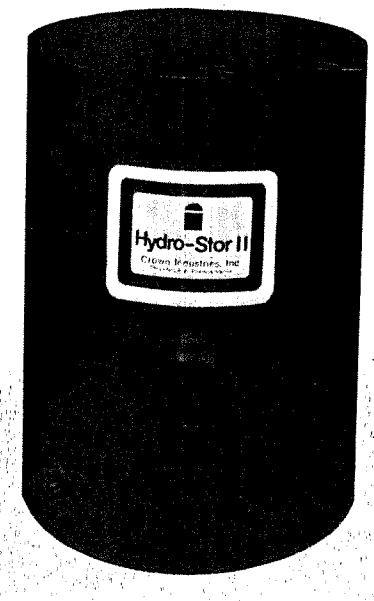
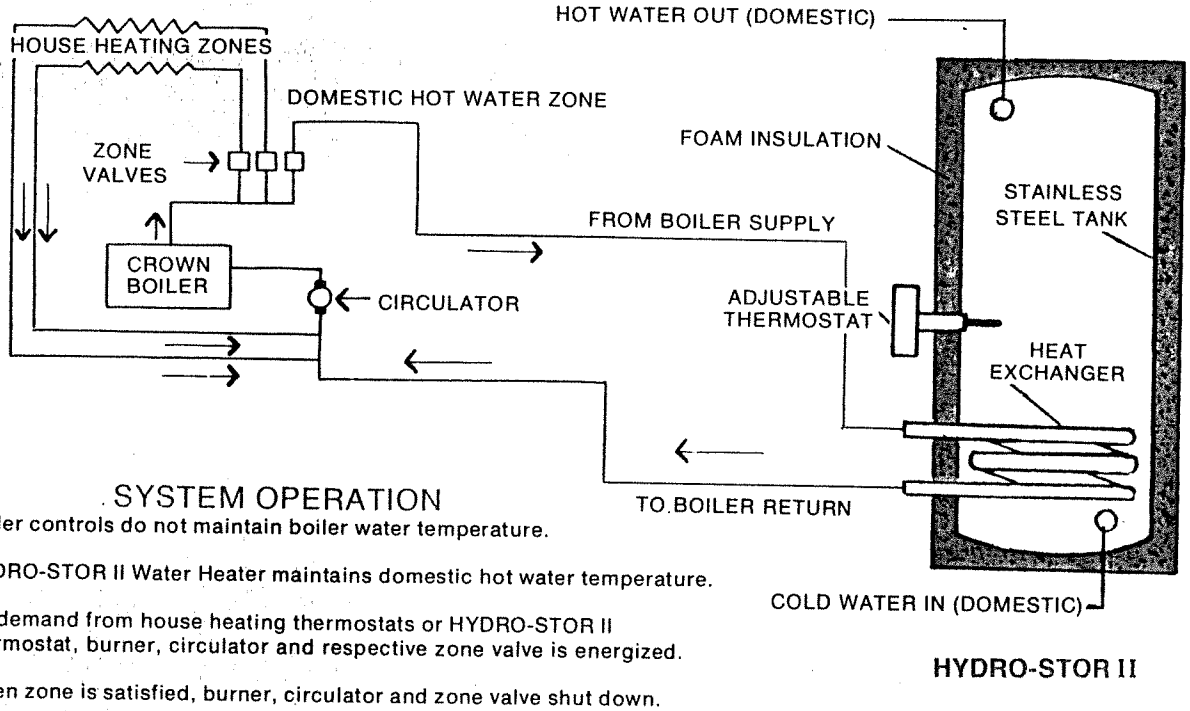
CROWN/HYDRO-STOR II

INDIRECT WATER HEATER



INSTALLATION AND OPERATING INSTRUCTIONS

HYDRO-STOR II SYSTEM



SYSTEM OPERATION

- Boiler controls do not maintain boiler water temperature.
- HYDRO-STOR II Water Heater maintains domestic hot water temperature.
- On demand from house heating thermostats or HYDRO-STOR II thermostat, burner, circulator and respective zone valve is energized.
- When zone is satisfied, burner, circulator and zone valve shut down.

