EPW Series IOM

GAS FIRED Pool Heater

1,000,000 – 1,500,000 – 2,000,000 -2,600,000-3,300,000-4,200,000 BTU/H

EPPMAN2015

Report No. 246577-2169600
Project No. 70040520 - 114

INSTALLATION& OPERATION MANUAL

Warning:

Before you operate this boiler, read this manual carefully and take extra precautions to all safety and warning symbols or important items. The operating manual is part of the documentation along with the boiler. The installer is required to explain your heating system and boiler operating instructions.

! **Notice:**

Please read this manual and retain for future reference. Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual for assistance or additional information or consult a qualified installer, service agency or the gas supplier.

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PREFACE

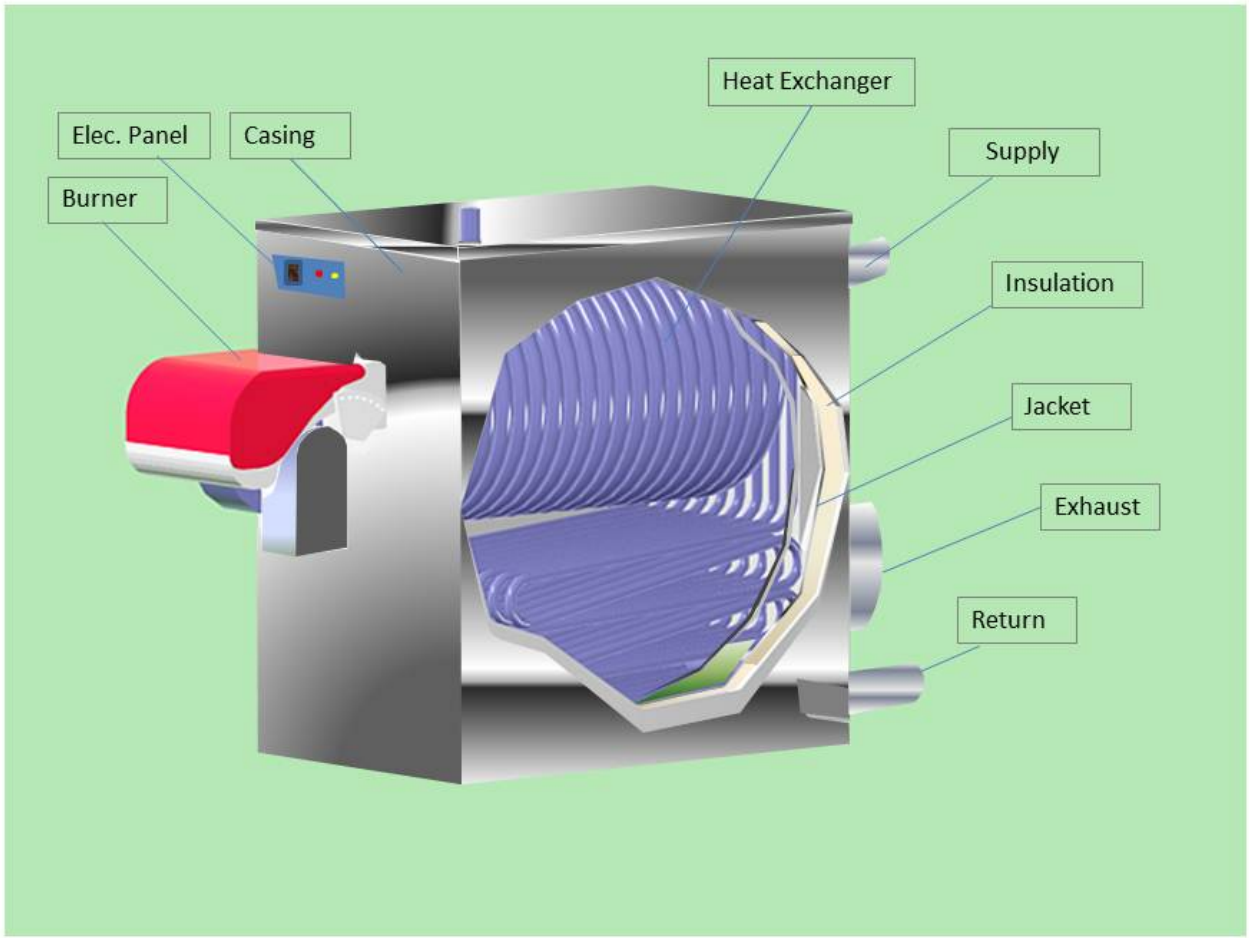
Read these instructions carefully, before putting the appliance into operation, familiarize your-self with its control functions, operation and strictly observe the instructions given. Failure to do so may invalidate warranty or prevent the appliance from operating.

The Installation and commissioning of the appliance needs to be performed by a licensed and trained heating contractor. A complete commissioning report must be performed, recorded and sent to EnerPro Boilers for warranty.

If you have any questions or require more information about specific subjects relating to this appliance or its installation please do not hesitate to contact us.

The data published in these technical instructions is based on the latest information (at date of publication) and may be subject to revisions.

We reserve all the right to continuous development in both design and manufacture, therefore any changes to the technology employed may not be retrospective nor may we be obliged to adjust earlier supplies accordingly.



1-Safety Instruction

1.1- General Instructions

Follow the instruction on Clearances from combustible construction for boiler, vent connector, and steam and hot-water pipes.

Keep unauthorized personnel away from the boiler. Do not place objects on or against the boiler. Do not touch hot water connections or the flue outlet when the boiler is operating – burn hazard.

Danger
This boiler is connected to a 120v or 208v power supply. An improper installation or attempts to repair electrical components or controls may result in life threatening situations

1.2- Working on the boiler

Installation, commissioning, maintenance and repair work must only be carried out by a suitably qualified specialist/ Engineer in accordance with all relevant national/local standards and certifications.
Always disconnect the main power supply and close the main gas cock before working on the boiler.

Casing panels should only be removed for maintenance and servicing purposes. Refit all panels on completion of maintenance or servicing before putting the boiler back into service.

Never stand on the boiler. the boiler casing is not designed for excessive force

Instructions and warning labels on the boiler must never be removed or covered and must be clearly legible throughout the entire service life of the boiler. Damaged or illegible instructions and warning labels must be replaced immediately.

Generally applicable safety instructions related to accident prevention must be consulted in addition to the information supplied in this technical documentation.

1.3- Pool Heater modification and spare parts

The boiler must not be modified or non OEM spare parts fitted without the express written approval of EnerPro Boilers Inc.

FOR YOUR SAFETY

Warning: If the information in these instructions
Are not followed exactly, a fire or explosion may
Result causing property damage, personal injury

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

-WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

WARNING

Inhalation of fiberglass wool and/or ceramic fiber materials is a possible cancer hazard. These materials can also cause respiratory, skin and eye irritation.

Code and Safety Requirements

Codes
The installation of this unit shall be in accordance with local codes. In the absence of local codes, use:

CAN/CSA-B149.1 or .2 Installation Codes for Gas Burning Appliances for Canada. For U.S. installations, use the National Fuel Gas Code ANSI Z223.1. Always use latest editions of codes.

In Canada all electrical wiring is to be done in accordance with the latest edition of CSA C22.1 Part 1 and/or local codes. In the U.S., use the National Electrical Code ANSI/NFPA 70. The heating contractor must also comply with the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1 where required by the authority having jurisdiction.

➢ *Carefully read this manual prior to attempting installation.*

WARNING:

Improper installation, adjustment, alteration, service or maintenance can

cause property damage, personal injury (exposure to hazardous materials) or loss of life. Refer to the user's information manual provided with this boiler. Installation and service must be performed by a qualified installer, service agency or the gas supplier (Who must read and follow the supplied instructions before installing, service, or removing this boiler. This boiler contains materials that have been identified as possibly carcinogenic to humans.

2- WATER HEATER DESIGN AND TECHNICAL DATAS

2.1-General Specification

High efficiency Condensing Potable water heater.

Maximum Allowable Working Pressure: 160 psi

Maximum Allowable Working Temperature: 210 F

Fuel : Natural Gas and propane

Inlet gas pressure 7"- 5psi(Natural gas) 11 -14 (Propane)

Material:

Pressure Part : Stainless steel 316L or Stainless Steel 316 Ti

Jacket : Stainless steel 304

Casing : Stainless steel 304 or Powder Coated Mild steel.

Burner : Riello RS…/M series or Power flame Nova Plus (IOM is attached), Fuel Master/ Pendel [Premix Blower+ Metal fiber Burner+ Modulating Gas valve].

ACT(American combustion Technologist), All other CSA/UL Burners as alternates.

Control and safety devices :

LFL or Honey well Burner control , Honey well or Dungs, Siemens ,Asco Gas Valves.

operation and high limit Temperature control.

Operating Pressure and Temperature Indicator

Honeywell or Dungs High gas Pressure switch.

Honeywell or Dungs Low gas Pressure Switch.

Equipped with flow control cut off. (Flow switch and low water cut off as an option)

All other CSA/ UL approved brands could be used as alternates, for the control and safety devices.

Equipped with ASME approved pressure relief valve.

