MIURA

MIURA'S EX SERIES DUAL-FUEL ON-DEMAND STEAM BOILERS

The new, BL Micro Controller Boiler Control System

Miura Gas/Oil-Fired EX Series High Pressure Steam Boiler

U.S. GREEN BUILDING COUNCIL MEMBER

On-Demand Steam Solutions

MIURA'S GAS/OIL SERIES ON-DEMAND STEAM BOILERS SAVE 20% FUEL COSTS CONSERVE RESOURCES.

EX SERIES

Miura is known world-wide for our commitment to protecting the environment and our innovative and efficient boiler designs. Our EX Gas/Oil Series High Pressure Steam Boiler is the most versatile industrial steam boiler in the world. The EX design minimizes carryover and produces dry 99+% saturated steam in 5 minutes or less from a cold start. Faster start-up means less fuel used, greater savings, and more responsible use of precious natural resources.

- *Dual fuel fired Natural Gas, Propane or #2 Fuel Oil*
- *High pressure options available (300 MAWP, 250 MAWP or 170 MAWP)*
- *Hot water boilers are available depending on models (refer to a Miura hot water boiler catalog for details)*
- *NOx rating is available as low as 30ppm depending on model*

ADDITIONAL BENEFITS

Water to Steam in 5 minutes

Miura Boilers produce steam in 5 minutes using their exclusive "**floating header**" design, a revolutionary advance that results in our customers using substantially less gas and oil. On average our customers save 20% on fuel costs and equivalent CO_2 reductions. Given ever-increasing concern with energy costs & CO2 emissions, forward-thinking organizations recognize the value that Miura's technology can bring to their "triple bottom line".

Modular "MI System" offers enhanced design flexibility & energy management

Facilities with larger loads can employ Miura's innovative "MI" (Multiple Installation) system to build an ***On-Demand*** steam plant customized to meet site-specific demand requirements. The MI System provides both the flexibility to build-to-suit current steam loads within very tight tolerances while allowing ease of future expansion of system capacity. In addition, the multiple modular units enhance a facility's energy management capability by providing higher efficiency during part-load / stand-by conditions via the MI System's ability to **stage multiple units on/off in response to demand fluctuations.**

BL MICRO CONTROLLER BOILER
CONTROL SYSTEM

The new BL Micro Controller Boiler Control System (left), the "brain" behind Miura's enhanced energy management system, offers significant advancements including many new individual monitoring points –an increase of over 60% compared to our popular XJ1 Controller.

The BL Controller provides robust 24/7 boiler Monitoring, Measuring & Verification (MM&V) capabilities and enhances troubleshooting by identifying problems and suggesting solutions via an easy-to-read display that interfaces with Miura Online Maintenance® software. Information is accessible both on site and on-line. The BL Controller features simple, intuitive programming that is easy to set up, program and operate. When combined with our O&M training program, the easy-to-use interface provides your facility with an intelligent boiler system to optimize energy and personnel management for increased productivity, efficiency and a reduced environmental impact.

- *Greater control over steam pressure settings for steadier steam pressure.*
- *Allows for compensated adjustment of high and low fire scale thermocouple settings.*
- *Allows for compensated adjustment of automatic blowdown based upon Total Dissolved Solids (TDS) and/or blowdown rates.*
- *Easily interfaces with the Miura "Colormetry" unit to minimize scale formation due to water softener failure.*

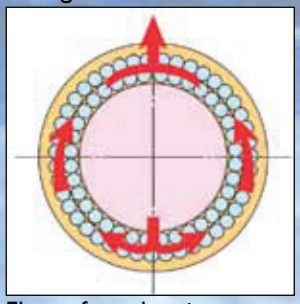
High Performance via Enhanced Control Capability

The BL Micro Controller Boiler Control System measures the performance of your boiler in an easy-to-read, user-friendly format:

- *Steam Pressure*
- *Flue Gas Temperature*
- *Feed Water Temperature*
- *Scale Monitor Temperature*
- *Overheat Monitor Temperature*
- *Flame Current*
- *Remaining Time to Blowdown*
- *Automatic Surface Blowdown Valve (On/Off)*
- *Water Conductivity*
- *11-Point Boiler Management Data*

... Plus many more

Omega Flow



Flow of combustion gas

Dual Fuel (Gas/Oil)

Miura's EX Series boilers offer a unique advantage for users of both gas and oil. Now you can enjoy the flexibility of switching fuel, without the need for a separate burner, typically required by other manufacturers. Miura technology means outstanding innovation and ease of use.