TYPICAL INSTALLATION

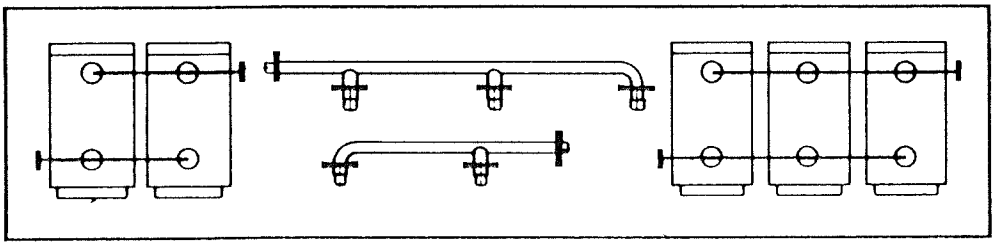
PUBLICATION NO. AP 6-27-86

SPECIFICATIONS

Sizes Available

Model No.	Domestic Tank Capacity	Shipping Weight	Heat Exchanger Surface Sq. Ft.
HS-20	20 Gal.	53 Lbs.	15
HS-30	30 Gal.	69 Lbs.	15
HS-40	40 Gal.	75 Lbs.	15

Combination Units



Output Performance

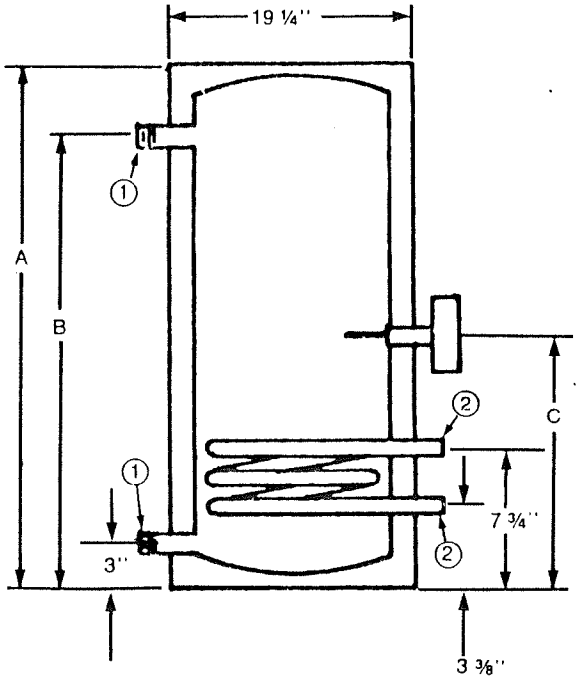
Model No.	PERFORMANCE * 1st Hour	
	@ 115° F	@ 140° F
HS-20	198 GPH	110 GPH
HS-30	252 GPH	140 GPH
HS-40	315 GPH	175 GPH

* Performance based on D.O.E. Test Method:

Domestic water inlet @ 55° F
Domestic water outlet @ 145° F
Boiler water constant @ 200° F

MAXIMUM WORKING PRESSURE

Heating System Coil ..... 150 PSI
Domestic Tank ..... 150 PSI



Dimensions

Model No.	DIMENSIONS IN INCHES				
	A	B	C	1	2
HS-20	27	22	12	3/4"	3/4"
HS-30	39 ½	34	18	NPT Male	Sweat
HS-40	52 ½	46	24	Conn.	Conn.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

CROWN INDUSTRIES, INC.
2101 EAST ALLEGHENY AVE., PHILA., PA 19134-3892 PHONE (215) 423-8900

OPERATING YOUR HYDRO-STOR II

Set thermostatic control on water heater at least 20° F below boiler setting. (Example: Boiler 180°F; tank 160°F Max). For summer operation set the limit of the boiler control at the minimum setting--this will call the burner on only to satisfy the tank control. The differential of the control should be 20°-25°, if your control is adjustable, if your control is not adjustable be sure it is in that range. We recommend a temperature setting of 140° F or in accordance with local and state codes for normal operation. You may prefer a setting of either higher or lower temperature to satisfy your needs.

NOTE: if draining of the Hydro-Stor is necessary, open the T & P valve or a Hot Water Tap to prevent vacuum build up in the tank, and piping.

