Megen Construction
11130 Ashburn Road
Cincinnati, Ohio 45240
P: (513) 742-9191

Project: C546B Princeton Athletic Facilities Renovation
11180 Chester Road
CINCINNATI, Ohio 45246

Submittal #235216-1.0 - Product Data – Condensing Boilers
235216 - CONDENSING BOILERS

Revision	0	**Submittal Manager**	Matthew Crawford (Megen Construction Company)
Status	Open	**Date Created**	Jul 21, 2025
Issue Date		**Spec Section**	235216 - CONDENSING BOILERS
Responsible Contractor	Feldkamp Enterprises, Inc	**Received From**	Heather Wyatt (Feldkamp Enterprises, Inc)
Received Date		**Submit By**	
Final Due Date	Sep 26, 2025	**Lead Time**	
		Cost Code	
Location		**Type**	Product Data
Submittal Package			

Approvers Tanya Tedesco (Motz Engineering), Brian Trettenero (Motz Engineering), Jessica Scholl (MSA Architects), Brad Sir Louis (MSA Architects)

Ball in Court Tanya Tedesco (Motz Engineering), Brian Trettenero (Motz Engineering)

Distribution Jeff Williams (Megen Construction Company), Stacy Beck (Megen Construction Company), Jessica Scholl (MSA Architects), Christopher Todd (Megen Construction Company), Brad Sir Louis (MSA Architects)

Description Please see the attached submittal for boilers for your review and approval.

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					235216 - Condensing Boilers11.pdf
Tanya Tedesco	Sep 5, 2025	Sep 19, 2025		Pending	
Brian Trettenero	Sep 5, 2025	Sep 19, 2025		Pending	
Jessica Scholl		Sep 26, 2025		Pending	
Brad Sir Louis		Sep 26, 2025		Pending	

SHOP DRAWINGS

X Reviewed ☐ Furnish as Corrected

☐ Rejected ☐ Revise and Resubmit

This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the work of all trades; and for performing all work in a safe and satisfactory manner.

Note: Errors in shop drawings or undue delays in making corrections are not an acceptable excuse for changing delivery dates from imperfect fabrication.

MOTZ CONSULTING ENGINEERS, INC.
By: Jeff Haynay Date: 09/12/2025

☐ Reviewed
☐ Reviewed & Revisions Noted
☐ Revise & Resubmit
☑ Other Received for Record

Review is for general conformance and design concept. Contractor is responsible for dimensions, quantities, coordination with other trades, techniques of construction and performance of work in a safe and satisfactory manner. Review does not relieve Contractor from responsibility for errors or deviations from contract requirements. Notations do not authorize an extra cost.

JScholl 9/12/2025
Signature Date

MSA DESIGN

Defer to Motz Review

Feldkamp Enterprises
3642 Muddy Creek Rd
Cincinnati, Ohio 45238
P: (513) 347-4500

Project: 1351 Princeton Athletic Facility
1100 Viking Way
Cincinnati, Ohio 45246

Submittal #23 52 16-1.0 - Boilers
23 52 16 - Condensing Boilers

Revision	0	**Submittal Manager**	Heather Wyatt (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises)
Status	Open	**Date Created**	Jul 24, 2025
Issue Date		**Spec Section**	23 52 16 - Condensing Boilers
Responsible Contractor	Blackmore and Glunt	**Received From**	Kyle Browning (Blackmore and Glunt)
Received Date		**Submit By**	
Final Due Date	Aug 18, 2025	**Lead Time**	
		Cost Code	
Location		**Type**	Product Information
Submittal Package			
Manufacturer	Fulton		
Approvers	Heather Wyatt (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Matt Crawford (Megen Construction)		
Ball in Court	Heather Wyatt (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises)		
Distribution	Jack Rahn (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Josh Zins (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Brian Linblad (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Jonathan Vogelpohl (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Matt Flower (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Kelly Jones (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Frank Izzo (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises) , Rob Bush (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), David Doremus (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Shawn Heeney (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises), Jason Hageman (Marsden Mechanical L.L.C. d/b/a/ Feldkamp Enterprises)		
Description	2.01 MANUFACTURERS A Natural Gas, Propane, or Combination Natural Gas/Propane for Indoor Applications: 2. Bradford White Corporation 3. LAARS Heating Systems Company 4. Lochinvar LLC 5. The Fulton Companies 6. □Aerco□. 2.02 MANUFACTURED UNITS A Factory assembled, factory fire-tested, self-contained, readily transported unit ready for automatic operation except for connection of water, fuel, electrical, and vent services. B Unit: Metal membrane wall, water or fire tube, condensing boiler on integral structural steel frame base with integral fuel burning system, firing controls, boiler trim, insulation, and removable jacket, suitable for indoor application. C Annual Fuel Utilization Efficiency (AFUE): 0.82 in accordance with ASHRAE Std 103. D Thermal Efficiency as defined by AHRI 1500 (I-P).		

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					
Kyle Browning		Aug 6, 2025	Aug 1, 2025	Submitted	
Heather Wyatt	Aug 1, 2025	Aug 4, 2025		Pending	
Matt Crawford		Aug 18, 2025		Pending	

blackmore and glunt inc.

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SUBMITTAL DATA

REV # 0

PROJECT: Princeton City Schools	**SUBMITTED BY:** Kyle Browning
CONTRACTOR: Feldkamp	**EMAIL:** kbrowning@b-g.com
PO / JOB # : TBD	**PHONE:** 513.489.5225
ENGINEER: Motz	
DATE: 7/11/25	**OPPORTUNITY # :** 25-07062

SUBMITTED FOR:

☒ **APPROVAL**
Submitted items will not be fabricated or delivered until approval is returned to Blackmore and Glunt confirming acceptance.

