



Automated Forklift Entryway Sanitizing System

Patented




INSTALLATION AND OPERATION MANUAL

Installation & Operation Manual: Automated Forklift Entryway Sanitizing System

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READ ALL INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL AND OPERATE THIS EQUIPMENT



WARNINGS

Read this manual completely before attempting to install or use this system.

- Always wear proper personal protective equipment (PPE's) when installing or servicing this unit.
- Always follow all chemical safety precautions and handling instructions provided by the chemical manufacturer or product Safety Data Sheet (SDS).
- If this unit is modified or serviced with parts not listed in this manual, the unit may not operate correctly and may void any warranty.
- **Chemical Spray Hazard:** Wear splash goggles or glasses when required by chemical manufacturer, SDS, or OSHA when installing or servicing this unit.
- **Magnet Warning (physical injury):**
 - This unit uses very strong magnets. Care must be taken when handling to prevent pinch and other personal injuries. Serious injury can occur to fingers if caught between large magnets. Small magnets can be a choking hazard and should never be swallowed or inserted into any part of the body. Small magnets are considered a choking hazard that can result in death and should be treated as such. Keep all magnets away from animals and children. If a magnet should break gather all small pieces and dispose of accordingly.
- **Magnet Warning (magnetic field):**



- THIS UNIT CONTAINS MAGNETS THAT MAY BE HARMFUL TO THOSE WEARING A PACEMAKER OR OTHER DEVICE SENSITIVE TO MAGNETS.

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INTRODUCTION:

This system is designed to aid in the sanitizing of wheels on forklifts prior to entering and exiting critical control areas, especially where reduced moisture is advantageous. This system has been designed to provide an uninterrupted uniform distribution of sanitizer solution onto the tire tread surface. The application of sanitizer is initiated manually by the operator or by automatic signaling from the controller circuitry, causing the pump to dispense approximately 1.0 ounce of sanitizer evenly split to all nozzles. Any modification or alteration of the system may result in poor performance which may include uneven spray patterns, interrupted spray, or excessive dripping of sanitizer. To avoid these issues, it is highly recommended that only authorized parts or components be used in this system.

SPECIFICATIONS:

Dimensions: Shipping package size, approximately 12" x 16" x 12"
Shipping Weight: without sanitizer, approximately 21 lbs.
Pump Capacity: 1 liter per minute @45-55 PSI

Materials of construction of wet components:









Nozzle Check Valve: Polypropylene, stainless steel, Aflas
Anti-Siphon Valve: Polypropylene, stainless steel, Silicone
Pump: Stainless steel, PEEK, Teflon
Tubing: Polyethylene, UV resistant
Nozzle Body: Nylon
Nozzle Tip: Stainless Steel, Brass
Push-Fit Fittings: Polypropylene, EPDM
Gallon Jug Adapter: Kynar, Viton
Dip Tubes: Polyethylene

Serial Number _____ (located on underside of pump cover)

Date purchased / Installed _____

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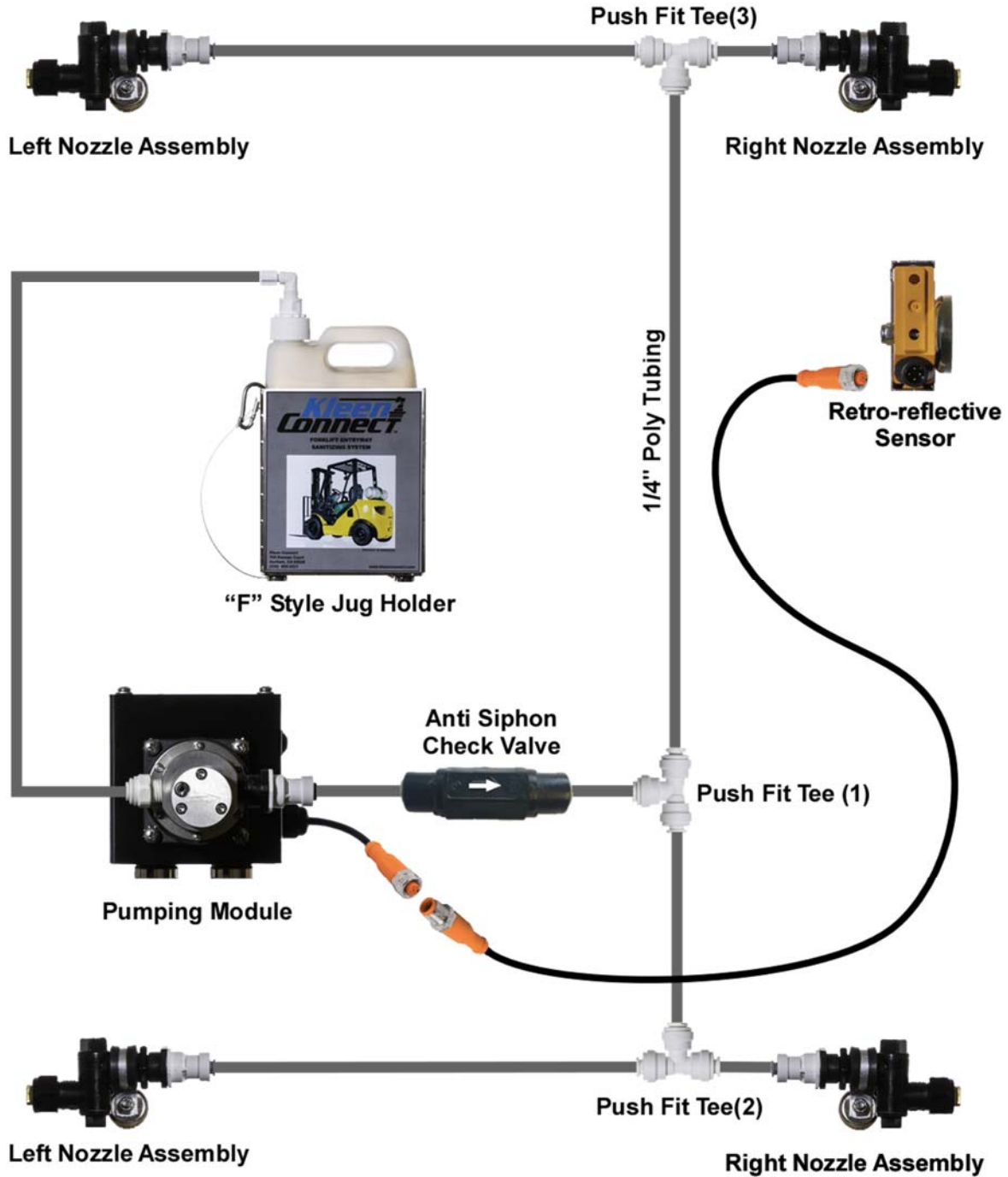
PACKAGE CONTENTS:

