

# M5M

## Watertube Boiler

2000-6000 MBTU



### *Dimensions and Ratings*

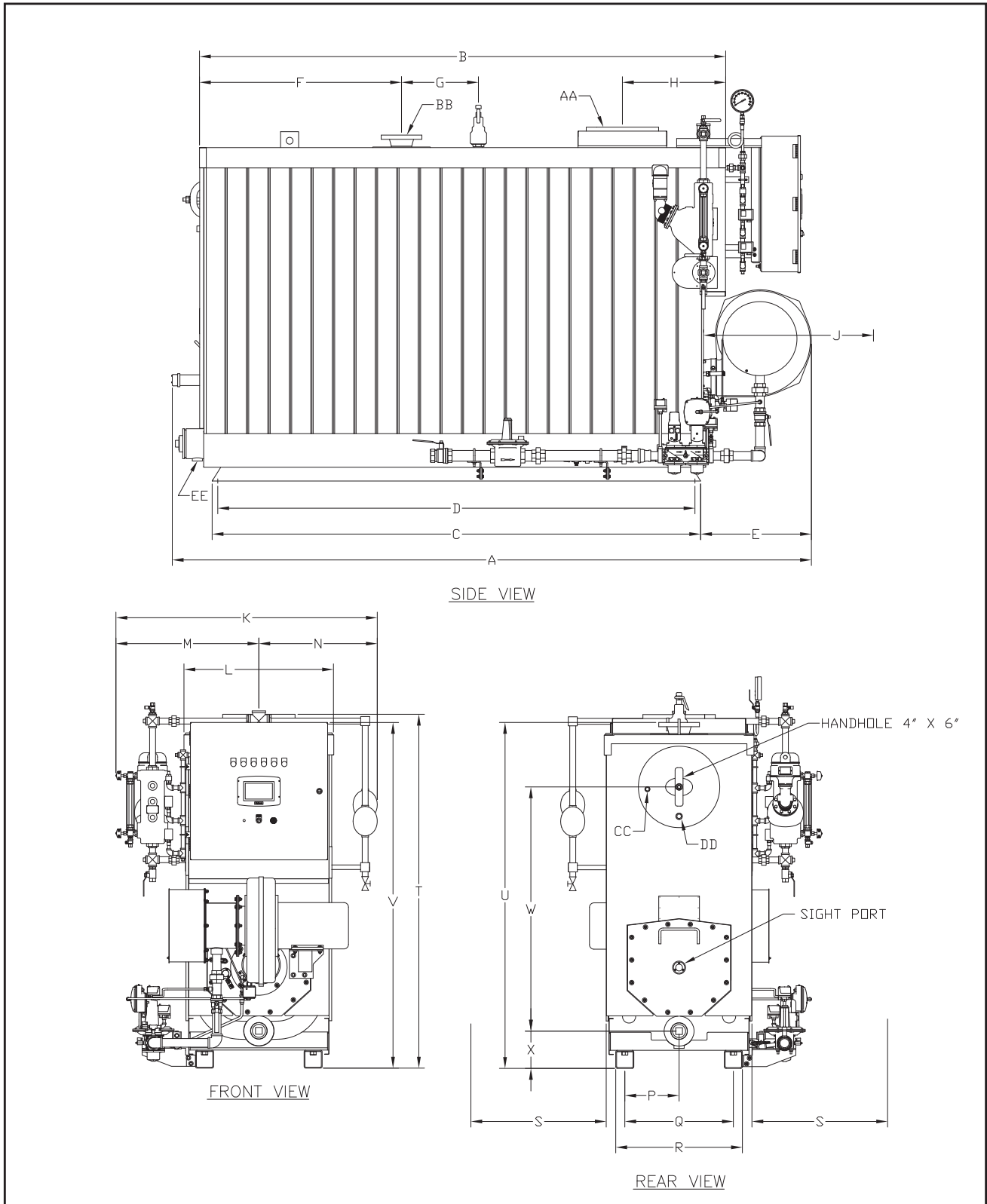


Figure 1. M5M Dimension Diagram - Steam

Table 1. M5M Steam Dimensions Inches

DIMENSIONS (inches)		Boiler Size							
		2000	2500	3000	3500	4000	4500	5000	6000
<b>Lengths</b>									
A	Overall	79	94.5	94.5	110	110	126	126	141.5
B	Pressure Vessel w/casing	52.25	68.38	68.38	84	84	100.63	100.63	116.25
C	Base Frame	45.5	61.13	61.13	76.75	76.75	92.38	92.38	108
D	Base Frame Anchor Holes	43	58.5	58.5	74.5	74.5	90	90	105.5
E	Blower Extension	19	19	20.5	20.5	24.5	24.5	24.5	24.5
F	Rear Casing to Steam Nozzle	16.38	24.38	24.38	30.13	30.13	36.75	36.75	44.63
G	Steam Nozzle to Safety Valve 15#	7	12	12	11.5	11.5	17	17	17
	Steam Nozzle to Safety Valve 150#	8	12	12	17	17	13	13	17
H	Front Casing to Stack Connection	18.19	18.69	18.69	18.69	18.69	22.81	22.81	22.81
J	Front Clearance for Burner Removal	20	20	24.5	24.5	30.5	30.5	39	39
<b>Widths</b>									
K	Overall	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
L	Casing	33	33	33	33	33	33	33	33
M	Center to water Column	33	33	33	33	33	33	33	33
N	Center to Aux. Water Column	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
P	Boiler Centerline to Base Centerline	12	12	12	12	12	12	12	12
Q	Base Frame Anchor Holes	24	24	24	24	24	24	24	24
R	Base Frame Outside	28	28	28	28	28	28	28	28
S	Tube Removal Each Side	30	30	30	30	30	30	30	30
<b>Heights</b>									
T	Overall Base to Stack Connection	78.25	78.25	78.25	78.25	78.25	78.25	78.25	78.25
U	Base to Steam Nozzle 15#	73.5	73.5	73.5	76.5	76.5	76.5	76.5	76.5
	Base to Steam Nozzle 150#	73.5	73.5	73.5	73.5	73.5	76.5	76.5	76.5
V	Base to Top of Control Panel	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5
W	Drum Centerline Spacing	54	54	54	54	54	54	54	54
X	Base to Lower Drum Center	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25
<b>Connections</b>									
AA	O.D. Stack Sleeve Connection	12	12	12	12	12	16	16	16
BB	Steam Nozzle 15#	4	4	4	6	6	6	6	6