☐ **RECORD**
Submitted items have either been ordered, are in the process of being fabricated, or have been delivered. Submitted for your records only. No action required.

Qty	Description & Tag
	Tag: BLR-1
1	Fulton EXE-500 Gas Fired Condensing Boiler 500 MBH Input 439 SS heat exchanger with PURE Technology including 10:1 Turndown O2 Compensation 3.5-14 W.C. CSD-1 Gas Train Relief Valve Low Water Cut Off 115/1/60

TECHNICAL DATA SHEET

ENDURA XE (EXE) SERIES:
EXE-399, EXE-500, EXE-650, EXE-750

399,000 to 750,000 BTU/HR:
Stainless Steel Firetube Condensing Boilers

Fulton's Endura XE (EXE) line of condensing boilers are a durable inline one-pass stainless steel firetube. The packaged boiler features an ultra-compact footprint that fits through a standard doorway, reliable quiet operation, and simplified service & maintenance. The highly-engineered robust construction is built to last with low heat exchanger stress, higher-strength materials, and a premium fit and finish reflecting Fulton's paramount quality. High-turndown Flame-by-Wire™ technology utilizes the surgical precision of independent air and gas motors and continuously tunes the air/fuel ratio for ideal excess O_2 levels to automatically adjust for seasonality. This maximizes condensing potential, and outperforms all conventional platforms in durability, reliability and repeatability.

STANDARD FEATURES:

- Factory Packaged and Test Fired Boiler Assembly
- Stainless Steel Firetube Heat Exchanger
- Fully Condensing Ultra-High Efficiency Operation
- Designed for Variable Primary Flow Arrangements
- Fully Modulating Burner; Up to 15:1 Turndown
- Low NOx Emissions <20 ppm
- Flame-by-Wire™ Electronic Combustion Control
- Real-Time O_2 Compensation™; Feed Forward
- Variable Speed Combustion Blower
- Direct Spark Ignition System
- 160 PSIG Maximum Allowable Working Pressure
- 210°F Maximum Allowable Working Temperature
- Maximum Setpoint Temperature of 185°F
- UL-353 Certified Operating and High Limit
- Low Water Cut Off Probe with Manual Reset
- Air and Blocked Intake Switches
- Ventless Gas Train Utilizing Vent Limiters
- Low and High Gas Pressure Switches (Excludes 399)
- Emergency Stop (E-Stop) Contact

PURE CONTROL™ CAPABILITIES:

- Color Touchscreen Display
- Integrated Lead-Lag of 2 to 10 Boilers
- Universal Data over Ethernet/IP; No Master Boiler Req.
- BAS Integration; Modbus Communication Protocol
- Flue Gas Exhaust Temperature Monitoring
- Inlet and Outlet Water Temperature Sensors
- Combustion Air Temperature Sensor
- Outdoor Air Temperature Reset with Plant Cutoff
- Setback Modes via Internal Clock
- Accept 4-20mA Remote Setpoint Signal
- Safety Interlock Contact for External Device(s)
- General Alarm Contact
- Remote Boiler Enable/Disable Contact
- Pump or Motorized Isolation Valve Start/Stop Contact
- Variable Speed Boiler (Primary) Pump Control
- System (Secondary) Pump Start/Stop Contact
- Domestic Hot Water Pump Start/Stop Contact
- Domestic Hot Water Priority
- Two-Stage Freeze Protection

PROJECT DETAILS:

Project Name	Princeton City Schools	City, State (Province)	Cincinnati, OH
Date Submitted	7/11/2025	Engineer of Record	Motz
Fulton Representative	Blackmore and Glunt	Contractor	Feldkamp

LISTINGS & COMPLIANCE:

- cETLus Listed and Labeled to ANSI Z21.13/CSA 4.9
- ASME Section IV Pressure Vessel, "H" Stamp
- CSD-1 and CSA Compliant Controls and Fuel Train
- AXA XL Compliant; Supersedes IRI
- AHRI Certified to AHRI-1500; Supersedes BTS-2000
- Energy Star Certified Commercial Boiler
- SCAQMD Certified; TCEQ Compliant
- Federal Energy Management Program (FEMP) Compliant
- Advanced Buildings New Construction Guide Tier Two (LEED v4 ACP)

TRIM KIT ITEMS:

- ASME Safety Relief Valve (60 PSIG)
- Condensate Drain Trap
- Pressure & Temperature Gauge
- Installation, Operation and Maintenance Manual

OPTIONAL ACCESSORIES: PARTS SHIP LOOSE FOR FIELD INSTALLATION

- ☑ BACnet Protonode with Remote Cloud Access *2-45-001058*
- ☐ Lead/Lag IP Switch (16 Port, 120VAC) *2-45-315010*
- ☐ Lead/Lag IP Switch (5 Port, DIN Mount, 24VDC) *2-45-315044*
- ☐ Second (Auxiliary) Low Water Cut Off Kit *Consult Factory*
- ☐ Flue Gas Condensate pH Neutralization *4-50-000021*
- ☑ Supply Header Temperature Sensor *4-30-000405*
- ☐ Outdoor Air Temperature Sensor *4-30-000520*
- ☐ Domestic Hot Water Temperature Sensor *4-30-420500*
- ☐ Return Header Temperature Sensor *4-30-000405*
- ☑ 2-Inch Ball Valve with 120VAC 2-Position Actuator *2-30-001382*
- ☐ Dedicated Boiler Circulator Pump 20°F ΔT *Consult Factory*
- ☐ Dedicated Boiler Circulator Pump 40°F ΔT *Consult Factory*
- ☑ PVC/CPVC Flue Gas Exhaust Kit for EXE-399/500
- ☐ PVC/CPVC Flue Gas Exhaust Kit for EXE-650/750
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

NOTE: Information provided in this document is based on standard boiler configurations only. Alternate configurations may result in deviations.

