ONE SHOT (OS-200 L/LS/S) INSTRUCTION MANUAL

THEORY OF OPERATION

The One Shot 200 is a dual product advanced microprocessor controlled injection system for dispensing a precise amount of detergent and bleach into a domestic type top loading washing machine. The dispenser features two of the KTM-500 timing modules, which includes a unique button programmable pump timer and pump "Lock-Out" time that is designed to prevent consecutive dispensing where cost containment and control is required. The KTM-500 also features a delay time function, and a "Relay Mode" which allows for a timed signal from a microprocessor laundry machine to control the pump operation.

The OS-200 will activate when the signal input on the circuit board receives a 14-240VAC signal. An optional two button remote switch box can be installed for a remote manual start. The OS-200 has a built in 120/208/230V transformer for main power.

INSTALLATION

- **Mounting:** Locate a spot near the laundry machine and use the provided hardware to mount the unit on the wall no more than 8 feet from the floor and within 20 feet of the chemical supply. If using a remote switch box, ensure the cable is long enough to mount the remote to the front of the washing machine.
- **Electrical:** Connect main power to the 120/208/230V internal transformer. Use approved power cord and conduit and install leads to appropriate voltage selection on the terminal strip on top of the internal transformer (refer to wiring diagram). Wire the external signal from the signal source to the 14-240VAC signal input terminal. (refer to wiring diagram). If using optional remote start switch wire the Orange and Red wires from the switch box to the "START" terminals on Pump 1's circuit board and wire the Black and Brown wires from the switch box to the "START" terminals on Pump 2's circuit board (refer to wiring diagram).
- **Plumbing:** Liquid product plumbing: Connect 1/4" OD tubing from the output (right) side of the pump to the point of injection. Connect 1/4" OD tubing from the chemical source to the suction (left) side of the pump.
- For solid chemical applications, an auxiliary feeder, such as the KNIGHT Power Bowl Ultra, is required to dissolve the product and deliver it to the machine or sink. The solenoid will need to be plumbed into the feeder.
- Solid product plumbing: Connect 1/4" OD tubing between inlet side of solenoid to the water source. Connect 1/4" OD copper tubing between output side of solenoid to the input of the Power Bowl Ultra.

PRIMING

(1) Locate the dip-switch pack on the circuit board and set switch #6 to RELAY.

(2) Press and hold the Start button until the chemical line is fully primed, then release the button.

(3) Set switch #6 to SIGNAL (unless you intend to use relay mode).

CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical mfrs.

CAUTION: To avoid severe or fatal shock, always disconnect main power when servicing the unit.

CAUTION: When installing any equipment, ensure that all national and local safety, electrical, and plumbing codes are met.

PROGRAMMING

Pump/Solenoid Run Time: (max run time is 12 minutes and 42 seconds)

(1) Locate the dip-switch pack on the circuit board — set switch #6 to SIGNAL, set switch #7 to RUN TIME and set switch #8 to PROGRAM MODE.

(2) Using a measuring cup or flask, press Start switch and release when pump starts. Let the pump or solenoid run until desired amount of chemical is dispensed then press Start switch again to stop. The One Shot run time is now programmed. Repeat step if new volume is required.

(3) Set mode switch #8 to RUN MODE.

Delay Time: (max delay time is 12 minutes and 42 seconds)

(1) Locate the dip-switch pack on the circuit board — set switch #6 to SIGNAL, set switch #7 to DELAY TIME and set switch #8 to PROGRAM MODE.

(2) Press Start switch and release when the LED begins flashing. When the desired delay time has passed, press the Start switch again. The One Shot delay time is now programmed. Repeat step if new delay time is required.

(3) Set mode switch #8 to RUN MODE.

Lock-Out Time: (max lock-out time is 31 minutes)

This feature defeats consecutive dispensing of product for a pre-determined interval. Select a combination of switches 1 – 5 to program total lock-out time.

