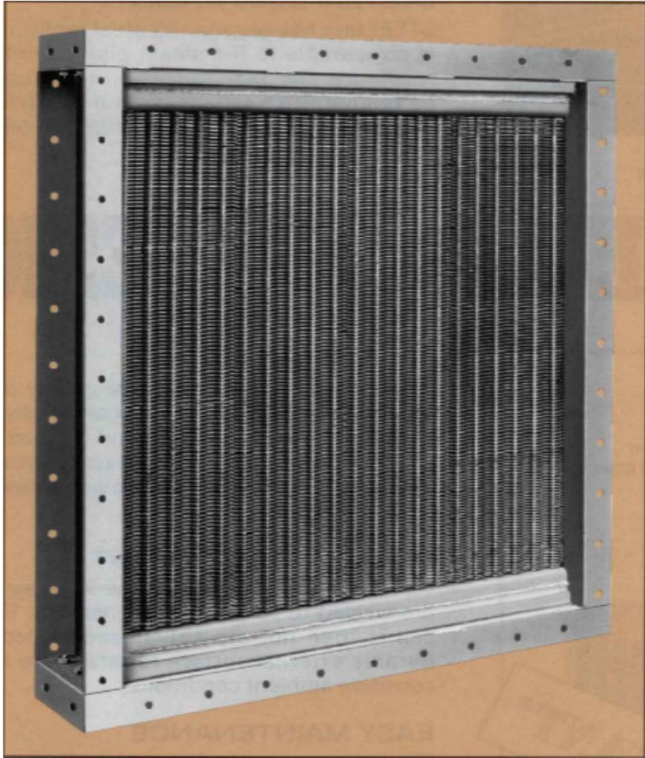


STEELFIN

RUGGED LOW-MAINTENANCE STEAM COILS
**Heavy-gauge steel coils, hot-dip galvanized to resist corrosive elements in industrial environments.*



Design and Application Features

PROVEN PERFORMANCE

The STEELfin heating surface was originally designed with the industrial application in mind. This primary design has stood the test of time for over 50 years and has become the standard for steam heating in some of the nation's largest manufacturing facilities.

SYSTEM COMPATIBILITY

STEELfin's heavy-gauge all-steel construction is comparable to the steam piping system in resilience and resistance to stress caused by temperature expansion and constriction [a common cause of failure with non-ferrous steam coils].

FREEZE-RESISTANT

Vertical tubes provide positive gravity drainage of condensate, making the coil literally nonfreeze when properly piped and trapped. The oval steel tubes resist rupture even when a malfunctioning trap might allow some condensate to freeze in the coil.

CORROSION-RESISTANT

Vertical tubes of .060 " thick SAE 950 alloy steel are welded to 10-gauge steel headers. Entire coil is then hot-dip galvanized to provide durable external surface resistance to many corrosive ambient conditions.

EASY MAINTENANCE

The heavy-gauge steel construction and wide fin spacing [five fins per inch] allow for cleaning with high pressure air, steam, or caustic solution without deforming fins.

EASY INSTALLATION

Sturdy coil casings provide easy installation in process systems, plenums, or ducts. Standard finish on casings is gray-green zinc chromate base machinery enamel. Galvanized casings are available, or coils can be furnished without casing for applications involving built-in coil racks or supports.

TYPE A

Corrugated-fin surface provides maximum heating capabilities by causing a mixing airflow effect in the fin/tube channels.



Two fin surfaces- both five fins per inch

TYPE B

Flat-fin surface is recommended for high-pressure steam applications where a moderate temperature rise is more desirable.



