

# CAMUS



# DynaForce

S E R I E S

*Gas Fired Stainless Steel Condensing Boilers*

For Hydronic Heating and Hot Water Supply

[www.camus-hydrronics.com](http://www.camus-hydrronics.com)

**CAMUS HYDRONICS LTD.**

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HLW

### Standard Features

- Up to 99% Thermal Efficiency
- Suitable for Cat. II or Cat. IV installation
- All welded heat exchanger, 439 grade stainless steel counter flow, primary / secondary construction
- Return water temperatures down to 40°F
- Single point input adjustment for control of air and gas
- 1 to 1 air/gas ratio control for perfect combustion across entire modulation range
- Extremely low NOx emissions (less than 9 ppm)
- Flow switch
- Water pressure switch
- Local/Remote switch for building management, remote modulation and set-point control
- Very small boiler foot print
- Extremely low noise level
- Stainless steel mirror finish outer jacket
- Advanced integrated Honeywell Sola control with touch-screen interface (see Control Panel Highlights)
- Direct ignition up to 2.5 million BTU/hr
- Proven pilot ignition for 3 to 5 million BTU/hr
- Low gas pressure switch
- High gas pressure switch (models 3000 through 5000)
- Inlet regulator for incoming gas pressures up to 1 psig
- Stainless steel burner with radial knitted fibre
- Easy access to components for maximum serviceability
- Inspected and tested to ASME requirements
- Maximum allowable working pressure of 160psig
- Maximum allowable discharge temperature of 210°F
- Minimum gas pressure requirements of 4.5" w.c. for models 300 to 1000, 7" w.c. for models 1200 to 5000
- Main burner test firing valve
- For operation with natural gas or propane
- Flame failure alarm contacts
- 5:1 turndown ratio with a minimum 20% firing rate
- Flue temperature monitoring
- Suitable for venting with PVC, CPVC or PPE plastic vent material (application dependant)

