Typical Specifications For DynaFlame Domestic Hot Water Supply - Condensing Models DF(N,P)W 0502– 6024

The domestic hot water boiler shall be a CAMUS DYNAFLAME model _____ having an input rating of _____ Btu (kW) /hr. and _____Btu (kW)/hr output for hydronic heating.

The domestic hot water boiler shall be design certified by CSA International and shall meet the requirements of ANSI Z21.10, and CSA 4.3. The domestic hot water boiler shall be vented as a Category II or IV condensing appliance.

Performance Overview:

- Boiler shall operate up to 88% thermal efficiency
- Heat exchanger shall be cylindrical 16 tube (Models 502 – 1202), 28 tube (Models 1502 – 4002), 32 tube (Models 4502 – 5002), 40 tube (Models 4524 – 6024) C12200 copper alloy with cast bronze headers and all gasket-less sealed design, optional C70600 cupronickel alloy is available
- Fine tuned combustion premix providing homogeneous air and gas combustion mix to a radial burner incorporating a knitted stainless steel wrap ensuring stable light off and efficient clean combustion.
- 5:1 gas input turn down ratio with sustained efficient combustion characteristics throughout entire modulating range
- Oxides of Nitrogen (NOx) of 9 ppm corrected to 3% oxygen.
- Category II venting certification with Category II and Category IV available
- The boiler is fully factory fire tested to obtain optimum combustion characteristics and to establish certified gas input rates.
- System safety and operating devices and controls are fully configured, calibrated and factory tested.
- Models consist of an input range of 500 MBTUH to 6000 MBTUH
- The boiler shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard

Combustion Chamber:
The combustion chamber shall be constructed of stainless steel, sealed water tight, chamber to be covered with minimal ¼" thick ceramic insulation. A stainless steel access door shall be provided for ease of service and inspection to the outer heat exchanger surface and an easily removable radial fired knitted fiber stainless steel burner to access the internal combustion chamber for inspection, service, and cleaning. A window view port shall be provided for visual inspection of the boiler combustion during firing.

Heat Exchanger:
The heat exchanger shall be tested and inspected to A.S.M.E. Section IV requirements. The A.S.M.E. Section IV seal of approval will not be provided as standard for jurisdictions not requiring the A.S.M.E Section IV seal of approval. The heat exchanger shall be a four pass design with a maximum working pressure of 160psig (1100kPa). The heat exchanger is of cylindrical design, with integral copper finned tube ⅞" I.D., 0.064" minimum wall thickness, 7 fins per inch, with nominal fin height of ⅜". Each end of the tubes shall be expanded by mechanical rolling process into the headers. The heat exchanger shall be gasket-less. All header castings shall be bronze. The heat exchanger tubes shall be copper alloy C12200 with optional cupronickel alloy C70600 available.

Gas Train:
The gas train shall consist of a pressure regulating electro-hydraulic proportional air/gas main gas actuator providing a slow opening, fast closing shutoff valve and proportional 1:1 air/gas ratio control, a fast closing safety shutoff gas solenoid, and a low gas pressure switch. Optional high gas pressure switch is available. A factory pre-set combination metering valve and orifice shall be provided for setting combustion parameters. Models DF 502 – DF 6024 operate with a 5:1 turndown ratio.

Burner/Combustion:
The combustion air fan draws gas under negative pressure and mixes it with air to generate a fine tuned air gas mixture which is delivered under positive pressure to the radial knitted stainless steel burner. Combustion modulation is established by a variable frequency drive on all models. The burner shall be a 100% stainless steel vertical mounted radial fired type with stainless knitted metal fiber construction. The burner shall combust a precise amount of premixed combustion air and gas to provide equal distribution of heat for heat transfer throughout the entire heat exchanger. Combustion products are exhausted under minimum back pressure. Combustion operates with a 3:1 turn down ratio while sustaining combustion characteristics throughout the entire modulating range. Operation of up to 85% thermal efficiency and shall be certified for Oxides of Nitrogen (NOx) of 9 ppm corrected to 3% oxygen.

Firing Mode:
The burner combustion shall operate as proportional modulating with a 5:1 turndown ratio with a minimum 20% firing rate. Light off shall be at no more than 50% to ensure a rumble free soft start.

Controls:
Standard controls include a Smartflame electronic proportional integrated combination ignition limit/operator control accurate to $1^{o}F$ ($0.5^{o}C$) having a 4-20 mA output signal suitable for control of a variable frequency motor drive. Control shall be capable of accepting a 0-10VDC signal for remote set point and outdoor reset operation, and have contacts for remote enable/disable of call for heat signal. Optional contacts for remote modulation signal shall accept either a 4-20mA or 0-10VDC. The control shall also provide readouts of boiler target, differential and inlet/outlet temperatures, modulation rate as well as accumulated runtime. On/off switch, and full diagnostic light package shall be provided. The complete control package shall be mounted on the front panel with hinged door for easy access to all control modules. A flow switch shall be provided loose.

