MIURA

LX-Series Gas-Fired
Low NOx Steam Boiler

LX

SCAN FOR MORE

LX BOILER INFO

MANUFACTUERED IN
THE USA
MIURA

Global Leader in Modular, On-Demand Steam Technology

MIURA

Since 1927, Miura has been revolutionizing the way industries use and generate steam. Manufactured with Safety, Efficiency and Reliability as core design philosophies, this innovative technology was released in North America in 1989. Now built “safer-by-design” in a SHARP Certified facility in Rockmart, GA, the compact, modular, and fast-response design has earned a best-in-class safety record during 60 years of production with zero catastrophic incidents recorded across all global markets served.

We recognize that the products we manufacture today affect the lives of generations to come. We are dedicated to building boilers that protect not only the people that operate them, but also the environment we call home. Maximizing efficiency while reducing harmful emissions protects that environment and helps build a better tomorrow for all.

Miura’s expertise does not stop with boilers. From water treatment to advanced monitoring, support, and maintenance contracts, our Complete Steam Solutions are backed by a company, team, and technology you can count on.

We’re proud to be setting the new standard for steam generation in the USA and thrilled that you have chosen to learn more about our commitment to the market and available products. Thank You!

What's in a Name?

MIURA

The "I" in the Miura logo features two dots, both on top and below. The top dot "i" represents the power of the Miura people that drive our innovation each day. The bottom dot "!" symbolizes the “aha!” moment that brings new ideas and better solutions for our customers. Our signature blue “earth” color symbolizes the sea and sky, fueling our mission to environmental consciousness with everything we do.

Proudly Manufactured in our Rockmart, Georgia Headquarters

“Miura aims to be your best partner for energy, water and environment.”

HIGH EFFICIENCY, LOW NOX

LX-SERIES STEAM BOILER

LX-SERIES STEAM BOILER

Prepare to rethink the steam boiler. Miura's modular LX-Series boiler serves as the foundation of safe, reliable, and efficient steam systems and is fully scalable for evolving needs. Achieve exceptional performance with the peace of mind that steam will be there when you need it.

Standard Pressure

- **Horsepower:** 50 – 300 BHP
- **Steam Output:** 1,725 - 10,350 LB/HR
- **Operating Pressure Range:** 70 - 150 PSI
- **Efficiency:** up to 87%
- **Fuel Type:** Natural Gas or Propane
- **Emissions:** as low as 9 PPM NOx

High Pressure

- **Horsepower:** 200 – 300 BHP
- **Steam Output:** 6,900 - 10,350 LB/HR
- **Operating Pressure Range:** 170 - 315 PSI
- **Efficiency:** up to 86%
- **Fuel Type:** Natural Gas or Propane
- **Emissions:** as low as 12 PPM NOx*

  * 9PPM NOx capable with some limitations

Need More Steam Output?

Miura boilers are designed to be part of a multiple installation (MI System). Users benefit from true scalability by adding or removing units and enhanced reliability from having inherent "back-up" (see page 6 for more info).

Modular Boiler System

(5) 300 HP Boilers = 1500HP Capacity

PRESSURE OPTIONS

UNIQUE HEAT EXCHANGER DESIGN

The LX-Series boiler features a pressure vessel with a unique tube selection and layout, including different types of finned tubes as part of the compact and low water content design. Combining these features with the pressure vessel's no thermal stress welded design gave birth to numerous benefits that the steam boiler industry believed to be unrealistic: inherent safety, five-minute start-up, and the on-demand boiler operation concept.

UNPARALLELED SAFETY

With more than 150,000 units in operation worldwide, Miura's once-through watertube boilers are built safer-by-design with an unmatched safety record of zero catastrophic failures. The low water content design stores less energy and utilizes a unique water tube design, greatly reducing risk. Easy accessibility and compact size also make maintenance simple and safe for operators.

