Danamark
WATERCARE

DanaHub Module #5 – Coffee

What we will cover in this section

- **Types of Equipment & Operation**
- **How Water Quality Impacts the Beverage & Equipment**
- **Potential Water Quality Problems**
- **Selecting the Right Water Filter**
- **How to Make More Money**

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The second largest commodity next to Oil!

As one of the most popular beverages in the world, fresh brewed coffee can be found in almost every traditional foodservice operation, and a wide variety of other venues.

- Grocery, Super Markets, and Convenience Stores
- Shopping Malls, Theatres, and Concessions
- Hospitals, Schools, and other Institutions

Thanks to the efforts of a select group of companies, the Specialty Coffee Industry has expanded and modified the drinking habits of coffee consumers during the past twenty years.

This group has introduced select coffee beans, alternate roasting methods, and brewing techniques from around the world.

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Coffee Brewing

Fresh brewed coffee is sometimes called “drip coffee”, and is manufactured through a relatively complex process that we can review in a few steps.

- Imported coffee beans are screened for size, shape, color, aroma, and general quality
- Accepted beans are cooked in a coffee roaster to release the desired flavor
- Roasted beans are ground to a specific size and texture for each brewing method
- A paper filter is placed in the equipment brewing basket to hold the grind and control the water flow
- A prescribed amount of ground coffee in placed in the equipment brewing basket
- Water is heated to 190 degrees F, and slowly released over the coffee grind
- The water moves through the coffee grind and paper filter, and drips into the finished pot

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Types of Coffee Brewing Equipment – Plumbed In Brewers

Most types of coffee brewing equipment use the simple steps that we have described, but a variety of equipment designs are available to meet customer needs.

Plumbed-In Brewers are the most common design in the foodservice industry, and they include a direct water line connection. Please note that a cold water supply should always be used for coffee brewing.

Single Cup Brewers are now available in a growing number of self-service locations. The paper filter is replaced with a pre-measured coffee packet, which is discarded after each brew cycle.

Bottle Brewers fill half-gallon glass pots during each brew cycle. The equipment is very common in traditional restaurant operations, and will usually include one brewing station, and several warming plates for extra coffee or other flavors.

Types of Coffee Brewing Equipment – Plumbed In Brewers - Continued

Satellite Brewers fill larger, insulated containers during each brew cycle. The satellite units are designed to hold the fresh coffee flavor for a longer period of time, and can be moved to warming plates in other parts of the building.

The 1-gallon and 2.5-gallon satellite containers are very popular models for locations that offer a variety of coffee flavors throughout the day. Larger 5-gallon satellite containers are also available for high volume locations.

Coffee Urns fill much larger stainless tanks during each brew cycle, for high volume applications. Hotels and banquet facilities typically use coffee urns that brew 3 to 10-gallons on each side of a dual brewer.

Types of Coffee Equipment - Continued

Pour-Over Brewers are less common in the restaurant industry, but they will be found in some low volume locations and in many office coffee programs. The pour-over design is not connected to the cold water supply, and the customer manually fills the water tank from a nearby sink.

Pre-Mix Coffee products have become readily available during the past few years. Concentrated “coffee syrup” is fed into the special brewer and mixed with hot water for a finished drink.

