

Dynamic Descaler®

Heat Exchangers

Heat exchangers in many manufacturing facilities are very crucial in everyday operations. Heat exchangers are designed to transfer heat in the form of kinetic energy from one liquid to another. And while transferring heat, the heat exchanger, over a period of time will collect lime, scale and rust on the waterside of the exchanger.

If you intend to clean only the Heat Exchanger, you still do not have to dismantle or remove the exchanger from your operations.

Cleaning instructions:

1. By-pass heat exchanger from operation.
2. Remove the existing water in the Heat Exchanger. This MUST be done, to insure proper results.
3. Disconnect the water in/out connections from the exchanger.
4. Attach the necessary hoses to in/out connections on Before After the exchanger to a circulating pump. Refer to chart on the following pages for the recommended circulation time and the amount of *Descaler* to use.
5. We recommend you circulate with water first to see if the system has any leaks, or if any unnecessary valves are not turned off. If you do have leaks, repair before proceeding to the next step.
6. Circulate the Descaler for 20 minutes, then turn off the circulating pump and let the Descaler set for approximately 20 minutes. After the first 20 minutes of circulation time, check the pH of our Descaler with a pH meter or with pH strips. Before use, Our Descaler has a pH between 0 and 1.15 pH. Depends which of our product is being used. If the pH rises to around 3 or 3.5 pH after the first 20 minutes, add more of our Descaler to lower the pH to around 1. Continue this process through the time allowed per chart. When the pH of our Descaler remains the same, there should be no more scale, so the Heat Exchanger should be clean. The Exchanger should be free of scale. The only way the pH of our Descaler would increase is by having scale remaining in the Exchanger.
7. We recommend the procedures in 7 and 8 to effectively to clean Heat Exchangers. The 20 minutes circulation and the 20 minutes saturating time are actually the US Navy procedures. The US Navy uses our products. We have increased the circulation time to speed up the cleaning. The Navy wanted 5 minute circulating time and 20 minutes saturating time.
8. The reason for this procedure is to allow the Descaler to penetrate through tough scales while been saturated. This allows our Descaler to work more effectively in your Heat exchanger. After 20 minutes of saturating, proceed with circulating to wash away all scale and debris.
9. If you decide to bypass the saturation technique, you may do this. In a complete circulation with no saturation, the time for cleaning will decrease. This would allow for less down time in your plant. Please call for more information.
10. Pump or remove the remaining Descaler into other container. If the Descaler still has a pH around 1-3 pH, use the Descaler for another cleaning.
11. After removing our Descaler from the Heat Exchanger, flush the Heat Exchanger with water to remove all debris and remaining Descaler. If you want to completely neutralize the Heat Exchanger, add sodium bicarbonate (baking soda) to the water while circulating. Add a ratio of 1/2 pound of sodium bicarbonate to 25 gallon of water.
12. Once you have flush the Heat Exchanger, disconnect the hoses from the circulating pump and circulate tank. Re-connect the water inlet and outlet to the Heat Exchanger.

Please refer to the Chart on the following pages for the proper amounts of *Dynamic Descaler* to use and the recommended circulation times.

Descaler Chart[®]

4" Diameter	
Length (ft)	Gallons/Circulation Time
4	1 Gal. / 45 Min.
6	1 Gal. / 45 Min.
8	1.5 Gal. / 45 Min.
10	2 Gal. / 1 Hr.
12	2 Gal. / 1 Hr. 45 Min.
16	3 Gal. / 1 Hr. 45 Min.
18	3 Gal. / 1 Hr. 45 Min.
20	3 Gal. / 1 Hr. 45 Min.
24	3.5 Gal. / 1 Hr. 45 Min.
30	4 Gal. / 2 Hr.
40	5 Gal. / 2 Hr.

5" Diameter	
Length (ft)	Gallons/Circulation Time
4	1 Gal. / 45 Min.
6	1.5 Gal. / 45 Min.
8	1.5 Gal. / 45 Min.
10	2.5 Gal. / 1 Hr. 45 Min.
12	2.5 Gal. / 1 Hr. 45 Min.
16	3.5 Gal. / 1 Hr. 45 Min.
20	4.5 Gal. / 1 Hr. 45 Min.
24	5 Gal. / 1 Hr. 45 Min.
30	7 Gal. / 1 Hr. 45 Min.
36	8 Gal. / 1 Hr. 45 Min.
40	9 Gal. / 2 Hr.

6" Diameter	
Length (ft)	Gallons/Circulation Time
4	1 Gal. / 45 Min.
6	1 Gal. / 45 Min.
8	2 Gal. / 1 Hr. 45 Min.
10	3 Gal. / 1 Hr. 45 Min.
12	4 Gal. / 1 Hr. 45 Min.
16	5 Gal. / 1 Hr. 45 Min.
20	6 Gal. / 1 Hr. 45 Min.
24	7.5 Gal. / 1 Hr. 45 Min.
30	11 Gal. / 1 Hr. 45 Min.
36	14 Gal. / 1 Hr. 45 Min.
40	15 Gal. / 1 Hr. 45 Min.

8" Diameter	
Length (ft)	Gallons/Circulation Time
4	2 Gal. / 45 Min.
5	2 Gal. / 45 Min.
6	3 Gal. / 45 Min.
8	4 Gal. / 1 Hr. 45 Min.
10	6 Gal. / 1 Hr. 45 Min.
16	8.5 Gal. / 1 Hr. 45 Min.
20	11 Gal. / 1 Hr. 45 Min.
24	15 Gal. / 1 Hr. 45 Min.
30	18 Gal. / 2 Hr. 45 Min.
36	23 Gal. / 2 Hr. 45 Min.
40	25 Gal. / 2 Hr. 45 Min.

