



Phantom-X 399C/500C

Residential High Efficiency Gas Boilers

PHNTM399C, PHNTM500C Submittal Sheet

PHNTM Floor Standing Heating Boilers

Wholesaler _____
Job Name _____
Mechanical Contractor _____
Model Number _____ Quantity: _____
Gas Type _____
BTU/hr INPUT _____
BTU/hr OUTPUT _____
Venting Application _____

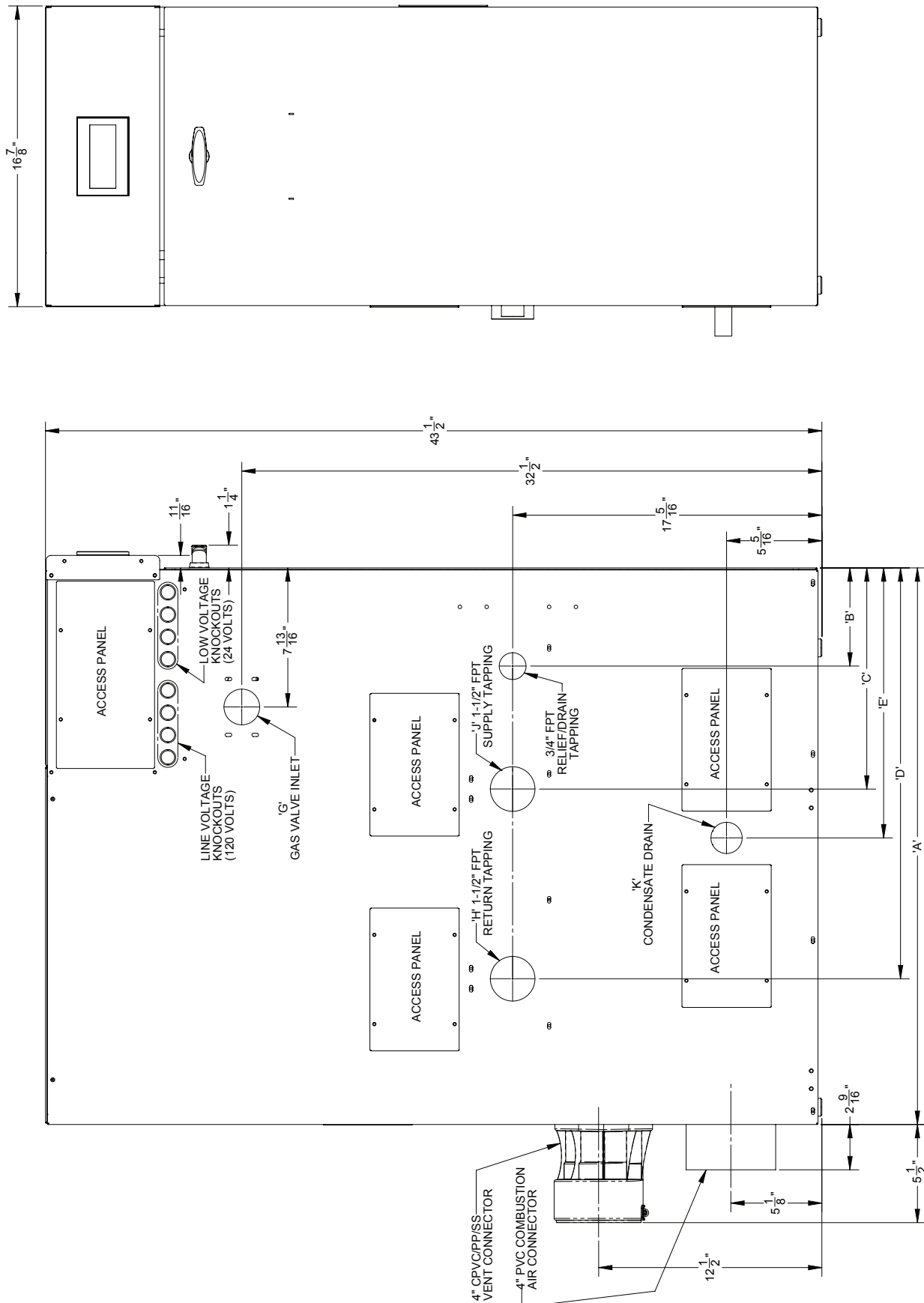
Standard Features

- ASME Constructed Stainless Steel Water Tube Heat Exchanger
- 50 psi Relief Valve
- 210F Maximum Operating Supply Temperature
- Thermal Efficiency up to 97.0%
- Fully Modulating Burner System with 5:1 Turndown Ratio
- Vent Adapter Allows For 4" CPVC/PVC or Single Wall Polypropylene or Stainless Venting
 - Note: See Installation Manual for a List of Approved Vent Systems, Vent Length Limitations, and Other Installation Requirements
- Polypropylene Condensate Trap
- Boiler, System and Domestic Hot Water Pump Output Terminals
- Tight Clearances to Combustible Material
- Field Convertible to LP Gas
- Stackable for Floor Space Savings