PLUMBING:

It is important that all plumbing is done in accordance with all local and state plumbing codes.

It is also necessary on all mechanical connections that you use both thread tape and pipe dope.

NOTE: The use of heat, such as blow torches etc. near the tank, will cause distortion to the P.V.C. wrapper, cautions should be exercised.

NOTE: When filling the Hydro-Stor make sure you open a Hot Water Tap to release air in tank and piping.

BOILER CONNECTIONS

Use a 3/4" Nominal Minimum Tube Size.

See Fig. 1
On the tank, boiler inlet is to be connected to outlet of circulator. Inlet of circulator is to be connected to the "HOT" "Outlet" side of the boiler. Be sure that arrow on circulator corresponds to the flow direction.

When using a seperate circulator for the Hydro-Stor See Fig. 2
boiler outlet is to be connected to a flow check or swing check valve and then connected to the return side of the boiler. Also the return(s) from heating loop(s) should have a flow check or a swing check valve installed before the return pipe from the tank.

Swing check valves or flow check valves prevent reverse flow of hot water through heating loop(s) or the tank.

In a steam boiler the tank inlet must be connected to the boiler below the minimun water level. A strainer and a drain valve should be installed at the boiler for periodic draining of scale and sludge.

NOTE: See typical installation.

COLD WATER INLET

Use both thread tape and pipe dope and connect a 3/4" N.P.T. brass tee. On the run install a brass drain valve, in the branch, install a 3/4" N.P.T. male x 3/4" (minimum) tube adapter. A shut off valve between city water supply and tank inlet is recommended for ease of service at a later date. It is recommended to use a back flow preventer, check your local codes.

NOTE: See typical installation.

If tank is replacing a tankless coil in the boiler--disconnect coil piping and use the cold inlet pipe and hot outlet pipes for Super-Stor tank. DO NOT PLUG TUBE OUTLET IN TANKLESS COIL.

HOT WATER OUTLET

Use both thread tape and pipe dope and connect a 3/4; N.P.T. brass cross. In the run of the brass cross install a 3/4" N.P.T. brass T & P valve long element for hot water storage tanks, required by local codes, but not less than a value certified as meeting the requirements for relief valves for hot water heaters ANSI Z 21, 1971 by a nationally recognized lab that maintains periodic inspection of production of listed equipment. The temperature and pressure relief valve must be plumbed down so discharge can exit only 6" above or at any distance below the structural floor, and cannot contact any live electrical parts.

In the top of the brass cross (Branch) vertically up, install a vacuum relief valve.

In the botton of the brass cross (Branch) vertically down install a 3/4" N.P.T. x 3/4" (Minimum) tube adapter. Then install (2) 3/4" (minimum) Note: See typical installation, sweat street 90° elbow.This acts as a thermal loop or trap to prevent thermal siphon action of hot water.NOTE: See Typical Installation.

ALTERNATE METHOD

Follow above instructions, only use a brass tee instead of a brass cross. Install with the branch vertically down and install a vacuum releaf in the piping between the tank and outlets--preferred as close to tank as possible.

NOTE: See typical installation.

EXPANSION TANK

An expansion tank is recommended in the system designed for potable water use to offset the expansion of stored water as the temperature is elevated

NOTE: See typical installation.

CONTROL

With pipe dope and thread tape install control well into marked port on tank. Then install control element into well and tighten in place with screw(s) on control body.

See wiring Page 7.