CAPACITIES: STANDARD NATURAL GAS; REFER TO PERFORMANCE DATA FOR CAPACITY AT HIGH ELEVATION

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Rated Input at High Fire	**BTU/hr**	**399,000**	**500,000**	**650,000**	**750,000**
	kW	*117*	*147*	*190*	*220*
Minimum Input at Low Fire	**BTU/hr**	**50,000**	**50,000**	**50,000**	**50,000**
	kW	*14.7*	*14.7*	*14.7*	*14.7*
Rated Output (at AHRI-1500)	**BTU/hr**	**391,020**	**486,500**	**625,950**	**720,000**
	Boiler HP	11.7	14.5	18.7	21.5
	kW	*115*	*143*	*184*	*211*
Thermal Efficiency (at AHRI-1500)	**%**	**98.0**	**97.3**	**96.3**	**96.0**
Burner Turndown	**-**	**8:1**	**10:1**	**13:1**	**15:1**

NOTES:
- Minimum Input at Low Fire is 125,000 BTU/hr (36.8 kW) when operating on propane.
- The boiler may be factory configured with either a natural gas or propane burner; the burner is not field convertible.

CONNECTION SIZES:

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Boiler Supply Water Outlet (NPT)	**inches**	**2**	**2**	**2**	**2**
	mm	*51*	*51*	*51*	*51*
Boiler Return Water Inlet (NPT)	**inches**	**2**	**2**	**2**	**2**
	mm	*51*	*51*	*51*	*51*
Flue Gas Condensate Drain	**inches**	**3/4**	**3/4**	**3/4**	**3/4**
	mm	*19*	*19*	*19*	*19*
Natural Gas Train Inlet (NPT)	**inches**	**1**	**1**	**1**	**1**
	mm	*25*	*25*	*25*	*25*
Min. Combustion Air Duct (ID) *(Adapter Required)*	**inches**	**4**	**4**	**6**	**6**
	mm	*102*	*102*	*152*	*152*
Min. Flue Gas Exhaust Vent (ID) *(Adapter Required)*	**inches**	**4**	**4**	**6**	**6**
	mm	*102*	*102*	*152*	*152*
Boiler Exhaust Outlet (ID)	**inches**	**3.87**	**3.87**	**5.87**	**5.87**
	mm	*98*	*98*	*149*	*149*
Boiler Exhaust Outlet (OD)	**inches**	**4**	**4**	**6**	**6**
	mm	*102*	*102*	*152*	*152*

NOTES:
- The combustion air inlet connection on all models shown is 4-inch Sch 10 pipe, appropriately sized field combustion air intake ducting requires an adapter.

FUEL REQUIREMENTS: STANDARD NATURAL GAS AT 1,020 BTU/SCF (9,082 KCAL/M³)

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Fuel Usage at Rated Input	**SCFH**	**391**	**490**	**637**	**735**
	m^3/hr	*11.1*	*13.9*	*18.0*	*20.8*
Minimum Gas Pressure *(Req. at High Fire)*	**in W.C.**	**3.5**	**3.5**	**3.5**	**3.5**
	kPa	*0.87*	*0.87*	*0.87*	*0.87*
Maximum Gas Pressure	**in W.C.**	**14**	**14**	**14**	**14**
	kPa	*3.5*	*3.5*	*3.5*	*3.5*

FUEL REQUIREMENTS: STANDARD HD5 PROPANE AT 2,500 BTU/SCF (22,260 KCAL/M3)

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Fuel Usage at Rated Input	**SCFH**	**160**	**200**	**260**	**300**
	m^3/hr	*4.5*	*5.7*	*7.4*	*8.5*
Minimum Gas Pressure *(Req. at High Fire)*	**in W.C.**	**7**	**7**	**7**	**7**
	kPa	*1.7*	*1.7*	*1.7*	*1.7*
Maximum Gas Pressure	**in W.C.**	**14**	**14**	**14**	**14**
	kPa	*3.5*	*3.5*	*3.5*	*3.5*

NOTES:
- Propane operation is suitable for use with HD5 (standard commercial) grade Liquid Petroleum Gases conforming to ASTM D1835-82.

ELECTRICAL REQUIREMENTS: APPLIES TO <20 PPM NOx STANDARD BLOWER AND CONTROL OPTIONS

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Electrical Supply	**Volts**	**120**	**120**	**120**	**120**
	ø	1	1	1	1
	Hz	*60*	*60*	*60*	*60*
Full Load Amps (FLA)	**Amps**	**8**	**8**	**8**	**8**
Minimum Current Ampacity (MCA)	**Amps**	**10**	**10**	**10**	**10**
SCCR	**Amps**	**10,000**	**10,000**	**10,000**	**10,000**

NOTES:
- Voltages under specification may result in increased amperage and burner de-rate.
- Provide separate power supplies for external devices. Do not power external devices through the boiler control circuits.

