PREMIER™ SERIES
APPLICATION GUIDE

Applications Include:

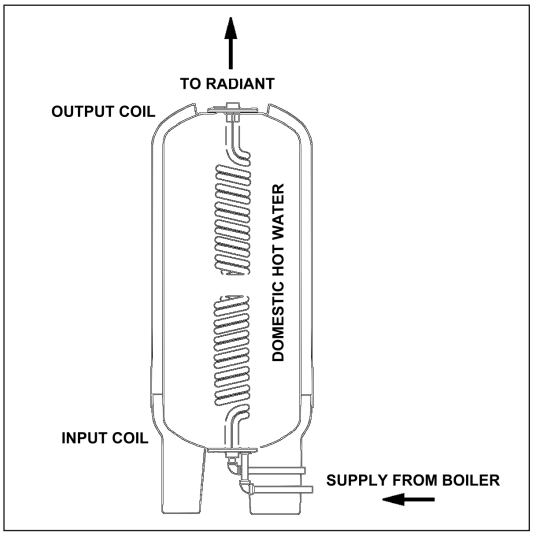
Radiant Heating
Snowmelt Systems
Solar Panel Input
Wood Boilers
Pool & Spa Heating
Twin Coil Input for Commercial

This booklet is not to be used as an installation manual. Detailed instructions are available at www.amtrol.com

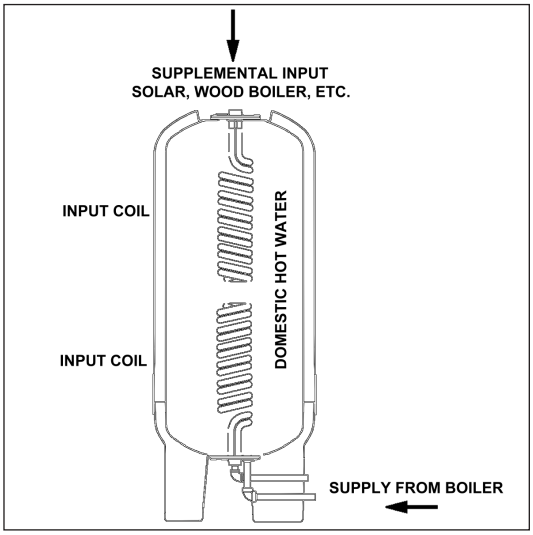
General Overview

The Premier™ DC Series is a multipurpose indirect-fired water heater suitable for many uses.

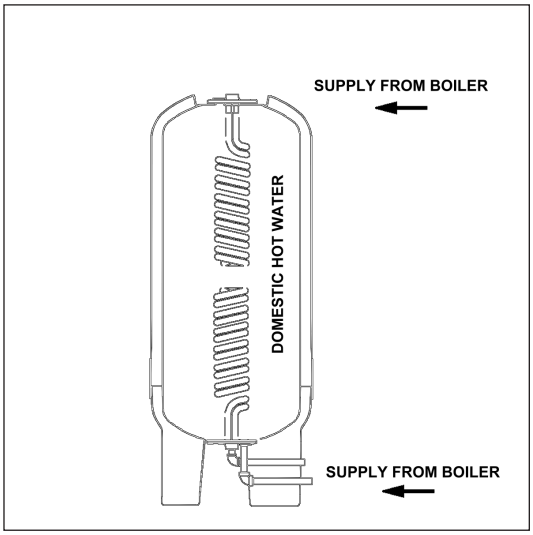
1. An indirect-fired heater with the top coil extracting heat for radiant or snowmelt systems. Acts as a combination buffer tank/indirect water heater.



2. An indirect-fired heater with the top coil connected to a supplemental heat source such as solar, wood boiler or heat recovery.



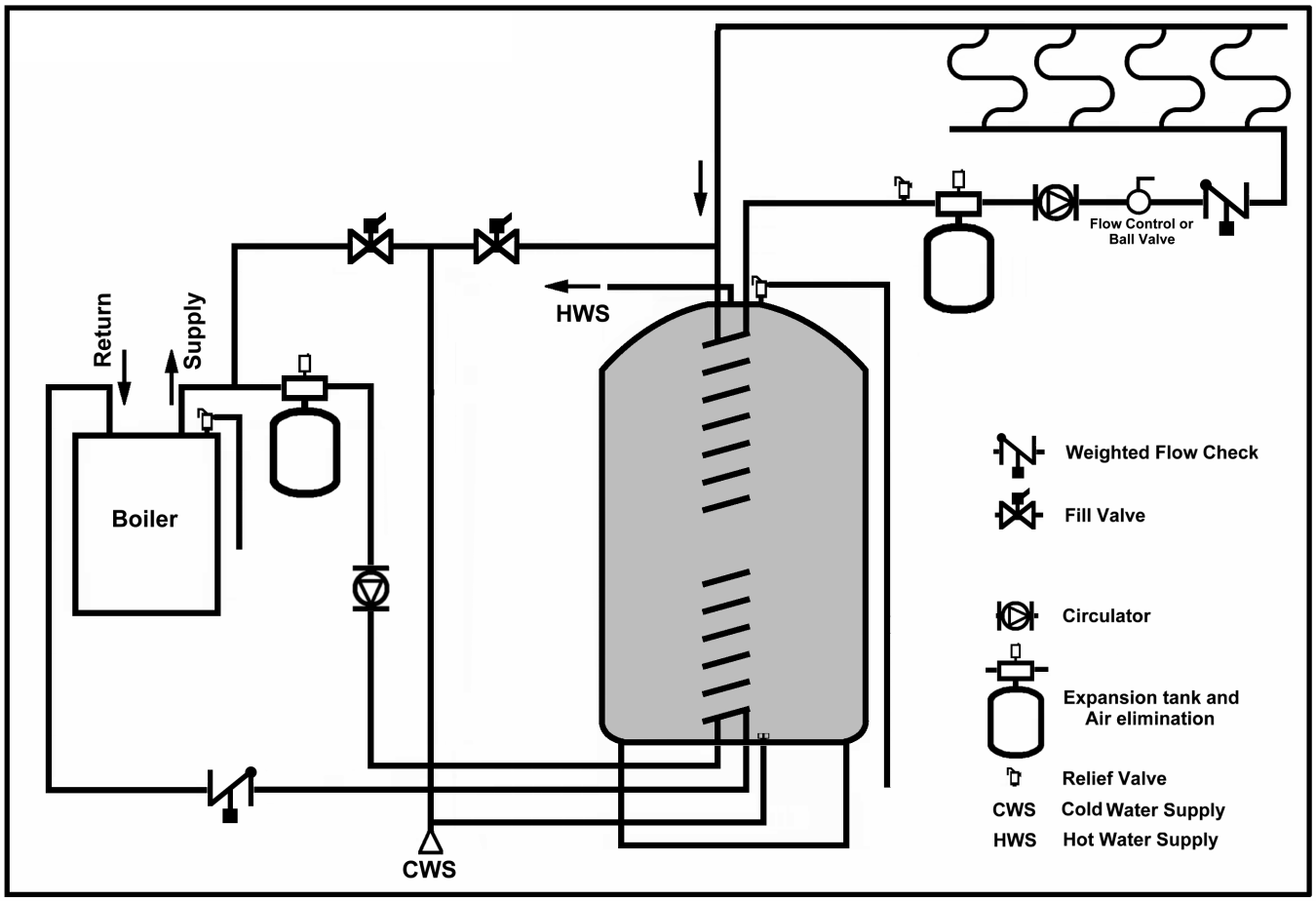
3. A commercial indirect setup where both coils are powered by a large boiler, providing excellent recovery.