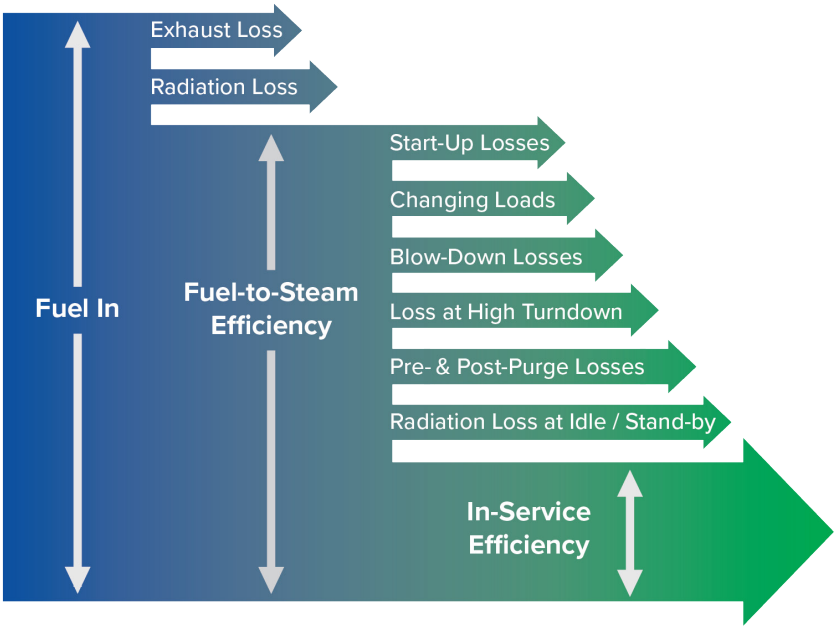
MODULAR BOILER SYSTEM DESIGN

The ability to produce full steam output in less than 5 minutes from a cold start, and to easily turn ON and OFF with short purge time adds flexibility in the boiler operation. The operator can easily turn boilers ON and OFF when needed based on the steam demand and operation schedule. When combined with the BP Panel, Miura's proprietary multiple boiler controller, the system can be modified and monitored together providing the operator with an all-inclusive peace of mind.

Miura 1200HP Modular Boiler Solution

OPTIMUM IN-SERVICE EFFICIENCY

To correctly assess the efficiency of the boiler system many factors of the boiler operation are to be taken into account – the "real" efficiency is what we call the "in-service-efficiency" (see diagram below). Miura LX boilers and its modular concept bring the best in-service efficiency in the industry:



1) Its compact, low-water-content design drastically reduce the start-up loss, the energy needed to heat up the water and heat exchanger before starting to produce steam.

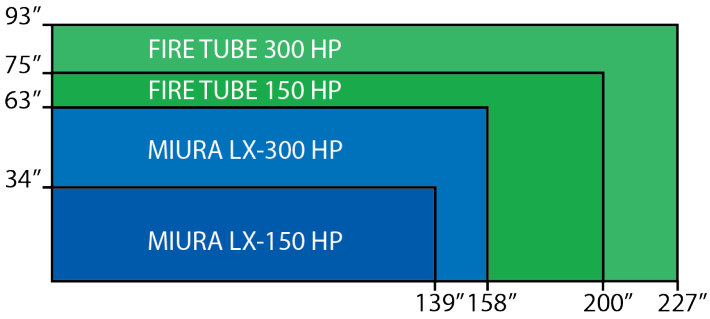
2) Modular steam system allows each unit to operate at peak efficiency at different point of time – even with fluctuating loads, or with different demand condition due to seasonal or operational changes. Most efficient boiler is the one that is kept OFF when not required.

3) LX model's compact design minimizes the purge time requirement, reducing the purge loss that happens when the burner has to turn OFF-ON.

4) By being compact, the radiation loss is naturally small. Furthermore, by keeping part of the boiler system OFF and cold, the loss is drastically smaller compared to that of a large, high-turn-down boiler that remains ON regardless of steam demand.

COMPACT FOOTPRINT

Facility floorspace is valuable, and the LX-Series' compact design takes up 50% less of it when compared to a traditional firetube while providing comparable output, saving both floor space and construction costs. Compact design allows for greater flexibility of adding and moving the boilers, with the ability to move the boilers through standard doorways (34 inches wide for up to a 200HP LX boiler).



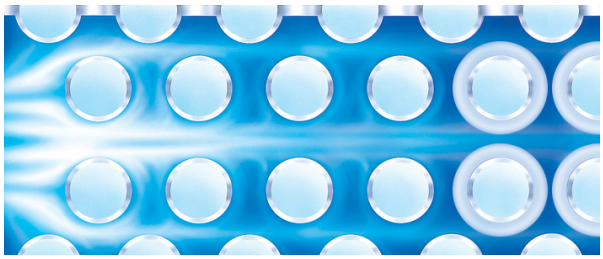
EASY MAINTENANCE

The compact, modular system makes maintenance safer and manageable. Perform routine inspections and maintenance on one boiler at a time while others remain in operation for full production. Operators perform most procedures with a screwdriver or adjustable wrench, without the need of chain hoist or heavy equipment which minimizes the risk of injury.

REDUCED ENVIRONMENTAL IMPACT

Miura recognizes the responsibility to respect the environment for future generations with sustainable steam. The efficiency improvement achieved through the boiler system upgrades directly contributes to decreased fuel consumption and CO2 emissions reduction related to steam production.

In addition, a consistent fuel mixture, unique flat burner, and optimized flame quenching in the heat exchanger contribute to a reduced NOx emission. This enables the LX-Series boiler to achieve below 20 ppm as standard rating and below 9 ppm with the Ultra-Low NOx option. In addition to complying with local regulations, choosing equipment with low emissions goes a long way to protecting the atmosphere.



Pressure Vessel Flame Path

ADVANCED CONTROLLER FOR RELIABLE STEAM

The BL Controller, the brain of the boiler, monitors hundreds of data points and ensures the healthy operation of the boiler. When an early sign of failure or a minor issue is detected, the yellow light “caution” is displayed with fault code information on the front LCD panel to guide the operator in maintenance work. In some cases, the BL keeps the boiler running on backup operation mode before a critical failure occurs, requiring the BL to shut down the boiler and signaling a red light “alarm.” Through a phone or Internet connection, data can be monitored by Miura technicians or output to company personnel for peace of mind and reliable steam.