	Steam Nozzle 150#	2 1/2	3	3	3	3	4	4	4
CC	Surface Blowoff	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
DD	Feedwater	1	1	1	1	1	1	1	1
EE	Bottom Blowdown 15#	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
	Bottom Blowdown 150#	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4

**Table 2. M5M Steam Dimensions Millimeters**

		Boiler Size							
DIMENSIONS (millimeters)		2000	2500	3000	3500	4000	4500	5000	6000
<b>Lengths</b>									
A	Overall	2007	2400	2400	2794	2794	3200	3200	3594
B	Pressure Vessel w/casing	1327	1737	1737	2134	2134	2556	2556	2953
C	Base Frame	1156	1553	1553	1949	1949	2346	2346	2743
D	Base Frame Anchor Holes	1092	1486	1486	1892	1892	2286	2286	2680
E	Blower Extension	483	483	521	521	622	622	622	622
F	Rear Casing to Steam Nozzle	416	619	619	765	765	933	933	1134
G	Steam Nozzle to Safety Valve 15#	178	305	305	292	292	432	432	432
	Steam Nozzle to Safety Valve 150#	203	305	305	432	432	330	330	432
H	Front Casing to Stack Connection	462	475	475	475	475	579	579	579
J	Front Clearance for Burner Removal	508	508	622	622	775	775	991	991
<b>Widths</b>									
K	Overall	1461	1461	1461	1461	1461	1461	1461	1461
L	Casing	838	838	838	838	838	838	838	838
M	Center to water Column	838	838	838	838	838	838	838	838
N	Center to Aux. Water Column	622	622	622	622	622	622	622	622
P	Boiler Centerline to Base Centerline	305	305	305	305	305	305	305	305
Q	Base Frame Anchor Holes	610	610	610	610	610	610	610	610
R	Base Frame Outside	711	711	711	711	711	711	711	711
S	Tube Removal Each Side	762	762	762	762	762	762	762	762
<b>Heights</b>									
T	Overall Base to Stack Connection	1988	1988	1988	1988	1988	1988	1988	1988
U	Base to Steam Nozzle 15#	1867	1867	1867	1943	1943	1943	1943	1943
	Base to Steam Nozzle 150#	1867	1867	1867	1867	1867	1943	1943	1943
V	Base to Top of Control Panel	1943	1943	1943	1943	1943	1943	1943	1943
W	Drum Centerline Spacing	1372	1372	1372	1372	1372	1372	1372	1372
X	Base to Lower Drum Center	210	210	210	210	210	210	210	210

