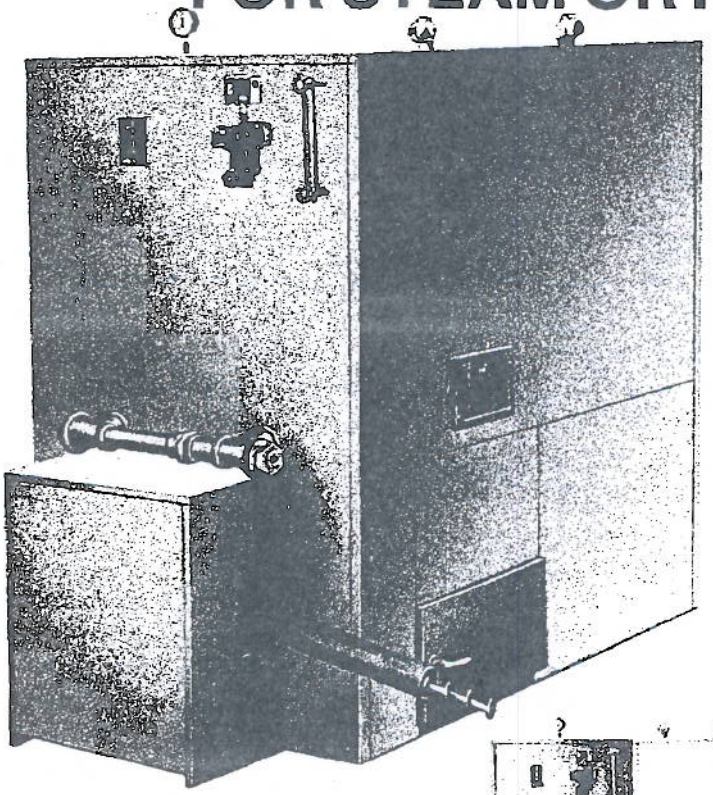
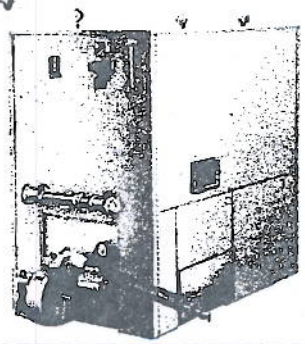
Today's MOST MODERN ANTHRACITE FIRED BOILER-STOKER UNIT FOR COMMERCIAL SIZED BUILDINGS. . .Schools. Churches • Large Apartment Houses • Warehouses • Industrial Plants • plus many other commercial buildings.

THE VAN WERT ANTHRATHERM

TODAY'S ENERGY SAVER

FOR STEAM OR HOT WATER SYSTEMS





Built to requirements of Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers. Each boiler is Code Stamped...your Assurance of SAFETY and your Guarantee of the HIGHEST QUALITY in design, materials and workmanship.

RUGGED DESIGN
STURDY CONSTRUCTION
SIMPLE OPERATION

- 3-Piece boiler construction for easy delivery through smaller passages
- Corrosion proof stainless steel coal feed worm
- Adjustable binfeed worm provides for longer coal pickup possibilities from coal bin or hopper
- Ball-bearing ash sweeper ring
- Gear reduction transmission equipped with genuine ball and roller bearings for low power consumption and longer life
- Firepot made of special heat resisting alloy. . .designed for expansion and contraction
- Self-contained copper-finned coils for abundant supply of domestic hot water
- Few moving parts and no complicated mechanisms. You can be sure of absolute minimum of maintenance.

TODAY'S ENERGY NEEDS are met with this completely automatic Anthracite fired boiler-stoker unit. Clean, Economical, Safe. . .Assures you of healthful and uniform temperatures. The famous Van Wert ANTHRATHERM burns small sized, less expensive Buckwheat coal, for economy of operation.

SPECIAL BOILER DESIGN assures cleaner heating surfaces for longer periods.

THE PERFECT COMBINATION FOR YOUR BUILDING

The Famous **Van Wert** *Anthratherm*

Burns ANTHRACITE . . . The Fuel of the Future

VAN WERT MANUFACTURING CO. INC., 739 RIVER STREET, PECKVILLE, PA. 18452

OVER 40 YEARS EXPERIENCE MANUFACTURING QUALITY AUTOMATIC HEATING EQUIPMENT

VAN WERT Heating Equipment

739 River Street
Peckville, Pa. 18452

OPERATING INSTRUCTIONS
VAN WERT ANTHRATHERM
ALL MODELS
USE BUCKWHEAT SIZE PENNSYLVANIA STANDARD ANTHRACITE HARD COAL

(See Page 5)

STARTING FIRE - DO NOT START FIRE WITH WOOD

Before starting fire be sure hot water system is filled and/or proper water level in steam boiler is determined and stoker switch is in "OFF" position. It is recommended that a supply of Kindle Pacs be kept on hand for the purpose of starting a fire. These can be purchased through our company.

Remove all ash from retort or firepot. Start stoker and allow enough coal to feed so that end of feed worm in bottom of firepot is covered. Turn stoker switch off and ignite Kindle Pac outside of boiler . . . Kindle Pac will not blaze until stoker switch is turned on. Impregnated paper bag keeps combustion low enabling you to ignite it safely in your hands. Deposit ignited Kindle Pac in firepot with ignited end down. Cover Kindle Pac with layer of coal, preferably enough to bring level of coal even with top ring. Turn stoker switch on. Kindle Pac will begin to blaze and holds its own flame until coal is ignited.

COAL FEED

Coal feed has been properly set before leaving factory to what is considered correct for normal operating conditions. With proper air and feed settings, a dead ash ring of 1" or 1½" will form around edge of firepot. The presence of hard clinkers in the firepot may be due to quality of coal, improper air adjustment, or unsatisfactory draft condition. Soft clinkers need not be cause for undue concern. Be sure adequate air for combustion and ventilation is provided in boiler room.

AIR ADJUSTMENT

Excessive unburned coal may indicate a shortage of air. Air may be increased by gradually opening air adjustment until proper combustion is attained. Do not try to burn all traces of black in ash.

DRAFT

To obtain a reasonably accurate draft setting, the adjustable weight on the Barometric Draft Control should be adjusted so that the flame of a lighted match held to the firing door while cracked open shows a slight inward pull. This adjustment must be made while stoker is in "ON" position.

