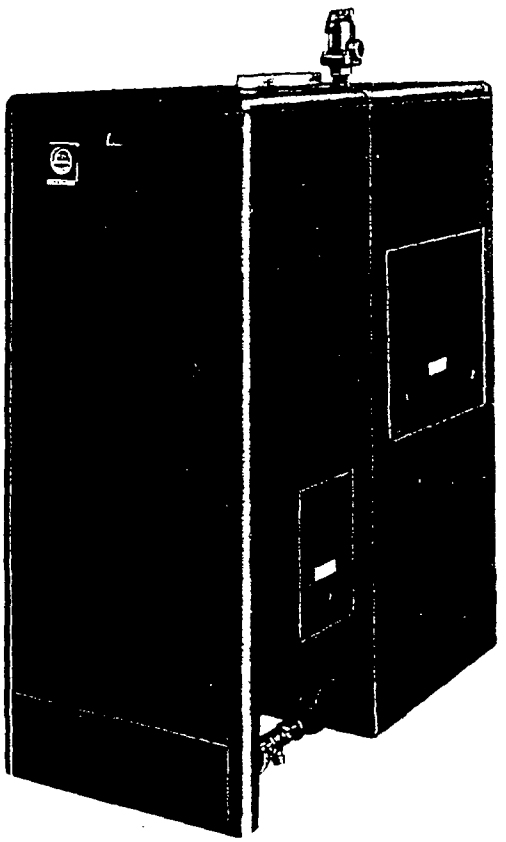


Guaranteed for 25 Years!

The cast iron sections—the working core of this boiler—are guaranteed for 25 years in residences. Note that this guarantee covers the complete sections, not merely the outer "shell."

boiler-burner models

packaged models

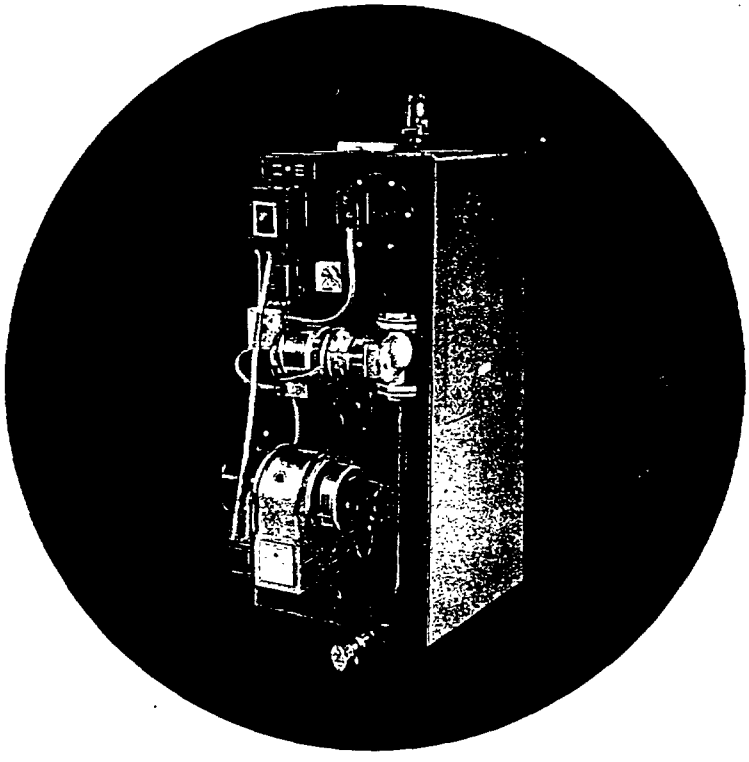
boilers

Arcoleader oil-fired heating units

AMERICAN-Standard

A I A File No. 30 C 1 (September, 1958)

PLAINTIFF'S EXHIBIT
tabbies
ASI-288
00323



▶ the Arcoleader new special design for

- quick installation
- reduced labor
- low maintenance

The Arcoleader Oil Heating Unit is an all-new boiler of evolutionary design by American-Standard. It has been developed for fast, low-cost installation, minimum maintenance, high efficiency and long-range dependability. The Arcoleader is ideal for all residential jobs, especially new construction.

Note these outstanding Arcoleader advantages—First, three popular sizes are available factory assembled, packaged and crated. (All sizes also available as boiler-burner units or boilers only.) Second, controls and accessories are factory-installed and pre-wired. Third, a combination of new vertical flue designed cast iron sections and a new research-engineered burner assure high efficiency with dependable operation.

■ **Highest domestic hot water ratings**—One of the most outstanding features of the Arcoleader is its high domestic hot water ratings (I=W=H approved). These top ratings are achieved through the use of an exclusive tankless heater for use only with the new Arcoleader boiler. All units are available with the special heater installed to reduce further time and costs.

