

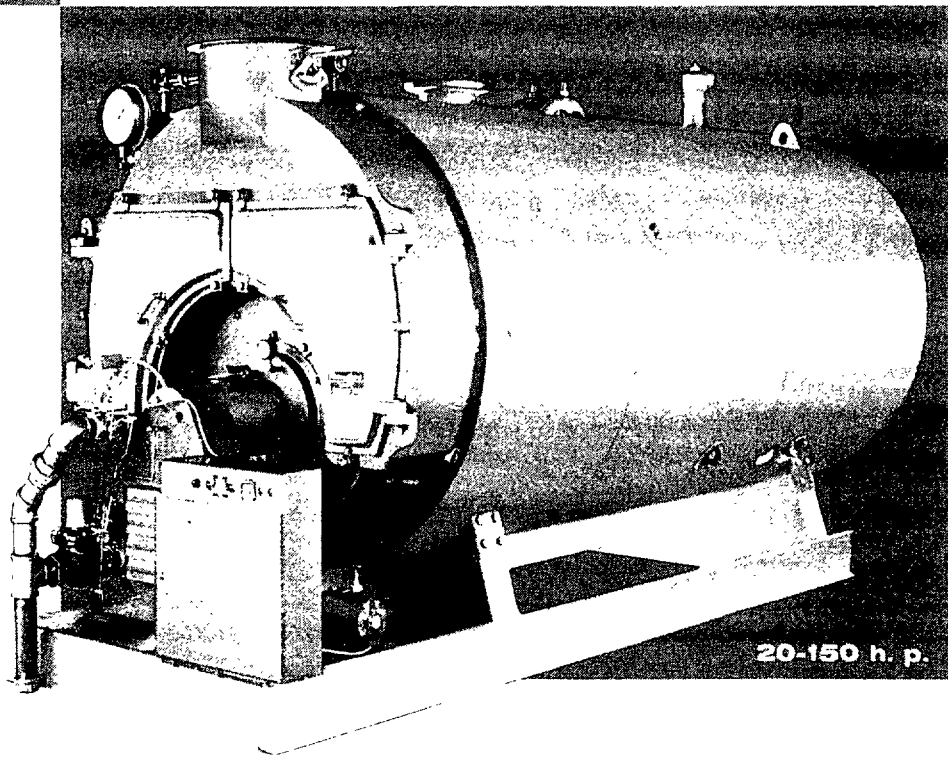
AMERICAN-STANDARD

KEWANEE

scottie junior[®]

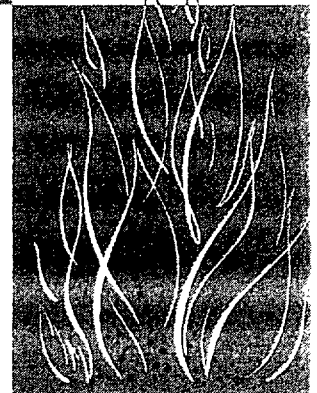
PLAINTIFF'S EXHIBIT

ASI-1218



20-150 h. p.

HIGH and LOW pressure
LIGHT OIL or GAS combination GAS-LIGHT OIL



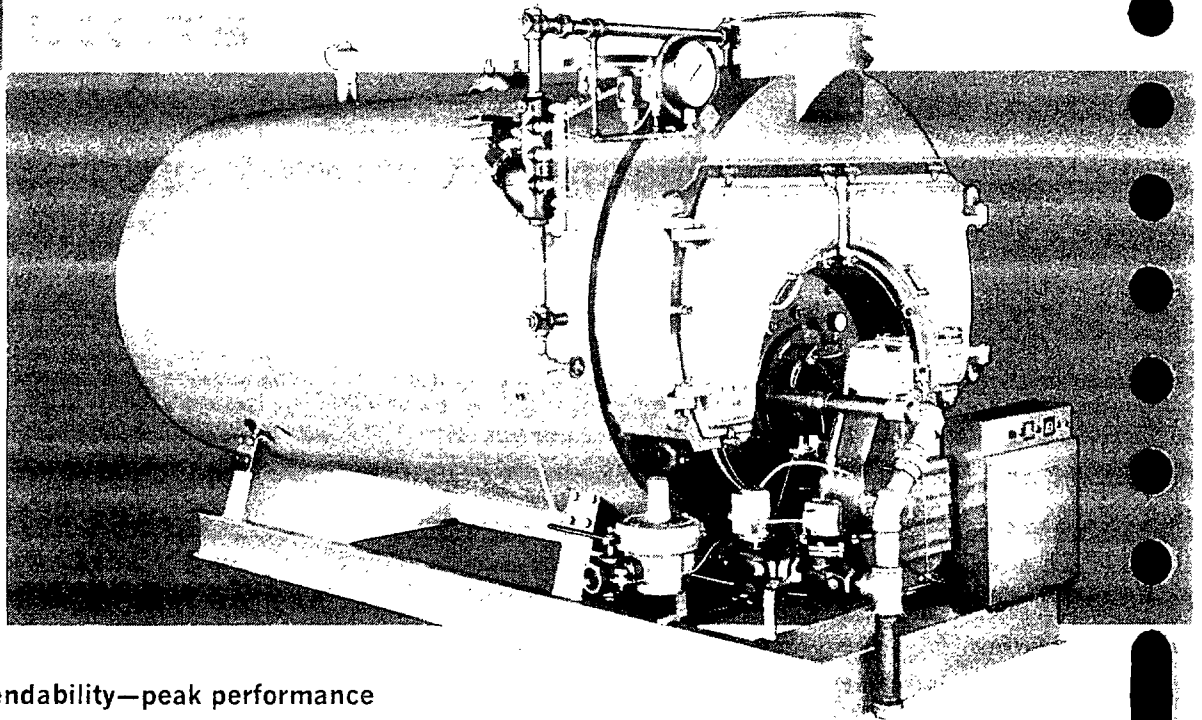
bulletin 749D
(revised november, 1962)

28712



AMERICAN-STANDARD

KEWANEE FORCED DRAFT



proved dependability—peak performance

Modern concept based on experienced engineering—conservative design and top-quality construction—assure you of highest efficiency, faithful performance, long dependable service. These qualities have been proved in thousands of installations . . . Kewanee has been the recognized leader in steel boilers for nearly a century.

Ratings are conservative—five square feet of heating surface per horsepower—providing adequate reserve capacity. Firing rates are carefully matched to heating surface. Flame size and shape are matched to furnace dimensions. Furnace volume is designed for efficient combustion, and direct heat absorbing surfaces are ample. Construction meets or exceeds A.S.M.E. Boiler Code requirements. These combined features assure operating efficiency of 80%.

forced draft operation

Assures ample combustion air for stub stack applications. Special blower assemblies available for high altitude.

large furnace tube

Provides abundant volume for complete combustion and greater proportion of primary heating surface. Hot flanged furnace tube openings assure maximum permanent strength at junction of furnace tube and tube sheets. Location of tube near bottom of boiler affords maximum protection against low water.

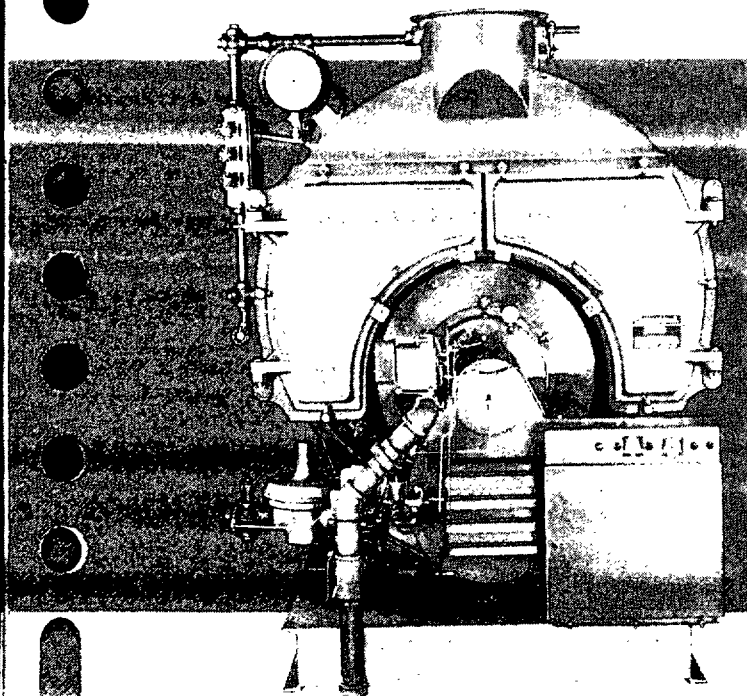
tubes

All fire tubes in high and low pressure units are set into tube sheets by roller expander . . . No tubes welded to tube sheets. Spinner blades in all tubes swirl hot gases against tube surfaces for longer gas travel and maximum heat transfer.

two pass design

Eliminates refractory baffles that can burn out and short circuit hot gases to stack . . . Kewanee design avoids wasted fuel, costly shutdown and expensive repairs.

