Boulter

COMMISSIONING DATA FOR CLASS 2 KEROSENE

CAMRAY QUARTET

Model	Kw	BTU 000's	Head	Nozzle	Pump (PSI) pressure	Bar	CO2 %	Flue Gas °C
40/60	12	40	Fixed	0.4 x 80 ° h	100	6.9	10	160
40/60	15	50	Fixed	0.5 x 80 ° h	100	6.9	11	180
40/60	17.5	60	Fixed	0.6 x 60 ° w	100	6.9	12	200
60/80	17.5	60	Fixed	0.6 x 60 °w	100	3.2	11.5	195
60/80	20.5	70	Fixed	0.65 x 60 ° w	115	8	11.5	207
60/80	23.4	80	Fixed	0.75 x 60 ° w	110	7.6	12	214
90/110	26.3	90	1	0.75 x 60 ° w	140	9.5	12	195
90/110	30	100	1	0.85 x 60 ° w	135	9.3	12	200
90/110	32.2	110	1	1.0 x 60 ° w	115	8	12	215
110/150	32.2	110	1	1.0 x 60 ° w	115	8	12	165
110/150	38	130	2	1.25 x 60 ° w	105	7.2	12	193
110/150	44	150	3	1.35 x 60 ° w	120	8.3	12	204

CAMRAY 3

40/50	12	40	Fixed	0.4 x 80 ° h	100	7.03	10.5	140/160
40/50	15	50	Fixed	0.5 x 60 ° w	100	7.03	11	165/195
50/70	15	50	Fixed	0.5 x 60 ° w	100	7.03	11.5	165/195
50/70	17.5	60	Fixed	0.6 x 60 ° w	100	7.03	12	165/195
50/70	20.5	70	Fixed	0.65 x 60 ° w	115	8.08	12	195/225
70/90	20.5	70	Fixed	0.65 x 60 ° w	115	8.08	12	190/220
70/90	23.4	80	Fixed	0.75 x 60 ° w	115	8.08	12	210/240
70/90	26.3	90	Fixed	0.85 x 60 ° w	115	8.08	12	220/250
90/130	26.3	90	0	0.85 x 60 ° w	115	8.08	12	190/210
90/130	32.2	110	0	1.0 x 60 ° w	120	8.44	12	205/235
90/130	38	130	1	1.25 x 60 ° w	110	7.73	12	230/260
135/175	40	135	0	1.35 x 60 ° w	100	7.03	12	200/220
135/175	45.5	155	1	1.50 x 60 ° w	110	7.73	12	215/235
135/175	51	175	2	1.75 x 60 ° w	100	7.03	12	240/260

CAMRAY COMBI

90/130	26.3	90	Closed	0.85 x 60 ° w	100	6.9	12	170/190
90/130	32.2	110	Closed	1.0 x 60 ° w	120	8.3	12	195/210
90/130	38	130	0.5	1.25 x 60 ° w	100	6.9	12	215/225

ECONOMY

50/70	15	50	Fixed	0.4 x 80 ° ES	115	8	10.5	190
50/70	17.5	60	Fixed	0.5 x 80 ° ES	110	7.6	12	205
50/70	20.5	70	Fixed	0.65 x 80 ° ES	110	7.6	12	210
70/90	20.5	70	Fixed	0.65 x 80 ° ES	110	7.6	12	224
70/90	23.4	80	Fixed	0.75 x 80 ° ES	110	7.6	12	228
70/90	26.3	90	Fixed	0.75 x 80 ° ES	138	9.5	12	238

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COMMISSIONING DATA FOR CLASS 2 KEROSENE

CAMRAY COMPACT

Model	Kw	BTU 000's	Head	Nozzle	Pump (PSI) pressure	Bar	CO2 %	Flue Gas °C
40/50	12	40	Fixed	0.4 x 60 ° w	100			
40/50	15	50	Fixed	0.5 x 60 ° w	100			
50/70	15	50	Fixed	0.5 x 60 ° w	100	6.9	10.5	200
50/70	20.5	70	Fixed	0.65 x 60 ° w	115	8	11.5	220

CAMRAY 15/21 EXTERNAL & INTERNAL

15/21EX	15	50	Fixed	0.5 x 60 ° w	105	7.2	10	210/220
15/21EX	17	58	Fixed	0.55 x 60 ° w	105	7.2	10.5	225/235
15/21EX	19	65	Fixed	0.6 x 60 ° w	110	7.6	11	240/250
15/21EX	21	72	Fixed	0.6 x 60 ° w	120	8.27	11	260/270

