

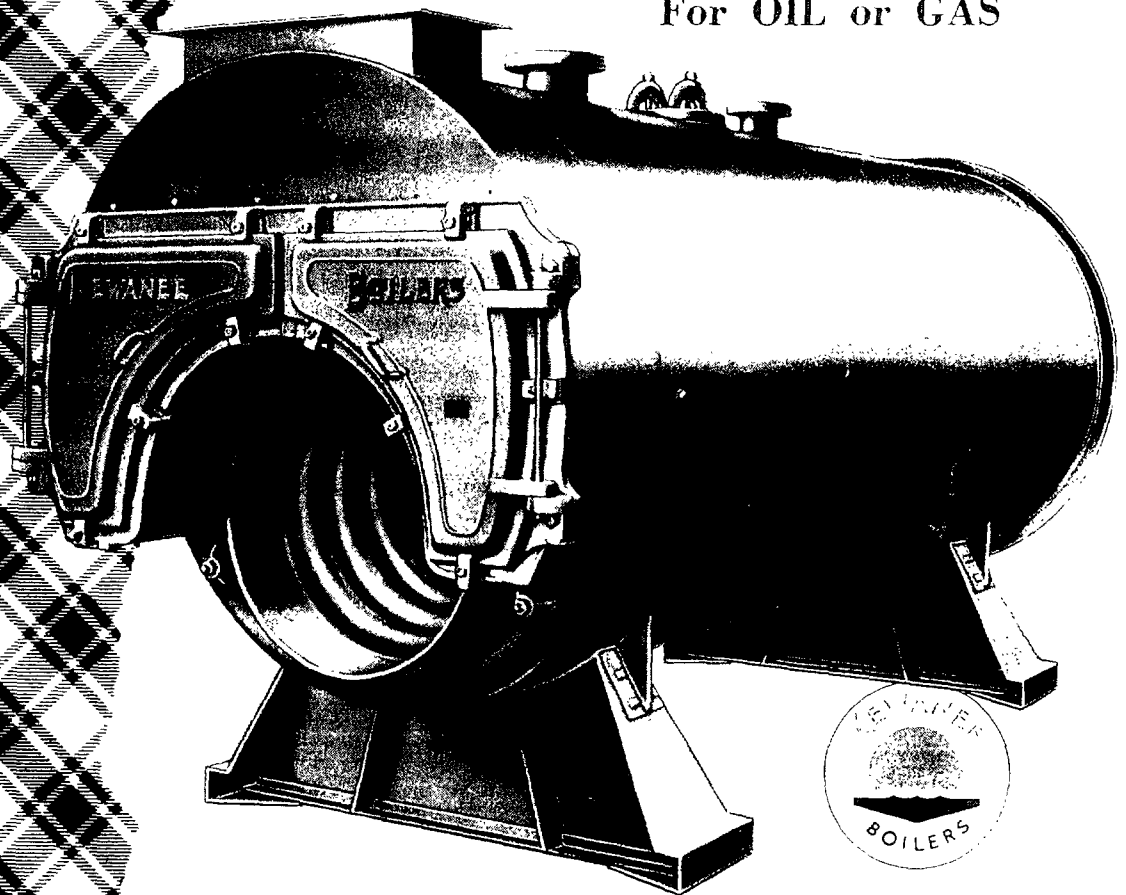
PLAINTIFF'S EXHIBIT

ASI-1211

KEWANEE

M-800 BOILER

For OIL or GAS



For High and Low Pressure Steam
or Hot Water Heating

KEWANEE-ROSS CORPORATION
Division of American Radiator & Standard Sanitary Corporation
KEWANEE, ILLINOIS

28804

THE M-800 SERIES

FOR HIGH AND LOW PRESSURE STEAM And Hot Water Heating



The Kewanee M-800 Boiler is not only Scotch in name but decidedly Scotch in its extra ruggedness and extreme thriftiness!

It is designed, engineered and built to achieve new "highs" in fuel economy and operates at full efficiency even when pushed to produce 50% more than its rated capacity. And back of this outstanding product is Kewanee's more than 80 years experience in the engineering and fabrication of steel boilers. A "plus value" that can't be converted into terms of dollars and cents.