2.2-Temperature control:

Depend on application and client requirement EPW boilers will be equipped with different option of temperature controls as followed:

Honeywell S7910, or S7999D1006

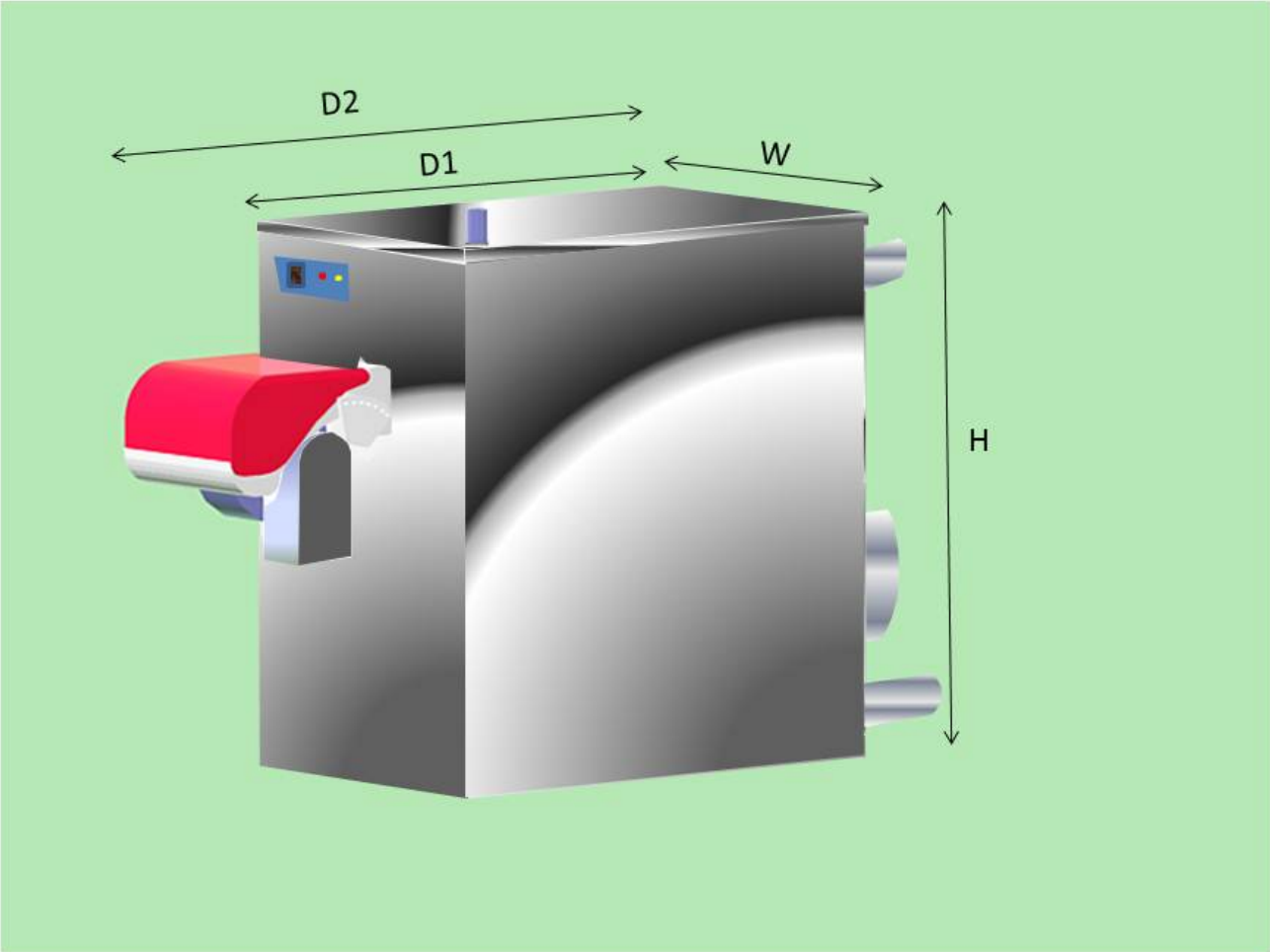
RWF40

T775

HPX CPU0500

E5CN/E5CN-U

(All other CSA/UL approved as alternates)



2.3-Units' Dimension

Model	W (in)	H (in)	D1 (in)	D2 (in)
EPW1000	29	56	55.5	74
EPW1500	35.5	64	62	75
EPW2000	35.5	64	68	83
EPW2600	35.5	66	72.5	116
EPW3300	35.5	66	81	116
EPW3300L	42	70	77	116
EPW4200	46	78	88	124

2.4-UNITS WEIGTH AND WATER CONTENT

MODEL	WEIGTH lb	WATER CONTENT Gal	Min. Relief Valve Capacity Ib/hr
EPW1000	**1100**	**30**	**1000**
EPW1500	**1500**	**45**	**1500**
EPW2000	**1950**	**60**	**2000**
EPW2600	**2400**	**80**	**2600**
EPW3300/3300L	**2640**	**90**	**3300**
EPW4200	**3740**	**120**	**4200**

2.5-Other Technical Data

Unit Models		EPW1000	EPW1500	EPW2000	EPW2600	EPW3300 /3300L	EPW4200
General							
Firing Sequence Operation		On- Off , 2 Stage or Fully Modulating					
Minimum Fuel Input	**MBH**	250	350	400	520	660	840
Maximum Fuel input	**MBH**	1000	1500	2000	2600	3300	4200
Minimum Fuel Output	**MBH**	238	325	380	494	630	800
Maximum Fuel Output	**MBH**	965	1380	1850	2470	3150	400
Gas and Venting							
Gas Type		Natural Gas - Propane					
Gas inlet Connection Size	in	1 ½”	2”	2”	1.5”/3”	2”/3”	2”/3”
Gas Pressure	inWC PSI	3.5 (Natural Gas) 11 – 14 (Propane) To 5 (Natural Gas)					
Flue Gas Vent Diameter	in	6	8	10	12	12	14
Condensate Drain Connection	in	1	11/4	11/4	11/4	11/2	11/2
Water							
Return	in	3F	3F	3F	3F	3F	4F
Supply	in	3F	3F	3F	3F	3F	4F
Burner Type							
Riello		**RS28/M**	**RS38/M**	**RS50/M**	**RS70/M**	**RS100/M**	**RS100/M**
Premix Metal Fiber Burner		**Premix Blowers + Modulating Gas Valves + Metal Fiber Burners (Specifications, Drawings and Manuals are attached.**					
Power Flame (Nova Plus)		**NP2-G-120**	**NP2-G-170**	**NP2-G-250**	**NP2-G-420**	**NP2-G-420**	**NP2-G-520**
Electrical							
Control Voltage	V	110/60/1ph	110/60/1ph	110/60/1ph			
Blower Voltage	V	110/60/1ph -220/60/1ph 208/60/3ph To 575/60/3ph					

Warning – Electrical shock hazard, can cause personal injury or loss of life, including property damage. – All electrical wiring to the boiler and controls must be protected from ingest of water and be properly grounded and bonded according to CEC Part I CSA 22.1 & NEC NFPA 70.

2.6- Pressure Parts

Pressure parts are fabricated from high grade stainless steel , SA 213 / SA249/SA312 / TP 316L /316Ti Welded According on ASME 2007 /2008 addenda Section IV and IX.