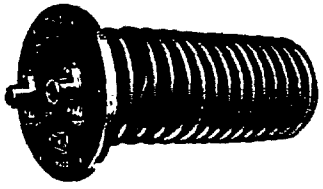
■ **Convenient control arrangement**—All accessories and controls are handily located on the front of the unit—even the stack control. This minimizes time and costs by making adjustments easier and simplifying wiring and piping hookups. Controls and accessories are pre-wired to the junction box on packaged models, reducing labor on each job.

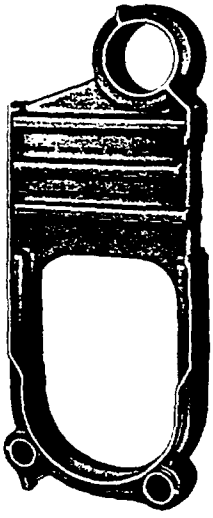
■ **New efficient sections and burner**—The Arcoleader incorporates advanced vertical flue section design with wet base construction. Flow of the flue products is completely updraft for ready adaptability to gas. The off-center location of the 6-inch nipple port, combined with wet base construction, provides excellent boiler water circulation for quick heating and high hot water ratings. The new Model PH Arcoflame Oil Burner also is exclusive with the Arcoleader Oil Heating Unit. Packaged separately to safeguard against shipping damage, it is quickly installed with the unique sling mount.

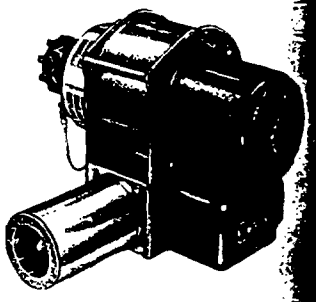
■ **Easily located anywhere**—Still another outstanding feature of the Arcoleader Packaged Oil Heating Unit is its "floating jacket" design—jacket does not rest on the floor. This design prevents damage in shipment and allows the unit to be moved easily with the jacket in place. A combination of easy mobility, wet base construction and front location of all controls gives the unit close clearance for corner installation—makes the Arcoleader particularly suited for first floor utility room, as well as basement installation.

00324

▶examine these outstanding new features







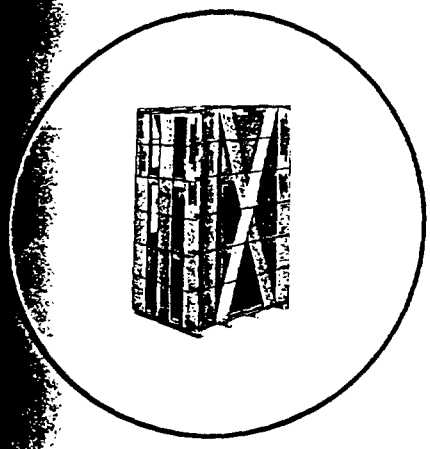
■ **Large, factory-installed, high-capacity, tankless water heater** has been specially designed for the Arcoleader. Its high I=W=H approved ratings are obtained by testing the heater with the boiler. Thus, these top ratings are the result of completely integrated engineering of the vertical flue section, with its quick heat transfer; the over-sized, off-center nipple port, with its unrestricted water circulation, and wet base construction, with its increased water content. The heater itself is submerged in the hottest water at the top of the boiler for fast, efficient heat transfer.

■ **Scientifically engineered cast iron sections** of the Arcoleader incorporate the vertical flue design principle with an extra-large 6-inch nipple port. Each section has wide, rounded, finned surfaces which extract maximum heat from combustion gases. The beveled design helps prevent soot collection. The unusual location of the top nipple port provides excellent circulation to assure quick boiler water recovery. With this new vertical flue section design, the boiler sections are easily cleaned from the right side only. Wet base construction feature eliminates need for special base.

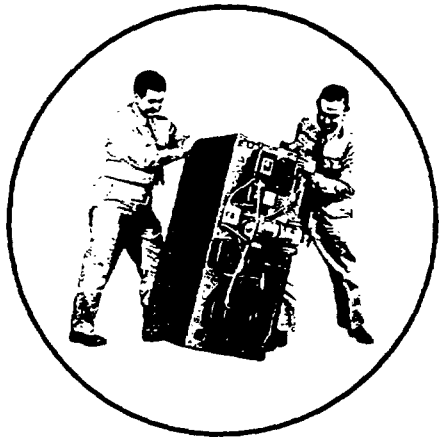
■ **Easiest, most accurate burner to adjust** – new Model PH Arcoflame Oil Burner – is designed specially for the Arcoleader. This high-pressure burner provides highly efficient firing with an exceptionally clean and quiet flame. A distinctive inlet air band permits precise air adjustment for correct firing—it's the only adjustment required! This ingeniously designed air handling device, which results in perfect air-oil mixture, provides a super hot flame with minimum smoke. A steel-reinforced housing, finished to match the Arcoleader, assures positive alignment of Model PH Arcoflame Burner.