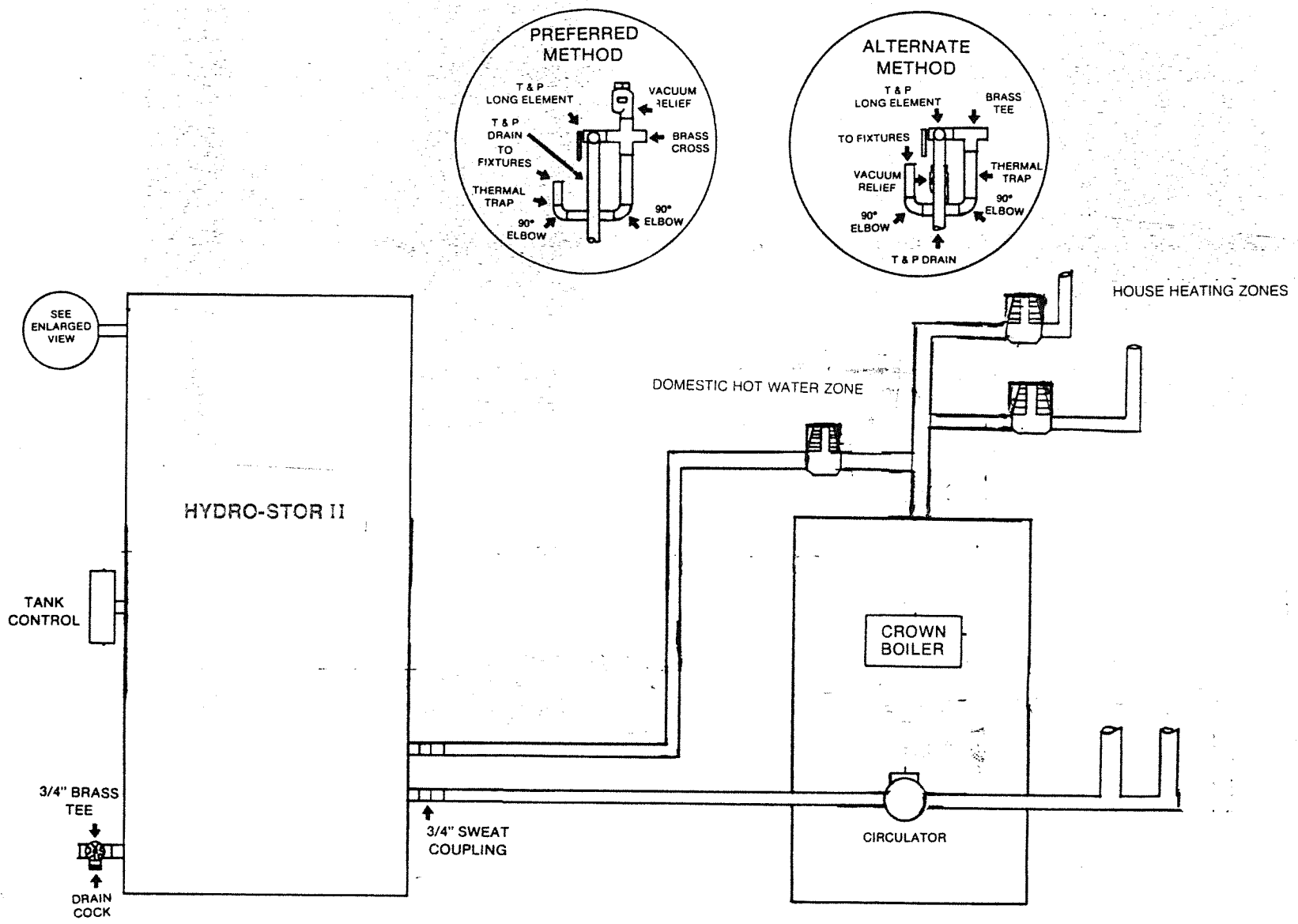
WIRING

All wiring is to be done in accordance with all applicable local and state codes.

Turn off all power related to the boiler before starting any wiring procedures.

It is recomended that a disconnect switch be installed between boiler control & water heater control.

TYPICAL INSTALLATION USING ZONE VALVES



NOTE; INSTALLATION MUST BE IN ACCORDANCE WITH STATE AND LOCAL CODES.