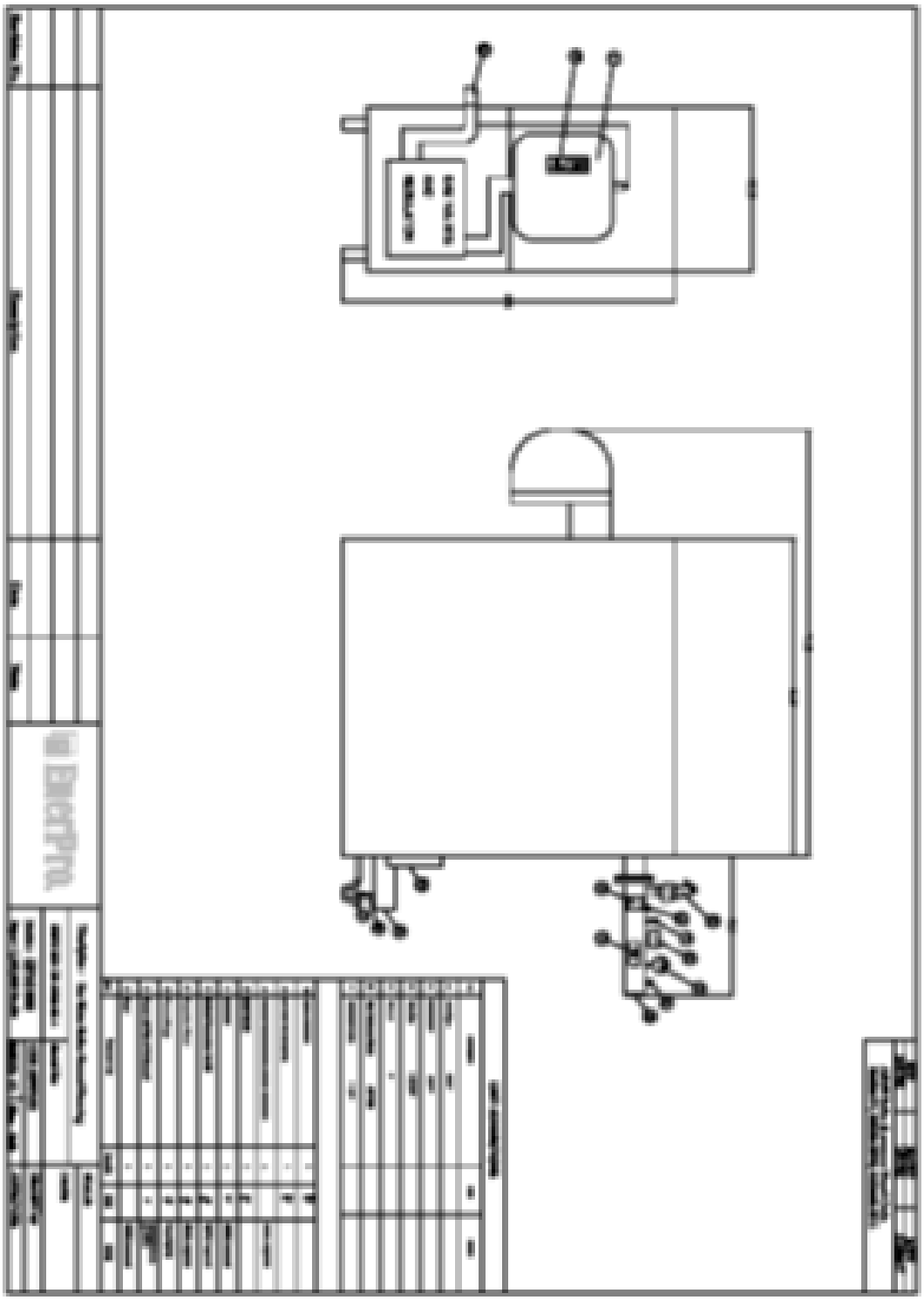
HTP	MAWP	MWT
240 PSI	160 PSI	210deg F

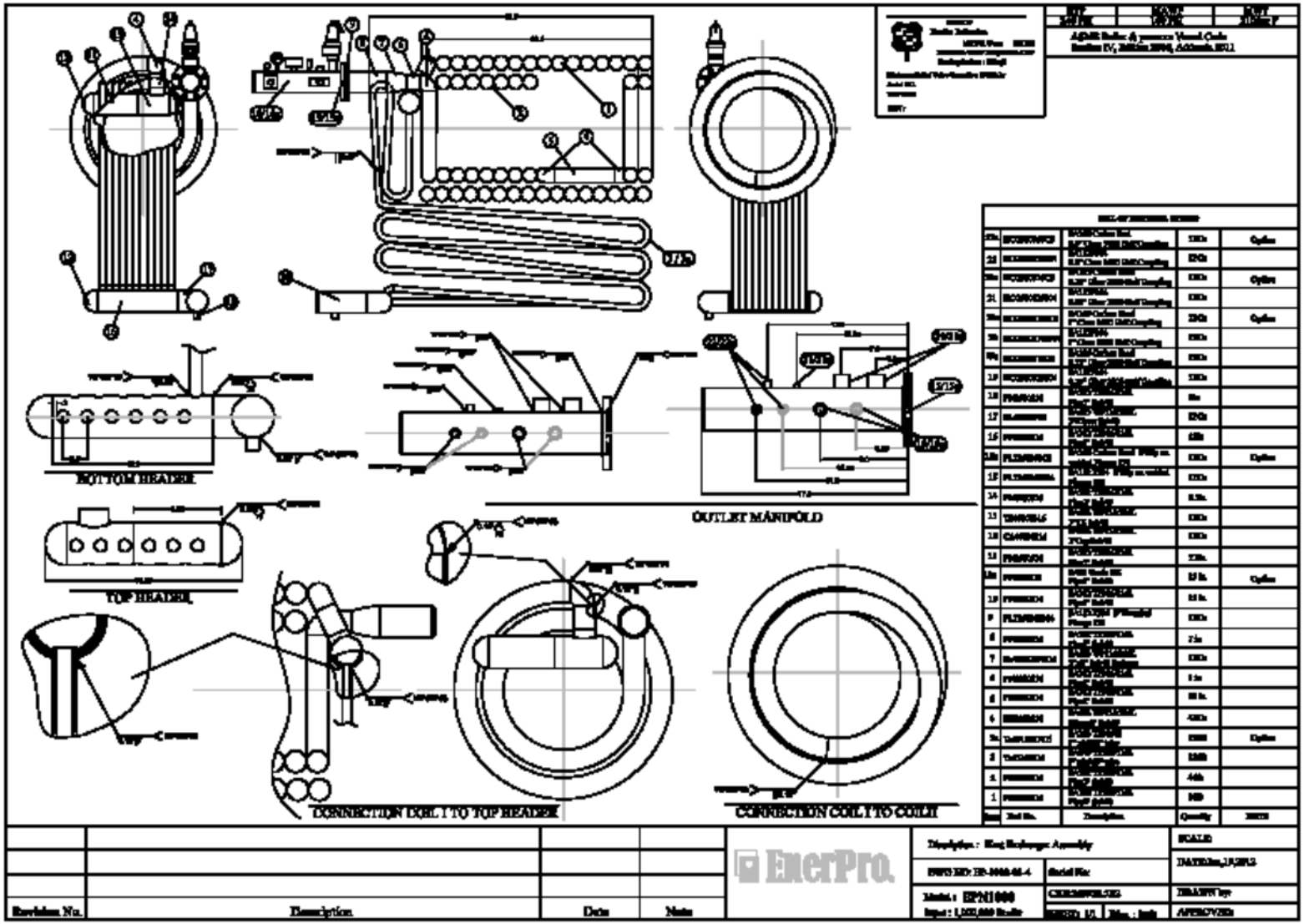
ASME Boiler & pressure Vessel Code
Edition 2010 Addenda2011 Section IV

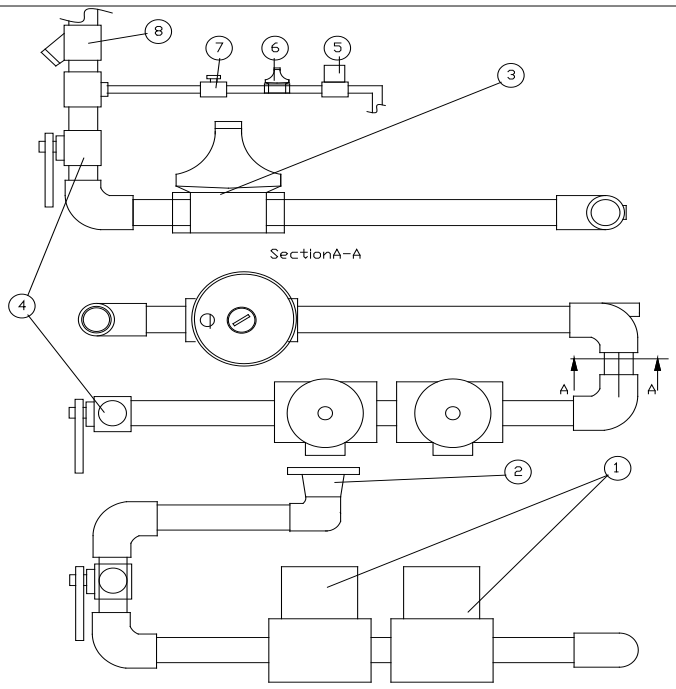
EnerPro®

EPN1000
Heating Boiler

Input 1,000,000 Btu/hr




BOTTOM HEATER
TOP HEATER
OUTLET MANIFOLD
CONNECTION COIL 1 TO TOP HEATER
CONNECTION COIL 1 TO COIL1
EnerPro.



Item	Discerіption	Quantity	
8	Sediment trap	1	
7	Cock valve	1	
6	Pilot Gas Regulator	1	
5	Pilot Solonoid Gas valve	1	
4	Manual Gas Valve	2	
3	Main Gas Regulator	1	
2	Burner Flange	1	
1	Main Solonoid Gas valve	2	

Revision No.	Description	Date

Discription : GASTRAIN

Model : EPN1000

Input : 1,000,000 Btu/hr

CRN:

SHEET: 10/10 Dim : Inch

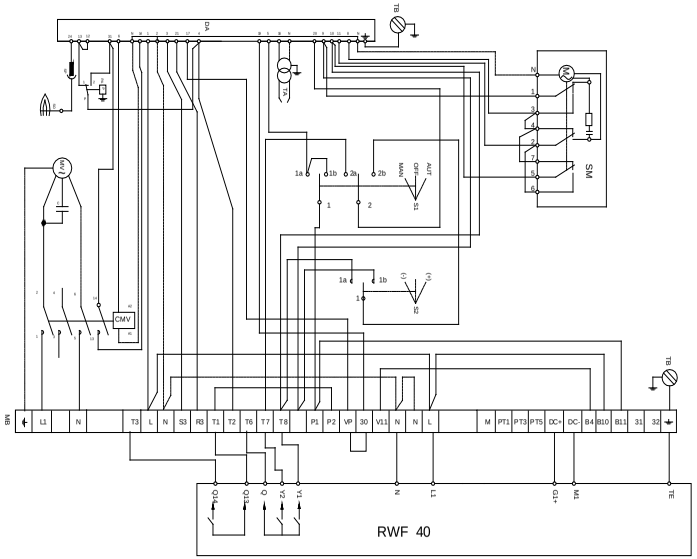
SCALE:

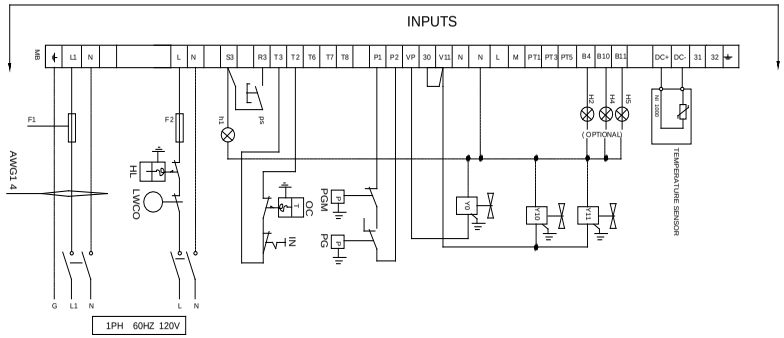
DATE:

DRAWN:

CHK:

APPROVED:





LEGEND	
C	Capacitor
CMV	Motor Contactor
DA	Siemens LFL Control Box
F1	Motor Fuse
F2	6 amp Control Fuse
H1	Remote Lock - out Signal (Optional)
H2	Burner On Signal (Optional)
H4	Power On Signal (Optional)
H5	Permission OK (Optional)
IN	Burner Manual Stop Switch
LWCO	Low water cut off
MB	Burner Terminal Strip
MV	Fan Motor
Ni 1000	RTD Temperature sensor
OC	Operating Control
PA	Air Pressure Switch
PG	Min Gas Pressure Switch
PGM	Max Gas Pressure Switch
RWF40	Siemens PID Controller
S1	Switch for following Operations
	Man = Manual
	Aut = automatic
	Off
S2	Button for
	- Power reduction
	+ Power increase
SM	Servomotor
SO	Falme Rod
SP	Plug - Socket
TA	Ignition transformer
TB	Burner Ground
Y0	Pilot Valve
Y10	Main Gas Valve
Y11	Main Gas Safety Valve
HL	High Temperature limit Cut off

Revision No.	Description	Date

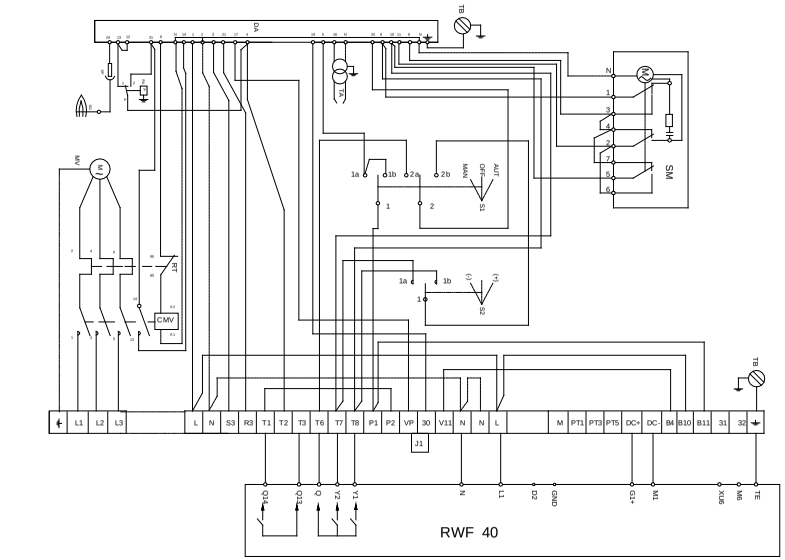
Discription : Electrical Drawing

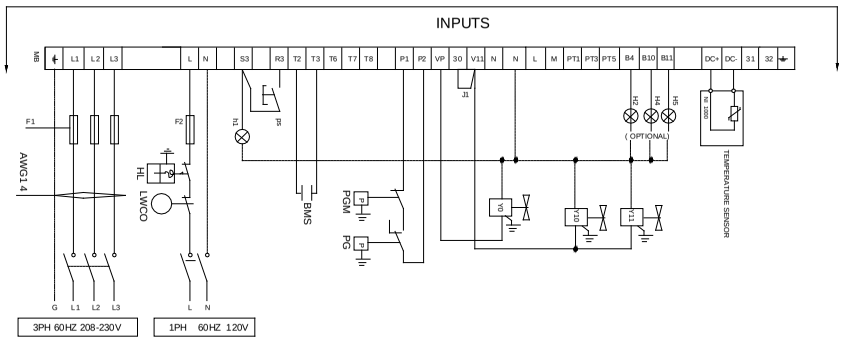
Model : EPN1000
EPN1500

CRN:

SHEET: 10/10 Dim : Inch

SCALE:
DATE:
DRAWN:
CHK:
APPROVED:





LEGEND	
BMS	Remote Enable
CMV	Motor Contactor
DA	Siemens LFL Control Box
F1	Motor Fuse
F2	6 amp Control Fuse
H1	Remote Lock- out Signal (Optional)
H2	Burner On Signal (Optional)
H4	Power On Signal (Optional)
H5	Permission OK (Optional)
IN	Burner Manual Stop Switch
J1	Run Test jumper
LWCO	Low water cut off
MB	Burner Terminal Strip
MV	Fan Motor
NI 1000	RTD Temperature Vensor
OC	Operating Control
PA	Air Pressure Switch
PG	Min Gas Pressure Switch
PGM	Max Gas Pressure Switch
PS	Remote Lock out reset (Optional)
RT	Thermal Overload
RWF40	Siemens PID Controller
S1	Switch for following Operations
	Man = Manual
	Aut = automatic
	Off
S2	Button for
	- Power reduction
	+ Power increase
SM	Servomotor
SO	Fame Rod
SP	Plug - Socket
TA	Ignition transformer
TB	Burner Ground
Y0	Piloy Valve
Y10	Main Gas Valve
Y11	Main Gas Safety Valve
HL	High Temperature limit Cut off

Revision No.	Description	Date	

Discription : Electrical Drawing

Model : EPN2000

CRN:

SHEET: 10/10 Dim : Inch

SCALE:
DATE:
DRAWN:
CHK:
APPROVED:

3- APPLICATION DATA

3-1- General

The EnerPro Pool Haters is suitable for both conventional room-supplied or sealed combustion. Sealed combustion terminals should comply with the local and national codes. Any horizontal pipe-work in the flue gas discharge system should slope towards the boiler. Horizontal pipe-work in the air supply system should slope towards the supply opening and may require a drain point at the low point.

The EPW units can be used on all new and refurbishment projects in both single and multiple configurations. Conventional and sealed combustion venting system capability means that the boiler can be sited almost any-where within a building.

External control systems (BMS) can be interfaced with the boiler to provide on/off – high/low or

modulating (0-10 V dc input) firing control options

All EnerPro Pool Heaters are fully test fired after assembly to ensure the boiler and controls comply with our strict quality policy.

3.2 -Clearance to Combustible

Model	EPW 1000	EPW 1500	EPW2000	EPW2600	EPW3300	EPW4200
Front (in)	24	24	24	24	24	24
Back (in)	6	6	6	6	6	6
Top (in)	6	6	6	6	6	6
Bottom (in)	6	6	6	6	6	6
Sides (in)	6	6	6	6	6	6

3.3-Clearance to Non-Combustible Steam and Hot water pipe, Vent Connector, Service

Model	EPW 1000	EPW 1500	EPW2000	EPW2600	EPW3300/L	EPW4200
Front (in)	24	24	24	24	24	24
Back (in)	12	12	16	16	16	16
Top (in)	16	16	16	16	16	16
Bottom (in)	4	4	4	4	4	4
Sides (in)	0	0	0	0	0	0

3.4- Combustion Air Supply Requirements

The boiler requires a clean, fresh and adequate supply of combustion air, failure to provide sufficient combustion air supply will result in carbon monoxide (CO) production that could lead to personal injury including loss of life or damage to boiler or property. Do not store any flammable liquids, fluids, vapors or materials near the vicinity of the boiler.

3.5- Unit's Venting Types

Flue gas venting: Use only an approved gas vent category IV type "BH."

Any improper operating of the venting system must be corrected so the installation conforms to both ANSI Z223.1/NFPA 54 or CAN/CSA B149.1 gas installation codes. When resizing any portion of the common venting system, the common venting system shall be resized to approach the minimum size as determined using the appropriate tables in Part II of ANSI Z223.1/NFPA 54 gas code &/or CAN/CSA B149.1 natural gas and propane installation code.

Caution – Warning:
Flue gas condensation is very aggressive and corrosive which could lead to failure of the venting system or drains, consult local and national codes regarding flue gas condensation disposal. The U -trap assembly must be properly installed to avoid escape of the flue gas emissions. The flue gas condensation may require neutralization prior to entering the drain.

For Instruction on vent installation refer to Security Chimney, Installation manual or other stack manufacturer which their products meet UL1738 &ULC S363.

3.6- Direct Vent [Side wall] Applications:

A horizontal vent system with the air supply, required for combustion, provided within the boiler room or combustion air sources provided into the room.