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CS-811
MN 1009

FINAL TEMPERATURES

TYPE A		CORRUGATED FINS						5 LBS. STEAM-227°F.			
Entering Air Temp. °F.	No. of Sections STEELfin Deep	Face Velocity, in FPM, at .075 lbs./cu. ft. air density*									
		400	500	600	700	800	900	1000	1100	1200	
-20°	1	68.7	65.3	62.4	59.3	56.3	53.2	50.2	NOT RECOMMENDED		
	2	125.6	121.2	117.3	113.1	109.0	104.7	100.5			
	3	162.0	157.8	153.9	149.7	145.5	141.0	136.5			
	4	185.4	181.7	178.3	174.5	170.7	166.5	162.3			
	5	200.4	197.4	194.6	191.4	188.1	184.5	180.7			
	6	210.0	207.7	205.4	202.9	200.2	197.1	193.9			
0°	1	81.5	78.4	75.7	72.8	70.1	67.3	64.5	61.8	59.1	
	2	133.8	129.8	126.2	122.3	118.6	114.6	110.8	106.8	102.8	
	3	167.3	163.4	159.8	155.9	152.1	147.9	143.8	139.6	135.2	
	4	188.8	185.4	182.3	178.8	175.3	171.4	167.5	163.4	159.1	
	5	202.6	199.8	197.2	194.3	191.3	187.9	184.5	180.8	176.8	
	6	211.4	209.3	207.2	204.8	202.4	199.5	196.6	193.4	189.9	
20°	1	94.4	91.5	89.0	86.4	83.9	81.3	78.9	76.4	73.9	
	2	142.0	138.3	135.1	131.6	128.2	124.5	121.0	117.4	113.8	
	3	172.6	169.0	165.7	162.2	158.7	154.9	151.2	147.3	143.3	
	4	192.2	189.1	186.2	183.0	179.8	176.3	172.8	169.0	165.1	
	5	204.7	202.2	199.9	197.2	194.4	191.4	188.2	184.9	181.3	
	6	212.8	210.8	209.0	206.8	204.5	202.0	199.3	196.4	193.2	
40°	1	107.2	104.6	102.4	100.0	97.8	95.4	93.2	90.9	88.7	
	2	150.2	146.9	143.9	140.8	137.7	134.4	131.3	128.0	124.7	
	3	177.9	174.6	171.7	168.5	165.3	161.9	158.5	155.0	151.4	
	4	195.6	192.7	190.2	187.3	184.4	181.2	178.0	174.6	171.1	
	5	206.9	204.6	202.5	200.1	197.6	194.8	192.0	188.9	185.7	
	6	214.2	212.4	210.7	208.8	206.7	204.4	202.0	199.3	196.5	
60°	1	120.0	117.7	115.7	113.6	111.6	109.5	107.5	105.5	103.5	
	2	158.5	155.5	152.8	150.0	147.3	144.3	141.5	138.6	135.7	
	3	183.1	180.2	177.6	174.8	171.9	168.9	165.8	162.7	159.5	
	4	198.9	196.4	194.1	191.6	189.0	186.1	183.3	180.3	177.1	
	5	209.1	207.0	205.1	203.0	200.8	198.3	195.7	193.0	190.1	
	6	215.6	214.0	212.5	210.7	208.9	206.8	204.7	202.3	199.8	
80°	1	132.8	130.8	129.0	127.2	125.4	123.6	121.8	120.1	118.3	
	2	166.7	164.1	161.7	159.2	156.8	154.3	151.8	149.2	146.6	
	3	188.4	185.8	183.5	181.0	178.5	175.8	173.2	170.4	167.6	
	4	202.3	200.1	198.1	195.8	193.5	191.0	188.5	185.9	183.1	
	5	211.2	209.4	207.8	205.9	203.9	201.7	199.5	197.1	194.6	
	6	--	215.6	214.2	212.7	211.1	209.3	207.4	205.3	203.0	
100°	1	145.6	143.9	142.4	140.8	139.3	137.7	136.1	134.6	133.1	
	2	174.9	172.6	170.6	168.5	166.4	164.2	162.0	159.8	157.6	
	3	193.7	191.5	189.5	187.3	185.1	182.8	180.5	178.1	175.7	
	4	205.7	203.8	202.0	200.1	198.1	195.9	193.8	191.5	189.1	
	5	213.4	211.9	210.4	208.8	207.1	205.2	203.3	201.2	199.0	
	6	--	--	--	214.7	213.3	211.7	210.0	208.3	206.3	

