



**NORTH STAR**<sup>TM</sup>  
WATER TREATMENT SYSTEMS

## Model NSDW500

How to install, operate and  
maintain your Undersink  
Drinking Water Filter System

Do not return unit to store

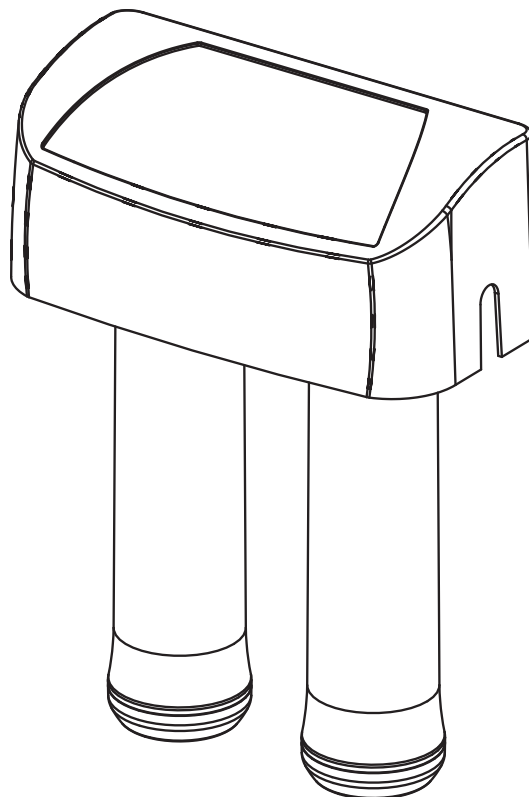
If you have any questions or concerns when  
installing, operating or maintaining your water  
filtration system, call our toll free number:

**1-800-972-0135**

Monday- Friday, 7 AM - 6 PM CST or visit

**[www.northstarwater.com](http://www.northstarwater.com)**

When you call, please be prepared to provide  
the model number and date code of  
your product, found on the rating decal,  
located inside the cover.



System tested and certified by NSF International  
against NSF/ANSI Standards 42 & 53.  
See performance data on page 12 for details.



Designed, Engineered &  
Assembled in the U.S.A.

Manufactured and warranted by  
North Star Water Treatment Systems  
1890 Woodlane Drive  
Woodbury, MN 55125

201-8404054 (Rev. 00 12/2/16)

**Installation and Operation Manual**

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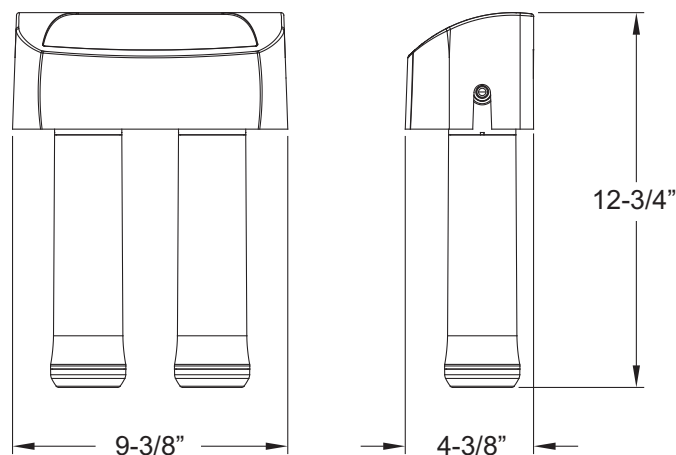
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## Before You Start

- ▼ Read all steps and guides carefully before installing and using your undersink drinking water filter system. Follow all steps exactly to correctly install. Reading this manual will also help you to get all the benefits from the undersink drinking water filter system.
- ▼ Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. This system is certified for cyst reduction and may be used on disinfected waters that may contain filterable cysts.
- ▼ All plumbing should be done in accordance with local codes and requirements. In Massachusetts, plumbing code 248 CMR 3.00 and 10.00 shall be adhered to. Consult with your licensed plumber.
- ▼ The undersink drinking water filter system works on water pressures of 30 psi (minimum) to 125 psi (maximum). If your house water pressure is over the maximum, install a pressure reducing valve in the water supply pipe to the filter system.
- ▼ Do not install the undersink drinking water filter system outside, or in extreme hot or cold temperatures. Temperature of the water supply to the undersink drinking water filter system must be between 40°F and 100°F. Do not install on hot water.

## Specifications and Dimensions

Min. - Max. Supply Water Pressure	30 - 125 psi (207 - 862 kPa)
Min. - Max. Supply Water Temperature	40 - 100 °F (4 - 38 °C)
Inlet - Outlet	3/8" quick connect fittings and tubing included



# Parts of the System

- filter system assembly
- filtered water faucet for sink or countertop mounting
- 3/8" tubing to make all needed connections