A "REAL" BOILER ENGINEERED TO DO A BIG JOB

Kewanee puts more into a boiler, so the owner gets more out of it . . . that's the simple way to explain why Kewanee Boilers stay on the job for many extra years, delivering a lifetime of dependable service with notable savings in fuel.

There is more Engineering, more Material and more Experience built into every Kewanee Boiler and these are the elements which make them different and better. M-800 is a real Kewanee in every respect.

From the largest to the smallest size every M-800 is a big husky unit.

There is more Furnace Volume providing plenty of space for complete combustion. It has ample heating

surface which gives the water in the boiler a chance to pick up and use all the heat. The long travel of hot gases . . . through the furnace, then back through the fire tubes . . . holds them within the boiler until all usable heat is absorbed. More steam space and more steam disengaging area permit steam to rise without turbulence so only dry quality steam gets into the mains.

The corrugated furnace (a feature of HM-800 for high pressure) adds strength and extra heating surface at the hottest parts of the fire and makes this boiler a fast steamer.

Like all Kewanee Boilers, M-800 meets or exceeds the requirements of the A.S.M.E. and S.B.I. Codes.

Copyright 1953—Kewanee-Ross Corporation

EASY TO CLEAN AND INSPECT

Easy access to fire tubes is provided through hinged doors on the front smokebox, and entire back cover plate is removed in two parts for access to rear combustion chamber. Or rear chamber can be cleaned through lower access plate, without removing entire back.

ACCESSIBLE WATER SURFACES

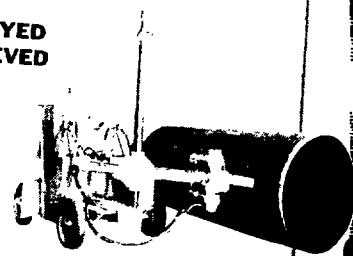
Manhole on top of the boiler and washout openings are conveniently located to provide access to the waterways. Fire tubes are spaced well apart for better circulation of water and more accessible water surfaces.



NO. 1 WELD, X-RAYED AND STRESS RELIEVED

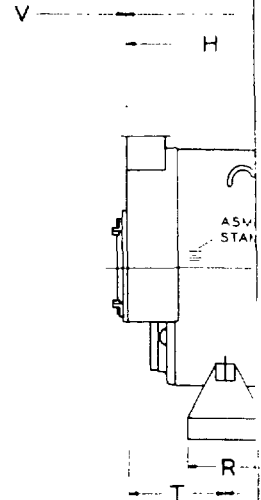
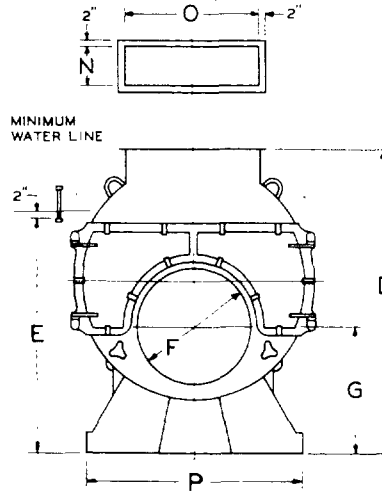
The most modern and proven method of welding is used on both high and low pressure boilers. On high pressure boilers X-ray machines radiograph those welds which are under maximum operating loads where perfection is an absolute necessity. Possible blow holes due to gas pockets, faulty fusion or other defects are detected and test specimens are stressed to destruction.

In a modern Stress Normalizing Furnace, Kewanee High Pressure Boilers are heated to a temperature of 1200° F., then allowed to cool gradually. All the fusion welded joints are thus thoroughly annealed and any locked up stresses relieved.