Product & Benefits

The Dual Coil reduces equipment costs and installation time while saving space by combining multiple hydronic system components into one unit. Figure 1 shows how boiler cycling is reduced in radiant heating applications to increase efficiency.

Figure 1 **Radiant Zone with Domestic Water Controlling Supply Temperature**



By combining two high capacity heat exchangers in a single unit, the domestic water temperature can provide reliable control of radiant supply temperatures. Double wall heat exchangers are also readily available for systems using antifreeze solutions where required by code.

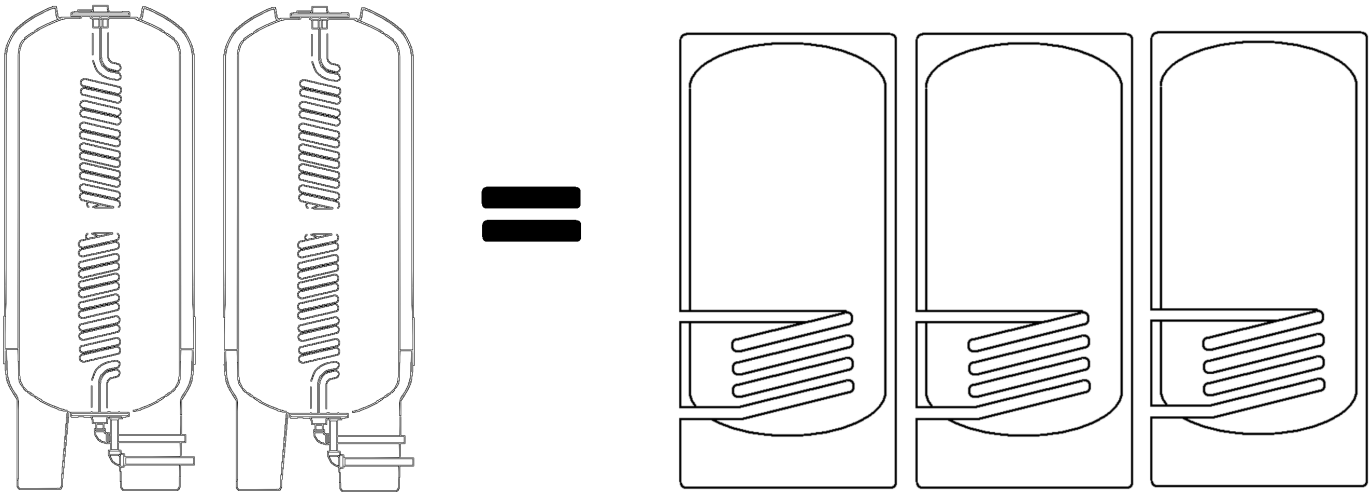
This setup simplifies installation and eliminates the need to purchase expensive heat exchangers and mixing valves. Boiler cycling is reduced by the domestic water mass, performing the same function as a buffer tank.

Product & Benefits (Con't)

Commercial applications require rapid recovery to meet high demands. These sites also have large boilers to accommodate the building(s) heating load. When both coils are utilized to heat domestic water, Premier™ DC Series have a heat transfer capability far in excess of traditional single-coil and tank-in-tank indirects. The resulting performance can allow competitive bids by using fewer heaters than the competition (Figure 2).

Figure 2 **Dual Coil Units Can Reduce the Number of Hot Water Makers Required**

Example: 80 Apartment units
700,000 BTUH domestic hot water demand
2-3GPM showerhead
2-3 person occupancy



Domestic Water Performance

	DC-80 / DC-80DW			DC-120/DC-120DW		
	BOILER OUTPUT BTU/HR	FIRST–HOUR RATING (90ºF rise) GALLONS	CONTINUOUS FLOW (70ºF rise steady state) GPH	BOILER OUTPUT BTU/HR	FIRST–HOUR RATING (90ºF rise) GALLONS	CONTINUOUS FLOW (70ºF rise steady state) GPH
Bottom Coil Only	80,000	117	139	80,000	209	139
	100,000	202	173	100,000	236	173
	120,000	229	208	120,000	263	208
	140,000	256	242	140,000	289	242
Both Coils as Input	160,000	283	277	160,000	316	277
	180,000	310	312	180,000	343	312
	200,000	337	346	200,000	370	346
	240,000	389	413	240,000	423	413
	280,000	443	482	280,000	477	482
	320,000	469	551	320,000	530	551
	*360,000	550	620	*360,000	584	620
	400,000	603	688	400,000	637	688

*Double wall models maximum 360,000 BTUH with both coils.

