 10. SYSTEM CLEAN UP FOR LONG TERM STORAGE. The Kodiak is designed for easy clean-up. Using soapy water and a scrub brush with a long handle to wipe the inside of the hopper down and pump 5 gallons of soapy water through the system into a container for disposal. After the majority of the material is cleaned out and the less than a few inches of water remain in the pump body you are free to disassemble the pump by un-screwing the hopper and then open the cam-loc levers on the lower hopper to access the lower pump parts. Rinse the remaining parts and reassemble. We recommend you leave the rotor and stator apart and stowed in the hopper for future use. Use liquid dish soap, like DawnTM, to lubricate the pump on reassembly, as described in the Rotor-Stator Assembly procedure on Page 3. The electronics are housed in a water resistant case, however do not expose the control box to high pressure water streams.
- 11. DO NOT RUN PUMP DRY. This pump operates by a chrome plated steel rotor turning inside a rubber stator tube. These parts are lubricated by the material that is being pumped. Without material to wet the pump, it can overheat and stick, potentially damaging the pump. If the pump is run dry or with water only, the rotor may adhere to the stator making it difficult to turn. If that happens refer to the trouble shooting section of this manual. Replacement of the stator tube is simple and inexpensive.
- 12. BEFORE EACH USE. Before each use check to make sure there are no blockages or kinks in the material line. Do not run the pump if there are restrictions in the material line. Damaging high pressure could build up due to line restrictions or kinks.
- 13. INITIAL START UP POWER. On initial startup the Kodiak may benefit from being plugged directly into an outlet, without an extension cord, until rotor turns freely. By doing this you insure that sufficient power is available to the motor.

ELECTRONICS

The pump motor of your Kodiak M2 is controlled by an electronic system housed in the (heat sink covered) black box mounted in the Kodiak (Item 3 in Fig. 3). This controller provides short circuit, ground fault, and overload protection. It also provides smooth power transitions to the motor and informational feedback to the operator via the two LEDS mounted next to the speed adjustment control (see Fig. 2). The Power On (GREEN) LED Indicates the presence of AC voltage. The Status LED is a tricolor LED that provides indication of the controllers operational status including installation problems such as incorrect input voltage, over voltage, and under voltage. It also provides a "normal" indication if all control and micro controller operating parameters are proper.

The following table outlines the various LED signal indications and their attendant status. Although the housing is water resistant and sealed, do not spray water directly on the control box. Water inside the box will cause failure. Use a damp rag to wipe clean.

TABLE 1 - CONTROL MODE AND STATUS LED INDICATION

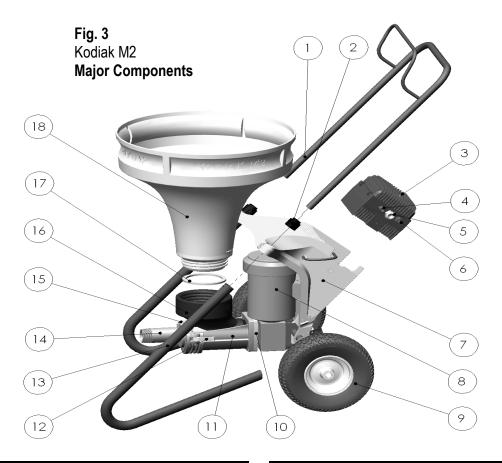
CONTROL MODE	STATUS LED INFORMATION			
	FLASH RATE	COLOR SEQUENCE	ILLUMINATION DURATION SECONDS	
RUN	Slow Flash	Green	1 Sec on - 1 Sec off	
STOP	Steady	Yellow	Constant	
STAND-BY (SLEEP, see detail on pg. 10)	Slow Flash	Yellow	1 Sec on - 1 Sec. off	
SHORT CIRCUIT	Slow Flash	Red	1 Sec on - 1 Sec. off	
GROUND FAULT	Quick Flash	Red	1/4 Sec on - 1/4 Sec off	
OVERLOAD	Steady	Red	Constant	
UNDERVOLTAGE	Quick Flash	Red-Yellow	1/4 Sec Red - 1/4 Sec Yellow	
OVERVOLTAGE	Slow Flash	Red-Yellow	1 Sec Red - 1 Sec Yellow	
RECOVERED UNDERVOLTAGE	Quick Flash	Red Yellow - off- Green - off	.025 Sec Red - 0.25 Sec Yellow- 0.5 Sec off—1 Sec Green—0.5 Sec off	
RECOVERED OVERVOLTAGE	Slow Flash	Red-Yellow-off-Green- off	1 Sec Red-1 Sec Yellow-0.5 Sec off- 1 Sec Green-0.5 Sec off	

