THE LARGEST COMMERCIAL PRODUCT SELECTION AVAILABLE, INCLUDING THE MOST SPECIFIED UNIT IN THE U.S.

A. O. Smith’s reputation for innovation continues to soar with our most complete line of products yet. With the trademark blend of innovative technology and energy-efficient solutions, our comprehensive line is the natural fit for spec jobs requiring everything from the smallest commercial installation up to the largest multi-structure complex.

We offer more than 500 different commercial models, including gas fired, oil-fired and electric configurations, ranging in capacities from 5 to 10,000 gallons, with input range from 50,000 BTU to the equivalent of 4,000,000 BTU. Through an inspired blend of innovation, efficiency and years of expertise, A. O. Smith continues to set the industry standard for performance and quality of water heaters, specialty heaters and storage tanks.
WHY TRUST A. O. SMITH WITH YOUR SPEC?

COMPANY HIGHLIGHTS

• A. O. Smith celebrates more than 140 years of innovation, integrity and customer satisfaction
• Multi-generational, family-owned company based in Ashland City, Tennessee directly contributes more than 3,500 jobs in the U.S.
• Through dedicated engineering and technology efforts A. O. Smith has been granted hundreds of patents related to our water heaters

PRODUCT HIGHLIGHTS

Complete product offering
• Commercial or residential, standard models, high efficiency models and even hybrid models

Best components in the industry
• APCOM, a division of A. O. Smith, is the industry’s largest manufacturer of thermostats, electric heating elements, gas manifolds and burners, pipe nipples and other water heater components

THE #1 SPECIFIED WATER HEATER

A. O. SMITH’S FLAGSHIP PRODUCT:
THE CYCLONE® Mxi
QUALITY COMPONENTS...KEY TO WELL ENGINEERED PRODUCTS

When it comes to building a tough water heater, there are three crucial components: glass lining, a self-cleaning system and the anode. These work together within A. O. Smith units to provide the ultimate advantage.

ANODE PROTECTION

CoreGard™ Anodes
Our CoreGard™ anode rods have a stainless steel core that causes the anode to securely adhere, extending the life of the rod for even longer protection.

High-Tech Powered Anodes
Powered anodes are so tough that they provide “forever” tank protection against corrosion. Additionally, while providing this superior tank protection they are not sacrificial like a standard anode, and powered anodes never need to be replaced.

GLASS LINING

Our PermaGlas® Ultra Coat™ glass lining provides the best protective barrier in the industry and was developed by our own advanced engineering team. PermaGlas Ultra Coat is a precise glass formula and provides tough protection for our tank steel. With our industry leading ULTRACOAT™ process, all glass lining is completed AFTER the tank welding is finished. Corrosion is nearly eliminated through the combination of dual anodes for additional tank protection and our patented ceramic glass lining.

SELF-CLEANING SYSTEM

Our Hydro Cannon™ self-cleaning dip tubes (Available on many models) lead the pack when it comes to keeping the tank free from sediment and mineral accumulation.

PREMIUM ELECTRICAL ELEMENT OPTIONS

Industrial strength Incoloy elements (DSE model only) are hard-wired for solid electrical connections. Low watt density for longer life with optional Y (3PH) configuration.

Staggered elements allow maximum heat transfer and larger surface area coverage.

A. O. SMITH IS DEDICATED TO THE SPECIFYING ENGINEER.

VISIT WWW.HOTWATER.COM/SPEC

TO FIND ALL THE TOOLS TO MAKE SPECIFYING WATER HEATERS EASIER.
Almost every commercial water heater made has a glasslined tank to protect against corrosion and leaks. A. O. Smith takes that protection to a new level with our exclusive PermaGlas® Ultra Coat™, available on all of our Cyclone and multi-flue models.

The process starts when the bare tank components (including the tank shell, heads and bottoms, and flue tubes) are welded together before application of PermaGlas Ultra Coat.

PermaGlas Ultra Coat in “slush” form is then poured into the completed tank. The tank is then sealed and rotated in several directions to allow the coating to precisely cover all water side inner tank surfaces.

Excess PermaGlas slush-coating material is then drained from the tank.

The slush-coated tank is then run through a 1,600ºF enameling furnace, which permanently heat bonds PermaGlas Ultra Coat to the steel.

Because A. O. Smith applies PermaGlas Ultra Coat after the tank is welded, there is no chance of “weld burn” that can burn away normal glass lining and expose bare steel to water. PermaGlas Ultra Coat provides superior protection for every part of the tank that’s vulnerable to corrosion, including the top, bottom, sides, flue tubes and every weld seam!
WHY IS SELF-CLEANING A KEY FEATURE FOR WATER HEATERS?

When water is heated, it begins to shed its minerals. As these mineral deposits such as lime and other sediments accumulate inside the tank, they form a barrier between the burner and the water and concentrate excessive heat around the critical weld areas. The result is reduced energy efficiency, higher operating costs and a greater risk of premature tank leaks. Depending on the water conditions, this mineral and sediment accumulation can begin to occur in just a few months. With our patented self-cleaning systems, our customers should never have to worry about any of these issues. Even our base commercial models come standard with this feature. Many of our more advanced commercial models come with the even more advanced Eliminator™ system, ensuring that virtually no sediment will accumulate in the tank.

THE ELIMINATOR™ SELF-CLEANING SYSTEM

The rotating turbulence created by the Eliminator™ helps keep sediment particles moving, so they can be carried out with the next hot water draw instead of collecting on the bottom of the tank.

With reduced sediment buildup, every Master-Fit® “BTR” and Master-Fit® Plus “BTL” water heater can be expected to maintain its rated 80% thermal efficiency longer and deliver year after year of reliable service.
FULLY MODULATING COMBUSTION CONTROL

- Modulates the firing rate as the demand changes
- Modulating the burner results in higher overall operating efficiencies and longer service life
- Intelligent control system with LCD display
- Venting flexibility for versatility and easy serviceability

- iCOMM™ compatible and can be monitored from remote locations. Cyclone Mxi models manufactured March 1, 2018 to present come standard with iCOMM Wi-Fi connectivity onboard. No charge connectivity using Wi-Fi or Ethernet connection.
- Models ranging from 50-gallon/76,000 BTU to 119-gallon/500,000 BTU with up to 98% thermal efficiency and all models are ENERGY STAR® Qualified except the BTX-80
- Industry-first powered anodes for superior tank protection
- Exclusive PermaGlas® Ultra Coat™ glass lining

TOTAL CONTROL: CYCLONE Mxi TOUCH SCREEN DISPLAY

The intelligent control system, with easy to navigate menu, provides precise temperature control and unit operating information.

- Detailed heater status information: blower, igniter, gas valve, flame detection, air inlet restrictions, exhaust vent restrictions, acceptable gas supply pressure
- Precise temperature setting with actual tank temperature at upper and lower probes
- Alerts the user to any potential corrosion-related leak
- Maintains constant log of the number of cycles and burner operating time
- Communicates fault details and gives diagnostic information
- Maintains a log of any fault occurrence and the time a fault occurred

POWERED ANODES*

The A. O. Smith powered anode system provides the most modern and innovative technology available to provide long-lasting tank protection.
- Non-sacrificial anode does not require maintenance or inspection
- Provides superior tank protection to traditional aluminum or magnesium anodes
- Power level adjusts to changes in water conditions for optimum protection
- Offers superior protection in various water conditions
  — Better protection in water with low conductivity
  — Eliminates the occurrence of hydrogen sulfide gas production (rotten egg odor)

*Not on 76,000 BTU models. Available as an option on 100,000 BTU models.
THE INNOVATION THAT STARTED IT ALL

Revolutionary Heat Exchanger And Burner Systems

The helical internal heat exchanger in all Cyclone models swirls the hot gases, like a cyclone, against the heat exchanger walls. This cyclonic action produces an increased rate of heat transfer, resulting in extra-high thermal efficiency. All Cyclone Mxi models employ an ingenious top-mounted down-fire pre-mix burner, resulting in even higher efficiencies.