▶ Arcoleader Oil Heating Units by American-Standard have ratings approved by the Institute of Boiler and Radiator Manufacturers and are constructed to the specifications of the American Society of Mechanical Engineers. The Model PH Arcoflame Oil Burner is listed by the Underwriters' Laboratories, Inc., for No. 1 and No. 2 fuel oil, complies with Commercial Standard CS-75 and is approved by the New York City Board of Standards and Appeals, by the State Fire Marshal of the Commonwealth of Massachusetts and by the Department of State Police, State of Connecticut.

The Arcoleader packaged oil heating unit for fast, low-cost installation

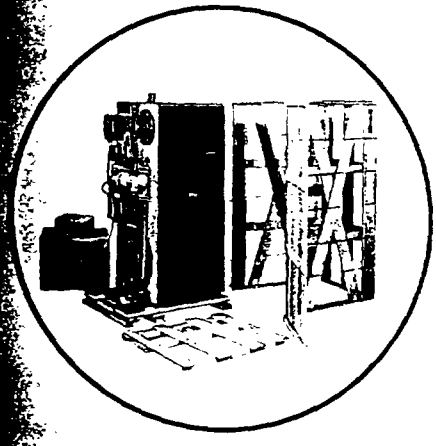


1—The Arcoleader Packaged Oil Heating Unit is assembled and fired at the factory. All controls, accessories and tankless water heater are mounted and the jacket is installed prior to shipment. Sturdy crate and polyethylene cover protect each boiler.



3—Suspended "off-the-floor" design of the jacket, plus the unusually lightweight, compact construction of the Arcoleader, allows the boiler to be "walked" into position without damaging the jacket. Jacket design and finish help prevent rust and corrosion.

2—Two men can easily remove the Arcoleader from the shipping crate. Compact design and lightweight construction of boiler permit handling by one man in an emergency. Note how the crate protects the unit, yet simplifies handling and speeds up installation.

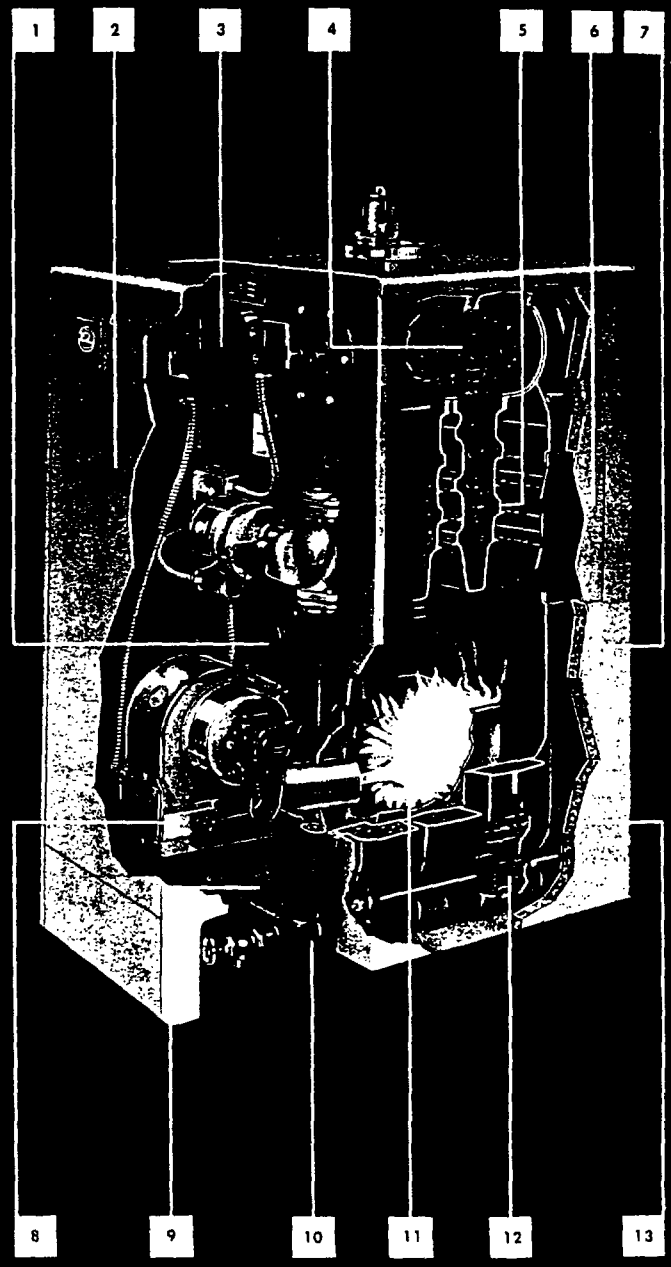


4—Model PH Arcoflame Oil Burner, designed for the Arcoleader, is installed in seconds with the special sling mount. Complete Arcoleader installation, from crate to connection of previously installed piping and thermostat wiring, takes less than an hour.