Built-in Online Monitoring

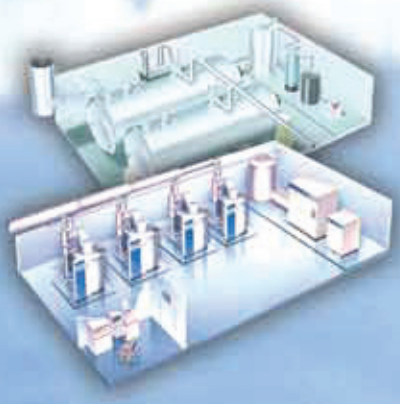
Miura's MOM / ER "Dashboard" Systems

Efficiency is also measured in consistent, reliable performance and Miura offers a robust suite of "dashboard" monitoring systems integrated with its BL boiler controller to provide real-time, 24/7 monitoring capability. Miura's On-line Maintenance® ("MOM") system provides a unique "sliding window" feature that records cautions / alarms in real time + 4 seconds preceding them to provide enhanced troubleshooting capability. The "MOM" system is standard with every unit and Miura offers monitoring to subscribing customers with a free 12-month trial of the service. Miura offers its ER monitoring system to those facilities that wish to integrate boiler monitoring into their on-site control system rather than subscribe to an off-site monitoring service.

See Miura's MOM / ER brochure for more information.

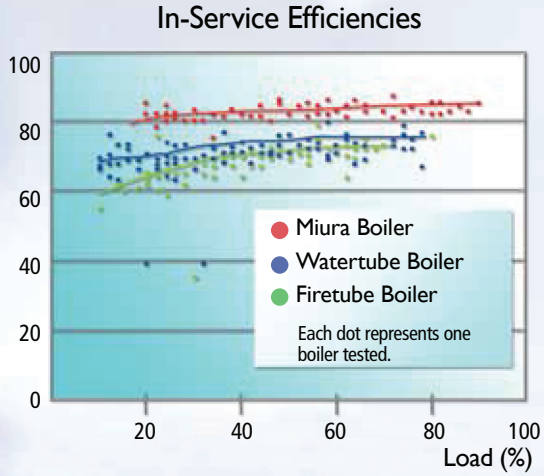
Reduced Boiler Footprint

Miura's unique compact modular design utilizes a low volume pressure vessel offering output capacities comparable to much larger conventional boilers. The resulting reduced boiler footprint provides design flexibility, reduced construction costs and enhanced utilization of existing space.



SUPERIOR FUEL SAVINGS & CO_2 REDUCTIONS

Highest In-Service Efficiencies in the commercial / industrial boiler industry



Miura's innovative design promises to move boiler technology into the 21st century, providing energy savings averaging 20% over other boiler designs. At 10% to 40% fuel savings, Miura can save about $200,000 per year in fuel for a typical 600 BHP steam system (assuming fuel cost of $0.90 / them) with reduced CO_2 emissions of over 1,100 metric tons per year.