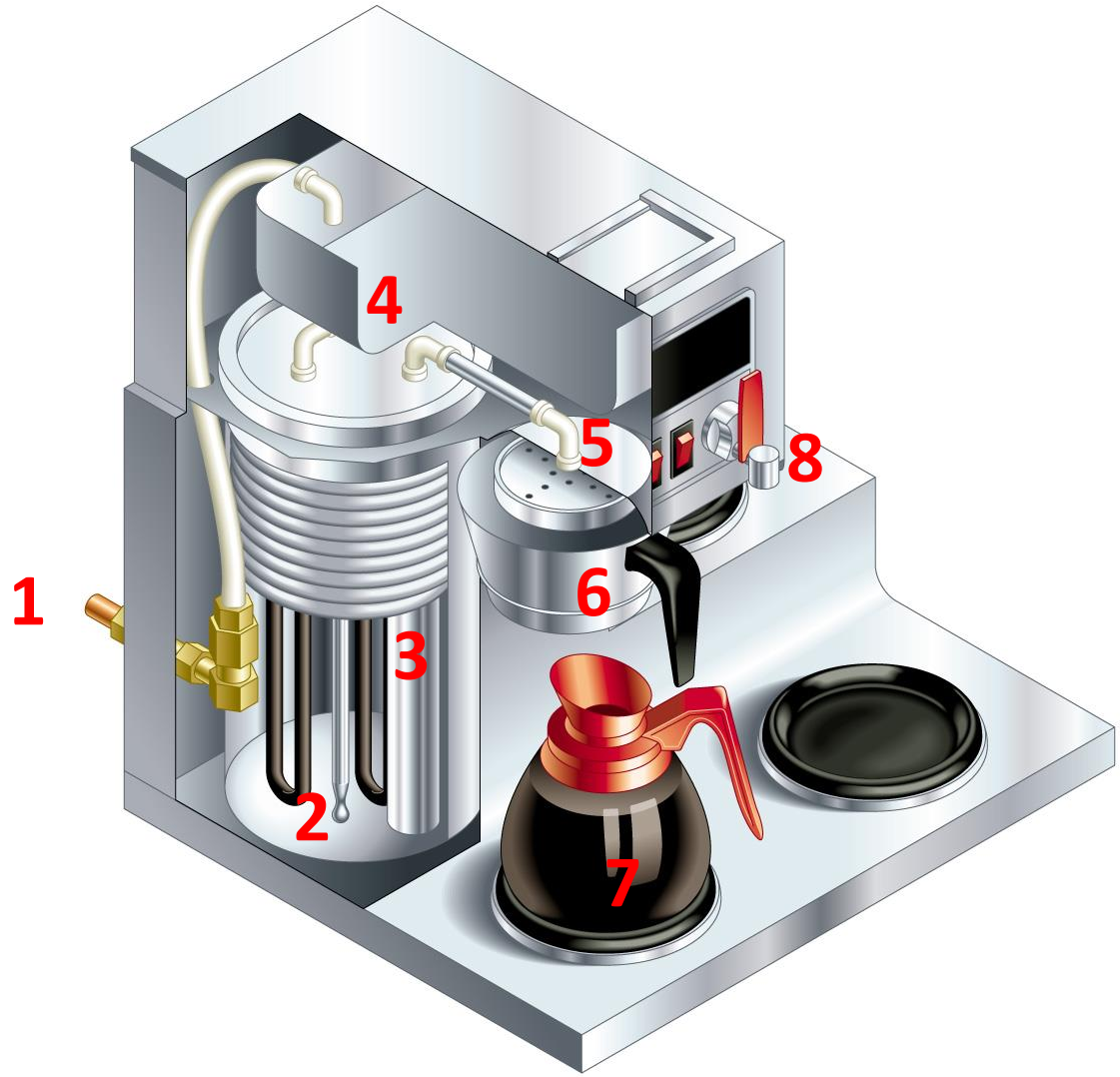
The coffee equipment is usually designed to dispense a single cup for each cycle, and this equipment can offer an extremely fast rate of service.

Pour-Over

Pre-Mix

Components of a Coffee Brewer

1. Inlet Water Supply
2. Reservoir
3. Heating Elements & Thermostat
4. Distribution Tubes
5. Spray Head
6. Brew Basket
7. Coffee Pot
8. Hot Water Tap



