

4-SERIES

4400

POULTRY HOUSE WASHER/SPRAYER (WITH JOHN BLUE PUMPS)

OPERATOR'S MANUAL

THIS MANUAL TO ACCOMPANY MACHINE

PART NO. 44-OM-02 PRINTING DATE: AUG 2014

WARRANTY POLICY

KELLEY MANUFACTURING COMPANY (KMC) warrants that all goods sold to the original purchaser of any KMC product shall be free of any defects in material and workmanship if used under normal operating conditions. The warranty period begins on the date of purchase by the retail customer. For non-commercial users the warranty ends twelve (12) months thereafter. For commercial users the warranty period ends six (6) months thereafter. KMC's sole responsibility is to repair and/or replace the defective part or parts at no cost to purchaser. This remedy is the **SOLE AND EXCLUSIVE REMEDY** of purchaser.

The purchaser must fill out and return the warranty registration form found in the front of the operator's manual. Failure to return the warranty registration form within 30 days shall result in the goods being sold "AS IS", and all warranties shall be excluded.

This warranty shall not apply to those items that are by nature worn in normal service, including but not limited to belts, springs, teeth, chains, etc. Items such as tires, tubes, and gearboxes and all other items warranted by the original manufacturer are warranted only to the extent of their individual manufacturer warranty, and KMC is not warranting any of said items. All warranty claims must be made through a KMC licensed dealer, and a warranty form request must be submitted to KMC within 30 days of failure or the warranty provision shall be unenforceable against KMC.

No agent or person has authority to change or add to this warranty as written.

THE ABOVE IS THE ONLY WARRANTY MADE BY KMC AND IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. KMC MAKES NO WARRANTY OF MERCHANTABILITY AS TO ANY GOODS MANUFACTURED BY KMC AND FURTHER, KMC DOES NOT WARRANT ANY SUCH GOODS AS SUITABLE FOR ANY PARTICULAR PUR-POSE TO THE RETAIL CUSTOMER. THE SUITABILITY OF GOODS FOR ANY PURPOSE PARTICULAR TO THE CUSTOMER IS FOR THE CUSTOMER, IN HIS SOLE JUDGEMENT, TO DETERMINE. KMC FURTHER MAKES NO WARRANTIES WITH RESPECT TO ITS MANUFACTURED GOODS THAT WOULD NORMALLY BE DISCLOSED BY AN EXAMINATION. THIS IS THE FULL AND FINAL EXPRESSION OF ALL WARRANTY LIABILITY OF KMC. NO OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, SHALL BE ENFORCEABLE AGAINST KMC.

Kelley Manufacturing Co.

80 Vernon Drive / Zip 31794 P.O. Drawer 1467 / Zip 31793 Tifton GA

TO THE PURCHASER

This **KMC Poultry House Washer/Sprayer** has been carefully designed and manufactured to give years of dependable service. In order to operate it efficiently and maintain if properly, please read the instructions within this manual thoroughly.

While reading the manual through, you will notice that it is divided into sections which clearly explain the assembly and operations of each components of this machine. A Table of Contents is also provided for quick reference to these sections

Some components of this machine are labeled left or right. The notations are determined facing the direction the machine will travel in use.



This safety alert symbol is used throughout this manual to identify safety messages. When you see this symbol, read the message which follows as it will advise you of possible injury.

After reading this Operator's Manual, Please keep it for reference each season.

To insure procurement of the proper repair parts, please record your machine's Serial Number and Purchase Date as shown below:

WIOGEI INO.

Serial No._____

Purchase l	Date	
Purchase l	Date	



Retail Customers Responsibility Under The KMC Warranty

The retail customer's responsibilities are:

- 1. To read the Operator's Manual and operate the **KMC Poultry House Washer**/ **Sprayer** in accordance with instructions given in the manual.
- 2. To inspect the **KMC Poultry House Washer/Sprayer** daily, lubricate as specified and repair or replace parts as needed, especially when continued use would cause damage or excess wear to other parts.
- 3. To maintain and keep in place all safety shields and devices.
- 4. When Warranty Service is necessary, it is the customer's responsibility to deliver the machine to the KMC dealer from which is was purchased, Warranty repairs should be submitted to the dealer within **thirty (30)** days of failure.
- 5. Dealer travel to the machine or hauling the machine to his shop for the purpose of performing warranty service is not allowed under KMC warranty. It is a cost to be paid for by the retail customer. Any arrangement whereby the dealer agrees to absorb all or part of this cost is strictly between the dealer and retail customer.