			
(4 ea) Fan Nozzles with Swivel Adapters, Screens, Check Valves, & Magnet Mounts	(3 ea) 1/4" Push-Fit Tee Fittings	(1 ea) Gallon Jug Adapter Cap, Push-Fit Tubing Connector	(1 ea) Retro-Reflective Sensor Assembly With Magnet Mount
			
(20 ea) Magnetic Tie Mounts	(25 ea) Small Plastic Cable Ties	(1 ea) Tubing Cutter	(1 ea) Sensor Connector Cable

			
(1 ea) 24 VDC Pumping Module & Controller	(1 ea) Battery Charger (2 ea) 4.0 Ah Batteries	(50 Ft) 1/4" Black PE Tubing	(1 ea) Sanitizer Jug Rack with Magnetic Mounts And Safety Cable Assembly
			
(4 ea) 24" Adhesive Backed Strips Reflective Tape	(1 ea) Large Plastic Cable Tie	(1 ea) Dip Tube Removal Tool (5 ea) Dip Tubes for 1 gallon jug	(1 ea) Anti-Siphon / Anti-Drip Check valve

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SYSTEM LAYOUT:



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TOOLS NEEDED TO INSTALL:

<p>Adjustable Wrench Used to tighten nozzle bodies and adjust nozzles</p>	
<p>Pliers Used to tighten nozzle bodies and adjust nozzles</p>	
<p>Angle Cutters Used to cut plastic ties</p>	
<p>Tape Measure Used to measure sensor height</p>	
<p>Tubing Cutter (provided) Used to cut tubing</p>	

NOTE

All components of this system are attached to the vehicle with magnets. The only tools needed for installation are an adjustable wrench, pliers, diagonal cutters, tape measure, and the tubing cutter supplied in this kit. The tubing connections are a push-fit style connection which when firmly pushed into the fitting will provide a tight, leak free connection. To release a push-fit style connection, press in on the fitting collar while pulling on the tubing.

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INSTALLATION INSTRUCTIONS:

READ ALL INSTRUCTIONS BEFORE INSTALLING THIS EQUIPMENT

1. Unpack the entire contents and inspect to ensure all components shown on page 4 “Package Contents” are included. Open the battery and charger packaging. Place one battery on the charger to begin charging.
2. Review the vehicle this unit will be installed on and determine which location is desired for placement of the one-gallon sanitizer jug rack. The jug rack can be attached by either the bottom mount magnets or the side mount magnets. Keep in mind that the jug rack can be moved to facilitate inspections and maintenance. You may want to identify a location that is the best fit during use, such as inside the ROP upright and another during inspection, such as outside the ROP upright.



Figure 1



Figure 2

3. The jug rack includes a safety cable that prevents the unit from falling to the ground if it is accidentally knocked off the vehicle. This safety cable will need to be attached to the vehicle roughly 18 inches above the jug rack. This will allow about 5 inches of slack in the cable. The safety cable and clip are visible in figures 2 and 3. If you plan to use alternate locations for the jug rack, make sure there is enough slack in the cable to allow movement to each of the alternate locations.

Attach the clip using the supplied large plastic cable tie. Route the cable tie through the small, closed end of the clip and secure it around the upright or other object (figure 4). Ensure the cable clip gate is easily accessible as the loop end of the cable will need to be removed from the clip each time the jug is replaced.