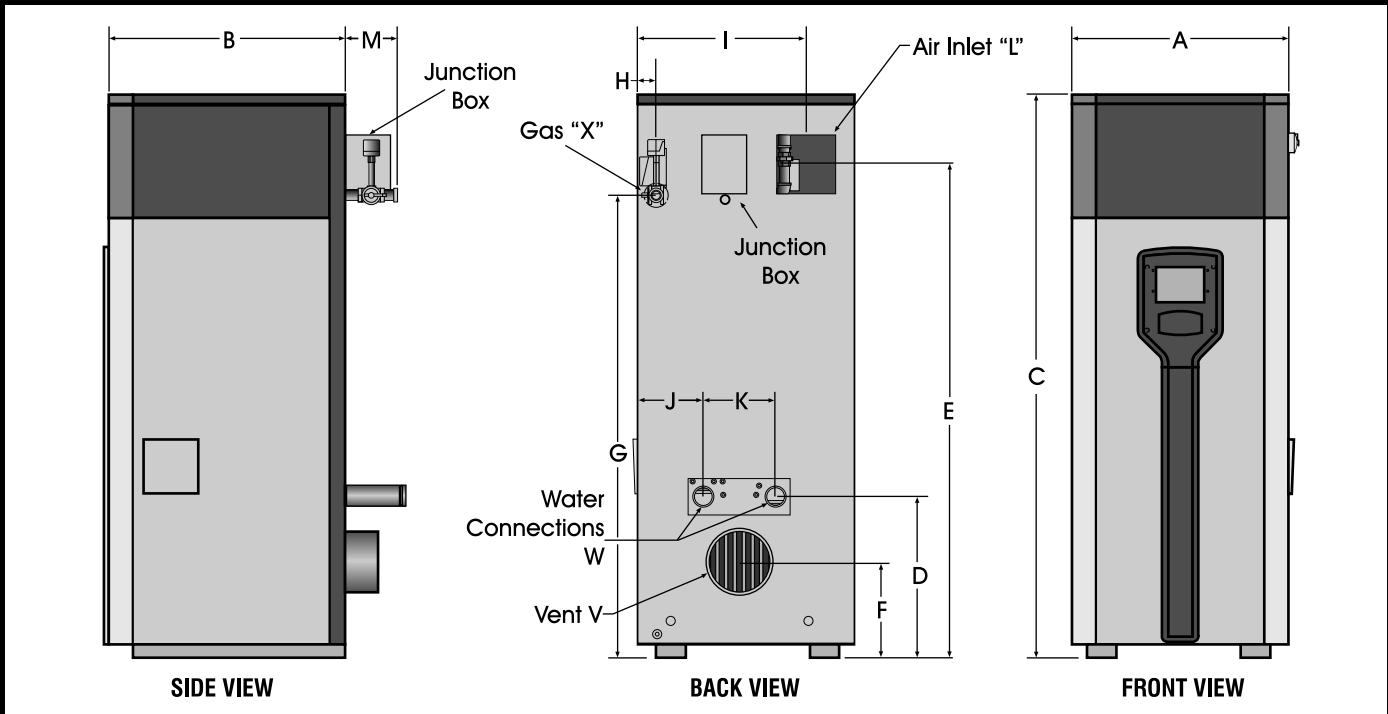
### DynaForce Control Panel Highlights



- 7" colour touch-screen user interface
- Remote operation through 4-20mA for set-point or fire-rate control (0-10VDC option available)
- Cascade up to 8 individual appliances in daisy-chain formation
- Building management interface through Modbus RTU (RS-485) protocol
- Optional gateway protocol converter for additional protocols available
- Multiple pump control
- Lead-lag cascade control and indoor/outdoor reset capable
- Error faults shown in text, time stamped
- Operation and combustion timed override test functions with infinitely adjustable firing rate for combustion and pump tests
- Digital safety annunciation and real-time flame signal readout
- Real-time analog readout of control signals and temperatures
- UL353 safety approved discharge temperature high limit
- Password setup feature for service personnel

### Optional Features

- Dual Fuel for firing with natural and propane (includes two gas trains)
- Pump delay up to 1 hp / Pilot Duty over 1 hp
- Air-inlet damper and/or damper contacts
- Outdoor installation
- Low water cut off (manual or automatic reset)
- High gas pressure switch (standard on models 3000 through 5000)
- Status on/off monitoring contacts
- 460V/60/3Phase incoming power supply
- Neutralization kit for condensate water
- Built for code requirements: CSD-1, IRI, FM
- Remote operation for set-point or fire-rate control utilizing 0-10VDC
- Gateway protocol converter for BacNetIP, BacNetMSTP, MetasysN2 or LonWorks