12" Diameter	
Length (ft)	Gallons/Circulation Time
4	5 Gal. / 1 Hr. 45 Min.
6	7 Gal. / 1 Hr. 45 Min.
8	10 Gal. / 1 Hr. 45 Min.
10	14 Gal. / 1 Hr. 45 Min.
12	17 Gal. / 1 Hr. 45 Min.
16	23 Gal. / 1 Hr. 45 Min.
20	28 Gal. / 2 Hr. 45 Min.
24	34 Gal. / 3 Hr. 45 Min.
30	44 Gal. / 3 Hr. 45 Min.
36	52 Gal. / 3 Hr. 45 Min.
40	54 Gal. / 3 Hr. 45 Min.

16" Diameter	
Length (ft)	Gallons/Circulation Time
5	11 Gal. / 1 Hr. 45 Min.
6	16 Gal. / 1 Hr. 45 Min.
8	19 Gal. / 1 Hr. 45 Min.
10	23 Gal. / 2 Hr. 45 Min.
12	29 Gal. / 2 Hr. 45 Min.
16	41 Gal. / 3 Hr. 45 Min.
20	52 Gal. / 3 Hr. 45 Min.
24	60 Gal. / 3 Hr. 45 Min.
30	80 Gal. / 4 Hr. 45 Min.
36	95 Gal. / 4 Hr. 45 Min.
40	110 Gal. / 4 Hr. 45 Min.

20" Diameter	
Length (ft)	Gallons/Circulation Time
6	24 Gal. / 2 Hr. 45 Min.
8	31 Gal. / 2 Hr. 45 Min.
10	39 Gal. / 3 Hr. 45 Min.
12	49 Gal. / 3 Hr. 45 Min.
16	64 Gal. / 3 Hr. 45 Min.
18	74 Gal. / 4 Hr. 45 Min.
20	79 Gal. / 4 Hr. 45 Min.
24	95 Gal. / 4 Hr. 45 Min.
30	115 Gal. / 4 Hr. 45 Min.
36	145 Gal. / 4 Hr. 45 Min.
40	155 Gal. / 4 Hr. 45 Min.

24" Diameter	
Length (ft)	Gallons/Circulation Time
5	27 Gal. / 3 Hr. 45 Min.
6	34 Gal. / 3 Hr. 45 Min.
8	49 Gal. / 3 Hr. 45 Min.
10	55 Gal. / 3 Hr. 45 Min.
12	65 Gal. / 4 Hr. 45 Min.
16	90 Gal. / 4 Hr. 45 Min.
20	115 Gal. / 4 Hr. 45 Min.
24	135 Gal. / 4 Hr. 45 Min.
30	175 Gal. / 4 Hr. 45 Min.
36	215 Gal. / 5 Hr. 45 Min.
40	235 Gal. / 5 Hr. 45 Min.

30" Diameter	
Length (ft)	Gallons/Circulation Time
6	52 Gal. / 4 Hr. 45 Min.
8	70 Gal. / 4 Hr. 45 Min.
10	85 Gal. / 4 Hr. 45 Min.
12	105 Gal. / 4 Hr. 45 Min.
16	145 Gal. / 4 Hr. 45 Min.
18	160 Gal. / 4 Hr. 45 Min.
20	175 Gal. / 4 Hr. 45 Min.
24	215 Gal. / 5 Hr. 45 Min.
30	275 Gal. / 5 Hr. 45 Min.
36	325 Gal. / 6 Hr. 45 Min.
40	355 Gal. / 6 Hr. 45 Min.

36" Diameter	
Length (ft)	Gallons/Circulation Time
6	75 Gal. / 4 Hr. 45 Min.
8	105 Gal. / 4 Hr. 45 Min.
10	125 Gal. / 4 Hr. 45 Min.
12	155 Gal. / 4 Hr. 45 Min.
16	215 Gal. / 5 Hr. 45 Min.
18	250 Gal. / 5 Hr. 45 Min.
20	265 Gal. / 5 Hr. 45 Min.
24	325 Gal. / 6 Hr. 45 Min.
30	395 Gal. / 6 Hr. 45 Min.
36	480 Gal. / 6 Hr. 45 Min.
40	530 Gal. / 6 Hr. 45 Min.

40" Diameter	
Length (ft)	Gallons/Circulation Time
6	90 Gal. / 4 Hr. 45 Min.
8	115 Gal. / 4 Hr. 45 Min.
10	140 Gal. / 4 Hr. 45 Min.
12	170 Gal. / 5 Hr. 45 Min.
16	230 Gal. / 5 Hr. 45 Min.
18	270 Gal. / 6 Hr. 45 Min.
20	300 Gal. / 6 Hr. 45 Min.
24	350 Gal. / 6 Hr. 45 Min.
30	450 Gal. / 6 Hr. 45 Min.
36	550 Gal. / 7 Hr. 45 Min.
40	630 Gal. / 7 Hr. 45 Min.

48" Diameter	
Length (ft)	Gallons/Circulation Time
4	90 Gal. / 4 Hr. 45 Min.
6	125 Gal. / 4 Hr. 45 Min.
8	165 Gal. / 4 Hr. 45 Min.
10	195 Gal. / 5 Hr. 45 Min.
16	330 Gal. / 6 Hr. 45 Min.
18	390 Gal. / 6 Hr. 45 Min.
20	450 Gal. / 6 Hr. 45 Min.
24	525 Gal. / 7 Hr. 45 Min.
30	650 Gal. / 7 Hr. 45 Min.
36	775 Gal. / 7 Hr. 45 Min.
40	875 Gal. / 7 Hr. 45 Min.