This exclusive design delivers rated thermal efficiencies of up to 98% with actual efficiencies up to 99.9% when in modulating firing mode.

CYCLONE Mxi MODELS USE THE LATEST IN BURNER TECHNOLOGY

A. The pre-mixed burner design delivers maximum efficiency.
B. Once the pre-mixed fuel is ignited, the flame travels into the submerged central combustion chamber.
C. The resulting hot flue gases are then forced at high velocity through a helical heat exchanger coil.
D. The spiral shape of the coil keeps the hot gases swirling against the heat exchanger walls, resulting in extra-high thermal efficiency.

CYCLONE HE

For medium duty applications choose one of the Cyclone BTX or BTXL models. These models deliver high efficiency and performance in a compact footprint. Like the Mxi these models feature the helical coil heat exchanger design that maximizes heat transfer. The BTX-80 is configured for single pipe power venting. The larger capacity BTX-100 and BTXL-100 models deliver more hot water and have the flexibility for either power vent or power direct vent installation.

CYCLONE LV

For commercial applications with short period peak demand such as hotels, arenas, convention centers and schools, choose one of the Cyclone LV BTHL models. Cyclone LV (Large Volume) provides integrated storage capacity to 250-gallons, eliminating the need for multiple water heaters or separate storage tank, providing both space and installation cost savings. Like the Mxi, these models incorporate the unique Cyclone helical coil heat exchanger, which maximizes heat transfer for optimal service life.

Cyclone LV models are available from 150,000 to 500,000 Btu/h and deliver thermal efficiencies to 96%. The modulating burner adjusts the firing rate to the specific demand, further increasing efficiency and dramatically lowering energy costs. Its next generation iCOMM™ connectivity platform provides remote monitoring, diagnostic fault notifications, and control of the set point and differential using the free A.O. Smith mobile app.
UNRIVALED VENTING VERSATILITY

The Cyclone features power-vent and power direct vent design, allowing combustion air to be drawn from the equipment room conventionally or directly from the outdoor atmosphere through a sealed intake air pipe. Vent systems can be terminated vertically through the ceiling or horizontally through a sidewall. Front located exhaust and condensate connections allow for easy installation and serviceability. **Common vent kits are now available.**

**Sealed Direct Vent Vertical**

**Sealed Direct Vent Sidewall**

**Power Vent Vertical**

**Power Vent Sidewall**

---

EASIER TO INSTALL

Because installation space today is almost always at a premium, we’ve designed the Cyclone to install in an absolute minimum of space. The exhaust outlet and fresh air intakes are positioned so the water heater can be placed either in a corner or against a wall.

ADVANCED GLASS LINING TECHNOLOGY

Exclusive PermaGlas® Ultra Coat™ glass lining protects all Cyclone water heaters. PermaGlas Ultra Coat provides superior protection for all inner tank surfaces as well as for the inside of the heat exchanger, which would otherwise be vulnerable to corrosion from flue gas condensate. The innovative helical coil minimizes weld points to extend tank life.

STRENGTH IN NUMBERS

Cyclone Mxi water heaters can be installed in manifolded multiples to serve the highest demand applications in place of boiler systems. For example, four BTH-500s can be manifolded to provide total storage of 476 gallons with an input of 2,000,000 BTU.

COMMON VENT CAPABLE

The Cyclone Mxi Common Venting Kit is certified for use with 120, 150, 199, 250, 300, 400, and 500 Cyclone models. These low-maintenance, non-powered kits will save on time and installation costs, because they include all of the necessary fittings such as a backflow preventer, intake and exhaust adapters. One kit per water heater is required.

BTH 120-250 uses 3” PVC vent pipe up to 50 equivalent feet and 4” PVC pipe for equivalent footage up to 120’. BTH 300-500 uses 4” PVC vent pipe for installations up to 70 equivalent feet and 6” PVC pipe for equivalent footage up to 120’. Concentric vent kits available. Pipe distances are measured independently. See instruction manual for complete venting instructions and allowable vent lengths.

---

FOR MORE DETAILED SPECS, VISIT

WWW.HOTWATER.COM/SPEC
MASTER-FIT®
Commercial Gas Water Heaters
DESIGNED TO FIT WHERE OTHERS CAN’T!

SMALL FOOTPRINT, LOW PROFILES.

27-3/4”. That’s the diameter of most Master-Fit® commercial gas water heaters. So, regardless of tank size or BTU input a Master-Fit model will take up the same amount of floor space. In many cases, you’ll be able to put in a Master-Fit® with a smaller footprint but a higher input than the water heater it’s replacing.

And, Master-Fit is designed to be shorter… up to a foot shorter than comparable models it may replace. And with 1 to 3 inches of clearance on most models* to combustibles on the sides and rear, plus approval for placement on combustible flooring with our NSF approved leg kit, you shouldn’t have any problem putting a Master-Fit just about anywhere you need it!

*Up to 6” on some larger models

THREE SETS OF WATER CONNECTIONS.

In replacement situations, you’ll find plenty of variations in hot and cold water piping configurations. However the old unit is plumbed, you can make it work with Master-Fit, which allows you to make hot and cold water connections through the front, rear or top of the unit.*

*The Eliminator™ self-cleaning device functions only when front cold water connection is used.
BTR GAS MODELS

The Master-Fit® BTR series provides outstanding performance and maximum installation flexibility for both new construction and replacement applications. Each unit is designed to be as much as a foot shorter than the models they usually replace, and multiple options for placement of water connections and low installation clearances are additional installer-friendly features.

THE ELIMINATOR™ SELF-CLEANING SYSTEM

As deposits of lime and other sediments accumulate inside the tank, they form a barrier between the burner and the water, concentrating heat around the critical weld areas. The result is reduced energy efficiency, higher operating costs, and a greater risk of premature tank leaks. The Eliminator™ directs incoming cold water under pressure to sweep the bottom of the tank to keep sediment moving so it doesn’t accumulate. Reduced sediment build-up helps maintain rated thermal efficiency and reduce water heating costs. The self-cleaning system also helps prolong tank life to ensure year after year of reliable service.

Factory-Installed Draft Diverter and Flue Damper
- Low-profile draft diverter helps for installation in tight spaces
- Automatic motorized flue damper helps minimize standby heat loss
- BTR 500 uses built-in Draft Blower. Requires no draft hood or Barometric damper.

Three Water Connection Options
- Hot and cold water connections can be made through front, top or rear of unit
- The Eliminator™ system operates when cold water is connected through front

PermaGlas® Ultra Coat™ Glass lining
- Exclusive process provides superior protection against corrosion
- CoreGard™ anode rods with stainless steel core provide additional corrosion protection

Optional Power Vent Kit Systems
- BTR 120-200 p/n 9005381205
- BTR 250-500 p/n 9003434205

Intermittent Electronic Ignition
- Eliminates standing pilot, saves energy
- Includes power ON/OFF switch
- Provides flame failure response in less than one second

Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA90.1

CSA Certified and ASME Rated T&P Relief Valve, Factory-Installed

Maximum Hydrostatic Working Pressure: 160 PSI

Fully Automatic Control System
- Manual-reset gas shutoff device prevents excessive water temperature
- Electric temperature control for precise temperature regulation adjustable 120°F–180°F
- Gas pressure regulator and pilot filter

Handhole Clean Out
- Allows easy access to tank interior for cleaning

3-Year Limited Tank Warranty
5-Year Limited Tank Warranty Optional
INDUCED DRAFT BTL GAS MODELS

80% THERMAL EFFICIENCY, LOW NOX

The Master-Fit® Plus BTL series meets Southern California Energy Commission (CEC) and Texas low NOx requirements of less than 14 ng/J and features an induced-draft design. This provides more efficient control of heat through the flue collector. Like all Master-Fit water heaters, the BTL series provides outstanding performance and maximum installation flexibility for both new construction and replacement applications. Each unit is designed to be as much as a foot shorter than the models they usually replace, and multiple options for placement of water connections and low installation clearances are additional installer-friendly features.