STOKER UNIT - DO NOT APPLY ANY GREASE TO THE THREE CAST IRON GEARS (TEETH) LOCATED ON COAL TRANSFER

All models are equipped with oilite self-lubricating bearings in main stoker body eliminating necessity of oiling. Occasional oiling, however, is recommended after several years of operation.

TRANSMISSION

Oil level in gear box should be checked every three months. Use only No. 90 transmission oil.

DO NOT OVER OIL - To check oil level, turn stoker switch to "OFF" position. Remove four screws holding transmission cover and fill with only enough oil to cover top of bottom shaft on Models VA400, 600, 800, and also on the VA110, 150 and 190 Warm Air Units. On Models VA1200, 1500, 1800, 2400 and 4000, fill to level of oil check plug on side of transmission. Do not forget to return the stoker switch to "ON" position.

ROLLER CHAIN

Roller chain should be lubricated twice each year with SAE No. 20 or 30 oil. Chain should never be allowed to become dry.

MOTOR

Motor bearings should be lubricated twice each year with about 5 drops of SAE No. 20 or 30 oil.

SHEAR PINS

On Models VA400, 600 and 800, VAC400, 600 and 800 steam or water units and VA110, 150 and 190 warm air units, there are soft brass shear pins in two different locations for protection against breakage of stoker parts in case any foreign materials jam feed worm (from hopper or storage bin) or pusher worm (from coal transfer to firepot). One shear pin is located in the binfeed worm bevel gear. The other shear pin is located in the sprocket on the coal feed or pusher worm which carries the coal into the firepot. Generally this pin will shear when trouble occurs.

On Models VA1200, 1500, 1800, 2400 and 4000 and VAC1200 there are two shear pins located on each end of transmission output shaft sprockets. One pin controls coal feed and the other controls the ash sweeper drive. There is also a shear pin located on the binfeed worm bevel gear; however, the shear pin located on the transmission output shaft sprocket, controlling the coal feed, is more likely to be the one that will shear.

FAILURE OF STOKER TO OPERATE MAY BE DUE TO ANY OF THE FOLLOWING REASONS:

a. No power. . .Check fuses and replace if necessary.
b. Off on Low Water Control. . .Check water level of boiler on steam installation. Water should be maintained about 1" above center of glass gauge.
c. Not feeding coal. . .Check to see if obstruction in coal feed worm has caused pin to shear. Obstruction must be removed before restarting stoker.

MAKE SURE POWER IS OFF BEFORE ATTEMPTING ANY SERVICE.

GENERAL

Use a well prepared Pennsylvania Standard Anthracite hard coal, uniform in size and free from dirt.

Best performance will be attained with medium free-burning BUCKWHEAT size coal which is recommended.

Be sure coal feed worm is kept covered with an adequate supply of coal at all times.

To assure a more efficient and trouble-free fire, hopper or coal bin should be cleaned once a year, particularly around area at end of the feed worm where fines will accumulate over a period of time.

If oil drum is used as a hopper, it is suggested that it be placed on 2" cinder blocks and five or six ½" or ¾" holes drilled in bottom. This will allow excessive water or moisture to drain out and will give added life to binfeed pipe and hopper itself.

ANNUAL MAINTENANCE

Each year the smoke pipe should be removed, brushed and cleaned. Lubrication instructions outlined above should be followed. If poor burnout of coal is being experienced after years of operation, a competent serviceman should be called to check the stoker unit thoroughly.

GENERAL BOILER CLEANING

WHILE IT IS EASIER TO CLEAN BOILER WHILE SURFACES ARE STILL WARM . . .CAUTION MUST BE TAKEN TO ALLOW SURFACES TO COOL DOWN TO A POINT THAT NO INJURY WILL RESULT IF BODY CONTACT IS MADE.

We suggest this be done by a competent serviceman. To assist those homeowners who may wish to undertake this work themselves, we offer the following suggestions:

1. Turn stoker switch to "OFF" position. Open ash door; reach in and remove the small front cleanout plate at end of firepot air housing. Close ash door; turn stoker switch on for 10 to 20 seconds to allow stoker fan to blow any accumulated fines out of air housing.
2. Turn stoker switch back off and open ash pit door and reinstall cleanout plate.
3. Through ash door opening: Clean flue passages with flexible long handled brush. Close ash door and open fire door to brush down inside boiler surfaces with small whisk broom. Soot or fly ash should be removed from ash pit.
4. Remove, clean and inspect smoke pipe. At this point, a portion of rear boiler surface must be cleaned through smoke pipe breeching of boiler which may be difficult to reach through ash door as mentioned above.
5. Check and clean chimney base if required.
6. Reinstall smoke pipe.

NOTE: If stoker is shut down during Spring and Summer months, smoke pipe should not be reinstalled but should be brushed clean and stored in a dry area to prevent rust and corrosion until such time as a call for heat occurs. Firepot should be thoroughly cleaned. Brush down inside of boiler.

IMPORTANT

DO NOT allow boiler to remain idle for longer than one week without being filled with water and rust preventative added.

DO NOT alter air adjustments unless experienced.

DO NOT START FIRE WITH WOOD OR WOOD KINDLINGS.

DO NOT throw refuse, garbage, sweepings, or any foreign material into your coal bin, hopper, or stoker firepot, as they can possibly cause damage and result in costly repairs.

DO NOT attempt to start stoker after it has stopped without first determining cause of failure. Steps should then be taken to correct problem as described in "FAILURE OF STOKER TO OPERATE, etc." paragraph outlined above.

WARM AIR MODELS

The above instructions also apply to Models VA110, 150 and 190 Warm Air Units. In addition, the circulating fan bearings should be lubricated twice each year with SAE No. 20 or 30 oil. Filters should also be removed and cleaned twice each year and replaced when necessary.

If unit is to remain idle for any period of time over a week, be sure firepot is thoroughly cleaned. Brush down inside of furnace and remove and thoroughly clean smoke pipe. Leave smoke pipe disconnected until furnace is placed back in operation. This will prolong life expectancy of smoke pipe.

FOR PROLONGED BOILER LIFE AND WARRANTY PROTECTION . . . BOILER WATER TREATMENT MUST BE USED ON INITIAL INSTALLATIONS AND AT END OF EACH HEATING SEASON AND IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS.

