

ResidualHQ

Operation & Maintenance Manual



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ResidualHQ

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Safety

IMPORTANT

**YOU MUST COMPLETELY
READ AND FULLY
UNDERSTAND THESE
INSTRUCTIONS BEFORE
INSTALLING, OPERATING,
OR SERVICING THIS UNIT.**

**Be sure you have read all installation, operation, maintenance and safety instructions
before you install, service or begin to operate this unit.**

Accidents occur every year because of careless use of industrial equipment. You can avoid hazards by following these safety instructions, and applying some ordinary common sense when operating or servicing this unit.

Keep in mind that ***full operator attention and alertness*** are required when operating or servicing this unit.

USE COMMON SENSE!! Most accidents can be avoided by using ***common sense and concentration*** on the job being done.



**Carefully read safety information when you see
any safety symbols.**



WARNING

Read and fully understand operator's manual before using this machine.

Failure to follow operating instructions could result in death or serious injury.

Safety

IMPORTANT

**YOU MUST COMPLETELY
READ AND FULLY
UNDERSTAND THESE
INSTRUCTIONS BEFORE
INSTALLING, OPERATING,
OR SERVICING THIS UNIT.**

Identify all possible hazards. Determine what safeguards are needed and implement them. **Only you, the user, understand your product and system characteristics fully. The ultimate responsibility for safety is with you. Your safety ultimately rests in your hands.** Do your part and you will enjoy safe, trouble free operation for years to come. This instruction manual is not intended to include a comprehensive listing of all details for all procedures required for placement, operation and maintenance. If you have a question about a procedure or are uncertain about any detail, **Do Not Proceed.** Please contact GridBee Customer Service at **866-437-8076** to speak to a representative.



IMPORTANT!!!

Follow all federal and state laws in regards to safety regulations of working at heights, confined spaces, rescue, etc. as required by the U.S. Department of Labor, Occupational Safety and Health Administration. Use necessary PPE when placing and servicing this unit.



Electrical Hazard

WARNING: THIS EQUIPMENT CONTAINS HIGH VOLTAGE! ELECTRICAL SHOCK CAN CAUSE SERIOUS OR FATAL INJURY. ONLY QUALIFIED PERSONNEL SHOULD ATTEMPT PLACEMENT, OPERATION AND MAINTENANCE OF ELECTRICAL EQUIPMENT. REMOVE ALL SOURCES OF ELECTRICAL POWER BEFORE PERFORMING ANY SERVICE WORK TO THE MACHINE. USE PROPER LOCKOUT TAGOUT (LOTO) PROCEDURES TO ENSURE A SAFE WORK ENVIRONMENT.



Chemical Hazard

WARNING: HIGHLY FLAMMABLE LIQUID AND VAPOR. CAUSES MILD SKIN IRRITATION. CAN CAUSE SERIOUS EYE IRRITATION. KEEP AWAY FROM HEAT/SPARKS/OPEN FLAME. NO SMOKING. AVOID BREATHING VAPORS. USE IN WELL VENTILATED AREA. WEAR PROTECTIVE GLOVES. DO NOT EAT, DRINK OR SMOKE WHEN USING. WASH HANDS THOUROUGHLY AFTER HANDLING.



Rotating Hazard

CAUTION: KEEP BODY APPENDAGES OR LOOSE CLOTHING AWAY FROM EQUIPMENT WHILE OPERATING. ENSURE EQUIPMENT IS OFF BEFORE ATTEMPTING SERVICE.



Laceration Hazard

CAUTION: EDGES MAY BE SHARP AND CAUSE LACERATION IF PROPER CARE IS NOT USED.



Entanglement Hazard

WARNING: ENSURE THAT PERSONNEL ARE CLEAR OF THE ELECTRIC CORD AND CHAIN TO AVOID ENTANGLEMENT.

Safety

Protect Yourself

It is important that you comply with all relative OSHA and local regulations while installing and performing any maintenance to the mixer circulation equipment.

Key OSHA Compliance Standards that must be followed (and not limited to) are:

- **1910.146 Permit-required confined spaces**
- **1910.147 Lockout/Tagout**
- **1926.500 Fall Protection**

Fall Protection Tips

- Identify all potential tripping and fall hazards before work starts.
- Look for fall hazards such as unprotected floor openings/edges, shafts, open hatches, stairwells, and roof openings/edges.
- Inspect fall protection and rescue equipment for defects before use.
- Select, wear, and use fall protection and rescue equipment appropriate for the task.
- Secure and stabilize all ladders before climbing.
- Never stand on the top rung/step of a ladder.
- Use handrails when you go up or down stairs.
- Practice good housekeeping. Keep cords, welding leads and air hoses out of walkways or adjacent work areas.

Refer to 29 CFR 1926.500 for complete regulations set by OSHA. Refer to your state's regulations if your state established and operates their own safety and health programs approved by OSHA.

Lockout Tagout

When the On/Off switch is in the "ON" position, the mixer may start up at any time if not already operating. The mixer's On/Off switch can be locked out by placing a pad lock thru the door latch of the controller after the switch has been turned to the "OFF" position. The On/Off switch is to be used as the emergency stop.



Permit-Required Confined Spaces

A confined space has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy. Confined spaces include underground reservoirs, ground storage tanks, elevated tanks, silos, manholes, and pipelines.

Confined Space Tips

- Do not enter permit-required confined spaces without being trained and without having a permit to enter.
- Review, understand and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- Before entry, identify any physical hazards.
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary.
- Use fall protection, rescue, air monitoring, ventilation, lighting and communication equipment according to entry procedures.
- Maintain contact at all times with a trained attendant either visually, via phone, or by two-way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

Refer to 29 CFR 1910.146 for complete regulations set by OSHA. Refer to your state's regulations if your state established and operates their own safety and health programs approved by OSHA.

ResidualHQ

Technical Specifications

Technology Description:

Disinfectant control system designed for continuous monitoring and management of disinfectant residual levels. Flexible control and fluid interface allows for integration into new and existing installations. Limited maintenance, simple single-point calibration for disinfectant residual sensors.

Features:

- Continuous Water Quality Monitoring
- Automated Control Modes and Management
- No Metering Pumps. Venturi's used for chemical injection
- Automated rinsing and flushing mechanisms limit system exposure to concentrated disinfectants

Applications:

- Chlorinated and Chloraminated Systems
- Tanks and Reservoirs
- Pipelines

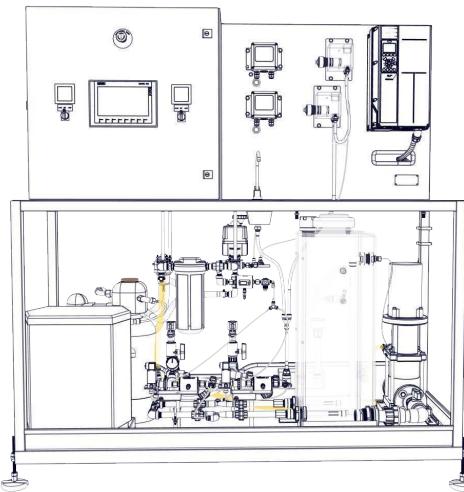


Figure 1: ResidualHQ Workstation

Physical Specifications:

	Tank	Pipeline
Water Quality Monitoring	Total and Free Chlorine via two (2) amperometric membrane sensors	
Feed Rate	0 - 2.5 gph. <i>Larger systems available. Contact Ixom Watercare, Inc. for more information.</i>	
Duty Cycle	Continuous, 100%	
Maximum Working Pressure	95 psi. <i>Higher pressures available. Contact Ixom Watercare, Inc. for more information.</i>	
Chemical Compatibility	Sodium Hypochlorite (up to 15%) Liquid Ammonium Sulfate (up to 40%)	
Electrical Requirements	230VAC 30A Service 1PH 60Hz (11A continuous)	
Fluid Connections	<ul style="list-style-type: none">• Sample/Motive [Inlet]• Return [Outlet]• Soft Source [Outlet]¹• Drain [Outlet] - 1.00" FNPT• Vent [Outlet]• Chlorine [Inlet]• Ammonia [Inlet]² Unless noted, all terminate as 0.5" FNPT	<ul style="list-style-type: none">• Sample/Motive [Inlet] - 2" FNPT• Return [Outlet] - 2" FNPT• Soft Source [Outlet]¹• Drain [Outlet] - 1.00" FNPT• Vent [Outlet]• Chlorine [Inlet]• Ammonia [Inlet]² Unless noted, all terminate as 0.5" FNPT
Dimensions and Weights	750 lbs 30" D x 72" W x 74" T	800 lbs 30" D x 72" W x 74" T

¹ Optional. Provides softened and filtered water to dilute bulk storage chemical if desired.

² Chloraminated systems only.