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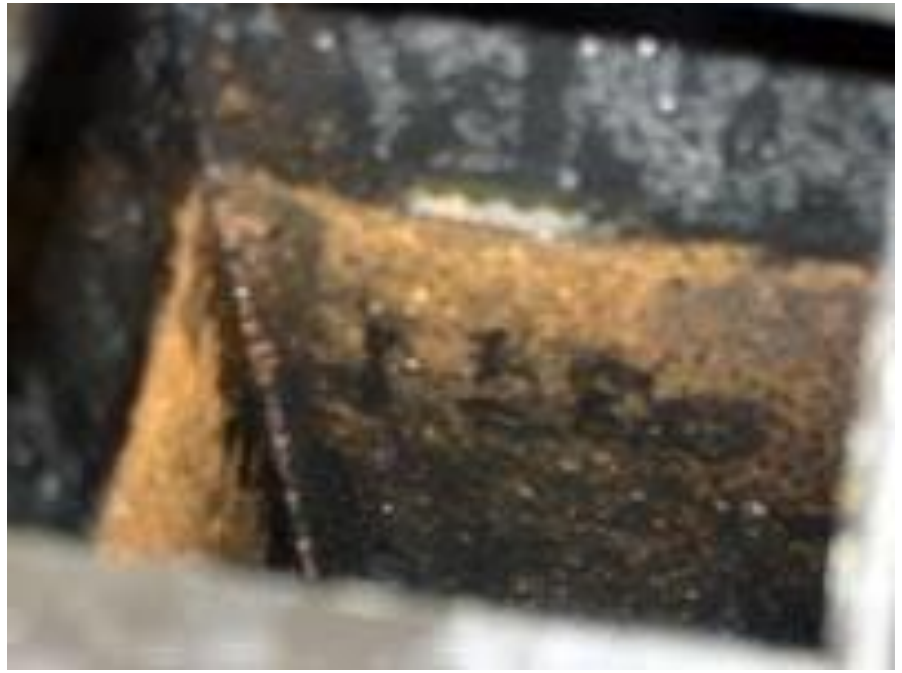
How Water Abuses Coffee Equipment

Water problems for coffee brewing systems include the following areas of concern:

- Suspended Solids / Turbidity can cause abrasion, clogging and equipment damage.
- Small solids can also contribute to the formation and volume of mineral scale.
- Natural, Organic Chemicals (T.O.C.) can leave tannin colors and stains.
- Chemical disinfectants are mildly acidic, and may be corrosive to metal surfaces.
- Chemical disinfectants can also attack rubber seals and gaskets.

How Water Abuses Coffee Equipment - Continued

- Dissolved solids / water hardness will usually build a volume of scale deposits when heated.
- Scale removal requires acid cleaning, which causes additional wear to the coffee brewer.
- Iron, Manganese, and Sulfur can also create corrosion or rust problems.



Our field experience has shown that most coffee brewers do not have any significant water treatment.

This provides a major opportunity for service providers because filtration can improve coffee taste, product consistency, equipment life, equipment maintenance and operating costs.

Recipe for Mineral Scale

Mineral scale consists of precipitated minerals and small solids. It forms at a point of energy transfer such as the freezing process in ice machines or the heating process in coffee brewers. Mineral scale is actually the reforming of rock from its component minerals.

There are three key ingredients for forming mineral scale.

- Calcium or magnesium cations (minerals) with a positive charge.
- Carbonate or sulfate anions (minerals) with a negative charge.
- Small dirt particles and solids.

The scale forms when positive and negatively charged particles are attracted to each other and precipitate. This formation may trap other solids in the process. There are two key conditions for scale formation. The pH level must be neutral (7.0) or above, and there must be an energy transfer to act as a catalyst*.

* A catalyst is an initiator – in this case the catalyst is energy transfer or heating.