The all-new Arcoleader is a highly efficient hot water heating plant ideal for new home construction and the replacement-modernization field. It is available as a completely packaged unit in 3, 4 and 5-section sizes with all components factory assembled, also as a boiler-burner unit or boiler in 3, 4 and 5-section assemblages.

00326



1—observation ports—permit complete viewing of flame from front and right side (not shown) without disturbing combustion or flame characteristics, and without use of mirrors.

2—jacket extension—matches jacket; has removable front and side panels for ready access to burner and controls. Arch-type opening in base provides ample air for combustion and ventilation.

3—controls—all controls (including stack control) mounted on front of boiler for easy maintenance and adjustment. Controls factory mounted and pre-wired on packaged units. Stack control installed in aluminized steel canopy which permits smaller smoke pipe sizes—makes Arcoleader easily adaptable to gas firing. Canopy factory assembled and puttied.

4—water heater—large, copper coil, tankless type. Features high I=W=H ratings. Special for Arcoleader only. See page 3.

5—boiler sections—new vertical design; constructed of durable cast iron. Sections are tested at 2½ times normal operating pressure. See page 3.

6—cleanout panel—one-piece panel permits cleaning of all flue surfaces from right side without dismantling jacket or disturbing burner, controls and accessories.

7—jacket—sturdy 20-gauge steel; smartly styled in new sparkling gray finish and modern radius corners. Interior surfaces finished with corrosion-resistant, high-temperature aluminum paint. Jacket assembled with boiler at factory for packaged models.

8—new Model PH Arcoflame Oil Burner—designed for Arcoleader to provide top operating efficiency. Equipped with time-saving sling mount.

9—auxiliary air inlet—built into the front of the boiler; provides adjustment of secondary air.

10—tappings—1½" supply (top) and return tappings (bottom) located in front section. Reduce bushing expense and labor.

11—combustion chamber—custom built of high-temperature stainless steel. Even heat distribution to combustion area. Pre-installed at factory in all Arcoleader boilers.

12—wet base construction—provides extra heat-absorbing bottom surface and increased boiler water content. Waterways completely surround combustion area and extend beneath boiler, keeping floor cool; ideal for first-floor or basement installation.

13—insulation—heavy Fiberglas insulation prevents excessive heat loss, keeps jacket cool.

■—gravity model—a special cover plate tapped 3" for supply connection available for covering heater opening when specified—(not shown)

00327

Arcoleader ratings

packaged oil heating unit number	boiler-burner unit number	boiler number	net I=B=R ratings■ Mbh water	gross I=B=R output Mbh	I=B=R burner capacity gph	chimney size inches	chimney height feet
A1-3-P	A1-3-B	A1-3	75.0	100	.95	8x8	15
A1-4-P	A1-4-B	A1-4	102.0	136	1.30	8x8	15
A1-5-P	A1-5-B	A1-5	129.8	173	1.65	8x8	15

■The ratings for these boilers represent the net loads that may be connected to the boilers. Allowances have been made for normal piping and pick-up loads.
Note: Suffix "P" denotes packaged unit. Suffix "B"—boiler-burner unit (non-packaged).

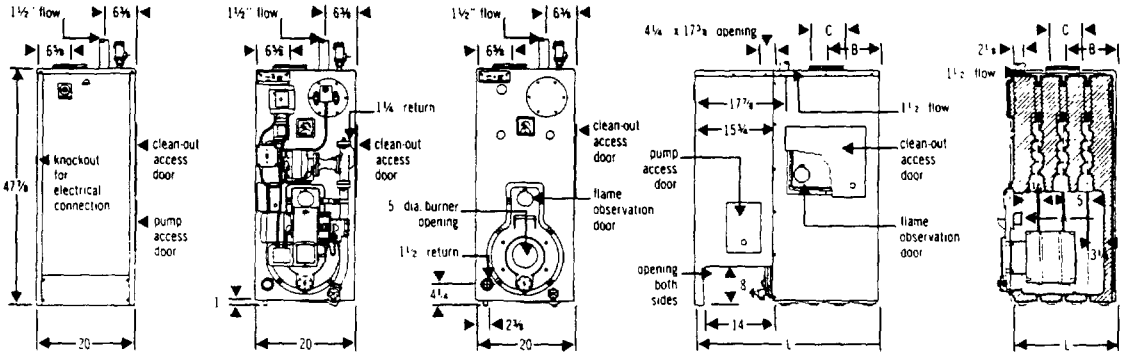
built-in tankless heaters tested with Arcoleader units

● heater number	▼ I=W=H rating	unit number	I=B=R burner capacity gph	● heater number	▼ I=W=H rating	unit number	I=B=R burner capacity gph
723	3¼	A1-3	.95	732	4¼	A1-4	1.30
723	3¼	A1-4	1.30	732	4¼	A1-5	1.65
723	3¼	A1-5	1.65	743	5½	A1-5	1.65
732	3¾	A1-3	.95				

▼ Gallons of water per minute heated from 40°F to 140°F with 200°F boiler water temperature.

