

## Replenishment water treatment filling unit

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**NA573**

### Function

The replenishment water treatment filling unit is an assembly consisting of a backflow preventer, isolation valves, filter housing unit with replaceable resin cartridge and AutoFill™ pre-adjustable fill valve. This unit is installed on the water inlet piping in sealed hydronic heating or cooling systems. Three important functions are provided in this single filling unit assembly: maintaining the pressure of the system stable at a set value and automatically filling up with water as required; protecting drinking water systems from return flow, caused by back-siphoning or back pressure of contaminated fluids; and producing from site-sourced water, demineralized water of an ideal grade for use in closed hydronic heating and cooling systems. Minerals causing hardness are almost entirely eliminated. This prevents premature equipment malfunction including reduced efficiency or component failure due to lime scale formation – a common affliction of heat exchangers. Demineralized water is low in electrical conductivity to minimize corrosion due to galvanic attack. Demineralized water eliminates the variability of mineral content found in untreated site water which provides more reliable dosing when chemical additives are used – such as glycol.

### Product Range **NA573**



NA573022 ½" FNPT inlet x ½" FNPT outlet  
NA573102 10" color changing demineralizing filter

### Technical Specifications

#### Replenishment water treatment filling unit assembly, NA573022

**Materials**

|          |         |
|----------|---------|
| - body:  | plastic |
| - cover: | plastic |
| - seals: | rubber  |

#### Performance

|                                                        |                    |
|--------------------------------------------------------|--------------------|
| Suitable fluids:                                       | tap water          |
| Max. inlet pressure:                                   | 125 psi (8.5 bar)) |
| Max. working temperature:                              | 100°F (38°C)       |
| Max. flow rate:                                        | 1 gpm (0.6 l/s)    |
| Demineralization capacity for 180 ppm untreated water: | ~ 30 gallons       |
| TDS of water after treatment:                          | < 30 ppm           |
| Resin exchange:                                        |                    |
| -Anion:                                                | 60%                |
| -Cation:                                               | 40%                |

**Connections** - ½" FNPT inlet x ½" FNPT outlet

**Technical  
Specifications**

**Filling unit**

|                  |          |             |
|------------------|----------|-------------|
| <b>Materials</b> | - body:  | brass       |
|                  | - cover: | PA 66 GF 30 |
|                  | - seals: | NBR         |

**Performance**

|                         |                      |
|-------------------------|----------------------|
| Pressure setting range: | 3–60 psi (0.2–4 bar) |
| Factory setting:        | 15 psi (1.035 bar)   |
| Indicator accuracy:     | ±2 psi (±0.15 bar)   |
| Pressure gauge scale:   | 0-60 psi / 0-6 bar   |

**Connections** - 553642A 1/2" NPT male inlet x 1/2" NPT female outlet

**Backflow preventer**

|                   |                     |                 |
|-------------------|---------------------|-----------------|
| <b>Materials:</b> | - body:             | low lead brass  |
|                   | - filter:           | stainless steel |
|                   | - check valve:      | PSU             |
|                   | - check valve stem: | brass           |
|                   | - diaphragm:        | EPDM            |
|                   | - seals:            | EPDM            |

**Connections** - 573403A 1/2" NPT female inlet and outlet

Certified to: CSA B64.3-94 and ASSE 1012-2009 NSF/ANSI 372-2011, Drinking Water System Components-Lead Content Reduction of Lead in Drinking Water Act, California Health and Safety Code 116875 S.3874, Reduction in Drinking Water Act, certified by ICC-ES, file PMG-1360.



## **SAFETY INSTRUCTION / CONSIGNE DE SÉCURITÉ**

This safety alert symbol will be used in this manual to draw attention to safety related **instructions**. **When used, the safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**

Ce symbole d'avertissement servira dans ce manuel à attirer l'attention sur la sécurité concernant instructions. Lorsqu'il est utilisé, ce symbole signifie **ATTENTION ! DEVEZ-VOUS ÊTRE ALERTES ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SÉCURITÉ.**



**CAUTION:** All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.

**ATTENTION:** Tous les travaux doivent être effectués par du personnel qualifié formé à la bonne application, installation et maintenance des systèmes conformément aux codes et règlements locaux.