	Suggested Quantity
MODEL	STEAM OR WATER SYSTEM
VA400 & VAC400	2 Steamaster Tablets
VA600 & VAC600	4 " "
VA800 & VAC800	4 " "
VA1200 & VAC1200	6 " "
VA1500 & VAC1500	6 " "
VA1800 & VAC1800	8 " "
VA2400 & VAC2400	8 " "
VA4000 & VAC4000	8 " "

IF S.B.I. WATER TREATMENT HAS PREVIOUSLY BEEN USED, BOILER MUST BE DRAINED AND REFILLED BEFORE ADDING THESE TABLETS.

TIMER SETTINGS
STEAM AND WATER SYSTEMS

Timers are needed only with Models VA-400, 600, 110, 150 and 190. On hot water systems, timers can be set to run approximately 1½ minutes on the half hour. This does not necessarily mean your stoker can be expected to run 3 minutes every hour because there is also a high limit control that activates operation of the stoker only when necessary. On steam systems they can be set to run 1½ to 2 minutes on the hour.

The above settings may vary with each installation, depending on draft conditions and quality of coal.

AQUASTAT SETTINGS
STEAM & WATER SYSTEMS

On steam systems the Aquastat (L4006A) should normally be set at about 190°. On hot water systems it is suggested the L8124A control be set at 180° Low and 200° High. No less than a 20° differential must be maintained between High and Low settings at all times on this hot water control.

FEED AND AIR ADJUSTMENTS

ONLY AFTER STOKER HAS BEEN IN OPERATION FOR ABOUT 24 HRS. SHOULD DRAFT READINGS BE TAKEN AND FINAL AIR ADJUSTMENTS MADE.

Stoker feeds are factory set and, providing the quality of coal is consistently acceptable, should not have to be changed. The stoker air adjustment, however, must be set to be compatible with the chimney draft and burning of the coal. The following procedures are recommended to assure the best possible combustion of coal and a good ash:

IMPORTANT: Make sure stoker is running before setting air adjustments.

Good starting points for air adjustments are as follow:

Stokers with air gates - Start with No. 3 setting.
(VA-400, 600, 800 - VA-110, 150, 190 Warm Air)

Stokers with air discs - Start with three (3) turns Open.
(VA-1200 through 4000)

If required, future adjustments that may be necessary can be made from these settings. The ultimate objective is to strive for a 1" to 2" ash ring around the firepot top ring. Do not look for or expect a 100% ash burn-out. Ten or fifteen percent unburned coal in the ash is considered acceptable. A lot depends on the source of coal and its' subsequent quality as to whether further adjustments may be necessary to obtain desired results.

1. It is strongly recommended a draft gauge be used if at all possible to check draft at loading door. A negative draft or pull of Zero to -.02" should be achieved. If no draft gauge is available, it will of course be necessary to use a match, but we wish to emphasize the use of a draft gauge is strongly suggested because further tests at the boiler breeching or smoke pipe should also be taken as explained below. In either case, open the small swing type observation gate on the fire door to insert draft gauge tube; or, if using a match, hold it to the opening and a slight flickering inward pull of the flame (toward fire) should be attained. Acceptable draft or pull at the loading door must be attained by adjusting the weight on the Barometric Draft Control. This control should be installed in the smoke pipe between the boiler and chimney. Once proper draft adjustments are made at the loading door, then a test with a draft gauge should be taken at the breeching or smoke pipe coming off the boiler. A minimum draft reading at the breeching of -.04" to -.05" should be attained. A ¼" hole will have to be drilled in the smoke pipe about 12" from the boiler smoke pipe collar. This same hole can then be used to take stack temperature and CO^2 readings which is recommended. Here again, adjustments with the Barometric Draft Control will have to be made to attain proper readings at this location. Regardless of location of Barometric Draft Control, be sure all testing is performed between Barometric Draft Control and boiler breeching, never between Barometric and chimney.

2. If you notice too much unburned coal in your ash, then it is possible a little more air may be required, again with the same objective of obtaining a 1" to 2" ash ring around your fire.

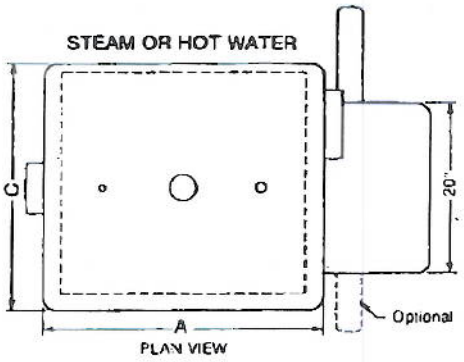
You might run into a condition where you find it necessary to increase the air slightly in an attempt to get the desired burn-out or ash ring. Be giving to much air, you may start developing hard clinkers or you may see an unacceptable and distorted fire pattern develop ing. After proper air adjustments have been made and you still have an unacceptable fire pattern, you may have to slow the coal feed. We recommend this only a last resort and if this becomes necessary, we are enclosing a data sheet showing sprockets that may have to be changed to increase or decrease feed, etc. We wish to emphasize, however, information shown on this statement applies only to stokers manufactured after 1982 which involved some changes in pulleys and sprockets on units manufactured prior to that year. Before making any changes in feed sprockets or pulleys it is recommended that you contact our plant for recommendations.

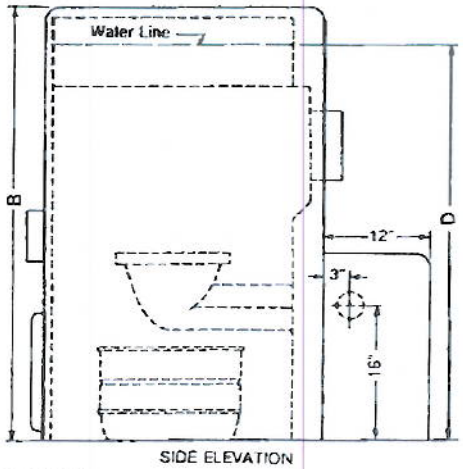
A relatively white ash is desired but is not always possible, depending on the quality of the coal. As mentioned above, ten or fifteen percent of unburned coal in the ashes is acceptable when taking into consideration the many varieties of coal, each with its own individual characteristics.

