EZChem™
Automated Distribution System for Bulk Chemistry

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1.   **INDICATIONS FOR USE**
      The EZCHEM is a chemical distribution system for bulk chemistry. EZCHEM can supply instrument cleaning, drying and lubrication chemistries to any washer disinfectors, instrument washers, ultrasonic washers, cart washers, and more. The system utilizes industry recognized Knight peristaltic pumps and controller with a patent pending auto-filling EZChem reservoir to eliminate the handling and transport of harsh chemical concentrates. The modular design of the EZCHEM allows the system to readily adapt to your chemical distribution requirements.

      The EZChem is a 5 component system, with each component performing a specific function. See the diagram below for illustration of the following:

1.1   The **EZChem Pump Controller** uses peristaltic pumps to deliver the chemistry from the bulk chemical containers to the EZChem chemical reservoir.

1.2   The **EZChem Reservoir** is an auto-filling chemical supply reservoir at the point-of-use. It has a re-fill float that signals the pump controller to replenish the chemical supply when the reservoir is low.

1.3   The **low level float** on the bulk chemical container triggers an alarm when   the bulk chemistry supply is low.

1.4   The **strobe/audible alarm** alerts the CS technician to the low level condition of the bulk chemical container(s).

1.5   The **EZChem Remote** displays system error codes.
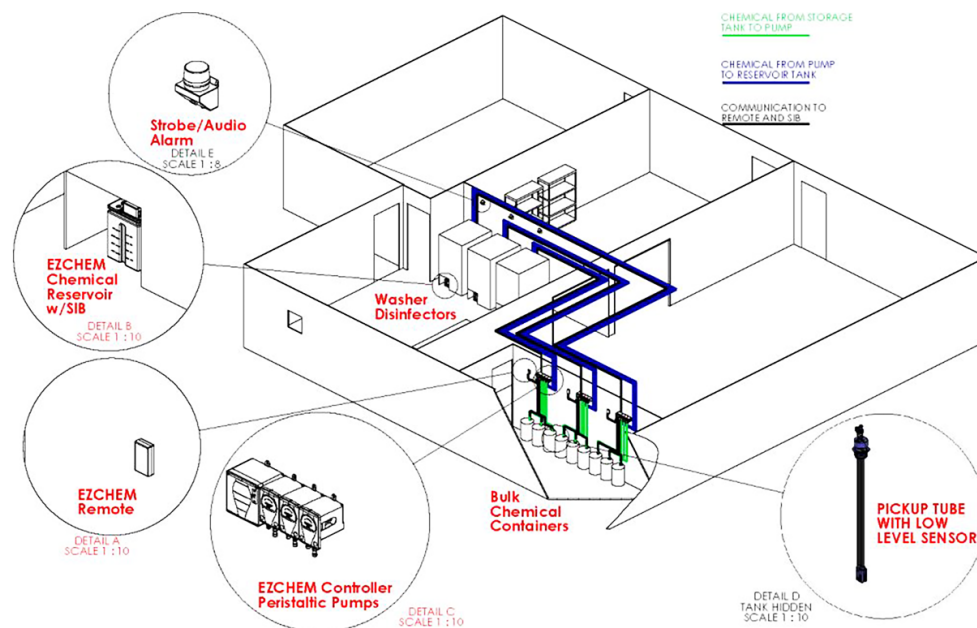
2. SAFETY
2.1 SAFETY PRECAUTIONS

- Wear protective clothing and eye protection whenever operating this system.
- Wear protective clothing and eye wear when dispensing chemicals. Observe safe handling instructions (MSDS) provided on chemical container or as supplied by chemical manufacturer.
- To avoid severe or fatal shock, physical injury, always disconnect main power when servicing the unit.
- When installing any equipment, ensure that all national and local safety, electrical and plumbing codes are met.
- System is for indoor use only
- Do not submerge or place in direct path of spray/moisture
- System cables communicate with safe 12 Volt DC power
- Only approved, factory authorized technicians to service unit

2.2 SAFETY SYMBOLS

Listed below are explanations of the safety symbols that appear either on the unit, in the instruction manual, or both. Please familiarize yourself with the meaning of each symbol.

Symbol	Description
☐	Class II Equipment
📖	Operating Instructions
📖	Follow operating instructions
👉📖	Refer to instruction manual/ booklet
⚠	General warning sign
🗑	This device contains electrical and/or electronic equipment that must be recycled per EU Directive 2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)
⚡	Caution risk of electric shock or Attention Dangerous Voltage

2.3 SPECIFICATIONS

Dimensions & Weight	Pump Controller:	7.8"W x 6.2"D x 9.4"H 19.8cm x 15.8cm x 23.9cm
	Pump:	4.6"W x 6.1"D x 7.5"H 11.7cm x 15.5cm x 19cm
	1-Gallon Reservoir:	6.3"W x 7.4"D x 11.3"H 16cm x 18.8cm x 33.8cm
	2-Gallon Reservoir:	12"W x 7.4"D x 11.3"H 30.5cm x 18.8cm x 28.7cm
	1 Pump System: 8.20 lbs (3.71 kg) 2 Pump System: 11.10 lbs (5.03 kg) 3 Pump System: 13.85 lbs (6.28 kg)	
Pump Flow Rate	34 oz/min (1000 ml/min)	

AC Power Supply/Voltage	In: 115 VAC, 50/60 Hz, 2.8A 230 VAC, 50/60 Hz, 1.6A Out: 24 VDC 6.5A
Chemical Compatibility—Dose Pump	Industry standard chemistry
Suction/Discharge Tube Length	8 ft (2.44 m) suction tube 250 ft discharge tube (76.2 m) 12 ft max elevation (3.65 m)
Suction/Discharge Tube Material	Plenum rated fire retardant
Communication Cable Length	50 ft – 250 ft (15.24 m – 76.2 m)
Chemical pickup from any size chemical containers	1 gallon – 55 gallon (5 liter to 208 liter)
Electrical Safety	Power Supply: 115 VAC, 50/60 Hz, 2.8A 230 VAC, 50/60 Hz, 1.6A Indoor Use Only Mains supply voltage fluctuations are not to exceed 10 percent of the nominal supply voltage Tubing: Standard rating Optional plenum rated tubing available
Temperature	41°F to 104°F (5°C - 40°C)
Equipment Ratings	Pollution degree, 2 Installation category, II Altitude, 2000 meters (max) Humidity, 95% Rh (max) Electrical supply input 100-240 VAC 50/60 Hz (see specifications above) System is for indoor use only Maximum ambiant temperature: 40° C
Approval Marks	CSA C US CE

3. **ACCESSORIES**

PART #	DESCRIPTION	QUANTITY
7002040	EZChem Remote Mounting Bracket	1
7600121	#10 Screws and Anchors, 2 of each	4
0300131	Cable Ties	4
6683000	Assy, Injection Fitting	1

4. **PRE-INSTALLATION**

Before the equipment is installed, you should survey the installation site thoroughly. At the very least, your survey should include the following:

Check to make sure that all functions of the washer disinfectors are operating properly.

