

# Hydrotech 101 Series

Advanced Reverse Osmosis Drinking Water Treatment System

## Performance Data Sheet

This system has been tested according to NSF/ANSI 58 for reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system as specified in NSF/ANSI 58.



### MODEL NUMBERS

SELECT MONITOR, FAUCET, OUTPUT, AND CLAIMS. CROSS-REFERENCE SELECTION TO CODES FOR MODEL NUMBER

Model Configuration			Output Designation*					Reduction Claims	
Water Quality Monitor	Product Water Faucet	Series	9	15	25	35	45	General	Nitrates
Pushbutton Smartap®	Polymer or Stainless Steel	101	03	04	05	06	07	101	103
Faucet Smartap®	Polymer or Stainless Steel	101	03	04	05	06	07	102	104

\* This is a Manufacturer's Reference Designation Only. Refer to Output Performance Table for Certified Output Performance

### CHEMICAL REDUCTION PERFORMANCE

Organic and Inorganic Contaminants	Influent Concentration mg/L	Effluent Average mg/L	Rejection Average %	Effluent Maximum mg/L	Rejection Minimum %	Maximum Product Water Concentration mg/L
Pentavalent Arsenic* (As <sub>5</sub> )	0.30± 10%	0.003	99%	0.004	99%	0.010
Barium (Ba)	10.0± 10%	0.15	99%	0.60	94%	2.0
Cadmium (Cd)	0.03± 10%	0.0005	98%	0.00077	97%	0.005
Hexavalent Chromium (Cr <sub>6</sub> )	0.30± 10%	0.022	86%	0.049	67%	0.1
Trivalent Chromium (Cr <sub>3</sub> )	0.30± 10%	0.02 <sup>‡</sup>	88%	0.02 <sup>‡</sup>	88%	0.1
Copper (Cu)	3.0± 10%	0.038	99%	0.074	97%	1.3
Fluoride (F)	8.0± 10%	0.28	97%	0.37	96%	1.5
Lead (Pb)	0.15± 10%	0.0011	99%	0.0015	99%	0.01
Nitrate/Nitrite <sup>†</sup> (N)	30.0± 10%	0.685	87%	0.843	86%	10.0
Radium 226/228 <sup>††</sup> (Ra)	25pCi/L	5pCi/L	80%	5pCi/L	80%	5pCi/L
Selenium (Se)	0.10± 10%	0.0042	96%	0.01	91%	0.05

<sup>+</sup> This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5), or arsenate at concentrations of 0.30 mg/L or less. This system reduces pentavalent arsenic, but may not remove other forms or arsenic. This system is to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts section of this Performance Data Sheet for further information.

<sup>†</sup> This system is acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate (NO<sub>3</sub>) and 3 mg/L nitrite (NO<sub>2</sub>) in combination measured as 7.8 mg/L nitrogen (N) and is certified for nitrate/nitrite reduction in water supplies with a pressure of 280 kPa (40 psig) or greater. This system is not available in California.

<sup>††</sup> Barium used as surrogate for Radium under NSF® Protocols.

<sup>‡</sup> Minimum Detection Level (MDL)

### MECHANICAL FILTRATION

Contaminant	Influent Challenge Concentration	Effluent Average	Rejection Average %	Effluent Minimum	Rejection Minimum %	Reduction Requirement Max Product Water Concentration
Asbestos	10 - 100 mfp/L >10 µm	0.347 mfp/L	99.95%	0.37 mfp/L	99.45%	99%
Cysts <sup>1</sup>	50,000/ml minimum	6.5/ml	>99.99%	56/ml	99.95%	99.95%
Turbidity	11±1 NTU	0.10 NTU	99.5%	0.19 NTU	99%	0.5 NTU
Chlorine# (Cl <sub>2</sub> )	1.98 mg/L	0.115 mg/L	94%	0.37 mg/L	81%	50%

NOTE: Certified for Cyst Reduction including Cryptosporidium parvum oocysts and cysts of Giardia and Entamoeba.

# System Conforms to NSF/ANSI 42 for Specific Performance Claims As Verified and Substantiated by Test Data: Chlorine (Taste and Odor) to a Product Water Capacity of 11,355 Liters/3,000 Gallons.