Fig.1

TYPICAL INSTALLATION

USING CIRCULATORS

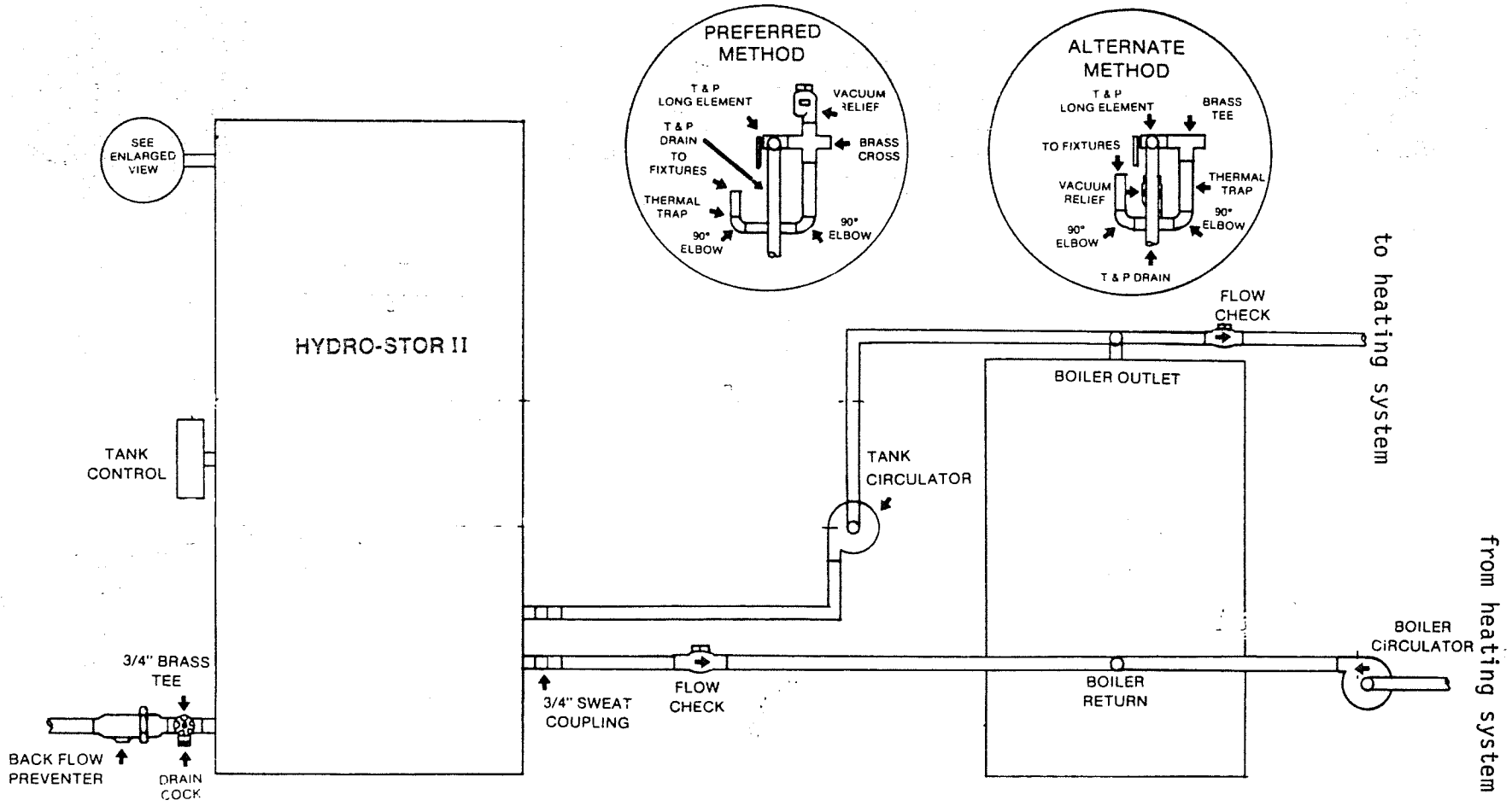