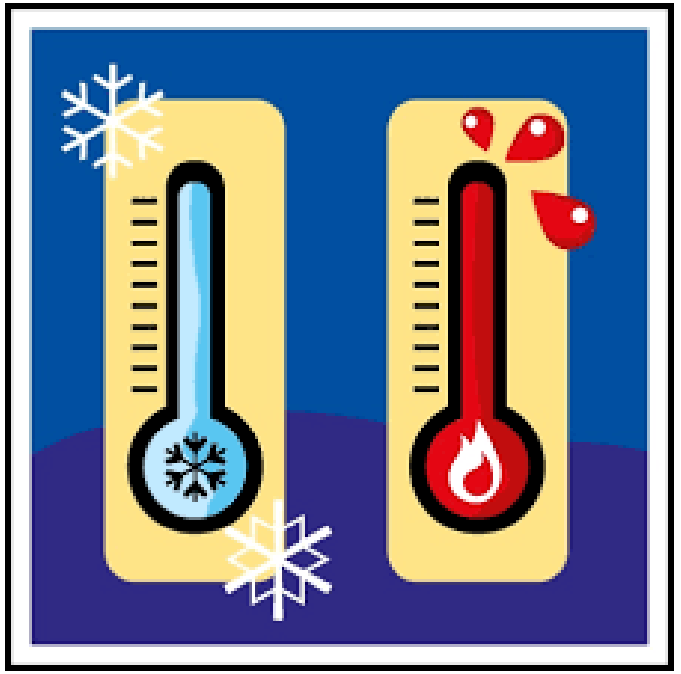
Mineral Scale – Equipment Problems

Mineral deposits such as limescale present a major headache for food service operators with ice, coffee, espresso, steam and warewashing equipment.

When the temperature of water is raised or lowered, the dissolved minerals begin to “precipitate” or fall out of solution. The components of rock (minerals / ions) start to reform, and this mineral scale attaches itself to the heating elements, reservoir walls, and the sides of metal tubing.

Mineral scale can clog tubing and small orifices, coat heating / cooling elements, and result in increased detergent usage.

Scale also becomes an insulator which causes reduced energy transfer and efficiency loss, resulting in increased energy demands for cooling or heating, and increased operating costs. A thin ¼” coating of mineral scale can result in almost 40% loss of energy transfer.



Mineral Scale – Equipment Problems - Continued

Increased operating costs also include the need for deliming – an acid cleaning process that removes mineral scale. This process is harsh to the equipment surfaces and decreases equipment life.

The deliming chemicals can also be hazardous to service personnel and create safe disposal problems.

The following numbers help define the severity of the mineral scale problem for your customers:

- There are 7,000 grains of mineral content in one pound of dissolved rock.
- There are approximately 15 grains per gallon in the average water supply
- 467 gallons of this water contains more than one pound of dissolved rock.

From the customer's perspective, with this average water supply:

- Almost 1.5 pounds of dissolved rock will enter a typical 600 pound cube ice machine eac.. week.

- Almost 1.5 pounds of dissolved rock will enter a coffee brewer every 6-8 weeks (15-20 pots /day).

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Traditional Coffee

By some recent estimates, almost 6 billion gallons of coffee will be brewed in the country this year.

The largest percentage of this volume will be served by what we may call the “Traditional Coffee” industry. This group selects a good quality coffee and basic brewing equipment to provide a cup of Java to every thirsty customer.

The key concepts for Traditional Coffee might be viewed as:

- acceptable quality
- moderate price
- mass markets
- unlimited outlets

Coffee vs. Suspended Solids

According to the coffee industry, your cup of Java is approximately 98.6% hot water. In addition to the potential equipment abuse that we have discussed, solid particles can affect the finished drink in several ways:

- Dirty water makes dirty coffee and customers will be repelled by visual sediment floating in the coffee cup. These solids can also alter the smooth texture of the final drink.
- Many suspended particles will dissolve into the liquid coffee. This process may release earthy taste issues, increase the total dissolved solid content, and alter the delicate flavors of brewed coffee.

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Coffee verses Chemicals

Chlorine and Chloramine can alter the aroma and flavor of brewed coffee in several ways.

- Purification agents oxidize the aromatics and oils in the coffee grind, releasing harsh or bitter tastes.
- These chemical agents can also reduce the pH balance, producing an acidic coffee product.
- They can release chemical / medicinal tastes and odours in the final product.

Natural, Organic Tastes, Odours and Colours can alter the aroma, flavour and colour of brewed coffee.

- T.O.C. can produce earthy, musty, or moldy flavour tones that clash with the drink.
- The natural tannins can also alter the finished colour of brewed coffee.

Tannins

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The Answer for Coffee Brewers

Water contaminants come in three basic groups:

- Solids
- Chemicals
- dissolved solids & gases.