Scottie Junior



(L-100-FGO Illustrated)

**FACTORY ASSEMBLED
FIRE-TESTED BEFORE SHIPMENT**

high pressure

low pressure

large steam space

Combined with abundant, unbroken disengaging area and unusually large water content assures steady water line, dry steam and ample reserves.

welded shell

Flange quality plate. . . All materials meet or exceed ASME code requirements for strength and durability . . . All welded construction . . . High pressure shells are X-rayed and stress relieved.

cast iron flue doors

An exclusive Kewanee feature—heavily insulated—precision fit and gasketed for gas tight seal. Hinged to provide quick access to tubes without interference with firing equipment.

i-beam skids

Rugged with extra heavy reinforced saddles. They support the unit, distribute weight evenly and facilitate handling.

insulated steel jacket

Factory installed heavy gauge steel jacket of drawband construction with 2" glass or mineral fiber insulation and reinforced catwalk area.

water heating coils

Standard Kewanee "KI" (instantaneous) and "KT" (tank) coils can be provided for all low pressure units.



KEWANEE

three-way air adjustment

Three-way air adjustment with inlet louver, discharge damper and primary-secondary proportioning shutter results in maximum burning efficiency for either fuel under all operating conditions.

Kewanee Scottie Junior Package Units are available for light oil, gas, or combination gas-light oil firing. Three sizes of Kewanee Forced Draft Burners are tailored to cover the entire range of boiler capacities.

Each Kewanee Forced Draft Burner is custom engineered for the boiler it fires. Together they make an unbeatable team with carefully matched capacity and characteristics. Light oil (No. 2 CS12-48) and either high or low pressure gas may be fired efficiently. Kewanee burners offer long, economical service with minimum maintenance. Forced draft eliminates need for conventional stacks.

oil burners

Oil burners are of the mechanical pressure atomizing type complete with motor, fan, oil pump, nozzles, electric ignition, oil filter, combustion controls and relays necessary for automatic operation. Oil piping is ready for field connection to oil supply.

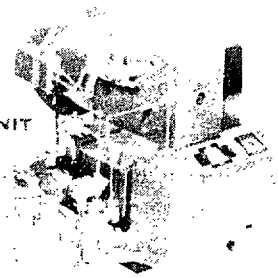
gas burners

Gas burners are of the multiple-jet flame retention type complete with motor, fan, gas-electric ignition, automatic and manual gas valves, gas pressure regulators, combustion controls and relays necessary for automatic operation. Gas piping is ready for field connection to gas supply.

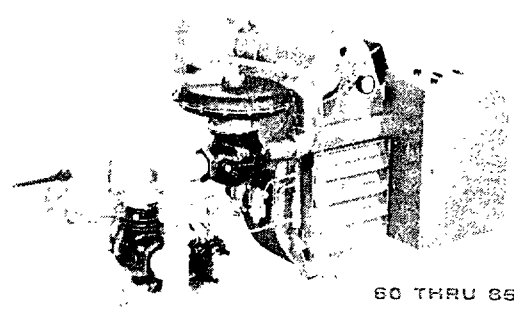
gas-oil burners

Gas-oil combination burners include the features of both the gas burners and oil burners in a single unit. No burner modifications to change fuels—just a flip of a switch.

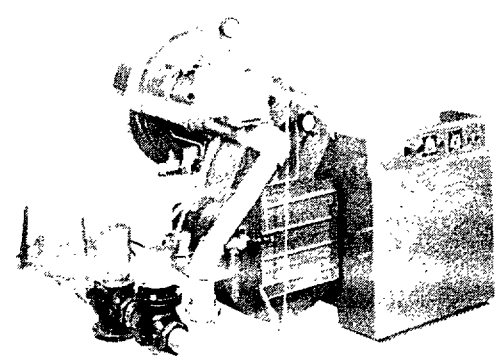
20 THRU 50 H.P. UNIT

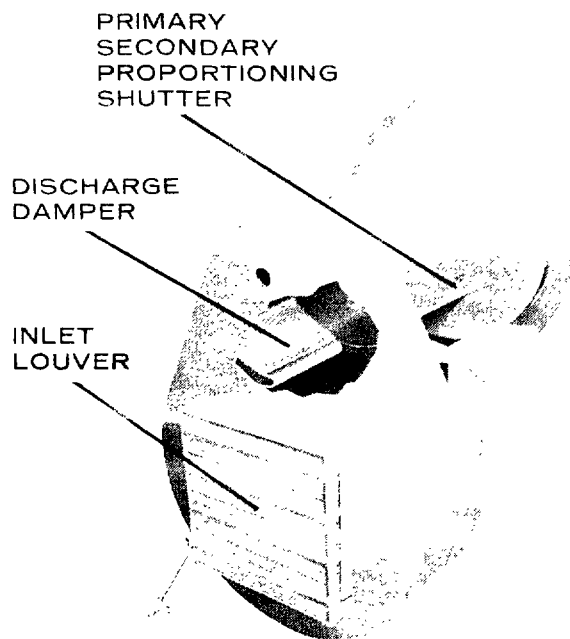


60 THRU 85 H.P. UNIT



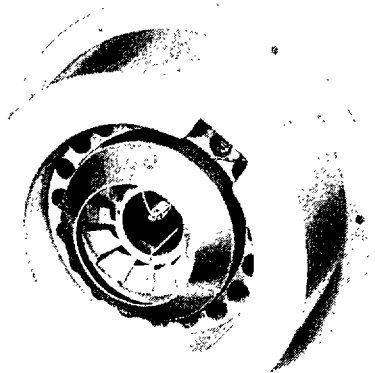
100 THRU 150 H.P. UNIT





approvals

Entire unit listed by the Underwriters Laboratory (UL). Fuel burning equipment listed by Canadian Standards Association (CSA); Fire Marshal, State of Massachusetts; City of New York Board of Standards and Appeals; and others



burner firing head

Exclusive design of burner firing head provides quiet, stable combustion of gas or oil at all inputs. The recessed ring of gas burner ports permits partial premixing of gas and air at each individual port.

Swirling high velocity main air supply assures intimate mixing of fuel and air for clean efficient firing.

A separate manual adjustment of primary air permits stable operation under wide variations of gas pressure and other conditions without objectionable noise or pulsation.

burner features

Units 20, 30, 40 and 50 feature on-off operation. Combustion air is regulated by a fixed position air inlet damper in addition to an adjustable primary air shutter. An electronic combustion safeguard and a programming timer assure safe operation with pre-purge and post-purge.

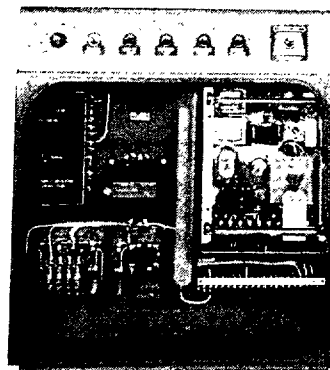
Units 60, 70 and 85 feature on-off operation with controlled low fire start. Fuel supply and combustion air are regulated at both low fire and high fire to provide smooth starting and top operating efficiency. An electronic combustion safeguard and a programming timer assure safe operation with pre-purge and post-purge.