NOTE: THESE FIGURES WERE OBTAINED USING 180°F BOILER WATER AT FLOWS OF APPROXIMATELY 15 GPM TOTAL FOR BOTH HEAT EXCHANGERS. UNLIKE MOST INDIRECTS, EXTREME BOILER TEMPS AND EXOTIC CIRCULATOR PUMPS ARE NOT REQUIRED TO ACHIEVE THESE NUMBERS.

Product & Benefits (Con't)

Unique exchanger placement and ease of service are two major benefits of the Premier™ DC Series. Amtrol® is the only company utilizing a tank design that allows two removable heat exchangers to be arranged at opposite ends of the tank. (Figure 3) This column arrangement promotes instant transfer of heat into the top coil during a radiant heating call, and provides a full-length heat exchanger when both coils are powered for indirect water heating. (Figure 4)

A heavy, molded plastic jacket resists dents, scratches and harsh commercial environments. A 2-part expanding urethane foam is injected into the jacket cavity, providing superior insulation when compared to standard fiberglass wraps. Standby loss is less than 0.4°F/hour.

Figure 3 **Dual Coil Design**

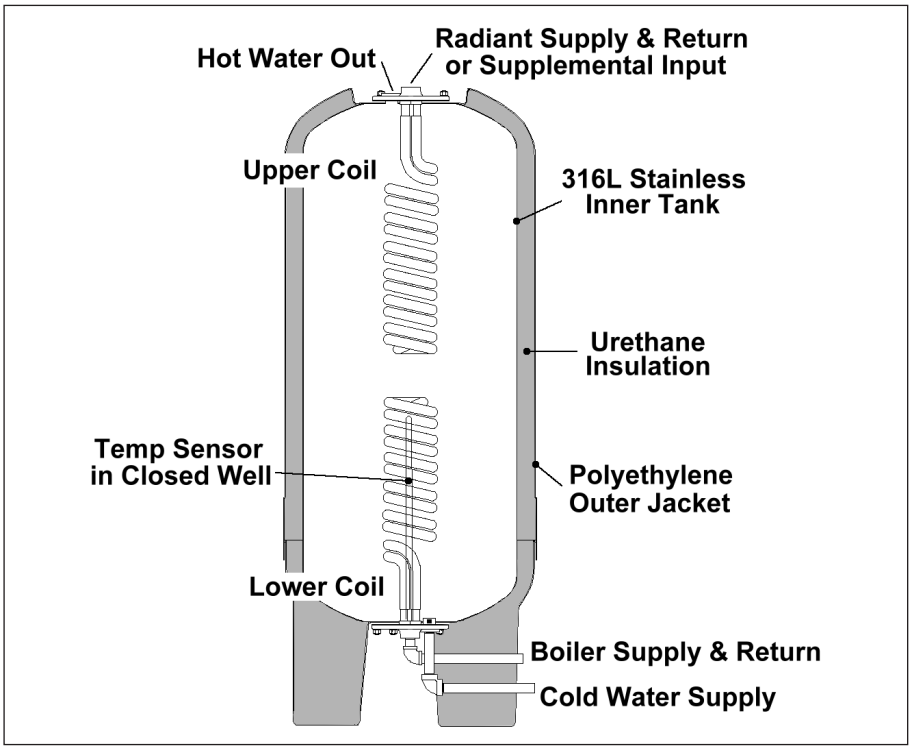
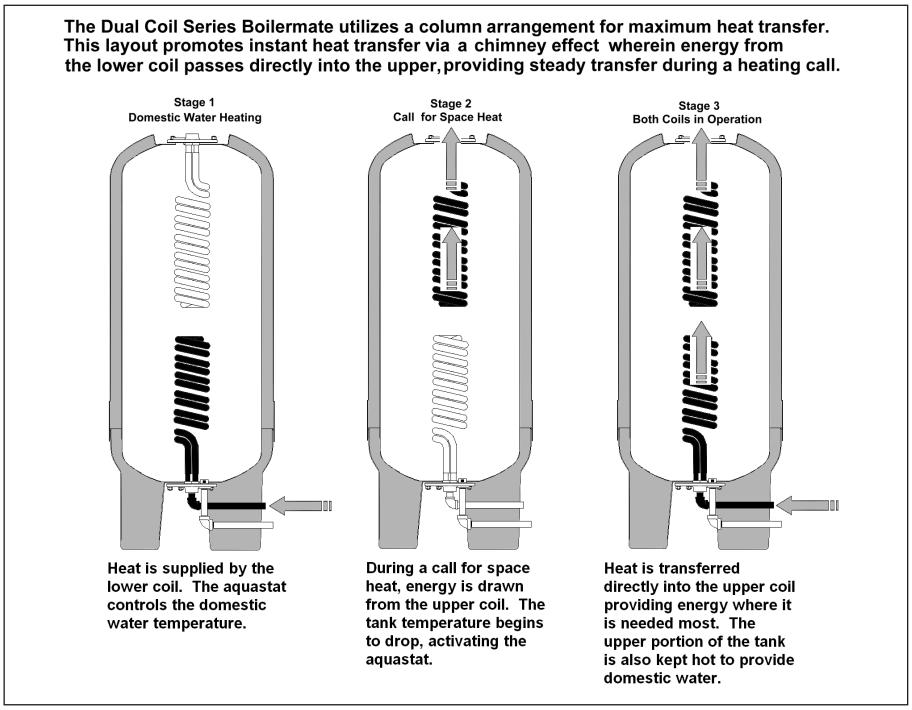