## Materials and Tools Needed

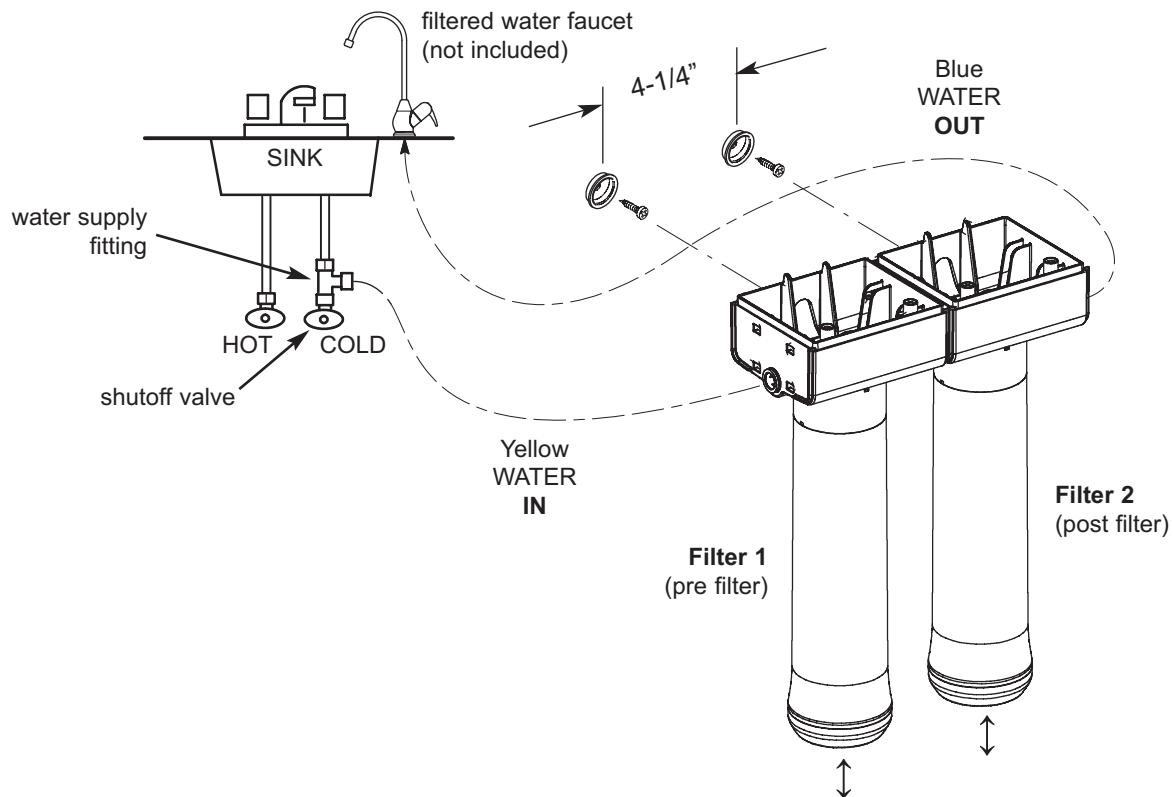
**NOTE:** Gather the required tools before starting installation. Read and follow the instructions provided with any tools listed here.

- filtered water faucet for sink or countertop mounting
- slotted and Phillips screwdrivers
- pliers and adjustable jaw wrench
- tubing cutter
- electric drill and 1-1/4" drill bit if mounting hole is needed for the faucet

**IMPORTANT:** To avoid damaging the sink, consult a qualified plumber or installer for drilling procedures in porcelain or stainless steel.

## Typical Undersink Installation

Locate the water filter housing on the cold water supply pipe, under the kitchen and/or bathroom sink, to filter the cold drinking water. Refer to the following drawing.



**NOTE:** Be sure to allow a minimum space of 1-1/2" under the system for removing the filter cartridges, in order to change the cartridges.

Fig. 1

# Installation Steps

## Step 1 - Cold Water Supply Fitting

Check and comply with local plumbing codes as you plan, then install a cold water supply fitting. The fitting must provide a leak-tight connection to the water filter 3/8" tubing. A typical connection using the included water supply fitting is shown in Figure 2A. An optional connection using standard plumbing fittings (not included) is shown in Figure 2B.

### Included Water Supply Fitting

1. Close the cold water shutoff valve (angle stop valve) that the water supply fitting will be installed on, and open faucet(s) to relieve pressure.
2. Disconnect the existing cold water line from the water shutoff valve.
3. Make sure that the water supply fitting's gasket is inside the female threaded portion of the fitting.
4. Install the water supply fitting onto the cold water shutoff valve, where the existing cold water line was removed, and hand tighten. Be careful not to cross thread or overtighten.
5. Connect the existing cold water line to the male threaded portion of the water supply fitting and hand tighten. Be careful not to cross thread or overtighten.

### Optional Pipe Fittings (compression type shown)

**NOTE:** Be sure to turn off the water supply and open a faucet to drain the pipe.

Complying with plumbing codes, install a fitting on the cold water pipe to adapt 3/8" OD tubing. A typical connection is shown in Figure 2B. If threaded fittings are used, be sure to use pipe joint compound or thread sealing tape on outside threads.