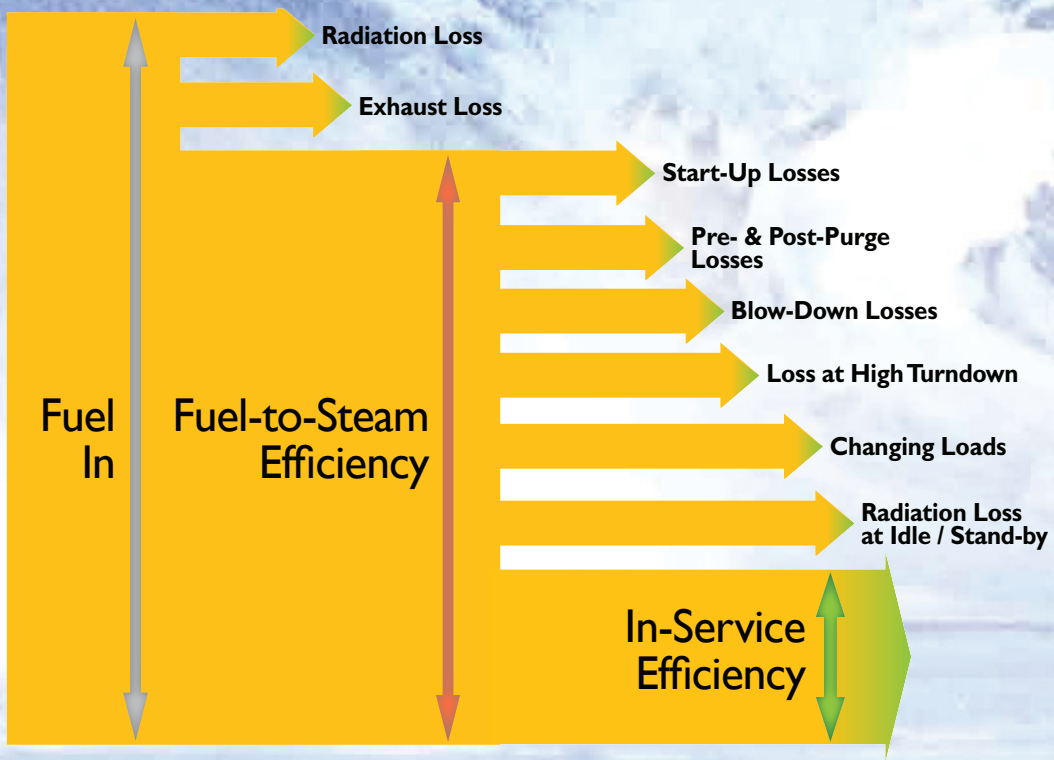
The chart (left) compares in-service efficiencies of Miura boilers with both conventional firetube and watertube boilers. Miura's low volume design results in optimal heat transfer with fuel-to-steam efficiencies of 85% at all load conditions. Although typical firetube designs can deliver up to 83% fuel-to-steam, studies comparing actual operating **In-Service Efficiencies** have shown Miura averages 10% to 40% in fuel savings over standard firetube designs.

Whereas conventional boiler efficiency is significantly reduced during part-load conditions, Miura offers consistently high operating efficiency at all load conditions.

HIGH IN-SERVICE EFFICIENCY

A Standard of Performance that sets Miura apart from other Steam Boiler manufacturers

In-Service Efficiency is a measure of overall boiler system performance, no matter your load profile. High In-Service Efficiency is the level of performance every Miura customer can expect. This standard of excellence has been established based on taking all factors of the boilers operation into account (see chart).



For a further explanation, let's review the common Definitions of Efficiency as related to the Boiler:

Miura has developed the term "In-Service Efficiency" to include Combustion Efficiency, Thermal Efficiency and all of the other energy losses from a boiler's operational cycle that contribute to operating efficiency including: radiation losses, blow-down losses, pre- and post-purge losses, and other losses that occur during changing loads, high turn-down, part-load and stand-by operation.

In-Service Efficiency is a more comprehensive measure of boiler efficiency. It better reflects a boiler's contribution to a facility's annual energy costs and is a more effective way to compare boiler performance. As a "bottom line" boiler performance indicator, In-Service Efficiency is the best measure of the true cost of steam.

EX SERIES SPECIFICATIONS

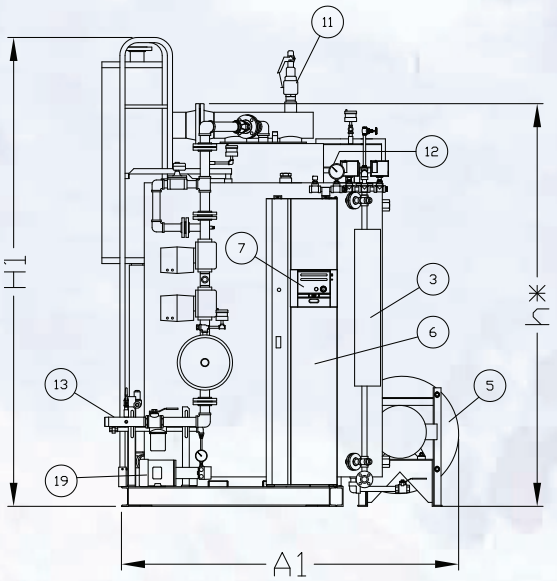
(Inches)