Example: For 10 minute lock-out, set switches #2 and #4 to ON with all other switches OFF.
For maximum lock-out (31 min) set all switches ON.
For no lock-out, set all switches OFF.

OPERATION

Manual activation: Press the Start button on the cover or on the remote switch box for 1 full second. The OS-200 will begin counting down the delay time (if used) and will then run the pump/solenoid for the amount of time programmed. Once the lock-out time expires the pump/solenoid will be ready to restart.

Signal activation: When the signal input on the circuit board receives a 14-240 VAC trigger signal for at least 5 full seconds, the delay time (if used) will begin counting down. Then the pump/solenoid will run for the amount of time programmed. Once the lock-out time expires the pump or solenoid will be ready to restart.

Relay Mode: Set switch #6 to RELAY. The pump/solenoid will activate for as long as an external trigger signal is present, or for as long as the manual button is depressed. All other board functions (such as delay time and lock-out time) are by-passed in relay mode.

LOCKOUT SIGNAL FEATURE

Systems are shipped from the factory with a pair of wires connecting the L/O SIG terminals of both boards together (as shown in the wiring diagram). These wires lock out both boards from operation when either one has a lockout time active. They also prevent both pumps from activating at the same time if both start buttons are pressed simultaneously, or if both boards share the same signal (if this situation occurs, only one pump will run).

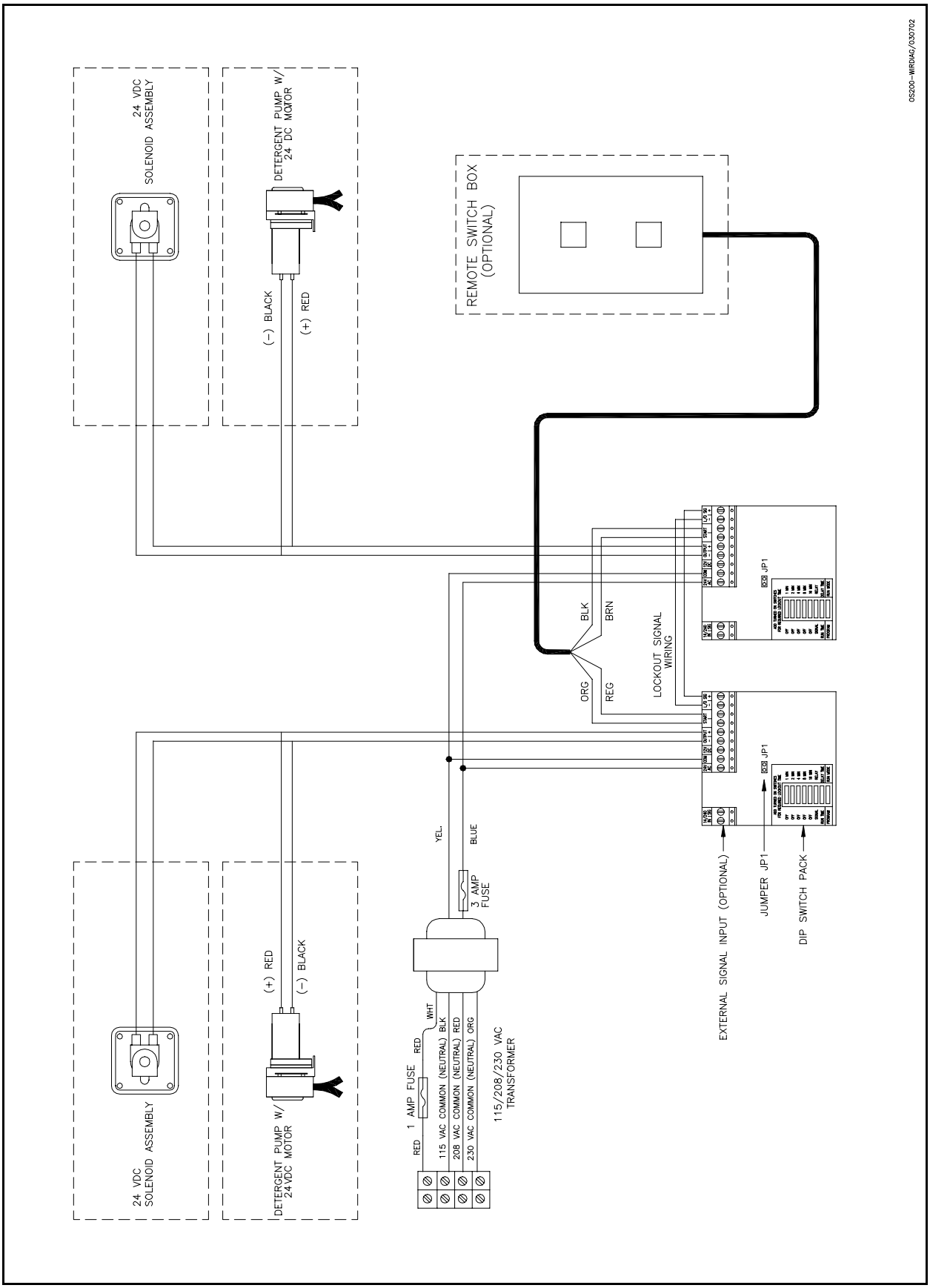
- Remove the wires from the L/O SIG terminals on both boards if you wish to activate both pumps from the same signal. It is recommended to program a delay time for the second pump so that only one pump runs at a time.
- If you later decide to re-connect the wires, be sure the polarity is correct as shown in the wiring diagram.

