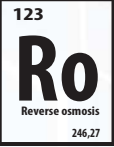


# ALTUM

## ARO-10

Reverse osmosis 10 gpm



### Daily production chart (liters/minute)

TDS (NaCl) inlet water (mg/l)

| °C/°F | 500        | 1 000 | 2 000 |
|-------|------------|-------|-------|
| 25/77 | (gpm) 10,0 | 9,6   | 9,0   |
|       | (lpm) 37,9 | 36,3  | 34,1  |
| 15/59 | (gpm) 10,0 | 10,0  | 8,0   |
|       | (lpm) 37,9 | 37,9  | 30,3  |
| 5/41  | (gpm) 7,6  | 6,8   | 5,3   |
|       | (lpm) 28,6 | 25,5  | 20,1  |

\* Inlet water parameters used for calculations: raw water at 25°C. SDI < 3, no counterpressure.

### Components

|  |                                      |
|--|--------------------------------------|
| Inlet valve  | 2" Electric valve                    |
| Prefilter  | 5 microns filter bag                 |
| Pressurization pump                                | Multistage 304 stainless steel       |
| Motor  | 2HP TEFC                             |
| Low pressure protection                            | Pressure switch                      |
| Membrane housing                                   | FRP                                  |
| Membrane type                                      | TFC - Low energy                     |
| Membrane dimensions                                | 102 x 1 016 mm (4 x 40")             |
| Number of membranes                                | 8                                    |
| Membrane surface m <sup>2</sup> (pi <sup>2</sup> ) | 64,8 (696)                           |
| Matrix configuration                               | 2/4 Recovery                         |
| Internal recirculation loop                        | 1,5" PVC                             |
| Recirculation control                              | 3/4" PVC Globe Valve                 |
| Drain control                                      | 3/4" PVC Globe Valve                 |
| Recirculation flowmeter                            | 0-151,4 lpm (0-40 gpm)               |
| Drain flowmeter                                    | 0-151,4 lpm (0-40 gpm)               |
| Permeate flowmeter                                 | 0-151,4 lpm (0-40 gpm)               |
| System shutoff control                             | Float/contact device                 |
| Inlet water quality monitor                        | 0-1 000 µS                           |
| Permeate water quality control                     | 0-250 µS                             |
| Display screen                                     | Printed circuit board, 2 line screen |

### Connections

|                         |  |
|-------------------------|--|
| Electric power supply   | 208-240VAC/1ph/60Hz/50Hz<br>208-575/3ph/60Hz<br>380VAC/3ph/50Hz<br>Other power supply configurations available on demand |
| Inlet                   | 2" PVC Union   |
| Permeate                | 1,5" PVC Union   |
| Reject                  | 1,5" PVC Union   |
| PüreRince process       | 3/4" PVC Union   |
| Cleaning station inlet  | 2" PVC Union   |
| Cleaning station outlet | 1,5" PVC Union (2 connections)   |

### Feed water

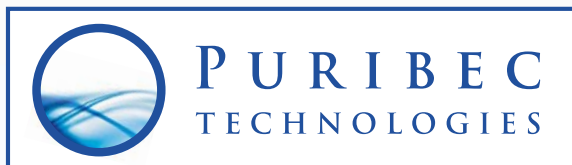
|                               |                           |
|-------------------------------|---------------------------|
| Inlet pressure                | 30-50 psi (2,1 - 3,4 bar) |
| Temperature                   | 4 - 30°C                  |
| pH                            | 2 - 11 SU                 |
| Chlorine (Max.)               | 0,05 mg/l                 |
| Hardness (Max.)               | 103 mg/l (6 gpg)          |
| Iron (Max.)                   | 0,3 mg/l                  |
| Silica (Max.)                 | 10,0 mg/l                 |
| Total dissolved solids (Max.) | 3 000 mg/l                |

### Operating specs

|                          |  |
|--------------------------|--|
| Inlet flow rate @ 65 %   | 58,2 lpm (15,4 gpm)                          |
| Permeate flow rate*      | 37,8 lpm (10 gpm)                            |
| Reject flow rate @ 65%   | 20,4 lpm (5,4 gpm)                           |
| Daily production         | 54 500 l (14 400 gal)                        |
| Operating pressure       | 100-150 psi (6,9 - 10,3 bar)                 |
| Max. pressure - shutdown | 175 psi (12,1 bar)                           |
| Min. pressure - shutdown | 15 psi (1,0 bar)                             |
| Rejection percentage     | 97 % - 99 %                                  |
| Typical recovery ratio   | 50 % - 75 %                                  |
| PüreRince time           | 10 minutes                                   |
| PüreRince volume         | 132,5 l (35gal)                              |
| Width x Depth x Height   | 2 743 x 914 x 1 626 mm<br>(108" x 36" x 64") |
| Weight                   | 408 kg (900 lbs)                             |

