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

1-800-972-0135

Monday- Friday, 7 AM - 6 PM CST

or visit www.northstarconditioning.com

When you call, please be prepared to provide the model and serial number of your product, found on the rating decal on the tank shroud.

Tested and certified by NSF International against NSF/ANSI Standard 372 for low lead content.
# Table of Contents, Specifications & Dimensions

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## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>NSSM10</th>
<th>NSSM10C</th>
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</thead>
<tbody>
<tr>
<td>Nominal Mineral Tank Size</td>
<td>10” dia. x 47” tall (1)</td>
<td>10” dia. x 47” tall (2)</td>
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<td>Amount of Anti-Scale Media</td>
<td>24 lbs.</td>
<td>24 lbs.</td>
</tr>
<tr>
<td>Amount of Activated Carbon</td>
<td>–</td>
<td>14 lbs.</td>
</tr>
<tr>
<td>Amount of HDPE Pellets</td>
<td>3 lbs.</td>
<td>6 lbs. (3 lbs./ tank)</td>
</tr>
<tr>
<td>Service Flow Rate</td>
<td>10 gpm</td>
<td></td>
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<tr>
<td>Maximum Flow Rate</td>
<td>15 gpm</td>
<td></td>
</tr>
<tr>
<td>Supply Water Pressure Limits (min./max.)</td>
<td>20 - 125 psi</td>
<td></td>
</tr>
<tr>
<td>Water Temperature Limits (min./max.)</td>
<td>40 - 120 °F</td>
<td></td>
</tr>
</tbody>
</table>

## Dimensions

![NSSM10 Dimensions](image1)

![NSSM10C Dimensions](image2)

**FIG. 1**
HOW THE NoXS™ SCALE MANAGER SYSTEM WORKS

Hard water forms "scale" deposits in plumbing. These deposits are composed of calcium carbonate (CaCO₃) and magnesium carbonate (MgCO₃). As scale builds up over time, it can clog plumbing and coat the heating element in your water heater, significantly reducing its efficiency and life.

Unlike a traditional water softener which uses ion exchange media to remove calcium and magnesium ions from the water, the NoXS™ Scale Manager converts them into a crystalline form that is less prone to forming scale. This system does not require water for backwashing and does not discharge water to the drain.

Since the NoXS™ Scale Manager does not require the addition of salt or chemicals, it is practically maintenance free. The system may benefit from having anti-scale media added every few years by your plumbing contractor, based on your water use and water conditions.

WHERE TO INSTALL THE SYSTEM

- Place the system as close as possible to the pressure tank (well system) or water meter (city water).
- Connect the system to the main water supply pipe upstream of the water heater. **Do not run hot water through the system.** The temperature of water passing through the system must not be above 120°F. Damage caused by hot water is not covered by the warranty.
- Do not install the system where freezing temperatures could occur. Damage caused by freezing is not covered by the warranty.
- Keep outside faucets on untreated water to conserve media capacity.
- Put the system in a place water damage is least likely to occur if a leak develops. The manufacturer will not repair or pay for water damage.
- If installing in an outside location, you must take the steps necessary to assure the system is as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
- Avoid installing in direct sunlight. Excessive sun heat may cause distortion or other damage to non-metallic parts.

TOOLs, PIPE & FITTINGS, OTHER MATERIALS YOU WILL NEED

- Plastic inlet and outlet fittings included with the system allow water flow equivalent to 1 inch nominal pipe. To maintain full valve flow, 1” pipes to and from the system fittings are recommended. Do not reduce the pipes to less than 3/4” size.
- Use copper, brass or PEX plastic pipe and fittings.
- ALWAYS install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the system for repairs if needed, but still have water available to the house pipes.

INSPECT SHIPMENT

The parts required to install the Scale Manager are included with the unit. Thoroughly check the system for possible shipping damage and parts loss. Remove and discard (or recycle) all packing materials.

SAFETY GUIDES

- Follow the installation instructions carefully. Failure to install the system properly voids the warranty.
- Before you begin installation, read this entire manual. Then obtain all the materials and tools you will need to make the installation.
- Check local plumbing codes. The installation must conform to them.
- Use only lead-free solder and flux for all sweat-solder connections as required by state and federal codes.
- Use care when handling the system. Do not turn upside down, drop, or set on sharp protrusions.
- Recommended maximum allowable inlet water pressure is 125 psi. Use a pressure reducing valve if necessary.
- This system is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

PLAN HOW YOU WILL INSTALL THE SYSTEM

You must first decide how to run in and out pipes to the system. Look at the house main water pipe at the point where you will connect the system. Is the pipe soldered copper, glued plastic, or threaded brass/galvanized? What is the pipe size?