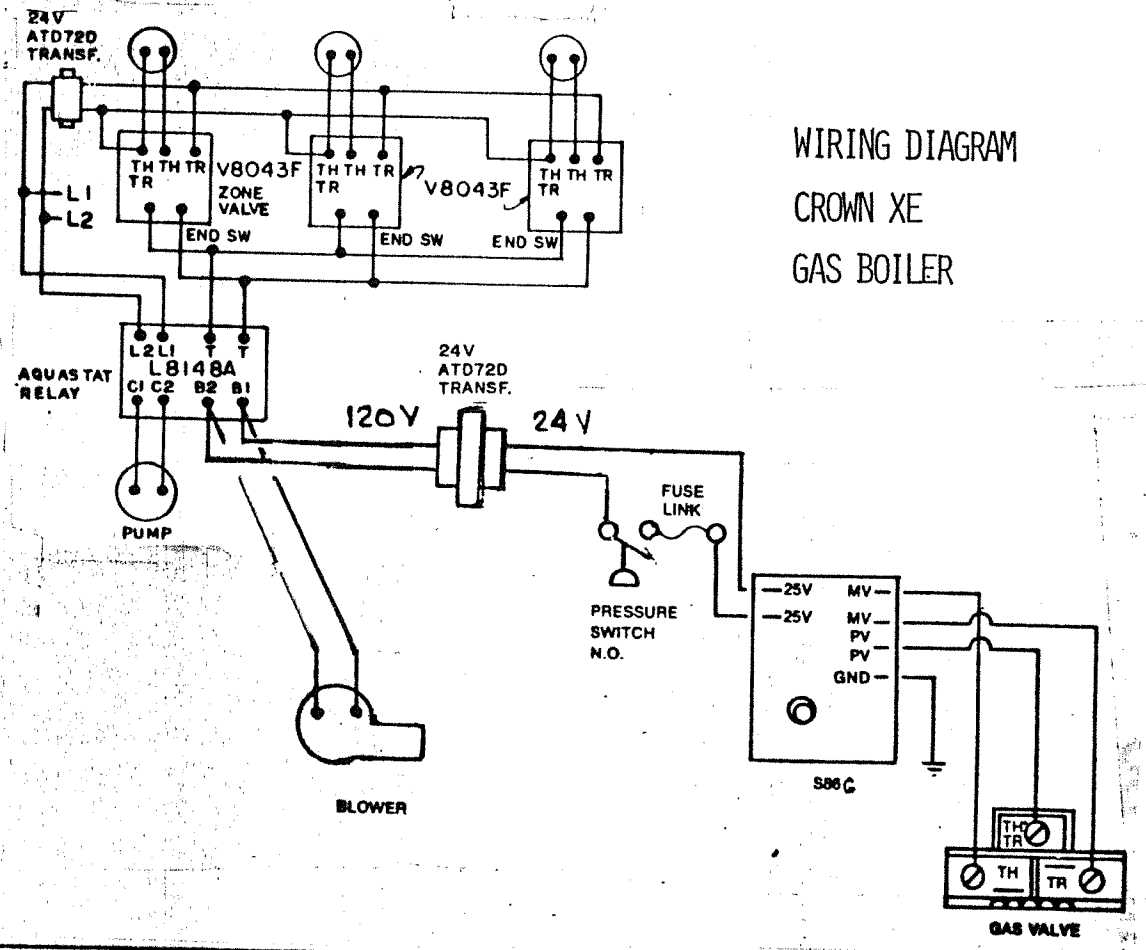
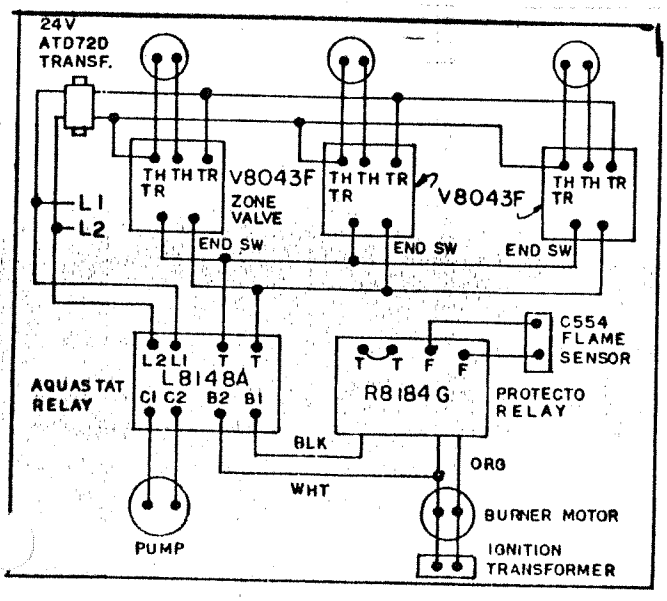