SAFETY PROCEDURES

Safety and performance are the primary objectives of the designers of KMC equipment. Safety features have been incorporated into this machine where possible and warnings given in other areas. For your safety, **PLEASE** read and observe the following safety procedures.

- 1. Do not permit anyone to ride on the machine.
- 2. Keep all persons a safe distance away from the rear and sides of the machines while it is in operation.
- 3. Drive safely during transport; excessive speed while turning on rough ground or over hills could cause tractor to tip over.
- 4. Make sure hitch components are attached securely before operating or transporting.
- 5. Use flashing warning lights when on highways, except where prohibited by law.
- 6. Stop tractor engine before leaving operator's position to adjust, lubricate, clean or unclog machine.
- 7. Keep all shields in place.
- 8. Keep hands, feet and clothing away from moving parts.
- 9. Make sure everyone is clear of machine before starting tractor or operating machine.

DANGER! Install safety struts and pins prior to working under machine. Failure to do so may result in serious injury or death.

- 11. Maximum towing speed is 20 MPH loaded -- 25 MPH empty.
- 12. Observe all safety decals located on machine.

10.

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POULTRY HOUSE WASHER/SPRAYER BASIC FEATURES

Throughout this manual we will be discussing various features and components of the **KMC Poultry House Washer/Sprayer**. References to various components for adjustments, settings, performance, and lubrication are made. The following diagram will help in identifying these components.



MACHINE SETUP

Attaching to Tractor

The KMC Poultry House Washer/Sprayer is designed to be operated from the stationary drawbar of the tractor. If the tractor being used has an option of a 540 or 1000 RPM PTO shaft, you should install the 540 shaft.

Once the tractor has been set, attach the Poultry House Washer/Sprayer to the tractor drawbar using an appropriate hitch pin. With the tractor and the Washer/Sprayer sitting on level ground, note the position of the front and rear of the washer frame. Ideally, the rear of the washer frame should be level with or higher than the front. This minimizes possible damage to the rear spray boom caused by crossing bumps or dips. If the rear of the frame is lower than the front and the adjustable hitch is not already in the top position, disconnect the washer from the tractor and move the hitch to the top position. Re-attach the Washer/Sprayer to the tractor.

The end of the PTO driveline with the small diameter shield attaches to the pump. Attach the driveline to the pump drive shaft by twisting the locking collar and pushing the driveline onto the drive shaft. Release the collar and continue to push the driveline onto the drive shaft until the collar locks. Follow the same procedure and attach the PTO driveline tractor end to the tractor PTO shaft. Make sure the PTO driveline shielding rotates freely on the driveline. Attach the safety chains, allowing sufficient slack for turns.

Positioning Sidewall Nozzles

The four sidewall nozzles can be adjusted vertically and horizontally as well as rotated vertically and horizontally. Horizontal and vertical adjustments (moving nozzles closer to or further away from wall and up or down) are made by loosening setscrews and sliding the boom extensions or nozzle brackets. Nozzles are rotated vertically by loosening the nozzle arm attachment bolt and rotating the nozzle arm. The swivel nozzle bodies provide horizontal rotation.

Place the washer/sprayer at the desired distance from the wall to be washed. Adjust nozzles to cover the desired height on the wall. Make sure nozzle spray tips are positioned to provide a vertical, flat, spray pattern. Make sure nozzle spray patterns will overlap providing complete coverage. It may be necessary to temporarily operate the pump during the nozzle adjustment process to observe spray patterns and make adjustments.



Positioning Floor and Ceiling Nozzles

The 3/4" double swivel spray nozzle is for use in spraying floors and washing ceilings. For spraying floors the nozzle should be turned downwards. The width covered by the nozzle is adjusted by changing the angle of the tips and/or lowering or raising the nozzle. Air movement can greatly decrease spray coverage. It may be desirable to close doors on the house or to spray one-half of the house per pass. To wash or spray ceilings, invert the double swivel nozzle to point the tips upward. The nozzle is inverted by loosening the setscrew on the nozzle support and inverting the support on the extension arm. The nozzle can be brought closer to the ceiling by extending the extension arm. With the nozzle raised, care must be taken to avoid hitting obstacles, e.g. raised watering equipment.

Setting Break-Away Boom Latch Pressure

The amount of force required to release the break-away boom can be adjusted by loosening or tightening the boom latch bolts. This will decrease or increase the amount of load on the latch springs. Check the latch pressure by forcefully and quickly pushing against the wall nozzle arm. The latch pressure should be checked with the wall nozzle boom extension in the retracted position..

