

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*

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

* 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*

HAND-FIRED										AUTOMATIC-FIRED									
Gross <i>I=B=R</i> Output 1000 Btu	Net <i>I=B=R</i> Rating			Piping and Pickup Factor	Time Available Fuel Will Last, Hr	Maximum Stack Height ^a Ft	Minimum Stack Area ^b Sq In.	Gross <i>I=B=R</i> Output 1000 Btu	Net <i>I=B=R</i> Rating			Piping and Pickup Factor		Minimum Stack Area ^b Sq In.	Maximum Allowable Draft Loss In. W.G.				
	Steam and water 1000 Btu	Steam							Water	1000 Btu	Sq Ft	Water	Steam						
		2	3																
57	24	100	2.360	7.50	39.0	60	7	37	9	10	11	12	13	50	0.044				
87	36	150	2.136	6.75	37.5	90	10	46	110	16	18	20	22	75	0.058				
117	48	200	1.912	6.00	36.0	120	14	61	148	21	24	27	30	100	0.072				
147	60	250	1.688	5.25	34.5	150	18	83	188	28	32	36	40	125	0.086				
177	72	300	1.464	4.50	33.0	180	24	109	240	36	40	45	50	150	0.099				
207	84	350	1.240	3.75	31.5	210	30	138	288	44	50	56	62	175	0.113				
237	96	400	1.016	3.00	30.0	240	36	170	336	54	60	67	74	200	0.127				
267	108	450	0.792	2.25	28.5	270	44	207	396	66	72	80	88	225	0.141				
297	120	500	0.568	1.50	27.0	300	52	246	474	84	84	93	102	250	0.155				
327	132	550	0.344	0.75	25.5	330	60	288	564	100	100	110	120	275	0.169				
357	144	600	0.120	0.00	24.0	360	72	333	642	120	120	132	144	300	0.183				
387	156	650	0.096	0.00	22.5	390	84	384	738	144	144	158	172	325	0.197				
417	168	700	0.072	0.00	21.0	420	96	432	832	168	168	183	200	350	0.211				
447	180	750	0.048	0.00	19.5	450	112	480	896	192	192	208	226	375	0.225				
477	192	800	0.024	0.00	18.0	480	120	528	960	216	216	232	250	400	0.239				
507	204	850	0.000	0.00	16.5	510	132	576	1056	240	240	256	274	425	0.253				
537	216	900	0.000	0.00	15.0	540	144	624	1152	264	264	280	297	450	0.267				
567	228	950	0.000	0.00	13.5	570	156	672	1248	288	288	304	318	475	0.281				
597	240	1000	0.000	0.00	12.0	600	168	720	1344	312	312	328	339	500	0.295				
627	252	1050	0.000	0.00	10.5	630	180	768	1440	336	336	352	369	525	0.309				
657	264	1100	0.000	0.00	9.0	660	192	816	1536	360	360	376	389	550	0.323				
687	276	1150	0.000	0.00	7.5	690	204	864	1632	384	384	400	406	575	0.337				
717	288	1200	0.000	0.00	6.0	720	216	912	1728	408	408	424	431	600	0.351				
747	300	1250	0.000	0.00	4.5	750	228	960	1824	432	432	448	454	625	0.365				
777	312	1300	0.000	0.00	3.0	780	240	1008	1920	456	456	472	478	650	0.379				
807	324	1350	0.000	0.00	1.5	810	252	1056	2016	480	480	496	502	675	0.393				
837	336	1400	0.000	0.00	0.0	840	264	1104	2112	504	504	520	526	700	0.407				
867	348	1450	0.000	0.00	0.0	870	276	1152	2208	528	528	544	550	725	0.421				
897	360	1500	0.000	0.00	0.0	900	288	1200	2304	552	552	568	574	750	0.435				
927	372	1550	0.000	0.00	0.0	930	300	1248	2400	576	576	592	598	775	0.449				
957	384	1600	0.000	0.00	0.0	960	312	1296	2496	600	600	616	622	800	0.463				
987	396	1650	0.000	0.00	0.0	990	324	1344	2592	624	624	640	646	825	0.477				
1017	408	1700	0.000	0.00	0.0	1020	336	1392	2688	648	648	664	670	850	0.491				
1047	420	1750	0.000	0.00	0.0	1050	348	1440	2784	672	672	688	694	875	0.505				
1077	432	1800	0.000	0.00	0.0	1080	360	1488	2880	696	696	712	718	900	0.519				
1107	444	1850	0.000	0.00	0.0	1110	372	1536	2976	720	720	736	742	925	0.533				
1137	456	1900	0.000	0.00	0.0	1140	384	1584	3072	744	744	760	766	950	0.547				
1167	468	1950	0.000	0.00	0.0	1170	396	1632	3168	768	768	784	790	975	0.561				
1197	480	2000	0.000	0.00	0.0	1200	408	1680	3264	792	792	808	814	1000	0.575				
1227	492	2050	0.000	0.00	0.0	1230	420	1728	3360	816	816	832	838	1025	0.589				