WATER AND FLOW REQUIREMENTS: SPECIFICATIONS APPLY TO 100% WATER SYSTEMS; SEE IOM FOR GLYCOL SYSTEMS

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Typical Flow Rate at Rated Output 20°F ΔT	**GPM**	**38**	**48**	**62**	**72**
	LPM	*144*	*182*	*235*	*273*
Typical Flow Rate at Rated Output 40°F ΔT	**GPM**	**19**	**24**	**31**	**36**
	LPM	*72*	*91*	*118*	*136*
Water Pressure Drop at Rated Output 20°F ΔT	**PSI**	**0.6**	**0.9**	**1.4**	**1.9**
	kPa	*8.3*	*6.2*	*9.7*	*13.1*
Water Pressure Drop at Rated Output 40°F ΔT	**PSI**	**0.2**	**0.2**	**0.3**	**0.5**
	kPa	*1.4*	*1.4*	*2.1*	*3.4*
Low Fire Variable Water Flow Rate	**GPM**	**4 to 105**	**4 to 105**	**4 to 125**	**4 to 125**
	LPM	*16 to 397*	*16 to 397*	*16 to 473*	*16 to 473*
High Fire Variable Water Flow Rate	**GPM**	**16 to 105**	**20 to 105**	**26 to 125**	**30 to 125**
	LPM	*61 to 397*	*76 to 397*	*99 to 473*	*114 to 473*

NOTES:

- Flow rates specified are for water systems, minimum flow parameter will increase for glycol systems. Review Application Guide for details.
- The system will require proper design flow for the given conditions to heat the building and prevent nuisance high limit manual reset lockouts at the boiler.
- Refer to the Installation, Operation, and Maintenance Manual for the water pressure drop at flow rates not listed above.

WEIGHTS AND VOLUMES:

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Dry Weight	**lbs**	**525**	**525**	**525**	**525**
	kg	*238*	*238*	*238*	*238*
Operating Weight	**lbs**	**674**	**674**	**674**	**674**
	kg	*305*	*305*	*305*	*305*
Pressure Vessel Water Volume	**Gallons**	**17.9**	**17.9**	**17.9**	**17.9**
	Liters	*67.8*	*67.8*	*67.8*	*67.8*

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Combustion Air Intake Flow Rate	**SCFM**	**82**	**102**	**133**	**153**
Flue Gas Exhaust Flow Rate	**SCFM**	**88**	**110**	**143**	**165**
	ACFM	*109*	*136*	*177*	*204*
Minimum Allowable Draft Pressure	**in W.C.**	**-0.10**	**-0.10**	**-0.10**	**-0.10**
	kPa	*-0.025*	*-0.025*	*-0.025*	*-0.025*
Maximum Allowable Draft Pressure	**in W.C.**	**+1.25**	**+1.25**	**+1.25**	**+1.25**
	kPa	*+0.311*	*+0.311*	*+0.311*	*+0.311*

VENTING REQUIREMENTS:

NOTES:

- Maximum draft pressure is the total sum of the venting system and is inclusive of both the flue gas vent and combustion air intake frictional pressure losses.
- Refer to the Installation, Operation, and Maintenance Manual for complete venting guidelines including certifications, materials, common venting requirements.

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
NOx	**ppm**	**< 20**	**< 20**	**< 20**	**< 20**
CO	**ppm**	**< 100**	**< 100**	**< 100**	**< 100**
	lbs/hr	0.0288	0.0361	0.0470	0.0542
	g/hr	*13.1*	*16.4*	*21.3*	*24.6*
SOx	**lbs/hr**	**0.0002**	**0.0003**	**0.0004**	**0.0005**
	g/hr	*0.12*	*0.15*	*0.20*	*0.23*
Total Particulates (PM)	**lbs/hr**	**0.0030**	**0.0038**	**0.0050**	**0.0057**
	g/hr	*1.4*	*1.7*	*2.2*	*2.6*
Total Organics (TOC)	**lbs/hr**	**0.0043**	**0.0054**	**0.0070**	**0.0081**
	g/hr	*1.96*	*2.45*	*3.19*	*3.68*
Lead	**lbs/hr**	**2×10^{-7}**	**2.5×10^{-7}**	**3.3×10^{-7}**	**3.8×10^{-7}**
	g/hr	*0.8×10^{-4}*	*1×10^{-4}*	*1.3×10^{-4}*	*1.5×10^{-4}*
Volatile Organic Compounds (VOC)	**lbs/hr**	**0.0022**	**0.0027**	**0.0035**	**0.0041**
	g/hr	*1.0*	*1.2*	*1.6*	*1.8*

EMISSIONS: STANDARD NATURAL GAS AT 1,020 BTU/SCF (9,082 KCAL/M³)

NOTES:

- NOx and CO are stated at a 3% O_2 correction.
- Emissions data is typical for standard natural gas operation at maximum rated burner input.
- Emissions will vary based on site specific factors and operating parameters.
- Site specific conditions and emissions requirements will determine the appropriate CO_2 settings for each application.
- VOC, SOx, PM, TOC and Lead are achieved through calculation using the AP 42 method as published by the US EPA, and are stated at rated input.
- AP 42, Fifth Edition, Vol 1, Ch 1, Table 1.4-2 determines the emissions components that cannot be measured with a combustion analyzer.
- Jacket losses: 0.2% of output at maximum capacity, IAW ASHRAE Standard 103-2007.

Endura XE Model		EXE-399	EXE-500	EXE-650	EXE-750
Front	**inches**	**24**	**24**	**24**	**24**
	mm	*610*	*610*	*610*	*610*
Rear	**inches**	**12**	**12**	**12**	**12**
	mm	*305*	*305*	*305*	*305*
Top	**inches**	**16**	**16**	**16**	**16**
	mm	*406*	*406*	*406*	*406*
Sides	**inches**	**0**	**0**	**0**	**0**
	mm	*0*	*0*	*0*	*0*

MINIMUM CLEARANCES:

NOTES:

- Although 12-inch (305 mm) rear clearance is permitted, some installations may require or benefit from 24-inch (610 mm) rear clearance.
- Boilers exceeding 400 MBTU/hr rating are not for installation in an alcove or closet. Boilers less than 400 MBTU/hr rating may be installed in an alcove.
- Local codes may supersede Fulton requirements, the more stringent of the two shall prevail.