### Options

|  |
|--|
| Raw water conductivity probe                       |
| Reject water conductivity probe                    |
| BACnet or Modbus communication protocols available |
| Direct feed  |
| Programmable logic controllers (PLC)               |
| Stainless steel piping (316)                       |
| Alternate or auxiliary pump                        |
| Upgrade for brackish water                         |
| Stainless steel skid                               |



# Reverse osmosis 10 gpm

## Technical specifications : Commercial and industrial reverse osmosis systems

### Operating profile

The system uses reverse osmosis technology to remove micropollutants, to improve color and reduce total dissolved solids (TDS) level in water by a minimum of 95%, depending on raw water quality. System contains its own pressurization system to optimize the production of water through the membranes. System operating pressure should be between 100 and 150 (6,9 and 10,3 bar). System functionalities include monitoring and regulating devices to adjust the system's operating pressure. The system contains an automatic inlet valve that closes when a tank full or a problem signal is received. A low pressure switch serves to protect pump from cavitation damage during low pressure occurrences. On/Off cycling is based on a parametrate normally open or closed dry contact.

### Pump design

Units use a multi-stage centrifuge pump. Wet end is 304 stainless steel (also available in 316 stainless steel). Pump motor is NEMA rated and designed with fully partitioned cooling fan and is tri-phase powered (also available in single phase) . The pump uses multiple turbine stages to increase the water pressure between 100 and 150 (6,9 and 10,3 bar).

### Membranes and housings

System uses 8 TFC low energy membranes, each one being 102 x 1 016mm (4.0" x 40") in size, to treat up to 10 gallons of water per minute, based on a 25°C operating temperature. The membrane device is designed for a low energy operation, at a pressure below 150 psi (10.3 bar). Membrane housings are made of fiber glass and rated for operation at pressures up to 250 psi (17.2 bar). Four membrane housings are included in the system and each one contains two membranes. The system includes a rejection recovery device adjustable with manual valves.

### Plumbing configuration

The system is calibrated for maximum operating pressure of 150 psi (10.3 bar) . Primary plumbing components are PVC 80. The system provides an internal adjustment of the recirculated and rejection flow. Rejection recirculation data is displayed on the operator interface panel at the front. The feed and pump pressures are also shown. Recirculation valves are placed for easy access and permeate sampling ports are located on each membrane housing.

### System controls

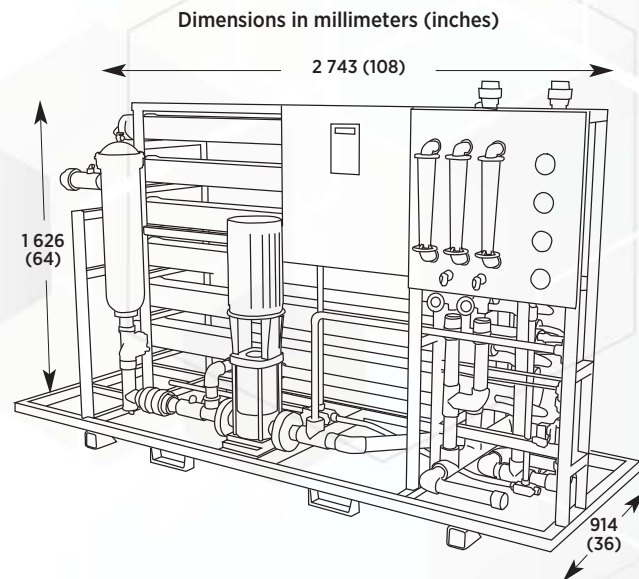
All system controls are automated and controlled by an integrated circuit. The system continuously displays produced water quality data in microSiemens ( $\mu\text{s}$ ). The controller activates the alarm system , including high or low pressure and low quality of raw and treated water. During the shutdown, the feed side of the membrane is flushed with treated water. All electronic components are enclosed in a sealed non-metallic NEMA 4X housing . System controls include a main switch that can interrupt the main power supply.

### Skid

System dimensions do not exceed 2743 x 914 x 1626 mm (108 x 36 x 64 "). The system is assembled on a steel structure covered with epoxy paint. Also available in stainless steel upon request.

# ALTUM

## ARO-10



### Distributed by



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