

# Rain Water Recovery System Support Equipment

## Product Description/Equipment Specifications



Distribution Pump-Filter Skid

**F**LEXIBILITY  
**L**ATITUDE  
**E**NGINEERING  
**E**XECUTION  
**E**XCELLENCE

*Process Water Systems designed with ultimate **FLEXIBILITY** in mind.*

*(Photos are for illustrative purposes only.)*



Side Stream UV Sanitization Skid

### Features at a glance:

- Quick Delivery
- Minimal field installation required
- Controls are UL listed
- Seismic Zone 4 compliant (support for exchange tanks provided separately)
- Flow rates ranging from 15 to 150 GPM
- Small foot print
- Skid Mounted
- Custom Configurations available.
- System wide O&M Manual

### General Description:

FLEXX™ is pleased to offer a comprehensive line of Distribution Pump-Filter Skids and Side Stream UV Sanitization-Pump Skids that are conducive to acquiring Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ credits when integrated into a comprehensive rainwater recovery treatment system.

The standard offering for Distribution Pump-Filter Skids includes units having flow rates ranging from 15 GPM to 150 GPM; the standard offering for Side Stream UV Sanitization-Pump Skids includes units having flow rates ranging from 10 GPM to 40 GPM.

All skids are constructed of carbon steel, powder-coated purple, appropriately sized for the equipment, and configured to provide for ease of maintenance. Schedule 80 PVC is utilized as the piping material for all skids. All skid interconnecting piping and wiring is completed at the factory. Each skid is completely prefabricated, pre-wired, and hydrostatically tested providing for easy, straightforward, integration of the equipment into the remainder of the Rainwater Recovery System. Field connections include flanged suction manifold, flanged discharge manifold, a power connection to the skid mounted control panel, and in the case of the Distribution Pump-Filter Skid, wiring from the skid mounted control panel to a field supplied and installed level switch.

## Distribution Pump-Filter Skids

### Mechanical Description:

Dual, multi-stage, centrifugal pumps having 316L stainless steel wetted parts have been provided for all flow rates. Each pump includes suction and discharge isolation valves, a ball type check valve, and flanged connections to aid in servicing and maintenance activities in the field. All pumps have TEFC type motors and are offered in two options as follows:

- Model numbers RSE-M1E, RSE-M2E, RSE-M3E, and RSE-M4E include pumps controlled by integral VFD's, each having an individual pressure sensor.
- Model numbers RSE-M1N, RSE-M2N, RSE-M3N, and RSE-M4N include pumps without VFD's controlled by a downstream pressure switch.

A bladder tank, pre-charged design with butyl diaphragm, isolated by a union ended ball valve and a single, stainless steel, bag filter housing has been included for each of the flow rates. Inlet and outlet pressure indicators have been provided on the bag filter housing to enable differential pressure monitoring of the filter.

### Electrical & Operational Description:

A single point, NEMA 4, skid mounted, disconnect panel has been included for each flow rate. Factory wiring for the panel includes variable frequency drives wiring (where applicable), motor wiring, and pressure switch wiring. The control panel is equipped with disconnect, motor overload protection, system off-on switch, pump selector switch, hand-off-auto switch for each pump, low tank alarm, alarm for each pump, and connections for tank level switch (tank level switch provided by others). Panel will be supplied with UL listing mark for industrial control panels.

Pumps shall operate one at a time with alternate pump in standby. Pumps will shutdown on Low-Low tank level and lag pump shall auto start upon lead pump failure.

### Product Overview:

<i>Model Number</i>	<i>Flow Rate</i>
RSE-M1E	15-30 gpm (56-113 lpm)
RSE-M2E	40-70 gpm (151-264 lpm)
RSE-M3E	80-125 gpm (302-473 lpm)
RSE-M4E	130-150 gpm (492-567 lpm)
RSE-M1N	15-30 gpm (56-113 lpm)
RSE-M2N	40-70 gpm (151-264 lpm)
RSE-M3N	80-125 gpm (302-473 lpm)
RSE-M4N	130-150 gpm (492-567 lpm)

### Factory Procedures:

Assembly	Fully assembled at factory.
Piping / Wiring	Fully wired and piped at the factory
Testing	Hydrostatic pressure test
Shipping preparation	Crated for domestic shipment (some components may be removed for protection prior to shipment)

**Regulations and Standards:**

Quality System	Factory procedures
Plastic Joining	Manufacturer trained and certified for PVC solvent welding
Carbon Steel Frame	ASME Compliant
Electrical and Controls	Underwriters Laboratory (UL), National Electrical Code (NEC)
NEMA rating	NEMA 4
Seismic rating	None (Optional Seismic calculations available, must request at time of proposal).