DIMENSIONS:

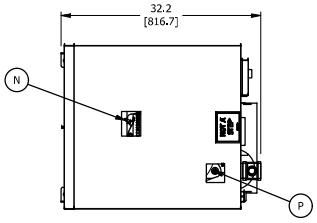
Refer to the 7-91 type Product Data Submittal End Assembly Drawing for dimensions.

FIELD CONNECTIONS			
ITEM	DESCRITION	SIZE	TYPE
A	SUPPLY WATER OUTLET (SEE NOTE 6)	2"	NPT
B	RETURN WATER INLET	2"	NPT
C	NATURAL GAS INLET	1"	NPT
D	COMBUSTION AIR INLET (SEE NOTE 8)	4"	SCH.10 PIPE
E	FLUE GAS EXHAUST OUTLET (SEE NOTE 9)	4"	OD TUBE
F	FLUE GAS CONDENSATE DRAIN	3/4"	OD TUBE
G	SAFETY RELIEF VALVE CONNECTION (SEE NOTES 5,6)	3/4"	NPT
H	LEAD LAG PASS THROUGH	---	---
J	HIGH VOLTAGE ELECTRICAL CONNECTION	---	---
K	FIELD/ LOW VOLTAGE ELECTRICAL CONNECTIONS	---	---

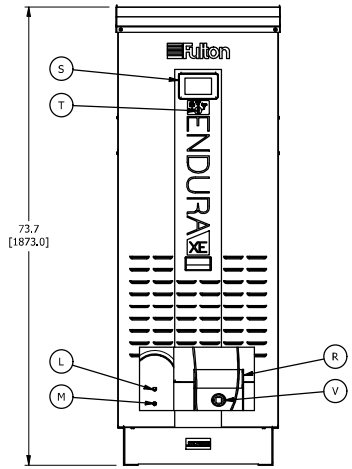
CALLOUTS			
ITEM	DESCRIPTION	SIZE	TYPE
L	COMBUSTION ANALYSIS PORT	1/4"	NPT
M	FLUE GAS TEMPERATURE SENSOR	1/4"	NPT
N	LOW WATER PROBE	1/4"	NPT
P	OPERATING/HIGH LIMIT/OUTLET TEMPERATURE SENSOR	1/4"	NPT
R	ASME STAMPING	---	---
S	CONTROL DISPLAY	---	---
T	ON/OFF SWITCH	---	---
U	RETURN WATER TEMPERATURE SENSOR	1/4"	NPT
V	INSPECTION ACCESS	1"	NPT

NOTES:
1. FRONT CLEARANCE MINIMUM IS 24" [610mm], REAR CLEARANCE MINIMUM IS 24" [610mm], TOP CLEARANCE MINIMUM IS 12" [305mm], SIDE CLEARANCE MINIMUM IS 0" [0mm].
2. 12" [305mm] REAR CLEARANCE CAN BE ACHIEVED WITH SPECIAL VENTING COMPONENTS.
3. 16" [406mm] TOP CLEARANCE IS RECOMMENDED.
4. THE PRESSURE VESSEL IS BUILT TO COMPLY WITH ASME SECTION IV.
5. APPROPRIATE SAFETY RELIEF VALVE IS DETERMINED BY TRIM PRESSURE & IS SUPPLIED IN THE TRIM KIT FOR FIELD INSTALLATION. INLET & OUTLET ARE NPT AND SIZES ARE AS FOLLOWS:

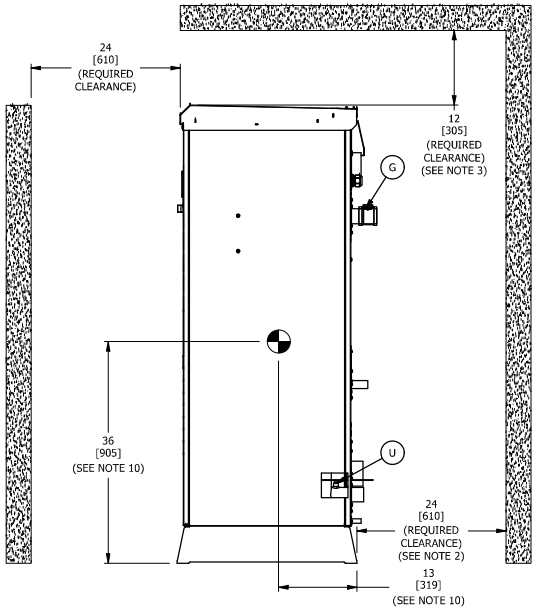
   60 PSI - 3/4" INLET x 1" OUTLET
6. SAFETY VALVE IS FIELD INSTALLED USING THE 2" x 3/4" REDUCING TEE SUPPLIED LOOSE IN THE TRIM KIT.
7. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS] & ARE FOR REFERENCE ONLY. THIS DRAWING IS NOT FOR CONSTRUCTION PURPOSES.
8. ROOM AIR KIT IS REQUIRED WHEN NOT UTILIZING SEALED COMBUSTION.
9. THE MINIMUM FLUE GAS VENT DIAMETER IS 4" I.D. [102mm] I.D.
10. CENTER OF GRAVITY IS ESTIMATED USING CAD MODEL DRY WEIGHT.