12 51243

39 to 304 HORSE 1,313,000 to 10,200,000



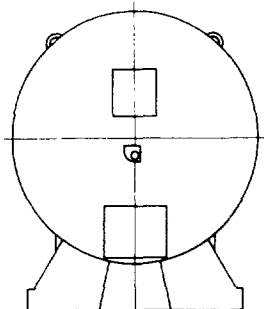
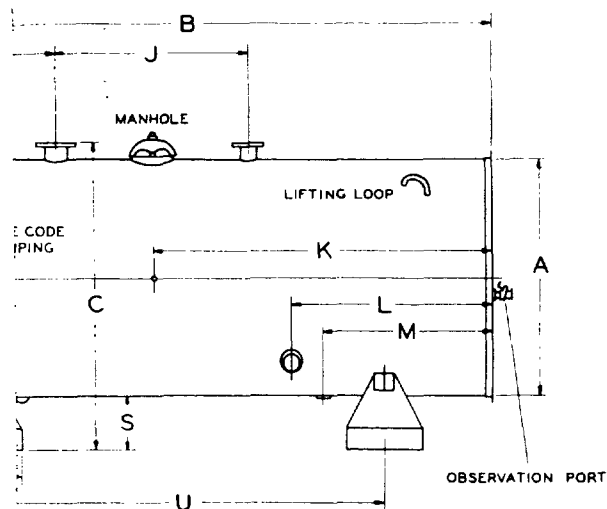
RATINGS, DIMENSIONS AND DATA (feet-inches)

Boiler Number—High Pressure	LM-878	LM-879	LM-880	LM-881	LM-882
—Low Pressure					
SBI Rating—Horsepower	39	44	52	61	74
—Steam Radiation sq ft	5470	6080	7290	8500	10330
—Water Radiation sq ft	8750	9720	11660	13600	16520
—Btu per Hour 1000's	1313	1459	1750	2040	2479
—Steam per Hour—212°F lb	1350	1500	1800	2100	2560
SBI Net Rating—Steam sq ft	4500	5000	6000	7000	8500
—Water sq ft	7200	8000	9600	11200	13600
—Btu per Hour 1000's	1080	1200	1440	1680	2040
Certified Output Rating hp	59	66	78	92	111
Firing Rate—Oil gph***	16	18	22	26	31
—Gas Btu hr 1000's	2460	2740	3280	3830	4650
Heating Surface (SBI min) sq ft	322	358	429	500	608
Furnace Volume (SBI min) cu ft	39.1	43.5	52.1	60.8	73.8
Net Furnace Volume cu ft	45.8	48.4	57.9	62.4	79.8
Safety Valve Capacity					
—over 15 lb swp lb steam per hr	2576	2864	3432	4000	4864
—15 lb swp lb steam per hr	1610	1790	2145	2500	3040
A—Boiler Diameter	4-6	4-6	5-0	5-0	5-6
B—Boiler Length	11-8	12-7	11-7	12-9 1/2	13-2
C—Steam Supply Height	6-6	6-6	7-0	7-0	7-6 1/2
D—Smoke Outlet Height	6-4	6-4	6-10	6-10	7-4
E—Water Column Height	5-1	5-1	5-6	5-6	5-9 1/2
F—Furnace O. Dia. at Front	2-3 1/2	2-3 1/2	2-6 1/2	2-6 1/2	2-9 1/2
G—Furnace Height	3-0	3-0	3-1 1/2	3-1 1/2	3-3
H—Steam Supply	3-0	3-6	3-1	3-7	3-8
J—Safety Valve	3-6	4-3	4-3	4-4	4-5
K—Feed Water, each side	6-7	7-1	6-6	7-1	7-4
L—Return 15 lb swp, each side	4-4	4-4	4-4	4-4	4-9
M—Blow-off	4-0	4-0	4-0	4-0	4-3
N—Smoke Outlet—Width	0-11	0-11	1-0	1-0	1-1
O—Length	2-5	2-5	3-0	3-0	3-4
P—Support—Length	3-11 1/2	3-11 1/2	4-5 1/2	4-5 1/2	5-1 1/2
R—Width	1-4	1-4	1-5	1-5	1-6
S—Height	1-6	1-6	1-6	1-6	1-6
T—Location	2-3	2-3	2-4	2-4	2-5
U—Center to Center	6-11	7-10	6-9	7-11	8-1
V—Tube Replacement Space	7-2	8-1	6-11	8-1 1/2	8-2
Steam Supply Size—15 lb swp*	0-6	0-6	0-8	0-8	0-8
—over 15 lb swp**	0-4	0-4	0-4	0-4	0-6
Blow-off Size	0-1 1/2	0-1 1/2	0-2	0-2	0-2
Return Size 15 lb swp, each side	0-4	0-4	0-4	0-4	0-4
Feed Water Size	0-1 1/4	0-1 1/4	0-1 1/4	0-1 1/4	0-1 1/2
Outside Surface to Cover sq ft	165	180	180	200	230
Breeching Diameter—One Boiler					
Stack—Diameter	1-9	1-10	1-11	2-0	2-2
—Height	1-7	1-8	1-9	1-10	2-0
—Height	40-0	40-0	35-0	40-0	40-0
Breeching Diameter—Two Boilers					
Stack—Diameter	2-3	2-4	2-6	2-7	2-10
—Height	2-1	2-2	2-4	2-5	2-8
—Height	45-0	45-0	40-0	45-0	45-0
Approx. Weight—15 lb swp lb	7000	7400	8200	8800	11300
—125 lb swp lb	7600	8000	10000	11100	13100
—150 lb swp lb	8200	8700	10400	11500	13900

