

CONDENSING COMMERCIAL GAS WATER HEATERS



SMART SYSTEM™

CONTROL WITH CASCADING SEQUENCER

UP TO 98% THERMAL EFFICIENCY

5 MODELS FROM 150,000 TO 500,000 BTU/HR

5:1 TURNDOWN FIRING RATE

LESS THAN 30 ppm NOx



**UP TO 98%
THERMAL EFFICIENCY**



lochinvar.com

ARMOR™

CONDENSING WATER HEATER

A BETTER WAY TO ACHIEVE 98% THERMAL EFFICIENCY

There are several tank-type commercial water heaters on the market with thermal efficiencies of 95% or higher. They all promise tremendous savings on operating costs compared to standard-efficiency units, but none of them truly measures up to the Lochinvar ARMOR™.

ARMOR is a fully condensing commercial gas water heater. Available in five models with inputs ranging from 150,000 to 500,000 Btu/hr, the ARMOR achieves thermal efficiencies up to 98%.

ARMOR delivers long-lasting life-cycle efficiency surpassing any commercial unit in its class. When you look beyond the numbers you'll discover the many ways that ARMOR technology is in a class by itself!

FULLY MODULATING WITH 5:1 TURNDOWN

ARMOR features advanced Negative Regulation (Neg/Reg) sealed combustion technology, permitting fan speed to constantly adjust the volume of fuel and air entering the burner. This ensures that ARMOR can safely and reliably operate with supply gas pressure as low as 4 inches water column.

ARMOR is equipped with fully modulating combustion with 5:1 turndown. This means ARMOR can fire as low as 20% of maximum input when water heating demand is lowest, and increase the firing rate up to 100% as demand increases. The result is better overall efficiency and less cycling, compared to all other tank-type units which are "on-off," which means they can only fire at 100% of maximum input.

STAINLESS STEEL CONDENSING HEAT EXCHANGER

The ARMOR's stainless steel heat exchanger is built to ASME Section IV requirements. Its design provides superior resistance to corrosion caused by condensation from low entering water temperatures. Traditional commercial water heaters will fail early with low entering water temperatures; however, with the ARMOR the lower the supply water temperature the more efficiently it performs throughout the life of the heater.



(285-500)

SMART SYSTEM™

THE ULTIMATE WATER HEATER OPERATING CONTROL

EASY TO USE – MAKES SETUP AND SERVICE A BREEZE

2-LINE 16-CHARACTER LCD DISPLAY OF SETUP, SYSTEM
STATUS AND DIAGNOSTIC DATA IN WORDS, NOT CODES

WATER HEATER PUMP CONTROL:

- > PUMP DELAY WITH FREEZE PROTECTION
- > PUMP EXERCISE

HIGH-VOLTAGE TERMINAL STRIP:

- > 110 VAC INPUT TO WATER HEATER
- > 110 VAC OUTPUT TO PUMP

LOW-VOLTAGE TERMINAL STRIP WITH
22 POINTS OF CONNECTION

BUILT-IN CASCADING SEQUENCER CONTROLS UP TO
8 ARMOR UNITS WITHOUT THE ADDED COST OF A
SEPARATE THIRD-PARTY SEQUENCER

INTERFACE FOR OPTIONAL SMART SYSTEM PC
SOFTWARE FOR ADVANCED SETUP AND DIAGNOSTICS

2-LINE 16-CHARACTER
LCD DISPLAY OF SETUP,
SYSTEM STATUS AND
DIAGNOSTIC DATA IN
WORDS, NOT CODES



EASY, FLEXIBLE INSTALLATION AND SERVICE

Direct-Vent, using PVC or CPVC – Up to 100 feet of air intake and 100 feet of exhaust vent with PVC or CPVC.

6 Conduit Knockouts – For field wiring connections.

User-Friendly Terminal Strip – Allows 22 points of low-voltage field connections for additional safeties or accessories.

Easy-Access Cabinet – Front and top panels are hand-removable, without tools.

Leveling Legs – Certified for installation on combustible floors.