- Microprocessor Based Honeywell Sola Control System with Touch Screen User Interface Consisting of:
 - o Direct Spark Ignition System
 - o Supply, Return, Flue, Outdoor Sensors and Flow Switch
 - o Lead/Lag and Selectable DHW Priority
 - o Warm Weather Shutdown
 - o Pump Exercise
 - o Central Heating System Freeze Protection
 - o Energy Management System (EMS) 4-20mA Interface
 - o Plug & Play Multiple Boiler Peer-Peer Communication Network Connections For Up to 8 Multiple Boiler Installations
 - o Remote Firing Rate and External Limit Terminal Contacts
 - o Terminal Contacts for Optional Header Sensor
- 9 Year Limited Heat Exchanger Warranty, 1 Year Warranty On Parts

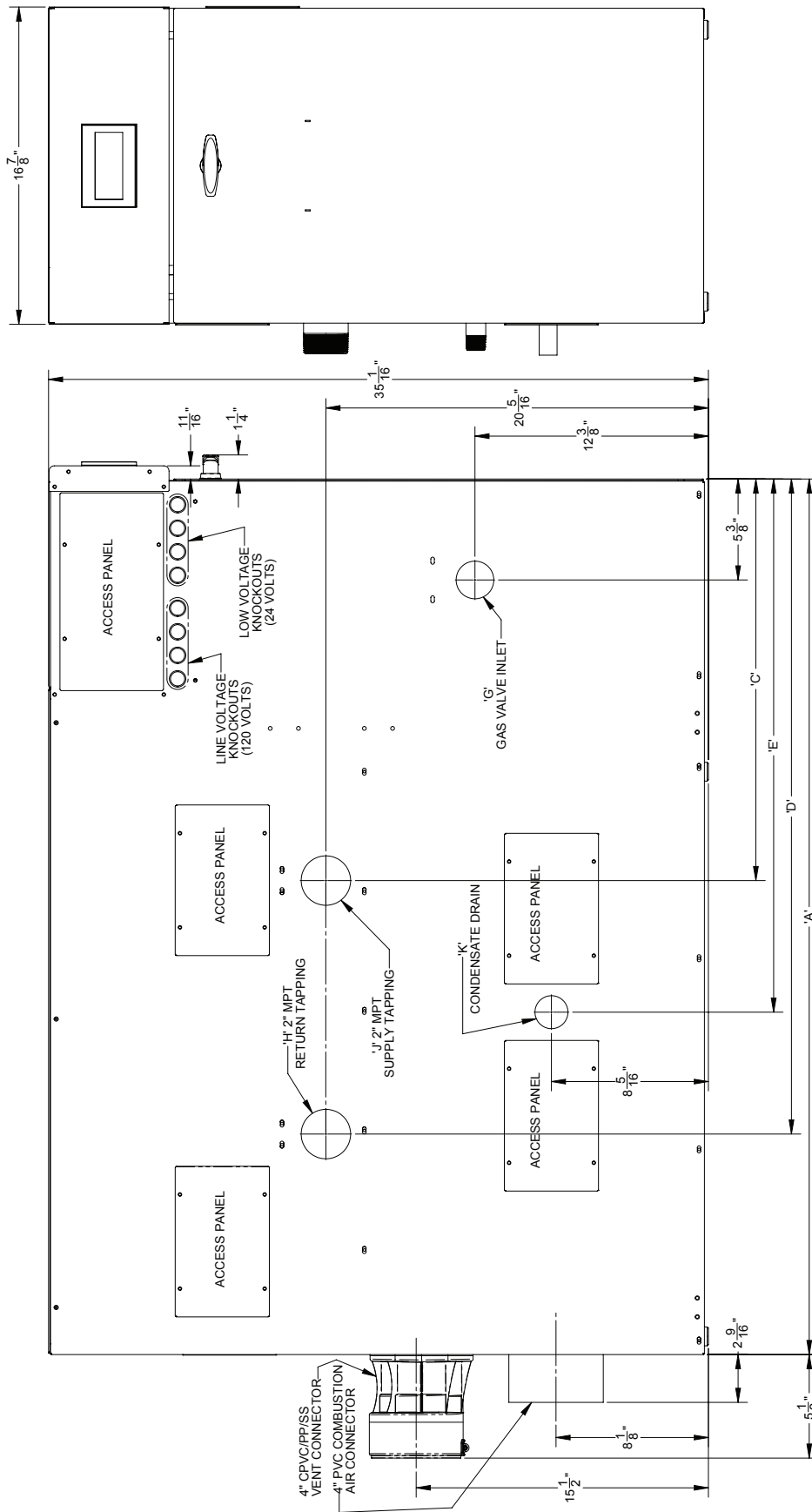
Optional Equipment

- Sage Zone Panel
- Condensate Neutralizer
- Header Sensor Kit - Required for multiple boiler systems
- RJ45 Cable Splitter
- LWCO Kit
- Manual Reset High Limit
- CSD-1 kit for 399C includes manual reset high limit and immersion well.
- CSD-1 kit for 500C includes high and low gas pressure switch assembly (manual reset) and gas valve leakage test harness.