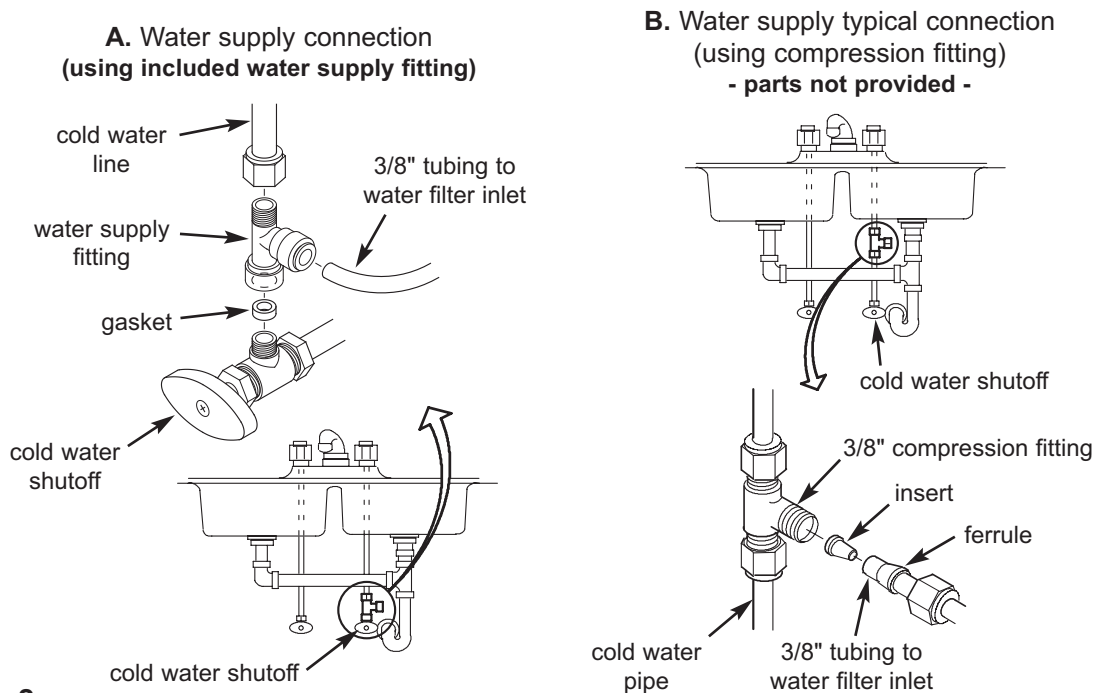


Fig. 2

**Questions? Call Toll Free 1-800-972-0135** Monday- Friday, 7 AM - 6 PM CST  
or visit [www.northstarwater.com](http://www.northstarwater.com)

When you call, please be prepared to provide the model number and date code, found on the filter head.

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# Installation Steps

## Step 2 - Make Hole For Filtered Water Faucet (not included)

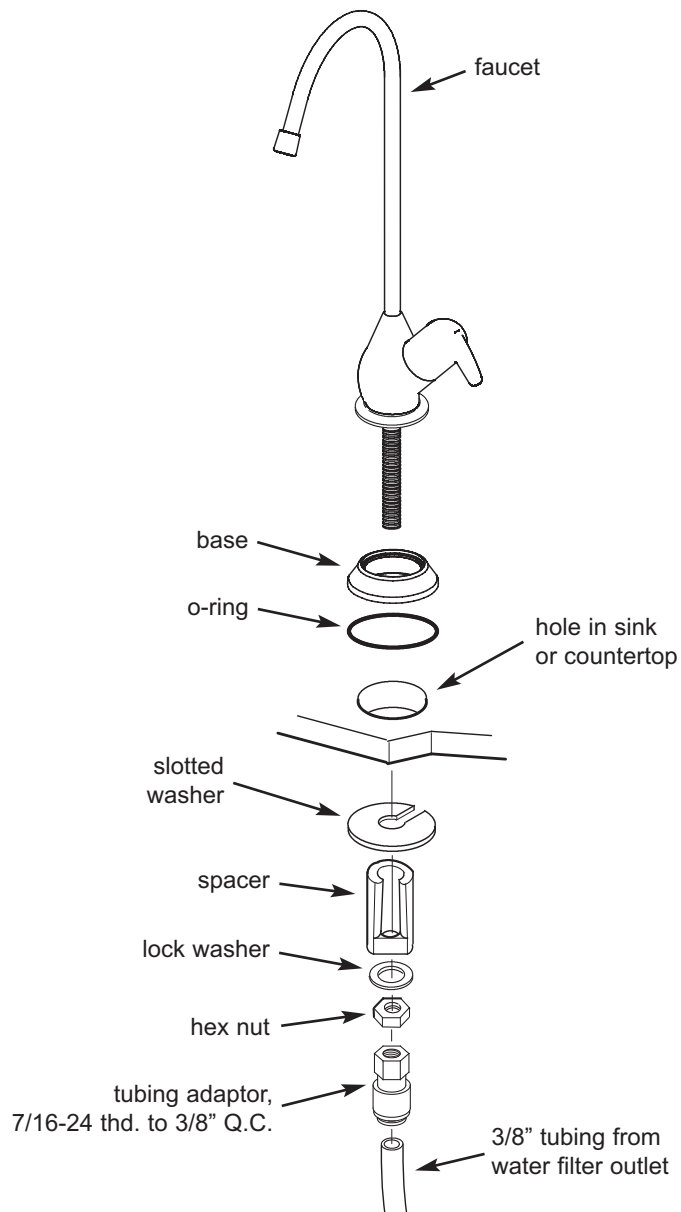
**IMPORTANT:** To avoid damaging the sink, consult a qualified plumber or installer for drilling procedures in porcelain or stainless steel. Special drill bits are made for this.