Technical Data Sheet



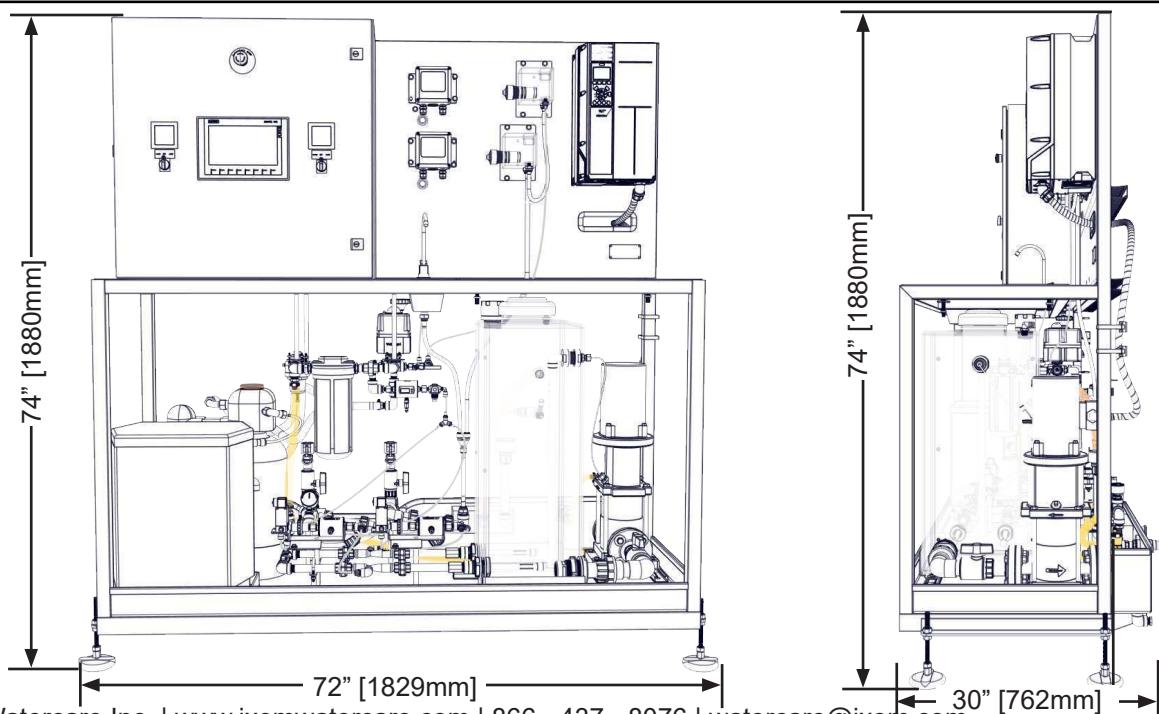
ResidualHQ

Technical Specifications

Controller Specifications:

	Tank	Pipeline
Display	7" Color Touchscreen	
Keyboard	7-key membrane type with tactile feedback	
Digital Inputs	-	1x 24VDC for: • Run/Enable
Relay Outputs	230VAC/30VDC 6A N.O./N.C. rated contacts for: • System OK • Residual In-Range	
Programmable Analog Inputs	3x 4-20mA current inputs for: • Bulk Ammonia Storage • Bulk Chlorine Storage • Tank Level	• Bulk Ammonia Storage • Bulk Chlorine Storage • Pipeline Flow Rate (required)
Communication	Modbus RTU (RS-485) • Read and Write operations supported (Remote Control)	
Local Data Logging	Local via USB comes standard. Various parameters available • Trending Process Values • Warnings • Alarms	
Diagnostic Support	Remote Monitoring available. <i>Cellular 4G LTE service availability required.</i>	
Available Operating Modes	• Manual Dosing • Automated Management • Maintenance (local)	• Manual Dosing • Feed Schedule • Automated Feed Control • Maintenance (local)

Dimensions:



RHQ Sample Pump

Technology Description - Residual HQ submersible sample pump, designed for continuous operation. Provides approximately 5 gpm constant flow to the Residual HQ station. Constructed of stainless steel and safe materials for contact with potable drinking water. Designed to be placed into service through roof hatch without tank entry.

Materials of Construction - 303 stainless steel casing, head, and hardware. FDA Compliant non-metallic parts, corrosion resistant and non-toxic. See certifications section below.

75 ft (22 m) of T316 stainless steel retrieval chain included for installation and retrieval without requiring tank entry.

Minimum Access Opening - Machine can be placed through 12 inch (30 cm) diameter opening.

Minimum Water Depth - The sample pump requires at least 2 feet (0.6 meters) of water above the discharge fitting to prevent pump cavitation and motor damage. Shut the sample pump off if water surface is less than 2ft from the top of the pump. Never operate out of water.

Intake - Water is drawn in just below the bottom of the sample pump assembly and is discharged through the top of the pump via 1/2" hose barb fitting.

Discharge Hose - 1/2" diameter crystal clear Phthalate Free PVC, reinforced with spiraled polyester yarn and longitudinal blue tracer yarns for identification. Resistant to chemicals, and NSF certified for safe contact with drinking water.

Electrical Requirements - The sample pump draws approximately 5.5 Amps @ 230VAC / 60Hz. Nominal power consumption of 800 Watts.

Motor - 1/2 HP stainless steel submersible, designed for continuous operation, low power requirement, direct drive, no gearbox and no lubrication schedule required. Automatic reset, on-winding thermal overload protection and surge arresters built in. Mounted in flow sleeve for superior cooling and long motor life in submerged temperatures up to 122 F. See certifications section below. 230VAC/1PH standard.

Wiring - Includes either 75 ft (22 m) of 12AWG submersible power cable to terminate within junction box at top of tank. Junction box included.

Sealed Penetration Fitting - T316 stainless steel tank fitting and cord grip included for sealed cord entry through tank roof. Not designed as a submersible penetration.

Shipping Size / Weight

Box 1 of 2: 44x16x12 in. / 88 lbs, Box 2 of 2: 17x13x8 in. / 25 lbs: Total shipment weight: 113 lbs

Certifications - Ixom's potable water products are certified to ANSI/NSF Standard 61, and 372 for lead-free content. Learn more at: www.ixomwatercare.com/std61

Maintenance / Warranty - Limited maintenance. Limited 2-year warranty. See RHQ Warranty Statement for details.

Patent Pending

Subject to change without notice.

Technical Data Sheet



Universal Fixture: RHQ Tank Penetration Assembly

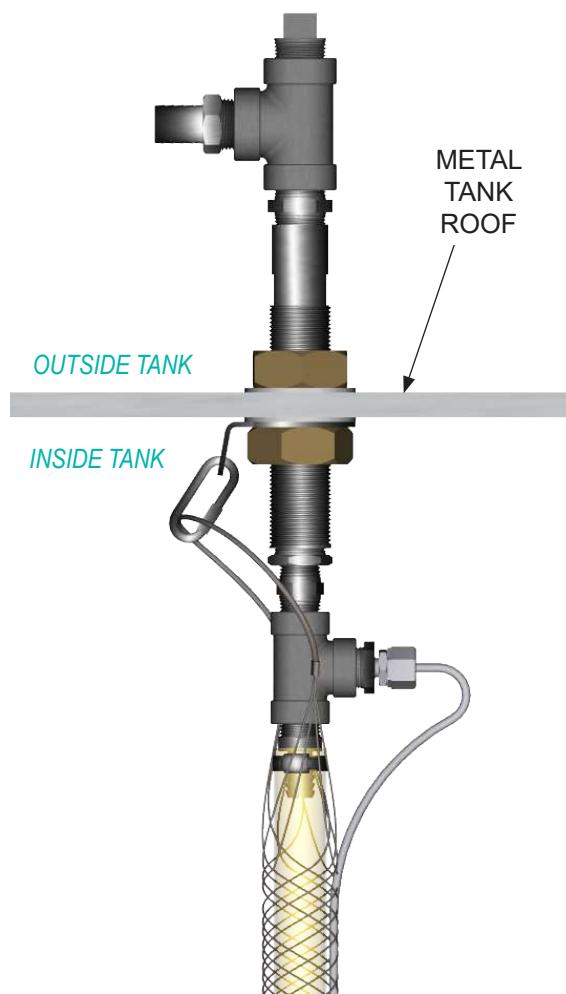
PN: 101556

TANK PENETRATION IS SEALED WITH
HDPE WASHERS ACCCOMPANIED BY
LEXEL® CO-POLYMER RUBBER-BASED SEALANT

1 CORD BOLT PER GRIDBEE:

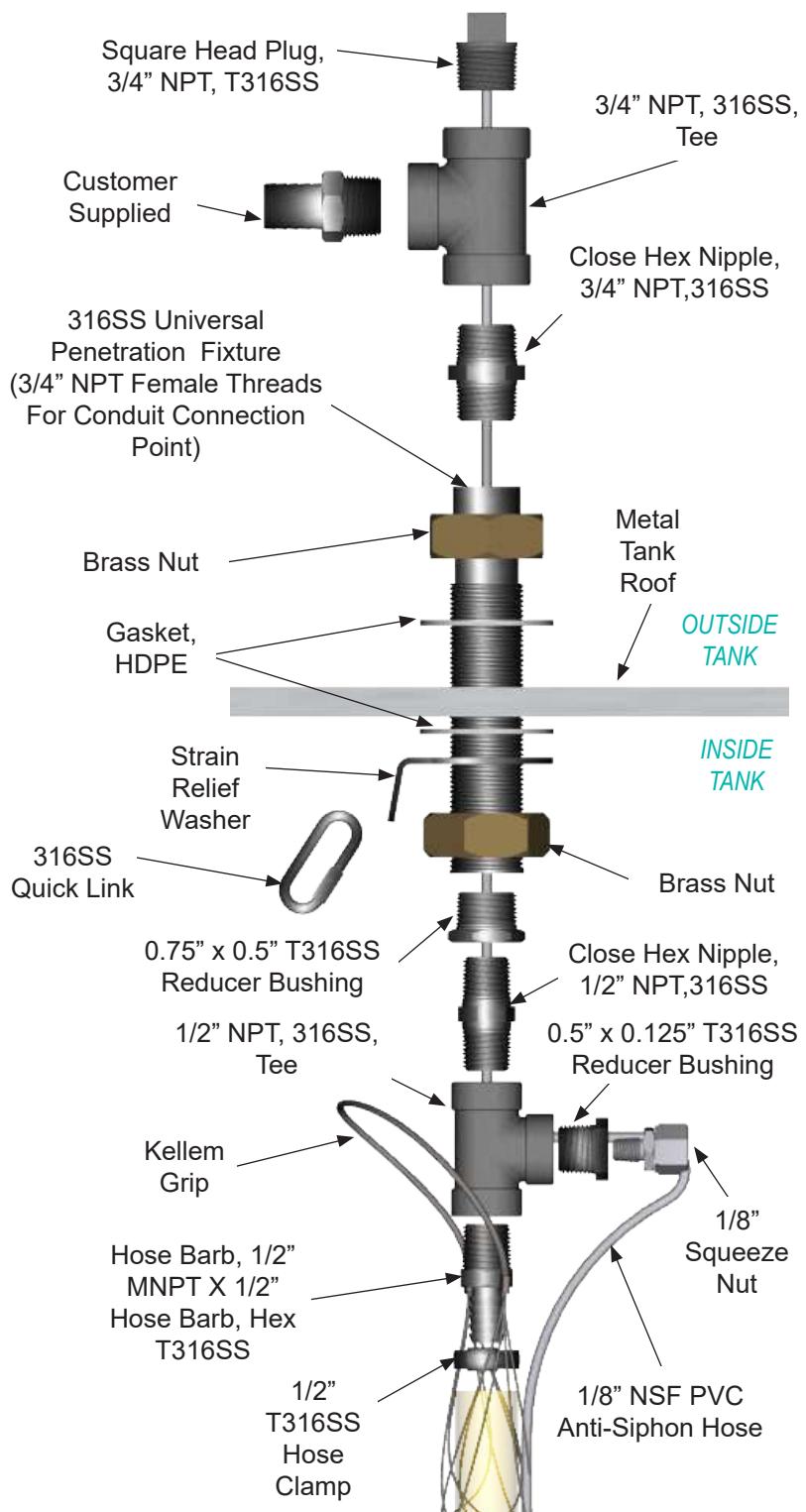
NUT/GASKET OD: 2.250"
THREADED FIXTURE OD: 1.250"
BORE REQUIRED: 1.3125"