TYPE B		SMOOTH FINS						5 LBS. STEAM-227°F.			
Entering Air Temp. °F.	No. of Sections STEELfin Deep	Face Velocity, in FPM, at .075 lbs./cu. ft. air density*									
		400	500	600	700	800	900	1000	1100	1200	
-20°	1	56.4	52.7	48.9	45.2	41.7	37.7	34.1	NOT RECOMMENDED		
	2	109.2	104.1	98.6	93.2	87.9	81.9	76.4			
0°	1	70.3	66.9	63.3	59.9	56.7	53.0	49.7	46.2	42.9	
	2	118.8	114.0	109.0	104.0	99.2	93.6	88.6	83.0	77.8	
20°	1	84.1	81.0	77.8	74.7	71.7	68.3	65.4	62.1	59.2	
	2	128.3	124.0	119.4	114.9	110.5	105.4	100.8	95.7	90.9	
40°	1	97.9	95.1	92.2	89.4	86.6	83.7	81.0	78.1	75.4	
	2	137.9	134.0	129.8	125.7	121.7	117.1	113.0	108.4	104.1	
60°	1	111.7	109.2	106.6	104.1	101.7	99.0	96.6	94.0	91.6	
	2	147.4	143.9	140.2	136.6	133.0	128.9	125.2	121.1	117.2	
80°	1	125.5	123.3	121.0	118.8	116.7	114.3	112.2	109.9	107.8	
	2	157.0	153.9	150.6	147.4	144.3	140.7	137.4	133.8	130.4	
100°	1	139.3	137.4	135.4	133.5	131.7	129.7	127.8	125.9	124.0	
	2	166.5	163.8	161.0	158.2	155.5	152.4	149.6	146.5	143.5	

* Coil face velocities equal CFM (at standard air density) divided by the coil face area... see page 5.

STEELfin COIL SELECTION

Selection is based on the required final temperature or temperature rise, actual entering air temperature, available steam pressure, air volume, and air velocity for the type of coil to be used. Air friction loss for a given selection can be determined from the information given on page 4.

Note: To obtain final temperature for steam pressures or entering air temperatures other than those shown on page 2, multiple the 0° entering air temperature ratings from page 2 by the appropriate conversion factor from the chart below, then add the resultant temperature rise to the actual entering air temperature.