1. Select one of the following places to install the faucet. Be sure there's room underneath so you can make the needed connections.

- In an existing sink spray attachment hole.
- Drill a hole in the sink top.
- Drill a hole in the countertop next to the sink.

2. If drilling is needed make a 1-1/4" dia. (minimum) hole for the faucet.

## Step 3 - Install Faucet (not included - North Star faucet shown)



**Fig. 3**

# Installation Steps

## Step 4 - Make Tubing Connections

**NOTE: Remove protective foam plugs before connecting tubes (See Fig. 4). Discard foam plugs.**

1. Allowing some slack, measure and cut a length of 3/8" tubing to connect between the supply fitting and the filter system inlet, Figure 1. Cut the ends of the tubing square.
2. Insert tubing all the way into the supply fitting and inlet fitting. Pull on the tubing to be sure that it's held firmly in the fittings.
3. Repeat steps 1 and 2 to connect tubing from the faucet to the filter system outlet, Figure 1.

Tubing Connection (all push-in fitting locations):

This system includes push-in fittings for quick tubing connections. If working with the fittings, do the following.

### Connect Tubing:

1. Use a sharp cutter or knife to cut the end of tubing square.
2. Inspect the end (about 1") of the tubing to be sure there are no nicks, scratches or other rough spots. If needed cut the tubing again.
3. Push tubing through the collet and all the way into fitting. Full engagement is 3/4" length of tube into the fitting.

If tubing other than supplied with the system is used, be sure it is of high quality, exact size and roundness with a smooth surface.

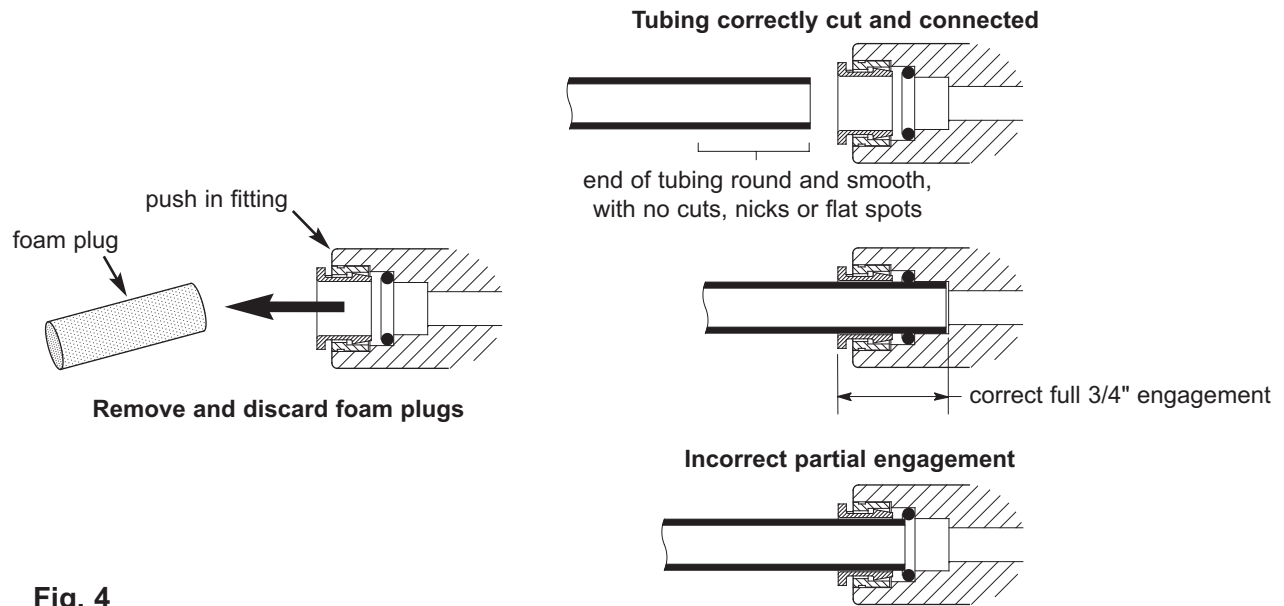


Fig. 4

### To Disconnect Tubing:

1. Push the collet inward and hold with a finger while pulling the tubing out.

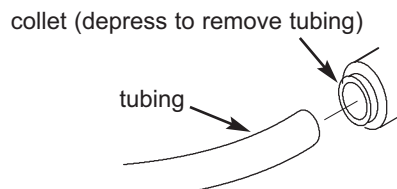


Fig. 5

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# Filter Cartridges

## Filter Cartridge Life

**Taste and Odor Cartridges:** A taste and odor cartridge contains activated carbon, a black powder. When new, open the filtered water faucet and allow fine, carbon particles to purge from the cartridge. Close the faucet when you no longer see the “fines” (carbon particulates) in the filtered water, or approximately 10 minutes. It is recommended to replace the filter cartridges every six months of use. There are several variables that determine how long a cartridge will last. These include:

1. How much water you use, and
2. How much sediment, taste and/or odor, or other unwanted substance, is in the water.

Use the following information as a guide. However, no matter which type of cartridge you are using, you will know it is time to replace it when you first notice the return of the unwanted substance in your water.