CROSS-SECTIONAL VIEW



**NOT DESIGNED AS A
SUBMERSIBLE PENETRATION.**

EXPLODED VIEW



Universal Fixture with Junction Box

Tank Penetration Assembly

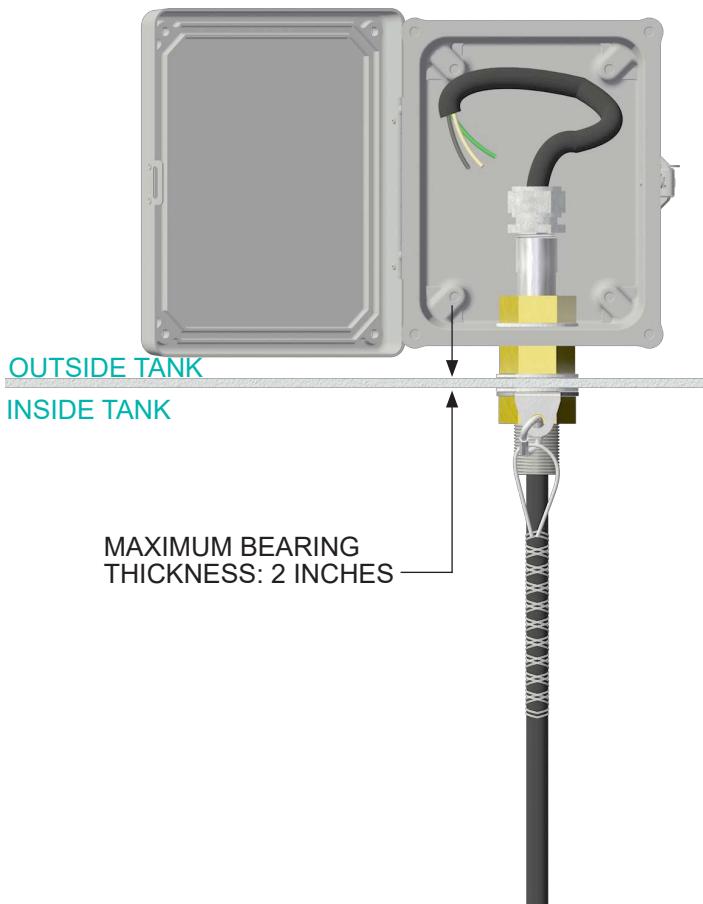
PN: 100473 & 14012060

TANK PENETRATION IS SEALED WITH
HDPE WASHERS ACCCOMPANIED BY
LEXEL® CO-POLYMER RUBBER-BASED SEALANT

1 CORD BOLT PER GRIDBEE:

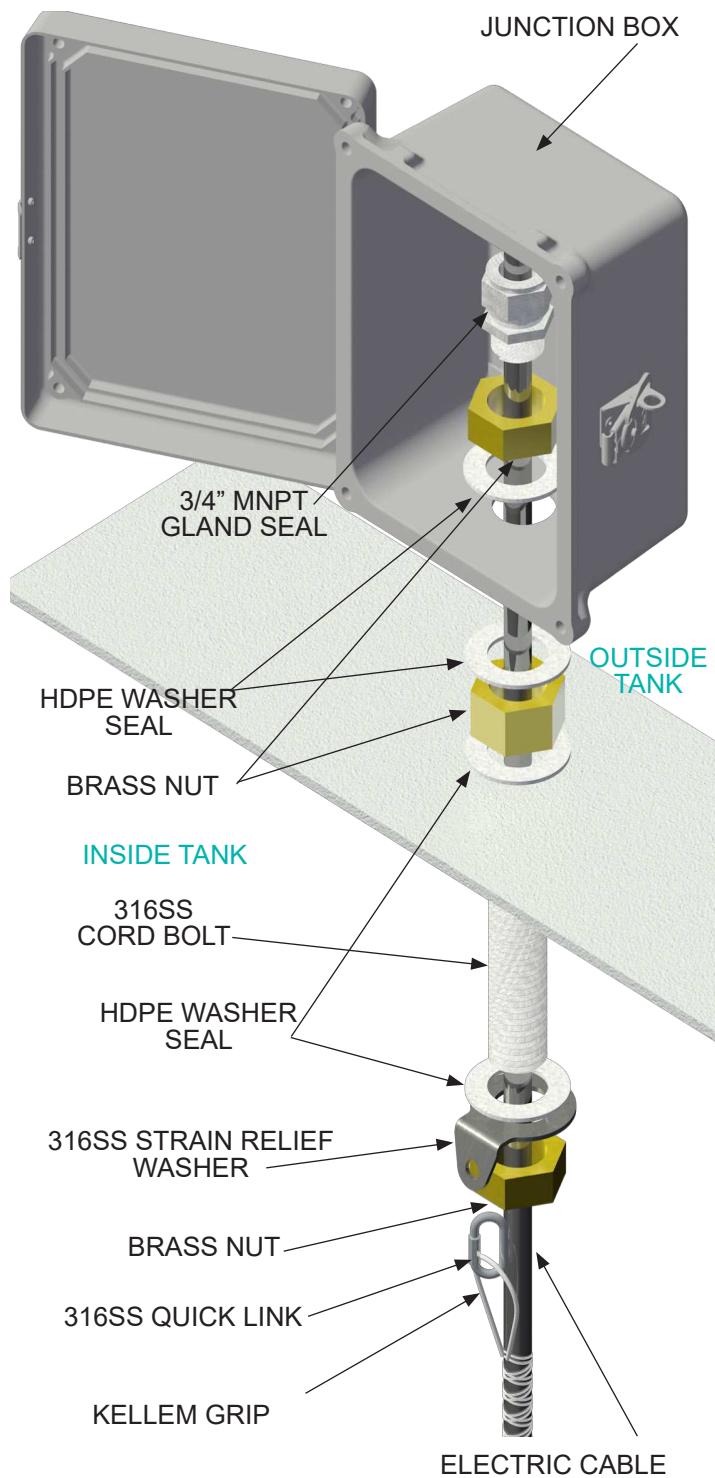
NUT/GASKET OD: 2.250"
THREADED FIXTURE OD: 1.250"
BORE REQUIRED: 1.3125"

ASSEMBLED VIEW



**NOT DESIGNED AS A
SUBMERSIBLE PENETRATION.**

EXPLODED VIEW



Principle of Operation

Tanks and Reservoirs

Basic Operation:

The standard model ResidualHQ includes three main components, the ResidualHQ Workstation, a submersible sample pump, and an active mixer(s). Placed inside the tank or reservoir the sample pump provides a continuous stream of water to the Workstation. This motive flow is then utilized in a number of ways prior to being returned to the tank, at the inlet of the active mixer(s) (Figure 1).

Online analyzers draw off the circulated stream, providing 24/7 real-time operational data of the monitored system. When requested or required, the circulated stream also powers a simple collection of valves and venturis which utilize vacuum injection to dilute and deliver disinfectant chemicals. Lastly, the circulated stream automatically flushes the majority of system components and plumbing, minimizing exposure to potentially corrosive chemicals and limiting their waste.

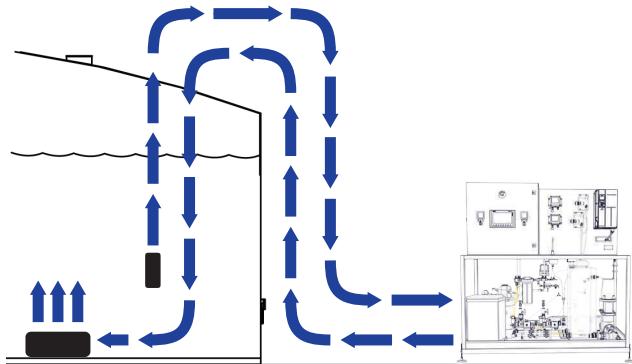


Figure 1: Circulation stream

Dosing Capabilities:

Depending on configuration, the system can deliver the following disinfectant solutions:

- Chlorine
- Ammonia
- Chloramine

Disinfectant is individually diluted by venturi(s) prior to blending by a static mixing apparatus inside the pre-mix tank located at the Workstation. A Pulse Width Modulation (PWM) flow control scheme is used to sequentially introduce the disinfectant(s), continuously monitored by a set of flow verification sensors. In the case of chloramine, feed rates and ratios (chlorine-to-ammonia) are limited by the control system, resulting in the thorough blending of disinfectants in a safe and controlled manner.