The presence of soft clinkers should be no cause for alarm, but if ashes are reddish brown in color and large, hard clinkers are forming, then it is an indication you do not have coal that is acceptably compatible with automatic stoker-fired equipment. If such is found to be the case, then it is suggested you consider another source for your coal. This company will be pleased to offer recommendations in this respect if it becomes necessary.

THE PERFECT COMBINATION
For Your Home
The Famous Van Wert *Anthratherm*

Burns ANTHRACITE . . . The Fuel of the Future





RATINGS & SPECIFICATIONS

MODEL	GROSS OUTPUT BTU/HR.	NET RATING				TANKLESS COIL G.P.M.	COAL FEED LBS./HR.	MOTOR 100V60C	ESTIMATED SHIPPING WEIGHT
		Steam		Water					
	Steam or water	MBH	Sq. Ft.	MBH	Sq. Ft.				
VA 600	150,000	112.5	470	130.5	870	4.0	18	¼	850 Lbs.
VA 800	198,000	148.5	620	172.0	1148	5.0	24	¼	1100 Lbs.
VA 1200	288,000	216.0	900	250.5	1670	6.5	34	½	1500 Lbs.
VA 1500	360,000	270.0	1125	313.0	2088	6.5	40	½	1800 Lbs.
VA 1800	430,000	322.5	1350	374.0	2495	6.5	50	½	2400 Lbs.

*An additional allowance should be made for gravity hot water systems or for unusual piping and pickup loads.

DIMENSIONS

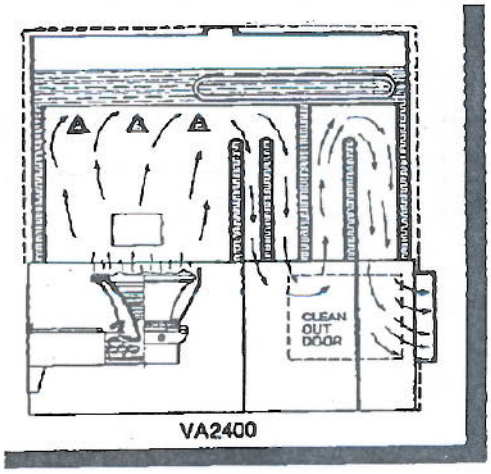
MODEL	A	B	C	WATER LINE D	BOILER WIDTH	BOILER DEPTH	BOILER HEIGHT	SMOKE PIPE DIAMETER	SMOKE PIPE HT. to C.L.	PIPE OUTLETS
VA - 600	33 INCHES	50 INCHES	30 INCHES	43 INCHES	27 INCHES	29 INCHES	48 INCHES	8 INCHES	31 INCHES	1-3 IN. RISER 2-1¼ IN. RET
VA - 800	38 INCHES	55 INCHES	32 INCHES	47½ IN.	29 INCHES	34 INCHES	53 INCHES	9 INCHES	35½ IN.	1-3 IN. RISER 2-2 IN. RET.
VA - 1200	40 INCHES	61 INCHES	34 INCHES	53 INCHES	31½ IN.	36 INCHES	59 INCHES	10 INCHES	38 INCHES	1-4 IN. RISER 2-2 IN. RET.
VA - 1500	43 INCHES	64 INCHES	34½ IN.	56½ IN.	31½ IN.	39 INCHES	62 INCHES	12 INCHES	39 INCHES	1-4 IN. RISER 2-3 IN. RET.
VA - 1800*	50 INCHES	69½ IN.	35 INCHES	63 INCHES	BOILER 31½ IN. BASE 33 INCHES	BOILER 46¾ IN. BASE 48 INCHES	BOILER 39½ IN. BASE 28 INCHES	14 INCHES	19½ IN.	2-4 IN. RISER 2-3 IN. RET.

*Model VA - 1800 has separate base

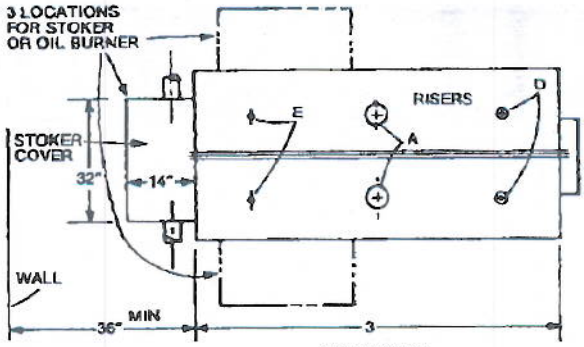
Represented By

Van Wert Mfg. Co. Inc.
Peckville, Pa. 18452

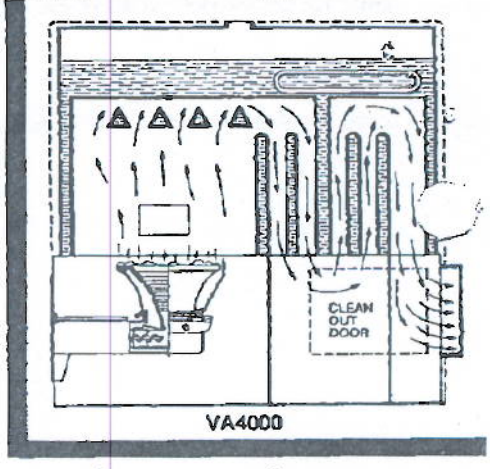
Before you install automatic heat of any kind—see the amazing new VAN WERT ANTHRATHERM and learn how you can save dollars. See WHY it gives superior performance.