The Eliminator™ Self-Cleaning System

As deposits of lime and other sediments accumulate inside the tank, they form a barrier between the burner and the water, concentrating heat around the critical weld areas. The result is reduced energy efficiency, higher operating costs, and a greater risk of premature tank leaks.

The Eliminator™ directs incoming cold water under pressure to sweep the bottom of the tank to keep sediment moving so it doesn’t accumulate. Reduced sediment build-up helps maintain rated thermal efficiency and reduce water heating costs. The self-cleaning system also helps prolong tank life to ensure year after year of reliable service.

Built-In Induced Draft Blower

- Factory-mounted on top of unit and pre-wired for easy installation
- Provides power-induced draft of combustion make-up air prior to burner ignition
- Requires no draft hood or barometric damper

Rated As Category 1 Appliance

- An excellent option for retrofit and upgrade installations
- Uses standard metal single-wall type “B” vent, can be commonly vented with other Category 1 appliances
- Vent connects directly to blower outlet

Three Water Connection Options

- Hot and cold water connections can be made through front, top or rear of unit
- The Eliminator™ system operates when cold water is connected through front

PermaGlas® Ultra Coat™ Glass Lining

- Exclusive process provides superior protection against corrosion
- CoreGard™ anode rods with stainless steel core provide additional corrosion protection

Compliance

- Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA90.1
- Models comply with California’s SCAQMD rule 1146.2 and Texas low NOx and other Air Quality Management Districts with NOx emission requirements of less than 14 ng/J
MASTER-FIT® COMMERCIAL GAS WATER HEATERS

With minimum 80% thermal efficiency, all Master-Fit® and Master-Fit® Plus commercial water heaters meet the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1.

MASTER-FIT® PLUS “BTL” LOW NOx MODELS WITH INDUCED DRAFT DESIGN

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>GALLON CAPACITY</th>
<th>RECOVERY CAPACITY GPH 80°F RISE</th>
<th>INPUT BTU/HR NATURAL GAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTL-120</td>
<td>81</td>
<td>115</td>
<td>120,000</td>
</tr>
<tr>
<td>BTL-154</td>
<td>81</td>
<td>148</td>
<td>154,000</td>
</tr>
<tr>
<td>BTL-180</td>
<td>81</td>
<td>173</td>
<td>180,000</td>
</tr>
<tr>
<td>BTL-198</td>
<td>81</td>
<td>191</td>
<td>199,000</td>
</tr>
<tr>
<td>BTL-199</td>
<td>100</td>
<td>219</td>
<td>241,000</td>
</tr>
<tr>
<td>BTL-250</td>
<td>100</td>
<td>250</td>
<td>250,000</td>
</tr>
<tr>
<td>BTL-275</td>
<td>100</td>
<td>264</td>
<td>275,000</td>
</tr>
<tr>
<td>BTL-310</td>
<td>86</td>
<td>295</td>
<td>310,000</td>
</tr>
<tr>
<td>BTL-366</td>
<td>86</td>
<td>352</td>
<td>366,000</td>
</tr>
<tr>
<td>BTL-400</td>
<td>86</td>
<td>375</td>
<td>390,000</td>
</tr>
<tr>
<td>BTL-250A</td>
<td>100</td>
<td>240</td>
<td>250,000</td>
</tr>
<tr>
<td>BTL-275A</td>
<td>100</td>
<td>264</td>
<td>275,000</td>
</tr>
<tr>
<td>BTL-310A</td>
<td>86</td>
<td>295</td>
<td>310,000</td>
</tr>
<tr>
<td>BTL-366A</td>
<td>86</td>
<td>352</td>
<td>366,000</td>
</tr>
<tr>
<td>BTL-400A</td>
<td>86</td>
<td>375</td>
<td>390,000</td>
</tr>
</tbody>
</table>

Electrical characteristics—120V-60 Hz A.C., 5.0A.
(A) after model number designates ASME construction.
LEG KITS FOR UL SANITATION TO MEET NSF-5 (increases overall height by 4”).
BTL models not available in LP gas.

Master-Fit® Plus “BTL” models comply with California’s SCAQMD rule 1146.2 and Texas Low NOx and other Air Quality Management Districts with NOx emission requirements of less than 14 ng/J.

WE’RE THE ONLY MANUFACTURER THAT DESIGNS, BUILDS, DISTRIBUTES AND FIELD SUPPORTS AN ENTIRE LINE OF RESIDENTIAL AND COMMERCIAL WATER HEATERS AND BOILERS.
CUSTOM XI (DSE) INDUSTRIAL STRENGTH COMMERCIAL ELECTRIC WATER HEATERS

The Custom Xi Series with advanced electronic control is available with storage capacities from 5 to 119 gallons. All tanks feature ASME tank construction. With various input options from as low as 3 kW to as high as 90 kW (on 50- through 119-gallon models), the Custom Xi Series is built with high-demand industrial applications in mind. In fact, the Custom Xi DSE models are a favorite spec of the specifying engineer. With a multitude of options, the DSE can be custom built/ designed to meet any special needs or design specification.

- Advanced electronic control with large LCD display.
- The DSE models use a unique combination of a conventional magnesium anode and a European-style powered anode. The powered anode is self-adjusting to water conditions, does not require maintenance or inspection, and provides longer-lasting tank protection in hard-to-reach areas. This multi-anode system provides superior anodic protection to hidden surfaces of the tank.
- Industrial-grade, bolt on, immersion Incoloy sheathed heating elements are designed for rugged, long-lasting commercial service.
- Ten tank sizes available from 5 gallons to 120 gallons, plus various voltages and kilowatts to meet any specifications you may require.

- Low Water Cutoff—Factory standard onboard low water cutoff uses a remote electronic immersion type probe to prevent energizing of the elements in the event of low water condition and eliminates accidental dry firing.
- Sequencing Factory Standard—Heating elements are energized according to adjustable (1° to 20°) differential set points for each. Helps reduce operating costs during low/moderate loads.
- Power-circuit fusing for system protection.
- A. O. Smith PermaGlas® coating provides truly superior protection against corrosion and is permanently bonded to all inner tank surfaces at 1600° F. All DSE tank sizes are ASME construction.
- Options include: stainless steel tank for deionized water, alarm horn, international voltages, modulating control.
THE HEAVY-DUTY CUSTOM SERIES is available with storage capacities from 5 to 119 gallons. All tanks feature ASME tank construction. With input choices as high as 90 kW on 50 through 119 gallon models, the DSE Custom Xi series can be used for maximum demand hot water supply service or as boosters for supplying sanitizing rinse water for dish washing.

Incoloy Sheathed Heating Elements Standard
- Industrial-grade Incoloy sheathed heating elements are designed for rugged long-lasting commercial service, and can withstand sheath temperatures up to 1500°F
- Each heating element has three separate heating loops, which provides more heating surface lower watt density and maximum recovery efficiency
- Input options from 3 kW to 90 kW, recovers from 12 gph to 369 gph at 100°F rise

Standard Voltages For Easy Installation
- Single-phase and 3-phase
- Single-phase 208V and 240V are field-convertible to 3-phase
- All 208V and 240V at 24 kW and below are supplied as phase-convertible units (single- to 3-phase and vice versa)
- 277V single-phase also available (Contact A. O. Smith for 120V circuit availability)
- International voltages also available (check with factory)

Factory-Installed Terminal Block (units with more than one contactor)

Advanced Electronic Controls
- Plain English text and animated icons
- Displays detailed operational and diagnostic information
- Fault or alert messages appear if an operational issue occurs
- Last 9 fault and alert messages saved with time stamp

Progressive Sequencing
- First heating element on is first heating element off
- First heating element energized is rotated with each successive heating cycle on models with multiple heating elements
- Evens out wear between heating elements

Economy Mode Operation
- Control system automatically lowers the operating set point by a programmed value during user-defined time periods
- Helps reduce operating costs during unoccupied or low demand periods

Precise Temperature Regulation
- Operating Set Point adjustable 90° to 190°F.
- Sequencing—Units with multiple element contactors are sequenced on with one second delay between stages. Adjustable modulating mode is optional.
- Helps reduce current surge / spikes and avoid peak demand charges.
- Manual reset high temperature cutoff.