3.7- Vent Termination Inlet/Outlets

The vent terminals must be installed to provide suitable protection against wind, rain, snow or blockage along with a rodent/debris screen. See this section for other requirements. Conventional chimney application tapered cone, and sidewall or direct vent require a termination Elbow fitting.

Warning:
The flue gas vent pipe must be airtight and watertight. Horizontal sections of the venting must slope downward towards the boiler ½" per linear foot [12mm] and adequate vent support must be provided.

3.8- Warning & Precautions for Co-venting:

Only co-venting this boiler with another, category II , appliance. When co-venting the EPW boiler a vent damper is required. Co-venting with other appliances shall conform and be sized in accordance to local and national codes [CSA B149 & ANSI Z223.1] according to appropriate tables in Part II of the above mentioned codes.

Conventional chimney vent length chart [room supplied combustion air]

Model	Vent ø	Vent Length [Min]		Vent Length [Max]		90° Elbow = Length		45° Elbow = Length	
	inch	Ft.	m	Ft.	m	Ft.	m	Ft.	m
EPW1000	6								
EPW`500	8								
EPW2000	10								
EPW2600	12	5	1.5	100	30	12	3.5	6.5	2
EPW3300	12								
EPW4200	14								

CLV system venting length chart [sealed combustion air]

Model	Vent ø	Vent Length [Min]		Vent Length [Max]		90° Elbow = Length		45° Elbow = Length	
	inch	Ft.	m	Ft.	m	Ft.	m	Ft.	mm
EPW1000	6								
EPW1500	8								
EPW2000	10								
EPW2600	12	5	1.5	100	30	12	3.5	6.5	2
EPW3300	12								
EPW4200	14								

(EPW1000, EPW1500, EPW2000,EPW2600, ,EPW3300,EPW4200 are category II and IV)

Venting lengths must not exceed the minimum and maximum equivalent lengths shown in above table . Any horizontal runs of the venting must slope towards the boiler ½" per linear foot.

3.9 -Direct vent applications:

This venting system uses a single vent to discharge all flue gases to the outside, combustion air provided within the boiler room, the air source must be sized in accordance to national codes CSA B149 & ANSI Z223.1 or local codes having jurisdiction, more than one source may be required. The vent terminal locations follow local and national codes requirements. The vent terminal shall discharge flue gases away from the building structure so that the flue gases do not cause damage to the building, the vent terminal locations must also follow CSA B149 & ANSI Z223.1.

Direct vent or sealed combustion system venting length chart [sealed combustion air]

Model	Vent ø	Vent Length [Min]		Vent Length [Max]		90° Elbow = Length		45° Elbow = Length	
	inch	Ft.	m	Ft.	m	Ft.	m	Ft.	mm
EPN1000	6								
EPN1500	8								
EPN2000	10								
EPN2600	12	5	1.5	100	30	12	3.5	6.5	2
EPN3300	12								
EPN4200	14								

3.10- Co-venting – Retrofitting:
At the time of removal of any existing boiler is removed from a common vent system, the following steps shall be performed with the each remaining appliance connected to the common vent in operation and not in operation. This boiler must not be co-vented with a category I or III appliance. The boiler must have a vent damper installed when co-venting with other appliances.

a. Any used opening of the vent system be properly sealed
b. Visually inspect the venting system for proper size and horizontal pitch, determine there is no blockage, restriction, leakage, corrosion and other deficiencies could cause an unsafe condition.
c. Close all building doors, windows and all doors between the appliances which remain connected to the common venting system are located and other space of the building. Turn on clothes dryers, exhaust fan at maximum speed and any appliance not connected to the common vent system, close fireplace dampers. Do not operate a summer exhaust fan.
d. Place in operation each of the appliances installed in the common vent system being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
e. Test for spillage near and around the each of the gas appliances after 5 minutes of main burner operation.
f. After determining that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return all doors, windows, exhaust fan, fireplace dampers and any other gas burning appliance to their normal positions.
g. Any improper operating of the venting system must be corrected so the installation conforms to both ANSI Z223.1/NFPA 54 or CAN/CSA B149.1 gas installation codes. When resizing any portion of the common venting system, the common venting system shall be resized to approach the minimum size as determined using the appropriate tables in Part II of ANSI Z223.1/NFPA 54 gas code &/or CAN/CSA B149.1 natural gas and propane installation code.

The combustion air inlet must be provided with a debris/bird-rodent screen. All terminals shall be arranged to avoid and prevent the accumulation of flue gas condensation.
Warning: In all installations avoid vent termination locations where excessive debris or snow could accumulate leading to blocking of the vent terminals or where prevailing winds and rain could enter the vent terminal creating additional resistance to the venting system.

Vent terminals should avoid being installed where the building exterior could be tarnished from the flue gases, a shield or another location should be considered.

The vent terminals shall be installed according to the instructions as provided terminals shall not be less than 2 inches [50mm] from the wall surface or more than 10 inches [254mm] from the ℄ of terminal to the wall. For high traffic locations, the vent terminal shall be guarded.

According to the national gas codes [CSA B149 & ANSI Z223.1/NFPA 54] a vent shall not terminate...

- Directly above a paved walkway or driveway which serves two or more buildings or where the flue gas condensation or vapor could create a hazard or improper operation of regulators, relief's or valves or any other device.
- Above or below any electric or gas meter, regulators & relief devices unless a 4ft [1.2m] horizontal clearance distance to be maintained.
- Less than 7ft [2.1m] above any paved sidewalk or driveway.
- Less than 6ft [1.8m] from any combustion air inlet source from any nearby building.
- Less than 4 ft [1.2m] above a meter/regulator assembly horizontally from a vertical centerline of the regulator vent outlet to a maximum vertical distance of 15ft [4.6m].
- Less than 1ft [03m] above grade or normal snow level in the area is expected.
- Less than 3ft [0.9m] from windows, doorways, and combustion air supplies nearby buildings or other appliances.

- Under a veranda, porch or deck, unless [1] the veranda, porch or deck is fully open on at least 2 sides underneath. [2] The distance between the top of the terminal and the grade is greater than 1ft [0.3m].

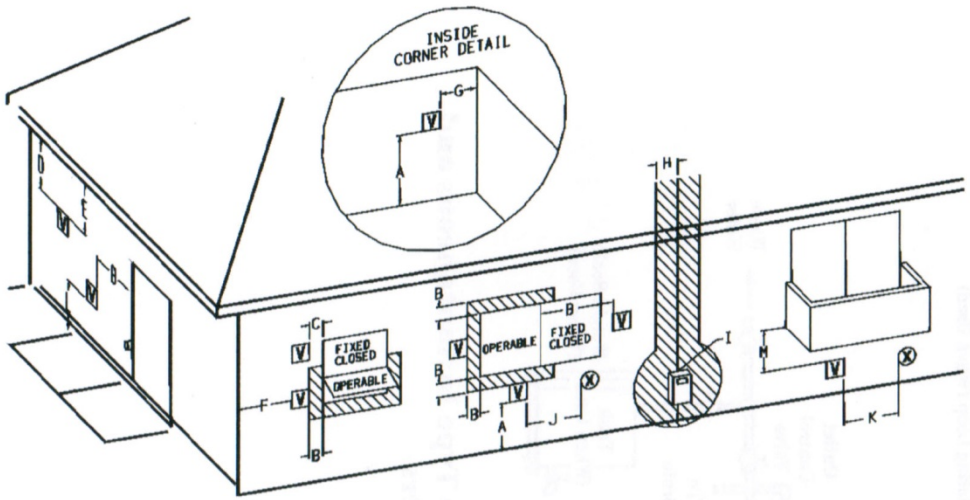
other than direct vent appliance , the appliance must be located as close as practicable to a chimney or gas vent,
The appliance should be located in an area where leakage of the tank or connection will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be avoided , it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow.

V VENT TERMINAL ⊗ AIR SUPPLY INLET ▨ AREA WHERE TERMINAL IS NOT PERMITTED

		Canadian Installations[1]	US Installations[2]
J=	Clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 12 inches (30 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 100,000 Btuh (30 kW), 36 inches (91 cm) for appliances >100,000 Btuh (30 kW)	4 feet (1.2 m) below or to side of opening; 1 foot (300 mm) above opening
K=	Clearance to a mechanical air supply inlet	6 feet (1.83 m)	3 feet (91 cm) above if within 10 feet (3 m) horizontally
L=	Clearance above paved sidewalk or paved driveway located on public property	7 feet (2.13 m) †	7 feet (2.13 m)
M=	Clearance under veranda, porch deck, or balcony	12 inches (30 cm) ‡	*

[1] In accordance with the current CSA B149.1 *Natural Gas and Propane Installation Code*
[2] In accordance with the current ANSI Z223.1 / NFPA 54 *National Fuel Gas Code*
† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.
‡ Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.
* For clearances not specified in ANSI Z223.1 / NFPA 54 or CSA-B149.1, one of the following shall be indicated:
a) A minimum clearance value determined by testing in accordance with section 2.20, or;
b) A reference to the following footnote:
"Clearance in accordance with local installation codes and the requirements of the gas supplier."

