

Objective

To provide a drain cover that will allow for; 1) The collecting of food soils, where the soils can be easily removed by hand; 2) Increase the speed at which the sinks will drain while allowing the minimal amount of solid waste to enter the plumbing.

Method

Four designs for a flat drain strainer were developed and tested. The data from the tests helped determine which design was the best candidate for the final analysis of the new strainer versus both a traditional, factory-supplied crumb cup and an open, uncovered drain.

Tests

Clean Water Test (no soap added)

- Volume of water in Wash Sink = 84 gallons
- Ball valve drains were fully opened and the flow rate was measured.

Soiled Water Test (no soap added)

- Volume of water in Wash Sink = 84 gallons
- Soils added to the water – 15 oz. canned peas, 15 oz. canned corn and 16 oz. dry lentils. Items were allowed to “wash” for 5 minutes then sit for 2 minutes before draining the sink.
- Ball valve drains were fully opened and the flow rate was measured.



Flat Perforated Strainer Pattern #1



Factory Crumb Cup

Water Height (Sink volume =84 gallons)	Time to Drain (min) - Clean Water			Time to Drain (min) - Soiled Water		
	Open Drain	Flat Strainer	Crumb Cup	Open Drain	Flat Strainer	Crumb Cup
16.5" - Full Sink	0	0	0	0	0	0
6.25"	1:47	1:26	2:00	1:47	1:50	4:32
3.125"	2:31	2:05	2:56	2:29	3:31	6:34
0" - Empty Sink	3:32	2:59	4:12	3:33	7:26	9:42
Average Flow (GPM)	23.7	28.0	19.9	23.6	11.2	8.6

Results

Factory Crumb Cup – average flow rate with unsoiled water was 19.9 GPM but only 8.6 GPM with soiled water. The crumb cup was difficult to clean when the soils collected in the recessed cavity and was sharp to the finger. This proved to be the poorest combination for efficient draining. Few solids passed through the cup to the plumbing. See images 1 & 2.

Flat Strainer – this combination performed the best overall. It maintained a flow rate of 28 GPM with unsoiled water and 11.2 GPM with soiled water. This strainer was very easy to clean and few solids passed through to the plumbing. See images 3 & 4.

Open / Uncovered Drain – this combination had a lower flow rate (23.7 GPM) than the flat strainer when draining unsoiled water but performed the best during the soiled water test (23.6 GPM). However, large quantities of soils passed through the drain and into the plumbing. See images 5 & 6.

Conclusions

Because of its higher flow rate versus the crumb cup and because it is easier to clean by hand when the soils in the water collect on its surface, it is recommended that the Flat Strainer be used in lieu of the factory-provided crumb cup to help facilitate the draining of the sinks.

While the flat strainer can be field installed as a retro-fit, Power Soak Systems is making it standard on all new production for customers that do not require a formal approval and recommending it for customers that do have a formal approval process.

