KN SERIES KN SERIES PLUS+

Condensing Cast-Iron Boilers

Meeting the Demands of Tomorrow's Market...Today

25-YEAR
Heat Exchanger
WARRANTY

ATH
ADVANCED THERMAL HYDRONICS
A MESTEK COMPANY

Cast-Iron Heat Exchangers

The KN-Series Legacy

In today's commercial boiler market, efficiency, durability and the environment are everything. The KN-Series has stood the test of time and has outperformed the competition in all facets.

A staple in the condensing boiler market for over 16 years and 30,000 installations the KN-Series uses the durability and heat retention capabilities of cast-iron heat exchangers with state-of-the-art air/fuel delivery systems and the HeatNet control platform to outpace the competition keeping KN at the head of the class.

Rugged and long lasting, cast iron is the ideal material for condensing boiler systems. KN-Series boilers are built to last the long haul and backed by the industry's best heat exchanger warranty. All heat exchangers carry a **25-Year non-prorated warranty*** covering materials and workmanship against failure due to condensate corrosion and thermal shock.

*See KN-Series written Warranty for specific requirements.

Facts:

- 5x greater wall thickness than stainless steel and aluminum.
- Construction with fewer seams and joints can handle more heat and stress.
- Corrosion-resistant properties mean less sensitivity to acidic and basic pH levels.
- Industry's best 25-year heat exchanger warranty.
- KN-Series boilers have an installation base of over 30,000 units since its introduction.
- KN-Series boilers have not had one documented failure associated with corrosion.
- Cast-iron boilers are an acceptable material for use in condensing boiler applications by ASHRAE.
- Cast iron has been the material of choice in the boiler industry for over 150 years.

American-Made

From raw materials to the state-of-the-art digital control system, the complete line of the KN-Series products is proudly manufactured in Boyertown, Pennsylvania. Utilizing decades of foundry and manufacturing expertise, the KN-Series boilers are cast, machined, assembled, and tested to the tightest standards possible – resulting in a finished product that is all-American in terms of innovation, reliability and craftsmanship.

Features and Benefits:

- +96% AHRI (KN-Series Plus)
- 10:1 Full Modulation (Optional)
- O_2 Monitoring (with 10:1 Option)
- Cast-Iron Primary Heat Exchangers
- Variable Volume
- 25-Year Heat Exchanger Warranty
- Tru-flow Air/Fuel Delivery System
- 20 – 100° Delta T's
- Vent up to 100'
- Fits through standard doorway
- NG/LP/Dual Fuel
- HeatNet Control Platform
- 7" LCD Touch Screen Display
- HeatNet Online Monitoring (Optional)

Click or Scan for Video

VIRTUOSO$_2$ - High Turndown

All KN-Series boilers are available with our ***NEW* Virtuoso$_2$** high turndown system. Working off the legendary Tru-Flow air/fuel coupling system; the engineers at ATH have developed an air shutter driven system expanding the KN's turndown ratio to 10:1.

The uniquely designed air shutter system is positioned between the venturi and the blower inlet. The air shutter opens and closes electronically depending on the firing rate. The air shutter and blower design protect against intake and flue pressure fluctuations by maintaining blower RPM; providing complete combustion stability across the firing rate without sacrificing performance and reliability at any turndown ratio.

O_2 Monitoring:

Temperatures and air density changes can effect boiler combustion. O_2 sensors measure oxygen levels in the exhaust. The Virtuoso$_2$ control platform incorporates a proven Bosch O_2 sensor for real-time monitoring that can be instantly accessed by operators and technicians for instant adjustments for improved efficiencies and lower emissions.

- Improved Efficiencies - Lower Emissions
- Less Cycling
- No Restrictions on Water Temp
- Improved Comfort
- Matched Input - No Degradation in Performance
- No Nuisance Lockouts - Less Maintenance

10% Turndown

50% Turndown

100% Full Fire

KN SERIES

Green Performance & Construction

In today's world, environmental preservation is of the utmost importance.

We take this very serious here at ATH and the entire KN-Series line exemplifies our dedication to quality products, performance and the environment.