☐ Check the proposed location for a 115 or 230 VAC power source

☐ Measure the distance from bulk chemical supply containers to the EZChem pump controller and from the pump controller to the EZChem reservoir. Make sure to take into consideration the route of the chemical line including the lift and drop of the tubing to determine the actual length of tubing and wiring needed

☐ Determine a location for the strobe/audible low level alarm

☐ Verify if installation will penetrate fire barrier

☐ Verify if installation will penetrate a positive/negative air balance within SPD

4.1 **TOOLS NEEDED**
- Philips screwdriver
- Tubing cutter
- Drill
- Flat insulated screwdriver
- Tape measure
- Leveler
- Stud finder

5. INSTALLATION

5.1 Mount the EZChem pump controller in a convenient location **no higher than 8 feet (2.44 m) above** and **within 10 feet (3.05 m) horizontally** of supply containers. The EZChem pump controller can be near the washer or it can be mounted as a remote pumping system.

  5.1.1 Use the mounting template provided in the accessory kit to mark the placement for the mounting screws.

  5.1.2 Drill a hole for the mounting screws and secure the mounting screws into place

  5.1.3 Hang the unit from the screws.
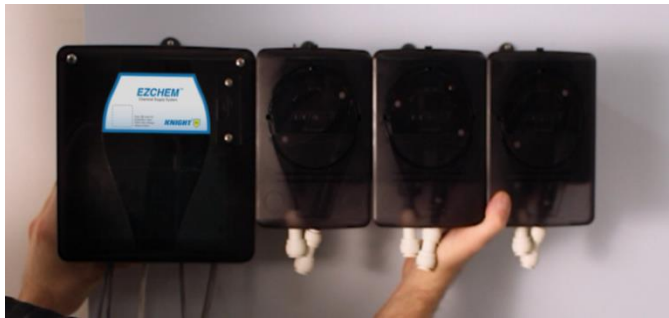
5.2 Mount the **Remote Control** next to the pump cabinet using the provided mounting bracket. Secure the bracket with the mounting screws or dual-lock fastening strips (be sure to first clean the mounting surface as the adhesive will not stick to a dirty surface).

5.3 Place the EZChem Reservoir(s) within reach of the chemical pickup tube(s) from the washer disinfectors.

A 2 or 3 pump system will have 2 and 3 chemical reservoirs, respectively. Connect the secondary reservoir(s) to the primary reservoir using the twist-lock connectors. (**Refer to section 17 Electrical**)

5.4 Route all required tubing and the communication cable making sure there is sufficient remaining tubing and cable for connecting the EZChem pump controller to the EZChem reservoir.

  5.4.1 For each pump cut the suction tube to length and insert one end into the corresponding low level sensor. Drop the low level sensor into the chemical container and adjust the cap by lowering it to create a seal around the chemical container opening.

5.4.2   Insert other end of the suction tube into the left (suction) side of the pump's squeeze tube.
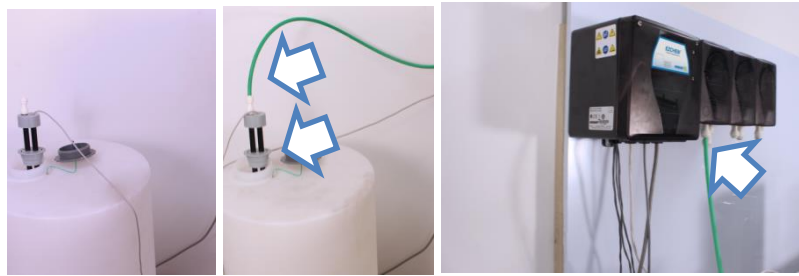
5.4.3   Mount the strobe alarm by the washer disinfectors or at a location that is highly visible for the cleaning technician. Connect the strobe alarm cable to the strobe port on the primary reservoir using the twist-lock connector.

5.5   Cut the discharge tube to length and insert one end to the inlet port of the EZChem reservoir. Insert the other end to the right (discharge) side of the pump's squeeze tube. Then take the twist-lock communication cable from the EZChem primary reservoir and connect it to the EZChem pump controller.

5.6   Power Up the EZChem System. Plug the pump cabinet to an available outlet. The system is now ready. If no errors are present, pumps will begin to auto prime the chemical line. If pumps do not run, the remote will indicate an error condition.

6.   POST INSTALLATION
Check to make sure that all functions of the installation are operating properly.

☐   Ensure you have sufficient chemical supply levels

☐   Ensure the overflow from the EZChem reservoir has not been triggered

☐   The initial chemical volume delivered to the EZChem reservoir may only be a partial fill. This volume will be sufficient to run multiple wash cycles. When the refill activation float triggers a refill thereafter, the EZChem pump system will fill to the programmed volume

☐   Check for leaks at all tubing connections

☐   Verify the system is operating (no errors displayed on the remote screen.)
     If there is an error, check the chemical supply and check that there is no overflow from the EZChem reservoir

7.   PROGRAMMING
The system is set to operate each pump until the activation float has been satisfied, then will run the programmed pump time to ensure the chemical supply in the reservoir is adequate.

Before the unit can be programmed, it must be switched into programming mode.

7.1   SWITCHING TO PROGRAM MODE
When the system is sitting idle, the display on the remote control will show "- -"

7.1.1   Move switch #2 on the DIP switch pack to the ON position.

7.1.2   Press ENTER on the remote control.

7.1.3   Display will show P1 indicating that you are ready to program pump 1.

7.2   PROGRAMMING PUMP RUN TIMES

7.2.1   While P1 (pump 1) is showing on the display, press ENTER and change the run time with the UP arrow (the number shown will be multiplied by 10 seconds), then press ENTER. If you reach 30 on the display, the number will loop back around to zero to begin again.