North Star Undersink Drinking Water Filter system model NSDW500 with replacement element pack 7358195 conforms to NSF/ANSI 42 and 53 for the specific performance claims as verified and substantiated by test data. The rated capacity for this system is 270 gallons (1022 liters) at a rated service flow of 0.5 gpm (gallons per minute).

## Filter Cartridge Replacement

1. Turn filter cartridge to the left to remove cartridges from the filter heads.
2. Dispose of the cartridges in a proper manner.
3. Install new cartridges. Turn cartridges to the right to re-attach to the filter heads.

**Taste and Odor Cartridges:** A taste and odor cartridge contains activated carbon, a black powder. When new, open the filtered water faucet and allow the fine carbon particles to purge from the cartridge. Close the faucet when you no longer see the “fines” in the filtered water, or approximately 10 minutes.

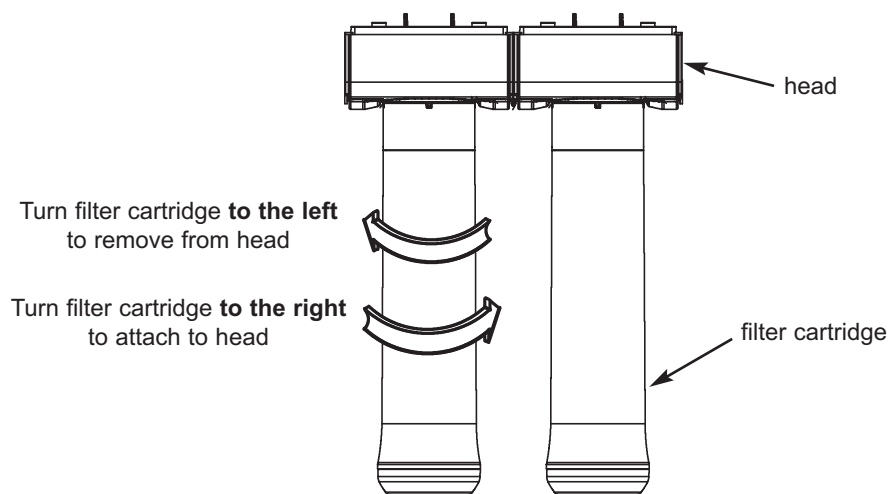
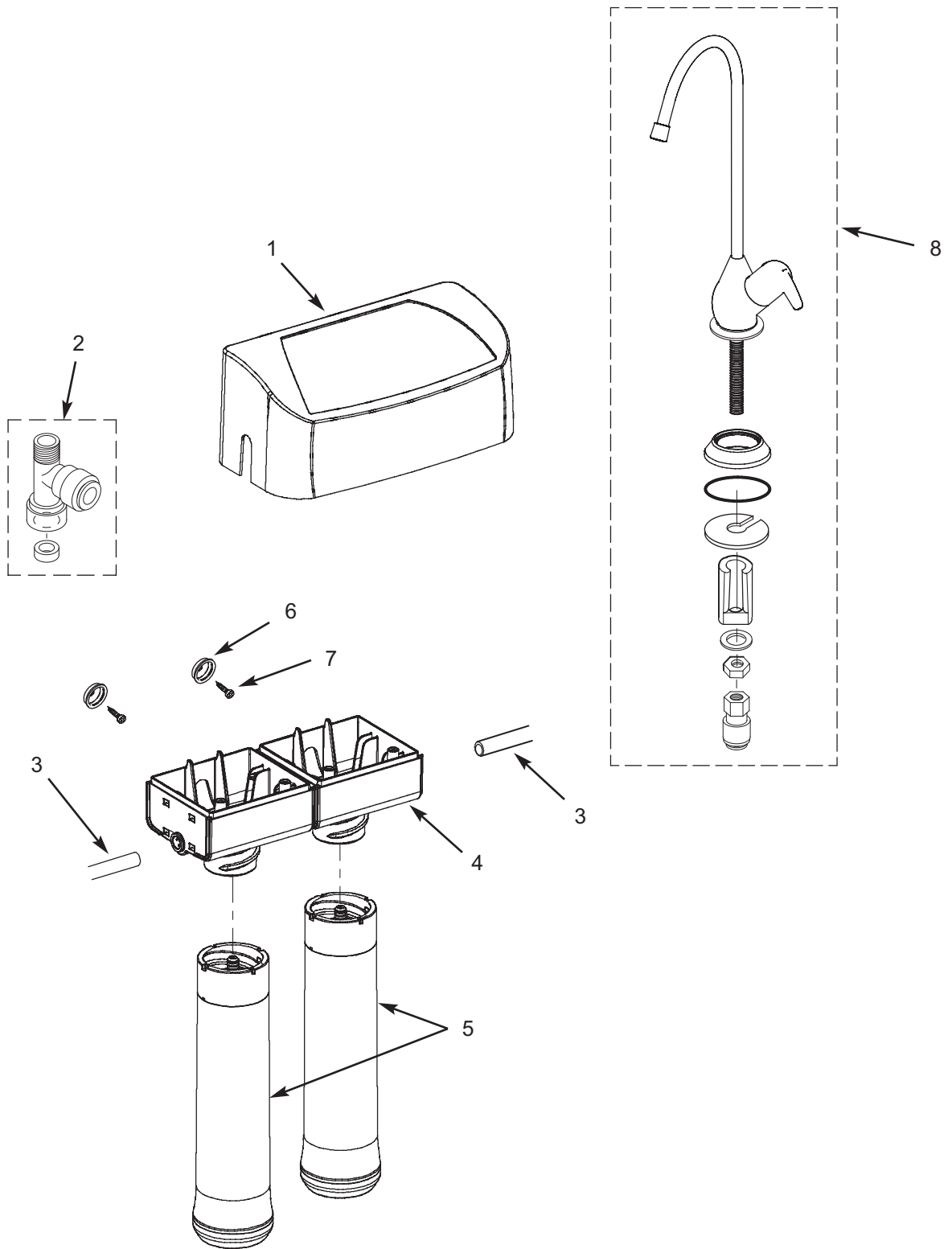