	A1	B1	H1	h*
EX-100 SGO	81	109	99	88
EX-150 SGO	91	130	120	103
EX-200 SGO	91	130	120	103
EX-250 SGO	94	136	146	120
EX-300 SGO**	106	142	157	131
EX-300 SGOF	114	140 ½	156 ½	130 ½

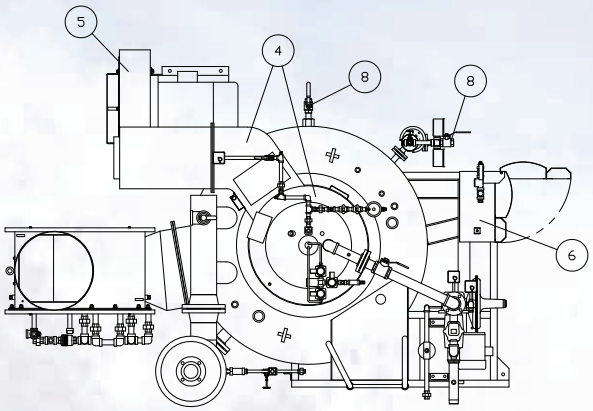
* Minimum height for Boiler Knock Down

** Drawing not applicable for EX-300 SGO-12 *(see new EX-300 insert)*

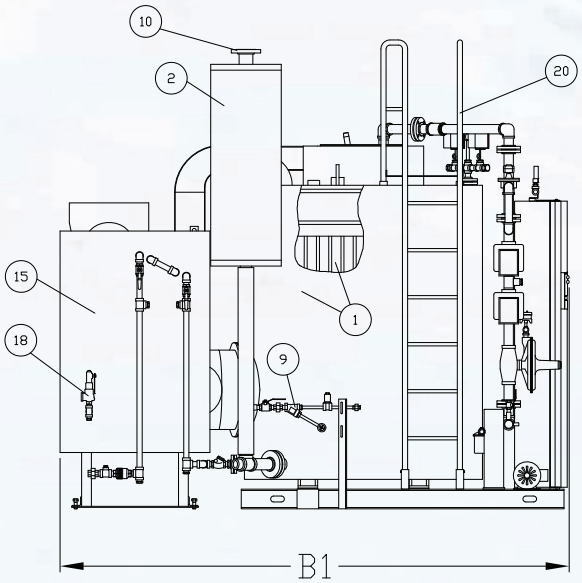
FRONT VIEW



TOP VIEW



SIDE VIEW



NO.	NAME OF PART
1	BOILER VESSEL
2	STEAM SEPARATOR
3	LIQUID VOLUME CONTROLLER
4	WIND BOX
5	FAN (AIR INLET)
6	ELECTRICAL CABINET
7	BL CONTROLLER
8	MANUAL BLOW DOWN
9	SURFACE BLOW DOWN
10	STEAM OUTLET
11	MAIN SAFETY VALVE
12	STEAM PRESSURE GAUGE
13	MAIN GAS INLET
14	FEED WATER INLET
15	ECONOMIZER
16	INVERTER BOX (OPTION)
17	LIFTING LUGS
18	ECON. RELIEF VALVE (OPTION)
19	OIL PUMP
20	LADDER