## Dimensions

MODEL	Dim. "A" (in.)	Dim. "B" (in.)	Dim. "C" (in.)	Dim. "D" (in.)	Dim. "E" (in.)	Dim. "F" (in.)	Dim. "G" (in.)	Dim. "H" (in.)	Dim. "I" (in.)	Dim. "J" (in.)	Dim. "K" (in.)	Dim. "L" (in.) Equiv. Ø Air Inlet up to 100 Ft. Equiv. Length	Dim. "M" (in.)	Dim. "V" (in.) Vent - CAT IV up to 100 Ft. Equiv. Length	Ø Dim. "V" (in.) Vent CAT II	Ø Dim. "W" (in.) Water	Ø Dim. "X" (in.) Gas
300	25	27	34	12 1/4	32 1/2	8 3/8	27	2 5/8	4 49/64	9 3/4	5 1/2	4	5	4	4	1 1/2	3/4
350	25	27	34	12 1/4	32 1/2	8 3/8	28	2 5/8	4 49/64	9 3/4	5 1/2	4	5	4	5	1 1/2	3/4
400	25	27	43	14 1/4	39	10 1/2	33	2 5/8	3 17/64	9 3/4	5 1/2	5	5	4	5	1 1/2	1
500	25	27	43	14 1/4	39	10 1/2	36	2 5/8	3 17/64	9 3/4	5 1/2	5	5	5	5	1 1/2	1
600	25	27	46	15 1/4	42 1/2	10 1/2	39	2 5/8	4 25/64	9 3/4	5 1/2	6	5	5	6	2	1
800	25	27	46	15 1/4	42 1/2	10 1/2	39	2 5/8	4 25/64	9 3/4	5 1/2	6	5	6	6	2	1
1000	25	27	60	17 1/4	54 1/2	11 1/2	53	2 5/8	4 25/64	9 3/4	5 1/2	8	5	6	7	2	1
1200	29 1/2	34	70	18	59 1/2	12	52 1/2	1 7/8	22 21/64	10 1/2	8 1/2	8	5	7	8	2 1/2	1 1/4
1400	29 1/2	34	73	20	65 1/2	13	54 1/2	1 7/8	22 21/64	10 1/2	8 1/2	8	5	7	8	2 1/2	1 1/4
1600	29 1/2	34	76	20	65 1/2	13	54 1/2	1 7/8	23 21/64	10 1/2	8 1/2	10	5	7	9	2 1/2	1 1/4
1800	29 1/2	34	76	20	65 1/2	13	54 1/2	1 7/8	23 11/64	10 1/2	8 1/2	10	5	8	9	2 1/2	1 1/4
2000	29 1/2	34	78	22	67 1/4	14	57 1/2	1 7/8	23 11/64	10 1/2	8 1/2	10	5	8	10	3	1 1/4
2500	29 1/2	34	88	24 1/2	79 1/2	15	65 1/2	1 7/8	24 11/64	10 1/2	8 1/2	12	5 1/2	9	10	3	1 1/2
3000	35 1/4	39 1/4	90	24 1/2	81 1/2	15	67 1/2	1 7/8	27 61/64	10 1/2	8 1/2	12	5 1/2	9	10	3	1 1/2
3500	35 1/4	39 1/4	94	25 1/2	84 1/2	15 1/2	72 1/2	2 1/4	27 61/64	10 1/2	11	12	6	10	12	4	2
4000	35 1/4	39 1/4	94	25 1/2	84 1/2	15 1/2	72 1/2	2 1/4	27 61/64	10 1/2	11	12	6	10	12	4	2
4500	35 1/4	39 1/4	97	27 1/2	87 1/2	16 1/2	74 1/2	3 1/2	28 61/64	10 1/2	11	14	7	12	12	4	2 1/2
5000	35 1/4	39 1/4	102	27 1/2	91	16 1/2	78	3 1/2	28 61/64	12 3/8	11	14	7	12	12	4	2 1/2