DISABLING THE START BUTTON

There is a jumper marked “JP1” on the circuit board that can be used to prevent manual activation in certain applications, or to allow manual activation by remote push-button only. This jumper only affects the on-board start button. A remote start button, or trigger signal, can always be used to activate the pump.

- When the jumper is ON, the on-board start button is functional.
- When the jumper OFF, the on-board start button is disabled.

WIRING DIAGRAM



TROUBLESHOOTING

Pump or solenoid will not start

- Push the start button and check pump/solenoid output voltage with volt meter.
- Make sure Lock-out time is set correctly and not active.
- Check the external signal voltage.

Pump 1 will activate but pump 2 will not

- If using lock-out signal check to see what the active lock-out time is for the pump that will activate.
- Set pump 2's lock-out time to zero and try to activate the pump.
- Push start button and check voltage to the pump motor.
- Check the external signal voltage for pump 2.

Pump is running too long or not for the correct time

- Re-program the pump for the proper run time.
- If in Relay Mode make sure that the signal is present for the correct amount of time.

Pump loses or will not hold prime

- Check or change squeeze tube or roller block.

DISCLAIMER

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

WARRANTY

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.

KNIGHT LLC, *A Unit of IDEX Corporation*

World Headquarters: 20531 Crescent Bay Drive, Lake Forest, CA 92630-8825 (USA) TEL: 949-595-4800, FAX: 949-595-4801, www.knightequip.com

Atlanta Branch:	Toronto Branch:	London Branch:	Sydney Branch:	Amsterdam Branch:
415 Gees Mill Business Court NE, Suite 200	2880 Argentia Road, Unit 6	#15 Brunel Centre	Unit 28, 317-321	Marssteden 68
Conyers, GA 30013 USA	Mississauga, Ontario	Newton Road, Crawley	Woodpark Rd., Smithfield	7547 TD Enschede
TEL: 770-760-8777	L5N 7X8 Canada	West Sussex UK RH10 9TU	NSW Australia 2164	The Netherlands
FAX: 770-761-0199	TEL: 905-542-2333	TEL: 44-1293-615570	TEL: 61-29-725-2588	TEL: 31-53-428-58-00
	FAX: 905-542-1536	FAX: 44-1293-615585	FAX: 61-29-725-2025	FAX: 31-53-428-58-09