The choice for all of today's GREEN initiatives including LEED projects, the KN-Series meets and exceeds all Federal and State requirements for efficiency and emissions.

Not only does the KN-Series burn clean it is also manufactured using over 90% post-consumer recycled materials in the primary heat exchanger making them environmentally sustainable and recyclable themselves.

Post-Consumer Recycled Content Used:

- 90% Cast-Iron Heat Exchanger
- 80% Complete Boiler Assembly
- 40% Plastic Componentry

Certified Performance

KN-Series boilers meet or exceed all Federal and State requirements for thermal efficiency and rebate incentives.

- +96% AHRI Certified Efficiency (KN Plus)
- 90% AHRI Certified Efficiency (KN)
- Low NOx & CO_2
- Reduced Carbon Footprint

Real World Advantages

All HVAC and building industry professionals have one thing in common: the need for quality equipment, easy installation and great ROI. With the ever-increasing industry demand for green technologies, it's no wonder that more and more professionals are turning to the KN-Series to fulfill all of their boiler application must-haves.

Architects & Engineers

- LEED Qualified.
- Cast-iron construction retains latent heat for maximum efficiencies and is made from recycled materials.
- A simple and compact footprint makes for quick and easy installation.
- HeatNet 3.0 works seamlessly with other BMS protocols.

Building Owners

- Quick installation.
- All boiler controls are digital and easily programmed through an innovative easy-to-read touchscreen.
- Annual maintenance and service fees are reduced through a service-friendly design.
- 25-year heat exchanger warranty.

Contractors

- Factory-packaged units require minimal piping and field wiring.
- All units have a small footprint for easier movement through doorways and mechanical rooms.
- HeatNet 3.0 boiler control software speeds up diagnostics and installations.

KN SERIES PLUS+

The Best Just Got Better

The engineers at Mestek have taken the KN-Series and raised the bar even further with the KN-Series Plus.

Built off the foundation that made the KN-Series a market leader the KN-Series Plus incorporates all of the class leading features of the KN-Series with increased efficiencies making it not only the most durable boiler on the market but one of the most energy efficient.

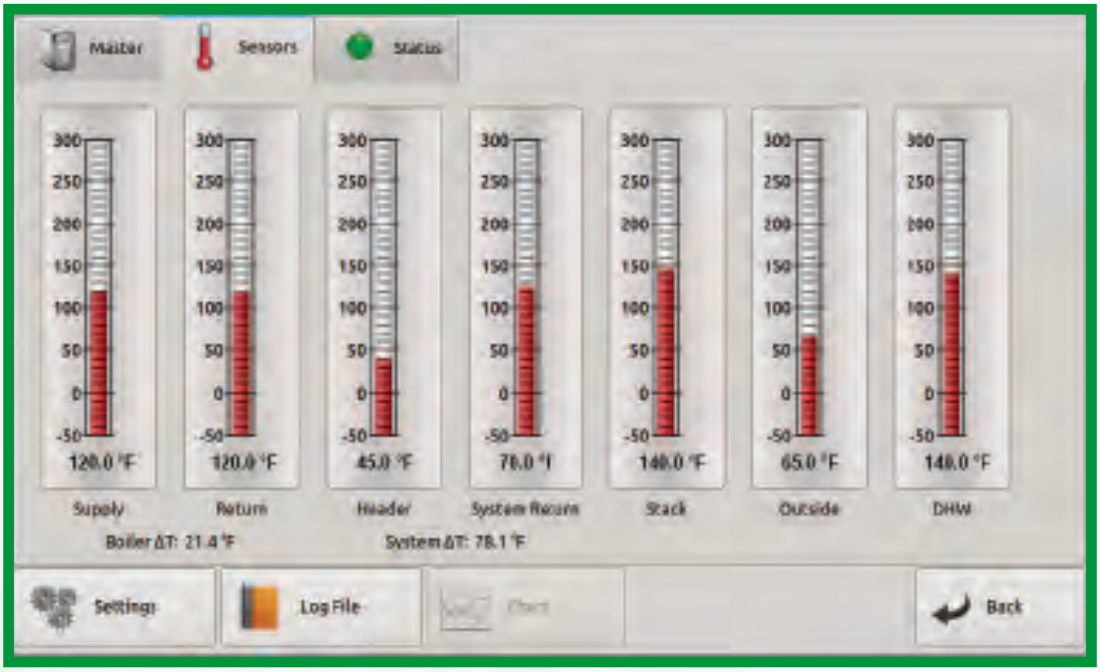
The KN-Series Plus utilizes a newly designed hydrophobic coated finned stainless steel heat exchanger to work in concert with the existing high efficiency cast-iron heat exchanger resulting in the most versatile high performance boiler in the world.