**CAUTION:** If the filling unit is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.

**ATTENTION:** Si unité de remplissage n'est pas installée, mis en service et entretenu correctement, selon les instructions contenues dans ce manuel, il peut ne pas fonctionner correctement et peut mettre en danger l'utilisateur.



**CAUTION:** Make sure that all the connecting pipework is water tight.

**ATTENTION:** S'assurer que tous les raccordements sont étanches.



**CAUTION:** When making the water connections, make sure that the filling unit connecting pipework is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.

**ATTENTION:** Lorsque vous effectuez les raccordements d'eau, assurez-vous que la tuyauterie reliant unité de remplissage n'est pas mécaniquement overstressed. Au fil du temps, ceci pourrait causer des ruptures, avec pour conséquence des pertes en eau qui, à leur tour, peuvent causer des dommages à la propriété et/ou les gens.



**CAUTION:** Water temperatures higher than 100°F can be dangerous. During the installation, commissioning and maintenance of the filling unit, take the necessary precautions to ensure that such temperatures do not endanger people.

**ATTENTION:** Les températures de l'eau supérieure à 100°F peut être dangereux. Au cours de l'installation, mise en service et l'entretien de la unité de remplissage, prendre les précautions nécessaires afin de s'assurer que de telles températures ne compromettent pas les gens.

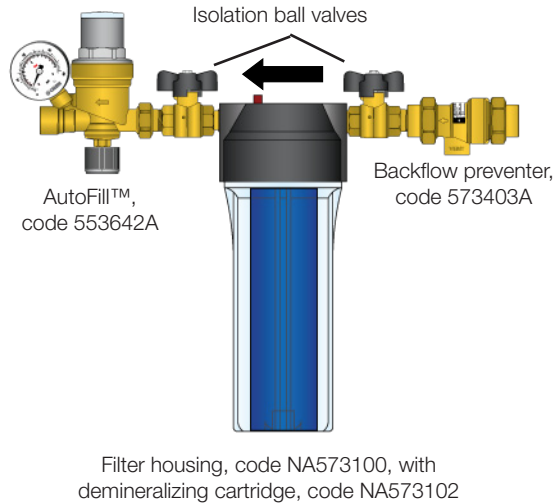


**CAUTION:** In the case of highly aggressive water, arrangements must be made to treat the water before it enters the filling unit, in accordance with current legislation. Otherwise the valve may be damaged and will not operate correctly.

**ATTENTION:** Dans le cas de l'eau fortement agressifs, des dispositions doivent être prises pour traiter l'eau avant qu'elle ne pénètre dans le unité de remplissage, conformément à la législation actuelle. Sinon la soupape pourrait être endommagée et ne fonctionnent pas correctement.

**LEAVE THIS MANUAL FOR THE USER  
LAISSEZ CE MANUEL AVEC L'UTILISATEUR**

## Construction details



Most closed-loop hydronic systems lose small amounts of water and air over time. These losses come from automatic air purging of dirt separators, weepage at air vents, valve packings or circulator flange gaskets. Fluid loss also occurs when a component such as a circulator is replaced. Over time, a standard make-up water assembly would allow untreated water to enter a system as demineralized water is lost. If the system was filled with treated demineralized when commissioned, untreated make-up water could bring undesirable compounds, such as calcium carbonate, back into the system. To prevent this, Caleffi offers an enhanced assembly, code NA573022, that includes a demineralizer cartridge. This is a replenishment water treatment assembly consisting of a backflow preventer and a pre-adjustable automatic filling valve with pressure gauge used to automatically feed small quantities of demineralized water into the system. This assembly is shown above. This unit would be installed, of course, after initially filling the system with the Caleffi NA570 series HYDROFILL™ portable water treatment filling unit.