CAMRAY 15/19 EXTERNAL

15/19EX	15	50	Fixed	0.5 x 60 ° w	105	7.2	10	210/220
15/19EX	17	58	Fixed	0.55 x 60 ° w	105	7.2	10.5	225/235
15/19EX	19	65	Fixed	0.6 x 60 ° w	110	7.6	11	240/250

CAMRAY 2

41/48	12	41	Fixed	0.45 x 70 °S	100	7.03	10.5	211/210
41/48	14	48	Fixed	0.45 x 70 °S	130	9.14	11.5	230
51/67	15	51	Fixed	0.5 x 60 °W	115	8.08	10.5	220
51/67	17.6	60	Fixed	0.6 x 60 °W	115	8.08	11	235
51/67	19.6	67	Fixed	0.65 x 60°W	115	8.08	11.5	245
65/85	19	65	Fixed	0.65 x 60°W	110	7.73	11	245
65/85	22	75	Fixed	0.75 x 60°W	100	7.03	11.5	250
65/85	24.9	85	Fixed	0.85 x 60°W	110	7.73	12	270
90/130	26.3	90	Closed	0.85 x 60°W	115	8.08	12	230
90/130	29.3	100	Closed	1.00 x 60°W	105	7.38	12	250
90/130	38	130	Closed	1.25 x 60°W	110	7.73	12	280
135/175	39.5	135	Closed	1.35 x 60°W	115	8.08	12	255
135/175	45.4	155	1.5	1.5 x 60°W	115	8.08	12	260
135/175	51.3	175	2	1.75 x 60°W	110	7.73	12.25	27

ECONOMY COMBI (KSI)

Model	Kw	BTU 000's	Head	Nozzle	Pump (PSI) Pressure	Bar	CO2 %	Flue Gas °C
90	26.3	90	Fixed	0.75 x 80°ES	138	9.5	12	220-260
130	38	130	2	1.25 x 60°W	105	7.2	11.5	200-230

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COMMISSIONING DATA FOR CLASS 2 KEROSENE

CAMRAY 5

Model	Kw	Btu 000's	Nozzle	PSI	Bar	CO2	Flue Exit	Test Point C
40/65	11.7	40	0.4 x 60°ES	100	7.0	10	165-195	215-245
40/65	16.1	55	0.5 x 60°ES	115	8.0	11	180-225	260-285
40/65	19	65	0.6 x 60°ES	110	7.6	12	180-245	295-320
65/95	19	65	0.6 x 60°ES	110	7.6	11.5	200-220	280-300
65/95	23.4	80	0.75 x 60°ES	105	7.2	11.5	220-240	310-335
65/95	27.8	95	0.85 x 60°ES	115	8.0	12.0	240-260	340-360
65/95 A	19	65	0.75 x 60°W	110	7.6	10	180	280-300
65/95 A	23.4	80	0.85 x 60°W	105	7.2	11	200	310-335
65/95 A	27.8	95	0.85 x 60°ES	115	8.0	12.0	204	340-360
100/140	29.3	100	1.0 x 60°W	115	8.0	12.0	200-230	225-235
100/140	33.7	115	1.1 x 60 °W	125	8.6	12.0	200-235	230-250
100/140	38.1	130	1.25 x 60°W	125	8.6	12.0	230-260	240-270
100/140	41	140	1.35 x 60°W	110	7.4	12.0	200-260	240-270
150/200	43.9	150	1.35 x 60°W	120	8.2	11	200	210-220
150/200	51.2	175	1.50 x 60°W	130	8.8	11.5	210	225-235
150/200*	58.6	200	1.75 x 60°W	125	8.5	11	220	245-255