Units 100, 125 and 150 feature full modulating operation with proved low fire start. Fuel supply and combustion air are regulated throughout the firing range by a modulating motor controlled by a boiler-mounted pressure or temperature modulating potentiometer. Enforced low fire start is provided by an interlock on the modulating motor. Combination electronic combustion safeguard and programmer assures safe operation with pre-purge, post-purge and proved ignition for both fuels.



maximum safety

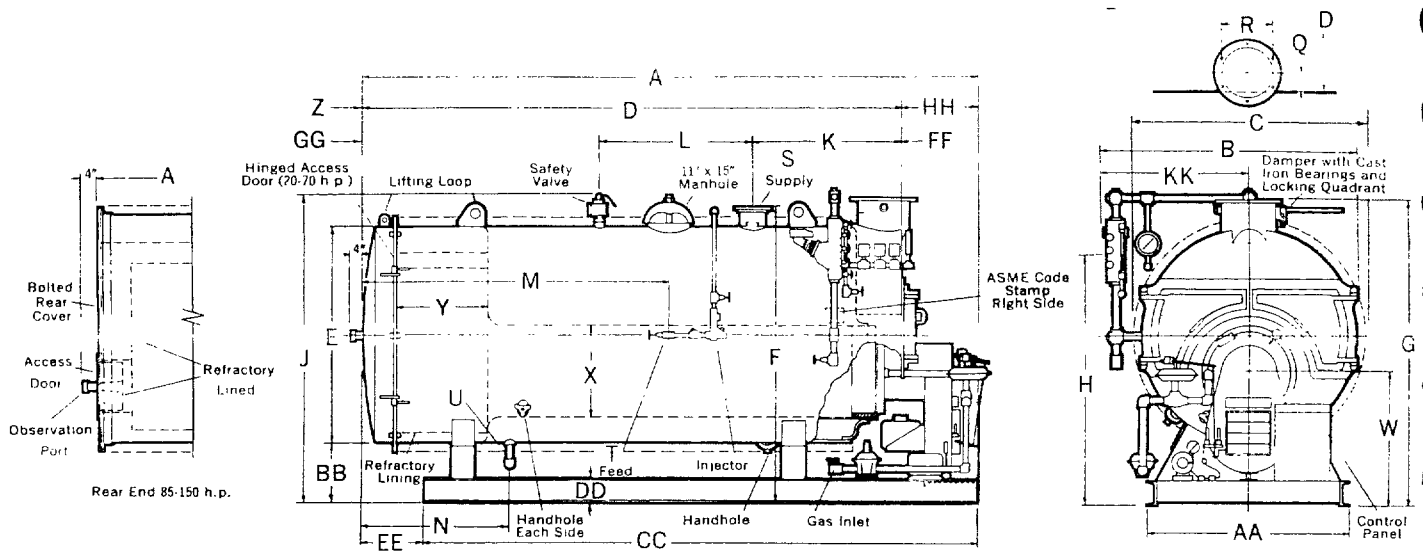
Dual automatic main gas valves provide added protection against valve leakage. Boiler passages are purged of possible accumulation of combustible gases both before and after each firing cycle. An electronic flame safeguard continuously monitors combustion.



control cabinet

Master programming and flame safeguard relays, switching relays, necessary motor magnetic starters, numbered terminal strips, indicating lights for major operations and fuel selector switch—all are mounted and wired in a heavy gauge steel, dust-proof, control cabinet. Wiring is ready for connection to source of power.

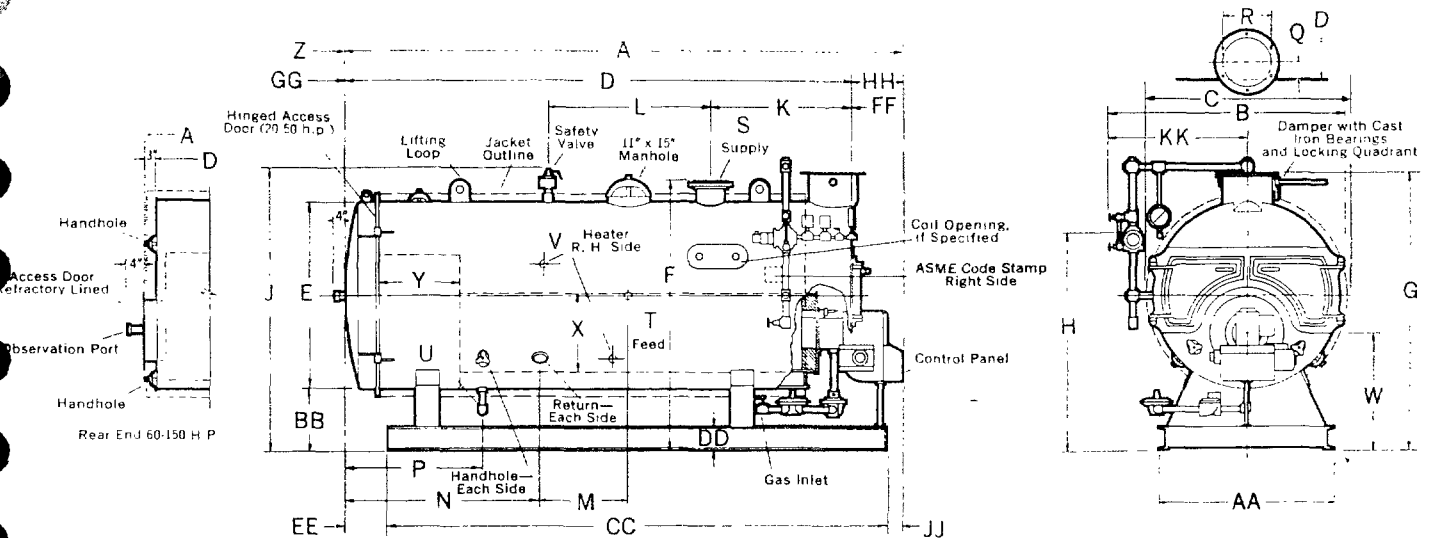
DEWANTE scottie junior high pressure units



UNIT NUMBER		HX-20	HX-30	HX-40	HX-50	HX-60	HX-70	HX-85	H-100	H-125	H-150
Rating—horsepower.		20	30	40	50	60	70	85	100	125	150
—MBh		672	1008	1344	1680	2016	2352	2856	3360	4200	5040
—steam per hour, 212°F	lb.	690	1030	1380	1720	2070	2410	2932	3450	4310	5170
—steam radiation	sq. ft.	2800	4200	5600	7000	8400	9800	11900	14000	17500	21000
Firing rate—oil, 140,000 Btu	gph.	6.0	9.0	12.0	15.0	18.0	21.0	25.5	30.0	37.5	45.0
—gas	MBh	840	1260	1680	2100	2520	2940	3570	4200	5250	6300
Heating surface*	sq. ft.	99	158	215	250	322	358	429	500	625	750
Net furnace volume	cu. ft.	16.9	21.4	29.6	32.0	47.9	50.8	62.5	67.7	85.4	94.7
Safety valve capacity—steam per hour	lb.	800	1200	1600	2000	2400	2864	3400	4000	5000	6000
Outside surface to cover—unjacketed	sq. ft.	63	90	107	121	145	158	178	197	222	252
Approximate dry weight —125 lb. W.P.	lb.	4100	5100	6300	7100	9300	9800	12100	12800	15800	18100
—150 lb. W.P.	lb.	4200	5200	6400	7100	9400	10000	13000	13400	16100	18400
Vent diameter	in.	10	10	12	12	14	14	16	16	18	18
dimensions, inches											
A—length overall		102½	132½	137	150	161	174	158	172½	177	198½
B—width overall		54	54	60	60	66	66	73	73	79	79
C—boiler—width		48½	48½	54½	54½	60½	60½	65	65	71	71
D— —length		85	115	121	134	143½	154½	139	153½	158	179½
E— —inside diameter		42	42	48	48	54	54	60	60	66	66
F—steam supply height		59½	59½	65½	65½	72½	72½	84	84	90½	90½
G—smoke outlet height		66	66	71½	71½	77½	77½	85½	85½	91	91
H—water line height		51	51	55	55	60½	60½	67½	67½	71	71
J—safety valve height		65½	65½	74	74	81	81	89½	89½	93½	94½
K—steam supply		27	33	35	35	36	42	37	43	44	50
L—safety valve		20	20	20	20	42	42	51	52	53	60
M—feed water		55	79	83	96	83	88	78	86	88	98
N—blow-off		32½	32½	36½	36½	40½	40½	48	48	51	51
Q—smoke outlet location		3½	3½	4½	4½	4½	4½	4½	4½	5	5
R—smoke outlet diameter		10	10	12	12	14	14	16	16	18	18
S—steam supply size¹		2	2	2	2	3	3	4	4	6	6
T—feed size	¾	¾	¾	¾	¾	¾	¾	1¼	1¼	1½	1½
U—blow-off size	1	1	1	1	1	1¼	1¼	2	2	2	2
W—furnace—height		29½	29½	31	31	34	34	38	38	39	39
X— —inside diameter		18	18	20	20	24	24	26¾	26¾	29¾	29¾
Y— —rear chamber		18	18	21	21	24	24	31	31	26	26
Z—rear door clearance		39	39	44	44	49	49	—	—	—	—
AA—base—width		36	36	42	42	48	48	60	60	66	66
BB— —floor to boiler		16	16	16	16	16	16	18	18	18	18
CC— —length		91½	121½	116½	135	141	152	150	137	153	173
DD— —height		6	6	6	6	6	6	6	6	8	8
EE— —location		11	11	15	15	18	18	18	18	19½	19½
FF—tube replacement space—front		41	71	69	82	86	97	83	97	98	119
GG— —rear		32	62	59	72	74	85	—	—	—	—
HH—burner front to boiler		17½	17½	16	16	17½	19½	19	19	19	19
KK—width—water column to CL of unit		31½	31½	34½	34½	37½	37½	41	41	44½	44½

