

# Helix VX 399

## ▶ Gas-Fired, Floor Mounted Modulating Condensing Boiler

- 96% Thermal Efficiency
- CSD-1 Compliant with
  - Manual Reset Low Water Cut Off
  - High Limit Manual Reset
- 5:1 Turn Down Ratio
- Innovative Heat Exchanger
  - 316L/444 Stainless Steel Fin Tube
  - Vertically Positioned, Low Maintenance, Self-Cleaning
  - Polypropylene Flue Collector
  - 150 psi MAWP



## ▶ Innovative.

The heat exchanger is the critical component of any boiler and is primarily responsible for efficiency and durability. At the heart of the 96% efficient VX is the Helix family's innovative, vertically mounted helical fin tube heat exchanger, made of 316L/444 stainless steel. The fins are laser welded onto the stainless tube resulting in greater strength and heat transfer capabilities.



### **VX 399 Coil**

The VX offers a round shape and a large diameter coil for better water flow and reduced scaling.

The vertically positioned VX heat exchanger coil drains away any debris and scale and in doing so is self cleaning.

## ▶ Efficient.

The Helix VX has a 96% Thermal Efficiency. The VX's advanced control automatically regulates boiler operation to ensure you are using the least amount of fuel possible.

The VX's control adjusts both the amount of gas being burned (modulation) as well as the boiler water temperature (outdoor reset). Gas burner modulation reduces your fuel cost by adjusting the fuel burned to meet the actual demands of your heating system. Rarely will your building require the full capacity of the VX and burning more gas than needed increases your energy costs. Outdoor Temperature Reset adjusts the boiler water temperature based on outdoor conditions. During cold periods, water temperature is increased. As it gets warmer, water temperature is lowered. Varying the water temperature reduces your fuel costs.

*The increased efficiency of the Dunkirk Helix VX could save up to 40% on heating bills annually.\* The 96% thermal efficiency of the Helix VX 399 allows it to qualify for State, Federal and local Utility company rebates.\*\**

The average water heater is rated at .59 EF - Energy Factor, measure of the useful energy coming out of your water heater divided by the amount of energy consumed to heat domestic water. One of the conveniences of heating with a boiler is the ability to use it to generate your domestic hot water. By pairing your 96% efficient VX with an H2O indirect water heater tank you will reduce your fuel consumption for heating hot water, increase the amount of hot water available. Ask your heating contractor to replace your inefficient standalone hot water tank with an H2O.

## ▶ Dependable.

### **Dunkirk's Stainless Steel Heat Exchanger**

- ASME certified to operate in applications up to 150 psi
- Every heat exchanger is tested up to 375 psi
- Built-In CSD-1 Compliant\*\*\*

### **Helix Quality**

- Every boiler is test-fired at the factory
- Complete combustion test is performed and a computer printout of the results are shipped with every boiler to ensure proper commissioning

### **8 year Limited Manufacturer's Warranty**

- The VX heat exchanger is simply the finest ever designed and as such we provide an 8-year factory warranty coverage
- One Year Parts Warranty



**“The Helix VX 399, Gas-Fired, Modulating Condensing Boiler is the latest addition to Dunkirk’s Helix boiler family.”**



**Key Features**



**Gas Supply**

- Top Pipe connection with built in drip leg saves material & time

**Heat Exchanger**

- Patent Pending
- 316L/444 stainless steel fin tube
- Vertically mounted
- Self-cleaning
- 150 psi MAWP
- Designed in the U.S., for the U.S.

**Electrical Wiring**

- Easy Access /Protected Terminal Strip

**H2O Indirect Water Heater**

- High Quality, 316L Stainless Steel Tank, Dip Tube and Aquastat Well Construction
- Exterior shell made of rust proof Thermo plastic
- Tank encased in high density insulation with less than 1/2 °F loss per hour
- Top Piping Connection saves material/time
- Smooth coil design eliminates sediment
- Magnesium anode rod protects against corrosion
- Equipped with T&P Relief Valve
- 30 - to 115 - gallon capacity (Commercial models feature higher output and larger connections)



**Advanced Controls**



- 5:1 turn down ratio
- Easy to understand English text display
- Outdoor reset maximizes fuel economy
- Priority domestic hot water meets changing demands
- Connections for Primary pump, CH pump, and DHW pump
- Automatically manages up to 16 units in Multiple Boiler System

**SETTINGS**  
Central Heating Setpoint 180°F

**SETTINGS**  
DHW Setpoint 180°F

There are two basic settings; one for Central Heating and one for Domestic Hot Water. Both have factory pre-sets for standard installation and require no further adjustment. If desired, adjusting the settings is as easy as pushing a button!  
When using the Outdoor Air Sensor the Central heat setpoint automatically adjusts itself!

**Factory Tested**



- Certified to ASME standards in ECR’s factory

\*Indirect tanks with a “C” designation have larger, commercial tappings.

# Dunkirk VX 399 Gas-Fired Modulating Condensing Hot Water Boiler

## SEA LEVEL RATINGS NATURAL AND PROPANE GASES

Size	Boiler Input Rate (MBH) <sup>(1)</sup>		Heating Capacity (MBH) <sup>(1)(2)</sup>	Net Rating, Water (MBH) <sup>(1)(3)</sup>	Thermal Efficiency
	Maximum	Minimum			
<b>399</b>	399	80	379	329	96.0

<sup>(1)</sup> 1000 Btu/hr (British Thermal Units Per Hour) <sup>(2)</sup> Heating Capacity and Thermal Efficiency is based on DOE (Department of Energy) test procedures.