7.2.2   Press ENTER to advance to P2 (pump 2) and repeat the step above. Then repeat the step above for P3 (pump 3).

7.3   SWITCHING BACK TO RUN MODE

7.3.1   When finished programming all pumps, move DIP switch #2 back to the OFF position.

7.3.2   The display on the remote control will return to show "- -"

8. ALARM CONDITIONS

8.1 When an alarm is triggered, the pumps will stop running. The EZChem system is capable of producing 4 different alarm conditions.

8.1.1 Display flashes "LL": Check the chemical low level condition of the bulk containers. If the chemical level from any bulk container is low, replace the supply with a fresh container.

8.1.2 Display flashes "o1": Check the chemical overflow level of the EZChem Reservoir for the pump number shown. If the chemical level in the reservoir is above the overflow level, discard the excess chemical.

8.1.3 Display flashes "F1": This indicates a fill error where the system has been running the pump number shown for an extended period of time and the lower float has not recognized a rise in chemical level. Press UP or ENTER to clear the error.

8.1.4 Display flashes "Co": Check the communication cable between the main reservoir and the base control unit.

8.1.5 Alarm conditions will reset themselves (except for fill error) when the cause of the error has been fixed.
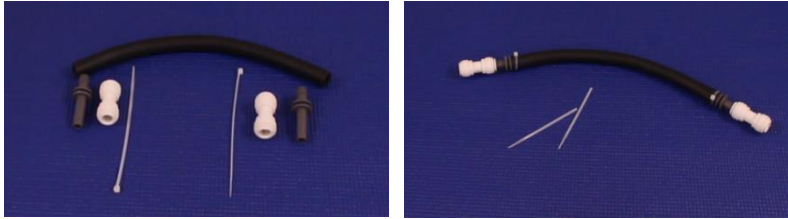
9. PREVENTATIVE MAINTENANCE KIT PART NUMBER 1411516

Description	Quantity
Tube, T-66 Plus, 10.5 in (25 cm)	3
Cable Tie, 4.0 in (10.2 cm), Black	6
Fitting, Push-In, 3/8 in (1 cm) Barb	6
Fitting Push Connect 3/8 in (1 cm) tube	6
Ktl-20 Tube Lubricant	1
Assy, Injection Fitting	3
Duckbill 0.583 (1.5 cm) OD	3
Tubing 1/4 in (0.6cm) ID x 3/8 in (1 cm) OD	3
Valve, Umbrella Foot Tapped	3

10

10. PREVENTATIVE MAINTENANCE INSTRUCTIONS

Scan the QR code for the preventative maintenance video. Video may change without notice.

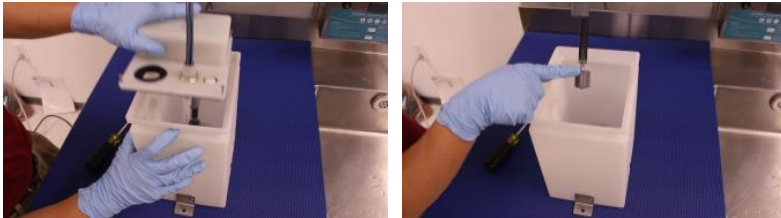|		FREQUENCY
10.1	Squeeze tube replacement. 10.1.1 Remove pump faceplate and dispose of old squeeze tube. 10.1.2 Assemble new squeeze tube and apply lube. 10.1.3 Secure new squeeze tube in place and reassemble faceplate. 	6 months
10.2	Check faceplates for secure attachment/cracks. 10.2.1 Replace as needed.	6 months
10.3	Check low level sensor for proper operation. 10.3.1 Lift low level sensor out of container to trigger alarm. 10.3.2 On the end of the sensor, lift the float. Alarm should stop. 	6 months

10.4	Inspect foot valve on low level sensor. 10.4.1 Lift low level sensor out of container. 10.4.2 Check foot valve for dirt or grime. 10.4.3 Replace as necessary. 	6 months
10.5	Check re-fill float on EZChem Reservoir. 10.5.1 Remove top from EZChem Reservoir and lift. 10.5.2 With the pump running, lift the float. The pump should stop. 10.5.3 Release the float, the pump should run. 	6 months
10.6	Replace pressure equalization valve and injection fitting on EZChem Reservoir 10.6.1 Remove top from EZChem Reservoir and lift 10.6.2 Disconnect main tubing and communication line 10.6.3 Turn top upside down, replace injection fitting as necessary (Clear arrow on side of fitting faces toward bottom of reservoir) 10.6.4 Replace white pressure equalization valve as necessary 	6 months

11. TROUBLESHOOTING

Pumps are not running	• Check for alarm condition. When an alarm condition is triggered, pumps will stop running • Check pump run time settings for valid duration • Check that formula number set to 1 • Check pump connections and loose pump motor wires • Check for voltage from circuit board to motor, voltage should read 24 volts • Check for mechanical binding of moving parts • Verify power using multimeter
Pumps run but do not dispense product	• Check product containers • Check squeeze tube for wear • Check condition of roller and pump housing • Check for air/fluid leaks on suction line • Check for blockage in the EZChem inlet • Check for blockage of the foot valve from chemical supply
EZChem Remote control does not light up. Power indicator does not come on	• Check fuse on circuit board inside dispenser – replace if necessary • Check voltage at power input terminals inside dispenser – refer to wiring diagram