28806

POWER FOR HIGH PRESSURE

100,000 BTU FOR LOW PRESSURE



HM-883 LM-883	HM-884 LM-884	HM-885 LM-885	HM-886 LM-886	HM-887 LM-887	HM-888 LM-888	HM-889 LM-889	HM-890 LM-890
87	109	130	152	174	217	261	304
12150	15180	18220	21250	24290	30360	36430	42500
19440	24280	29150	34000	38860	48570	58280	68000
2916	3643	4373	5100	5830	7286	8743	10200
3010	3750	4510	5260	6010	7510	9010	10510
10000	12500	15000	17500	20000	25000	30000	35000
16000	20000	24000	28000	32000	40000	48000	56000
2400	3000	3600	4200	4800	6000	7200	8400
131	164	195	228	261	326	392	456
37	46	54	64	73	91	110	127
5460	6840	8200	9560	10920	13670	16400	19120
715	893	1072	1250	1429	1786	2143	2500
86.8	108.5	130.2	151.8	173.5	216.9	260.3	303.6
87.5	110.2	141.1	153.7	174.0	217.0	262.9	308.8
5720	7144	8576	10000	11432	14288	17144	20000
3575	4465	5360	6250	7145	8930	10715	12500
5-6	6-0	6-6	6-6	7-0	7-6	8-0	8-6
14-10	16-1	16-7	18-7	17-9	18-11	20-0	20-1
7-6 1/2	8-0 1/2	8-6 1/2	8-6 1/2	9-0 1/2	9-7 1/2	10-4 1/2	10-10 1/2
7-4	7-10	8-4	8-4	8-10	9-4	10-1	10-7
5-9 1/2	6-1 1/2	6-5 1/2	6-5 1/2	6-9 1/2	7-3	7-10 1/2	8-4
2-9 1/2	2-11 1/2	3-2 1/2	3-2 1/2	3-6	3-8 1/2	4-1	4-5
3-3	3-5	3-6 1/2	3-6 1/2	3-8	3-9 1/2	4-2 1/2	4-4 1/2
4-2	4-9	4-10	5-4	5-5	5-5	5-6	5-7
5-0	5-0	5-0	6-6	5-6	6-6	7-0	7-0
8-2	8-10	9-3	10-3	9-10	10-6	11-0	11-0
4-9	5-3	5-8	6-2	6-3	6-5	6-7	6-7
4-3	4-5	5-4	5-4	5-6	5-6	5-6	5-6
1-1	1-2	1-3	1-3	1-4	1-4	1-5	1-6
3-4	3-6	3-11	3-11	4-7	5-4	5-7	6-1
5-1 1/2	5-7 1/2	6-1	6-1	6-6 1/2	7-0 1/2	7-6	7-6
1-6	1-7	1-8	1-8	1-10	1-10	2-0	2-0
1-6	1-6	1-6	1-6	1-6	1-6	1-9	1-9
2-8	2-9	2-10	3-4	3-5	3-5	3-6	3-7
9-6	10-6	10-6	12-0	11-0	12-0	13-0	13-0
9-10	10-9	10-8	12-8	11-7	12-7	13-6	13-5
0-8	0-8	0-8	0-8	0-8	0-10	0-10	0-10
0-6	0-6	0-6	0-6	0-6	0-8	0-8	0-8
0-2	0-2	0-2	0-2 1/2	0-2 1/2	0-2 1/2	0-2 1/2	0-2 1/2
0-4	0-4	0-4	0-4	0-4	*0-6	*0-6	*0-6
0-1 1/2	0-1 1/2	0-1 1/2	0-1 1/2	0-1 1/2	0-1 1/2	0-2	0-2
260	305	340	380	390	440	500	530
2-4	2-6	2-7	2-9	2-11	3-3	3-5	3-7
2-2	2-4	2-5	2-7	2-9	3-0	3-2	3-4
45-0	50-0	50-0	55-0	50-0	55-0	55-0	55-0
3-0	3-4	3-5	3-8	3-11	4-2	4-6	4-8
2-10	3-1	3-2	3-5	3-8	3-11	4-2	4-4
50-0	55-0	55-0	60-0	55-0	60-0	60-0	60-0
12400	14800	17400	19200	22400	26600	31300	35000
14000	17500	20800	21900	27100	32000	37200	41900
15100	18700	22700	24900	28700	34500	40100	45100