Figure 4 **Dual Coil Operation**

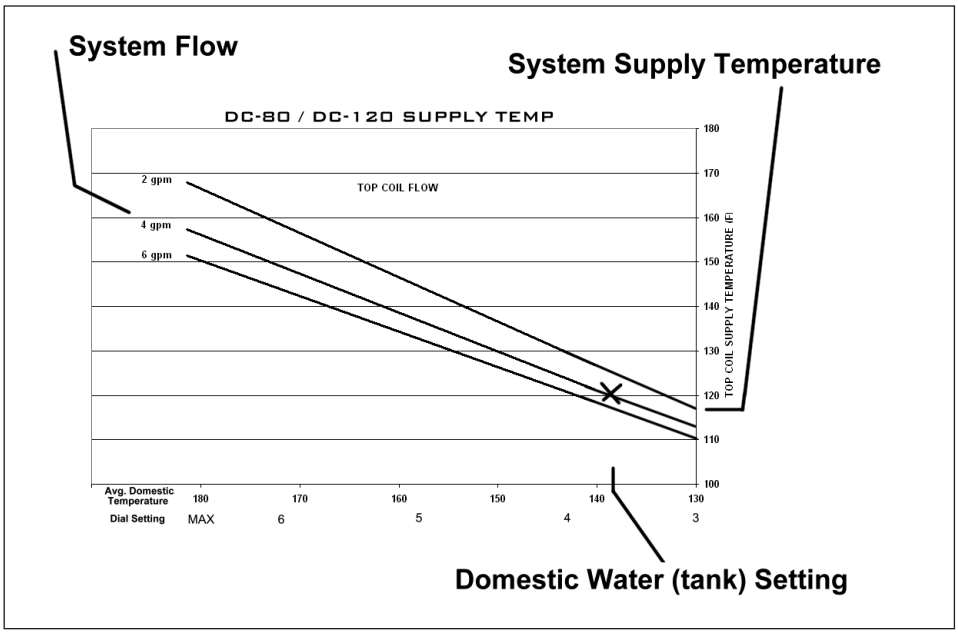


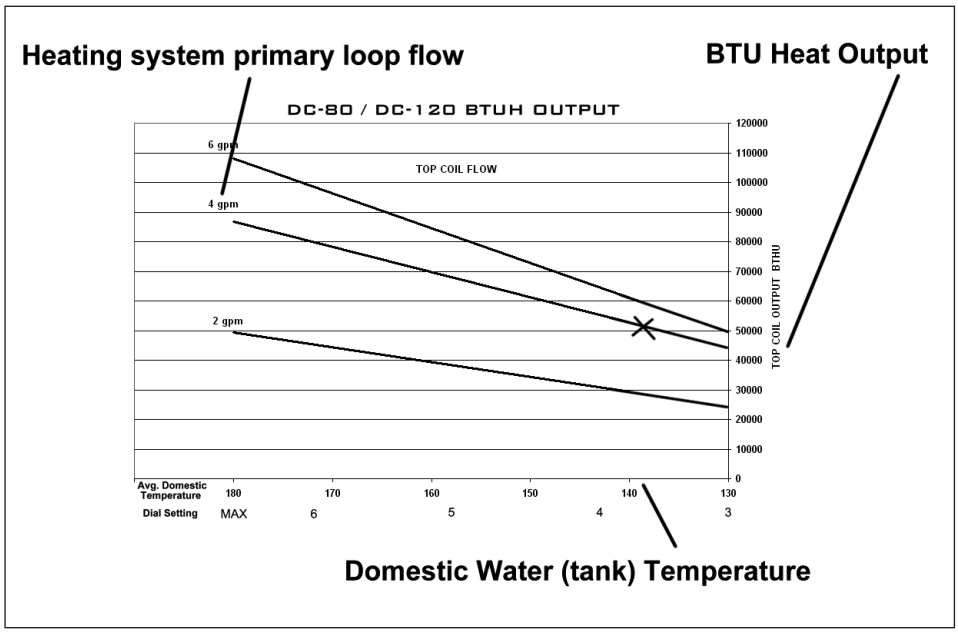
Radiant and Snowmelt Applications

1. Determine the heat load for the application
2. Determine the supply temperature and flow for your system
3. Using the charts below, determine what domestic temperature and top coil flow combination will satisfy the space heat demand.
4. Choose either the DC-80 or DC-120 based on the domestic hot water load. Specify double-wall heat exchanger if required by code.

Example: Radiant loop for large addition
80-gallon unit selected to handle large bathtub
120°F desired supply temp
45,000 BTU anticipated heat load

In this example, a domestic water setting of approximately 138°F will provide a consistent 120°F output at 4GPM.





Commercial Use as Indirect Heater

With both coils powered, the DC Series models have first-hour ratings up to 637 gallons at a 90°F domestic temperature rise. See the following charts for sizing:

APARTMENT SIZING				
Model DC-80	PUMP SELECTION			BOILER SELECTION
Units	Heaters	Coil Flow (GPM) Total for Both Coils	FT/Head (Use Parallel Plumbing)	MBH Available for DHW with Maximum # of Units
2-16	1	15	18	400
17-54	2	30	18	800
55-89	3	45	18	1200
90-124	4	60	18	1600
125-160	5	75	18	2000

APARTMENT SIZING				
Model DC-120	PUMP SELECTION			BOILER SELECTION
Units	Heaters	Coil Flow (GPM) Total for Both Coils	FT/Head (Use Parallel Plumbing)	MBH Available for DHW with Maximum # of Units
2-21	1	15	18	400
22-82	2	30	18	800
83-138	3	45	18	1200
139-197	4	60	18	1600
198-260	5	75	18	2000

HOTEL SIZING				
Model DC-80	PUMP SELECTION			BOILER SELECTION
Rooms	Heaters	Coil Flow (GPM) Total for Both Coils	FT/Head (Use Parallel Plumbing)	MBH Available for DHW with Maximum # of Units
2-19	1	15	18	400
20-65	2	30	18	800
66-108	3	45	18	1200
109-155	4	60	18	1600
156-200	5	75	18	2000