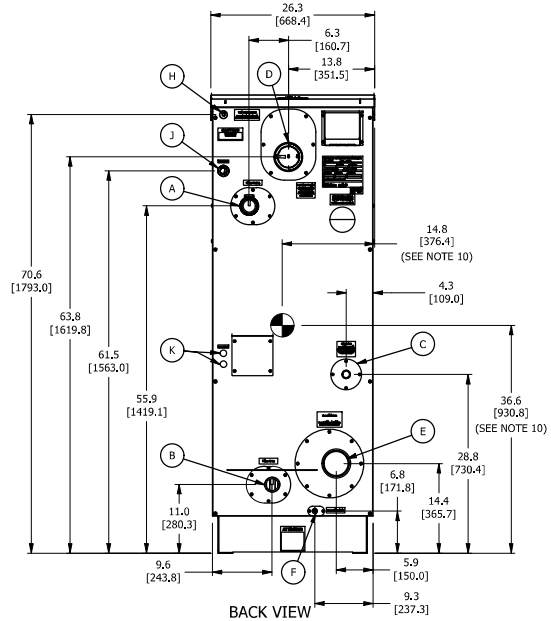
TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW

REV	REVISION DESCRIPTION	CHECKED	B.O.M.	MECH. ENG	ELEC. ENG	APPROVED
-	- INITIAL RELEASE -	T.K. 8/14/23	N/A	A.P. 8/16/23	N/A	K.B. 8/16/23

REVISION HISTORY

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

TOLERANCES	INCH	[METRIC]
FRACTIONAL ± 1/8	± 1/8	± 3mm
(1) PLACE DEC.	± 0.03	± 0.76mm
(2) PLACE DEC.	± 0.015	± 0.38mm
(3) PLACE DEC.	± 0.005	± 0.127mm
ANGLE	± 0.5000	± 0.5 DEG

SURFACE FINISH 250 MICRO=INCHES | SURFACE FINISH 6.35 MICRO=METERS

The items shown in this drawing may be covered by one or more patents of The Fulton Companies.