Automated Management:

The system employs a closed-looped control scheme to maintain or increase chlorine residual levels to a specified level. This is accomplished by monitoring chlorine residual trends, and when necessary, making incremental disinfectant doses. Safeguards are easily set to control the number of recovery doses, the amount of disinfectant fed during each dose, as well as cumulative volume limits to further control the amount of chemical applied.

In chloraminated applications, the intent of the system is to re-bind free ammonia available in source water from upstream systems. The system may feed either chlorine or chloramine solutions, taking into consideration previous actions, results, and residual trends (Figure 2).

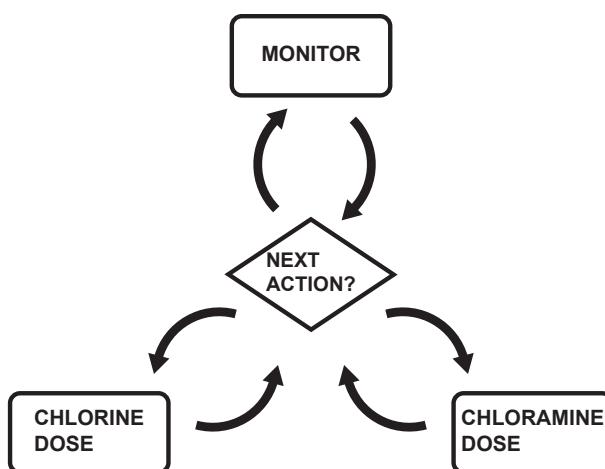


Figure 2: Simplified automated control sequence

Placement Overview

ResidualHQ

Workstation Placement

System requires enclosure or building for environmental protection. Suggest one foot (1') minimum clearance on all sides for ease of access to connections and maintainable items. Mounting brackets accept adjustable feet for minor leveling, or permanent anchoring. Workstation contains a variable frequency drive (VFD) for Return Pump, therefore if GFCI protection is desired an appropriate filter may be required.

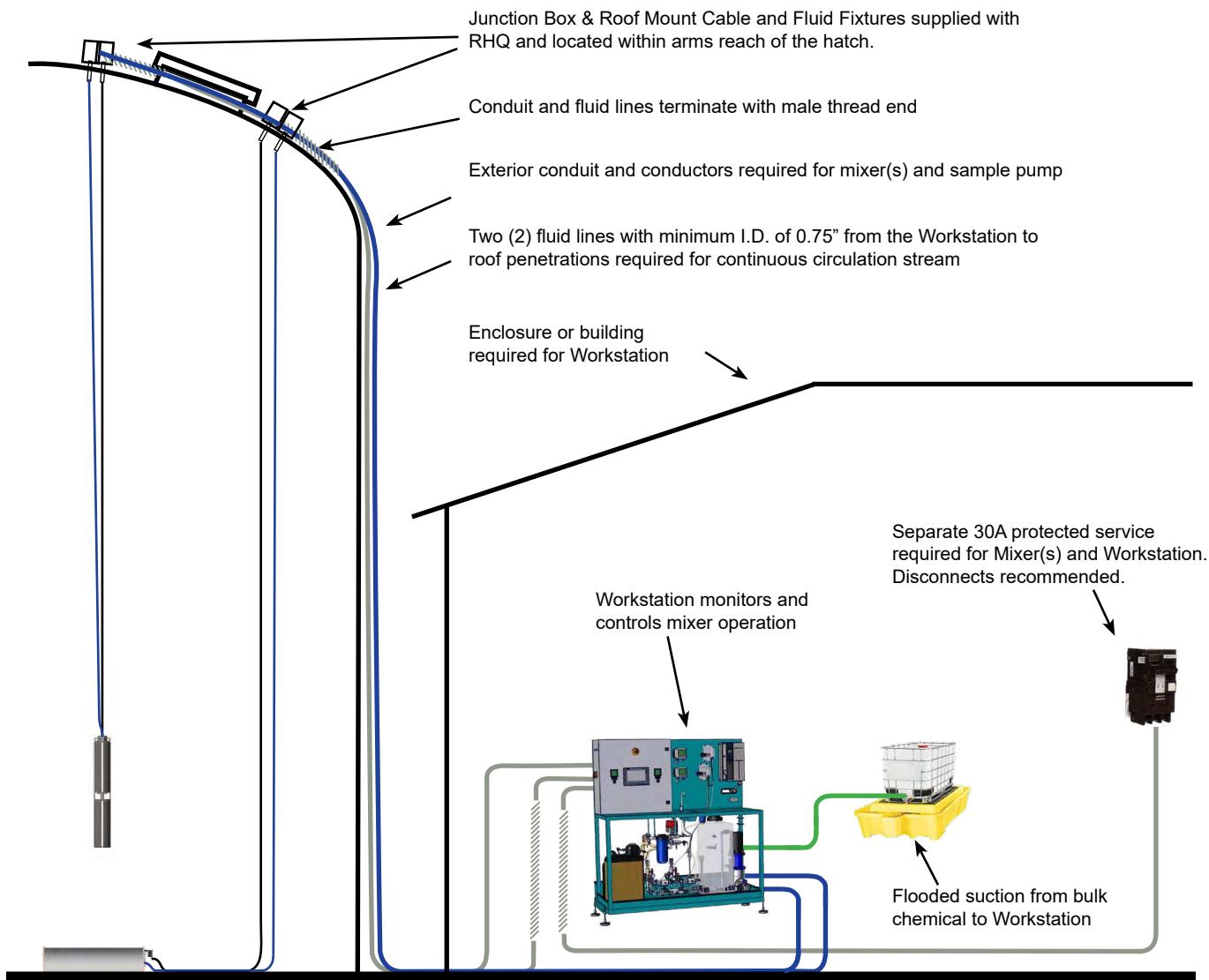


Figure 1: Typical ResidualHQ Placement

Cold Weather Considerations

Workstation is designed to drain fluid circulation lines running to and from tank upon system shutdown or loss of power. In areas prone to freezing additional measures may be taken. Backup generators or other means may be required to ensure continuous circulation, as well as installation of fluid lines inside conduit, or adding heat trace for additional protection.

System Startup

Equipment and Control System Checks

Equipment Inspection

Prior to starting the system, several checks should be made to ensure the safe, reliable operation.

1. Look for visible leaks, spills, or staining around Workstation, storage tanks, and connections
2. Ensure all connections to and from the Workstation are secure (cam-locks, unions, etc.)
3. Check filters and screens for cleanliness and serviceability, and ensure all caps and housings are replaced and secure
4. Check water softener salt tank level
5. Check all isolation valves and their positions. Typical configuration for system run is:
 - Soft water source CLOSED
 - Sample source OPEN
 - Return/delivery discharge (and suction) OPEN
 - Chlorine bulk source OPEN
 - Ammonia bulk source OPEN
 - Vent OPEN
 - Drain OPEN
 - Bypass CLOSED
6. Ensure power present (typically indicated by live screens on Control Panel and VFD)
7. Ensure Mixer Switch, Sample Switch, and VFD are in the AUTO position.
8. If initial startup, or return pump is no longer primed (No Water/Loss of Flow Error), ensure pre-mix tank is filled to 7-9G indicator. This can be done by momentarily placing the Sample Control Box in the HAND position (after checking valve positions). Once the tank is just short of the 7-9G indicator, place the Sample Control Box back in the AUTO position. Can further ensure pump is primed by slowly opening the bleeder valve on the left-hand side of the return pump. Once primed, secure the bleeder valve.

Control System Inspection

Once all equipment has been verified for serviceability, the control system may be accessed

1. If given appropriate access, check all system configuration parameters (*Base > Configuration*)
2. If all appears to be in order, place system in desired operational mode (*Base > Operation*)
3. Turn Circulation ON.
4. Turn Mixer ON. If the mixer is left OFF, dosing and automated actions are disabled (*System OK* reported LOW)

The system will now automatically begin continuously monitoring and logging water quality parameters. If in Automated Management Mode, data will be given time to establish prior to any action is taken.

Priming of Chemical Lines

If required, chemical lines may be primed by placing the unit in Maintenance Mode (*Base > Operation*), then entering Maintenance Mode Configuration (*Operation > Maintenance*) and switching the Rinse Valve to SOFT. Only one chemical valve may be actuated at a time. After approximately 30 seconds, switch one of the respective chemical valves to ON. Watch for fluid to completely fill the chemical strainer. This may take several intervals, as the system will automatically stop the chemical feed. Switch the valve to RINSE. Allow the system to circulate for approximately 2 minutes, then the other chemical valve may be primed in the same manner.

Adjustments and Maintenance

ResidualHQ

Overview:

The ResidualHQ Workstation was designed for ease of use and minimal maintenance. Pumps are designed for continuous service. All system controls are located on the front of the Workstation within arm's reach of the user. System consumables and components requiring scheduled maintenance are placed at or near the front of the unit, allowing users to easily access, maintain, and replenish the system. The following items are to be maintained at the stated intervals:

Amperometric Sensors:

- Average service interval of 3 to 6 months depending on application, requiring membrane and electrolyte change.
- Calibrate Total Chlorine sensor utilizing DPD colorimetric test kit or equivalent for validation.
- Free Chlorine sensor does not typically require calibration, and may require additional equipment. Contact *Ixom Watercare Customer Service* for more information.
- Follow manufacturer guidelines provided with the respective sensor for specific service and calibration procedures.

Chemical Y-Strainers (PVC):

- Visually inspect strainer through clear housing during each visit. Signs of a plugging may include visible build-up of debris in strainer, or reported as Flow Verification Error.
- This can be confirmed by placing the system in *Maintenance Mode*, then visiting the *Maintenance Operation* page at *Base > Operate > Maintenance*. See the *ResidualHQ Control Manual* for more detailed information.
- The following steps should only be carried out with caution by authorized personnel abiding by all applicable safety standards and procedures.
 1. Place *Rinse Valve* on *SOFT* and wait approximately 15 seconds.
 2. Place *Chlorine Valve* on *CHEM* and observe reported flow rate. Flow rate should stabilize within 3 to 5 seconds between 3 to 4 GPH for the standard unit.
 3. Place *Chlorine Valve* on *RINSE* and wait approximately 2 minutes. This gives adequate time for the system to transition from one disinfectant feed to another.
 4. If required, Repeat Steps 2 & 3 with *Ammonia Valve* to verify respective flow rate.
- If either strainer requires cleaning, isolate the strainer by closing the respective chemical source valve and follow all manufacturers guidelines provided with the respective strainer.