## OUTPUT PERFORMANCE DATA

System Conforms to NSF/ANSI 58 for Specific Performance Claims As Verified and Substantiated by Test Data								
Total Dissolved Solids (TDS) Reduction						Daily Output		
Model Number	Influent Challenge Concentration mg/L	Effluent Avg. mg/L	Reject Avg. %	Effluent Max. mg/L	Reject Min. %	Max Product Water Concentration mg/L	Production Rate	Recovery Rating
10103	750±40	19	98%	24	97%	187	19 Liter/day (5 gal/day)	34%
10104	750±40	51	94%	74	91%	187	27.6 Liter/day (7.3 gal/day)	25%
10105	750±40	22	97%	28	96%	187	28.3 Liter/day (7.5 gal/day)	21%
10106	750±40	32	96%	44	94%	187	34 Liter/day (9 gal/day)	24%
10107	750±40	39	95%	58	93%	187	45 Liter/day (12 gal/day)	24%

**NOTE:** System has been tested and shown to operate at its calculated recovery rating under standard test conditions.

## TEST SPECIFICATIONS

Influent Water Specifications			
Contaminants	Chemical and Nitrate Reduction	TDS and Output	Mechanical Filtration
TDS	750 mg/L	757 mg/L	200 - 500 mg/L
PH	7.5	7.1	7.0 - 8.0
Turbidity	<1.0 NTU	<1.0 NTU	1.0 NTU
Temperature	25° C (77° F)	25° C (77° F)	20° C (68° F)
Pressure	345 kPa (50 psig)	345 kPa (50 psig)	414 kPa (60 psig)

**NOTE:** Testing was performed under standard laboratory conditions. Actual performance may vary.

## CONDITIONS FOR SYSTEM USE

MEMBRANE TYPE: THIN FILM COMPOSITE

Source Water Supply Profile		Chemical Parameters	Max mg/L
Community or Private	Chlorinated or Non-Chlorinated	Hardness (CaCo <sub>3</sub> )	<350
System Pressure	280 - 690 kPa (40 - 100 psig)	Iron (Fe)	<0.1
Temperature	4° - 38° C (40° - 100° F)	Manganese (Mn)	<0.05
pH Range	3.0 - 11.0	Hydrogen Sulfide (H <sub>2</sub> S)	0.00
Maximum TDS Level	2000 mg/L	Residual Chlorine (Cl <sub>2</sub> )	<2.0
Turbidity	<1.0 NTU*	* Nephelometric Turbidity Unit	
Maximum SDI**	<4.0	** Silt Density Index: Value stated in SDI units.	

SMARTAP<sup>®</sup> WATER QUALITY MONITORS

Our *patented* water quality monitor uses dual probe LOGIC PLUS MEMORY technology to accurately indicate membrane performance. A split-second power pulse compares the Total Dissolved Solids (TDS) level of the feed water to that of the product water. Then, by reversing the polarity of the electronic pulse, probes are cleaned and kept free of chemical plating. A nine-volt alkaline battery provides power to the monitor. To prolong battery life, the Faucet Monitor indicator lights self-extinguish after a few seconds even if water continues to be dispensed.

PUSHBUTTON SMARTAP<sup>®</sup>

Pressing a test button located on the manifold cover activates the monitor. When button is pressed, and momentarily held down, the monitor instantly checks TDS levels and reports membrane status by illuminating either the green or yellow light located next to the test button.

FAUCET SMARTAP<sup>®</sup>

Opening the product water faucet or extra point-of-use device activates the monitor. When the monitor is activated, it instantly checks TDS levels and reports membrane status by illuminating the green, yellow or orange light located at the faucet base or on the front of the faucet body.

**OPERATIONAL DESCRIPTIONS**

- Factory Specifications rated at water pressure of 414 kPa (60 psig), temperature of 25° C (77° F), >350 mg/L TDS.
- Actual Production/Flow Rates vary according to water temperature, pressure, TDS levels, membrane variations, and customer usage.
- This system cleans itself automatically by rinsing concentrates from the membrane.
- System performance may vary according to local water conditions. Contaminants listed in this Data Sheet are not necessarily in your water.
- Patented Fail Safe Flow Control Valve ensures that product water is never contaminated by reject water. If product water pressure exceeds specifications, the Control Valve relieves the excess pressure and prevents membrane damage.
- System has been tested and operates at the specified Recovery Rating under standard test conditions as specified in NSF/ANSI Standard 58. The Recovery Rating is a percentage measure of the amount of influent water which is delivered as permeate under open permeate discharge conditions.