HOTEL SIZING				
Model DC-120	PUMP SELECTION			BOILER SELECTION
Rooms	Heaters	Coil Flow (GPM) Total for Both Coils	FT/Head (Use Parallel Plumbing)	MBH Available for DHW with Maximum # of Units
2-24	1	15	18	400
25-95	2	30	18	800
96-162	3	45	18	1200
163-232	4	60	18	1600
233-300	5	75	18	2000

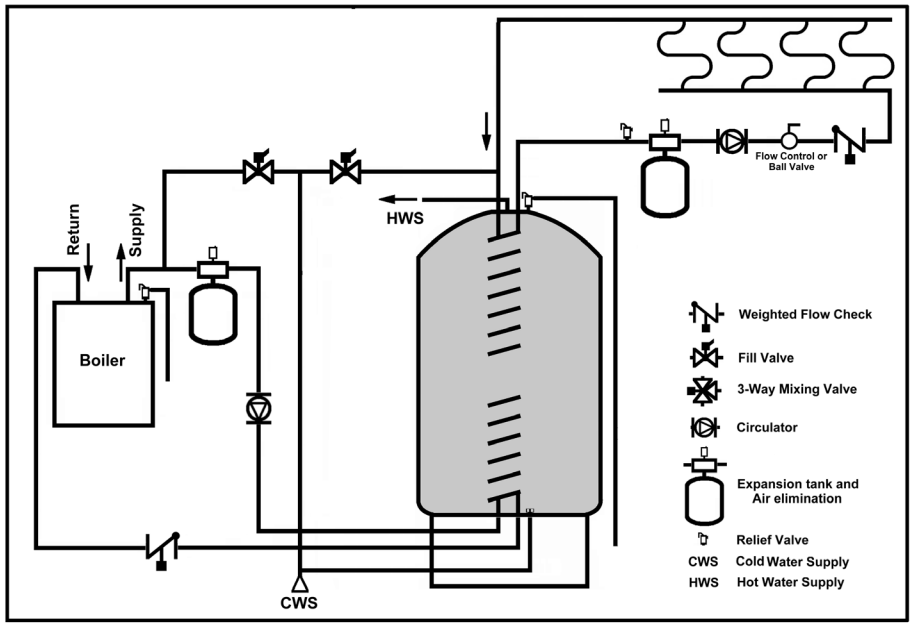
MBH = BTU output in 1000's DHW = Domestic Hot Water

Installation

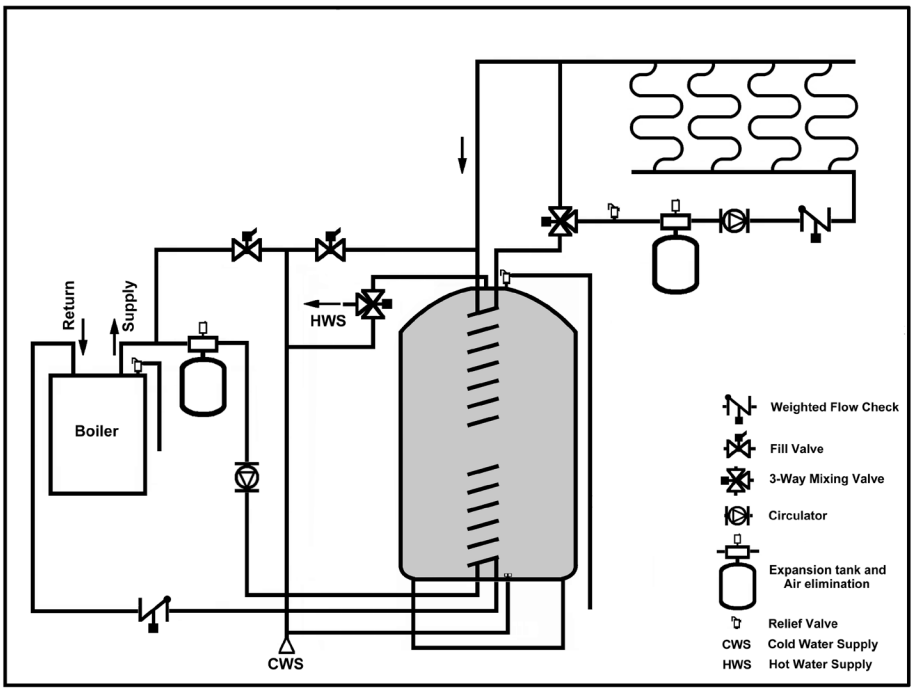
The following diagrams depict general piping schemes for various applications. These diagrams are for reference only and should not be used as a detailed piping schematic.

1. Radiant with domestic temp controlling supply temp. Simple and cost-effective Differential controlled to with 15°F with heating load only
2. Mixing valve used for applications with multiple temp requirements or greatly fluctuating system flow rates
3. Injection pump used for maximum pump efficiency and precise temperature control
4. Backup or wood boiler as supplement via top coil
5. Solar input to top coil
6. Commercial application with both coils powered by large boiler