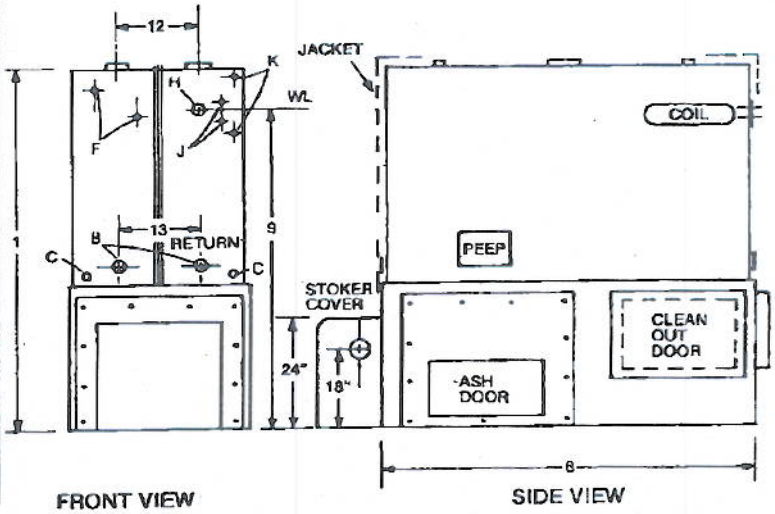
VA2400



TOP VIEW

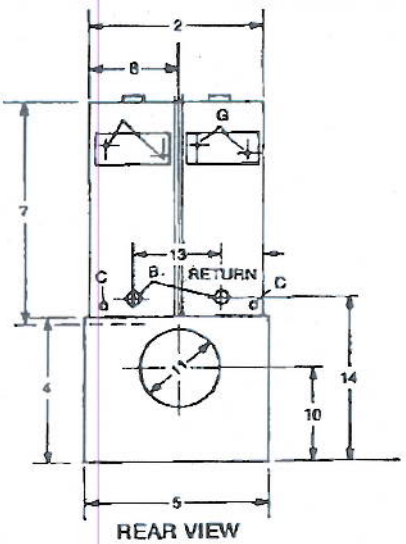


VA4000



FRONT VIEW

SIDE VIEW



REAR VIEW

LOCATION	SIZE VA-2400	SIZE VA-4000	STEAM	WATER	LOCATION	SIZE VA-2400	SIZE VA-4000	STEAM	WATER
A	2 - 4"	2 - 4"	Risers	Risers	F	2 - ¾"	2 - ¾"	Top-Plugged Lower-Use Aquastat	Top-Plugged Lower-Use Aquastat
B	4 - 3"	4 - 3"	Returns	Returns	G	4 - ½"	4 - ¾"	Two Coil Tappings per Section	Two Coil Tappings per Section
C	4 - 1½"	4 - 1½"	Inspection	Inspection	H	1 - 2½"	1 - 2½"	Skim Off or LWCO	Plugged . . . Alternate LWCO
D	2 - 1¼"	2 - 1½"	Pop Safety Valves	Pressure Relief Valves	J	2 - ¾"	2 - ¾"	Tri-Cocks	Plugged
E	2 - ½"	2 - ½"	Pressure Gauges	PTA Gauges	K	2 - ½"	2 - ½"	Water Cauge Glass	Plugged

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MODEL	BOILER TOTAL HEIGHT	BOILER WIDTH	BOILER LENGTH	BASE HEIGHT	BASE WIDTH	BASE LENGTH	INDIVIDUAL BOILER SECTIONS (TWO SECTIONS/BOILER) HEIGHT	INDIVIDUAL BOILER SECTIONS (TWO SECTIONS/BOILER) WIDTH	WATER LINE HEIGHT	SMOKE COLLAR HT. TO CENTER	SMOKE PIPE DIAMETER	C.L. BETWEEN RISERS	C.L. BETWEEN RETURNS	C.L. HEIGHT RETURNS
VA2400	69"	35½"	56½"	28"	36¼"	57"	40½"	17-¾"	60½"	20"	14"	17¾"	17¾"	30¼"
VA4000	77"	43"	76"	31"	44"	77"	45-¾"	21½"	68½"	20¼"	18"	21½"	21½"	33¼"

MODEL	GROSS OUTPUT BTU/HR. STEAM OR WATER	NET RATINGS STEAM MBH	NET RATINGS STEAM SQ. FT.	NET RATINGS WATER MBH	NET RATINGS WATER SQ. FT.	INPUT COAL LBS./HR.	DOM. COIL GPM @ 200° BOILER WATER STD.	DOM. COIL GPM @ 200° BOILER WATER OPTIONAL	STOKER MOTOR H.P.	EST. SHIPPING WEIGHT
VA2400	608,400	456.3	1901	529.3	3529	60	8	Up to 16	3/4	3500
VA4000	1,027,000	770.3	3210	893.5	5957	100	10	Up to 19	3/4	5000

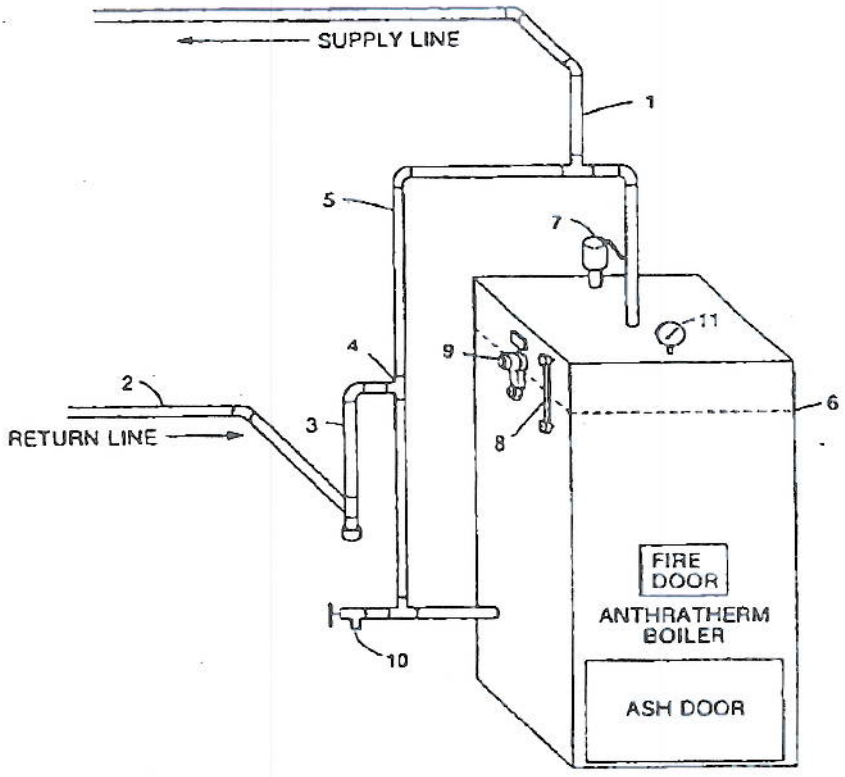
Coal Heat Value, BTU/Lb	13,000	12,500	12,000	11,500	11,000	10,500	10,000	9,000	8,000
Correction Factor	1.00	1.04	1.08	1.13	1.18	1.24	1.30	1.44	1.63