● Only heaters Nos. 732 and 743 available factory installed.

dimensions and tappings



oil heating unit number	number and size tappings — inches flow*	return	dimensions — inches A	B	C	L flush jacket	L jacket extension
A1-3	1-1½	2-1½	11½	8⅛	6	16¼	32
A1-4	1-1½	2-1½	16½	10⅝	7	21¼	37
A1-5	1-1½	2-1½	21½	13⅛	7	26¼	42

* special heater opening cover plate with 3" tapping for supply connection available for gravity systems when specified on order (except packaged units)

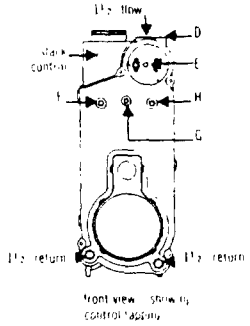
assemblage of sections

oil heating unit number	arrangement of sections
A1-3	F, C, B
A1-4	F, C, C, B
A1-5	F, C, C, C, B

F—Front connecting section
C—Center section
B—Back connecting section

control applications

location on boiler	size inches	water control
D	¾	relief valve
E	¾	immersion control double throw switch
F	¾	limit control
G	½	combination altitude gauge and thermometer
H	¾	immersion control, reverse acting (for installations without tankless water heater)



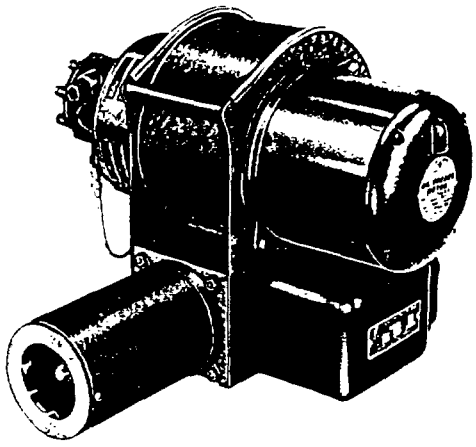
front view showing control tapping

American-Standard Arcoleader Oil-Fired Boilers are another development in hydronics—the science of heating and cooling with water.

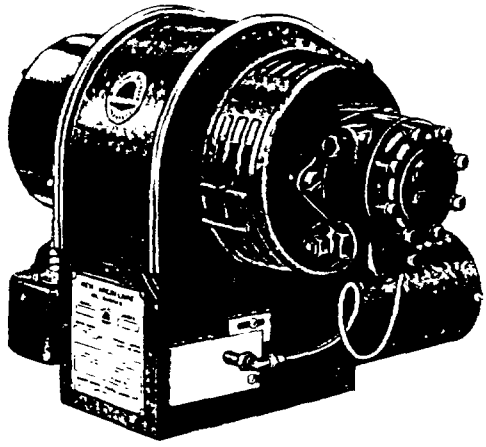
AMERICAN-Standard PLUMBING AND HEATING DIVISION
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
40 WEST 40TH STREET • NEW YORK 18, NEW YORK

Litho in U.S.A.

00328



front view—PH2 oil burner



rear view—PH2 oil burner

■ The new Model PH2 Arcoflame Oil Burner features a new inner assembly design that results in exceptionally efficient, quiet operation over the entire firing range of 0.65 to 3.00 gallons per hour. This assembly consists of a stamped steel static disk integrated with a vaned cast iron turbulator. The Model PH2 burner is equipped with four differently sized disk-turbulator combinations covering four firing ranges, thereby providing **each** with a pre-set inner assembly that scientifically proportions air flow for the nozzle sizes in the particular range. Each disk-turbulator combination is clearly identified regarding its gallonage capacities. Disk-turbulator combinations may be changed on the job **without** removing the nozzle adaptor or altering the electrode setting.

With the new Model PH2 Burner, just one easy, accurate adjustment of the air band is all that's required to obtain a high CO_2 with a clean, quiet flame. Three types of mountings—hanger, pedestal and flange—and convenient 5″, 6¾″, 8″, 15″ and 23″ tube lengths make this burner ideal for any oil-fired installation. For ease of handling, the Model PH2 is fabricated of sturdy steel and is equipped with standard components throughout.