FIG. 2

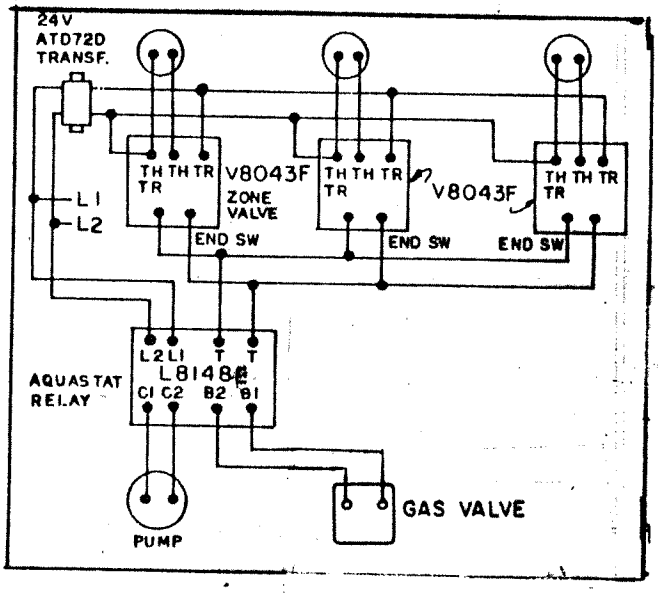
WIRING DIAGRAM
CROWN XE
GAS BOILER

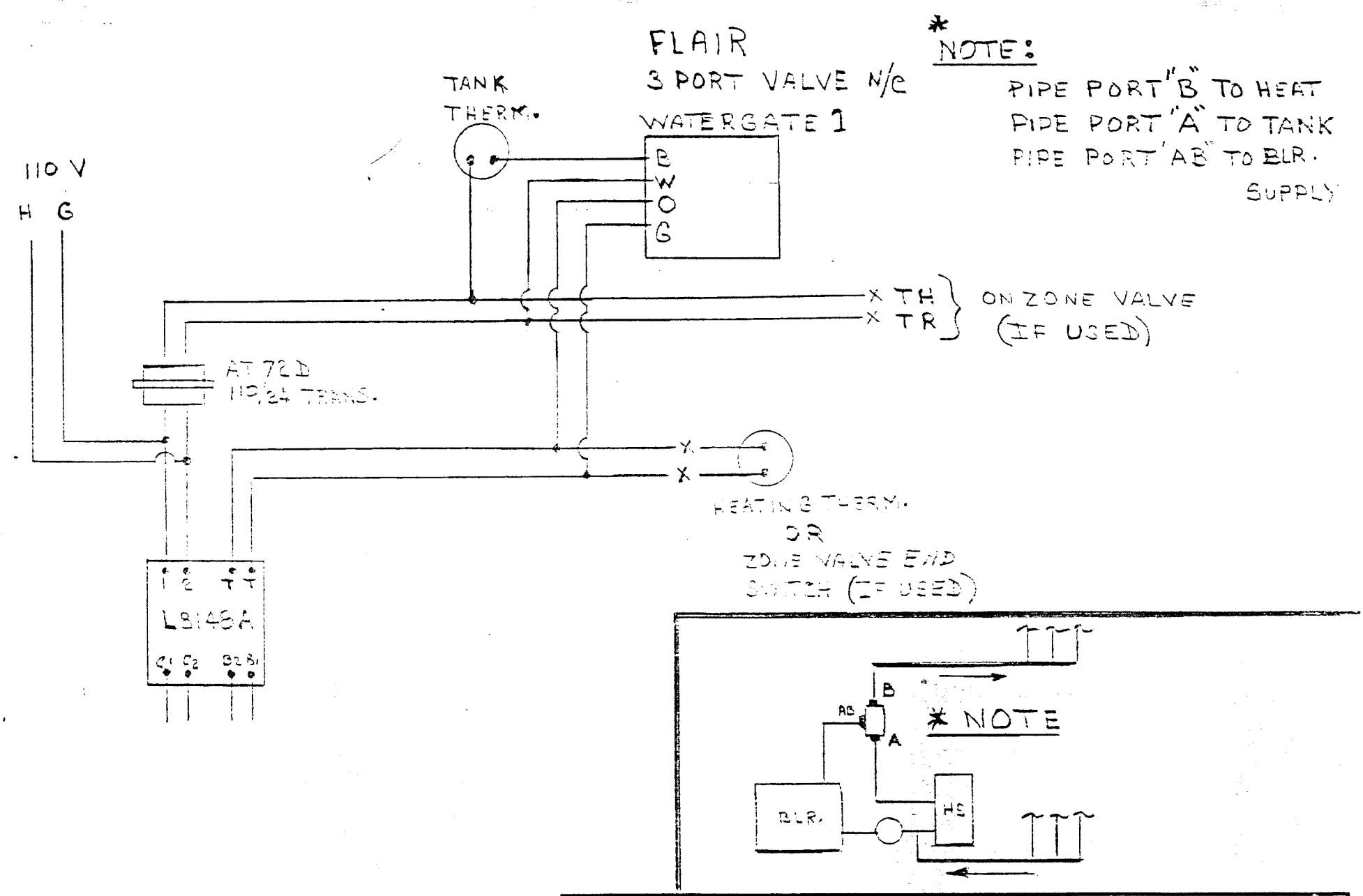


TYPICAL WIRING DIA.
CROWN FREEPORT AND
NO COIL OIL BOILERS



TYPICAL WIRING DIA.
CROWN ARUBA AND
NO COIL GAS BOILERS





SYM	±TOLER. UNLESS SPEC.D OTHER-WISE	TITLE 3-WAY VALVE/HYDRO-STOR/L8148A
CHANGE	FRACT.	MODELS ALL VE-CT-60 A/C
	DEC.	CROWN BOILER CO., INC., PHILA., PA.
BY	ANGLE	MAT'L
		DR. BY & DATE KW 9.2.86 CH. BY & DATE

CROWN BOILER

ENERGY BONUS CHART

STEADY STATE EFFICIENCY	OLD STYLE BOILER 65%	ASHRAE MINIMUM 75%	CROWN FREEPORT 87.5%
BTU/HR GROSS OUTPUT (INPUT @ 105,000)	68,250	78,750	91,980
ENERGY BONUS BTU/HR	----	10,500	23,750
GPH RECOVERY at 90° rise	90.87	104.85	122.47
GPH HOT WATER BONUS	----	13.98	31.60
D.O.E. DAILY HOT WATER REQUIREMENTS FOR AVERAGE FAMILY (4) 64 GALLONS			

8/19/88

CROWN HYDRO-STOR

SIZING GUIDELINES
FOR RESIDENTIAL HOMES

