



SPECTRUM[®]

CLEAN-IN-PLACE & STERILISATION GUIDE

For Premier Pleated Filter Cartridges



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INTRODUCTION

A regular cleaning and sanitisation regime can increase filter life, product quality and reduce downtime. This guide details the commonly used chemicals, agents and procedures found within the industry. The information is a guide which should be considered flexible, and monitoring of individual systems should be continuous to ensure process improvements are on-going.

Chemical cleaning of filter cartridges is used to remove blockage particulate and improve filter life. Commonly found within the brewing industry, this method should be used for contaminants that are not simply removed by water rinsing, such as colloidal matter, trapped proteins and yeast.

Chemical and hot water sanitisation are important for maintaining final product quality and for keeping systems hygienic. Steam-in-Place (SIP) provides more efficient sanitisation and is generally used where full sterility of the system is required.



INSTRUCTION SCOPE

The guidance within this document provides instructions for the Clean-in-Place (CIP) procedures, and Steam Sterilisation of SPECTRUM Premier Pleated filter cartridges. All solutions used for cleaning and sanitisation should be pre-filtered to avoid shortening the life of the filter cartridges, at a level one retention grade higher than the micron rating of the first cartridge in the filter train to receive the CIP solution.

CIP of the stages within a filtration train should be carried out before a differential pressure increase of 3-5 psi across each filter cartridge is reached and always before a filter cartridge has fully blocked. With a multi-stage filtration system, it is important to isolate and flush each filter stage to avoid moving debris down the filter train.

The following instructions should be carried out by qualified personnel with the necessary PPE and a full risk assessment and method statement process should be followed. Caution should always be taken when handling chemicals.