ECONOMIZER COMES STANDARD

Unlike other boilers in the market, Miura package boilers come standard with a load of added benefits, including a heat recovery economizer. The economizer captures otherwise wasted heat from the combustion exhaust to preheat the incoming feed water. With this, the Miura LX boiler produces steam using less fuel while operating at increased efficiency.

QUALITY BUILT IN THE USA

Miura proudly builds its boilers in our Rockmart, GA manufacturing facility with quality and safety as our hallmarks. Every boiler is UL-listed, ASME certified and includes an in-house built pressure vessel using American manufactured boiler tubes. We conduct a multi-point inspection and optimal operation test on each boiler before leaving the factory.

POWER IN NUMBERS:

BENEFITS OF MODULAR DESIGN

On-Demand Steam: Boiler Turns On Only When Necessary

The modular concept achieved with quick start-up and compact design of the LX series allows the optimized efficiency and flexible operation of the steam system. Multiple units work together to share the steam load and keep up with changing demand within seconds. This efficient, on-demand steam system quickly adjusts firing rates or turns complete units on or off to match fluctuating demands. It leads to fuel savings and lower emissions over more traditional systems by cutting wasted fuel by turning off when not in use and not requiring them to stay warm or idle to meet demand. Operators have the flexibility, for example, to run a just a portion of the system to match reduced steam demand, as opposed to keeping the full system online, even if there is less demand. Take advantage of Miura's modular design to save valuable time, fuel and emissions.

LOW STEAM DEMAND			MEDIUM STEAM DEMAND			HIGH STEAM DEMAND		
LOW FIRE	OFF	OFF	OFF	LOW FIRE	HIGH FIRE	HIGH FIRE	HIGH FIRE	HIGH FIRE

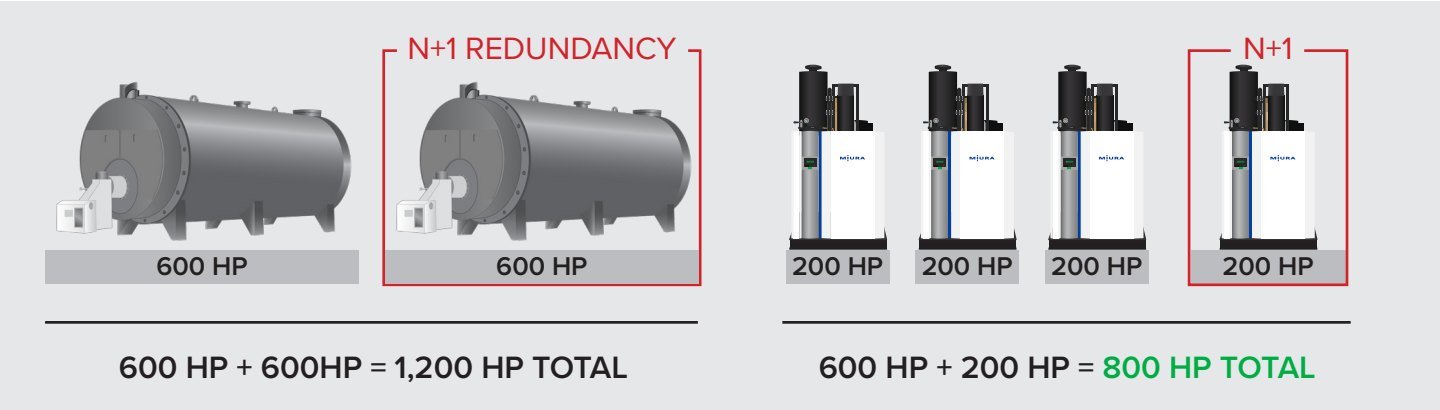
Scalable Steam: Long-Term Flexibility

Your steam equipment should always match your business goals. Miura's modular design is easily scalable by adding units as production increases or turning off units if need decreases due to trends or a sudden stop in production. Modular scalability adds greater flexibility to your business, with size and operational methods no longer restricting the ability to change capacity. The compact footprint fits twice the steam output in the same square footage, so you won't compromise space or require a construction overhaul for system expansion. It's the only steam system that can incrementally scale up or down to provide a matching steam generation system for your load profile to endure through the changing years to come.

INITIAL INSTALLATION - 600HP			DEMAND INCREASES - 900HP			DEMAND DECREASES - 300HP		
							LAY-UP	LAY-UP
LX-300	LX-300	OPEN	LX-300	LX-300	LX-300	LX-300	OFF	OFF

Planned Reliability: N+1 Redundancy

In a modular steam system, the risk is spread across multiple units, giving businesses improved reliability for continuous steam production. During plant inspection or maintenance, steam output responsibility shifts to other boilers in the system, diminishing the risk of production shut down. Instead of relying on one large boiler and another large emergency unit serving as N+1 redundancy, modular systems use multiple compact units to meet the full steam demand amount with an additional compact boiler serving as the N+1 redundancy. This method saves significant money and valuable boiler room space.