This assembly uses a special 10-inch demineralizing filter cartridge, code NA573102, containing the color changing resin beads necessary to demineralize water passing through it at relatively low flow rates. The cartridge assembly can be isolated by closing the two ball valves. The clear housing can then be unscrewed to remove and replace the cartridge. The Caleffi cartridge will appear blue color when new. Its internal color will change to amber as the resin beads approach a spent condition. Each cartridge can demineralize approximately 30 gallons of water at 180 ppm of untreated water. This should provide several years of normal make-up water supply, assuming only minor water losses from the system occur.

## Installation

The Caleffi NA573 replenishment water treatment filling unit must be installed in accordance with the diagrams contained in this instruction sheet taking into account all the applicable local codes and regulations.

Before installing a Caleffi NA573 filling unit, the system must be thoroughly flushed to remove impurities or any debris which may have accumulated during installation. Failure to remove dirt or debris may affect system performance and the manufacturer's guarantee. In addition, the system must be filled with demineralized water with total dissolved solids (TDS) less than 30 ppm. This can be accomplished with the Caleffi NA570 series HYDROFILL™ portable water treatment filling unit. Because the NA573 filling unit is designed for system replenishment with a 1 gpm maximum flow rate for optimal demineralization, it can not be used for filling the system.

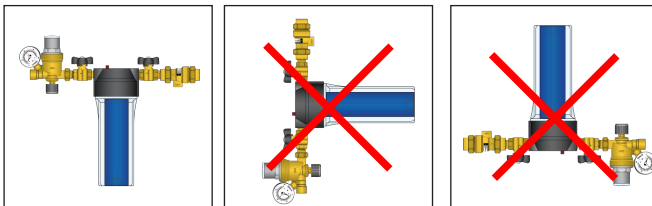
Note: The Caleffi NA570 HYDROFILL™ portable water treatment filling unit's built in TDS meter will indicate the TDS level during filling operation. If this is not used for filling the system, the Caleffi NA575002 TDS tester kit can be used to verify the system fluid TDS level is less than 30 ppm before operation.

The Caleffi NA573 filling unit must be installed horizontally, following the flow direction indicated by the arrow on the filter cartridge head, and also as indicated on the AutoFill™ and back flow preventer.

The Caleffi NA573 filling unit comes pre-assembled and pressure tested. Make sure that you have connecting piping and proper connections to accommodate the assembled unit installation with 19 inches end-to-end length.

The Caleffi NA573 filling unit must be installed in an accessible location to facilitate testing and servicing. The back flow preventer just be installed with the vent port connected via an air gap to a discharge line, in accordance with the local plumbing code requirements and keeping a minimum distance of 12" from the floor. Do not install where the discharge can cause water damage.

The NA573 replenishment water treatment filling unit must not be installed upside down.



## Maintance

The Caleffi NA573 assembly uses a special 10-inch cartridge insert, code NA573102, containing the color changing resin beads necessary to demineralize water passing through it at relatively low flow rates. The cartridge assembly can be isolated for replacement by closing the two ball valves. The clear housing can then be unscrewed to remove and replace the cartridge. The Caleffi cartridge will appear blue color when new. Its internal color will change to amber as the resin beads approach a spent condition. Each cartridge can demineralize approximately 30 gallons of water. This should provide several years of normal make-up water supply, assuming only minor water losses from the system occur.