Now look at the typical installation illustrations on pages 4 & 5. Use them as a guide when planning your particular installation. **Be sure to direct incoming, untreated water to the "UPFLOW INLET" port.**

For 2-tank Model NSSM10C, you must install the NSCU10 carbon tank UPSTREAM of the NSSM10 anti-scale media tank, as shown on page 5.
**Typical Installation Illustrations**

**Model NSSM10**

**INSTALLATION USING INCLUDED BYPASS VALVE**

![Diagram of Model NSSM10 Installation Using Included Bypass Valve]

**FIG. 2**

For treated water (service):
- Open the inlet and outlet valves

For untreated (bypass):
- Close the inlet and outlet valves
- Open the bypass valve

* Included with system - Pipe and fittings supplied by installer.

---

**Model NSSM10**

**INSTALLATION USING 3-VALVE BYPASS**

![Diagram of Model NSSM10 Installation Using 3-Valve Bypass]

**FIG. 3**

For treated water (service):
- Open the inlet and outlet valves

For untreated (bypass):
- Close the inlet and outlet valves
- Open the bypass valve

* Included with system - Pipe and fittings supplied by installer.

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**BYPASS VALVE OPERATION**

**SERVICE**
(water flows through Scale Manager System, and then to house plumbing)

**BYPASS**
(water flows to house plumbing without going through Scale Manager System)

![Diagram of Bypass Valve Operation]

**FIG. 4**
Typical Installation Illustrations

2-Tank Model NSSM10C
INSTALLATION USING INCLUDED BYPASS VALVES

NOTE: Install the carbon tank UPSTREAM of the anti-scale media tank.

* Included with system - Pipe and fittings supplied by installer.

1" Female NPT Pipe Adapter (4) not included
Plumbing Adapter (4)*

FIG. 5

2-Tank Model NSSM10C
INSTALLATION USING 3-VALVE BYPASS

NOTE: Install the carbon tank UPSTREAM of the anti-scale media tank.

* Included with system - Pipe and fittings supplied by installer.

For treated water (service):
- Open the inlet and outlet valves

For untreated (bypass):
- Close the inlet and outlet valves
- Open the bypass valve

FIG. 6
Installation Instructions

1. TURN OFF WATER SUPPLY
   a. Close the main water supply valve near the well pump or water meter.
   b. Shut off the electric or fuel supply to the water heater.
   c. Open high and low faucets to drain all water from the house pipes.

2. INSTALL BYPASS VALVE AND/OR PLUMBING ADAPTERS:
   a. If installing a single bypass valve, thread the bypass valve, with lubricated o-ring seals in place, onto the head inlet and outlet ports (See Figs. 2 & 5). Tighten the collars by hand for a leak-tight seal.
   - OR -
   b. If installing a 3-valve bypass system, thread the included plumbing adapters, with lubricated o-ring seals in place, onto the head inlet and outlet ports (See Figs. 3 & 6). Tighten the collars by hand for a leak-tight seal.

3. COMPLETE PLUMBING TO AND FROM THE SYSTEM
   Using the “Typical Installation Illustrations” on pages 4 and 5 as a guide, observe all of the following cautions while you connect inlet and outlet plumbing:
   - For 2-tank Model NSSM10C, you must install the NSCU10 carbon tank UPSTREAM of the NSSM10 anti-scale media tank (See Page 5).
   - Be sure incoming, untreated water is directed to the UPFLOW INLET port. It may be necessary to plumb a crossover if the water pipe’s flow is from right to left.
   - Be sure to install bypass valve(s).
   - If making a soldered copper installation, do all sweat soldering before connecting pipes to the included plastic adapters. Torch heat will damage plastic parts.
   - Use pipe joint compound on all external pipe threads.
   - When turning threaded pipe fittings onto plastic fittings, use care not to cross-thread.
   - Support inlet and outlet plumbing in some manner (use pipe hangers) to keep the weight off of the head adapters.

4. COLD WATER PIPE GROUNDING
   The house cold water pipe (metal only) is often used as a ground for the house electrical system. The 3-valve bypass type of installation, shown in Figures 3 and 6, will maintain ground continuity. If you use the plastic bypass, continuity is broken. To restore the ground, do either step 4a or 4b following.

   a. Use the North Star ground clamp kit (not included) to make a jumper across the inlet and outlet pipes (See Figure 7).
   b. Install a #4 copper wire across the removed section of main water pipe, securely clamping at both ends – parts not included.