CONVERSION FACTORS - ENTERING AIR TEMPERATURE AND STEAM PRESSURE

Entering Air Temp. °F.	Steam Pressure in Pounds per Square Inch (Gauge)															
	0	2	5	10	15	20	30	40	50	60	80	100	125	150	175	200
-20	1.021	1.050	1.088	1.142	1.187	1.227	1.295	1.350	1.399	1.441	1.514	1.575	1.641	1.699	1.750	1.795
-10	0.977	1.006	1.044	1.098	1.143	1.183	1.250	1.306	1.355	1.397	1.470	1.531	1.597	1.655	1.705	1.751
0	0.933	0.962	1.000	1.054	1.100	1.139	1.206	1.262	1.310	1.353	1.426	1.487	1.554	1.611	1.662	1.707
10	0.889	0.918	0.956	1.010	1.055	1.095	1.163	1.219	1.266	1.309	1.382	1.443	1.510	1.566	1.618	1.664
20	0.845	0.874	0.912	0.966	1.012	1.051	1.119	1.174	1.223	1.265	1.338	1.399	1.465	1.523	1.574	1.620
30	0.801	0.830	0.868	0.922	0.968	1.007	1.075	1.130	1.179	1.221	1.294	1.355	1.421	1.479	1.530	1.575
40	0.757	0.786	0.824	0.877	0.923	0.963	1.030	1.086	1.134	1.177	1.250	1.311	1.378	1.435	1.486	1.531
45	0.735	0.764	0.802	0.856	0.901	0.941	1.009	1.064	1.113	1.155	1.228	1.289	1.355	1.413	1.464	1.510
50	0.713	0.742	0.780	0.834	0.879	0.919	0.986	1.042	1.091	1.133	1.201	1.267	1.334	1.390	1.442	1.487
55	0.691	0.720	0.758	0.812	0.857	0.897	0.965	1.020	1.069	1.111	1.184	1.245	1.311	1.369	1.420	1.465
60	0.669	0.698	0.736	0.790	0.835	0.875	0.943	0.998	1.046	1.089	1.161	1.224	1.290	1.346	1.398	1.444
65	0.647	0.676	0.714	0.768	0.813	0.853	0.921	0.976	1.025	1.067	1.141	1.201	1.267	1.325	1.376	1.421
70	0.625	0.654	0.692	0.746	0.791	0.831	0.899	0.954	1.003	1.045	1.119	1.179	1.245	1.302	1.354	1.400
75	0.603	0.632	0.670	0.724	0.769	0.809	0.877	0.932	0.981	1.023	1.097	1.157	1.224	1.280	1.332	1.377
80	0.581	0.610	0.648	0.702	0.747	0.787	0.855	0.910	0.959	1.001	1.075	1.135	1.201	1.259	1.310	1.355
85	0.559	0.588	0.626	0.679	0.725	0.765	0.833	0.888	0.937	0.979	1.053	1.113	1.180	1.236	1.288	1.334
90	0.537	0.566	0.604	0.657	0.703	0.743	0.811	0.866	0.914	0.957	1.031	1.091	1.157	1.215	1.266	1.311
100	0.453	0.522	0.560	0.613	0.659	0.691	0.767	0.822	0.871	0.913	0.986	1.047	1.114	1.170	1.222	1.268
110	0.449	0.478	0.516	0.569	0.615	0.655	0.723	0.778	0.827	0.869	0.942	1.003	1.070	1.126	1.177	1.224
120	0.405	0.434	0.472	0.525	0.571	0.611	0.679	0.734	0.783	0.825	0.898	0.959	1.025	1.082	1.133	1.180
140	0.317	0.346	0.384	0.438	0.483	0.523	0.591	0.646	0.695	0.737	0.810	0.871	0.937	0.995	1.045	1.091
150	0.273	0.303	0.340	0.394	0.439	0.479	0.547	0.602	0.651	0.693	0.765	0.827	0.893	0.951	1.001	1.048
180	0.141	0.169	0.208	0.262	0.307	0.347	0.414	0.470	0.519	0.561	0.633	0.695	0.762	0.819	0.869	0.915
200	0.053	0.081	0.120	0.173	0.219	0.259	0.326	0.382	0.430	0.473	0.545	0.607	0.673	0.731	0.782	0.827

STEAM SATURATION TEMPERATURES AND LATENT HEAT - BTU/LB.*

Gauge Pressure PSI	Temp. °F.	Latent Heat
2	218.47	966.20
5	227.16	960.54
10	239.41	952.45
15	249.73	945.49
20	258.79	939.26
25	266.85	933.63
30	274.08	928.50
40	286.74	919.27
50	297.70	911.24
60	307.30	903.91
70	316.03	897.28

Gauge Pressure PSI	Temp.	Latent Heat
(continued)	(continued)	(continued)
80	323.89	891.08
90	331.16	888.42
100	337.86	880.82
110	344.22	874.85
120	350.09	870.05
130	355.65	865.48
140	360.89	861.12
150	365.92	856.92
175	377.47	847.02
200	387.88	838.00

* See Page 4 for Physical Limits.

PHYSICAL LIMITS/ MAINTENANCE/ COIL PRESSURE DROP

PHYSICAL LIMITS

Maximum conditions - standard length STEELfin (up to 60" tubes) may be used to 200 PSIG and 600°F. steam temperature. STEELfin should not be used at over 1000 FPM face velocity with sub-zero entering air.

Superheated steam - may be used within the 600°F steam temperature limitation. Because superheated steam must be held in the coil until it cools to the condensation temperature, coils for superheated steam must have additional face area. Size coils as for saturated steam and add 10% face area for each 100° of superheat.