Heavy-Duty Magnetic Contactors

Power Circuit Fusing For System Protection

Glasslined Tank, with ASME Construction

CSA Certified and ASME Rated T&P Relief Valve Compliance
- Meets the standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA90.1

Brass Drain Valve

3-Year Limited Tank Warranty
- 5-year limited tank warranty optional

All dimensions in inches

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>GALLON CAPACITY</th>
<th>MAXIMUM KILOWATTS IMMERSION HEATERS</th>
<th>HEIGHT</th>
<th>DIA.</th>
<th>APPROX. SHIP WEIGHT (LBS.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSE-5</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>DSE-10</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>28.13</td>
<td>18</td>
</tr>
<tr>
<td>DSE-20</td>
<td>20</td>
<td>18</td>
<td>2</td>
<td>31-3/4</td>
<td>22</td>
</tr>
<tr>
<td>DSE-30</td>
<td>30</td>
<td>24</td>
<td>2</td>
<td>43-1/4</td>
<td>22</td>
</tr>
<tr>
<td>DSE-40</td>
<td>40</td>
<td>36</td>
<td>2</td>
<td>54-3/4</td>
<td>22</td>
</tr>
<tr>
<td>DSE-50</td>
<td>50</td>
<td>90</td>
<td>5</td>
<td>66.19</td>
<td>22</td>
</tr>
<tr>
<td>DSE-65</td>
<td>65</td>
<td>90</td>
<td>5</td>
<td>57-1/4</td>
<td>26-1/2</td>
</tr>
<tr>
<td>DSE-80</td>
<td>80</td>
<td>90</td>
<td>5</td>
<td>58.13</td>
<td>28</td>
</tr>
<tr>
<td>DSE-100</td>
<td>100</td>
<td>90</td>
<td>5</td>
<td>70-1/4</td>
<td>28</td>
</tr>
<tr>
<td>DSE-120</td>
<td>119</td>
<td>90</td>
<td>5</td>
<td>70-1/4</td>
<td>30.13</td>
</tr>
</tbody>
</table>
THE GOLD XI SERIES (DVE) AND GOLD SERIES (DRE) MODELS

The Gold Xi Series, featuring advanced electronic control, is available with 50-, 80-, and 119-gallon storage tanks, with inputs ranging from 6 kW to 54 kW. They can be used as recovery heaters or as boosters for supplying sanitizing rinse water for dishwashing.

The Gold Series, is the industry’s most popular line of commercial electric heaters. Also available in 50-, 80-, and 119-gallon tanks as well as various electrical configurations, they will provide hot water where and when you need it.

- Incoloy elements resist corrosion, resulting in long-term efficiency and damage protection
- LCD advanced electronic control panel for ease of service should a fault occur (on Gold Xi models only)
- Power-circuit fusing for system protection
- Glass-lined tank provides long-lasting protection against corrosion
- Optional manifold kits with isolation valves for easy multiple-unit installations
- Available with 3, 6, or 9 elements
- Dual anode rods
- Ceramic glass lining
- Optional UL approved conversion kits available, allowing for various electric configurations to meet every possible need

VERSATILE AND DEPENDABLE TO PROVIDE GALLONS OF HOT WATER WHEN AND WHERE YOUR BUSINESS NEEDS IT.
INDUSTRIAL-STRENGTH INCOLOY®

Want to make sure your water heater lasts longer? Both our DRE and DVE models come with Incoloy® elements that resist lime scale and calcium adhesion as well as sheath temperatures up to 1500°F.

The Incoloy element was chosen by A. O. Smith to be a standard feature in the Gold Xi and Gold Series. The value of Incoloy is its unparalleled ability to resist corrosion. And with its excellent electrical and thermal conductivity, you are ensured lifelong stability in your water heater.

Industrial strength triple loop Incoloy elements (DSE & Dura Power DVE/DHE models model only). Low watt density for longer life with optional Y (3PH) configuration.

ADVANCED ELECTRONIC CONTROL SYSTEM

The intelligent control system, with easy-to-navigate menu, provides precise temperature control and unit operating information displayed on an LCD screen.

- Detailed heater status information
- Precise temperature setting with actual tank temperature at upper and lower probes
- Detailed diagnostics including fault messages and run time history
- Economy Mode option allows the user to lower the operating set points during non-peak demand periods
- Linear Sequencing—Elements are energized according to adjustable (1° to 20°) differential set points, which helps reduce operating costs during moderate to low loads
- Alert Messages—Displays a list of possible causes for a fault and aids in servicing; displays sequence of operation in real time
THE HIGHEST STANDARDS, THE BEST PERFORMANCE

The innovative streak that runs through all A. O. Smith products is also proudly on display in our commercial electric line. Thanks to the new advanced electronic control, our complete line of commercial electric water heaters now far surpasses the competition. And when equipped with optional gold elements, our water heaters can sustain that performance even in the harshest water conditions.

Dura-Power™ commercial electric water heaters are built to the same high quality standards as our gas models. These are the largest commercial electric’s we manufacture. Ideal for use as recovery heaters for all types of large commercial and industrial applications or for large process potable hot water requirements. They can be customized to meet any special application with the large selection of available options.

Dura-Power™ Large Volume DVE and DHE Models

- Available in vertical and horizontal baked enamel cabinets (DVE/DHE models)
- Sizing available from 140 gallons to 2,500 gallons
- Inputs range from 15 kW to 900 kW
- Standard voltages include 208V, 240V, 480V, and 600V
- Standard glass-lined tank with optional tank linings in cement or epoxy
- Incoloy heavy duty triple loop immersion elements standard

IDEAL FOR SCHOOLS OR BUSINESS WHERE THERE IS A HIGH DEMAND FOR HOT WATER.
DEN/DEL ELECTRIC DURA-POWER™ MODELS
The Dura-Power™ DEN (standard upright) and DEL (lowboy) series is available with tank capacities from 6 through 119-gallons. They can be installed for non-simultaneous and single element operation (maximum input up to 6 kW), or for simultaneous dual-element operation (maximum input up to 12 kW).

Zinc-Plated Copper Sheath Heating Elements Standard
- Element options from 1.5 kW to 6 kW (non-simultaneous or simultaneous operation), recoveries from 6 gph to 49 gph at 100°F rise.

Standard Voltages For Easy Installation
- 120V, 277V single-phase, and 208V, 240V and 480V unbalanced 3-phase delta.
- Easily converted to single-phase at terminal block (except for 208V with 6000W elements).
- Single-element heater, single-phase only (see chart for dual-element options).

Factory-Installed Terminal Block
- Provide electrical service to heater and connect to block (not supplied on 120V and 277V models)

Factory-Wired Controls
- Temperature control (adjustable from 110°F to 170°F on single element; 120°F to 180°F on dual-element models).
- Factory-wired for non-simultaneous operation; easily converted to simultaneous operation (3-phase models only).

Glasslined Tank
- Provides long-lasting protection against corrosion.
- Equipped with anode rod for additional protection against corrosion.

Compliance

Maximum Hydrostatic Working Pressure: 150 PSI

3-Year Limited Tank Warranty
- 5-year limited tank warranty optional.