OPERATING INSTRUCTIONS

Operating Pump

Do not operate the pump above 540 RPM. When the pump is operating, check the oil level in the sight glass



IF THE OIL SUDDENLY TURNS WHITE STOP THE PUMP IMMEDIATELY. THIS INDICATES THAT A DIAPHRAM HAS RUPTURED. IF THE OIL LEVEL RISES TO THE TOP OF THE SIGHT GLASS DUE TO HIGH OPERATING TEMPERATURE, STOP THE PUMP TO PREVENT DAMAGE FROM INTERNAL OVERPRESSURE.

Setting Pulsation Damper and Pump Pressure

THE PUMP PRESSURE SHOULD BE SET WITH ALL DISCHARGE IN BYPASS LINE ONLY. ALL OTHER DISCHARGE LINES SHOULD BE CLOSED. This prevents exceeding the maximum pump pressure rating. For example, if the pressure was set at or near maximum pump pressure with one or more nozzles turned on , when these nozzle (s) were turned off, the pressure would rise above the pump's maximum pressure rating. If the maximum pump pressure is exceeded, liquid will exit from the safety valve, this is normal. The recommended pressure setting for most operations is 600 psi. With the pump not running check pulsation damper with pressure gauge. Inflate to 100 psi if required. (Check on regular intervals before running)



Pump Discharge Controls

Three valves control the discharge of liquid to the rear boom, the spray gun, and the re-circulating line. The valves that control the discharge to the boom and spray gun are located on the right side of the pump housing. **(On pumps prior to 6/96, valves are located on the left side of pump.)** The valve controlling the re-circulating line is located on the pressure control unit. Normally, the valves controlling the boom and spray gun discharge lines should be fully opened when either of these components are to be used. The valve controlling the re-circulating line can be left in the closed position if only water is being used. If a disinfectant or other chemical and water mixture is being used, the re-circulating feature can provide agitation of the mixture. Fully opening the re-circulating valve will greatly decrease the pump pressure; therefore, only partially open the valve.

Boom Nozzle Controls

On the poultry house washer/ sprayer, each wall nozzle, as well as the floor/ceiling nozzle are independently controlled with valves. These valves are located on the distribution manifold at the rear of the washer/sprayer.





Washing Sidewalls or Curtains

Place the four valves that control the wall nozzles in the open position. Make sure the valve at the pump that controls the boom discharge line is open. Make sure the break-away feature of the boon is operational. Engage the tractor PTO and bring the engine up to PTO working speed.

It is recommended that two passes be made for each wall. The first pass wets the material and aids in loosening it for removal by the second pass. For maximum cleaning, the sprayer should be operated at a ground speed of 1 to 3 mph. However, this may vary depending on the degree of build-up on the wall or curtains.

Spraying/Washing Floors or Ceilings



If a disinfectant or other chemical is added to the tank, use the recirculation feature to agitate the water/chemical mixture. Allow the mixture to agitate for several minutes before spraying.

Floors can normally be sprayed in one pass through the house. After positioning the 3/4" double swivel nozzle for spraying floors, open the control valve located on the distribution manifold. Make sure the valve at the pump that controls the boom discharge line is open. Engage the tractor PTO and bring the engine up to PTO working speed.

Place the 3/4" double swivel nozzle in the inverted position with the tips upward for washing ceilings. To wash the entire ceiling and obtain maximum cleaning, 2 to 4 passes through the house may be required.

<u>Spray Gun and Hose Reel</u>

Operating the spray gun requires the operator to be off the tractor and in a standing position. Engage the tractor PTO and bring the engine up to PTO working speed. After dismounting the tractor, open the spray gun discharge valve at the pump.



The hose reel is spring-loaded which provides automatic rewinding of the spray gun hose. Pull the required amount of hose from the reel by grasping the hose. To lock the reel in position, pull



the hose until an audible "click" is heard in the reel, then slowly release the hose. To rewind the hose, first pull a few inches of hose from the reel to unlock the reel locking mechanism. While holding the hose, allow the reel to rewind the hose. The spray pattern of the gun can be adjusted by rotating the forearm handle.

DUE TO THE FORCE OF THE WATER EXITING THE SPRAY GUN, SUBSTANTIAL RECOIL IS PRODUCED. WHEN OPERATING THE SPRAY GUN, FIRMLY GRASP THE GUN WITH BOTH HANDS.

MAINTENANCE AND AD-Pump Maintenance

After a chemical and water mixture has been used with the washer/sprayer, the pump should be operated at working pressure with clean water for a few minutes. Afterwards, let the pump pressure drop to zero and operate the pump without liquids for two minutes. Running the pump without liquids can be accomplished by completely emptying the tank or closing the inlet valve and removing the strainer.