ROTABLE SPARE PROGRAM: The Kodiak electronic box is best serviced by factory technicians. We do not recommend that they be serviced in the field. Since the Kodiak is built to last, it pays to keep it operational. We offer a unique and affordable spare control box program called ROTABLE SPARE PROGRAM. If you have a control box that requires repair call our factory and ask to speak to our Service Department. The program is simple, you send your box in and we send you a serviceable replacement (may be new or factory reconditioned) box for a substantially reduced flat fee, no questions asked. That's our way of keeping our customers going affordably. Overnight shipping is available.

PARTS LISTS AND DIAGRAMS

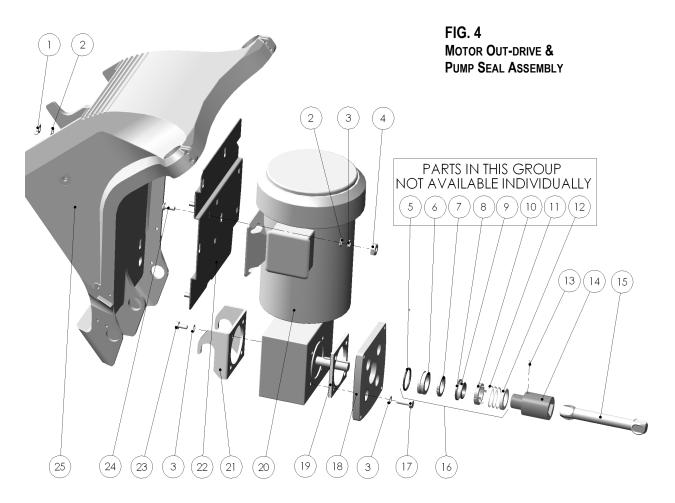
Fig. 2 Kodiak M2 Control panel





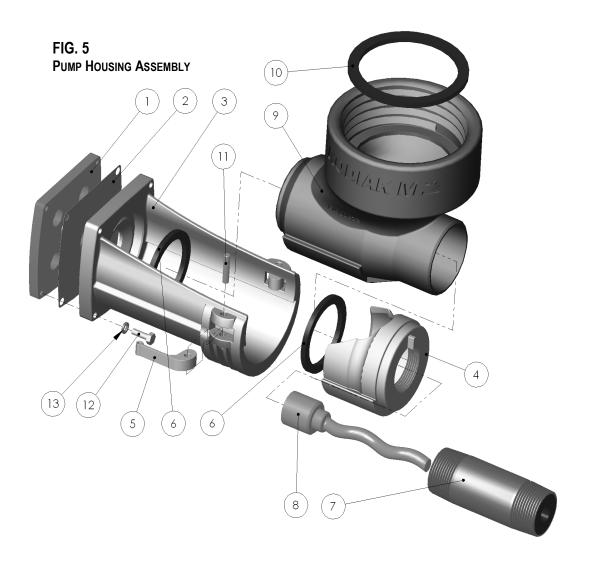
Ref	PN	Description	Qty.
1	00511	Handle bar	1
2	00515	Collar, handle lock	2
3	00660	Electronic control box	1
4	00661	Motor power cable	1
5	00662	Main power cable	1
6	00663	Gun control cable	1
7	00624	Main chassis/frame	1
8	00643	Pump, gear motor (1 HP, 5:1)	1
9	00523	Tire-wheel assy.	2

Ref	PN	Description	Qty.
10	00646	Junction plate	1
11	00620	Pump housing base	1
12	00538	Lever, camloc	2
13	00650	Frame rail	2
14	00557	Pump stator	1
15	00621	Pump housing retainer	1
16	00623	Pump housing	1
17	00628	Flat seal, 6 inch	1
18	00622	Hopper	1