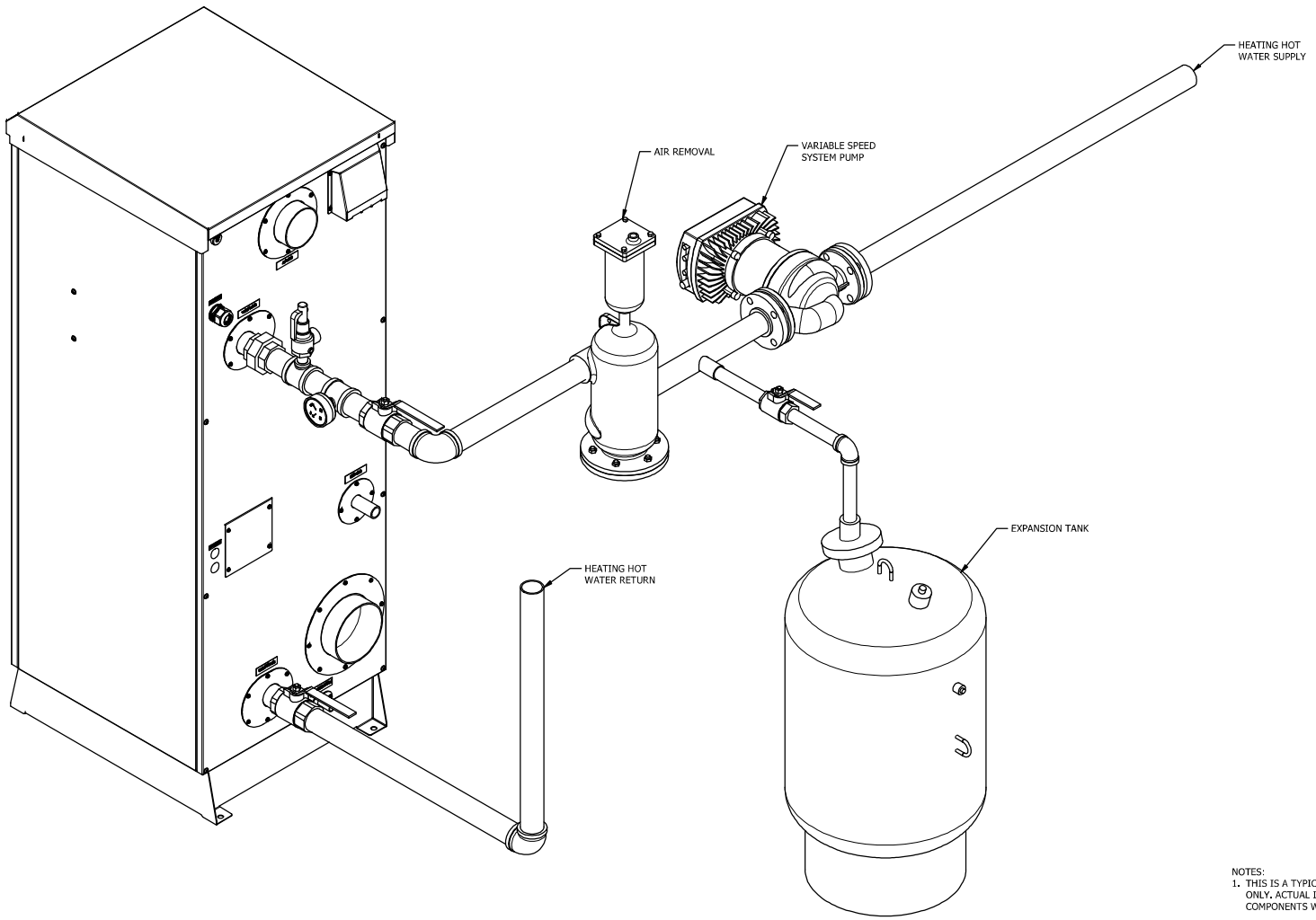
THIRD ANGLE PROJECTION

DRAWN BY: K. KIRK 8/14/2023	MECHANICAL REVIEW:	JOB NUMBER:	DESCRIPTION: ENDURA XE EXE-399, EXE-500 CONDENSING HYDRONIC BOILER END ASSEMBLY
CHECKED BY:	ELECTRICAL REVIEW:	PROJECT NAME:	
B.O.M. REVIEW:	APPROVED BY:	PROJECT MANAGER:	SHEET 1 OF 1

Fulton
Fulton Thermal Corporation

DRAWING NUMBER: 7-91-42F501-42 - PDS

REVISION: -



NOTES:
1. THIS IS A TYPICAL ARRANGEMENT FOR REFERENCE PURPOSES ONLY. ACTUAL INSTALLATIONS MAY REQUIRE ADDITIONAL COMPONENTS WHICH ARE NOT SHOWN FOR CLARITY.
2. THIS DRAWING IS NOT FOR CONSTRUCTION PURPOSES.
3. REFER TO THE INSTALLATION AND OPERATION MANUALS FOR INFORMATION REGARDING CLEARANCES AND INSTALLATION REQUIREMENTS.

REV	REVISION DESCRIPTION	CHECKED BY	B.O.M. / PLANT	MECH. / ELEC.	ASME	APPROVED BY
-	INITIAL RELEASE	-	-	-	-	-

REVISION HISTORY

UNLESS OTHERWISE NOTED DIMENSIONS ARE DECIMAL CONFIRMED

TOLERANCES	INCH	METRIC
FRACTIONS & WHOLE VALUE	± 1/8	± 3mm
(1) PLACE DEC.	± 0.03	± 0.76mm
(2) PLACE DEC.	± 0.015	± 0.38mm
(3) PLACE DEC.	± 0.005	± 0.12mm
ANGLE	± 0.5000	± 0.5 DEG

SURFACE FINISH: 250 MICRO-INCHES — SURFACE FINISH: 6.35 MICRO-METERS

THIRD ANGLE PROJECTION

DRAWN BY: T. BETTS 3/19/2021	MECHANICAL / ELECTRICAL REVIEW: ARP 3/25/2021	JOB NUMBER:	DESCRIPTION: ENDURA XE BOILER PRIMARY ONLY VARIABLE FLOW SINGLE BOILER PIPING DIAGRAM
CHECKED BY: N/A	ASME REVIEW: N/A	PROJECT NAME:	
B.O.M. / PLANT REVIEW: N/A	APPROVED BY: KDB 3/25/2021	PROJECT MANAGER:	SHEET 1 OF 1

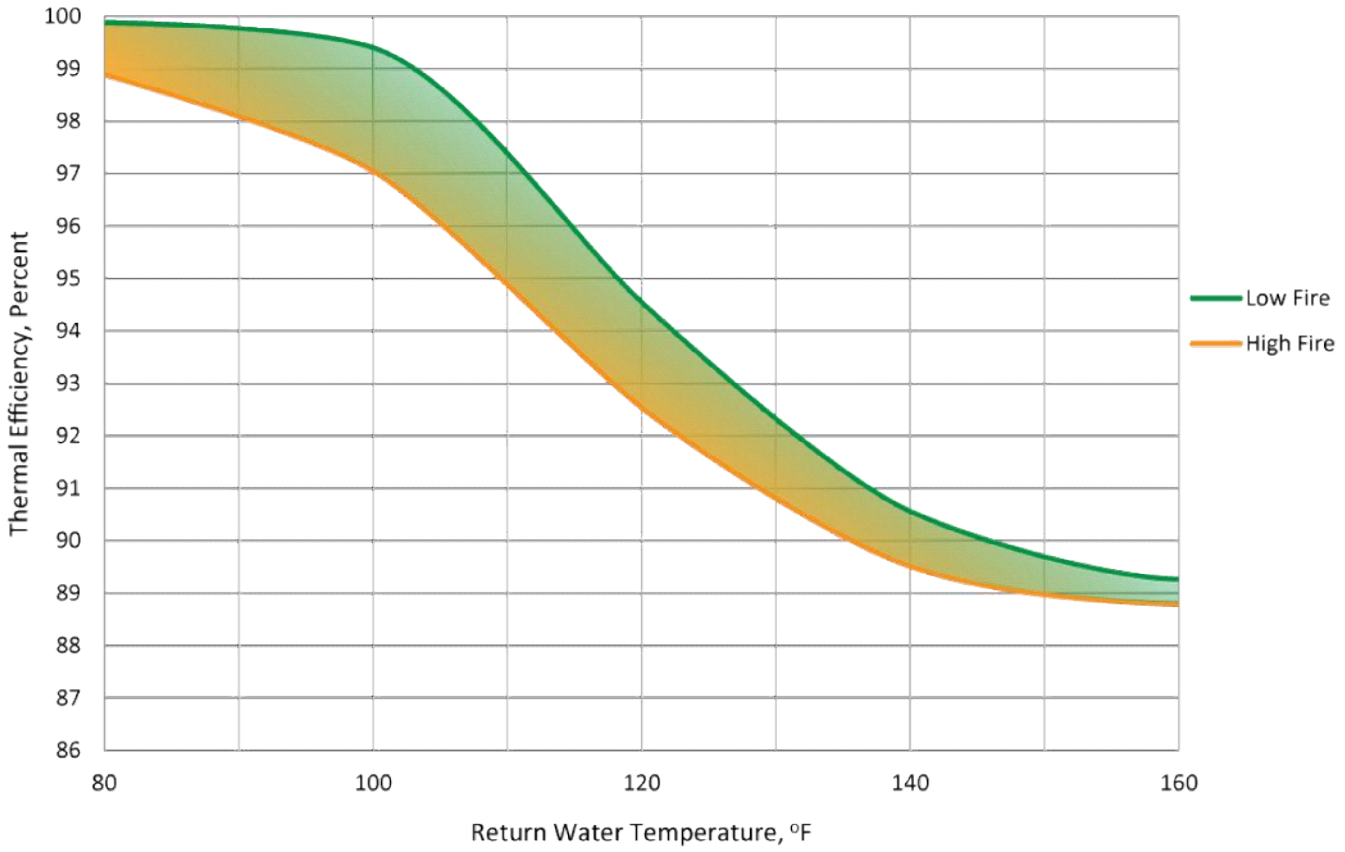
Fulton
Fulton Heating Solutions, Inc.