* 150 lb American Standard Drilling.

** 300 lb American Standard Drilling.

*** Fuel burning rates based on 150,000 Btu oil.

Low Pressure Boilers furnished with openings for Oil Heater and Temperature Control.

High Pressure Boilers furnished with openings for Oil Heater and Injector.

Overall Height is increased 1 1/2" when steel skids are furnished.

SAFETY VALVES—Boilers over 15 lb swp—Number and size varies with valve setting. All boilers having 500 sq ft or less of heating surface furnished with one valve. Boilers having more than 500 sq ft of heating surface furnished with two or more valves. Manufacturer reserves right to use separate outlets or yokes as conditions require.

Boilers 15 lb swp—One or more valves furnished depending on required capacity, regardless of boiler heating surface.

STANDARD EQUIPMENT (15-125-150 lb STEAM)—Steel saddle supports, refractory lined rear combustion chamber factory installed. Flue cleaner and handle. Washout plug socket wrench for 15 lb boilers only.

STANDARD TRIM (15-125-150 lb STEAM)—Safety valve(s) as required by A.S.M.E. Code, steam gauge with syphon and cock, water column, water gauge valves, glass, guards and three try cocks. Chain operated water gauge valves and try cocks with boilers HM-884, LM-884 and larger.

NOTE—For 125 and 150 lb steam boilers: Globe and check valves for feed line, quick action and slow action blow-off valves are furnished.