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Safety Cable



Figure 3



Figure 4

4. Determine the desired location for the pumping module. Usually behind the operator's seat. Attach the pump by setting the base mounted magnets on a suitable metal surface. Ensure the magnets hold the pump securely in place. Ensure the pumping module will not interfere with seat adjustment or daily/shift inspections. The magnets do allow repositioning for service, but it is advisable to not require repositioning for daily/shift inspections. (Figure 5)



Figure 5

***Note.**

If the desired pump module location is non-metallic, a steel plate (not provided) can be attached to the forklift to mount the pump.

5. Determine the location of the photo-electric sensor. The sensor should be placed in a convenient location with the sensor glass pointing away from the forklift, perpendicular to the vehicle's travel path. It should be placed at a height that will be equal to the reflective

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tape you will be installing at each entryway/doorway. It is recommended to install the sensor on the A pillar (closest to the mast) pointed to the right hand side of the entryway. This will permit the sensor to see the reflective tape upon entry and not on exit. (Figure 6)



Figure 6

6. Connect the sensor cable to the sensor using the M12 connector. Hand tighten only. Do not use tools to tighten the connectors. (Figure 7)



Figure 7

7. Starting with the sensor cable at the sensor, route the sensor cable along the roll cage using the provided magnetic tie mounts and ties. When routing the cable, do not draw the ties up snug yet, as you may need to include the chemical tubing in these ties to attach to the nozzles at the front of the forklift. Once you have routed the sensor cable back to the

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location of the pumping module, Lay the remaining cable next to the pumping module and advance to the nozzle locations.



Figure 8

8. Find the positions on the body of the vehicle that will allow the nozzles to point to the tire tread with at least a 2 to 3 inch spacing. If the nozzle is located too close to the tire it will not cover the entire tread surface area. If it is located too far away from the tire it will spray wider than the tire tread surface area and waste sanitizer. Affix the nozzles for all three or four tires, depending on the lift. Have an assistant turn the steering through the complete range of motion while you observe and ensure clearance with the nozzles. Pay attention to anything that might contact the nozzles. Relocate the nozzles if necessary.



Figure 9

NOTE: The kit comes with nozzle assemblies set for each side of the forklift, (2) left and (2) right. If required, you may remove the clamp from the nozzle assembly and reverse if

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needed to properly locate the nozzles. Determine which locations and configurations work best for your installation. (Figures 10 & 11)



Figure 10



Figure 11

Final positions and angles can be adjusted after installation to achieve optimum coverage. The nozzle bodies also provide tilt and swivel adjustment to fine tune the spray location. (Figure 12)

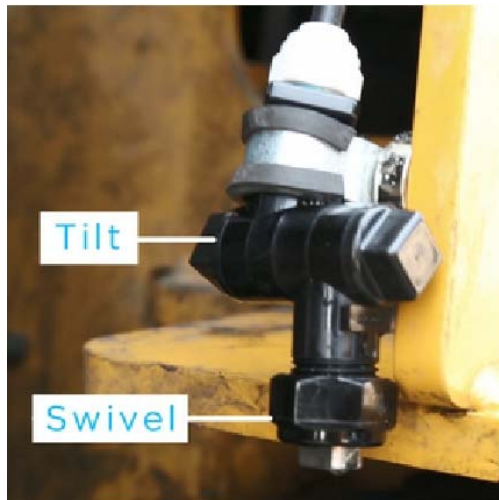


Figure 12

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9. With the jug rack, pumping module, and nozzles located, you may now install the chemical tubing. Start by placing a one-gallon container of sanitizer in the jug rack. Unclip the safety cable from the cable clip and route the cable through the handle of the jug and then reattach to the clip. (Figure 13)



Figure 13

Remove the cap from the sanitizer jug and attach the one-gallon adapter cap assembly by pushing down firmly as you turn the adapter clockwise. Insert the $\frac{1}{4}$ " PE tubing into the push-fit fitting on the adapter cap and press firmly until the tubing is fully seated into the fitting. * Note. It is important that the tubing end be cut square and to press it in straight. Do not force the tubing or press at an angle. The tubing should insert approximately $\frac{1}{2}$ ". (Figure 13)

Route the tubing from the one-gallon container to the pumping module and mark the cut location using a piece of tape. (The tape from the tubing wrap works well for this) **DO NOT CUT THE TUBING AT THIS POINT.** Lift the engine inspection cover and or seat, depending on your lift design, and ensure that the tubing does not get in the way or become pinched. If this requires temporarily moving the jug rack to an alternate location for inspection, you may move it. Be sure to leave enough extra tubing to allow both locations. (Figure 14)

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Figure 14

Now pull the jug rack loose from the vehicle and allow it to be suspended by the safety cable. Ensure that the tubing from the jug to the pump does not get pulled tight or placed under any strain. Allow extra tubing if necessary.



Figure 15

Once you have determined the desired routing for the tubing from the one-gallon jug to the inlet of the pump, you may attach the tubing using several of the magnetic mounts and plastic ties.