1 2" and 3" threaded outlets. 4" and 6" 300 lb. American Standard flanges. Manhole on 60 to 150 units.
2 Waterside heating surface on X models. Fireside heating surface on others

scottie junior low pressure units



UNIT NUMBER	LX-20	LX-30	LX-40	LX-50	LX-60	LX-70	LX-85	L-100	L-125	L-150
Rating—horsepower	20	30	40	50	60	70	85	100	125	150
—MBh	672	1008	1344	1680	2016	2352	2856	3360	4200	5040
—steam per hr. 212°F	690	1030	1380	1720	2070	2410	2932	3450	4310	5170
—water radiation	sq. ft. 4480	6720	8960	11200	13440	15680	19040	22400	28000	33600
—net steam radiation	sq. ft. 2300	3450	4600	5750	6900	8050	9800	11500	14400	17250
Firing rate—oil, 140,000 Btu	gph. 6.0	9.0	12.0	15.0	18.0	21.0	25.5	30.0	37.5	45.0
—gas	MBh 840	1260	1680	2100	2520	2940	3570	4200	5250	6300
Heating surface*	sq. ft. 99	158	215	250	322	358	429	500	625	750
Net furnace volume	cu. ft. 16.5	21.7	29.9	32.7	49.8	53.3	62.5	69.1	83.5	93.3
Safety valve capacity—steam per hour	lb. 672	1008	1344	1680	2016	2352	2856	3360	4200	5040
Outside surface to cover—unjacketed	sq. ft. 61	88	105	119	163	177	186	208	233	263
Approximate dry weight	lb. 3400	4000	5400	6200	7500	8200	8800	10000	12000	13300
Vent diameter	in. 10	10	12	12	14	14	16	16	18	18
dimensions, inches										
A—length overall	98	128	132	145	149	162	152½	169	170	190½
B—width overall	56	56	62	62	69	69	75	75	82	82
C—boiler—width	48½	48½	54½	54½	57	57	64	64	69	69
D—length	83	112½	118½	131½	131½	142½	134	150½	148	168½
E—inside diameter	42	42	48	48	54	54	60	60	66	66
F—steam supply height	59½	59½	70	70	79	79	84	84	90	90
G—smoke outlet height	65½	65½	71½	71½	79½	79½	85½	85½	91	91
H—water line height	49½	49½	54	54	63	63	66½	66½	70½	70½
J—safety valve height	63	63	70½	70½	77	77	87½	87½	91	93½
K—steam supply	27	33	35	35	36	42	37	43	44	50
L—safety valve	20	20	20	20	64	69	62	70	69	84
M—feed water each side	—	—	—	—	25	33	26	33½	31	41
N—return—4 openings—all sizes	42½	44½	51½	51½	42½	39½	43	45	47	47½
P—drain	32½	32½	36½	36½	35½	35½	39	41	41	41½
Q—smoke outlet location	3½	3½	4½	4½	4½	4½	4½	4½	5	5
R—smoke outlet diameter	10	10	12	12	14	14	16	16	18	18
S—steam supply size¹	4	4	6	6	6	6	8	8	8	8
T—feed size	—	—	—	—	1¼	1¼	1¼	1¼	1½	1½
U—drain size	1½	1½	1½	1½	1½	1½	2	2	2	2
V—heater opening size	1½	1½	1½	1½	2	2	2	2	2	2
W—furnace—height	29½	29½	30½	30½	37	37	37½	37½	39	39
X—inside diameter	18	18	20	20	26¾	26¾	29¾	29¾	32½	32½
Y—rear chamber	18	18	21	21	24	24	24	24	24	24
Z—rear door clearance	39	39	44	44	—	—	—	—	—	—
AA—base—width	36	36	42	42	54	54	60	60	66	66
BB—floor to boiler	16	16	16	16	19	19	18	18	18	18
CC—length	86½	118	115	130	137	150	137	150	153	173
DD—height	6	6	6	6	6	6	6	6	8	8
EE—location	7	7	11	13	8½	8½	11	13½	9½	10
FF—tube replacement space—front	39	69	67	80	78	89	78	94	94	114
GG—rear	22	44½	48	70	—	—	—	—	—	—
HH—burner front to boiler	15	15½	13½	13½	17½	19½	18½	18½	19	19
JJ—burner front to base	4½	3	6	2	3½	3½	4½	5½	—	—
KK—width—water column to CL of unit	33½	33½	36½	36½	40½	40½	42	42	47½	47½

¹ 4" threaded outlets 6" and 8" 150 lb. American Standard flanges. Manhole on No. 60 to 150 units.

Waterside heating surface on X models. Fireside heating surface on others.

KEWANEE

standard equipment

optional equipment

ALL UNITS

1. Boiler Mounted on Steel Skids
2. Gas Tight Front Steel Smokebox with Gasketed Cast Iron Doors
3. Pyrex Observation Port
4. 3" Firetubes with Spinner Blades (Units 20 thru 85)
5. 2½" Firetubes with Spinner Blades (Units 100 thru 150)
6. Round Smoke Outlet with Quadrant Lock Damper
7. Explosion Relief Door(s)
8. Operating Limit Control
9. Safety High Limit Control
10. Flue Cleaner with Handle
11. Insulated Steel Jacket with Reinforced Catwalk Area
12. Manhole (Units 60 thru 150)
13. Lifting Loops
14. Listed Standard and Selected Optional Equipment Mounted, Piped, Wired, Ready for Field Connection to Fuel, Water, Steam, and Electricity
15. Factory Firetest
16. Starting Service

1. Flue Gas Temperature Gauge
2. One Year Service Period

ALL STEAM UNITS

1. Safety Valve(s)
2. Steam Gauge and Cock
3. Hand Operated Water Column Trim

1. Chain Operated Water Column Trim in Lieu of Hand Operated

ALL LOW PRESSURE UNITS

1. Hinged Rear Combustion Chamber Door with Rear Combustion Chamber Refractory (Units 20 thru 50)
2. Wet Back Type Construction (Units 60 thru 150)
3. 16" Dia. Rear Access Opening (Units 60 thru 150)

LOW PRESSURE STEAM UNITS

1. No. 64K Combination Water Column and Low Water Cut-off (Units 20 thru 70)
2. No. 157A or 157D Combination Water Column, Pump Control and Low Water Cut-off (Units 85 thru 150)
3. Angle Drain Valve

1. No. 42K Combination Water Column, Pump Control and Low Water Cut-off (Units 20 thru 70)
2. Kewanee Water Column; Combination Water Feeder, Low Water Cut-off and Alarm Switch
3. Second Low Water Cut-off
4. Instantaneous or Tank-Type Hot Water Coils

HOT WATER UNITS

1. Water Relief Valve(s)
2. Pressure Gauge and Thermometer
3. Low Water Cut-off
4. Angle Drain Valve

1. Higher than Standard 30 lbs. Water Working Pressure
2. Baffled Return Opening (Kewanee Design)
3. Dip Tube in Supply Opening
4. Instantaneous or Tank-Type Hot Water Coils

HIGH PRESSURE STEAM UNITS

1. No. 157A or No. 157D Combination Water Column, Pump Control and Low Water Cut-off
2. Blow-off Valves
3. Injector (Units 125 thru 150)
4. Globe and Check Valves for Boiler Feed Line
5. Rear Combustion Chamber Refractory
6. Hinged Rear Combustion Chamber Door (Units 20 thru 70)
7. Rear Cover Plate (Units 85 thru 150)
8. 16" Dia. Rear Access Opening (Units 85 thru 150)

1. Second Low Water Cut-off
2. Higher than 150 lb. Steam Working Pressure

OIL UNITS 20, 30, 40, 50

1. Forced Draft Mechanical Pressure Atomizing Oil Burner
2. 115V, 60Cy., 1ph. Motor and Controls
3. Two-Stage Oil Pump Direct-Coupled to Burner Fan Motor
4. Dual Oil Nozzles
5. Oil Solenoid Valve (Dual on Units 40, 50)
6. 10,000 V Ignition Transformer for Electric Ignition
7. Photocell Flame Detector
8. "On-Off" Firing Sequence (with Low Fire Start on Units 40, 50)
9. Control Cabinet Mounted on Burner Including: RA890 Protectorelay; T-1 Timer for Pre-Purge and Post-Purge Timing; Burner "On-Off" Switch; Indicating Lights (2); Necessary Relays; Numbered Terminal Strip; Engraved Name Plates

1. Other than Standard Voltages
2. High-Low Firing Sequence (Units 40, 50)
3. Fireye Flame Safeguard
4. Oil Controls for FM
5. Oil Controls for FIA
6. Alarm Bell