HYDRO-STOR MODEL	NOTE:	DISH WASHER	BATHS	BEDROOMS	AVG. JACUZZI	RECOMMENDED MIN. XE SERIES	BOILER SIZE CT SERIES
HS - 30	1	0	1 1/2	1	0	XE - 3	CT - 3
HS - 40	1	1	1 1/2	3	0	XE - 4	CT - 3
HS - 30	2	1	2	3	0	XE - 4	CT - 4
HS - 40C	2	1	2 1/2	4	1	XE - 5	CT - 4
HS - 60C	2	1	2 1/2	5	1	XE - 5	CT - 4

NOTES:

1. When heat loss of the residence is known, add 5,000 BTU/hr for domestic hot water load, then select boiler size on net output rating.
2. Add 10,000 BTU/hr to heat loss of house.
3. To obtain manimum domestic hot water output; circulator must have capacity as follows:
   HS - 30 thru HS - 60 - 6-8 GPM @13 FT. HD.
   HS - 30C and HS - 60C - 15 GPM @13 FT. HD.

Pipe size between boiler and tank to be sized accordingly.

EXAMPLE

House heat loss of 82,500 BTU/hr.
2 1/2 baths
3 Bedrooms

CALCULATION

82,500 add 5,000 = 87,500

SELECTION

BOILER		
OIL	GAS	HYDROSTOR
CT-4	XE-5	HS-40