12. PARTS

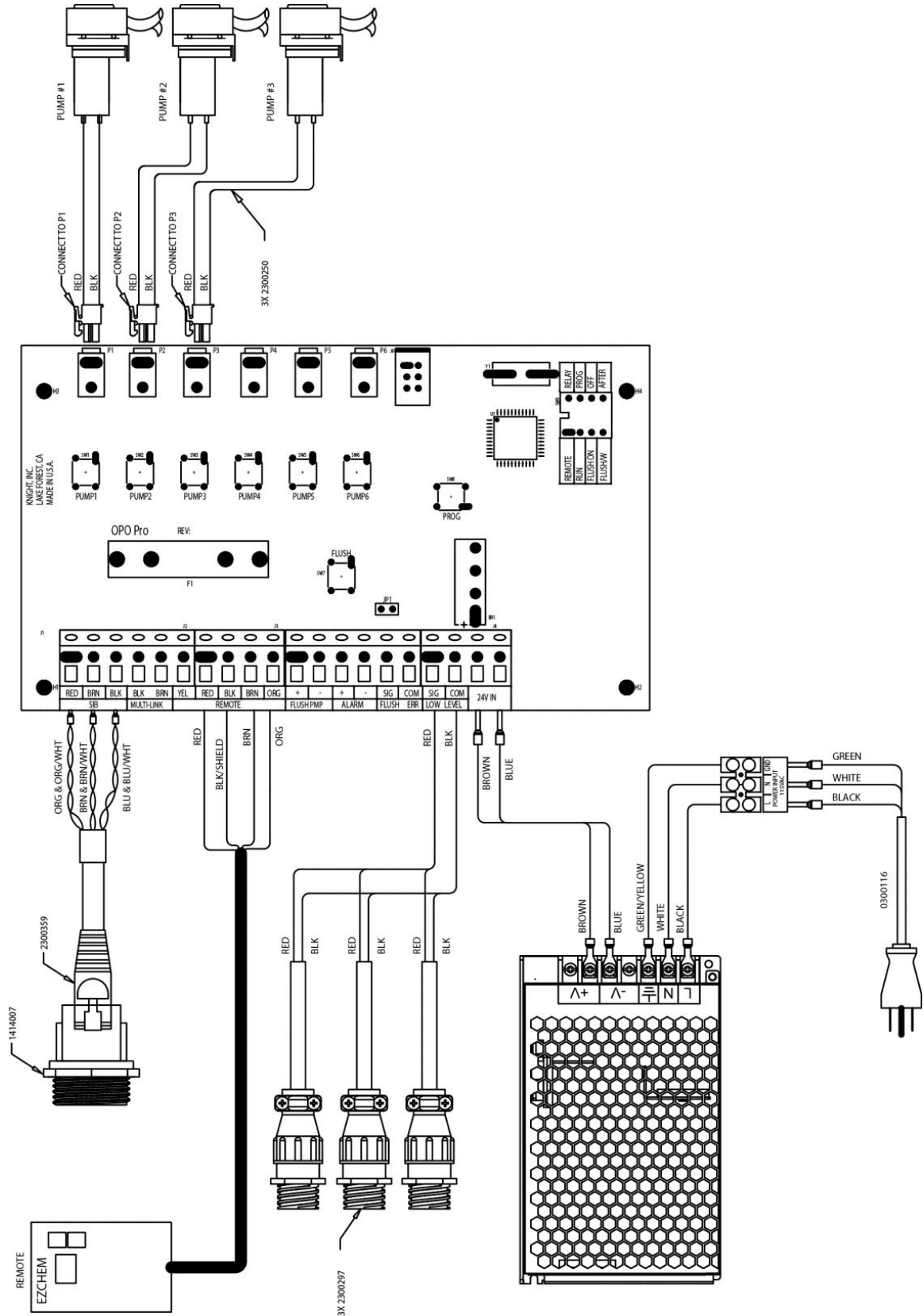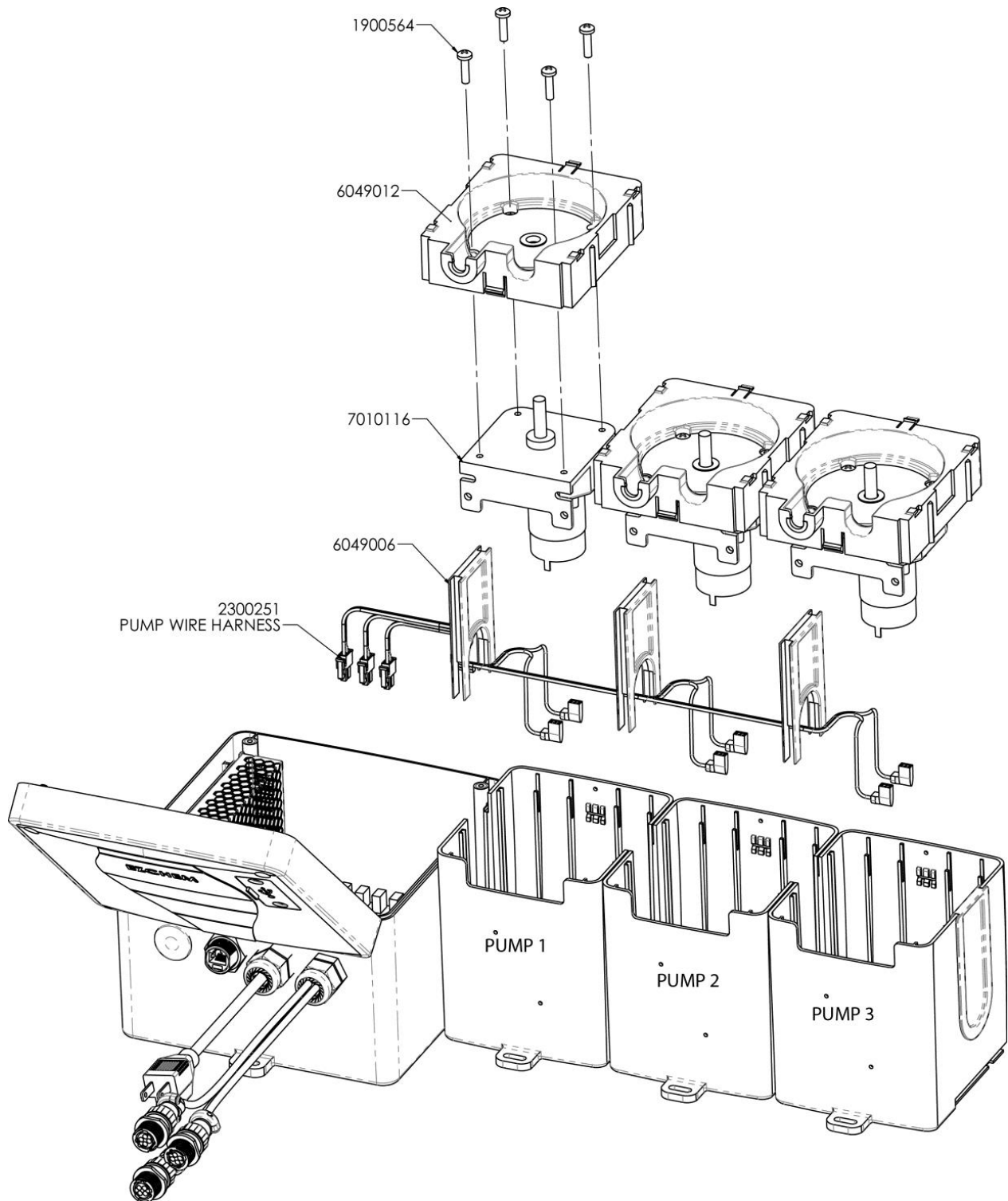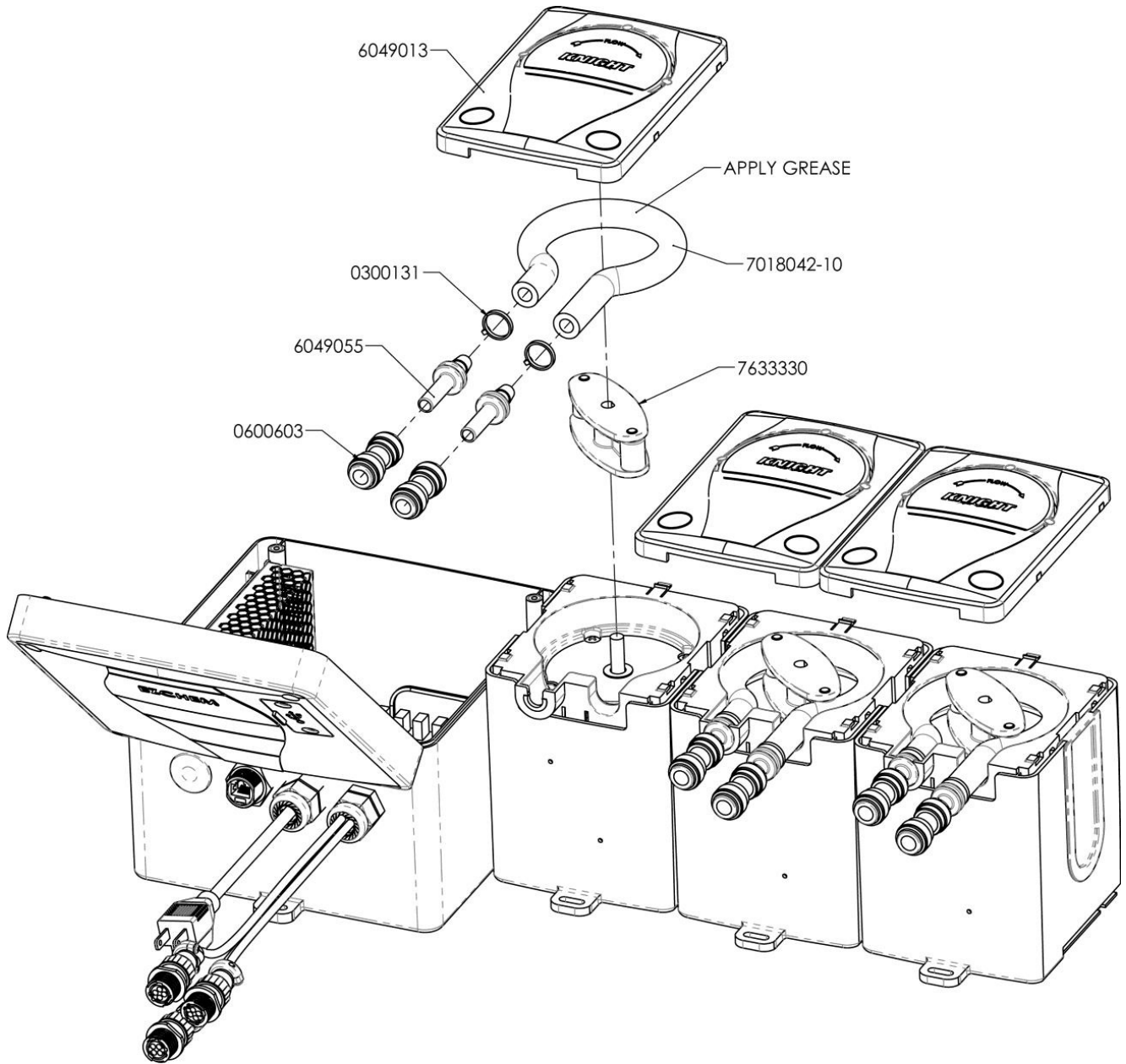| PART NUMBER	DESCRIPTION
Harness	
1410000-1	SIB Communication Cable, Shielded Plenum 50ft
1410002-1	SIB Communication Cable, Shielded Plenum 100ft
1410007-1	SIB Communication Cable, Shielded Plenum 250ft
Low Level Sensor Pickup Assembly	
6077001	Low Level Sensor 5-15 Gallon
6077002	Low Level Sensor 10-30 Gallon
6077101	Low Level Sensor 30-55 Gallon
Pump	
8080157	Pump Kit, 8100B 110 RPM
7010116	Motor/cap Assy, 110Rpm, 24VDC,
7633330	Assy, R-850 Roller, Yellow Roller, T-50/66
6049013	Face Plate, 800 Series
0600603	Push Connect 3/8 Tube X 3/8 (1cm) Tube
6049055	Fitting, Push-In, 3/8 (1cm) Barb pp, dark grey
Pump Controller	
1420000	C.B. Assy, OPO Pro EZChem
2000530	Power Supply, 24VDC, 6.5A, 156W
Reservoir	
7188011	1 Port EZChem Reservoir, includes Lid with SIB and 1-Gallon Tank
6640021	1 Port EZChem Reservoir, includes Lid without SIB and 1-Gallon Tank
7188012	5 Port EZChem Reservoir, includes Lid with SIB and 2-Gallon Tank
1415024	5 Port EZChem Reservoir, includes Lid without SIB and 2-Gallon Tank
2300353-25	Extension Cable, Tank to Tank, 25 Feet
1413312	SA-12 Strobe Alarm w/Connector
6640015	Bracket, Reservoir Tank
Tubing	
1418004-1	Tubing, Plenum, Red 250ft
1418005-1	Tubing, Plenum, Blue 250ft
1418006-1	Tubing, Plenum, Green 250ft