As you can see, with Miura's LX-Series modular, on-demand boilers, there is power in numbers. It's a modern steam generation system that provides flexibility, scalability, and reliability you can trust.

TRADITIONAL BOILER CHALLENGES VS. MIURA MODULAR SOLUTIONS

How can we increase steam capacity for use when production demand increases?

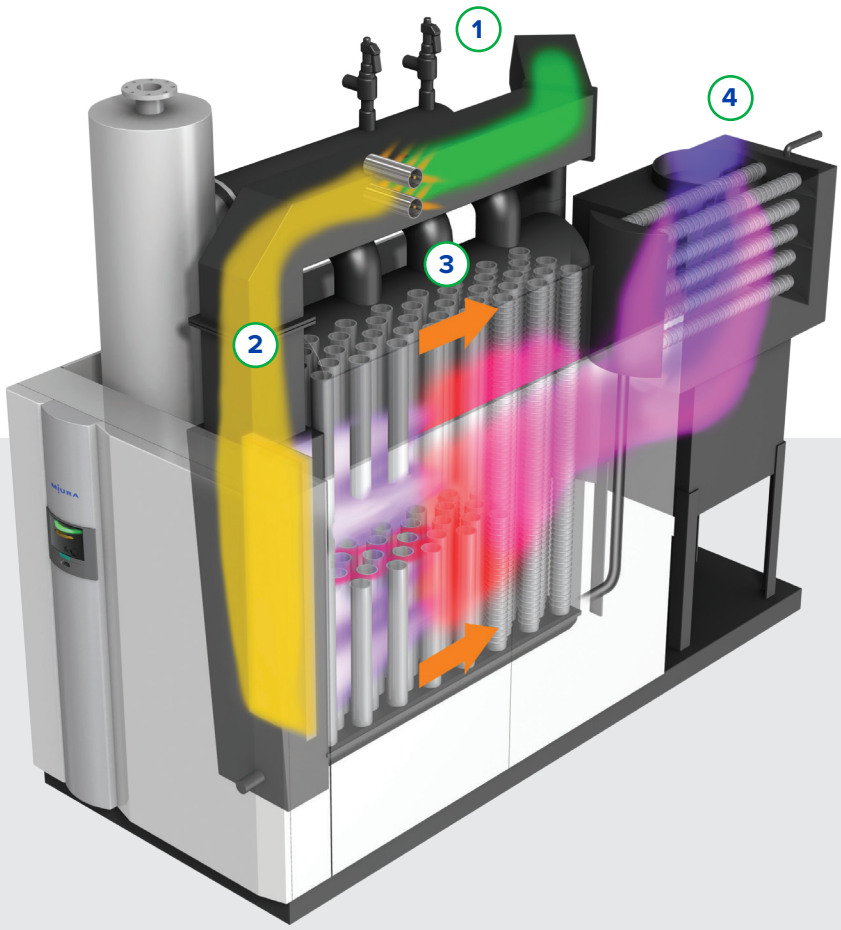
TRADITIONAL BOILER CHALLENGE	MIURA MODULAR SOLUTION
Large firetube boilers are usually sized to supply the maximum facility demand when installed. When demand increases, the large horizontal pressure vessel drum creates space constraints for additional units. Any supplemental firetube boilers have to be keep ON in idle mode to be ready when spikes occur.	Miura's LX-Series modular boilers grow with you. The compact design makes it easy to add units when production requires more steam. Boilers automatically turn ON/OFF based on facility demand, so boilers only used during peak loads don't have to stay on all the time.

Is it possible to avoid production interruption during planned maintenance and yearly inspections?

TRADITIONAL BOILER CHALLENGE	MIURA MODULAR SOLUTION
The firetube boiler size and complexity to open makes yearly boiler inspections and maintenance a burden. It interrupts production for at least two to three days to let the boiler cool, empty, disassemble, inspect, reassemble, fill and heat.	With Miura boilers, production interruptions are a thing of the past. Operators inspect and maintain the multiple smaller units in a modular system one at a time. This eliminates the need to shut down production for servicing.

COMBUSTION SEQUENCE

Miura's proprietary once-through watertube design has collected many engineering milestones such as increased in-service efficiency, world-class reliability and an industry-leading safety record. The safer-by-design system produces steam from a cold start in minutes, making it the best choice for energy efficiency.



1 Air Intake

Ambient air pulled through replaceable filters mounted on the air box and propelled into the wind box by a blower.

2 Air and Fuel Mixing

Combustion air mixes with fuel gas in the gas chamber and flows into the wind box. Then, the mixture passes through the burner and ignited.