Fig. 6

**Questions? Call Toll Free 1-800-972-0135** Monday- Friday, 7 AM - 6 PM CST  
or visit [www.northstarwater.com](http://www.northstarwater.com)

When you call, please be prepared to provide the model number and date code, found on the filter head.

# Exploded View





# Repair Parts List

Key No.	Part No.	Description
1	7276262	Cover, order decal below
–	107-8404138	Decal, Cover
2	119-8600088	Water Supply Fitting, 3/8" Q.C.
3	7168435	Tubing, 3/8" x 72" long, White
4	7280106	Head Assembly
5	7358195	Rep'l Filter Cartridge (2 pack) *
–	7333129	Mounting Hardware Kit (includes 2 ea. of Key Nos. 6 & 7)
6	↑	Hanger Washer (2 req'd)
7	↑	Screw (2 req'd)
■	201-8404054	Owner's Manual
<b>OPTIONAL ITEMS</b> (not included)		
8	WHEFCHR	Faucet, Chrome
	WHEFSAT	Faucet, Brushed Nickel

\* Please purchase replacement cartridges from the retailer where you bought your drinking water system.

■ Not illustrated.

To order repair parts call toll free 1-800-972-0135,  
Monday - Friday, 7 am - 6 pm CST.

Manufactured and warranted by  
North Star Water Treatment Systems  
1890 Woodlane Drive  
Woodbury, MN 55125

# Troubleshooting the System

<b>Problem: Taste and/or Odor.</b>	
<b>Cause:</b> Pre & Post filter expended.	<b>Correction:</b> Replace the filter cartridges.
<b>Cause:</b> System contaminated.	<b>Correction:</b> Sanitize system. Call 1-800-972-0135 for instructions.
<b>Problem: Water leaks at push connect fittings.</b>	
<b>Cause:</b> Tubing not pushed in all the way.	<b>Correction:</b> Push tubing in all the way into fittings.
<b>Cause:</b> Tubing not cut square.	<b>Correction:</b> Cut tubing square.
<b>Cause:</b> Tubing nicked.	<b>Correction:</b> Remove nicked portion, reinsert tubing into fitting.
<b>Cause:</b> Outer tubing surface not smooth.	<b>Correction:</b> Remove rough portion, reinsert tubing into fitting.

## Warranty

### ONE YEAR LIMITED WARRANTY ON UNDERSINK DRINKING WATER FILTER SYSTEM (except filter cartridges)

Warrantor: North Star Water Treatment Systems, 1890 Woodlane Drive, Woodbury, MN 55125

Warrantor guarantees, to the original owner, that the Undersink Drinking Water Filter System, when installed and maintained in accordance with the instructions, will be free from defects in materials and workmanship for a period of one (1) year from the date of purchase. If, within the first year, a part proves, after inspection, to be defective, Warrantor will, at its sole option, either replace or repair the part without charge except normal shipping and installation charges. Labor to maintain the equipment is not part of the warranty. Filters, which are expendable, are not covered by the warranty.

TO OBTAIN WARRANTY PARTS, SIMPLY CALL 1-800-972-0135, Monday - Friday, 7 am - 6 pm CST, for assistance.

#### General Provisions

The above warranties are effective provided the Undersink Drinking Water Filter System is operated at water pressures not exceeding 125 psi, and at water temperatures not exceeding 100°F; provided further that the Undersink Drinking Water Filter System is not subject to abuse, misuse, alteration, neglect, freezing, accident or negligence; and provided further that the Undersink Drinking Water Filter System is not damaged as the result of any unusual force of nature such as, but not limited to, flood, hurricane, tornado or earthquake. Warrantor is excused if failure to perform its warranty obligations is the result of strikes, government regulation, materials shortages, or other circumstances beyond its control.

**THERE ARE NO WARRANTIES ON THE UNDERSINK DRINKING WATER FILTER SYSTEM BEYOND THOSE SPECIFICALLY DESCRIBED ABOVE. ALL IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED TO THE EXTENT THEY MIGHT EXTEND BEYOND THE ABOVE PERIODS. THE SOLE OBLIGATION OF WARRANTOR UNDER THESE WARRANTIES IS TO REPLACE OR REPAIR THE COMPONENT OR PART WHICH PROVES TO BE DEFECTIVE WITHIN THE SPECIFIED TIME PERIOD, AND WARRANTOR IS NOT LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. NO WARRANTOR DEALER, AGENT, REPRESENTATIVE, OR OTHER PERSON IS AUTHORIZED TO EXTEND OR EXPAND THE WARRANTIES EXPRESSLY DESCRIBED ABOVE.**

Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damage, so the limitations and exclusions in this warranty may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. This warranty applies to consumer-owned installations only.