13. SYSTEM WIRING

1900564

6049012

7010116

6049006

2300251
PUMP WIRE HARNESS

PUMP 1

PUMP 2

PUMP 3

6049013

APPLY GREASE

7018042-10

0300131

6049055

7633330

0600603

2X 6640015

4X 2300809

4X 2300798

4X 1900665

1 GAL   3.79 L
3/4 GAL   2.84 L
1/2 GAL   1.89 L
1/4 GAL   .946 L

1 GAL   3.79 L
3/4 GAL   2.84 L
1/2 GAL   1.89 L
1/4 GAL   .946 L
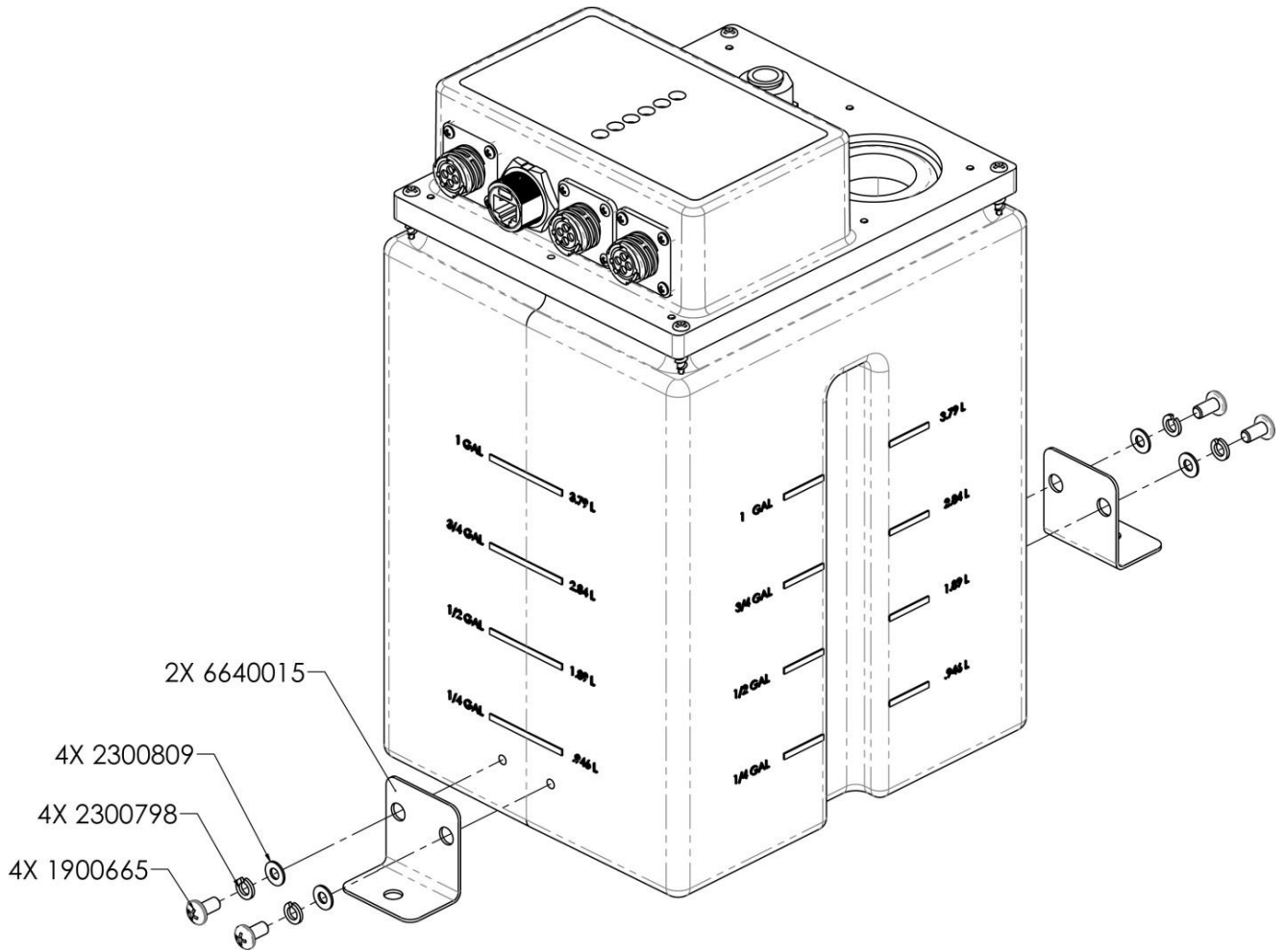
Tank Mounting Bracket