EX SERIES SPECIFICATIONS

ITEM	EX-100 SGO	EX-150 SGO	EX-200 SGO	EX-250 SGO	EXN-300 SGO (F) (*6,*7)	NEW EX-300 SGO
Utilization Horsepower	100HP	150HP	200HP	250HP	300HP	300BHP
Maximum Pressure (*1)	170 PSIG MAWP, 150 PSIG Maximum Operating					
Equivalent Output (*2)	3,450 LB/HR	5,175 LB/HR	6,900 LB/HR	8,625 LB/HR	10,350 LB/HR	10,350 LB/HR
Heat Output	3,348,000 BTU/HR	5,022,000 BTU/HR	6,695,000 BTU/HR	8,369,000 BTU/HR	10,050,000 BTU/HR	10,040,000 BTU/HR
Efficiency (fuel to steam) (*3)	85% (80% without Economizer)					86% (81% without Economizer)"
Heating Surface Area	196 FT^2	323 FT^2	323 FT^2	389 FT^2	499 FT^2	515 FT^2
Operational Weight	7,250 LBS	11,500 LBS	11,500 LBS	17,850 LBS	18,000 LBS	18,000 LBS
Shipping Weight	7,500 LBS	7,700 LBS	8,340 LBS	8,990 LBS	11,010 LBS	11,010 LBS
Dimensions Given are Approximate						
Width	81 in.	91 in.	91 in.	94 in	99 in.	99 in
Length	109 in.	130 in.	130 in.	136 in.	142 in.	142 in
Height	99 in.	120 in.	120 in.	146 in.	157 in.	166 in.
Combustion System	Proprietary Forced Draft, Step Fired Modulation Hi-Low-Off					
Ignition System	Electric Spark Ignited, Interrupted Gas Pilot					
Power Supply	208, 230, 460, or 575 V, 3 PHASE, 60 HZ					
Max. Electrical Consumption	13.35 KVA (14.2 for oil)	24.5 KVA (25.4 for oil)	27.5 KVA (28.5 for oil)	32.3 KVA (34.3 for oil)	35.4 KVA (37.3 for oil)	35.4 KVA (37.3 for oil)
Fuel Type (*4)	Natural Gas or Propane (3-5 PSIG), No. 2 oil					
Gas Consumption (*5)	3,920 SCFH	5,880 SCFH	7,850 SCFH	9,810 SCFH	11,780 SCFH	11,670 SCFH
No. 2 oil	28.1 GAL/Hr	42.2 GAL/Hr	56.3 GAL/Hr	68.7 GAL/Hr	84.5 GAL/Hr	82.3 GAL/Hr
Gas Supply Pressure	3-5 PSIG Natural (Gas or Propane)					
Main Steam Outlet	2 in.	3 in.	3 in.	4 in.	4 in.	4 in.
Safety Valve Outlet (*8)	One 2 in.	One 2 ½ in.			Two 2 ½ in.	Two 2 ½ in
Main Water Inlet	1 in.	1 in.	1 in.	1 ¼ in.	1 ¼ in.	1 ½ in.
Fuel Gas Inlet	2 in.	2 in.	2 in.	2 ½ in.	2 ½ in.	2 ½ in.
Fuel Oil Inlet	¾ in.					
Automatic Surface Blowdown	One ⅜ in.			Two ⅜ in.		
Manual Blowdown	Two 1in.				One 1in. and One 1 ¼ in.	
Chimney Diameter (ID)	14 in.	20 in.	20 in.	20 in.	26 in.	20 in.
Flame Detector	Ultraviolet Flame Eye Sensor					
Pressure Control	Adjustable Pressure Transducer and Switch					
Liquid Volume Control	Electric Conductivity Type					
Overheat Protection	Low Water Cut Off & Thermocouple					

Note: *1 Optional EXH-SGO Series at 250 PSIG MAWP, 225 PSIG maximum operating.
*2 Equivalent output calculated from and at 212°F (100°C) feed water at 212°F (100°C) steam.
*3 Thermal Efficiencies are based on high heating values of fuels at 68°F (20°C) feed water.
*4 UL and c-UL approved for natural gas, propane, and No. 2 oil.
*5 Gas consumption based on natural gas with high heating 1004 BTU/SCF.
*6 Low water content option available to meet provincial water volume regulations in Canada.
*7 Low NOx model (EXN300SGOF) available to meet 30ppm NOx.
*8 Safety valve outlet size may change depending on the pressure setting.

Additional Notes:
1 All Miura steam boilers are fully packaged and test fired at factory.
2 Built to meet and exceed UL & ASME standards in U.S.A; c-UL & B-51 standards in Canada.
3 Flue gas recirculation is optional only with the Economizer

"S" - Economizer
"G" - Natural Gas or Propane Fired
"O" - #2 Oil Fired
"F" - Flue Gas Recirculation
"N" - Low NOx

View Miura's
Virtual Start-Up Video

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MIURA

Miura Steam is Engineered for Greater Efficiency, Lower Costs, and Reduced Environmental Impact.