OIL UNITS 60, 70, 85

1. Forced Draft Mechanical Pressure Atomizing Oil Burner
2. 230V, 60Cy., 1ph. Motor (Units 60, 70) 230V, 60Cy., 3ph. Motor (Unit 85)
3. 115V, 60Cy., 1ph. Control Circuit
4. Two-Stage Oil Pump Assembly with Filter, Gauge, Relief Valve
5. Variable Capacity Oil Nozzle
6. Oil Solenoid Valves
7. 12,000V Ignition Transformer for Electric Ignition
8. Photocell Flame Detector
9. "On-Off" Firing Sequence with Low Fire Start

1. Other than Standard Voltages
2. Modulated Firing Sequence
3. High-Low Firing Sequence
4. Fireye Flame Safeguard
5. Oil Controls for FM
6. Oil Controls for FIA
7. Circuit Breakers
8. Draft Gauge

Requires Special Control Cabinet

standard equipment

optional equipment

OIL UNITS 60, 70, 85—Continued

10. Two-Position Air Inlet Damper Control
11. Control Cabinet Mounted on Burner Including: RA890 Protectorelay, Control Circuit Transformer; Control Circuit Fuses; T-1 Timer for Pre-Purge and Post-Purge Timing; Burner "On-Off" Switch; Air-Flow Safety Switch; Indicating Lights (2); Necessary Relays; Numbered Terminal Strip; Engraved Name Plates

9. Sequencing Draft Controls
10. Alarm Bell

OIL UNITS 100, 125, 150

1. Forced Draft Mechanical Pressure Atomizing Oil Burner
2. 230V, 60 Cy., 3ph. Motor
3. 115V, 60 Cy., 1ph. Control Circuit
4. Two-Stage Oil Pump Assembly with Filter, Gauge, Relief Valve
5. Variable Capacity Oil Nozzle
6. Oil Solenoid Valve
7. Oil Metering Valve
8. 12,000 V Ignition Transformer for Electric Ignition
9. Lead Sulphide Flame Detector
10. Modulated Firing Sequence with Low Fire Start
11. Modulating Motor to Control Fuel-Air Supply
12. Low Fire Interlock
13. Modulating Potentiometer (Boiler Mounted)
14. Control Cabinet Mounted on Boiler Skid Including: Fireye FJ-2 Flame Safeguard and Programming Relay; Control Circuit Transformer; Control Circuit Fuses; Burner "On-Off" Switch; Air-Flow Safety Switch; Indicating Lights (4); Necessary Relays; Numbered Terminal Strips; Manual Potentiometer with Manual-Automatic Switch; Engraved Name Plates

1. Other than Standard Voltages
2. Oil Controls for FM
3. Oil Controls for FIA
4. DC Voltmeter
5. Circuit Breakers
6. Draft Gauge
7. Sequencing Draft Controls
8. Alarm Bell

GAS UNITS 20, 30, 40, 50

1. Forced Draft Multiple-Jet Flame Retention Type Gas Burner
2. 115V, 60Cy., 1ph. Motor and Controls
3. UL Gas Control Group Including: Automatic Diaphragm Gas Valve, Automatic Solenoid Gas Valve, Gas Pressure Regulator and Gas Cock
4. Gas-Electric Ignition Assembly Including: 6000V Ignition Transformer, Gas Valve, Gas Pressure Regulator and Gas Cock
5. Flame Rod Flame Detector
6. "On-Off" Firing Sequence
7. Control Cabinet Mounted on Burner Including: RA890 Protectorelay; T-1 Timer for Pre-Purge and Post-Purge Timing; Air-Flow Safety Switch; Burner "On-Off" Switch; Indicating Lights (2); Necessary Relays; Numbered Terminal Strip; Engraved Name Plates

1. Other than Standard Voltages
2. Modulated Firing Sequence (Units 40, 50)
3. High-Low Firing Sequence (Units 40, 50)
4. Fireye Flame Safeguard
5. Gas Controls for Other than Standard Pressures
6. Gas Controls for FM
7. Gas Controls for FIA
8. Gas Controls for Local Utility Requirements
9. Alarm Bell

GAS UNITS 60, 70, 85

1. Forced Draft Multiple-Jet Flame Retention Type Gas Burner
2. 230V, 60Cy., 1ph. Motor (Units 60, 70); 230V, 60Cy., 3ph. Motor (Unit 85)
3. 115V, 60Cy., 1ph. Control Circuit
4. UL Gas Control Group Including: Automatic Motorized Gas Valve, Automatic Solenoid Gas Valve, Gas Gauge, Gas Pressure Regulator and Gas Cock
5. Gas-Electric Ignition Assembly Including: 6000V Ignition Transformer, Gas Valve, Gas Pressure Regulator and Gas Cock
6. Flame Rod Flame Detector
7. "On-Off" Firing Sequence with Low Fire Start
8. Two-Position Air Inlet Damper Control
9. Control Cabinet Mounted on Burner Including: RA890 Protectorelay, T-1 Timer for Pre-Purge and Post-Purge Timing; Air-Flow Safety Switch; Burner "On-Off" Switch; Control Circuit Transformer; Control Circuit Fuses; Indicating Lights (2); Necessary Relays; Numbered Terminal Strip; Engraved Name Plates

1. Other than Standard Voltages
2. Modulated Firing Sequence
3. High-Low Firing Sequence
4. Fireye Flame Safeguard
5. Gas Controls for Other than Standard Pressures
6. Gas Controls for FM
7. Gas Controls for FIA
8. Gas Controls for Local Utility Requirements
9. Circuit Breakers
10. Draft Gauge
11. Sequencing Draft Controls
12. Alarm Bell

GAS UNITS 100, 125, 150

1. Forced Draft Multiple-Jet Flame Retention Type Gas Burner
2. 230V, 60Cy., 3ph. Motor
3. 115V, 60Cy., 1ph. Control Circuit
4. UL Gas Control Group Including: Automatic Motorized Gas Valve, Automatic Solenoid Gas Valve, Gas Volume Control Valve, Gas Gauge, Gas Pressure Regulator and Gas Cock
5. Gas-Electric Ignition Assembly Including: 6000V Ignition Transformer, Gas Valve, Gas Pressure Regulator and Gas Cock
6. Lead Sulphide Flame Detector
7. Modulated Firing Sequence with Low Fire Start
8. Modulating Motor to Control Air-Fuel Supply
9. Low Fire Interlock
10. Modulating Potentiometer (Boiler Mounted)
11. Control Cabinet Mounted on Boiler Skid Including: Fireye FJ-2 Flame Safeguard and Programming Relay; Air-Flow Safety Switch; Burner "On-Off" Switch; Control Circuit Transformer; Control Circuit Fuses; Indicating Lights (4); Manual Potentiometer with Manual-Automatic Switch; Necessary Relays; Numbered Terminal Strips; Engraved Name Plates

1. Other than Standard Voltages
2. Gas Controls for Other than Standard Pressures
3. Gas Controls for FM
4. Gas Controls for FIA
5. Gas Controls for Local Utility Requirements
6. DC Voltmeter
7. Circuit Breakers
8. Draft Gauge
9. Sequencing Draft Controls
10. Alarm Bell

COMBINATION GAS-OIL UNITS—ALL SIZES

1. Manual Fuel Changeover Switch
2. Changeover Without Mechanical Adjustments or Changes

1. Automatic Fuel Changeover Control

*Requires Special Control Cabinet
*On Special Application Only

KEWANEE

scottie junior package units

high pressure

The contractor shall furnish and install _____ Number _____
Kewanee Forced Draft Scottie Junior Package
Unit(s) for (oil) (gas) (gas-oil combination) firing. The unit(s)
shall have a rating of _____ H.P. and shall contain not less
than five sq. ft. of heating surface per H.P. and a minimum fur-
nace volume of _____ cu. ft. The heat release shall not
exceed 67,500 BTU per cubic foot of combustion space. The fur-
nace diameter shall be no less than _____ in., the diameter
of the vent _____ in.

The shell shall be of the scotch type, two pass, horizontal firetube
design, ASME Code construction for (125) (150) PSIG Steam.
The boiler shall be mounted on steel I-beam skid base with in-
tegral forced draft burner and burner controls.

All tubes shall be set with a roller expander and beaded at each
end. Welded tube ends will not be permitted.

The front smoke box shall be of heavy gauge steel welded to the
boiler to secure a gas tight fit. The flue doors shall be of cast iron
and gasketed to secure a gas tight fit with a minimum number
of clamps and shall be lined with insulating refractory securely
keyed in place and capable of withstanding a temperature of
1500°F. A round flue outlet shall be furnished with a bearing
damper with locking quadrant.