15. PLUMBING (SINGLE CHEMICAL PORT, 1-GALLON RESERVOIRS)

CHEMICAL
LOW LEVEL
SENSOR WITH
3WAY SPLITTER
UP TO 55 GAL
6077101

CHEMICAL
LOW LEVEL
SENSOR WITH
3WAY SPLITTER
UP TO 25 GAL
6077002

CHEMICAL
LOW LEVEL
SENSOR WITH
3WAY SPLITTER
UP TO 10 LITRE
6077001

PLUMBING CONNECTIONS

REMOTE

PRIMARY
TANK

SECONDARY
TANK

SECONDARY
TANK 2

CONTROLLER

PUMP 1

PUMP 2

PUMP 3

WASHER
PICK UP TUB
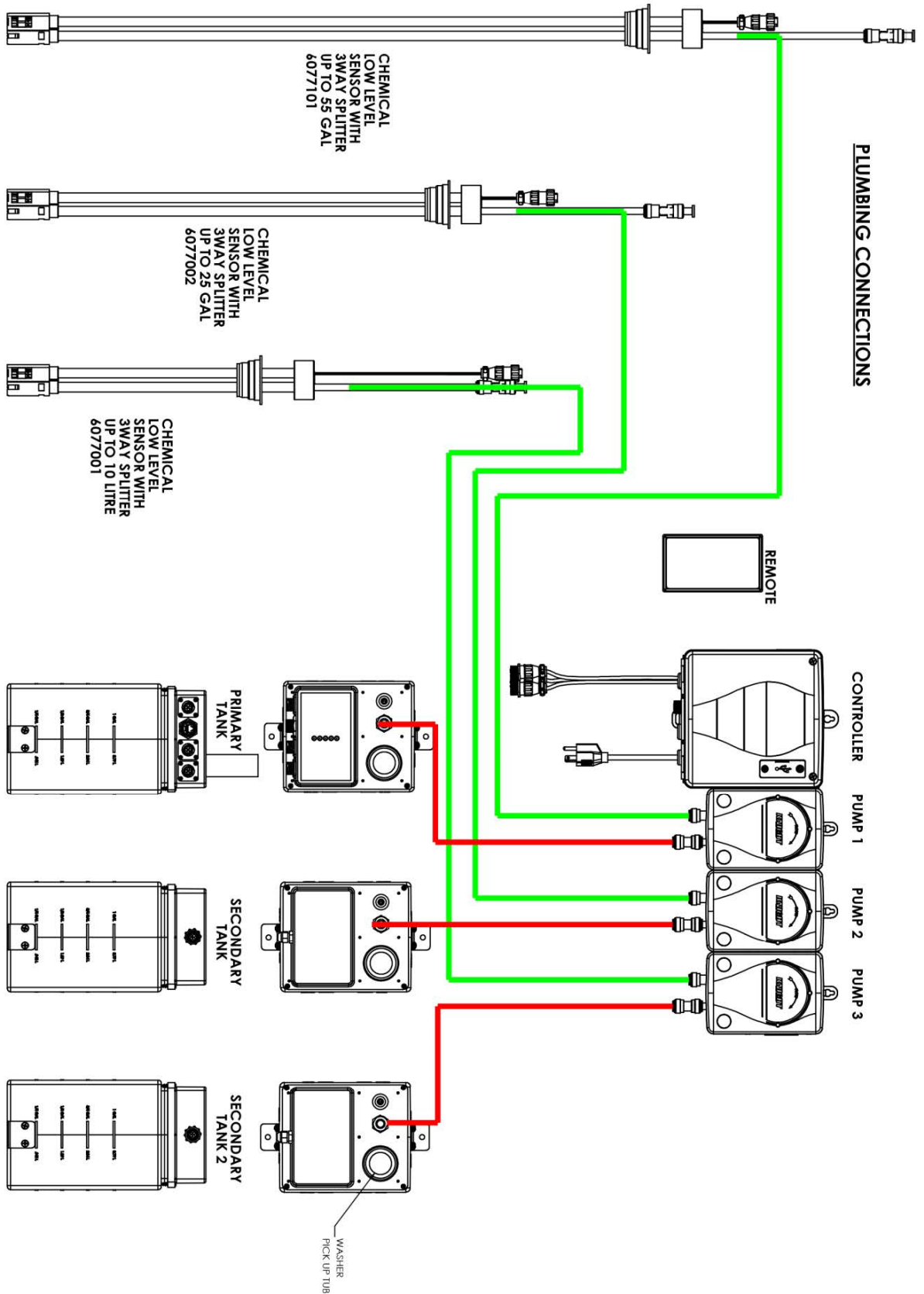
16. PLUMBING (MULTIPLE CHEMICAL PORT, 2-GALLON RESERVOIRS)
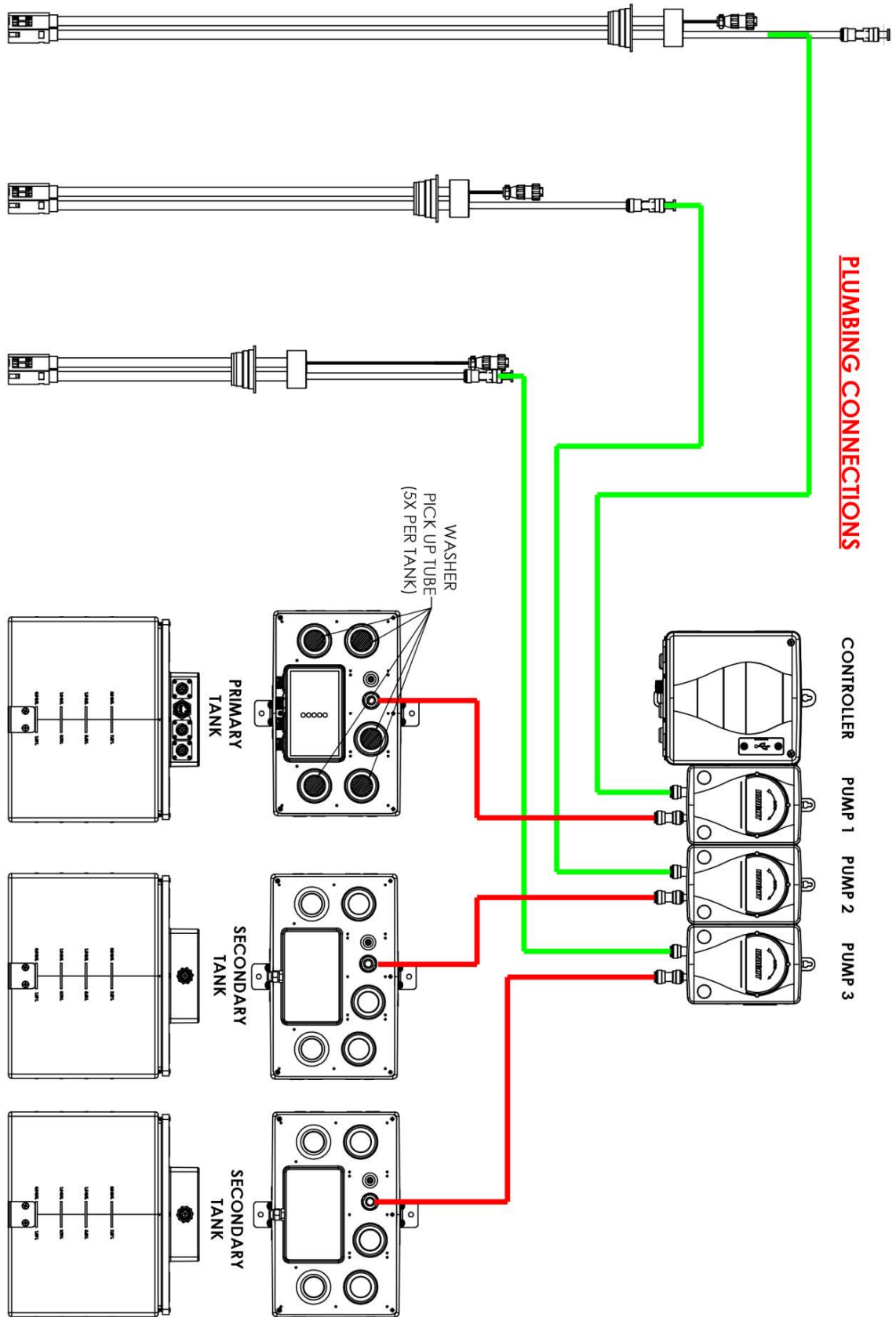
17. ELECTRICAL CONNECTIONS
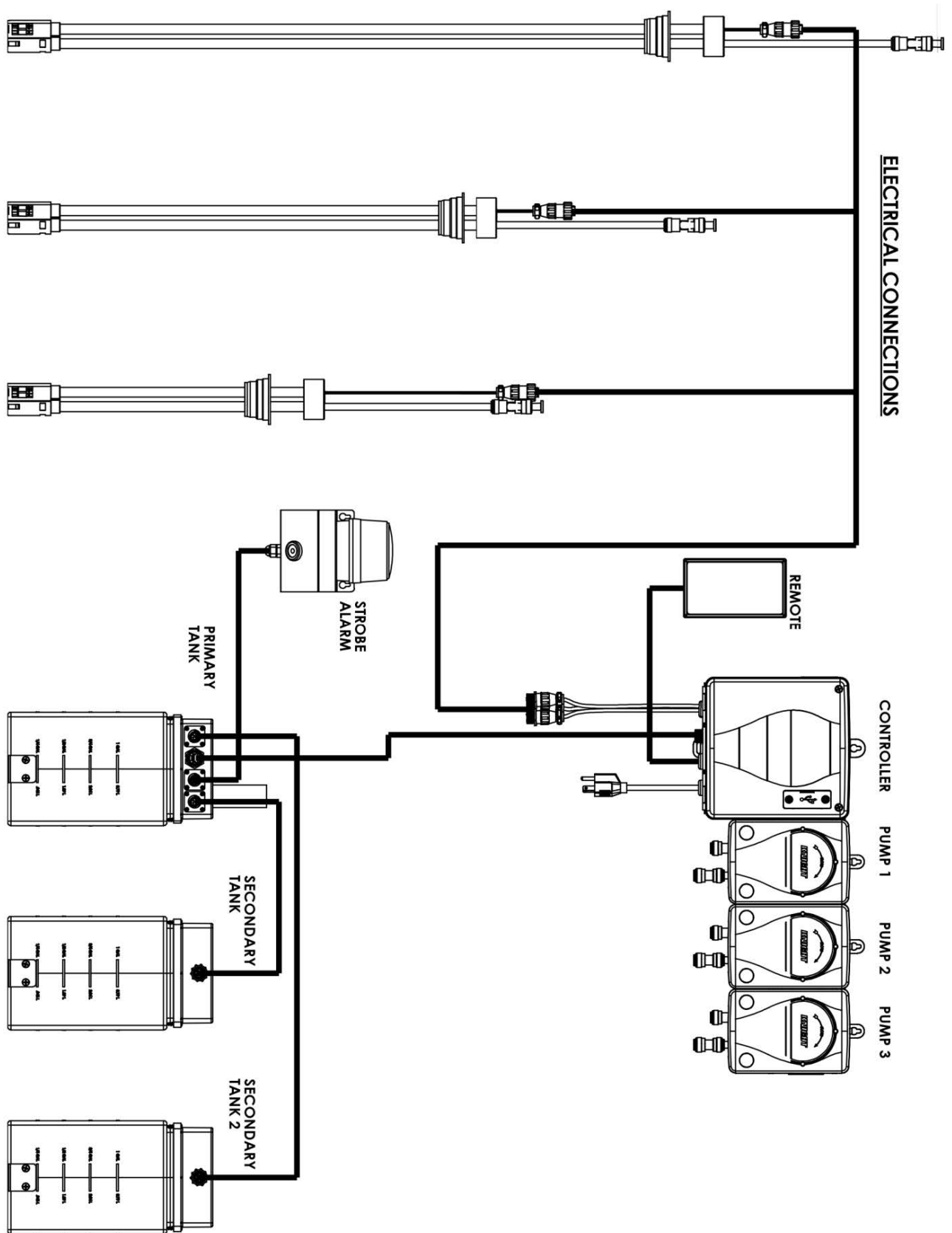
18. DECLARATION OF CONFORMITY