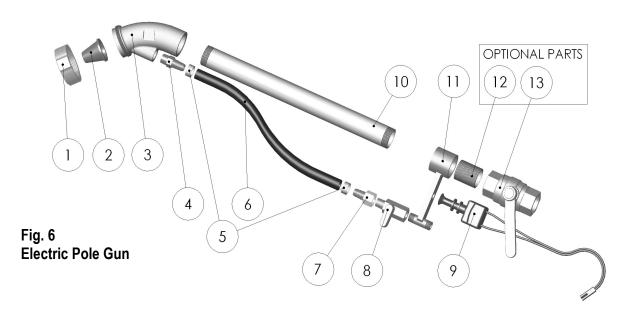
REF	P.N.	DESCRIPTION	QTY.
1	00688	Wing nut	4
2	00687	Washer, flat, 5/16	8
3	00682	Lock washer, 5/16	12
4	00695	Nut, 5/16	4
5	00690	Seal seat O-ring	1
6	00547	Seal seat	1
7	00693	Seal seat mate	1
8	00691	Drive band retainer	1
9	00692	Drive band seal	1
10	00694	Lower spring retainer	1
11	00549	Spring	1
12	00550	Spring retainer	1
13	00689	Set screw	1

Ref	P.N.	DESCRIPTION	QTY.
14	00552	Square drive	1
15	00553	Connecting rod	1
16	00590	Mechanical seal assy.	1
17	00681	Bolt, 8 mm x 25 mm	4
18	00646	Junction plate	1
19	00647	Spacer plate	1
20	00643	Pump, gear motor (1 hp, 5:1 Bison)	1
21	00629	Bracket, axle/motor	1
22	00632	Plate, motor mount	1
23	00686	Bolt, 8 mm x 16 mm	4
24	00542	Bolt, carriage 5/16 x 1	4
25	00624	Chassis, main	1



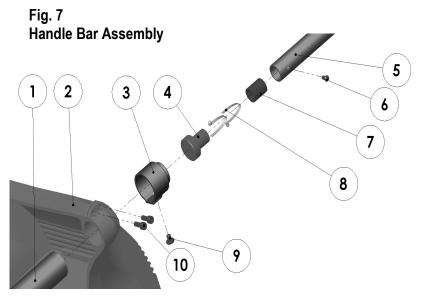
REF	P.N.	DESCRIPTION	QTY.
1	00646	Junction plate	1
2	00634	Gasket	1
3	00620	Base, pump housing	1
4	00621	Retainer, pump housing	1
5	00538	Lever, camloc	2
6	00546	Flat seal, 3 inch	2
7	00557	Stator	1

REF	P.N.	DESCRIPTION	QTY.
8	00556	Rotor	1
9	00623	Pump housing	1
10	00628	Flat seal, 6 inch	1
11	00443	Camloc pin, 1-1/2 in	2
12	00539	Bolt, 5/16x1-1/4	4
13	00682	Lock washer, 5/16	4

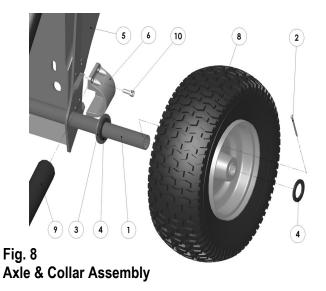


F	REF	P.N.	DESCRIPTION	QTY.
	1	00122	Nut, tip retainer	1
	2	0012X	Tip, pole gun	1
	3	00133	Head, gun	1
	4	125-4-4	Hose barb, 1/4 MNPT	1
	5	OET 1518	Crimp, clamp	2
	6	MP25300	Hose, air	1
	7	128-4-4	Swivel hose barb, 1/4FNPT	1

REF	P.N.	DESCRIPTION	QTY.
8	00340	Valve, air metering	1
9	00589	Switch, push pull	1
10	00134	Pipe, pole gun	1
11	00135	Bracket, elec. pole gun	1
12		3/4 close nipple (OPTIONAL)	1
13	00172	3/4 ball valve (OPTIONAL)	1



Ref	P.N.	DESCRIPTION	QTY.
1	00650	Frame rail	2
2	00624	Main Chassis	1
3	00515	Collar, handle lock	2
4	00518	Stabilizer, handle	2
5	00511	Handle bar	1
6	00514	Screw, 1/4-20X3/8-collar	2
7	00516	Stop, handle	2
8	00517	Button, snap	4
9	00521	Screw, stabilizer	2
10	00685	Screw, 1/4-20x5/8, SHC	4



REF	P.N.	DESCRIPTION	QTY.
1	00630	Axle	1
2	00525	Cotter pin	4
3	00633	Washer, 1" Flat	2
4	00522	Spacer, Plastic	4
5	00624	Main Chassis	1
6	00625	Left Collar	1
7 (not show n)	00626	Right Collar (not shown)	1
8	00523	Tire wheel assy	2
9	00650	Frame rail	2
10	00685	Screw, 1/4-20x5/8, SHC	8

TOOLS & MAINTENANCE

Keep your machine in good working order. For general use and maintenance, hand tools and a pipe wrench may be required.