Figure 3-B: Other Than Direct Vent Terminal Clearances



V VENT TERMINAL

⊗ AIR SUPPLY INLET

▨ AREA WHERE TERMINAL IS NOT PERMITTED

		Canadian Installations[1]	US Installations[2]
A=	Clearance above grade, veranda, porch, deck, or balcony	12 inches (30 cm)	12 inches (30 cm)
B=	Clearance to window or door that may be opened	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 12 inches (30 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 100,000 Btuh (30 kW), 36 inches (91 cm) for appliances >100,000 Btuh (30 kW)	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 9 inches (23 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15 kW)
C=	Clearance to window or door that may be opened	*	*
D=	Clearance to permanently closed window	*	*
E=	Clearance to unventilated soffit	*	*
F=	Clearance to outside corner	*	*
G=	Clearance to inside corner	*	*
H=	Clearance to each side of center line extended above meter/regulator assembly	3 feet (91 cm) within a height 15 feet above the meter/regulator assembly	*
I=	Clearance to service regulator vent outlet	3 feet (1.83 m)	*
J=	Clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 12 inches (30 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 100,000 Btuh (30 kW), 36 inches (91 cm) for appliances >100,000 Btuh (30 kW)	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 9 inches (23 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15 kW)
K=	Clearance to a mechanical air supply inlet	6 feet (1.83 m)	3 feet (91 cm) above if within 10 feet (3 m) horizontally
L=	Clearance above paved sidewalk or paved driveway located on public property	7 feet (2.13 m) †	*
M=	Clearance under veranda, porch deck, or balcony	12 inches (30 cm) ‡	*

[1] In accordance with the current CSA B149.1 *Natural Gas and Propane Installation Code*
[2] In accordance with the current ANSI Z223.1 / NFPA 54 *National Fuel Gas Code*
† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.
‡ Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.
* For clearances not specified in ANSI Z223.1 / NFPA 54 or CSA-B149.1, one of the following shall be indicated:
a) A minimum clearance value determined by testing in accordance with section 2.20, or;
b) A reference to the following footnote:

Figure 3-A: Direct Vent Terminal Clearances

4- INSTALLATION DETAIL AND OPERATION

- ***Important:*** ***Do not install boiler on carpet or other combustible materials.*** Never stand on the boiler – the boiler casing is not designed for excessive force

4.1- The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI 2223.1 and/ or CAN/CGA BI49.1 Natural Gas and propane Installation Code.
In addition to the above regulations, this boiler must be installed in compliance with:
National & local building codes
ASME CSD-1 as required
CSA & NEC electrical codes
Other local regulations

4.2- Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD1.

4.3- The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressure in excess of ½ psi (35 kpa).

4.4- The boiler shall be installed such that the gas ignition system components are protected from water (dripping, spraying, rain, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.).

4.5- The boiler and its gas connection must be leak tested before placing the boiler in operation.

4.6- if an external electrical source is utilized, the boiler, when installed, must be electrically bonded to ground in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, ANSI/NFPA70 and/or the Canadian Electrical code Part1, CSA C22.1, Electrical Code.
4.7- Water heater installation must conform with one or more of the following, as applicable:
Local Code or, in the absence of local codes, the National fuel Gas Code, ANSI Z 223.1/ NFPA 54 and/or CSA B149.1 Natural Gas and Propane Installation Code.
4.8 The maximum inlet gas pressure must not exceed the value listed is for the purposes of input adjustment.

4.9- Water pressure
The boiler is suitable for a maximum working pressure of 160 psi
.
The system should be filled with mains, cold water (this will usually have a pH of between 7 and 8).

The system is flushed thoroughly to remove all fluxes and debris and filled completely once.

The hardness of the water shall conform to the water quality document requirements
All scale deposits will reduce the efficiency of the boiler and should be prevented

The boiler if installed above radiation [heating circuits below the boiler] or as required by local codes or authorities having jurisdiction must install a low water cut-off safety device, the LWCO is not a standard scope of supply, but is available as an option.

4.10- Typical water system layout

- The piping diagram illustrates the minimum boiler system controls needed, the by-pass system is not necessary, but can be used in multiple heating temperature circuits.
- Consult all national, local and building codes having jurisdiction for other requirements regarding the boiler system.
- It is strongly suggested a decoupling devise is used when the system flow is unknown. For multiple boilers, consult the factory.
- Check local codes regarding condensate discharge into the common drain.
- Water must be analyzed to ensure acceptable quality. If make water consumption is unknown, the system should be checked at regular intervals – consult water specialists for assistance.
- When the boiler is connected to a refrigeration system, it must be installed so the chilled medium is piped in parallel with the boiler with appropriate valve to present the chilled medium from entering the boiler

The boiler piping system of a hot water boiler connected to heating coils located in air handling units where they may be exposed to refrigeration air circulation must be equipped with flow controls valves or other automatic means to prevent gravity circulation of the boiler water during cooling operations.

All water piping and reliefs shall be piped to avoid any ingest of water near the boiler controls. The piping diagram shown below does not reflect all systems consult local and national codes having jurisdictions regarding other water system controls required.

If water heater is installed in a closed water supply system, such as one having a backflow preventer in the cold water supply line, means shall be provided to control thermal expansion. Contact the water supplier local plumbing inspector on how to control the situation.
If a relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. **Do not** plug the relief valve.

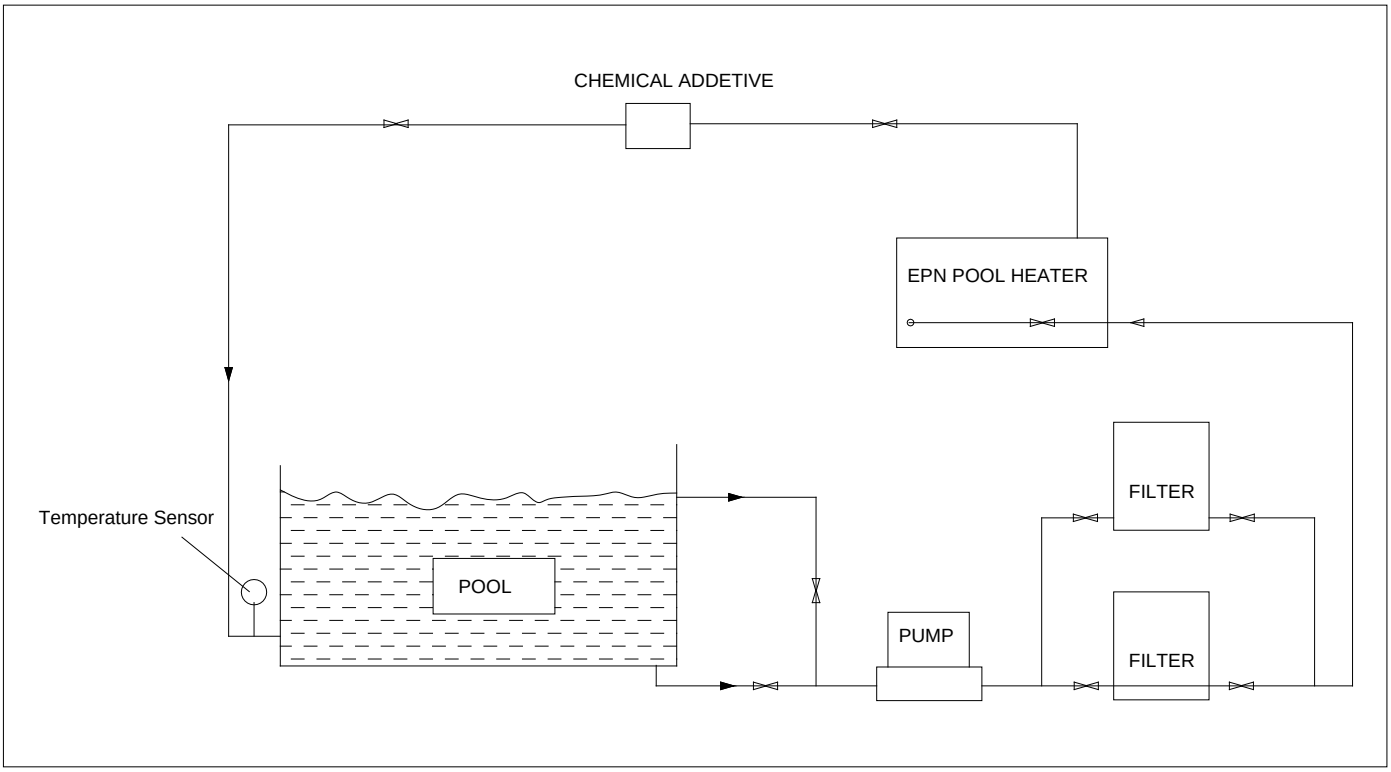
When Boiler installed above radiation level or as required by the Authority having jurisdiction must be provided with a low water cut off device.

4-11 Gas line

Gas line shall be installed according on burner manufacturer instruction Section8 (Burner IOM Drawing C8316016) also page 11 of this manual Drawing of gas train.
Gas regulator vent shall be piped outside of building and be 3ft away from windows or doors or other openings.

The Boiler and its gas connection must be leak tested before placing the boiler in operation.

Boiler shall be installed such that the gas ignition system components are protected from water (dripping, spraying, rain, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.).