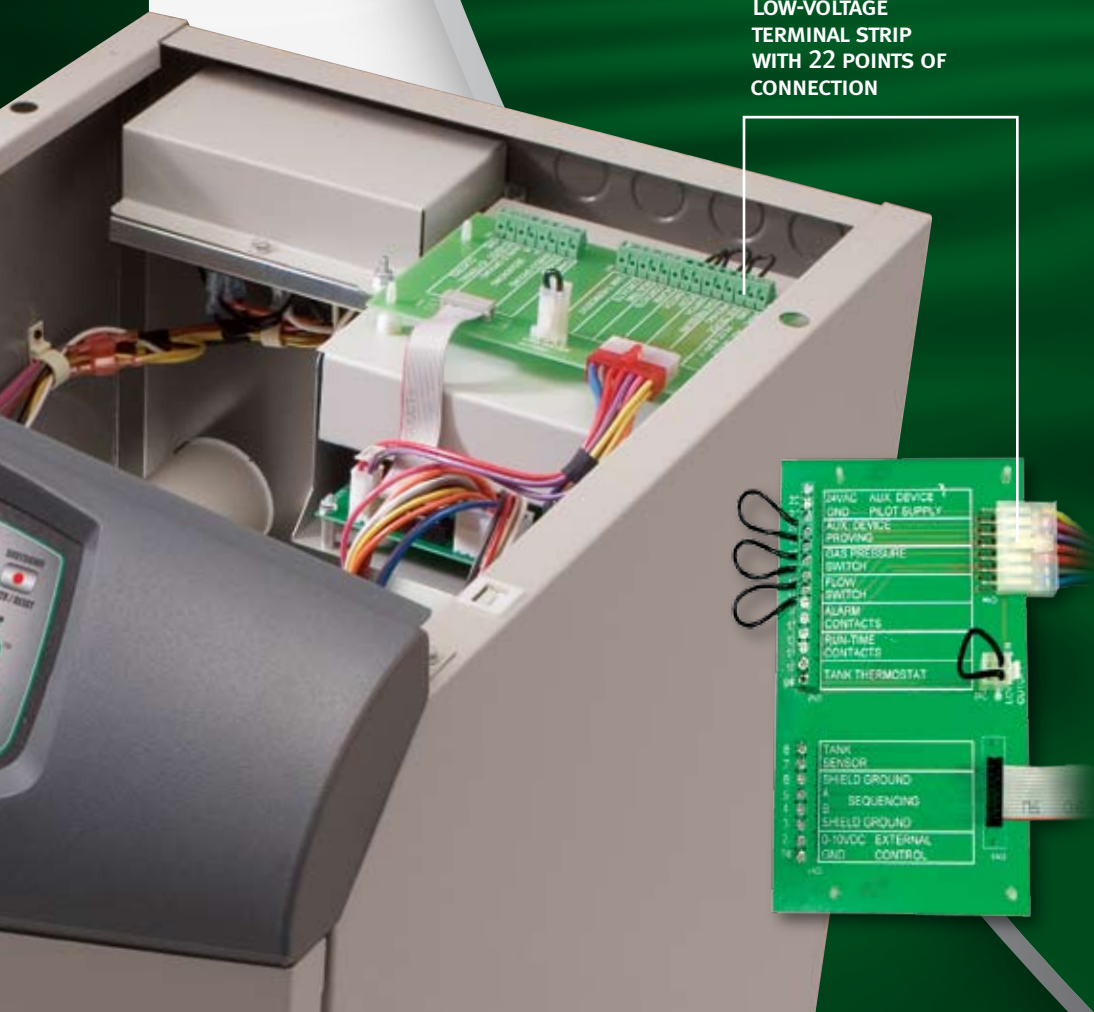
Water Heater Circulating Pump – Included as standard equipment.

Small Footprint – Conserves valuable floor space.

Lightweight Design – Easy to handle, simple to install.

Natural to LP Gas Conversion Kit – Up to AWN399

LOW-VOLTAGE
TERMINAL STRIP
WITH 22 POINTS OF
CONNECTION



SEPARATE TANK FOR FLEXIBILITY, LOWER REPLACEMENT COSTS

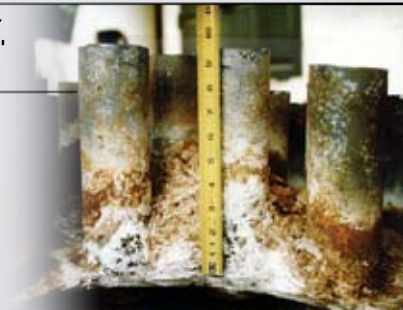


With standard tank-type water heaters, your choices are limited when it comes to matching input with storage capacity to meet “peak demand” delivery requirements. With ARMOR, you can match one or more water heaters with inputs ranging from 150,000 to 500,000 with one or more storage tanks in a wide variety of sizes. Lochinvar Lock-Temp® tanks are available to meet the need, from our 80-gallon vertical to the 5000-gallon vertical or horizontal model. Another advantage of the ARMOR “dual component” system is lower replacement costs. Standard tank-type designs require replacement of the entire water heater. With ARMOR, you’ll save time and money by only replacing individual components as needed, such as the pump or storage tank.