WIRING CARE

Periodically check the wires for loose connections, cuts or fraying. Replace power cord if ground prong is damaged.

MATERIAL HOSE CARE

Inspect hose lines for any weaknesses. These lines carry material at very high pressure, so it is important that they be in good condition.

- The stator and rotor are wear parts. They will require replacement over time. The length of time between replacement depends on the material pumped and frequency of use. Any foreign material accidentally run through the pump may lead to premature replacement.
- Grease the wheels every six months. There are grease zerts on the wheel hub.
- Store the machine in a dry, protected area.
- Check the air in the tires periodically
- Do not let material harden in hopper or pump

MATERIAL COMPATABILITY

Not all liquids are suitable or approved for the Kodiak. Call the factory if you have questions about materials other than drywall spray mud.

CLEAN-UP

- Your clean up procedures will be different depending on the product you are spraying and the time between jobs.
- Never use petroleum based cleaner on the Kodiak. It will destroy the rubber pump parts.
- If you are spraying a standard drywall texture mud and there
 is no more than a few days between use, you can leave a
 mud in the hopper. Wipe down the machine and rinse off the
 hose set. It will not hurt the pump or the hopper to leave texture in it. You may cover the hopper to keep texture from drying out.
- If you expect long delays between jobs, then it is best if you
 do a more thorough clean-up (see Step 10 on Page 3).
- Flush soapy water solution through the hopper, pump and hose set. Use liquid dish soap like Dawn™ or Joy™. Remove the stator tube and rotor and place them in the hopper for future use and assembly. At this point, your Kodiak can be stored safely for many months.
- If you are spraying a material that will harden and is not easily removed after it sets, then a more thorough procedure will be necessary after each use. Wipe down the machine and rinse off the hose set. Use a liquid dish soap like Dawn™ or similar. Remove the stator tube and rotor and place them in the hopper for future use and assembly. When reassembling, pour a liberal amount of dish soap on the rotor and this will make the reassembly easier.
- DO NOT SPRAY WATER ON THE CONTROL BOX. THE CONTROL BOX IS WATER RESISTANT, NOT WATER PROOF. WATER INSIDE THE BOX WILL CAUSE FAILURE AND POSSIBLY A SAFETY HAZARD. SEE CONTOL BOX

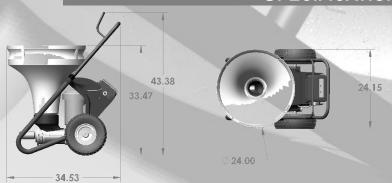
TROUBLESHOOTING GUIDE

Problem	Possible Cause	Corrective Action
Pump delays before starting	This is normal operation	None
Pump will not start	Pump went to "sleep"* This happens if pump is plugged into power source with gun switch in the "ON" position	Turn switch on and off at the gun to restart the machine. (see Note at bottom of this page for more information)
	2. Worn electrical cord	2. Check cord and replace as needed.
	3. Relay circuit failure in control box	Recommend factory repair of components in control box.
Motor starts but will not pump	Failure of drive mechanism	Check to see if rotor is turning. Repair or replace failed parts as needed.
Motor struggles but can't turn pump	Stator adhered to rotor, caused by running pump dry or with water only. New stator tubes are very tight, which can make it difficult to turn the rotor. This condition is similar to placing rubber on clean glass without water. It is very hard to move the rubber against the glass until there is some lubricant to allow the rubber to glide freely.	Add slurry to pump and turn pump on and off several times (1 second cycles). If this does not work, put a pipe wrench on stator tube and apply shock load while turning on motor. If still not freed, remove stator tube and free the rotor. Reinstall with liquid dish soap as lubricant.
Pump is slow and getting worse	Rotor or stator is worn	Rotor and stator are wear parts and must be replaced from time to time.
Pump shows some leakage	Mechanical seal is worn	Mechanical seal is a wear part and will need to be replaced occasionally. Service depends on the nature of the material being pumped and the service duty.