If the pump will experience freezing conditions, empty the pump completely. If the pump will be stored for long periods, some of which will be under



freezing conditions, an extra precautionary measure is to flush the pump with a 50/50 anti-freeze and water mixture.

The pump has an internal pulsation dampener which aids in smoothing out the discharged liquid flow. The pressure in this dampener is set and checked through an air valve stem located at the front of the pump. The pressure should periodically be checked using an automotive air gauge without pump running. As a general rule, set pulsation dampener to 1/3 the working pressure without exceeding **100** psi. For example: if the pump will be operated from **300-700** PSI, the pulsation dampener pressure should be set **100** PSI.

Valve Assembly and O-Ring Replacement

Occasionally debris can cause the valves to not seat properly or damage o-rings. To check this problem follow these steps, referring to diagram.

- 1) Remove valve cover, valve assembly and O-rings.
- 2) Check the valve assembly for debris and both the valve assembly and o-rings for wear.
- 3) Replace parts as necessary consulting the parts list for valve or o-ring part numbers.





Diaphragm Replacement

The pump diaphragms should be changed after every 500 hours of use. When replacing diaphragms, follow these steps referring to the diagram:

 Drain the oil from the pump by removing the cap from the oil site glass, removing the pump mount bolts and loosening the necessary hoses. Turn the pump upside down and rotate the crankshaft until oil stops flowing out.

Repeat steps 2 thru 8 for each diaphragm being replaced.

- 2) Remove the pump head.
- 3) Rotate the crankshaft to bring the diaphragm clamping bolt out as far as possible.
- 4) Using a hex wrench, remove the diaphragm clamping bolt; diaphragm cap, and diaphragm.
- 5) Before installing the diaphragm, rotate the crank shaft until the piston is at the bottom of its stroke.
- 6) Install the new diaphragm onto the piston tightening the clamping bolt to a torque of 18.5 ft lbs.
- 7) Insert the edge of the diaphragm into the grooves in the piston sleeve.
- 8) Replace the head.
- 9) Using a SAE 30W non-detergent oil, refill the pump through the site glass to the proper level. Rotate the crankshaft while filling to distribute the oil.
- 10) Before putting the cap back on the oil site glass, run the pump with no pressure (raise the control unit pressure release lever) until all air bubbles are vented.
- 11) After replacing the cap on the oil site glass, check the oil level with the pump operating with pressure.



Other Maintenance and Adjustments

The environment that the washer/sprayer is used in can be highly corrosive to steel components.

Therefore, to protect painted surfaces, the washer/sprayer should be washed off after each use. Periodically clean the inlet strainer and the nozzle tips.

The tank hold-down straps should be checked periodically for tightness. Temperature changes, vibration, and settling of the tank may cause them to loosen. Check the straps with the tank at least 3/4 full. Tighten the straps by tightening the nuts on the bolts that attach the straps to the tank saddle.

Periodically check all hose clamps, fittings, and valves for tightness. Replace worn, cracked, or leaking hoses.

The spring tension on the hose reel can be adjusted by adding or removing wraps of hose from the spool. Add wraps to increase tension and remove wraps to decrease tension. Add or remove wraps one at a time until desired tension is reached.



<u>CAUTION:</u> REEL IS UNDER TENSION. USE EXTREME CAUTION WHEN ADJUSTING SPRING TENSION. ADJUST WITH LATCHING MECHANISM ENGAGED.



<u>CAUTION:</u> DO NOT ATTEMPT TO DISMANTLE REEL. A HIGH TENSION SPRING ASSEMBLY IS CONTAINED WITHIN THE REEL. IMPROPER REMOVEL OF THE SPRING COULD RESULT IN PERSONAL INJURY AND/ OR REEL DAMAGE.

LUBRICATION

It is very important to maintain the proper oil level in the pump crankcase. The oil level is checked via the site glass located on the top of the pump. The pump requires a SAE 30W non -detergent oil.

The pump crankcase oil should be changed after every 500 hours of use or when the pump diaphragms are replaced. The oil is changed as follows:

- 1) Drain the oil from the pump by removing the cap from the oil site glass, removing the pump mount bolts and loosen the necessary hoses. Turn the pump upside down and rotate the crankshaft until oil stops flowing out.
- 2) It is recommended that the inside of the pump crankcase be washed with gasoline or diesel oil.
- 3) Using a SAE 30W non-detergent oil, refill the pump through the site glass to the proper level. Rotate the crankshaft while filling to distribute the oil.
- 4) Before putting the cap back on the oil site glass, run the pump with no pressure (raise the control unit pressure release lever) until all air bubbles are vented.
- 5) After replacing the cap on the oil site glass, check the oil level with the pump operating with pressure.