Longer-than-standard-coils - are available, up to a maximum of 92" tube length. Because longer tubes result in greater total tube expansion and the possibility of stresses due to unequal expansion, the determining factor is the difference between the steam temperature (ST) from page 3 and the actual entering air temperature (EAT).

$$\text{Maximum tube length} = \frac{30 + 18,000}{\text{ST-EAT}}$$

Hot water - the large cross-section, single-pass tubes that make STEELfin ideal for steam heating applications also reduce hot water heating efficiency. Consult **nyb** for estimated hot water ratings for Type A coils.

PROPER MAINTENANCE

Externally - all coils become dirty and must be cleaned to avoid loss of heat capacity and increased air friction. Unlike many other coils, STEELfin may be cleaned with a stiff brush, high pressure air, water, or steam without damaging the fins.

Internally - poor trapping, piping, venting or a poor pH condition will cause internal corrosion but generally will result in fewer failures than with other coil designs with thinner tube walls (see Engineering Letter for proper piping guides). When freeze-ups occur, thaw out the coils by shutting off the air and turning on the steam.

APPLICATION FEATURES

Process Systems

Structurally strong wide-spaced fins allow cleaning with high pressure air or steam without deforming the fins as with alternate steam coil designs. Ideal for plants with dirty environments such as foundries. The galvanized steel surface also readily withstands strong cleaning agents required in food processing plants. These strength characteristics plus the ability to handle 200 psi steam make STEELfin a top choice for process heat applications.

Make-Up Air Systems

Thick-walled oval tubes surrounded by heavy steel fins which act as structural reinforcements make STEELfin capable of withstanding the severe temperature variations inherent to make-up air applications. The vertical tubes provide for rapid condensate drainage and uniform thermal expansion and contraction, minimizing coil stresses that frequently cause cracking in horizontal thin-wall coils. STEELfin's heavy steel construction even withstands the occasional freeze-ups that can occur during cold morning start-up conditions.

Space Heating

STEELfin's extra thick headers (10 gauge steel) and .060" thick SAE 950 steel tubes provide a steam channel that is inherently strong and totally compatible with the heating system in terms of chemical water treatment and expansion and contraction. This is the key to the superior life expectancy that STEELfin exhibits when compared to many other designs used in typical space heating applications.

COIL PRESSURE DROP

Table I gives the pressure drop of air at 70° F (.075 lb./cu. ft.). Calculate air volume and velocity at 70°F, read Table I, and multiply by average temperature factor from Table II [average temperature = entering air temperature + leaving air temperature ÷ 2].

Table I
Pressure Drop (" WG)

Type	# of Sections Deep	Face Velocity, Feet per Minute						
		400	500	600	700	800	1000	1200
A	1	0.06	0.08	0.12	0.15	0.20	0.30	0.43
	2	0.12	0.17	0.24	0.30	0.40	0.60	0.86
	3	0.18	0.25	0.36	0.45	0.60	0.90	1.29
	4	0.24	0.34	0.48	0.60	0.80	1.20	1.72
	5	0.30	0.42	0.60	0.75	1.00	1.50	2.15
	6	0.36	0.51	0.72	0.90	1.20	1.80	2.58
B	1	0.03	0.04	0.06	0.08	0.10	0.16	0.24
	2	0.05	0.08	0.12	0.16	0.21	0.33	0.48

Table II
Average Temperature Factors

Avg. Temp. °F.	Factor	Avg. Temp. °F.	Factor
0	0.868	90	1.038
10	0.887	100	1.057
20	0.906	110	1.076
30	0.924	120	1.094
40	0.943	130	1.113
50	0.962	140	1.132
60	0.981	150	1.151
70	1.000	160	1.170
80	1.019	170	1.189

DIMENSIONS

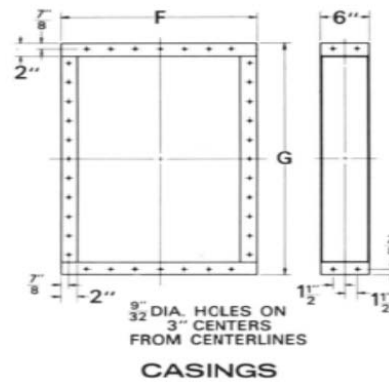
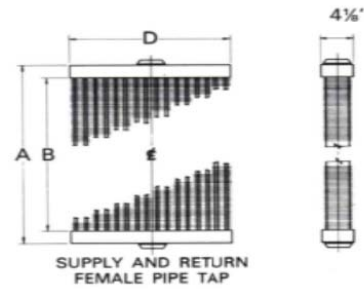
Standard coil nomenclature gives face area dimensions. First 2 digits denote width (D dimension) and last 2 digits denote length (B dimension) except those in tinted area.