Special Job Notes:



PHNTM500C



Phantom X Series Gas-Fired Boilers



Model Number	Input (MBH)		Gross Output (MBH)	Net Ratings Water ¹ (MBH)	Thermal Efficiency (%)	Combustion Efficiency (%)
	Min.	Max.				
PHNTM399C	80	399	375	326	94.1	94.5
PHNTM500C	100	500	485	422	97.0	96.0

Ratings shown are for installations at sea level and elevations up to 2000 ft. at minimum vent length. For elevations above 2000 ft., see Appendix A Instructions for High Altitude Installations above 2000 ft.

¹ Net AHRI Water Ratings based on allowance of 1.15. Consult manufacturer before selecting boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.

Specification	Boiler Model	
	PHNTM399C	PHNTM500C
Altitude (ft. above sea level) ¹	0-10,100	0-10,100 ²
Fuel	Shipped for Natural Gas, Field Converted for LP Gas	
Max. Allowable Water Temperature (°F)	210	210
Max. Allowable Working Pressure (psi)	160	160
Factory Supplied Safety Relief Valve (psi)	50	50
Boiler Water Volume (gal.)	3.4	4.3
Heat Transfer Area (sq. ft.)	41.8	58.1
Approx. Shipping Weight (lb.)	316	368

¹ Follow instructions in instruction manual for high altitude installations above 2000 ft. (see Appendix A in manual)

² PHNTM500C LP cannot be installed above 6,000 ft.

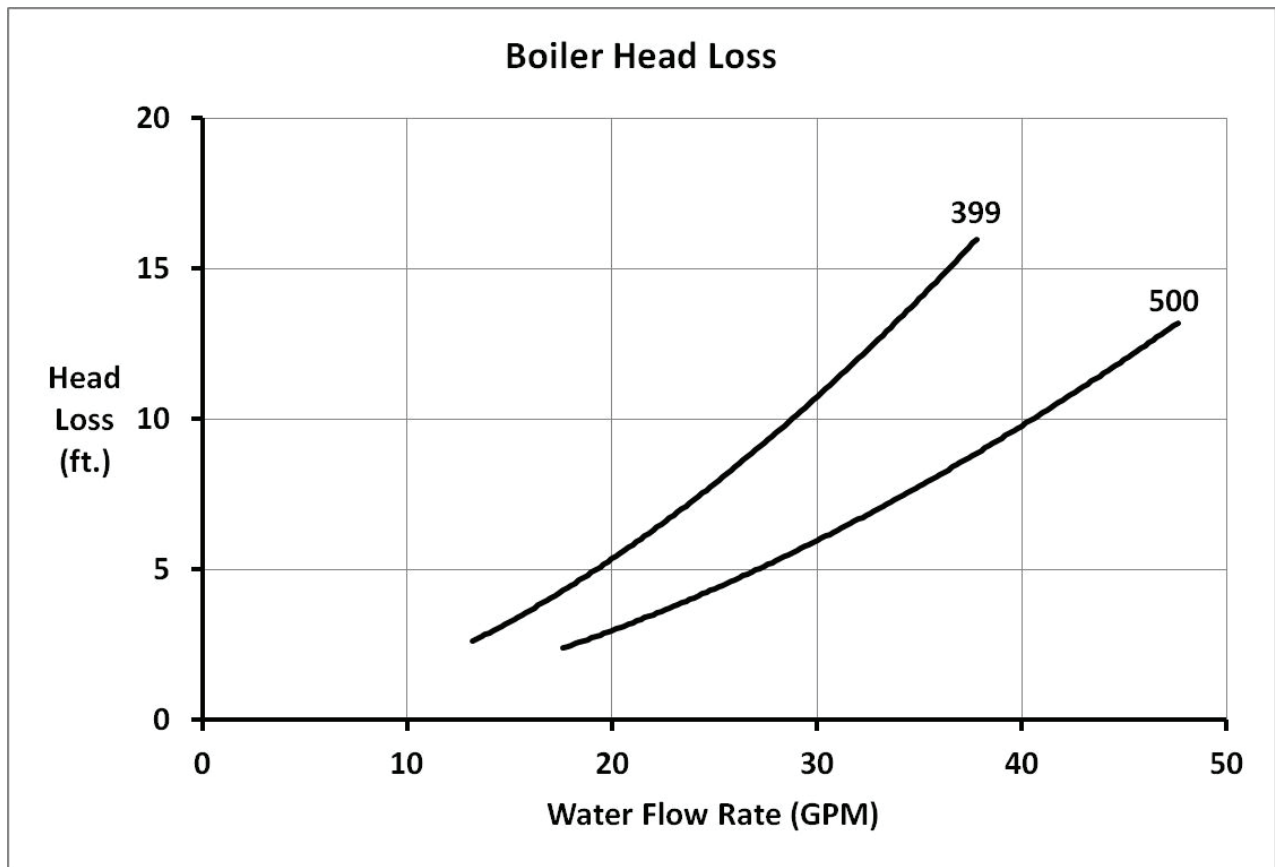
Dimension	Boiler Model	
	PHNTM399C	PHNTM500C
A - Inch (mm)	31-3/16 (792)	46-1/2 (1181)
B - Inch (mm)	5-1/2 (140)	N/A
C - Inch (mm)	12-3/8 (314)	21-5/16 (541)
D - Inch (mm)	23 (584)	34-13/16 (884)
E - Inch (mm)	15-1/8 (384)	28-5/16 (719)
Gas Inlet G - Inch	3/4 (FPT)	
Return H - Inch	1-1/2 FPT	2 MPT
Supply J - Inch	1-1/2 FPT	2 MPT
PP Condensate Drain K - Inch	3/4 PVC Compression Coupling	
PVC Combustion Air Connector - Inch	4	
CPVC/PP/SS Vent Connector - Inch (mm)	4 (100)	