The rear flue gas chamber shall be of pressure tight construction,
lined with insulating castable refractory and provided with an
access opening.

Boiler trimmings shall consist of the following, mounted and piped:

Safety valve(s); steam gauge with siphon and cock; No.
157A or 157D combination water column, pump control and
low water cut-off; hand operated water gauge and try cocks
assembly; blow-off valves; globe and check valves for boiler
feed line.

Boiler shall be inspected during construction by an authorized
inspector and after completion shall be subjected to a hydrostatic
test one and one-half times the working pressure and stamped
with all identifying markings and symbols as required by the
latest edition of the ASME Boiler Construction Code.

Unit(s) shall be provided with factory installed aluminum finished
jacket of 22 ga. steel securely fastened with drawbands. Jacket
shall have a 2" thick insulation of lightweight mineral or glass
wool material of 3 lbs. density per cu. ft. attached with adhesive.
A similar material of 8 lb. density, 2" thick, shall be applied at
selected locations for reinforcement including the top splice where
it will form a 12" catwalk along the entire length of the boiler.
Cover rings shall be provided at all openings. Lifting loops shall
be provided so that unit may be handled without damage to the
jacket.

Fuel burning equipment as follows shall be provided: *Note: Select
applicable paragraphs (pages 11 thru 13) according to fuel and
unit size.*

low pressure

The contractor shall furnish and install _____ Number _____
Kewanee Forced Draft Scottie Junior Package
Unit(s) for (oil) (gas) (gas-oil combination) firing. The unit(s)
shall have a rating of _____ H.P. and shall contain not less
than five sq. ft. of heating surface per H.P. and a minimum furnace
volume of _____ cu. ft. The heat release shall not exceed
67,500 BTU per cubic foot of combustion space. The furnace
diameter shall be no less than _____ in., the diameter of
the vent _____ in.

The shell shall be of the scotch type, two pass, horizontal firetube
design, ASME Code construction for (15 PSIG steam) (30 PSIG
water). The boiler shall be mounted on steel I-beam skid base
with integral forced draft burner and burner controls. An access
opening shall be provided to permit entry into the rear combus-
tion chamber.

All tubes shall be set with a roller expander and flared at each
end. Welded tube ends will not be permitted.

The front smokebox shall be of heavy gauge steel welded to the
boiler to secure a gas tight fit. The flue doors shall be of cast iron
and gasketed to secure a gas tight fit with a minimum number of
clamps. They shall be lined with insulating refractory securely
keyed in place and capable of withstanding a temperature of
1500°F. A round flue outlet shall be furnished with a bearing
damper with locking quadrant.

Boiler trimmings shall consist of the following, mounted and piped:

For Steam—Safety valve(s); steam gauge with siphon and cock; combination water column and low water cut-off (units 20 thru 70); combination water column, pump control and low water cut-off (units 85 thru 150); and angle drain valve.

For Hot Water—Relief valves, pressure gauge, thermometer, low water cut-off, angle drain valve.

Boiler shall be inspected during construction by an authorized inspector and after completion shall be subjected to a 60 lb. hydrostatic test and stamped with all identifying markings and symbols as required by the latest edition of the ASME Boiler Construction Code.

Unit(s) shall be provided with factory installed aluminum finished jacket of 22 ga. steel securely fastened with drawbands. Jacket shall have 2" thick insulation of lightweight mineral or glass wool material of 3 lbs. density per cu. ft. attached with adhesive. A similar material of 8 lb. density, 2" thick, shall be applied at selected locations for reinforcement including the top splice where it will form a 12" catwalk along the entire length of the boiler. Cover rings shall be provided at all openings. Lifting loops shall be provided so that unit may be handled without damage to the jacket.

Fuel burning equipment as follows shall be provided: *Note: Select applicable paragraphs (pages 11 thru 13) according to fuel and unit size.*

burner specifications

FOR ALL UNITS

Fuel burning equipment shall be of the forced draft type; factory assembled, wired, mounted, and firetested. Shall bear the Underwriters Laboratory label and shall be ready for field connection to power and fuel supply. Equipment to include windbox with refractory ring; forced draft fan with inlet air damper; high limit control; operating control; flame sensing device; and control cabinet containing electronic combustion safeguard, programming timer for pre-purge and post-purge, burner on-off switch, necessary switching relays, indicating lights for major operations, numbered terminal strips, color-coded wiring, and engraved name plates. *Note: The following equipment conforms to UL requirements. Specify additional controls if FM or FIA insured or subject to special local utility requirements.*

FOR OIL UNITS 20, 30, 40, 50

Oil burner shall be of the mechanical pressure atomizing type

for No. 2 oil with a two-stage oil pump direct connected to the blower motor. Burner shall include dual oil atomizing nozzles; oil solenoid valve; 10,000 volt ignition transformer; photocell flame detector; two indicating lights on burner-mounted control cabinet; and all necessary controls for "on-off" type of operation. Air control shall be by fixed position air inlet damper and adjustable primary air shutter.

FOR OIL UNITS 60, 70, 85

Oil burner shall be of the mechanical pressure atomizing type for No. 2 oil with a two-stage oil pump assembly with filter, gauge and relief valve. Burner shall include variable-flow oil atomizing nozzle; dual oil solenoid valves; 12,000 volt ignition transformer; photocell flame detector; air-flow safety switch; two indicating lights on burner-mounted control cabinet; and all necessary controls and linkage for "on-off" type of operation with low fire start. Air control shall include two-position regulation of the air inlet damper.

FOR OIL UNITS 100, 125, 150

Oil burner shall be of the mechanical pressure atomizing type for No. 2 oil with a two-stage oil pump assembly with filter, gauge and relief valve. Burner shall include variable-flow oil atomizing nozzle; oil solenoid valve; oil metering valve; 12,000 volt ignition transformer for electric ignition; lead sulphide flame detector; modulating motor with low fire interlock; skid-mounted control cabinet with combination electronic flame safeguard and programming control, four indicating lights and manual potentiometer with manual-automatic switch; and all necessary controls and linkage for modulated firing with proved low fire start. Air-fuel ratio shall be regulated through the entire firing range by a modulating motor controlled by a boiler-mounted modulating potentiometer.

FOR GAS UNITS 20, 30, 40, 50

Gas burner shall be of the multiple-jet flame retention type including a main gas control group consisting of an automatic diaphragm gas valve, automatic solenoid safety gas valve, gas pressure regulator and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, automatic gas valve, gas pressure regulator and gas cock; air-flow safety switch; flame rod flame detector; two indicating lights on burner-mounted control cabinet; and all necessary controls for

"on-off" type of operation. Air control shall be by a fixed position air inlet damper and adjustable primary air shutter.

FOR GAS UNITS 60, 70, 85

Gas burner shall be of the multiple-jet flame retention type including a main gas control group consisting of an automatic slow-opening motorized type gas valve, automatic solenoid safety gas valve, gas pressure regulator, gas gauge and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, automatic gas valve, gas pressure regulator and gas cock; air-flow safety switch; flame rod flame detector; two indicating lights on burner-mounted control cabinet; and all necessary controls and linkages for "on-off" type of operation with low fire start. Air control shall include two-position regulation of the air inlet damper.

FOR GAS UNITS 100, 125, 150

Gas burner shall be of the multiple-jet flame retention type including a main gas control group consisting of an automatic motorized gas valve, an automatic solenoid safety gas valve, gas volume control valve, gas pressure regulator, gas gauge and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, automatic gas valve, gas pressure regulator and gas cock; air-flow safety switch; lead sulphide flame detector; modulating motor with low fire interlock; skid-mounted control cabinet with combination electronic flame safeguard and programming control, four indicating lights and manual potentiometer with manual-automatic switch; and all necessary controls and linkage for modulated firing with proved low fire start. Air-fuel ratio shall be regulated through the entire firing range by a modulating motor controlled by a boiler-mounted modulating potentiometer.

FOR COMBINATION GAS-OIL UNITS 20, 30, 40, 50

Gas-oil burner shall consist of a combination multiple-jet flame retention type gas burner and mechanical pressure atomizing oil burner for No. 2 oil including all necessary controls for "on-off" type of operation. Gas controls shall include a main gas control group consisting of an automatic diaphragm type gas valve, automatic solenoid safety gas valve, gas pressure regulator and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, automatic gas valve, gas pressure regulator and gas cock; air-flow safety switch; and flame rod flame detector. Oil controls shall include a two-stage oil pump direct connected to the blower motor; dual oil atomizing nozzles; oil solenoid valve; 10,000 volt ignition transformer; and photocell

flame detector. Air control shall be by a fixed position air inlet damper and adjustable primary air shutter. Changeover from one fuel to the other shall be accomplished by means of a manual fuel selector switch in the burner-mounted control cabinet. No changes in linkage, burner position, or mechanical adjustment shall be necessary when changing fuels. The fuel selector switch shall provide, through the combustion control relay, proper ignition timing for the fuel being burned.