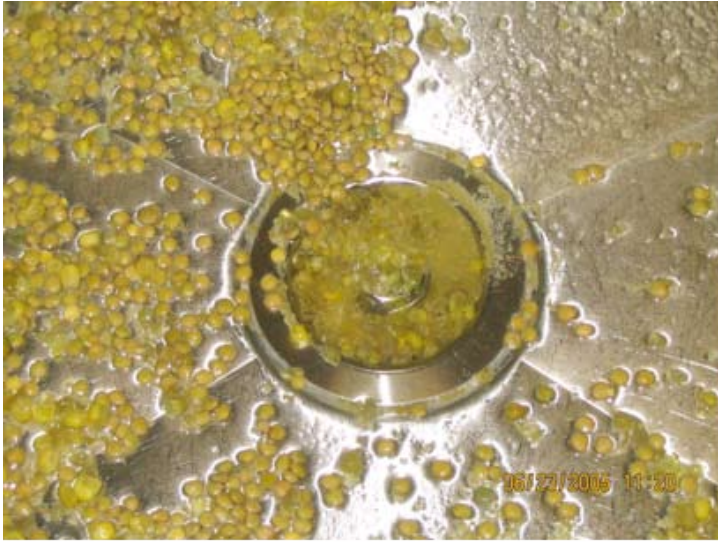


Image #1 Crumb Cup



Image #2 Drain discharge sample using Factory Crumb Cup

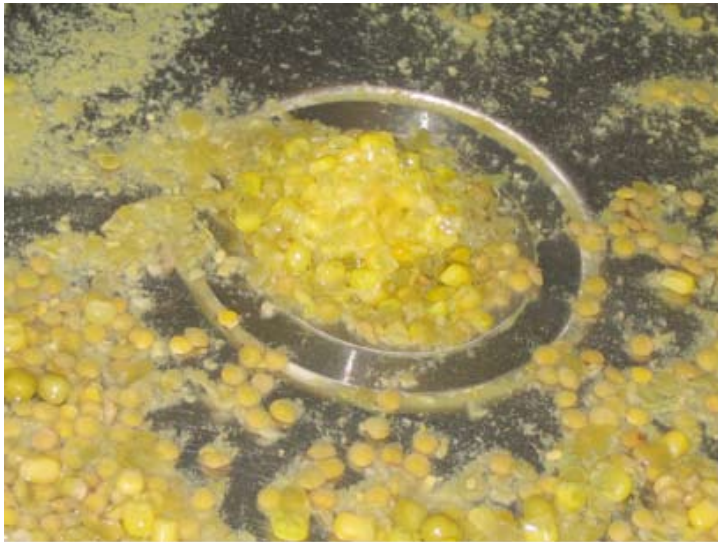


Image #3 Flat strainer

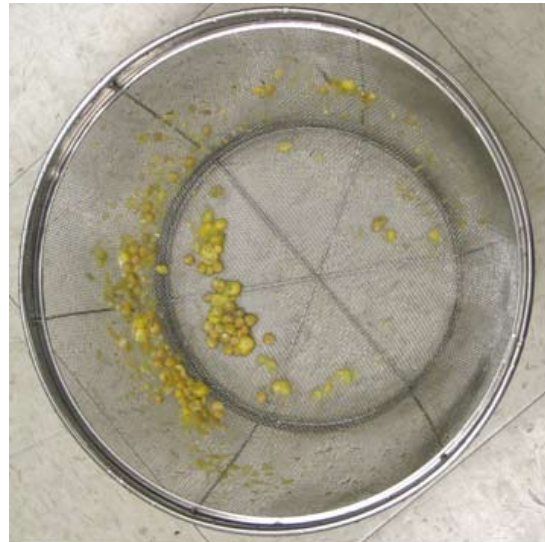


Image #4 Drain discharge sample using Flat Strainer

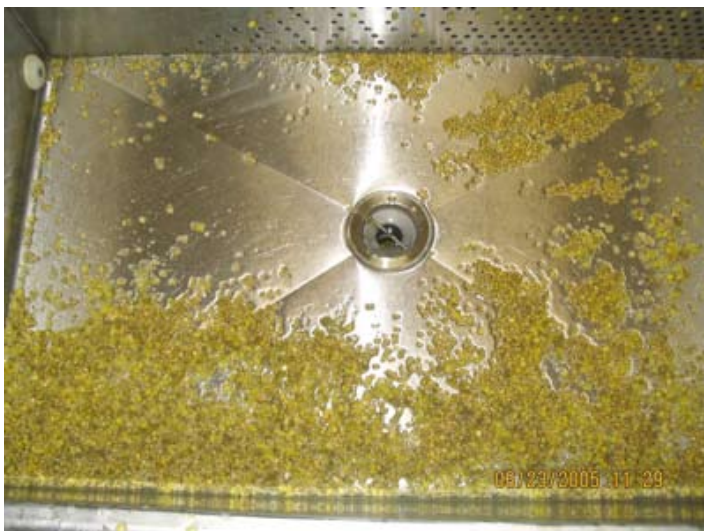


Image #5 Without Crumb Cup or Flat Strainer



Image #6 Drain discharge sample without Crumb Cup or Flat Strainer