*** Note:- for 200,000 Btu/h remove and discard inner blast tube sleeve**

CLASSIC

Model	Kw	Btu 000's	Head	Nozzle	PSI	Bar	C02%	Flue gas °C
50/70	14.7	50	Fixed	0.40 x 80°ES	115	7.9	10.5	190
50/70	17.6	60	Fixed	0.50 x 80°ES	110	7.6	12	205
50/70	20.5	70	Fixed	0.65 x 80°ES	110	7.6	12	210
50/70 A	14.7	50	Fixed	0.50 x 80°ES	100	7.0	10	190
50/70 A	17.6	60	Fixed	0.50 x 80°ES	135	9.3	11	205
50/70 A	20.5	70	Fixed	0.65 x 60° W	110	7.6	12	210
70/90	20.5	70	Fixed	0.65 x 80°ES	110	7.6	12	224
70/90	23.4	80	Fixed	0.75 x 80°ES	110	7.6	12	228
70/90	26.4	90	Fixed	0.75 x 80°ES	135	9.5	12	238
70/90 A	20.5	70	Fixed	0.65 x 60° W	110	7.6	10.5	175
70/90 A	23.4	80	Fixed	0.75 x 60° W	105	7.2	11.5	185
70/90 A	26.4	90	Fixed	0.85 x 60° W	105	7.2	12	190
95/130	27.8	95	0	0.85 x 60°W	120	8.2	11	205
95/130	33.7	115	0	1.00 x 60°W	125	8.6	12	210
95/130	38.1	130	2	1.25 x 60°W	105	7.2	12	228
135/165	39.6	135	3	1.25 x 60°W	115	7.9	11.5	195
135/165	44.0	150	3	1.35 x 60°W	120	8.2	11.5	205
135/165	48.4	165	3	1.50 x 60°W	120	8.2	12	215

135/175

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COMMISSIONING DATA FOR CLASS 2 KEROSENE

COMBI+

Model	Kw	BTU 000's	Head	Nozzle	Pump (PSI) pressure	Bar	CO2 %	Flue Gas °C
Combi+	26.4	90	Fixed	0.75 x 60°ES	140	9.65	12	220-240

CAMRAY 5 COMBI

Model	Kw	Btu 000's	Nozzle	PSI	Bar	CO2 %	Flue exit °C	Test point °C
C5 Combi 95	27.8	95	0.85 x 60°ES	115	8.0	12.0	240-260	340-360
C5 Combi 70	20.5	70	0.60 x 60°ES	130	8.9	11.5	200-220	280-300
C5 Combi 55	16.1	55	0.50 x 60°ES	115	8.0	11.0	180-210	260-285

BONUS

Model	Kw	Btu 000's	Head	Nozzle	Pump (PSI) pressure	Bar	CO2 %	Flue exit °C	Test point °C
40/65	11.7	40	Fixed	0.4 x 60°ES	100	7.0	10	165-195	215-245
40/65	16.1	55	Fixed	0.5 x 60°ES	115	8.0	11	180-225	260-285
40/65	19	65	Fixed	0.6 x 60°ES	110	7.6	12	180-245	295-320
65/95	19	65	Fixed	0.6 x 60°ES	110	7.6	11.5	200-220	280-300
65/95	23.4	80	Fixed	0.75 x 60°ES	105	7.2	11.5	220-240	310-335
65/95	27.8	95	Fixed	0.85 x 60°ES	115	8.0	12.0	240-260	340-360
65/95 A	19	65	Fixed	0.6 x 60°ES	110	7.6	10	180	280
65/95 A	23.4	80	Fixed	0.75 x 60°W	105	7.2	11	200	304
65/95 A	26.4	90	Fixed	0.85 x 60°W	115	7.9	12	204	335

CAMRAY 5 WALL HUNG INTERNAL

Model	Kw	Btu 000's	Burner type Riello RDB 1 With short head fitted	Nozzle	PSI	Bar	CO2 %	Smoke	Flue exit °C	Test point °C
C5 W/Hung Internal 50/70	14.5	50		0.50X 60°ES	100	6.8	10.5	0-1	165	230
	17.5	60		0.60 x 60°ES	100	6.8	11	0-1	180	245
	20.5	70		0.65 x 60°ES	110	7.5	12	0-1	200	265

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COMMISSIONING DATA FOR CLASS 2 KEROSENE

PATHFINDER – COMMERCIAL RANGE

Model	Kw	Btu 000's	Nozzle	Flue Size"	Pressure
C2/4	27	92	0.85 x 80°W	5	100
C2/5	35.5	121	1.1x 60°W	5	100
C2/6	44.2	151	1.35 x 60°W	5	100
C2/7	53.5	182	1.75 x 60°W	5	100
C2/8	62.7	214	2.0 x 60°W	7	100
C2/9	68	232	2.25 x 60°W	7	100
C2/10	74	252	2.5 x 60°B	7	100
C2/11	81	276	2.75 x 60°B	7	100
C4/5	86.1	294	2.5 x 60°W	7	130

Typical combustion figures for pathfinder boilers;-

C02%	11-12
02%	5-6
Smoke	0-1
C0 ppm	< 100
Flue gas	190-210

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COMMISSIONING DATA FOR CLASS D GAS OIL

