

ciency, the draft loss through the boiler, and the heat release in the combustion chamber are subjected to limitation by the code.⁵ Oil-fired boiler ratings are established by tests using gun-type oil burners and commercial grade No. 2 fuel oil. Stoker-fired ratings are based on the *Gross I=B=R Output* obtained by oil-fired tests. Gas-fired ratings for boilers having gross outputs greater than 300,000 Btu per hour, where no A.G.A. Rating is published, are based on the *Gross I=B=R Output* obtained by oil-fired tests. Gas-fired ratings for boilers having gross outputs less than 300,000 Btu per hour, where no A.G.A. Rating is published, are established by gas-fired tests with atmospheric, single-port-type burners using natural or manufactured gas or a mixture of these two

TABLE 2. SBI NET RATING DATA FOR Table 2 STEEL BOILERS—OIL-FIRED^a

SBI NET RATING			MINIMUM FURNACE VOLUME Cu Ft	MINIMUM HEATING SURFACE Sq Ft
Steam		Water Btuh		
Sq Ft (1)	Btuh (2)			
		(3)	(4)	(5)
275	66,000	74,000	2.5	16
320	77,000	87,000	2.9	19
400	96,000	108,000	3.6	24
550	132,000	149,000	5.0	32
700	168,000	189,000	6.4	41
900	216,000	243,000	8.2	53
1100	264,000	297,000	10.0	65
1300	312,000	351,000	11.8	77
1500	360,000	405,000	13.6	88
1800	432,000	486,000	16.4	106
2200	528,000	594,000	20.0	129
2600	624,000	702,000	23.6	153
3000	720,000	810,000	27.3	177
3500	840,000	945,000	31.8	206
4000	960,000	1,080,000	36.3	236
4500	1,080,000	1,215,000	40.9	265
5000	1,200,000	1,350,000	45.4	294

^a Stoker-Fired and Gas-Fired SBI Net Rating not greater than oil-fired rating. Hand-Fired Net SBI Rating (Steam) not greater than 14 times the square feet of heating surface.

gases. The A.G.A. Output Rating of a gas-designed boiler may be used in determining the *Net I=B=R Rating*.

The *Net I=B=R Rating* is determined from the *Gross I=B=R Output* by applying specified *Piping and Pickup Factors* which range from 2.36 to 1.40 for hand-fired boilers, and from 1.56 to 1.288 for automatically-fired steam boilers, and from 1.333 to 1.288 for automatically-fired hot water boilers. In all cases, the factor decreases as the boiler size increases. Table 3 is abstracted from the 1951 *I=B=R Boiler Rating Tables* in the code and illustrates the relationship between *Net I=B=R Rating* and *Gross I=B=R Output*.

The American Gas Association rates gas-designed boilers at 80 percent of the A.G.A. Input Rating. These ratings are determined by performance tests described in the A.G.A. Approval Requirements for Central Heating Appliances.

The Heating, Piping and Air Conditioning Contractors National Association has adopted a method, based on their physical characteristics for