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Ignition Module:
The ignition module shall employ a proved igniter with 3 tries for ignition followed by a lockout condition for all models. Trial for ignition shall be 5 seconds with 15 seconds between retrials. Ignition control shall include times for pre-purge, pre-ignition, ignition, and post purge.

Venting Options:
The following venting options shall be utilized:

- Category II Venting – single or combined vent
- Category IV Outside Air (Horizontal & Vertical)
- Category IV Through-wall Venting (Horizontal & Vertical)
- Outdoor Venting
- Category II & IV Direct Venting

The following Category II vent material shall be utilized:

- Stainless or AL29-4C material, single or double wall

The following Category IV vent material shall be utilized:

- Stainless or AL29-4C material, single or double wall, positive pressure rated

External Jacket and Fasteners:
The external jacket shall be of 430 stainless steel mirror finish panels and a powder paint coated access top cover assembled utilizing interference fit locks and minimal non-strip self tap screws for ease of removal and access to the heat exchanger and combustion air / gas control.

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Engineer: _____ Job Location: _____ Date: _____

Prepared by: _____ Buyer's Name: _____ Quote #: _____

Job Name: _____ Buyer's Address: _____

Input & Output (MBTUH)

Model	Condensing	
	Input	Output
0502	500	475
0752	750	713
1102	1100	1045
1202	1200	1140
1502	1500	1425
1752	1750	1663
2002	2000	1900
2502	2500	2375
3002	3000	2850
3502	3500	3325
4002	4000	3800
4502	4500	4275
5002	5000	4750
4524	4500	4275
5024	5000	4750
6024	6000	5700

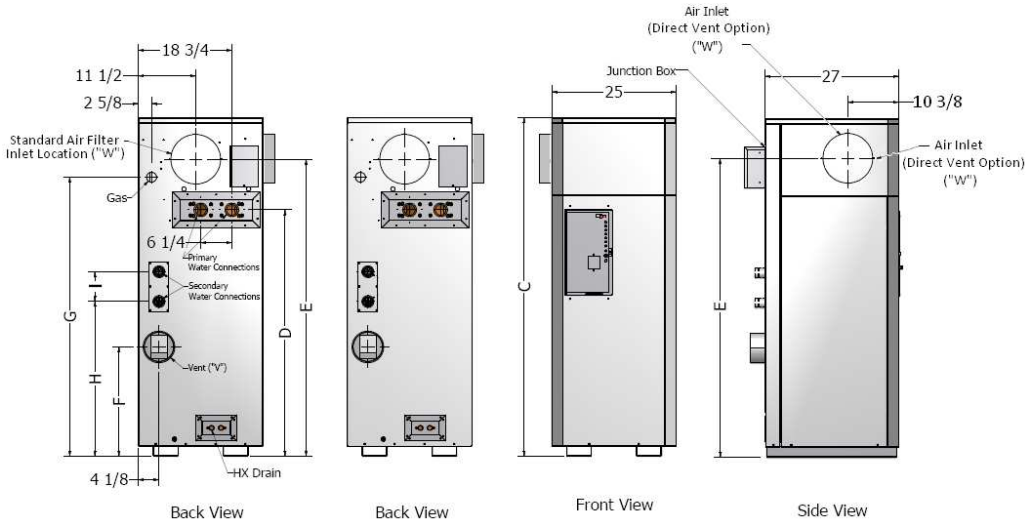
Shipping Weight

Model	Condensing
0502	425
0752	450
1102	530
1202	535
1502	628
1752	745
2002	850
2502	950
3002	995
3502	1120
4002	1230
4502	1340
5002	1440
4524	1275
5024	1623
6024	1963