A complete treatment approach should include the following components:

- Reducing the amount of solid particles in the water by mechanical filtration.
- Reducing the chemical contaminants such as chlorine with activated carbon.
- Reducing the effects of mineral content in the water supply.

You will find all of these capabilities uniquely designed into the Everpure filter products for coffee brewing systems. For most situations, the following are the only products that you need to remember.

Everpure Solutions for Coffee

Everpure QL3-OCS Water Filter – for Office Coffee and small brewers with low flow and limited volume.

Everpure QL3-BH Water Filter – for single brewers with flow rates under 0.5 gallons per minute.

Everpure QC7i-MH Water Filter – for coffee urns and satellite brewers with flow rates between 0.5 and 2.0 gpm

Larger option:

Everpure Combination CSR Systems – for customers that want filtered water supplied to a variety of foodservice equipment applications.

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Product Selection

You will need to consider two significant issues in selecting the proper sized filter system for any coffee brewer application:

- Required Flow Rates
- Estimated Volumes

Answer these questions:

- How Many Brewers?
- Number of Pots or Gallons Brewed Per Day?
- Does the Equipment Include a Hot Water Tap?
- Is there other water-using equipment that could be filtered at the same time?
- Line Size/Adequate Plumbing?

Product Selection - Continued

The basic rules of estimating peak flow rates will help you choose an adequate filter system and the proper installation plumbing to avoid equipment starvation.

Remember that the water supply for most coffee brewers includes an adjustable inlet solenoid and timer. If the water flow is restricted by your choice of filter system or installation plumbing, the customer may get short pots of coffee.

Examples:

- Bottle Brewers fill ½ gallon in approximately 1 –2 minutes. Small ¼” plumbing can be used.
- Satellite Brewers draw about 1 gallon per minute. Be wise and use 3/8” plumbing.
- Coffee Urns can require a range of 1–3 gallons per minute during fill. Minimum 3/8” plumbing.
- Multiple brewers may fill at the same time. Add the flow rates and size accordingly.

Product Selection - Continued

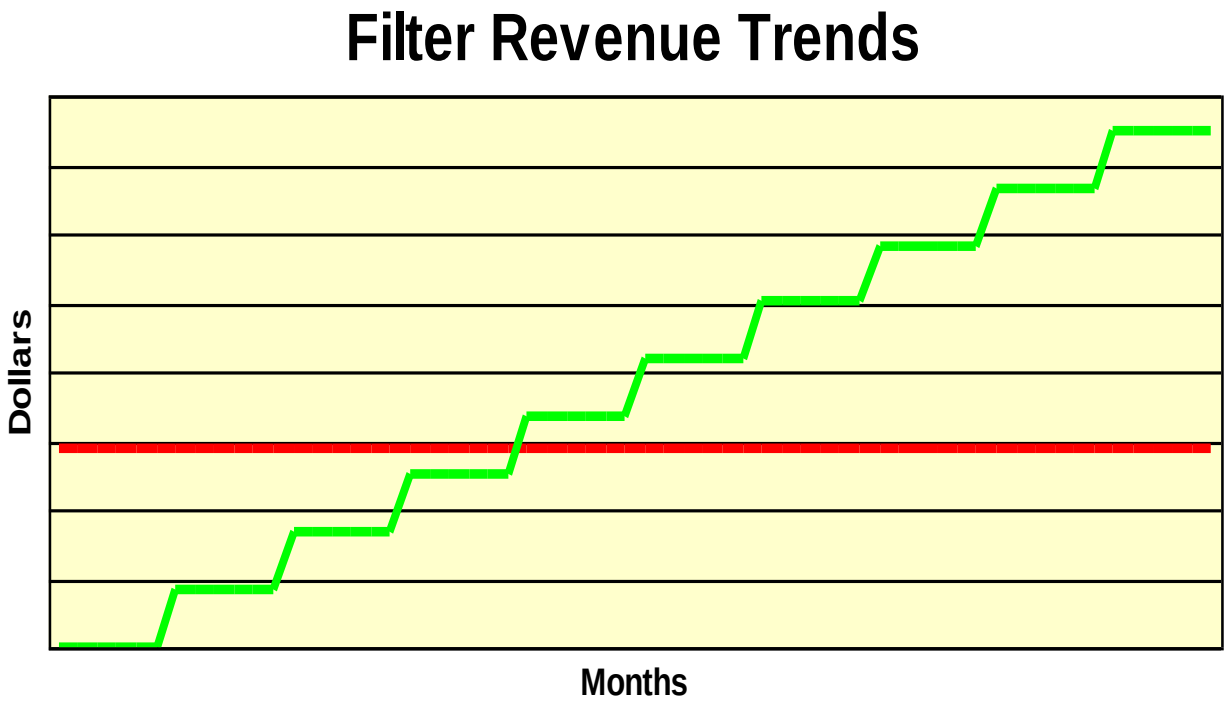
The basic rules for estimating water volume assume that the customer does not want more than two filter changes per year.