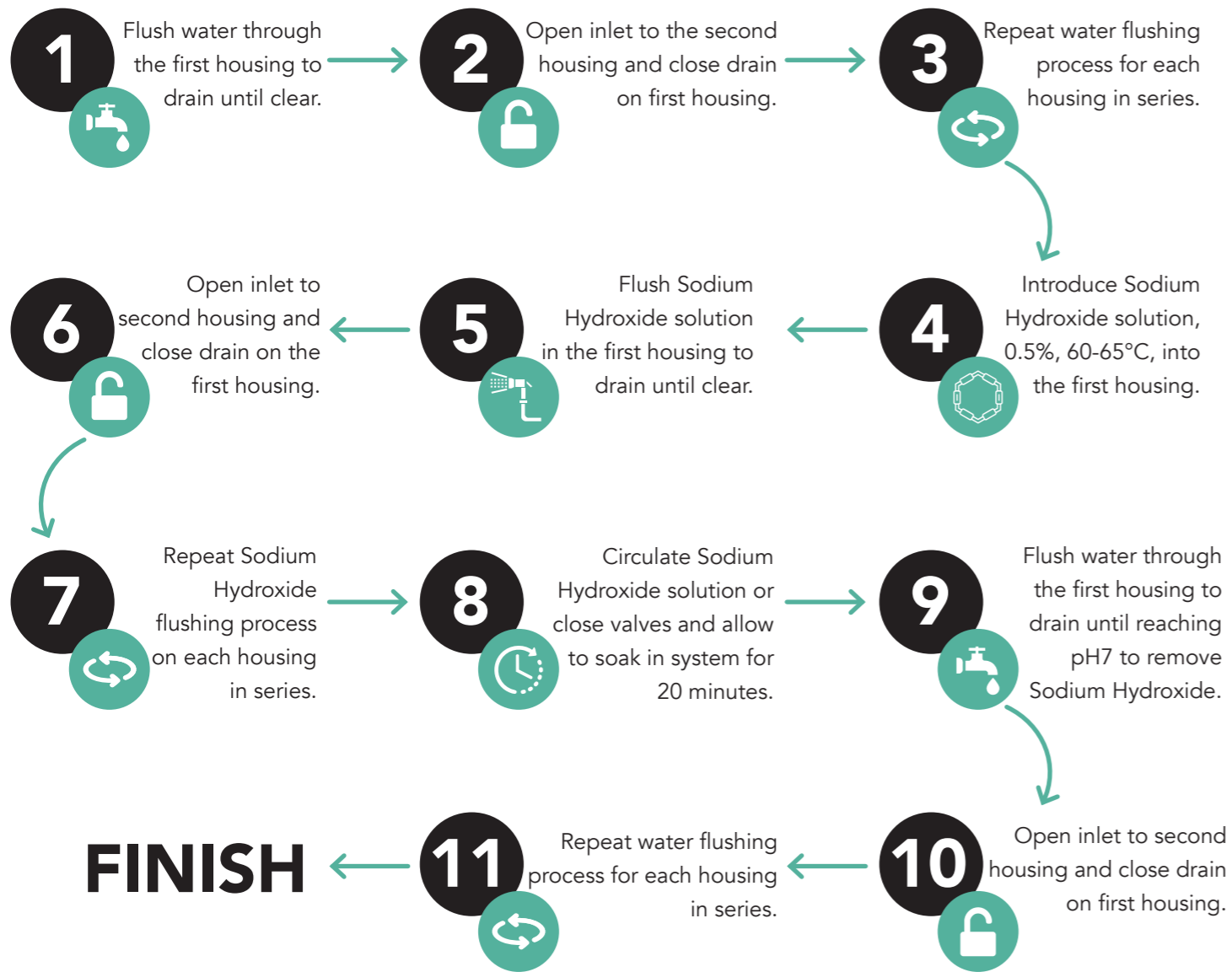
CIP PROCEDURES



CHEMICAL CLEANING OF FILTER CARTRIDGES

For the chemical cleaning procedure detailed below, a solution of 0.5% Sodium Hydroxide, (60-65°C), should be used. Any other solutions used should be checked for chemical compatibility and suitability prior to use.

This procedure is suitable for use with polypropylene media pre-filters (PPP, PPHP, PPDP), and polyethersulfone membrane final filters (Bubble Point, PES, PPES).



CIP PROCEDURES



CHEMICAL SANITISATION OF FILTER CARTRIDGES

The chemical sanitisation procedure is suitable for use with the range of filter media as detailed in the following sanitising agent guide (overleaf).



SANITISING AGENT GUIDE

Chemical Sanitisation Agent	Concentration	Duration (Minutes)	PPP / PPHP / PPDP	PPG / CP	PPES / Bubble Point / PES	PPPTFE
Bleach (up to 3% free C12)	0.5%	15-30	OK	OK	OK	OK
Formaldehyde (37%)	0.5- 1%	15-30	OK	OK	OK	OK
Hydrogen Peroxide (37%)	3%	15-30	OK	NOT RECOMMENDED	OK	OK
Isopropyl Alcohol	70%	15-30	OK	OK	OK	OK
Ozone (O3)	<50 ppm.hours	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED
Renalin (Peracetic Acid & H2O2)	1%	15-30	OK	NOT RECOMMENDED	OK	OK

CIP PROCEDURES



HOT WATER SANITISATION OF FILTER CARTRIDGES

Hot water must be introduced gradually into each housing replacing cold water to reduce any potential temperature shock to the filter cartridges.



STEAM-IN-PLACE STERILISATION PROCEDURE

In suitable high temperature housings, SPECTRUM Premier Pleat filters can be steam sterilised on site, with pressurised and pre-filtered steam (1 bar at 121°C).

Cartridges to be steam sterilised require stainless steel or PSU reinforced end cap adaptors which can be ordered in 222 or 226 end cap configurations (Q and Z codes respectively). Double open ended (AA) cartridges are not recommended for SIP.

1. Flush the system, by draining fluid and venting the housing.
2. Open outlet and drain valves of the filter housing.
3. After the steam generator has reached appropriate pressure, open the steam inlet valve **SLOWLY**.
4. Allow the temperature to reach 121°C in all parts of the system. Vent steam to minimise differential pressure build-up; differential pressure should not exceed 3 psi. Time for 20 minutes as soon as all of the system has reached 121°C.
5. When the validated sterilisation period is complete, close drain and vent valves.
6. Close steam inlet valve, and immediately open air or nitrogen inlet valve. To assist cooling, steam may be flushed from the assembly by carefully opening vent valves. Close valves after flushing, allow entire assembly to cool to ambient or process temperatures.
7. Close air or nitrogen inlet valve, relieve gas pressure via vent valves. Filter assembly is now ready for use.

SPECTRUM filters can withstand total exposure time to 121°C steam as detailed below:

Product/Range	No. of Cycles	Cycle Time (minutes)	Total Exposure (minutes)
PPP, PPHP, PPDP	10	20	200
PPG, CP	5	20	100
PPPEs, Bubble Point, PPPTFE	30	30	900





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