By using finned stainless steel tubes the KN-Series Plus has increased heat transfer area to maximize efficiency in a very cost-effective manner all while keeping the same small footprint as the original KN-Series boiler!

- Up to 4x more surface – Increased Efficiencies
- Hydrophobic coated stainless steel heat exchanger for increased corrosion resistance
- Full variable flow heat exchangers – No Cv penalties
- PVC/CPVC & polypropylene approved venting
- Small footprint

HEATNET® 3.0

HeatNet® 3.0 & HeatNet Online Remote Monitoring



Every KN-Series boiler is integrated with Heatnet 3.0 - an innovative, digital Boiler Management System that provides consistency and feedback through digital communication. By continuously monitoring several system characteristics, HeatNet 3.0 modulates boilier-firing rates to maximize turndown ratios and maintain peak efficiency - no matter the load.

HeatNet 3.0 doesn't just benefit stand-alone KN-Series boilers; it is a valuable and cost-saving tool in operating a multi-boiler Master/Member network of up to 16 boilers. By functioning as a boiler management system, HeatNet 3.0 can incorporate a mixture of condensing boilers and non-condensing boilers to eliminate costly third-party, wall-mounted boiler control platforms.

- Digital touch screen programming
- Lead/lag cascade (16 units)
- Adaptive modulation
- Circulator pump/VFD/valve control
- BMS integration (Modbus, BACnet, LonWorks)
- Freeze protection and Delta T monitoring
- Hybrid/base load capacity
- Priority boiler control
- Domestic hot water communication
- Diagnostics and troubleshooting
- Set points
- Web-based remote monitoring/dashboard with HeatNet Online

HeatNet Online

HeatNet Online is the perfect alternative to expensive BMS programs. Built specifically for the KN-Series family of boilers HeatNet Online is the most cost effective solution to maximize the performance of your facilities investment.

A secure web-based remote monitoring control platform HeatNet Online continuously monitors, records and graphs input and output trending data for quick visualization of overall boiler system performance. HeatNet Online allows users to see live system performance 24/7/365 to insure peak efficiency while preventing costly failures by allowing proactive responses to systems potentially operating in unsafe conditions. Users can see system performance including but not limited to temperature settings, system cycles and overall boiler performance.

Money:

Running your boiler system at peak efficiency is not only important to your organization but it is critical for the environment. By having an easy to understand remote monitoring platform you can pinpoint problems and resolve issues quickly saving time and money while preventing critical system failures resulting in decreased downtime and premium performance.

Alerts & Security:

Custom email alerts are sent to pertinent personnel including the boiler applications team at Advanced Thermal Hydronics to aid in technical assistance when necessary.

HeatNet Online is a secure system using either a wired network or a wireless cellular network. Outbound data only is transmitted through HeatNet Online eliminating security risks. The team at Advanced Thermal Hydronics is available for consultation regarding any security questions to insure all of your IT department's policies and procedures stay protected.

Features & Benefits:

- 24/7/365 online boiler system monitoring
- Customized email notification
- Prevent boiler system failure/down time
- Increase boiler performance
- Remote access from any mobile device
- Secure outbound only data transmission
- Wired or wireless cellular network capable
- Communication with any operating system (IOS/Android/Windows)

One Size May Not Fit All...