Motive Pressure Regulator (Brass):

- Manually adjust to approximately 40 PSI, read from the pressure gauge near the venturi inlets.

Motive Y-Strainer (Bronze):

- Service interval dependent on location. Visually inspect by observing motive pressure gauge.
- If no longer capable of maintaining 40 PSI, clean by turning circulation OFF, isolating unit, and removing plug.

Rinse Pressure Regulator (PP):

- Manually adjust so that each chemical valve (chlorine, and if applicable, ammonia) is flowing approximately 2.5 GPH.
- It is important the respective rinse flows are approximately 0.5 GPH different from the chemical flows. This allows the system to easily confirm proper valve actuation and chemical feed schemes.
- Real-time flows can be viewed and confirmed during adjustment in the *Maintenance Operation* page, found at *Base > Operate > Maintenance*. See the *ResidualHQ Control Manual* for more detailed information.

For replacement items/consumables contact *Ixom Watercare, Inc. Customer Service* at (800) 437-8076.

Adjustments and Maintenance

ResidualHQ

Sediment Filter (Cartridge, PP):

- Replace with 10" x 2.5" cartridge having 50 mesh/300 micron or greater rating every 1 to 2 months (application dependent, finer mesh/micron ratings may require more frequent service).

Water Softener Salt:

- Check salt tank during each visit. Use is dependent on frequency and volume of disinfectant dosing as well as incoming water hardness.
- Fill with quality grade salt, processed especially for use in water softeners.
- For additional troubleshooting or maintenance procedures consult the manufacturers documentation provided.

For replacement items/consumables contact Ixom Watercare, Inc. Customer Service at (800) 437-8076.

Electrical Integration

Control Panel

FIELD CONNECTIONS (AC)

TB51.A0 (L1)	91	A	TB1	A0	[EXT_POWER_L1]
TB53.A0 (L2)	92	A	TB2	A0	[EXT_POWER_L2]
TB55.A0 (GND)	93	A	TB3	A0	[EXT_POWER_GND]
					—
K2.8 (L1)	139	A	TB4	A0	[EXT_MIXER_L1]
K2.7 (L1)	140	A	TB5	A0	[EXT_MIXER_L2]
TB55.A2 (GND)	103	A	TB6	A0	[EXT_MIXER_GND]
					—
K1.8 (L1)	137	A	TB7	A0	[EXT_SAMP_L1]
K1.7 (L1)	138	A	TB8	A0	[EXT_SAMP_L2]
TB55.A1 (GND)	102	A	TB9	A0	[EXT_SAMP_GND]
					—

SOURCE POWER INPUT
(230VAC 1PH 20A)

MIXER OUTPUT
(230VAC 1PH 8A)

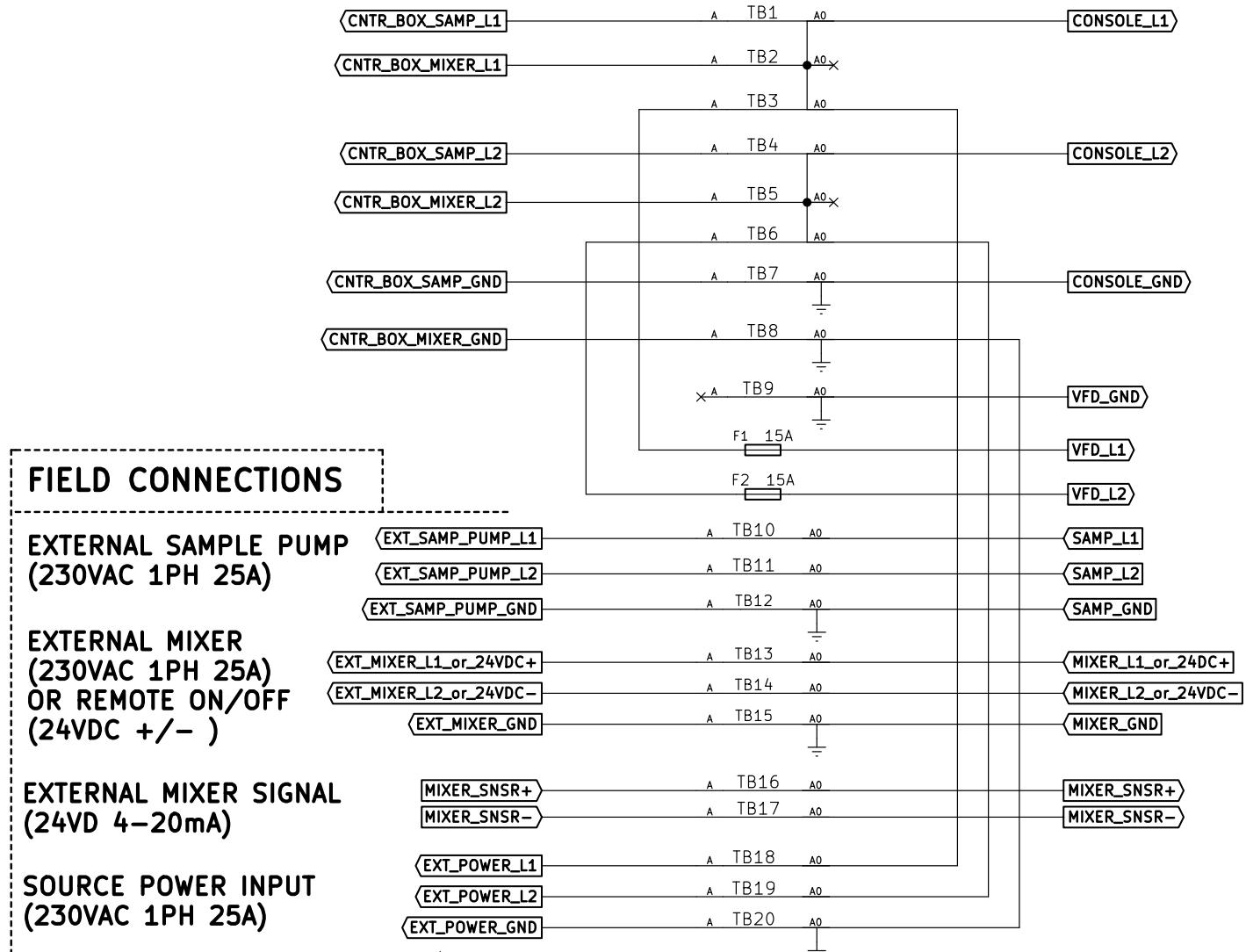
SAMPLE PUMP OUTPUT
(230VAC 1PH 8A)

FIELD CONNECTIONS (DC)

TB81.A (DC+)	48	A0	TB10	A	CL_BULK_SNSR+	EXTERNAL CHLORINE BULK STORAGE SENSOR INPUT (4-20mA)
AI1.1+ (DC+)	74	B0		B	CL_BULK_SNSR-	
				C	CL_BULK_GND	
4POS JUMPER TB10.A:TB13.A						
	73	B0		A	AMM_BULK_SNSR+	EXTERNAL AMMONIA BULK STORAGE SENSOR INPUT (4-20mA)
				B	AMM_BULK_SNSR-	
AI1.0+ (DC+)				C	AMM_BULK_GND	
	76	B0		A	MNTR_TANK_SNSR+	EXTERNAL MONITORED TANK SENSOR INPUT (4-20mA)
				B	MNTR_TANK_SNSR-	
AI1.3+ (DC+)				C	MNTR_TANK_GND	
AI1.2+ (DC+)	75	B0		A	SPARE_AI+	SPARE ANALOG INPUT SENSOR INPUT (4-20mA)
				B	SPARE_AI-	
				C	SPARE_AI_GND	
RLY1.14 (DC+)	82	A0	TB14	A	SYS_OK_NO	* SYSTEM OK RELAY OUTPUT (6A/260VAC, 6A/30VDC)
	83	B0		B	SYS_OK_COM	
	81	C0		C	SYS_OK_NC	
RLY2.14 (DC+)	85	A0	TB15	A	RSDL_RNG_NO	* RESIDUAL RANGE RELAY OUTPUT (6A/260VAC, 6A/30VDC)
	86	B0		B	RSDL_RNG_COM	
	84	C0		C	RSDL_RNG_NC	
COMM1.DSUB_8	112	A0	TB16	A	RS_485_A	RS485 MODBUS 2-WIRE
COMM1.DSUB_3	113	B0		B	RS_485_B	
COMM1.DSUB_1	114	C0		C	RS_485_GND	