3 Combustion / Heat Exchanger

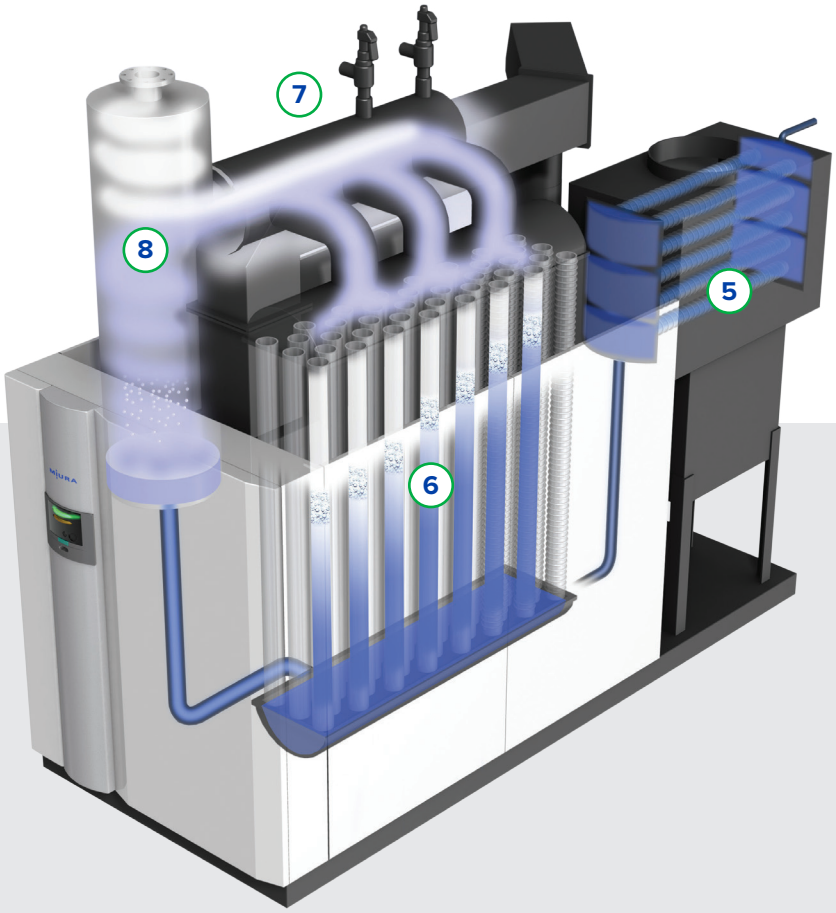
The corrugated burner projects a large flame in the heat exchanger where combustion and heat transfer occur simultaneously. Heat transfer is optimized with finned tubes in the low temperature zone.

4 Heat Recovery

The combustion exhaust exits through the heat recovery economizer that uses exhaust heat to preheat the incoming feed water.

WATER JOURNEY

Miura's watertube technology stems from over 60 years of perfecting the design to enhance efficiencies. From the feed water supply to steam in your facility, Miura's complete steam solution efficiently preserves resources, and recycles energy for sustainability and costs savings. Intuitive sensors monitor each step of the water journey and integrate with the complete system.



5 Economizer Feed Water Preheat

Incoming feed water is routed through a heat recovery economizer to increase the efficiency of the boiler.

6 Main Pressure Vessel

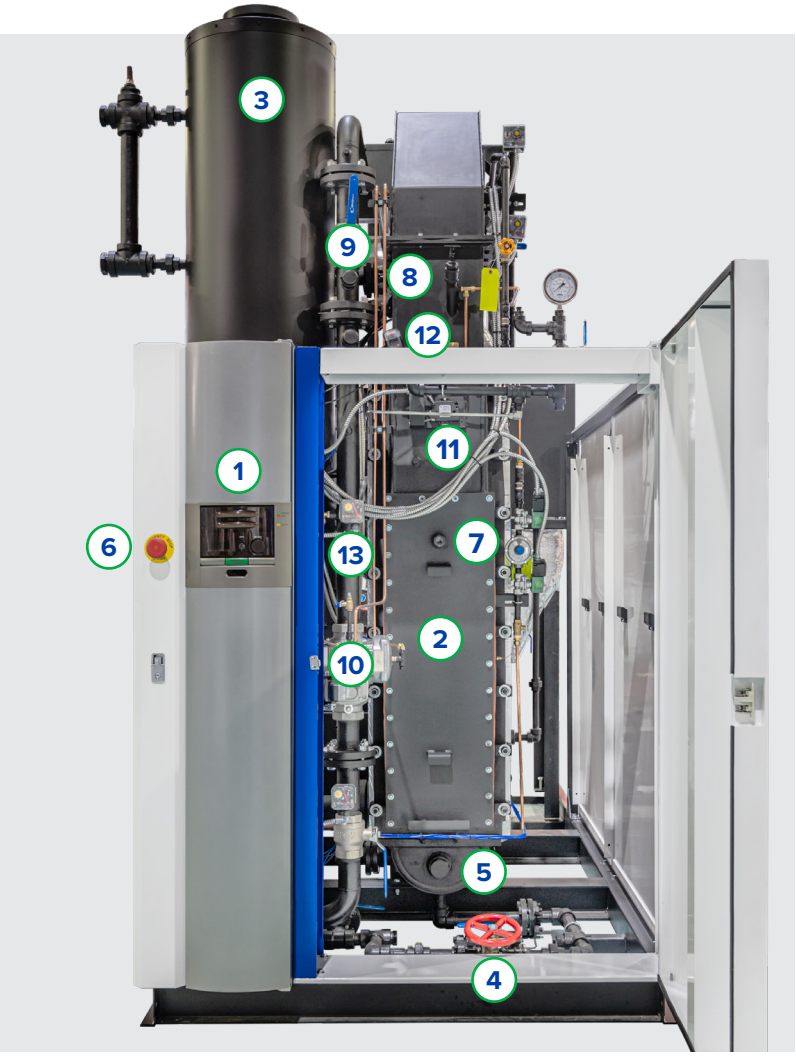
Water fills the tubes from the bottom of the pressure vessel and receives heat from combustion gas. It turns into steam and flows upward.