Represented By

ANTHRATHERM BOILER-STOKER UNITS
(All Models)

STEAM SYSTEM

SUGGESTED PIPING LAYOUT

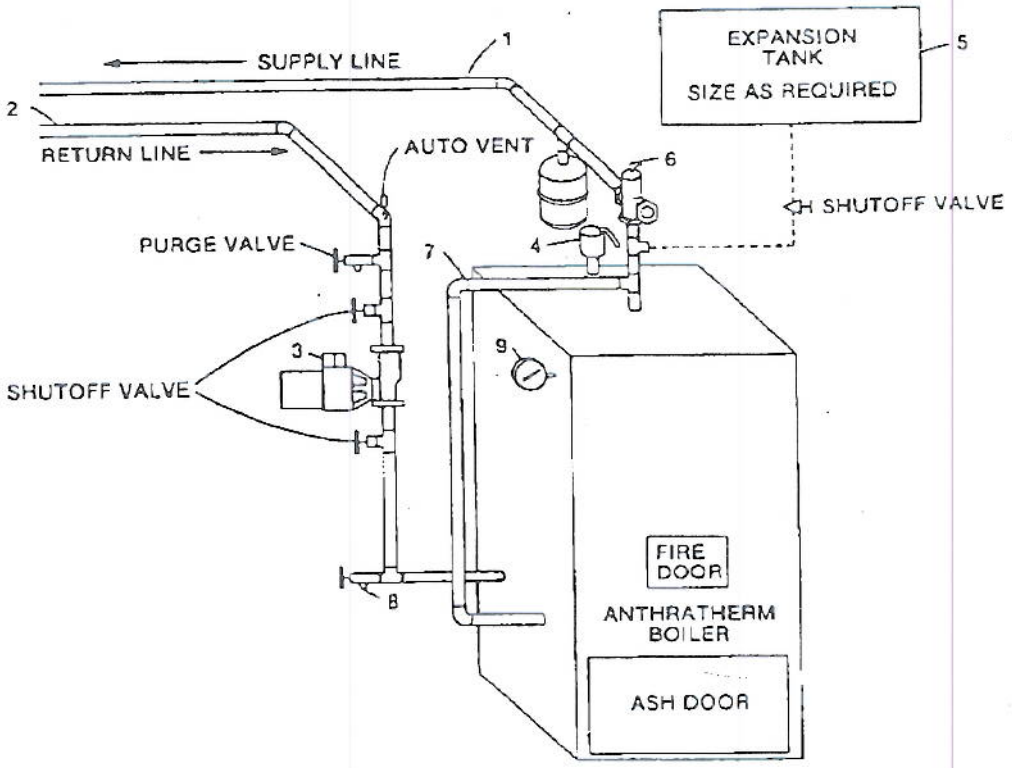


1. Supply Line to system.
2. Return Line from system.
3. Hartford Loop.
4. Hartford Loop connection must be 2" below the water level.
5. Equalizing Line.
6. Boiler Water Level
7. Relief Valve - should be piped to safe place of disposal and in accordance with control manufacturer's instructions.
8. Water Glass Gauge.
9. Low Water Gauge.
10. Boiler Drain.
11. Pressure Gauge.

ANTHRATHERM BOILER-STOKER UNITS
(All Models)