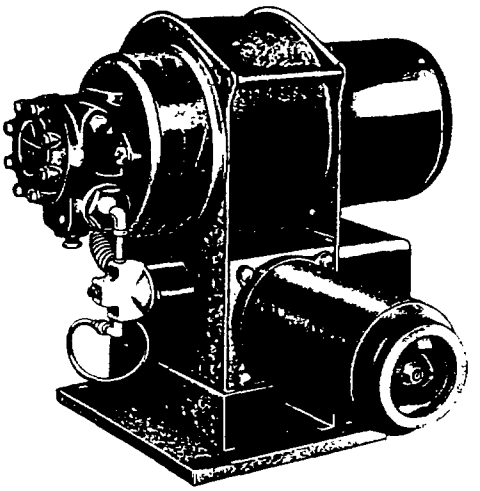
model PH2

Arcoflame oil burner

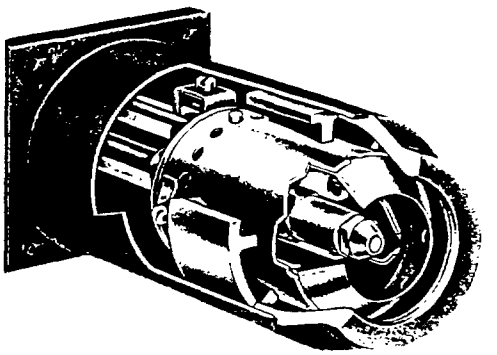
American-Standard

A I A File No 30 G 1 (September 1959)

00329



model ES-2 with pedestal



model ES-2 shell head—cutaway view

■ The Model ES-2 Shell Head Arcoflame Oil Burner by American-Standard provides clean, efficient combustion with minimum excess air. Featuring a practical size range of 0.70 to 1.50 gallons per hour capacity, the ES-2 is constructed of sturdy, lightweight steel which means easy handling and fast, economical installation. A standard fuel unit, transformer, fan and motor make burner servicing quick and easy. To assure positive performance, all burners feature proven shell head design and are fully tested in the field, laboratory and factory to meet rigid American-Standard requirements. Four convenient air tube lengths, ranging from 6¾" to 23", plus a choice of pedestal, flange or hanger mountings, make the ES-2 ideal for conversion jobs as well as for American-Standard oil heating units. Externally operated controls—primary air adjustment, nozzle positioning slide block, air intake band—permit precision adjustments to be made while burner is running, resulting in highly accurate settings and improved flame stability. The ES-2 incorporates a single shaft for fuel unit, fan and motor with flexible coupling and a statically and dynamically balanced fan for quiet operation and maximum firing efficiency. Chrome trim strips and an attractive Forge Red and black finish make the Arcoflame a modern, well-styled oil burner.

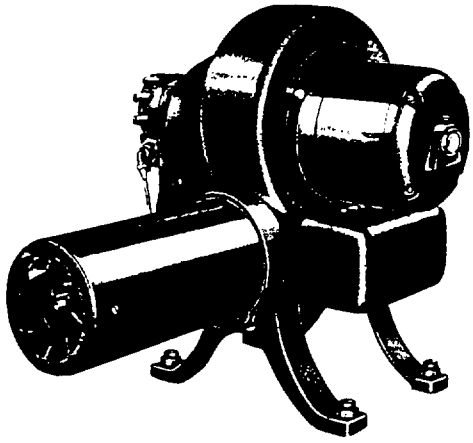
model ES-2 shell head

Arcoflame oil burner

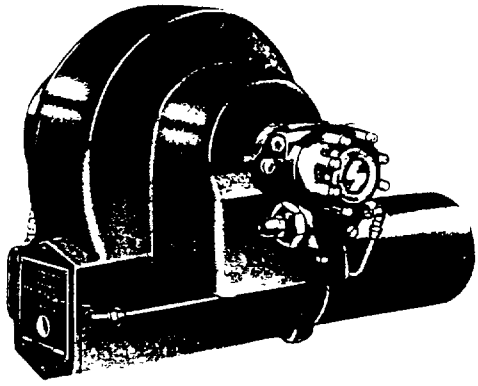
AMERICAN-Standard

A I A file No. 30 G-1 (September, 1938)

00331



model L



model LF-E

■ Constructed of rugged, corrosion-proof, time-proof cast iron, the Model L Arcoflame by American-Standard is a high-pressure, heavy-duty oil burner for flexible, dependable application with heating units in commercial buildings, apartments or large residences.

In addition to dependable durability, all Model L components—motor, transformer, fuel pump, firing mechanism—are carefully designed and integrated for the quietest possible operation over the entire firing range of 3 to 7 gallons per hour.

Model L burners also feature remarkably clean, economical fuel consumption—with quick starts and quick cut-offs that avoid waste. The two-stage fuel unit pumps air-free oil; the precision-built nozzle provides accurate atomization; primary air volume is accurately and easily controlled with a simple adjustment of the air shutter.

The Model L may be either pedestal mounted or flange mounted and is easily installed to convert any boiler or furnace within its capacity range to automatic oil-fired heating. A complete selection of versatile control combinations is available for all types of hot water, steam or warm air installations.