7 Steam Collection Drum

Raw steam funnels into the collection drum where the dry steam starts to rise to the top while moisture sinks to the bottom.

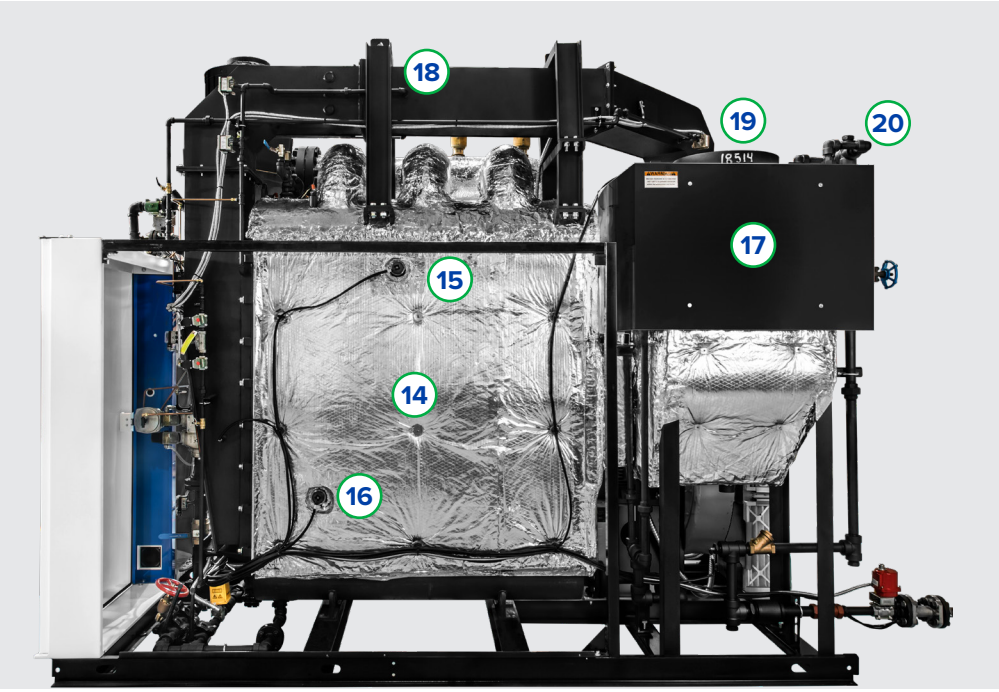
8 Steam Separator

The steam separator allows the dry steam to exit the to process equipment and recirculates the moisture back to the pressure vessel.



1. **BL Controller:** Boiler main control panel for start/stop, alarm/caution insight and setting adjustments
2. **Low Temperature Burner:** Miura burner design allows for low flame temperature and low Nox
3. **Steam Separator:** Unique design provides dry steam to process equipment
4. **Bottom Blow down Valve:** Used to drain pressure vessel water
5. **Inspection Plug:** Used to access lower pressure vessel for inspection
6. **Emergency Shut-Off:** Shut off button in case of an emergency
7. **Flame Sight Glass:** Port to see main flame
8. **Pilot Sight Glass:** Port to see pilot flame
9. **Gas Shut-Off Valve:** Manual gas train valve
10. **Fuel Regulator:** Proportional regulator/actuator combo unit
11. **Ignition Transformer:** Creates the spark to ignite the pilot flame
12. **Flame Sensor:** Flame detection sensor
13. **Gas Pressure Switch:** Low and High gas cut off

14. **Pressure Vessel:** Miura “Once-Through” floating header pressure vessel
15. **Overheat Monitor:** Thermocouple to monitor pressure vessel temperature
16. **Scale Monitor:** Thermocouple to monitor scale induced temperature increases
17. **Economizer:** Heat recovery device that utilizes exhaust heat to preheat incoming feed water
18. **Lifting Points:** Designed for moving the boiler
19. **Exhaust Outlet:** Duct for expulsion of exhaust gas
20. **Economizer Water Inlet:** Feed water piping to enter the economizer