Venting Note: Sizes noted are for two pipe CPVC/PVC & certain specified two pipe polypropylene and certain specified stainless steel vent systems. Concentric vent terminals are not permitted. See installation manual for venting option details.

Flow Range Requirement Through Boiler

Boiler Model	Supply Connection (in.)	Return Connection (in.)	ΔT = 35°F		ΔT = 30°F		ΔT = 25°F		ΔT = 20°F	
			Minimum Required Flow (GPM)	Boiler Head Loss (ft.)	Required Flow (GPM)	Boiler Head Loss (ft.)	Required Flow (GPM)	Boiler Head Loss (ft.)	Maximum Required Flow (GPM)	Boiler Head Loss (ft.)
PHNTM399C	1-1/2	1-1/2	21.5	6.1	25.1	7.9	30.2	10.8	37.7	15.9
PHNTM500C	2	2	27.7	5.2	32.3	6.8	38.8	9.3	48.5	13.6

Notes: Required Flow = Output*1000/(500*ΔT), where flow rate is in GPM, output is in MBH, and ΔT is in °F
 Outputs for specific boiler models are provided on page 4. See also Tables on page 6 for near boiler piping sizing.
 Using boiler antifreeze will result in increased fluid density and may require larger circulators.



**Recommended Taco Circulators for 50 ft. Equivalent ft. Near Boiler Piping
[Approximately 20 ft. Straight Pipe, (4) 90° Elbows, and (2) Full Port Ball Valves]**

Boiler Model	Supply & Return Connection (in.)	Near Boiler Pipe Size (in.)	ΔT=35°F			ΔT=30°F			ΔT=25°F			ΔT=20°F		
			Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model
PHNTM399C	1½	2	21.4	6.4	0014	25.0	8.3	0013	30.0	11.4	2400-60	37.5	16.8	2400-70
PHNTM500C	2	2	27.7	5.8	0012	32.3	7.5	2400-60	38.8	10.3	2400-60	48.5	15.2	2400-65

**Recommended Grundfos Circulators for 50 Equivalent ft. Near Boiler Piping
[Approximately 20 ft. Straight Pipe, (4) 90° Elbows, and (2) Full Port Ball Valves]**

Boiler Model	Supply & Return Connection (in.)	Near Boiler Pipe Size (in.)	ΔT=35°F			ΔT=30°F			ΔT=25°F			ΔT=20°F		
			Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model	Flow (GPM)	Boiler & Piping Head Loss (ft.)	Circulator Model
PHNTM399C	1½	2	21.5	6.4	UP26-64F	25.1	8.4	UP26-99F	30.2	11.5	UPS43-100F, Spd. 2	37.7	16.9	UPS43-100F, Spd. 3
PHNTM500C	2	2	27.7	5.8	UPS43-44FC, Spd. 2	32.3	7.5	UPS43-44F	38.8	10.3	UPS43-100F, Spd. 2	48.5	15.2	UPS50-60F, Spd. 3