LONG-LASTING “LIFE CYCLE” EFFICIENCY

In a standard tank-type water heater, lime scale builds up over time on important heat transfer surfaces, insulating the water from the heat source. This decreases thermal efficiency and increases operating cost. Just 1/4" of lime scale in the tank can increase operating costs as much as 25%!

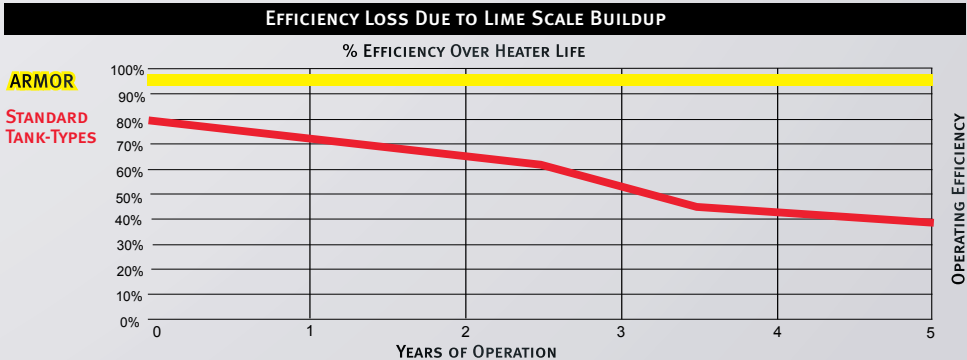
Traditional tank-type water heater flue tubes with nearly 6" of lime scale buildup



This buildup in the bottom of the tank and around the flue tubes can cause tank-type heaters to fail in as little as 2-5 years.

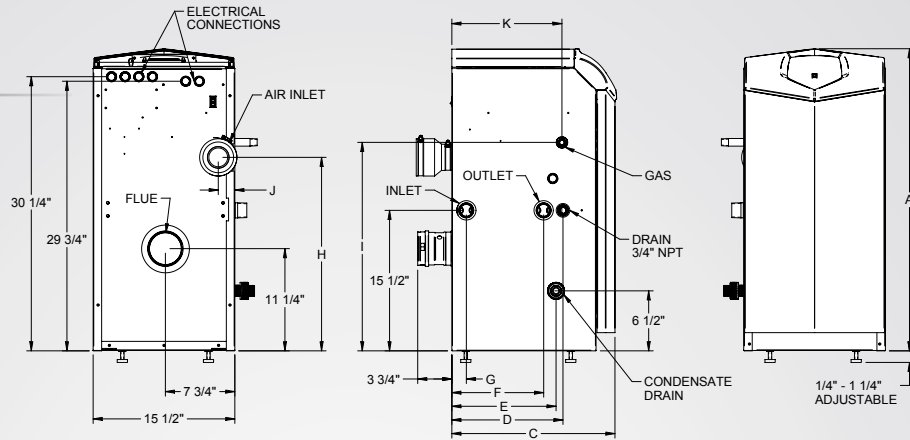
ARMOR’s “dual component” concept eliminates the impact of lime scale, maintaining a high-rated thermal efficiency and low operating cost throughout its long life cycle.

The chart below illustrates how ARMOR is a better way, delivering true “life cycle efficiency” compared to standard tank-type units.