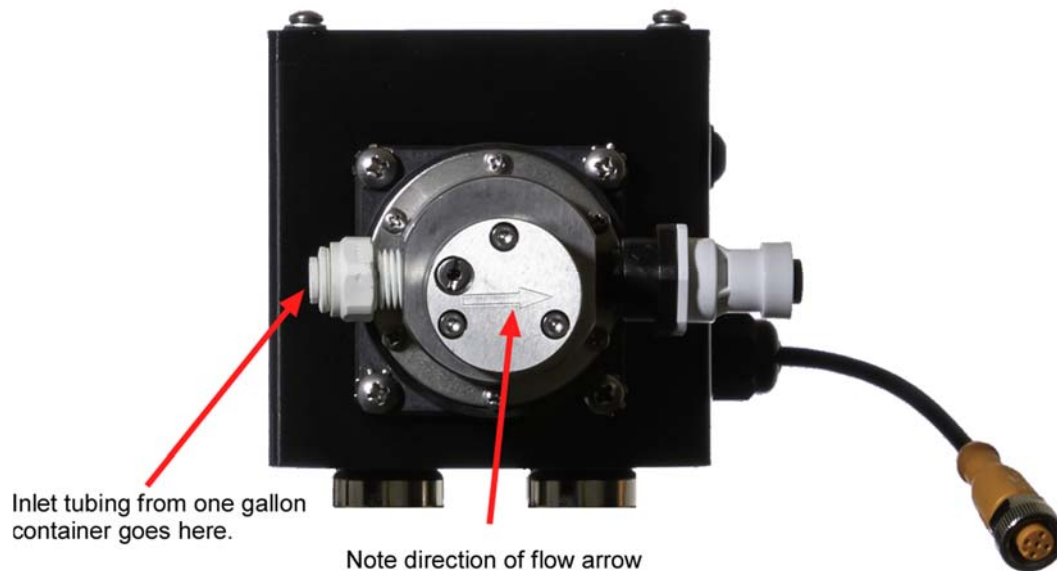
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SAFE TUBING INSTALLATION QUICK CHECK: Tubing is not kinked, pulled, or pinched...

	With the jug rack in the normal operating position
	With the jug rack in the alternate / maintenance / inspection position.
	When the inspection cover or seat are lifted for maintenance or inspection
	When the one-gallon container is lifted from the jug rack
	When the jug rack and one gallon container are suspended by the safety cable

10. With the tubing properly routed, establish the final correct length from the one-gallon jug to the pumping module inlet push-fit fitting and cut the tubing with the supplied tubing cutter.

Note: The inlet tubing should be connected to the inlet side of the pump as shown below



Install the end of the tubing into the pumping module inlet fitting by pushing in until the tubing is fully seated, just as in step 9. *Note, in all of these push-fit connections, you should feel some resistance when pressing the tubing into the fitting, followed by the tubing engaging into the fitting an additional 1/2".

11. Install one end of the 1/4" tubing roll into the discharge push lock fitting on the pump. (See diagram above). Roll out enough of this tubing to reach the counterweight behind the operator's seat. Cut the tubing with approximately 6" additional tubing. Now position the first of the three push fit tees in a convenient location, typically in the middle of the counterweight area.

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This tee splits the flow into two directions, one for the front and one for the rear. Depending on your lift, these outlets will need to be split again to each nozzle previously mounted near each tire. You can shorten the tubing later if desired.

With the first tee in position, determine a convenient location for the anti-siphon check valve somewhere between the pump discharge and the first tee. Install the check valve by cutting the tubing and inserting the ends into the check valve using the same push-fit method. Make sure the direction of flow arrow is pointing away from the pump and toward the first tee.

With the anti-siphon check valve and the first tee installed, install another piece of tubing to one of the open ends of the first tee and plan where the additional tee will be installed to split the spray to each rear wheel. Cut the tubing and install the second tee.

*Note, Reference the System Layout on page 5 for the suggested tee configuration.



Figure 16

12. Next, starting at one of the rear wheel nozzles located on either side of the lift, attach the black $\frac{1}{4}$ " tubing to the spray nozzle push-fit fitting. Route the tubing up the body of the forklift to the location of the second tee installed in the previous step. Be sure to route the tubing so that it is least likely to be damaged, kinked or smashed. Leave a couple inches of extra tubing near the nozzle to allow minor adjustments to the nozzle location. Secure the tubing with the magnetic tie holders and ties (figure 16) and cut the tubing to length. Connect it to either side of the second tee.

Repeat for the rear wheel on the other side and connect to the other end of the second Tee. At this point, the installation of the rear spray nozzles and tubing is complete, and you can now install the tubing for the front nozzles.