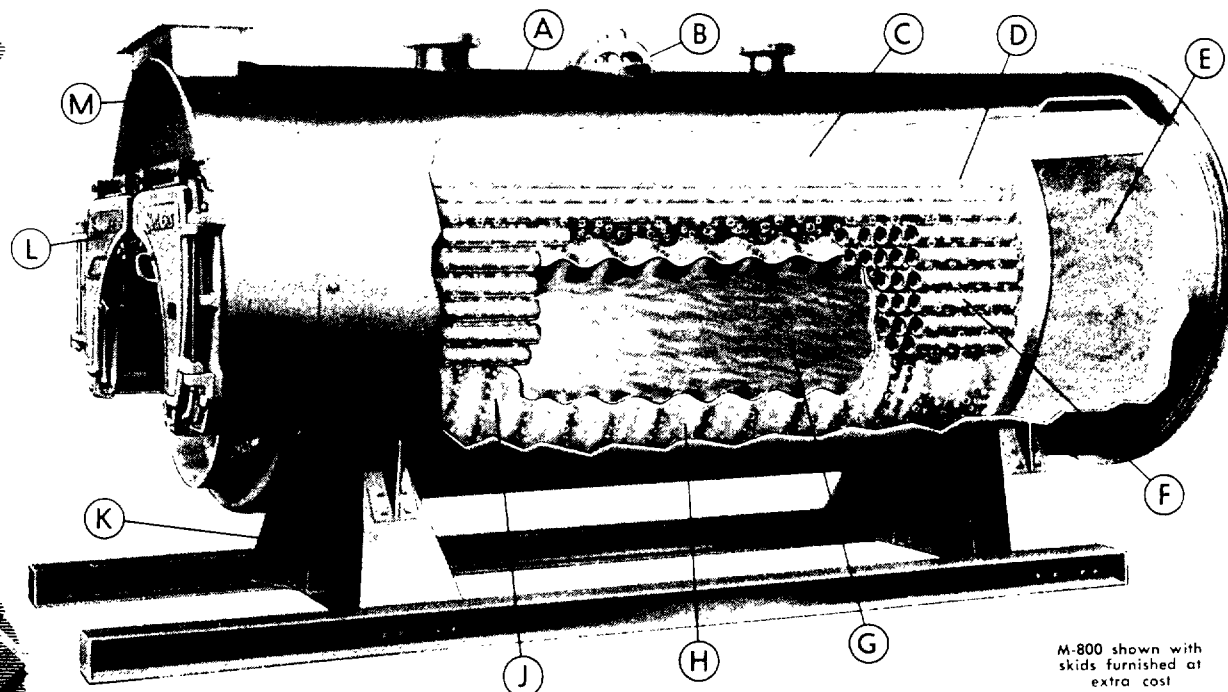
STANDARD EQUIPMENT (Water Boilers)—Steel saddle supports, refractory lined rear combustion chamber factory installed. Flue cleaner and handle. Washout plug socket wrench.

TRIM (Water Boilers)—None furnished.

Additional equipment or trim at extra cost.

Choose KEWANEE and You Get More . . .

Look Inside and See



A SHELL shaped from heavy flange steel with heads and furnace of firebox quality. Greater strength insures longer life.

B MANHOLE 11" x 15" in all boilers and washout openings provide accessibility to waterside.

C STEAM SPACE . . . generous steam space for ample reserve of dry steam to take care of unusual and sudden demands.

D STEAM DISENGAGING AREAS are long and wide so steam bubbles move up into the steam chamber without turbulence.

E REAR COMBUSTION CHAMBER is heavily lined with refractory. Boilers for high pressure incorporate dry back design. Low pressure boilers designed with water back top. Sectional rear cover plate with observation port and access opening to fusible plug.

F FIRE TUBES, 3" in diameter of heavy gage steel, expanded into holes with ends firmly rolled and beaded.

G Long GAS TRAVEL, through the lengthy combustion chamber, then back through the full length of the fire tubes, transfers all usable heat to the boiler water.

H CORRUGATED FURNACE for extra strength and added heating surface next to the fire. Its generous size provides plenty of space for the burning fuel to mix with the air and burn completely. Low pressure boilers provided with plain circular furnace.

J RAPID CIRCULATION through the wide, unobstructed waterways sweeps steam bubbles up without commotion. M-800 is a very fast steamer.

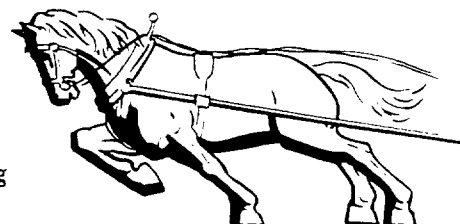
K Sturdy steel SADDLE SUPPORTS require no special base construction. Steel skids shown in cut-away illustration above, furnished at additional cost.

L Substantial hinged FLUE DOORS, gasketed for permanent gas-tight fit, provide easy access to fire tubes for cleaning and inspection.

M Gas tight SMOKEBOX of heavy gage steel . . . welded in one piece to boiler shell. Rectangular smoke outlet located at top.