If you note the size of the coffee pot / satellite / urn and ask the restaurant staff how many times it is filled each day, you can estimate the total amount of filtered water needed in 180 days.

Be sure to add extra gallons if the brewer includes a hot water tap for brewed tea or other mixed drinks.

	OCS	BH	MH	Combination
Pots	**3,000**	**6,000**	**18,000**	**Multiple Equipment**
Gallons	**1,500**	**3,000**	**9,000**	**Multiple Equipment**
Flow Rate	**.5 gpm**	**.5 gpm**	**1.67 gpm**	**Per System**

Profit Opportunity



One new filter system sale per month yields increasing cartridge changes over the years, ensuring a steadily growing revenue stream

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Profit Opportunity

We refer to Everpure products as ‘backward compatible’ which means that all our replacement cartridges fit into existing Everpure hardware regardless of when it was purchased. The universal design of the filter head/heads means your customers can enjoy new technology cartridges as they are introduced and you have lots of options in your ‘toolkit’ to address their needs in the future.

In addition to the ongoing revenue stream associated with selling water filtration systems, Everpure offers a broad range of ‘upgrades’ in the form of higher capacity cartridges, should you need longer life. Problem solving cartridges for problematic water and even shorter cartridges should you be tight on space.

By keeping track of your system sales and scheduled cartridge changes, and providing your customers with a planned PM programme, you can build a nice business that will only grow year over year.

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Importance of NSF Certifications & Food Safety

The National Sanitation Foundation (NSF) is an independent third party certification organization. Drinking Water Treatment units are voluntarily submitted for certification. Everpure has the most certified products on the market today.

NSF/ANSI Certified Drinking Water Treatment units undergo the following testing:

- Extraction testing to ensure that wetted parts do not leach contaminants
- Structural Integrity testing
- Literature review to ensure honest and accurate product performance claims
- Performance testing against specific contaminants, per the NSF/ANSI Standard.

Look for the NSF Mark:

- NSF/ANSI Standard 42 certifies aesthetic claims, which include mechanical reduction of solids and reduction of chlorine.

- NSF/ANSI Standard 53 certifies health claims. NSF/ANSI Standard cyst reduction certification requires 99.95% or greater of cysts removed.

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Protecting Coffee Breweing Equipment is as easy as 1,2,3

1) Install the proper Watercare Equipment

2) Assure results with the proper installation

3) Establish a Preventive Maintenance Schedule & Stay on Schedule!

Establishing Regular Preventative Maintenance (PM) with the customer and replacing filter cartridges when needed, is of paramount importance.

Preventative maintenance can be assured by scheduled automatic service calls, auto ship programs or by sending automatic reminders to the customers.

Remember: S I R - Select - Install - Replace

Is the key to providing quality, protecting equipment and selling filters.

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Recap

WaterCare is a great business to be a part of…it benefits your customers and their operations and it provides you with a new revenue stream.

Water filters pay for themselves through:

- Customer satisfaction by delivering consistently high quality water, day in and day out
- Reduced emergency maintenance, wear & tear on equipment
- Extended equipment life, less deliming with harsh chemicals
- Peace of mind –water is food and food safety is everything (NSF Certification)

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Thank you for your time.

This concludes our DanaHub Module on Coffee

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