Thorough laboratory and factory testing programs for Arcoflame oil burners assure conformance to American-Standard requirements for peak operating performance.

model L
model LF-E

Arcoflame oil burners

American-Standard

A I A File No. 30 G 1 (September 1958)

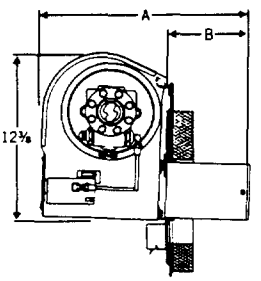
00333

model PH2 Arcoflame

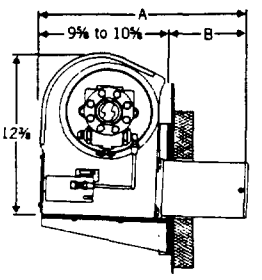
outstanding design features

- **disk-turbulator assembly** – provides four different, efficient firing combinations
- **single-shaft design** – for fuel unit, fan and motor for quiet operation
- **fan** – statically and dynamically balanced for quiet performance
- **air band** – simple and precise – only adjustment required
- **mountings** – versatile pedestal, flange or hanger types provided
- **electrodes** – rigidly secured – insulated with glazed porcelain
- **ignition** – intermittent or constant spark
- **housing** – heavy-duty steel – easily handled on job
- **transformer** – mid-point grounded to prevent television or radio interference
- **air tube** – available in wide range of 5", 6¾", 8", 15" and 23" lengths – all 4" in diameter
- **nozzle** – each nozzle tested at factory
- **controls** – available for all types of hot water, steam or warm air installations

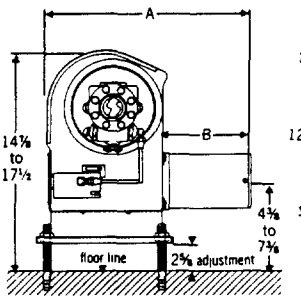
dimensions (inches)



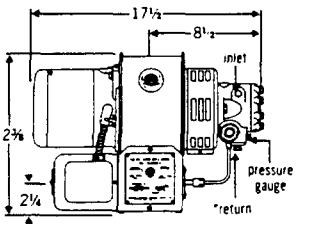
side view hanger mounted



side view flange mounted



side view pedestal mounted



rear view

*on 2 pipe systems install by pass plug in return opening

Model	PH2-5	PH2-6	PH2-8	PH2-15	PH2-23
A	14¼	15½	16¾	23¾	31¾
B	5	6¾	8	15	23

diameter air tube–4"

specifications

Current Characteristics	Oil Rate Minimum	Oil Rate Maximum ■	Motor hp	Motor rpm	Oil Pressure (psig)	Capacity Range: Disk-Turbulator Assembly	Capacity Range: Nozzle Spray Angle	Capacity Range: Type Cone
115 volt 60 cycle	0.65	3.00	⅛	1,750	100	0.65-1.10	60° or 70°	Hollow
						0.90-1.25	60° or 70°	Hollow
						1.35-1.75	60° or 70°	Solid
						1.80-2.30	60° or 70°	Solid
						2.35-3.00	60° or 70°	Solid

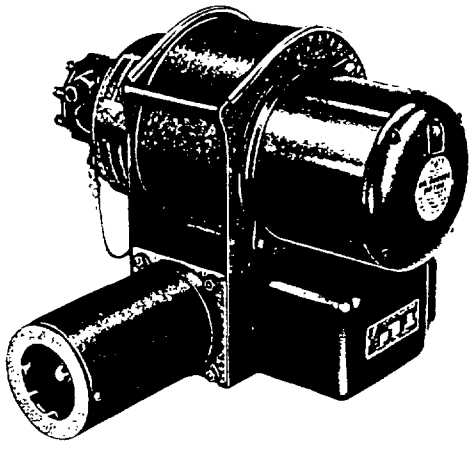
■ These capacities can be used up to 1,000 feet altitude. Reduce capacities by 4% for each additional 1,000 feet above sea level.

▶ Approval – All Model PH2 Arcoflame Oil Burners (60-cycle, 115-volt) are listed by Underwriters' Laboratories, Inc. for No. 1 and No. 2 grades of fuel oil, distillate or catalytic cracked, and comply with Commercial Standard CS-75. They are approved by the New York City Board of Standards and Appeals, the State Fire Marshal of the Commonwealth of Massachusetts and the Department of State Police, State of Connecticut.