TABLE 3. I=B=R BOILER RATING TABLE^a

HAND-FIRED										AUTOMATIC-FIRED									
Gross I=B=R Output 1000 Btu	Net I=B=R Rating			Piping and Pickup Factor	Time Available Fuel Will Last, Hr	Maximum Stack Height, Ft	Minimum Stack Area, Sq In.	Gross I=B=R Output 1000 Btu	Net I=B=R Rating				Piping and Pickup Factor		Minimum Stack Area, Sq In.	Maximum Allowable Draft Loss In. W.G.			
	Steam and water 1000 Btu	Steam Sq Ft	Steam 1000 Btu						Sq Ft	Water 1000 Btu	Steam 1000 Btu	Sq Ft	Water	Steam					
1	24	100	2.360	4	5	6	7	8	9	10	11	12	13	14	15				
218	96	400	2.268	4	7.50	29.0	50	37	28	94	100	1.333	1.360	50	0.044				
399	168	700	2.139	5.73	38.5	50	146	146	110	26	400	1.333	1.420	50	0.058				
489	240	1000	2.039	6.73	42.0	54	261	261	188	168	700	1.333	1.460	50	0.072				
614	312	1300	1.987	4.99	46.0	62	352	352	264	240	1000	1.333	1.466	52	0.084				
735	384	1600	1.914	4.73	49.0	68	451	451	338	312	1300	1.333	1.474	73	0.096				
854	456	1900	1.872	4.49	52.0	72	547	547	410	384	1600	1.333	1.484	68	0.108				
970	528	2200	1.805	4.24	54.5	76	642	642	482	456	1900	1.333	1.498	115	0.118				
1083	600	2500	1.774	4.00	56.5	80	736	736	552	528	2200	1.333	1.504	135	0.130				
1192	672	2800	1.744	4.15	59.0	84	829	829	622	600	2500	1.333	1.512	153	0.141				
1298	744	3100	1.717	4.07	61.0	88	920	920	690	672	2800	1.333	1.519	173	0.152				
1401	816	3400	1.691	4.00	63.0	92	1011	1011	760	744	3100	1.333	1.528	192	0.162				
1502	888	3700	1.664	4.00	64.5	96	1101	1101	820	816	3400	1.333	1.539	211	0.172				
1599	960	4000	1.638	4.00	66.5	100	1190	1190	892	888	3700	1.333	1.550	230	0.183				
1728	1056	4400	1.612	4.00	68.0	104	1278	1278	960	960	4000	1.333	1.561	249	0.192				
1849	1152	4800	1.605	4.00	70.0	108	1366	1366	1036	1036	4400	1.333	1.571	267	0.206				
1968	1248	5200	1.677	4.00	71.5	112	1454	1454	1132	1132	4800	1.333	1.581	284	0.215				
2086	1344	5600	1.652	4.00	73.0	116	1542	1542	1246	1246	5200	1.333	1.591	301	0.224				
2197	1440	6000	1.626	4.00	74.5	120	1630	1630	1344	1344	5600	1.333	1.601	318	0.233				
2307	1536	6400	1.600	4.00	76.0	124	1718	1718	1440	1440	6000	1.333	1.611	339	0.242				
2415	1632	6800	1.574	4.00	77.5	128	1806	1806	1536	1536	6400	1.333	1.621	359	0.251				
2470	1680	7200	1.547	4.00	79.0	132	1894	1894	1632	1632	6800	1.333	1.631	377	0.260				
2603	1800	7500	1.540	4.00	81.5	136	1982	1982	1728	1728	7200	1.333	1.641	395	0.269				
2733	1920	8000	1.495	4.00	83.0	140	2070	2070	1824	1824	7600	1.333	1.651	426	0.278				
2874	2040	8500	1.469	4.00	85.0	144	2158	2158	1920	1920	8000	1.333	1.661	446	0.287				
3024	2160	9000	1.443	4.00	87.0	148	2246	2246	2016	2016	8500	1.333	1.671	467	0.296				
3182	2280	9500	1.417	4.00	89.0	152	2334	2334	2112	2112	9000	1.333	1.681	486	0.305				
3380	2400	10000	1.400	4.00	91.5	156	2422	2422	2208	2208	9500	1.333	1.691	504	0.314				
4032	2880	12000	1.400	4.00	99.0	164	3344	3344	2304	2304	12000	1.333	1.701	522	0.323				
4704	3360	14000	1.400	4.00	106.5	172	4328	4328	2380	2380	14000	1.333	1.711	559	0.332				
5376	3840	16000	1.400	4.00	112.5	180	4946	4946	2440	2440	16000	1.333	1.721	603	0.341				
5956	4320	18000	1.400	4.00	118.0	188	5564	5564	2496	2496	18000	1.333	1.731	640	0.350				
6720	4800	20000	1.400	4.00	120.0	196	6182	6182	2552	2552	20000	1.333	1.741	677	0.359				