Welcome to WMS Hydronics 101
Part 1 The Basics

What will be covered

System Sizing
Picking the boiler
Boiler Components
Universal Hydronics Formula
Why 12 PSI
Circulator Placement

Where do you start?

Ok I got this the house has a 200,000 BTU boiler and it is Base board, so I need the next largest size boiler, so I don't get called in the middle of the night.

I wonder maybe I should ask Mrs. Jones if the house is comfortable?

If she says yes, then I can do a connected load and size the boiler that way, I can't go wrong.

Well Maybe

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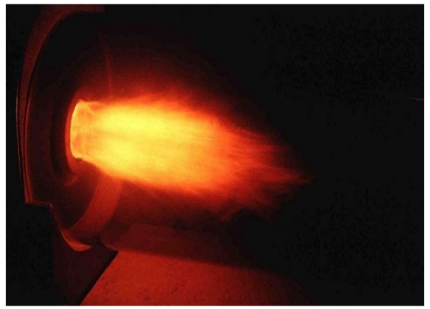
Connected Load Pit Falls

New Windows
Added Insulation
Tighter House = Less Infiltration
Smaller Heat Load

Oil Boiler Sizing Terms

- BTU Input
  - BTUH Gallons input per hour
  - 140,000 BTUH = 1 Gallon per hour
- DOE Capacity
  - Input X combustion efficiency
  - Federal output rating
  - Boiler/piping in heated area
  - Jacket losses offset heating load
- I-B-R Net Output
  - De-rates DOE 15%
  - Jacket/piping losses wasted
  - “Pickup” allowance



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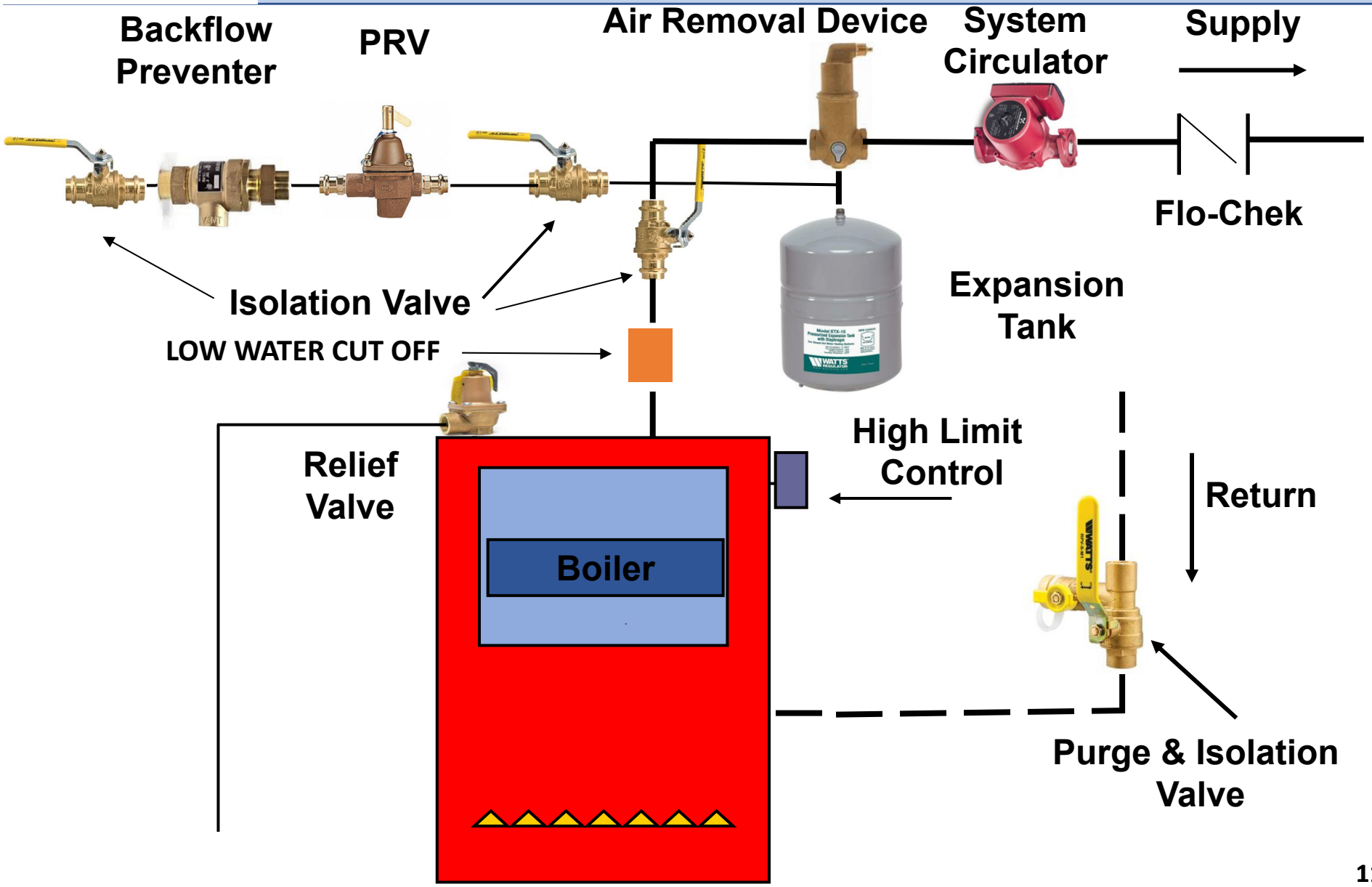

Formulas

- BTU = Energy required to raise 1 lb. of water 1°F
- ΔT = Temperature Differential
- 60 = Minutes per hour
- 8.33 = Weight of gallon of water
- GPM=Load in BTU÷ΔTx(60x8.33= 499.8)
- GPM=Load in BTU/ΔTx500
- 20°ΔT X 500 =10,000 BTU per hr per GPM of flow
- BTU load÷10,000 = GPM

Pumping Away from Tank Circulator ON