DRAWING NUMBER: G-37-100003

REVISION: -

PERFORMANCE DATA

SUBJECT:	ENDURA XE (EXE) SERIES:	DATE:
Thermal Efficiency Curve	EXE-399, EXE-500, EXE-650, EXE-750	July 14, 2022

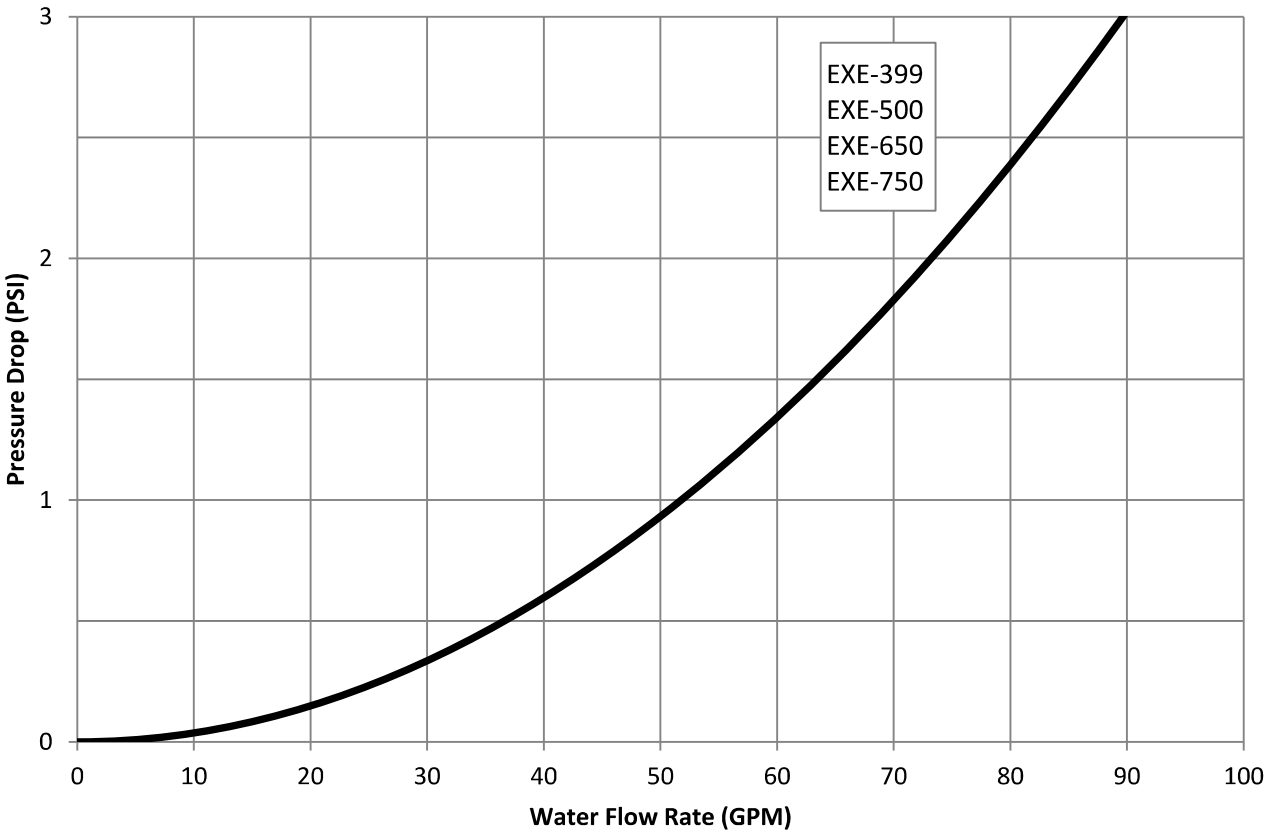


Notes:

1. Laboratory data collected by Fulton research & development.
2. Field performance may vary based on site conditions, maintenance history, and configured combustion parameters.
3. Fuel is standard natural gas.

PERFORMANCE DATA

SUBJECT:	ENDURA XE (EXE) SERIES:	DATE:
Water Side Pressure Drop	EXE-399, EXE-500, EXE-650, EXE-750	July 8, 2024



Notes:

1. Laboratory data collected by Fulton Research & Development.
2. Always consider the losses associated with piping, fittings and valves in addition to the boiler when selecting pumps.