**WE RECOMMEND YOUR WATER BE TESTED TO DETERMINE SYSTEM REQUIREMENTS**

This drinking water system is for use on potable water supplies only. Source water exceeding chemical parameters requires pretreatment. System can be used on disinfected water that may contain filterable cysts.

**CAUTION**

**DO NOT USE THIS SYSTEM WHERE WATER IS MICROBIOLOGICALLY UNSAFE OR WITH WATER OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION BEFORE OR AFTER THE SYSTEM.**

**ARSENIC FACTS**

Arsenic (abbreviated As) is found naturally in some well water. Arsenic in water has no color, taste, or odor. The amount of arsenic in the water must be measured by laboratory test. Public water utilities must have their water tested for arsenic. You can get the results from your water utility.

If you have your own well, you can have the water tested by a certified laboratory. The local health department or state environmental health agency can provide a list of certified laboratories. Information about arsenic in water can be found on the internet at the U.S. Environmental Protection Agency (USEPA) website: [www.epa.gov/safewater/arsenic.html](http://www.epa.gov/safewater/arsenic.html).

There are two forms of arsenic: pentavalent arsenic (also called As(V), As(+5), and arsenate) and trivalent arsenic (also called As(III), As(+3), and arsenite). In well water, arsenic may be pentavalent, trivalent, or a combination of both. Special sampling procedures are required for a laboratory to determine what type and how much of each type of arsenic is in the water. Check with the laboratories in your area to see if they provide this service.

Reverse Osmosis (RO) water treatment systems are very effective at removing pentavalent arsenic from well water, but they are ineffective in removing trivalent arsenic. A free chlorine residual will rapidly convert trivalent arsenic to pentavalent arsenic. Other water treatment chemicals, such as ozone and potassium permanganate, will also convert trivalent arsenic to pentavalent arsenic.

A combined chlorine residual (also called chloramines) may not convert all of the trivalent chlorine. If you get water from a public water utility, contact the utility to determine if free chlorine or combined chlorine is used in the water system.

The Hydrotech® 101 Series Water Treatment System is designed to remove pentavalent arsenic. It will not convert trivalent arsenic to pentavalent arsenic. The system was tested in a laboratory to determine its capability to remove pentavalent arsenic. Under laboratory conditions, the system reduced 0.30 mg/L (ppm) pentavalent arsenic to 0.010 mg/L (ppm) (the USEPA standard for drinking water) or less. System performance may be different at your installation. Have the treated water tested for arsenic to confirm that the system is operating properly.

The RO component of the Hydrotech® 101 Series Water Treatment System must be replaced in accordance with the Manufacturer's Routine Maintenance Requirements (see table below) to ensure that the system will continue to remove pentavalent arsenic. The RO components are identified in this Performance Data Sheet (Parts Information) and in the Owner's Guide (Exploded Schematic and Parts List).

**MAINTENANCE AND WARRANTY INFORMATION**

REFER TO OWNER'S GUIDE FOR DETAILED INFORMATION, MAINTENANCE, AND WARRANTY INFORMATION

Routine Maintenance Requirements	Hydrotech® Warranty
<p>Replace filters every 6 to 12 months.</p> <p>Replace membrane as required based on periodic TDS rejection tests and Smartap Monitor® indication.</p> <p>Maximum recommended service life for the membrane is 36 months.</p>	<p>System: 2 years limited</p> <p>Membrane: 12 months prorated</p> <p>Smartap® Monitor: 5 years</p>

This system contains replaceable treatment components that are critical to the efficiency of the system. These components, by the very nature of the processes involved, have a finite life span. Replacement of the reverse osmosis component should be with one of identical specifications, as defined by Hydrotech®, to assure the same efficiency and contaminant reduction.