5. FLUSH PIPES AND TEST FOR LEAKS
   CAUTION: To avoid water or air pressure damage to system inner parts, be sure to do the following steps exactly as listed:
   a. Fully open two treated water faucets, one cold and one hot, nearby the system.
   b. Place bypass valve(s) into BYPASS position. On a single valve, turn both handles perpendicular to water flow (See Fig. 4). On a 3 valve system, close the inlet and outlet valves, and open the bypass valve (See Figs. 3 & 6).
   c. Fully open the house main water pipe shutoff valve. Observe a steady flow from both opened faucets.
   d. Close both faucets.
   e. Check your plumbing work for leaks and, if any are found, fix right away. Be sure to observe previous caution notes.
   f. Turn on the gas or electric supply to the water heater. Light the pilot, if applicable.

6. START UP PROCEDURE
   a. Place bypass valve(s) into SERVICE position, EXACTLY as follows:
      - Single Bypass Valve: Turn the outlet (marked downflow inlet on head) handle parallel to water flow. SLOWLY, turn the upflow inlet handle parallel to water flow, pausing several times to allow the system to pressurize slowly.
      - 3 Valve Bypass: Fully close the bypass valve and open the outlet valve. SLOWLY, open the inlet valve, pausing several times to allow the system to pressurize slowly.
   b. Check all connections for leaks.
   c. Fully open a cold water faucet, downstream from the system, and allow 50 gallons of water to pass through the system. This should take at least 20 minutes. Close the faucet.
Adding Anti-Scale Media

PROCEDURE FOR ADDING ANTI-Scale MEDIA

1. Bypass the system by turning both bypass handles perpendicular to the flow of water (See Fig. 8).

2. Slowly loosen the installation collars between the bypass valve and in/out head (See Fig. 9), allowing pressure to escape from system.

3. When both installation collars between bypass and in/out head are completely loosened from the in/out head, pull the system away from the bypass valve.

4. Holding the tank neck adapter with a strap wrench, unscrew the in/out head from the tank neck adapter (See Fig. 10). Once the in/out head is completely unscrewed, check to see whether the riser pipe (See Fig. 10) is still inserted in the in/out head. Remove it by lifting the in/out head enough to grasp the riser pipe and pull it free from the head.

5. Using a hose or tube that is 3/4” O.D. or less, siphon the water from the mineral tank through the riser pipe. This will prevent the top-bedding HDPE from floating out of the tank as the water rises when adding media.

6. Remove clips and clamps (See Fig. 11), and lift tank neck adaptor and top distributor from the tank neck. Be careful not to lose the o-rings.

7. Plug, cap or tape the open top of the riser pipe (See Fig. 11) to prevent media from entering the riser pipe.

IMPORTANT: Media entering the riser pipe will restrict flow and increase system pressure drop significantly.

8. Use a funnel that either fits around the riser pipe or alongside of it and fits inside of the tank neck.

9. Add 12 lbs. of anti-scale media (P/N 7351672) to the tank.

10. Uncover the riser pipe and reassemble the system in reverse order, making sure that all o-rings are in place.

NOTE: The riser pipe (See Fig. 10) may have been pulled up from the bottom of the mineral tank. If this has happened, the in/out head may not engage the threads of the neck adapter. To correct this, apply air or water pressure to the riser pipe. This will move the media at the bottom of the tank, allowing the riser pipe to be lowered to the bottom of the mineral tank.
### SYSTEM EXPLODED VIEW

![System Exploded View Diagram]