Radiant Zone with Domestic Water Controlling Supply Temperature

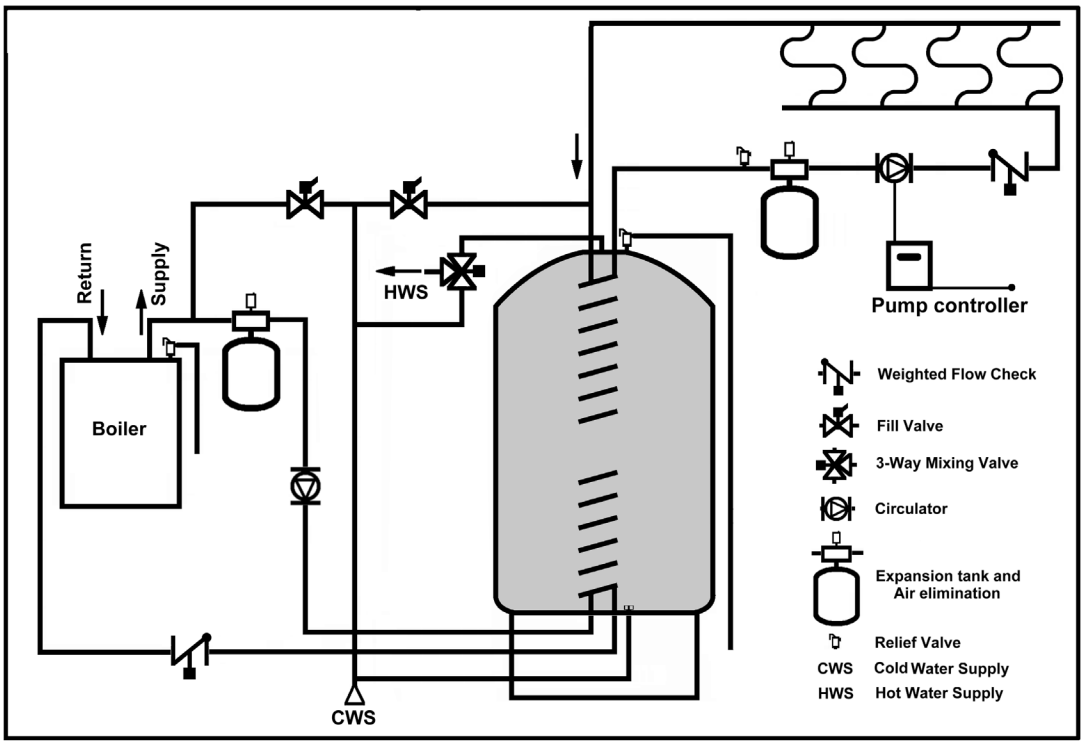


Radiant with Mixing Valve



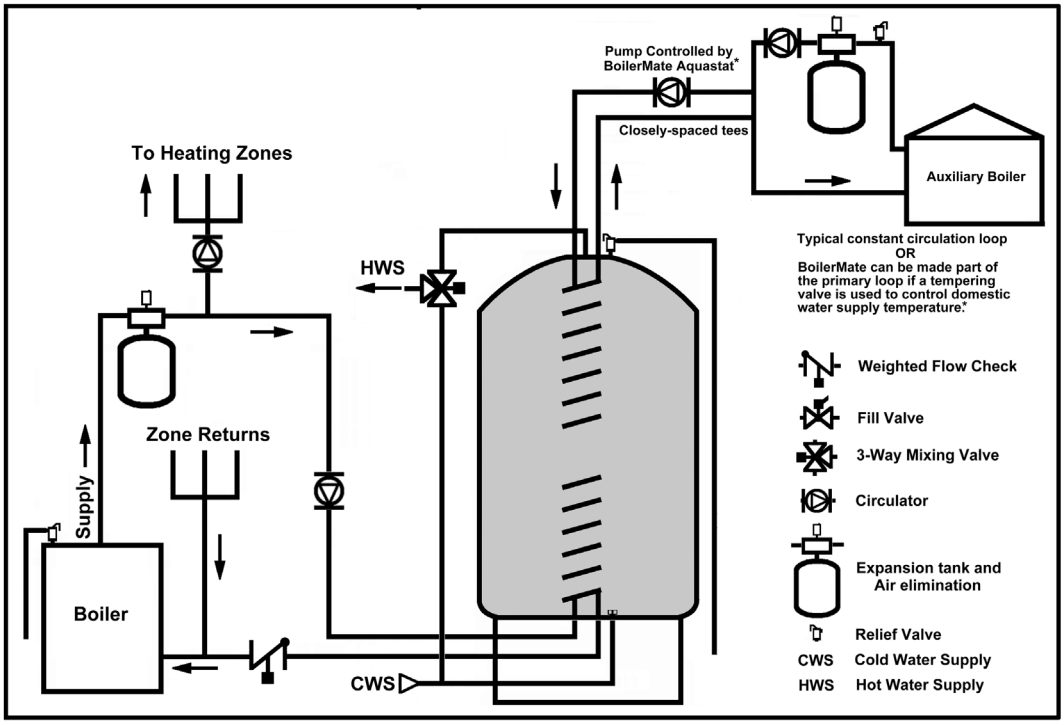
Installation (Con't)

Radiant Zone with Variable Speed Pump



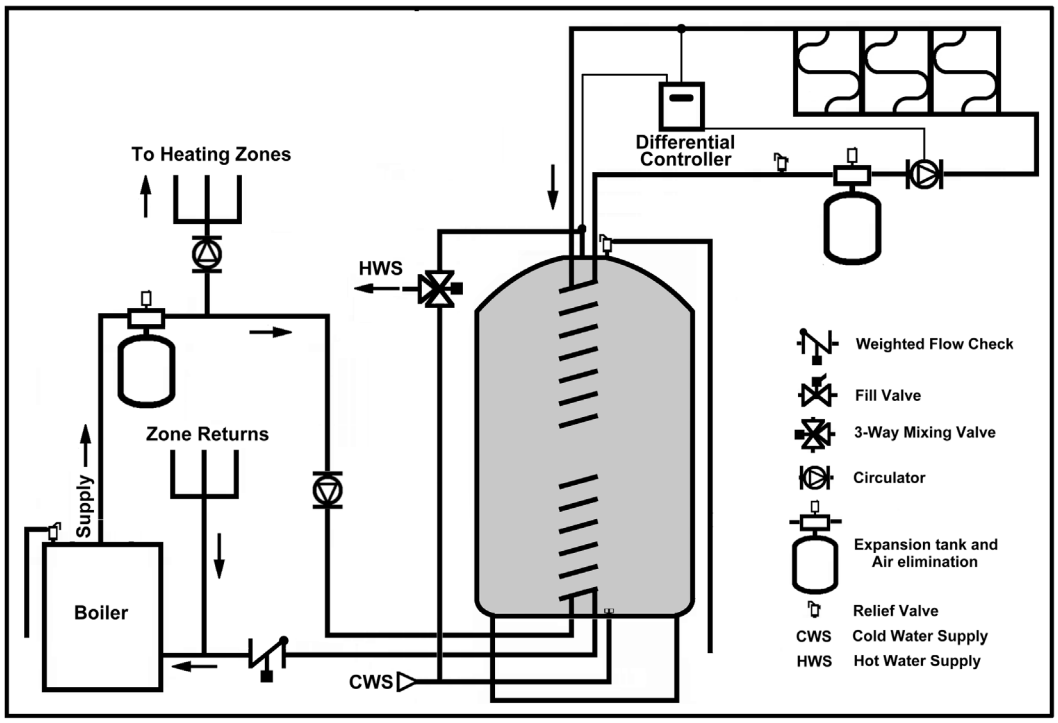
Input with Dual Boilers (Wood Boiler Shown)