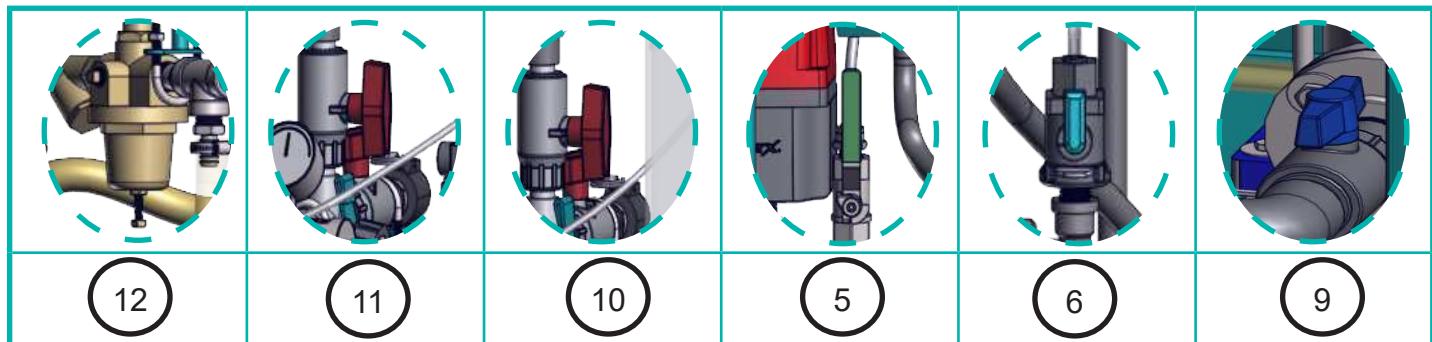
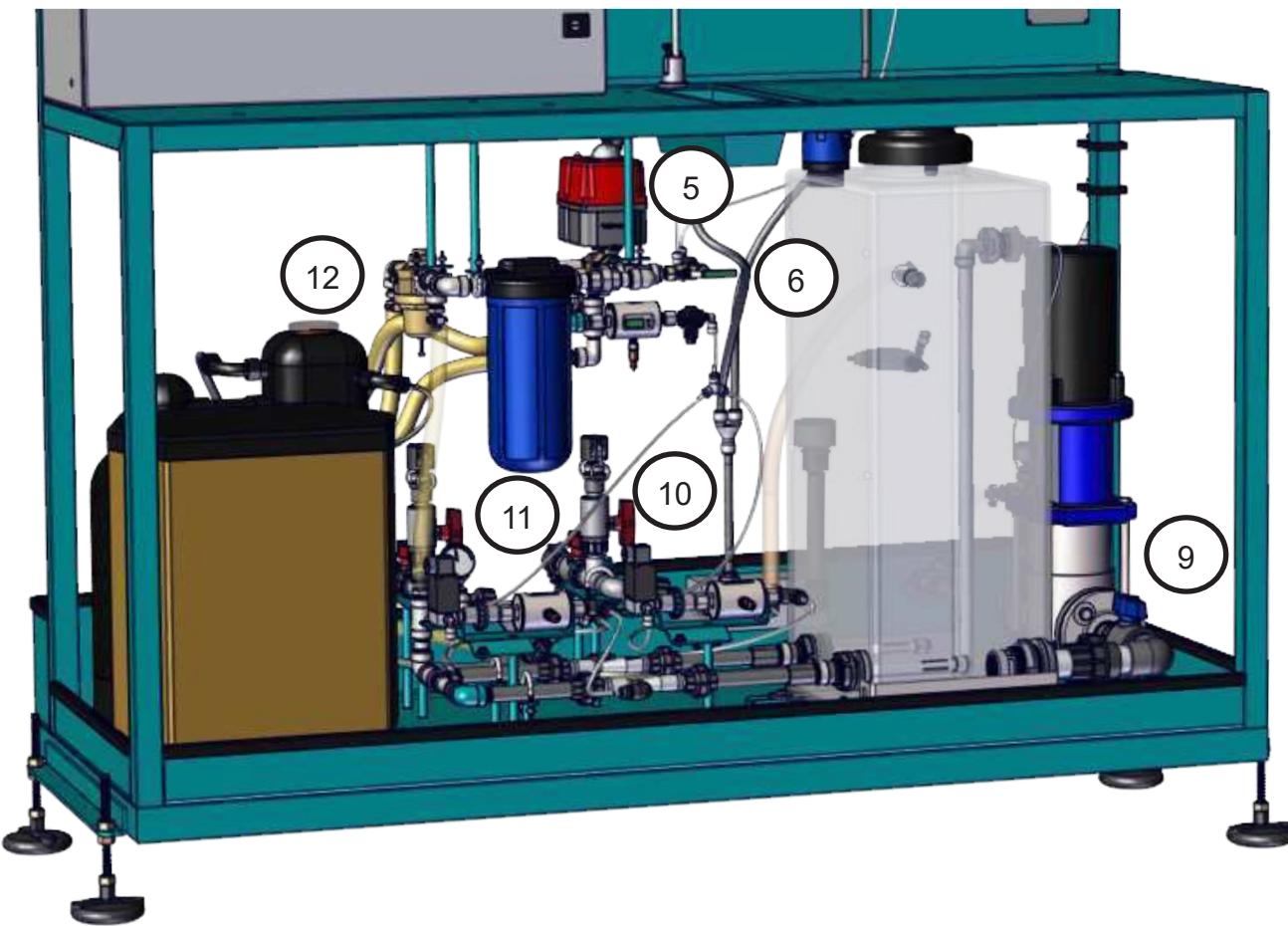
Electrical Integration

Power Junction Box



Connection Detail

Valves and Locations

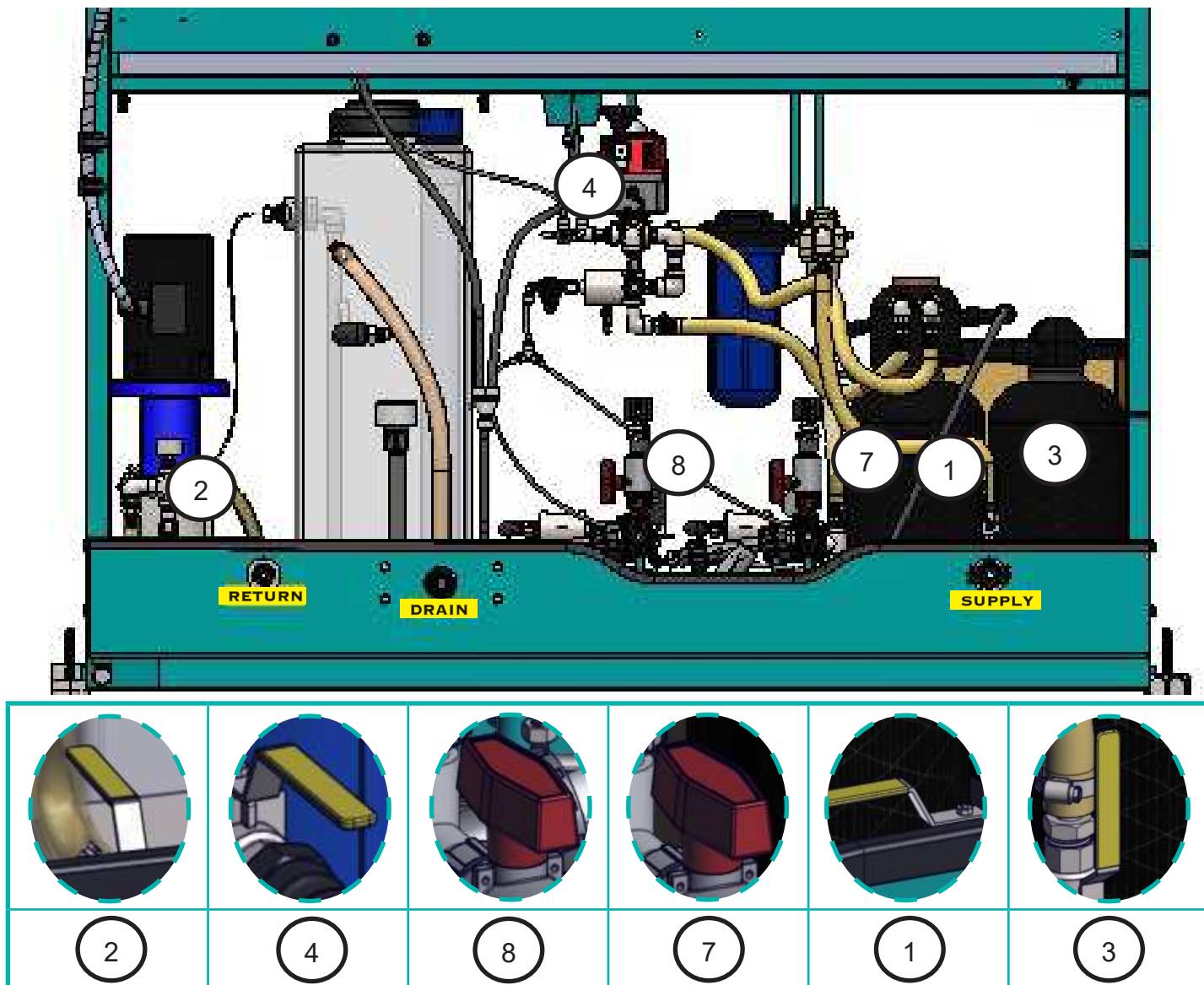


Front Valves

5. Sample Tap Valve	11. Ammonia Auxiliary Port Valve
6. Sensors Feed Valve	12. Pressure Regulating Valve
9. Pre-Mix Tank to Return Valve	
10. Chlorine Auxiliary Port Valve	