For connection sizes (inches) see Table 1

Table 3. M5M Ratings Steam

Description	Units	Boiler Size							
		2000	2500	3000	3500	4000	4500	5000	6000
Input Max.	BTU/Hr.	2,000,000	2,500,000	3,000,000	3,500,000	4,000,000	4,500,000	5,000,000	6,000,000
	KCAL/Hr.	504,000	630,000	756,000	882,000	1,008,000	1,134,000	1,260,000	1,512,000
Natural Gas (1000 Btu/ft3)	FT3/Hr	2000	2500	3000	3500	4000	4500	5000	6000
Natural Gas	M3/Hr	57	71	85	99	113	127	142	170
Output at 100% Firing	BTU/Hr.	1,600,000	2,000,000	2,400,000	2,800,000	3,200,000	3,600,000	4,000,000	4,800,000
	KCAL/Hr.	403,200	504,000	604,800	705,600	806,400	907,200	1,008,000	1,209,600
	BHP	48	60	72	84	96	108	119	143
	KW	469	586	703	821	938	1055	1172	1407
Steam Capacity (from and at 212 deg F)	lb/hr	1656	2070	2484	2898	3312	3726	4105	4933
	kg/hr	751	939	1127	1315	1502	1690	1862	2238
MAWP	PSI	15/150	15/150	15/150	15/150	15/150	15/150	15/150	15/150
	BAR	1.0/10.3	1.0/10.3	1.0/10.3	1.0/10.3	1.0/10.3	1.0/10.3	1.0/10.3	1.0/10.3
Water Content (Standard)	Gallons (U.S.)	65.3	90.0	90.0	112.9	112.9	139.4	139.4	163.0
	Gallons (Imp.)	54.4	74.9	74.9	94.0	94.0	116.1	116.1	135.7
	Liters	247.3	340.5	340.5	427.3	427.3	527.8	527.8	616.9
Water Content (Low Water Volume)	Gallons (U.S.)	31.9	43.8	43.8	54.6	54.6	68.0	68.0	74.7
	Gallons (Imp.)	26.6	36.5	36.5	45.5	45.5	56.6	56.6	62.2
	Liters	120.9	165.9	165.9	206.8	206.8	257.3	257.3	282.8
Weight w/o Water (Shipping)	Pounds	3,100	3,700	3,700	4,100	4,100	4,700	4,700	5,400
	Kg	1406	1678	1678	1860	1860	2132	2132	2449
Operating Weight (Standard)	Pounds	3,644	4,450	4,450	5,041	5,041	5,862	5,862	6,758
	Kg	1653	2018	2018	2287	2287	2659	2659	3066
Operating Weight (Low Water Volume)	Pounds	3,366	4,065	4,065	4,555	4,555	5,266	5,266	6,023
	Kg	1527	1844	1844	2066	2066	2389	2389	2732
Fan Motor Size	HP	2	2	3	3	5	5	5	7.5
Operating Voltage, Fan	Volts/Ph/Hz	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Control Circuit	Volts/Ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60
Flue Gas Mass Flow @ 100% Firing (Natural Gas)	lb/hr	2266	2832.5	3399	3965.5	4532	5098.5	5665	6798
	kg/h	1028	1285	1542	1799	2056	2313	2570	3084