***Do not circulate when boiler is cold.**

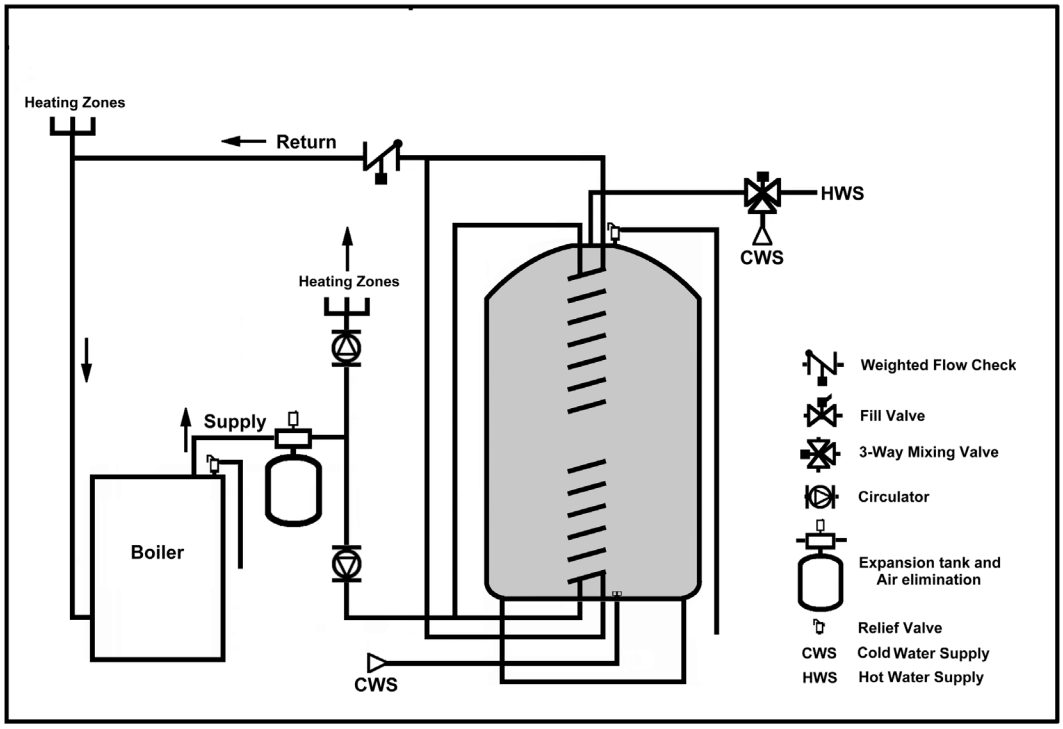


Installation (Con't)