All dimensions in inches

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>GALLON CAPACITY</th>
<th>KILOWATTS MAXIMUM</th>
<th>HEIGHT</th>
<th>DIA.</th>
<th>APPROX. SHIP WEIGHT (LBS.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEL MODELS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEL-6S</td>
<td>6</td>
<td>3</td>
<td>15-1/2</td>
<td>14-1/4</td>
<td>35</td>
</tr>
<tr>
<td>DEL-10S</td>
<td>10</td>
<td>6</td>
<td>18-1/4</td>
<td>18</td>
<td>54</td>
</tr>
<tr>
<td>DEL-15S</td>
<td>15</td>
<td>6</td>
<td>26</td>
<td>18</td>
<td>58</td>
</tr>
<tr>
<td>DEL-20S</td>
<td>20</td>
<td>6</td>
<td>22-1/4</td>
<td>21-3/4</td>
<td>73</td>
</tr>
<tr>
<td>DEL-30D</td>
<td>30</td>
<td>12</td>
<td>36-7/8</td>
<td>21-3/4</td>
<td>100</td>
</tr>
<tr>
<td>DEL-40D</td>
<td>40</td>
<td>12</td>
<td>32-1/4</td>
<td>24</td>
<td>125</td>
</tr>
<tr>
<td>DEL-50D</td>
<td>50</td>
<td>12</td>
<td>32-1/4</td>
<td>26-1/2</td>
<td>166</td>
</tr>
<tr>
<td>DEN MODELS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEN-30D</td>
<td>30</td>
<td>12</td>
<td>34-1/2</td>
<td>20-1/2</td>
<td>98</td>
</tr>
<tr>
<td>DEN-40D</td>
<td>40</td>
<td>12</td>
<td>45-1/8</td>
<td>20-1/2</td>
<td>113</td>
</tr>
<tr>
<td>DEN-52D</td>
<td>50</td>
<td>12</td>
<td>54-7/8</td>
<td>20-1/2</td>
<td>131</td>
</tr>
<tr>
<td>DEN-66D</td>
<td>66</td>
<td>12</td>
<td>60-3/4</td>
<td>21-3/4</td>
<td>176</td>
</tr>
<tr>
<td>DEN-80D</td>
<td>80</td>
<td>12</td>
<td>59-3/8</td>
<td>24</td>
<td>211</td>
</tr>
<tr>
<td>DEN-120D</td>
<td>119</td>
<td>12</td>
<td>62-7/16</td>
<td>29-3/8</td>
<td>326</td>
</tr>
</tbody>
</table>

S denotes single element. D denotes dual element.
A MORE EFFICIENT WAY TO HEAT WATER WITH ELECTRICITY

The CHP-120 is an integrated system designed specifically for commercial use. This water heating solution utilizes industry-leading heat pump technology to provide a more efficient way to heat water with electricity. By pulling heat from the surrounding air and transferring it into the tank, the heat pump also produces cooler, dehumidified air as a welcome by-product.

Most importantly, by moving heat rather than generating it, the CHP-120 operates at an industry leading 4.2 coefficient of performance (COP). It also has 120 gallons of storage capacity to maximize performance and energy savings. These two qualities make the CHP-120 a low greenhouse gas emission, sustainable water heating solution and an integral part of any all-electric site design. The CHP-120 may qualify for local utility rebates or credits where available. Visit hotwater.com to search for rebate opportunities in your area.

Applications
- Quick-serve & fine dining restaurants
- Medical & veterinary clinics
- Hair salons
- Schools & universities
- Retail buildings
- Any 120-gallon commercial electric water heater application that desires lower operating costs

.Failures. NSF. UL. Listed. ENERGY STAR.
COMMERCIAL HEAT PUMP

FULLY INTEGRATED DESIGN
SAVES SPACE, INSTALLATION COST & ENERGY

LCD touchscreen display for easy control of temperature settings and operational information

Microchannel heat exchanger transfers heat into the tank

High-efficiency evaporator fans discharge cool air to the mechanical room

Dual 6 kW heating elements provide additional heating capability for periods of high demand

Evaporator coil captures the heat from the air and transfers it to the R-134a refrigerant

High-capacity compressor pumps the hot refrigerant gases through the microchannel heat exchanger that is wrapped around the tank

Refrigeration system components including electronic expansion valve, coil, accumulator, 4-way valve, and charging ports

COMMERCIAL PERFORMANCE WITH MAXIMUM EFFICIENCY

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Gallon Capacity</th>
<th>COP</th>
<th>Number of Elements</th>
<th>Total Element Wattage (both elements @ 240V)</th>
<th>First Hour Delivery in Hybrid Mode (GPH)</th>
<th>Recovery in GPH at 100° Temperature Rise</th>
<th>Approx. Shipping Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAHP-120</td>
<td>119</td>
<td>4.2</td>
<td>2</td>
<td>12,000</td>
<td>150</td>
<td>Efficiency = 41 Hybrid = 90 Electric = 50</td>
<td>620</td>
</tr>
</tbody>
</table>
PERFORMANCE FEATURES

Environmentally Friendly Energy Savings
• ENERGY STAR®—Qualified with an industry-leading 4.2 COP
• Large-capacity tank enables heat pump to operate more frequently than electric elements, saving money for the end-user

Commercial Performance
• First-hour delivery exceeds 150 GPH
• Heat pump power rating of 3.15 HP
• Electric heating element capacity of 12 kW
• Max water temperature of 150° F in Efficiency and Hybrid modes—and 180° F in Electric mode

Ease of Operation
• Integrated design and pre-charged refrigeration system make for a quick and easy install
• Large touchscreen LCD display allows for mode selection, provides run information, and includes troubleshooting alerts and detail
• Three operating modes (Efficiency, Hybrid and Electric) maximize efficiency while meeting specific hot water demands

Dependable and Long-Lasting Design
• Glass-coated tank developed by A. O. Smith
• Tank rated at 150 PSI working pressure
• Electric elements include incoloy sheathing and provide excellent protection from oxidation and scaling
• Backed by 3-year tank and 1-year parts/compressor limited warranties

SAMPLE ANNUAL ENERGY SAVINGS

<table>
<thead>
<tr>
<th>City</th>
<th>Gallons/Day</th>
<th>kWh/Year</th>
<th>Energy Savings/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston</td>
<td>350</td>
<td>6,206</td>
<td>$3,461</td>
</tr>
<tr>
<td>Orlando</td>
<td>350</td>
<td>5,695</td>
<td>$1,909</td>
</tr>
<tr>
<td>Houston</td>
<td>350</td>
<td>5,695</td>
<td>$1,598</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>350</td>
<td>5,841</td>
<td>$3,197</td>
</tr>
<tr>
<td>Milwaukee</td>
<td>350</td>
<td>6,206</td>
<td>$2,335</td>
</tr>
</tbody>
</table>

Annual energy savings based on 100% of water heated in heat pump (efficiency) mode.
TANKLESS
Commercial Gas Water Heaters
DURABLE PARTS MAKE A DURABLE PRODUCT

COMMERCIAL-GRADE HEAT EXCHANGER

Only A. O. Smith incorporates true commercial-grade heat exchangers in our tankless heaters. All aspects of the heat exchanger are designed to add to the durability and reliability that is vital to any successful commercial organization or business.

COMMERCIAL-GRADE COPPER ALLOY

Our commercial-grade copper is a heat-resistant copper alloy, with additive elements that make it much stronger and harder than the standard C1220 copper used in most other heat exchangers. Our commercial-grade copper has 8 times the tensile strength of regular copper. Even at high temperatures, our commercial-grade copper maintains a fine grain and high strength. Commercial-grade copper provides resistance to the damaging effects of erosion that can cause heat exchangers to leak.

DRUM THICKNESS

During every ignition cycle, thermal expansion causes all heat exchangers to undergo heat stress. After the thousands of ON/OFF cycles typically seen in a commercial application, this heat stress can prove damaging. This is why the heat exchangers in our commercial and light commercial products utilize drums that are 25% thicker. A thicker drum creates less strain on the heat exchanger, ensuring the longevity of our products.
Making true commercial-grade water heaters involves more than just redesigning our heat exchangers—every internal component has to measure up to A. O. Smith’s commercial standards. Just like our advanced heat exchangers, the longevity and functionality of components such as our water valves and flow sensors are also of great importance.

FROM SALONS AND QUICK SERVE RESTAURANTS TO HEAVY DUTY JOBS LIKE SPACE HEATING AND HOTELS, A. O. SMITH’S LINE OF COMMERCIAL TANKLESS WATER HEATERS PROMISES ENDLESS HOT WATER WITH VERSATILE INSTALLATION OPTIONS TO FIT YOUR APPLICATION.