# Performance Data



**NORTH STAR™**  
WATER TREATMENT SYSTEMS

## Model NSDW500 Drinking Water Filter

**IMPORTANT NOTICE:** Read this performance data and compare the capabilities of this unit with your actual water treatment needs. It is

recommended that, before purchasing a water treatment unit, you have your water supply tested to determine your actual water treatment needs. This filter system is designed to be used for the reduction of the performance claims listed below. Do not use where water is microbiologically unsafe or of unknown quality, without adequate disinfection before or after the system. Systems certified for cyst reduction may be used on disinfected water that may contain filterable cysts. While testing was performed under standard laboratory conditions, actual performance of this system may vary based on local water conditions. Some or all of the contaminants reduced by this unit may not be in your water supply. See elsewhere in this owner's manual for further instructions on filter cartridge replacement, system installation, operating procedures, and warranty. The maintenance instructions must be followed for the product to perform as indicated below.

### General Information

This filter improves the taste and odor and reduces many chemical contaminants in drinking water. The faucet indicator monitors the length of time the filter has been installed and will flash amber continuously; indicating the filters and battery need to be replaced. This system has been tested according to NSF/ANSI 42 and 53 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 42 and 53. The testing was performed using spiked tap water at a flow rate of 0.5 gpm (1.9 L/min.), pH of 7.5 ± 0.5, pressure of 60 psig, and temperature of 68 ± 5°F.

### Installation Requirements

Pressure Range ..... 30-125 psig (2.1-8.8 kg/cm<sup>2</sup>)  
 Temperature Range ..... 40-100°F (5-38°C)  
 Service Flow Rate ..... 0.5 gpm (1.9 L/min.)  
 Service Life ..... 270 Gallons (1,022 Liters)

### Maintenance

Cartridges should be replaced every 270 gallons or six months, whichever comes first. Replacement filter prices will vary. Estimated costs of replacement filter elements (part number 7358195) range from \$30.00 to \$50.00 per filter element.

### PERFORMANCE CLAIMS

Contaminant	NSF Required Influent Level (mg/L) <sup>2</sup>	NSF Max. Permissible Eff. Level (mg/L) <sup>2</sup>	Average Influent Level (mg/L) <sup>2</sup>	Avg. / Max. Effluent (mg/L) <sup>2</sup>	Avg. / Min. Percent Reduction	EPA MCL <sup>1</sup> (mg/L) <sup>2</sup>
Cyst	≥50,000 particles / mL <sup>4,5</sup>	99.95% <sup>3</sup>	93,000 particles / mL <sup>4</sup>	<1 / <4 particles / mL <sup>4</sup>	99.99 / 99.99	None <sup>7</sup>
Lead @ pH 6.5	0.15 ±10%	0.010	0.152	0.001 / 0.001	99.3 / 99.3	0.015
Lead @ pH 8.5	0.15 ±10%	0.010	0.150	0.001 / 0.001	99.3 / 99.3	0.015
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.015 ±20%	0.005	0.01467	0.0005 / 0.0005	96.2 / 96.2	None <sup>6</sup>
<b>Substance</b>						
Chlorine Taste & Odor	2.0 ±10%	50% <sup>3</sup>	2.0	0.05 / 0.08	97.5 / 96.2	None <sup>6</sup>
<b>VOC Reduction<sup>7</sup></b>						
Chloroform	0.30 ±10%	95% <sup>3</sup>	0.320	0.0005 / 0.0005	99.8 / 99.8	0.080

<sup>1</sup> Environmental Protection Agency Maximum Contaminant Level, as required under the Safe Drinking Water Act.

<sup>2</sup> Milligrams per Liter, which is equivalent to parts per million (PPM).

<sup>3</sup> NSF minimum percent reduction requirement. Acceptance level for this substance is based on percent reduction, rather than maximum effluent concentration.

<sup>4</sup> Cyst reported in particles per milliliter.

<sup>5</sup> Microspheres was used as a surrogate.

<sup>6</sup> The EPA has not determined an MCL for this chemical.

<sup>7</sup> Chloroform was used as a surrogate for the reduction of chemicals specified in the Organic Chemicals Reduced by Chloroform Surrogate Testing table.



System tested and certified by NSF International against NSF/ANSI Standard 42 for the reduction of chlorine taste and odor, and Standard 53 for the reduction of cyst, lead, MTBE and VOCs.