5- COMMISSIONING

Warning:

If you do not follow the commissioning instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

5.1- Initial lighting

1. Isolate main power supply
2. Open the main gas valve.
3. Check the electrical connections including earth.
4. Fill the boiler and the system with water.
5. Vent the system.
6. Check the flue gas discharge connection and air inlet Connection (in case of sealed combustion).
7. Vent the gas pipe.
8. Open the gas cock to the boiler.
9. Check the inlet gas pressure (7”-14”) OR High Pressure up to 5psi
10. Check the gas connection for gas tightness.
11. Switch on the main power supply to the boiler.
12. Switch on the boiler operating switch.
13. Switch on the heating pump and check the installation position and direction of rotation.
14. Adjust the boiler controls to heat demand.
15. The boiler should start with the run sequence
    a- Purging
    b- Pilot on
    c- Burner on (Low fire)

To Tets the ignition system shutoff safety device, When boiler is runing perform following test on low fire and high fire:
Turn off the manual main gas valve, the burner shall be stop firing and go to alarm mode rapidly.
(More information on Burner operating in Section 8 (Components).

Keep Boiler area clean and free from combustible materials, gasoline and other flamable vapors and liquids.

5.2- Unit Commissioning Report

Address:				**DATE :**	
Phone No:			**E- mail:**		
Installer:			**Company:**		
Phone No.:					
Equipment Detail					
Boiler Model;	**Serial No:**		**Control Model:**		**Serial No.**
Burner Model;	**Serial No:**		**Firing**		
Relief Valve	**Size:**		**Capacity(Mbtu/hr)**		
Chimney Type	**Size:**		**LWCO Device**		
Vent Safety Device					
Other Controls:					
Fuel Type:	**Input Rate Btu/hr**		**Min**		**Max**

Item	**Min Rate**	**Max Rate**		**Min Rate**	**Max Rate**
Manifold air pressure			**Co2 %**		
Manifold gas Pressure			**CO [ppm]**		
Supply & Return Temp.			**Nox [ppm]**		
			O2%		
			Flue gas temperature		
			Ambient temperature F		

Control Safety Checklist				
Item	**Set Point**		**Tested**	
Safety Hi Limit				
Operating Limit				
LWCO				
LGP switch				
HGP switch				
Vent Damper				

Notes:

6- MARKING

Certified / Certifié ENERPRO	EPW Series Gas Fired Automatic Stainless Steel Pool Heater "INDOOR INSTALLATIONS ONLY" For either Direct Vent Installation or for installation using Indoor combustion air "INSTALLATION INTERIEURE SEULEMENT"		EPW1000	Clearances / Dégagements Floor /Plancher Non-combustible - do not install on carpet Non-combustible - ne pas installer sur le tapis Direct Vent Wall Thickness 2" - 24" Service /Service Front& Rear 24 inches–pouces Side / le côté 24" one side–pouces 0" other Top /Dessus 24 inches- pouces Vent / Cheminée Follow venting mfr instructions and approvals Suivre les instructions et les approbations du fabriquant pour la ventillation	HLW C US
EnerPro Boilers Inc. 185 Durham Street West Mount Forest, Ontario Canada N0G 2L1 Tel: 519-509-5000 Fax: 519-509-3122	Serial Number / Numero de Serie EPW15-995	Electrical Supply [V/P/H] Alimentation électrique [V/P/H] 120/1PH(15A max)	Type of Fuel Equipped / Type de carburant Natural Gas/Propane		
Gas Supply Pressure Range / Chaîne de pression d'offre de gaz 3.5" WC to 5psi	Gas Manifold Pressure Range / Chaîne diverse de pression de gaz 0.026"WC-1.53"WC	CSA - Gas Input Range (MBH) / CSA - Chaîne (MBH) d'entrée de gaz Min 250-Max 1000 MBH	CSA - Gas Output Range (MBH)/ CSA - Chaine (MBH) dentree de gas Min 220 - Max 980 MBH		
Minimum Relief / Soulagement minimum 1000lb/hr	Boiler Water Content Capacity (US Gal.) / Capacité (USA gallon) de teneur en eau de chaudière 51		Maximum Allowable Water Temp °F °F maximal permis de température de l'eau 210° F		
ASME M.A.W.P. PSI G Pression maximale de l'eau permise en livre par pouces carré 160	⁎WARNING / AVERTISSEMENT⁎ Disconnect fuel and power supply prior to servicing – Sources maybe from multiple sources. The appliance must be earth grounded (bonded) Débrancher l'alimentation de carburant et d'énergie avant d'entretenir - Les sources peuvent-être multiples. L'appareil doit être relié a la terre		Compliance / Conformité ANSI Z21.56 2014 CSA4.7 2014 UL795 2014		
Canadian Pressure Vessel Approvals [CRN] / Approbations canadiennes de navire de pression [CRN] Made in Canada - Fabriqué au Canada	Consult Local & National Gas & Electrical Codes - Consulter le gaz local et national et les codes électriques d'installation Canada – B149.1 & CSA 22.1, Part 1 ANSI Z223.1-NFPA 54 NEC-NFPA 70 All circuit must be earth grounded (bonded) Use Copper Conductors Only 120V- 60Hz - 12A Maximum - Min wire gauge 18 AWG [0.75mm2] 90°C Tout les circuits doivent être conducteurs et reliés a terre, utiliser des circuits en cuivre uniquement 120V- 60Hz - maximum 12A - A.W.G. minimum de la mesure 18 de fil [0.75mm2] 90°C		Vent / Cheminée Direct Vent & Category II & IV Venting Clearance to combustible/ Degagement combustible 6" inches all sides and top / tout les côtés- 24" front		Heating Surface Area Ft2 Wetted Superficie de Chauffage pi2 134 Model EPW1000

NB 96

Certified by

EnerPro Boilers Inc.

MAWP Water 160 psi

Maximum Allowable Input 1,000,000 Btu/hr / 293 KW

HLW

Serial No. : EPW14-804

Year Built: 2014

CRN: M7003.5R2C

WARNING:

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury (exposure to hazardous materials) or loss of life. Refer to the user's information manual provided with this boiler. Installation and service must be performed by a qualified installer, service agency or the gas supplier (Who must read and follow the supplied instructions before installing, service, or removing this boiler. This boiler contains materials that have been identified as possibly carcinogenic to humans.

WARNING

To assemble air intake after cleaning or service use proper sealing material also install end elbow and mesh.

The max cutoff temperature is marked and locked On High limit temperature cutoff.

The range of operating temperature is marked On temperature controller.

1. Spa or hot tub water temperature should never exceed 104° F (40°C). A temperature of 100°F (38°C) is considered safe for healthy adult. Special caution is suggested for young children.

2. Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness and subsequently result in drowning.

3. Pregnant woman beware! Soaking in water above 102°F (39°C) can cause fetal damage during first three months of pregnancy (resulting in the birth of a brain- damaged or deformed child). Pregnant woman should stick to the 100°F (38°C) maximum rule.

4. Before entering the spa or hot tub, users should check the water temperature with an accurate thermometer; spa or hot tub thermostat may err in regulating water temperature by as much as 4°F (2°C).

5. Person with medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain the physician's advice before using spa or hot tubs.

6. Persons taking medications which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants, should not use spa or hot tubs.

7- Service Instruction

Note:
Please ensure that the gas supply and main power supply is isolated before any maintenance work is carried out on the boiler. Care should be taken when stripping the boiler for maintenance making sure that all parts, nuts, washers and gaskets, etc. are kept safe, clean and dry for re-assembly. Following maintenance/cleaning, the boiler should be re-assembled in the reverse order re-placing gaskets and joints where found necessary.

7.1- Combustion Air Supply Requirements

The boiler requires a clean, fresh and adequate supply of combustion air, failure to provide sufficient combustion air supply will result in carbon monoxide (CO) production that could lead

to personal injury including loss of life or damage to boiler or property. Do not store any flammable liquids, fluids, vapors or materials near the vicinity of the boiler.

Special attention:

- Quality of combustion air
- Dust, fumes, corrosive elements, hydrocarbons, other unknown containments
- Paint, beauty, automotive etc. shops

Warning:

The flue gas vent pipe must be airtight and watertight. Horizontal sections of the venting must slope downward towards the boiler ½" per linear foot [12mm] and adequate vent support must be provided.

7.2- Room combustion air supply requirements:

Direct Vent [Side wall] Applications:
A horizontal vent system with the sir supply, required for combustion, provided within the boiler room or combustion air sources provided into the room. Min thickness of wall can be 2" and maximum 24".

Seal Combustion System Applications:
A vertical or horizontal venting system for both, the flue gases and combustion air at same termination and pressure level.

7.3- Vent Termination Inlet/Outlets

The vent terminals must be installed to provide suitable protection against wind, rain, snow or blockage along with a rodent/debris screen. See section 7.3.6-7-8 for other requirements. Conventional chimney application tapered cone, and sidewall or direct vent require a termination TEE fitting.

The boiler must be provided with an adequate combustion air supply, the combustion air supply requirements must be determined and sized in accordance to national and local codes having jurisdiction. CSA B149 & ANSI Z223.1 – More than one combustion air source maybe required.
An optional filter should be fitted air intake housing.