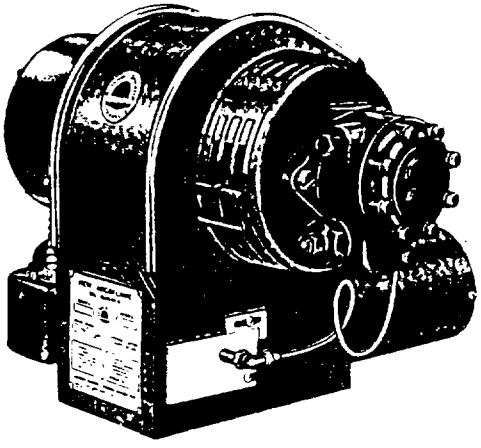
AMERICAN-Standard PLUMBING AND HEATING DIVISION
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
40 WEST 40TH STREET • NEW YORK 18, NEW YORK

Form No 268-2

00335



front view—PH2 oil burner



rear view—PH2 oil burner

■ The new Model PH2 Arcoflame Oil Burner features a new inner assembly design that results in exceptionally efficient, quiet operation over the entire firing range of 0.65 to 3.00 gallons per hour. This assembly consists of a stamped steel static disk integrated with a vaned cast iron turbulator. The Model PH2 burner is equipped with four differently sized disk-turbulator combinations covering four firing ranges, thereby providing **each** with a pre-set inner assembly that scientifically proportions air flow for the nozzle sizes in the particular range. Each disk-turbulator combination is clearly identified regarding its gallonage capacities. Disk-turbulator combinations may be changed on the job **without** removing the nozzle adaptor or altering the electrode setting.

With the new Model PH2 Burner, just one easy, accurate adjustment of the air band is all that's required to obtain a high CO_2 with a clean, quiet flame. Three types of mountings—hanger, pedestal and flange—and convenient 5″, 6¾″, 8″, 15″ and 23″ tube lengths make this burner ideal for any oil-fired installation. For ease of handling, the Model PH2 is fabricated of sturdy steel and is equipped with standard components throughout.

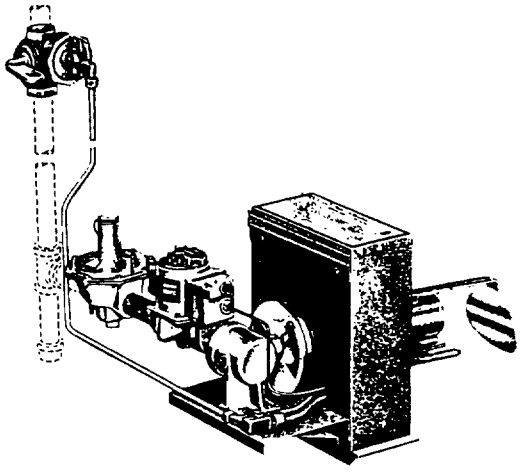
model PH2

Arcoflame oil burner

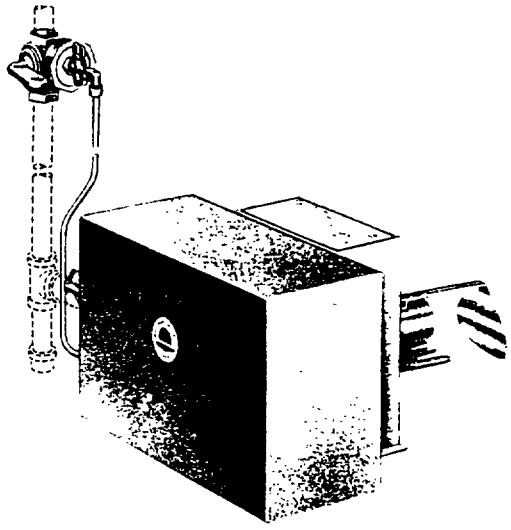
AMERICAN-Standard

A.I.A. File No. 30 G | [September 1958]

00336



model IN
with exposed controls



model IN
with concealing cover

■ Conversion of modern, compact boilers to efficient gas-fired heating requires an equally modern, compact burner. American-Standard, with the new Model IN Inshot Gas Conversion Burner, offers the ideal unit for this specialized application. This clean-firing burner injects a level flame directly against a horizontally mounted stainless steel spreader—a design that assures easy fit and thorough heat diffusion in low combustion chambers.

Designed specifically for easy installation with the popular American-Standard Arcoleader and Arcoliner, or other residential wet base oil boilers, the Model IN also is conveniently adaptable to any type of heating unit within its wide capacity range (80,000 to 275,000 Btuh input) and effective tube length (up to 5 inches). The Model IN bolts directly to the burner face plate on the Arcoleader and Arcoliner. Use of a sheet metal mounting plate equips it for other boilers or furnaces.

The Inshot burner is available in three practical models and may be installed either with all conveniently arranged components exposed or with an optional concealing cover. The attractive heavy-duty steel cover merely snaps into position and is simply lifted off for immediate accessibility to all controls and piping.

A choice of three versatile control arrangements is offered for either natural and mixed gases or manufactured gas. The standard arrangement includes a combination diaphragm gas valve and gas pressure regulator. An alternate arrangement has a quiet-acting solenoid gas valve and a separate leak-limiting gas pressure regulator. An optional self-energizing system is also available.

model IN

Inshot gas conversion burner

AMERICAN-Standard

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