### Replacement of demineralization cartridge

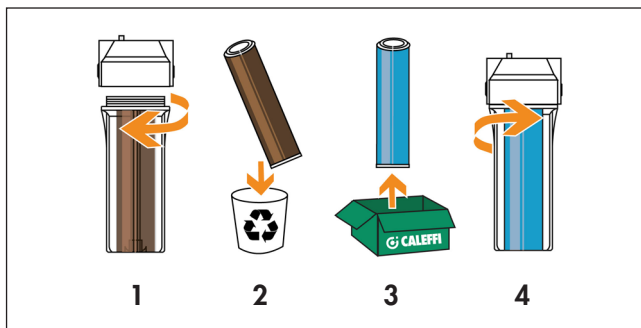
The 10-inch cartridge insert, code NA573102, containing the color changing resin beads that demineralizes water passing through it, will appear blue color when new. The internal color will change to amber as the resin beads approach a spent condition. Each cartridge can demineralize approximately 30 gallons of water. This should provide several years of normal make-up water supply, assuming only minor water losses from the system occur.



Maintenance and field testing procedues for the Caleffi 553 series AutoFill™ fill valve and 573 series back flow preventer can be found in instruction sheets 38467 and 38517, respectively, and are packed with these components unassembled in the box containing the NA573022 water treatment filling unit. These instruction sheets are also available at [www.caleffi.com](http://www.caleffi.com).

## Cartridge change

1. Close the isolation ball valves. 2. Turn the cartridge with white plastic wrench included with unit. 3. Remove the used cartridge and discard them. 4. Insert the new cartridge. 5. Turn the cartridge and tighten in place with the white plastic wrench. 6. Re-open the isolation ball valves to return to normal operation.



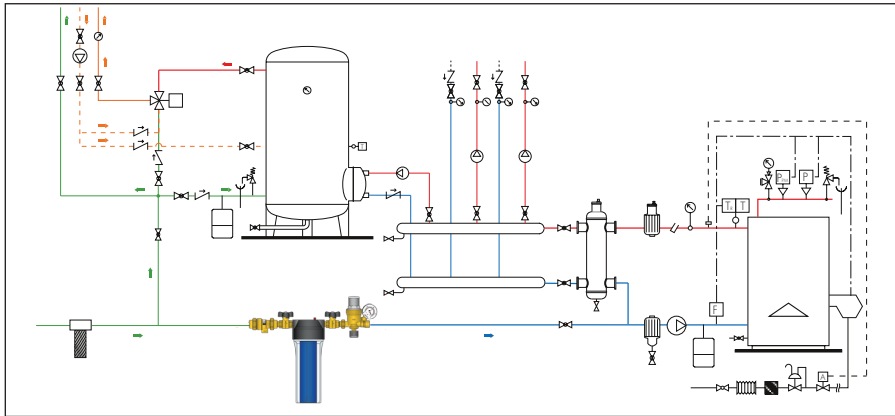
White plastic wrench, included in package, is required to remove filter housing to replace spent color changing demineralization filter. Please do not dispose and keep in handy location for future use.



Note: The replacement water treatment filling unit is not designed for initial filling. Caleffi's HYDROFILL™ water treatment filling unit, code NA5709 series, is recommended for that purpose.

The capacity depends on various factors including the temperature of the water, the chemical composition of the water and pressure. For an exact determination is a water analysis of the raw water. The values specified here are always related to the optimal case and are not binding.

## Application diagram



|  |                            |  |                   |  |                 |  |                      |
|--|----------------------------|--|-------------------|--|-----------------|--|----------------------|
|  | Shut-off valve             |  | Pump              |  | 3-way valve     |  | Fuel shut-off valve  |
|  | Ball valve                 |  | FlowCal™          |  | Pressure switch |  | Anti-vibration joint |
|  | BALLSTOP                   |  | Flow meter        |  | Control pocket  |  | Sensor pocket        |
|  | Thermometer                |  | Temperature probe |  | Gas filter      |  | Safety valve         |
|  | Differential by-pass valve |  | Safety thermostat |  | Gas regulator   |  | Y-strainer           |
|  | Flow switch                |  | Regulator         |  | Air separator   |  |                      |
|  | Zone valve                 |  | Expansion vessel  |  |                 |  |                      |

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