A. O. SMITH COMMERCIAL TANKLESS PRODUCTS

<table>
<thead>
<tr>
<th>Model</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Weight (lbs)</th>
<th>Electric</th>
<th>Noise Level</th>
<th>Gas Consumption</th>
<th>Efficiency</th>
<th>Max Efficiency</th>
<th>Flow Rate</th>
<th>Hot/Cold Gas Connections</th>
<th>Multiple Unit Installation</th>
<th>Temperature Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT-199/I/O</td>
<td>23 ⅞”</td>
<td>17 ⅜”</td>
<td>11 ⅞”</td>
<td>59</td>
<td>120V</td>
<td>56 dB</td>
<td>199,000 BTU/h</td>
<td>96% Thermal Efficiency</td>
<td>10 GPM</td>
<td>¾” NPT</td>
<td>Easy Link System (up to four units)</td>
<td>Multi-Unit System (up to 20 units)</td>
<td>100°F to 185°F 120°F Factory Default</td>
</tr>
<tr>
<td>AT10-910</td>
<td>24 ⅜”</td>
<td>25 ½”</td>
<td>12 ⅜”</td>
<td>112</td>
<td>120V</td>
<td>61 dB</td>
<td>380,000 BTU/h</td>
<td>80.2% Thermal Efficiency</td>
<td>14.5GPM</td>
<td>1” NPT</td>
<td>Easy Link System (up to four units)</td>
<td>Multi-Unit System (up to 10 units)</td>
<td>100°F to 175°F 120°F Factory Default</td>
</tr>
</tbody>
</table>
MULTIPLE UNIT INSTALLATIONS

EASY-LINK SYSTEM

For larger applications that require multiple water heaters to work in conjunction, the ACT-199 and 910 Series feature the Easy-Link System. This allows installers to easily field manifold up to 4 units without the need for a system controller. The controls are already built into each model’s internal computer.

MULTI-UNIT SYSTEM

For even larger applications, the ACT-199 and 910 Series models also feature the Multi-Unit System, allowing a greater number of units to manifold together in the field. The Multi-Unit System Controller is necessary to enable the Multi-Unit System. The Multi-Unit System can control up to twenty ACT-199s, and ten 910s.

UNIT COMPARISON

<table>
<thead>
<tr>
<th>UNIT COMPARISON</th>
<th>CT-199 Series</th>
<th>910 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASY-LINK (No Controller Necessary)</td>
<td>Up to 4 units</td>
<td>Up to 4 units</td>
</tr>
<tr>
<td>Maximum input (BTU/h)</td>
<td>796,000</td>
<td>1,520,000</td>
</tr>
</tbody>
</table>

| MULTI-UNIT* | Up to 20 units | Up to 10 units |
| Maximum input (BTU/h) | 3,980,000 | 3,800,000 |

*Requires Multi-Unit Controller: 100112691
FACTORY COMMERCIAL RACK SYSTEM

For the easiest multi-unit applications, consider our factory built tankless rack system. Available in wall mount and free-standing configurations of up to 6 units. Rack systems come factory manifolded and wired for ease of installation. BTU inputs of up to 597,000 for wall mount and single row free-standing configurations and inputs of up to 1,194,000 for “back-to-back” free-standing configurations. If necessary multiple racks can be combined for up to 20 unit combinations.

SPECIFIC BENEFITS OF FACTORY RACK SYSTEMS INCLUDE:

High Hot Water Flow Rates and BTU inputs as high as 1,194,000

Easy Field Installations
- Fewer Field Connections – Because this system has many of the connections done at the factory, on-site installation time and costs are minimized as the installer only needs to complete 3 simple connections (cold water, hot water, and gas)
- Light weight – Because our rack systems utilize the industry’s lightest 199,000 BTU tankless units as the “engines” installers will benefit from the overall light weight nature of our rack systems

System Redundancy
- Because our rack system utilizes multiple tankless units even if one or several of the individual units experience issues the ability of the other combined units provide peace of mind.
- Plus when performing field maintenance this system allows technician to easily isolate single units for service or replacement.
HIGH EFFICIENCY, HIGH INPUT COMMERCIAL XP MODELS

DESIGNED FOR A GREAT RANGE OF APPLICATIONS

XP models are designed to be used in potable hot water applications, including large-volume, full-service hotels and high-rise apartment complexes to casinos, resorts, government buildings, schools, hospitals and more.

XP and XP PLUS At A Glance

- Top-of-the-line control with touchscreen
- Industry-leading thermal efficiencies
- XP PLUS is up to 98% thermal efficiency in low-temperature applications
- XP is up to 96% thermal efficiency in low-temperature applications
- Vents in inexpensive PVC pipe or optional CPVC, Polypropylene or stainless steel.
- XP PLUS model is ready for immediate connection to existing building management using MODBUS protocol
- XP PLUS models can be field converted for outdoor use in warm climates with accessory kit
- ENERGY STAR® Qualified
- XP models are CSA certified to the ANSI Z21.10.3-CSA 4.3 water heater standard and are AHRI listed with thermal efficiency ratings of up to 96% @ 100% fire and 140˚F outlet temperature.
**XP PLUS: THE HEAT EXCHANGER**

The XP PLUS features the latest technology in high efficiency circulating water heaters. The heart of the design is the 316L stainless steel heat exchanger. The heat exchanger’s condensing design heats water up to an impressive 98% thermal efficiency. This new design features a slide out door for improved access and maintenance flexibility.

The modulating combustion system is capable of 5:1 turndown and uses a NEG/REG gas control to achieve this.

Model sizes are available in 1.25, 1.5, 2.0, 3.0 and 4.0M BTU/hr input rates to cover a wide range of heavy duty commercial and industrial applications. Each model is shipped with a factory sizes all-bronze pump which is managed by the water heaters control.

---

**XP: THE HEAT EXCHANGER**

Thanks to its leading-edge technology, the XP features a stainless steel heat exchanger designed to optimize efficiency while delivering long and trouble-free service. Simply put, the XP family is both fuel efficient and capable of minimizing operating costs with every heating cycle.

- Designed for fully condensing operation throughout the heating range
- All heating surfaces are 316L stainless steel to provide a long and trouble-free service life
- Saves both fuel and operating costs with every cycle
- Impervious to thermal shock

A. Air intake adapter.

B. Fully modulating burner capability which prevents energy-stealing short cycling and provides smooth system operation with higher overall system efficiencies. (Burner not shown in rendering)

C. The stainless steel heat exchanger construction allows the XP water heater to operate in a continuous condensing mode while maximizing longevity and delivering up to 96% thermal efficiency.

D. All XP models have flow switches with low water cutoffs as standard features, providing redundant flow and low water protection.
DIRECT VENTING UP TO 150 EQUIVALENT FEET OF PIPING (CPVC/PVC VENTING MATERIAL)

With their combination of innovative control features and modulating capabilities, XP and XP PLUS Water Heater models are the latest in high efficiency fully condensing products from A. O. Smith, offering high outputs for demanding, large-volume commercial applications. Thanks to a state-of-the-art stainless steel heat exchanger, the XP PLUS models can achieve thermal efficiencies up to 98% when used in low-temperature water heating applications.

The XP and XP PLUS Water Heater models provide flexible and lower cost installation because they permit direct-vent air intake and exhaust runs up to 150 equivalent feet using PVC venting material. With the XP and PWH-3000 models vent runs up to 100 equivalent feet is approved. On the XP PLUS 1.25, 1.5, 2.0 and 4.0M BTU models vent runs of up to 150 equivalent feet are approved. In addition to PVC, these models can be vented with CPVC, Polypropylene or AL29-4C stainless steel materials. The XP Family (Category IV) venting system’s intake and exhaust runs can terminate horizontally through a sidewall or vertically through the roof. Please consult the latest edition of the Installation Manual for detailed venting information and maximum/minimum venting distances.
THE ART OF FLEXIBILITY

The VF™ Series variable fire copper water heaters are designed with one thing in mind: to provide the best value to the customer.

As a result, we’re proud to offer a more installation-friendly line that works well in more applications and requires less maintenance.