KN-Series Boiler Product Summary

Don't let their size fool you – the KN-2 and KN-4 are built with the same quality, durability and levels of efficiency as their larger counterparts. Built with smaller footprints and vent sizes, the KN-2 and KN-4 are ideally suited for residential and light commercial boiler projects, as well as other hydronic space–heating applications.

	KN-2	KN-4
Boiler Ratings and Capacities		
Input BTU/HR	199,999	399,999
Output BTU/HR (High Fire)	179,999	359,999
AHRI Thermal Efficiency (%)	N/A	90
AHRI Combustion Efficiency (%)		87.7
AHRI AFUE Efficiency (%)	90	N/A
Turn Down	5:1	5:1
Boiler HP	5	11
Fuel Type	NG/Prop	NG/Prop
Category	CAT II/IV	CAT II/IV
Water Volume (gal)	3.9	5.9
Design Data - (Max working Press)	100 psig	100 psig
ASME Sect IV Fireside Htg Surface (sq-ft)	7.88	14.53
ASME Sect IV Waterside Htg Surface (sq-ft)	7.1	14.21
Cv GPM (1PSIG)	20	40
Electrical (Standard)	120 V - 1ph	120 V - 1ph
Electrical (Optional - 3ph)	N/A	N/A
Boiler FLA (amps) - Standard Voltage*	2.5	5
Min. Gas Pressure (w.c.)	2	2
Max. Gas Pressure (w.c.)	14	14
Boiler Temp Rise/Press Drop		
Max. Flow Rate (gpm) @ 20 delta-t (f)	3.6	7.2
Min. Flow Rate (gpm) @ 100 delta-t (f)	18	36
40 deg f - delta t (Flow Rate, gpm)	9	18
Pressure drop (ft-hd)	0.47	0.5
60 deg f - delta t (Flow Rate, gpm)	6	12
Pressure drop (ft-hd)	0.21	0.21
80 deg f - delta t (Flow Rate, gpm)	4.5	9
Pressure drop (ft-hd)	0.12	0.12
Max Vent (Equiv. ft)	100	100
Max Combustion Air (Equiv. ft)	100	100
Boiler Trim		
Number of Relief Valves	1	1
Relief Valve Pressure Rating (PSI)	30	30
Inlet Water Connection (in)	1 1/4	1 1/4
Outlet Water Connection (in)	1 1/4	1 1/4
Gas Connection (in)	1/2	1/2
Vent Outlet Connection (in)	3	4
Standard Vent Material	SS	SS
Combustion Air Connection	3	4
Dimensions		
Height (in)	51 1/8	51 29/32
Width (in)	28 3/8	35 7/16
Depth (in)	17 3/16	22
Operating Weight (lbs.)	563	827
Shipping Weight (lbs.)	540	780
Clearance Service/Combustible		
Front (in)	36/6	36/6
Rear (in)	24/6	24/6
Right Side (in)	24/6	24/6
Left Side (in)	24/6	24/6
Top (in)	24/6	24/6

* Add circulator amps.

But Innovation Always Will.