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13. Starting at the front of the lift, follow the direction you used to install the sensor cable and thread the tubing through the plastic ties that were loosely tied when installing the sensor cable in step 7. Continue to route the tubing and connect it to the remaining open end of the first tee. This should complete the plumbing on the rear of the lift. At this point it is a good idea to again check for interference with inspection covers and/or seat movement. Once you have ensured that the cable and tubing are correctly routed you may tighten the plastic ties to secure both the sensor cable and the tubing. Connect the sensor cable to the pump system using the M12 connector. Hand tighten only. Coil excess cable and tie out of harm's way using the magnet mounts and ties
14. At the front of the forklift, find a location to install the third Tee. Usually between the mast and the front of the forklift body. (Figure 17)



Figure 17

Cut the tubing and install the tee, then use the tubing and the magnetic mounts and plastic ties to route each end of the tee to the front spray nozzles. Connect the front spray nozzles just as you connected the rear nozzles, leaving some slack, if possible, to allow adjustment of the nozzles.

15. Install a fully charged battery pack.
16. Once the installation is complete, walk around and check to make sure all tubing is routed and secured properly. Open and close any engine compartment doors or access covers, slide the seat fully forward and backward, and make sure there are no interferences with tubing or components. (Figure 18) (Figure 19-showing temp relocation of jug rack)

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Figure 18



Figure 19

PRIMING THE SYSTEM:

The system is now ready for priming and use. Actuate the pumping module by pushing in on the Prime Button and releasing. Each time the button is pushed the unit will run until it times out. When the nozzles have achieved a spray pattern the priming is complete. Check to make sure there are no leaks at connection points. Make sure all tubing connections have been fully inserted into the push fit style fittings.

***Note**, if the prime button fails to actuate the pump, it is most likely that the photo electric sensor has been inadvertently switched into the wrong mode. To correct this condition, See the section below on setting the photo sensor.

***Note**, if the pump fails to prime after 3 or 4 actuations, disconnect the pump discharge tubing from one of the nozzles or branch tee fittings and place in/over a suitable container. Reattempt to prime the system again until some fluid exits through the disconnected fitting. Once the pump has been primed you may reconnect the tubing to the fitting. This method should only be required upon initial startup with a dry pump or following an extended shutdown where the pump was allowed to completely dry out.

SETTING THE PHOTO SENSOR:

The photo electric sensor should be pre-programmed when received. However, in the event the sensor is not performing properly, ensure it is programmed properly by performing the following:

- Align the sensor so there is no light reflected from the reflective tape.
- First press [OUT off], then [OUT on] on the photo electric sensor.

This will set the sensor in the proper mode and adjust for maximum sensitivity.

Electronic Lock: The photo sensor does have the ability to be electronically locked to prevent unauthorized setting. On delivery, the unit is not locked. To lock or unlock, follow these steps:

- Press [OUT on] **and** [OUT off] simultaneously for 10 seconds. Acknowledgement is indicated by a change of the LED status.

ADJUSTING THE NOZZLES:

Have an assistant press the pump prime button while you observe the spray pattern at each wheel. The goal is to achieve a flat fan spray that covers the entire width of the wheel. (Figure 20) Adjust as required by placing the magnet mount in an alternate location, adjusting the nozzle swivels, or turning the nozzle itself to align with the wheel. Make sure to tighten the nozzle swivel assemblies as well as the caps. You may also trim any excess tubing at this point. If you relocated the nozzles, be sure to re-check for clearance when turning the wheels.



Figure 20

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SETTING THE REFLECTIVE STRIPS:

Take the forklift to a location, door opening or entryway area where you want the unit to spray the tires. Note the height and angle of the photo sensor and the desired direction of travel in relation to the sensor. Most installations will call for the reflective tape to be installed on the right side of the entryway to permit operation when entering and not when exiting.

Confirm that this height and angle will work for all desired entryways, then measure and record the centerline height of the sensor. Using this measurement, apply one of the adhesive-backed reflective strips at the appropriate height, such that when the forklift passes the tape, the sensor will receive a reflected beam and activate the pump system. Each provided strip is 24" in length. When installed correctly, the beam height should be near the center of the 24" strip. This will allow some variability between lifts and installations. For optimum beam reflection, the reflective tape and beam should pass at 90° angles relative to each other.

Install additional reflective strips at the same height at each desired door or entryway.

Photo Electric Beam Height _____

Reflective Tape Mounting Height _____ to bottom _____ to top of strip.

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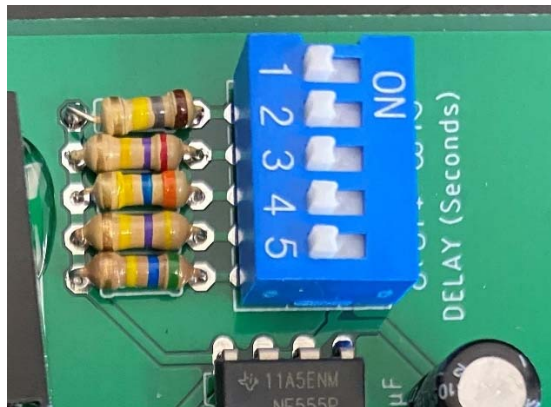
SETTING THE SPRAY (RUN) TIME:

To check the wheel coverage, have an assistant drive the forklift in a straight line at normal operating speeds, through a doorway fitted with the reflective tape. Observe the spray patterns and coverage on each wheel and determine if the run time will be adequate for your tire size and ensure full coverage of all tread areas.