Connection Detail

Valves and Locations

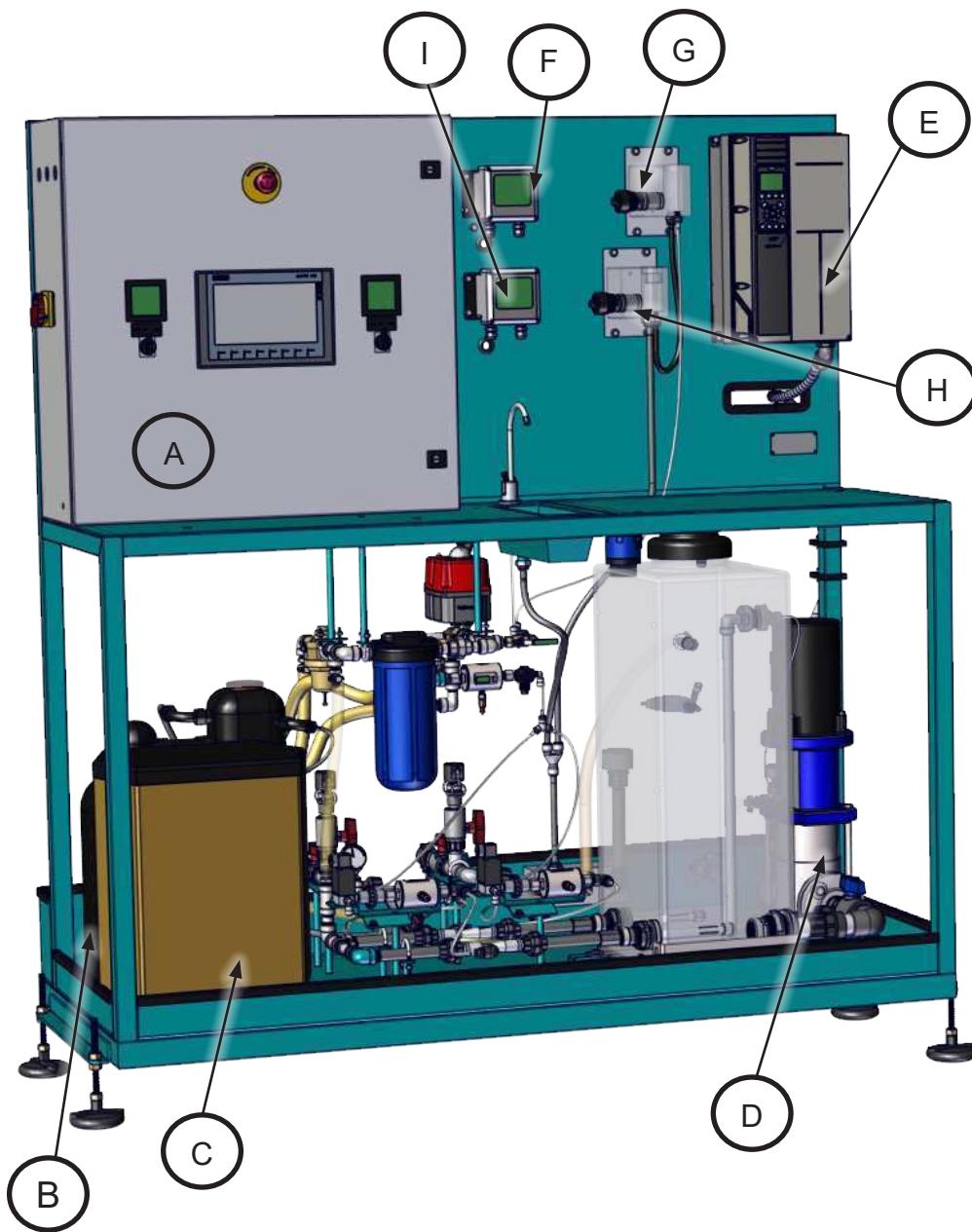


Rear Valves

1. By-pass Valve	8. Ammonia Feed Valve
2. Return Pump Valve	10. Chlorine Auxiliary Port Valve
3. Water Supply Line Valve	11. Ammonia Auxiliary Port Valve
4. Soft Water Line Valve	
7. Chlorine Feed Valve	

Connection Detail

Valves and Locations



Front Connections

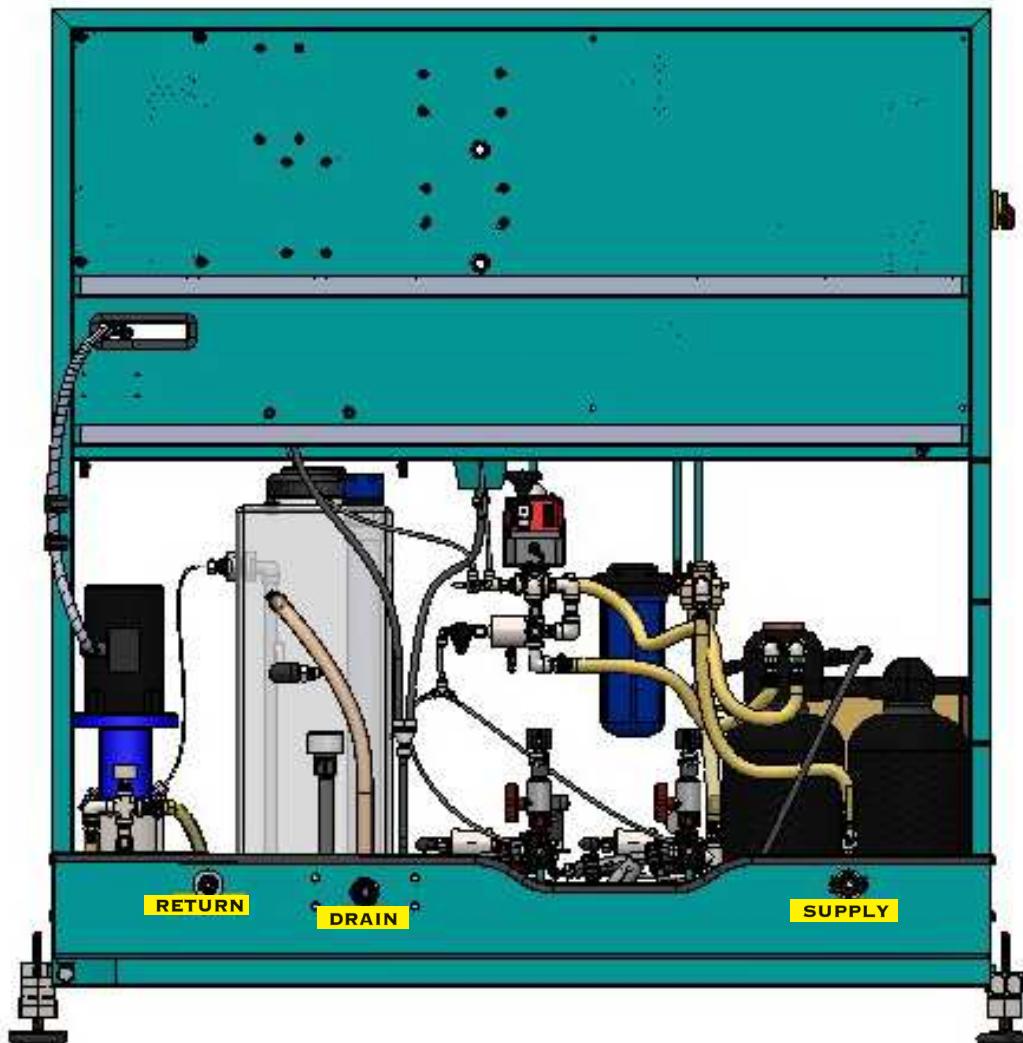
- A. Control Panel * See Note IV
- B. Water Softener Brine Tank
- C. Water Softener
- D. Return Pump
- E. VFD
- F. Total Chlorine Sensor
- G. Total Chlorine Transmitter
- H. Free Chlorine Transmitter
- I. Free Chlorine Sensor

Notes:

- I. Fluid connections terminate as 1/2" FNPT or optional Banjo Quick Connects, except drain.
- II. Drain connection is 1" FNPT.
- III. Unit default to drain sensor discharge at rate of approximately 10GPH.
Water softener requires drain for regeneration.
Approximately 10G of regeneration water per 100G of injected chemical.
- IV. **Control Panel and Power Junction Box have two (2) plugged 1/2" conduit knockouts for connections by Others.**

Connection Detail

Valves and Locations



Rear Connections

- A. Sample/Motive [IN]
- B. Chlorine Source [IN]
- C. Soft Water Source [OUT]
- D. Ammonia Source [IN]
- E. Drain [OUT] * See Note III
- F. Return [OUT]
- G. Vent [OUT]

Notes:

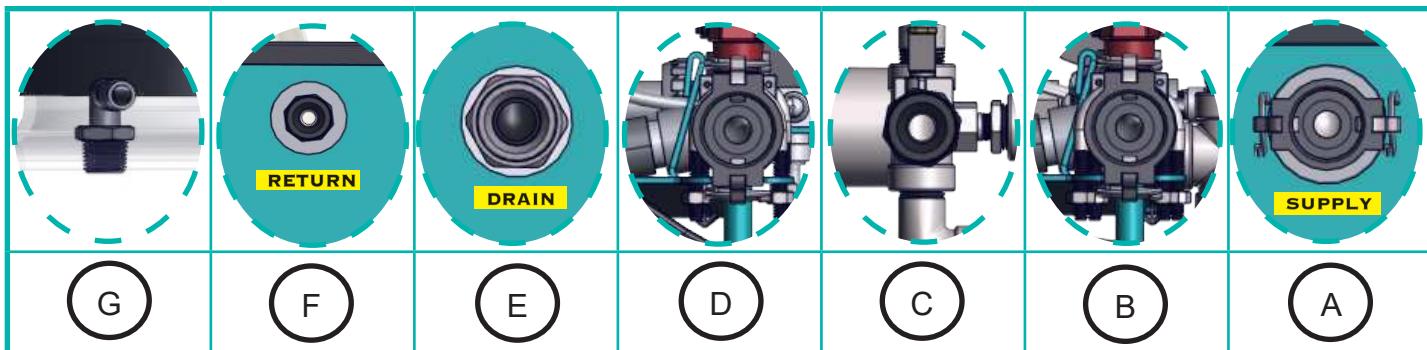
Fluid connections terminate as 1/2" FNPT or optional Banjo Quick Connects, except drain. Drain connection is 1" FNPT.

Unit default to drain sensor discharge at rate of approximately 10GPH.

Water softener requires drain for regeneration.

Approximately 10G of regeneration water per 100G of injected chemical.

Control Panel and Power Junction Box have two (2) plugged 1/2" conduit knockouts for connections by Others.