The secret to the stunning performance of the VF Series is its flexibility. The VF is capable of firing from 100% to 25% or a 4:1 turndown ratio. The water heater’s output is based strictly on the current system demand and required BTUs needed to maintain the desired system set point temperature. The VF’s modulating capability is virtually limitless.

The VF Water Heater sets a high efficiency standard by combining thermal efficiencies up to 87% with a smoother, more energy-efficient overall system operation.
THE ANATOMY OF GREAT PERFORMANCE

A Combustion air intake is self-adjusting—no air shutter required.

B Modulating Control with 4:1 turndown ratio. The VF’s output is based strictly on the current system demand and the required BTUs needed to maintain the desired system set point temperature. The VF’s modulating capability is virtually limitless between 25% and 100% fire.

C Advanced pre-mix burner design precisely mixes air and gas prior to ignition for optimum performance, with low-NOx emissions (complies with SCAQMD Rule 1146.2).

D Venturi-mixing gas/air ratio system works with variable speed blower to precisely mix gas and air throughout firing range, provides good operation with supply gas pressures down to 4˝ WC, and is self-adjusting for altitudes up to 6,000 feet, all while providing low NOx emissions that meet or exceed the most stringent standards.

E Heavy-duty ASME 160 psi copper finned tube heat exchanger—vertical, straight tube, multi-pass design surrounds the burner with a 360° wall of copper finned tubing, making the entire heat exchanger resistant to thermal shock.

F The sealed heat exchanger flue collection system is constructed of stainless steel that resists corrosive flue gases.

- Multiple Water Heater systems provide increased turndown and even smoother, more efficient system operation
- 4 Water Heaters w/4:1 Turndown = 16:1 total system turndown
UP TO 87% EFFICIENT HOT WATER HEATER WITH MODULATING FIRE 4:1 TURNDOWN

HOT WATER APPLICATIONS:

With 5 models to choose from and BTU inputs from 500,000 BTUHs to 2 million BTUH there is a VF Water Heater or a combination of VF Water Heaters ideal for almost any large water heating application.

Category IV Listed

Professional Start-Up Service Furnished

Thermal Efficiency

• Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1

LOW NOx OPERATION

• Complies with SCAQMD Rule 1146.2 and other Air Quality Management districts with similar requirements for low NOx emissions

OTHER VF™ FEATURES:

• ASME Pressure Relief Valve 125#
• Contacts for 0-10 VDC BMS External Control
• Contacts for Alarm or Any Failure
• Factory-Mounted Flow Switch

Low Gas Pressure Switch

Features: (cont’d)

• All Bronze Factory Sized Pump Included (Shipped Loose)
• Digital Inlet/Outlet Temperature Read Out
• Manual Reset Hi-Limit

VF OPTIONS:

• Sequence Panel – Can manage 1 to 4 modulating units (Includes remote Tank sensor and sensor well)
• Alarm Bell
• Low Water Cutoff w/Manual Reset and Test
• LP Gas
• Vent Kits:
  - Horizontal Exhaust Cap
  - Horizontal Air Intake Cap
  - Horizontal Direct Vent Kit
  - Category IV to Category II
  - Conversion Kit

Warranty:

• 5-Year Limited Heat Exchanger Warranty

VENTING SOLUTIONS

All VF models feature flexible direct vent and sidewall Category IV venting. In addition, the VF units may be installed as Category II appliances, allowing multiple units to be manifolded together into a common vent stack—giving you even more design options! (Both Category II and IV venting systems require corrosion-resistant, AL29-4C stainless steel sealed venting material.)

Vertical Venting
Using Category IV vent materials.

Sidewall Venting*
Horizontal venting up to 50 equivalent feet using Category IV vent materials.

Direct Venting*
Horizontal or vertical venting up to 50 equivalent feet. Draws combustion air up to 50 feet from the same pressure zone using Category IV vent materials.

Common Venting*
Vents multiple units horizontally through one vent termination and draws combustion air from the room, roof or sidewall. Category IV to II conversion kit required.

Ducted Air Vertical*
Vertical venting up to 50 equivalent feet. Draws combustion air up to 50 feet from a different pressure zone using Category IV vent materials.

Ducted Air Horizontal*
Vents horizontally up to 50 equivalent feet and draws combustion air up to 50 feet from a different pressure zone using Category IV vent materials.

*Requires optional factory-supplied vent and combustion air intakes terminals be used. Note: For the most current VF venting distances information consult the VF Instruction Manual, available through your local A. O. Smith representative or online at www.hotwater.com.
**BURKAY GENESIS®: EFFICIENT, SPACE-SAVING WATER HEATERS**

The Genesis® water heater line offers value in a variety of applications. Genesis boilers are available from 399,000 BTUs through 2.07 million BTUs. Features and benefits include:

- At 85% thermal efficiency, Genesis achieves the highest possible efficiency for a non-condensing boiler.
- Exceptional heat transfer because the heat exchanger contains glass lined headers and copper-finned tubes with extruded integral fins spaced at 7 fins per inch.
- Installation versatility due to standard or direct venting options.
- Maximum water heating power fits into minimum space thanks to compact, stackable design.
- Indoor and outdoor models available.

**Electronic Control** provides remote tank temperature sensing and +/- 1° tank temperature control. Controls the factory furnished pump to assure maximum heat transfer and reduce stand-by heat loss.

**Copper Finned Tube Heat Exchanger**
- Copper-finned design delivers superior heat transfer and energy efficiency.
- Copper is lightweight, immune to rust and thermal shock.

**Ceramic Fiber Combustion Chamber**
Rated for temperatures up to 2300°F.

**Combustion Air Blower with Air Shutter**
Adjusts to the application for maximum efficiency.

**Hot Surface Ignition**

**Unique gasketless glass lined header** design eliminates gaskets and O-rings.

**Pressurized Combustion System**
Clean burning Stainless Steel Premix Burners for smooth ignition, clean combustion and low NOx that meets or exceeds the most current NOx requirements.
A. O. Smith is the market leading manufacturer of domestic hot water storage tanks in the United States and maintains an inventory of both bare and factory jacketed and insulated stock tanks from 80 gallons up to 1,000 gallons for immediate shipping. For special applications or where non-standard openings or special linings are required, A. O. Smith offers custom-built tanks built to your specifications from 80 gallons all the way up to 4,000 gallons.

80% TANK DRAW GUARANTEED AND GIMMICK FREE

A. O. Smith storage tanks deliver unsurpassed system efficiencies without the design limitations associated with other designs on the market. When installed with an A. O. Smith commercial boiler or water heater using the A. O. Smith “Cer-Temp 80” piping method, our storage tanks will deliver 80% of total tank capacity as usable hot water. And we do it with a proven tank design that depends entirely on the foolproof laws of physics.

A. Just like hot air, the hottest water in the storage tank rises to the top.
B. As the hot water rises, cooler water is pushed downward into the tank.
C. When hot water is used out in the system, the hot water is drawn off the top of the tank, where the water is always the hottest.
D. As water is drawn off the top of the tank an equal amount of cold water is added to the bottom of the tank.
E. A tank temperature sensor/control installed at the top of the bottom 1/3 of the tank determines when additional heat is required to maintain set point temperature and controls both the system pump and the boiler.
F. When heat is required, warm/mixed water is pumped from the bottom of the tank through the boiler and heated.
G. Hot water from boiler is re-circulated back to the tank and restarts the heating cycle.
HEAVY-DUTY LARGE VOLUME STORAGE TANKS MODEL HD CUSTOM-BUILT

Custom-Built Tanks From 80 to 4,000 Gallons

Horizontal or Vertical Mounting Options Available

High-Density, Insulated Jackets or Bare Steel Tanks

Glasslined, Cement or Epoxy Linings Available ASME Construction

• Available in 125, 150 and 160 psi working pressure.