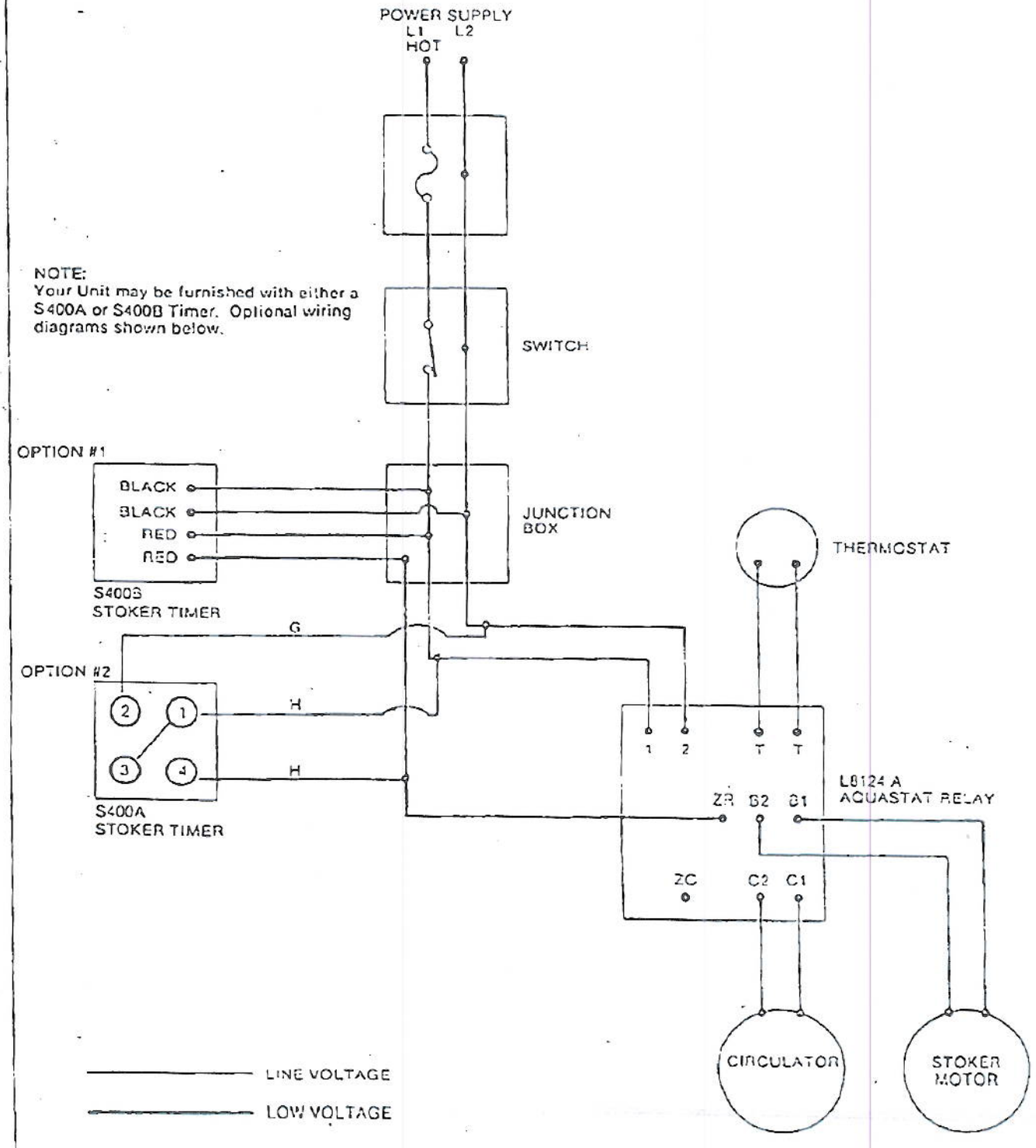
HOT WATER SYSTEM

SUGGESTED PIPING LAYOUT



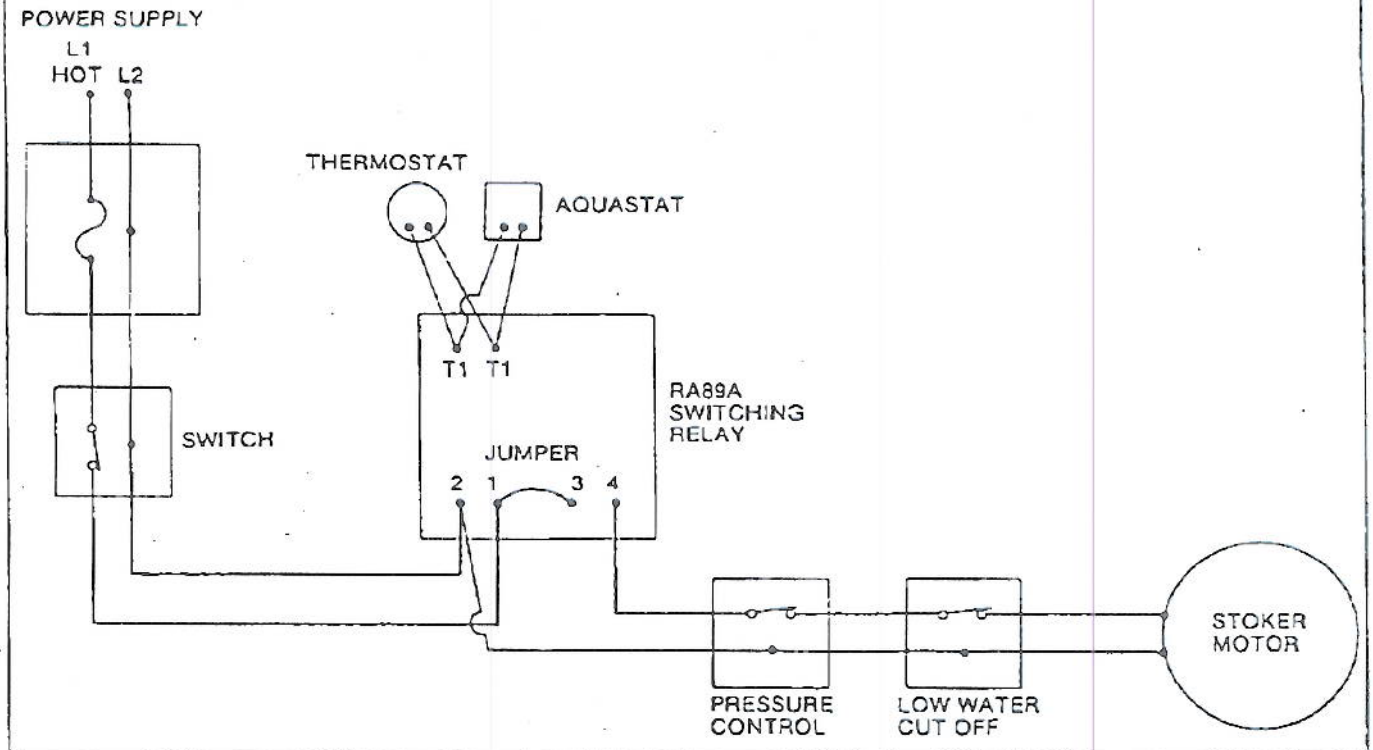
1. Supply Line to system.
2. Return Line to system.
3. Circulator.
4. Relief valve - should be piped to safe place of disposal and in accordance with control manufacturer's instructions.
5. Extrol Tank - if present extrol tank is not large enough, add adequate sized expansion tank to handle radiation load.
6. Flow Control Valve.
7. 1¼" min. By-pass Equalizer
8. Boiler Drain.
9. PTA Gauge.