Piping and Instrumentation Diagram

EQUIPMENT SYMBOLS

	CONSTANT FLOW VALVE
	BALL VALVE
	PRESSURE REDUCING VALVE
	FILTER HOUSING
	ACTUATED VALVE
	VENTURI ASSEMBLY
	Y-STRAINER
	WATER SOFTENER
	MIX TANK
	PUMP
	CHECK VALVE
OF	OVERFLOW

INSTRUMENT DESIGNATION

AT	ANALYZER TRANSMITTER
FT	FLOW TRANSMITTER
PI	PRESSURE INDICATOR
LS	LEVEL SWITCH
LT	LEVEL TRANSMITTER

Note:

See next page for diagram
with parts shown

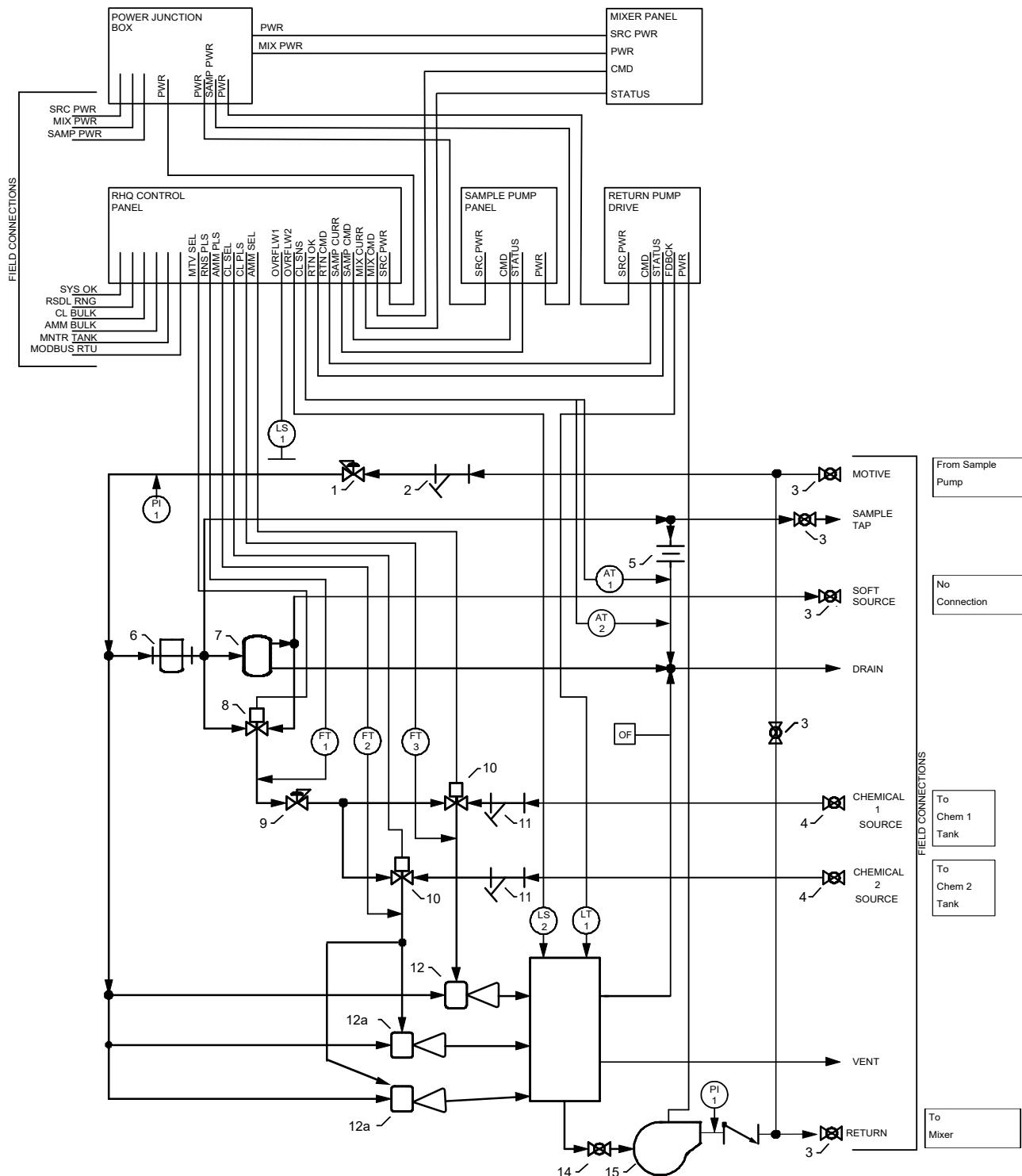
EQUIPMENT PART

1	Motive Pressure Regulator	101515
2	Motive Y-Strainer	101153
3	Isolation Ball Valve (SS)	101139
4	Chemical Ball Valve (PVC)	101638
5	Sample Flow Regulator	101514
6	Filter Housing	101036
-	Replacement Filter	101515
7	Water Softener	101208
8	Rinse Select Valve	101039
9	Rinse Pressure Regulator	101115
10	Chemical Select Valve	101045
11	Chemical Y-Strainer	101156
12	Ammonia Venturi Assembly	101043
12a	Chlorine Venturi Assembly	102572
13	Check Valve (PP)	101553
14	Isolation Ball Valve (PVC)	101201

INSTRUMENT PART

AT1	Total Chlorine Analyzer	101046
AT2	Free Chlorine Analyzer	101047
FT1	Rinse Flow Verification Sensor	101303
FT2	Chemical Flow Verification Sensor	101159
FT3	Chemical Flow Verification Sensor	101159
LS1	Mix Tank Level Switch	101116
LS2	Containment Level Switch	101117
LT1	Mix Tank Level Transmitter	101044
PI1	Motive Pressure Gauge	16010707

Piping and Instrumentation Diagram



ResidualHQ Limited Replacement Warranty

ResidualHQ Disinfectant Control Systems. The ResidualHQ disinfectant control systems are warranted to be free of defective parts, materials, and workmanship for a period of two years from the date of installation. The warranty is valid only for use of the equipment in accordance with the owner's manual and any initial and ongoing factory recommendations. The warranty is limited to the repair or replacement of defective components only and does not apply to normal wear and tear. If the factory's service crews performed the original on-site placement and startup, then this warranty also includes labor. Where labor is included, in lieu of sending a factory service crew to the site for minor repairs, Ixom may choose to send the replacement parts to the owner postage-paid and may pay the owner a reasonable labor allowance, as determined solely by Ixom, to install the parts. There is no liability for consequential damages of any type. The warranty that is submitted and provided with the purchased equipment is the valid warranty.

Terms applicable to all equipment. This Limited Replacement Warranty is subject to the terms of Ixom's General Terms and Conditions of Sale. In the event of any inconsistency between the terms of this Limited Replacement Warranty and Ixom's General Terms and Conditions of Sale, the terms of this Limited Replacement Warranty shall prevail to the extent of that inconsistency.

Protect Your Investment With The Ixom Service Program

Comprehensive Damage Repair

Damage which occurs to your Ixom manufactured equipment in the normal course of operation will be repaired or replaced including supply and installation of structural repairs and replacement parts in accordance with Ixom's standard terms & conditions.

Trained & Experienced Service Technicians

The Ixom Service Program allows our customers to take advantage of our highly trained service technicians. We have the equipment, experience and training to ensure the machines are well maintained while following OSHA regulations. Our dedication to safety and high level of training has earned us the prestigious SHARP recognition award time and time again. We have the means to safely service the equipment whether in municipal water tanks, lakes, reservoirs, or wastewater ponds & basins.



Guaranteed Annual Onsite Maintenance

Ixom service personnel will perform a minimum of one (1) onsite equipment inspection & maintenance per yearly term of the service contract including mechanical, structural, and electronic components of Ixom manufactured equipment.



On-Site Crew Response for Critical Application and Operational Service Issues

If service issues arise, the customer may be asked to perform a basic machine inspection and discuss results with Ixom's Customer Service Department. In some cases, the customer may be asked to perform minor tasks (i.e., cleaning, basic troubleshooting, and replacing minor parts). If replacement parts are needed, the factory will ship them out at no cost. For more serious application and service issues, Ixom will dispatch service personnel to resolve the issues onsite.



Removal, Storage, and Redeployment of Equipment

For situations when Ixom equipment needs to be removed, stored, and redeployed, services can be offered at a discounted rate.

Access to On-Staff Water Quality Experts

Ixom employs many experts in the water quality field including specialized areas such as limnology, hydrology, wastewater, biology, and engineering. Our water quality personnel are available for data analysis and troubleshooting when you need it.

Contact us for a quote!

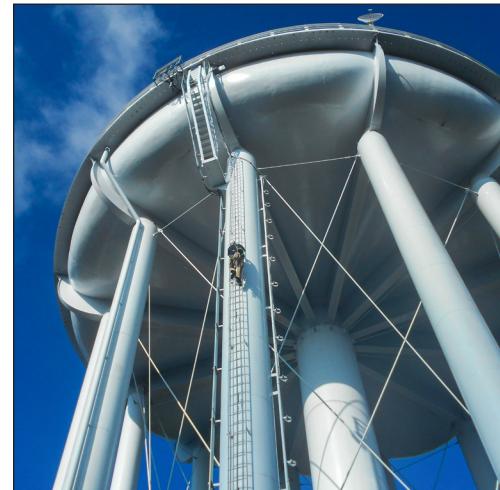
Call +1 866-437-8076 or email us at watercare@ixom.com



Nationwide Installation & Service

EVERYONE DESERVES GREAT CUSTOMER SUPPORT

Ixom Watercare earns customer trust with unparalleled service start to finish. Every department in Ixom is dedicated to the support of our Customers and the improvement of water quality. Complete life cycle support is much, much more than a returned phone call or an email. It centers around direct access and communication to those who can help when help is needed from the beginning of a project throughout the life of the equipment.



ABOUT IXOM

Ixom combines innovative water quality solutions with top notch manufacturing and nationwide in-field service capabilities to create trusted, full circle support our Customers depend on.

We design and manufacture many trusted brands including GridBee®, SolarBee®, MIEX®, and ResidualHQ® for use across the water quality spectrum. This includes solutions for Water Treatment, Distribution Treatment, Wastewater Treatment and Lakes & Source Water Reservoirs.

Ixom has thousands of installations and is an industry-leader solving water quality problems across the United States, Canada and the world.

Contact us today to discuss your water quality and service needs.

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