21. Blower Motor VFD: Variable frequency drive (VFD) modulates blower motor speed *(only available on LX 250/300)*

22. Air Intake Box: Pulls air through replaceable air filters and channels to combustion zone

23. Boiler Feed Water Shut-Off: Controls water supply to boiler

24. Feed Water Connection Point: Connection for incoming feed water supply

25. Blow Down Piping: Piping to channel blow down water from pressure vessel

26. Gas Piping: Connection point for gas line into the boiler

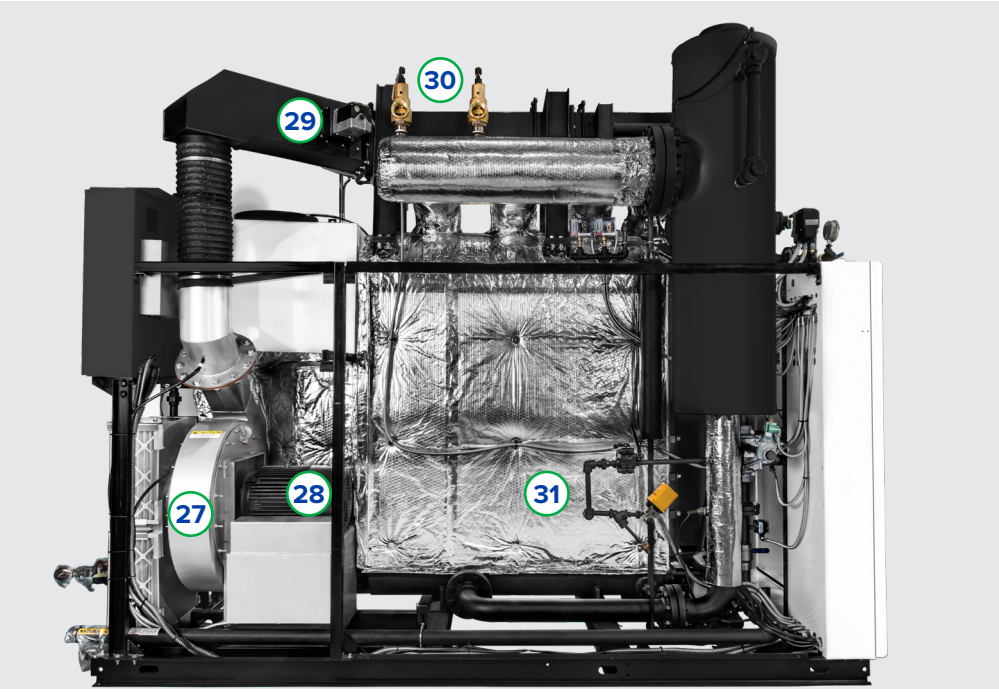
27. Blower: Fan that pulls air from outside and propels into combustion chamber

28. Blower Motor: Three-Phase motor to turn impeller

29. Air Damper: Controls airflow into the boiler

30. Safety Relief Valves: ASME Section I rated safety relief valves

31. Surface Blow Down: Piping to control concentration of boiler water. Control built in to BL controller



DIMENSIONS

FOR REFERENCE ONLY!
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Contact your sales representative for latest drawings and data.