Anodic Protection

Manholes, Handholes, Additional Tank Opening, M Lifting Lugs, Angle Legs, Ring Bases and Horizontal Tanks Saddles All Available as Options

Meets R12.5 Minimum Thermal Insulation Requirements of the U.S. Department of Energy and Current Edition of ASHRAE/IES 90.1

5-Year Limited Tank Warranty

• For complete warranty information, consult written warranty or go to hotwater.com
### Horizontal or Vertical Tank Mounting

A. O. Smith Standard Stock Bare Tanks (with the exception of T-80 STD models, T-120 STD models) are shipped factory standard with leg sockets for vertical installation, but are also designed with inlet and outlet openings to permit both vertical and horizontal installation. For horizontal installation, optional tank saddles are required. The TL-500 ASME is designed for horizontal installation only.

#### A. O. SMITH STANDARD STOCK FACTORY JACKETED AND INSULATED TANKS (Vertical)

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>U.S. GALLON CAPACITY</th>
<th>APPROXIMATE OVERALL DIMENSIONS (INCHES)</th>
<th>APPROXIMATE SHIPPING WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-80 STD</td>
<td>80</td>
<td>63 x 25-1/4</td>
<td>236</td>
</tr>
<tr>
<td>T-80 ASME</td>
<td>80</td>
<td>54-7/8 x 26-1/2</td>
<td>369</td>
</tr>
<tr>
<td>TJV-120M STD</td>
<td>119</td>
<td>62 x 29-3/8</td>
<td>320</td>
</tr>
<tr>
<td>TJV-120 A</td>
<td>119</td>
<td>61-3/4 x 28</td>
<td>411</td>
</tr>
<tr>
<td>TJV-140 A</td>
<td>140</td>
<td>87 x 30</td>
<td>516</td>
</tr>
<tr>
<td>TJV-200 A</td>
<td>200</td>
<td>83 x 36</td>
<td>612</td>
</tr>
<tr>
<td>TJV-200M A</td>
<td>200</td>
<td>77 x 32</td>
<td>560</td>
</tr>
<tr>
<td>TJV-250 A</td>
<td>250</td>
<td>93 x 36</td>
<td>900</td>
</tr>
<tr>
<td>TJV-350 A</td>
<td>350</td>
<td>100 x 42</td>
<td>1080</td>
</tr>
<tr>
<td>TJV-400 A</td>
<td>400</td>
<td>105 x 42</td>
<td>1282</td>
</tr>
<tr>
<td>TJV-500 A</td>
<td>500</td>
<td>91 x 46</td>
<td>1800</td>
</tr>
<tr>
<td>TJV-600 A</td>
<td>600</td>
<td>88 x 52</td>
<td>1900</td>
</tr>
<tr>
<td>TJV-700 A</td>
<td>700</td>
<td>97 x 52</td>
<td>2000</td>
</tr>
<tr>
<td>TJV-750 A</td>
<td>750</td>
<td>100 x 52</td>
<td>2485</td>
</tr>
<tr>
<td>TJV-1000 A</td>
<td>1000</td>
<td>124 x 52</td>
<td>3410</td>
</tr>
<tr>
<td>TJV-1250 A</td>
<td>1250</td>
<td>133 x 60</td>
<td>4660</td>
</tr>
<tr>
<td>TJV-1500 A</td>
<td>1500</td>
<td>129 x 66</td>
<td>6200</td>
</tr>
<tr>
<td>TJV-1750 A</td>
<td>1750</td>
<td>153 x 66</td>
<td></td>
</tr>
<tr>
<td>TJV-2000 A</td>
<td>2000</td>
<td>126 x 78</td>
<td>7400</td>
</tr>
<tr>
<td>TJV-2500 A</td>
<td>2500</td>
<td>146.5 x 78</td>
<td>9000</td>
</tr>
</tbody>
</table>

#### A. O. SMITH STANDARD HORIZONTAL JACKETED AND INSULATED TANKS (Build to Order)

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>U.S. GALLON CAPACITY</th>
<th>HEIGHT/LENGTH/ DIAMETER (INCHES)</th>
<th>SHIPPING WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TJH-200 A</td>
<td>200</td>
<td>36 x 41 x 77</td>
<td>790</td>
</tr>
<tr>
<td>TJH-250 A</td>
<td>250</td>
<td>36 x 41 x 90</td>
<td>1000</td>
</tr>
<tr>
<td>TJH-350 A</td>
<td>350</td>
<td>42 x 47 x 93</td>
<td>1370</td>
</tr>
<tr>
<td>TJH-400 A</td>
<td>400</td>
<td>42 x 47 x 99</td>
<td>1476</td>
</tr>
<tr>
<td>TJHT-500 A</td>
<td>500</td>
<td>53 x 87 x 46</td>
<td>1711</td>
</tr>
<tr>
<td>TJH-500 A</td>
<td>500</td>
<td>53 x 87 x 46</td>
<td>1711</td>
</tr>
<tr>
<td>TJH-600 A</td>
<td>600</td>
<td>59 x 88 x 52</td>
<td>2053</td>
</tr>
<tr>
<td>TJH-700 A</td>
<td>700</td>
<td>59 x 97 x 52</td>
<td>700</td>
</tr>
<tr>
<td>TJH-750 A</td>
<td>750</td>
<td>59 x 100 x 52</td>
<td></td>
</tr>
<tr>
<td>TJH-1000 A</td>
<td>1000</td>
<td>59 x 124 x 52</td>
<td>3144</td>
</tr>
<tr>
<td>TJH-1250 A</td>
<td>1250</td>
<td>68.5 x 134 x 60.25</td>
<td>5126</td>
</tr>
<tr>
<td>TJH-1500 A</td>
<td>1500</td>
<td>74.5 x 127 x 66.25</td>
<td>6820</td>
</tr>
<tr>
<td>TJH-2000 A</td>
<td>2000</td>
<td>86.5 x 127 x 78.25</td>
<td>8140</td>
</tr>
<tr>
<td>TJH-2500 A</td>
<td>2500</td>
<td>86.5 x 144 x 78.25</td>
<td>9900</td>
</tr>
</tbody>
</table>
REMOTE MONITORING
Commercial Gas Water Heaters
Connect your A. O. Smith water heater to your building management system using the new Millennium control from ICC* (Industrial Control Communications, Inc.)

- Works with Cyclone, McBee DVE, DSE/DVE/DHE
- Use the ICC Control to enable/disable the water heater
- Change Temperature Set points and differentials
- Two models with four different configurations to connect to BACnet and Modbus
- Ethernet and Serial RS-485 versions available
- 2 wire or 4 wire RS-485 Network
- Power can be supplied via the USB cable, as a 7-24 VDC input on the main terminal Block, or via IEEE 802.3af Power over Ethernet (PoE on ETH-1000 only)
- Configure protocols, network characteristics, and client/server object definitions
- Graphically interact with the internal database in real-time via USB connection
- Automatically discover and configure IP settings Ethernet gateways connected to the current subnet
- Update Firmware

INTRODUCING THE BMS GATEWAY FOR CONTROL OF A. O. SMITH WATER HEATERS

Models:
ETH-1000
Ethernet connection
XLTR-1000
Serial RS-485 connection

| ICC ENERGY MANAGEMENT INTERFACES |
|------------------|------------------|------------------|
| PROTOCOL | PART # | CONNECTION TYPE | APPLICATION |
| BACnet | 100131364 | Serial (RS485) | Commercial Gas - Cyclone® BTH and BTX(L)-100 |
| | 100131365 | Serial (RS485) | Commercial Electric - DSE, DVE, DHE |
| | 100131370 | Ethernet (IP) | Commercial Gas - Cyclone® BTH and BTX(L)-100 |
| | 100131371 | Ethernet (IP) | Commercial Electric - DSE, DVE, DHE |
| Modbus | 100131367 | Serial (RS485) | Commercial Gas - Cyclone® BTH and BTX(L)-100 |
| | 100131368 | Serial (RS485) | Commercial Electric - DSE, DVE, DHE |
| | 100131373 | Ethernet (IP) | Commercial Gas - Cyclone® BTH and BTX(L)-100 |
| | 100131374 | Ethernet (IP) | Commercial Electric - DSE, DVE, DHE |

- Heater connection wiring supplied with unit
- For questions on this product call 888-928-3702 Opt 1
- RTU and serial connect via RS-485
- Ethernet and IP connect via RJ-45