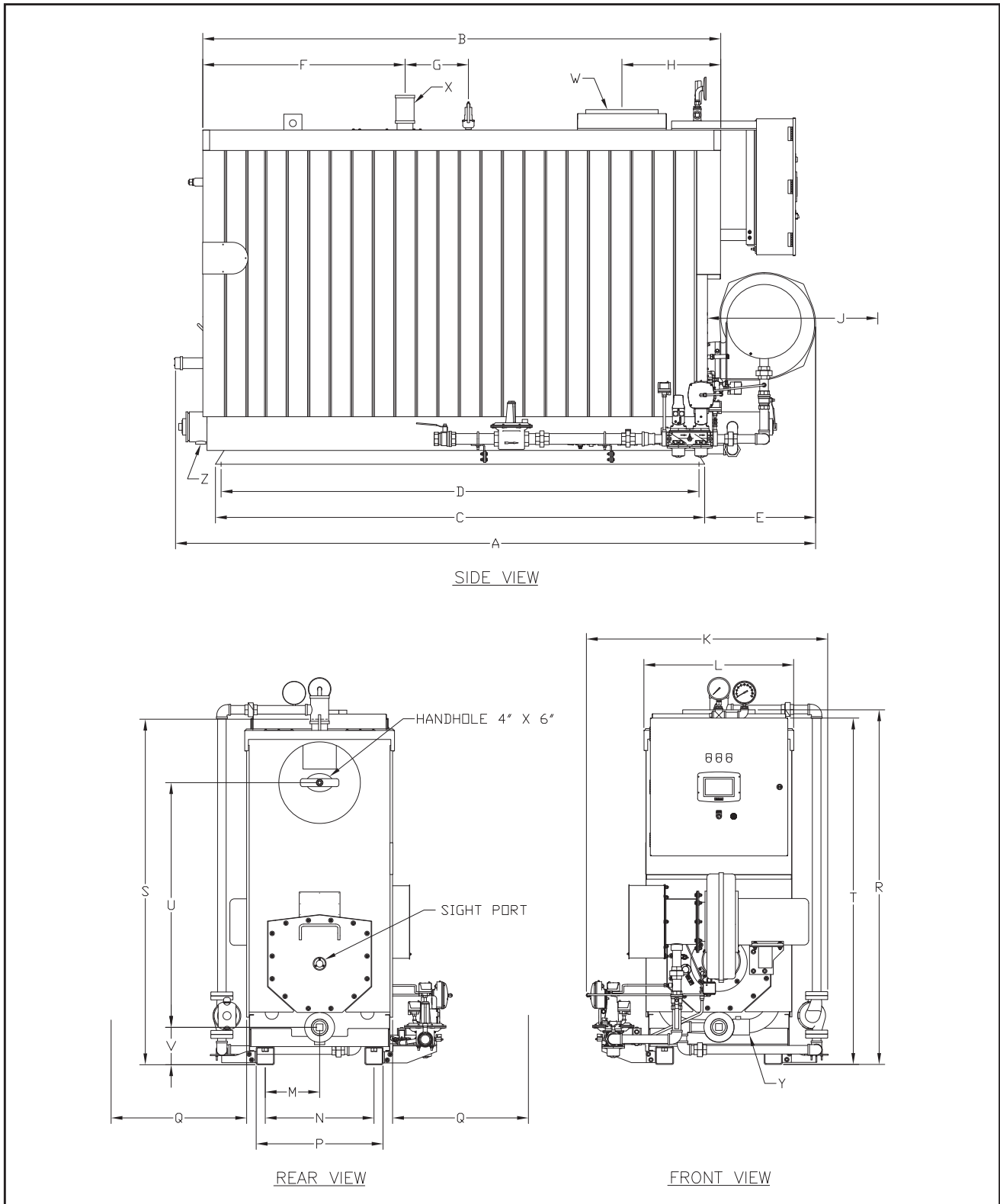


Figure 2. M5M Dimension Diagram - Hot Water

Table 4. M5M Hot Water Dimensions Inches

		Boiler Size							
	DIMENSIONS (inches)	2000	2500	3000	3500	4000	4500	5000	6000
<b>Lengths</b>									
A	Overall	79	94.5	94.5	110	110	126	126	141.5
B	Pressure Vessel w/casing	51.25	67.38	67.38	83	83	99.63	99.63	115.25
C	Base Frame	45.5	61.13	61.13	76.75	76.75	92.38	92.38	108
D	Base Frame Anchor Holes	43	58.5	58.5	74.5	74.5	90	90	105.5
E	Blower Extension	19	19	20.5	20.5	24.5	24.5	24.5	24.5
F	Rear Casing to Supply Nozzle	16.38	24.38	24.38	30.13	30.13	36.75	36.75	44.63
G	Supply Nozzle to Relief Valve	7	12	12	10.75	10.75	13	13	14
H	Front Casing to Stack Connection	17.19	17.69	17.69	17.69	17.69	21.81	21.81	21.81
J	Front Clearance for Burner Removal	20	20	24.5	24.5	30.5	30.5	39	39
<b>Widths</b>									
K	Overall	50	50	50	54	54	54	54	54
L	Casing	33	33	33	33	33	33	33	33
M	Boiler Centerline to Base Centerline	12	12	12	12	12	12	12	12
N	Base Frame Anchor Holes	24	24	24	24	24	24	24	24
P	Base Frame Outside	28	28	28	28	28	28	28	28
Q	Tube Removal Each Side	30	30	30	30	30	30	30	30
<b>Heights</b>									
R	Overall Base to Stack Connection	78.25	78.25	78.25	78.25	78.25	78.25	78.25	78.25
S	Base to Supply Nozzle	76.25	76.25	76.25	76.25	76.25	76.25	76.25	76.25
T	Base to Top of Control Panel	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5
U	Drum Centerline Spacing	54	54	54	54	54	54	54	54
V	Base to Lower Drum Center	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25
<b>Connections</b>									
W	O.D. Stack Sleeve Connection	12	12	12	12	12	16	16	16
X	Supply Nozzle	3	3	3	4	4	4	4	4
Y	Return Nozzle	3	3	3	4	4	4	4	4
Z	Drain	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2