FOR COMBINATION GAS-OIL UNITS 60, 70, 85

Gas-oil burner shall consist of a combination multiple-jet flame retention type gas burner and mechanical pressure atomizing oil burner for No. 2 oil including all necessary controls and linkages for "on-off" type of operation with low fire start. Gas controls shall include a main gas control group consisting of an automatic slow-opening motorized type gas valve, an automatic solenoid safety gas valve, gas pressure regulator, gas gauge and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, automatic gas valve, gas pressure regulator and gas cock; air-flow safety switch; and flame rod flame detector. Oil controls shall include a two-stage oil pump assembly with filter, gauge and relief valve; variable-flow oil atomizing nozzle; dual oil solenoid valves; 12,000 volt ignition transformer; and photo-cell flame detector. Air control shall include two-position regulation of the air inlet damper. Changeover from one fuel to the other shall be accomplished by means of a manual fuel selector switch in the burner-mounted control cabinet. No changes in linkage, burner position, or mechanical adjustment shall be necessary when changing fuels. The fuel selector switch shall provide, through the combustion control relay, proper ignition timing for the fuel being burned.

FOR COMBINATION GAS-OIL UNITS 100, 125, 150

Gas-oil burner shall consist of a combination multiple-jet flame retention type gas burner and mechanical pressure atomizing oil burner for No. 2 oil including all necessary controls and linkages for modulated firing on both fuels with proved low fire start. Gas controls shall include a main gas control group consisting of an automatic motorized gas valve, an automatic solenoid safety gas valve, gas volume control valve, gas pressure regulator, gas gauge and gas cock; gas-electric ignition assembly consisting of a 6,000 volt ignition transformer, gas valve, regulator and cock. Oil controls shall include a two-stage oil pump assembly with filter, gauge and relief valve; a variable-flow oil atomizing nozzle, oil solenoid valve, and oil metering valve; 12,000 volt ignition transformer.

Controls for both fuels shall include a lead sulphide flame detector; air-flow safety switch; modulating motor with low fire interlock; skid-mounted control cabinet with combination electronic flame safeguard and programming control, fuel selector switch, four indicating lights and manual potentiometer with manual-automatic switch; and all necessary controls and linkage for modulated firing with proved low fire start. Air-fuel ratio shall be regulated through the entire firing range by a modulating motor controlled by a boiler-mounted modulating potentiometer. Change-over from one fuel to the other shall be accomplished by means of a manual fuel selector switch without changing linkage, burner position or mechanical adjustment. The fuel selector switch shall provide, through the combustion control relay, proper ignition timing for the fuel being burned.

for all units

All motors shall be for . . . volts, . . . cycle, . . . phase operation. Controls shall be 115 volt, 60 cycle,

single phase. Magnetic motor starters with thermal overload protection and a step-down control circuit transformer shall be provided in the control cabinet when other than 115 volt motors are specified.

Fuel burning equipment shall be set and adjusted by a factory authorized representative to burn . . . G.P.H. of No. 2 oil (and) (or) . . . C.F.H. of . . . BTU cu. ft. (natural) (manufactured) (L.P.) gas having a . . . sp. gr. with . . . inches W.C. pressure at inlet of burner manual gas cock. Unit efficiency, based on flue gas analysis, shall be not less than 80%.

Note: Specify job altitude if over 2,000 ft. above sea level.

Owner's representative shall be present to receive instructions in the care and maintenance of the boiler unit at the time the boiler unit is started up by the service representative.

Note: Specify a free service period of not less than 90 days after start-up.

KEWANEE burner data

Unit*	Input		Fuel Control		Air Control	Programming and Flame Safeguard Control	Gas Control† Standard—U.L. 1000 btu/cf—.6 s.g.		Motors H P.		Standard Electrical Characteristics 60 cycle		
H or L	Gas	Oil	Gas	Oil			Required Inlet Pressure	Control Group Size	Burner	Oil Pump	Motors		Control Voltage Single Phase
	Mbtuh**	Gph***									Voltage	Phase	
20	840	6	On-Off	On-Off	Fixed	T-1 Timer & RA890	6.5" w.c.	1¼"	½	‡	115	1	115
30	1260	9	On-Off	On-Off	Fixed	T-1 Timer & RA890	6.5" w.c.	1½"	½	‡	115	1	115
40	1680	12	On-Off	Low Fire Start	Fixed	T-1 Timer & RA890	6.5" w.c.	1½"	½	‡	115	1	115
50	2100	15	On-Off	Low Fire Start	Fixed	T-1 Timer & RA890	6.5" w.c.	2"	½	‡	115	1	115
60	2520	18	Low Fire Start	Low Fire Start	Two- Position	T-1 Timer & RA890	6.5" w.c.	2"	¾	¼	230	1	115
70	2940	21	Low Fire Start	Low Fire Start	Two- Position	T-1 Timer & RA890	6.5" w.c.	2½"	¾	¼	230	1	115
85	3570	25.5	Low Fire Start	Low Fire Start	Two- Position	T-1 Timer & RA890	6.5" w.c.	2½"	1	¼	230	3	115
100	4200	30	Modu- lating	Modu- lating	Modu- lating	FJ-2	7.0" w.c.	2½"	1	⅓	230	3	115
125	5250	37.5	Modu- lating	Modu- lating	Modu- lating	FJ-2	7.0" w.c.	3"	1½	⅓	230	3	115
150	6300	45	Modu- lating	Modu- lating	Modu- lating	FJ-2	7.0" w.c.	3"	1½	⅓	230	3	115

*Unit Suffix denotes fuel. — FG for gas; — FO for oil; — FGO for gas-oil combination firing.

Example: L-100-FGO for low pressure construction, 100 boiler horsepower, gas-oil combination firing.

**Based on 1000 btu cf gas at 0.60 sp. gr

***Based on 140,000 btu/gal No. 2 oil

†Controls for other pressures or insurance requirements available

‡Direct connected to burner motor

KEWANEE

with KEWANEE dependable
burner—oil, gas or
combination gas-oil

This Kewanee unit offers you the same long-life dependable service in the higher capacities. Ratings are conservative. Construction meets or exceeds A.S.M.E. Boiler Code requirements. Firing rates are carefully matched to heating surface. Ample furnace volume assures efficient combustion.

Kewanee dependable, automatically controlled, horizontal rotary gas-oil combination burner handles efficiently all types of gas and the complete range of fuel oils. Each burner is carefully designed for the boiler it fires.

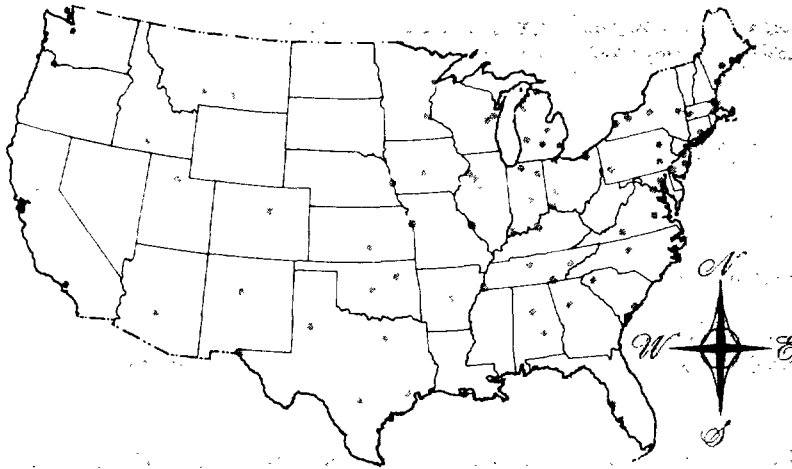
HIGH PRESSURE

80 to 672 H.P.
125-150 lb. Steam W.P. Std.