**Input & Output**

MODEL	Input (MBTU / hr)	Output (MBTU / hr)
300	300	282
350	350	329
400	399	375
500	500	470
600	600	564
800	800	752
1000	1000	940
1200	1200	1138
1400	1400	1327
1600	1600	1517
1800	1800	1706
2000	2000	1896
2500	2500	2370
3000	3000	2835
3500	3500	3307
4000	4000	3780
4500	4500	4253
5000	5000	4725

**Weight**

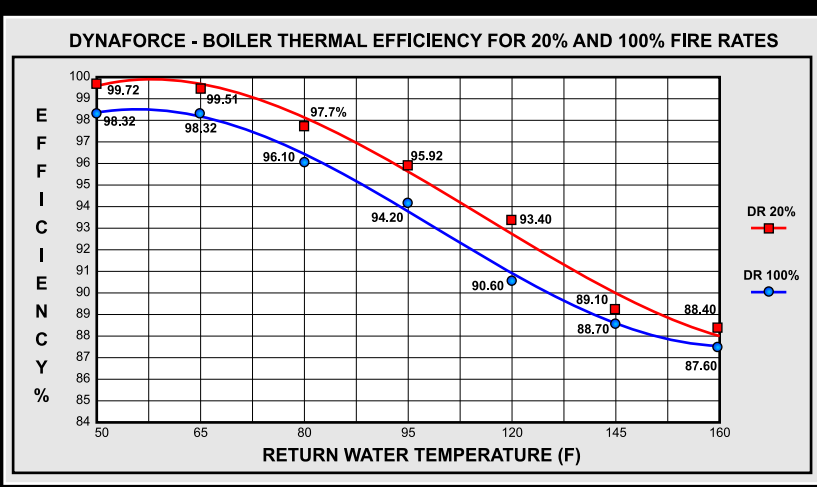
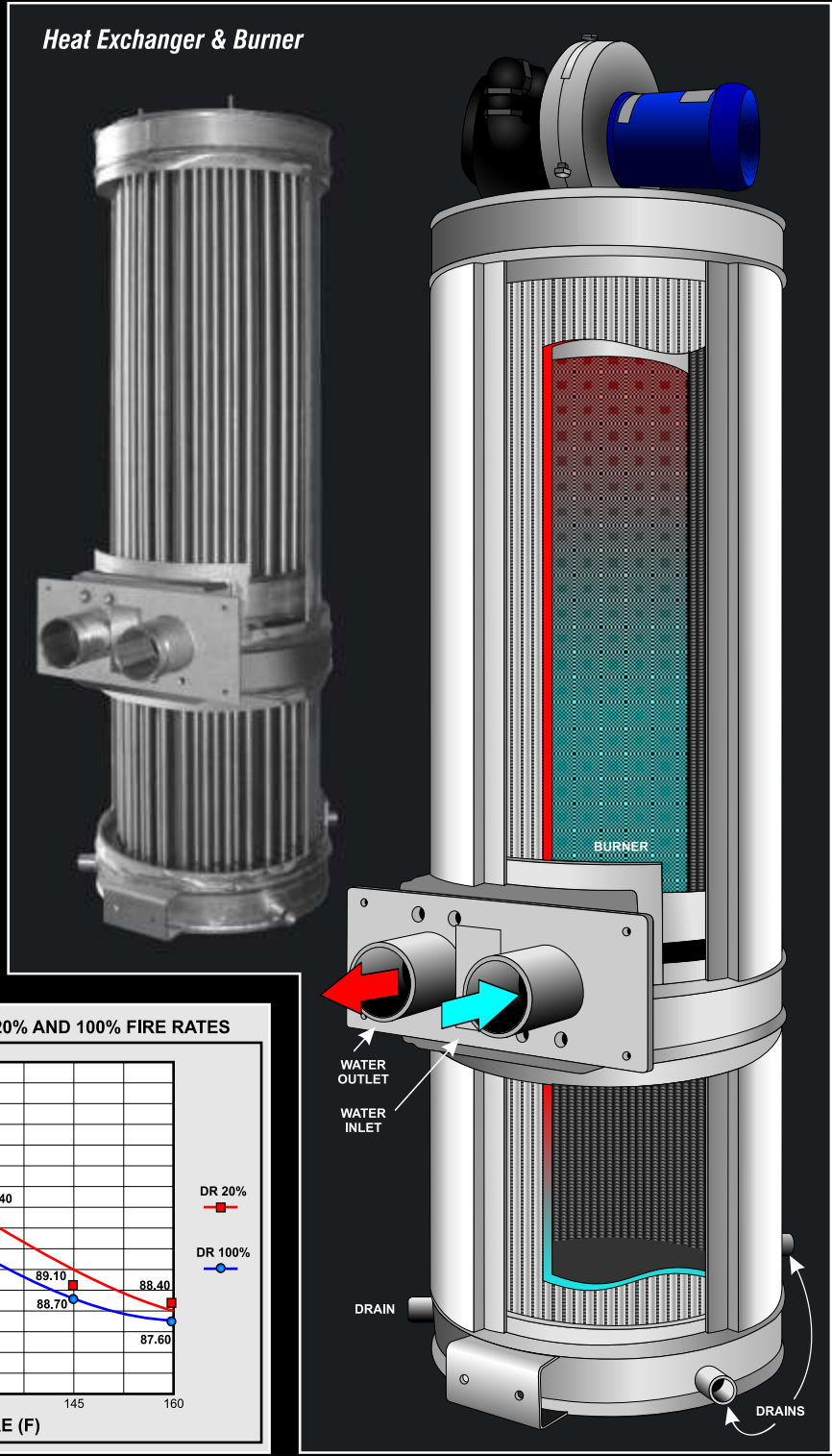
MODEL	LBS.
300	190
350	190
400	250
500	315
600	375
800	375
1000	485
1200	582
1400	679
1600	776
1800	776
2000	825
2500	875
3000	920
3500	1140
4000	1140
4500	1250
5000	1350

**Flow and Pressure Drop at a Given Temperature Rise**

MODEL	10 °F Rise		15 °F Rise	
	USGPM	Δ P - FT	USGPM	Δ P - FT
300	57.0	0.5	38.0	0.3
350	66.5	0.7	44.3	0.4
400	76.0	1.0	50.1	0.5
500	95.0	1.6	63.3	0.8
600	113.9	2.5	75.9	1.3
800	152.0	6.6	101.3	3.2
1000	189.8	11.4	126.5	5.4

MODEL	20 °F Rise		25 °F Rise	
	USGPM	Δ P - FT	USGPM	Δ P - FT
1200	113.8	10.0	91.0	6.6
1400	132.8	14.0	106.2	9.2
1600	151.8	14.1	121.4	9.3
1800	170.9	14.3	136.7	9.4
2000	189.8	20.8	151.8	13.6
2500	237.2	27.1	189.8	17.7
3000	284.6	27.3	227.7	17.8
3500	331.8	33.0	265.4	21.5
4000	379.5	36.9	303.6	24.0
4500	426.9	55.8	341.5	36.3
5000	474.0	60.0	379.2	39.0

**Heat Exchanger & Burner**



Camus Hydronics is also a manufacturer of replacement parts for most copper finned water heaters & heating boilers as well as a supplier of speciality HVAC products. Our service line is open 24 hours a day, seven days a week! Call 905-696-7800.