### SYSTEM PARTS LIST

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7351753</td>
<td>Head, In/Out</td>
</tr>
<tr>
<td>2</td>
<td>7351779</td>
<td>Bypass Valve Assembly, Upflow, includes o-rings (See Key No. 4)</td>
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<tr>
<td>3</td>
<td>7346790</td>
<td>Adapter, Plumbing, 1&quot; NPT, pack of 2, includes o-rings (See Key No. 4)</td>
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<tr>
<td>4</td>
<td>7311127</td>
<td>O-Ring, 1-1/16&quot; x 1-5/16&quot;, single</td>
</tr>
<tr>
<td>4</td>
<td>7336410</td>
<td>O-Ring, 1-1/16&quot; x 1-5/16&quot;, pack of 20</td>
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<td>5</td>
<td>7342788</td>
<td>Adapter, Tank Neck</td>
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<td>6</td>
<td>7331177</td>
<td>Tank Neck Clamp Kit (includes 2 ea. of Key Nos. 6 &amp; 7)</td>
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<td>7</td>
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<td>Clamp Section</td>
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<td>7</td>
<td></td>
<td>Retainer, Clamp</td>
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<td>7112963</td>
<td>Distributor O-Ring Kit (includes Key Nos. 8 &amp; 9)</td>
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<td>O-Ring, 2-7/8&quot; x 3-1/4&quot;</td>
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<td>9</td>
<td></td>
<td>O-Ring, 2-3/4&quot; x 3&quot;</td>
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<td>10</td>
<td>7077870</td>
<td>Top Distributor</td>
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<td>11</td>
<td>7105047</td>
<td>Repl. Bottom Distributor</td>
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<td>12</td>
<td>7092202</td>
<td>Repl. Mineral Tank, 10&quot; x 47&quot;</td>
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<td>13</td>
<td>7351672</td>
<td>Anti-Scale Media, 12 lbs. (24 lbs. used in NSSM10 &amp; NSSM10C)</td>
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<td>13</td>
<td>7353755</td>
<td>Anti-Scale Media, 1.5 lbs.</td>
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<td>13</td>
<td>7301619</td>
<td>Activated Carbon, 27.5 lbs. (14 lbs. used in NSSM10C, not used in NSSM10)</td>
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<td>13</td>
<td>7351761</td>
<td>HDPE Pellets, 3 lbs. (3 lbs. used in NSSM10 &amp; 6 lbs. used in NSSM10C)</td>
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<td>14</td>
<td>7026196</td>
<td>Base, Foam</td>
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<td>15</td>
<td>7092210</td>
<td>Shroud Kit, includes cap (order decal below)</td>
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<td>15</td>
<td>7353535</td>
<td>Decal, Shroud Front, NSSM10</td>
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<td>15</td>
<td>7353543</td>
<td>Decal, Shroud Front, NSCU10</td>
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<td>16</td>
<td>7248706</td>
<td>Ground Clamp Kit ★</td>
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<td>17</td>
<td>7352822</td>
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<td>17</td>
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<td>18</td>
<td>7353438</td>
<td>Filter, Sediment, NSSFS10</td>
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★ Not illustrated.

Optional parts, not included with system.
Warrantor: North Star Water Conditioning, 1890 Woodlane Drive, Woodbury, MN 55125

Warrantor guarantees, to the original owner, that:

One Year Full Warranty:
- For a period of one (1) year from the date of purchase, all parts will be free from defects in materials and workmanship and will perform their normal functions.

Limited Warranties:
- For a period of ten (10) years from the date of purchase, the fiberglass mineral tank will not rust, corrode, leak, burst, or in any other manner, fail to perform its proper functions.
- For a period of three (3) years from the date of purchase, the in/out head will be free of defects in materials and workmanship and will perform its normal functions.
- For a period of three (3) years from the date of purchase, the activated carbon will reduce chlorine from municipal water supplies.

The anti-scale media, which is considered expendable, is excluded from this warranty.

If, during such respective period, a part proves to be defective, Warrantor will ship a replacement part directly to your home, without charge.

General Provisions
Damage to any part of this water conditioner because of misuse, misapplication, neglect, alteration, accident, installation or operation contrary to our printed instructions, or damage caused by any unusual force of nature such as, but not limited to, freezing, flood, hurricane, tornado, or earthquake is not covered by this warranty. In all such cases, regular parts and service charges will apply.

We assume no warranty liability in connection with this water treatment system other than specified herein. This warranty is in lieu of all other warranties, expressed or implied, including warranties of fitness for a particular purpose. We do not authorize any person or representative to assume for us any other obligations on the sale of this water treatment system.

Should a defect or malfunction occur, contact your contractor. If you are unable to contact your contractor, return the part, freight prepaid, directly to the factory at the address below. Enclose with the part a full description of the problem, with your name, full address, date purchased, model and serial numbers, and selling contractor's name and address. We will repair or replace the part and return it to you at no cost if our repair department determines it to be defective under the terms of the warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

This water treatment system is manufactured by
North Star Water Conditioning, 1890 Woodlane Drive, Woodbury, MN 55125
Customer Information Telephone No. 1-800-972-0135