<sup>(3)</sup> Net Ratings based on piping and pickup allowance of 1.15. Contact Technical Support before selecting boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.




- Constructed and hydrostatically tested for maximum allowable working pressure of 150 psig (pounds per square inch gauge) (1035 kPa) in accordance with ASME Boiler and Pressure Vessel Code, Section IV, Rules for Construction of Heating Boilers.
- Ratings used for elevations up to 2000 ft (600m) above sea level.
- For elevations between 2000 ft (600m) and 4500 ft (1350m), install high altitude control kit.
- For elevations above 4500 ft (1350m) install high altitude control kit and:
  - USA - Reduce input rate 4% for each 1000 ft (300m) beyond 4500 ft.
  - Canada - Contact Provincial authority having jurisdiction for installations above 4500 feet (1350m) above sea level.

### General Information (See Installation, Operation and Maintenance Manual for complete instructions)

Clearances	Dimension	Combustible Materials (Required) <sup>(4)</sup>	Service <sup>(4)(5)</sup>
		<b>Top</b>	0" (0 cm)
(4) Required distances measured from boiler jacket.	<b>Left Side</b>	0" (0 cm)	6" (15 cm)
	<b>Right Side</b>	0" (0 cm)	6" (15 cm)
	<b>Front</b>	0" (0 cm)	24" (61 cm)
	<b>Back</b>	0" (0 cm)	0" (0 cm)
(5) Service, proper operation clearance recommendation.	<b>Bottom</b>	0" (0 cm)	0" (0 cm)
	<b>Combustion Air/Vent Piping</b>	0" (0 cm)	6" (16 cm)
	<b>Hot Water Piping</b>	See Local Code	6" (16 cm)

Combustion Air & Vent Pipe Equivalent Length	(Schedule 40 PVC)	
	4" Pipe	
Minimum Length	6 Ft.	
	(1.8 m)	
Maximum Length	100 Ft.	
	(30.5 m)	

Note: Refer to IOM and vent pipe manufacturer's instructions for equivalent vent lengths and alternate venting materials.

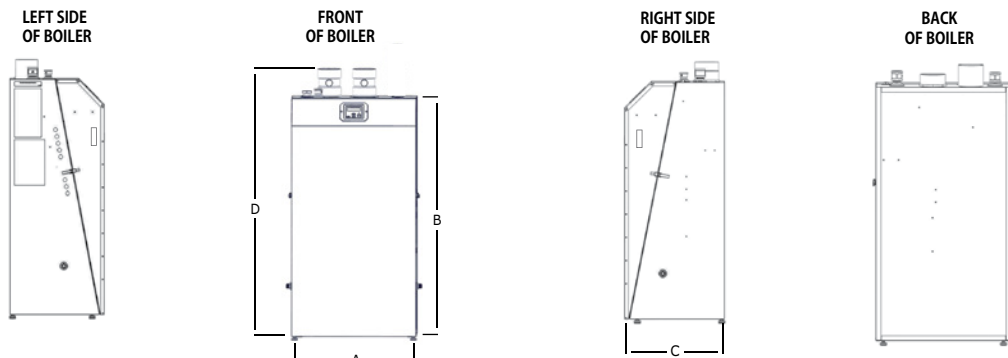
<b>Electrical</b>	120 Volts AC, 60hertz, 1 phase, Less than 25 amps (15 amp circuit recommended)
<b>Gas Pressure</b>	Natural Gas – Min: 3.0" w.c. (0.7 kPa), Max: 13.5" w.c. (3.3 kPa) Propane – Min: 5.0" w.c. (1.2 kPa), Max: 13.5" w.c. (3.4 kPa)
<b>Water Content of Heat Exchanger</b>	399 – 1.75 Gallons
<b>Standard Equipment</b>	CSD-1 Control package includes: UL listed LWCO w/Manual Reset. Boiler Control Module: High Temperature limit w/Manual Reset. Outdoor Temperature Sensor included. Automatic Line Voltage Intermittent Direct Spark Ignition, Modulating with a 5:1 combustion turn down ratio. (For multiple boiler applications - the control module can stage up to 16 boilers.) User Display interface: Easy programming with text display. Heat Exchanger: High grade 316L/444 Stainless Steel Fin Coil with Flame Sight Glass. Combustion: Gas Valve with Premix Venturi and Blower, Durable Stainless Steel Mesh Modulating Burner with 5:1 turn down ratio, Direct Spark Igniter and Flame Sensor. Electrical: Line Voltage Terminal Strip, High Voltage Junction Box and Transformer. Other: 50 PSI Safety Relief Valve, Boiler Drain Valve and Condensate Drain with built in trap, Leveling Legs.
<b>Options</b>	Concentric Vent Kit (4"), System Sensor (For Multiple Boiler Applications)
<b>Certifications</b>	  

Location		Inches	mm
<b>A</b>	<b>Width</b>	27 1/8	688
<b>B</b>	<b>Height - Unit only</b>	52	1320
<b>C</b>	<b>Depth</b>	21 1/8	537
<b>D</b>	<b>Height unit w/ Piping</b>	66 1/4	1683

\* Note - Alternate Condensate Drain Connection on Right Side of Boiler. All ratings and specifications subject to change.

\*Dunkirk's interpretation of CSD-1 requirements. Consult local code authorities prior to installation.

## OVERALL DIMENSIONS



P.O. Box 4729  
Utica, New York 13504

Tel: 315.797.1310  
Fax: 315.797.3762

Contractor Assistance:  
800.325.5479



  
[www.dunkirk.com](http://www.dunkirk.com)