**Documentation Package (Included with Operation and Maintenance Manual):**

Drawings	Process and Instrumentation Diagram (P&ID), Electrical Schematics
Quality Documents	Quality Assurance data reports

**Design Parameters:**

Configuration	Skid mounted, powder-coated, carbon steel
Feedwater Flow	Equivalent to skid flow rate listed above by Model Number

**General Specifications:**

Piping Material	Schedule 80 PVC, ANSI Flanges, Threaded Connections, Solvent Glue Joints
Isolation Valves	RSE-M1E and RSE-M1: PVC Ball Valves, GF Type 375, or equal
	All other models: Butterfly Valves, 316 SS disc and stem, ABZ Fig 397, or equal
Check Valve	PVC Ball Check Valve, GF Type 360, or equal
Pressure Gauge	Ametek, SS, 0-160 PSI, NPT, or equal
Pump (With VFD selection)	Grundfos CRNE, vertical multi-stage centrifugal, with integral VFD, sensor, 316SS, flanged, TEFC, or equal
	RSE-M1E: CRNE 5-7
	RSE-M2E: CRNE 15-3
	RSE-M3E: CRNE 20-3
	RSE-M4E: CRNE 32-3-2
Pump (Without VFD selection)	Grundfos CRN, vertical multi-stage centrifugal, 316SS, flanged, TEFC, or equal
	RSE-M1N: CRN 5-7
	RSE-M2N: CRN 15-3
	RSE-M3N: CRN 20-3
	RSE-M4N: CRN 32-3-2
Bladder Tank	Dayton, 21 gallon (79 liter), Max Working Pressure 125 psi (8.6 bar), Max Temperature 200° F (93° C), or equal
	RSE-M1E, RSE-M2E, RSE-M3E, RSE-M4E

<i>Bladder Tank-continued</i>	Dayton, 80 gallon (302 liter), Max Working Pressure 125 psi (8.6 bar), Max Temperature 200° F (93° C), or equal		
		RSE-M1N, RSE-M2N, RSE-M3N, RSE-M4N	
Bag Filter Housing	Stainless steel, single bag		
		RSE-M1(E/N): Fil-Trek, Size P1, 100 gpm (378 lpm) max, 304SS, or equal	
		RSE-M2(E/N): Fil-Trek, Size P1, 100 gpm (378 lpm) max, 304SS, or equal	
		RSE-M3(E/N): Fil-Trek, Size P2, 200 gpm (756 lpm) max, 304SS, or equal	
	RSE-M4(E/N): Fil-Trek, Size P2, 200 gpm (756 lpm) max, 304SS, or equal		

**Controls Specifications:**

Enclosure Type	NEMA 4
Voltage	3 phase

**Pipe Connection Specifications:**

Model	RSE-M1(E/N)	RSE-M2(E/N)	RSE-M3(E/N)	RSE-M4(E/N)
Skid Inlet	1-1/2" 150# Flange	2" 150# Flange	3" 150# Flange	4" 150# Flange
Skid Outlet	1-1/2" 150# Flange	2" 150# Flange	3" 150# Flange	3" 150# Flange

**Utility Requirements:**

Model	RSE-M1(E/N)	RSE-M2(E/N)	RSE-M3(E/N)	RSE-M4(E/N)
Pump HP	2	5	7.5	10
Full Load Amps: 3PH @ 480 VAC	3.4	7.6	11.0	14.0
Breaker Req. Per Code	15	15	20	25

**Physical Dimension Specifications:**

Model	RSE-M1(E/N)	RSE-M2(E/N)	RSE-M3(E/N)	RSE-M4(E/N)
Length, in (cm)	60 (153)	60 (153)	72 (183)	72 (183)
Width, in (cm)	42 (107)	42 (107)	42 (107)	42 (107)
Height, in (cm)	70 (178)	70 (178)	70 (178)	70 (178)
Operating weight, lbs (kg)	852 (387)	1018 (462)	1228 (558)	1447 (657)

## Rain Water Recovery System Support Equipment

### *Distribution Pump-Filter Skids Selection Matrix*

Select

**EXAMPLE PART NUMBER**

**RES-  
M1E**

FIELD 1	Booster Pump Pack	
	Code	Code Description
	<b>RSE-M1E</b>	15-30 gpm (56-113 lpm), with VDF controlled pumps
	<b>RSE-M2E</b>	40-70 gpm (151-264 lpm), with VDF controlled pumps
	<b>RSE-M3E</b>	80-125 gpm (302-473 lpm), with VDF controlled pumps
	<b>RSE-M4E</b>	130-150 gpm (492-567 lpm), with VDF controlled pumps
	<b>RSE-M1N</b>	15-30 gpm (56-113 lpm), without VDF controlled pumps
	<b>RSE-M2N</b>	40-70 gpm (151-264 lpm), without VDF controlled pumps
	<b>RSE-M3N</b>	80-125 gpm (302-473 lpm), without VDF controlled pumps
	<b>RSE-M4N</b>	130-150 gpm (492-567 lpm), without VDF controlled pumps



## Side Stream UV Sanitization-Pump Skids

### Mechanical Description:

Horizontal, multi-stage, centrifugal pumps having 316L stainless steel wetted parts have been provided for all flow rates. Each skid includes pump suction and skid outlet isolation valves, a ball type check valve, and union connections to aid in servicing and maintenance activities in the field. All pumps have TEFC type motors and self-lubricating bearings.