1257	504	2100	0.000	0.00	0.0	1260	432	1776	3456	840	840	856	862	1050	0.603				
1287	516	2150	0.000	0.00	0.0	1290	444	1824	3552	864	864	880	886	1075	0.617				
1317	528	2200	0.000	0.00	0.0	1320	456	1872	3648	888	888	904	910	1100	0.631				
1347	540	2250	0.000	0.00	0.0	1350	468	1920	3744	912	912	928	934	1125	0.645				
1377	552	2300	0.000	0.00	0.0	1380	480	1968	3840	936	936	952	958	1150	0.659				
1407	564	2350	0.000	0.00	0.0	1410	492	2016	3936	960	960	976	982	1175	0.673				
1437	576	2400	0.000	0.00	0.0	1440	504	2064	4032	984	984	1000	1006	1200	0.687				
1467	588	2450	0.000	0.00	0.0	1470	516	2112	4128	1008	1008	1024	1030	1225	0.701				
1497	600	2500	0.000	0.00	0.0	1500	528	2160	4224	1032	1032	1048	1054	1250	0.715				
1527	612	2550	0.000	0.00	0.0	1530	540	2208	4320	1056	1056	1072	1078	1275	0.729				
1557	624	2600	0.000	0.00	0.0	1560	552	2256	4416	1080	1080	1096	1102	1300	0.743				
1587	636	2650	0.000	0.00	0.0	1590	564	2304	4512	1104	1104	1120	1126	1325	0.757				
1617	648	2700	0.000	0.00	0.0	1620	576	2352	4608	1128	1128	1144	1150	1350	0.771				
1647	660	2750	0.000	0.00	0.0	1650	588	2400	4704	1152	1152	1168	1174	1375	0.785				
1677	672	2800	0.000	0.00	0.0	1680	600	2448	4800	1176	1176	1192	1198	1400	0.799				
1707	684	2850	0.000	0.00	0.0	1710	612	2496	4896	1200	1200	1216	1222	1425	0.813				
1737	696	2900	0.000	0.00	0.0	1740	624	2544	4992	1224	1224	1240	1246	1450	0.827				
1767	708	2950	0.000	0.00	0.0	1770	636	2592	5088	1248	1248	1264	1270	1475	0.841				
1797	720	3000	0.000	0.00	0.0	1800	648	2640	5184	1272	1272	1288	1294	1500	0.855				
1827	732	3050	0.000	0.00	0.0	1830	660	2688	5280	1296	1296	1312	1318	1525	0.869				
1857	744	3100	0.000	0.00	0.0	1860	672	2736	5376	1320	1320	1336	1342	1550	0.883				
1887	756	3150	0.000	0.00	0.0	1890	684	2784	5472	1344	1344	1360	1366	1575	0.897				
1917	768	3200	0.000	0.00	0.0	1920	696	2832	5568	1368	1368	1384	1390	1600	0.911				
1947	780	3250	0.000	0.00	0.0	1950	708	2880	5664	1392	1392	1408	1414	1625	0.925				
1977	792	3300	0.000	0.00	0.0	1980	720	2928	5760	1416	1416	1432	1438	1650	0.939				
2007	804	3350	0.000	0.00	0.0	2010	732	2976	5856	1440	1440	1456	1462	1675	0.953				
2037	816	3400	0.000	0.00	0.0	2040	744	3024	5952	1464	1464	1480	1486	1700	0.967				
2067	828	3450	0.000	0.00	0.0	2070	756	3072	6048	1488	1488	1504	1510	1725	0.981				
2097	840	3500	0.000	0.00	0.0	2100	768	3120	6144	1512	1512	1528	1534	1750	0.995				
2127	852	3550	0.000	0.00	0.0	2130	780	3168	6240	1536	1536	1552	1558	1775	1.009				
2157	864	3600	0.000	0.00	0.0	2160	792	3216	6336	1560	1560	1576	1582	1800	1.023				
2187	876	3650	0.000	0.00	0.0	2190	804	3264	6432	1584	1584	1600	1606	1825	1.037				
2217	888	3700	0.000	0.00	0.0	2220	816	3312	6528	1608	1608	1624	1630	1850	1.051				
2247	900	3750	0.000	0.00	0.0	2250	828	3360	6624	1632	1632	1648	1654	1875	1.065				
2277	912	3800	0.000	0.00	0.0	2280	840	3408	6720	1656	1656	1672	1678	1900	1.079				
2307	924	3850	0.000	0.00	0.0	2310	852	3456	6816	1680	1680	1696	1702	1925	1.093				
2337	936	3900	0.000	0.00	0.0	2340	864	3504	6912	1704	1704	1720	1726	1950	1.107				
2367	948	3950	0.000	0.00	0.0	2370	876	3552	7008	1728	1728	1744	1750	1975	1.121				
2397	960	4000	0.000	0.00	0.0	2400	888	3600	7104	1752	1752	1768	1774	2000	1.135				
2427	972	4050	0.000	0.00	0.0	2430	900	3648	7200	1776	1776	1792	1798	2025	1.149				
2457	984	4100	0.000	0.00	0.0	2460	912	3696	7296	1800	1800	1816	1822	2050	1.163				
2487	996	4150	0.000	0.00	0.0	2490	924	3744	7392	1824	1824	1840	1846	2075	1.177				
2517	1008	4200	0.000	0.00	0.0	2520	936	3792	7488	1848	1848	1864	1870	2100	1.191				
2547	1020	4250	0.000	0.00	0.0	2550	948	3840	7584	1872	1872	1888	1894	2125	1.205				
2577	1032	4300	0.00																