WIRING DIAGRAM
FOR FORCED HOT WATER SYSTEM
ANTHRATHERM
MODELS: VA400 and 600
FURNISHED WITH STOKER TIMER

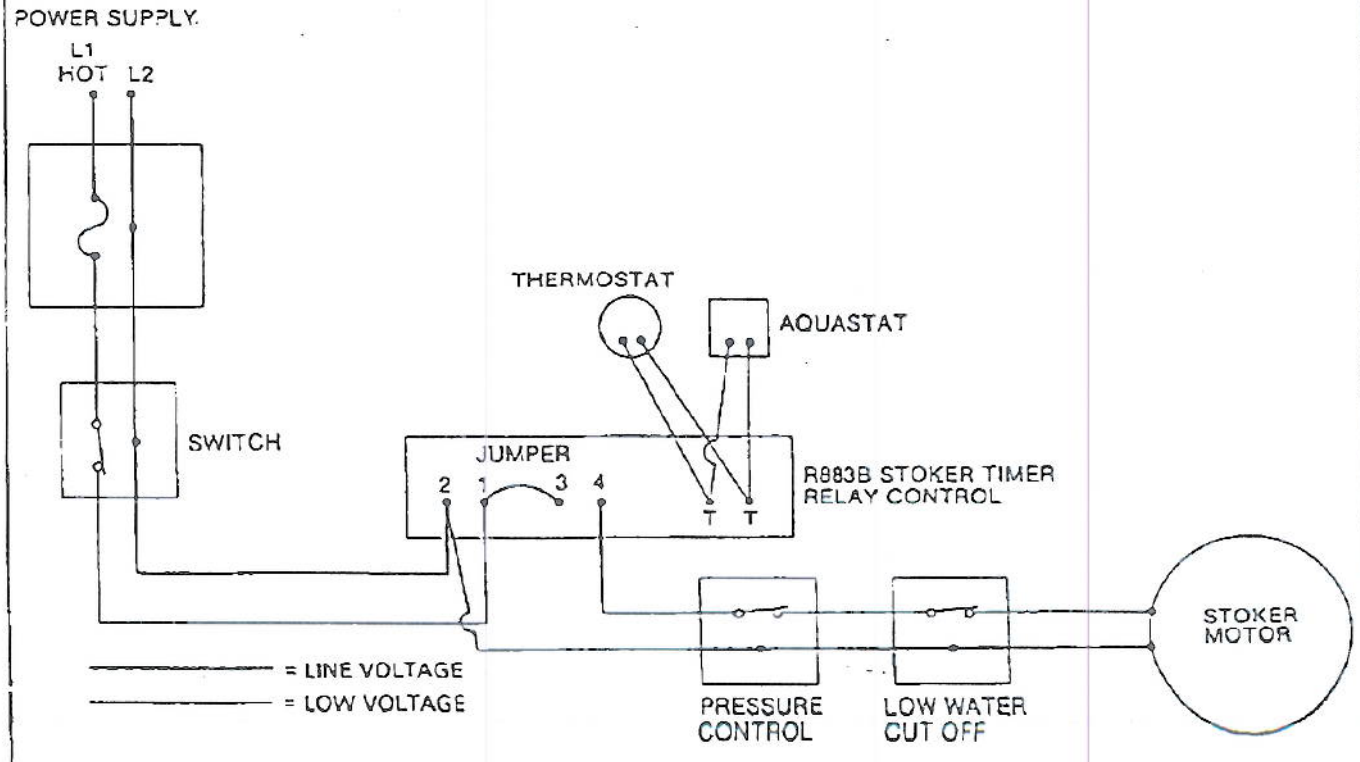


WIRING DIAGRAMS
FOR STEAM SYSTEMS

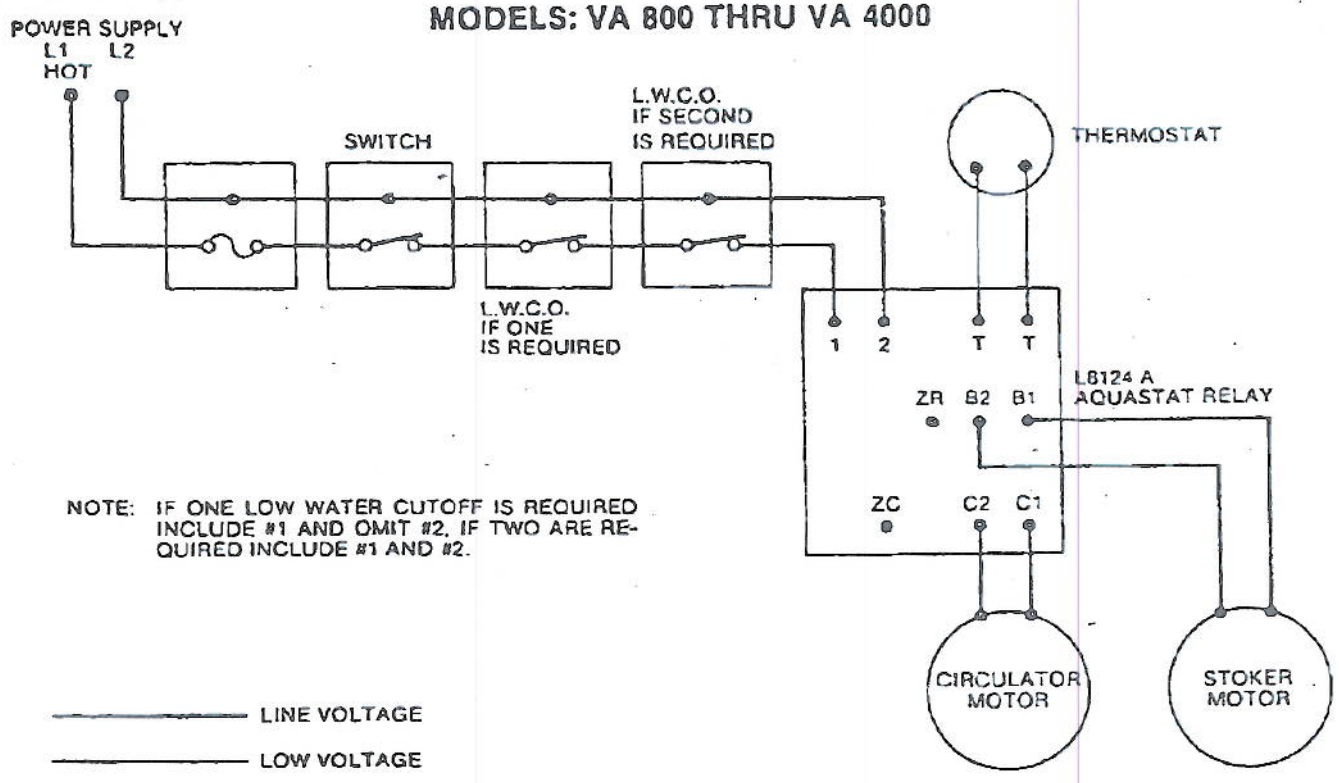
ANTHRATHERM
MODELS: VA800 THRU VA4000 AND CONVERSION STOKERS



MODELS: VA400 AND VA600 ONLY FURNISHED WITH STOKER TIMER



WIRING DIAGRAM
FOR FORCED HOT WATER SYSTEM WITH LOW WATER CUTOFF
ANTHRATHERM
MODELS: VA 800 THRU VA 4000



NOTE: IF ONE LOW WATER CUTOFF IS REQUIRED INCLUDE #1 AND OMIT #2. IF TWO ARE REQUIRED INCLUDE #1 AND #2.

FOR FORCED HOT WATER SYSTEM (LESS LOW WATER CUTOFF)
ANTHRATHERM
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