8.2

**SQUARE FEET OF
HEATING SURFACE**
per Horsepower of Boiler Rating

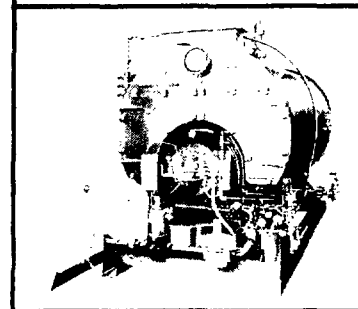
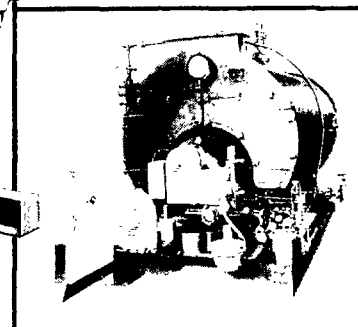
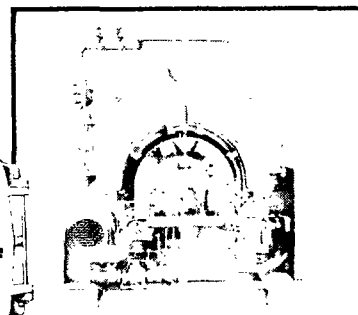
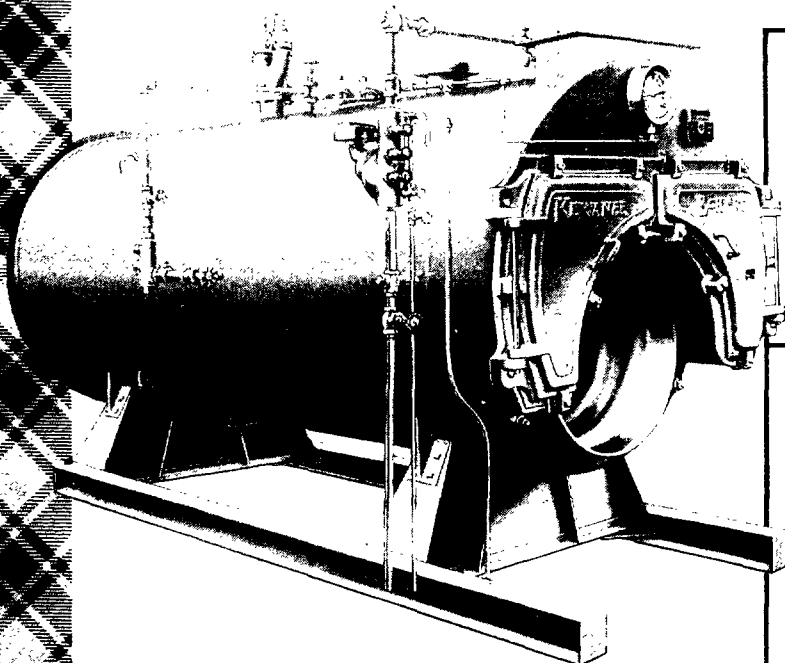


The M-800 Series, like every Kewanee boiler, has been designed on 8.2 square feet of heating surface for each horsepower of its rated capacity, which is in strict accordance with the time-tested and proven code established by the Steel Boiler Institute.

This proper proportioning of primary and secondary heating surfaces to the volume of water in the boiler comes only as a result of many years of experience and continual testing to find out just what is right. Kewanee's 84 years of experience can't be matched!

KEWANEE M-800

A GREAT TEAMMATE FOR ANY QUALITY
OIL, GAS OR COMBINATION OIL-GAS BURNER



The Kewanee M-800 Boiler is ideal for use with any quality Oil, Gas or Combination Oil-Gas Burner to form a complete Boiler-Burner Unit.

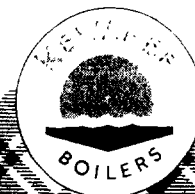
A few of the many features which make this boiler so adaptable to Boiler-Burner Units are . . . complete range of sizes for both high and low pressures . . . unusual strength and dependability . . . ability to produce far above rated capacities at highest efficiencies . . . greater heating surface . . . ease of cleaning and inspection . . . steel skids that eliminate special base construction . . . only two or three matching connections to make in mounting burners to boiler frame.

KEWANEE-ROSS CORPORATION
Division of American Radiator & Standard Sanitary Corporation
KEWANEE, ILLINOIS

Three Boiler-Burner Units developed using the M-800 Series are shown above. For additional information on these units, write for separate catalogs.

Catalog 98 40M 7-53 S.P.

Litho in U.S.A



28809