	KN-6	KN-10	KN-16	KN-20	KN-26	KN-30	KN-40
Boiler Ratings and Capacities							
Input BTU/HR	600,000	1,000,000	1,600,000	1,999,000	2,600,000	3,000,000	4,000,000
Output BTU/HR (High Fire)	540,000	900,000	1,440,000	1,799,100	2,340,000	2,700,000	3,540,000
AHRI Thermal Efficiency (%)	90	90	90.0	90	90	90.0	88.5
AHRI Combustion Efficiency (%)	87	86.8	86.0	86.6	86	85.8	86.6
Turn Down	10:1*	10:1*	10:1*	10:1*	10:1*	10:1*	10:1*
Boiler HP	16	27	43	54	70	81	106
Fuel Type	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop
Category	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV
Water Volume (gal)	7.9	11.9	17.9	21.9	27.7	31.7	41.6
Design Data - (Max working Press)	100 psig	100 psig	100 psig	100 psig	100 psig	100 psig	100 psig
ASME Sect IV Fireside Htg Surface (sq-ft)	21.18	34.48	54.43	67.72	87.69	100.98	134.23
ASME Sect IV Waterside Htg Surface (sq-ft)	21.32	35.54	56.86	71.08	92.41	106.63	142.17
Cv GPM (1PSIG)	62	100	140	161	222	246	271
Electrical (Standard)	120 V - 1ph	120 V - 1ph	230V - 1ph	230V - 1ph	230V - 3ph	230V - 3ph	230V - 3ph
Electrical (Optional - 3ph)	N/A	N/A	208V-575V	208-575V	208-575V	208-575V	208-575V
Boiler FLA (amps) - Standard Voltage***	15.8	15.8	19.8	19.8	16.1	16.1	19.9
Min. Gas Pressure (w.c.)	3	3	3	3	3	3	3
Max. Gas Pressure (w.c.)	14	14	14	14	14	14	14
Boiler Temp Rise/Press Drop							
Max. Flow Rate (gpm) @ 20 delta-t (f)	54.0	90.0	144.1	180.0	234.1	270.1	354.1
Min. Flow Rate (gpm) @ 100 delta-t (f)	10.8	18.0	28.8	36.0	46.8	54.4	70.8
40 deg f - delta t (Flow Rate, gpm)	27.0	45.0	72.0	90.0	117.0	135.1	177.1
Pressure drop (ft-hd)	0.44	0.47	0.61	0.72	0.64	0.70	0.99
60 deg f - delta t (Flow Rate, gpm)	18.0	30.0	48.0	60.0	78.0	90.0	118.0
Pressure drop (ft-hd)	0.19	0.21	0.27	0.32	0.29	0.31	0.44
80 deg f - delta t (Flow Rate, gpm)	13.5	22.5	36.0	45.0	58.5	67.5	88.5
Pressure drop (ft-hd)	0.11	0.12	0.15	0.18	0.16	0.17	0.25
Max Vent (Equiv. ft)	120	120	120	120	120	120	100
Max Combustion Air (Equiv. ft)	120	120**	120	120	120	120	100
Boiler Trim							
Number of Relief Valves	1	1	1	1	1	1	1
Relief Valve Pressure Rating (PSI)	50	50	50	50	50	50	50
Inlet Water Connection (in)	3	3	3	3	4	4	4
Outlet Water Connection (in)	3	3	3	3	4	4	4
Gas Connection (in)	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2
Vent Outlet Connection (in)	4	4/5**	6	6	8	8	10
Standard Vent Material	SS	SS	SS	SS	SS	SS	SS
Combustion Air Connection	6	6	8	8	8	8	12
Dimensions							
Height (in)	71 17/32	71 17/32	71 3/8	71 29/32	71 29/32	71 29/32	73 15/32
Width (in)	35 1/8	35 3/32	34 31/32	34 29/32	34 9/32	34 9/32	33 3/16
Depth (in)	42 9/16	49 15/16	59 7/32	66 19/32	77 29/32	85 9/32	105 11/16
Operating Weight (lbs.)	1150	1557	2360	2714	3425	3850	4627
Shipping Weight (lbs.)	1080	1400	2160	2480	3120	3500	4280
Clearance Service/Combustible							
Front (in)	36/6	36/6	36/6	36/6	36/6	36/6	36/6
Rear (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Right Side (in)	6/6	6/6	6/6	6/6	6/6	6/6	6/6
Left Side (in)	6/6	6/6	6/6	6/6	6/6	6/6	6/6
Top (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6