The spray time (pump run time) is preset on the pumping unit to 3 seconds, providing approximately 1.5oz/application, split between the four nozzles. The speed you are traveling, and the tire size will determine the overall tire coverage. In most cases the average solid tired forklift traveling at moderate speeds of 2-4 mph will not require any adjustment to cover the entire wheel surface. If your condition requires a longer or shorter application, you can adjust the run time of the pumping module by removing the battery and the pump cover and setting the dipswitch(s) to achieve the correct application time. (Figure 22)

Refer to the chart below for alternate run times.

Dip Switch #	"ON"
1	2 seconds
2	3 seconds
3	4 seconds
4	5 seconds
5	6 seconds



Select time by selecting one dip switch only. Turning "ON" more than one dip switch will result in lower run times.

Figure 22

OPERATING THE SYSTEM:

TO OPERATE THE SYSTEM, PERFORM THE FOLLOWING:

As the operator travels through a door or entryway the sensor signal is reflected back from the reflective tape and the pumping module sprays to cover the surface of the rotating tires with sanitizer. To ensure adequate coverage on steer wheels, all effort should be made to install the system in a location that provides a straight direction of travel during application.

Refill or replace the sanitizer solution as necessary, making sure the container has the appropriate Safety Feed insert installed.

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REFILLING THE SANITIZER:

If refilling the sanitizer container, you must remove and replace the safety feed insert. Follow the steps below to remove and replace the insert.

1. Disconnect the Safety Feed adapter cap from the empty sanitizer container.
2. Disconnect the safety cable from the cable clip and remove the F style container from the jug rack.
3. Using the special Safety Feed removal tool, remove the Safety Feed dip tube from the empty container. Center the tee handle tool over the Safety Feed dip tube and turn in a clockwise direction while pushing down on the dip tube. As the tool bites into the dip tube, it will begin to turn. Pull up on the tee handle to remove the Safety Feed dip tube.



The dip tube can be damaged when removed and is typically designed to be disposed of after a few uses. Reusing the dip tube will eventually result in improper pump operation and should be replaced if it begins to cavitate the pump.

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4. Refill the one gallon F style container with sanitizer. Sanidate RTU is recommended as it has shown to be compatible with the materials of construction.
5. Reinstall a new Safety Feed dip tube in the container after refilling if required. Simply press a new dip tube assembly into the jug opening until it snaps into place. The disposable dip tubes can be purchased in bags of 25 each.



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WARRANTY:

Thank you for your purchase of a Kleen Connect Forklift Entryway Sanitizing System. We have carefully chosen materials to be compatible with most sanitizers and hope this system gives you years of service with minimal maintenance. Your purchase is covered by a limited warranty and replacement parts are available directly from Kleen Connect.

For replacement parts call (530) 895-0521

LIMITED WARRANTY:

This Limited Warranty applies to the physical components, and only for physical components purchased through an authorized Kleen Connect Distributor. This Limited Warranty covers any defects in material or workmanship under normal use during the Warranty Period.

During the Warranty Period, Kleen Connect will repair or replace, at no charge, products or parts of a product that prove defective because of improper material or workmanship, under normal use and maintenance.

The Warranty Period for the Forklift Entryway Sanitizing System purchased from an Authorized Distributor is **12 Months from the date of purchase**. A replacement system or component assumes the remaining warranty of the original Forklift Entryway Sanitizing System.

This Limited Warranty does not cover any problem that is caused by conditions, malfunctions, or damage not resulting from defect in material or workmanship. This includes but is not limited to problems caused by:

- Physical damage, dropping, crushing, or other abuse outside normal operating conditions.
- Improper installation, maintenance, or modifications to the system.
- Contact with wheels or other moving objects such as masts, chains, etc.
- Damage caused by chemical incompatibility.

To obtain warranty service, contact Kleen Connect at (530) 895-0521 to determine the problem and the most appropriate solution for you. Please have the Serial Number of your system available. The Serial Number can be found on the underside of the pumping system lid.

BATTERY USER GUIDE:

The battery pack provided with this system is manufactured by Kobalt. The batteries, charger, and all Kobalt designs & logos are products and registered Trademarks of Kobalt. Kobalt is merely a provider of the battery pack and in no way liable or responsible for the operation of this unit, other than those liabilities and obligations that may come with the purchase of their Kobalt 24 VDC battery and charger. The user guide for the Kobalt 24VDC battery has been reprinted and attached at the end of this manual for reference only. Refer to the complete guide included with the battery pack and/or charger.

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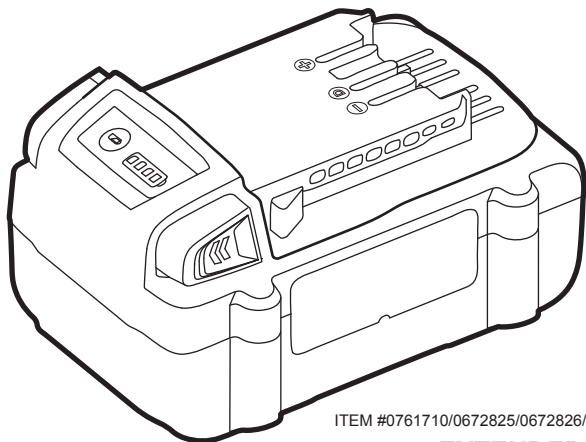
This page intentionally left blank.....Use it for taking notes during your installation.