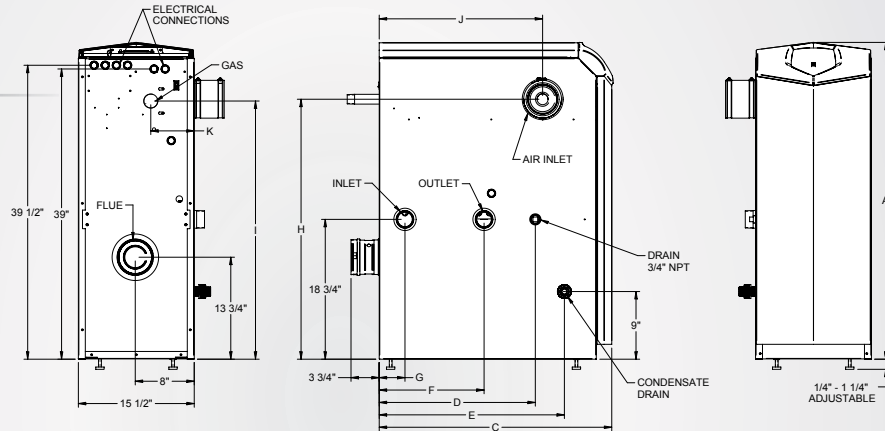


ARMOR™ WATER HEATER DIMENSIONS AND SPECIFICATIONS

MODELS 150-199



MODELS 285-500



Model Number Guide

AW	N	150	PM
Model	Natural Gas	Btu/hr Input	Pump Mount

Armor Water Heater,
Natural Gas,
150,000 Btu/hr Input,
Pump Mount

Model Number	Btu/hr Input	GPH @ 100° Rise	A	C	D	E	F	G	H	I	J	K	Gas Conn.	Water Conn.	Air Inlet	Vent Size	Shipping Wt. (lbs.)
AWN150PM	150,000	172	33-1/4"	18"	12-1/4"	11-1/2"	10"	1-1/2"	21-1/4"	23"	1-3/4"	12"	1/2"	1-1/4"	3"	3"	165
AWN199PM	199,900	230	33-1/4"	22-1/4"	16-1/2"	15-3/4"	14-1/4"	5-1/4"	21-1/4"	23"	1-3/4"	16-1/4"	1/2"	1-1/4"	3"	3"	175
AWN285PM	285,000	327	42-1/2"	19-3/4"	13-1/4"	13-1/2"	6-1/4"	2-1/2"	34"	31"	11-3/4"	4-1/4"	3/4"	2"	4"	4"	225
AWN399PM	399,900	459	42-1/2"	27"	21"	20-3/4"	14"	3-1/2"	34"	34"	18-3/4"	2"	1"	2"	4"	4"	285
AWN500PM	500,000	564	42-1/2"	31-1/4"	21"	25"	14"	3-1/2"	35"	35"	22"	5-3/4"	1"	2"	4"	4"	305

All dimensions shown in inches.

STANDARD FEATURES

- Up to 98% Thermal Efficiency
- 5:1 Turndown Firing Rate
- Operates at Temperatures up to 180°F for Sanitizing Applications
- 160 PSI ASME Stainless Steel Heat Exchanger (AWN 285-500 Models)
- PVC and CPVC Venting
- Direct-Vent Sealed Combustion
- Combustion Air Intake and Venting up to 100 Equivalent Feet
- Sidewall Venting Terminals
- SMART SYSTEM Control, with:
 - 2-Line 16-Character LCD Display
 - Password Security
 - Built-in Sequencing for 2-8 Water Heaters
 - 0-10Vdc BMS Input
 - Product Service Indicator
 - Time Clock
 - PC Connection Port
 - Water Heater Pump Control
 - Pump Delay with Freeze Protection
 - Pump Exercise
- All Bronze Circulating Pump
- Low-NOx Operation
- Zero Clearance to Combustibles
- Low Gas Pressure Operation
- Line Voltage Terminal Strip
- Low-Voltage Terminal Strip
- Direct Spark Ignition
- Natural to LP Conversion Kit (AWN 150-399)
- High & Low Gas Pressure Switches (AWN500 Only)
- Downstream Test Cock (AWN500 Only)
- Leveling Legs – Certified for Installation on Combustible Floors
- Inlet and Outlet Temperature Sensors
- Temperature & Pressure Gauge (AWN500 Only)
- ASME Temperature and Pressure Relief Valve
- Contacts on Any Failure
- Alarm Contacts
- Runtime Contacts
- Manual Reset High Limit
- Flow Switch
- Low Water Flow Indication
- On/Off Switch
- 5-Year Heat Exchanger Warranty
- 1-Year Parts Warranty

FIRING CONTROL SYSTEMS

- M9 – Direct Spark Ignition
- M13 – GE GAP/FM/IRI (AWN500)
- M7 – California Code (AWN 285-500)

OPTIONAL EQUIPMENT

- Adjustable High Limit w/Manual Reset
- Alarm Bell
- Concentric Vent Kit (AWN 150-199)
- Condensate Neutralization Kit
- SMART SYSTEM PC or Pocket PC Software