Coils shown in tinted area are available but do not conform to above sizing nomenclature as they were created specifically for **nyb** Unit Heaters.

All coils are available with or without casings.

Casings for coils up to 30" tube length are 16 gauge...
over 30" tube length are 14 gauge.

Tappings are located for vertical installation.



DIMENSIONS (INCHES)

Size	Coil Face Area	A	B	D	F	G	Supply and Return Tapping	Number Mounting Holes Per Side	Weight (lbs.)
1524	2.50	28	24	15	19 1/4	32 1/4	2 1/2	28	115
1530	3.12	34	30	15	19 1/4	38 1/4	2 1/2	32	140
1536	3.75	40	36	15	19 1/4	44 1/4	2 1/2	36	170
1542	4.38	46	42	15	19 1/4	50 1/4	2 1/2	40	195
1548	5.00	52	48	15	19 1/4	56 1/4	2 1/2	44	225
2024	3.33	28	24	20	24 1/4	32 1/4	2 1/2	32	150
2030	4.17	34	30	20	24 1/4	38 1/4	2 1/2	36	190
2036	5.00	40	36	20	24 1/4	44 1/4	2 1/2	40	225
2042	5.83	46	42	20	24 1/4	50 1/4	2 1/2	44	260
2048	6.66	52	48	20	24 1/4	56 1/4	2 1/2	48	300
2536	6.25	40	36	25	29 1/4	44 1/4	2 1/2	44	280
2542	7.30	46	42	25	29 1/4	50 1/4	2 1/2	48	320
2548	8.34	52	48	25	29 1/4	56 1/4	2 1/2	52	375
2554	9.38	58	54	25	29 1/4	62 1/4	2 1/2	56	425
2560	10.41	64	60	25	29 1/4	68 1/4	2 1/2	60	470
3036	7.50	40	36	30	34 1/4	44 1/4	2 1/2	48	340
3039	8.13	43	39	30	34 1/4	47 1/4	2 1/2	52	365
3042	8.76	46	42	30	34 1/4	50 1/4	2 1/2	52	390
3048	10.00	52	48	30	34 1/4	56 1/4	2 1/2	56	450
3054	11.25	58	54	30	34 1/4	62 1/4	2 1/2	60	510
3060	12.50	64	60	30	34 1/4	68 1/4	2 1/2	64	560
3525	6.08	29	25	35	39 1/4	33 1/4	2 1/2	44	320
3536	8.75	40	36	35	39 1/4	44 1/4	2 1/2	52	390
3542	10.20	46	42	35	39 1/4	50 1/4	2 1/2	56	460
3548	11.65	52	48	35	39 1/4	56 1/4	2 1/2	60	525
3554	13.12	58	54	35	39 1/4	62 1/4	2 1/2	64	590
3560	14.60	64	60	35	39 1/4	68 1/4	2 1/2	68	660
2	0.70	13	10	10	14 1/4	17 1/4	1 1/2	16	38
46	0.96	13 3/8	11 1/2	11 3/4	16	17 5/8	1 1/2	20	50
812	1.29	15 7/8	13 1/2	13 7/8	18	20 1/8	1 1/2	20	70
1420	1.88	19 1/4	16 1/2	16 1/4	20 1/2	23 1/2	2	28	95
1824	2.78	22 7/8	20	20	24 1/4	27 1/8	2	28	130
4256	4.92	31	27	26 1/4	30 1/2	35 1/4	2 1/2	36	220