*SLEEP: Your Kodiak is equipped with a new safety feature to help prevent accidental pump starts. This can happen when plugging the machine in to power while the switch at the gun and the switch at the control box are in the ON position. If this happens the computer in the control box recognizes this as an operator error and will go to "SLEEP", this means it will not start the pump. This condition is shown as **Stand-by** (see table 1 on page 4) in the status LED on the control panel. To override this and start the pump, simply turn the switch at the gun OFF then ON again and the pump will start. Cycling the switch off and on, in effect, wakes up the control box and reactivates the pump.

CONTROL BOX REPAIR PROGRAM: If you have determined that you control box requires repair take advantage of our affordable ROTABLE SPARE PROGRAM. See details on bottom of page 5.

SPECIFICATIONS



Machine Weight, (excluding hose and gun)	138 lb.
Weight, 35' hose and gun	30 lb.
Shipping Weight	196 lb.
Hopper Capacity	16 gal.

Ratings:

1.0 hp 5:1	Gear Motor	110VAC 15 Amp
1.0 hp 15:1	Gear Motor	110VAC 15 Amp
1.5 hp 5:1	Gear Motor	220VAC 10 Amp

STANDARD TERMS AND CONDITIONS OF SALE

Payment Terms: Prepaid unless approved for terms.

Service Charge: All amounts not paid within thirty (30) days of date of invoice will accrue a service charge in the amount of two (2) percent per month or the highest rate allowed by applicable usury laws. The charge will be compounded each month in which the invoice or any part thereof remains unpaid.

Collection Costs: Purchaser agrees to pay all collection costs incurred by Seller in collecting unpaid amounts, including attorney fees, witness fees (expert or otherwise) and all out-of-pocket costs.

Freight Policy: FOB shipping point. Title passes upon delivery to the carrier at the point of shipment. Shipments are not insured unless ordered by purchas-

Delivery: Delivery dates given in advance of actual shipment are estimates and shall not be deemed to represent fixed or guaranteed delivery dates

Cancellation: Buyer may cancel an order at any time prior to shipment by mutual agreement of a reasonable cancellation charge to be paid to Seller. Orders for equipment over \$1,000.00 will incur a minimum of a 10% cancellation charge. Security deposits for orders may be withheld for a reasonable time to allow for the resale of the inventory committed to the order. Such time will not normally exceed 6 months.

Returned Goods: Goods may not be returned without prior approval and a "Return Authorization Number" (RAN). Only new parts in new condition valued under \$1,000.00 may be returned. The return period is 30 days from original shipping date. A minimum restocking fee of 25% will apply. Items valued over \$1,000.00 including big rigs and the Kodiak Sprayer are non-refundable. Custom and special order parts may not be returned.

Warranty and Limitation of Warranty: For a period of six months after retail purchase within the United States of America, Seller will, at its option, repair or replace, free of charge, seller manufactured parts found to be defective in material or workmanship. Components not manufactured by the Seller are covered under the original manufacturer warranty. Examples include, but are not limited to electric motors; gas powered engines, hydraulic parts, gear reduction boxes, compressors, and batteries. Such components carry separate warranties. This warranty is limited to the original purchaser starting on the date of retail purchase.

The provisions as set forth in this warranty provide the sole and exclusive remedy of Sellers obligations arising out of the sale of this equipment. Seller will not be liable for incidental or consequential loss or damage. Seller's sole liability under valid warranty claims shall be limited, at seller's option, to repair or replacement of defective parts or goods.

All other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose are hereby expressly disclaimed in their entirety. There is no warranty on equipment that has been modified, neglected, abused or improperly operated or inadequately maintained. Seller will not be responsible for expense in connection with repairs made by anyone other than a seller-authorized service station, unless prior written authorization has been obtained.

This limited warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state. Certain disclaimers are not allowed in some states and therefore they may not apply to you under all circumstances. It is the responsibility of the purchaser to deliver or ship the equipment covered under this warranty to the factory. Freight costs will be paid by the purchaser.



Kodiak M2 is manufactured in the USA