**Table 5. M5M Hot Water Dimensions Millimeters**

DIMENSIONS (millimeters)		Boiler Size							
		2000	2500	3000	3500	4000	4500	5000	6000
<b>Lengths</b>									
A	Overall	2007	2400	2400	2794	2794	3200	3200	3594
B	Pressure Vessel w/casing	1302	1711	1711	2108	2108	2531	2531	2927
C	Base Frame	1156	1553	1553	1949	1949	2346	2346	2743
D	Base Frame Anchor Holes	1092	1486	1486	1892	1892	2286	2286	2680
E	Blower Extension	483	483	521	521	622	622	622	622
F	Rear Casing to Supply Nozzle	416	619	619	765	765	933	933	1134
G	Supply Nozzle to Relief Valve	178	305	305	273	273	330	330	356
H	Front Casing to Stack Connection	437	449	449	449	449	554	554	554
J	Front Clearance for Burner Removal	508	508	622	622	775	775	991	991
<b>Widths</b>									
K	Overall	1270	1270	1270	1372	1372	1372	1372	1372
L	Casing	838	838	838	838	838	838	838	838
M	Boiler Centerline to Base Centerline	305	305	305	305	305	305	305	305
N	Base Frame Anchor Holes	610	610	610	610	610	610	610	610
P	Base Frame Outside	711	711	711	711	711	711	711	711
Q	Tube Removal Each Side	762	762	762	762	762	762	762	762
<b>Heights</b>									
R	Overall Base to Stack Connection	1988	1988	1988	1988	1988	1988	1988	1988
S	Base to Supply Nozzle	1937	1937	1937	1937	1937	1937	1937	1937
T	Base to Top of Control Panel	1943	1943	1943	1943	1943	1943	1943	1943
U	Drum Centerline Spacing	1372	1372	1372	1372	1372	1372	1372	1372
V	Base to Lower Drum Center	210	210	210	210	210	210	210	210

For connection sizes (inches) see Table 4



Table 6. M5M Ratings Hot Water

Description	Units	Boiler Size							
		2000	2500	3000	3500	4000	4500	5000	6000
Input Max.	BTU/Hr.	2,000,000	2,500,000	3,000,000	3,500,000	4,000,000	4,500,000	5,000,000	6,000,000
	KCAL/Hr.	504,000	630,000	756,000	882,000	1,008,000	1,134,000	1,260,000	1,512,000
Natural Gas (1000 Btu/ft3)	FT3/Hr	2000	2500	3000	3500	4000	4500	5000	6000
Natural Gas	M3/Hr	57	71	85	99	113	127	142	170
Output 100% Firing	BTU/Hr.	1,630,000	2,037,500	2,445,000	2,852,500	3,260,000	3,667,500	4,075,000	4,890,000
	KCAL/Hr.	410,760	513,450	616,140	718,830	821,520	924,210	1,026,900	1,232,280
MAWP	PSI	140	140	140	140	140	140	140	140
	BAR	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Operating Temp., Max.	°F	250	250	250	250	250	250	250	250
	°C	121	121	121	121	121	121	121	121
Water Content	Gallons (U.S.)	96	131	131	163	163	200	200	233
	Gallons (Imp.)	79.94	109.08	109.08	135.70	135.70	166.50	166.50	194.01
	Liters	363.4	495.9	495.9	616.9	616.9	756.9	756.9	882.0
Weight w/o Water (Shipping)	Pounds	3,100	3,700	3,700	4,100	4,100	4,700	4,700	5,400
	Kg	1406	1678	1678	1860	1860	2132	2132	2449
Operating Weight	Pounds	3,900	4,792	4,792	5,458	5,458	6,366	6,366	7,342
	Kg	1769	2174	2174	2476	2476	2888	2888	3330
Standby Heat Loss	BTU/Hr	4,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000
	Watts	1172	1465	1758	2051	2344	2637	2930	3516
Fan Motor Size	HP	2	2	3	3	5	5	5	7.5
Operating Voltage, Fan	Volts/Ph/Hz	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Control Circuit	Volts/Ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60
Flue Gas Mass Flow @ 100% Firing (Natural Gas)	lb/hr	2266	2832.5	3399	3965.5	4532	5098.5	5665	6798
	kg/h	1028	1285	1542	1799	2056	2313	2570	3084