KNIGHT®

EC – Declaration of Conformity

We declare that the product listed below, to which this Declaration of Conformity relates, is in conformity with the Standards and other Normative Documents listed below:

Equipment Description: Automated Distribution System for Bulk Chemistry
Type/Model Number: OP-Pro-50C "EZChem ™"

Low Voltage Directive:
LVD Directive - 2006/95/EC (until April 19th, 2016) and 2014/35/EU (from April 20th, 2016)
Standards to which Conformity is Declared:

Electrical Safety   IEC 61010-1 (2nd Ed). EN 61010-1 (2nd Ed) - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements.

For Information: The "Electrical Safety Test" took place at the CSA Group, Irvine, CA, U.S.A

Electromagnetic Compatibility:
EMC Directive - 2004/108/EC (until April 19th, 2016) and 2014/30/EU (from April 20th, 2016)
Standards to which Conformity is Declared:

For Information: The "Electromagnetic Test" took place at the Element Testing Labs, Irvine, CA, U.S.A

EMC Emissions:

Standards

Specification	Method
EN 55011: 2009 (Amended by A1:2010) Class A	CISPR 11:2015
EN 61326-1:2013 Class A	CISPR 11:2015 + A1:2016
FCC 15.107:2017 Class A	ANSI C63.4:2014
FCC 15.109(g):2017 Class A	

EMC Immunity:

Standards

| Specification	Method
	IEC 61000-4-2 :2008
	IEC 61000-4-3 :2010
	IEC 61000-4-4 :2012
EN 61326-1 :2013	IEC 61000-4-5 :2014
	IEC 61000-4-6 :2013
	IEC 61000-4-8 :2009
	IEC 61000-4-11 :2004

Certification Marking: CE

We declared that the equipment specified above conforms to the referenced EU Directives and Harmonized Standards.

Signature: _____   Date: 08/31/2017

Name: Iler, Terry   Title: Business Line Leader

WARRANTY

For complete product terms and conditions scan the QR code below or enter the following URL into your browser: http://cfstech.info/t-and-c
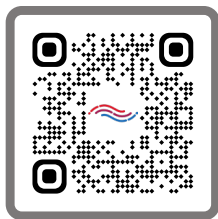
SCAN

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 the label, MSDS, or Knight LLC. Knigh products are not for use in potentially explosive environments. Any use of of our equipment in such an environment is at the risk of the user. Knight does not accept any liability in such circumstances.

FOOTNOTE

The information and specifications included in this publication were in effect at the time of approval for publishing. Knight LLC reserves the right to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.

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