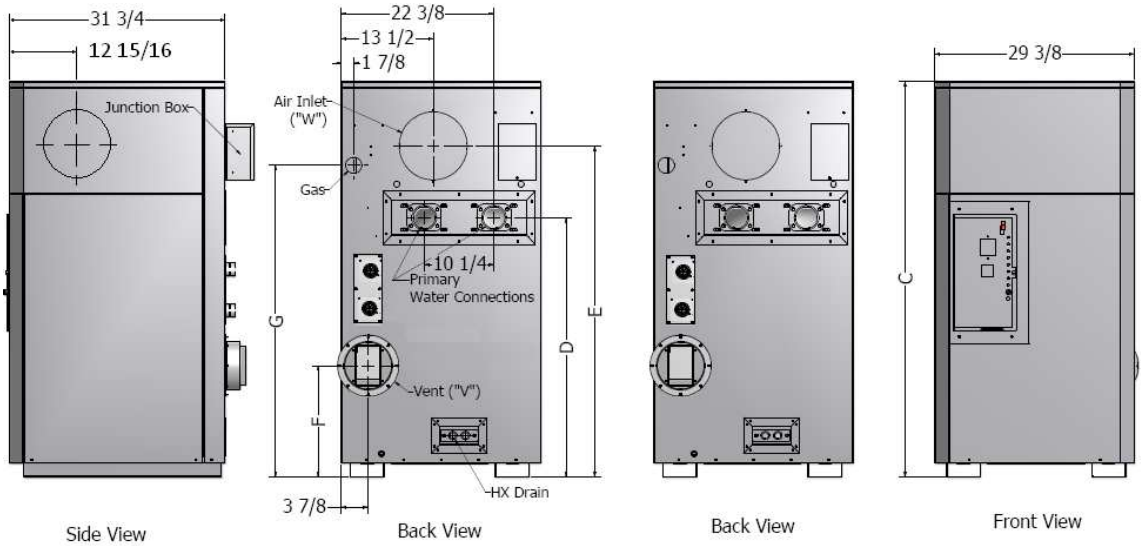
Secondary Heat Exchanger Water Connections

Model	Water Conn. Second. (Grooved)
502	1 1/2
752	1 1/2
1102	1 1/2
1202	1 1/2
1502	1 1/2
1752	1 1/2
2002	1 1/2
2502	1 1/2
3002	1 1/2
3502	1 1/2
4002	1 1/2
4502	1 1/2
5002	1 1/2
4524	1 1/2
5024	1 1/2
6024	1 1/2

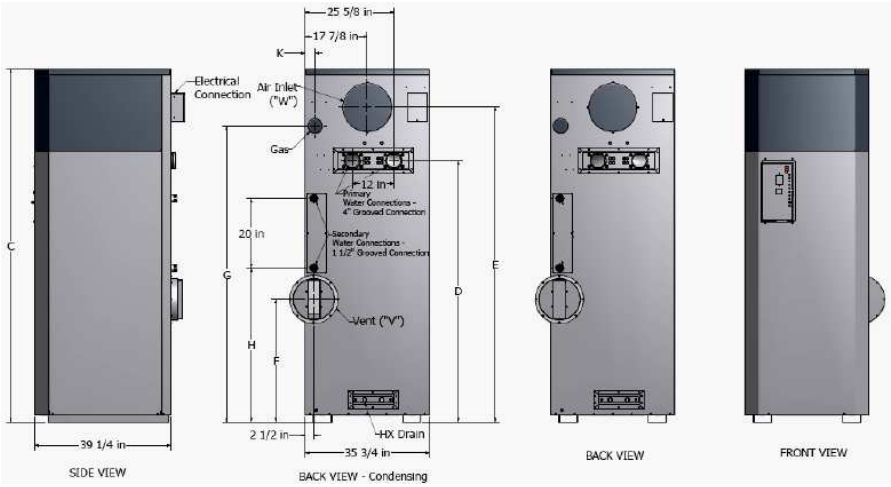
DYNAFLAME 0502 – 1202



DYNAFLAME 1502 – 5002



DYNAFLAME MEGA 4524– 6024



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Dimensions

Model	Height Dim. "C" [in.]	Water Conn. "D" [in.]	Air Inlet "E" [in.]	Flue Height "F" [in.]	Gas Height "G" [in.]	Air Inlet Dia. "W" [in.]	Water Conn. Prim. [NPT, in.]+	Gas Conn. [NPT, in.]	"K"
0502	45 5/8	27	37 1/4	13 1/4	33 5/8	6	2	1	--
0752	55	36 3/8	46 5/8	15 3/4	43	8	2	1	--
1102	68 1/4	49 5/8	59 7/8	22	56 1/4	8	2	1	--
1202	68 1/4	49 5/8	59 7/8	22	56 1/4	8	2	1	--
1502	58 1/8	38 1/4	48 5/8	16 3/8	45 7/8	10	2 1/2	1 1/4	--
1752	62 5/8	42 5/8	53 1/8	16 3/8	50 3/8	10	2 1/2	1 1/4	--
2002	66 7/8	46 7/8	57 3/8	20	53 5/8	12	3	1 1/4	--
2502	73 1/2	52 5/8	63 5/8	25 3/4	60 3/8	12	3	1 1/2	--
3002	79 1/2	58 5/8	69 5/8	31 3/4	66 3/8	12	3	1 1/2	--
3502	86 1/2	63 5/8	76	24 7/8	72 5/8	14	4	2	--
4002	91 1/2	68 5/8	81	29 7/8	77 5/8	14	4	2	--
4502	96 1/2	73 5/8	86	34 7/8	82 5/8	14	4	2 1/2	--
5002	101 1/2	78 5/8	91	39 7/8	87 5/8	14	4	2 1/2	--
4524	83	59 3/4	72 1/4	20 3/4	67 7/8	14	4 (Grooved)	2 1/2	3 1/2
5024	88 1/4	65	77 1/2	26	72 1/4	14	4 (Grooved)	2 1/2	3 1/2
6024	102	75 1/2	91	35 1/2	85 1/2	14	4 (Grooved)	3	2 3/4