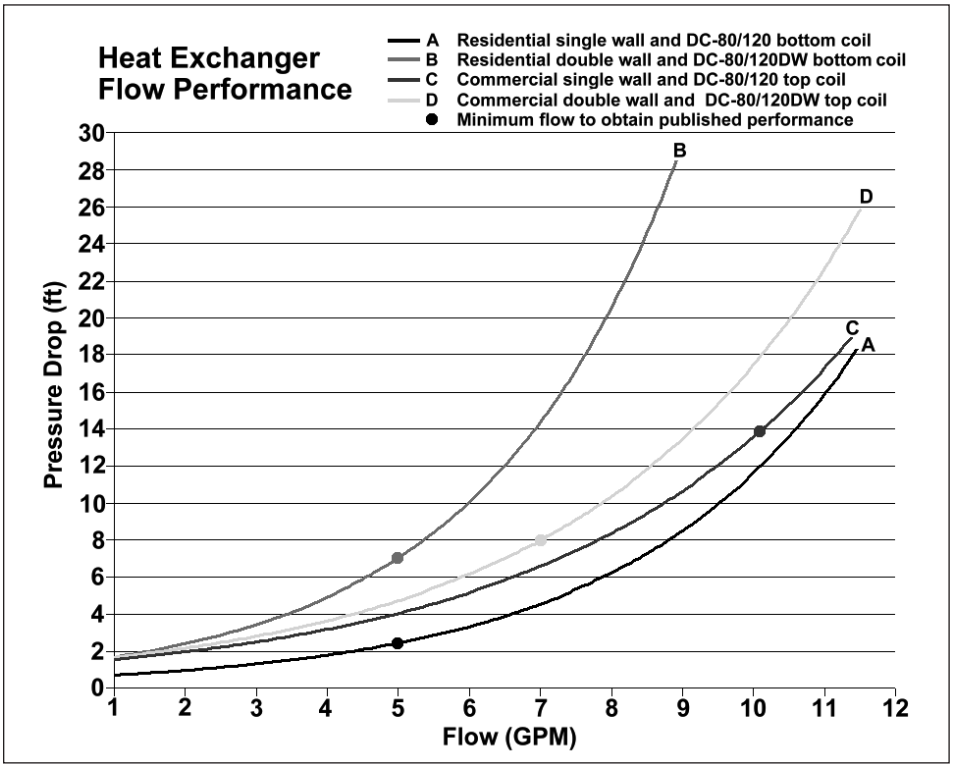
Dual Input with Solar Collectors

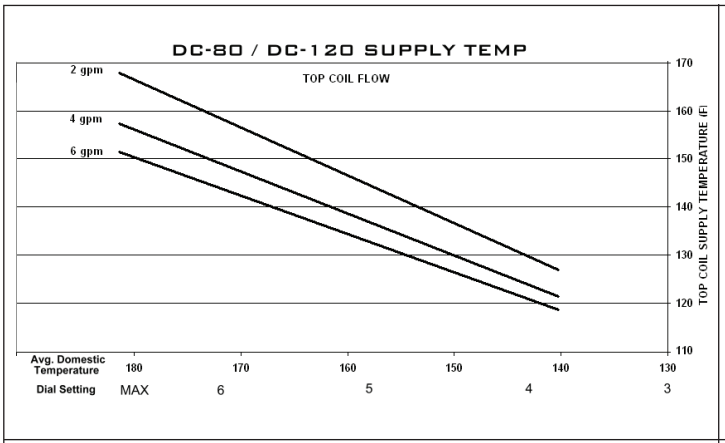


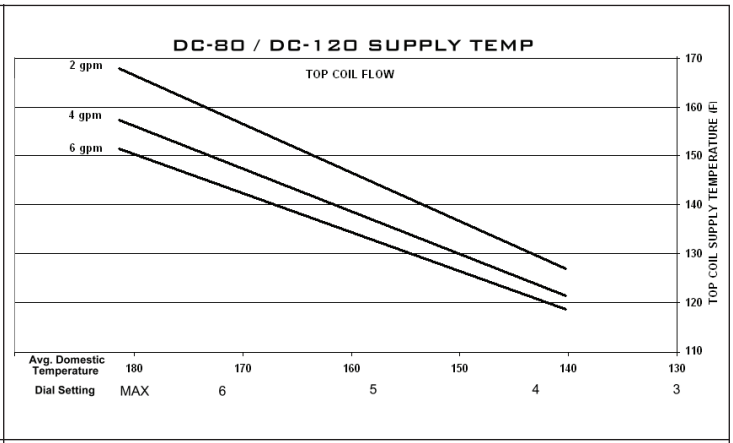
Both Coils as Input
(Reverse Return Piping)

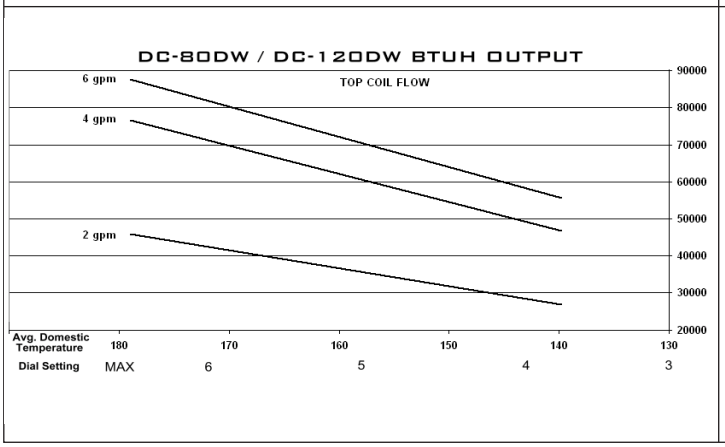


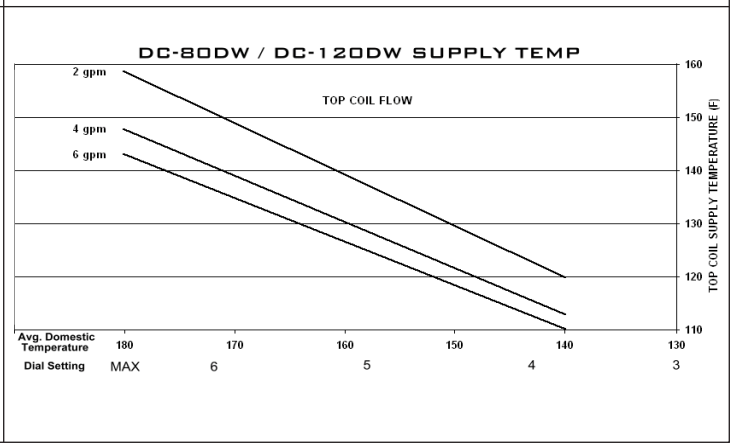
Coil Performance and Flow











DC Series Applications and Opportunities

Heating Applications

- In-floor heating with large hot water supply for additions with large bathrooms.
- Snowmelt applications with complete isolation of boiler system results in no minimum fluid return temperature and no chance of shocking boiler.
- Bathroom remodels with large tubs, in-floor heat and towel warmers.
- Pool & Spa heating, indoor and outdoor.

Dual Input Source Applications

- Solar collector systems.
- Wood boilers.
- Heat reclamation systems.

Commercial Applications

- Apartments, schools, hotels (combined pool heating and sidewalk snowmelt via top coil).
- Inputs to 400,000 BTUH for fast recovery.
- Stainless Steel construction for dairy washdown and disinfection systems.
- 180°F aquastat supplied standard.
- Commercial T&P relief included with every tank.

WORTHINGTON INDUSTRIES
1400 Division Road, West Warwick, RI USA 02893
T: 800.426.8765 **www.amtrol.com**

PHCC PLUMBING-HEATING-COOLING CONTRACTORS ASSOCIATION
LOW-LEAD IAPMO R&T
MADE IN USA

MC 10015 9040-647 (06/19)