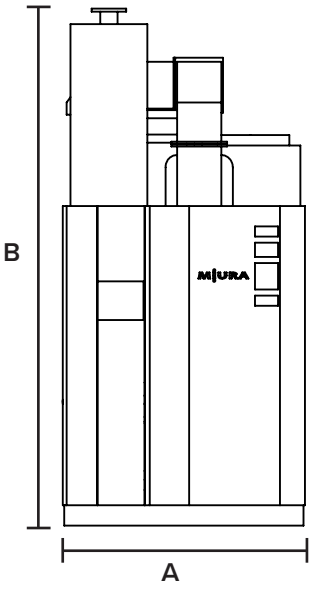

Figure 1 - Front View

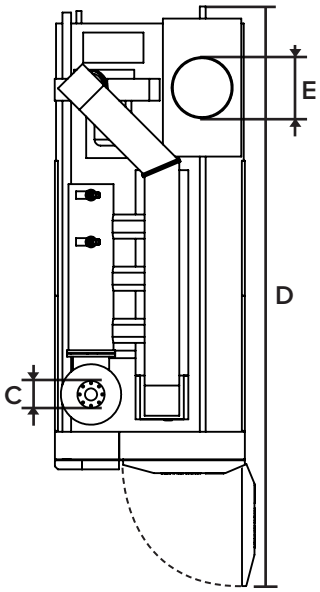

Figure 2 - Top View

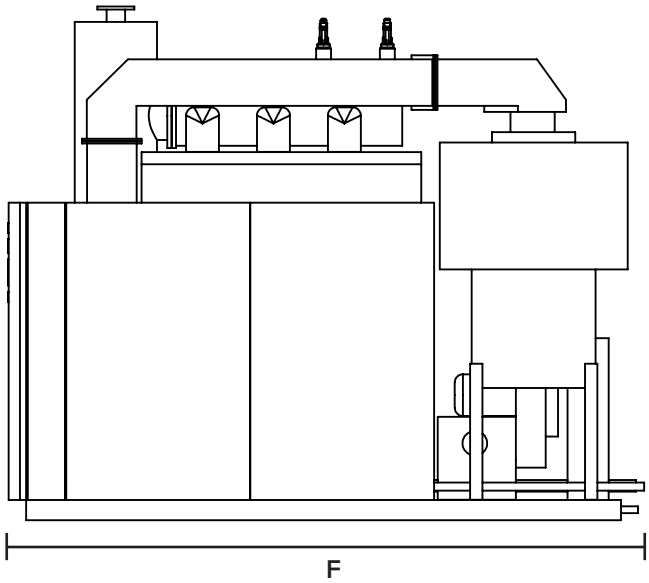

Figure 3 - Side View

Pressure Option	Model Number	Width (A)	Height (B)	Steam Outlet (C)	Door Open (D)	Chimney Outlet (E)	Length (F)	Shipping Weight	Operation Weight
	UNIT	Min IN.	IN.	IN.		IN.	Min IN.	LBS	LBS
Standard Pressure	LX-50	33 7/8"	101 5/8"	2”	127 3/4”	12" OD	96 7/8"	4,200	4,600
	LX-100		110 3/4"		156”		125 1/8"	6,000	6,600
	LX-150		125 5/8"	3”	169”	20" OD	138 3/4"	8,000	8,800
	LX-200								
	LX-250	63"	127"	4”	216 3/4”		157 7/8"	11,500	12,700
	LX-300								
High Pressure	LXH-200	33 7/8"	125 3/8"	3”	205 5/8”	20” OD	155 5/8"	8,200	9,100
	LXH-250	63"	127"	4”	216 3/4”		156 1/4"	11,800	13,000
	LXH-300								
	LXH-300-350P							12,000	13,200
Ultra Low NOx	LX-100SGN	33 7/8"	110 3/4"	2”	156”	12" OD	140 5/8"	6,000	6,600
	LX-150SGN		125 5/8"	3”	169”	20" OD	154 3/4"	8,000	8,800
	LX-200SGN								
	LX-250SGN	63"	127"	4”	216 3/4”		157 7/8"	11,500	12,700
	LX-300SGN								

SPECIFICATIONS

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Pressure Option	Model	BHP	MAWP	Steam Output	Heat Output	Efficiency	Fuel	Power Supply	Gas Pressure	Water Content
	UNIT	BHP	PSIG	LB/HR	MMBTU/HR				PSIG	GAL
Standard Pressure	LX-50	50	170	1,730	1.675	85%	Natural Gas and Propane	575,460,380,230, or 208V, 3 Phase, 60Hz	3-5 PSIG	45
	LX-100	100		3,450	3.348					60
	LX-150	150		5,180	5.022					95
	LX-200	200		6,900	6.695					
	LX-250	250		8,630	8.369	87%				115
	LX-300	300		10,350	10.043					110
High Pressure	LXH-200	200	300	6,900	6.696	84%				100
	LXH-250	250		8,630	8.370	86%				140
	LXH-300	300		10,350	10.043					
	LXH-300-350P	300	350	10,350	10.043	85%				135
Ultra Low NOx	LXL-100SGN	100	15	3,450	3.348	85%				55
	LX-100SGN	100	170							60
	LXL-150SGN	150	15	5,180	5.022					95
	LX-150SGN	150	170							
	LXL-200SGN	180	15	6,210	6.026					95
	LX-200SGN	180	170							95
	LXH-200SGN	180	300			84%				100
	LX-250SGN	250	170	8,630	8.369	87%				115
	LXH-250SGN	250	300		8.370	86%				140
	LX-300SGN	300	170	10,350	10.043	87%				110
	LXH-300SGN	300	300			86%				140
	LXH-300SGN-350P	300	350			85%				135

Notes:

Serving Industry Across America

"When we built the facility, every piece of equipment we looked at had to be easy-to-use, easy-to-maintain, and completely reliable. After doing our research, asking questions and looking at all the options, we purchased two Miura LX-Series steam boilers. The boilers addressed all our needs, and after about a year they continue to perform exceptionally well. They have never let us down."

-Chief Engineer
Large Laundry Operation

"While planning for the brewery, it was quickly evident that space would be at a premium. The Miura LX-200 we chose would require less space than a traditional boiler and provide additional capacity beyond the initial steam load. The brewery would be able to grow without adding additional boilers."

-Brew Master
Craft Brewery

"One of the many advantages of Miura boilers was their on-demand steam capabilities. The company claims to produce full steam in less than five minutes, I timed it. The steam we needed was there in four minutes. That impressive feature saved us time and labor costs, while allowing us to be more productive."

-Facilities Engineer
Industrial Manufacturing

"I've been in this industry for over 45 years and have researched—or worked with—all the major boiler companies. None of them were able to offer an energy-efficient package to meet our sustainability and production needs like Miura."

-Facilities Director
Food Production Facility

MIURA | ON-DEMAND STEAM SOLUTIONS

USA: 1-888-309-5574 | miuraboiler.com
2200 Steve B Smith Blvd., Rockmart, Ga 30153 USA