CAMRAY 2

Model	Kw	Btu 000's	Nozzle	Pump pressure	Air setting	Combustion head setting
51/67	15	51	0.4 x 60 °W	130	3	-
51/67	17.6	60	0.4 x 60 °W	175	3.25	-
51/67	19.6	67	0.5 x 60°W	140	3.75	-
65/85	19	65	0.5 x 60°W	135	3.75	-
65/85	22	75	0.5 x 60°W	160	4.25	-
65/85	24.9	85	0.6 x 60°W	140	4.75	-
90/130	26.3	90	0.6 x 60°W	150	3.5	1
90/130	29.3	100	0.65 x 60°W	160	4	2
90/130	38	130	0.85 x 60°W	160	4.5	3
135/175	39.5	135	0.85 x 60°W	1750	2.5	0
135/175	45.4	155	1.00 x 60°W	170	2.75	1.5
135/175	51.3	175	1.10 x 60°W	170	3.25	2

CAMRAY 3

Model	Kw	Btu 000's	Nozzle	Pump pressure	Air setting	C02%	Flue gas °C
40/50	15	50	0.40 x 60 ° w	120	2.4	11	200/220
50/70	15	50	0.40 x 60 ° w	120	2.2	11	160/180
50/70	17.5	60	0.6 x 60 ° w	110	3.2	12	195/215
50/70	20.5	70	0.50 x 60 ° w	105	3.6	12	205/225
70/90	20.5	70	0.60 x 60 ° w	105	2.6	11	200/220
70/90	23.4	80	0.60 x 60 ° w	115	2.8	12	215/235
70/90	26.3	90	0.75 x 60 ° w	110	5.3	12	230/250
90/130	26.3	90	0.75 x 60 ° w	110	2.8	12	200/220
90/130	32.2	110	0.85 x 60 ° w	130	3.6	12	225/245
90/130	38	130	1.0 x 60 ° w	130	4.5	12	240/260
135/175	40	135	1.0 x 60 ° w	140	2.9	11	215/235
135/175	45.5	155	1.1x 60 ° w	150	3.3	12	225/245
135/175	51	175	1.25 x 60 ° w	150	3.5	12	240/260

CAMRAY 5 150/200

Model	Kw	Btu 000's	Nozzle	Oil pressure Psi	Oil pressure bar	Head setting	$C0_2$%	Smoke No.	Flue Exit temp °C
150/200	44.0	150	1.00 x 60º H	180	12.2	1.5	11	0-1	200
150/200	51.3	175	1.25 x 60º H	155	10.4	2	11.5	0-1	210
150/200	58.6	200	1.25 x 60º H	200	13.6	2	11	0-1	220

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COMMISSIONING DATA FOR CLASS D GAS OIL

CAMRAY QUARTET

Model	Kw	BTU 000's	Head	Nozzle	Pump (PSI) pressure	Bar	CO2 %	Flue Gas °C
40/60	15	50	Fixed	0.4 x 80 ° w	115	8	12	216
40/60	17.5	60	Fixed	0.5 x 60 ° w	105	7.2	12	232
60/80	20.5	70	Fixed	0.5 x 60 ° w	145	10	11.5	200
60/80	23.4	80	Fixed	0.6 x 60 ° w	130	9	12	220
90/110	26.3	90	Fixed	0.75 x 60 ° w	105	7.2	12	200
90/110	30	100	Fixed	0.75 x 60 ° w	130	9	12	210
90/110	32.2	110	Fixed	0.85 x 60 ° w	120	8.3	12	220
110/150	32.2	110	2	0.85 x 60 ° w	120	8.3	12	178
110/150	38	130	2	1.0 x 60 ° w	125	8.5	12	188
110/150	44	150	4	1.1 x 60 ° w	135	9.3	12	220

PATHFINDER – COMMERCIAL RANGE

Model	Kw	Btu 000's	Nozzle	Flue Size"	Pressure
C4/6	103.5	353	2.25 x 60°W	7	175
C4/7	121	413	2.5 x 60°B	8	190
C4/8	158.3	472	3.0 x 60°B	8	175
C4/9	157	536	3.25 x 60°B	8	190
C4/10	182.6	623	2.0 x 60°W x2	8	175
C4/11	202.3	690	2.25x 60°W x2	8	175
C4/12	222.1	758	2.5 x 60°W x2	8	175

Typical combustion figures for pathfinder boilers;-

C02%	11-12
02%	5-6
Smoke	0-1
C0 ppm	< 100
Flue gas	190-210

Please note: Pathfinder C2/4 – C4/5 can be set to 35 sec. oil - contact Boulter Sales Office for details