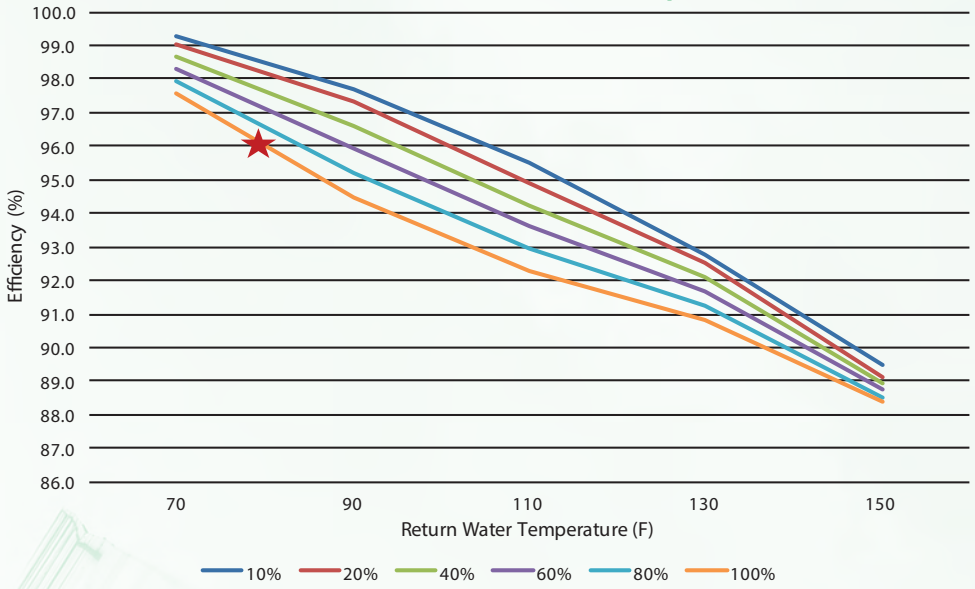
* 5:1 Standard Turndown
** Max equivalent length of 80' using 4" and 120' using 5".
*** Add circulator amps.

KN-Series Plus Boiler Product Summary

	KN6+	KN10+	KN16+	KN20+	KN26+	KN30+	KN40+
Boiler Ratings and Capacities							
Input BTU/HR	600,000	1,000,000	1,600,000	2,000,000	2,600,000	3,000,000	4,000,000
Output BTU/HR (High Fire)	576,600	952,000	1,537,600	1,904,000	2,498,600	2,856,000	3,808,000
AHRI Thermal Efficiency (%)	96.1	95.2	96.1	95.2	96.1	95.2	95.2
AHRI Combustion Efficiency (%)	96.3	95.4	96.3	95.4	96.3	95.4	95.4
Turn Down	10:1*	10:1*	10:1*	10:1*	10:1*	10:1*	10:1*
Boiler HP	17	28	46	57	75	85	114
Fuel Type	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop	NG/Prop
Category	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV
Water Volume (gal)	10.5	14.5	21	24.9	31.9	35.9	47.1
Design Data - (Max working Press)	100 psig	100 psig	100 psig	100 psig	100 psig	100 psig	100 psig
ASME Fireside Htg Surface (sq-ft)	21.18	34.48	54.43	67.72	87.69	100.98	134.23
ASME Waterside Htg Surface (sq-ft)	30.95	45.17	72.91	87.13	111.7	125.9	165.9
Cv GPM (1PSIG)	62	100	140	161	222	246	271
Electrical (Standard)	120 V - 1ph	120 V - 1ph	230V - 1ph	230V - 1ph	230V - 3ph	230V - 3ph	230V - 3ph
Electrical (Optional - 3ph)	N/A	N/A	208V-575V	208-575V	208-575V	208-575V	208-575V
Boiler FLA (amps) - Standard Voltage	16.5	16.5	20.8	20.8	16.9	16.9	21.9
Min. Gas Pressure (w.c.)	3	3	3	3	3	3	3
Max. Gas Pressure (w.c.)	14	14	14	14	14	14	14
Boiler Temp Rise/Press Drop							
Max. Flow Rate (gpm) @ 20 delta-t (f)	57.7	95.2	153.8	190.5	250.0	285.7	381.0
Min. Flow Rate (gpm) @ 100 delta-t (f)	11.5	19.0	30.8	38.1	50.0	57.1	76.2
40 deg f - delta t (Flow Rate, gpm)	28.8	47.6	76.9	95.2	125.0	142.9	190.5
Pressure drop (ft-hd)	0.50	0.52	0.70	0.81	0.73	0.78	1.14
60 deg f - delta t (Flow Rate, gpm)	19.2	31.7	51.3	63.5	83.3	95.2	127.0
Pressure drop (ft-hd)	0.22	0.23	0.31	0.36	0.33	0.35	0.51
80 deg f - delta t (Flow Rate, gpm)	14.4	23.8	38.5	47.6	62.5	71.4	95.2
Pressure drop (ft-hd)	0.12	0.13	0.17	0.20	0.18	0.19	0.28
Max Vent (Equiv. ft)	100	100	100	100	100	100	100
Max Combustion Air (Equiv. ft)	100	100	100	100	100	100	100
Boiler Trim							
Number of Relief Valves	1	1	1	1	1	1	1
Relief Valve Pressure Rating (PSI)	50	50	50	50	50	50	50
Inlet Water Connection (in)	3	3	3	3	4	4	4
Outlet Water Connection (in)	3	3	3	3	4	4	4
Gas Connection (in)	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2
Vent Outlet Connection (in)	5	5	6	6	8	8	10
Standard Vent Material	SS	SS	SS	SS	SS	SS	SS
Optonal Non Metallic Vent Material	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP
Combustion Air Connection	6	6	8	8	8	8	12
Dimensions							
Height (in)	71 17/32	71 17/32	71 3/8	71 29/32	71 29/32	71 29/32	73 15/32
Width (in)	32 1/8	32 1/8	33 1/16	33	33	33 7/16	33 5/16
Depth (in)	66 5/32	73 17/32	85 3/32	92 5/32	109 1/2	116 27/32	138 9/16
Operating Weight (lbs.)	1480	1920	2735	3080	3895	4325	5100
Shipping Weight (lbs.)	1400	1750	2520	2840	3580	3960	4735
Clearance Service/Combustible							
Front (in)	36/6	36/6	36/6	36/6	36/6	36/6	36/6
Rear (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Right Side (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Left Side (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Top (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6