The PTO driveline should be greased as follows: Grease the universal joints and shield fitting after every 8 hours of use. Grease the locking collars and driveline tubes after every 20 hours of use.

TRANSPORTATION

Before towing the washer/sprayer for extended distances, make the following preparations: Remove the PTO driveline, detaching it from the pump. Secure the spray gun in the holster. Secure the break-away boom with a rope, rubber strap, etc. to prevent it from opening when crossing rough areas such as railroad crossings. Maximum towing speed is 25 MPH.

STORAGE

The Poultry House Washer/Sprayer should be washed down thoroughly. After washing, treating with a disinfectant is recommended to kill any remaining bacteria. Treat the metal components of the machine with a soluble oil to protect from rust and corrosion. One product which meets these requirements is called "Film Fluid" manufactured by Eureka Chemical Co., San Francisco, CA. It is sold in some tractor dealerships and farm supply dealers.

If the pump will experience freezing conditions, empty the pump of water completely. An extra precautionary measure is to flush the pump with a 50/50 anti-freeze and water mixture.

SPECIFICATIONS

Weight: 1100 lbs

Width: 77 inches

Height: 61 inches

Length: 14 feet

Tire Size: 11L x 15 (6 ply)

Pump: PTO driven diaphragm produces maximum pressure of 725 psi and maximum flow rate of 39.5 gpm. Maximum 540 rpm PTO speed.

Tractor Size: Minimum 30 horsepower with 540 rpm PTO.

Hitch: Clevis Type.

Axle: Solid with replaceable hub assembly.

Rear Boom: Has break-away feature which causes boom to swing open if immovable object is contacted.

Liquid Flow Control: All spray nozzles are individually controlled with 90 degree turn, ball valves.

Spray Gun: 21" wand, 850 psi maximum, 30 gpm maximum with adjustable spray pattern.

Tank: 500 gallon elliptical polyethylene.

Reel: Spring rewind, capacity of 50 ft of 1/2 inch hose.

TROUBLESHOOTING

TROUBLES	CAUSES	CURES	
	+ Valves have worn seats	+ Check valves	
The pump doesn't reach the required pressure	 Suction hose with air pockets or irregular elbows 	+ Check hose	
	+ Worn nozzles	+ Check nozzles	
	+ Clogged strainer	+ Clean strainer	
The pressure gauge fluctuates	 Pump is sucking air, or air hasn't been evacuated completely. 	 Start pump with the gun open, to evacuate the air and commutate. 	
	+ Valves blocked	+ Clean or change valves	
The liquid flow is irregular	 The air in the pulsation damper is incorrectly set. 	 Check pressure in pulsation damper. Should be 8-10% of operating pressure. 	
Output drops and the pump is noisy	+ Oil level is too low	 Top up with oil to correct level (halfway of the site glass), when pump is operating. 	
Oil comes out of the discharge pipe	 One or more diaphragms are broken. Stop pump immedi- ately 	 Drain the pump of oil. Disman- tle heads and change dia- phragms. Fill with oil to correct level. 	
Oil is changing col- or into white	 Diaphragm failure (s). Stop pump immediately 	 Drain the pump of oil. Disman- tle heads and change dia- phragms. Fill with oil to correct level. 	





The following is a list of serial numbers issued to our machines at the beginning of each year. To determine when a unit was made, find the range within which the particular serial number falls. It would have been produced between January 1 to December 31 of that year.

YEAR	SERIAL NUMBERS		
1985	27986-29695		
1986	29696-31095		
1987	31096-33234		
1988	33235-35548		
1989	35549-38496		
1990	38497-41771		
1991	41772-44466		
1992	44467-47001		
1993	47002-48750		
1994	48751-51549		
1995	51551-54262		
1996	54263-56661		
1997	56662-59465		
1998	59466-62097		
1999	62098-63986		
2000	63987-65692		
2001	65693-67340		
2002	67341-68699		
2003	68700-70482		
2004	70483-72646		
2005	72647-74866		
2006	74867-76368		
2007	76369-77883		
2008	77884-79891		
2009	79892-80944		
2010	80945-81775		
2011	81776-83453		
2012	83454-85092		
2013	85093-86418		
2014	86419-87790		
2015	87791-89096		
2016	89097-		



DEPENDABLE EQUIPMENT FOR PROGRESSIVE FARMING

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