+For Models 1500 – 5000 Appliance Inlet/Outlet Connections are 3" NPT

Recovery Capacity

Model	100°F Rise	56°C Rise	80°F Rise	44°C Rise	60°F Rise	33°C Rise
	GPH	LPH	GPH	LPH	GPH	LPH
0502	569	2154	712	2693	949	3591
0752	854	3232	1067	4040	1423	5386
1102	1252	4740	1565	5925	2087	7900
1202	1366	5171	1708	6463	2277	8618
1502	1708	6463	2135	8079	2846	10772
1752	1992	7541	2490	9426	3320	12568
2002	2277	8618	2846	10772	3795	14363
2502	2846	10772	3558	13465	4743	17954
3002	3415	12927	4269	16158	5692	21544
3502	3984	15081	4981	18851	6641	25135
4002	4554	17236	5692	21544	7589	28726
4502	5123	19390	6404	24237	8538	32317
5002	5692	21544	7115	26931	9487	35907
4524	5123	19392	6404	24240	8539	32320
5024	5692	21545	7115	26931	9487	35908
6024	6791	25703	8489	32129	11318	42839

Primary Heat Exchanger Head Loss & Flow

Model	Temperature Rise Across Heat Exchanger			
	30°F*		35°F*	
	USGPM	ΔP-Ft.	USGPM	ΔP-Ft.
0502	28.0	0.7	24.0	0.5
0752	42.0	1.4	36.0	1.0
1102	61.6	2.7	52.8	2.1
1202	68.0	2.9	58.3	2.2
1502	83.9	.9	1.9	1.4
1752	97.9	2.9	83.9	2.2
2002	111.9	4.1	95.9	3.1
2502	13.9	6.1	119.9	4.6
3002	167.9	8.4	143.9	7.0
3502	198.1	127	169.8	9.5
4002	226.9	17.0	194.5	12.7
4502	254.7	21.9	218.3	16.4
5002	282.9	27.6	242.5	20.7
4524	254.7	15.3	218.3	11.4
5024	282.9	19.6	242.5	14.9
6024	339.5	31.8	291.0	24.1

* Rise across main heat exchanger only

Sec. Heat Exchanger Head Loss & Flow

Model	USGPM	ΔP-Ft.
502	10.0	0.4
752	13.0	0.7
1102	22.0	1.8
1202	24.0	2.1
1502	0.0	3.1
1752	35.0	4.2
2002	40.0	5.5
2502	50.0	8.0
3002	60.0	11.5
3502	40.0	8.5
4002	46.0	11.0
4502	52.0	14.0
5002	57.0	16.5
4524	52.	14.0
5024	57.0	16.5
6024	68.0	25.0

Condensing Venting

Model	Vent ("V") Diameter Inches			
	Outdoor	Cat. IV Up to 50 ft	Cat. IV Up to 100 ft	Cat. II
0502	4	4	6	5
0752	6	6	8	6
1102	6	6	8	7
1202	6	6	8	7
1502	7	7	10	8
1752	7	7	10	8
2002	8	8	12	9
2502	8	8	12	9
3002	8	8	12	10
3502	9	9	14	12
4002	9	9	14	12
4502	10	10	14	12
5002	10	10	14	12
4524	10	10	14	12
5024	10	10	14	12
6024	12	12	14	12

Current drawn by Boiler @ 115 Volts Single Phase 60 Hz

Model	Max Amps Draw - Boiler Only
0502	7
0752	7
1102	7
1202	7
1502	11
1752	11
2002	11
2502	14

Current drawn by Boiler @ 230 Volts 60 Hz

Model	Max Amps Draw - Boiler Only	Phase
3002	14	Single
3502	16	Single
4002	16	Single
4502	24	Single
5002	18	Three
4524	24	Single
5024	18	Three
6024	18	Three

Model # _____ # Of Units _____ Type of Gas _____

Total Input _____BTU/hr Flow _____USGPM @ Allowable Pressure Drop _____ft.

Total Output _____BTU/hr

Optional Accessories _____