We strongly recommend that the system user test the product water at regular intervals (six months minimum) to ensure the system is operating satisfactorily. The test is performed using the Smartap® Water Quality Monitor. Compliance with operational, maintenance, and component replacement requirements is essential for this drinking water system to perform as specified.



**System Conforms to NSF/ANSI 58 for Specific Performance Claims as Verified and Substantiated by Test Data:**

Pentavalent Arsenic, Asbestos, Barium, Cadmium, Copper, Cysts, Hexavalent Chromium, Trivalent Chromium, Copper, Fluoride, Lead, Nitrate/Nitrite, Radium 226/228, Selenium, Turbidity, Total Dissolved Solids

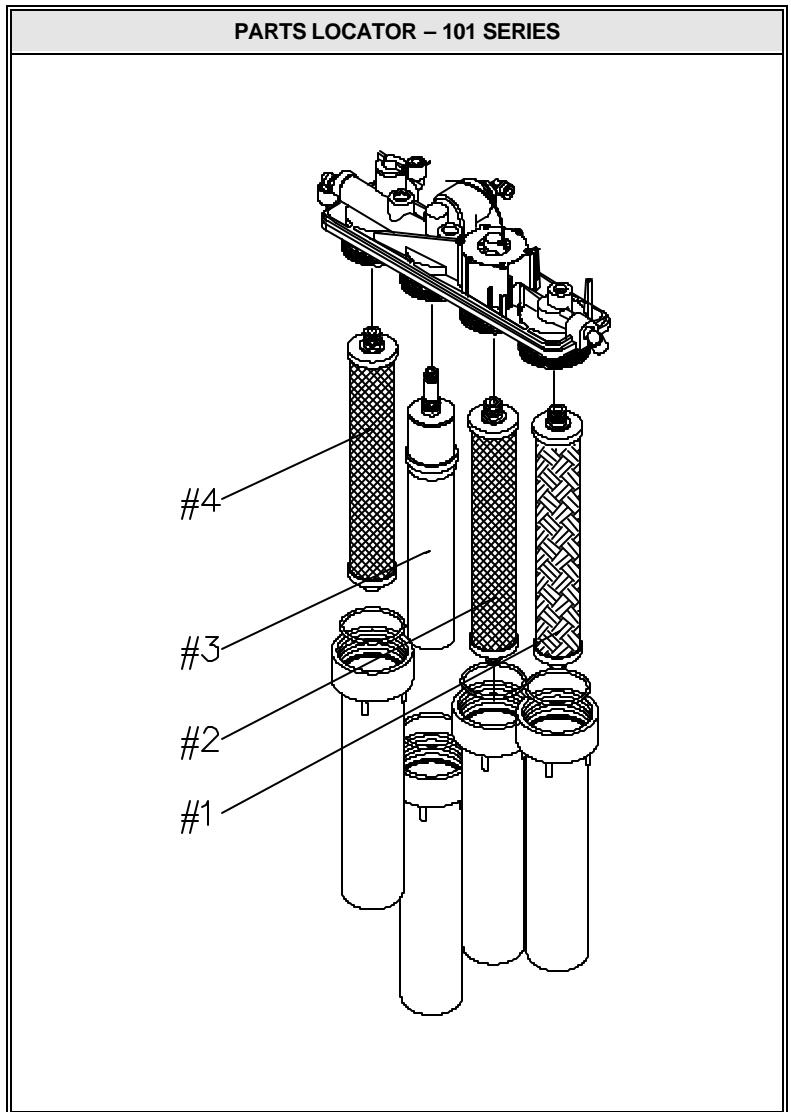
**System Conforms to NSF/ANSI 42 for Specific Performance Claims as Verified and Substantiated by Test Data:**

Chlorine - Taste and Odor

**PARTS INFORMATION**

Manufacturer's Suggested Retail Price (MSRP)

Item	Replacement Element	MSRP
1	Polypropylene Sediment Filter	30.00
2	Activated Carbon Pre-Filter	40.00
3	Membrane Model 10103	150.00
	Membrane Model 10104	
	Membrane Model 10105	
	Membrane Model 10106	
4	Activated Carbon Post-Filter	40.00
n/s	Battery, 9 volt alkaline	3.00



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