Air supply and venting materials for Direct Vent:
Single wall aluminum or stainless steel material Min 20G for Air Supply, Stainless Steel 316 or AL29-4C
18-20G for Vent. CPVC 3/16' thickness for vent (Just EPW1000)

7.4- Air supply structure:

The air supply pipe must also be airtight. Horizontal sections in the air supply must slope away from the boiler towards the supply opening and incorporate a drain connection if the route rises from a lower point. It is necessary to provide an easily removable air vent for maintenance reasons.

7.5- GAS Train

Inlet filter on gas train (Part No8 in gas train drawing) need to be checked and cleaned every season.
Water deposit in gas train shall be drained every season.

For more information on burner and gas train service refer to section 8 (Components) burner manual.

items requiring periodic checks:

At least once a year the must be checked, cleaned or replaced as required:

- Venting system leaks or poor connections
- Venting system sagging or damaged vent components
- Debris in vent terminal screens [exhaust and air inlet]
- Boiler room kept clear of flammable liquids, combustible materials,
- The combustion air supply source(s) clear without any obstructions
- Combustion air filter if fitted, replace as necessary

Inspection of combustion air supply venting (Direct vent).

Caution:
Label all wires prior to disconnection when servicing controls, wiring error can cause improper and dangerous operation.
Verify proper operation after servicing,

7.6 - Cleaning flue gas passageways

Flue gas passage shall be cleaned as followed procedure every 2 years.

1 –Turn off the main power .

2– Dismantle the Burner.(Fig1&2)

3– Dismantle the front panel of casing (2 PCs will be dismantled by pulling up. (Fig2)

4- Take the insulation of the front side of the jacket. (Fig3)

5- Dismantle the front flange, you may check the gas passage and clean them(Fig4)

6- By a pressure washer clean the gas passages.(Fig4)

7-- Put the ceramic rope gasket properly.

8- Install the front flange

9-Put the insulation back

10- Install the front panel.

11- Install the Burner.

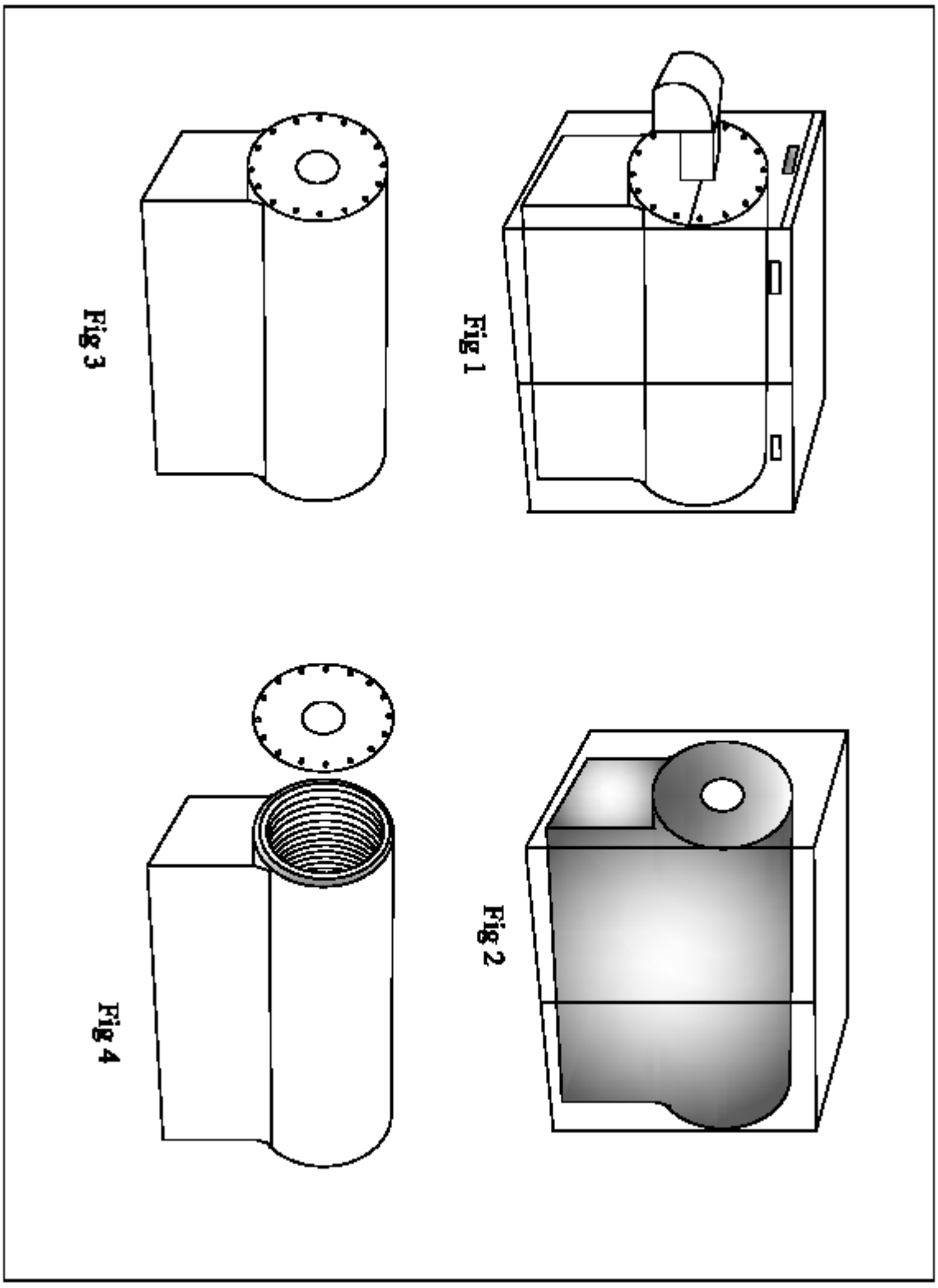


Fig 1

Fig 2

Fig 3

Fig 4

7.7- CLEANING CONDENSATE PAN

a) Remove the condensate U trap.
b) Connect a hose to the condensate drain pipe
c) Fill up condensate pan (about 6gal for EPW1000, 8gal for EPW1500 , 10 gal for EPW2000).
d) Take the hose off and let the water drains.
e) Go to step b until you see no residue in drained water.
f) Re connect the U trap , make sure there is no leak.

7.8- CLEANING of BURNER AIR AND GAS PASSAAGE

a) Refer to Section 9, part a of this manual
b) In burner Manual refer to page 14, shows how to open the burner
c) Take the burner head out
d) Inspect the air and gas passage, and clean them by a piece of cloth
e) If ignition probe or flame sensor probe are rusted or burnt replace them.

7.9- CLEANING THE METAL FIBER BUNER HEAD

Take these steps from 7.6

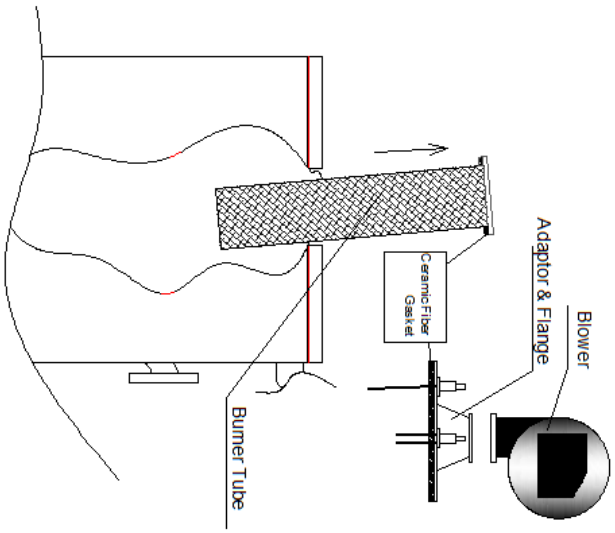
2– Dismantle the Burner or blower.(Fig1&2)

3– Dismantle the front panel of casing (2 PCs will be dismantled by pulling up. (Fig2)

4- Take the insulation of the front side of the jacket. (Fig3)

5- Dismantle the front flange, you may check the gas passage and clean them(Fig4)

After above steps, carefully take the burner head out and clean it with air pressure gun.



8-Checklist

Responsible		Description	Schedule
Owner should at least be familiar with what items or areas need periodic attention and maintenance, the licensed and authorized service personnel shall inform the owner what symptoms to be aware of and course of action		System pressure	Monthly
		Control functioning	Monthly
		Seals or evidence of leaks	Monthly
		Unobstructed combustion air supply, no chemicals, garbage, gasoline, combustible materials, flammable liquids are stored near the boiler.	Monthly
		Check for water on the floor – around relief, vent and other parts and piping of the water system	Monthly
		Check operating limits for correct operation	Semi-annually
		Ensure neutralization system is working	Semi-annually
		Check exhaust terminals for ice, snow or debris buildup	Monthly
		Check and test pressure relief safety valve	Annually
		Test temperature Hi limit functions	Annually
		Checks for system leaks	Monthly
		Check all auxiliary and other safety limit for function and correct operation.	Annually
		Check system water quality	Monthly
		Check pump operation	Monthly
		Check fuel lines for leaks	Annually
		Check combustion	Annually
		Check control settings	Annually
		Clean combustion chamber	Bi-Annually
		Clean condensation collector and siphon	Annually
		Clean Gas and air inlet filter	Semi annually
		Clean Metal Fiber Burner Head	Semi annually

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