The bacteria destruct Ultraviolet Sterilizer (UV) is fitted with 254 nm bulbs and quartz sleeves and is constructed of 316L stainless steel. The bacteria destruct UV is installed in a manner to permit continuous recirculation of water through the UV thereby reducing system bioburden.

A Big Blue cartridge filter housing has been provided and includes inlet and outlet pressure indicators to enable monitoring of the cartridge filter differential pressure.

### Electrical & Operational Description:

A single point, NEMA 4, skid mounted, disconnect panel has been included for each flow rate. Factory wiring for the panel includes the Ultraviolet Sterilizer and pump motor wiring. The control panel is equipped with disconnect, motor overload protection, and system off-on switch. Panel will be supplied with UL listing mark for industrial control panels.

### Product Overview:

<i>Model Number</i>	<i>Flow Rate</i>
RESUV-10	10 gpm (37 lpm)
RESUV-20	20 gpm (75 lpm)
RESUV-40	40 gpm (151 lpm)

### Factory Procedures:

Assembly	Fully assembled at factory.
Piping / Wiring	Fully wired and piped at the factory
Testing	Hydrostatic pressure test
Shipping preparation	Crated for domestic shipment (some components may be removed for protection prior to shipment)

### Regulations and Standards:

Quality System	Factory procedures
Plastic Joining	Manufacturer trained and certified for PVC solvent welding
Carbon Steel Frame	ASME Compliant
Electrical and Controls	Underwriters Laboratory (UL), National Electrical Code (NEC)
NEMA rating	NEMA 4
Seismic rating	None (Optional Seismic calculations available, must request at time of proposal).

**Documentation Package (Included with Operation and Maintenance Manual):**

Drawings	Process and Instrumentation Diagram (P&ID), Electrical Schematics
Quality Documents	Quality Assurance data reports

**Design Parameters:**

Configuration	Skid mounted, powder-coated, carbon steel
Feedwater Flow	Equivalent to skid flow rate listed above by Model Number

**General Specifications:**

Piping Material	Schedule 80 PVC, ANSI Flanges, Threaded Connections, Solvent Glue Joints
Isolation Valves	PVC Ball Valves, GF Type 375, or equal
Check Valve	PVC Ball Check Valve, GF Type 360, or equal
Pressure Gauge	Ametek, SS, 0-160 PSI, NPT, or equal
Pump	Grundfos CHI, horizontal multi-stage centrifugal, 316 SS, or equal
	RESUV-10: CHI 2-20
	RESUV-20: CHI 4-20
	RESUV-40: CHI 8-20 S
UV Sterilizer	Aquafine, 254 nm lamp(s), or equal
	RESUV-10: SL-1
	RESUV-20: MP-2-SL
	RESUV-40: CSL-4R
Cartridge Filter Housing	20 in (50 cm), Big Blue

**Controls Specifications:**

Enclosure Type	NEMA 4
Voltage	1 phase

**Pipe Connection Specifications:**

Model	RESUV-10	RESUV-20	RESUV-40
Skid Inlet	3/4" 150# Flange	1-1/4" 150# Flange	1-1/2" 150# Flange
Skid Outlet	3/4" 150# Flange	1" 150# Flange	1-1/2" 150 # Flange

**Utility Requirements:**

Model	RESUV-10	RESUV-20	RESUV-40
Pump HP	1/2	1/2	1
Full Load Amps: 1PH @ 115 VAC	9.8	9.8	16.0
Breaker Req. Per Code	20	20	30

**Physical Dimension Specifications:**

Model	RESUV-10	RESUV-20	RESUV-40
Length, in (cm)	44 (112)	44 (112)	44 (112)
Width, in (cm)	34 (87)	34 (87)	34 (87)
Height, in (cm)	70 (178)	70 (178)	70 (178)
Operating weight, lbs (kg)	261 (119)	279 (127)	333 (152)

**Rain Water Recovery System Support Equipment  
Side Stream UV Sanitization-Pump Skids Selection Matrix**

Select

**EXAMPLE PART NUMBER**

**RESUV-10**

FIELD 1	Booster Pump Pack	
	Code	Code Description
	<b>RESUV-10</b>	Side Stream UV Sanitization-Pump Skid, 10 GPM (37 lpm)
	<b>RESUV-20</b>	Side Stream UV Sanitization-Pump Skid, 20 GPM (75 lpm)
	<b>RESUV-40</b>	Side Stream UV Sanitization-Pump Skid, 40 GPM (151 lpm)





**PROCESS & INSTRUMENTATION DIAGRAM**