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*705 Keenan Court - Durham, CA 95938
(530) 895-0521 - www.kleenconnect.com*

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MODEL #KB 424-03

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Questions, problems, missing parts? Before returning to your retailer, call our customer service department at 1-888-3KOBALT (1-888-356-2258), 8 a.m. - 8 p.m., EST, Monday - Friday.

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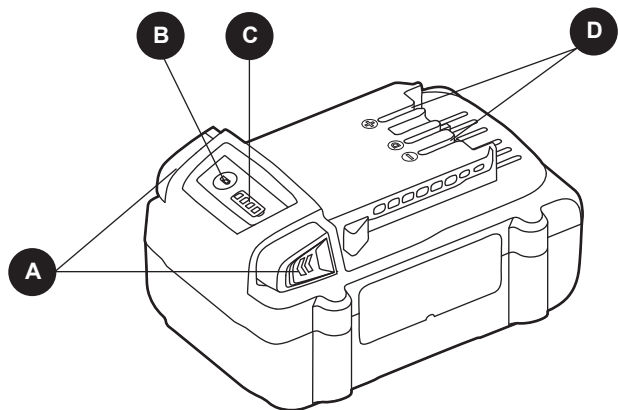
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PRODUCT SPECIFICATIONS

COMPONENT	SPECIFICATIONS
Battery voltage	24V d.c.
Battery capacity	4.0 Ah
Battery type	Lithium-ion
Battery charger model	KRC 2445-03; KRC 2490-03

PACKAGE CONTENTS



PART	DESCRIPTION
A	Battery-release buttons
B	Power-indicator button
C	Power indicator
D	Electrical contacts

⚠ WARNING

- Remove the battery pack from the package and examine it carefully. Do not discard the carton or any packaging material until all parts have been examined.
- If any part of the tool is missing or damaged, do not attach the battery pack or use the tool until the part has been repaired or replaced. Failure to heed this warning could result in serious injury.

SAFETY INFORMATION

Please read and understand this entire manual before attempting to assemble or operate this product. If you have any questions regarding the product, please call customer service at 1-888-3KOBALT, 8 a.m. - 8 p.m., EST, Monday - Friday.

Know the Tool

To operate this battery pack, carefully read this manual and all labels affixed to the battery pack before using it. Keep this manual available for future reference.

Important

This battery pack should be serviced only by a qualified service technician.

Read All Instructions Thoroughly

Battery Pack Safety Warnings

WARNING

- Before using battery pack, read all instructions and cautionary markings on battery pack, battery charger, and tools using battery. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.
- Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

SAFETY INFORMATION

- Know your power tool. Read the operator's manual carefully. Learn the tool's applications and limitations, as well as the specific potential hazards related to this tool. Following this rule will reduce the risk of electric shock, fire, or serious injury.
- When battery pack is not in use, keep it away from other metal objects like paperclips, coins, keys, nails, screws or other small metal objects that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- Do not open the battery. There is risk of a short circuit.
- Battery tools do not have to be plugged into an electrical outlet; they are always in operating condition. Be aware of possible hazards when not using your battery tool or when changing accessories. Following this rule will reduce the risk of electric shock, fire or serious personal injury.
- Do not place battery tools or their batteries near fire or heat. This will reduce the risk of explosion and possible injury.
- Do not crush, drop or damage the battery pack. Do not use a battery pack or charger that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- Batteries vent hydrogen gas and can explode in the presence of a source of ignition, such as a pilot light. To reduce the risk of serious personal injury, never use any cordless product in the presence of open flame. An exploded battery can propel debris and chemicals. If exposed, flush with water immediately.
- Do not charge the battery in a damp or wet location. Following this rule will reduce the risk of electric shock.
- For best results, your battery should be charged in a location where the temperature is greater than 41°F (5°C) and less than 104°F (40°C). Do not store outside or in vehicles.

SAFETY INFORMATION

- Under extreme usage or temperature conditions, battery leakage may occur. If liquid comes in contact with your skin, wash immediately with soap and water, then neutralize with lemon juice or vinegar. If liquid gets in your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention. Following this rule will reduce the risk of serious personal injury.
- Do not let gasoline, oils, petroleum-based products, etc., come in contact with plastic parts. These substances contain chemicals that can damage, weaken or destroy plastic.
- Save these instructions. Refer to them frequently and use them to instruct others who may use this tool. If you lend someone this tool, lend them these instructions also to prevent misuse of the product and possible injury.

PREPARATION

Know Your Battery Pack

Before attempting to use the battery pack, familiarize yourself with all of its operating features and safety requirements.