# Performance Data

## ORGANIC CHEMICALS REDUCED BY CHLOROFORM SURROGATE TESTING

Contaminant	Avg. <sup>1</sup> Influent (µg/L) <sup>3</sup>	Maximum Effluent (µg/L) <sup>3</sup>	Percent Removal	EPA MCL <sup>2</sup> (µg/L) <sup>3</sup>	Contaminant	Avg. <sup>1</sup> Influent (µg/L) <sup>3</sup>	Maximum Effluent (µg/L) <sup>3</sup>	Percent Removal	EPA MCL <sup>2</sup> (µg/L) <sup>3</sup>
Alachlor	50	1.0 <sup>4</sup>	>98	2.0	Haloketones (HK):				NA
Atrazine	100	3.0 <sup>4</sup>	>97	3.0	1,1-Dichloro-2-Propanone	7.2	0.1 <sup>5</sup>	99	NA
Benzene	81	1.0 <sup>4</sup>	99	5.0	1,1,1-Trichloro-2-Propanone	8.2 <sup>6</sup>	0.3 <sup>5</sup>	96	NA
Carbofuran	190	1.0 <sup>4</sup>	>99	40	Heptachlor	25	0.01 <sup>4</sup>	>99	0.4
Carbon Tetrachloride	78	1.8 <sup>5</sup>	98	5.0	Heptachlor Epoxide	10.7 <sup>7</sup>	0.2 <sup>7</sup>	98	0.2
Chlorobenzene	77	1.0 <sup>4</sup>	99	100	Hexachlorobutadiene	44	1.0 <sup>4</sup>	98	NA
Chloropicrin	15	0.2 <sup>5</sup>	99	NA	Hexachlorocyclopentadinene	60	0.002 <sup>4</sup>	>99	50
2,4-D	110	1.7 <sup>5</sup>	98	70	Lindane	55	0.01 <sup>4</sup>	>99	0.2
Dibromochloropropane (DBCP)	52	0.02 <sup>4</sup>	>99	0.2	Methoxychlor	50	0.1 <sup>4</sup>	>99	40
o-Dichlorobenzene	80	1.0 <sup>4</sup>	99	600	Pentachlorophenol	96	1.0 <sup>4</sup>	99	1.0
p-Dichlorobenzene	40	1.0 <sup>4</sup>	98	75	Simazine	120	4.0 <sup>4</sup>	97	4.0
1,2-Dichloroethane	88	4.8 <sup>6</sup>	95 <sup>6</sup>	5.0	Styrene	150	0.5 <sup>4</sup>	>99	100
1,1-Dichloroethylene	83	1.0 <sup>4</sup>	99	7.0	1,1,2,2-Tetrachloroethane	81	1.0 <sup>4</sup>	99	NA
cis-1,2-Dichloroethylene	170	0.5 <sup>4</sup>	>99	70	Tetrachloroethylene	81	1.0 <sup>4</sup>	99	5.0
trans-1,2-Dichloroethylene	86	1.0 <sup>4</sup>	99	100	Toluene	78	1.0 <sup>4</sup>	99	1,000
1-2-Dichloropropane	80	1.0 <sup>4</sup>	99	5.0	2,4,5-TP (silvex)	270	1.6 <sup>4</sup>	99	50
cis-1,3-Dichloropropylene	79	1.0 <sup>4</sup>	99	NA	Tribromoacetic acid	42	1.0 <sup>4</sup>	98	NA
Dinosorb	170	0.2 <sup>5</sup>	99	7.0	1,2,4-Trichlorobenzene	160	0.5 <sup>4</sup>	>99	70
Endrin	53	0.59 <sup>5</sup>	99	2.0	1,1,1-Trichloroethane	84	4.6 <sup>5</sup>	95	200
Ethylbenzene	88	1.0 <sup>4</sup>	99	700	1,1,2-Trichloroethane	150	0.5 <sup>4</sup>	>99	5.0
Ethylene Dibromide (EDB)	44	0.02 <sup>4</sup>	>99	0.05	Trichloroethylene	180	1.0 <sup>4</sup>	>99	5.0
Haloacetonitriles (HAN):				NA	Trihalomethanes (includes):	300	15	95	80
Bromochloroacetonitrile	22	0.5 <sup>5</sup>	98	NA	Chloroform (surrogate chemical)				
Dibromoacetonitrile	24	0.6 <sup>5</sup>	98	NA	Bromoform				
Dichloroacetonitrile	9.6	0.2 <sup>5</sup>	98	NA	Bromodichloromethane				
Trichloroacetonitrile	15	0.3 <sup>5</sup>	98	NA	Chlorodibromomethane				
					Xylenes (total)	70	1.0 <sup>4</sup>	99	10,000

<sup>1</sup> Influent challenge levels are average influent concentrations determined in surrogate qualification testing.

<sup>2</sup> Environmental Protection Agency Maximum Contaminant Level, as required under the Safe Drinking Water Act.

<sup>3</sup> Micrograms per Liter, which is equivalent to parts per billion (PPB).

<sup>4</sup> Maximum product water level was not observed, but was set at the detection limit of analysis.

<sup>5</sup> Maximum product water level is set at a value determined in surrogate qualification testing.

<sup>6</sup> Chemical reduction percent and maximum product water level calculated at chloroform 95% breakthrough point, as determined in surrogate qualification testing.

<sup>7</sup> The surrogate test results for Heptachlor Epoxide demonstrated a 98% reduction. These data were used to calculate an upper occurrence concentration, which would produce a maximum product water level at the MCL.



## FOR IOWA USE ONLY

All sales in Iowa require the following signature before consummation of sale. These signatures must be retained by seller/renter for 2 years minimum.

Buyer/Renter \_\_\_\_\_ Date \_\_\_\_\_

Seller \_\_\_\_\_ Date \_\_\_\_\_

Seller's Address \_\_\_\_\_

Seller's Phone No. \_\_\_\_\_

**Product: North Star Model NSDW500 Drinking Water Filter**