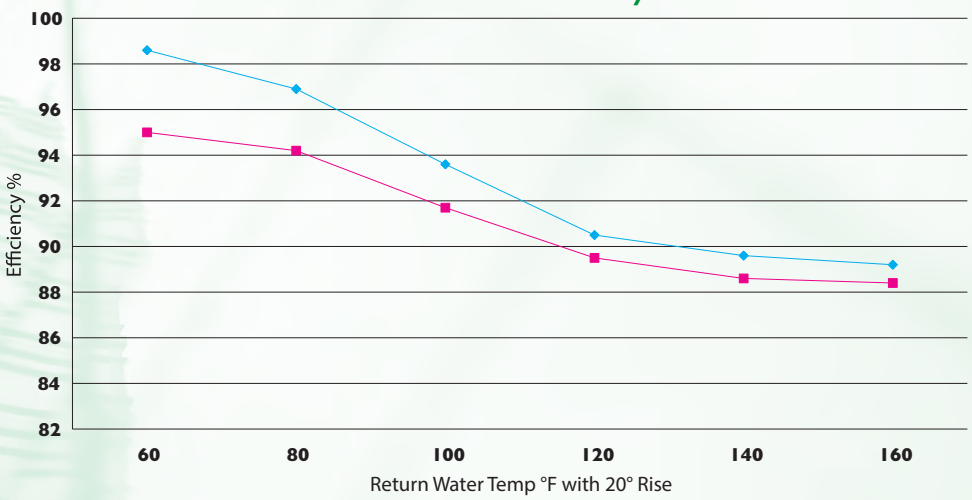
* 5:1 Standard Turndown

KN-Series Plus Efficiency



★ 96.1% AHRI Certified Product Performance Thermal Efficiency

KN-Series Efficiency



AHRI Certified 90% Efficient

– Annual Mean Thermal Efficiency is a calculated average utilizing cumulative run hours and corresponding load. (ASHRAE Degree Day & BIN Method/Fundamentals 19.17)

– Maximum Modulation Efficiency (Low Fire)

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ADVANCED THERMAL HYDRONICS
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