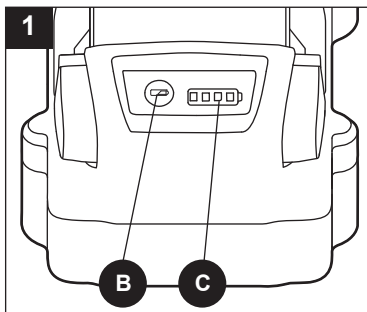
WARNING

- Do not attempt to modify the battery pack or create accessories not recommended for use with this battery pack. Any such alteration or modification is misuse and could result in a hazardous condition leading to possible serious personal injury.

OPERATING INSTRUCTIONS

1. Power Indicator

This lithium-ion battery pack is equipped with a power indicator that displays the battery pack's charge status. Press the power-indicator button (B) to display the LED lights in the power indicator (C). The LED lights will stay lit for approximately 5 seconds. It is recommended that the battery pack be brought up to full charge before starting a big job or using it for an extended period of time.



NOTICE: The power indicator can be used whether the battery is attached or removed from tool.

- ● ● ● 80%-100% charge
- ● ● ○ 60% - 79% charge
- ● ○ ○ 40% - 59% charge
- ○ ○ ○ 20% - 39% charge
- ☼ ○ ○ ○ Fewer than 20% charge
- ☼ ☼ ☼ ☼ Completely discharged or overloaded
- ☼ ○ ☼ ○ High/Low temperature

OPERATING INSTRUCTIONS

Low Capacity Warning

If one LED of the power indicator (C) begins to flash, the battery pack is charged to less than 20% of its capacity and should be recharged.

Unlike other types of battery packs, lithium-ion battery packs deliver fade-free power for their entire run time. The tool will not experience a slow, gradual loss of power as it is used. The power delivered to the tool will drop quickly when the battery pack is at the end of its run time and needs to be charged. It is not necessary to completely discharge the battery pack before recharging. Remove the battery pack from the tool and recharge it when it is convenient or when it is not in use.

Battery Protection

The battery circuitry protects the battery pack from extreme temperature, over-discharge, and over-charge. To protect the battery pack from damage and prolong its life, the battery pack circuitry will turn off the battery pack if it becomes overloaded or if the temperature becomes too high during use. This may happen in extremely high torque, binding, and stalling situations. This system will begin normal operation when it returns to 32°F (0°C) - 122°F (50°C).

The power indicator (C) will display four flashing LED lights if the circuitry detects a momentary overload. Reset the battery pack by pressing the power-indicator button (A). Press the power indicator button again to display the remaining charge.

NOTICE: A significantly reduced run time after fully charging the battery pack indicates that the batteries are near the end of their usable life and must be replaced.

OPERATING INSTRUCTIONS

2. Cold Weather Operation

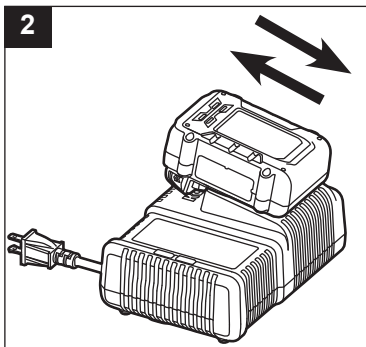
This lithium-ion battery pack will provide optimal performance in temperatures between 32°F (0°C) and 104°F (40°C). When the battery pack is very cold, it may “pulse” for the first minute of use to warm itself. Put the battery pack on a tool and use the tool in a light application. After about a minute, the battery pack will have warmed itself and will operate normally.

3. To Charge the Battery Pack


NOTICE: This lithium-ion battery pack is shipped partially charged. Before using it the first time, fully charge the battery pack.


A fully discharged battery pack will charge in about 70 minutes with charger KRC 2490-03 in a surrounding temperature between 41°F (5°C) and 104°F (40°C).

- Always charge the battery pack with the correct charger.
- Connect the charger to a power supply.
- Attach the battery pack to the charger by aligning the raised ribs of the battery pack with the slot in the charger. Slide the battery pack onto the charger (Fig. 2).
- When the charger indicates the battery pack is fully charged, remove it from the charger.




CARE AND MAINTENANCE

 All maintenance should only be carried out by a qualified service technician.

 Dispose of used battery packs promptly. Keep battery packs away from children. Do not disassemble battery packs and do not dispose of them in fire.

Cleaning

 Before cleaning or performing any maintenance, remove the battery pack from the tool. For safe and proper operation, always keep the tool and its ventilation slots clean.

Always use only a soft, dry cloth to clean your battery pack; never use detergent or alcohol.

3-YEAR HASSLE-FREE WARRANTY

For 3 years from date of purchase the battery is warranted for the original purchaser to be free from defects in material and workmanship. This guarantee does not cover damage due to abuse, normal wear, improper maintenance, neglect, unauthorized repair/alteration, or expendable parts and accessories expected to become unusable after a reasonable period of use.

If you think your product meets the above guarantee criteria, please return it to the place of purchase with valid proof of purchase and the defective product will be repaired or replaced at no charge. This guarantee gives you specific legal rights, and you may also have other rights that vary from state to state.

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