LOW PRESSURE

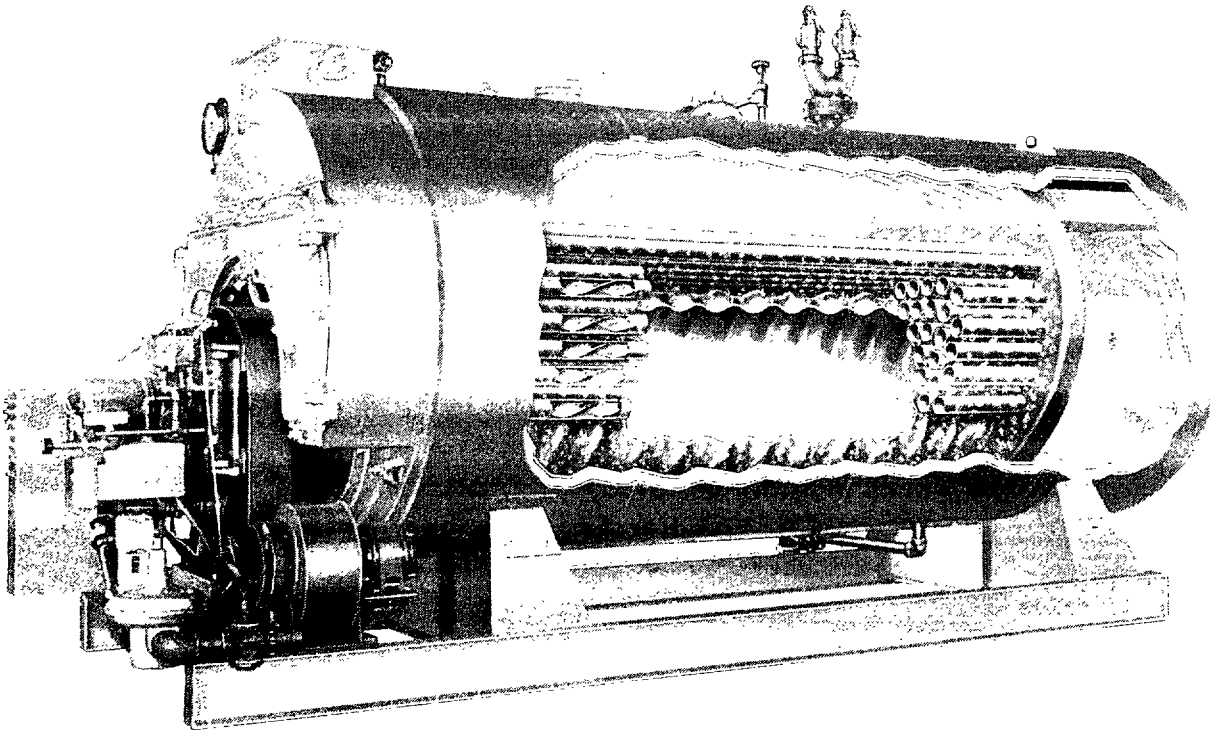
2,882,000 to 23,211,000 Btuh.
15 lb. Steam or 30 lb. Water Std.

REFERENCE: BULLETIN 149D



Experienced sales engineering and service facilities in all principal cities assure each Kewanee owner of proper application and prompt, efficient service for complete and continued satisfaction.

The owner of a new Kewanee Forced Draft Scottie Jr. Package Unit receives Starting Service which consists of the initial startup of the unit, checking the general operation of the unit, making adjustments required by local job conditions, instructing the operator in proper operating and maintenance procedures, and service for a period of 90 days after startup.



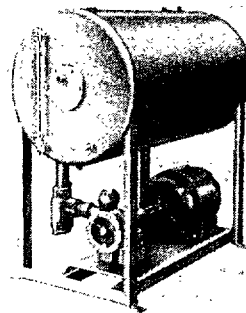
for high or low pressure steam systems ...
KEWANEE condensate pumps and receivers

SIMPLEX or DUPLEX

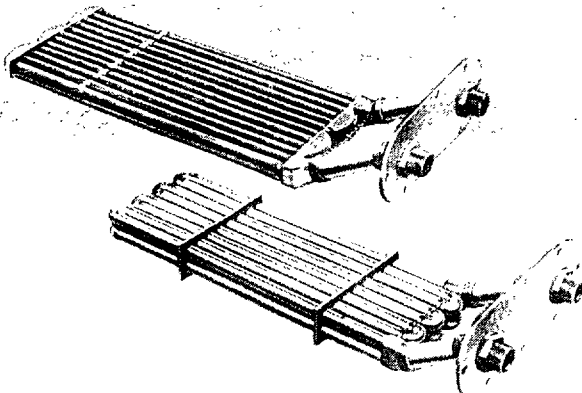
Packaged or Remote Mounted

For 20 to 750 Bhp Kewanee Boilers

REFERENCE: KEWANEE BOILER FEED DATA SHEET



for domestic hot water ... all year 'round
KEWANEE water heating coils



INSTANTANEOUS or TANK TYPE

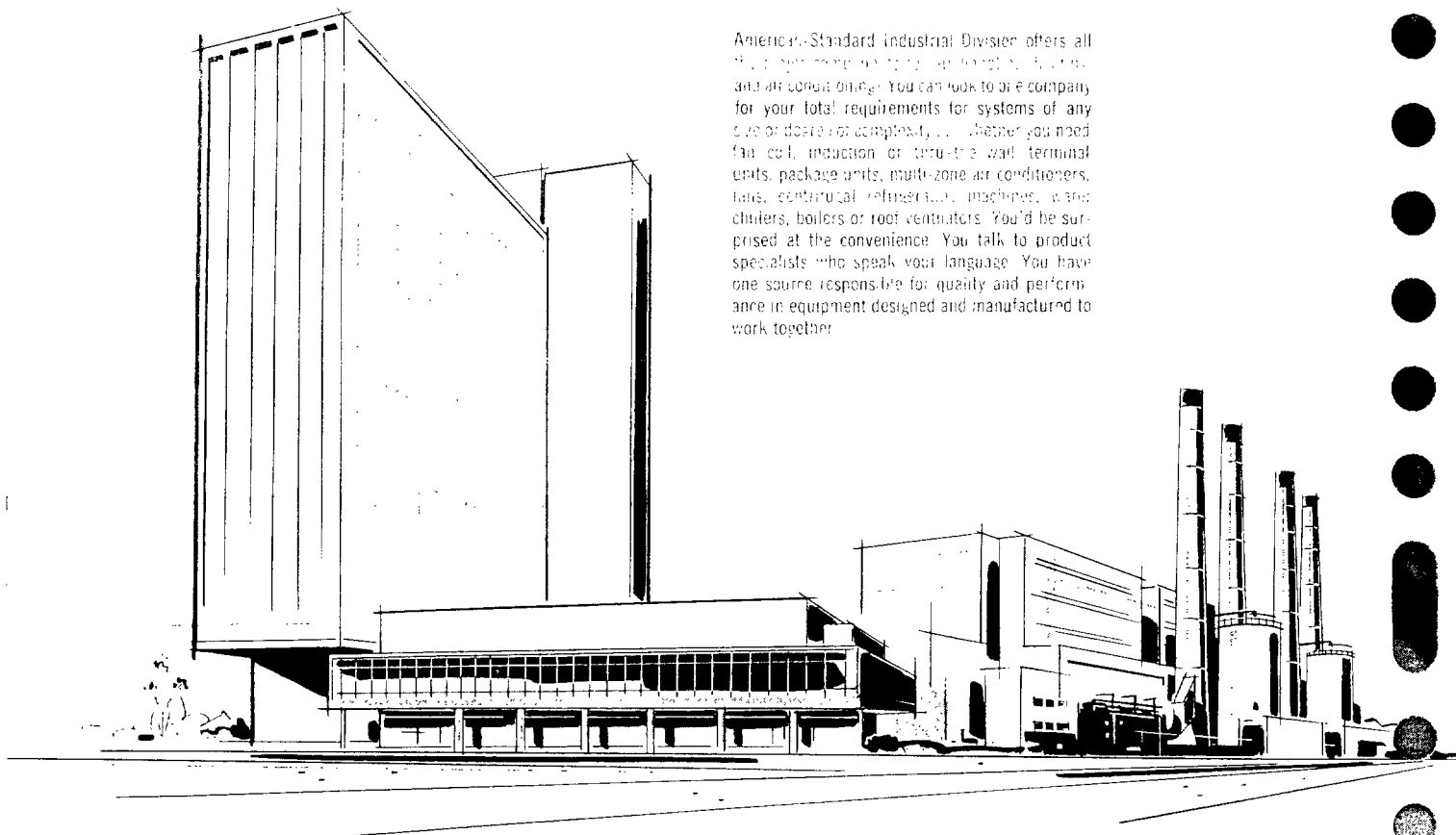
20 to 2580 Gal. per Hour

For All Kewanee Low Pressure Boilers

REFERENCE: KEWANEE COILS DATA SHEET

Did you know . . .

American-Standard Industrial Division offers all the services you need for industrial heating, cooling, and air conditioning. You can look to one company for your total requirements for systems of any size or degree of complexity. . . . Whether you need fan coil, induction or thru-the-wall terminal units, package units, multi-zone air conditioners, fans, centrifugal refrigeration machines, water chillers, boilers or roof ventilators. You'd be surprised at the convenience. You talk to product specialists who speak your language. You have one source responsible for quality and performance in equipment designed and manufactured to work together.



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